

STATE OF SD	PROJECT	SHEET NO.	TOTAL SHEETS
	IM-P 0033(32)	1	18

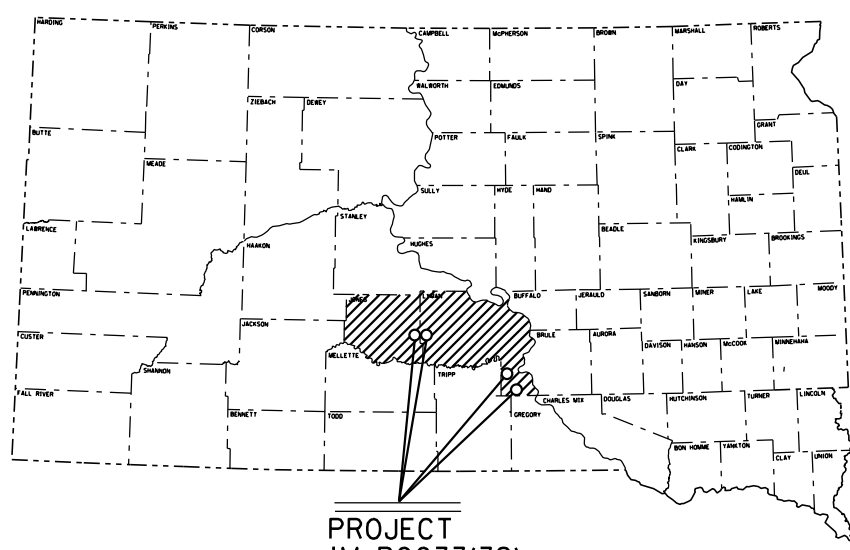
Revised 04/24/2024 RWF
Revised 07/26/2024 RWF

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT IM-P 0033(32)
Interstate 90,
SD248, SD47, & SD49
JONES & LYMAN COUNTIES

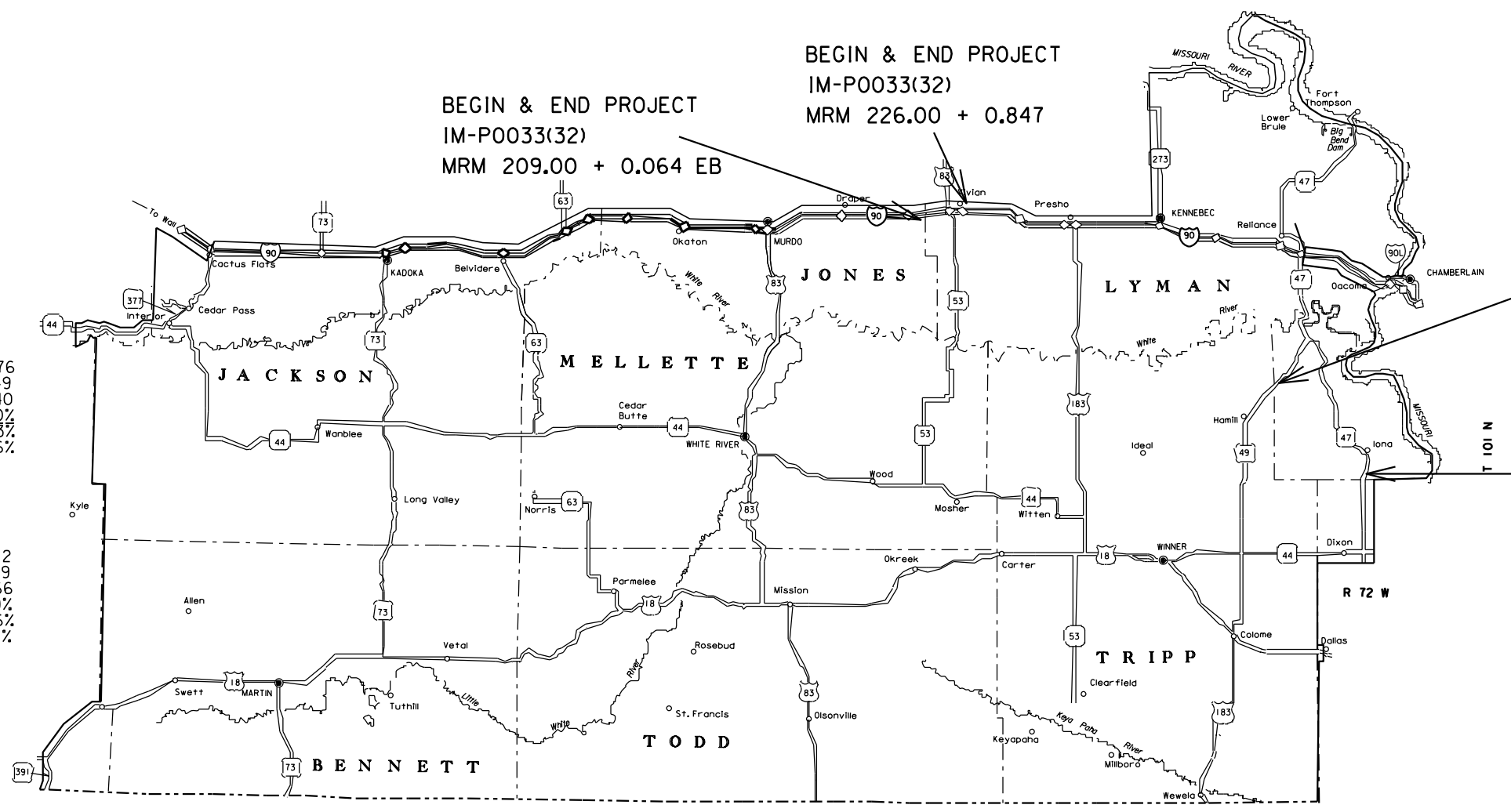
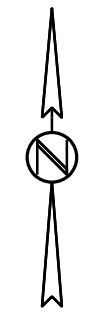
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PROJECT IM-P0033(32)

PIPE REPAIR
PCN 06FD



BEGIN & END PROJECT IM-P0033(32)
MRM 209.00 + 0.064 EB

BEGIN & END PROJECT IM-P0033(32)
MRM 226.00 + 0.847

BEGIN & END PROJECT IM-P0033(32)
MRM 51.00 + 0.257

BEGIN & END PROJECT IM-P0033(32)
MRM 41.00 + 0.393 &
MRM 42.00 + 0.011

I-90 PCN 06FD JONES COUNTY DESIGN DESIGNATION		SD 248 PCN 06FD LYMAN COUNTY DESIGN DESIGNATION	
ADT (2022)	3715	ADT (2022)	176
ADT (2042)	5249	ADT (2042)	249
DHV	929	DHV	40
D	51%	D	50%
T DHV	14.2%	T DHV	10.3%
T ADT	31.2%	T ADT	22.6%
SD 47 PCN 06FD LYMAN COUNTY DESIGN DESIGNATION		SD 49 PCN 06FD LYMAN COUNTY DESIGN DESIGNATION	
ADT (2022)	280	ADT (2022)	412
ADT (2042)	391	ADT (2042)	559
DHV	46	DHV	66
D	50%	D	50%
T DHV	10.9%	T DHV	16%
T ADT	23.9%	T ADT	35.1%

STORMWATER PERMIT
None Required

Estimate of Quantities

Non-Section Method

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0500	Remove Pipe Culvert	104	Ft
110E0510	Remove Pipe End Section	10	Each
110E1690	Remove Sediment	1.0	CuYd
120E0600	Contractor Furnished Borrow	90	CuYd
450E0162	30" RCP Class 2, Furnish	26	Ft
450E0170	30" RCP, Install	26	Ft
450E0192	42" RCP Class 2, Furnish	18	Ft
450E0200	42" RCP, Install	18	Ft
450E2024	30" RCP Flared End, Furnish	2	Each
450E2025	30" RCP Flared End, Install	2	Each
450E2032	42" RCP Flared End, Furnish	1	Each
450E2033	42" RCP Flared End, Install	1	Each
450E4798	42" CMP 14 Gauge, Furnish	52	Ft
450E4800	42" CMP, Install	52	Ft
450E5215	24" CMP Flared End, Furnish	2	Each
450E5216	24" CMP Flared End, Install	2	Each
450E5219	30" CMP Flared End, Furnish	2	Each
450E5220	30" CMP Flared End, Install	2	Each
450E5227	42" CMP Flared End, Furnish	4	Each
450E5228	42" CMP Flared End, Install	4	Each
450E8910	Cleanout for Culvert Treatment	3	Each
450E9524	24" Cured in Place Pipe	138	Ft
450E9526	30" Cured in Place Pipe	87	Ft
450E9530	42" Cured in Place Pipe	109	Ft
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	498.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	2	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
720E1010	PVC Coated Bank and Channel Protection Gabion	10.0	CuYd
734E0010	Erosion Control	Lump Sum	LS
734E0132	Type 2 Turf Reinforcement Mat	223.0	SqYd
734E0154	12" Diameter Erosion Control Wattle	320	Ft
734E0450	Temporary Water Barrier	100	Ft
831E0110	Type B Drainage Fabric	29	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified 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. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A1: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.026 acres of wetlands (includes temporary and permanent) becoming impacted.

Table of Impacted Wetlands

Wetland No.	MRM	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
1 I90 EB	209.00 + 0.064	0.00	0.00	0.003	0.003	0.006
2 SD248	226.00 + 0.847	0.00	0.00	0.002	0.002	0.004
3 SD49	51.00 + 0.257	0.00	0.00	0.001	0.001	0.002
4 SD47	41.00 + 0.393	0.00	0.004	0.003	0.003	0.010
5 SD47	42.00 + 0.011	0.00	0.00	0.002	0.002	0.004

Action Taken/Required:

Mitigation is required in accordance with the "Statewide Finding Regarding Wetlands for South Dakota Federal-Aid Highway Projects (February 2018)". Replacement of 0.004 acres of permanent wetland impacts will be completed through another wetland mitigation opportunity in a manner which considers FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.

Temporary impacts identified in the Table of Impacted Wetlands will not be mitigated as original contours and elevations will be re-established as designated in Grading Plans. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.21 D of the Specifications.

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Action Taken/Required: (CONTINUED)

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any wetland. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any wetlands beyond the work limits and easements shown in the plans.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

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 C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project

vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris, and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:

< <https://sdleastwanted.sd.gov/maps/default.aspx> >

< [South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species:](https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04)
<https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04> >

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

Medicine Creek is classified as warmwater, marginal fishery with a total suspended solids standard of less than 150 mg/L 30-day average, less than 263 mg/L daily maximum.

This project may be in the vicinity of multiple streams and wetlands. These waters are considered waters of the state and are protected under Administrative Rules of South Dakota (ARSD) Chapter 74:51. Special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

The Contractor is advised that the South Dakota Surface Water Quality Standards, administered by the South Dakota Department of Agriculture and Natural Resources (DANR), apply to this project. Special construction measures will be taken to ensure the above standard(s) of the surface waters are maintained and protected.

COMMITMENT D2: SURFACE WATER DISCHARGE

The DANR General Permit for Temporary Discharge is required for temporary dewatering and discharges to waters of the state. The effluent limit for total suspended solids will be 90 mg/L 30-day average. The effluent limit applies to discharges to all waters of the state except discharges to waters classified as coldwater permanent fish life propagation waters according to the ARSD 74:51:01:45. For discharges to waters of the state classified as coldwater permanent fish life propagation waters, the effluent limit for total suspended solids will be 53 mg/L daily maximum.

The permittee has the option of completing effluent testing or implementing a pollution prevention plan for compliance with this permit. If the permittee develops a pollution prevention plan instead of total suspended solids sampling, the plan must be developed and implemented prior to discontinuing total suspended solids sampling. Refer to Section 4.0 of the permit. If any pollutants are suspected of being discharged, a sample must be taken for those parameters listed in Section 3.4 of the permit.

Refer to Commitment D1: Surface Water Quality for stream classification.

Action Taken/Required:

If construction dewatering is required and this project is not required to be covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the Contractor will obtain the General Permit for Temporary Discharge Activities from the DANR Surface Water Program, 605-773-3351.

<
https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_TemporaryDischargeNOI2018Fillable.pdf >

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Action Taken/Required: (CONTINUED)

The Contractor will provide a copy of the approved permit or the submitted dewatering information to the Project Engineer prior to proceeding with any dewatering activities. The approved permit or submitted dewatering information must be kept on-site and as part of the project records.

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DANR monthly. Additional information can be found at:

<
<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/swdpermitting/Ereporting.aspx> >

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will 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) will 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 Agriculture and Natural Resources.

The waste disposal site(s) will 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 Environmental Office and the Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with 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 not to exceed the duration of the project. Prior to project completion, the waste will 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) will be incidental to the various contract items.

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO) 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 a cultural resource review prior to scheduling the pre-construction meeting. 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 will arrange and pay for a record search and when necessary, a cultural resource survey. 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 if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in 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 will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. 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.

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Action Taken/Required: (CONTINUED)

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

SHPO 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 will not utilize a site known or suspected of having contaminated soil or water. The Contractor will 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 USACE for the permanent actions associated with this project.

Action Taken/Required:

The Contractor will comply with all requirements contained in the Section 404 Permit.

The Contractor will also be responsible for obtaining a Section 404 Permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.

SCOPE OF WORK

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

- Install Temporary Erosion and Sediment Controls
- Removal of Embankment Topsoil at Areas Requiring Work
- Repair Mainline Pipe, Scour Areas, and Install Gabions
- Replace Topsoil
- Complete Any Remaining Project Cleanup

The Contractor is encouraged to inspect the project site prior to bidding to evaluate the extent of work that will be required for construction.

190 MRM 209.00 + 0.064 The site work on the left consists of removing and replacing the existing end section and three sections of the existing 42" RCP. The outlet will be cleaned out for approximately 50' to the East and North to the existing right of way to allow for drainage away from the pipe. Type 2 Turf Reinforcement Mat will be installed on the outlet clean out area 16' wide x 50' length. Excess dirt removed from this area will be disposed of by the Contractor or used as Contractor Furnished Borrow at other locations throughout the project.

The site work on the right consists of removing 42" x 52' CMP, one CMP/RCP transition and 42" x 4' RCP. This pipe is the dam overflow pipe that ties into a vertical drain located in the South ditch of 190. The use of a Temporary Water Barrier may be needed dependent on elevation of the existing water in the dam at the time of construction. The existing pipe inlet to the vertical drain will be plugged by the contractor to the satisfaction of the Engineer. A new 42" x 52' CMP and two flared ends will be installed at the same location and inlet elevation as the existing pipe. The pipe will outlet into the South ditch of Interstate 90 near the top inlet of the existing vertical drain. Type 2 Turf Reinforcement Mat will be installed in the South ditch of 190 8' wide x 10' length from the outlet of the new pipe to the inlet of the existing vertical drain. Approximately 50' of Right of Way fence will be removed and reset for the above work. Payment for plugging the existing vertical drain inlet and removing and resetting the existing fence will be incidental to

the contract unit prices for the corresponding pipe remove and install bid items.

SD 248 MRM 226.00 + 0.847 The site work on the left consists of removing and replacing the existing end section and three sections of the existing 30" RCP. The outlet will be cleaned out to allow drainage away from the pipe.

The site work on the right consists of removing and replacing the existing end section and two sections of the existing 30" RCP. The inlet will be cleaned out to allow drainage to the pipe.

SD 49 MRM 51.00 + 0.257 The site work consists of cleanout out for culvert treatment and installation of a 24" Cured in Place Pipe Liner. The existing 24" end sections on both the inlet and outlet will be removed and replaced. The inlet and outlet will be cleaned to allow drainage to and from the pipe.

SD 47 MRM 41.00 + 0.393 The site work consists of cleanout out for culvert treatment and installation of a 42" Cured in Place Pipe Liner. The existing 42" end sections on both the inlet and outlet will be removed and replaced. The existing scour hole on the inlet will be filled in with contractor furnished borrow. Type 2 Turf Reinforcement Mat will be installed 16' wide x 20' length at the inlet. Bank and Channel Protection Gabions and Type B Drainage Fabric will be placed on the outlet within the existing right of way. The remaining scour hole on the outlet will be filled with contractor furnished borrow.

SD47 MRM 42.00 + 0.011 The site work consists of cleanout out for culvert treatment and installation of a 30" Cured in Place Pipe Liner. The existing 30" end sections on both the inlet and outlet will be removed and replaced. The inlet and outlet will be cleaned to allow drainage to and from the pipe. The outlet will be cleaned out for approximately 30' to the right of way line to allow drainage away from the pipe. Type 2 Turf Reinforcement Mat will be installed 16' wide x 30' length at the outlet and 16' x 20' at the inlet.

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CLEANOUT FOR CULVERT TREATMENT

Cleanout of pipe culvert will be done in advance of the culvert lining.

Material in existing pipe culvert will be cleaned out by water flushing or other approved methods.

Material removed from the pipe culvert will become property of the Contractor for disposal.

The Contractor will implement appropriate sediment control measures prior to water flushing to prevent discharges from the project boundaries.

The pipe culvert will be cleaned to the satisfaction of the Engineer.

All costs to dewater, clean pipe, and dispose of removed materials will be incidental to the contract unit price per each for "Cleanout for Culvert Treatment".

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

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

Traffic must be maintained through the project at ALL times. The Contractor may perform work on the roadway during daylight hours only, unless additional hours are approved by the Engineer. Traffic will be returned to two-way traffic during non-working hours.

The Contractor will provide a minimum traffic width of 12 feet for one-way operations and 24 feet for two-way operations during the daytime construction period. The Contractor will restore traffic to normal driving lanes during periods when no construction activity is occurring. Contractor will accommodate all over width traffic for the duration of the project.

All construction operations will be conducted in the general direction of traffic movement.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following project completion.

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

Portable sign supports may be used as long as the duration is less than 3 days. If the duration is more than 3 days, the signs will be a fixed support and meet the minimum mounting heights of 5 foot for rural areas and 7 foot for urban areas.

A Type 3 Barricade will be installed at the end of a lane

closure taper as detailed in these plans.

Channelizing devices in a series must be of the same type. All traffic control devices will be in "like new" condition.

TRAFFIC CONTROL SIGNS

Sufficient traffic control devices have been included in these plans to sign 2 interstate lane closures and 2 two-way traffic closures. If the Contractor elects to work on additional locations, the cost for additional traffic control devices will be the responsibility of the contractor.

UTILITIES

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It will be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

CORRUGATED METAL PIPE

Corrugated metal pipes will have 2 2/3-inch X 1/2-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes will have 3-inch X 1-inch or 5-inch X 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

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CORRUGATED METAL PIPE – (CONTINUED)

Areas within the project have soils that are highly corrosive to steel. Corrugated metal pipe in these areas will be polymer coated 14 gauge steel as specified in the Table of Pipe Quantities. Any required connection bands, elbows, tees, crosses, wyes, reducers, and transitions will also be polymer coated. The connection bands will be 24 inches wide. All polymer coated corrugated metal pipe and components will be in conformance with AASHTO M245. Riveted pipe will not be allowed.

All damage to the polymer coating will 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 will be incidental to the corresponding CMP contract items.

Metal pipe end sections connected to polymer coated CMP will 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 will be incidental to the corresponding CMP End Section contract items

REINFORCED CONCRETE PIPE

High sulfate levels are likely to be encountered on this project. The type of cement will be either a Type II or a Type V with 20% to 25% Class F Modified Fly Ash substituted for cement in accordance with Section 605 of the Specifications. The Water/Cementitious material ratio will not exceed 0.45 as defined in Section 460.3 C of the Specifications. The mix will be as per the fabricator's design; however, minimum compressive strength will not be less than 4500 psi at 28 days. The pipe must be marked in an acceptable way to designate meeting requirements for sulfate resistance.

TIE BOLTS FOR REINFORCED CONCRETE PIPE

All joints for RCP including installed new and reset, will be tied together with tie bolts as per applicable Standard Plate(s). This includes connection from existing culvert sections to new

or reset sections. Existing tie bolts may be salvaged and reused if condition is acceptable to the Engineer. The cost for furnishing and installing the tie bolts for new and reset sections will be incidental to resetting or installing the pipe and end sections.

For informational purposes: Field drilling will be required to install the tie bolts on reset culvert, on reset culvert ends, existing culvert when installing a new/reset end section. All costs for removing/resetting existing tie bolts, drilling tie bolt holes, and furnishing and installing the tie bolts will be incidental to corresponding pipe items.

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor will provide a suitable site for Contractor Furnished Borrow Excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material will be approved by the Engineer.

Contractor Furnished Borrow will be required to fill in scour holes and other erosion as noted in the scope of work for the individual repair sites. All fill material will meet with the approval of the Engineer. Borrow Areas within the right-of-way may be available with prior approval of the Engineer.

Prior to removal of fill material, the Contractor will be required to remove four inches of topsoil and replacing the removed topsoil upon completion of the work. The placing of topsoil will be spread evenly throughout all disturbed areas. Any clumps larger than 3 inches will be broken up prior to seeding the areas. Removing and replacing topsoil will not be measured for payment but will be incidental to the contract unit price per cubic yard for "Contractor Furnished Borrow Excavation". Restoration of the borrow site will be the responsibility of the Contractor.

It is anticipated that water for compaction will not be required. When, in the opinion of the Engineer, the fill material is dry, water may be ordered and placed to the satisfaction of the Engineer. The cost of water will be incidental to the contract unit price per cubic yard for "Contractor Furnished Borrow".

The plans quantity for "Contractor Furnished Borrow" as shown in the Estimate of Quantities will be the basis of payment for this item unless the Engineer orders changes. The Contractor is responsible for obtaining all required permits and clearances for the borrow site.

Excess dirt removed at each site may be used as Contractor Furnished Borrow throughout the project with approval of the Engineer. It is anticipated that the project work will generate enough usable borrow material to complete the work. Excess material will be disposed of by the contractor.

Once a work site is opened up at a given location, work will proceed in a continuous manner to minimize the potential for erosion.

Compaction of the fill material will be to the satisfaction of the Engineer.

TEMPORARY WATER BARRIER

Temporary water barriers will be placed in a manner that creates the least amount of disturbance. Temporary water barriers are placed to keep the work area dry and separate from the water body. Contaminated water within the work area collected by the water barriers will be removed and treated in conformance with the Dewatering and Sediment Collecting notes.

All costs for furnishing, installing, maintaining, and removal of the temporary water barrier including hauling, materials, equipment, labor, and incidentals necessary will be paid for at the contract unit price per foot for "Temporary Water Barrier".

Properly designed sheet pile is an acceptable alternate temporary water barrier as approved by the Engineer.

Revised 4/24/2024 RWF
Revised 7/26/2024 RWF

TEMPORARY WATER BARRIER – (CONTINUED)

The temporary water barrier will be from the list below or an approved equal:

<u>Product</u>	<u>Manufacturer</u>
Environmental Barricades	Environmental Barricades Inc. Eagle Creek, OR Phone: 1-800-656-1296
Portadam	Portadam, Inc. Williamstown, NJ Phone: 1-800-346-4793 www.portadam.com
Aquadam	Water Structures Unlimited Carlotta, CA Phone: 1-800-682-9283 www.aquadam.com
Typar Geocell	Fiberweb Inc. Old Hickory, TN Phone: 1-615-847-7500 www.typargeosynthetics.com

DEWATERING AND SEDIMENT COLLECTING

The Contactor has the option to treat sediment laden water trapped within the project limits or the Contractor may elect to transport sediment laden water off the project.

Water transported off the project limits will not be disposed of in an area where it can enter a waterway. The disposal site must be approved by the Engineer.

Payment for dewatering and sediment collecting will be incidental to the contract unit prices for the corresponding pipe remove and install bid items.

EROSION CONTROL

The areas disturbed as a result of work on this project will be restored and/or reshaped to the satisfaction of the Engineer. All disturbed areas will be seeded and mulched.

The varieties listed for the seed mixture are preferred varieties. Native harvest seed will be allowed.

Type F Permanent Seed Mixture will consist of the following:

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

It is estimated that 0.25 acres of disturbed area will require seeding. Limits of the work will be determined by the Engineer at the time of Construction. Mulch required will be applied at a rate of 2 ton/acre. Hand placement and spreading of mulch will be allowed.

Application of fertilizer will not be required on this project.

All costs associated with furnishing/placing the seed, mulch, and inoculum, along with all labor, and equipment will be incidental to the contract lump sum price for "Erosion Control".

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum will 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 will provide certification of the fungal species claimed and the live propagule count. The inoculum will include a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

All seed will 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 will be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

<u>Product</u>	<u>Manufacturer</u>
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
LALRISE Prime and Max WP	Lallemand Specialties Inc. Milwaukee, WI Phone: 1-844-590-7781 www.lallemandplantcare.com

Revised 4/24/2024 RWF
Revised 7/26/2024 RWF

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment will be installed at locations noted in the table, Table of Mainline Pipe and Erosion Repair, and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details. The Contractor will provide certification that the erosion control wattles do not contain noxious weed seeds.

Erosion control wattles will remain on the project to decompose.

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

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

TURF REINFORCEMENT MAT

Turf Reinforcement Mat will be installed at locations shown in the table at the widths specified, and at locations determined by the Engineer during construction. The Contractor will 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://apps.sd.gov/HC60ApprovedProducts/main.aspx>

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

ITEMIZED LIST FOR TRAFFIC CONTROL

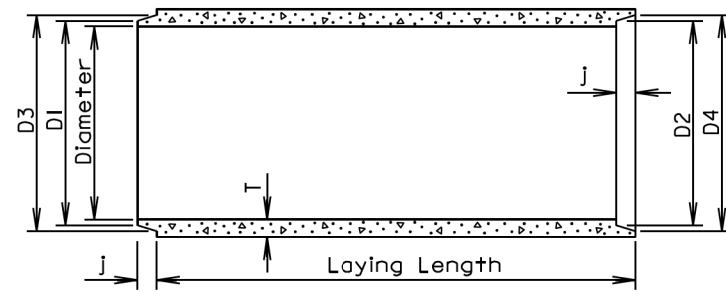
ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD				EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	4	48" x 48"	16.0	64.0				
W4-2	LEFT or RIGHT LANE ENDS (symbol)		48" x 48"	16.0		4	48" x 48"	16.0	64.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0	4	48" x 48"	16.0	64.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD		48" x 48"	16.0		4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0		48" x 48"	16.0	
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0		48" x 48"	16.0	
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0	4	48" x 24"	6.0	32.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT				EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			
		274.0				224.0			

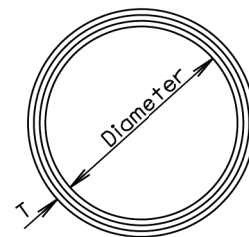
Highway			Interstate 90 EB		SD 248		SD 49		SD 47		SD 47						
MRM			209.00 + 0.064		226.00 + 0.847		51.00+0.257		41.00+0.393		42.00+0.011						
In-Place Structure Type			42" CMP (52') & 42" RCP (236')		30" RCP (186')		24" CMP (138')		42" CMP (109')		30" CMP (87')						
In-Place End Treatment			Flared		Flared		Flared		Flared		Flared						
IM-P0033(32)			PROJECT TOTALS		Repair Notes		Repair Notes		Repair Notes		Repair Notes						
					SUBTOTAL		remove/replace end section and 3 pipe sections;install tie bolts on all pipe;repair scour hole;shape outlet and install erosion control items		remove/replace 42"x52' CMP and flared end;remove 42"x4' RCP & Transition;plug vertical drain inlet;install 42" CMP Flared End		remove/replace end section and 3 pipe sections;install tie bolts on all pipe;shape outlet and install erosion control items		remove/replace end section and 2 pipe sections;install tie bolts on all pipe;shape inlet and install erosion control items		remove/replace end section;install cured in place pipe liner;shape inlet and repair scour hole; install erosion control items		remove/replace end section;fill scour hole;shape outlet and install gabions;install erosion control items
Bid Item	Bid Item Description	Unit			Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	Lt	Rt	
110E0500	Remove Pipe Culvert	(Ft)	104	104	18	60	14	12									
110E0510	Remove Pipe End Section	(Each)	10	10	1	1	1	1	1	1	1	1	1	1	1	1	
110E1690	Remove Sediment	(CuYd)	1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
120E0600	Contractor Furnished Borrow Excavation	(CuYd)	90	90	10	40	5	5	5	5	10	10					
450E0162	30" RCP Class 2, Furnish	(Ft)	26	26			14	12									
450E0170	30" RCP, Install	(Ft)	26	26			14	12									
450E0192	42" RCP Class 2, Furnish	(Ft)	18	18	18												
450E0200	42" RCP, Install	(Ft)	18	18	18												
450E2024	30" RCP Flared End, Furnish	(Each)	2	2			1	1									
450E2025	30" RCP Flared End, Install	(Each)	2	2			1	1									
450E2032	42" RCP Flared End, Furnish	(Each)	1	1	1												
450E2033	42" RCP Flared End, Install	(Each)	1	1	1												
450E4798	42" CMP 14 Gauge, Furnish	(Ft)	52	52		52											
450E4800	42" CMP, Install	(Ft)	52	52		52											
450E5215	24" CMP Flared End, Furnish	(Each)	2	2					1	1							
450E5216	24" CMP Flared End, Install	(Each)	2	2					1	1							
450E5219	30" CMP Flared End, Furnish	(Each)	2	2									1	1			
450E5220	30" CMP Flared End, Install	(Each)	2	2									1	1			
450E5227	42" CMP Flared End, Furnish	(Each)	4	4		2					1	1					
450E5228	42" CMP Flared End, Install	(Each)	4	4		2					1	1					
450E8910	Cleanout for Culvert Treatment	(Each)	3	3					1	1			1	1			
450E9524	24" Cured in Place Pipe	(Ft)	138	138					138								
450E9526	30" Cured in Place Pipe	(Ft)	87	87									87				
450E9530	42" Cured in Place Pipe	(Ft)	109	109							109						
634E0010	Flagging	(Hour)	40	40			5	5	5	5	5	5	5	5	5	5	
634E0110	Traffic Control	(SqFt)	498	498	112	112							137	137		137	
634E0120	Traffic Control, Miscellaneous	(LS)	1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
634E0275	Type 3 Barricade	(Each)	2	2	1	1											
634E0420	Type C Advance Warning Arrow Board	(Each)	2	2	1	1											
720E1010	PVC Coated Bank and Channel Protection Gabion	(CuYd)	10	10									10				
734E0010	Erosion Control	(LS)	1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
734E0132	Type 2 Turf Reinforcement Mat	(SqYd)	223	223	89	9							36	53	36		
734E0154	12" Diameter Erosion Control Wattle	(Ft)	320	320	60	40	20	20	20	20	60	40	20	20			
734E0450	Temporary Water Barrier	(Ft)	100	100		100											
831E0110	Type B Drainage Fabric	(SqYd)	29	29									29				

TOLERANCES IN DIMENSIONS

Diameter: $\pm 1.5\%$ for 24" Dia. or less and $\pm 1\%$ or $\frac{3}{8}$ " whichever is more for 27" Dia. or greater.
 Diameters at joints: $\pm \frac{3}{16}$ " for 30" Dia. or less and $\pm \frac{1}{4}$ " for 36" or greater.
 Length of joint (J): $\pm \frac{1}{4}$ ".
 Wall thickness (T): not less than design T by more than 5% or $\frac{3}{16}$ ", whichever is greater.
 Laying length: shall not underrun by more than $\frac{1}{2}$ ".



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

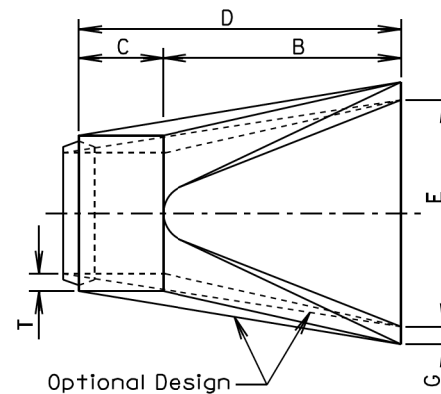
Construction of R.C.P. shall conform to the requirements of Section 990 of the Specifications.

Not more than 2 four-foot sections shall be permitted near the ends of any culvert. Four-foot lengths shall be used only to secure the required length of culvert.

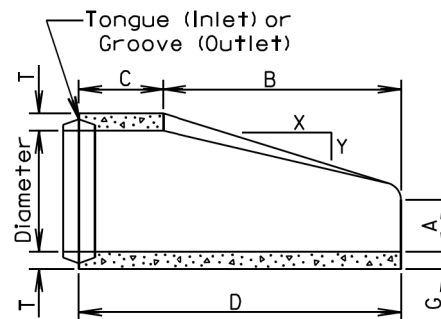
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 1/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	3 1/4	3	29 1/4	29 5/8	30 1/4	30 5/8
30	384	3 1/2	3 1/4	32 3/8	32 3/4	33 1/2	33 7/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 1/8	45 5/8	46 1/2	47
48	867	5	4 1/2	51 1/2	52	53	53 1/2
54	1070	5 1/2	4 1/2	57 1/8	58 3/8	59 3/8	59 7/8
60	1296	6	5	64 1/4	64 3/4	66	66 1/2
66	1542	6 1/2	5 1/2	70 5/8	71 1/8	72 1/2	73
72	1810	7	6	77	77 1/2	79	79 1/2
78	2098	7 1/2	6 1/2	83 3/8	83 7/8	85 5/8	86 1/8
84	2410	8	7	89 3/4	90 1/4	92 1/8	92 5/8
90	2740	8 1/2	7	95 3/4	96 1/4	98 7/8	98 5/8
96	2950	9	7	102 1/8	102 5/8	104 1/2	105
102	3075	9 1/2	7 1/2	109	109 1/2	111 1/2	112
108	3870	10	7 1/2	115 1/2	116	118	118 1/2

June 26, 2015

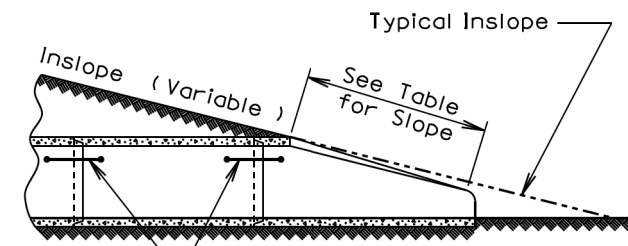
S D D O T	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
	Published Date: 2024	Sheet 1 of 1



TOP VIEW



LONGITUDINAL SECTION

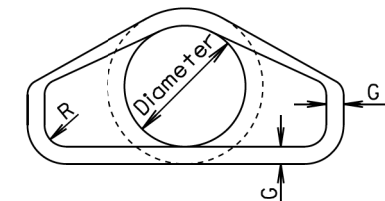


SLOPE DETAIL

GENERAL NOTES:

Lengths of concrete pipe shown on plan sheets are between flared ends only.

Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Specifications.



END VIEW

Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4:1	2	4	24	48 7/8	72 1/8	24	2	1 1/2
15	740	2.4:1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3:1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4:1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5:1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5:1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5:1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5:1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5:1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5:1	5	24	72	26	98	84	5	1 1/2
54	8240	2:1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9:1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7:1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8:1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8:1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6:1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5:1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

June 26, 2015

S D D O T	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
	Published Date: 2024	Sheet 1 of 1

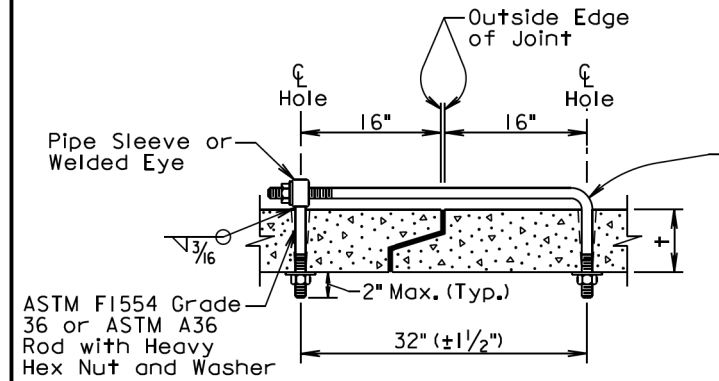
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3/4	5/8	3/4
3/2-6/2	3/4	1
≥ 7	1	1 1/4

GENERAL NOTES:

Tie bolts shall conform to ASTM F1554 Grade 36 or ASTM A36. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.

Pipe Sleeve shall conform to ASTM A500 or A53, Grade B.

Galvanize adjustable eye bolt tie assembly in accordance with ASTM A153.



ADJUSTABLE EYE BOLT TIE

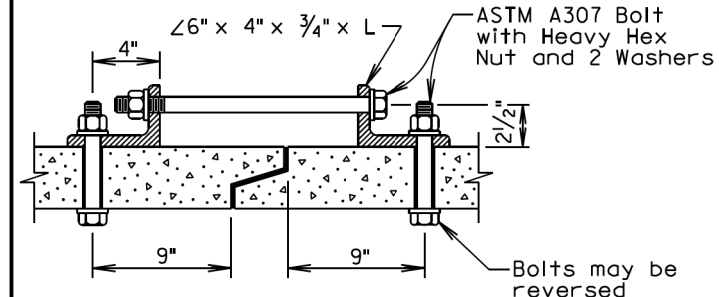
Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	3/4
> 48	6	1

GENERAL NOTES:

Angles shall conform to ASTM A36.

Bolts shall conform to ASTM A307. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.

Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.



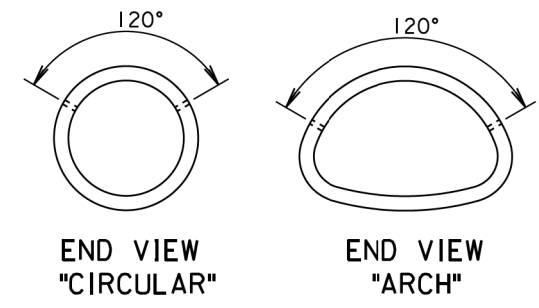
ANGLE AND BOLT TIE

GENERAL NOTES:

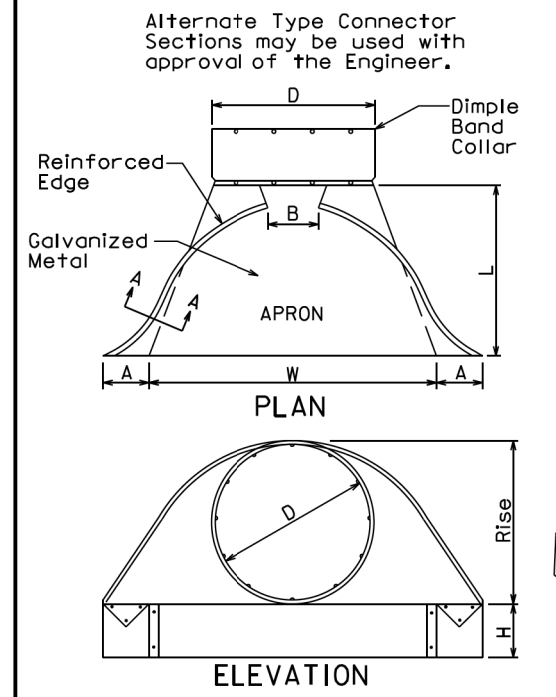
In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

All pipe sections of R.C.P. and R.C.P. Arch shall be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manhole, and junction boxes shall be tied with tie bolts.

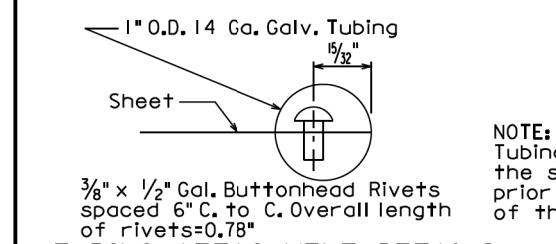
There will be no separate measurement or payment for the tie bolts. The cost for furnishing and installing the tie bolts shall be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.



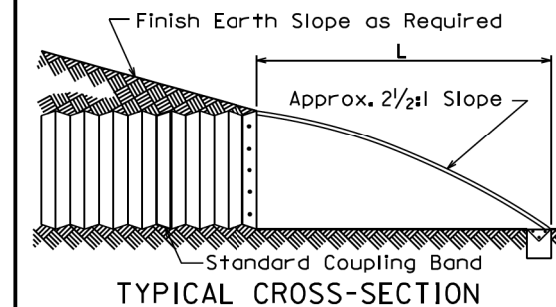
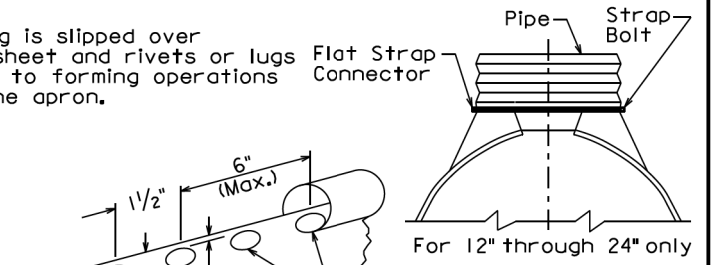
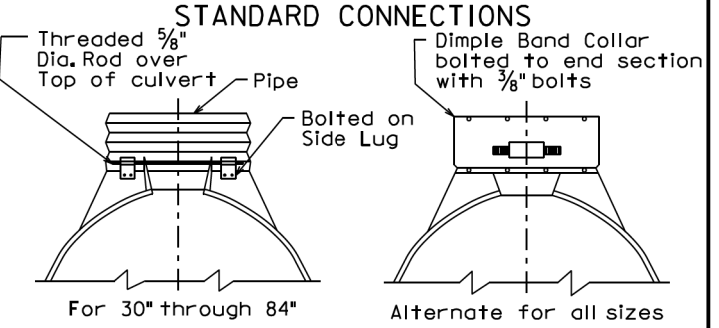
Published Date: 2024	S D D O T	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	February 28, 2013
		PLATE NUMBER 450.18	Sheet 1 of 1



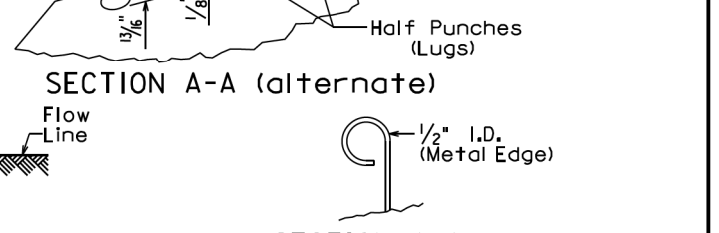
Dia. D (in.)	Ga.	DIMENSIONS (in.)					Approx. Slope	Body
		A	B	H	L	W		
12	16	6	6	6	21	24	2 1/2:1	1 Pc.
15	16	7	8	6	26	30	2 1/2:1	1 Pc.
18	16	8	10	6	31	36	2 1/2:1	1 Pc.
21	16	9	12	6	36	42	2 1/2:1	1 Pc.
24	16	10	13	6	41	48	2 1/2:1	1 Pc.
30	14	12	16	8	46	60	2 1/2:1	1 Pc.
36	14	14	19	9	51	72	2 1/2:1	2 Pc.
42	12	16	22	11	60	84	2 1/2:1	2 Pc.
48	12	18	27	12	69	90	2 1/4:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1 3/4:1	3 Pc.
66	12	18	36	12	87	120	1 1/2:1	3 Pc.
72	12	18	39	12	87	126	1 1/3:1	3 Pc.
78	12	18	42	12	87	132	1 1/4:1	3 Pc.
84	12	18	45	12	87	138	1 1/6:1	3 Pc.



TUBING ATTACHMENT DETAILS SECTION A-A



TYPICAL CROSS-SECTION



SECTION A-A (alternate)

GENERAL NOTES:

All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.

For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.

Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

Published Date: 2024	S D D O T	C.M.P. FLARED ENDS	March 31, 2000
		PLATE NUMBER 450.35	Sheet 1 of 1

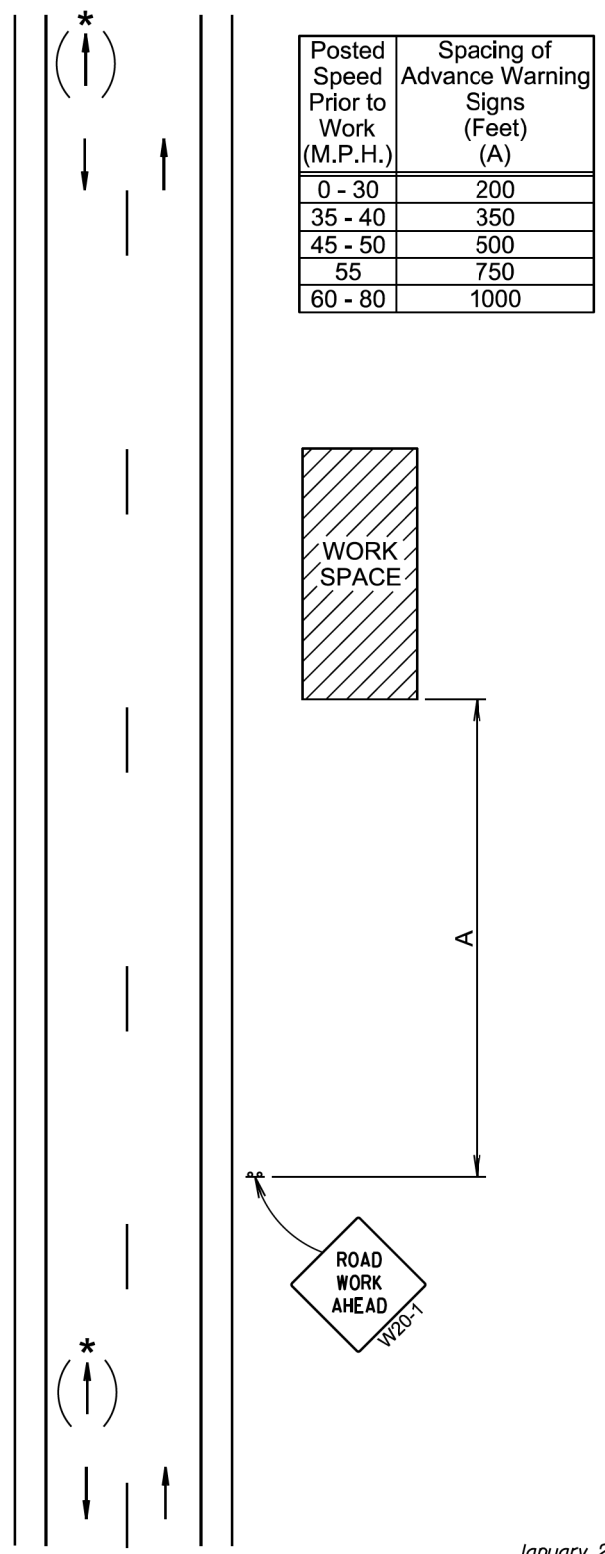
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated will 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.

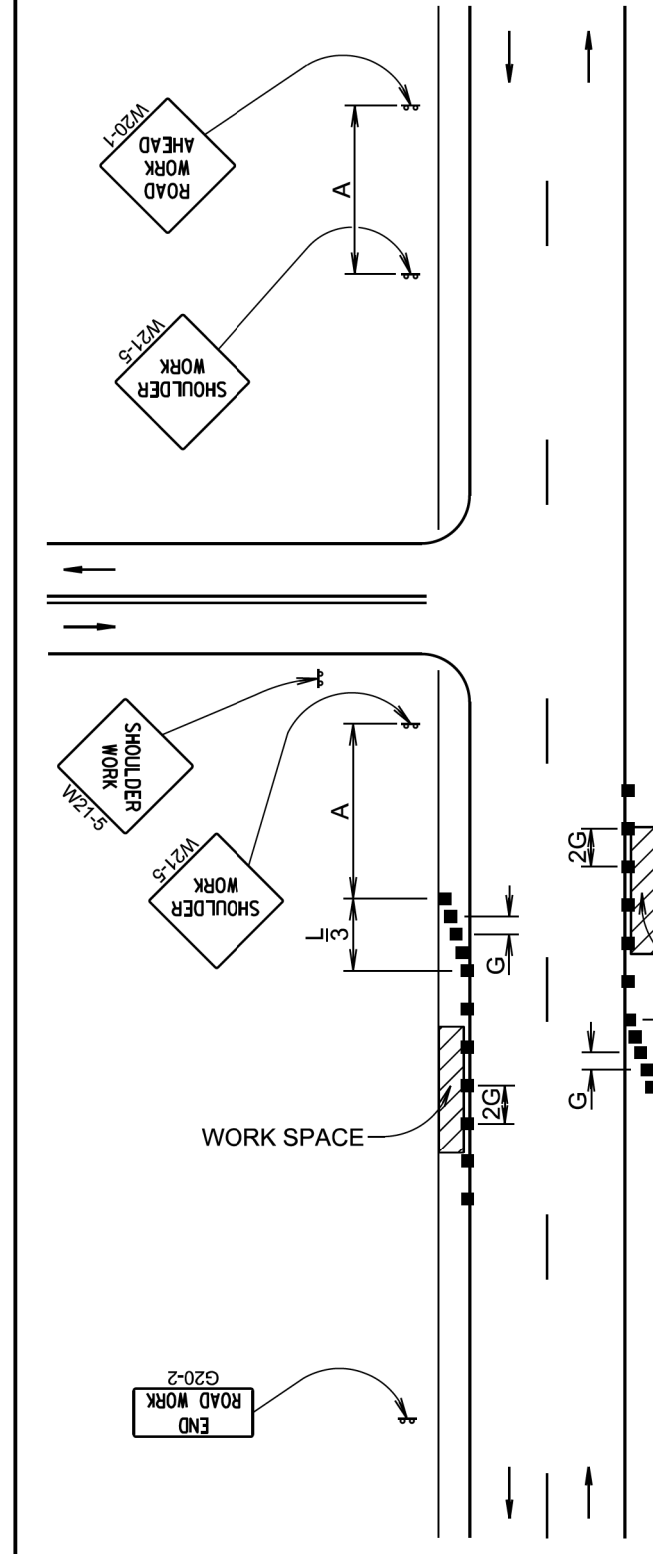
* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

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.



January 22, 2021

Published Date: 2024	S D D O T	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
END ROAD WORK G20-2

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

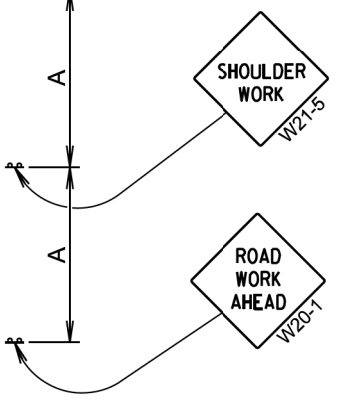
For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

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.

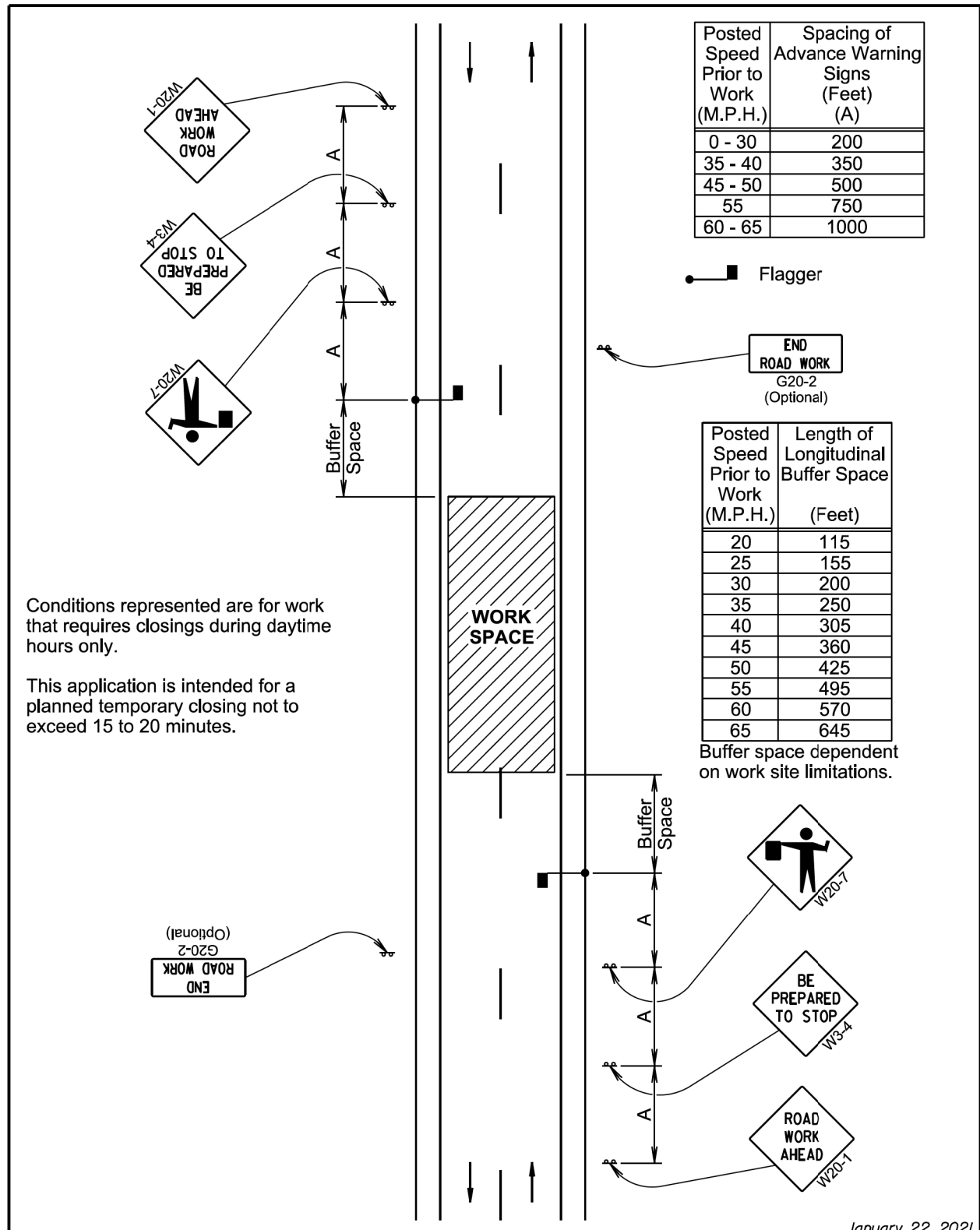
The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

WORK SPACE

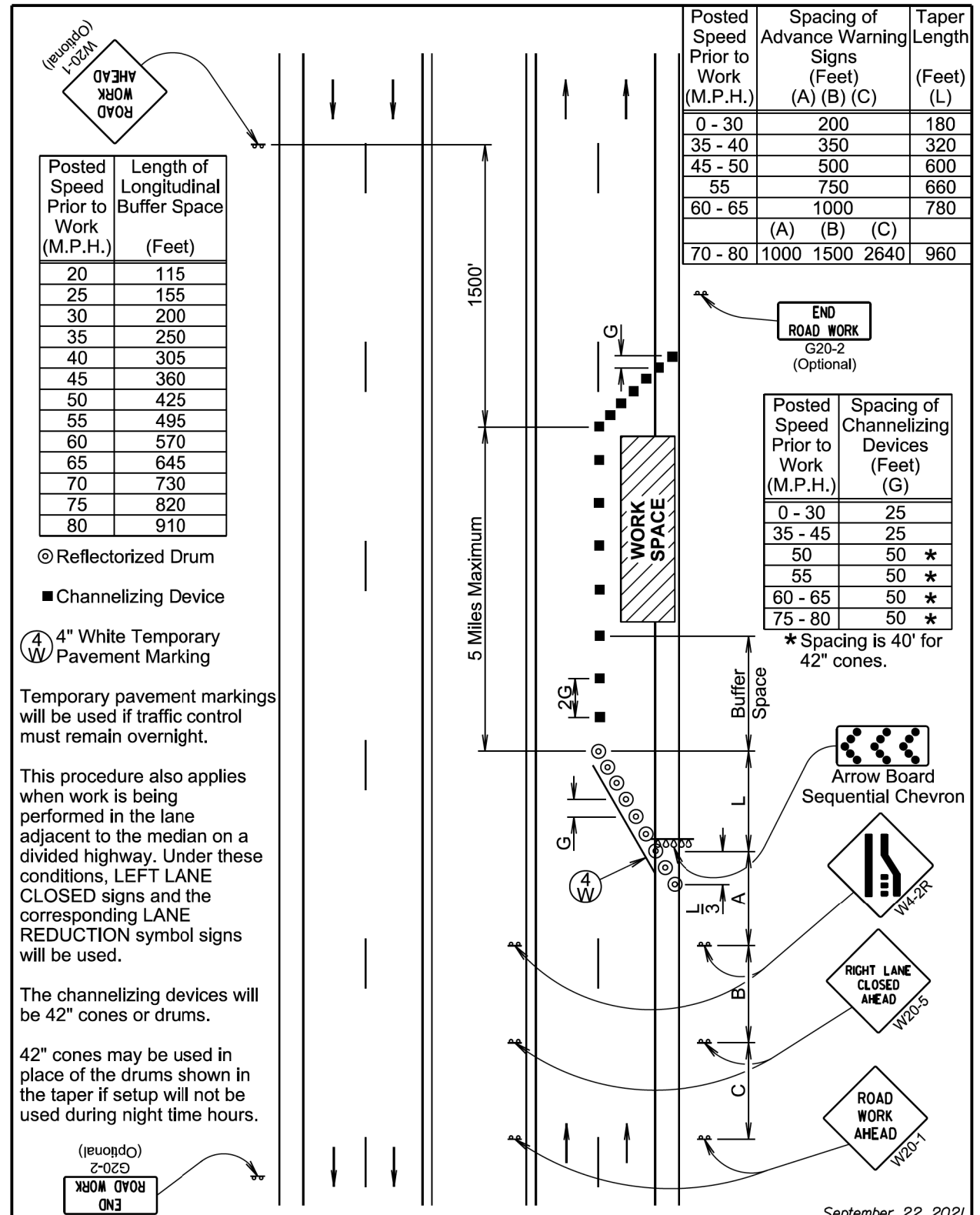


January 22, 2021

Published Date: 2024	S D D O T	WORK ON SHOULDERS	PLATE NUMBER 634.03
			Sheet 1 of 1



S D D O T	TEMPORARY ROAD WORK	PLATE NUMBER 634.30
	Published Date: 2024	Sheet 1 of 1



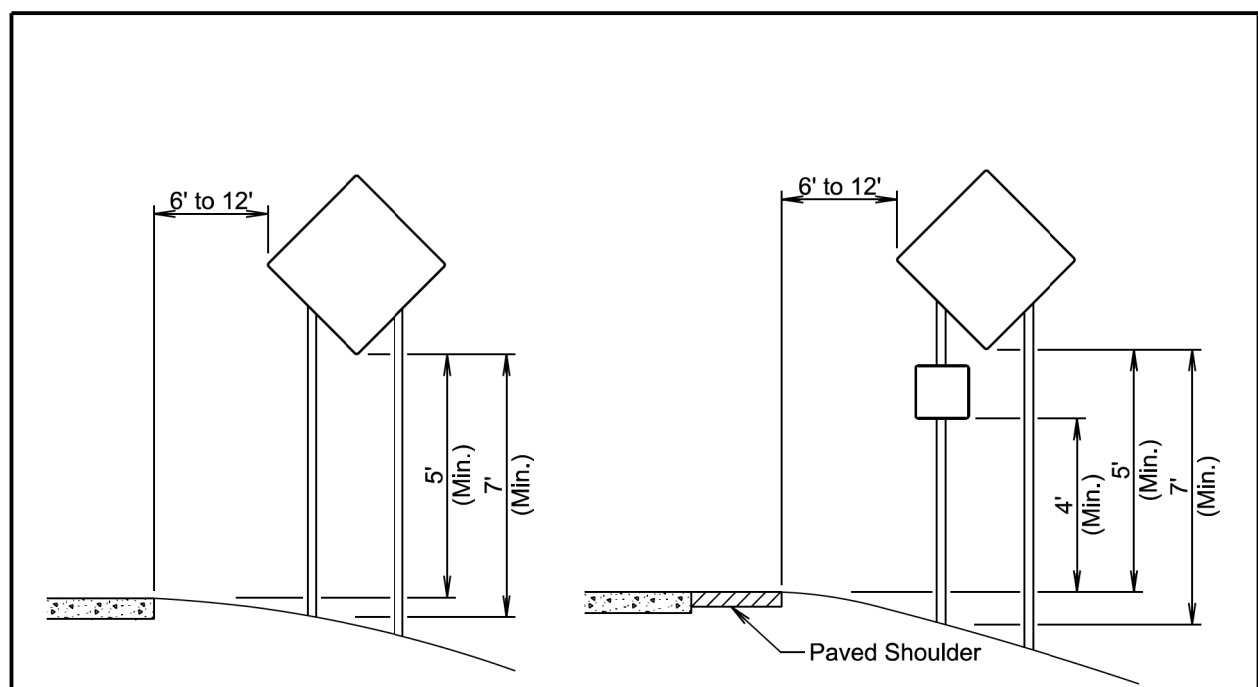
S D D O T	LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER 634.64
	Published Date: 2024	Sheet 1 of 1

Plot Scale - 1:200

Plotted From - TRW11NT29

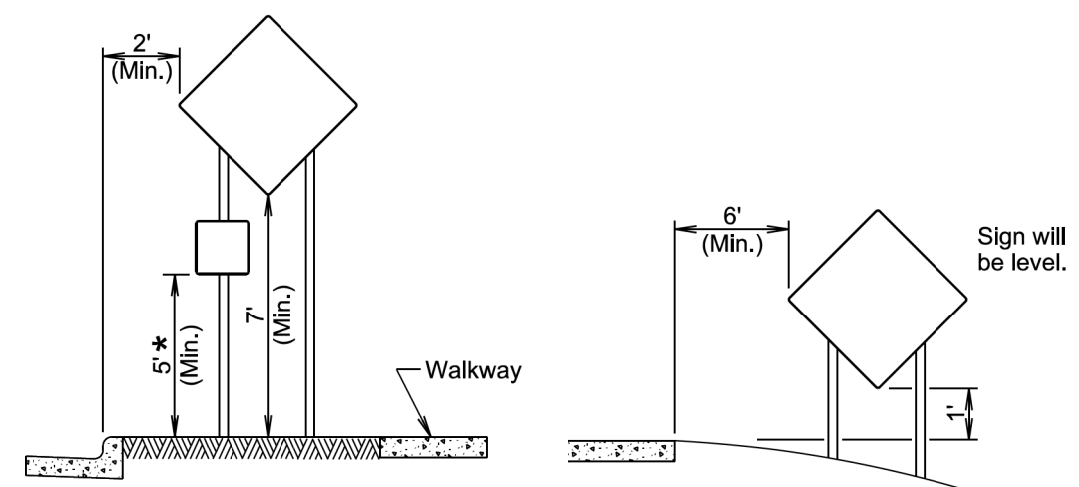
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Plot Scale - 1:200



RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

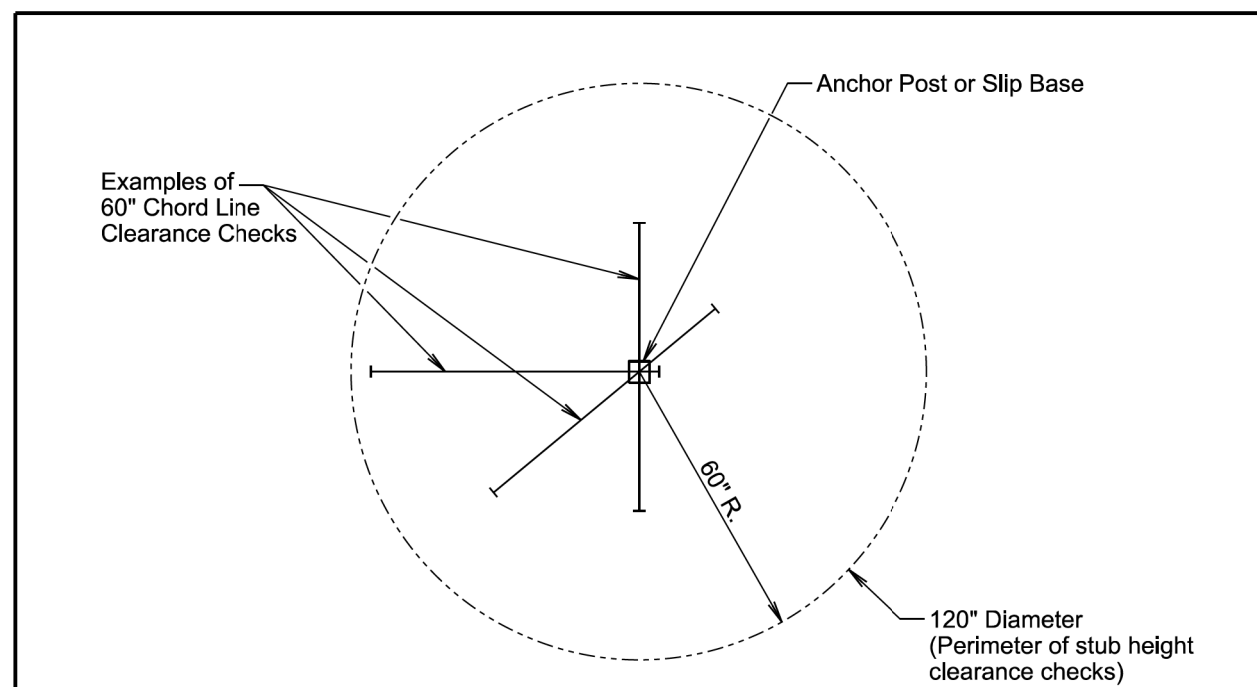
RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

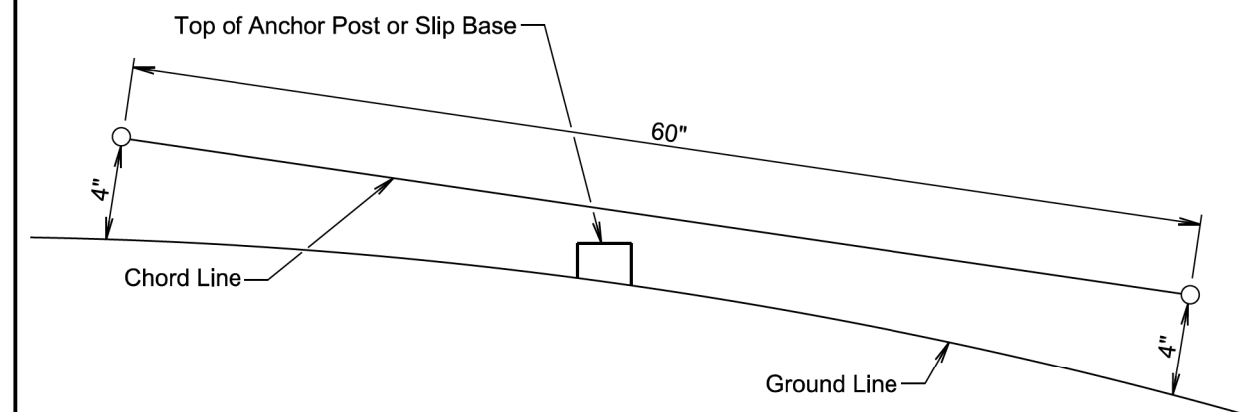
January 22, 2021

S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
		Sheet 1 of 1

Published Date: 2024



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

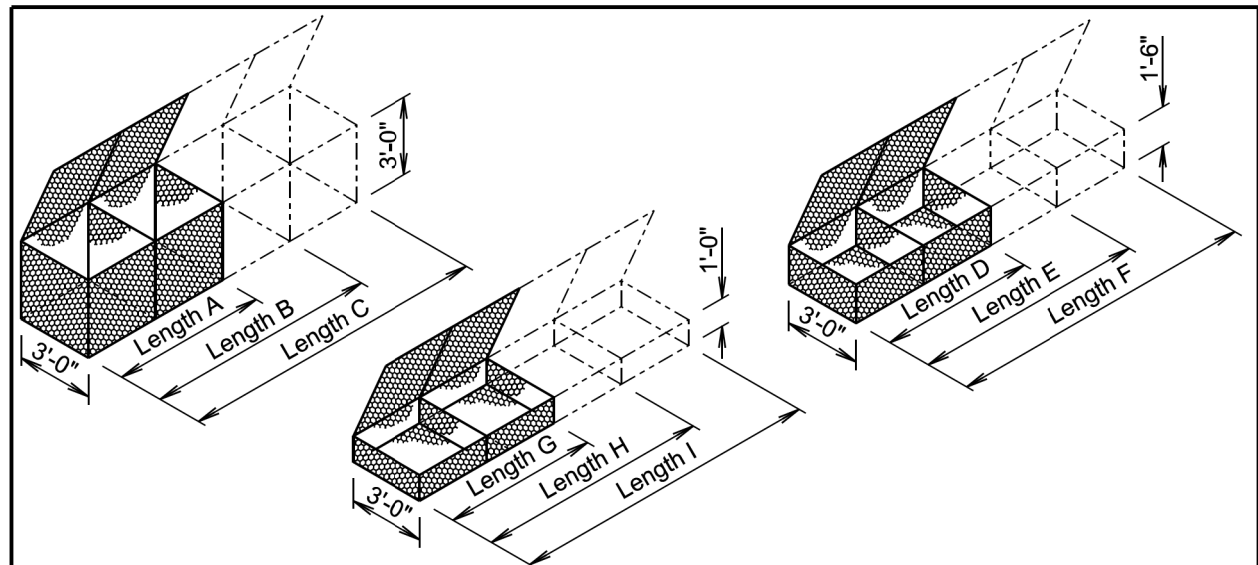
January 22, 2021

S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
		Sheet 1 of 1

Published Date: 2024

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GABION DETAILS

STANDARD SIZES					
SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY (Cu. Yd.)
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

GENERAL NOTES:

Above dimensions subject to mill tolerances.

Lacing and internal connecting wire will be 0.0866 inch diameter steel wire ASTM A641, Class 3 soft temper measured after galvanizing and for PVC coated gabions will be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately 1½ times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

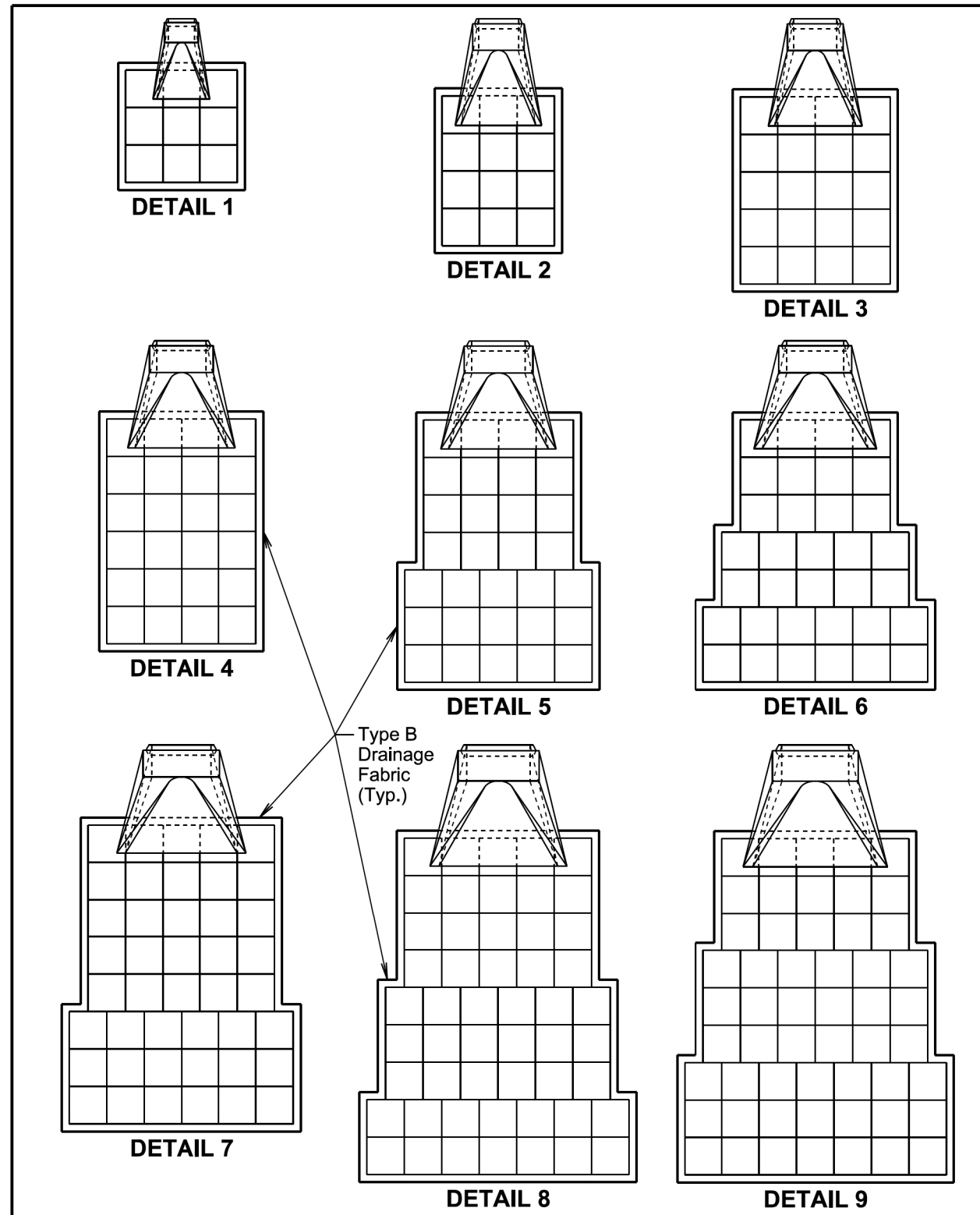
Wire lacing or interlocking type fasteners will be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions will be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing will conform to ASTM A641-92, Class 3 coating. Fasteners will also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions will be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class 1. The spacing of the interlocking fasteners during all phases of assembly and construction will not exceed 6 inches.

All fasteners will be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

February 14, 2020

Published Date: 2024	S D D O T	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER 720.01
			Sheet 1 of 1



February 14, 2020

Published Date: 2024	S D D O T	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03
			Sheet 1 of 2

* ESTIMATED QUANTITIES				
Detail	Pipe Diameter (Inches)	Gabion (Cu. Yd.)	Type B Drainage Fabric (Sq. Yd.)	
RCP, RCP Arch, CMP, and CMP Arch	1	12, 18, and 24	4.5	15
	2	30 and 36	6.0	19
	3	42	10.0	29
	4	48 and 54	12.0	34
	5	60	15.5	43
	6	66	17.0	47
	7	72	21.5	57
	8	78	26.0	68
	9	84	27.0	70

GENERAL NOTES:

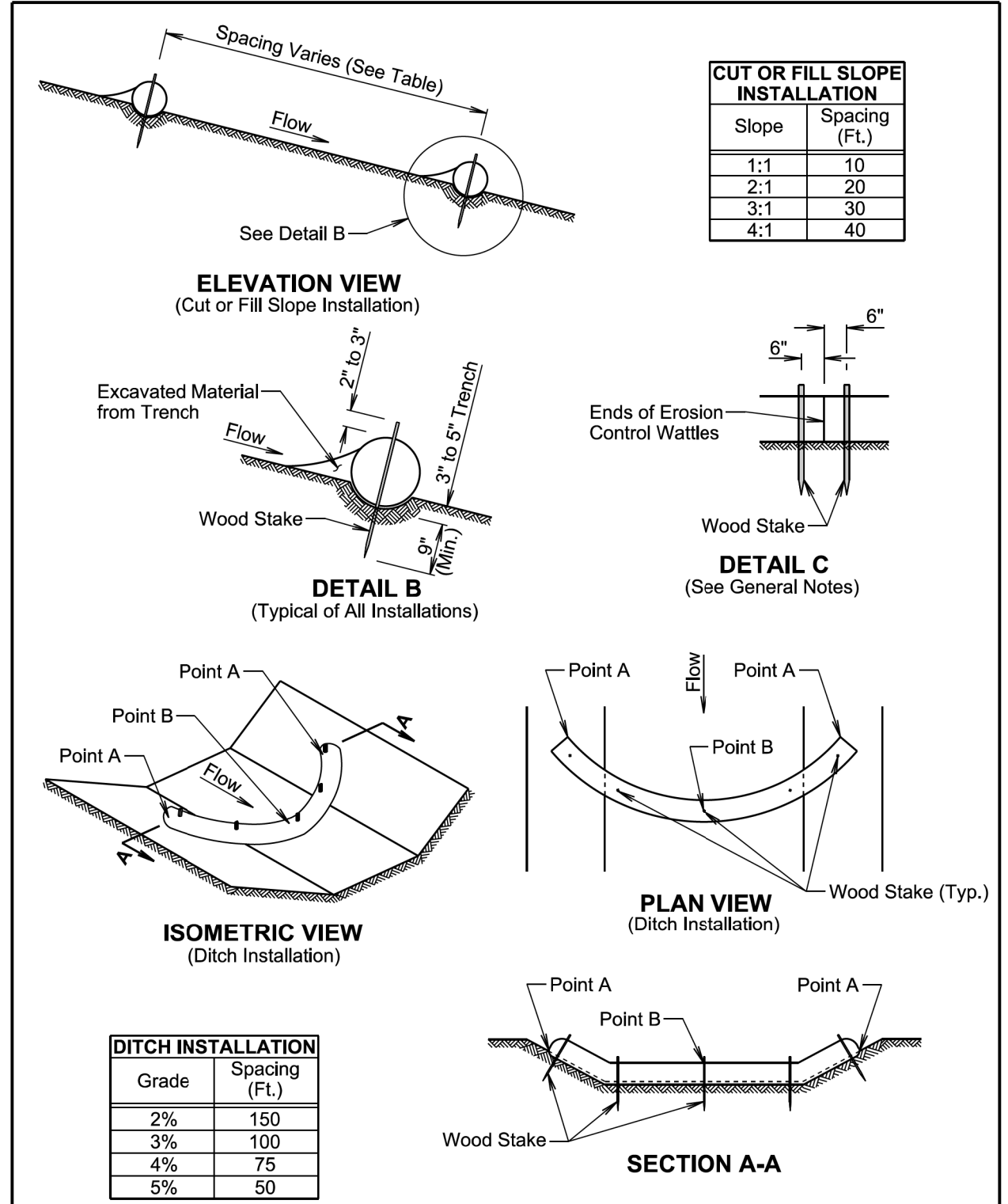
Gabions at outlets of CMP and RCP will be placed under the end section a distance of 2 feet from the outlet end. For CMP end section installations, the upper fabric of the gabions will be modified to accommodate the metal end section as approved by the Engineer.

* Gabion and type B drainage fabric quantities on this standard plate are based on standard gabion sizes D, E, and F as depicted on standard plate 720.01.

Type B drainage fabric will be placed under the gabions and around the exterior sides (perimeter) of the gabions as approved by the Engineer. The type B drainage fabric will be in conformance with Section 831 of the Specifications. Measurement and payment of the type B drainage fabric will be in conformance with Section 720 of the Specifications.

February 14, 2020

Published Date: 2024	S D D O T	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03
			Sheet 2 of 2



February 14, 2020

Published Date: 2024	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

Plot Scale - 1:200

Plotted From - TRW11NT29

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STATE OF SOUTH DAKOTA	PROJECT IM-P 0033(32)	SHEET 18	TOTAL SHEETS 18
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Plotting Date: 02/23/2024

Plot Scale - 1:200

GENERAL NOTES:

At cut or fill slope installations, wattles will 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 will 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 will 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 will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

Where installing running lengths of wattles, the Contractor will butt the second wattle tightly against the first and will not overlap the ends. See Detail C.

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will 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 will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials will be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

February 14, 2020

<i>Published Date: 2024</i>	S D D O T	EROSION CONTROL WATTLE	<i>PLATE NUMBER</i> 734.06
			<i>Sheet 2 of 2</i>

- Plotted From - TRW11NT29

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