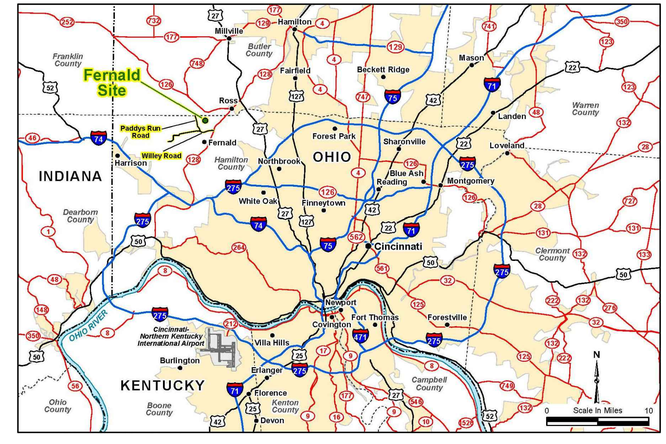
UNITED STATES
DEPARTMENT OF ENERGY
OFFICE OF LEGACY MANAGEMENT
FERNALD PRESERVE
PADDYS RUN
STREAMBANK STABILIZATION

SITE PLAN

INDEX OF DRAWINGS

SHEET	TITLE	DRAWING NO.
1	TITLE SHEET	S11755-R01-T01-D+ 1
2	PROJECT SITE PLAN	S11756-R01-F01-D+ 1
3	SITE OVERVIEW / CLEAR AND GRUB PLAN / LAYOUT PLAN	S11757-R01-C01-D+ 1
4	MATERIALS PLAN	S11758-R01-C02-D+ 1
5	FINISH GRADING AND DRAINAGE PLAN	S11759-R01-C03-D+ 1
6	CROSS SECTION 1	S11760-R01-C04-D+ 1
7	CROSS SECTION 2	S11761-R01-C05-D+ 1
8	DETAILS	S11762-R01-C06-D+ 1
9	PLANTING PLAN	S12033-R01-L01-D+ 1



LOCATION MAP

DRAWING LEGEND

PLAN

- BOUNDARY OF WORK
- RAILROAD TRACK
- WIRE FENCE
- CHAIN LINK FENCE
- SPLIT RAIL FENCE
- PLASTIC FABRIC/ROPE FENCE W/ T-POST
- DRAINAGE DITCH/WATER LINE LIMITS
- EXISTING ASPHALT ROAD/PARKING LOT
- EXISTING UNIMPROVED DIRT ROAD
- TREES/SHRUBS/BRUSH
- GROUND LINE
- NEW TRAILS
- PROJECT ACCESS ROUTE
- UTILITY POLE TO BE REMOVED
- UTILITY POLE TO REMAIN
- UNDERGROUND DRAINAGE CULVERT
- XXXX EXISTING MONITORING WELL
- 191 HIGHWAY
- SLOPE/FLOW ARROW
- TOP OF SLOPE
- SURVEY CONTROL POINT
- T — O — W — BURIED – TELEPHONE/OPTICAL/WATER
- E — O — IP — BURIED – ELECTRICAL/GAS LINES/ IRRIGATION PIPE
- IP ABOVE GROUND IRRIGATION PIPE
- EFF EFFLUENT GROUNDWATER, LEACHATE LINES
- RW RAW WATER (4"ø ABANDONED)
- OHE OVERHEAD ELECTRICAL LINE TO BE REMOVED
- OHE OVERHEAD ELECTRICAL LINE TO REMAIN

N

SCALE IN FEET

500 250 0 500 100 1500

CONTOUR INTERVAL = 1 FOOT

ABBREVIATIONS

APPROX.	APPROXIMATE	1 LDB	LEFT DESCENDING BANK	THK.	THICK
BOTT.	BOTTOM	MAX.	MAXIMUM	TYP	TYPICAL
BKF	BANKFULL ELEVATION	MIN.	MINIMUM	UG	UNDERGROUND
℄	CENTER LINE	MW	MONITORING WELL	VERT.	VERTICAL
CLR	CLEAR	N	NORTHING		
CONC.	CONCRETE	NA	NOT APPLICABLE		
CONT.	CONTINUATION	NO.	NUMBER		
CSP	CORRUGATED STEEL PIPE	NOM	NOMINAL		
DIA. OR ø	DIAMETER	N.I.C.	NOT IN CONTRACT		
DOE	DEPARTMENT OF ENERGY	NTS	NOT TO SCALE		
EA.	EACH	OC	ON CENTER		
E	EASTING	OD	OUTSIDE DIAMETER		
EL. OR ELEV.	ELEVATION	OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION		
EQUA.	EQUATION	PLC'S.	PLACES		
EXIST.	EXISTING	1 RDB	RIGHT DESCENDING BANK		
GA	GAUGE	R.O.W.	RIGHT-OF-WAY		
GPM	GALLONS PER MINUTE	SCH	SCHEDULE		
HORIZ.	HORIZONTAL	SHT	SHEET		
INV	INVERT	STA.	STATION		

SECTION

- 5210 EXISTING CONTOUR
- BUILDING/STRUCTURE
- EXISTING ASPHALT SURFACE
- WETLANDS
- ACCESS ROAD
- PROPOSED SOIL ENCAPSULATED LIFTS
- PROPOSED REGRADING FABRIC & PLANT SLOPE
- PROPOSED ROCK TOE
- EXISTING RIPRAP
- EXISTING VEGETATION TO BE REMOVED
- COMMON BORROW
- COMPACTED SOIL
- UNDISTURBED SOIL
- ROAD BASE
- SAND OR BEDDING MATERIAL
- GRAVEL OR DRAIN ROCK

DETAIL SYMBOL

1 — DETAIL NUMBER/SECTION LETTER

2 — SHEET ON WHICH DETAIL/SECTION IS TAKEN FROM

3 — SHEET ON WHICH DETAIL/SECTION IS DRAWN

FINAL DESIGN

REVISION NO.	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	PROJECT A/E	APPROVAL
1	8/27/14	Addendum No. 3	MCK	BK	MM	JH

U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION, COLORADO

Work Performed by
The S.M. Stoller Corporation
Under DOE Contract
No. DE-LM0000415

PROJECT LOCATION
FERNALD PRESERVE
HARRISON, OHIO

REFERENCE
APEX
155 Tri County Pkwy, Suite 250
Cincinnati, Ohio
Phone: (513) 771-3617

APPROVALS		DATE
DRAWN BY:	MCK (APEX)	7/29/14
ENGINEER	CGN (APEX)	7/29/14
PROJECT ENGINEER	M.W. MADRIL	7/29/14
ENGINEERING MANAGER	M. MADRIL	7/29/14
PROJECT LEAD	J. HOMER	7/29/14
SITE MANAGER/LEAD	B. HERTEL	7/29/14

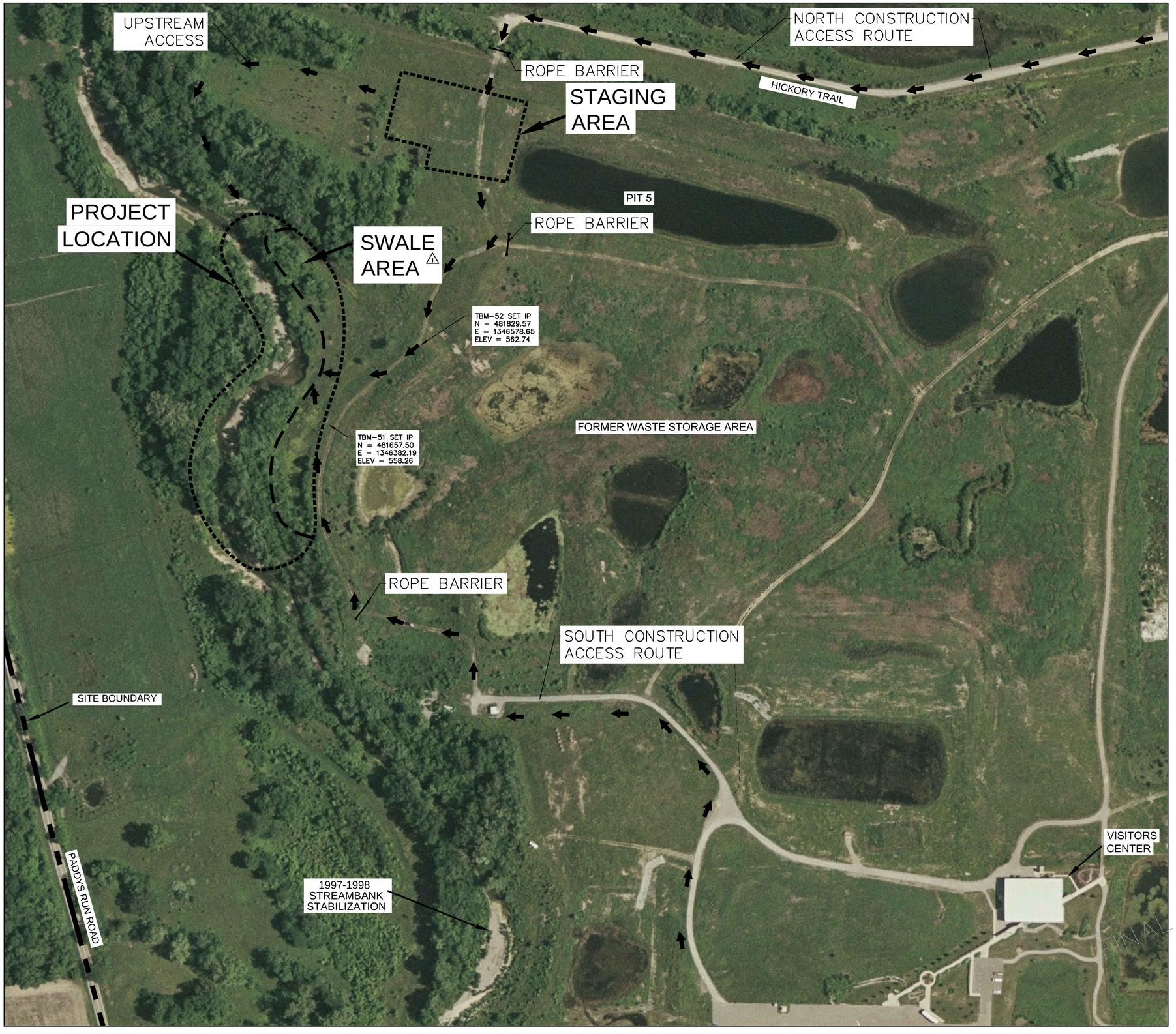
PADDYS RUN
STREAMBANK STABILIZATION

TITLE SHEET

PROJECT NO. LTS-111-0051-49-001

DRAWING NO. S11755-R01-T01-D+

SHT. 1 OF 9



N

SCALE IN FEET
100 50 0 100 200 300

CONTOUR INTERVAL = 1 FOOT

REFERENCE BASE DATA

1. AERIAL:
LM\GIS\SITES_PROD\SITES\OH\FERNALD\
IMAGES\2013\20130604_HINAMAN_FIXEDWINGAERIALS/822-3_RECT.JPG.

2. SURVEY CONTROL: TECUMSEH SURVEYING, 4/15/2014
SITES_DEV\\LM\GIS\SITES\OH\FERNALD\ORIG\20140415_FERNALD_PADDYS_
RUN_BENCHMARKS---TECUMSEH_SURVEYING ---SSP

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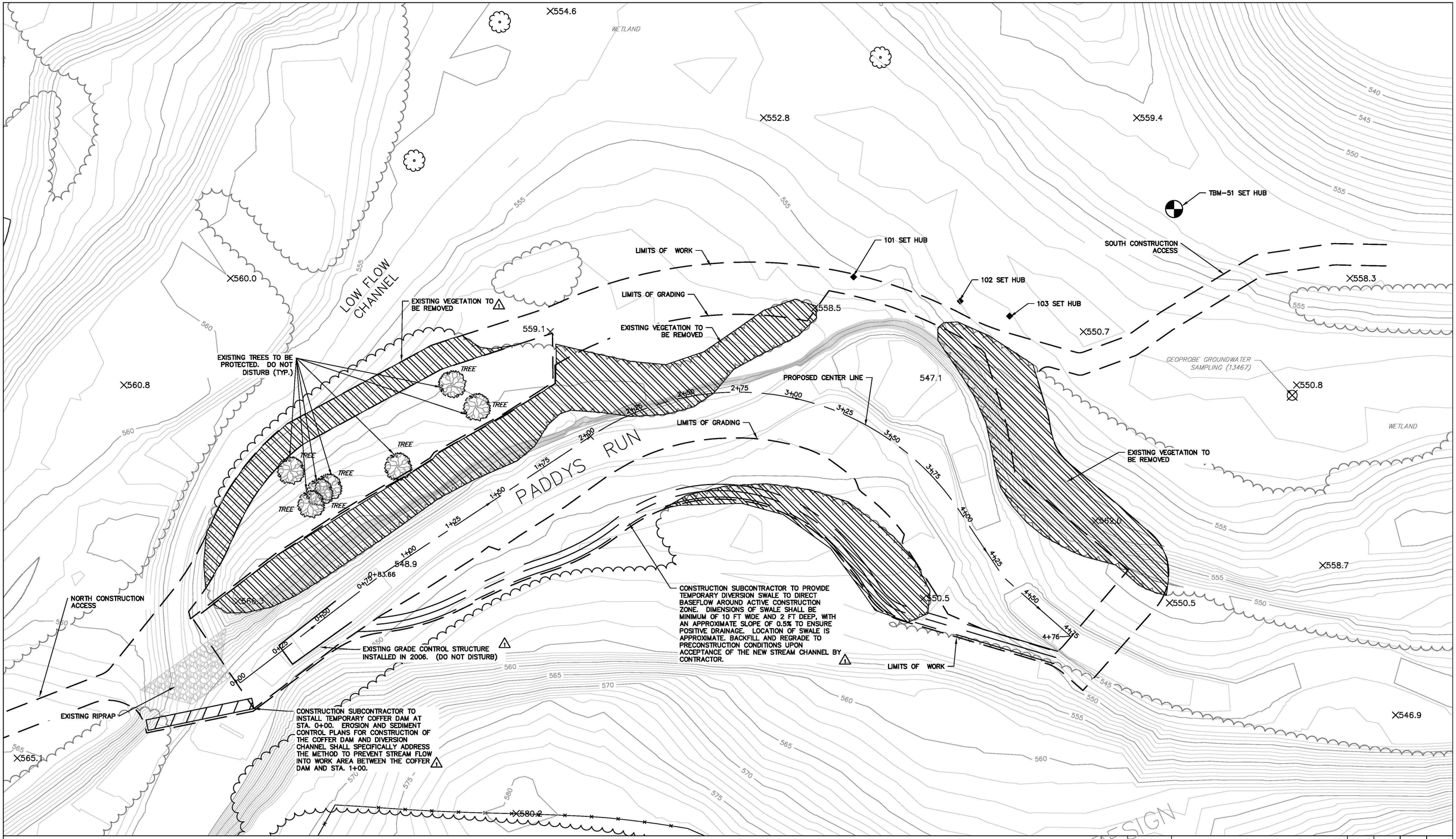
PROJECT LEAD:	J. HOMER	7/29/14
SITE MANAGER/LEAD:	B. HERTEL	7/29/14

STREAMBANK STABILIZATION
AT PADDYS RUN

PROJECT SITE PLAN

PROJECT NO. LTS-111-0051-49-001
DRAWING NO. S11756-R01-F01-D+
SHT. 2 OF 9

REFERENCE
APEX
155 Tri County Pkwy, Suite 250
Cincinnati, Ohio
Phone: (513) 771-3617



SET HUBS			
HUBS	NORTHING	EASTING	ELEVATION
101	481807.80	1346350.65	555.49
102	481757.79	1346339.34	552.07
103	481734.66	1346332.33	552.78
TBM-51 SET IP	481657.50	1346382.19	558.26

SCALE IN FEET
20 10 0 20 40 80
CONTOUR INTERVAL = 1 FEET

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GRAND JUNCTION, COLORADO

Work Performed by
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Under DOE Contract No. DE-LM000415

PROJECT LOCATION: FERNALD PRESERVE, HARRISON, OHIO

REFERENCE: APEX, 155 Tri County Pkwy, Suite 250, Cincinnati, Ohio, Phone: (513) 771-3617

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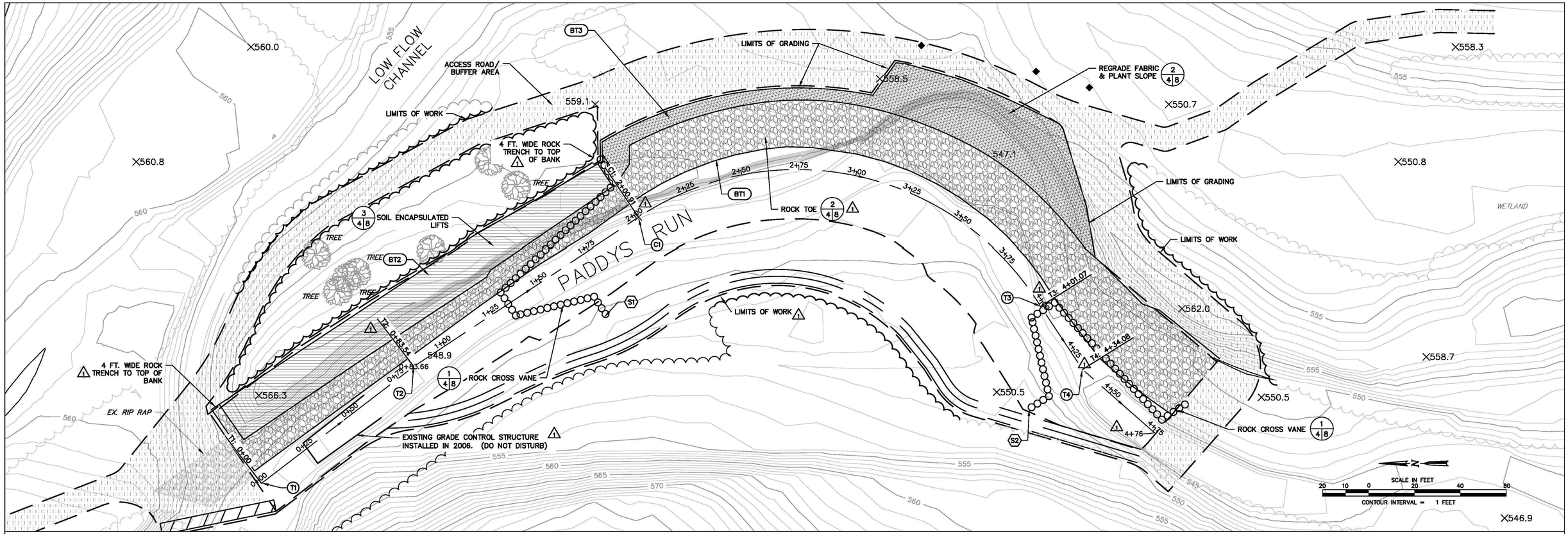
SITE MANAGER/LEAD	B. HERTEL	7/29/14

STREAMBANK STABILIZATION AT PADDYS RUN

SITE OVERVIEW
CLEAR AND GRUB PLAN
LAYOUT PLAN

PROJECT NO. LTS-111-0051-49-001
DRAWING NO. S11757-R01-C01-D+
SHT. 3 OF 9



STAKE OUT TABLE

ALIGNMENT SEGMENT	TYPE	START STATION	NORTHING	EASTING	LENGTH	RADIUS	DIRECTION	END STATION	NORTHING	EASTING	DELTA	CHORD LENGTH	DEGREE OF CURVATURE BY ARC
T1	LINE	0+00	482099.04	1346165.62	83.54	N/A	S33°02'58"E	0+83.54	482029.02	1346211.18	N/A	N/A	N/A
T2	LINE	0+83.54	482029.02	1346211.18	117.37	N/A	S33°28'22"E	2+00.91	481755.85	1346237.37	N/A	N/A	N/A
C1	CURVE	2+00.91	481755.85	1346237.37	200.16	125'	N/A	4+01.07	481737.56	1346209.89	91°44'56"	179.45	45°50'12"
T3	LINE	4+01.07	481737.56	1346209.89	33.01	N/A	S56°21'32"W	4+34.08	481706.07	1346182.21	N/A	N/A	N/A
T4	LINE	4+34.08	481706.07	1346182.21	41.92	N/A	S41°18'49"W	4+76.00	481706.07	1346182.21	N/A	N/A	N/A

STRUCTURE TABLE

STRUCTURE NO.	TYPE	UPSTREAM STA.	UPSTREAM ℄ ELEV.	DOWNSTREAM STA. LDB	DOWNSTREAM BKF ELEV LDB	DOWNSTREAM STA. ELEV RDB	DOWNSTREAM BKF ELEV. RDB
S1	UP STREAM CROSS VANE	1+32.85	547.00	2+01.03	552.5	1+65.95	550.4
S2	DOWN STREAM CROSS VANE	4+03.03	545.50	4+74.60	550.5	4+37.76	548.4

NOTE: ELEVATIONS SHOWN ARE TO THE TOP OF CREST STONE

BANK TREATMENT TABLE

PLAN SYMBOL	TREATMENT TYPE	TYPE	UPSTREAM STA.	UPSTREAM TOE OF TREATMENT ELEV.	UPSTREAM TOP OF TREATMENT ELEV.	DOWNSTREAM STA.	DOWNSTREAM TOE OF TREATMENT ELEV.	DOWNSTREAM TOP OF TREATMENT ELEV.
	BT1	ROCK TOE	0+00.0	548.00	552.00	4+76	542.8	552.00
	BT2	SOIL ENCAPSULATED LIFTS	0+04.0	552.00	556.30	2+00	552.00	560.00
	BT3	REGRADE. FABRIC & PLANT	2+04.0	552.00	559.20	3+95	552.00	N/A

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GRAND JUNCTION, COLORADO

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The S.M. Stoller Corporation
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PROJECT LOCATION: FERNALD PRESERVE, HARRISON, OHIO

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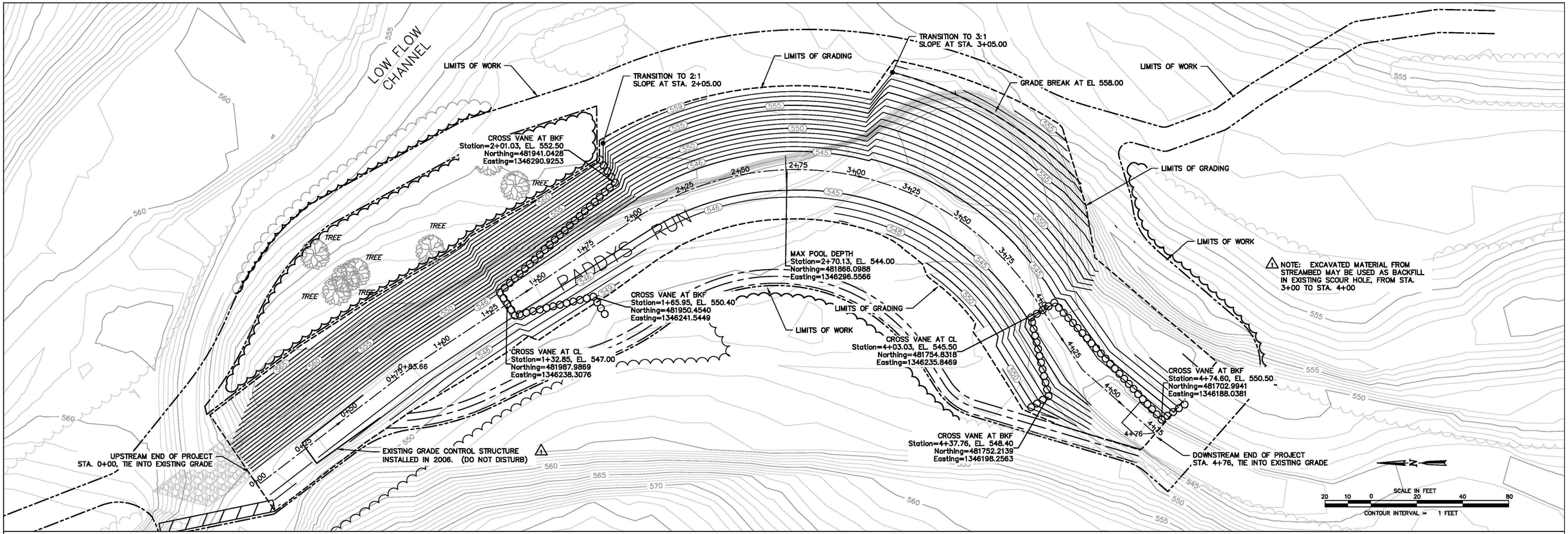
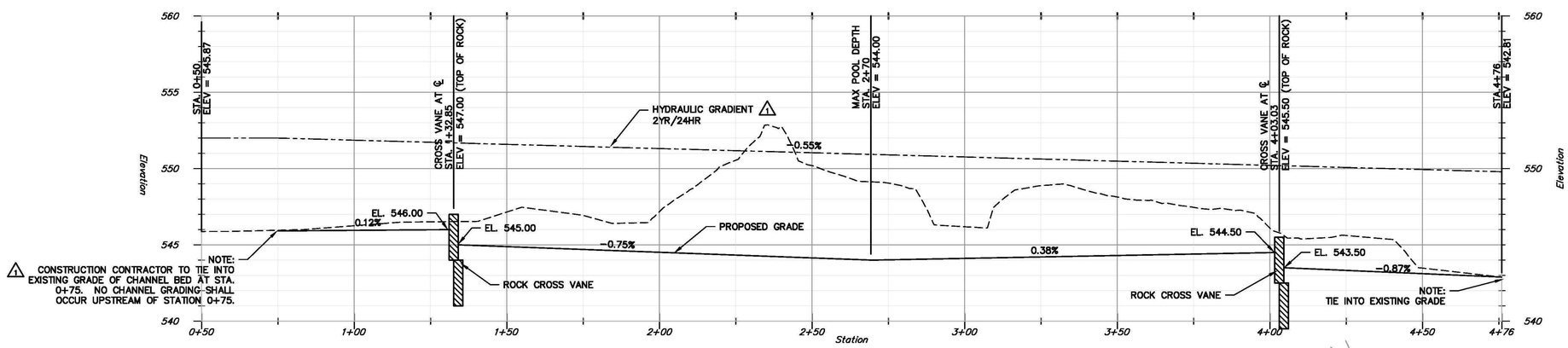
REFERENCE: APEX, 155 Tri County Pkwy, Suite 250, Cincinnati, Ohio, Phone: (513) 771-3617

STREAMBANK STABILIZATION AT PADDY'S RUN

LAYOUT & MATERIAL PLAN

PROJECT NO. LTS-111-0051-49-001
DRAWING NO. S11758-R01-C02-D+
SHT. 4 OF 9





PROFILE CL – PADDYS RUN
HORIZ: 1"=20'
VERT: 1"=4'

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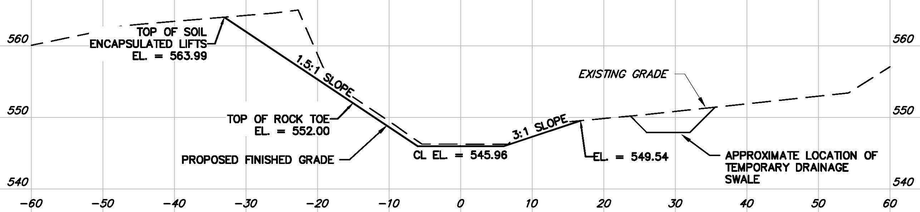
SITE MANAGER/LEAD	B. HERTEL	7/29/14

STREAMBANK STABILIZATION AT PADDYS RUN

FINISH
GRADING & DRAINAGE PLAN

PROJECT NO. LTS-111-0051-49-001
DRAWING NO. S11759-R01-C03-D+
SHT. 5 OF 9



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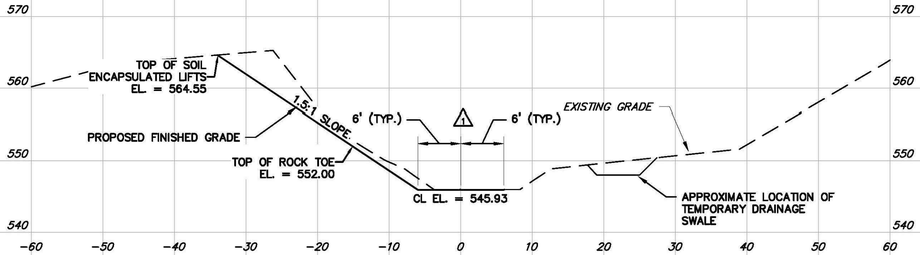

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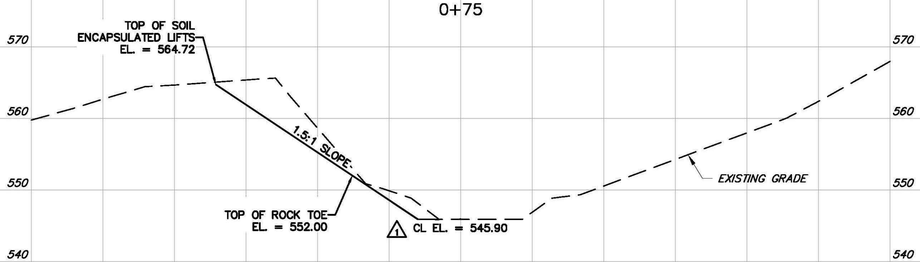

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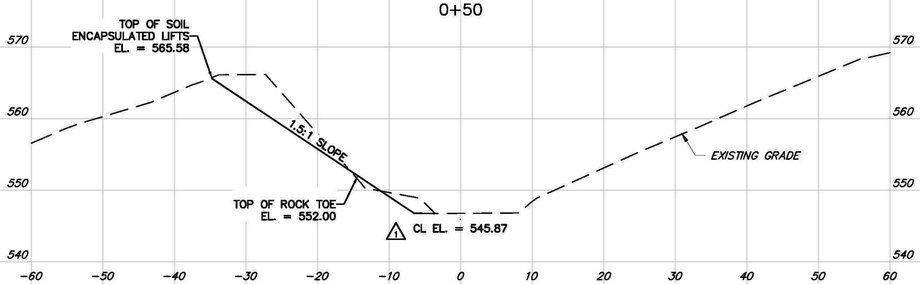

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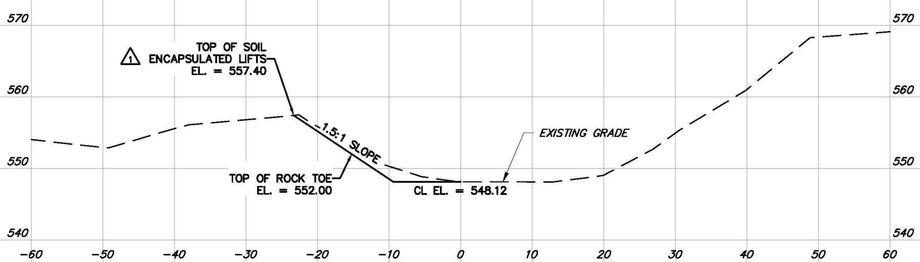

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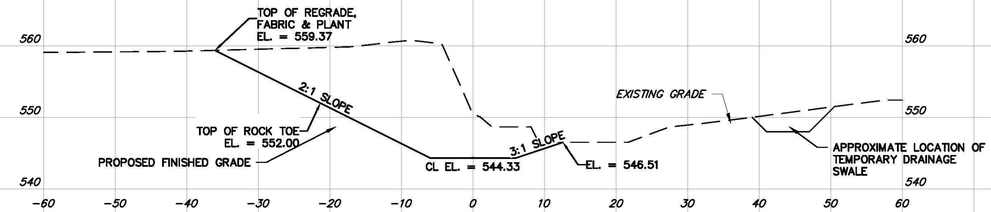

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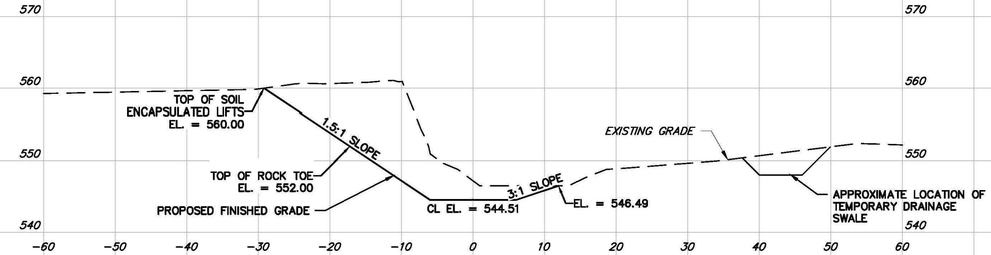

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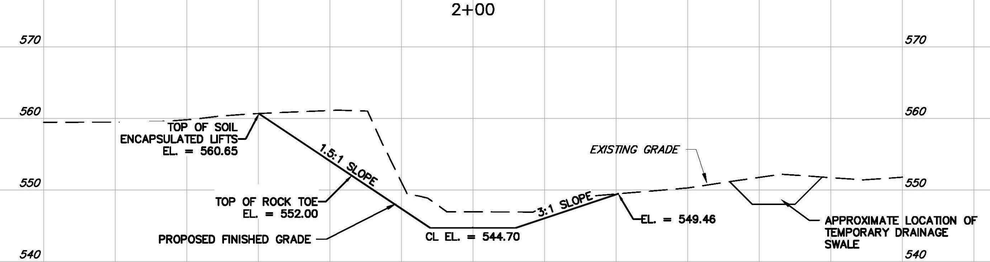

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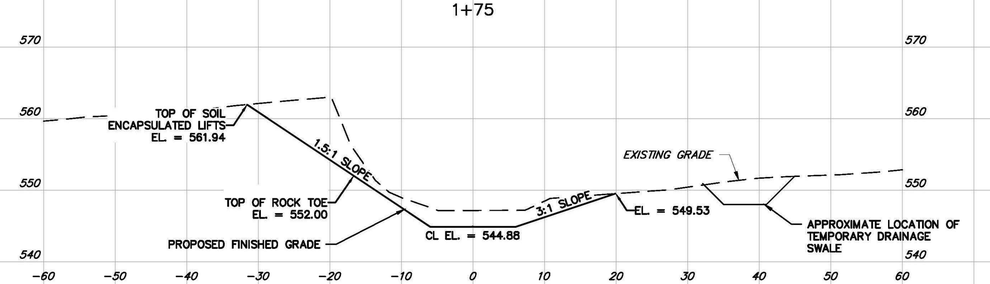

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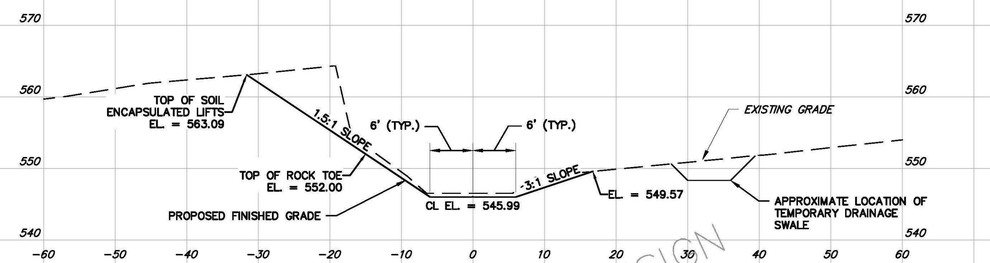

1+25

FINAL DESIGN

SCALE: 1"=10' (V)
1"=10' (H)

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1	8/27/14	Addendum No. 3	MCK	BK	MM	JH

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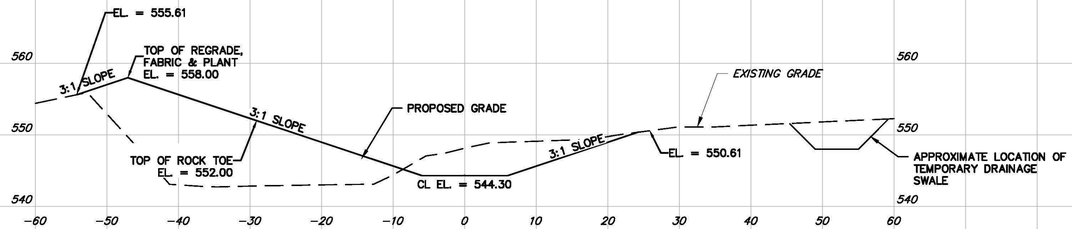
STREAMBANK STABILIZATION AT PADDYS RUN

CROSS SECTION SHEET 1

PROJECT NO. LTS-111-0051-49-001
DRAWING NO. S11760-R01-C04-D+
SHT. 6 OF 9



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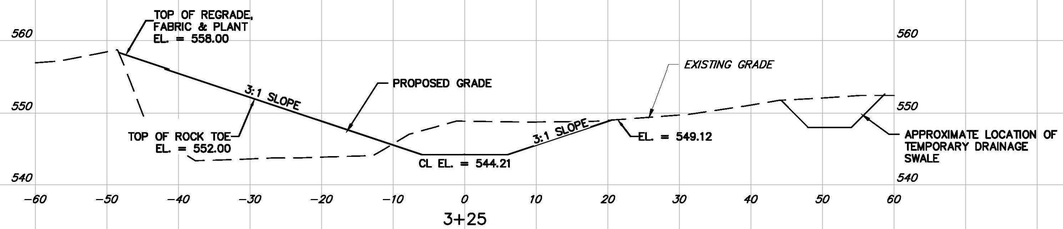

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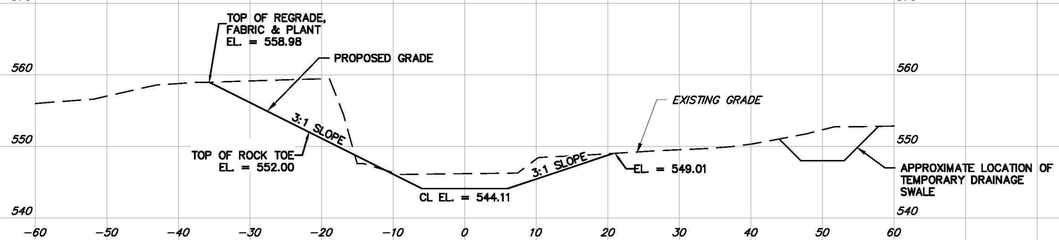

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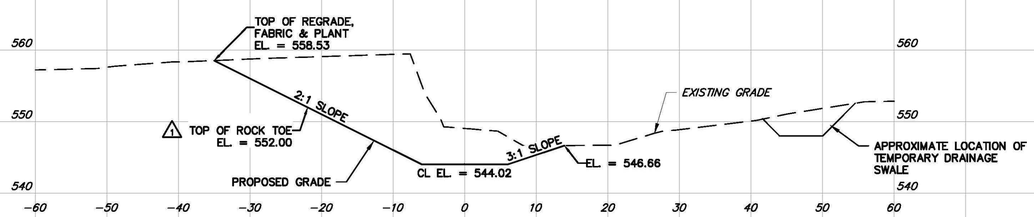

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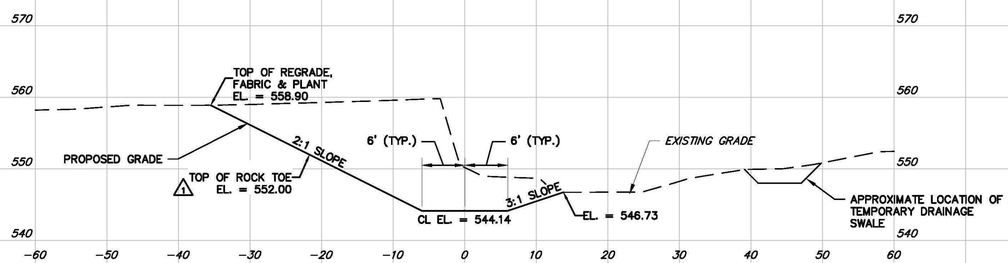

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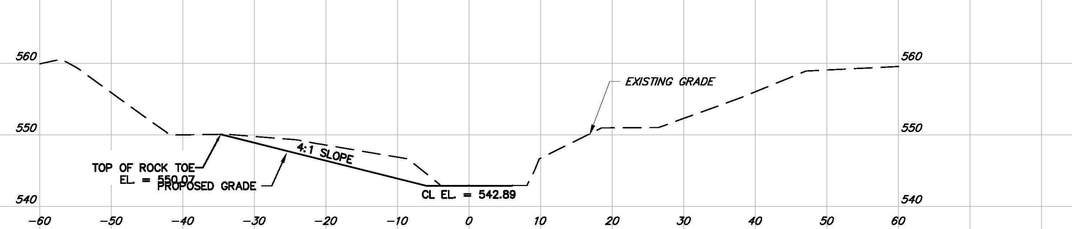

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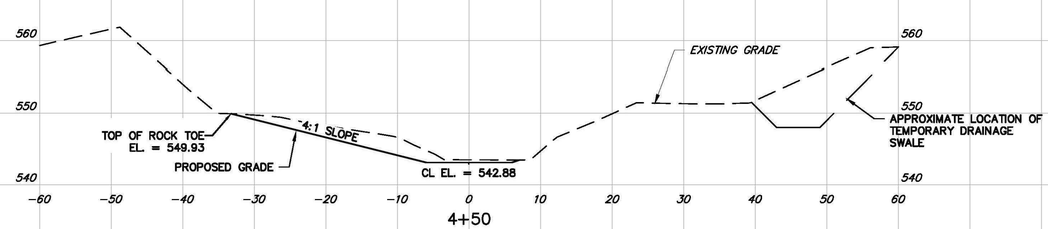

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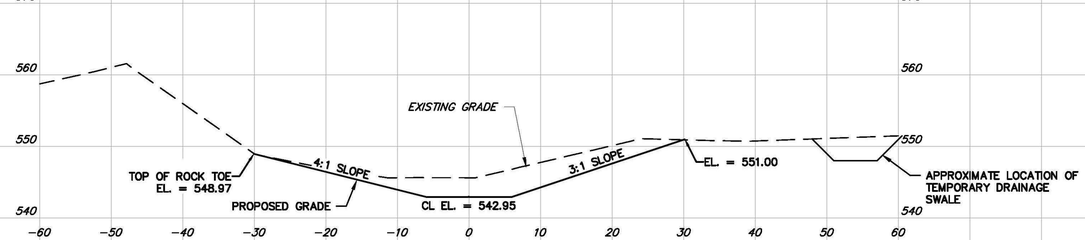

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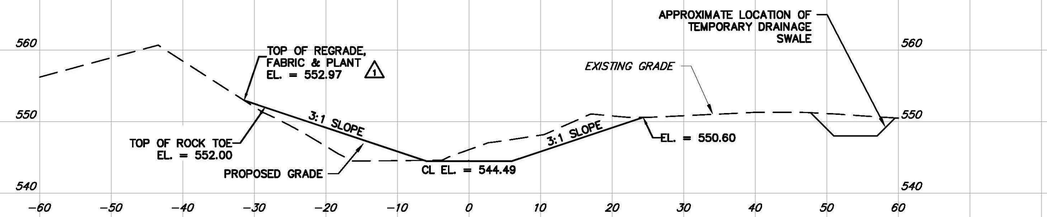

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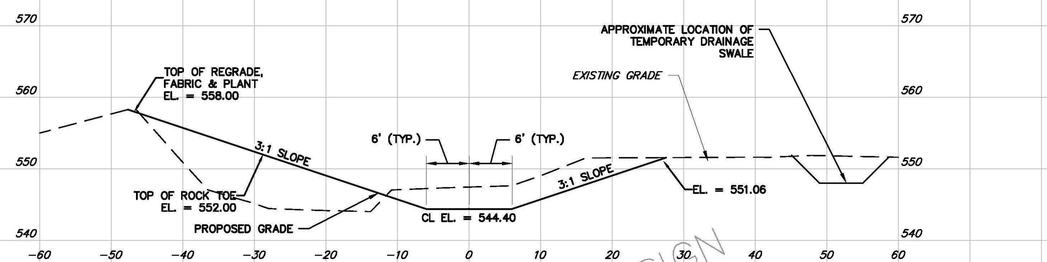


3+75

FINAL DESIGN

SCALE: 1"=10' (V)
1"=10' (H)

REVISION NO.	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	PROJECT A/E	APPROVAL
1	8/27/14	Addendum No. 3	MCK	BK	MM	JH

U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION, COLORADO

Work Performed by
The S.M. Stoller Corporation
Under DOE Contract No. DE-LM0000415

PROJECT LOCATION
FERNALD PRESERVE
HARRISON, OHIO

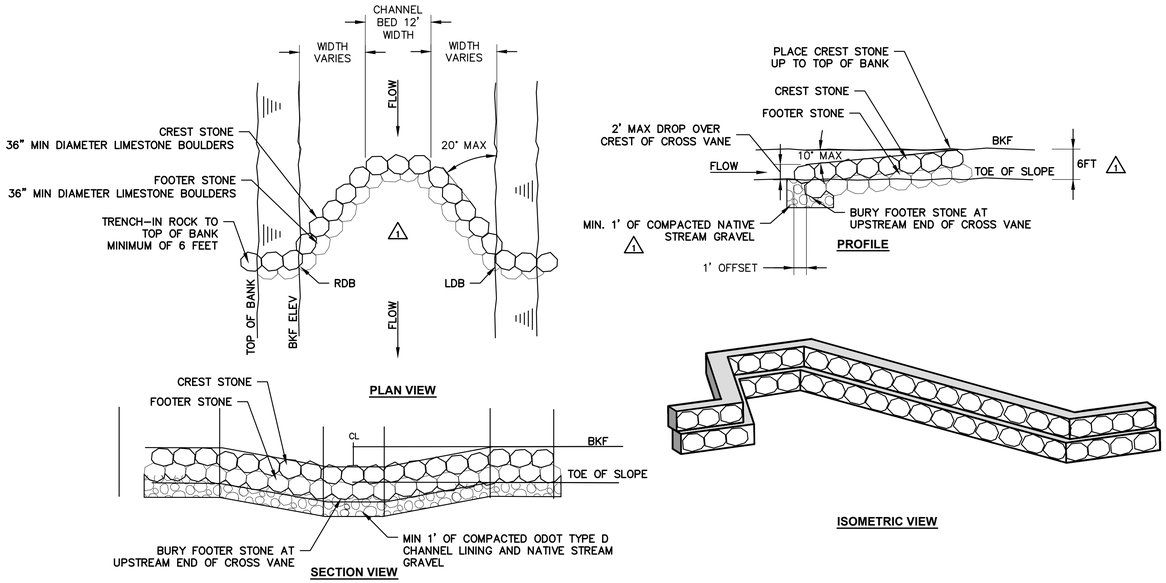
REFERENCE
APEX
155 Tri County Pkwy, Suite 250
Cincinnati, Ohio
Phone: (513) 771-3617

APPROVALS		
DRAWN BY	MCK (APEX)	7/29/14
ENGINEER	CGN (APEX)	7/29/14
PROJECT ENGINEER	M.W. MADRIL	7/29/14
ENGINEERING MANAGER	M. MADRIL	7/29/14
PROJECT LEAD	J. HOMER	7/29/14
SITE MANAGER/LEAD	B. HERTEL	7/29/14

STREAMBANK STABILIZATION AT PADDYS RUN

CROSS SECTION SHEET 2

PROJECT NO. LTS-111-0051-49-001
DRAWING NO. S11761-R01-C05-D+
SHT. 7 OF 9



1/4 8 **ROCK CROSS VANE**
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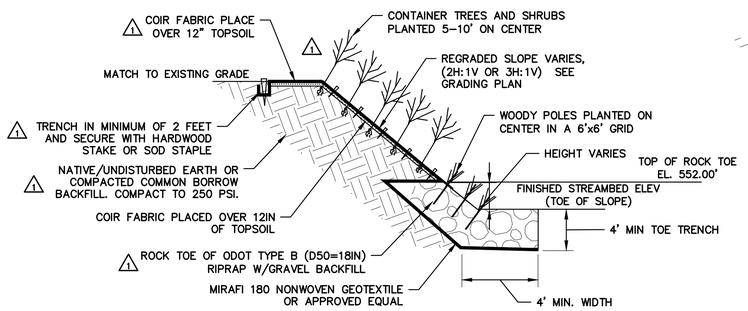
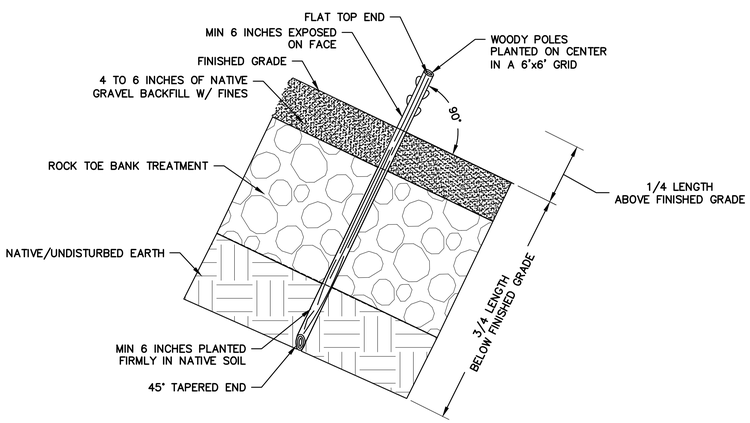
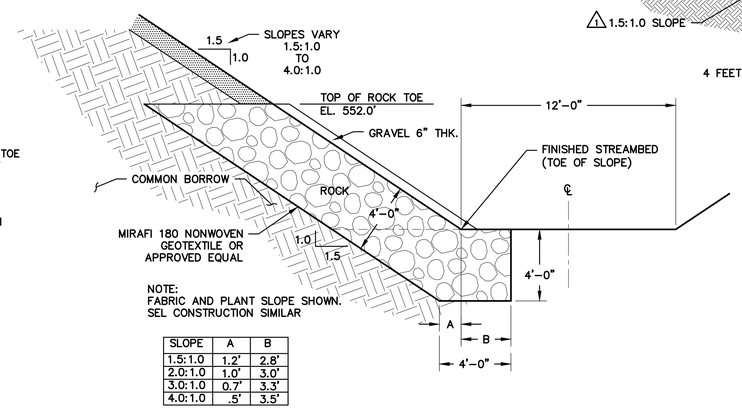


2 4 8 **FABRIC AND PLANT WITH ROCK TOE BANK TREATMENT**
N.T.S.

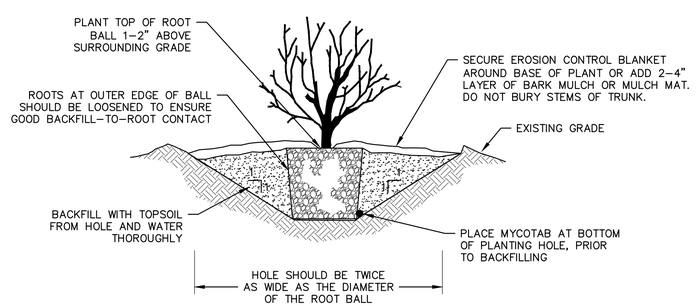


4 4 8 **ROCK TOE WOODY POLES PLANTING**
N.T.S.

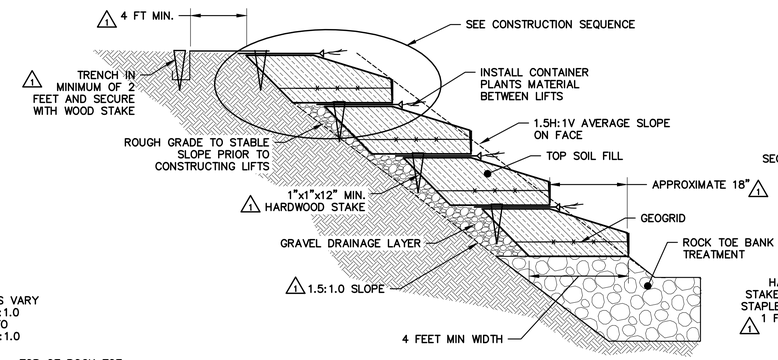


SLOPE	A	B
1.5:1.0	1.2'	2.8'
2.0:1.0	1.0'	3.0'
3.0:1.0	0.7'	3.3'
4.0:1.0	.5'	3.5'

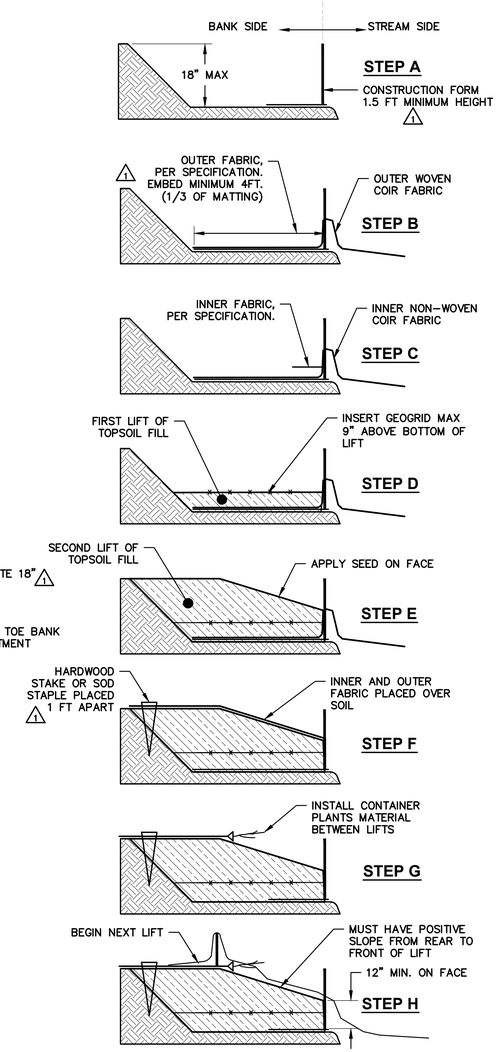
6 8 8 **ROCK TOE SECTION**
N.T.S.



5 4 8 **CONTAINER PLANTING**
N.T.S.



SECTION VIEW



CONSTRUCTION SEQUENCE

3 4 8 **SOIL ENCAPSULATED LIFTS**
N.T.S.

FINAL DESIGN

REVISION NO.	DATE	DESCRIPTION	DRAWN BY	CHECKED BY	PROJECT A/E	APPROVAL
1	8/27/14	Addendum No. 3	MCK	BK	MM	JH

U.S. DEPARTMENT OF ENERGY
GRAND JUNCTION, COLORADO

Work Performed by
The S.M. Stoller Corporation
Under DOE Contract No. DE-LM0000415

PROJECT LOCATION: FERNALD PRESERVE, HARRISON, OHIO

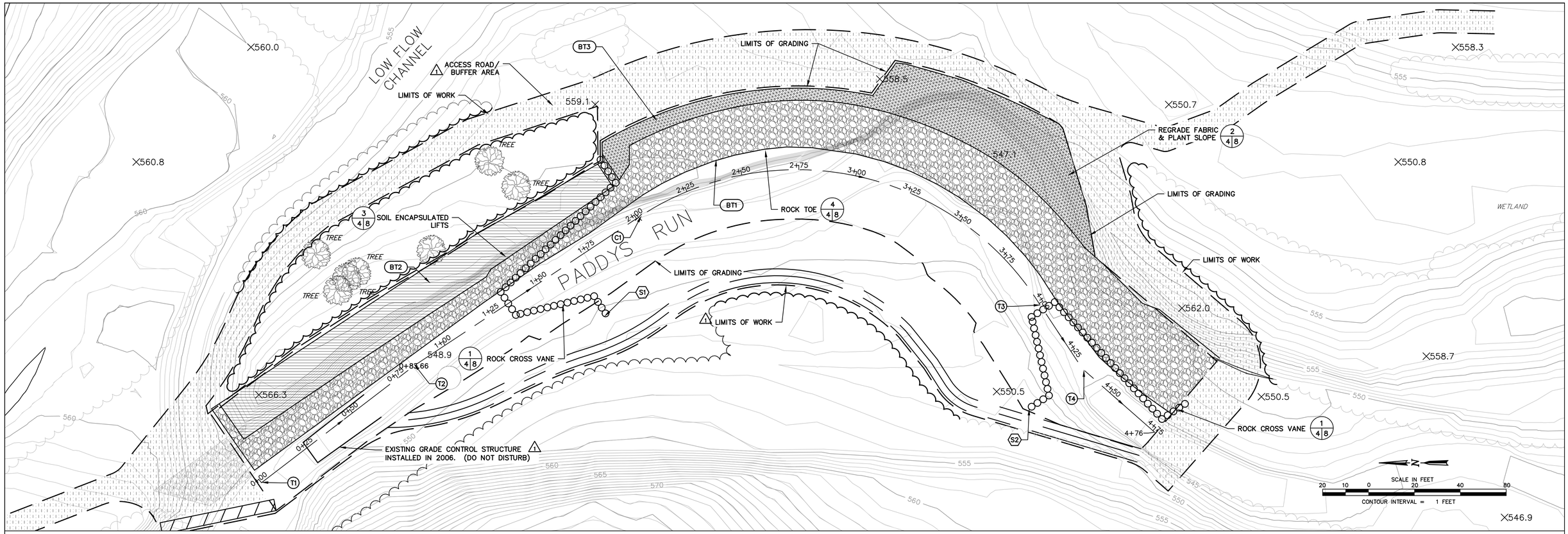
STREAMBANK STABILIZATION AT PADDYS RUN

DETAILS

APPROVALS		
DRAWN BY	MCK (APEX)	7/29/14
ENGINEER	CGN (APEX)	7/29/14
PROJECT ENGINEER	M.W. MADRIL	7/29/14
ENGINEERING MANAGER	M. MADRIL	7/29/14
PROJECT LEAD	J. HOMER	7/29/14
SITE MANAGER/LEAD	B. HERTEL	7/29/14

REFERENCE: APEX, 155 Tri County Pkwy, Suite 250, Cincinnati, Ohio, Phone: (513) 771-3617

PROJECT NO. LTS-111-0051-49-001
DRAWING NO. S11762-R01-C06-D+
SHT. 8 OF 9



Seed Mix for Soil Lifts and Regraded Slope Area		
Grasses		
Scientific Name	Common Name	lb/ac
Andropogon gerardii	BIG BLUESTEM	3
Bouteloua curtipendula	SIDE-OATS GRAMA GRASS	0.5
Elymus canadensis	CANADA WILD RYE	10
Lolium multiflorum	ANNUAL RYE	5
Panicum virgatum	SWITCH GRASS	0.5
Schizachyrium scoparium	LITTLE BLUESTEM	3
Sorghastrum nutans	INDIAN GRASS	3
Asclepias tuberosa	BUTTERFLY-WEED	2
Aster laevis	SMOOTH ASTER	0.5
Aster novae-angliae	NEW ENGLAND ASTER	0.5
Baptisia australis	BLUE FALSE INDIGO	1.5
Baptisia lactea	WHITE FALSE INDIGO	1.5
Chamaecrista fasciculata	PARTRIDGE-PEA	1.5
Desmodium canadense	CANADA TICK-TREFOIL	1
Echinacea purpurea	PURPLE CONEFLOWER	1
Eryngium yuccifolium	RATTLESNAKE-MASTER	1
Eupatorium purpureum	PURPLE JOE-PYE WEED	0.25
Euthamia graminifolia	FLAT-TOPPED GOLDENROD	0.1
Heliopsis helianthoides	SMOOTH OXEYE	1
Lespedeza capitata	ROUND-HEADED BUSH-CLOVER	1
Monarda fistulosa	WILD BERGAMOT	0.25
Penstemon digitalis	FOXGLOVE BEARD-TONGUE	0.25
Ratibida pinnata	GRAY-HEADED CONEFLOWER	1
Rudbeckia hirta	BLACK-EYED SUSAN	0.25
Senna hebecarpa	NORTHERN WILD SENNA	2
Silphium laciniatum	COMPASS PLANT	2
Silphium perfoliatum	CUP-PLANT	2
Silphium terebinthinaceum	PRAIRIE DOCK	2
Solidago rigida	STIFF GOLDENROD	0.25
Tradescantia ohiensis	OHIO SPIDERWORT	0.75
Verbena stricta	HOARY VERVAIN	0.5

Interim Seed Mix	
Species	(lb/ac)
Oats (Arena sativa)	30
Canada Wild-Rye (Elymus canadensis)	20
Annual Rye (Lolium multiflorum)	20
Partridge Pea (Cassia fasciculata)	2 ounces
Black-Eyed Susan (Rudbeckia hirta)	2 ounces

1 Wetland Mix For Swale Area (1 acre)		
Scientific Name	Common Name	lb/ac
Andropogon gerardii	BIG BLUESTEM	3
Calamagrostis canadensis	CANADA BLUEJOINT	0.25
Echinochloa crusgalli	BARNYARD GRASS	1
Elymus virginicus	VIRGINIA WILD RYE	10
Panicum virgatum	SWITCH GRASS	0.5
Spartina pectinata	PRAIRIE CORD GRASS	2
Asclepias incarnata	SWAMP MILKWEED	3
Aster novae-angliae	NEW ENGLAND ASTER	1
Carex cristatella	CRESTED SEDGE	0.5
Carex frankii	FRANK'S SEDGE	1
Carex hystericina	PORCUPINE SEDGE	1
Carex lurida	BOTTLEBRUSH SEDGE	1.5
Carex vulpinoidea	FOX SEDGE	0.5
Desmodium canadense	CANADA TICK-TREFOIL	3
Eupatorium maculatum	SPOTTED JOE-PYE WEED	0.5
Eupatorium perfoliatum	COMMON BONESET	0.5
Helianthus grosseserratus	SAWTOOTH SUNFLOWER	1.5
Hibiscus laevis	HALBERD-LEAVED ROSE-MALLOW	3
Juncus torreyi	TORREY'S RUSH	0.25
Liatris spicata	SPIKED BLAZING-STAR	1.5
Lobelia cardinalis	CARDINAL-FLOWER	0.25
Lobelia siphilitica	GREAT BLUE LOBELIA	0.25
Mimulus ringens	COMMON MONKEY-FLOWER	0.25
Pycnanthemum tenuifolium	NARROW-LEAVED MOUNTAIN-MINT	0.5
Sagittaria latifolia	COMMON ARROWHEAD	1
Schoenoplectus tabernaemontani	SOFT-STEMMED BULRUSH	1
Scirpus atrovirens	GREEN BULRUSH	0.25
Sparganium eurycarpum	GIANT BUR-REED	1
Verbena hastata	BLUE VERVAIN	0.5
Veronicastrum virginicum	CULVER'S-ROOT	0.25

1 Tree & Shrub Species (Regrade, Fabric, and Plant & Buffer Areas)				
Species	Latin Name	Growth Form	Size	Quantity
Serviceberry	Amelianchier arborea	Shrub	1-5 gallon	100
Coralberry	Symphoricarpos orbiculatus	Shrub	1-5 gallon	100
Rough-Leaved Dogwood	Cornus drumondii	Shrub	1-5 gallon	100
Nine Bark	Physocarpus opulifolius	Shrub	1-5 gallon	100
Hazelnut	Corylus americana	Shrub	1-5 gallon	100
Paw Paw	Asimina triloba	Tree (subcanopy)	3-5 gallon	100
Witch Hazel	Hamamelis virginiana	Tree (subcanopy)	3-5 gallon	100
White Oak	Quercus alba	Tree	3-5 gallon	100
Red Oak	Quercus rubra	Tree	3-5 gallon	100
Hop hornbeam	Ostrya virginiana	Tree	3-5 gallon	100
Black Walnut	Juglans nigra	Tree	3-5 gallon	100
Redbud	Cercis Canadensis	Tree	3-5 gallon	100
Shell Bark Hickory	Carya laciniosa	Tree	3-5 gallon	50

Shrub Species (Soil Encapsulated Lifts)				
Species	Latin Name	Growth Form	Size	Quantity
Coralberry	Symphoricarpos orbiculatus	Shrub	1 gallon	67
Gray Dogwood	Cornus racemosa	Shrub	1 gallon	67
Nine Bark	Physocarpus opulifolius	Shrub	1 gallon	67
Hazelnut	Corylus americana	Shrub	1 gallon	67
Witch Hazel	Hamamelis virginiana	Shrub	1 gallon	67

Tree Species (Swale Area) 1				
Species	Latin Name	Growth Form	Size	Quantity
Pin Oak	Quercus palustris	Tree	15 gallon	25
Swamp White Oak	Quercus bicolor	Tree	15 gallon	25
Red Maple	Acer rubrum	Tree	15 gallon	25
Black Gum	Nyssa sylvatica	Tree	15 gallon	25

1 Approximate location of swale area to be planted is located on sheet 2. precise locations to be determind by contractor.

Woody Pole Cuttings (Rock Toe)		
Common Name	Latin Name	Quantity
Sandbar Willow	Salix exigua	80
Peachleaf Willow	Salix amygdaloides	80
American Sycamore	Platanus occidentalis	80

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STREAMBANK STABILIZATION
AT PADDYS RUN

PLANTING PLAN

PROJECT NO. LTS-111-0051-49-001
DRAWING NO. S12033-R01-C07-D+
SHT. 9 OF 9