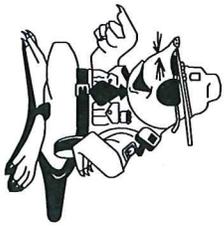


HOLEY MOLEY SAYS

**"DIG SAFELY"**



**"IT'S THE LAW"**

CALL 2 WORKING DAYS BEFORE YOU DIG  
**1-800-382-5544 or 811**

CALL TOLL FREE  
PER INDIANA STATE LAW TO EXCAVATE  
WITHOUT NOTIFYING THE UNDERGROUND  
LOCATION SERVICES AND (2) WORKING  
DAYS BEFORE COMMENCING WORK.  
NO REPRESENTATION IS MADE BY THE  
NATURAL RESOURCES CONSERVATION  
SERVICE AS TO THE EXISTENCE OR  
NON-EXISTENCE OF UNDERGROUND  
HAZARDS.



NO SCALE

# ONRCS

U. S. DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

DETAIL PLANS FOR  
Aquatic Nuisance Species  
Control Berm

Eagle Marsh WRP  
ALLEN COUNTY, INDIANA

**PROJECT PARTNERS**

- Little River Wetlands Project – Eagle Marsh property manager & 50% landownership.
- Indiana Division of Natural Resources (IDNR) – project coordinator & 50% Eagle Marsh landownership.
- USDA – Natural Resources Conservation Service (NRCS) – project engineering & wetland easement holder.
- Council on Environmental Quality (CEQ) – national leadership on ANSC and basin separation.
- Army Corps of Engineers, Louisville District – project planning and hydrologic & hydraulic study.
- Allen County, IN – drainage assessment & property owner @ Trailhead.
- Norfolk Southern Railway – property owner @ railroad.

**PROJECT FUNDING**

USDA–NRCS Wetland Reserve Program  
U.S. Environmental Protection Agency – Great Lakes Restoration Initiative (GLRI)

PROJECT No. # E020094C

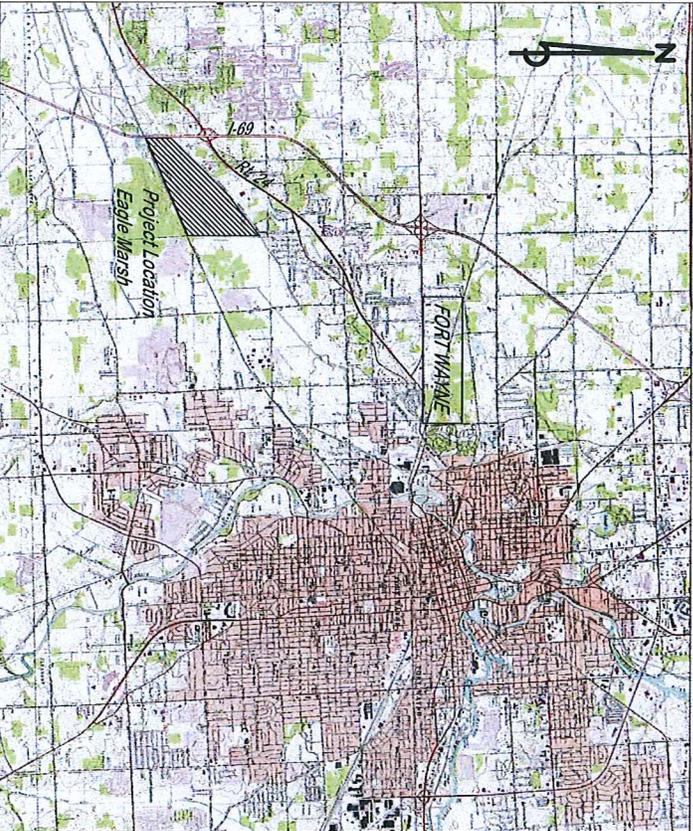
**INDEX OF DRAWINGS**

TITLE	SHEET NO.
COVER SHEET	1
LOCATION MAP	2
PLAN VIEW	3-4
STAGING AREA DETAILS	5
ANSC BERM PLAN/PROFILE	6-9
BERM DETAILS – TYPICAL CROSS SECTIONS	10-11
BORROW AREA DETAILS & SOILS INFORMATION	12
BERM DETAILS – ROCK SECTION AT SILE DITCH	13
BERM NOTCH AND FENCE DETAILS	14
EBB & RIPRAP DITCH BANK PROTECTION	15-16
TOWPATH TRAILHEAD PLAN VIEW & DETAILS	17
UTILITY ROAD DETAILS	18-20
PPE STRUCTURE DETAILS	21
EXISTING FENCE REMOVAL DETAILS	22
LAYOUT @ GRAVEL UTILITY RD. & TRAFFIC BARRIERS	23-24
	25

**\*BERM DESIGN ELEVATIONS DETERMINED BY ARMY CORPS OF ENGINEERS' HYDROLOGIC & HYDRAULIC STUDY**

DESIGNED BY: Duane Reithman, P.E. DATE: 12/2013  
 Area Engineer  
 Andrew Pughill, P.E. DATE: 12/2013  
 Agricultural Engineer  
 CHECKED BY: Mike Cox, P.E. DATE: 1/2014  
 State Conservation Engineer  
 REVIEWED AND APPROVED BY: Mike Cox, P.E. – DE19200466 DATE: 4/2014  
 State Conservation Engineer

SHEET 1 OF 25



CONSTRUCTION DATA

CONSTRUCTION START DATE \_\_\_\_\_

CONSTRUCTION COMPLETION DATE \_\_\_\_\_

CONTRACTOR NAME AND ADDRESS \_\_\_\_\_

\_\_\_\_\_

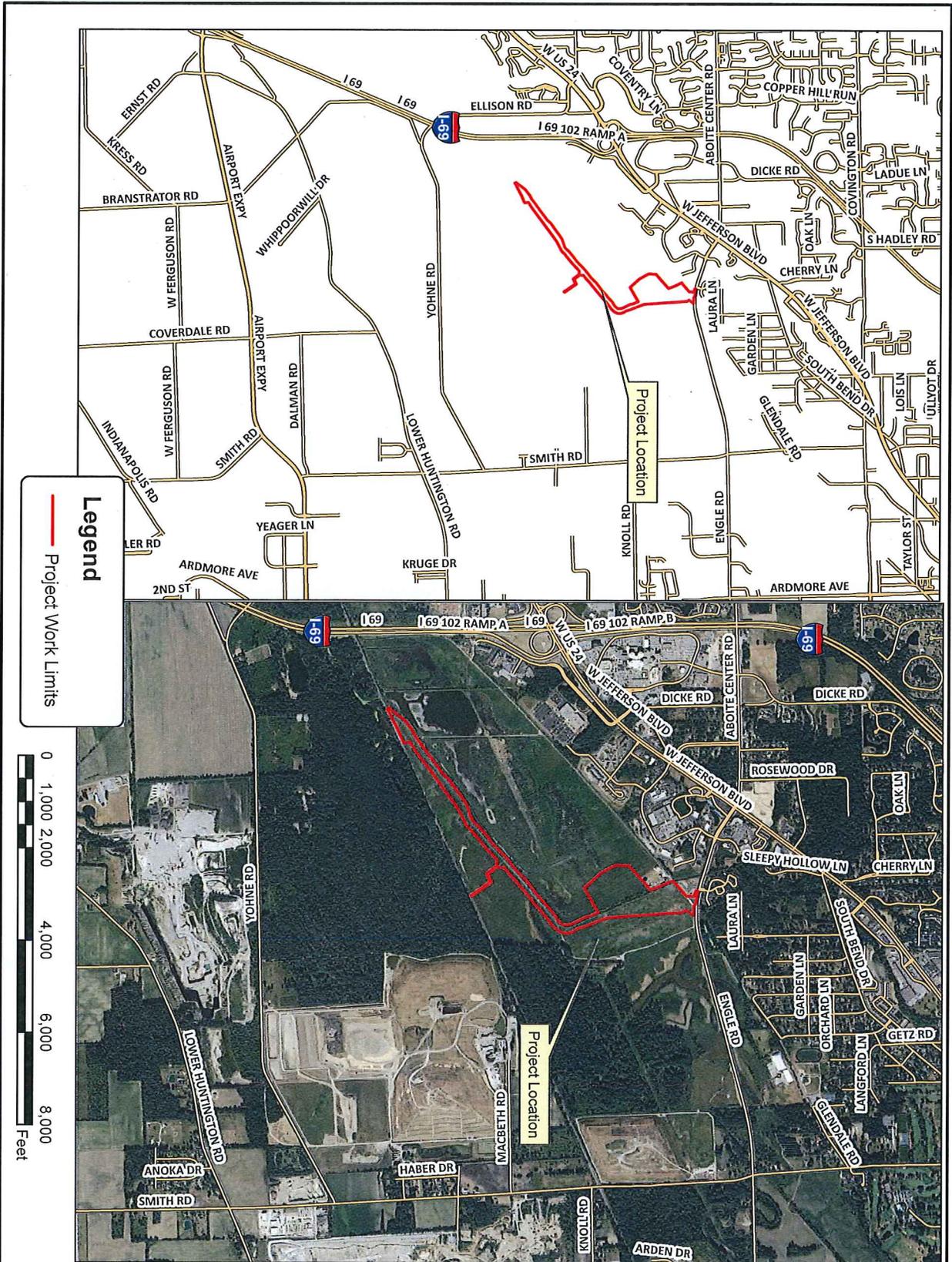
AS-BUILTS SUBMITTED BY: \_\_\_\_\_ DATE: 20\_\_

TITLE \_\_\_\_\_

CONSTRUCTION QUES QUES NOT MEET STANDARDS AND SPECIFICATIONS

AS-BUILTS REVIEWED AND APPROVED BY: \_\_\_\_\_ DATE: 20\_\_

TITLE \_\_\_\_\_ DATE: 20\_\_



Sheet 2 of 25



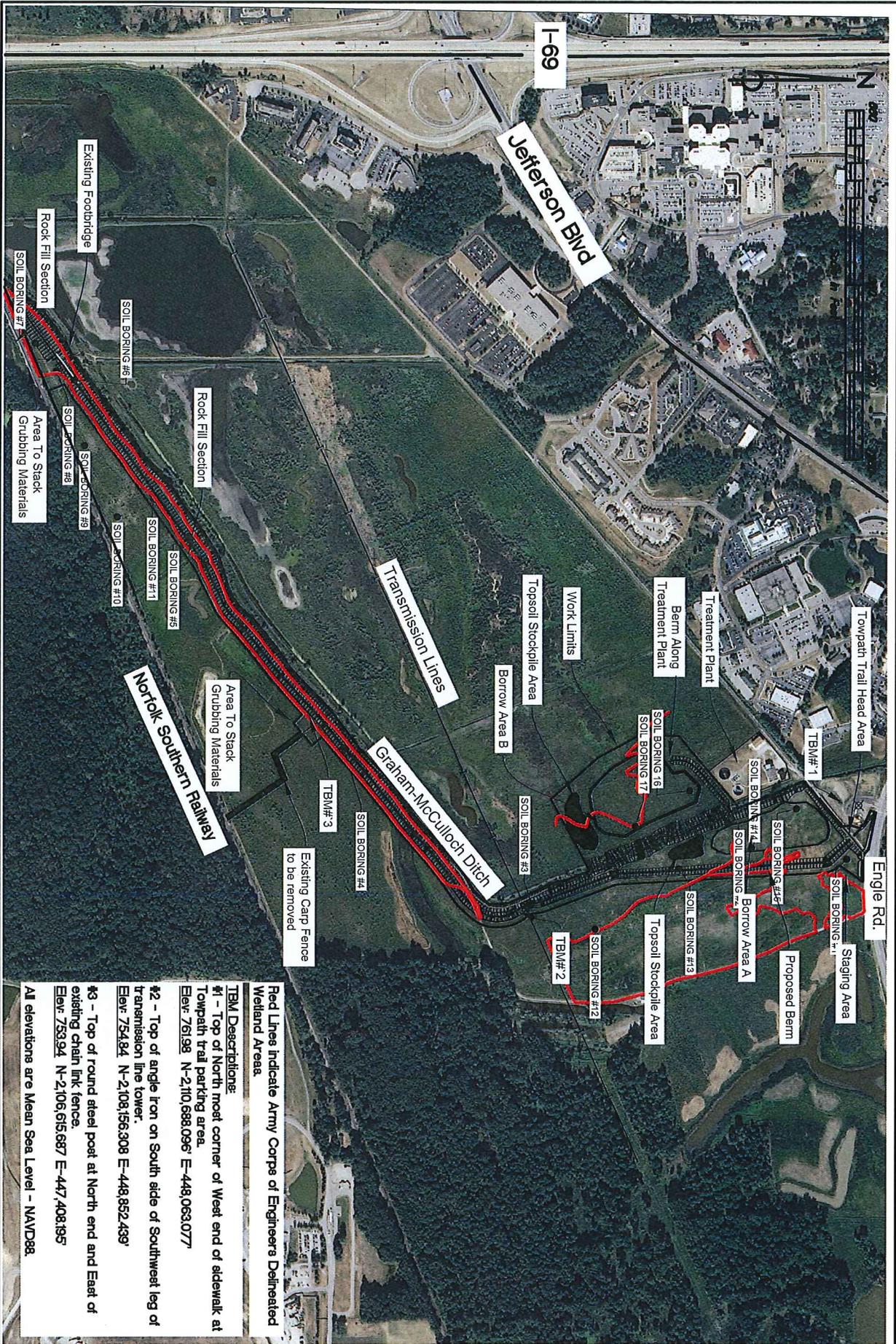
Natural Resources Conservation Service  
United States Department of Agriculture

Location Map

Landuser Eagle Marsh ANSC Berm  
 Location Aboite Twp.  
Allen County SWCD, Indiana  
 Section 24-26 T 30N R 11E

Date

Designed D. Riethman & A. Pursifull 12/2013  
 Drawn A. Pursifull 12/2013  
 Checked M. Cox 1/2014  
 Approved M. Cox 4/2014  
 Title SCE



**Red Lines indicate Army Corps of Engineers' Delineated Wetland Areas.**

**TBM Descriptions:**  
 #1 - Top of North most corner of West end of sidewalk at Towpath trail parking area.  
 Elev: 761.98 N-2,110,688.096 E-448,063.077  
 #2 - Top of angle iron on South side of Southwest leg of transmission line tower.  
 Elev: 754.84 N-2,108,156.308 E-448,852.439  
 #3 - Top of round steel post at North end and East of existing chain link fence.  
 Elev: 753.94 N-2,106,615.687 E-447,408.185  
 All elevations are Mean Sea Level - NAVD88.

Sheet 3 of 25

Drawing No.  
 File No.

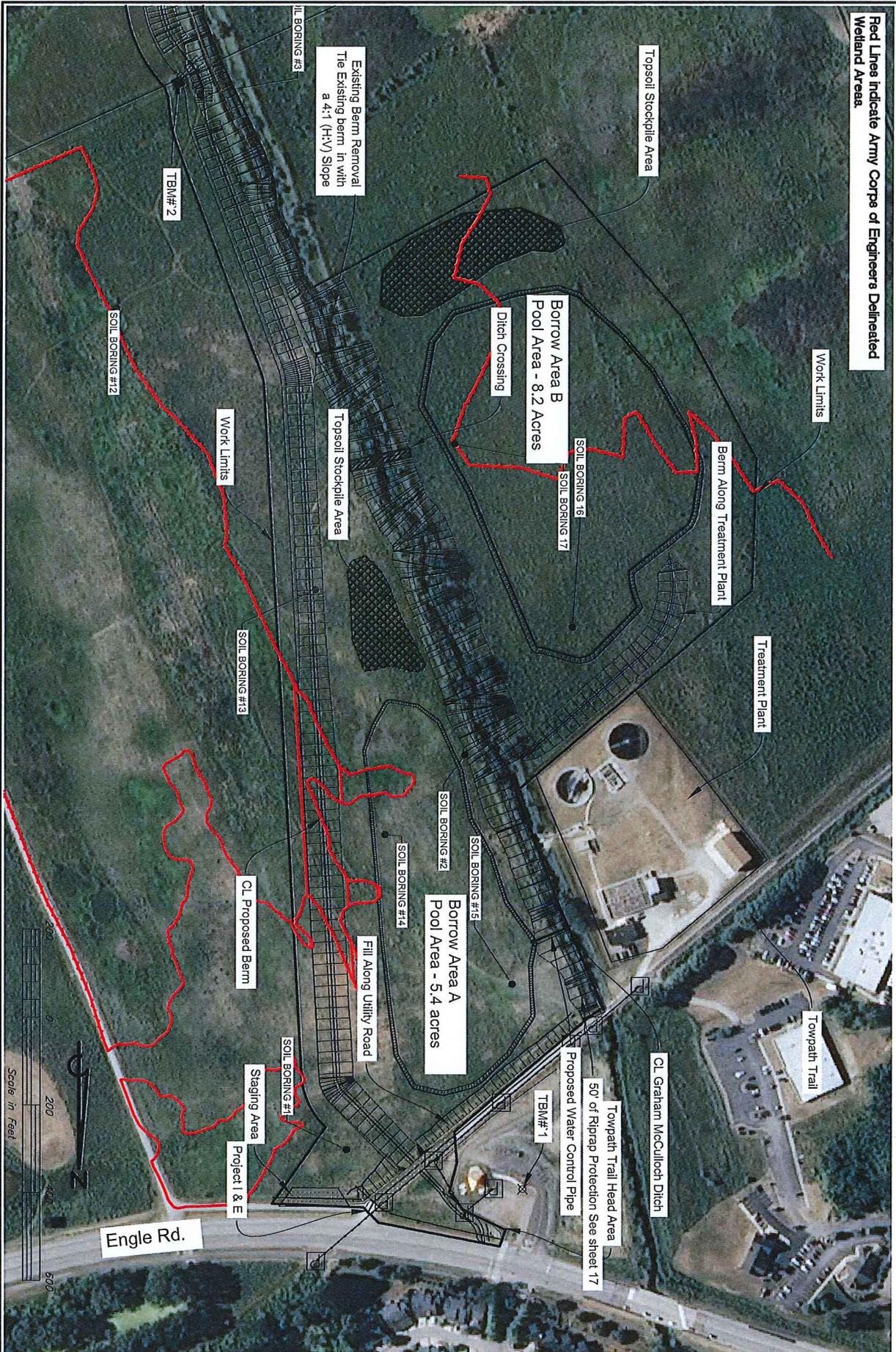


Plan View  
 Eagle Marsh WRP - ANSC Berm

Designed	A. Pursifull	12/2013
Drawn	A. Pursifull	8/2014
Checked	M. Cox	1/2014
Approved	M. Cox	4/2014

Allen County, IN

Red Lines Indicate Army Corps of Engineers Delineated Wetland Areas.

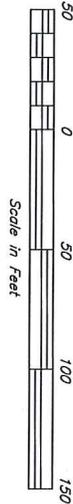
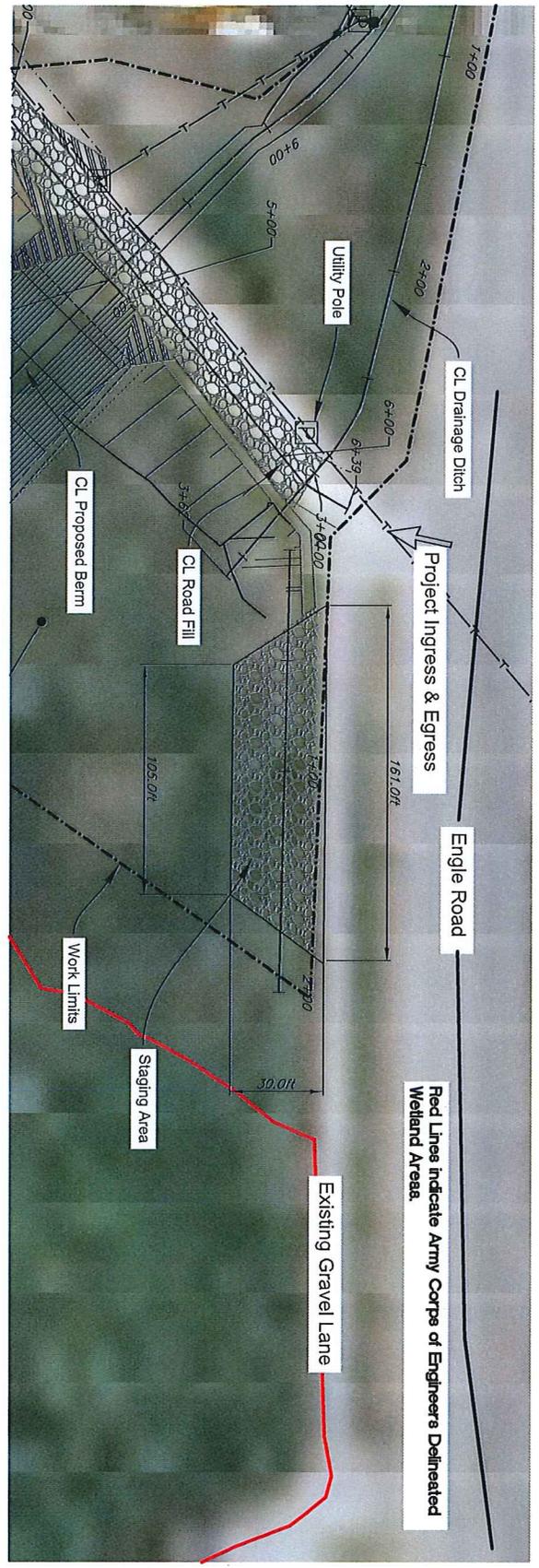


File No.  
Drawing No.  
Sheet 4 of 25



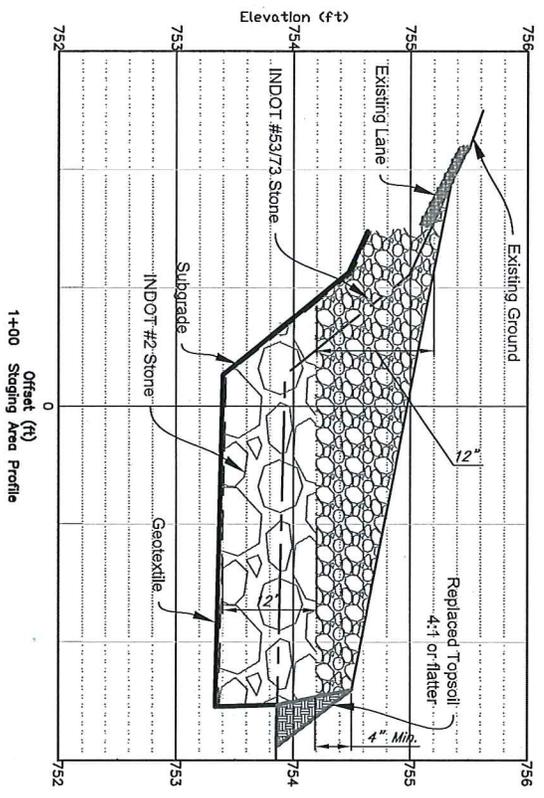
Right Side of Ditch & Borrow Area Plan View  
Eagle Marsh WRP – ANSC Berm  
Allen County, IN

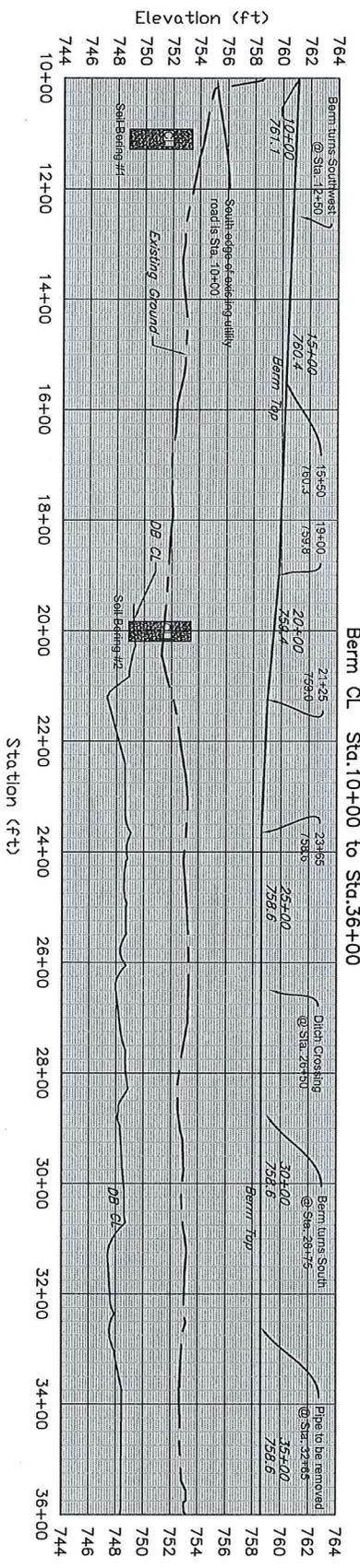
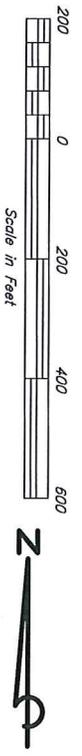
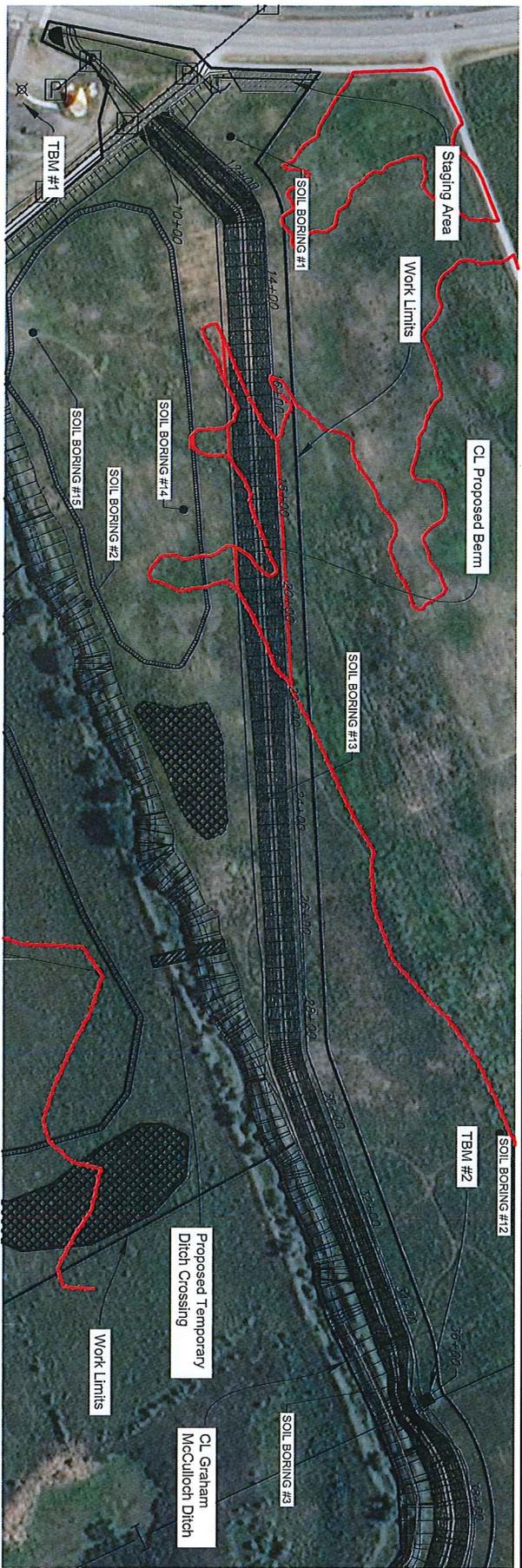
	Designed	Date
	A. Pursifull	12/2013
	A. Pursifull	8/2014
	M. Cox	1/2014
	M. Cox	4/2014



**Construction Notes:**

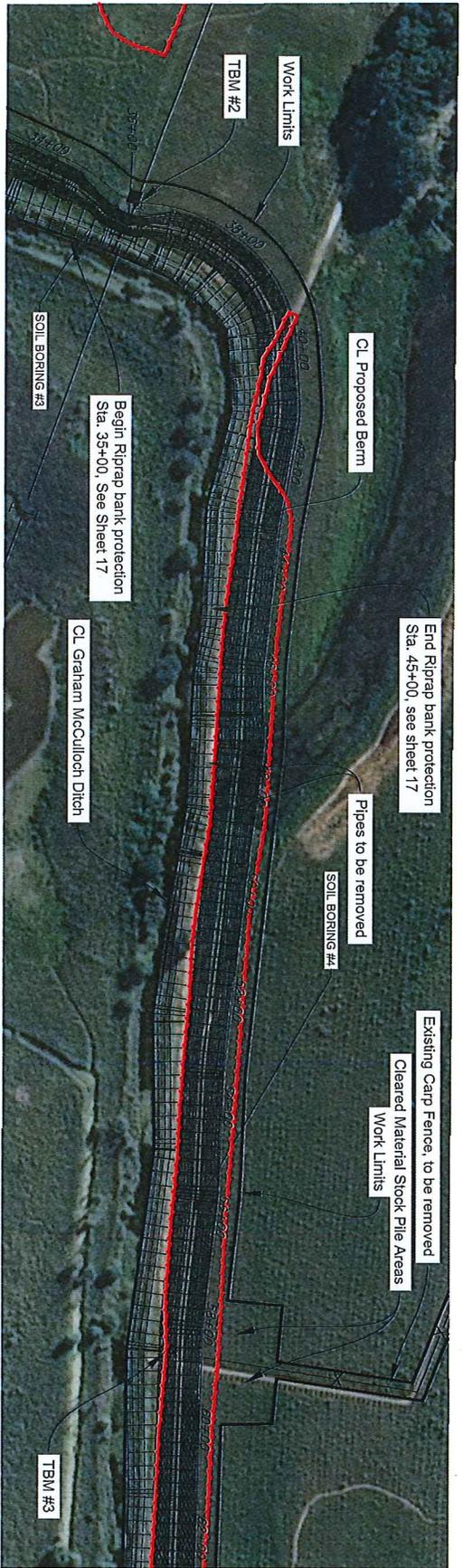
1. 6" of topsoil to be removed under staging area (except under existing lane).
2. Non-woven Geotextile will be placed under new stone.
3. Min. of 12" of INDOT #2 stone placed over geotextile.
4. 4" to 12" of INDOT #53 or #73 stone placed over #2 stone.
5. Surface shall be graded so that surface water runs off and does not pool.
6. The into existing lane so that staging area will be easily accessed from existing lane.
7. Removed topsoil will be used to finish grading around edges of staging area to provide a uniform slope of 4:1 (H:V) or flatter until all topsoil is used.
8. All disturbed areas are to be seeded and mulched.



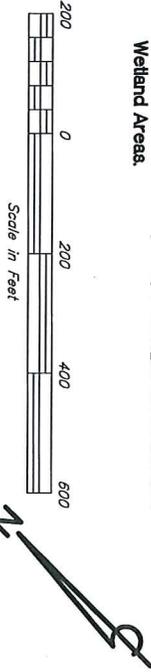


Berm CL Sta. 10+00 to Sta. 36+00

Red Lines Indicate Army Corps of Engineers Delimited Wetland Areas.

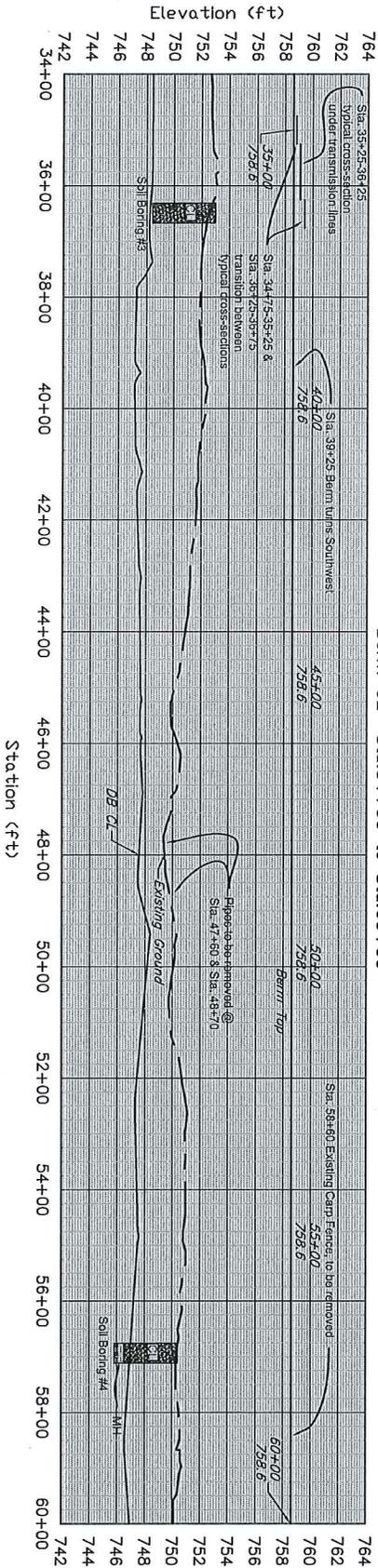


**Red Lines Indicate Army Corps of Engineers Delimited Wetland Areas.**



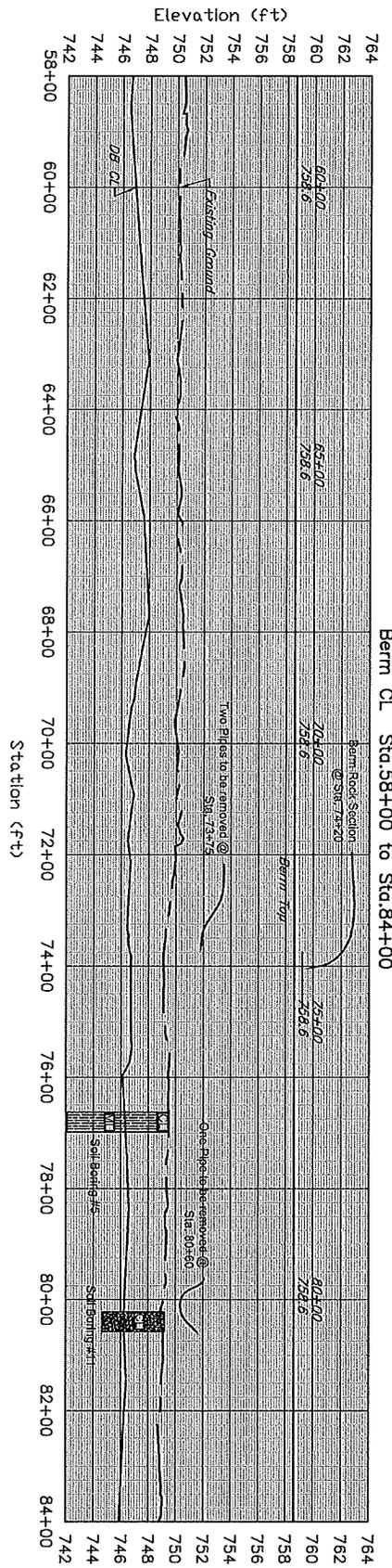
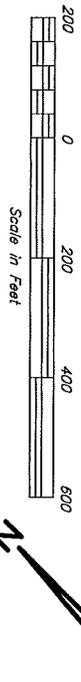
Soil Boring #3 - Sample taken at 24"-33"  
 CL material with Atterberg Limits of LL = 38 & PI = 19

Berm CL Sta.34+00 to Sta.60+00





Red Lines indicate Army Corps of Engineers Delineated Wetland Areas.

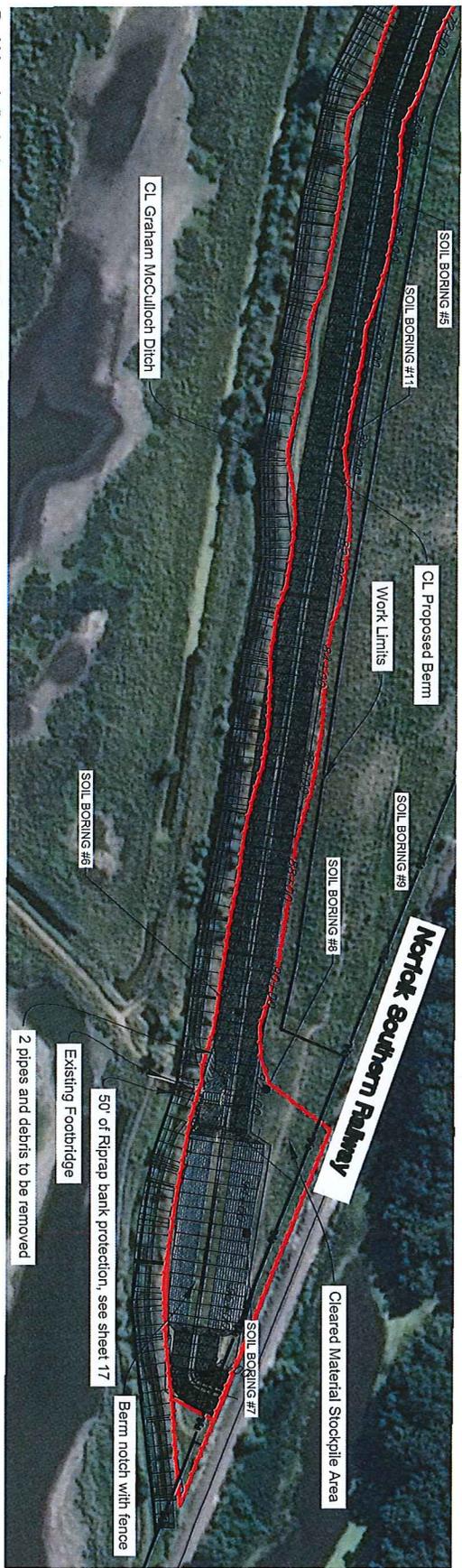


File No. \_\_\_\_\_  
 Drawing No. \_\_\_\_\_  
 Sheet 8 of 25

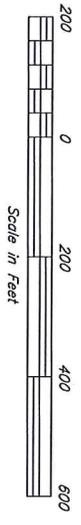


Berm Details Sta 58+00  
 to Sta 84+00  
 Eagle Marsh WRP - ANSC Berm  
 Allen County, IN

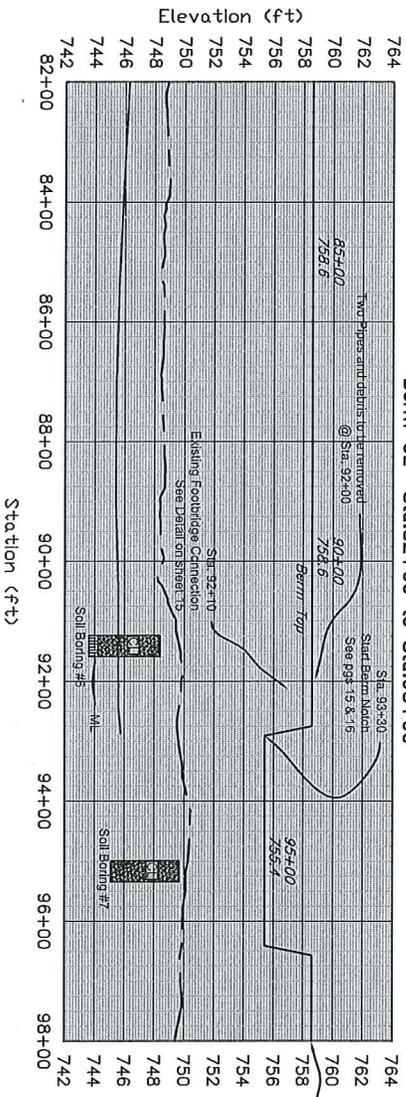
Designed	A. Pursifull	12/2013
Drawn	A. Pursifull	8/2014
Checked	M. Cox	1/2014
Approved	M. Cox	4/2014



Red Lines indicate Army Corps of Engineers Delineated Wetland Areas.



Berm CL Sta. 82+00 to Sta. 98+00



Sta. 93+30  
Start Berm Notch  
See Pgs 15 & 16

Sta. 92+00  
Two pipes and debris to be removed  
@ Sta. 92+00

SOIL BORING #5

SOIL BORING #7

SOIL BORING #6

SOIL BORING #8

SOIL BORING #9

SOIL BORING #11

Existing Footbridge Connection  
See Detail on sheet 15

Berm Top

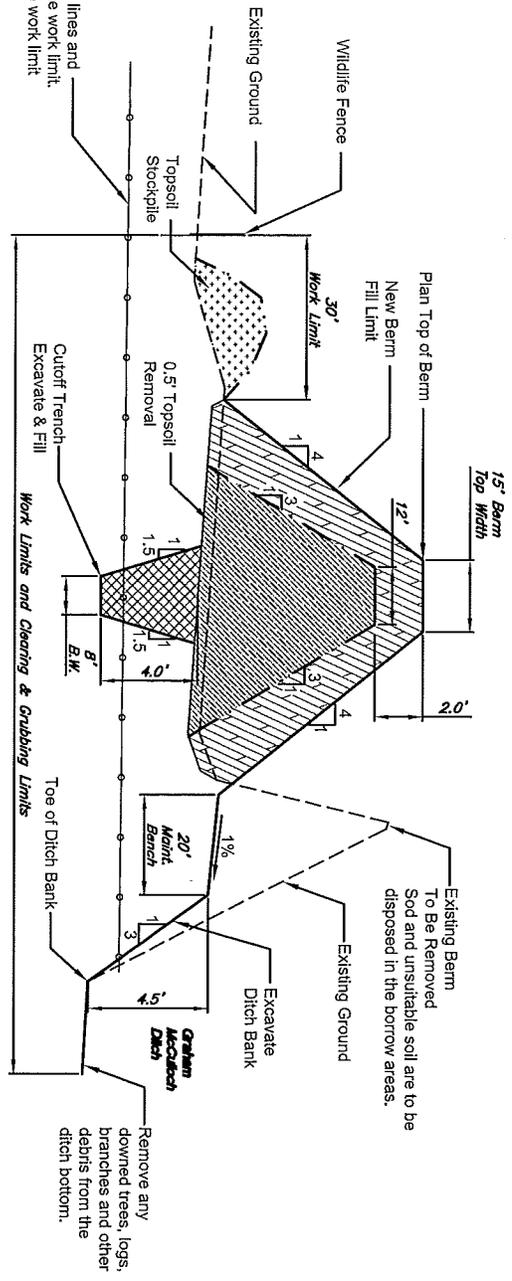
Berm notch with fence

Cleared Material Stockpile Area

-  Berm Spoil & Topsoil (existing berm spoil and salvaged topsoil)
-  Berm Core - Compacted Earth Fill - 95% Standard Proctor (taken from borrow areas and existing berm)
-  Cutoff Trench - Compacted Earth Fill - 95% Standard Proctor (excavate and compact existing material)

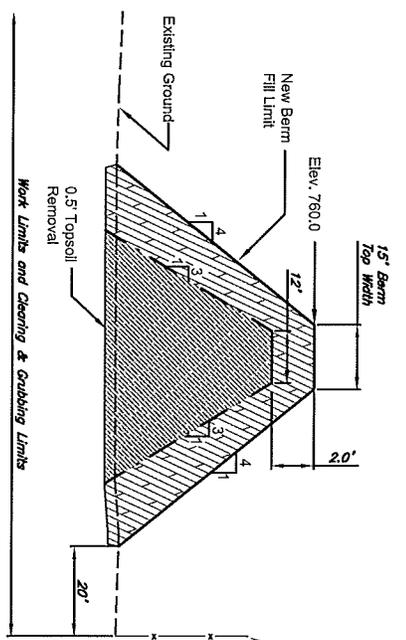
\* Left looking in downstream direction.

Remove any and all tile lines and pipe structures within the work limit. Dig the lines back to the work limit and cap.

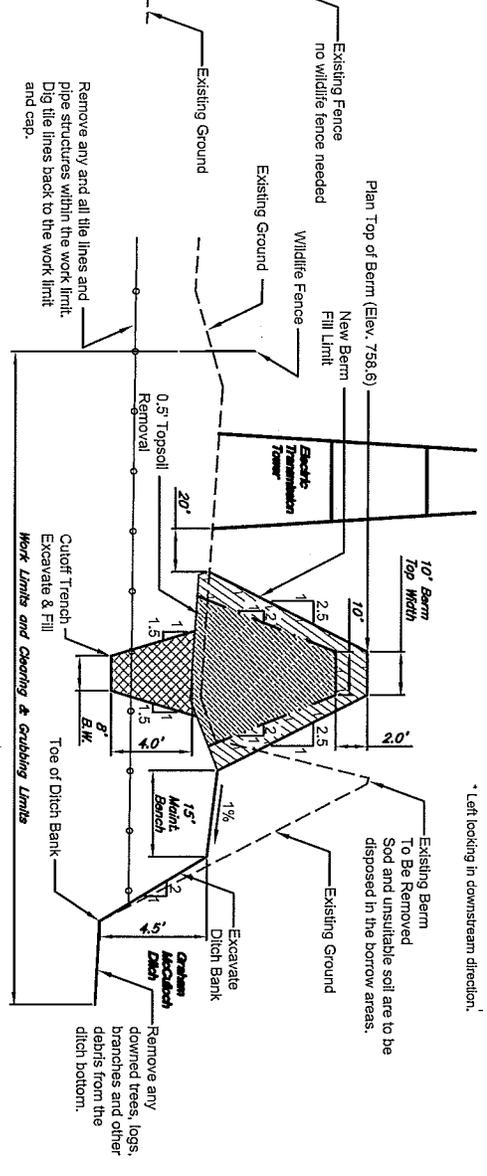


TYPICAL BERM CONSTRUCTION CROSS SECTION  
Sta. 28+75 to Sta. 98+35

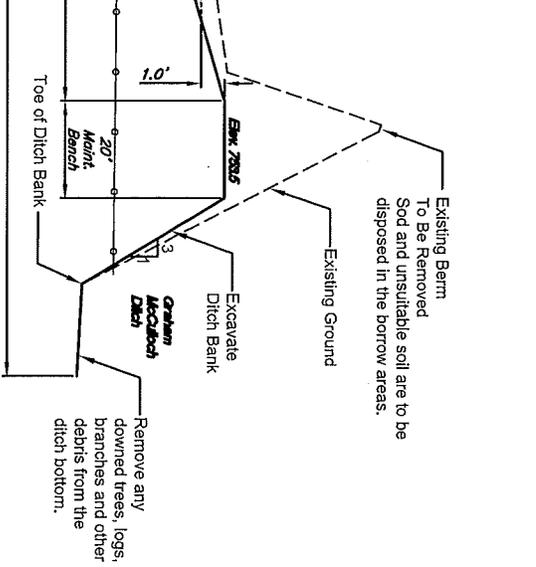
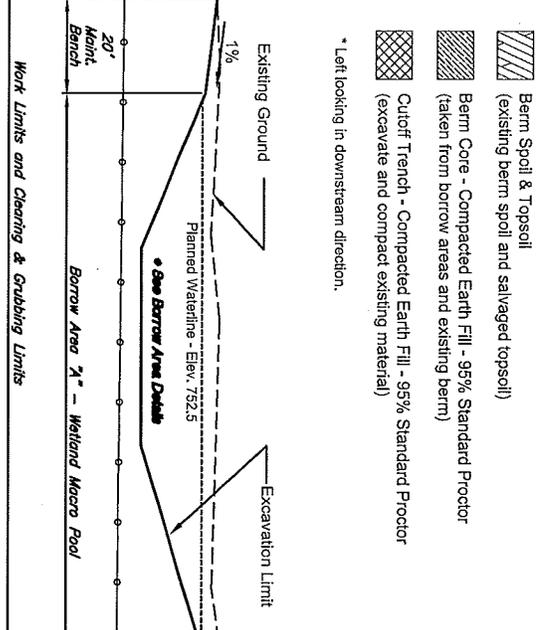
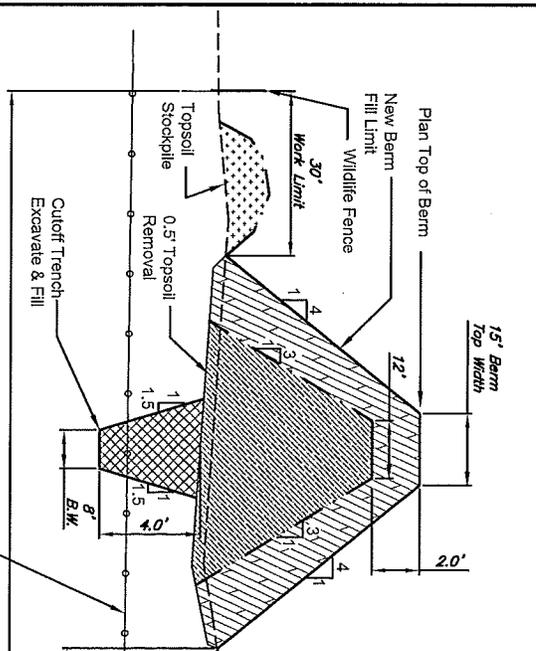
\* Left looking in downstream direction.



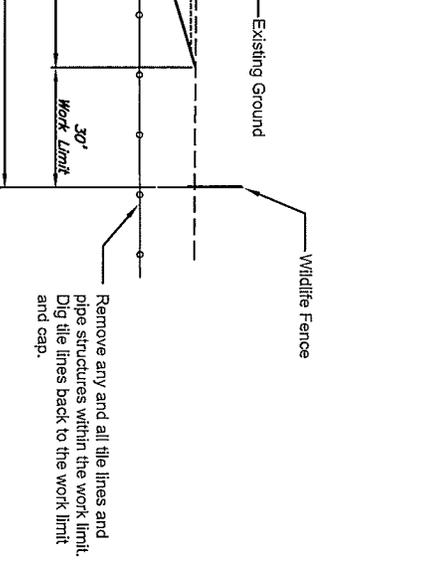
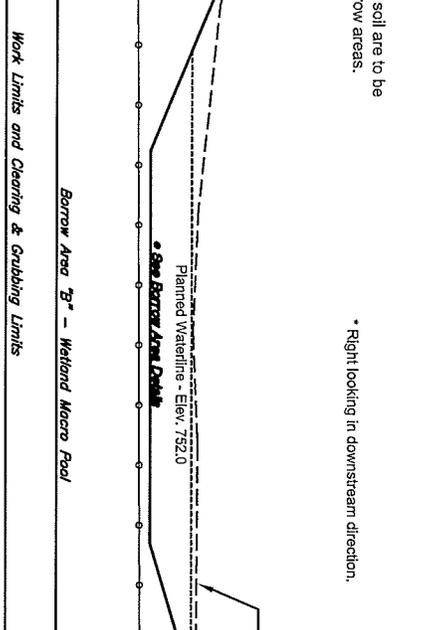
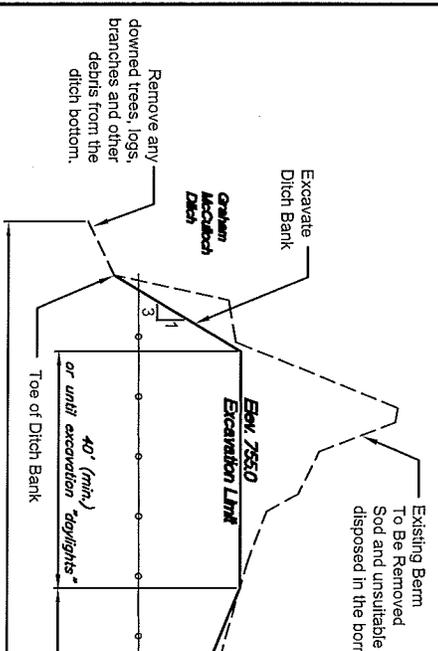
TYPICAL BERM CONSTRUCTION CROSS SECTION  
RIGHT SIDE ALONG TREATMENT PLANT



TYPICAL BERM CONSTRUCTION CROSS SECTION - UNDER TRANSMISSION LINES  
Sta. 35+25 to Sta. 36+25



TYPICAL BERM CONSTRUCTION CROSS SECTION - Berm Not Along the Ditch  
Sta. 10+00 to Sta. 28+75



BERM REMOVAL & BORROW AREA - RIGHT SIDE

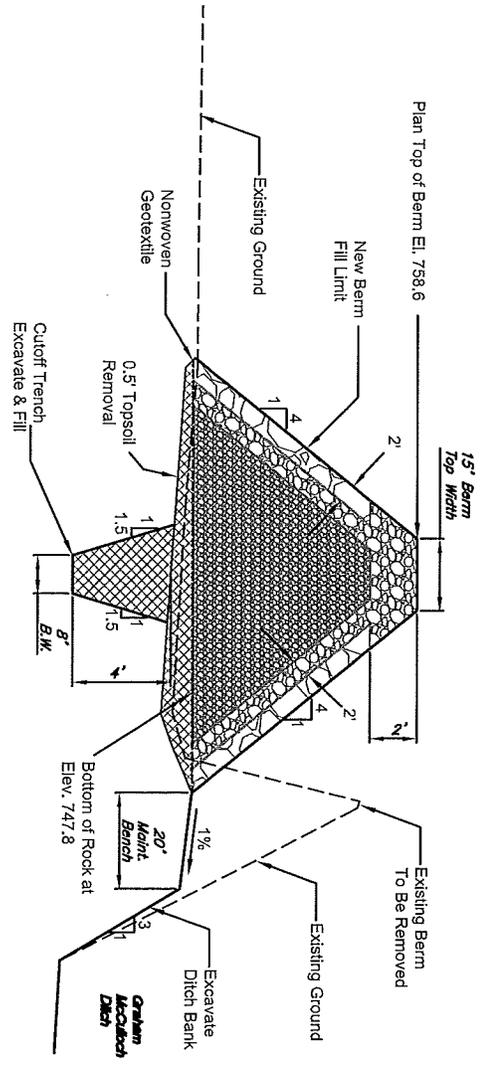
Designed	Riethman/Pursifull	Date	5/13
Drawn	D. Riethman		8/14
Checked	M. Cox		1/14
Approved	M. Cox		4/14

TYPICAL CONSTRUCTION X-SECTIONS  
ANSC BERM  
EAGLE MARSH WRP  
ALLEN County, IN

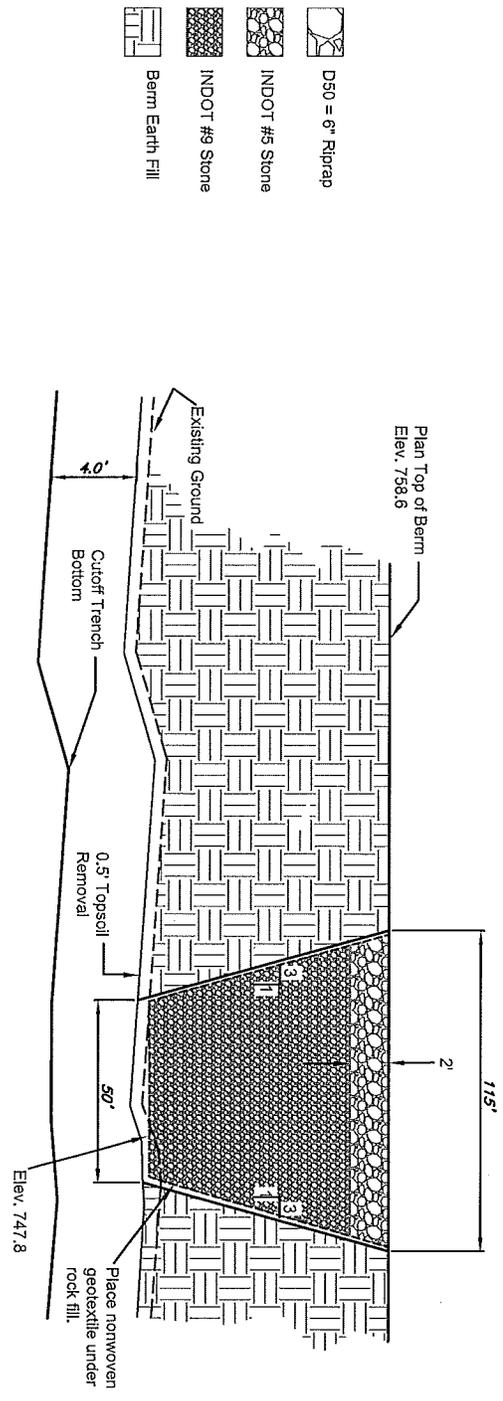
NRCS  
 Natural Resources Conservation Service  
 United States Department of Agriculture  
 Drawing No. 077/14  
 File No. \_\_\_\_\_  
 Sheet 11 of 25



- - 
  - 
  -
- \* Left looking in downstream direction.

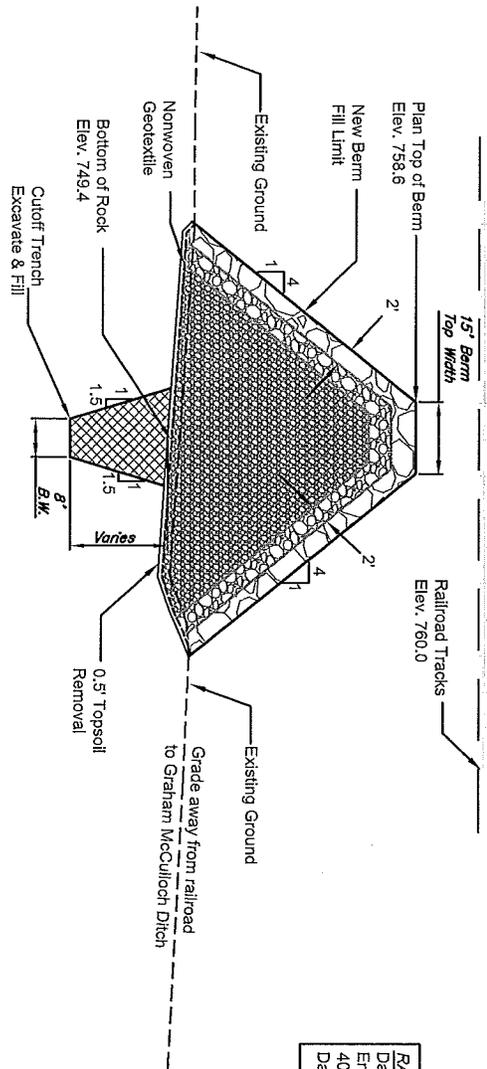


TYPICAL BERM CONSTRUCTION CROSS SECTION - ROCK SECTION  
Sta. 74+20



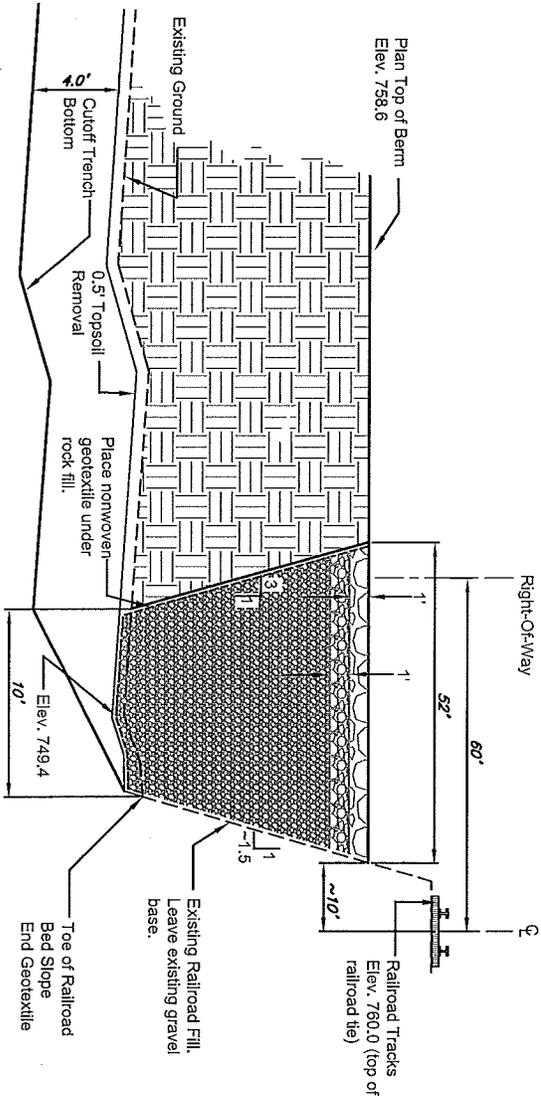
BERM CONSTRUCTION PROFILE @ ROCK SECTION  
Sta. 74+20

- 
- 
- 
- 
- 



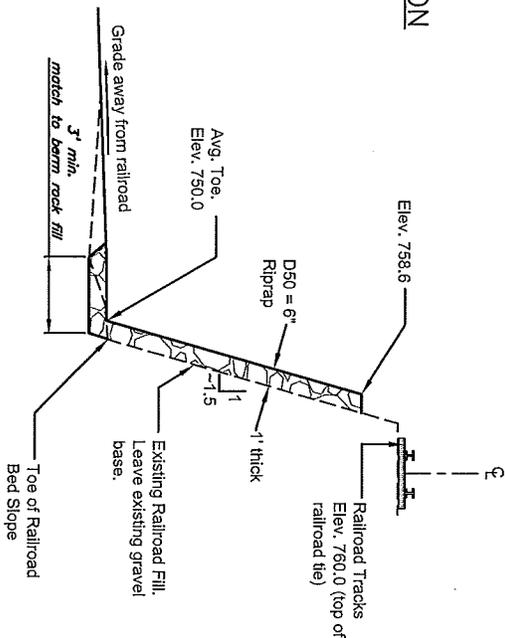
TYPICAL BERM CONSTRUCTION CROSS SECTION @ RAILROAD CONNECTION

\* Left looking in downstream direction.



BERM CONSTRUCTION PROFILE @ RAILROAD CONNECTION

TYPICAL CROSS-SECTION  
RIPRAP PLACEMENT ON RAILROAD BED  
EACH SIDE OF BERM CONNECTION



RAILROAD CONTACT INFORMATION:  
Daniel C. Parker  
Engineer Public Improvement  
404-529-1256  
Daniel.Parker@nscorp.com

Not to Scale

File No. \_\_\_\_\_  
Drawing No. \_\_\_\_\_  
Typical X-Sect  
8/4/14  
Sheet 14 of 25

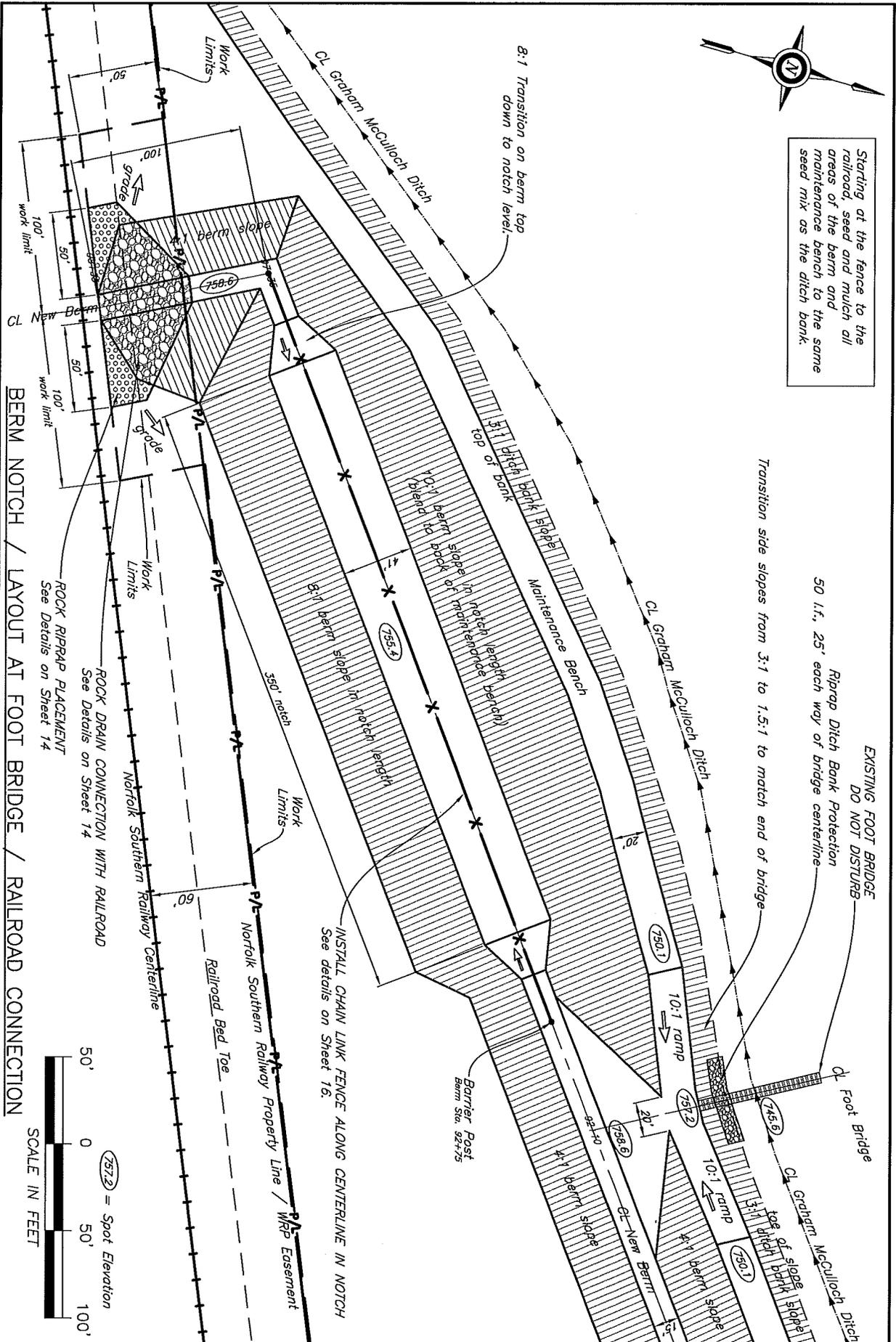


BERM CONSTRUCTION AT RAILROAD  
CONNECTION - ROCK DRAIN  
ANSO BERM  
EAGLE MARSH WRP ALLEN County, IN

Date 8/13  
Designed B. Clarizia  
Drawn B. Clarizia/D. Riethman 8/14  
Checked M. Cox 1/14  
Approved M. Cox 4/14



Starting at the fence to the railroad, seed and mulch all areas of the berm and maintenance bench to the same seed mix as the ditch bank.



BERM NOTCH / LAYOUT AT FOOT BRIDGE / RAILROAD CONNECTION

ROCK RIPRAP PLACEMENT  
See Details on Sheet 14

ROCK DRAIN CONNECTION WITH RAILROAD  
See Details on Sheet 14

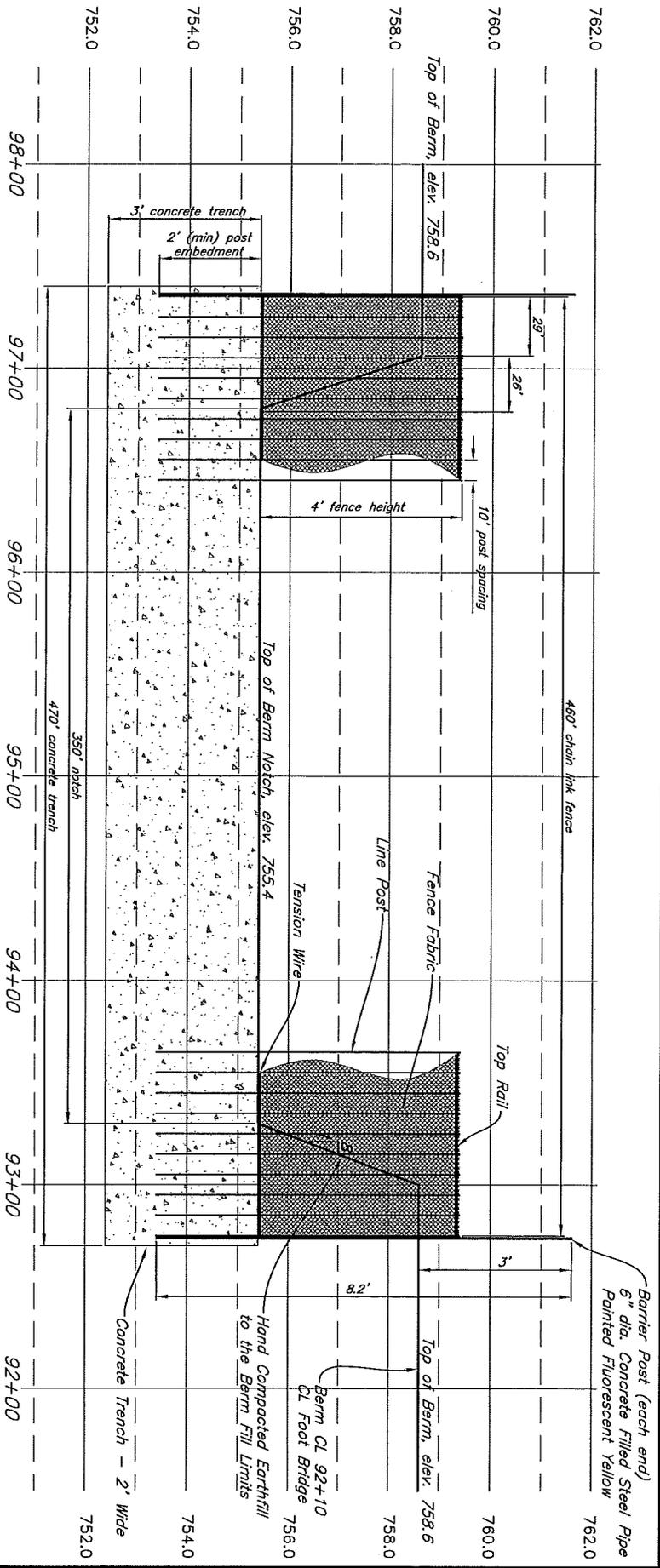


**NRCS**  
Natural Resources Conservation Service  
United States Department of Agriculture

File No. \_\_\_\_\_  
Drawing No. \_\_\_\_\_  
Date 8/7/14  
Sheet 15 of 25

LAYOUT FOOT BRIDGE TO RAILROAD  
INCLUDING NOTCH  
ANSC BERM  
EAGLE MARSH WRP ALLEN County, IN

Designed	D. Riethman	Date	3/14
Drawn	D. Riethman		8/14
Checked	M. Cox		4/14
Approved	M. Cox		4/14



**NOTCH & FENCE PROFILE**

**FENCE CONSTRUCTION NOTES:**

1. Reference Construction Specification 91 – Chain Link Fence.
2. Fence Fabric – 2" square open mesh, 9-gauge, galvanized steel installed on the south or railroad side of the posts. Place flush with the concrete.
3. Terminal Posts – 2 3/8" dia. galvanized steel posts, schedule 40, with dome top.
4. Line Posts – 2 3/8" dia. galvanized steel posts, schedule 40, loop top and ties 12" max. spacing.
5. Top Rail – 1 3/8" dia. galvanized steel with ties 12" max. spacing.
6. Tension Wire – 7 gauge with ties 12" max. spacing.
7. Selvage – Knuckle edge finish for top and bottom.

Designed	<i>D. Riethman</i>	Date	<i>3/14</i>
Drawn	<i>D. Riethman</i>		<i>3/14</i>
Checked	<i>M. Cox</i>		<i>4/14</i>
Approved	<i>M. Cox</i>		<i>4/14</i>

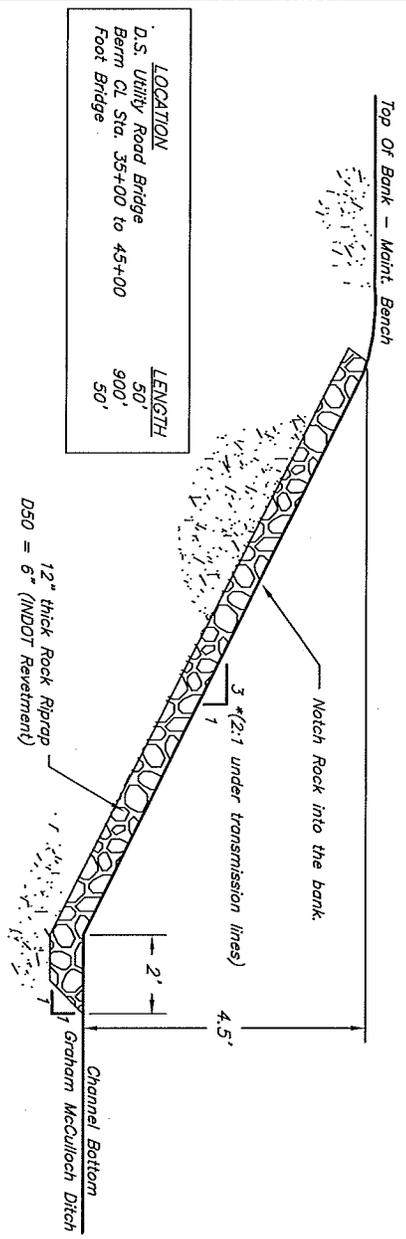
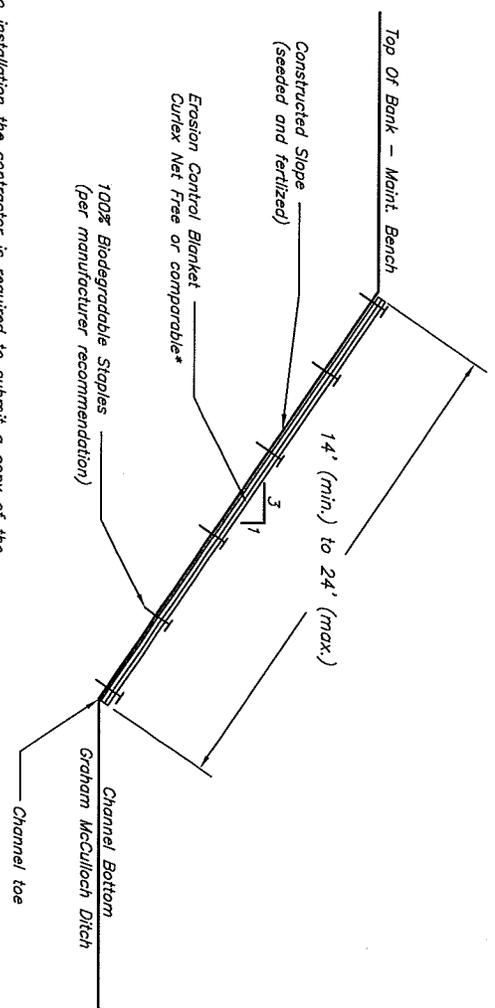
FENCE IN NOTCH DETAILS  
 ANSC BERM  
 EAGLE MARSH WRP  
 ALLEN County, IN



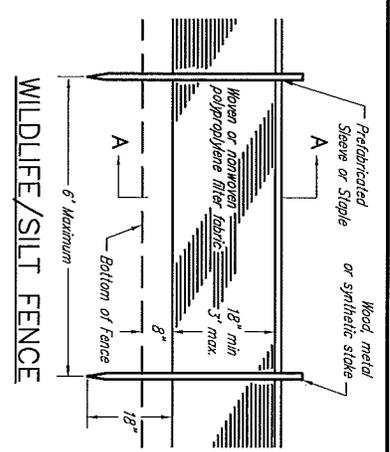
File No. \_\_\_\_\_  
 Drawing No. \_\_\_\_\_  
 Notice Layout \_\_\_\_\_  
 8/7/14  
 Sheet 16 of 25

\* Prior to installation the contractor is required to submit a copy of the product installation requirements for a channel application with an estimated maximum velocity of 3.0 ft./sec and less than 1 lb./sq.ft. tractive force.

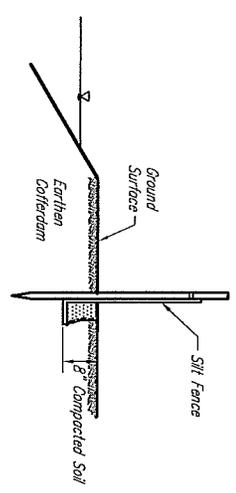
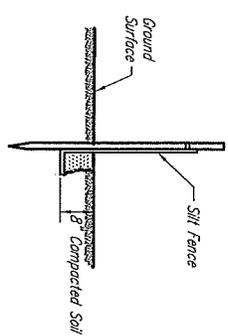
**TYPICAL EROSION CONTROL BLANKET INSTALLATION - DITCH BANK**  
all seeded ditch banks - left & right side



**TYPICAL RIPRAP DITCH BANK PROTECTION**  
left side of Graham McCulloch Ditch



**WILDLIFE/SILT FENCE**



**Section A-A**

- INSTALLATION NOTES:**
1. Fence needs to be installed between August 1 and October 31.
  2. Fence shall be placed as close as possible to the edge of the construction limits.
  3. Fence may be installed by plowing.
  4. Fence is to be maintained in-place for the duration of construction in the area and removed upon completion of the work.
  5. In wetland pool areas that extend beyond the work limits, fence will be installed on top of the earthen Cofferdam.

Designed	D. Riethman	Date	5/13
Drawn	D. Riethman		7/14
Checked	M. Cox		1/14
Approved	M. Cox		4/14

DETAILS-DITCH BANK PROTECTION &  
WILDLIFE FENCE  
ANSC BERM  
EAGLE MARSH WRP ALLEN County, IN



File No. \_\_\_\_\_  
Drawing No. 8/7/14  
Sheet 17 of 25

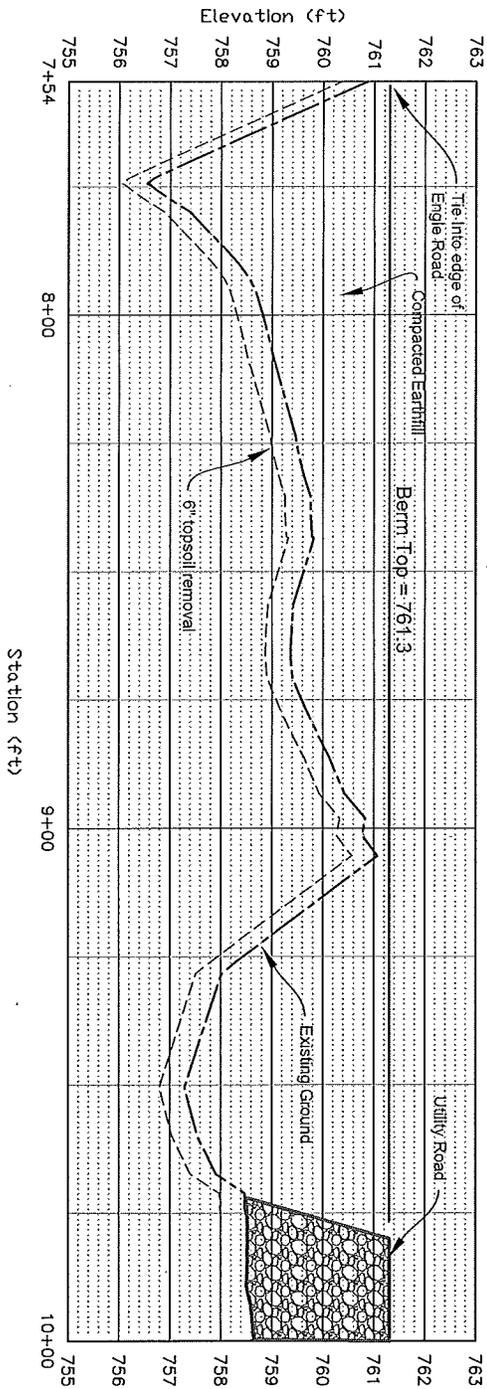
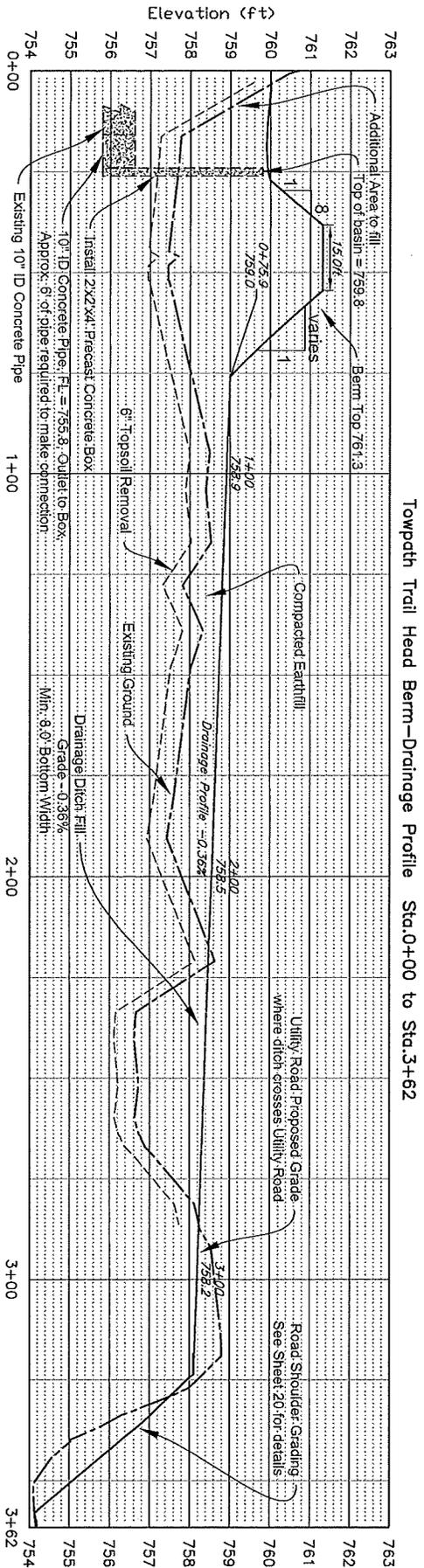


**Construction Notes:**

1. Underground gas and communication lines exist along the gravel Utility Road. Call to have them located prior to any work in this area.
2. 6" of topsoil to be removed and replaced on any fill areas.
3. Min. of 15' flat top section of berm.
4. All berm side slopes are 8:1 (H:V) or flatter and will vary.
5. EXTREME CARE should be taken to avoid damage to existing infrastructure (Towpath trail, sidewalks, pavilion, etc.). All damages will be repaired at cost to contractor.
6. Area between Berm, Engle Road, and Towpath Trail shall be filled and graded so that all surface water will run into new pre-cast concrete catch basin.
7. Removed topsoil will be used to finish grading.
8. All disturbed areas to be seeded and mulched.
9. At least 3 days prior to construction in this area contact Mark Walls, Indiana-Michigan Power (260-749-3095), to have the guy wire anchor disconnected. Return the call once work is completed to have it reconnected.
10. Maintain OSHA minimum clearances on all overhead utility lines.

CL Proposed Road Fill

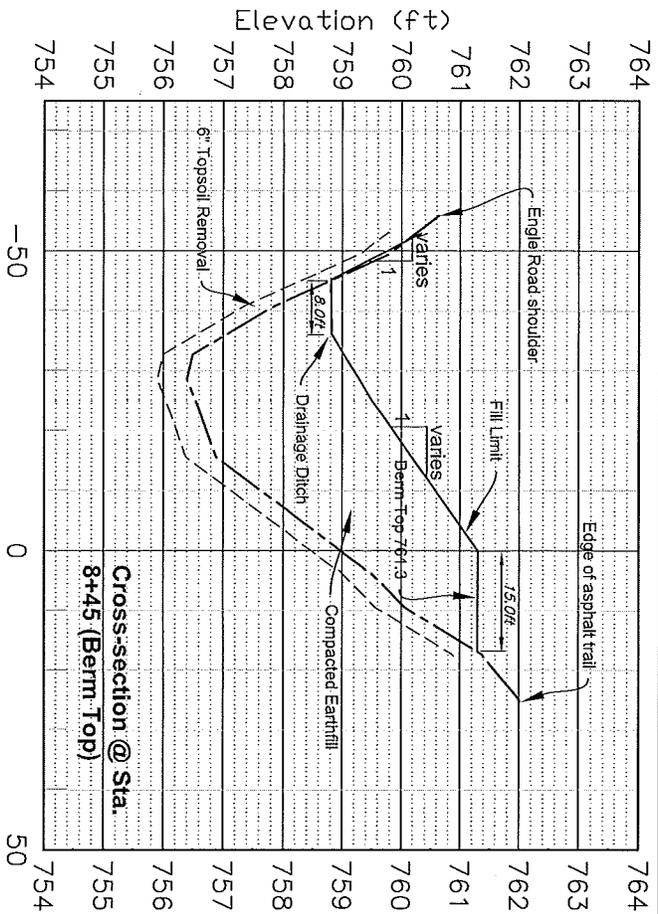
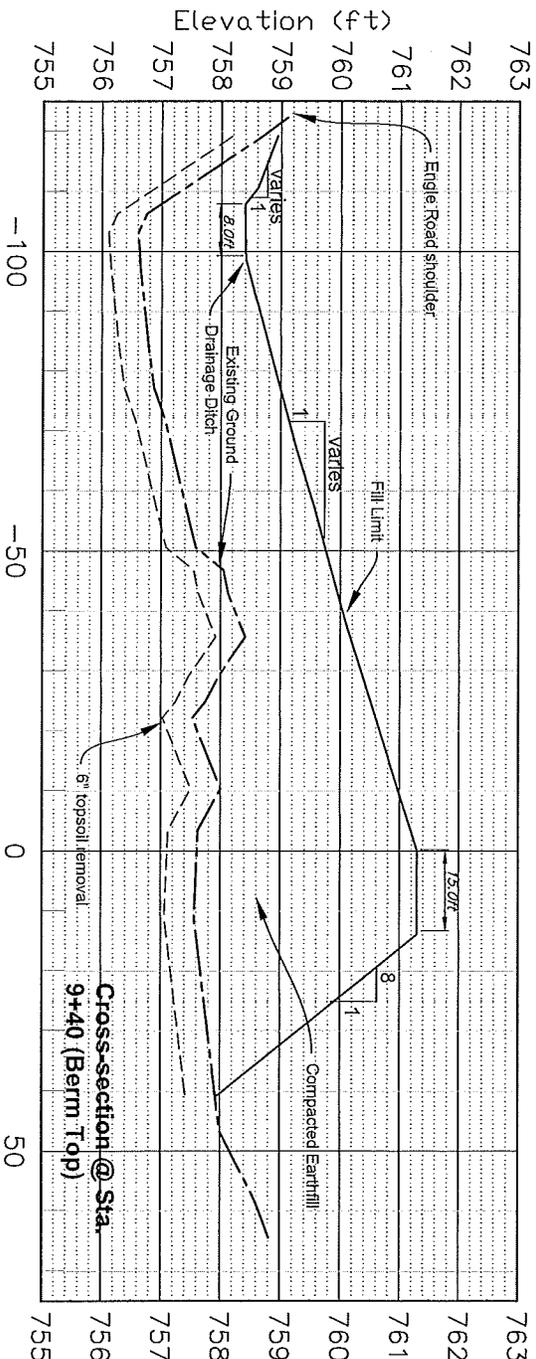
CL Proposed Berm



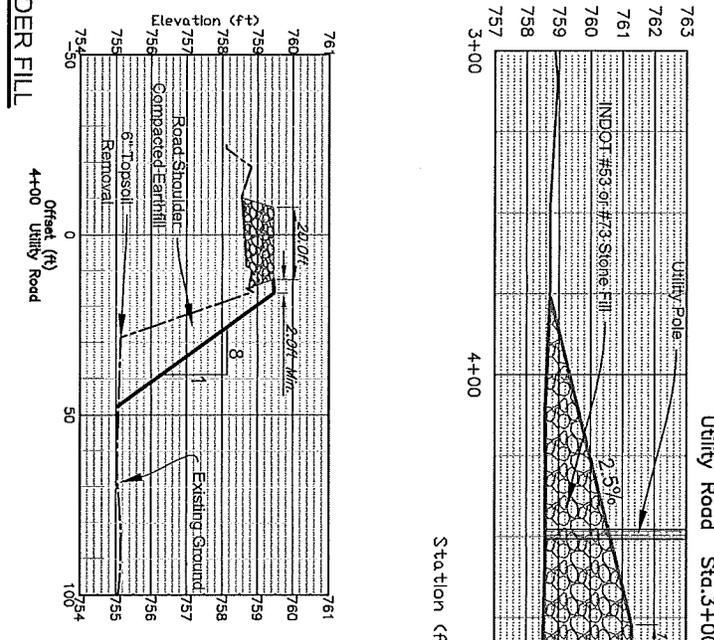
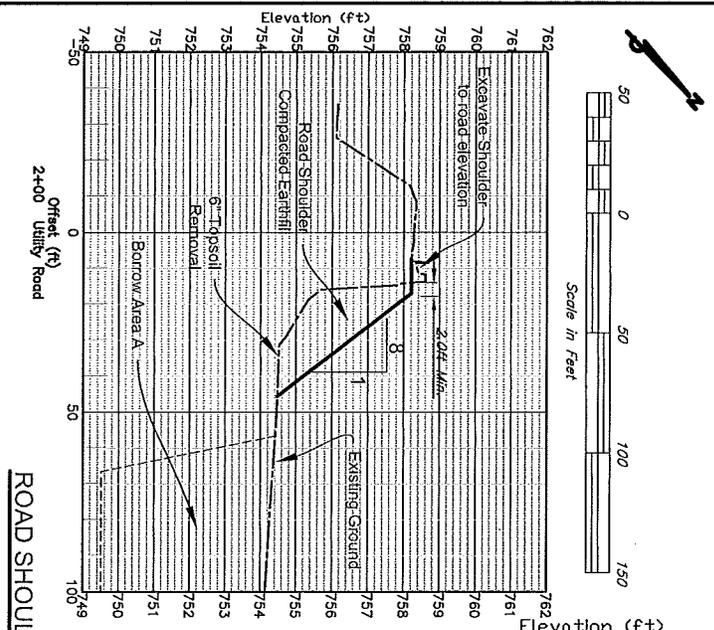
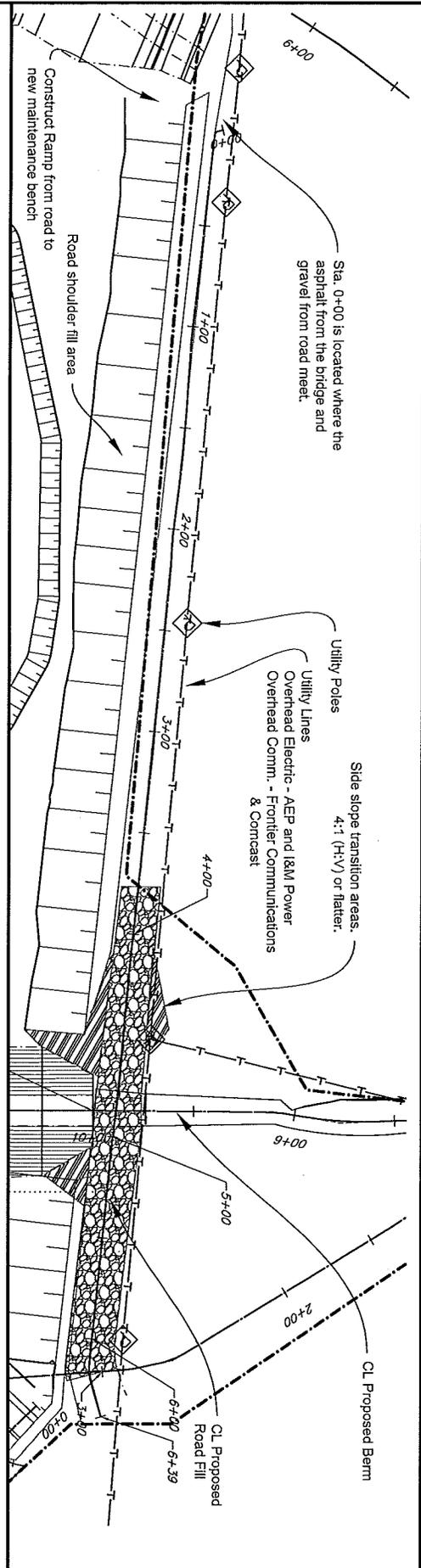
Berm at Towpath Trail Head Sta.7+54 to Sta.10+00

**Construction Notes:**

1. 6" of topsoil to be removed and replaced on any fill areas.
2. Min. of 15' flat top section of berm.
3. Drainage Ditch has 8.0' flat bottom.
4. Side slopes to drainage ditch will vary. Grade side slopes on a uniform grade from ditch bottom to top of berm and shoulder of Engle Road.

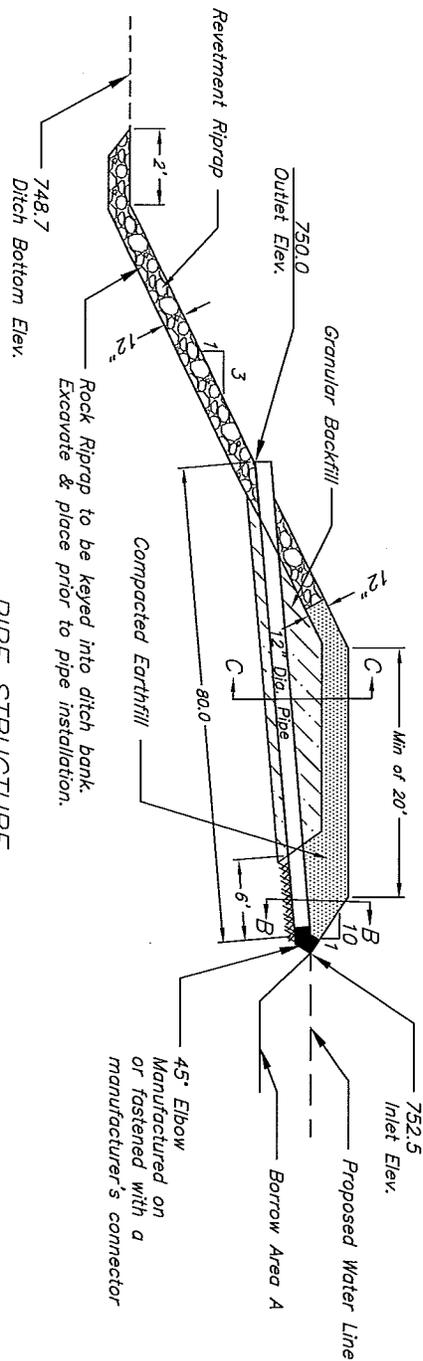


\*Station "0" in cross-sections is located at the North/East edge of the Berm top.



- Construction Notes:**
- 6" of topsoil to be removed under any areas to be filled with soil. No subgrade excavation of existing road base.
  - Min. of 15' flat top section of berm.
  - Side slope shall be filled on the East side of the utility road. Side slopes shall be 8:1 (H:V) or flatter.
  - All stone fill for Utility Road shall be INDOT #53 or #73 stone.
  - Removed topsoil will be used to finish grading.
  - All disturbed areas to be seeded and mulched.

 <p>National Resources Conservation Service United States Department of Agriculture</p>	<p>Towpath Trail Head Profile &amp; Cross-Sections Eagle Marsh WRP - ANSC Berm</p>		<p>Designed <u>A. Pursifull</u> Date <u>12/2013</u></p>
			<p>Drawn <u>A. Pursifull</u> Date <u>8/2014</u></p>
			<p>Checked <u>M. Cox</u> Date <u>1/2014</u></p>
			<p>Approved <u>M. Cox</u> Date <u>4/2014</u></p>
<p>File No. _____</p>	<p>Drawing No. _____</p>	<p>Allen County, IN</p>	<p>Sheet 21 of 25</p>



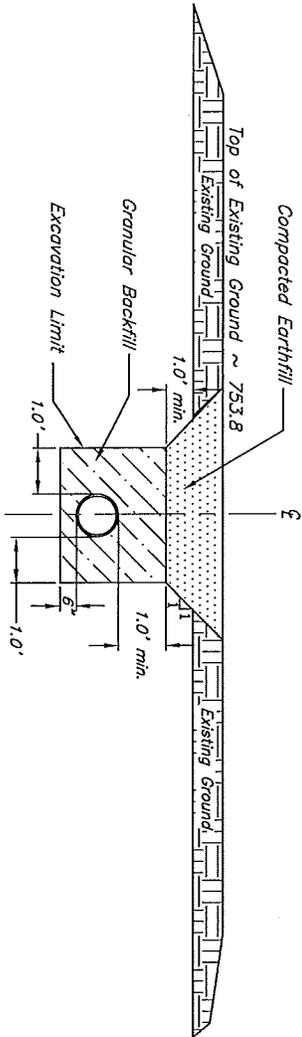
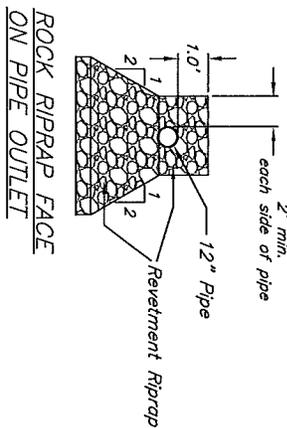
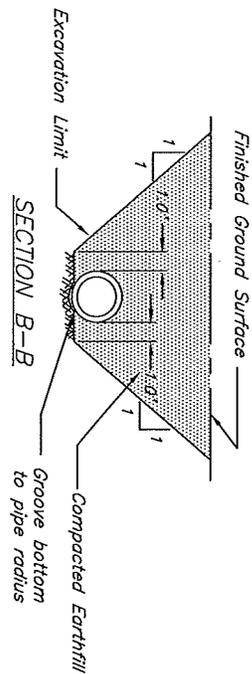
**PIPE STRUCTURE**  
Inlet with Elbow

**MATERIAL & CONSTRUCTION SPECIFICATIONS:**

1. Pipe Material:  
PVC PIPE is to be Schedule 40.
2. Granular Backfill is to be MDOT #8 or #9 stone.
3. Rock Riprap is to meet MDOT Revestment size.

Gradation:

SIZE	18"	12"	6"	3"
% SMALLER	100	90-100	20-40	0-10

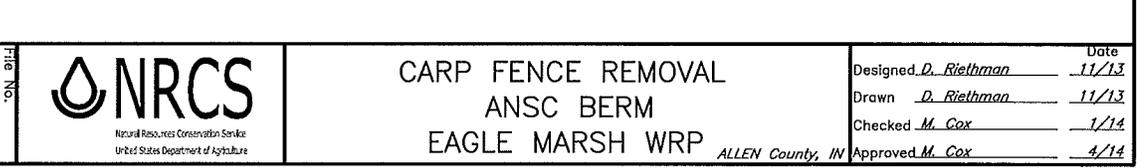
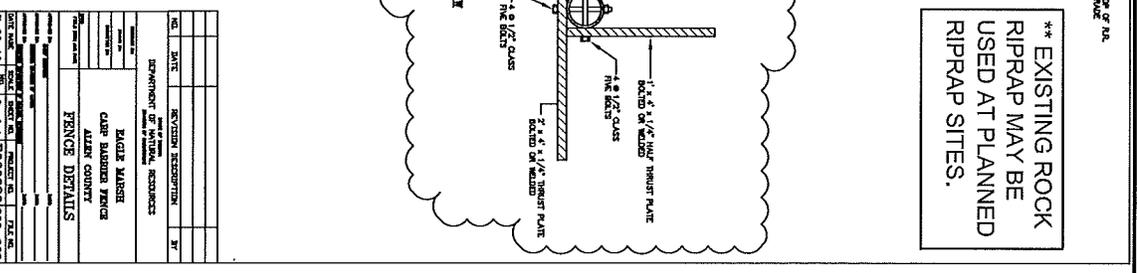
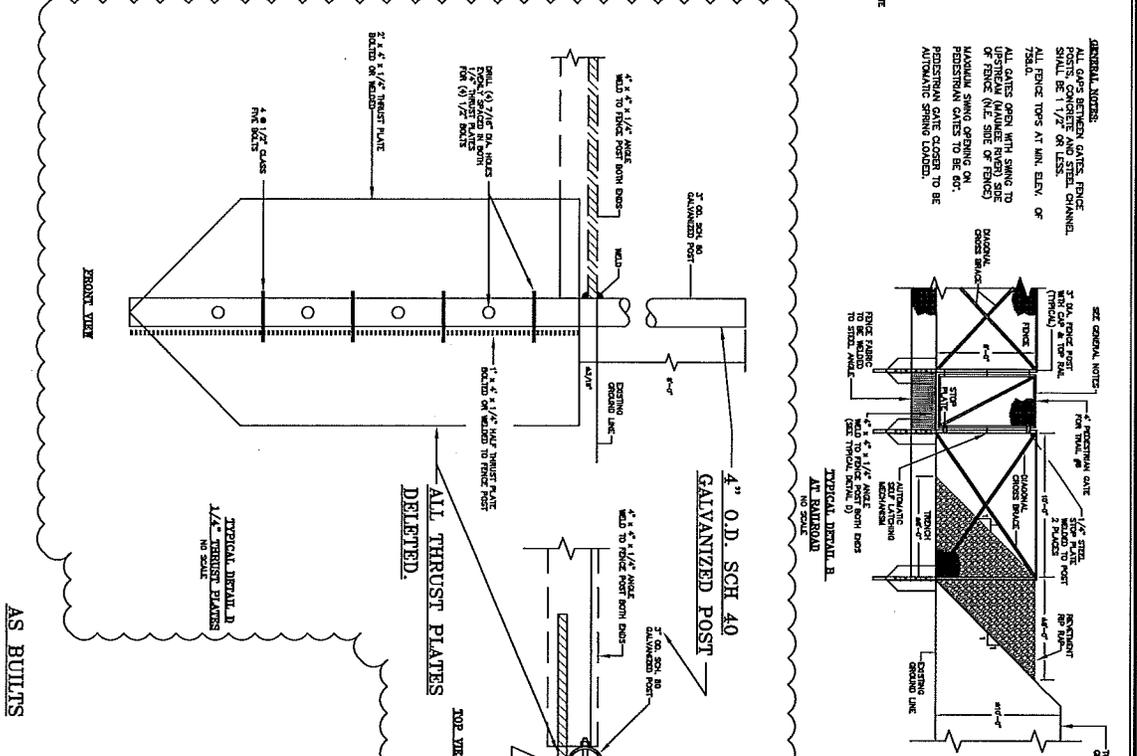
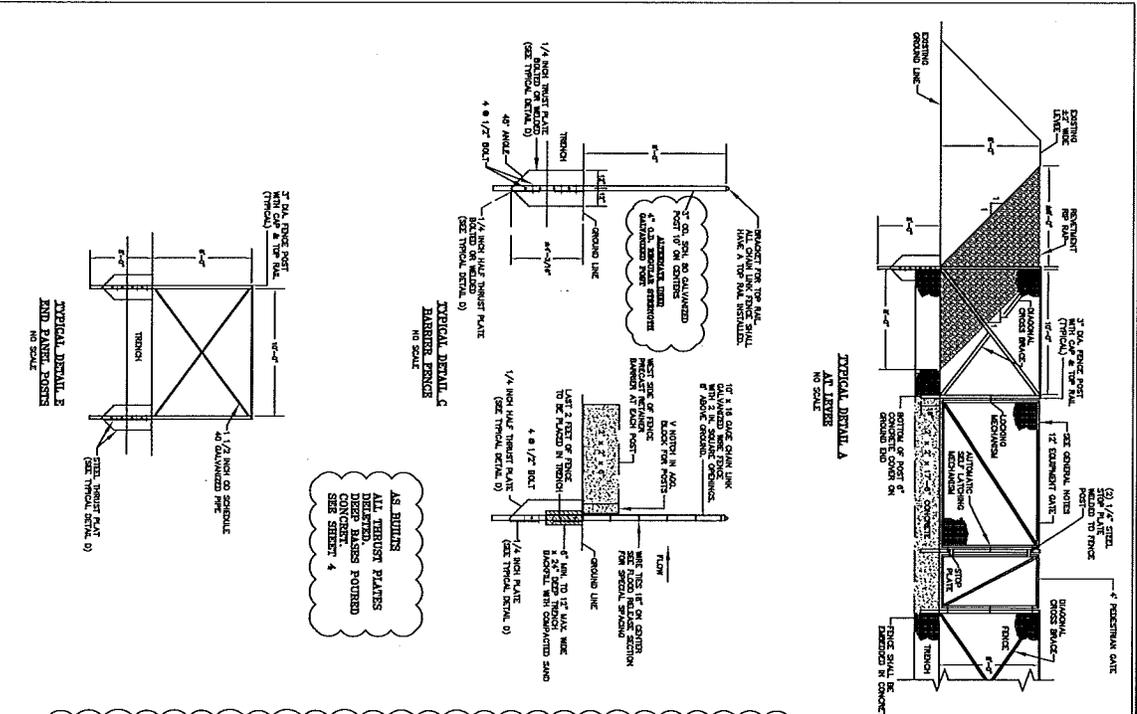


**SECTION C-C**

not to scale

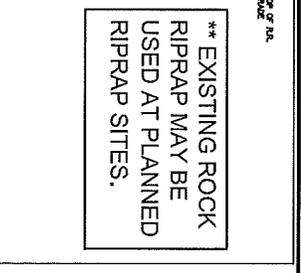
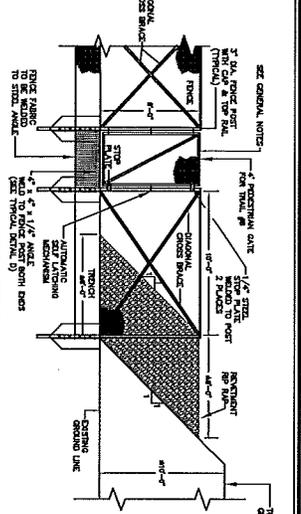
<p>Natural Resources Conservation Service United States Department of Agriculture</p>	<b>ELBOW INLET PIPE STRUCTURE</b> <b>BORROW AREA A</b> Eagle Marsh - ANSC Berm Allen County, Indiana		Date 12/2013
	Designed A. Pursifull	12/2013	12/2013
	Drawn A. Pursifull	1/14	4/14
	Checked M. Cox	4/14	4/14
	Approved M. Cox	4/14	4/14

**\*\* EXISTING FENCE ( BOTH BARRIER AND DEBRIS ) AND ALL ACCOMPANY PARTS TO BE REMOVED AND DISPOSED OF OFFSITE. \*\***  
**AS-BUILT DRAWINGS PROVIDED BY IDNR - DIVISION OF ENGINEERING**



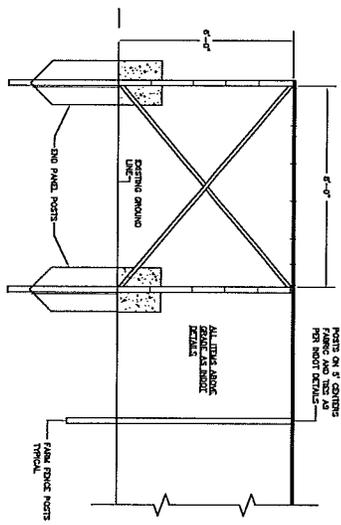
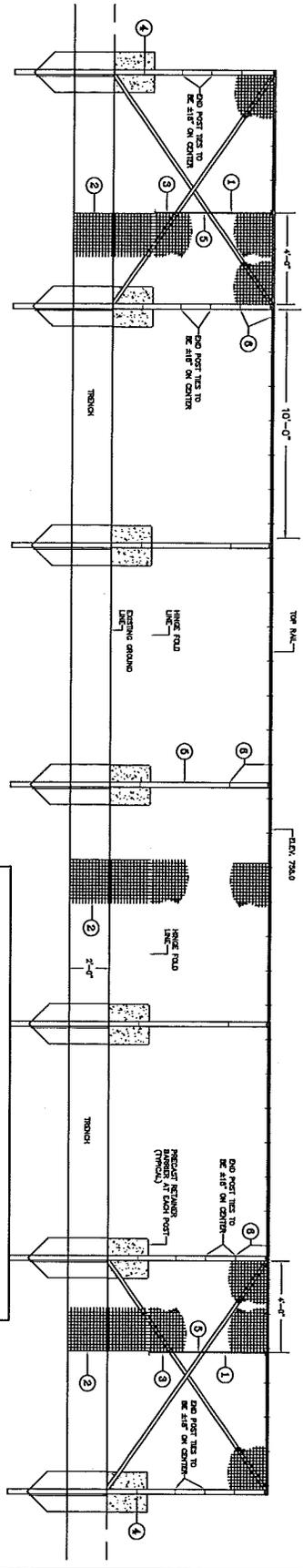
**\*\* EXISTING ROCK RIPRAP MAY BE USED AT PLANNED RIPRAP SITES. \*\***

**GENERAL NOTES:**  
 ALL GAPS BETWEEN GATES, FENCE AND POSTS SHALL BE CHANGED TO 1/2" OR LESS.  
 ALL FENCE TOPS AT MIN. ELEV. OF 758.0.  
 ALL GATES OPEN WITH SWING TO UPSTREAM (MAYBE REVERSED SIDE OF FENCE (W.L. SIDE OF FENCE)) MAXIMUM SWING OPENING ON POSTS SHALL BE 10'.  
 AUTOMATIC SPRING CLOSED.



NO.	DATE	REVISION DESCRIPTION	BY
1		DESIGN	DR
2		REVISED	DR
3		REVISED	DR
4		REVISED	DR

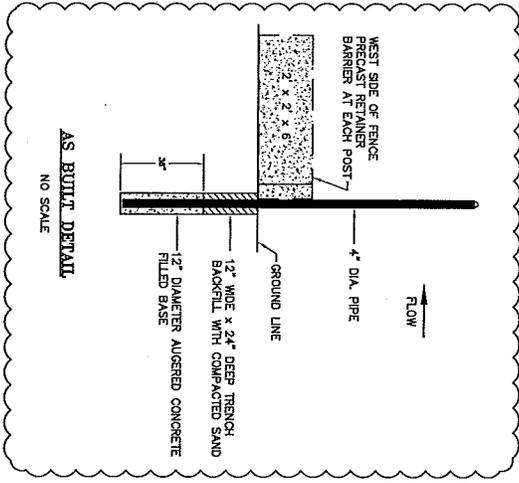
DEPARTMENT OF NATURAL RESOURCES  
 EAGLE MARSH  
 CARP BARRIER FENCE  
 ALLEN COUNTY  
 FENCE DETAILS  
 7-30-10 3 of 4 E06800281200-363



**\*\* AFTER REMOVAL OF THE FENCE AND CONCRETE ANCHORED POSTS, BACKFILL THE TRENCH WITH EARTHFILL TO EXISTING GROUND LEVEL.**

**TYPICAL DETAIL E  
EASED BREAKER BARRIER  
NO SCALE**

**TYPICAL DETAIL G  
DEBRIS FENCE  
NO SCALE**



**AS BUILT DETAIL  
NO SCALE**

**AS BUILTS**

- NOTES**
1. These Eased Breaker Panels are shown on the downstream side of the barrier.
  2. These Eased Breaker Panels only have trench and backfill.
  3. The Fence Fabric to match bar and chain tie to End Panel Fabric.
  4. The Fence Fabric is no higher than 18" above ground.
  5. 10 ties to post in the area between 18" above grade up to level 700.0.
  6. The Road Safety Panel all ties on top of the road safety panel shall be 10.00 or above.

**\*\* EXISTING FENCE (BOTH BARRIER & DEBRIS) AND ALL ACCOMPANY PARTS TO BE REMOVED AND DISPOSED OF OFFSITE. \*\***  
**AS-BUILT DRAWINGS PROVIDED BY IDNR - DIVISION OF ENGINEERING**

NO.	DATE	REVISION DESCRIPTION	BY

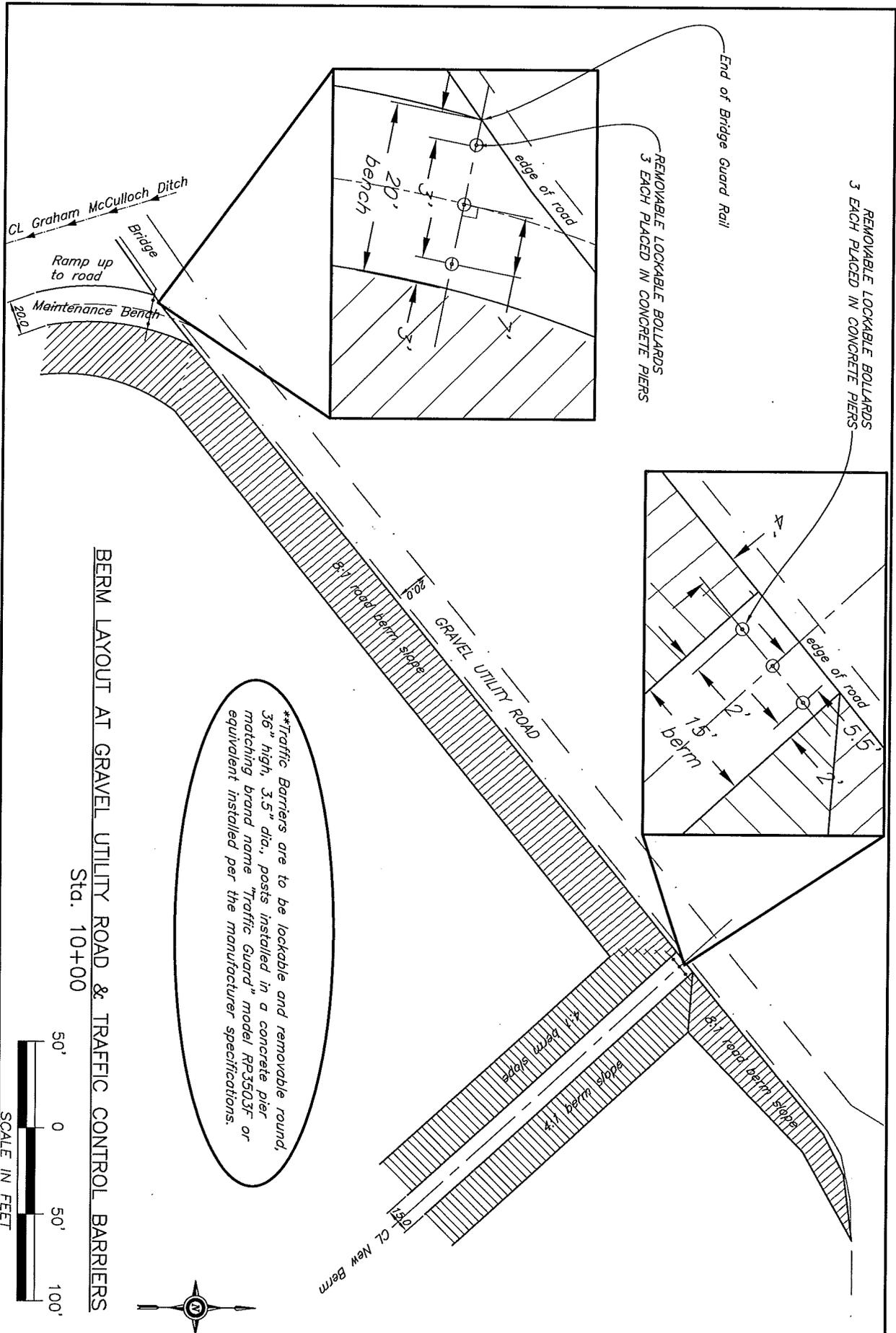
DRAWN BY: **EDGIE MARSH**  
 CHECKED BY: **CARP BARRIER FENCE**  
 DESIGNED BY: **ALAN COX**  
 PROJECT NO.: **FENCE DETAILS**  
 SHEET NO.: **7-20-10 201 4 of 4** | E060026200-365

Drawing No. **4/1/14**  
 Project Name **Fence Removal**  
 Sheet **24** of **25**



**CARP FENCE REMOVAL**  
**ANSC BERM**  
**EAGLE MARSH WRP**  
 ALLEN County, IN

Designed	Date
<i>D. Riethman</i>	11/13
<i>D. Riethman</i>	11/13
<i>M. Cox</i>	1/14
<i>M. Cox</i>	4/14



BERM LAYOUT AT GRAVEL UTILITY ROAD & TRAFFIC CONTROL BARRIERS  
Sta. 10+00



\*\*Traffic Barriers are to be lockable and removable round, 36" high, 3.5" dia., posts installed in a concrete pier matching brand name "Traffic Guard" model RP3503F or equivalent installed per the manufacturer specifications.

File No.  
Drawing No.  
8/27/14  
Sheet 25 of 25



BERM LAYOUT AT GRAVEL UTILITY ROAD  
ANSC BERM  
EAGLE MARSH WRP  
ALLEN County, IN

	Date
Designed <i>D. Riethman</i>	9/13
Drawn <i>D. Riethman</i>	10/13
Checked <i>M. Cox</i>	1/14
Approved <i>M. Cox</i>	4/14