

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
1806-351
SD 1806 - MRM 152.5
STANLEY COUNTY

DRAINAGE IMPROVEMENTS & EROSION PROTECTION
PCN I4XU



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1806-351	1	43
Plotting Date: 06/13/18 Revised Date: xx/xx/xx Initials: SJS			

INDEX OF SHEETS

1	TITLE AND LAYOUT MAP
2-6	ESTIMATE OF QUANTITIES AND GENERAL NOTES
7	TYPICAL SECTION
8	TRAFFIC CONTROL
9-13	EROSION CONTROL
14	CONTROL DATA
15	TOPO SYMBOLOGY & LEGEND
16-17	PLAN & PROFILE
18	DETAILS
19-26	STANDARD PLATES
27-41	CROSS SECTIONS

PROJECT

8 miles South and
20 miles East
of Fort Pierre, South Dakota

END PROJECT

At Sta. 635+50= A Point Approx. 475' South and 1175'
West of the NE Corner of Section 28, T109N, R76W.

BEGIN PROJECT

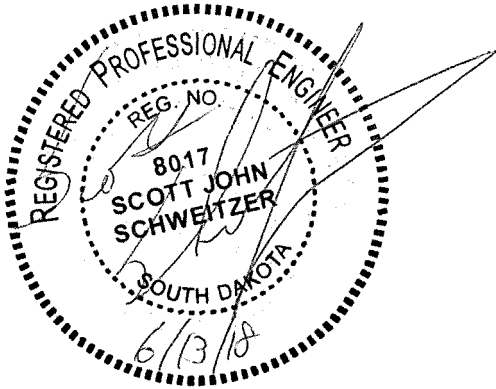
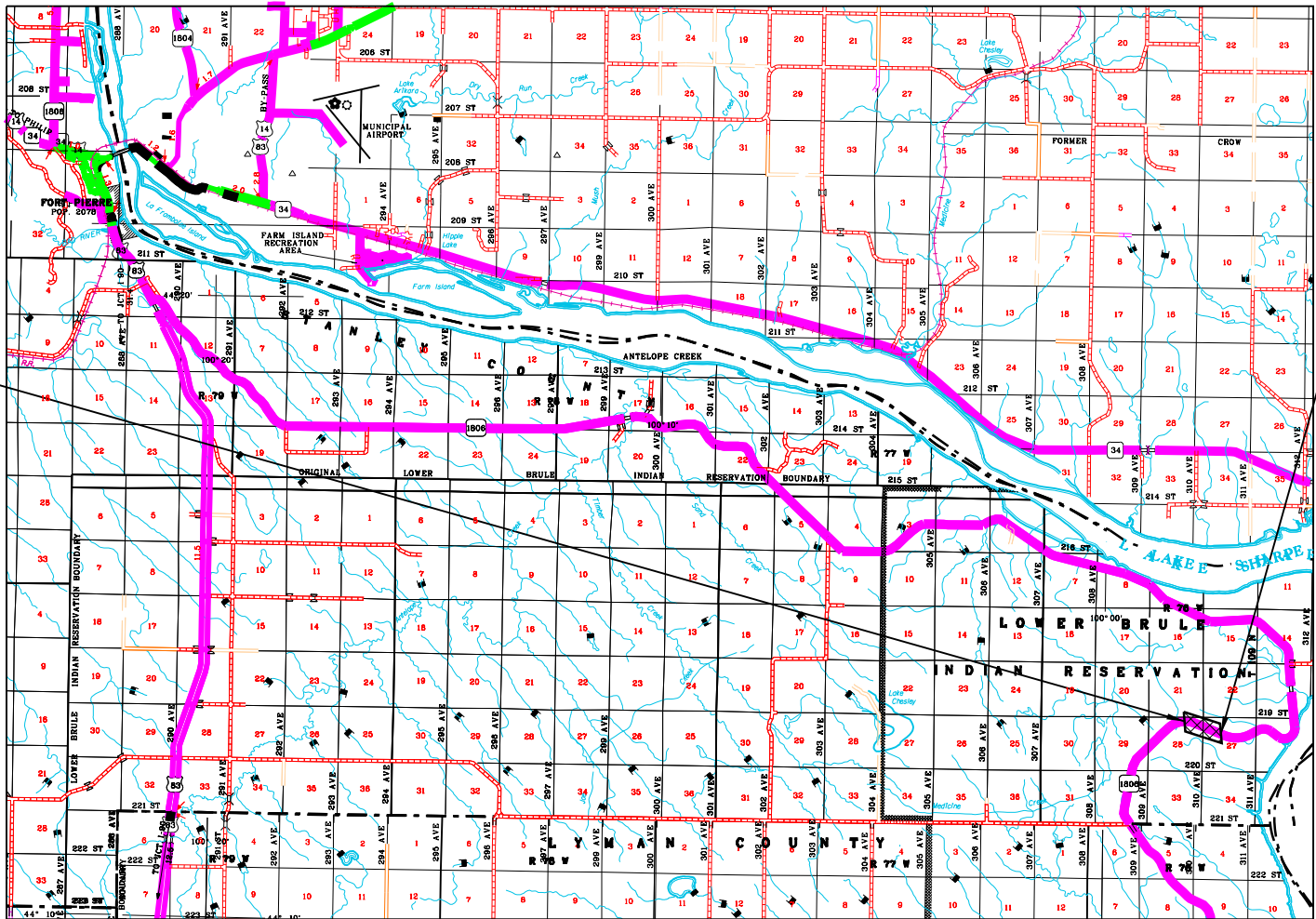
At Sta. 629+00 = A Point Approx. 650' South and 460'
West of the NE Corner of Section 28, T109N, R76W.

DESIGN DESIGNATION

ADT (2017)	186
ADT (2037)	282
DHV	44
D	50%
T DHV	1.7%
T*ADT	3.7%
V	50 mph

STORM WATER PERMIT DATA

MAJOR RECEIVING BODY OF WATER: Missouri River
AREA DISTURBED: 1.75 Acres
TOTAL PROJECT AREA: 2.16 Acres
LATITUDE: 44° 13' 20" N
LONGITUDE: 99° 58' 00" W



BEI: S18-P503
Survey by: SDDOT
Plans by: Brosz Engineering, Inc. Pierre, SD

ESTIMATE OF QUANTITIES AND NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	1806-351	2	43

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0510	Remove Pipe End Section	2	Each
110E0600	Remove Fence	875	Ft
110E1690	Remove Sediment	1	CuYd
110E1693	Remove Erosion Control Wattle	10	Ft
110E1700	Remove Silt Fence	154	Ft
120E0010	Unclassified Excavation	16594	CuYd
120E0600	Contractor Furnished Borrow Excavation	8534	CuYd
120E6100	Water for Embankment	400	MGal
230E0010	Placing Topsoil	967	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
450E4758	18” CMP 14 Gauge, Furnish	360	Ft
450E4760	18” CMP, Install	360	Ft
450E5406	18” CMP Safety End, Furnish	2	Each
450E5407	18” CMP Safety End, Install	2	Each
462E0250	Cellular Grout	23.3	CuYd
620E0010	Type 1 Right-of-Way Fene	875	Ft
620E1020	2 Post Panel	2	Each
620E1030	3 Post Panel	1	Each
620E0515	Type 1A Temporary Fence	736	Ft
634E0010	Flagging	150	Hour
634E0110	Traffic Control Signs	179.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
680E0240	4” Corrugated Polyethylene Drainage Tubing	124	Ft
680E0440	4” Slotted Corrugated Polyethylene Drainage Tubing	160	Ft
680E2000	Concrete Headwall for Underdrain	1	Each
680E2500	Porous Backfill	60	Ton
734E0010	Erosion Control	Lump Sum	LS
734E0131	Type 1 Turf Reinforcement Mat	128	SqYd
734E0325	Surface Roughening	0.86	Acre
734E0154	12” Diameter Erosion Control Wattle	40	Ft
734E0165	Remove and Reset Erosion Control Wattle	10	Ft
734E0604	High Flow Silt Fence	615	Ft
734E0610	Mucking Silt Fence	43	CuYd
734E0620	Repair Silt Fence	154	Ft

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor’s primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

The DENR and the US Environmental Protection Agency (EPA) have issued separate general permits for the discharge of storm water runoff. The DENR permit applies to discharges on state land and the EPA permit applies to discharges on federal or reservation land. The Contractor is advised this project is regulated under the Phase II Storm Water Regulations and must receive coverage under the General Permit for Construction Activities. A Notice of Intent (NOI) will be submitted to DENR a minimum of 15 days prior to project start by the DOT Environmental Office. A letter must be received

from DENR that acknowledges project coverage under this general permit before project start. The Contractor is advised that permit coverage may also be required by off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

The Contractor shall adhere to the “Special Provision Regarding Storm Water Discharges to Waters of the State”.

A major component of the storm water construction permits is development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which is a joint effort and responsibility of the SDDOT and the Contractor. Erosion control measures and best management practices will be implemented in accordance with the SWPPP. The SWPPP is a dynamic document and is to be available on-site at all times.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT:
<http://www.sddot.com/business/environmental/stormwater/Default.aspx>

DENR: <http://www.denr.sd.gov/des/sw/stormwater.aspx>

EPA: http://cfpub.epa.gov/npdes/home.cfm?program_id=6

Contractor Certification Form:

The “Department of Environmental and Natural Resources – Contractor Certification Form” (SD EForm – 2110LDV1-ContractorCertification.pdf) shall be completed by the Contractor or their certified Erosion Control Supervisor after the award of the contract. Work may not begin on the project until this form is signed.

The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the Surface Water Discharge General Permit for Storm Water Discharges Associated with Construction Activities for the Project. The online form can be found at:
<http://denr.sd.gov/des/sw/eforms/E2110LDV1-ContractorCertification.pdf>

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Project Engineer.

ESTIMATE OF QUANTITIES AND NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	1806-351	3	43

COMMITMENT H: WASTE DISPOSAL SITE (Continued)

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or

demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the Public ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating “No Dumping Allowed”.

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been

previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the US Army Corps of Engineers for the permanent actions associated with this project.

Action Taken/Required:

The Contractor shall comply with all requirements contained in the Section 404 permit.

The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

SEQUENCE OF OPERATIONS

The Contractor shall take into account erodible soils, and the potential for drainage during inclement weather when sequencing operations. The Contractor’s shall protect work throughout the project and promptly secure erosion control and seeding following completion various phases of work.

The Contractor shall submit a proposed sequence of operations for the Engineer’s review and approval at least two weeks prior to the preconstruction meeting.

Traffic shall be maintained through the project at ALL times. The Contractor shall maintain access on and off the highway for local residences and county roads. The Contractor may perform work on the roadway during daylight hours only, unless additional hours are approved by the Engineer. Traffic shall be returned to normal driving lanes during non-working hours.

Contractor shall accommodate over width traffic for the duration of the project.

SCOPE OF WORK

This project is located on SD1806 at MRM 152.5.

The general scope of this project consists of, but is not limited to, Removal of CMP End Sections and plugging of the existing 24” CMP, pipe installation, ditch grading and landslide repair.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 15 gallons of water per cubic yard of Embankment minus Waste.

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

Special ditch grades and other sections of the roadway different than the typical section(s) shall be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer shall contact the Designer for the proposed change.

Temporary fence and/or permanent fence shall be placed ahead of the grading operation unless otherwise directed by the Engineer.

UTILITIES

The Contractor shall be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor shall contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

SHRINKAGE FACTOR: Embankment +30%

TABLE OF UNCLASSIFIED EXCAVATION

Excavation	14173
Unstable Material	1344
Underdrain Excavation	110
Topsoil	967
Total	16594

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

When plan quantities are used for payment, the Unclassified Excavation quantity shall be used for final payment.

The following paragraphs are general earthwork information and information in regards to computing the Unclassified Excavation quantity when final cross sections are taken in the field:

The Unstable Material Excavation quantity is included in the Excavation quantity listed in the Table of Unclassified Excavation. When finaling a

ESTIMATE OF QUANTITIES AND NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	1806-351	4	43

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY(Continued)

project, the Unstable Material Excavation quantity shall be added to the Excavation quantity to compute the Unclassified Excavation quantity.

The Topsoil quantity in the Table of Unclassified Excavation is an estimate. When finaling a project, the total quantity of field measured Topsoil shall be used in place of the estimated Topsoil quantity. The quantity of Topsoil from the cuts will be paid for twice as Unclassified Excavation, as it will be in both the Excavation and Topsoil quantities. This will be full compensation for Excavation, which includes necessary undercutting to provide space for placement of topsoil.

UNSTABLE MATERIAL

Unstable Excavation will be required throughout the project limits to excavate saturated or weak compressible soils and other organic materials. A nominal 3 ft. depth of compressible material is anticipated to be removed from the fill footprint prior to construction of the embankment. The depth of unstable excavation may be adjusted by the Engineer to ensure a solid foundation free of organic, soft, unstable material is prepared. Unstable and/or highly organic material shall be stockpiled for use as topsoil or wasted at a site approved by the Engineer.

TABLE OF UNSTABLE MATERIAL

Station	to	Station	L/R	Depth (Ft)	Quantity (CuYd)
632+60		634+40	L	3'	1344
				Total:	1344

LANDSLIDE DEBRIS EXCAVATION

Landslide Debris Excavation will be required at the locations shown on the cross sections. It is anticipated that most of the excavated Landslide Debris can be used in the construction of the berm and mainline inslopes. Borrow will be required to construct the remaining embankment. The Landslide Debris Excavation limits shall not exceed those shown on the cross sections unless directed by the Engineer. The temporary backslope required to excavate Landslide Debris will become unstable over the long-term. However, the temporary 1.5:1 excavated backslope should remain globally stable over the short-term during construction provided that measures are taken to divert runoff away from the slope and regular monitoring of the slope is conducted. Construction activities shall be sequenced to minimize the amount of time the steep temporary backslopes are left exposed and unsupported. Landslide Debris Excavation shall be paid for as Unclassified Excavation.

EMBANKMENT CONSTRUCTION

Embankment construction shall not begin until all unstable compressible materials have been excavated from the embankment footprint to the satisfaction of the Engineer. A suitable embankment foundation consists of compacted soil which does not pump, rut, or otherwise displace when traveled over with construction equipment. All embankment shall be horizontally benched into the temporary excavation slopes. Compaction of the embankment will be according to the Specified Density Method. Minimum density testing requirements shall be one test per zone. Each

zone shall be 3 feet in depth. Moisture testing shall remain as per Minimum Sample Test Requirements.

A disk designed and constructed for construction purposes shall be in use as per Section 120.3, of the Specifications.

CLASSIFICATION OF EXCAVATION

All materials encountered during the construction of this project, regardless of their nature or the manner in which they are excavated, will be considered Unclassified Excavation.

Most of the material encountered should be able to be excavated using conventional methods. Prospective bidders are encouraged to review the geology report compiled by the SDDOT Geotechnical Engineering Activity and observe the project conditions in the field. The geology report is available at the Pierre Area Office.

CELLULAR GROUT

The Contractor shall submit a proposed procedure for the grouting, to the engineer at least two weeks prior to beginning this work.

Bulkheads shall be constructed at each end of the pipe. Each bulkhead shall be constructed to withstand the pressure of the grouting operation. The bulkhead shall extend from the end of the existing pipe inward a minimum depth of 18 inches.

Pressure grouting shall be done to ensure all the voids are filled in the existing pipe including all breaks or holes in and around the existing pipe.

The grout shall be a cellular grout (grout with pre-generated foam) with a minimum 28 day compressive strength of 100 pounds per square inch. If water is not present within the pipe a low density grout with a minimum of 30 pounds per cubic foot wet density may be used. When it is not possible to dewater the existing pipe, a high density grout with a minimum of 70 pounds per cubic foot shall be used which may include sand. The foaming agent shall meet the requirements of ASTM C869 when tested in accordance with ASTM C796.

Both of the cellular grout mix designs shall be submitted to the SDDOT Concrete Engineer for approval prior to use. The mix design submittal shall include the base cement slurry mix per cubic yard, expansion factor from the foaming agent, and the cellular grout wet density (pounds per cubic foot).

The Contractor shall install a bypass valve adjacent to the location where the pressure grouting hose is attached for obtaining samples to be checked for wet density. The wet density of the cellular grout shall be checked by the Contractor to verify the proper minimum wet density before the cellular grout filling operations begin and at a minimum once every two hours during production. The SDDOT shall document the results of the density checks.

Cellular grout shall be wasted until the cellular grout meets the minimum wet density required; however, if 0.5 cubic yards or more of base cement slurry is wasted trying to meet density requirements, then that quantity will not be included for payment.

If grout holes are utilized, cylindrical wooden plugs or other approved plugs shall be inserted to plug holes until the grout has set. After the plugs are removed the holes shall be filled with concrete.

The quantity of cellular grout was estimated based on the volume of the existing pipe, and an additional 5% was added for the void volume outside the existing pipe.

All costs for furnishing and installing the cellular grout including bulkhead construction, inlet bevel construction, and incidentals necessary to satisfactorily complete the work shall be included in the contract unit price per cubic yard for "Cellular Grout".

Plans quantity will be the basis for payment unless otherwise ordered by the Engineer.

UNDERDRAIN

An underdrain system shall be installed from Sta. 632+20 to Sta. 633+80 and outlet at Sta. 632+80 167' L (see plans and cross sections for details).

The underdrain system will consist of 4 inch slotted polyethylene drainage tubing placed in the bottom of a 2-foot wide by 3-foot deep trench. The trench will then be backfilled with 3 feet of porous backfill. The last 88 feet of underdrain attached to the headwall shall be 4 inch polyethylene drainage tubing and shall be backfilled with typical embankment material. The 110 cubic yards of excavation and the 4 inch polyethylene tee connector shall be incidental to the contract unit price per foot for the corresponding "4" Corrugated Polyethylene Tubing" bid item.

The estimated quantities for the underdrain system are as follows:

4" Corrugated Polyethylene Drainage Tubing	124	Ft
4" Slotted Polyethylene Drainage Tubing	160	Ft
4" Polyethylene Drainage Tube Tee Connector	1	Each
Porous Backfill	60	Ton
Concrete Headwall for Underdrain (See Standard Plate 680.01)	1	Each
Excavation	110	CuYd

UNDERDRAIN CONSTRUCTION

The underdrain trench shall be graded to maintain a minimum of .01ft/ft or 1% drop from beginning to outlet. The Outlet Headwall shall be placed to blend in with the surrounding topography with the outlet tubing placed above the bottom of the drainage so as to permit proper flow from the outlet.

Care must be taken to insure that the underdrain and outlet tubing is not damaged during construction. Sufficient cover material is to be placed over the underdrains before heavy equipment is allowed to work over the underdrains.

The underdrain locations and elevations given are based on the best information available to the Geotechnical Engineering Activity. Actual field conditions may require that adjustments be made by the Project Engineer during construction to provide for sufficient drainage

ESTIMATE OF QUANTITIES AND NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	1806-351	5	43

CORRUGATED METAL PIPE

The soils within the project area are highly corrosive to steel. Corrugated metal pipe shall be 14 gauge steel. Corrugated metal pipe including the connection bands, elbows, reducers, and transitions shall be polymer coated and shall be in conformance with AASHTO M245 and AASHTO M36.

Riveted pipe shall not be allowed. The connection bands shall be 24 inches wide.

All damage to the polymer coating shall be repaired in accordance with the manufacturer’s recommendations prior to installation of the pipe. All costs associated with the polymer coating including repair of polymer coating shall be incidental to the corresponding CMP bid items.

Metal pipe end sections connected to polymer coated CMP shall be aluminum-coated (Type 2) in accordance with AASHTO M36 as specified in the Table of Pipe Quantities. All costs associated for gauge, coating, and connections shall be incidental to the corresponding CMP End Section bid items.

GENERAL MAINTENANCE OF TRAFFIC

All traffic control sign locations shall be set in the field by the Contractor and verified by the Engineer prior to installation.

Channelizing devices in a series shall be of the same type. Channelizing drums shall be of a two part construction with breakaway bases.

A shadow vehicle, equipped with flashing amber light and a ROAD MACHINERY AHEAD sign prominently displayed, shall be used in advance of landscaping, clean up, and other mobile work activities. The cost of ROAD MACHINERY AHEAD sign shall be incidental to the contract lump sum price for “Traffic Control, Miscellaneous”.

Any existing signs in the work limits shall be removed and reset as needed to accommodate the under drain installations. Cost for remove/reset existing signs shall be incidental to the contract lump sum price for “Traffic Control, Miscellaneous”.

TRAFFIC CONTROL

The Contractor shall designate an employee to be responsible for the maintenance of traffic. The Engineer must approve the employee selected. The name and phone number of person(s) shall be provided to the SD Department of Transportation (605-773-5294), SD Highway Patrol (Pierre State Radio (605-773-3536)), and Stanley County Sheriff Department (605-223-7792).

All traffic control devices shall be in “like new” condition.

TRACKING

Excess tracking of material must be removed from the roadway in a manner that satisfies the storm water pollution prevention plan. All costs associated with this work shall be incidental to the contract lump sum price for “Traffic Control, Miscellaneous”.

TEMPORARY EARTH CROSSING

If the Contractor elects to haul material from one side of the existing surfaced roadway to the other side with scrapers, a temporary earth crossing shall be installed prior to the start of hauling. A flagger at each end of the crossing shall also be utilized. The crossing shall be completely removed each evening prior to nightfall. No separate payment will be made for providing the crossing, and no separate payment will be made for removing the crossing and reinstalling it the next day.

If utilized , the Temporary Earth Crossing shall be constructed according to the standard plate 380.30, except that no granular material will be required due to the crossing being removed each night.

Any damage to the existing asphalt road surface caused by the hauling of materials by any method, or by the process of installing or removing the Temporary Earth Crossing, shall be repaired at no cost to the State.

All costs associated with constructing, maintaining, and removing the crossing each day shall be incidental to the various contract bid items. The flagger hours will be measured and paid for at the contract unit price per hour for “Flagging”.

LANDSLIDE MATERIAL EXCAVATION AREAS

In areas where a temporary slope steeper than a 4:1 is detailed in the cross sections, channelizing devices shall be placed and maintained along the edge of asphalt at 25 feet spacing whenever traffic is utilizing the adjacent lane. These devices shall be either Drums or Type II Barricades, and shall remain in place until topsoil is placed on the new finished 4:1 slopes. All costs associated with this work shall be incidental to the contract lump sum price for “Traffic Control, Miscellaneous”. One “Shoulder Closed” sign shall also be placed at the beginning of the channelizing devices.

PLACING TOPSOIL

The thickness will be approximately 4 inches within the right-of-way and 6 inches on temporary easements.

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum shall consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

- 25% Glomus intraradices
- 25% Glomus aggregatum or deserticola
- 25% Glomus mosseae
- 25% Glomus etunicatum

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed shall be incidental to the contract lump sum price for “Erosion Control”.

The mycorrhizal inoculum shall be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 www.reforest.com

EROSION CONTROL

All areas disturbed as a result of work on this project shall be restored and/or reshaped to the satisfaction of the Engineer. The areas to be seeded and mulched comprise of all newly graded areas within the project limits except for the top of roadways and temporary easements under cultivation.

Application of fertilizer will not be used on this project.

The application of mulch will be at a rate of 3 tons/acre for additional erosion control.

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project.

South Dakota native grown seed is an acceptable alternative to any of the seed varieties listed below. South Dakota native grown seeds used as an alternative shall conform to the same specification and requirements for that individual seed type.

Type F Permanent Seed Mixture shall consist of the following:

EROSION CONTROL, CONTINUED

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Green Needlegrass	Lodorm, AC Mallard Ecovar	4
Sideoats Grama	Butte, Pierre	3
Blue Grama	Bad River	2
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
Total:		26

It is an estimated 1.75 acres will be disturbed. All costs associated with furnishing and placing the seed and mulch, including labor, equipment and incidentals shall be incidental to the contract lump sum price for “Erosion Control”.

ESTIMATE OF QUANTITIES AND NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	1806-351	6	43

SURFACE ROUGHENING

Surface roughening shall be done after topsoil placement and before permanent seeding, fertilizing, and mulching applications. Refer to Standard Plate 734.25 for details.

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

An estimated quantity of erosion control wattles shall remain on the project until vegetation has been established. It is estimated that some of the erosion control wattles will remain on the project to decompose.

A quantity of 12" Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

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

HIGH FLOW SILT FENCE

The high flow silt fence fabric provided shall be from the approved product list. The approved product list for high flow silt fence may be viewed at the following internet site:

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

High flow silt fence shall be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

An additional quantity of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

TABLE OF HIGH FLOW SILT FENCE

Station	L/R	Location	Quantity (Ft)
629+00	R	Perimeter Control	20
631+55 to 635+50	L	Perimeter Control	475
633+25	R	Inlet Protection	20
Additional Quantity:			100
Total:			615

TURF REINFORCEMENT MAT

Turf Reinforcement Mat shall be installed at locations shown in the table at the widths specified, and at locations determined by the Engineer during construction. The Contractor shall use a turf reinforcement mat from the approved products list. The approved product list for turf reinforcement mat may be viewed at the following internet site:

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

Turf Reinforcement Mat shall be installed in accordance with the manufacturer's installation instructions.

TABLE OF TURF REINFORCEMENT MAT

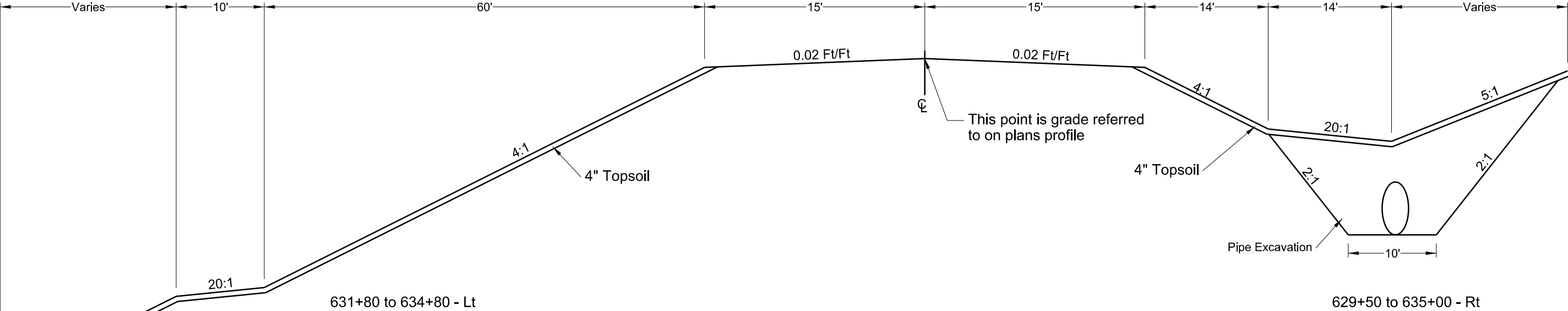
Station to	Station	L/R	Width (Ft)	Type	Quantity (SqYd)
629+00	629+54	L	20	1	128
Total Type 1 Turf Reinforcement Mat:					128

TEMPORARY FENCE

An estimated 736 Ft of Type 1A Temporary Fence has been included to block off the construction site from grazing cattle in the area. Exact placement shall be determined by the Contractor with the Field Engineer's approval.

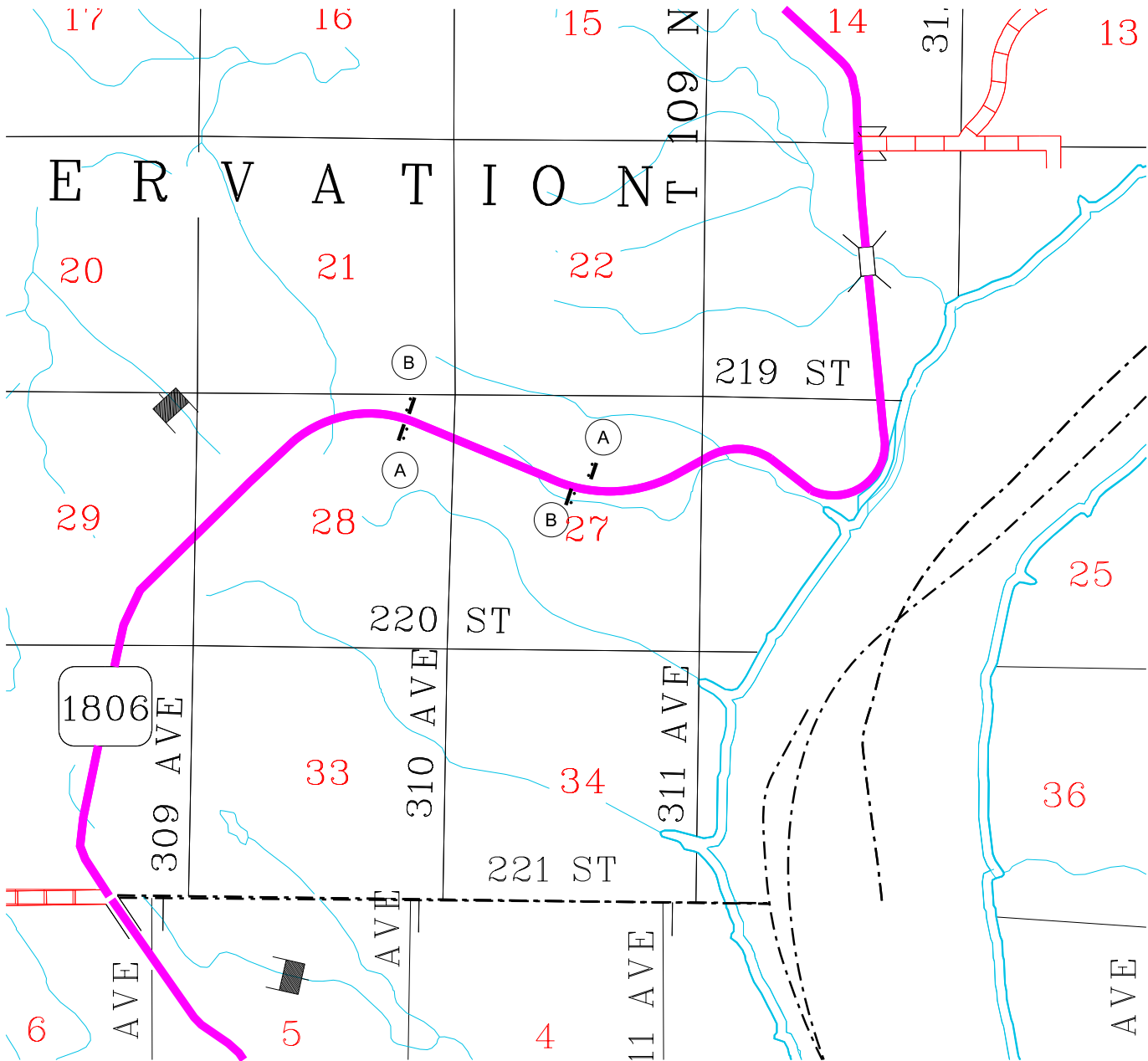
Typical Grading Section

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1806-351	7	43
Plotting Date: 06/13/18 Revised Date: xx/xx/xx Initials: SJS			



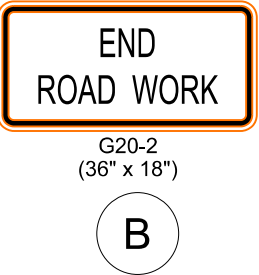
Fixed Sign Locations

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1806-351	8	43
Plotting Date: 06/13/18 Revised Date: xx/xx/xx Initials: SJS			



ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	2	48" x 48"	16.0	32.0
W16-2P	___ FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		179.0			



Note: Sign Locations will be verified in the field by the Engineer prior to the installation.

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 Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See 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** 2.16 Acres **(4.2 1.b.)**
- **Total Area To Be Disturbed** 1.75 Acres **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 75%
- **Soil Properties:** AASHTO Soil or USDA-NRCS Soil Series Classification **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Missouri River **(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.)
- **Install perimeter protection where runoff sheets from the site.**
 - **Install channel and ditch bottom protection. .**
 - **Remove and store topsoil.**
 - **Stabilize disturbed areas.**
 - **Install inlet and culvert protection after completing storm drainage and other utility installations.**
 - **Complete final grading.**
 - **Complete traffic control installation and protection devices.**
 - **Reseed areas disturbed by removal activities.**

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)
 - ☐ Fiber Mulching (Wood Fiber Mulch)
 - ☐ Soil Stabilizer
 - ☐ Bonded Fiber Matrix
 - ☐ Fiber Reinforced Matrix
 - ☐ Erosion Control Blankets
 - ☐ Vegetation Buffer Strips
 - ☒ Surface Roughening (e.g. tracking)
 - ☐ Dust Control
 - ☐ Other:

➤ **Structural Temporary Erosion and Sediment Controls**

- ☒ Silt Fence
- ☐ Floating Silt Curtain
- ☐ Erosion Bales
- ☐ Temporary Berm (Windrow)
- ☐ Temporary Slope Drain
- ☒ Erosion Control Wattles
- ☐ Temporary Sediment Barriers
- ☐ Turf Reinforcement Mat
- ☐ Riprap
- ☐ Gabions
- ☐ Rock Check Dams
- ☐ Sediment Traps/Basins
- ☐ Culvert Inlet Protection
- ☐ Transition Mats
- ☐ Median/Area Drain Inlet Protection
- ☐ Curb Inlet Protection
- ☐ Stabilized Construction Entrances
- ☐ Entrance/Exit Equipment Tire Wash
- ☐ Interceptor Ditch
- ☐ Concrete Washout Facility
- ☐ 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 “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 Water 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. 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 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**

- Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- 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 1/3 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 infestations.
- 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 SDDOT Project Engineer and Contractor’s Erosion Control Supervisor are responsible for inspections. Maintenance, repair activities are the responsibility of the Contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

NON-STORM WATER DISCHARGES (3.0)

- The following non-storm water discharges are anticipated during the course of this project (check all that apply).
- ☐ Discharges 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, de-greasing 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, residuals from concrete saw cutting (either wet or dry), 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 SDDOT. 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 facilities on the site. These areas must be self-contained and not connected to any storm water outlet of the site. Upon completion of construction, the area at the washout facility 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 cleanup 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 cleanup 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 water, 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 waters, 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 the 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 one of the following conditions exists:
 - 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 Communications 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 waters. The SDDOT Project Engineer 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 appropriate.

➤ **South Dakota Department of Transportation**

I certify under penalty of law that this document and all attachments 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 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 (See the General Permit, Section 6.9.1.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: _____
- _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **Erosion Control Supervisor**

- Name: _____
- Address: _____
- _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **SDDOT Project Engineer**

- Name: _____
- Business Address: _____
- Job Office Location: _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **SD DENR Contact Spill Reporting**

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

➤ **SD DENR Contact for Hazardous Materials.**


















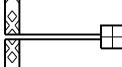














- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.

Erosion and Sediment Control Legend

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1806-351	12	43
Plotting Date: 06/13/18 Revised Date: xx/xx/xx Initials: SJS			

-  Low Flow Silt Fence
-  High Flow Silt Fence
-  High Flow Silt Fence at Pipe
-  Sediment Control at Inlet After Placement of Surfacing
-  Sediment Control at Inlet Before Placement of Surfacing
-  Temporary Sediment Barrier
-  Temporary Water Barrier
-  Floating Silt Curtain
-  Sediment Filter Bags
-  Triangular Silt Barriers
-  Erosion Control Wattles on Slopes
-  Erosion Control Wattles at Inlets
-  Erosion Control Wattles in Ditches
-  Erosion Bales
-  Surfacing Roughening
-  Temporary Grass Hay or Straw Mulch/ Soil Stabilizer
-  Cut Interceptor Ditch
-  Temporary Slope Drain
-  Bonded Fiber Matrix/ Fiber Reinforced Matrix
-  Rock Check Dam
-  Type 1 Erosion Control Blanket
-  Type 2 Erosion Control Blanket
-  Type 3 Erosion Control Blanket
-  Type 4 Erosion Control Blanket
-  Type 1 Turf Reinforcement Mat
-  Type 2 Turf Reinforcement Mat
-  Type 3 Turf Reinforcement Mat
-  Transition Mat
-  Silt Trap (See Standard Plate 734.04)
-  Type 1 Sediment Trap
-  Type 2 Sediment Trap
-  Type 3 Sediment Trap

BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are split into three categories and are to be used throughout construction.

INITIAL PHASE

BMPs from the Legend shown as Orange Symbols on the Erosion and Sediment Control Plan Sheets are to be installed in the Initial Phase prior to earth disturbing activittles and remain in place for the Intermediate Phase for temporary stabilization and in the Final Phase to achieve final stabilization.

INTERMEDIATE PHASE

BMPs from the Legend shown as Blue Symbols on the Erosion and Sediment Control Plan Sheets are to be installed in the Intermediate Phase for temporary stabilization and remain in place in the Final Phase to achieve final stabilization.

FINAL PHASE

BMPs from the Legend shown as Green Symbols on the Erosion and Sediment Control Plan Sheets are to be installed in the Final Phase to achieve final stabilization.

If these items are applicable they are to be shown in the updated SWPPP using the Symbols given.



Topsoil Stockpile



On-Site Construction Material Storage Area



Borrow Area



Spill Kit



Stabilized Construction Entrance



Work Platform



Vegetated Buffer Strip



Cover Crop Seeding



Concrete Washout



Asphalt Plant Site



Concrete Plant Site



Vehicle and Equipment Parking, Fueling, and Maintenance Areas



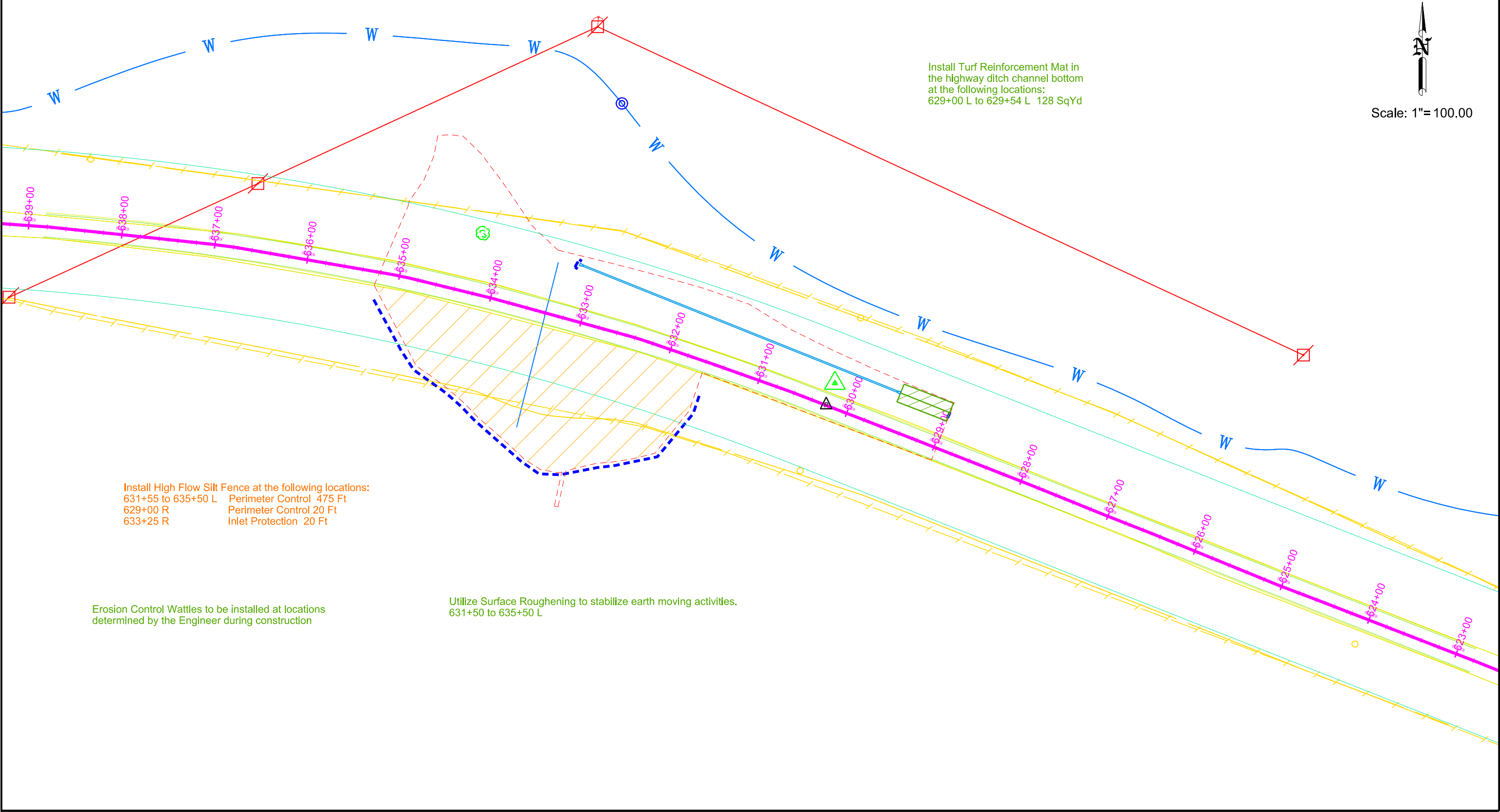
Dumpster or other Trash and Debris Containers

Erosion and Sediment Control Plan

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1806-351	13	43
Plotting Date: 06/13/18 Revised Date: xx/xx/xx Initials: SJS			



Scale: 1"= 100.00



Control Data & Fence Quantities

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1806-351	14	43
Plotting Date: 06/13/18 Revised Date: xx/xx/xx Initials: SJS			

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
GPS112	615+93.01	13,438' - L	Rebar/yellow cap	675559.577	2061329.935	1793.024
PC656OS	630+23	25' R	Barcap PC	688616.768	2064924.350	1743.234

FENCE QUANTITIES										
		Side (L/R)	Right-of-Way Fence			Temporary Fence			Post Panels	
			Type 1			Type 1A			2 Post Pane	3 Post Panel
Station to Station										
630+25	634+75	L	450						1	1
631+35	631+35	L				154				
631+35	636+00	L				426				
634+75	639+00	L	425						1	
636+00	636+00	L				156				
TOTALS:			875			736			2	1

Existing Topography Symbology and Legend

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1806-351	15	43
Plotting Date: 06/13/18 Revised Date: xx/xx/xx Initials: SJS			

Anchor	
Antenna	
Approach	
Assumed Corner	
Azimuth Marker	
BBQ Grill/ Fireplace	
Bearing Tree	
Bench Mark	
Box Culvert	
Bridge	
Brush	
Buildings	
Bulk Tank	
Cattle Guard	
Cemetery	
Centerline	
Cistern	
Clothes Line	
Commercial Sign Double Face	
Commercial Sign One Post	
Commercial Sign Overhead	
Commercial Sign Two Post	
Concrete Symbol	
Creek Edge	
Curb/Gutter	
Curb	
Dam Grade/Dike/Levee	
Deck Edge	
Ditch Block	
Doorway Threshold	
Drainage Profile	
Drop Inlet	
Edge Of Asphalt	
Edge Of Concrete	
Edge Of Gravel	
Edge Of Other	
Edge Of Shoulder	
Elec. Trans./Power Jct. Box	
Fence Barbwire	
Fence Chainlink	
Fence Electric	
Fence Misc.	
Fence Rock	
Fence Snow	
Fence Wood	
Fence Woven	
Fire Hydrant	
Flag Pole	
Flower Bed	
Gas Valve Or Meter	
Gas Pump Island	
Grain Bin	
Guardrail	
Guide Sign One Post	
Guide Sign Two Post	
Gutter	
Guy Pole	
Haystack	

Hedge	
Highway R.O.W. Marker	
Interstate Close Gate	
Iron Pin	
Irrigation Ditch	
Lake Edge	
Lawn Sprinkler	
Mailbox	
Manhole Electric	
Manhole Gas	
Manhole Misc	
Manhole Sanitary Sewer	
Manhole Storm Sewer	
Manhole Telephone	
Manhole Water	
Merry-Go-Round	
Microwave Radio Tower	
Misc. Line	
Misc. Property Corner	
Misc. Post	
Overhang Or Encroachment	
Overhead Utility Line	
Parking Meter	
Pipe With End Section	
Pipe With Headwall	
Pipe Without End Section	
Playground Slide	
Playground Swing	
Power And Light Pole	
Power And Telephone Pole	
Power Meter	
Power Pole	
Power Pole And Transformer	
Power Tower Structure	
Propane Tank	
Property Pipe	
Property Pipe With Cap	
Property Stone	
Public Telephone	
Railroad Crossing Signal	
Railroad Milepost Marker	
Railroad Profile	
Railroad R.O.W. Marker	
Railroad Signs	
Railroad Switch	
Railroad Track	
Railroad Trestle	
Rebar	
Rebar With Cap	
Reference Mark	
Regulatory Sign One Post	
Regulatory Sign Two Post	
Retaining Wall	
Riprap	
River Edge	
Rock And Wire Baskets	
Rockpiles	
Satellite Dish	
Septic Tank	

Shrub Tree	
Sidewalk	
Sign Face	
Sign Post	
Slough Or Marsh	
Spring	
Stream Gauge	
Street Marker	
Subsurface Utility Exploration Test Hole	
Telephone Fiber Optics	
Telephone Junction Box	
Telephone Pole	
Television Cable Jct Box	
Television Tower	
Test Wells/Bore Holes	
Traffic Signal	
Trash Barrel	
Tree Belt	
Tree Coniferous	
Tree Deciduous	
Tree Stumps	
Triangulation Station	
Underground Electric Line	
Underground Gas Line	
Underground High Pressure Gas Line	
Underground Sanitary Sewer	
Underground Storm Sewer	
Underground Tank	
Underground Telephone Line	
Underground Television Cable	
Underground Water Line	
Warning Sign One Post	
Warning Sign Two Post	
Water Fountain	
Water Hydrant	
Water Meter	
Water Tower	
Water Valve	
Water Well	
Weir Rock	
Windmill	
Wingwall	
Witness Corner	
State and National Line	
County Line	
Section Line	
Quarter Line	
Sixteenth Line	
Property Line	
Construction Line	
R. O. W. Line	
New R. O. W. Line	
Cut and Fill Limits	
Control of Access	
New Control of Access	
Proposed ROW (After Property Disposal)	

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1806-351	16	43
Plotting Date: 06/13/18 Revised Date: xx/xx/xx Initials: SJS			

SD1806

633+39
Plug Existing 24" Pipe

633+39
Take out 2 FI Ends

629+60 - 40' R to 633+20 - 59' R
Install 18" - 360' CMP (14ga)
& 2 Safety Ends w/out bars

Lower Brule Sioux Tribe, Allotment T930
NE1/4 of Section 28 - Township 109 North -
Range 76 West of the 5th P.M.
Parcel 2



Scale: 1"= 100.00

635+24 - 79' R
End Remove &
Reset Fence

635+20
180' R
633+50
180' R
633+80 - 94' R
Begin Remove &
Reset Fence

639+00 - 75' L
End Remove Fence
639+00 - 75' L
End Type 1 Fence

End Project

Begin Project

NE1/4

Lower Brule Sioux Tribe, Allotment T930
NE1/4 of Section 28 - Township 109 North -
Range 76 West of the 5th P.M.
Parcel 1

Sec. 28 - T109N - R76W

632+20 - 60' L to 633+80 - 56' L
Install Underdrain
Install Slotted 4" Corrugated Polyethylene Drainage Tubing

632+80 - 73' L to 632+73 - 196' L
Install Underdrain Outlet
Install 4" Corrugated Polyethylene Drainage Tubing

632+73 - 196' L
Install Concrete Headwall
for Underdrain

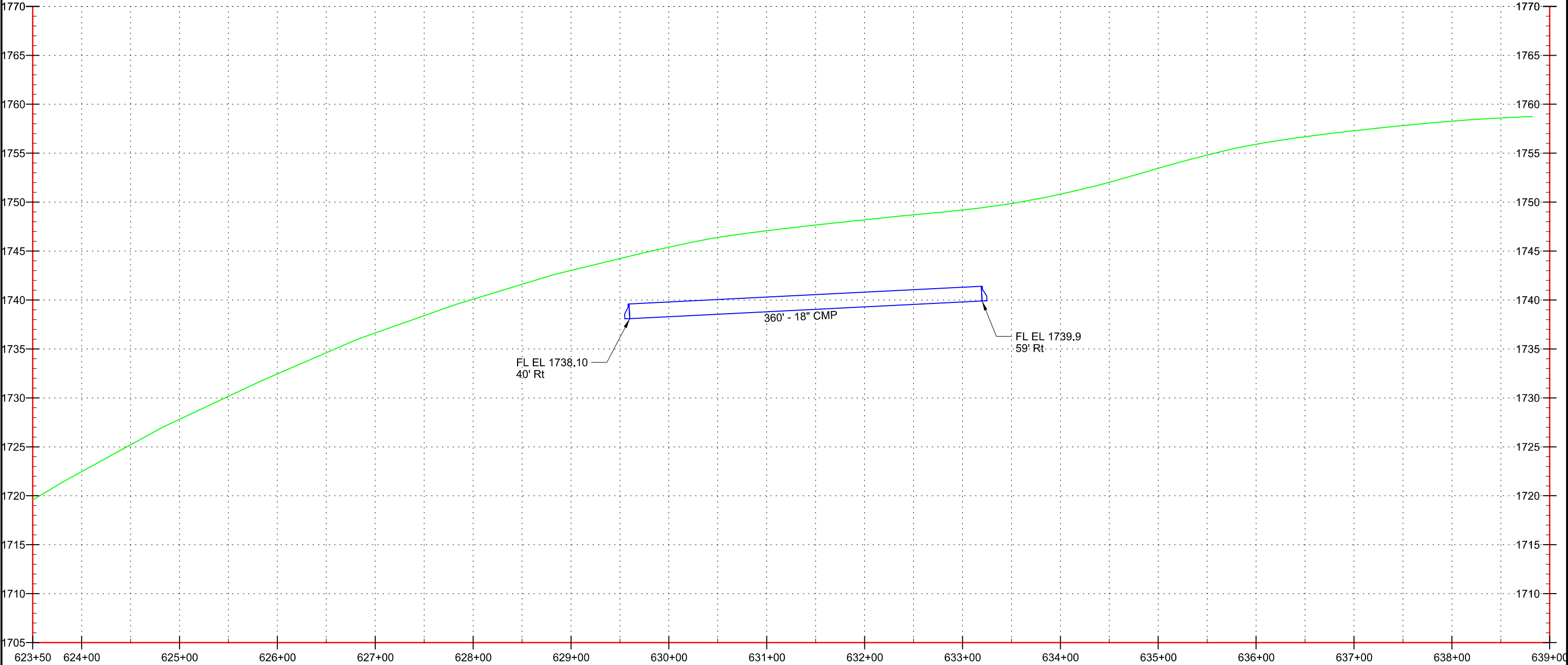
Parcel 1
631+35 to 636+00 L
Temporary Easement containing
1.62 ac, more or less

Parcel 2
633+50 to 635+20 R
Temporary Easement containing
0.42 ac, more or less

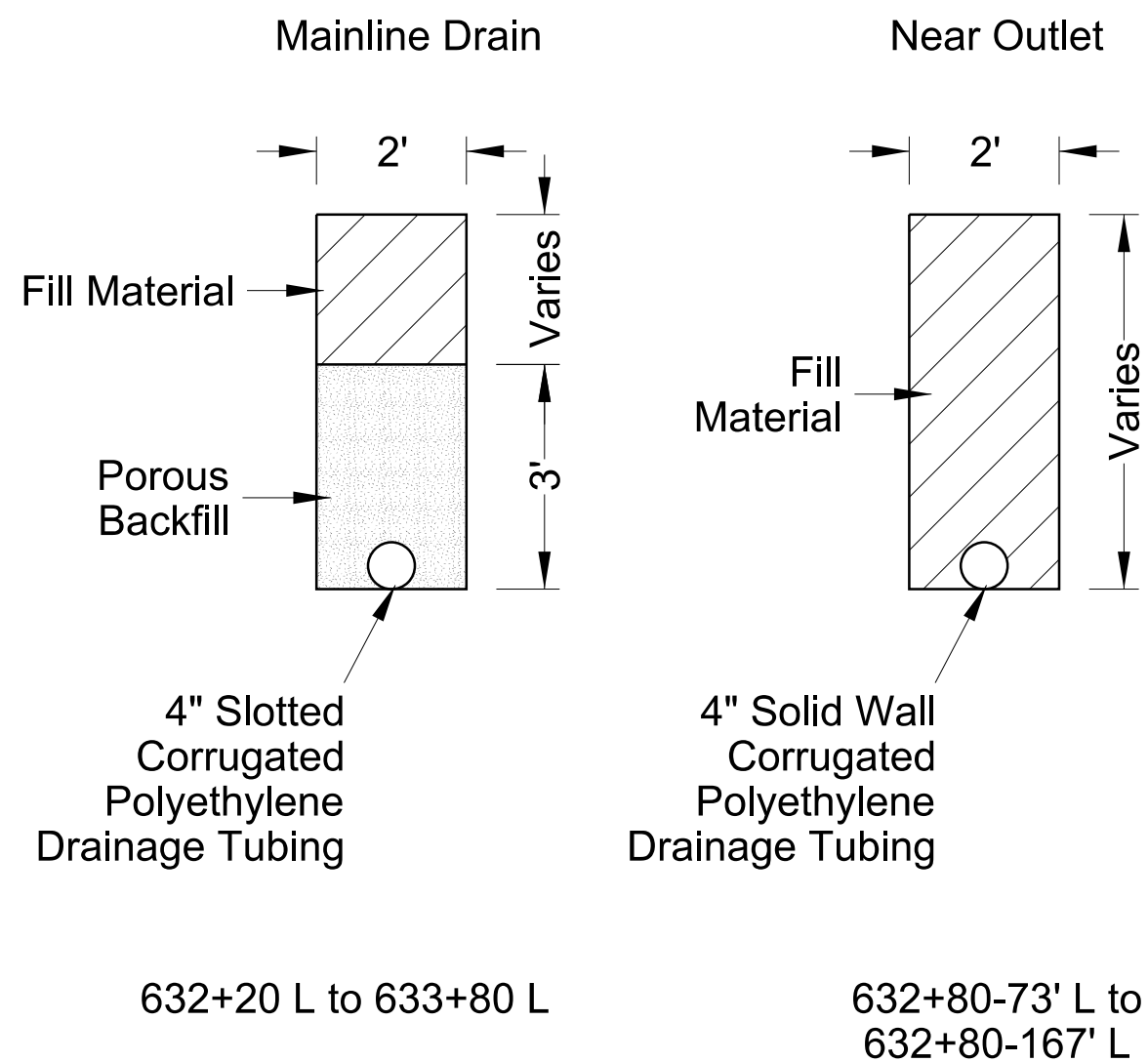
Section Line

Profile SD1806

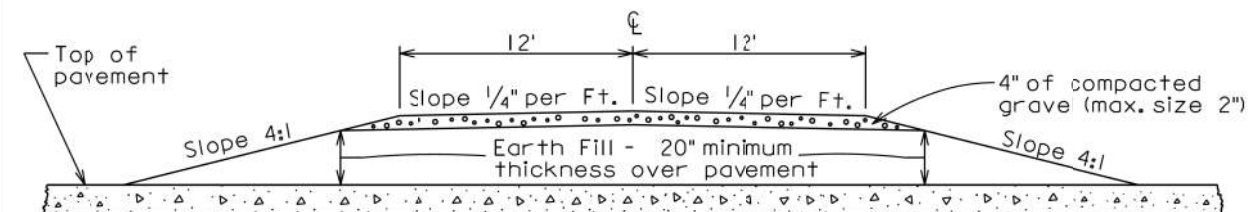
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1806-351	17	43
Plotting Date: 06/13/18 Revised Date: xx/xx/xx Initials: SJS			



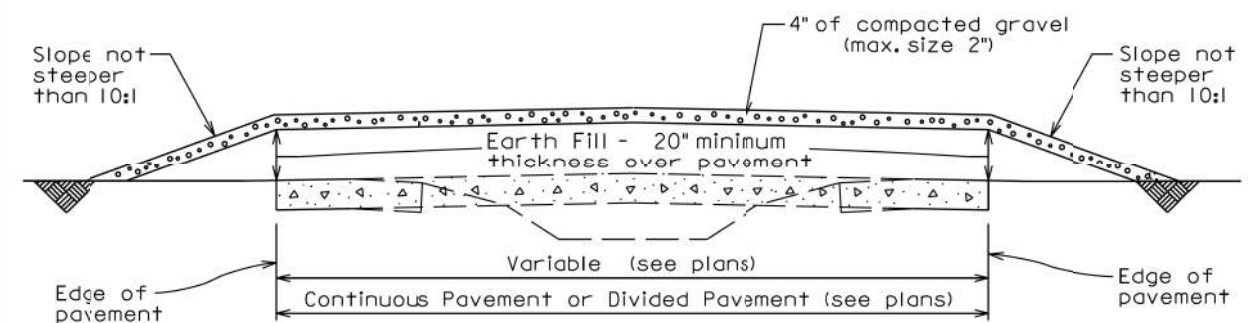
Typical Underdrain Installation



Underdrains shall be constructed in accordance with Section 680



TRANSVERSE SECTION OF CROSSING



LONGITUDINAL SECTION ALONG CENTERLINE OF CROSSING

GENERAL NOTES:

Temporary Earth Crossing shall be constructed and satisfactorily maintained in accordance with the details shown above. When the need for the crossing no longer exists the contractor shall, at the direction of the Engineer, remove the crossing and dispose of the materials therein to the satisfaction of the Engineer.

All costs for furnishing and placing all materials, labor, and equipment necessary for constructing and removing the Temporary Earth Crossing shall be incidental to the contract unit price per Each for "Temporary Earth Crossing."

When the plans specify that the fill over the pavement be entirely of gravel, instead of earth and gravel as shown by the details above, all except the upper 4 inches of the gravel may be pit run material. In these cases the item becomes "Temporary Gravel Crossing" instead of "Temporary Earth Crossing", but otherwise the requirements stated above for "Temporary Earth Crossing" shall apply.

March 31, 2000

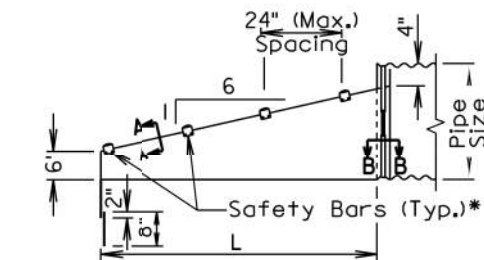
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TEMPORARY EARTH OR GRAVEL CROSSING

PLATE NUMBER
380.30

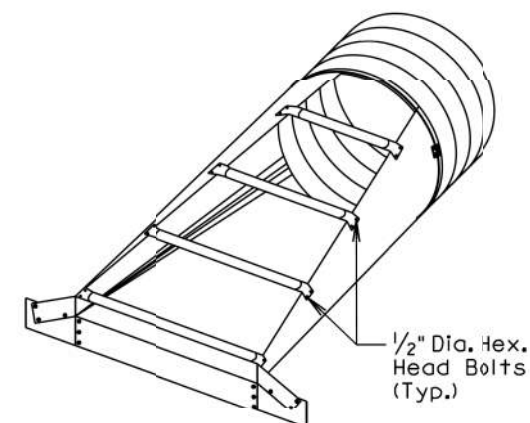
Sheet 1 of 1

Published Date: 2nd Qtr. 2018

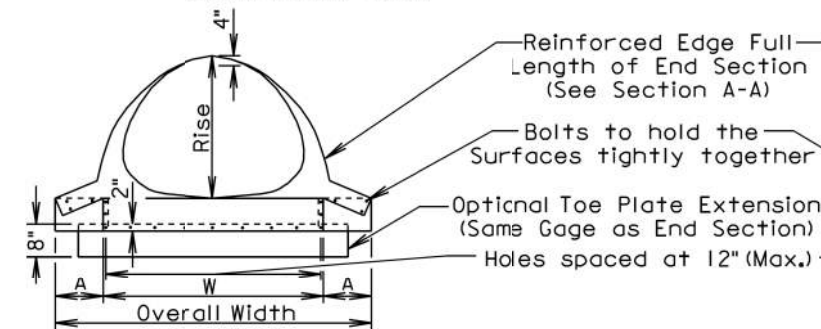


ELEVATION VIEW

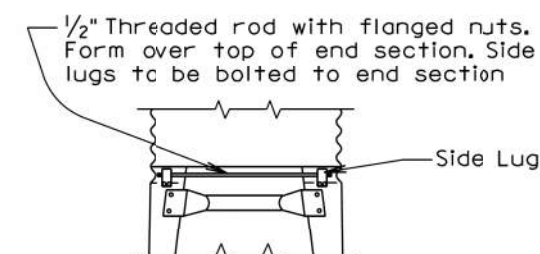
* Number of bars required will vary depending on the length of the end section.



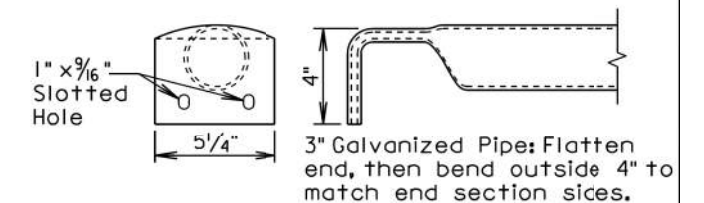
ISOMETRIC VIEW



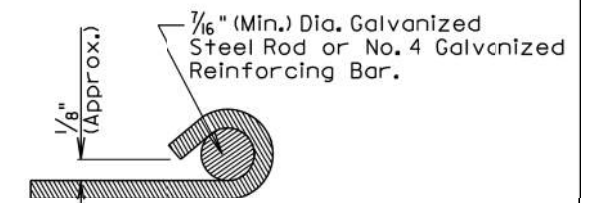
FRONT VIEW



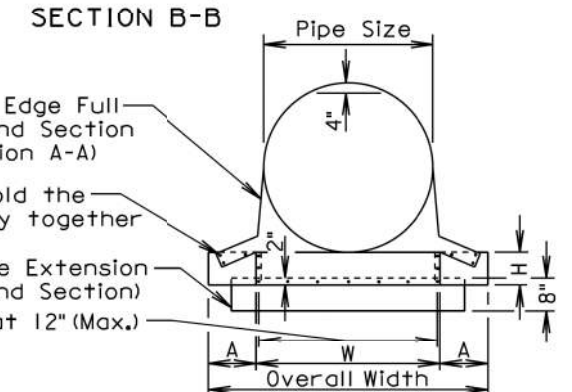
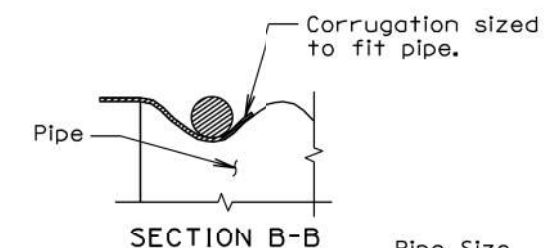
TYPE #2 CONNECTOR DETAIL
(For 30" and Larger)
(For 21" X 15" and Larger)



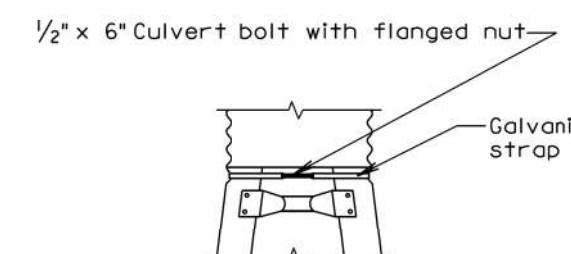
DETAIL OF SAFETY BARS



SECTION A-A



FRONT VIEW



TYPE #1 CONNECTOR DETAIL
(For 15" Through 24")

June 26, 2015

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C. M. P. SAFETY ENDS

PLATE NUMBER
450.38

Sheet 1 of 2

Published Date: 2nd Qtr. 2018

ARCH C.M.P. SAFETY ENDS										
Equiv. Dia. (Inch)	(Inches)		Min. Thick.		Dimensions (Inches)				L Dimensions	
	Span	Rise	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
18	21	15	.064	16	8	6	27	43	6:1	30
21	24	18	.064	16	8	6	30	46	6:1	48
24	28	20	.064	16	8	6	34	50	6:1	60
30	35	24	.079	14	12	9	41	65	6:1	84
36	42	29	.109	12	12	9	48	72	6:1	114
42	49	33	.109	12	16	12	55	87	6:1	138
48	57	33	.109	12	16	12	63	95	6:1	168
54	64	43	.109	12	16	12	70	102	6:1	198
60	71	47	.109	12	16	12	77	109	6:1	222
72	83	57	.109	12	16	12	89	121	6:1	282

CIRCULAR C.M.P. SAFETY ENDS								
Pipe Dia. (Inch)	Min. Thick.		Dimensions (Inches)				L Dimensions	
	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
15	.064	16	8	6	21	37	6:1	30
18	.064	16	8	6	24	40	6:1	48
21	.064	16	8	6	27	43	6:1	66
24	.064	16	8	6	30	46	6:1	84
30	.109	12	12	9	36	60	6:1	120
36	.109	12	12	9	42	66	6:1	156
42	.109	12	16	12	48	80	6:1	192
48	.109	12	16	12	54	86	6:1	228
54	.109	12	16	12	60	92	6:1	264
60	.109	12	16	12	66	98	6:1	300

GENERAL NOTES:

Safety ends shall be fabricated from galvanized steel conforming to the requirements of the Specifications.

Safety bars shall be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5X.216 in conformance with ASTM A500, grade B.

Slotted holes for safety bar attachment shall be provided for all end sections.

Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.

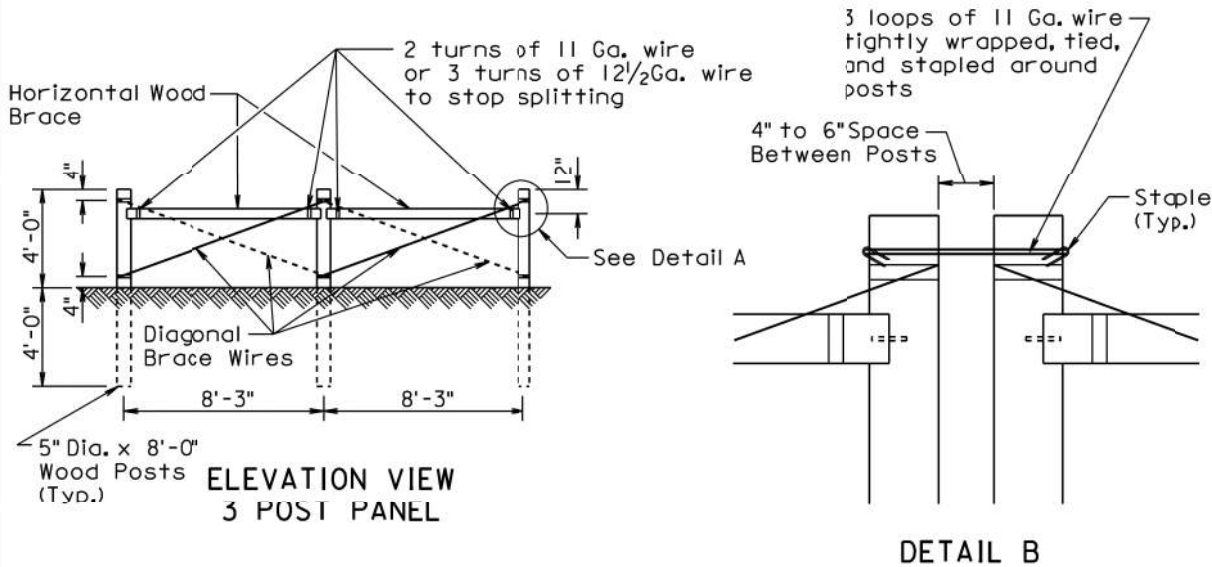
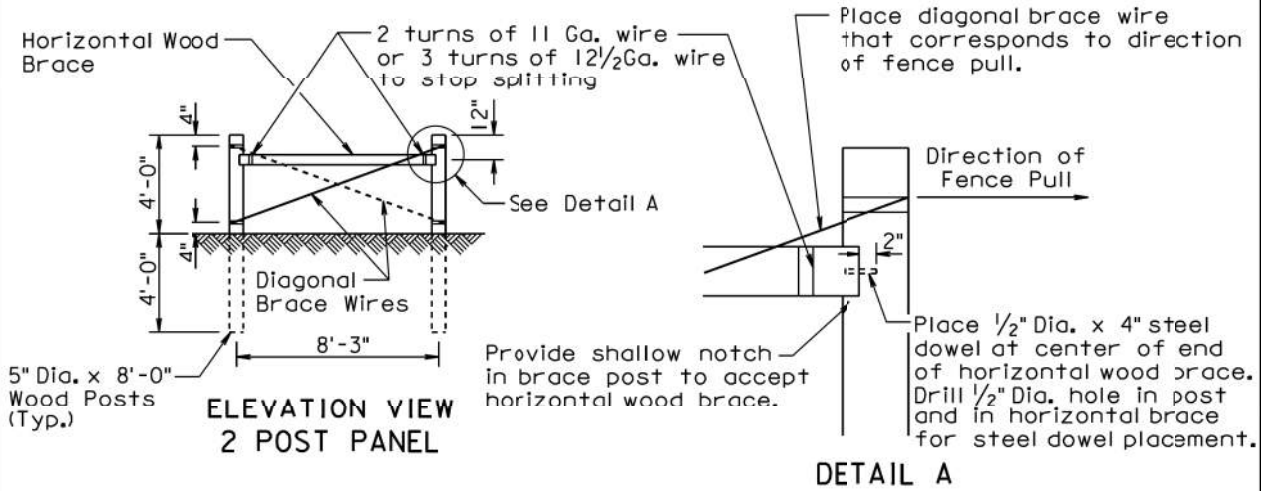
When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.

Installation shall be performed in accordance with the Specifications.

Cost of all work and materials required for fabrication and installation of safety ends shall be incidental to the bid items for the various sizes of safety ends.

June 26, 2015

Published Date: 2nd Qtr. 2018	S D D O T	C. M. P. SAFETY ENDS	PLATE NUMBER
			450.38
			Sheet 2 of 2



GENERAL NOTES:

Two Post Panels shall be installed at least every 1320' between corners.

Two Post Panels shall be installed at any sharp vertical angle crest points and as directed by the Engineer.

Horizontal wood braces shall consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.

Diagonal brace wires shall be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires shall be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

December 23, 2004

Published Date: 2nd Qtr. 2018	S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER
			620.03
			Sheet 1 of 3

SPACING OF 2 POST PANELS WITHIN CURVES

DEGREE OF CURVE	SPACING OF 2 POST PANEL
less than 3°15'	** 1320'
3°15' and greater	**At P.C., P.T., and at every 1320' between P.C. and P.T.

* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

** Fence lengths greater than 1320 and less than 2640' place 2 Post Panel approximately at midpoint.

① See Detail B on Sheet 1 of 3.

GENERAL NOTE:

All degrees of curvature stated for fence are at centerline of roadway.

Existing Fence

New Fence

BEGIN OR END FENCE
(where new fence ties into existing fence)

New Fence

Open ended fence
no existing fence

SHORT JOGS IN FENCE

Mainline Post

CROSS FENCE

SHARP ANGLES IN CROSS FENCE

ANGLES IN MAINLINE FENCE

Corner Post (Typ.)

Mainline Post

10° and less

Greater than 10°

Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.

Additional fence panel is required when an angle in the mainline fence is greater than 10°.

Intersecting Road

ENTRANCE
(NOT ON CORNER)

ENTRANCES AT CORNERS

DOUBLE ENTRANCES

GATES

Fence type shall be same as adjacent fence type or as directed by the Engineer.

Fence type shall be same as adjacent fence type or as directed by the Engineer.

* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 500' to next corner use a 3 post panel.

① See Detail B on Sheet 1 of 3.

Published Date: 2nd Qtr. 2018

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BRACE PANELS
AND APPLICATIONS OF BRACE PANELS

December 23, 2004

PLATE NUMBER
620.03

Sheet 2 of 3

Published Date: 2nd Qtr. 2018

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BRACE PANELS
AND APPLICATIONS OF BRACE PANELS

December 23, 2004

PLATE NUMBER
620.03

Sheet 3 of 3

The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations, such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 80	1000



April 15, 2015

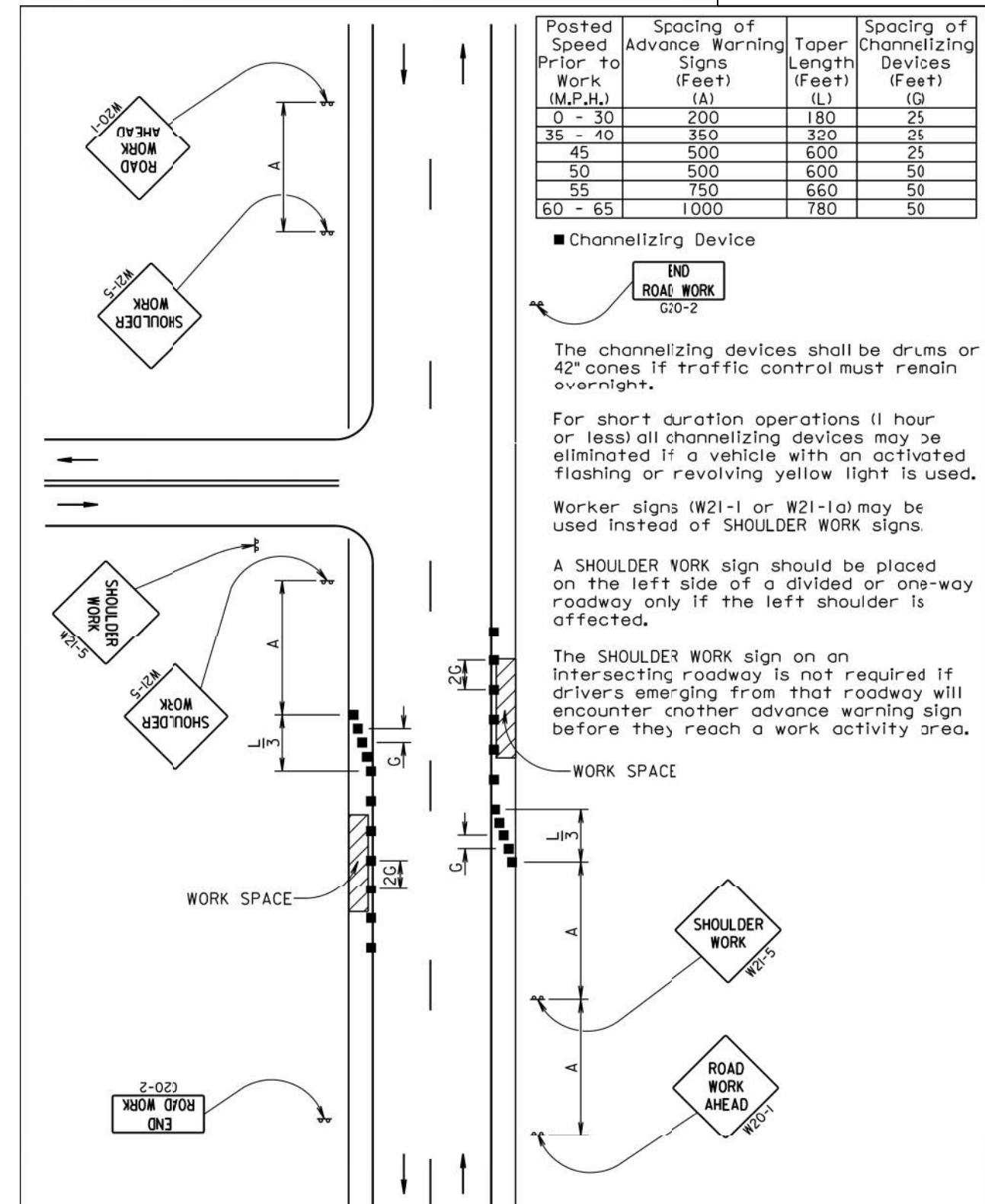
Published Date: 2nd Qtr. 2018

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GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER

PLATE NUMBER
634.01

Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50
55	750	660	50
60 - 65	1000	780	50

■ Channelizing Device



The channelizing devices shall be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

WORK SPACE

June 3, 2016

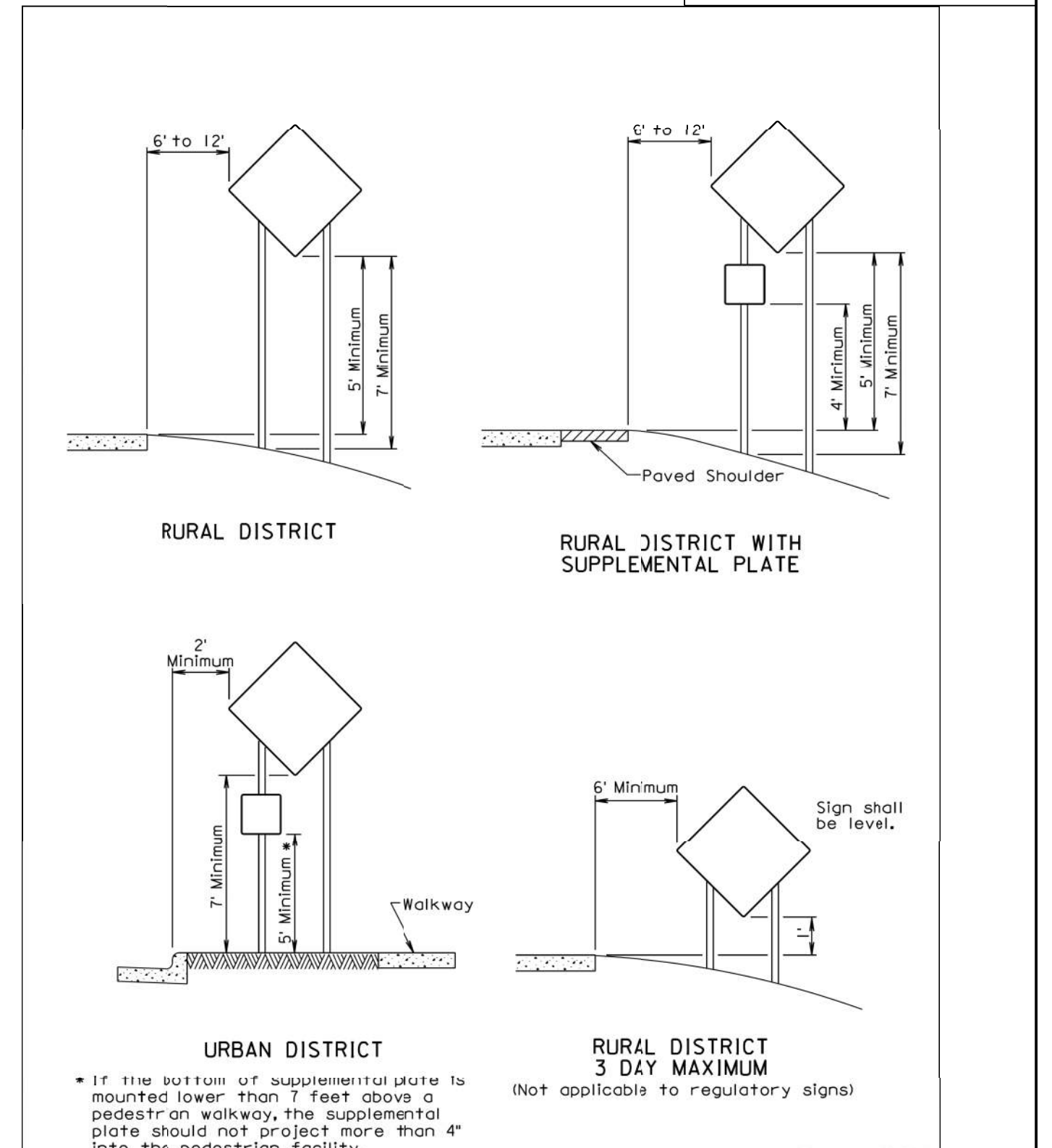
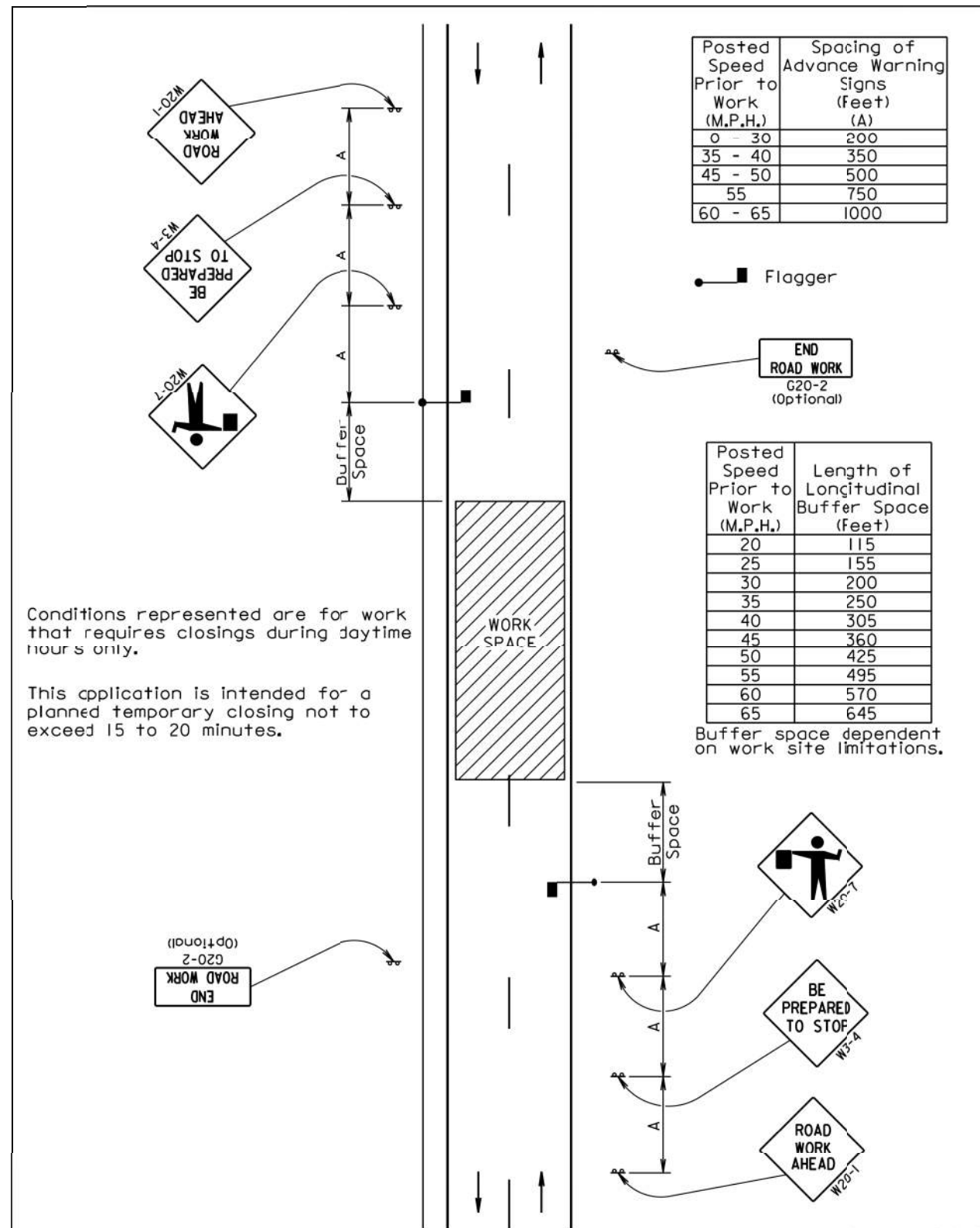
Published Date: 2nd Qtr. 2018

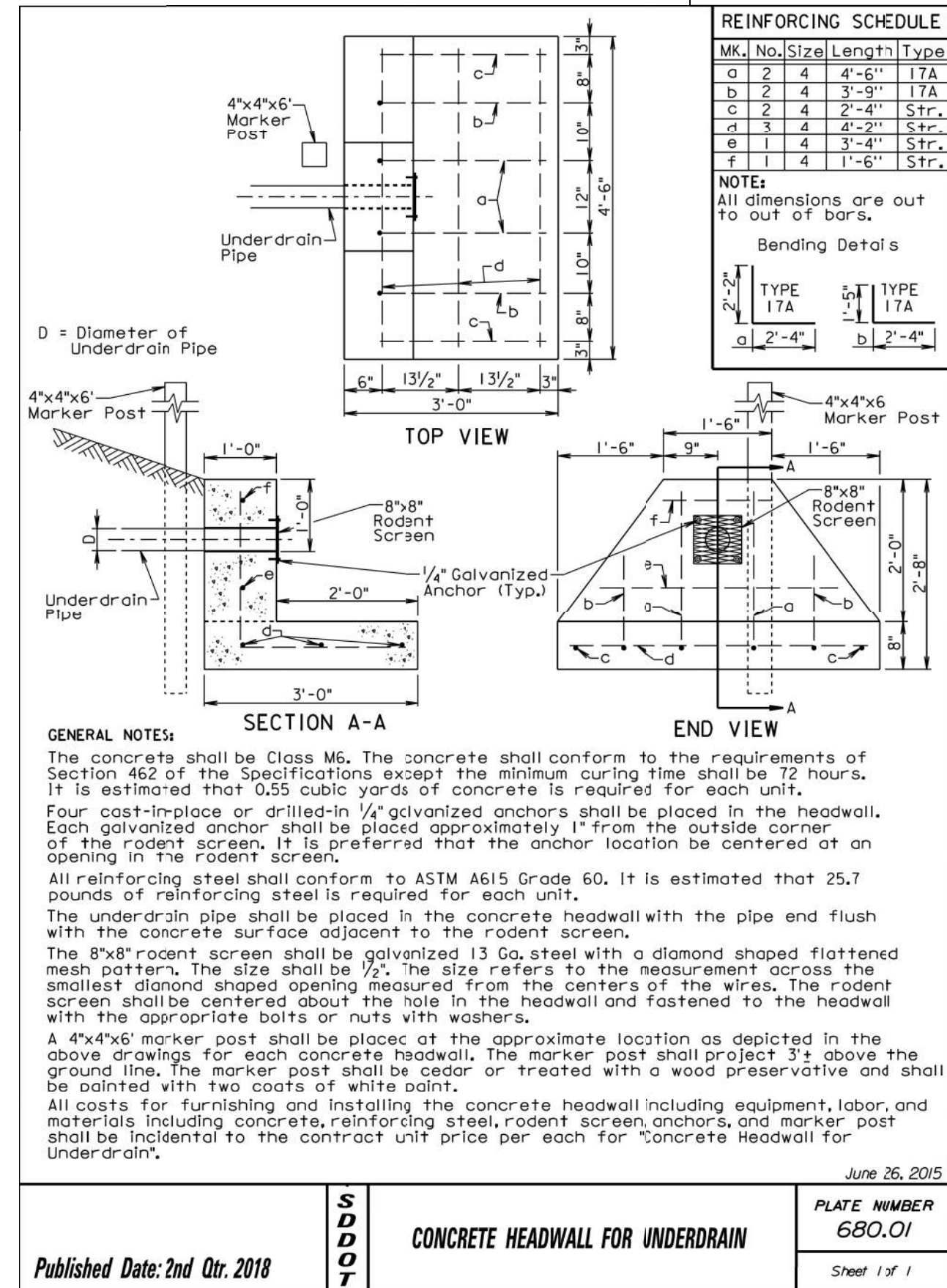
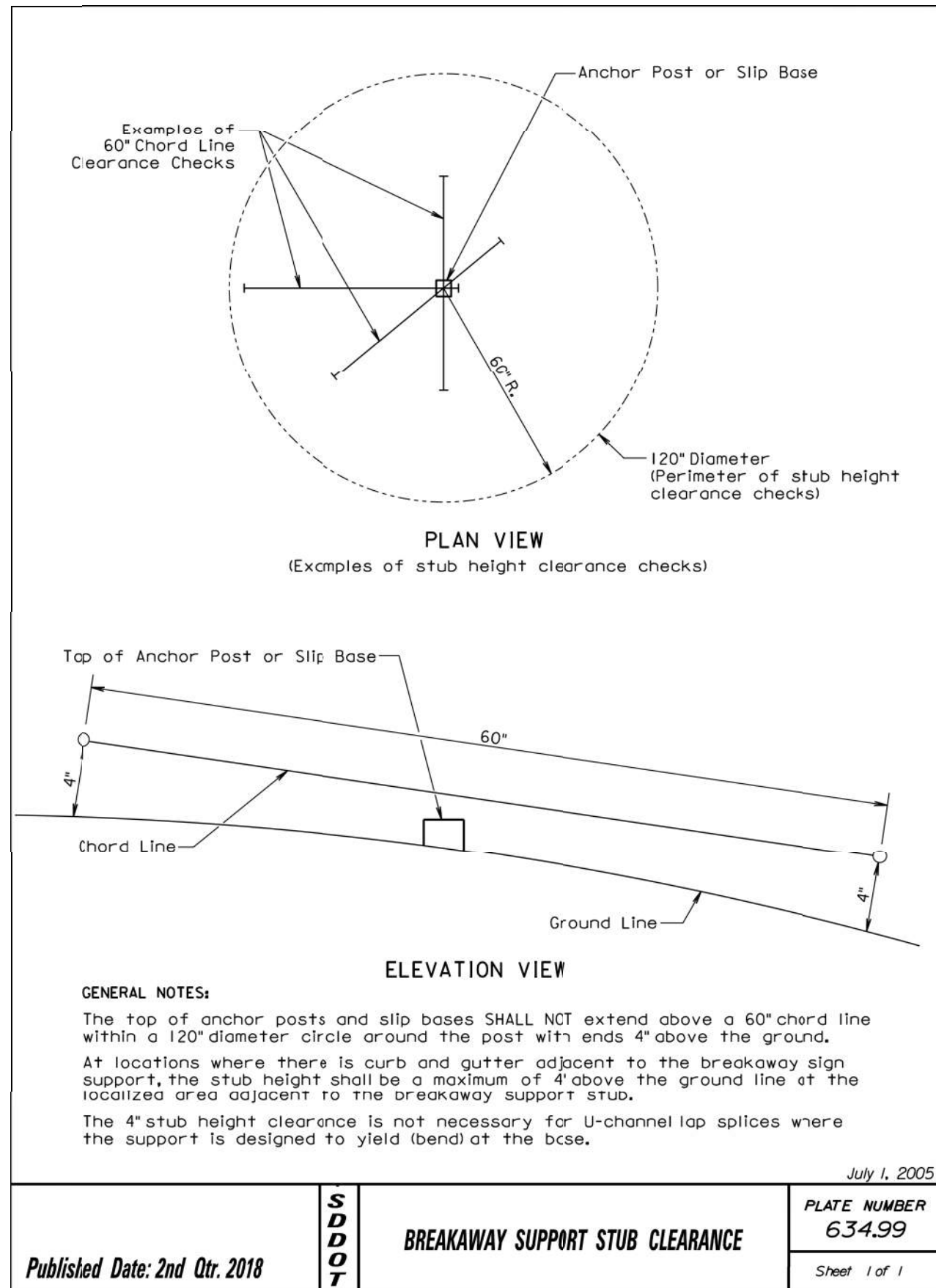
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GUIDES FOR TRAFFIC CONTROL DEVICES
WORK ON SHOULDERS

PLATE NUMBER
634.03

Sheet 1 of 1





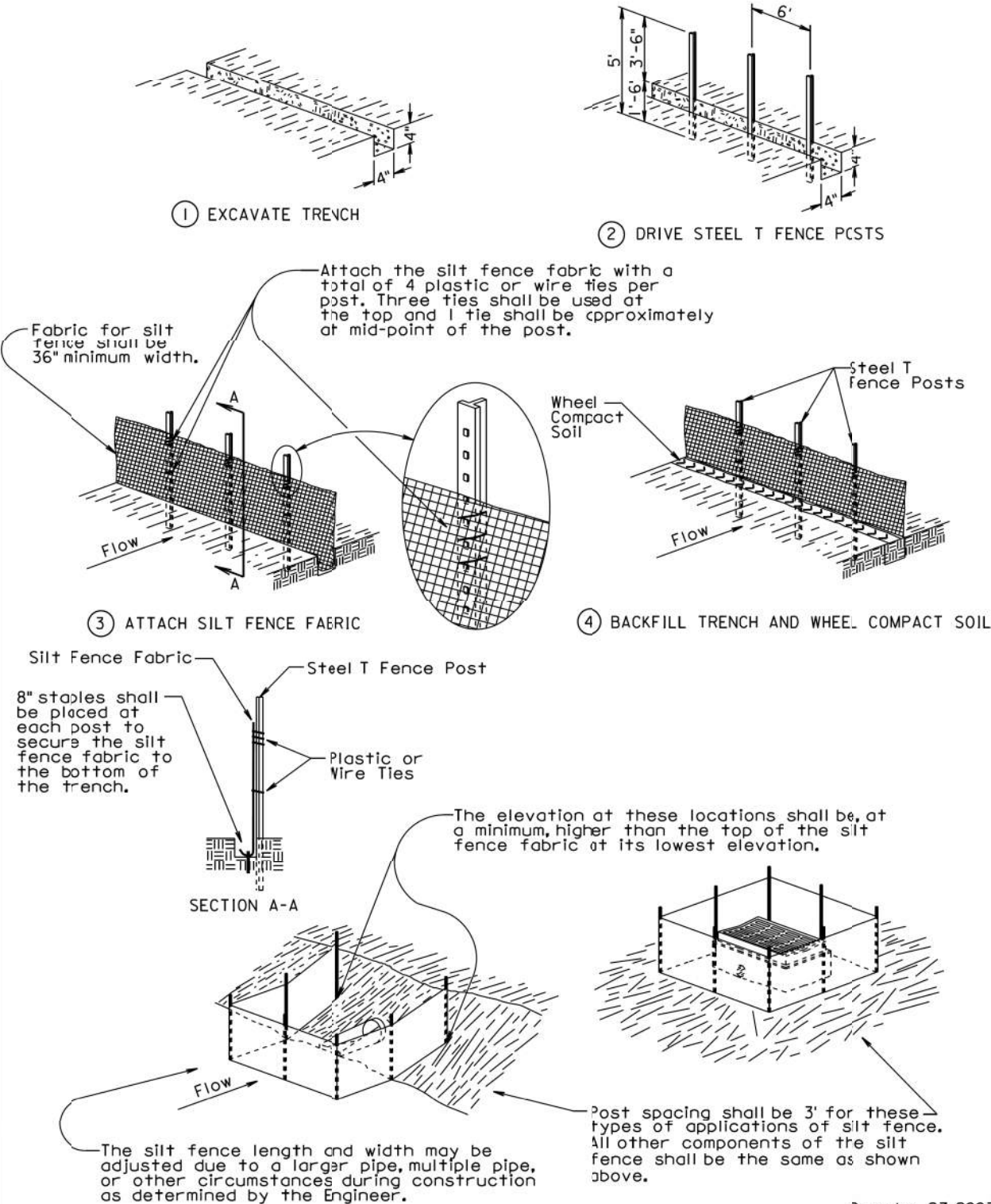
REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
a	2	4	4'-6"	17A
b	2	4	3'-9"	17A
c	2	4	2'-4"	Str.
d	3	4	4'-2"	Str.
e	1	4	3'-4"	Str.
f	1	4	1'-6"	Str.

NOTE:
All dimensions are out to out of bars.

Bending Details

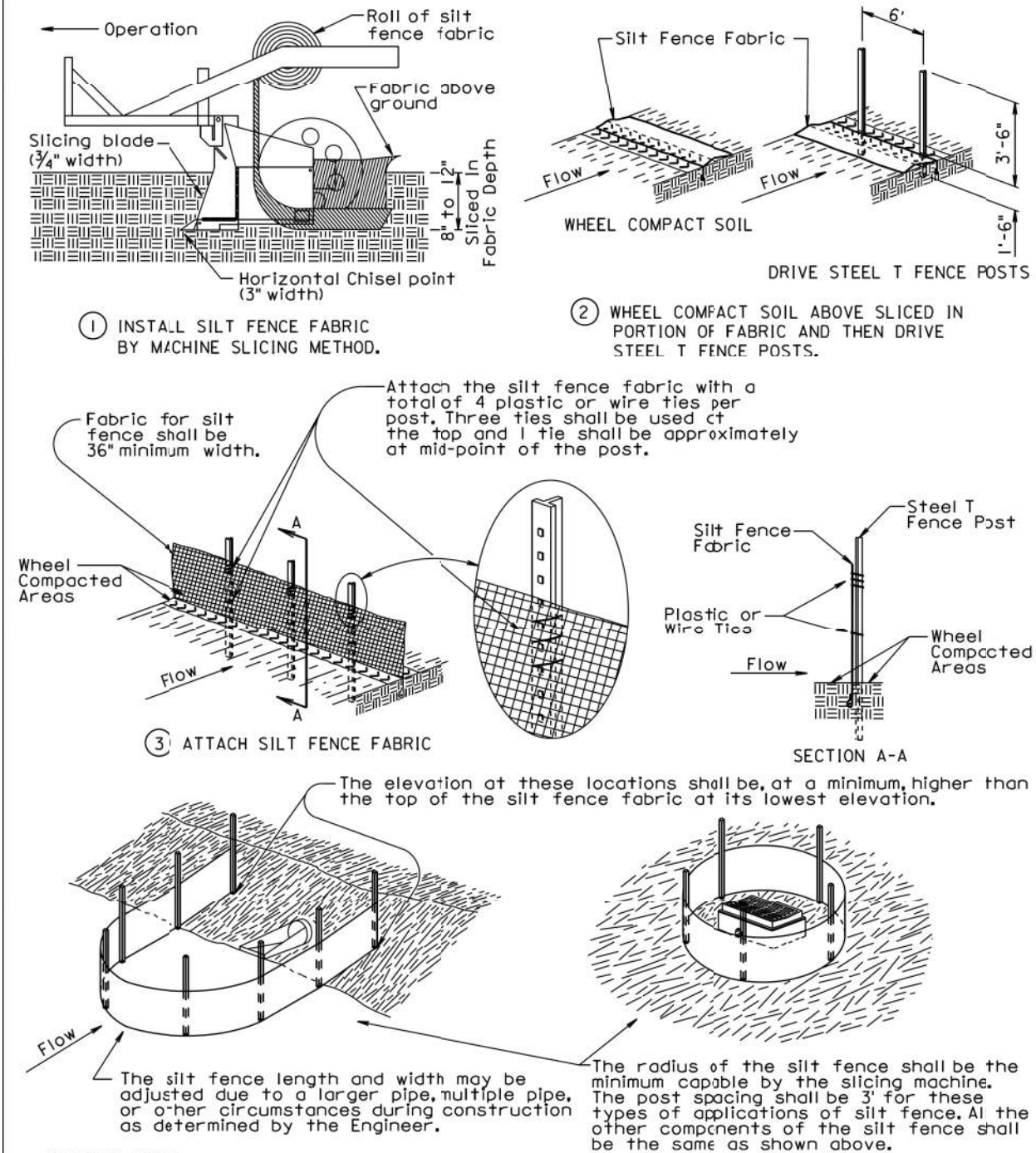
2'-2"	TYPE 17A	1'-5"	TYPE 17A
a	2'-4"	b	2'-4"

MANUAL HIGH FLOW SILT FENCE INSTALLATION

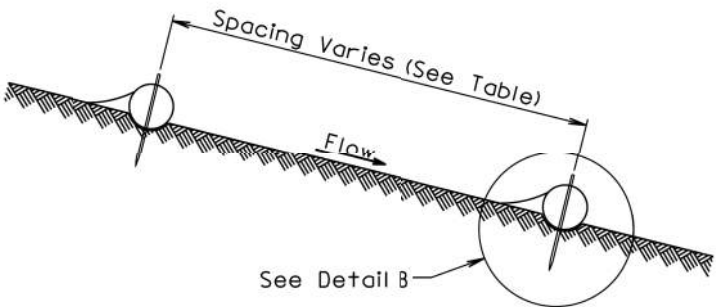


December 23, 2003

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION

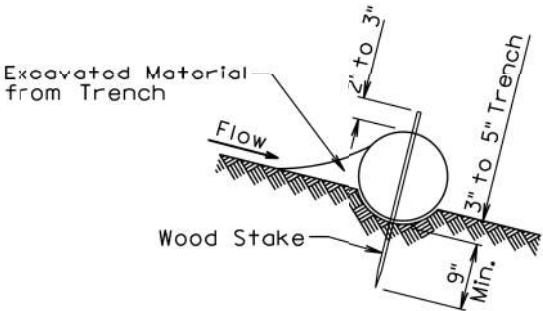


December 23, 2003

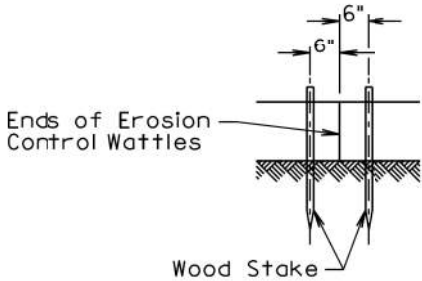


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

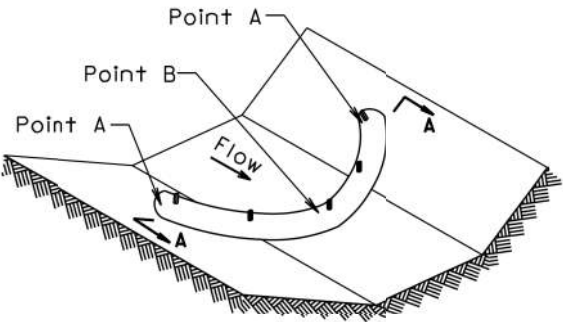
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



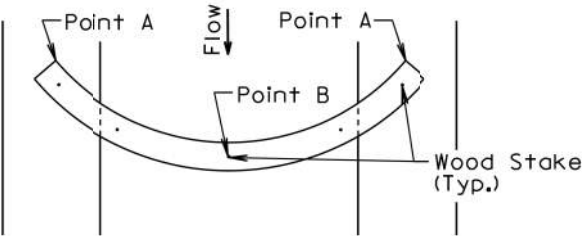
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

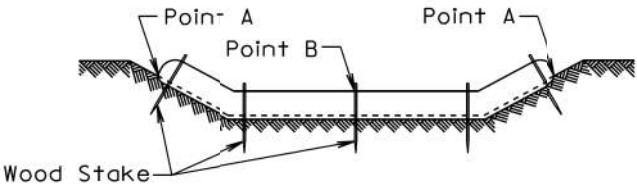


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

DITCH INSTALLATION	
Grade	Spacing (Ft)
2%	150
3%	100
4%	75
5%	50



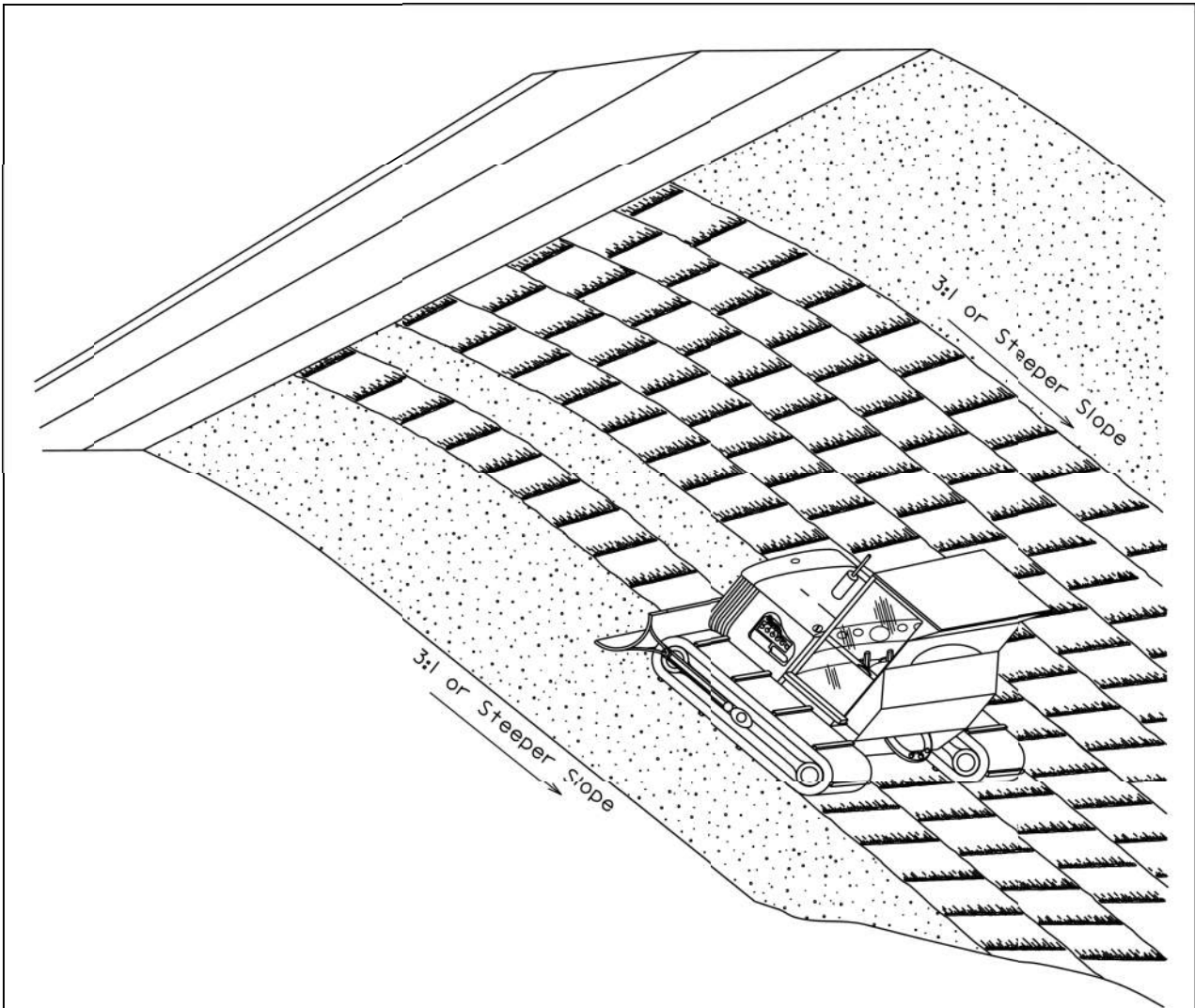
SECTION A-A

December 23, 2004

GENERAL NOTES:

- At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow.
- At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.
- The Contractor shall dig a 3" to 5" trench, install the wattle tightly in the trench so that 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.
- 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'.
- 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.
- The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.
- Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".
- All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.
- All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

December 23, 2004



GENERAL NOTES:

Where practical, surface roughening shall be done on slopes 3:1 and steeper and on slopes deemed necessary by the Engineer.

The equipment used for surface roughening shall be equipped with tracks that are capable of creating ridges in the soil that are perpendicular to the slope. The final condition of the surface roughening shall be approved by the Engineer.

Measurement for surface roughening shall be to the nearest tenth of an acre.

All costs associated with surface roughening including labor, equipment, and materials shall be incidental to the contract unit price per acre for "Surface Roughening".

June 26, 2009

Published Date: 2nd Qtr. 2018

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SURFACE ROUGHENING

PLATE NUMBER
734.25

Sheet 1 of 1

