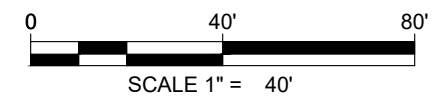


FOCALPOINT SYSTEM OVERLAY
SCALE: 1" = 40'



FOCALPOINT SYSTEM OVERLAY
HALLOCKS MILL ROAD
YORKTOWN HEIGHTS, NY
SITE DESIGNATION: FP-1

DRAWN BY
BMK
DATE
07/10/2023
SHEET NO.

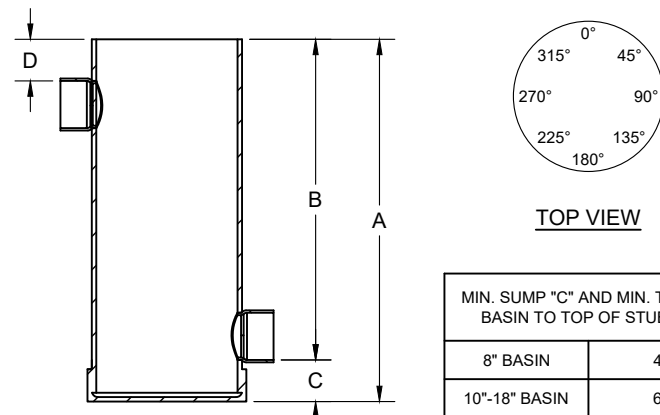
R-TANK^{HD} QUANTITIES

R-TANK ^{HD} MODULE TYPE	Single+Mini
# OF Single+Mini R-TANKS	2,400
TOTAL SYSTEM STORAGE	18,593 CF
R-TANK STORAGE VOLUME	15,198 CF
STONE STORAGE VOLUME (40% VOID RATIO)	3,395 CF
STONE BED FOOTPRINT	8400 SF
STONE QUANTITY	314 CY
SR-18 MICROGRID (UNDER FOCALPOINT)	6195 SF (688 SY)
N080 NON-WOVEN GEOTEXTILE TANK WRAP	18,213 SF (2,024 SY)
N080 NON-WOVEN GEOTEXTILE EXCAVATION WRAP	21,042 SF (2338 SY)
6" FOCALPOINT INSPECTION PORT	1
12" MAINTENANCE PORTS	6
PIPE BOOTS (8")	15
NOTE: STONE QUANTITY INCLUDES 6" OF COVER AND 3" OF BASE.	
NOTE: GEOTEXTILE / LINER QUANTITIES INCLUDE A 15% WASTE FACTOR.	

ELEVATIONS

FOCALPOINT FILTER SURFACE AREA	3350 SF
TOP OF MULCH ELEVATION	403.00
TOP OF MEDIA ELEVATION	402.75
DEPTH OF MEDIA	18"
TOP OF BRIDGING STONE ELEVATION	401.25
TOP OF R-TANK UNDERDRAIN ELEV.	400.75
R-TANK UNDERDRAIN INVERT	398.59
INVERT OF STONE BASE (3")	398.34

BASIN LOCATION	DRAIN BASIN DIA. (")	GRATE TYPE	"A" BASIN HEIGHT
FP-1	30"	FLAT	4.58 FT



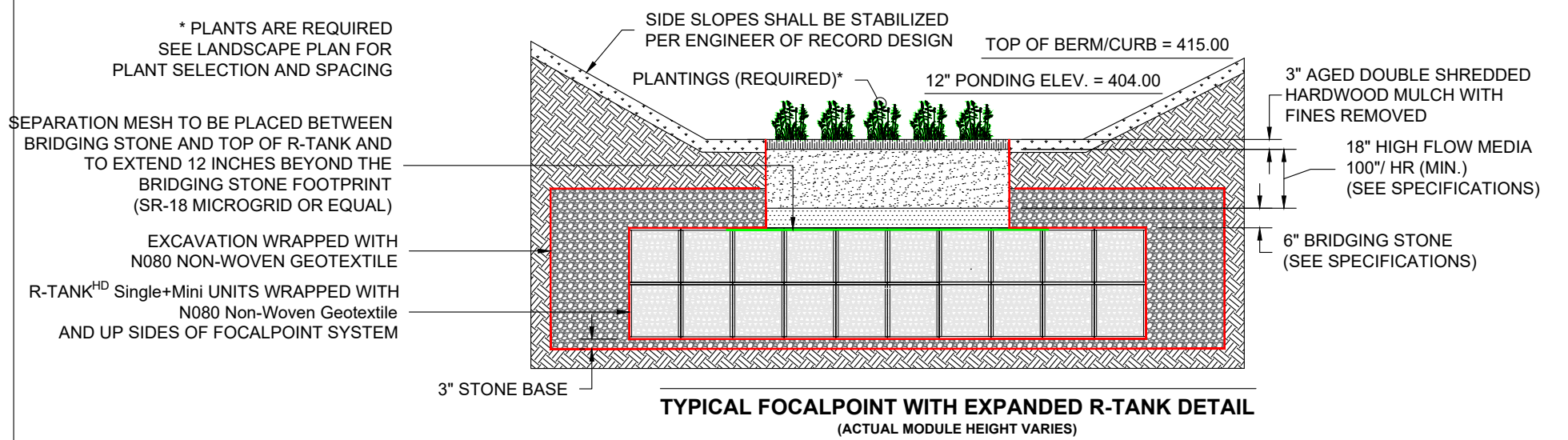
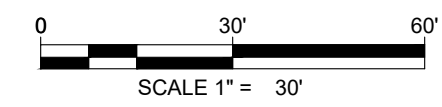
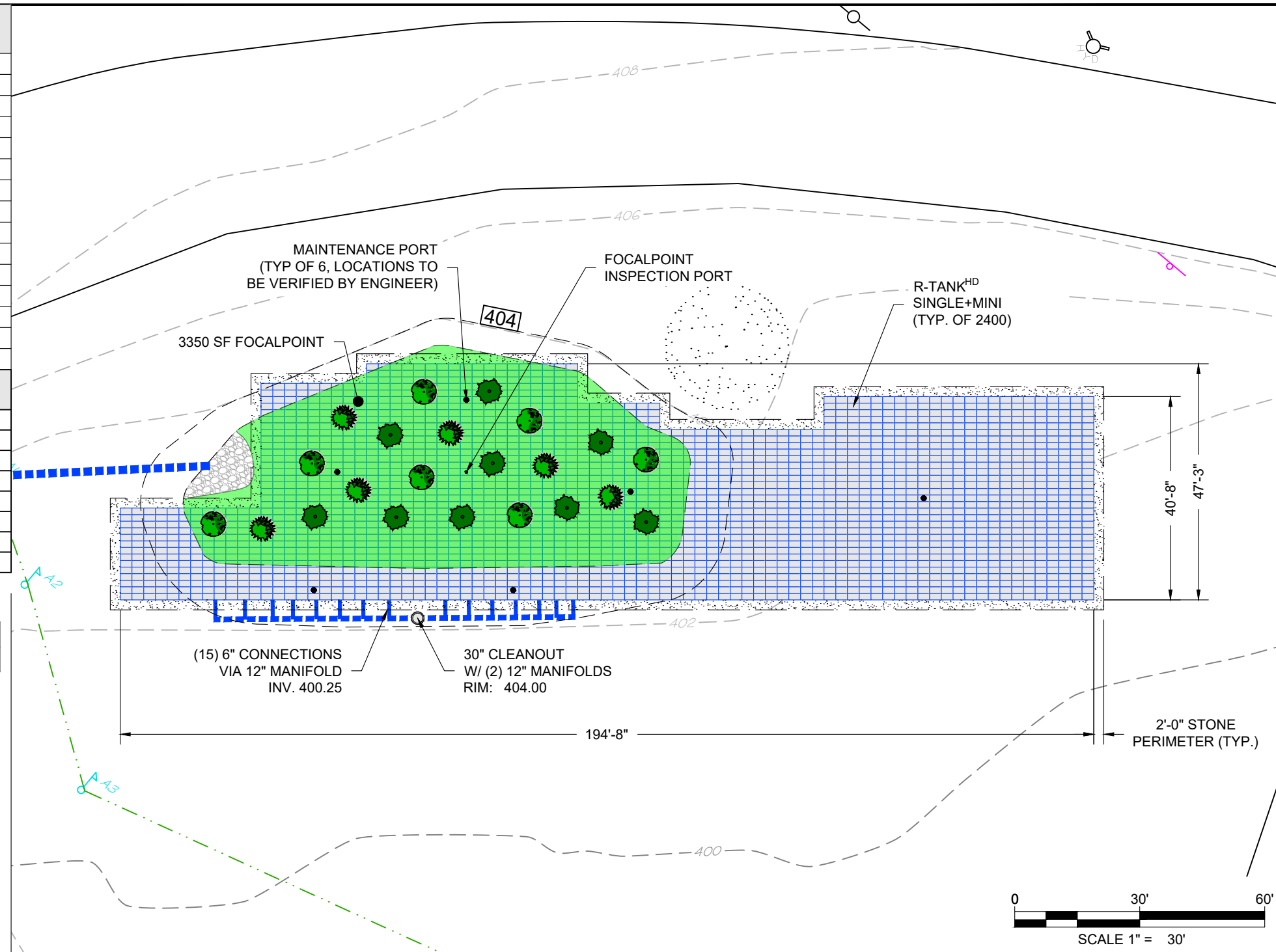
MIN. SUMP "C" AND MIN. TOP OF BASIN TO TOP OF STUB "D"	
8" BASIN	4"
10"-18" BASIN	6"
24" BASIN	8"
30" BASIN	10"
36" BASIN	14"

SIDE VIEW

- NOTES:
- A - OVERALL DRAIN BASIN HEIGHT
 - B - TOP OF BASIN TO INVERT OF STUB (FLOW LINE)
 - C - SUMP - REFER TO CHART FOR MINIMUMS
 - D - TOP OF BASIN TO TOP OF STUB - REFER TO CHART FOR MINIMUMS

	STUB DIA. (IN.)	LOCATION (DEGREES)	"B" INVERT HEIGHT	TYPE OF PIPE	PIPE MANUFACTURER
STUB #1	12	270	3.75 FT	PVC	PLEASE VERIFY
STUB #2	12	90	3.75 FT	PVC	PLEASE VERIFY
STUB #3					
STUB #4					

DRAIN BASIN STUB DETAIL

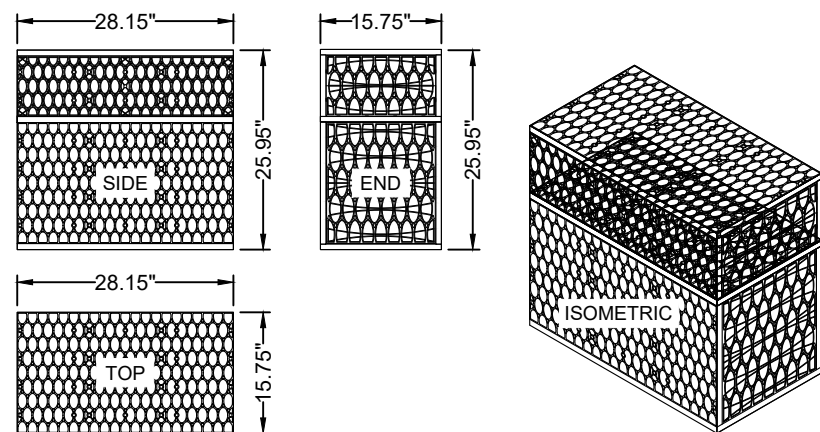


* PLANTS ARE REQUIRED SEE LANDSCAPE PLAN FOR PLANT SELECTION AND SPACING

SEPARATION MESH TO BE PLACED BETWEEN BRIDGING STONE AND TOP OF R-TANK AND TO EXTEND 12 INCHES BEYOND THE BRIDGING STONE FOOTPRINT (SR-18 MICROGRID OR EQUAL)

EXCAVATION WRAPPED WITH N080 NON-WOVEN GEOTEXTILE

R-TANK^{HD} Single+Mini UNITS WRAPPED WITH N080 Non-Woven Geotextile AND UP SIDES OF FOCALPOINT SYSTEM

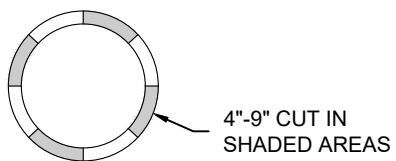
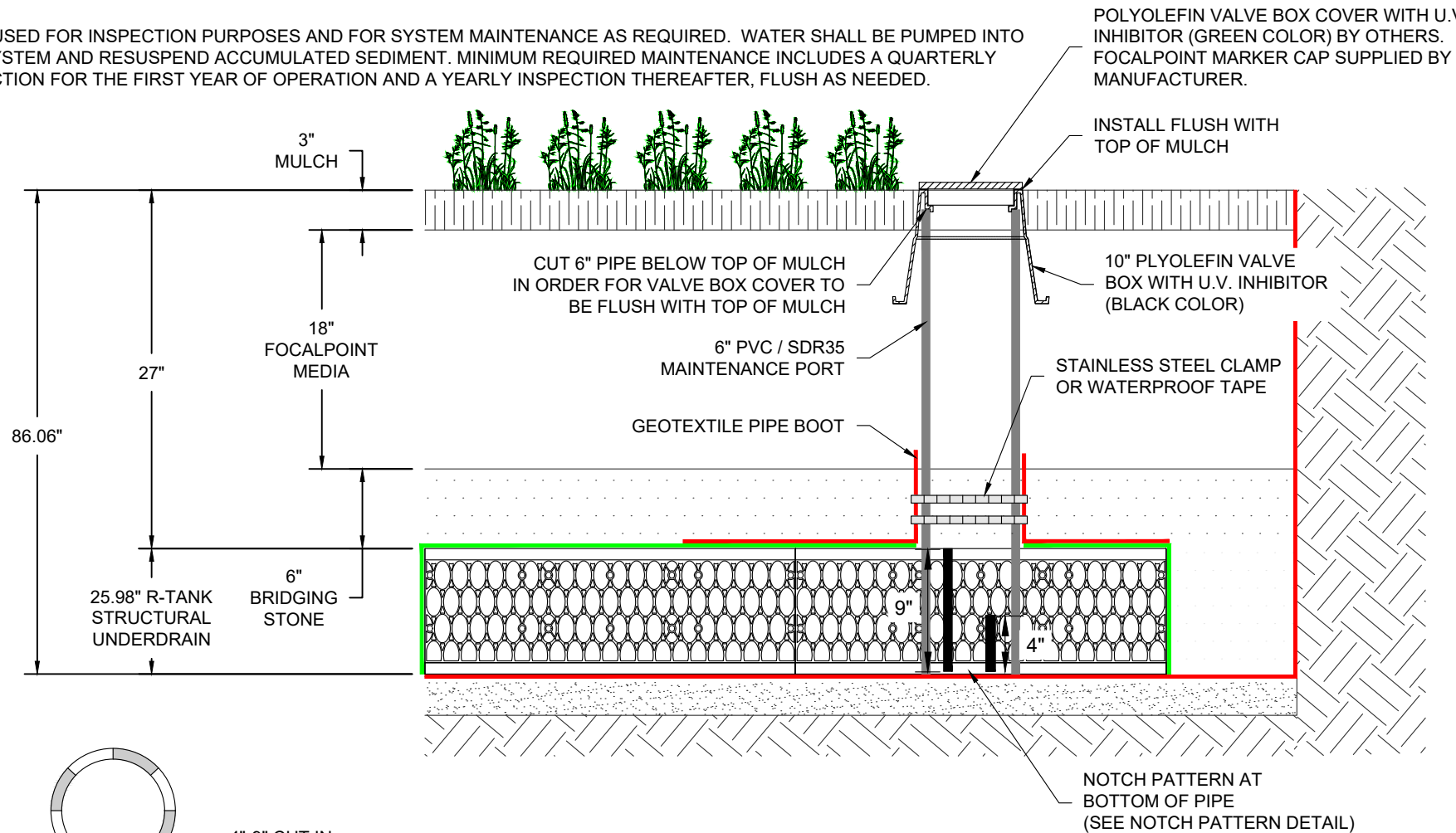


MODULE DATA

GEOMETRY: LENGTH = 28.15 IN. (715 MM) WIDTH = 15.75 IN. (400 MM) HEIGHT = 25.95 IN. (660 MM) TANK VOLUME = 6.66 CF STORAGE VOLUME = 6.33 CF VOID INTERNAL VOLUME: 95% VOID SURFACE AREA: 90%	LOAD RATING: 33.4 PSI, (MODULE ONLY) HS20, (WITH ACF COVER SYSTEM) MATERIAL: 100% RECYCLED POLYPROPYLENE SMALL PLATES PER SEGMENT/TOTAL: 5/10
--	--

SINGLE + MINI R-TANK^{HD} - MODULE DETAIL

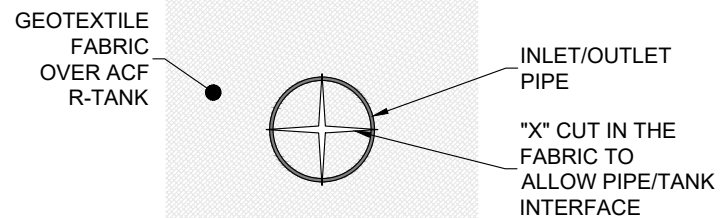
NOTE: PORT USED FOR INSPECTION PURPOSES AND FOR SYSTEM MAINTENANCE AS REQUIRED. WATER SHALL BE PUMPED INTO THE SYSTEM AND RESUSPEND ACCUMULATED SEDIMENT. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION FOR THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER, FLUSH AS NEEDED.



PIPE NOTCH PATTERN DETAIL

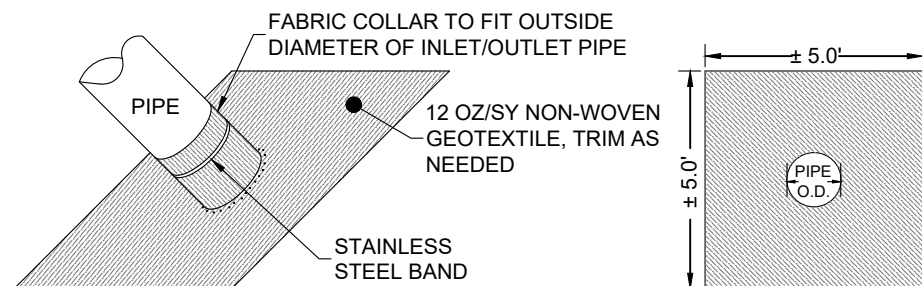
FOCALPOINT OBSERVATION & MAINTENANCE PORT DETAIL

CUT AN "X" IN THE FABRIC ENVELOPE THAT IS SLIGHTLY LARGER THAN THE PIPE. PULL THE FABRIC FLAPS AROUND THE PIPE, AND SEAL WITH A STAINLESS STEEL BAND.



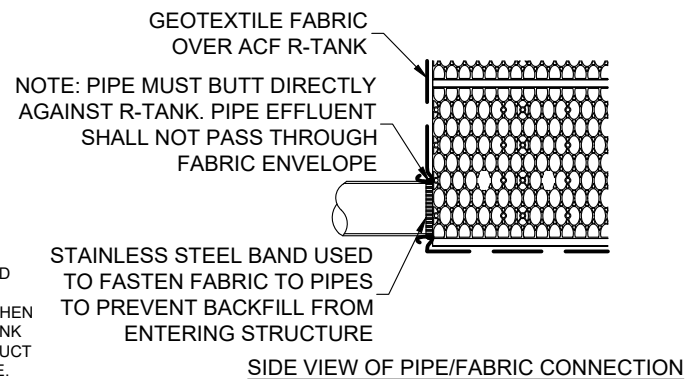
END VIEW OF PIPE/FABRIC CONNECTION

AFTER TANK WRAP IS SECURED TO PIPE, SLIDE BOOT AGAINST R-TANK AND SECURE WITH SECOND STAINLESS STEEL BAND, THEN ATTACH BOOT FLAP TO TANK ENVELOPE FABRIC WITH DUCT TAPE OR OTHER ADHESIVE.

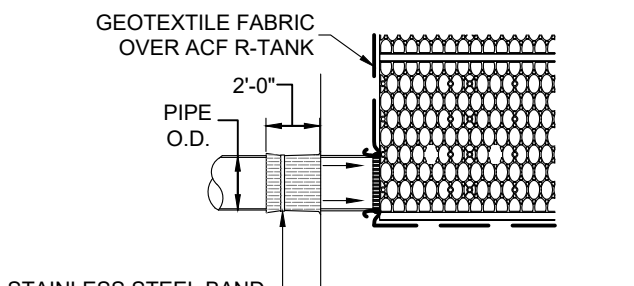


GEOTEXTILE BOOT

FRONT VIEW OF GEOTEXTILE BOOT



SIDE VIEW OF PIPE/FABRIC CONNECTION



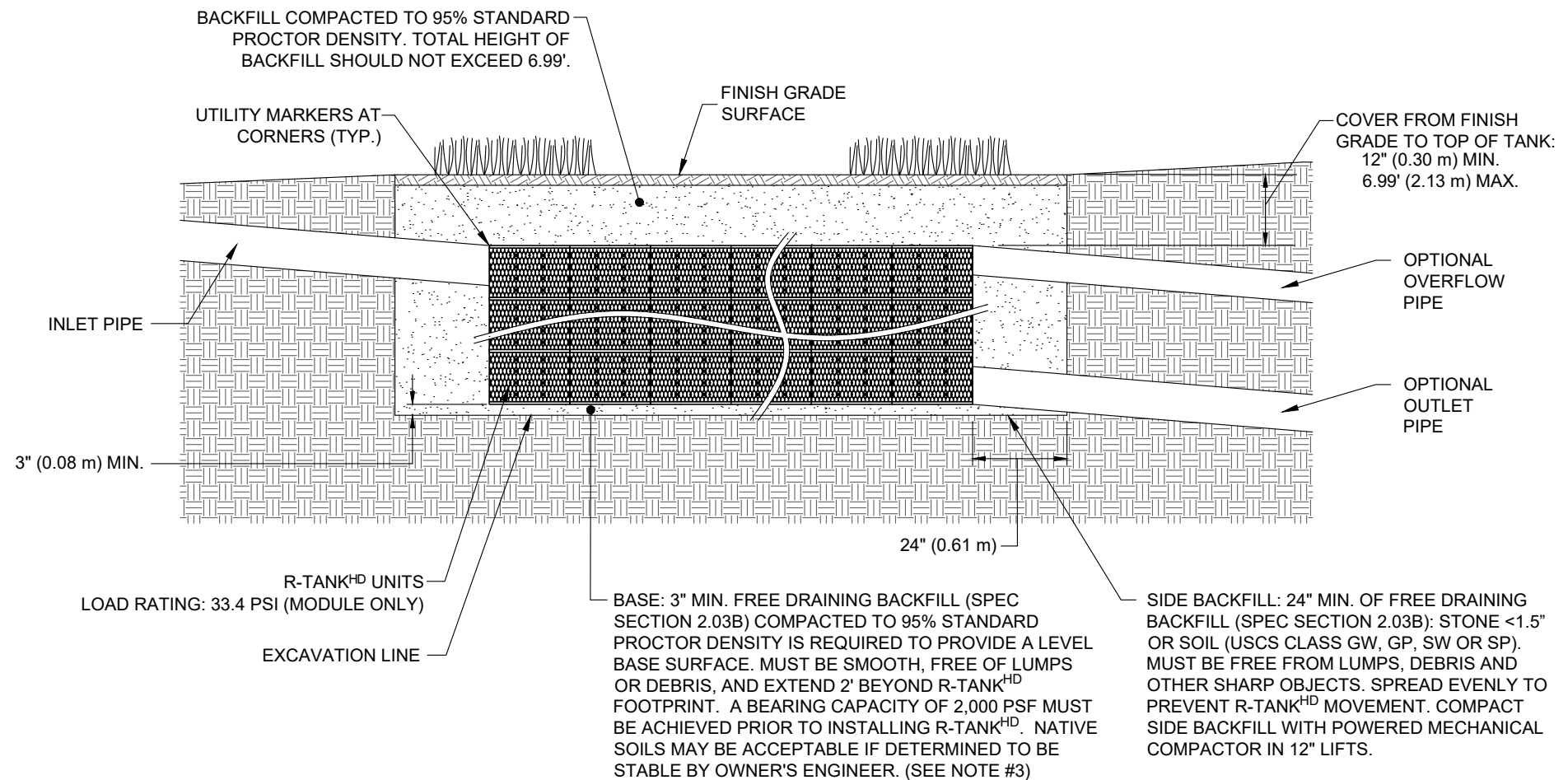
STAINLESS STEEL BAND

SIDE VIEW OF GEOTEXTILE BOOT

R-TANK^{HD} TYPICAL TANK INLET/OUTLET W/ GEOTEXTILE PIPE BOOT DETAIL

NOTES:

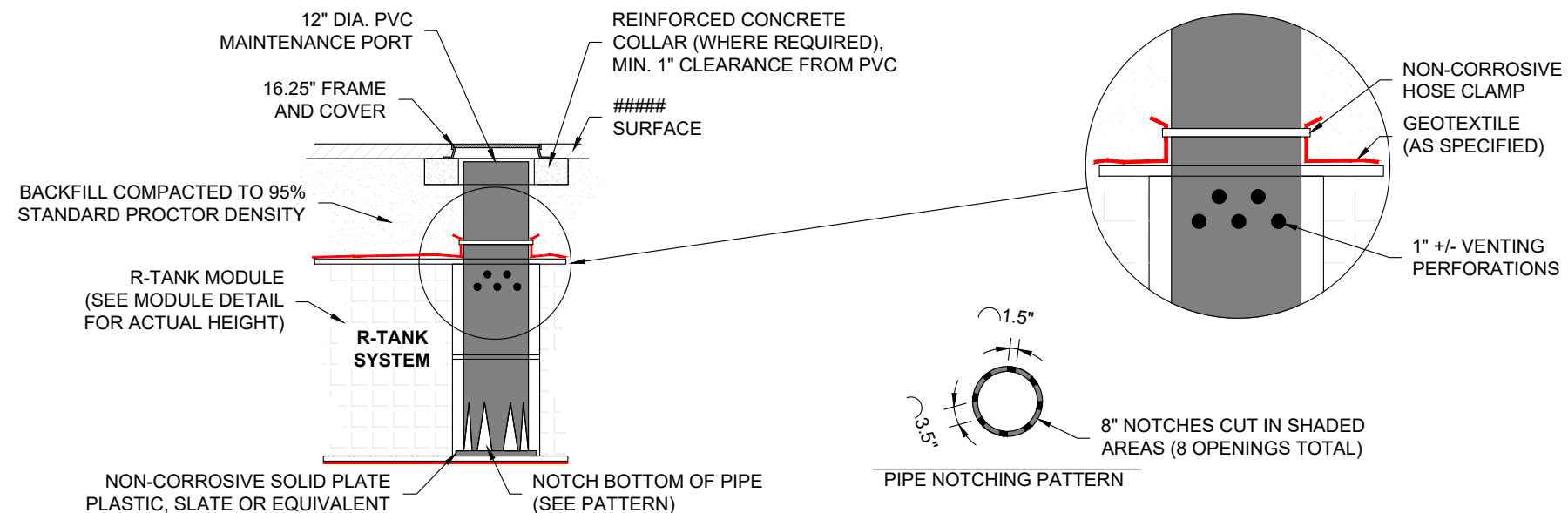
1. FOR COMPLETE MODULE DATA, SEE APPROPRIATE R-TANK^{HD} SHEET (MINI MODULE, SINGLE MODULE, DOUBLE MODULE, TRIPLE MODULE, QUAD MODULE, OR PENTA MODULE).
2. PRE-TREATMENT STRUCTURES NOT SHOWN.
3. FOR INFILTRATION APPLICATIONS, GEOTEXTILE ENVELOPING R-TANK SHALL BE ACF M200 (PER SPEC SECTION 2.02A) AND BASE SHALL BE 4" MIN. UNCOMPACTED FREE DRAINING BACKFILL (SPEC SECTION 2.03A) TO PROVIDE A LEVEL BASE. SURFACE MUST BE SMOOTH, FREE OF LUMPS OR DEBRIS, AND EXTEND 2' BEYOND R-TANK^{HD} FOOTPRINT.



R-TANK^{HD} GREEN SPACE - SECTION VIEW

NOTES

1. THIS PORT IS USED TO PUMP WATER INTO THE SYSTEM AND RE-SUSPEND ACCUMULATED SEDIMENT SO THAT IT MAY BE PUMPED OUT.
2. MINIMUM REQUIRED MAINTENANCE INCLUDES A QUARTERLY INSPECTION DURING THE FIRST YEAR OF OPERATION AND A YEARLY INSPECTION THEREAFTER. FLUSH AS NEEDED.
3. R-TANK^{HD}, R-TANK^{SD}, R-TANK^{UD} AND R-TANK^{XD} MAY BE USED IN TRAFFIC APPLICATIONS.
4. SEE TRAFFIC LOADING DETAIL FOR MINIMUM & MAXIMUM COVER REQUIREMENTS.
5. IF MAINTENANCE PORT IS LOCATED IN A NON-TRAFFIC AREA, A PLASTIC CAP CAN BE USED IN LIEU OF A FRAME AND COVER WITH CONCRETE COLLAR.



R-TANK TYPICAL MAINTENANCE PORT

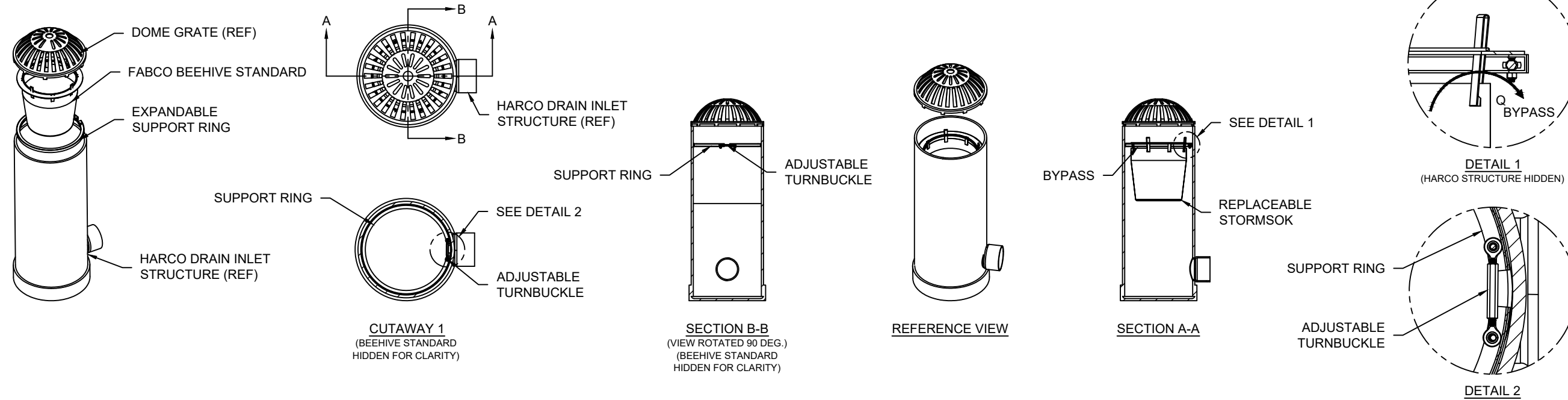
NOTES:

1. MATERIAL:
 - A) SUPPORT FLANGE: ALUMINUM ALLOY PLATE, 5000 SERIES
 - B) STORMSOK: WOVEN POLYPROPYLENE GEOTEXTILE
 - C) EXPANSION RING: ALUMINUM ALLOY CHANNEL, 6000 SERIES
 - D) HARDWARE: STAINLESS STEEL
2. RECOMMENDED MINIMUM VAULT DEPTH: 2-IN BELOW STORMSOK
3. USE ONLY WITH FABCO REPLACEABLE STORMSOK

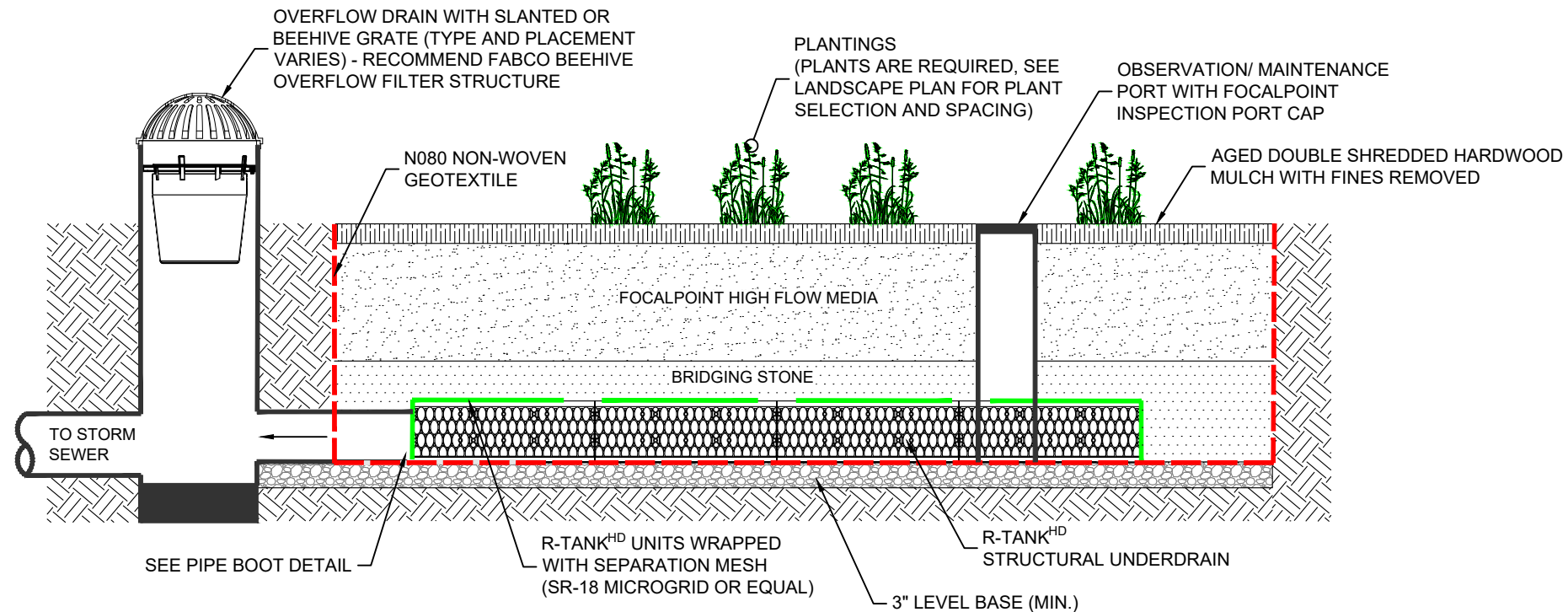
GENERAL INSTALLATION:

ADJUST THE TURNBUCKLE DOWN TO GIVE THE SMALLEST RING DIAMETER AND LOCATE THE EXPANSION RING INTO THE HARCO STRUCTURE MINIMUM OF 6-IN DOWN FROM THE TOP OPENING AS SHOWN. BEGIN OPENING THE TURNBUCKLE UNTIL THE EXPANSION RING IS SELF SUPPORTING, THEN VERIFY THE RING IS LEVEL AND PLUMB TO THE HARCO STRUCTURE. USING A CALIBRATED TORQUE WRENCH, CONTINUE TO OPEN THE TURNBUCKLE TO GIVEN TORQUE (MODEL-SPECIFIC). DO NOT OVER TIGHTEN. INSTALL THE STORMSACK ASSEMBLY DIRECTLY ON THE SUPPORT RING.

STRUCTURE DIA. (IN.)	DEBRIS CAPACITY (CU. FT.)	FILTERED FLOWRATE (CFS)	BYPASS FLOWRATE (CFS)
12	0.66	1.70	1.00
15	1.00	2.10	1.30
18	1.20	2.30	1.40
24	2.80	3.90	2.20
30	2.80	3.90	2.22

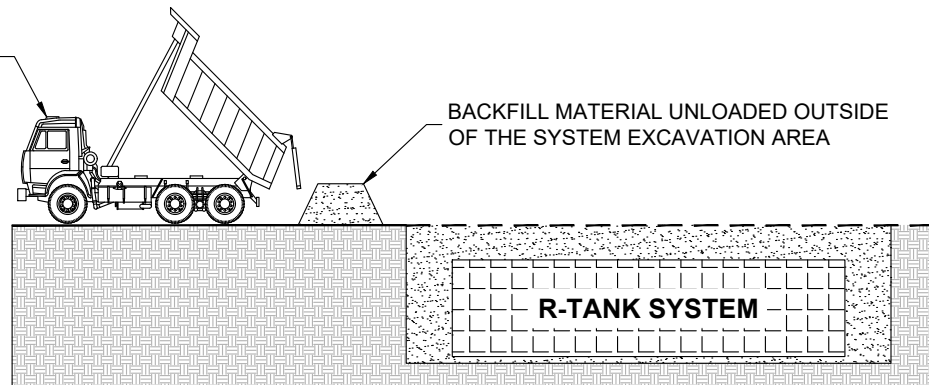


FABCO BEEHIVE STANDARD OVERFLOW FILTER STRUCTURE



TYPICAL FOCALPOINT SECTION WITH OVERFLOW STRUCTURE

DUMP TRUCKS AND PANS SHALL NOT OPERATE OVER THE SYSTEM EXCAVATION AREA



DUMP TRUCK DETAIL (SEE NOTE 3)

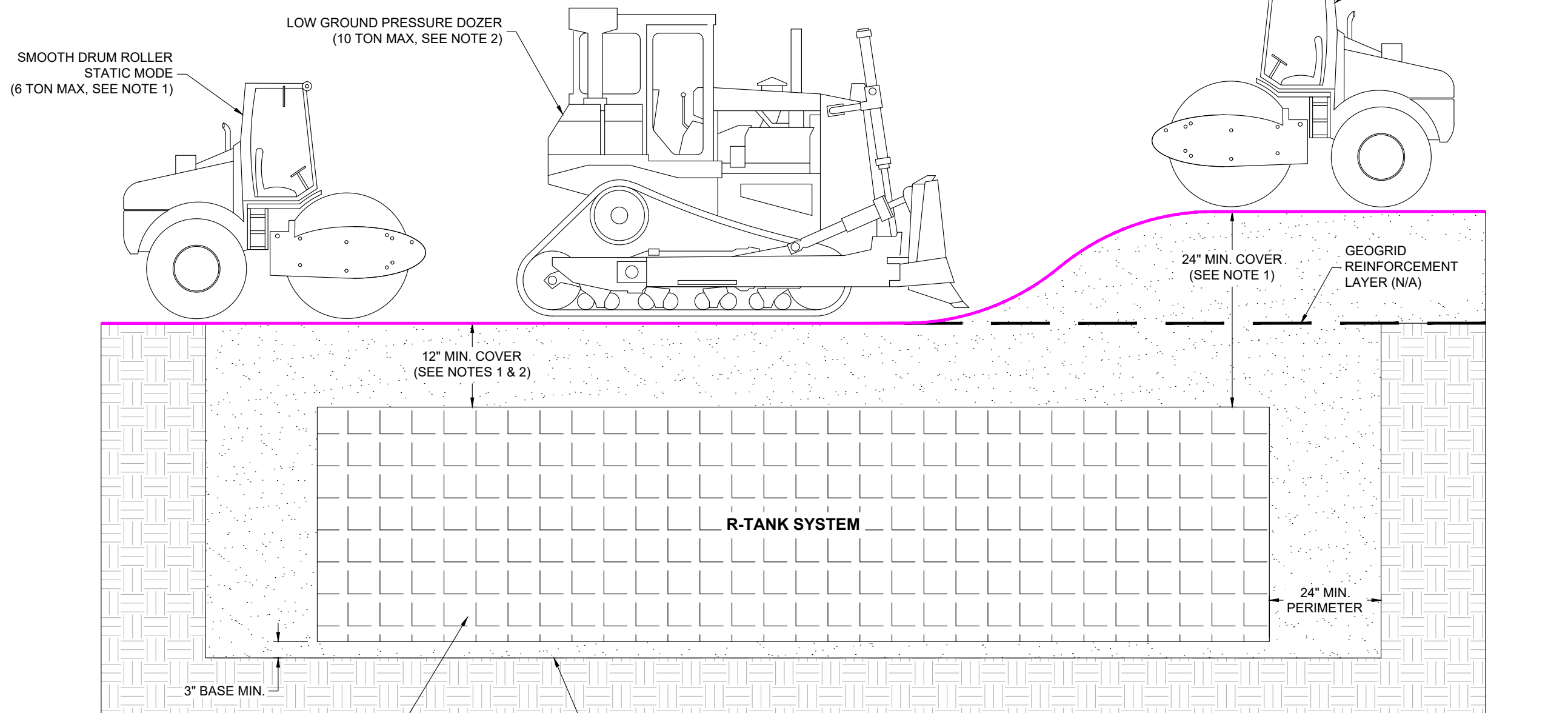
NOTES:

1. FOLLOWING PLACEMENT OF SIDE BACKFILL, A UNIFORM 12" LIFT OF THE FREELY DRAINING MATERIAL (SPEC SECTION 2.03 B2) SHALL BE PLACED OVER THE R-TANK AND LIGHTLY COMPACTED USING A WALK-BEHIND TRENCH ROLLER. ALTERNATELY, A ROLLER (MAXIMUM GROSS VEHICLE WEIGHT OF 6 TONS) MAY BE USED. ROLLER MUST REMAIN IN STATIC MODE UNTIL A MINIMUM OF 24" OF COVER HAS BEEN PLACED OVER THE MODULES. SHEEP FOOT ROLLERS SHOULD NOT BE USED. **SPEC SECTION 3.05 A5**
2. ONLY LOW PRESSURE TIRE OR TRACK VEHICLES (LESS THAN 7 PSI AND OPERATING WEIGHT OF LESS THAN 20,000 LBS) SHALL BE OPERATED OVER THE R-TANK SYSTEM DURING CONSTRUCTION. **SPEC SECTION 3.05 A5**
3. DUMP TRUCKS AND PANS SHALL NOT BE OPERATED WITHIN THE R-TANK SYSTEM AT ANY TIME. WHERE NECESSARY, THE HEAVY EQUIPMENT SHOULD UNLOAD IN AN AREA ADJACENT TO THE R-TANK SYSTEM AND THE MATERIAL SHOULD BE MOVED OVER THE SYSTEM WITH TRACKED EQUIPMENT. **SPEC SECTION 3.05 A5**
4. ENSURE THAT ALL UNRELATED CONSTRUCTION TRAFFIC IS KEPT AWAY FROM THE LIMITS OF EXCAVATION UNTIL THE PROJECT IS COMPLETE AND FINAL SURFACE MATERIALS ARE IN PLACE. NO NON-INSTALLATION RELATED LOADING SHOULD BE ALLOWED OVER THE R-TANK SYSTEM UNTIL THE FINAL DESIGN SECTION HAS BEEN CONSTRUCTED (INCLUDING PAVEMENT). **SPEC SECTION 3.05 B**
5. SEE R-TANK INSTALLATION GUIDE OR CONTACT YOUR LOCAL FERGUSON REPRESENTATIVE FOR ADDITIONAL INFORMATION.

SMOOTH DRUM ROLLER STATIC MODE (6 TON MAX, SEE NOTE 1)

LOW GROUND PRESSURE DOZER (10 TON MAX, SEE NOTE 2)

SMOOTH DRUM ROLLER VIBRATORY MODE (6 TON MAX, SEE NOTE 1)



R-TANK^{HD} OR R-TANK^{SD} UNITS
 HD: LOAD RATING: 33.4 PSI (MODULE ONLY)
 SD: LOAD RATING: 40 PSI (MODULE ONLY)

SUBGRADE / EXCAVATION LINE: COMPACT PER SPEC SECTION 3.02 D. A BEARING CAPACITY OF 2,000 PSF MUST BE ACHIEVED PRIOR TO INSTALLING R-TANK^{HD} OR R-TANK^{SD}

CONSTRUCTION EQUIPMENT COVER DETAIL - VEHICULAR TRAFFIC (FOR AREAS OUTSIDE OF FOCALPOINT FOOTPRINT)

DRAWN BY
 BMK

DATE
 07/10/2023

SHEET NO.

R-TANK^{XD} SPECIFICATION

PART 1 - GENERAL

1.01 Related Documents

- A. Drawings, technical specification and general provisions of the Contract as modified herein apply to this section.

1.02 Description of Work Included

- A. Provide excavation and base preparation per geotechnical engineer's recommendations and/or as shown on the design drawings, to provide adequate support for project design loads and safety from excavation sidewall collapse. Excavations shall be in accordance with the owner's and OSHA requirements.
- B. Provide and install R-Tank^{XD} system (hereafter called R-Tank) and all related products including fill materials, geotextiles, geogrids, inlet and outlet pipe with connections per the manufacturer's installation guidelines provided in this section.
- C. Provide and construct the cover of the R-Tank system including; stone backfill, structural fill cover, and pavement section as specified.
- D. Protect R-Tank system from construction traffic after installation until completion of all construction activity in the installation area.

1.03 Quality Control

- A. All materials shall be manufactured in ISO certified facilities.
- B. Installation Contractor shall demonstrate the following experience:
1. A minimum of three R-Tank or equivalent projects completed within 2 years; and,
 2. A minimum of 25,000 cubic feet of storage volume completed within 2 years.
 3. Contractor experience requirement may be waived if the manufacturer's representative provides on-site training and review during construction.
- C. Installation Personnel: Performed only by skilled workers with satisfactory record of performance on bulk earthworks, pipe, chamber, or pond/landfill construction projects of comparable size and quality.
- D. Contractor must have manufacturer's representative available for site review if requested by Owner.

1.04 Submittals

- A. Submit proposed R-Tank layout drawings. Drawings shall include typical section details as well as the required base elevation of stone and tanks, minimum cover requirements and tank configuration.
- B. Submit manufacturer's product data, including compressive strength and unit weight.
- C. Submit manufacturer's installation instructions.
- D. Submit R-Tank sample for review. Reviewed and accepted samples will be returned to the Contractor.
- E. Submit material certificates for geotextile, geogrid, base course and backfill materials.
- F. Submit required experience and personnel requirements as specified in Section 1.03.
- G. Any proposed equal alternative product substitution to this specification must be submitted for review and approved prior to bid opening. Review package should include third party reviewed performance data that meets or exceeds criteria in Table 2.01 B.

1.05 Delivery, Storage, and Handling

- A. Protect R-Tank and other materials from damage during delivery, and store UV sensitive materials under tarp to protect from sunlight when time from delivery to installation exceeds two weeks. Storage of materials should be on smooth surfaces, free from dirt, mud and debris.
- B. Handling is to be performed with equipment appropriate to the materials and site conditions, and may include hand, handcart, forklifts, extension lifts, etc.
- C. Cold weather:
1. Care must be taken when handling plastics when air temperature is 40 degrees or below as plastic becomes brittle.
 2. Do not use frozen materials or materials mixed or coated with ice or frost.
 3. Do not build on frozen ground or wet, saturated or muddy subgrade.

1.06 Preinstallation Conference.

- A. Prior to the start of the installation, a preinstallation conference shall occur with the representatives from the design team, the general contractor, the excavation contractor, the R-Tank installation contractor, and the manufacturer's representative.

1.07 Project Conditions

- A. Coordinate installation for the R-Tank system with other on-site activities to eliminate all non-installation related construction traffic over the completed R-Tank system. No loads heavier than the design loads shall be allowed over the system, and in no case shall loads higher than a standard AASHTO HS20 (or HS25, depending on design criteria) load be allowed on the system at any time.
- B. Protect adjacent work from damage during R-Tank system installation.
- C. All pre-treatment systems to remove debris and heavy sediments must be in place and functional prior to operation of the R-Tank system. Additional pretreatment measures may be needed if unit is operational during construction due to increased sediment loads.
- D. Contractor is responsible for any damage to the system during construction.

PART 2 - PRODUCTS

2.01 R-Tank Units

- A. R-Tank^{XD} - Injection molded plastic cells stacked to form a 90% void modular structure of pre-designed height (custom for each project).
- B. R-Tank^{XD} units shall meet the following Physical & Chemical Characteristics:

PROPERTY	DESCRIPTION	R-Tank ^{XD} VALUE
Void Area	Volume available for water storage	90%
Surface Void Area	Percentage of exterior available for infiltration	90%
Compressive Strength	ASTM D 2412 / ASTM F 2418	240.2 psi
HS-20 Minimum Cover	Cover required to support HS-20 loads	6"
HS-25 Minimum Cover	Cover required to support HS-25 loads	6"
Maximum Cover	Maximum allowable cover depth	< 16.7 feet
Unit Weight	Weight of plastic per cubic foot of tank	7.55 lbs / cf
Service Temperature	Safe temperature range for use	-14 – 185° F

- C. Supplier: Ferguson Waterworks 2831 Cardwell Road Richmond, VA 23234 (T): 800-448-3636; (F): 804-743-7779 www.ferguson.com

2.02 Geosynthetics

- A. Geotextile. A geotextile envelope is required to prevent backfill material from entering the R-Tank modules.
1. **Standard Application:** The standard geotextile shall be a minimum 8 oz per square yard nonwoven geotextile (ACF N080 or equivalent).
 2. **Infiltration Applications:** When water must infiltrate/exfiltrate through the geotextile as a function of the system design, a woven monofilament (ACF M200 or equivalent) shall be used.
- B. Geogrid: When required by project plans, install geogrid (ACF BX12 or equivalent) to reinforce backfill above the R-Tank system.

2.03 Backfill & Cover Materials

- A. **Bedding Materials:** Stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System) shall be used below the R-Tank system (3" minimum). Material must be free from lumps, debris, and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation. For infiltration applications bedding material shall be free draining.
- B. **Side and Top Backfill:**
1. **Deep Applications (> 12" total cover):** Free draining stone (angular and smaller than 1.5" in diameter) or soil (GW, GP, SW, or SP as classified by the Unified Soil Classification System) shall be used adjacent to (12" minimum) and above (for the first 12") the R-Tank system. Material must be free from lumps, debris and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.
 2. **Shallow Applications (< 12" total cover):** Materials listed in section 2.03 B1 above may be used adjacent to the modules. Top backfill must be well graded aggregate (angular and smaller than 0.75" in diameter) or soil (GW or SW as classified by the Unified Soil Classification System). Material must be free from lumps, debris and any sharp objects that could cut the geotextile. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.
- C. **Additional Cover Materials:** Structural Fill shall consist of granular materials meeting the gradational requirements of SM, SP, SW, GM, GP or GW as classified by the Unified Soil Classification System. Structural fill shall have a maximum of 25 percent passing the No. 200 sieve, shall have a maximum clay content of 10 percent and a maximum Plasticity Index of 4. Material shall be within 3 percent of the optimum moisture content as determined by ASTM D698 at the time of installation.

2.04 Other Materials

- Utility Marker: Install metallic tape at corners of R-Tank system to mark the area for future utility detection.

PART 3 - EXECUTION

3.01 Assembly of R-Tank Units

- A. R-Tank^{XD} modules do not require on-site assembly prior to installation. See Section 3.04 below for details on installation.

3.02 Layout and Excavation

- A. Installer shall stake out, excavate, and prepare the subgrade area to the required plan grades and dimensions, ensuring that the excavation is at least 2 feet greater than R-Tank dimensions in each direction allowing for installation of geotextile filter fabric, R-Tank modules, and free draining backfill materials.
- B. All excavations must be prepared with OSHA approved excavated sides and sufficient working space.
- C. Protect partially completed installation against damage from other construction traffic by establishing a perimeter with high visibility construction tape, fencing, barricades, or other means until construction is complete.
- D. Base of the excavation shall be uniform, level, and free of lumps or debris and soft or yielding subgrade areas. A minimum 2,000 pounds per square foot bearing capacity is required.
1. **Standard Applications:** Compact subgrade to a minimum of 95% of Standard Proctor (ASTM D698) density or as required by the Owner's engineer.
 2. **Infiltration Applications:** Subgrade shall be prepared in accordance with the contract documents. Compaction of subgrade should not be performed in infiltration applications.
- E. **Unsuitable Soils or Conditions:** All questions about the base of the excavation shall be directed to the owner's engineer, who will approve the subgrade conditions prior to placement of stone. The owner's engineer shall determine the required bearing capacity of the R-Tank subgrade; however in no case shall a bearing capacity of less than 2,000 pounds per square foot be provided.
1. If unsuitable soils are encountered at the subgrade, or if the subgrade is pumping or appears excessively soft, repair the area in accordance with contract documents and/or as directed by the owner's engineer.
 2. If indications of the water table are observed during excavation, the engineer shall be contacted to provide recommendations.
 3. Do not start installation of the R-Tank system until unsatisfactory subgrade conditions are corrected and the subgrade conditions are accepted by the owner's engineer.

3.03 Preparation of Base

- A. Place a thin layer (3" unless otherwise specified) of bedding material (Section 2.03 A), over the subgrade to establish a level working platform for the R-Tank modules. Level to within 1/2" (+/- 1/4") or as shown on the plans. Native subgrade soils or other materials may be used if determined to meet the requirements of 2.03 A and are accepted by the owner's engineer.
1. **Standard Applications:** Static roll or otherwise compact bedding materials until they are firm and unyielding.
 2. **Infiltration Applications:** Bedding materials shall be prepared in accordance with the contract documents.
- B. Outline the footprint of the R-Tank system on the excavation floor using spray paint or chalk line to ensure a 12" perimeter is available around the R-Tank system for proper installation and compaction of backfill.

3.04 Installation of the R-Tank^{XD}

- A. Where a geotextile wrap is specified on the stone base, cut strips to length and install in excavation, removing wrinkles so material lays flat. Overlap geotextile a minimum 12" or as recommended by manufacturer.
- B. Where an impervious liner (for containment) is specified, install the liner per manufacturer's recommendations and the contract documents. The R-Tank units shall be separated from impervious liner by a non-woven geotextile fabric installed accordance with Section 3.04A.
- C. Install R-Tank^{XD} Units in layers in accordance with the design drawings. R-Tank^{XD} pieces on each layer should be connected to all other pieces on that layer. Layers should stack on top of each preceding layer evenly. No vertical connection between layers is required. It is advisable to use a string line to form square corners and straight edges along the perimeter of the R-Tank system. The panels are to be oriented as per the design drawing (19.68" x 23.62") with required depth as shown on plans.
- D. Wrap the R-Tank top and sides in specified geotextile. Cut strips of geotextile so that it will cover the sides and top, encapsulating the entire system to prevent backfill entry into the system. Overlap geotextile 12" or as recommended by manufacturer. Take great care to avoid damage to geotextile (and, if specified, impervious liner) during placement.
- E. Identify locations of inlet, outlet and any other penetrations of the geotextile (and optional liner). These connections should be installed flush (butted up to the R-Tank) and the geotextile fabric shall be cut to enable hydraulic continuity between the connections and the R-Tank units. These connections shall be secured using pipe boots with stainless steel pipe clamps. Support pipe in trenches during backfill operations to prevent pipe from settling and damaging the geotextile, impervious liner (if specified) or pipe. Connecting pipes at 90 degree angles facilitates construction, unless otherwise specified. Ensure end of pipe is installed snug against R-Tank system.
- F. Install Inspection and Maintenance Ports in locations noted on plans. At a minimum one maintenance port shall be installed within 10' of each inlet & outlet connection, and with a maximum spacing of one maintenance port for every 2,500 square feet. Install all ports as noted in the R-Tank Installation Guide.
- G. If required, install ventilation pipes and vents as specified on drawings to provide ventilation for proper hydraulic performance. The number of pipes and vents will depend on the size of the system. Vents are often installed using a 90 degree elbow with PVC pipe into a landscaped area with 'U' bend or venting bollard to inhibit the ingress of debris. A ground level concrete or steel cover can be used.

3.05 Backfilling of the R-Tank Units

- A. Backfill and fill with recommended materials as follows:
1. Place freely draining backfill materials (Section 2.03 B) around the perimeter in lifts with a maximum thickness of 12". Each lift shall be placed around the entire perimeter such that each lift is no more than 24" higher than the side backfill along any other location on the perimeter of the R-Tank system. No fill shall be placed over top of tanks until the side backfill has been completed.
 2. Each lift shall be compacted at the specified moisture content to a minimum of 95% of the Standard Proctor Density or until no further densification is observed (for self-compacting stone materials). The side lifts must be compacted with walk behind compaction equipment. Even when "self-compacting" backfill materials are selected, a walk behind vibratory compactor must be used.
 3. Take care to ensure that the compaction process does not allow the machinery to come into contact with the modules due to the potential for damage to the geotextile and R-Tank units.
 4. No compaction equipment is permissible to operate directly on the R-Tank modules.
 5. Top Backfill:
 - a. **Deep Applications (> 12" total cover):** Install a 12" (or as shown on plans) lift of freely draining material (Section 2.03 B1) over the R-Tank^{XD} Units, maintaining 12" between equipment tracks and R-Tank System. Lightly compact using a walk-behind trench roller. Alternately, a roller (maximum gross vehicle weight of 6 tons) may be used. Roller must remain in static mode until a minimum of 24" of cover has been placed over the modules. Sheep foot rollers should not be used.
 - b. **Shallow Applications (< 12" total cover):** Install top backfill (Section 2.03 B2) in accordance with plans using an LGP skid steer or dozer (rubber tracks preferred). Lightly compact using a walk-behind trench roller. Alternately, a roller (maximum gross vehicle weight of 6 tons) may be used in static mode only.
 6. If required, install a geogrid as shown on plans. Geogrid shall extend a minimum of 3 feet beyond the limits of the excavation wall.
 7. Following placement and compaction of the initial cover, subsequent lifts of structural fill (Section 2.03 C) shall be placed at the specified moisture content and compacted to a minimum of 95% of the Standard Proctor Density and shall cover the entire footprint of the R-Tank system. During placement of fill above the system, unless otherwise specified, a uniform elevation of fill shall be maintained to within 12" across the footprint of the R-Tank system. Do not exceed maximum cover depths listed in Table 2.01 B.
 8. Place additional layers of geotextile and/or geogrid at elevations as specified in the design details. Each layer of geosynthetic reinforcement placed above the R-Tank system shall extend a minimum of 3 feet beyond the limits of the excavation wall.
- B. Only low pressure tire or track vehicles shall be operated over the R-Tank system during construction. No machinery should drive on top of the tank until a minimum of 18" of backfill and compaction is achieved. Dump Trucks and Pans shall not be operated within the R-Tank system footprint at any time. Where necessary the heavy equipment should unload in an area adjacent to the R-Tank system and the material should be moved over the system with tracked equipment.
- C. Ensure that all unrelated construction traffic is kept away from the limits of excavation until the project is complete and final surface materials are in place. No non-installation related loading should be allowed over the R-Tank system until the final design section has been constructed (including pavement).
- D. Place surfacing materials, such as groundcovers (no large trees), or paving materials over the structure with care to avoid displacement of cover fill and damage to surrounding areas.
- E. Backfill depth over R-Tank system must be within the limitations shown in the table in Section 2.01 B. If the total backfill depth does not comply with this table, contact engineer or manufacturer's representative for assistance.

PART 4 - USING THE SYSTEM

4.01 Maintenance Requirements

- A. A routine maintenance effort is required to ensure proper performance of the R-Tank system. The Maintenance program should be focused on pretreatment systems. Ensuring these structures are clean and functioning properly will reduce the risk of contamination of the R-Tank system and stormwater released from the site. Pre-treatment systems shall be inspected yearly, or as directed by the regulatory agency and by the manufacturer (for proprietary systems). Maintain as needed using acceptable practices or following manufacturer's guidelines (for proprietary systems).
- B. Inspection and/or Maintenance Ports in the R-Tank system will need to be inspected for accumulation of sediments at least quarterly through the first year of operation and at least yearly thereafter. This is done by removing the cap of the port and using a measuring device long enough to reach the bottom of the R-Tank system and stiff enough to push through the loose sediments, allowing a depth measurement.
- C. If sediment has accumulated to the level noted in the R-Tank Maintenance Guide or beyond a level acceptable to the Owner's engineer, the R-Tank system should be flushed.
- D. A flushing event consists of pumping water into the Maintenance Port and/or adjacent structure, allowing the turbulent flows through the R-Tank system to re-suspend the fine sediments. If multiple Maintenance Ports have been installed, water should be pumped into each port to maximize flushing efficiency. Sediment-laden water can be filtered through a Dirtbag or approved equivalent if permitted by the locality.



ENGINEER OF RECORD TO REVIEW, APPROVE AND ENDORSE FINAL SITE SPECIFIC DESIGN.



FOR ADDITIONAL INFORMATION PLEASE CONTACT:
FERGUSON WATERWORKS,
1-800-448-3636, www.ferguson.com

R-TANK SPECIFICATION
HALLOCKS MILL ROAD
YORKTOWN HEIGHTS, NY
SITE DESIGNATION: FP-1

DRAWN BY

BMK

DATE

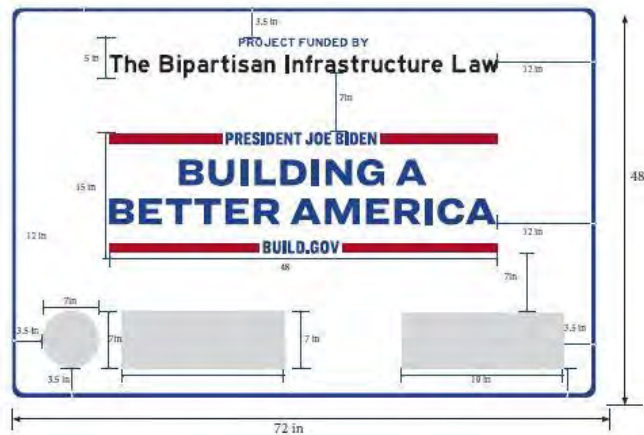
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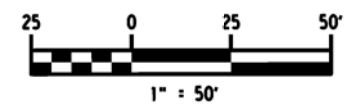
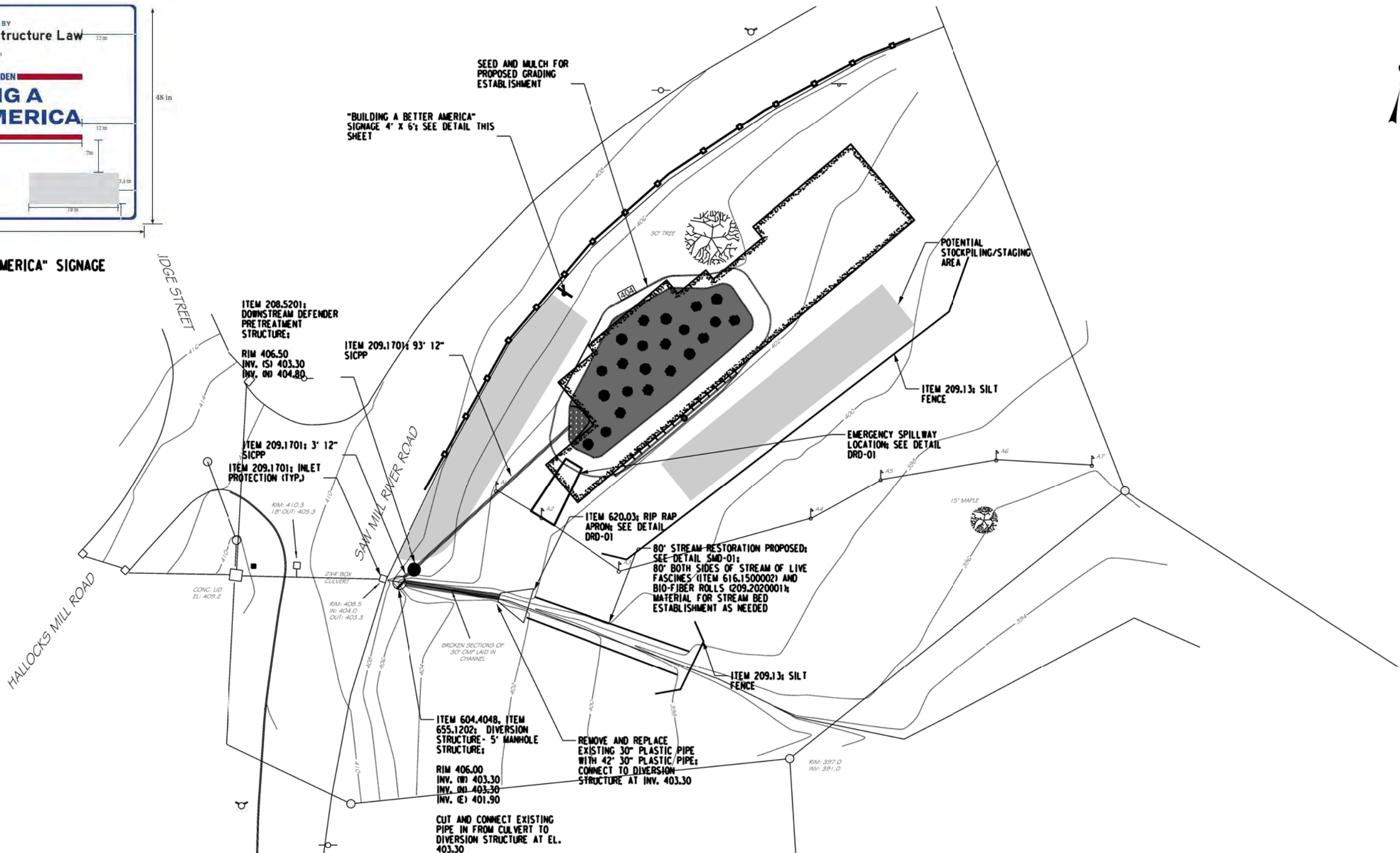
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 USER = DGNUSERNAME

DESIGN SUPERVISOR **B. FITZGERALD** JOB MANAGER **L. SCHILLING** DESIGN **E. CHILTON** DRAFTING **L. SCHILLING** CHECK **L. SCHILLING** DRAFTING **L. SCHILLING** CHECK **E. CHILTON** PROJECT MANAGER **L. SCHILLING**



"BUILDING A BETTER AMERICA" SIGNAGE



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REVISIONS			

**EAST OF HUDSON WATERSHED CORPORATION
 STORMWATER RETROFIT PROJECT
 HALLOCKS MILL**

ALL DIMENSIONS IN FT UNLESS OTHERWISE NOTED

DRAINAGE AND ESC PLAN

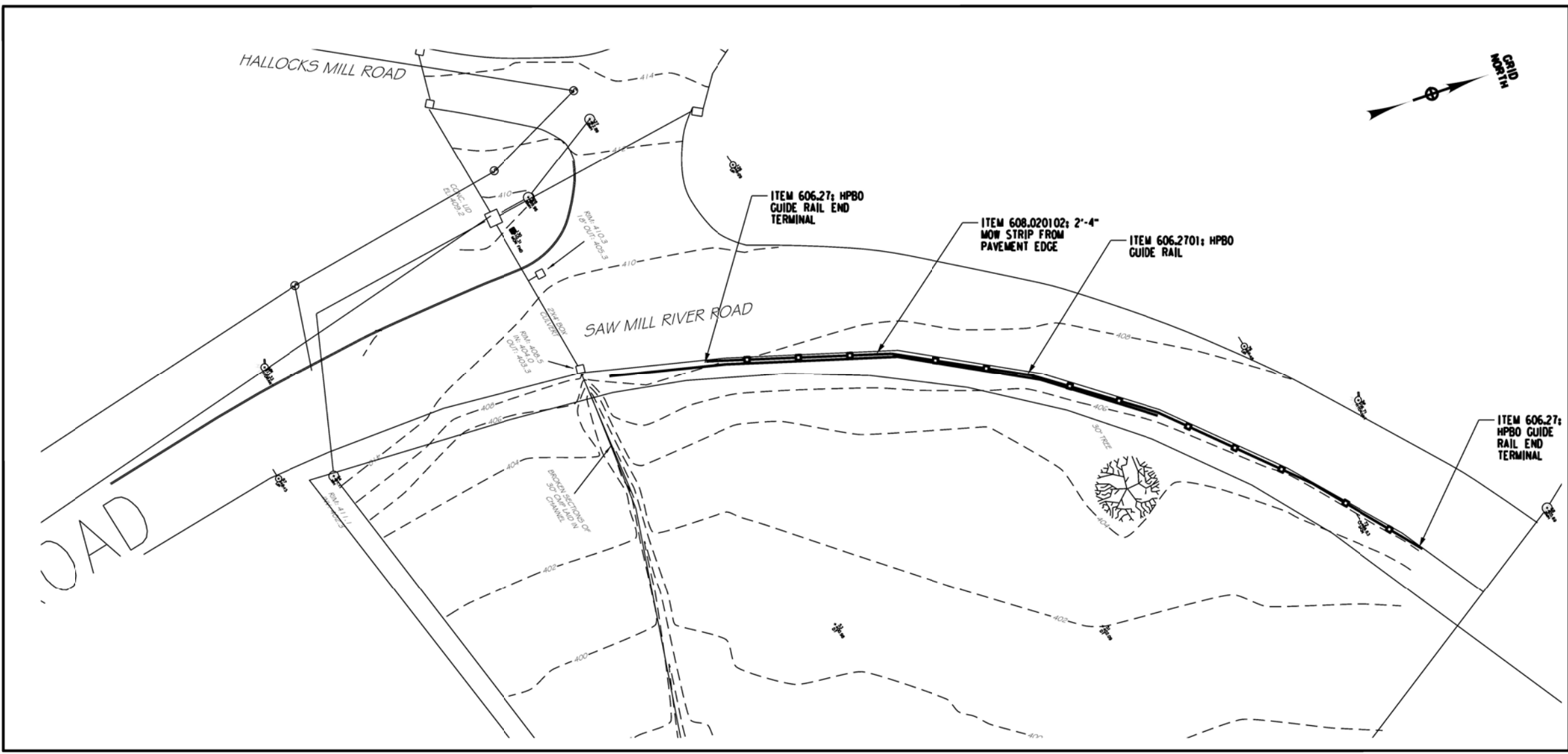
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 DRAWING NO. ECP-01
 SHEET NO.

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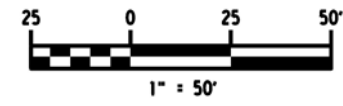
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DESIGN SUPERVISOR **B. FITZGERALD** JOB MANAGER **L. SCHILLING** DESIGN **E. CHILTON** CHECK **L. SCHILLING** DRAFTING **L. SCHILLING** CHECK **E. CHILTON** PROJECT MANAGER **L. SCHILLING**



NOTES:

1. GUIDE RAIL SHOULD BE INSTALLED IN ACCORDANCE WITH THE NYSOT STANDARD SHEETS (SECTION 606)
2. GUIDE RAIL START:
 NORTHING: 892646.84 EASTING: 689379.06
 GUIDE RAIL END:
 NORTHING: 892843.00 EASTING: 689583.88



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NUMBER	DATE	DESCRIPTION	APPROVED
REVISIONS			

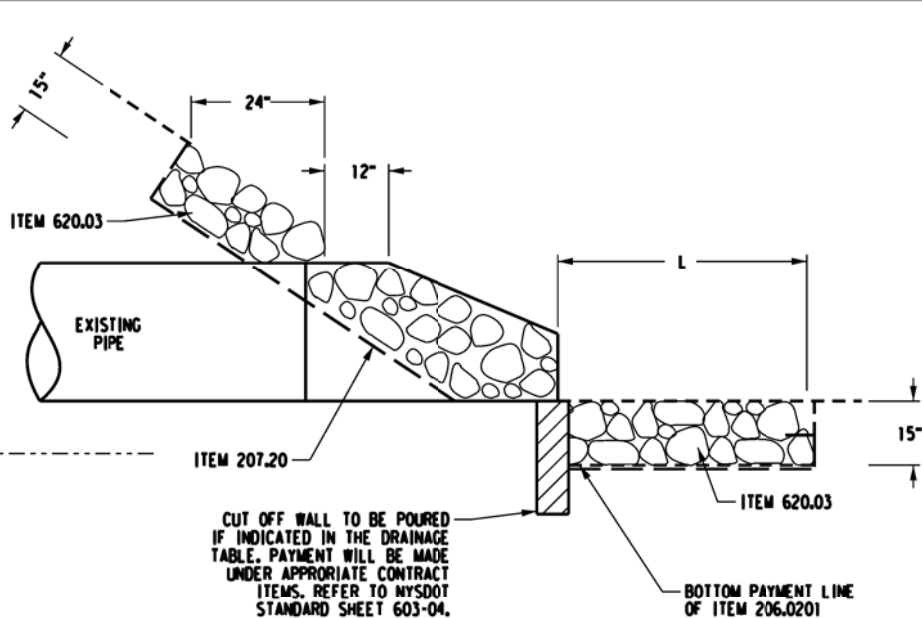
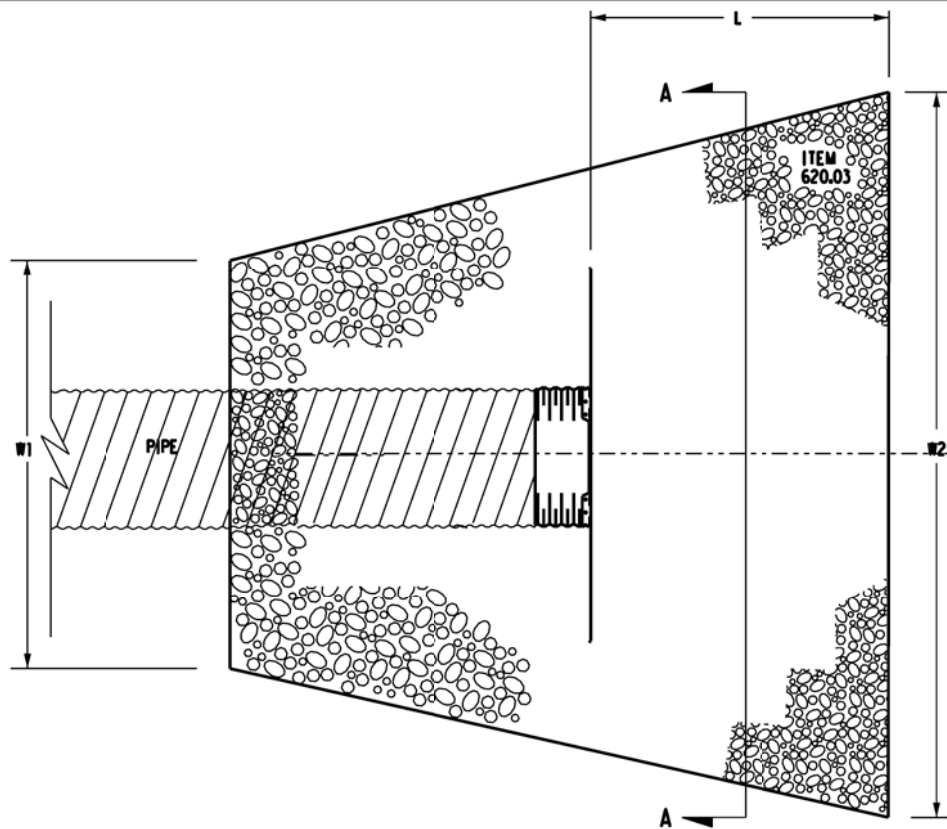
**EAST OF HUDSON WATERSHED CORPORATION
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 HALLOCKS MILL**

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GUIDE RAIL LAYOUT	DRAWING NO. RWY-01 SHEET NO.

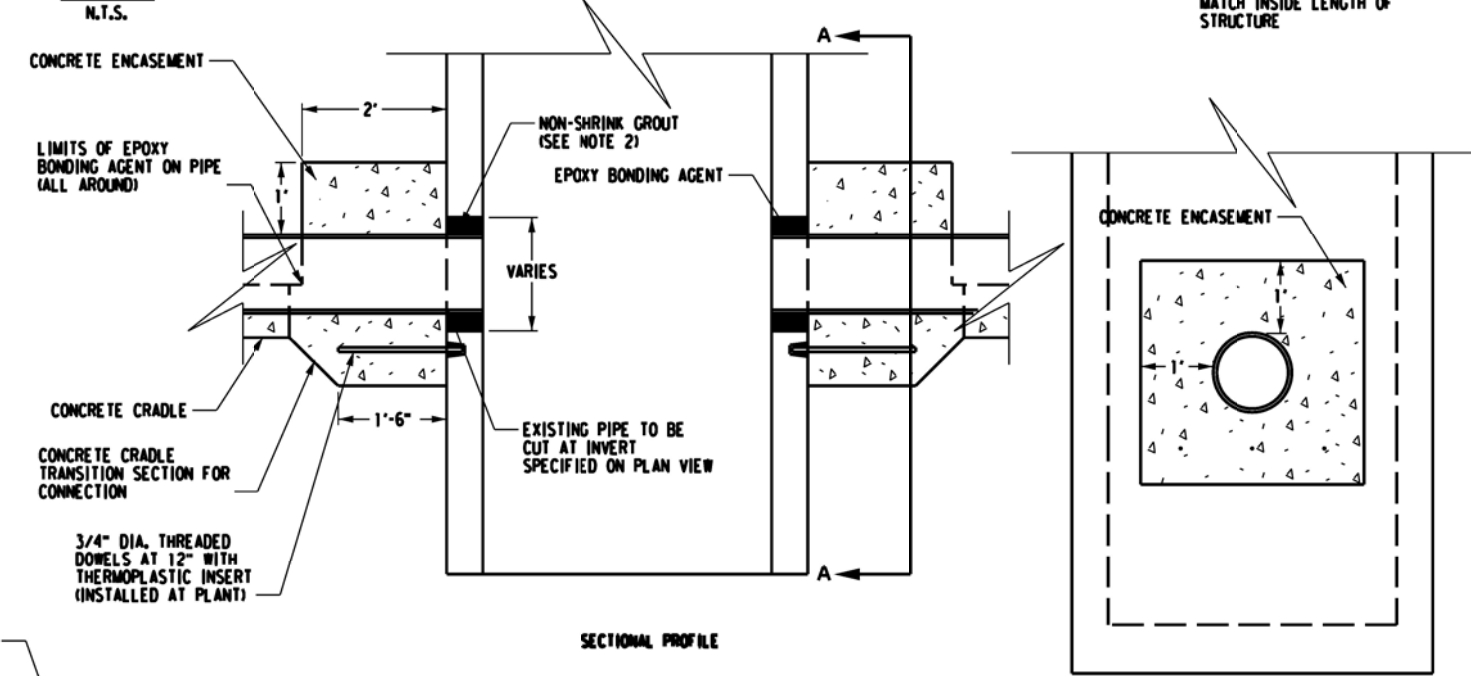
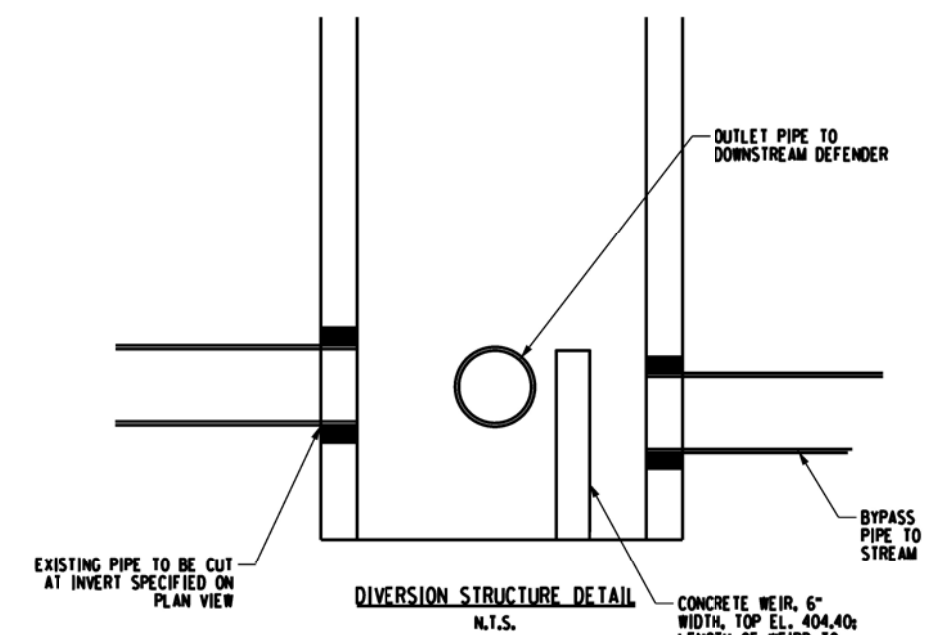
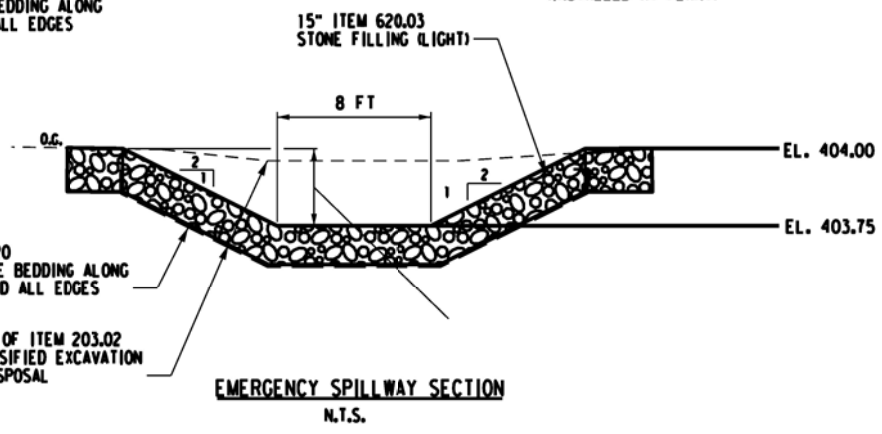
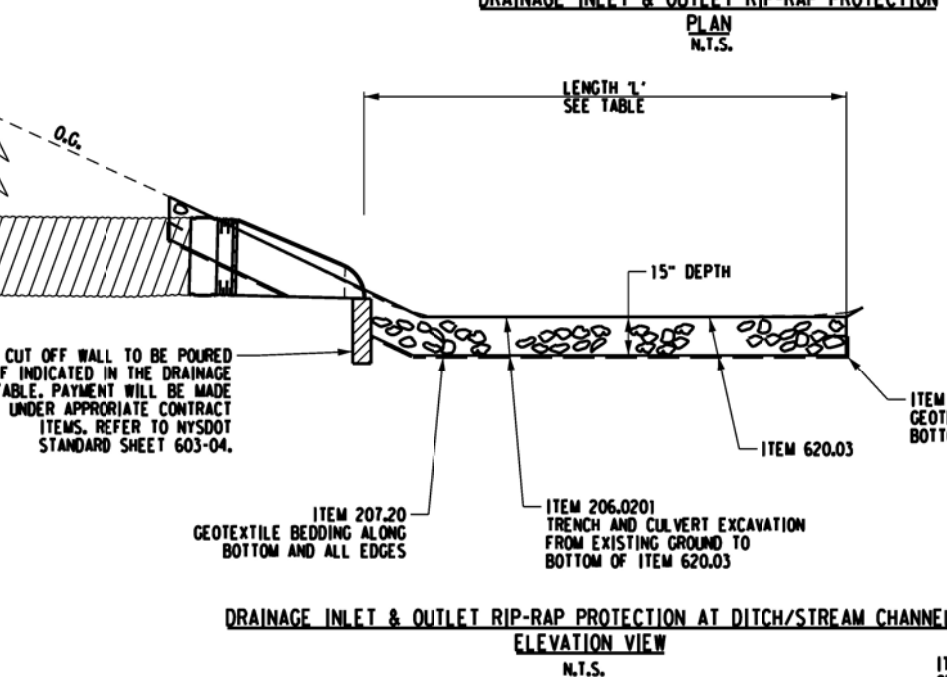
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PROJECT MANAGER: L. SCHILLING
 CHECK: E. CHILTON
 DRAFTING: L. SCHILLING
 CHECK: L. SCHILLING
 DESIGN: E. CHILTON
 JOB MANAGER: B. FITZGERALD
 FILE NAME: DGNSSPEC
 DATE/TIME: DGNSSYTIME
 USER: DGNUSERNAME



LOCATION	DIMENSIONS (FT)		
	W1	W2	L
STREAM	10'	20'	40'



- PIPE CONNECTION TO DIVERSION STRUCTURE NOTES**
1. EPOXY BONDING AGENT TO BE ROCKWELL 'C' AS MANUFACTURED BY PRECO CHEMICAL CO. OR EQUAL.
 2. NON-SHRINK GROUT TO BE SIKA-SET MORTAR AS MANUFACTURED BY SIKA CO. OR EQUAL.
 3. THERMOPLASTIC INSERT AS MANUFACTURED BY PENNSYLVANIA INSERT CORP. OR EQUAL.
 4. WORK TO BE PAID UNDER ITEM FOR DIVERSION STRUCTURE.

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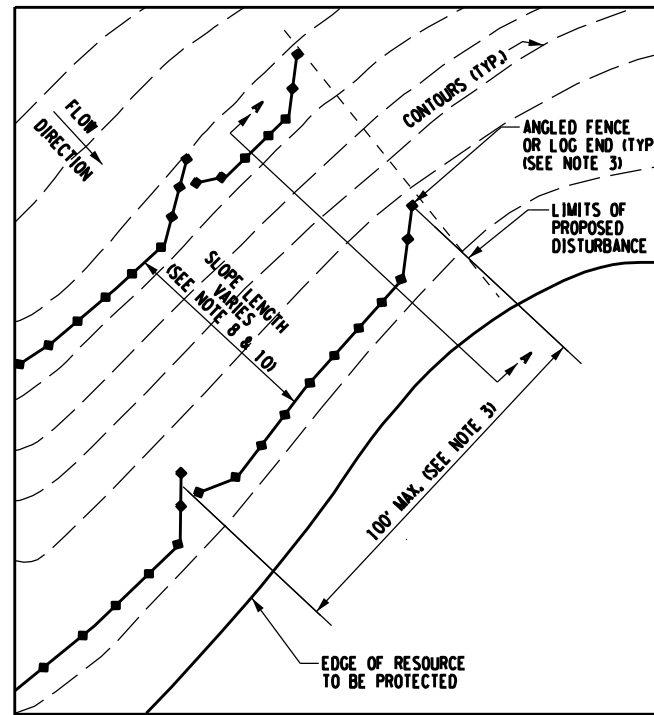
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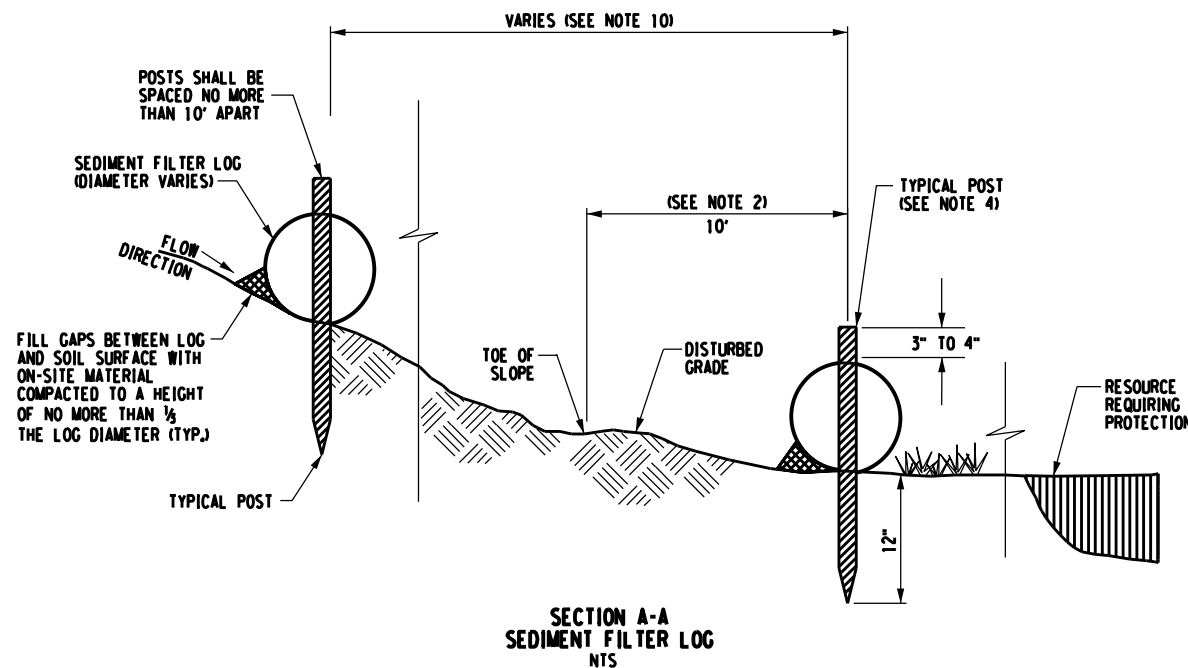
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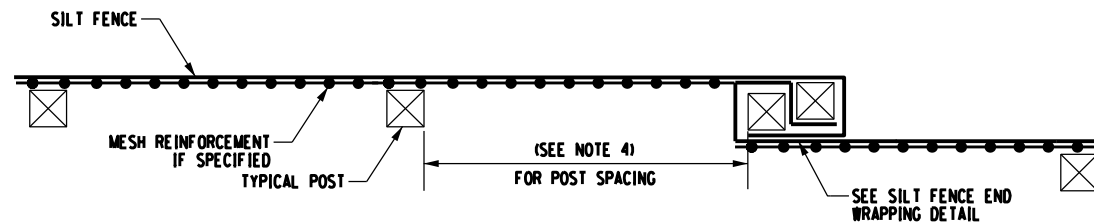
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 JOB MANAGER L. SCHILLING
 DESIGN SUPERVISOR B. FITZGERALD



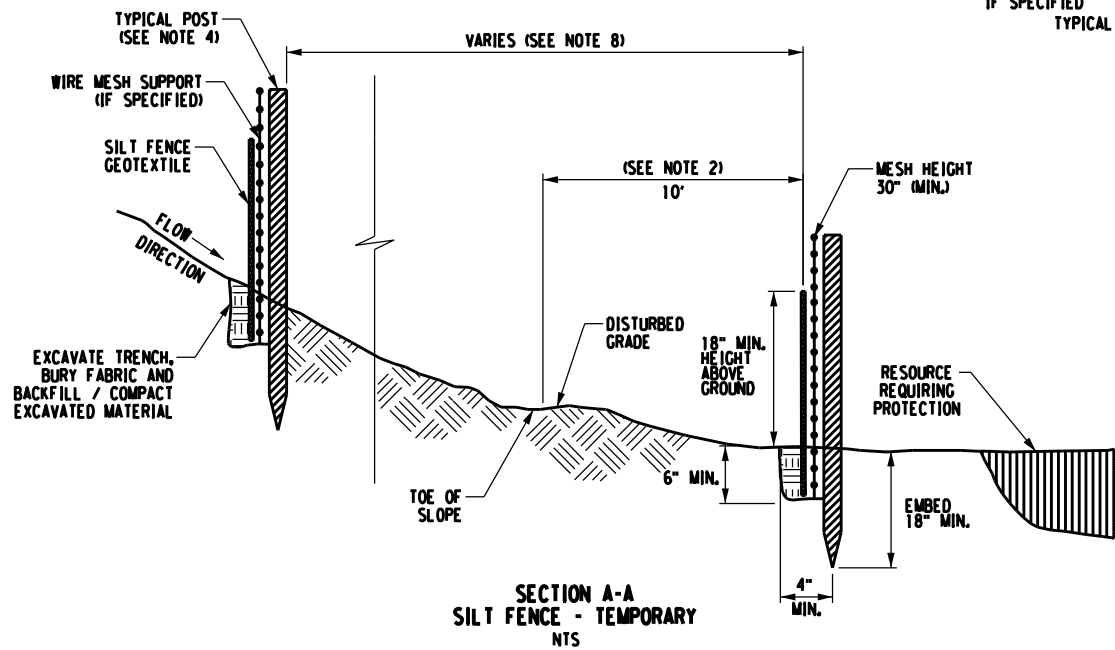
PLAN EXAMPLE LAYOUT OF SILT FENCE OR SEDIMENT FILTER LOG NTS



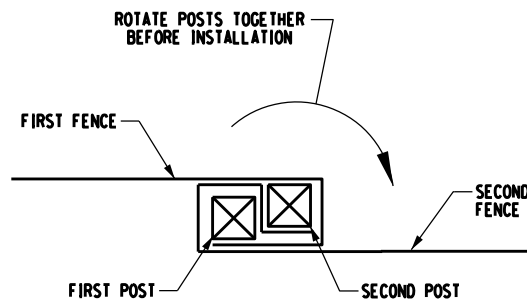
SECTION A-A SEDIMENT FILTER LOG NTS



PLAN SILT FENCE PLACEMENT NTS



SECTION A-A SILT FENCE - TEMPORARY NTS



SILT FENCE END WRAPPING DETAIL NTS

APPLICATION NOTES

- A. THE PRIMARY PURPOSE OF A SILT FENCE OR SEDIMENT FILTER LOG IS TO INTERCEPT SEDIMENT LADEN RUNOFF BY IMPOUNDING WATER BEHIND THE FENCE OR LOG SO THAT SEDIMENT FALLS OUT OF SUSPENSION.
- B. IDENTIFY ONSITE AND OFFSITE RESOURCES THAT NEED TO BE PROTECTED USING THE SILT FENCE OR SEDIMENT FILTER LOG (E.G. WETLANDS, PONDS, WATERWAYS OR ENVIRONMENTALLY SENSITIVE AREAS). SILT FENCE OR SEDIMENT FILTER LOGS ARE TYPICALLY USED WITH EROSION OR SEDIMENT CONTROL MEASURES, SUCH AS MULCH AND/OR ROLLED EROSION CONTROL FABRIC.
- C. SILT FENCE OR SEDIMENT FILTER LOGS SHALL NOT BE USED IN OR ACROSS A FLOWING CHANNEL, OR AREAS OF CONCENTRATED FLOW. DO NOT USE SILT FENCE OR SEDIMENT FILTER LOGS AS A PERIMETER CONTROL, TO DEFINE PROPERTY LINES, OR TO DELINEATE A RESOURCE.

GENERAL NOTES

1. SILT FENCE OR SEDIMENT FILTER LOGS SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM.
2. FOR LOCATIONS THAT WARRANT PLACEMENT OF SILT FENCE OR SEDIMENT FILTER LOGS AT THE BASE OF SLOPES, SILT FENCE OR SEDIMENT FILTER LOGS SHALL BE PLACED A MINIMUM OF 10 FEET FROM THE TOE OF THE SLOPE, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF THE SEDIMENT CONTAINMENT AREA.
3. THE ENDS OF A ROW OF SILT FENCE OR SEDIMENT FILTER LOGS SHALL BE ANGLED UP SLOPE TO PREVENT CHANNELIZED FLOW FROM BEING CONVEYED PAST THE ENDS OF THE FENCE. A SECTION OF SILT FENCE OR SEDIMENT FILTER LOGS SHOULD NOT EXCEED 100 FEET IN LENGTH.
4. WOOD POSTS FOR SILT FENCE SHALL HAVE A CROSS-SECTION AREA OF 3.5 SQUARE INCHES OR STEEL POSTS SHALL BE "T" OR "U" SHAPE AND 1.33 POUNDS/FEET (MINIMUM) FOR STEEL. SPACING FOR THE PROVIDED SILT FENCE POSTS SHALL BE AS DESIGNATED ON THE DEPARTMENT APPROVED LIST FOR SILT FENCE. THE LENGTH OF SILT FENCE POSTS SHALL BE 40 INCHES. WOOD POSTS FOR SEDIMENT FILTER LOGS SHALL BE NOMINAL 2x2. THE LENGTH OF FILTER LOG POSTS SHALL BE 16" GREATER THAN THE DIAMETER OF THE LOG.
5. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 6" BELOW GROUND. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSLOPE SIDE OF THE FABRIC.
6. WHERE ENDS OF GEOTEXTILE FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED AND FOLDED AND STAPLED TO PREVENT SEDIMENT BYPASS, OR THE END POSTS OF TWO SECTIONS SHALL BE WRAPPED AS SHOWN IN THE DETAIL FOR SILT FENCE END WRAPPING.
7. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE ABOVE GROUND HEIGHT OR WHEN BULGES DEVELOP IN THE FABRIC. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
8. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS (DISTANCE BETWEEN ROWS) FOR SILT FENCE INSTALLATION:

SILT FENCE MAXIMUM SLOPE LENGTH (FEET)			
SLOPE	STEEPNESS	STANDARD**	REINFORCED***
+5-10%	20:1 TO 10:1	125	250
10-20%	10:1 TO 5:1	100	150
20-33%	5:1 TO 3:1	60	80
33-50%	3:1 TO 2:1	40	70
> 50%	> 2:1	20	30

- * FOR SLOPES LESS THAN 5% SILT FENCE IS NOT REQUIRED UNLESS IN SENSITIVE AREAS OR HIGHLY ERODIBLE SOILS.
- ** STANDARD SILT FENCE IS FABRIC ROLLS STAPLED TO WOODEN POSTS DRIVEN 18 INCHES INTO THE GROUND.
- *** REINFORCED SILT FENCE IS FABRIC PLACED AGAINST WELDED WIRE MESH WITH ANCHORED STEEL POSTS DRIVEN 18 INCHES INTO THE GROUND.

9. INSTALLATION OF SILT FENCE OR SEDIMENT LOG, INCLUDING EXCAVATION, BACKFILL, AND COMPACTION OF SOIL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM.
10. SEDIMENT FILTER LOG POSTS SHALL BE SPACED NO MORE THAN 10 FEET APART. ENDS OF LOGS SHALL BE OVERLAPPED BY 24 INCHES AND STAKED SIDE BY SIDE. THE MAXIMUM SLOPE LENGTH (DISTANCE BETWEEN ROWS) SHALL NOT EXCEED THE FOLLOWING LIMITS:

DIA. (IN.)	SLOPE %					
	2	5	10	20	33	50
12	250	225	125	65	50	25
18	275	250	150	70	55	30
24	350	275	200	130	100	35

MAINTENANCE NOTES

1. MEASURES SHALL BE INSPECTED ONCE EVERY SEVEN CALENDAR DAYS, AND AFTER EACH RUNOFF EVENT AND DAILY DURING PROLONGED RAINFALL.
2. SEDIMENT SHALL BE REMOVED WHEN THE ACCUMULATION REACHES ONE-HALF OF THE MEASURED HEIGHT.
3. DAMAGED FILTER LOGS WILL BE REPAIRED IN A MANNER REQUIRED BY THE MANUFACTURER OR REPLACED WITHIN 24 HOURS OF INSPECTION NOTIFICATION.
4. TRAFFIC WILL NOT BE ALLOWED TO CROSS FILTER LOGS.
5. BIODEGRADABLE FILTER LOGS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE FILTER LOGS AFTER ONE YEAR. POLYPROPYLENE FILTER LOGS SHALL BE REPLACED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
6. COST OF ALL MAINTENANCE/AND OR REPLACEMENT DUE TO DAMAGE AND DEGRADATION WILL BE INCLUDED IN THE UNIT BID PRICE ITEM 209.2301

AFFIX SEAL: ON:	ALTERED BY: ON:																
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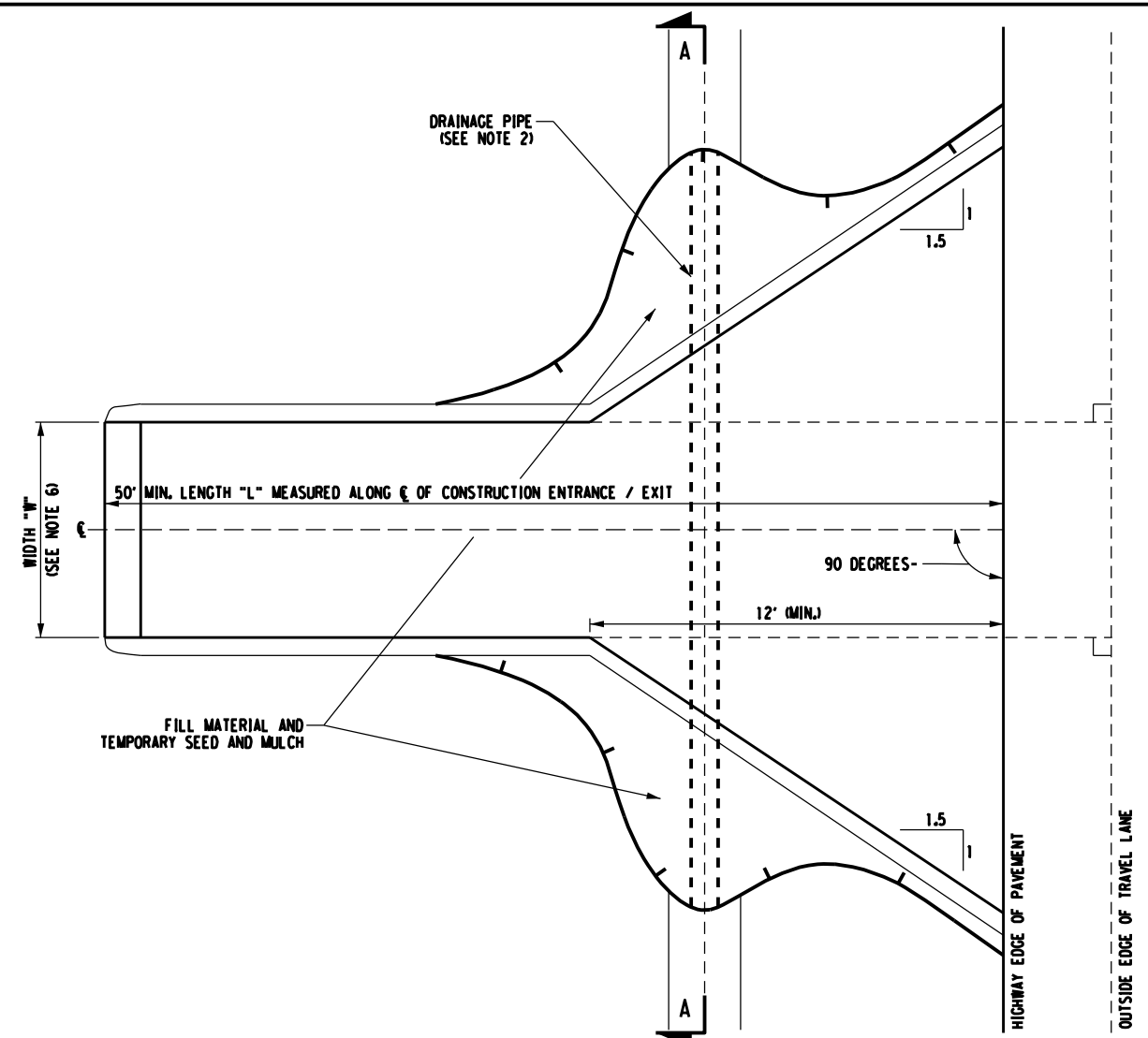
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STORMWATER RETROFIT PROJECT
HALLOCKS MILL

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EROSION CONTROL DETAILS
 SRP Y-MU-40
 DRAWING NO. ECD-01
 SHEET NO.

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PROJECT MANAGER L. SCHILLING
 CHECK E. CHILTON
 DRAFTING L. SCHILLING
 CHECK L. SCHILLING
 DESIGN E. CHILTON
 JOB MANAGER L. SCHILLING
 DESIGN SUPERVISOR B. FITZGERALD
 FILE NAME = DGN#SPEC
 DATE/TIME = DGN#SYTIME
 USER = DGN#USERNAME



TYPICAL CONSTRUCTION ENTRANCE / EXIT PLAN (CUT/DITCH AND FILL SECTIONS) NTS

APPLICATION NOTES:
 THE PURPOSE OF A STABILIZED CONSTRUCTION ENTRANCE/EXIT IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY OR STREETS.

GENERAL NOTES:
 MODIFICATIONS MAY BE REQUIRED TO MATCH FIELD CONDITIONS.

PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS (12" MIN.). ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCE / EXIT MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.

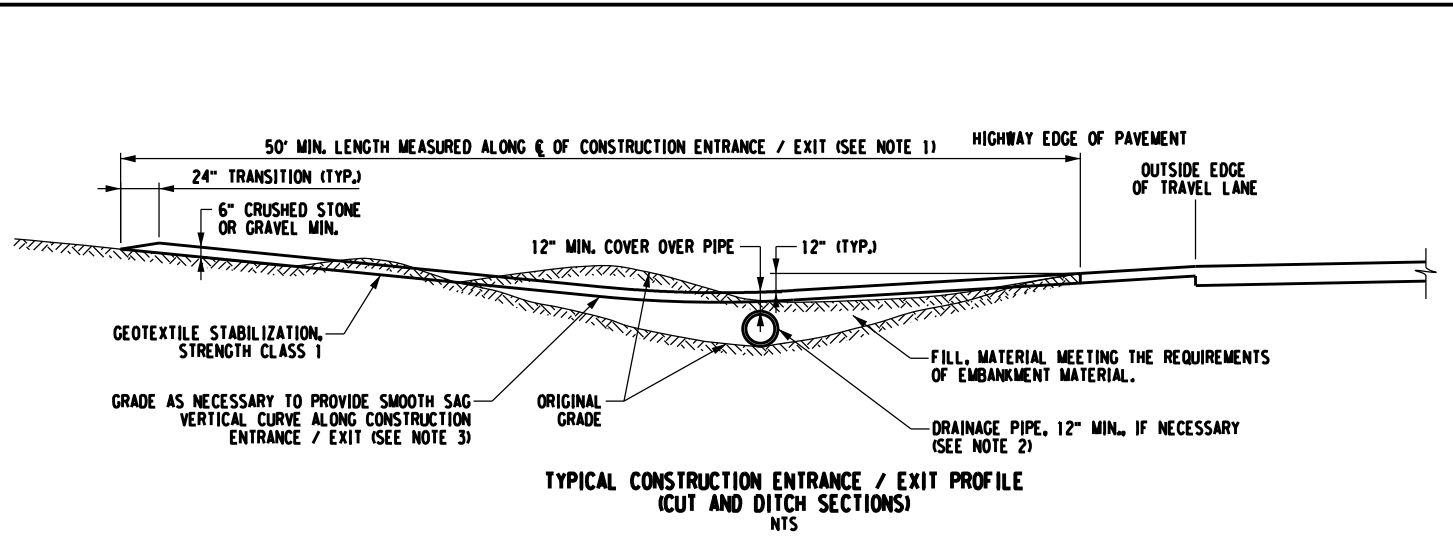
DRAINAGE PIPES OVER 20" DIA. THAT ARE NOT BEHIND A ROADSIDE BARRIER SHALL INCLUDE SAFETY END SECTIONS OR GRATING TO ENSURE TRAVERSABILITY.

THE CONTRACTOR SHALL GRADE TO PREPARE AND SMOOTH ORIGINAL GROUND, PLACE GEOTEXTILE OVER THE ENTIRE AREA THEN PLACE 6" OF #3 CRUSHED STONE OR GRAVEL ENTRANCE MATERIAL UP TO THE EDGE OF PAVEMENT.

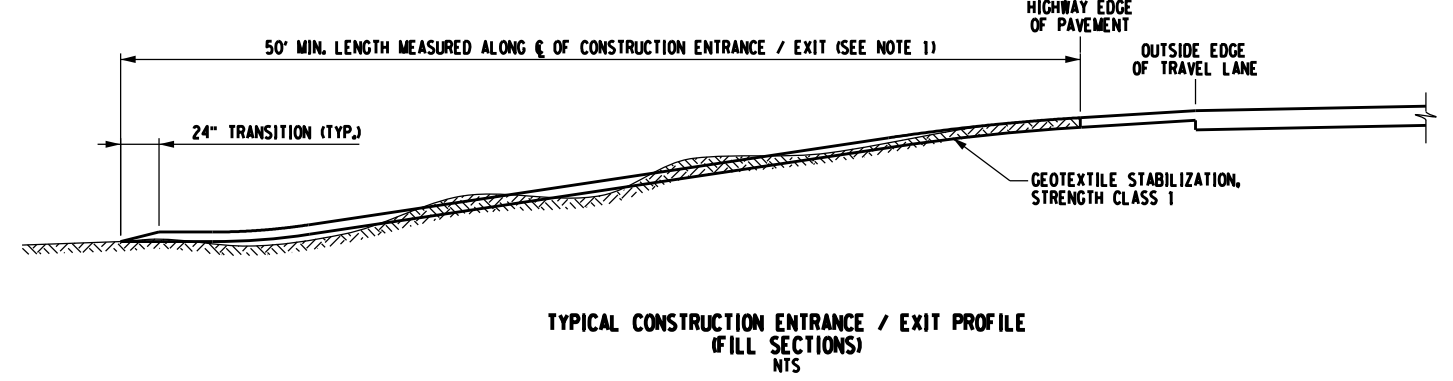
LAYOUT DRIVEWAY OPENING PER TAPER METHOD OF LAYOUT FOR A MINOR COMMERCIAL DRIVEWAY ON STANDARD SHEET 608-03.

DETERMINE DRIVEWAY WIDTH "W" FROM THE MINOR COMMERCIAL DRIVEWAY CLASSIFICATION OF TABLE 1 ON STANDARD SHEET 608-03.

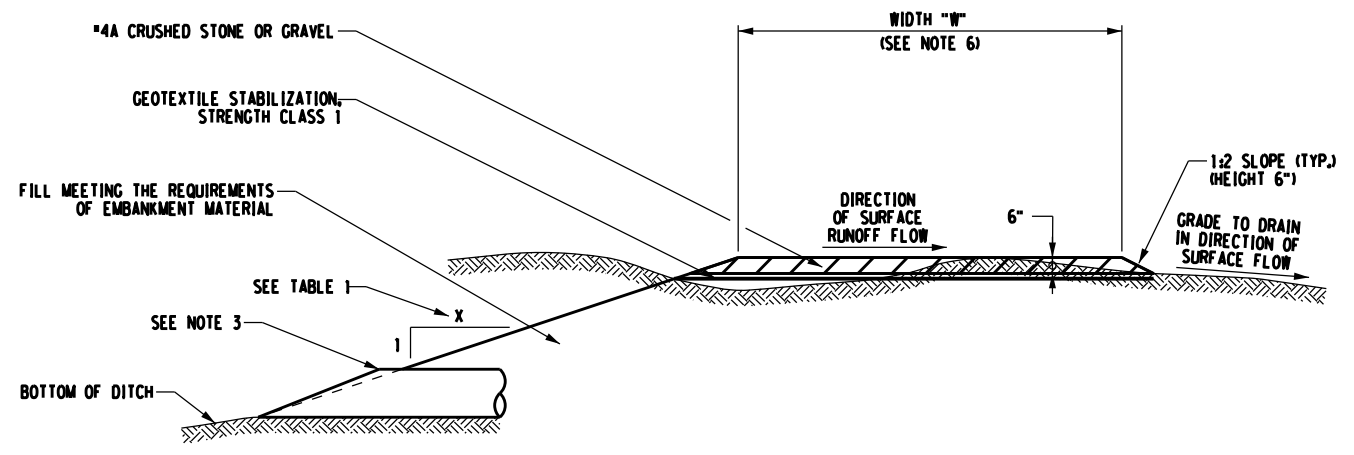
- MAINTENANCE NOTES:**
1. THE ACCESS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY OR STREETS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL AGGREGATE. ALL SEDIMENT SPILLED, DROPPED, OR WASHED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
 2. WHEN NECESSARY, WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERCOURSES.
 3. INSPECT THE CONSTRUCTION ENTRANCE / EXIT AT LEAST WEEKLY FOR SEDIMENT ACCUMULATION WITHIN THE STONE SURFACE AND FOR GENERAL SURFACE CONDITION.
 4. COST OF MAINTENANCE WILL BE INCLUDED IN THE UNIT PRICE BID ITEM 209.22.



TYPICAL CONSTRUCTION ENTRANCE / EXIT PROFILE (CUT AND DITCH SECTIONS) NTS



TYPICAL CONSTRUCTION ENTRANCE / EXIT PROFILE (FILL SECTIONS) NTS



TYPICAL CONSTRUCTION ENTRANCE / EXIT SECTION A - A NTS

X	HIGHWAY SPEED CONDITION
2	ALL SPEEDS - PROTECTED BY BARRIER
3	< 50 MPH
6	≥ 50 MPH

NUMBER	DATE	DESCRIPTION	APPROVED
REVISIONS			

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EAST OF HUDSON WATERSHED CORPORATION
 STORMWATER RETROFIT PROJECT
 HALLOCKS MILL

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED
 SRP Y-MU-40
 EROSION CONTROL DETAILS
 DRAWING NO. ECD-02
 SHEET NO.



BEACON, NEW YORK 12508
 (845) 538-3600
 www.hveapc.com



GENERAL SOIL EROSION AND SEDIMENT CONTROL NOTES:

1. THE CONTRACTOR WILL BE REQUIRED TO PERFORM ALL CONSTRUCTION OPERATIONS IN A MANNER SO AS TO MINIMIZE SOIL EROSION AND ENSURE SEDIMENT CONTROL. EROSION CONTROL MEASURES ARE ITEMS WHICH MINIMIZE THE EROSION OF SOIL. SEDIMENT CONTROL MEASURES ARE ITEMS WHICH KEEP SEDIMENT FROM LEAVING THE PROJECT SITE. EFFECTIVE SOIL EROSION AND SEDIMENT CONTROL CAN BE ACCOMPLISHED BY LIMITING THE AREA OF UNPROTECTED SOIL. PROTECTED IS DEFINED AS HAVING TEMPORARY OR PERMANENT SOIL EROSION AND SEDIMENT CONTROL MEASURES IN PLACE. PERIMETER SEDIMENT CONTROL MEASURES ALONE ARE NOT CONSIDERED ADEQUATE PROTECTION.
2. TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AS PER DETAILS AND SPECIFICATIONS. THE COST OF MAINTAINING AND REMOVING TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INCLUDED IN THE BID PRICE OF THE ITEM USED. ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED BY THE CONTRACTOR AT A MINIMUM ONCE EVERY SEVEN (7) CALENDAR DAYS AND AFTER EACH RAINFALL OF ONE-HALF INCH OR MORE IN A 24 HOUR PERIOD.
3. PERIMETER SEDIMENT CONTROL MEASURES AND VEGETATION PROTECTION FENCE SHALL BE PLACED PRIOR TO STARTING CLEARING AND GRUBBING OPERATIONS. THESE MEASURES SHALL REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE PERMANENTLY PROTECTED WITH EROSION CONTROL MEASURES.
4. TEMPORARY STOCKPILES OF SOIL SHALL BE PROTECTED AS PER THE SOIL EROSION AND SEDIMENT CONTROL PLAN AND DETAILS. AT A MINIMUM TEMPORARY STOCKPILES SHALL BE RINGED WITH SILT FENCE. STOCKPILES AND AREA OF STOCKPILES LEFT INACTIVE FOR LONGER THAN 14 DAYS SHALL HAVE TEMPORARY MULCH, OR TEMPORARY SEED AND MULCH APPLIED, OR BE COVERED IN A MANNER THAT WILL PREVENT EROSION. ANY MEASURES USED TO COVER STOCKPILES SHALL BE SECURED TO MAINTAIN THEIR EFFECTIVENESS.
5. ANY ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL MEASURES USED TO SUPPLEMENT THE PLANS SHALL BE PREPARED IN ACCORDANCE WITH THE TECHNICAL REQUIREMENTS CONTAINED IN THE "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL", LATEST EDITION. ADDITIONAL SOIL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED AS PER SECTION 107-12 OF THE STANDARD SPECIFICATIONS.
6. THE CONTRACTOR SHALL COMPLY WITH THE PROVISIONS OF ALL ENVIRONMENTAL PERMITS ISSUED FOR THIS PROJECT. THESE PLANS REFLECT THE PROVISIONS AND REQUIREMENTS OF SAID PERMITS. PERMITS WILL BE AVAILABLE FROM THE ENGINEER-IN-CHARGE (E.I.C.) PRIOR TO THE START OF CONSTRUCTION.
7. ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO PREVENT DIRECT OR INDIRECT CONTAMINATION OF ALL WATER BODIES (INCLUDING WETLANDS) BY SILT, SEDIMENT, FUELS, SOLVENTS, LUBRICANTS, EPOXY COATINGS, CONCRETE LEACHATE, SLURRY OR ANY OTHER POLLUTANT ASSOCIATED WITH CONSTRUCTION AND CONSTRUCTION PROCEDURES. DURING CONSTRUCTION, NO WET OR FRESH CONCRETE OR LEACHATE OR SLURRY SHALL BE ALLOWED TO ESCAPE DIRECTLY OR INDIRECTLY INTO ANY WATER BODIES (INCLUDING WETLANDS), NOR SHALL WASHINGS FROM CONCRETE TRUCKS, MIXERS, OR OTHER DEVICES BE ALLOWED TO ESCAPE DIRECTLY OR INDIRECTLY INTO ANY WATER BODIES (INCLUDING WETLANDS).
8. ANY DEBRIS OR EXCESS MATERIALS FROM CONSTRUCTION OF THIS PROJECT SHALL BE IMMEDIATELY AND COMPLETELY REMOVED FROM THE STREAM BED AND WITHIN 50' OF THE WATERS EDGE OF ALL WATER BODIES (INCLUDING WETLANDS) AND SHALL BE DISPOSED OF AWAY FROM WETLANDS, WATER COURSES, OR OTHER BODIES OF WATER.
9. ALL DREDGED AND EXCAVATED MATERIAL SHALL BE DISPOSED OF AND BE PROTECTED SO THAT IT CANNOT DIRECTLY OR INDIRECTLY RE-ENTER ANY WATER BODY OR WETLAND AREA. ALL DEWATERING OPERATIONS INVOLVING TURBID WATER SHALL BE ACCOMPLISHED BY PUMPING TO A VEGETATED AREA (NOT INCLUDING WETLANDS) OR TO A SEDIMENT TRAP, OR A MANUFACTURED SEDIMENT CONTROL SYSTEM. DEWATERING OPERATIONS OF TURBID WATER SHALL NOT DIRECTLY OR INDIRECTLY DISCHARGE TO ANY WATER BODIES (INCLUDING WETLANDS) UNLESS THE WATER BEING DISCHARGED IS AS FREE AND CLEAR OF SEDIMENT AS THE ADJACENT STREAM OR WATER BODY. LOCATIONS AND DESIGNS NOT SHOWN ON THE PLANS SHALL BE APPROVED BY THE E.I.C. AND THE REGIONAL CONSTRUCTION ENVIRONMENTAL COORDINATOR.

EROSION & SEDIMENT CONTROL PROJECT STAGING

1. THE CONTRACTOR WILL BE REQUIRED TO PERFORM ALL CONSTRUCTION OPERATIONS IN A MANNER THAT MINIMIZES SOIL EROSION AND PREVENTS SEDIMENTATION ON LANDS ADJACENT TO OR AFFECTED BY THE WORK, AND TAKE MEASURES TO MAINTAIN WATER QUALITY OF RECEIVING WATER BODIES (INCLUDING WETLANDS).
2. DISTURBED IS DEFINED AS WORK THAT RESULTS IN SOIL EXPOSURE.
3. STABILIZED IS DEFINED AS HAVING TEMPORARY OR PERMANENT EROSION AND SEDIMENT CONTROL MEASURES IN PLACE, INCLUDING, BUT NOT LIMITED TO, EROSION CONTROL MEASURES THAT COVER EXPOSED SOIL TO MINIMIZE THE SOIL FROM ERODING. PERIMETER SEDIMENT CONTROL MEASURES ALONE ARE NOT CONSIDERED ADEQUATE STABILIZATION.
4. PRIOR TO BEGINNING ANY DISTURBANCE ACTIVITIES ON A SECTION OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT A PLAN SHOWING THE LIMITS OF DISTURBANCE, INCLUDING THE AMOUNT OF AREA TO BE DISTURBED, AN EROSION AND SEDIMENT CONTROL PLAN THAT SUPPLEMENTS THE CONTRACT'S EROSION AND SEDIMENT CONTROL PLAN, AND A PROGRESS SCHEDULE FOR THE ACCOMPLISHMENT OF TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL WORK FOR REVIEW AND APPROVAL BY THE ENGINEER-IN-CHARGE. THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN SHALL INCLUDE MEASURES THAT MINIMIZE EROSION AND CONTROL SEDIMENT FROM DISTURBED AREAS, INCLUDING, BUT NOT LIMITED TO, EROSION AND SEDIMENT CONTROL FOR STORAGE AND STAGING AREAS, HAIL ROADS AND CONSTRUCTION ENTRANCES, BORROW AREAS, AND DISPOSAL AREAS WITHIN THE RIGHT-OF-WAY. THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN SHALL BE PREPARED IN ACCORDANCE WITH DEPARTMENT SPECIFICATIONS AND THE GUIDANCE CONTAINED IN THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, LATEST EDITION.

ANTICIPATED SEQUENCE

1. INSTALL PERIMETER SEDIMENT CONTROL MEASURES/STABILIZED CONSTRUCTION ENTRANCES PRIOR TO BEGINNING WORK AT LOCATIONS SHOWN IN CONTRACT PLANS AND AS DIRECTED BY THE ENGINEER, BEFORE CONSTRUCTION BEGINS. THE CONTRACTOR SHALL ENSURE THAT THESE MEASURES HAVE BEEN INSTALLED AND ARE FUNCTIONING PROPERLY. THE CONTRACTOR SHALL MAINTAIN ALL EROSION AND SEDIMENT CONTROL COMPONENTS DURING ALL PHASES OF CONSTRUCTION UNTIL FINAL STABILIZATION.
2. EXCAVATE FOR R-TANK RETROFIT.
3. MODIFY EXISTING DRAINAGE/INSTALL PROPOSED DRAINAGE.
4. PROVIDE INLET PROTECTION TO DRAINAGE STRUCTURES WITH DISTURBED CONTRIBUTING AREAS.
5. CONTINUE EXCAVATION FOR PRACTICE AS NEEDED.
6. INSTALL R-TANKS.
7. GRADE AND COVER TO EXISTING CONDITIONS WITH SEED, AND MULCH.
8. UPON INITIAL DISTURBANCE AT ANY LOCATION, AREAS SHOULD BE WORKED TO COMPLETED CONDITION/PERMANENT STABILIZATION AS SOON AS POSSIBLE.
9. UPON FINAL STABILIZATION OF SITE AS DEFINED BY THE SPDES GENERAL PERMIT, REMOVE BY HAND ALL TEMPORARY EROSION CONTROL MEASURES. SEED AND MULCH DISTURBED AREAS AS A RESULT OF REMOVAL OF TEMPORARY PRACTICES.

EXPOSED SOIL CRITERIA (FOR TEMPORARILY EXPOSED SOIL AREAS)	
CRITERIA	REQUIRED ACTION
PRIOR TO ANY ANTICIPATED PRECIPITATION OR AOB	TEMPORARY MULCH (ITEM 209.100101)
NO WORK ON EXPOSED SOIL AREA(S) FOR 7 OR MORE CONSECUTIVE DAYS	TEMPORARY MULCH (ITEM 209.100101)
NO WORK ON EXPOSED SOIL AREA(S) FOR 14 OR MORE CONSECUTIVE DAYS	PLACEMENT OF TOPSOIL (ITEM 610.1402) AS SPECIFIED, AND TURF ESTABLISHING (ITEM 610.1601) AND 209 ITEMS AS SHOWN ON THE TYPICAL SECTIONS

NOTES:

1. ALL AREAS SHALL BE BROUGHT TO FINAL GRADE AND TRIMMED AS SOON AS POSSIBLE.
2. MAINTENANCE OF MULCHED AREAS SHALL INCLUDE RE-MULCHING OF AREAS IN WHICH SOIL BECOMES EXPOSED TO VIEW, ANY AREAS THAT BECOME SETTLED OR GULLIED DURING MULCHING OPERATIONS SHALL BE RE-GRADED.
3. MAINTENANCE OF TEMPORARY SEEDED AREAS SHALL INCLUDE RE-SEEDING AS NEEDED TO ESTABLISH A SATISFACTORY STAND OF GRASS. THERE SHALL BE NO ADDITIONAL PAYMENT FOR RE-SEEDING.
4. THE USE OF TEMPORARY SEED (ITEM 209.100102), OR TEMPORARY SEED & MULCH, AS AN EFFECTIVE EROSION CONTROL METHOD MUST BE APPLIED PRIOR TO OCTOBER 15 AND AFTER MARCH 31.
5. DEPENDING ON WEATHER CONDITIONS, WATERING MAY BE NEEDED TO ESTABLISH TEMPORARY SEED. WATERING SHALL BE APPLIED AS SPECIFIED IN SUB-SECTION 610-3.10 OF THE STANDARD SPECIFICATIONS. NO ADDITIONAL PAYMENT FOR WATER WILL BE MADE. COST TO BE CONSIDERED INCIDENTAL TO VARIOUS EROSION CONTROL ITEMS. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE LIFE OF THE CONTRACT. THERE SHALL BE NO ADDITIONAL PAYMENT MAINTENANCE OF EROSION CONTROL MEASURES.

ITEM NUMBER	DESCRIPTION	QUANTITY
209.100101	MULCH - TEMPORARY	250 SY
209.100102	SEED - TEMPORARY	250 SY



NOTES

1. ADDITIONAL QUANTITIES OF EROSION AND SEDIMENT CONTROL ITEMS IN ADDITION TO THE ITEMS INCLUDED IN THE PLANS ARE PROVIDED FOR USE IN AREAS IN NEED OF EROSION CONTROL THAT WERE UNFORSEEN DURING THE DESIGN OF THE PLANS. LOCATIONS SHALL BE DETERMINED BY THE ENGINEER-IN-CHARGE.

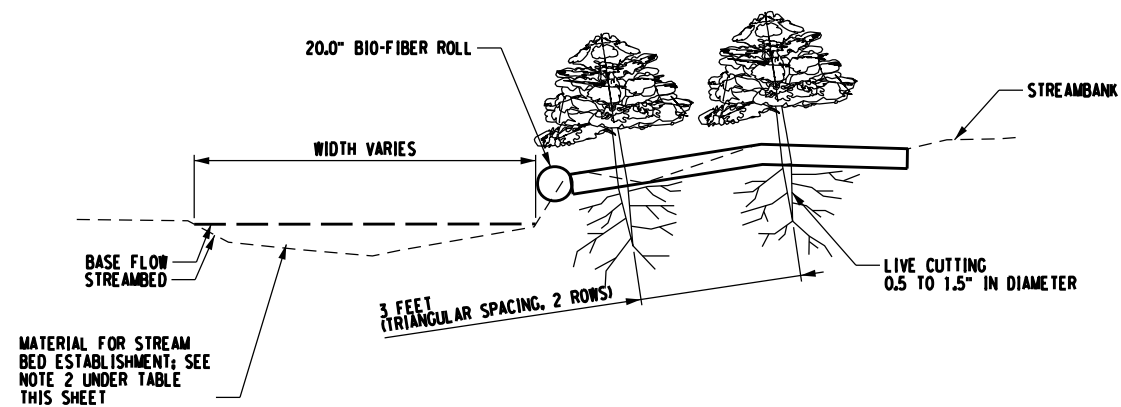
AFFIX SEAL: ON:	ALTERED BY: ON:

NUMBER	DATE	DESCRIPTION	APPROVED
REVISIONS			

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE STAMP OF A LICENSED PROFESSIONAL IS ALTERED, THE ALTERING ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT, OR LAND SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

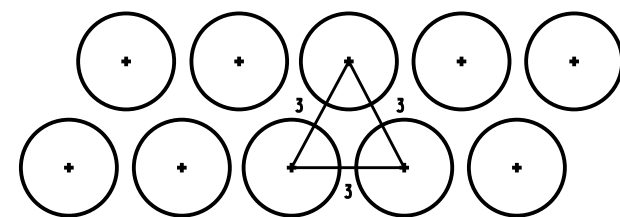
EAST OF HUDSON WATERSHED CORPORATION STORMWATER RETROFIT PROJECT HALLOCKS MILL	ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED	SRP Y-MU-40
	EROSION & SEDIMENT CONTROL NOTES	DRAWING NO. ECN-1 SHEET NO.
	<small>BEACON, NEW YORK 12508 (845) 538-3600 www.hveapc.com</small>	

PROJECT MANAGER: L. SCHILLING
 CHECK: E. CHILTON
 DRAFTING: L. SCHILLING
 CHECK: L. SCHILLING
 DESIGN: E. CHILTON
 JOB MANAGER: L. SCHILLING
 DESIGN SUPERVISOR: B. FITZGERALD



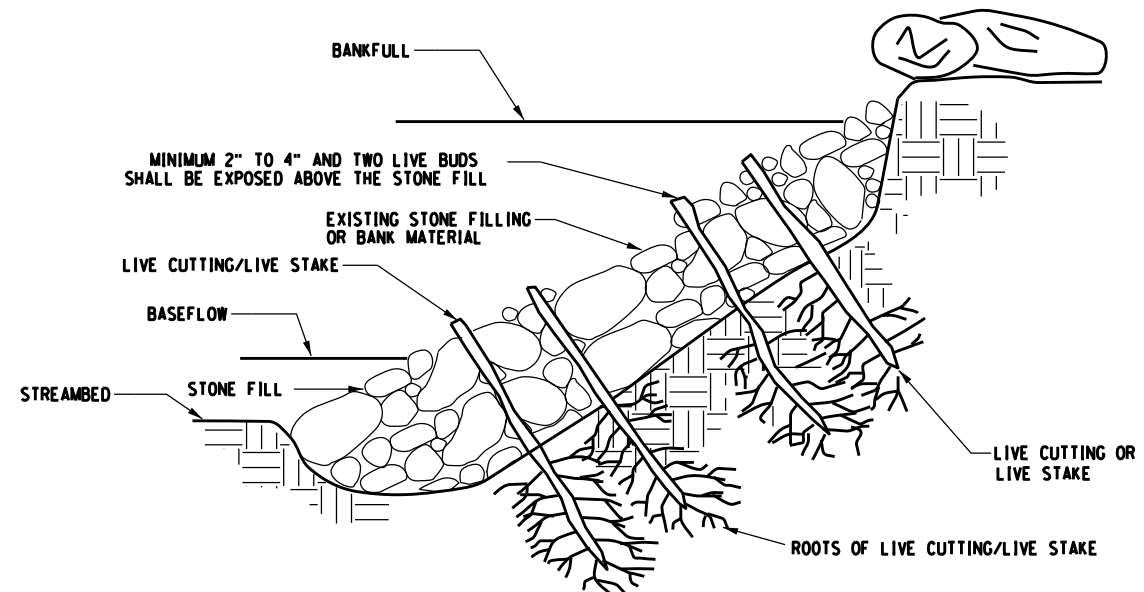
PROPOSED STREAMBED STABILIZATION DETAIL
N.T.S.
(SEE TABLE FOR LOCATIONS)

- STREAM CHANNEL STABILIZATION NOTES:**
- FOR INSTALLATION OF BIOSTABILIZATION MEASURES, CUT FRESH, DORMANT BRANCHES (UP TO 12 FT LONG AND .25 TO 1 INCH IN DIAMETER) FROM WILLOW OR DOGWOOD SPECIES. TRIM OFF THE SIDE BRANCHES.
 - CARE SHALL BE TAKEN NOT TO DAMAGE THE LIVE CUTTINGS/LIVE STAKES DURING INSTALLATION. THOSE DAMAGED SHALL BE LEFT IN PLACE AND SUPPLEMENTED WITH AN INTACT LIVE CUTTING/LIVE STAKE.
 - THE LENGTHS OF LIVE CUTTINGS/LIVE STAKES DEPENDS UPON THE APPLICATION. AT LEAST HALF THE LENGTH SHALL BE INSERTED IN TO THE SOIL.
 - SLOPES SHALL BE GRADED TO 2:1 OR FLATTER PRIOR TO PLACING BEDDING, FILTER FABRIC, OR STONE RIPRAP.
 - RIPRAP SHALL BE PLACED SO THAT IT FORMS DENSE, WELL-GRADED MASS OF STONE WITH A MINIMUM OF VOIDS. THE TOE OF THE RIPRAP SHALL BE KEYED INTO A STABLE FOUNDATION AT ITS BASE.
 - RIPRAP SHALL BE PLACED IN AREAS OF HIGH VELOCITY.



NOTE:
CONTRACTOR SHOULD PLANT LIVE CUTTINGS USING TWO ROWS ALONG EACH BANK USING TRIANGULAR SPACING, 3 FEET ON CENTER

TYPICAL LIVE STAKE INSTALLATION SPACING
N.T.S.

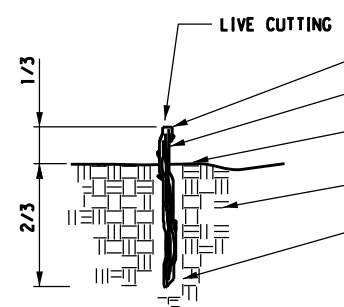


LIVE CUTTING/LIVE STAKE JOINT PLANTING CROSS SECTION

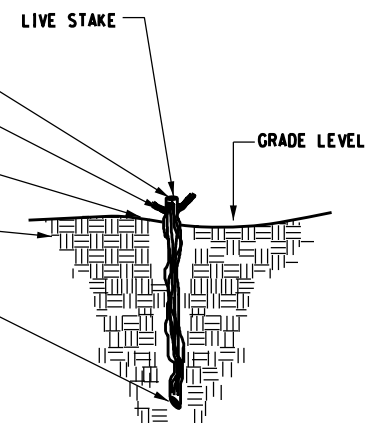
MATERIAL FOR STREAM BED ESTABLISHMENT	
SIEVE SIZE DESIGNATION	PERCENTAGE OF SOIL PASSING BY WEIGHT
4 INCH	100
1/2 INCH	40-85
NO. 20	15-50
NO. 100	0-20

INSTALLATION NOTES:

- LIVE CUTTINGS SHALL RANGE FROM 1/2" TO 2" IN DIAMETER AND BE FROM 1' TO 4' IN LENGTH.
- LIVE STAKES SHALL RANGE FROM 1" TO 4" IN DIAMETER AND BE FROM 5' TO 6' LENGTH.
- LIVE CUTTINGS/LIVE STAKES SHALL BE CUT TO A POINT ON THE BASAL END FOR INSERTION IN THE GROUND.
- USE A DEAD BLOW HAMMER TO DRIVE STAKES INTO THE GROUND. (HAMMER HEAD FILLED WITH SHOT OR SAND.) A DIBBLE, IRON BAR, OR SIMILAR TOOL SHALL BE USED TO MAKE A PILOT HOLE TO PREVENT DAMAGING THE MATERIAL DURING INSTALLATION.
- LIVE CUTTINGS SHALL BE INSERTED BY HAND INTO PILOT HOLES.
- WHEN POSSIBLE, TAMP SOIL AROUND LIVE CUTTING/LIVE STAKES.
- ANY LIVE CUTTING/LIVE STAKE THAT IS DAMAGED SHALL BE LEFT IN PLACE AND SUPPLEMENTED WITH AN INTACT LIVE CUTTING/LIVE STAKE.
- CARE SHALL BE TAKEN NOT TO DAMAGE THE LIVE CUTTINGS/LIVE STAKES DURING INSTALLATION. THOSE DAMAGED SHALL BE LEFT IN PLACE AND SUPPLEMENTED WITH AN INTACT LIVE CUTTING/LIVE STAKE.
- THE LENGTHS OF LIVE CUTTINGS/LIVE STAKES DEPENDS UPON THE APPLICATION. THE LENGTH SHALL EXTEND THROUGH THE SURFACE OF THE STONEFILL. AT LEAST HALF THE LENGTH SHALL BE INSERTED IN TO THE SOIL, BELOW THE STONE FILL.
- A PILOT HOLE IS REQUIRED TO ENSURE THAT THE LIVE CUTTING/LIVE STAKE IS NOT DAMAGED WHEN DRIVEN THROUGH THE STONE FILLING. ACCESS SHALL BE MADE THROUGH THE USE OF A DIBBLE BAR, OR SIMILAR TOOL TO WORK AN OPENING THROUGH THE ROCK LAYER.
- MINIMUM 2" TO 4" AND TWO LIVE BUDS OF THE LIVE CUTTING/LIVE STAKE SHALL BE EXPOSED ABOVE THE STONE FILLING.



LIVE CUTTING CROSS SECTION



LIVE STAKE CROSS SECTION

LIVE CUTTINGS/LIVE STAKES PLANTING DETAIL
NOT TO SCALE

AFFIX SEAL: ON: _____	ALTERED BY: ON: _____

NUMBER	DATE	DESCRIPTION	APPROVED
REVISIONS			

EAST OF HUDSON WATERSHED CORPORATION
STORMWATER RETROFIT PROJECT
HALLOCKS MILL

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED		SRP Y-MU-40
STORMWATER MANAGEMENT DETAILS		DRAWING NO. SMD-1
		SHEET NO.

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FILE NAME = DGN0SPEC
 DATE/TIME = DGN0SYTIME
 USER = DGN0USERNAME