

ANGOSTURA SHORELINE STABILIZATION PROJECT

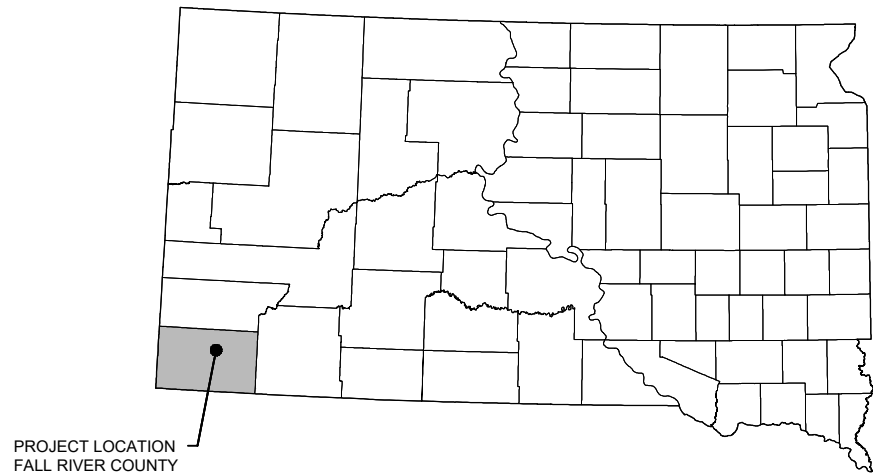
SOUTH DAKOTA DEPARTMENT OF GAME, FISH & PARKS

ANGOSTURA RESERVOIR

FALL RIVER COUNTY, SOUTH DAKOTA

PROJECT NO. ANGO20MA

STATE MAP



PROJECT LOCATION
FALL RIVER COUNTY

LOCATION MAP

NOT TO SCALE

ABBREVIATIONS	
ABBREVIATION	DESCRIPTION
APPROX.	APPROXIMATE
AVE	AVENUE
ELEV.	ELEVATION
NAVD	NORTH AMERICAN VERTICAL DATUM
NAD	NORTH AMERICAN DATUM
RSS	REINFORCED SOIL SLOPE
SD	SOUTH DAKOTA
SW	SOUTH WEST
SF	SQUARE FEET
STA	STATION
TBD	TO BE DETERMINED
T.O.	TOP OF
TYP	TYPICAL
WSE	WATER SURFACE ELEVATION

GENERAL NOTES:

- HORIZONTAL DATUM AND COORDINATE SYSTEM:
SOUTH DAKOTA STATE PLANE SOUTH, US SURVEY FEET

VERTICAL DATUM:
NGVD29
- TOPOGRAPHIC SURVEY WAS COMPLETED AUGUST 8, 2019 BY BROSZ ENGINEERING
- WATER LEVEL DATA OBTAINED FROM UNITED STATES BUREAU OF RECLAMATION WEBSITE, WWW.USBR.GOV

ANGOSTURA RESERVOIR ELEVATIONS (NGVD29)	
AUGUST 8, 2019 SURVEY	3185.3
NORMAL OPERATION LEVEL (APPROX. APRIL THROUGH JULY)	3186.0 TO 3187.0
TYPICAL FALL CONDITIONS	3177.3
MAX. RECORDED LEVEL	3189.4



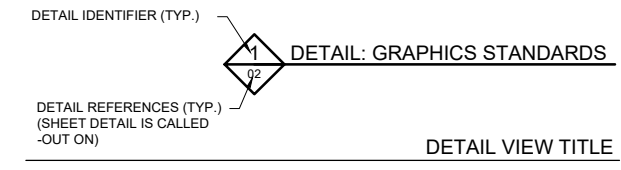
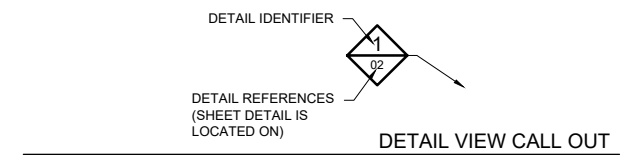
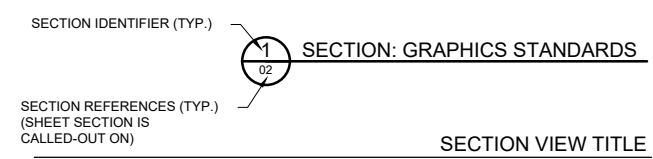
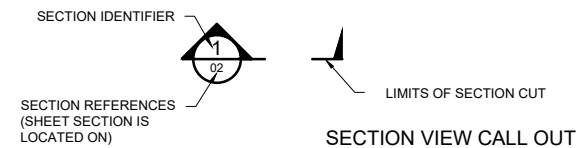
VICINITY MAP

NOT TO SCALE



SOUTH DAKOTA ONE CALL:
CALL BEFORE YOU DIG.
1-800-781-7474 or 811

CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD-LOCATING ALL SITE UTILITIES, PRIVATE AND PUBLIC, PRIOR TO STARTING THE WORK. ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. ANY UTILITIES DAMAGED BY CONTRACTOR SHALL BE REPAIRED BY CONTRACTOR TO THE SATISFACTION OF THE UTILITY OWNER.



SHEET INDEX

SHEET NUMBER	TITLE
01.....	TITLE SHEET
02.....	EXISTING CONDITIONS PLAN
03.....	SITE ACCESS, STAGING AND TRAFFIC CONTROL
04.....	SLOPE STABILIZATION AREA PLAN
05.....	SLOPE STABILIZATION AREA TYPICAL SECTIONS
06.....	SLOPE STABILIZATION AREA TYPICAL SECTIONS
07.....	SLOPE STABILIZATION SECTIONS
08.....	SLOPE STABILIZATION SECTIONS
09.....	SLOPE STABILIZATION DETAILS
10.....	EROSION PREVENTION AND SEDIMENT CONTROL PLAN
11.....	EROSION PREVENTION AND SEDIMENT CONTROL DETAILS
12.....	RESTORATION PLAN
13.....	RESTORATION PLAN DETAILS
14.....	USBR NOTES
15.....	SWPPP CHECKLIST 1 OF 2
16.....	SWPPP CHECKLIST 2 OF 2

ISSUE FOR
CONSTRUCTION

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



PROJECT NO. ANGO20MA
DATE: 10/11/2019
DRAWN BY: NLB2
CHECKED BY: BARR



ANGOSTURA SHORELINE STABILIZATION PROJECT
FALL RIVER COUNTY, SOUTH DAKOTA
TITLE SHEET

1 OF 16

CADD USER: Rchickler FILE: M:\DESIGN\41231001_004\231001_01.DWG PLOT SCALE: 1/2"=1' PLOT DATE: 10/11/2019 2:16 PM

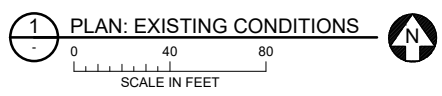


LEGEND

- 2560 — EXISTING MAJOR CONTOUR
- - - - - EXISTING MINOR CONTOUR
- - - - - EXISTING FENCE
- - - - - EXISTING SHORELINE AT WSE = 3185.3
- - - - - EXISTING SHORELINE AT WSE = 3177.3
- ST EXISTING STORM SEWER
- ▲ EXISTING CONTROL POINT
- - - - - EXTENTS OF TOPOGRAPHIC SURVEY (SEE NOTES)
- B-1 HDR BOREHOLE LOCATIONS
- ⊗ EXISTING BEEHIVE CATCHBASIN
- ▨ EXISTING SLOPE FAILURE FACE
- ▤ EXISTING CONCRETE
- - - - - EXISTING CREST OF SLOPE
- - - - - EXISTING SLOPE FAILURE OUTLINE
- ~ ~ ~ EXISTING BIKE PATH
- - - - - EXISTING ROAD
- - - - - APPROX. WETLAND EXTENTS

REGISTERED PROFESSIONAL ENGINEER
 REG. NO. 14369
 RUSSELL SHEETS
 SOUTH DAKOTA
Russell Sheets
 10/11/2019

CONTROL POINT INFORMATION					
POINT NUMBER	RAW DESCRIPTION	NORTHING	EASTING	ELEVATION	LOCATION
CP-1	CONTROL POINT 1	371218.69	1151573.20	3213.07	EAST OF PICNIC AREA
CP-3	CONTROL POINT 3	371353.05	1151195.78	3226.01	BETWEEN BIKE PATH AND WEST END OF GUARD RAIL



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South Dakota
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PROJECT NO. 14369-000-ANGOSTURA
 SHEET NO. N1B2
 DATE 10/11/2019

BARR

ANGOSTURA SHORELINE STABILIZATION PROJECT
 FALL RIVER COUNTY, SOUTH DAKOTA
 EXISTING CONDITIONS PLAN

2 OF 16

CADD USER: Rachel Lahr FILE: M:\DESIGN\14369\1001_004\123100100_02.DWG PLOT SCALE: 1:2 PLOT DATE: 10/11/2019 2:15 PM

CADD USER: Rachel Leier FILE: M:\DESIGN\14231001_004\1423100100_03.DWG PLOT SCALE: 1:2 PLOT DATE: 10/11/2019 2:19 PM



1 PLAN: STAGING AND TRAFFIC CONTROL
 0 50 100
 SCALE IN FEET

2 PLAN: SITE ACCESS

REGISTERED PROFESSIONAL ENGINEER
 REG. NO. 14369
 RUSSELL SHEETS
 SOUTH DAKOTA
 10/11/2019

LEGEND

	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	EXISTING FENCE
	EXISTING GUARDRAIL
	EXISTING SHORELINE AT WSE = 3185.3 (8/8/19)
	EXISTING SHORELINE AT WSE = 3177.3 (TYP. FALL)
	EXISTING STORM SEWER
	EXISTING CONTROL POINT
	HDR BOREHOLE LOCATION
	BEEHIVE CATCHBASIN
	EXISTING CONCRETE
	EXISTING BIKE PATH
	EXISTING ROAD
	STAGING, LAYDOWN, AND TEMPORARY STOCKPILE AREA
	RIPRAP BUTTRESS
	RSS FACE
	CONSTRUCTION LIMITS

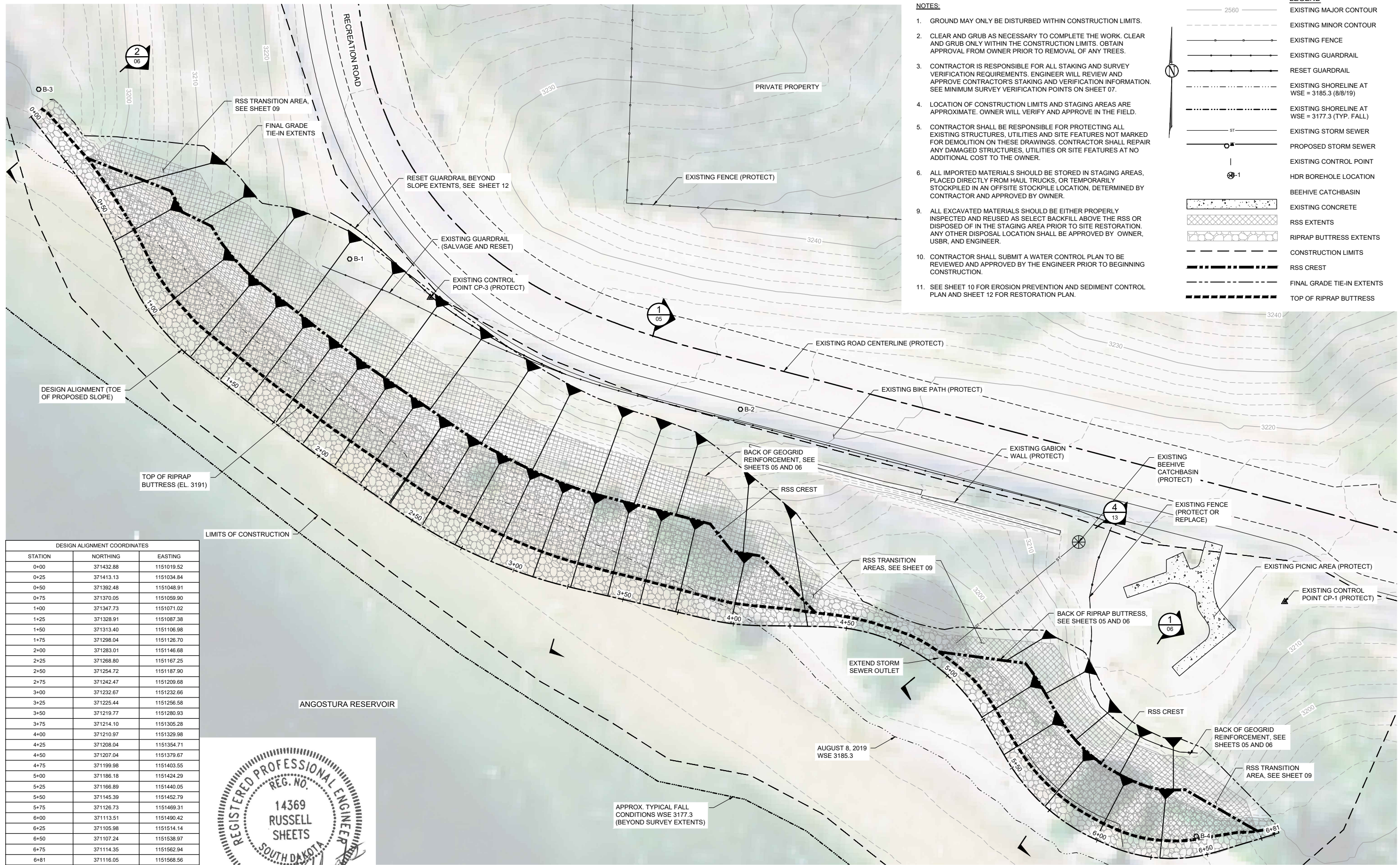
- NOTES:**
- GROUND MAY ONLY BE DISTURBED WITHIN CONSTRUCTION LIMITS.
 - CONTROL PUBLIC ACCESS TO WORK AREAS AS NEEDED WITH CONSTRUCTION FENCING.
 - CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND COMPLIANCE WITH THE PROJECT SWPPP.
 - CLEAR AND GRUB AS NECESSARY TO COMPLETE THE WORK. CLEAR AND GRUB ONLY WITHIN THE CONSTRUCTION LIMITS. OBTAIN APPROVAL FROM OWNER PRIOR TO REMOVAL OF ANY TREES.
 - CONTRACTOR IS RESPONSIBLE FOR ALL STAKING AND SURVEY VERIFICATION REQUIREMENTS. ENGINEER WILL REVIEW AND APPROVE CONTRACTOR'S STAKING AND VERIFICATION INFORMATION.
 - LOCATION OF CONSTRUCTION LIMITS AND STAGING AREAS ARE APPROXIMATE. OWNER WILL VERIFY AND APPROVE IN THE FIELD.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING STRUCTURES, UTILITIES AND SITE FEATURES NOT MARKED FOR DEMOLITION ON THESE DRAWINGS. CONTRACTOR SHALL REPAIR ANY DAMAGED STRUCTURES, UTILITIES OR SITE FEATURES AT NO ADDITIONAL COST TO THE OWNER.
 - ALL IMPORTED MATERIALS SHOULD BE STORED IN STAGING AREAS, PLACED DIRECTLY FROM HAUL TRUCKS, OR TEMPORARILY STOCKPILED IN AN OFFSITE STOCKPILE LOCATION, DETERMINED BY CONTRACTOR AND APPROVED BY OWNER.
 - CONTRACTOR IS RESPONSIBLE FOR PLANNING AND EXECUTING SAFE AND ORDERLY PARKING AND TRAFFIC MANAGEMENT FOR VEHICLES AND PEDESTRIANS THROUGHOUT CONSTRUCTION TO ACCOMMODATE CONSTRUCTION ACTIVITIES.
 - CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR ROAD AND/OR SIDEWALK CLOSINGS, WORK IN THE RIGHT-OF-WAY, AND DETOURS.
 - CONTRACTOR IS RESPONSIBLE FOR ALL PUBLIC NOTICES REQUIRED FOR ANY ROAD, SIDEWALK, OR TRAIL CLOSINGS OR DETOURS.
 - CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND PLACING ANY NECESSARY SIGNAGE, WARNING LIGHTS, OR FLAGMEN.
 - CONTRACTOR SHALL DETERMINE ALL STAGING AND LAYDOWN AREAS PRIOR TO DELIVERY OF MATERIALS AND EQUIPMENT TO THE SITE INCLUDING OBTAINING ANY NECESSARY AGREEMENTS WITH RESPECTIVE GOVERNMENTAL AGENCIES AND PRIVATE OWNERS. CONTRACTOR SHALL FOLLOW ALL LAWS AND REGULATIONS PERTAINING TO THE STAGING AND LAYDOWN AREAS.
 - CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING ANY HAUL ROUTES AND ACCESS TO THE PROJECT SITE INCLUDING ANY AGREEMENTS NECESSARY WITH RESPECTIVE GOVERNMENTAL AGENCIES AND PRIVATE OWNERS FOR MAINTENANCE AND RESTORATION OF THE ROUTES.
 - CONTRACTOR SHALL PROTECT EXISTING ROAD AND BIKE PATH SURFACING WHILE PERFORMING CONSTRUCTION OPERATIONS. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE CAUSED TO SUCH SURFACING AND WILL BE REQUIRED TO REPAIR/REPLACE ANY SURFACING DAMAGED DURING CONSTRUCTION TO THE SATISFACTION OF THE OWNER AND ENGINEER.

ISSUE FOR CONSTRUCTION

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

PROJECT: ANGSTURA SHORELINE STABILIZATION PROJECT
 SHEET: 3 OF 16
 DATE: 10/11/2019
 DRAWN BY: NUB2
 CHECKED BY: BARR

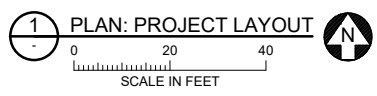


- NOTES:**
- GROUND MAY ONLY BE DISTURBED WITHIN CONSTRUCTION LIMITS.
 - CLEAR AND GRUB AS NECESSARY TO COMPLETE THE WORK. CLEAR AND GRUB ONLY WITHIN THE CONSTRUCTION LIMITS. OBTAIN APPROVAL FROM OWNER PRIOR TO REMOVAL OF ANY TREES.
 - CONTRACTOR IS RESPONSIBLE FOR ALL STAKING AND SURVEY VERIFICATION REQUIREMENTS. ENGINEER WILL REVIEW AND APPROVE CONTRACTOR'S STAKING AND VERIFICATION INFORMATION. SEE MINIMUM SURVEY VERIFICATION POINTS ON SHEET 07.
 - LOCATION OF CONSTRUCTION LIMITS AND STAGING AREAS ARE APPROXIMATE. OWNER WILL VERIFY AND APPROVE IN THE FIELD.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING STRUCTURES, UTILITIES AND SITE FEATURES NOT MARKED FOR DEMOLITION ON THESE DRAWINGS. CONTRACTOR SHALL REPAIR ANY DAMAGED STRUCTURES, UTILITIES OR SITE FEATURES AT NO ADDITIONAL COST TO THE OWNER.
 - ALL IMPORTED MATERIALS SHOULD BE STORED IN STAGING AREAS, PLACED DIRECTLY FROM HAUL TRUCKS, OR TEMPORARILY STOCKPILED IN AN OFFSITE STOCKPILE LOCATION, DETERMINED BY CONTRACTOR AND APPROVED BY OWNER.
 - ALL EXCAVATED MATERIALS SHOULD BE EITHER PROPERLY INSPECTED AND REUSED AS SELECT BACKFILL ABOVE THE RSS OR DISPOSED OF IN THE STAGING AREA PRIOR TO SITE RESTORATION. ANY OTHER DISPOSAL LOCATION SHALL BE APPROVED BY OWNER, USBR, AND ENGINEER.
 - CONTRACTOR SHALL SUBMIT A WATER CONTROL PLAN TO BE REVIEWED AND APPROVED BY THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
 - SEE SHEET 10 FOR EROSION PREVENTION AND SEDIMENT CONTROL PLAN AND SHEET 12 FOR RESTORATION PLAN.

- LEGEND**
- 2560 ——— EXISTING MAJOR CONTOUR
 - EXISTING MINOR CONTOUR
 - EXISTING FENCE
 - EXISTING GUARDRAIL
 - RESET GUARDRAIL
 - EXISTING SHORELINE AT WSE = 3185.3 (8/8/19)
 - EXISTING SHORELINE AT WSE = 3177.3 (TYP. FALL)
 - ST ——— EXISTING STORM SEWER
 - ——— PROPOSED STORM SEWER
 - ——— EXISTING CONTROL POINT
 - ——— HDR BOREHOLE LOCATION
 - ——— BEEHIVE CATCHBASIN
 - EXISTING CONCRETE
 - RSS EXTENTS
 - RIPRAP BUTTRESS EXTENTS
 - CONSTRUCTION LIMITS
 - RSS CREST
 - FINAL GRADE TIE-IN EXTENTS
 - TOP OF RIPRAP BUTTRESS

DESIGN ALIGNMENT COORDINATES

STATION	NORTHING	EASTING
0+00	371432.88	1151019.52
0+25	371413.13	1151034.84
0+50	371392.48	1151048.91
0+75	371370.05	1151059.90
1+00	371347.73	1151071.02
1+25	371328.91	1151087.38
1+50	371313.40	1151106.98
1+75	371298.04	1151126.70
2+00	371283.01	1151146.68
2+25	371268.80	1151167.25
2+50	371254.72	1151187.90
2+75	371242.47	1151209.68
3+00	371232.67	1151232.66
3+25	371225.44	1151256.58
3+50	371219.77	1151280.93
3+75	371214.10	1151305.28
4+00	371210.97	1151329.98
4+25	371208.04	1151354.71
4+50	371207.04	1151379.67
4+75	371199.98	1151403.55
5+00	371186.18	1151424.29
5+25	371166.89	1151440.05
5+50	371145.39	1151452.79
5+75	371126.73	1151469.31
6+00	371113.51	1151490.42
6+25	371105.98	1151514.14
6+50	371107.24	1151538.97
6+75	371114.35	1151562.94
6+81	371116.05	1151568.56



ISSUE FOR CONSTRUCTION

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Phone: (605) 773-6082

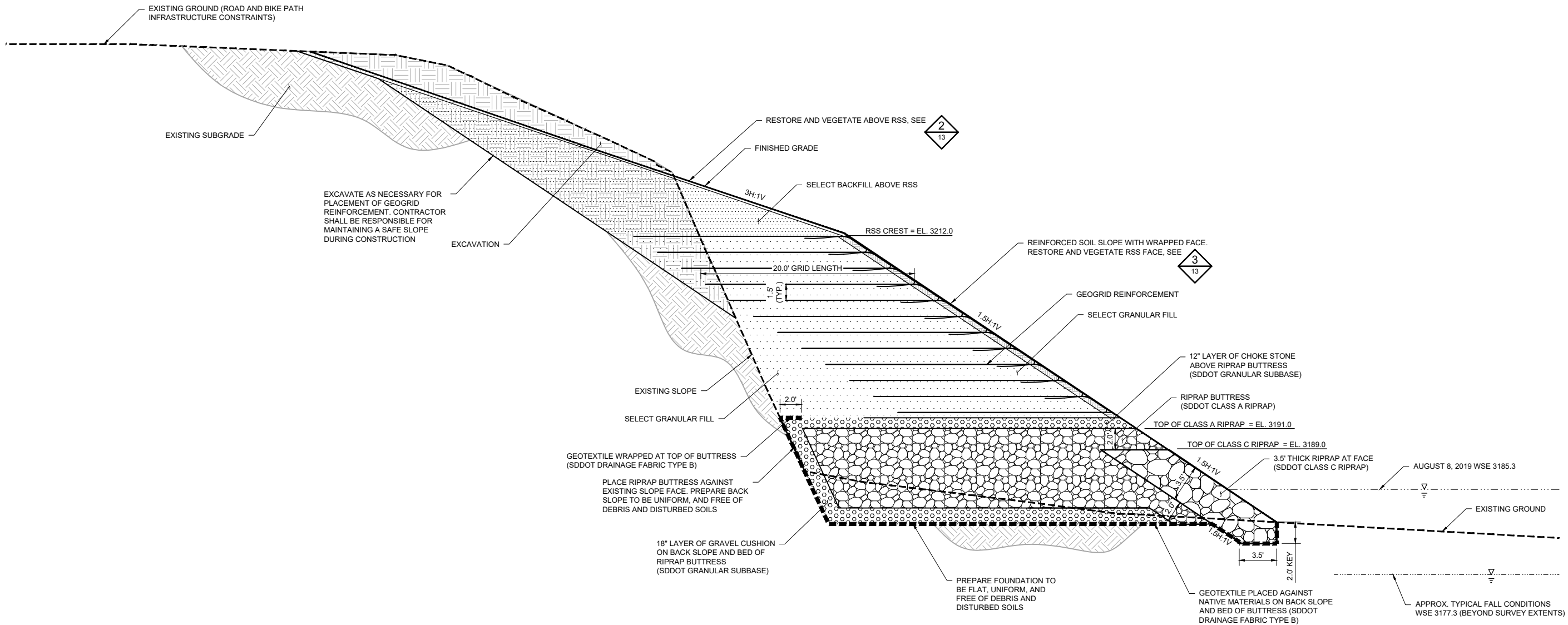
Department of Game, Fish & Parks

PROJECT NO. 14321001_004
DATE: 10/11/2019
DRAWN BY: NLS2
CHECKED BY: BARR

BARR

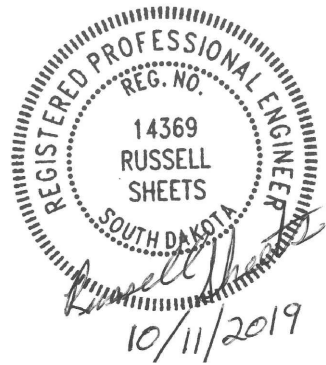
ANGOSTURA SHORELINE STABILIZATION PROJECT
FALL RIVER COUNTY, SOUTH DAKOTA
SLOPE STABILIZATION AREA PLAN

4 OF 16



EXCAVATE AS NECESSARY FOR PLACEMENT OF GEOGRID REINFORCEMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A SAFE SLOPE DURING CONSTRUCTION

1 SECTION: TYPICAL SLOPE STABILIZATION TYPE 1
 04
 0 5 10
 SCALE IN FEET



ISSUE FOR CONSTRUCTION

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Department of Game, Fish & Parks

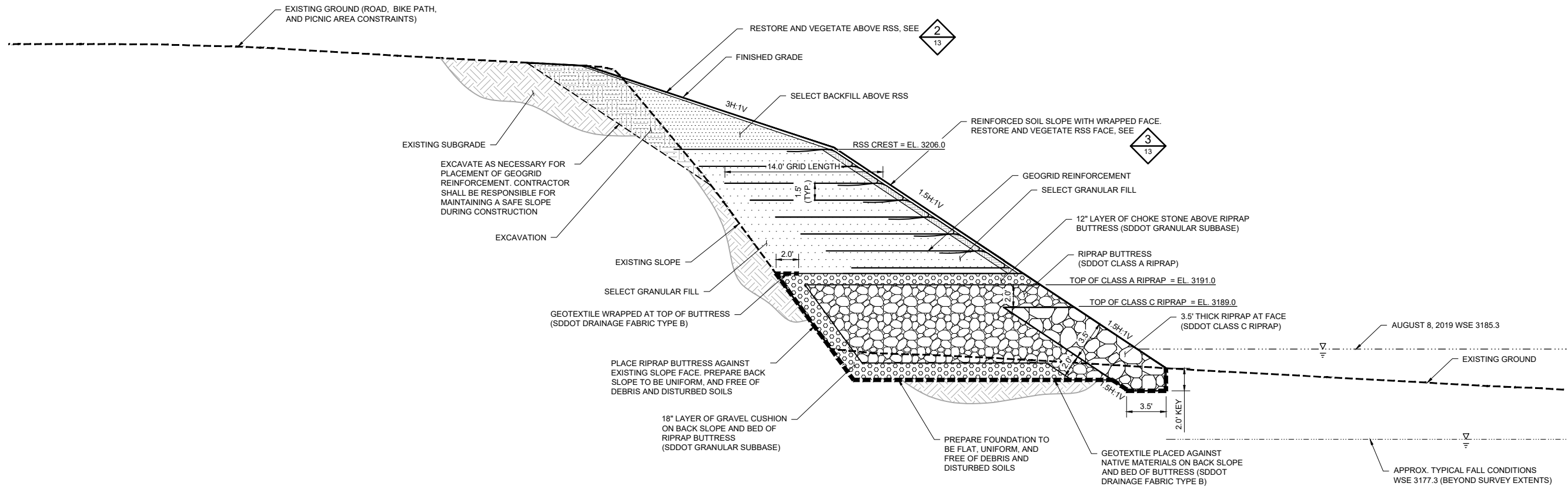
10/11/2019

ANGOSTURA SHORELINE STABILIZATION PROJECT
 FALL RIVER COUNTY, SOUTH DAKOTA
 SLOPE STABILIZATION AREA TYPICAL SECTIONS

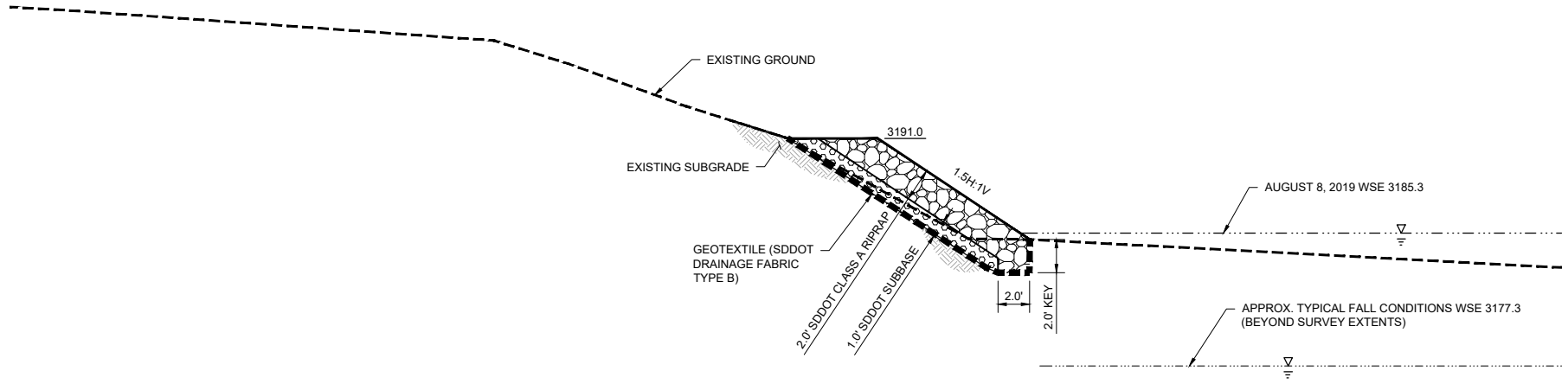
10/11/2019

ANGOSTURA SHORELINE STABILIZATION PROJECT
 FALL RIVER COUNTY, SOUTH DAKOTA
 SLOPE STABILIZATION AREA TYPICAL SECTIONS

5 OF 16



1 SECTION: TYPICAL SLOPE STABILIZATION TYPE 2
 04
 0 5 10
 SCALE IN FEET



2 SECTION: TYPICAL SLOPE STABILIZATION TYPE 3
 04
 0 5 10
 SCALE IN FEET

REGISTERED PROFESSIONAL ENGINEER
 REG. NO. 14369
 RUSSELL SHEETS
 SOUTH DAKOTA
 10/11/2019

ISSUE FOR CONSTRUCTION

CADD USER: Rachel Leier FILE: M:\DESIGN\41231001_004123100100_06.DWG PLOT SCALE: 1:2 PLOT DATE: 10/11/2019 2:53 PM

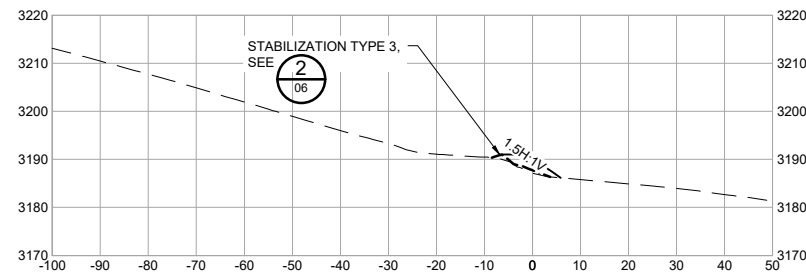
Division of Administration
 Foss Building
 523 E. Capitol Ave.
 Pierre, South Dakota 57501-3182
 Phone: (605) 773-6082

Department of Game, Fish & Parks

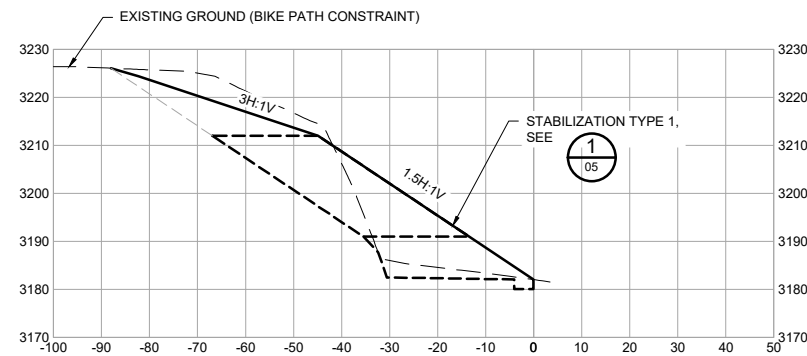
10/11/2019

PROJECT: ANOSTURA SHORELINE STABILIZATION PROJECT
 FALL RIVER COUNTY, SOUTH DAKOTA
 SLOPE STABILIZATION AREA TYPICAL SECTIONS

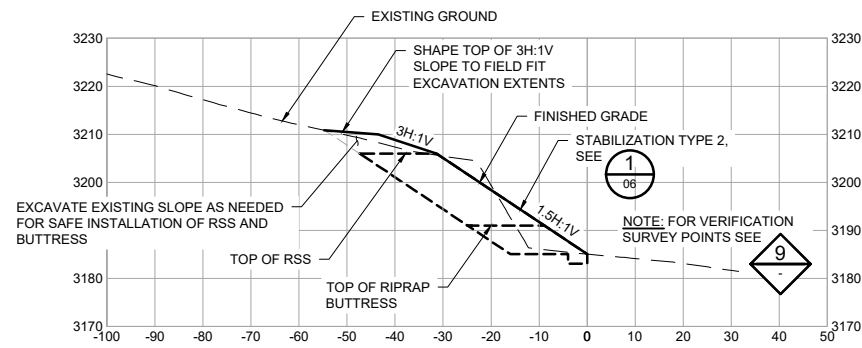
6 OF 16



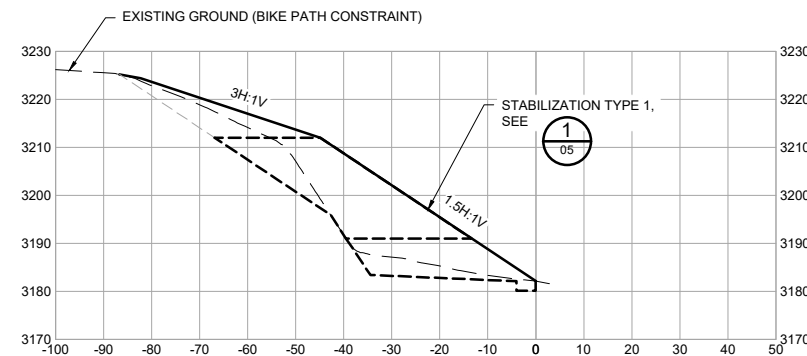
1 SECTION: SLOPE STABILIZATION STATION 0+00
SCALE IN FEET



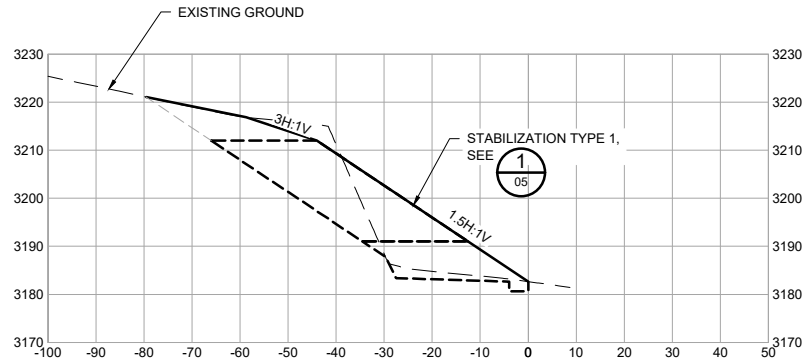
5 SECTION: SLOPE STABILIZATION STATION 2+00
SCALE IN FEET



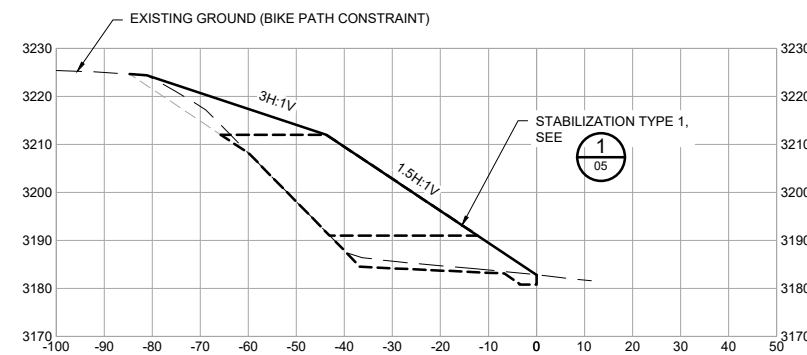
2 SECTION: SLOPE STABILIZATION STATION 0+50
SCALE IN FEET



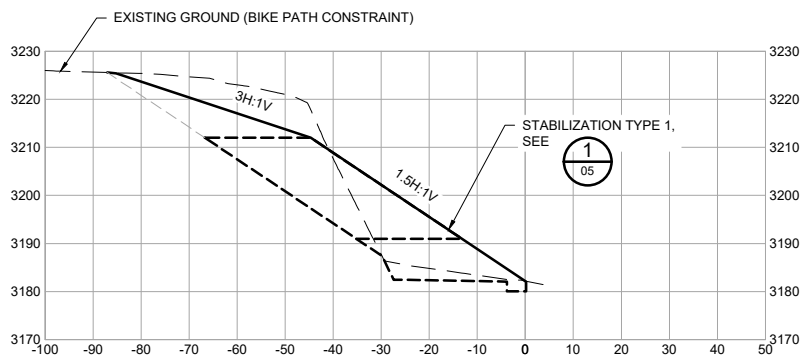
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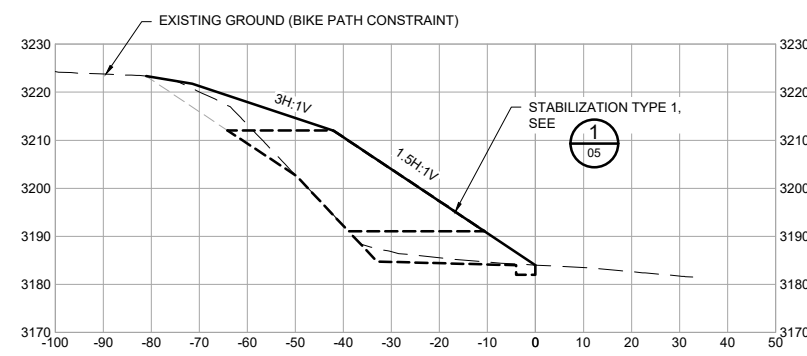
3 SECTION: SLOPE STABILIZATION STATION 1+00
SCALE IN FEET



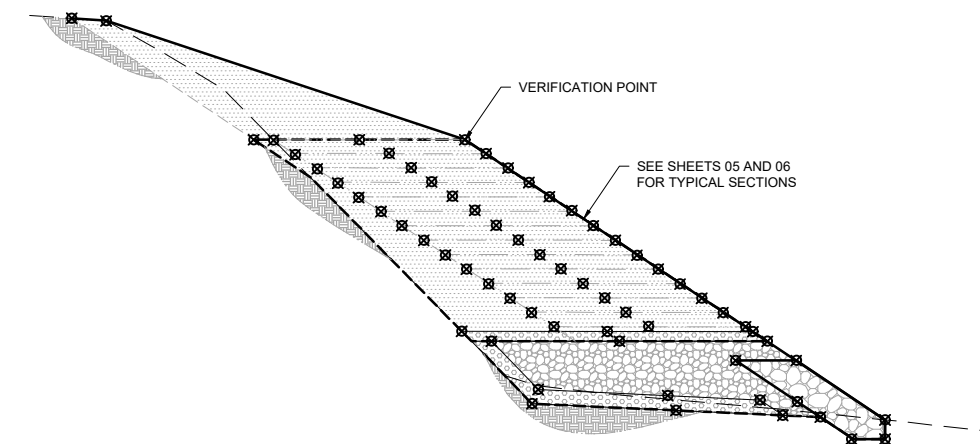
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SCALE IN FEET



4 SECTION: SLOPE STABILIZATION STATION 1+50
SCALE IN FEET



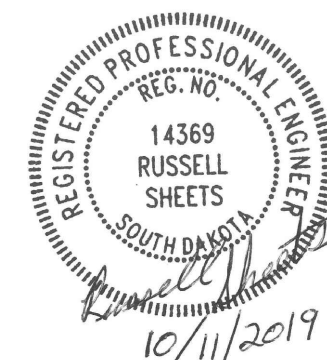
8 SECTION: SLOPE STABILIZATION STATION 3+50
SCALE IN FEET



9 DETAIL: TYPICAL SURVEY VERIFICATION POINTS
SCALE IN FEET

NOTES:

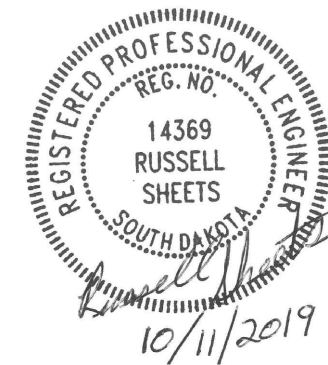
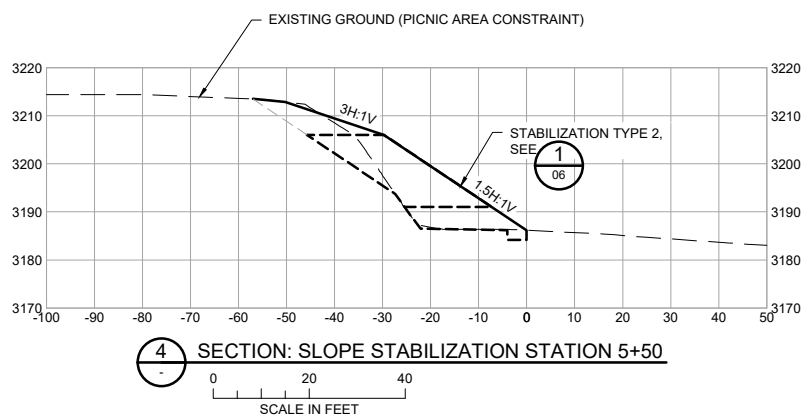
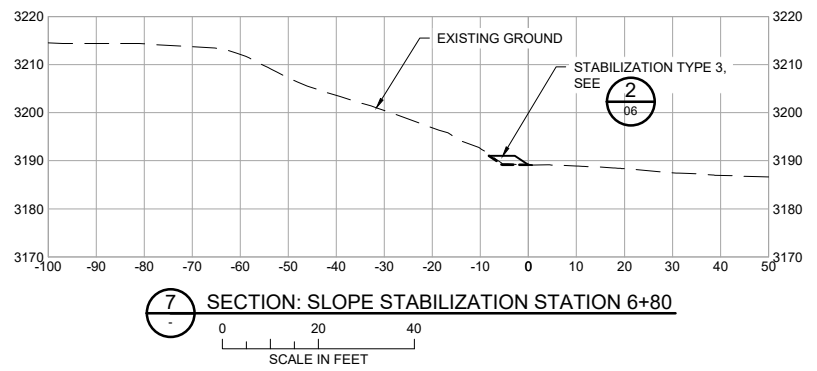
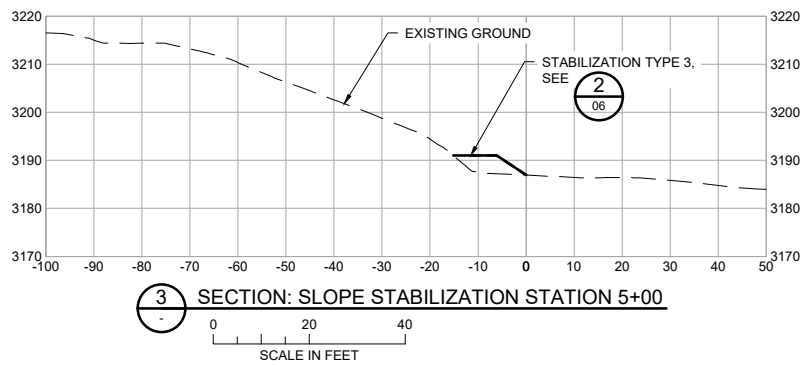
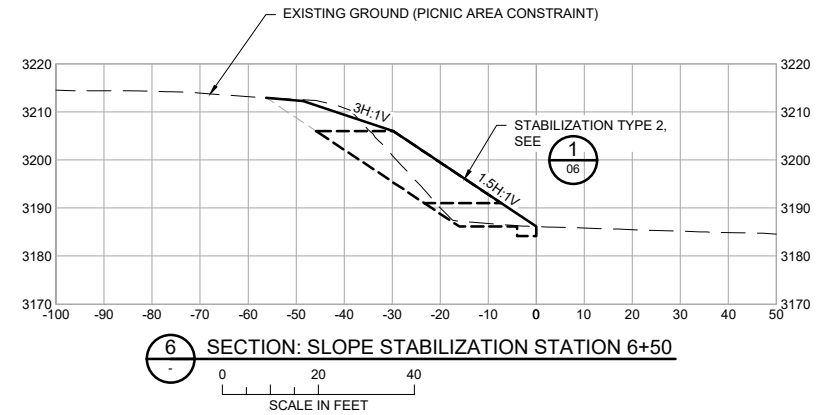
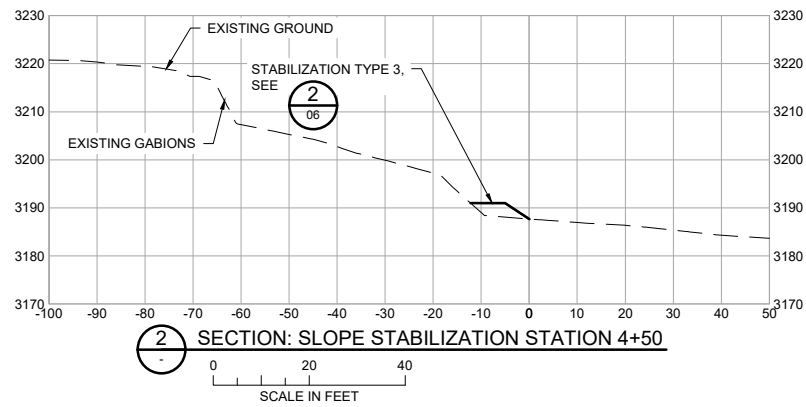
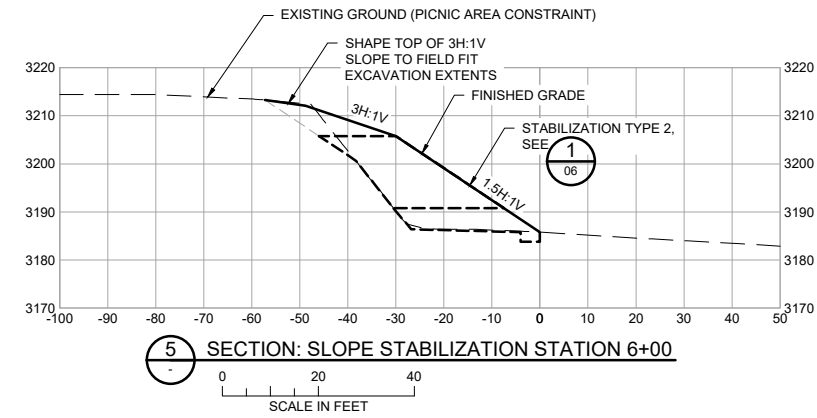
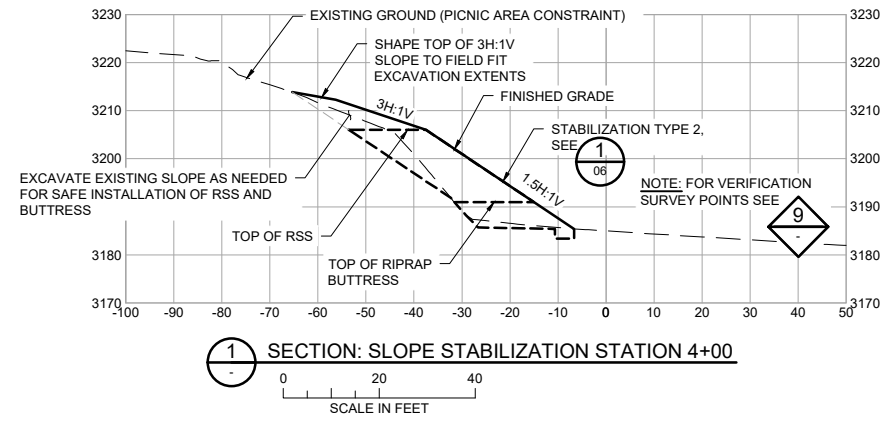
1. PERFORM SURVEY VERIFICATION FOR EACH SECTION ON SHEETS 07 AND 08 (EVERY 50' ALONG THE DESIGN ALIGNMENT).
2. AGGREGATE LAYERS, RIPRAP, GEOGRID, AND FILL EXTENTS MUST BE SURVEYED AND APPROVED BY ENGINEER PRIOR TO INSTALLATION OF SUBSEQUENT LAYERS, AS SHOWN ON THE DRAWINGS AND DESCRIBED IN THE SPECIFICATIONS.
3. PROVIDE VERIFICATION SURVEYS IN HORIZONTAL AND VERTICAL DATUMS MATCHING SHEET 01.



ISSUE FOR CONSTRUCTION

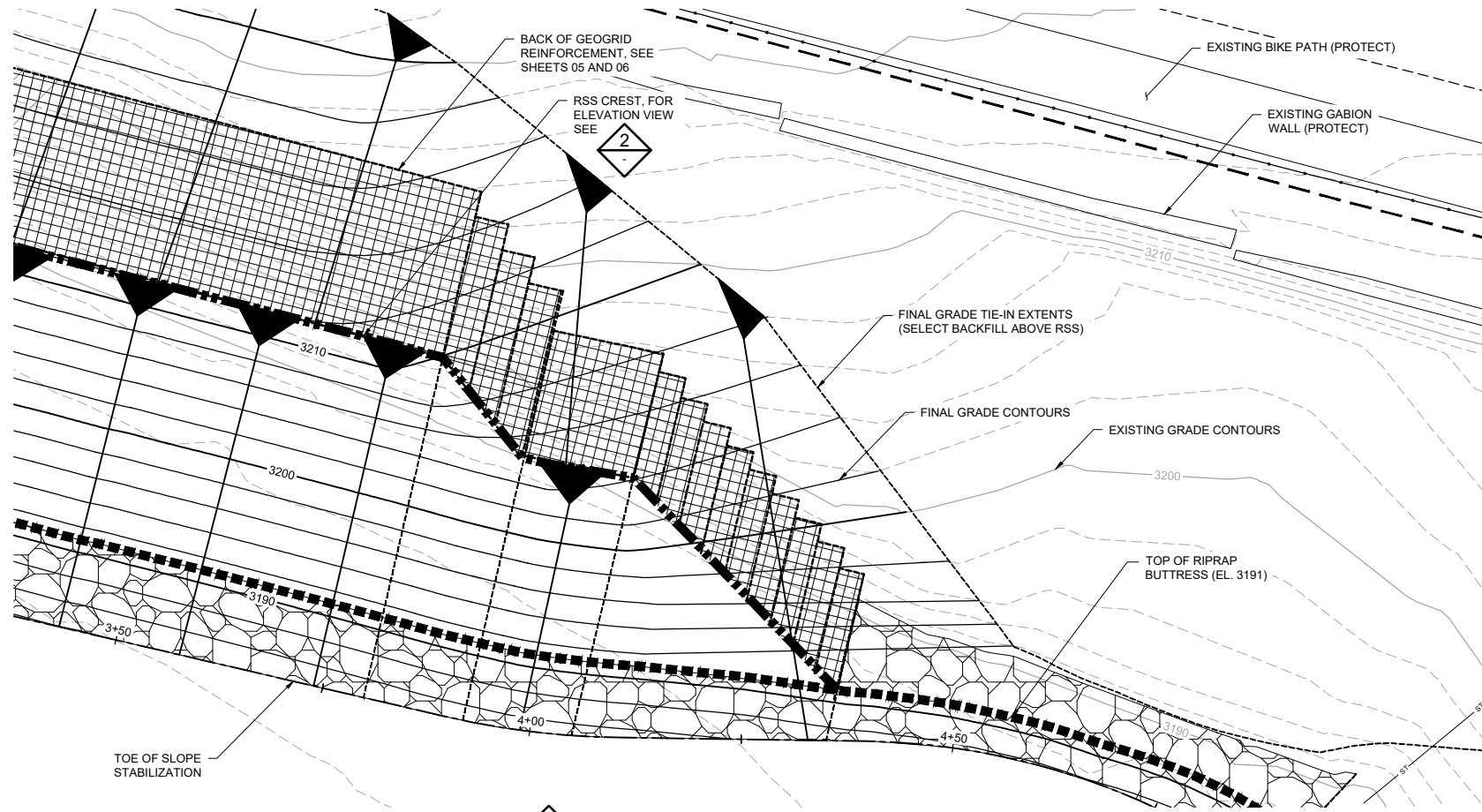
CADD USER: Rachel Leier FILE: M:\DESIGN\41231001_004123100100_07.DWG PLOT SCALE: 1:2 PLOT DATE: 10/11/2019 2:55 PM

PROJECT: ANGSTURA SHORELINE STABILIZATION PROJECT
 SHEET: 7 OF 16
 DATE: 10/11/2019
 DRAWN BY: NUB2
 CHECKED BY: BARR
 DIVISION OF ADMINISTRATION
 FOSS BUILDING
 523 E. CAPITOL AVE.
 PIERRE, SOUTH DAKOTA 57501-3182
 PHONE: (605) 773-6082
 DEPARTMENT OF GAME, FISH & PARKS
 SOUTH DAKOTA
 BARR

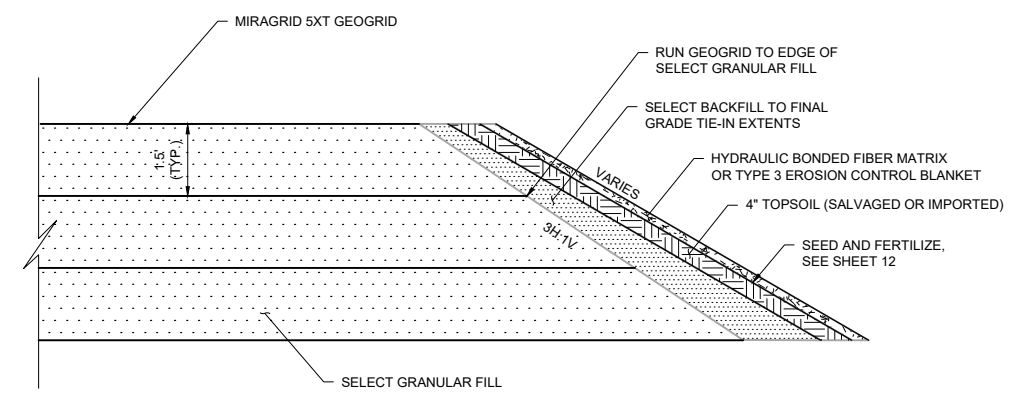


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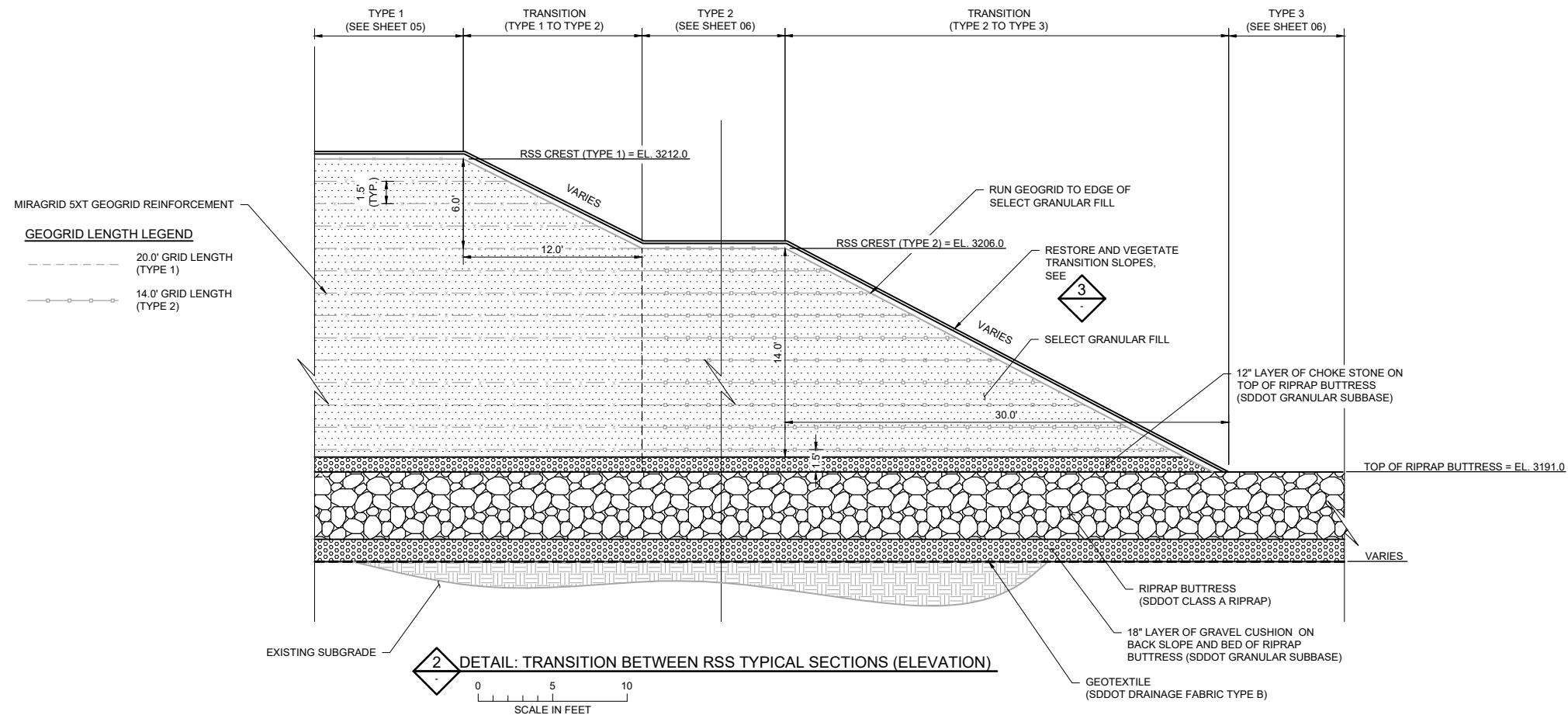




1 DETAIL: TRANSITION BETWEEN RSS TYPICAL SECTIONS (PLAN)
 SCALE IN FEET



3 DETAIL: RSS SIDE SLOPE RESTORATION
 NOT TO SCALE



2 DETAIL: TRANSITION BETWEEN RSS TYPICAL SECTIONS (ELEVATION)
 SCALE IN FEET



ISSUE FOR CONSTRUCTION

CADD USER: Rachel Leier FILE: M:\DESIGN\41231001_004\23100100_09.DWG PLOT SCALE: 1:2 PLOT DATE: 10/11/2019 3:21 PM

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

Department of Game, Fish & Parks

PROJECT NO: 41231001_004/ANGOSTURA
 SHEET: N1B2
 DATE: 10/11/2019

BARR

ANGOSTURA SHORELINE STABILIZATION PROJECT
 FALL RIVER COUNTY, SOUTH DAKOTA
 SLOPE STABILIZATION DETAILS

9 OF 16



LEGEND

	2560	EXISTING MAJOR CONTOUR
		EXISTING MINOR CONTOUR
		EXISTING FENCE
		EXISTING SHORELINE AT WSE = 3185.3
		EXISTING SHORELINE AT WSE = 3177.3
	ST	EXISTING STORM SEWER
		EXISTING CONTROL POINT
	OB-1	HDR BOREHOLE LOCATION
		BEEHIVE CATCHBASIN
		EXISTING SLOPE FAILURE FACE
		EXISTING CONCRETE
		EXISTING BIKE PATH
		EXISTING ROAD
		STAGING, LAYDOWN, AND TEMPORARY STOCKPILE AREA
		ROCK CONSTRUCTION ENTRANCE
		CONSTRUCTION LIMITS
		SILT FENCE

- NOTES:**
1. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH THE PROJECT SWPPP.
 2. SEE SHEET 11 FOR EROSION PREVENTION AND SEDIMENT CONTROL DETAILS.
 3. DISPOSE OF EXCESS OR UNSUITABLE SLOPE EXCAVATION AND FOUNDATION PREPARATION SEDIMENTS BY SPREADING EVENLY WITHIN STAGING AREA PRIOR TO RESTORATION OF STAGING AREA. SEE SHEET 12 FOR RESTORATION PLAN.



1 PLAN: EROSION PREVENTION AND SEDIMENT CONTROL PLAN

0 50 100
SCALE IN FEET

ISSUE FOR CONSTRUCTION

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523 E. Capitol Ave.
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Phone: (605) 773-6082

BARR

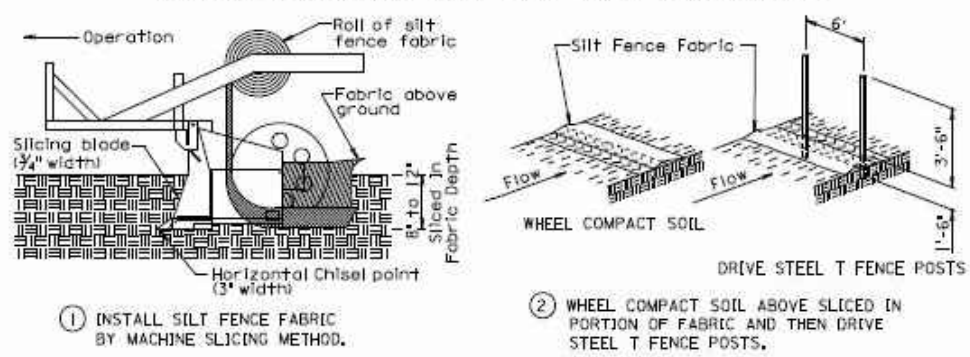
PROJECT: ANGOSTURA SHORELINE STABILIZATION PROJECT
LOCATION: FALL RIVER COUNTY, SOUTH DAKOTA
DRAWN BY: NUB2
CHECKED BY: BARR

DATE: 10/11/2019

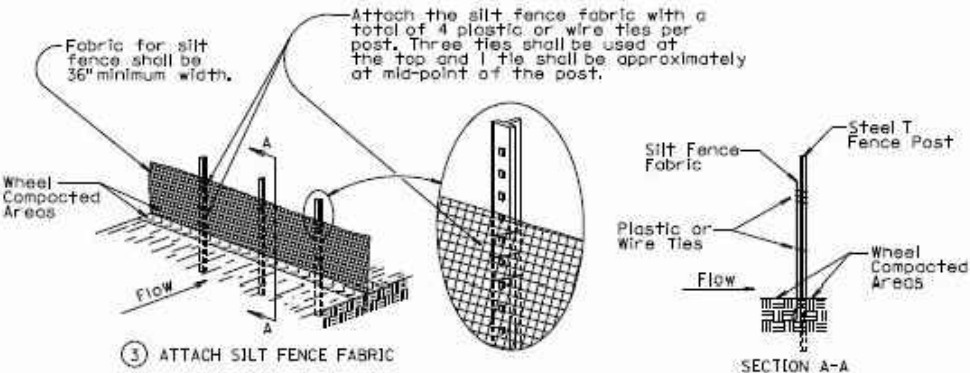
10 OF 16

CADD USER: Rachel Leier FILE: M:\DESIGN\41231001_004123100100_10.DWG PLOT SCALE: 1:2 PLOT DATE: 10/11/2019 3:27 PM

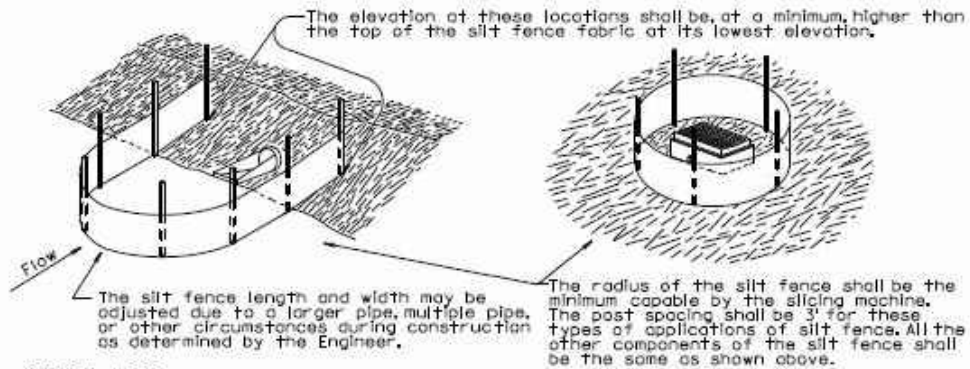
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



1. INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.
2. WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



3. ATTACH SILT FENCE FABRIC



GENERAL NOTE:

If a trench can not be dug or the silt fence fabric can not be sliced 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.

December 23, 2003

SDDOT

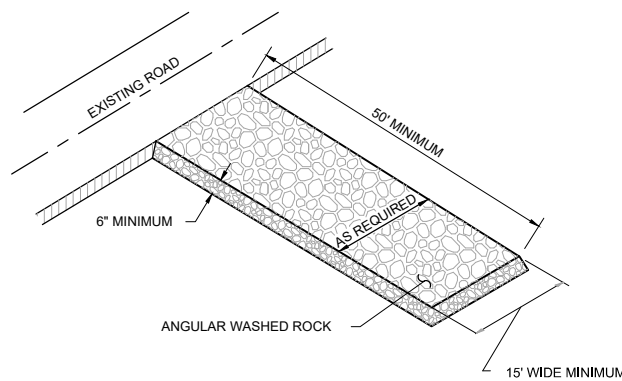
HIGH FLOW SILT FENCE

PLATE NUMBER
734.05

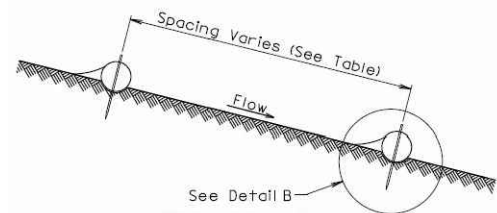
Sheet 2 of 2

Published Date: 3rd Qtr. 2019

1 DETAIL: SILT FENCE
NOT TO SCALE

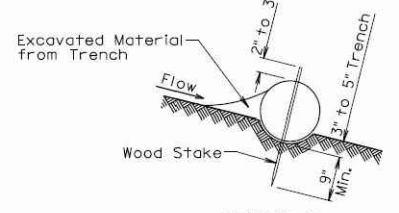


2 DETAIL: ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE

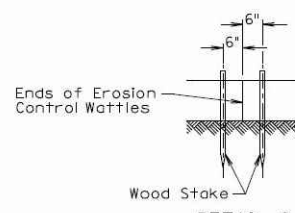


ELEVATION VIEW CUT OR FILL SLOPE INSTALLATION

CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



DETAIL B
(TYPICAL OF ALL INSTALLATIONS)

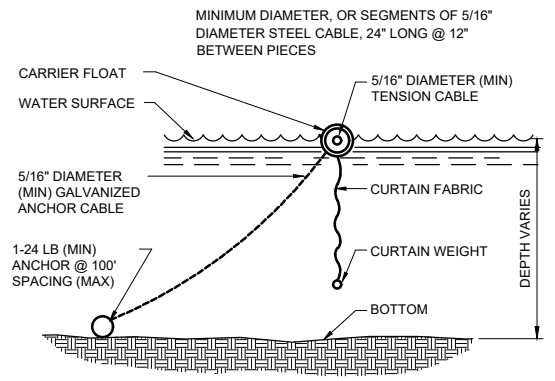


DETAIL C

NOTES:

1. AT CUT OR FILL SLOPE INSTALLATIONS, WATTLES SHALL BE INSTALLED ALONG THE CONTOUR AND PERPENDICULAR TO THE WATER FLOW.
2. THE CONTRACTOR SHALL DIG A 3" TO 5" TRENCH, INSTALL THE WATTLE TIGHTLY IN THE TRENCH SO THE DAYLIGHT CAN NOT BE SEEN UNDER THE WATTLE, AND THEN COMPACT THE SOIL EXCAVATED FROM THE TRENCH AGAINST THE WATTLE ON THE UPHILL SIDE. SEE DETAIL B.
3. THE STAKES SHALL BE 1"X2" OR 2"X2" WOOD STAKES, HOWEVER, OTHER TYPES OF STAKES SUCH AS REBAR MAY BE USED ONLY IF APPROVED BY THE ENGINEER. THE STAKES SHALL BE PLACED 6" FROM THE ENDS OF THE WATTLES AND THE SPACING OF THE STAKES ALONG THE WATTLES SHALL BE 3' TO 4'.
4. WHERE INSTALLING RUNNING LENGTHS OF WATTLES, THE CONTRACTOR SHALL BUTT THE SECOND WATTLE TIGHTLY AGAINST THE FIRST AND SHALL NOT OVERLAP THE ENDS. SEE DETAIL C.

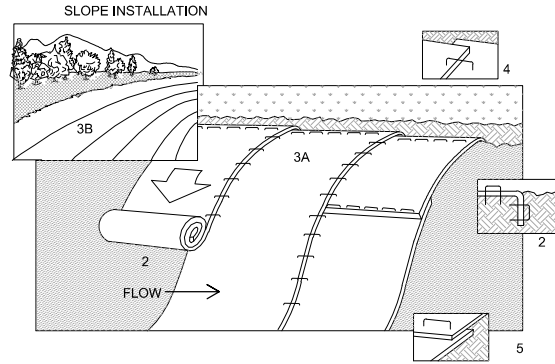
3 DETAIL: EROSION CONTROL WATTLE (SDDOT PLATE 734.06)
NOT TO SCALE



NOTES:

1. 6" MAXIMUM FOR WATER DEPTHS UP TO 3'-0" DEEP AND 1'-0" MAXIMUM FOR DEPTHS OVER 3'-0"
2. ELIMINATE ANCHOR AND CABLE FOR WATER DEPTHS LESS THAN 3'-0" OR DISTANCE BETWEEN SHORE ANCHORS FOR TENSION CABLE OF LESS THAN 100'
3. ANCHOR TENSION CABLE AT BOTH SIDES WITH STEEL POSTS OF DIAMETER AND LENGTH TO PREVENT BENDING AND PULL-OUT
4. WEIGHT HEAVY ENOUGH TO HOLD CURTAIN VERTICAL IN CURRENT AND WAVES TYPICAL FOR SITE
5. MATERIALS:
CURTAIN - 22 OZ VINYL COATED NYLON FABRIC
CURTAIN WEIGHT - CONTINUOUS GALVANIZED STEEL CHAIN 5/16" FLOAT - 8" MINIMUM DIAMETER PLASTIC SEGMENTS

4 DETAIL: FLOATING SILT CURTAIN
NOT TO SCALE



NOTES:

1. REFER TO MANUFACTURER RECOMMENDATIONS FOR STAPLE PATTERNS FOR SLOPE INSTALLATIONS.
2. PREPARE SOIL BY LOOSENING TOP 1-2 INCHES AND APPLY SEED (AND FERTILIZER WHERE REQUIRED) PRIOR TO INSTALLING BLANKETS. GROUND SHOULD BE SMOOTH AND FREE OF DEBRIS.
3. BEGIN (A) AT THE TOP OF THE SLOPE AND ROLL THE BLANKETS DOWN OR (B) AT ONE END OF THE SLOPE AND ROLL THE BLANKETS HORIZONTALLY ACROSS THE SLOPE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 6" OVERLAP, WITH THE UPHILL BLANKET ON TOP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART.
6. BLANKET MATERIALS SHALL BE AS SPECIFIED OR AS APPROVED BY ENGINEER.

5 DETAIL: EROSION CONTROL BLANKET - INSTALLATION
NOT TO SCALE



ISSUE FOR CONSTRUCTION



CADD USER: Rachel Leier FILE: M:\DESIGN\41231001_004\4123100100_12.DWG PLOT SCALE: 1:2 PLOT DATE: 10/11/2019 3:38 PM



1 PLAN: RESTORATION
 0 50 100
 SCALE IN FEET

LEGEND

	2560	EXISTING MAJOR CONTOUR
		EXISTING MINOR CONTOUR
		EXISTING FENCE
		EXISTING GUARDRAIL
		RESET GUARDRAIL
		EXISTING SHORELINE AT WSE = 3185.3
		EXISTING SHORELINE AT WSE = 3177.3
		EXISTING STORM SEWER
		EXISTING CONTROL POINT
		HDR BOREHOLE LOCATION
		BEEHIVE CATCHBASIN
		RESTORE SLOPE ABOVE RSS
		RSS RESTORATION
		RIPRAP STABILIZATION
		RESTORE REMAINING DISTURBED AREAS
		CONSTRUCTION LIMITS

- SEEDING NOTES:**
- REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING SEEDING, TERRASEEDING, FERTILIZING, EROSION CONTROL, AND BONDED FIBER MATRIX.
 - SEED ESTABLISHMENT PERIOD**
 - VEGETATIVE COVER MUST CONSIST OF A UNIFORM PERENNIAL VEGETATION WITH A DENSITY OF 70 PERCENT OF ITS EXPECTED FINAL GROWTH. CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING (REGARDLESS OF NOTIFICATION) DURING SEED ESTABLISHMENT.

ANGOSTURA SHORELINE STABILIZATION CUSTOM PERMANENT SEED MIX (BASED ON SDDOT MIX F)		
Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Green Needlegrass	Loderm, AC Mallard	4
Sideoats Grama	Butte, Pierre	3
Blue Grama	Bad River	2
Cover Crop		
Oats or Spring Wheat: April through May;		10
Winter Wheat: August through November		
Total		26

- NOTES:**
- RESTORE BEACH AND PICNIC AREA TO PRE-CONSTRUCTION CONDITIONS OR BETTER.
 - CLEAN ROADWAY OF ANY CONSTRUCTION IMPACTS.



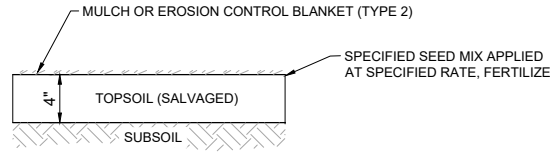
ISSUE FOR CONSTRUCTION

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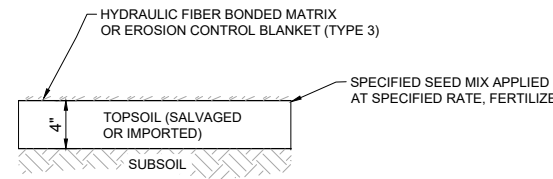
10/11/2019

ANGOSTURA SHORELINE STABILIZATION PROJECT
 FALL RIVER COUNTY, SOUTH DAKOTA
 RESTORATION PLAN

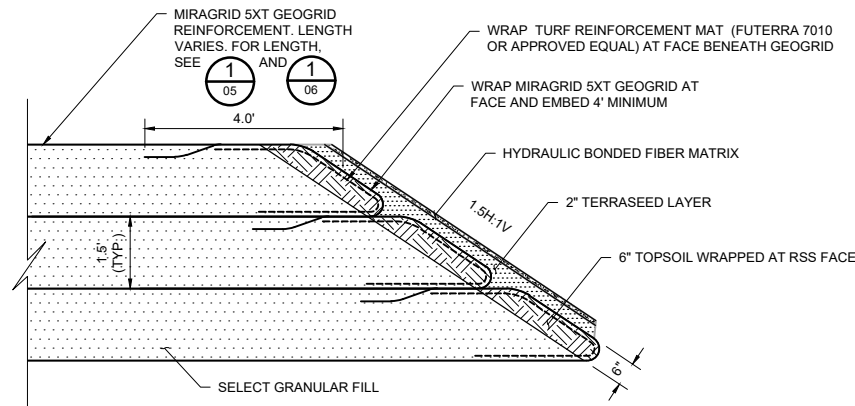
12 OF 16



1
12
DETAIL: GENERAL SITE RESTORATION
NOT TO SCALE



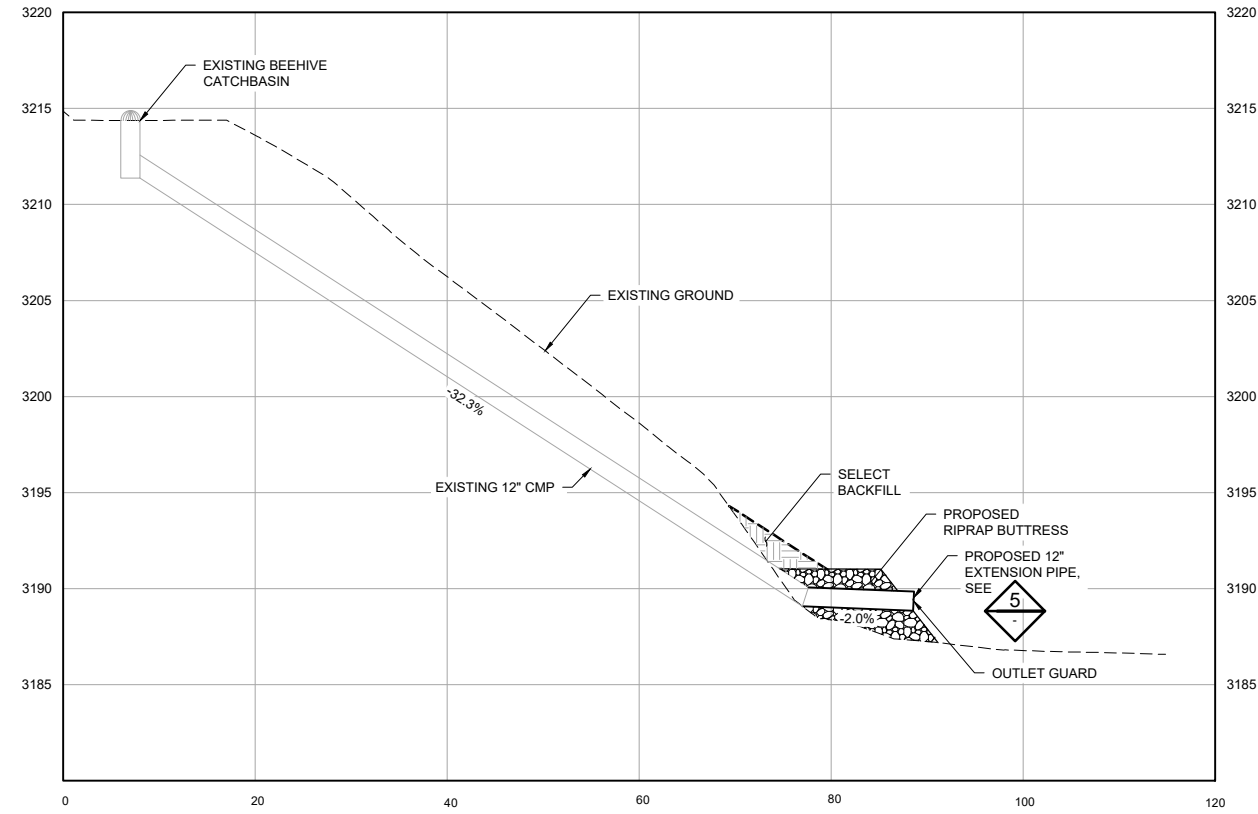
2
12
DETAIL: RESTORATION ABOVE RSS
NOT TO SCALE



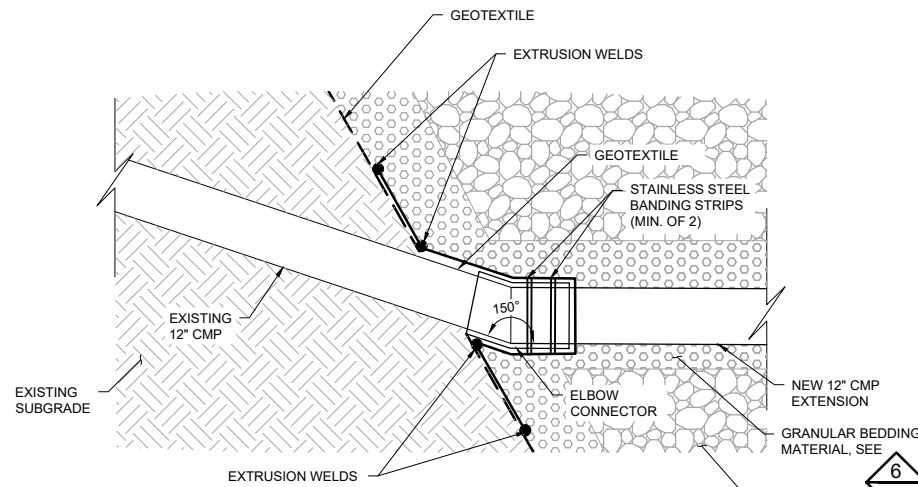
NOTES:

1. LEAVE ZONE FOR TOPSOIL NEAR THE SLOPE FACE. PLACE AT LEAST 12 INCHES OF SELECT GRANULAR FILL BEFORE PLACING TOPSOIL TO AVOID DISTURBANCE TO GRID BY OPERATING EQUIPMENT ON THE GRID.
2. PLACE TOPSOIL ZONE AT THE RSS FACE. SHAPE AND PARTIALLY COMPACT TO THE 1.5H:1V SLOPE CONFIGURATION.
3. PULL GRID AND TRM OVER THE TOPSOIL TO COMPLETE THE WRAP AT THE SLOPE FACE.
4. COVER THE GRID AT THE SLOPE FACE WITH TERRASEED LAYER AND HYDRAULIC EROSION CONTROL (BONDED FIBER MATRIX) PER SPECIFICATIONS.

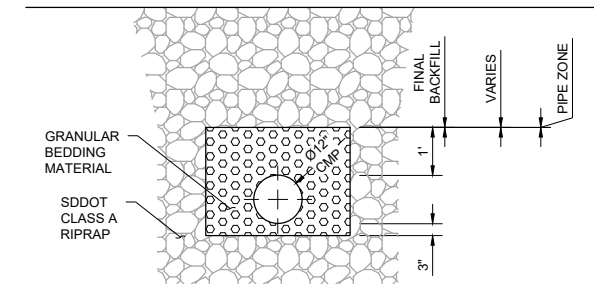
3
05, 06
DETAIL: RSS FACE RESTORATION
NOT TO SCALE



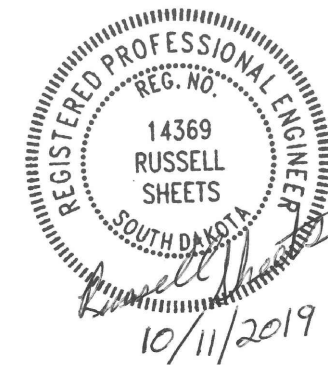
4
04
SECTION: STORMWATER PIPE OUTLET EXTENSION
HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION = 2:1



5
-
DETAIL: STORM SEWER EXTENSION CONNECTION
NOT TO SCALE



6
-
DETAIL: STORM SEWER EXTENSION BEDDING
NOT TO SCALE



ISSUE FOR CONSTRUCTION

IMPORTED MATERIALS

IMPORTED MATERIALS FURNISHED MUST COME FROM A SOURCE PREVIOUSLY SURVEYED BY A PROFESSIONAL ARCHAEOLOGIST AND CLEARED BY THE STATE HISTORIC PRESERVATION OFFICER (SHPO). PROOF OF CLEARANCE MEANS THE AREA ARCHAEOLOGIST NEEDS TO SEE THE CONTRACT ARCHAEOLOGIST'S REPORT FOR THE FIELD SURVEY OF THE BORROW SOURCE AND THE SHPO LETTER CONCURRING WITH A DETERMINATION OF "NO HISTORIC PROPERTIES AFFECTED."

IF THE BORROW SOURCES ARE LISTED IN THE SHR NEPA PROJECT REVIEW PLAN AS PREVIOUSLY CLEARED, THE AREA ARCHAEOLOGIST DOES NOT NEED TO CONDUCT FURTHER CONSULTATION WITH SHPO. REFER TO THE PLAN SHEETS FOR APPROVED BORROW SOURCES.

IF THE BORROW SOURCES SELECTED ARE ON PRIVATE LAND AND NOT ON THE LIST, PROOF OF CULTURAL RESOURCE CLEARANCE WOULD NEED TO BE PROVIDED TO THE AREA ARCHAEOLOGIST.

IF A BORROW SOURCE NEEDS A CULTURAL RESOURCE SURVEY, THE PROJECT PROPONENT AND US BOR NEED TO DETERMINE WHO IS RESPONSIBLE FOR THE SURVEY AND ASSOCIATED COSTS. A MINIMUM OF 45 DAYS SHOULD BE ALLOWED FOR THIS CLEARANCE TO BE COMPLETED.

US BOR APPROVED BORROW SOURCES (MAY 2019)				
COUNTY	OWNER	PIT NAME	SECTION/TOWNSHIP/RANGE	STIPULATIONS
CUSTER, SD	---	EAST OF BUFFALO GAP	N $\frac{1}{2}$ NW $\frac{1}{4}$ 33/6S/7E	---
FALL RIVER, SD	CROELL REDI-MIX	CHEYENNE PIT	2,3,10,11,8S/6E	---
FALL RIVER, SD	HILLS MATERIALS	HOT SPRINGS QUARRY	10/7S/5E	---
LAWRENCE, SD	HEAVY CONSTRUCTION	EDWARDS PIT	E $\frac{1}{2}$ 34/7N/1E	AVOID 39LA1647
LAWRENCE, SD	HILLS MATERIALS	CENTENNIAL QUARRY	35 & 36/6N/3E	---
MEADE, SD	PETE LIEN & SONS	BLACK HAWK QUARRY	7,17, & 18/2N/7E	---

ARCHAEOLOGY GENERAL GUIDELINES

IF PREVIOUSLY UNDISCOVERED CULTURAL RESOURCES ARE EXPOSED DURING ANY ACTIVITIES, WORK WITHIN THE AREA SHALL CEASE. THE SITE WILL BE SECURED AND PROTECTED. PROJECT WORK AT THE SITE WILL NOT RESUME UNTIL ALL ACTIVITIES NEEDED TO COMPLY WITH THE PROTECTION OF HISTORIC PROPERTIES (36 CFR PART 800.13) HAVE BEEN COMPLETED. RECLAMATION WILL CONSULT WITH THE APPROPRIATE HISTORIC PRESERVATION OFFICER (HPO) AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION ON ITS DETERMINATION AS TO WHETHER THE DISCOVERY QUALIFIES AS A HISTORIC PROPERTY. PROJECT WORK CAN CONTINUE UNDER THE ADVICE OF THE PROJECT ARCHAEOLOGIST MEETING THE SECRETARY OF THE INTERIOR'S PROFESSIONAL QUALIFICATION STANDARDS (48 FR 22716, SEPT. 1983).

IN THE EVENT OF AN INADVERTENT DISCOVERY OF HUMAN REMAINS OR FUNERARY OBJECTS, ALL WORK AT THE FIND SPOT AND IN THE IMMEDIATE VICINITY SHALL CEASE. THE SITE WILL BE SECURED AND PROTECTED UNTIL RECLAMATION OFFICIALS AND THE HPO HAVE BEEN NOTIFIED AND ARRIVE ON SITE. PROTECTION OF THE DISCOVERY SITE MAY INCLUDE FLAGGING THE DISCOVERY LOCATION WITH A BUFFER ZONE AROUND IT, TARPING THE FIND SPOT, AND HAVING AN INDIVIDUAL STAY AT THE LOCATION TO PREVENT FURTHER DISTURBANCE. CONTACT INFORMATION FOR THE INDIVIDUAL WHO DISCOVERED THE SITE MUST BE PROVIDED TO RECLAMATION AND THE HPO. NO DIGGING, COLLECTING, OR MOVING HUMAN REMAINS OR OTHER ITEMS WILL OCCUR AFTER THE INITIAL DISCOVERY. RECLAMATION AND THE HPO WOULD BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE COURSE OF ACTION UNDER THE NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT. (25 U.S.C. 3001 ET. SEQ. (NOV. 16, 1990))

UNDER THE ARCHAEOLOGICAL RESOURCES PROTECTION ACT (16 U.S.C. 470AA-470MM; PUBLIC LAW 96-95 (1979)) HISTORIC PROPERTIES, WHICH MAY INCLUDE ROCK ART SITES, HISTORIC BUILDINGS OR STRUCTURES, OR HISTORIC OR PREHISTORIC ARTIFACTS, ARE PROTECTED. UNAUTHORIZED COLLECTING OR DIGGING, VANDALISM, OR OTHER METHODS OF DESTRUCTION TO HISTORIC PROPERTIES ARE NOT PERMITTED. THEREFORE, RECLAMATION AND THE HPO WOULD NEED TO BE NOTIFIED IF YOU DISCOVER EVIDENCE OF THESE TYPES OF ACTIVITIES.

ARCHAEOLOGY GENERAL GUIDELINES (CONT.)

UNDER THE NATIONAL REGISTER BULLETIN 38, GUIDELINES FOR EVALUATING AND DOCUMENTING TRADITIONAL CULTURAL PROPERTIES (TCP), A TCP IS A HISTORIC PROPERTY THAT DERIVES ITS SIGNIFICANCE FROM THE ROLE IT PLAYS IN A COMMUNITY'S HISTORICALLY ROOTED BELIEFS, CUSTOMS, AND PRACTICES. IF A POTENTIAL TCP IS DISCOVERED DURING THE COURSE OF IMPLEMENTING THE PROJECT, ALL WORK IN ITS VICINITY MUST HALT. RECLAMATION AND THE HPO WOULD NEED TO BE NOTIFIED AND WOULD BE RESPONSIBLE FOR DETERMINING THE APPROPRIATE COURSE OF ACTION.

THE AREA ARCHAEOLOGIST, RENEE BOEN, (605) 394-9757 EXT. 3014, IS AVAILABLE FOR ANY QUESTIONS YOU MAY HAVE REGARDING THESE STIPULATIONS AND THE LAWS.

ARCHAEOLOGY

THE AREA ARCHAEOLOGIST DETERMINED THAT THIS PROJECT WOULD RESULT IN NO HISTORIC PROPERTIES AFFECTED IF ALL ACTIVITIES ARE CONFINED TO THE AREA OF POTENTIAL EFFECT (APE). THE AREA HAS BEEN 100% PREVIOUSLY SURVEYED FOR CULTURAL RESOURCES. NO HISTORIC PROPERTIES ARE LOCATED WITHIN THE APE. THE PROPOSED APE (WORK ZONE) INCLUDES SECTION 33, TOWNSHIP 8 SOUTH, RANGE 6 EAST, USGS 7.5' EDMOUNT QUADRANGLE, FALL RIVER COUNTY, SD. IF THE PROJECT OR THE APE SHOULD CHANGE, CONSULTATION WITH THE SHPO MUST BE REINITIATED BEFORE WORK CAN CONTINUE.

CULTURAL AND ENVIRONMENTAL SPECIAL CONDITIONS

THE BUREAU OF RECLAMATION HAS COMPLETED A CATEGORICAL EXCLUSION CHECKLIST (CEC) FOR THIS PROPOSED PROJECT AND DETERMINED THAT IT DOES NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT. IN ORDER TO REMAIN IN COMPLIANCE WITH THE CEC, THE CONTRACTOR MUST ABIDE BY THE FOLLOWING:

AQUATIC INVASIVE SPECIES

THE CONTRACTOR WILL ENSURE ALL EQUIPMENT HAS BEEN DECONTAMINATED PRIOR TO ENTRANCE ONTO BFR LANDS AND WATERS IN ACCORDANCE WITH RECLAMATION'S "CLEANING MANUAL FOR EQUIPMENT AND VEHICLES TO PREVENT THE SPREAD OF INVASIVE SPECIES." [HTTPS://WWW.USBR.GOV/MUSSELS/PREVENTION/DOCS/EQUIPMENTINSPECTIONANDCLEANINGMANUAL2012.PDF](https://www.usbr.gov/mussels/prevention/docs/equipmentinspectionandcleaningmanual2012.pdf)

CONSTRUCTION SITE STIPULATIONS

ALL CONSTRUCTION EQUIPMENT WILL BE STAGED IN THE DESIGNATED, APPROVED STAGING AREA (PROJECT SITE). ALL REFUELING AREAS MUST BE LOCATED ABOVE ELEVATION 3187.2' MSL (ACTIVE CONSERVATION POOL). ALL PORTABLE FUEL TANKS MAY HOLD NO MORE THAN 660 GALLONS. ALL PORTABLE FUEL TANKS MUST BE DOUBLE-WALLED AND MUST BE PLACED IN SECONDARY CONTAINMENT. IN THE EVENT OF A MEASURABLE SPILL (MORE THAN 1 QUART), THE CONTRACTOR IS RESPONSIBLE FOR REPORTING THE SPILL IMMEDIATELY TO SDGFP, WHICH WILL IMMEDIATELY REPORT TO BOR. THE CONTRACTOR IS RESPONSIBLE FOR IMMEDIATE CLEANUP AND PROPER DISPOSAL. THE CONTRACTOR IS REQUIRED TO SIGN ALL PORTABLE FUEL TANKS AS "FLAMMABLE-NO SMOKING". ALL PORTABLE FUEL TANKS MUST HAVE A FIRE EXTINGUISHER PLACED WITHIN 25-75' OF THE TANK. THE CONTRACTOR IS RESPONSIBLE FOR MAKING REPAIRS TO ROADS AND FENCES IN ACCORDANCE WITH THE PLAN SPECIFICATIONS SET FORTH. THE CONTRACTOR IS RESPONSIBLE FOR SCARIFYING AND SEEDING ANY DISTURBED AREAS AND ANY OFF-ROAD AREAS THAT HAVE BEEN DRIVEN ON, INCLUDING THE STAGING AREA AND PROJECT SITE, IN ACCORDANCE WITH THE PLAN SPECIFICATIONS SET FORTH. THE CONTRACTOR IS RESPONSIBLE FOR SIGNING AREAS THAT ARE OFF LIMITS TO THE PUBLIC DURING CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE PLAN SPECIFICATIONS SET FORTH AND SDGFP APPROVAL. OFF-SITE FILL MATERIAL MUST COME FROM A BOR APPROVED, SHPO CLEARED SOURCE.

ENDANGERED SPECIES AND CRITICAL HABITAT

THE BUREAU OF RECLAMATION HAS MADE A NO EFFECT DETERMINATION FOR THREATENED OR ENDANGERED SPECIES. IT IS INFEASIBLE TO PLAN FOR POTENTIAL TRANSIENT, MIGRANT, OR DISPERSING INDIVIDUALS. HOWEVER, IN THE UNLIKELY EVENT THAT ANY THREATENED OR ENDANGERED SPECIES ARE ENCOUNTERED DURING PROJECT ACTIVITIES, THE BUREAU OF RECLAMATION WILL INITIATE CONSULTATION WITH THE U.S. FISH AND WILDLIFE SERVICE TO DETERMINE APPROPRIATE STEPS TO AVOID ANY EFFECTS TO THESE SPECIES, INCLUDING CESSATION OF CONSTRUCTION.



--- AREA OF POTENTIAL EFFECTS
 PLAN: ANGOSTURA SHORELINE STABILIZATION PROJECT
 SCALE: 1" = 50' (SEE INSET)

REGISTERED PROFESSIONAL ENGINEER
 REG. NO. 14369
 RUSSELL SHEETS
 SOUTH DAKOTA
 10/11/2019

ISSUE FOR CONSTRUCTION

CADD USER: Rashed.Leeb FILE: M:\DESIGN\41231001_004\123100100_14.DWG PLOT SCALE: 1:2 PLOT DATE: 10/11/2019 4:16 PM

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

Department of Game, Fish & Parks

10/11/2019

ANGOSTURA SHORELINE STABILIZATION PROJECT
 FALL RIVER COUNTY, SOUTH DAKOTA
 USBR NOTES

14 OF 16

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: Camp Loop Construction – 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 = 3.5 acres, Area to be disturbed = 1.6 acres, the remaining 1.9 acres to remain undisturbed (4.2 1.b.)
- ▶ Total Area to be Disturbed – 1.6 acres (4.2 1.b.)
- ▶ Existing Vegetative Cover (%) 62
- ▶ Soil Properties: USDA–NRCS Soil Series Classification SnE, GrE (4.2 1.d.)
- ▶ Name of Receiving Water Body/Bodies – Angostura 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. Limit and control access points to the construction site.
- ▶ Install perimeter protection along construction perimeter 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 initial grading.
- ▶ Install riprap buttress and RSS.
- ▶ Complete final grading.
- ▶ Complete final surfacing.
- ▶ Replace/place topsoil, fertilize, permanent seed, and mulch to areas disturbed by removal activities for final stabilization.

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

(Check all that apply)

- ▶ 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

▶ 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:

▶ 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.

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■ 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.

■ Points

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 by the contractor in the materials storage area on-site. 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 by 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: Tyler Ulrich, Engineer III
- Business Address: 523 E Capitol Ave.
- Job Office Location: 2nd Floor Foss Building
- City: Pierre State: South Dakota Zip: 57501
- Office Phone: 605-773-5244

► 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

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ANGOSTURA SHORELINE STABILIZATION PROJECT
FALL RIVER COUNTY, SOUTH DAKOTA
SWPPP CHECKLIST 2 OF 2

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