


SITE NAME	
SITE NO.	CONTRACT NO.
287	E008-177
GREENE COUNTY	
	

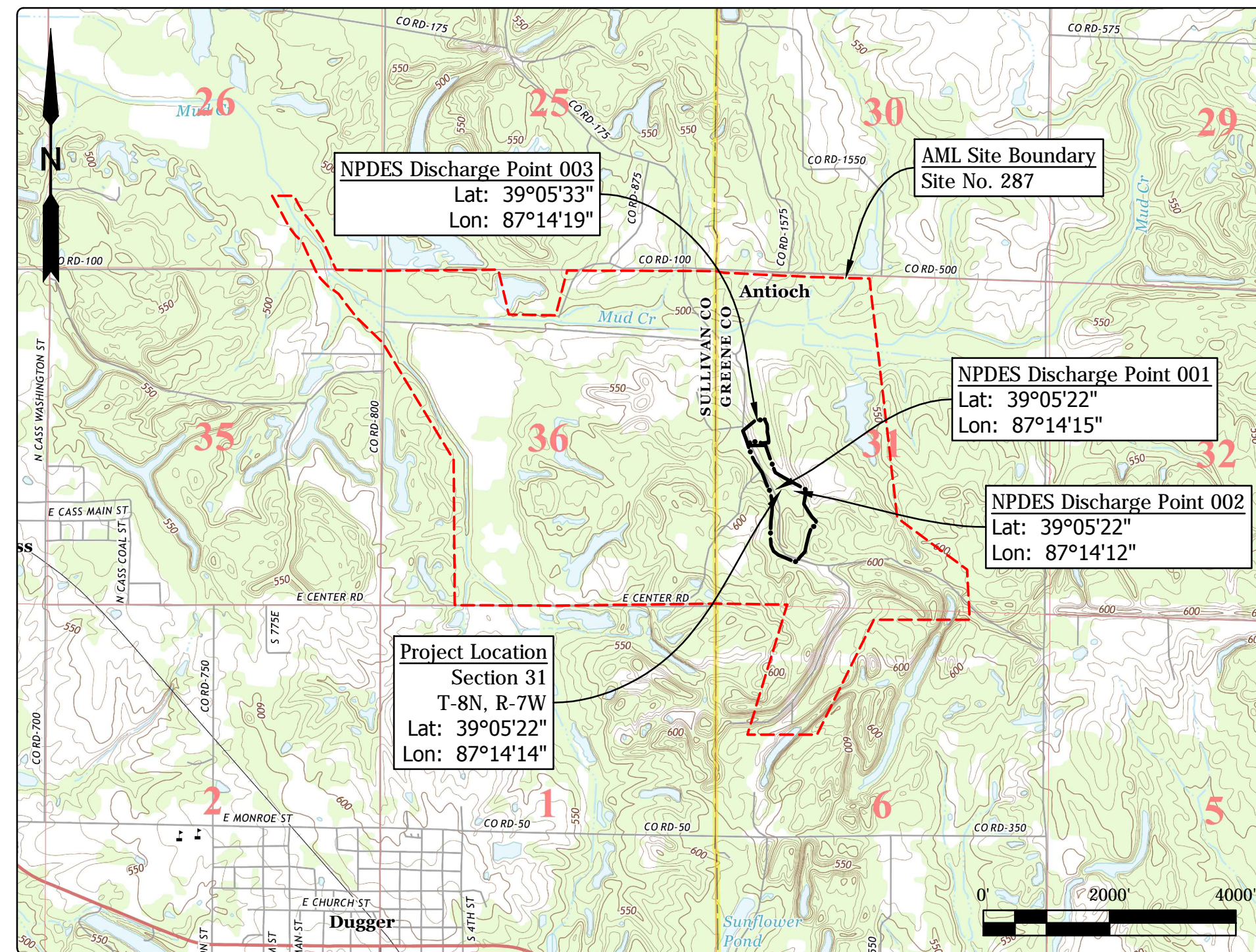
STATE OF INDIANA
INDIANA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION



ABANDONED COAL MINE
RESTORATION

FRIAR TUCK
SITE 287
CONTRACT E008-177
GREENE COUNTY

Clear and grub, construct wetlands, demolish
hazardous facilities, and revegetate all disturbed.



Project Location Map
Dugger & Linton US TOPO (USGS, 2013)

GENERAL NOTES

2010 AML Standard Specifications to be used with these plans.
Plans developed from LiDAR topographic mapping survey flown in Spring of 2010 by Williams Aerial & Mapping, Inc. in NAD 83, Indiana State Plane West, Feet.
An NPDES discharge permit is required for this project.

INDEX

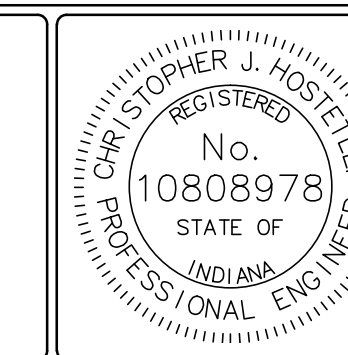
SHEET NO.	SHEET TITLE
1	TITLE, INDEX, & LOCATION MAP
2	SITE MAP
3-4	SITE PLANS
5	PROFILES
6	REVEGETATION PLAN
7-8	DETAILS

UTILITIES

The facilities of the following utilities exist near the project site but are not expected to be affected by the proposed construction. If questions arise, the utility may be contacted using the information below.

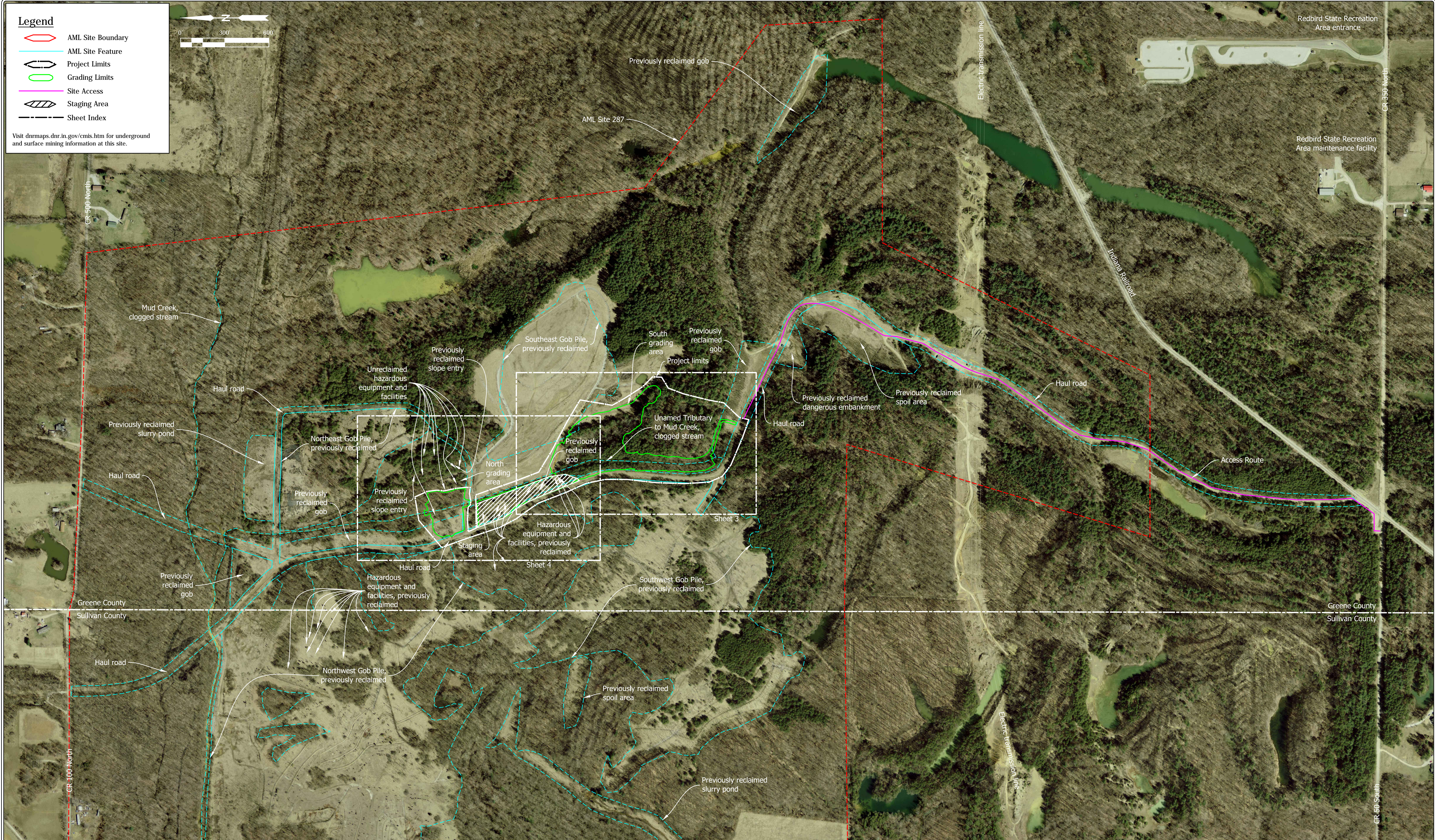
ELECTRIC: Utilities District of Western Indiana R.E.M.C. PO Box 427/Hwy. 54 West Bloomfield, IN 47424 Phone: (812) 384 5053	TELECOM: AT&T Distribution 2042 Alta Ave Louisville, KY 40205 Phone: (502) 553 0561
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Call Before You Dig. Indiana Underground Plant Protection Service (IUPPS) 1-800-382-5544 or 811 from your mobile phone.




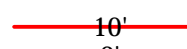

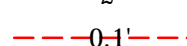
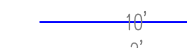











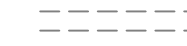


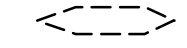






PLANS PREPARED BY: INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION (812) 665-2207 PHONE NUMBER
CERTIFIED BY: *Christopher J. Hostetler* 5/12/17 DATE
APPROVED FOR LETTING: *M. D. ELLI* 5/12/17 DATE
DIVISION OF RECLAMATION

SCALE AS NOTED	SHEET 1 of 8
PROJECT E008-177	SITE 287

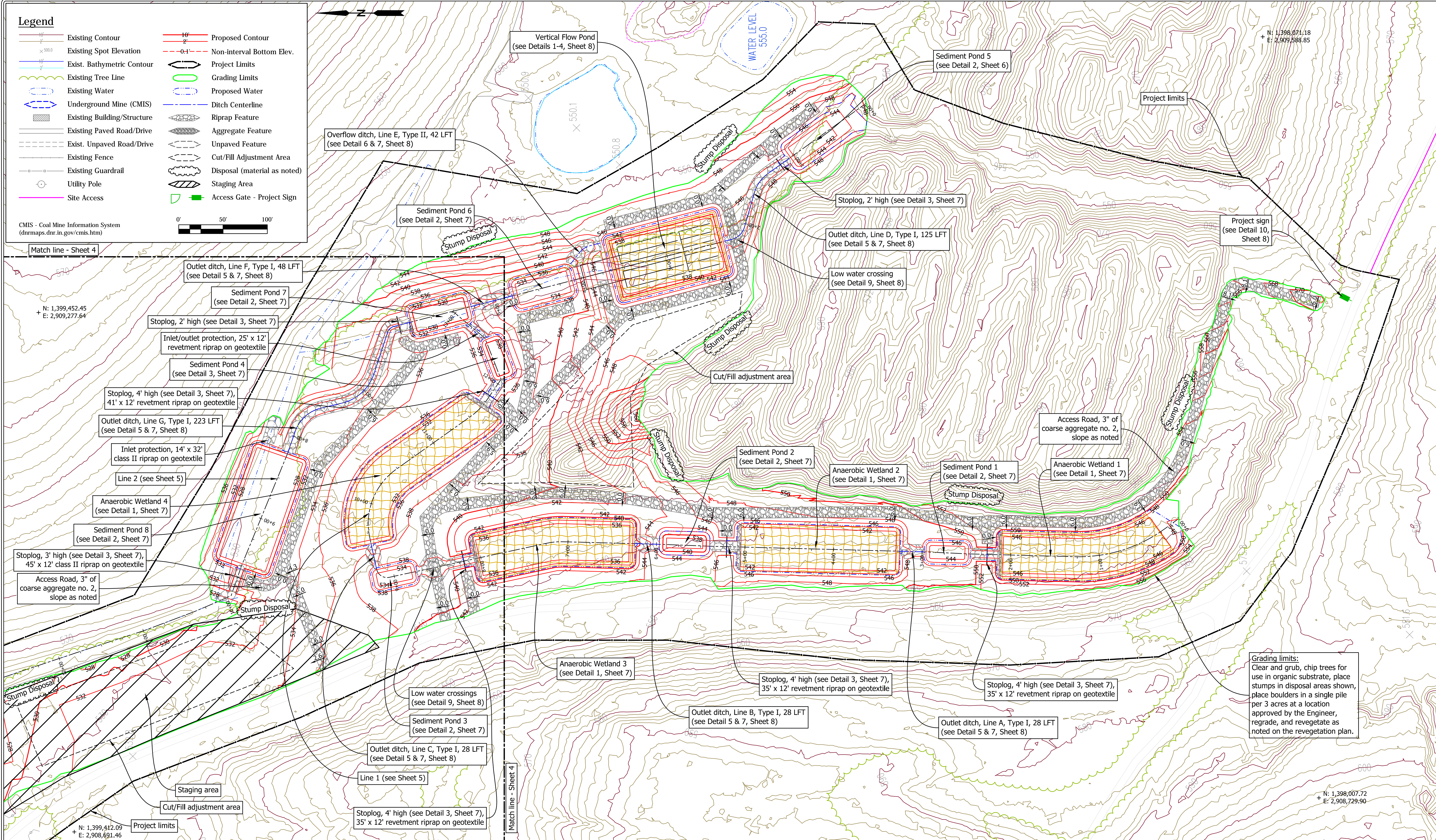
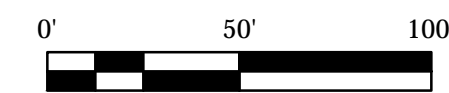


	RECOMMENDED FOR APPROVAL: <i>Christopher J. Hostetler</i> 5/12/17 DATE	DATE MADE 9/19/2016	SITE MAP STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION	SCALE 1" = 300'	SHEET 2 of 8
	DESIGNED BY C.J.H.	DRAWN BY C.J.H.		DATE REVISED 3/1/2017 2:31:30 PM	PROJECT E008-177

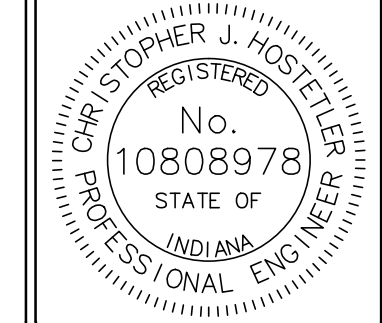
Legend

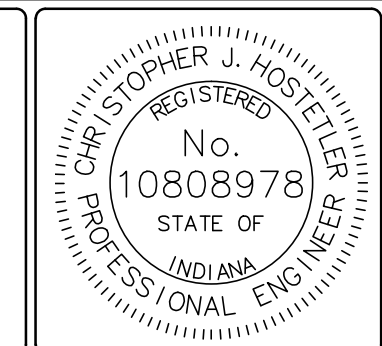
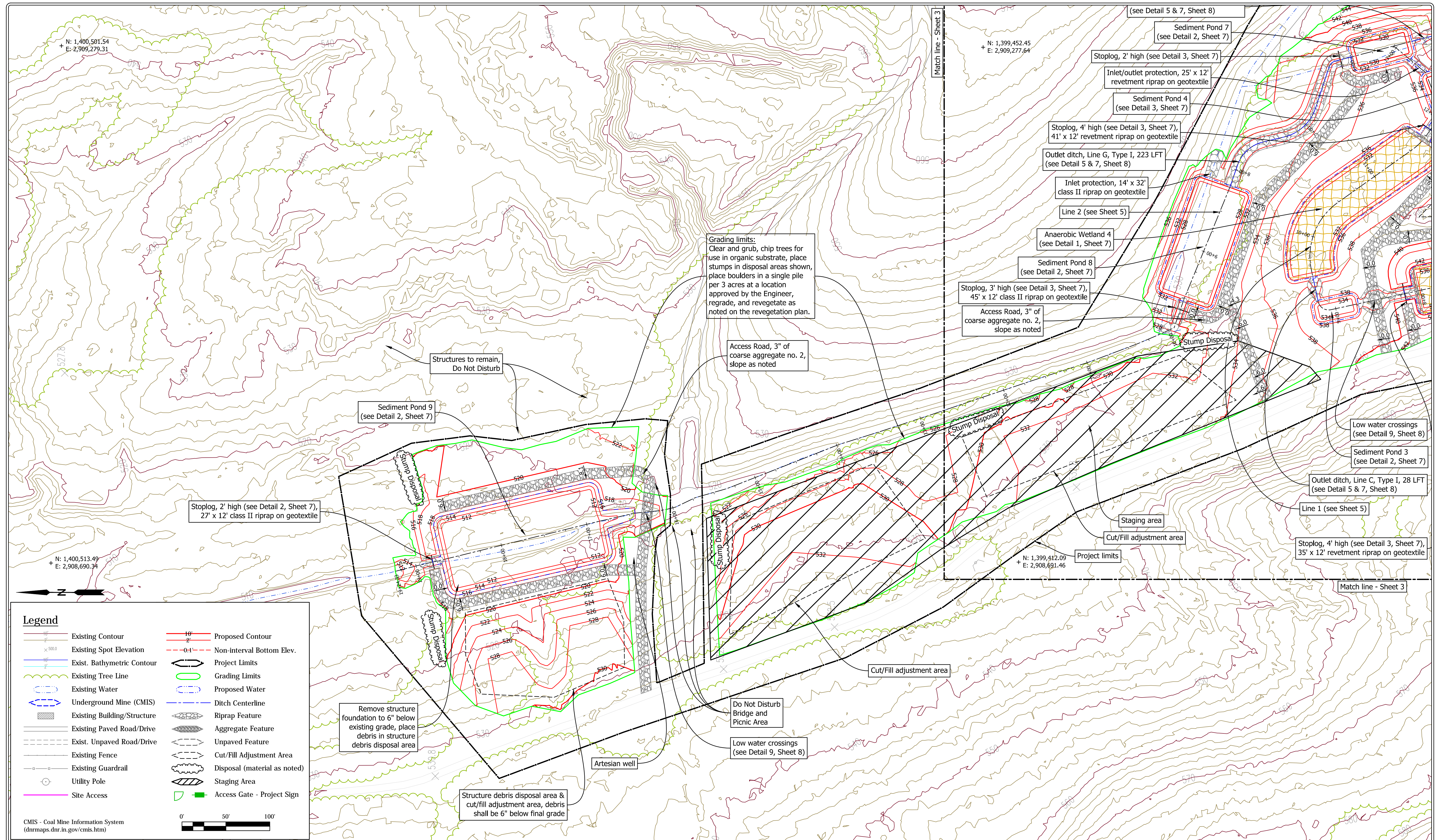
-  Existing Contour
-  Proposed Contour
-  Existing Spot Elevation
-  Non-interval Bottom Elev.
-  Exist. Bathymetric Contour
-  Project Limits
-  Existing Tree Line
-  Grading Limits
-  Existing Water
-  Proposed Water
-  Underground Mine (CMIS)
-  Ditch Centerline
-  Existing Building/Structure
-  Riprap Feature
-  Existing Paved Road/Drive
-  Aggregate Feature
-  Exist. Unpaved Road/Drive
-  Unpaved Feature
-  Existing Fence
-  Cut/Fill Adjustment Area
-  Existing Guardrail
-  Disposal (material as noted)
-  Utility Pole
-  Staging Area
-  Site Access
-  Access Gate - Project Sign

CMIS - Coal Mine Information System
 (dnrmmaps.dnr.in.gov/cmisis.htm)



Grading limits:
 Clear and grub, chip trees for use in organic substrate, place stumps in disposal areas shown, place boulders in a single pile per 3 acres at a location approved by the Engineer, regrade, and revegetate as noted on the revegetation plan.

	RECOMMENDED FOR APPROVAL: <i>Christopher J. Hostetler</i> 5/12/17 DATE	DATE MADE 9/19/2016	SITE PLAN - SOUTH STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION	SCALE 1" = 50'	SHEET 3 of 8
	DESIGNED BY C.J.H.	DRAWN BY C.J.H.		DATE REVISED 3/1/2017 2:31:30 PM	PROJECT E008-177



RECOMMENDED FOR APPROVAL: *Christopher J. Hostetler* 5/12/17 DATE

DESIGNED BY: C.J.H. DRAWN BY: C.J.H.

DATE MADE: 9/19/2016

DATE REVISED: 3/1/2017 2:31:30 PM

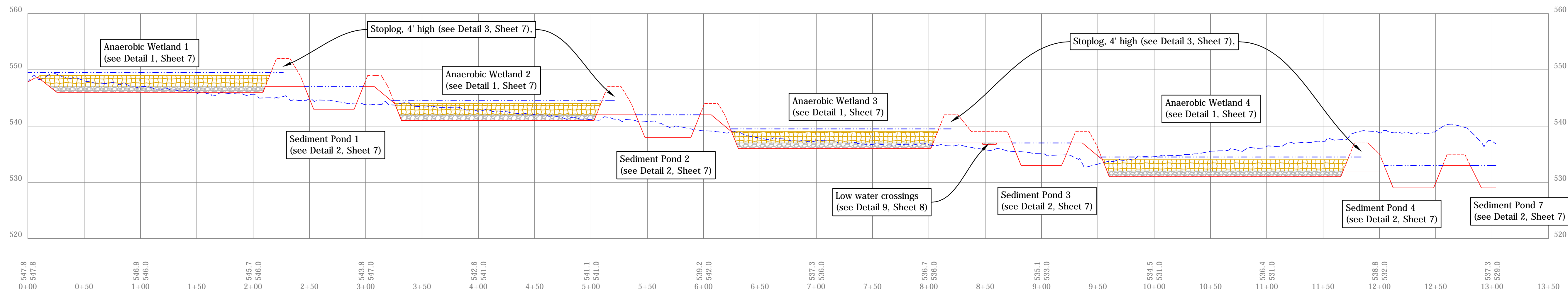
SITE PLAN - NORTH
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE: 1" = 50'

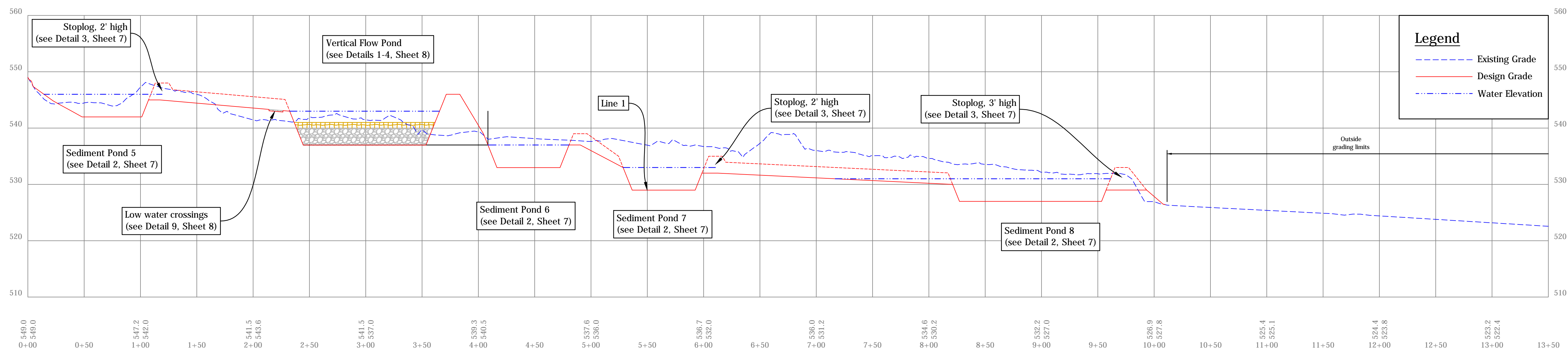
PROJECT: E008-177

SHEET: 4 of 8

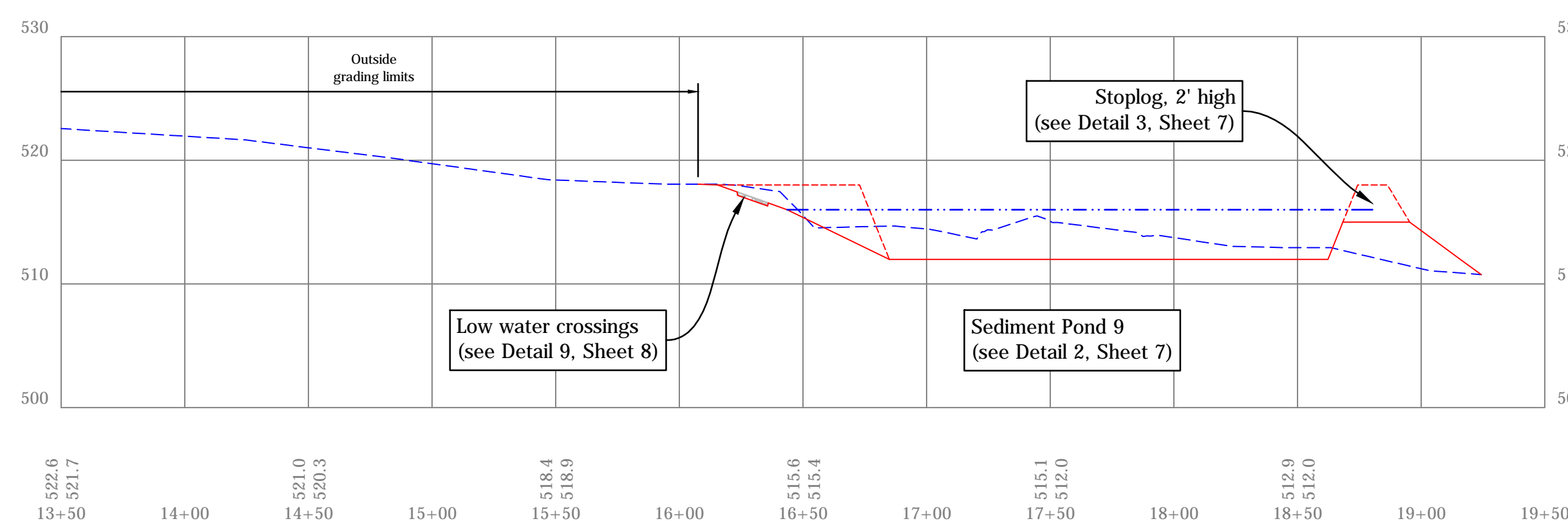
SITE: 287



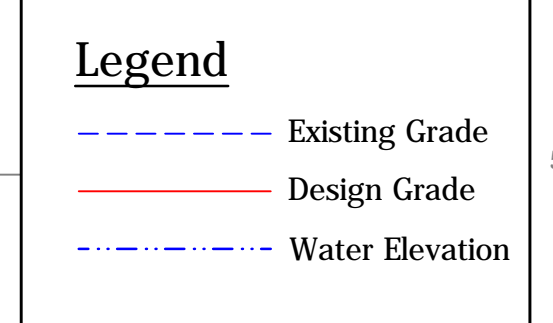
1 Profile Line 1
Scale: 1" = 50' Horiz., 1" = 10' Vert.



2-A Profile Line 2
Scale: 1" = 50' Horiz., 1" = 10' Vert.

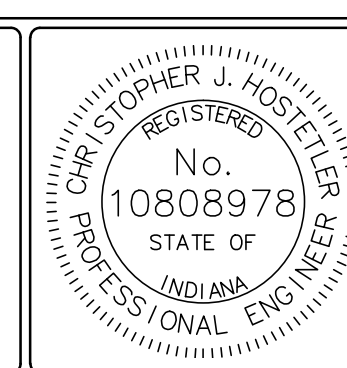


2-B Profile Line 2 (cont.)
Scale: 1" = 50' Horiz., 1" = 10' Vert.



<p>Line A, 1.303 LFT Centerline Report 0+00.00, Begin, N: 1.398,165.94 E: 2.909,045.11 0+00.00, PT, Brg: N 36°12'53" W, Dist: 19.17' 0+19.17, PC, Radius: 164.50' 0+75.37, PI 1+27.47, PT, Brg: N 01°30'25" E, Dist: 118.30' 2+45.77, PT, Brg: N 02°36'31" E, Dist: 52.01' 2+97.78, PT, Brg: N 01°30'25" E, Dist: 242.00' 5+39.78, PT, Brg: N 02°11'41" E, Dist: 57.00' 5+96.79, PT, Brg: N 01°30'25" E, Dist: 109.21' 7+06.00, PC, Radius: 75.00' 7+15.02, PI 7+23.96, PT, Brg: N 12°13'11" W, Dist: 181.83' 9+05.79, PC, Radius: 12.00' 9+17.79, PI 9+24.64, PT, Brg: N 77°46'49" E, Dist: 36.56' 9+61.20, PC, Radius: 75.00'</p>	<p>10+10.69, PI 10+48.70, PT, Brg: S 35°22'45" E, Dist: 103.11' 11+51.81, PC, Radius: 74.00' 11+64.88, PI 11+77.68, PT, Brg: S 55°24'31" E, Dist: 28.51' 12+06.19, PT, Brg: N 68°33'40" E, Dist: 50.01' 12+56.20, PT, Brg: N 39°54'27" E, Dist: 47.22' 13+03.43, End, N: 1.398,985.05 E: 2.909,279.09</p>	<p>2+15.22, PI 2+24.56, PT, Brg: N 14°27'35" W, Dist: 393.95' 6+18.51, PC, Radius: 10.00' 6+23.98, PI 6+28.52, PT, Brg: N 71°49'15" W, Dist: 49.30' 6+77.82, PC, Radius: 50.00' 7+05.70, PI 7+28.69, PT, Brg: N 13°31'37" W, Dist: 25.18' 7+53.87, PC, Radius: 40.00' 7+75.71, PI 7+93.86, PT, Brg: N 70°48'12" W, Dist: 27.26' 8+21.12, PT, Brg: N 67°42'29" W, Dist: 136.19' 9+57.31, PT, Brg: N 70°48'12" W, Dist: 36.01' 9+93.32, PT, Brg: N 24°09'05" W, Dist: 19.55' 10+12.87, PT, Brg: N 23°00'52" W, Dist: 26.05' 10+38.91, PT, Brg: N 20°41'14" W, Dist: 59.75' 10+98.67, PT, Brg: N 18°02'02" W, Dist: 47.97' 11+46.63, PT, Brg: N 18°06'31" W, Dist: 23.55'</p>	<p>11+70.18, PT, Brg: N 18°33'23" W, Dist: 63.33' 12+33.51, PT, Brg: N 18°47'35" W, Dist: 53.67' 12+87.18, PT, Brg: N 18°18'39" W, Dist: 61.79' 13+48.97, PT, Brg: N 17°23'04" W, Dist: 47.57' 13+96.54, PT, Brg: N 21°30'05" W, Dist: 94.06' 14+90.60, PT, Brg: N 21°24'56" W, Dist: 43.87' 15+34.47, PT, Brg: N 15°59'20" W, Dist: 37.74' 15+72.20, PT, Brg: N 25°40'43" W, Dist: 24.48' 15+96.69, PT, Brg: N 14°29'07" W, Dist: 9.75' 16+06.44, PT, Brg: N 10°47'23" W, Dist: 9.07' 16+15.51, PT, Brg: N 05°37'22" W, Dist: 28.14' 16+43.65, PT, Brg: N 12°47'18" W, Dist: 41.30' 16+84.95, PT, Brg: N 13°50'07" W, Dist: 183.44' 18+68.39, PT, Brg: N 12°58'35" W, Dist: 27.00' 18+95.39, PT, Brg: N 14°21'57" W, Dist: 28.94' 19+24.33, End, N: 1.400,121.54 E: 2.908,680.96</p>
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CL Profile Line 1 & 2 Centerline Reports
No Scale



RECOMMENDED FOR APPROVAL: *Christopher J. Hostetler* 5/12/17 DATE

DESIGNED BY: C.J.H. DRAWN BY: C.J.H.

DATE MADE: 9/19/2016

DATE REVISED: 3/1/2017 2:31:30 PM

PROFILES

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION


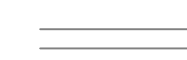


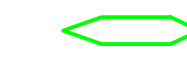








SCALE: AS NOTED

PROJECT: E008-177

SHEET: 5 of 8

SITE: 287

Legend

-  Building/Structure
-  Paved Road/Drive
-  Unpaved Road/Drive
-  Project Limits
-  Grading Limits
-  Proposed Water
-  Site Access
-  Staging Area
-  Riprap Feature
-  Aggregate Feature
-  Unpaved Feature
-  Field Mix
-  Wetland Mix



WETLAND SEED MIX	
SEED	PLS OZ./AC
PERMANENT GRASS/SEDGE:	
Fox Sedge (<i>Carex vulpinoidea</i>)	6
Blunt Spikerush (<i>Eleocharis obtusa</i>)	1
Virginia Wildrye (<i>Elymus virginicus</i>)	48
Common Rush (<i>Juncus effusus</i>)	5
Green Bulrush (<i>Scirpus atrovirens</i>)	5
Woolgrass (<i>Scirpus cyperinus</i>)	4
Softstem Bulrush (<i>Scirpus validus</i>)	5
FORBS:	
American Water Plantain (<i>Alisma subcordatum</i>)	4
Swamp Milkweed (<i>Asclepias incarnata</i>)	2
Nodding Beggartick (<i>Bidens cernua</i>)	4
Allegheny Monkeyflower (<i>Mimulus ringens</i>)	1
Broadleaf Arrowhead (<i>Sagittaria latifolia</i>)	6
Swamp Verbena (<i>Verbena hastata</i>)	2
TEMPORARY COVER:	
Common Oat (<i>Avena sativa</i>)	24 LBS/AC
Italian Ryegrass (<i>Lolium perenne</i>)	9 LBS/AC

FIELD SEED MIX	
SEED	LBS/AC
Common Oat (<i>Avena sativa</i>)	50
Little Bluestem (<i>Schizachyrium scoparium</i>)	5
Orchard Grass (<i>Dactylis glomerata</i>)	5
Perennial Ryegrass (<i>Lolium perenne</i>)	8
Smooth Brome (<i>Bromus inermis</i>)	5
Switchgrass (<i>Panicum virgatum</i>)	5
Weeping Lovegrass (<i>Eragrostis curvula</i>)	2
Korean Lespedeza (<i>Kummerowia stipulacea</i>)	10
Red Clover (<i>Trifolium pratense</i>)	8

N: 1,400,501.54
E: 2,909,279.31

N: 1,399,452.45
E: 2,909,277.64

N: 1,398,071.18
E: 2,909,588.85

N: 1,400,513.49
E: 2,908,690.34

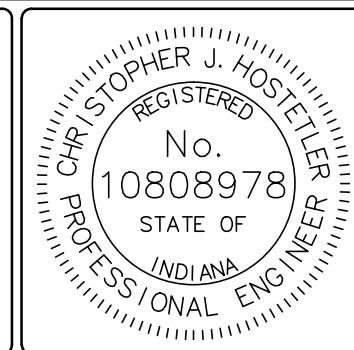
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N: 1,398,007.72
E: 2,908,729.90



Notes:

- Field mix shall be placed on access routes, staging areas, in the area of structure demolition, and all other disturbed areas not otherwise specified on revegetation map, except in riprap, coarse aggregate, and final water areas.



RECOMMENDED FOR APPROVAL: *Christopher J. Hostetler* 5/12/17 DATE

DESIGNED BY
C.J.H.

DRAWN BY
C.J.H.

DATE MADE
9/19/2016

DATE REVISED
3/1/2017 2:31:30 PM

REVEGETATION PLAN

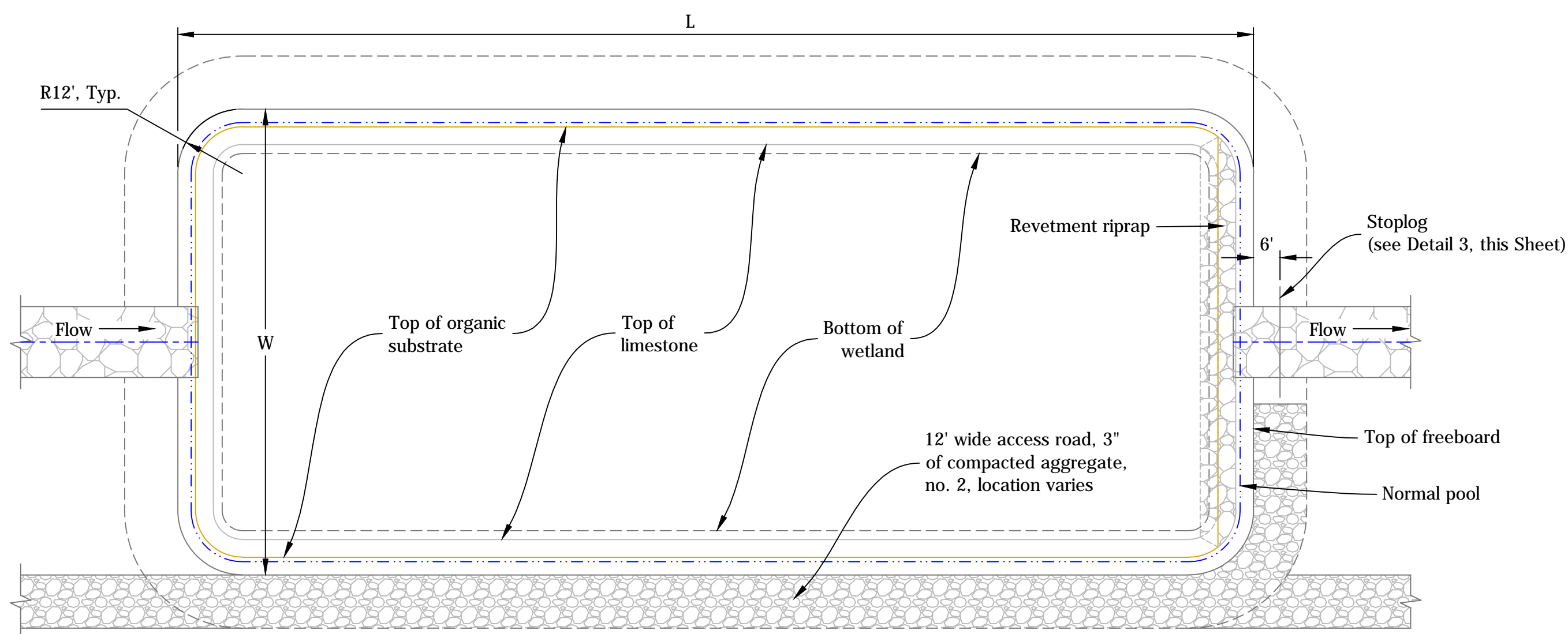
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE
1" = 100'

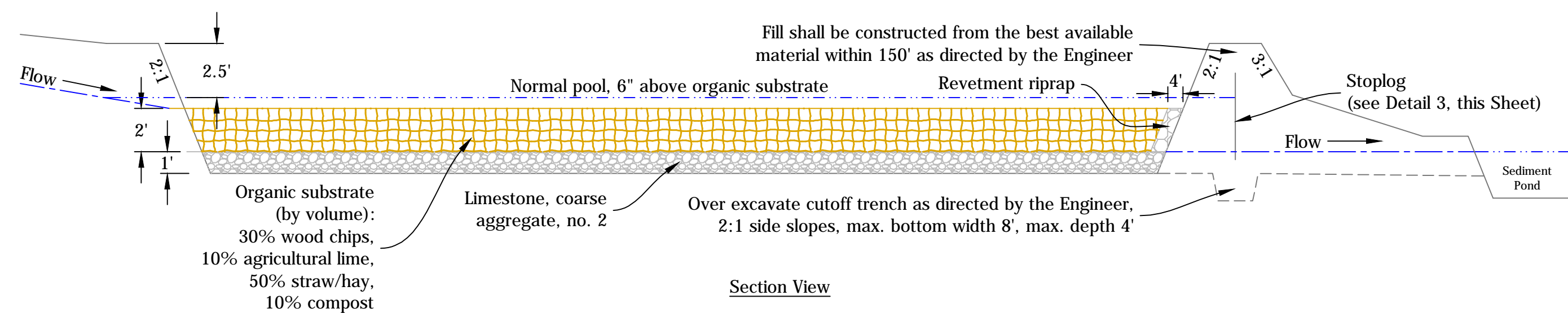
PROJECT
E008-177

SHEET
6 of 8

SITE
287



Plan View



Section View

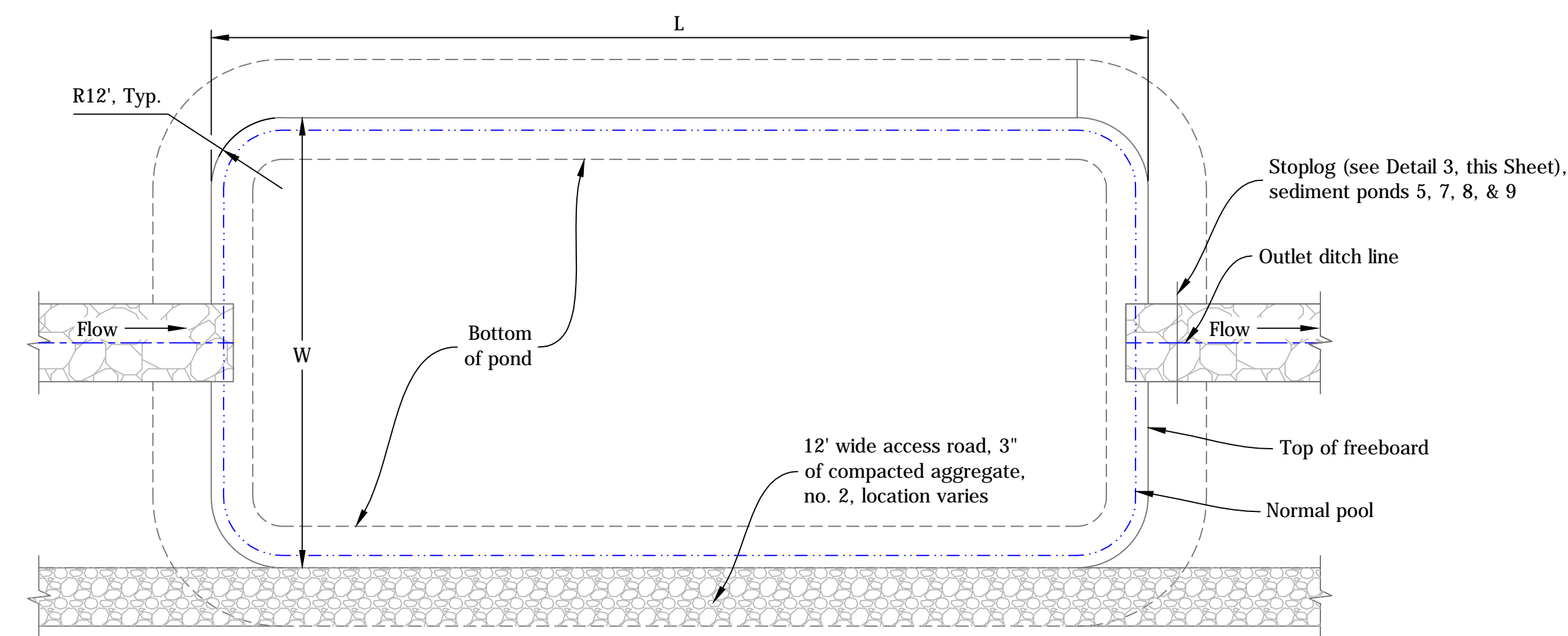
1 Anaerobic Wetlands
Not to Scale

Anaerobic Wetland Information						
Wetland	Dimensions, L x W	Freeboard Elev.	Normal Pool Elev.	Top of Organic Substrate Elev.	Top of Limestone Elev.	Bottom of Wetland Elev.
1	204' x 65'	552.0'	549.5'	549.0'	547.0'	546.0'
2	195' x 65'	547.0'	544.5'	544.0'	542.0'	541.0'
3	195' x 65'	542.0'	539.5'	539.0'	537.0'	536.0'
4	230' x 65'	537.0'	534.5'	534.0'	532.0'	531.0'

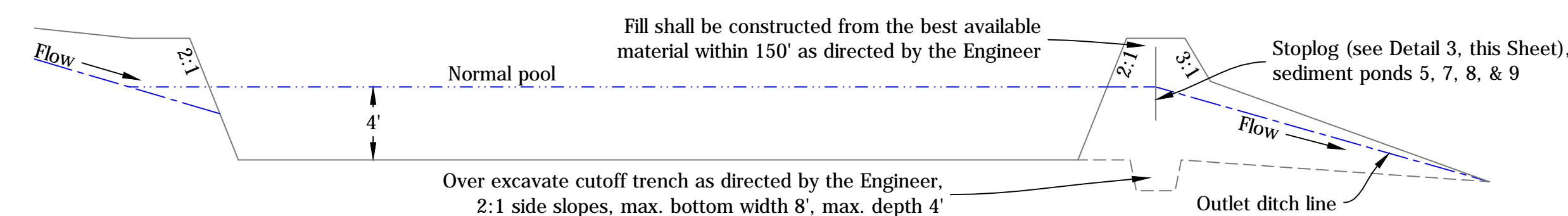
Sediment Pond Information				
Pond	Dimensions, L x W	Freeboard Elev.	Normal Pool Elev.	Bottom of Pond Elev.
1	60' x 35'	549.0'	547.0'	543.0'
2	65' x 35'	544.0'	542.0'	538.0'
3	60' x 35'	539.0'	537.0'	533.0'
4	60' x 35'	535.0'	533.0'	529.0'
5	80' x 45'	548.0'	546.0'	542.0'
6	80' x 45'	539.0'	537.0'	533.0'
7	80' x 45'	535.0'	533.0'	529.0'
8	150' x 75'	533.0'	531.0'	527.0'
9	200' x 100'	518.0'	516.0'	512.0'

Stoplog Information			
Location	Height, H	Distance, d	Length, L
Anaerobic Wetlands	4'	3.75'	24'
Sediment Pond 8	3'	2.25'	20'
Sediment Ponds 5, 7, & 9	2'	0.75'	16'

- Stoplog Notes:**
- All rebar shall be Size #5 and Grade 60 and rebar bends shall be 3" in diameter.
 - Pressure treated lumber shall be provided as stoplogs and installed in two stacks in the stainless steel channels for each structure up to the normal pool elevation.
 - Stoplogs shall be 2" x 12" x 4', except for the first log on the downstream side which shall be 2" x 6" x 4' so the stacks are staggered.
 - The top stoplog in each stack shall be cut to the normal pool elevation.
 - Five (5) stainless steel weir plates shall be provided for the stoplog structures at Anaerobic Wetland 1 and Sediment Ponds 5, 7, 8, & 9.
 - Stainless steel weirs shall be installed on the downstream side of the stoplogs and attached to stoplogs with stainless steel bolts.
 - Stainless Steel shall be Grade 304.

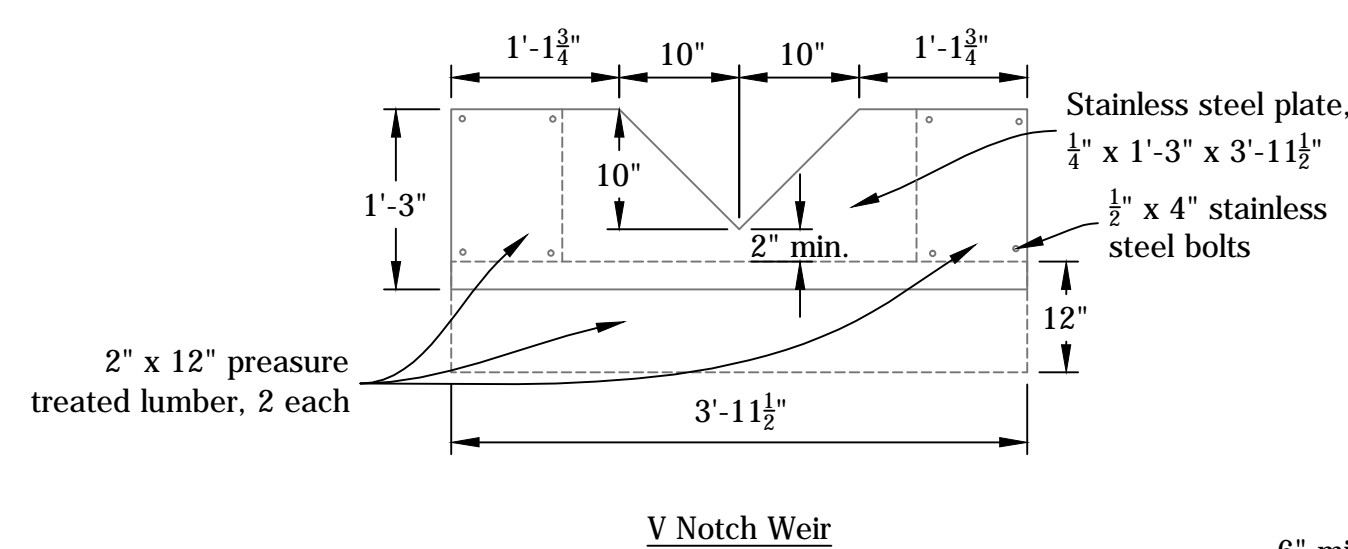


Plan View

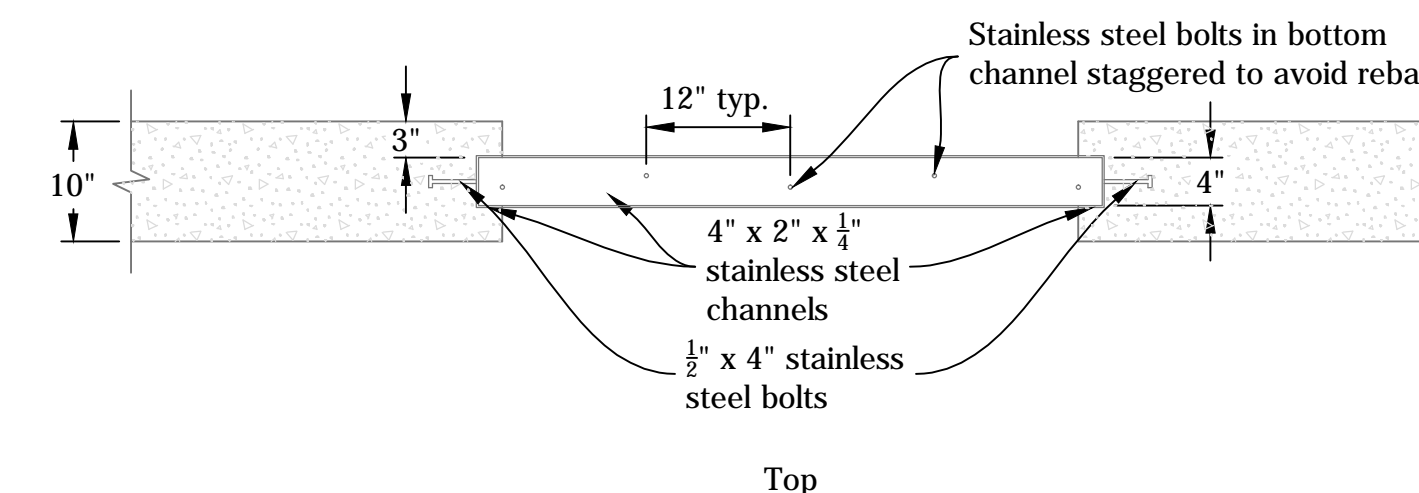


Section View

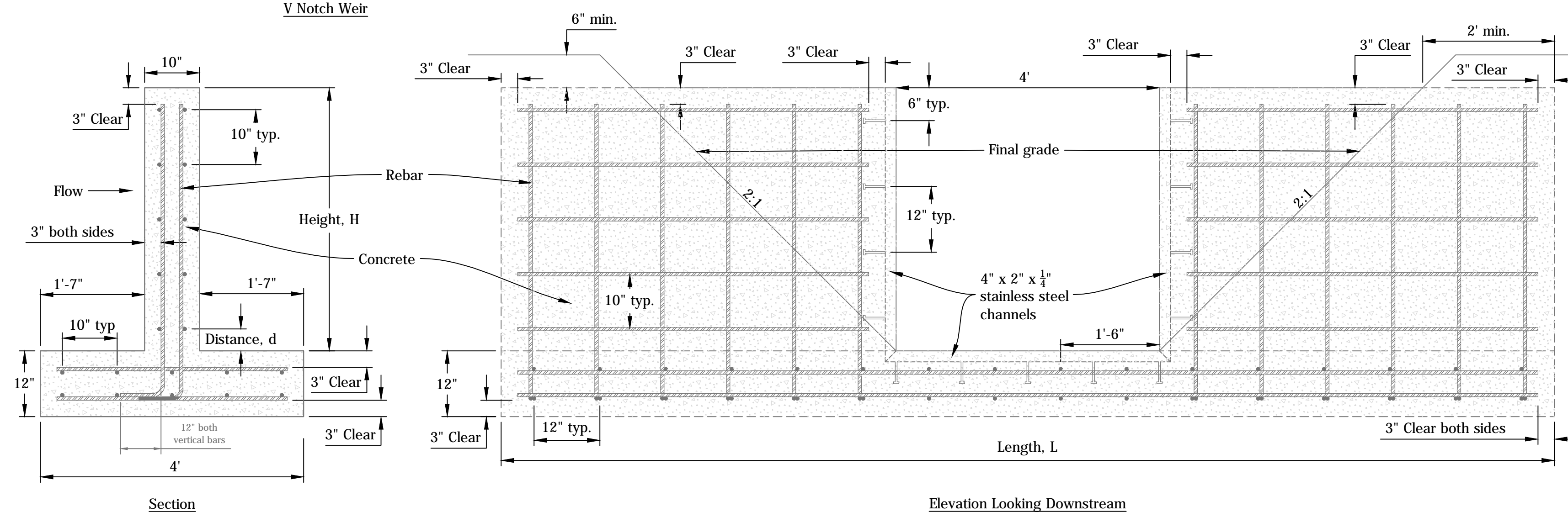
2 Sediment Pond
Not to Scale



V Notch Weir



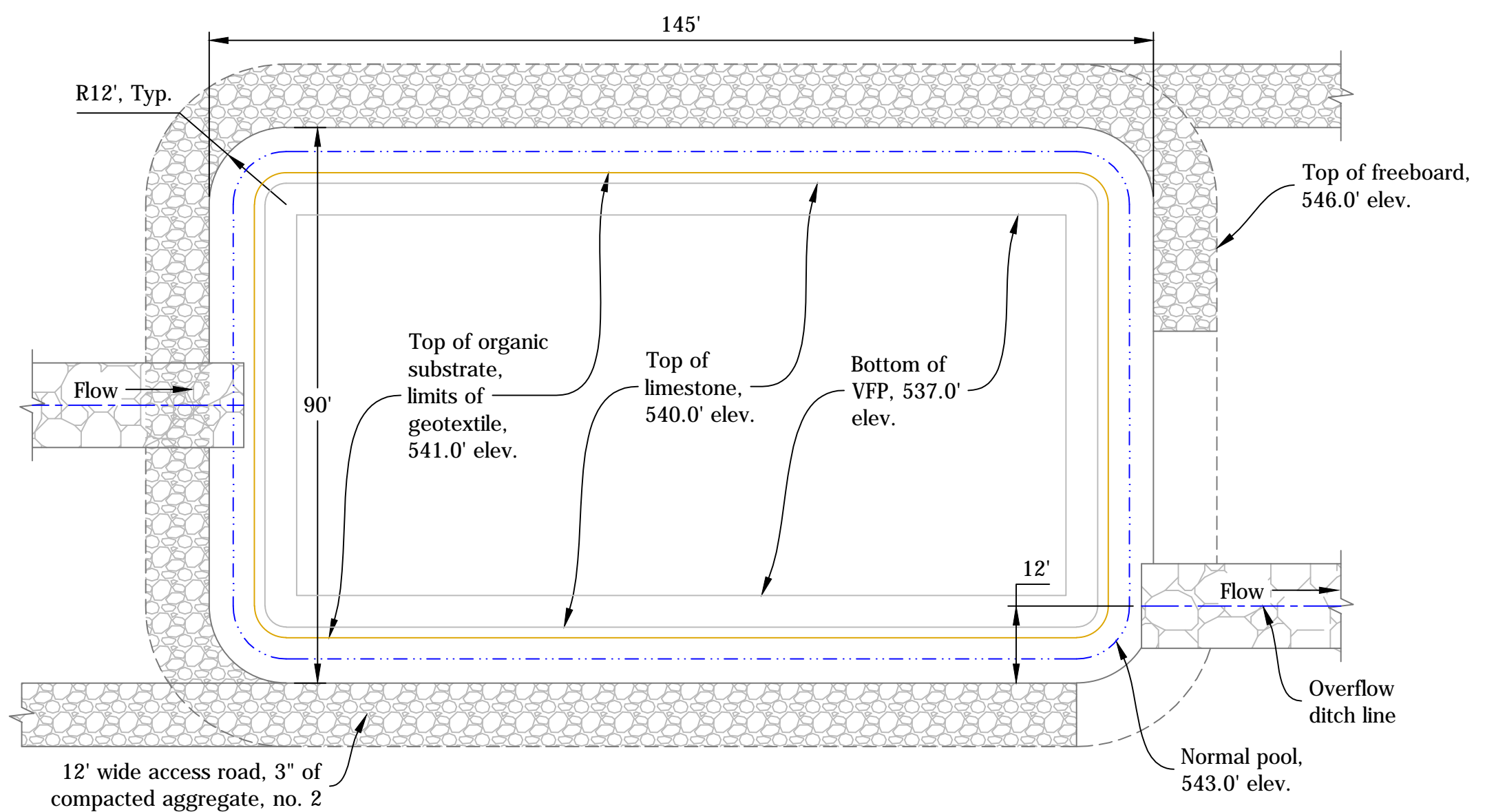
Top



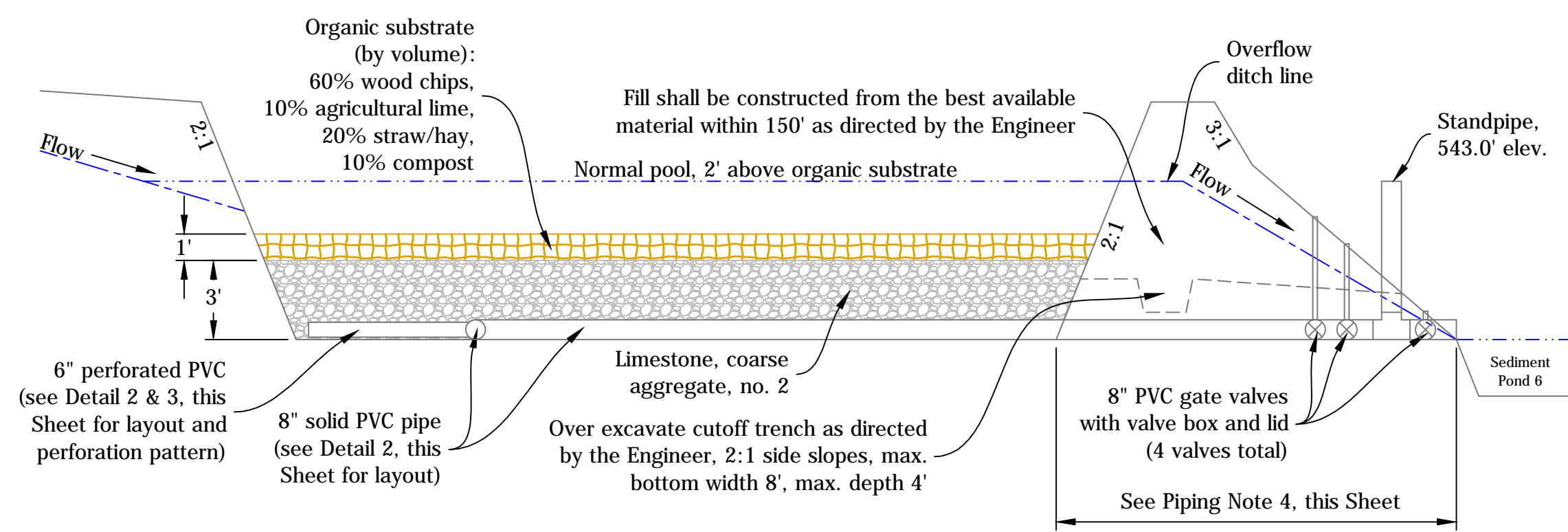
Elevation Looking Downstream

3 Stoplog Structure
Not to Scale

	RECOMMENDED FOR APPROVAL: <i>Christopher J. Hostetler</i> 5/12/17 DATE	DATE MADE 9/19/2016	DETAILS - ANAEROBIC WETLANDS & SEDIMENT PONDS	SCALE AS NOTED	SHEET 7 of 8
	DESIGNED BY C.J.H.	DRAWN BY C.J.H.	DATE REVISED 3/1/2017 2:31:30 PM	STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES DIVISION OF RECLAMATION	PROJECT E008-177

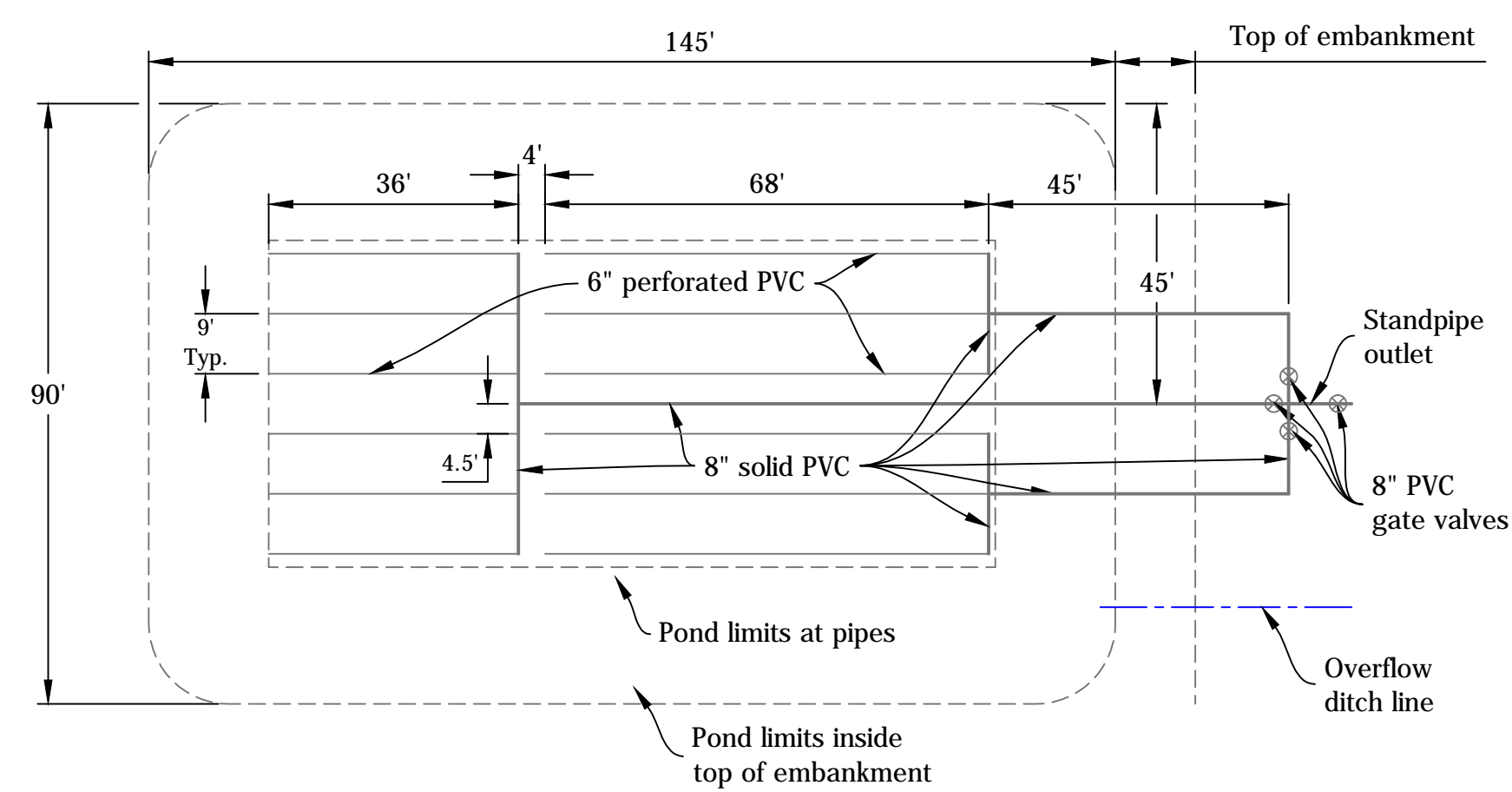


Plan View

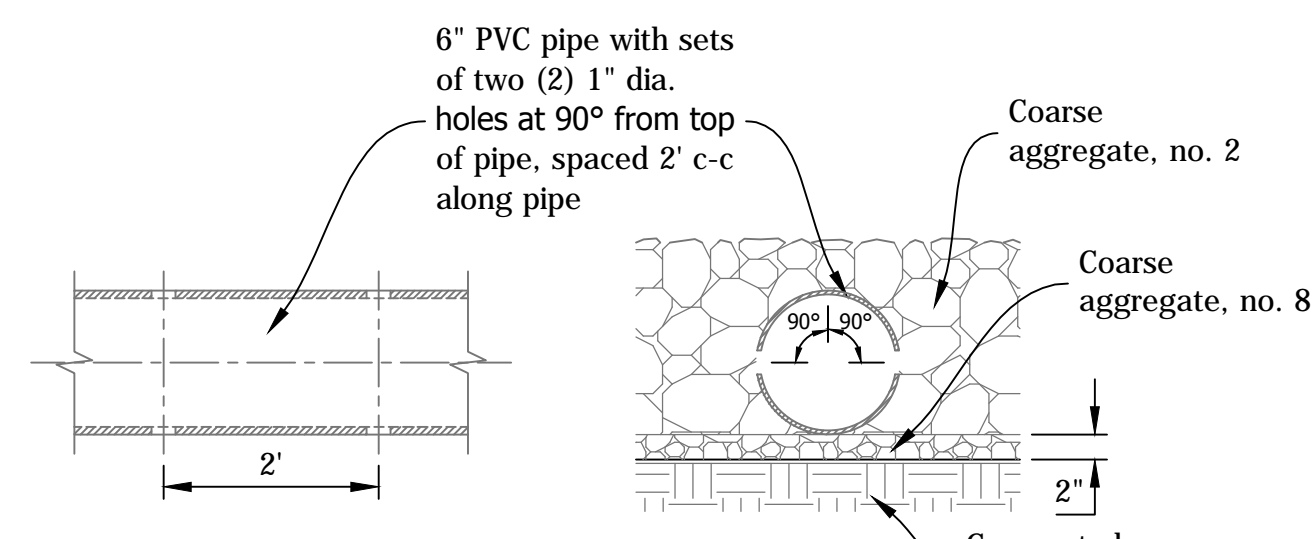


Section View

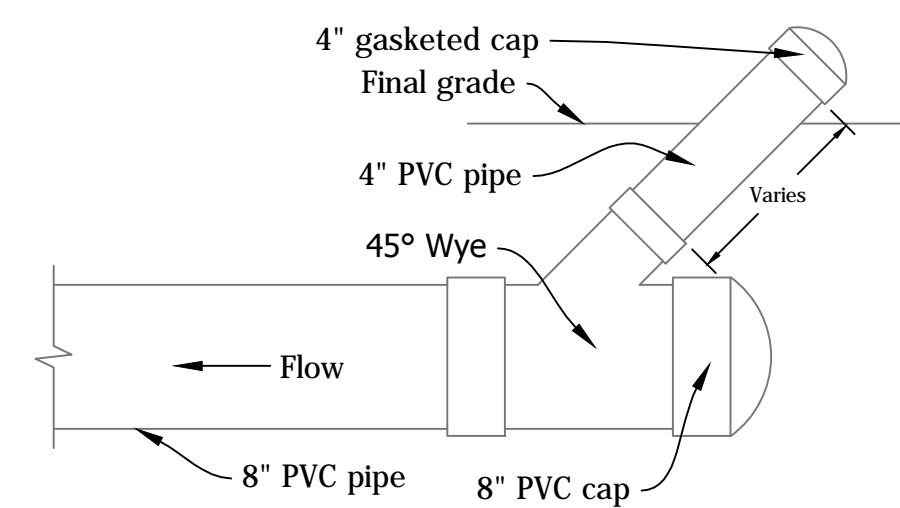
1 Vertical Flow Pond (VFP)
Not to Scale



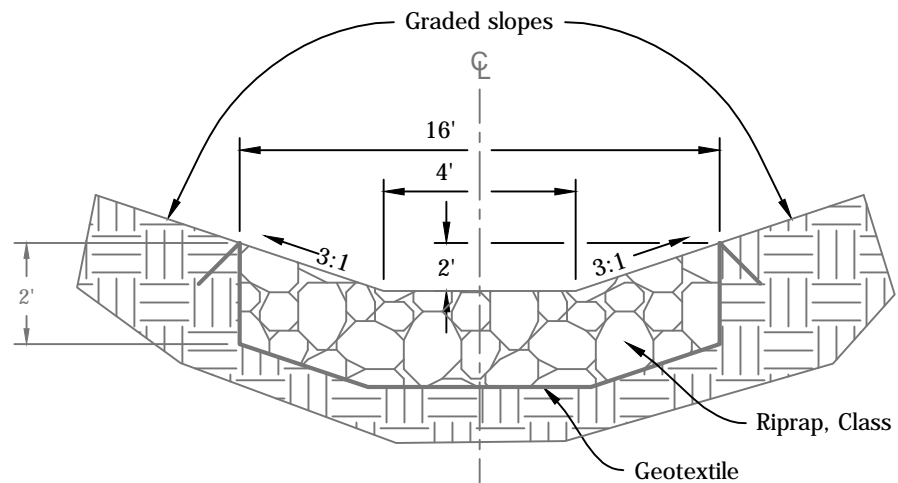
2 VFP Pipe Layout
Not to Scale



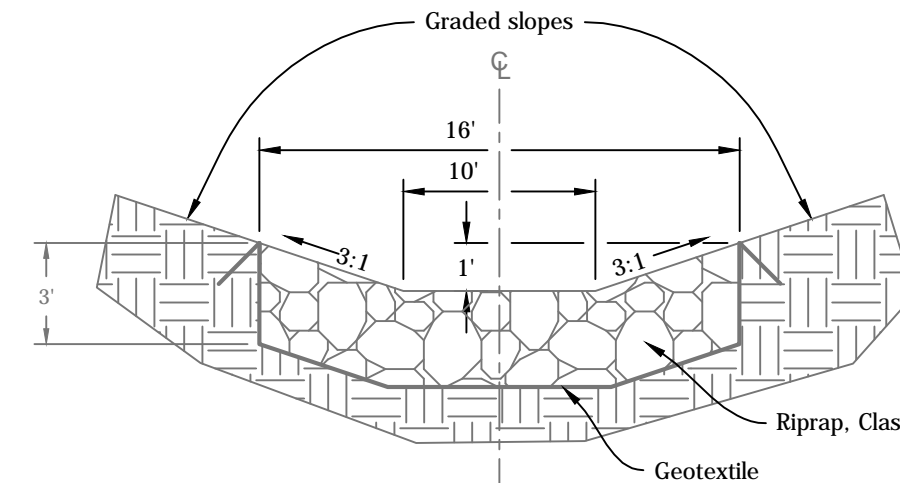
3 VFP Perforation Pattern
Not to Scale



4 Pipe Cleanout
Not to Scale



5 Outlet Ditch Lines A-D & F-G, Type I
Not to Scale



6 Overflow Ditch Line E, Type II
Not to Scale

Outlet ditch line A, Type I, 28 LFT
Centerline Report
0+00.00, Begin, N: 1.398,453.14 E: 2,909,007.54
0+00.00, PT, Brg: N 01°30'25\"/>

Outlet ditch line D, Type I, 125 LFT
Centerline Report
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0+00.00, PT, Brg: N 35°35'19\"/>

Outlet ditch line F, Type I, 48 LFT
Centerline Report
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0+00.00, Brg: N 14°27'35\"/>

Outlet ditch line B, Type I, 28 LFT
Centerline Report
0+00.00, Begin, N: 1.398,752.02 E: 2,909,016.09
0+00.00, PT, Brg: N 01°30'25\"/>

Outlet ditch line E, Type I, 42 LFT
Centerline Report
0+00.00, Begin, N: 1.398,818.74 E: 2,909,356.06
0+00.00, PT, Brg: N 14°27'35\"/>

Outlet ditch line G, Type I, 223 LFT
Centerline Report
0+00.00, Begin, N: 1.399,032.24 E: 2,909,266.92
0+00.00, PT, Brg: N 14°27'35\"/>

Outlet ditch line C, Type I, 28 LFT
Centerline Report
0+00.00, Begin, N: 1.399,071.33 E: 2,908,989.45
0+00.00, PT, Brg: N 77°46'49\"/>

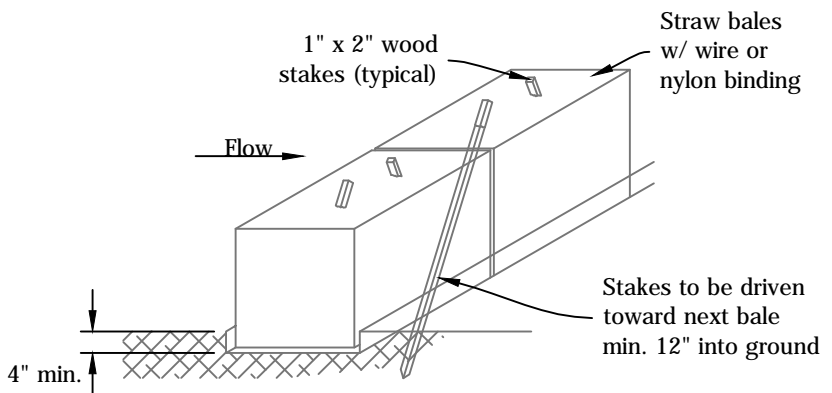
Outlet ditch line E, Type I, 42 LFT
Centerline Report
0+00.00, Begin, N: 1.398,818.74 E: 2,909,356.06
0+00.00, PT, Brg: N 14°27'35\"/>

Outlet ditch line G, Type I, 223 LFT
Centerline Report
0+00.00, Begin, N: 1.399,032.24 E: 2,909,266.92
0+00.00, PT, Brg: N 14°27'35\"/>

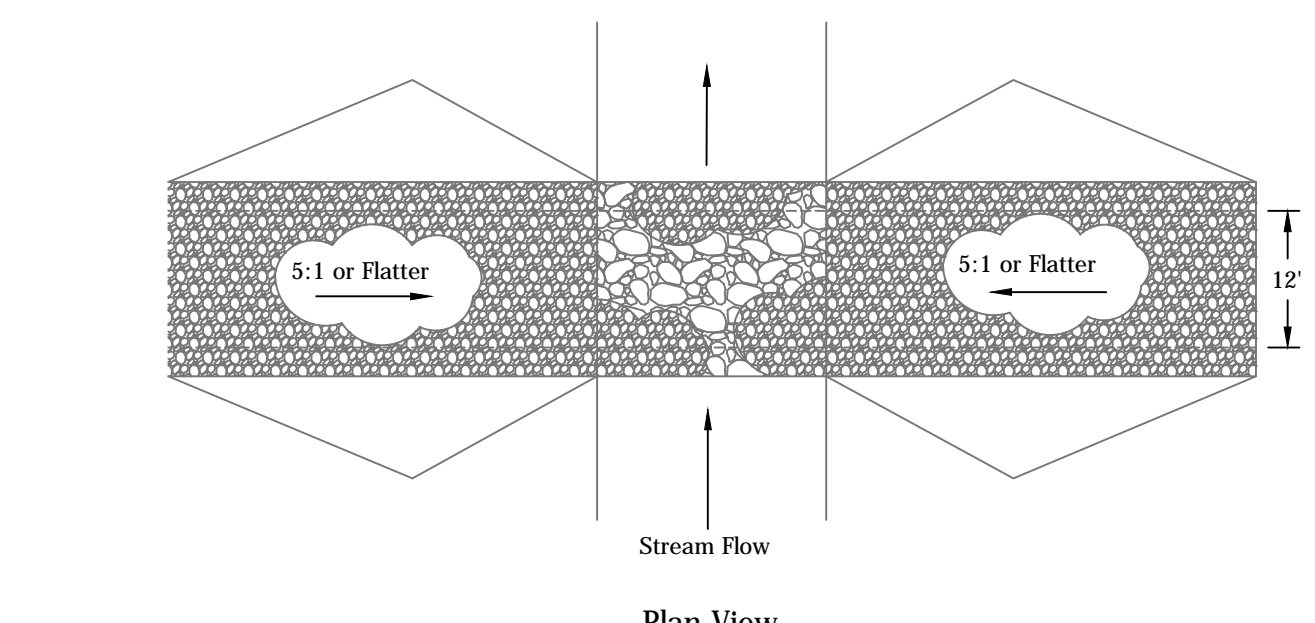
7 Outlet Ditch Lines - Centerline & Profile Reports
No Scale

Piping Notes:

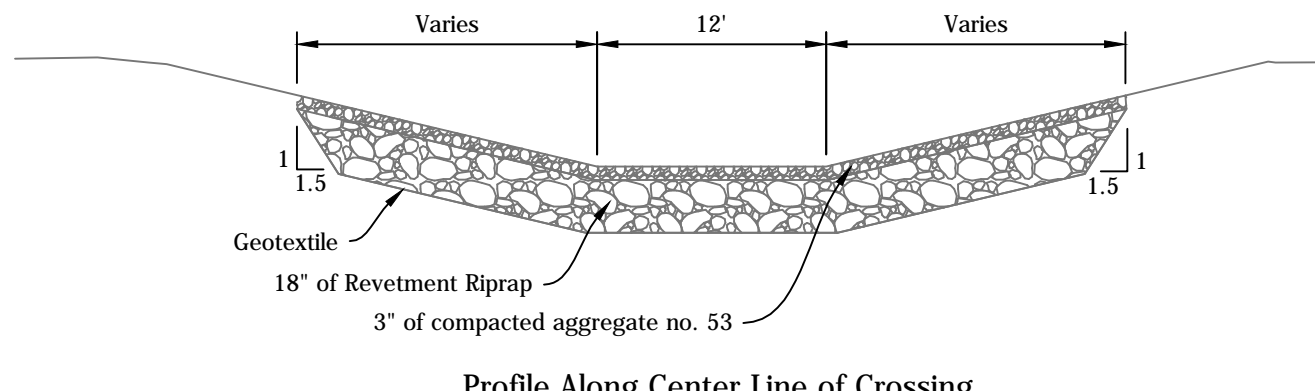
- All pipes shall be Schedule 40.
- Cleanouts (3) as shown in Detail 4, this Sheet, shall be provided for each 8\"/>



8 Temporary Check Dam, Straw Bale
Not to Scale



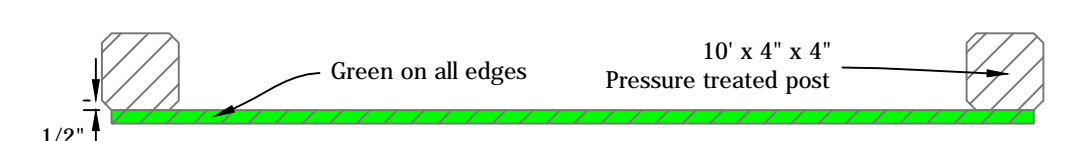
Plan View



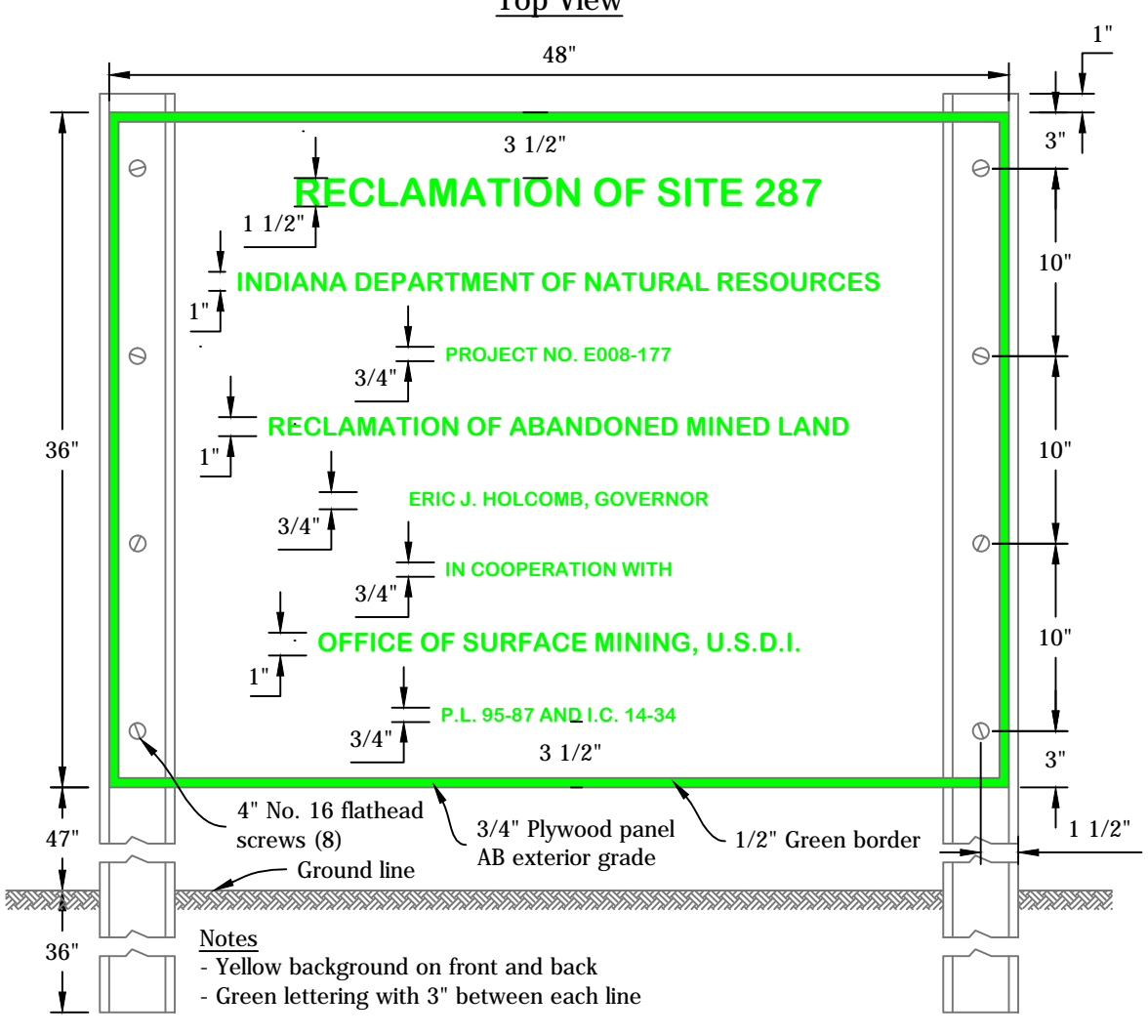
Profile Along Center Line of Crossing

- NOTES**
- Compact surfacing material by equipment travel. The finished top surface of the rock in the bottom of the channel shall be no higher than the ditch bottom at the upstream edge of the crossing. It is expected that surfacing material will have to be replaced following high flow events.
 - Blend approaches.
 - Runoff shall be diverted from the approach.

9 Low Water Crossing
Not to Scale

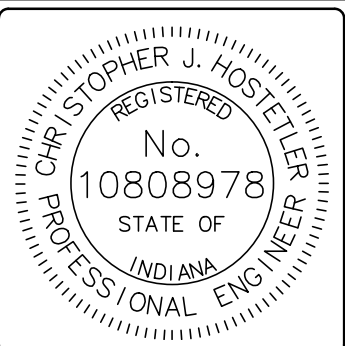


Top View



Front View

10 Project Sign
Not to Scale



RECOMMENDED FOR APPROVAL: *Christopher J. Hostetler* 5/12/17 DATE

DESIGNED BY: C.J.H. DRAWN BY: C.J.H. DATE REVISED: 3/1/2017 2:31:30 PM

DATE MADE: 9/19/2016

DETAILS - VERTICAL FLOW POND

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE: AS NOTED

PROJECT: E008-177

SHEET: 8 of 8

SITE: 287