

WATER PERMIT NO. 2845-2

Name of Applicant: USDA – Forest Service

Address: 1617 Cole Blvd, Bldg 17, Lakewood CO

Phone: 303 275-5096

Amount of Water Claimed: 100 AF

Total Acres: NA

Source of Water Supply: unnamed trib to N Fork Medicine Creek

Water to be used for: recreation & FWP

County: Jones

Type of Waste Disposal System:

Location: 10 miles northwest of Draper

PRIORITY

Date Received: 3-23-22

Application/License Fee: \$ 700

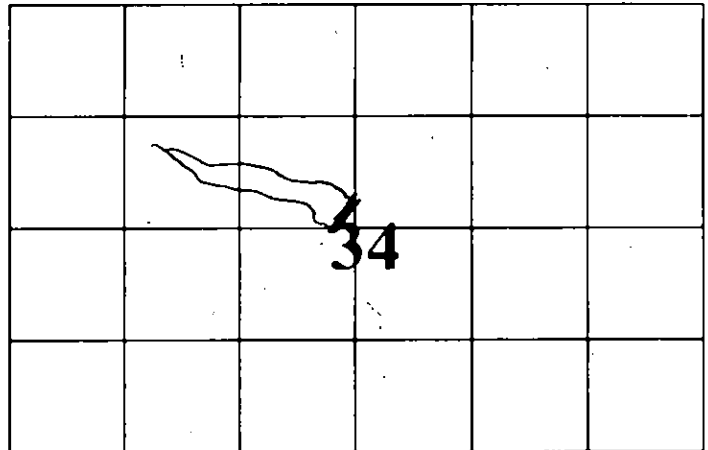
Corrected Application Received:

Period of Annual Use: Jan 1- Dec 31

Remarks: Reconstruction of a breached dam

Diversion Point: approximate center of Sec 34-
T1N-R31E

Water Impounded: S 1/2 NW 1/4 Sec 34-T1N-
R31E



Depth of Well: NA

Well Driller:

Remarks:

Type of Map: aerial

Prepared by:

Reviewed and the Number Assigned on: 3-24-22

By: Karen Schlaak

Notice of Hearing - date to intervene: _____

**SOUTH DAKOTA
WATER PERMIT NO. 2845-2**

Date of first receipt of application March 23, 2022.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 2845-2 to United States of America, USDA Forest Service, c/o Jack Isaacs, Forest Supervisor, 1617 Cole Blvd, Building 17, Lakewood CO 80401-3305 authorizing the construction of the dam and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 2845-2 authorizes impoundment of 100 acre-feet of water from an unnamed tributary to North Fork Medicine Creek by re-constructing a dam located in the approximate center of Section 34 with water impounded in the S 1/2 NW 1/4 Section 34; all in T1N-R31E. This permit authorizes impoundment of sufficient water to maintain water to the outlet elevation. The dam site is located approximately 10 miles northeast of Draper SD.
2. The water appropriated shall be used for the purpose of fish and wildlife propagation, domestic, and recreational use and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date from which applicant may claim right is March 23, 2022.
5. The date of approval of Permit No. 2845-2 is June 13, 2022.
6. One-fifth of the construction is to be completed on or before December 13, 2024.
7. All construction is to be completed on or before June 13, 2027.
8. Water is to be put to beneficial use on or before June 13, 2031.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. Water Permit No. 2845-2 authorizes storage of up to 100 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water must be by-passed.

WATER MANAGEMENT BOARD

By: Eric Gronlund
Eric Gronlund, Chief Engineer
Water Rights Program
Department of Agriculture and Natural Resources

JUL 25 2022
date



RECEIVED

MAR 23 2022

WATER RIGHTS
PROGRAM

Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>2845-2</u>	(office use only) Hydrologic Unit <u>10140104</u>
	Basin <u>Missouri River</u>	
	Newspaper <u>Murdo Coyote</u>	
	<u>Plains man</u>	

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use(s) of water:

☐ Municipal	☐ Water Distribution System	☒ Recreational	☐ Institutional
☐ Rural Water System	☐ Commercial	☒ Fish & Wildlife	☐ Geothermal
☒ Domestic (over 18 gpm)	☐ Industrial	☐ Other _____	

Type of Application:
(check one)

☒ New	☐ Vested Right (Use predates Mar 2, 1955)	☐ Future Use Reservation
☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____		
☐ Amendment/Correction to Permit No. _____		

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

- Name to Appear on Water Permit United States of America, USDA Forest Service
 Mailing Address 1617 Cole Blvd., Building 17 Lakewood CO 80401-3305
(Address) (City) (State) (Zip Code)
 Phone (303)275-5096 Mobile _____ Email andrea.rogers@usda.gov
- Amount of water claimed _____ *CFS or _____ **GPM and 100 ***AF or _____ Gallons
Flow rate and volume are both required (*Cubic Feet per Second) (**Gallons per Minute) (***)Acre Feet - storage capacity of dam/dugout or annual use)
- Source of water supply Unnamed tributary to N. Fork Medicine Creek (a dry draw)
- Location of point of diversion Center of Section 34, T1N, R31E. County Jones
(example - 3 wells in SW1/4 NE1/4 section 12-T104N-R53W)
 If not a public water supply (e.g. municipal), will water be used outside of the area described above? ☐ Yes ☒ No
 If "Yes," where will water be used? water impounded: S 1/2 NW 1/4 Sec 34-T1N-R31E
(example - NW1/4 section 12-T104N-R53W)
- County or counties where water will be used Jones
- Annual period during which water is to be used January - December
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

Existing Dam has breached. Dam will be reconstructed in the same location as the existing dam. No water right was in place for this dam but a location notice #69854 was obtained in 1983. The original dam was constructed in approximately 1937. For questions about this application, please contact Darrin Jons or Dan Svingen of the Fort Pierre Ranger District at (605) 224-5517.

I, JACK ISAACS, Digitally signed by JACK ISAACS Date: 2022.03.21 08:19:14 -06'00' Forest Supervisor, the applicant, certify under
Name of Person Title (if applicable)

penalty of perjury that I have read this application, examined the attached map, and that the matters stated are true. I further certify, if acting on behalf of an entity or individual other than myself, that I am authorized to submit this application.

Attachments: Attach Form 2A if diversion is from a well or dugout, or if storage of water is proposed. Also, attach map and any other technical information. (see instructions)

Supplemental Information

(type or print)

1. Well Information (check one or both as applicable) ☐ Drilling new well(s) ☐ Using existing well(s)

- a) If new wells, how many _____ Have test holes been drilled ☐ Yes ☐ No Drilled by _____
(if yes, please provide copies of logs)
- b) If existing wells, how many _____ Provide copy of log(s), if available. Drilled by _____

For either Existing or Proposed Wells:

- c) Well Depth (required) _____ Depth to Top of Water Bearing Material _____ Depth to Water from Surface _____
- d) Distance to nearest domestic well on applicant's property _____ Property owned by others _____

2. Wastewater Disposal System Information

- a) Type of System (i.e. septic tank, drain field) _____
- b) System Capacity (gallons) _____ Year Constructed _____
- c) Connected to the City of _____ Sanitary System

3. Dugout Information

- a) Surface Dimensions _____ Depth _____
- b) Depth to water (ground surface to water level) _____

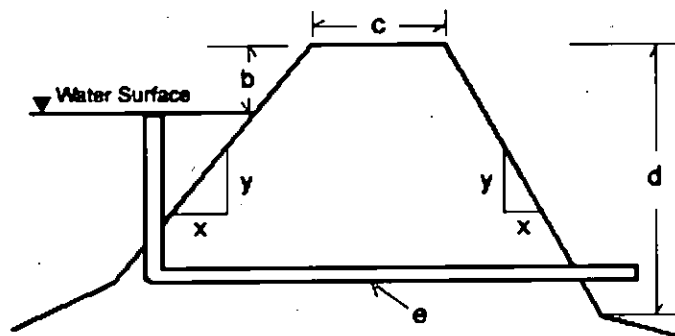
4. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

- a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:

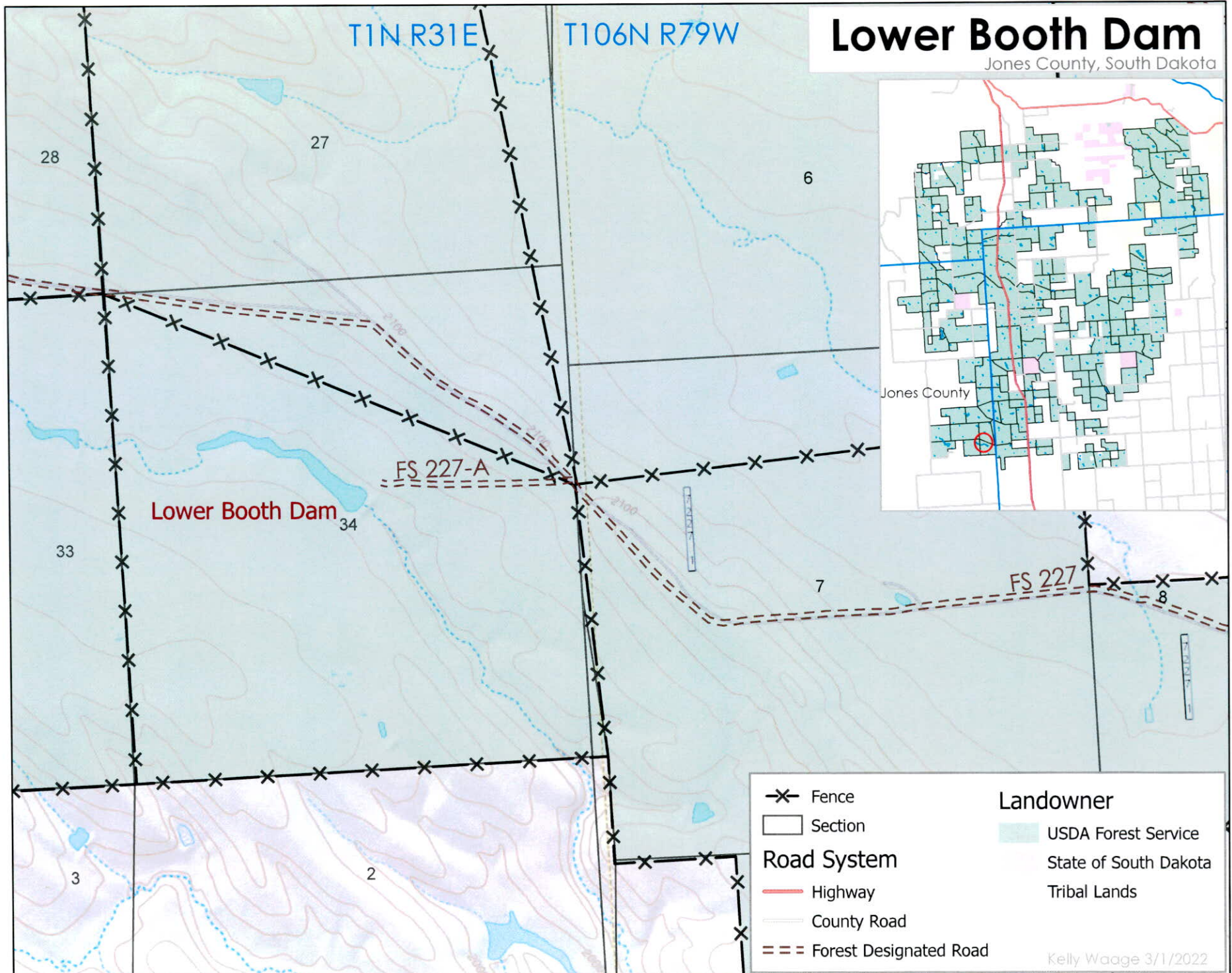
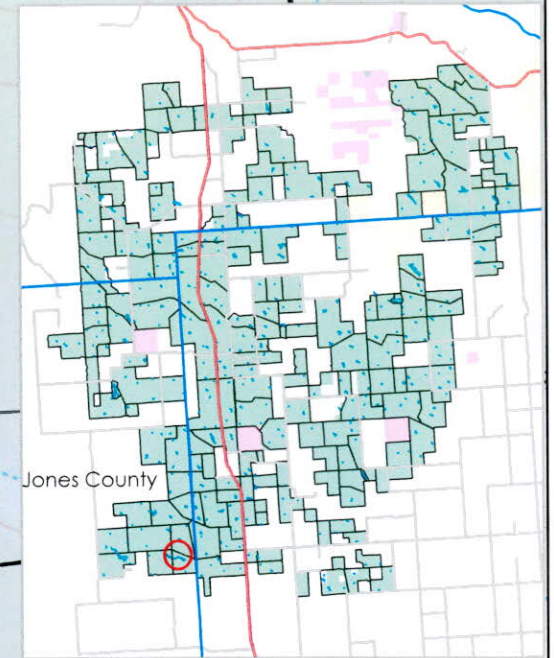
James Gilkerson
South Dakota Game, Fish and Parks
523 East Capital Ave.
Pierre, SD 57501
605-773-4521

- b) Freeboard 3 feet
- c) Crest Width 12 feet
Crest Length 518 feet
- d) Height 23 feet
- e) Primary Outlet Capacity 250 cfs
If pipe, diameter 42 inch
- f) Secondary Spillway Capacity 410 cfs
Spillway Width 52.5 feet
- g) X & Y Slope (e.g. 3 to 1 is a typical slope)
Upstream 3:1
Downstream 3:1
- h) Surface Area of Impoundment approx. 8 acres
- i) Storage 100 Acre Feet
- j) Drainage Area Above Dam 2743 Acres



Lower Booth Dam

Jones County, South Dakota



SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS LOWER BOOTH DAM RECONSTRUCTION FT. PIERRE NATIONAL GRASSLANDS JONES COUNTY, SOUTH DAKOTA

GFP#s: *****

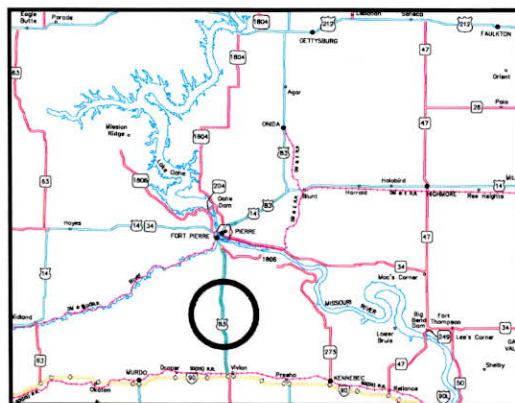
2022



PROJECT VICINITY



VICINITY MAP



LOCATION MAP

PROJECT LOCATION



PROJECT LOCATION

ONE CALL INFO

44.002518° N
-100.376614° W

T001N, R 031E, S 34
Jones County, SD

Lower Booth; 6 Miles North of Vivian Exit on HWY 83 and 2.75 Miles West of HWY 83 on Grasslands Trail

INDEX OF SHEETS

SHEET NO.	DRAWING TITLE
1	Title Sheet
2	Estimate of Quantities
3-6	Plan Notes
7-17	Site Plans

LOCAL CONTACT INFORMATION

Kyle Potter, Habitat Biologist
605-223-7705

BIDDING INFORMATION

PLAN REQUESTS: BILL HADDOCK: 605-773-6082

TECHNICAL QUESTIONS: JAMES GILKERSON: 605-773-4521

BID TABS, PLAN HOLDERS LISTS:
[HTTP://GFP.SD.GOV/AGENCY/PROJECTS/BID.ASPX](http://GFP.SD.GOV/AGENCY/PROJECTS/BID.ASPX)

ESTIMATE OF QUANTITIES

LOWER BOOTH DAM RECONSTRUCTION

Item No.	Item Description	Units	Estimated Quantity
1.00	MOBILIZATION	LS	1
1.01	BORROW FILL EXCAVATION & PLACE	CY	3368
1.02	CREST LEVELING	LF	500
1.03	CLASS B RIPRAP: F&I	TON	733
1.04	TYPE B DRAINAGE FABRIC	SY	722
1.05	ORD. SHAPING AND GRADING	SY	1200
1.06	SEEDING/EROSION CONTROL BLANKET: F&I	SY	7200
1.07	72" RCP RISER: F&I	LS	1
1.08	42" RCP PIPE: F&I	LS	1
1.09	REINFORCED CAST-IN-PLACE CONCRETE	CY	20
1.10	COMPACTED BASECOURSE	TON	35
1.11	GRAVEL SURFACING: F&I	TON	260
1.12	HEADCUT REPAIR	LS	1
1.13	FISHING POD CONSTRUCTION	EA	2
1.14	DEWATERING/TEMP COFFER DAM	LS	1
1.15	EXISTING CMP DEMOLITION	LS	1
1.16	TRAFFIC CONTROL SIGNS	UNITS	162
1.17	TRAFFIC CONTROL MISCELLANEOUS	LS	1

Office of Administration
 Jean B. King, Ave.
 523 E. Capitol Ave.
 Pierre, South Dakota 57501-3927
 Phone: (605) 773-3204

[Signature]
 Assistant State Engineer
 Department of Transportation



PROJECT NO. _____
 SHEET NO. _____
 DATE _____

LOWER BOOTH DAM
 CONSTRUCTION
 EXISTING PLAN

2
 17

PROJECT CONTACTS

James Gilkerson - Project Engineer
South Dakota Game, Fish and Parks - Engineering. 605-773-4521

SPECIFICATIONS

South Dakota Department of Transportation's *Standard Specifications for Roads And Bridges*, 2015 Edition and its Supplemental Specifications and Supplemental Specifications for Errata (<http://www.sddot.com/business/contractors/specs/2015specbook/Default.aspx>) and its Supplemental Specifications and Errata shall apply for all construction and material details with the exception of Method of Payment, Basis of Payment and where noted. Plans, notes and/or details shall supersede the SDDOT Standard Specifications.

SCOPE OF WORK

The work required for this project includes, but is not limited to, the following items, not necessarily listed in order of execution:

1. Crest Leveling
2. Ordinary Shaping
3. 72" & 42" RCP Pipe Installation
4. Class B RipRap w/ Drainage Fabric F&I
5. Reinforced Cast-In-Place Concrete Installation
6. Gravel Surfacing: F&I
7. Seeding and Erosion Control Blanket F&I
8. Head Cut Repair
9. (2) Fishing Pond Construction
10. Existing CMP Demolition

DEPARTMENT OF GAME, FISH AND PARKS RESPONSIBILITIES

12. Construction Staking and Survey

COMPLETION DATE

All work shall be substantially complete by December 15th, 2022.

Penalties for work not substantially complete by December 15th, 2022 shall be \$375.00 per each calendar day until the work is substantially complete.

GENERAL NOTES

The Contractor is advised to visit the site prior to bid preparation to confirm measurements and ascertain the amount of work involved.

CONSTRUCTION STAKING

The Owner will provide the construction staking. Construction staking for the Project shall include project site limits, horizontal and vertical control, and other project specific features. Subsequent staking shall be sequenced and scheduled as necessary, allowing a minimum of 5 business days for the preparation and staking thereof. The Contractor is responsible for maintaining stakes and grades thereafter. No separate payment will be made to maintain grade stakes.

UTILITIES

The Contractor shall notify SOUTH DAKOTA ONE CALL, 1-800-781-7474, to locate any utility that may be located within the project limits. The Contractor is responsible for any damage to utilities and shall repair them at the Contractor's expense.

NOTIFICATION TO PROJECT ENGINEER

The Contractor is required to notify the Project Engineer at least 10 days prior to beginning construction activities. The Project Engineer shall be notified before any over runs from plans quantities are approved.

AQUATIC INVASIVE SPECIES PREVENTION GUIDELINES FOR CONTRACTORS AND CONSTRUCTION EQUIPMENT

Aquatic Invasive Species (AIS) are a significant threat to the biodiversity and ecological health of the aquatic resources of South Dakota. These species have the potential to dramatically alter the ecology of a lake or river, impose substantial economic costs to maintain water infrastructure and decrease the recreational value and use of a waterbody. While South Dakota has largely remained free of AIS, the recent discovery of a Zebra Mussel infestation highlights the need to prevent the introduction of AIS that may impact the aquatic resources of the state.

A major vector for the movement of AIS into the state is the interstate transport of construction equipment. Some areas of the United States, especially the Great Lakes Region, have established AIS populations that currently do not exist or exist in limited areas of South Dakota. It is essential that the following guidelines are followed to prevent these species from establishing throughout South Dakota.

- Any boat, barge or floating structure must be transported with all drain plugs, valves, ballers or similar devices removed or open when not being launched or loaded. (SD Administrative Rule 41.00:04:03). When possible, any equipment that will be used in or on a waterbody should be allowed to dry for at least seven days prior to launching in a South Dakota waterbody.
- Any boat, barge or floating structure or equipment that has significant dried organic matter or mud on the exterior surfaces should be powerwashed prior to launching in a South Dakota waterbody.
- Any boat, barge or floating structure or equipment that has been used in the Great Lakes watershed or in a waterbody known to be infested with zebra or quagga mussels within the past 30 days shall be inspected for the presence of AIS prior to use. All interior compartments or storage holds should be free of standing water.
- Any boat, barge or floating structure or equipment that has been used in the Great Lakes watershed or in a waterbody known to be infested with zebra or quagga mussels within the past 7 days shall be decontaminated with a hot-water power wash, or shall be allowed to completely dry. In addition all boats, barges, floating structures and equipment shall be inspected for the presence of AIS by a SDGFP representative prior to use within South Dakota. All interior compartments or storage holds should be free of standing water.

Additional information on construction equipment cleaning and decontamination techniques can be found at: <http://www.sbr.gov/mussels/prevention/docs/EquipmentInspectionandCleaningManual2019.pdf>.

SEASONAL LIMITATIONS AND TEMPERATURE REQUIREMENTS

Seasonal limitations and temperature requirements, as outlined in the SDDOT Standard Specifications, shall apply for this project, except where noted otherwise. Upon written request from the Contractor, the seasonal limitations will be reviewed and may be amended by the Engineer, provided temperature and weather requirements are still met.

SEQUENCE OF OPERATIONS

The Contractor shall propose their Sequence of Operations at the Pre-Construction meeting and coordinate it with the Engineer.

ALLOWABLE WORK HOURS

There are no work hour restrictions.

CERTIFICATION AND TESTING

Certification documents shall be provided by the Contractor for all materials delivered to the site. Appropriate sampling and testing in compliance with the SDDOT Standard Specifications shall apply.

Additional random densities, aggregate testing, depth measurements, etc. may be requested and shall be provided at the Owner's expense. Any retesting due to failed initial tests will be provided at the Contractor's expense.

HAUL ROUTES

The Contractor will be responsible for determining any haul routes from the material source(s) to the project site including any agreements necessary with respective governmental agencies for maintenance and restoration of the routes.

It shall be the responsibility of the Contractor to prepare the haul route, maintain the haul route in a good condition satisfactory to the governing agency and upon completion of its use, restore the haul route to a condition at least equal to that which existed at the time hauling operation began. The fact that other general and normal traffic have used the haul route or a portion of it concurrently shall not relieve the Contractor of his obligation to maintain and restore the haul route as recommended.

The contractor shall submit a haul route plan to the owner prior to the start of construction.

WASTE DISPOSAL SITE

The Contractor shall supply his own off-site waste disposal site appropriate for disposing of all waste generated on the project.

MOBILIZATION

Lump Sum payment for expenses incurred by the Contractor before actual project construction begins, including but not limited to, bringing personnel, equipment, supplies, and incidentals to the site, establishing temporary offices and other facilities; constructing security fences; obtaining temporary utilities, and paying premiums on bonds and insurance policies.

Progress payments, when applicable, will be made as follows:

1. When 5% of the total original contract amount has been earned from other items on the bid schedule, 50% of the amount bid for mobilization will be paid, exclusive of any amount already paid by the Contractor for bond premiums.
2. When 10% of the total original contract amount has been earned, the balance of the amount bid for mobilization will be paid.

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EARTHWORK

Earthwork operations of the Project shall be done in accordance with Sections 120 and 230 of the SDDOT Standard Specifications for Roads and Bridges, 2015 Edition, as they pertain to the Project; in accordance with the Plan Drawings and details within, and/or as delineated in the field at the direction of the Project Engineer.

CLASS B RIPRAP

Stone for riprap shall meet the gradation requirements of Section 830.1 of the SDDOT Standard Specifications for Roads and Bridges, 2015 Edition, for Class B riprap. Unfractured field stone will be accepted so long as the stone furnished is angular in nature with a minimum of 2 angular faces.

RipRip shall be installed in accordance with the Plan Drawings and details within, and/or as delineated in the field at the direction of the Project Engineer.

Payment shall be by the ton furnished and installed and shall include all costs necessary to complete the work as specified.

Tonnage weight tickets will be required for quantity verification and shall be submitted to the Project Engineer at the conclusion of the Project. All costs necessary to provide the required weight tickets are incidental to the unit price and shall be included in the unit price bid line item for Class B RipRip. Furnished and installed.

TYPE B DRAINAGE FABRIC

The Contractor shall furnish and install Type B Drainage Fabric as classified by SDDOT in accordance with Section 831 of the SDDOT Standard Specifications for Roads and Bridges, 2015 Edition, and as delineated in the Plan Drawings. The Type B Drainage Fabric provided shall be from the approved product list. The approved product list for Type B Drainage Fabric may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

The drainage fabric serves as a separator and reinforcement media between the riprap and the finished subgrade surface.

Payment shall be by the square yard furnished and installed. Payment shall be inclusive of all incidentals necessary to complete the work as specified.

WATER FOR COMPACTION

Cost of water for compaction of granular material & compacted embankment shall be absorbed in the unit price for various contract items. Optimum moisture $\pm 3\%$ will be required at the time of compaction unless otherwise directed by the Engineer.

DE-WATERING/TEMP. COFFER DAM

The contractor is responsible for de-watering, temporary coffer dam construction, and temporary coffer dam removal as necessary for the dam repairs as shown in the plans.

The cost for de-watering, temporary coffer dam construction, and temporary coffer dam removal shall be paid for as lump sum.

CAST IN PLACE STEEL REINFORCED CLASS M6 CONCRETE

The Contractor shall furnish and install steel reinforced Class M6 concrete in accordance with the Plan Drawings and as per the specifications set forth in Section 462, Concrete for Incidental Construction-Class M, of the Standard Specifications for Roads and Bridges, South Dakota Department of Transportation, 2015 Edition, as they pertain to the Project.

Steel reinforcement shall be furnished and installed in accordance with the Plan Drawings and as per the specifications set forth in Section 1010, Concrete Reinforcement, of the Standard Specifications for Roads and Bridges, South Dakota Department of Transportation, 2015 Edition, as they pertain to the Project. Reinforcement bars shall be Grade 60 deformed bar. All reinforcement bars shall be positioned on approved support devices in advance of the concrete placement. No hand placement of reinforcement bars during concrete placement will be allowed.

Concrete joints and joint sealer shall be provided in accordance with the Plan Drawings and as per the specifications set forth in Section 870, Concrete Joint Sealer, of the Standard Specifications for Roads and Bridges, South Dakota Department of Transportation, 2015 Edition, as they pertain to the Project.

The concrete surface shall be broom finished prior to the metal line finish. Brooming shall be done transversely across the slab surface with adjacent strokes slightly overlapping. Brooming shall be uniform in appearance and produce randomized grooves approximately 1/16" deep. The metal line finish shall be done transversely across the slab surface. Adjacent finishing passes shall not overlap. The metal line finish shall be uniform in appearance and produce uniform grooves approximately 1/8" wide x 3/16" deep with an effective spacing of 1". Surface finishing operations shall be done only when the concrete surface can be textured without being torn or unduly roughened by the finishing operations.

Concrete Mix design shall be submitted to the Project Engineer for approval a minimum of 48 hours prior to the placement of concrete. The mix design shall incorporate chemical admixture for high early strength. The Contractor shall notify the Project Engineer a minimum of 48 hours prior to the placement of concrete. Upon notification, the necessary preparation work for the placement of concrete shall be in place and ready for inspection and approval for the placement of concrete.

Payment for Cast In Place Steel Reinforced Class M6 Concrete shall be by the cubic yard, furnished and installed, and shall include all costs, including forming; steel reinforcement; approved bar support devices; tie wire; and other incidental costs; finishing; painting; joint materials; and incidental costs; curing; curing materials; and incidental costs; concrete protection; and any and all other costs necessary to complete the work as specified.

CONCRETE SAW AND SEAL JOINTS/CRACKS

Low Modulus Silicone Sealant. Low modulus silicone sealant shall be furnished in a one part silicone formulation. The sealant must be on the SDDOT's Approved Products List and must meet the requirements found in Section 870 of the SDDOT Standard Specifications for Roads and Bridges for Concrete Joint Sealer.

The backer rod shall be a non moisture absorbing, closed cell, resilient material meeting the requirements of ASTM D5249 approximately 25% larger in diameter than the width of the joint to be sealed. The backer rod shall be compatible with the sealant and no hard or reaction shall occur between the rod and the sealant.

Low Modulus Silicone Sealant is to be used on horizontal, soaping, and vertical cracks. Low Modulus Silicone Sealant is also to be used at the joint adjoining new concrete surface with the existing concrete surfaces.

Sealing operations will only be permitted when the air and pavement surface temperatures are 40°F or greater and rising.

Payment shall be made per the lineal foot as shown in the Estimate of Quantities. Cracks to be routed and sealed will be delineated in the field and discussed at the pre-construction meeting.

BORROW EXCAVATION/COMPACTED EMBANKMENT

Grades shall be constructed in accordance with the Plan Drawings and details within, and/or as delineated in the field at the direction of the Project Engineer. Salvageable materials generated by unclassified excavation may be utilized in embankment sections throughout the Project after approval from the engineer.

The contractor may excavate the borrow material from the borrow location as shown in the plans and as delineated in the field by the owner. After all excavation has concluded the borrow area must be scarified, seeded, fertilized, and covered with erosion control blanket.

A compaction factor of 1.30 was utilized in estimating compacted embankment quantities.

Specified density of compacted embankment shall be 90%, placed in lifts not to exceed 8" in depth per lift. The cost of water for compaction shall be absorbed into the unit price per cubic yard for compacted embankment.

Payment shall be by the cubic yard, compacted in place, and shall include all costs necessary to complete the work as specified.

EROSION CONTROL BLANKET

The Contractor shall furnish and install Type 2 Erosion Control Blanket in accordance with Section 734 of the SDDOT Standard Specifications for Roads and Bridges, 2015 Edition, as it pertains to the project; in accordance with the Plan Drawings and details provided within, and/or placed at areas disturbed by construction activities. The Erosion Control Blanket utilized shall be from the SDDOT Approved Products List.

<http://sddot.com/business/certification/products/Default.aspx>

Payment shall be by the square yard for each respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.

Division of Administration
Fees Building
312 E. Capitol Ave.
Pierre, South Dakota 57501-1820
Phone: (605) 773-1552

Project Engineer
[Signature]
[Stamp]



Project No. 2015-0001
Contract No. 2015-0001-01
Sheet No. 1 of 1

LOWER ROCKY DAM
JONES COUNTY SD
NOTES

4
17

SEEDING

Seeding operations of the Project shall be done in accordance with Sections 730 and 731 of the SDOOT Standard Specifications for Roads and Bridges, 2015 Edition, as they pertain to the Project, in accordance with the Plan Drawings and details within, and/or as delineated in the field at the direction of the Project Engineer.

The Contractor shall furnish and install grass seed and fertilizer to restore the Project Site turf. All permanent seed shall be planted in the topsoil at a depth of 1/4" to 1/2". Broadcast seed must be raked or dragged in utilizing conventional methods.

The specified seed mix shall be Type C Permanent Seed Mixture as classified by SDOOT. A seed mixture analysis certificate shall be submitted to the Project Manager. In addition to the Type C Permanent Seed Mixture, Oats or Spring Wheat shall also be included in the seed mixture as shown.

TYPE C PERMANENT SEED MIXTURE		
GRASS SPECIES	VARIETY	PLS (POUNDS/ACRE)
WESTERN WHEATGRASS	FLINTLOCK, RODAN, ROSANA	12
CANADA WILDRYE	MANDAN	4
OATS OR SPRING WHEAT		20
	TOTAL	36

The estimate of area to be restored for this Project is 64,800± 7200 SY = 1.50 acre±, whereby the Project requires 48# PLS Western Wheatgrass, 60# PLS Canada Wildrye, and 30# PLS Oats or Spring Wheat, all to be applied in accordance with the specified application rates above.

Payment for Seeding shall be by the square yard and shall include any and all incidentals necessary to complete the work as specified.

REINFORCED CONCRETE PIPE

The Contractor shall furnish and install Reinforced Concrete Pipe in accordance with Section 450 and 990 of the SDOOT Standard Specifications for Roads and Bridges, 2015 Edition, as it pertains to the project, in accordance with the Plan Drawings and details provided within.

- Description: 72" dia. Reinforced Concrete Pipe (RCP) Drop Inlet Structure Installation.
 - Installation shall include the RCP sections to overall length required, a monolithic base, a circular knock-out for the 42" dia. RCP, watertight joints with mastic, a Haulo Industries Item GG60 galvanized trash rack (or equal), 4,000 psi for concrete floor and concrete collar (as required between 72" dia. RCP riser and 42" dia. RCP), all as SHOWN ON THE DRAWINGS. Other work includes the installation and compaction of an aggregate base under the RCP drop inlet structure.
- Description: 42" dia. Reinforced Concrete Pipe Outlet Pipe Installation.
 - Installation shall include the required RCP sections to overall length shown, gasketed, Class II, and RCP flared end section as SHOWN ON THE DRAWINGS. This work includes preparing the foundation under the RCP Outlet Pipe to be compacted and level to the elevation required.

Reinforced concrete pipe may be bell and spigot. The pipe sections will be adjoined such that the ends are fully entered and the inner surfaces are reasonably flush and even. All reinforced concrete pipe joints shall be tied with tie bolts in accordance with SDOOT standard plate number 450.18. Lift holes in the reinforced concrete pipe will be plugged with grout. Watertight joint seals will conform to the following requirements:

- Reinforced concrete pipe: gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with section 990 of the specifications; nongasketed concrete pipe joints will be sealed with a hydrophilic flexible water stop seal and wrapped with a 1-foot wide strip of fabric above the cradle. The fabric will conform to the requirements of section 831 of the specifications for type A drainage fabric. The hydrophilic flexible water stop will be from the list below.

Approved list of hydrophilic flexible water stop seal:

Product: Waterstop
Manufacturer: RX Celco
Hoffman Estates, IL
800-527-9948
www.celco.com

Conseal CS 231

Concrete Sealants, Inc.
Tipp City, OH
800-332-7325
conseal.com

Gaskets and seals (mastic, waterstop, and seal wraps) will be installed in accordance with the manufacturer's recommendations. The cost for furnishing and installing all gaskets, mastic joint seal, water stop seal, seal wrap, concrete collars, tie bolt hardware, and for plugging the lift holes will be incidental to the contractor's price per foot for the corresponding pipe bid item.

Payment shall be by the Lump Sum for each respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.

FISHING PODS

The Contractor shall furnish and install all materials required to construct the fishing pods as detailed in the construction plans and notes. The material quantities and labor necessary to complete construction as detailed in the plan drawings shall be included in the fishing pods line items.

Payment shall be by each respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.

HEADCUT REPAIR

The Contractor shall furnish and install all materials required to construct the headcut repair as detailed in the construction plans and notes. The material quantities and labor necessary to complete construction as detailed in the plan drawings shall be included in the headcut repair line items.

Payment shall be by lump sum for the respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.

CMP DEMOLITION

The Contractor shall work including excavating to locate the inlet end of the existing CMP. If the inlet end of CMP is outside the dam structure, demolition will consist of filling the CMP cavity with an industrial expanding foam material. If the inlet end of the CMP appears to be within the dam structure and requires excavating into the dam, the Contractor will contact the CO to discuss a plan of action.

Payment shall be by lump sum for the respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.

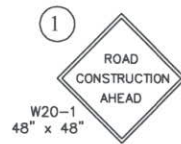
Division of Administration
Flood Building
525 E. Centre Ave.
Tipp City, OH 45371
Phone: (603) 775-3167
Fax: (603) 775-3167

Project Engineer
[Signature]
[Stamp]

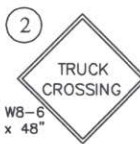
Project Manager
[Signature]
[Stamp]

LOWER POUCH TEAM
LOWER POUCH TEAM
[Stamp]

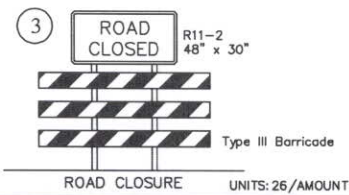
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UNITS: 34/AMOUNT



UNITS: 34/AMOUNT



Type III Barricade

UNITS: 26/AMOUNT

TOTAL UNITS: 162 UNITS



TRAFFIC CONTROL DETAIL

Division of Administration
Foss Building
523 E. Capitol Ave.
Pierre, South Dakota 57501-3182
Phone: (605) 773-6082



12/19/2021

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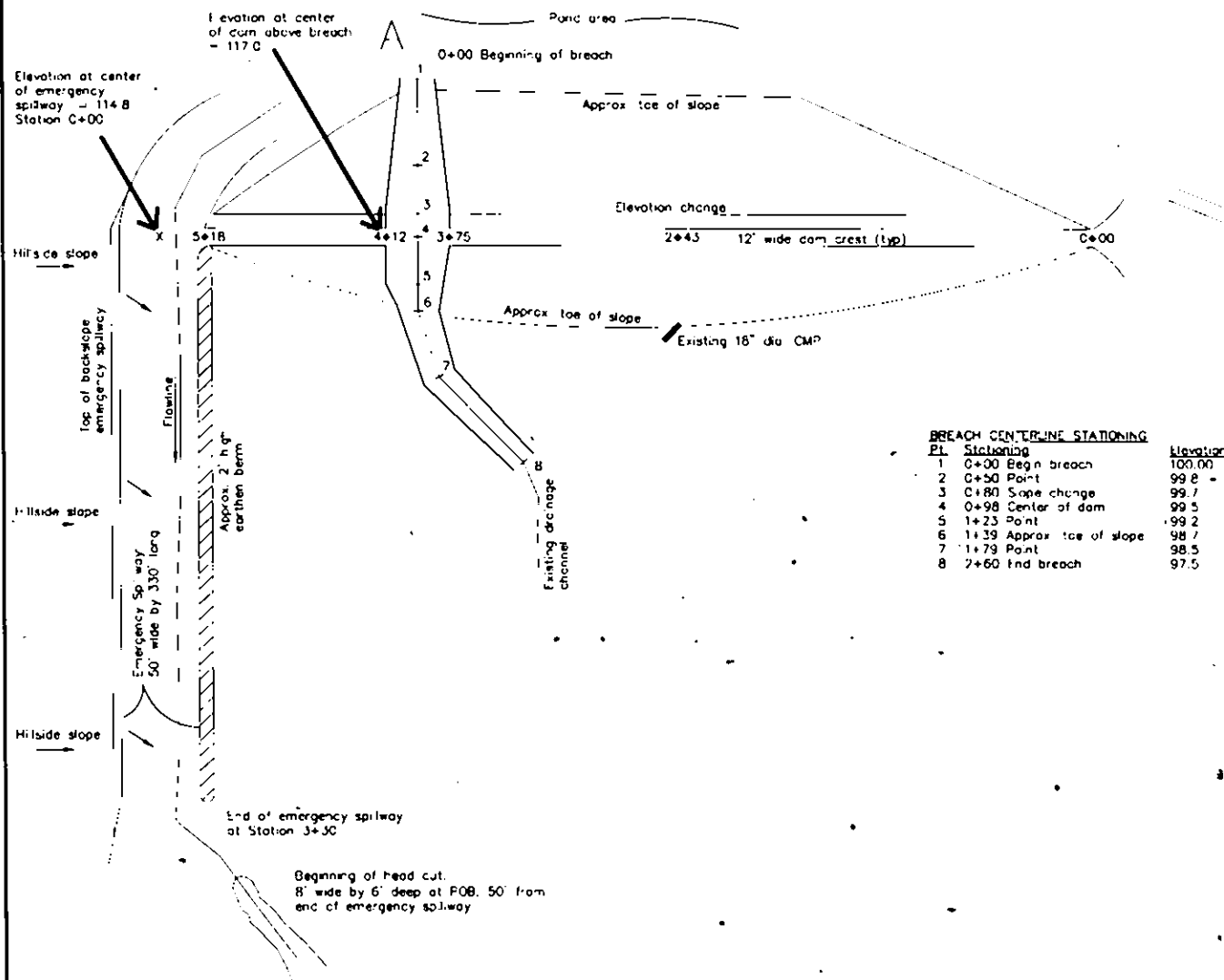
12/19/2021

LOWER BOOTH DAM
JONES COUNTY, SD
EXISTING PLAN VIEW

6

OF

17



BREACH CENTERLINE STATIONING		
PL	Stationing	Elevation
1	0+00 Begin breach	100.00
2	0+50 Point	99.2
3	0+80 Slope change	99.7
4	0+98 Center of dam	99.5
5	1+23 Point	99.2
6	1+39 Approx toe of slope	98.7
7	1+79 Point	98.5
8	2+60 End breach	97.5

GENERAL NOTES:

The following information came from the '977 Forest Service Dam Inventory sheets.

- Dam is an earthen dam constructed in 1938
- Breach occurred prior to 2012 inspection
- Drainage area 4.27 square miles
- Acre-feet Storage (full pool) - 96
- Hydraulic Height - 23 feet

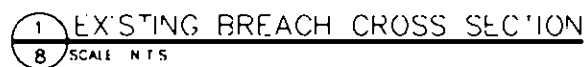
BREACH - APPROX. WIDTH/HEIGHT BY STATION			
PL	Stationing	Width	Height
1	0+00 Begin breach	22'	0'
2	0+50 Point	25'	7'
3	0+80 Slope change	35'	11'
4	0+98 Center of dam	37'	17'
5	1+23 Point	31'	10'
6	1+39 Approx toe of slope	25'	6'
7	1+79 Point	20'	4'
8	2+60 End breach	15'	0'

-The height of the breach (above bottom of breach) was approx. the same on both sides of the breach.

-The width of the breach was taken at it's widest point.

1 EXISTING PLAN VIEW
7 SCALE N.T.S.

NOTE: OCA, DATUM DAM CREST 117' = 2042' MSL



NOTE LOCAL DATUM DAM CREST 117' = 2042' MSL

Division of Administration
Fiscal Building
523 L. Capital Ave.
P. O. Box 100, South Dakota 57101
Phone (605) 773-6002

Edward D. White
Department of Commerce, Bureau of Customs, New York

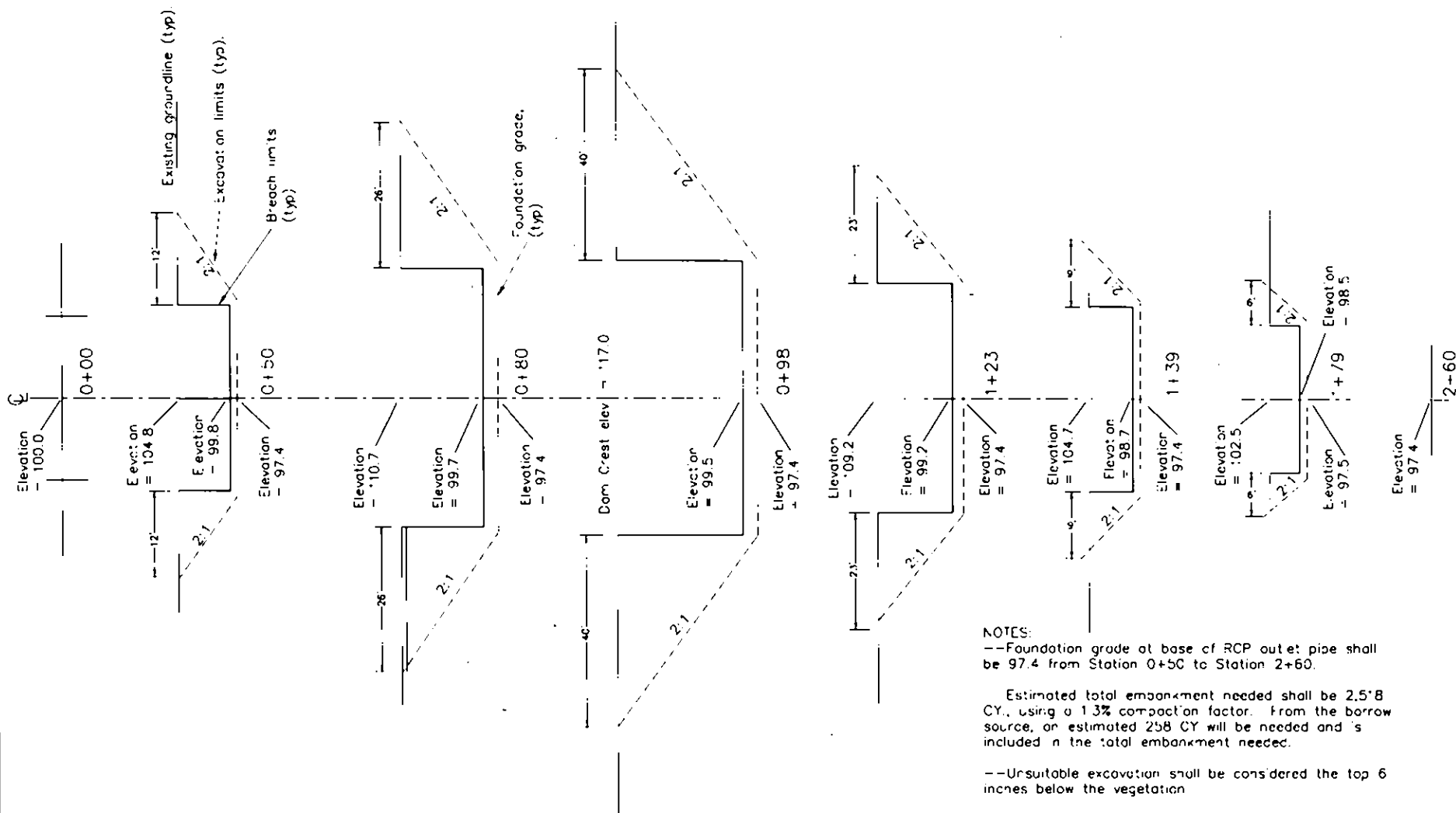


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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LOWER ROOMS
LONGS COUNTRY CO
EXITING ROOM

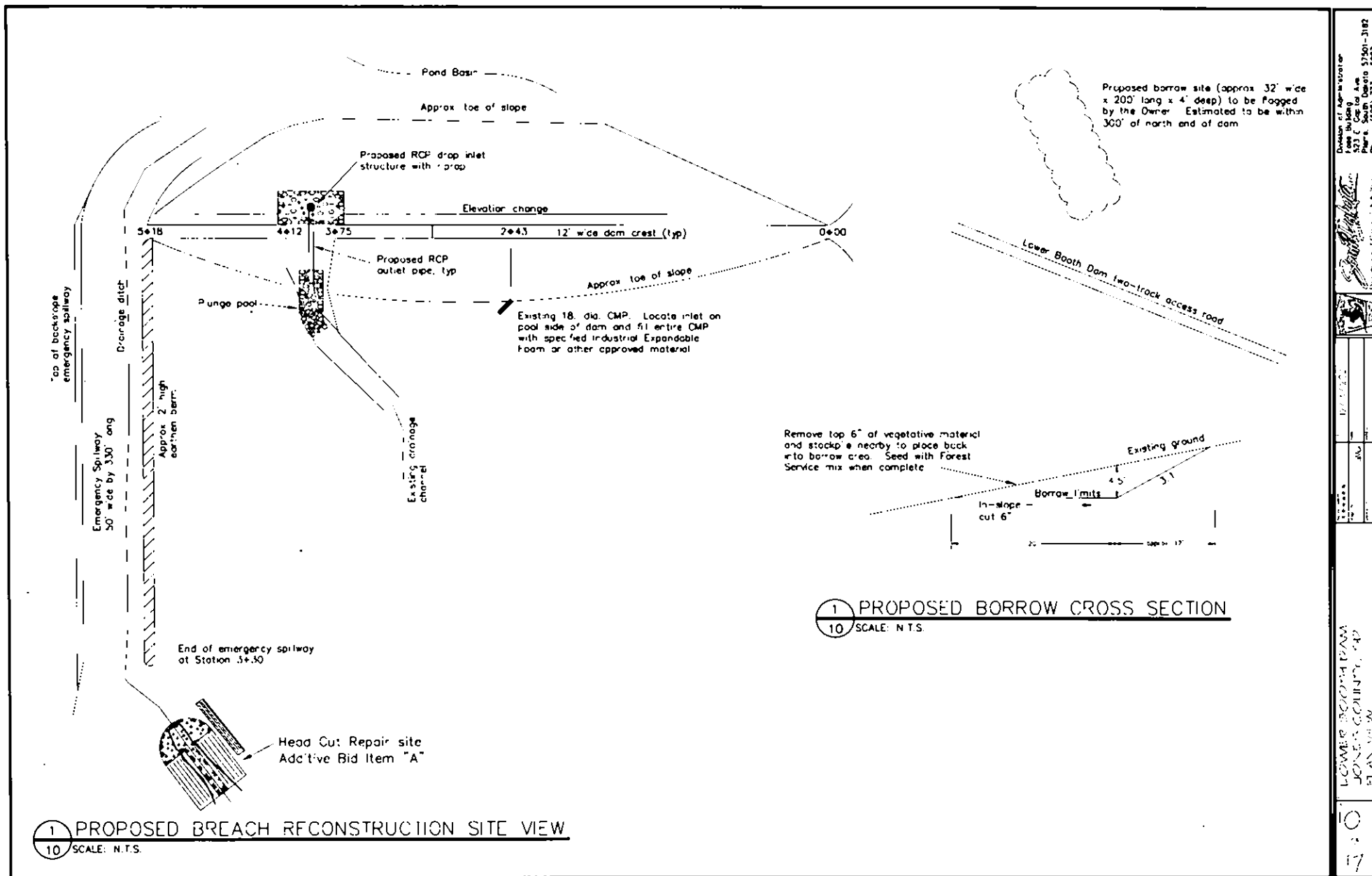
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NOTE: LOCAL DATUM DAM CREST: '17' - 2042' MSL



- NOTES:
- Foundation grade at base of RCP outlet pipe shall be 97.4 from Station 0+50 to Station 2+60.
 - Estimated total embankment needed shall be 2.5'8 CY., using a 13% compaction factor. From the borrow source, an estimated 258 CY will be needed and is included in the total embankment needed.
 - Unsuitable excavation shall be considered the top 6 inches below the vegetation
 - Widths of breach may be found on SHEET 2 of 10.

1 CROSS SECTIONS
9 SCALE: N.T.S.



Install 96 tons of SD Class B
rock riprap, 2' depth with
non-woven geotextile fabric
beneath. Machine compact
in place.

1 PROPOSED PLAN VIEW
11 SCALE: N.T.S.

148 tons of SD Class B rock riprap, 2' depth with non-woven geotextile fabric beneath. Machine compact in-place.

Existing slope

Existing slope change

Dam crest elev. 117.0

Existing slope

72" d.c. RCP drop inlet structure

56 LF of 42" RCP outlet ppe, Class III, gasketed joint with 8' flared end section at end, slope at -1.00%

install 96 tons of SD Class B rock riprap, 2' depth with non-woven geotextile fabric beneath. Machine compact in-place

Pre cast drop inlet structure base

Invert 42" RCP outlet pipe elev 97.7

CLASS B BEDDING

Plunge pool elev 96.7 (or 12" below RCP end section elevation).

Outlet Elevation: 97.06'

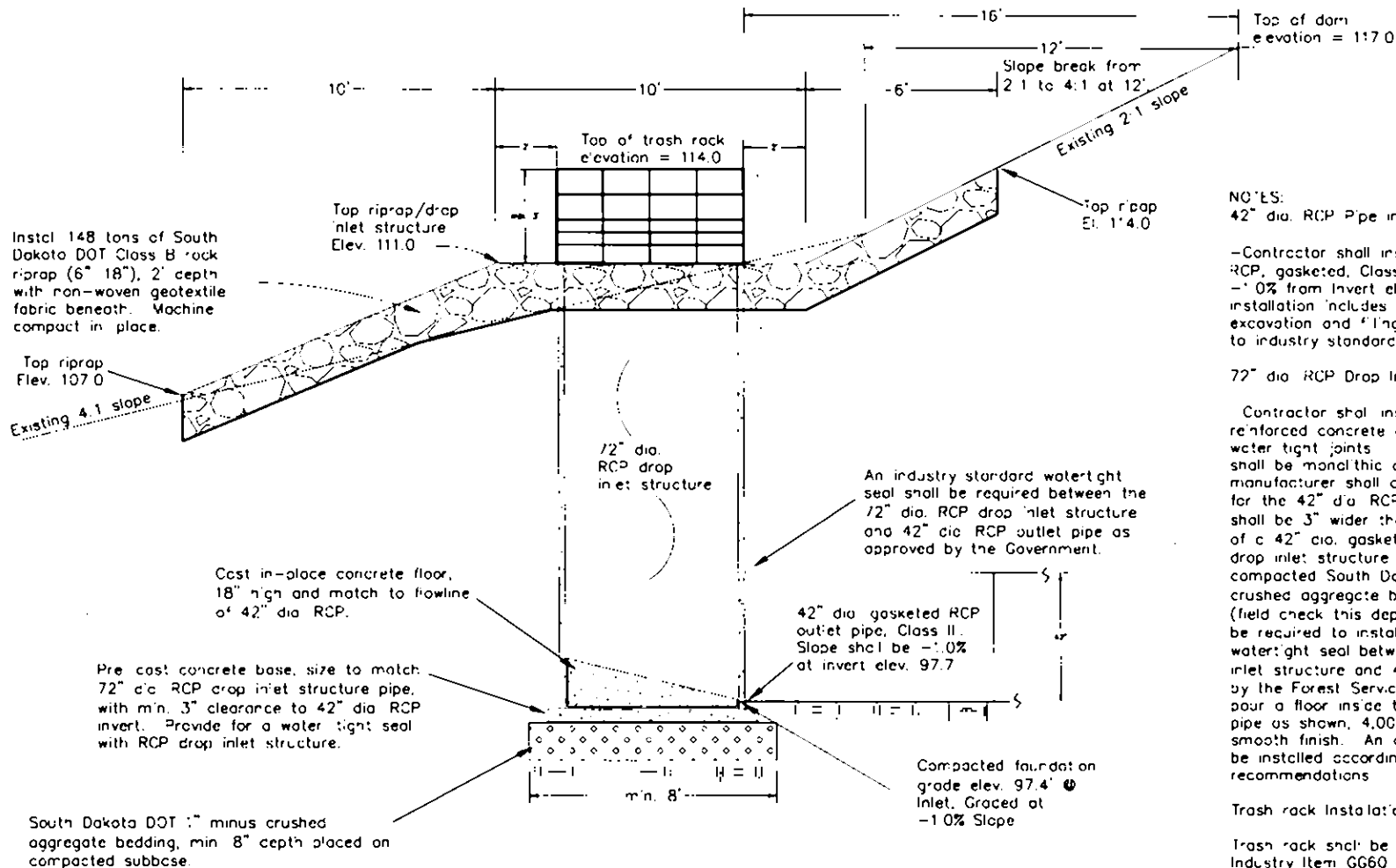
South Dakota DCT 1" minus crushed aggregate bedding, min. 8" depth

2 PROPOSED SECTION VIEW

11 SCALE N.T.S.

2 PROPOSED SECTION VIEW
11 SCALE N.T.S.

NOTE: LOCAL DATUM JAW CREST: 1:7' = 2042' MSL



1 72" DIA. RCP DROP INLET STRUCTURE DETAIL
12 SCALE: NTS

NOTE: LOCAL DATUM DAM CREST: 117' = 2042' MSL

NOTES:
42" dia. RCP Pipe installation

-Contractor shall install 56 LF of 42" dia RCP, gasketed, Class III, with a slope of -1.0% from invert elev. of 97.7. Typical installation includes backfilling foundation excavation and filling all voids and compacting to industry standards.

72" dia RCP Drop Inlet Structure installation

Contractor shall install a precast 72" dia reinforced concrete drop inlet structure with water tight joints. The bottom concrete base shall be monolithic and the precast manufacturer shall create a circular knockout for the 42" dia RCP. The circular knockout shall be 3" wider than the outside diameter of a 42" dia. gasketed, Class III RCP. RCP drop inlet structure shall be bedded on compacted South Dakota DOT 1" minus crushed aggregate bedding, min. 8" depth (field check this depth). The Contractor shall be required to install an industry standard watertight seal between the 72" dia RCP drop inlet structure and 42" dia RCP as approved by the Forest Service. The Contractor shall pour a floor inside the drop inlet structure pipe as shown, 4,000 psi with fiber and a smooth finish. An approved trash rack shall be installed according to manufacturers recommendations.

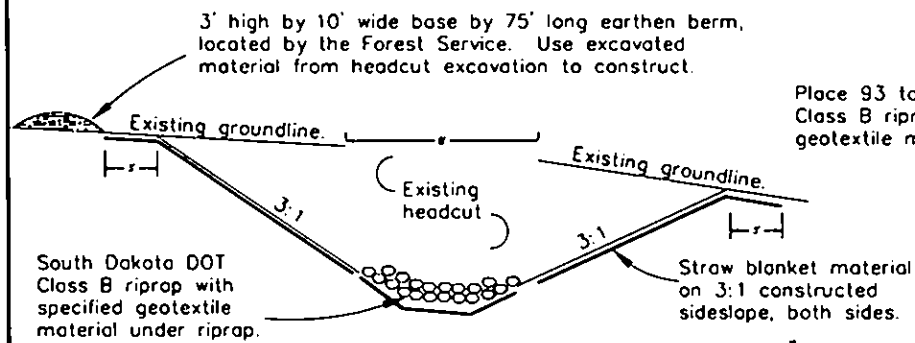
Trash rack installation

Trash rack shall be a galvanized Haala Industry Item GG60 or equal. Secure to top of drop inlet structure using manufacturer and industry standards for this type of application.

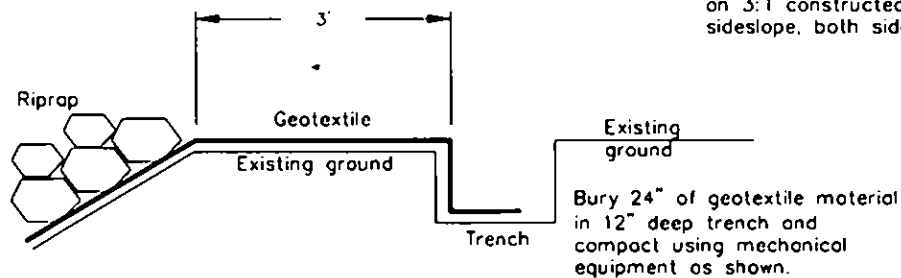
Division of Transportation
Forest Service
523 E. Capitol Ave.
Pierre, South Dakota 57501-3182
Phone: (605) 773-6097

Contractor: [Signature]
[Signature]
[Signature]

12
17



1 SECTION A-A
13 SCALE: N.T.S.



2 GEOTEXTILE TRENCH DETAIL
13 SCALE: N.T.S.

NOTES:

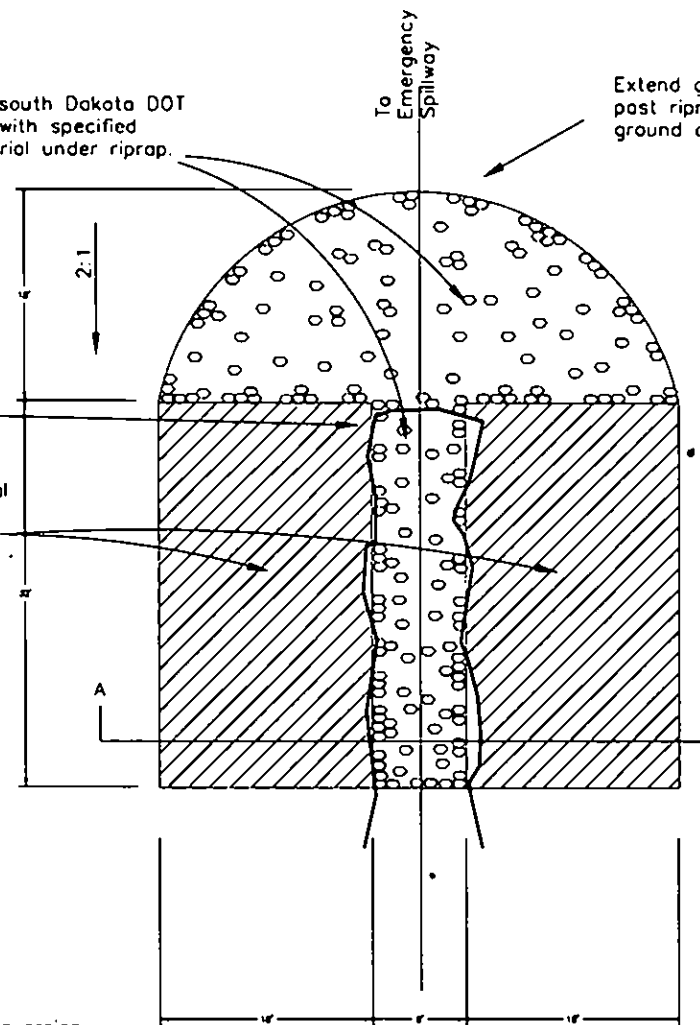
- Excavate headcut repairs as shown. Placement of specified geotextile material shall be installed to 3 feet beyond riprap and trenched in as shown.
- Excess embankment shall be dispersed in the surrounding landscape as directed by the Forest Service.

NOTE:

Cubic yards to tons conversion
-58 cubic yards = 93 tons

Place 93 tons south Dakota DOT Class B riprap with specified geotextile material under riprap.

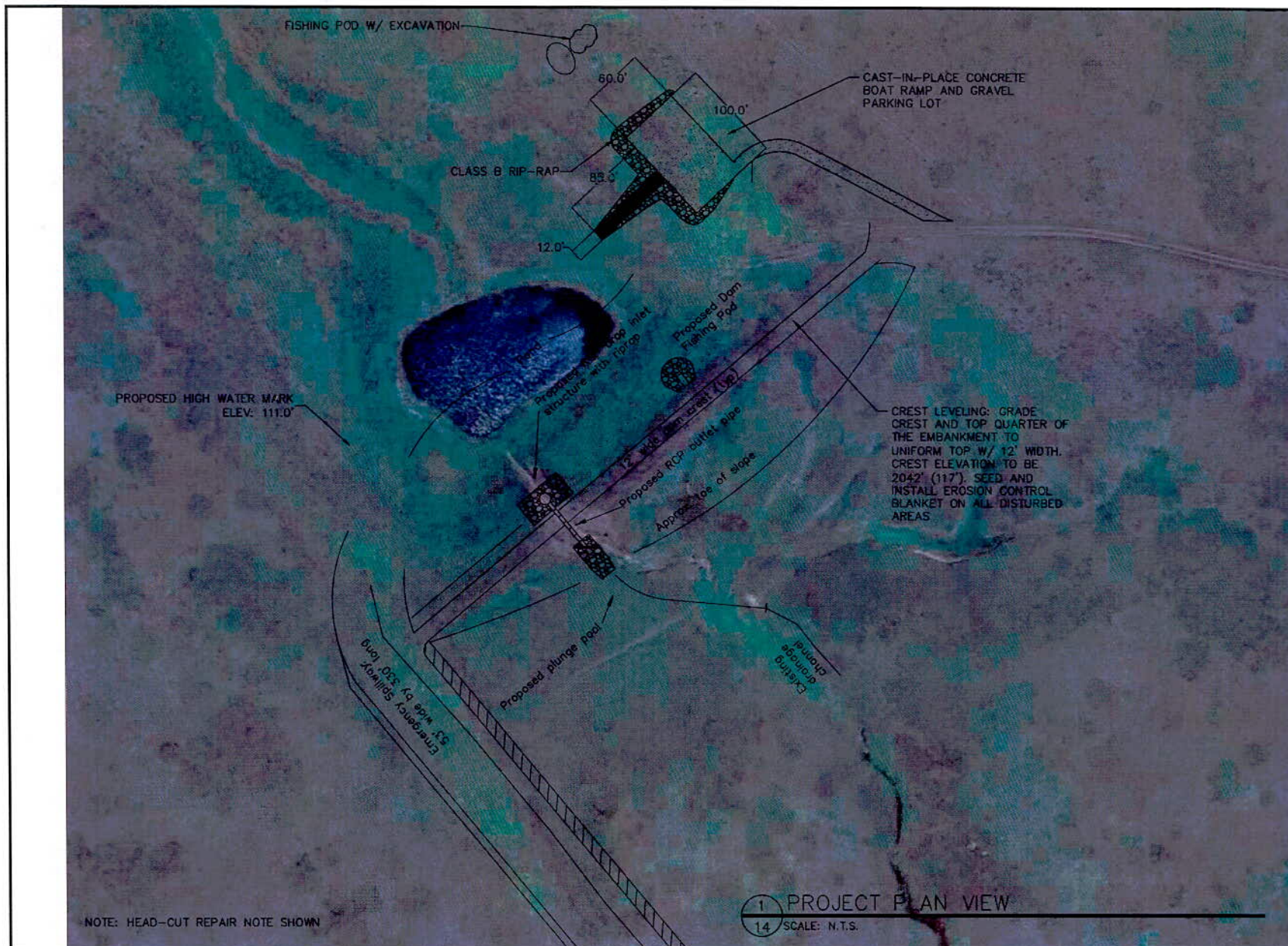
Extend geotextile 3 feet past riprap and trench into ground as shown.

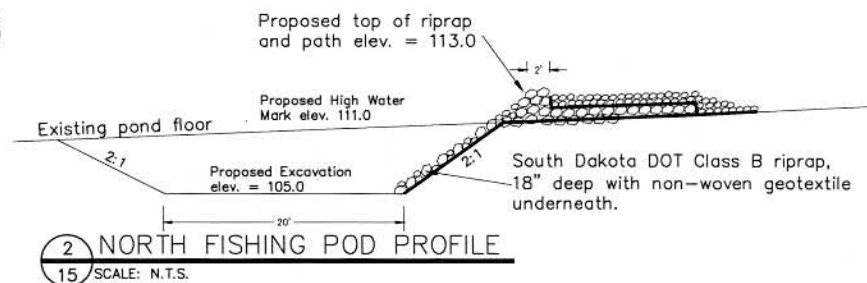
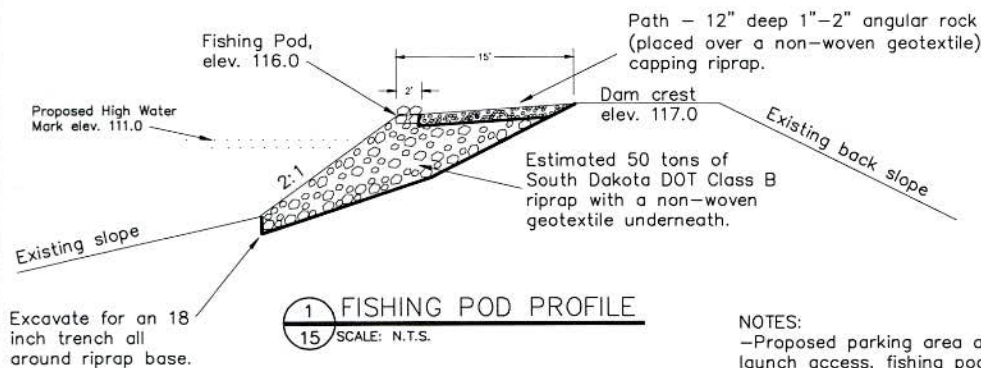


3 PLAN VIEW
13 SCALE: N.T.S.



3' high by 10' wide base by 75' long earthen berm, located by the Forest Service. Use excavated material from headcut excavation to construct.

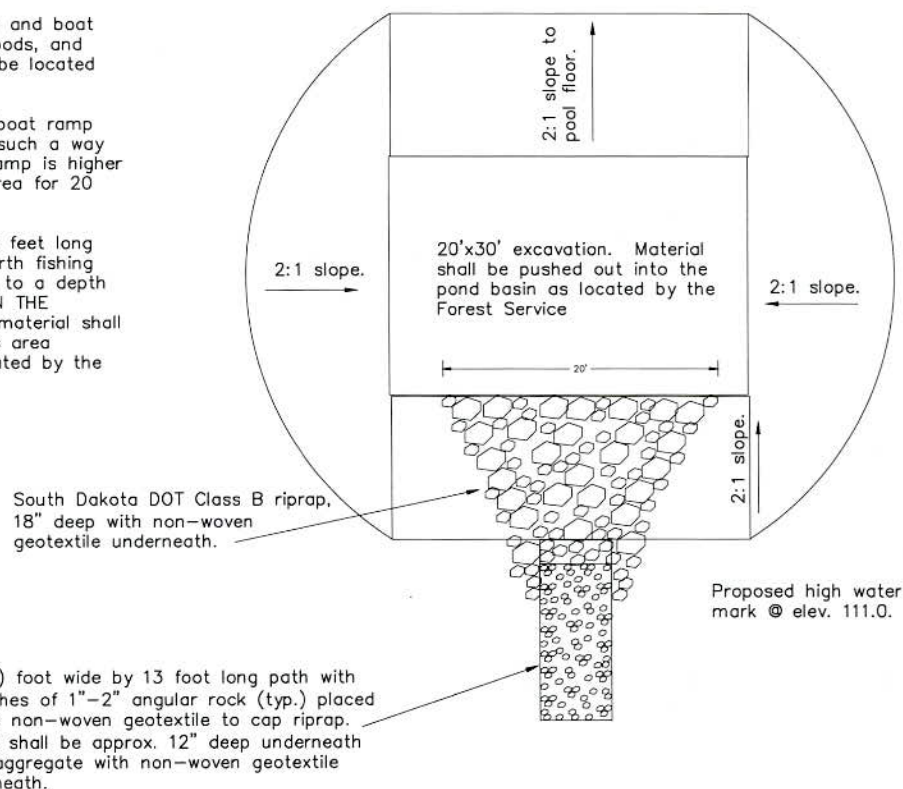
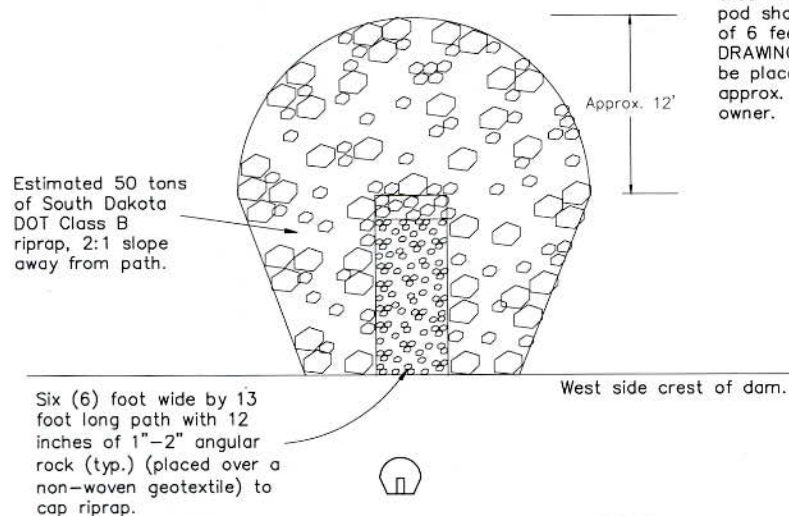


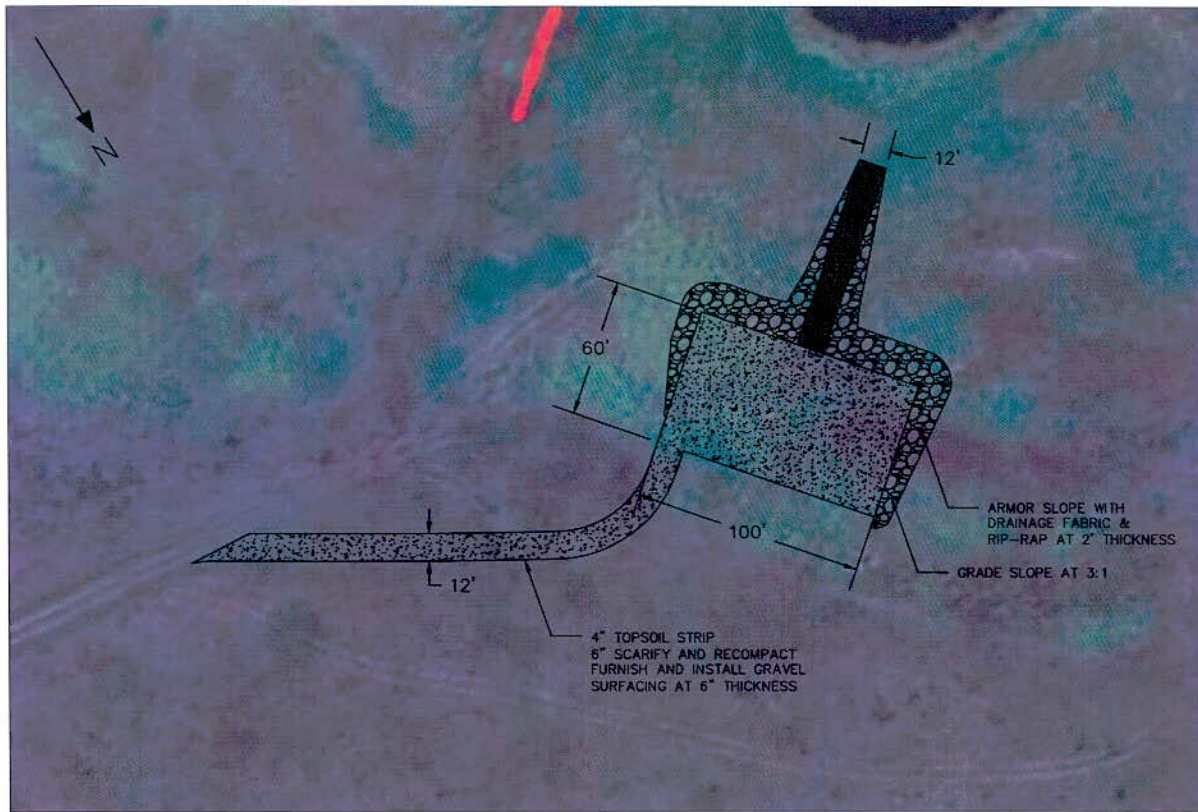


NOTES:
-Proposed parking area and boat launch access, fishing pods, and boat launch area shall be located by the owner.

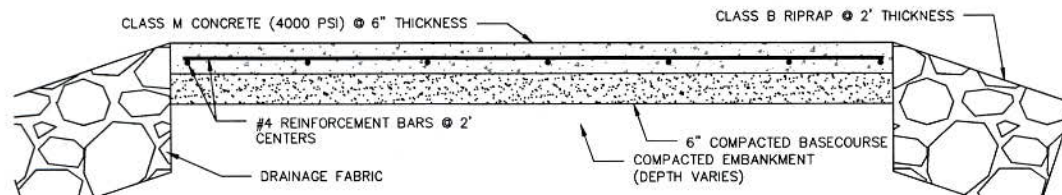
-The area around the boat ramp shall be landscaped in such a way that the base of the ramp is higher than the surrounding area for 20 feet all around.

-A 20 foot wide by 30 feet long area in front of the north fishing pod shall be excavated to a depth of 6 feet as SHOWN ON THE DRAWINGS. Excavated material shall be placed south of this area approx. 50 feet as located by the owner.



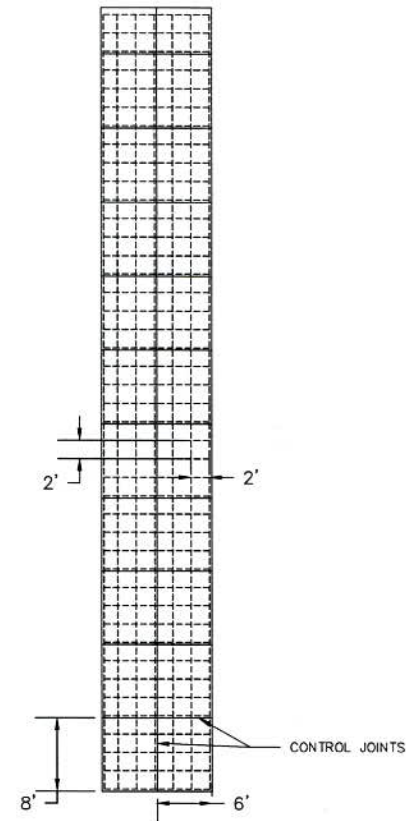


1 BOAT RAMP/PARKING LOT PLAN VIEW
16 SCALE: N.T.S.

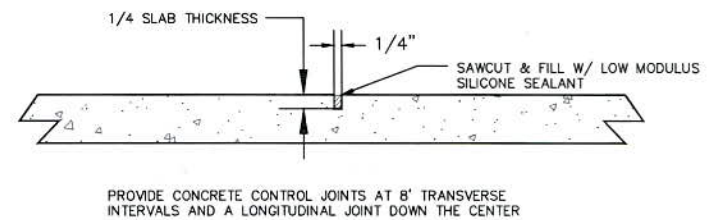


2 TYPICAL SECTION
16 SCALE: N.T.S.

NOTE:
CONCRETE MIX DESIGN SHALL INCORPORATE
CHEMICAL ADMIXTURE FOR HIGH EARLY STRENGTH

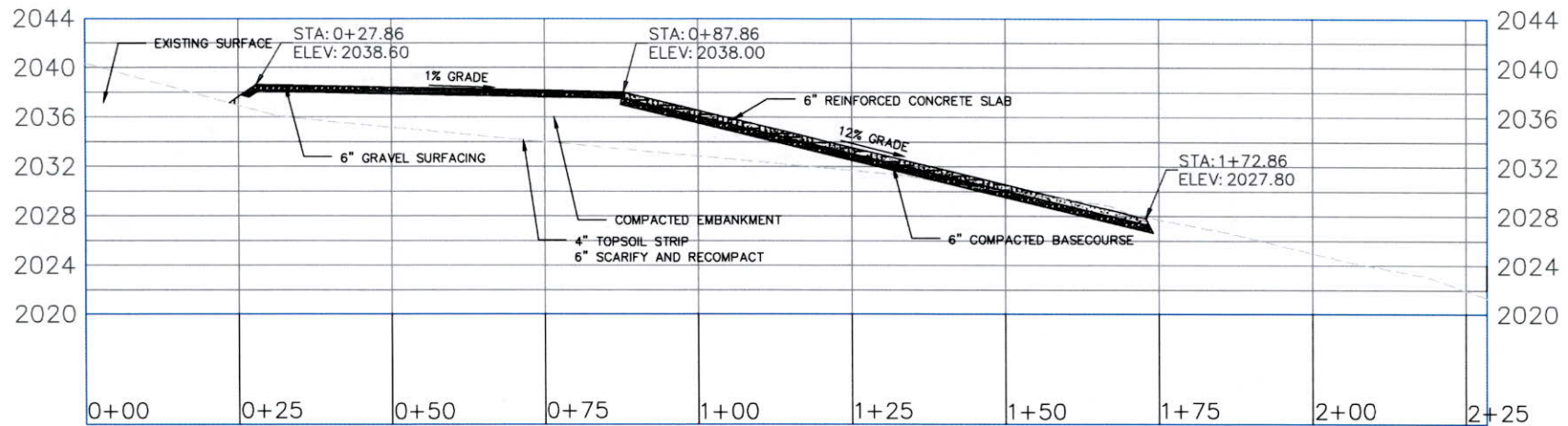


4 CONCRETE PLAN VIEW
16 SCALE: N.T.S.



3 TYPICAL CONTROL JOINT
16 SCALE: N.T.S.

LOWER BOOTH PARKING LOT/RAMP



17 CENTERLINE BOAT RAMP PROFILE
17 SCALE: N.T.S.

NOTE: LOCAL DATUM DAM CREST: 117' = 2042' MSL

Division of Administration
Foss Building
523 E. Capitol Ave.
Pierre, South Dakota 57501-3182
Phone: (605) 773-6355

South Dakota
Department of Game, Fish & Parks



12/18/2024
JMG
17

LOWER BOOTH DAM
JONES COUNTY, SD
PARKING LOT/BOAT RAMP PROFILE

17
17

Kilts, Whitney (DENR)

From: Gilkerson, James
Sent: Friday, January 21, 2022 11:00 AM
To: Duvall, Ron; Earney, Kim - FS
Cc: Kilts, Whitney (DENR)
Subject: RE: [EXT] NNF&G, Ft. Pierre National Grassland, Lower Booth Dam Reconstruction
Attachments: Elevation Storage LB.pdf

Good Morning,

I retrieved some survey information at Lower Booth last week to calculate the storage capacity. I have attached the storage capacity table for reference.

The storage capacity at the outlet elevation OHW (2036') is approximately 100 acre-ft and the approximate storage capacity at the top of the embankment (2042') is 211 acre-ft.

The elevation change from the toe of the embankment to the top of the embankment is 22'.

If you need more information please let me know.

Thanks,

James Gilkerson, P.E. | Engineer II
South Dakota Game, Fish and Parks
523 East Capitol Avenue | Pierre, SD 57501
O: 605.773.4521 | C: 605.280.2197 | James.Gilkerson@state.sd.us



From: Duvall, Ron <Ron.Duvall@state.sd.us>
Sent: Thursday, March 4, 2021 8:23 AM
To: Earney, Kim - FS <kim.earney@usda.gov>; Tobin, Ryan <Ryan.Tobin@state.sd.us>
Subject: RE: [EXT] NNF&G, Ft. Pierre National Grassland, Lower Booth Dam Reconstruction

Kim,

Thank you for plans. Regarding permitting, could you please confirm that 80 acre-feet at full pool is the storage capacity at the primary spillway elevation? If the storage capacity to the primary spillway is 80 acre-feet, then a water right permit will be needed for that amount of storage. A dry draw location notice can only be used for dams impounding 25 acre-feet or less.

Secondly, regarding applicability of safety of dams requirements, what is elevation difference of either the natural bed of the watercourse or lowest point on the toe of the dam and the elevation of the dam crest?

Thanks again,

Ron Duvall
Water Rights Program
605.773.3352
denr.sd.gov



DENR
SOUTH DAKOTA

From: Earney, Kim - FS <kim.earney@usda.gov>
Sent: Wednesday, March 3, 2021 11:14 AM
To: Duvall, Ron <Ron.Duvall@state.sd.us>; Tobin, Ryan <Ryan.Tobin@state.sd.us>
Subject: [EXT] NNF&G, Ft. Pierre National Grassland, Lower Booth Dam Reconstruction

Hi Ron and Ryan, I finally was able to get the correct app to combine pdf files for this project that allowed me to only send 4 packages, not the 30+ if I had to do it individually. Thanks for the patience.

So, I feel this package is at 90%. If you have any comments/corrections in the design you would like to see, let me know. Especially the fishing pods and boat launch features. As I understand the agreement Dan Svingen, District Ranger at Ft. Pierre, has set up, Ryan - your shop will advertise and administer the contract once it is let? If so, will the formatting I have in this package work?

The elevations shown on the drawings are project elevations; the project elevation for the crest of the dam is shown as 117.0. A GPS determined elevation is 2042.0. I also did not develop a pond size based on the project elevation on top of the RCP inlet structure, believe this elevation is similar to what the previous existing primary spillway pipe was set at.

We have an old Location Notice – Dry Draw form. Dry draw number is 69854. I believe the question will be: can we file another location notice or need a water right?

Thoughts?? Comments??? Thanks!!!

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JMG 3/4/2022

Dimensions	
Inlet (Riser) Diameter	72 in
Inlet (Riser) Area	28.26 sf
Conduit Diameter	42 in
Conduit Area	9.6163 sf
Weir Length (b)	18.85 ft
C _w (Weir Discharge Coefficient)	3.1
C _d (Discharge Coefficient)	0.8
Aux Spillway Width	52.5 ft
C _w (Aux Spillway Coefficient)	1.5

Primary Spillway Elevation	111
Conduit Invert Elevation	97.7
Auxiliary Spillway Elevation	114
Top of Embankment Elevation	117

Equations Used:	
$Q_{weir} = C_w b h^{3/2}$	
$Q_{orifice} = C_d a \sqrt{2gh}$	

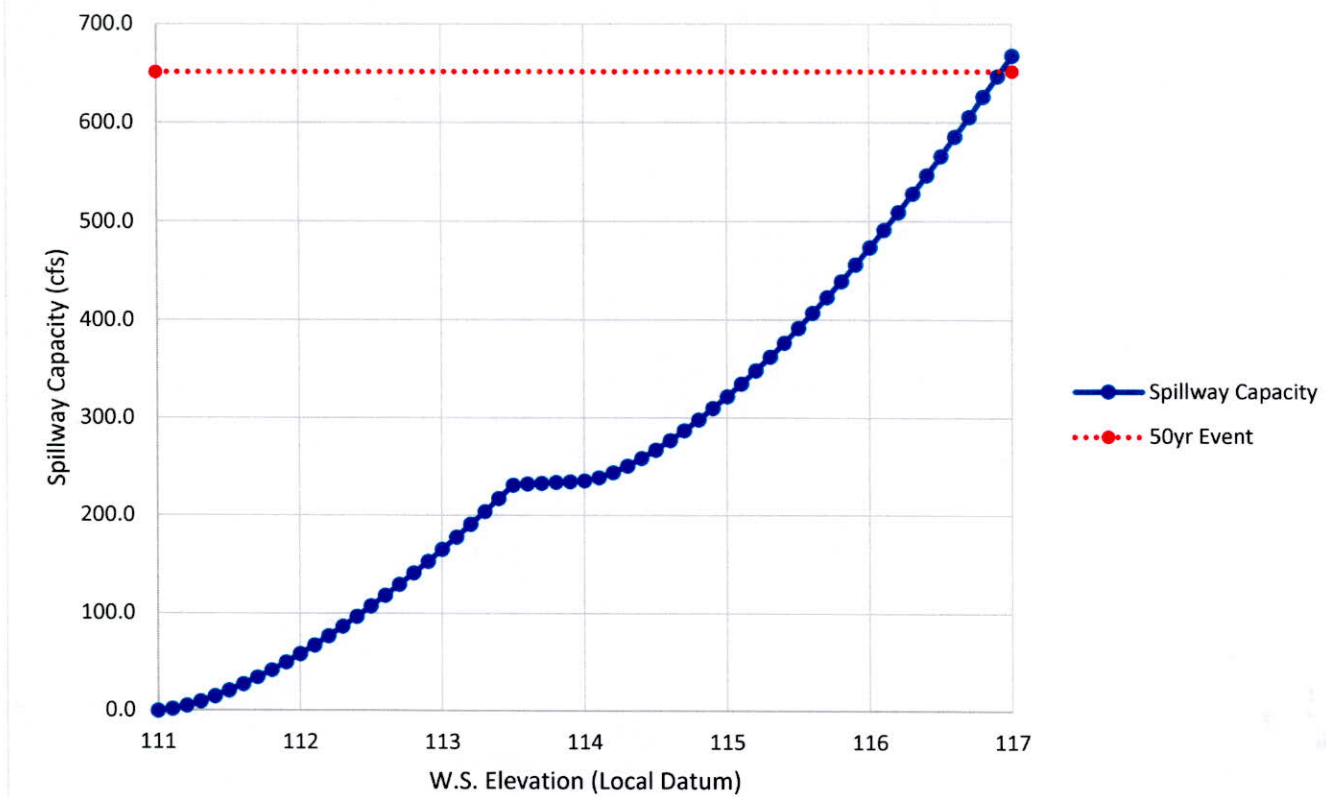
StreamStat 10yr Event (cfs)	290
StreamStat 25yr Event (cfs)	476
StreamStat 50yr Event (cfs)	654
StreamStat 100yr Event (cfs)	862

Storage Capacity OHMW (acre-ft)	99.62
Storage Capacity Top (acre-ft)	211.31

Elevation	Weir cfs	Orifice cfs	Aux cfs	Controlling Factor	Q (cfs)
111	0.0	209.8	0	Weir Flow	0.0
111.1	1.8	210.7	0	Weir Flow	1.8
111.2	5.2	211.6	0	Weir Flow	5.2
111.3	9.6	212.5	0	Weir Flow	9.6
111.4	14.8	213.4	0	Weir Flow	14.8
111.5	20.7	214.3	0	Weir Flow	20.7
111.6	27.2	215.2	0	Weir Flow	27.2
111.7	34.2	216.1	0	Weir Flow	34.2
111.8	41.8	217.0	0	Weir Flow	41.8
111.9	49.9	217.8	0	Weir Flow	49.9
112	58.4	218.7	0	Weir Flow	58.4
112.1	67.4	219.6	0	Weir Flow	67.4
112.2	76.8	220.4	0	Weir Flow	76.8
112.3	86.6	221.3	0	Weir Flow	86.6
112.4	96.8	222.2	0	Weir Flow	96.8
112.5	107.3	223.0	0	Weir Flow	107.3
112.6	118.3	223.9	0	Weir Flow	118.3
112.7	129.5	224.7	0	Weir Flow	129.5
112.8	141.1	225.6	0	Weir Flow	141.1
112.9	153.0	226.4	0	Weir Flow	153.0
113	165.3	227.3	0	Weir Flow	165.3
113.1	177.8	228.1	0	Weir Flow	177.8
113.2	190.7	228.9	0	Weir Flow	190.7
113.3	203.8	229.8	0	Weir Flow	203.8
113.4	217.3	230.6	0	Weir Flow	217.3
113.5	231.0	231.4	0	Weir Flow	231.0
113.6	245.0	232.2	0	Orifice Flow	232.2
113.7	259.2	233.0	0	Orifice Flow	233.0
113.8	273.8	233.9	0	Orifice Flow	233.9

Embankment Height (ft)	22	113.9	288.6	234.7	0 Orifice Flow	234.7
		114	303.6	235.5	0 Orifice Flow	235.5
		114.1	318.9	236.3	2.5 Orifice Flow	238.8
Height x Capacity	4648.8	114.2	334.5	237.1	7.0 Orifice Flow	244.1
**50yr frequency design flood		114.3	350.3	237.9	12.9 Orifice Flow	250.8
		114.4	366.3	238.7	19.9 Orifice Flow	258.6
**C _d (Discharge Coefficient) = 0.80 due to high HW/d value (submergence)		114.5	382.6	239.5	27.8 Orifice Flow	267.3
		114.6	399.1	240.3	36.6 Orifice Flow	276.9
		114.7	415.9	241.1	46.1 Orifice Flow	287.2
		114.8	432.9	241.9	56.3 Orifice Flow	298.2
		114.9	450.0	242.7	67.2 Orifice Flow	309.9
		115	467.5	243.4	78.7 Orifice Flow	322.2
		115.1	485.1	244.2	90.9 Orifice Flow	335.1
		115.2	503.0	245.0	103.5 Orifice Flow	348.5
		115.3	521.0	245.8	116.7 Orifice Flow	362.5
		115.4	539.3	246.6	130.4 Orifice Flow	377.0
		115.5	557.8	247.3	144.7 Orifice Flow	392.0
		115.6	576.5	248.1	159.4 Orifice Flow	407.5
		115.7	595.4	248.9	174.6 Orifice Flow	423.4
		115.8	614.5	249.6	190.2 Orifice Flow	439.8
		115.9	633.8	250.4	206.2 Orifice Flow	456.6
		116	653.3	251.2	222.7 Orifice Flow	473.9
		116.1	673.0	251.9	239.7 Orifice Flow	491.6
		116.2	692.9	252.7	257.0 Orifice Flow	509.6
		116.3	713.0	253.4	274.7 Orifice Flow	528.1
		116.4	733.3	254.2	292.8 Orifice Flow	547.0
		116.5	753.7	254.9	311.3 Orifice Flow	566.2
		116.6	774.4	255.7	330.1 Orifice Flow	585.8
		116.7	795.2	256.4	349.4 Orifice Flow	605.8
		116.8	816.2	257.2	369.0 Orifice Flow	626.1
		116.9	837.4	257.9	388.9 Orifice Flow	646.8
		117	858.8	258.6	409.2 Orifice Flow	667.8

LOWER BOOTH SPILLWAY CAPACITY



JMG 3/4/2022

Dimensions	
Inlet (Riser) Diameter	72 in
Inlet (Riser) Area	28.26 sf
Conduit Diameter	42 in
Conduit Area	9.6163 sf
Weir Length (b)	18.85 ft
C _w (Weir Discharge Coefficient)	3.1
C _c (Discharge Coefficient)	0.8
Aux Spillway Width	52.5 ft
C _w (Aux Spillway Coefficient)	1.5

Primary Spillway Elevation	111
Conduit Invert Elevation	97.7
Auxiliary Spillway Elevation	114
Top of Embankment Elevation	117

Equations Used:

$$Q_{weir} = C_w b h^{3/2}$$

$$Q_{orifice} = C_d a \sqrt{2gh}$$

StreamStat 10yr Event (cfs)	290
StreamStat 25yr Event (cfs)	476
StreamStat 50yr Event (cfs)	654
StreamStat 100yr Event (cfs)	862

Storage Capacity OHMW (acre-ft)	99.62
Storage Capacity Top (acre-ft)	211.31

Embankment Height (ft)	22
------------------------	----

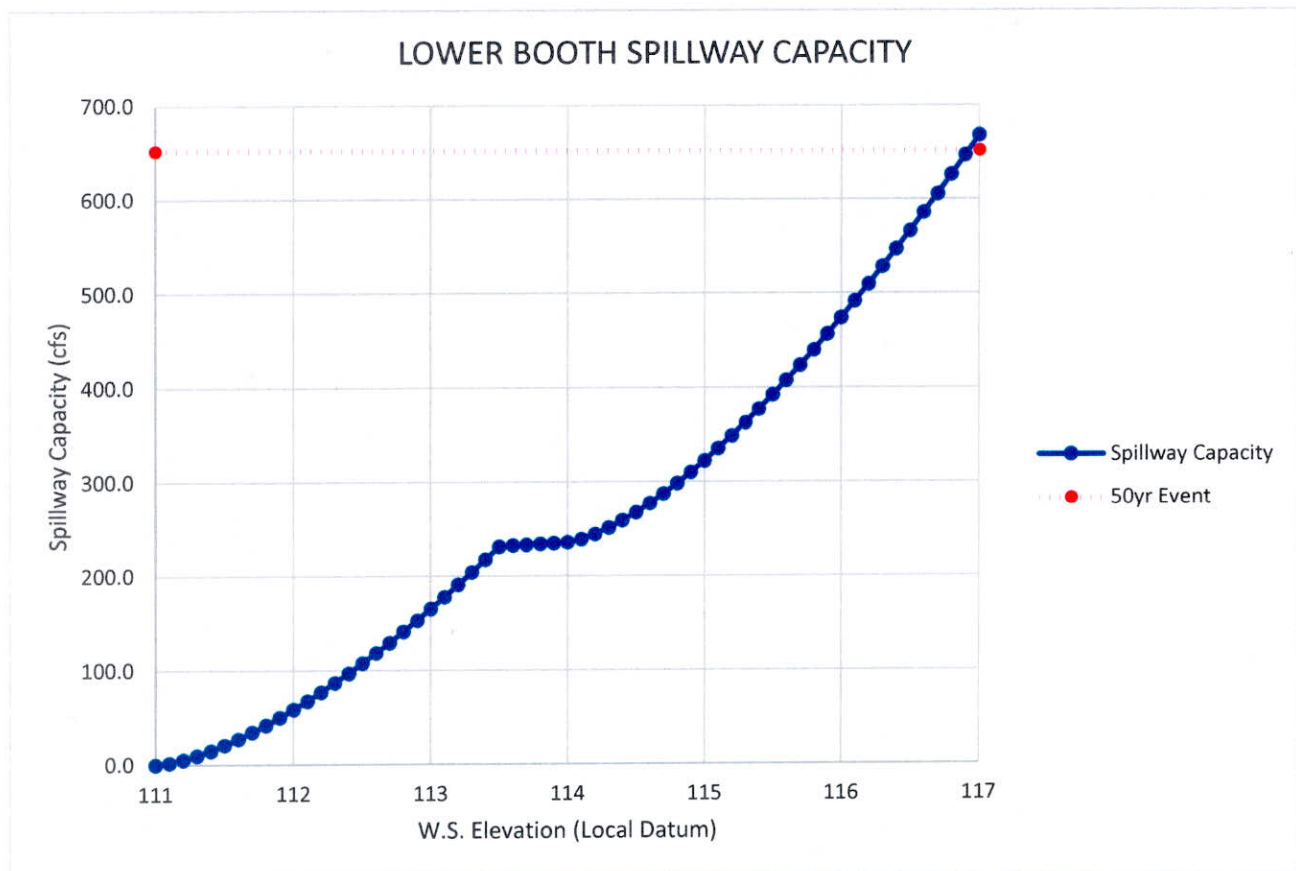
Height x Capacity	4648.8
-------------------	--------

****50yr frequency design flood**

****C_d (Discharge Coefficient) = 0.80 due to high HW/d value (submergence)**

Elevation	Weir cfs	Orifice cfs	Aux cfs	Controlling Factor	Q (cfs)
111	0.0	209.8	0	Weir Flow	0.0
111.1	1.8	210.7	0	Weir Flow	1.8
111.2	5.2	211.6	0	Weir Flow	5.2
111.3	9.6	212.5	0	Weir Flow	9.6
111.4	14.8	213.4	0	Weir Flow	14.8
111.5	20.7	214.3	0	Weir Flow	20.7
111.6	27.2	215.2	0	Weir Flow	27.2
111.7	34.2	216.1	0	Weir Flow	34.2
111.8	41.8	217.0	0	Weir Flow	41.8
111.9	49.9	217.8	0	Weir Flow	49.9
112	58.4	218.7	0	Weir Flow	58.4
112.1	67.4	219.6	0	Weir Flow	67.4
112.2	76.8	220.4	0	Weir Flow	76.8
112.3	86.6	221.3	0	Weir Flow	86.6
112.4	96.8	222.2	0	Weir Flow	96.8
112.5	107.3	223.0	0	Weir Flow	107.3
112.6	118.3	223.9	0	Weir Flow	118.3
112.7	129.5	224.7	0	Weir Flow	129.5
112.8	141.1	225.6	0	Weir Flow	141.1
112.9	153.0	226.4	0	Weir Flow	153.0
113	165.3	227.3	0	Weir Flow	165.3
113.1	177.8	228.1	0	Weir Flow	177.8
113.2	190.7	228.9	0	Weir Flow	190.7
113.3	203.8	229.8	0	Weir Flow	203.8
113.4	217.3	230.6	0	Weir Flow	217.3
113.5	231.0	231.4	0	Weir Flow	231.0
113.6	245.0	232.2	0	Orifice Flow	232.2
113.7	259.2	233.0	0	Orifice Flow	233.0
113.8	273.8	233.9	0	Orifice Flow	233.9
113.9	288.6	234.7	0	Orifice Flow	234.7
114	303.6	235.5	0	Orifice Flow	235.5
114.1	318.9	236.3	2.5	Orifice Flow	238.8
114.2	334.5	237.1	7.0	Orifice Flow	244.1
114.3	350.3	237.9	12.9	Orifice Flow	250.8
114.4	366.3	238.7	19.9	Orifice Flow	258.6
114.5	382.6	239.5	27.8	Orifice Flow	267.3
114.6	399.1	240.3	36.6	Orifice Flow	276.9
114.7	415.9	241.1	46.1	Orifice Flow	287.2
114.8	432.9	241.9	56.3	Orifice Flow	298.2
114.9	450.0	242.7	67.2	Orifice Flow	309.9
115	467.5	243.4	78.7	Orifice Flow	322.2

115.1	485.1	244.2	90.9 Orifice Flow	335.1
115.2	503.0	245.0	103.5 Orifice Flow	348.5
115.3	521.0	245.8	116.7 Orifice Flow	362.5
115.4	539.3	246.6	130.4 Orifice Flow	377.0
115.5	557.8	247.3	144.7 Orifice Flow	392.0
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115.7	595.4	248.9	174.6 Orifice Flow	423.4
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115.9	633.8	250.4	206.2 Orifice Flow	456.6
116	653.3	251.2	222.7 Orifice Flow	473.9
116.1	673.0	251.9	239.7 Orifice Flow	491.6
116.2	692.9	252.7	257.0 Orifice Flow	509.6
116.3	713.0	253.4	274.7 Orifice Flow	528.1
116.4	733.3	254.2	292.8 Orifice Flow	547.0
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116.6	774.4	255.7	330.1 Orifice Flow	585.8
116.7	795.2	256.4	349.4 Orifice Flow	605.8
116.8	816.2	257.2	369.0 Orifice Flow	626.1
116.9	837.4	257.9	388.9 Orifice Flow	646.8
117	858.8	258.6	409.2 Orifice Flow	667.8



Schlaak, Karen

From: Jons, Darrin -FS <darrin.jons@usda.gov>
Sent: Wednesday, March 23, 2022 1:22 PM
To: Schlaak, Karen
Subject: RE: [EXT] Water Right Permit - Lower Booth Dam

Thanks Karen, Carol Erickson from our office will call Lynda to pay with her credit card in the next couple of days, I can let you know when she makes the payment. I can be the contact person for this application, that is fine. Thanks again....Darrin



Darrin Jons
Rangeland Management Specialist
Forest Service
Nebraska National Forests and Grasslands, Fort Pierre Ranger District
p: 605-224-5517
f: 605-224-6517
darrin.jons@usda.gov
1020 North Deadwood St
Fort Pierre, SD 57532

From: Schlaak, Karen <Karen.Schlaak@state.sd.us>
Sent: Wednesday, March 23, 2022 8:05 AM
To: Jons, Darrin -FS <darrin.jons@usda.gov>
Subject: FW: Water Right Permit - Lower Booth Dam

Eric forwarded your email to me. The application and map look complete. I can print this application and map if you are ready to submit or you can mail the application. Regarding the fee, \$700 is correct. You can send a check payable to the Water Rights Program or if paying electronically, please contact Lynda Fratzke, 773-4216, for those requirements.

I am assuming you will be the contact person for this application, is this correct?

Let me know if you have questions.

Karen Schlaak

DANR - Water Rights Program
(605) 773-3352
Website: <https://danr.sd.gov>



From: Jons, Darrin -FS <darrin.jons@usda.gov>
Sent: Tuesday, March 22, 2022 12:59 PM
To: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Cc: Jons, Darrin -FS <darrin.jons@usda.gov>
Subject: RE: [EXT] Water Right Permit - Lower Booth Dam

Good afternoon, I believe we are about done with the application for the water rights permit for Lower Booth Dam. Could you please take a quick look at this application and map and let me know if we need to make any additions/changes. If everything looks ok I will have our purchasing person get in contact with your shop to make payment (I believe it would be \$700 total?). When everything is ready, are electronic documents ok or would you prefer us to send them hard copy to the address on the application? Thanks for your help....Darrin



Darrin Jons
Rangeland Management Specialist
Forest Service
Nebraska National Forests and Grasslands, Fort Pierre Ranger District
p: 605-224-5517
f: 605-224-6517
darrin.jons@usda.gov
1020 North Deadwood St
Fort Pierre, SD 57532

From: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Sent: Wednesday, March 16, 2022 11:43 AM
To: Jons, Darrin -FS <darrin.jons@usda.gov>
Subject: RE: Water Right Permit - Lower Booth Dam

Amount of water claimed should be storage at primary outlet elevation which in this case is 100 AF. Eric

From: Jons, Darrin -FS <darrin.jons@usda.gov>
Sent: Wednesday, March 16, 2022 11:37 AM
To: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Cc: Jons, Darrin -FS <darrin.jons@usda.gov>
Subject: RE: [EXT] Water Right Permit - Lower Booth Dam

Thanks Eric...one question on the application form. James said the dam is designed for 100 AF at the Ordinary High Water Mark (top of the pipe elevation). The maximum storage prior to overtopping (water level at the top of the embankment) is 211 AF. Which number should go in #2 (page 1) for amount of water claimed as well as #4: i on page 3? After we get that squared away I will get signatures and submit the application. Thanks...



Darrin Jons
Rangeland Management Specialist
Forest Service
Nebraska National Forests and Grasslands, Fort Pierre Ranger District
p: 605-224-5517
f: 605-224-6517
darrin.jons@usda.gov
1020 North Deadwood St
Fort Pierre, SD 57532

RECEIPT

WATER RIGHTS PROGRAM South Dakota Department of Agriculture and Natural Resources

Date March 24, 2022

RECEIVED OF United States of America, USDA Forest Service 1617 Cole Blvd., Bldg. 17, Lakewood CO 80401-3305

The following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>2845-2</u> to Appropriate Water, to construct and to put water to beneficial use	\$ <u>500.00</u>
Fee for Application for Permit No. _____ to Appropriate Water for Future use	\$ _____
Fee to retain Future Use Permit No. _____ after period of seven years.	\$ _____
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>2845-2</u>	\$ <u>200.00</u>
Fee for Filing Transfer Form _____	\$ _____
Fee for _____	\$ _____
Fee for Issuing New Well Driller's License No. _____	\$ _____
Fee for Renewal of Well Driller's License No. _____	\$ _____
Fee for Issuing Well Pump Installer's License No. _____	\$ _____
Fee for Renewal of Well Pump Installer's License No. _____	\$ _____
(Any Other Work Provided by Law) TOTAL	\$ <u>700.00</u>

By Eric Gronlund
Chief Engineer
me

Schlaak, Karen

To: Maberry, Vickie
Subject: RE: [EXT] Merchant Email Receipt

-----Original Message-----

From: Auto-Receipt <noreply@mail.authorize.net>
Sent: Wednesday, March 23, 2022 3:00 PM
To: Van Bockel, Jenny <Jenny.VanBockel@state.sd.us>; Fratzke, Lynda <Lynda.Fratzke@state.sd.us>; Keiser, Darcy <Darcy.Keiser@state.sd.us>; Stumpff, Amber <Amber.Stumpff@state.sd.us>
Subject: [EXT] Merchant Email Receipt

===== SECURITY STATEMENT =====

It is not recommended that you ship product(s) or otherwise grant services relying solely upon this e-mail receipt.

===== GENERAL INFORMATION =====

Merchant : DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (1869311) Date/Time : 23-Mar-2022 14:59:47 CDT

===== ORDER INFORMATION =====

Invoice :
Description : Water Permit for Lower Booth Dam Amount: ~~717.50~~ (USD) Payment Method: MasterCard xxxx7088
Transaction Type: Authorization and Capture

===== Line Items =====

===== RESULTS =====

Response : This transaction has been approved.
Auth Code : 023916
Transaction ID : 63613237848
Address Verification : Street Address: No Match -- First 5 Digits of Zip: Match

===== CUSTOMER BILLING INFORMATION =====

Customer ID :
First Name : Carol
Last Name : Erickson
Company :
Address :
City :
State/Province :
Zip/Postal Code : 57532
Country :
Phone :
Fax :
E-Mail : carol.erickson@usda.gov

===== CUSTOMER SHIPPING INFORMATION =====

First Name :
Last Name :
Company :
Address :
City :
State/Province :
Zip/Postal Code :
Country :

===== ADDITIONAL INFORMATION =====

Tax :
Duty :
Freight :
Tax Exempt :
PO Number :

5/17/2022

P&S Review
Lower Booth Repair

wkk

Plans prepare by an engineer as defined by ARSD Chapter 74:02:08 _Yes-James Gilkerson LC No. 15557 _

Top of Dam Elevation __2042 ft__ Maximum Storage Capacity__211 acre ft__

2nd Spillway Elevation __2039.8 ft__ Intermediate Storage Capacity_207.96 acre-ft (@2040ft) _

P. Spillway Elevation __2036 ft__ Normal Storage Capacity__99.62 acre-ft__

Downstream embankment toe elevation__2020 ft__

Height __22 ft__

Effective height (per ARSD 74:02:08:01(8)) __estimated 15.3 ft__

Minimum design flood requirement under ARSD 74:02:08:07

Dam hazard category _low__ Dam size _small__

dam is in the national grasslands, immediate downstream flood plain has no development approximately 5 stream miles to nearest farm place and approximately 6 stream miles to HWY 83, flows from a dam breach should attenuate in the watershed before reaching these structures

Additional ARSD requirements/notes:

$15.3 * 207.96 = 3181.788 > 3000$ so does not qualify for ARSD 74:02:08:07.01 exception

Minimum design flood required __50 year, 24hr event__

Streamstats yields a 50 year runoff for the watershed of 654 cfs

Design peak flow in plans __667.8 cfs__

Comments:

spillway capacity meets rule

5/17/2022

P&S Review
Lower Booth Repair

wkk

ARSD 74:02:08:09 Requirements

1. Top map _repair n/a _____
2. Dam axis profile __ repair n/a _____
3. Dam max X-section _yes _
4. Area-capacity curves _yes _____
5. Outlet details ____missing trash rack
details _____
6. Spillway Rating __yes _____
7. Spillway details _yes _____
8. Specs ____ yes _____
9. If category 1 EPP/EAP _n/a _____

Additional comment/notes:

NRCS Annual Yield
(From SD Engineering Field Manual for
Conservation Practices)

Qualifies for the National Inventory of Dams

Yes

-will need to be added to inventory after
construction

-recommend requesting as-builds as part of the
approval letter

StreamStats Report

Region ID: SD

Workspace ID: SD20220518152122206000

Clicked Point (Latitude, Longitude): 44.00292, -100.37602

Time: 2022-05-18 10:21:47 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
----------------	-----------------------	-------	------

Parameter Code	Parameter Description	Value	Unit
CONTDA	Area that contributes flow to a point on a stream	4.27	square miles

Peak-Flow Statistics Parameters [Subregion C]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
CONTDA	Contributing Drainage Area	4.27	square miles	0.06	904

Peak-Flow Statistics Flow Report [Subregion C]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	Plu	SE	ASEp	Equiv. Yrs.
50-percent AEP flood	57.1	ft ³ /s	13.2	246	108	108	1.8
20-percent AEP flood	168	ft ³ /s	60.9	464	67	67	4.8
10-percent AEP flood	290	ft ³ /s	119	705	58	58	8.3
4-percent AEP flood	476	ft ³ /s	208	1090	53	53	12
2-percent AEP flood 50 Yr	654	ft ³ /s	288	1490	53	53	14.9
1-percent AEP flood	862	ft ³ /s	369	2010	55	55	16.5
0.2-percent AEP flood	1490	ft ³ /s	555	4000	65	65	16.6

Peak-Flow Statistics Citations

Sando, Steven K., 1998, A Method for Estimating Magnitude and Frequency of Floods in South Dakota: U.S. Geological Survey Water-Resources Investigations Report 98-4055, 48 p. (<http://pubs.water.usgs.gov/wri98-4055/>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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Application Version: 4.8.1

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

June 1, 2022

USDA Forest Service
Attn: Jack Isaacs
1617 Cole Blvd Building 17
Lakewood, CO 80401-3305

Dear Mr. Isaacs:

We have reviewed the plans and specifications prepared by South Dakota Game, Fish, & Parks for the reconstruction of Lower Booth Dam located in Section 34-T1N-R31E in Jones County owned by the USDA Forest Service. The plans and specifications for the reconstruction of the dam are approved. However, reconstruction of the dam cannot begin until the water permit is issued for the dam.

Our review was to determine compliance with the requirements of the Water Management Board Safety of Dams Rules, Chapter 74:02:08. Although not specifically addressed in the SD Safety of Dams Rules, we would like to recommend the inclusion of a filter diaphragm be considered as part of the conduit design. The inclusion of a filter diaphragm as part of the design of a conduit through a dam has become standard practice since the SD Safety of Dams Rules were last updated. Approval of these plans and specifications does not release the USDA Forest Service, the owner of the dam, from the responsibility for operating and maintaining the dam to ensure the safety of the dam.

Lower Booth Dam will be classified as a small size category 3, (low hazard dam) with a dam height of 22 feet and a normal storage capacity of 100 acre-feet. A category 3 dam is a low hazard dam whose failure may cause limited damage to agricultural lands or county or township roads or minimum economic loss. However, future downstream development could change this classification. Additionally, the Water Rights Program does not have an inspection program for federally owned low hazard dams, so the development of an inspection and maintenance routine to help ensure the long-term safety of the dam is encouraged.

If a set of as-built plans are prepared for this dam reconstruction project, the Water Rights Program requests a copy of them for our records. If a set of as-built plans are not prepared the Water Rights Program requests to be notified when the project is completed. If you have any questions, please feel free to contact the Water Rights Program at (605) 773-3352.

Sincerely,

Eric Gronlund, PE
Chief Engineer, Water Rights Program

Cc: James Gilkerson, South Dakota Game, Fish & Parks



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 2845-2, United States of America, USDA Forest Service**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Agriculture and Natural Resources concerning Water Permit Application No. 2845-2, United States of America, USDA Forest Service, 1617 Cole Blvd. Bldg. 17, Lakewood CO 80401-3305.

The Chief Engineer is recommending APPROVAL of Application No. 2845-2 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing domestic water uses and water rights, 3) the proposed use is a beneficial use and 4) it is in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board with the following qualifications:

1. Water Permit No. 2845-2 authorizes storage of up to 100 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water must be by-passed.

See report on application for additional information.

Eric Gronlund, Chief Engineer
May 23, 2022

REPORT ON WATER PERMIT APPLICATION NO. 2845-2

USDA Forest Service

May 20, 2022

Application No 2845-2, proposes to impound 100 acre-feet of water from an unnamed tributary to N. Fork Medicine Creek by reconstructing a dam located in the approximate center of Section 34 with water impounded in the S 1/2 NW 1/4 Section 34; all in T1N-R31E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation, recreational, and domestic use purposes. The dam site is located approximately 10 miles northeast of Draper SD.

South Dakota Codified Law SDCI. 46-2A-2 directs the Chief Engineer to make a recommendation to the Water Management Board on a permit application. The Chief Engineer needs to consider four criteria in making a recommendation on whether a permit should be approved, approved with qualifications, denied, or deferred. They are: 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing domestic water uses and water rights, 3) the proposed use is a beneficial use, and 4) it is in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board. This report will analyze the available information to make a recommendation to the Chief Engineer on the first two criteria the Chief Engineer needs to consider in making an official recommendation to the Water Management Board.

Review of the Proposed Water Source

The source of water for the proposed project is an unnamed tributary to the North Fork of Medicine Creek in Jones County. An annual watershed yield analysis was made for runoff from the watershed located upstream from the proposed dam. The analysis estimated the drainage area above the dam to be 2,733 acres and had a potential annual yield with a 50% chance of occurrence or 1 out of 2 years of yielding 227 acre-feet annually. At a 10% chance of occurrence, 1 out of 10 years, the estimated annual runoff yield is 763 acre-feet (USDA-NRCS. 2009). There is a dam authorized by Water Right No. 2590-2 located approximately 3,600 feet upstream on the unnamed tributary on property owned by the USDA-Forest Service capable of impounding 52.4 ac-ft of water. This upstream dam would need to fill prior to the proposed dam receiving significant inflow from the watershed (Water Rights. 2022). The watershed is capable of providing sufficient runoff to fill this dam except in years of extremely dry climatic conditions.

Review of Existing Water Rights

There are no existing water rights/permits appropriating water downstream of the proposed dam from the unnamed tributary or on the North Fork Medicine Creek. There are two location notices on file for dams located 2 to 5 miles downstream, a review of aerial photography shows both have been breached for several years.

Conclusions

1. This application proposes to impound 100 acre-feet of water from an unnamed tributary to N. Fork Medicine Creek by reconstructing a dam. The water is for fish and wildlife propagation, recreational, and domestic use purposes.
2. The watershed is capable of providing sufficient runoff to fill this dam except in years of extremely dry climatic conditions.
3. There are no existing water rights/permits appropriating water downstream of the proposed dam.

for Eric Drenth
Mark D. Rath
Natural Resources Engineer III

References

1. USDA-NRCS. 2009. National Engineering Handbook Part 630 Hydrology - South Dakota Engineering Field Manual - Watershed Yield.
2. Water Rights. 2022. Water Right/Permit Files. SD DENR-Water Rights Program, Joe Foss Bldg., Pierre, South Dakota.

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, May 24, 2022 10:54 AM
To: andrea.rogers@usda.gov; Jons, Darrin -FS
Cc: Gilkerson, James
Subject: Water Permit Application No. 2845-2
Attachments: 3492.pdf

Attached is a copy of the report, chief engineer recommendation and information regarding the public notice for the water permit application. As stated in the letter, please contact the papers as soon as possible to authorize publication and arrange for payment. This information is being mailed to James Isaacs, Forest Supervisor today.

Karen Schlaak
DANR - Water Rights Program
(605) 773-3352
Website: <https://danr.sd.gov>



RECEIVED

JUN 23 2022

OFFICE OF
WATER

-PUBLISHER'S AFFIDAVIT OF PUBLICATION

STATE OF SOUTH DAKOTA

)ss

COUNTY OF JONES

I, Mishayla Buchanan, of said County and State, being duly sworn, on oath says: THE MURDO COYOTE is a weekly newspaper of general circulation, printed and published in MURDO, in said County and State and has been such newspaper during the times hereinafter mentioned; that the said THE MURDO COYOTE is a legal newspaper and has been in existence for more than one year immediately preceding the first publication herein mentioned; and has more than 200 bonified subscribers; that I, the undersigned am Legal Advertising Manager of said newspaper, and in charge of the advertising department thereof, and have personal knowledge of all facts stated in this affidavit; and that the advertisement headed

USDA Forest Service

Notice of Application No. 2845-2 to Appropriate Water

a printed copy of which is hereto attached, was printed and published in said newspaper for 1 successive issues, the first publication being on the 2nd day of June, 2022, and the last publication on the 2nd day of June, 2022, that \$43.73 being the full amount of the fee for publication of the annexed notice solely to the benefit of the publishers of the said newspaper, that no arrangement or understanding for a division thereof has been made with any person and that no part thereof has been agreed to be paid to any other person whomsoever.

x *Selma Shuman*

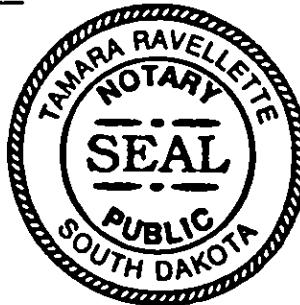
Subscribed and sworn to before me this 2nd day of June, 2022.

Tamara Ravellette

Notary Public, State of South Dakota

My Commission Expires

January 24, 2026



**Notice of Application
No. 2845-2 to
Appropriate Water**

Notice is given that USDA - Forest Service, c/o Jack Isaacs, 1617 Cole Blvd, Bldg 17, Lakewood Colo. 80401-3305 has filed an application for a water permit to impound 100 acre-feet of water from an unnamed tributary to North Fork Medicine Creek by re-constructing a dam located in the approximate center of Section 34 with water impounded if the S 1/2 NW 1/4 Section 34; all in T1N-R31E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation, domestic, and recreational use purposes. The dam site is located approximately 10 miles northeast of Draper S.D.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2845-2 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) It is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <https://danr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/public> or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss

Building, 523 E Capitol, Pierre S.D. 57501 or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by June 13, 2022.

The petition shall include a statement describing the unique injury upon approval of the application on the petitioner, the petitioner's reasons for opposing the application, and the name and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov/public> or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by June 13, 2022.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Published June 2, 2022, at the total approximate cost of \$43.73

Proof Of Publication

Huron Plainsman
49 3rd Street SE
Huron, SD 57350
605-353-7402

RECEIVED

JUN 06 2022

OFFICE OF
WATER

Legal Notice Number: 1454

I, Cadee Schelske, being duly sworn on oath say that the Plainsman is a daily paper published at Huron, Beadle County South Dakota, and that said newspaper has a bona fide circulation of at least 250 copies daily; that said newspaper has been published within said county for fifty-two consecutive weeks immediately prior to this date, that said newspaper is printed in whole or in part, in an office maintained at said place of publication; that I am a Legal Advertising Coordinator of said newspaper and know that facts herein state. The annexed notice headed: USDA Forest Service- Water No. 2845-2 was published for one day, in said newspaper and not in any supplement of the said newspaper; the publication was on 6/3//2022. That the full amount of the fee charged for the publishing \$44.91 insures to the benefit of the publisher of said newspaper; that no agreement or understanding for the division thereof has been made with any other person, and that no part thereof has been agreed to be paid to any person whom so ever.

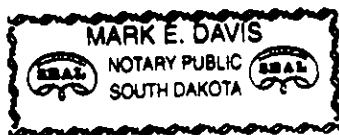
Cadee Schelske

Subscribed and sworn to me before this date 6/3/22.

Mark E. Davis

Notary Public, South Dakota

My Term Expires 12/27/2024



2000 - Legals

F. P. 06-03-22

NOTICE OF APPLICATION NO. 2845-2 to

Appropriate Water

Notice is given that USDA - Forest Service, c/o Jack Isaacs, 1617 Cole Blvd, Bldg 17, Lakewood CO 80401-3305 has filed an application for a water permit to impound 100 acre-feet of water from an unnamed tributary to North Fork Medicine Creek by re-constructing a dam located in the approximate center of Section 34 with water impounded in the S 1/2 NW 1/4 Section 34; all in T1N-R31E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation, domestic, and recreational use purposes. The dam site is located approximately 10 miles northeast of Draper SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 2845-2 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <https://danr.sd.gov/> public or contact Ron Duval for this information, or other information, at the Water Rights Program address provided below.

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the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/> public or by contacting

2000 - Legals

the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501" or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by June 13, 2022.

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No. 1454 (adv.)

Published one time at the total approximate cost of \$44.01.

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, May 24, 2022 10:47 AM
To: 'rcrandall@plainsman.com'
Subject: 2845-2, USDA - Forest Service
Attachments: 2845-2public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on June 3, 2022.

USDA-Forst Service, c/o Jack Isaacs, 1617 Cole Blvd, Bldg 17, Lakewood CO 80401-3305 (303 275-5096) has been notified to contact you to authorize publication and arrange for payment.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol, Pierre SD 57501.

Let me know if you have questions. Please acknowledge receipt of this email.

Karen Schlaak

DANR - Water Rights Program
(605) 773-3352
Website: <https://danr.sd.gov>



Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, May 24, 2022 10:45 AM
To: Murdo Coyote (mcoyote@gwtc.net)
Subject: 2845-2, USDA - Forest Service
Attachments: 2845-2public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on June 2, 2022.

USDA-Forst Service, c/o Jack Isaacs, 1617 Cole Blvd, Bldg 17, Lakewood CO 80401-3305 (303 275-5096) has been notified to contact you to authorize publication and arrange for payment.

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Let me know if you have questions. Please acknowledge receipt of this email.

Karen Schlaak

DANR - Water Rights Program
(605) 773-3352
Website: <https://danr.sd.gov>





**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

**NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPERS RIGHT AWAY.**

May 24, 2022

USDA – Forest Service
c/o Jack Isaacs
1617 Cole Blvd, Bldg 17
Lakewood CO 80401-3305

Dear Mr. Isaacs:

Water Permit Application No. 2845-2 for fish & wildlife propagation, domestic, and recreational use have been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Murdo Coyote printed at Murdo (Ph # 605 669-2271) and the Plainsman printed at Huron (Ph # 605 353-7414). You will need to contact the newspapers and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspapers to authorize publication of your Notice and to arrange for payment. Early contact with the papers can eliminate delays. Upon receiving authorization from you, the publishers have been instructed to publish your notice. The newspapers have also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

NOTICE OF APPLICATION NO. 2845-2 to Appropriate Water

Notice is given that USDA – Forest Service, c/o Jack Isaacs, 1617 Cole Blvd, Bldg 17, Lakewood CO 80401-3305 has filed an application for a water permit to impound 100 acre-feet of water from an unnamed tributary to North Fork Medicine Creek by re-constructing a dam located in the approximate center of Section 34 with water impounded in the S 1/2 NW 1/4 Section 34; all in T1N-R31E. This application requests impoundment of sufficient water to maintain water to the outlet elevation. The water is for fish and wildlife propagation, domestic, and recreational use purposes. The dam site is located approximately 10 miles northeast of Draper SD.

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Published once at the total approximate cost of_



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

JUL 25 2022

USDA – Forest Service
c/o Jack Isaacs, Forest Supervisor
1617 Cole Blvd, Building 17
Lakewood CO 80401-3305

Dear Mr. Isaacs:

Enclosed is Water Permit No. 2845-2 authorizing construction of the water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

Eric Gronlund, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures

c: Kelly Waage, Forest Service (email)

Rodriguez, Rachel

From: Kilts, Whitney (DENR)
Sent: Wednesday, June 7, 2023 11:59 AM
To: Schlaak, Karen; Rodriguez, Rachel
Subject: FW: Lower Booth Safety of Dams Review
Attachments: Lower Booth Dam FINAL Plans.pdf; Lower Booth Calculations.pdf; RCG72.pdf

Karen or Rachel,

Can you add this email chain and the attached files to the file for Water Permit No. 2845-2?

Thanks,



Whitney Kilts
Water Rights Program
Department of Agriculture and Natural Resources
523 E. Capitol Ave. Pierre SD, 57501
605.773.3352
danr.sd.gov

From: Kilts, Whitney (DENR) <Whitney.Kilts@state.sd.us>
Sent: Wednesday, June 7, 2023 11:45 AM
To: Gilkerson, James <James.Gilkerson@state.sd.us>
Cc: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Subject: RE: Lower Booth Safety of Dams Review

James,

Thanks for providing the updated plans.

The approval letter is on page 40 of the attached. Since the change to spillway capacity was an increase and the added features were recommended in the approval letter, the plans will not need to be rereviewed. So, you are good to go with both the water permit and Safety of Dams. Good luck with the bidding and construction.

Thanks,



Whitney Kilts
Water Rights Program
Department of Agriculture and Natural Resources
523 E. Capitol Ave. Pierre SD, 57501
605.773.3352
danr.sd.gov

From: Gilkerson, James <James.Gilkerson@state.sd.us>
Sent: Wednesday, June 7, 2023 11:29 AM
To: Kilts, Whitney (DENR) <Whitney.Kilts@state.sd.us>
Cc: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Subject: RE: Lower Booth Safety of Dams Review

Good morning Whitney,

It's been awhile but I'm circling back here for the Lower Booth Safety of Dams review. I have attached the final plans, updated discharge capacity, and trash rack drawings.

The auxiliary spillway was lowered by 1.5' from 114' to 112.5' to allow for additional freeboard during a design flow event. The total capacity of the structure prior to overtopping is 1037 cfs, the 50yr event is 654 cfs.

I have included a filter diaphragm into the design as well.

In the plans I have two alternates for the CMP abandonment, one is the standard flowable grout material and the other is the expandable foam from the previous version of the plans.

I thought we had Safety of Dams approval for this project but I'm not finding it in my files or emails, so I apologize for the delay in getting this information over to you. We plan to advertise for bids this summer with a late summer/fall construction.

Please let me know if you have any questions or comments.

Thanks!

James Gilkerson, P.E. | *Engineer II*
South Dakota Game, Fish and Parks
523 East Capitol Avenue | Pierre, SD 57501
O: 605.773.4521 | C: 605.280.2197 | James.Gilkerson@state.sd.us



From: Gilkerson, James
Sent: Wednesday, April 13, 2022 4:49 PM
To: Kilts, Whitney (DENR) <Whitney.Kilts@state.sd.us>
Cc: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Subject: RE: Lower Booth Safety of Dams Review

Good Afternoon Whitney,

Please see that attached spreadsheet and pdf copy of the discharge capacity of the primary outlet structure and auxiliary spillway at Lower Booth Dam.

I am currently looking into and working with the USFS on the other items covered in your previous email.

If you need additional information or have questions, please let me know.

Thanks!

James Gilkerson, P.E. | *Engineer II*
South Dakota Game, Fish and Parks
523 East Capitol Avenue | Pierre, SD 57501
O: 605.773.4521 | C: 605.280.2197 | James.Gilkerson@state.sd.us



From: Kilts, Whitney (DENR) <Whitney.Kilts@state.sd.us>
Sent: Monday, April 11, 2022 11:16 AM
To: Gilkerson, James <James.Gilkerson@state.sd.us>
Cc: Gronlund, Eric <Eric.Gronlund@state.sd.us>
Subject: RE: Lower Booth Safety of Dams Review

Greetings James,

I finally had a chance to look at the Lower Booth Dam reconstruction plans. Additional information is needed in order to determine for the design's compliance with the SD's Safety of Dam Rules.

Since this is a reconstruction of a breached dam, the reconstruction needs to meet the spillway capacity requirements in the Safety of Dam Rules. Therefore, some additional items from the list of minimum contents of plans and specifications under ARSD 74:02:08:09 are needed to evaluate compliance of the reconstruction design with the SD's Safety of Dam Rules.

Per ARSD 74:02:08:09(6), I am requesting the discharge capacity in cubic feet per second of the spillways for each foot in water depth above the spillway crest up to the maximum high-water level (top of dam) and the formula used in making the calculations. For the primary spillway NRCS has some spreadsheets for spillway discharges for some of the more standard drop inlet spillway types that might help, which can be found here: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/sd/technical/engineering/?cid=nrcs141p2_036580

Also, per ARSD 74:02:08:09(5), I am requesting detailed drawings of the trash rack. NRCS has several sets of standard drawings for trash racks that you might be able to utilize if the planned trash rack is a standard design. Those drawings can be found here: https://www.nrcs.usda.gov/wps/portal/nrcs/detail/sd/technical/engineering/?cid=nrcs141p2_036582

I am familiar with using flowable grouts to plug conduits through dams but not industrial expanding foam. Is there a particular product that was intended to be used? My concern is will the foam be able to hold up long term to things like wide temperature variations, being underwater during flooding, freeze/thaw, animal activity, etc.

I also have a suggestion (not a requirement) for your consideration. Most modern designs for conduits through dams include a filter diaphragm as part of the design as a protection measure against piping internal erosion issues developing along the conduit. Suggested references for more information on filter diaphragms would be the FEMA technical manual on conduits through embankment dams (https://www.swc.nd.gov/pdfs/conduits_embankment_dams.pdf) or the NRCS National Engineering Handbook chapter on filter diaphragms (<https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17751.wba>).

If you have any questions, please feel free to reach out.

Thanks,



Whitney Kilts
Water Rights Program
Department of Agriculture and Natural Resources
523 E. Capitol Ave. Pierre SD, 57501
605.773.3352
danr.sd.gov

From: Gilkerson, James <James.Gilkerson@state.sd.us>

Sent: Tuesday, March 8, 2022 3:47 PM

To: Kilts, Whitney (DENR) <Whitney.Kilts@state.sd.us>

Cc: Earney, Kim - FS <kim.earney@usda.gov>

Subject: Lower Booth Safety of Dams Review

Whitney,

Please see the attached plans for the Lower Booth Dam Reconstruction project for the safety of dams review.

If you have any questions or need further information please let me know.

Thanks!

James Gilkerson, P.E. | *Engineer II*

South Dakota Game, Fish and Parks

523 East Capitol Avenue | Pierre, SD 57501

O: 605.773.4521 | C: 605.280.2197 | James.Gilkerson@state.sd.us

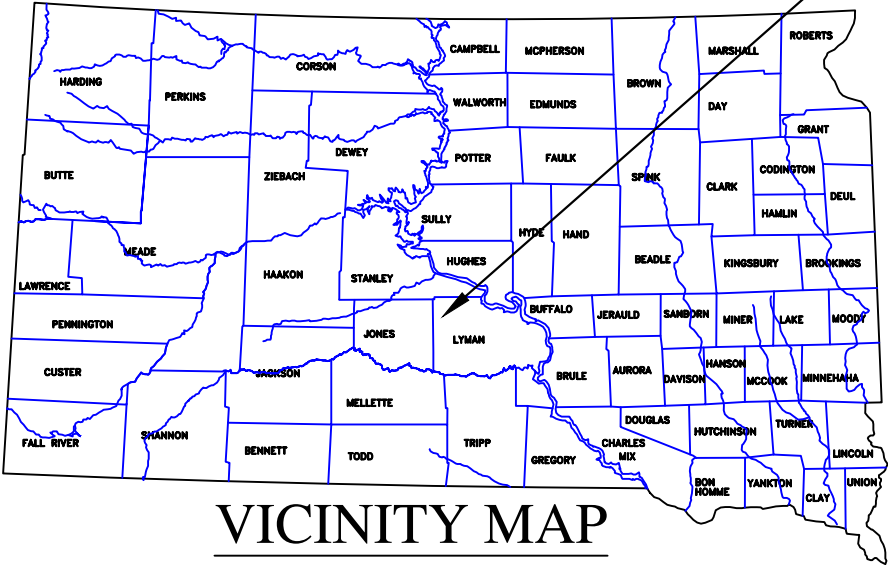


SOUTH DAKOTA DEPARTMENT OF GAME, FISH AND PARKS
LOWER BOOTH DAM RECONSTRUCTION
FT. PIERRE NATIONAL GRASSLANDS
JONES COUNTY, SOUTH DAKOTA
GFP#s: LBoo24Wa

2023



PROJECT VICINITY



VICINITY MAP

REVIEWED AND RECOMMENDED BY:

Regional Structural Engineer
Plans, Specifications, and Cost Estimate
Meet Technical Requirements

Date

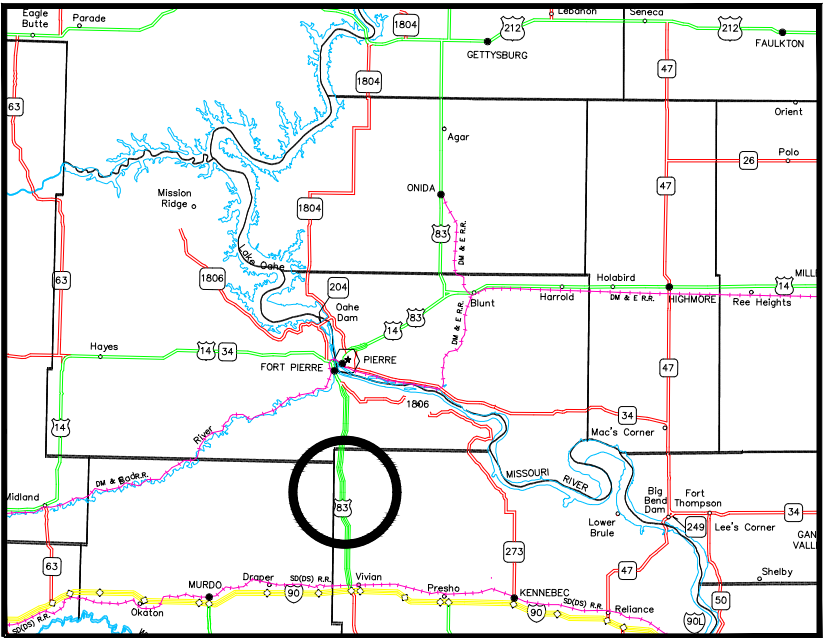
APPROVED:

Regional Director of Engineering
Complies with Technical Structural
Requirements and Engineering Standards

Date

District Ranger
Consistent with Applicable Regulatory and
Land Management Plan Requirements

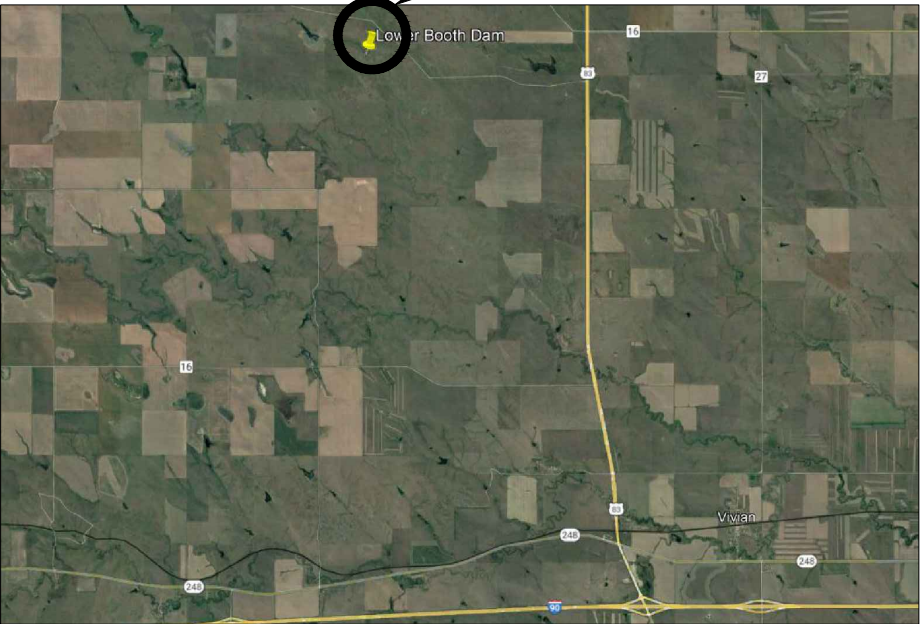
Date



LOCATION MAP

INDEX OF SHEETS	
SHEET NO.	DRAWING TITLE
1	Title Sheet
2	Estimate of Quantities
3-6	Plan Notes
7-21	Site Plans
22-25	Stormwater Pollution Prevention Plan

PROJECT LOCATION



PROJECT LOCATION

LOCAL CONTACT INFORMATION

Kyle Potter, Habitat Biologist
605-223-7705

BIDDING INFORMATION

PLAN REQUESTS: BILL HADDOCK: 605-773-6082

TECHNICAL QUESTIONS: JAMES GILKERSON: 605-773-4521

BID TABS, PLAN HOLDERS LISTS:
[HTTP://GFP.SD.GOV/AGENCY/PROJECTS/BID.ASPX](http://gfp.sd.gov/agency/projects/bid.aspx)

ONE CALL INFO

44.002518° N
-100.376614° W

T001N, R 031E, S 34
Jones County, SD

Lower Booth; 6 Miles North of Vivian Exit on HWY 83 and 2.75 Miles West of HWY 83 on Grasslands Trail NFSR 227

ESTIMATE OF QUANTITIES

LOWER BOOTH DAM RECONSTRUCTION

Item No.	Item Description	Units	Estimated Quantity
1.00	MOBILIZATION	LS	1
1.01	BORROW FILL EXCAVATION & PLACE	CY	3368
1.02	TOPSOIL STRIP, STOCKPILE, AND PLACE	CY	533
1.03	CREST LEVELING	LF	500
1.04	CLASS B RIPRAP: F&I	TON	762
1.05	TYPE B DRAINAGE FABRIC	SY	762
1.06	ORD. SHAPING AND GRADING	SY	1426
1.07	MISC. SHAPING AND GRADING	SY	4359
1.08	SEEDING: F&I	SY	8973
1.09	EROSION CONTROL BLANKET: F&I	SY	4442
1.10	HIGH FLOW SILT FENCE	LF	1100
1.11	42" RCP PIPE: F&I	LS	1
1.12	FILTER DIAPHRAGM: F&I	LS	1
1.13	REINFORCED CAST-IN-PLACE CONCRETE	CY	20
1.14	COMPACTED BASECOURSE	TON	35
1.15	GRAVEL SURFACING: F&I	TON	260
1.16	FISHING POD CONSTRUCTION	EA	2
1.17	DEWATERING/TEMP COFFER DAM	LS	1
1.18	TRAFFIC CONTROL SIGNS	UNITS	162
1.19	TRAFFIC CONTROL, MISCELLANEOUS	LS	1
<u>ALTERNATES:</u>			
A1.00	72" RCP RISER	LS	1
A1.01	72" RCP RISER W/ PREFAB MANHOLE BASE	LS	1
A1.02	UPSTREAM EMBKMNT CLASS B RIPRAP: F&I	TON	1300
A1.03	UPSTREAM EMBKMNT TYPE B DRAINAGE FABRIC: F&I	SY	1300
A1.04	CMP ABANDONMENT W/ EXPANSIVE FOAM	LS	1
A1.05	CMP ABANDONMENT W/ GROUT	LS	1
A1.06	HEADCUT REPAIR	LS	1



James Gilkerson, P.E. – Project Engineer
South Dakota Game, Fish and Parks – Engineering: 605-773-4521

South Dakota Department of Transportation's *Standard Specifications for Roads And Bridges*, 2015 Edition and its Supplemental Specifications and Supplemental Specifications for Errata (<http://www.sddot.com/business/contractors/specs/2015specbook/Default.aspx>) and its Supplemental Specifications and Errata shall apply for all construction and material details with the exception of Method of Payment, Basis of Payment and where noted. Plans, notes and/or details shall supersede the SDDOT Standard Specifications.

The work required for this project includes, but is not limited to, the following items, not necessarily listed in order of execution:

- Alternate Items:
- A1. Manhole Base for RCP Riser
 - A2. Rip-Rap upstream dam embankment face
 - A3. Headcut Repair

1. Construction Staking and Survey

All work shall be substantially complete by December 15th, 2023.

Penalties for work not substantially complete by December 15th, 2023 shall be \$375.00 per each calendar day until the work is substantially complete.

The Contractor is required to notify the Project Engineer at least 10 days prior to beginning construction activities. The Project Engineer shall be notified before any over runs from plans quantities are approved.

The Owner will provide the construction staking. Construction staking for the Project shall include project site limits, horizontal and vertical control, and other project specific features. Subsequent staking shall be sequenced and scheduled as necessary, allowing a minimum of 5 business days for the preparation and staking thereof. The Contractor is responsible for maintaining stakes and grades thereafter. No separate payment will be made to maintain grade stakes.

All items on the Bid Form will be paid based on plan quantities. These items will not be measured in the field and Contractor will be paid based on the quantity shown on the bid form unless one or more of the following occurs:

1. A contract revision alters or eliminates the quantity for a designated pay item.
2. The quantity for a designated item varies by more than 5 percent from the pay quantity.
3. A quantity verification causes the value of the work under a designated bid item to vary by more than \$5,000 from the bid amount.

Aquatic Invasive Species (AIS) are a significant threat to the biodiversity and ecological health of the aquatic resources of South Dakota. These species have the potential to dramatically alter the ecology of a lake or river, impose substantial economic costs to maintain water infrastructure and decrease the recreational value and use of a waterbody. While South Dakota has largely remained free of AIS, the recent discovery of a Zebra Mussel infestation highlights the need to prevent the introduction of AIS that may impact the aquatic resources of the state.

A major vector for the movement of AIS into the state is the interstate transport of construction equipment. Some areas of the United States, especially the Great Lakes Region, have established AIS populations that currently do not exist or exist in limited areas of South Dakota. It is essential that the following guidelines are followed to prevent these species from establishing throughout South Dakota.

- Any boat, barge or floating structure must be transported with all drain plugs, valves, bailers or similar devices removed or open when not being launched or loaded. (SD Administrative Rule 41:10:04:03). When possible, any equipment that will be used in or on a waterbody should be allowed to dry for at least seven days prior to launching in a South Dakota waterbody.
- Any boat, barge or floating structure or equipment that has significant dried organic matter or mud on the exterior surfaces should be powerwashed prior to launching in a South Dakota waterbody.
- Any boat, barge or floating structure or equipment that has been used in the Great Lakes watershed or in a waterbody known to be infested with zebra or quagga mussels within the past 30 days shall be inspected for the presence of AIS prior to use. All interior compartments or storage holds should be free of standing water.
- Any boat, barge or floating structure or equipment that has been used in the Great Lakes watershed or in a waterbody known to be infested with zebra or quagga mussels within the past 7 days shall be decontaminated with a hot-water power wash, or shall be allowed to completely dry. In addition all boats, barges, floating structures and equipment shall be inspected for the presence of AIS by a SDGFP representative prior to use within South Dakota. All interior compartments or storage holds should be free of standing water.

Additional information on construction equipment cleaning and decontamination techniques can be found at: <http://www.usbr.gov/mussels/prevention/docs/EquipmentInspectionandCleaningManual2010.pdf>

The Contractor shall propose their Sequence of Operations at the Pre-Construction meeting and coordinate it with the Engineer.

There are no work hour restrictions.

Certification documents shall be provided by the Contractor for all materials delivered to the site. Appropriate sampling and testing in compliance with the SDDOT Standard Specifications shall apply.

Additional random densities, aggregate testing, depth measurements, etc. may be requested and shall be provided at the Owner's expense. Any retesting due to failed initial tests will be provided at the Contractor's expense.

The Contractor will be responsible for determining any haul routes from the material source(s) to the project site including any agreements necessary with respective governmental agencies for maintenance and restoration of the routes.

It shall be the responsibility of the Contractor to prepare the haul route, maintain the haul route in a good condition satisfactory to the governing agency and upon completion of its use, restore the haul route to a condition at least equal to that which existed at the time hauling operation began. The fact that other general and normal traffic have used the haul route or a portion of it concurrently shall not relieve the Contractor of his obligation to maintain and restore the haul route as recommended.

The contractor shall submit a haul route plan to the owner prior to the start of construction.

The Contractor shall supply his own off-site waste disposal site appropriate for disposing of all waste generated on the project.

The Contractor shall notify SOUTH DAKOTA ONE CALL, 1-800-781-7474, to locate any utility that may be located within the project limits. The Contractor is responsible for any damage to utilities and shall repair them at the Contractor's expense.

Item 100 - Preconstruction
Lump Sum payment for expenses incurred by the Contractor before actual Project construction begins; including but not limited to, bringing personnel, equipment, supplies, and incidentals to the site; establishing temporary offices and other facilities; constructing security fences; obtaining temporary utilities; and paying premiums on bonds and insurance policies. Progress payments, when applicable, will be made as follows:

1. When 5% of the total original contract amount has been earned from other items on the bid schedule, 50% of the amount bid for mobilization will be paid, exclusive of any amount already paid by the Contractor for bond premiums.
2. When 10% of the total original contract amount has been earned, the balance of the amount bid for mobilization will be paid.

SEEDING

Seeding operations of the Project shall be done in accordance with Sections 730 and 731 of the SDDOT Standard Specifications for Roads and Bridges, 2015 Edition, as they pertain to the Project; in accordance with the Plan Drawings and details within, and/or as delineated in the field at the direction of the Project Engineer.

The Contractor shall furnish and install grass seed and fertilizer to restore the Project Site turf. All permanent seed shall be planted in the topsoil at a depth of 1/4" to 1/2". Broadcast seed must be raked or dragged in utilizing conventional methods.

The specified seed mix shall be Type C Permanent Seed Mixture as classified by SDDOT. A seed mixture analysis certificate shall be submitted to the Project Manager. In addition to the Type C Permanent Seed Mixture, Oats or Spring Wheat shall also be included in the seed mixture as shown.

TYPE C PERMANENT SEED MIXTURE		
GRASS SPECIES	VARIETY	PLS (POUNDS/ACRE)
WESTERN WHEATGRASS	FLINTLOCK, RODAN, ROSANA	32
CANADA WILDRYE	MANDAN	4
OATS OR SPRING WHEAT		20
	TOTAL	56

The estimate of area to be restored for this Project is 64,800SF = 7200 SY = 1.50 acre±; whereby the Project requires 48# PLS Western Wheatgrass, 6.0# PLS Canada Wildrye, and 30# PLS Oats or Spring Wheat, all to be applied in accordance with the specified application rates above.

The seed shall be maintained until there is 70% vegetative cover. Contractor shall supply all materials necessary for reseeding work and complete all reseeding work entirely at his own expense.

Payment for Seeding shall be by the square yard and shall include any and all incidentals necessary to complete the work as specified.

FISHING PODS

The Contractor shall furnish and install all materials required to construct the fishing pods as detailed in the construction plans and notes. The material quantities and labor necessary to complete construction as detailed in the plan drawings shall be included in the fishing pods line items.

Payment shall be by each respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.

HEADCUT REPAIR

The Contractor shall furnish and install all materials required to construct the headcut repair as detailed in the construction plans and notes. The material quantities and labor necessary to complete construction as detailed in the plan drawings shall be included in the headcut repair line items.

Payment shall be by lump sum for the respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.

REINFORCED CONCRETE PIPE

The Contractor shall furnish and install Reinforced Concrete Pipe in accordance with Section 450 and 990 of the SDDOT Standard Specifications for Roads and Bridges, 2015 Edition, as it pertains to the project; in accordance with the Plan Drawings and details provided within.

- ALTERNATE 1 – Description: 72” dia. Reinforced Concrete Pipe (RCP) Drop Inlet Structure Installation
 - Installation shall include the RCP sections to overall length required, a monolithic base, a circular knock-out for the 42” dia. RCP, watertight joints with mastic, a Haala Industries Item GG72 galvanized trash rack (or equal) with anti-vortex plate, 4,000 psi for concrete floor and concrete collar (as required between 72” dia. RCP riser and 42” dia. RCP), all as SHOWN ON THE DRAWINGS. Other work includes the installation and compaction of an aggregate base under the RCP drop inlet structure.
- ALTERNATE 2 – Description: 72” dia. Reinforced Concrete Pipe (RCP) Drop Inlet Structure with Prefabricated Manhole Base Installation
 - Installation shall include the RCP sections to overall length required and a prefabricated monolithic manhole base, a Haala Industries Item GG72 galvanized trash rack (or equal) with anti-vortex plate, and other work necessary for installation as SHOWN ON THE DRAWINGS. Other work includes the installation and compaction of an aggregate base under the RCP drop inlet structure.
- 42” RCP CONDUIT PIPE – Description: 42” dia. Reinforced Concrete Pipe Outlet Pipe Installation
 - Installation shall include the required RCP sections to overall length shown, gasketed, Class III, and RCP flared end section as SHOWN ON THE DRAWINGS. This work includes preparing the foundation under the RCP Outlet Pipe to be compacted and level to the elevation required.

Reinforced concrete pipe may be bell and spigot. The pipe sections will be adjoined such that the ends are fully entered and the inner surfaces are reasonably flush and even. All reinforced concrete pipe joints shall be tied with tie bolts in accordance with SDDOT standard plate number 450.18. Lift holes in the reinforced concrete pipe will be plugged with grout. Watertight joint seals will conform to the following requirements:

1. Reinforced concrete pipe: gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with section 990 of the specifications. nongasketed concrete pipe joints will be sealed with a hydrophilic flexible water stop seal and wrapped with a 1-foot wide strip of fabric above the cradle. The fabric will conform to the requirements of section 831 of the specifications for type a drainage fabric. The hydrophilic flexible water stop will be from the list below.

Approved list of hydrophilic flexible water stop seal:

Product
Waterstop

Manufacturer
RX Cetco
Hoffman Estates, IL
800-527-9948
www.cetco.com

Conseal CS-231

Concrete Sealants, Inc.
Tipp City, OH
800-332-7325
conseal.com

Gaskets and seals (mastic, waterstop, and seal wraps) will be installed in accordance with the manufacturer’s recommendations

REINFORCED CONCRETE PIPE (CONT.)

The cost for furnishing and installing all gaskets, mastic joint seal, water stop seal, seal wrap, concrete collars, tie bolt hardware, and for plugging the lift holes will be incidental to the contract unit price per foot for the corresponding pipe bid item.

Payment shall be by the Lump Sum for each respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.

CMP ABANDONMENT ALTERNATES

The contractor shall locate and complete work required to abandon the existing 16” CMP pipe located on the north end of the dam embankment, The downstream end of the pipe is visible and located at the toe of the embankment. The upstream end is not visible. The Contractor shall work including excavating to locate the inlet end of the existing CMP. If the inlet end of CMP is outside the dam structure, abandonment will consist of filling the CMP cavity with an industrial expanding foam material or flow-able grout material. If the inlet end of the CMP appears to be within the dam structure and requires excessive excavating into the dam embankment, the Contractor will contact the CO to discuss a plan of action.

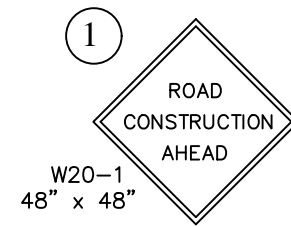
Payment shall be by lump sum for the respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.

FILTER DIAPHRAGM

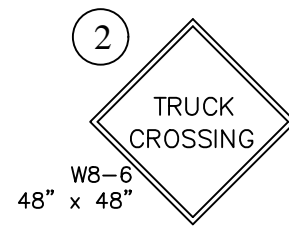
The Contractor shall furnish and install all materials required to construct the filter diaphragm as detailed in the construction plans. The contractor shall install ASTM C 33 sand to the dimensions as shown in the construction plans. The material quantities and labor necessary to complete construction shall be included in the filter diaphragm line items.

- Filter diaphragm sand shall be placed uniformly in layers not to exceed 8 inches thick before compaction. Each layer shall be thoroughly wetted immediately prior to compaction.
- Each layer of sand shall be compacted by a minimum of two passes of a vibratory plate compactor weighing at least 160 pounds. The compactor shall have a minimum centrifugal force of 2,450 pounds at a vibrating frequency of no less than 5,000 cycles per minute (or by a minimum of two passes of a vibratory smooth wheeled roller weighing at least 325 pounds with a centrifugal force of 2,250 pounds at a vibrating frequency of no less than 4,500 cycles per minute).
- The sand shall be placed to avoid segregation of particle sizes and to ensure the continuity and integrity of all zones. No foreign material shall be allowed to become intermixed with or otherwise contaminate the drainfill.
- Traffic shall not be permitted to crossover filter zones at random. Equipment crossovers shall be maintained, and the number and location of such crossovers shall be established and approved before the beginning of diaphragm placement. Each crossover shall be cleaned of all contaminating material and shall be inspected and approved by the engineer before the placement of additional drain fill material.
- Any damage to the foundation surface or the trench sides or bottom occurring during placement of sand filter shall be repaired before the sand filter zone placement is continued.
- The upper surface of the sand filter zone constructed concurrently with adjacent zones of earthfill shall be maintained at a minimum elevation of 1 foot above the upper surface of adjacent earthfill.

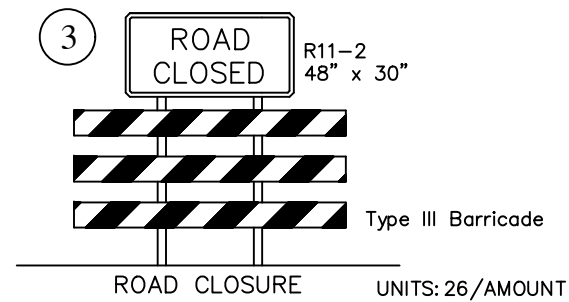
Payment shall be by lump sum for the respective line item, furnished and installed, and shall include all costs necessary to complete the work as specified.



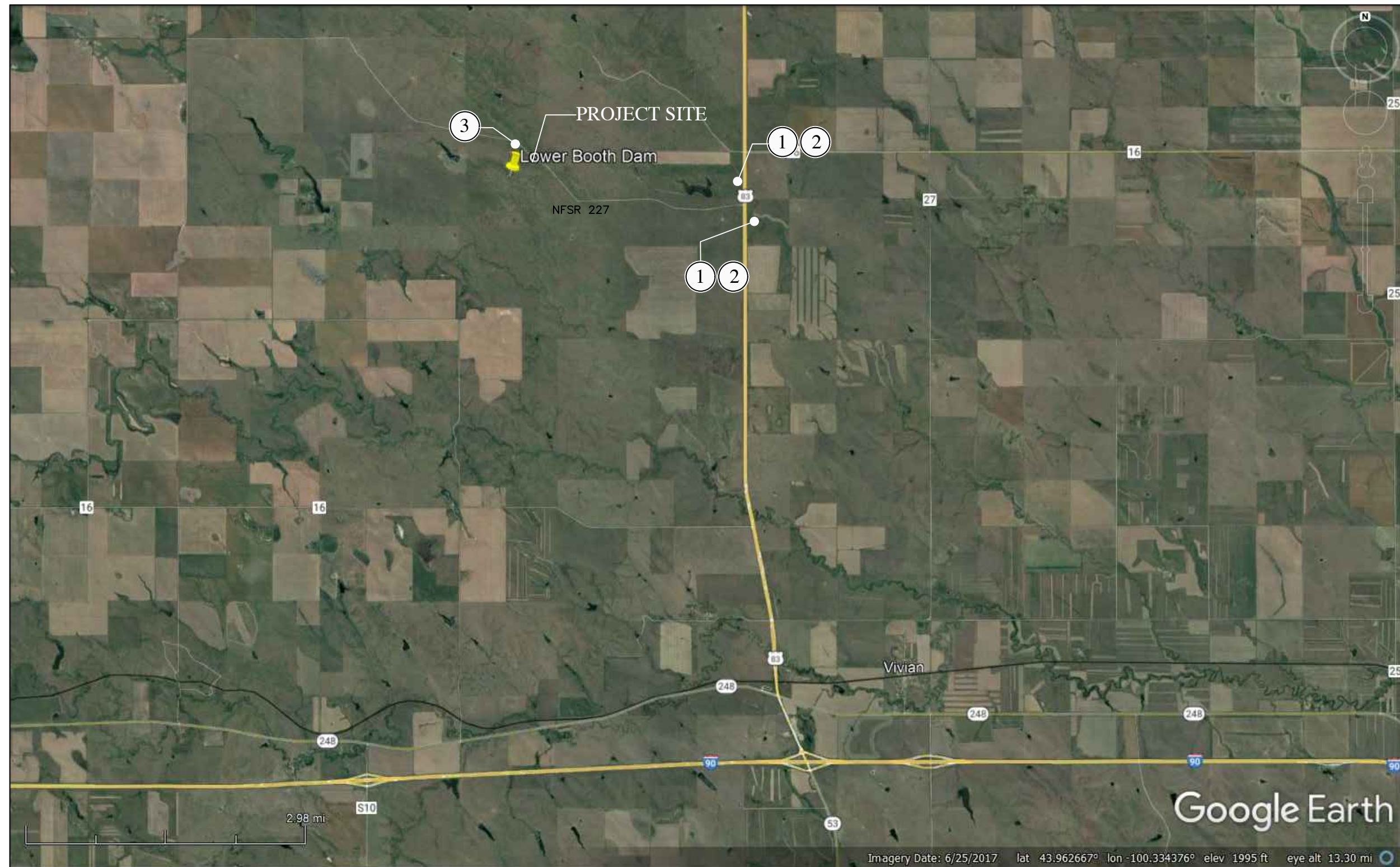
UNITS: 34/AMOUNT



UNITS: 34/AMOUNT



TOTAL UNITS: 162 UNITS



TRAFFIC CONTROL DETAIL

Division of Administration
Foss Building
523 E. Capitol Ave.
Pierre, South Dakota 57501-3182
Phone: (605) 773 - 6082

South Dakota
Department of Game, Fish & Parks

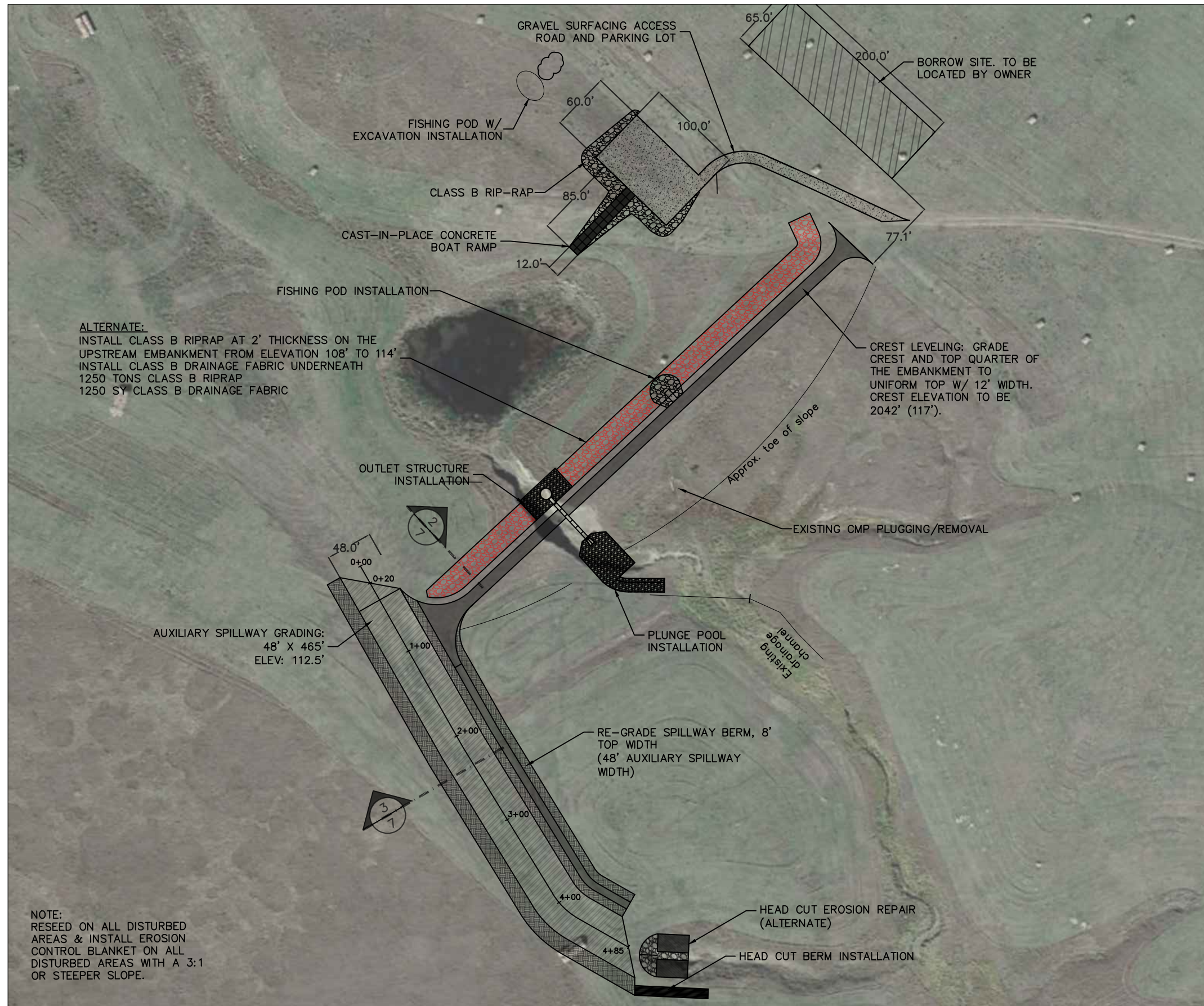


DATE: 2/09/2023
FILE: BROWN
REVISION: BROWN

DESIGNER: LBoe24Wa
DRAWN: JMG
CHECKED: JMG

LOWER BOOTH DAM
JONES COUNTY, SD
TRAFFIC CONTROL

6
OF
25



1 PROJECT PLAN VIEW
 SCALE: N.T.S.

NOTE:

THE BORROW SITE SHALL BE RESTORED FOLLOWING CONSTRUCTION. THE SITE SHALL BE GRADED TO DRAIN, SEEDED AND EROSION CONTROL BLANKET PLACED ON THE SLOPES STEEPER THAN 3:1

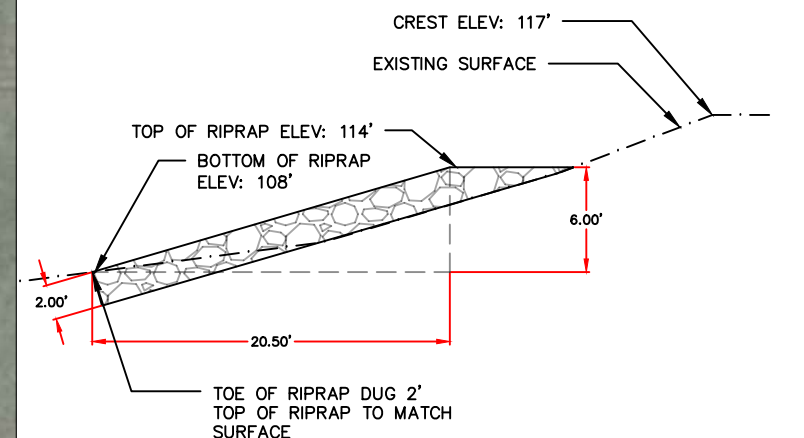
MISC. SHAPING AND GRADING BID ITEM APPLIES TO THE AUXILIARY SPILLWAY GRADING AND SPILLWAY BERM GRADING. EXCAVATED MATERIAL, IF SUITABLE, SHALL BE USED TO REINFORCE THE AUX SPILLWAY BERM.

BERM ELEV: 117' | AUX SPILLWAY ELEV: 112.5'

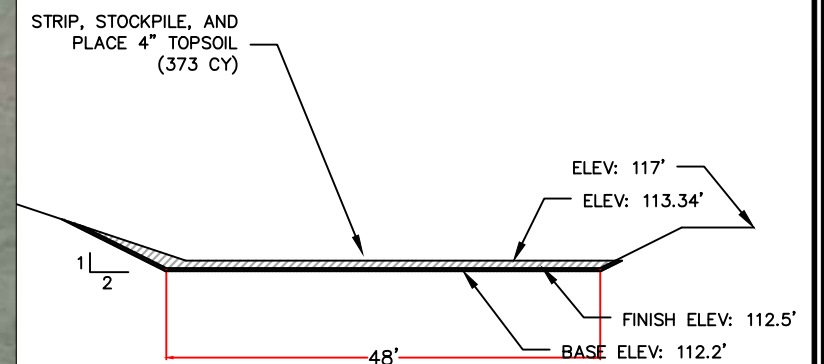
ORDINARY SHAPING AND GRADING BID ITEM COVERS THE BOAT RAMP, PARKING LOT AND ACCESS TRAIL GRADING.

CREST LEVELING APPLIES TO THE GRADING AND SHAPING REQUIRED TO GRADE THE EMBANKMENT CREST.

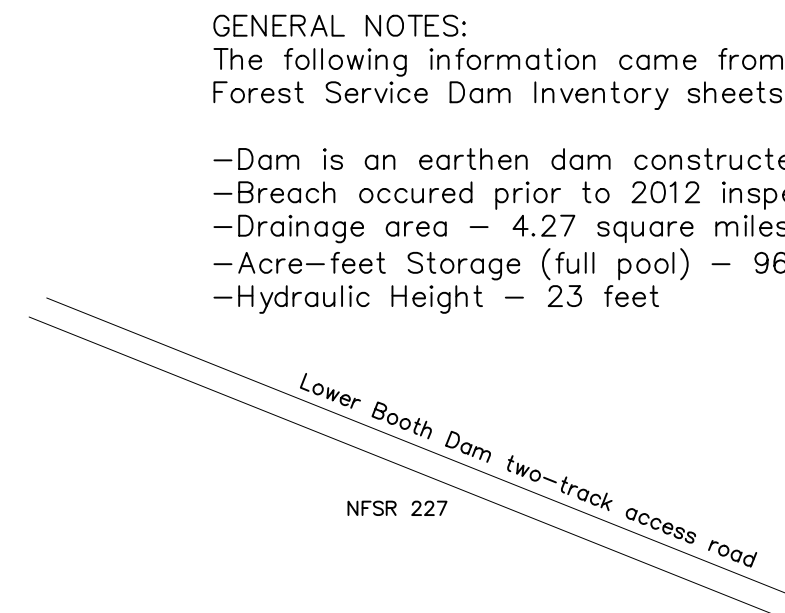
BORROW EXCAVATION AND PLACE APPLIES TO THE FILL REQUIRED TO CONSTRUCT THE BOAT RAMP, PARKING LOT, & THE FILL COMPACTION & SHAPING OF THE OUTLET STRUCTURE INSTALLATION.



2 ALT. RIP-RAP SECTION
 SCALE: N.T.S.



3 AUX SPILLWAY SECTION
 SCALE: N.T.S.



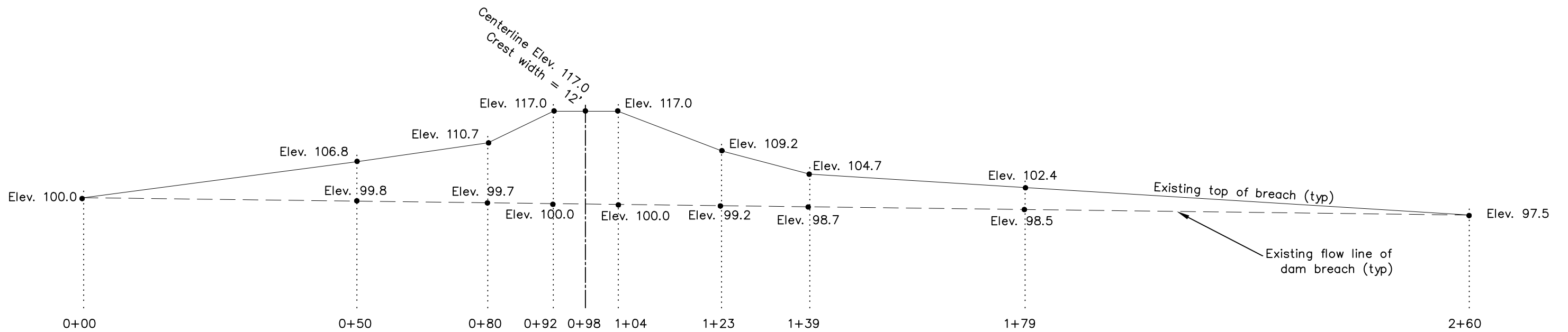
<u>BREACH — APPROX. WIDTH/HEIGHT BY STATION</u>			
<u>Pt.</u>	<u>Stationing</u>	<u>Width</u>	<u>Height</u>
1	0+00 Begin breach	22'	0'
2	0+50 Point	25'	7'
3	0+80 Slope change	35'	11'
4	0+98 Center of dam	37'	17'
5	1+23 Point	31'	10'
6	1+39 Approx. toe of slope	25'	6'
7	1+79 Point	20'	4'
8	2+60 End breach	15'	0'

—The height of the breach (above bottom of breach) was approx. the same on both sides of the breach.

—The width of the breach was taken at it's widest point.

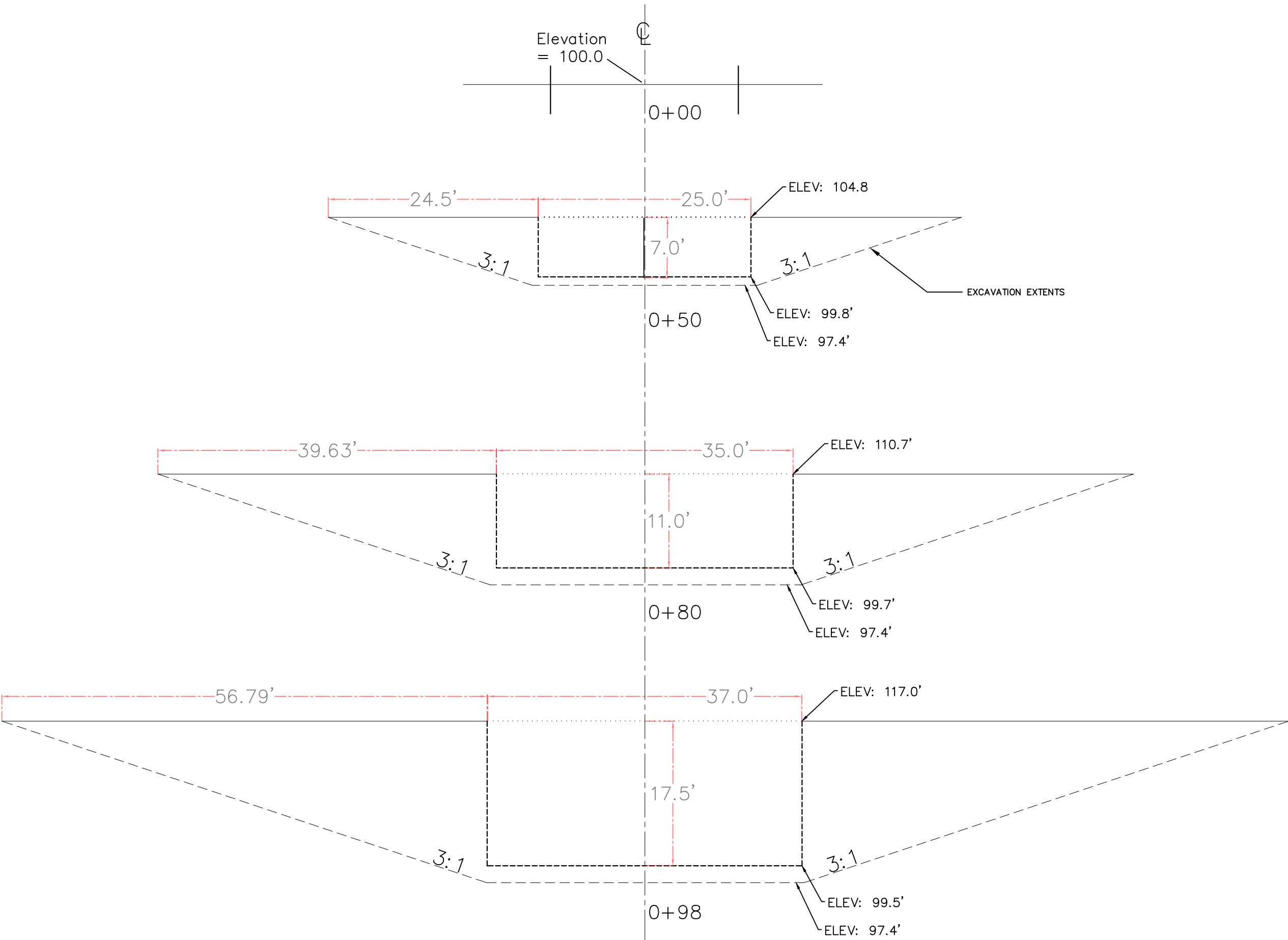
BREACH — APPROX. WIDTH/HEIGHT BY STATION			
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7	1+79 Point	20'	4'
8	2+60 End breach	15'	0'

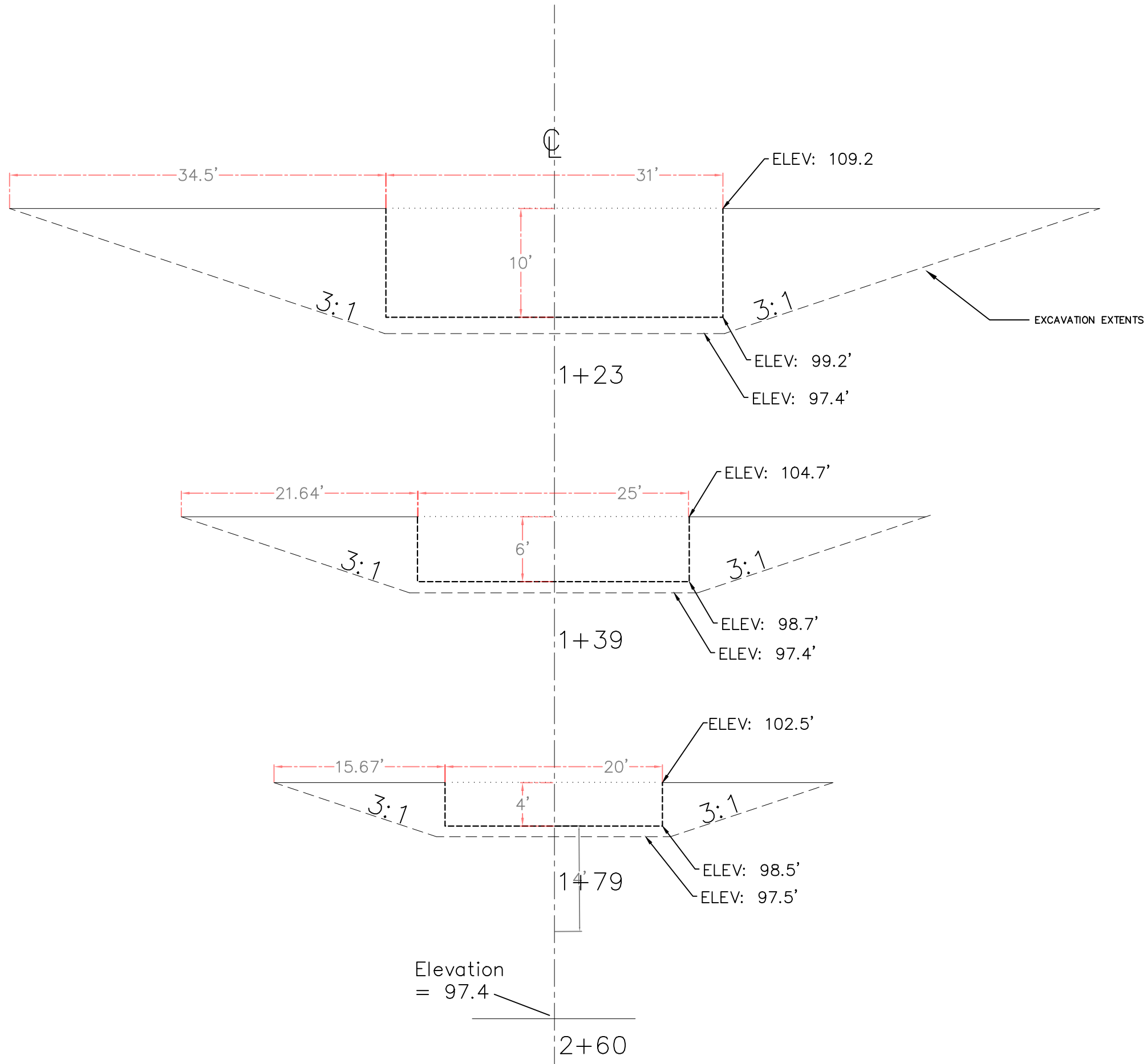
NOTE: LOCAL DATUM DAM CREST: 117' = 2042' MLS

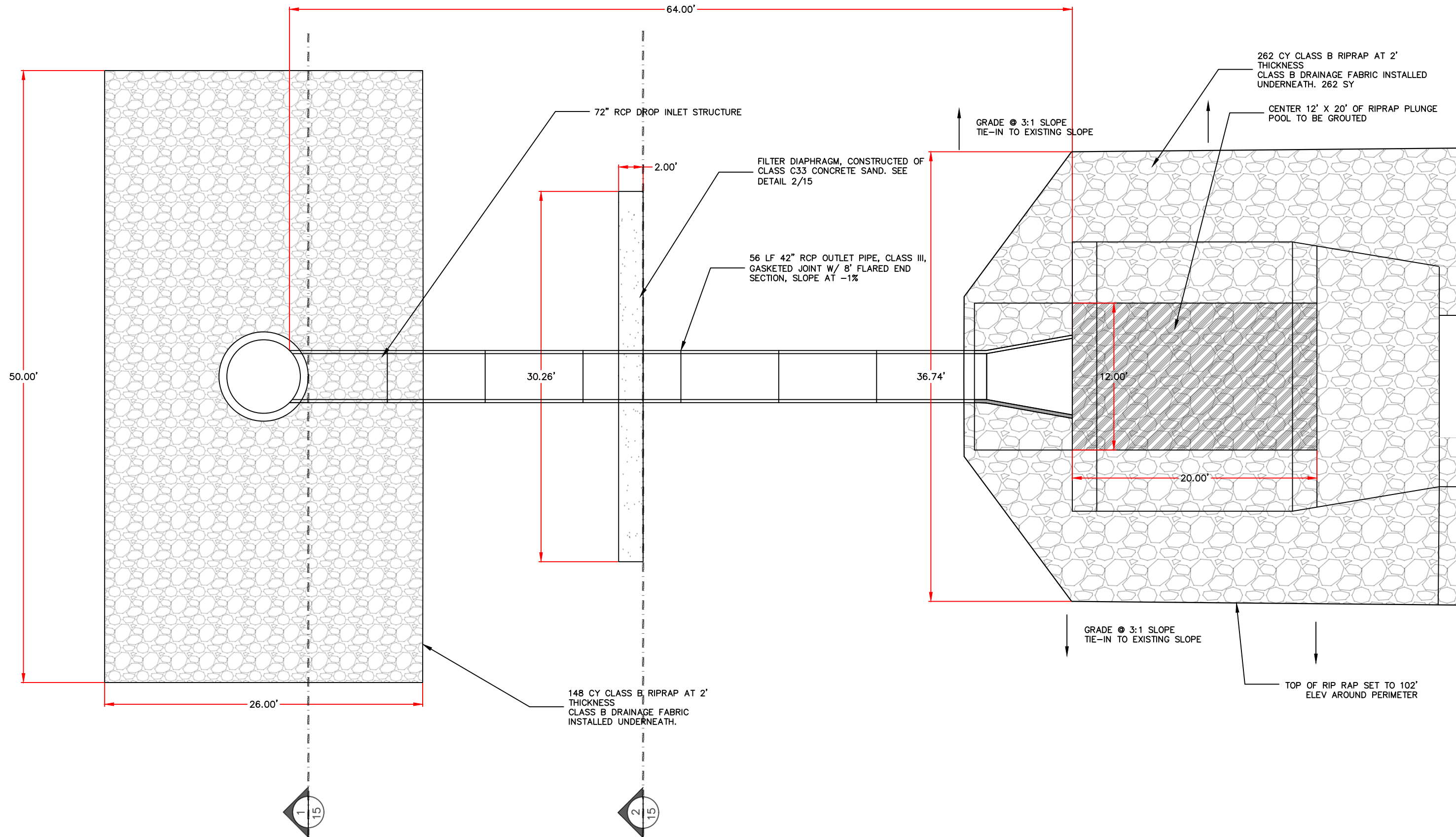


1 EXISTING BREACH CROSS SECTION
9 SCALE: N.T.S.

NOTE: LOCAL DATUM DAM CREST: 117' = 2042' MLS



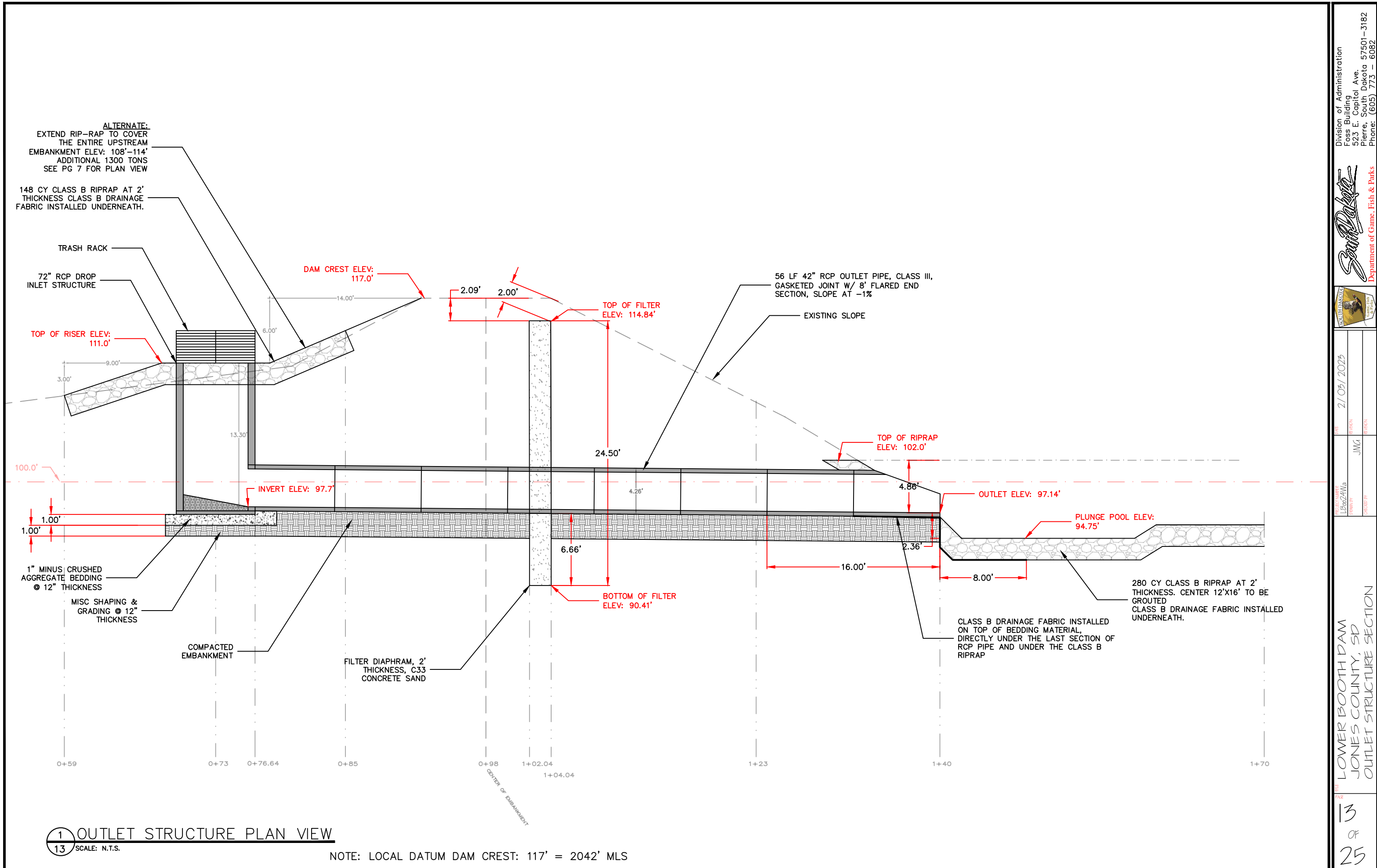




1 OUTLET STRUCTURE PLAN VIEW
12 SCALE: N.T.S.

NOTE: LOCAL DATUM DAM CREST: 117' = 2042' MLS

NOTE: SEE PG 18 & 19 FOR PLUNGE POOL GRADING DETAILS



ALTERNATE:
EXTEND RIP-RAP TO COVER
THE ENTIRE UPSTREAM
EMBANKMENT ELEV: 108'-114'
ADDITIONAL 1300 TONS
SEE PG 7 FOR PLAN VIEW

148 CY CLASS B RIPRAP AT 2'
THICKNESS CLASS B DRAINAGE
FABRIC INSTALLED UNDERNEATH.

TRASH RACK
72" RCP DROP
INLET STRUCTURE

TOP OF RISER ELEV:
111.0'

DAM CREST ELEV:
117.0'

TOP OF FILTER
ELEV: 114.84'

56 LF 42" RCP OUTLET PIPE, CLASS III,
GASKETED JOINT W/ 8' FLARED END
SECTION, SLOPE AT -1%

EXISTING SLOPE

TOP OF RIPRAP
ELEV: 102.0'

OUTLET ELEV: 97.14'

PLUNGE POOL ELEV:
94.75'

1" MINUS CRUSHED
AGGREGATE BEDDING
@ 12" THICKNESS

MISC SHAPING &
GRADING @ 12"
THICKNESS

COMPACTED
EMBANKMENT

FILTER DIAPHRAM, 2'
THICKNESS, C33
CONCRETE SAND

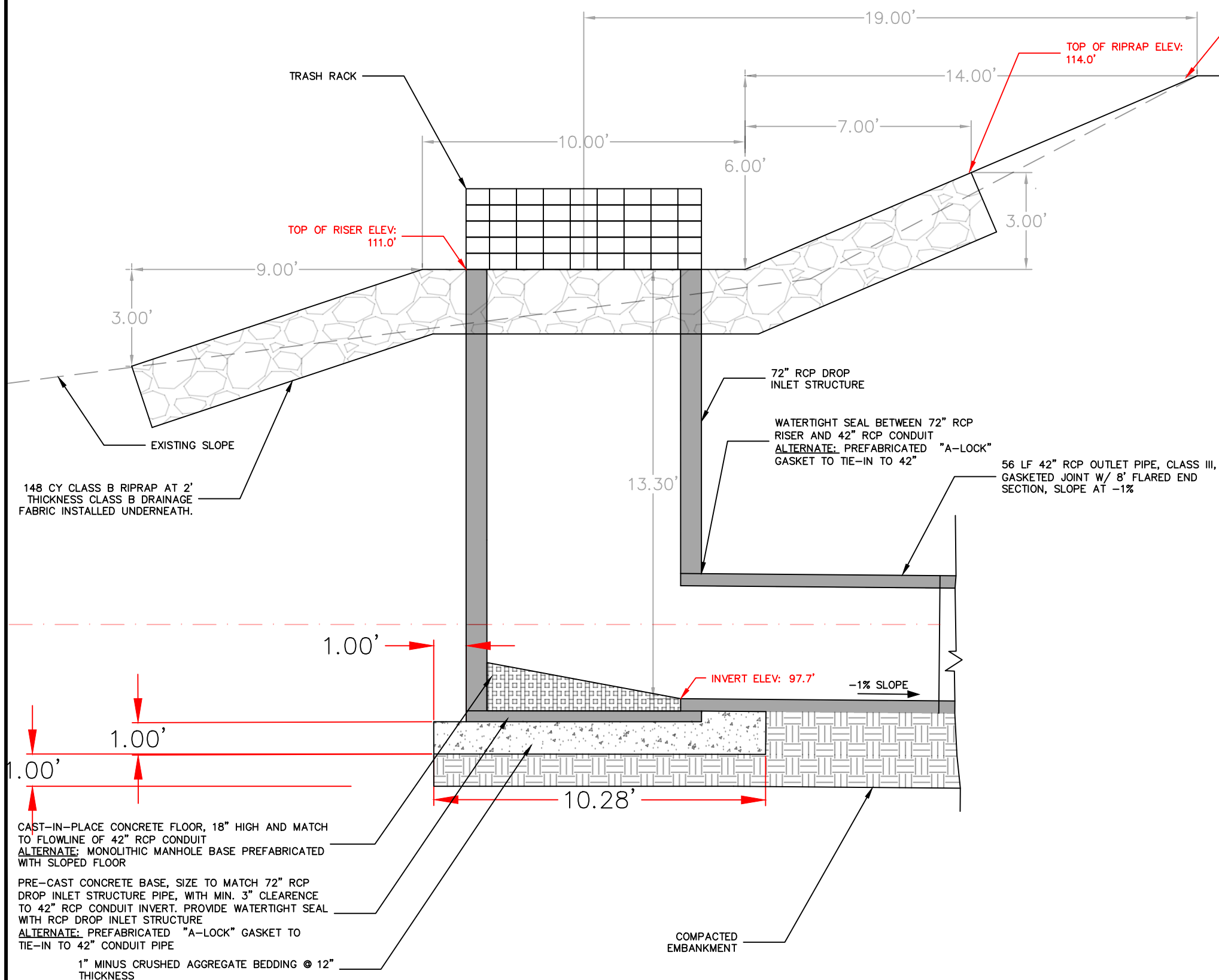
BOTTOM OF FILTER
ELEV: 90.41'

CLASS B DRAINAGE FABRIC INSTALLED
ON TOP OF BEDDING MATERIAL,
DIRECTLY UNDER THE LAST SECTION OF
RCP PIPE AND UNDER THE CLASS B
RIPRAP

280 CY CLASS B RIPRAP AT 2'
THICKNESS. CENTER 12'X16' TO BE
GROUTED CLASS B DRAINAGE FABRIC
INSTALLED UNDERNEATH.

1 OUTLET STRUCTURE PLAN VIEW
13 SCALE: N.T.S.

NOTE: LOCAL DATUM DAM CREST: 117' = 2042' MLS



NOTES:

42" dia. RCP Pipe installation

-Contractor shall install 56 LF of 42" dia. RCP, gasketed, Class III, with a slope of -1.0% from Invert elev. of 97.7. Typical installation includes backfilling foundation excavation and filling all voids and compacting to industry standards and SDDOT Standard Specifications for Roads and Bridges.

72" dia. RCP Drop Inlet Structure Installation:

-Contractor shall install a precast 72" dia. reinforced concrete drop inlet structure with water tight joints. The bottom concrete base shall be monolithic and the precast manufacturer shall create a circular knockout for the 42" dia. RCP. The circular knockout shall be 3" wider than the outside diameter of a 42" dia. gasketed, Class III RCP. RCP drop inlet structure shall be bedded on compacted South Dakota DOT 1" minus crushed aggregate bedding, min. 12" depth (field check this depth). The Contractor shall be required to install an industry standard watertight seal between the 72" dia. RCP drop inlet structure and 42" dia. RCP as approved by the Owner. The Contractor shall pour a floor inside the drop inlet structure pipe as shown, 4,000 psi with fiber (1.6lbs/CY) and a smooth finish. An approved trash rack shall be installed according to manufacturers recommendations.

ALTERNATE:

An alternate bid item is requested for the use of a 72" ID RCP monolithic manhole base with an "A-Lock" or similar tie-in system to connect the 42" ID RCP conduit to the 72" ID riser. The monolithic manhole base shall have a sloped floor and be installed to maintain the top of riser elevation and conduit invert elevation.

Trash rack Installation:

Trash rack shall be a galvanized Haala Industry Item GG72 or equal with anti-vortex plate. Secure to top of drop inlet structure using manufacturer and industry standards for this type of application.

148 CY CLASS B RIPRAP AT 2'
THICKNESS CLASS B DRAINAGE
FABRIC INSTALLED UNDERNEATH.

TOP OF RISER ELEV:
111.0'

INVERT ELEV: 97.7'

ELEV: 97.4'

1" MINUS CRUSHED
AGGREGATE

COMPACTED
EMBANKMENT

EXCAVATION EXTENTS

1 CROSS SECTION: ST 0+76.64
15 SCALE: N.T.S.

NOTE: LOCAL DATUM DAM CREST: 117' = 2042' MLS

ELEV: 117.0'

FILTER DIAPHRAM, 2'
THICKNESS, C33
CONCRETE SAND

TOP OF BEDDING
ELEV: 97.07'

FILTER DIAPHRAM EXTENTS:
24.43' X 30.26' X 2.0'
APPROX 74 TONS ASTM 33 SAND

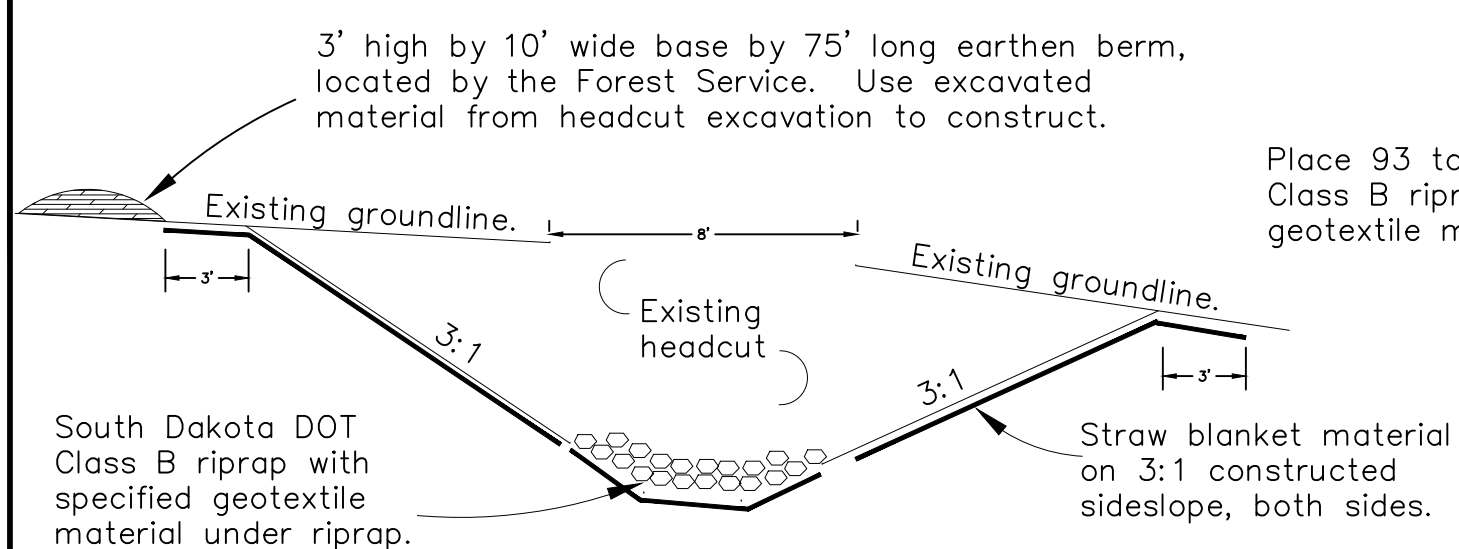
BOTTOM OF FILTER
ELEV: 90.41'

COMPACTED
EMBANKMENT

EXCAVATION EXTENTS

TOP OF EMBANKMENT

2 CROSS SECTION: ST 1+04.04
15 SCALE: N.T.S.



3' high by 10' wide base by 75' long earthen berm, located by the Forest Service. Use excavated material from headcut excavation to construct.

ndline.

— 8'

- Existing headcut

Existing groundline.

Straw blanket material
on 3:1 constructed
sideslope, both sides.

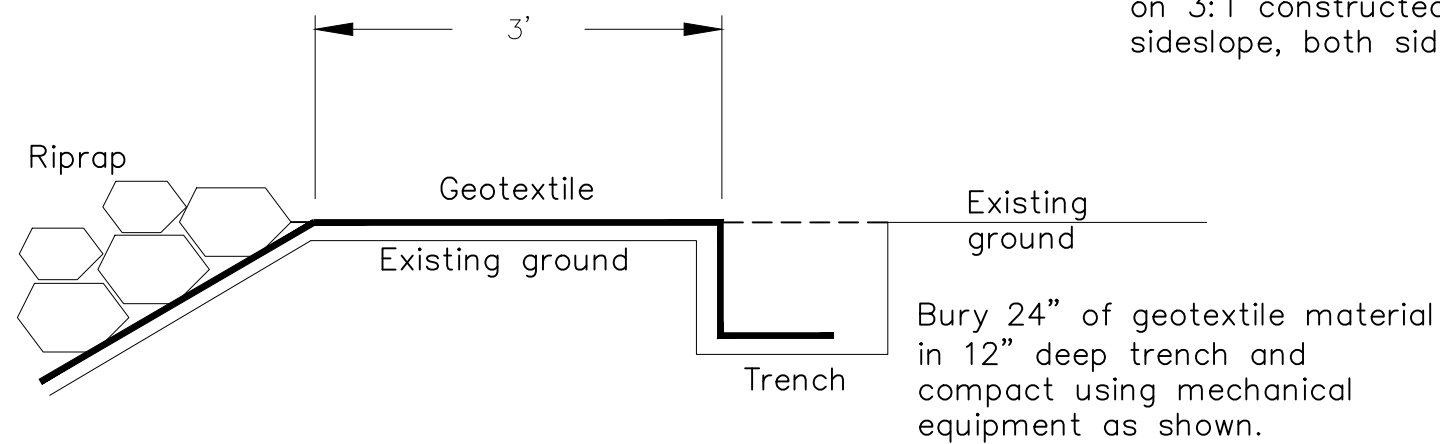
3:1

3'

South Dakota DOT
Class B riprap with
specified geotextile
material under riprap.

1 SECTION A-A
16 SCALE: N.T.S.

16 SCALE: N.T.S.



3'

Geotextile

Existing ground

Existing
ground

Trench

Bury 24" of geotextile material in 12" deep trench and compact using mechanical equipment as shown.

2 GEOTEXTILE TRENCH DETAIL
16 SCALE: N.T.S.

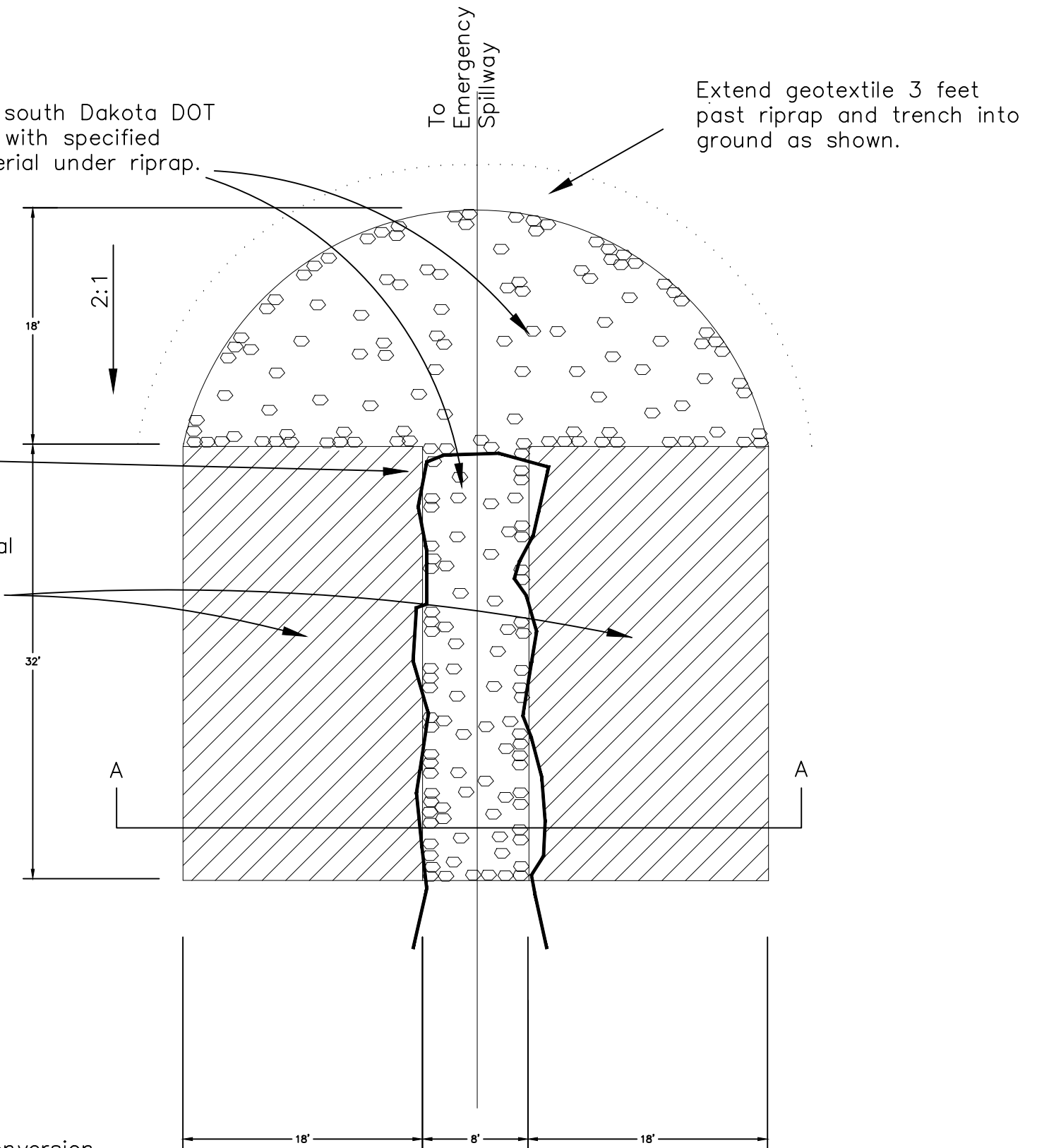
16 SCALE: N.T.S.

NOTES:

–Excavate headcut repairs as shown. Placement of specified geotextile material shall be installed to 3 feet beyond riprap and trenched in as shown.

- Excess embankment shall be dispersed in the surrounding landscape as directed by the Forest Service.

Place 93 tons south Dakota DOT
Class B riprap with specified
geotextile material under riprap. _



Extend geotextile 3 feet
past riprap and trench into
ground as shown.

2:1

18'

Begin existing headcut

Straw blanket material
on 3:1 constructed
sideslope, both sides.—

32'

A

A

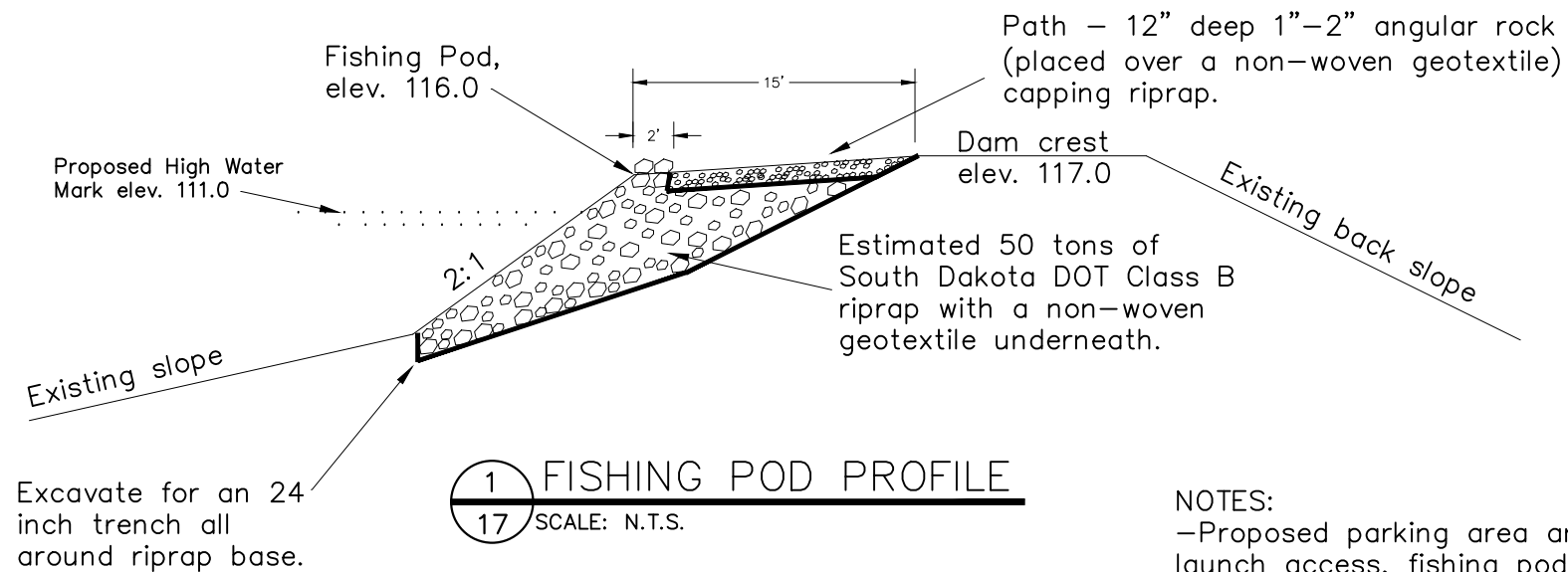
— 1

— 8'.

— 1

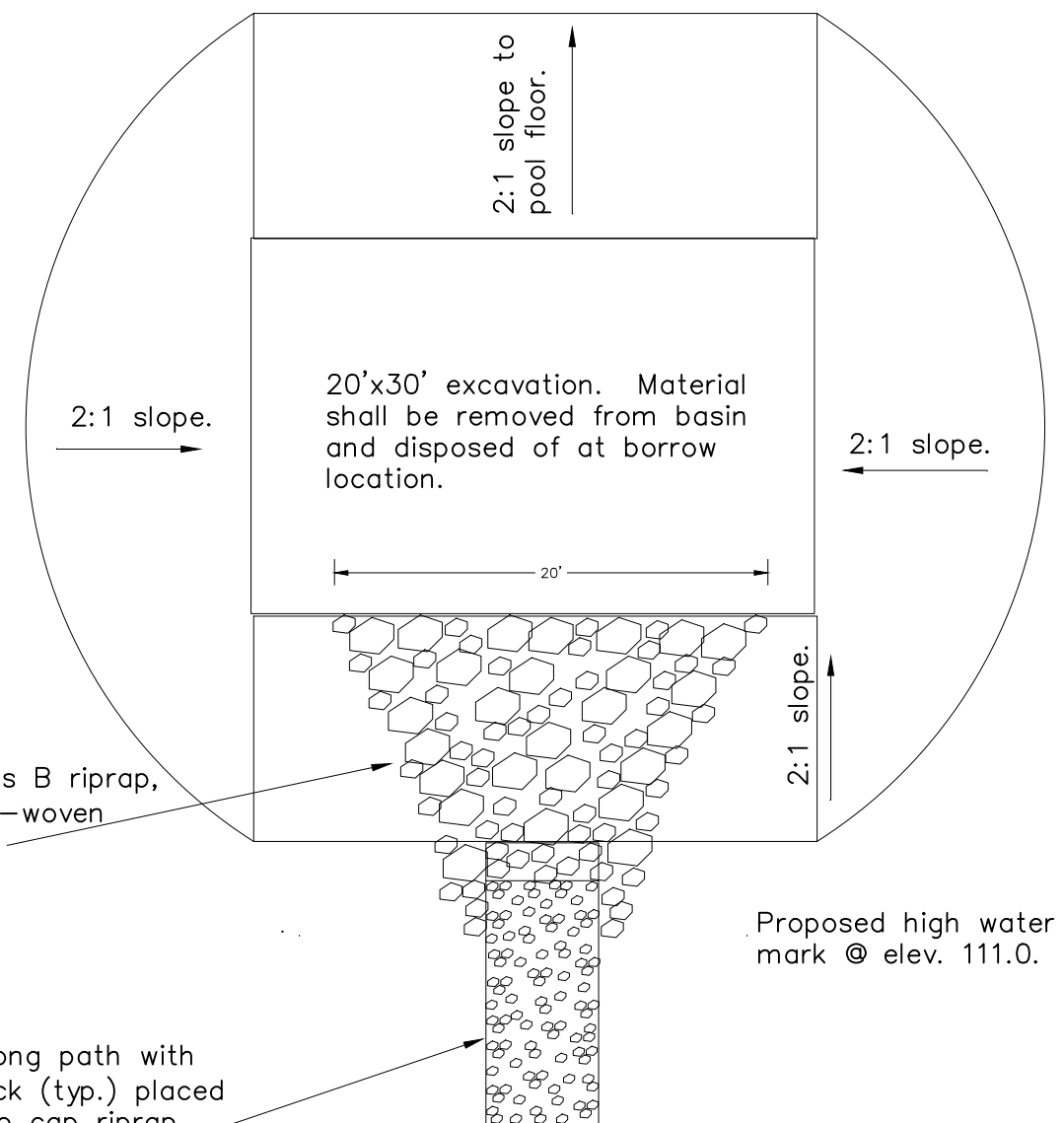
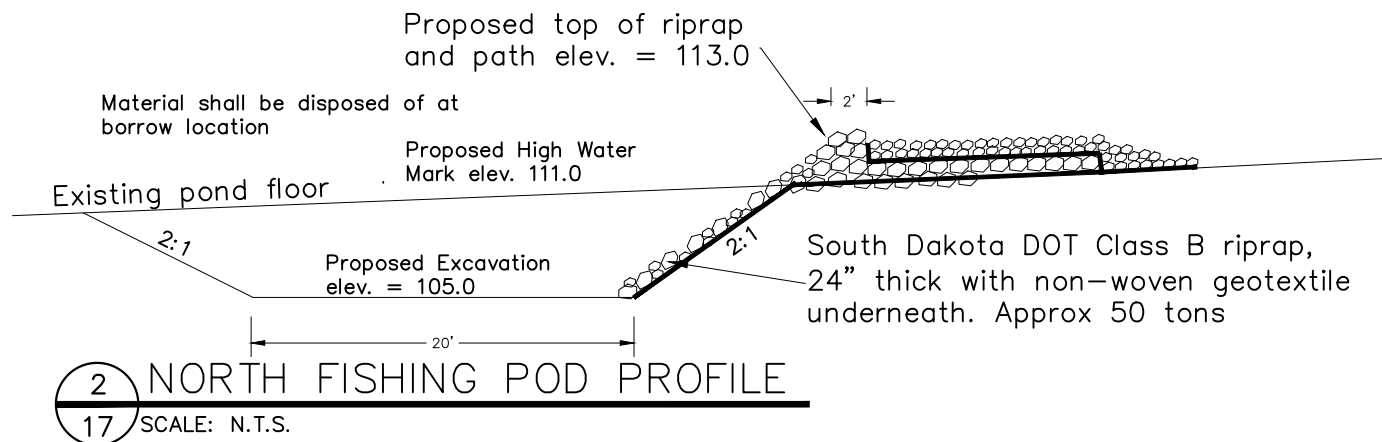
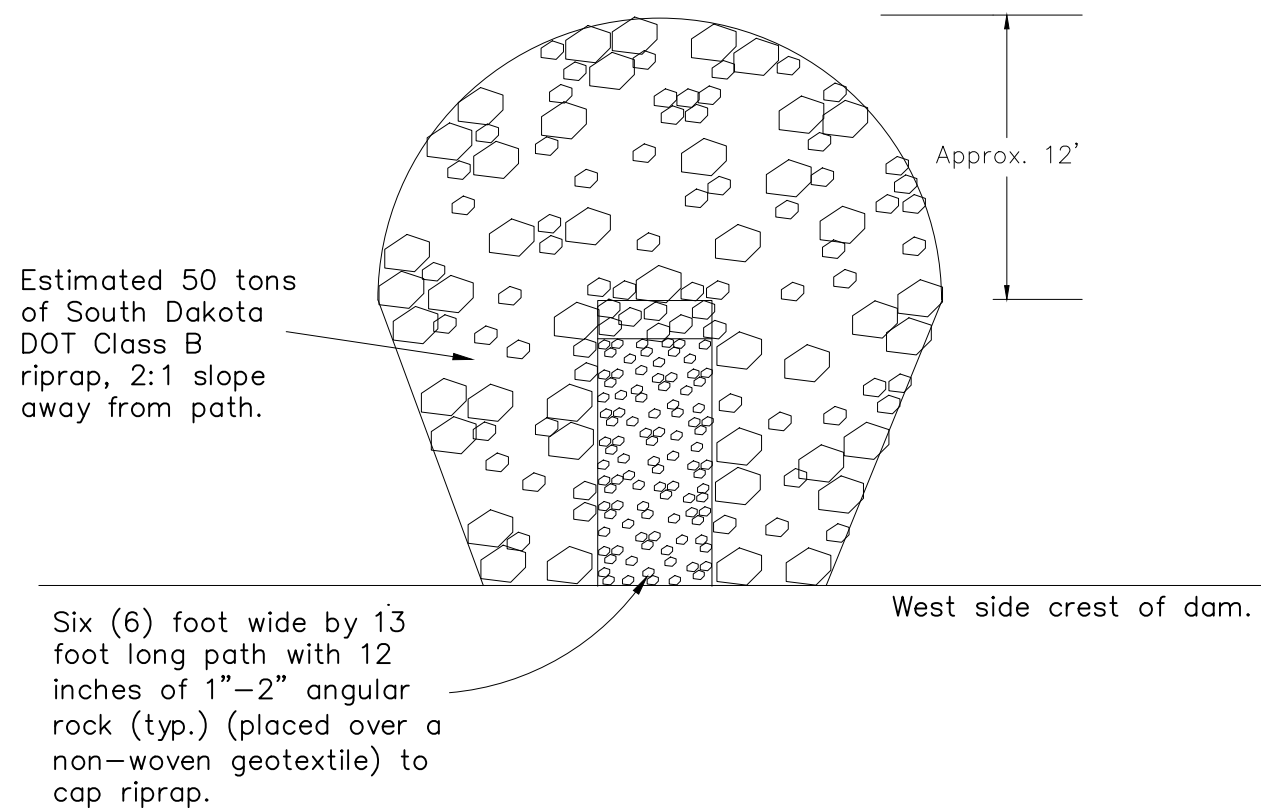
3 PLAN VIEW
16 SCALE: N.T.S.

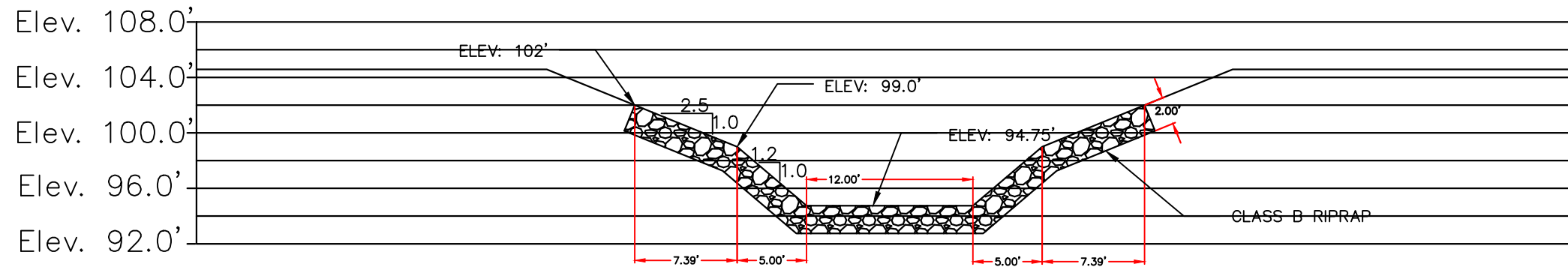
16 SCALE: N.T.S.



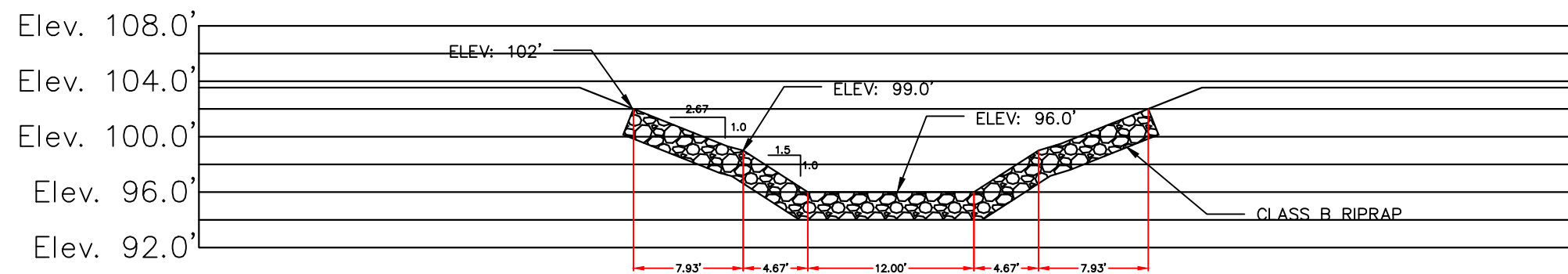
NOTES:

- Proposed parking area and boat launch access, fishing pods, and boat launch area shall be located by the owner.
- A 20 foot wide by 30 feet long area in front of the north fishing pod shall be excavated to a depth of 6 feet as SHOWN ON THE DRAWINGS. Excavated material shall be disposed of in the borrow location.

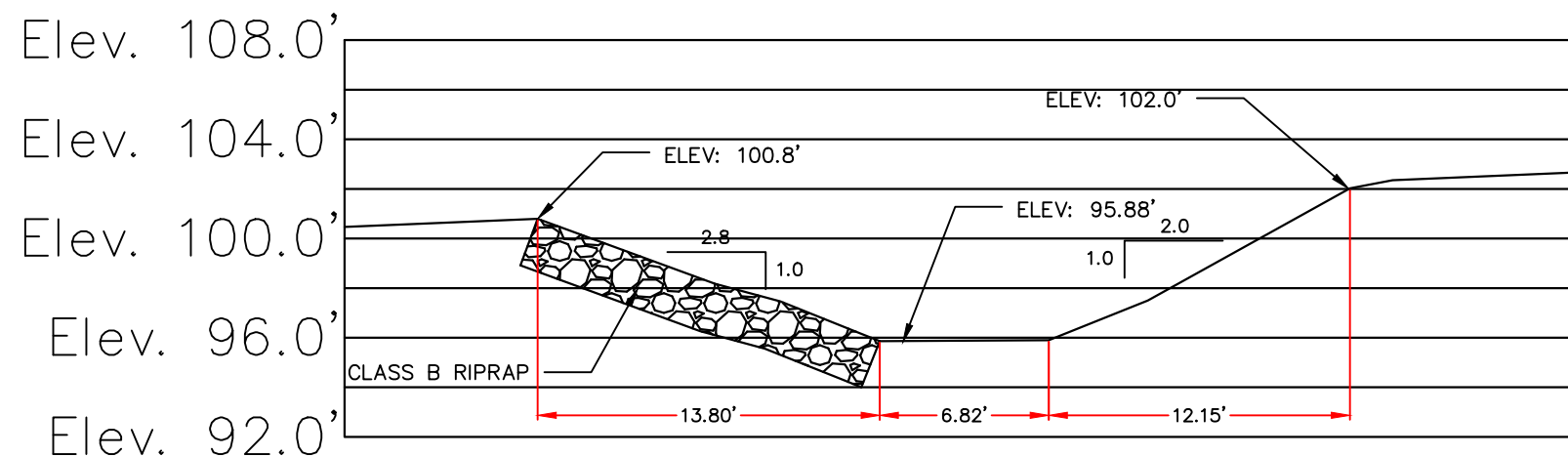




1 PLUNGE POOL SECTION
19 SCALE: N.T.S.

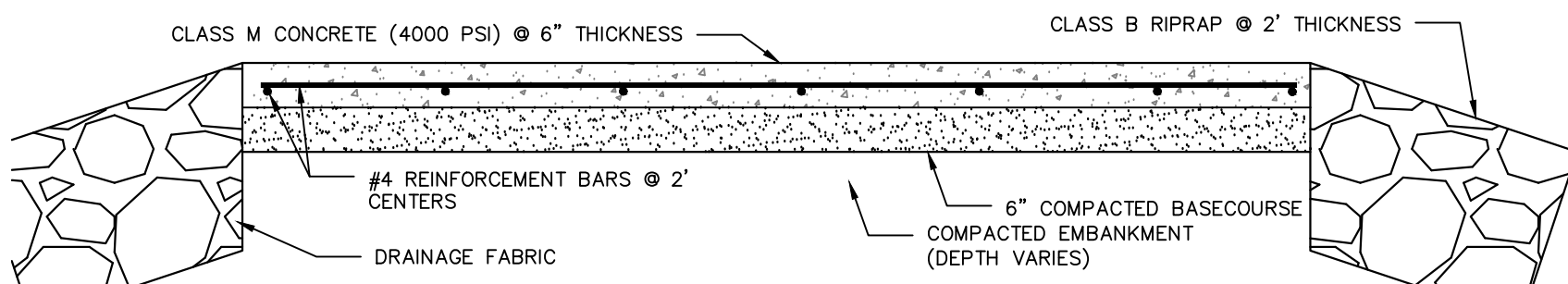
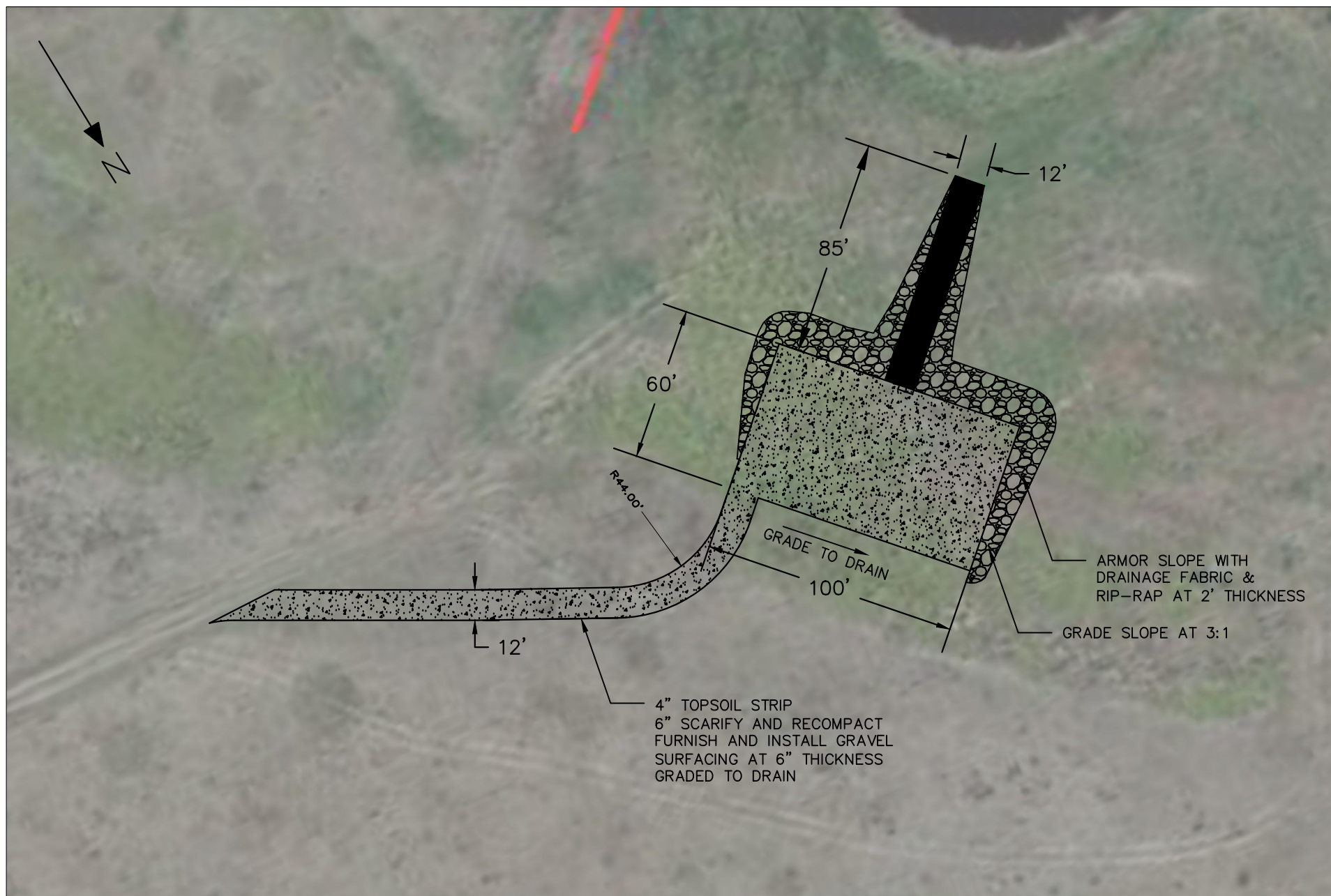


2 PLUNGE POOL SECTION
19 SCALE: N.T.S.



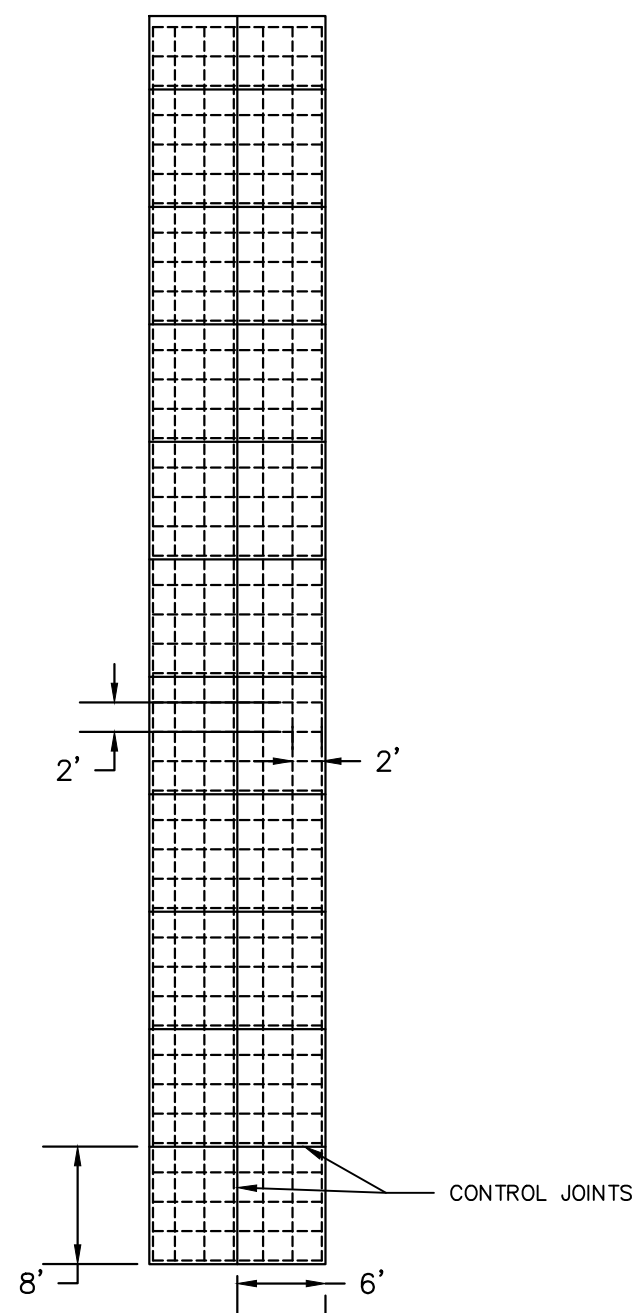
3 PLUNGE POOL SECTION
19 SCALE: N.T.S.

NOTE:
LOCAL DATUM DAM CREST: 117' = 2042' MLS
TYPE B DRAINAGE FABRIC TO BE INSTALLED UNDER
ALL RIP RAP

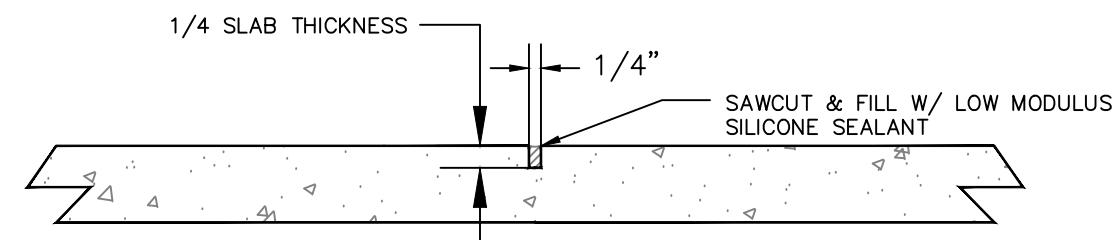


2 TYPICAL SECTION
20 SCALE: N.T.S.

NOTE:
CONCRETE MIX DESIGN SHALL INCORPORATE
CHEMICAL ADMIXTURE FOR HIGH EARLY STRENGTH

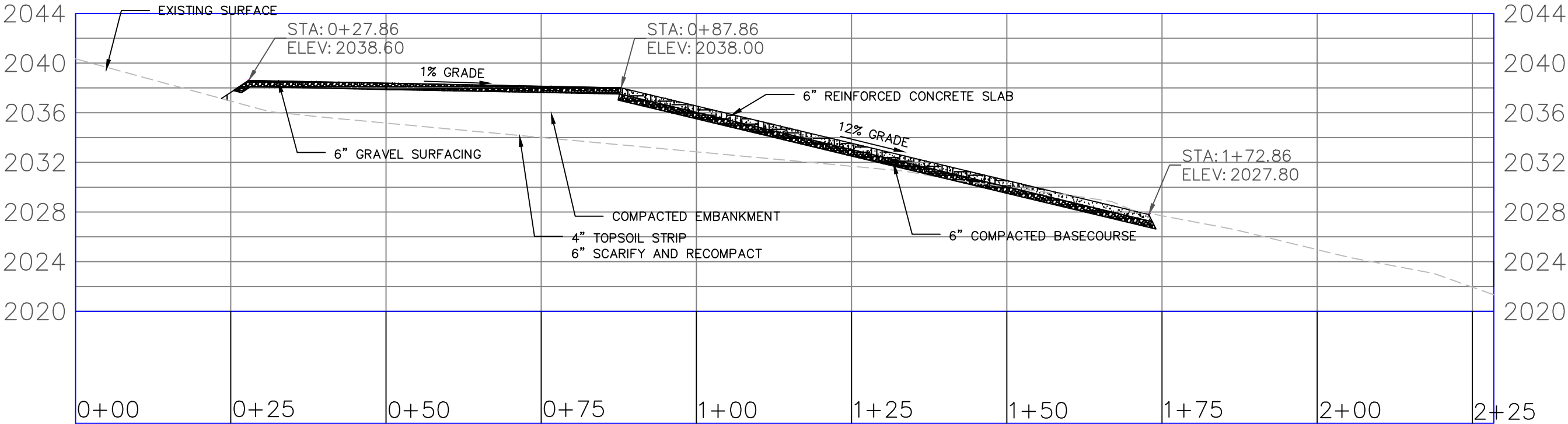


4 CONCRETE PLAN VIEW
20 SCALE: N.T.S.



3 TYPICAL CONTROL JOINT
20 SCALE: N.T.S.

LOWER BOOTH PARKING LOT/RAMP



1 CENTERLINE BOAT RAMP PROFILE
21 SCALE: N.T.S.

NOTE: LOCAL DATUM DAM CREST: 117' = 2042' MLS

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

(The numbers right of the title headings are reference numbers to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES)

◆ SITE DESCRIPTION (4.2 1)

- ▶ Project Limits: See Project Title Sheet and Plans (4.2 1.b)
- ▶ Project Description: Parking Lot Reconstruction – See Project Title Sheet and Plans (4.2 1.a)
- ▶ Site Map(s): See Project Title Sheet and Plans (4.2 1.f.(1)–(6))
- ▶ Major Soil Disturbing Activities (Check all that apply)
 - ☐ Clearing and grubbing
 - ☒ Excavation/borrow
 - ☒ Grading and shaping
 - ☒ Filling
 - ☒ Cutting and filling
 - ☐ Other (describe):
- ▶ Total Project Area – Total project area = 5.0 acres, Area to be disturbed = 3.0 acres, the remaining 2.0 acre to remain undisturbed (4.2 1.b.)
- ▶ Total Area to be Disturbed – 3.0 acres (4.2 1.b.)
- ▶ Existing Vegetative Cover (%) 95
- ▶ Soil Properties: USDA–NRCS Soil Series Classification BeE, JbD (4.2 1.d.)
- ▶ Name of Receiving Water Body/Bodies – Lake Francis Case Reservoir (4.2 1.e.)

◆ ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)

- (Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14–day limit if earth disturbing activities will be resumed within 21 days.)
- ▶ Special Sequencing requirements – Sequence grading where possible to minimize open areas.
 - ▶ Install stabilized construction entrance if needed. Limit and control access points to the construction site.
 - ▶ Install perimeter protection along construction corridor and where runoff sheets from the site.
 - ▶ Clearing and grubbing.
 - ▶ Remove and salvage topsoil for reuse on project (Use for barrier/buffer in interim).
 - ▶ Stabilize disturbed areas with erosion control wattles, silt fence, etc.
 - ▶ Complete final grading.
 - ▶ Complete final surfacing.
 - ▶ Replace/place topsoil, fertilize, permanent seed, mulch and install erosion control blanket to areas disturbed by removal activities for final stabilization.

◆ EROSION AND SEDIMENT CONTROLS (4.2 2.a.(1)(a)–(f))

- ▶ Stabilization Practices (See Detail Plan Sheets)
 - ☐ Temporary Seeding (Cover Crop Seeding)
 - ☒ Permanent Seeding
 - ☐ Sodding
 - ☐ Planting (Woody Vegetation for Soil Stabilization)
 - ☐ Mulching (Grass Hay or Straw)
 - ☐ Hydraulic Mulch (Wood Fiber Mulch)
 - ☐ Soil Stabilizer
 - ☐ Bonded Fiber Matrix
 - ☒ Erosion Control Blankets or Mats
 - ☒ Vegetation Buffer Strips
 - ☐ Roughened Surface (e.g. tracking)
 - ☐ Dust Control
 - ☐ Gabions–Gabion Matress
 - ☒ Other – Vegetative Berm, High Flow Silt Fence

▶ Structural Temporary Erosion and Sediment Controls

- ☒ Silt Fence
- ☐ Floating Silt Curtain
- ☐ Straw Bale Check
- ☐ Temporary Berm
- ☐ Temporary Slope Drain
- ☒ Straw Wattles or Rolls
- ☐ Turf Reinforcement Mat
- ☐ Rip Rap
- ☐ Gabions
- ☐ Rock Check Dams
- ☐ Sediment Traps/Basins
- ☐ Inlet Protection
- ☐ Outlet Protection
- ☐ Surface Inlet Protection (Area Drain)
- ☐ Curb Inlet Protection
- ☐ Stabilized Construction Entrances
- ☐ Entrance/Exit Equipment Tire Wash
- ☐ Interceptor Ditch
- ☐ Concrete Washout Area or offsite washout area shall be used
- ☐ Temporary Diversion Channel
- ☐ Work Platform
- ☐ Temporary Water Barrier
- ☐ Temporary Water crossing
- ☒ Other: Vegetated Buffer

▶ Wetland Avoidance

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

▶ Storm Water Management (4.2 2.b.,(1) and (2))

Storm water management will be handled by temporary controls outlined in the "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.

▶ Other Storm Controls (4.2 2.c.,(1) and (2))

- Waste Disposal
All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer or representative. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
- Hazardous Waste
All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on–site representative will be responsible for seeing that these practices are followed.
- Sanitary Waste
Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

◆ Maintenance and Inspection (4.2 3. and 4.2 4.)

▶ Maintenance and Inspection Practices

- Inspection 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.

▶ Maintenance and Inspection Practices (Continued)

- Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches ½ of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches ½ the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestation.
- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The SD GF&P Engineer, or a representative for GFP, and the contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The SD GF&P Engineer, or a representative for GFP, will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

◆ Non–Storm Water Discharge (3.0)

The following non–storm water discharges are anticipated during the course of this project (check all that apply)

- ☐ Discharge from water line flushing.
- ☐ Pavement wash–water, where no spills or leaks of toxic or hazardous materials have occurred.
- ☐ Uncontaminated ground water associated with dewatering activities.

◆ Materials Inventory (4.2 2.c.(2))

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).

- ☒ Concrete and Portland Cement
- ☐ Detergents
- ☐ Paints
- ☐ Metals
- ☐ Bituminous Materials
- ☐ Petroleum Based Products
- ☐ Cleaning Solvents
- ☐ Wood
- ☐ Cure
- ☐ Texture
- ☐ Chemical Fertilizers
- ☐ Other

◆ Spill Prevention (4.2 2.c.(2))

▶ Material Management

- Housekeeping
 - Only needed products will be stored on–site by the contractor.
 - Except for bulk materials the contractor will store all materials under cover and in appropriate containers.
 - Products must be stored in original containers and labeled.
 - Material mixing will be conducted in accordance with the manufacturer's recommendations.
 - When possible, all products will be completely used before properly disposing of the container off site.
 - The manufacturer's directions for disposal of materials and containers will be followed.
 - The contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
 - Dust generated will be controlled in an environmentally safe manner.
 - Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.

■Hazardous Materials

- Products will be kept in original containers unless the container is not resealable.
- Original labels and material safety data sheets will be retained in a safe place to relay important product information.
- If surplus product must be disposed of, manufacturer’s label directions for disposal will be followed.
- Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, degreasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
- Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any storm water system or storm water treatment system.
- Potential pH–modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, and mixer washout waters will be collected on site and managed to prevent contamination of storm water runoff.

►Product Specific Practices (6.8)

■Petroleum Products

All on–site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

■Fertilizers

Fertilizers will be applied only in the amounts specified by the SD GF&P. Once applied, fertilizers will be worked into the soil to limit the exposure to storm water. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

■Paints

All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer’s instructions and any applicable state and local regulations.

■Concrete Trucks

Contractors will provide designated truck washout areas on the site. These areas must be self contained and not connected to any storm water outlet of the site. Upon completion of construction washout areas will be properly stabilized.

►Spill Control Practices (4.2 2 c.(2))

- In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.
- For all hazardous materials stored on site, the manufacturer’s recommended methods for spill clean up will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
 - Appropriate cleanup materials and equipment will be maintained be the contractor in the materials storage area on–sire. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for clean up purposes.
 - All spills will be cleaned immediately after discovery and the materials disposed of properly.
 - The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
 - After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken, The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
 - The contractor’s site superintendent, responsible for day–to–day operations, will be the spill prevention and cleanup coordinator. The contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.

►Spill Response (4.2 2 c.(2))

- The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into storm water runoff and conveyance systems. If the release has impacted on–site storm waste, it is critical to contain the released materials on–site and prevent their release into receiving waters. If a spill of pollutants threatens storm water or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.
- The contractor’s site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
 - If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving water, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.

- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained be the contractor at the site.
- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove that material causing the sheen. The contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
- If a spill occurs the superintendent or the superintendent’s designee will be responsible for completing the spill reporting form and for reporting the spill to SD DENR.
- Personnel with primary responsibility for spill response and clean up will receive training by the contractor’s site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

◆ Spill Notification

In the event of a spill, the contractor’s site superintendent will make the appropriate notification(s), consistent with the following procedures:

- A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to DENR immediately if any of the following conditions exist:
 - The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).
 - The discharge causes an immediate danger to human health or safety.
 - The discharge exceeds 25 gallons.
 - The discharge causes a sheen on surface water.
 - The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:51:01.
 - The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:51:01.
 - The discharge of any substance that harms or threatens to harm wildlife or aquatic life.
 - The discharge of crude oil in field activities under SDCL (South Dakota codified Laws) chapter 45–9 is greater than 1 barrel (42 gallons).

To report a release or spill, call DENR at 605–773–3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communication at 605–773–3231. Reporting the release to DENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the responsible person must also contact local authorities to determine the local reporting requirements for releases. DENR recommends that spills also be reported to the National Response Center at (800) 424–8802.

◆ Construction Changes (4.4)

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 water. The SD GF&P Engineer or representative will modify the SWPPP plan (DOT 298) and drawings to reflect the needed changes. Copies of changes will be routed per DOT 298. Copies of forms and the SWPPP will be retained in a designated place for review over the course of the project.

◆ CERTIFICATIONS

►Certification of Compliance with Federal, State, and Local Regulations

The Storm Water Pollution Prevention Plan (SWPPP) for this project reflects the requirements of all local municipal jurisdictions for storm water management and sediment and erosion control as established by ordinance, as well as other state and federal requirements for sediment and erosion control plans, permits, notices or documentation as appropriated.

►South Dakota Department of Game Fish & Parks

I certify under penalty of law that this document and all attachment were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signature (See the General Permit, Section 6.7.1.C.)

►Prime Contractor

This section is to be executed by the General Contractor after the award of the contract. This section may be executed any time there is a change in the Prime Contractor of the Project.

I certify under penalty of law that this document and all attachments will be revised or maintained under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signature

◆ CONTACT INFORMATION

►Contractor Information

■Prime Contractor Name:

■Contractor Contact Name:

■Address:

■Address:

■City: State: Zip:

■Office Phone: Field: Cell: Fax:

►Erosion Control Supervisor

■Name:

■Address:

■Address:

■City: State: Zip:

■Office Phone: Field: Cell: Fax:

►SD GF&P Project Engineer

- Name: James Gilkerson, E.I.T.
- Business Address: 523 E Capitol Ave.

■Job Office Location: 2nd Floor Foss Building

■City: PierreState: South Dakota Zip: 57501

■Office Phone: 773–4521 Fax: 773–6245

►SD DENR Contact Spill Reporting

- Business Hours Monday–Friday (605)773–3296
- Nights and Weekends (605)773–3231

►SD DENR Contact for Hazardous Materials

■(605)773–3153

►National Response Center Hotline

■(800)424–8802

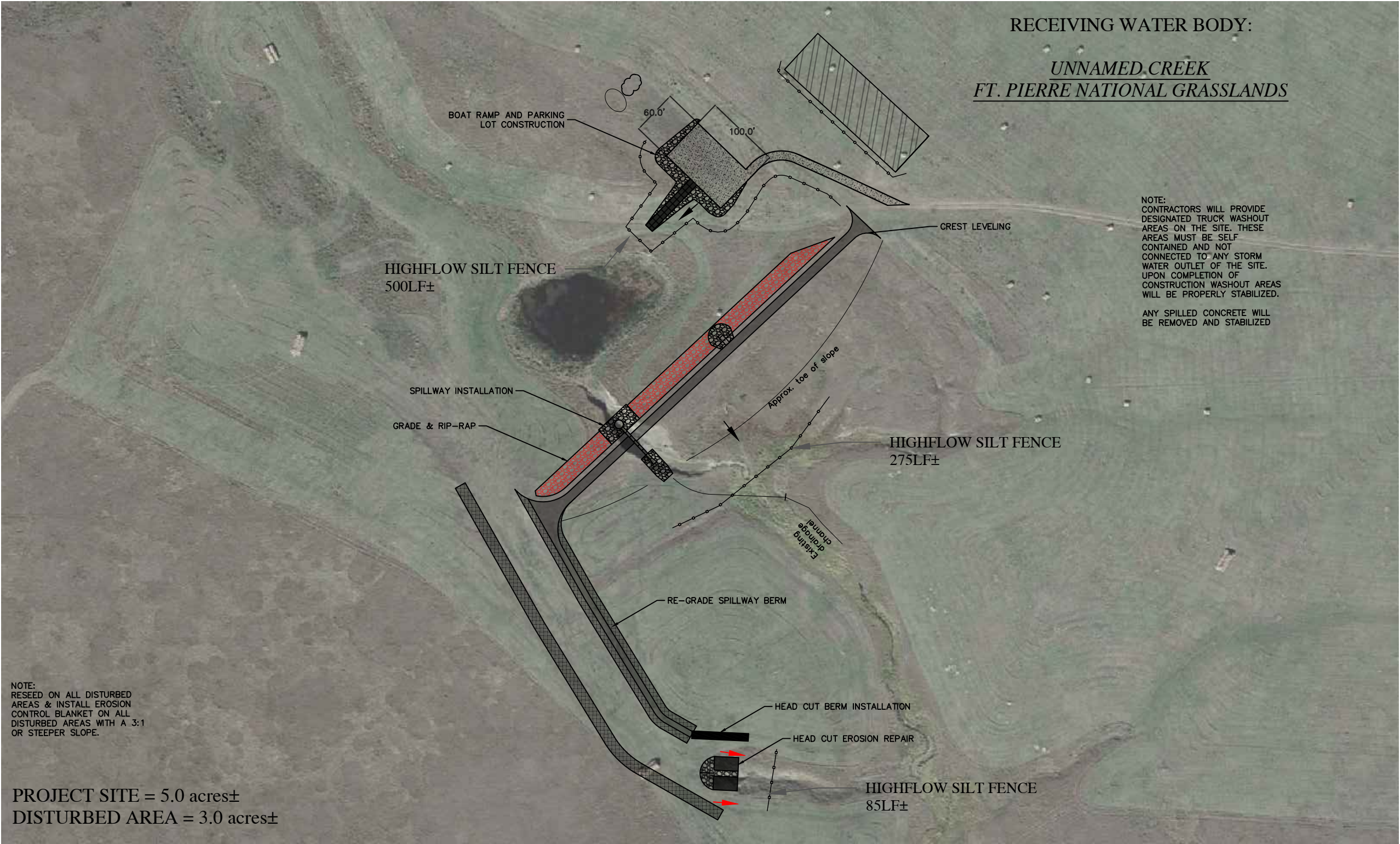
Division of Administration
Foss Building
523 E. Capitol Ave.
Pierre, South Dakota 57501–3182
Phone: (605) 773 – 6082



DATE	2/05/2025	DATE	2/05/2025
BY	JMG	BY	JMG
FOR	STATE	FOR	STATE
FOR	STATE	FOR	STATE

LOWER BOOTH DAM
JONES COUNTY, SD
SWPPP

23
OF
25



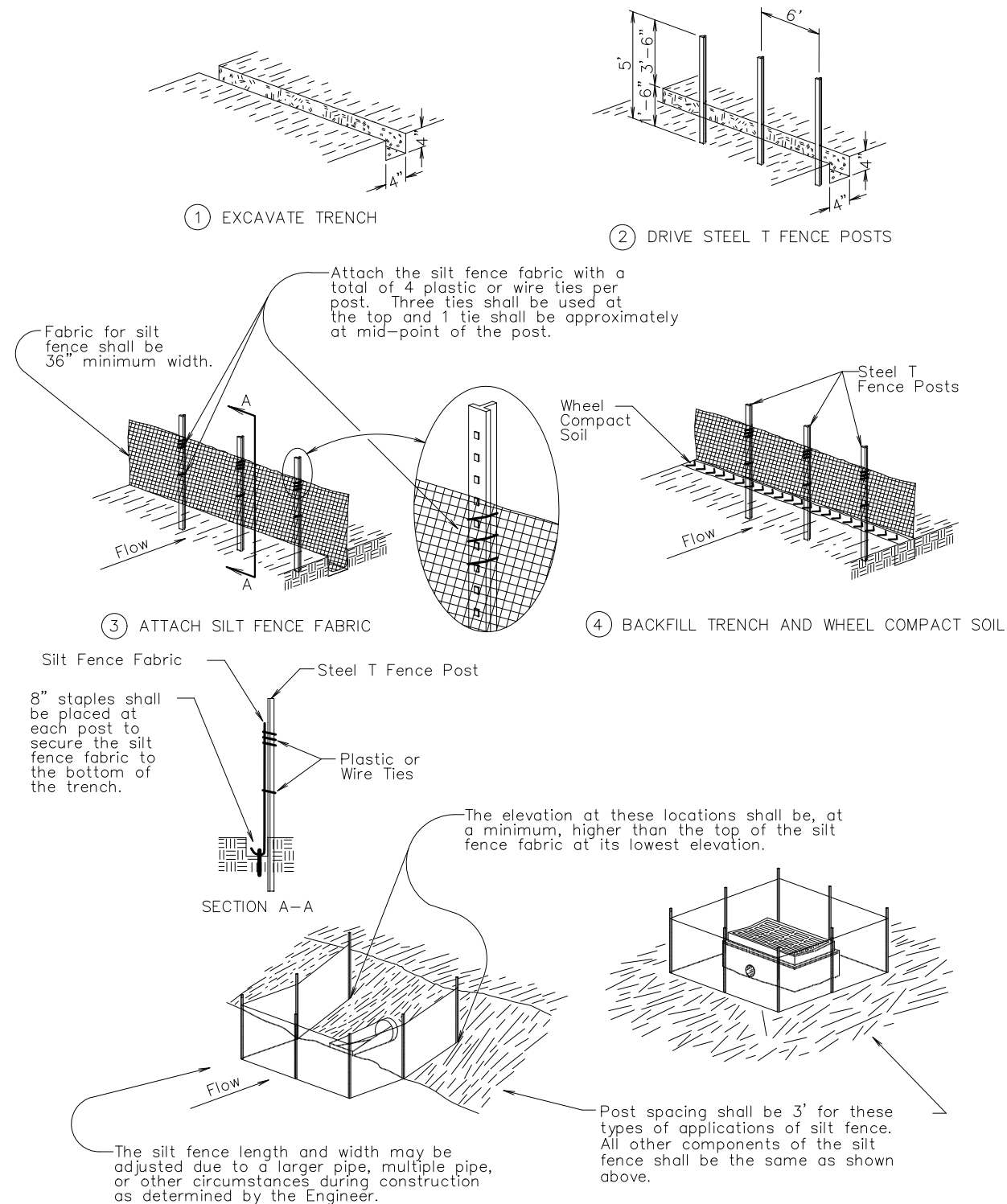
SEDIMENT CONTROL PLAN

SCALE: N.T.S.

HIGH FLOW SILT FENCE

Sheet 1 of 2

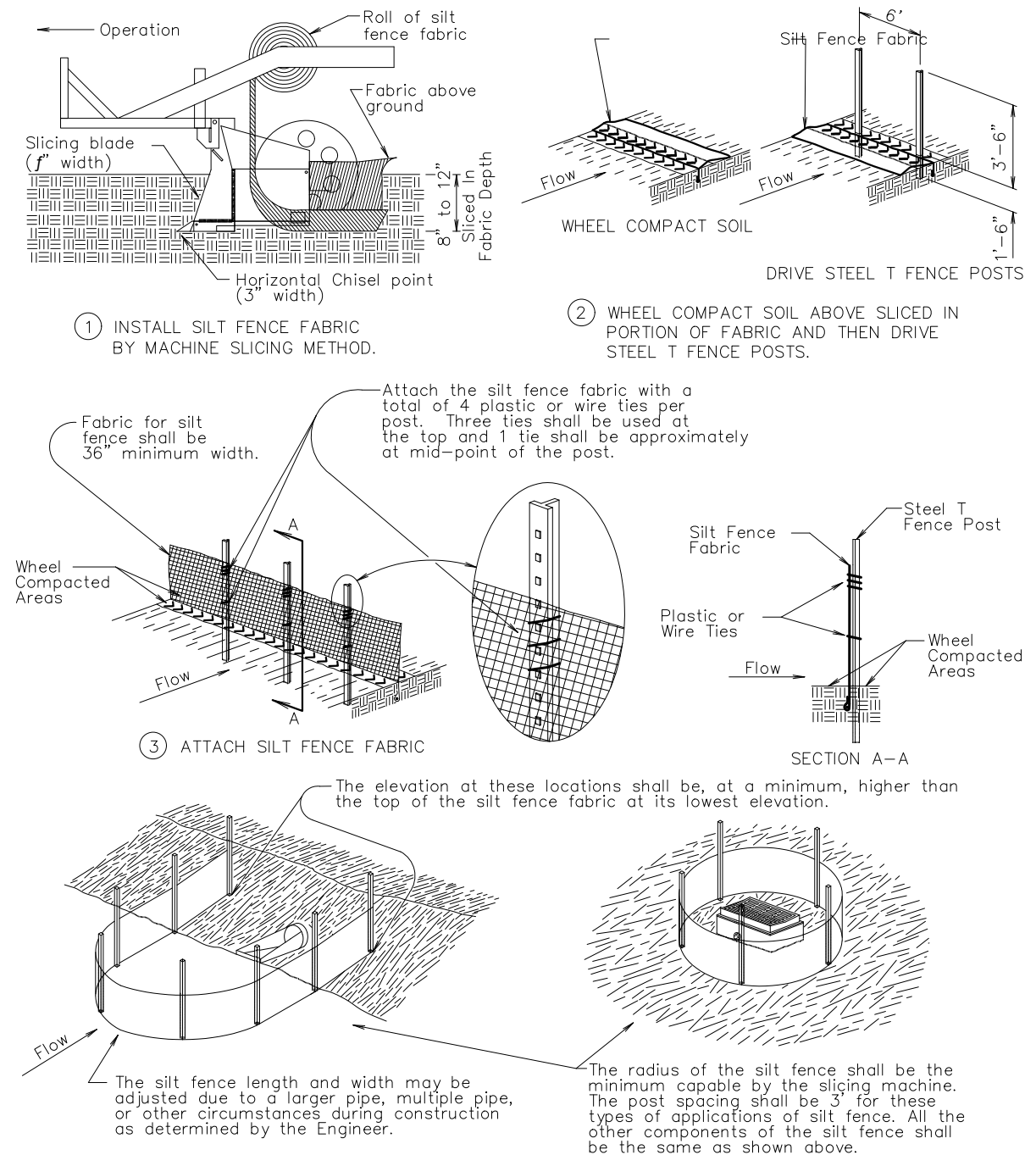
MANUAL HIGH FLOW SILT FENCE INSTALLATION



HIGH FLOW SILT FENCE

Sheet 2 of 2

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



GENERAL NOTE:

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end shall be provided on top of the extra length of silt fence fabric to prevent underflow.

Published Date: 1st Quarter 2013

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HIGH FLOW SILT FENCE

PLATE NUMBER

734.05

Sheet 1 of 2

Published Date: 1st Quarter 2013

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HIGH FLOW SILT FENCE

PLATE NUMBER

734.05

Sheet 2 of 2

Division of Administration
Foss Building
523 E. Capitol Ave.
Pierre, South Dakota 57501-3182
Phone: (605) 773 - 6082



DATE: 2/05/2025
DRAWN: JMG
CHECKED: JMG

LOWER BOOTH DAM
JONES COUNTY, SD
SWPPP

25
OF
25

JMG 6/07/2023

		Elevation	Weir cfs	Orifice cfs	Aux Flow	Controlling Factor	Q (cfs)
Dimensions		111	0.0	209.8	0	Weir Flow	0.0
Inlet (Riser) Diameter	72 in	111.1	1.8	210.7	0	Weir Flow	1.8
Inlet (Riser) Area	28.26 sf	111.2	5.2	211.6	0	Weir Flow	5.2
Conduit Diameter	42 in	111.3	9.6	212.5	0	Weir Flow	9.6
Conduit Area	9.6163 sf	111.4	14.8	213.4	0	Weir Flow	14.8
Weir Length (b)	18.85 ft	111.5	20.7	214.3	0	Weir Flow	20.7
C _w (Weir Discharge Coefficient)	3.1	111.6	27.2	215.2	0	Weir Flow	27.2
C _d (Discharge Coefficient)	0.8	111.7	34.2	216.1	0	Weir Flow	34.2
Aux Spillway Width	48 ft	111.8	41.8	217.0	0	Weir Flow	41.8
C _w (Aux Spillway Coefficient)	1.7	111.9	49.9	217.8	0	Weir Flow	49.9
		112	58.4	218.7	0	Weir Flow	58.4
Primary Spillway Elevation	111	112.1	67.4	219.6	0	Weir Flow	67.4
Conduit Invert Elevation	97.7	112.2	76.8	220.4	0	Weir Flow	76.8
Auxiliary Spillway Elevation	112.5	112.3	86.6	221.3	0	Weir Flow	86.6
Top of Embankment Elevation	117	112.4	96.8	222.2	0	Weir Flow	96.8
		112.5	107.3	223.0	0.0	Weir Flow	107.3
		112.6	118.3	223.9	2.6	Weir Flow	120.8
		112.7	129.5	224.7	7.3	Weir Flow	136.8
		112.8	141.1	225.6	13.4	Weir Flow	154.5
		112.9	153.0	226.4	20.6	Weir Flow	173.7
		113	165.3	227.3	28.8	Weir Flow	194.1
		113.1	177.8	228.1	37.9	Weir Flow	215.7
		113.2	190.7	228.9	47.8	Weir Flow	238.5
		113.3	203.8	229.8	58.4	Weir Flow	262.2
		113.4	217.3	230.6	69.7	Weir Flow	286.9
		113.5	231.0	231.4	81.6	Weir Flow	312.6
		113.6	245.0	232.2	94.1	Orifice Flow	326.4
		113.7	259.2	233.0	107.3	Orifice Flow	340.3
		113.8	273.8	233.9	120.9	Orifice Flow	354.8
		113.9	288.6	234.7	135.2	Orifice Flow	369.8
		114	303.6	235.5	149.9	Orifice Flow	385.4
		114.1	318.9	236.3	165.1	Orifice Flow	401.4
		114.2	334.5	237.1	180.9	Orifice Flow	418.0
		114.3	350.3	237.9	197.1	Orifice Flow	435.0
		114.4	366.3	238.7	213.7	Orifice Flow	452.4
		114.5	382.6	239.5	230.8	Orifice Flow	470.3
		114.6	399.1	240.3	248.3	Orifice Flow	488.6
		114.7	415.9	241.1	266.3	Orifice Flow	507.4
		114.8	432.9	241.9	284.6	Orifice Flow	526.5
		114.9	450.0	242.7	303.4	Orifice Flow	546.1
		115	467.5	243.4	322.6	Orifice Flow	566.0
		115.1	485.1	244.2	342.1	Orifice Flow	586.3
StreamStat 10yr Event (cfs)	290						
StreamStat 25yr Event (cfs)	476						
StreamStat 50yr Event (cfs)	654						
StreamStat 100yr Event (cfs)	862						
Storage Capacity OHMW(acre-ft)	99.62						
Storage Capacity Top (acre-ft)	211.31						
Embankment Height (ft)	22						
Height x Capacity	4648.8						
**50yr frequency design flood							
**C _d (Discharge Coefficient) = 0.80 due to high HW/d value (submergence)							

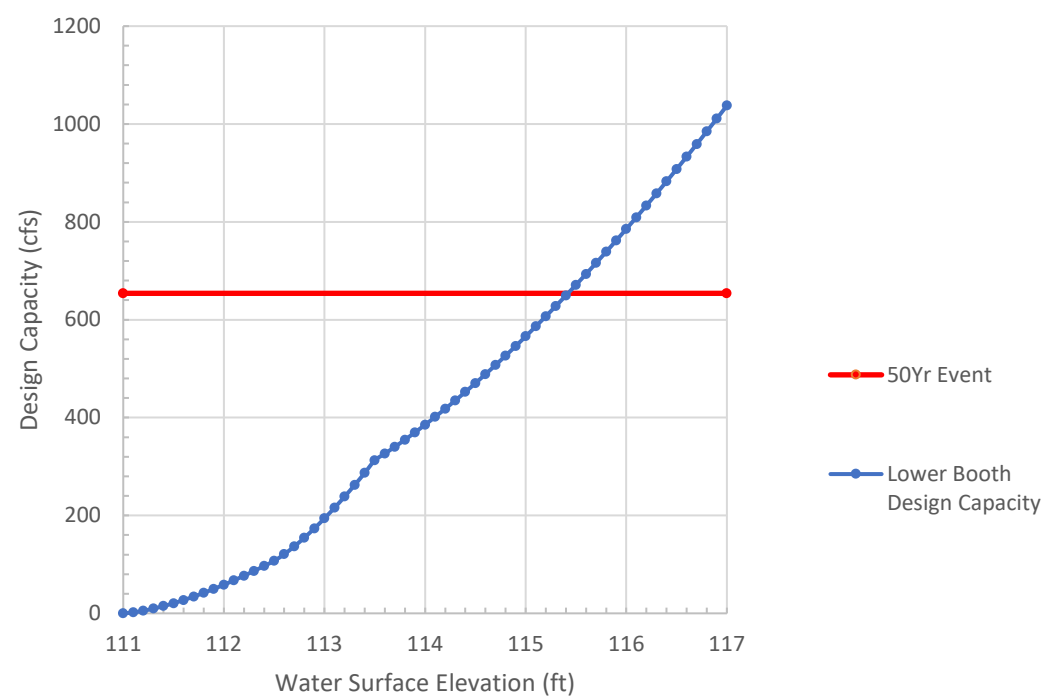
Equations Used:

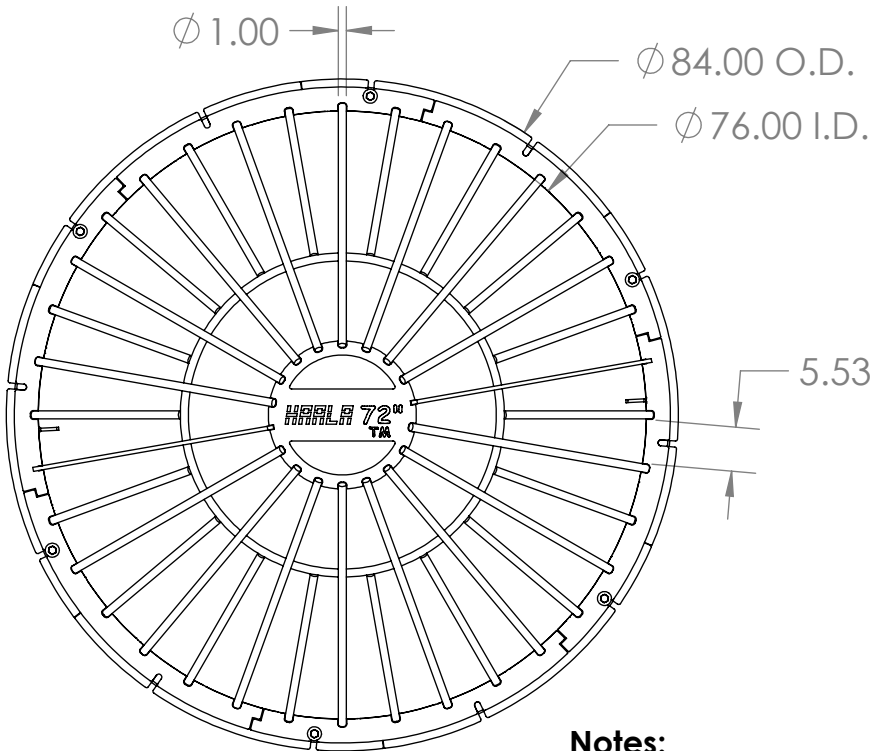
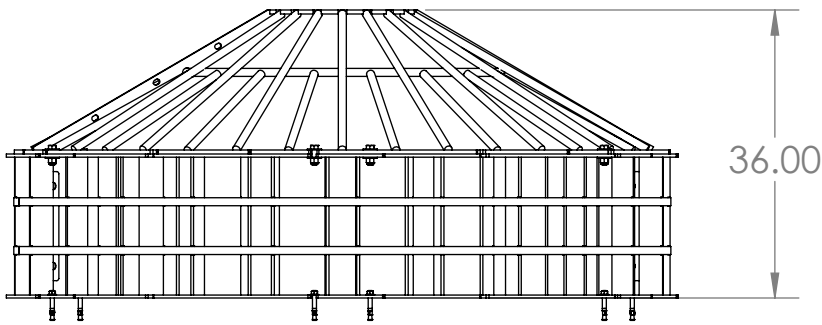
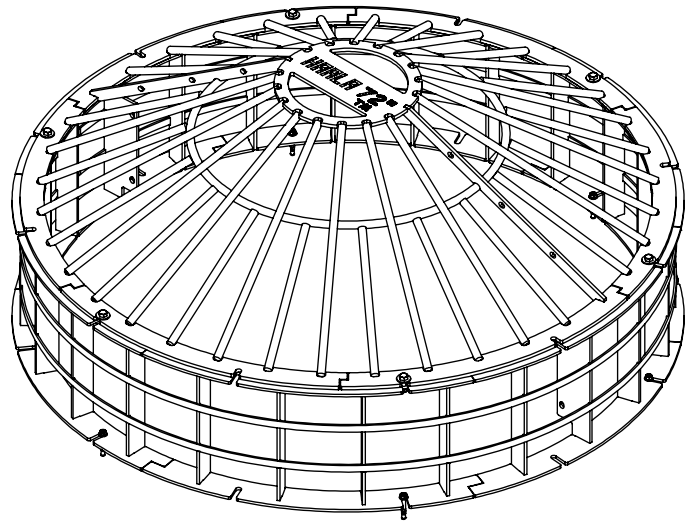
$$Q_{weir} = C_w b h^{3/2}$$

$$Q_{orifice} = C_d a \sqrt{2gh}$$

115.2	503.0	245.0	362.0 Orifice Flow	607.0
115.3	521.0	245.8	382.3 Orifice Flow	628.1
115.4	539.3	246.6	403.0 Orifice Flow	649.5
115.5	557.8	247.3	424.0 Orifice Flow	671.3
115.6	576.5	248.1	445.4 Orifice Flow	693.5
115.7	595.4	248.9	467.1 Orifice Flow	716.0
115.8	614.5	249.6	489.2 Orifice Flow	738.8
115.9	633.8	250.4	511.6 Orifice Flow	762.0
116	653.3	251.2	534.3 Orifice Flow	785.5
116.1	673.0	251.9	557.4 Orifice Flow	809.3
116.2	692.9	252.7	580.8 Orifice Flow	833.4
116.3	713.0	253.4	604.5 Orifice Flow	857.9
116.4	733.3	254.2	628.5 Orifice Flow	882.6
116.5	753.7	254.9	652.8 Orifice Flow	907.7
116.6	774.4	255.7	677.4 Orifice Flow	933.1
116.7	795.2	256.4	702.4 Orifice Flow	958.8
116.8	816.2	257.2	727.6 Orifice Flow	984.8
116.9	837.4	257.9	753.1 Orifice Flow	1011.0
117	858.8	258.6	778.9 Orifice Flow	1037.6

Lower Booth Design Capacity





Notes:

1. Unit is built in 2 sections from A36 steel and is hot dip galvanized after fabrication per ASTM A123.
2. Bolts to mount cone grate to bottom unit are included.
3. Anchor bolts to mount to concrete are available upon request.

Rodriguez, Rachel

From: Kilts, Whitney (DENR)
Sent: Monday, January 6, 2025 11:34 AM
To: Rodriguez, Rachel
Cc: Rath, Mark
Subject: FW: Lower Booth Dam-Water Permit 2845-2

Rachel,

Can you please add this email to the file for Water Permit No. 2845-2 to indicate construction on the project is complete? Thanks.

Thanks,



Whitney Kilts
Office of Water-Water Rights Program
Department of Agriculture and Natural Resources
523 E. Capitol Ave. Pierre SD, 57501
605.773.3352
danr.sd.gov

From: Gilkerson, James <James.Gilkerson@state.sd.us>
Sent: Monday, January 6, 2025 11:27 AM
To: Kilts, Whitney (DENR) <Whitney.Kilts@state.sd.us>
Subject: RE: Lower Booth Dam

Whitney,

There were no major changes from the review plans.

Thanks!

James

From: Kilts, Whitney (DENR) <Whitney.Kilts@state.sd.us>
Sent: Monday, January 6, 2025 11:07 AM
To: Gilkerson, James <James.Gilkerson@state.sd.us>
Subject: RE: Lower Booth Dam

Were as-built plans done or did the end construction end up basically matching the review plans?



Whitney Kilts
Office of Water-Water Rights Program
Department of Agriculture and Natural Resources
523 E. Capitol Ave. Pierre SD, 57501
605.773.3352
danr.sd.gov

From: Gilkerson, James <James.Gilkerson@state.sd.us>
Sent: Monday, January 6, 2025 9:18 AM

To: Kilts, Whitney (DENR) <Whitney.Kilts@state.sd.us>
Subject: RE: Lower Booth Dam

Good morning Whitney,

Yes, Lower Booth is completed.

Thanks,

James

From: Kilts, Whitney (DENR) <Whitney.Kilts@state.sd.us>
Sent: Monday, January 6, 2025 9:16 AM
To: Gilkerson, James <James.Gilkerson@state.sd.us>
Subject: Lower Booth Dam

Morning James,

I am starting to work on dam inventory updates and wanted to check if the Lower Booth Dam project was finish?

Thanks,



Whitney Kilts
Office of Water-Water Rights Program
Department of Agriculture and Natural Resources
523 E. Capitol Ave. Pierre SD, 57501
605.773.3352
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