



Le Sueur County, MN

Tuesday, October 6, 2015

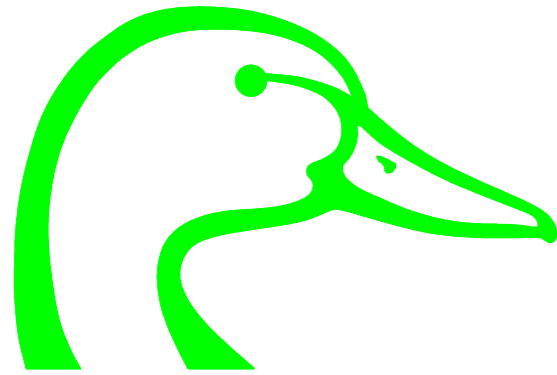
Board Meeting

Item 5

10:00 am Ducks Unlimited (30 min)

RE: Sanborn Lake

Staff Contact:



DUCKS UNLIMITED

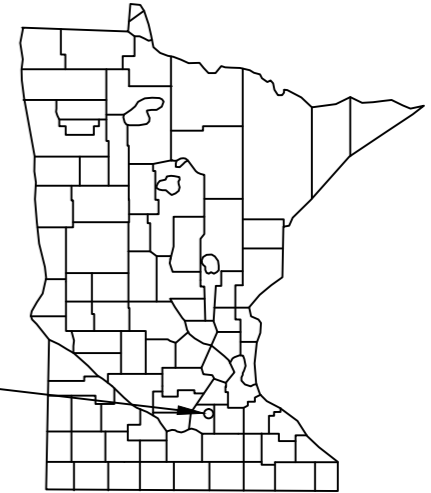
DUCKS UNLIMITED, INC.

SANBORN LAKE

SECTION 26 TOWNSHIP 112N, RANGE 23W
LE SUEUR COUNTY, MN

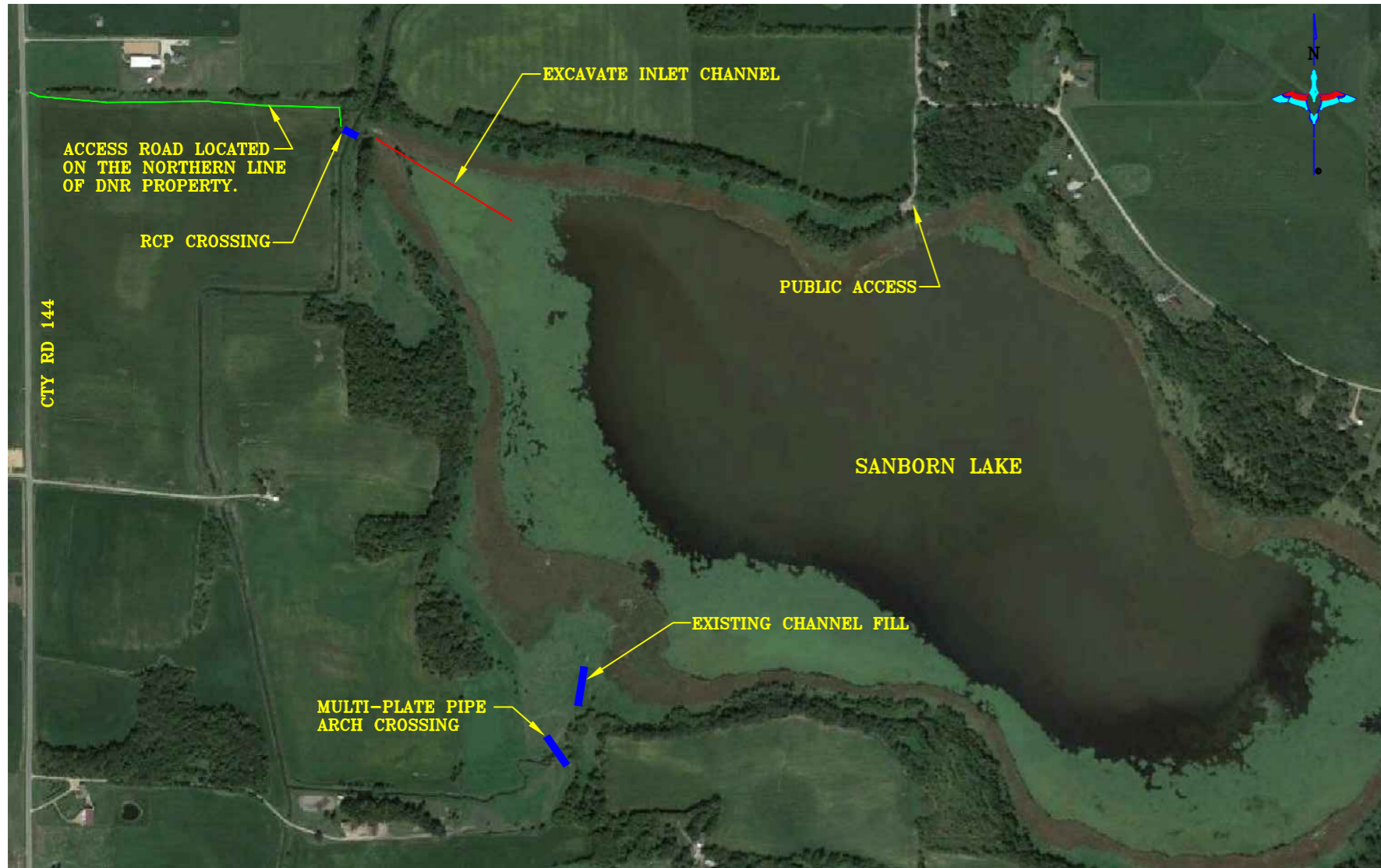
IN COOPERATION WITH

MINNESOTA DEPARTMENT OF NATURAL RESOURCES



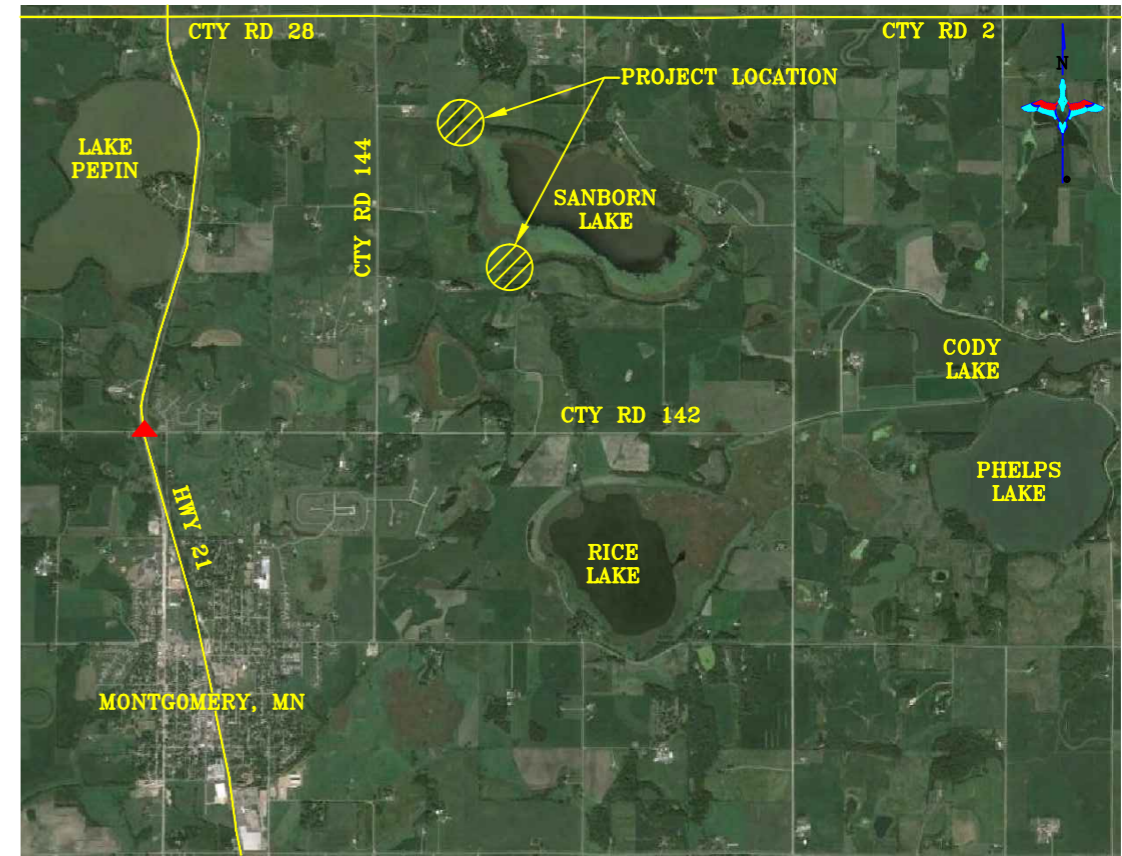
PROJECT LOCATION

MINNESOTA



LOCATION MAP
NOT TO SCALE

MAP POINT "▲" IS LOCATED @ INTERSECTION OF STATE HWY 21 AND COUNTY ROAD 142 (340TH STREET) LOCATED ±1 MILE NORTH OF MONTGOMERY, MN TO SITE FROM MAP POINT: HEAD EAST ON COUNTY ROAD 142 (340TH STREET) ±1 MILE TO INTERSECTION OF COUNTY ROAD 142 & COUNTY ROAD 144. HEAD NORTH ON COUNTY ROAD 144 ±1.5 MILES TO ACCESS POINT ON EAST SIDE OF ROAD. LAT: 44° 28' 45.2" LONG: 93° 33' 59.0"



VICINITY MAP
NOT TO SCALE

PLAN INDEX

- 1 PROJECT LOCATION MAPS
- 2 ESTIMATED QUANTITIES AND CONSTRUCTION NOTES
- 3 PROJECT TOPOGRAPHY
- 4 PLAN & PROFILE RCP CROSSING, DETAILS AND NOTES
- 5 PLAN & PROFILE W.C.S., DETAILS AND NOTES
- 6-9 WATER CONTROL STRUCTURE DETAILS
- 10 STOPLOG STORAGE BOX DETAILS
- 11 PLAN & PROFILE INLET CHANNEL
- 12 PLAN & PROFILE AND MULTI-PLATE PIPE ARCH CROSSING DETAILS
- 13 EXISTING CHANNEL "FILL" DETAILS AND NOTES
- 14 PLAN VIEW EROSION CONTROL
- 15 STORM WATER POLLUTION PREVENTION PLAN

PROJECT CONTACTS:

JOE STANGEL
NICOLLET DNR OFFICE

JIM STREIFEL, P.E.
DU - BISMARCK, ND
701-355-3551

IF THESE PLANS ARE NOT PLOTTED AND/OR REPRODUCED AT THE ORIGINAL SIZE OF 24"x 36" ANY SCALE REFERENCED HEREIN SHOULD BE DISREGARDED AND THE PLANS SHOULD BE CONSIDERED "NOT TO SCALE."

PRELIMINARY

Revision Number	Sheet Number	Revisions	Date	Rv	hereby certify that this plan, specification or report was prepared
		Board Meeting - 10/6/2015			

	PROJECT NO. MN-445-1	DESIGNED BY: JAS
	SANBORN LAKE COVER SHEET	DRAWN BY: MLO
GREAT PLAINS REGIONAL OFFICE	SHEET NO. 1	CHECKED BY: GLJ
DATE: 7-23-2015	APPROVED BY:	APPROVED BY:

ESTIMATED QUANTITIES

NOTE	SPEC.#	ITEM	UNIT	QUANTITY
1	201	MOBILIZATION	L.S	1
2	202	SITE PREPARATION	L.S	1
3	203	EXCAVATION - INLET CHANNEL	L.F.	2,005
	204	EMBANKMENT		
4		MULTI-PLATE PIPE ARCH CROSSING	C.Y.-S	400
5		EXISTING CHANNEL FILL	L.F.	275
	303	CULVERT SUPPLY AND INSTALLATION		
		96"Ø GASKETED, CLASS III, RCP	L.F.	40
		96"Ø GASKETED, CLASS III, SLOPED END	E.A.	2
		48"Ø WELDED STEEL PIPE	L.F.	78
		9'-4"x6'-3" MULTI-PLATE PIPE ARCH	L.F.	48
6	304	CAST-IN-PLACE REINFORCED CONCRETE	C.Y.	2
	305	RIPRAP, REVETMENT, AND AGGREGATE PLACEMENT		
7		DU CLASS II RIPRAP	TDN	274
7		DU CLASS III RIPRAP	TDN	200
8		¾"-1¼" CRUSHED ROCK BEDDING & BACKFILL	TDN	500
9	307	SHEET PILE MATERIAL	S.F.	893
9	307	SHEET PILE INSTALLATION	S.F.	893
10	309	STRUCTURAL STEEL		
		ALUMINUM STOPLOGS	L.S.	1
		GALVANIZED CATWALK COMPONENTS	L.S.	1
		GALVANIZED CHANNEL GUIDES	L.S.	1
		GALVANIZED LIFTING HOOKS	L.S.	1
		GALVANIZED STORAGE BOX	L.S.	1
		PILE CAP	L.S.	1
11	311	REMOVAL OF EXISTING STRUCTURES	L.S.	1
12	401	STORMWATER MANAGEMENT AND POLLUTION CONTROL		
		SILT FENCE	L.F.	1200
		EROSION CONTROL BLANKET	S.Y.	1900
		STORMWATER PERMIT FOR CONSTRUCTION	L.S.	1
		FLOATING SILT FENCE	L.F.	40
13	402	SEEDING & MULCHING	ACRE	3.2
		MISCELLANEOUS		
14		CLEARING & GRUBBING	L.S.	1

RIPRAP SCHEDULE

LOCATION	CLASS II	CLASS III
RCP CROSSING-U-S- SIDE	100 TDN	
RCP CROSSING-D-S- SIDE		200 TDN
W.C.S. UPSTREAM SIDE	34 TDN	
MULTI-PLATE PIPE ARCH CROSSING	140 TDN	

¾"-1¼" CRUSHED ROCK SCHEDULE

LOCATION	¾"-1¼" ROCK
RCP BEDDING & BACKFILL	300 TDN
WSP BEDDING & BACKFILL	100 TDN
MULTI-PLATE BEDDING & BACKFILL	100 TDN

CONSTRUCTION NOTES:

- BID ITEM FOR MOBILIZATION SHALL INCLUDE THE SUPPLY OF ALL LABOR, MATERIAL AND EQUIPMENT TO TRANSPORT ALL NEEDED LABOR, MATERIAL AND EQUIPMENT TO AND FROM A PROJECT SITE TO SUCCESSFULLY COMPLETE THAT PROJECT AS SHOWN ON THE PLANS OR DESCRIBED BY THE ENGINEER.
- SITE PREPARATION BID ITEM SHALL INCLUDE STRIPPING BENEATH BOTH CROSSING SITES, WATER CONTROL STRUCTURE PIPELINE, AND BORROW/SPOIL AREA'S. TOPSOIL SHALL BE STOCKPILED AND REPLACED OVER COMPLETED CROSSINGS, WATER CONTROL STRUCTURE PIPELINE, BORROW/SPOIL AREA AND CHANNEL SIDES LOPEs. BID ITEM SHALL INCLUDE LEVELING AND DRAGGING OR DISK PRIOR TO PLACEMENT OF SEED MIX.
- BID ITEM FOR INLET CHANNEL EXCAVATION SHALL INCLUDE ALL WORK REQUIRED TO EXCAVATE THE INLET CHANNEL AS SHOWN ON THE PLANS. ALL SPOIL MATERIAL MUST BE REMOVED FROM ANY WETLAND AREA AND DEPOSITED IN THE DESIGNATED SPOIL AREA AS SHOWN ON SHEET 3. A SECOND MOBILIZATION MAY BE REQUIRED TO COMPLETE INLET CHANNEL EXCAVATION FOLLOWING DRAW DOWN OF LAKE LEVELS. SPOIL MATERIAL SHALL BE LEVELED AND TOPSOIL PLACED OVER COMPLETED SURFACE. PAYMENT IS BASED ON LINEAR FEET, CONTRACTOR WILL ONLY BE PAID FOR THE EXACT AMOUNT OF FINISHED CHANNEL EXCAVATED IN THE FIELD.
- BID ITEM FOR EMBANKMENT (MULTI-PLATE PIPE ARCH CROSSING) SHALL INCLUDE ALL WORK REQUIRED TO HAUL, PLACE AND COMPACT FILL MATERIAL TO CONSTRUCT CROSSING AS STAKED IN THE FIELD. THE ESTIMATED QUANTITY OF 400 C.Y.-S INCLUDES 15% ESTIMATED SHRINKAGE. IF WATER IS REQUIRED TO OBTAIN THE SPECIFIED COMPACTION OF 95% OF THE STANDARD PROCTOR, IT WILL BE CONSIDERED INCIDENTAL TO THE EMBANKMENT BID ITEM. DUE TO INSUFFICIENT SURVEY DATA PAYMENT WILL BE BASED ON CUBIC YARD STAKED QUANTITY. THE DU FIELD ENGINEER WILL STAKE CROSSING PRIOR TO CONSTRUCTION AND DETERMINE EXACT QUANTITY IN THE FIELD. MATERIAL SHALL BE OBTAINED FROM THE DESIGNATED BORROW AREA AS SHOWN ON SHEET 13.
- BID ITEM FOR EMBANKMENT (EXISTING CHANNEL FILL) SHALL INCLUDE ALL WORK REQUIRED TO STRIP TOPSOIL, STOCKPILE, HAUL, PLACE AND COMPACT NEW FILL IN EXISTING CHANNEL. THIS ALSO INCLUDES RE-TOPSOILING EXISTING CHANNEL. PAYMENT IS BASED ON LINEAR FEET, CONTRACTOR WILL ONLY BE PAID FOR THE AMOUNT OF LINEAR FEET AS DETERMINED IN THE FIELD.
- BID ITEM FOR CAST-IN-PLACE CONCRETE SHALL INCLUDE: MATERIALS AND INSTALLATION OF THE CONCRETE FLOOR AS DETAILED ON SHEET 8. THIS INCLUDES DOWELS, REBAR, & CONCRETE.
- BID ITEM FOR RIPRAP DU CLASS II & III IS AS SHOWN ON THE PLANS AND RIPRAP SCHEDULE. THIS SHEET. NON-WOVEN FILTER FABRIC IS REQUIRED BENEATH ALL ROCK RIPRAP AND SHALL BE SECURED TO SLOPES AND BOTTOM USING PINS AS NOTED IN SPECIFICATION 305. EXCAVATION REQUIRED FOR ROCK RIPRAP AND PLACEMENT SHALL ALSO BE PAID FOR UNDER THIS LINE ITEM. CONTRACTOR WILL BE PAID FOR THE ACTUAL QUANTITY INSTALLED. QUANTITIES ARE BASED ON TONS, CONTRACTOR SHALL PROVIDE SCALE TICKETS WITH WEIGHTS INCLUDING TARE WEIGHTS, GROSS WEIGHTS, AND NET WEIGHTS OF MATERIAL DELIVERED. RIPRAP SUPPLY SOURCE SHALL BE IDENTIFIED FOR INSPECTION BY THE MNDNR FOR INVASIVE SPECIES PRIOR TO TRANSPORTING ONSITE.
- BID ITEM FOR ¾"-1¼" CRUSHED ROCK BEDDING & BACKFILL SHALL INCLUDE MATERIALS, HAULING, PLACING, AND COMPACTING. QUANTITY IS BASED ON TONS, CONTRACTOR SHALL PROVIDE SCALE TICKETS WITH WEIGHTS INCLUDING TARE WEIGHTS, GROSS WEIGHTS, AND NET WEIGHTS OF MATERIAL DELIVERED.
- SHEET PILE MATERIAL SHALL BE PZ-22, HOT ROLLED OR APPROVED EQUAL. MINIMUM THICKNESS OF 0.375" (¾") AND MINIMUM SECTION MODULUS 18.1³.
- BID ITEMS FOR STRUCTURAL STEEL SHALL INCLUDE ALL INDIVIDUAL LINE ITEMS LISTED UNDER THIS HEADING AND INCLUDE ALL MATERIALS AND LABOR REQUIRED FOR COMPLETE INSTALLATION AS SHOWN ON THE PLANS. ANY GALVANIZED ITEMS LISTED REQUIRING FIELD WELDING SHALL BE RE-PAINTED WITH A COLD GALVANIZED SPRAY.
- BID ITEM FOR REMOVAL OF EXISTING STRUCTURES SHALL BE FOR REMOVING AND DISPOSING OFF-SITE THE EXISTING 72"Ø CMP AT MULTI-PLATE PIPE ARCH CROSSING AND THE EXISTING 96"Ø RISERS AND BARRELS. SUCH MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL OFF-SITE. ANY EXISTING ROCK AT THIS LOCATION SHALL BE SALVAGED AND RE-INSTALLED UNDER THIS LINE ITEM.
- THE BID ITEM FOR STORM WATER MANAGEMENT AND POLLUTION CONTROL SHALL INCLUDE THE SUPPLY, INSTALLATION AND MAINTENANCE OF SILT FENCE, MNDOT CATEGORY 3 EROSION CONTROL BLANKET, AND FLOATING SILT FENCE. EXACT LOCATION AND QUANTITY MAY VARY DEPENDING UPON ACTUAL SITE CONDITIONS. EROSION CONTROL MEASURES SHALL BE INSTALLED CONCURRENTLY OR WITHIN 24 HOURS AFTER THE START OF WORK AND WILL BE MAINTAINED FOR THE DURATION OF THE PROJECT. CONTRACTOR WILL BE PAID AT THE UNIT PRICE BID FOR THE ACTUAL QUANTITY INSTALLED. IT IS THE CONTRACTORS RESPONSIBILITY TO INSTALL, INSPECT AND MAINTAIN THE BEST MANAGEMENT PRACTICE MEASURES REQUIRED TO PREVENT SILT AND POLLUTION RUNOFF. IF ADDITIONAL ITEMS NOT LISTED ON THE UNIT PRICE TABLE ARE NEEDED, THOSE SHALL BE CONSIDERED EXTRA WORK. THE CONTRACTOR WILL ALSO BE REQUIRED TO OBTAIN THE STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES PRIOR TO THE START OF THE CONSTRUCTION.
- BID ITEM SEEDING AND MULCHING SHALL INCLUDE THE EQUIPMENT AND LABOR REQUIRED TO LEVEL AND PREPARE TOPSOIL FOR SEEDING AND MULCHING IN ALL DISTURBED AREAS. THE CONTRACTOR WILL PROVIDE THE LOCAL ECO-TYPE SEED MIXTURE AND BE RESPONSIBLE FOR PLACING SEED IN ACCORDANCE WITH DU SPECIFICATION 402. MNDOT TYPE 1 MULCH SHALL BE APPLIED TO ALL AREAS SEEDED AS DIRECTED BY THE DU FIELD ENGINEER. PAYMENT WILL BE BASED ON ACTUAL ACRES SEEDED AND MULCHED AFTER FINAL COMPLETION OF PROJECT, THIS WILL BE DETERMINED BY DU FIELD ENGINEER.
- BID ITEM FOR CLEARING AND GRUBBING SHALL INCLUDE THE REMOVAL OF TREES AND BRUSH ALONG RCP CROSSING, INLET CHANNEL, WATER CONTROL STRUCTURE, MULTI-PLATE PIPE ARCH AND CROSSING, BORROW AREAS, AND ANY MISCELLANEOUS AREAS IDENTIFIED BY THE DU FIELD ENGINEER. CONTRACTOR SHALL DISPOSE OF TREES AND BRUSH BY CHIPPING, MARKETING OR STOCKPILING FOR BURNING. SEE PLANS FOR DETAILS.

A NOTE CONCERNING INVASIVE SPECIES REQUIREMENTS

THE MINNESOTA DNR/USFWS OPERATION ORDER 113 REQUIRES PREVENTING OR LIMITING THE INTRODUCTION, ESTABLISHMENT AND SPREAD OF INVASIVE SPECIES DURING ACTIVITIES ON PUBLIC WATER AND USFWS ADMINISTERED LANDS. THE CONTRACTOR SHALL PREVENT INVASIVE SPECIES FROM ENTERING INTO OR SPREADING WITHIN A PROJECT SITE BY CLEANING EQUIPMENT AND CLOTHING PRIOR TO ARRIVING AT THE PROJECT SITE. THE DNR SHALL INSPECT ALL EQUIPMENT AND CLOTHING AT THE STAGING AREA DETERMINED AT THE PRE-CONSTRUCTION MEETING.

IF EQUIPMENT OR CLOTHING ARRIVES AT THE PROJECT SITE WITH SOIL, AGGREGATE MATERIAL, MULCH, VEGETATION (INCLUDING SEEDS) OR ANIMALS, IT SHALL BE CLEANED BY CONTRACTOR FURNISHED TOOL OR EQUIPMENT (BRUSH/BROOM, COMPRESSED AIR, OR PRESSURE WASHER) AT THE STAGING AREA. THE CONTRACTOR SHALL DISPOSE OF MATERIAL CLEANED FROM EQUIPMENT AND CLOTHING AT A LOCATION DETERMINED BY THE OWNER. IF MATERIAL CANNOT BE DISPOSED OF ONSITE, SECURE MATERIAL PRIOR TO TRANSPORT (SEALED CONTAINER, COVERED TRUCK, OR WRAP WITH TARP) AND LEGALLY DISPOSE OF OFFSITE.

IF WORK IS PERFORMED WITHIN A WATER BODY, THE CONTRACTOR SHALL CLEAN EQUIPMENT AND CLOTHING AS NOTED ABOVE, PRIOR TO ENTERING AND LEAVING THE WATER BODY. DRAIN ALL WATER FROM EQUIPMENT WHERE WATER MIGHT BE TRAPPED, SUCH AS TANKS, PUMPS, HOSES, SILT CURTAINS, AND WATER RETAINING COMPONENTS OF BOATS/BARGES.

THE SOURCES OF ALL IMPORTED MATERIAL SHALL BE INSPECTED FOR INVASIVE SPECIES BY THE DNR PRIOR TO TRANSPORTING.

UTILITIES NOTE

BEFORE THE START OF CONSTRUCTION, THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "GOPHER STATE ONE-CALL" AT 800-252-1166 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.

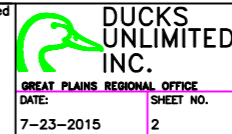
PRELIMINARY

This material, data and information in these plans is the property of Ducks Unlimited, Inc. It may not be used or reproduced for any purpose without the prior written consent of an authorized agent of Ducks Unlimited, Inc. Ducks Unlimited, Inc. makes no representation or warranty of any kind regarding this material, data and information, including, but not limited to, the accuracy of the material, data and information or its suitability for any purpose. All use of the material, data and information is at the users responsibility. Any use of this material, data and information, user agrees that Ducks Unlimited, Inc. is not responsible for their use of the material, data and information or the results thereof.

Revision Number	Sheet Number	Revisions	Date	By	I hereby certify that this plan, specification or report was prepared
		Board Meeting - 10/6/2015			

James A. Streifel, P.E.
for Ducks Unlimited, Inc.
License No. 47359

Date

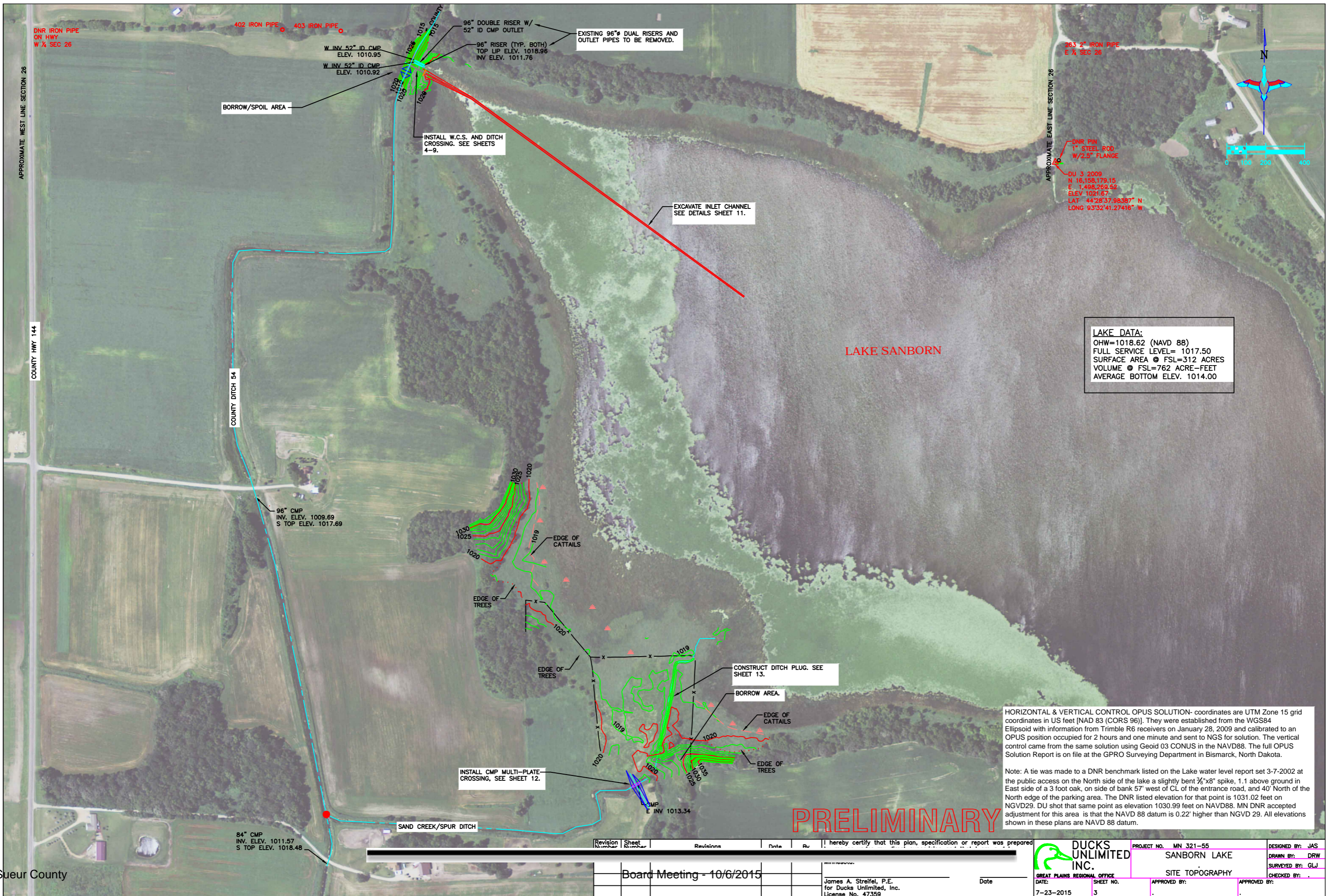


PROJECT NO. MN-445-1
SANBORN LAKE
ESTIMATED QUANTITIES AND
CONSTRUCTION NOTES

DESIGNED BY: JAS
DRAWN BY: MLO
SURVEYED BY: GLJ
CHECKED BY:

GREAT PLAINS REGIONAL OFFICE
DATE: 7-23-2015 SHEET NO. 2

APPROVED BY: APPROVED BY:



LAKE DATA:
 OHW=1018.62 (NAVD 88)
 FULL SERVICE LEVEL= 1017.50
 SURFACE AREA @ FSL=312 ACRES
 VOLUME @ FSL=762 ACRE-Feet
 AVERAGE BOTTOM ELEV. 1014.00

HORIZONTAL & VERTICAL CONTROL OPUS SOLUTION- coordinates are UTM Zone 15 grid coordinates in US feet [NAD 83 (CORS 96)]. They were established from the WGS84 Ellipsoid with information from Trimble R6 receivers on January 28, 2009 and calibrated to an OPUS position occupied for 2 hours and one minute and sent to NGS for solution. The vertical control came from the same solution using Geoid 03 CONUS in the NAVD88. The full OPUS Solution Report is on file at the GPRO Surveying Department in Bismarck, North Dakota.

Note: A tie was made to a DNR benchmark listed on the Lake water level report set 3-7-2002 at the public access on the North side of the lake a slightly bent 3/8"x8" spike, 1.1 above ground in East side of a 3 foot oak, on side of bank 57' west of CL of the entrance road, and 40' North of the North edge of the parking area. The DNR listed elevation for that point is 1031.02 feet on NGVD29. DU shot that same point as elevation 1030.99 feet on NAVD88. MN DNR accepted adjustment for this area is that the NAVD 88 datum is 0.22' higher than NGVD 29. All elevations shown in these plans are NAVD 88 datum.

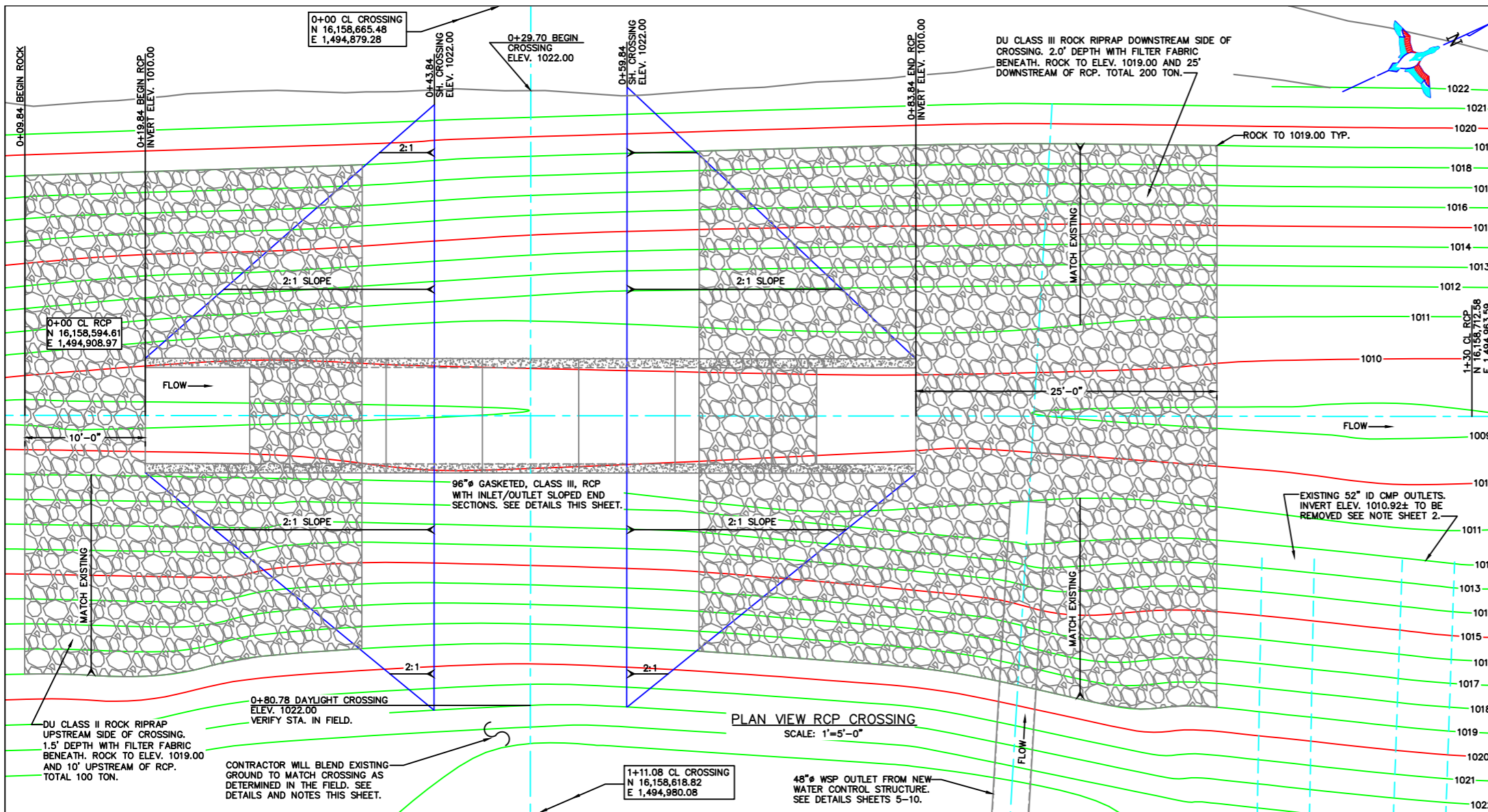
PRELIMINARY

Revision Number	Sheet Number	Revisions	Date	By	I hereby certify that this plan, specification or report was prepared

Board Meeting - 10/6/2015

James A. Streifel, P.E.
 for Ducks Unlimited, Inc.
 License No. 47359

 DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE DATE: 7-23-2015	PROJECT NO. MN 321-55 SANBORN LAKE SITE TOPOGRAPHY	DESIGNED BY: JAS DRAWN BY: DRW SURVEYED BY: GLJ CHECKED BY:
	SHEET NO. 3 APPROVED BY:	APPROVED BY:



SITE PREPARATION NOTE:
 MINIMUM 12" DEPTH TOPSOIL SHALL BE STRIPPED FROM BENEATH THE CROSSING FOOTPRINT AND STOCKPILED PRIOR TO INSTALLING RCP. UPON COMPLETION OF RCP INSTALLATION/CROSSING CONTRACTOR SHALL PLACE MIN. 6" DEPTH TOPSOIL OVER ALL DISTURBED AREAS NOT RECEIVING ROCK RIPRAP. ANY ADDITIONAL SITE PREPARATION WITHIN EXISTING CHANNEL BANKS WILL BE CONSIDERED "EXTRA" AND PAID FOR AS SUCH. ANY ADDITIONAL TOPSOIL SHALL BE WASTED IN BORROW AREA OR AS DIRECTED BY THE DU FIELD ENGINEER.

THE CONTRACTOR SHALL LEVEL ALL TOPSOIL SUITABLE ENOUGH FOR SEEDING & MULCHING, AS DETERMINED BY DU FIELD ENGINEER. PAYMENT FOR STRIPPING, STOCKPILING, REMOVAL/DEPOSITING, AND PLACEMENT SHALL BE PAID FOR BASED ON THE CONTRACTOR'S UNIT BID PRICE FOR "SITE PREPARATION."

BORROW AREA/CROSSING NOTE:
 THE CONTRACTOR WILL BE REQUIRED TO SHAPE EXISTING GROUND TO MATCH NEW CROSSING TOP ELEVATION, THIS SHALL BE SUITABLE ENOUGH FOR VEHICLE TRAFFIC TO CROSS SAFELY AS DETERMINED BY THE DU FIELD ENGINEER. THIS WILL BE MINIMAL WORK ON THE EAST SIDE BUT WILL REQUIRE SOME EXCAVATION AND LEVELING ON THE WEST SIDE. ANY SUITABLE MATERIAL FROM THIS EXCAVATION CAN BE USED AS FILL FOR THE NEW CROSSING. ANY FURTHER FILL REQUIRED SHALL BE TAKEN FROM THE PROPOSED BORROW AREA LOCATED ON THE WEST SIDE OF CROSSING IN THE OPEN FIELD. BORROW AREA IS ALSO DESIGNATED WASTE AREA. CONTRACTOR WILL EXCAVATE TEST HOLES IN ADJACENT FIELD TO FIND SUFFICIENT BACKFILL MATERIAL. AS DETERMINED BY THE DU FIELD ENGINEER. FILL MATERIAL SHALL BE PLACED AND COMPACTED AS DESCRIBED IN EMBANKMENT SPECIFICATION 204. CONTRACTOR SHALL BLEND BORROW AREA INTO THE EXISTING LANDSCAPE TO THE EXTENT POSSIBLE AND LEVEL SUITABLE ENOUGH FOR SEEDING & MULCHING.

ALL WORK REQUIRED TO BLEND NEW CROSSING INTO EXISTING GROUND, FILL MATERIAL FOR CROSSING/RCP BACKFILL, EXCAVATION, HAULING, DEPOSITING, AND PLACEMENT SHALL BE CONSIDERED "INCIDENTAL" TO RCP INSTALLATION.

COFFERDAM NOTE:
 THE CONTRACTOR WILL LIKELY NEED A COFFERDAM ON BOTH THE UPSTREAM AND DOWNSTREAM SIDES OF EXISTING CHANNEL IN ORDER TO INSTALL RCP CROSSING AND RIPRAP. COFFERDAM MATERIAL SHALL BE TAKEN FROM BORROW AREA AS NOTED ABOVE. ANY MATERIAL PLACED WITHIN THE EXISTING CHANNEL FOR "COFFERDAM" SHALL BE REMOVED ENTIRELY AFTER INSTALLATION OF THE VARIOUS COMPONENTS.

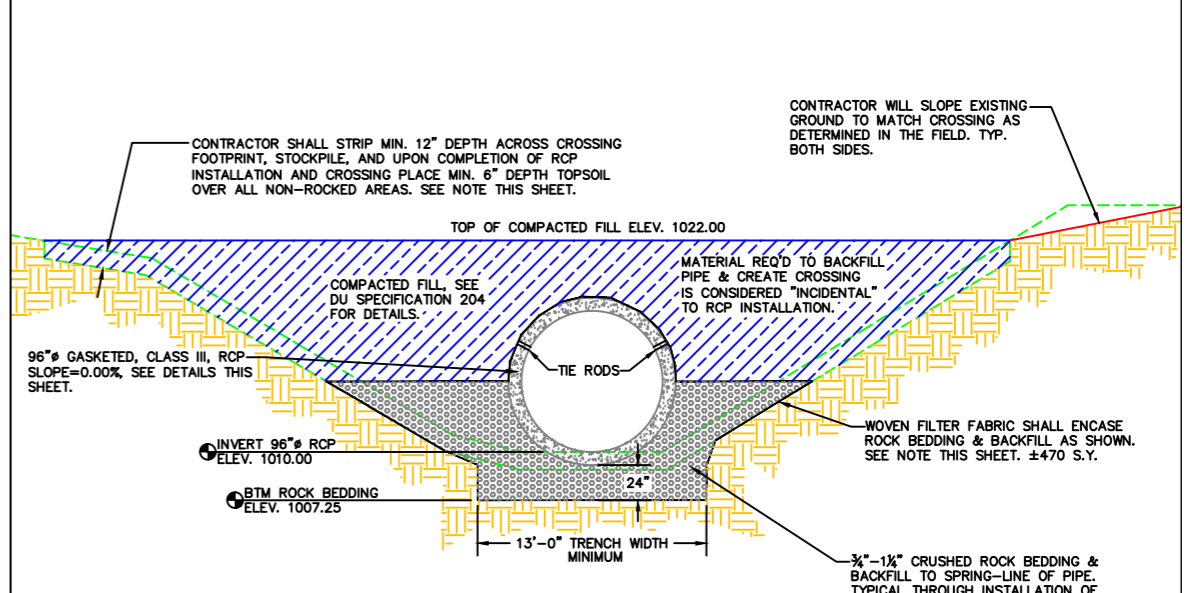
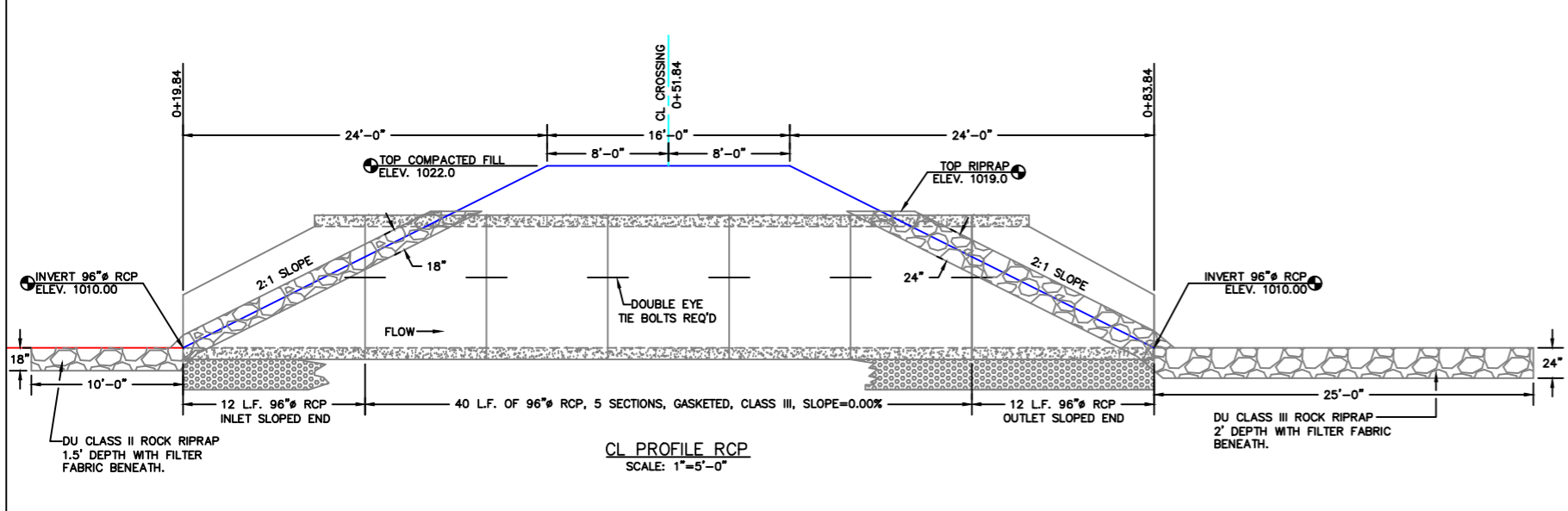
ALL COFFERDAM WORK IS CONSIDERED "INCIDENTAL" TO RCP INSTALLATION.

RIPRAP NOTE:
 DU CLASS II ROCK RIPRAP SHALL BE INSTALLED ON THE UPSTREAM SIDE OF THE RCP, 1.5' DEPTH WITH FILTER FABRIC BENEATH. CONTRACTOR WILL RIPRAP 10' UPSTREAM OF PIPE AND SIDE SLOPES TO ELEVATION 1019.00 AS SHOWN. ROCK SHALL BE MACHINE COMPACTED TO ENSURE A STABLE/UNIFORM LOOK. ALL EXCAVATION REQUIRED FOR ROCK RIPRAP SHALL BE CONSIDERED "INCIDENTAL" TOTAL OF 100 TON.

DU CLASS III ROCK RIPRAP SHALL BE INSTALLED ON THE DOWNSTREAM SIDE OF THE RCP, 2' DEPTH WITH FILTER FABRIC BENEATH. CONTRACTOR WILL RIPRAP 25' DOWNSTREAM OF PIPE AND UP SIDE SLOPES TO ELEVATION 1019.00 AS SHOWN. ROCK SHALL BE MACHINE COMPACTED TO ENSURE A STABLE/UNIFORM LOOK. ALL EXCAVATION REQUIRED FOR ROCK RIPRAP SHALL BE CONSIDERED "INCIDENTAL" TOTAL OF 200 TON.

PAYMENT FOR ROCK RIPRAP (EXCAVATION, SPOIL REMOVAL, NON-WOVEN FILTER FABRIC, ROCK, AND INSTALLATION) SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "DU CLASS II & III."

CLEARING & GRUBBING NOTE:
 EXISTING TREES AND BRUSH ARE PRESENT ON THE WEST SIDE OF THE EXISTING DITCH. CONTRACTOR SHALL ONLY REMOVE THOSE TREES/BRUSH THAT ARE WITHIN THE CONSTRUCTION AREA, AS DETERMINED BY THE DU FIELD ENGINEER. DEBRIS SHALL BE REMOVED AND DEPOSITED IN BORROW AREA OR OTHER AS DETERMINED BY AGENCY. SUCH TREE/BRUSH REMOVAL SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "CLEARING & GRUBBING."



ESTIMATED QUANTITIES:

96" RCP INLET SLOPED END	1 REQ'D
96" RCP OUTLET SLOPED END	1 REQ'D
96" RCP	40 L.F.
DOUBLE EYE BOLT TIE RODS	12 REQ'D
3/4"-1 1/4" CRUSHED ROCK BEDDING/BACKFILL	300 TON
DU CLASS II ROCK RIPRAP	100 TON
DU CLASS III ROCK RIPRAP	200 TON

96" RCP INSTALLATION:
 CONTRACTOR SHALL INSTALL 64 LINEAL FEET OF 96" RCP, CLASS III, GASKETED JOINT AT A SLOPE OF 0.0%. THIS SHALL INCLUDE AN INLET & OUTLET SLOPED END SECTIONS. TYPICAL INSTALLATION WILL BE 2' DEPTH OF ROCK BEDDING AND BACKFILL TO SPRING-LINE OF PIPE. CONTRACTOR SHALL MACHINE COMPACT ROCK TO ENSURE ALL VOIDS HAVE BEEN FILLED. WOVEN FILTER FABRIC WILL BE INSTALLED UNDER, OVER, AND ALONG SIDES OF ROCK FOR THE ENTIRE TRENCH WIDTH AND LENGTH, PRIOR TO INSTALLING RCP. WOVEN FIL INSTALLATION. DOUBLE EYE TIE RODS MANUFACTURER RECOMMENDS. PAYMENT FOR MATERIALS (RCP, TIE RODS, WOVEN FILTER FABRIC, ETC), HAULING, AND PLACEMENT SHALL BE PAID FOR BASED ON THE CONTRACTOR'S UNIT BID PRICE FOR "96" RCP."

Revision Number	Sheet Number	Revisions	Date	By

Board Meeting - 10/6/2015

PRELIMINARY

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and I am a duly Licensed Professional Engineer in the State of Minnesota.

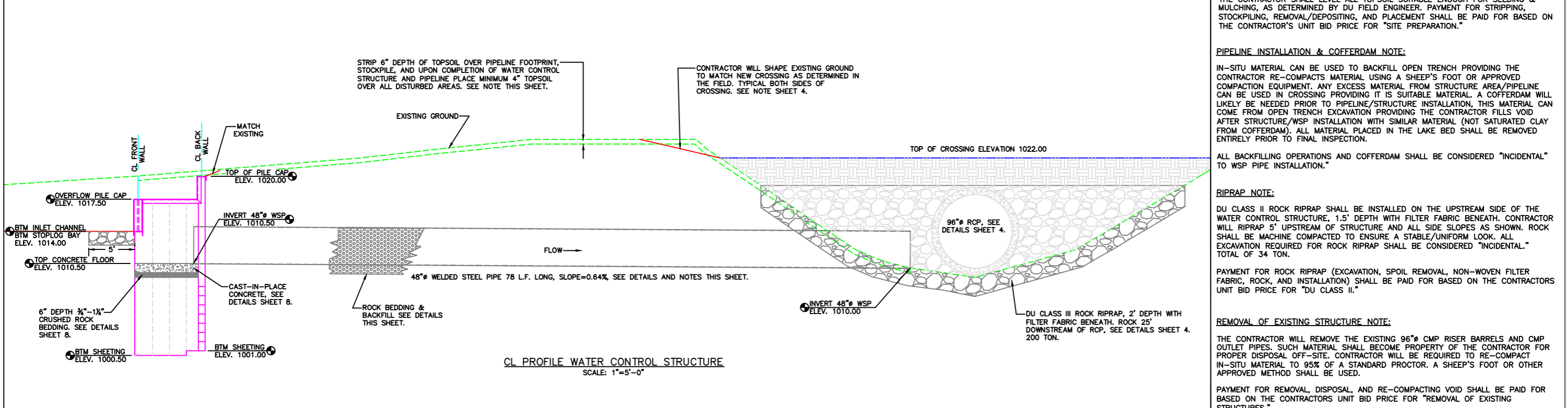
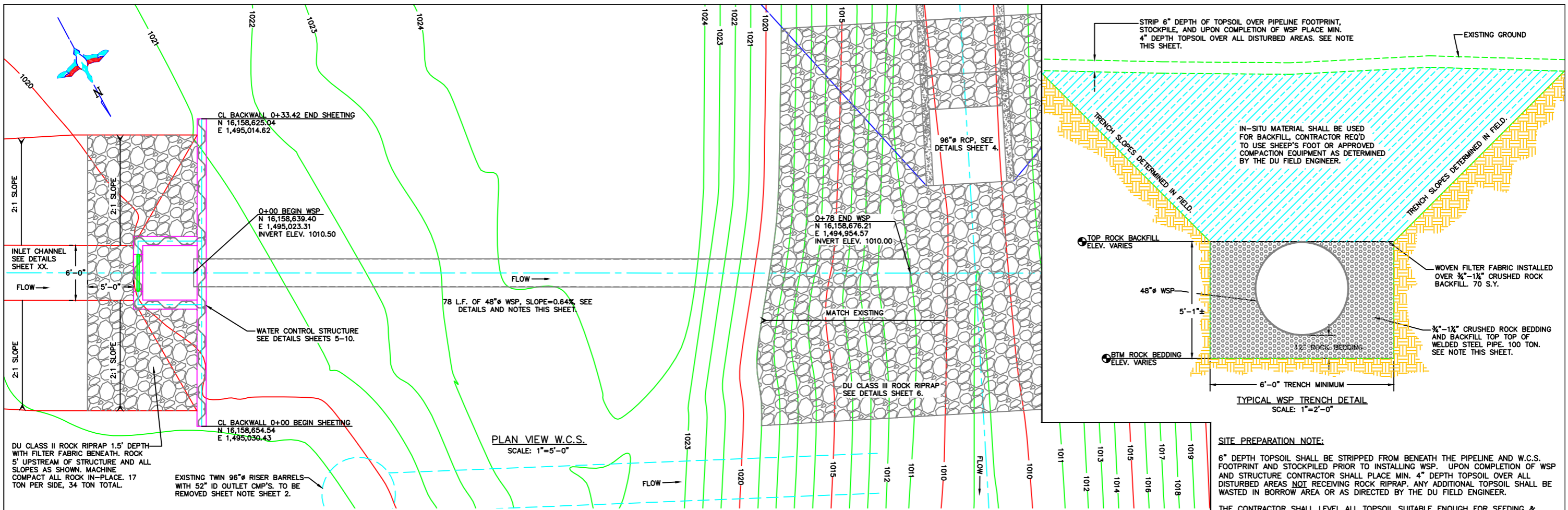
James A. Streifel, P.E.
 for Ducks Unlimited, Inc.
 License No. 47359

DATE: 7-23-15

DUCKS UNLIMITED INC.
 GREAT PLAINS REGIONAL OFFICE
 SHEET NO. 4

PROJECT NO. MN-445-1
SANBORN LAKE
 PLAN & PROFILE RCP CROSSING
 DETAILS AND NOTES

DESIGNED BY: JAS
 DRAWN BY: MLO
 SURVEYED BY: GLJ
 CHECKED BY:
 APPROVED BY:



SITE PREPARATION NOTE:
6" DEPTH TOPSOIL SHALL BE STRIPPED FROM BENEATH THE PIPELINE AND W.C.S. FOOTPRINT AND STOCKPILED PRIOR TO INSTALLING WSP. UPON COMPLETION OF WSP AND STRUCTURE CONTRACTOR SHALL PLACE MIN. 4" DEPTH TOPSOIL OVER ALL DISTURBED AREAS NOT RECEIVING ROCK RIPRAP. ANY ADDITIONAL TOPSOIL SHALL BE WASTED IN BORROW AREA OR AS DIRECTED BY THE DU FIELD ENGINEER.

THE CONTRACTOR SHALL LEVEL ALL TOPSOIL SUITABLE ENOUGH FOR SEEDING & MULCHING, AS DETERMINED BY DU FIELD ENGINEER. PAYMENT FOR STRIPPING, STOCKPILING, REMOVAL/DEPOSITING, AND PLACEMENT SHALL BE PAID FOR BASED ON THE CONTRACTOR'S UNIT BID PRICE FOR "SITE PREPARATION."

PIPELINE INSTALLATION & COFFERDAM NOTE:
IN-SITU MATERIAL CAN BE USED TO BACKFILL OPEN TRENCH PROVIDING THE CONTRACTOR RE-COMPACTS MATERIAL USING A SHEEP'S FOOT OR APPROVED COMPACTION EQUIPMENT. ANY EXCESS MATERIAL FROM STRUCTURE AREA/PIPELINE CAN BE USED IN CROSSING PROVIDING IT IS SUITABLE MATERIAL. A COFFERDAM WILL LIKELY BE NEEDED PRIOR TO PIPELINE/STRUCTURE INSTALLATION, THIS MATERIAL CAN COME FROM OPEN TRENCH EXCAVATION PROVIDING THE CONTRACTOR FILLS VOID AFTER STRUCTURE/WSP INSTALLATION WITH SIMILAR MATERIAL (NOT SATURATED CLAY FROM COFFERDAM). ALL MATERIAL PLACED IN THE LAKE BED SHALL BE REMOVED ENTIRELY PRIOR TO FINAL INSPECTION.

ALL BACKFILLING OPERATIONS AND COFFERDAM SHALL BE CONSIDERED "INCIDENTAL" TO WSP PIPE INSTALLATION.

RIPRAP NOTE:
DU CLASS II ROCK RIPRAP SHALL BE INSTALLED ON THE UPSTREAM SIDE OF THE WATER CONTROL STRUCTURE, 1.5' DEPTH WITH FILTER FABRIC BENEATH. CONTRACTOR WILL RIPRAP 5' UPSTREAM OF STRUCTURE AND ALL SIDE SLOPES AS SHOWN. ROCK SHALL BE MACHINE COMPACTED TO ENSURE A STABLE/UNIFORM LOOK. ALL EXCAVATION REQUIRED FOR ROCK RIPRAP SHALL BE CONSIDERED "INCIDENTAL." TOTAL OF 34 TON.

PAYMENT FOR ROCK RIPRAP (EXCAVATION, SPOIL REMOVAL, NON-WOVEN FILTER FABRIC, ROCK, AND INSTALLATION) SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "DU CLASS II."

REMOVAL OF EXISTING STRUCTURE NOTE:
THE CONTRACTOR WILL REMOVE THE EXISTING 96" CMP RISER BARRELS AND CMP OUTLET PIPES. SUCH MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL OFF-SITE. CONTRACTOR WILL BE REQUIRED TO RE-COMPACT IN-SITU MATERIAL TO 95% OF A STANDARD PROCTOR. A SHEEP'S FOOT OR OTHER APPROVED METHOD SHALL BE USED.
PAYMENT FOR REMOVAL, DISPOSAL, AND RE-COMPACTING VOID SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "REMOVAL OF EXISTING STRUCTURES."

ESTIMATED QUANTITIES:

48" WELDED STEEL PIPE (WSP)	78 L.F.
3/4"-1 1/2" CRUSHED ROCK BEDDING/BACKFILL	100 TON
DU CLASS II ROCK RIPRAP	34 TON

48" WSP INSTALLATION:
CONTRACTOR SHALL INSTALL 78 LINEAL FEET OF 48" WELDED STEEL PIPE (WSP) AT A SLOPE OF 0.64%. TYPICAL INSTALLATION WILL BE 1' DEPTH OF ROCK BEDDING AND BACKFILL TO TOP OF PIPE. CONTRACTOR SHALL MACHINE COMPACT ROCK TO ENSURE ALL VOIDS HAVE BEEN FILLED. WOVEN FILTER FABRIC WILL BE INSTALLED OVER TOP OF ROCK BACKFILL AFTER INSTALLATION OF WSP AND BEFORE REMAINING BACKFILLING OPERATIONS. WOVEN FILTER FABRIC SHALL BE CONSIDERED "INCIDENTAL" TO WSP INSTALLATION.

PAYMENT FOR MATERIALS (WSP, WOVEN FILTER FABRIC, ETC.), HAULING, AND PLACEMENT SHALL BE PAID FOR BASED ON THE CONTRACTOR'S UNIT BID PRICE FOR "48" WSP."

PRELIMINARY

Revision Number	Sheet Number	Revisions	Date	By

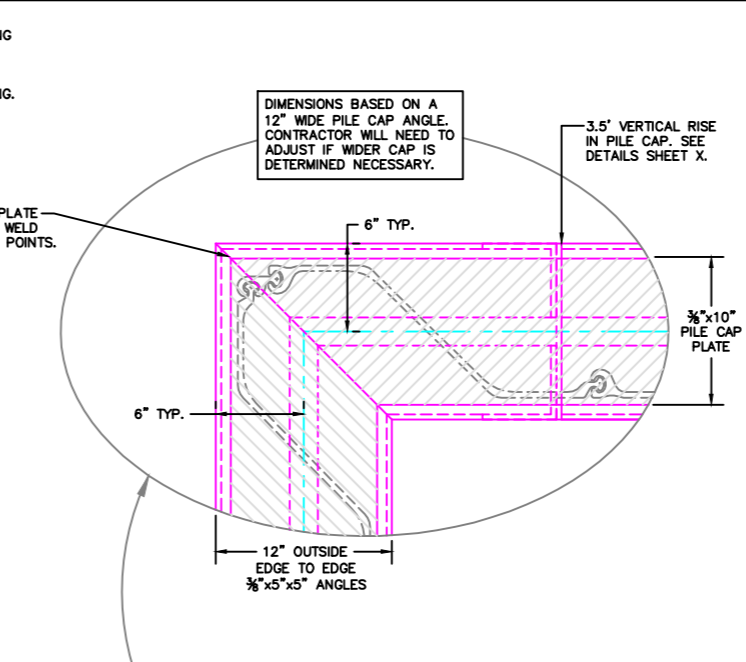
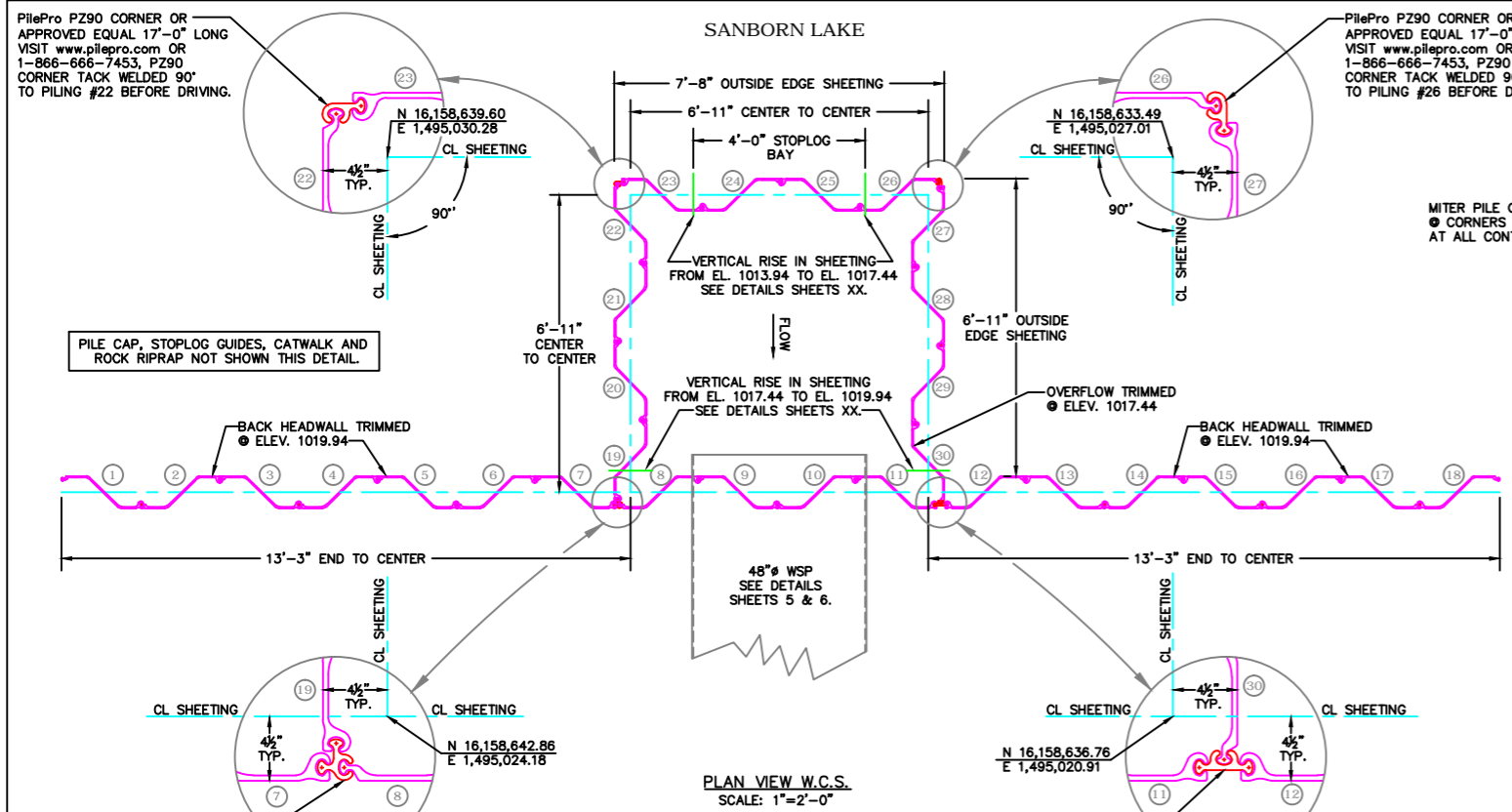
I hereby certify that this plan, specification or report was prepared by: James A. Streifel, P.E. for Ducks Unlimited, Inc. License No. 47359

Date: _____

DUCKS UNLIMITED INC.
GREAT PLAINS REGIONAL OFFICE
DATE: 7-23-2015 SHEET NO. 5

PROJECT NO. MN-445-1
SANBORN LAKE
PLAN & PROFILE W.C.S.
DETAILS AND NOTES

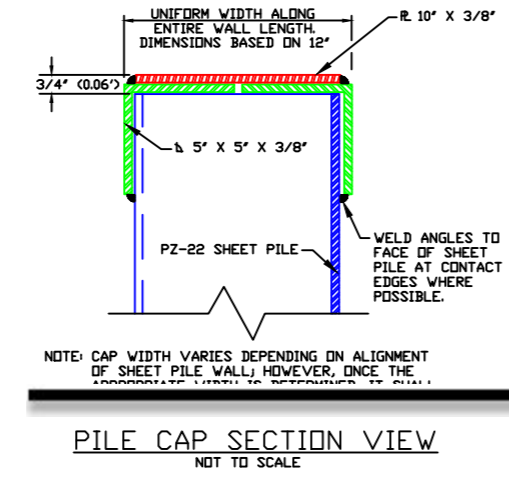
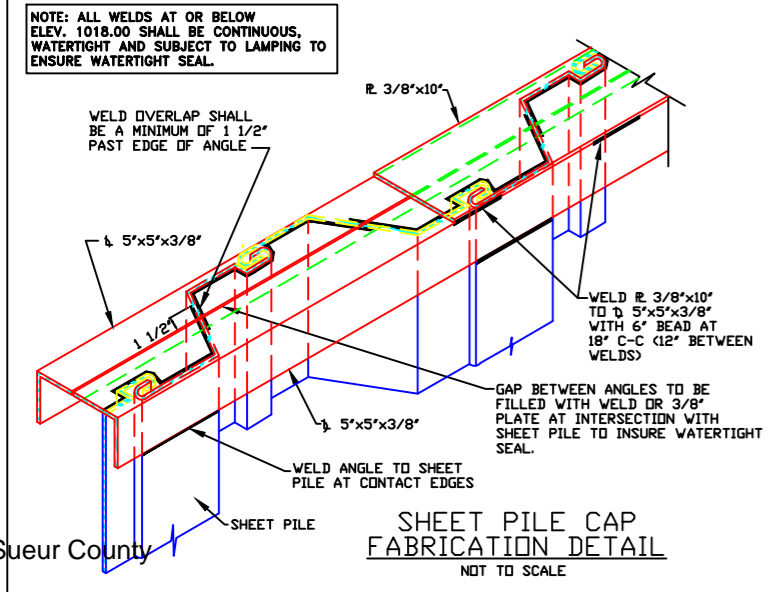
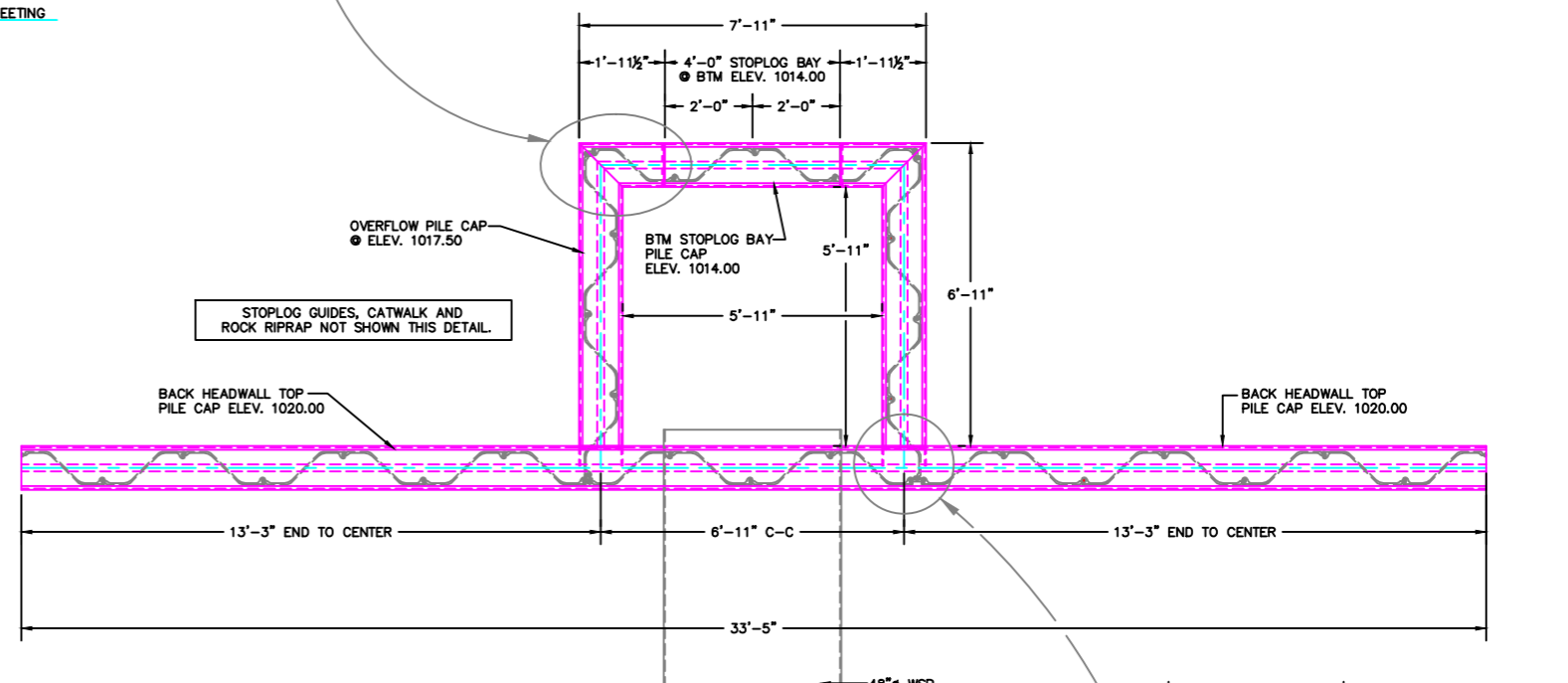
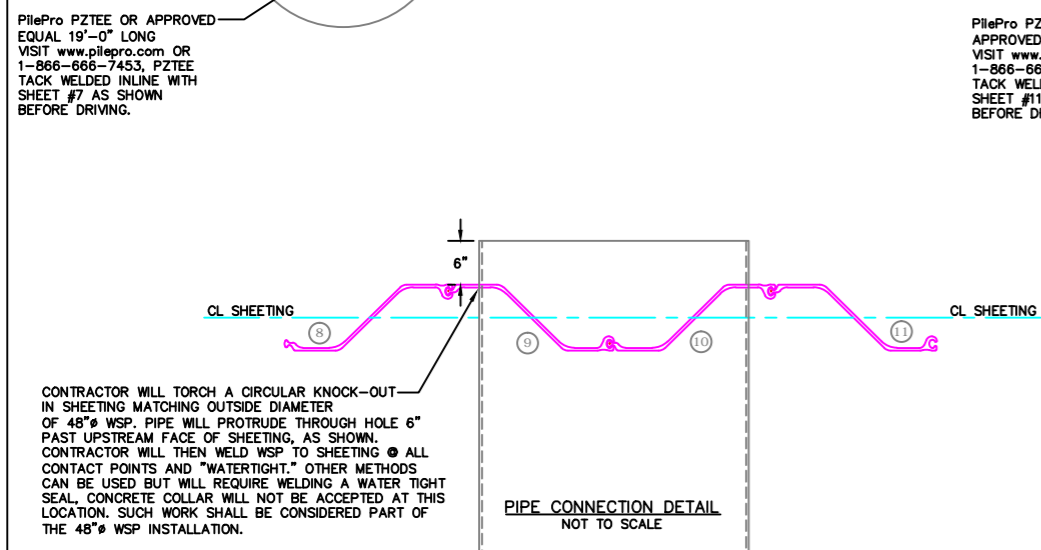
DESIGNED BY: JAS
DRAWN BY: MLO
SURVEYED BY: GLJ
CHECKED BY: _____
APPROVED BY: _____



SHEET PILE SPECIFICATIONS & NOTES:

PZ-22 HOT ROLLED SHEET PILE OR APPROVED EQUAL MINIMUM THICKNESS 0.375 INCHES MINIMUM SECTION MODULUS 18.1 IN³/LF OF WALL

SHEETING: #1 & #18 @ 12' LONG	2 REQ'D (44 S.F.)
SHEETING: #2 & #17 @ 13' LONG	2 REQ'D (47.67 S.F.)
SHEETING: #24 & #25 @ 13.5' LONG	2 REQ'D (49.50 S.F.)
SHEETING: #3 & #16 @ 14' LONG	2 REQ'D (51.33 S.F.)
SHEETING: #4 & #15 @ 15' LONG	2 REQ'D (55 S.F.)
SHEETING: #5 & #14 @ 16' LONG	2 REQ'D (58.67 S.F.)
SHEETING: #6, #13, #20, #21, #22, #23, #26, #27, #28, #29 @ 17' LONG	10 REQ'D (311.67 S.F.)
SHEETING: #7 & #12 @ 18' LONG	2 REQ'D (66 S.F.)
SHEETING: #8, #9, #10, #11, #19, #30 @ 19' LONG	6 REQ'D (209 S.F.)
TOTAL SQUARE FOOT =	893 S.F.-P
PilePro PZ90 CORNERS 17' LONG	2 REQ'D
PilePro PZTEE 19' LONG	1 REQ'D
PilePro PZBULLHEAD 19' LONG	1 REQ'D
PILE CAP: 3/8"x10" PLATE	68 L.F.
3/8"x5"x5" ANGLES	136 L.F.



- NOTES:**
- ALL WELDS TO BE 1/4" FILLET WELDS (SEE D.I. SPECIFICATIONS).
 - ALL WELDS WILL BE SUBJECT TO LAMPING. ANY AREAS FAILING WILL BE REWELDED BEFORE ACCEPTANCE OF PROJECT.
 - TOP OF SHEET PILE SHALL BE TRIMMED TO GRADES INDICATED ON PLANS TO REMOVE ANY DAMAGE CAUSED BY DRIVING. ANY TRIMMING OVER 3" SHALL BE CONSIDERED CUT-OFF AND WILL BE DEDUCTED FROM THE COST OF "SHEET PILE INSTALLATION."
 - ABOVE 1018.00 PILE CAP NEED NOT BE WATERTIGHT, WELDS SHALL CONSIST OF A 6" BEAD AT 18" C-C (12" BETWEEN WELDS).
 - LENGTH OF PILE CAP AS SHOWN ON PLANS.
 - ALL WELDS AROUND STOPLOG BAY TO BE CONTINUOUS TO INSURE A WATERTIGHT SEAL.

PRELIMINARY

Revision	Sheet	Revisions	Date	By	hereby certify that this plan, specification or report was prepared

Board Meeting - 10/6/2015

James A. Streifel, P.E.
for Ducks Unlimited, Inc.
License No. 47359

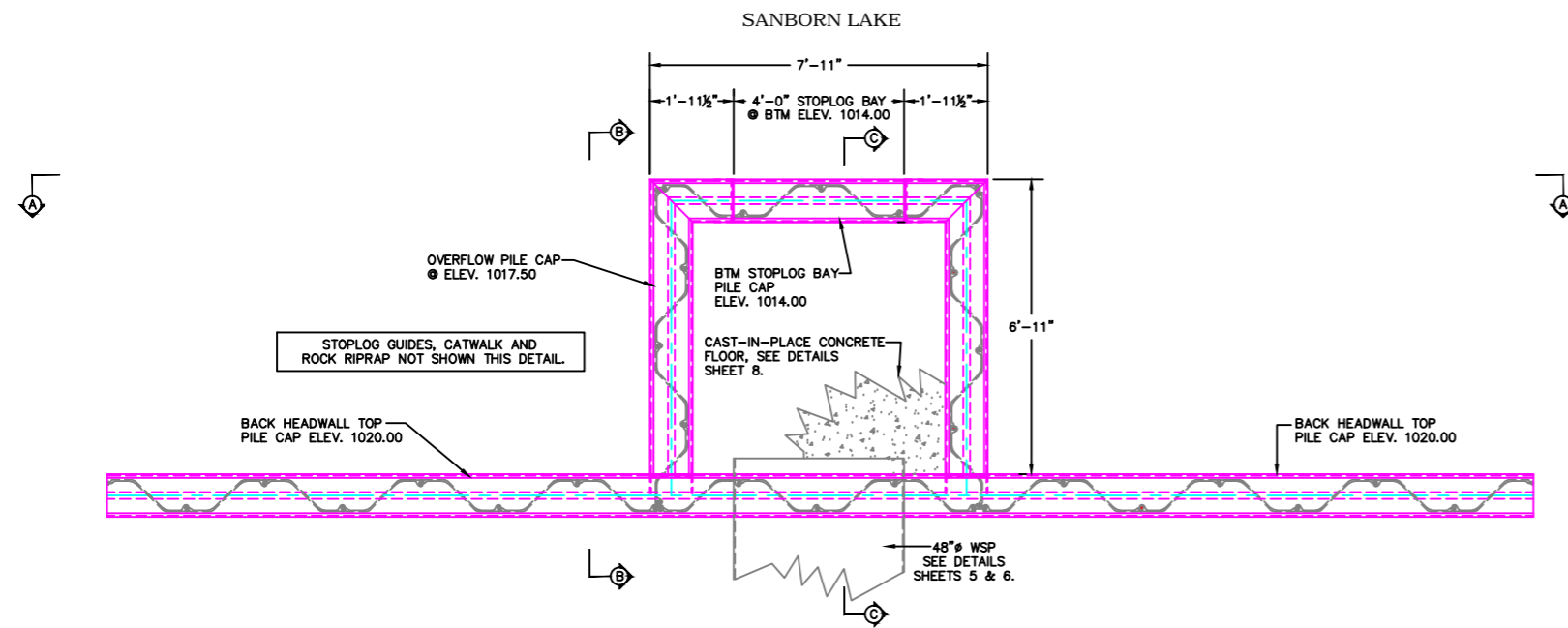
Date

DUCKS UNLIMITED INC.

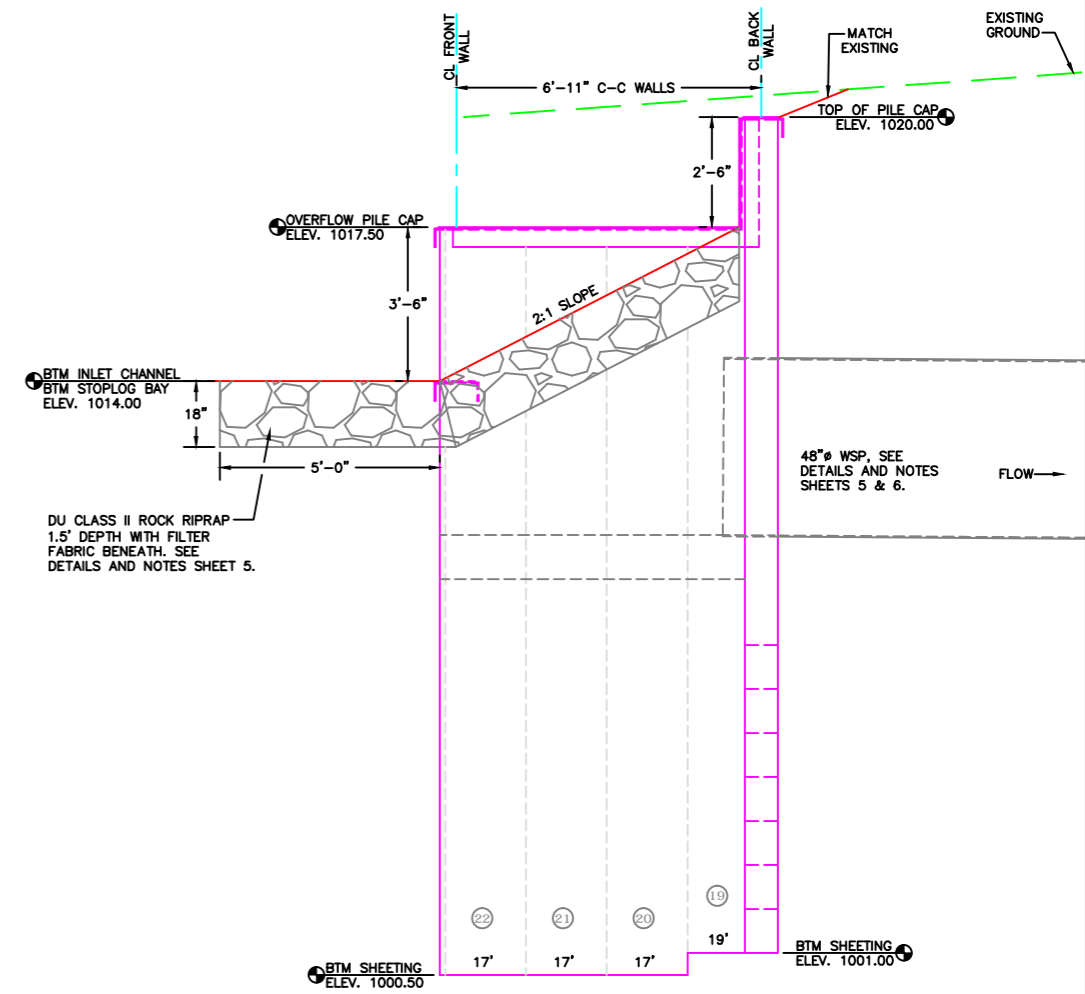
GREAT PLAINS REGIONAL OFFICE
DATE: 7-23-2015 SHEET NO. 6

PROJECT NO. MN-445-1
SANBORN LAKE WATER CONTROL STRUCTURE DETAILS AND NOTES

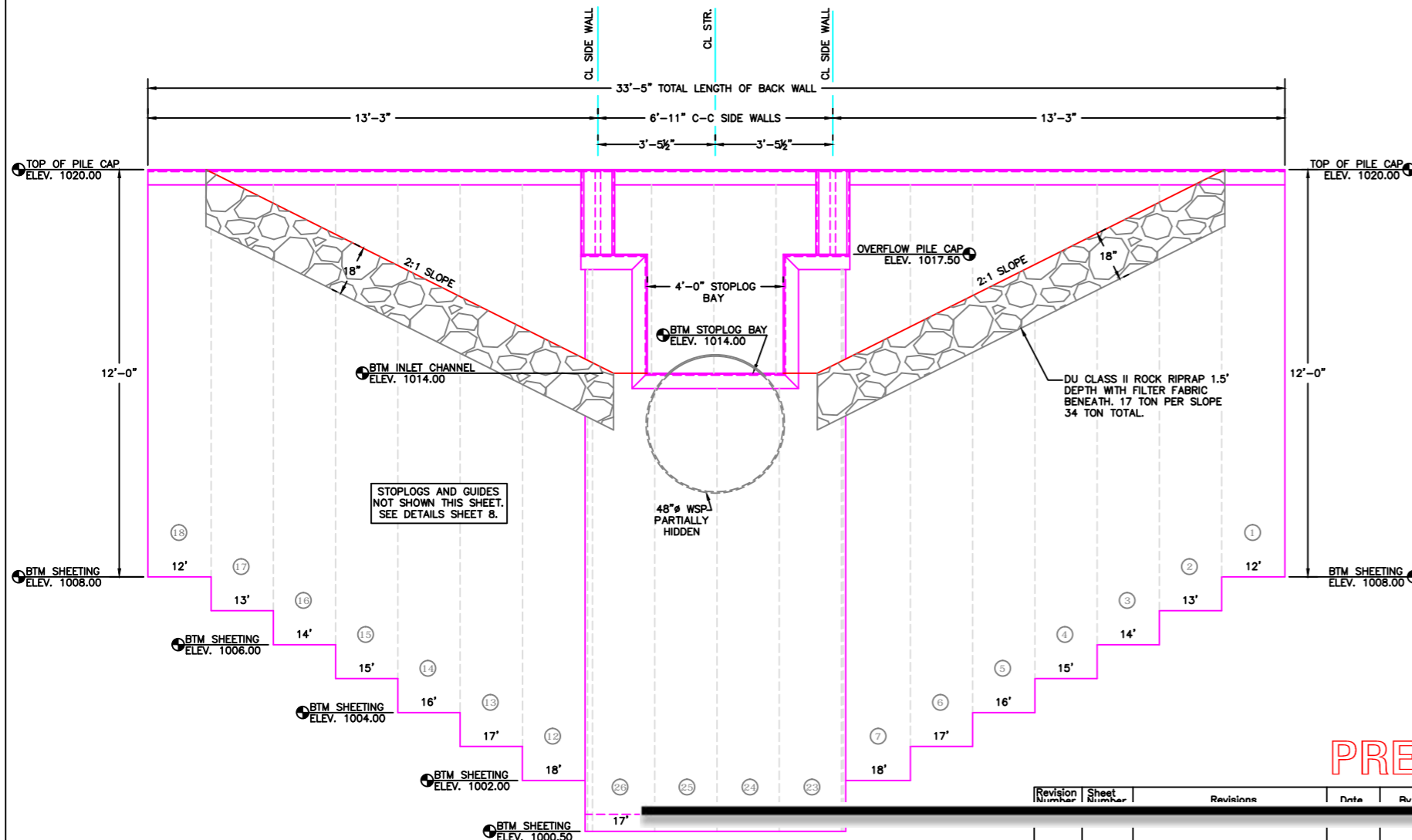
DESIGNED BY: JAS
DRAWN BY: MLO
SURVEYED BY: GLJ
CHECKED BY: .
APPROVED BY: .



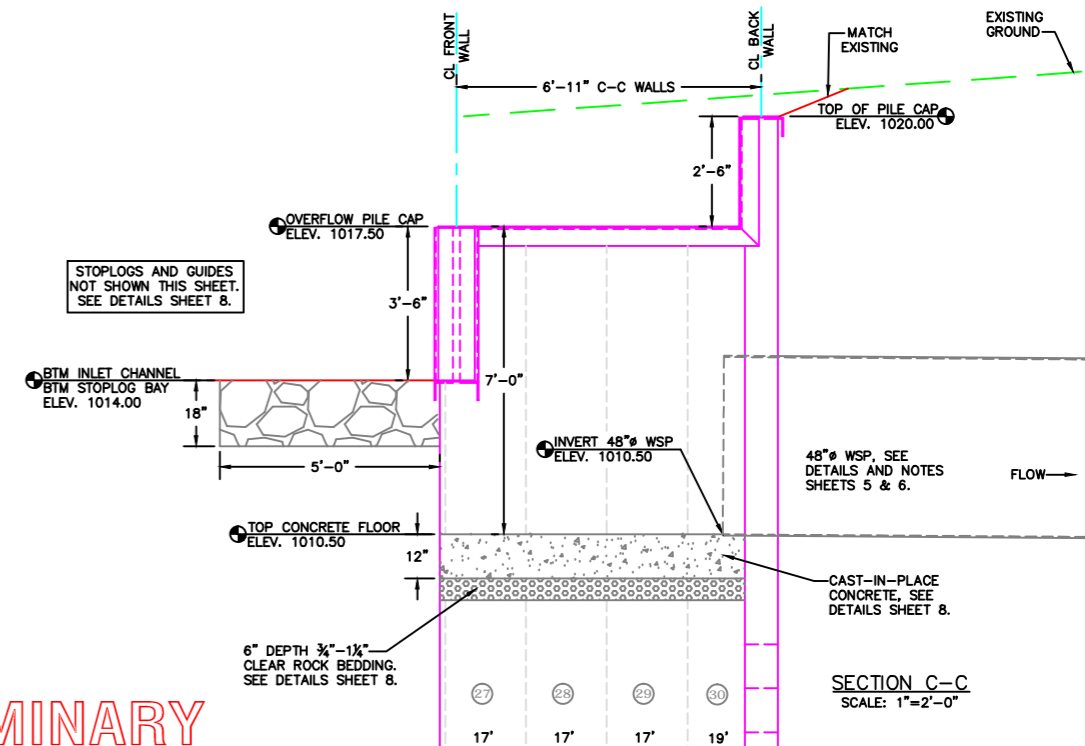
PLAN VIEW WATER CONTROL STRUCTURE
SCALE: 1"=2'-0"



SECTION B-B
SCALE: 1"=2'-0"



SECTION A-A
SCALE: 1"=2'-0"



SECTION C-C
SCALE: 1"=2'-0"

PRELIMINARY

Revision Number	Sheet Number	Revisions	Date	By	I hereby certify that this plan, specification or report was prepared

Board Meeting - 10/6/2015

James A. Streifel, P.E.
for Ducks Unlimited, Inc.
License No. 47359

Date

DUCKS UNLIMITED INC.

GREAT PLAINS REGIONAL OFFICE

DATE: 7-23-2015 SHEET NO. 7

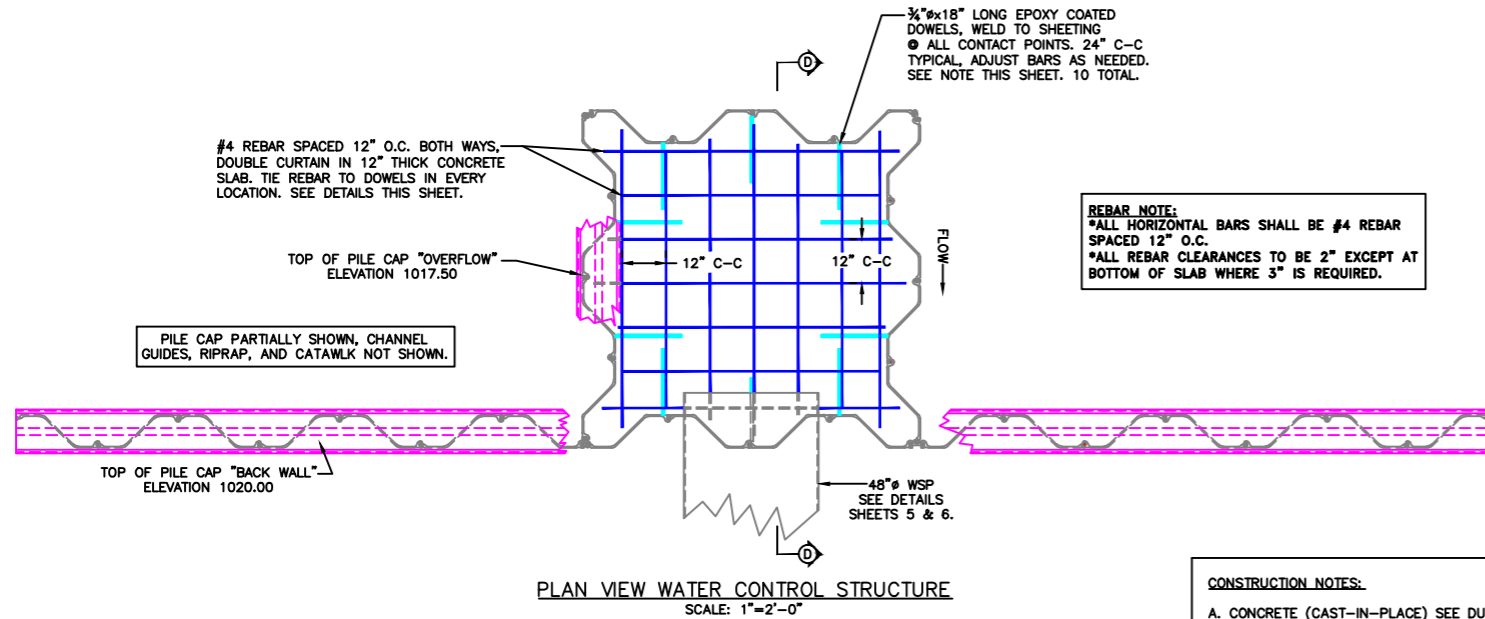
PROJECT NO. MN-445-1

SANBORN LAKE WATER CONTROL STRUCTURE DETAILS AND NOTES

DESIGNED BY: JAS
DRAWN BY: MLO
SURVEYED BY: GLJ
CHECKED BY:

APPROVED BY:

SANBORN LAKE



3/4" x 18" LONG DOWEL NOTE:

3/4" x 18" LONG EPOXY COATED DOWELS SHALL BE WELDED TO THE INSIDE SHEET PILE WATER CONTROL STRUCTURE @ 24" C-C SPACING, ADJUST BARS AS NEEDED. 6 REQ'D ALONG FRONT/BACKWALL SHEETING. 4 REQ'D ALONG SIDE SHEETING (10 TOTAL). CONTRACTOR SHALL USE 2-PART EPOXY COATING WHERE DOWELS ARE WELDED TO SHEETING, AREA SHALL BE RE-COATED WITH EPOXY COATING AS MANUFACTURE RECOMMENDS. ALL DOWELS SHALL BE EPOXY COATED. PAYMENT FOR MATERIALS & INSTALLATION OF SUCH SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "CAST-IN-PLACE CONCRETE."

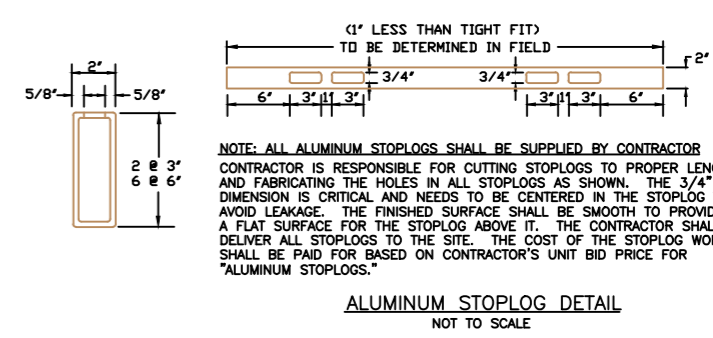
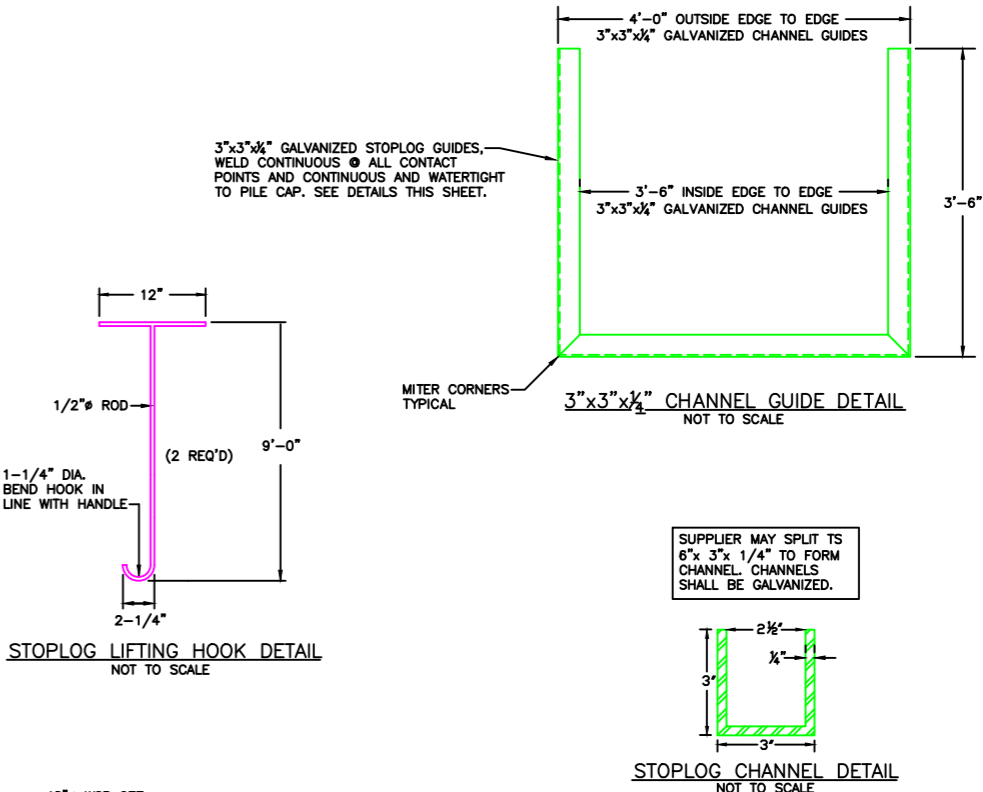
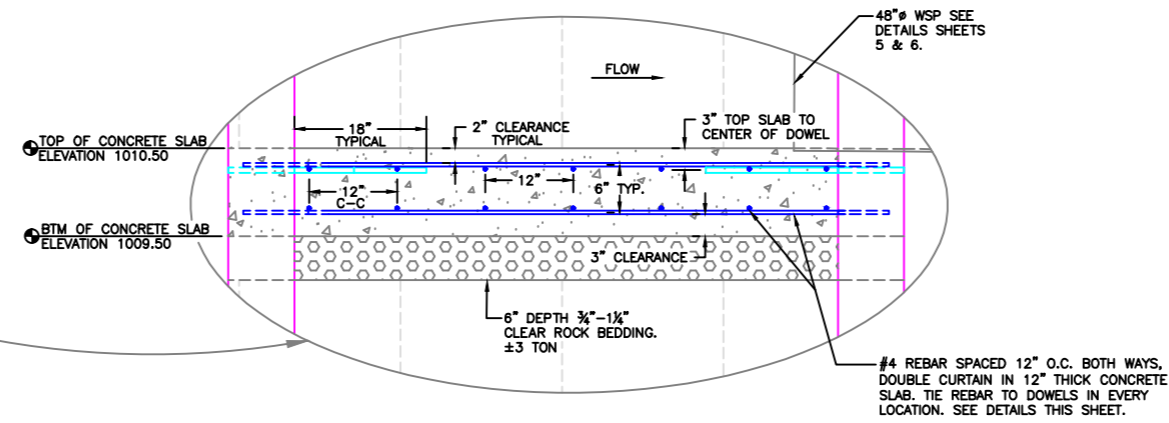
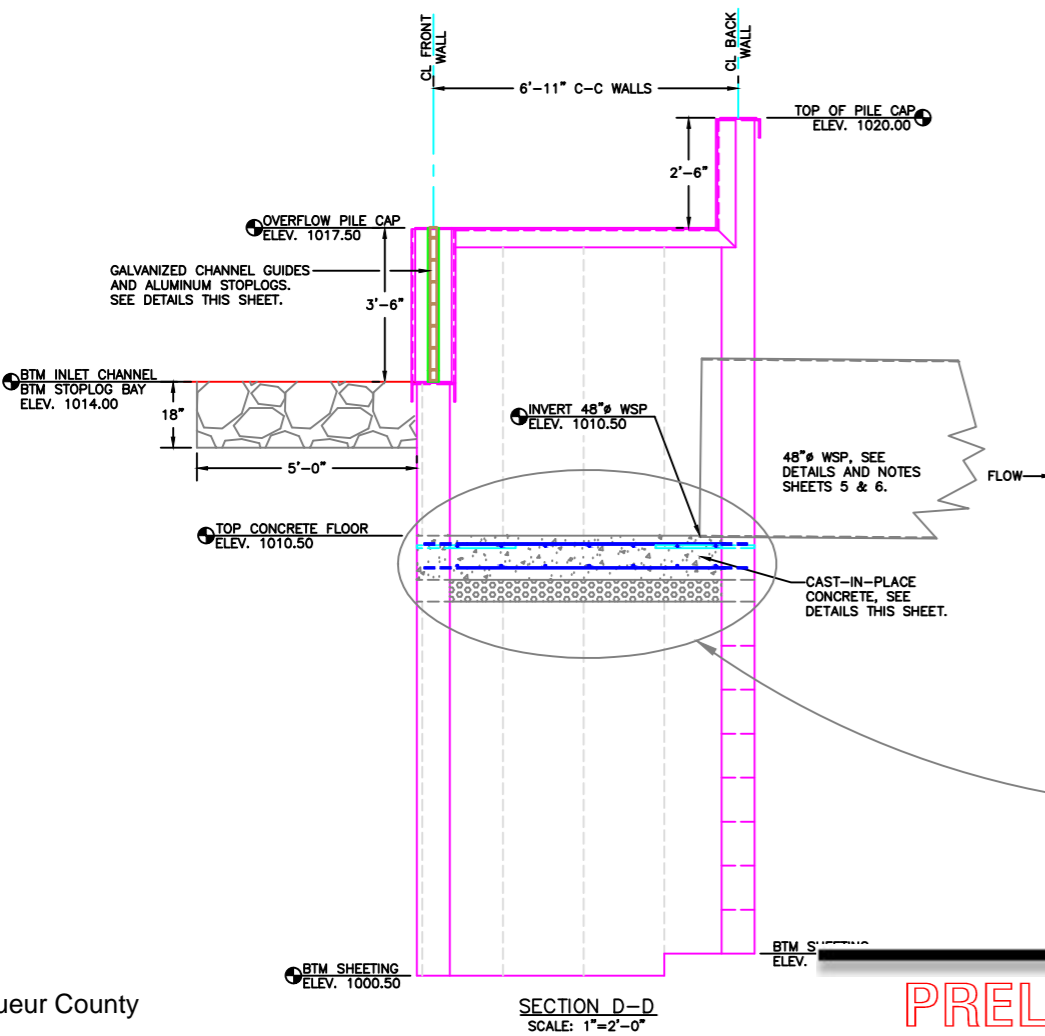
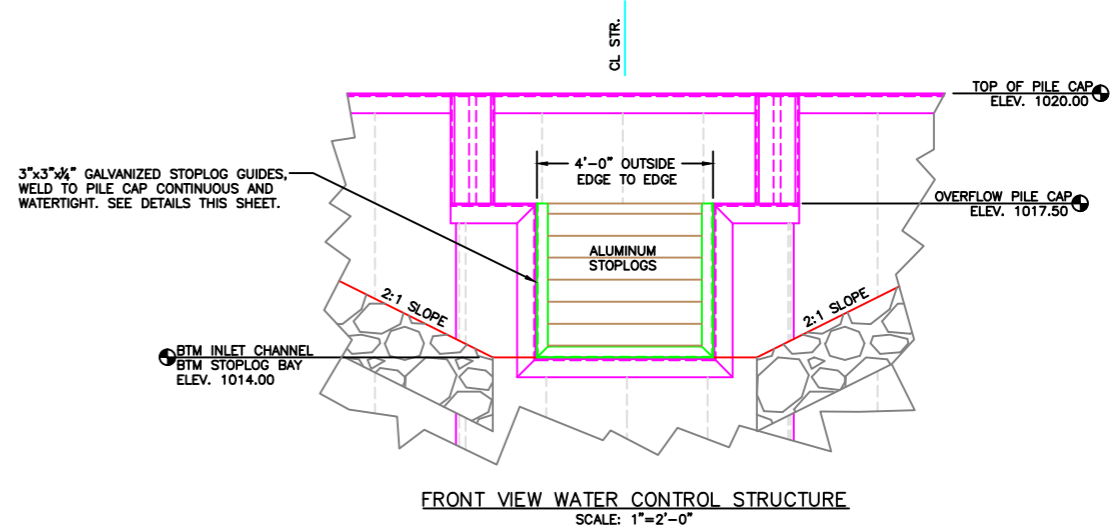
REBAR NOTE:
 *ALL HORIZONTAL BARS SHALL BE #4 REBAR SPACED 12" O.C.
 *ALL REBAR CLEARANCES TO BE 2" EXCEPT AT BOTTOM OF SLAB WHERE 3" IS REQUIRED.

- CONSTRUCTION NOTES:**
- CONCRETE (CAST-IN-PLACE) SEE DU SPECIFICATION 208.
 1. $f_c = 4,000$ PSI
 2. REINFORCEMENT A615, GRADE 60 $f_y = 60,000$ PSI
 3. REINFORCEMENT ON CORNERS SHALL BE CONTINUOUS OR INCLUDE A LAP LENGTH WITH 36 BAR DIAMETER.
 4. MINIMUM COVER ON REINFORCEMENT STEEL SHALL BE 3" WHEN IT IS ADJACENT TO THE GROUND AND 2" MINIMUM IN ALL OTHER AREAS.
 6. ALL EXPOSED EDGES SHALL BE FINISHED WITH 3/4" CHAMFER.
 7. ALL CONCRETE SHOWN SHALL BE REINFORCED. SECTIONS AND PLANS SHOWN WITHOUT REINFORCEMENT ARE INTENDED TO SHOW DIMENSIONS AND DETAILS OF CONSTRUCTION ONLY. REINFORCEMENT OF THESE SECTIONS SHALL BE PROVIDED IN ACCORDANCE WITH DETAILS SHOWING REINFORCEMENT.

MATERIAL LIST:

GALVANIZED CHANNEL GUIDES:	
3"x3"x1/4" GALVANIZED STOPLOG GUIDES	11 L.F.
GALVANIZED STOPLOG LIFTING HOOKS:	
1/2" GALVANIZED ROD LIFTING HOOKS	2 REQ'D
ALUMINUM STOPLOGS:	
2"x3"x1/4" ALUMINUM STOPLOG WITH NO LIFTING HOLES	1 REQ'D
2"x3"x1/4" ALUMINUM STOPLOG WITH LIFTING HOLES	1 REQ'D
2"x6"x1/4" ALUMINUM STOPLOG WITH LIFTING HOLES	6 REQ'D
CAST-IN-PLACE CONCRETE:	
#4 REBAR	180 L.F.
#6 EPOXY COATED DOWELS 18" IN LENGTH	10 REQ'D
4,000 PSI CONCRETE	2 C.Y.

*THIS LIST IS PROVIDED FOR INFORMATION ONLY. ADDITIONAL MATERIALS NOT LISTED HERE MAY BE REQUIRED. BIDDER IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES. ALSO, ADDITIONAL LENGTH OF STEEL STOCK BEYOND WHAT'S LISTED HERE MAY BE REQUIRED TO ALLOW FOR FABRICATION.



Revision Number	Sheet Number	Revisions	Date	By	hereby certify that this plan, specification or report was prepared

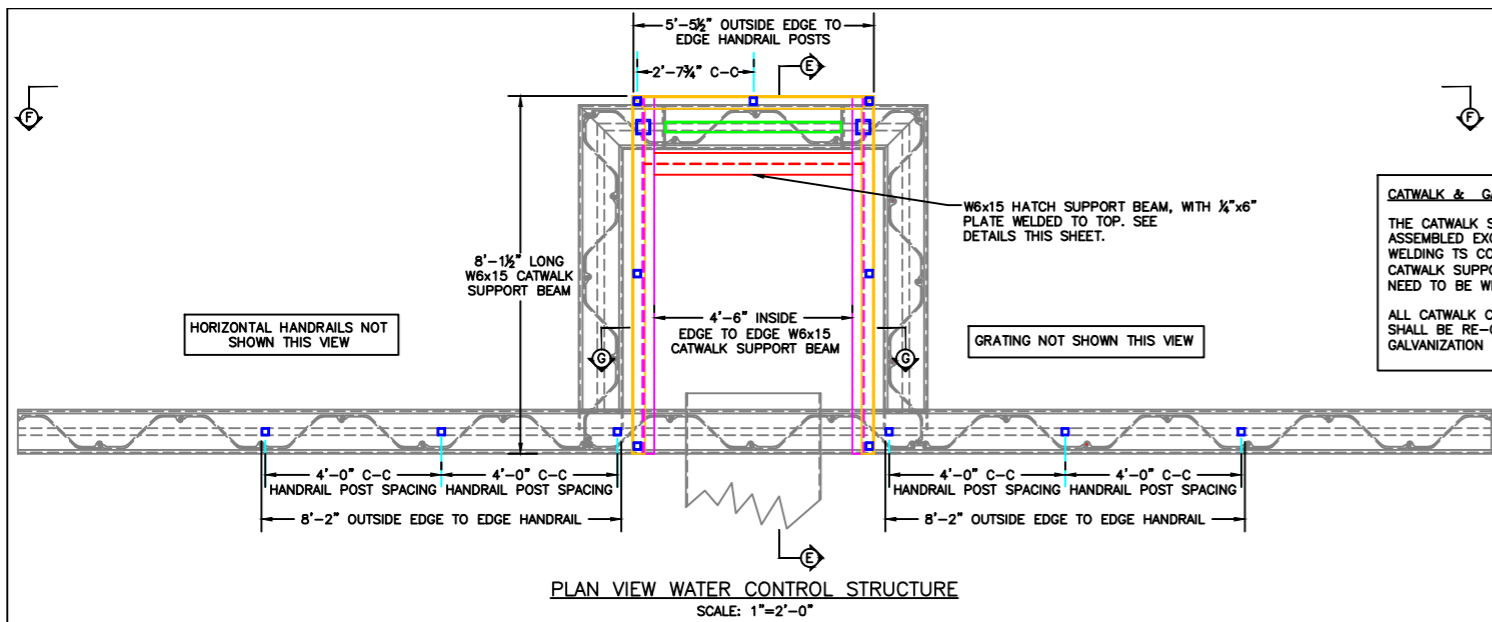
Board Meeting - 10/6/2015

James A. Streifel, P.E.
for Ducks Unlimited, Inc.
License No. 47359

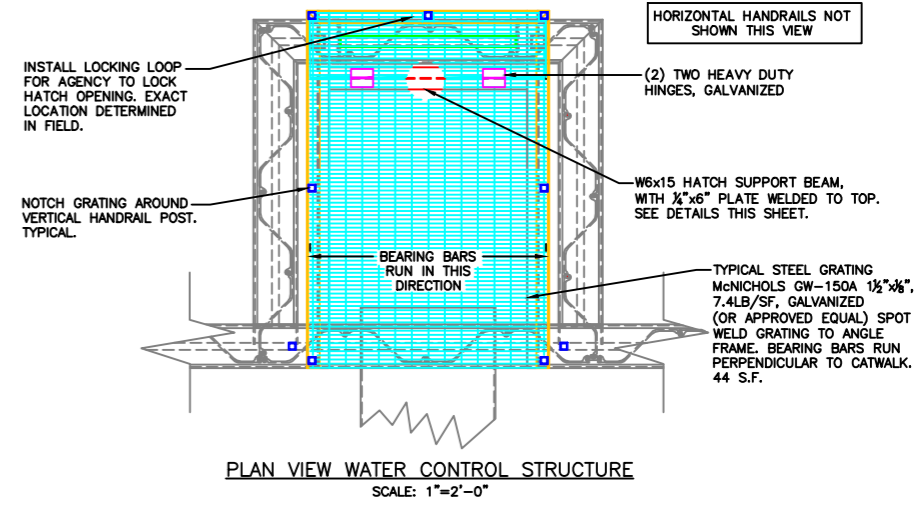
DUCKS UNLIMITED INC.
 GREAT PLAINS REGIONAL OFFICE
 DATE: 7-23-2015 SHEET NO. B

PROJECT NO. MN-445-1
 SANBORN LAKE
 CAST-IN-PLACE CONCRETE & GUIDES/STOPLOG DETAILS

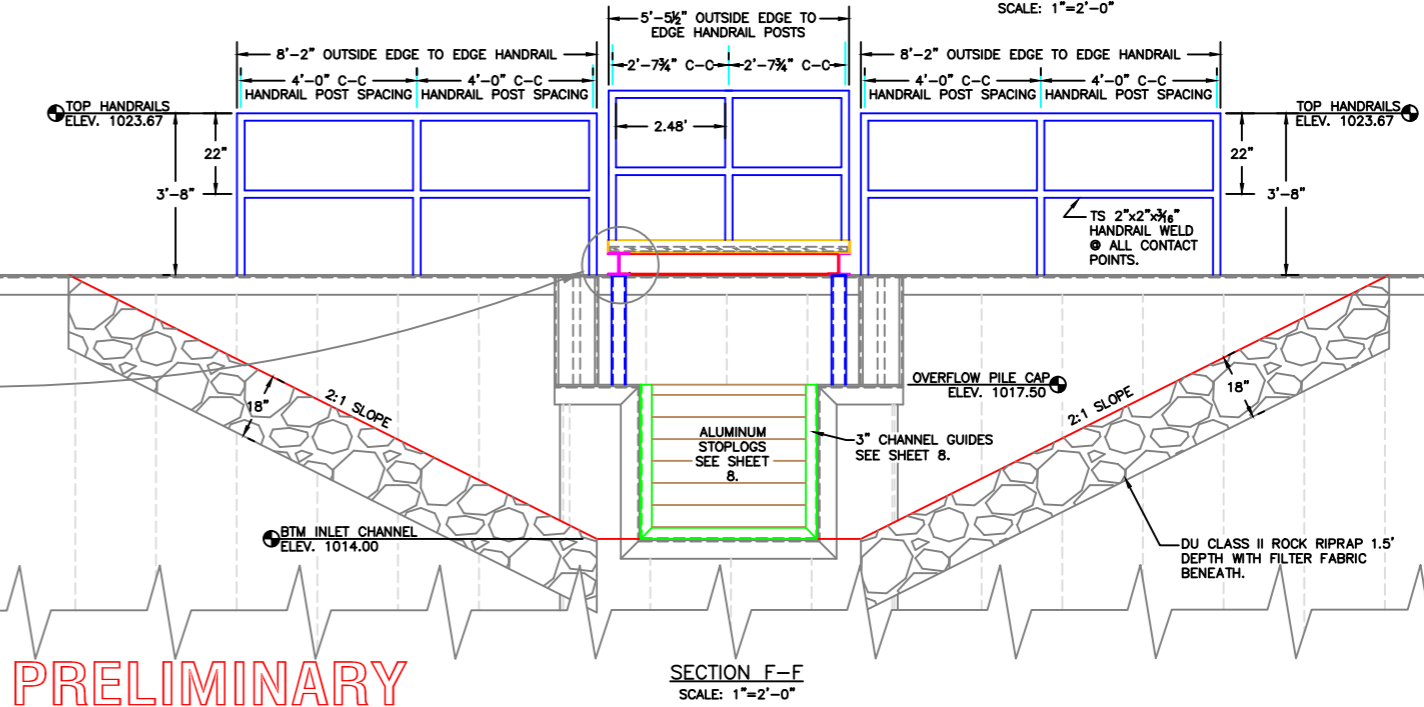
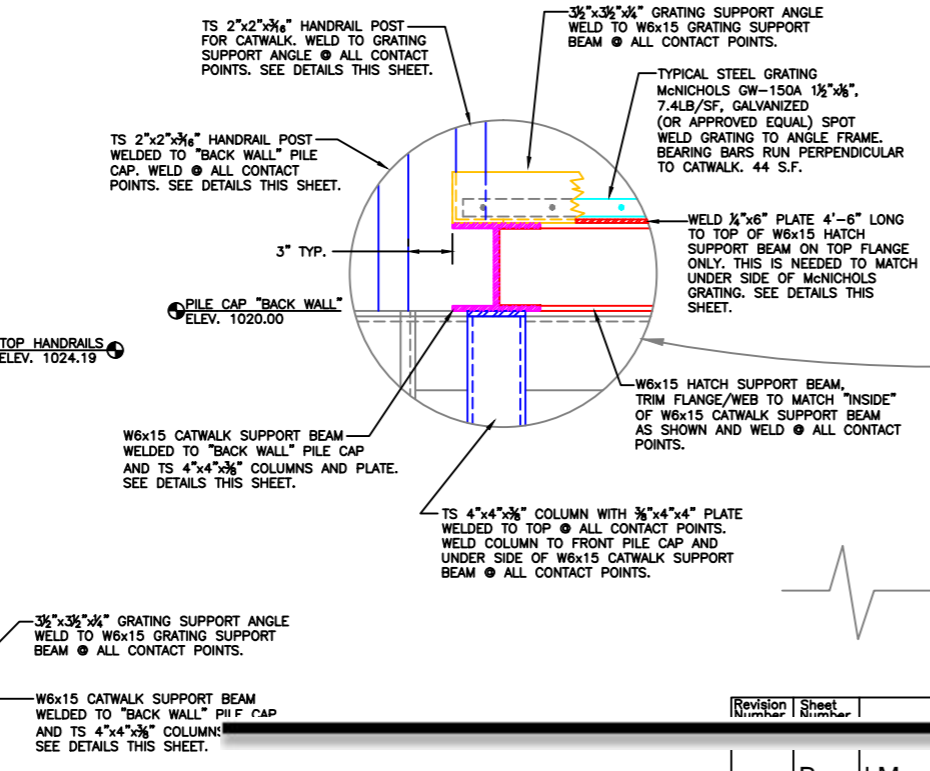
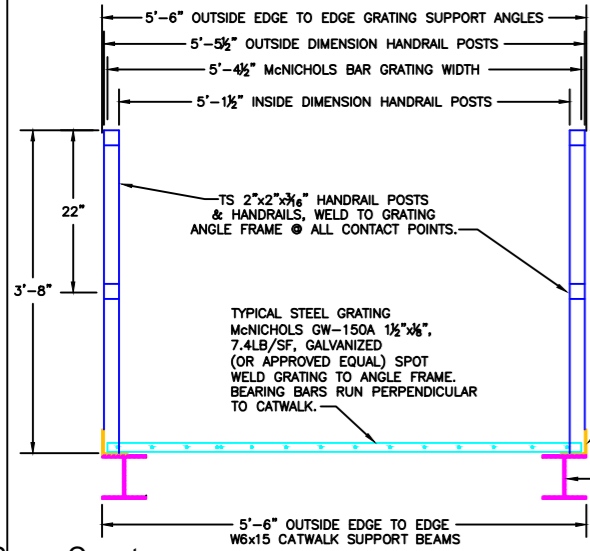
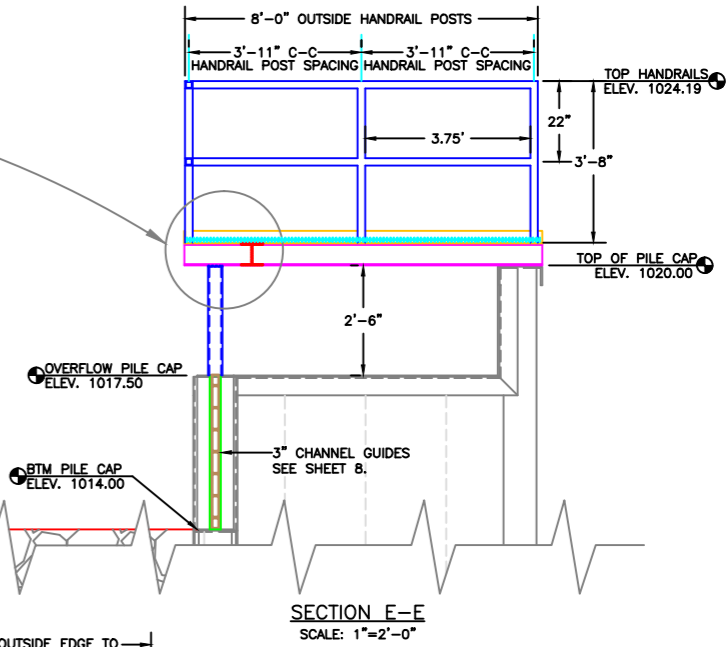
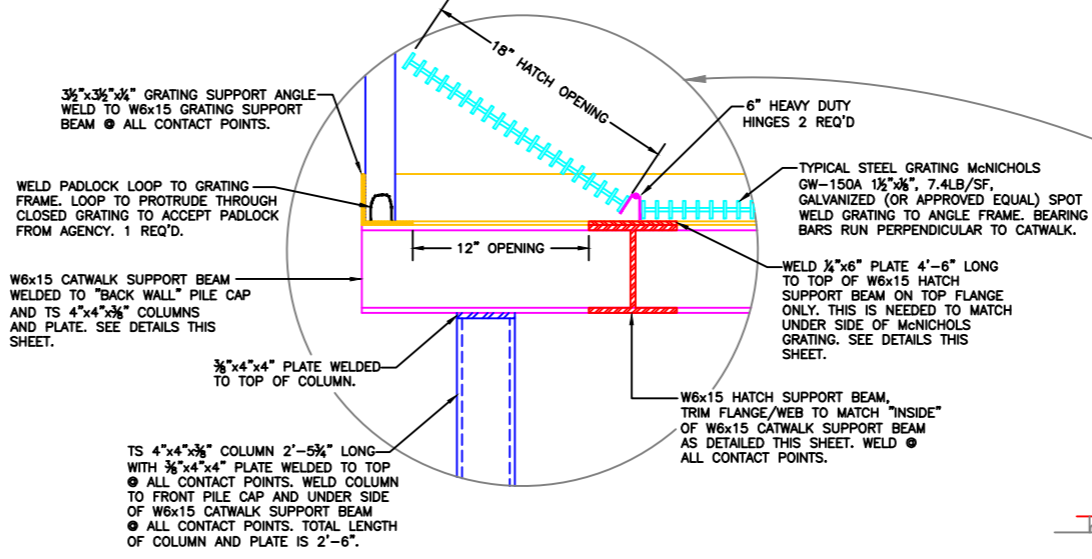
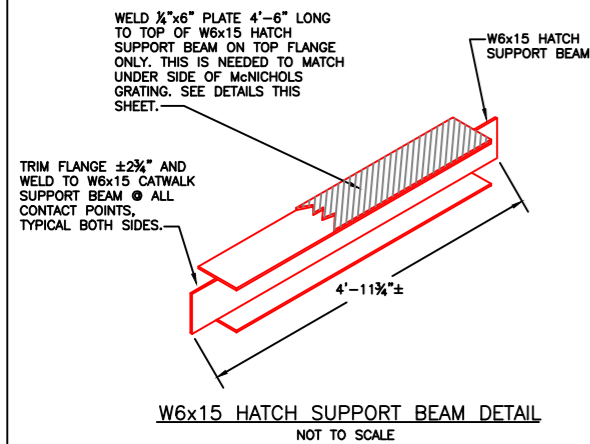
DESIGNED BY: JAS
 DRAWN BY: MLO
 SURVEYED BY: GLJ
 CHECKED BY:
 APPROVED BY:
 APPROVED BY:



CATWALK & GALVANIZING NOTE:
 THE CATWALK SHALL BE SHOP FABRICATED OFF-SITE AND DELIVERED FULLY ASSEMBLED EXCEPT FOR THE TS COLUMNS. THE ONLY FIELD WELDING SHOULD BE: WELDING TS COLUMNS/PLATE TO THE PILE CAP AND W6x15 BEAMS. ALSO WELDING W6x15 CATWALK SUPPORT BEAMS TO THE "BACK WALL" PILE CAP. THE SIDE HANDRAILS WILL ALSO NEED TO BE WELDED TO THE PILE CAP BUT SHOULD COME PRE-FABRICATED TO THE SITE.
 ALL CATWALK COMPONENTS AND SIDE HANDRAILS WILL BE GALVANIZED. ANY FIELD WELDING SHALL BE RE-COATED WITH A COLD GALVANIZATION SPRAY TO MATCH. THE COST OF GALVANIZATION WILL BE CONSIDERED "INCIDENTAL" TO STRUCTURAL STEEL.

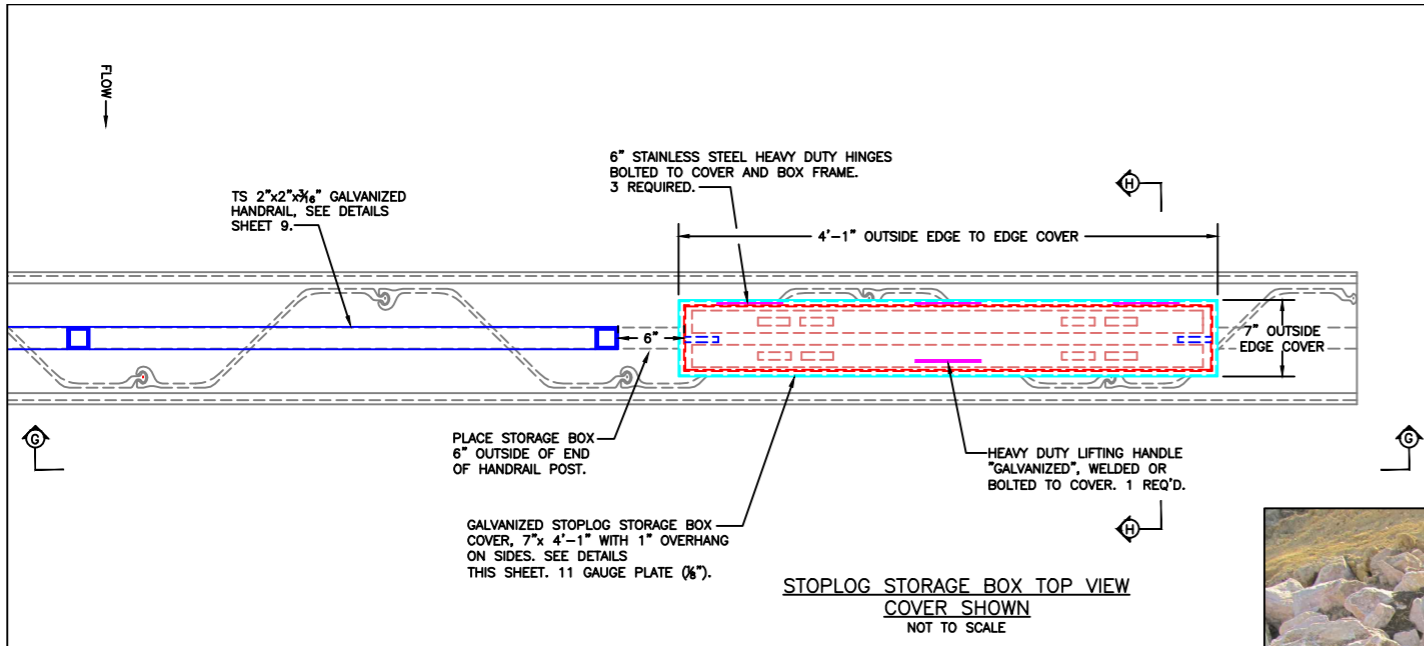


- MATERIAL LIST:**
- GALVANIZED HANDRAILS ALONG "BACK WALL":**
 - TS 2"x2"x3/8" HANDRAIL POST 3'-8" LONG 6 REQ'D
 - TS 2"x2"x3/8" HANDRAIL 31 L.F.
 - CATWALK MEMBERS (ALL GALVANIZED):**
 - W6x15 CATWALK SUPPORT BEAMS 8'-1 1/2" LONG 2 REQ'D
 - W6x15 HATCH SUPPORT BEAM 4'-11 1/4" LONG 1 REQ'D
 - 1/4"x8" PLATE 4'-6" LONG 1 REQ'D
 - TS 3/4"x4"x4" COLUMN 2'-5 1/2" LONG 2 REQ'D
 - 3/8"x4"x4" PLATE 2 REQ'D
 - 3/8"x3/8"x3/4" GRATING SUPPORT ANGLE 22 L.F.
 - TS 2"x2"x3/8" HANDRAIL POST 3'-8" LONG 7 REQ'D
 - TS 2"x2"x3/8" HANDRAIL 40 L.F.
 - 6" HEAVY DUTY HINGES 2 REQ'D
 - LOCKING LOOP 1 REQ'D
 - McNICHOLS BAR GRATING GW-150A 7.4LBS/SQ. FT. 44 S.F.
- *THIS LIST IS PROVIDED FOR INFORMATION ONLY. ADDITIONAL MATERIALS NOT LISTED HERE MAY BE REQUIRED. BIDDER IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES. ALSO, ADDITIONAL LENGTH OF STEEL STOCK BEYOND WHAT'S LISTED HERE MAY BE REQUIRED TO ALLOW FOR FABRICATION.*

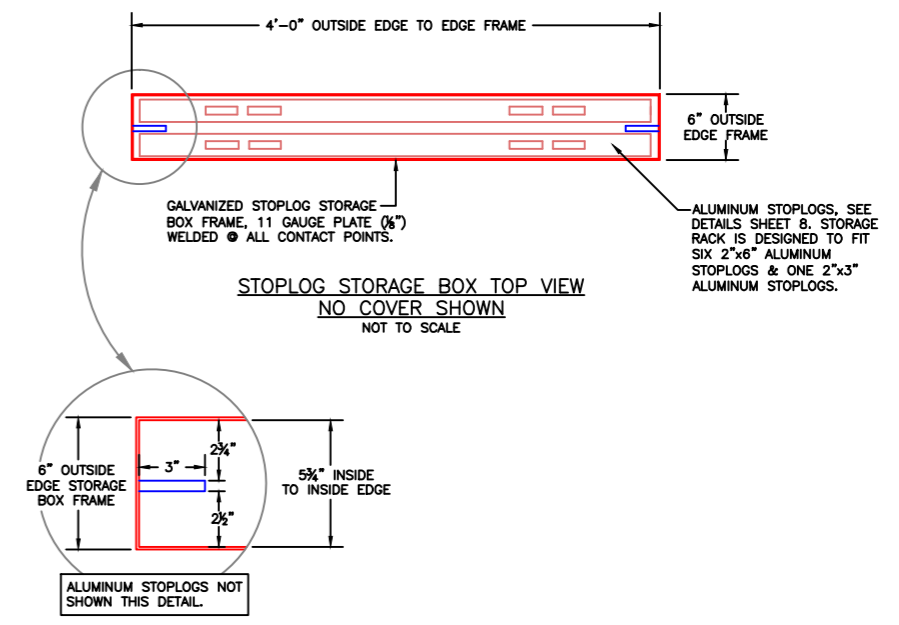


PRELIMINARY

Revision Number	Sheet Number	Revisions	Date	By	I hereby certify that this plan, specification or report was prepared
Board Meeting - 10/6/2015					
			James A. Streifel, P.E. for Ducks Unlimited, Inc. License No. 47359		
			Date		
DUCKS UNLIMITED INC.		PROJECT NO. MN-445-1		DESIGNED BY: JAS	
GREAT PLAINS REGIONAL OFFICE		SANBORN LAKE WATER CONTROL STRUCTURE CATWALK DETAILS		DRAWN BY: MLO	
DATE: 7-23-2015		SHEET NO. 9		SURVEYED BY: GLJ	
		APPROVED BY:		CHECKED BY:	

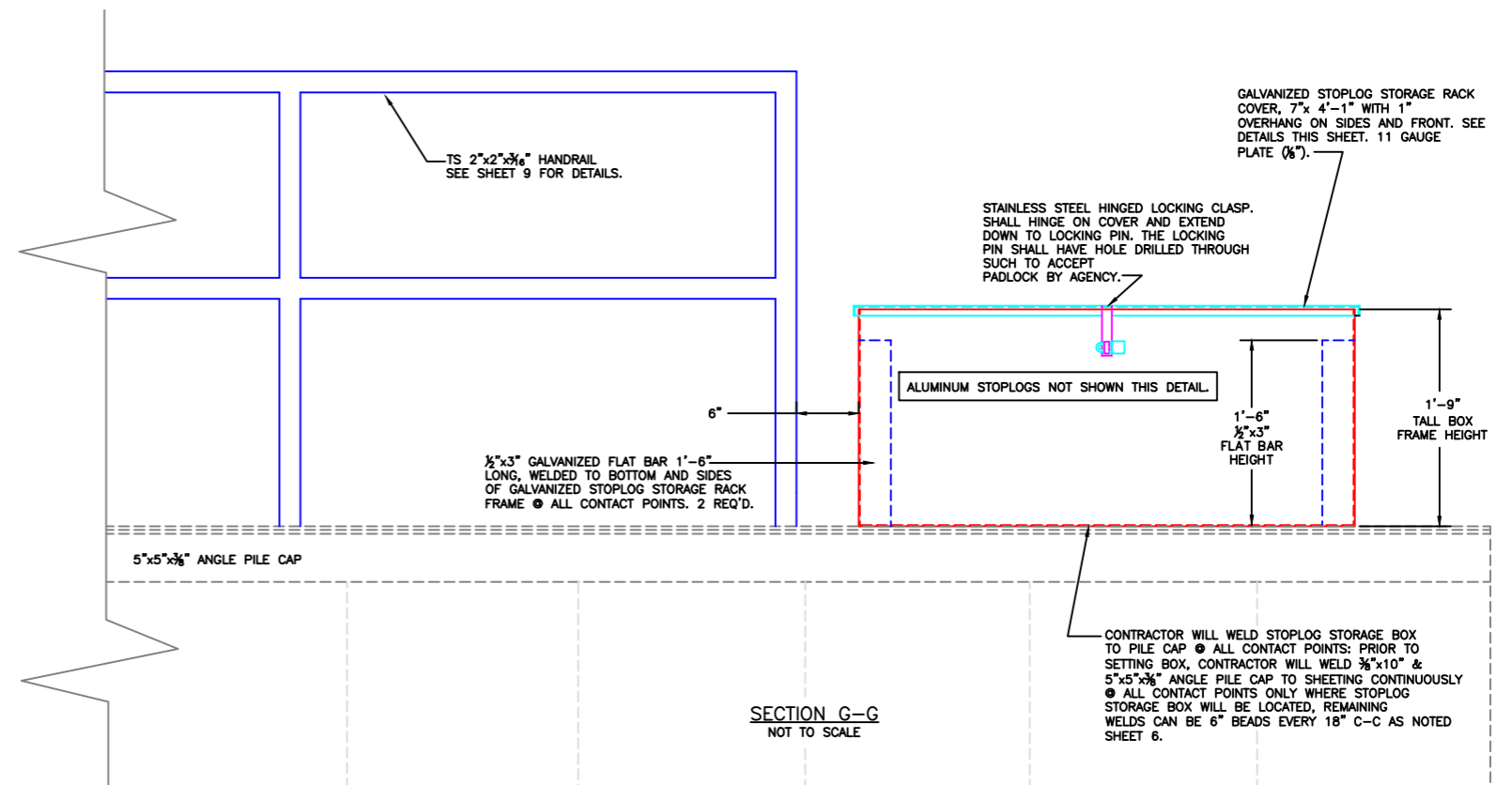
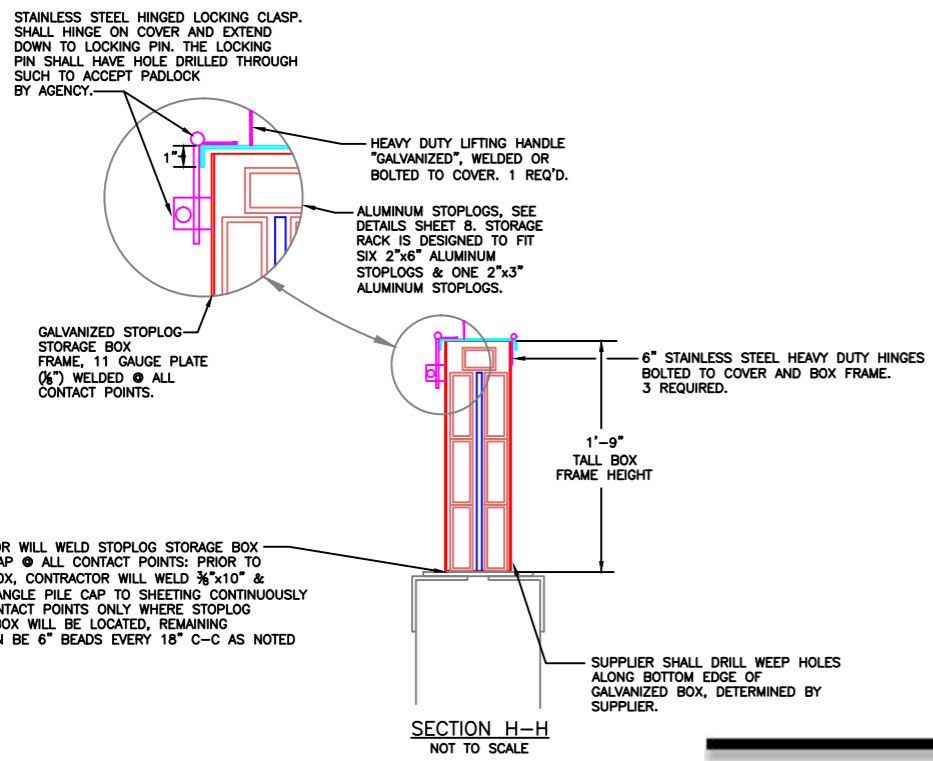


EXAMPLE OF STORAGE BOX MADE BY HALLA INDUSTRIES



STOPLOG STORAGE BOX NOTES:

- BOX FRAME AND COVER SHALL BE 11 GAUGE (1/8") THICK AND BE WELDED @ ALL CONTACT POINTS.
- COVER SHALL HAVE A 1" OVER HANG ON ALL SIDES.
- ALL STOPLOG STORAGE BOX COMPONENTS SHALL BE GALVANIZED.
- SUPPLIER SHALL DRILL WEEP HOLES IN BOTTOM OF BOX.
- 1/2"x3" FLAT BARS SPACERS SHALL BE WELDED @ ALL CONTACT POINTS ALONG BOTTOM AND TACK WELDED (3" BEADS SPACED APART) ALONG BOTH SIDES OF BAR STOCK SUFFICIENT ENOUGH TO WITH STAND FIELD USE.
- SUPPLIER SHALL STAINLESS STEEL HEAVY DUTY HINGES, LIFTING HANDLE, LOCKING CLASP, AND LOCKING PIN.
- STOPLOG STORAGE BOX WILL BE WELDED TO 3/8"x10" PILE CAP @ ALL CONTACT POINTS. PRIOR TO INSTALLING STORAGE BOX: THE CONTRACTOR SHALL WELD 3/8"x10" PILE CAP & 5"x5"x3/8" ANGLES CONTINUOUSLY TO SHEET PILING ONLY WHERE BOX FRAME IS LOCATED. REMAINING WELDS CAN BE 6" BEADS, 18" C-C AS NOTED SHEET 6.
- PAYMENT FOR STOPLOG STORAGE BOX AND ALL COMPONENTS DETAILED THIS SHEET SHALL BE BASED ON THE CONTRACTORS UNIT BID PRICE FOR "GALVANIZED STOPLOG STORAGE BOX."

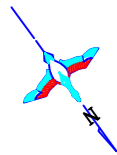


Revision Number	Sheet Number	Revisions	Date	By	I hereby certify that this plan, specification or report was prepared
		Board Meeting - 10/6/2015			James A. Streifel, P.E. for Ducks Unlimited, Inc. License No. 47359

DUCKS UNLIMITED INC.
GREAT PLAINS REGIONAL OFFICE
DATE: 7-23-2015 SHEET NO. 10

PROJECT NO. MN-445-1
SANBORN LAKE
STOPLOG STORAGE BOX DETAIL

DESIGNED BY: JAS
DRAWN BY: MLO
SURVEYED BY: GLJ
CHECKED BY: .
APPROVED BY: . APPROVED BY: .



DESIGNATED BORROW/WASTE AREA. SEE NOTE THIS SHEET.

EXCAVATE 6' WIDE 2:1 SLOPE INLET CHANNEL, SEE DETAILS THIS SHEET.

FLOW →

0+00 CL INLET CHANNEL
N 16°57'48.84"
E 1496.66844'
BTM ELEV. 1014.00

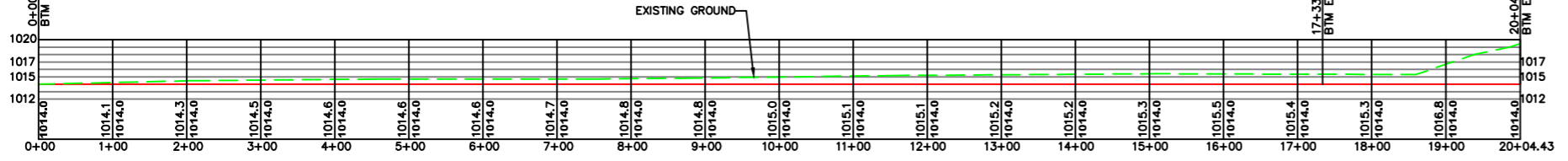
PLAN VIEW INLET CHANNEL
SCALE: 1"=100'-0"

17+33.58 P.I. INLET CHANNEL
N 16°56'08.46"
E 1497.67766'
BTM ELEV. 1014.00

17+33.58 P.I. INLET CHANNEL
BTM ELEV. 1014.00

20+04.43 END INLET CHANNEL
BTM ELEV. 1014.00

0+00 BEGIN INLET CHANNEL
BTM ELEV. 1014.00



CL PROFILE INLET CHANNEL
SCALE: 1"=100'-0" HORIZONTAL
1"=10'-0" VERTICAL

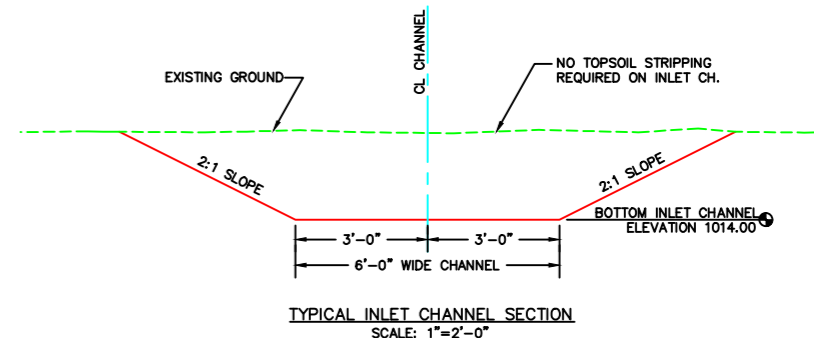
ESTIMATED QUANTITIES:
INLET CHANNEL: 950 C.Y.*
*THIS IS FOR INFORMATION ONLY. PAYMENT WILL BE BASED ON LINEAR FOOT.

ESTIMATED QUANTITIES:
INLET CHANNEL EXC. STATIONS 0+00-20+05:
2005 LINEAR FEET
PAYMENT WILL BE BASED ON LINEAR FOOT BASIS,
CONTRACTOR SHALL INCLUDE ALL COSTS ASSOCIATED WITH "CHANNEL EXCAVATION" AS NOTED THIS SHEET.

INLET CHANNEL EXCAVATION NOTES:

CONTRACTOR WILL EXCAVATE 6' WIDE 2:1 SLOPE CHANNEL @ BOTTOM ELEV. 1014.00, ALL SPOIL MATERIAL SHALL BE REMOVED FROM WETLAND AND DEPOSITED IN DESIGNATED WASTE AREA SHOWN THIS SHEET. THE WASTE AREA IS ALSO THE BORROW AREA FOR RCP CROSSING, CONTRACTOR WILL FILL "VOID" WITH SPOIL MATERIAL AND LEVEL SUITABLE ENOUGH FOR SEEDING & MULCHING. THE EXACT BORROW/WASTE AREA WILL BE LOCATED IN THE FIELD BUT FOR BIDDING PURPOSES WILL BE IN THE GENERAL AREA WEST OF RCP CROSSING. NO TOPSOIL STRIPPING REQUIRED WITHIN EXISTING CHANNEL FOOTPRINT. CONTRACTOR SHALL INCLUDE A SECOND MOBILIZATION TO RETURN WHEN WATER LEVELS HAVE LOWERED SUITABLE ENOUGH TO FINISH FULL INLET CHANNEL AS SHOWN.

PAYMENT IS BASED ON LINEAR FOOT: THIS SHALL INCLUDE BUT NOT LIMITED TO: EXCAVATOR, DOZER, TRUCKS, OPERATORS, LABORERS, MATS AND SECOND MOBILIZATION TO RETURN WHEN WATER LEVELS HAVE LOWERED TO FINISH FULL INLET CHANNEL AS SHOWN. CONTRACTOR SHALL INCLUDE ALL COSTS ASSOCIATED WITH CHANNEL EXCAVATION WORK AS NOTED. EXCAVATION REQUIRED FOR RIPRAP IS CONSIDERED "INCIDENTAL" TO THAT LINE ITEM.



TYPICAL INLET CHANNEL SECTION
SCALE: 1"=2'-0"

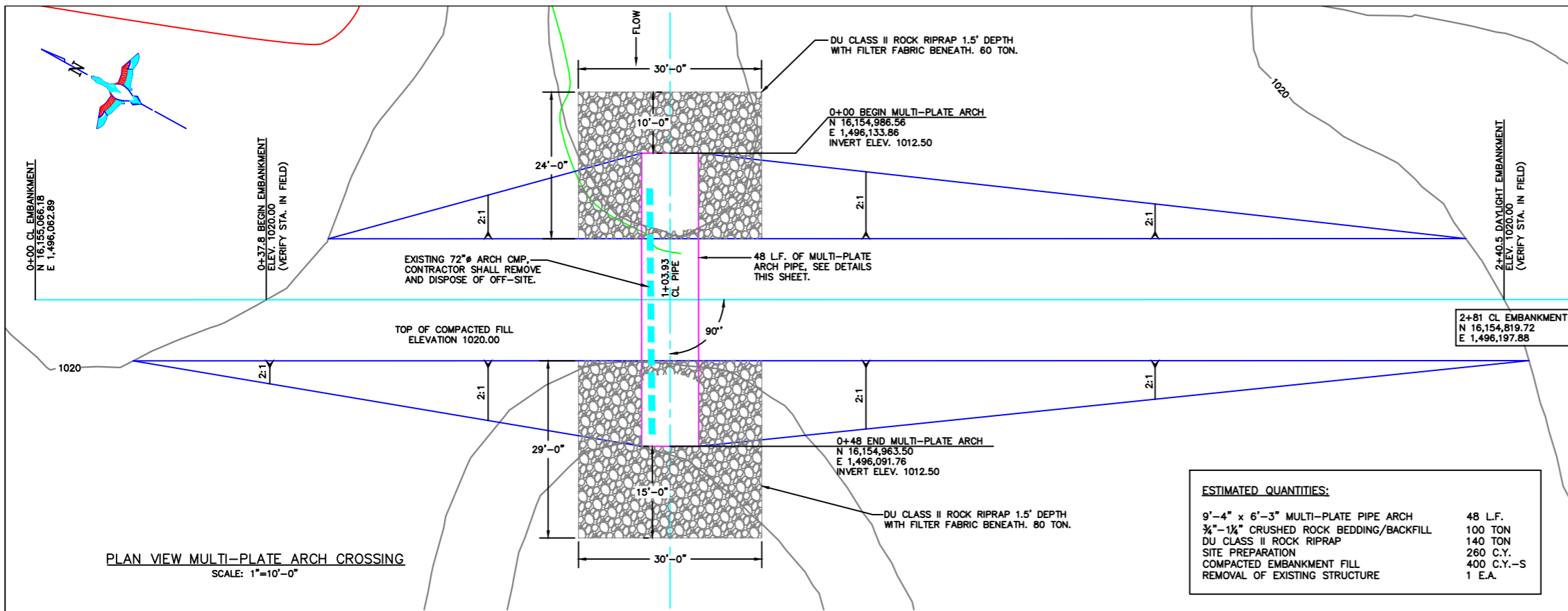
PRELIMINARY

Revision Number	Sheet Number	Revisions	Date	By	I hereby certify that this plan, specification or report was prepared
		Board Meeting - 10/6/2015			James A. Streifel, P.E. for Ducks Unlimited, Inc. License No. 47359

DUCKS UNLIMITED INC.
GREAT PLAINS REGIONAL OFFICE
DATE: 7-23-2015 SHEET NO. 11

PROJECT NO. MN-445-1
SANBORN LAKE
PLAN & PROFILE INLET CHANNEL
DETAILS AND NOTES

DESIGNED BY: JAS
DRAWN BY: MLO
SURVEYED BY: GLJ
CHECKED BY: .
APPROVED BY: .



SITE PREPARATION NOTE:

MINIMUM 12" DEPTH TOPSOIL SHALL BE STRIPPED FROM BENEATH THE CROSSING FOOTPRINT AND STOCKPILED PRIOR TO INSTALLING PIPE. UPON COMPLETION OF PIPE INSTALLATION/CROSSING CONTRACTOR SHALL PLACE MIN. 6" DEPTH TOPSOIL OVER ALL DISTURBED AREAS NOT RECEIVING ROCK RIPRAP. ANY ADDITIONAL TOPSOIL SHALL BE WASTED IN BORROW AREA OR AS DIRECTED BY THE DU FIELD ENGINEER.

THE CONTRACTOR SHALL LEVEL ALL TOPSOIL SUITABLE ENOUGH FOR SEEDING & MULCHING, AS DETERMINED BY DU FIELD ENGINEER. PAYMENT FOR STRIPPING, STOCKPILING, REMOVAL/DEPOSITING, AND PLACEMENT SHALL BE PAID FOR BASED ON THE CONTRACTOR'S UNIT BID PRICE FOR "SITE PREPARATION."

BORROW AREA/CROSSING NOTE:

THE BORROW AREA FOR MULTI-PLATE PIPE CROSSING IS HILL SIDE LOCATED NORTHEAST OF CROSSING, SEE SHEET 13. CONTRACTOR WILL EXCAVATE TEST HOLES WITHIN THIS GENERAL AREA TO LOOK FOR SUFFICIENT MATERIAL TO BE USED AS BACKFILL ALONG PIPE AND COMPACTED EMBANKMENT, AS DETERMINED BY THE DU FIELD ENGINEER. AFTER COMPLETION OF CROSSING AND BACKFILLING "EXISTING DITCH" (SEE SHEET 13), CONTRACTOR WILL BLEND BORROW AREA INTO EXISTING LANDSCAPE AND LEVEL ALL TOPSOIL SUITABLE ENOUGH FOR SEEDING & MULCHING. INSUFFICIENT SURVEY DATA AT THIS CROSSING SITE MEANS THAT THE MULTI-PLATE PIPE ARCH CROSSING WILL BE BID AS CUBIC YARD-STAKED. CONTRACTOR WILL BE PAID FOR ACTUAL STAKED QUANTITY DETERMINED IN THE FIELD. FOR BIDDING PURPOSES IT IS ESTIMATED THAT THE CROSSING IS 400 CUBIC YARDS. CONTRACTOR WILL PLACE AND COMPACT MATERIAL AS DESCRIBED IN EMBANKMENT SPECIFICATION 204.

PAYMENT FOR MULTI-PLATE ARCH CROSSING SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "EMBANKMENT."

COFFERDAM NOTE:

THE CONTRACTOR WILL LIKELY NEED A COFFERDAM ON BOTH THE UPSTREAM AND DOWNSTREAM SIDES OF EXISTING CHANNEL IN-ORDER TO INSTALL PIPE AND RIPRAP. COFFERDAM MATERIAL SHALL BE TAKEN FROM BORROW AREA AS NOTED ABOVE. ANY MATERIAL PLACED WITHIN THE EXISTING CHANNEL FOR "COFFERDAM" SHALL BE REMOVED ENTIRELY AFTER INSTALLATION OF THE VARIOUS COMPONENTS.

ALL COFFERDAM WORK IS CONSIDERED "INCIDENTAL" TO MULTI-PLATE PIPE INSTALLATION.

CLEARING & GRUBBING NOTE:

EXISTING TREES AND BRUSH ARE PRESENT AT THE CROSSING SITE AND BORROW AREA. CONTRACTOR WILL REMOVE THOSE TREES/BRUSH WITHIN THE CONSTRUCTION AREA, AS IDENTIFIED BY THE DU FIELD ENGINEER, AND PLACE IN A PILE FOR THE AGENCY TO BURN AT A LATER DATE. EXACT LOCATION OF PILE WILL BE DETERMINED BY THE AGENCY BUT FOR BIDDING PURPOSES WITHIN 400' OF THE CROSSING. SUCH TREE/BRUSH REMOVAL SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "CLEARING & GRUBBING."

MULTI-PLATE PIPE ARCH INSTALLATION:

CONTRACTOR SHALL INSTALL 48 LINEAL FEET OF 9'-4" x 6'-3" MULTI-PLATE PIPE ARCH AT A SLOPE OF 0.00% INVERT ELEVATION 1012.50. TYPICAL INSTALLATION WILL BE 1.5' DEPTH OF ROCK BEDDING AND 4' OF BACKFILL UP SIDES OF PIPE. CONTRACTOR SHALL MACHINE COMPACT ROCK TO ENSURE ALL VOIDS HAVE BEEN FILLED. WOVEN FILTER FABRIC WILL BE INSTALLED OVER ROCK FOR THE ENTIRE TRENCH WIDTH, PRIOR TO PLACING COMPACTED EMBANKMENT FILL. WOVEN FILTER FABRIC SHALL BE CONSIDERED "INCIDENTAL" TO PIPE INSTALLATION. PAYMENT FOR MATERIALS, HAULING, AND PLACEMENT SHALL BE PAID FOR BASED ON THE CONTRACTOR'S UNIT BID PRICE FOR "9'-4"x6'-3" MULTI-PLATE PIPE ARCH."

RIPRAP NOTE:

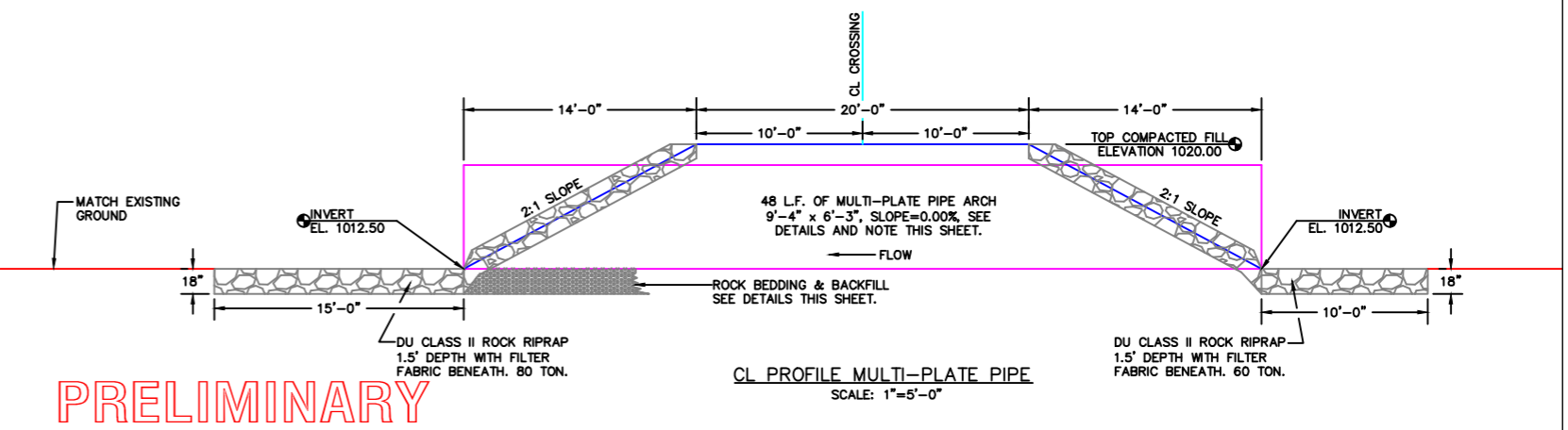
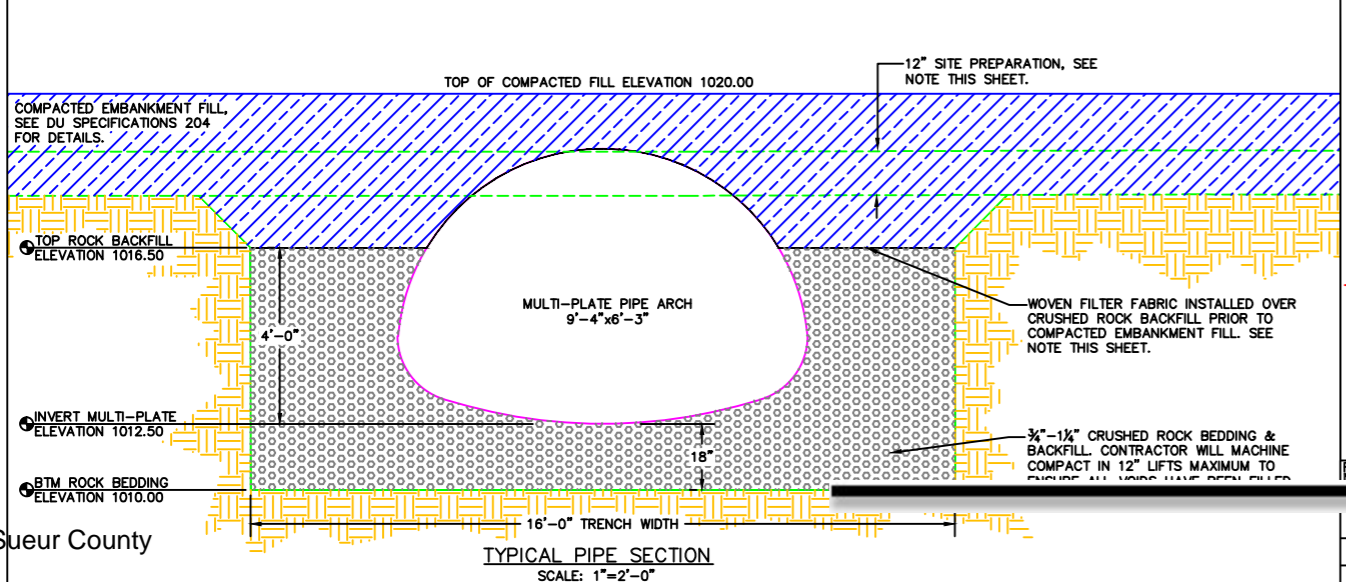
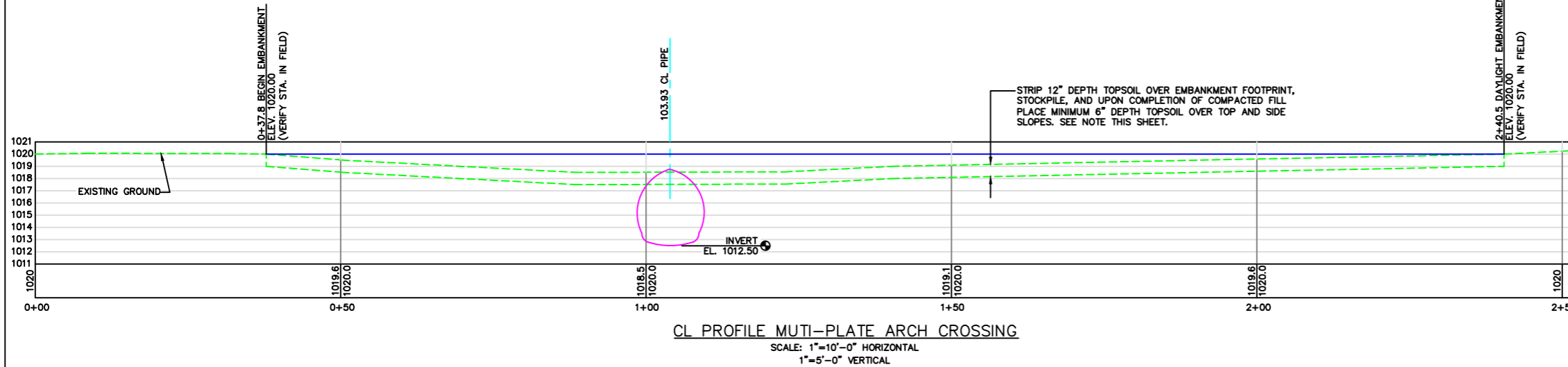
DU CLASS II ROCK RIPRAP SHALL BE INSTALLED ON THE UPSTREAM SIDE OF THE RCP, 1.5' DEPTH WITH FILTER FABRIC BENEATH. CONTRACTOR WILL RIPRAP 10' UPSTREAM OF PIPE AND SIDE SLOPES TO ELEVATION 1020.00 AS SHOWN. ROCK SHALL BE MACHINE COMPACTED TO ENSURE A STABLE/UNIFORM LOOK. ALL EXCAVATION REQUIRED FOR ROCK RIPRAP SHALL BE CONSIDERED "INCIDENTAL." TOTAL OF 60 TON.

DU CLASS II ROCK RIPRAP SHALL BE INSTALLED ON THE DOWNSTREAM SIDE OF THE RCP, 1.5' DEPTH WITH FILTER FABRIC BENEATH. CONTRACTOR WILL RIPRAP 15' DOWNSTREAM OF PIPE AND UP SIDE SLOPES TO ELEVATION 1020.00 AS SHOWN. ROCK SHALL BE MACHINE COMPACTED TO ENSURE A STABLE/UNIFORM LOOK. ALL EXCAVATION REQUIRED FOR ROCK RIPRAP SHALL BE CONSIDERED "INCIDENTAL." TOTAL OF 80 TON.

PAYMENT FOR ROCK RIPRAP (EXCAVATION, SPOIL REMOVAL, NON-WOVEN FILTER FABRIC, ROCK, AND INSTALLATION) SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "DU CLASS II"

ESTIMATED QUANTITIES:

9'-4" x 6'-3" MULTI-PLATE PIPE ARCH	48 L.F.
¾"-1½" CRUSHED ROCK BEDDING/BACKFILL	100 TON
DU CLASS II ROCK RIPRAP	140 TON
SITE PREPARATION	260 C.Y.
COMPACTED EMBANKMENT FILL	400 C.Y.-S
REMOVAL OF EXISTING STRUCTURE	1 E.A.



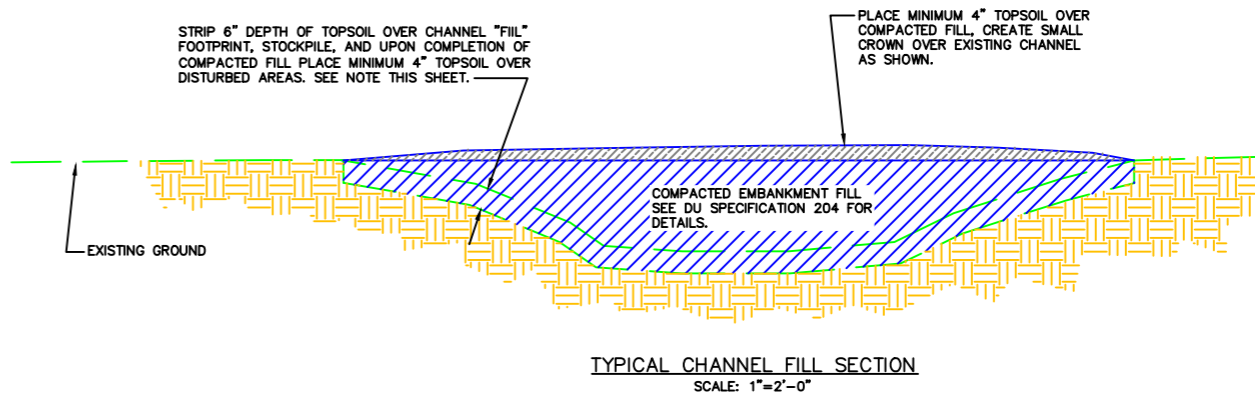
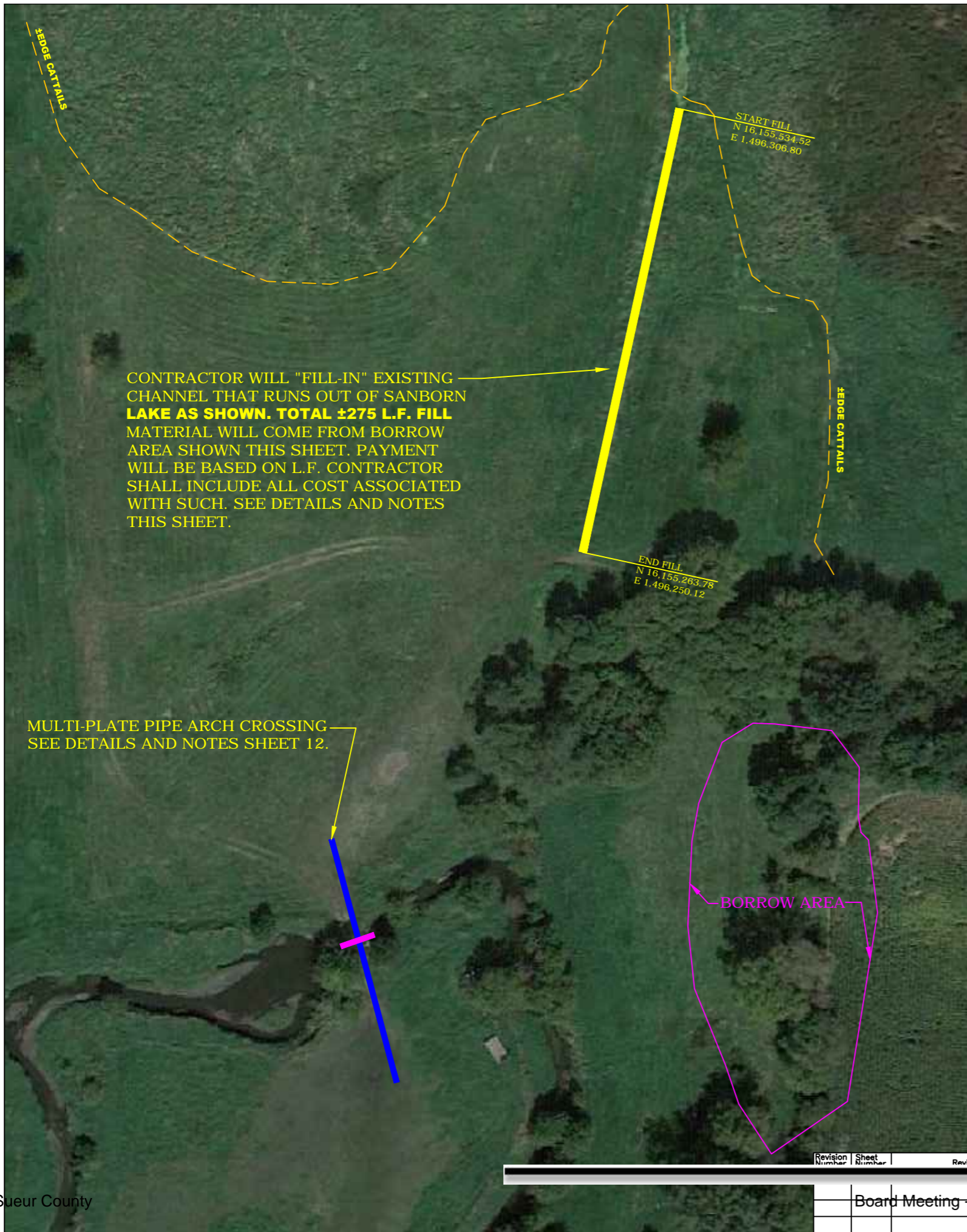
PRELIMINARY

Revision Number	Sheet Number	Revisions	Date	By	I hereby certify that this plan, specification or report was prepared

DUCKS UNLIMITED INC.
 GREAT PLAINS REGIONAL OFFICE
 DATE: 7-23-2015 SHEET NO. 12

PROJECT NO. MN-445-1
 SANBORN LAKE
 PLAN & PROFILE MULTI-PLATE PIPE ARCH

DESIGNED BY: JAS
 DRAWN BY: MLO
 SURVEYED BY: GLJ
 CHECKED BY: .
 APPROVED BY: . APPROVED BY: .



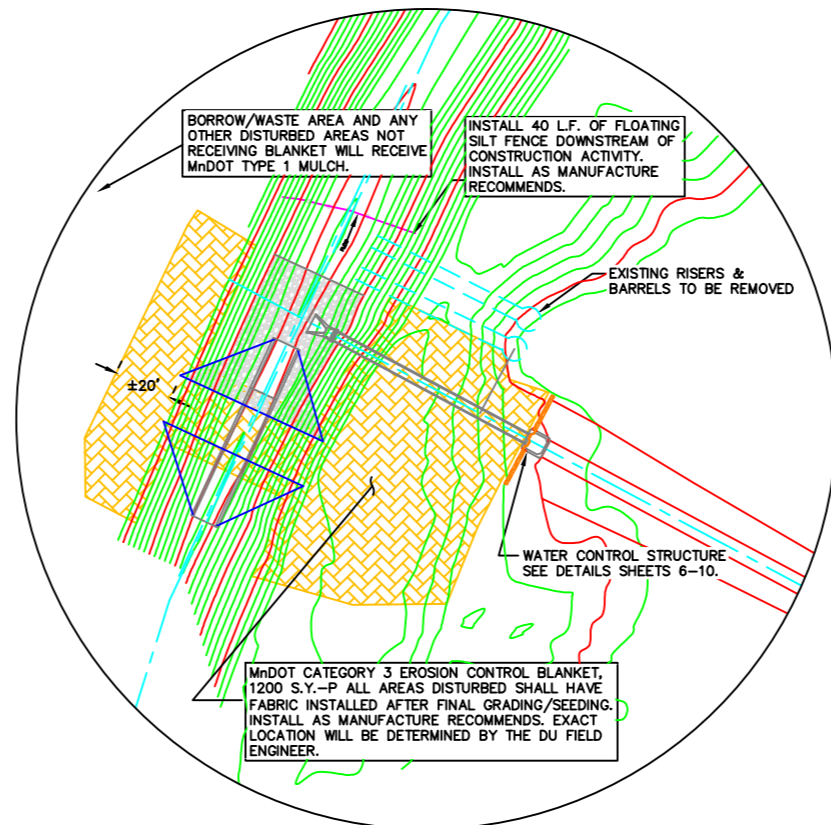
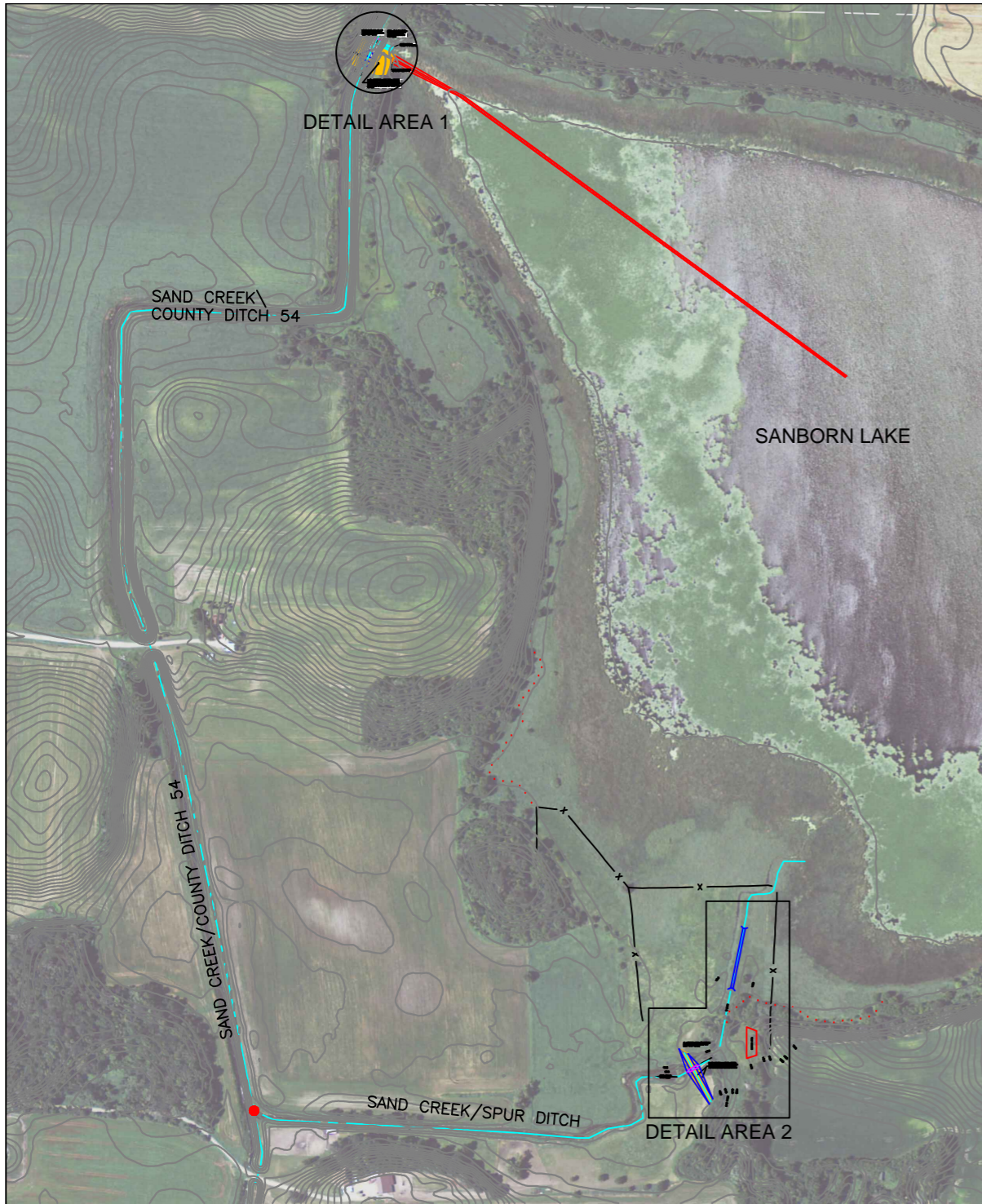
EXISTING CHANNEL FILL NOTE:

THE CONTRACTOR WILL "FILL-IN" THE EXISTING CHANNEL THAT LEADS OUT OF SANBORN LAKE AS SHOWN THIS SHEET. TOTAL OF 275 L.F. OF EXISTING CHANNEL WILL NEED TO BE FILLED. SUCH WORK SHALL CONSIST OF: STRIPING 6" TOPSOIL OVER EXISTING CHANNEL FOOTPRINT, STOCKPILING, PLACING COMPACTED FILL TO MATCH EXISTING SIDE SLOPES, AND PLACING 4" DEPTH OF TOPSOIL OVER ALL DISTURBED AREAS. CONTRACTOR WILL LEVEL SUITABLE ENOUGH FOR SEEDING AND MULCHING. BORROW AREA IS SHOWN ON THIS SHEET, UPON COMPLETION OF WORK CONTRACTOR WILL BLEND INTO THE EXISTING LANDSCAPE AND LEVEL SUITABLE ENOUGH FOR SEEDING AND MULCHING.

ALL WORK REQUIRED FOR "EXISTING CHANNEL FILL" INCLUDING: SITE PREPARATION, HAULING, PLACING, COMPACTING FILL, AND LEVELING SUITABLE ENOUGH FOR SEEDING & MULCHING WILL BE INCLUDED IN THE CONTRACTORS UNIT BID PRICE FOR "EXISTING CHANNEL FILL." ANY ADDITIONAL LENGTH REQUIRED, AS DETERMINED BY THE DU FIELD ENGINEER, WILL BE CONSIDERED "EXTRA" AND PAID FOR AS SUCH.

PRELIMINARY

Revision Number	Sheet Number	Revisions	Date	By	I hereby certify that this plan, specification or report was prepared	DATE	DESIGNED BY	PROJECT NO.	DESIGNED BY
					James A. Streifel, P.E. for Ducks Unlimited, Inc. License No. 47359	7-23-2015	JAS	MN-445-1	JAS
							MLO		MLO
							GLJ		GLJ



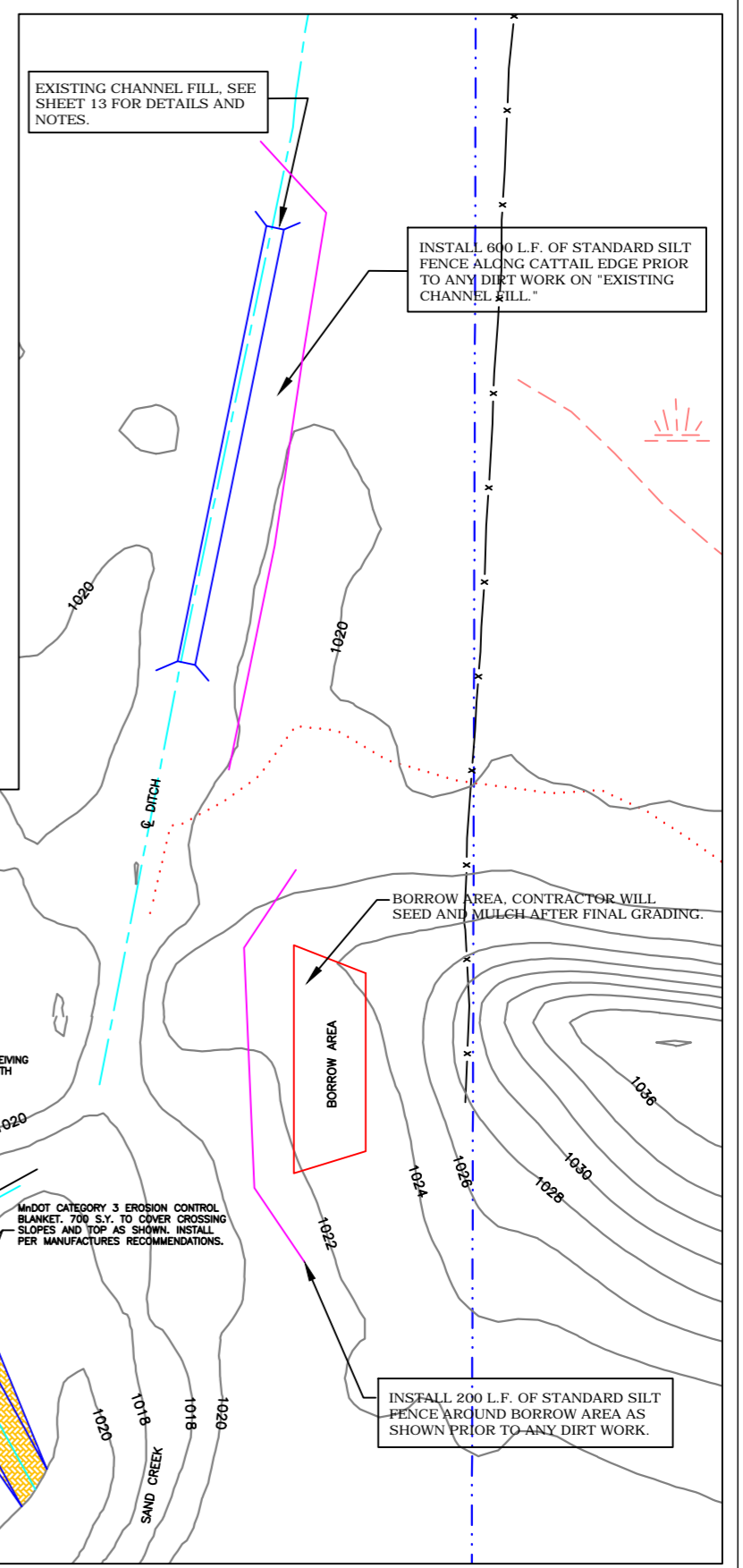
DETAIL AREA 1

- SEQUENCE OF CONSTRUCTION ACTIVITIES AND BMP IMPLEMENTATION**
1. Clear and grub construction site.
 2. Perform site preparation work at structure site and proposed borrow area. Install silt fence perimeter control.
 3. Complete structure work and install temporary ditch check.
 4. Following initial lake drawdown, perform inlet channel work. If water is still flowing out of the during channel work, install floating silt curtain or other approved BMP's.
 5. Seed and mulch disturbed areas.
 6. Remove temporary rock check.
 7. Inspect all BMP's.
 8. Minnesota DNR will be responsible for the removal of all other temporary BMP's including silt fence and bio rolls following satisfactory seed germination.
- SEQUENCE OF CONSTRUCTION EVENTS MAY BE ALTERED BY THE CONTRACTOR AS LONG AS BMP'S ARE IMPLEMENTED ACCORDINGLY. CONTRACTOR SHALL PROVIDE MODIFIED SCHEDULE AND BMP IMPLEMENTATION.

Mixture: 350			
Common Name	PLS Rate		% of Mix Component
	kg/ha	lb/ac	
Bluestem, big	3.4	3.0	21.5
Indian grass	2.8	2.5	18.0
Bluestem, little	2.8	2.5	18.0
Gramma, sideoats	3.4	3.0	21.5
Wild-rye, Canadian	2.2	2.0	14.0
Switch grass	1.1	1.0	7.0
Grass Totals	15.7	14.0	100.0
Bulk Rate			
Common Name	kg/ha		% of Mix Component
	kg/ha	lb/ac	
Winter Wheat*	62.7	56.0	80.0
Rye-grass, annual	12.5	11.2	16.0
Wheatgrass, slender	3.1	2.8	4.0
Cover Crop Totals	78.3	70.0	100.0
Mesic Forbs Mixture	0.6	0.5	100.0
GRAND TOTALS:	94.6	84.5	100.0

*Oats to be substituted for spring plantings
Application: Native mix for general roads/de areas.

SEED MIX NOTE: MINNESOTA DNR SHALL APPROVE FINAL SEED MIX. IF MIX DIFFERS FROM THAT SHOWN, DNR WILL PROVIDE A LOCAL NATIVE SEED MIX.



DETAIL AREA 2

ESTIMATED QUANTITIES FOR STORMWATER BMP'S

Location	Silt Fence (Lineal Ft.)	Erosion Control Blanket (Square Yards)	Floating Silt Fence (Lineal Feet)	Seeding Area (Acres)	Seed Mix (Pounds)	Mulch (Ton)
Area 1 - Water Control	600	1,200	40	1.5	130	3
Area 2 - Multi-Plate	200	700		1.5	130	3
Sanborn Lake Ditch Fill	600			0.2	20	0.5
TOTAL	1,400	1,900	40	3.2	280	6.5

ESTIMATED QUANTITIES WATER CONTROL STRUCTURE SITE:
QUANTITIES LISTED ARE APPROXIMATE AND WILL BE ADJUSTED BASED ON SITE CONDITIONS AND EXACT MEASUREMENTS DETERMINED BY THE DU FIELD ENGINEER. IF FURTHER EROSION CONTROL METHODS ARE REQUIRED THAN THOSE WILL BE TREATED AS "EXTRA" AND PAID FOR AS SUCH. PRIOR TO FINAL INSPECTION THE DU FIELD ENGINEER WILL TAKE MEASUREMENTS ON L.F. SILT FENCE, SQUARE YARD BLANKET, AND TOTAL ACRES OF SEEDING/MULCHING; CONTRACTOR WILL BE PAID BASED ON THESE AS-BUILT MEASUREMENTS.

AREA 1 SOIL TYPES

NRCS Soil Name	Acres in Area 2	Percent of Area 2	K Factor	Soil Classification
Cordova Clay Loam	0.46	31%	0.28	CL-ML
Manet Clay Loam	0.17	11%	0.24	CL
Caron, Blue Earth	0.87	58%	0.02	ML-DL

AREA 2 SOIL TYPES

NRCS Soil Name	Acres in Area 2	Percent of Area 2	K Factor	Soil Classification
Dassel Loam (183)	0.75	44%	0.28	CL-ML
Dttr Silty Loam (46B)	0.10	6%	0.32	CL
Caron Muck (S24)	0.85	50%	0.02	PT

Revision Number	Sheet Number	Revisions	Date	By
		Board Meeting - 10/6/2015		

I hereby certify that this plan, specification or report was prepared by: James A. Streifel, P.E. for Ducks Unlimited, Inc. License No. 47359

PRELIMINARY

DUCKS UNLIMITED INC.
GREAT PLAINS REGIONAL OFFICE
DATE: 7-23-2015 SHEET NO. 14

PROJECT NO. MN-445-1
SANBORN LAKE
PLAN VIEW EROSION CONTROL

DESIGNED BY: JAS
DRAWN BY: MLO
SURVEYED BY: GLJ
CHECKED BY:

APPROVED BY: APPROVED BY:

STORM WATER POLLUTION PREVENTION PLAN
 THE Minnesota General Permit Authorization to Discharge Stormwater Associated with Construction Activity issued on June 25, 2013 shall apply for this project.

ABBREVIATIONS
 MNDNR: Minnesota Department of Natural Resources
 MPCA: Minnesota Pollution Control Agency

NARRATIVE
 Project Limits: See Sheets 1, 3, 4, 5, 11, 12, & 13 of these plans for the project limits. These sheets cover structure installations, channel cleanout, embankment construction and seeding areas.

SITE DESCRIPTION
 Project Description: The purpose of the project is to replace the existing water control structures with a sheet pile box riser weir. The project will also include the construction of ditch crossings and channel cleanout.

Site Map(s): See map on sheet 14 of plans.

Major Soil Disturbing Activities (check all that apply):
 Clearing & Grubbing
 Grading & Shaping
 Cutting & Filling
 Other (describe):

Total Project Area: 1.5 Acres
 Total Area to Be Disturbed: 1.5 Acres
 Existing Impervious Area: 0.0 Acres
 Proposed Impervious Area: 0.0 Acres

Name of Receiving Water Body/Bodies: Sanborn Lake discharges directly into County Ditch 54 which in turn becomes Sand Creek.

Discharges to Special Or Impaired Waters: The project does have a discharge point within 1 mile of a special water or a water that is impaired for sediment or a sediment related parameter of the permit. Sand Creek has been determined to be impaired for: Chloride & Turbidity.

Discharges to Calcareous Fen: The project does not have a discharge to a Calcareous fen.

Endangered or Threatened Species: The project area has not been identified for endangered or threatened species.

Historic Places or Archeological Sites: Historical places or archeological sites have been addressed by the MNDNR.

Quantities Tabulation for All BMPs: See estimated quantities and construction notes in plans.

ORDER OF CONSTRUCTION ACTIVITIES
 (Stabilization measures shall be initiated as soon as possible, but in no case later than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.)
 Install erosion and sediment control measures.
 Proceed with site grading and construction activities.
 Stabilize areas disturbed by construction activities with temporary erosion and sediment control measures.
 Complete final grading.
 Complete permanent erosion and sediment control measures.

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN
 See sheets 2, 14 & 15 for erosion control measures and notes.

EROSION AND SEDIMENT CONTROLS
 (Check all that apply)

Stabilization Practices (See Erosion and Sediment Control Details in Plan Sheets)
 Temporary or Permanent Seeding
 Sod Placement
 Planting
 Mulching (Straw or Cellulose Fiber)
 Erosion Control Blankets or Mats
 Vegetation Buffer Strips
 Roughened Surface (e.g. tracking)
 Gabions-Gabion Mattress
 Other: Rip Rap

Structural Temporary Erosion and Sediment Controls
 Silt Fence
 Temporary Berm
 Temporary Slope Drain
 Straw Wattles or Rolls
 Diversion Channels/Swales
 Channel Liners (TRM)
 Stone Rip Rap Sheet
 Rock Check Dams
 Sediment Traps/Basins
 Inlet Protection
 Outlet Protection
 Surface Inlet Protection
 Curb Inlet Protection
 Stabilized Construction Entrances
 Other

Wetland Avoidance:
 Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes No
 If yes, the project and erosion and sediment control impacts have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.

Storm Water Management: Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period.

Pollution Prevention Management Measures

- Solid Wastes**
 Collected sediment, asphalt, and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with the MPCA disposal requirements.
- Hazardous Materials**
 Oil, gasoline, paint and any hazardous substances must be properly stored, including secondary containment, to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste must be in compliance with MPCA regulations.
- Vehicle Washing**
 External washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.
- Concrete Washout Onsite**
 All liquid and solid wastes generated by concrete washout operation must be contained in a leak-proof containment facility or impermeable liner. A compacted clay liner that does not allow washout liquids to enter ground water is considered an impermeable liner. The liquid and solid wastes must not contact the ground, and there must not be runoff from the concrete washout operation or areas. Liquid and solid wastes must be disposed of properly and in compliance with MPCA regulations. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

MAINTENANCE AND INSPECTION
 Maintenance and Inspection Practices
 Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
 All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report or as soon as field conditions allow access.
 Where work has been suspended due to frozen ground conditions, the required inspections and maintenance must take place as soon as runoff occurs at the site or prior to resuming construction, whichever comes first.
 Where parts of the construction site have undergone final stabilization, but work remains on other parts of the site, inspections of the stabilized areas may be reduced to once per month.
 Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence. All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/3 of the height of the fence.

- Sediment basins and traps will be checked. Sediment will be removed when the depth reaches approximately 50 percent of the structure's capacity.
- Check dams will be inspected for stability. Sediment will be removed when the depth reaches 1/2 the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Surface waters, including drainage ditches and conveyance systems, must be inspected for evidence of sediment being deposited by erosion.
- Construction site vehicle exit locations must be inspected for evidence of off-site sediment tracking onto paved surfaces. Tracked sediment must be removed from all off-site paved surfaces within 24 hours of discovery.
- Disturbed areas will be checked for stabilization. Stabilization measures shall be initiated as soon as construction activity in that portion of the site has temporarily or permanently ceased.
- The normal wetted perimeter of any temporary or permanent drainage ditch or swale that drains water from any portion of the construction site, or diverts water around the site, must be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water. Stabilization of the last 200 lineal feet must be completed within 24 hours after connection to a surface water.
- Stabilization of the remaining portions of any temporary or permanent ditches or swales must be completed within 14 days after connecting to a surface water and construction in that portion of the ditch has temporarily or permanently ceased.
- Temporary or permanent ditches or swales that are being used as a sediment containment system (with properly designed rock ditch checks, bio rolls, silt dikes, etc.) do not need to be stabilized. These areas must be stabilized within 24 hours after no longer being used as a sediment containment system.
- Pipe outlets must be provided with temporary or permanent energy dissipation within 24 hours after connection to a surface water.
- Discharge procedures for water control and dewatering operations will be inspected. If the water cannot be discharged to a sedimentation basin prior to entering the surface water, it must be treated with the appropriate BMPs, such that the discharge does not adversely affect the receiving water or downstream landowners.
- Inspection and maintenance reports will be completed for each site inspection, this form will also be used to document changes to the SWPPP. The report shall include the date and amount of rainfall events greater than 0.5 inch in 24 hours. A copy of the completed inspection form will be filed with the SWPPP documents.
- The Contractor's site superintendent is responsible for inspection. Maintenance and repair activities are the responsibility of the Contractor.

SPILL NOTIFICATION
 In the event of a spill, the contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:
 1. A reportable spill is a quantity of more than 5 gallons of petroleum which must be reported immediately to the MPCA.
 2. Any spill of oil or hazardous substance to waters of the state must be reported immediately by telephone to the MPCA.
 3. MPCA Contact for Environmental Emergencies: 24 Hour (651) 649-5451 or (800) 422-0798

CONSTRUCTION CHANGES
 When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SWPPP will be retained in a designated place for review over the course of the project.

PROJECT CONTACTS AND RESPONSIBILITIES

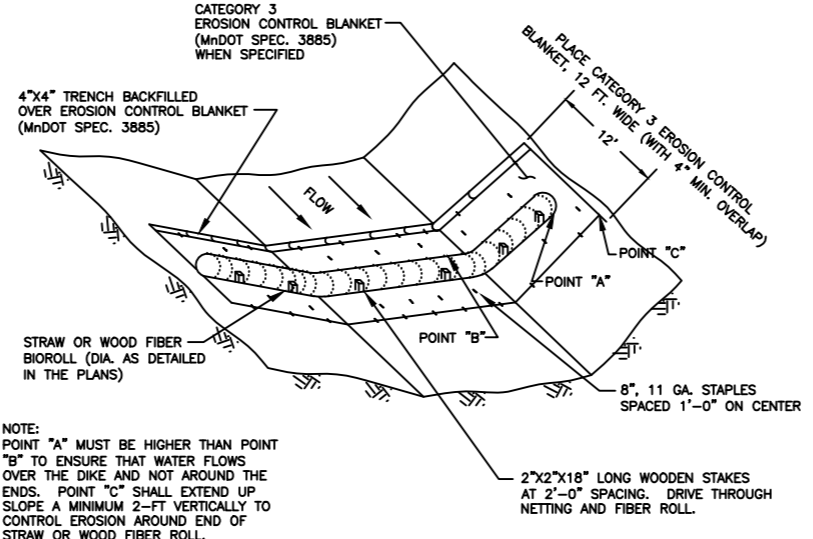
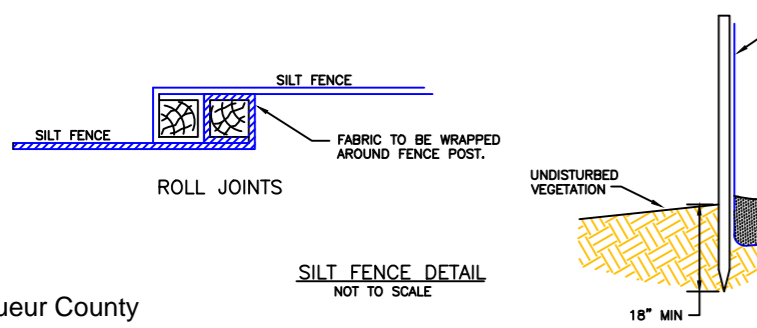
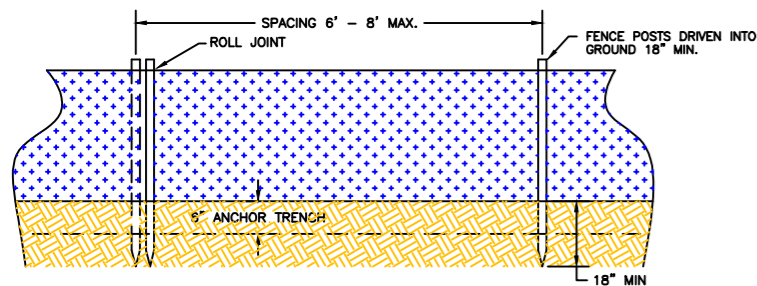
The Contractor is responsible for cosigning and being familiar with the MPCA General Permit for storm water discharges associated with a construction site. When a conflict arises between the permit and this plan sheet, the permit shall govern.
 The Contractor is responsible for implementation of the SWPPP and installation, inspection and maintenance of the erosion prevention and sediment control BMP's before and during construction. The Minnesota Department of Natural Resources, Windom Field Office, is responsible for long term operation and maintenance of the permanent storm water management system. The Contractor and FWS contact information is provided in the contract documents and project plans.

James A. Streifel, P.E., Regional Engineer for Ducks Unlimited, Inc. prepared the SWPPP. He successfully completed the "Design of Storm Water Pollution Prevention Plans" training course sponsored by the University of Minnesota (Nov. 16-17, 2009, Mankato, MN) and recertification course (Feb. 4, 2013, St. Cloud, MN). His certification expires May 31, 2016.

The Contractor will be required to have a person designated and on the project site who has been trained and certified as either an Erosion/ Sediment Control Inspector/Installer or in Erosion/Sediment Control Site Management.

SILT FENCE NOTES:

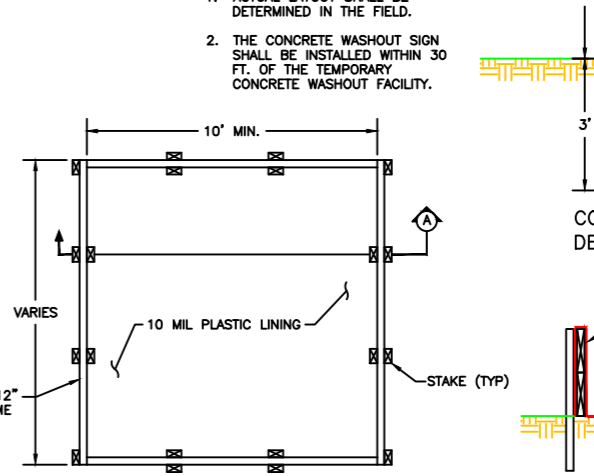
WOOD POST SHALL BE A MINIMUM OF 1 1/2" x 1 1/2".
 CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IS POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY, USE THE DETAIL SHOWN OR OTHER APPROVED METHOD.



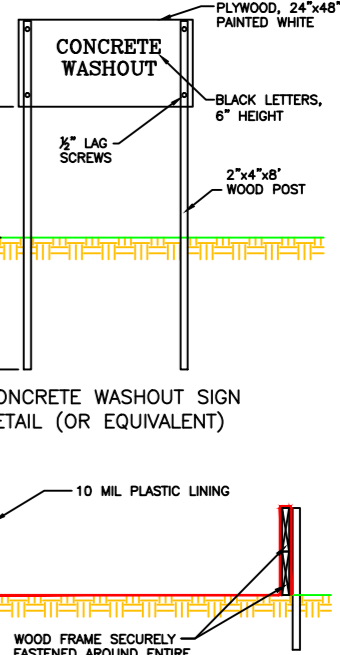
NOTE: POINT "A" MUST BE HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS. POINT "C" SHALL EXTEND UP SLOPE A MINIMUM 2-FT VERTICALLY TO CONTROL EROSION AROUND END OF STRAW OR WOOD FIBER ROLL.

TEMPORARY DITCH CHECK DETAIL
 NOT TO SCALE

CONCRETE WASHOUT PLAN VIEW



CONCRETE WASHOUT PLAN VIEW
 TYPE - ABOVE GRADE



SECTION A-A

Revision Number	Sheet Number	Revisions	Date	By	I hereby certify that this plan, specification or report was prepared	DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE DATE: 7-23-2015 SHEET NO. 15	PROJECT NO. MN-445-1 SANBORN LAKE STORM WATER POLLUTION PREVENTION PLAN	DESIGNED BY: JAS DRAWN BY: MLO SURVEYED BY: GLJ CHECKED BY:
Board Meeting - 10/6/2015					James A. Streifel, P.E. for Ducks Unlimited, Inc. License No. 47359		APPROVED BY: APPROVED BY:	

VI. DESIGN ADDENDUM

To model the entire watershed system including Ditch 54, Spur Ditch and Sanborn Lake water control structure, the HEC RAS and HydroCAD models were revised to include some additional elements. The HEC RAS results for Ditch 54 and the Spur Ditch were the used in conjunction with the HydroCAD model to route the flood hydrographs through Sanborn Lake to determine lake elevations for each of the runoff events. Even though the Spur Ditch now routes a portion of the inflows directly into Ditch 54, water surface profiles still rise to an elevation which then splits inflows and routes them through the existing water control structure. The revised model will take this into consideration to better represent the effects of the proposed versus existing conditions.

As part of the revised model, the proposed water control structure for Sanborn Lake included an increased size of the outlet barrel from 36" diameter to 48" diameter. The proposed weir length and full service level remained the same.

Because the TR-20 runoff method used in HydroCAD produces results considerably higher than those estimated in the regression equations, the Curve Number and Time of Concentration input variables were modified to produce similar runoffs to those of the regression equations. The modified TR-20 input variables and the resulting peak discharge rates are shown in Table 2 below for each of the subwatersheds. Table 1 shows the previously used peak flow estimates from the regression equations developed by using "StreamStats".

Events	Existing Sanborn Watershed	Sand Creek at Spur Ditch No. 2	County Ditch 54 - Upper Reach
1-Year	32.5 cfs	118 cfs	53.2 cfs
2-Year	43.0 cfs	162 cfs	72.1 cfs
5-Year	75.4 cfs	300 cfs	131 cfs
10-Year	101 cfs	416 cfs	181 cfs
25-Year	139 cfs	589 cfs	254 cfs
50-Year	171 cfs	737 cfs	318 cfs
100-Year	208 cfs	907 cfs	390 cfs

Table 1. Peak Flow Estimates from StreamStats

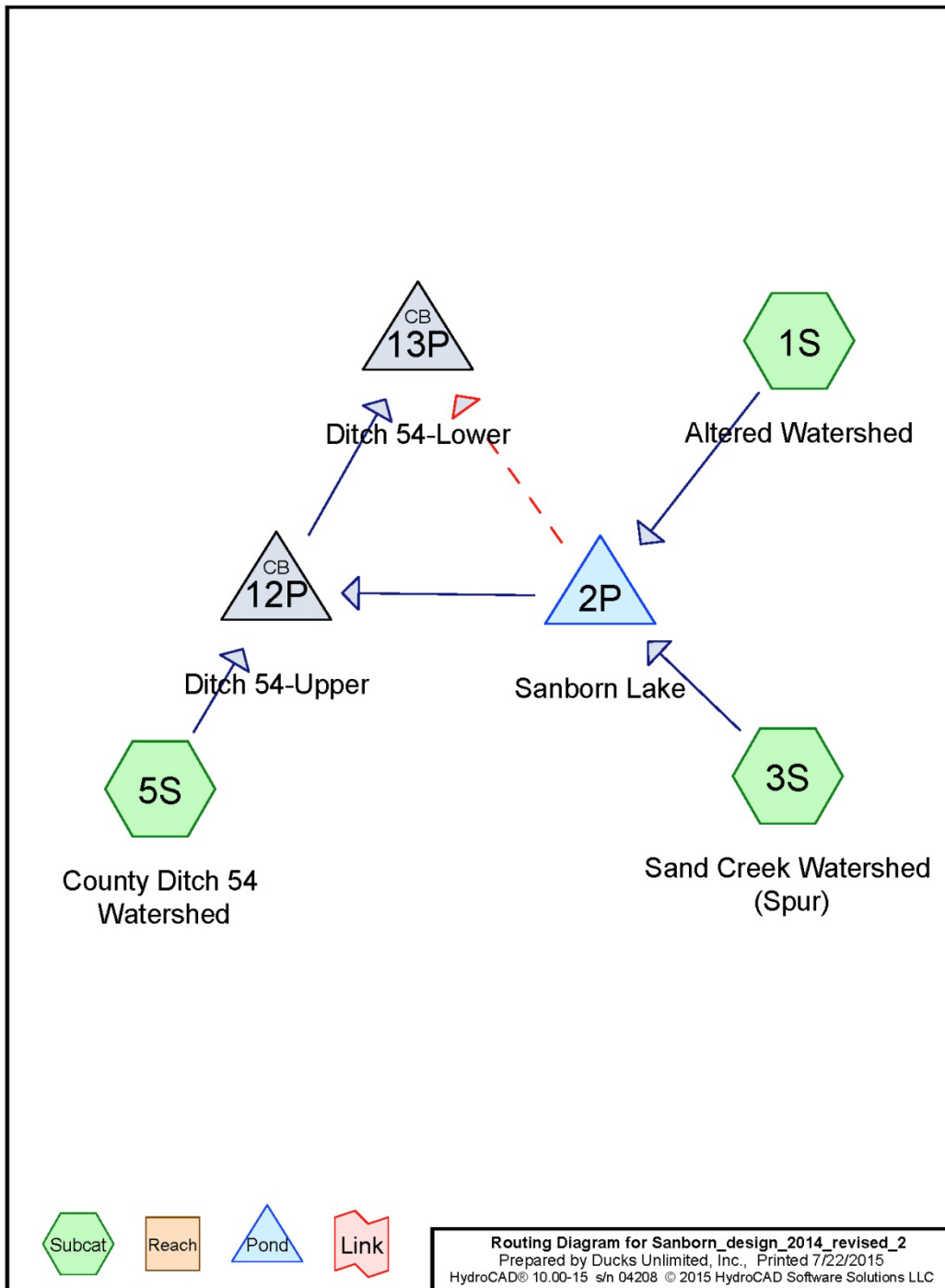


Figure 1. HydroCAD Routing Diagram

Sanborn Lake Design Report

Ducks Unlimited, Inc.

Altered Sanborn Lake Watershed - Area = 2,325 acres, CN = 60, AMC = 2
Sand Creek Watershed to Spur - Area = 22,656 acres, CN = 55, AMC = 2
Ditch 54 Upper Reach Watershed - Area = 9,344 acres, CN = 55, AMC = 2
24 Hr. Rainfall Depths from NOAA Atlas 14, Volume 8, Version 2 by U.S. Weather Bureau

Events	Existing Sanborn Watershed		Sand Creek at Spur Ditch Watershed		Count Ditch 54 Watershed	
	TOC (minutes)	Q (cfs)	TOC (minutes)	Q (cfs)	TOC (minutes)	Q (cfs)
1-Year	425	33	750	118	630	52
2-Year	750	44	1,350	163	1,185	73
5-Year	950	75	1,800	298	1,650	132
10-Year	1,200	101	2,250	416	2,075	182
25-Year	1,500	141	2,830	589	2,700	255
50-Year	1,780	171	3,325	738	3,175	317
100-Year	1,935	210	3,750	908	3,600	390

Table 2. Modified TR-20 Variables and Peak Discharge

Water surface profiles for Ditch 54 and the Spur Ditch were determined in the HEC RAS model and used as a user defined stage discharge for the ponds shown on the HydroCAD model diagram. The results of the HydroCAD model are shown in the tables 3 and 4 below.

A. Sanborn Lake Existing Conditions - Routing Results

	Inflow (cfs)	Spur Ditch Flow (cfs)	Structure Flow (cfs)	Elevation (feet)
1-Year	139	121	8	1019.09
2-Year	186	186	12	1019.13
5-Year	327	211	43	1019.37
10-Year	454	228	100	1019.68
25-Year	646	252	208	1020.13
50-Year	802	271	300	1020.48
100-Year	972	297	312	1020.95

Starting elevation of Sanborn Lake was assumed to be 1018.96 at the start of each event.

Table 3. Stage Discharge for Existing Conditions

Sanborn Lake Design Report

Ducks Unlimited, Inc.

B. Sanborn Lake Design Conditions - Routing Results

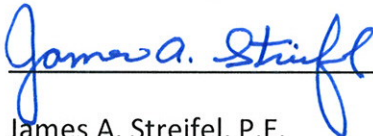
	Inflow (cfs)	Spur Ditch Flow (cfs)	Structure Flow (cfs)	Elevation (feet)
1-Year	139	136	1	1017.65
2-Year	186	139	4	1017.76
5-Year	327	158	38	1018.36
10-Year	454	191	95	1019.0
25-Year	646	232	180	1019.76
50-Year	802	263	195	1020.34
100-Year	972	297	205	1020.95

Starting elevation of Sanborn Lake was assumed to be 1017.5 at the start of each event.

Table 4. Stage Discharge for Design Conditions

Given the proposed lower operating level on Sanborn Lake from the existing risers, the peak elevation of the 100-year event turns out to be similar. Discharge through the primary is less than the existing structure but the increased storage results in the same peak elevation.

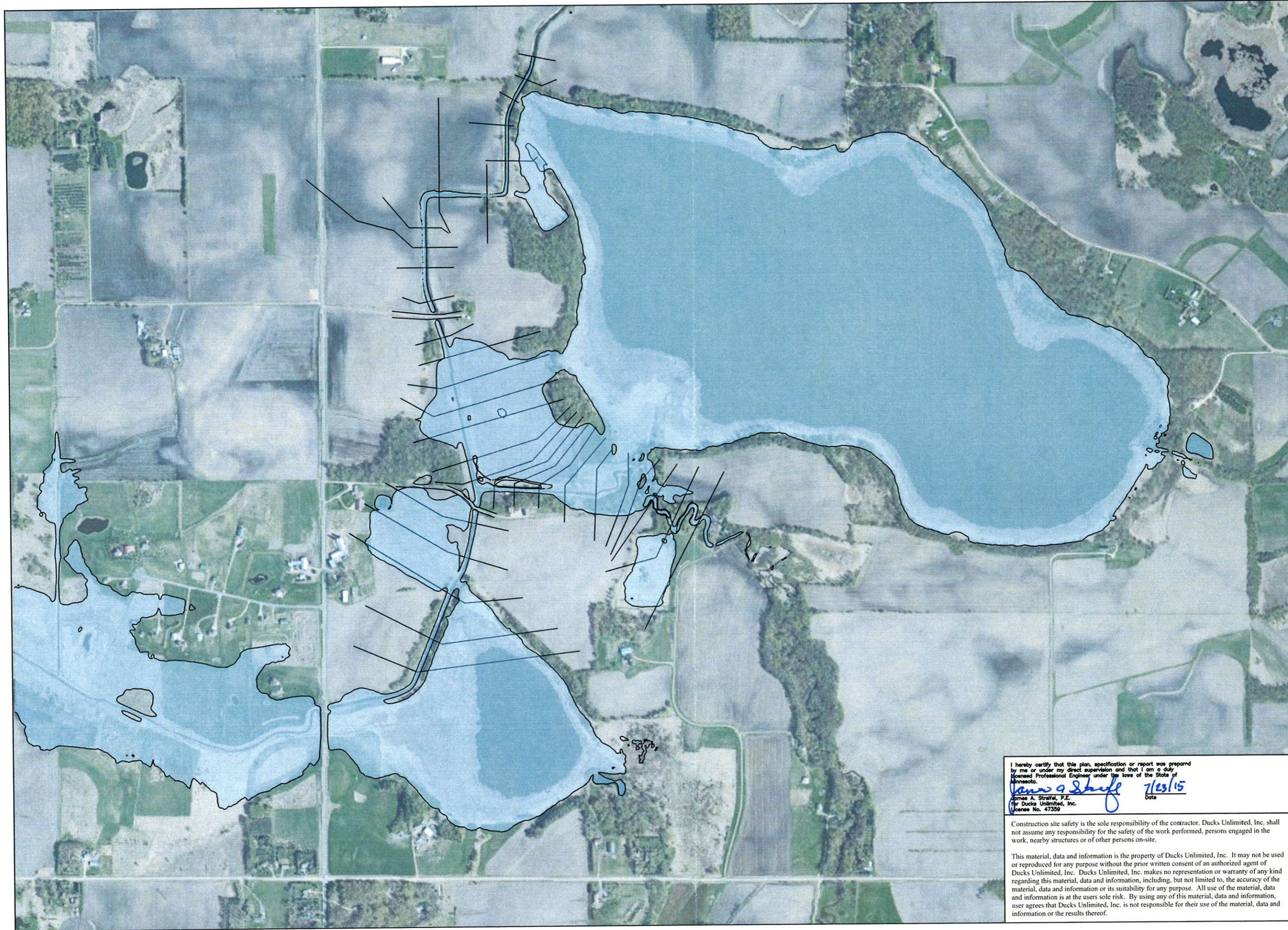
I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



James A. Streifel, P.E.
For Ducks Unlimited, Inc.
License No. 47359

7/23/2015

Date



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Minnesota.
James A. Straifal 7/23/15
 James A. Straifal, P.E.
 For Ducks Unlimited, Inc.
 License No. 47359

Construction site safety is the sole responsibility of the contractor. Ducks Unlimited, Inc. shall not assume any responsibility for the safety of the work performed, persons engaged in the work, nearby structures or of other persons on-site.

This material, data and information is the property of Ducks Unlimited, Inc. It may not be used or reproduced for any purpose without the prior written consent of an authorized agent of Ducks Unlimited, Inc. Ducks Unlimited, Inc. makes no representation or warranty of any kind regarding this material, data and information, including, but not limited to, the accuracy of the material, data and information or its suitability for any purpose. All use of the material, data and information is at the users sole risk. By using any of this material, data and information, user agrees that Ducks Unlimited, Inc. is not responsible for their use of the material, data and information or the results thereof.

Global Leader in Wetlands & Wildlife Conservation
GREAT LAKES/ATLANTIC REGIONAL OFFICE
 ANN ARBOR, MICHIGAN (734) 623-2000
 BISMARCK, NORTH DAKOTA (701) 355-3500



DUCKS UNLIMITED

SANBORN LAKE
 100-YEAR
 PEAK ELEVATION

Revision No.	By	Date	Revisions	Sheet
1	x	x	x	x
2	x	x	x	x
3	x	x	x	x
4	x	x	x	x
5	x	x	x	x
6	x	x	x	x
7	x	x	x	x
8	x	x	x	x
9	x	x	x	x
10	x	x	x	x

CAD FILE:
 DESIGNED BY: JS
 DRAWN BY: JS
 SURVEYED BY: GLA, MLO
 BOOK NO. -
 DATE:
 7-22-2015
 PROJECT NO.:
 US-MN-445-1
 GLARO-000-000-00



RINKE NOONAN
attorneys at law

1015 W. St. Germain St., Ste. 300, P.O. Box 1497
St. Cloud, Minnesota 56302-1497
Telephone 320-251-6700, Fax 320-656-3500

To: Le Sueur County Drainage Authority for Le Sueur County Ditch 54
From: John C. Kolb, Rinke Noonan
Direct Dial: 320-656-3503
Re: Ducks Unlimited/Department of Natural Resources Sanborn Lake Project
Our File: 15741-0022
Date: September 22, 2015

You asked Rinke Noonan to review and provide an opinion on the Ducks Unlimited (DU) and Department of Natural Resources (DNR) proposal to restore the contributing watershed of Sanborn Lake (Project). Because the Project involves modification to both the original construction and current function of County Ditch (CD) 54, the Drainage Authority will have to consider the impact of the Project on both the function of CD 54 and its utility for benefited landowners.

Our recommendation, as discussed below, is that the Drainage Authority:

- (1) initiate proceedings under statutes section 103E.101, subd. 4a to clarify the drainage system record for CD 54 by identifying and re-establishing the records defining the alignment; cross-section; profile; hydraulic structure locations, materials, dimensions, and elevations; or right-of-way of the CD 54 as originally constructed or subsequently improved; and
- (2) require DU or the DNR to petition the Drainage Authority under statutes section 103E.227 to impound, reroute, or divert drainage system waters for beneficial use.

History of CD 54:

CD 54 was established and constructed between 1966 and 1971. The alignment of CD 54 traversed most of a previously constructed drainage system, CD 30. However, the construction of CD 54 left several remnants of CD 30 that were never abandoned.

The construction plans for CD 54 show a portion of the main ditch departing from the original alignment of CD 30 to continue east along the north line of the southwest quarter of section 34 to the original alignment of spur 1 of CD 30. The design plans then show the main ditch turning to the south along the original alignment of spur 1 of CD 30, running along a portion of the east

[15741-0022/2127283/1]

1

line of the southwest quarter of section 34, where it re-joined the original alignment of CD 30 and continued to the southeast. CD 54 then continued to the east crossing under County Road 144 where it then turned north, departing from the original alignment of CD 30 and bypassing Sanborn Lake (the original alignment of CD 30 connected to Sand Creek and discharged to Sanborn Lake).

A portion of the original alignment of CD 30 flowing toward Sanborn Lake, currently designated as Spur 2 of CD 54, was obstructed as part of the CD 54 construction in order to prevent flows from CD 54 entering Sanborn Lake.

The construction of CD 54 included installation of a fixed crest outlet structure on Sanborn Lake, near the center of section 26, to regulate flows from Sanborn Lake into CD 54. The remainder of CD 54, downstream of Sanborn Lake, followed and altered the natural watercourse of Sand Creek.

Prior to construction of CD 54, the combined natural drainage area of Sanborn Lake and the drainage area of CD 30 to Sanborn Lake was approximately 52 square miles. Construction of CD 54, bypassing Sanborn Lake, reduced the area draining to Sanborn Lake to approximately 37 square miles.

Sometime during the 1980s or 1990s, following a number of high runoff events, the obstruction of Spur 2 of CD 54 failed and the channel headcut back to and connected with Sand Creek. The connection diverted the flow of water from Sand Creek into Spur 2 to the main channel of CD 54. The diversion of flow further reduced the area draining into Sanborn Lake. Currently, only about 4 square miles of drainage area flow to Sanborn Lake.

The major changes in drainage area of Sanborn Lake has significantly altered how Sanborn Lake now functions. Whether caused by all natural conditions or with human intervention, the result, as it relates to CD 54, is a drainage system that is functioning in a substantially different manner than originally constructed.

DU and the DNR are proposing a Project to restore conditions established by the original construction of CD 54 – restoring approximately 33 square miles of drainage area to the lake. Additionally, the Project will modify structures at the outlet of Sanborn Lake to allow for permanent drawdown of the lake for ecological purposes. The actions proposed in the Project will involve permanent modification of CD 54 and will require proceedings and approval by the Drainage Authority. Typically, costs of such modifications are borne solely by the project petitioners. However, in this case, at least a portion of the proposed work involves restoration of failed conditions on CD 54. For this reason, the Drainage Authority should consider what portion of Project cost is properly paid for by the drainage system.

Correction of Drainage System Records:

If, after thorough investigation of drainage system records, a drainage authority finds that records establishing the alignment, cross-section, profile, or right-of-way of a drainage system that it administers are lost, destroyed, or otherwise incomplete, it may, by order, reestablish records defining the alignment; cross-section; profile; hydraulic structure locations, materials, dimensions, and elevations; or right-of-way of the drainage system as originally constructed or subsequently improved.

Here the as built condition of CD 54 is unclear, especially as it relates to remnants of CD 30 that continue to function to provide beneficial drainage. Since there is no record of any portion of CD 30 being abandoned, the Drainage Authority must determine whether the intent of the CD 54 establishment was to result in a single functional drainage system (as it exists for the most part on the ground today), or two drainage systems with one exiting in remote or non-functional fragments.

The record correction process will allow the Drainage Authority to define the CD 54 system, remove orphaned portions of CD 30 and establish a base line from which to consider the Project.

The procedure for reestablishing drainage system records must involve, at a minimum, investigation and a report of findings by a professional engineer licensed in Minnesota supported by existing records and evidence, including, but not limited to, applicable aerial photographs, soil borings or test pits, culvert dimensions and invert elevations, and bridge design records. The existing and reestablished records together must define the alignment; cross-section; profile; hydraulic structure locations, materials, dimensions, and elevations; and right-of-way of the drainage system.

The Drainage Authority may initiate the records correction process by resolution or may act on a petition filed by any party affected by the drainage system. Once the process is initiated, the Drainage Authority, in consultation with the auditor, shall set a time and location for a hearing after the engineer's report is complete. Notice of the hearing must be given by mail to the commissioner of natural resources, the executive director of the Board of Water and Soil Resources, and all property owners benefited or damaged by the drainage system. In addition, notice of the hearing must be given by publication in a newspaper of general circulation in the drainage system area or on a Web site of the Drainage Authority.

Petition to Impound, Divert or Reroute a Drainage System or Drainage System Waters:

To conserve and make more adequate use of water resources or to incorporate wetland or water quality enhancing elements, a person; public or municipal corporation; governmental subdivision; the state or a department or agency of the state; the commissioner of natural resources; and the United States or any of its agencies may petition to impound, reroute, or divert drainage system waters for beneficial use.

Here, DU and the DNR propose that the project will permanently modify portion of CD 54 by re-routing and diverting waters in order to improve ecological conditions on Sanborn Lake. The modifications will include the installation of outlet and flow control structures within the alignment of the drainage system and modification of the flow in Spur 2. The legal standard for such modification requires an investigation of whether the proposed modification will be of a public or private benefit and whether the proposed modification will impair the utility of the drainage system or deprive affected land owners of its benefit.

The proceeding must be initiated by a petition. The petition must contain the location of the installation, concept plans for the proposed project, and a map that identifies the areas likely to be affected by the project. The petition must identify the sources of funds to be used to secure the necessary land rights and to construct the project and the amount and rationale for any drainage system funds requested. The petitioner must also acquire a public waters work permit or a water use permit from the commissioner of natural resources if required under chapter 103G for any work altering the course, current, or cross section of public water. The petition must also contain a statement that one or more petitioners will pay the costs incurred if the proceedings are dismissed or a contract is not awarded to construct the drainage system proposed in the petition. The petitioner is responsible for the cost of proceedings, but, in this case, since the State is a petitioner, no bond is required.

If the petition is granted, the petitioner may not modify the drainage system until it has obtained all required permits and all necessary rights-of-way and flowage easements from owners of land to be affected by the Project. The order of the Drainage Authority modifying the drainage system must identify the parties responsible for construction, operation, and maintenance of the drainage system modification and the amount, if any, of drainage system funds for the project. If the part of the drainage system located within the project boundaries is in need of repairs, the petitioner's engineer shall estimate the cost at the time of petition of these separable repairs. The drainage authority shall consider the separable repair costs that will be avoided as a result of the petitioned project, as well as any other benefits of the project to the drainage system, when determining whether or how much to contribute to the petitioned project.