

COLUMBUS AND FRANKLIN COUNTY METRO PARKS WETLAND AND STREAM RESTORATION PLAN

AT THE FORMER EASTSIDE NURSERY SITE 6723 LITHOPOLIS ROAD, CANAL WINCHESTER, OHIO 43110 2009

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OWNER

COLUMBUS AND FRANKLIN COUNTY METRO PARKS
1069 WEST MAIN STREET, WESTERVILLE, OH 43081
PHONE: (614) 891-0700 FAX: (614) 895-6208

WORK

PART I:
WETLAND CELLS 1A AND 1B
STREAM RESTORATION STA. 43+44.70 TO 70+44.70

PART II:
WETLAND CELLS 2-9
STREAM RESTORATION STA. 0+00 TO 43+44.70
WALNUT CREEK BANK STABILIZATION
REFORESTATION

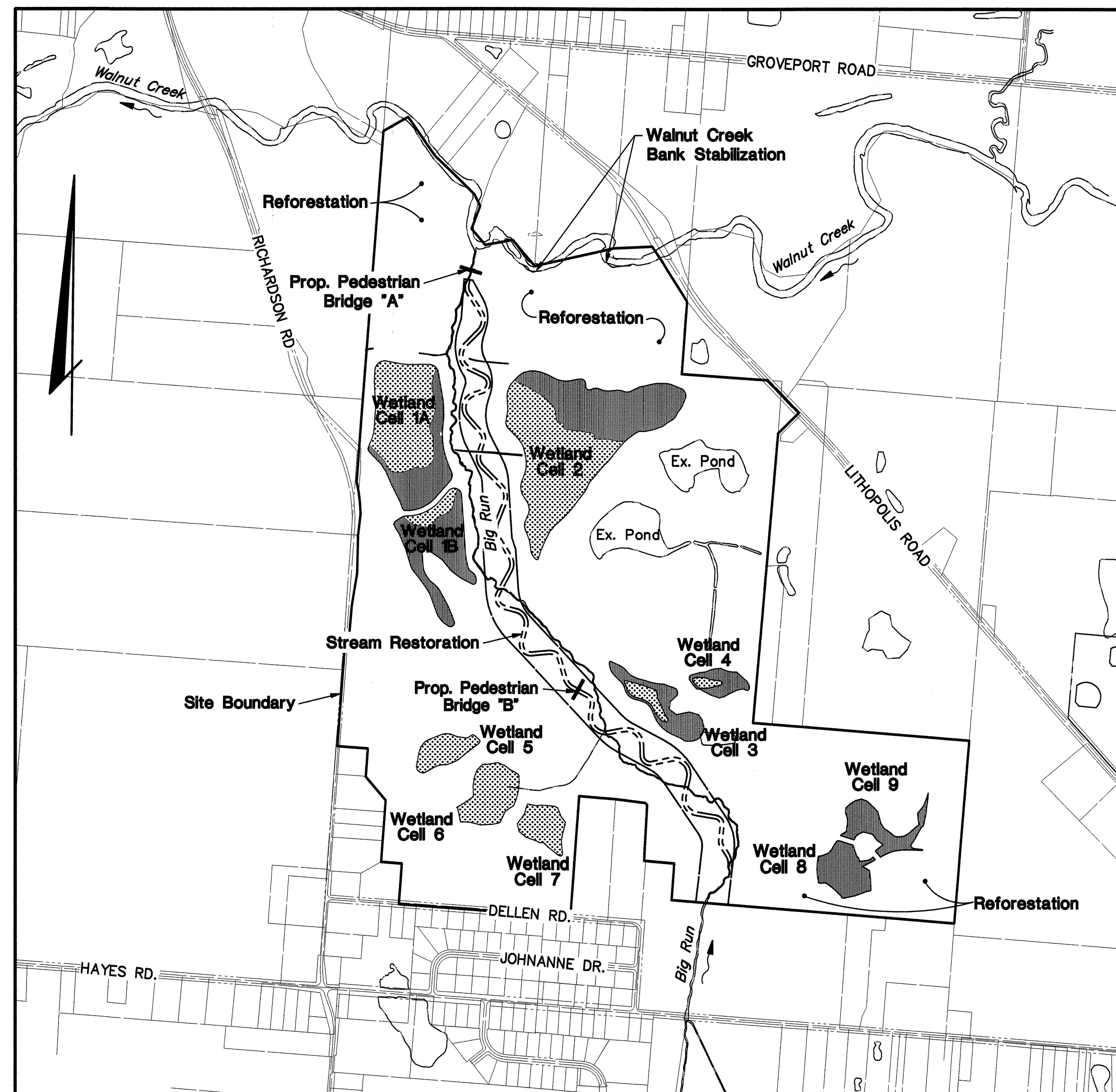
PART III:
PEDESTRIAN BRIDGES

STANDARD DRAWINGS

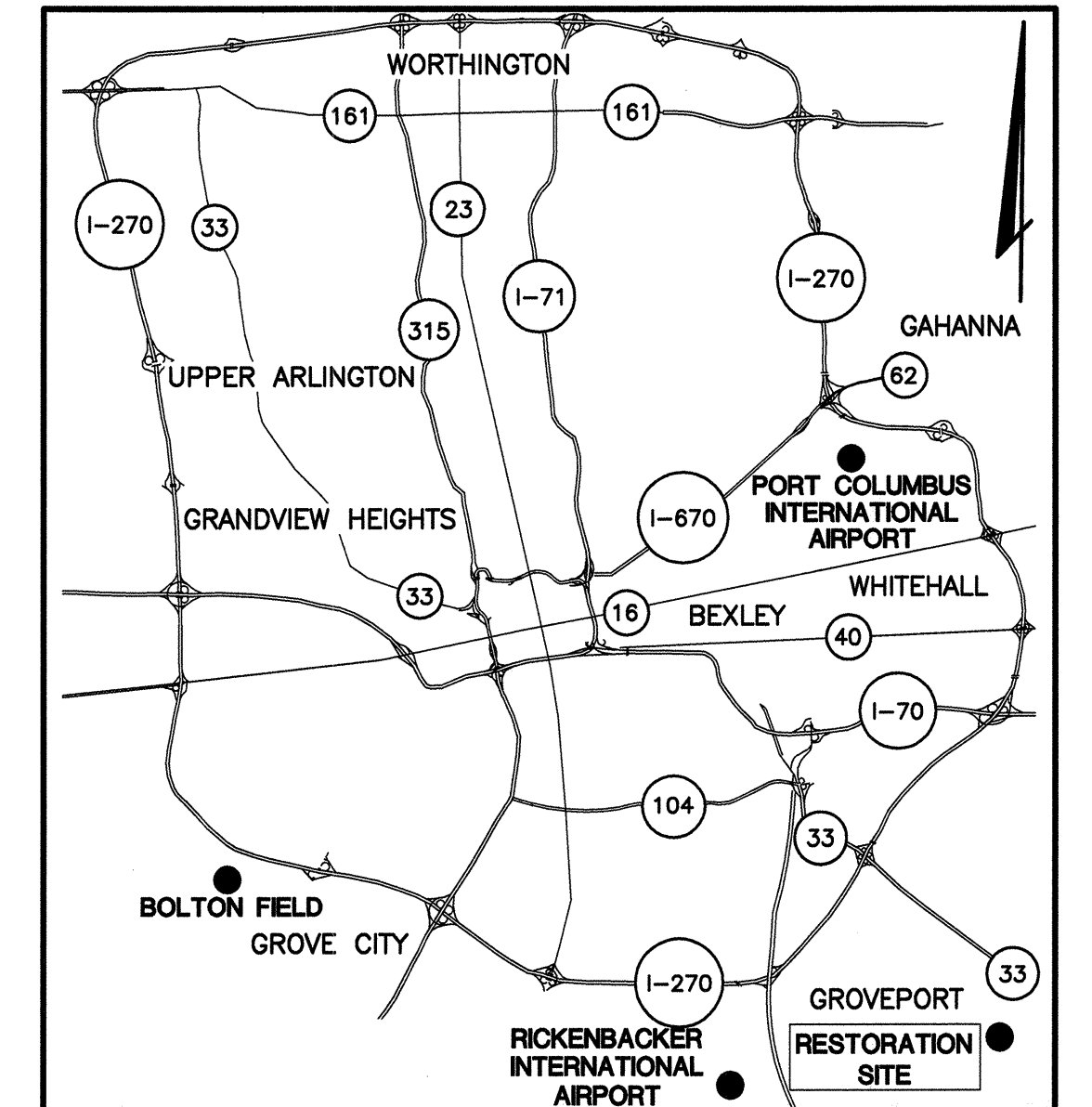
COLUMBUS AA-S169 (MODIFIED)
ODOT TC-41.20

BIG RUN STREAM DESIGN STATISTICS

WATERSHED AREA AT DOWNSTREAM END	APPROX. 8.5 SQ. MILES
AVERAGE SINUOSITY	1.22
BANKFULL WIDTH	31.0 FEET
BANKFULL MEAN DEPTH	2.71 FEET
BANKFULL MAX DEPTH	3.5 FEET
W/D RATIO	11.44
BELTWIDTH	275 FEET
ENTRENCHMENT RATIO	9.52
BANKFULL DISCHARGE AT DOWNSTREAM END	APPROX. 337 cfs
BANKFULL VELOCITY AT DOWNSTREAM END	APPROX. 4.0 ft/s

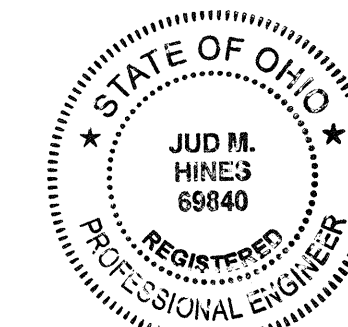


LOCATION MAP
SCALE: 1"=800'



VICINITY MAP
NO SCALE

PREPARED BY:



PROFESSIONAL ENGINEER

10-8-09
DATE

SIGNATURES BELOW SIGNIFY ONLY CONCURRENCE WITH THE GENERAL PURPOSE AND GENERAL LOCATION OF THE PROJECT. ALL TECHNICAL DETAILS REMAIN THE RESPONSIBILITY OF THE ENGINEER PREPARING THE PLANS.

[Signature]
COLUMBUS AND FRANKLIN COUNTY METRO PARKS
EXECUTIVE DIRECTOR
JOHN O'MEARA

10/13/09
DATE

METRO PARKS BOARD OF COMMISSIONERS
ELLEN L. TRIPP - GREG LASHUTKA - ROBERT JEFFREY

As-Built Plan
John Eramo
& Sons Inc.
January, 2011



	CELL 1A	CELL 1B	CELL 2	CELL 3	CELL 4	CELL 5	CELL 6	CELL 7	CELL 8	CELL 9
NORMAL OPERATING POOL ELEV. (A)	727.5	728.5	728.5	732.5	735.5	745.5	745.5	744.5	743.5	744.5
SATURATION ELEV.	728.5	729.5	729.5	733.5	736.5	746.5	746.5	745.5	744.5	745.5
EMERGENT WETLAND AREA (AC.)	9.98	1.14	14.64	3.10	0.37	2.43	4.27	2.62	-	-
FORESTED WETLAND AREA (AC.)	4.98	6.36	10.80	0.98	1.53	-	-	-	3.42	3.23
TOTAL WETLAND AREA (AC.)	14.96	7.50	25.44	4.08	1.90	2.43	4.27	2.62	3.42	3.23
TRIBUTARY AREA (AC.)	110.43	93.02	114.95	204.02	178.11	13.19	21.57	14.10	10.92	54.59
RATIO (TRIB. AREA/WETLAND AREA)	7.38	12.40	4.52	50.00	93.74	5.42	5.05	5.38	3.19	16.90

Job No. 2009-0643
Date October, 2009
Scale As Noted
Drawn By GDT

COLUMBUS AND FRANKLIN COUNTY METRO PARKS
WETLAND AND STREAM RESTORATION PLAN
AT
THE FORMER EASTSIDE NURSERY SITE
6723 LITHOPOLIS ROAD, CANAL WINCHESTER, OHIO 43110
TITLE SHEET

EMHT
Evans, Mechwart, Hamblen & Tilton, Inc.
Engineers • Surveyors • Planners • Scientists
5500 New Albany Road, Columbus, OH 43254
Phone: 614.775.6500 Fax: 614.775.9829
M C M X X V I

COLUMBUS AND FRANKLIN COUNTY METRO PARKS
1069 WEST MAIN STREET,
WESTERVILLE, OH 43081-1181
(614) 891-0700
(614) 895-6208 FAX

REVISIONS
MARK DATE

Sheet 01/39

ROCK RIFFLES:

Only imbedded (not visible) support and crest stone may be quarried limestone material. No construction rubble is permissible. All other material used to construct the rock riffle (all visible rock) shall be river rock, consisting of rounded stone with natural hues. The Contractor shall review samples of this material with the Construction Manager for approval prior to installation. See Riffle Materials Table for descriptions and sizes of materials.

1.0 CREST STONE

The crest stone shall be placed to the elevation shown and labeled on the stream profile. The crest elevation must pool water back to the base of the upstream riffle/run.

Installation:

The crest elevation must be determined and the center weir stone installed first. Trench into the stream bed approximately 1.5 feet and place the stone(s) so that the center weir stone reaches the crest elevation. Trench and install the remaining crest stones across the stream, elevating them into the banks the specified distance. Finished elevations of the crest stone must concentrate flows through the center of the riffle.

2.0 SUPPORT STONE

Installation:

Support stone must be placed tightly on both sides of the crest stone paying close attention to fit on the downstream side. Proper elevation of the support stone must be maintained and must be as high as the crest stone. Ten (10) feet downstream of the crest stone the support stone will be laid more loosely to create turbulence of flow across the riffle. At this point, the stone should start to become trenched into the streambed. At the end of the riffle, the support stone will be trenched fully into the stream bed to a depth of approximately 1.5 feet. Finished elevations of the support stone must concentrate flows across the center of the riffle and create non-laminar (turbulent) flow. Support stones will continue up the banks to the final elevation. Support stone will be trenched into the banks to support the crest stone.

3.0 FILL STONE

Installation:

After the installation of the larger crest and support stones, fill all voids with Fill Stone and compact with an excavator bucket. Final grading and transition with the upper bank area can be accomplished using this stone size.

4.0 PAYMENT

The cost of all labor and materials associated with the construction of rock riffles as shown on this plan, including crest, support and fill stone, shall be included in the price bid for Item Spec., Rock Riffle, As Per Plan.

BOULDER TOE:

1.0 Material:

The boulder toe material may consist of quarried limestone (no construction rubble is permissible). The Contractor shall review samples of this material with the Construction Manager for approval prior to installation. The size of this material shall be consistent with the gradation of Type 'C' Rock Channel Protection, per ODOT Item 601.

2.0 Installation:

The boulder toe material shall be imbedded into the channel bottom and channel bank to the minimum depths shown on Detail 'C'. Filter fabric material per ODOT Item 712.09, Type B, shall be included in the construction of the boulder toe reinforcement, as demonstrated on Detail 'C'. Over-excavation of the channel bank to install the boulder toe reinforcement shall be backfilled with compactable material that is placed in lifts and graded to conform to the designed channel bank, and reinforced with the geotextile material specified by this plan.

3.0 Payment:

The cost of all labor and materials associated with the placement of Boulder Toe, shall be included in the price bid for Item Spec., Boulder Toe, As Per Plan.

COIR ROLL:

1.0 Material:

Rolls shall consist of biodegradable material 16 inches in diameter with a density of 7 lbs./cu.ft. The coir roll outer netting shall consist of a bristle coir twine with a breaking strength of 90 lbs. Hardwood stakes to anchor the coir rolls shall be 2"x2"x36" in size. The specified length is a minimum and may need to be adjusted to allow for sufficient anchoring.

The Contractor may use coir rolls manufactured by Rolanka Products (800) 760-3215, or approved equal.

2.0 Installation:

Refer to Detail 'A' for a schematic of the location of the coir roll material along the channel and Detail 'C' for a schematic of the location of the coir rolls with respect to the other bank reinforcement materials.

The coir rolls shall be installed after the boulder toe material is in place. The upstream and downstream ends of the coir roll shall be bent back into the channel bank to prevent stream flow from cutting behind the Rolls. The ends of abutting coir rolls shall be tied together with twine. Hardwood stakes shall be driven into the native, undisturbed soil behind the Rolls. The Rolls shall be tied to the stakes with twine. Stakes shall be placed at the beginning and end of each Roll and at a maximum spacing of 2 feet.

3.0 Payment:

The cost of all labor and materials associated with the installation of the coir rolls and stakes shall be included in the price bid for Item Spec., Coir Roll, As Per Plan.

LIVE STAKES:

1.0 Material:

Live stake material shall be dormant and gathered locally (within or in proximity to the project site) or purchased from a reputable commercial supplier. The Contractor may use live stakes supplied by Ernst Conservation Seeds (800) 873-3321, or approved equal. This material shall be planted only during its natural dormancy period, extending from late fall through early spring. Stakes shall be 1/2 to 2 inches in diameter, 2 to 3 feet in length, and living based on the presence of young buds and green bark. Prior to installation, the stakes shall be cut so that they are angled on the bottom and flush on the top.

All harvested or purchased live stake material shall be preserved in a cool, moist environment until installation. Plant material that has been allowed to dry out or is not preserved in a dormant state prior to installation shall be discarded.

See Stream Planting Plan for Material List.

2.0 Installation:

Refer to Detail 'A' for a schematic of the location of the live stakes along the channel and Detail 'C' for a schematic of the location of the live stakes with respect to the other bank reinforcement materials.

Live stakes shall be installed in two (2) rows, with 2.0-foot spacing between the stakes. Three-fourths of the stake is to be imbedded within the channel bank. The angle of the imbedded stake to the channel bank shall be between 30 and 60 degrees. When installed, at least two (2) buds should remain above the ground surface and those buds shall be oriented upwards.

Live stakes that split or become bent or broken during installation shall be removed from the channel bank and discarded.

3.0 Payment:

The cost of all labor and materials associated with the installation of live stakes shall be included in the price bid for Item Spec., Stream Planting, As Per Plan.

STOCKPILE COBBLE MATERIAL:

Remove and stockpile any available cobble stream bed material through the reach of the existing stream channel to be excavated/relocated. Stockpiled material shall be replaced within the excavated/relocated stream bed upon completion. Cost of this work to be included in the price bid for the various related items.

GEOTEXTILES:

The specified geotextile shall meet the specifications identified on this plan, unless otherwise approved by the Construction Manager.

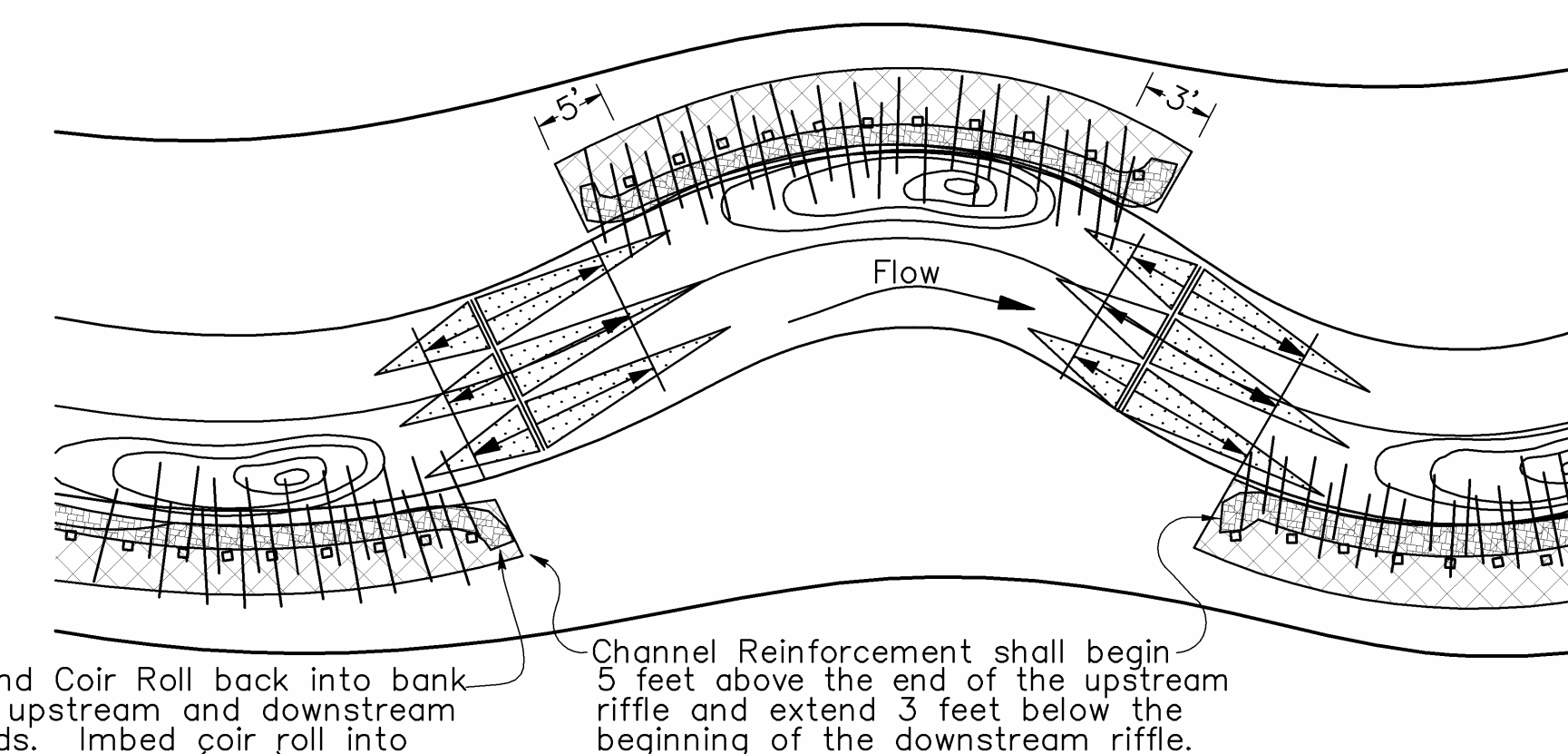
Geotextile shall be placed in accordance with ODOT CMS Item 671, and manufacturer's recommendations.

The geotextile Rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement. Each Roll shall be labeled or tagged to provide product identification sufficient for field inventory and quality control purposes. Rolls shall be stored in a manner which provides identification, as well as protection from the elements. If stored outdoors, the Rolls shall be elevated and protected with a waterproof cover.

INSTALLATION:

- Over-excavation of the channel bank may be necessary to accomplish the installation of the boulder toe protection. The boulder toe protection shall be imbedded into the bottom of the channel to the depth specified on Detail C, this sheet.
- The live stakes shall be placed on top of the imbedded boulder toe material protruding into the native, undisturbed soil of the channel bank.
- Soil material, including the specified topsoil, shall be placed to backfill the over-excavated channel bank.
- The specified seeding shall be applied to the disturbed/restored soil material.
- The first (lowest) row of the geotextile material shall be anchored to the restored soil material.
- The coir roll material shall be installed and secured with the hardwood stakes protruding into the native, undisturbed soil of the channel bank.
- Any remaining rows of geotextile material shall be installed and anchored to the channel bank, with the last (highest) row "trenched" into the bank.

RIFFLE MATERIAL TABLE			
I.D.	DESCRIPTION	SIZE	% OF RIFFLE VOLUME
Crest Stone	Stone to establish the crest and footing of the Riffle	Rock Channel Protection, Type C Type C shall consist of sizes such that at least 85 percent of the total material by weight shall be larger than 6 inches but less than an 18-inch square opening. At least 50 percent of the total material by weight shall be larger than 12-inch square opening.	30%
Support Stone	Stone to transition upstream and down stream of the crest	Rock Channel Protection, Type D Support Stone shall have a gradation of sizes such that at least 85% of the material by weight shall be between 4" and 8" in diameter, 50% of which shall be larger than 6" in diameter.	50%
Fill Stone	Stone that fills the voids between the larger stone: Cobble- rounded river rock	Fill stone shall have a gradation of sizes such that at least 85% of the material by weight shall be between 1" and 6" in diameter, 50% of which shall be larger than 3" in diameter.	20%



TYPICAL GEOTEXTILE LOCATION PLAN- DETAIL 'A'

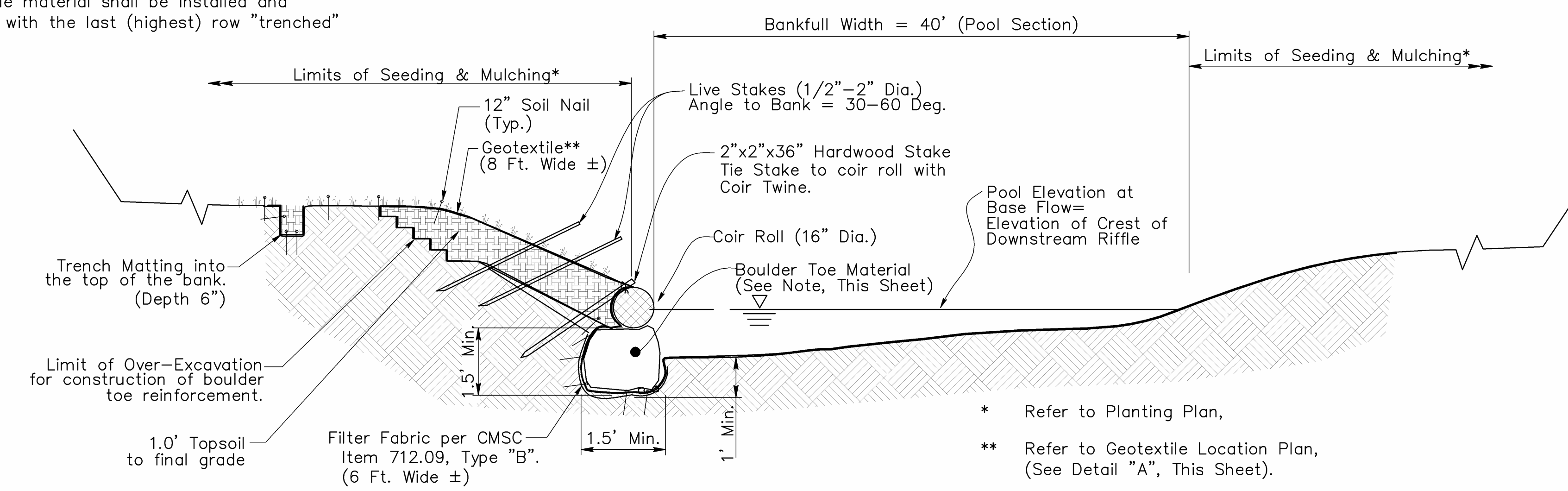
LEGEND Not to Scale NOTES

LEGEND

- [Symbol] Limits of boulder toe, coir roll, and geotextile reinforcement**; refer to Detail "C", (This Sheet).
- [Symbol] Riffle-Run Complex
- [Symbol] Pool
- [Symbol] Live Stake (Typ.)
- [Symbol] Coir Roll (Typ.)
- [Symbol] Hardwood Stake (Typ.)

NOTES

- ** Geotextile shall be an Erosion Control Mat, Type C per 712.11 or approved equivalent:
 - 70% Straw/30% Coconut Fiber
 - Photodegradable Polypropylene Netting



CHANNEL REINFORCEMENT DETAIL - DETAIL 'C'

Not to Scale

- * Refer to Planting Plan,
- ** Refer to Geotextile Location Plan, (See Detail "A", This Sheet).

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Job No. 2009-0543
Date January, 2011
Scale Not to Scale
Drawn By: GDT

COLUMBUS AND FRANKLIN COUNTY METRO PARKS
WETLAND AND STREAM AS-BUILT PLAN
AT
THE FORMER EASTSIDE NURSERY SITE
6723 LITOPOLIS ROAD, CANAL WINCHESTER, OHIO 43110
STREAM DETAILS

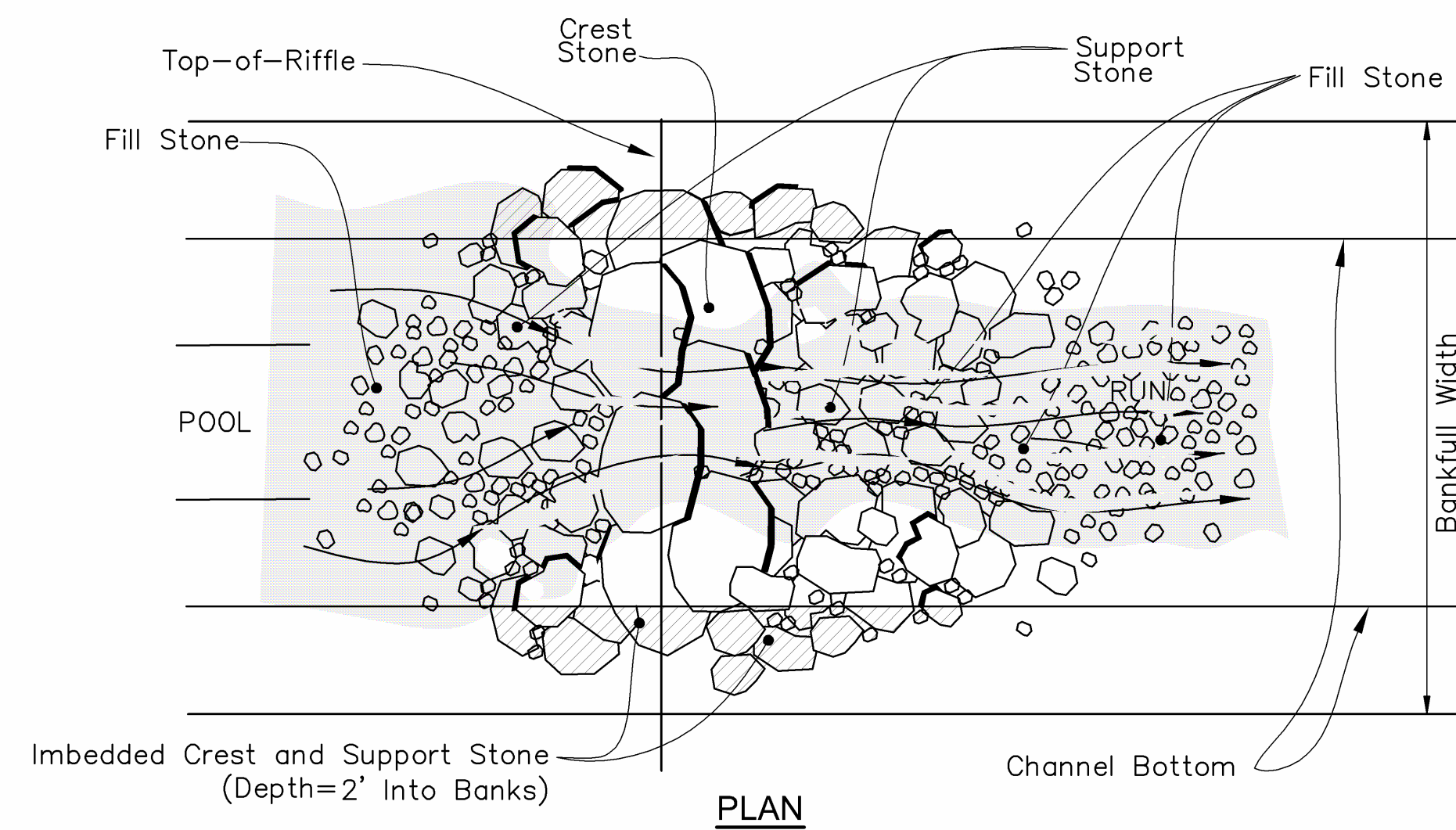
EMHT
Erosion Management & Technology, Inc.
Engineers • Surveyors • Planners • Scientists
Phone: 614.775.6500 Fax: 614.775.5448
emht.com

COLUMBUS AND FRANKLIN COUNTY METRO PARKS
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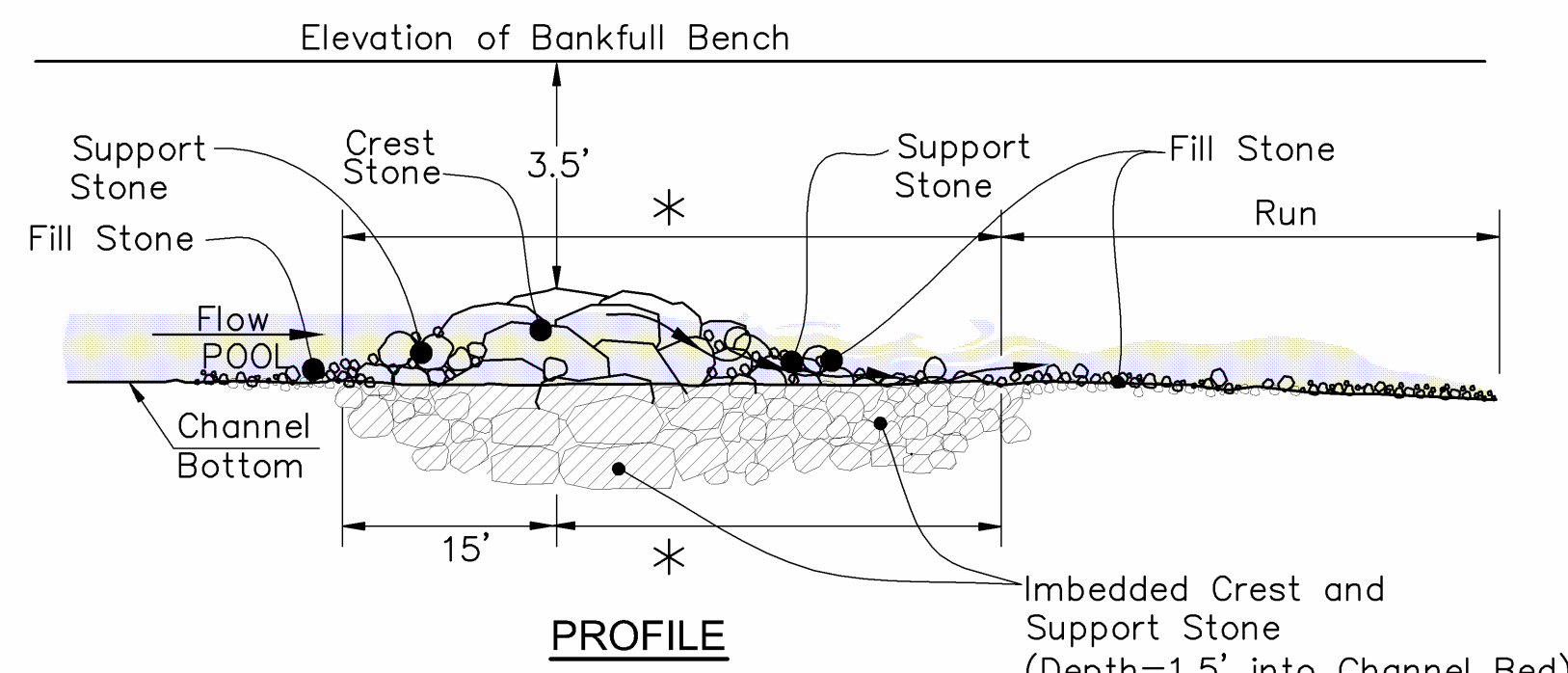
MARK	DATE	REVISIONS

Sheet 12/39

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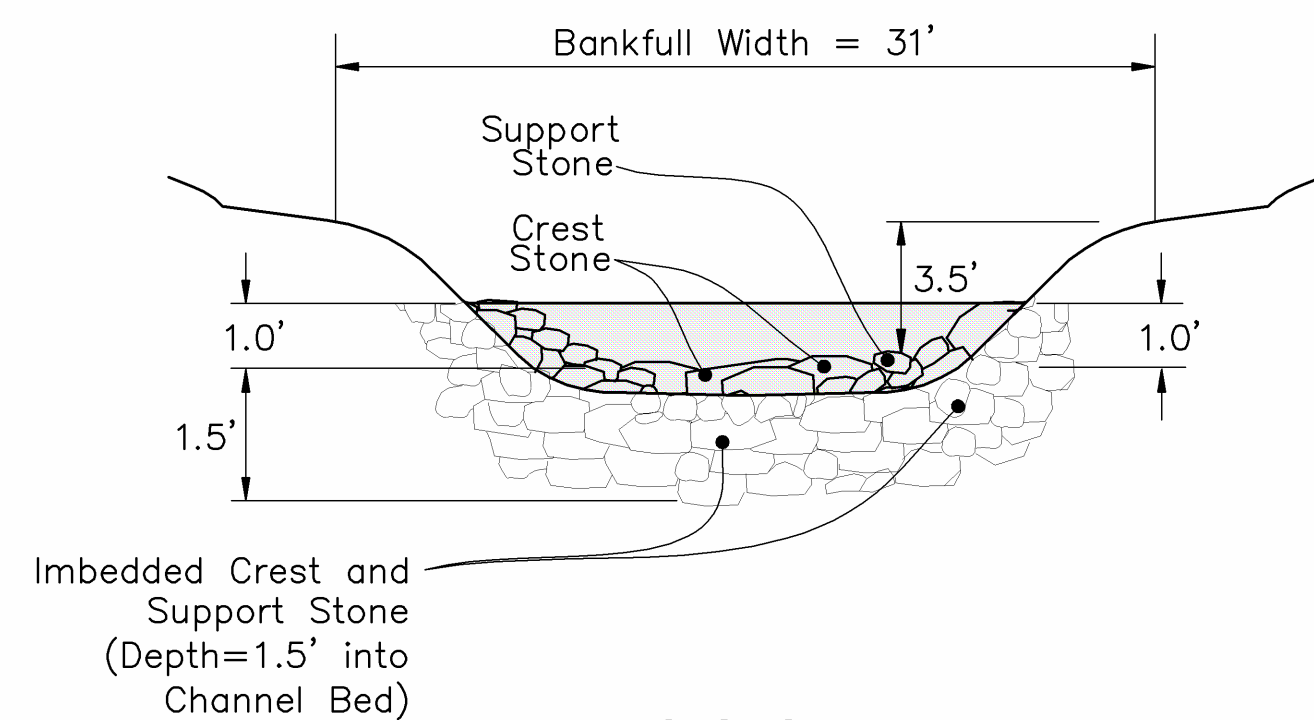


PLAN



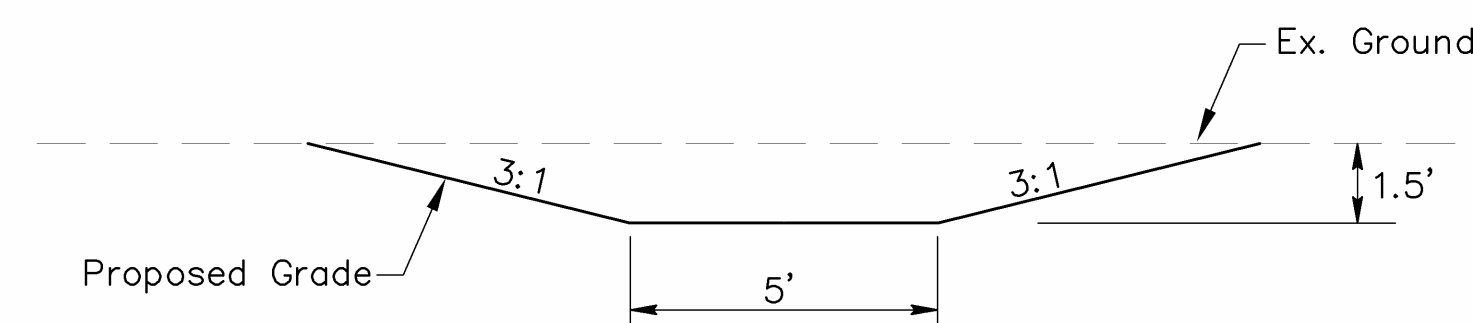
PROFILE

* See Stream Profile for Riffle Lengths



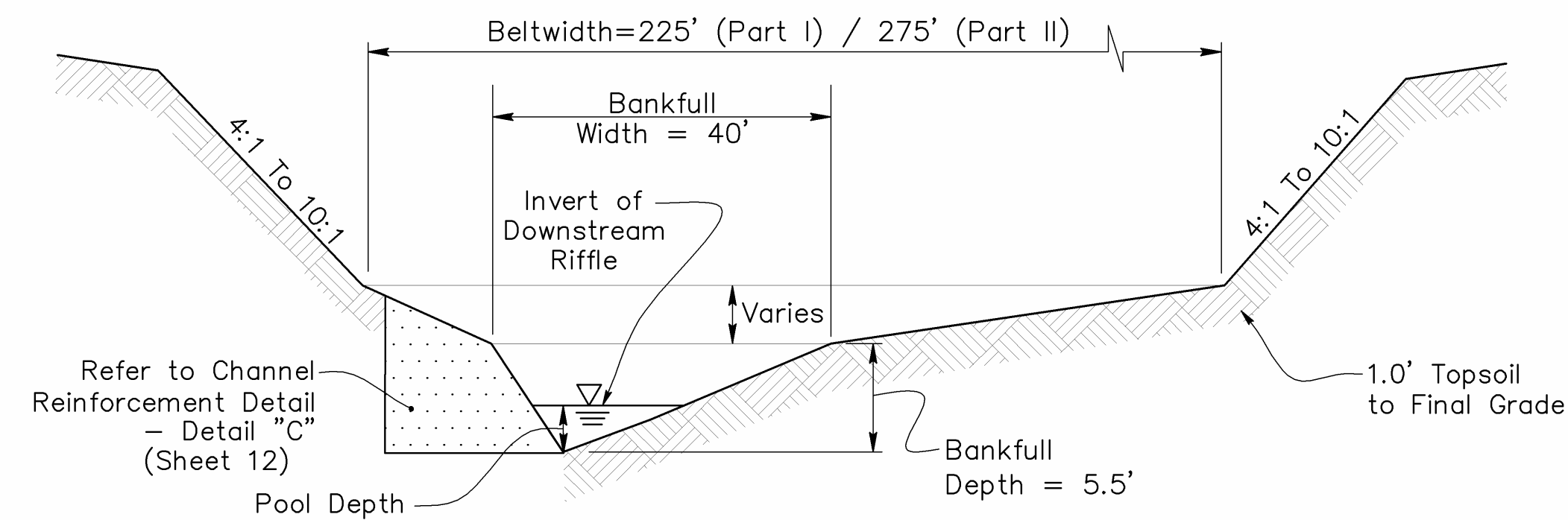
SECTION

ROCK RIFFLE DETAIL - DETAIL 'B'
Not to Scale

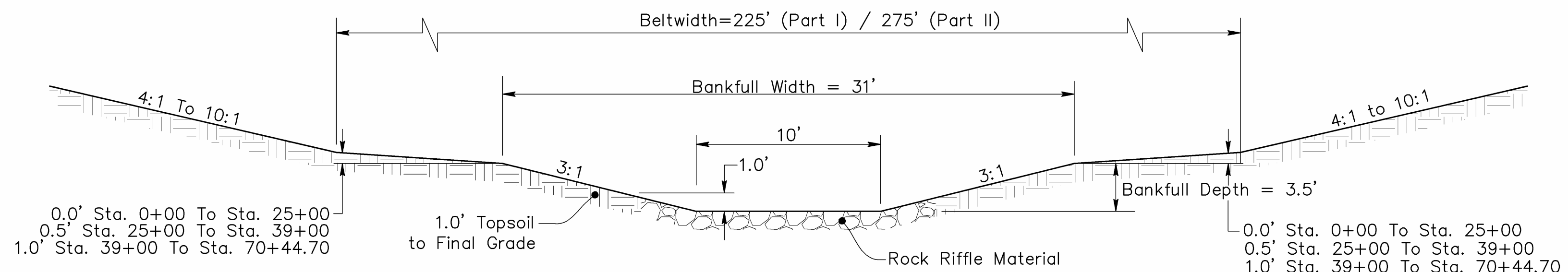


DITCH TYPICAL SECTION
Not To Scale

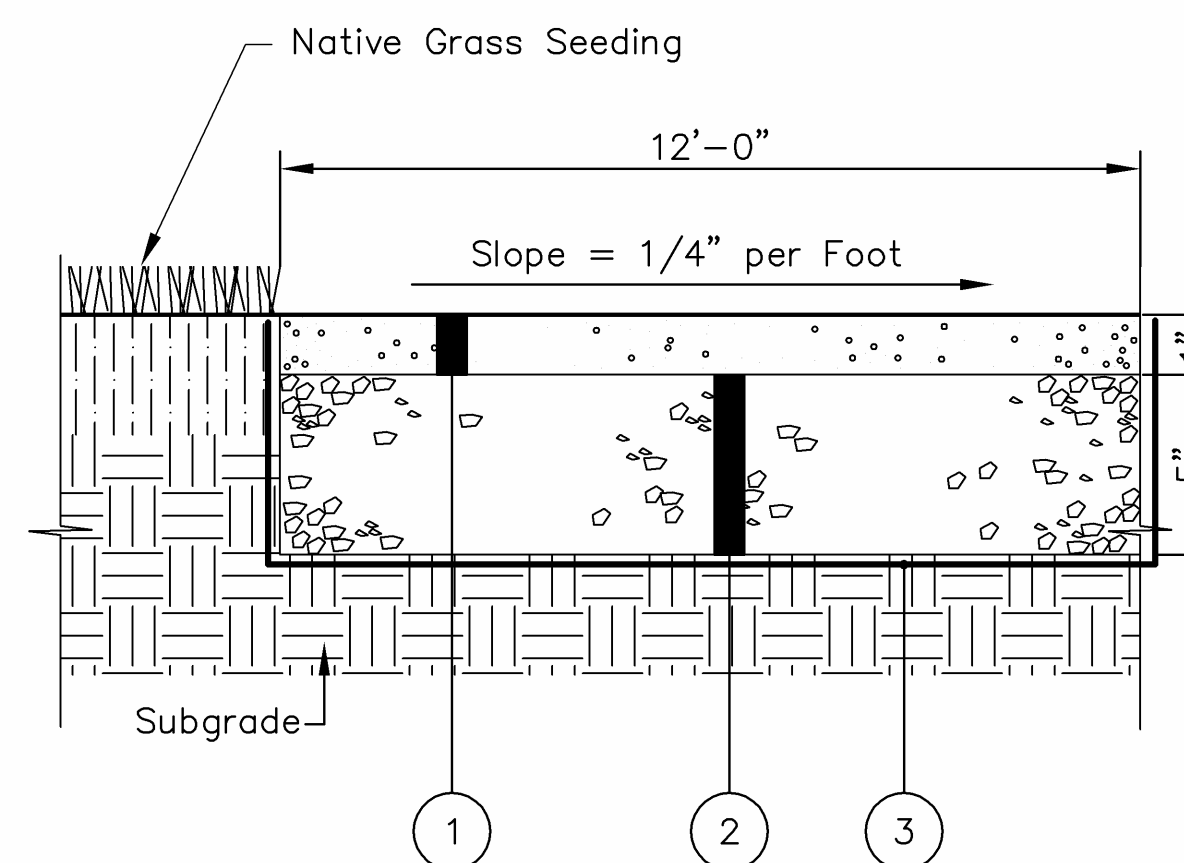
NOTE:
 The proposed ditch shall be stabilized with Native Grass Seeding and Mulching immediately after construction. See Native Grass Seeding specifications on sheet 2 and seeding table on sheet 14.



TYPICAL POOL SECTION (See Detail 'C', Sheet 12)
Not to Scale



TYPICAL RIFFLE SECTION (See Detail 'B')
Scale: 1"=5'



- ① #10 Limestone Screenings with Dust Surface Course
- ② No. 57 Limestone Compacted
- ③ Filter Fabric, Type B

PEDESTRIAN PATH DETAIL
Not To Scale

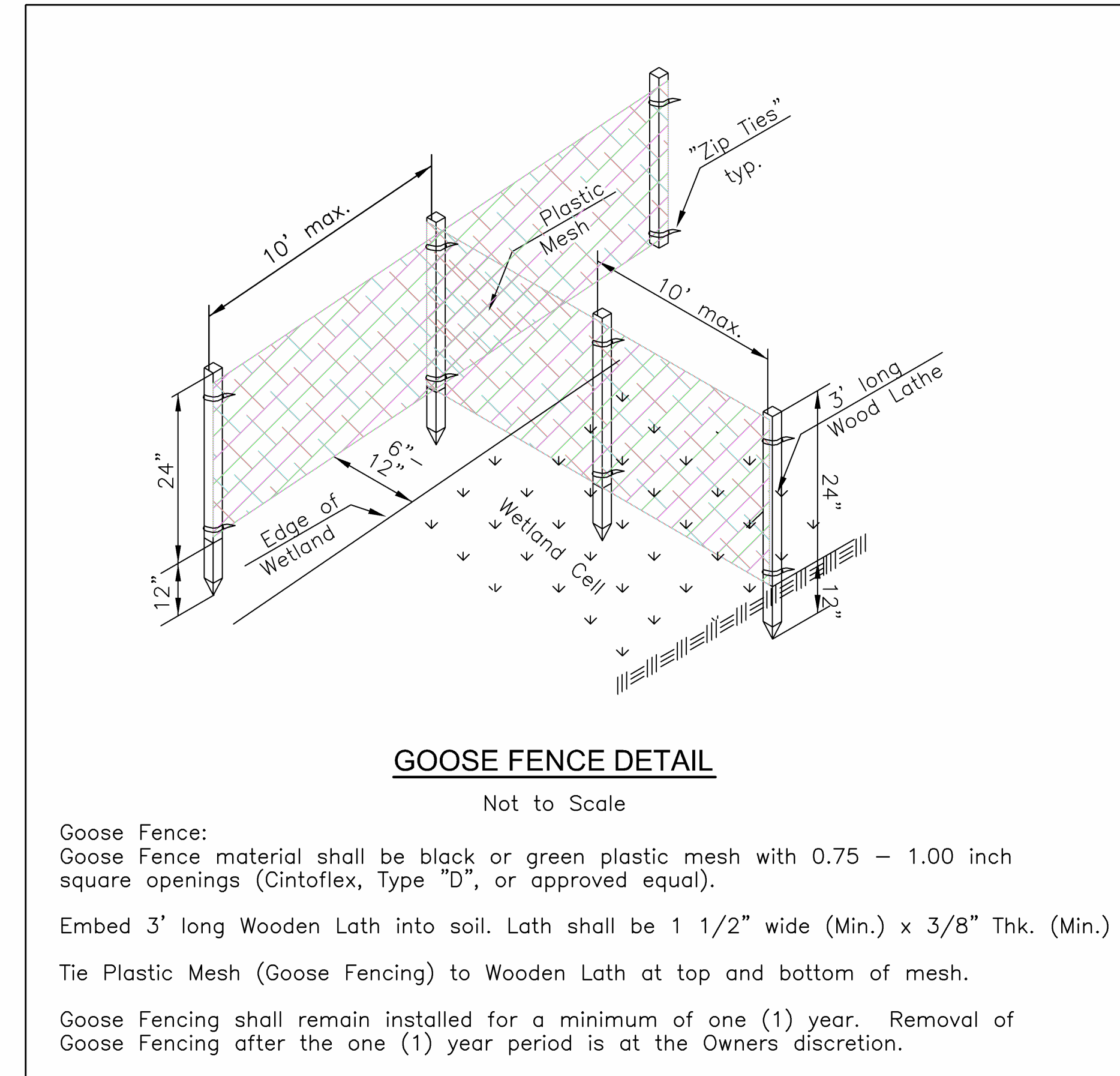
Job No. 2009-0543	Date January, 2011	Drawn By GDT	Scale As Noted
COLUMBUS AND FRANKLIN COUNTY METRO PARKS WETLAND AND STREAM AS-BUILT PLAN AT THE FORMER EASTSIDE NURSERY SITE 6723 LITOPOLIS ROAD, CANAL WINCHESTER, OHIO 43110 STREAM DETAILS			
 Evans, Melschwert, Hambleton & Jilka, Inc. Engineers • Surveyors • Planners • Scientists Phone: 614.775.4500 • Fax: 614.775.3448 emht.com			
COLUMBUS AND FRANKLIN COUNTY METRO PARKS 1069 WEST MAIN STREET, WESTERVILLE, OH 43081-1181 (614) 891-0700 (614) 896-6208 FAX:			
REVISIONS			

MARK	DATE	REVISIONS




\\C:\HW\1201\Project\1209054\1209054.dwg [Project] 1209054.dwg [Sheet] Wetland As-Built\1209054.dwg [1/21/2011 1:28:21 PM] - PlotterBy: JCRAMER [1/21/2011 1:28:21 PM] - SavedBy: JCRAMER [1/21/2011 1:28:21 PM] - Information: ARRA Logo.rpt - Scale: As Noted

WETLAND SEEDING TABLE																																																						
TYPE		APPLICATION RATES	APPLICATION DATES																																																			
OVER SEED: Annual Ryegrass or Oats (Grain) or Winter Rye (Grain)	(<i>Lolium multiflorum</i>) (<i>Secale cereale</i>) (<i>Avena sativa</i>)	40 Lbs./Acre 15 Lbs./Acre 40 Lbs./Acre	March to October March to October October to February																																																			
(Forested/Emergent Wetland Buffer) PERMANENT SEED: Native Grass Custom Seed Mix																																																						
	<table border="1"> <thead> <tr> <th>Common Name</th> <th>Scientific Name</th> <th>Percentage</th> </tr> </thead> <tbody> <tr><td>Little bluestem</td><td><i>Andropogon scoparius</i></td><td></td></tr> <tr><td>Big bluestem</td><td><i>Andropogon gerardii</i></td><td>15</td></tr> <tr><td>Riverbank wild rye</td><td><i>Elymus riparius</i></td><td>10</td></tr> <tr><td>Silky wild rye</td><td><i>Elymus villosus</i></td><td>10</td></tr> <tr><td>Virginia wild rye</td><td><i>Elymus virginicus</i></td><td>10</td></tr> <tr><td>Indian grass</td><td><i>Sorghastrum nutans</i></td><td>10</td></tr> <tr><td>Switchgrass</td><td><i>Panicum virgatum</i></td><td>10</td></tr> <tr><td>Black-eyed susan</td><td><i>Rudbeckia hirta</i></td><td>7</td></tr> <tr><td>Ox-eye sunflower</td><td><i>Heliopsis helianthoides</i></td><td>7</td></tr> <tr><td>Gray-headed coneflower</td><td><i>Ratibida pinnata</i></td><td>6</td></tr> <tr><td>Cup plant</td><td><i>Silphium perfoliatum</i></td><td>4</td></tr> <tr><td>Tall white bread tongue</td><td><i>Penstemon digitalis</i></td><td>4</td></tr> <tr><td>Ohio spiderwort</td><td><i>Tradescantia ohioensis</i></td><td>3</td></tr> <tr><td>Joe pye weed</td><td><i>Eupatorium fistulosum</i></td><td>2</td></tr> <tr><td>Wild bergamot</td><td><i>Monarda fistulosa</i></td><td>1</td></tr> </tbody> </table>	Common Name	Scientific Name	Percentage	Little bluestem	<i>Andropogon scoparius</i>		Big bluestem	<i>Andropogon gerardii</i>	15	Riverbank wild rye	<i>Elymus riparius</i>	10	Silky wild rye	<i>Elymus villosus</i>	10	Virginia wild rye	<i>Elymus virginicus</i>	10	Indian grass	<i>Sorghastrum nutans</i>	10	Switchgrass	<i>Panicum virgatum</i>	10	Black-eyed susan	<i>Rudbeckia hirta</i>	7	Ox-eye sunflower	<i>Heliopsis helianthoides</i>	7	Gray-headed coneflower	<i>Ratibida pinnata</i>	6	Cup plant	<i>Silphium perfoliatum</i>	4	Tall white bread tongue	<i>Penstemon digitalis</i>	4	Ohio spiderwort	<i>Tradescantia ohioensis</i>	3	Joe pye weed	<i>Eupatorium fistulosum</i>	2	Wild bergamot	<i>Monarda fistulosa</i>	1	7 lbs/acre	October 1st – May 15th			
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Over seed shall be applied with the permanent seed to quickly stabilize the site. This is required because the permanent seed takes much longer to germinate than the over seed.



Goose Fence shall only be installed in Wetland Cell 1A and 1B. See Specification on Sheet 2.

	COLUMBUS AND FRANKLIN COUNTY METRO PARKS WETLAND AND STREAM AS-BUILT PLAN AT THE FORMER EASTSIDE NURSERY SITE 6723 LITOPOLIS ROAD, CANAL WINCHESTER, OHIO 43110 WETLAND PLANTING PLAN	Job No. 2009-0543 Date January, 2011 Drawn By RRR Scale As Noted
	E.M.H.T. & Associates Evans, Melchior, Hombach & Thron, Inc. Engineers • Surveyors • Planners • Scientists Phone: 614.775.6500 Fax: 614.775.3448 emht.com	
	COLUMBUS AND FRANKLIN COUNTY METRO PARKS 1069 WEST MAIN STREET WESTERVILLE, OH 43081-1181 (614) 891-0700 (614) 895-6208 FAX:	
REVISIONS		
MARK DATE		
Sheet		23/39

