



IOWA DEPARTMENT OF NATURAL RESOURCES

CENTER LAKE

FISH BARRIER SYSTEM AND SHORELINE RESTORATION

DICKINSON COUNTY, IOWA
IDNR PROJECT #15-01-30-05

I hereby certify that this plan was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Lucas L. Rief 7/15/16
(signature) (date)

Lucas Leo Rief
License number 23037

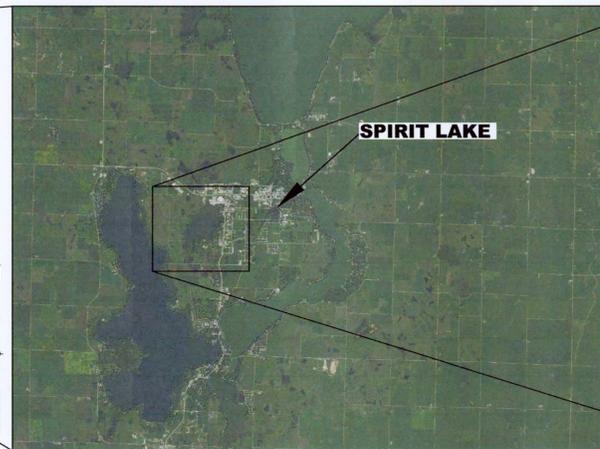
My license renewal date is December 31, 2016

Pages or sheets covered by this seal:
Sheets 1 - 10



IMAGE SOURCE: WWW.GEOLOGY.COM

STATE MAP
NOT TO SCALE



AERIAL SOURCE: NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP), 2014

LOCAL AREA MAP
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AERIAL SOURCE: NATIONAL AGRICULTURE IMAGERY PROGRAM (NAIP), 2014

VICINITY MAP
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AUTHORIZATION TO BID

[Signature] Fisheries 7/19/16

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

[Signature] 7/19/16

ENGINEERING BUREAU CHIEF DATE



NO.	DATE	BY	DESCRIPTION

CENTER LAKE
FISH BARRIER SYSTEM AND SHORELINE RESTORATION
DICKINSON COUNTY, IOWA

COVER SHEET



EA ENGINEERING,
SCIENCE, AND
TECHNOLOGY, INC., PBC
221 Sun Valley Boulevard
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DATE	JULY 2016
DESIGNED BY	NDD
DRAWN BY	JRM
CHECKED BY	JMT
PROJECT MANAGER	LLR
PROJECT NUMBER	1531301
SCALE	AS SHOWN
FILE NAME	COVER SHEET.DWG
DRAWING NUMBER	G-001
SHEET NUMBER	1 OF 10

GENERAL CONSTRUCTION NOTES:

- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS AS REQUIRED.
- TOPOGRAPHIC CONTOURS, SITE FEATURES, BATHYMETRIC DATA AND ASSOCIATED CONTOURS SHOWN ARE BASED UPON A SITE SURVEY PERFORMED BY EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC ON THE 3RD TO 4TH OF NOVEMBER, 2015.
- ALL TOPOGRAPHIC AND BATHYMETRIC ELEVATIONS ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88). ALL HORIZONTAL LOCATIONS ARE REFERENCED TO IOWA NORTH STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NAD 83).
- HORIZONTAL LAYOUT OF SITE IMPROVEMENTS WILL BE PROVIDED BY ENGINEER IN ELECTRONIC FORMAT AS DESCRIBED IN THE SPECIFICATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING IN PLACE ALL ACTIVE UTILITY STRUCTURES (BOTH BELOW AND ABOVE GROUND), PIPING, AND APPURTENANCES THAT ARE TO REMAIN IN PLACE UNLESS SPECIFIED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MINIMIZING AND CLEANING UP DUST AND MUD ON ALL ROADS DUE TO VEHICLES ARRIVING AND LEAVING THE JOB SITE AS PART OF THIS WORK.
- IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK THAT WOULD NORMALLY BE REQUIRED TO COMPLETE THE PROJECT SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO COMPLETE SUCH WORK.
- SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY FIELD CORRECTIONS OR ADJUSTMENTS MADE WITHOUT NOTIFYING THE ENGINEER.
- EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS MADE AVAILABLE TO OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. LOCATION, CONFIGURATIONS, AND ELEVATIONS OF EXISTING UNDERGROUND POWER, TELEPHONE, FIBER OPTIC CABLE, DUCT WAYS, SPRINKLER SYSTEMS, SEPTIC SYSTEMS, AND WATER, GAS, AND SEWER SERVICE LINES MAY NOT ALL BE INDICATED. OTHER UTILITIES AND STRUCTURES MAY BE PRESENT. UNDERGROUND LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AND STRUCTURES, AS FURNISHED BY THE OWNER OF EACH UTILITY OR STRUCTURE, ARE APPROXIMATE. OVERHEAD UTILITIES ARE NOT SHOWN IN PROFILE.
- JOB SAFETY SHALL BE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
- RESTORE ANY EXISTING STRUCTURES THAT ARE DISTURBED, DAMAGED, OR REMOVED BY CONSTRUCTION TO THEIR ORIGINAL LOCATION AND CONDITION.
- ALL DISTURBED AREAS SHALL BE SEEDED AND COVERED WITH MULCH, UNLESS OTHERWISE INDICATED. INSTALL TEMPORARY ROLLED EROSION CONTROL PRODUCT RECP TYPE 2.C ON ALL FILL SLOPES GREATER THAN 10:1.
- STAY WITHIN LIMITS OF DISTURBANCE AS SHOWN ON THE DRAWINGS, OR IF NOT SHOWN, ALL LIMITS OF DISTURBANCE SHALL EXTEND 10 FEET FROM PROPOSED WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR A FINAL AS-BUILT SURVEY OF FINISHED GRADES AS REQUIRED IN THE TECHNICAL SPECIFICATIONS. THE ENGINEER WILL PROVIDE CONSTRUCTION STAKING.

ESTIMATED QUANTITIES:

BID ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	BID ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY
1	MOBILIZATION/DEMobilIZATION	LS	1	16	SHORELINE OVER EXCAVATION	CY	390
2	NPDES PERMITTING AND PPP	LS	1		WEST SHORELINE	CY	310
3	RIPRAP TOE - WEST SHORELINE	TON	650		EAST SHORELINE	CY	80
4	RIPRAP BEDDING	TON	150	17	ROAD GRAVEL	TON	31
5	FIELD STONE	TON	583	18	BOX CULVERT	LS	1
	PERMEABLE ROCK BARRIER AND APRON	TON	560		8' X 4' BARREL	LF	36
	CULVERT APRONS	TON	23		END SECTION	EA	2
6	SHORELINE FIELD STONE	TON	880		EARTHWORK	CY	160
	WEST SHORELINE APRON	TON	470		SAND AND ROAD GRAVEL	TON	27
	WEST SHORELINE TOE TOP LAYER	TON	300		GRANULAR SUBBASE	TON	10
	EAST SHORELINE APRON	TON	110		RIPRAP	TON	30
7	GRANULAR SUBBASE	TON	70	19	WETLAND 1 OUTLET STRUCTURE	LS	1
8	GEOGRID	SY	390		36" CMP	LF	140
9	FILTER FABRIC	SY	2,130		RISER STRUCTURE AND BASE	EA	2
	SHORELINE TOE	SY	1,070		ANTI-SLEEP COLLAR	EA	4
	PERMEABLE ROCK BARRIER	SY	870		CABLED ANCHOR	EA	4
	CULVERT DISCHARGE APRONS	SY	60		ANIMAL GUARD	EA	2
	CONSTRUCTION ENTRANCES	SY	130	20	ACCESS PATH CULVERT	LF	48
10	TURF REINFORCEMENT MAT	SY	1,040	21	RSH EXCLUSION ANIMAL GUARD	EA	1
11	HIGH PERFORMANCE TURF REINFORCEMENT MAT	SY	340	22	CLEARING AND GRUBBING	AC	1.7
	EAST SHORELINE	SY	280	23	LARGE TREE (12"+) REMOVAL	EA	30
	WETLAND 1 OVERFLOW NOTCH	SY	60	24	FLOATING SEDIMENT CURTAIN	LS	1
12	WETLAND DIKE EARTH FILL	CY	2,739	25	SILT FENCE	LF	550
	WETLAND 1 DIKE	CY	110	26	WOOD FIBER LOG	LF	210
	WETLAND 2 DIKE AND ACCESS PATH	CY	1,400	27	STRAW WATTLE	LF	2,050
	WETLAND 3 DIKE AND ROCK BARRIER	CY	1,220	28	TREE PROTECTION	EA	10
13	SHORELINE EARTH FILL	CY	1,010	29	NATIVE GRASS SEEDING	AC	0.7
	WEST SHORELINE	CY	840	30	SEEDING DISTURBED AREAS	AC	3.1
	EAST SHORELINE	CY	170	31	TEMPORARY ROLLED EROSION CONTROL PRODUCT	SY	2,970
	TOPSOIL FOR SHORELINE	CY	80	32	VEGETATION ESTABLISHMENT PERIOD	LS	1
15	EXCAVATION	CY	7,480	33	SHORELINE ACCESS	LS	1
	ROCK BARRIER AND APRON EXCAVATION	CY	340				
	WETLAND 1 EXPANSION AND CONNECTION DITCH	CY	7,140				

LEGEND:

- EXISTING CONTOURS
- EXISTING PROPERTY LINE
- CONTROL POINT
- SIGN
- UTILITY POLE
- PROPOSED CONTOURS
- RIPRAP
- SPOIL AREA
- CONSTRUCTION ENTRANCE
- LIMITS OF DISTURBANCE
- SILT FENCE
- SHORELINE REPAIR AREA
- CLEARING AREA
- WETLANDS WITH REED CANARY GRASS
- WETLAND
- WATER SURFACE ELEVATION
- EDGE OF WATER

11
G-207
DETAIL NUMBER
SHEET WHERE DETAIL IS REFERENCED

BASE POLLUTION PREVENTION PLAN:

THIS BASE POLLUTION PREVENTION PLAN (PPP) INCLUDES INFORMATION ON ROLES AND RESPONSIBILITIES, PROJECT SITE DESCRIPTION, CONTROLS, MAINTENANCE PROCEDURES, INSPECTION REQUIREMENTS, NON-STORM WATER CONTROLS, POTENTIAL SOURCES OF OFF SITE POLLUTION, AND DEFINITIONS. THIS PLAN REFERENCES OTHER DOCUMENTS RATHER THAN REPEATING THE INFORMATION CONTAINED IN THE DOCUMENTS. A COPY OF THIS BASE POLLUTION PREVENTION PLAN, AMENDED AS NEEDED PER PLAN REVISIONS OR BY CONTRACT MODIFICATION, WILL BE READILY AVAILABLE FOR REVIEW. ALL CONTRACTORS SHALL CONDUCT THEIR OPERATIONS IN A MANNER THAT CONTROLS POLLUTANTS, MINIMIZES EROSION, AND PREVENTS SEDIMENTS FROM ENTERING WATERS OF THE STATE AND LEAVING THE PROJECT SITE. THE PRIME CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE AND IMPLEMENTATION OF THE PPP FOR THEIR ENTIRE CONTRACT. THIS RESPONSIBILITY SHALL BE FURTHER SHARED WITH SUBCONTRACTORS WHOSE WORK IS A SOURCE OF POTENTIAL POLLUTION AS DEFINED IN THIS PPP.

I. ROLES AND RESPONSIBILITIES

- ENGINEER:
 - PREPARES BASE PPP INCLUDED IN THE DRAWINGS.
 - MAKE THESE PLANS AVAILABLE TO THE DNR UPON THEIR REQUEST.
 - REVIEW CONTRACTOR'S INSPECTION REPORTS.
- CONTRACTOR/SUBCONTRACTOR:
 - AFFECTED CONTRACTORS/SUBCONTRACTORS ARE CO-PERMITTEES AND WILL SIGN A CERTIFICATION STATEMENT ADHERING TO THE REQUIREMENTS OF THE NPDES PERMIT AND THIS PPP PLAN. ALL CO-PERMITTEES ARE LEGALLY REQUIRED UNDER THE CLEAN WATER ACT AND THE IOWA ADMINISTRATIVE CODE TO ENSURE COMPLIANCE WITH THE TERMS AND CONDITIONS OF THIS PPP.
 - MAINTAIN AN UP-TO-DATE LIST THAT IDENTIFIES CONTRACTORS AND SUBCONTRACTORS AS CO-PERMITTEES.
 - PREPARE A STORM WATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH THIS BASE PPP, THE TECHNICAL SPECIFICATIONS, AND NPDES GENERAL PERMIT NO. 2.
 - UPDATE PPP WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS FROM THE PROJECT.
 - PREPARES NOTICE OF INTENT (NOI) SUBMITTED TO IOWA DNR.
 - SIGNATURE AUTHORITY ON THE PPP AND NOI.
 - INSTALL AND MAINTAIN APPROPRIATE CONTROLS.
 - SUPERVISE AND IMPLEMENT GOOD HOUSEKEEPING PRACTICES.
 - CONDUCT REQUIRED INSPECTIONS OF THE SITE AND COMPLETE INSPECTION REPORT AFTER EACH INSPECTION.
 - SIGNATURE AUTHORITY ON CO-PERMITTEE CERTIFICATION STATEMENTS, STORM WATER INSPECTION REPORTS, AND NOTICE OF DISCONTINUATION (NOD).

II. PROJECT SITE DESCRIPTION

- THIS POLLUTION PREVENTION PLAN (PPP) IS FOR THE CONSTRUCTION OF FISH BARRIERS, CULVERTS, AND SHORELINE RESTORATION.
- THIS PPP COVERS APPROXIMATELY 15.0 ACRES WITH AN ESTIMATED 15.0 ACRES BEING DISTURBED. THE PORTION OF THE PPP COVERED BY THIS CONTRACT HAS 15.0 ACRES DISTURBED.
- STORM WATER SITE MAP - MULTIPLE SOURCES OF INFORMATION COMPRISE THE BASE STORM WATER SITE MAP INCLUDING:
 - DRAINAGE PATTERNS - EXISTING CONDITIONS AND PLAN AND PROFILE SHEETS.
 - PROPOSED SLOPES - PLAN AND PROFILE SHEETS.
 - AREAS OF SOIL DISTURBANCE - CONSTRUCTION LIMITS SHOWN ON PLAN AND PROFILE SHEETS.
 - LOCATION OF STRUCTURAL CONTROLS - STAGING, ACCESS, AND SPOIL SHEET.
 - LOCATIONS OF NON-STRUCTURAL CONTROLS - STAGING, ACCESS, AND SPOIL SHEET.
 - LOCATIONS OF STABILIZATION PRACTICES - GENERALLY WITHIN CONSTRUCTION LIMITS SHOWN ON PLAN AND PROFILE SHEETS.
 - SURFACE WATERS (INCLUDING WETLANDS) - EXISTING CONDITIONS AND PLAN AND PROFILE SHEETS.
 - LOCATIONS WHERE STORM WATER IS DISCHARGED - EXISTING CONDITIONS AND PLAN AND PROFILE SHEETS.
- THE PPP IS LOCATED IN AN AREA OF 1 SOIL ASSOCIATION CLARION LOAM. THE ESTIMATED AVERAGE SCS RUNOFF CURVE NUMBER FOR THIS PPP AFTER COMPLETION WILL BE 85.
- THE BASE SITE MAP IS AMENDED BY CONTRACT MODIFICATIONS AND PROGRESS PAYMENTS OF COMPLETED WORK.
- RUNOFF FROM THIS WORK WILL FLOW INTO BLUE LAKE AND STORM WATER DITCHES NEAR THE MISSOURI RIVER.

III. CONTROLS

- THE CONTRACTOR'S PPP SHOULD CLEARLY DESCRIBE THE INTENDED SEQUENCE OF MAJOR ACTIVITIES AND FOR EACH ACTIVITY DEFINE THE CONTROL MEASURE AND THE TIMING DURING THE CONSTRUCTION PROCESS THAT THE MEASURE WILL BE IMPLEMENTED.
- PRESERVE VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION.
- THE TECHNICAL SPECIFICATIONS DEFINE REQUIREMENTS TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES. ACTUAL QUANTITIES OF SEDIMENT CONTROL MEASURES USED MAY VARY FROM THE DRAWINGS AND BASE PPP AND AMENDMENT OF THE PLAN WILL BE DOCUMENTED VIA FIELDBOOK ENTRIES OR BY CONTRACT MODIFICATION. ADDITIONAL EROSION AND SEDIMENT CONTROL ITEMS MAY BE REQUIRED AS DETERMINED BY THE INSPECTOR AND/OR CONTRACTOR DURING STORM WATER MONITORING INSPECTIONS. IF THE WORK INVOLVED IS NOT APPLICABLE TO ANY CONTRACT ITEMS, THE WORK WILL BE SUBSIDIARY TO OTHER RELATED WORK ITEMS.
 - EROSION AND SEDIMENT CONTROLS
 - STABILIZATION PRACTICES
 - SITE PLANS WILL ENSURE THAT EXISTING VEGETATION IS PRESERVED WHERE ATTAINABLE AND DISTURBED PORTIONS OF THE SITE WILL BE STABILIZED.
 - STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED.

- TEMPORARY STABILIZING SEEDING SHALL BE COMPLETED AS THE DISTURBED AREAS ARE CONSTRUCTED. IF CONSTRUCTION ACTIVITY IS NOT PLANNED TO OCCUR IN A DISTURBED AREA FOR AT LEAST 21 DAYS, THE AREA SHALL BE STABILIZED BY TEMPORARY SEEDING OR MULCHING WITHIN 14 DAYS. OTHER STABILIZING METHODS SHALL BE USED OUTSIDE THE SEEDING TIME PERIOD.

b. STRUCTURAL PRACTICES

- STRUCTURAL PRACTICES WILL BE IMPLEMENTED TO DIVERT FLOWS FROM EXPOSED SOILS AND DETAIN OR OTHERWISE LIMIT RUNOFF AND THE DISCHARGE OF POLLUTANTS FROM EXPOSED AREAS OF THE SITE.
- STRUCTURAL ITEMS TO BE USED FOR THIS PROJECT ARE LOCATED ON THE STAGING, ACCESS, AND SPOIL SHEET AND TECHNICAL SPECIFICATIONS. TYPICAL DRAWINGS DETAILING CONSTRUCTION OF THE DEVICES TO BE USED ON THIS PROJECT CAN BE FOUND ON DETAILS 1 SHEET 9 OF THE DRAWINGS.

c. STORM WATER MANAGEMENT

- MEASURES SHALL BE INSTALLED DURING THE CONSTRUCTION PROCESS TO CONTROL POLLUTANTS IN STORM WATER DISCHARGES THAT WILL OCCUR AFTER CONSTRUCTION OPERATIONS HAVE BEEN COMPLETED. THE INSTALLATION OF THESE DEVICES MAY BE SUBJECT TO SECTION 404 OF THE CLEAN WATER ACT.
- OTHER CONTROLS

CONTRACTOR DISPOSAL OF UNUSED CONSTRUCTION MATERIALS AND CONSTRUCTION MATERIAL WASTES SHALL COMPLY WITH APPLICABLE STATE AND LOCAL WASTE DISPOSAL, SANITARY SEWER, OR SEPTIC SYSTEM REGULATIONS. IN THE EVENT OF A CONFLICT WITH OTHER GOVERNMENTAL LAWS, RULES AND REGULATIONS, THE MORE RESTRICTIVE LAWS, RULES OR REGULATIONS SHALL APPLY.

 - VEHICLE ENTRANCES AND EXITS - CONSTRUCT AND MAINTAIN ENTRANCES AND EXITS TO PREVENT TRACKING OF SEDIMENTS ONTO ROADWAYS.
 - MATERIAL DELIVERY, STORAGE AND USE - IMPLEMENT PRACTICES TO PREVENT DISCHARGE OF CONSTRUCTION MATERIALS DURING DELIVERY, STORAGE, AND USE.
 - STOCKPILE MANAGEMENT - INSTALL CONTROLS TO REDUCE OR ELIMINATE POLLUTION OF STORM WATER FROM STOCKPILES OF SOIL AND PAVING.
 - WASTE DISPOSAL - DO NOT DISCHARGE ANY MATERIALS, INCLUDING BUILDING MATERIALS, INTO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.
 - SPILL PREVENTION AND CONTROL - IMPLEMENT PROCEDURES TO CONTAIN AND CLEAN-UP SPILLS AND PREVENT MATERIAL DISCHARGES TO THE STORM DRAIN SYSTEM AND WATERS OF THE STATE.
 - CONCRETE RESIDUALS AND WASHOUT WASTES - DESIGNATE TEMPORARY CONCRETE WASHOUT FACILITIES FOR RINSING OUT CONCRETE TRUCKS. PROVIDE DIRECTIONS TO TRUCK DRIVERS WHERE DESIGNATED WASHOUT FACILITIES ARE LOCATED.
 - VEHICLE AND EQUIPMENT CLEANING - EMPLOY WASHING PRACTICES THAT PREVENT CONTAMINATION OF SURFACE AND GROUND WATER FROM WASH WATER.
 - VEHICLE AND EQUIPMENT FUELING AND MAINTENANCE - PERFORM ON SITE FUELING AND MAINTENANCE IN ACCORDANCE WITH ALL ENVIRONMENT LAWS SUCH AS PROPER STORAGE OF ONSIDE FUELS AND PROPER DISPOSAL OF USED ENGINE OIL OR OTHER FLUIDS ON SITE.
 - LITTER MANAGEMENT - ENSURE EMPLOYEES PROPERLY DISPOSE OF LITTER.
 - APPROVED STATE OR LOCAL PLANS

DURING THE COURSE OF THIS CONSTRUCTION, IT IS POSSIBLE THAT SITUATIONS WILL ARISE WHERE UNKNOWN MATERIALS WILL BE ENCOUNTERED. WHEN SUCH SITUATIONS ARE ENCOUNTERED, THEY WILL BE HANDLED ACCORDING TO ALL FEDERAL, STATE, AND LOCAL REGULATIONS IN EFFECT AT THE TIME.

IV. MAINTENANCE PROCEDURES

THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES IN PROPER WORKING ORDER, INCLUDING CLEANING, REPAIRING, OR REPLACING THEM THROUGHOUT THE CONTRACT PERIOD. THIS SHALL BEGIN WHEN THE FEATURES HAVE LOST 50% OF THEIR CAPACITY.

V. INSPECTION REQUIREMENTS

- INSPECTIONS SHALL BE MADE BY THE CONTRACTOR AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER EACH RAIN EVENT THAT IS 1/8" OR GREATER. STORM WATER MONITORING INSPECTIONS WILL INCLUDE:
 - DATE OF THE INSPECTION.
 - SUMMARY OF THE SCOPE OF THE INSPECTION.
 - NAME AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION.
 - RAINFALL AMOUNT.
 - REVIEW EROSION AND SEDIMENT CONTROL MEASURES WITHIN DISTURBED AREAS FOR THE EFFECTIVENESS IN PREVENTING IMPACTS TO RECEIVING WATERS.
 - MAJOR OBSERVATIONS RELATED TO THE IMPLEMENTATION OF THE PPP.
 - IDENTIFY CORRECTIVE ACTIONS REQUIRED TO MAINTAIN OR MODIFY EROSION AND SEDIMENT CONTROL MEASURES.
- INCLUDE STORM WATER MONITORING INSPECTION REPORTS IN THE AMENDED PPP. INCORPORATE ANY ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES DETERMINED AS A RESULT OF THE INSPECTION. IMMEDIATELY BEGIN CORRECTIVE ACTIONS ON ALL DEFICIENCIES FOUND AND COMPLETE ALL ACTIONS WITHIN 3 CALENDAR DAYS OF THE INSPECTION.

VI. NON-STORM WATER DISCHARGES

THIS INCLUDES SUBSURFACE DRAINS (I.E. LONGITUDINAL AND STANDARD SUBDRAINS) AND SLOPE DRAINS. THE VELOCITY OF THE DISCHARGE FROM THESE FEATURES MAY BE CONTROLLED BY THE USE OF PATIO BLOCKS, CLASS A STONE, EROSION STONE OR OTHER APPROPRIATE MATERIALS.

VII. POTENTIAL SOURCES OF OFF SITE POLLUTION

SILTS, SEDIMENT, AND OTHER FORMS OF POLLUTION MAY BE TRANSPORTED ONTO THE PROJECT SITE AS A RESULT OF A STORM EVENT. POTENTIAL SOURCES OF POLLUTION LOCATED OUTSIDE THE PROJECT SITE ARE BEYOND THE CONTROL OF THIS PPP. POLLUTION WITHIN THE PROJECT SITE WILL BE CONVEYED AND CONTROLLED PER THIS PPP.

VIII. DEFINITIONS

- BASE PPP - INITIAL POLLUTION PREVENTION PLAN.
- AMENDED PPP - MAY INCLUDE PLAN REVISIONS OR CONTRACT MODIFICATIONS FOR NEW ITEMS AND FIELDBOOK ENTRIES MADE BY THE INSPECTOR.
- CONTROLS - METHODS, PRACTICES, OR MEASURES TO MINIMIZE OR PREVENT EROSION, CONTROL SEDIMENTATION, CONTROL STORM WATER, OR MINIMIZE CONTAMINANTS FROM OTHER TYPES OF WASTE OR MATERIALS.
- SIGNATURE AUTHORITY - REPRESENTATIVE FROM ENGINEER OR CONTRACTOR/SUBCONTRACTOR AUTHORIZED TO SIGN VARIOUS STORM WATER DOCUMENTS.

ABBREVIATIONS:

A	AMPERE	NAD	NORTH AMERICAN DATUM
AC	ALTERNATING CURRENT	NAVD	NORTH AMERICAN VERTICAL DATUM
AF	AMPS FRAME	NEMA	NATIONAL ELECTRICAL
APPROX.	APPROXIMATE		MANUFACTURERS ASSOCIATION
CMP	CORRUGATED METAL PIPE	O.C.	ON CENTER
CONC	CONCRETE	OD	OUTSIDE DIAMETER
ALUM.	CONTINUOUS	PPP	POLLUTION PREVENTION PLAN
CP	CONTROL POINT	RCP	REINFORCED CONCRETE PIPE
CY	CUBIC YARDS	R.O.W.	RIGHT-OF-WAY
DIA.	DIAMETER	SF	SQUARE FEET
ELEV.	ELEVATION	TYP	TYPICAL
FT	FEET	USGS	UNITED STATES GEOLOGICAL SURVEY
FT BGS	FEET BELOW GROUND SURFACE	VAC	VOLTS ALTERNATING CURRENT
FVNR	FULL VOLTAGE NON-REVERSING	W.S.	WATER SURFACE
ID	INSIDE DIAMETER	Ø	DIAMETER
INV.	INVERT	"	INCHES
LF	LINEAR FEET	'	FEET
LOD	LIMITS OF DISTURBANCE	#	NUMBER
N/A	NOT AVAILABLE		

REVISIONS

NO.	DATE	BY	DESCRIPTION

CENTER LAKE FISH BARRIER SYSTEM AND SHORELINE RESTORATION
DICKINSON COUNTY, IOWA

ABBREVIATIONS, GENERAL NOTES, AND LEGEND

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC
221 Sun Valley Boulevard Suite D
Lincoln, Nebraska 68528
(402) 476-3766

DATE: JULY 2016

DESIGNED BY: NDD

DRAWN BY: JRM

CHECKED BY: JMT

PROJECT MANAGER: LLR

PROJECT NUMBER: 1531301

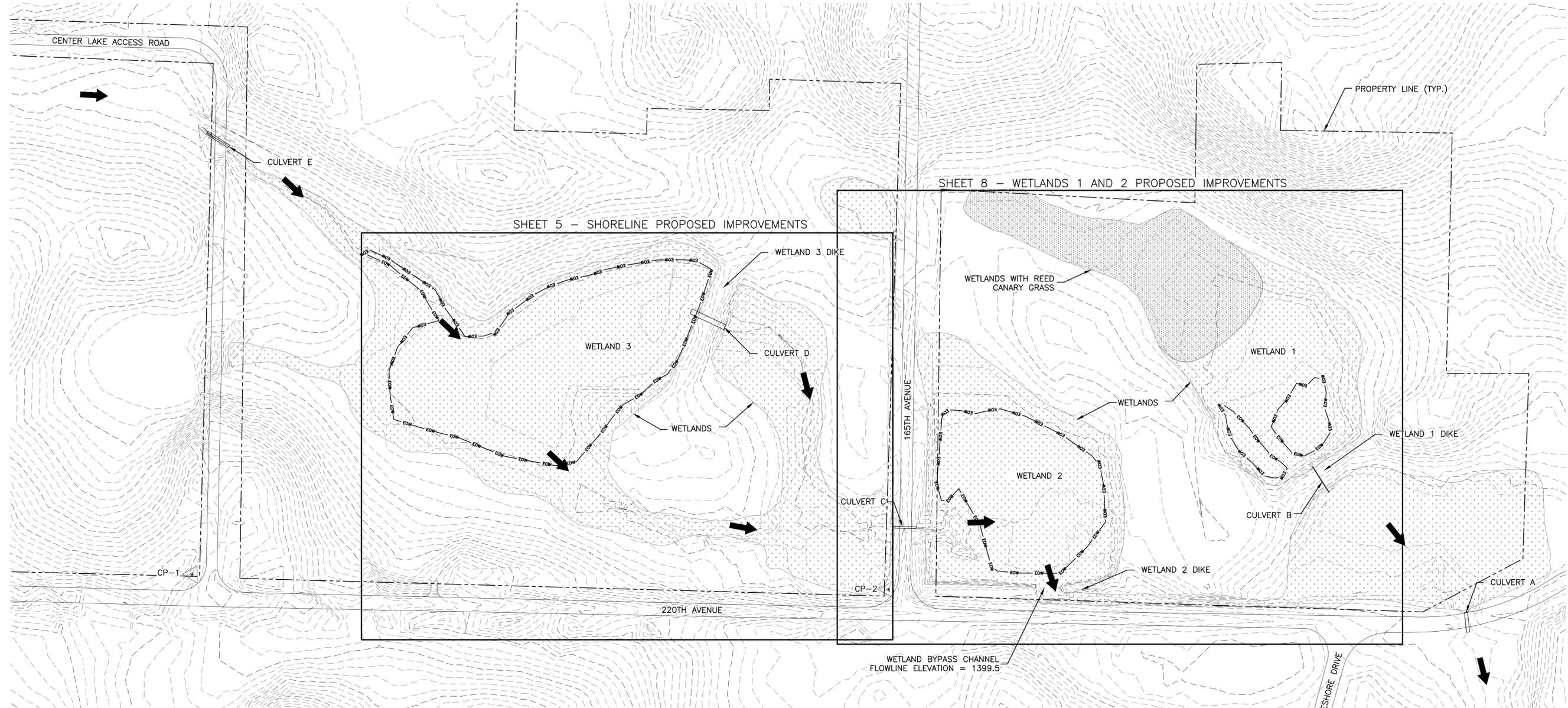
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FILE NAME: GENERAL NOTES AND LEGEND.DWG

DRAWING NUMBER: G-002

SHEET NUMBER: 2 OF 10

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CONTOUR SOURCE: EA SURVEY NOV. 3-4, 2015
 LIDAR CONTOURS: IOWA DNR, CREATED 07-26-2013

EXISTING CULVERT DATA

Structure	Size (in.)	Number of Barrels	Material	Upstream Flowline Elevation	Downstream Flowline Elevation	Length (ft)
A	36	2	RCP	1395.26	1395.05	36
B	12	1	Plastic	1401.40	1398.13	56
C	42	1	RCP	1398.63	1398.70	39
D	57w x 38h Arch	1	CMP	1402.02	1400.77	69
E	36	2	RCP	1405.15	1404.90	48

CONTROL POINTS

NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
CP-1	3981570.42	4482672.30	1434.80	REBAR
CP-2	3980280.42	4482643.73	1403.78	REBAR
CP-3	3983228.46	4485501.38	1434.06	REBAR

NO.	DATE	BY	DESCRIPTION

**CENTER LAKE
 FISH BARRIER SYSTEM AND SHORELINE RESTORATION**
 DICKINSON COUNTY, IOWA

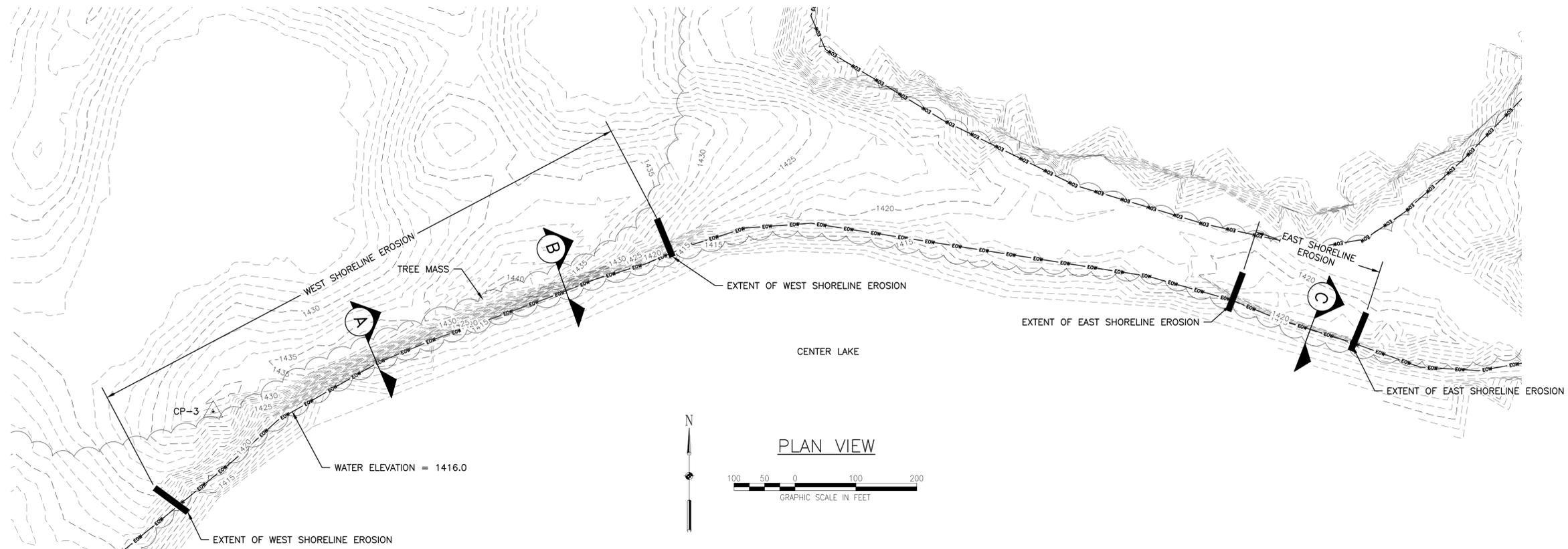
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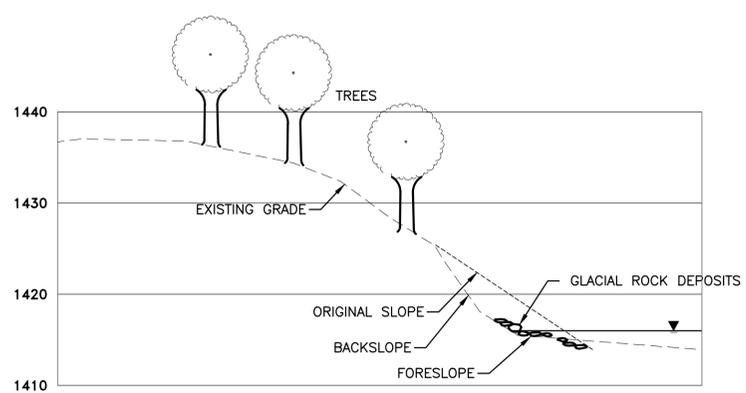
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 DRAWING NUMBER: C-101
 SHEET NUMBER: 3 OF 10

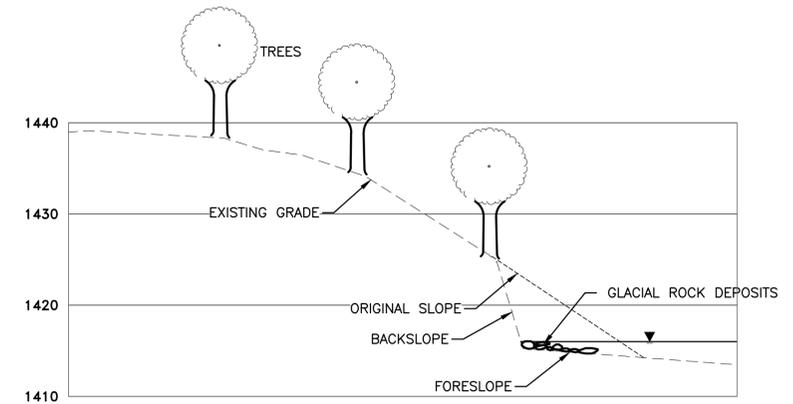
FILE PATH: F:\STATE & LOCAL\STATE\IOWA\DEPT OF NATURAL RESOURCES\PROJECTS\1531301 - CENTER LAKE\CAD\FIGURES\3 WETLANDS EXISTING CONDITIONS.DWG [EXISTING CONDITIONS] 12/15/15 lrrf



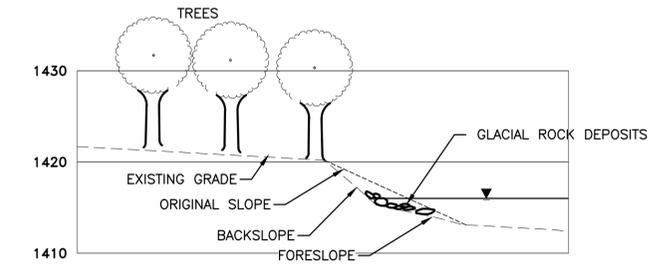
CONTOUR SOURCE: EA SURVEY NOV. 3-4, 2015
LIDAR CONTOURS: IOWA DNR, CREATED 07-26-2013



A WEST SHORELINE CROSS SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 10'



B WEST SHORELINE CROSS SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 10'



C EAST SHORELINE CROSS SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 10'

REVISIONS	
NO.	DESCRIPTION

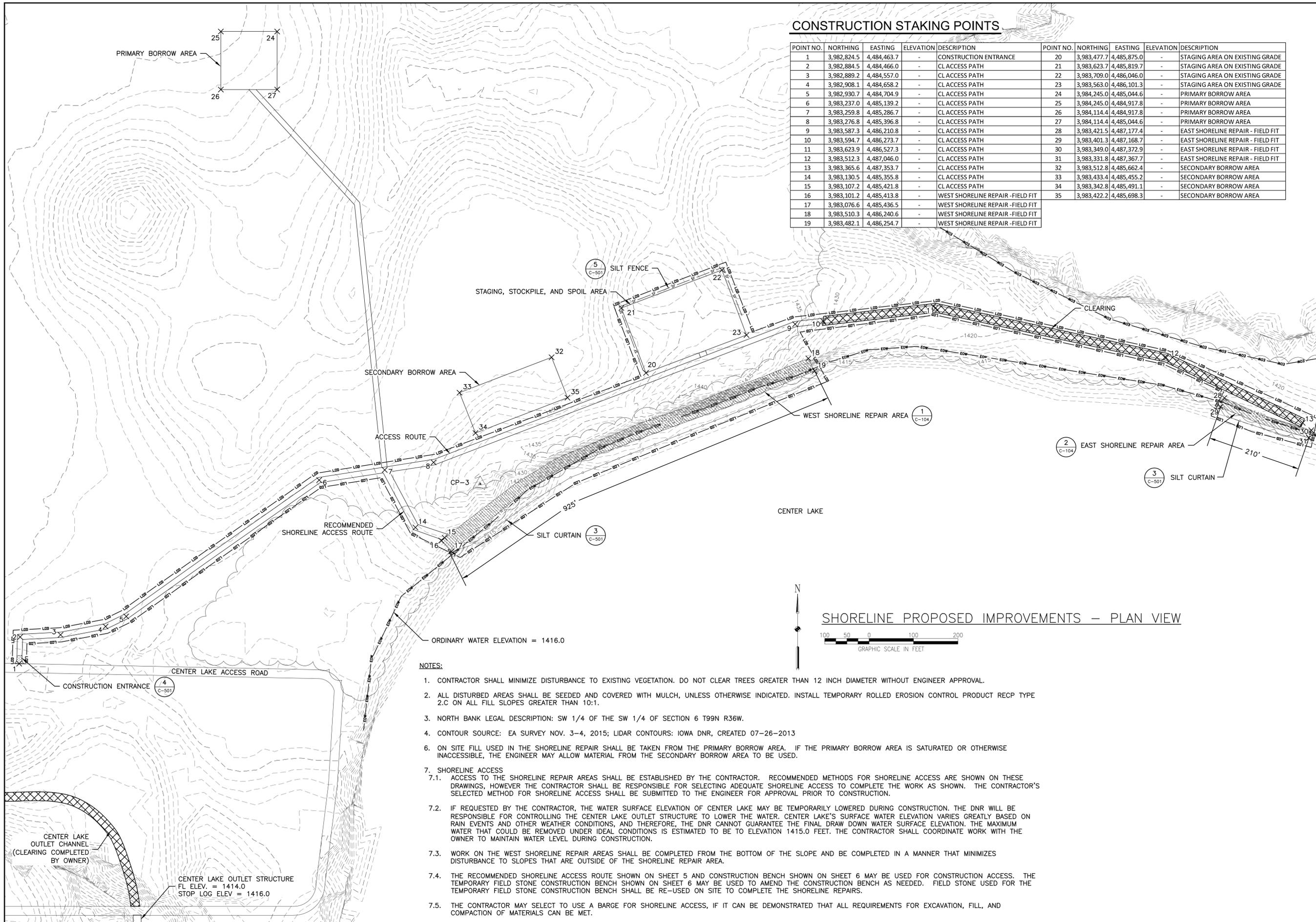
CENTER LAKE FISH BARRIER SYSTEM AND SHORELINE RESTORATION DICKINSON COUNTY, IOWA	
SHORELINE EXISTING CONDITIONS	

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC 221 Sun Valley Boulevard Suite D Lincoln, Nebraska 68528 (402) 476-3766	
DATE	JULY 2016
DESIGNED BY	NDD
DRAWN BY	JRM
CHECKED BY	JMT
PROJECT MANAGER	LLR
PROJECT NUMBER	1531301
SCALE	AS SHOWN
FILE NAME	4 NORTH BANK EX COND.DWG
DRAWING NUMBER	C-102
SHEET NUMBER	4 OF 10

FILE PATH: F:\STATE & LOCAL\STATE\IOWA\DEPT OF NATURAL RESOURCES\PROJECTS\1531301 - CENTER LAKE\CAD\FIGURES\4 NORTH BANK EXISTING CONDITIONS.DWG [EXISTING CONDITIONS] 12/15/15 11:41

CONSTRUCTION STAKING POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION	POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	3,982,824.5	4,484,463.7	-	CONSTRUCTION ENTRANCE	20	3,983,477.7	4,485,875.0	-	STAGING AREA ON EXISTING GRADE
2	3,982,884.5	4,484,466.0	-	CL ACCESS PATH	21	3,983,623.7	4,485,819.7	-	STAGING AREA ON EXISTING GRADE
3	3,982,889.2	4,484,557.0	-	CL ACCESS PATH	22	3,983,709.0	4,486,046.0	-	STAGING AREA ON EXISTING GRADE
4	3,982,908.1	4,484,658.2	-	CL ACCESS PATH	23	3,983,563.0	4,486,101.3	-	STAGING AREA ON EXISTING GRADE
5	3,982,930.7	4,484,704.9	-	CL ACCESS PATH	24	3,984,245.0	4,485,044.6	-	PRIMARY BORROW AREA
6	3,983,237.0	4,485,139.2	-	CL ACCESS PATH	25	3,984,245.0	4,484,917.8	-	PRIMARY BORROW AREA
7	3,983,259.8	4,485,286.7	-	CL ACCESS PATH	26	3,984,114.4	4,484,917.8	-	PRIMARY BORROW AREA
8	3,983,276.8	4,485,396.8	-	CL ACCESS PATH	27	3,984,114.4	4,485,044.6	-	PRIMARY BORROW AREA
9	3,983,587.3	4,486,210.8	-	CL ACCESS PATH	28	3,983,421.5	4,487,177.4	-	EAST SHORELINE REPAIR - FIELD FIT
10	3,983,594.7	4,486,273.7	-	CL ACCESS PATH	29	3,983,401.3	4,487,168.7	-	EAST SHORELINE REPAIR - FIELD FIT
11	3,983,623.9	4,486,527.3	-	CL ACCESS PATH	30	3,983,349.0	4,487,372.9	-	EAST SHORELINE REPAIR - FIELD FIT
12	3,983,512.3	4,487,046.0	-	CL ACCESS PATH	31	3,983,331.8	4,487,367.7	-	EAST SHORELINE REPAIR - FIELD FIT
13	3,983,365.6	4,487,353.7	-	CL ACCESS PATH	32	3,983,512.8	4,485,662.4	-	SECONDARY BORROW AREA
14	3,983,130.5	4,485,355.8	-	CL ACCESS PATH	33	3,983,433.4	4,485,455.2	-	SECONDARY BORROW AREA
15	3,983,107.2	4,485,421.8	-	CL ACCESS PATH	34	3,983,342.8	4,485,491.1	-	SECONDARY BORROW AREA
16	3,983,101.2	4,485,413.8	-	WEST SHORELINE REPAIR - FIELD FIT	35	3,983,422.2	4,485,698.3	-	SECONDARY BORROW AREA
17	3,983,076.6	4,485,436.5	-	WEST SHORELINE REPAIR - FIELD FIT					
18	3,983,510.3	4,486,240.6	-	WEST SHORELINE REPAIR - FIELD FIT					
19	3,983,482.1	4,486,254.7	-	WEST SHORELINE REPAIR - FIELD FIT					

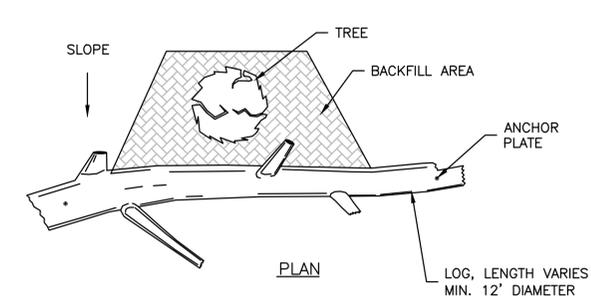
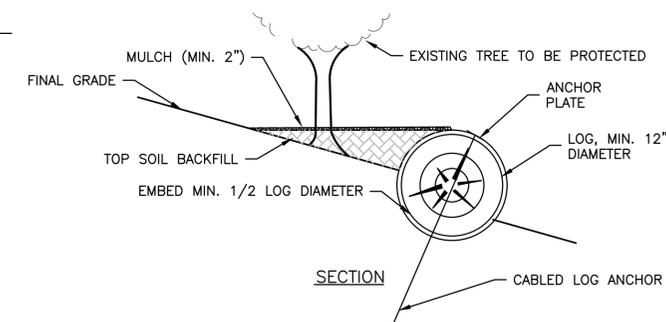
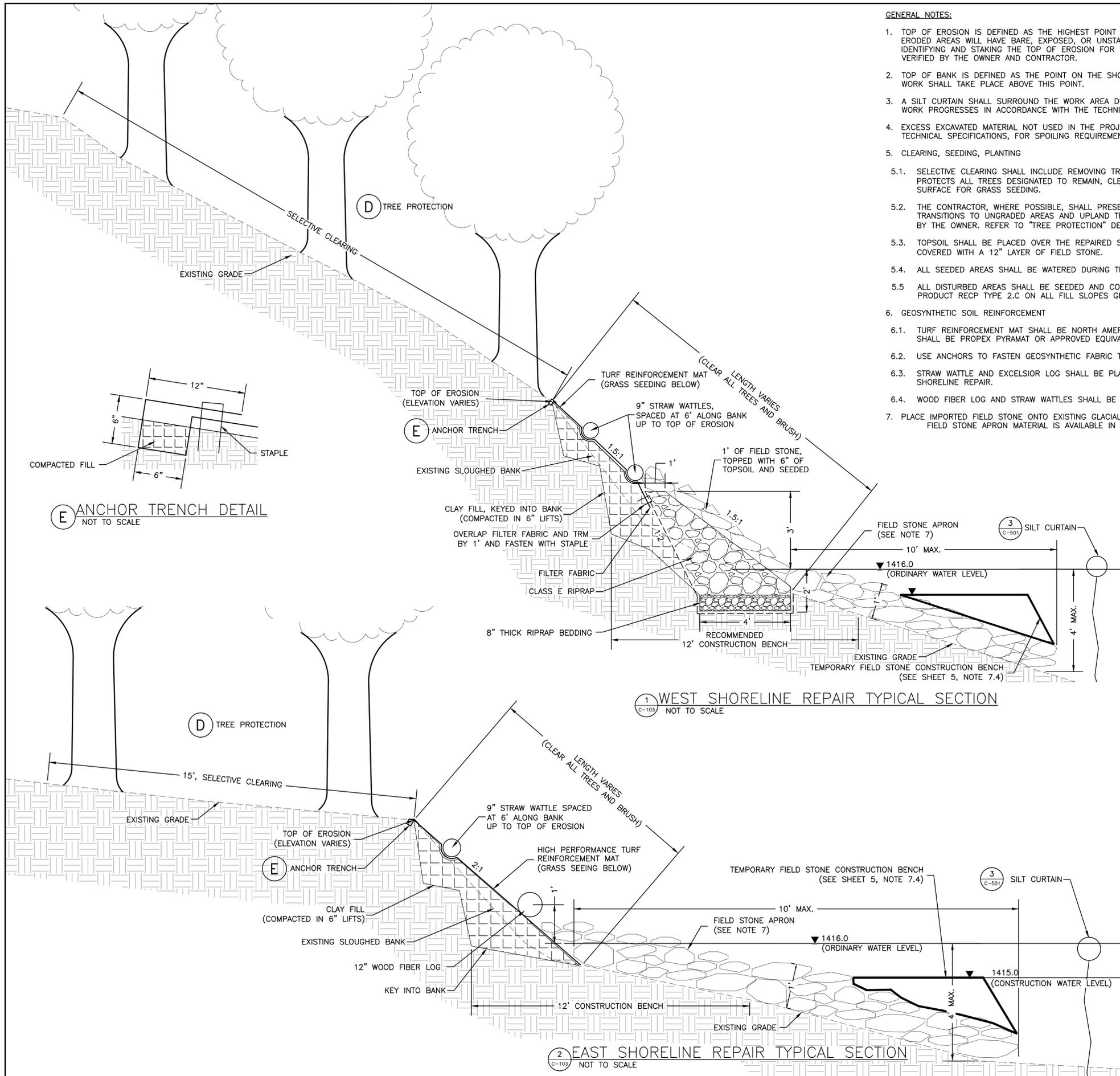


NOTES:

- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING VEGETATION. DO NOT CLEAR TREES GREATER THAN 12 INCH DIAMETER WITHOUT ENGINEER APPROVAL.
- ALL DISTURBED AREAS SHALL BE SEEDED AND COVERED WITH MULCH, UNLESS OTHERWISE INDICATED. INSTALL TEMPORARY ROLLED EROSION CONTROL PRODUCT RECP TYPE 2.C ON ALL FILL SLOPES GREATER THAN 10:1.
- NORTH BANK LEGAL DESCRIPTION: SW 1/4 OF THE SW 1/4 OF SECTION 6 T99N R36W.
- CONTOUR SOURCE: EA SURVEY NOV. 3-4, 2015; LIDAR CONTOURS: IOWA DNR, CREATED 07-26-2013
- ON SITE FILL USED IN THE SHORELINE REPAIR SHALL BE TAKEN FROM THE PRIMARY BORROW AREA. IF THE PRIMARY BORROW AREA IS SATURATED OR OTHERWISE INACCESSIBLE, THE ENGINEER MAY ALLOW MATERIAL FROM THE SECONDARY BORROW AREA TO BE USED.
- SHORELINE ACCESS
 - ACCESS TO THE SHORELINE REPAIR AREAS SHALL BE ESTABLISHED BY THE CONTRACTOR. RECOMMENDED METHODS FOR SHORELINE ACCESS ARE SHOWN ON THESE DRAWINGS, HOWEVER THE CONTRACTOR SHALL BE RESPONSIBLE FOR SELECTING ADEQUATE SHORELINE ACCESS TO COMPLETE THE WORK AS SHOWN. THE CONTRACTOR'S SELECTED METHOD FOR SHORELINE ACCESS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
 - IF REQUESTED BY THE CONTRACTOR, THE WATER SURFACE ELEVATION OF CENTER LAKE MAY BE TEMPORARILY LOWERED DURING CONSTRUCTION. THE DNR WILL BE RESPONSIBLE FOR CONTROLLING THE CENTER LAKE OUTLET STRUCTURE TO LOWER THE WATER. CENTER LAKE'S SURFACE WATER ELEVATION VARIES GREATLY BASED ON RAIN EVENTS AND OTHER WEATHER CONDITIONS, AND THEREFORE, THE DNR CANNOT GUARANTEE THE FINAL DRAW DOWN WATER SURFACE ELEVATION. THE MAXIMUM WATER THAT COULD BE REMOVED UNDER IDEAL CONDITIONS IS ESTIMATED TO BE TO ELEVATION 1415.0 FEET. THE CONTRACTOR SHALL COORDINATE WORK WITH THE OWNER TO MAINTAIN WATER LEVEL DURING CONSTRUCTION.
 - WORK ON THE WEST SHORELINE REPAIR AREAS SHALL BE COMPLETED FROM THE BOTTOM OF THE SLOPE AND BE COMPLETED IN A MANNER THAT MINIMIZES DISTURBANCE TO SLOPES THAT ARE OUTSIDE OF THE SHORELINE REPAIR AREA.
 - THE RECOMMENDED SHORELINE ACCESS ROUTE SHOWN ON SHEET 5 AND CONSTRUCTION BENCH SHOWN ON SHEET 6 MAY BE USED FOR CONSTRUCTION ACCESS. THE TEMPORARY FIELD STONE CONSTRUCTION BENCH SHOWN ON SHEET 6 MAY BE USED TO AMEND THE CONSTRUCTION BENCH AS NEEDED. FIELD STONE USED FOR THE TEMPORARY FIELD STONE CONSTRUCTION BENCH SHALL BE RE-USED ON SITE TO COMPLETE THE SHORELINE REPAIRS.
 - THE CONTRACTOR MAY SELECT TO USE A BARGE FOR SHORELINE ACCESS, IF IT CAN BE DEMONSTRATED THAT ALL REQUIREMENTS FOR EXCAVATION, FILL, AND COMPACTION OF MATERIALS CAN BE MET.

NO.		DATE		BY		REVISIONS	DESCRIPTION
CENTER LAKE FISH BARRIER SYSTEM AND SHORELINE RESTORATION DICKINSON COUNTY, IOWA							
SHORELINE PROPOSED IMPROVEMENTS							
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC., PBC 221 Sun Valley Boulevard Suite D Lincoln, Nebraska 68528 (402) 476-3766							
DATE		JULY 2016					
DESIGNED BY		NDD					
DRAWN BY		JRM					
CHECKED BY		JMT					
PROJECT MANAGER		LLR					
PROJECT NUMBER		1531301					
SCALE		AS SHOWN					
FILE NAME: 5 NORTH BANK PROP IMPROVEMENTS.DWG							
DRAWING NUMBER		C-103					
SHEET NUMBER		5 OF 10					

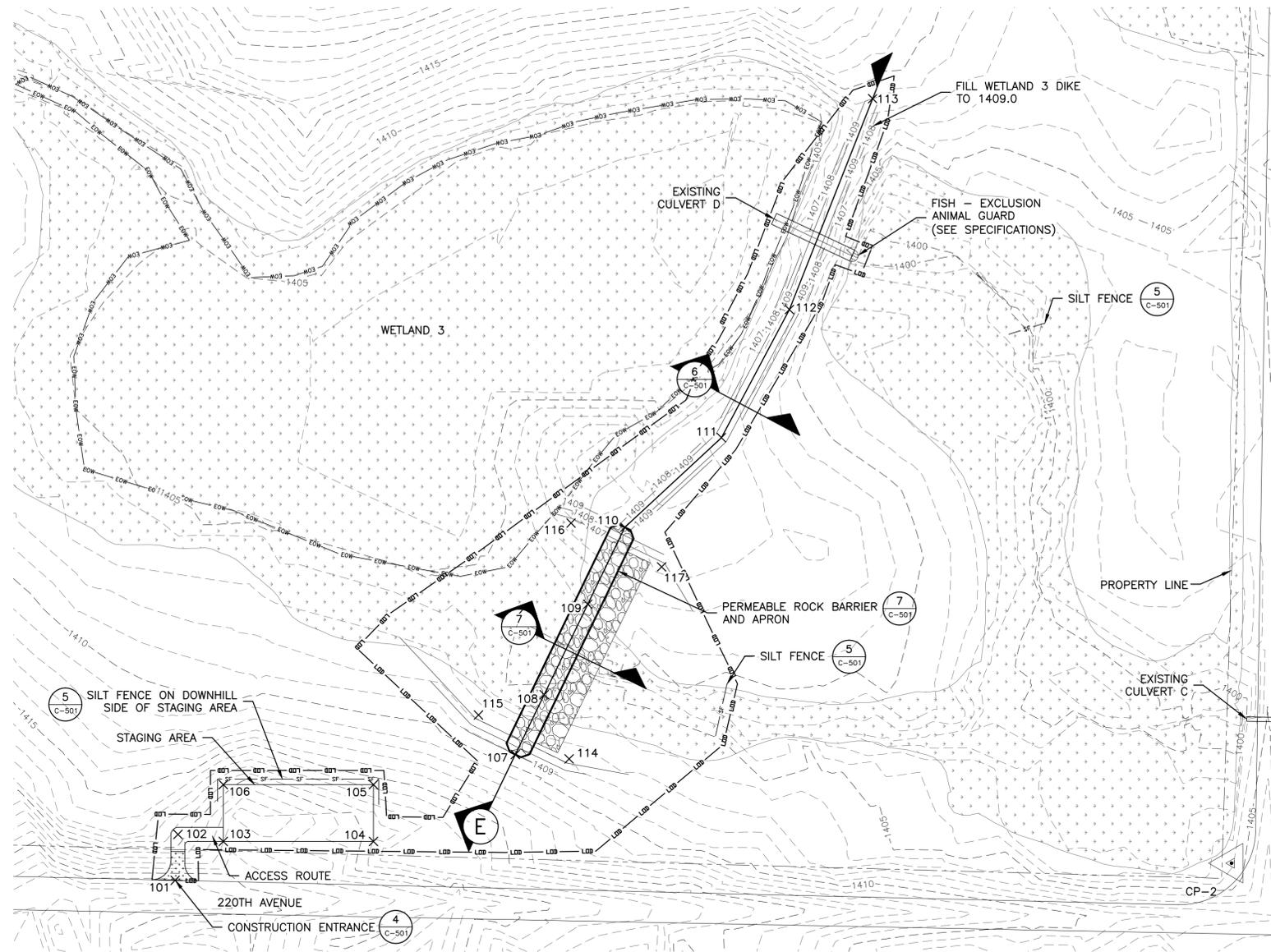
FILE PATH: F:\STATE & LOCAL\STATE\IOWA\DEPT OF NATURAL RESOURCES\PROJECTS\1531301 - CENTER LAKE\DRAWINGS\5 NORTH BANK PROPOSED IMPROVEMENTS.DWG [PROPOSED IMPROVEMENTS] 2/16/16 11:41



D TREE PROTECTION DETAIL
 NOT TO SCALE

REVISIONS		NO.	DATE	BY	DESCRIPTION
CENTER LAKE FISH BARRIER SYSTEM AND SHORELINE RESTORATION DICKINSON COUNTY, IOWA					
SHORELINE TYPICAL CROSS SECTIONS					
EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC. PBC 221 Sun Valley Boulevard Suite D Lincoln, Nebraska 68528 (402) 476-3766					
DATE	JULY 2016				
DESIGNED BY	NDD				
DRAWN BY	JRM				
CHECKED BY	JMT				
PROJECT MANAGER	LLR				
PROJECT NUMBER	1531301				
SCALE	AS SHOWN				
FILE NAME	6 NORTH BANK TYPICAL CROSS SECTIONS				
DRAWING NUMBER	C-104				
SHEET NUMBER	6 OF 10				

FILE PATH: F:\STATE & LOCAL\STATE\IOWA\DEPT OF NATURAL RESOURCES\PROJECTS\1531301 - CENTER LAKE\CAD\FIGURES\6 NORTH BANK TYPICAL CROSS SECTIONS.DWG [CROSS SECTIONS] 2/16/16 .tif



CONTOUR SOURCE: EA SURVEY NOV. 3-4, 2015
 LIDAR CONTOURS: IOWA DNR, CREATED 07-26-2013

WETLAND 3 PROPOSED IMPROVEMENTS – PLAN VIEW

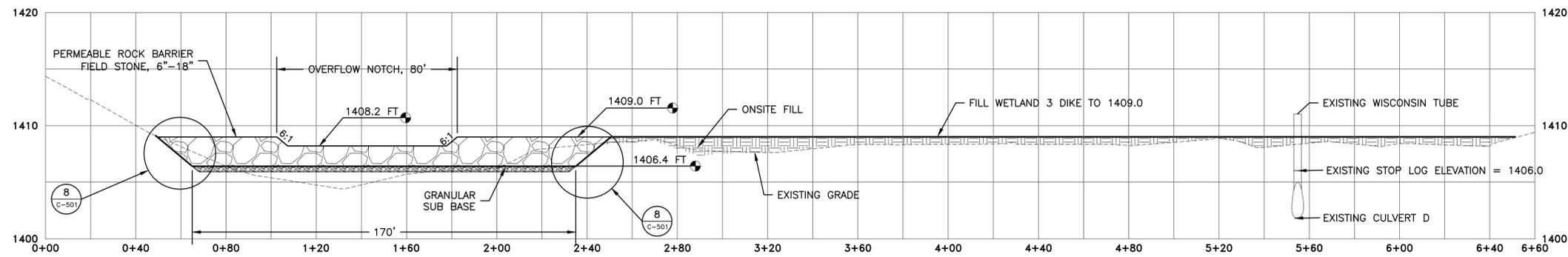


CONSTRUCTION STAKING POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
101	3,981,124.4	4,482,630.1	-	CONSTRUCTION ENTRANCE
102	3,981,122.1	4,482,666.7	-	ACCESS PATH
103	3,981,085.9	4,482,661.1	-	STAGING AREA
104	3,980,965.9	4,482,661.1	-	STAGING AREA
105	3,980,965.9	4,482,706.3	-	STAGING AREA
106	3,981,085.9	4,482,706.3	-	STAGING AREA
107	3,980,852.7	4,482,730.3	1,409.0	CL TOP OF PERMEABLE ROCK BARRIER
108	3,980,829.5	4,482,778.1	1,408.2	OVERFLOW NOTCH
109	3,980,794.7	4,482,850.1	1,408.2	OVERFLOW NOTCH
110	3,980,765.1	4,482,911.4	1,409.0	CL TOP OF PERMEABLE ROCK BARRIER
111	3,980,688.0	4,482,982.9	1,409.0	CL TOP OF WETLAND 3 DIKE
112	3,980,633.7	4,483,085.0	1,409.0	CL TOP OF WETLAND 3 DIKE
113	3,980,567.1	4,483,253.1	1,409.0	CL TOP OF WETLAND 3 DIKE
114	3,980,809.6	4,482,726.9	1,406.4	TOE OF GRADING
115	3,980,882.0	4,482,761.9	1,406.4	TOE OF GRADING
116	3,980,808.1	4,482,914.9	1,406.4	TOE OF GRADING
117	3,980,735.7	4,482,879.9	1,406.4	TOE OF GRADING

NOTES:

- ALL DISTURBED AREAS SHALL BE SEEDED AND COVERED WITH MULCH, UNLESS OTHERWISE INDICATED. INSTALL TEMPORARY ROLLED EROSION CONTROL PRODUCT RECIP TYPE 2.C ON ALL FILL SLOPES GREATER THAN 10:1.
- USE ON-SITE MATERIAL FOR FILL. BORROW FROM THE NEAREST AVAILABLE EXCAVATION, INCLUDING THE ROCK BARRIER AND WETLAND CONNECTION DITCH.



E PERMEABLE ROCK BARRIER AND DIKE PROFILE
 HORIZONTAL SCALE: 1" = 30'
 VERTICAL SCALE: 1" = 6'

NO.	DATE	BY	DESCRIPTION

CENTER LAKE
 FISH BARRIER SYSTEM AND SHORELINE RESTORATION
 DICKINSON COUNTY, IOWA

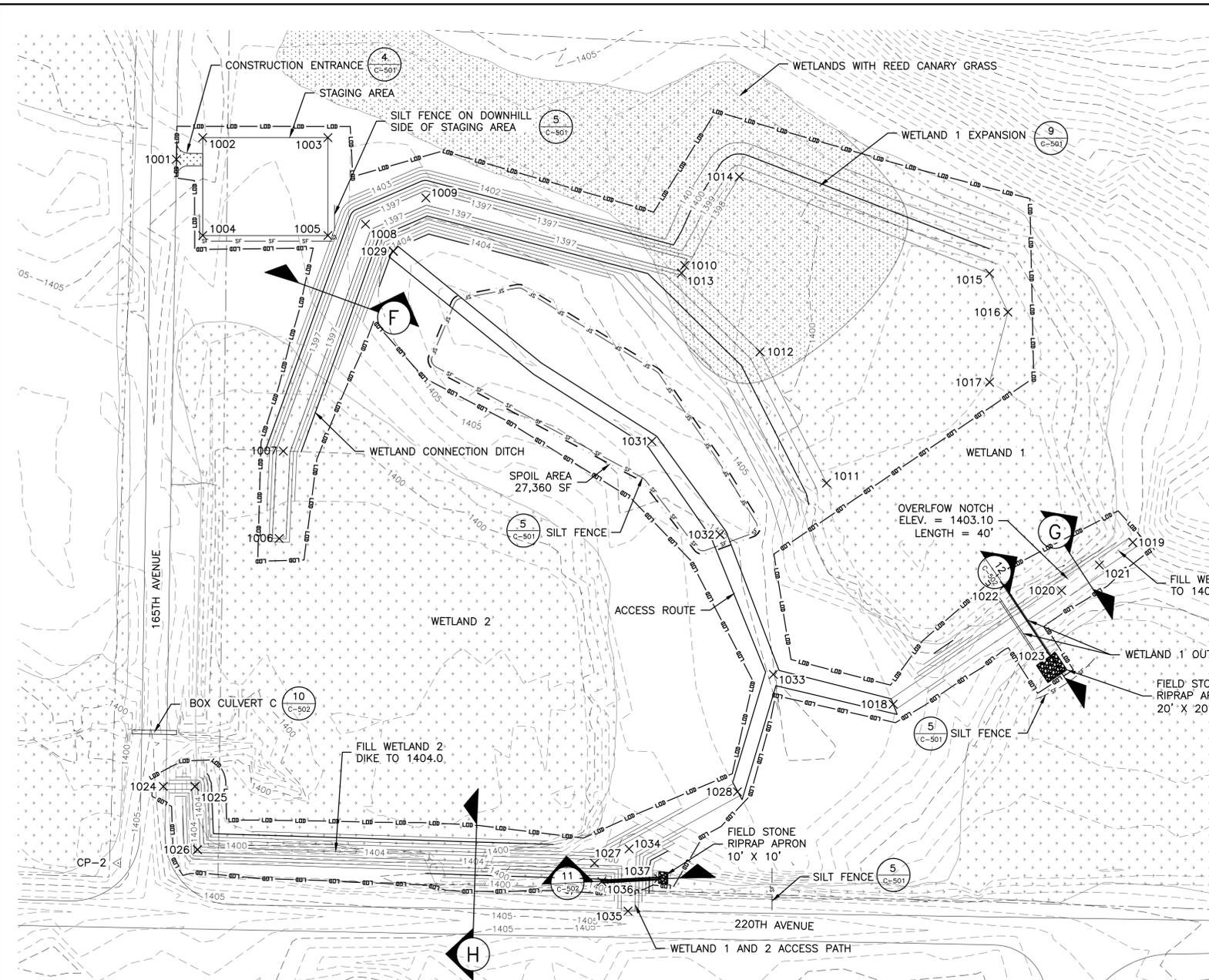
WETLAND 3 PROPOSED IMPROVEMENTS



EA ENGINEERING,
 SCIENCE, AND
 TECHNOLOGY, INC., PBC
 221 Sun Valley Boulevard
 Suite D
 Lincoln, Nebraska 68528
 (402) 476-3766

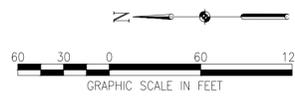
DATE	JULY 2016
DESIGNED BY	NDD
DRAWN BY	JRM
CHECKED BY	JMT
PROJECT MANAGER	LLR
PROJECT NUMBER	1531301
SCALE	AS SHOWN
FILE NAME	FISH BARRIER IMPROVMENT.DWG
DRAWING NUMBER	C-105
SHEET NUMBER	7 OF 10

FILE PATH: F:\STATE & LOCAL\STATE & LOCAL\STATE PROJECTS\1531301 - CENTER LAKE\ADD\FIGURES\WETLAND 3 IMPROVEMENTS.DWG [WETLAND 3 PROPOSED IMPROVEMENTS] 7/6/16.rvt



CONTOUR SOURCE: EA SURVEY NOV. 3-4, 2015
 LIDAR CONTOURS: IOWA DNR, CREATED 07-26-2013

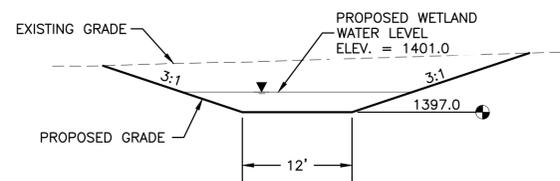
WETLANDS 1 AND 2 PROPOSED IMPROVEMENTS - PLAN VIEW



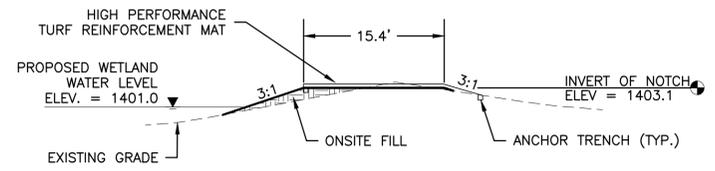
CONSTRUCTION STAKING POINTS

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
1001	3,980,229.3	4,483,260.2	-	CONSTRUCTION ENTRANCE
1002	3,980,206.2	4,483,279.1	-	STAGING AREA
1003	3,980,096.2	4,483,279.1	-	STAGING AREA
1004	3,980,206.2	4,483,193.4	-	STAGING AREA
1005	3,980,096.2	4,483,193.4	-	STAGING AREA
1006	3,980,139.0	4,482,928.0	1,397.0	CL WETLAND CONNECTION DITCH
1007	3,980,135.4	4,483,004.6	1,397.0	CL WETLAND CONNECTION DITCH
1008	3,980,063.3	4,483,203.3	1,397.0	CL WETLAND CONNECTION DITCH
1009	3,980,010.2	4,483,226.4	1,397.0	CL WETLAND CONNECTION DITCH
1010	3,979,783.1	4,483,167.2	1,397.0	CL WETLAND CONNECTION DITCH
1011	3,979,658.5	4,482,976.6	1,398.0	BOTTOM OF WETLAND 1 EXPANSION
1012	3,979,716.9	4,483,091.6	1,398.0	BOTTOM OF WETLAND 1 EXPANSION
1013	3,979,785.9	4,483,160.5	1,398.0	BOTTOM OF WETLAND 1 EXPANSION
1014	3,979,735.0	4,483,245.0	1,398.0	BOTTOM OF WETLAND 1 EXPANSION
1015	3,979,515.3	4,483,160.3	1,398.0	BOTTOM OF WETLAND 1 EXPANSION
1016	3,979,499.2	4,483,126.2	1,398.0	BOTTOM OF WETLAND 1 EXPANSION
1017	3,979,515.3	4,483,064.9	1,398.0	BOTTOM OF WETLAND 1 EXPANSION
1018	3,979,600.0	4,482,782.8	1,404.0	CL TOP OF WETLAND 1 DIKE AND ACCESS PATH
1019	3,979,389.6	4,482,924.6	1,404.0	CL TOP OF WETLAND 1 DIKE
1020	3,979,452.1	4,482,882.4	1,403.1	WETLAND 1 OVERFLOW NOTCH
1021	3,979,418.9	4,482,904.8	1,403.1	WETLAND 1 OVERFLOW NOTCH
1022	3,979,502.5	4,482,886.7	1,398.2	WETLAND 1 OUTLET STRUCTURE
1023	3,979,461.8	4,482,825.0	1,398.0	WETLAND 1 OUTLET STRUCTURE
1024	3,980,240.7	4,482,710.8	1,404.0	CL TOP OF WETLAND 2 DIKE REPAIR
1025	3,980,213.0	4,482,710.8	1,404.0	CL TOP OF WETLAND 2 DIKE REPAIR
1026	3,980,210.8	4,482,655.4	1,404.0	CL TOP OF WETLAND 2 DIKE REPAIR
1027	3,979,862.2	4,482,643.6	1,404.0	CL TOP OF WETLAND 2 DIKE REPAIR
1028	3,979,736.7	4,482,706.2	1,404.0	CL TOP OF WETLAND 2 DIKE REPAIR AND ACCESS PATH
1029	3,980,038.8	4,483,179.5	-	CL ACCESS PATH
1030	3,979,912.2	4,483,076.8	-	CL ACCESS PATH
1031	3,979,811.8	4,483,013.2	-	CL ACCESS PATH
1032	3,979,752.0	4,482,931.4	-	CL ACCESS PATH
1033	3,979,705.1	4,482,808.9	-	CL ACCESS PATH
1034	3,979,831.8	4,482,656.2	1,404.0	CL TOP OF WETLAND 1 AND 2 ACCESS PATH
1036	3,979,832.8	4,482,601.7	1,404.0	CL TOP OF WETLAND 1 AND 2 ACCESS PATH
1037	3,979,855.7	4,482,627.5	1,399.5	CL INLET DITCH PIPE
1038	3,979,805.9	4,482,630.2	1,398.0	CL OUTLET DITCH PIPE

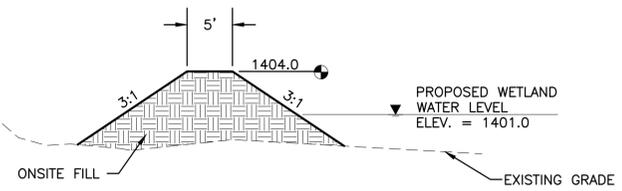
- NOTES:
1. WETLAND 1 WILL BE DEWATERED BY THE OWNER TO THE EXTENT POSSIBLE.
 2. ALL DISTURBED AREAS SHALL BE SEEDED AND COVERED WITH MULCH, UNLESS OTHERWISE INDICATED. INSTALL TEMPORARY ROLLED EROSION CONTROL PRODUCT RECP TYPE 2.C ON ALL FILL SLOPES GREATER THAN 10:1.
 3. USE ON-SITE MATERIAL FOR FILL. BORROW FROM THE NEAREST AVAILABLE EXCAVATION.



F WETLAND CONNECTION DITCH TYPICAL SECTION
 NOT TO SCALE



G WETLAND 1 DIKE OVERFLOW NOTCH TYPICAL SECTION
 NOT TO SCALE



H WETLAND 2 DIKE REPAIR TYPICAL SECTION
 NOT TO SCALE

NO.	DATE	BY	DESCRIPTION

CENTER LAKE
 FISH BARRIER SYSTEM AND SHORELINE RESTORATION
 DICKINSON COUNTY, IOWA

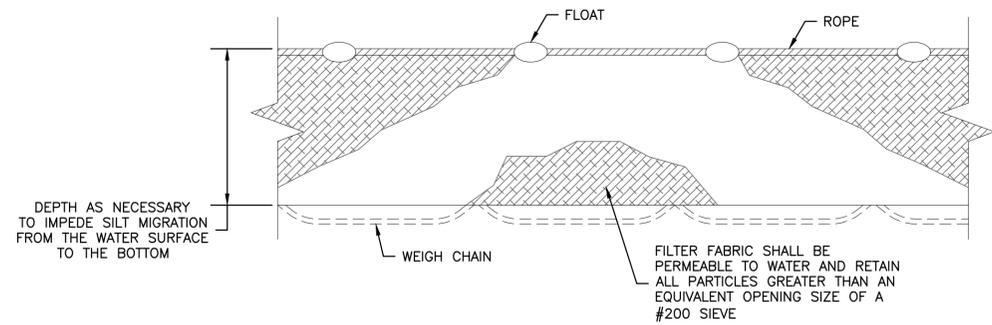
WETLANDS 1 AND 2 PROPOSED IMPROVEMENTS



EA ENGINEERING,
 SCIENCE, AND
 TECHNOLOGY, INC., PBC
 221 Sun Valley Boulevard
 Suite D
 Lincoln, Nebraska 68528
 (402) 476-3766

DATE	JULY 2016
DESIGNED BY	NDD
DRAWN BY	JRM
CHECKED BY	JMT
PROJECT MANAGER	LLR
PROJECT NUMBER	1531301
SCALE	AS SHOWN
FILE NAME	WETLAND IMPROVEMENT.DWG
DRAWING NUMBER	C-106
SHEET NUMBER	8 OF 10

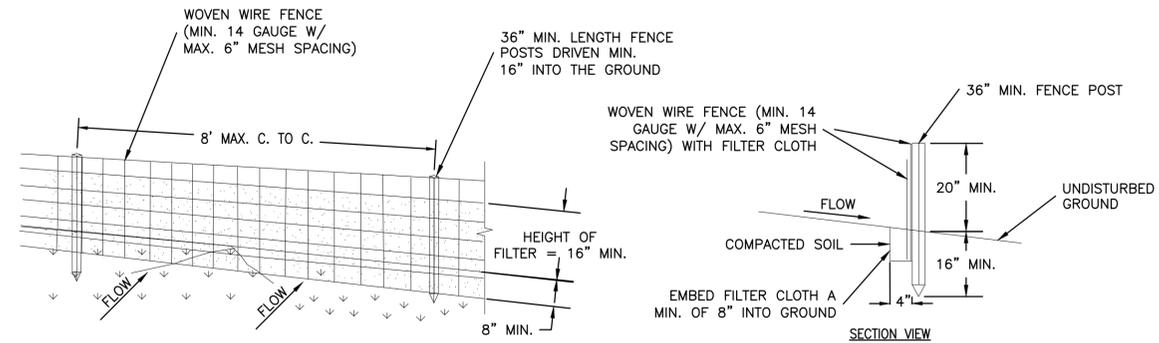
FILE PATH: F:\STATE & LOCAL\STATE & LOCAL\STATE\IOWA\DEPT OF NATURAL RESOURCES\PROJECTS\1531301 - CENTER LAKE\CAD\FIGURES\WETLAND PROPOSED IMPROVEMENTS.DWG [WETLAND PROPOSED IMPROVEMENTS] 7/6/16 RMR



3 FLOATING SILT CURTAIN DETAIL

C-103
NOT TO SCALE
C-104

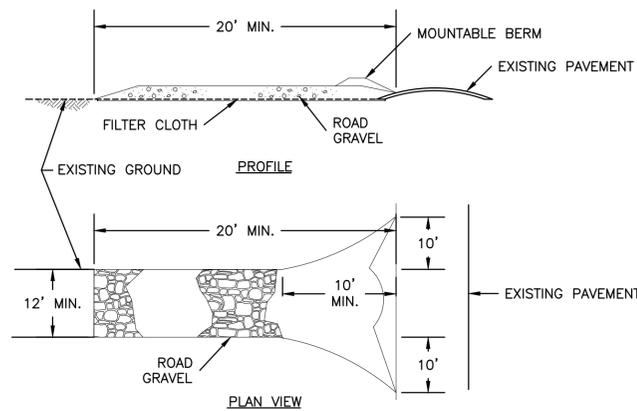
- NOTE:**
- ONE FLOATING SILT CURTAIN SHALL BE USED FOR THE PROJECT. MOVE ALONG SHORELINE AS REPAIR PROGRESSES.



5 TEMPORARY SILT FENCE DETAIL

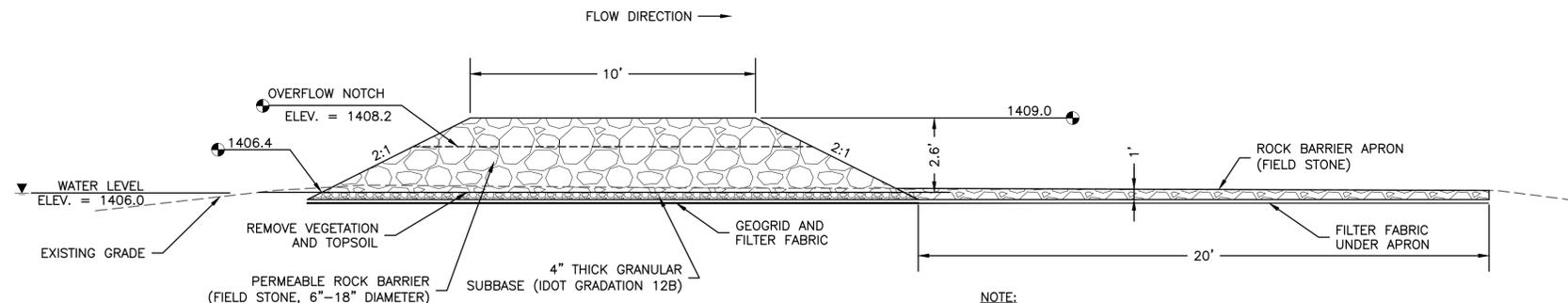
C-103
NOT TO SCALE
C-105
C-106

- NOTES:**
- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD WITH A MINIMUM CROSS-SECTIONAL AREA OF 3 SQUARE INCHES.
 - FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH SPACED EVERY 24" AT TOP, MID SECTION, AND BOTTOM. FENCE SHALL BE WOVEN WIRE, 14 GAUGE, 6" MAXIMUM MESH OPENING.
 - WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
 - PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
 - MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
 - ANY TORN SILT FENCE CLOTH SECTIONS SHALL BE REPLACED BY THE CONTRACTOR IMMEDIATELY.



4 STABILIZED CONSTRUCTION ENTRANCE

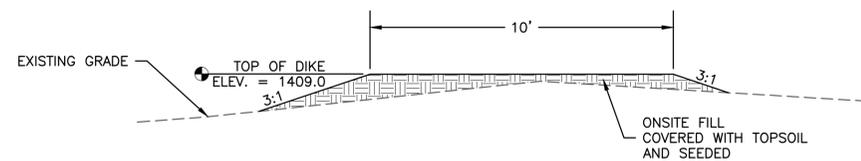
C-103
NOT TO SCALE
C-105
C-106



7 PERMEABLE ROCK BARRIER SECTION

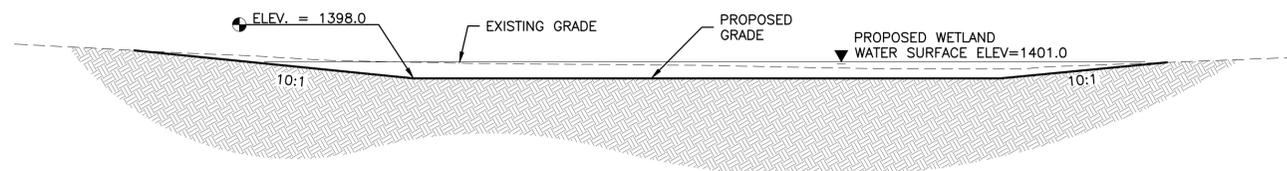
C-105
NOT TO SCALE

- NOTE:**
- FIELD STONE NOT MEETING GRADATION REQUIREMENTS WILL BE REJECTED.



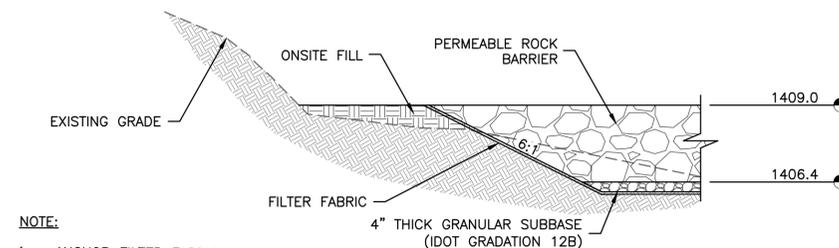
6 WETLAND 3 DIKE SECTION

C-105
NOT TO SCALE



9 WETLAND 1 EXPANSION DETAIL

C-106
NOT TO SCALE



8 PERMEABLE ROCK BARRIER DETAIL

C-105
NOT TO SCALE

- NOTE:**
- ANCHOR FILTER FABRIC AT FRONT EDGE OF BARRIER AGAINST WETLAND. ONLY ON SLOPE.

REVISIONS		DESCRIPTION
NO.	DATE	BY

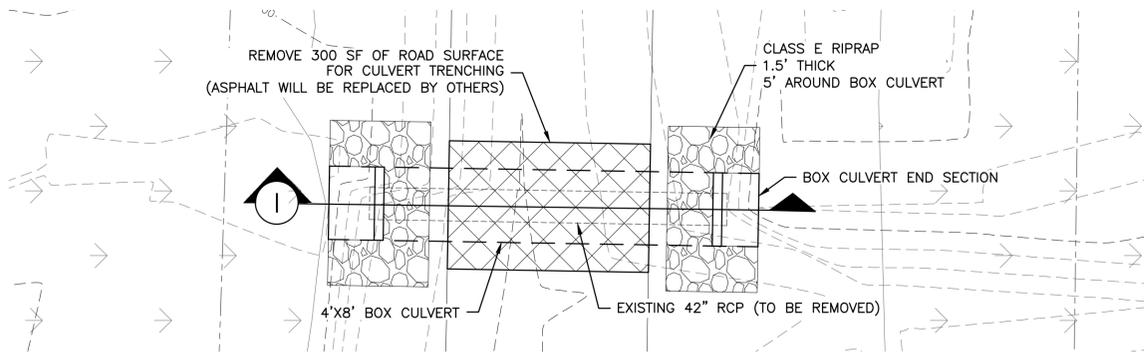
CENTER LAKE
FISH BARRIER SYSTEM AND SHORELINE RESTORATION
DICKINSON COUNTY, IOWA

DETAILS 1

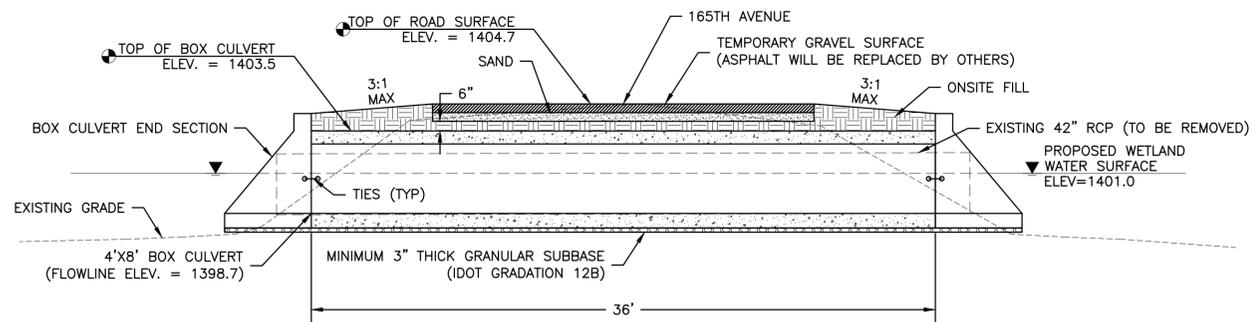
EA
EA ENGINEERING,
SCIENCE, AND
TECHNOLOGY, INC., PBC
221 Sun Valley Boulevard
Suite D
Lincoln, Nebraska 68528
(402) 476-3766

DATE	JULY 2016
DESIGNED BY	NDD
DRAWN BY	JRM
CHECKED BY	JMT
PROJECT MANAGER	LLR
PROJECT NUMBER	1531301
SCALE	AS SHOWN
FILE NAME	FISH BARRIER DETAILS.DWG
DRAWING NUMBER	C-501
SHEET NUMBER	9 OF 10

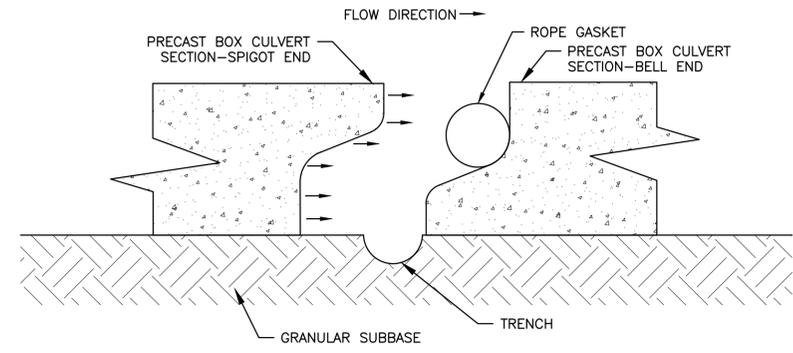
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10 **CULVERT C - PLAN VIEW**
C-106 SCALE: 1" = 10'



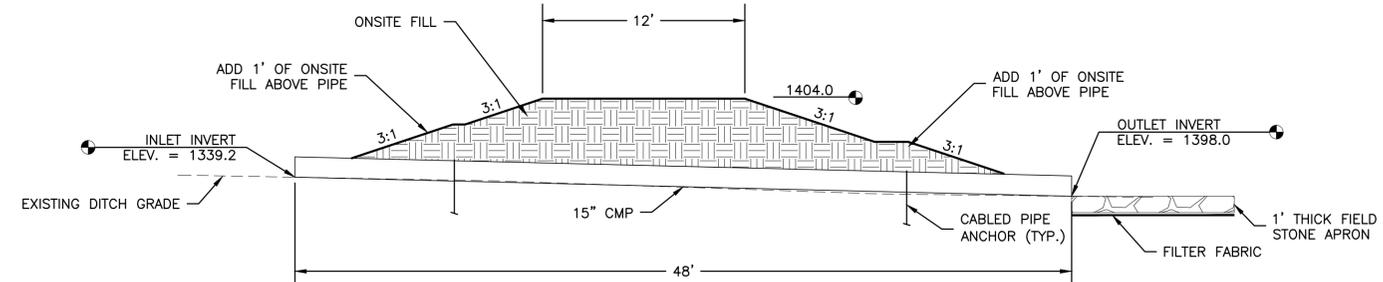
1 **CULVERT C - SECTION**
NOT TO SCALE



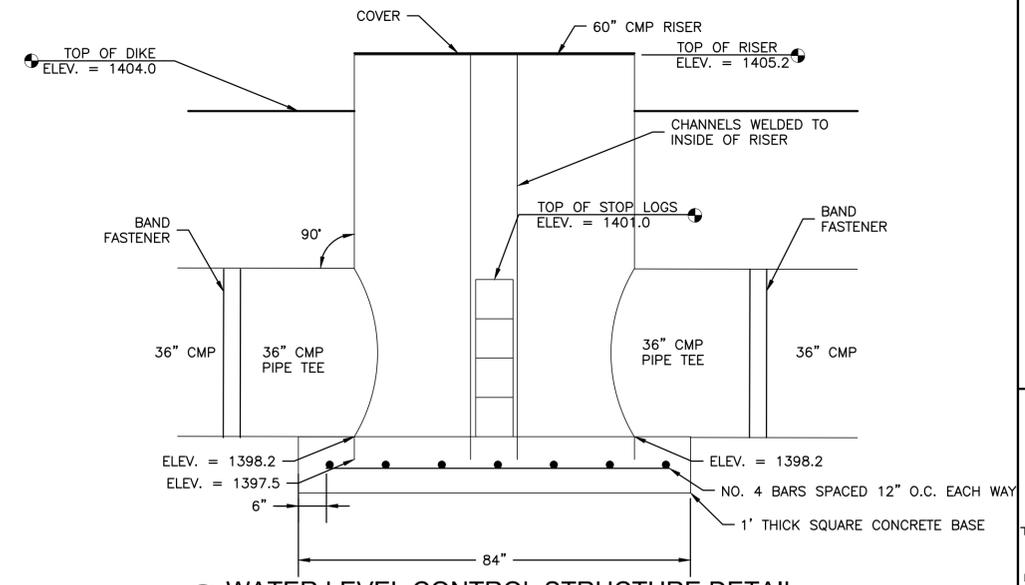
BOX CULVERT - INSTALLATION DETAIL
NOT TO SCALE

CONSTRUCTION NOTES:

1. GRANULAR SUBBASE SHALL BE CAREFULLY INSPECTED TO ENSURE NO DIPS OR MOUNDS EXIST THAT WOULD PUT EXCESS PRESSURE ON THE BOX WHEN INSTALLED.
2. GRANULAR SUBBASE THICKNESS SHALL BE AT LEAST 3".
3. FILL SHALL BE COMPACTED ON THE SIDES AND ABOVE THE BOX TO PROVIDE UNIFORM SUPPORT AND PRESSURE ALONG THE LENGTH OF THE BOX.
4. DURING CONNECTION OF BOX SECTIONS, A SMALL TRENCH SHALL BE MADE ALONG THE JOINT TO COLLECT CRUSHED ROCK BASE THAT WOULD OTHERWISE BE PULLED INTO THE JOINT.
5. THE BOX SHALL BE CONSTRUCTED FROM THE OUTLET END TOWARDS THE INLET END, WITH THE BELL END OF EACH CULVERT SECTION FACING UPSTREAM.
6. ROPE GASKET SHALL BE INSTALLED IN THE JOINT BETWEEN CULVERT SECTIONS. IT SHALL BE PLACED ALONG THE BOTTOM AND AT LEAST HALFWAY UP THE SIDES OF THE CULVERT SECTION JOINT.
7. WRAP OUTSIDE OF CULVERT JOINTS WITH POLYOLEFIN BACKED EXTERIOR JOINT WRAP.
8. FASTEN CULVERT SECTIONS TOGETHER WITH 1" ADJUSTABLE TIES OR U-TIES.
9. USE ONSITE FILL TO BACKFILL ON SIDES AND ABOVE CULVERT. COMPACT BACKFILL IN LIFTS OF 6" OR LESS.
10. PLACE AT LEAST 6" OF SAND AS SUBGRADE.
11. PLACE TEMPORARY GRAVEL OVER SAND SUBGRADE. TRANSITION SMOOTHLY TO EXISTING ROAD.

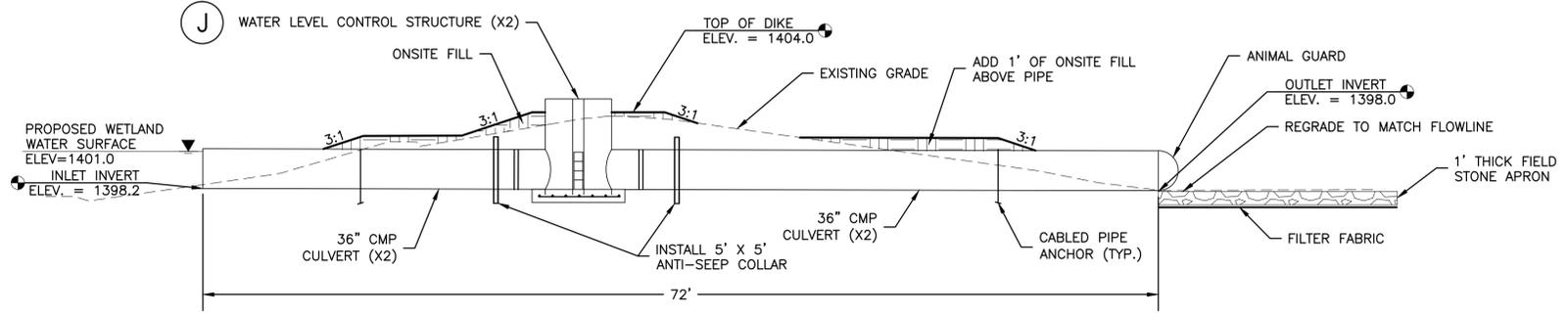


11 **WETLAND 1 AND 2 ACCESS PATH SECTION**
C-106 NOT TO SCALE



J **WATER LEVEL CONTROL STRUCTURE DETAIL**
NOT TO SCALE

- NOTES:
1. SEE TECHNICAL SPECIFICATIONS FOR ADDITIONAL MATERIAL AND INSTALLATION INFORMATION FOR 60" CMP RISER.
 2. ONLY ONE TYPE OF COATING SHALL BE USED IN EACH INSTALLATION.
 3. ALL ANGLES AND BARS TO BE SECURELY WELDED AS SHOWN ON THE PLANS IN ACCORDANCE WITH SPECIFICATIONS.
 4. ALL WELDS AND HEAT AFFECTED AREAS ON GALVANIZED METAL TO BE TREATED IN ACCORDANCE WITH SPECIFICATIONS.



12 **WETLAND 1 OUTLET STRUCTURE**
C-106 NOT TO SCALE

- NOTE:
1. INSTALL TWO WETLAND 1 OUTLET STRUCTURES IN PARALLEL, SPACED 10' APART ON CENTER.

NO.	DATE	BY	DESCRIPTION

CENTER LAKE
FISH BARRIER SYSTEM AND SHORELINE RESTORATION
DICKINSON COUNTY, IOWA

DETAILS II



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SCALE	AS SHOWN
FILE NAME	FISH BARRIER DETAILS.DWG
DRAWING NUMBER	C-502
SHEET NUMBER	10 OF 10

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