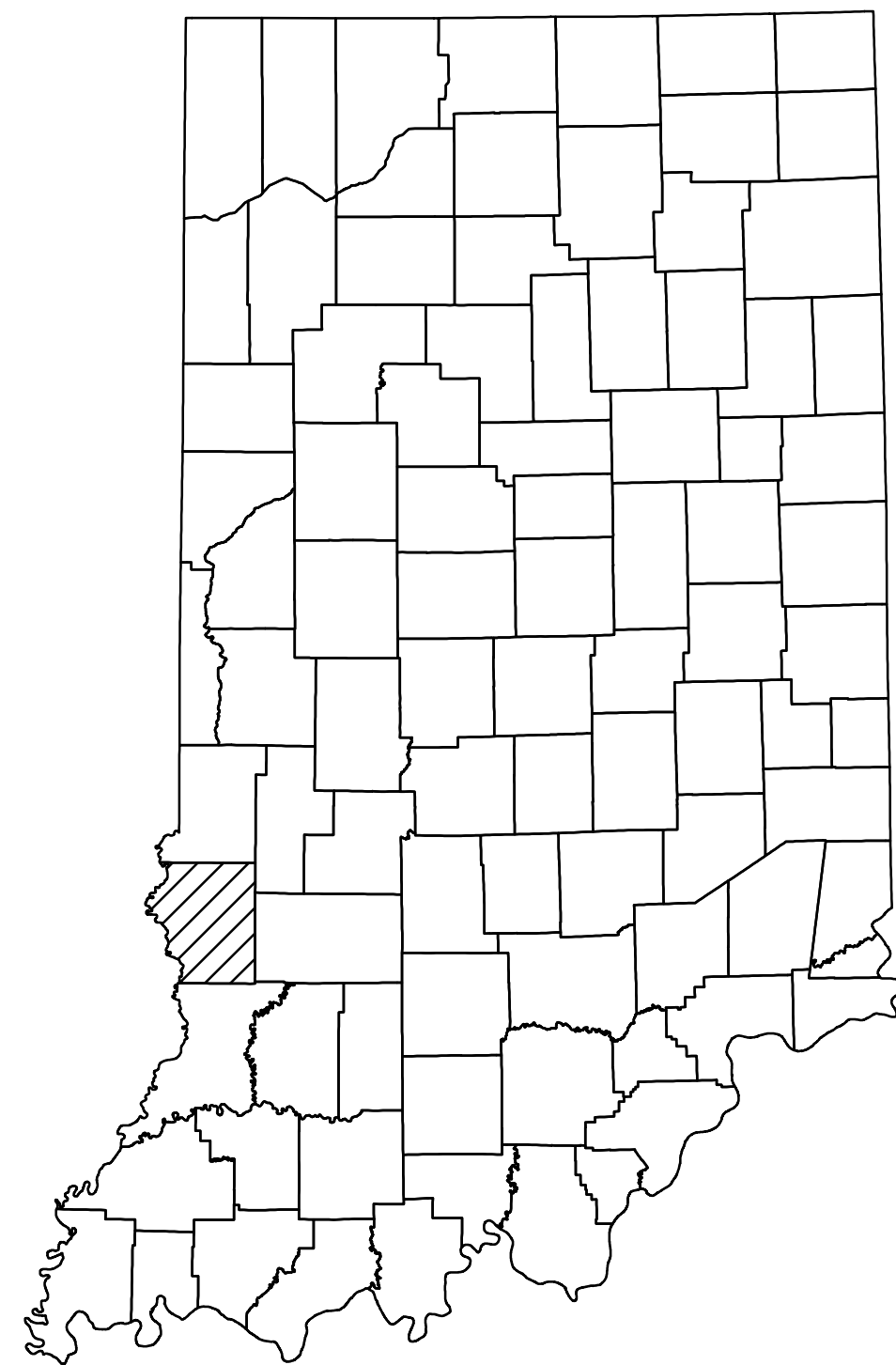


BUCKTOWN HIGHWALL

SITE NO.	CONTRACT NO.
510	DEL1915208005/E008-200

SULLIVAN COUNTY



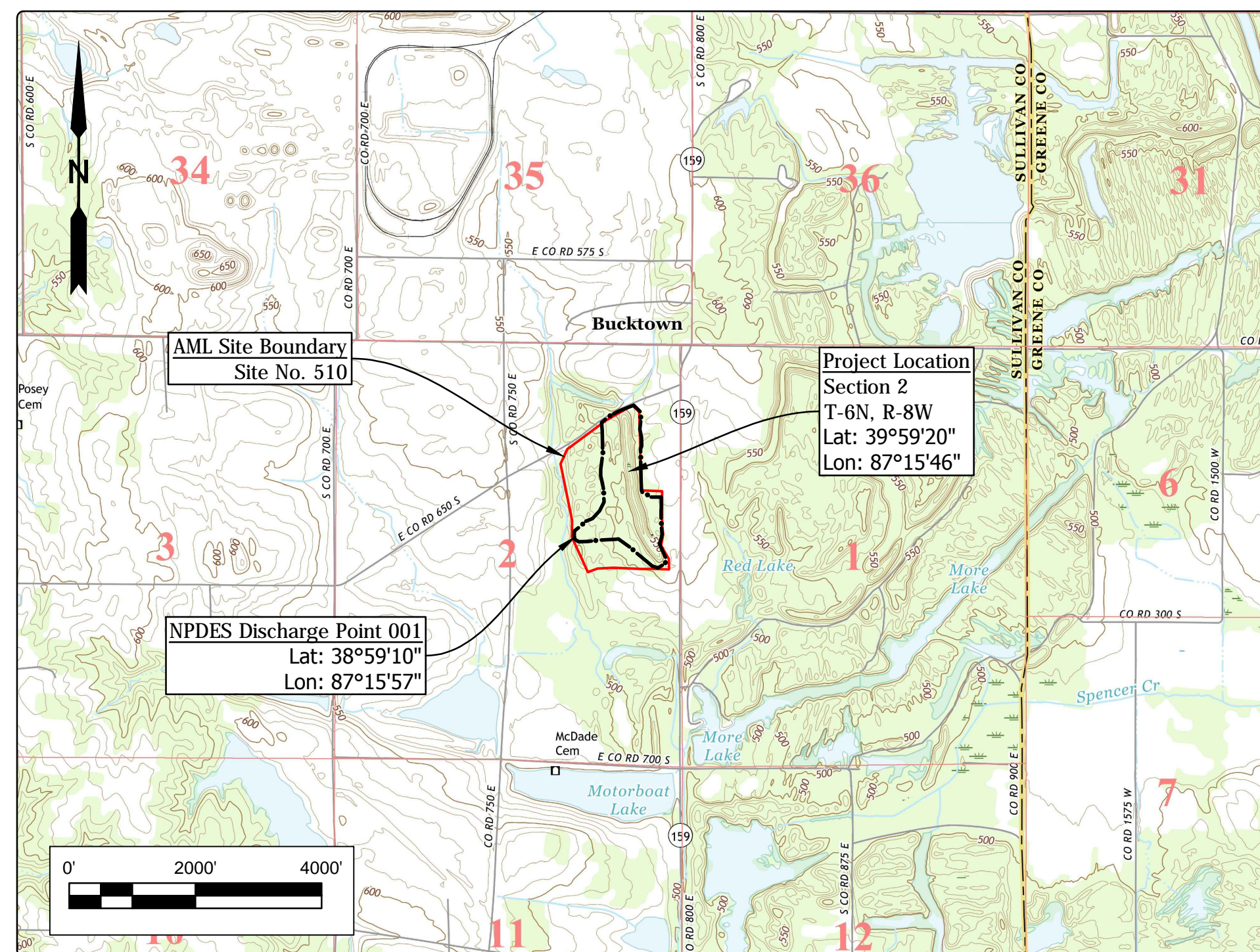
STATE OF INDIANA
INDIANA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION



ABANDONED COAL MINE
RESTORATION

BUCKTOWN HIGHWALL
SITE 510
CONTRACT DEL1915208005/E008-200
SULLIVAN COUNTY

Clear and grub, backfill highwall, grade piles and embankments, backfill vertical opening, demolish equipment and facilities, improve drainage, and revegetate all disturbed areas.



Project Location Map
Bucktown US TOPO (USGS, 2016)

GENERAL NOTES

2010 AML Standard Specifications to be used with these plans.
An NPDES discharge permit is required for this project.
Plans developed from two (2) separate aerial topographic mapping surveys by Williams Aerial & Mapping, Inc. in NAD 83, Indiana State Plane West, Feet (see Site Map and Site Plans)

INDEX

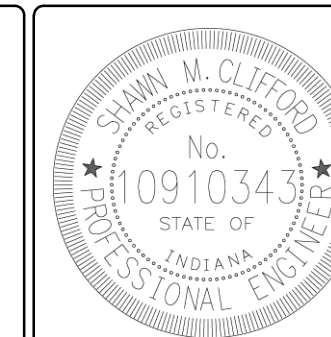
SHEET NO.	SHEET TITLE
1	TITLE, INDEX, & LOCATION MAP
2	SITE MAP
3-4	SITE PLANS
5	SECTIONS
6	REVEGETATION PLAN & DETAILS

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: Duke Energy 390 N. Main Street Martinsville, IN 46151 (765) 349-4012	NATURAL GAS: Ohio Valley Gas Corp. (Sullivan) PO Box 469 Winchester, IN 47394 Phone: (812) 268-6368
WIN Energy REMC 3981 South US Hwy 41 Vincennes, IN 47591 (812) 882-5140	PIPELINE: Texas Gas Transmission - Oaktown 9 Greenway Plaza, Suite 2800 Houston, TX 77046 (713) 479-8224
TELECOM: Smithville Telephone Co., Inc. 1600 W. Temperance Street Ellettsville, IN 47429 (812) 876-9103	WATER/SANITARY: Pleasantville Water Co. Inc. 6416 East CR 750 S. Carlisle, IN 47838 (812) 659-2060








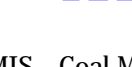
Call Before You Dig. Indiana Underground Plant Protection Service (IUPPS) 1-800-382-5544 or 811 from your mobile phone.



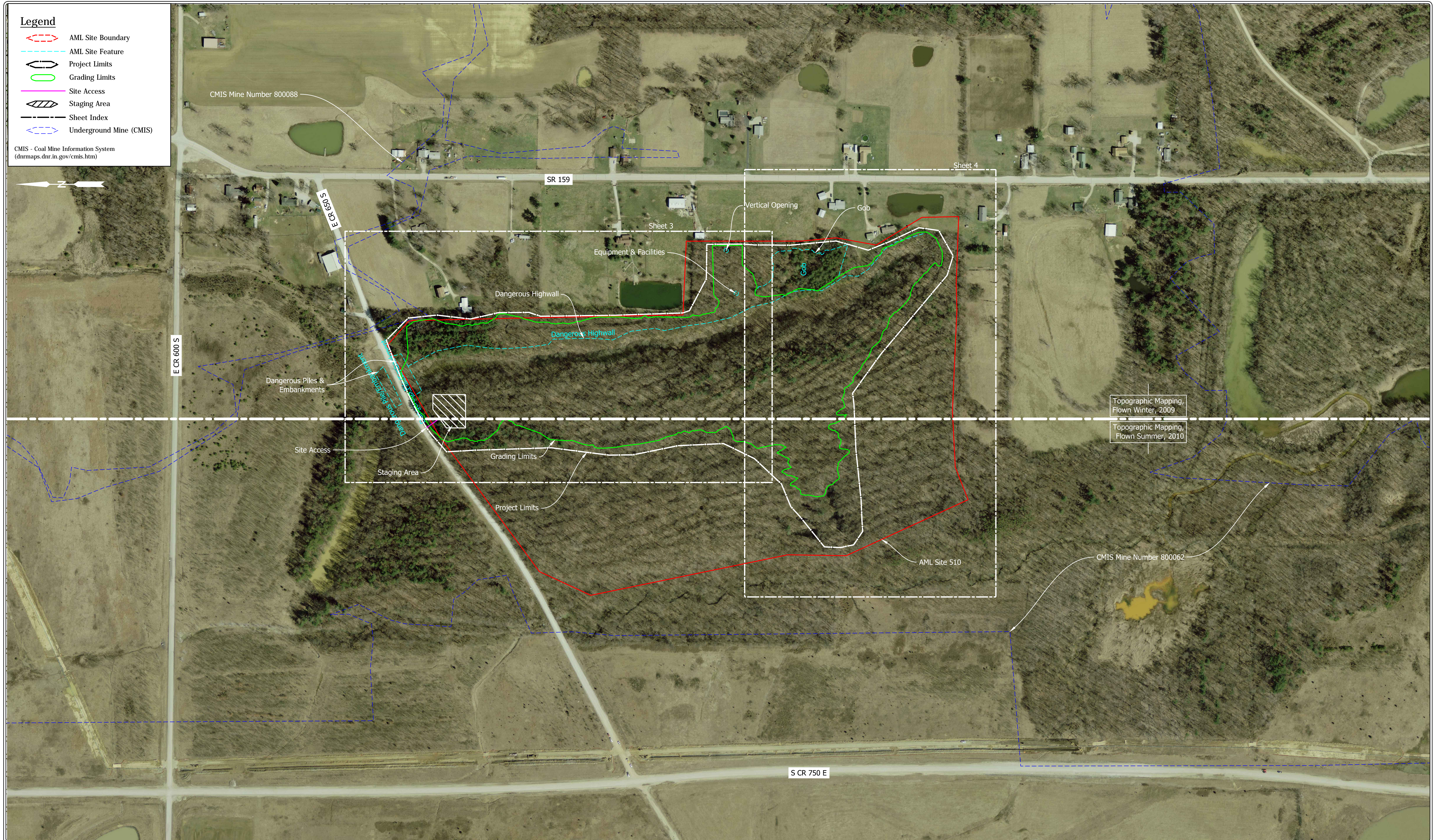
PLANS
PREPARED BY: INDIANA DEPARTMENT OF NATURAL RESOURCES (812) 665-2207
DIVISION OF RECLAMATION
CERTIFIED BY: *Shawn M. Cliftford* No. 091034 PHONE NUMBER 09/28/2018 DATE
APPROVED FOR LETTING: *M. D. E. [Signature]* 09/28/2018 DATE
DIVISION OF RECLAMATION


SCALE AS NOTED	SHEET 1 OF 6
PROJECT E008-200	SITE 510

Legend

-  AML Site Boundary
-  AML Site Feature
-  Project Limits
-  Grading Limits
-  Site Access
-  Staging Area
-  Sheet Index
-  Underground Mine (CMIS)

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

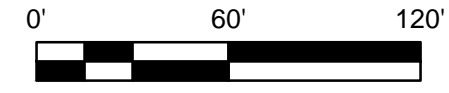


		RECOMMENDED FOR APPROVAL: <i>Sh M Clifford</i> 09/28/2018 <small>DATE</small>	DATE MADE 03/15/2018	SITE MAP STATE OF INDIANA DEPARTMENT OF NATURAL RESOURCES <small>DIVISION OF RECLAMATION</small>	SCALE 1" = 200'	SHEET 2 OF 6
	DESIGNED BY S.M.C.	DRAWN BY S.M.C.	DATE REVISED 9/7/2018 3:25:42 PM		PROJECT E008-200	SITE 510

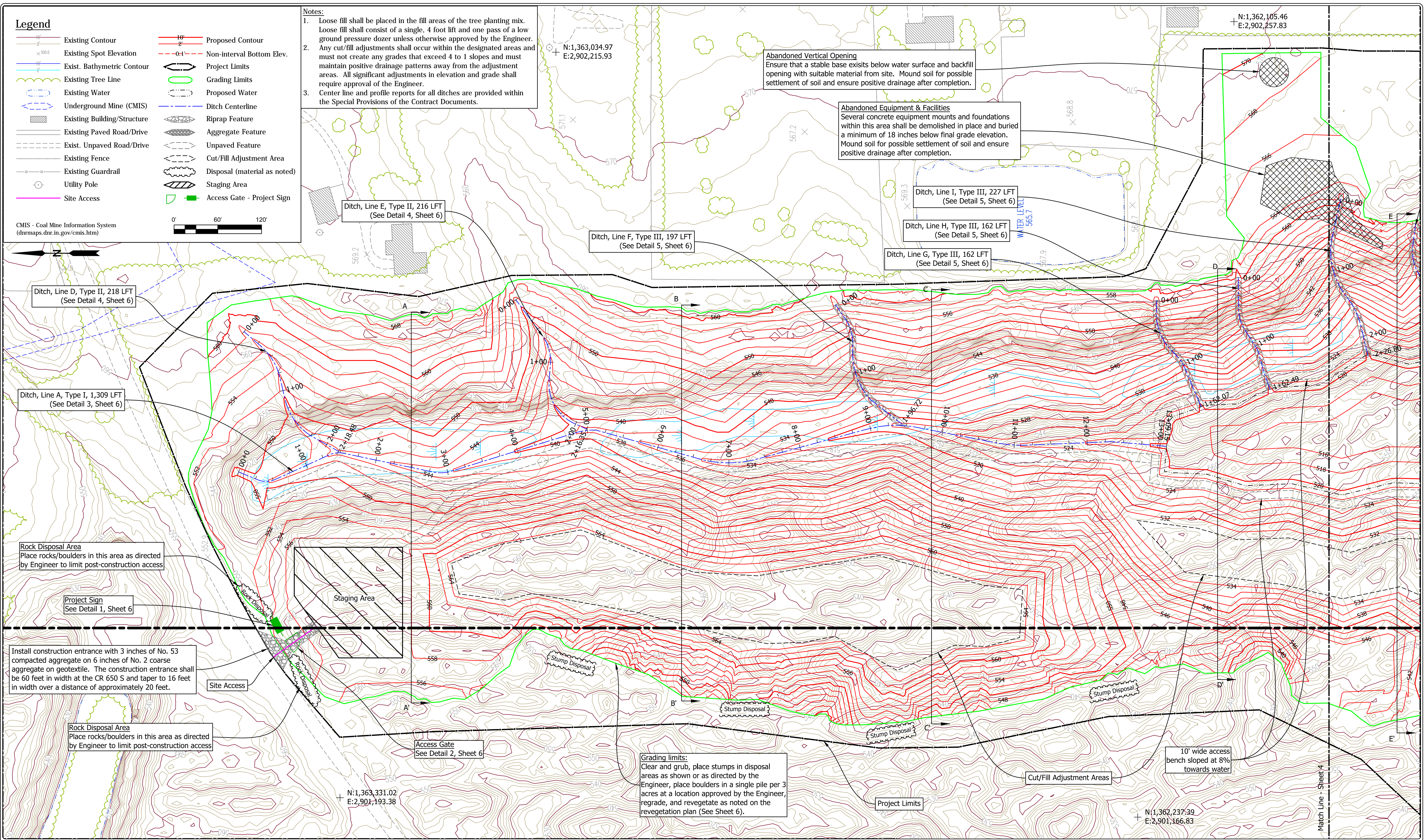
Legend

- Existing Contour
- Proposed Contour
- Existing Spot Elevation
- Non-interval Bottom Elev.
- Exist. Bathymetric Contour
- Existing Tree Line
- Existing Water
- Underground Mine (CMIS)
- Existing Building/Structure
- Existing Paved Road/Drive
- Exist. Unpaved Road/Drive
- Existing Fence
- Existing Guardrail
- Utility Pole
- Site Access
- 10' Proposed Contour
- 2' Proposed Contour
- 0-1' Non-interval Bottom Elev.
- Project Limits
- Grading Limits
- Proposed Water
- Ditch Centerline
- Riprap Feature
- Aggregate Feature
- Unpaved Feature
- Cut/Fill Adjustment Area
- Disposal (material as noted)
- Staging Area
- Access Gate - Project Sign

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



- Notes:**
- Loose fill shall be placed in the fill areas of the tree planting mix. Loose fill shall consist of a single, 4 foot lift and one pass of a low ground pressure dozer unless otherwise approved by the Engineer.
 - Any cut/fill adjustments shall occur within the designated areas and must not create any grades that exceed 4 to 1 slopes and must maintain positive drainage patterns away from the adjustment areas. All significant adjustments in elevation and grade shall require approval of the Engineer.
 - Center line and profile reports for all ditches are provided within the Special Provisions of the Contract Documents.



Abandoned Vertical Opening
 Ensure that a stable base exists below water surface and backfill opening with suitable material from site. Mound soil for possible settlement of soil and ensure positive drainage after completion.

Abandoned Equipment & Facilities
 Several concrete equipment mounts and foundations within this area shall be demolished in place and buried a minimum of 18 inches below final grade elevation. Mound soil for possible settlement of soil and ensure positive drainage after completion.

Ditch, Line E, Type II, 216 LFT
 (See Detail 4, Sheet 6)

Ditch, Line F, Type III, 197 LFT
 (See Detail 5, Sheet 6)

Ditch, Line I, Type III, 227 LFT
 (See Detail 5, Sheet 6)

Ditch, Line H, Type III, 162 LFT
 (See Detail 5, Sheet 6)

Ditch, Line G, Type III, 162 LFT
 (See Detail 5, Sheet 6)

Ditch, Line D, Type II, 218 LFT
 (See Detail 4, Sheet 6)

Ditch, Line A, Type I, 1,309 LFT
 (See Detail 3, Sheet 6)

Rock Disposal Area
 Place rocks/boulders in this area as directed by Engineer to limit post-construction access

Project Sign
 See Detail 1, Sheet 6

Install construction entrance with 3 inches of No. 53 compacted aggregate on 6 inches of No. 2 coarse aggregate on geotextile. The construction entrance shall be 60 feet in width at the CR 650 S and taper to 16 feet in width over a distance of approximately 20 feet.

Rock Disposal Area
 Place rocks/boulders in this area as directed by Engineer to limit post-construction access

Access Gate
 See Detail 2, Sheet 6

Grading limits:
 Clear and grub, place stumps in disposal areas as shown or as directed by the Engineer, 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 (See Sheet 6).

10' wide access bench sloped at 8% towards water

Cut/Fill Adjustment Areas

Project Limits

N:1,362,237.39
 E:2,901,166.83

Match Line - Sheet 4



RECOMMENDED FOR APPROVAL: *Shawn M. Clifford* 09/28/2018
 DATE

DESIGNED BY
 S.M.C.

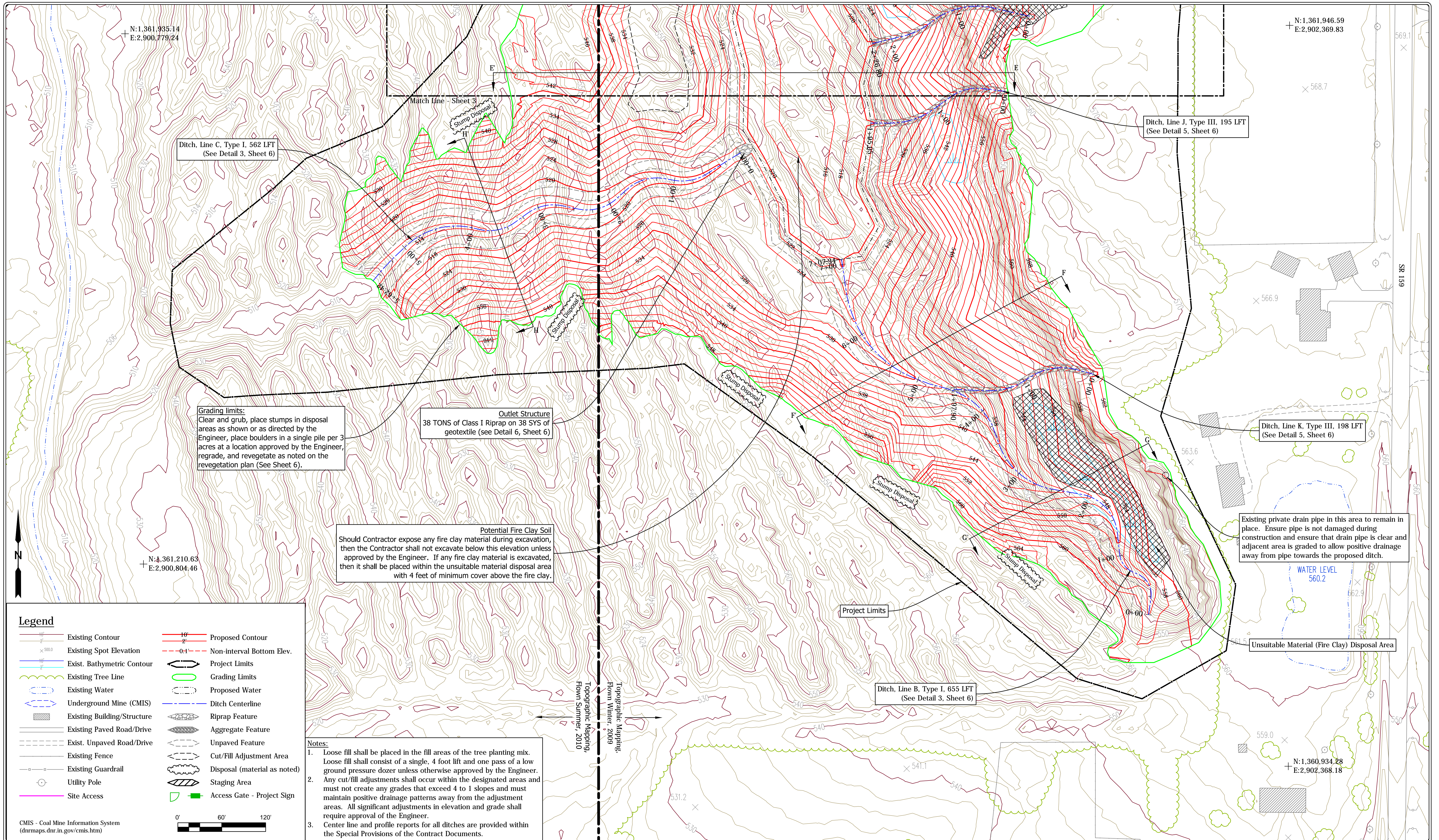
DRAWN BY
 S.M.C.

DATE MADE
 03/15/2018
 DATE REVISED
 9/7/2018 3:25:42 PM

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

SCALE
 1" = 60'
 PROJECT
 E008-200

SHEET
 3 OF 6
 SITE
 510



N: 1,361,935.14
E: 2,900,779.24

N: 1,361,946.59
E: 2,902,369.83

Ditch, Line C, Type I, 562 LFT
(See Detail 3, Sheet 6)

Ditch, Line J, Type III, 195 LFT
(See Detail 5, Sheet 6)

Grading limits:
Clear and grub, place stumps in disposal areas as shown or as directed by the Engineer, 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 (See Sheet 6).

Outlet Structure
38 TONS of Class I Riprap on 38 SYS of geotextile (see Detail 6, Sheet 6)

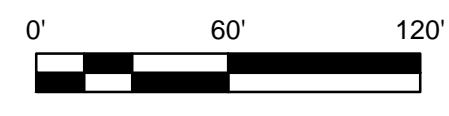
Potential Fire Clay Soil
Should Contractor expose any fire clay material during excavation, then the Contractor shall not excavate below this elevation unless approved by the Engineer. If any fire clay material is excavated, then it shall be placed within the unsuitable material disposal area with 4 feet of minimum cover above the fire clay.

Existing private drain pipe in this area to remain in place. Ensure pipe is not damaged during construction and ensure that drain pipe is clear and adjacent area is graded to allow positive drainage away from pipe towards the proposed ditch.

Unsuitable Material (Fire Clay) Disposal Area

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

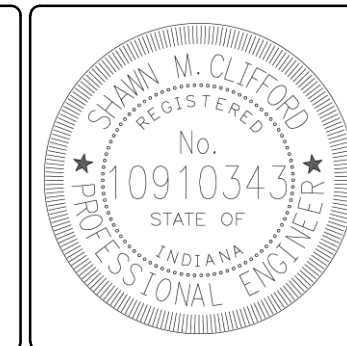
CMIS - Coal Mine Information System
(dnrmaps.dnr.in.gov/cmisis.htm)



- Notes:**
- Loose fill shall be placed in the fill areas of the tree planting mix. Loose fill shall consist of a single, 4 foot lift and one pass of a low ground pressure dozer unless otherwise approved by the Engineer.
 - Any cut/fill adjustments shall occur within the designated areas and must not create any grades that exceed 4 to 1 slopes and must maintain positive drainage patterns away from the adjustment areas. All significant adjustments in elevation and grade shall require approval of the Engineer.
 - Center line and profile reports for all ditches are provided within the Special Provisions of the Contract Documents.

Topographic Mapping,
Flown Summer, 2010

Topographic Mapping,
Flown Winter, 2009



RECOMMENDED FOR APPROVAL: *Shawn Clifford* 09/28/2018 DATE

DESIGNED BY: S.M.C. DRAWN BY: S.M.C.

DATE MADE: 03/15/2018

DATE REVISED: 9/7/2018 3:25:42 PM

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

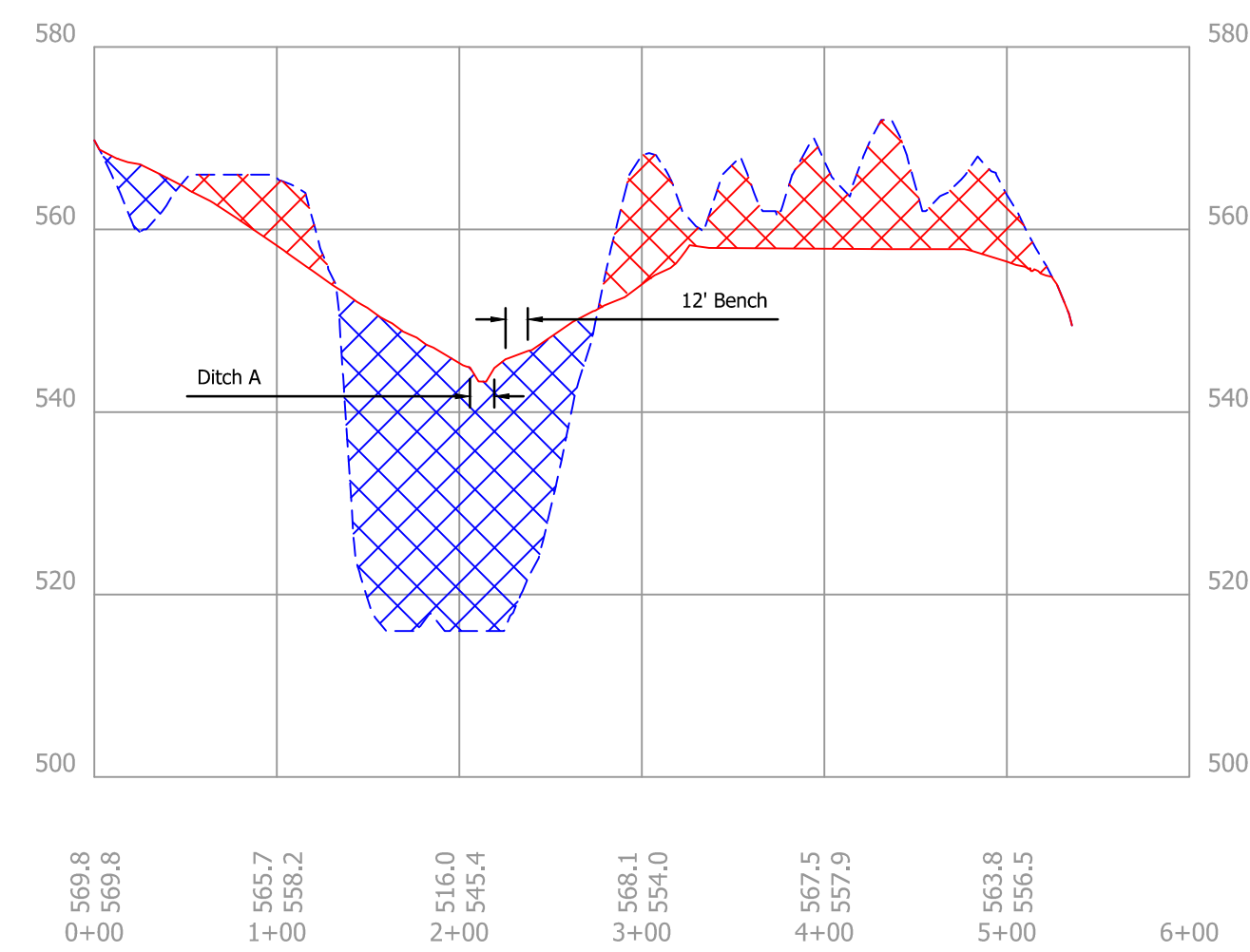
SCALE: 1" = 60'

PROJECT: E008-200

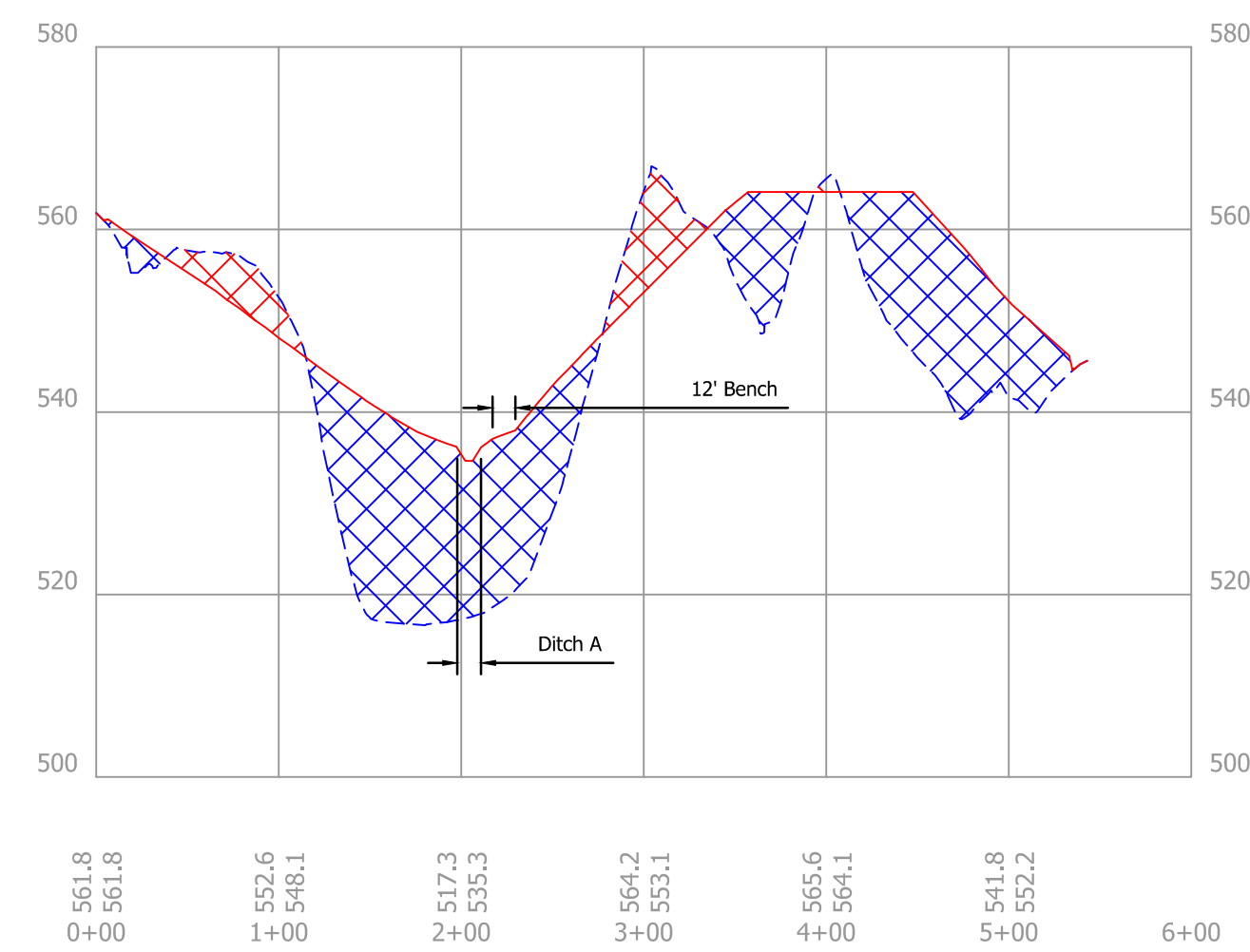
SHEET: 4 OF 6

SITE: 510

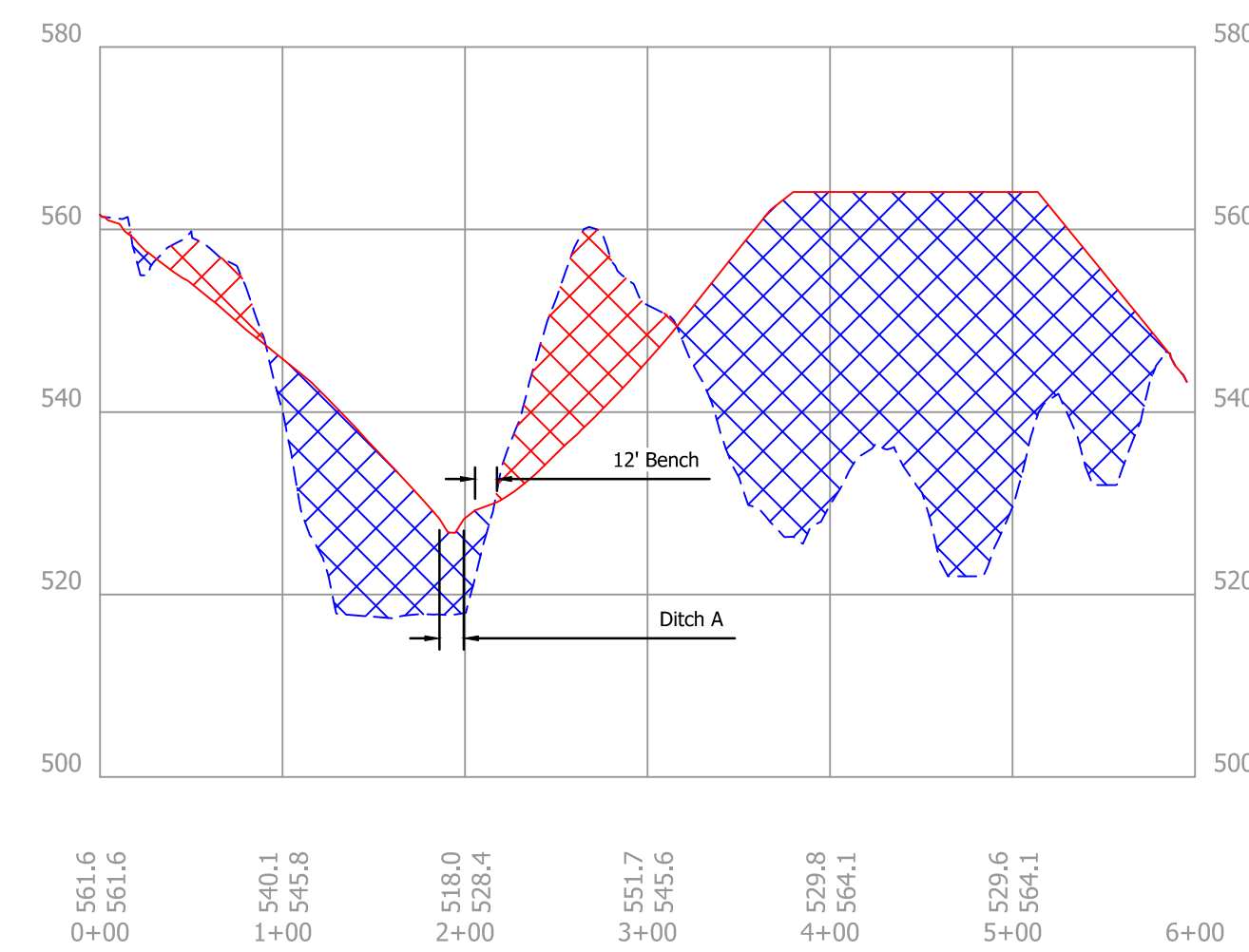
	Existing Grade
	Design Grade
	Cut
	Fill
	Water Elevation



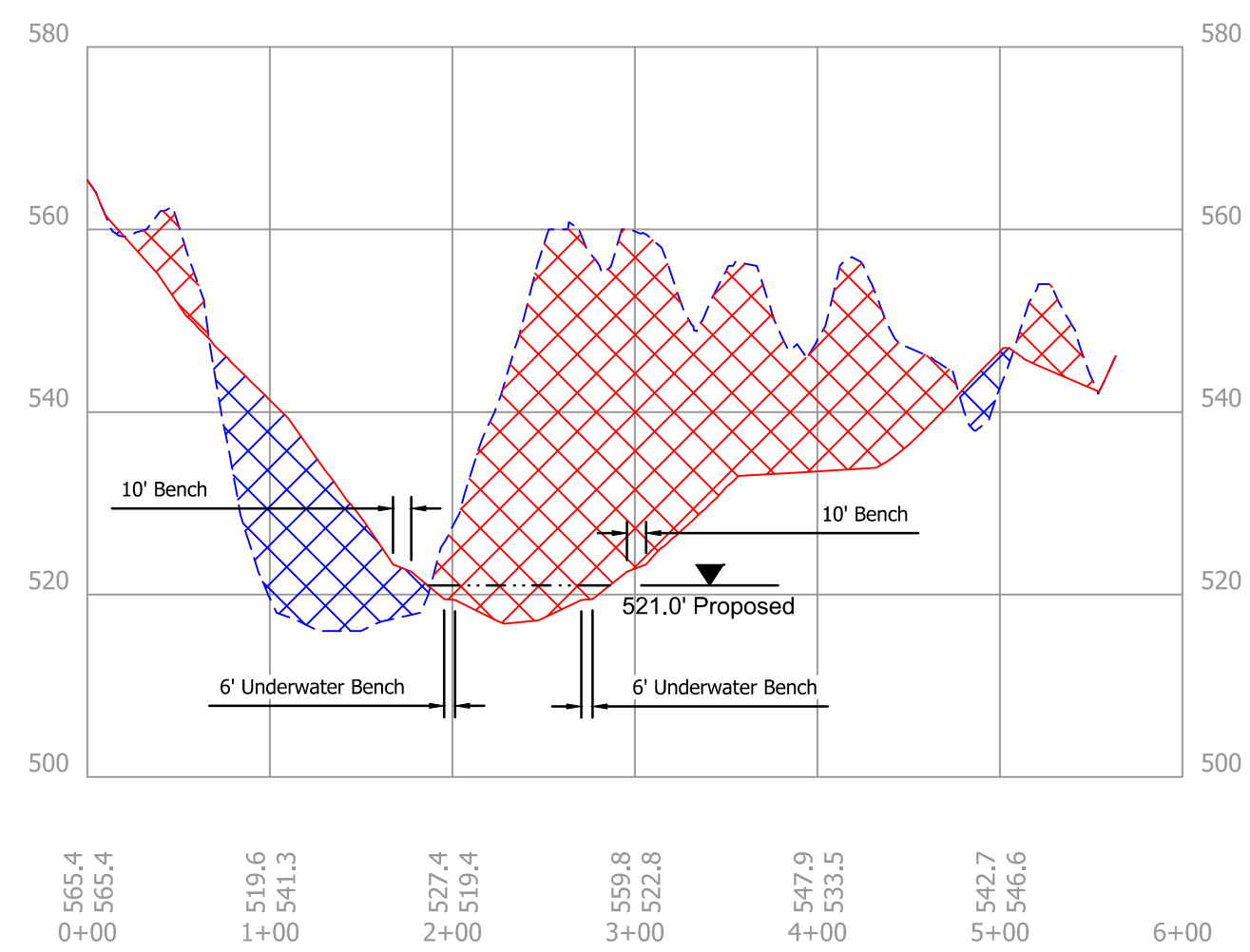
A Section A-A'
1" = 100' H, 20' V



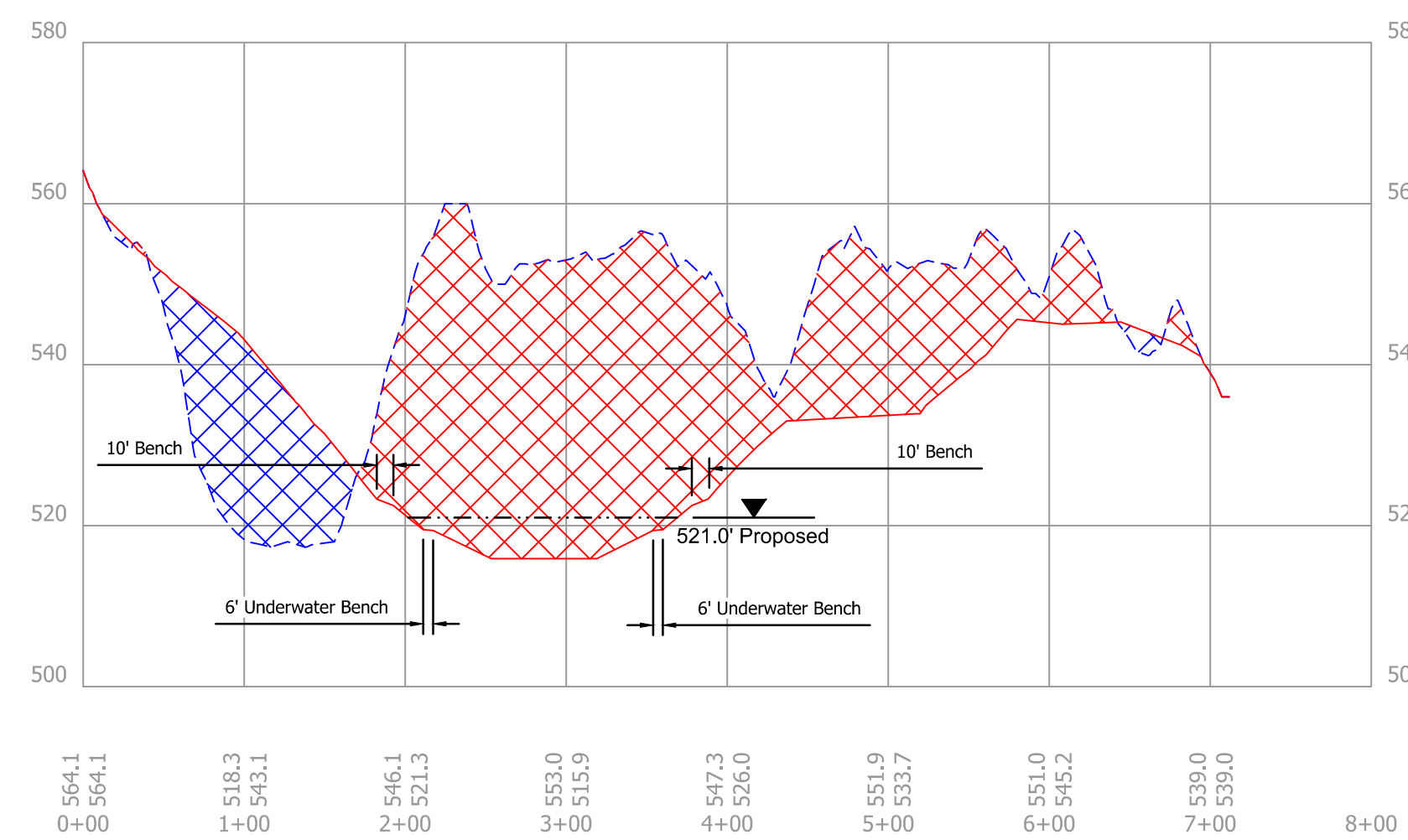
B Section B-B'
1" = 100' H, 20' V



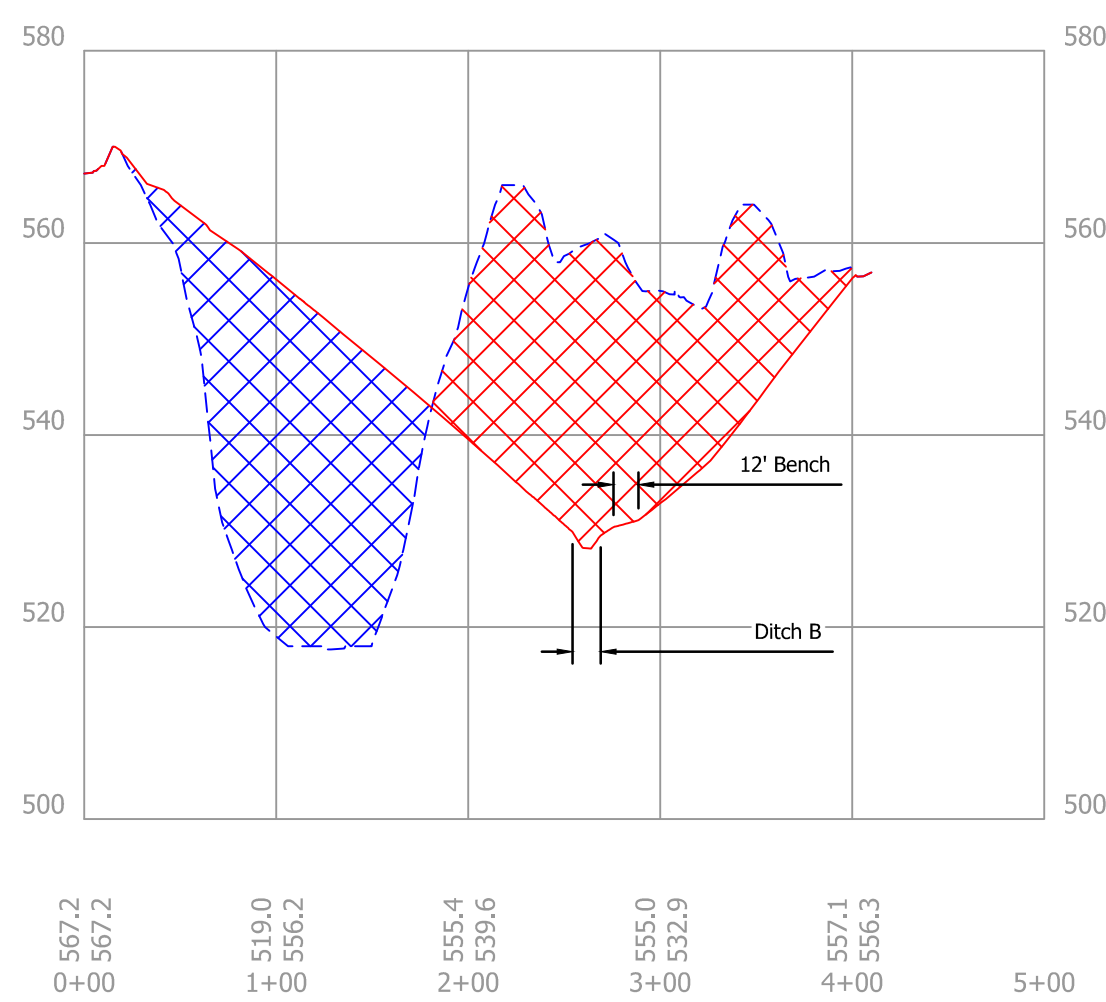
C Section C-C'
1" = 100' H, 20' V



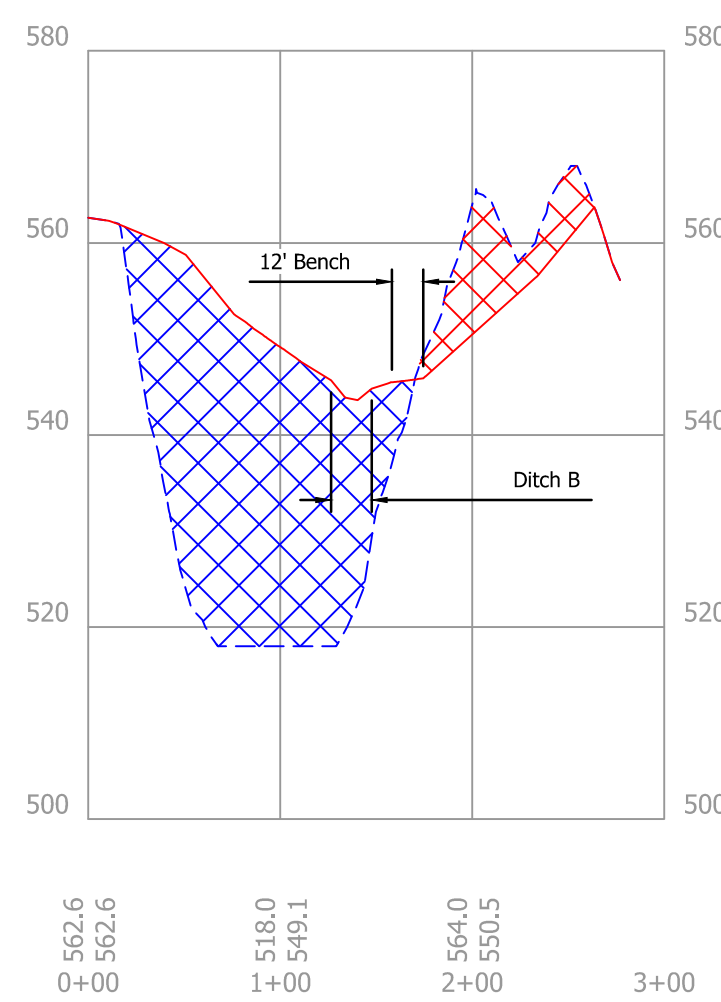
D Section D-D'
1" = 100' H, 20' V



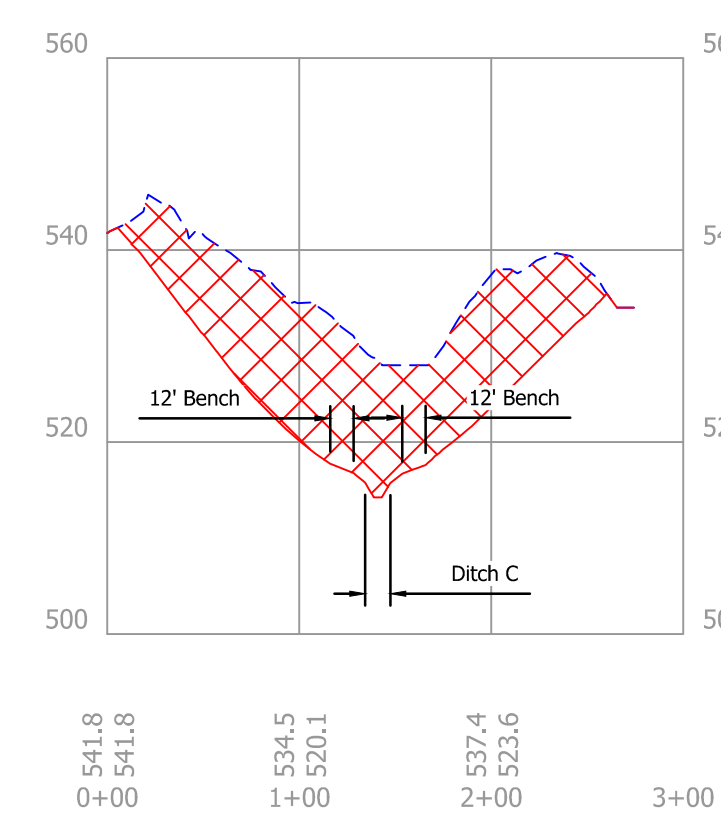
E Section E-E'
1" = 100' H, 20' V



F Section F-F'
1" = 100' H, 20' V



G Section G-G'
1" = 100' H, 20' V



H Section H-H'
1" = 100' H, 20' V



RECOMMENDED FOR APPROVAL: *Sh M Clifford* 09/28/2018
DATE

DESIGNED BY: S.M.C.
DRAWN BY: S.M.C.

DATE MADE: 03/15/2018

DATE REVISED: 9/7/2018 3:25:42 PM

SECTIONS
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE AS NOTED

PROJECT E008-200

SHEET 5 OF 6

SITE 510

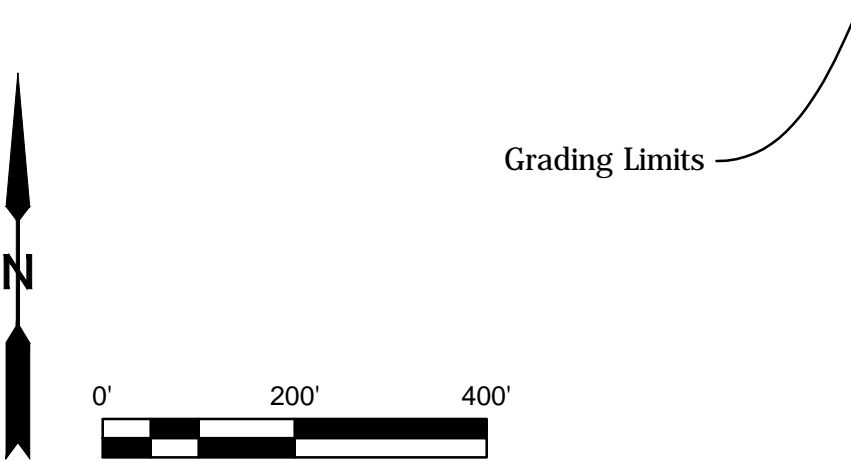
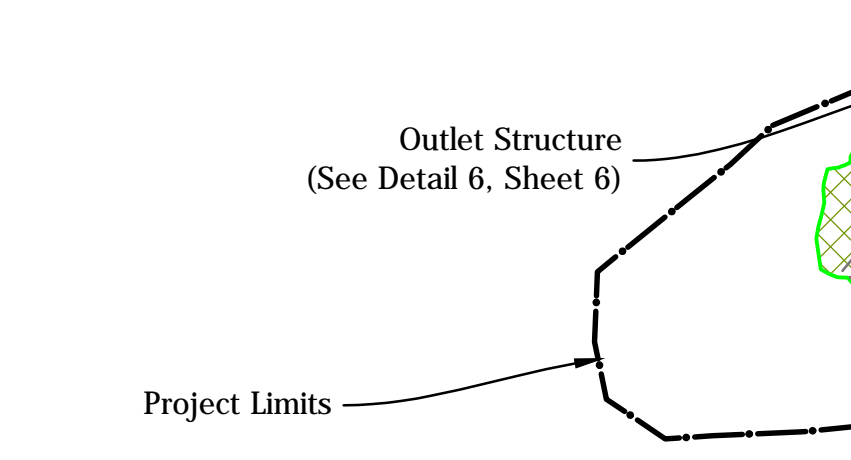
WETLAND SEED MIX	
SEED	PLS OZ./AC
PERMANENT GRASS/SEDGE:	
Fox Sedge (<i>Carex vulpinoidea</i>)	6
Blunt Spikerush (<i>Eleocharis obtusa</i>)	1
Virginia Wildrye (<i>Elymus virginicus</i>)	48
Common Rush (<i>Juncus effusus</i>)	5
Green Bulrush (<i>Scirpus atrovirens</i>)	5
Woolgrass (<i>Scirpus cyperinus</i>)	4
Softstem Bulrush (<i>Scirpus validus</i>)	5

FIELD SEED MIX	
SEED	LBS/AC
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

TREE PLANTING SEED MIX	
SEED	LBS/AC
PERMANENT GRASS/SEDGE:	
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
Red Clover (<i>Trifolium pratense</i>)	8

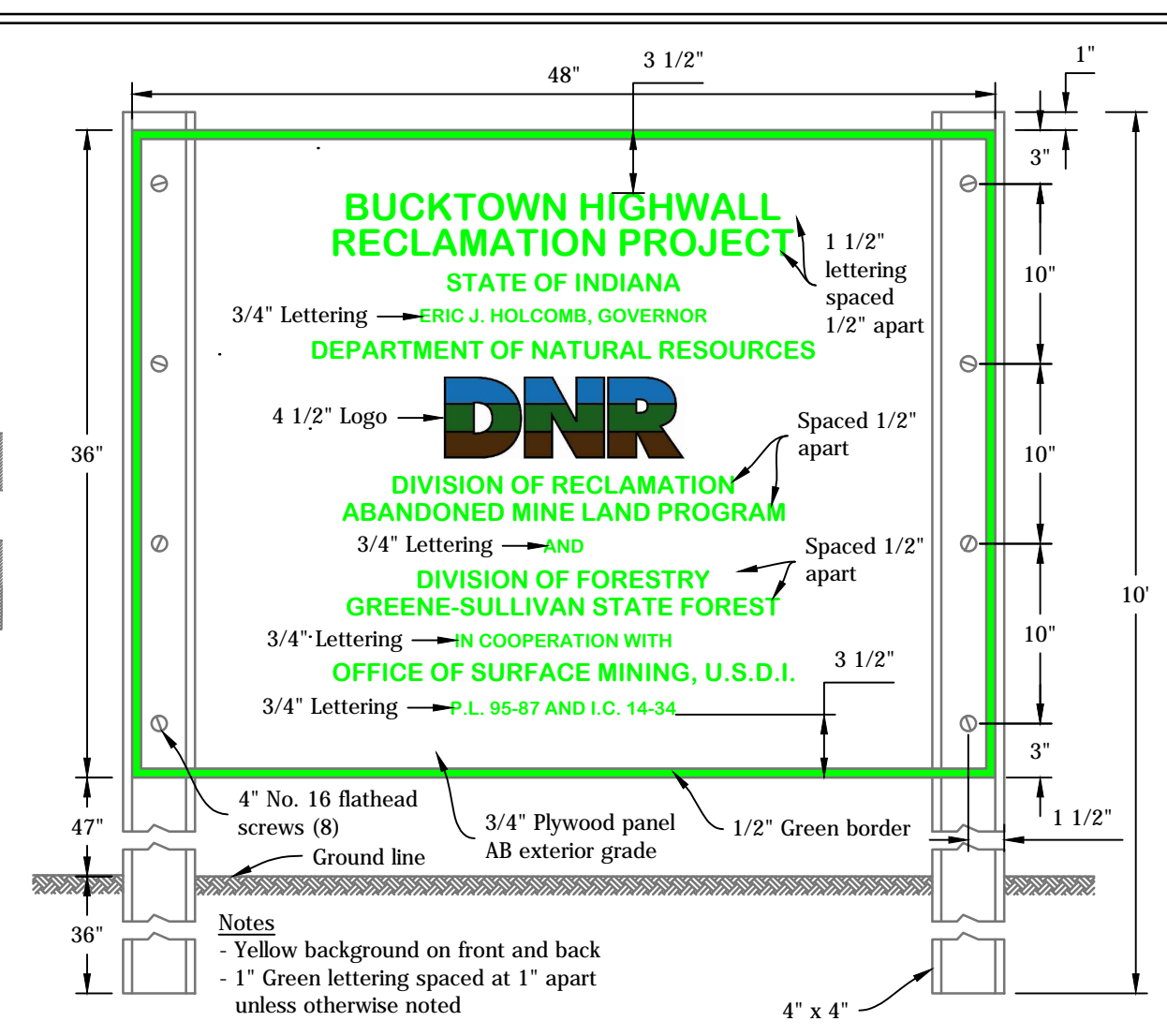
TREE PLANTING SEED MIX	
SEED	LBS/AC
PERMANENT GRASS/SEDGE:	
Alfalfa (<i>Medicago sativa</i>)	5
Switchgrass (<i>Panicum virgatum</i>)	5
Partridge Pea (<i>Chamaecrista fasciculata</i>)	2
Common Oat (<i>Avena sativa</i>)	50

- Notes:**
1. Wetland mix shall be spread 1 ft. each side of proposed water edge.
 2. Loose fill shall be placed in the fill areas of the tree planting mix. Loose fill shall consist of a single 4 ft. lift and one pass of a low ground pressure dozer unless otherwise approved by the Engineer.
 3. Field mix shall be placed on access routes, staging areas, and all other disturbed areas not otherwise specified on revegetation map, except in riprap, coarse aggregate, and final water areas.

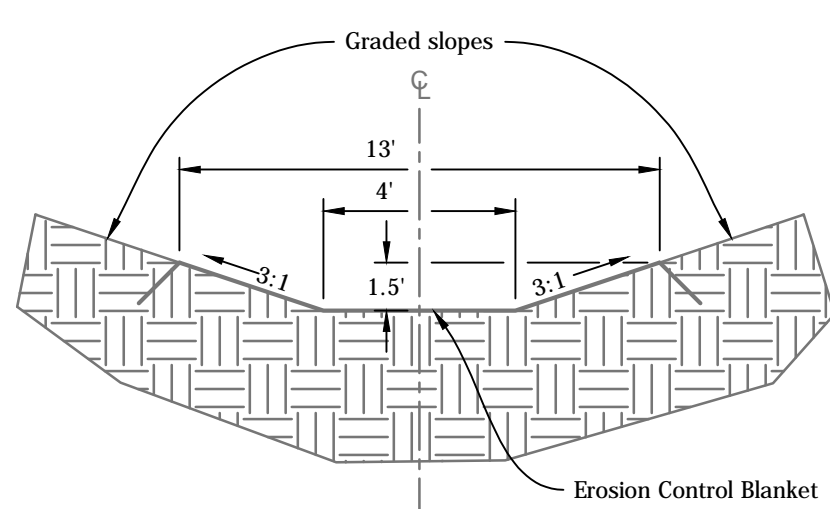


Legend	
	Building/Structure
	Paved Road/Drive
	Unpaved Road/Drive
	Project Limits
	Grading Limits
	Proposed Water
	Site Access
	Staging Area
	Riprap Feature
	Aggregate Feature
	Unpaved Feature
	Field Mix
	Wetland Mix
	Tree Planting Mix

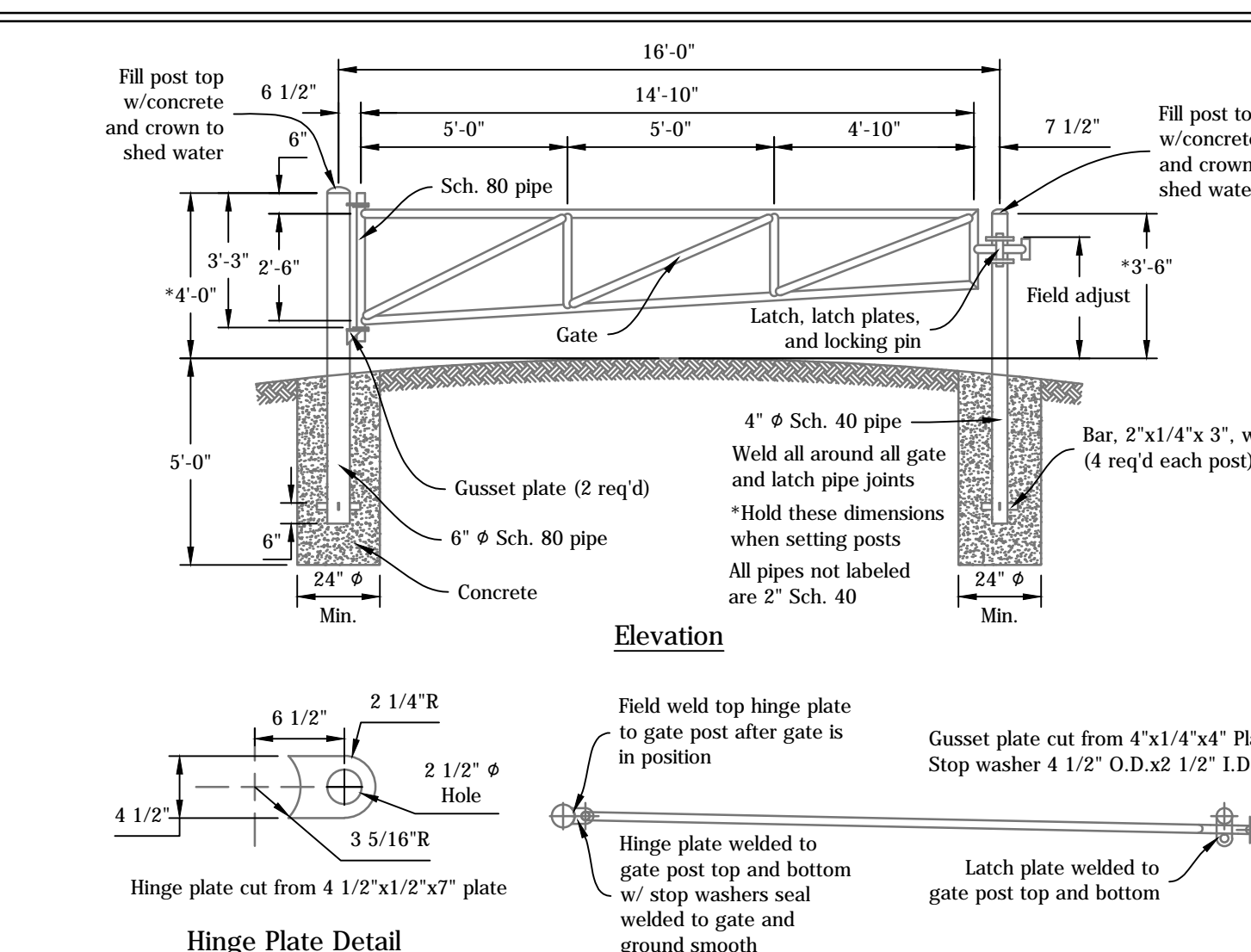
RP Revegetation Plan
1" = 200'



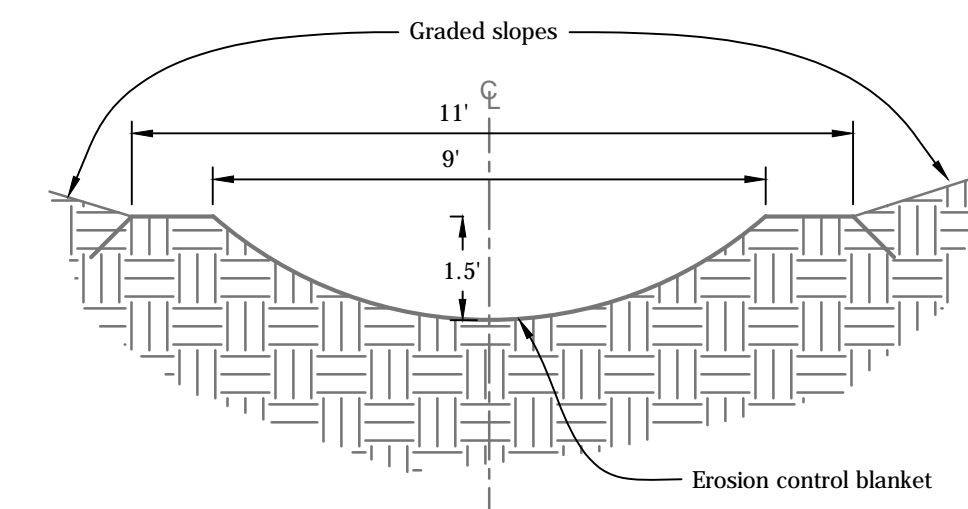
1 Project Sign
Not to Scale



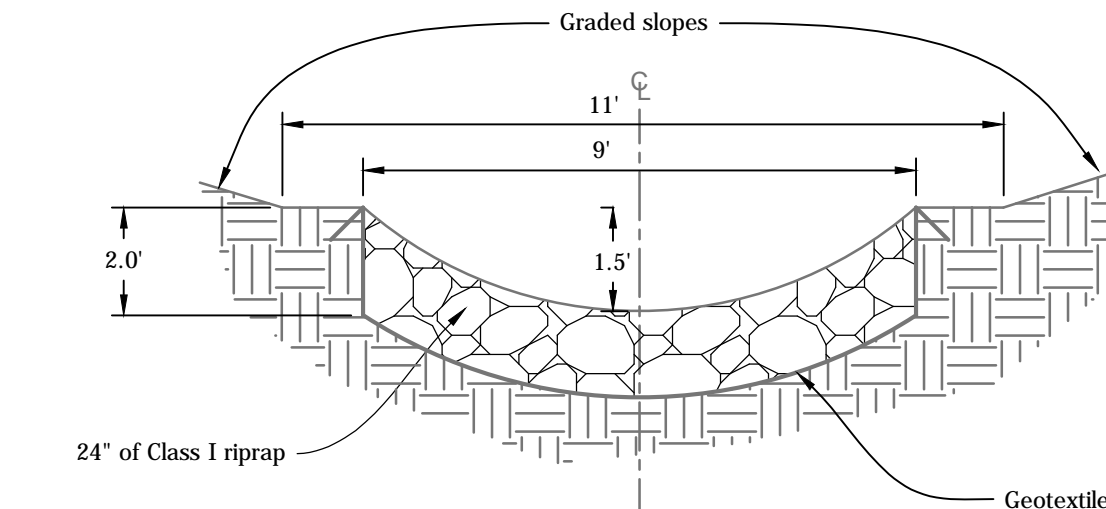
3 Ditch Line A-C, Type I
Not to Scale



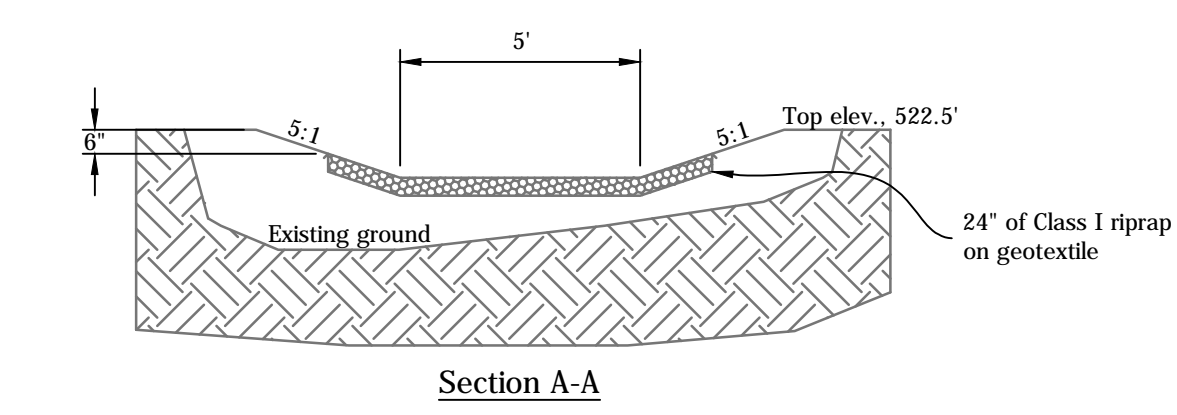
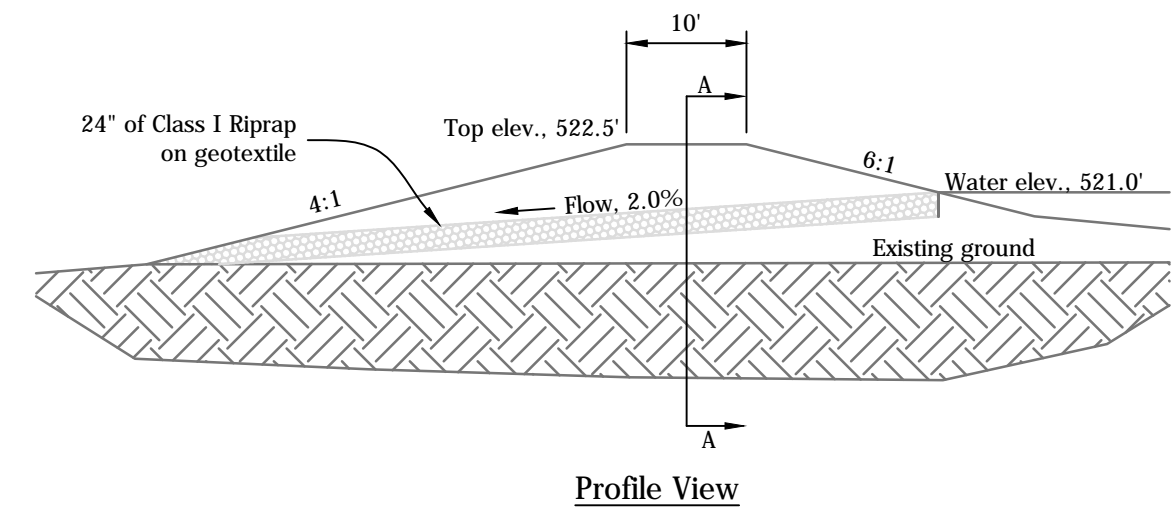
2 Access Gate
Not to Scale



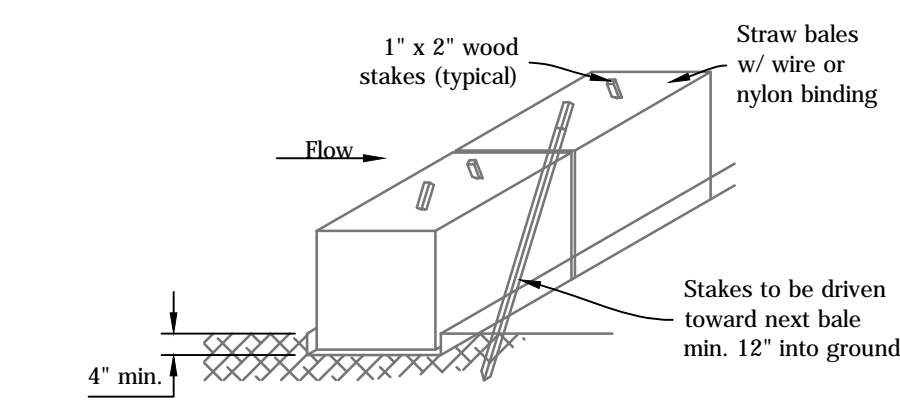
4 Ditch Line D & E, Type II
Not to Scale



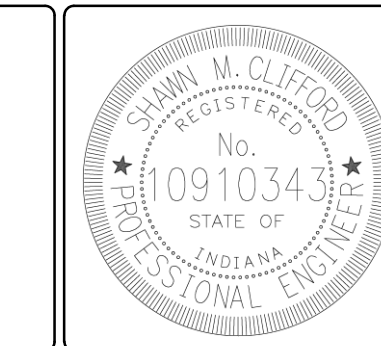
5 Ditch Line F-K, Type III
Not to Scale



6 Outlet Structure
Not to Scale



7 Temporary Check Dam, Straw Bale
Not to Scale



RECOMMENDED FOR APPROVAL: *Shawn M. Clifford* 09/28/2018 DATE

DESIGNED BY S.M.C. DRAWN BY S.M.C.

DATE MADE 03/15/2018

DATE REVISED 9/7/2018 3:25:42 PM

REVEGETATION PLAN & DETAILS
STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECLAMATION

SCALE AS NOTED

PROJECT E008-200

SHEET 6 OF 6

SITE 510