LOCKHEED MARTIN

Lockheed Martin Mission Systems & Training
497 Electronics Parkway
Liverpool, NY 13088

May 16, 2014

Mr. Richard Mustico
Project Manager
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7010

Re: *Construction Work Plan Addendum*
Bloody Brook, Onondaga County, New York
Voluntary Cleanup Agreement Index #D7-0001-01-09 (VCP Site No. V00501-7)

Dear Mr. Mustico:

This letter and the enclosures to this letter are being submitted as an addendum to the March 2014 *Construction Work Plan* for the West Branch of Bloody Brook to address comments in New York State Department of Environmental Conservation's (NYSDEC's) April 23, 2014 letter. Below are the comments from the NYSDEC's April 23, 2014 letter and Lockheed Martin's response to the comments.

Comment 1

A Phase 1A Cultural Resources Survey (CRS) is required for the site. A Phase 1A CRS Report should be submitted for review and approved prior to initiating ground disturbing activities at the site which have the potential to disturb natural soils (e.g., non-disturbed, non-fill soils).

Response to Comment 1

A Phase 1A CRS will be completed prior to initiating ground disturbing activities at the site which have the potential to disturb natural soils (e.g., non-disturbed, non-fill soils). Natural soils at the site are soils located deeper than 2 feet below ground surface within the area of the site that will have excavations completed from 2 to 6 feet below ground surface.

Comment 2

Certification of the work plan (by a professional engineer authorized to practice engineering under the education law of the State of New York), as per Section 1.5 of DER-10, is required.

Response to Comment 2

A certification of the work plan has been enclosed with this letter.

Comment 3

Section 2.2.3.2 Monitoring and Maintenance of Control Measures – The text discusses sediment removal from behind the silt fence if the sediment reaches one-half the height of the silt fence (approximately 18 inches of sediment). Lockheed should consider modifying this to something less (e.g., 6 inches).

Response to Comment 3

Sediment removal from silt fence will be conducted as stated below.

Sediment will be removed from the silt fence if sediment has accumulated to a depth of 6 inches above the existing grade, or as deemed appropriate by the on-site inspector.

Comment 4

Section 2.3 Bypass Pumping – It is the Department's understanding that during periods of wet weather and dry weather, the site bypass pumping system will be monitored continuously, via float switches/alarms, as appears to be indicated in Section 2.3.3 Bypass Pumping System, bullet number 3. During working hours and during periods of high flow (work hours or not), the site will be monitored per the Response Action Matrix in Section 2.3.5.6 Response Actions. More intensive monitoring called for in the Response Action Matrix would end when the "Water Level Threshold" meets the "water level greater than 2 feet from overtopping and holding steady or falling" (Response Action indicates "continue normal water level monitoring", which is assumed to be the same as "dry weather monitoring"). Please confirm above.

Response to Comment 4

The Department's understanding is correct.

Comment 5

Section 2.3.2 Water Quality Controls - It is the Department's understanding that downstream turbidity for the 2014 construction activities will be measured in the brook at Brookview Lane. Please confirm.

Response to Comment 5

The Department's understanding is correct.

Comment 6

Section 2.3.5 By-Pass Pumping Emergency Shutdown – This section should be amended to discuss when by-pass pumping shutdowns may occur. For example, during, or just prior to, overtopping events.

Response to Comment 6

When the water level threshold of "Water level within 2 feet of overtopping and rising" is met, the by-pass pumps will be shut down and removed from the stream.

Comment 7

Section 2.3.5.3 Water Level Monitoring – The text discusses a Response Action Matrix provided in Section 4.4.4.2. It appears that the text should be referring to Section 2.3.5.6.

Response to Comment 7

The reference to Section 4.4.4.2 was incorrect. The reference should be to Section 2.3.5.6.

Comment 8

Section 2.3.5.4 Overtopping Contingency Measures. It is the Department's understanding that the most likely issue with overtopping of the dam is the backup of upstream water, which may potentially cause flooding upstream. Other issues such as the protection of personnel and equipment are discussed in Section 2.3.5.5 Mitigation Procedures. With respect to migration of contaminated sediment due to overtopping, this is limited through the actions discussed in the second bullet of Section 2.3.5.5 Mitigation Procedures (securing excavations at the end of each work day) and in the Response Action Matrix located in Section 2.3.5.6 Response Actions (i.e., "cover any open excavations with polyethylene sheeting and weight down with sandbags" during "water level within 2 feet of overtopping and rising"). Text should be added to include removal of head dam sandbags prior to an overtopping event to help alleviate the potential for upstream flooding.

Response to Comment 8

When the water level threshold of "Water level within 2 feet of overtopping and rising" is met, the by-pass pumps will be shut down and removed from the stream. The sandbags shown in the "Temporary Cofferdam (head Dam) with Rip-Rap Apron Elevation" detail found on Figure 16 will be removed to open the emergency spillway to allow consistent flow through the brook as needed."

Comment 9

Section 2.4.1 Dewatering, Collection and Transfer of Construction Water – Construction water will need to meet appropriate discharge requirements [i.e., flow (monitor), total suspended solids (10 mg/L) and cadmium (1.2 µg/l)] prior to discharge. Batch sampling should be conducted prior to the initial discharge. Once water meets appropriate discharge requirements, weekly sampling (continuous flow) should be conducted to ensure compliance.

Response to Comment 9

Construction water will be sampled to confirm it meets the appropriate discharge requirements [i.e., flow (monitor), total suspended solids (10 mg/L) and cadmium (1.2 µg/l)] prior to discharge. Batch sampling will be conducted prior to the initial discharge. Once water meets appropriate discharge requirements, weekly sampling (continuous flow) will be conducted to ensure compliance.

Comment 10

Figure 16, Stockpile Management Area – A sump should be added to the Stockpile Management Area detail.

Response to Comment 10

Figure 16 has been edited to add a sump to the Stockpile Managements Area. The revised figure is enclosed with this letter.

Comment 11

Figure 21 - Green Ash should not be used for replanting due to concerns regarding the spread of the Emerald Ash Borer. This tree species should be replaced with another New York State native tree.

Response to Comment 11

Figures 21 and 22 have been edited to replace Green Ash with Black willow (Salix niger) and/or Sandbar willow (Salix exigua). The revised figures are enclosed with this letter.

Comment 12

Restoration monitoring should be conducted for a minimum of 5 years to ensure that restoration is successful.

Response to Comment 12

Additional restoration details and responses to comments regarding restoration activities will be provided in the Restoration Plan for 2014 activities to be submitted to NYSDEC by June 2, 2014.

Comment 13

Restoration performance goals should be stated to measure the success of the restoration (e.g., trees, shrubs, grasses).

Response to Comment 13

Additional restoration details and responses to comments regarding restoration activities will be provided in the Restoration Plan for 2014 activities to be submitted to NYSDEC by June 2, 2014.

Comment 14

Due to the extent of cadmium contamination, not all of the wetland is scheduled for excavation. This will leave phragmite stands in the immediate vicinity of the wetland being restored. Measures should be discussed and taken to prevent the spreading of phragmites into the newly restored areas.

Response to Comment 14

Additional restoration details and responses to comments regarding restoration activities will be provided in the Restoration Plan for 2014 activities to be submitted to NYSDEC by June 2, 2014.

Comment 15

Contingency plans should be developed to deal with invasive species (e.g., phragmites). Contingency plans should also be developed to take steps if performance goals are not met (e.g., reseed or replant, additional or different species).

Response to Comment 15

Additional restoration details and responses to comments regarding restoration activities will be provided in the Restoration Plan for 2014 activities to be submitted to NYSDEC by June 2, 2014.

If you have any questions or would like to discuss any of the responses to comments above, please contact me at (315) 456-1993.

Sincerely,

Jill Fonte

Jill Fonte
Environmental Engineer
Enclosure

Enclosures

cc (with enclosure): Myron Parkolap – Lockheed Martin, Syracuse
Sandra Fenske, Esq. – Lockheed Martin, Syracuse
Robert Nunes – USEPA, Region II, New York
Harry Warner, P.E. – NYSDEC, Region 7, Syracuse
Virginia Robbins, Esq. – Bond, Schoeneck & King, Syracuse
Mark Sergott - NYSDOH, Albany
Lisa Letteney – Onondaga County Department of Health
Luis Mendez, Esq. – Onondaga County Department of Law
David Coburn – Onondaga County Office of the Environment
Stephen Drake, E.I. – Onondaga County Water Authority
Mark Nicotra – Town of Salina Supervisor
Laura Cassalia – Town of Salina Engineer
Joseph Heath, Esq.
Thane Joyal, Esq.
Jeanne Shenandoah – Onondaga Nation
Alma Lowry
Nickcole Evans, P.E. – AECOM

cc (w/out enclosure): Argie Cirillo, Esq. – USEPA, Region II, New York
Margaret Sheen, Esq. – NYSDEC, Syracuse
Maureen Schuck – NYSDOH, Albany
Curtis Waterman – HETF

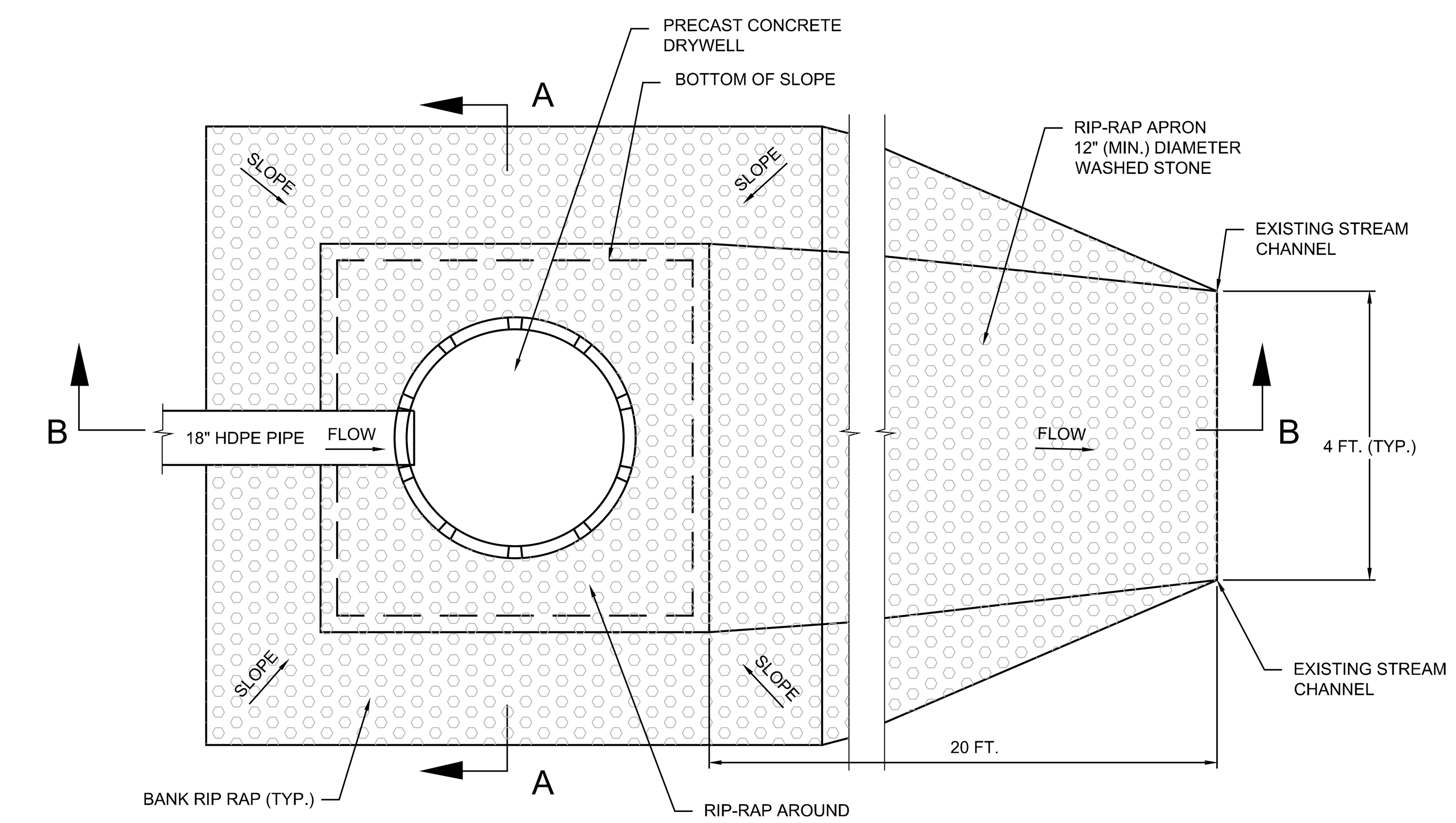
2014 CONSTRUCTION WORK PLAN
WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

CERTIFICATION STATEMENT

I, Nickcole M. Evans, P.E., certify that I am currently a NYS registered professional engineer and that this Construction Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10). This work plan was also prepared in accordance with Paragraph II.B.2 of the Voluntary Cleanup Agreement for Remedial Investigation/Remedial Action between the New York State Department of Environmental Conservation and Lockheed Martin Corporation (Index #: D7-0001-01-09).

Nickcole M. Evans, P.E.
License Number 085978

In accordance with New York State Education Law, it is a violation for any person, unless he is acting under the direction of a licensed professional engineer, to alter this Work Plan in any way.

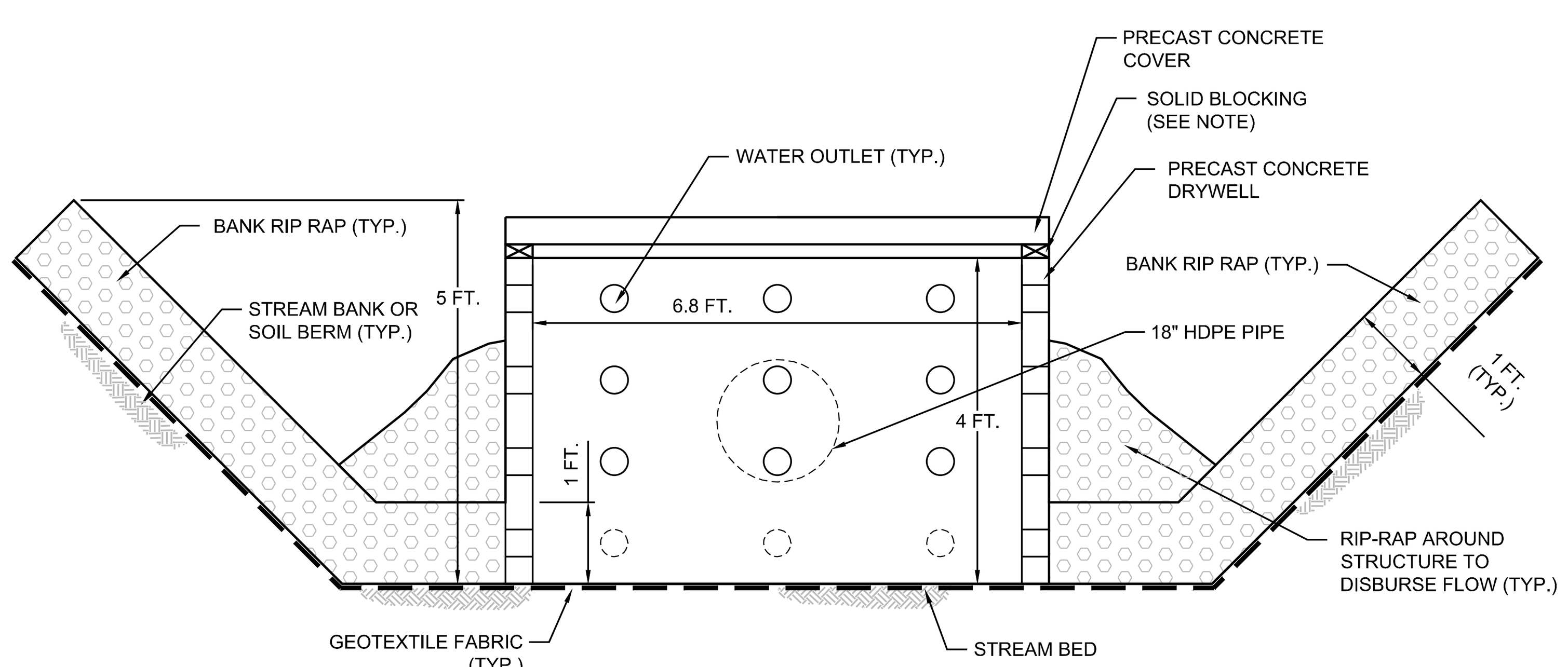


PLAN

NOTE:
RIP RAP SHALL BE A MIXTURE OF LIGHT AND MEDIUM STONE FILLING, NYSDOT ITEMS 620.03 & 620.04

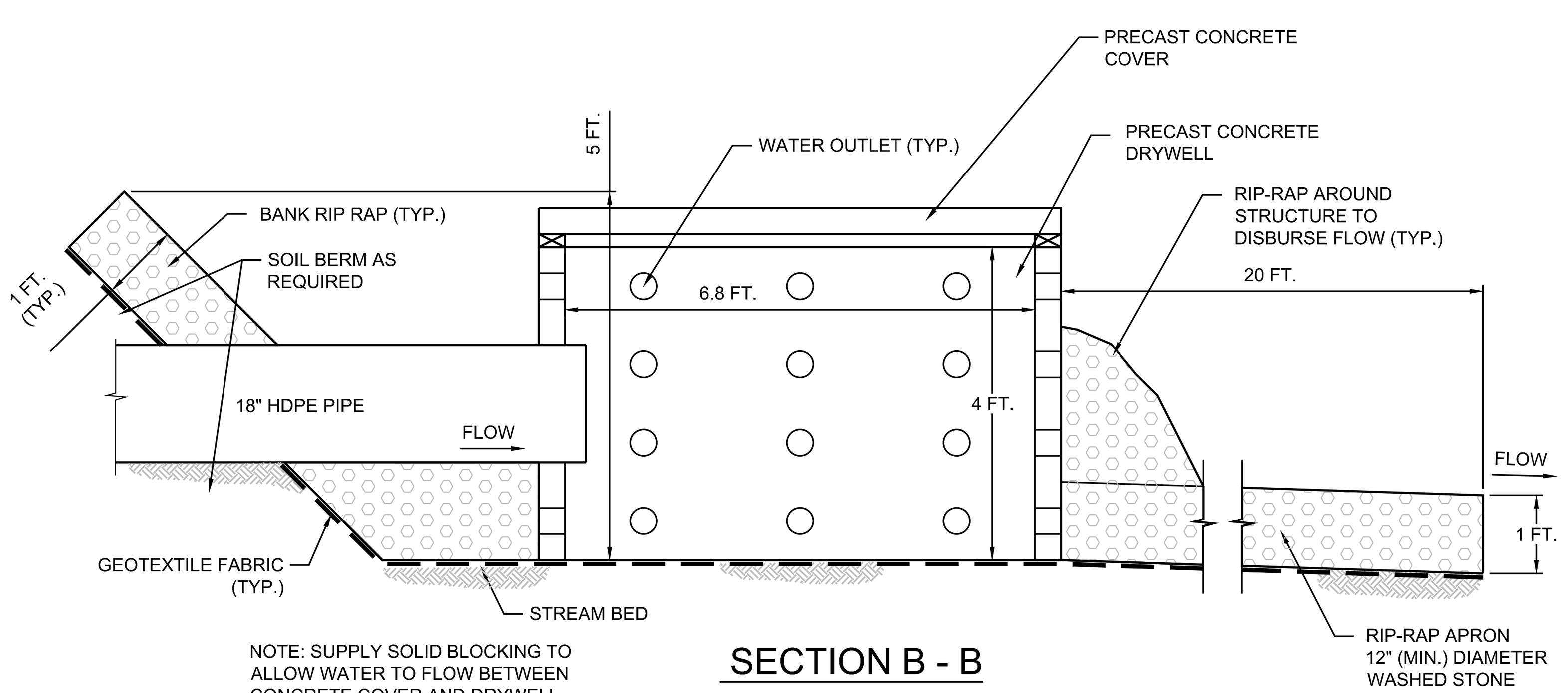
TEMPORARY PUMP DISCHARGE STRUCTURE

(NOT TO SCALE)



SECTION A - A

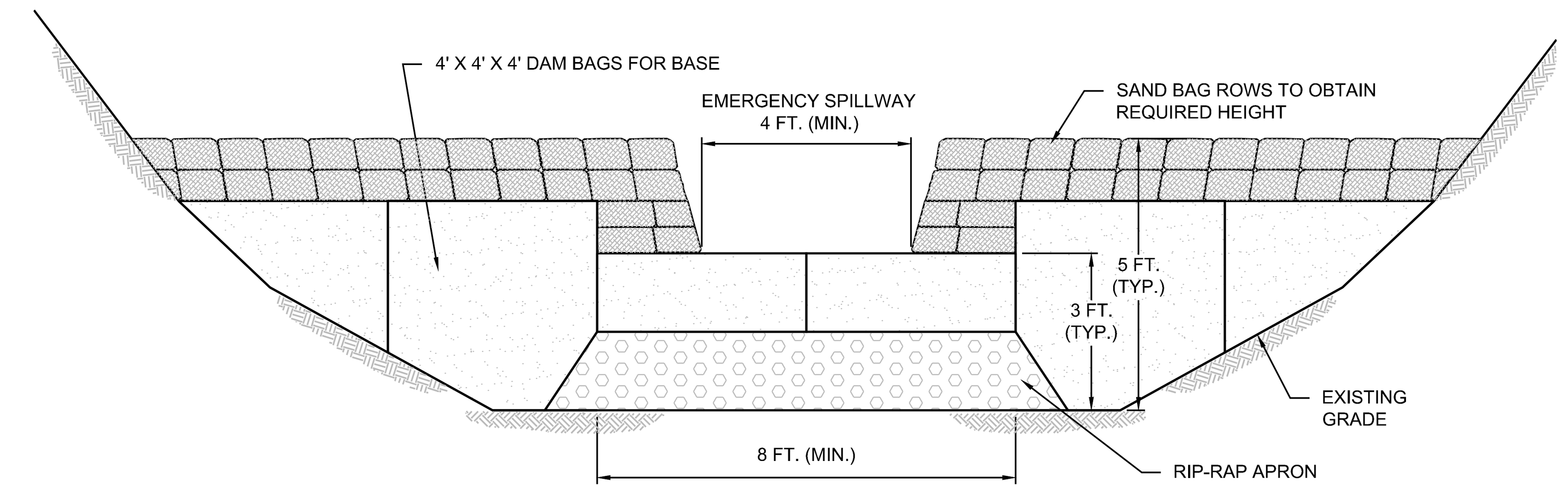
(NOT TO SCALE)



NOTE: SUPPLY SOLID BLOCKING TO ALLOW WATER TO FLOW BETWEEN CONCRETE COVER AND DRYWELL.

SECTION B - B

(NOT TO SCALE)



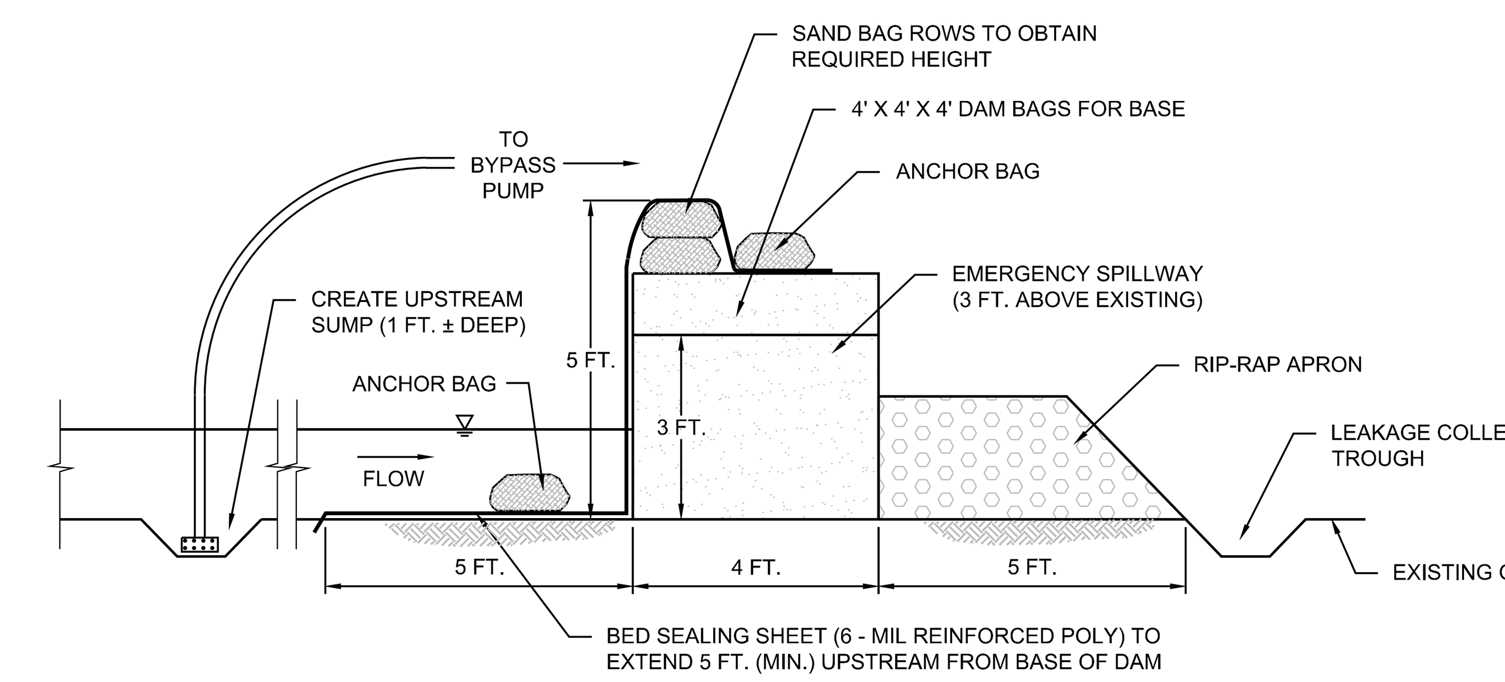
TEMPORARY COFFERDAM (HEAD DAM) WITH RIP-RAP APRON ELEVATION

(NOT TO SCALE)

NOTES:

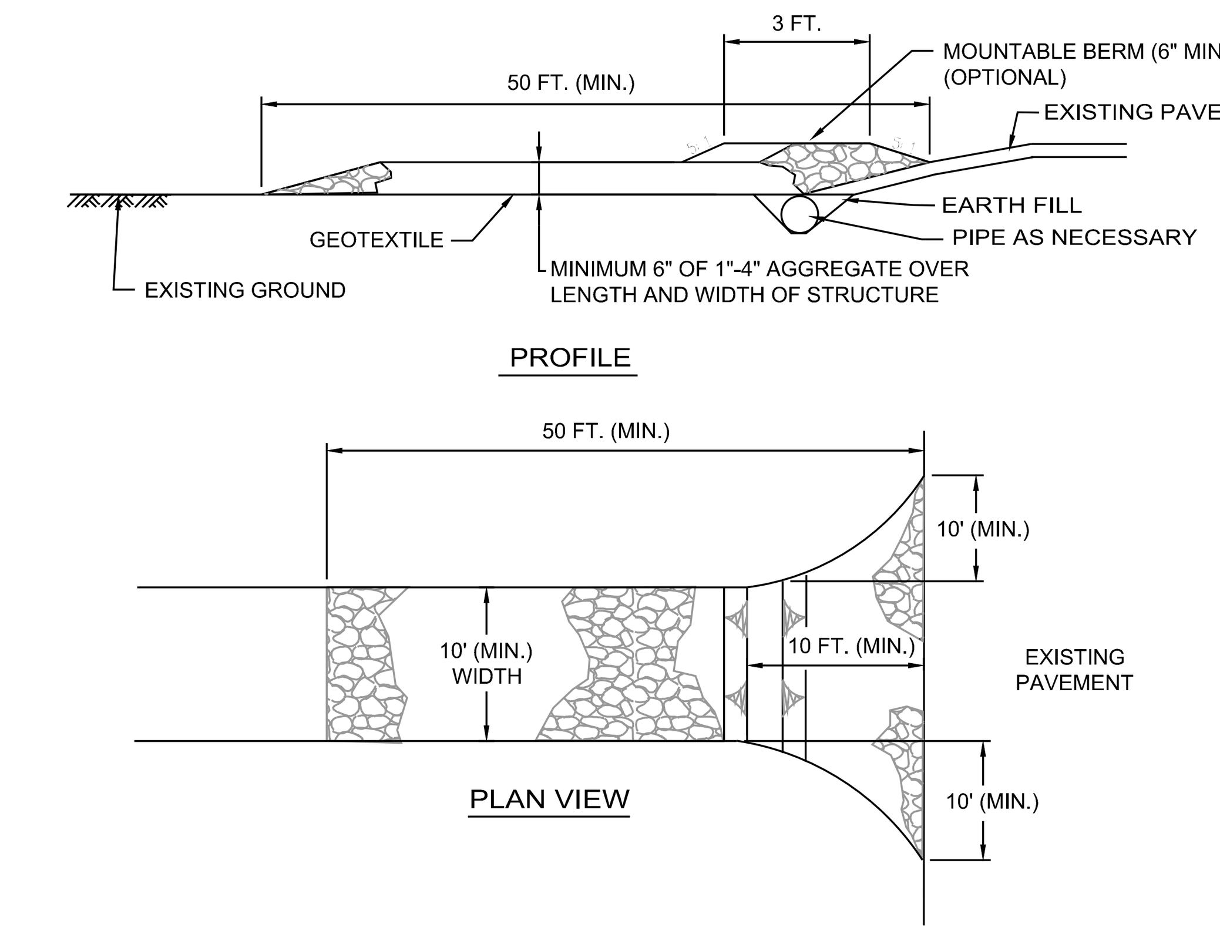
1) REMOVE COBBLES AND BOULDERS FROM BENEATH SAND BAGS AND BED SEALING SHEET TO PROVIDE OPTIMUM SEAL.

2) CREATE UPSTREAM SUMP TO MINIMIZE UPSTREAM POOL ELEVATION.



TEMPORARY COFFERDAM (HEAD DAM) WITH RIP-RAP APRON SECTION

(NOT TO SCALE)



STABILIZED CONSTRUCTION ENTRANCE NOTES:

1) STONE SIZE - USE 1 - 4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE

2) LENGTH - NOT LESS THAN 50 FT.

3) THICKNESS - NOT LESS THAN 6 INCHES.

4) WIDTH - 12 FT. MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS, 24 FOOT MINIMUM IF SINGLE ENTRANCE TO SITE.

5) GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.

6) SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPE WILL BE PERMITTED.

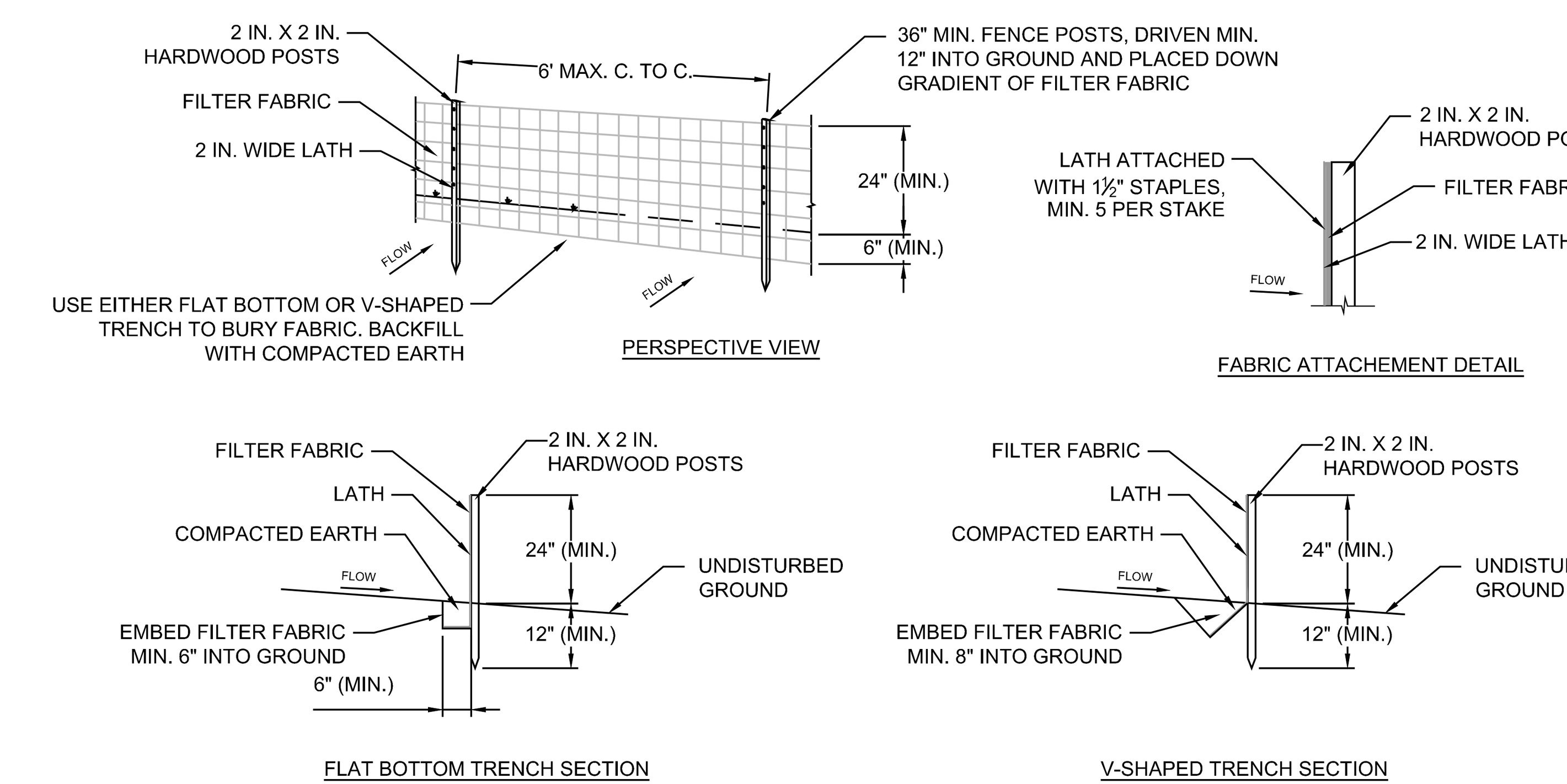
7) MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

8) WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

9) PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN EVENT.

STABILIZED CONSTRUCTION ENTRANCE

(NOT TO SCALE)



SILT FENCE DETAILS

NOT TO SCALE

CONSTRUCTION NOTES FOR SILT FENCE:

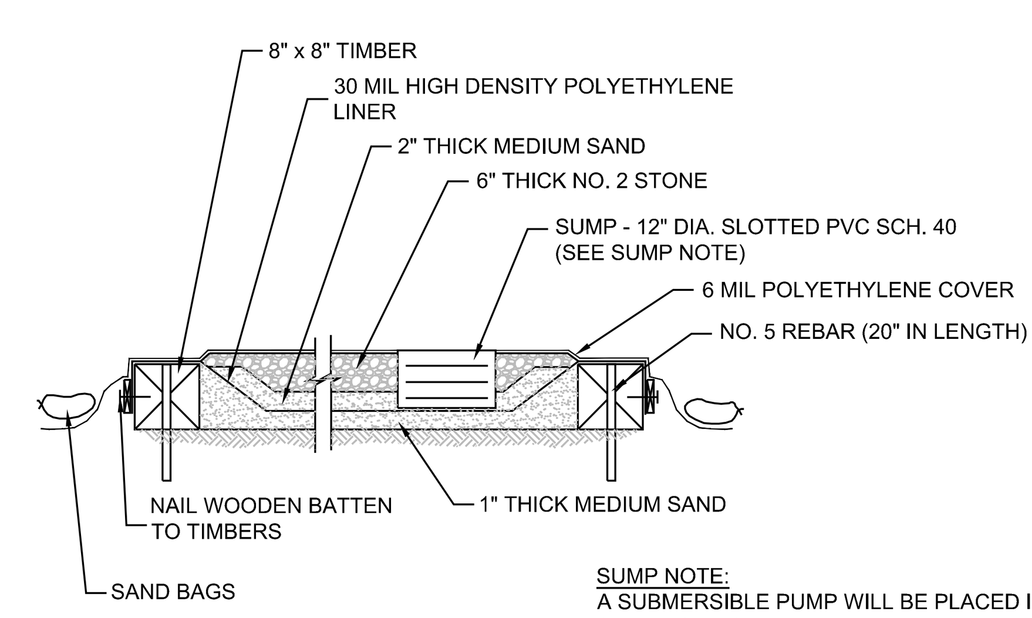
1) WHEN TWO SECTIONS OF FILTER FABRIC ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.

2) MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

MATERIALS:

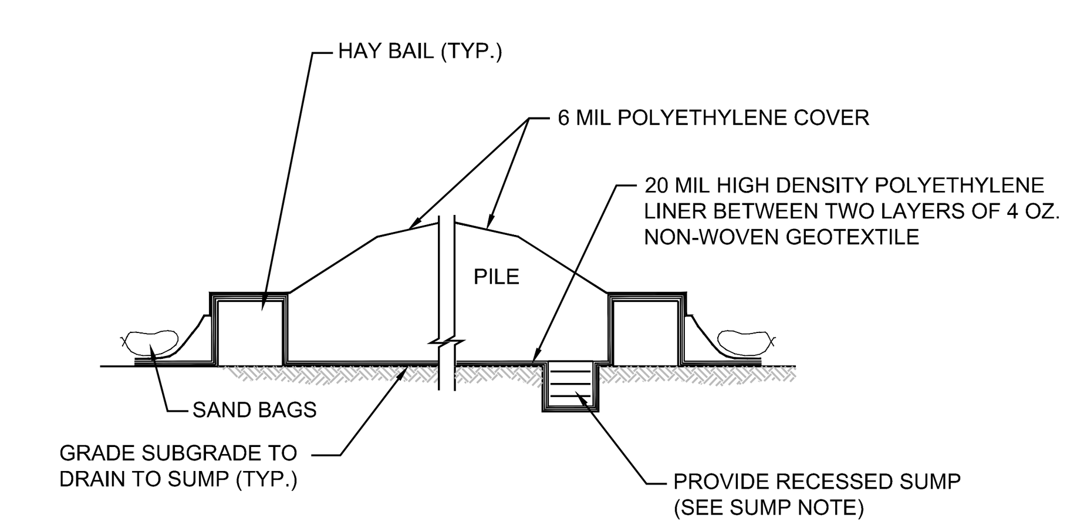
POST:
2" HARDWOOD

FILTER FABRIC:
FILTER X. MIRAFI 100X
STABILINKA T140N
OR APPROVED EQUAL.



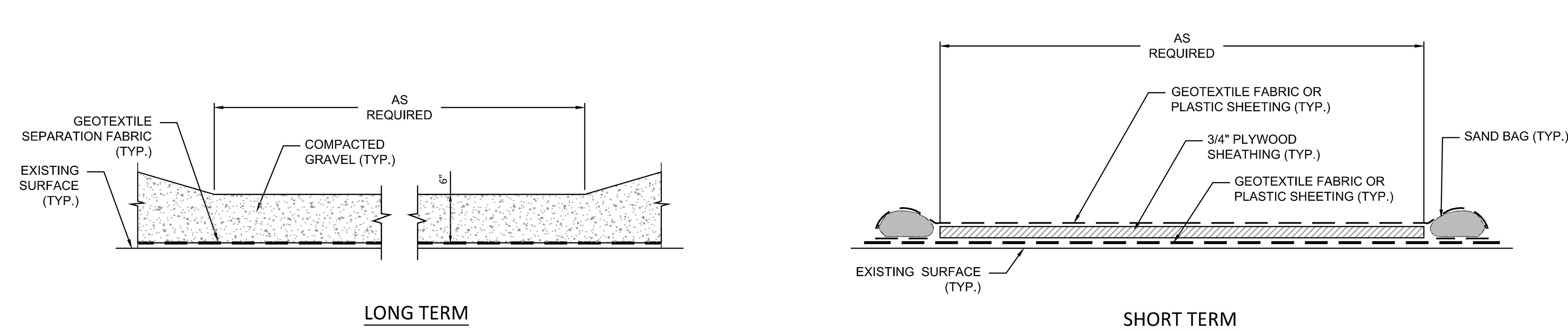
SUMP NOTE:
A SUBMERSIBLE PUMP WILL BE PLACED IN SUMP AS REQUIRED. THE PUMP WILL TRANSPORT WASTEWATER VIA HOSE TO 1,500 GALLON WATER TANKS.

EQUIPMENT CONTAMINATION REDUCTION PAD (IF NECESSARY)



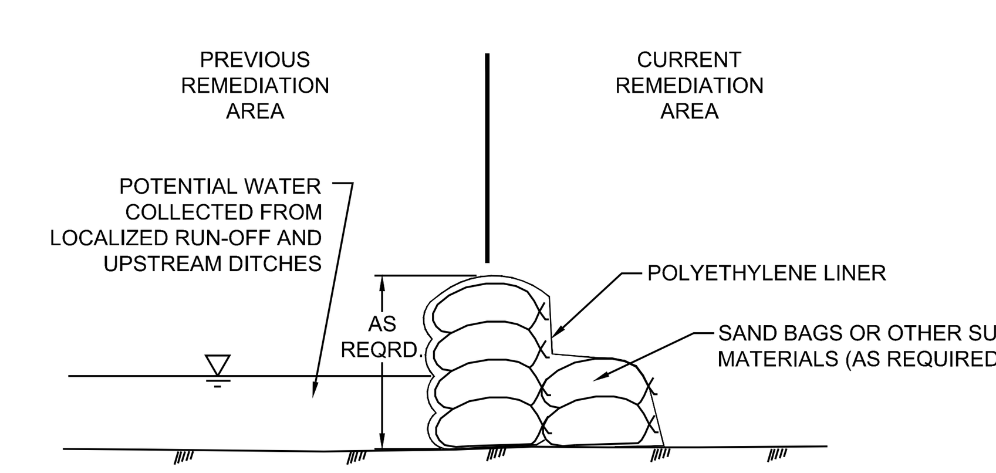
STOCKPILE MANAGEMENT AREA

NOT TO SCALE



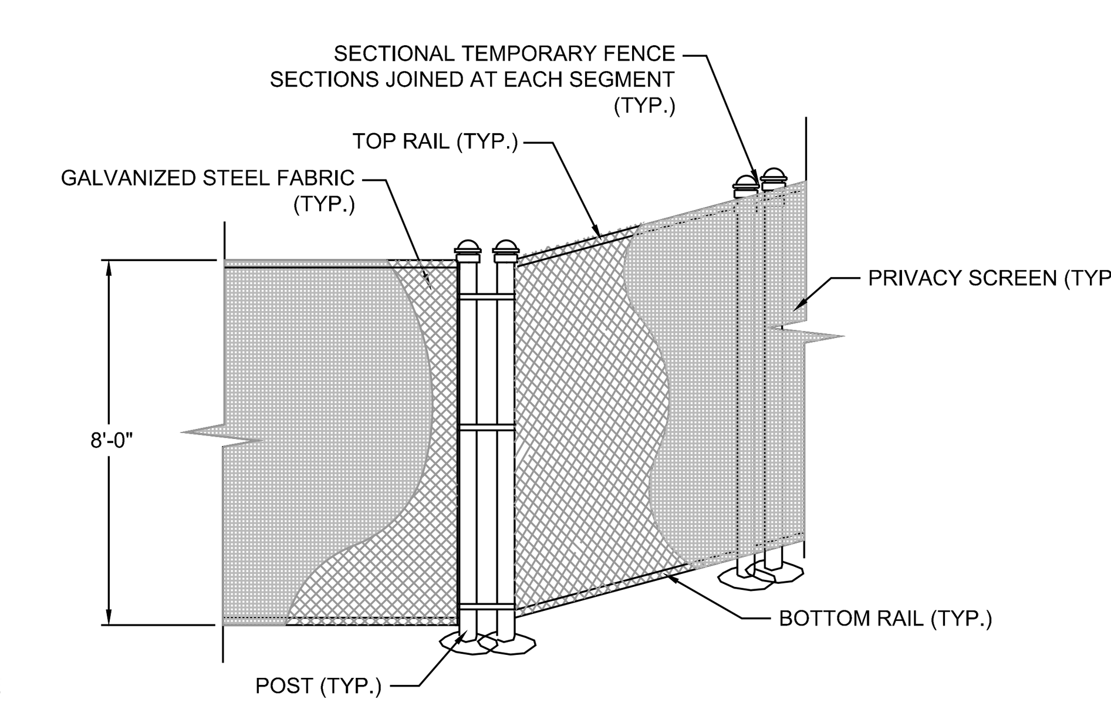
TEMPORARY ACCESS ROAD

NOT TO SCALE



TEMPORARY INTERMEDIATE COFFER DAM DETAIL

(NOT TO SCALE)



DETAIL

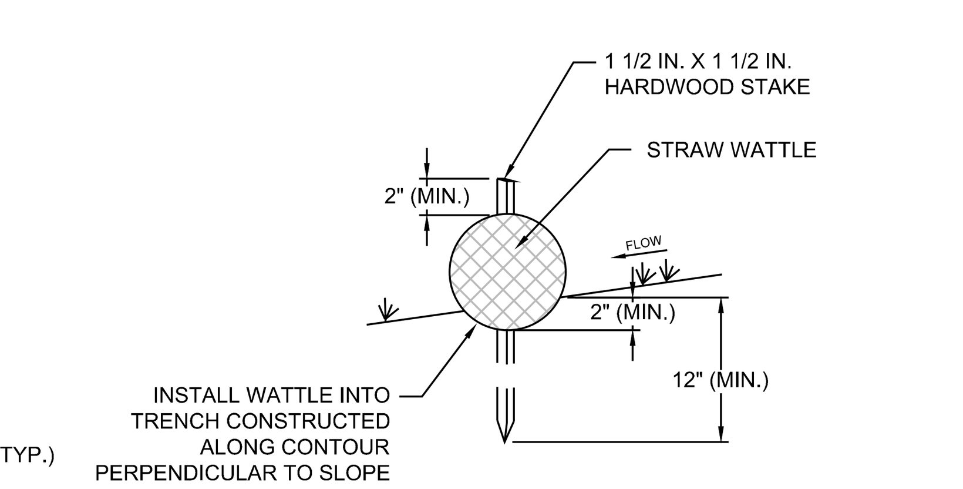
TEMPORARY SECURITY FENCE

NOT TO SCALE

TEMPORARY SECURITY FENCE NOTES:

1) CONTRACTOR SHALL MAINTAIN INTEGRITY OF SECURITY FENCING AND ENCLOSURE AT ALL TIMES.

2) POST SHALL BE TEMPORARILY SET INTO THE GROUND OR ON BASE PLATES THAT ARE SUFFICIENTLY WEIGHTED TO RESIST OVERTURNING.



TEMPORARY STRAW WATTLE DETAILS

(NOT TO SCALE)

STRAW WATTLE INSTALLATION NOTES:

1) WATTLES SHALL BE SECURELY STAKED.

2) MINIMUM POST SPACING = 5 FT.

3) WATTLES SHALL BE OVERLAPPED 6" (MIN.) WHEN JOINING.

4) WATTLES SHALL BE STAKED 3" (MIN.) FROM EACH END.

AECOM

LOCKHEED MARTIN CORPORATION

CONSTRUCTION DETAILS

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
BLOODY BROOK	KAM	60194430	03 / 2014	16

Plotted By: meisterk Layout-Sheet Name: CD Plot File Date Created: May/01/2014 8:27 AM
Filename: P:\60194430_LMC BLOODY BROOK\CADD\DESIGN\ALT-ACC-60194430-BLOODY_BROOK-C3D_DESIGN.DWG

Habitat Coverage in the Wooded Area
West Branch of Bloody Brook
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Habitat Name*	Acres	Cowardin Habitat** type
Confined River (Natural Shoreline)	0.163	R3RS1
Confined River Stone-lined Banks	0.124	R3RS2
Floodplain Forest	2.950	UPL
Mowed Lawn with Trees	1.548	UPL
Reedgrass/Purple Loosestrife Marsh	1.046	PEM5
Reedgrass/Purple Loosestrife Marsh - Variant I	0.069	PEM5
Shrub Swamp	0.246	PSS1
Successional Old Field	0.459	UPL
Successional Shrub land	0.431	UPL
Transition Area Phragmites and Shrub Wetland	0.070	PSS1

* Edinger *et al.*, 2002. *Ecological Communities of New York State*
** Cowardin, *et al.*, 1979, *Classification of Wetlands and Deepwater Habitats of the United States*
1. R3RS1 – Upper perennial riverine, rocky shore, bedrock
2. R3RS2 – Upper perennial riverine, rocky shore, rubble
3. UPL – Upland (Non-wetland)
4. PEM5 – Palustrine emergent (*Phragmites australis*)
5. PSS1 – Palustrine shrub-scrub, broad-leaved deciduous

Summary of Wetlands Delineated in the Wooded Area of the Remediation Site
West Branch of Bloody Brook
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Wetland ID	Total Area in Square feet (sf)	Emergent Habitat (PEM) (sf)	Shrub-Scrub Habitat (PSS) (sf)	Forested Habitat (PFO) (sf)
Wetland A	334	334	0	0
Wetland B	51,094	43,569	7,525	0
Wetland C	240	240	0	0
Wetland D	8,042	2,768	5,274	0
Total	59,710	46,911	12,799	0

Summary of Restoration of Temporary Wetland Impacts Resulting from Site Remedial Activities
West Branch of Bloody Brook
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Habitat Type	Existing Total Area (Square feet)	Area Impacted (Square feet)	Area Restored (Square feet)	Total Area Following Restoration (Square feet)
Palustrine Deciduous Forest	0	0	16,829	16,829
Palustrine Shrub/Scrub	12,799	12,632	12,292	12,459
Palustrine Emergent	46,911	37,025	23,008	32,894
Total	59,710	49,657	52,129	62,182

Plant Quantities by Wetland Habitat Area
West Branch of Bloody Brook
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Habitat Area Name	Common Name	Scientific name	Common name	Size	Quantity[1]
PFO 1	Wetland forest	*Acer rubrum*	Red maple	2.5-3 in	32
11,606 sf		*Quercus palustris*	Pin oak	2.5-3 in	32
(0.2664 a)		*Salix niger*	Black Willow	2.5-3 in	26
		Betula nigra	River birch	2.5-3 in	26
		Cornus amomum	Silky dogwood	Live stakes	65
		Alnus incana	Speckled alder	3 gal	45
		Sambucus canadensis	Elderberry	3 gal	35
					261
		PFO understory seed mix	ERNMX-251	20#/acre	
PFO2	Wetland forest	*Acer rubrum*	Red maple	2.5-3 in	18
5,223 sf		*Quercus palustris*	Pin oak	2.5-3 in	12
(0.1199 a)		*Salix exigua*	Sandbar Willow	2.5-3 in	12
		Quercus bicolor	Swamp white oak	2.5-3 in	10
		Cornus amomum	Silky dogwood	Live stakes	43
		Sambucus canadensis	Elderberry	3 gal	22
					117
		PFO understory seed mix	ERNMX-251	20#/acre	
PSS 1	Shrub wetland	*Cornus amomum*	Silky dogwood	Live stakes	20
3,533 sf		*Cephalanthus occidentalis*	Buttonbush	3 gal	15
(0.0811 a)		*Sambucus canadensis*	Elderberry	3 gal	15
		Alnus incana	Speckled alder	3 gal	20
		Aronia arbutifolia	Red chokeberry	3gal	10
					80
		PSS understory seed mix	ERNMX-251	20#/acre	
PSS 2	Shrub wetland	*Cornus amomum*	Silky dogwood	Live stakes	30
5,113 sf		*Salix niger*	Black willow	Live stakes	25
(0.1174 a)		*Salix discolor*	Pussy willow	3 gal	20
		Sambucus canadensis	Elderberry	3 gal	15
		Lindera benzoin	Spice bush	3 gal	15
		Aronia arbutifolia	Red chokeberry	3gal	10
					115
		PSS understory seed mix	ERNMX-251	20#/acre	
PSS 3	Shrub wetland	*Cornus amomum*	Silky dogwood	Live stakes	22
3,646 sf		*Salix discolor*	Pussy willow	3 gal	20
(0.0837 a)		*Sambucus canadensis*	Elderberry	3 gal	15
		Lindera benzoin	Spice bush	3 gal	15
		Aronia arbutifolia	Red chokeberry	3gal	10
					82
		PSS understory seed mix	ERNMX-251	20#/acre	
PEM 1	Marsh	*Typha latifolia*	Broadleaf cattail	Rhizomes	300
23,008 sf		*Iris versicolor*	Blue flag iris	6 in. pot	30
(0.5282 a)		*Scirpus cyperinus*	Woolgrass	4 in. pot	50
		Juncus effusus	Softrush	4 in. pot	50
		Onoclea sensibilis	Sensitive fern	4 in. pot	50
					480
		PEM wetland seed mix	ERNMX-251	20#/acre	
PEM 2 Replant access	Marsh	PEM wetland seed mix	ERNMX-251	20#/acre	

[1] Assume approximately 981 plants per acre (436 trees / acre and 545 shrubs / acre)
[2] Plant list to be approved by NYSDEC during the Restoration Plan review.

Suggested Seed Mix for Wetland Areas
West Branch of Bloody Brook
Bloody Brook Voluntary Cleanup Program
Onondaga County, New York

Ernst Conservation Seeds PA New England Province FACW Mix

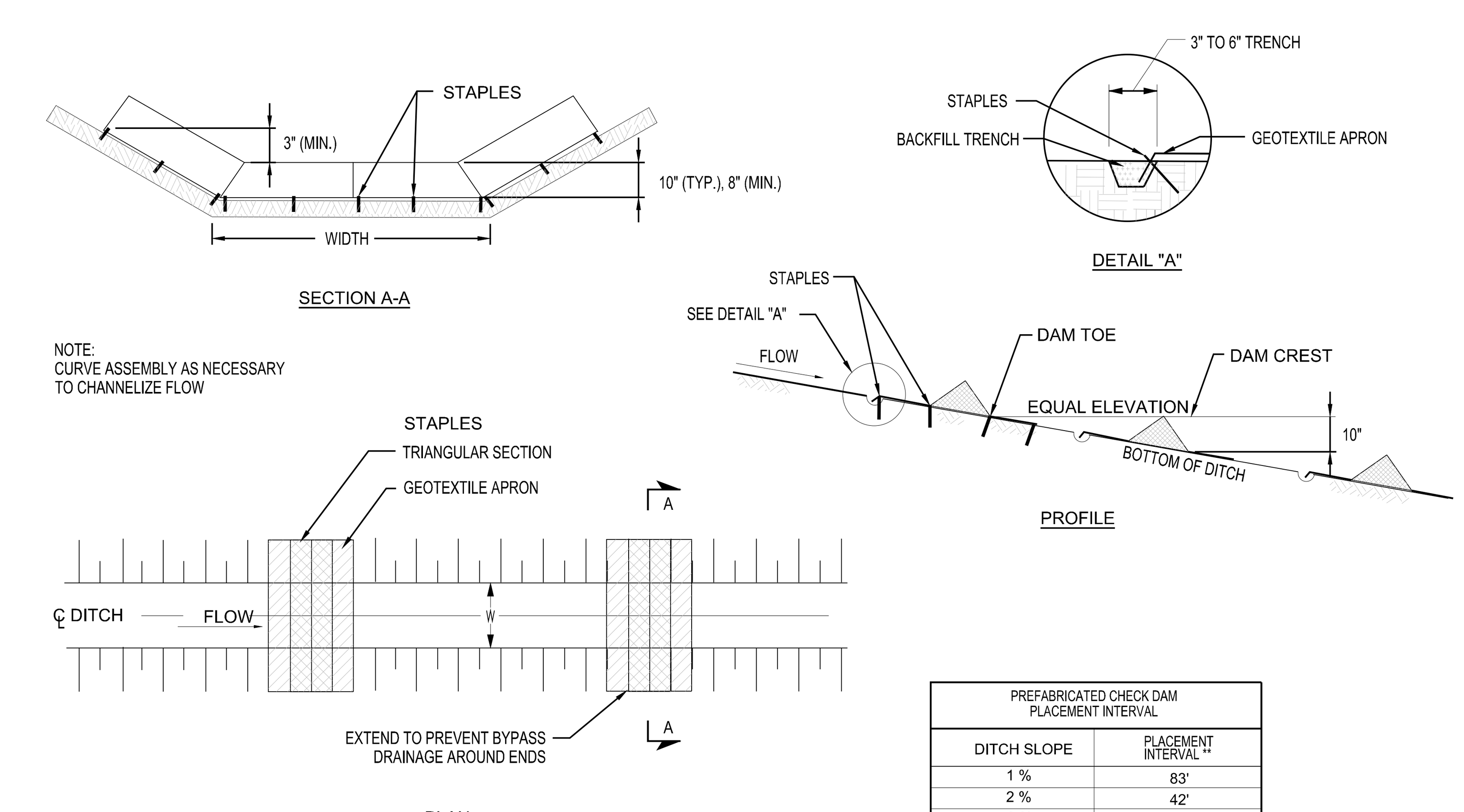
ERNMX # ERNMX-251

Seeding Rate Approximately 20 lb per acre

Mix Type Wet Meadow & Wetland Sites

- 24% Fox Sedge, PA Ecotype (Carex vulpinoidea, PA Ecotype)
- 20% Virginia Wildrye, PA Ecotype (Elymus virginicus, PA Ecotype)
- 10% Lurid (Shallow) Sedge, PA Ecotype (Carex lurida, PA Ecotype)
- 5% Hop Sedge, PA Ecotype (Carex lupulina, PA Ecotype)
- 4% Blue Vervain, PA Ecotype (Verbena hastata, PA Ecotype)
- 3% Green Bulrush, PA Ecotype (Scirpus atrovirens, PA Ecotype)
- 3% Soft Rush (Juncus effusus)
- 2% Swamp Milkweed, PA Ecotype (Asclepias incarnata, PA Ecotype)
- 2% Wood Reedgrass, PA Ecotype (Cinna arundinacea, PA Ecotype)
- 2% Boneset, PA Ecotype (Eupatorium perfoliatum, PA Ecotype)
- 2% Cosmos (Bristly) Sedge, PA Ecotype (Carex comosa, PA Ecotype)
- 2% Oxeye Sunflower, PA Ecotype (Heliopsis helianthoides, PA Ecotype)
- 2% Redtop Panicgrass, PA Ecotype (Panicum rigidulum (P. stipitatum), PA Ecotype)
- 2% Sensitive Fern (Onoclea sensibilis)
- 1% Joe Pye Weed, PA Ecotype (Eupatorium fistulosum, PA Ecotype)
- 1% Pennsylvania Smartweed, PA Ecotype (Polygonum pensylvanicum, PA Ecotype)
- 1% Spotted Joe Pye Weed, PA Ecotype (Eupatorium maculatum (Eupatoriadelphus maculatus), PA Ecotype)
- 1% Northern Long Sedge, PA Ecotype (Carex folliculata, PA Ecotype)
- 1% Slender Mountainmint (Pycnanthemum tenuifolium)
- 1% Flat Topped White Aster, PA Ecotype (Aster umbellatus (Doellingeria umbellata), PA Ecotype)
- 1% Bladder (Star) Sedge, PA Ecotype (Carex intumescens, PA Ecotype)
- 1% Rattlesnake Grass, PA Ecotype (Glyceria canadensis, PA Ecotype)
- 1% Many Leaved Bulrush, PA Ecotype (Scirpus polyphyllus, PA Ecotype)
- 1% Great Blue Lobelia, PA Ecotype (Lobelia siphilitica, PA Ecotype)
- 1% New York Ironweed, PA Ecotype (Vernonia noveboracensis, PA Ecotype)
- 1% Narrowleaf Blue Eyed Grass (Sisyrinchium angustifolium)
- 1% Brown Bulrush, PA Ecotype (Scirpus pendulus, PA Ecotype)
- 1% New England Aster (Aster novae-angliae (Symphyotrichum n.))
- 1% Zigzag Aster, PA Ecotype (Aster prenanthoides (Symphyotrichum p.), PA Ecotype)
- 1% Purplestem Aster, PA Ecotype (Aster puniceus (Symphyotrichum puniceum), PA Ecotype)
- 1% Square Stemmed Monkeyflower, PA Ecotype (Mimulus ringens, PA Ecotype)

Total: 100%



PREFABRICATED CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1 %	83'
2 %	42'
3 %	28'
4 %	21'
5 %	17'

** BASED ON 10" TYPICAL HEIGHT

TEMPORARY PREFABRICATED CHECK DAM
(NOT TO SCALE)

AECOM

LOCKHEED MARTIN CORPORATION

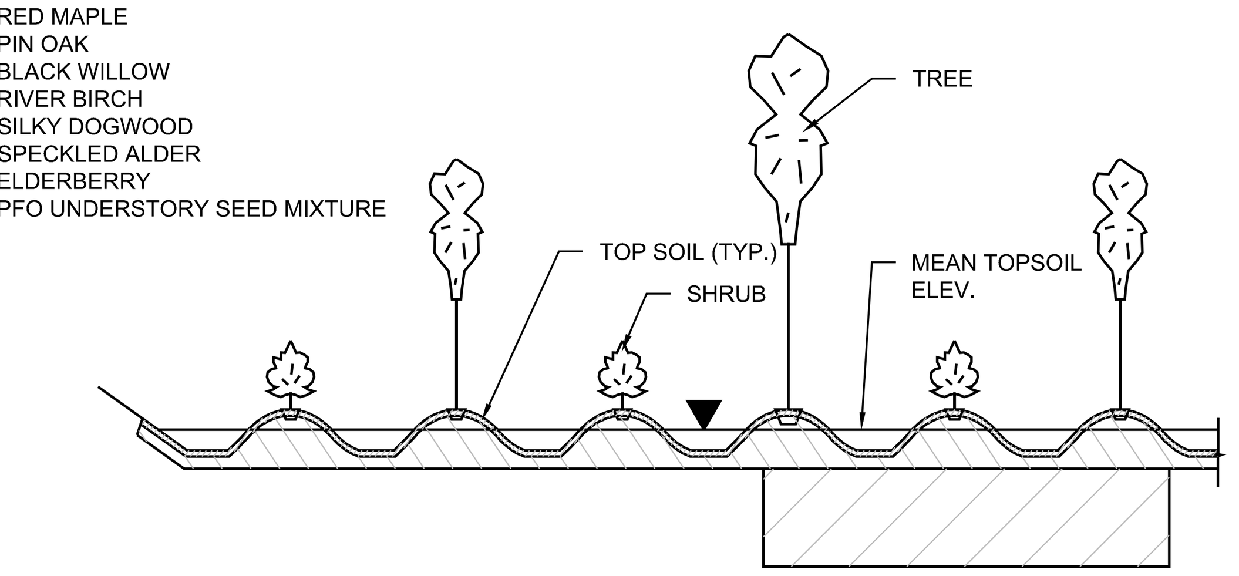
WETLAND TABLES AND
MISCELLANEOUS DETAILS

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
BLOODY BROOK	KAM	60194430	03 / 2014	21

PLANT TYPES

RED MAPLE
PIN OAK
BLACK WILLOW
RIVER BIRCH
SILKY DOGWOOD
SPECKLED ALDER
ELDERBERRY
PFO UNDERSTORY SEED MIXTURE

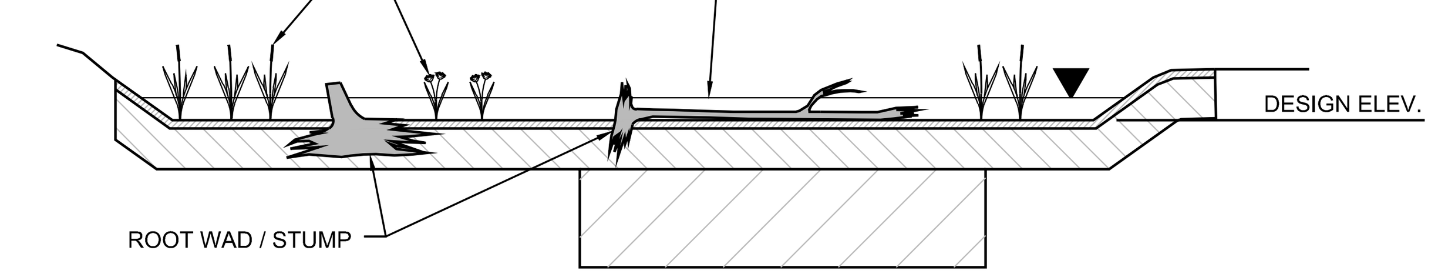


TYPICAL FORESTED WETLAND

(NOT TO SCALE)

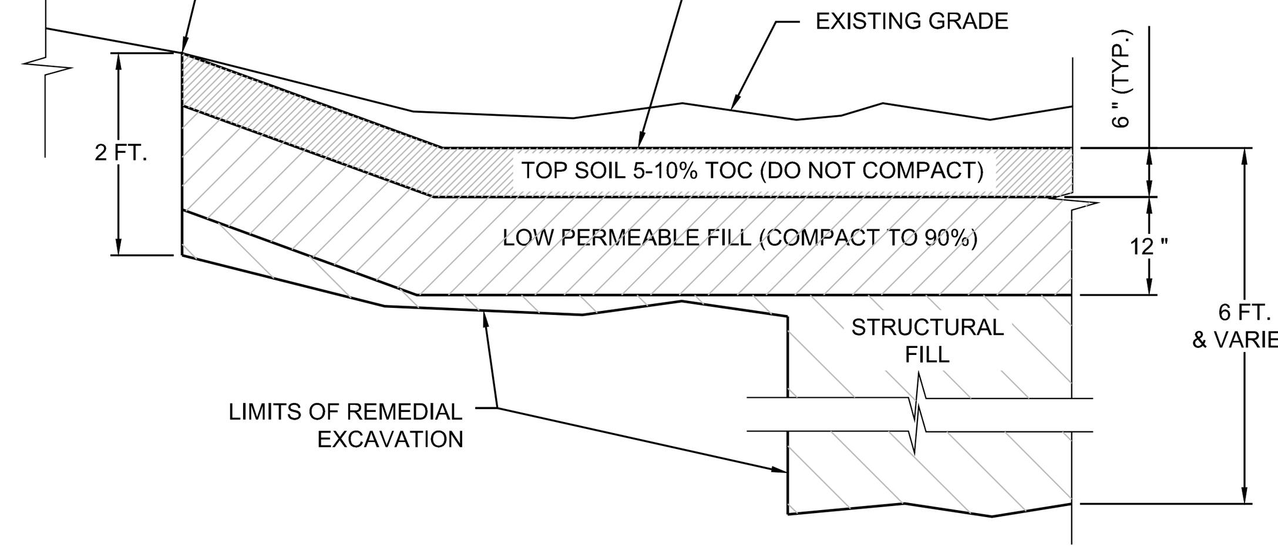
TYPICAL PLANT

BROAD LEAF CATTAIL
BLUE FLAGIRIS
WOOL GRASS
SOFT RUSH
SENSITIVE FERN
PEM UNDERSTORY SEED MIXTURE



TYPICAL EMERGENT WETLAND

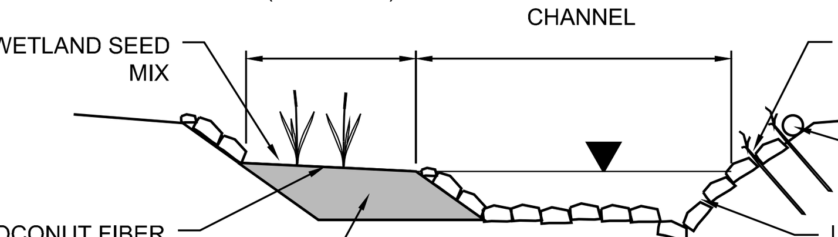
(NOT TO SCALE)



NOTE:
LOW PERMEABLE FILL SHALL MEET LINER PERM.
RATE OF 3.1 E-05 cm/sec (4.0 to 2.5 E -05 cm/sec)

TYPICAL WETLAND FILL SOIL DETAIL

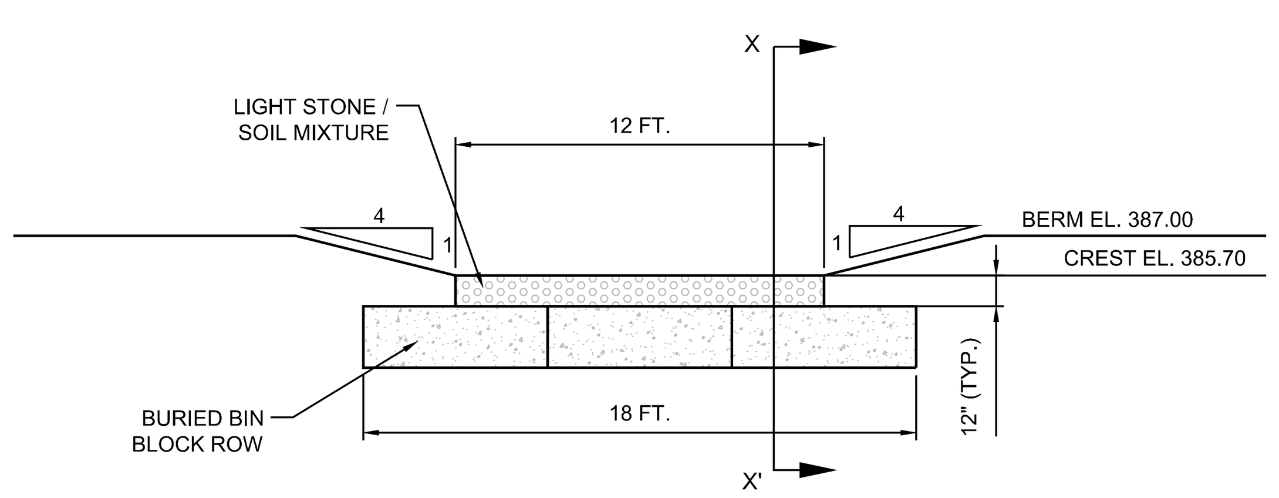
(NOT TO SCALE)



TYPICAL BROOK

(NOT TO SCALE)

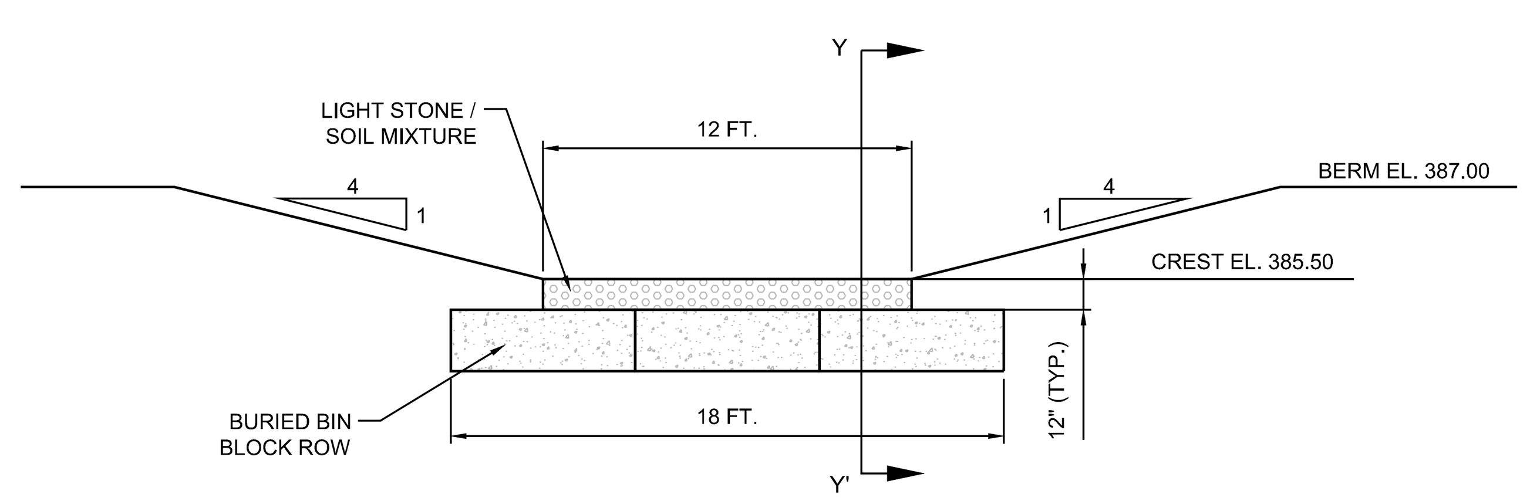
NOTE:
POTENTIAL USE OF WETLAND BENCH RESERVED
FOR STREAM RESTORATION AREAS BETWEEN
STATIONS 38+00 TO 45+50 +/-



ELEVATION

(NOT TO SCALE)

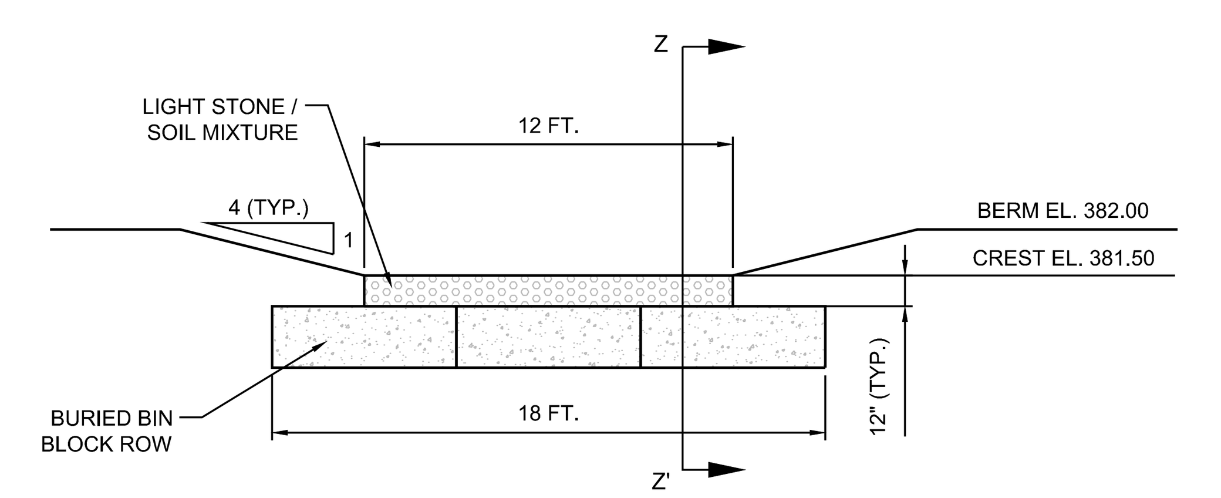
WEIR #1



ELEVATION

(NOT TO SCALE)

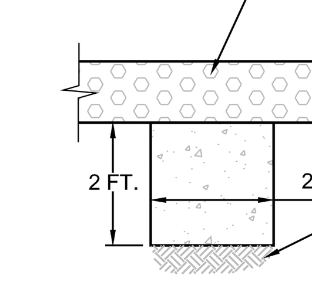
WEIR #2



ELEVATION

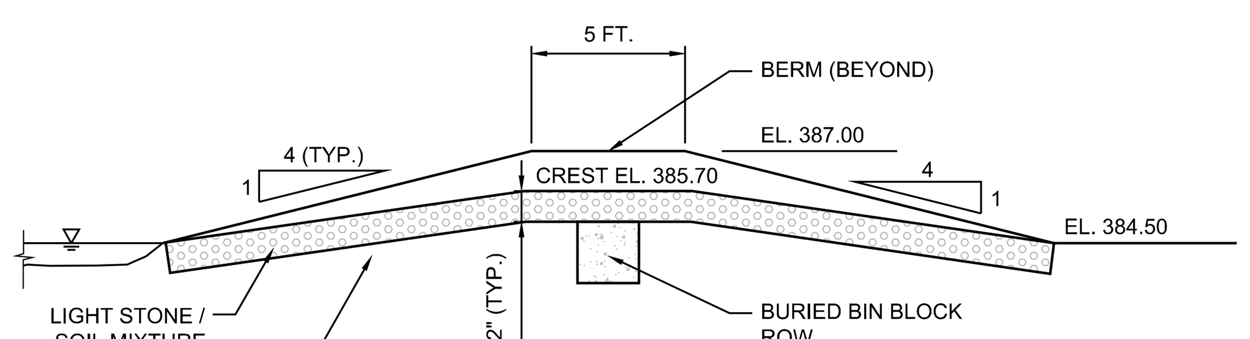
(NOT TO SCALE)

WEIR #3



BIN BLOCK DETAIL

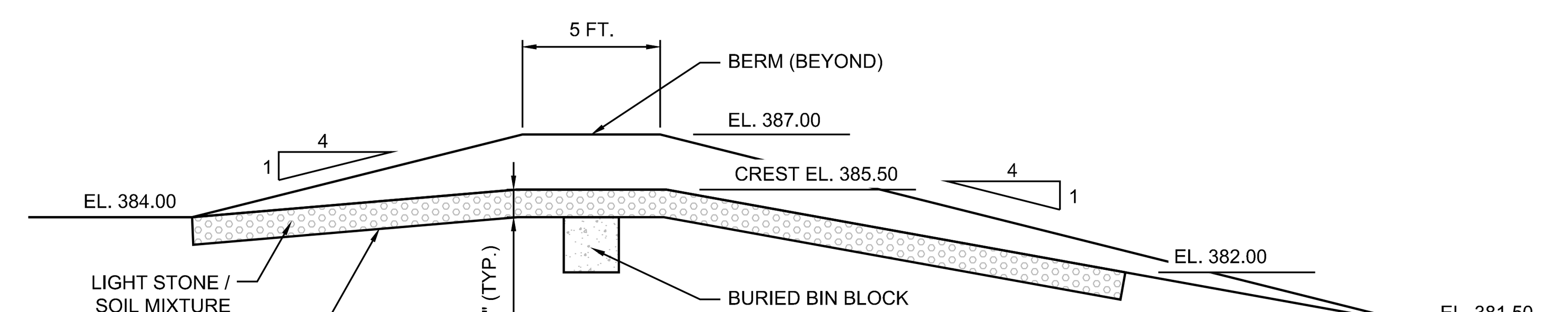
(NOT TO SCALE)



SECTION X - X'

(NOT TO SCALE)

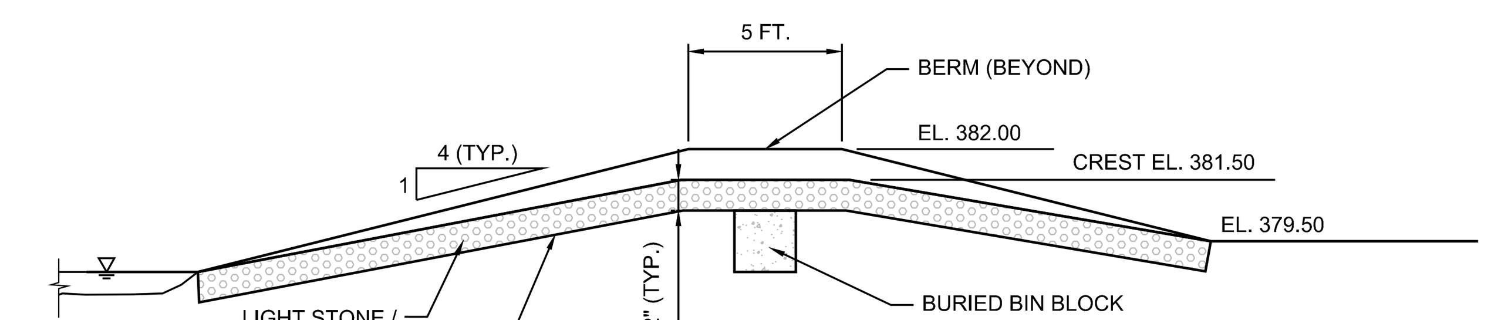
WEIR #1



SECTION Y - Y'

(NOT TO SCALE)

WEIR #2



SECTION Z - Z'

(NOT TO SCALE)

WEIR #3

AECOM

LOCKHEED MARTIN CORPORATION

RESTORATION
DETAILS

WEST BRANCH OF BLOODY BROOK
ONONDAGA COUNTY, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
BLOODY BROOK	KAM	60194430	03 / 2014	22