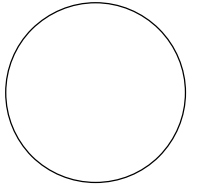


IOWA DEPARTMENT OF NATURAL RESOURCES CONSTRUCTION DOCUMENTS FOR MISSOURI RIVER WILDLIFE UNIT FLOOD DAMAGE REPAIRS HARRISON, MONONA, SHELBY, AND WOODBURY COUNTIES, IOWA

PROJECT # 21-04-43-02

SHEET INDEX	
A.01	COVER SHEET
A.02	LOCATION MAP
B.01	TYPICAL CROSS SECTIONS AND DETAILS
B.02	TYPICAL CROSS SECTIONS AND DETAILS
B.03	TYPICAL CROSS SECTIONS AND DETAILS
B.04	TYPICAL CROSS SECTIONS AND DETAILS
B.05	TYPICAL CROSS SECTIONS AND DETAILS
B.06	TYPICAL CROSS SECTIONS AND DETAILS
B.07	TYPICAL CROSS SECTIONS AND DETAILS
B.08	QUANTITIES AND GENERAL INFORMATION
B.09	QUANTITIES AND GENERAL INFORMATION
B.10	QUANTITIES AND GENERAL INFORMATION
B.11	QUANTITIES AND GENERAL INFORMATION
B.12	QUANTITIES AND GENERAL INFORMATION
C.01	QUANTITIES AND GENERAL INFORMATION
C.02	QUANTITIES AND GENERAL INFORMATION
D.01	SITE PLAN
D.02	SITE PLAN
D.03	SITE PLAN
D.04	SITE PLAN
D.05	SITE PLAN
D.06	SITE PLAN
D.07	SITE PLAN
D.08	SITE PLAN

CONSULTANT:



IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



COVER SHEET

FLOOD DAMAGE REPAIRS FOR:

MISSOURI RIVER WILDLIFE UNIT

HARRISON COUNTY

NO.	BY	DATE	REVISION

SHEET NO: **A.01**

LICENSED PROFESSIONAL ENGINEER
MANDI L. ALDRICH PETERS
14439
IOWA

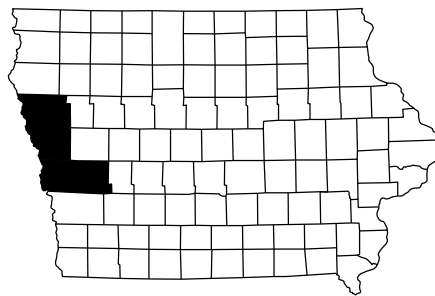
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME UNDER THE LAWS OF THE STATE OF IOWA.

SIGNATURE: _____ DATE: _____

MANDI L. ALDRICH PETERS
PRINTED OR TYPED NAME

MY LICENCE RENEWAL DATE IS DECEMBER 31, 20 21

PAGES COVERED BY THIS SEAL: ALL



IOWA

ONE CALL

1-800-292-8989

www.iowaonecall.com

Know what's below.
Call before you dig.

DIRECTORY			
PROJECT MANAGER	CONSTRUCTION INSPECTOR		
COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES	COMPANY	IOWA DEPARTMENT OF NATURAL RESOURCES
ADDRESS	502 EAST 9TH STREET	ADDRESS	
CITY, STATE, ZIP	DES MOINES, IA, 50319	CITY, STATE, ZIP	
CONTACT	MANDI L. ALDRICH PETERS	CONTACT	MARK JOHNSON
TELEPHONE	515-205-1698	TELEPHONE	515-250-3713
FAX		FAX	
EMAIL	Mandi.Aldrich-Peters@dnr.iowa.gov	EMAIL	Mark.Johnson@dnr.iowa.gov

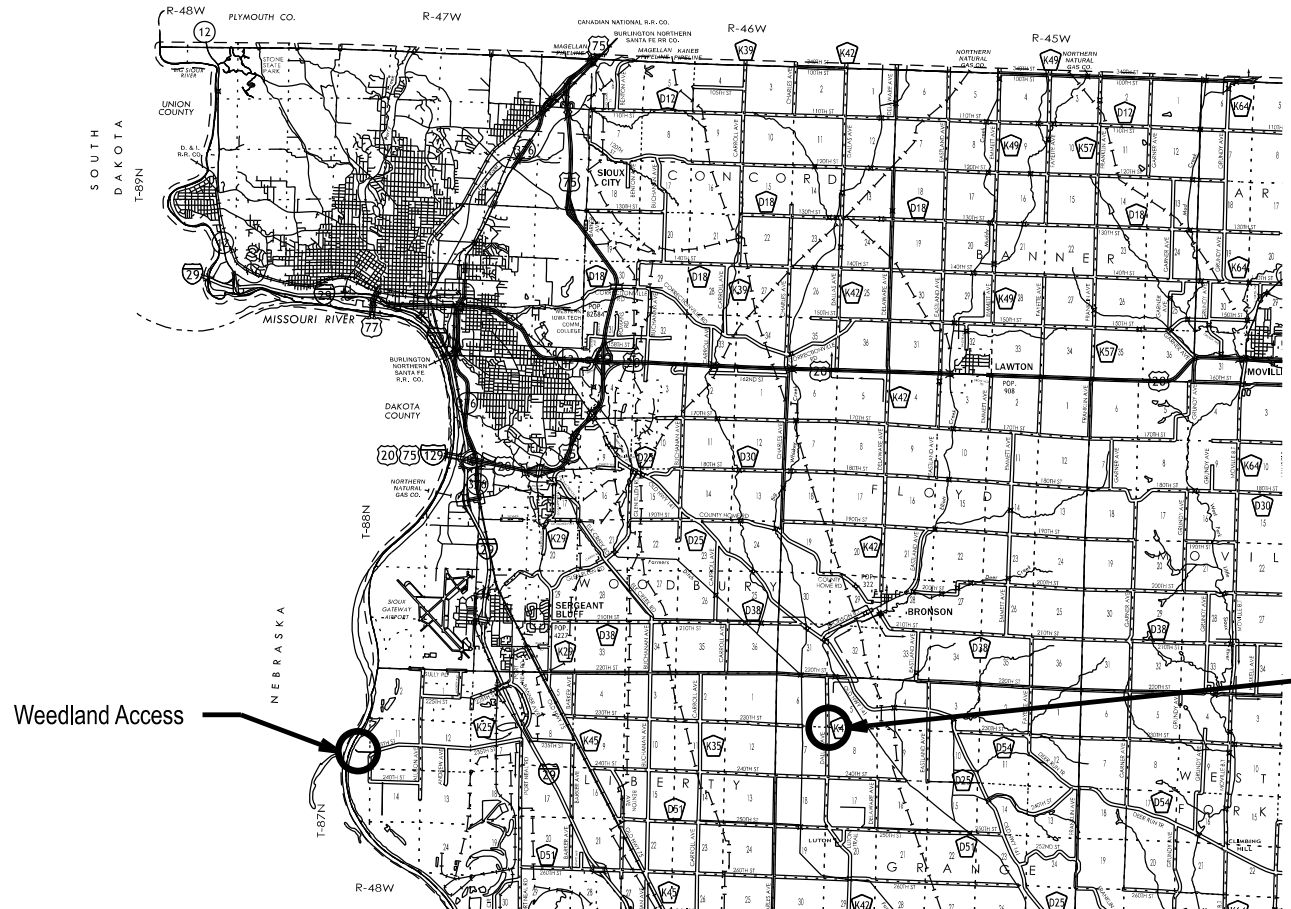
PROJECT DESCRIPTION

This project consists of FEMA repairs by removing sediment, fixing parking lots, water control structures, pipes and roadways in various locations in Woodbury, Monona, Harrison and Shelby Counties.

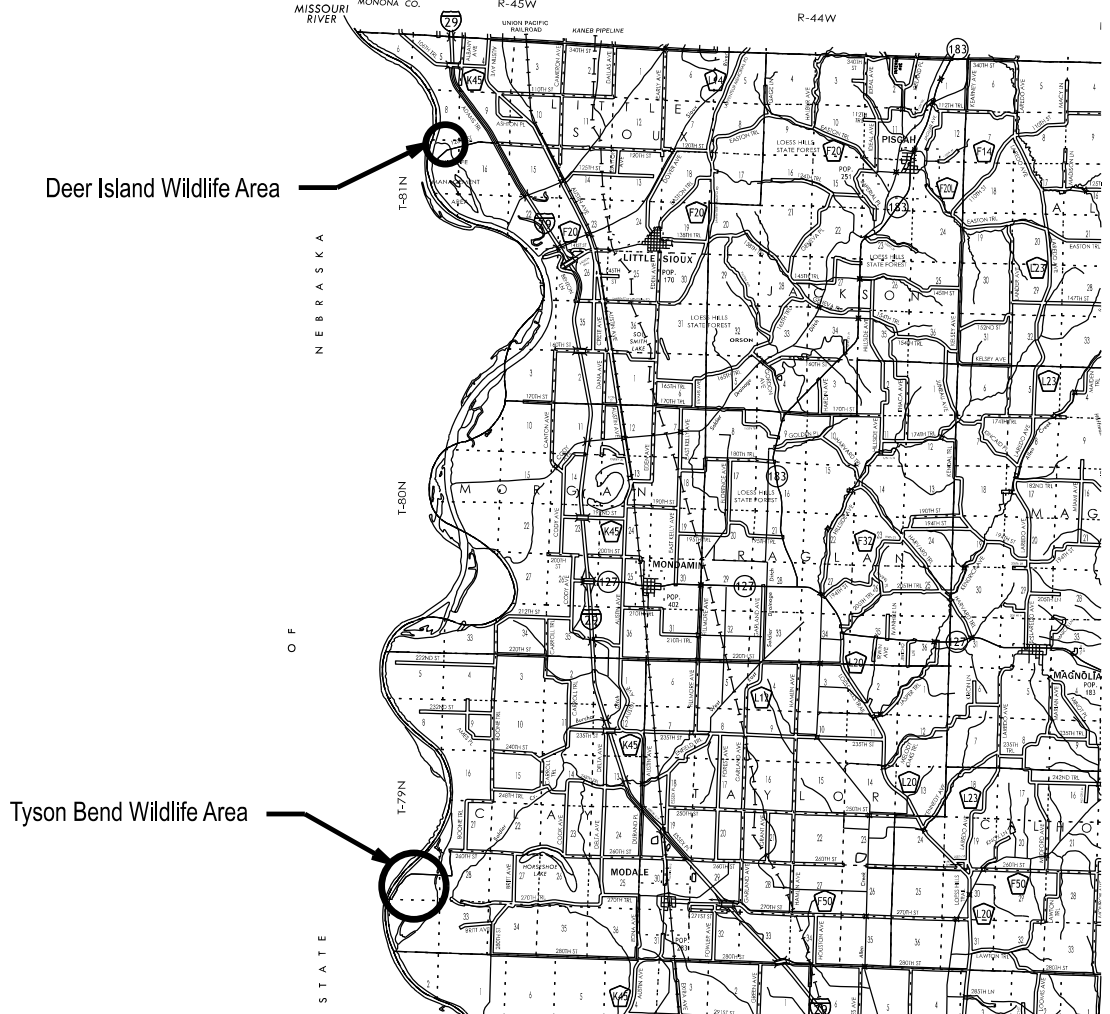
AUTHORIZATION TO BID

AUTHORIZATION - PARKS | WILDLIFE | FISHERIES | LAW ENFORCEMENT | FORESTRY DATE

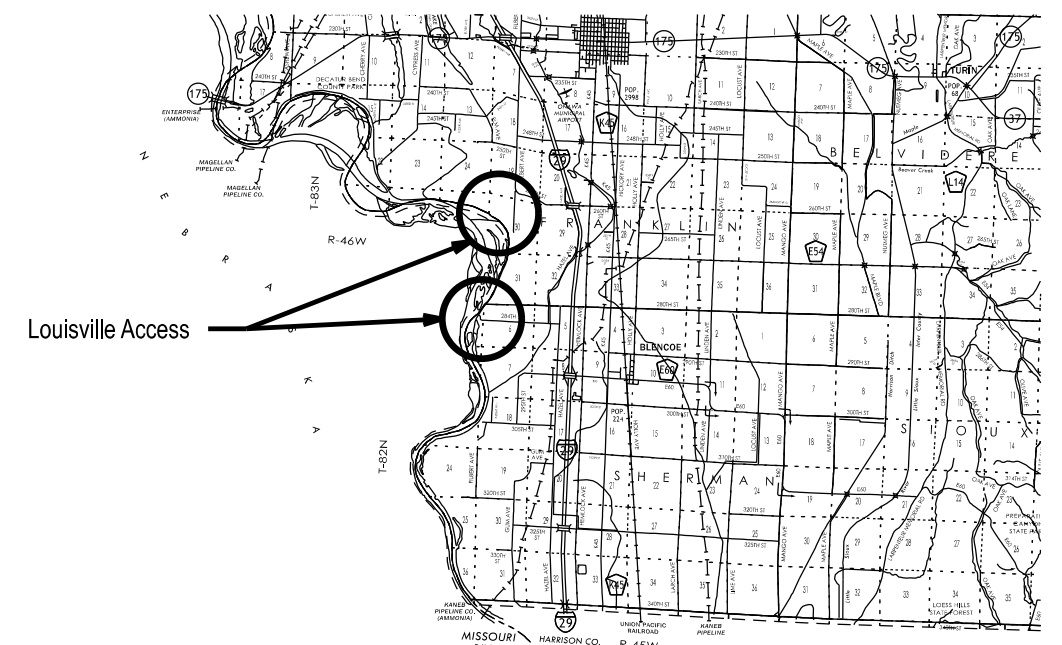
ENGINEERING BUREAU CHIEF
DATE



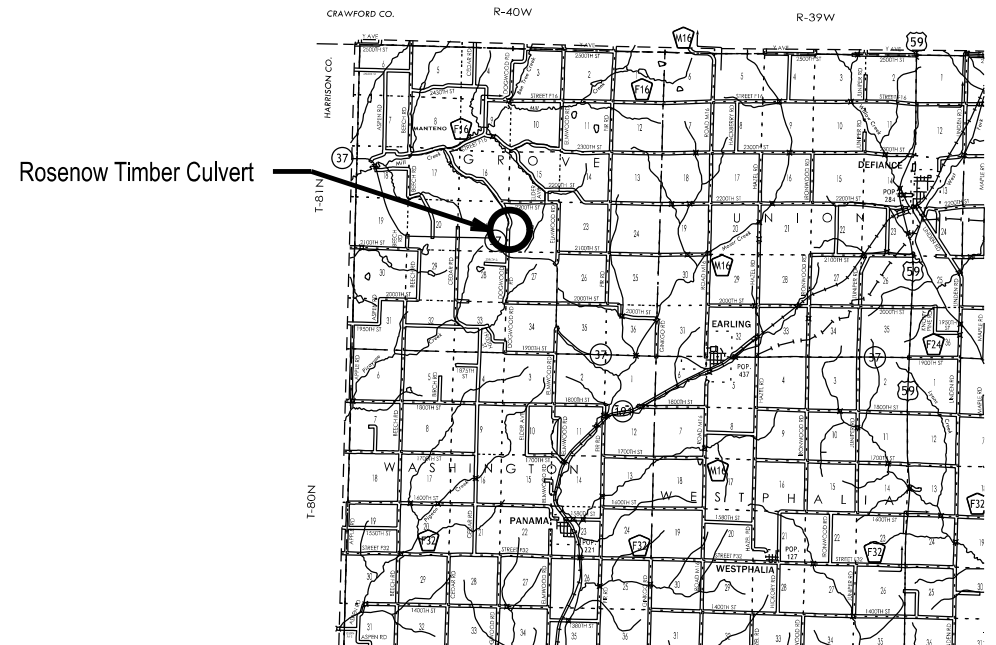
Woodbury County



Harrison County

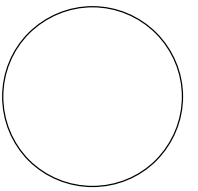


Monona County



Shelby County

CONSULTANT:



**IOWA DEPARTMENT OF
NATURAL RESOURCES**

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



PROJECT LOCATION MAP

FLOOD DAMAGE REPAIRS FOR:

MISSOURI RIVER WILDLIFE UNIT

HARRISON COUNTY

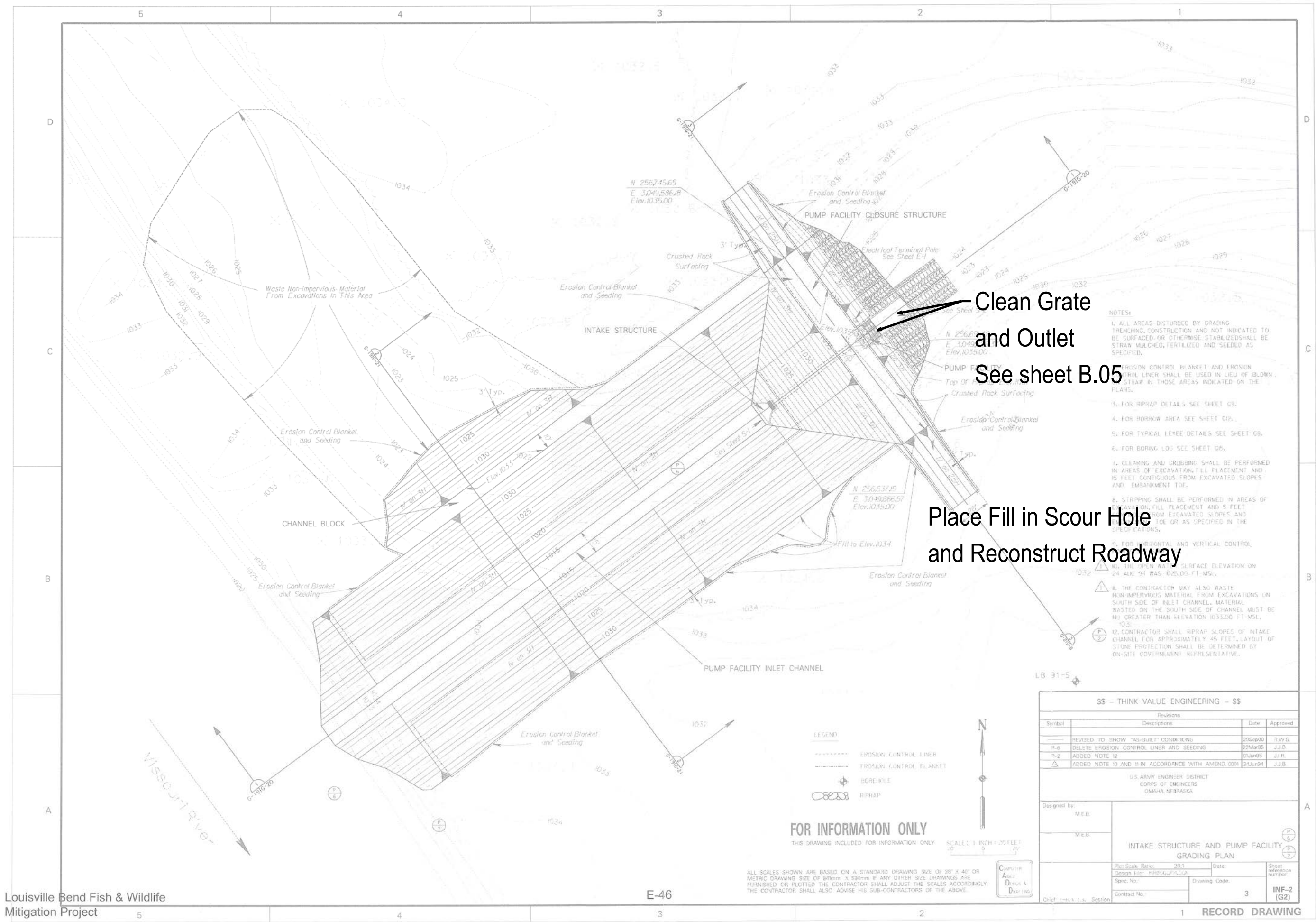
NO.	BY	REVISION

DRAWN BY: PROJECT NUMBER:
21-04-43-02

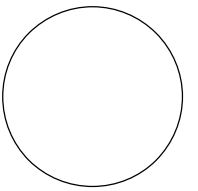
CHK'D BY: DATE:

SHEET NO.:

A.02



CONSULTANT:



IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

FLOOD DAMAGE REPAIRS FOR:
MISSOURI RIVER WILDLIFE UNIT
HARRISON COUNTY

NO.	DATE	REVISION

B.01

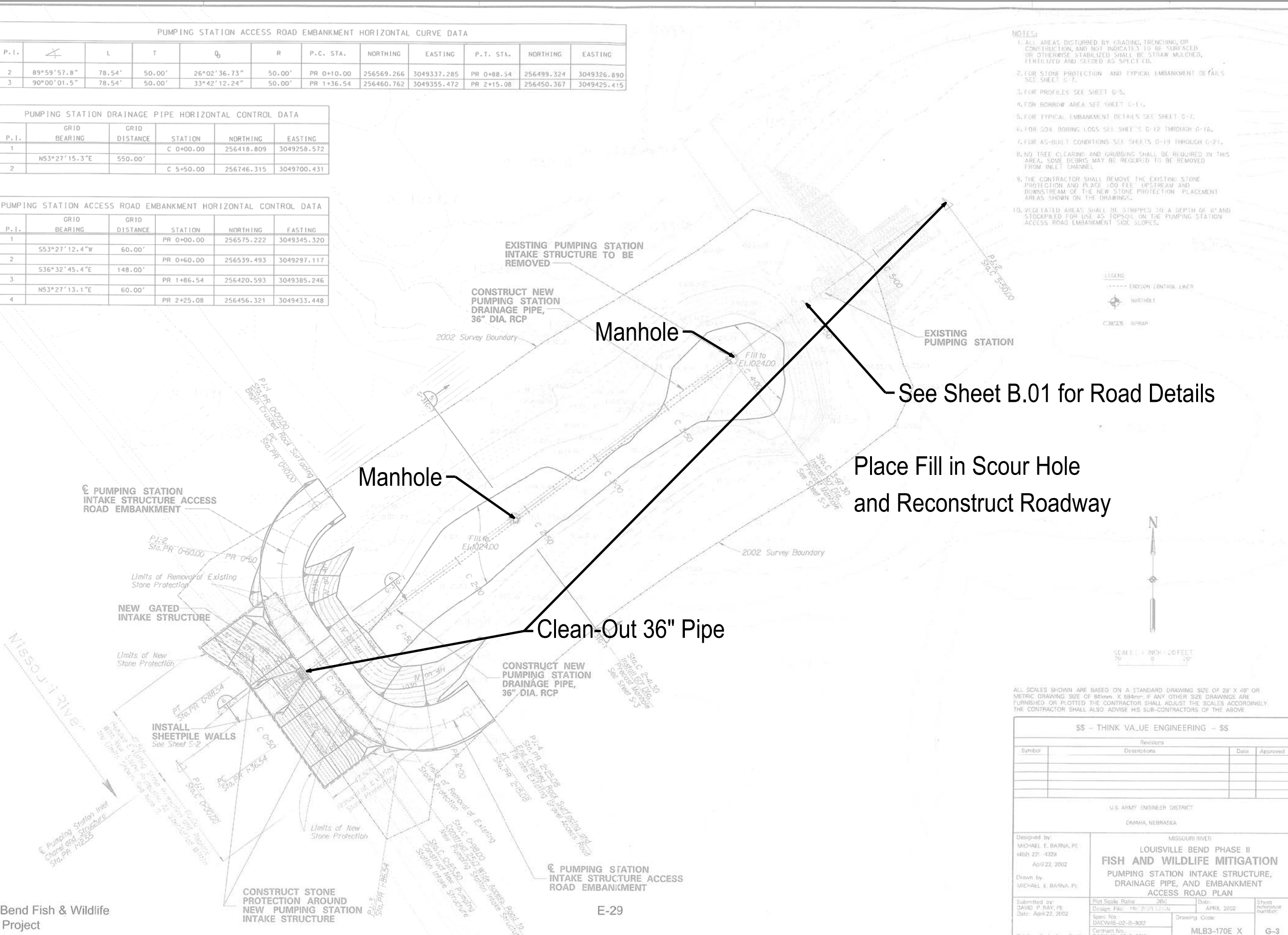
P. I.	Angle	L	T	ϕ	R	P.C. STA.	NORTHING	EASTING	P.T. STA.	NORTHING	EASTING
2	89°59'57.8"	78.54'	50.00'	26°02'36.73"	50.00'	PR 0+10.00	256569.266	3049337.285	PR 0+88.54	256499.324	3049326.890
3	90°00'01.5"	78.54'	50.00'	33°42'12.24"	50.00'	PR 1+36.54	256460.762	3049355.472	PR 2+15.08	256450.367	3049425.415

P. I.	GRID BEARING	GRID DISTANCE	STATION	NORTHING	EASTING
1	N53°27'15.3"E	550.00'	C 0+00.00	256418.809	3049258.572
2			C 5+50.00	256746.315	3049700.431

P. I.	GRID BEARING	GRID DISTANCE	STATION	NORTHING	EASTING
1	S53°27'12.4"W	60.00'	PR 0+00.00	256575.222	3049345.320
2	S36°32'45.4"E	148.00'	PR 0+60.00	256539.493	3049297.117
3	N53°27'13.1"E	60.00'	PR 1+86.54	256420.593	3049385.246
4			PR 2+25.08	256456.321	3049433.448

- NOTES:**
- ALL AREAS DISTURBED BY GRADING, TRENCHING, OR CONSTRUCTION, AND NOT INDICATED TO BE SURFACED, OR OTHERWISE STABILIZED SHALL BE STRAW MULCHED, FERTILIZED AND SEEDS AS SPECIFIED.
 - FOR STONE PROTECTION AND TYPICAL EMBANKMENT DETAILS SEE SHEET G-7.
 - FOR PROFILES SEE SHEET G-5.
 - FOR BORROW AREA SEE SHEET G-11.
 - FOR TYPICAL EMBANKMENT DETAILS SEE SHEET G-7.
 - FOR SOIL BORING LOGS SEE SHEETS G-12 THROUGH G-16.
 - FOR AS-BUILT CONDITIONS SEE SHEETS G-19 THROUGH G-21.
 - NO TREE CLEARING AND GRUBBING SHALL BE REQUIRED IN THIS AREA. SOME DEBRIS MAY BE REQUIRED TO BE REMOVED FROM INLET CHANNEL.
 - THE CONTRACTOR SHALL REMOVE THE EXISTING STONE PROTECTION AND PLACE 100 FEET UPSTREAM AND DOWNSTREAM OF THE NEW STONE PROTECTION PLACEMENT AREAS SHOWN ON THE DRAWINGS.
 - VEGETATED AREAS SHALL BE STRIPPED TO A DEPTH OF 6" AND STOCKPILED FOR USE AS TOPSOIL ON THE PUMPING STATION ACCESS ROAD EMBANKMENT SIDE SLOPES.

D
C
B
A



ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 594mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

Symbol	Revisions	Date	Approved

U.S. ARMY ENGINEER DISTRICT
OMAHA, NEBRASKA

**MISSOURI RIVER
LOUISVILLE BEND PHASE II
FISH AND WILDLIFE MITIGATION**

**PUMPING STATION INTAKE STRUCTURE,
DRAINAGE PIPE, AND EMBANKMENT
ACCESS ROAD PLAN**

Designed by: MICHAEL E. BARNA, PE
4021-221-4329
April 22, 2002

Drawn by: MICHAEL E. BARNA, PE

Submitted by: DAVID P. RAY, PE
Date: April 22, 2002

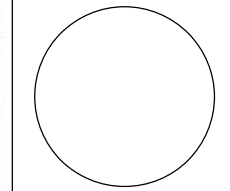
Plot Scale Ratio: 30:1
Design File: MLB3-170E-02-002
Spec. No.: DACW46-02-B-002
Contract No.: DACW46-02-C-003

MISSOURI RIVER PROJECT NUMBER:
21-04-43-02

Sheet reference number:
MLB3-170E X G-3

Chief: Sols A Section

CONSULTANT:



**IOWA DEPARTMENT OF
NATURAL RESOURCES**

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

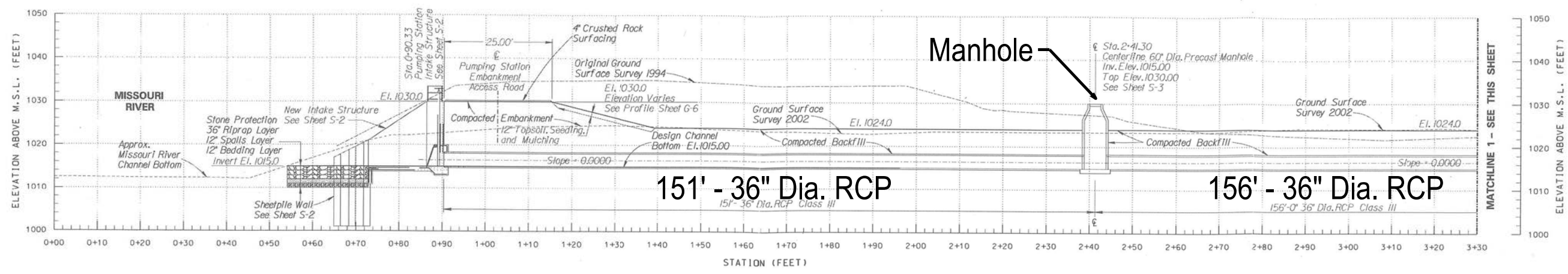
FLOOD DAMAGE REPAIRS FOR:
MISSOURI RIVER WILDLIFE UNIT
HARRISON COUNTY

NO.	BY DATE	REVISION

CHECKED BY: DATE:

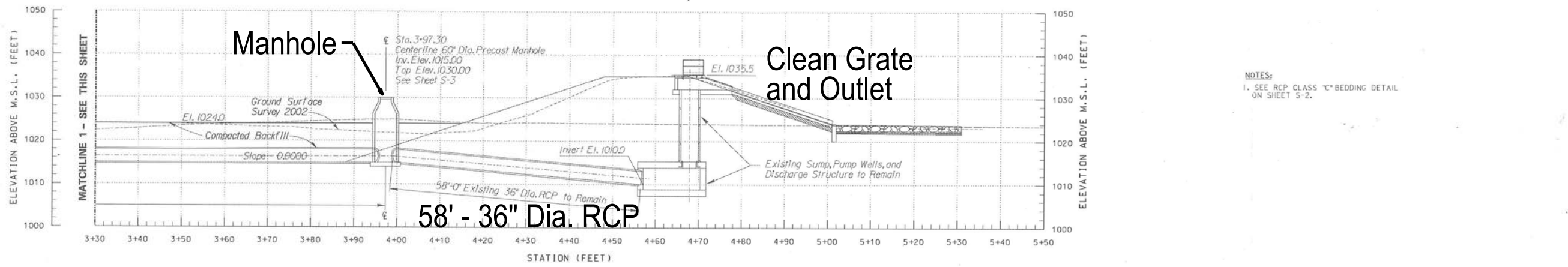
SHEET NO:

D



PUMPING STATION DRAINAGE PIPE AND INLET CHANNEL PROFILE

C

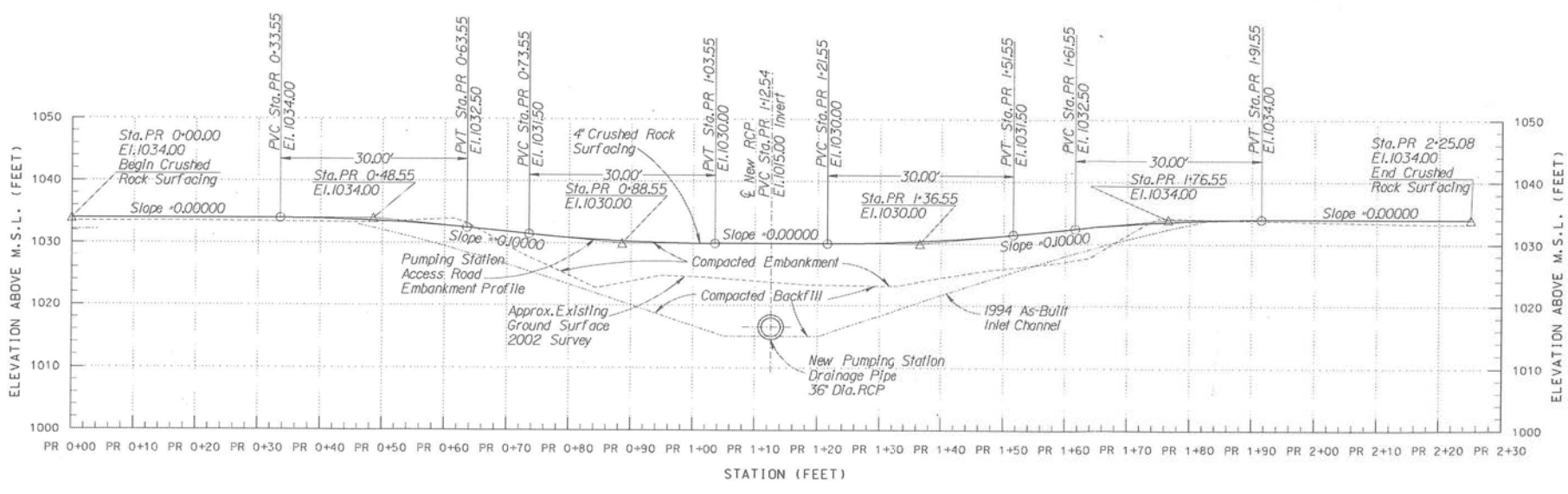


PUMPING STATION DRAINAGE PIPE AND INLET CHANNEL PROFILE, CONT'D

NOTES:
 1. SEE RCP CLASS "C" BEDDING DETAIL ON SHEET S-2.

SCALE: 1 INCH = 10 FEET

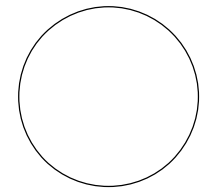
B



PUMPING STATION ACCESS ROAD EMBANKMENT PROFILE

E-31

CONSULTANT:



IOWA DEPARTMENT OF
 NATURAL RESOURCES
 ENGINEERING SERVICES - WALLACE BUILDING
 502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

FLOOD DAMAGE REPAIRS FOR:
 MISSOURI RIVER WILDLIFE UNIT
 HARRISON COUNTY

ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 594mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

Revisions			
Symbol	Descriptions	Date	Approved

U.S. ARMY ENGINEER DISTRICT
 OMAHA, NEBRASKA

Designed by:
 MICHAEL E. BARNA, PE
 (402)-221-4329
 April 22, 2002

Missouri River
 LOUISVILLE BEND PHASE II
FISH AND WILDLIFE MITIGATION
 PUMPING STATION INTAKE STRUCTURE AND
 DRAINAGE PIPE PROFILE AND
 ACCESS ROAD PROFILE

Drawn by:
 MICHAEL E. BARNA, PE

Submitted by:
 DAVID P. RAY, PE
 Date: April 22, 2002

Plot Scale Ratio: 10:1
 Design File: M3:280PR1.DGN
 Date: APRIL 2002

Spec. No.: DACW45-02-B-0012
 Contract No.: DACW45-02-C-0013

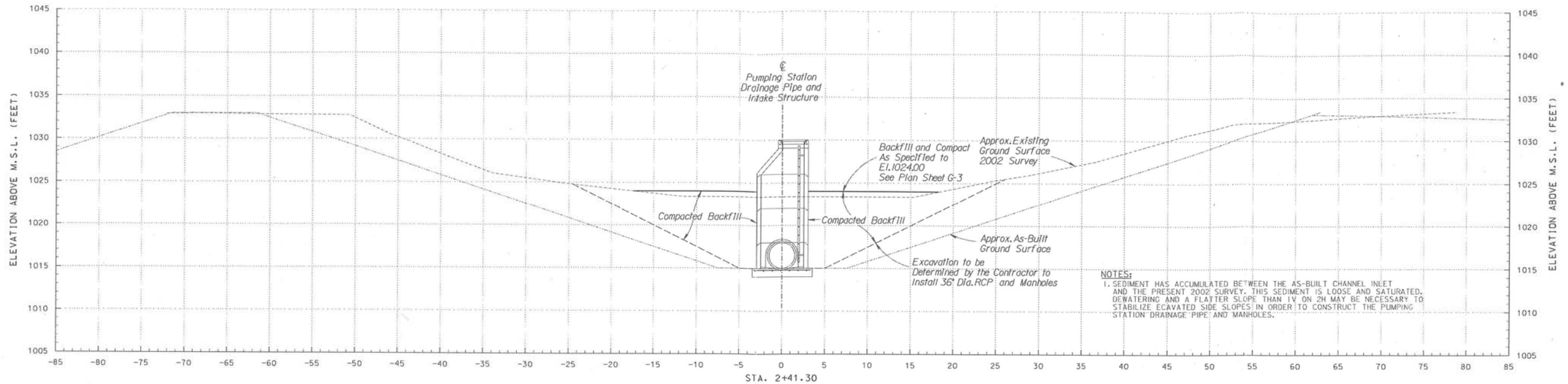
MLB3-170E X
 G-5

NO.	BY	DATE	REVISION

DRAWN BY: PROJECT NUMBER:
 21-04-43-02

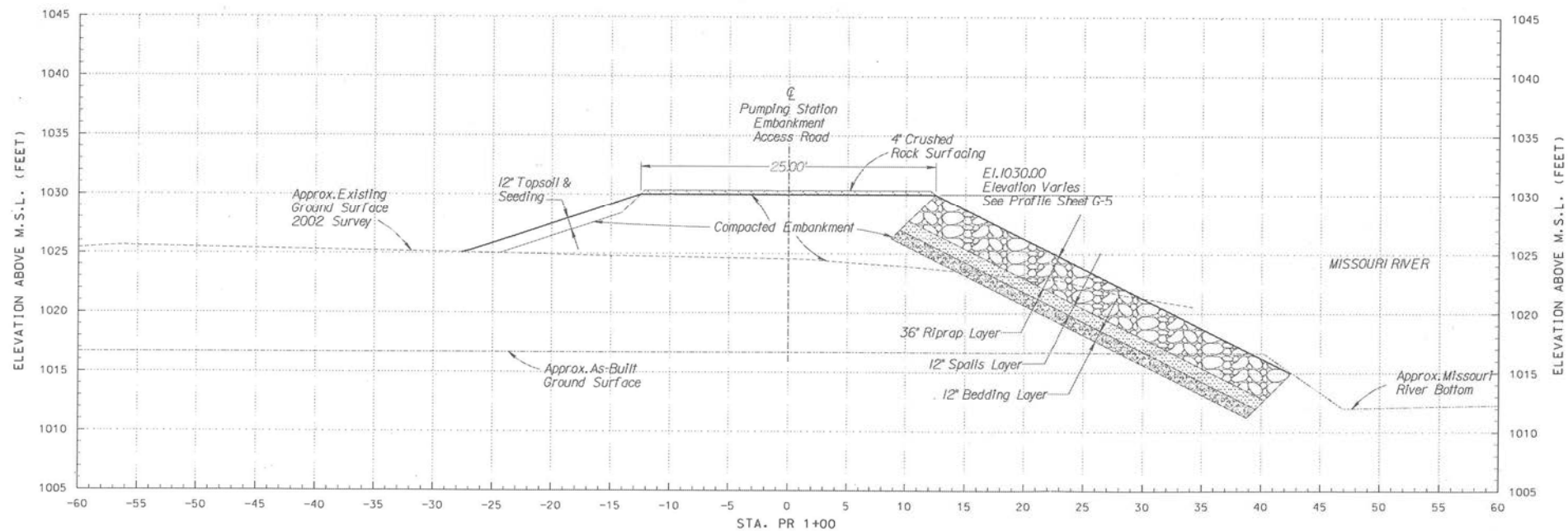
CHK'D BY: DATE:

SHEET NO:



TYPICAL CROSS-SECTION THROUGH PUMPING STATION INLET CHANNEL AND MANHOLE

SECTION 5
G-316-7



TYPICAL PUMPING STATION ACCESS ROAD EMBANKMENT AND STONE PROTECTION CROSS-SECTION

SECTION 6
G-316-7

SCALE: 1 INCH = 5 FEET

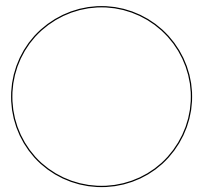
\$\$ - THINK VALUE ENGINEERING - \$\$

Symbol	Revisions Descriptions	Date	Approved

U.S. ARMY ENGINEER DISTRICT
OMAHA, NEBRASKA

Designed by: MICHAEL E. BARNA, PE (402)-221-4329 April 22, 2002	MISSOURI RIVER LOUISVILLE BEND PHASE II FISH AND WILDLIFE MITIGATION TYPICAL PUMPING STATION DRAINAGE PIPE AND EMBANKMENT ACCESS ROAD CROSS-SECTIONS		Sheet reference number: G-7
Drawn by: MICHAEL E. BARNA, PE	Plot Scale Ratio: 5:1 Design File: MK2PXSJLDGN Spec. No.: DACW45-02-B-0012 Contract No.: DACW45-02-C-3013	Date: APRIL 2002 Drawing Code: MLB3-170E X	
Submitted by: DAVID P. RAY, PE Date: April 22, 2002	Chief: Soils A Section		

CONSULTANT:



**IOWA DEPARTMENT OF
NATURAL RESOURCES**

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

FLOOD DAMAGE REPAIRS FOR:

MISSOURI RIVER WILDLIFE UNIT

HARRISON COUNTY

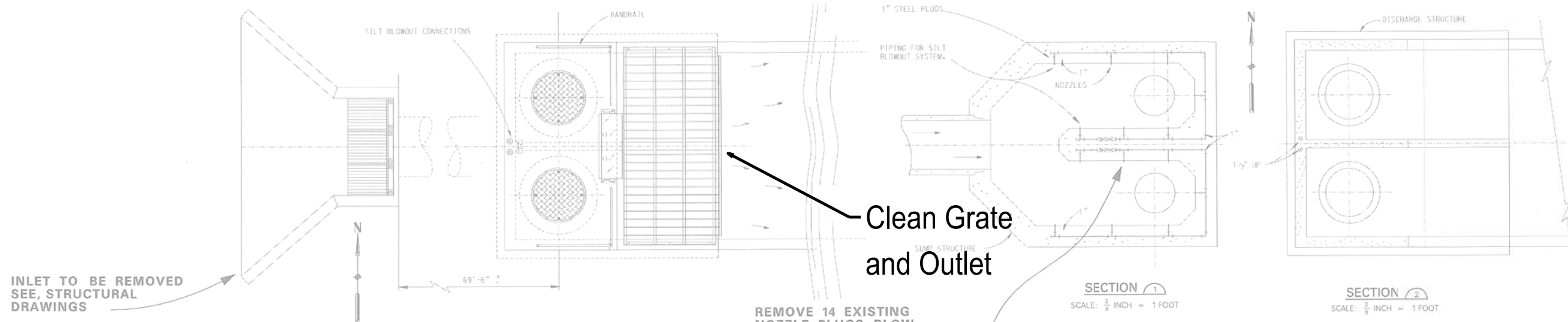
NO. BY DATE REVISION

DRAWN BY: PROJECT NUMBER:
21-04-43-02

CHK'D BY: DATE:

SHEET NO.:

B.04

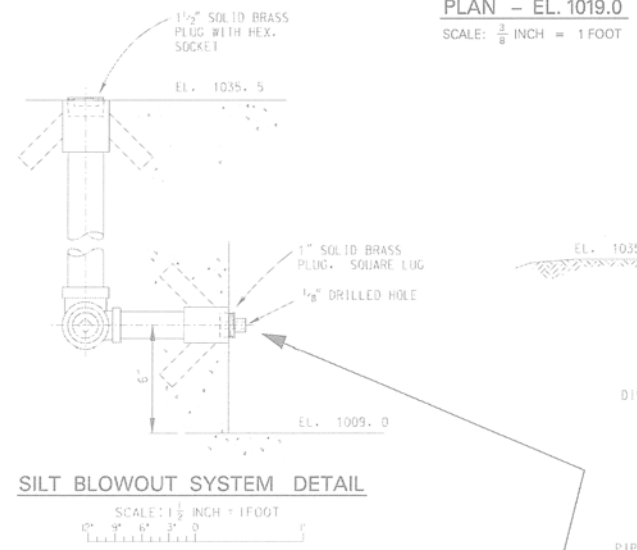


Clean Grate and Outlet

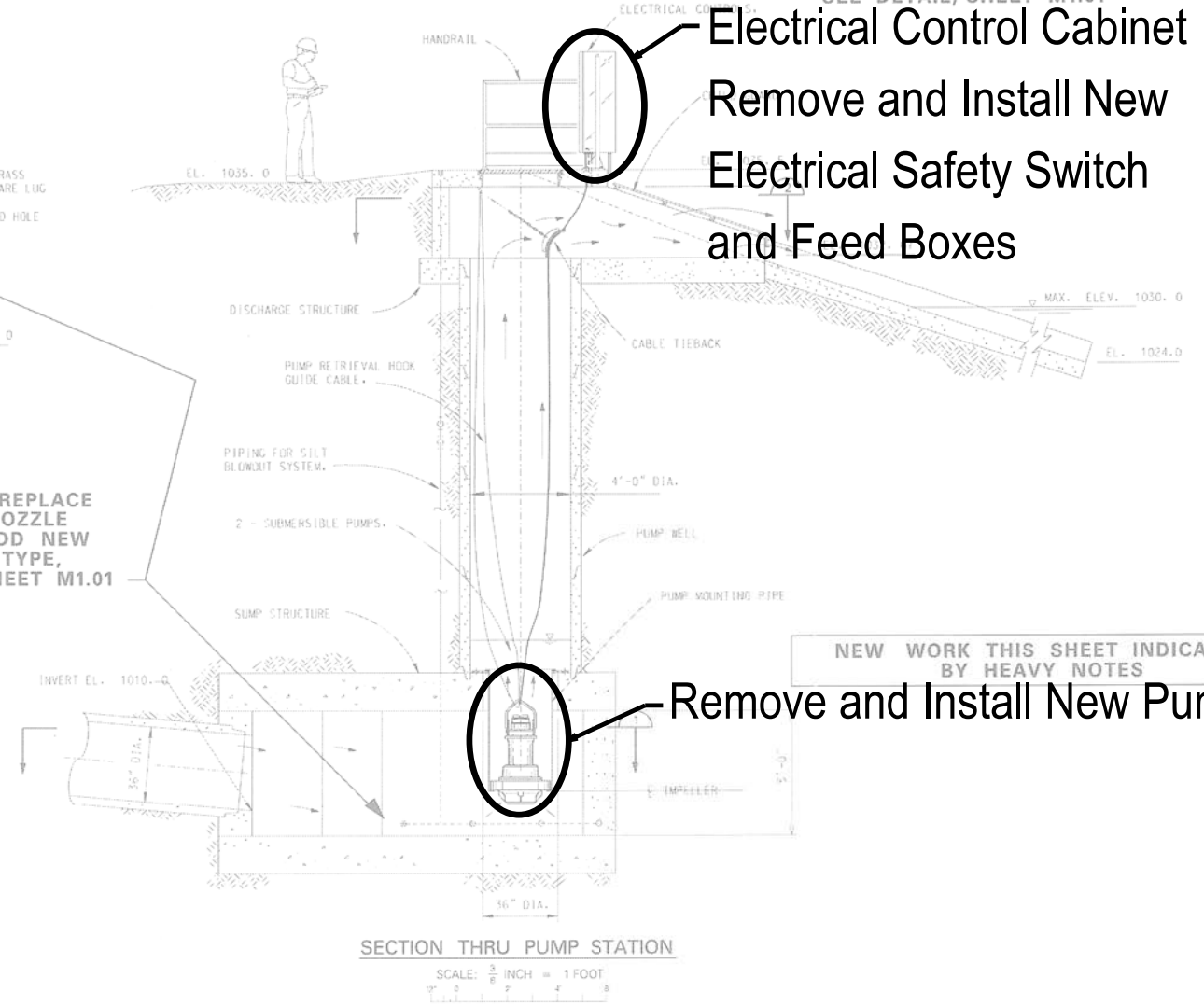
REMOVE 14 EXISTING NOZZLE PLUGS, BLOW OUT PIPING AND REINSTALL NEW SIDE NOZZLE, SEE DETAIL, SHEET M1.01

Electrical Control Cabinet
Remove and Install New
Electrical Safety Switch
and Feed Boxes

Remove and Install New Pumps



REMOVE AND REPLACE 14 EXISTING NOZZLE PLUGS AND ADD NEW CHECK VALVE TYPE, SEE DETAIL, SHEET M1.01



NEW WORK THIS SHEET INDICATED BY HEAVY NOTES

ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 841mm X 1194mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

Revisions			
Symbol	Descriptions	Date	Approved

U.S. ARMY ENGINEER DISTRICT
OMAHA, NEBRASKA

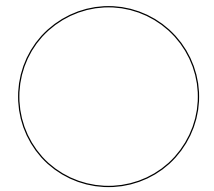
DESIGNED BY: K.E.V. MISSOURI RIVER
LOUISVILLE BEND PHASE II
FISH AND WILDLIFE MITIGATION

DRAWN BY: K.E.V. SILT BLOW OUT SYSTEM
NEW WORK AT EXISTING PUMP STRUCTURE

SUBMITTED BY: S.G.E. Plot Scale Ratio: 2.66 : 1 Date: APRIL 2002 Sheet reference number: M1.05

DATE: Design File: MLC-2012-05-002N Spec No.: DACWHS-02-B-0012 Drawing Code: MLB3-170E Contract No.: DACWHS-02-C-0013

CONSULTANT:



IOWA DEPARTMENT OF
NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

FLOOD DAMAGE REPAIRS FOR:
MISSOURI RIVER WILDLIFE UNIT
HARRISON COUNTY

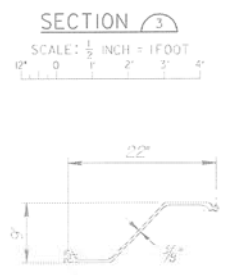
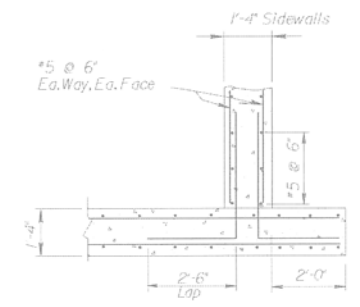
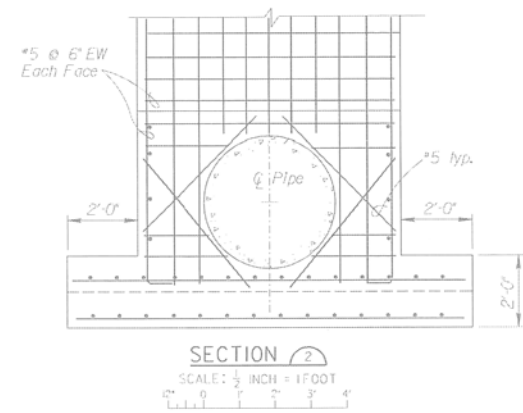
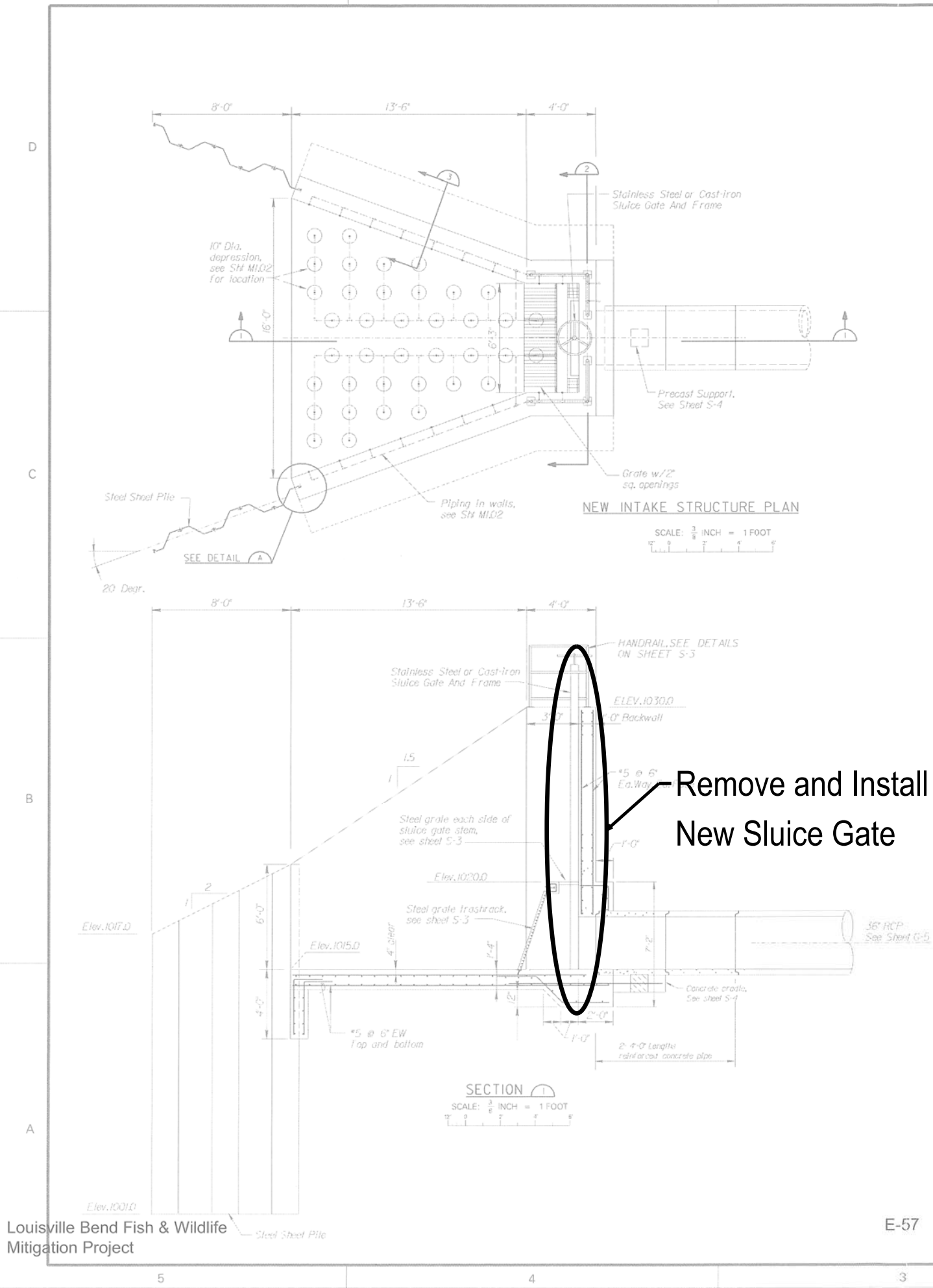
NO.	BY	DATE	REVISION

DRAWN BY: PROJECT NUMBER:
21-04-43-02

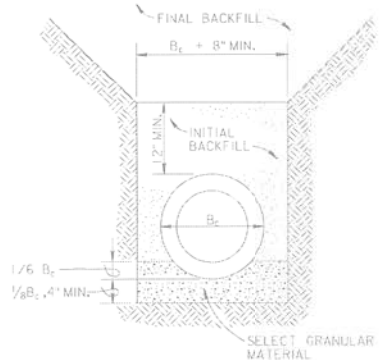
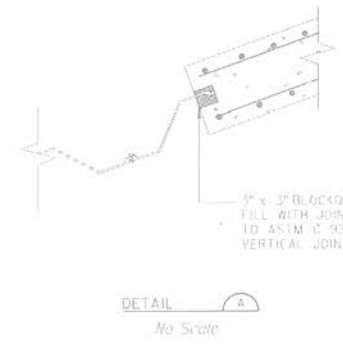
CHECKED BY: DATE:

SHEET NO.:

B.05



STEEL SHEET PILE DETAIL
No Scale



PIPE BEDDING NOTES:
1. SEE SPECIFICATIONS FOR MATERIAL AND COMPACTION REQUIREMENTS.
2. MAXIMUM PARTICULATE SIZE IN INITIAL BACKFILL SHALL BE 1/2".

CLASS C
PIPE BEDDING DETAIL
NO SCALE

NOTES:

- REINFORCED CONCRETE:
 - CONCRETE: COMPRESSIVE STRENGTH $f'_c = 4,000$ PSI AT 28 DAYS.
 - REINFORCING BARS: ASTM A 615, GRADE 60.
- CLEAR COVER FOR CONCRETE REINFORCING STEEL SHALL BE 3" FOR SLABS CAST AGAINST SOIL AND 2" ELSEWHERE OR AS NOTED.
- REINFORCING BAR LAP SPLICES NOT SHOWN SHALL BE THE MIN. LENGTHS SHOWN BELOW.

BAR SIZE	LAP SPLICE (INCHES)
#4	24
#5	30
#6	36

NOTE: NOT ALL BAR SIZES LISTED MAY BE REQUIRED.
- MISCELLANEOUS METAL AND STRUCTURAL STEEL:
 - ROLLED PLATES AND SHAPES: SPECIFIED YIELD STRENGTH $F_y = 36$ KSI; (ASTM A 563)
 - STEEL PIPE: ASTM A 53 TYPE E OR TYPE S.
 - WELDED ANCHOR STUDS: SHALL CONFORM TO ASTM A 108.
 - WELDING: ALL WELDING SHALL BE PERFORMED WITH E70 ELECTRODES.
 - SHEET PILE: ASTM A 328 $F_y = 38,500$ PSI.
 - MISCELLANEOUS METAL (NOT SHEET PILE) SHALL BE GALVANIZED AFTER FABRICATION.

ALL SCALES SHOWN ARE BASED ON A STANDARD DRAWING SIZE OF 28" X 40" OR METRIC DRAWING SIZE OF 84mm X 98mm. IF ANY OTHER SIZE DRAWINGS ARE FURNISHED OR PLOTTED THE CONTRACTOR SHALL ADJUST THE SCALES ACCORDINGLY. THE CONTRACTOR SHALL ALSO ADVISE HIS SUB-CONTRACTORS OF THE ABOVE.

Revisions			
Symbol	Descriptions	Date	Approved

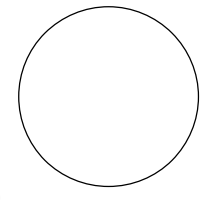
U.S. ARMY ENGINEER DISTRICT
OMAHA, NEBRASKA

Designed by: LYLE E. PETERSON, PE 14021 221-4442	Missouri River LOUISVILLE BEND PHASE II FISH AND WILDLIFE MITIGATION
Drawn by: LYLE E. PETERSON, PE	STRUCTURAL NEW INTAKE STRUCTURE
Submitted by: BRUCE N. HARRIS, PE	Date: APRIL 2002
Spec. No.: DACW45-02-B-0012	Drawing Code: MLB3-170E X
Contract No.: DACW45-02-C-0013	Sheet reference number: S-2

Louisville Bend Fish & Wildlife Mitigation Project

E-57

CONSULTANT:



IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

FLOOD DAMAGE REPAIRS FOR:

MISSOURI RIVER WILDLIFE UNIT

HARRISON COUNTY

NO.	BY	DATE	REVISION

DRAWN BY: PROJECT NUMBER:
21-04-43-02

CHK'D BY: DATE:

SHEET NO:

B.06

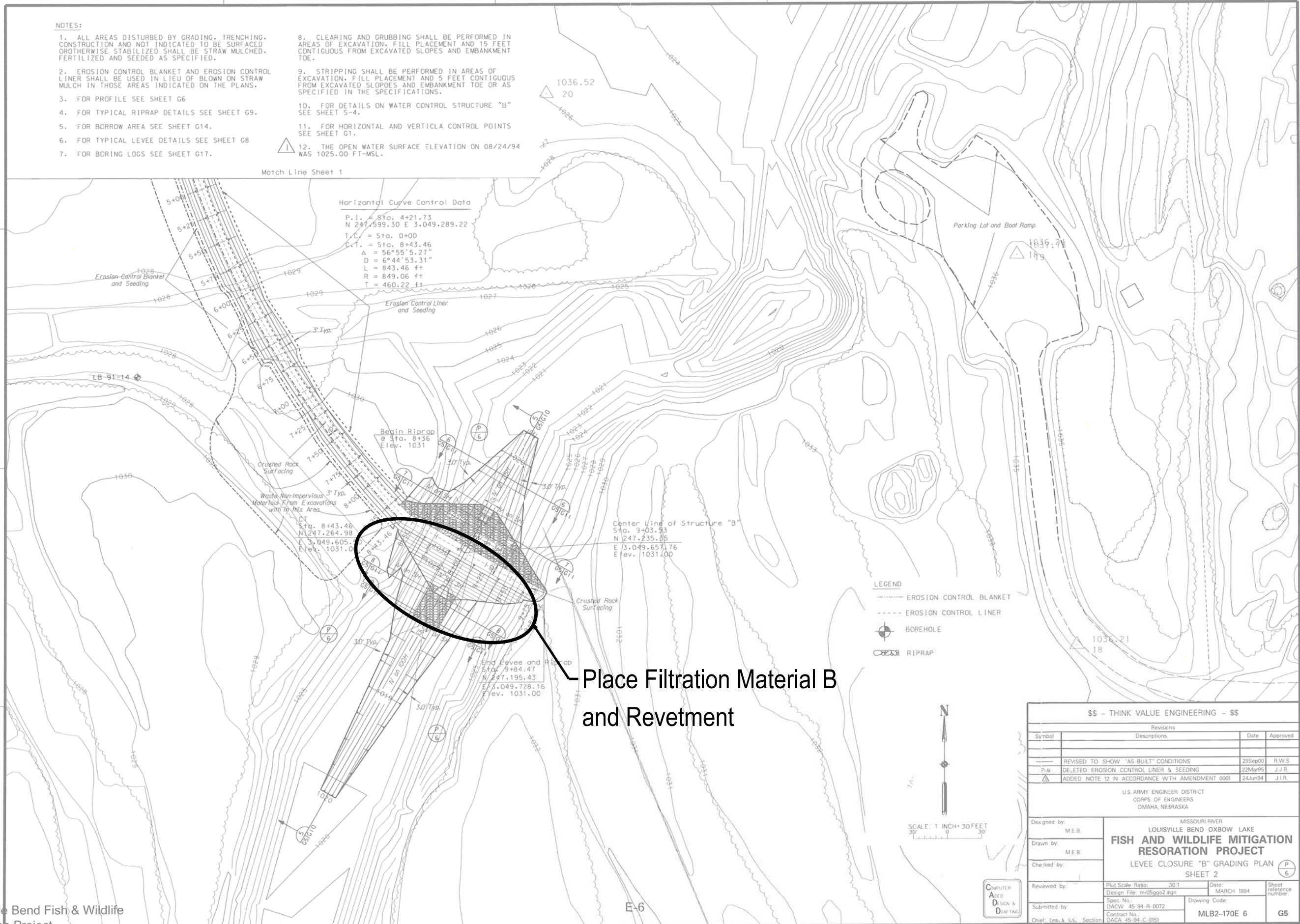
NOTES:

1. ALL AREAS DISTURBED BY GRADING, TRENCHING, CONSTRUCTION AND NOT INDICATED TO BE SURFACED OTHERWISE STABILIZED SHALL BE STRAW MULCHED, FERTILIZED AND SEEDED AS SPECIFIED.
2. EROSION CONTROL BLANKET AND EROSION CONTROL LINER SHALL BE USED IN LIEU OF BLOWN ON STRAW MULCH IN THOSE AREAS INDICATED ON THE PLANS.
3. FOR PROFILE SEE SHEET G6
4. FOR TYPICAL RIPRAP DETAILS SEE SHEET G9.
5. FOR BORROW AREA SEE SHEET G14.
6. FOR TYPICAL LEVEE DETAILS SEE SHEET G8
7. FOR BORING LOGS SEE SHEET G17.
8. CLEARING AND GRUBBING SHALL BE PERFORMED IN AREAS OF EXCAVATION, FILL PLACEMENT AND 15 FEET CONTIGUOUS FROM EXCAVATED SLOPES AND EMBANKMENT TOE.
9. STRIPPING SHALL BE PERFORMED IN AREAS OF EXCAVATION, FILL PLACEMENT AND 5 FEET CONTIGUOUS FROM EXCAVATED SLOPES AND EMBANKMENT TOE OR AS SPECIFIED IN THE SPECIFICATIONS.
10. FOR DETAILS ON WATER CONTROL STRUCTURE "B" SEE SHEET 5-4.
11. FOR HORIZONTAL AND VERTICLA CONTROL POINTS SEE SHEET G1.
12. THE OPEN WATER SURFACE ELEVATION ON 08/24/94 WAS 1025.00 FT-MSL.

Match Line Sheet 1

Horizontal Curve Control Data

P.I. = Sta. 4+21.73
 N 247.599.30 E 3.049.289.22
 T.C. = Sta. 0+00
 C.T. = Sta. 8+43.46
 $\Delta = 56^{\circ}55'5.27''$
 $D = 6^{\circ}44'53.31''$
 $L = 843.46$ ft
 $R = 849.06$ ft
 $T = 460.22$ ft



Place Filtration Material B and Revetment

- LEGEND**
- EROSION CONTROL BLANKET
 - EROSION CONTROL LINER
 - ⊕ BOREHOLE
 - ⊗ RIPRAP



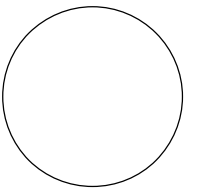
US ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 OMAHA, NEBRASKA

Revisions			
Symbol	Descriptions	Date	Approved
---	REVISED TO SHOW "AS-BUILT" CONDITIONS	29Sep00	R.W.S.
---	DELETED EROSION CONTROL LINER & SEEDING	22Mar95	J.J.B.
Δ	ADDED NOTE 12 IN ACCORDANCE WITH AMENDMENT 0001	24Jun94	J.I.R.

Designed by:	M.E.B.	MISSOURI RIVER LOUISVILLE BEND OXBOW LAKE	
Drawn by:	M.E.B.	FISH AND WILDLIFE MITIGATION RESORATION PROJECT	
Checked by:		LEVEE CLOSURE "B" GRADING PLAN	
Reviewed by:		SHEET 2	
Submitted by:		Plot Scale Ratio: 30:1	Date: MARCH 1994
Chief, Emb. & S.S. Section		Design File: m05gg02.dgn	Sheet Reference Number:
		Spec. No. DACM 45-94-R-0072	Drawing Code: MLB2-170E 6
		Contract No. DACA 45-94-C-0151	G5

Louisville Bend Fish & Wildlife Mitigation Project

CONSULTANT:



IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
 502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

FLOOD DAMAGE REPAIRS FOR:

MISSOURI RIVER WILDLIFE UNIT

HARRISON COUNTY

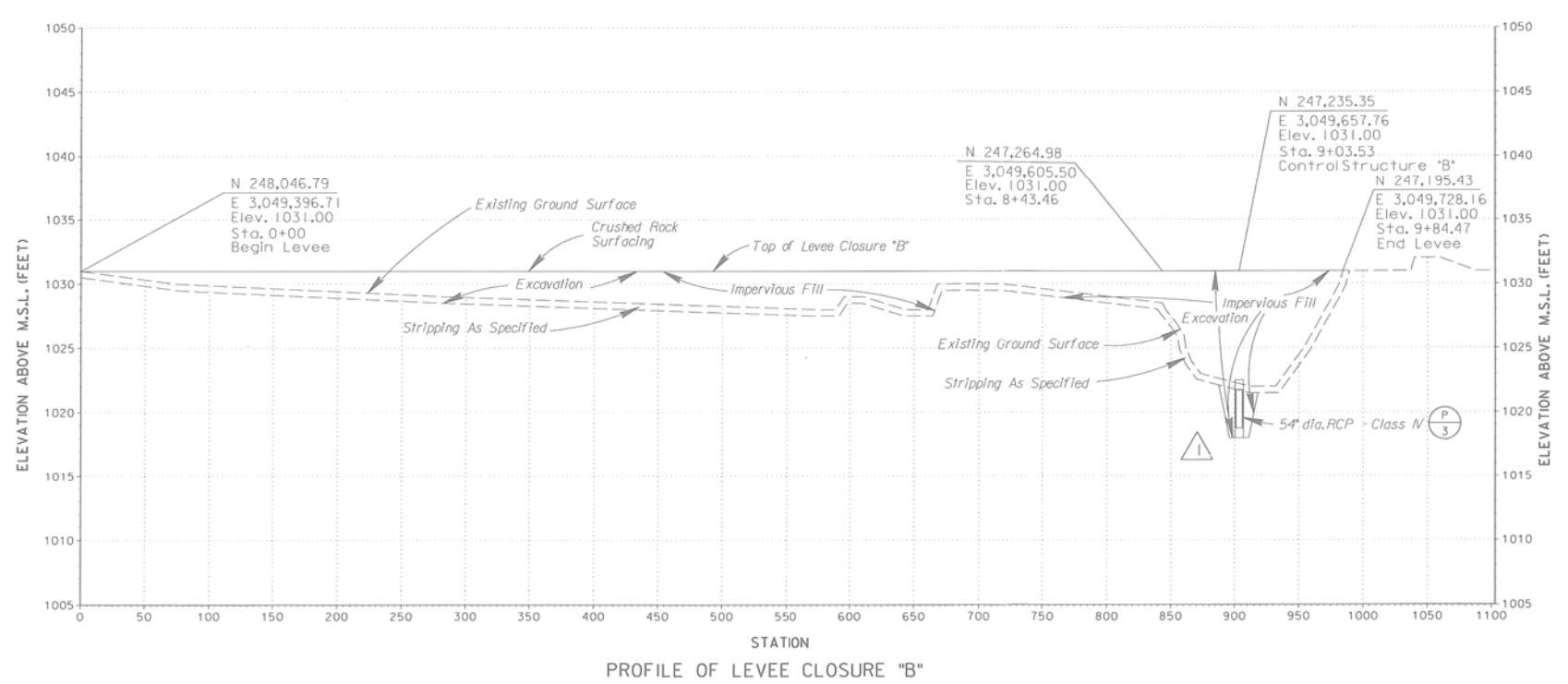
NO. BY DATE REVISION

DRAWN BY: PROJECT NUMBER:

CHK'D BY: DATE:

SHEET NO:

B.07



- NOTES:**
- FOR GRADING PLANS OF LEVEE CLOSURES "B" SEE SHEETS G4 AND G5.
 - FOR DETAILS OF STRUCTURES "B" (54" dia. RCPs) SEE SHEET S-4.
 - SEE SHEET G8 FOR CRUSHED ROCK SURFACING DETAIL.

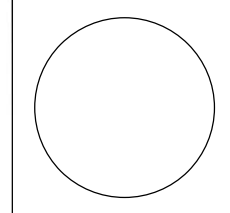
\$\$ - THINK VALUE ENGINEERING - \$\$

Symbol	Descriptions	Date	Approved
P-4	REVISD TO SHOW AS-BUILT CONDITIONS	29Sep00	R.W.S.
P-4	DELETE LEVEE CLOSURE "A" PROFILE AND REFERENCES TO LEVEE CLOSURE "A"	12Apr95	L.J.G.
P-3	SUBSTITUTE 54" DIA. RCP CLASS IV WITH BOX CULVERT 3'X5'	06Feb95	L.J.G.
△	DELETE LEADER NOTE IN ACCORDANCE WITH AMEND. #0001	25Aug94	J.I.R.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by: M.E.B.	MISSOURI RIVER LOUISVILLE BEND OXBOW LAKE FISH AND WILDLIFE MITIGATION RESORATION PROJECT		
Drawn by: M.E.B.	LEVEE CLOSURES "B" PROFILES		
Checked by:	Reviewed by:	Plot Scale Ratio: 200:1	Date: MARCH 1994
Submitted by:	Design File: m05gprt.dgn	Design Code: MLB2-170E 7	Shoot reference number: G6
Chief: Emb. & S.S. Section	Spec. No. DACV 45-94-R-0072	Contract No. DACA 45-94-C-0151	

CONSULTANT:



IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

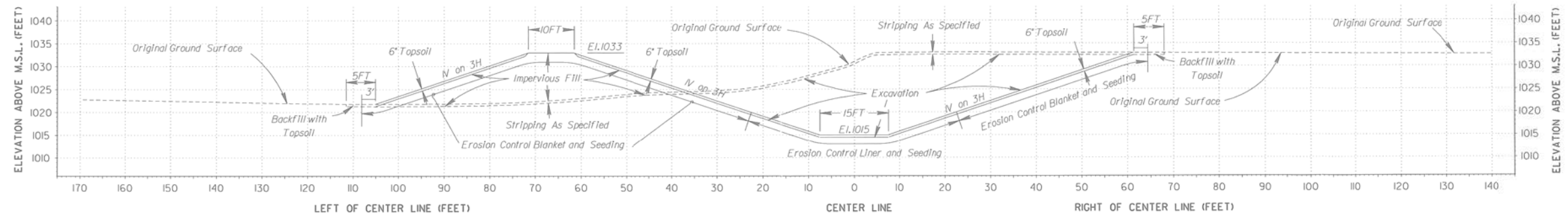
FLOOD DAMAGE REPAIRS FOR:
MISSOURI RIVER WILDLIFE UNIT
HARRISON COUNTY

NO.	BY DATE	REVISION

DRAWN BY: PROJECT NUMBER:
21-04-43-02

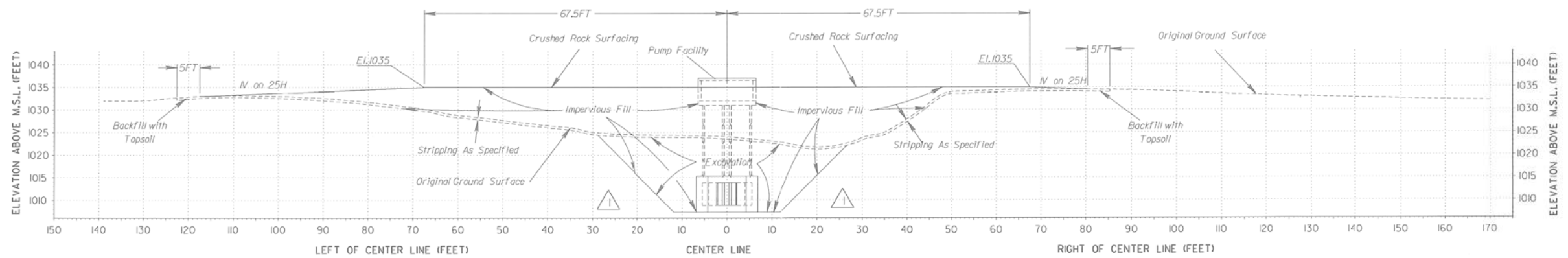
CHK'D BY: DATE:

SHEET NO:

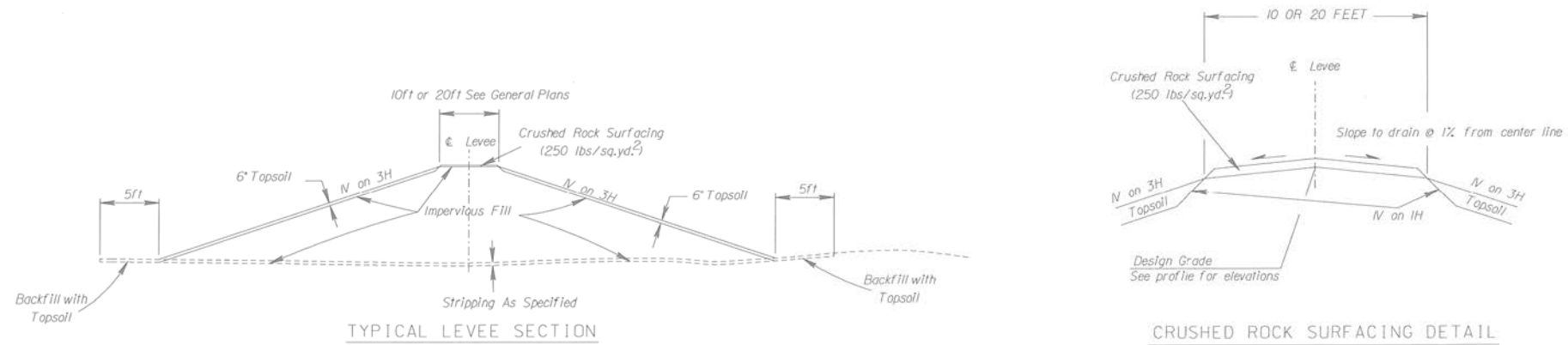


SECTION 2
G21G8

NOTE:
1. CONTRACTOR SHALL RIPRAP SLOPES OF INTAKE CHANNEL FOR APPROXIMATELY 45 FEET. LAYOUT OF STONE PROTECTION SHALL DETERMINED BY THE ON-SITE GOVERNMENT REPRESENTATIVE.



SECTION 3
G21G8



SCALE: 1 INCH = 10 FEET

\$\$ - THINK VALUE ENGINEERING - \$\$			
Revisions			
Symbol	Descriptions	Date	Approved
-	REVISED TO SHOW "AS-BUILT" CONDITIONS	29Sep00	R.W.S.
p-2	ADDED NOTE 1	07Jan95	J.I.R.
Δ	DELETED TEXT IN ACCORDANCE WITH AMEND. 0001	24Jun94	J.I.R.
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA			
MISSOURI RIVER LOUISVILLE BEND OXBOW LAKE FISH AND WILDLIFE MITIGATION RESORATION PROJECT PUMP FACILITY CROSS-SECTIONS AND TYPICAL SECTIONS			
Designed by: M.E.B.	Plot Scale Ratio: 10:1	Date: MARCH 1994	Sheet reference number: G8
Drawn by: M.E.B.	Design File: m05gpx2.dgn	Drawing Code: MLB2-170E 9	
Checked by:	Spec. No: DACA 45-94-R-0072	Contract No.:	
Reviewed by:	Chief, Emb. & S.S. Section:		
Submitted by:			

Louisville Bend Fish & Wildlife
Mitigation Project

E-9

CONSULTANT:

IOWA DEPARTMENT OF
NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

FLOOD DAMAGE REPAIRS FOR:

MISSOURI RIVER WILDLIFE UNIT

HARRISON COUNTY

NO. BY DATE REVISION

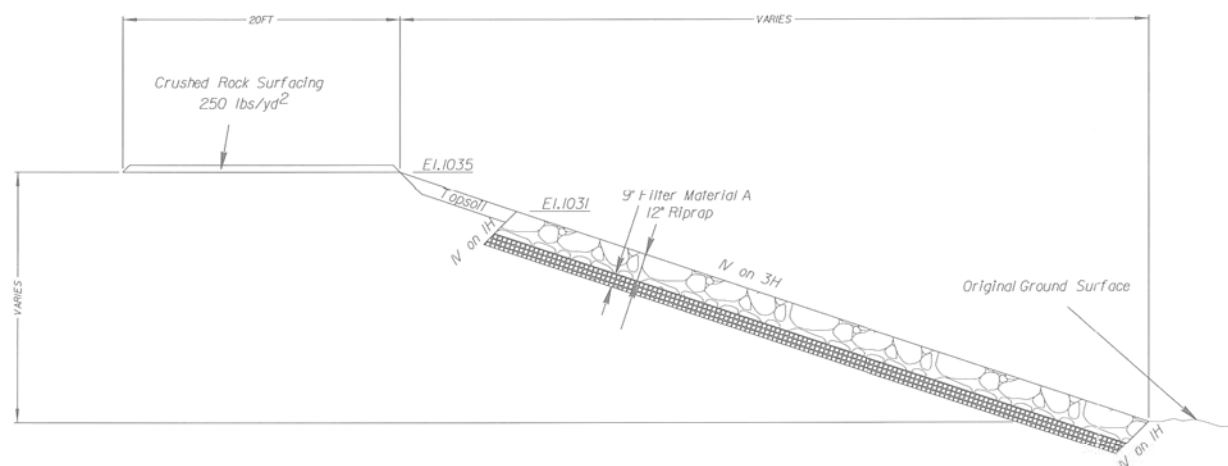
DRAWN BY: PROJECT NUMBER:
21-04-43-02

CHK'D BY: DATE:

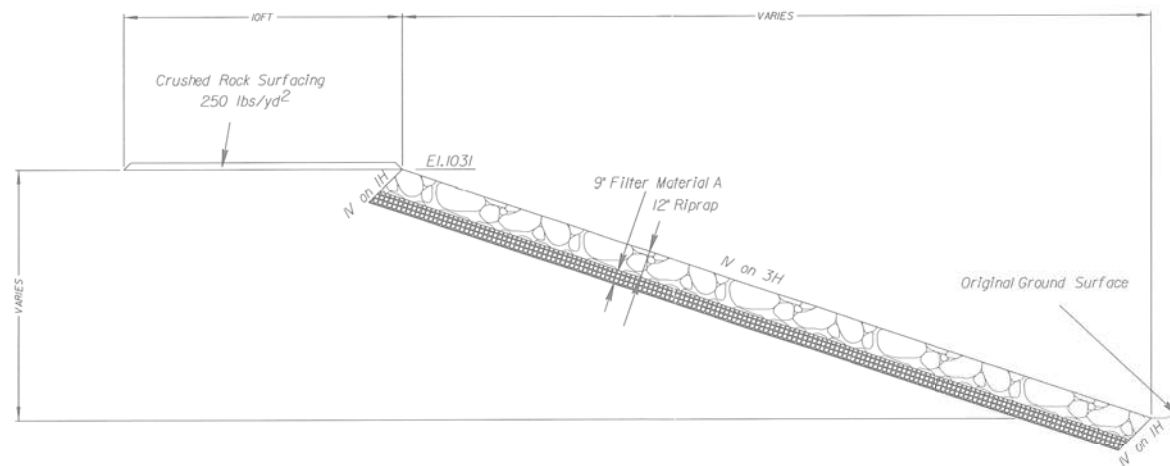
SHEET NO.:

B.09

RECORD DRAWING



PUMP FACILITY TYPICAL RIPRAP DETAILS
NO SCALE



LEVEE CLOSURE "B" TYPICAL RIPRAP DETAILS
NO SCALE

\$\$ - THINK VALUE ENGINEERING - \$\$

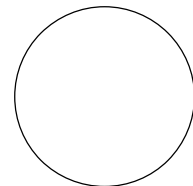
Symbol	Revisions	Date	Approved
	REVISI		
	CHANGED TITLE AND TITLE BLOCK AND DELETED SECTION 4 AND NOTE 1	12Apr95	L.J.G.
	REVISI	29Sep00	R.W.S.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by: M.E.B.	MISSOURI RIVER LOUISVILLE BEND OXBOW LAKE FISH AND WILDLIFE MITIGATION RESORATION PROJECT PUMP FACILITY AND LEVEE CLOSURE "B" TYPICAL RIPRAP DETAILS	Plot Scale Ratio: 5:1	Date: MARCH 1994	Sheet reference number: G9
Drawn by: M.E.B.		Spec. No. DACV 45-94-R-0072	Drawing Code: MLB2-170E 10	
Checked by:		Contract No. DACA 45-94-C-0151		
Reviewed by:				
Submitted by:				
Chief: Enb. & S.S. Section				

COMPUTER AIDED DESIGN & DRAFTING

CONSULTANT:



IOWA DEPARTMENT OF
NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

FLOOD DAMAGE REPAIRS FOR:

MISSOURI RIVER WILDLIFE UNIT

HARRISON COUNTY

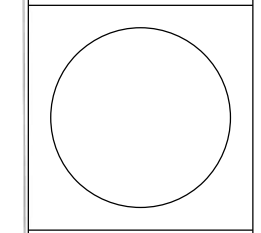
NO. BY DATE REVISION

DRAWN BY: PROJECT NUMBER:
21-04-43-02

CHK'D BY: DATE:

SHEET NO.:

CONSULTANT:

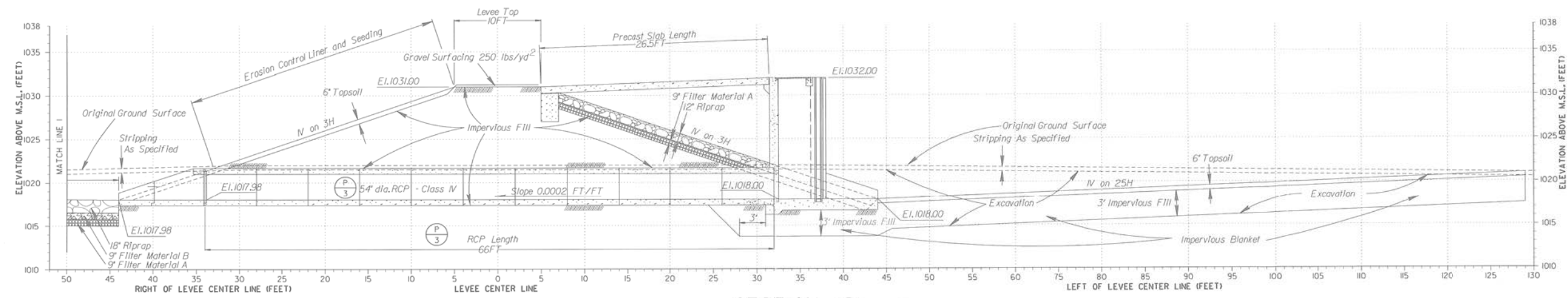


IOWA DEPARTMENT OF NATURAL RESOURCES
 ENGINEERING SERVICES - WALLACE BUILDING
 502 E. 9TH ST., DES MOINES, IA 50319-0034

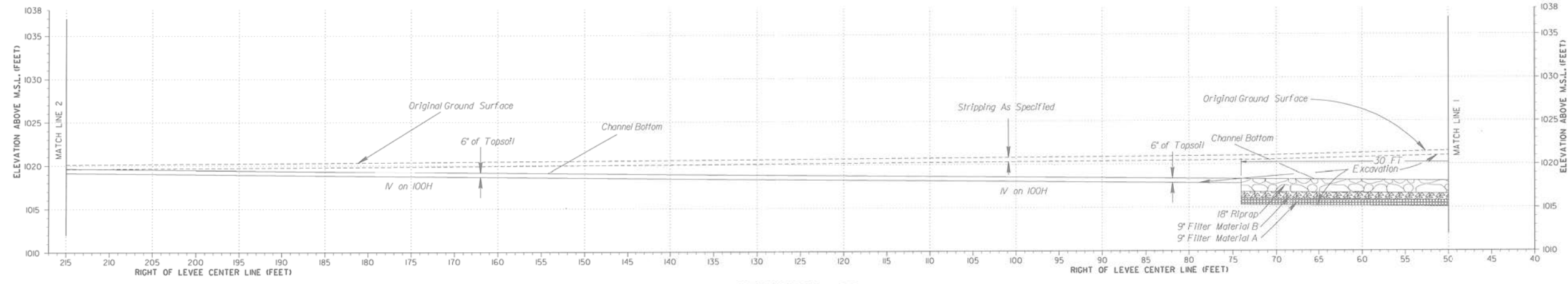


TYPICAL CROSS SECTIONS AND DETAILS
 FLOOD DAMAGE REPAIRS FOR:
MISSOURI RIVER WILDLIFE UNIT
 HARRISON COUNTY

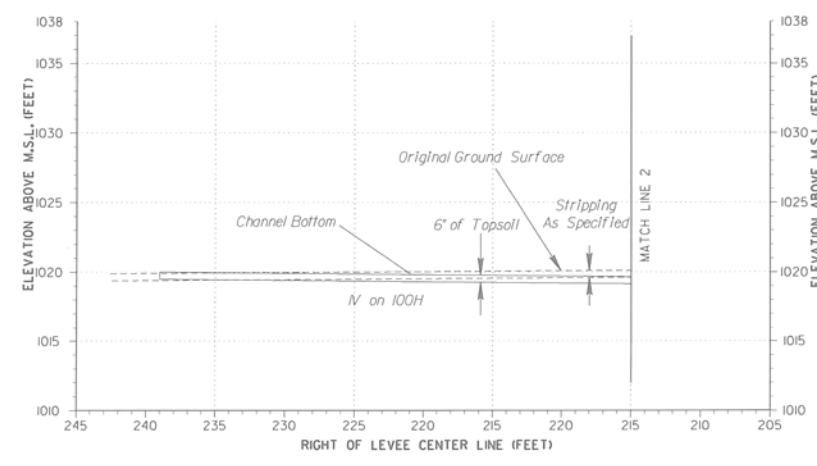
NO.	BY	DATE	REVISION



SECTION 5
G51G10 (P 3)



SECTION 5
G51G10



SECTION 5
G51G10

NOTES:
 1. FOR DETAILS OF WATER CONTROL STRUCTURE "B" AND PRECAST SLAB SEE SHEET S-4.
 2. FOR RIPRAP DETAILS SEE SHEET G9.



\$\$ - THINK VALUE ENGINEERING - \$\$

Symbol	Revisions	Date	Approved
---	REVISED TO SHOW "AS-BUILT" CONDITIONS	29Sep00	R.W.S.
P-3	MOD#P00003 CHANGED 3'X5' BOX CULVERT TO 54" RCP	06Feb95	L.J.G.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by: M.E.B.	MISSOURI RIVER LOUISVILLE BEND OXBOW LAKE FISH AND WILDLIFE MITIGATION RESORATION PROJECT LEVEE CLOSURE "B" CROSS-SECTION	Plot Scale Ratio: 5:1 Date: MARCH 1994 Sheet Reference Number: G10
Drawn by: M.E.B.		
Checked by:		
Reviewed by:		
Submitted by:		
Design File: m05gxs4.dgn Spec. No.: DACV 45-94-R-0072 Contract No.: DACA 45-94-C-0151	Drawing Code: MLB2-170E 11	

COMPUTER AIDED DESIGN & DRAFTING

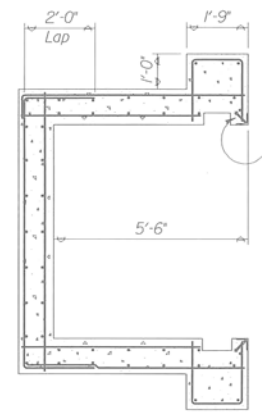
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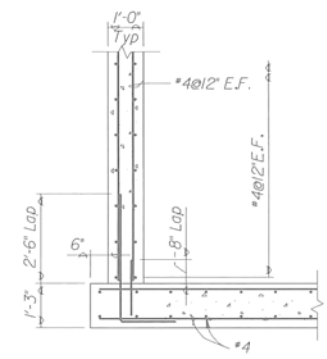
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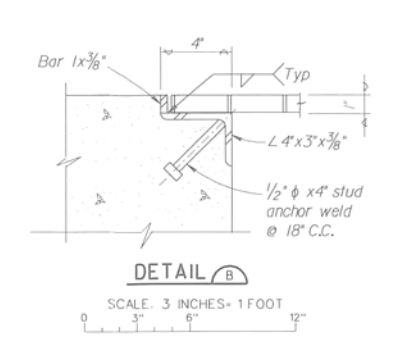
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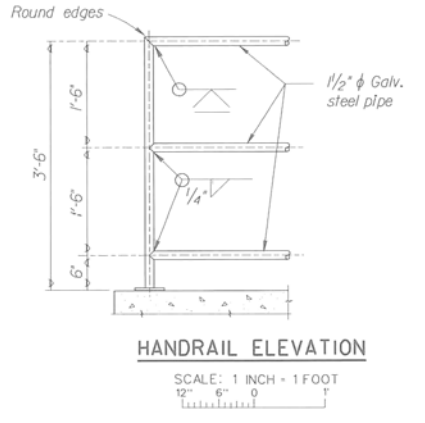
SECTION 1
SCALE: 3/4 INCH = 1 FOOT



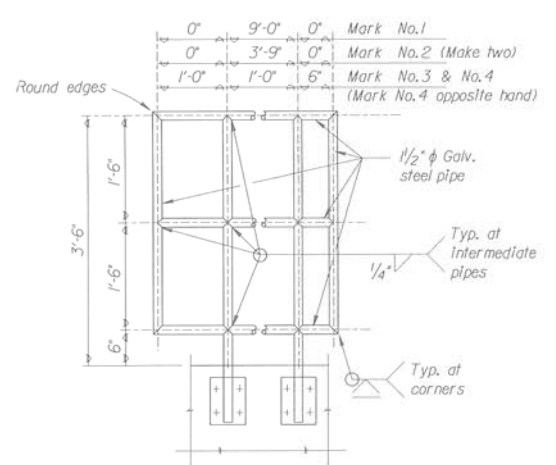
SECTION 2
SCALE: 3/4 INCH = 1 FOOT



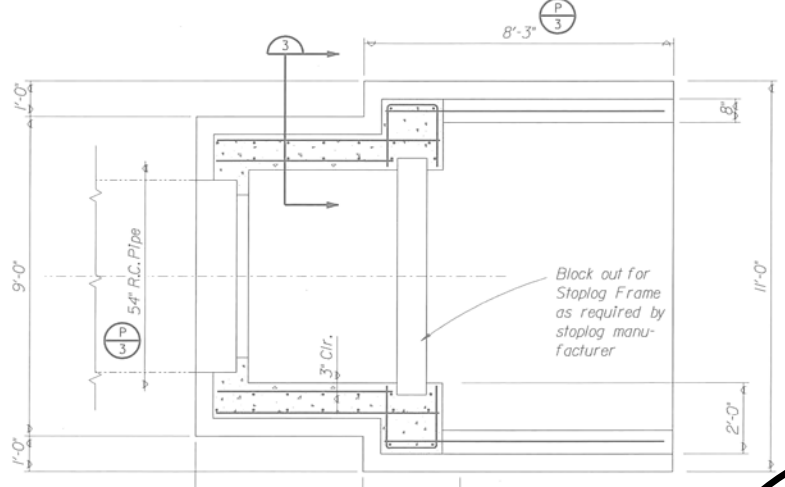
DETAIL B
SCALE: 3 INCHES = 1 FOOT



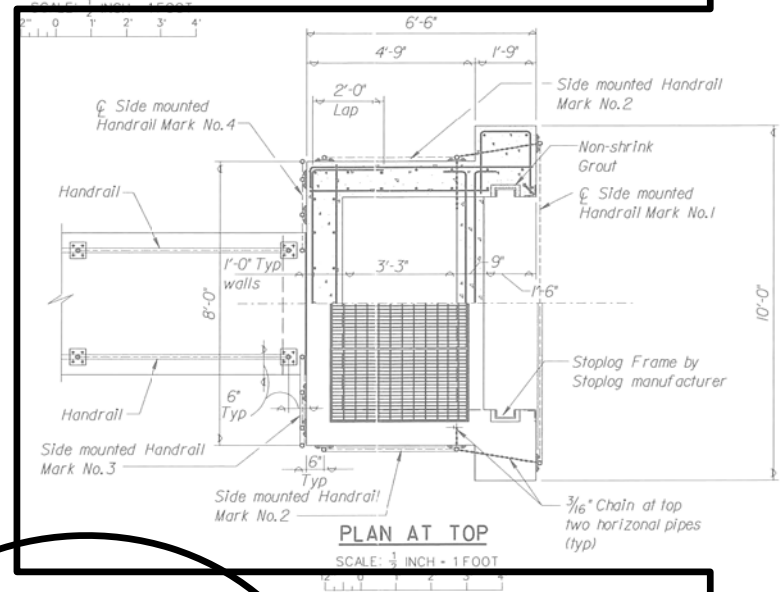
HANDRAIL ELEVATION
SCALE: 1 INCH = 1 FOOT



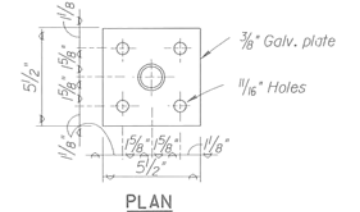
SIDE MOUNTED HANDRAIL ELEVATION
SCALE: 1 INCH = 1 FOOT



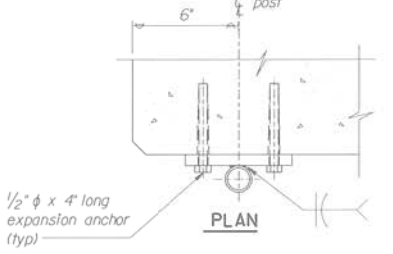
SECTION 3
SCALE: 3/4 INCH = 1 FOOT



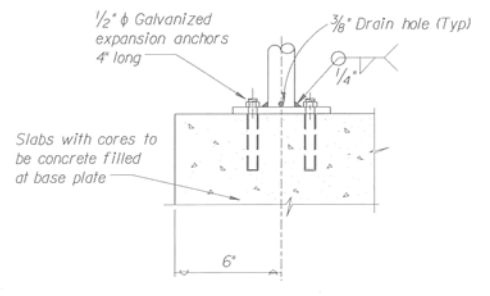
PLAN AT TOP
SCALE: 3/4 INCH = 1 FOOT



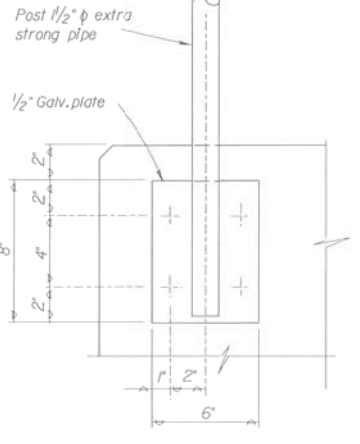
PLAN



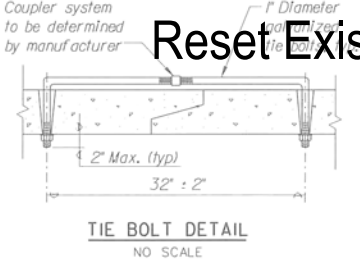
PLAN



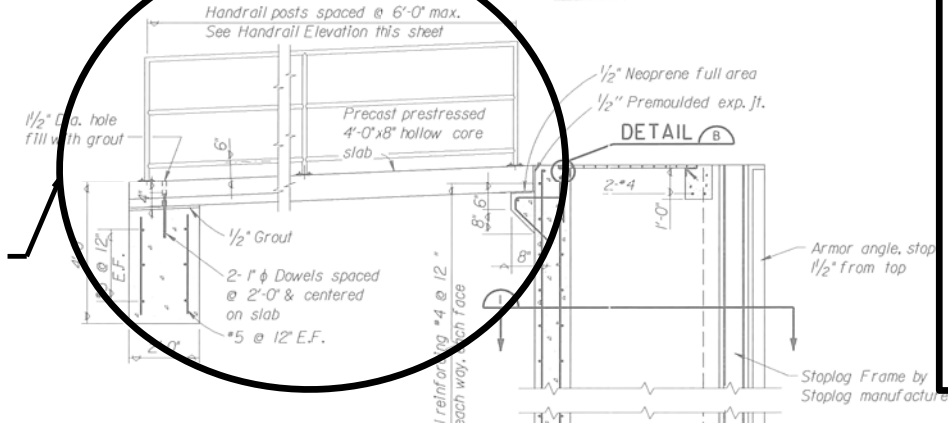
ELEVATION
BASE DETAIL
SCALE: 3 INCHES = 1 FOOT



ELEVATION
SIDE MOUNTED POST DETAIL
SCALE: 3 INCHES = 1 FOOT



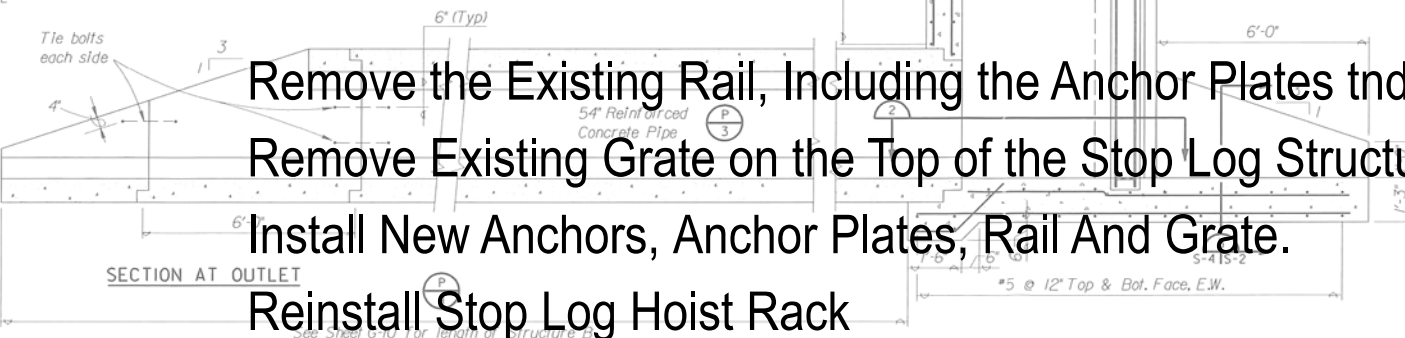
TIE BOLT DETAIL
NO SCALE



DETAIL B

Reset Existing Bridge

Remove the Existing Rail, Including the Anchor Plates and Anchors,
Remove Existing Grate on the Top of the Stop Log Structure.
Install New Anchors, Anchor Plates, Rail and Grate.
Reinstall Stop Log Hoist Rack



SECTION AT OUTLET

OUTLET WORKS & PROFILE
SCALE: 3/4 INCH = 1 FOOT

E-23

SS - THINK VALUE ENGINEERING - SS

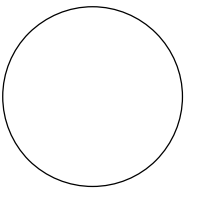
Symbol	Revisions	Date	Approved
P-4	REVISED TO SHOW "AS-BUILT" CONDITIONS	8Aug97	T.A.J.
P-4	MOD#P0004 STRUCTURE "A" REFERENCE DELETED FROM OUTLET WORKS CENTERLINE PROFILE AND TITLE BLOCK	4Apr95	P.D.L.
P-3	MOD#P0003 SUBSTITUTE 54" R.C.P. FOR PRECAST BOX, REVISE DIMENSIONS IN SECTION 2	6Feb95	P.D.L.

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

Designed by:	D.J.S.	Project Scale Ratio:	2.0000	Date:	MARCH 1994	Sheet reference number:	S-4
Drawn by:	T.O.G.	Design File:	mt055504.dgn	Drawing Code:			
Checked by:	D.J.S.	Spec. No.:	DACW 45 94-R-0072	Contract No.:	MLB2-170E24		
Reviewed by:	T.C.C.	Contract No.:	DACW 45 94-C-0151				

Louisville Bend Fish & Wildlife Mitigation Project

CONSULTANT:



IOWA DEPARTMENT OF NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



TYPICAL CROSS SECTIONS AND DETAILS

FLOOD DAMAGE REPAIRS FOR:

MISSOURI RIVER WILDLIFE UNIT

HARRISON COUNTY

NO.	BY	DATE	REVISION

DRAWN BY: PROJECT NUMBER: 21-04-43-02

CHK'D BY: DATE:

SHEET NO:

B.12

1 RECORD DRAWING



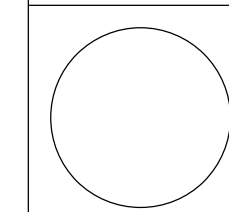
ESTIMATED PROJECT QUANTITIES

Table with columns: ITEM NO., ITEM, UNIT, TOTAL. Contains project items for Weedland Access, Luton Wildlife Area Parking Lot, Louisville Access Water Control Structure, Louisville Access Boat Ramp, Deer Island Wildlife Area, Rosenow Timber Culvert, Tyson Bend Wildlife Area, and Tyson Bend Wildlife Area Boat Ramp.

ESTIMATED PROJECT QUANTITIES

Table with columns: ITEM NO., ITEM, UNIT, TOTAL. Contains project items for Tyson Bend Wildlife Area Water Control Structure.

CONSULTANT:



IOWA DEPARTMENT OF NATURAL RESOURCES
ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



QUANTITIES AND GENERAL INFORMATION
FLOOD DAMAGE REPAIRS FOR:
MISSOURI RIVER WILDLIFE UNIT
HARRISON COUNTY

Table with columns: NO., BY, DATE, REVISION. Includes fields for DRAWN BY, PROJECT NUMBER (21-04-43-02), CHK'D BY, and DATE.

SHEET NO: C.01

ESTIMATE REFERENCE INFORMATION

ITEM NO.	DESCRIPTION										
20, 24, 39, 43, 48 3 21, 25, 40, 44, 49 55 1, 5, 14, 15, 16, 18, 22, 26, 29, 32, 41, 45, 47, 50	Base Hauled and Placed, 1 1/2" Roadstone (All Sites) Base Hauled and Placed, Macadam Stone Base Subbase Hauled and Placed, Macadam Stone Base (All Sites) Granular Surfacing, Macadam Stone Base (Site 2) Granular Surfacing, 1" Roadstone (All Sites) A. Final leveling of surface aggregate after being dumped is required. B. Removal of vegetative debris is incidental. C. The quantity of materials specified will be measured as indicated in the contract documents. D. Payment for material placed will be the contract unit price per ton.										
7, 56	Revetment, Class E (All Sites) A. Place revetment as directed by the DNR Inspector. B. Clearing and grubbing is incidental. C. The quantity of materials specified will be measured as indicated in the contract documents. D. Payment for material placed will be the contract unit price per ton.										
35 4, 37, 38, 42 23, 28	Earthwork, Fill Hauled and Placed, Clay Mix Earthwork, Fill Hauled and Placed, Native Soil (All Sites) Earthwork, Fill Hauled and Placed, Unclassified (All Sites) A. Borrow material shall be contractor furnished. B. All borrow or fill material must come from pre-existing stockpiles or commercially procured material from a source existing prior to the event, March 12, 2019 (i.e. an existing quarry that has been licensed prior to the event). For any FEMA-funded project requiring the use of a non-commercial source or a commercial source that was not permitted to operate prior to the event (e.g. a new pit, agricultural fields, road ROWs, etc.) in whole or in part, regardless of cost, the Applicant must notify FEMA and the Recipient prior to extracting material. FEMA must review the source for compliance with all applicable federal environmental planning and historic preservation laws and executive orders prior to a subrecipient or their contractor commencing borrow extraction. Consultation and regulatory permitting may be required. Non-compliance with this requirement may jeopardize receipt of federal funding. Documentation of borrow sources required prior to construction and subject to approval by Engineer. C. Place fill as directed by the DNR Inspector. D. Clearing and grubbing is incidental. E. Removal of vegetative debris is incidental. F. No payment for overhaul will be allowed. G. Fertilizing, seeding and mulching are incidental. H. Dimensions of fill areas shown are approximate from the FEMA Project Worksheet. It is the responsibility of the contractor to verify prior to bidding.										
8	Filtration Material B (Site 1: Levee Embankment) A. See sheets B.08 for details. B. A 9" thick layer shall be placed to to form a backing for the revetment protection. C. The filter materials shall be composed of tough, durable particles, shall be reasonably free from thin, flat, and elongated pieces, and shall contain no organic matter nor soft friable particles in quantities considered objectionable by the Engineer. The filter materials shall be well graded between the following limits: <table border="1"> <thead> <tr> <th>Sieve Size</th> <th>Percent Passing by Weight</th> </tr> </thead> <tbody> <tr> <td>6"</td> <td>100</td> </tr> <tr> <td>3"</td> <td>50-90</td> </tr> <tr> <td>1"</td> <td>5-45</td> </tr> <tr> <td>3/8"</td> <td>0-5</td> </tr> </tbody> </table> D. Filter materials shall be spread uniformly on the prepared base, in a satisfactory manner, to the slope lines and grades indicated on the drawings or as directed. Placing of materials by methods which will tend to segregate particle sizes within the bedding will not be permitted. Any damage to the surface of the filter base during placing of the filters shall be repaired before proceeding with the work. Compaction of the filter material layers will not be required but it shall be finished to present a reasonably even surface free from mounds or windrows. E. Measurement for earthwork material will be the plan quantity in cubic yards. Adjustments may be made to the plan quantities if agreed to by both the Engineer and the Contractor. F. Payment will be at the unit price per cubic yard.	Sieve Size	Percent Passing by Weight	6"	100	3"	50-90	1"	5-45	3/8"	0-5
Sieve Size	Percent Passing by Weight										
6"	100										
3"	50-90										
1"	5-45										
3/8"	0-5										
11 17	Pipe Clean-Out, 36" (Site 2: Lift Pump Station) Pipe Clean-Out, 18" (Site 4: North Pump Access Road) A. Measurement will be lump sum. B. Payment will be lump sum per location.										
12	Pump Station Repairs A. See sheets B.06-B.07 for details. B. All work shall be in compliance with the National Electric Code (NEC). C. Remove existing electrical feed boxes and and install two (2) new 480 Volt, 22kW Electrical Feed Boxes. D. Remove existing electrical safety switch and install one (1) new 600 VAC, 200 Amp Heavy Duty Electrical Safety Switch. E. Remove two (2) existing pumps and install two (2) new 30 HP Flygt Series LL3201 Pumps, 460 Volts, or approved equal. F. Measurement will be lump sum. G. Payment will be lump sum.										

ESTIMATE REFERENCE INFORMATION

ITEM NO.	DESCRIPTION
19, 30, 31, 33, 46, 52, 54	Sediment, Removal and Disposal (All Sites) A. Off site disposal is the responsibility of the contractor. B. No equipment allowed on the concrete boat ramps. C. Removal of vegetative debris is incidental. D. Fertilizing, seeding and mulching are incidental. E. Measurement for sediment removal will be the plan quantity in cubic yards. Adjustments may be made to the plan quantities if agreed to by both the Engineer and the Contractor. F. Payment will be at the unit price per cubic yard.
10	Sluice Gate, Remove And Replace (Site 2: Lift Pump Station) A. See sheets B.06-B.07 for details. B. Measurement will be lump sum. C. Payment shall be lump sum.
9	Stop Log Structure Repairs A. See sheet B.09 for details. B. Resetting Access Bridge is Incidental. C. Remove existing rail and install 110.5 SF of 1-1/2" Diameter Round Galvanized Steel Guardrail D. Remove existing anchors and install 40 - 1/2" Diameter X 4" Galvanized Expansion Anchors E. Remove existing hoist frame anchors and install 8 - 1/2" Diameter X 5" Galvanized Expansion Anchors for Hoist Frame D. Resetting the hoist frame is incidental. E. Remove existing steel grate cover and install 2 - 3.17' x 2' Steel Grate Covers F. Remove existing anchor plates and install 10 - 4-Hole Galvanized 8" X 6" Guardrail Anchor Plates G. Measurement will be lump sum. H. Payment shall be for lump sum.
57	Vegetation Obstacles, Removal (Site 3) A. Off site disposal is the responsibility of the contractor. B. Fertilizing, seeding and mulching are incidental. C. Measurement for earthwork material will be the plan quantity in cubic yards, without final field measurement. Adjustments may be made to the plan quantities if agreed to by both the Engineer and the Contractor. D. Payment will be at the unit price per cubic yard.

GENERAL NOTES

Verify actual locations and elevations with DNR Engineer.

All work shall conform to and be performed in accordance with all applicable codes and ordinances.

The contractor shall visit the site and inspect the project area and thoroughly familiarize themselves with the actual job conditions prior to bidding and the start of work. Failure to visit the project site shall not relieve the contractor from performing the work in accordance to the plans, specification, special provisions and contract.

The contractor shall verify, at the site, all dimensions and conditions shown on the plans and shall notify the DNR Engineer of any discrepancies, omissions, and/or conflicts prior to proceeding with the work.

It shall be the contractor's responsibility to provide waste areas or disposal sites for excess material (excavated material or broken concrete) which is not desirable to be incorporated into the work involved on this project. No payment for overhaul will be allowed for material hauled to these sites. No material shall be placed within the right-of-way, unless specifically stated in the plans or approved by the DNR Engineer.

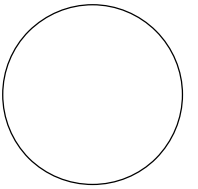
The contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service areas will be subject to the approval of the DNR Engineer.

Where utilities and fixtures are shown as Existing on the plans or encountered within the construction area, it shall be the responsibility of the contractor to notify the DNR Engineer of those utilities prior to the beginning of any construction. The contractor shall be afforded access to these facilities for necessary modification of services. Underground facilities, structures and utilities have been plotted from available surveys and records and therefore their locations must be considered approximate only. It is possible there may be others, the existence of which is presently not known or shown. It is the contractor's responsibility to determine their existence and exact location and to avoid damage thereto. No claims for additional compensation will be allowed to the contractor for any interference or delay caused by such work.

The contractor shall shape graded area to maintain surface drainage. All elevations are to finish grade.

The contractor is expected to have materials, equipment, and labor available on a daily to install and maintain erosion control features on the project. This may involve seeding, silt fence, rock ditch checks, silt basins or silt dikes.

CONSULTANT:



IOWA DEPARTMENT OF
NATURAL RESOURCES

ENGINEERING SERVICES - WALLACE BUILDING
502 E. 9TH ST., DES MOINES, IA 50319-0034



QUANTITIES AND GENERAL INFORMATION

FLOOD DAMAGE REPAIRS FOR:
MISSOURI RIVER WILDLIFE UNIT
HARRISON COUNTY

NO. BY REVISION

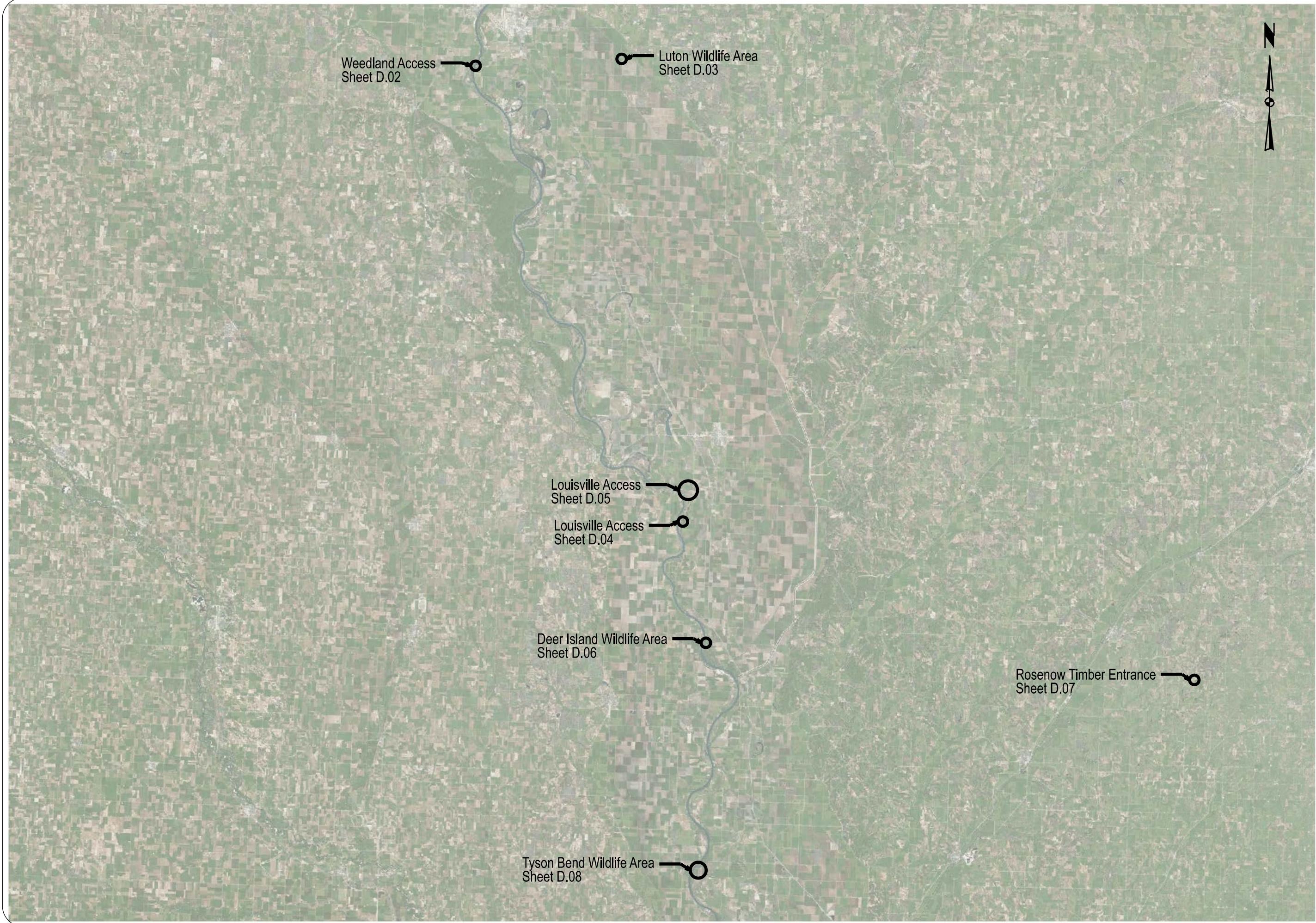
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21-04-43-02

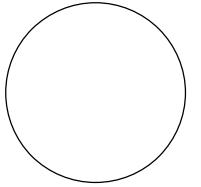
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C.02



CONSULTANT:



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502 E. 9TH ST., DES MOINES, IA 50319-0034



SITE PLAN

FLOOD DAMAGE REPAIRS FOR:

MISSOURI RIVER WILDLIFE UNIT

HARRISON COUNTY

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DATE		

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21-04-43-02

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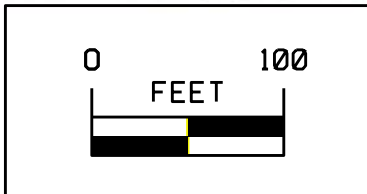
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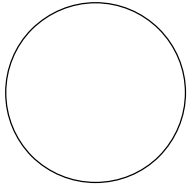


Weedland Access Boat Ramp & Parking Area
 Site 1: Parking Lot
 42.362599, -96.415008
 203 TON Granular Surfacing, 1" Roadstone

Original parking lot rock has been washed away.
 Grade parking lot to drain with 3:1 minimum foreslope.
 Place 3" of 1" Roadstone on existing parking lot.
 Seed disturbed soil.



CONSULTANT:



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SITE PLAN

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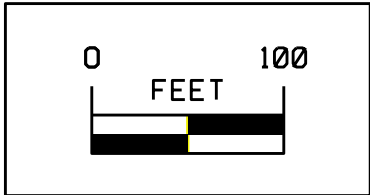
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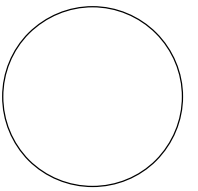


Luton Wildlife Area Parking Lot
 42.37291, -96.23247
 177.8 CY Earthwork, Fill Hauled and Placed, Native Soil
 65 TON Base Hauled and Placed, Macadam Stone Base
 70 TON Granular Surfacing, 1" Roadstone

Portions of the original parking lot has been washed away.
 Place fill material to reconstruct 80' long x 30' wide parking lot adjacent to roadway
 matching the elevation of the north side of the remaining existing lot. Grade to drain
 with 3:1 minimum foreslope. Place 5" of macadam stone base and 5"
 of 1" roadstone. Seed disturbed soil.



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D.03



Site 1: Levee embankment



Site 1: Stop Log Structure



Louisville Access Water Control Structure

Site 1: Levee Embankment (39' long x 36' wide)
 41.94642, -96.14065
 74 TON Revetment, Class E
 39 CY Filtration Material B

Site 1: Stop Log Structure
 41.94642, -96.14065
 110.5 SF 1-1/2" Diameter Round Galvanized Steel Guardrail, Remove And Replace
 40 EACH 1/2" Diameter X 4" Expansion Anchors, Remove And Replace
 8 EACH 1/2" Diameter X 5" Expansion Anchors for Hoist Frame, Remove And Replace
 2 EACH 3.17' X 2' Steel Grate Cover
 10 EACH 4-Hole Galvanized 8" X 6" Guardrail Anchor Plates, Remove And Replace

Flooding washed away the armoring along the levee and damaged the stop log structure. Remove and dispose of vegetative debris. Place 9" of filtration material B and 1" of revetment along the levee as shown on the original construction detail on sheet B.07-B.11.

Reset the bridge and stop log hoist rack. Remove the existing rail, including the anchor plates and anchors, and the grate on the top of the stop log structure. Install new anchors, anchor plates, rail and grate as shown on the original construction detail on sheet B.12.

Remove and dispose of vegetative debris on access road.



Louisville Access Boat Ramp
 Site 1: Gravel Access Road
 41.94713, -96.13893
 245 TON Granular Surfacing, 1" Roadstone

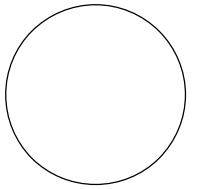
 Flooding washed the roadway rock away.
 Place 3" of 1" roadstone. Seed disturbed soil.

Louisville Access Boat Ramp
 Site 2: Gravel Access Road (1,656' long x 16' wide)
 41.94595, -96.13550 to 41.94688, -96.13884
 464 TON Granular Surfacing, 1" Roadstone

Flooding washed the roadway rock away.
 Place 3" of 1" roadstone. Seed disturbed soil.



CONSULTANT:



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 502 E. 9TH ST., DES MOINES, IA 50319-0034



SITE PLAN

FLOOD DAMAGE REPAIRS FOR:

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HARRISON COUNTY

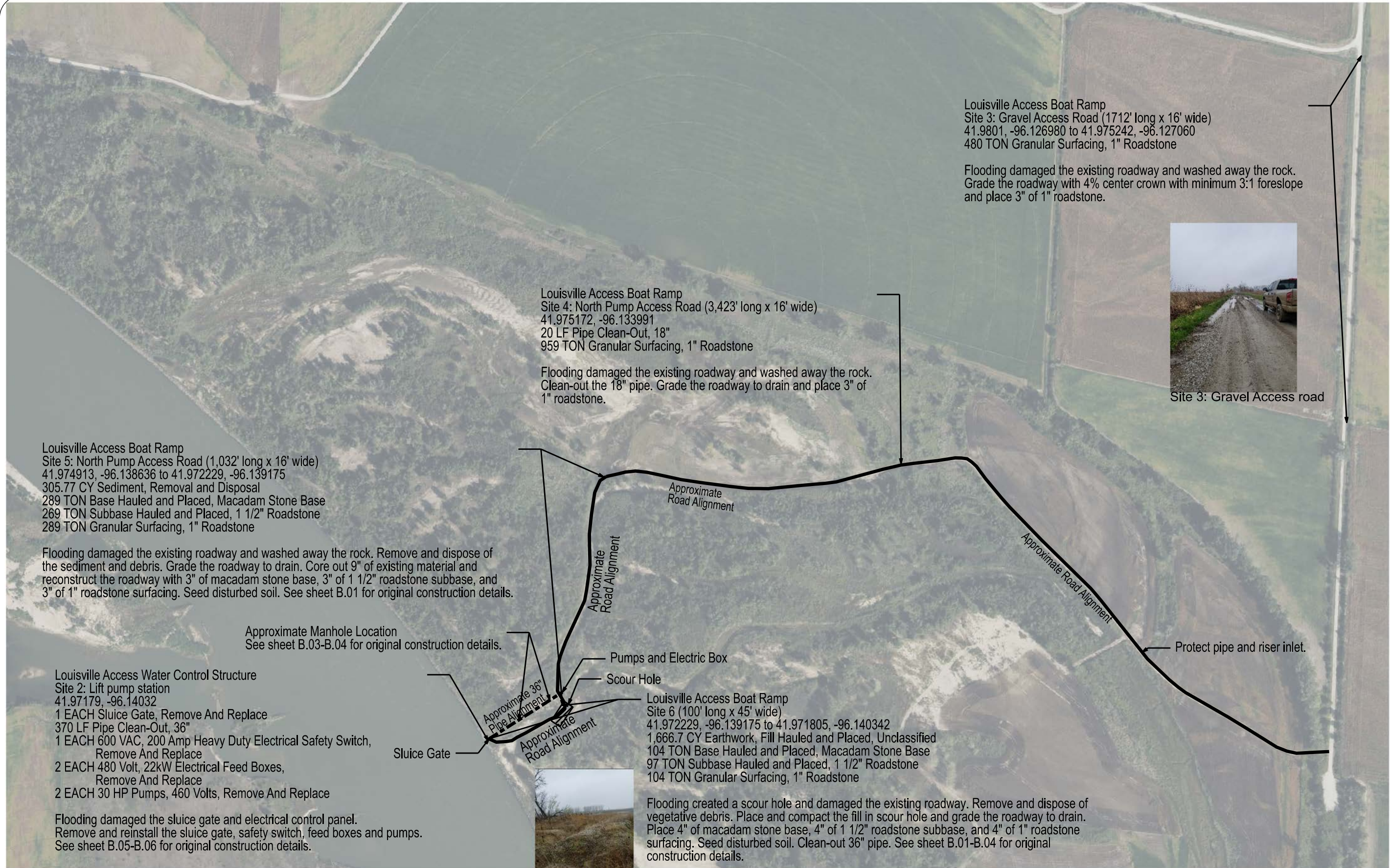
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Louisville Access Boat Ramp
Site 3: Gravel Access Road (1712' long x 16' wide)
41.9801, -96.126980 to 41.975242, -96.127060
480 TON Granular Surfacing, 1" Roadstone

Flooding damaged the existing roadway and washed away the rock. Grade the roadway with 4% center crown with minimum 3:1 foreslope and place 3" of 1" roadstone.



Site 3: Gravel Access road

Louisville Access Boat Ramp
Site 4: North Pump Access Road (3,423' long x 16' wide)
41.975172, -96.133991
20 LF Pipe Clean-Out, 18"
959 TON Granular Surfacing, 1" Roadstone

Flooding damaged the existing roadway and washed away the rock. Clean-out the 18" pipe. Grade the roadway to drain and place 3" of 1" roadstone.

Louisville Access Boat Ramp
Site 5: North Pump Access Road (1,032' long x 16' wide)
41.974913, -96.138636 to 41.972229, -96.139175
305.77 CY Sediment, Removal and Disposal
289 TON Base Hauled and Placed, Macadam Stone Base
269 TON Subbase Hauled and Placed, 1 1/2" Roadstone
289 TON Granular Surfacing, 1" Roadstone

Flooding damaged the existing roadway and washed away the rock. Remove and dispose of the sediment and debris. Grade the roadway to drain. Core out 9" of existing material and reconstruct the roadway with 3" of macadam stone base, 3" of 1 1/2" roadstone subbase, and 3" of 1" roadstone surfacing. Seed disturbed soil. See sheet B.01 for original construction details.

Approximate Manhole Location
See sheet B.03-B.04 for original construction details.

Louisville Access Water Control Structure
Site 2: Lift pump station
41.97179, -96.14032
1 EACH Sluice Gate, Remove And Replace
370 LF Pipe Clean-Out, 36"
1 EACH 600 VAC, 200 Amp Heavy Duty Electrical Safety Switch, Remove And Replace
2 EACH 480 Volt, 22kW Electrical Feed Boxes, Remove And Replace
2 EACH 30 HP Pumps, 460 Volts, Remove And Replace

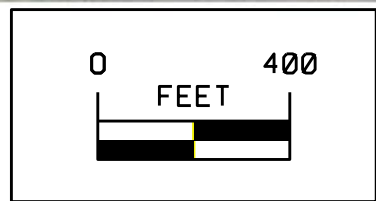
Flooding damaged the sluice gate and electrical control panel. Remove and reinstall the sluice gate, safety switch, feed boxes and pumps. See sheet B.05-B.06 for original construction details.

Louisville Access Boat Ramp
Site 6 (100' long x 45' wide)
41.972229, -96.139175 to 41.971805, -96.140342
1,666.7 CY Earthwork, Fill Hauled and Placed, Unclassified
104 TON Base Hauled and Placed, Macadam Stone Base
97 TON Subbase Hauled and Placed, 1 1/2" Roadstone
104 TON Granular Surfacing, 1" Roadstone

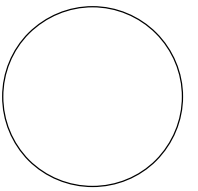
Flooding created a scour hole and damaged the existing roadway. Remove and dispose of vegetative debris. Place and compact the fill in scour hole and grade the roadway to drain. Place 4" of macadam stone base, 4" of 1 1/2" roadstone subbase, and 4" of 1" roadstone surfacing. Seed disturbed soil. Clean-out 36" pipe. See sheet B.01-B.04 for original construction details.



Louisville Access Boat Ramp
Site 6 Scour Hole



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SITE PLAN

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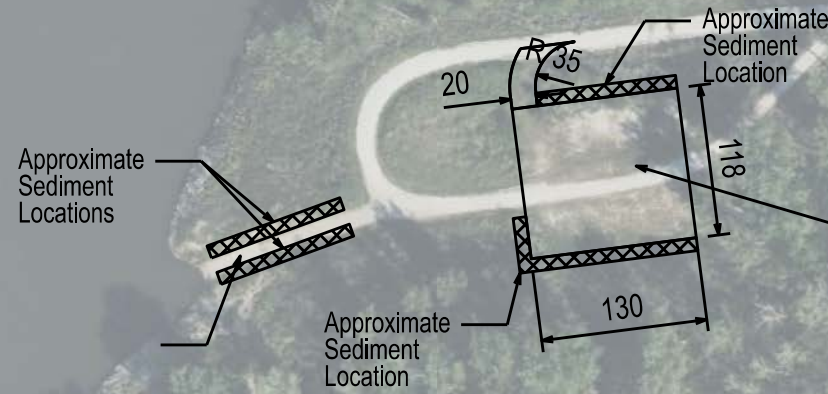
Site 4: Boat Ramp - Northerly Side

Deer Island Wildlife Area
 Site 4: Boat Ramp
 41.834650, -96.108151
 15 CY Sediment, Removal and Disposal

Remove and dispose of the sediment located along side the boat ramp and slopes. Clear sediment from the pavement and the slope back of curb at 3:1 minimum slope. Seed disturbed soil.



Site 4: Boat Ramp - Southerly Side



Deer Island Wildlife Area
 Site 3: Parking Lot
 41.834868, -96.107025
 660 CY Sediment, Removal and Disposal
 312 TON Granular Surfacing, 1" Roadstone

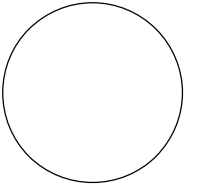
Original parking lot rock has been washed away and sediment deposited in the area. Remove and dispose of sediment located along the parking lots. Regrade the ditches to drain with 4' earth shoulder off the lot, 3:1 minimum foreslopes, 5' bottom, 3:1 minimum backslope. Place 1" Roadstone on the existing parking lot. Seed disturbed soil.

Deer Island Wildlife Area
 Site 1: Access Road
 41.832837, -96.103943
 25 TON Granular Surfacing, 1" Roadstone

Place 3" of 1" roadstone.



CONSULTANT:



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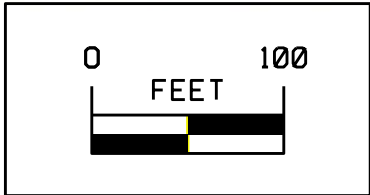
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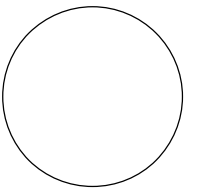


Rosenow Timber Entrance
 41.810720, -95.498694
 31 CY Earthwork, Fill Hauled and Placed, Clay Mix
 34 LF Culvert, CMP Entrance, 36"

 Fast moving high water damaged the entrance. Remove existing 36" CMP. Install new 36" CMP. Reconstruct the entrance with 3:1 minimum foreslope. Seed disturbed soil.



CONSULTANT:



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SITE PLAN

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Tyson Bend Wildlife Area Site 4

Tyson Bend Wildlife Area Site 4 (575' long x 16' wide)
41.625823, -96.099211
110 TON Granular Surfacing, 1" Roadstone
1,646 CY Earthwork, Fill Hauled and Placed, Native Soil
161 TON Base Hauled and Placed, Macadam Stone Base
150 TON Subbase Hauled and Placed, 1 1/2" Rock

Flooding damaged the roadway. Remove and dispose of vegetative debris. Place and compact fill material to original grade with 4:1 foreslope, 1' deep V ditch and a 2:1 backslope. Construct the roadway with 3" of macadam stone base, 3" of 1 1/2" roadstone subbase, and 2" of 1" roadstone surfacing. Seed disturbed soil.

Tyson Bend Wildlife Area Site 5 (240' x 16')
41.625912, -96.102179
46 TON Granular Surfacing, 1" Roadstone
190 CY Earthwork, Fill Hauled and Placed, Native Soil
69 TON Base Hauled and Placed, Macadam Base Stone
64 TON Subbase Hauled and Placed, 1 1/2" Rock

Flooding damaged the roadway. Remove and dispose of vegetative debris. Place and compact fill material to original grade with 4:1 foreslope, 1' deep V ditch and a 2:1 backslope. Construct the roadway with 3" of macadam stone base, 1 1/2" roadstone subbase, and 2" of 1" roadstone surfacing. Seed disturbed soil.



Tyson Bend Wildlife Area Site 7

Tyson Bend Wildlife Area Boat Ramp
41.621929, -96.113972
5 CY Sediment, Removal and Disposal

Flooding deposited sediment in the area. Remove and dispose of sediment located at the boat ramp. Seed disturbed soil.

Tyson Bend Wildlife Area Site 7 (60' long x 65" wide)
41.621684, -96.113885
48 TON Granular Surfacing, 1" Roadstone
69 TON Base Hauled and Placed, Macadam Stone Base
64 TON Subbase Hauled and Placed, 1 1/2" Roadstone

Flooding washed away the rock on the existing parking lot. Remove and dispose of vegetative debris. Core out 8" and reconstruct the parking lot with 3" of macadam stone base, 3" of 1 1/2" roadstone subbase, and 2" of 1" roadstone surfacing. Seed disturbed soil.

Tyson Bend Wildlife Area Water Control Structure Site 2
41.625819, -96.098922 to 41.625824, -96.099149
57 TON Granular Surfacing, Macadam Stone Base (50' long x 16' wide)
51 TON Revetment, Class E (40' long x 8')

Flooding washed away revetment and roadway at the low water crossing. Place 3' of revetment on the north side of the low water crossing and 12" of macadam stone along low water crossing. Seed disturbed soil.

Tyson Bend Wildlife Area Site 6
41.625912, -96.102179 to 41.621953, -96.113975
3,091 CY Sediment, Removal and Disposal
1099 TON Granular Surfacing, 1" Roadstone (3,922' long x 16' wide)

Flooding deposited sediment along the roadway. Remove and dispose of sediment and vegetative debris. Grade roadway to drain with 4:1 foreslope, 1' deep V ditch and a 2:1 backslope. Place 3" of 1" roadstone. Seed disturbed soil.

Tyson Bend Wildlife Area Site 3 (60' long x 20' wide x 12' deep)
41.625924, -96.099564
533 CY Earthwork, Fill Hauled and Placed, Native Soil

Flooding created a scour hole. Remove and dispose of vegetative debris. Fill and compact hole. Seed disturbed soil.

Tyson Bend Wildlife Area Water Control Structure Site 1: Low Water Crossing Road Damage (35' long x 35' wide x 4.5' deep)
41.625842, -96.098670
204 CY Sediment, Removal and Disposal

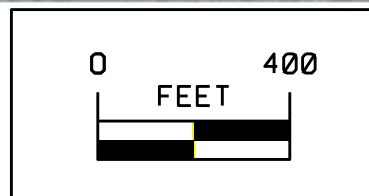
Flooding deposited sediment near the low water crossing. Remove and dispose of sediment and vegetative debris. Grade roadway to drain with 3:1 minimum foreslope. Seed disturbed soil.

Tyson Bend Wildlife Area Site #1: Road
Place 24 TON Granular Surfacing, 1" Roadstone
Place 3" of 1" roadstone.

Tyson Bend Wildlife Area Water Control Structure Site 3 (21' long x 10' wide)
41.625749, -96.098832
47 CY Vegetation Obstacles, Removal and Disposal

Flooding deposited debris and vegetation near the low water crossing. Remove and dispose of vegetation in vicinity of the roadway. Seed disturbed soil.

Approximate Road Alignment



Tyson Bend Wildlife Area Water Control Structure Site 1 Sediment

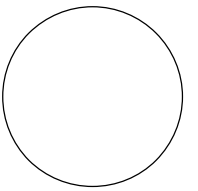


Tyson Bend Wildlife Area Site 3: Scour Hole



Tyson Bend Wildlife Area Water Control Structure Site 3 Vegetative Obstacle (looking east)

CONSULTANT:



IOWA DEPARTMENT OF NATURAL RESOURCES

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502 E. 9TH ST., DES MOINES, IA 50319-0034



SITE PLAN

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