

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	NH0081(00)112 PCN 03CU	1	4

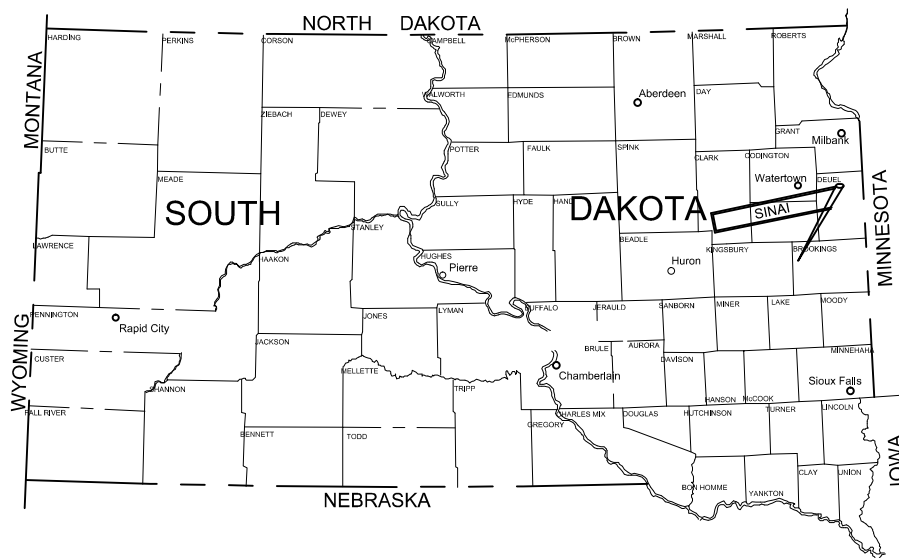
CONSTRUCTION PLANS FOR

BROOKINGS COUNTY

US HWY 81 SOUTH OF US HWY 14

TEMPORARY DRAWDOWN OF TWIN LAKES

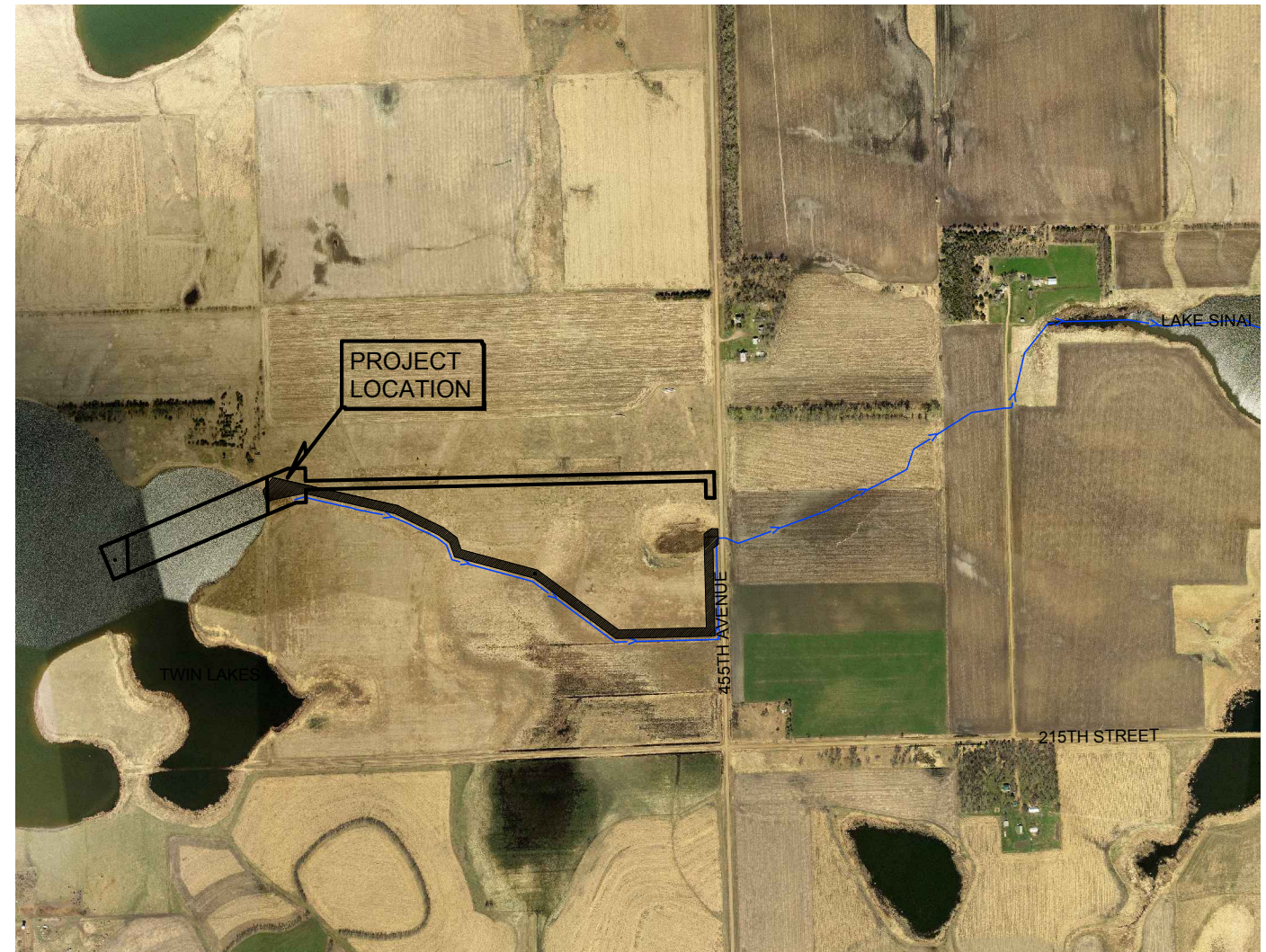
DRAWDOWN CONTRACT



North
PROJECT VICINITY MAP

INDEX OF SHEETS

SHT. NO.	DESCRIPTION
1.	TITLE AND INDEX SHEET
2.	SITE PLAN
3.	GENERAL DETAILS AND NOTES
4.	BID ITEMS AND NOTES

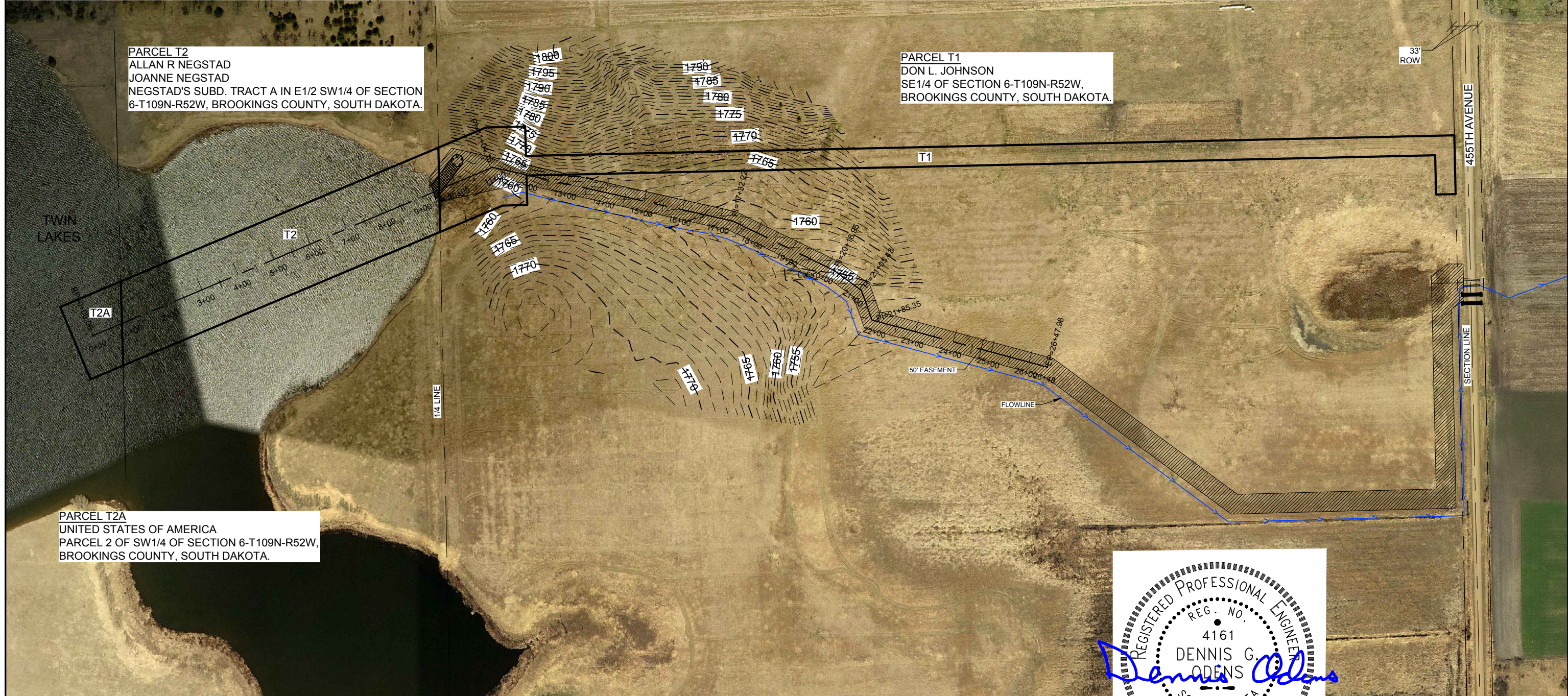
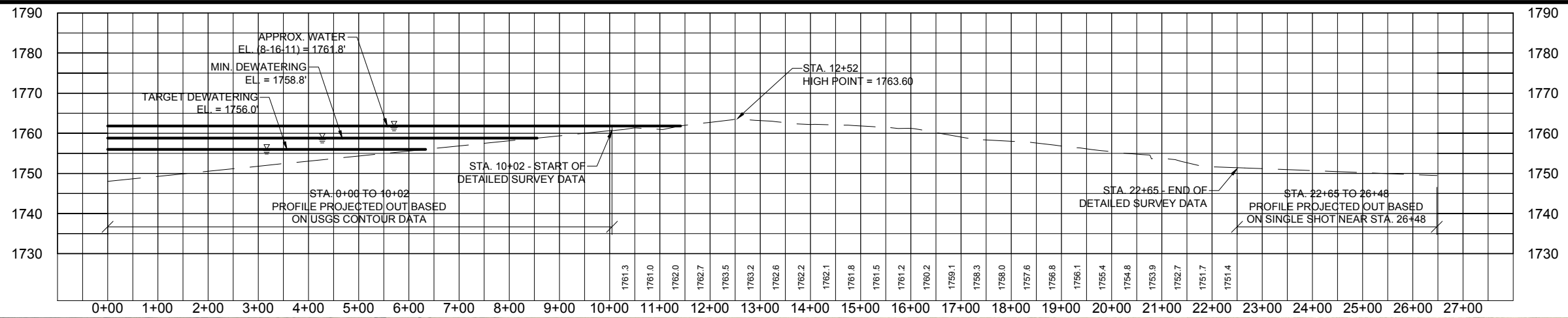


North
PROJECT LOCATION MAP

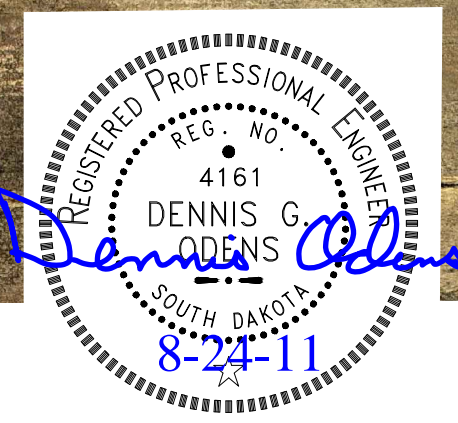
AUGUST, 2011



STATE OF SOUTH DAKOTA	PROJECT NH0081(00)112 PCN03CU	SHEET No.	TOTAL SHEETS
		2	4



SE 1/4 SECTION 6-T109N-R52W



SE CORNER
SEC. 6-109-52
(FOUND 3/4" IRON PIN)

SECTION LINE

215TH STREET

STATE OF	PROJECT	SHEET	TOTAL
SOUTH DAKOTA	NH0081(00)112 PCN 03CU	No. 3	SHEETS 4

PROJECT: NH 0081(00)112, BROOKINGS COUNTY - PCN 03CU
EMERGENCY DRAWDOWN OF TWIN LAKES

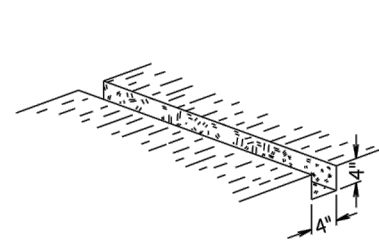
WORK WILL INVOLVE DEWATERING THE LAKES AT AN APPROXIMATE SUSTAINED RATE OF 35 CUBIC FEET PER SECOND (MAXIMUM) FOR 90 TO 100 DAYS. WORK MAY BE INHIBITED DUE TO WEATHER CONDITIONS OR OTHER CIRCUMSTANCES - THUS THE STANDBY TIME. CHANNEL/SADDLE MODIFICATION WILL NOT BE ALLOWED TO ACCOMPLISH THE WORK. THE EXISTING CHANNEL/SADDLE IS TO REMAIN UNCHANGED.

1. CONTRACTOR SHALL PROVIDE MEANS AND METHOD FOR A SUSTAINED DRAWDOWN OF 35 CFS FROM TWIN LAKES. THIS FLOW RATE SHALL BE VERIFIED BY AN APPROVED METHOD OF MEASUREMENT. THE FLOW SHALL BE MEASURED AND RECORDED TWICE WEEKLY, BY THE CONTRACTOR. THE PRELIMINARY ENGINEERING REPORT PRESENTED ALTERNATIVES FOR THIS DRAWDOWN AND CAN BE EXAMINED AND DOWNLOADED FROM THE SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION WEB SITE [HTTP://WWW.SDDOT.COM/PE/PROJDEV/PLANNING_PUBMEET_US81.ASP](http://www.sddot.com/pe/projdev/planning_pubmeet_us81.asp) OR USE THE LINK ON THE HOME PAGE OF THE WEBSITE WWW.SDDOT.COM.

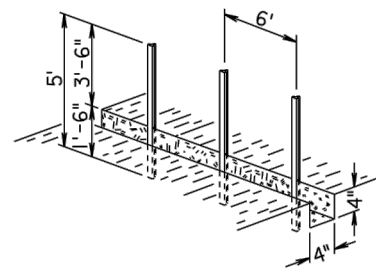
THE TOTAL FLOW WILL BE MONITORED BY DOT AT THE 4 - 48" CMP CULVERTS INSTALLED IN THE TOWNSHIP ROAD (455TH AVENUE). CONTRACTOR WILL BE RESPONSIBLE TO INCREASE OR DECREASE THE SUSTAINED DRAWDOWN FLOW TO ACCOUNT FOR THE NATURAL FLOW THAT MAY OCCUR AT THE SADDLE DUE TO RAIN FALL EVENTS.

- FISH SCREENING SHALL BE PROVIDED BY THE CONTRACTOR. SD GAME FISH AND PARKS STATED THAT THE GOAL IS TO PREVENT TRANSFER OF FISH FROM ONE LAKE TO THE OTHER BY DOWNWARD MIGRATION OR UPWARD MIGRATION. PLACING A PIPE UNDER OVERSIZED ROCK IS AN ACCEPTABLE MEANS OF PREVENTING FISH FROM TRANSFERRING FROM ONE LAKE TO THE OTHER AS LONG AS BOTH ENDS OF THE PIPE ARE THUS PROTECTED. THE DEPTH OF THE ROCK MUST BE GREAT ENOUGH TO CREATE A MATRIX THAT THE FISH CANNOT NAVIGATE THROUGH AND GET CAUGHT IN THE FLOW. MECHANICAL SCREENS WOULD ALSO BE ALLOWED. THE SLOT SIZE SHALL BE EQUIVALENT TO A #40 SIEVE SIZE OR APPROXIMATELY 0.0165 INCHES OR 0.425 MM. SCREENS SHALL BE SIZED SO THAT THE TOTAL OPEN AREA ALLOWS FOR A MAXIMUM SLOT VELOCITY OF 0.5 FT PER SEC. THE FISH SCREENING FACILITY PLANNED FOR THIS PROJECT MUST BE APPROVED BY SD DOT AND SD GAME FISH AND PARKS.
- EROSION PROTECTION SHALL BE PROVIDED BY THE CONTRACTOR AT THE ENDS OF THE PIPE TO PREVENT A SCOUR HOLE AND EROSION OF SOIL PARTICLES.
- THE WATER WITHDRAWAL SHALL END WHEN ANY OF THE FOLLOWING CRITERIA HAS BEEN MET:
 - THE TWIN LAKES WATER ELEVATION REACHES AN ELEVATION OF 1756.00 MEAN SEA LEVEL (NAVD88). THIS ELEVATION WILL BE MONITORED AND DOCUMENTED BY DOT AT THE US HIGHWAY 81 MRM 113. AN ELEVATION ROD WILL BE SET IN PLACE AT THE EDGE OF THE SHOULDER.
 - WEATHER CONDITIONS CAUSE FREEZING IN THE DRAINAGE THAT RESTRICTS FLOW AND BACKS WATER UP IN THE CHANNEL. DOT WILL MONITOR AND IN MUTUAL AGREEMENT WITH BROOKINGS COUNTY DETERMINE WHEN THE FLOW RESTRICTIONS IS GREAT ENOUGH TO REQUIRE THE OPERATIONS TO CEASE.
 - OPERATIONS WILL CEASE NO LATER THAN DECEMBER 16, 2011.
- THE WATER SURFACE ELEVATION OF LAKE SINAI WILL ALSO BE MEASURED BY DOT. DRAWDOWN OPERATION MAY BE PUT ON STANDBY IF LAKE SINAI WATER ELEVATIONS REACH 1747.5 (NAVD88). DRAWDOWN OPERATIONS WOULD RESUME WHEN LAKE SINAI WATER ELEVATION DROPS DOWN TO 1747.3 (NAVD88).
- DOT WILL MONITOR THE RIVER STAGES USING THE USGS GAGING STATION #06480000. IF THE BIG SIOUX RIVER FLOWS INCREASE TO 1900 CFS THEN THE DRAWDOWN OPERATIONS WILL TEMPORARILY CEASE UNTIL THE BIG SIOUX RIVER FLOWS HAVE DROPPED DOWN TO 1500 CFS.
- SURFACE RESTORATION SHALL BE COMPLETED BY THE CONTRACTOR IN THE SPRING OF 2012. WORK SHALL INCLUDE THE RE-SEEDING OF THE CRP ACREAGE AS REQUIRED TO RESTORE THE AREA TO THE EXISTING CONDITION PRIOR TO THIS PROJECT.
- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE BROOKING COUNTY TEMPORARY DRAINAGE PERMIT AND THE ATTACHED FINDINGS OF FACT, CORP OF ENGINEERS 404 PERMIT AND THE SD GAME FISH AND PARKS PERMIT.

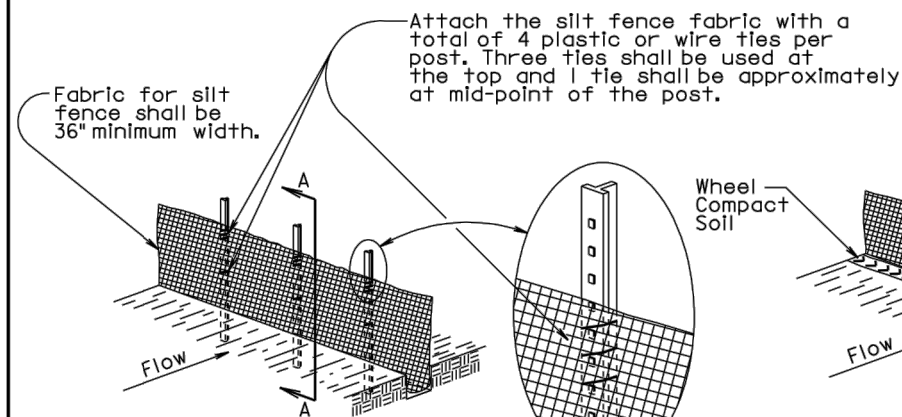
MANUAL HIGH FLOW SILT FENCE INSTALLATION



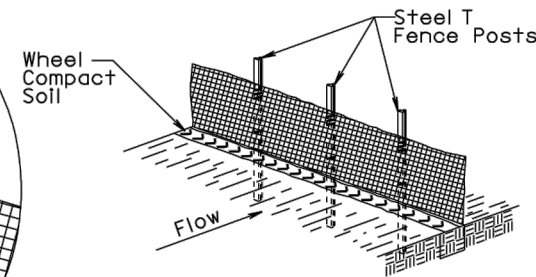
① EXCAVATE TRENCH



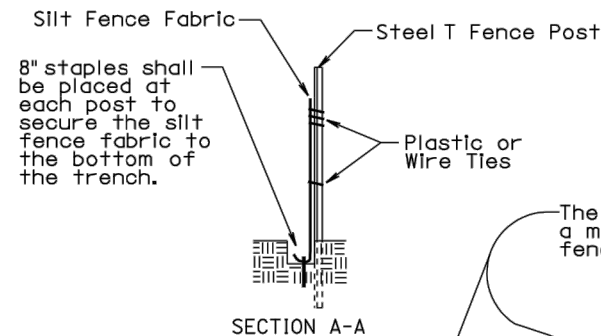
② DRIVE STEEL T FENCE POSTS



③ ATTACH SILT FENCE FABRIC

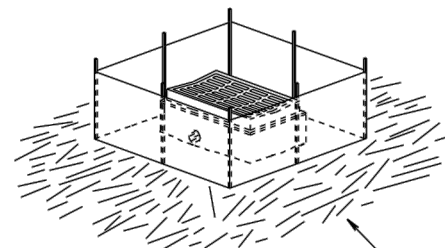


④ BACKFILL TRENCH AND WHEEL COMPACT SOIL



SECTION A-A

The elevation at these locations shall be, at a minimum, higher than the top of the silt fence fabric at its lowest elevation.



Post spacing shall be 3' for these types of applications of silt fence. All other components of the silt fence shall be the same as shown above.

The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

December 23, 2003

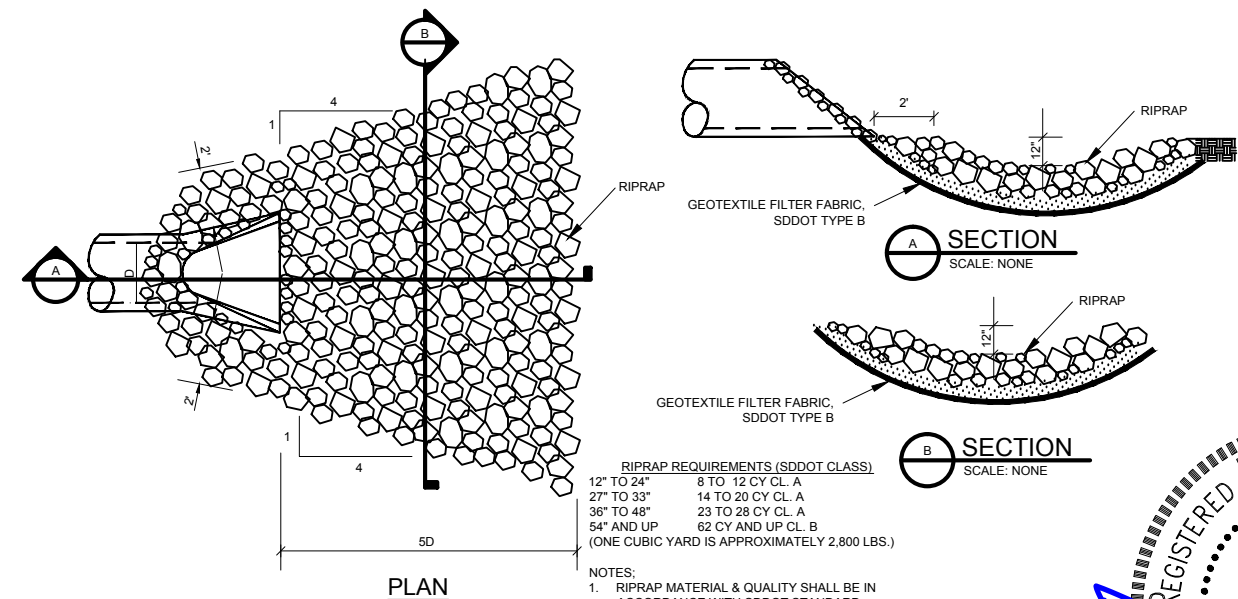
Published Date: 1st Qtr. 2011

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D
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T

HIGH FLOW SILT FENCE

PLATE NUMBER
734.05

Sheet 1 of 2



RIPRAP REQUIREMENTS (SDDOT CLASS)
12" TO 24" 8 TO 12 CY CL. A
27" TO 33" 14 TO 20 CY CL. A
36" TO 48" 23 TO 28 CY CL. A
54" AND UP 62 CY AND UP CL. B
(ONE CUBIC YARD IS APPROXIMATELY 2,800 LBS.)

- NOTES:
- RIPRAP MATERIAL & QUALITY SHALL BE IN ACCORDANCE WITH SDDOT STANDARD SPECIFICATIONS FOR RIPRAP.
 - PROVIDE RIPRAP AT ALL STORMWATER & DRAINAGE PIPE OUTLETS.



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SECTION BESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	L.S.
700E0210	Class B Riprap	70	Tons
734E0010	Erosion Control	Lump Sum	L.S.
734E4990	Dewatering	90 to 100	Days
734E4995	Dewatering Standby	0 to 30	Days
831E0110	Type B Drainage Fabric	50	S.Y.

MOBILIZATION

Mobilization shall consist of all time, material and supply necessary to move equipment to the site ready for operation. Including but not limited to permit fees, bonding, insurance, demobilization and other work necessary to transport equipment and personnel to the site ready for operation. This item shall be paid for as a lump sum item.

CLASS B RIPRAP

Class B riprap shall be required for erosion control at the end of the discharge pipe if not protected by other means. Contractor shall be responsible to place riprap as necessary to prevent erosion caused by the dewatering process. Contractor shall monitor erosion control and relocate, supplement or adjust riprap as necessary for continued, effective erosion control throughout the dewatering process. Riprap shall be paid for per ton for riprap placed at the site based on furnished weigh tickets submitted to the DOT. Scales used for weighing the truck shall be a DOT certified scale.

EROSION CONTROL

Erosion control shall be provided along the ingress/egress path, water course and all areas disturbed by the contractor. Contractor shall supply erosion control means and methods, tilling, seed, fertilizer, mulch and equipment necessary to restore the grass land and CRP ground back to conditions prior to construction. Seed shall be as follows:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	16
Canada Wildrye	Mandan	2
Total:		18

Oversized rock that is installed in the lake waters shall be removed upon completion of the project. It is anticipated that some of this erosion control, seeding and rock removal will need to be completed in the spring of 2012.
Payment for erosion control shall be made on a lump sum basis.

DEWATERING

Contractor shall supply the means and methods necessary to dewater Twin Lakes at a sustained rate of 35 cfs. The contractor shall supply all material, labor and equipment necessary to accomplish the dewatering by methods chosen by the contractor and approved by DOT which may include siphon piping or pumping. Contractor shall provide the fish screening facilities appropriate to the means and method proposed for dewatering. Oversized rock if used on site must be removed upon completion of this contract. (Spring removal will be allowed paid for under the erosion control lump sum bid item.) Contractor shall provide means and method for flow measurement appropriate for the dewatering technique chosen/proposed. Payment for DEWATERING shall be by the DAY measured to the half day and shall include all costs associated with the dewatering task, including rental, piping, valves, screening, pipe anchors, labor, operation and maintenance.

DEWATERING –STANDBY

Weather or ice freeze up may cause the operation to cease on a temporary basis as outlined in the Finding of Facts attached to the proposal. Contractor shall be put on Standby under conditions described in the Finding of Facts. Payment for DEWATERING – STANDBY shall be made be the Day measured to the half day and shall include all costs associated with having the dewatering process in standby mode ready to be put back in operation once the DOT and Brookings County Drainage Board by mutual agreement allows the dewatering work to continue.

TYPE B DRAINAGE FABRIC

Type B Drainage Fabric shall be provided beneath the riprap installed in this contract. Type B drainage fabric material and quality shall be in accordance with SDDOT Standard Specification for type B drainage fabric. Payment shall be made per square yard for material actually installed.

