

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0907(77)309	1	75

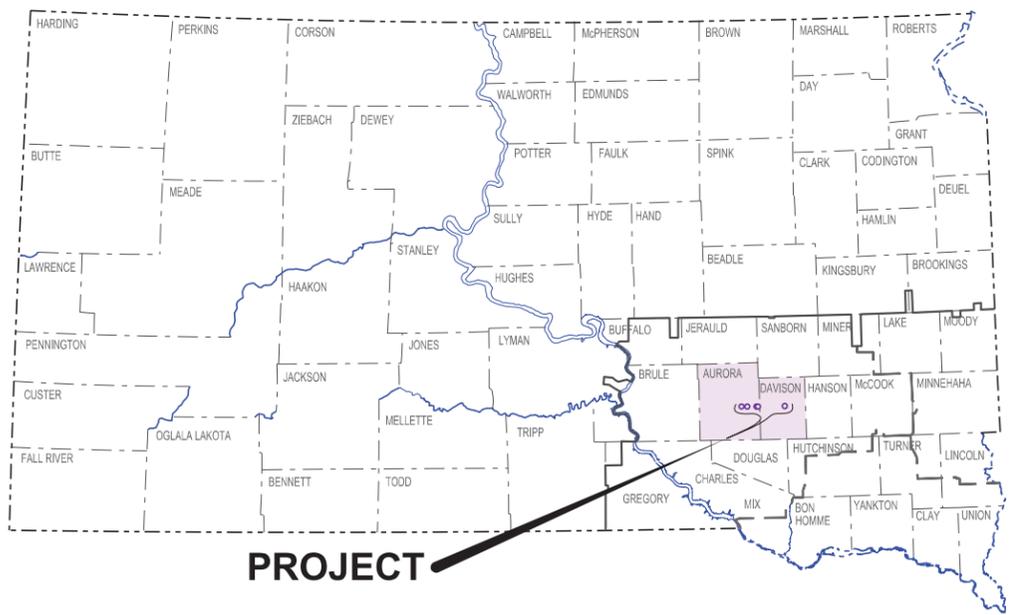
Plotting Date: 02/20/2026 Rev 2/20/26 MR

PLANS FOR PROPOSED  
**PROJECT IM 0907(77)309**  
**INTERSTATE 90**  
**AURORA & DAVISON COUNTIES**  
**RC BOX CULVERT EXTENSIONS & REMOVE GUARDRAIL**  
**PCN 034U**

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Sheet 64	Fence Details
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PLOT SCALE - 1"=7000'

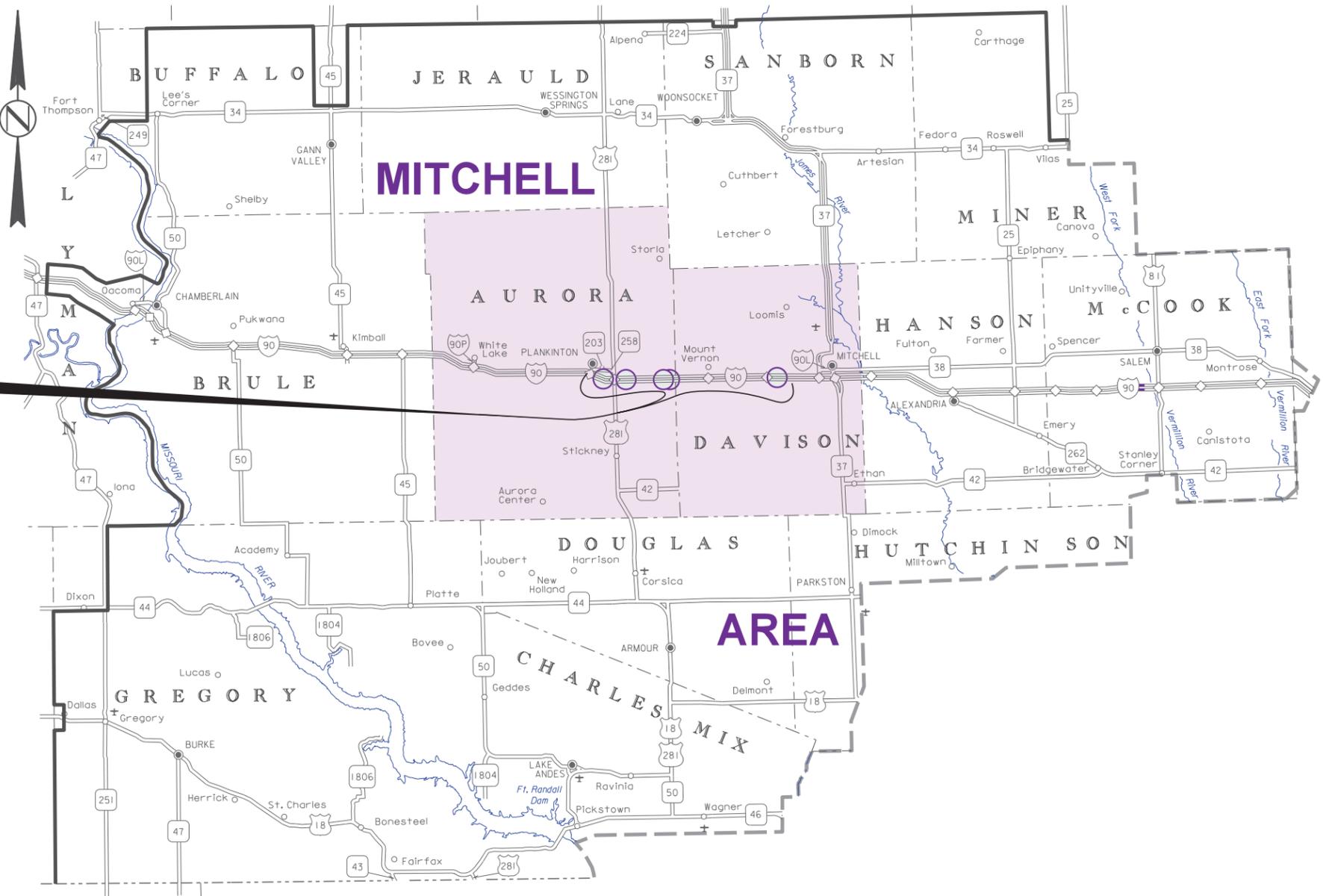


PROJECT

**PROJECT**  
I90 RC Box Culvert Locations:

Str. No. 02-171-163	MRM 309.60
Str. No. 02-186-165	MRM 311.05
Str. No. 02-223-165	MRM 314.64
Str. No. 02-231-165	MRM 315.56
Str. No. 18-093-105	MRM 325.78

**STORM WATER PERMIT**  
Receiving Waters: Unnamed Creeks, Tributaries to West Branch Firesteel Creek and to Enemy Creek  
Area Disturbed: 4 Acres  
Total Project Area: 10 Acres  
Latitude: 43.6966 to 43.6951 (Google)  
Longitude: -98.4616 to -98.1394 (Google)



PLOTTED FROM - TRMLINT15

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# INTERSTATE 90 AURORA & DAVISON COUNTIES

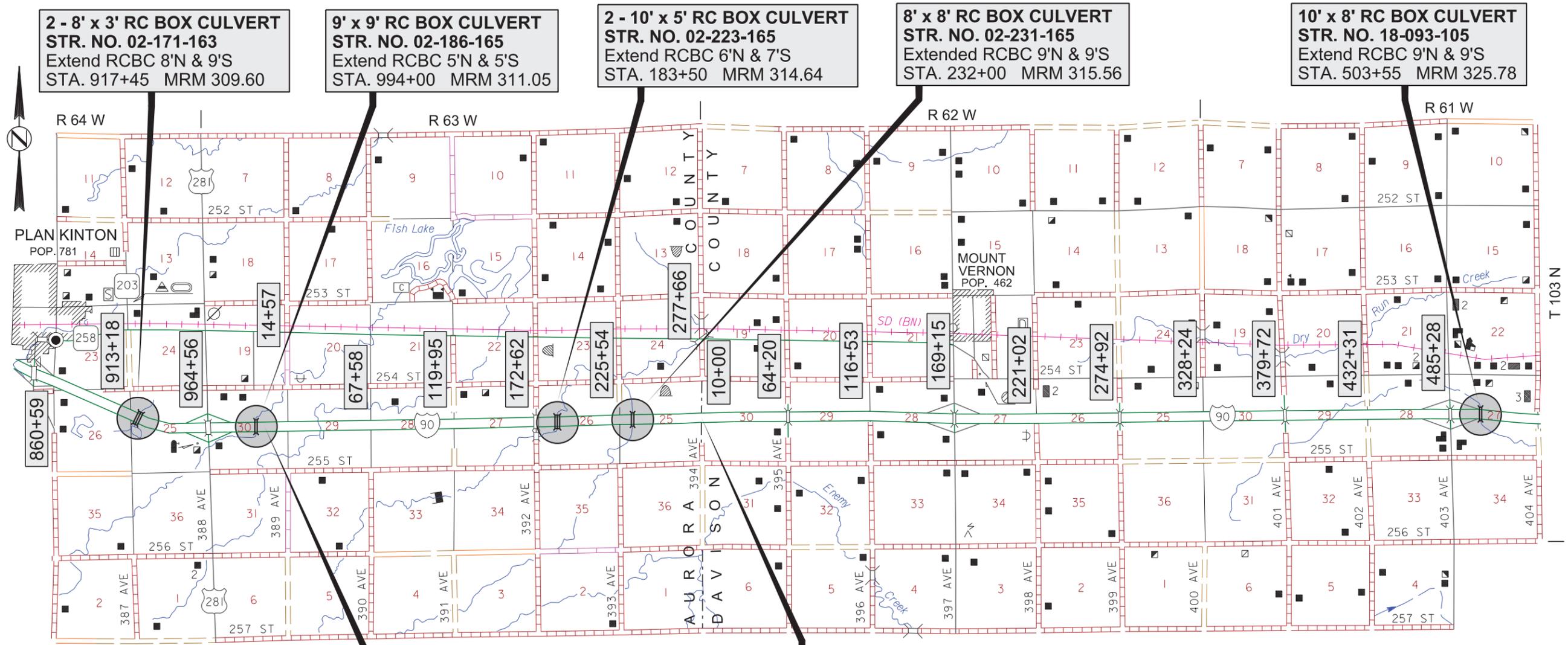
STATE OF SOUTH DAKOTA	PROJECT IM 0907(77)309	SHEET 2	TOTAL SHEETS 75
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Plotting Date: 01/16/2026

PLOT SCALE - 1:7000

PLOT NAME - 2

FILE - ... \PRJ2026\AUR09034U\TTL034U.DGN



**2 - 8' x 3' RC BOX CULVERT**  
STR. NO. 02-171-163  
Extend RCBC 8'N & 9'S  
STA. 917+45 MRM 309.60

**9' x 9' RC BOX CULVERT**  
STR. NO. 02-186-165  
Extend RCBC 5'N & 5'S  
STA. 994+00 MRM 311.05

**2 - 10' x 5' RC BOX CULVERT**  
STR. NO. 02-223-165  
Extend RCBC 6'N & 7'S  
STA. 183+50 MRM 314.64

**8' x 8' RC BOX CULVERT**  
STR. NO. 02-231-165  
Extended RCBC 9'N & 9'S  
STA. 232+00 MRM 315.56

**10' x 8' RC BOX CULVERT**  
STR. NO. 18-093-105  
Extend RCBC 9'N & 9'S  
STA. 503+55 MRM 325.78

**EQUATION**  
1000+00 Back=  
0+00 Ahead

**EQUATION**  
277+66 Back=  
10+00 Ahead

DESIGN DESIGNATION		
ROUTE	I90W	I90E
ADT(2024)	5,699	5,698
ADT(2044)	8,046	8,045
DHV	1,331	1,331
D	50%	50%
T DHV	9.1%	9.1%
T ADT	20.1%	20.1%
V	80 MPH	80 MPH

PLOTTED FROM - TRM1INT15

# ESTIMATE OF QUANTITIES

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## PCN 034U

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3250	Miscellaneous Staking	0.783	Mile
009E3280	Slope Staking	0.783	Mile
009E3290	Structure Staking	5	Each
009E3301	Engineer Directed Surveying/Staking	50.0	Hour
009E4100	Construction Schedule, Category I	Lump Sum	LS
100E0020	Clear and Grub Tree	3	Each
110E0600	Remove Fence	520	Ft
110E0700	Remove 3 Cable Guardrail	3,704	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	20	Each
110E1140	Remove Concrete Sidewalk	69.0	SqYd
110E1650	Remove Bank and Channel Protection Gabion	39	Each
110E1700	Remove Silt Fence	125	Ft
110E7510	Remove Pipe End Section for Reset	1	Each
120E0600	Contractor Furnished Borrow Excavation	4,120	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
450E0122	18" RCP Class 2, Furnish	4	Ft
450E0130	18" RCP, Install	4	Ft
450E9001	Reset Pipe End Section	1	Each
620E0260	Modified Type 6 Right-of-Way Fence	475	Ft
620E0510	Type 1 Temporary Fence	265	Ft
620E1020	2 Post Panel	22	Each
632E2022	4"x4" White Delineator Back to Back with 1.12 Lb/Ft Post	8	Each
632E2024	4"x8" White Delineator with 1.12 Lb/Ft Post	7	Each
632E2510	Type 2 Object Marker Back to Back	22	Each
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	436.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	2	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0640	Temporary Pavement Marking	1,920	Ft
634E1255	Contractor Furnished Vehicle Speed Feedback Sign	2	Each
651E0060	6" Concrete Sidewalk	224	SqFt
730E0212	Type G Permanent Seed Mixture	104	Lb
732E0100	Mulching	8.0	Ton
734E0102	Type 2 Erosion Control Blanket	826	SqYd
734E0154	12" Diameter Erosion Control Wattle	4,240	Ft
734E0602	Low Flow Silt Fence	500	Ft
734E0610	Mucking Silt Fence	35	CuYd
734E0620	Repair Silt Fence	125	Ft

## STR. NO. 02-171-163

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	19	CuYd
421E0200	Box Culvert Undercut	66	CuYd
460E0120	Class A45 Concrete, Box Culvert	35.5	CuYd
460E0300	Breakout Structural Concrete	11.6	CuYd
460E0380	Install Dowel in Concrete	52	Each
480E0100	Reinforcing Steel	6,503	Lb
700E0210	Class B Riprap	28.0	Ton
831E0110	Type B Drainage Fabric	45	SqYd

## STR. NO. 02-186-165

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	38	CuYd
421E0200	Box Culvert Undercut	134	CuYd
460E0120	Class A45 Concrete, Box Culvert	66.4	CuYd
460E0300	Breakout Structural Concrete	50.5	CuYd
460E0380	Install Dowel in Concrete	48	Each
480E0100	Reinforcing Steel	8,102	Lb
700E0210	Class B Riprap	40.6	Ton
831E0110	Type B Drainage Fabric	64	SqYd

## STR. NO. 02-223-165

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	37	CuYd
421E0200	Box Culvert Undercut	125	CuYd
460E0120	Class A45 Concrete, Box Culvert	59.9	CuYd
460E0300	Breakout Structural Concrete	27.9	CuYd
460E0380	Install Dowel in Concrete	74	Each
480E0100	Reinforcing Steel	8,987	Lb
700E0210	Class B Riprap	66.6	Ton
831E0110	Type B Drainage Fabric	110	SqYd

## STR. NO. 02-231-165

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E5451	Salvage Riprap	20.0	Ton
420E0200	Structure Excavation, Box Culvert	34	CuYd
421E0200	Box Culvert Undercut	124	CuYd
460E0120	Class A45 Concrete, Box Culvert	60.7	CuYd
460E0300	Breakout Structural Concrete	41.3	CuYd
460E0380	Install Dowel in Concrete	44	Each
480E0100	Reinforcing Steel	7,858	Lb
700E0210	Class B Riprap	21.1	Ton
700E2010	Place Riprap	20.0	Ton
831E0110	Type B Drainage Fabric	64	SqYd

## STR. NO. 18-093-105

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	39	CuYd
421E0200	Box Culvert Undercut	126	CuYd
460E0120	Class A45 Concrete, Box Culvert	68.1	CuYd
460E0300	Breakout Structural Concrete	43.4	CuYd
460E0380	Install Dowel in Concrete	48	Each
464E0100	Controlled Density Fill	1.8	CuYd
480E0100	Reinforcing Steel	8,586	Lb
700E0210	Class B Riprap	38.0	Ton
831E0110	Type B Drainage Fabric	61	SqYd

# ENVIRONMENTAL COMMITMENTS

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	IM 0907(77)309	4	75

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## 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 0.79 acres of wetlands (includes temporary and permanent) becoming impacted.

#### Table of Impacted Wetlands

Wetland No.	Station	Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
1	917+45 L/R	0.01	0.33	0.34
2	994+00 L/R	0.01	0.13	0.14
3	183+50 L/R	0.02	0.18	0.20
4	232+00 L/R	0.02	0.07	0.09
5	503+55 L	0.01	0.01	0.02

#### 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 0.08 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.

## COMMITMENT A1: WETLANDS (CONTINUED)

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 NonSection plans. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.18 of the Specifications.

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 A2: STREAMS

All efforts to avoid and minimize stream impacts from the project have resulted in approximately 0.03 acre of stream (includes temporary and permanent) becoming impacted.

#### Table of Impacted Streams

Stream Name	Station	Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
OW1	183+50 R	0.00	0.03	0.03

#### Action Taken/Required:

It has been determined that project impacts do not require mitigation. Temporary impacts identified in the Table of Impacted Streams will not be mitigated as the finished ground under the bridge will be shaped to match the upstream channel and flood plain and the existing low water channel will be maintained as near as practical to the existing location as designated in NonSection 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

If a Contractor needs access to state waters for extraction, the Contractor must obtain a water right, through the application of a Temporary Permit to Use Public Waters before work begins.

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 ( $\geq 140$  °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.

The Contractor will not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

#### 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 (SDDANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Temporary permit to use public waters for highway construction purposes application can be found on the SDDANR website: <https://danr.sd.gov/OfficeOfWater/WaterRights/PermitForms/default.aspx>

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>

## COMMITMENT D: WATER QUALITY STANDARDS

### COMMITMENT D1: SURFACE WATER QUALITY

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.

# ENVIRONMENTAL COMMITMENTS (CONTINUED)

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## COMMITMENT D2: SURFACE WATER DISCHARGE

The DANR General Permit for Temporary Discharge Activities 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 currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the contractor will need to submit the dewatering information to the Project Engineer using the following SDDOT Dewatering Info CDX form:

<<https://dot.sd.gov/doing-business/environmental/forms/>>

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 1 acre or more of earth disturbance and/or work in a waterway.

### Action Taken/Required:

The DANR General Permit for Stormwater Discharges Associated with Construction Activities is required for construction activity disturbing one or more acres of earth and work in a waterway. The SDDOT is the owner of this permit and will submit the NOI to DANR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DANR letter of approval is received.

The Contractor must adhere to the Special Provision Regarding Storm Water Discharges to Waters of the State.

## COMMITMENT E: STORM WATER (CONTINUED)

The Contractor will complete the DANR Contractor Authorization Form prior to the pre-construction meeting. The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the permit for this project. Work may not begin on this project until this form is signed and submitted to DANR.

The form can be found at:

<[https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR\\_CGPAppeNdixCCA2023Fillable.pdf](https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAppeNdixCCA2023Fillable.pdf)>

The Contractor is advised that permit coverage may also be required for off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

### Storm Water Pollution Prevention Plan

The Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the submittal of the NOI and will be implemented for all construction activities for compliance with the permit. The SWPPP must be kept on-site and updated as site conditions change. Erosion control measures and best management practices will be implemented in accordance with the SWPPP.

The DOT 298 Form will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPPP will be observed to ensure that they are operating correctly, and sediment is not tracked off the site.

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

SDDOT: < <https://dot.sd.gov/doing-business/environmental/stormwater> >

DANR:

<<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/default.aspx>>

EPA: < <https://www.epa.gov/npdes> >

## 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.

Cost 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.

# ENVIRONMENTAL COMMITMENTS (CONTINUED)

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## 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.

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.

**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.

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 Engineer to determine modifications that will be necessary to avoid utility impacts.

**UTILITY CONTACT LIST**

Lawrence Escobin  
SDN Communications Inc.  
2900 W 10<sup>th</sup> St  
Sioux Falls, SD 57104  
Office: (605) 978-1094: *Goes straight to Cell if not In-Office.*  
Cell: (605) 310-7238  
Email: [Lawrence.Escobin@SDNCommunications.com](mailto:Lawrence.Escobin@SDNCommunications.com)

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Dell Rapids SD, 57022  
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Cell: (605) 864-0613  
Email: [RyanCuny@GoldenWest.com](mailto:RyanCuny@GoldenWest.com)

Andrew Wixon  
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125 S Dakota Ave  
Sioux Falls, SD 57104  
Phone: (605) 681-2049  
Email: [Andrew.Wixon@Lumen.com](mailto:Andrew.Wixon@Lumen.com)

Tim Pringle  
Aurora-Brule Rural Water System, Inc.  
117 W 2<sup>nd</sup> Street – P.O. Box 140  
Kimball, SD 57355-0140  
Office: (605) 778-6110  
Cell: (605) 730-1258  
Email: [ABRWS@MidstateSD.net](mailto:ABRWS@MidstateSD.net)

**TABLE FOR REMOVING & PLACING CONCRETE SIDEWALK (CONCRETE LIVESTOCK PATH)**

LOCATION	REMOVE CONCRETE SIDEWALK SQYD	6" CONCRETE SIDEWALK SQFT
503+55 L	50	224
503+55 R	19	-
<b>TOTALS:</b>	<b>69</b>	<b>224</b>

**TABLE FOR REMOVING GABIONS**

LOCATION	REMOVE BANK AND CHANNEL PROTECTION GABIONS EACH
503+55 R	39
<b>TOTAL:</b>	<b>39</b>

**TABLE FOR CONTRACTOR STAKING**

Structure Number	Description	Begin Station	End Station	Side	Length (Ft)	Misc. Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)
02-171-163	RCBC Extension & Inslope Transitions	916+00	919+00	L	300	0.057	0.057	0.5
		916+00	919+00	R	300	0.057	0.057	0.5
02-186-165	RCBC Extension & Inslope Transitions	992+50	995+50	L	300	0.057	0.057	0.5
		991+90	996+10	R	420	0.080	0.080	0.5
02-223-165	RCBC Extension & Inslope Transitions	182+00	185+00	L	300	0.057	0.057	0.5
		181+00	186+00	R	500	0.095	0.095	0.5
02-231-165	RCBC Extension & Inslope Transitions	230+50	233+50	L	300	0.057	0.057	0.5
		228+50	235+50	R	700	0.133	0.133	0.5
18-093-105	RCBC Extension & Inslope Transitions	501+00	506+00	L	500	0.095	0.095	0.5
		501+00	506+00	R	500	0.095	0.095	0.5
<b>Total:</b>						<b>0.783</b>	<b>0.783</b>	<b>5</b>

**REMOVE AND REPLACE TOPSOIL**

A 4" depth of topsoil will be salvaged from the inslopes at the box culvert extension locations. Following completion of embankment operations, topsoil will be replaced on the disturbed area up to the concrete / asphalt concrete edge.

Refer to the Table of Inslope Transitions for the estimated amount of topsoil to be removed and replaced. Cost for removing and replacing the topsoil will be included in the contract lump sum price for Remove and Replace Topsoil.

**CONTRACTOR FURNISHED BORROW EXCAVATION**

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining required permits and clearances for the borrow site. The borrow material will be approved by the Engineer. The plans quantity for Contractor Furnished Borrow Excavation as shown in the Estimate of Quantities will be the basis of payment for this item.

Prior to placement or removal of fill material, the Contractor will be required to remove four inches of topsoil and replace it following the placement of the new fill material.

The Contractor will be allowed to place topsoil in lieu of fill material if the fill depth is one foot or less. By doing this the Contractor will not be required to remove and replace the four inches of in place topsoil.

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

It is not anticipated that water for compaction will be required; however, if in the opinion of the Engineer the fill material is extremely dry, water may be ordered and placed to the satisfaction of the Engineer. Cost for water will be incidental to the contract unit price per cubic yard for Contractor Furnished Borrow Excavation.

Restoration of the Contractor furnished borrow excavation site will be the responsibility of the Contractor.

**INSLOPE TRANSITIONS**

Inslope transitions will be required at the RC Box Culvert Extensions. Refer to Standard Plate 120.05 for details.

**TABLE OF INSLOPE TRANSITIONS**

Station - Side	Inslope Transition	Transition Length Ft	Contractor Furnished Borrow Excavation CuYds	Remove and Replace Topsoil CuYds
917+45 – L	Type 2	100	125	69
917+45 – R	Type 2	100	145	74
994+00 – L	Type 1	100	445	119
994+00 – R	Type 1	200	635	169
183+50 – L	Type 2	100	245	92
183+50 – R	Type 2	200	275	167
232+00 – L	Type 2	100	335	90
232+00 – R	Type 2	300	505	181
503+55 – L	Type 1	200	720	264
503+55 – R	Type 1	200	690	281
<b>Totals:</b>			<b>4,120</b>	<b>1,506</b>

**WATER FOR EMBANKMENT**

Water for compaction of earth embankment will be applied at the rate of 10 gallons per cubic yard of Contractor Furnished Borrow Excavation. Cost for water will be incidental to the contract unit price per cubic yard for Contractor Furnished Borrow Excavation.

**TABLE FOR MAINLINE CULVERT WORK**

STATION	CULVERT	18" RCP	REMOVE & RESET PIPE END SECTION
917+10 WBL	18" RCP	4'	1 Each

**TIE BOLTS FOR RCP/RCP ARCH CULVERTS**

Tie bolts will conform to Standard Plate 450.18.

Tie Bolts will be installed at the inlet and outlet on the first three sections of new/reset culvert and on new/reset culvert ends (requires connection from existing culvert to new culvert / new end section).

For informational purposes:

Field drilling will be required to install the tie bolts on reset culvert, on reset culvert ends and on existing culvert when installing a new/reset end section.

Cost for removing tie bolts, drilling tie bolt holes and furnishing and installing tie bolts will be incidental to the contract unit prices for installing or resetting RCP/RCP Arch Culverts and End Sections. Existing tie bolts may be salvaged and reused if condition is acceptable to the Engineer.

The Contractor will place culvert and end sections such that the installation does not cause existing culvert sections to separate at any of the existing joints. Any joint separation caused by the Contractor's operations will result in removal, resetting and re-tie bolting of said culvert sections at the Contractor's expense.

**TABLE OF FENCE QUANTITIES**

LOCATION	REMOVE FENCE FT	MODIFIED TYPE 6 R.O.W. FENCE FT	2 POST PANELS EACH	TEMPORARY FENCE FT
183+50 L	125	120	4	-
183+50 R	205	195	6	175
503+55 L	100	85	6	45
503+55 R	90	75	6	45
<b>TOTALS:</b>	<b>520</b>	<b>475</b>	<b>22</b>	<b>265</b>

**TABLE FOR REMOVAL OF GUARDRAIL**

LOCATION	REMOVE 3 CABLE GUARDRAIL	REMOVE 3 CABLE GUARDRAIL ANCHOR ASSEMBLY
<b>BRIDGE CORNER</b>	<b>LANE-SHOULDER</b>	
<b>STR. NO. 02-171-163</b> STA. 917+45 MRM 309.60	WBL Outside 324 EBL Outside 324	2 2
<b>STR. NO. 02-186-165</b> STA. 994+00 MRM 311.05	WBL Outside 388 EBL Outside 452	2 2
<b>STR. NO. 02-223-165</b> STA. 183+50 MRM 314.64	WBL Outside 372 EBL Outside 372	2 2
<b>STR. NO. 02-231-165</b> STA. 232+00 MRM 215.56	WBL Outside 372 EBL Outside 372	2 2
<b>STR. NO. 18-093-105</b> STA. 503+55 MRM 325.78	WBL Outside 388 EBL Outside 340	2 2
<b>TOTALS:</b>	<b>3704</b>	<b>20</b>

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

The Mycorrhizal Inoculum provided will be from the approved product list. The approved product list may be viewed at the following internet site:

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

**PERMANENT SEEDING. INOCULATING AND MULCHING**

Type G Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk, Chief, Nebraska 54	3
Big Bluestem	Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza	3
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
<b>Total:</b>		<b>26</b>

The areas to be seeded, inoculated and mulched (estimated at 4 Acres) consist of disturbed areas within the right-of-way resulting from the work required by this contract.

**MULCHING (GRASS HAY OR STRAW)**

Grass Hay or Straw Mulch is to be used at disturbed areas within the locations noted in the table and at locations determined by the Engineer during construction.

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

**TABLE OF MULCHING (GRASS HAY OR STRAW)**

Station	Location	Quantity Ton
916+00 to 919+00 L/R	Inslope/Ditch	1
992+00 to 996+00 L/R	Inslope/Ditch	1.5
182+00 to 186+00 L/R	Inslope/Ditch	1.5
228+50 to 235+50 L/R	Inslope/Ditch	2
501+00 to 506+00 L/R	Inslope/Ditch	2
<b>Total:</b>		<b>8</b>

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

**EROSION CONTROL WATTLE**

Erosion control wattles for restraining the flow of runoff and sediment will be installed at locations noted in the table 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:

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

**TABLE OF EROSION CONTROL WATTLE**

Station	L/R	Diameter Inch	Location	Quantity Ft
916+06 to 918+84	L	12	Box Culvert	315
916+06 to 918+84	R	12	Box Culvert	320
992+95 to 995+05	L	12	Box Culvert	330
991+95 to 996+05	R	12	Box Culvert	445
182+09 to 184+91	L	12	Box Culvert	315
181+09 to 185+91	R	12	Box Culvert	510
230+65 to 233+35	L	12	Box Culvert	305
228+65 to 235+35	R	12	Box Culvert	700
501+25 to 505+75	L	12	Box Culvert	500
501+25 to 505+75	R	12	Box Culvert	500
<b>Total:</b>				<b>4,240</b>

**LOW FLOW SILT FENCE**

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

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

Low flow silt fence will 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 734.04 for details.

**TABLE OF LOW FLOW SILT FENCE**

Station	L/R	Location	Quantity (Ft)
Locations to be determined by the Engineer			500
<b>Total:</b>			<b>500</b>

**EROSION CONTROL BLANKET**

Erosion control blanket will be installed at the locations noted in the table and layouts, and at locations determined by the Engineer during construction.

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

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

**TABLE OF EROSION CONTROL BLANKET**

Station	L/R	Location	Type	Quantity SqYd
917+23	L	Pipe Culvert	2	3
917+45	L	Box Culvert	2	41
917+45	R	Box Culvert	2	41
994+00	L	Box Culvert	2	72
994+00	R	Box Culvert	2	264
183+50	L	Box Culvert	2	56
183+50	R	Box Culvert	2	97
232+00	L	Box Culvert	2	64
232+00	R	Box Culvert	2	64
503+55	L	Box Culvert	2	62
503+55	R	Box Culvert	2	62

Total Type 2 Erosion Control Blanket: 826

**INSTALLATION OF TYPE 2 OBJECT MARKERS AT ROADSIDE OBSTACLES**

Type 2 Object Markers and posts will be furnished and installed by the Contractor at the locations shown in the table below:

STATION	DESCRIPTION	TYPE 2 OBJECT MARKER BACK TO BACK (EACH)
917+10 WBL	18" RCP (15° Skew LHF)	1 L
917+45	Twin 8'x3' RCBC	2 L & 2 R
994+00	9'x9' RCBC	2 L & 2 R
182+78 WBL	18" RCP (15° Skew LHF)	1 L
183+50	Twin 10'x5' RCBC	2 L & 2 R
232+00	8'x8' RCBC	2 L & 2 R
503+55	10'x8' RCBC	2 L & 2 R
<b>TOTAL:</b>		<b>22</b>

At locations where Type 2 Object Markers are in place and culvert work will be performed, the Contractor will remove and dispose of the existing Type 2 Object Marker.

At the ten locations where a Type 2 Object Marker is in place and the cable guardrail is being removed, the Contractor will remove and dispose of the existing Type 2 Object Marker.

Cost for removing Type 2 Object Markers will be incidental to the contract unit price per each Type 2 Object Marker Back-to-Back.

**STORMWATER POLLUTION PREVENTION PLAN CHECKLIST**

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

**5.3 (2): STAFF TRAINING/SWPPP IMPLEMENTATION**

To promote stormwater management awareness specific for this project, the Contractor's Erosion Control Supervisor should provide correspondence of how the SWPPP will be implemented. The Contractor's Erosion Control Supervisor is responsible for providing this information at the preconstruction meeting, and subsequently completing an attendance log, which should identify site-specific implementation of the SWPPP and the names of the personnel who attended the preconstruction meeting. Documentation of the preconstruction meeting will be filed with the SWPPP documents.

**5.3 (3): DESCRIPTION OF CONSTRUCTION ACTIVITIES**

- **5.3 (3a): Project Limits** (See Title Sheet)
- **5.3 (3a): Project Description** (See Title Sheet)
- **5.3 (4): Site Map(s)** (See Title Sheet and Plans)
- **Major Soil Disturbing Activities** (check all that apply)
  - Clearing and grubbing
  - Excavation/borrow
  - Grading and shaping
  - Filling
  - Other (describe):
- **5.3 (3b): Total Project Area** 10 Acres
- **5.3 (3b): Total Area to be Disturbed** 4 Acres
- **5.3 (3c): Maximum Area Disturbed at One Time**  
Approx. 1/2 Acre or less per site at 10 sites
- **5.3 (3d): Existing Vegetative Cover (%)** 90%
- **5.3 (3d): Description of Vegetative Cover** Native grass
- **5.3 (3e): Soil Properties:** Loams, Clay Loams
- **5.3 (3f): Name of Receiving Water Body/Bodies** Tributaries to West Branch Firesteel Creek, Enemy Creek and Unnamed Creeks
- **5.3 (3g): Location of Construction Support Activity Areas**

**5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES**

The Contractor will enter the Estimated Start Date.

Description	Estimated Start Date
Install Silt Fence prior to dirt moving activities	
Extend Box Culverts and Pipe Culvert	
Construct Inslope Transitions	
Install Riprap	
Seed Disturbed Areas	
Install Erosion Control Blanket & Wattles (refer to plan sheets)	
Remove 3 Cable Guardrail	

**5.3 (5): DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES**

All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report. Include the technical reasoning for selecting each control. (check all that apply)

**Perimeter Controls (See Detail Plan Sheets)**

Description	Estimated Start Date
<input checked="" type="checkbox"/> Natural Buffers (within 50 ft of Waters of State)	
<input checked="" type="checkbox"/> Silt Fence	
<input checked="" type="checkbox"/> Erosion Control Wattles	
<input type="checkbox"/> Temporary Berm / Windrow	
<input type="checkbox"/> Floating Silt Curtain	
<input type="checkbox"/> Stabilized Construction Entrances	
<input type="checkbox"/> Entrance/Exit Equipment Tire Wash	
<input type="checkbox"/> Other:	

**Structural Erosion and Sediment Controls**

Description	Estimated Start Date
<input checked="" type="checkbox"/> Silt Fence	
<input type="checkbox"/> Temporary Berm/Windrow	
<input checked="" type="checkbox"/> Erosion Control Wattles	
<input type="checkbox"/> Temporary Sediment Barriers	
<input type="checkbox"/> Erosion Bales	
<input type="checkbox"/> Temporary Slope Drain	
<input type="checkbox"/> Turf Reinforcement Mat	
<input checked="" type="checkbox"/> Riprap	
<input type="checkbox"/> Gabions	
<input type="checkbox"/> Rock Check Dams	
<input type="checkbox"/> Sediment Traps/Basins	
<input type="checkbox"/> Culvert Inlet Protection	
<input type="checkbox"/> Transition Mats	
<input type="checkbox"/> Median/Area Drain Inlet Protection	
<input type="checkbox"/> Curb Inlet Protection	
<input type="checkbox"/> Interceptor Ditch	
<input type="checkbox"/> Concrete Washout Facility	
<input type="checkbox"/> Work Platform	
<input type="checkbox"/> Temporary Water Barrier	
<input type="checkbox"/> Temporary Water Crossing	
<input type="checkbox"/> Permanent Stormwater Ponds	
<input type="checkbox"/> Permanent Open Vegetated Swales	
<input type="checkbox"/> Natural Depressions to allow for Infiltration	
<input type="checkbox"/> Sequential Systems that combine several practices	
<input type="checkbox"/> Other:	

**Dust Controls**

Description	Estimated Start Date
<input type="checkbox"/> Tarps & Wind impervious fabrics	
<input type="checkbox"/> Watering	
<input type="checkbox"/> Stockpile location/orientation	
<input type="checkbox"/> Dust Control Chlorides	
<input type="checkbox"/> Other	

**Dewatering BMPs**

Description	Estimated Start Date
<input type="checkbox"/> Sediment Basins	
<input type="checkbox"/> Dewatering bags	
<input type="checkbox"/> Weir tanks	
<input type="checkbox"/> Temporary Diversion Channel	
<input type="checkbox"/> Other:	

**Stabilization Practices (See Detail Plan Sheets)**

(Stabilization measures will begin the following work day whenever earth disturbing activity on any portion of the site has temporarily or permanently ceased. Temporary stabilization will be completed as soon as practicable but no later than 14 days after initiating soil stabilization activities (3.18))

Description	Estimated Start Date
<input type="checkbox"/> Vegetation Buffer Strips	
<input checked="" type="checkbox"/> Temporary Seeding (Cover Crop Seeding)	
<input checked="" type="checkbox"/> Permanent Seeding	
<input type="checkbox"/> Sodding	
<input type="checkbox"/> Planting (Woody Vegetation for Soil Stabilization)	
<input checked="" type="checkbox"/> Mulching (Grass Hay or Straw)	
<input type="checkbox"/> Fiber Mulching (Wood Fiber Mulch)	
<input type="checkbox"/> Soil Stabilizer	
<input type="checkbox"/> Bonded Fiber Matrix	
<input type="checkbox"/> Fiber Reinforced Matrix	
<input checked="" type="checkbox"/> Erosion Control Blankets	
<input type="checkbox"/> Surface Roughening (e.g. tracking)	
<input type="checkbox"/> 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.

### **5.3 (6): PROCEDURES FOR INSPECTIONS**

- Inspections will be conducted at least once every 7 days.
- 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 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 1/2 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 and 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.

### **5.3 (7): POST CONSTRUCTION STORMWATER MANAGEMENT**

Stormwater management will be handled by temporary controls outlined in "DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES" above, and any permanent controls needed to meet permanent stormwater management needs in the post construction period will be shown in the plans and noted as permanent.

### **5.3 (8): POLLUTION PREVENTION PROCEDURES**

#### **5.3 (8a): Spill Prevention and Response Procedures**

##### ➤ **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/or 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.

##### ▪ Hazardous Materials

- Products will be kept in original containers unless the container is not resealable and provide secondary containment as applicable.
- 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 stormwater system or stormwater 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 stormwater runoff.

##### ➤ **Spill Control Practices**

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.

##### ➤ **Spill Response**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into stormwater runoff and conveyance systems. If the release has impacted on-site stormwater, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens stormwater 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 SDDANR.
- Personnel with primary responsibility for spill response and cleanup 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.

### **5.3 (8b): WASTE MANAGEMENT PROCEDURES**

##### ➤ **Waste Disposal**

- All liquid waste materials will be collected and stored in approved sealed containers. 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. The Contractor is responsible for ensuring 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 Contractor 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 which must be secured to prevent tipping and serviced in a timely manner by a licensed waste management Contractor or as required by any local regulations.

### 5.3 (9): CONSTRUCTION SITE POLLUTANTS

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 heading "POLLUTION PREVENTION PROCEDURES" (check all that apply).

- Concrete and Portland Cement
- Detergents
- Paints
- Metals
- Bituminous Materials
- Petroleum Based Products
- Diesel Exhaust Fluid
- Cleaning Solvents
- Wood
- Cure
- Texture
- Chemical Fertilizers
- Other:

#### Product Specific Practices

##### ▪ **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 stormwater. 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 stormwater outlet of the site. Upon completion of construction, the area at the washout facility will be properly stabilized.

### 5.3 (10): NON-STORMWATER DISCHARGES

The following non-stormwater 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.

### 5.3 (11): INFEASIBILITY DOCUMENTATION

If it is determined to be infeasible to comply with any of the requirements of the Stormwater Permit, the infeasibility determination must be thoroughly documented in the SWPPP.

### 7.0: 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 SDDANR immediately **if any one of the following** conditions exists:
  - The release or spill threatens or is able to threaten waters of the state (surface water or ground water)
  - The release or spill causes an immediate danger to human health or safety
  - The release or spill exceeds 25 gallons
  - The release or spill causes a sheen on surface water
  - The release or spill of any substance that exceeds the ground water quality standards of ARSD Chapter 74:54:01
  - The release or spill of any substance that exceeds the surface water quality standards of ARSD Chapter 74:51:01
  - The release or spill of any substance that harms or threatens to harm wildlife or aquatic life
  - The release or spill is required to be reported according to Superfund Amendments and Reauthorization Act (SARA) Title III List of Lists, Consolidated List of Chemicals Subject to Reporting Under the Emergency Planning and Community Right to Know Act, US Environmental Protection Agency.
- To report a release or spill, call SDDANR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central Standard Time). To report the release after hours, on weekends or holidays, call South Dakota Emergency Management at 605-773-3231. Reporting the release to SDDANR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, you must also contact local authorities to determine the local reporting requirements for releases. A written report of the unauthorized release of any regulated substance, including quantity discharged, and the location of the discharge will be sent to SDDANR within 14 days of the discharge.

**5.4: SWPPP 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 7.4 (1))

➤ **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**

The following personnel are duly authorized representatives and have signatory authority for modifications made to the SWPPP:

➤ **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: \_\_\_\_\_

➤ **SDDANR Contact Spill Reporting**

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

➤ **SDDANR Contact for Hazardous Materials.**

- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.

➤ **SDDANR Stormwater Contact Information**

- SDDANR Stormwater (800) 737-8676
- Surface Water Quality Program (605) 773-3351

**5.5: REQUIRED SWPPP MODIFICATIONS**

➤ **5.5 (1): Conditions Requiring SWPPP Modification**

The SWPPP must be modified, including the site map(s), in response to any of the following conditions:

- When a new operator responsible for implementation of any part the SWPPP begins work on the site.
- When changes to the construction plans, sediment and erosion control measures, or any best management practices on site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered by inspections.
- To reflect areas on the site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
- If inspections by site staff, local officials, SDDANR, or U.S. EPA determine that SWPPP modifications are necessary for compliance with the Stormwater Permit.
- To reflect any revisions to applicable federal, state, or local requirements that affect the control measures implemented at the site.
- If approved by the Secretary, to reflect any changes in chemical water treatment systems or controls, including the use of a different water treatment chemical, age rates, different areas, or methods of application.

➤ **5.5 (2): Deadlines for SWPPP Modification**

Any required revisions to the SWPPP must be completed within 7 calendar days following any of the items listed above.

➤ **5.5 (3): Documentation of Modifications to the Plan**

All SWPPP modification records are required to be maintained showing the dates of when the modification occurred. The records must include the name of the person authorizing each change and a brief summary of all changes.

➤ **5.5 (4): Certification Requirements**

All modifications made to the SWPPP must be signed and certified as required in Section 7.4.

➤ **5.5 (5): Required Notice to Other Operators**

If there are multiple operators at the site, the Contractor's Erosion Control Supervisor must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

When modifications as described above occur, the SWPPP will be modified to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP using the DOT 298 form and drawings on the plan will be modified to reflect the needed changes. Copies of the DOT 298 forms and the SWPPP will be retained on site in a designated place for review throughout the course of the project. A copy of the DOT 298 form will be given to the Contractor Erosion Control Supervisor and a copy will be emailed to the SDDOT Environmental Section in accordance with the DOT 298 Form.

**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.

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.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

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 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.

A Type 3 Barricade will be installed at the end of a lane closure taper as detailed in these plans.

Lane closures will be limited to 2 miles in length. The distance between the closest points of any two-lane closures will be at least 3 miles, excluding tapers.

**LANE CLOSURES**

The contractor will be limited to 2 lane closures being set up at one time. Additional lane closures are subject to approval by the Engineer. No payment will be made for added signs or radar speed trailers resulting from this request.

The length of lane closures for structure work on interstate should be limited to 2 miles.

Interstate lane closures will be removed when work will not be occurring for a period of 3 or more calendar days. Curing time for concrete will constitute as work. Lane closures will not be set up on a Friday if no work will be occurring on Saturday or Sunday. In these cases, the lane closure will be installed on Monday.

**WORK ZONE SPEED REDUCTION**

The Department is required to obtain a speed reduction resolution prior to the installation of any SPEED LIMIT (R2-1) signs shown on standard plate 634.63. To provide adequate time for the resolution to be enacted, the Contractor will inform the Engineer a minimum of 3 weeks prior to the scheduled installation of any work zone speed reduction signs on the project. The information provided by the Contractor will include the anticipated date of sign installation, the newly reduced speed limit, the location of the work zone, and the anticipated completion date of work requiring the speed reduction.

**CONTRACTOR FURNISHED VEHICLE FEEDBACK SIGN**

The Contractor will provide 2 radar speed feedback trailers to monitor traffic speeds on designated routes at locations specified in the field by the Engineer.

The radar speed feedback sign assembly will include a speed limit sign mounted in conjunction with the radar speed feedback display. The speed display will not flash vehicle speeds exceeding the speed limit or any other messages.

All costs associated with furnishing, maintaining, transporting, relocating if necessary, and removing the radar speed feedback trailers from locations specified by the Engineer will be incidental to the contract unit price per each for "Contractor Furnished Vehicle Feedback Sign".

**DELINEATION TABLES**

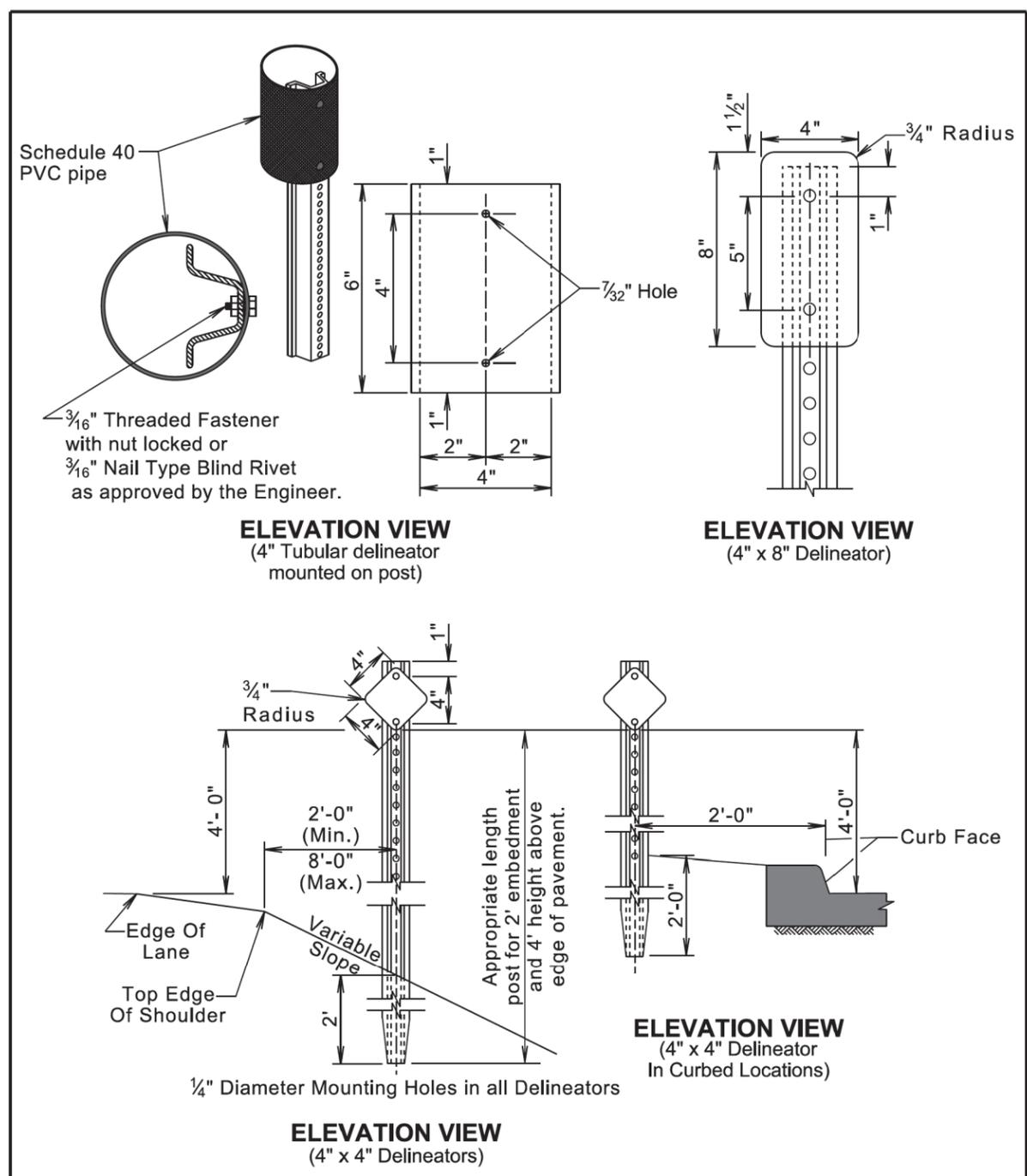
Delineation per Standard Plate 632.46 and 632.48

4"x4" White Delineator Back to Back with 1.12 Lb/Ft Post 632E2022			
HWY	STATION	SPACING	QUANTITY
I-90	914+65 to 920+25	528'	2
I-90	991+00 to 997+00	528'	2
I-90	180+50 to 186+50	528'	2
I-90	229+00 to 235+00	528'	2
		TOTAL	8

4"x8" White Delineator with 1.12 Lb/Ft Post 632E2024			
HWY	STATION	SPACING	QUANTITY
I-90	500+55 to 506+55	100'	7
		TOTAL	7

**ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS**

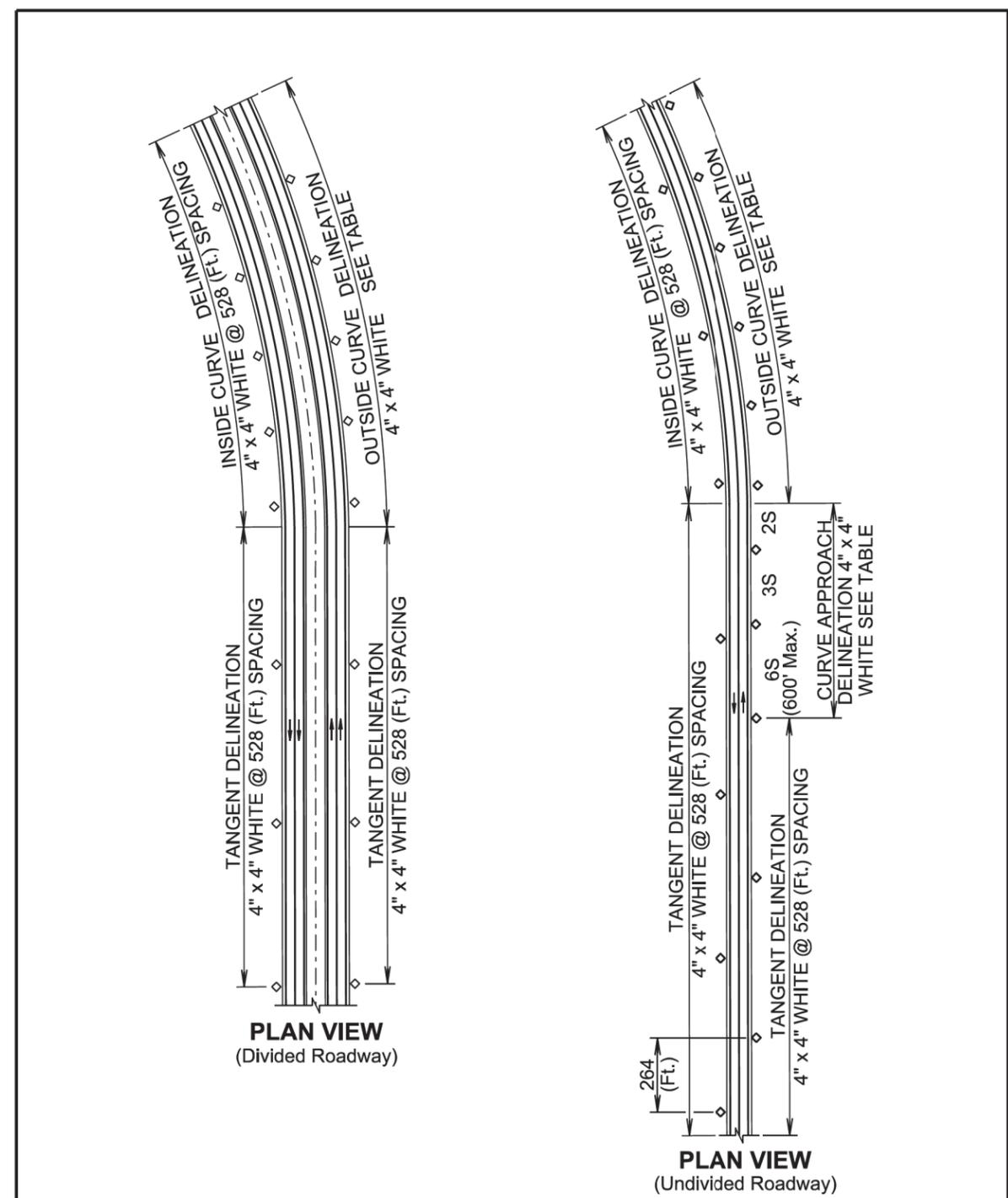
SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 65	6	36" x 48"	12.0	72.0
R2-1	SPEED LIMIT 80	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W3-5	SPEED REDUCTION AHEAD (65 MPH)	4	48" x 48"	16.0	64.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	2	48" x 48"	16.0	32.0
W4-2	RIGHT LANE ENDS (symbol)	4	48" x 48"	16.0	64.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-5	RIGHT LANE CLOSED AHEAD	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
<b>EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT</b>					<b>436.0</b>



**GENERAL NOTES:**  
Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

March 31, 2024

Published Date: 2026	S D D O T	DELINEATOR INSTALLATION DETAIL	PLATE NUMBER 632.42
			Sheet 1 of 1



March 31, 2024

Published Date: 2026	S D D O T	DELINEATOR INSTALLATION SPACING	PLATE NUMBER 632.46
			Sheet 1 of 2

Plot Scale - 1:601.066

Plotted From - TRM11315

Plot Name - \$S:\pnames\$

File - ...034U TC Nov 251034U.DGN

**GENERAL NOTES:**

Delineators will be located from 2 to 8 feet outside of the outer edge of shoulder. When a roadside barrier or other obstruction intrudes into the space between the pavement edge and the extension of the line of delineators, the delineators should be in line with the barrier or in line with the innermost edge of the obstruction.

When normal spacing is interrupted by driveways, crossroads, or approaches, delineators falling within such areas may be moved in either direction a distance not exceeding one-quarter of the standard spacing. Delineators still falling within such areas should be eliminated.

The spacing for specific radii may be interpolated from the table. The minimum spacing should be 20 feet. The spacing on curves should not exceed 300 feet. In advance of or beyond a curve, and proceeding away from the end of the curve, the spacing of the first delineator is 2S, the second 3S, and the third 6S, but not to exceed 300 feet. S refers to the delineator spacing for specific radii computed from the formula  $S = 3\sqrt{R - 50}$ . The distances for S shown in the table were rounded to the nearest 5 feet.

Curve approach delineation is not required if curve delineation spacing exceeds 100 ft.

Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

DELINEATOR SPACING OUTSIDE CURVE				
Radius of Curve (Ft.)	Curve Delineator Spacing (Ft.)	Curve Approach Spacing (Ft.)		
		A	B	C
50	20	40	65	125
115	25	50	75	150
150	30	60	90	180
180	35	70	110	215
250	40	85	125	250
300	45	95	140	285
400	55	110	170	300
500	65	125	190	300
600	70	140	210	300
700	75	150	230	300
800	80	165	245	300
900	85	175	260	300
1000	90	185	275	300

March 31, 2024

November 19, 2020

Published Date: 2026

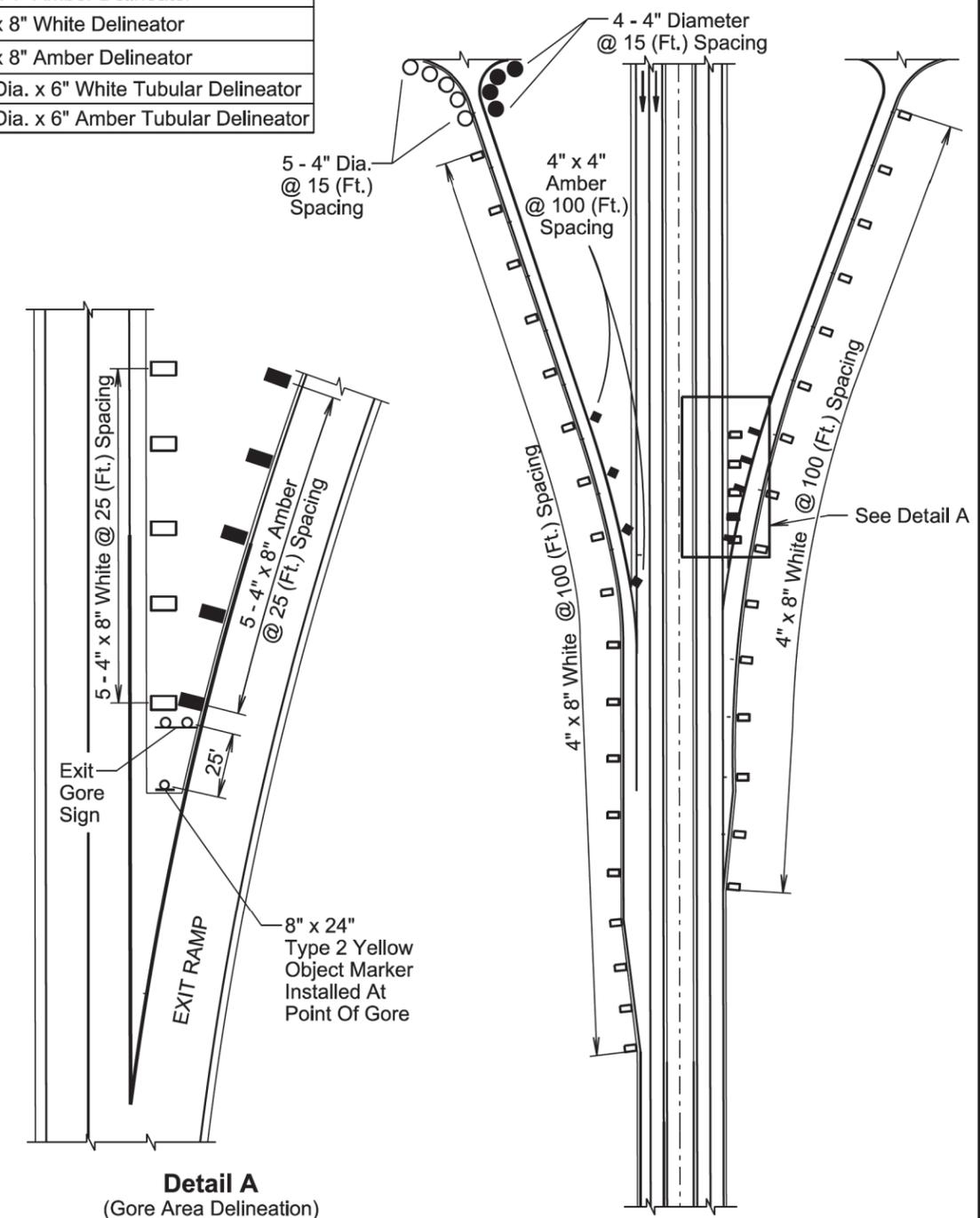
S  
D  
D  
O  
T

**DELINEATOR INSTALLATION SPACING**

PLATE NUMBER  
632.46

Sheet 2 of 2

LEGEND	
◇	4" x 4" White Delineator
◆	4" x 4" Amber Delineator
□	4" x 8" White Delineator
■	4" x 8" Amber Delineator
○	4" Dia. x 6" White Tubular Delineator
●	4" Dia. x 6" Amber Tubular Delineator



**Detail A**  
(Gore Area Delineation)

Published Date: 2026

S  
D  
D  
O  
T

**DELINEATORS AT RAMPS AND GORE AREAS**

PLATE NUMBER  
632.48

Sheet 1 of 1

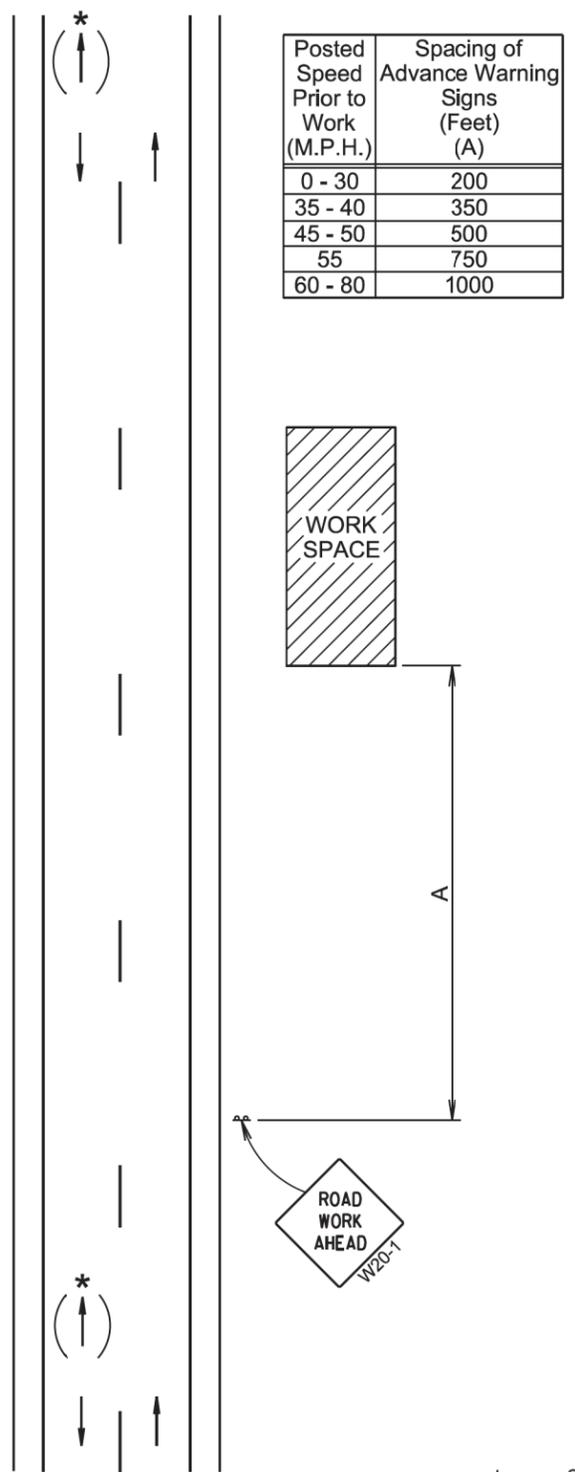
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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: 2026	S D D O T	WORK BEYOND THE SHOULDER	PLATE NUMBER 634.01
			Sheet 1 of 1

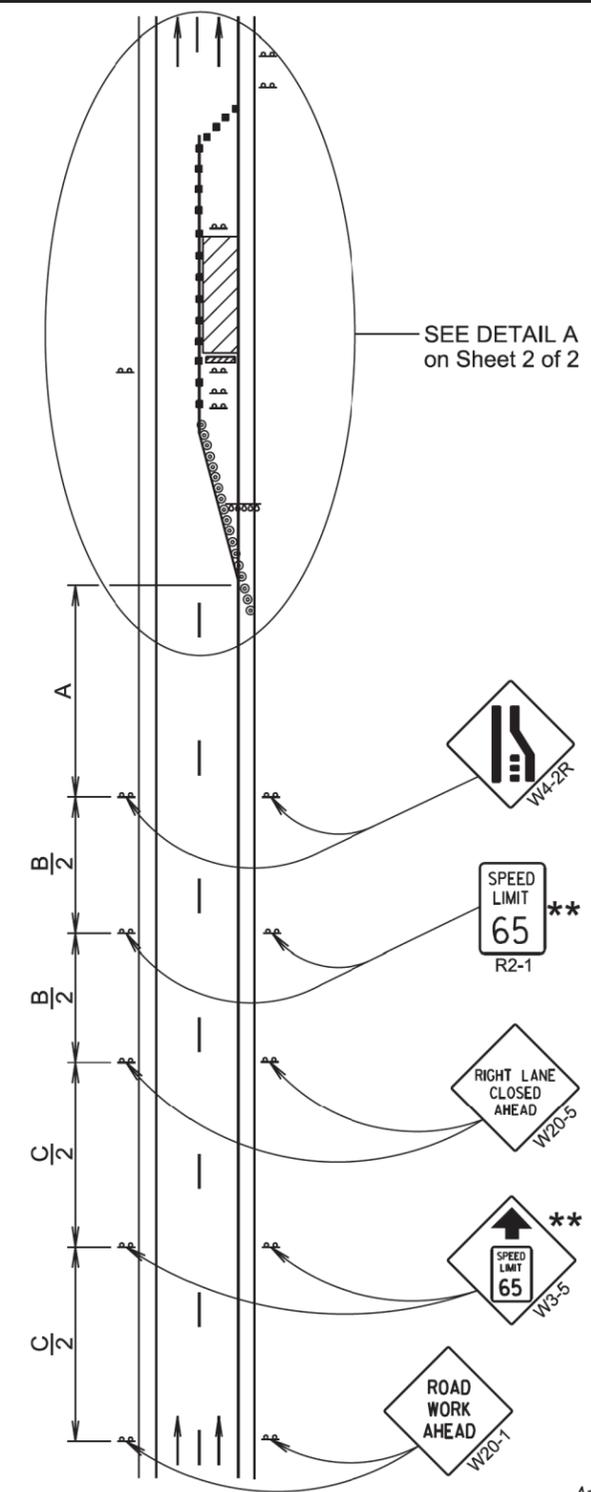
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)		
	(A)	(B)	(C)
0 - 30	200		
35 - 40	350		
45 - 50	500		
55	750		
60 - 65	1000		
	(A)	(B)	(C)
70 - 80	1000	1500	2640

\*\* Speed appropriate for location.

- ◉ Reflectorized Drum
- Channelizing Device

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

High speed is defined as having a posted speed limit greater than 45 mph.



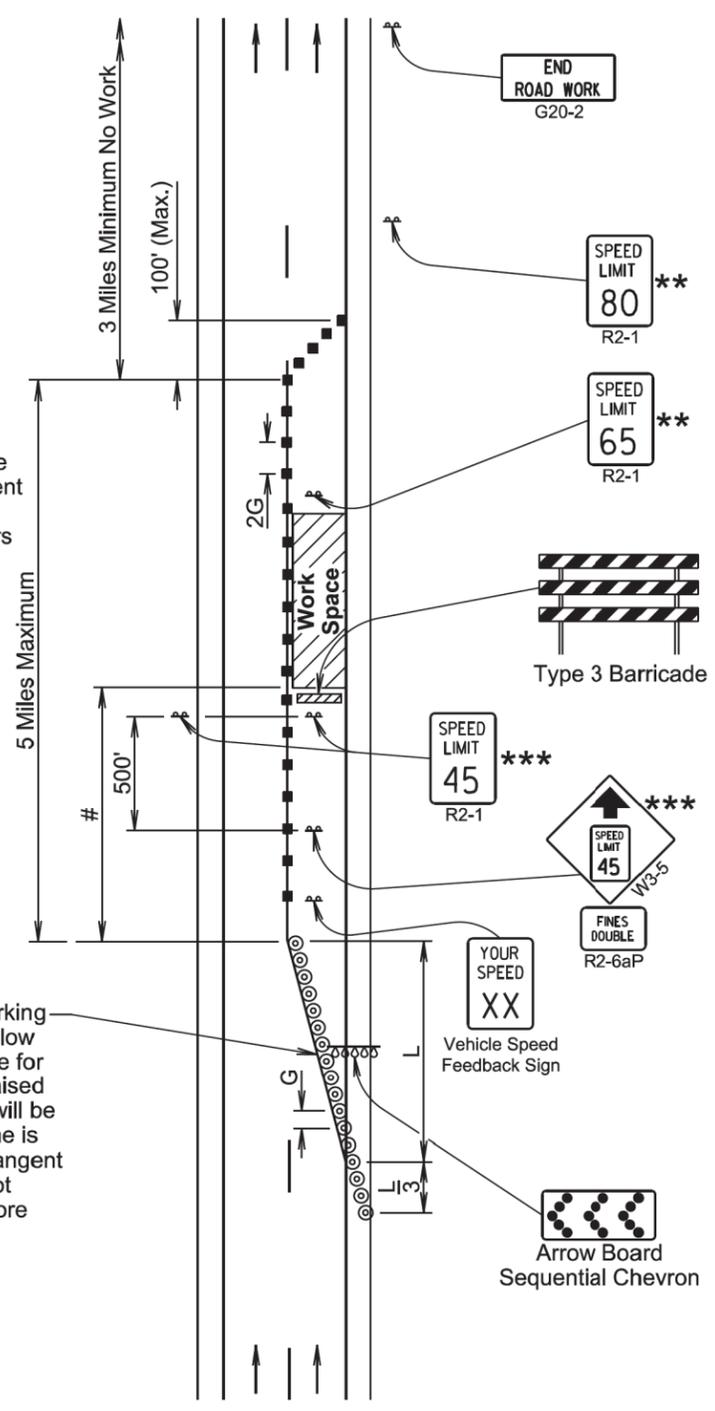
SEE DETAIL A on Sheet 2 of 2

April 8, 2025

Published Date: 2026	S D D O T	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
			Sheet 1 of 2

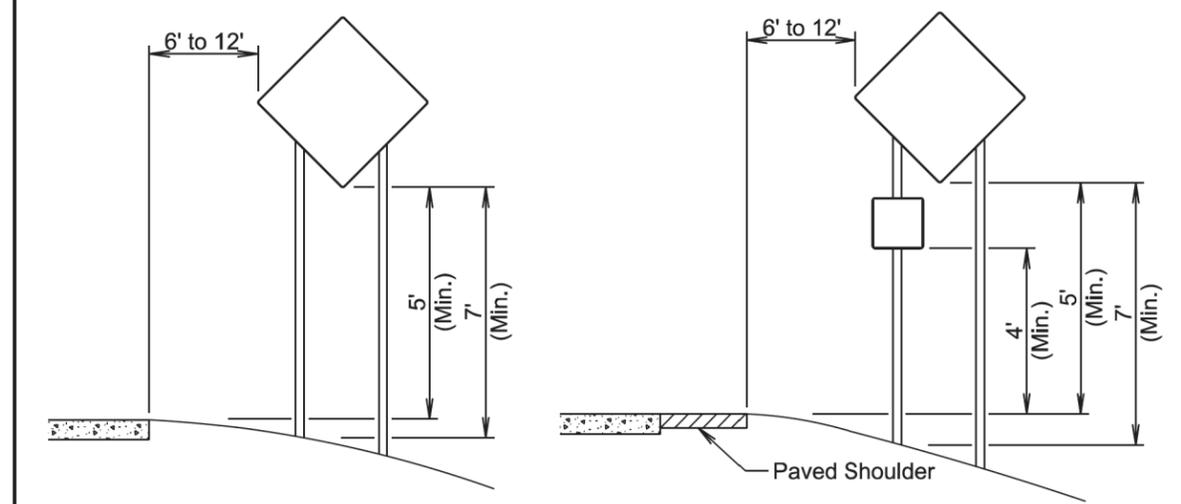
Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
0 - 30	25	180
35 - 40	25	320
45	25	600
50	50 *	600
55	50 *	660
60 - 65	50 *	780
70 - 80	50 *	960

- \* Spacing is 40' for 42" cones.
  - \*\* Speed appropriate for location.
  - \*\*\* Use speed limit designated for the condition when workers are present in the work space. Signs will be covered or removed when workers are not present.
  - ⊙ Reflectorized Drum
  - Channelizing Device
  - # The Work Space will be a minimum of 500' from the end of the taper.
- The channelizing devices will be 42" cones or drums.
- 42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.
- 4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary raised pavement markers at 5' spacing will be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do not exist and the lane is closed for more than 3 days.

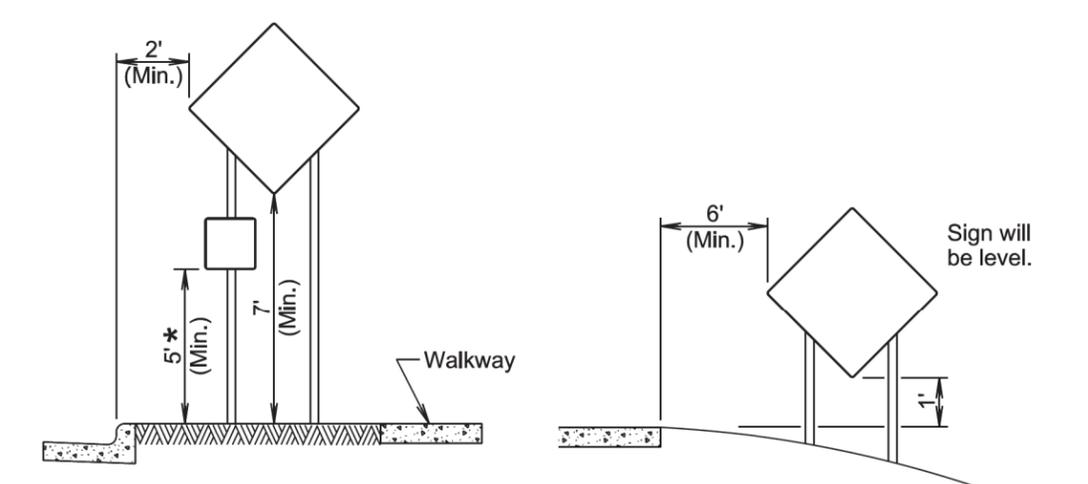


**DETAIL A** April 8, 2025

<b>SDOT</b>	<b>WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS</b>	PLATE NUMBER <b>634.63</b>
	Published Date: 2026	Sheet 2 of 2



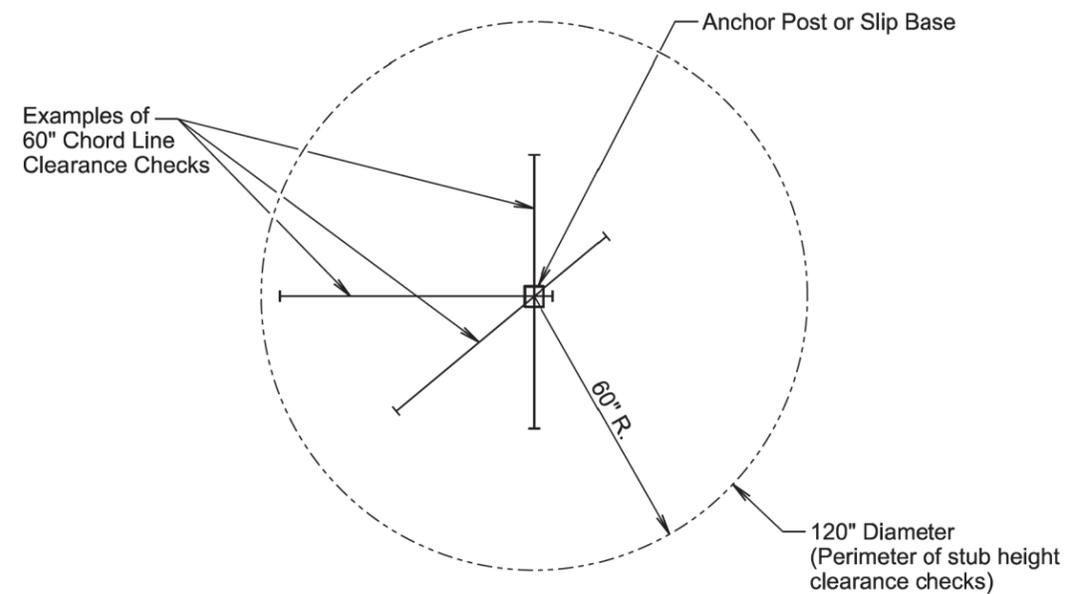
**RURAL DISTRICT**      **RURAL DISTRICT WITH SUPPLEMENTAL PLATE**



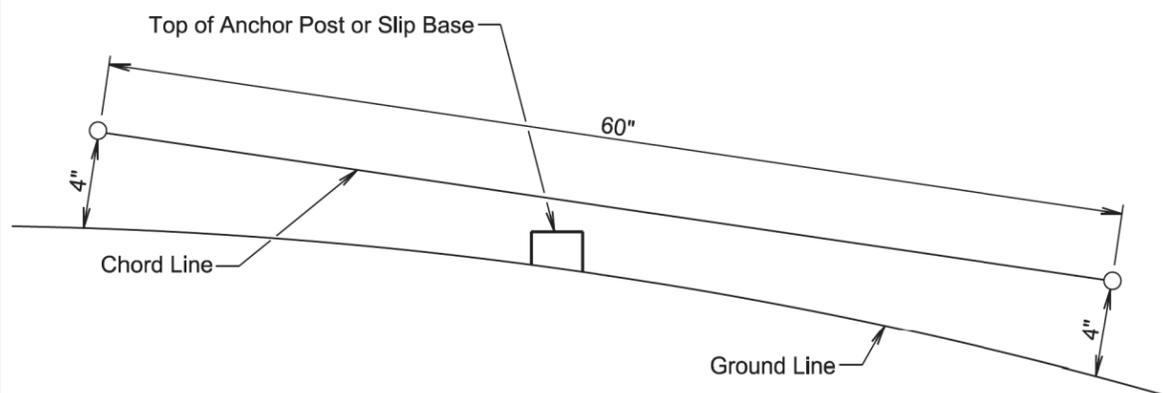
**URBAN DISTRICT**      **RURAL DISTRICT 3 DAY MAXIMUM**  
(Not applicable to regulatory signs)

\* 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.

<b>SDOT</b>	<b>CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)</b>	PLATE NUMBER <b>634.85</b>
	Published Date: 2026	Sheet 1 of 1



**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.

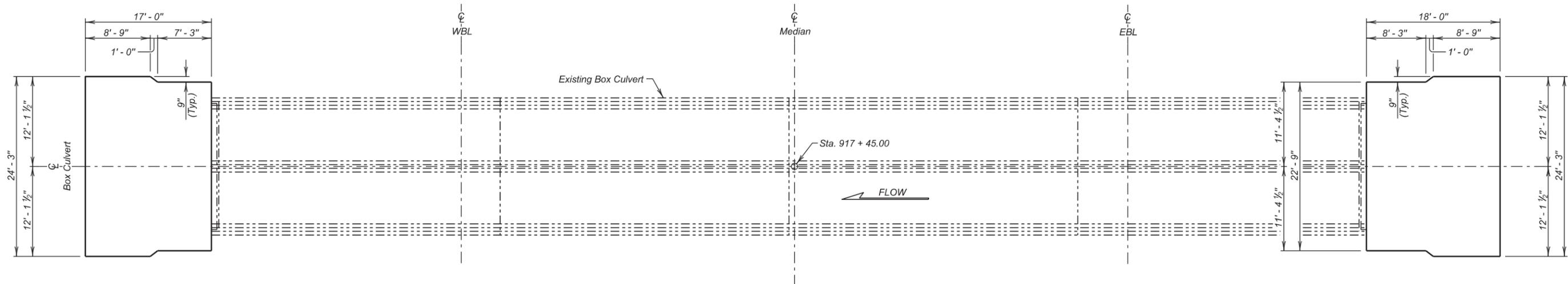
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

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

<i>Published Date: 2026</i>	<b>S D D O T</b>	<b>BREAKAWAY SUPPORT STUB CLEARANCE</b>	PLATE NUMBER 634.99
			Sheet 1 of 1





**UNDERCUT LAYOUT**  
(Bottom Dimensions)

**SPECIFICATIONS**

1. Design Specifications: AASHTO Standard Specifications for Highway Bridges, 2002 Edition (Service Load).
2. Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.

**GENERAL NOTES**

1. Design Live Load: HS 20-44 and Alternate Loading. No construction loading in excess of legal load was considered.
2. The design of the barrel section is based on a minimum fill height of one foot and includes all subsequent fill heights up to and including the maximum fill height of 5 feet (F5).
3. Unit Stresses: Concrete  $f_c' = 1800$  p.s.i.  
Reinforcing Steel  $f_s = 24000$  p.s.i.
4. All concrete shall be Class A45 conforming to Section 460.
5. All reinforcing steel shall conform to ASTM A615 Grade 60.
6. All exposed edges shall be chamfered 3/4 inch.
7. Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.
8. The Contractor shall imprint on the structure the date of the existing box culvert construction as well as the date of new construction as specified and detailed on Standard Plate No. 460.03.
9. Care shall be taken to establish Working Points (W.P.) as shown on the wings.
10. Circled numbers in PLAN and ELEVATION views on the General Drawing are section I.D. Numbers (see SDDOT Materials Manual).
11. Cost of Preformed Expansion Joint Filler used in apron construction shall be incidental to the other contract items.

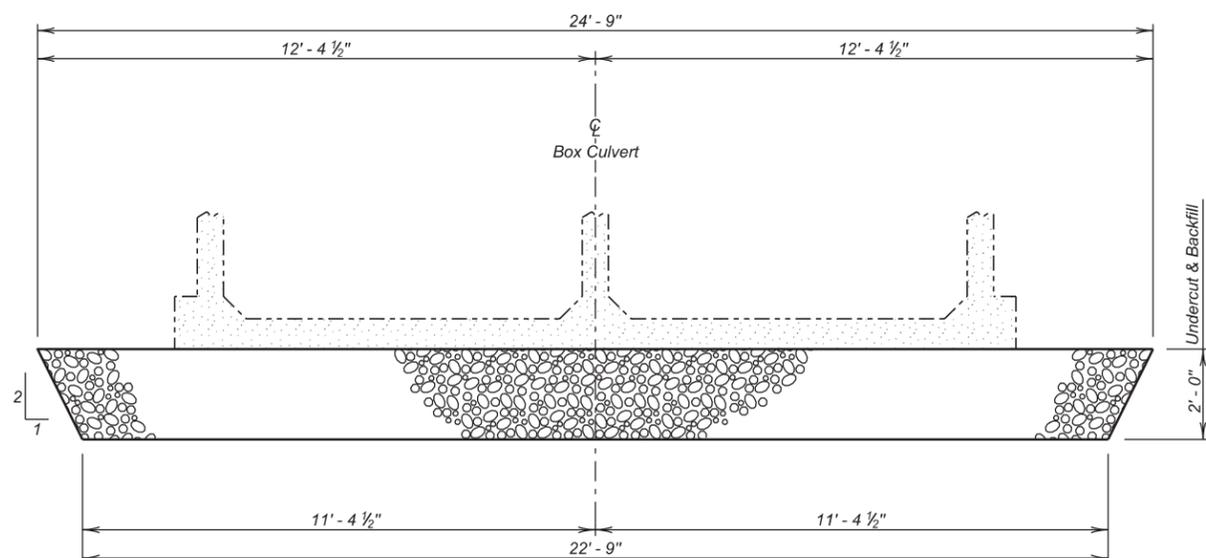
**DIMENSIONS OF EXISTING BOX CULVERT**

All details and dimensions of the Existing Box Culvert, contained in these plans, are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary dimensions affecting the satisfactory completion of the work required for this project. Original construction plans can be obtained from the Office of Bridge Design.



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Box Culvert Undercut	Cu. Yd.	66

For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.



**TYPICAL SECTION**  
(For Limits of Undercut)

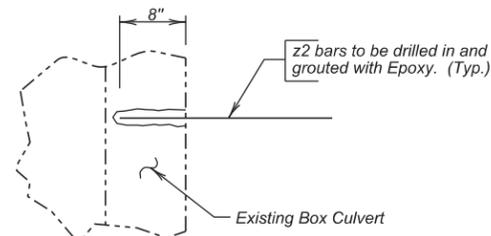
**NOTES AND UNDERCUT DETAILS**  
FOR

**2 - 8' X 3' BOX CULVERT EXTENSION**  
OVER CREEK  
STA. 917 + 45.00  
STR. NO. 02-171-163  
0° SKEW  
SEC. 25-T103N-R64W  
IM 0907(77)309  
HS 20-44  
( & ALT. )

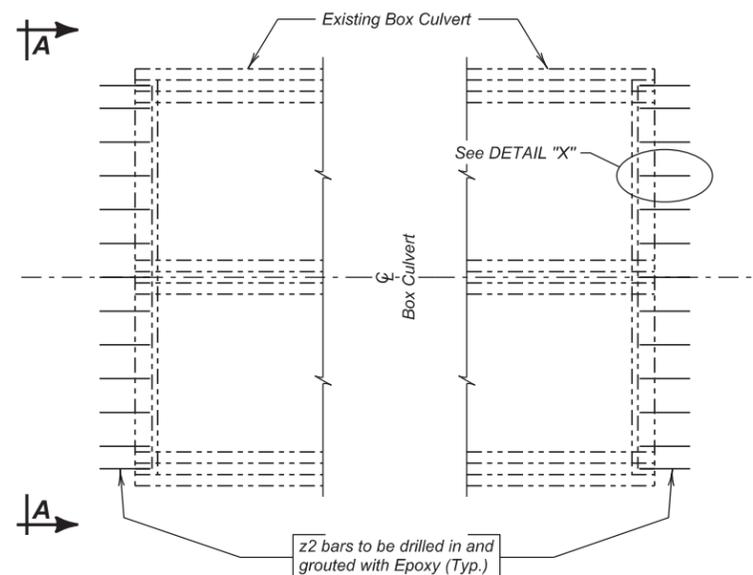
AURORA COUNTY  
S. D. DEPT. OF TRANSPORTATION  
JULY 2012

### BREAKOUT STRUCTURAL CONCRETE

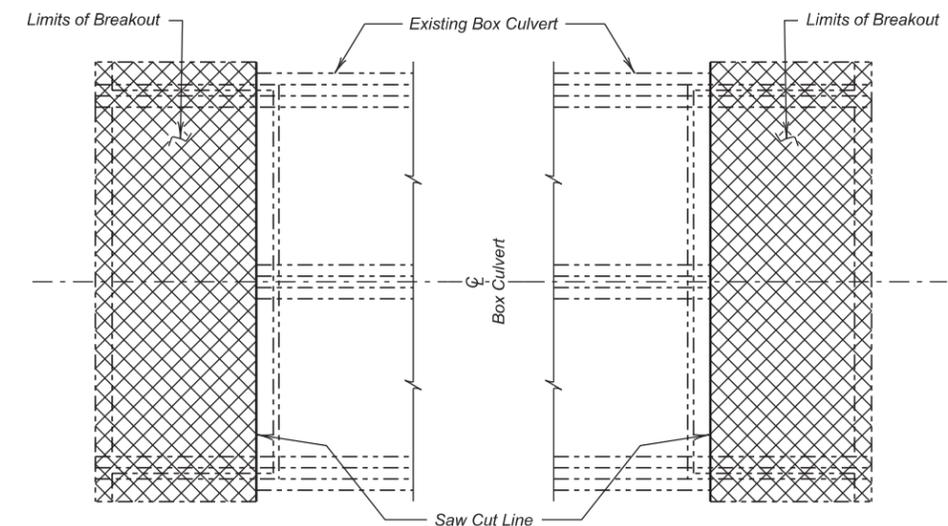
1. This work will consist of breaking out and disposing of structural concrete. All broken out concrete and other discarded material will be disposed of in accordance with the Waste Disposal Site notes found in the Environmental Commitments Notes.
2. Define the breakout limits with 3/4 inch deep saw cuts.
3. Any additional breakout required due to spalling or cracking of the existing structure will be determined by the Engineer. Where additional breakout in the barrel section of the existing structure is required, care shall be taken not to damage any of the existing reinforcing steel. All steel will be left in place and thoroughly cleaned by sandblasting.
4. Additional breakout in existing walls or top slab will require shoring up of the parapet and top slab, as directed by the Engineer.
5. Plans quantity payment will be full compensation for this item regardless of the quantity actually broken out, unless measurement is ordered by the Engineer. If the Engineer orders breakout beyond the limits shown, this additional breakout will be paid for at the contract unit price per cubic yard for Breakout Structural Concrete. If additional breakout is caused by the Contractor's operations, no additional payment will be made.
6. Breakout Structural Concrete will be paid for at the contract unit price per cubic yard. This payment shall be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to breaking out the structural concrete. Payment includes, but is not limited to, excavation required to perform the required breakout, sawcutting, breaking out concrete, cleaning and sandblasting reinforcing steel and concrete surfaces, and removing and disposing of all waste materials to satisfactorily complete the work.



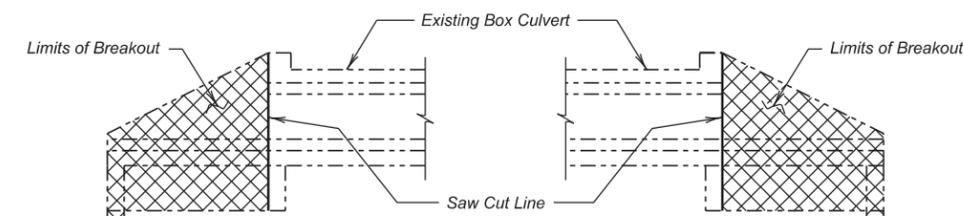
DETAIL "X"



PLAN - DOWEL DETAILS  
(Inlet and Outlet)



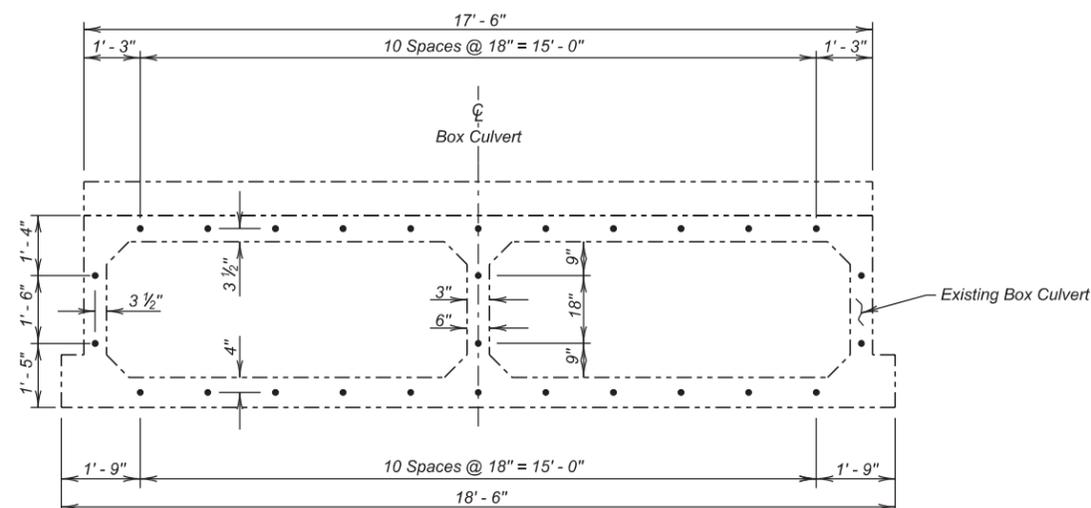
PLAN - BREAKOUT DETAILS



ELEVATION - BREAKOUT DETAILS

### INSTALLING DOWELS IN CONCRETE

1. The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and shall conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).
2. The diameter of the drilled holes shall not be less than 1/8 inch greater, nor more than 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. Holes shall not be drilled using core bits. The drilled holes shall be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
3. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting methods will not be allowed.
4. No loads shall be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
5. Embed z2 dowels 8" into existing concrete.
6. z2 dowel bars shall be #6 deformed bars conforming to ASTM A615 Grade 60.
7. The cost of drilling holes, epoxy resin, dowels, installation and other incidental items shall be included in the contract unit price per each for Install Dowel in Concrete.



VIEW A - A  
(Dowel Locations)

ESTIMATED QUANTITIES (Inlet and Outlet)		
ITEM	UNIT	QUANTITY
Breakout Structural Concrete	Cu. Yd.	11.6
Install Dowel in Concrete	Each	52

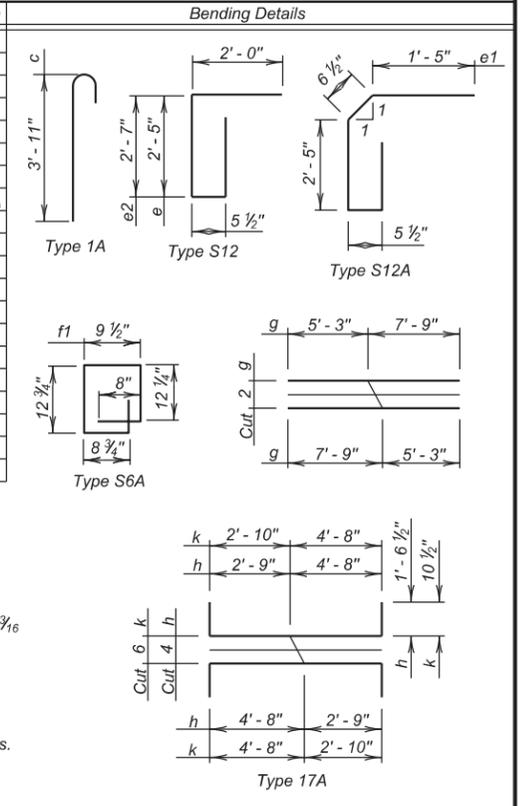
### BREAKOUT AND DOWEL PLACEMENT DETAILS

FOR  
**2 - 8' X 3' BOX CULVERT EXTENSION**  
 OVER CREEK 0° SKEW  
 STA. 917 + 45.00 SEC. 25-T103N-R64W  
 STR. NO. 02-171-163 IM 0907(77)309  
 HS 20-44  
 (& ALT.)

AURORA COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 JULY 2012

**REINFORCING SCHEDULE**  
(For One Inlet or One Outlet)

Mk.	No.	Size	Length	Type
a1	4	6	17'-6"	Str.
b1	4	6	16'-9"	Str.
c	4	5	4'-6"	1A
c1	8	5	6'-6"	Str.
c2	4	5	7'-0"	19B
d1	8	5	5'-6"	19B
e	17	4	7'-0"	S12
e1	10	4	7'-3"	S12A
f1	18	4	5'-0"	S6A
g0	12	5	5'-0"	Str.
g	4	4	13'-0"	Str.
h	4	4	10'-6"	17A
k	6	4	9'-3"	17A
p6	10	6	7'-0"	Str.
p7	10	4	8'-6"	Str.
p8	4	4	11'-0"	Str.



NOTES:  
 All dimensions are out to out of bars.  
 See cutting diagram.  
 Bend in field as necessary to fit.

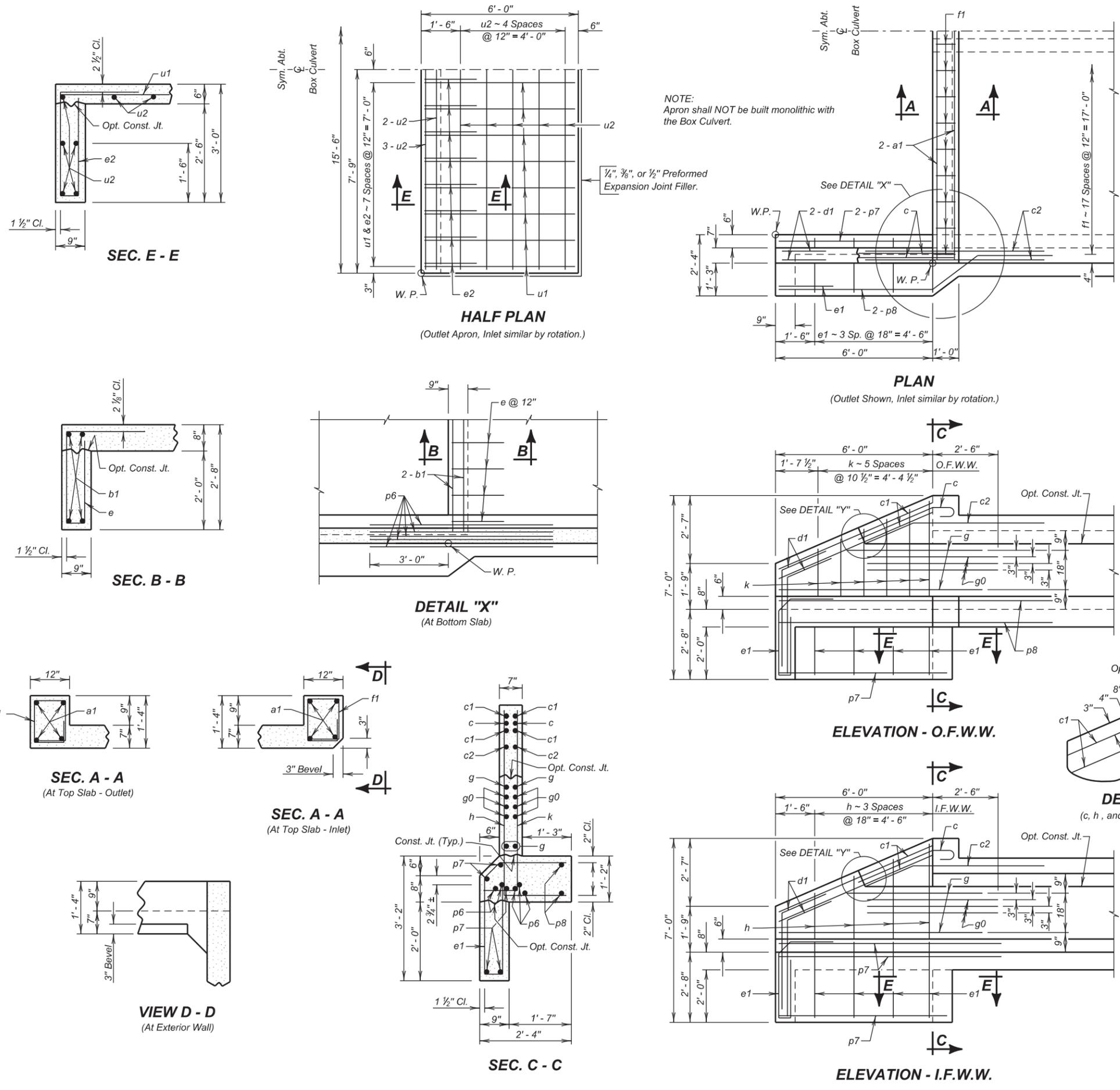
**ESTIMATED QUANTITIES**

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
	Cu. Yd.	Lb.	Cu. Yd.
Inlet	5.2	896	3.0
Inlet Apron	2.8	239	2.8
Outlet	5.2	896	3.0
Outlet Apron	2.8	239	2.8

**LEGEND FOR PLACING RE-STEEL**  
 O. F. W. W. - Outside Face of Wing Wall  
 I. F. W. W. - Inside Face of Wing Wall

**INLET OR OUTLET DETAILS FOR 2 - 8' X 3' BOX CULVERT EXTENSION OVER CREEK**  
 0° SKEW  
 STA. 917 + 45.00 SEC. 25-T103N-R64W  
 STR. NO. 02-171-163 IM 0907(77)309  
 HS 20-44 (& ALT.)

AURORA COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 JULY 2012



LEGEND FOR PLACING RE-STEEL	
T. T. S.	- Top of Top Slab
B. T. S.	- Bottom of Top Slab
T. B. S.	- Top of Bottom Slab
B. B. S.	- Bottom of Bottom Slab
O. F. O. W.	- Outside Face of Outside Wall
I. F. O. W.	- Inside Face of Outside Wall
M. W.	- Middle Wall

### REINFORCING SCHEDULE

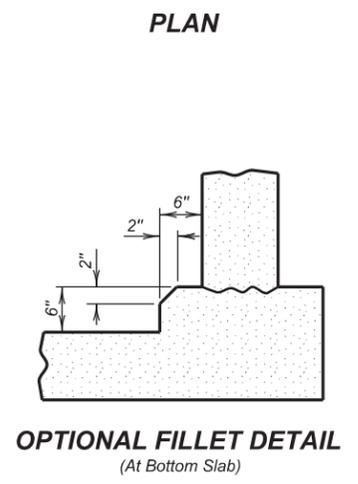
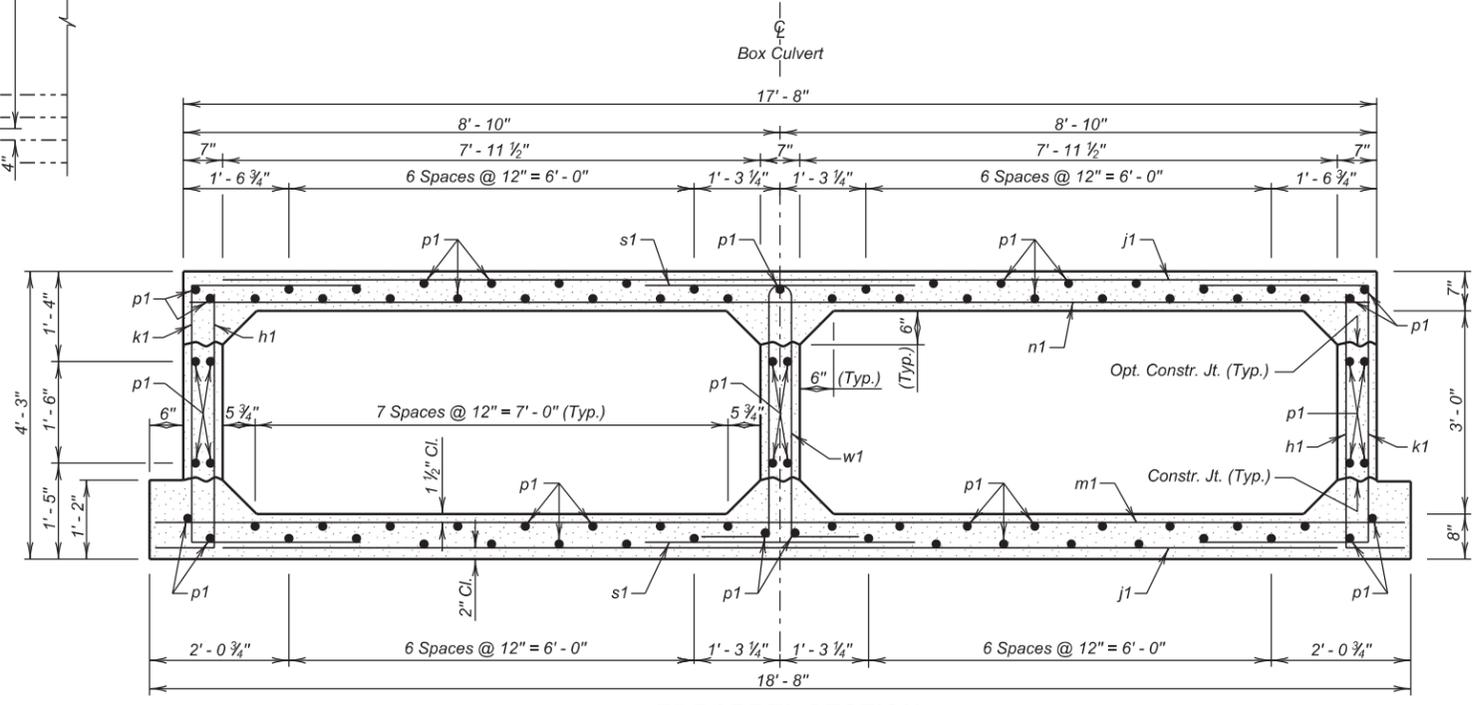
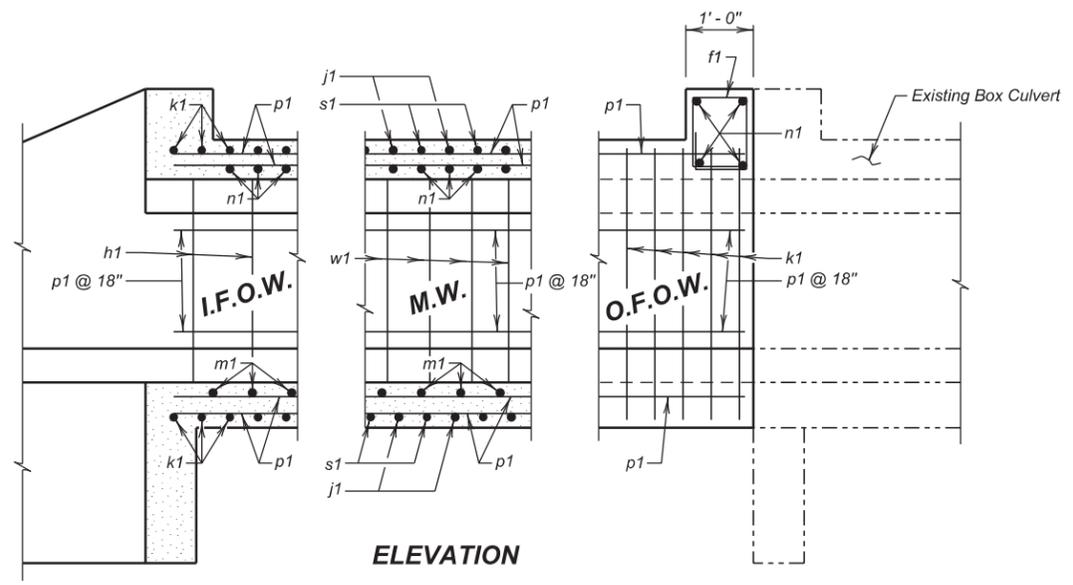
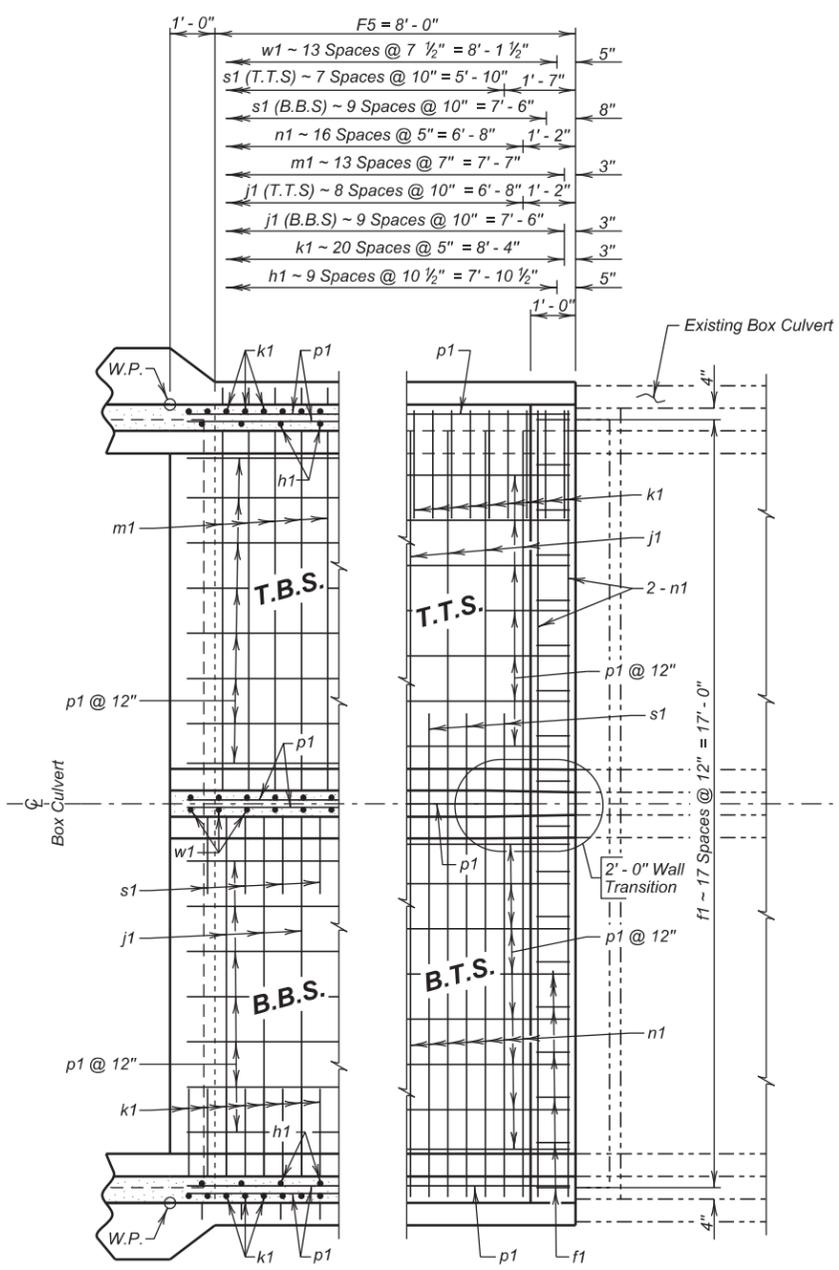
(For One F5 Barrel End Section)

Mk.	No.	Size	Length	Type	Bending Details
f1	18	4	5'-0"	S6A	
h1	20	4	4'-9"	17A	
j1	19	5	16'-6"	Str.	
k1	42	4	9'-0"	17	
m1	14	5	18'-6"	Str.	
n1	21	5	17'-6"	Str.	
p1	83	4	8'-6"	Str.	
s1	18	5	4'-0"	Str.	
w1	14	4	10'-3"	S11A	
z2	22	6	2'-3"	Str.	

**OPTIONAL k1 SPLICE DETAIL**

Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel shall be borne by the Contractor.

**NOTES:**  
 All dimensions are out to out of bars.  
 Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.  
 \* Quantity of z2 bars is not included in reinforcing steel. See BREAKOUT AND DOWEL PLACEMENT DETAILS Sheet.



### ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
1 - F5 Barrel End Section @ 8' - 0"	9.2	1999	3.7

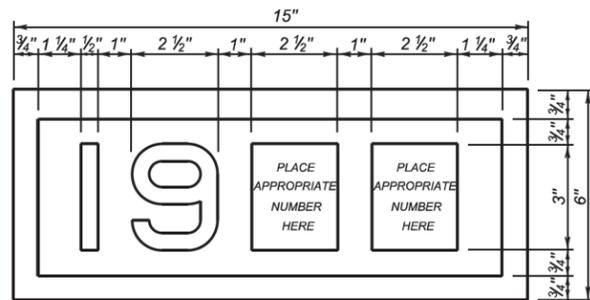
**F5 BARREL END SECTION DETAILS (8' - 0")**  
 FOR  
**2 - 8' X 3' BOX CULVERT EXTENSION**  
 OVER CREEK  
 STA. 917 + 45.00  
 STR. NO. 02-171-163

0° SKEW  
 SEC. 25-T103N-R64W  
 IM 0907(77)309  
 HS 20-44  
 (& ALT.)

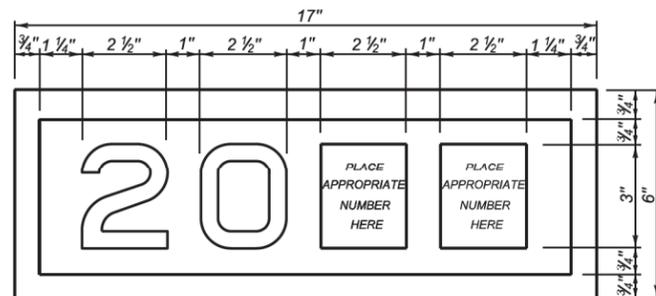
AURORA COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 JULY 2012



**YEAR PLATE  
DETAILS FOR  
ORIGINAL CONSTRUCTION**

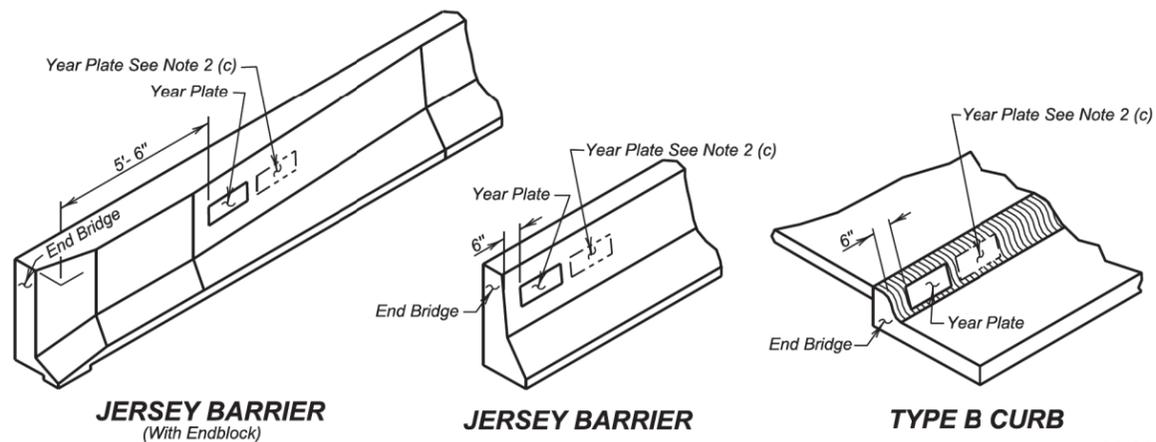


**YEAR PLATE  
DETAILS FOR  
NEW CONSTRUCTION**



**GENERAL NOTES:**

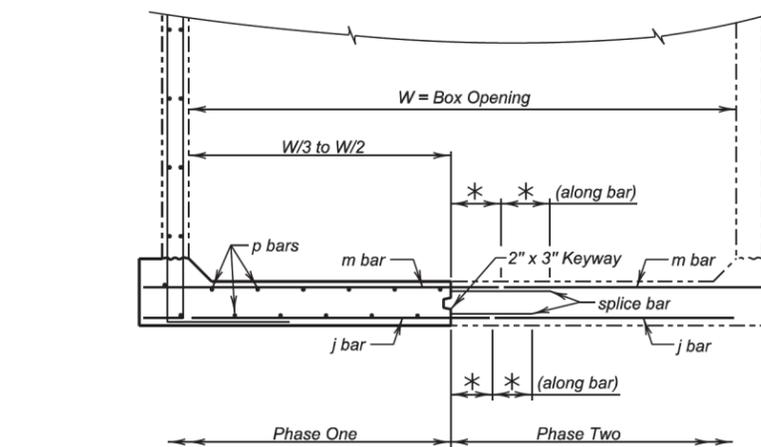
- Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
- Year plates shall be located on structure(s) as follows:
  - On cast-in-place box culverts the year plates shall be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
  - On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'-6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
  - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



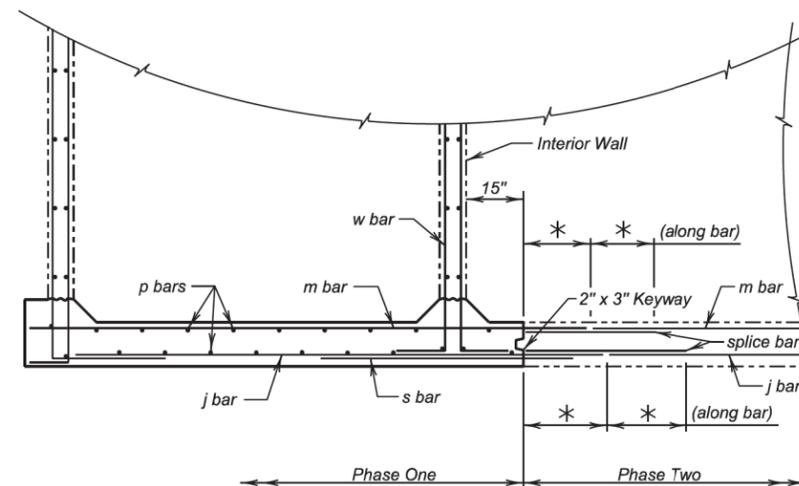
June 26, 2012

<b>S D D O T</b>	<b>DUAL DATE YEAR PLATE DETAILS</b>	PLATE NUMBER 460.03
		Sheet 1 of 1

Published Date: 2026



**TYPICAL SINGLE BARREL CONSTRUCTION JOINT LOCATION  
(BOTTOM SLAB ONLY)**



**TYPICAL MULTIPLE BARREL CONSTRUCTION JOINT LOCATION  
(BOTTOM SLAB ONLY)**

\* See table of Lap Lengths for correct length of lap to use.

BAR SIZE	LAP LENGTH	
	SPACING < 6"	SPACING ≥ 6"
#4	1' - 9"	1' - 6"
#5	2' - 3"	1' - 9"
#6	2' - 9"	2' - 3"
#7	3' - 3"	2' - 6"
#8	4' - 3"	3' - 3"

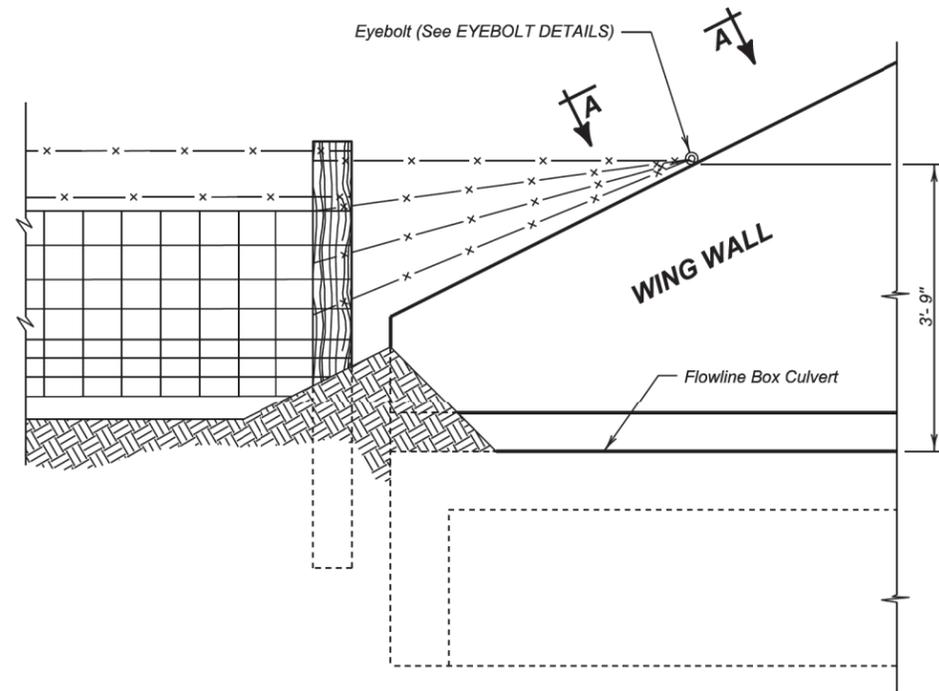
**GENERAL NOTES:**

- The s bars shall not be cut and lapped.
- The m and j bars listed on the barrel detail sheet(s) are the length of bar required not including laps.
- The cost of additional reinforcing steel for the lap shall be borne by the Contractor.
- All costs for constructing the optional bottom slab construction joint including labor and materials, except for the additional lap reinforcing steel, shall be incidental to the contract unit price per cubic yard for "Class A45 Concrete, Box Culvert".

June 26, 2012

<b>S D D O T</b>	<b>OPTIONAL BOTTOM SLAB CONSTRUCTION JOINT</b>	PLATE NUMBER 460.11
		Sheet 1 of 1

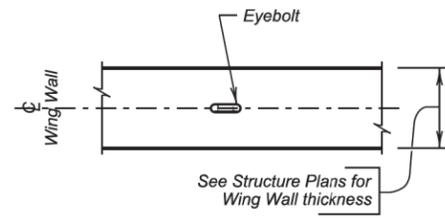
Published Date: 2026



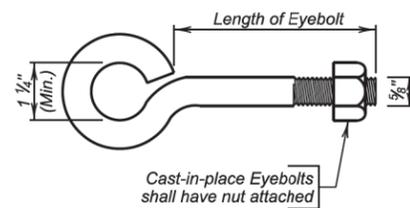
**DETAIL FOR FENCE ANCHORS**

**GENERAL NOTES:**

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the box culvert wing walls.
3. Eyebolts shall be  $\frac{5}{8}$  inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be  $4\frac{1}{2}$  inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the  $\frac{5}{8}$  inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



**VIEW A - A**

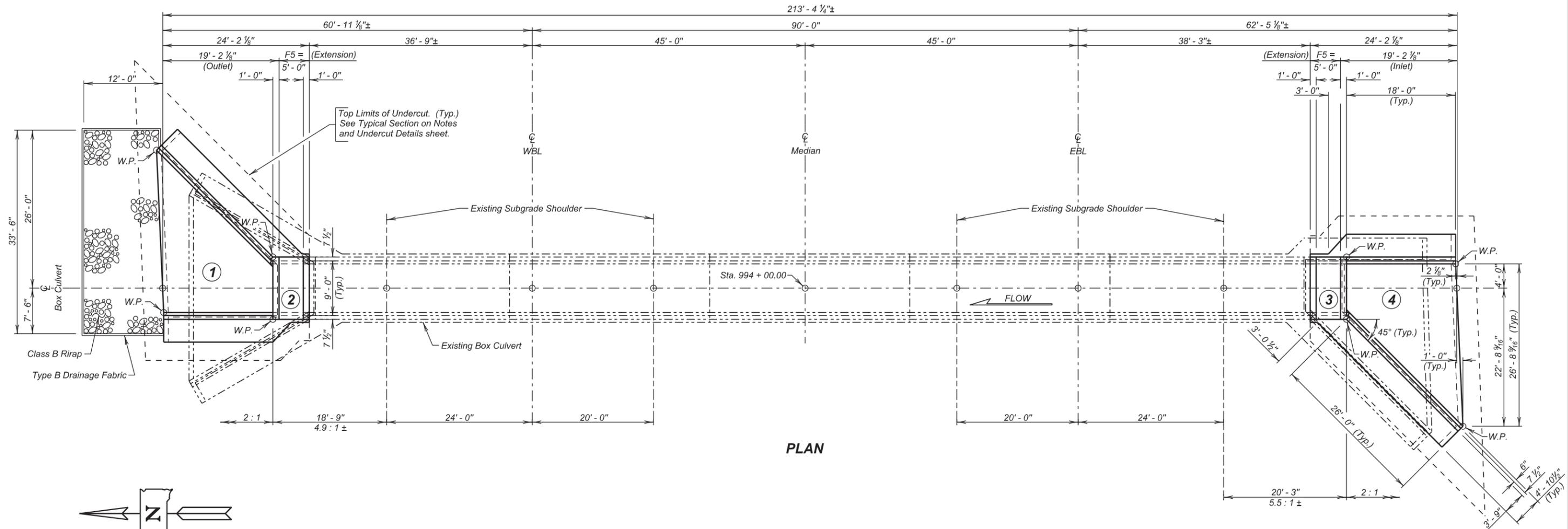


**EYEBOLT DETAILS**

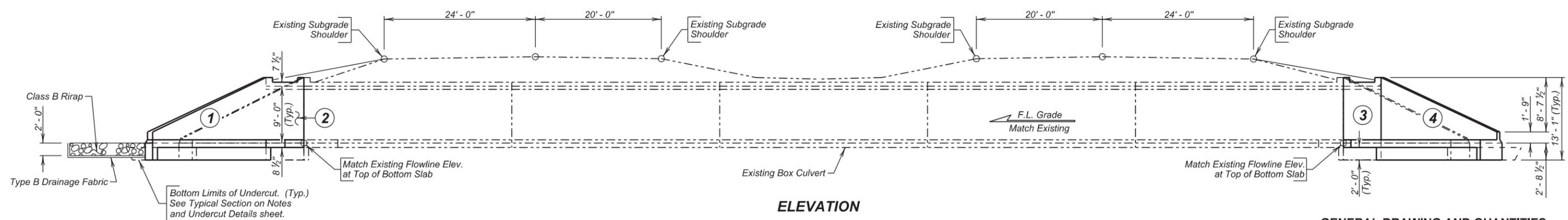
December 23, 2012

<b>S D D O T</b>	<b>FENCE ANCHORS FOR BOX CULVERT WING WALLS</b>	PLATE NUMBER <b>620.16</b>
		Sheet 1 of 1

Published Date: 2026



PLAN



ELEVATION

**INDEX OF CULVERT SHEETS-**

- Sheet No. 1 - General Drawing and Quantities
- Sheet No. 2 - Notes and Undercut Details
- Sheet No. 3 - Breakout and Dowel Placement Details
- Sheet No. 4 - Inlet or Outlet Details (A)
- Sheet No. 5 - Inlet or Outlet Details (B)
- Sheet No. 6 - F5 Barrel End Section Details (5'-0")
- Sheet No. 7 - Details of Standard Plate No's. 460.03 & 620.16

NOTE: All stations and dimensions are based on survey/original plans of the existing box culvert. The intent is to match the existing box location, flowline, and slope.

**ESTIMATED QUANTITIES**

ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	Cu. Yd.	66.4
Reinforcing Steel	Lb.	8102
Structure Excavation, Box Culvert	Cu. Yd.	38
Box Culvert Undercut	Cu. Yd.	134
Class B Riprap	Ton	40.6
Type B Drainage Fabric	Sq. Yd.	64
Breakout Structural Concrete	Cu. Yd.	50.5
Install Dowel in Concrete	Each	48

±

± For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yd. to Tons.

**GENERAL DRAWING AND QUANTITIES**

FOR  
**9' X 9' BOX CULVERT EXTENSION**

\* Topeka Shiner Stream

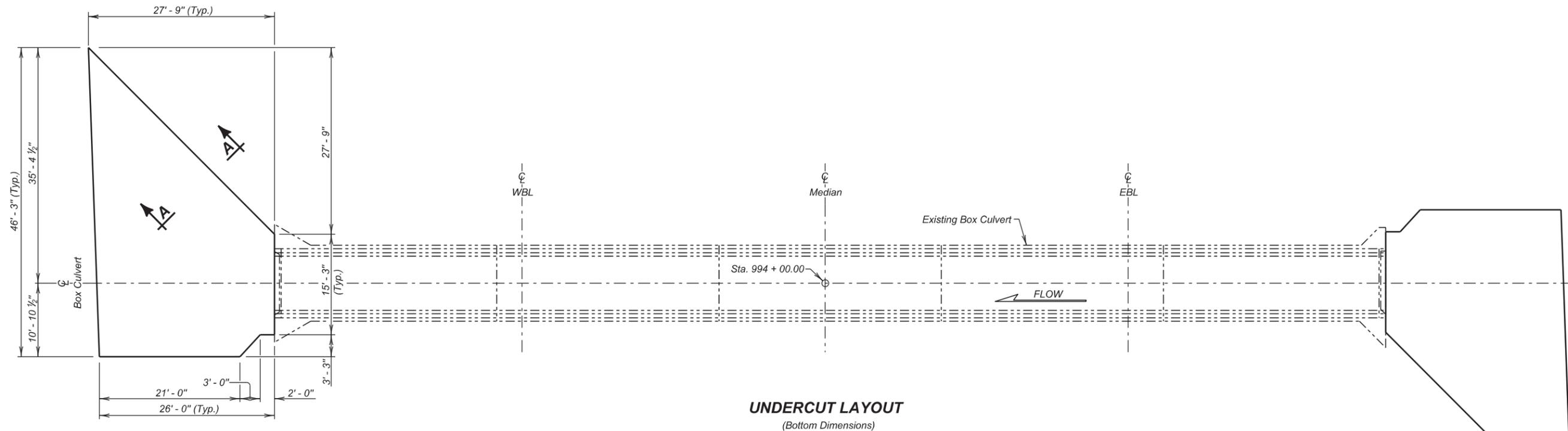
OVER CREEK \*  
STA. 994 + 00.00  
STR. NO. 02-186-165  
PCN 034U

0° SKEW  
SEC. 30-T103N-R63W  
IM 0907(77)309  
HS 20-44  
( & ALT. )

AURORA COUNTY  
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JULY 2012

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### SPECIFICATIONS

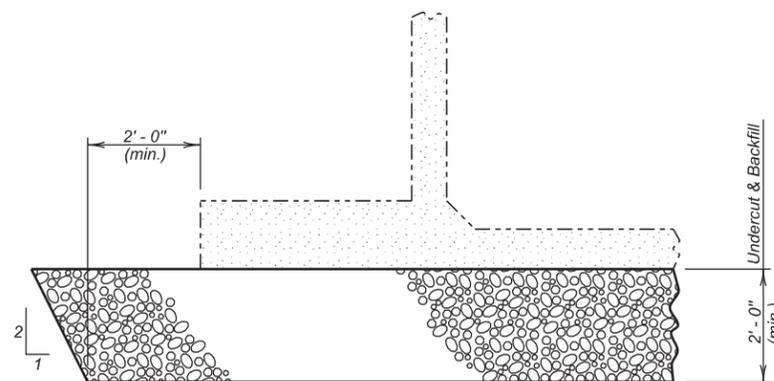
- Design Specifications: AASHTO Standard Specifications for Highway Bridges, 2002 Edition (Service Load).
- Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.

### GENERAL NOTES

- Design Live Load: HS 20-44 and Alternate Loading. No construction loading in excess of legal load was considered.
- The design of the barrel section is based on a minimum fill height of one (1) foot and includes all subsequent fill heights up to and including the maximum fill height of 5 feet (F5).
- Unit Stresses: Concrete  $f_c' = 1800$  p.s.i.  
Reinforcing Steel  $f_s = 24000$  p.s.i.
- All concrete shall be Class A45 conforming to Section 460.
- All reinforcing steel shall conform to ASTM A615 Grade 60.
- All exposed edges shall be chamfered 3/4 inch.
- Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.
- The Contractor shall imprint on the structure the date of the existing box culvert construction as well as the date of new construction as specified and detailed on Standard Plate No. 460.03.
- Care shall be taken to establish Working Points (W.P.) as shown on the wings.
- Circled numbers in PLAN and ELEVATION views on the General Drawing are section I.D. Numbers (see SDDOT Materials Manual).
- Cost of Preformed Expansion Joint Filler used in apron construction shall be incidental to the other contract items.

### DIMENSIONS OF EXISTING BOX CULVERT

All details and dimensions of the Existing Box Culvert, contained in these plans, are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary dimensions affecting the satisfactory completion of the work required for this project. Original construction plans can be obtained from the Office of Bridge Design.



**SEC. A - A**  
(For Limits of Undercut)



### ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Box Culvert Undercut	Cu. Yd.	134

For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.

### NOTES AND UNDERCUT DETAILS FOR

**9' X 9' BOX CULVERT EXTENSION**  
 OVER CREEK 0° SKEW  
 STA. 994 + 00.00 SEC. 30-T103N-R63W  
 STR. NO. 02-186-165 IM 0907(77)309  
 HS 20-44 (& ALT.)

AURORA COUNTY  
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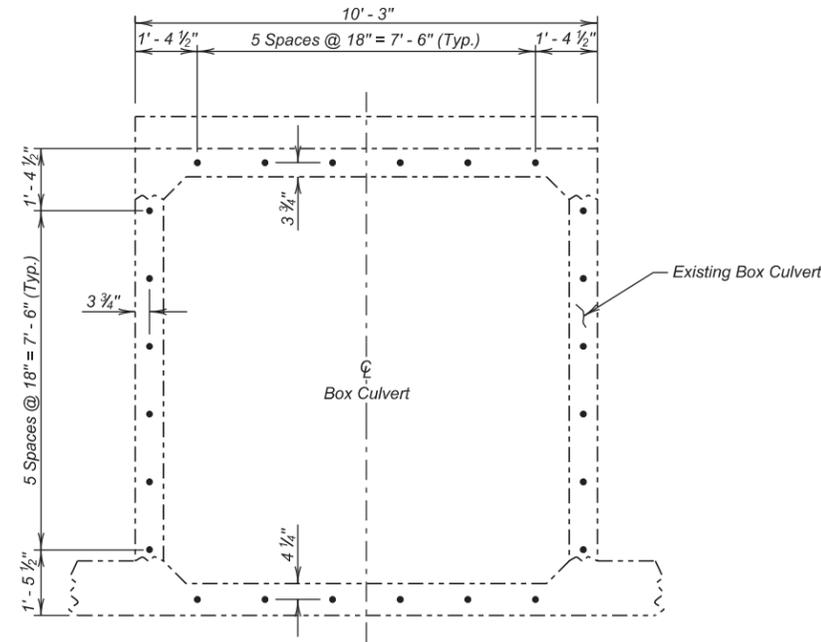
JULY 2012

2 OF 7

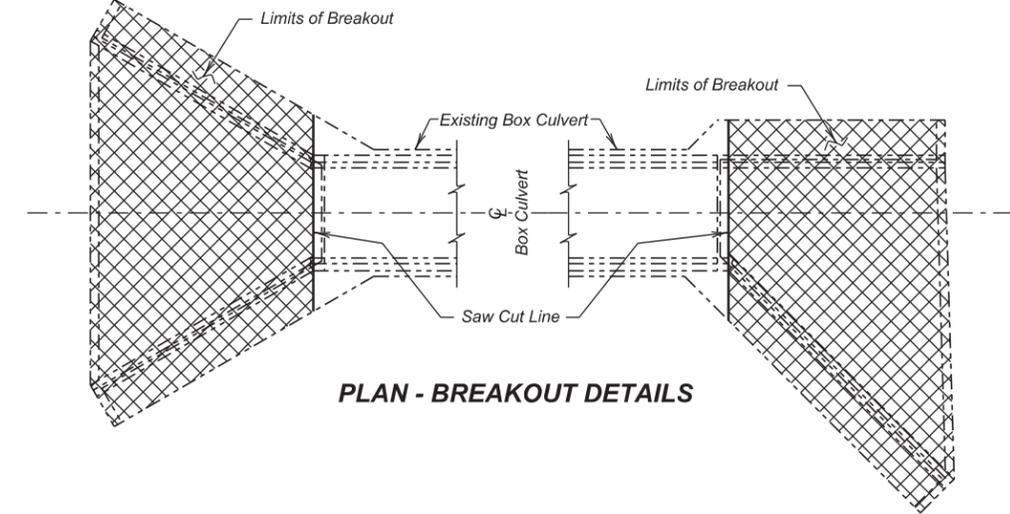
DESIGNED BY JMH AURO034U	CK. DES. BY BAF 034UTB02	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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### BREAKOUT STRUCTURAL CONCRETE

- This work will consist of breaking out and disposing of structural concrete. All broken out concrete and other discarded material will be disposed of in accordance with the Waste Disposal Site notes found in the Environmental Commitments Notes.
- Define the breakout limits with 3/4 inch deep saw cuts.
- Any additional breakout required due to spalling or cracking of the existing structure will be determined by the Engineer. Where additional breakout in the barrel section of the existing structure is required, care shall be taken not to damage any of the existing reinforcing steel. All steel will be left in place and thoroughly cleaned by sandblasting.
- Additional breakout in existing walls or top slab will require shoring up of the parapet and top slab, as directed by the Engineer.
- Plans quantity payment will be full compensation for this item regardless of the quantity actually broken out, unless measurement is ordered by the Engineer. If the Engineer orders breakout beyond the limits shown, this additional breakout will be paid for at the contract unit price per cubic yard for Breakout Structural Concrete. If additional breakout is caused by the Contractor's operations, no additional payment will be made.
- Breakout Structural Concrete will be paid for at the contract unit price per cubic yard. This payment shall be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to breaking out the structural concrete. Payment includes, but is not limited to, excavation required to perform the required breakout, sawcutting, breaking out concrete, cleaning and sandblasting reinforcing steel and concrete surfaces, and removing and disposing of all waste materials to satisfactorily complete the work.



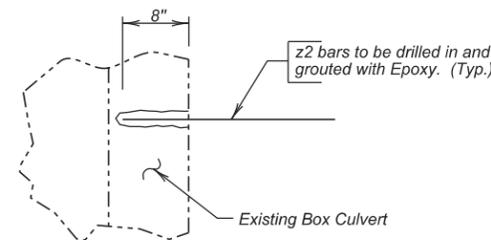
**VIEW A - A**  
(Dowel Locations)



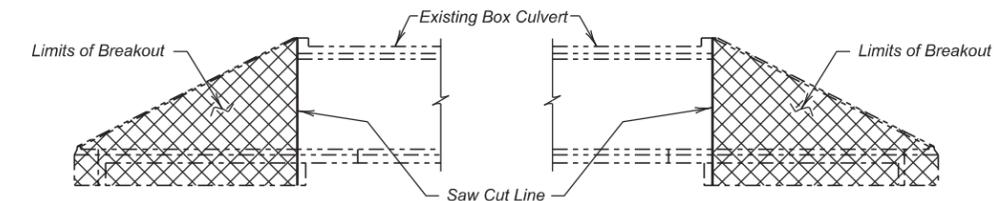
**PLAN - BREAKOUT DETAILS**

### INSTALLING DOWELS IN CONCRETE

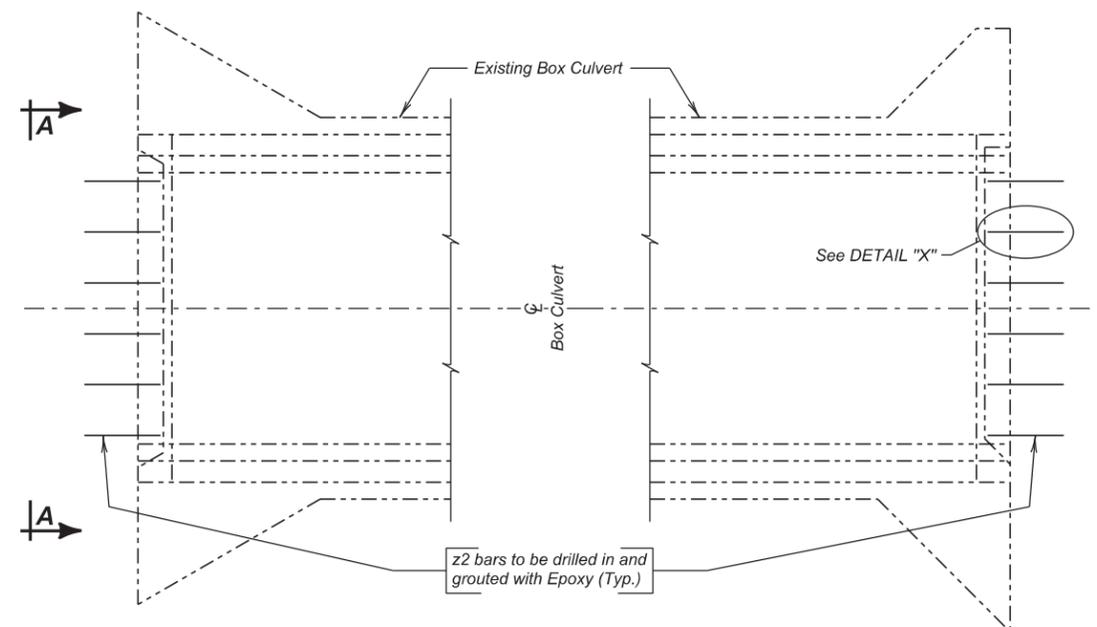
- The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and shall conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).
- The diameter of the drilled holes shall not be less than 1/8 inch greater, nor more than 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. Holes shall not be drilled using core bits. The drilled holes shall be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
- Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting methods will not be allowed.
- No loads shall be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
- Embed z2 dowels 8" into existing concrete.
- z2 dowel bars shall be #6 deformed bars conforming to ASTM A615 Grade 60.
- The cost of drilling holes, epoxy resin, dowels, installation and other incidental items shall be included in the contract unit price per each for Install Dowel in Concrete.



**DETAIL "X"**



**ELEVATION - BREAKOUT DETAILS**



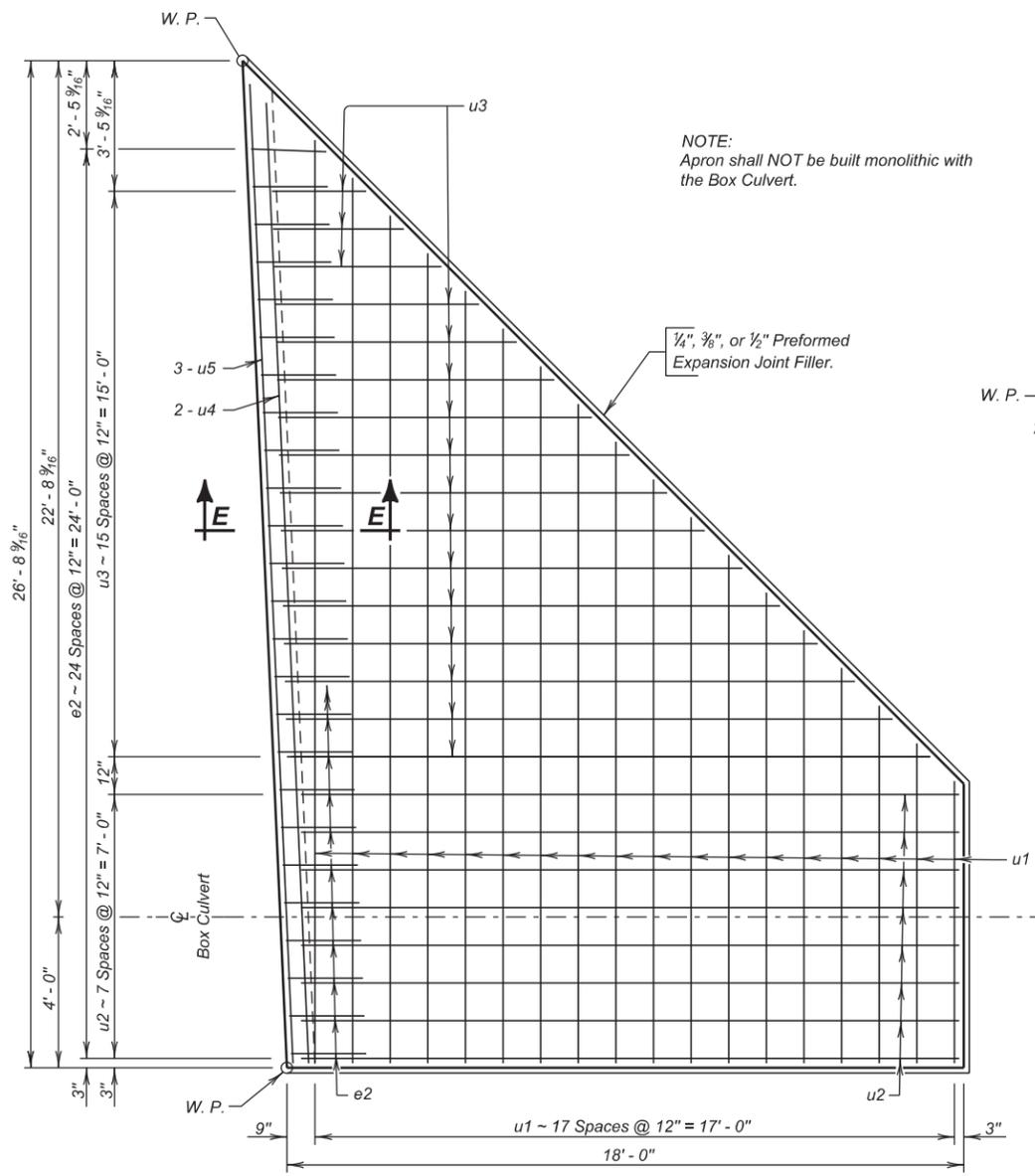
**PLAN - DOWEL DETAILS**  
(Inlet and Outlet)

ESTIMATED QUANTITIES (Inlet and Outlet)		
ITEM	UNIT	QUANTITY
Breakout Structural Concrete	Cu. Yd.	50.5
Install Dowel in Concrete	Each	48

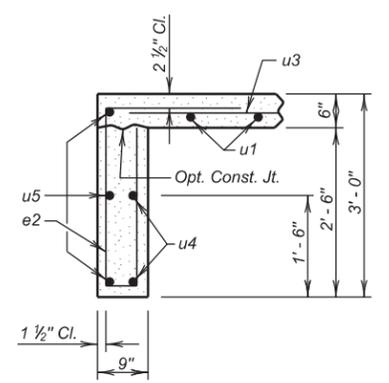
**BREAKOUT AND DOWEL PLACEMENT DETAILS**  
FOR  
**9' X 9' BOX CULVERT EXTENSION**  
OVER CREEK 0° SKEW  
STA. 994 + 00.00 SEC. 30-T103N-R63W  
STR. NO. 02-186-165 IM 0907(77)309  
HS 20-44  
( & ALT.)

AURORA COUNTY  
S. D. DEPT. OF TRANSPORTATION  
JULY 2012

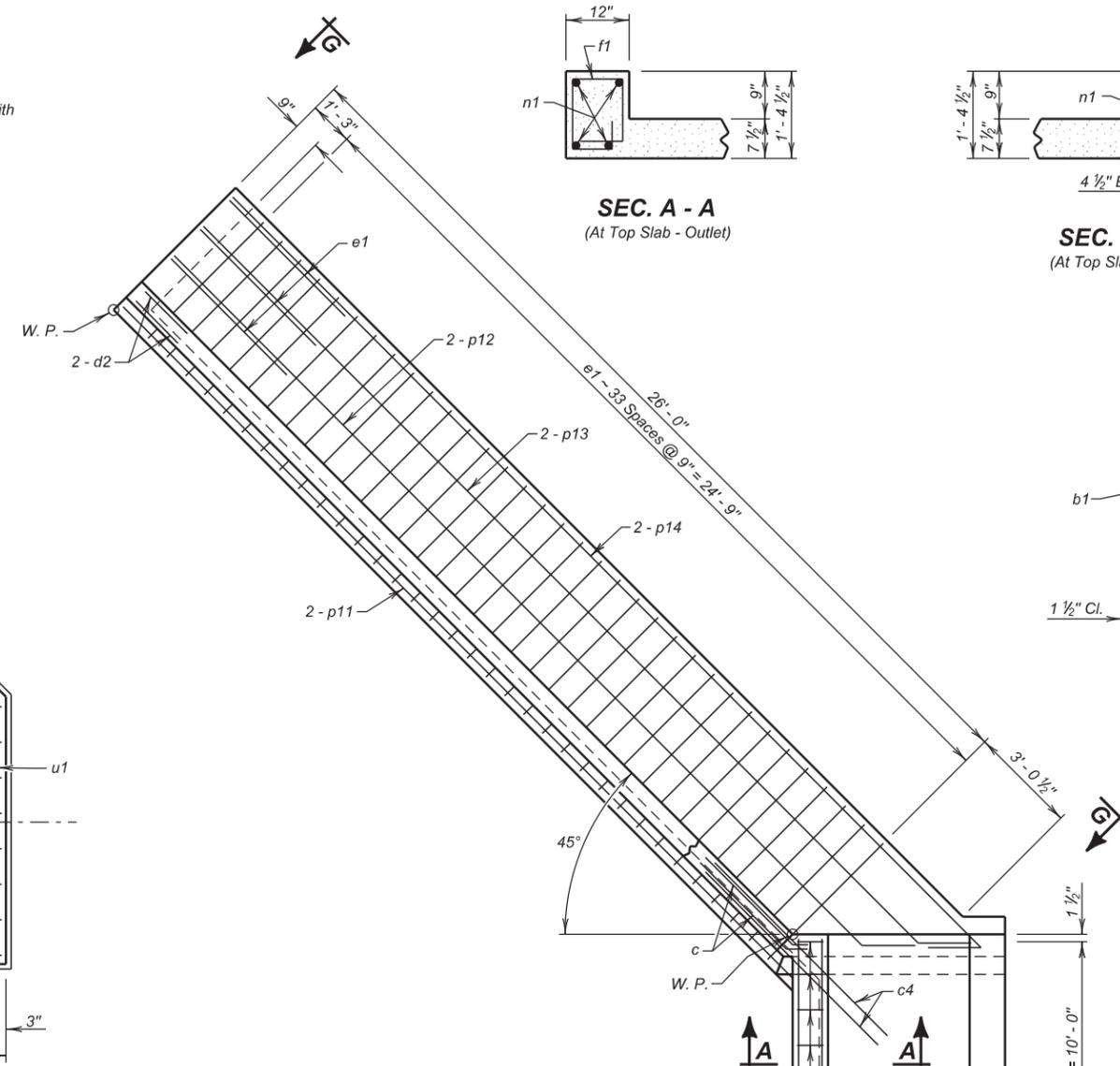
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0907(77)309	31	75



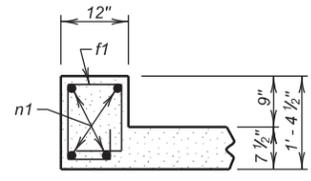
**PLAN**  
(Outlet Shown, Inlet similar by rotation.)



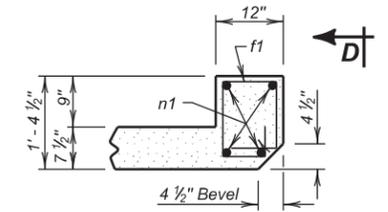
**SEC. E - E**



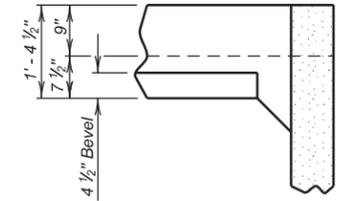
**PLAN**  
(Outlet Shown, Inlet similar by rotation.)



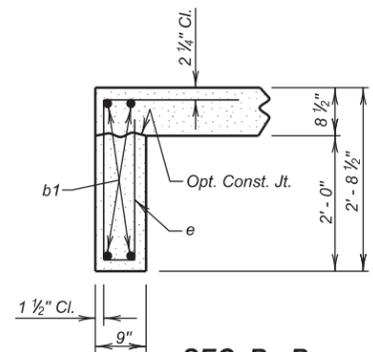
**SEC. A - A**  
(At Top Slab - Outlet)



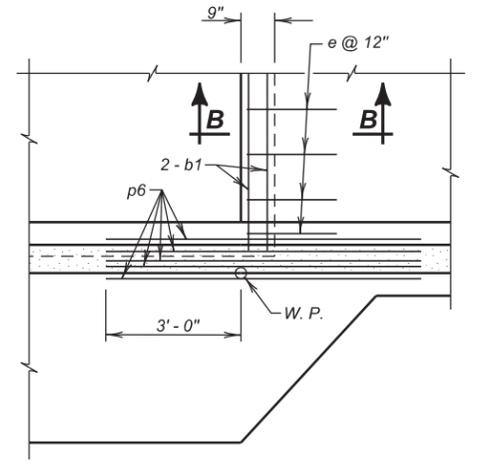
**SEC. A - A**  
(At Top Slab - Inlet)



**VIEW D - D**  
(At Exterior Wall)



**SEC. B - B**



**DETAIL "X"**  
(At Bottom Slab)

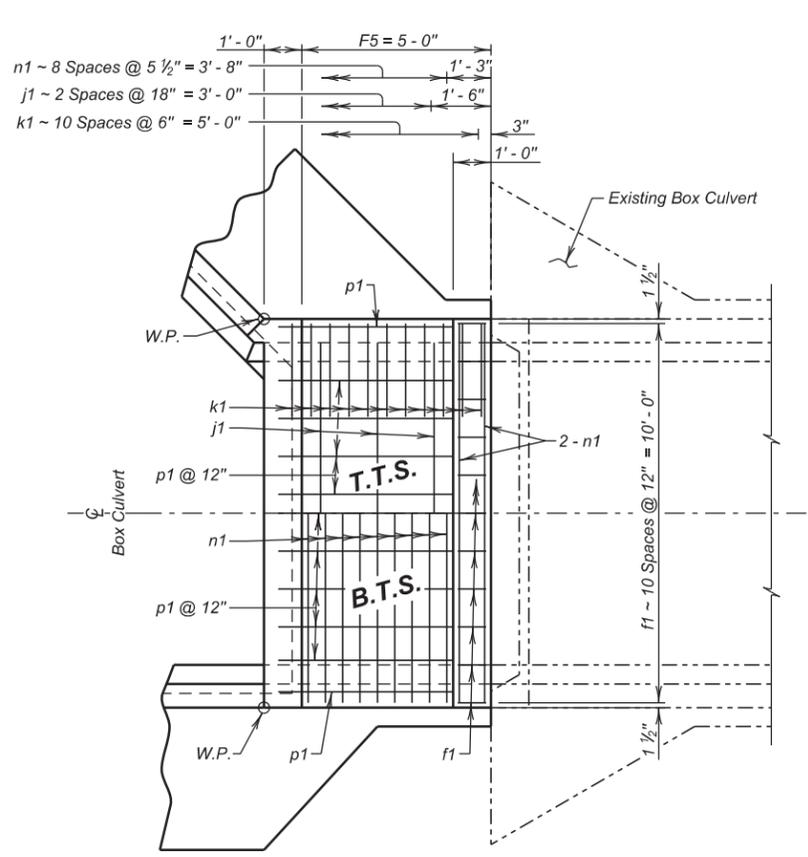
**INLET OR OUTLET DETAILS (A)**  
FOR  
**9' X 9' BOX CULVERT EXTENSION**  
OVER CREEK  
STA. 994 + 00.00  
STR. NO. 02-186-165

0° SKEW  
SEC. 30-T103N-R63W  
IM 0907(77)309  
HS 20-44  
( & ALT.)

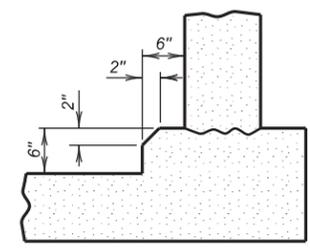
AURORA COUNTY  
S. D. DEPT. OF TRANSPORTATION  
JULY 2012

DESIGNED BY JMH AURO034U	CK. DES. BY BAF 034UTB04	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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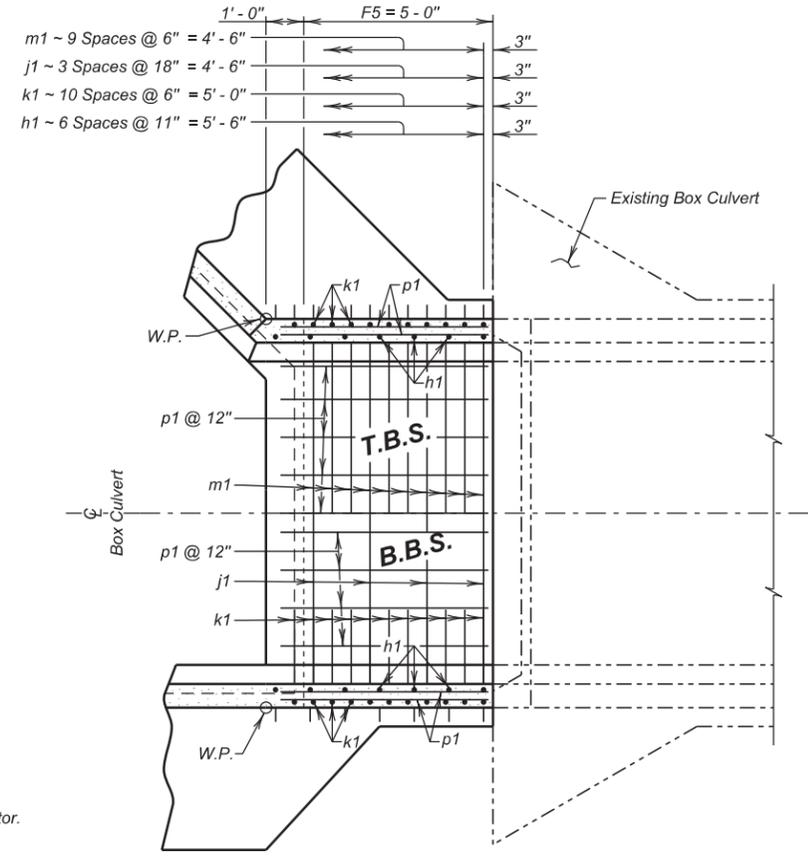


**PLAN**  
(Outlet Shown - Top Slab)



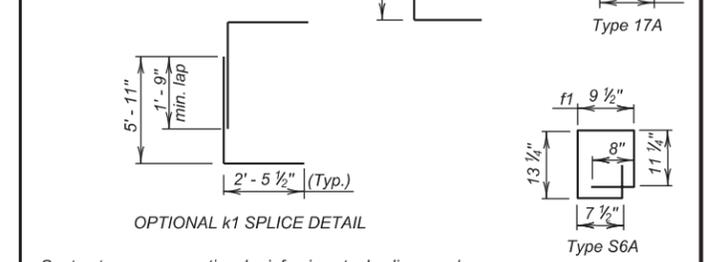
**OPTIONAL FILLET DETAIL**  
(At Bottom Slab)

Note: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete shall be borne by the Contractor.



**PLAN**  
(Outlet Shown - Bottom Slab)

REINFORCING SCHEDULE				
(For One F5 Barrel End Section)				
Mk.	No.	Size	Length	Type
f1	11	4	4'-9"	S6A
h1	14	4	10'-9"	17A
j1	7	4	9'-0"	Str.
k1	22	5	15'-0"	17
m1	10	6	11'-0"	Str.
n1	13	6	10'-0"	Str.
p1	66	4	5'-6"	Str.
z2	12	6	2'-3"	Str.

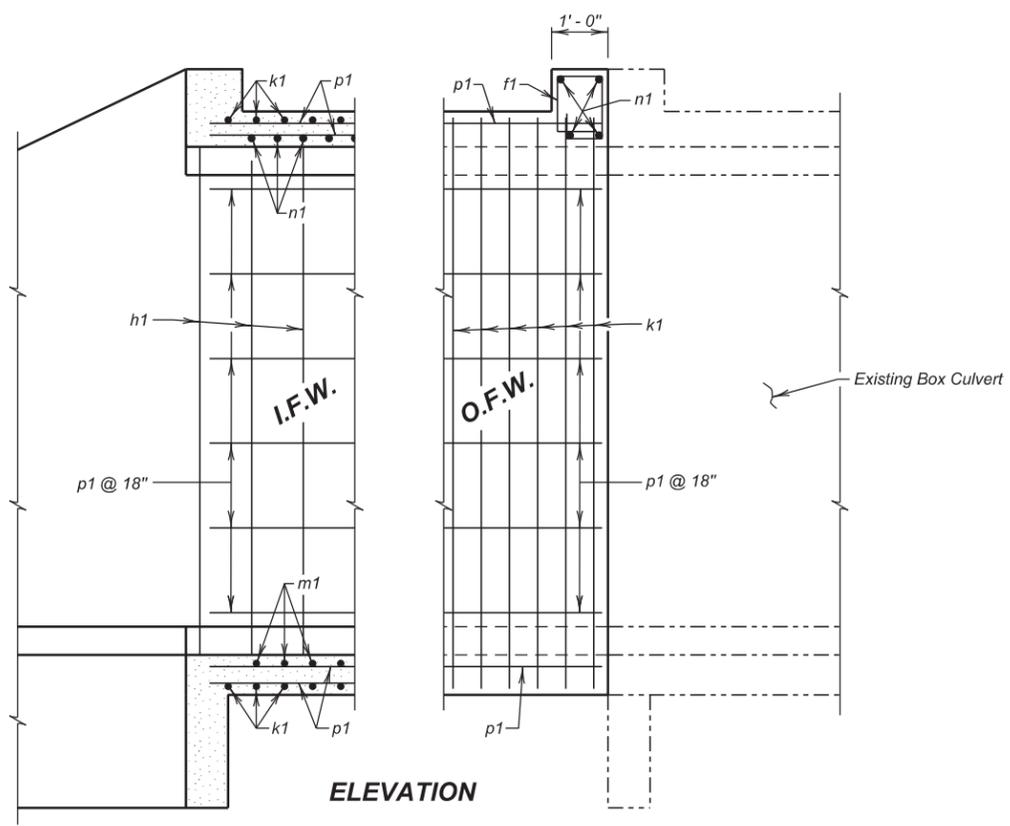


Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel shall be borne by the Contractor.

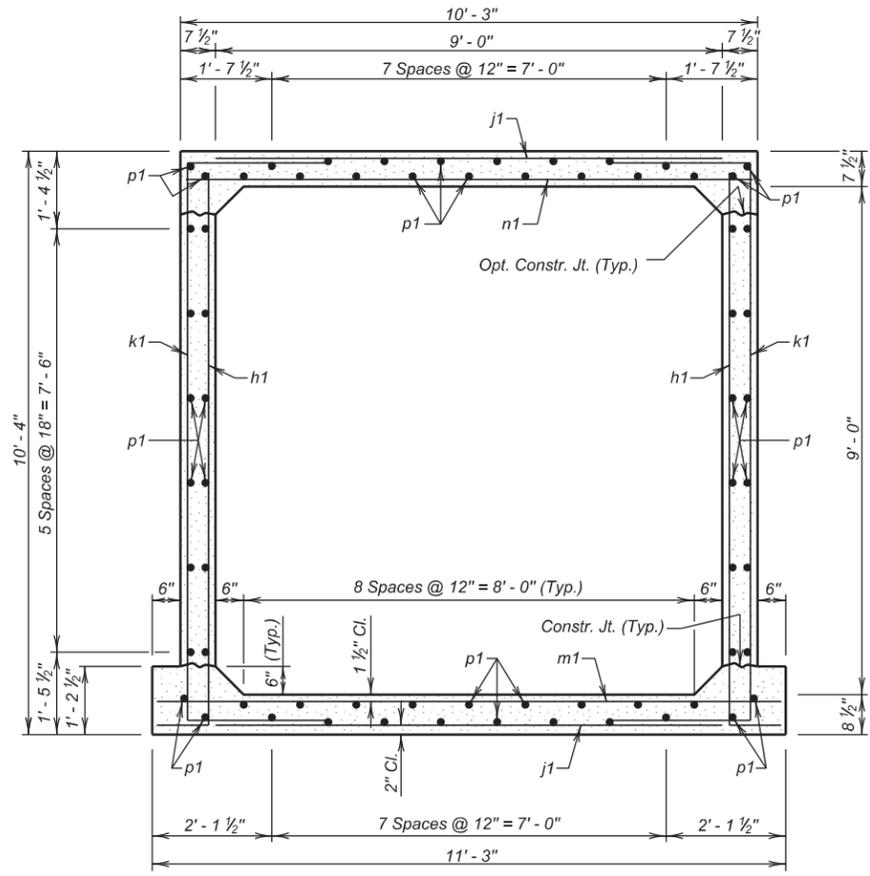
NOTES:  
All dimensions are out to out of bars.  
Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.  
\* Quantity of z2 bars is not included in reinforcing steel. See BREAKOUT AND DOWEL PLACEMENT DETAILS Sheet.

ESTIMATED QUANTITIES			
ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
2 - F5 Barrel End Sections @ 5' - 0"	10.4	2250	3.0

LEGEND FOR PLACING RE-STEEL	
T. T. S.	- Top of Top Slab
B. T. S.	- Bottom of Top Slab
T. B. S.	- Top of Bottom Slab
B. B. S.	- Bottom of Bottom Slab
O. F. W.	- Outside Face of Wall
I. F. W.	- Inside Face of Wall



**ELEVATION**

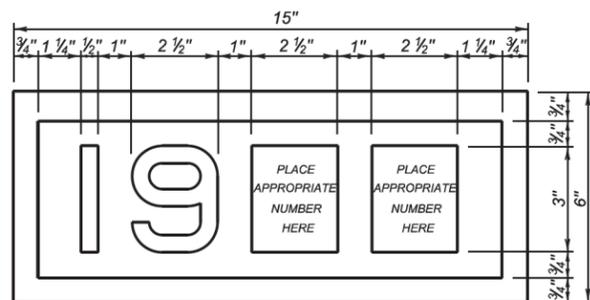


**F5 BARREL SECTION**  
(5' - 0" Maximum Fill)

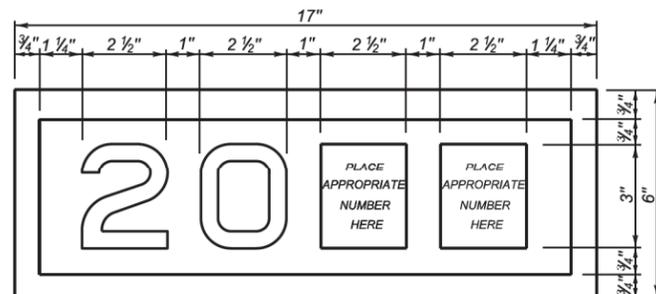
**F5 BARREL END SECTION DETAILS (5' - 0")**  
FOR  
**9' X 9' BOX CULVERT EXTENSION**  
OVER CREEK  
STA. 994 + 00.00  
STR. NO. 02-186-165  
0° SKEW  
SEC. 30-T103N-R63W  
IM 0907(77)309  
HS 20-44  
( & ALT. )

AURORA COUNTY  
S. D. DEPT. OF TRANSPORTATION  
JULY 2012

**YEAR PLATE  
DETAILS FOR  
ORIGINAL CONSTRUCTION**

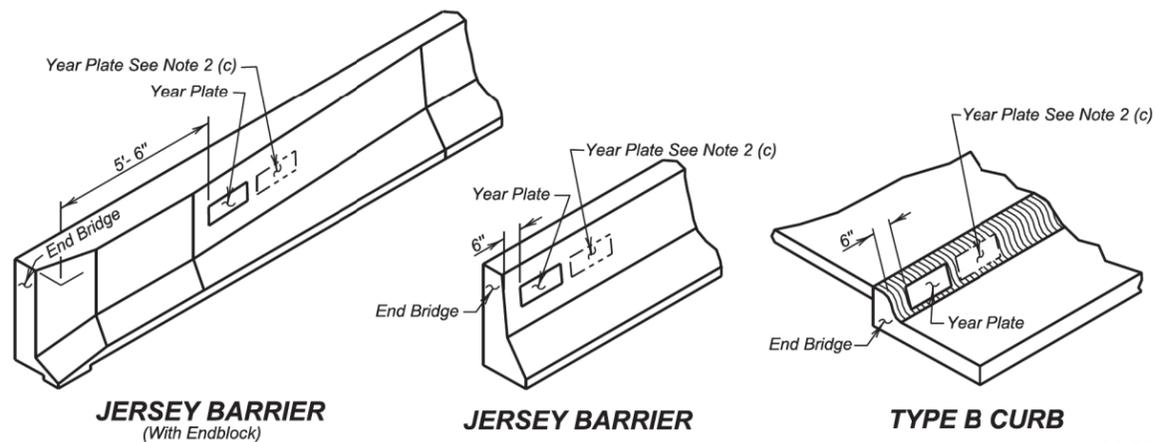


**YEAR PLATE  
DETAILS FOR  
NEW CONSTRUCTION**



**GENERAL NOTES:**

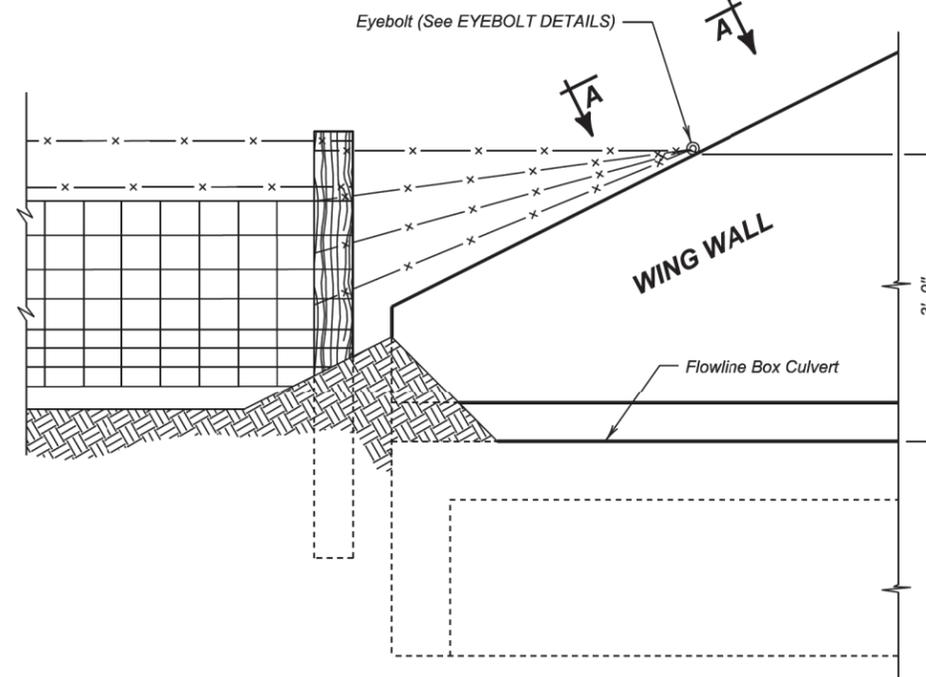
- Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
- Year plates shall be located on structure(s) as follows:
  - On cast-in-place box culverts the year plates shall be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
  - On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'-6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
  - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



June 26, 2012

<b>S D D O T</b>	<b>DUAL DATE YEAR PLATE DETAILS</b>	PLATE NUMBER 460.03
		Sheet 1 of 1

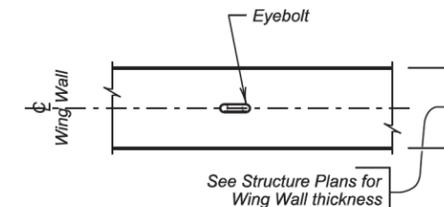
Published Date: 2026



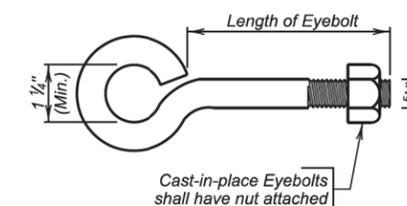
**DETAIL FOR FENCE ANCHORS**

**GENERAL NOTES:**

- The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
- Eyebolts shall be placed on all of the box culvert wing walls.
- Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
- Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
- Cast-in-place eyebolts shall have a nut attached, be 4 1/2 inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the 5/8 inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
- The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



**VIEW A - A**



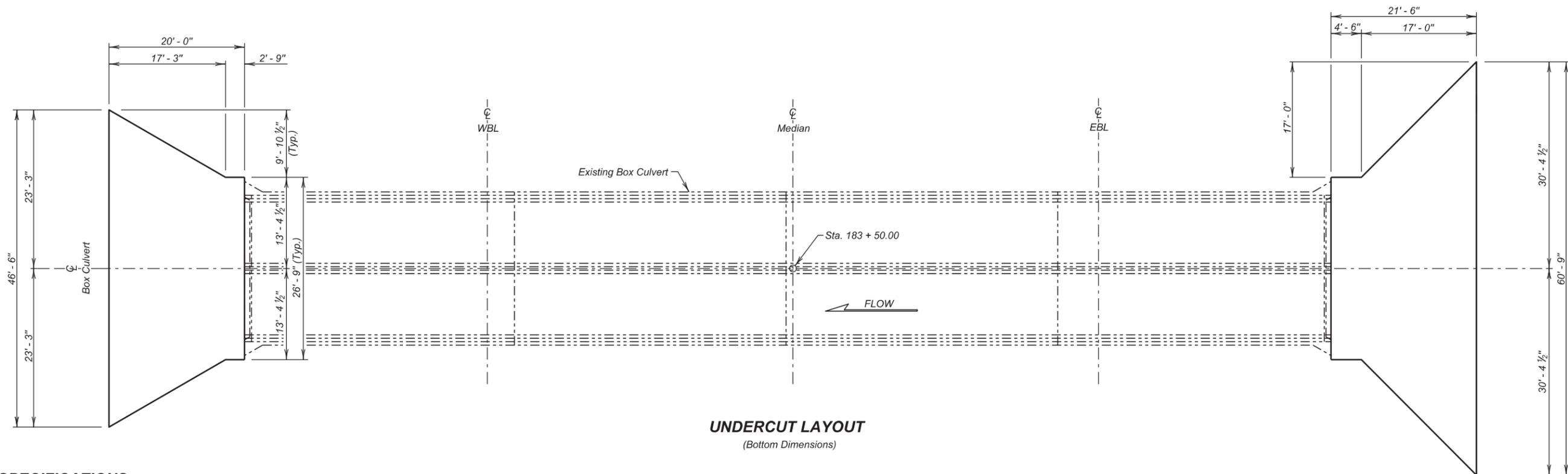
**EYEBOLT DETAILS**

December 23, 2012

<b>S D D O T</b>	<b>FENCE ANCHORS FOR BOX CULVERT WING WALLS</b>	PLATE NUMBER 620.16
		Sheet 1 of 1

Published Date: 2026





**UNDERCUT LAYOUT**  
(Bottom Dimensions)

**SPECIFICATIONS**

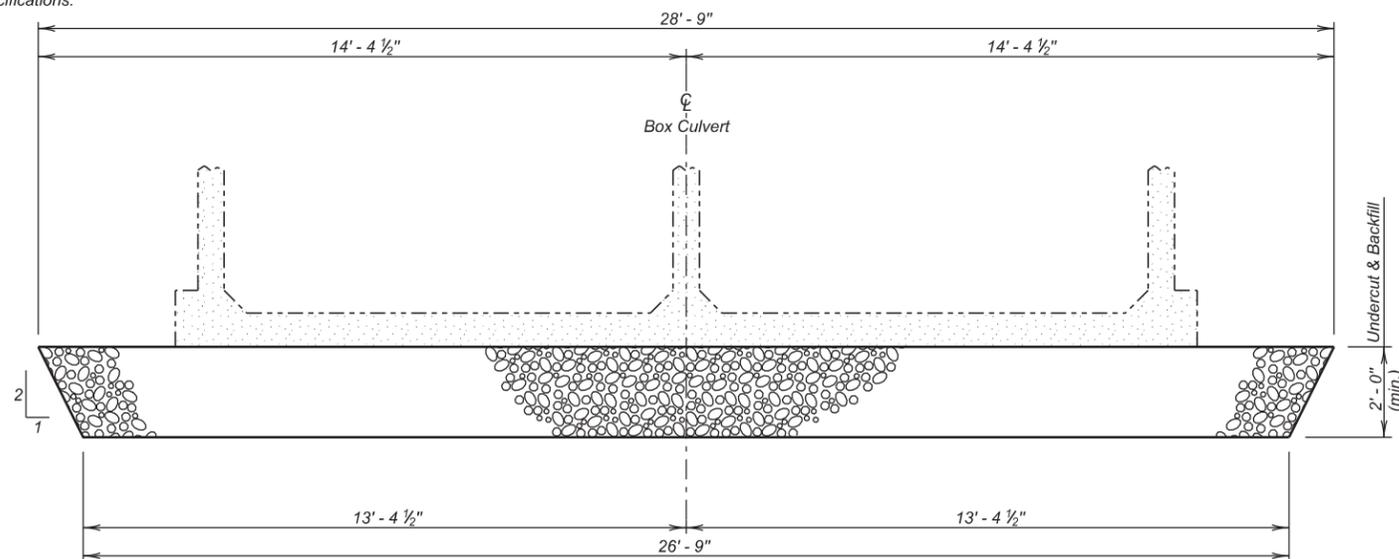
- Design Specifications: AASHTO Standard Specifications for Highway Bridges, 2002 Edition (Service Load).
- Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.

**GENERAL NOTES**

- Design Live Load: HS 20-44 and Alternate Loading. No construction loading in excess of legal load was considered.
- The design of the barrel section is based on a minimum fill height of one (1) foot and includes all subsequent fill heights up to and including the maximum fill height of 5 feet (F5).
- Unit Stresses: Concrete  $f_c' = 1800$  p.s.i.  
Reinforcing Steel  $f_s = 24000$  p.s.i.
- All concrete shall be Class A45 conforming to Section 460.
- All reinforcing steel shall conform to ASTM A615 Grade 60.
- All exposed edges shall be chamfered 3/4 inch.
- Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.
- The Contractor shall imprint on the structure the date of the existing box culvert construction as well as the date of new construction as specified and detailed on Standard Plate No. 460.03.
- Care shall be taken to establish Working Points (W.P.) as shown on the wings.
- Circled numbers in PLAN and ELEVATION views on the General Drawing are section I.D. Numbers (see SDDOT Materials Manual).
- Cost of Prefomed Expansion Joint Filler used in apron construction shall be incidental to the other contract items.

**DIMENSIONS OF EXISTING BOX CULVERT**

All details and dimensions of the Existing Box Culvert, contained in these plans, are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary dimensions affecting the satisfactory completion of the work required for this project. Original construction plans can be obtained from the Office of Bridge Design.



**TYPICAL SECTION**  
(For Limits of Undercut)



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Box Culvert Undercut	Cu. Yd.	125

For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.

**NOTES AND UNDERCUT DETAILS**

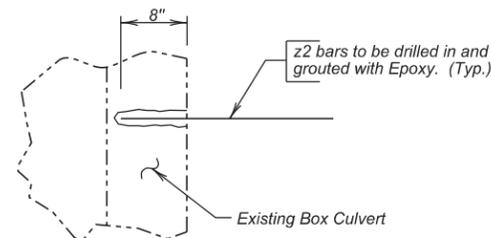
FOR  
**2 - 10' X 5' BOX CULVERT EXTENSION**  
OVER CREEK 0° SKEW  
STA. 183 + 50.00 SEC. 26-T103N-R63W  
STR. NO. 02-223-165 IM 0907(77)309  
HS 20-44 (& ALT.)

AURORA COUNTY  
S. D. DEPT. OF TRANSPORTATION

JULY 2012

2 OF 11

DESIGNED BY PW AUR0034U	CK. DES. BY MR/TB 034UTC02	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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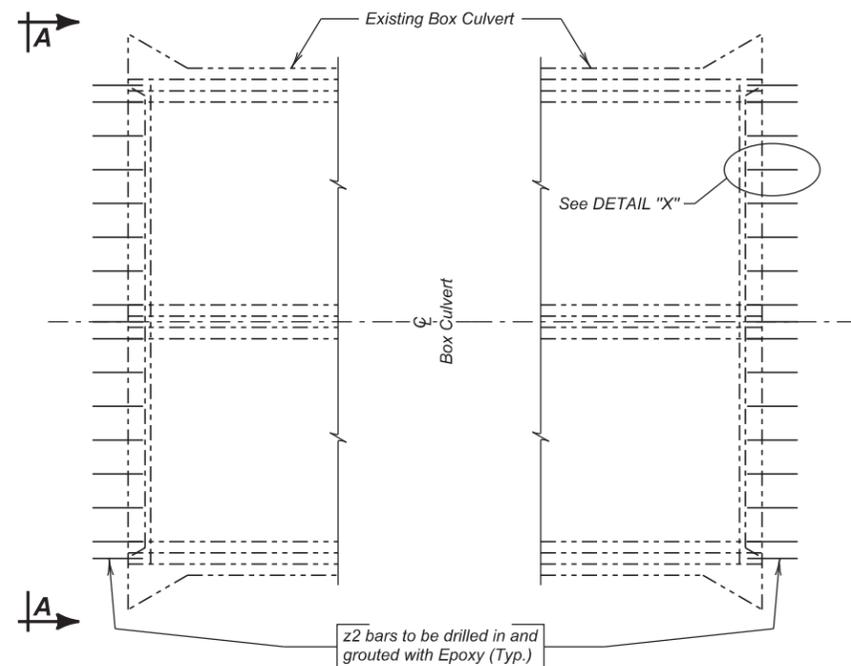
**DETAIL "X"**

**BREAKOUT STRUCTURAL CONCRETE**

1. This work will consist of breaking out and disposing of structural concrete. All broken out concrete and other discarded material will be disposed of in accordance with the Waste Disposal Site notes found in the Environmental Commitments Notes.
2. Define the breakout limits with 3/4 inch deep saw cuts.
3. Any additional breakout required due to spalling or cracking of the existing structure will be determined by the Engineer. Where additional breakout in the barrel section of the existing structure is required, care shall be taken not to damage any of the existing reinforcing steel. All steel will be left in place and thoroughly cleaned by sandblasting.
4. Additional breakout in existing walls or top slab will require shoring up of the parapet and top slab, as directed by the Engineer.
5. Plans quantity payment will be full compensation for this item regardless of the quantity actually broken out, unless measurement is ordered by the Engineer. If the Engineer orders breakout beyond the limits shown, this additional breakout will be paid for at the contract unit price per cubic yard for Breakout Structural Concrete. If additional breakout is caused by the Contractor's operations, no additional payment will be made.
6. Breakout Structural Concrete will be paid for at the contract unit price per cubic yard. This payment shall be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to breaking out the structural concrete. Payment includes, but is not limited to, excavation required to perform the required breakout, sawcutting, breaking out concrete, cleaning and sandblasting reinforcing steel and concrete surfaces, and removing and disposing of all waste materials to satisfactorily complete the work.

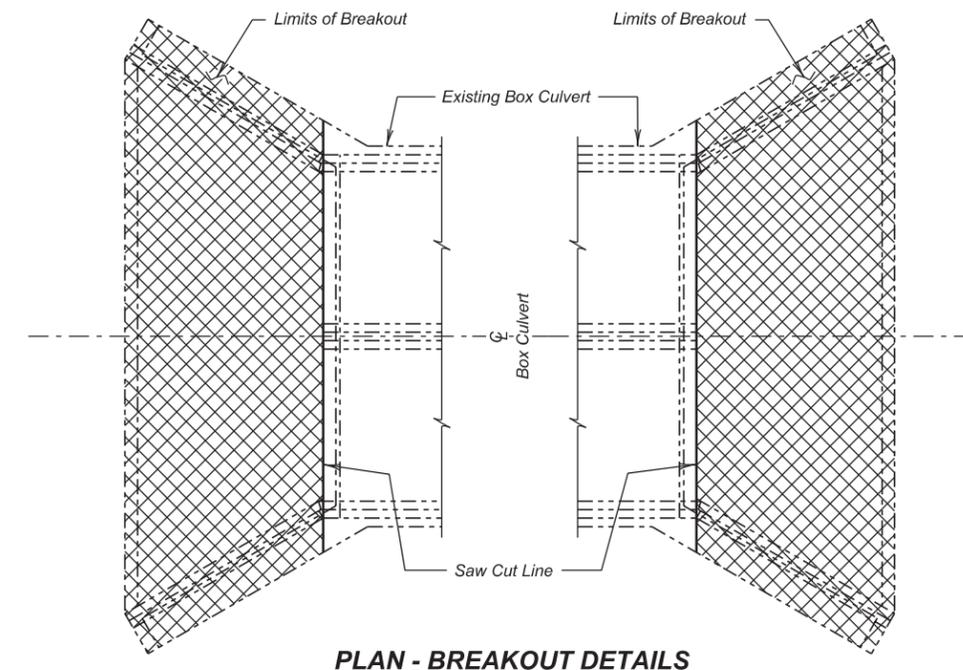
**INSTALLING DOWELS IN CONCRETE**

1. The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and shall conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).
2. The diameter of the drilled holes shall not be less than 1/8 inch greater, nor more than 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. Holes shall not be drilled using core bits. The drilled holes shall be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
3. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting methods will not be allowed.
4. No loads shall be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
5. Embed z2 dowels 8" into existing concrete.
6. z2 dowel bars shall be #6 deformed bars conforming to ASTM A615 Grade 60.
7. The cost of drilling holes, epoxy resin, dowels, installation and other incidental items shall be included in the contract unit price per each for Install Dowel in Concrete.

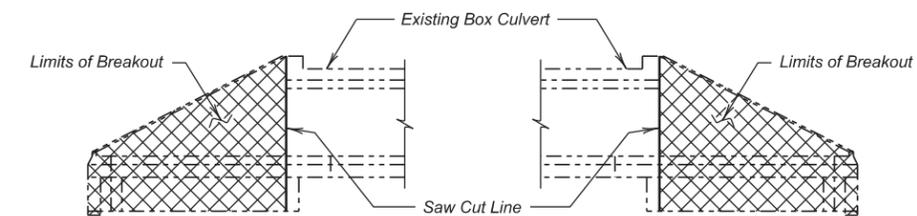


**PLAN - DOWEL DETAILS**

(Inlet and Outlet)

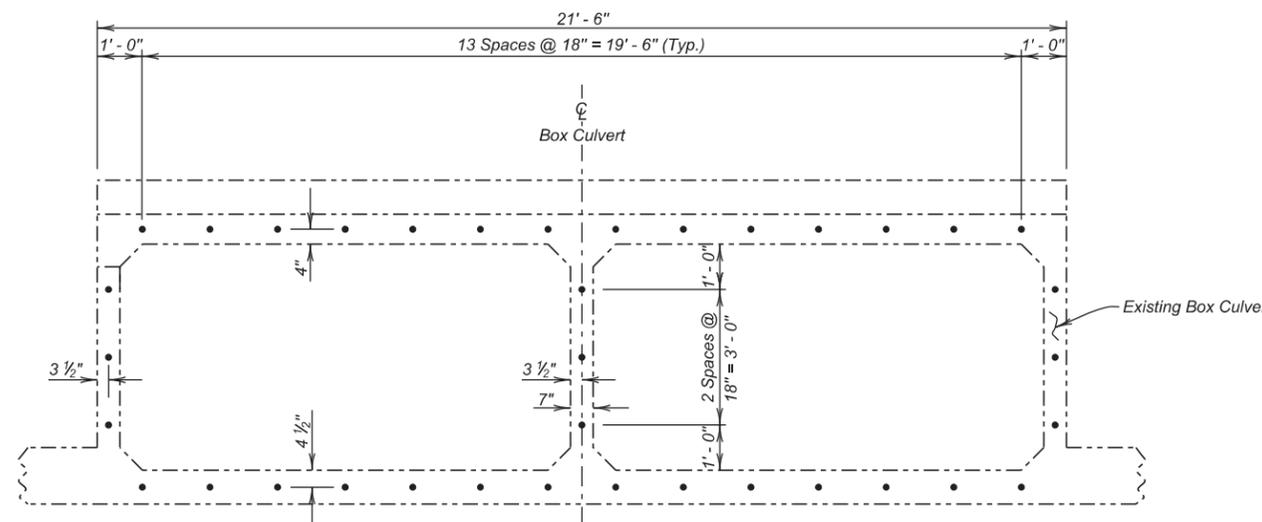


**PLAN - BREAKOUT DETAILS**



**ELEVATION - BREAKOUT DETAILS**

<b>ESTIMATED QUANTITIES</b> (Inlet and Outlet)		
ITEM	UNIT	QUANTITY
Breakout Structural Concrete	Cu. Yd.	27.9
Install Dowel in Concrete	Each	74



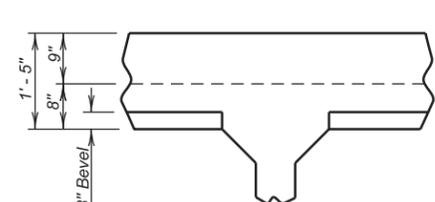
**VIEW A - A**  
(Dowel Locations)

**BREAKOUT AND DOWEL PLACEMENT DETAILS**  
FOR  
**2 - 10' X 5' BOX CULVERT EXTENSION**

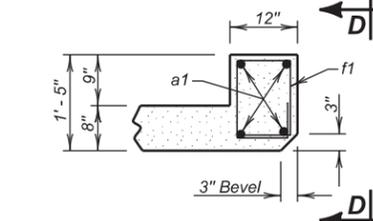
OVER CREEK  
STA. 183 + 50.00  
STR. NO. 02-223-165

0° SKEW  
SEC. 26-T103N-R63W  
IM 0907(77)309  
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AURORA COUNTY  
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JULY 2012

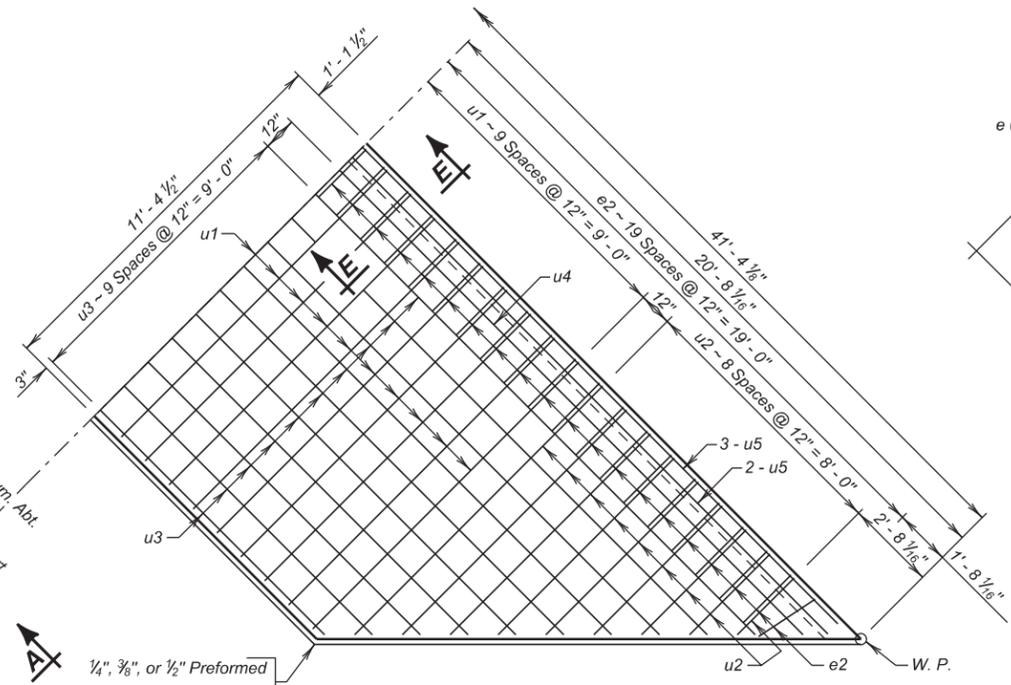


**VIEW D - D**  
(At Interior Wall)

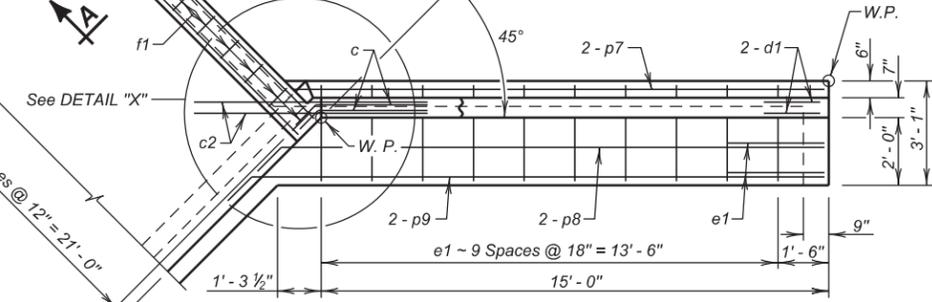


**SEC. A - A**  
(At Top Slab)

NOTE:  
Apron shall NOT be built monolithic with the Box Culvert.



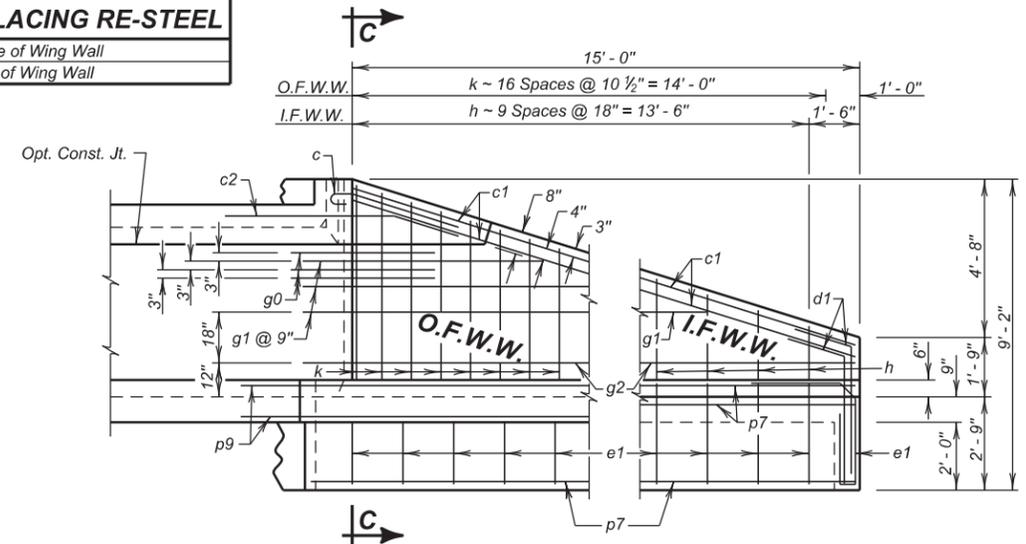
**HALF PLAN**



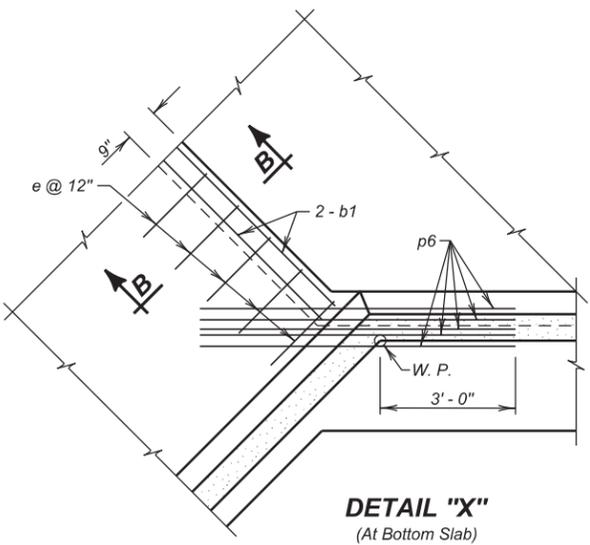
**HALF PLAN**

**LEGEND FOR PLACING RE-STEEL**

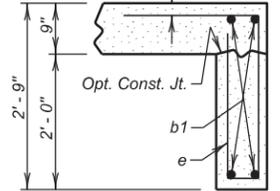
- O. F. W. W. - Outside Face of Wing Wall
- I. F. W. W. - Inside Face of Wing Wall



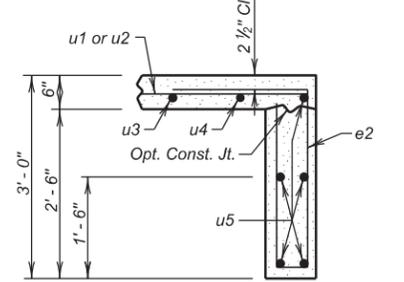
**ELEVATION**



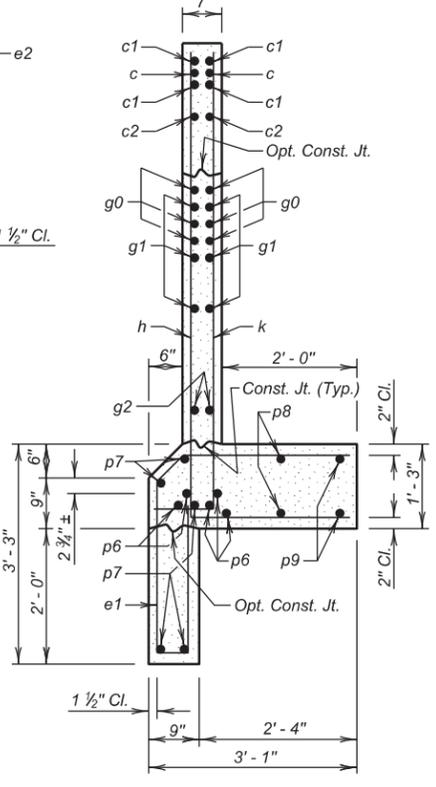
**DETAIL 'X'**  
(At Bottom Slab)



**SEC. B - B**



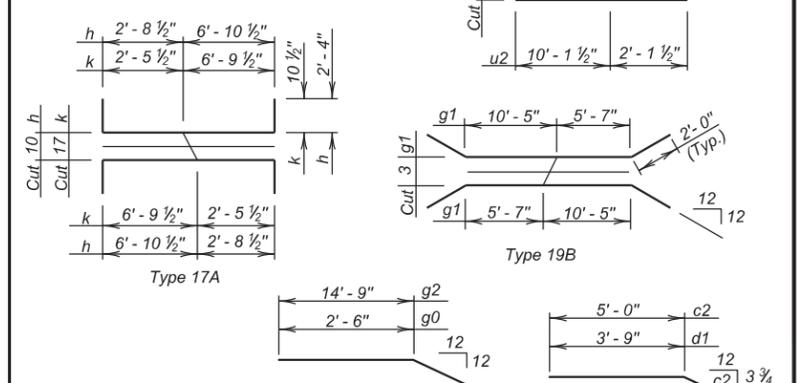
**SEC. E - E**



**SEC. C - C**

**REINFORCING SCHEDULE**

Mk.	No.	Size	Length	Type
a1	4	6	21'-6"	Str.
b1	4	6	19'-3"	Str.
c	4	5	4'-6"	1A
c1	8	5	15'-6"	Str.
c2	4	5	7'-0"	19B
d1	8	5	5'-6"	19B
e	20	4	7'-0"	S12
e1	24	4	8'-6"	S12A
f1	22	4	5'-3"	S6A
g0	12	5	5'-0"	19B
g1	6	4	20'-0"	19B
g2	4	4	16'-9"	19B
h	10	4	14'-3"	17A
k	17	4	11'-0"	17A
p6	10	6	7'-0"	Str.
p7	10	4	17'-6"	Str.
p8	4	4	17'-9"	Str.
p9	4	4	18'-6"	Str.



NOTES:  
All dimensions are out to out of bars.  
See cutting diagram.  
Bend in field as necessary to fit.

**ESTIMATED QUANTITIES**

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Inlet	12.0	1501	6.5
Inlet Apron	9.1	750	9.1

**INLET DETAILS**

FOR  
**2 - 10' X 5' BOX CULVERT EXTENSION**  
OVER CREEK  
STA. 183 + 50.00  
STR. NO. 02-223-165

0° SKEW  
SEC. 26-T103N-R63W  
IM 0907(77)309  
HS 20-44  
( & ALT. )

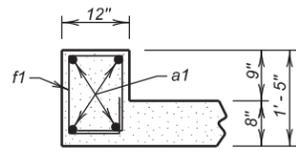
AURORA COUNTY  
S. D. DEPT. OF TRANSPORTATION

JULY 2012

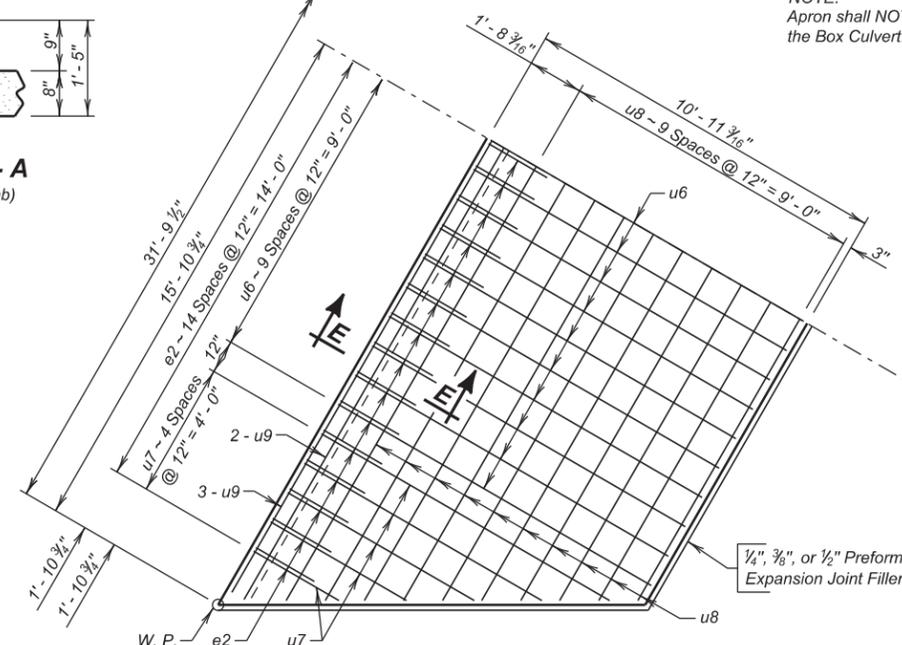
### REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details	
a1	4	6	21'-6"	Str.	Type 1A	
b2	4	6	20'-0"	Str.	Type S12	
c	4	5	4'-6"	1A	Type S12A	
c3	8	5	12'-9"	Str.	Type S12A	
c4	4	5	7'-0"	19B	Type S12A	
d2	8	5	5'-6"	19B	Type S12A	
e	20	4	7'-0"	S12	Type S12A	
e1	20	4	8'-6"	S12A	Type S12A	
f1	22	4	5'-3"	S6A	Type S12A	
g3	12	5	5'-0"	19B	Type S12A	
g4	6	4	16'-9"	19B	Type S12A	
g5	4	4	13'-9"	19B	Type S12A	
h0	8	4	14'-3"	17A	Type S12A	
k0	13	4	11'-3"	17A	Type S12A	
p6	10	6	7'-0"	Str.	Type S12A	
p10	10	4	14'-6"	Str.	Type S12A	
p11	4	4	15'-6"	Str.	Type S12A	
p12	4	4	17'-3"	Str.	Type S12A	
APRON					Type S12A	
e2	29	4	7'-6"	S12	Type S12A	
u6	19	4	10'-6"	Str.	Type S12A	
u7	5	4	12'-0"	Str.	Type S12A	
u8	5	4	48'-0"	Str.	Type S12A	
u9	5	4	30'-6"	Str.	Type S12A	

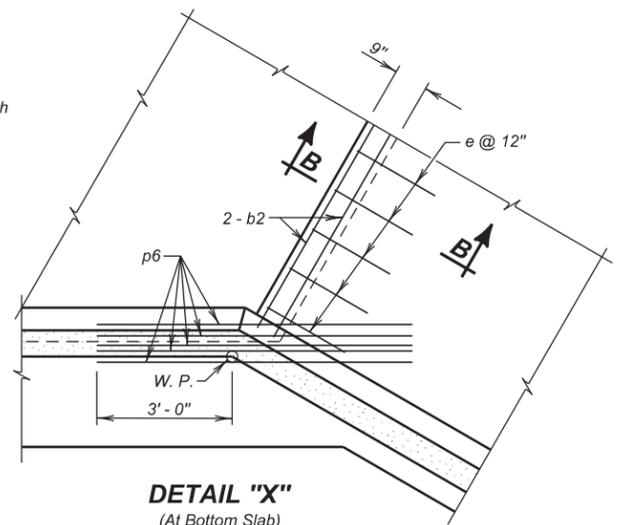
NOTES:  
 All dimensions are out to out of bars.  
 See cutting diagram.  
 Bend in field as necessary to fit.



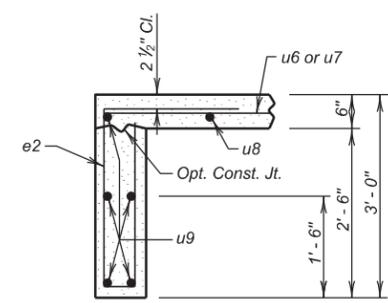
**SEC. A - A**  
(At Top Slab)



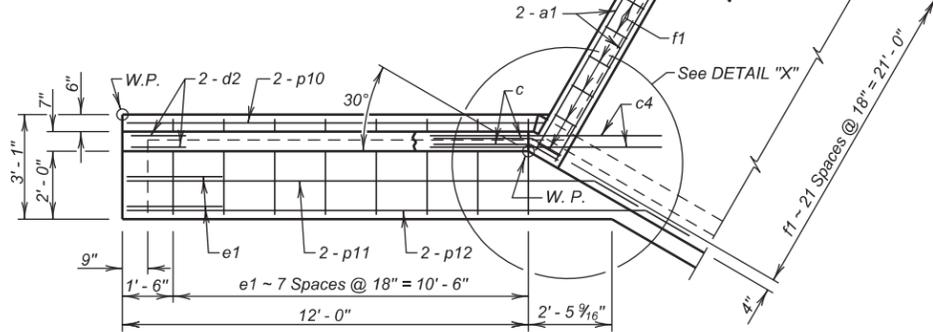
**HALF PLAN**



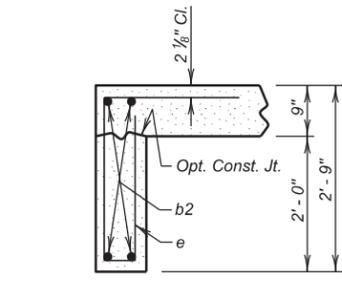
**DETAIL 'X'**  
(At Bottom Slab)



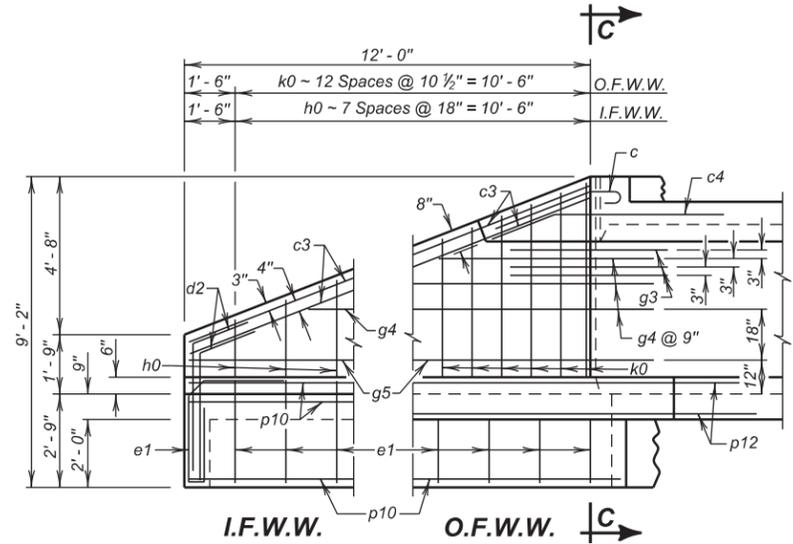
**SEC. E - E**



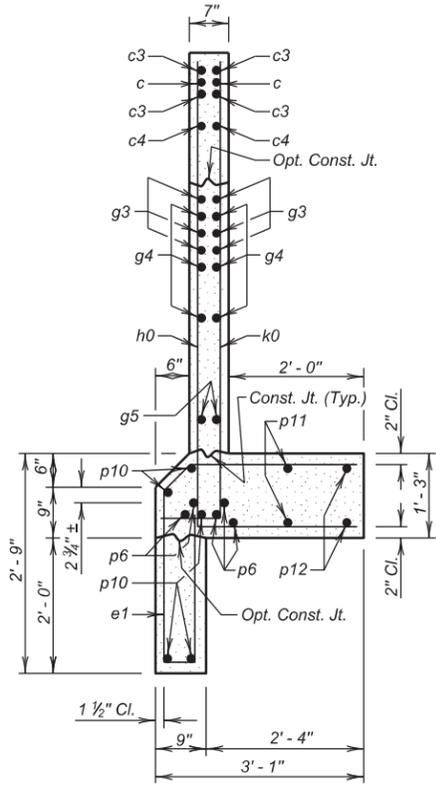
**HALF PLAN**



**SEC. B - B**



**ELEVATION**



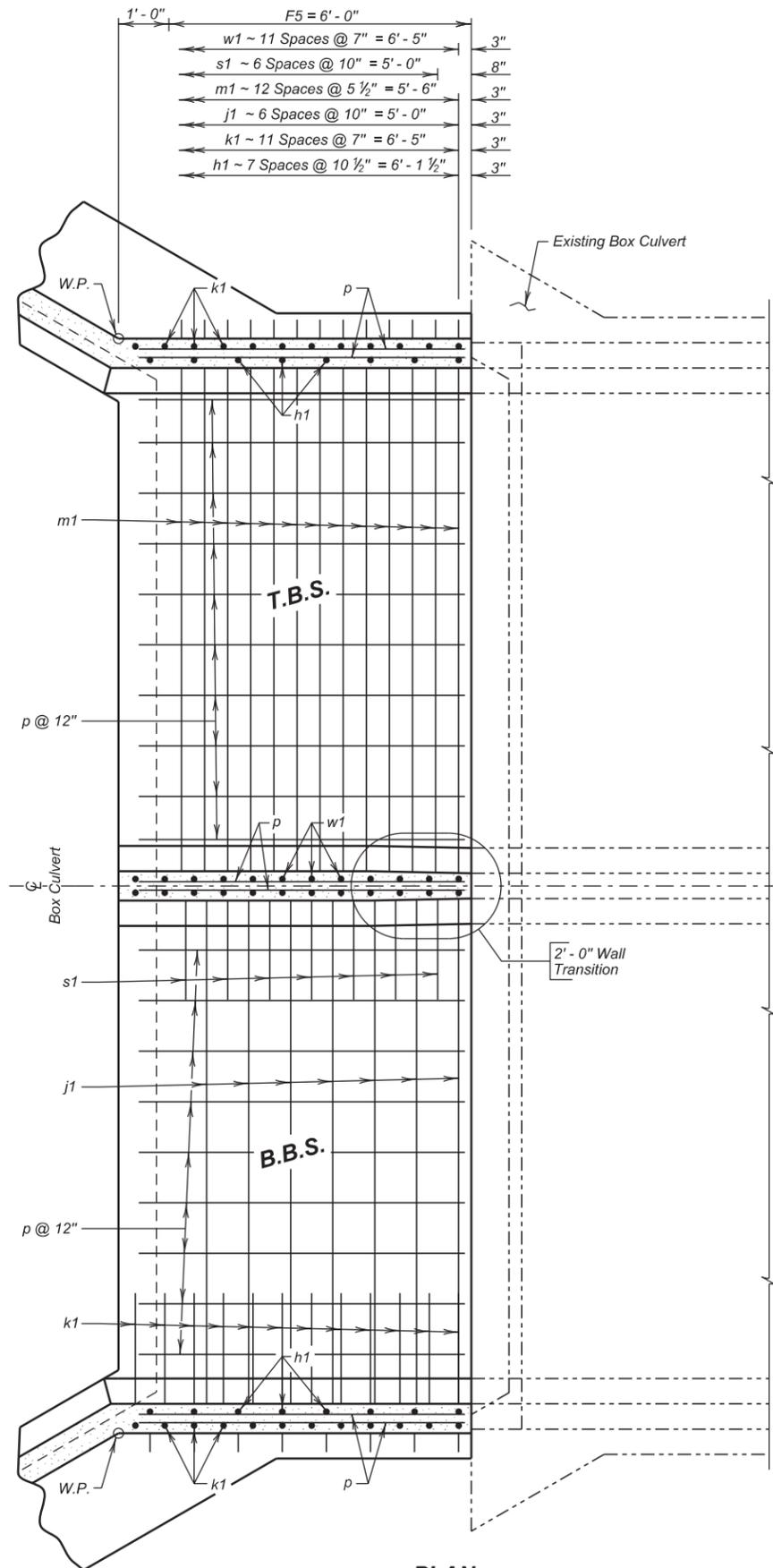
**SEC. C - C**

**LEGEND FOR PLACING RE-STEEL**  
 O. F. W. W. - Outside Face of Wing Wall  
 I. F. W. W. - Inside Face of Wing Wall

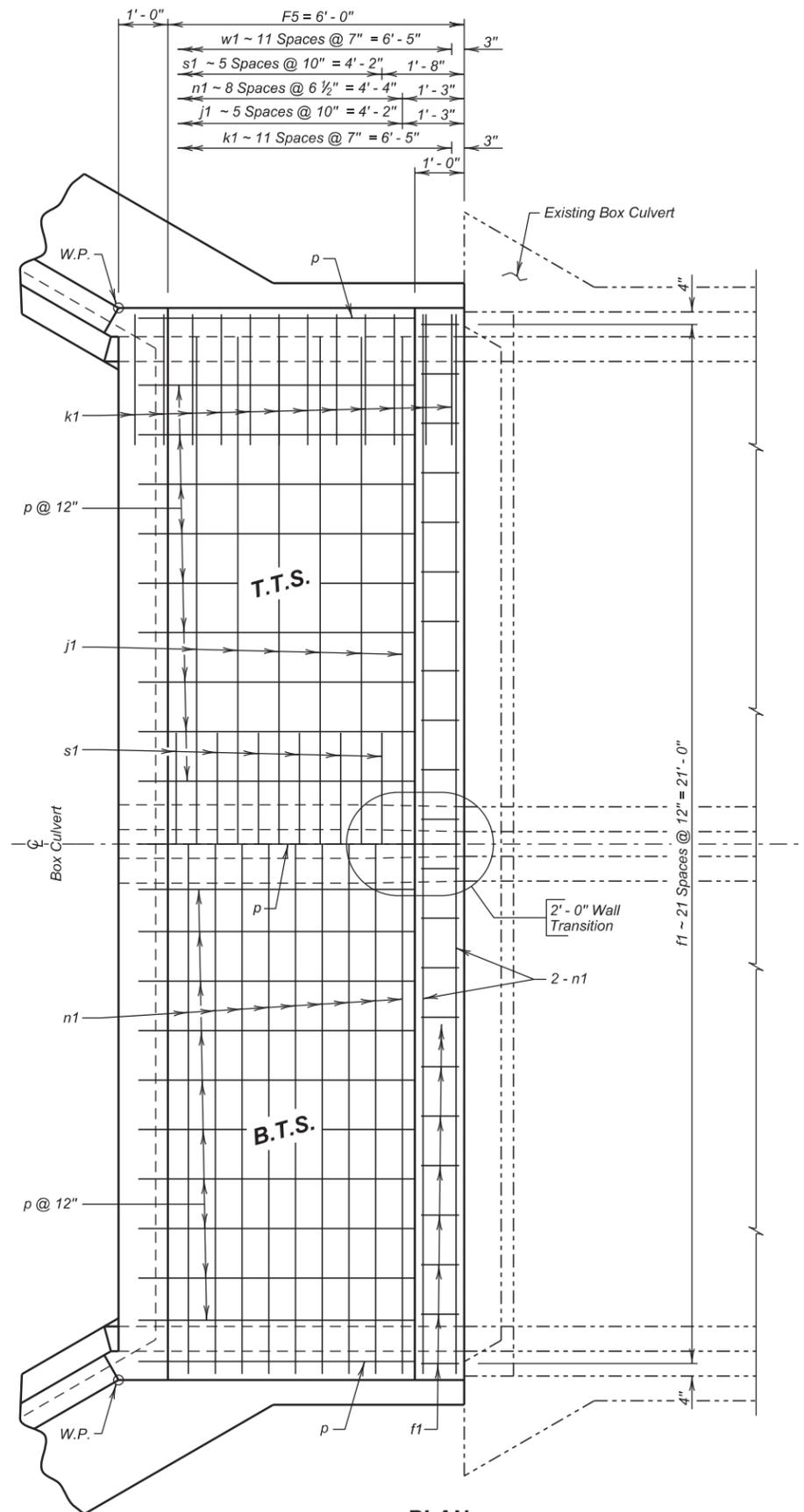
ESTIMATED QUANTITIES			
ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Outlet	10.2	1364	5.6
Outlet Apron	7.3	581	7.3

**OUTLET DETAILS FOR**  
**2 - 10' X 5' BOX CULVERT EXTENSION**  
 OVER CREEK  
 STA. 183 + 50.00  
 STR. NO. 02-223-165  
 0° SKEW  
 SEC. 26-T103N-R63W  
 IM 0907(77)309  
 HS 20-44 (& ALT.)

AURORA COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 JULY 2012



**PLAN**  
(Outlet End - Bottom Slab)



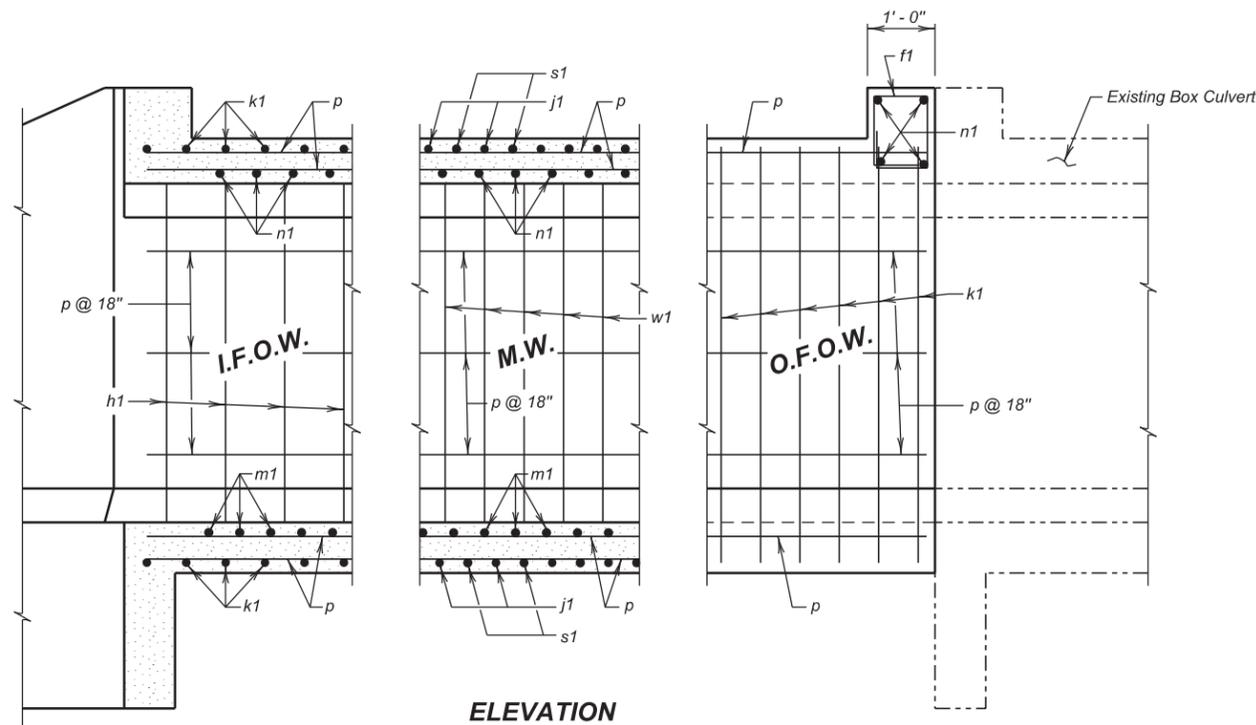
**PLAN**  
(Outlet End - Top Slab)

LEGEND FOR PLACING RE-STEEL	
T. T. S.	- Top of Top Slab
B. T. S.	- Bottom of Top Slab
T. B. S.	- Top of Bottom Slab
B. B. S.	- Bottom of Bottom Slab

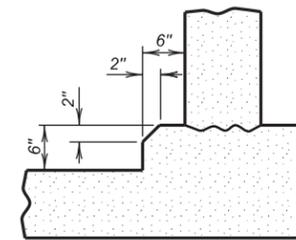
**F5 BARREL END SECTION DETAILS (6' - 0") (A)**  
 FOR  
**2 - 10' X 5' BOX CULVERT EXTENSION**  
 OVER CREEK  
 STA. 183 + 50.00  
 STR. NO. 02-223-165

0° SKEW  
 SEC. 26-T103N-R63W  
 IM 0907(77)309  
 HS 20-44  
 (& ALT.)

AURORA COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 JULY 2012



**ELEVATION**



**OPTIONAL FILLET DETAIL**  
(At Bottom Slab)

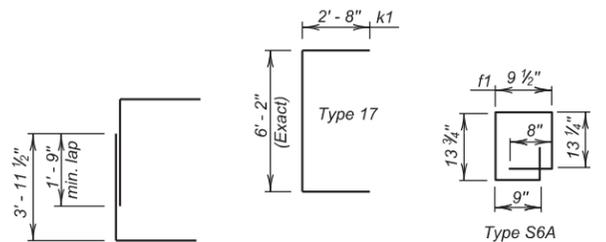
Note: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete shall be borne by the Contractor.

**LEGEND FOR PLACING RE- STEEL**

O. F. O. W. - Outside Face of Outside Wall
I. F. O. W. - Inside Face of Outside Wall
M. W. - Middle Wall

**REINFORCING SCHEDULE**  
(For One F5 Barrel End Section)

Mk.	No.	Size	Length	Type	Bending Details
f1	22	4	5' - 3"	S6A	
h1	16	4	6' - 9"	17A	
j1	13	6	20' - 6"	Str.	
k1	24	5	11' - 6"	17	
m1	13	5	22' - 3"	Str.	
n1	13	6	21' - 3"	Str.	
p	105	4	6' - 6"	Str.	
s1	13	6	4' - 6"	Str.	
w1	12	4	14' - 6"	S11A	
z2	31	6	2' - 3"	Str.	



**OPTIONAL k1 SPLICE DETAIL**

Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel shall be borne by the Contractor.

**NOTES:**

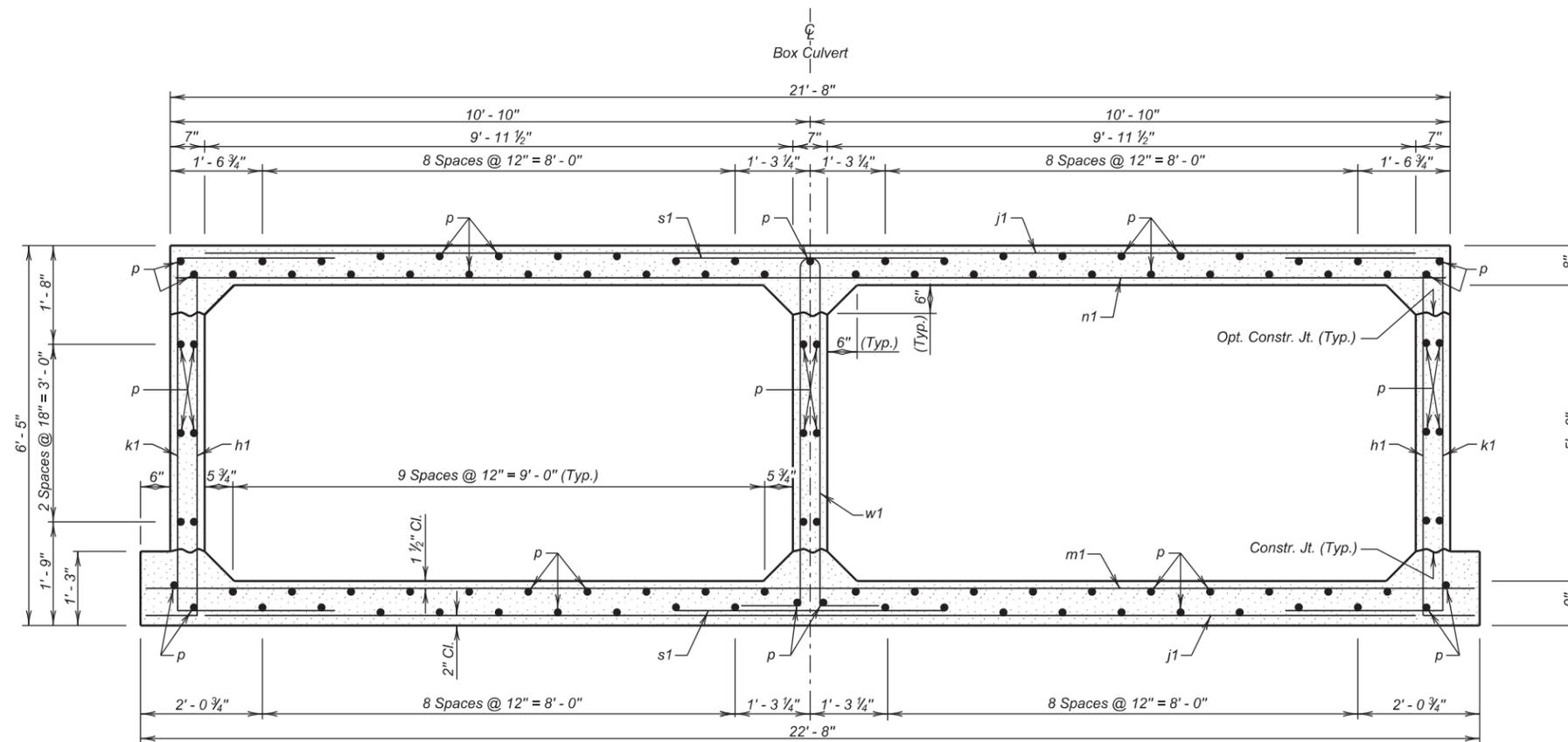
All dimensions are out to out of bars.

Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.

\* Quantity of z2 bars is not included in reinforcing steel. See BREAKOUT AND DOWEL PLACEMENT DETAILS Sheet.

**ESTIMATED QUANTITIES**

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
1 - F5 Barrel End Section @ 6' - 0"	9.9	2214	3.8



**F5 BARREL SECTION**  
(5' - 0" Maximum Fill)

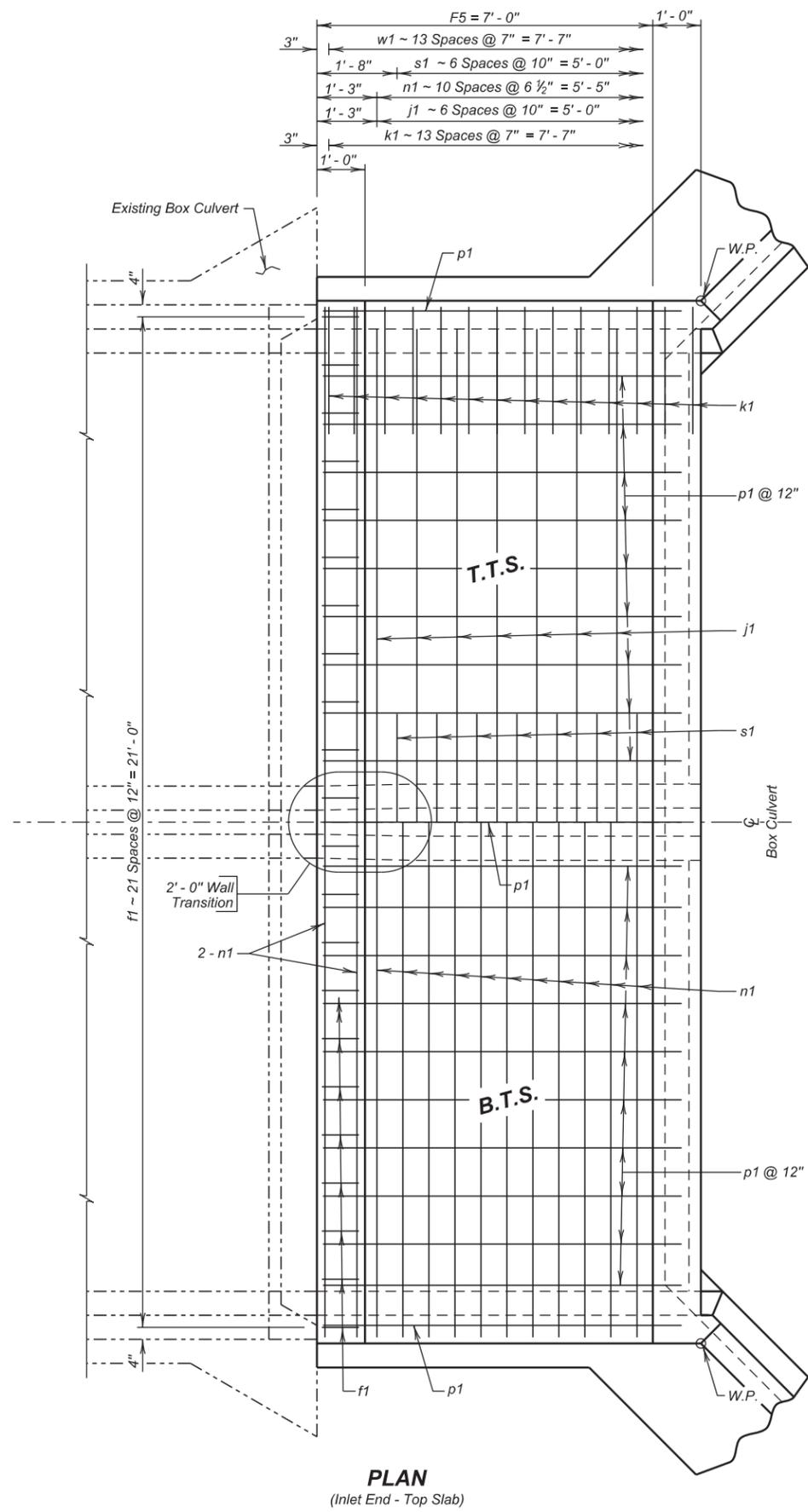
**F5 BARREL END SECTION DETAILS (6' - 0") (B)**

FOR  
**2 - 10' X 5' BOX CULVERT EXTENSION**  
OVER CREEK  
STA. 183 + 50.00  
STR. NO. 02-223-165

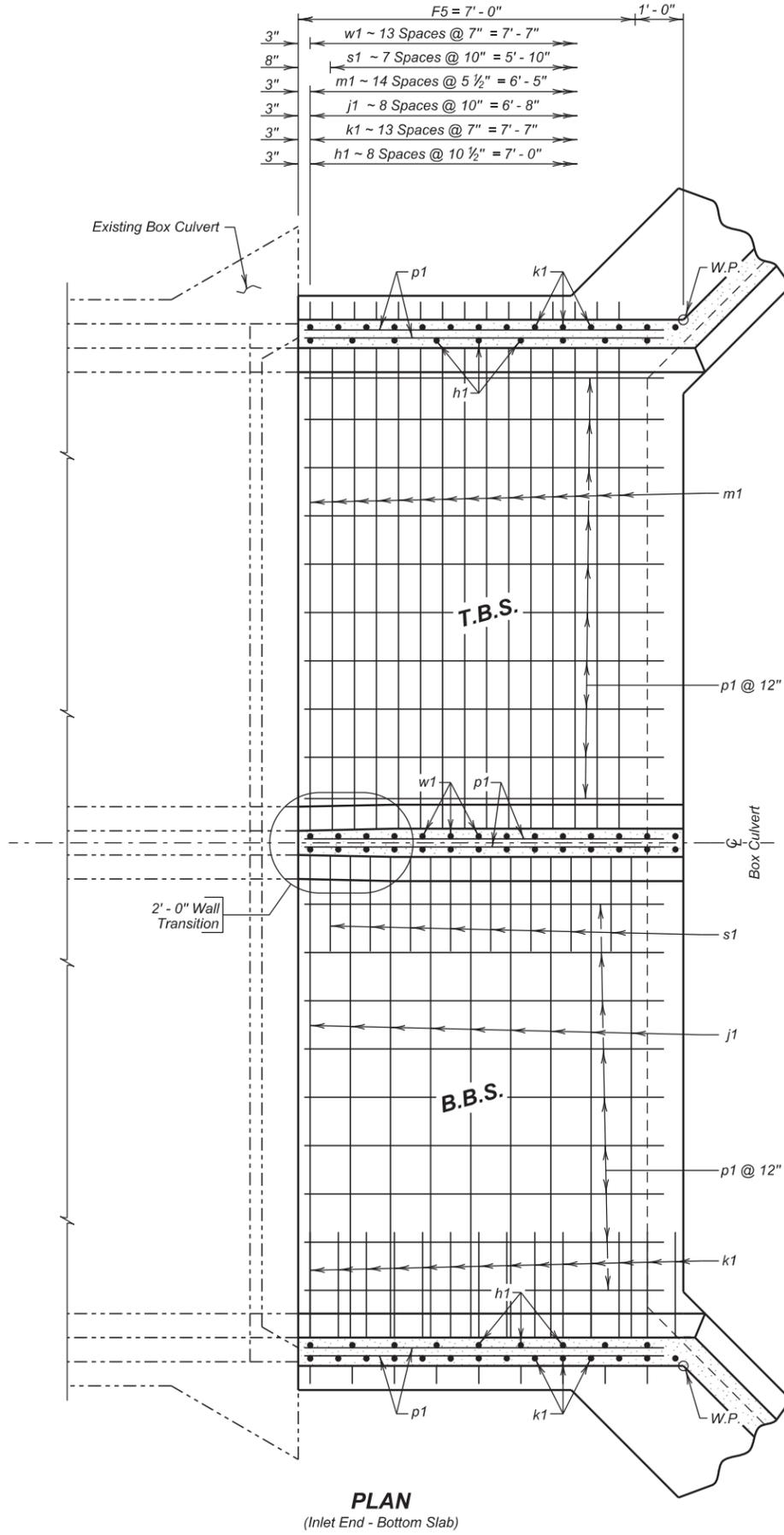
0° SKEW  
SEC. 26-T103N-R63W  
IM 0907(77)309  
HS 20-44  
( & ALT.)

AURORA COUNTY  
S. D. DEPT. OF TRANSPORTATION

JULY 2012



**PLAN**  
(Inlet End - Top Slab)

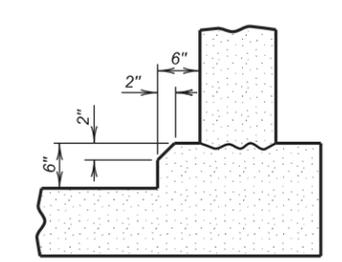
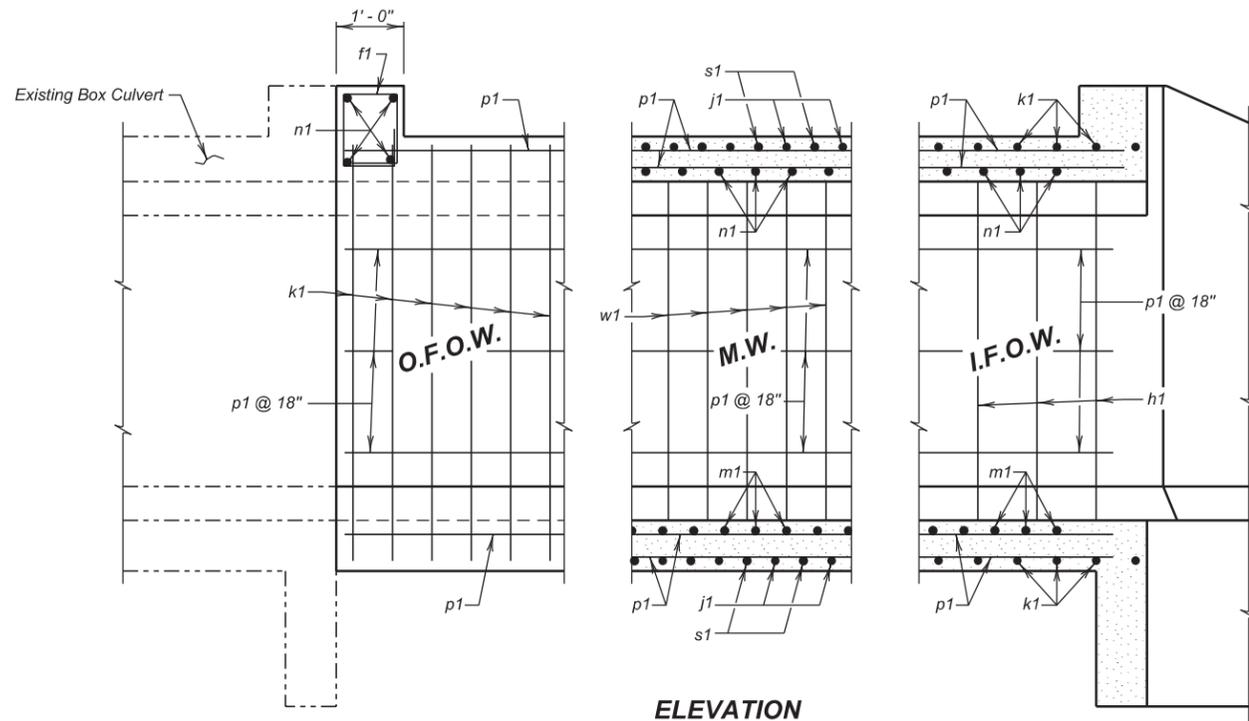


**PLAN**  
(Inlet End - Bottom Slab)

LEGEND FOR PLACING RE-STEEL	
T. T. S.	- Top of Top Slab
B. T. S.	- Bottom of Top Slab
T. B. S.	- Top of Bottom Slab
B. B. S.	- Bottom of Bottom Slab

**F5 BARREL END SECTION DETAILS (7' - 0") (A)**  
 FOR  
**2 - 10' X 5' BOX CULVERT EXTENSION**  
 OVER CREEK  
 STA. 183 + 50.00  
 STR. NO. 02-223-165  
 0° SKEW  
 SEC. 26-T103N-R63W  
 IM 0907(77)309  
 HS 20-44  
 (& ALT.)

AURORA COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 JULY 2012



Note: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete shall be borne by the Contractor.

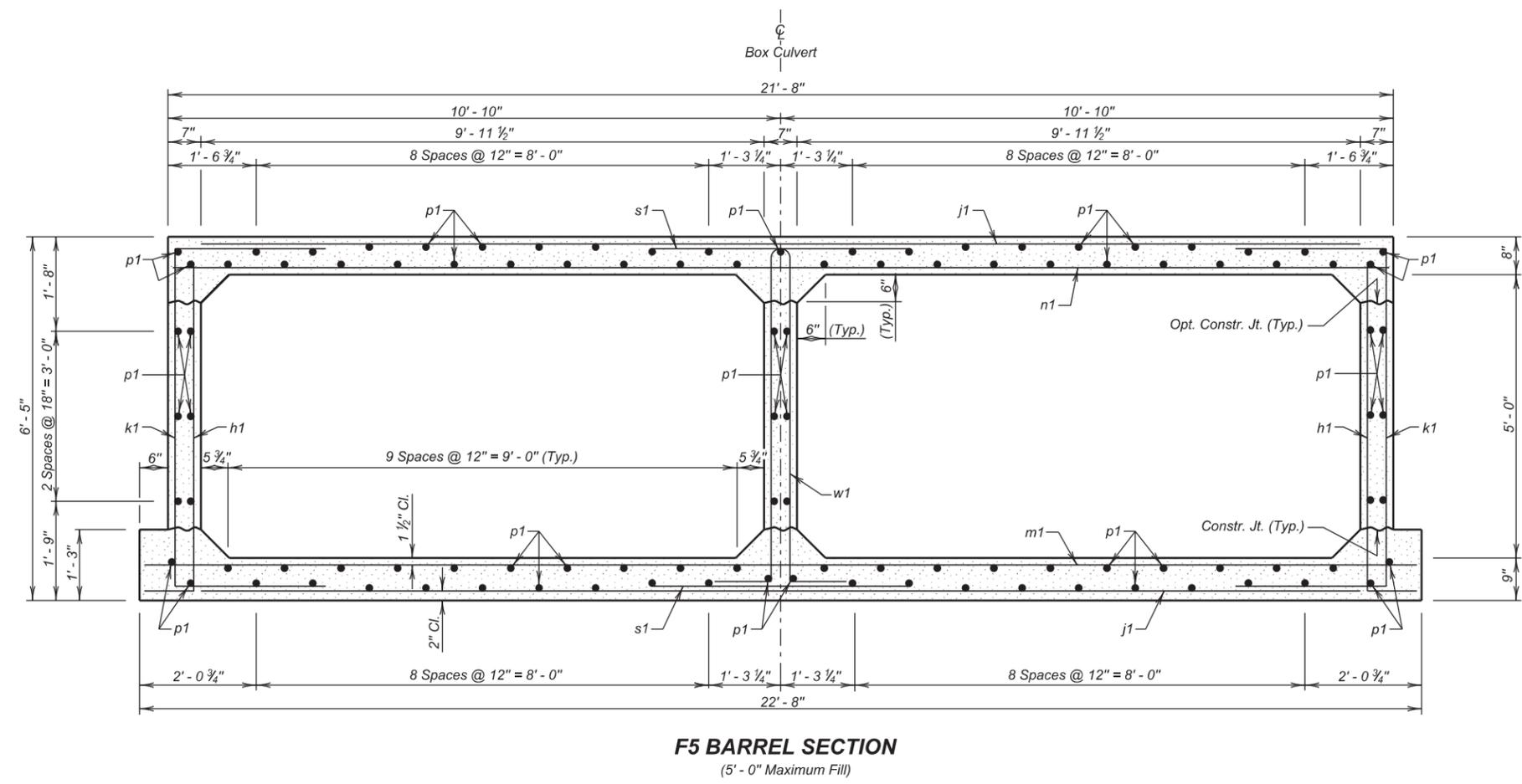
LEGEND FOR PLACING RE- STEEL	
O. F. O. W.	- Outside Face of Outside Wall
I. F. O. W.	- Inside Face of Outside Wall
M. W.	- Middle Wall

**REINFORCING SCHEDULE**  
(For One F5 Barrel End Section)

Mk.	No.	Size	Length	Type	Bending Details
f1	22	4	5'-3"	S6A	
h1	18	4	6'-9"	17A	
j1	16	6	20'-6"	Str.	
k1	28	5	11'-6"	17	
m1	15	5	22'-3"	Str.	
n1	15	6	21'-3"	Str.	
p1	105	4	7'-6"	Str.	
s1	15	6	4'-6"	Str.	
w1	14	4	14'-6"	S11A	
z2	31	6	2'-3"	Str.	

Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel shall be borne by the Contractor.

**NOTES:**  
All dimensions are out to out of bars.  
Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.  
\* Quantity of z2 bars is not included in reinforcing steel. See BREAKOUT AND DOWEL PLACEMENT DETAILS Sheet.

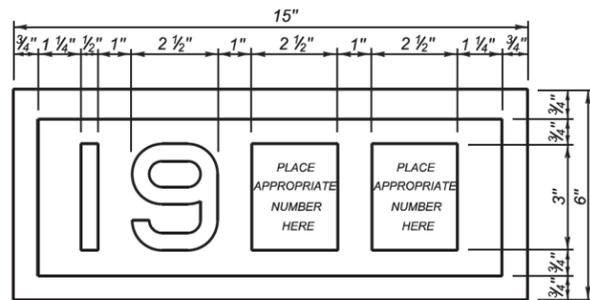


ESTIMATED QUANTITIES			
ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
1 - F5 Barrel End Section @ 7' - 0"	11.4	2577	4.4

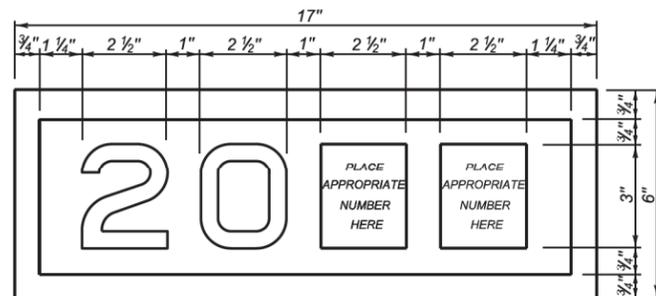
**F5 BARREL END SECTION DETAILS (7' - 0") (B)**  
FOR  
**2 - 10' X 5' BOX CULVERT EXTENSION**  
OVER CREEK  
STA. 183 + 50.00  
STR. NO. 02-223-165

0° SKEW  
SEC. 26-T103N-R63W  
IM 0907(77)309  
HS 20-44  
( & ALT.)

**YEAR PLATE  
DETAILS FOR  
ORIGINAL CONSTRUCTION**

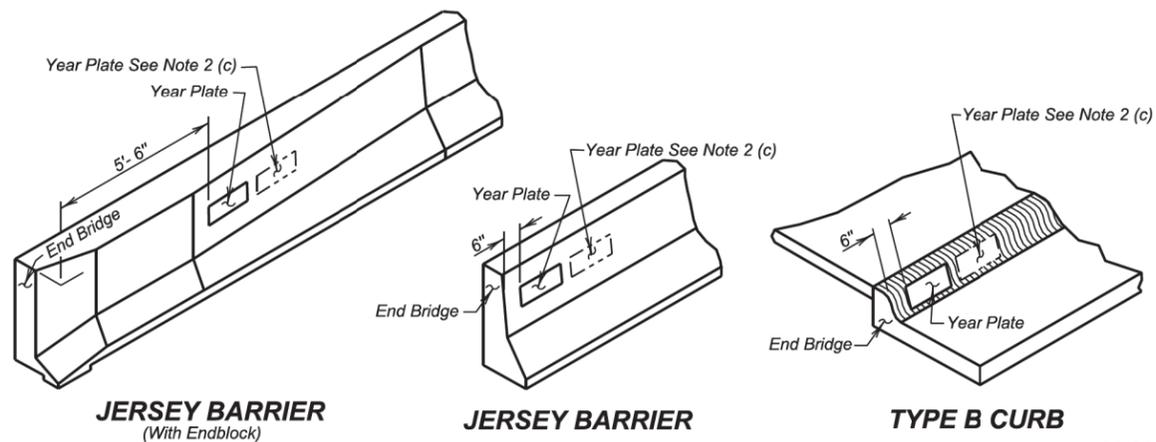


**YEAR PLATE  
DETAILS FOR  
NEW CONSTRUCTION**



**GENERAL NOTES:**

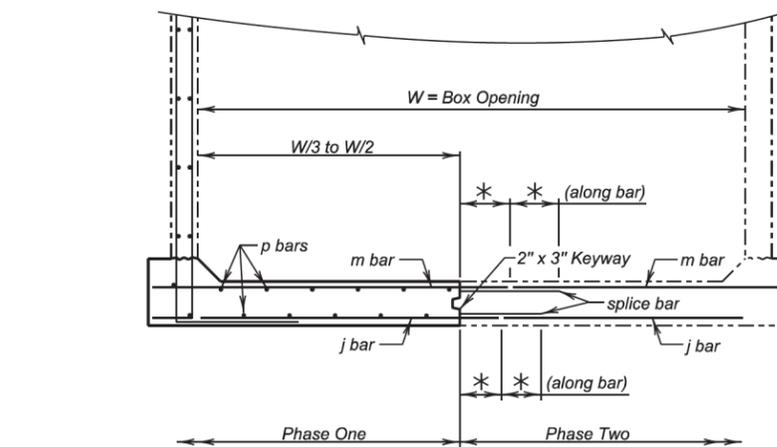
- Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
- Year plates shall be located on structure(s) as follows:
  - On cast-in-place box culverts the year plates shall be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
  - On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'-6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
  - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



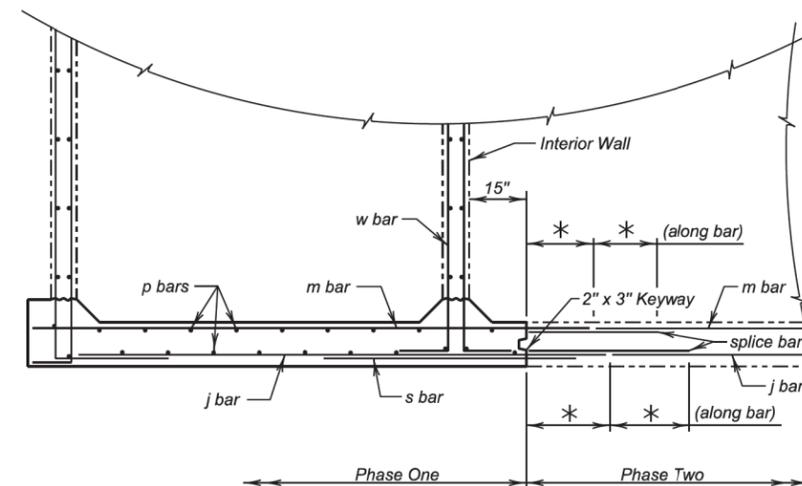
June 26, 2012

<b>S D D O T</b>	<b>DUAL DATE YEAR PLATE DETAILS</b>	PLATE NUMBER 460.03
		Sheet 1 of 1

Published Date: 2026



**TYPICAL SINGLE BARREL CONSTRUCTION JOINT LOCATION  
(BOTTOM SLAB ONLY)**



**TYPICAL MULTIPLE BARREL CONSTRUCTION JOINT LOCATION  
(BOTTOM SLAB ONLY)**

\* See table of Lap Lengths for correct length of lap to use.

BAR SIZE	LAP LENGTH	
	SPACING < 6"	SPACING ≥ 6"
#4	1' - 9"	1' - 6"
#5	2' - 3"	1' - 9"
#6	2' - 9"	2' - 3"
#7	3' - 3"	2' - 6"
#8	4' - 3"	3' - 3"

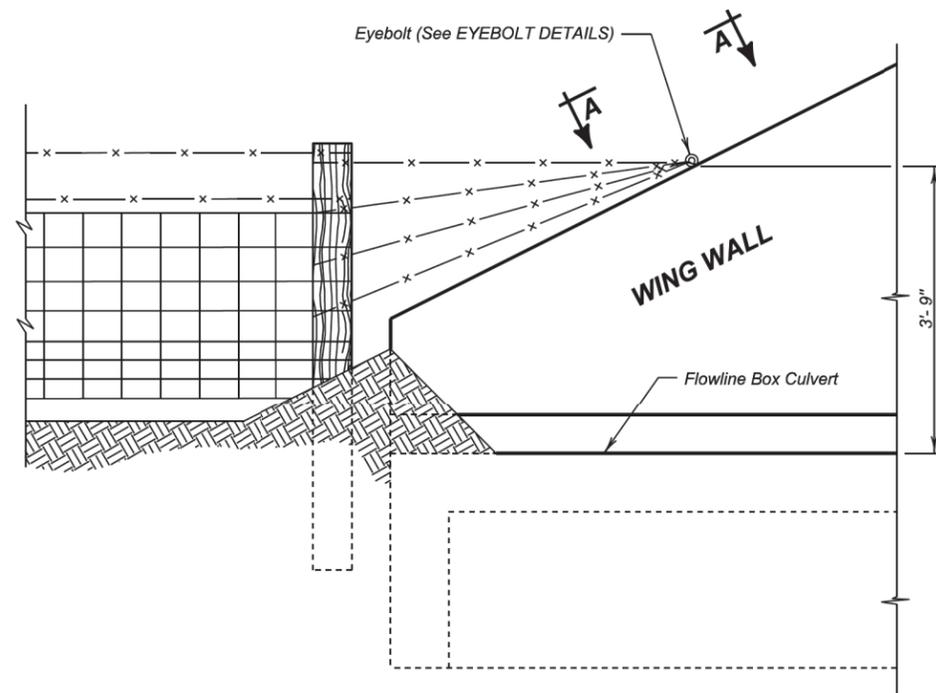
**GENERAL NOTES:**

- The s bars shall not be cut and lapped.
- The m and j bars listed on the barrel detail sheet(s) are the length of bar required not including laps.
- The cost of additional reinforcing steel for the lap shall be borne by the Contractor.
- All costs for constructing the optional bottom slab construction joint including labor and materials, except for the additional lap reinforcing steel, shall be incidental to the contract unit price per cubic yard for "Class A45 Concrete, Box Culvert".

June 26, 2012

<b>S D D O T</b>	<b>OPTIONAL BOTTOM SLAB CONSTRUCTION JOINT</b>	PLATE NUMBER 460.11
		Sheet 1 of 1

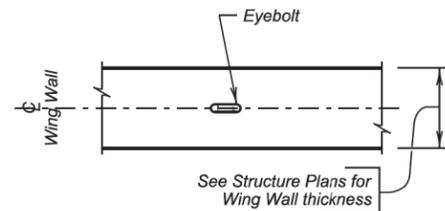
Published Date: 2026



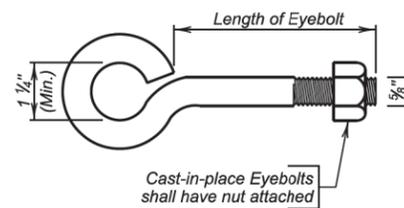
**DETAIL FOR FENCE ANCHORS**

**GENERAL NOTES:**

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the box culvert wing walls.
3. Eyebolts shall be  $\frac{5}{8}$  inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4  $\frac{1}{2}$  inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the  $\frac{5}{8}$  inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



**VIEW A - A**

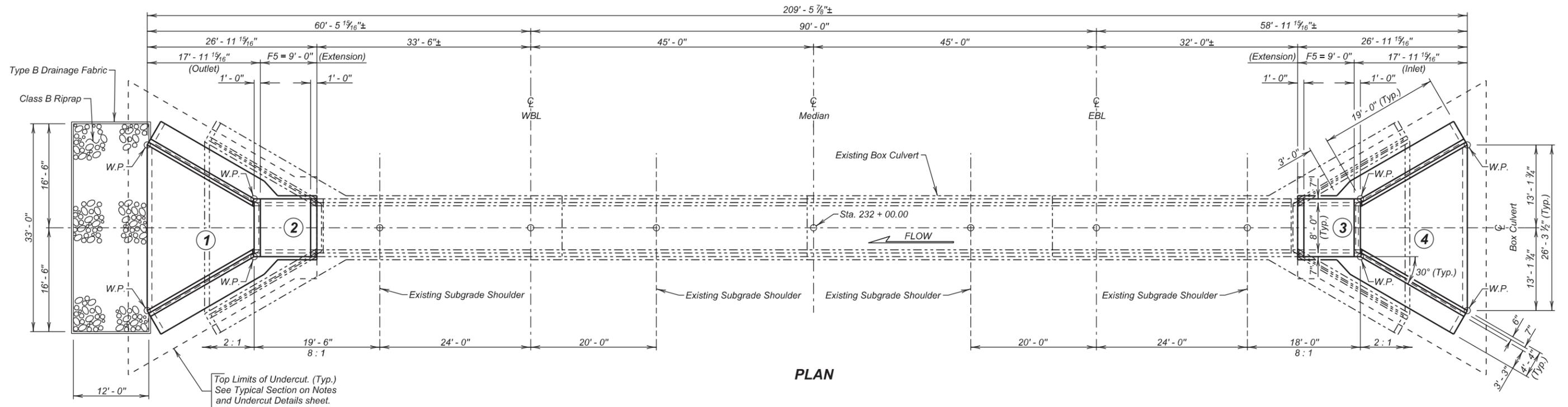


**EYEBOLT DETAILS**

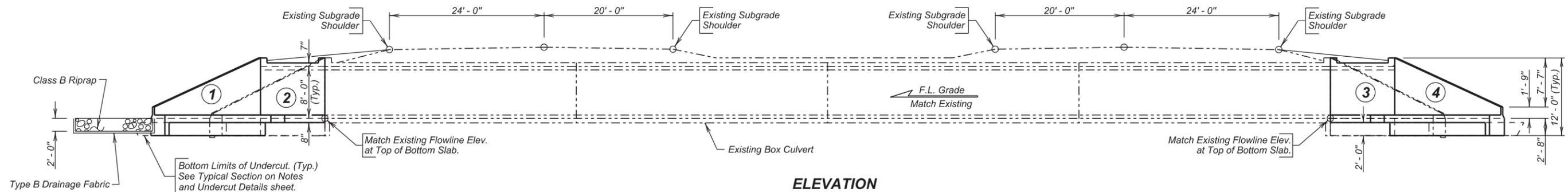
December 23, 2012

<b>S D D O T</b>	<b>FENCE ANCHORS FOR BOX CULVERT WING WALLS</b>	PLATE NUMBER <b>620.16</b>
		Sheet 1 of 1

Published Date: 2026



PLAN



ELEVATION

**INDEX OF CULVERT SHEETS-**

- Sheet No. 1 - General Drawing and Quantities
- Sheet No. 2 - Notes and Undercut Details
- Sheet No. 3 - Breakout and Dowel Placement Details
- Sheet No. 4 - Inlet or Outlet Details
- Sheet No. 5 - F5 Barrel End Section Details (9' - 0")
- Sheet No. 6 - Details of Standard Plate No's. 460.03 & 620.16

NOTE: All stations and dimensions are based on survey/original plans of the existing box culvert. The intent is to match the existing box location, flowline, and slope.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	Cu. Yd.	60.7
Reinforcing Steel	Lb.	7858
Structure Excavation, Box Culvert	Cu. Yd.	34
Box Culvert Undercut	Cu. Yd.	124
Class B Riprap	Ton	21.1
Type B Drainage Fabric	Sq. Yd.	64
Breakout Structural Concrete	Cu. Yd.	41.3
Install Dowel in Concrete	Each	44
Salvage Riprap	Ton	20.0
Place Riprap	Ton	20.0

≠ For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yd. to Tons.

**GENERAL DRAWING AND QUANTITIES**

FOR  
**8' X 8' BOX CULVERT EXTENSION**

OVER CREEK \* 0° SKEW  
 STA. 232 + 00.00 SEC. 25-T103N-R63W  
 STR. NO. 02-231-165 IM 0907(77)309  
 PCN 034U HS 20-44  
 (& ALT.)

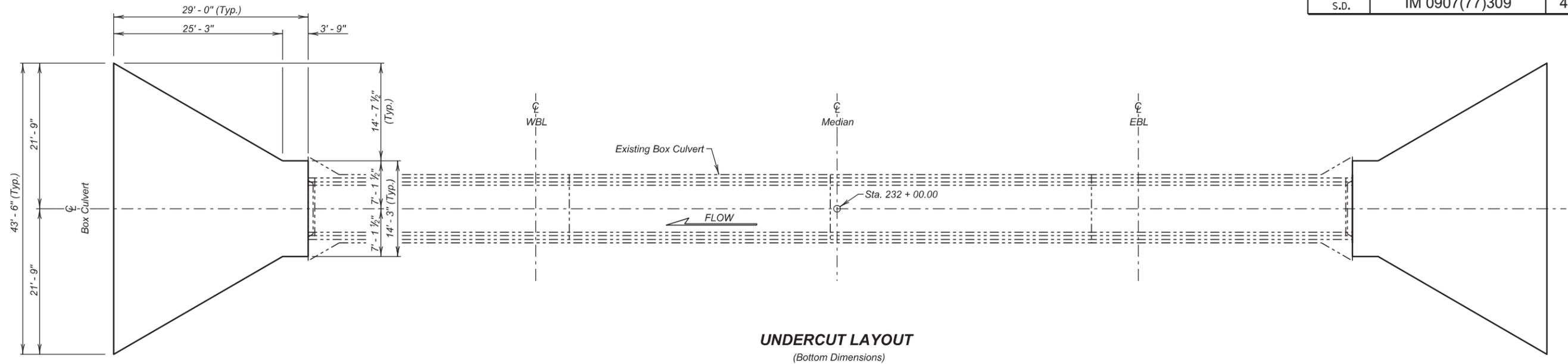
AURORA COUNTY  
 S. D. DEPT. OF TRANSPORTATION

JULY 2012

1 OF 6

PLANS BY:  
 OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY SK AURO034U	CK. DES. BY DC 034UTD01	DRAFTED BY BT	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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**SPECIFICATIONS**

1. Design Specifications: AASHTO Standard Specifications for Highway Bridges, 2002 Edition (Service Load).
2. Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.

**GENERAL NOTES**

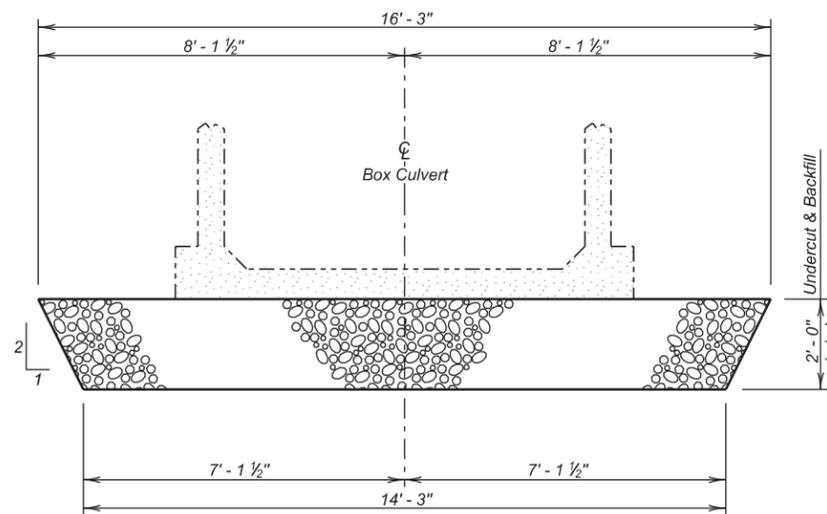
1. Design Live Load: HS 20-44 and Alternate Loading. No construction loading in excess of legal load was considered.
2. The design of the barrel section is based on a minimum fill height of one foot and includes all subsequent fill heights up to and including the maximum fill height of 5 feet (F5).
3. Unit Stresses: Concrete  $f_c' = 1800$  p.s.i.  
Reinforcing Steel  $f_s = 24000$  p.s.i.
4. All concrete shall be Class A45 conforming to Section 460.
5. All reinforcing steel shall conform to ASTM A615 Grade 60.
6. All exposed edges shall be chamfered 3/4 inch.
7. Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.
8. The Contractor shall imprint on the structure the date of the existing box culvert construction as well as the date of new construction as specified and detailed on Standard Plate No. 460.03.
9. Care shall be taken to establish Working Points (W.P.) as shown on the wings.
10. Circled numbers in PLAN and ELEVATION views on the General Drawing are section I.D. Numbers (see SDDOT Materials Manual).
11. Cost of Preformed Expansion Joint Filler used in apron construction shall be incidental to the other contract items.

**RIPRAP**

1. The in-place riprap on the downstream end of the existing structure shall be salvaged and used for riprap as shown on plans.
2. The estimated quantity of in-place riprap is approximately 20 tons.
3. All costs for salvaging the riprap including equipment, labor, materials, and any excess material shall be incidental to the contract unit price per ton "Salvage Riprap".
4. All costs for placing the riprap including equipment, labor, materials, and any excess material shall be incidental to the contract unit price per ton "Place Riprap".

**DIMENSIONS OF EXISTING BOX CULVERT**

All details and dimensions of the Existing Box Culvert, contained in these plans, are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary dimensions affecting the satisfactory completion of the work required for this project. Original construction plans can be obtained from the Office of Bridge Design.



**TYPICAL SECTION**  
(For Limits of Undercut)



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Box Culvert Undercut	Cu. Yd.	124

For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.

**NOTES AND UNDERCUT DETAILS**

FOR

**8' X 8' BOX CULVERT EXTENSION**

OVER CREEK 0° SKEW  
 STA. 232 + 00.00 SEC. 25-T103N-R63W  
 STR. NO. 02-231-165 IM 0907(77)309  
 HS 20-44  
 (& ALT.)

AURORA COUNTY  
 S. D. DEPT. OF TRANSPORTATION

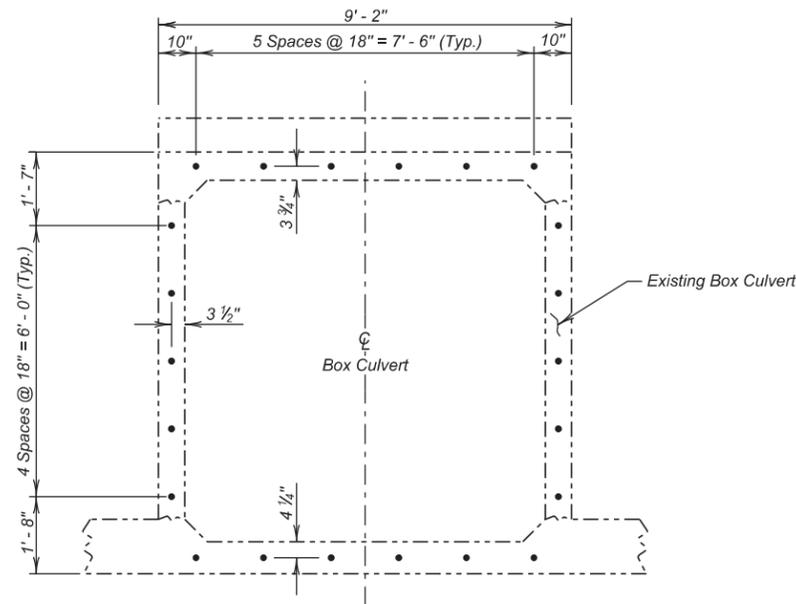
JULY 2012

2 OF 6

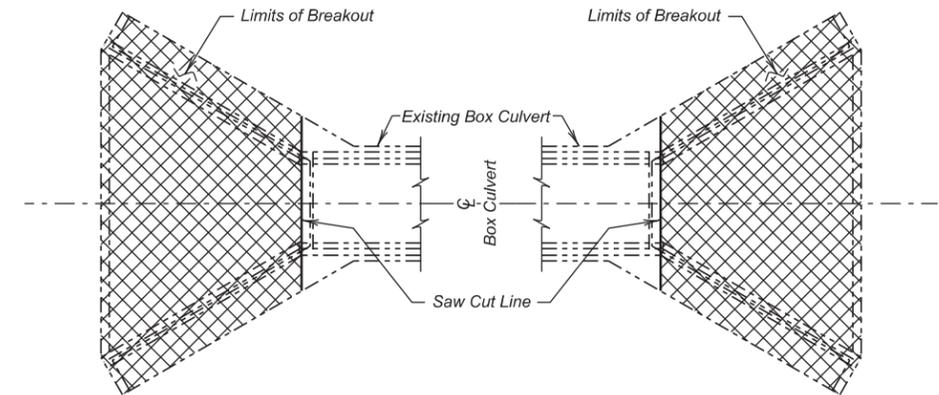
DESIGNED BY SK AURO034U	CK. DES. BY DC 034UTD02	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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### BREAKOUT STRUCTURAL CONCRETE

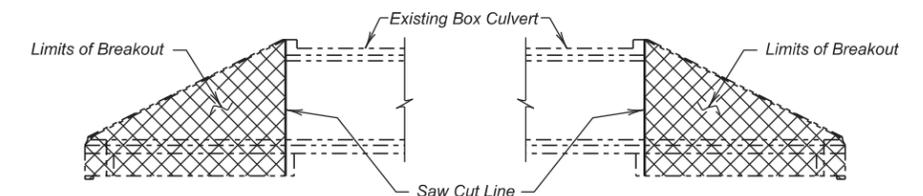
- This work will consist of breaking out and disposing of structural concrete. All broken out concrete and other discarded material will be disposed of in accordance with the Waste Disposal Site notes found in the Environmental Commitments Notes.
- Define the breakout limits with 3/4 inch deep saw cuts.
- Any additional breakout required due to spalling or cracking of the existing structure will be determined by the Engineer. Where additional breakout in the barrel section of the existing structure is required, care shall be taken not to damage any of the existing reinforcing steel. All steel will be left in place and thoroughly cleaned by sandblasting.
- Additional breakout in existing walls or top slab will require shoring up of the parapet and top slab, as directed by the Engineer.
- Plans quantity payment will be full compensation for this item regardless of the quantity actually broken out, unless measurement is ordered by the Engineer. If the Engineer orders breakout beyond the limits shown, this additional breakout will be paid for at the contract unit price per cubic yard for Breakout Structural Concrete. If additional breakout is caused by the Contractor's operations, no additional payment will be made.
- Breakout Structural Concrete will be paid for at the contract unit price per cubic yard. This payment shall be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to breaking out the structural concrete. Payment includes, but is not limited to, excavation required to perform the required breakout, sawcutting, breaking out concrete, cleaning and sandblasting reinforcing steel and concrete surfaces, and removing and disposing of all waste materials to satisfactorily complete the work.



**VIEW A - A**  
(Dowel Locations)



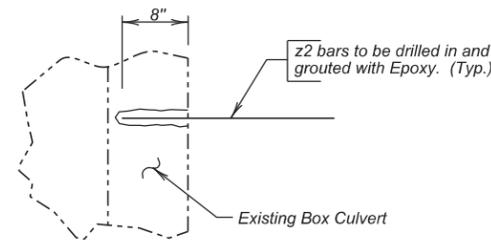
**PLAN - BREAKOUT DETAILS**



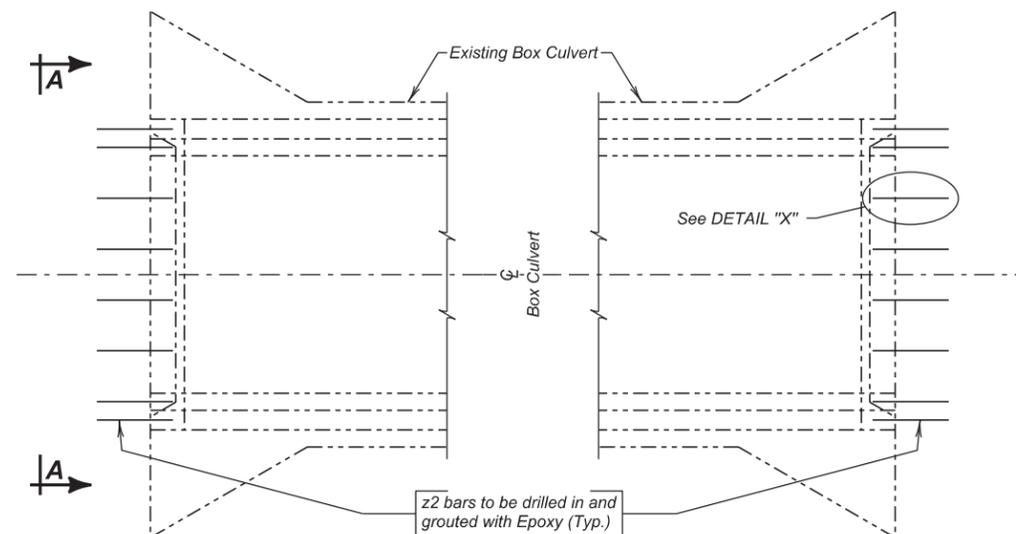
**ELEVATION - BREAKOUT DETAILS**

### INSTALLING DOWELS IN CONCRETE

- The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and shall conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).
- The diameter of the drilled holes shall not be less than 1/8 inch greater, nor more than 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. Holes shall not be drilled using core bits. The drilled holes shall be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
- Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting methods will not be allowed.
- No loads shall be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
- Embed z2 dowels 8" into existing concrete.
- z2 dowel bars shall be #6 deformed bars conforming to ASTM A615 Grade 60.
- The cost of drilling holes, epoxy resin, dowels, installation and other incidental items shall be included in the contract unit price per each for Install Dowel in Concrete.



**DETAIL "X"**



**PLAN - DOWEL DETAILS**  
(Inlet and Outlet)

ESTIMATED QUANTITIES (Inlet and Outlet)		
ITEM	UNIT	QUANTITY
Breakout Structural Concrete	Cu. Yd.	41.3
Install Dowel in Concrete	Each	44

### BREAKOUT AND DOWEL PLACEMENT DETAILS

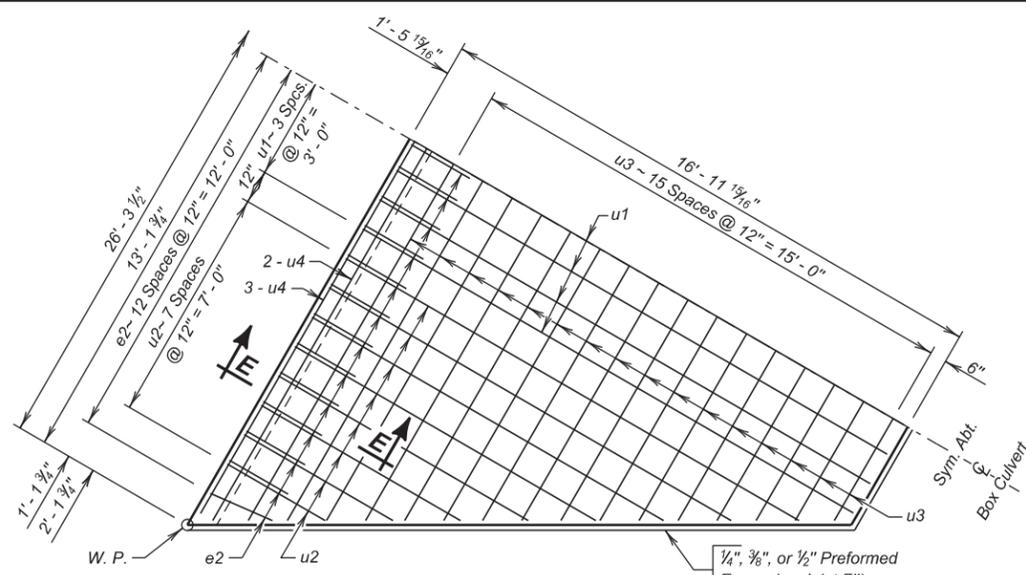
FOR  
**8' X 8' BOX CULVERT EXTENSION**  
 OVER CREEK 0° SKEW  
 STA. 232 + 00.00 SEC. 25-T103N-R63W  
 STR. NO. 02-231-165 IM 0907(77)309  
 HS 20-44  
 (& ALT.)

AURORA COUNTY  
 S. D. DEPT. OF TRANSPORTATION

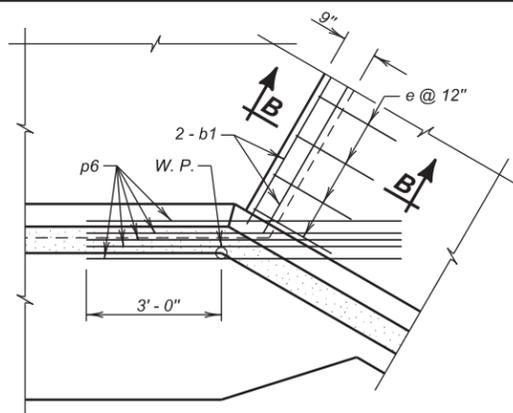
JULY 2012

3 OF 6

DESIGNED BY SK AURO034U	CK. DES. BY DC 034UTD03	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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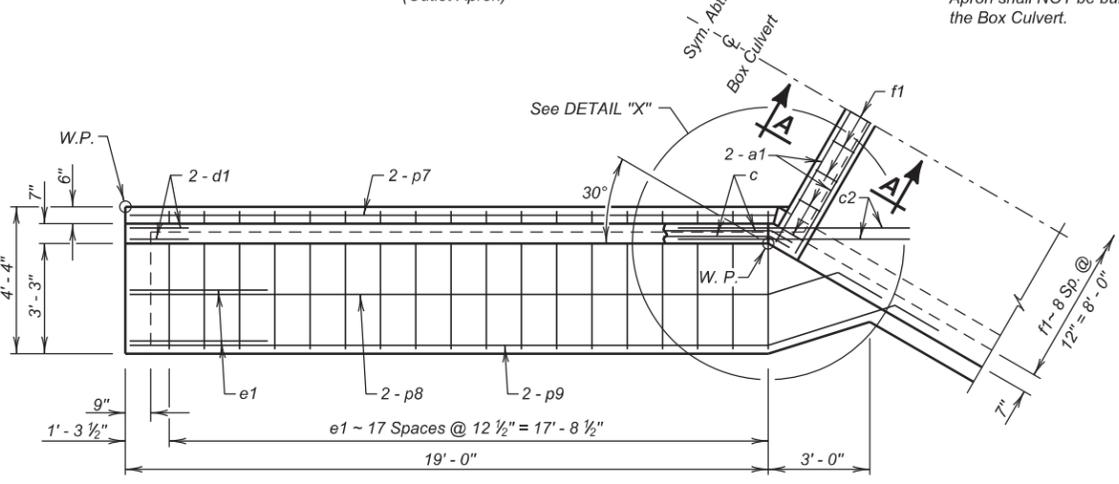


**HALF PLAN**  
(Outlet Apron)

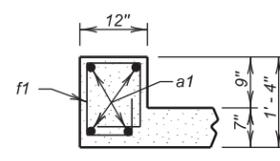


**DETAIL "X"**  
(At Bottom Slab)

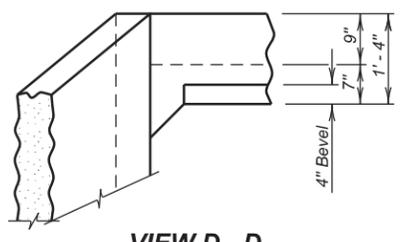
NOTE:  
Apron shall NOT be built monolithic with the Box Culvert.



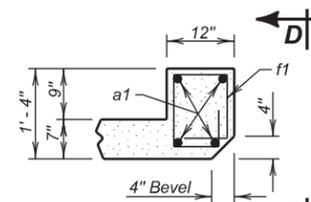
**HALF PLAN**  
(Outlet Shown)



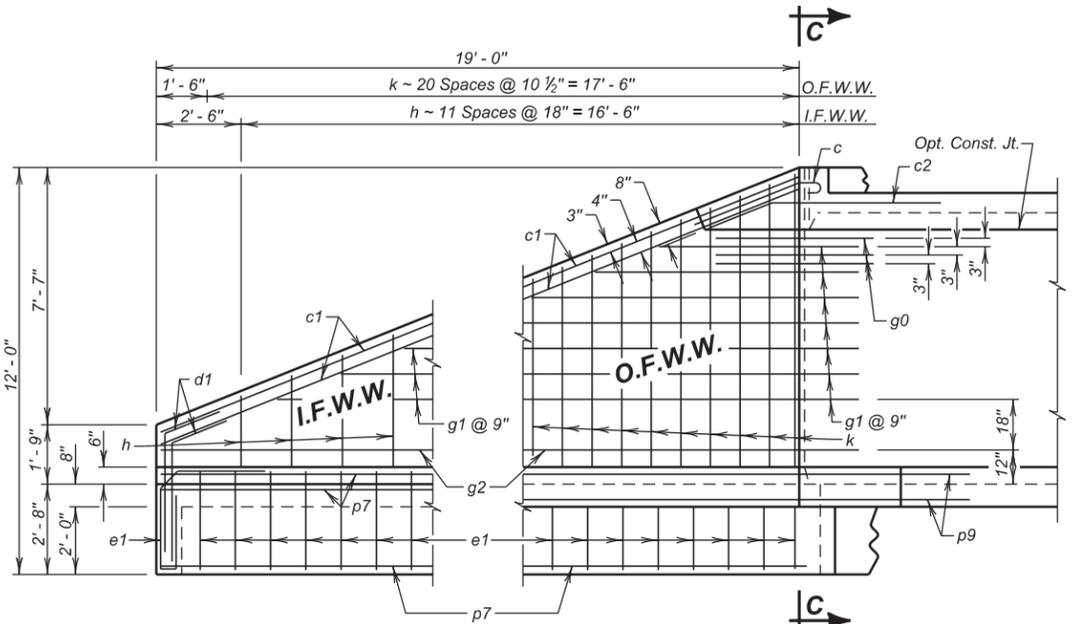
**SEC. A - A**  
(At Top Slab - Outlet)



**VIEW D - D**  
(At Exterior Wall)



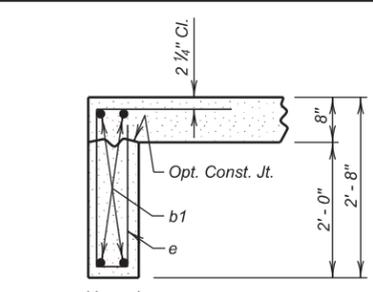
**SEC. A - A**  
(At Top Slab - Inlet)



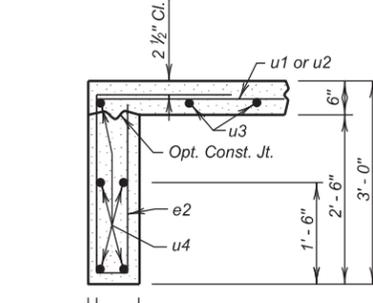
**ELEVATION**

**LEGEND FOR PLACING RE-STEEL**

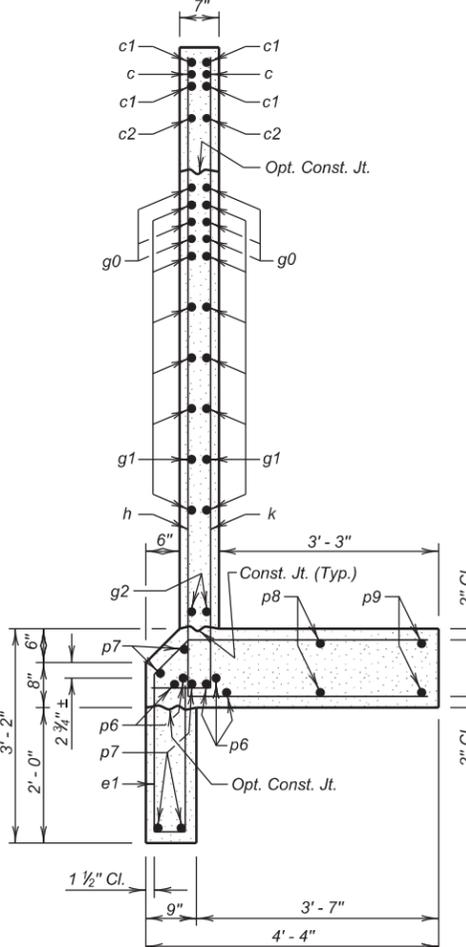
O. F. W. W. - Outside Face of Wing Wall
I. F. W. W. - Inside Face of Wing Wall



**SEC. B - B**



**SEC. E - E**



**SEC. C - C**

**REINFORCING SCHEDULE**  
(For One Inlet or One Outlet)

Mk.	No.	Size	Length	Type
a1	4	6	9'-0"	Str.
b1	4	6	7'-3"	Str.
c	4	5	4'-6"	1A
c1	8	5	20'-3"	Str.
c2	4	5	7'-0"	19B
d1	8	5	5'-3"	19B
e	8	4	6'-9"	S12
e1	40	4	9'-6"	S12A
f1	9	4	4'-9"	S6A
g0	12	5	5'-0"	19B
g1	14	4	23'-6"	19B
g2	4	4	20'-9"	19B
h	12	4	20'-0"	17A
k	21	4	14'-0"	17A
p6	10	6	7'-0"	Str.
p7	10	4	21'-6"	Str.
p8	4	4	23'-3"	Str.
p9	4	4	24'-3"	Str.

**APRON**

Mk.	No.	Size	Length	Type
e2	25	4	7'-6"	S12
u1	7	4	16'-6"	Str.
u2	8	4	18'-0"	Str.
u3	8	4	30'-6"	Str.
u4	5	4	25'-0"	Str.

**Bending Details**

**NOTES:**  
All dimensions are out to out of bars.  
See cutting diagram.  
Bend in field as necessary to fit.

**ESTIMATED QUANTITIES**

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Inlet	15.6	1747	7.5
Inlet Apron	7.0	545	7.0
Outlet	15.6	1747	7.5
Outlet Apron	7.0	545	7.0

**INLET OR OUTLET DETAILS**  
FOR  
**8' X 8' BOX CULVERT EXTENSION**  
OVER CREEK  
STA. 232 + 00.00  
STR. NO. 02-231-165

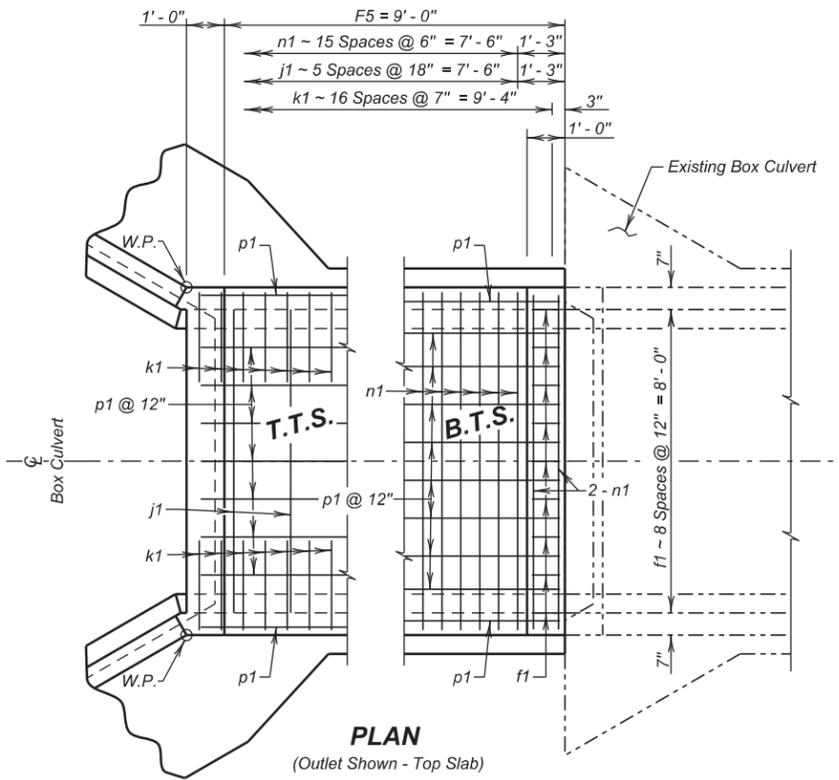
0° SKEW  
SEC. 25-T103N-R63W  
IM 0907(77)309  
HS 20-44  
( & ALT. )

AURORA COUNTY  
S. D. DEPT. OF TRANSPORTATION  
JULY 2012

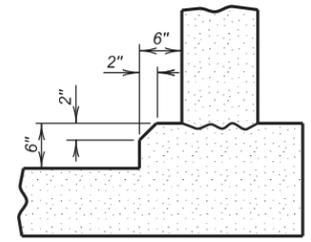
DESIGNED BY SK AUR0034U  
CK. DES. BY DC  
DRAFTED BY BT

Steve A. Johnson  
BRIDGE ENGINEER

4 OF 6

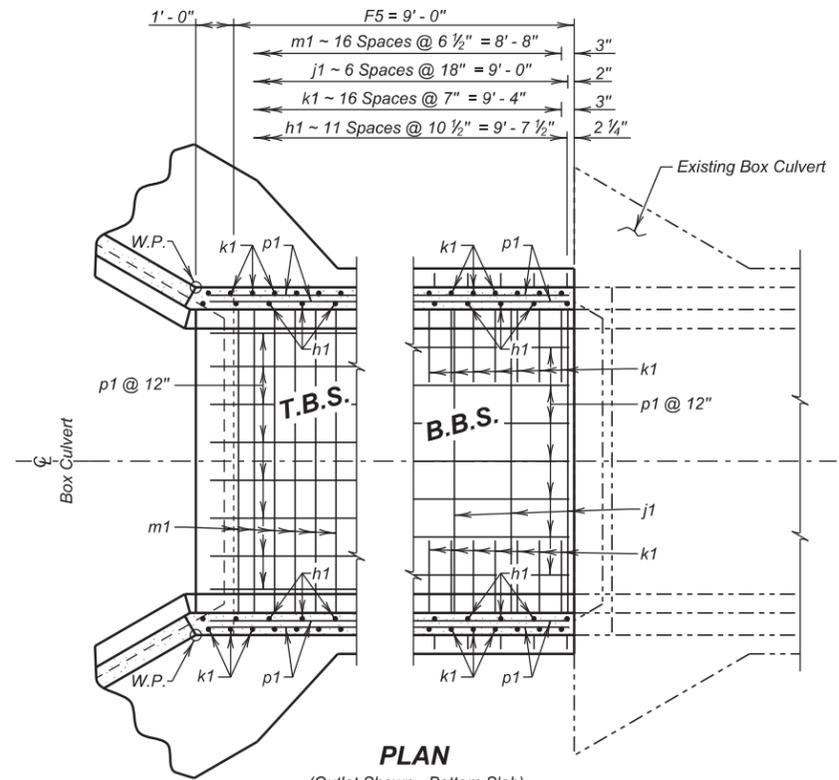


**PLAN**  
(Outlet Shown - Top Slab)



**OPTIONAL FILLET DETAIL**  
(At Bottom Slab)

Note: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete shall be borne by the Contractor.



**PLAN**  
(Outlet Shown - Bottom Slab)

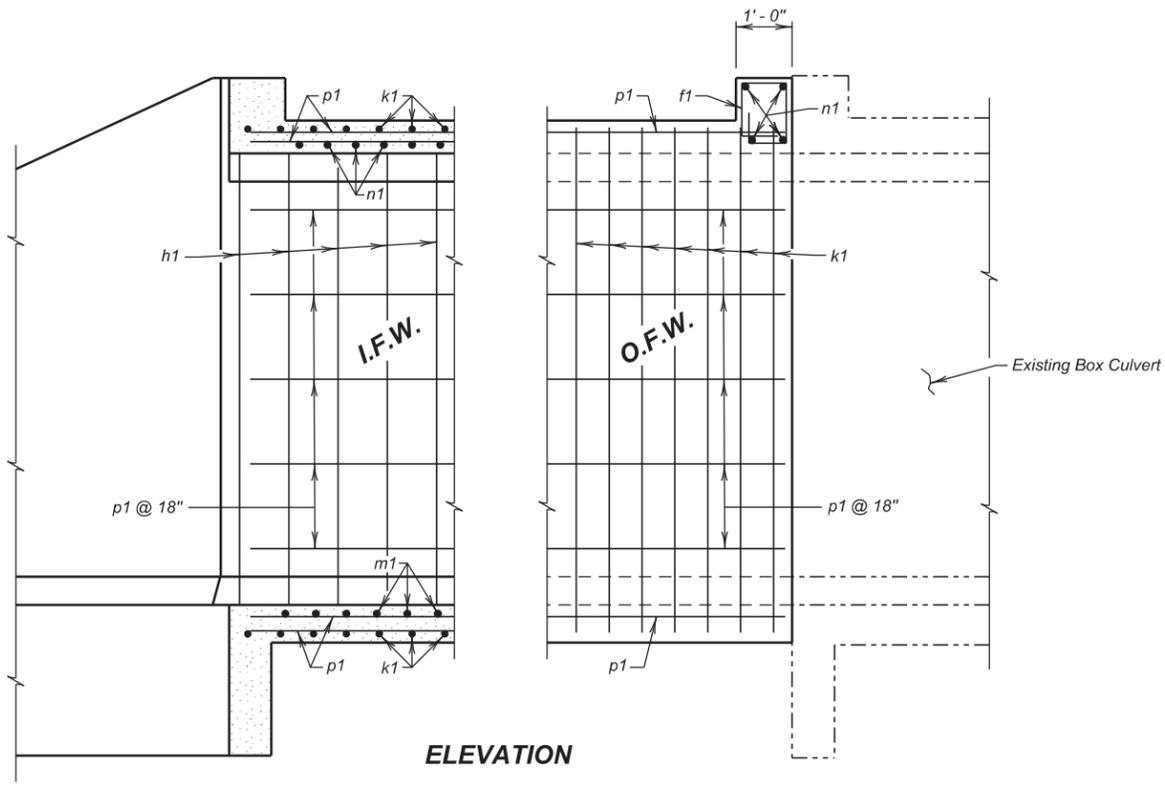
REINFORCING SCHEDULE				
(For One F5 Barrel End Section)				
Mk.	No.	Size	Length	Type
f1	9	4	4'-9"	S6A
h1	24	4	9'-9"	17A
j1	13	4	8'-0"	Str.
k1	34	5	13'-9"	17
m1	17	6	10'-0"	Str.
n1	20	6	9'-0"	Str.
p1	58	4	9'-6"	Str.
z2	12	6	2'-3"	Str.

**Bending Details**

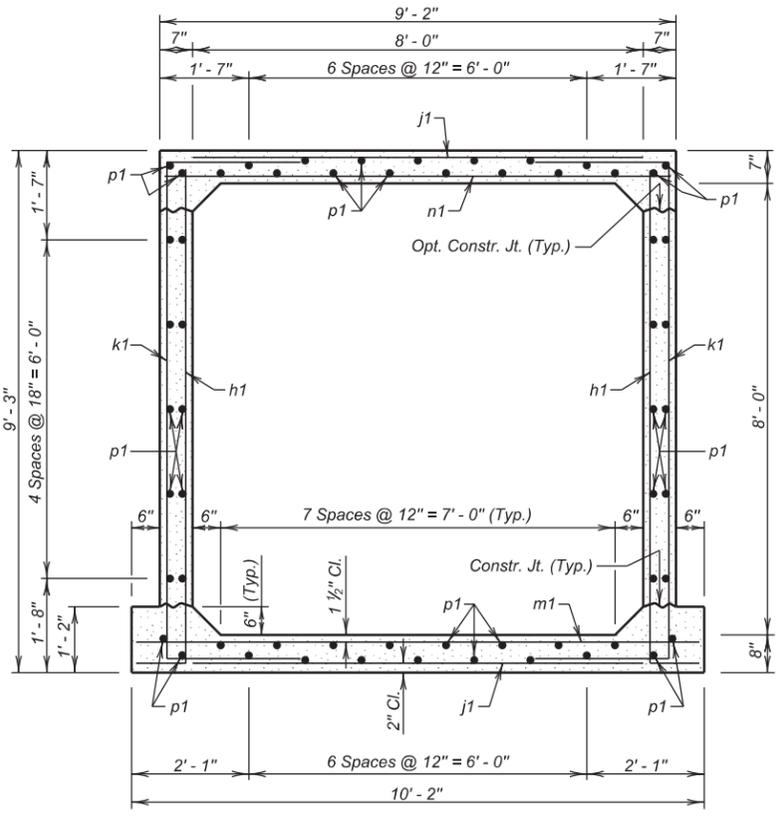
**OPTIONAL k1 SPLICE DETAIL**

Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel shall be borne by the Contractor.

**NOTES:**  
All dimensions are out to out of bars.  
Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.  
\* Quantity of z2 bars is not included in reinforcing steel. See BREAKOUT AND DOWEL PLACEMENT DETAILS Sheet.



**ELEVATION**



**F5 BARREL SECTION**  
(5'-0" Maximum Fill)

ESTIMATED QUANTITIES			
ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
2 - F5 Barrel End Sections @ 9' - 0"	15.5	3274	4.5

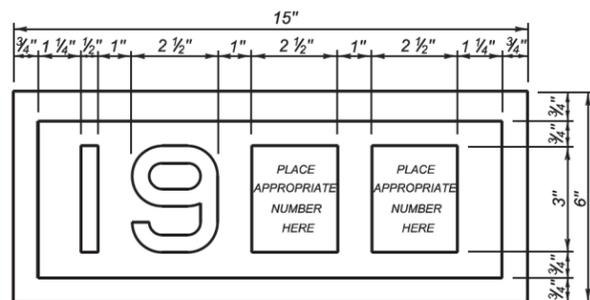
LEGEND FOR PLACING RE-STEEL	
T. T. S.	- Top of Top Slab
B. T. S.	- Bottom of Top Slab
T. B. S.	- Top of Bottom Slab
B. B. S.	- Bottom of Bottom Slab
O. F. W.	- Outside Face of Wall
I. F. W.	- Inside Face of Wall

**F5 BARREL END SECTION DETAILS (9' - 0")**  
FOR  
**8' X 8' BOX CULVERT EXTENSION**  
OVER CREEK  
STA. 232 + 00.00  
STR. NO. 02-231-165

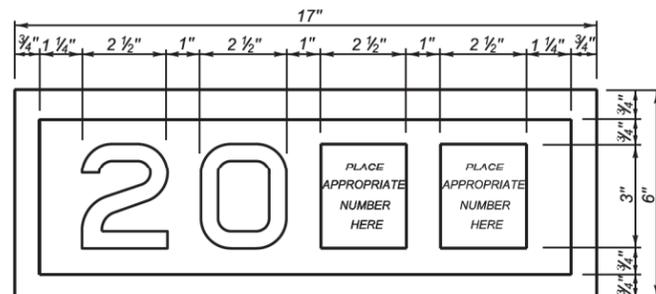
0° SKEW  
SEC. 25-T103N-R63W  
IM 0907(77)309  
HS 20-44  
( & ALT. )

AURORA COUNTY  
S. D. DEPT. OF TRANSPORTATION  
JULY 2012

**YEAR PLATE  
DETAILS FOR  
ORIGINAL CONSTRUCTION**

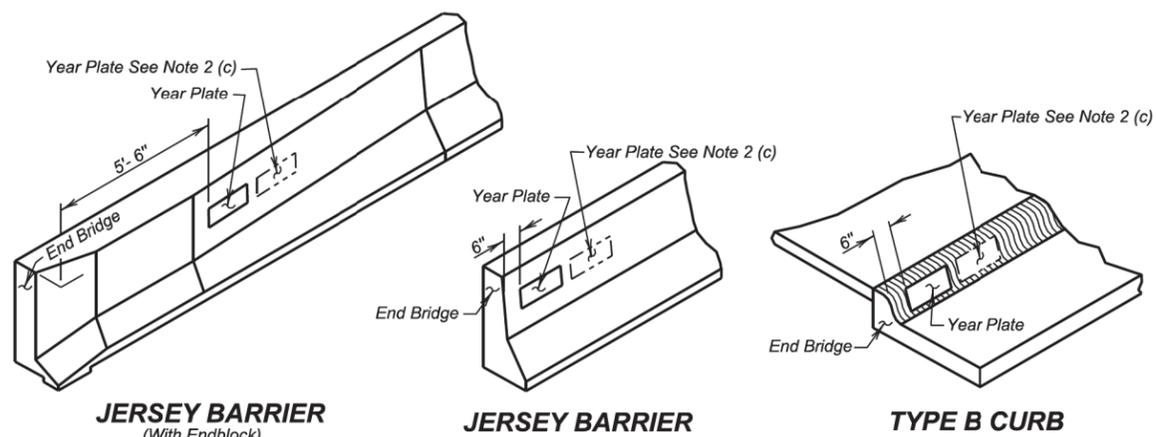


**YEAR PLATE  
DETAILS FOR  
NEW CONSTRUCTION**



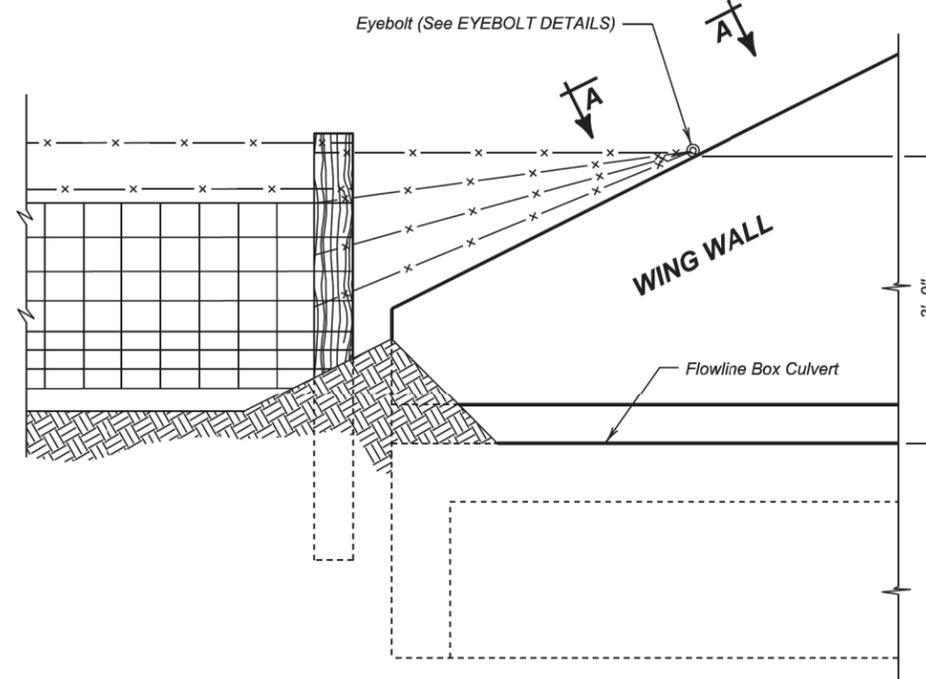
**GENERAL NOTES:**

- Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
- Year plates shall be located on structure(s) as follows:
  - On cast-in-place box culverts the year plates shall be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
  - On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'-6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
  - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



June 26, 2012

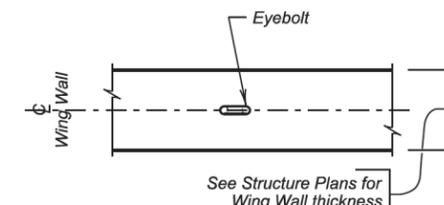
Published Date: 2026	S D D O T	DUAL DATE YEAR PLATE DETAILS	PLATE NUMBER 460.03
			Sheet 1 of 1



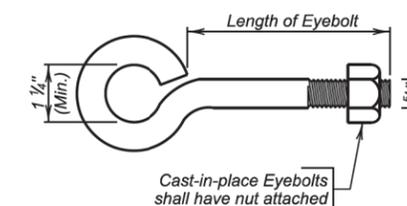
**DETAIL FOR FENCE ANCHORS**

**GENERAL NOTES:**

- The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
- Eyebolts shall be placed on all of the box culvert wing walls.
- Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
- Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
- Cast-in-place eyebolts shall have a nut attached, be 4 1/2 inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the 5/8 inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
- The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



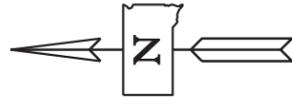
**VIEW A - A**



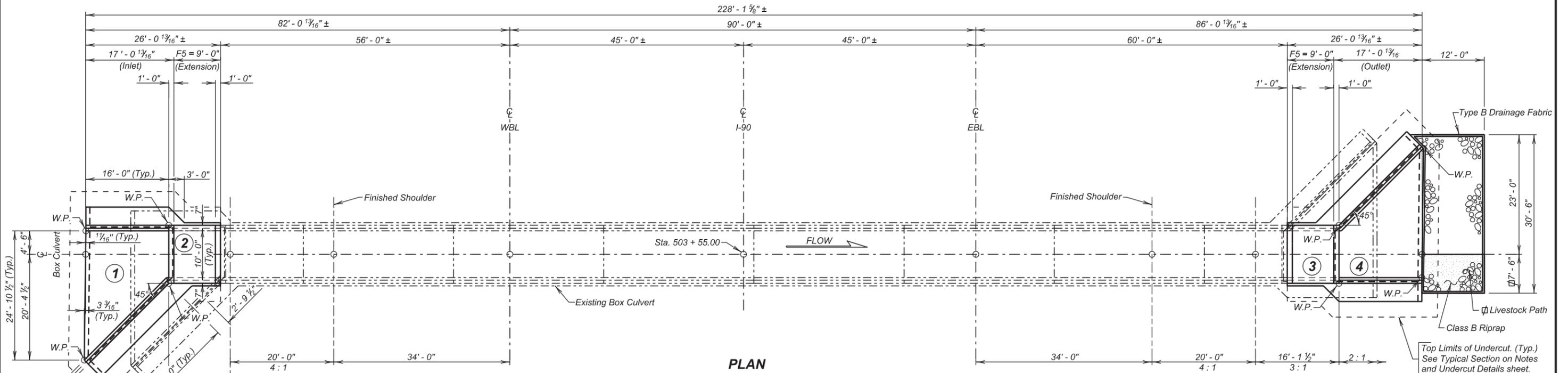
**EYEBOLT DETAILS**

December 23, 2012

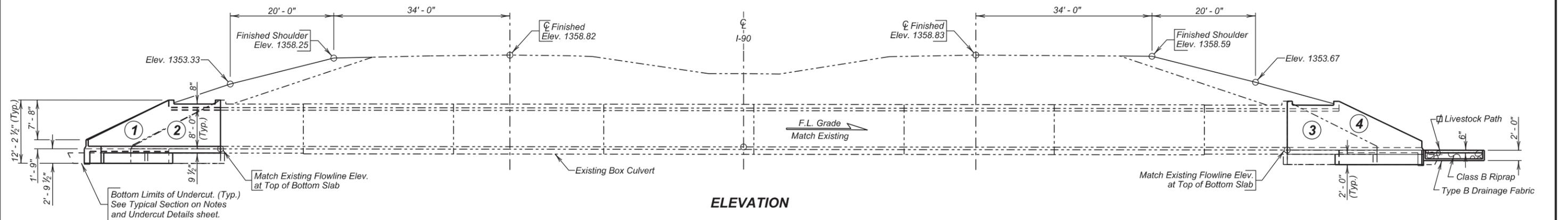
Published Date: 2026	S D D O T	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16
			Sheet 1 of 1



NOTE:  
All stations and elevations are based on survey of the existing box culvert. The intent is to match the existing box location, flowline and slope.



PLAN



ELEVATION

**INDEX OF CULVERT SHEETS-**

- Sheet No. 1 - General Drawing and Quantities
- Sheet No. 2 - Notes and Undercut Details
- Sheet No. 3 - Breakout and Dowel Placement Details
- Sheet No. 4 - Inlet or Outlet Details (A)
- Sheet No. 5 - Inlet or Outlet Details (B)
- Sheet No. 6 - F5 Barrel End Section Details (9' - 0")
- Sheet No. 7 - Details of Standard Plate No's 460.03 and 620.16

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	Cu. Yd.	68.1
Reinforcing Steel	Lb.	8586
Structure Excavation, Box Culvert	Cu. Yd.	39
Box Culvert Undercut	Cu. Yd.	126
Class B Riprap	Ton	38.0
Type B Drainage Fabric	Sq. Yd.	61
Breakout Structural Concrete	Cu. Yd.	43.4
Install Dowel in Concrete	Each	48
Controlled Density Fill	Cu. Yd.	1.8

≠ For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert Cu. Yd. to Tons.

**NOTES:**

1. Controlled Density Fill will provide a smooth path for livestock.
2. Controlled Density Fill is estimated using 6" of material to account for voids in the Class B Riprap.
3. All cost associated with supplying and placing Controlled Density Fill for the Livestock Path will be incidental to the contract unit price per cubic yard for Controlled Density Fill. The Controlled Density Fill will comply with Section 464.

**GENERAL DRAWING AND QUANTITIES**

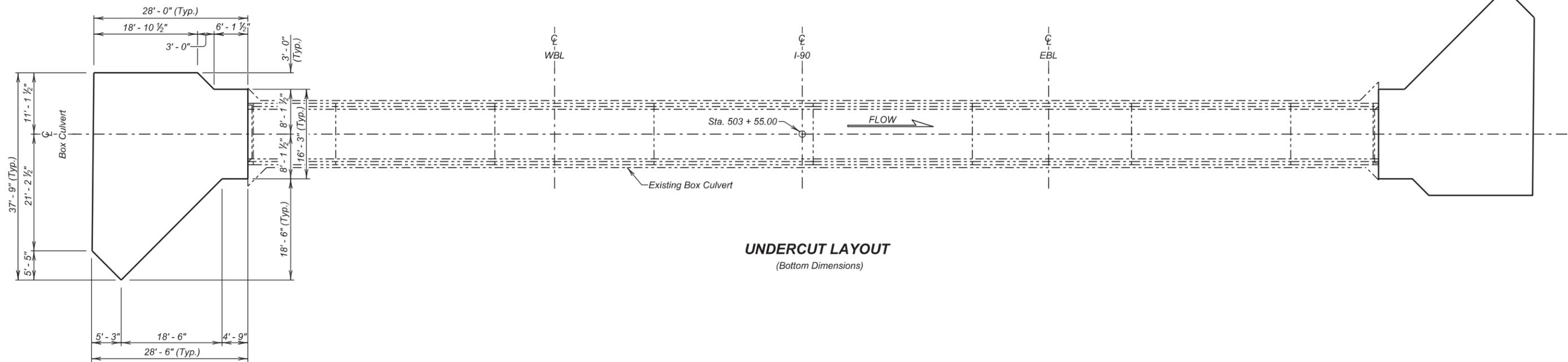
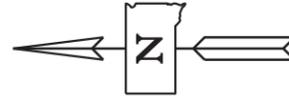
FOR  
**10' X 8' BOX CULVERT EXTENSION**  
OVER DRAW 0° SKEW  
STA. 503 + 55.00 SEC. 27-T103N-R61W  
STR. NO. 18-093-105 IM 0907(77)309  
PCN 034U HS 20-44

DAVISON COUNTY  
S. D. DEPT. OF TRANSPORTATION

AUGUST 2025 1 OF 7

PLANS BY:  
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY JH DAVS034U	CK. DES. BY BM 034UHA01	DRAFTED BY BT	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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### SPECIFICATIONS

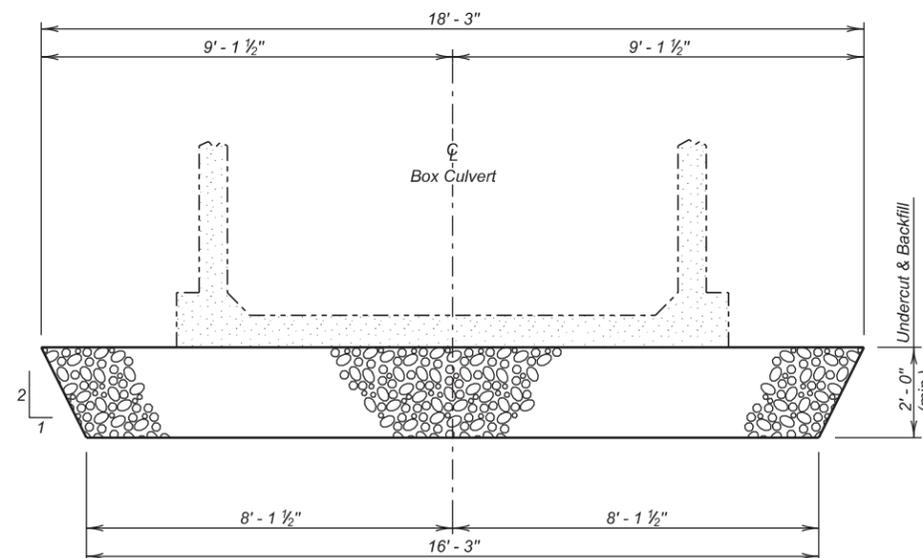
1. Design Specifications: AASHTO Standard Specifications for Highway Bridges, 10th Edition.
2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Road and Bridges are available for download and viewing at: <https://dot.sd.gov/doing-business/contractors/standard-specifications>

### GENERAL NOTES

1. Design Live Load: HS 20-44 and Alternate Loading. No construction loading in excess of legal load was considered.
2. The design of the barrel section is based on a minimum fill height of one foot and includes all subsequent fill heights up to and including the maximum fill height of 5 feet (F5).
3. Unit Stresses: Concrete  $f_c' = 1800$  p.s.i.  
Reinforcing Steel  $f_s = 24000$  p.s.i.
4. All concrete shall be Class A45 conforming to Section 460.
5. All reinforcing steel shall conform to ASTM A615 Grade 60.
6. All exposed edges shall be chamfered 3/4 inch.
7. Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.
8. The Contractor shall imprint on the structure the date of the existing box culvert construction as well as the date of new construction as specified and detailed on Standard Plate No. 460.03.
9. Care shall be taken to establish Working Points (W.P.) as shown on the wings.
10. Circled numbers in PLAN and ELEVATION views on the General Drawing are section I.D. Numbers (see SDDOT Materials Manual).
11. Cost of Preformed Expansion Joint Filler used in apron construction shall be incidental to the other contract items.

### DIMENSIONS OF EXISTING BOX CULVERT

All details and dimensions of the Existing Box Culvert, contained in these plans, are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary dimensions affecting the satisfactory completion of the work required for this project. Original construction plans can be obtained from the Office of Bridge Design.



**TYPICAL SECTION**  
(For Limits of Undercut)

### ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Box Culvert Undercut	Cu. Yd.	126

For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.

### NOTES AND UNDERCUT DETAILS

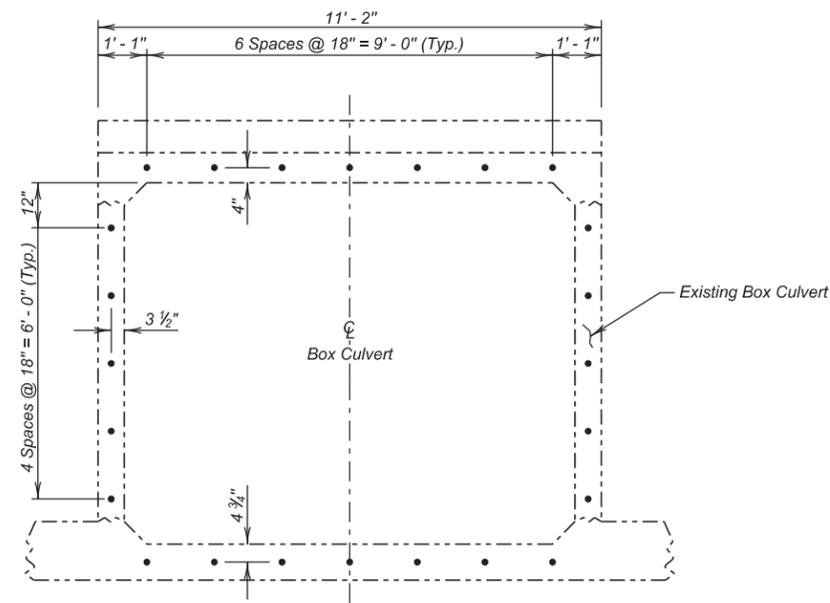
FOR

**10' X 8' BOX CULVERT EXTENSION**  
 OVER DRAW 0° SKEW  
 STA. 503 + 55.00 SEC. 27-T103N-R61W  
 STR. NO. 18-093-105 IM 0907(77)309  
 HS 20-44

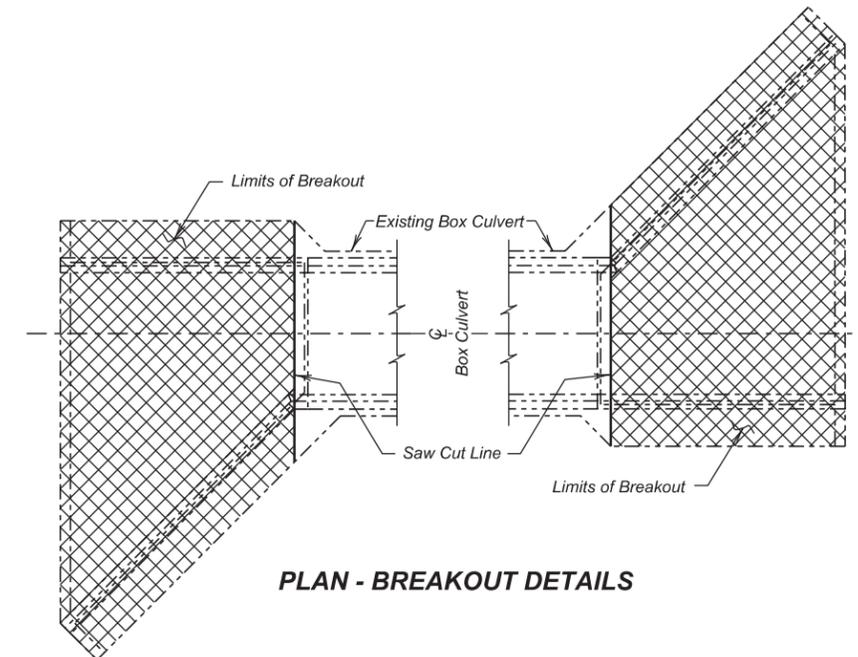
DAVISON COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 AUGUST 2025

### BREAKOUT STRUCTURAL CONCRETE

1. This work will consist of breaking out and disposing of structural concrete. All broken out concrete and other discarded material will be disposed of in accordance with the Waste Disposal Site notes found in the Environmental Commitments Notes.
2. Define the breakout limits with 3/4 inch deep saw cuts.
3. Any additional breakout required due to spalling or cracking of the existing structure will be determined by the Engineer. Where additional breakout in the barrel section of the existing structure is required, care will be taken not to damage any of the existing reinforcing steel. All steel will be left in place and thoroughly cleaned by sandblasting.
4. Additional breakout in existing walls or top slab will require shoring up of the parapet and top slab, as directed by the Engineer.
5. Plans quantity payment will be full compensation for this item regardless of the quantity actually broken out, unless measurement is ordered by the Engineer. If the Engineer orders breakout beyond the limits shown, this additional breakout will be paid for at the contract unit price per cubic yard for Breakout Structural Concrete. If additional breakout is caused by the Contractor's operations, no additional payment will be made.
6. Breakout Structural Concrete will be paid for at the contract unit price per cubic yard. This payment will be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to breaking out the structural concrete. Payment includes, but is not limited to, excavation required to perform the required breakout, sawcutting, breaking out concrete, cleaning and sandblasting reinforcing steel and concrete surfaces, and removing and disposing of all waste materials to satisfactorily complete the work.



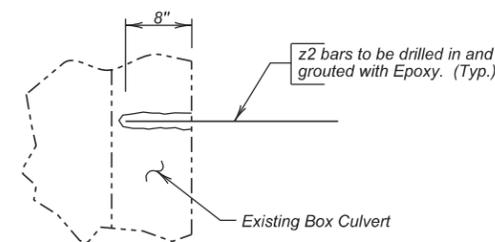
**VIEW A - A**  
(Dowel Locations)



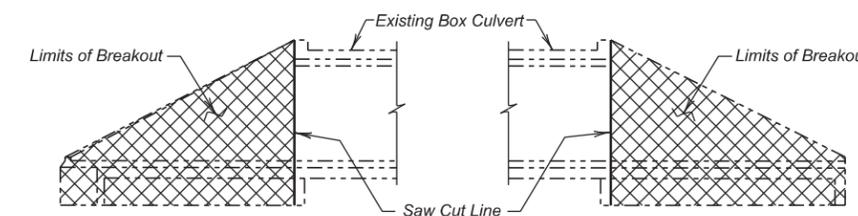
**PLAN - BREAKOUT DETAILS**

### INSTALLING DOWELS IN CONCRETE

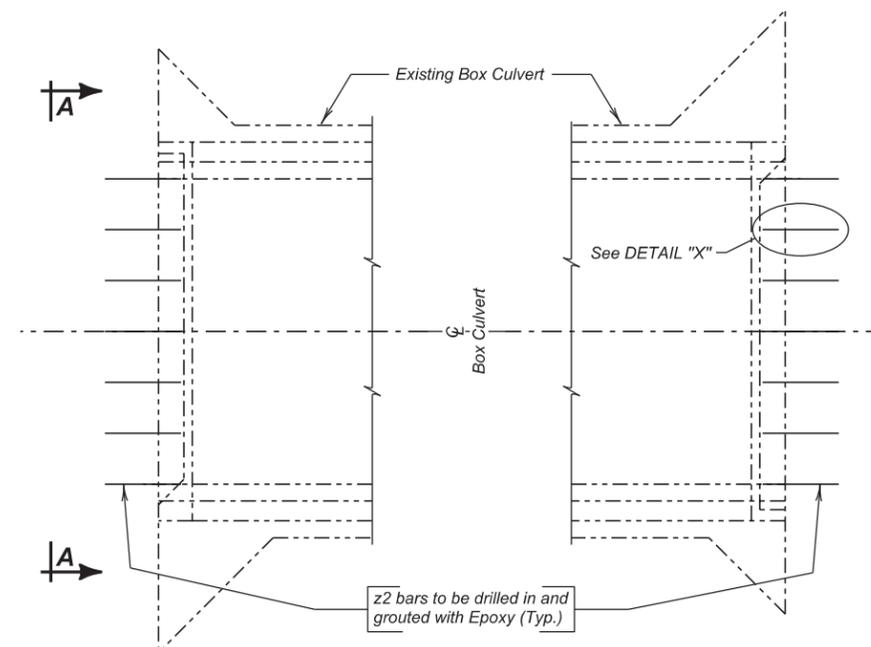
1. The epoxy resin mixture shall be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).
2. The diameter of the drilled holes will not be less than 1/8 inch greater, nor more than 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. Holes will not be drilled using core bits. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
3. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care will be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting methods will not be allowed.
4. No loads will be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
5. Embed z2 dowels 8" into existing concrete.
6. z2 dowel bars will be #6 deformed bars conforming to ASTM A615 Grade 60.
7. The cost of drilling holes, epoxy resin, dowels, installation and other incidental items will be included in the contract unit price per each for Install Dowel in Concrete.



**DETAIL "X"**



**ELEVATION - BREAKOUT DETAILS**



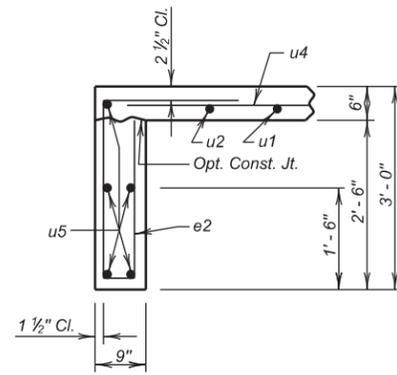
**PLAN - DOWEL DETAILS**  
(Inlet and Outlet)

ESTIMATED QUANTITIES (Inlet and Outlet)		
ITEM	UNIT	QUANTITY
Breakout Structural Concrete	Cu. Yd.	43.4
Install Dowel in Concrete	Each	48

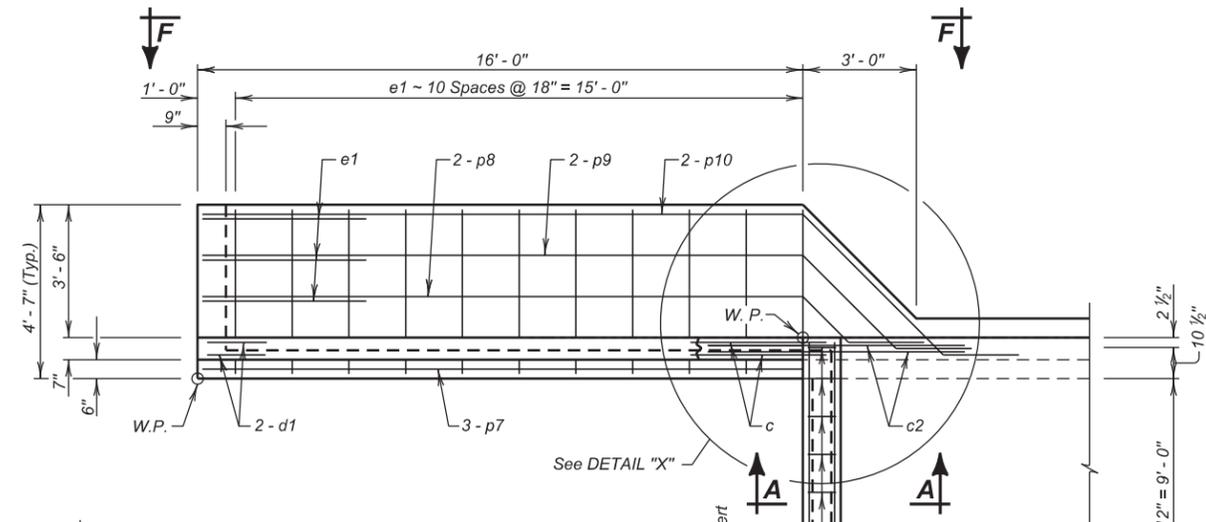
**BREAKOUT AND DOWEL PLACEMENT DETAILS**  
FOR  
**10' X 8' BOX CULVERT EXTENSION**  
OVER DRAW 0° SKEW  
STA. 503 + 55.00 SEC. 27-T103N-R61W  
STR. NO. 18-093-105 IM 0907(77)309  
HS 20-44

DAVISON COUNTY  
S. D. DEPT. OF TRANSPORTATION  
AUGUST 2025

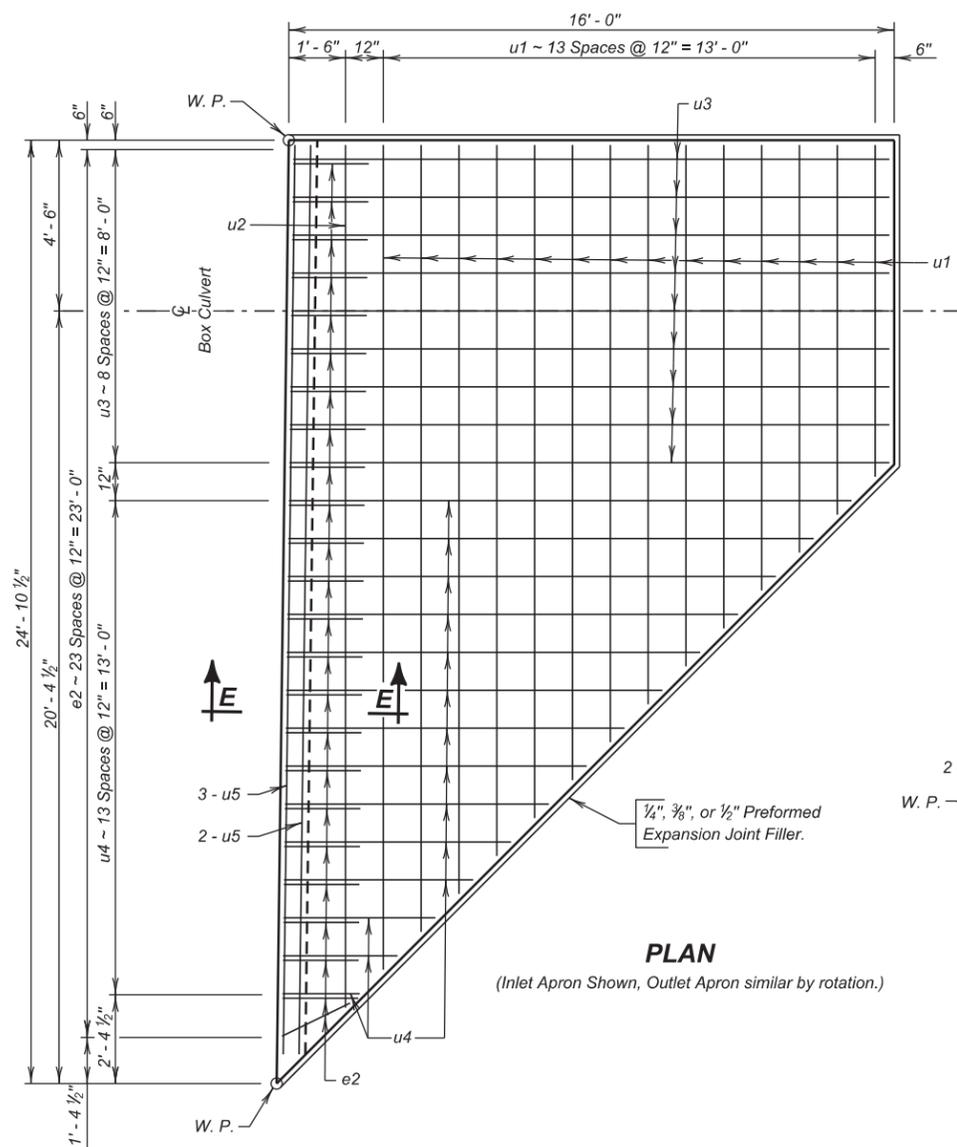
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0907(77)309	55	75



**SECTION E - E**

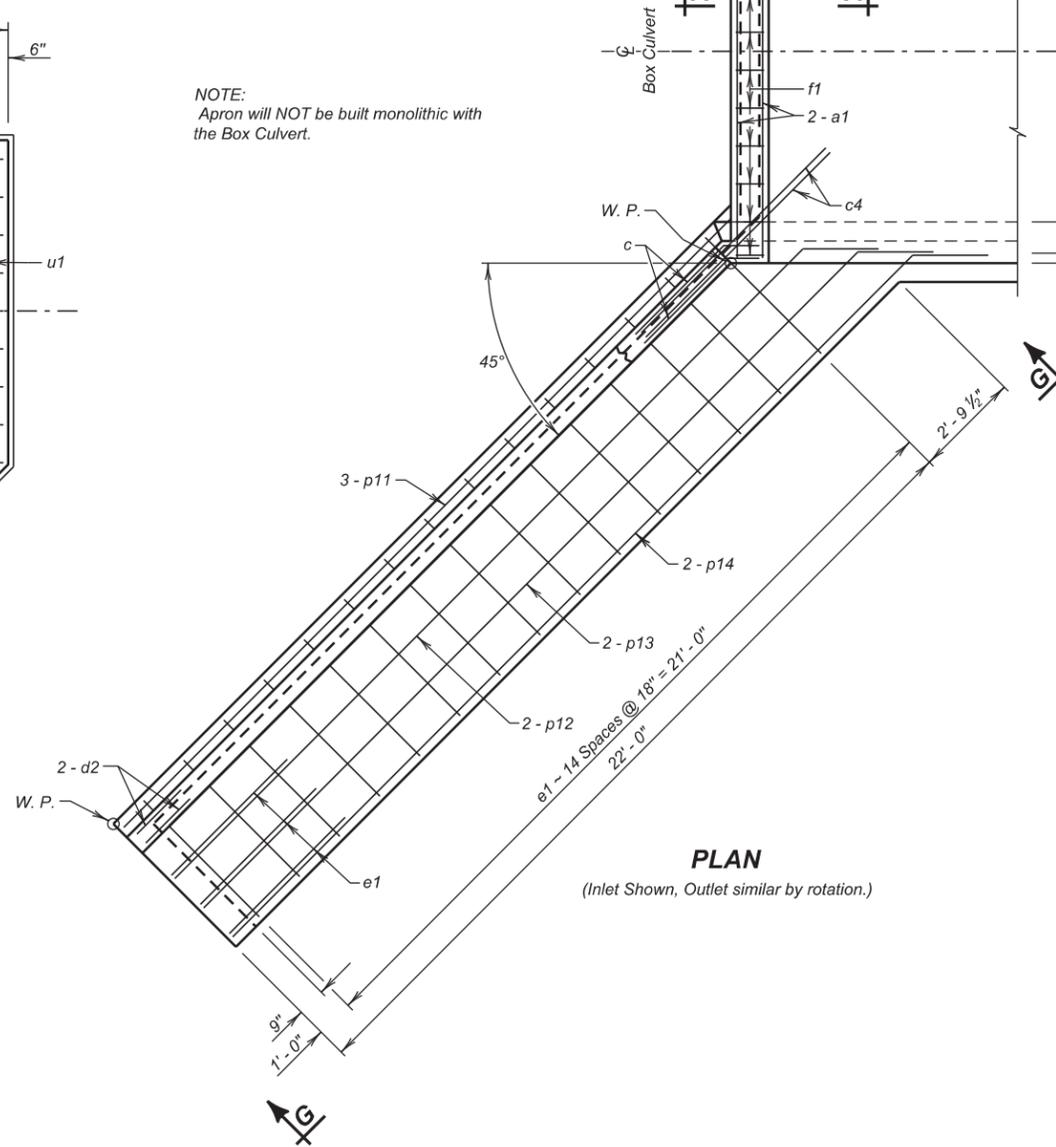


NOTE:  
Apron will NOT be built monolithic with the Box Culvert.



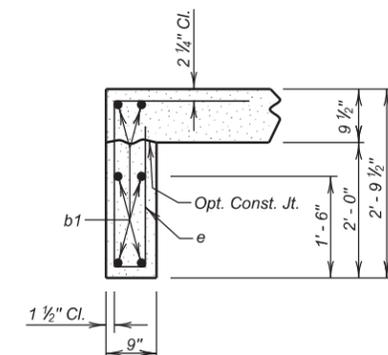
**PLAN**

(Inlet Apron Shown, Outlet Apron similar by rotation.)

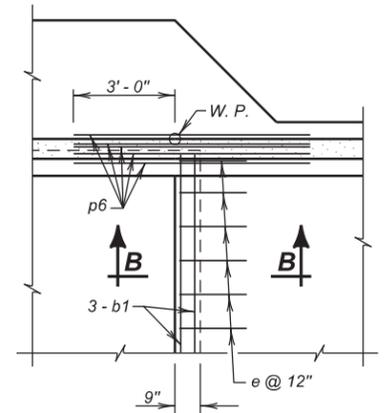


**PLAN**

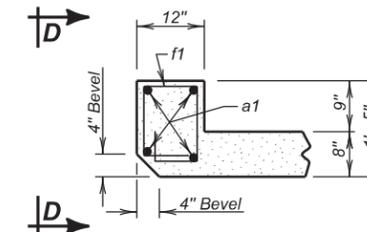
(Inlet Shown, Outlet similar by rotation.)



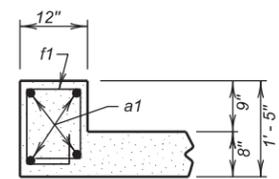
**SECTION B - B**



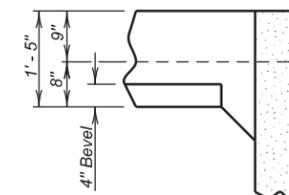
**DETAIL "X"**  
(At Bottom Slab)



**SECTION A - A**  
(At Top Slab - Inlet)



**SECTION A - A**  
(At Top Slab - Outlet)



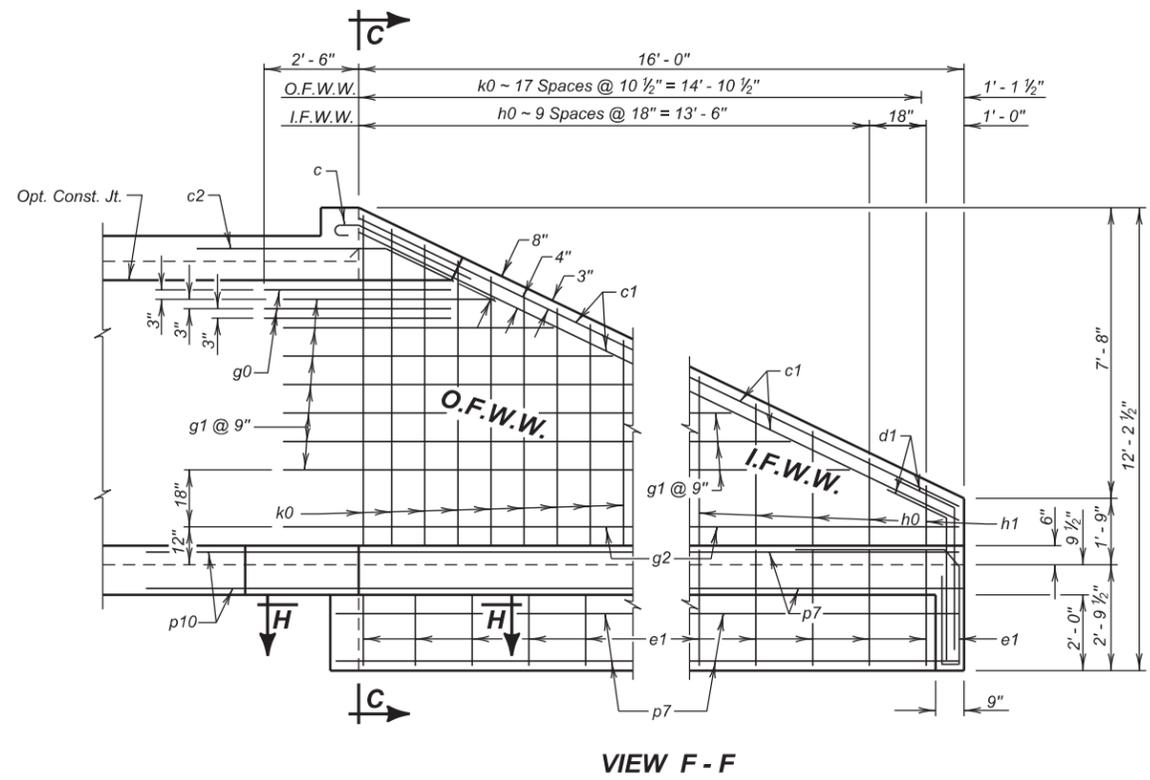
**VIEW D - D**  
(At Exterior Wall)

**INLET OR OUTLET DETAILS (A)**  
FOR

**10' X 8' BOX CULVERT EXTENSION**  
OVER DRAW 0° SKEW  
STA. 503 + 55.00 SEC. 27-T103N-R61W  
STR. NO. 18-093-105 IM 0907(77)309  
HS 20-44

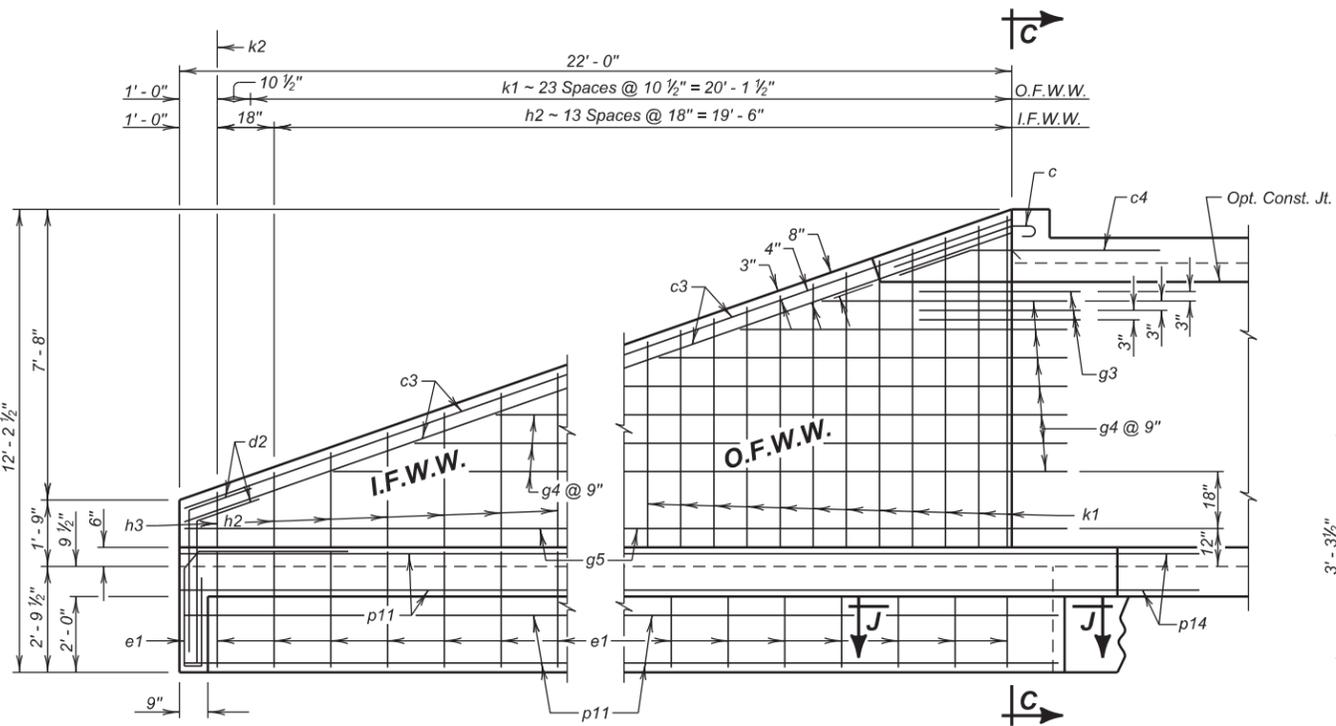
DAVISON COUNTY  
S. D. DEPT. OF TRANSPORTATION  
AUGUST 2025

DESIGNED BY JH DAVS034U	CK. DES. BY BM 034UHA04	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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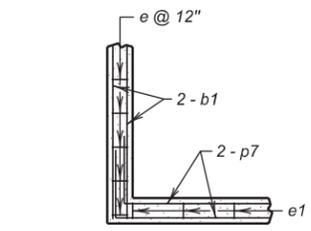


VIEW F - F

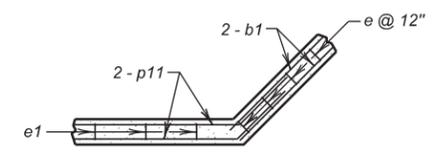
**LEGEND FOR PLACING RE-STEEL**  
 O. F. W. W. - Outside Face of Wing Wall  
 I. F. W. W. - Inside Face of Wing Wall



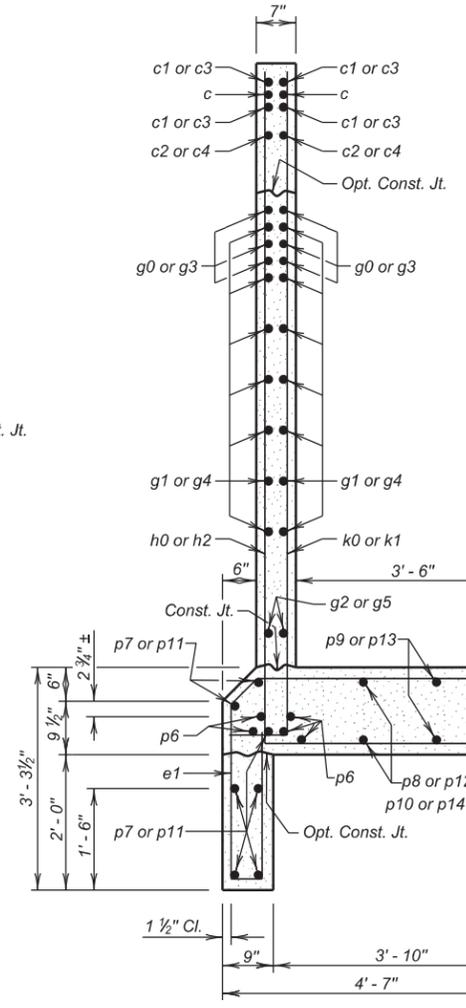
VIEW G - G



SECTION H - H



SECTION J - J



SECTION C - C

**REINFORCING SCHEDULE**  
(For One Inlet or One Outlet)

Mk.	No.	Size	Length	Type
a1	4	6	10' - 9"	Str.
b1	6	6	9' - 3"	Str.
c	4	5	4' - 6"	1A
c1	4	5	17' - 6"	Str.
c2	2	5	7' - 0"	19B
c3	4	5	23' - 3"	Str.
c4	2	5	7' - 0"	19B
d1	4	5	5' - 6"	19B
d2	4	5	5' - 6"	19B
e	9	4	7' - 0"	S12
e1	32	4	9' - 9"	S12A
f1	12	4	5' - 0"	S6A
g0	6	5	5' - 0"	Str.
g1	7	4	20' - 6"	Str.
g2	2	4	17' - 6"	Str.
g3	6	5	5' - 0"	19B
g4	7	4	27' - 0"	19B
g5	2	4	23' - 9"	19B
h0	5	4	20' - 9"	17A
h1	1	4	6' - 6"	17A
h2	7	4	20' - 6"	17A
h3	1	4	6' - 3"	17A
k0	9	4	14' - 3"	17A
k1	12	4	14' - 6"	17A
k2	1	4	3' - 6"	17A
p6	10	6	7' - 0"	Str.
p7	7	4	18' - 6"	Str.
p8	2	4	19' - 3"	Str.
p9	2	4	20' - 9"	Str.
p10	2	4	22' - 3"	Str.
p11	7	4	24' - 6"	Str.
p12	2	4	24' - 9"	Str.
p13	2	4	25' - 9"	Str.
p14	2	4	27' - 0"	Str.
APRON				
e2	24	4	8' - 6"	S12
u1	7	4	30' - 6"	Str.
u2	1	4	22' - 9"	Str.
u3	9	4	15' - 9"	Str.
u4	7	4	16' - 9"	Str.
u5	5	4	24' - 3"	Str.

**Bending Details**

**NOTES:**  
 All dimensions are out to out of bars.  
 ☐ See cutting diagram.  
 \* Bend in field as necessary to fit.

ESTIMATED QUANTITIES			
ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Inlet	17.9	1913	9.3
Inlet Apron	6.7	548	6.7
Outlet	17.9	1913	9.3
Outlet Apron	6.7	548	6.7

**INLET OR OUTLET DETAILS (B)**  
 FOR  
**10' X 8' BOX CULVERT EXTENSION**  
 OVER DRAW 0° SKEW  
 STA. 503 + 55.00 SEC. 27-T103N-R61W  
 STR. NO. 18-093-105 IM 0907(77)309  
 HS 20-44

DAVISON COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 AUGUST 2025

### REINFORCING SCHEDULE

(For One F5 Barrel End Section)

Mk.	No.	Size	Length	Type
f1	12	4	5'-0"	S6A
h5	22	4	9'-9"	17A
j5	13	4	10'-0"	Str.
k5	34	5	14'-3"	17
m5	17	6	12'-0"	Str.
n5	20	6	11'-0"	Str.
p5	66	4	9'-6"	Str.
z2	24	6	2'-3"	Str.

**Bending Details**

**OPTIONAL k5 SPLICE DETAIL**

Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel shall be borne by the Contractor.

**NOTES:**  
 All dimensions are out to out of bars.  
 Request for additional reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.  
 \* Quantity of z2 bars is not included in reinforcing steel. See BREAKOUT AND DOWEL PLACEMENT DETAILS Sheet.

### ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu.Yd.	Lb.	Cu.Yd.
2 - F5 Barrel End Sections @ 9' - 0"	18.9	3664	7.0

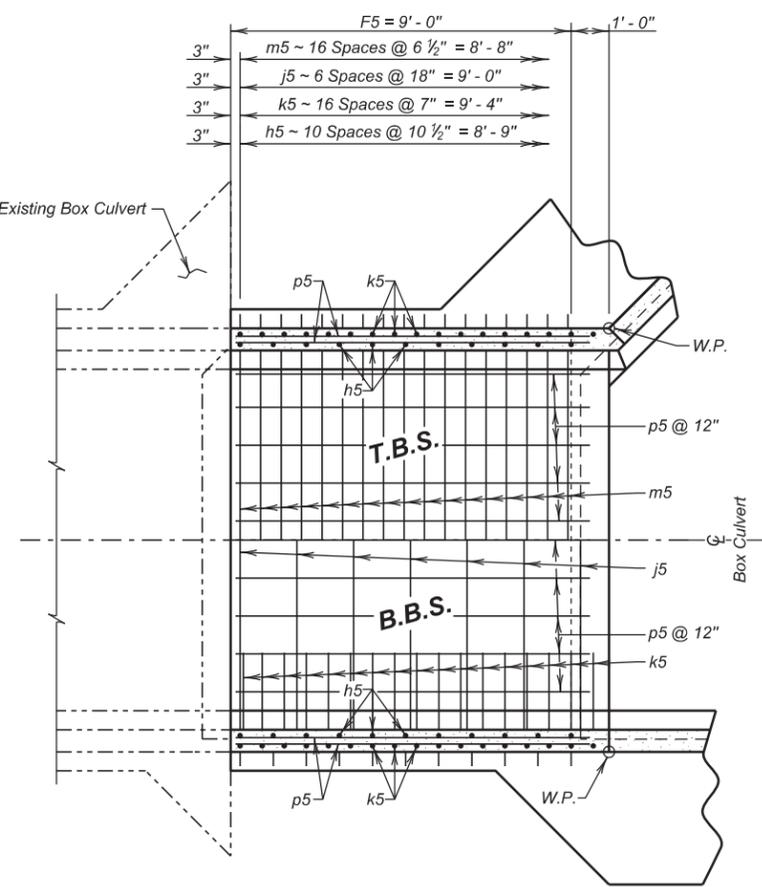
### LEGEND FOR PLACING RE-STEEL

T. T. S.	- Top of Top Slab
B. T. S.	- Bottom of Top Slab
T. B. S.	- Top of Bottom Slab
B. B. S.	- Bottom of Bottom Slab
O. F. W.	- Outside Face of Wall
I. F. W.	- Inside Face of Wall

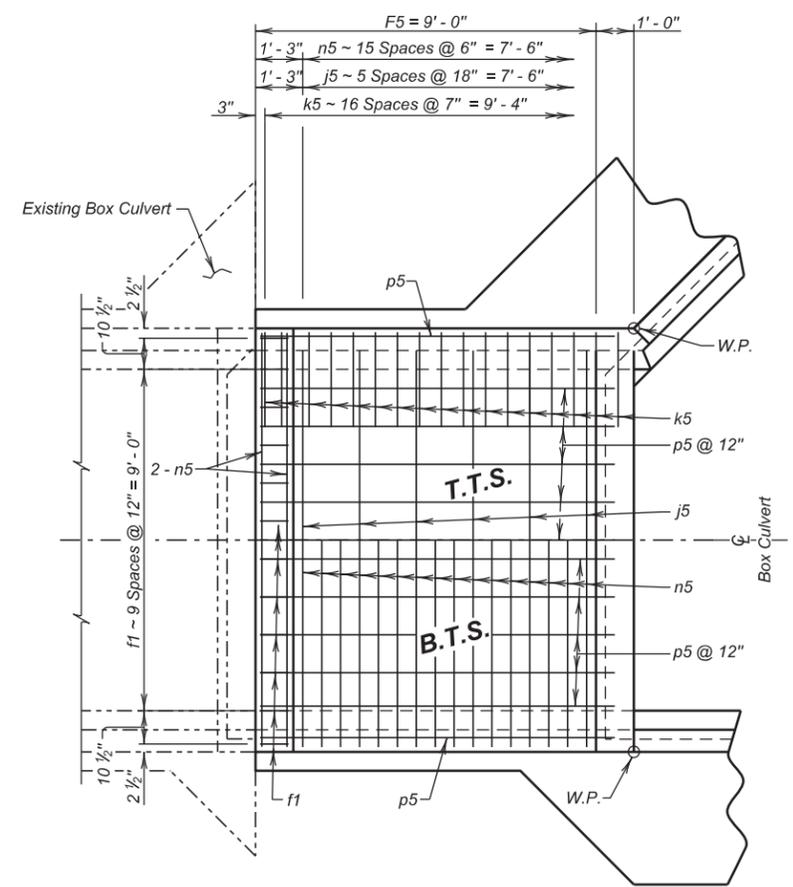
**F5 BARREL END SECTION DETAILS (9' - 0")**  
 FOR  
**10' X 8' BOX CULVERT EXTENSION**  
 OVER DRAW 0° SKEW  
 STA. 503 + 55.00 SEC. 27-T103N-R61W  
 STR. NO. 18-093-105 IM 0907(77)309  
 HS 20-44

DAVISON COUNTY  
 S. D. DEPT. OF TRANSPORTATION  
 AUGUST 2025

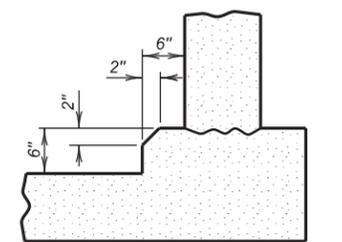
DESIGNED BY JH DAVS034U	CK. DES. BY BM 034UHA06	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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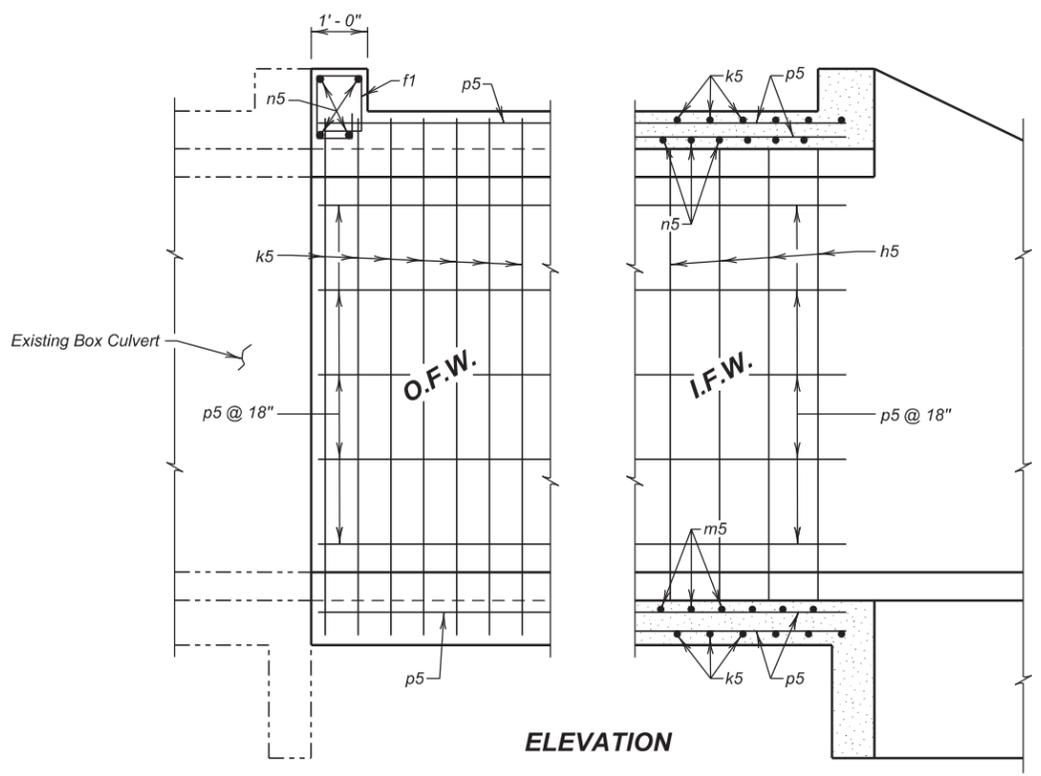
**PLAN**  
(Outlet Shown - Bottom Slab)



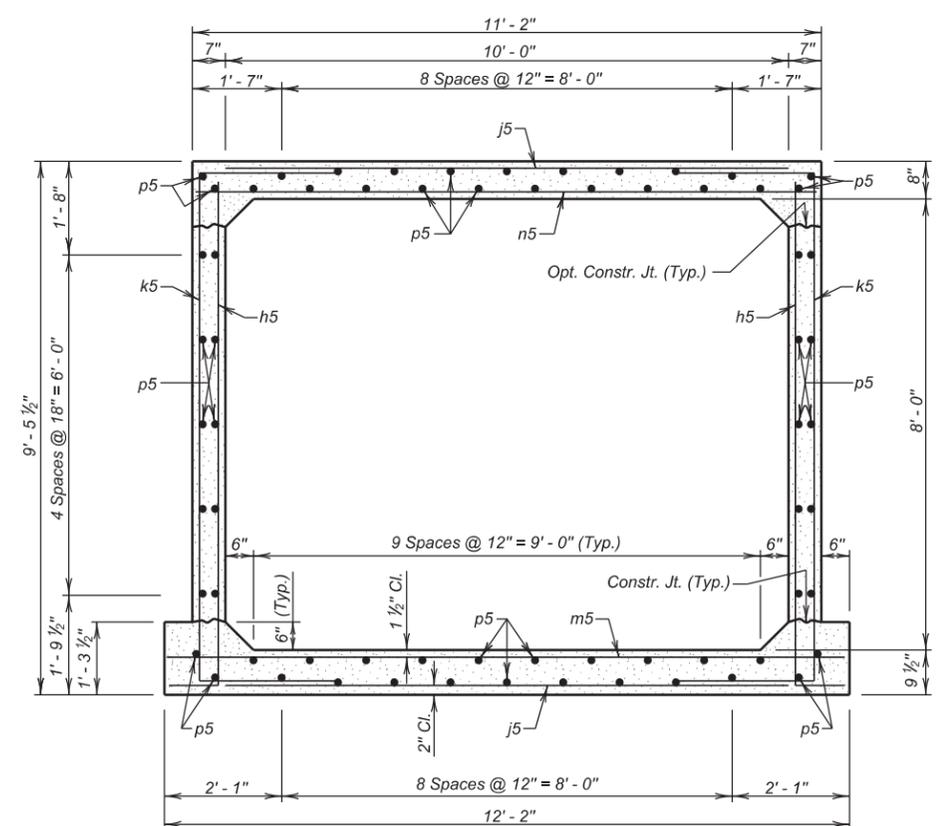
**PLAN**  
(Outlet Shown - Top Slab)



**OPTIONAL FILLET DETAIL**  
(At Bottom Slab)  
 Note: Contractor may form the optional full fillet, with 2" Chamfer, as detailed. The cost of the additional concrete shall be borne by the Contractor.

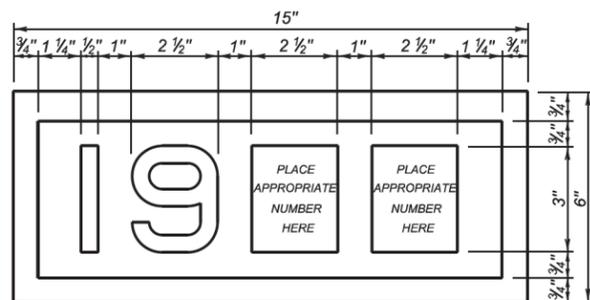


**ELEVATION**

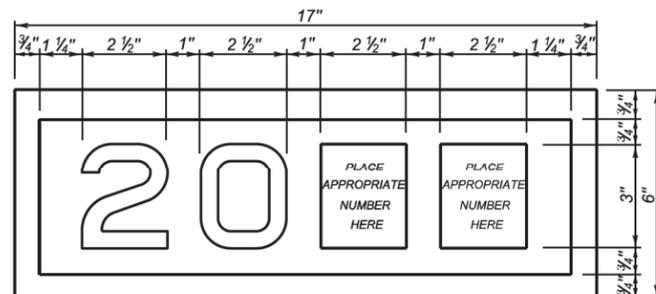


**F5 BARREL SECTION**  
(5' - 0" Maximum Fill)

**YEAR PLATE  
DETAILS FOR  
ORIGINAL CONSTRUCTION**

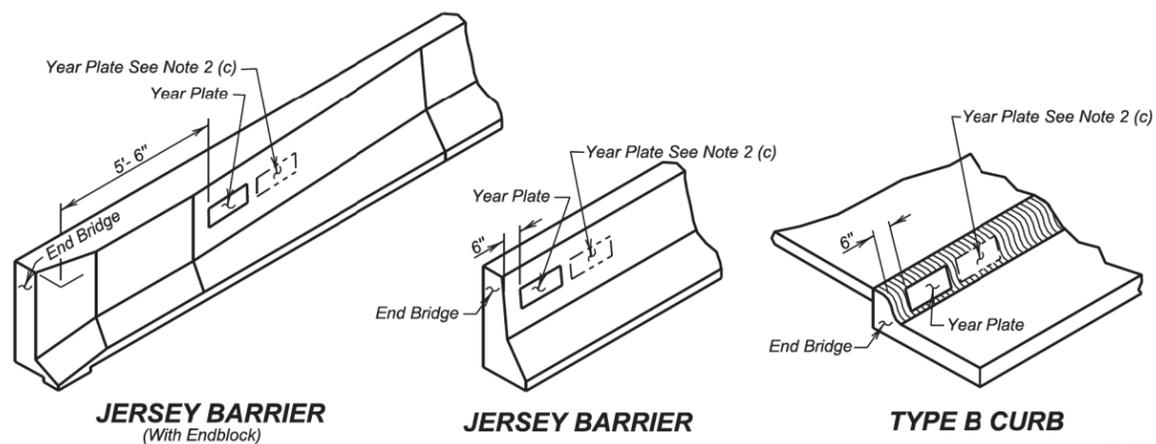


**YEAR PLATE  
DETAILS FOR  
NEW CONSTRUCTION**



**GENERAL NOTES:**

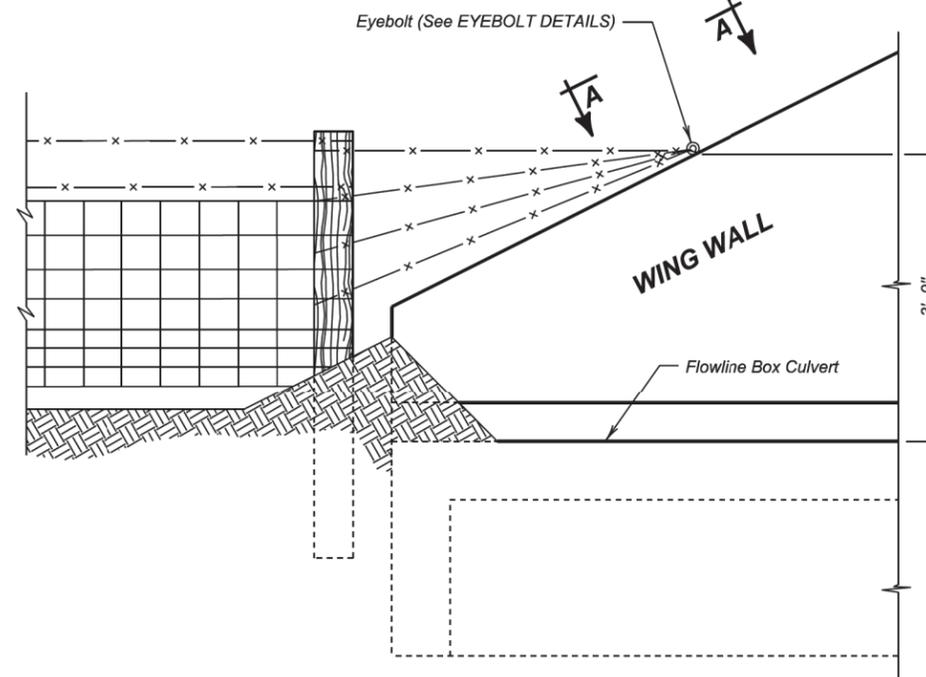
- Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
- Year plates shall be located on structure(s) as follows:
  - On cast-in-place box culverts the year plates shall be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
  - On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'-6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
  - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



June 26, 2012

<b>S D D O T</b>	<b>DUAL DATE YEAR PLATE DETAILS</b>	PLATE NUMBER 460.03
		Sheet 1 of 1

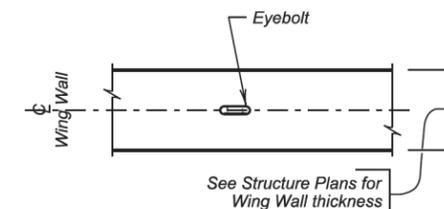
Published Date: 2026



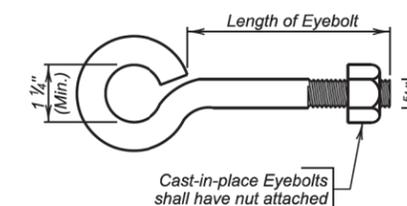
**DETAIL FOR FENCE ANCHORS**

**GENERAL NOTES:**

- The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
- Eyebolts shall be placed on all of the box culvert wing walls.
- Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
- Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
- Cast-in-place eyebolts shall have a nut attached, be 4 1/2 inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the 5/8 inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
- The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



**VIEW A - A**



**EYEBOLT DETAILS**

December 23, 2012

<b>S D D O T</b>	<b>FENCE ANCHORS FOR BOX CULVERT WING WALLS</b>	PLATE NUMBER 620.16
		Sheet 1 of 1

Published Date: 2026

# EROSION & SEDIMENT CONTROL & PIPE EXTENSION AT STR. NO. 02-171-163 MRM 309.60 STA. 917+45

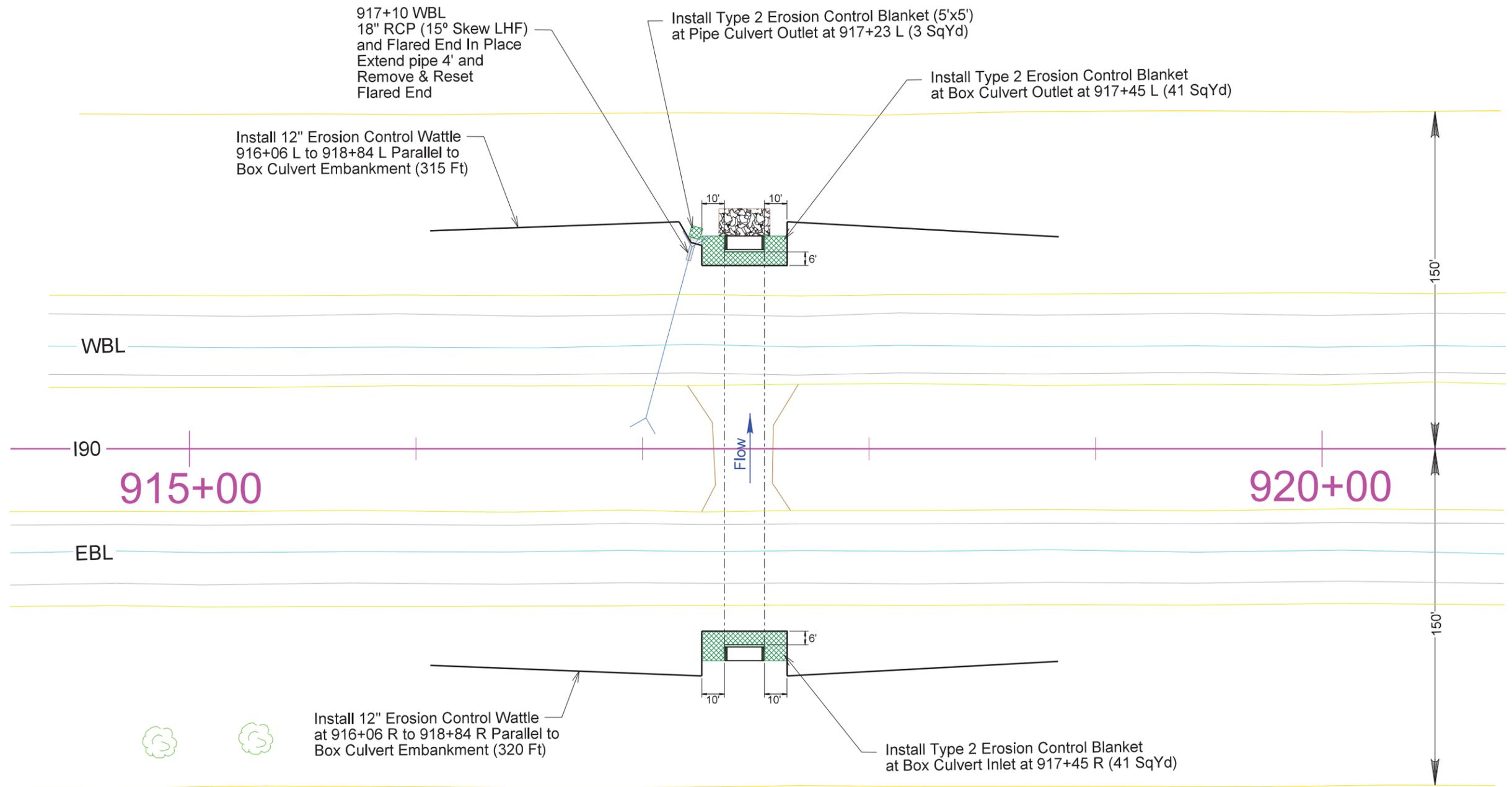
STATE OF SOUTH DAKOTA	PROJECT IM 0907(77)309	SHEET 59	TOTAL SHEETS 75
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Plotting Date: 01/16/2026



PLOT SCALE - 1:50

PLOT NAME - 3



PLOTTED FROM - TRMLINT15

FILE - ... \PRJ2026\AUR0034\U91745.DGN

# EROSION & SEDIMENT CONTROL AT STR. NO. 02-186-165 MRM 311.05 STA. 994+00

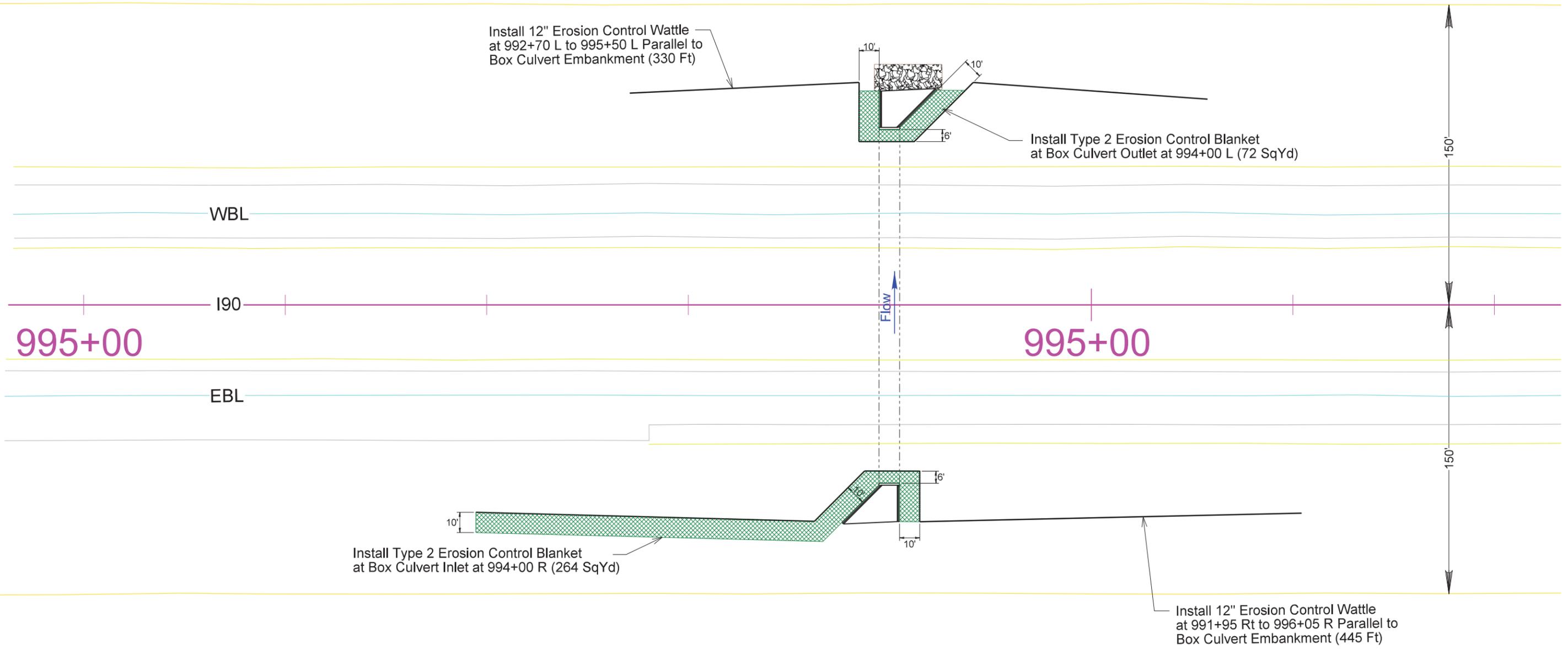
STATE OF SOUTH DAKOTA	PROJECT IM 0907(77)309	SHEET 60	TOTAL SHEETS 75
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Plotting Date: 01/16/2026



PLOT SCALE - 1:50

PLOT NAME - 4



PLOTTED FROM - TRMLINT15

FILE - ... \PRJ2026\AUR0034\U99400.DGN

# EROSION & SEDIMENT CONTROL & FENCING AT STR. NO. 02-223-165 MRM 314.64 STA. 183+50

STATE OF SOUTH DAKOTA	PROJECT IM 0907(77)309	SHEET 61	TOTAL SHEETS 75
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Plotting Date: 01/16/2026

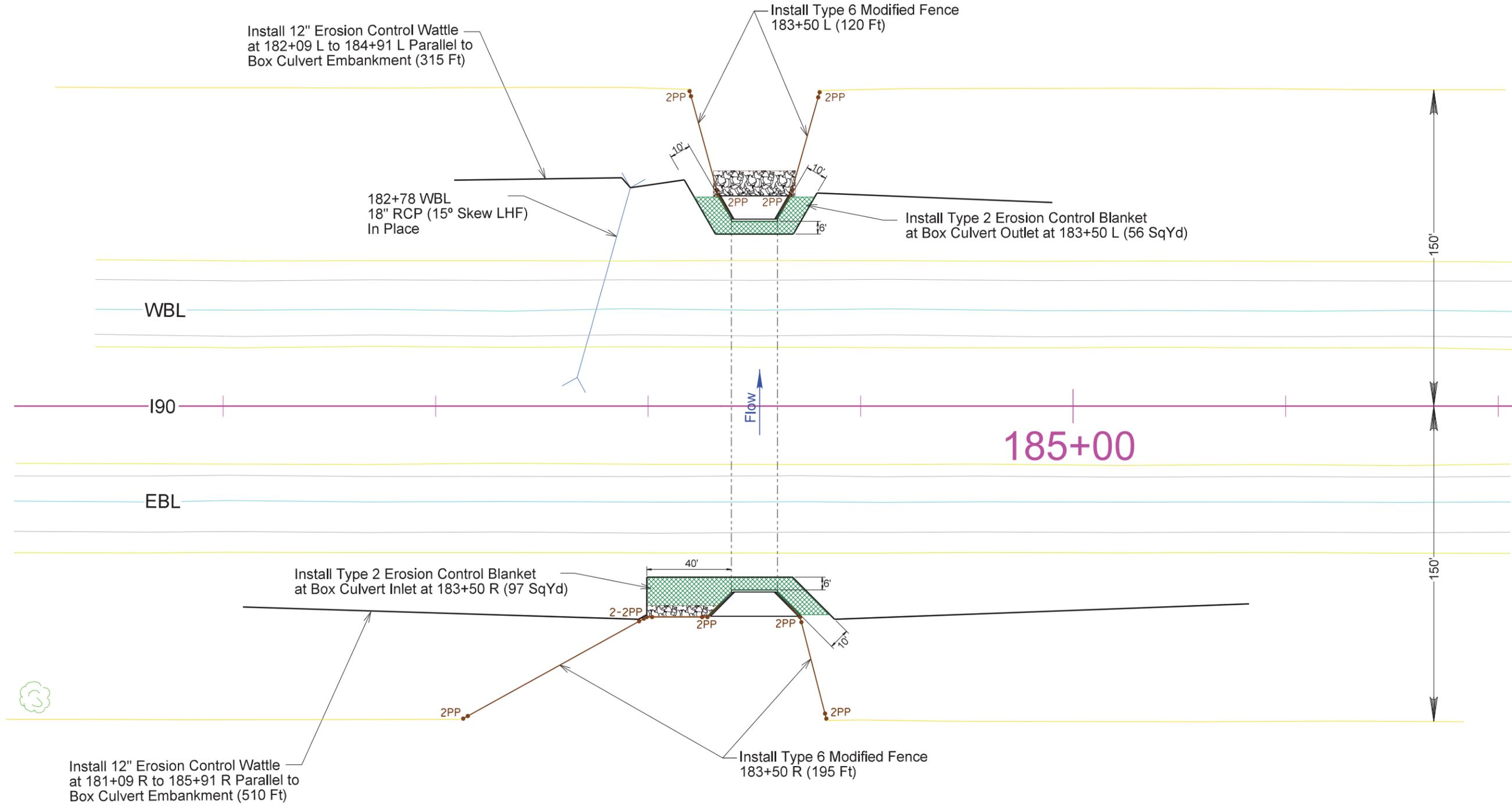
PLOT SCALE - 1:50



PLOT NAME - 5

FILE - ... \PRJ2026\AUR0034\U\18350.DGN

PLOTTED FROM - TRMLINT15



# EROSION & SEDIMENT CONTROL AT STR. NO. 02-231-165 MRM 315.56 STA. 232+00

STATE OF SOUTH DAKOTA	PROJECT IM 0907(77)309	SHEET 62	TOTAL SHEETS 75
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Plotting Date: 01/16/2026

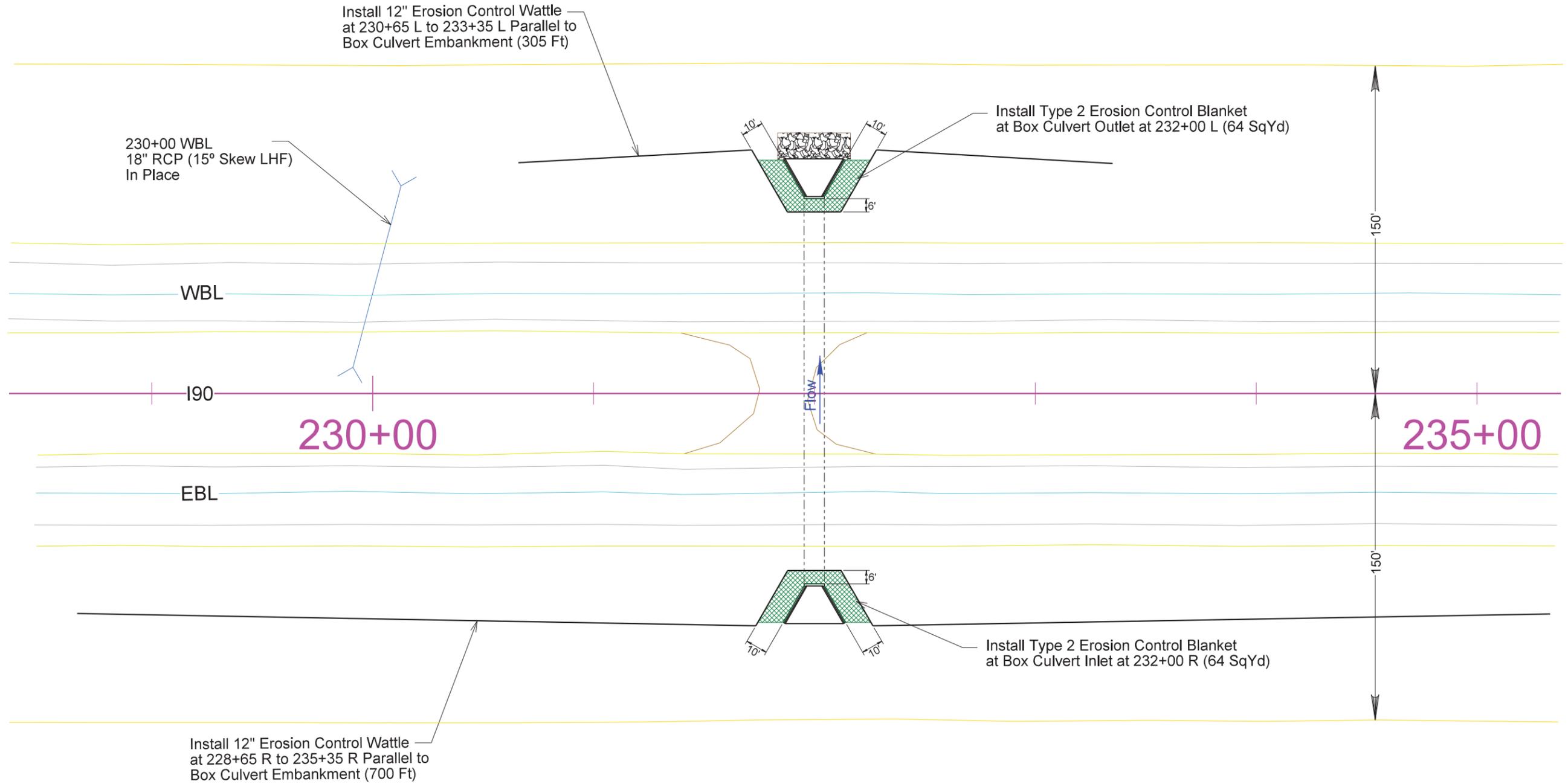


PLOT SCALE - 1:50

PLOT NAME - 6

FILE - ... \PRJ2026\AUR0034U\23200.DGN

PLOTTED FROM - IRMLINT15



# EROSION & SEDIMENT CONTROL, FENCING & CONCRETE LIVESTOCK PATH REMOVAL & PLACEMENT AT STR. NO. 18-093-105 MRM 325.78 STA. 503+55

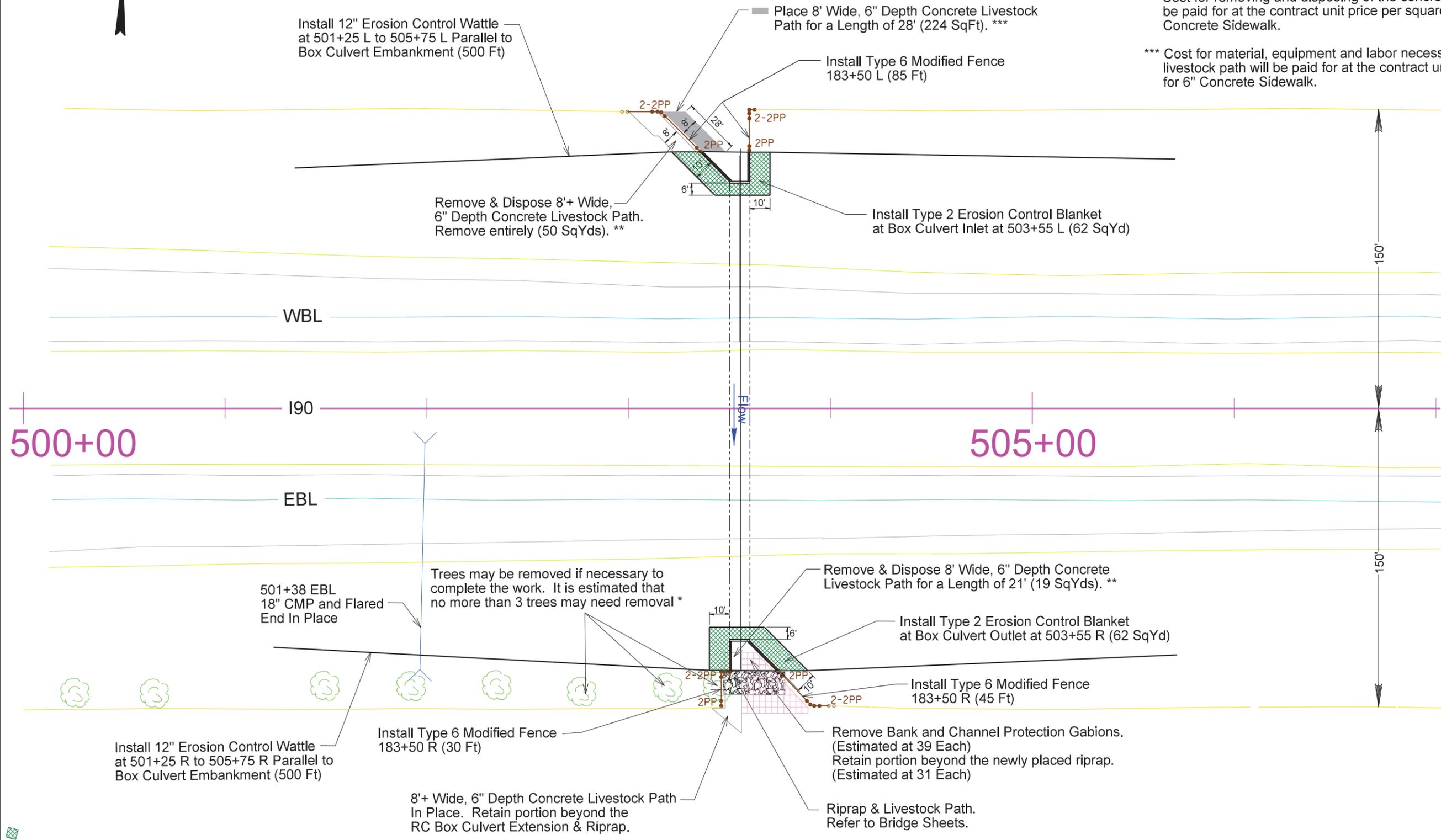
STATE OF SOUTH DAKOTA	PROJECT IM 0907(77)309	SHEET 63	TOTAL SHEETS 75
Plotting Date: 01/16/2026		Rev 1/16/26 MR	



PLOT SCALE - 1:50

PLOT NAME - 7

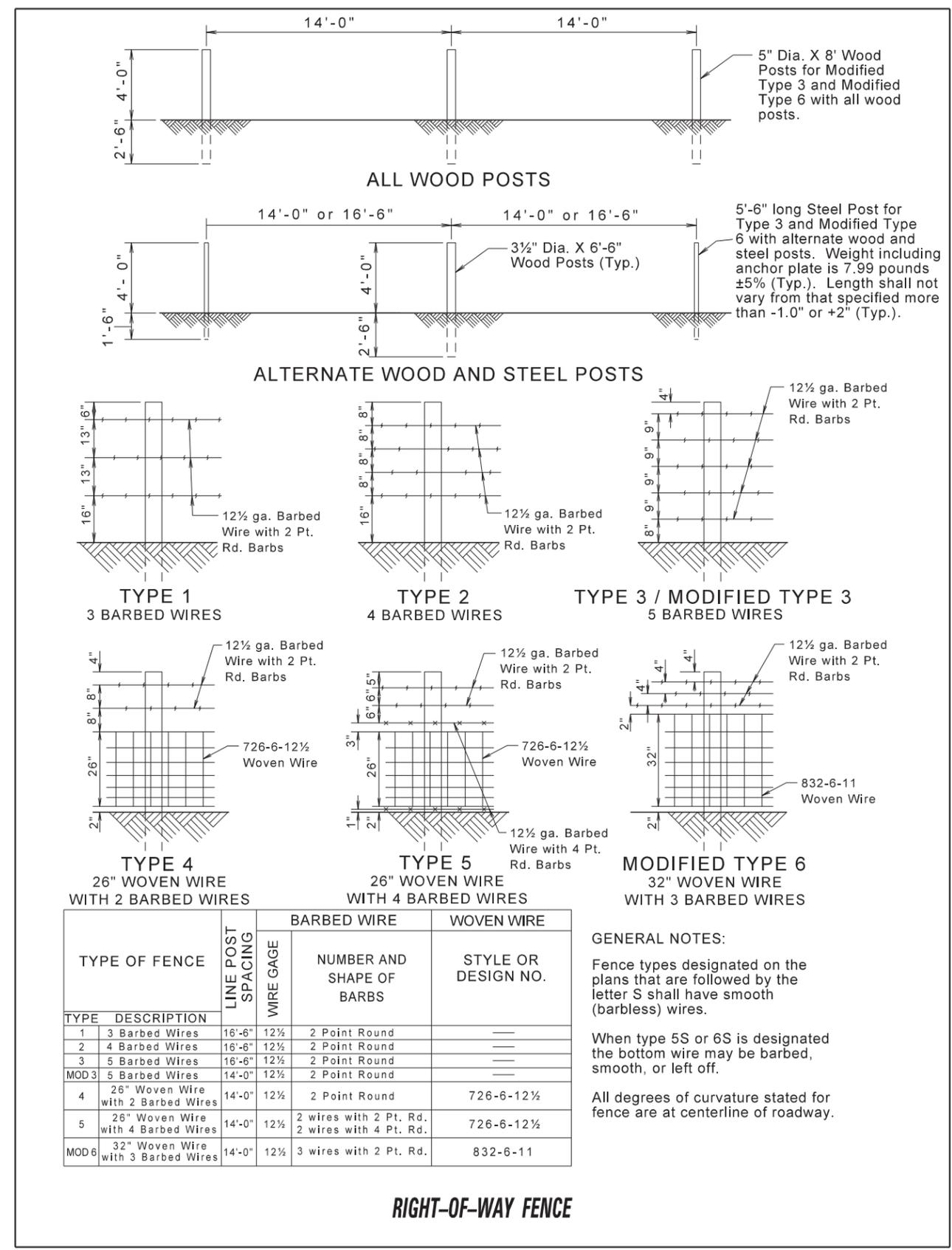
- \* Cost for tree removal and disposal will be included in the contract unit price per each for Clear and Grub Tree.
- \*\* Cost for removing and disposing of the concrete livestock path will be paid for at the contract unit price per square yard for Remove Concrete Sidewalk.
- \*\*\* Cost for material, equipment and labor necessary to install the concrete livestock path will be paid for at the contract unit price per square foot for 6" Concrete Sidewalk.



PLOTTED FROM - TRMLINT15

FILE - ... \PRJ2026\AUPR0034U\50355.DGN

PLOT SCALE - 1:8000



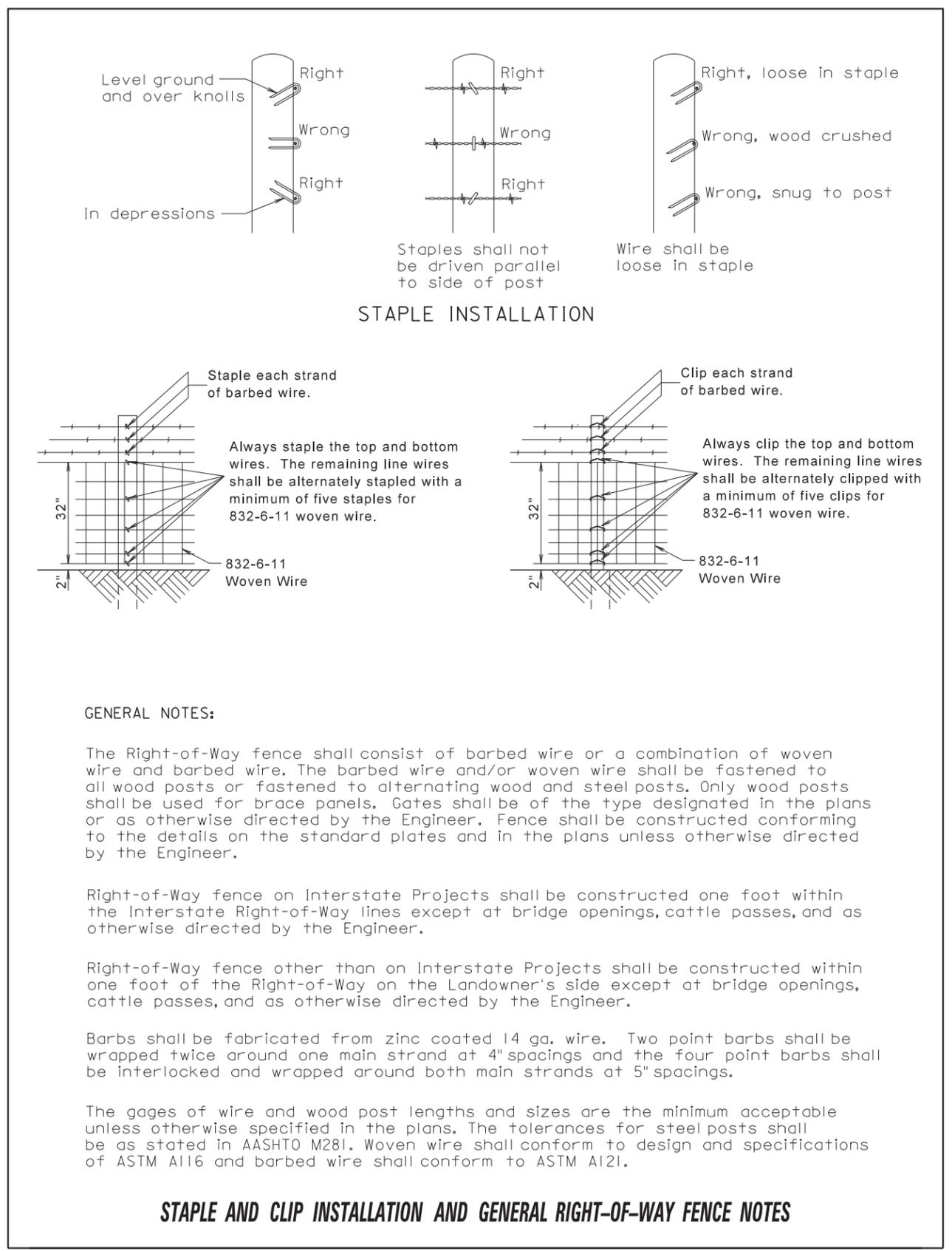
TYPE	DESCRIPTION	LINE POST SPACING	WIRE GAGE	BARBED WIRE		WOVEN WIRE
				NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.	
1	3 Barbed Wires	16'-6"	12½	2 Point Round	---	---
2	4 Barbed Wires	16'-6"	12½	2 Point Round	---	---
3	5 Barbed Wires	16'-6"	12½	2 Point Round	---	---
MOD 3	5 Barbed Wires	14'-0"	12½	2 Point Round	---	---
4	26" Woven Wire with 2 Barbed Wires	14'-0"	12½	2 Point Round	---	726-6-12½
5	26" Woven Wire with 4 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 2 wires with 4 Pt. Rd.	---	726-6-12½
MOD 6	32" Woven Wire with 3 Barbed Wires	14'-0"	12½	3 wires with 2 Pt. Rd.	---	832-6-11

**RIGHT-OF-WAY FENCE**

**GENERAL NOTES:**  
 Fence types designated on the plans that are followed by the letter S shall have smooth (barbless) wires.  
 When type 5S or 6S is designated the bottom wire may be barbed, smooth, or left off.  
 All degrees of curvature stated for fence are at centerline of roadway.

PLOT NAME - 8

FILE - ... \AG2001SP & 62002SP.DGN



**STAPLE AND CLIP INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES**

Published Date: 2026	
<b>S D D O T</b>	<p><b>INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS</b></p>
Sheet 1 of 2	<p>September 14, 2018                  PLATE NUMBER  <b>120.05</b></p>

**TYPE 1 INSLOPE TRANSITION**

**GENERAL NOTES:**

This Type 1 Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

\* Transition from the typical inslope to the inslope at the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned gradually to the slope necessary adjacent to the RCBC wing wall or pipe culvert end section within the transition length necessary for the transition within the clear zone.

Published Date: 2026	
<b>S D D O T</b>	<p><b>INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS</b></p>
Sheet 2 of 2	<p>September 14, 2018                  PLATE NUMBER  <b>120.05</b></p>

**TYPE 2 INSLOPE TRANSITION**

**GENERAL NOTES:**

This Type 2 Inslope Transition is used when the specified inslope at the pipe or RCBC is flatter than a 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

\* Transition from Inslope at drainage structure to a 6 : 1 inslope and 3:1 inslope.

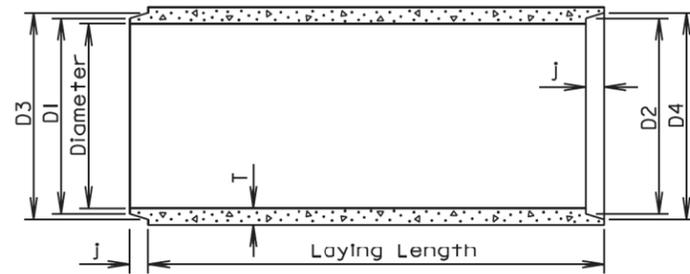
\*\* Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
IM 0907(77)309	IM 0907(77)309	65	75
Plotting Date: 12/22/2025			

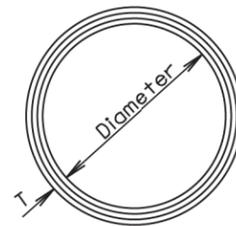
Plotting Date: 12/22/2025

**TOLERANCES IN DIMENSIONS**

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



LONGITUDINAL SECTION



END VIEW

**GENERAL NOTES:**

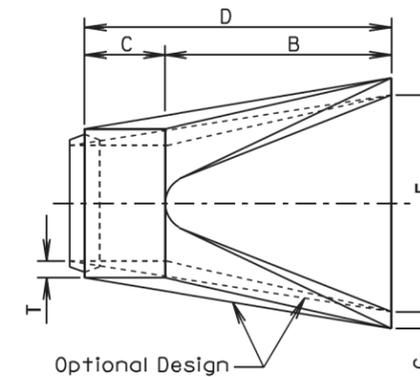
Construction of R.C.P. shall conform to the requirements of Section 990 of the Specifications.

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.

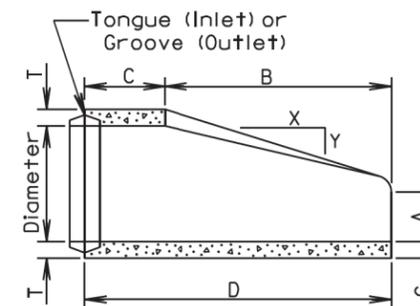
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	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 7/8	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

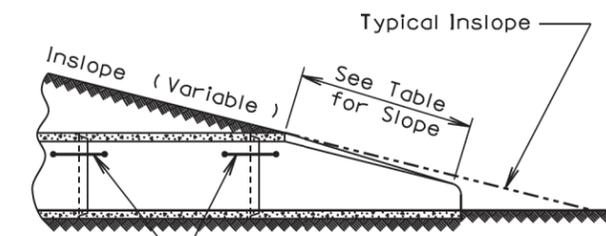
<b>S D D O T</b>	<b>REINFORCED CONCRETE PIPE</b>	PLATE NUMBER <b>450.01</b>
	Published Date: 2026	Sheet 1 of 1



TOP VIEW



LONGITUDINAL SECTION



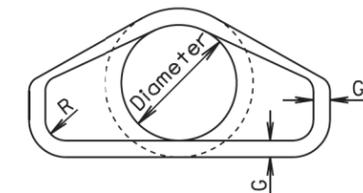
See Standard Plate 450.18  
(TIE BOLTS FOR R.C.P. AND R.C.P. ARCH)

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.



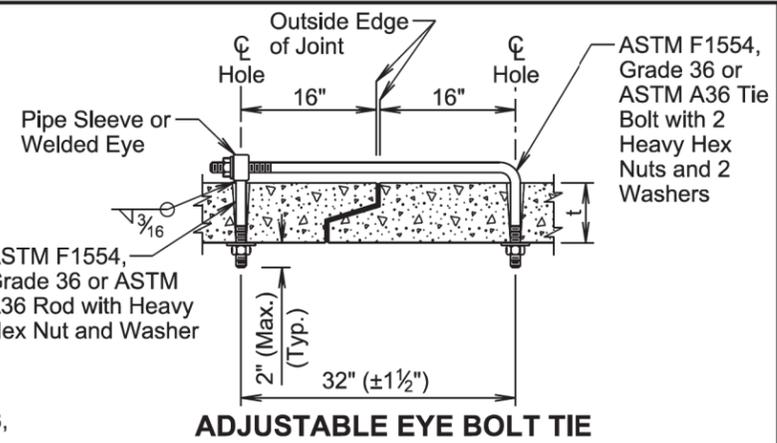
END VIEW

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 7/8	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

<b>S D D O T</b>	<b>R. C. P. FLARED ENDS</b>	PLATE NUMBER <b>450.10</b>
	Published Date: 2026	Sheet 1 of 1

Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3¼	5/8	¾
3½-6½	¾	1
≥ 7	1	1¼



**ADJUSTABLE EYE BOLT TIE**

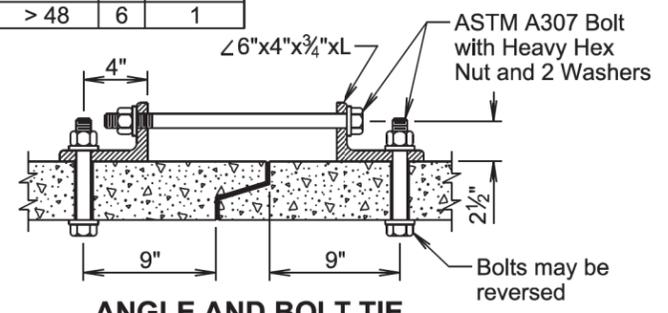
**GENERAL NOTES:**

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

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

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

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	¾
> 48	6	1



**ANGLE AND BOLT TIE**

**GENERAL NOTES:**

Angles will conform to ASTM A36.

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

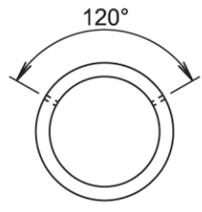
Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.

**GENERAL NOTES:**

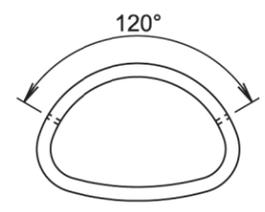
In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

All pipe sections of R.C.P. and R.C.P. Arch will 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, manholes, and junction boxes will 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 will be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.



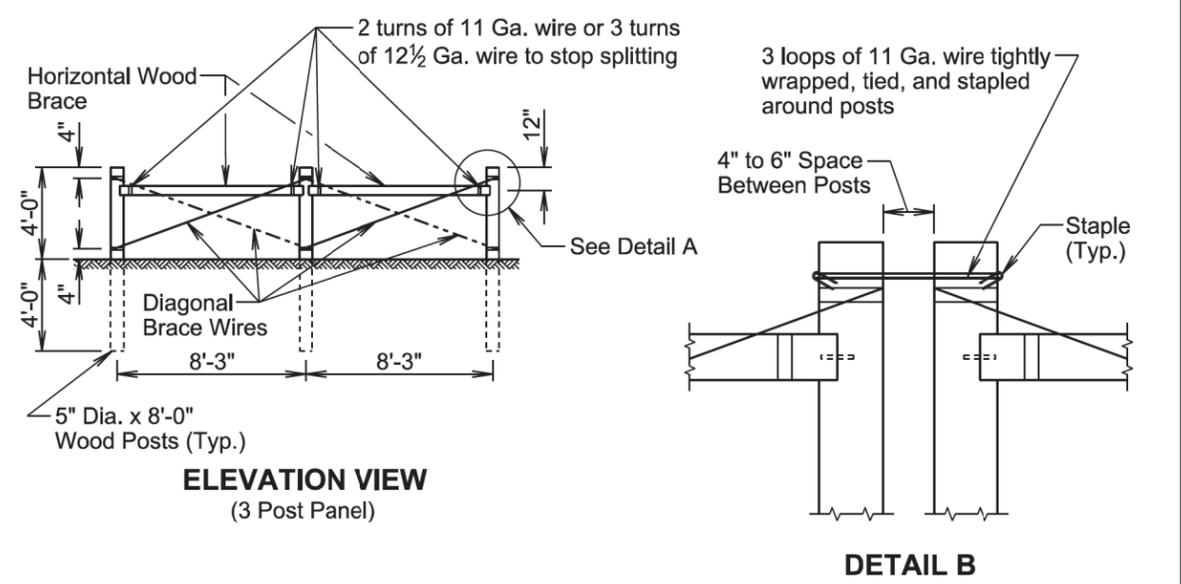
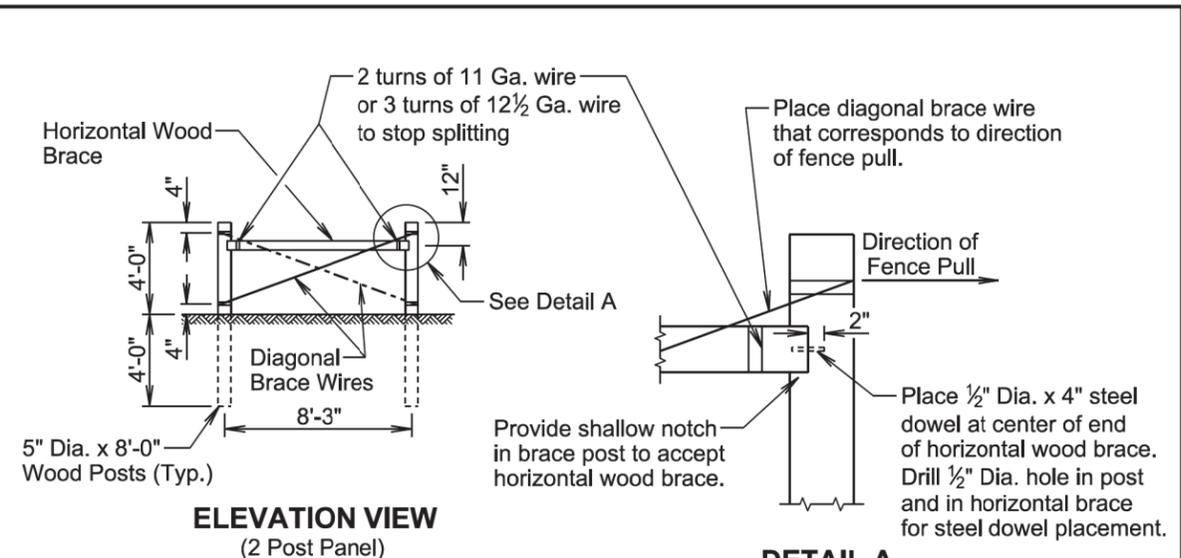
**END VIEW (Circular)**



**END VIEW (Arch)**

April 8, 2025

Published Date: 2026	<b>S D D O T</b>	<b>TIE BOLTS FOR R.C.P. AND R.C.P. ARCH</b>	PLATE NUMBER <b>450.18</b>
			Sheet 1 of 1



**GENERAL NOTES:**

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

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

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

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

March 31, 2024

<b>S D D O T</b>	<b>BRACE PANELS AND APPLICATIONS OF BRACE PANELS</b>	PLATE NUMBER <b>620.03</b>
		Sheet 1 of 3

Published Date: 2026

RADIUS OF CURVE	SPACING OF 2 POST PANEL
Greater than 1800 Ft.	** 1320'
Less than 1800 Ft.	** At P.C., P.T., and at every 1320' between P.C. and P.T.

**GENERAL NOTE:**

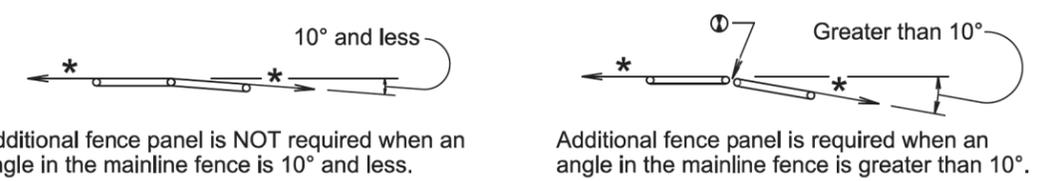
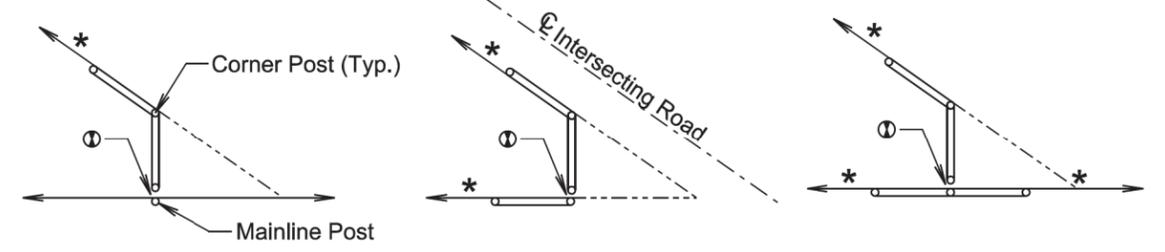
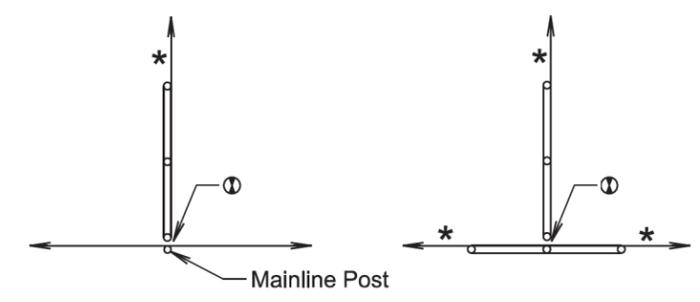
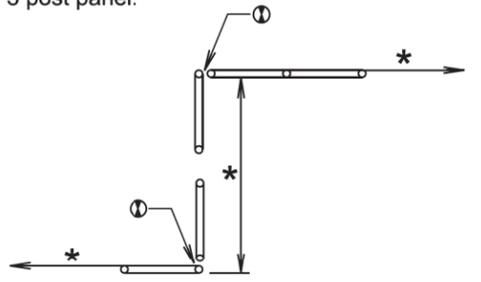
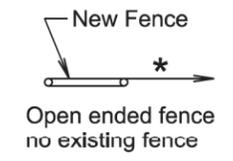
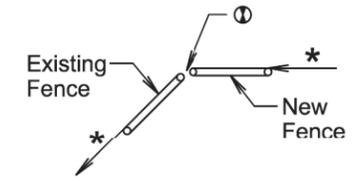
All radius of curvature stated for fence are at centerline of roadway.

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.



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°.

March 31, 2024

<b>S D D O T</b>	<b>BRACE PANELS AND APPLICATIONS OF BRACE PANELS</b>	PLATE NUMBER <b>620.03</b>
		Sheet 2 of 3

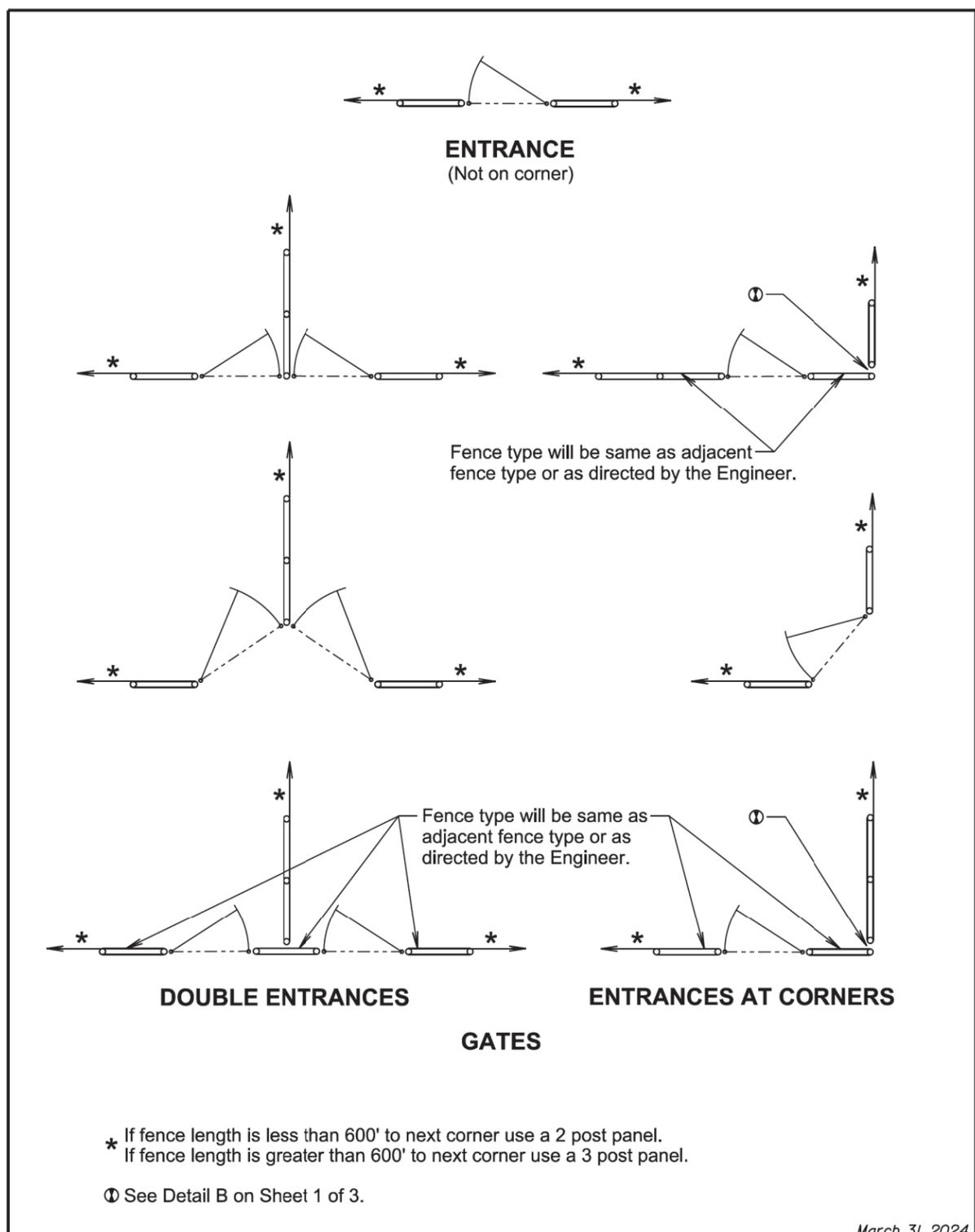
Published Date: 2026

PLOT SCALE - 1:200

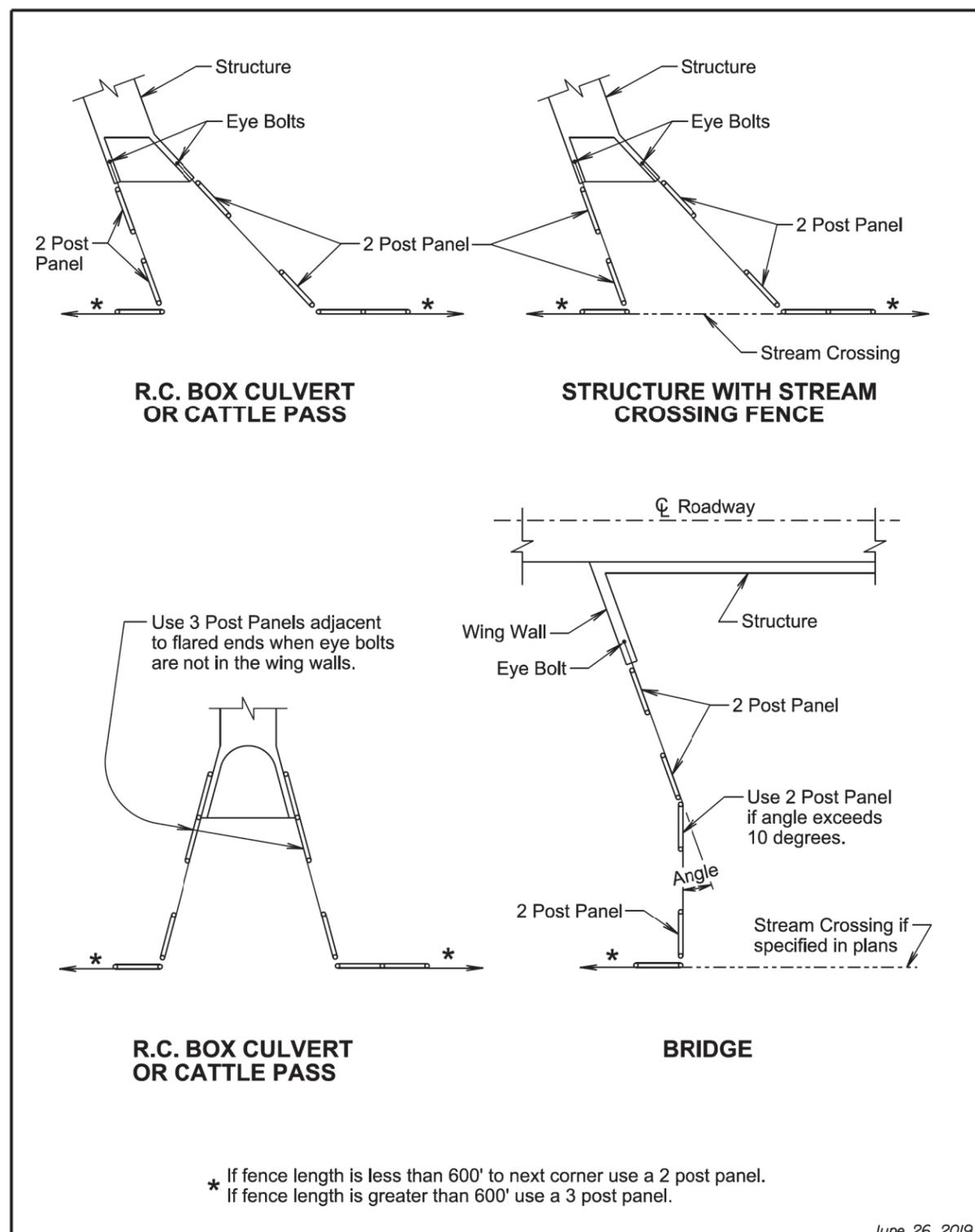
PLOT NAME - 5

FILE - ... \STD PLATES\STD 620 PLATES.DGN

PLOTTED FROM - TRMLINT15

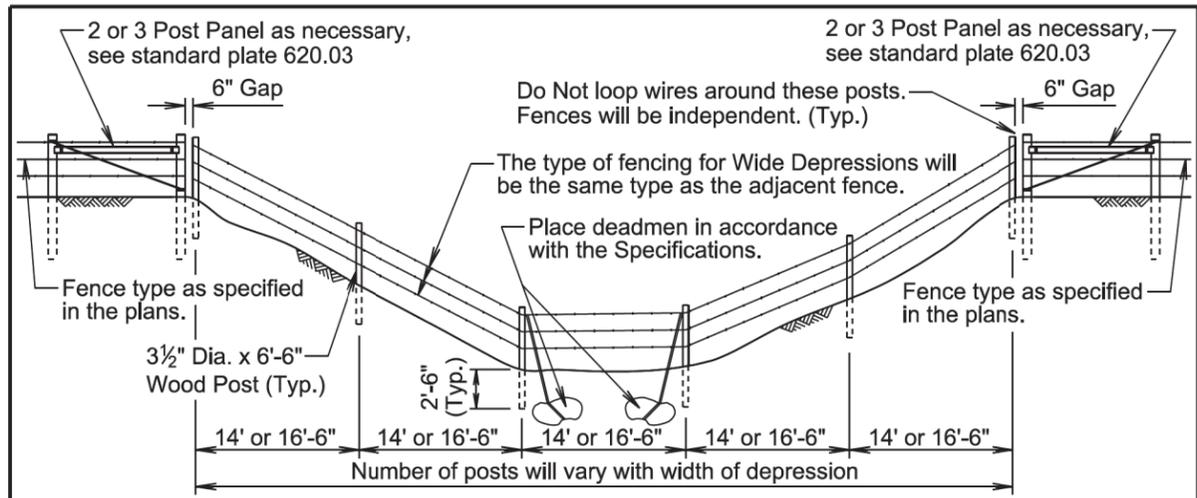


Published Date: 2026	S D D O T	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	March 31, 2024
			PLATE NUMBER 620.03
			Sheet 3 of 3

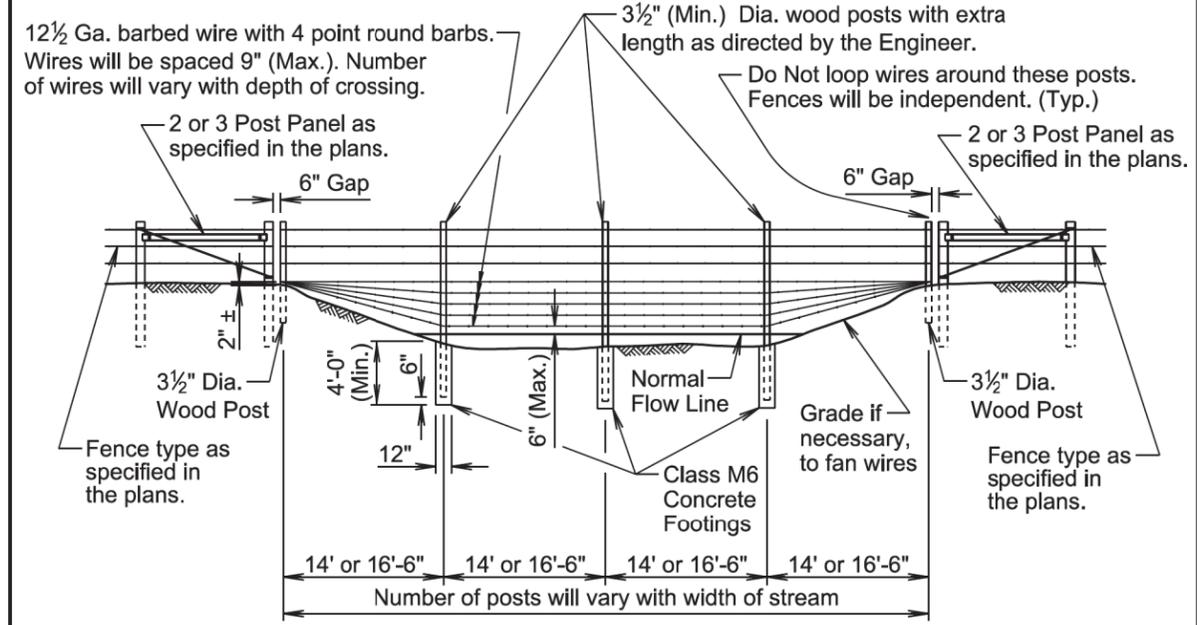


Published Date: 2026	S D D O T	BRACE PANEL APPLICATIONS AT STRUCTURES	June 26, 2019
			PLATE NUMBER 620.04
			Sheet 1 of 1

Plotting Date: 12/22/2025



This installation will be made when requested by the Engineer.  
**FENCING AT WIDE DEPRESSION**  
 (Subject to Flooding)



This installation will be made only when stated in the plans.  
**FENCING AT STREAM CROSSING**

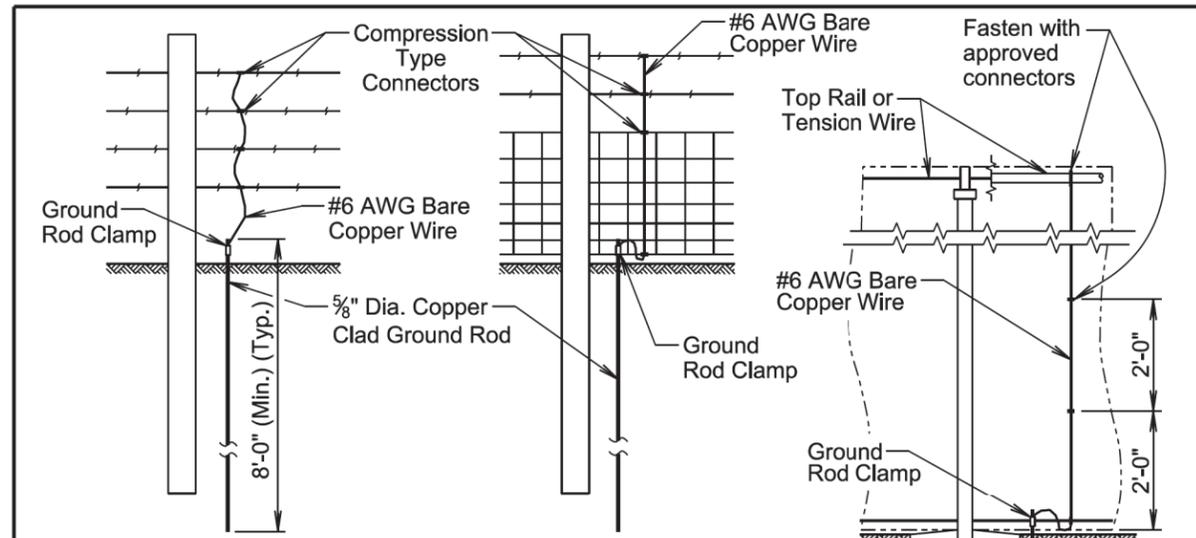
**GENERAL NOTES:**

There will be no extra payment for the additional work and materials required to construct the fencing at the wide depression(s) and/or the fencing at the stream crossing(s). The deadmen will be paid for in accordance with 620.5 A of the Specifications.

Measurement and payment for the fencing at the wide depression(s) and/or the fencing at the stream crossing(s) will be at the contract unit price per foot for the corresponding Right-of-Way fence contract item.

June 26, 2019

<b>S D D O T</b>	<b>FENCING AT WIDE DEPRESSION(S) AND STREAM CROSSING(S)</b>	PLATE NUMBER <b>620.10</b>
	Published Date: 2026	Sheet 1 of 1



**BARBED WIRE FENCE**      **WOVEN WIRE FENCE**

**GENERAL NOTES:**

Details shown on this standard plate will apply to all types of Right-of-Way fence constructed with all wood posts or chain link fence.

Continuous fence in urban areas will be grounded at maximum intervals of 500 feet. Continuous fence in rural areas will be grounded at maximum intervals of 1000 feet. There will be a ground at a maximum of 100 feet from a gate in each adjacent section of fence.

Fence placed under a power line will be grounded with three grounds. One ground will be placed directly below the crossing and the other two will be placed 25 feet to 50 feet away, one on each side.

One ground will be placed directly below each telephone or cable crossing.

Ground rods will be located on the post side of the fence and will be as close as possible to the post and fence.

The cost of furnishing and placing all materials for grounding will be incidental to the contract unit price per foot for the respective Right-of-Way fence or chain link fence contract item.

The approximate quantities of materials per each installation of a ground are:

- 1 ground rod clamp.
  - 1 5/8" diameter x 8' long copper clad ground rod
  - 1 #6 AWG bare copper wire; 7' long for Right-of-Way fence or 10' long for chain link fence.
- Compression type or other type of connectors:
- 26" woven wire will have a total of two connectors, one secured to the top and one secured to the bottom.
  - 32" woven wire will have a total of three connectors, one secured to the top, one secured to the middle, and one secured to the bottom.
  - One connector will be used for each strand of barbed wire.
  - A minimum of 3 connectors will be installed on chain link fence, the connectors will be placed vertically at every 2-foot increment and connectors will be placed on the top and bottom tension wires or top rail.

**GROUND ROD DETAIL**

June 26, 2019

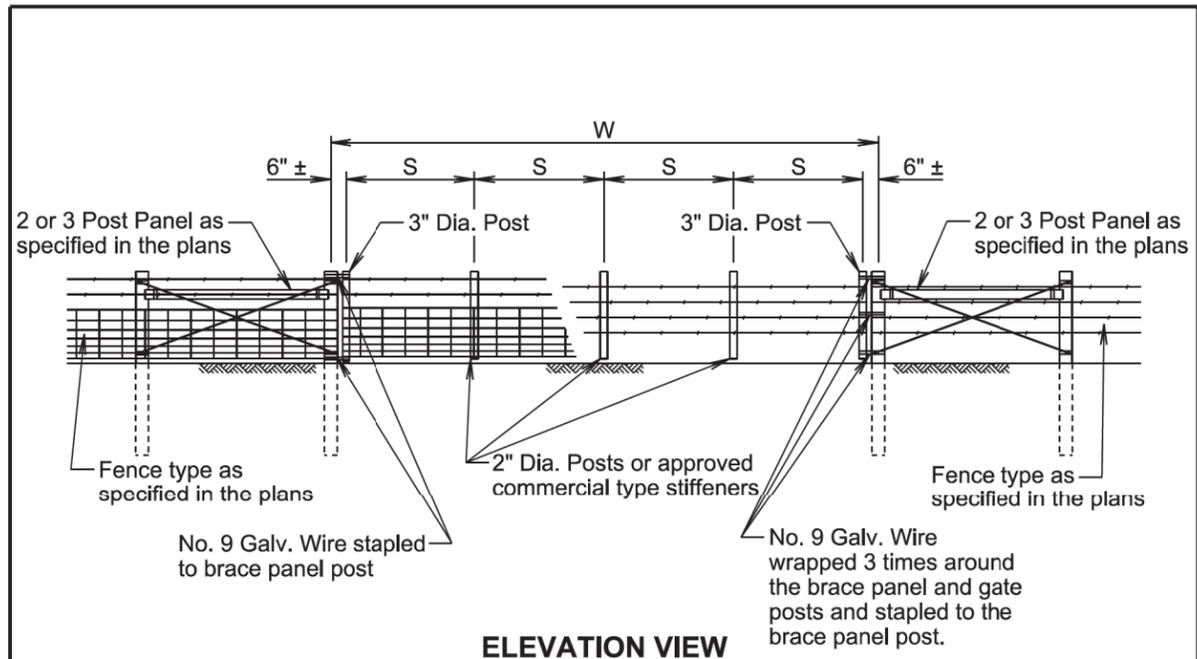
<b>S D D O T</b>	<b>FENCE GROUNDING</b>	PLATE NUMBER <b>620.11</b>
	Published Date: 2026	Sheet 1 of 1

PLOT SCALE - 1:200

PLOTTED FROM - TRMLINT15

PLOT NAME - 6

FILE - ... \STD PLATES\STD 620 PLATES.DGN



**ELEVATION VIEW**

W Gate Width (Ft.)	S Post Spacing
16	3 @ 5'-0" ±
20	4 @ 4'-9" ±
24	4 @ 5'-9" ±
30	5 @ 5'-10" ±
40	6 @ 6'-6" ±

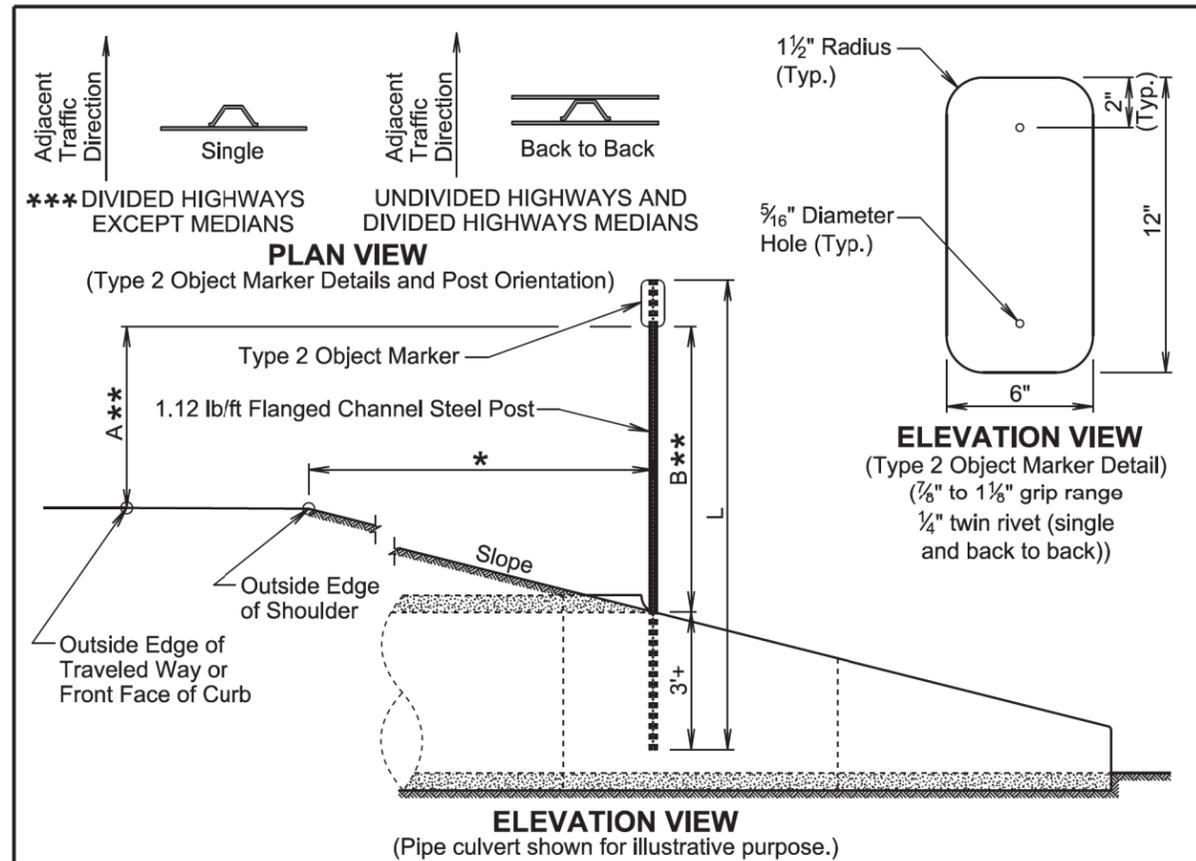
**GENERAL NOTES:**

- Creosote treatment of the gate posts will not be accepted.
- The type of fencing in the gate will be of the same type as specified for the adjacent Right-of-Way fence.
- All costs for furnishing and constructing the wire gate(s) will be incidental to the contract unit price per foot for the respective Right-of-Way fence contract item.

June 26, 2019

<b>S D D O T</b>	<b>WIRE GATES</b>	PLATE NUMBER <b>620.20</b>
		Sheet 1 of 1

Published Date: 2026



**ELEVATION VIEW**  
(Pipe culvert shown for illustrative purpose.)

TYPE 2 OBJECT MARKER POST LENGTHS										
OFFSET (*)	1'	2'	3'	4'	5'	6'	7'	8'	Greater Than 8'	
<b>POST LENGTH (L)</b>										
<b>SLOPE</b>	3:1	8'-6"	8'-9"	9'-3"	9'-6"	9'-9"	10'-3"	10'-6"	10'-9"	8'-0"
	4:1	8'-6"	8'-9"	9'-0"	9'-3"	9'-9"	9'-9"	10'-0"	10'-3"	8'-0"
	5:1	8'-3"	8'-6"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	9'-9"	8'-0"
	6:1	8'-3"	8'-6"	8'-9"	8'-9"	9'-0"	9'-3"	9'-3"	9'-6"	8'-0"

**GENERAL NOTES:**

- \*\*\* The type 2 object marker may be installed back to back when specified in the plans. Post Length L was calculated based on a shoulder width of 6 feet at a crossslope of 4 percent and L was rounded up to the nearest 3 inches.
- \*\* Dimension A is 4 feet when the Offset \* is 8 feet and less. Dimension B is 4 feet when Offset \* is greater than 8 feet.
- The type 2 object marker and the 1.12 lb/ft flanged channel steel post will be in conformance with Specifications Section 982.2 J.
- Payment for the type 2 object marker will be in conformance with Specification Section 632.5 B.

December 23, 2019

<b>S D D O T</b>	<b>TYPE 2 OBJECT MARKER (DIRECT DRIVE)</b>	PLATE NUMBER <b>632.01</b>
		Sheet 1 of 1

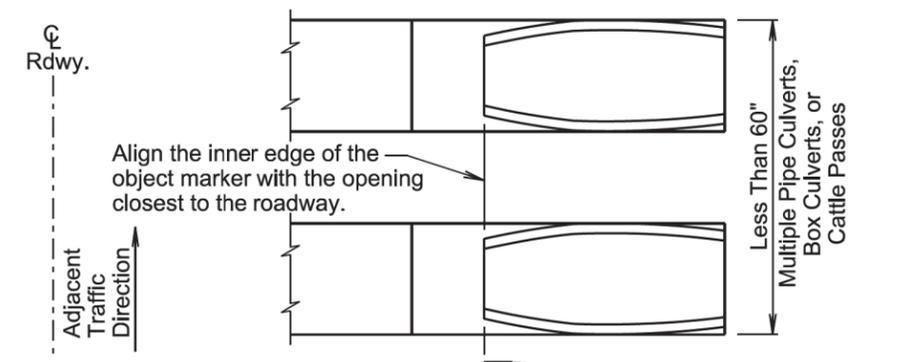
Published Date: 2026

Plotting Date: 12/22/2025

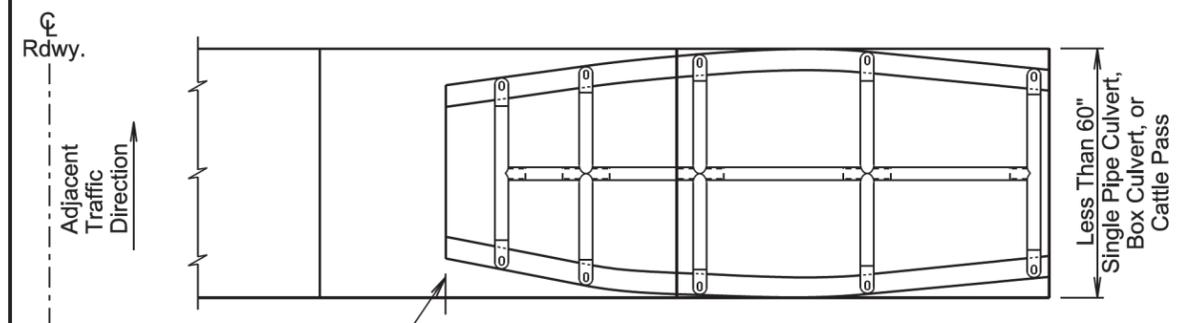
PLOT SCALE - 1:200

PLOT NAME - 8

FILE - ... \STD PLATES\STD 632 PLATES.DGN



**PLAN VIEW**  
(For Multiple Pipe Culverts, Box Culverts, and Cattle Passes)  
(Pipe culverts shown for illustrative purpose.)  
(Embankment is not shown.)



**PLAN VIEW**  
(For Single Pipe Culvert, Box Culvert, and Cattle Pass)  
(Pipe culvert shown for illustrative purpose.)  
(Embankment is not shown.)

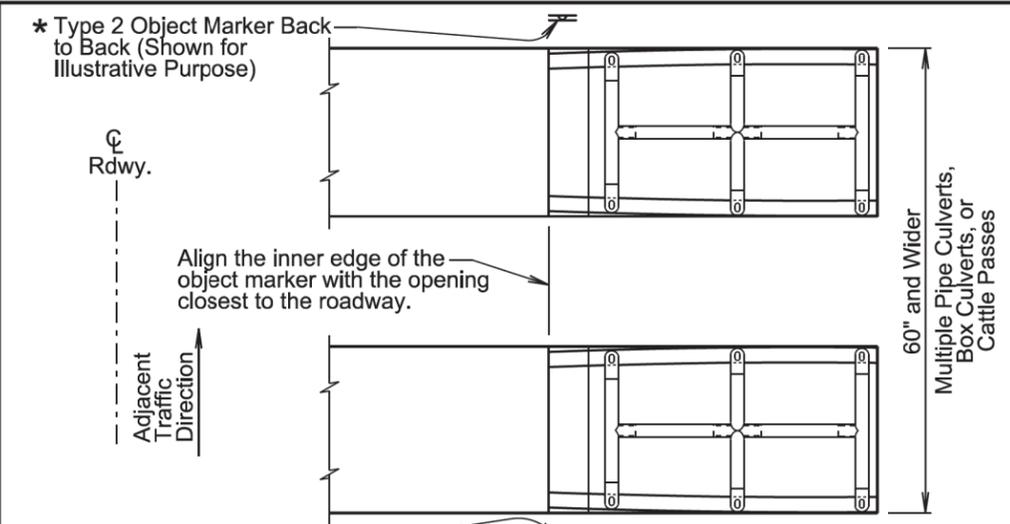
**GENERAL NOTES:**

This standard plate will be used in conjunction with standard plate 632.01.

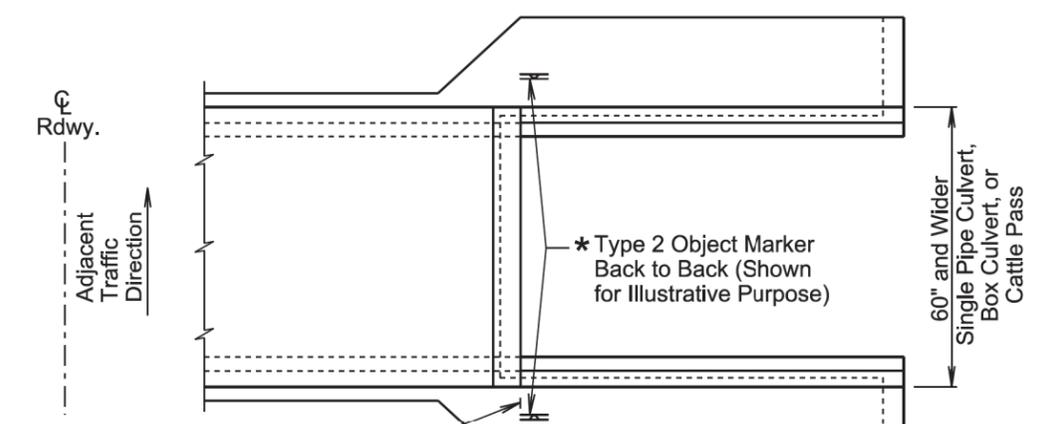
\* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

<b>Published Date: 2026</b>	<b>S D D O T</b>	<b>TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (Less than 60" Overall Width)</b>	<b>PLATE NUMBER</b> 632.03
			Sheet 1 of 1



**PLAN VIEW**  
(For Multiple Pipe Culverts, Box Culverts, and Cattle Passes)  
(Pipe culverts shown for illustrative purpose.)  
(Embankment is not shown.)



**PLAN VIEW**  
(For Single Pipe Culvert, Box Culvert, and Cattle Pass)  
(Box culvert shown for illustrative purpose.)  
(Embankment is not shown.)

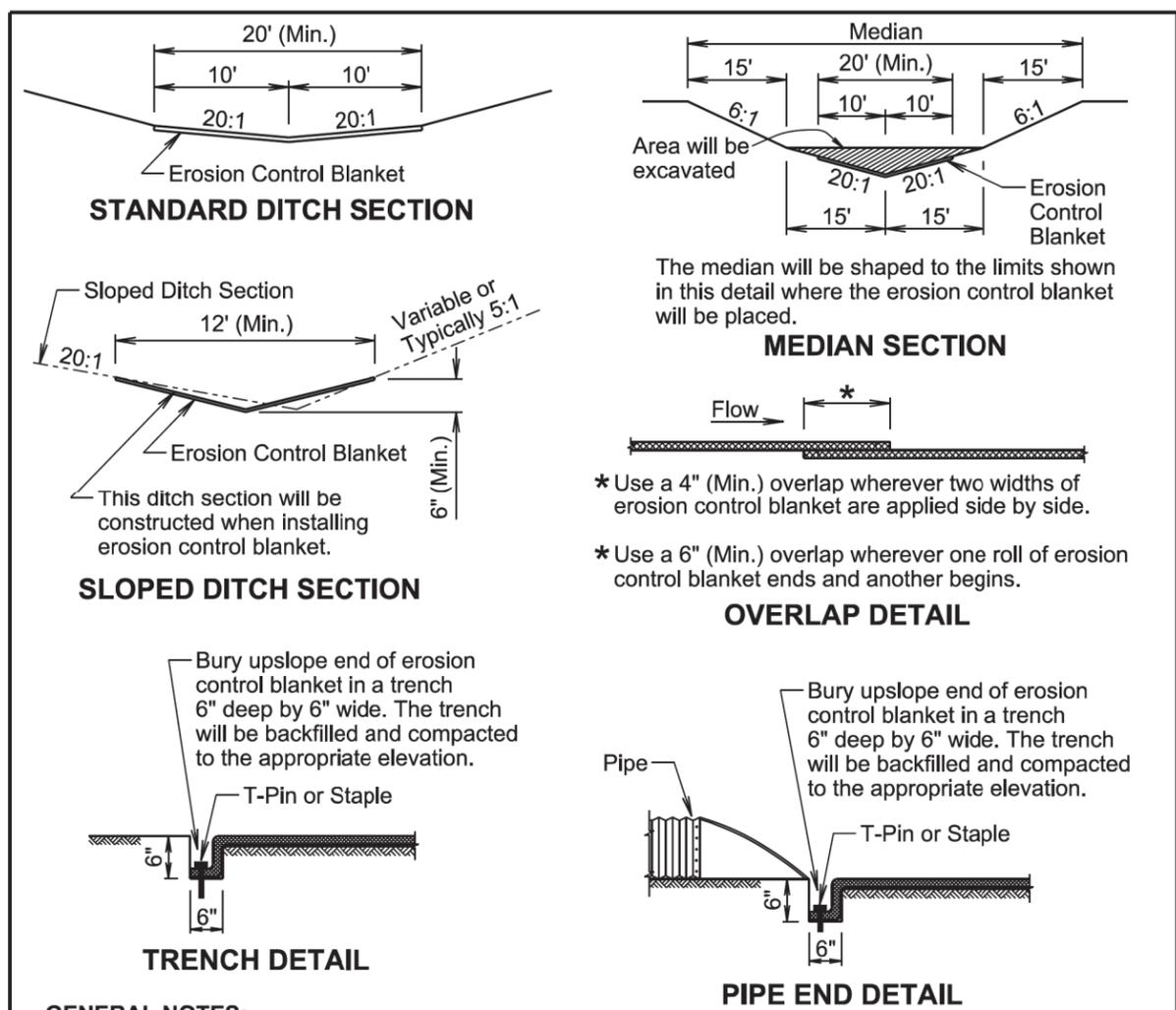
**GENERAL NOTES:**

This standard plate will be used in conjunction with standard plate 632.01.

\* The type 2 object markers will be installed at the locations shown above. The type 2 object markers, single faced or back to back, will be as specified in the plans.

December 23, 2019

<b>Published Date: 2026</b>	<b>S D D O T</b>	<b>TYPE 2 OBJECT MARKER AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES (60" and Greater Overall Width)</b>	<b>PLATE NUMBER</b> 632.04
			Sheet 1 of 1



**GENERAL NOTES:**

Prior to placement of the erosion control blanket, the areas will be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket will be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket will be buried in a trench 6" wide by 6" deep. There will be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

The erosion control blanket will be pinned to the ground according to the manufacturer's installation recommendations.

After the placement of the erosion control blanket, the Contractor will fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

All ditch sections will be shaped when installing the erosion control blanket. All costs for shaping the ditches will be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

February 14, 2020

<i>Published Date: 2026</i>	<b>S D D O T</b>	<b>EROSION CONTROL BLANKET</b>	PLATE NUMBER 734.01
			Sheet 1 of 1

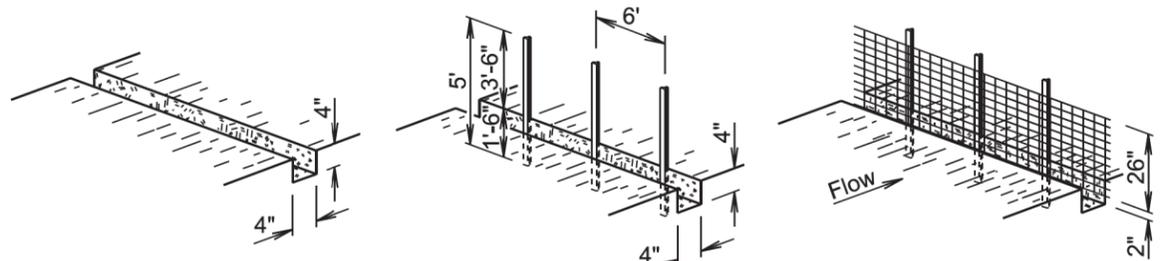
PLOT SCALE - 1:200

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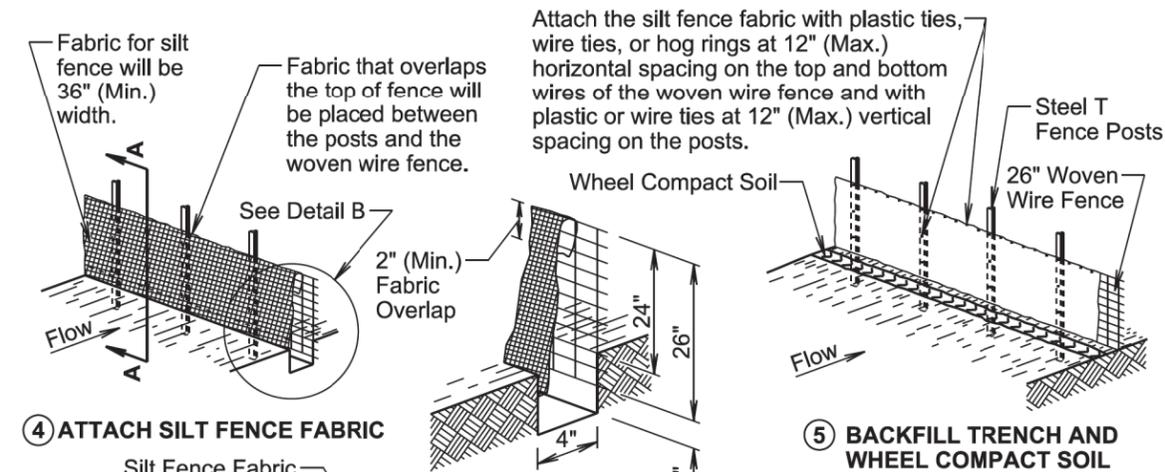
PLOT NAME - 9

FILE - ... \STD PLATES\STD 734 PLATES.DGN

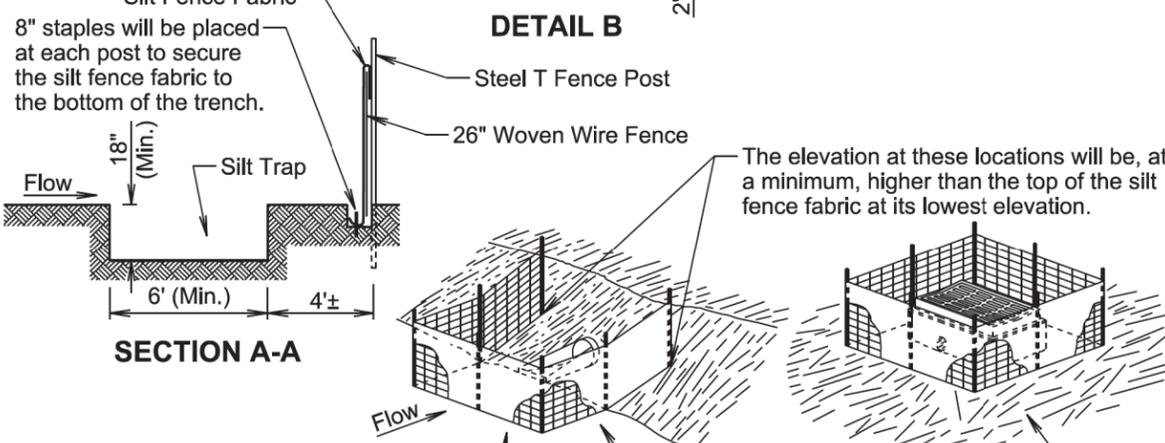
### MANUAL LOW FLOW SILT FENCE INSTALLATION



- EXCAVATE TRENCH
- DRIVE STEEL T FENCE POSTS
- ATTACH 26" WOVEN WIRE FENCE TO POSTS



- ATTACH SILT FENCE FABRIC
- BACKFILL TRENCH AND WHEEL COMPACT SOIL



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

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

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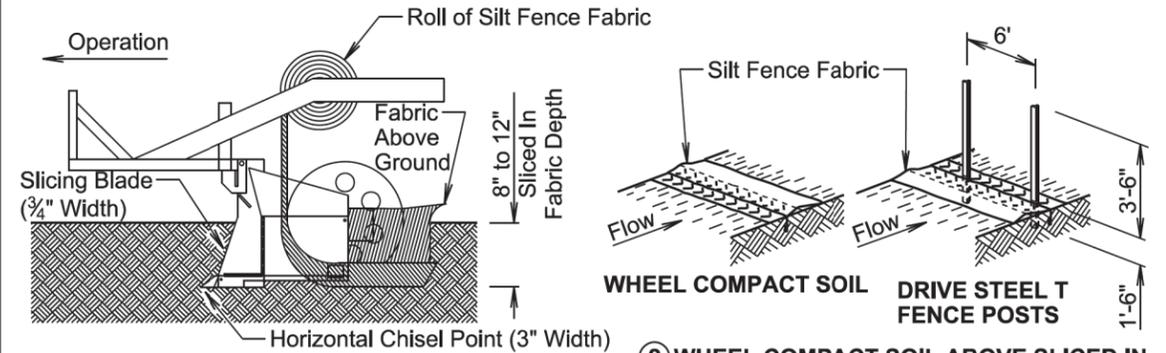
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LOW FLOW SILT FENCE  
AND SILT TRAP

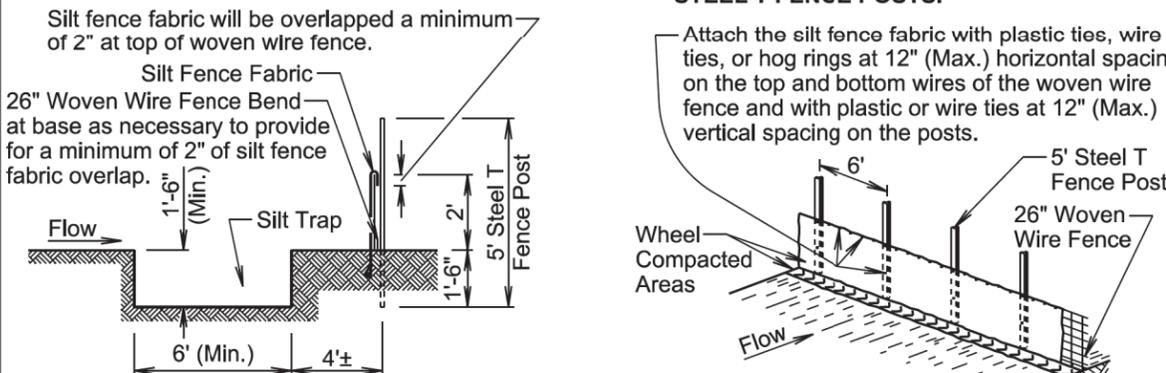
PLATE NUMBER  
734.04

Sheet 1 of 2

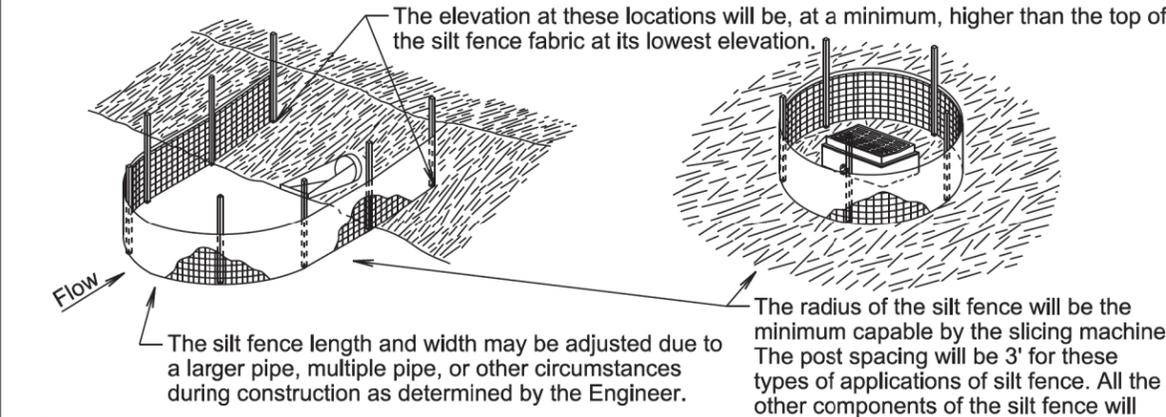
### MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



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



- ATTACH 26" WOVEN WIRE FENCE TO POSTS AND ATTACH SILT FENCE FABRIC.



#### GENERAL NOTES:

A silt trap will be provided when specified by a plan note. All costs for constructing the silt trap will be incidental to the contract unit price per cubic yard for "Silt Trap".

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

February 14, 2020

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LOW FLOW SILT FENCE  
AND SILT TRAP

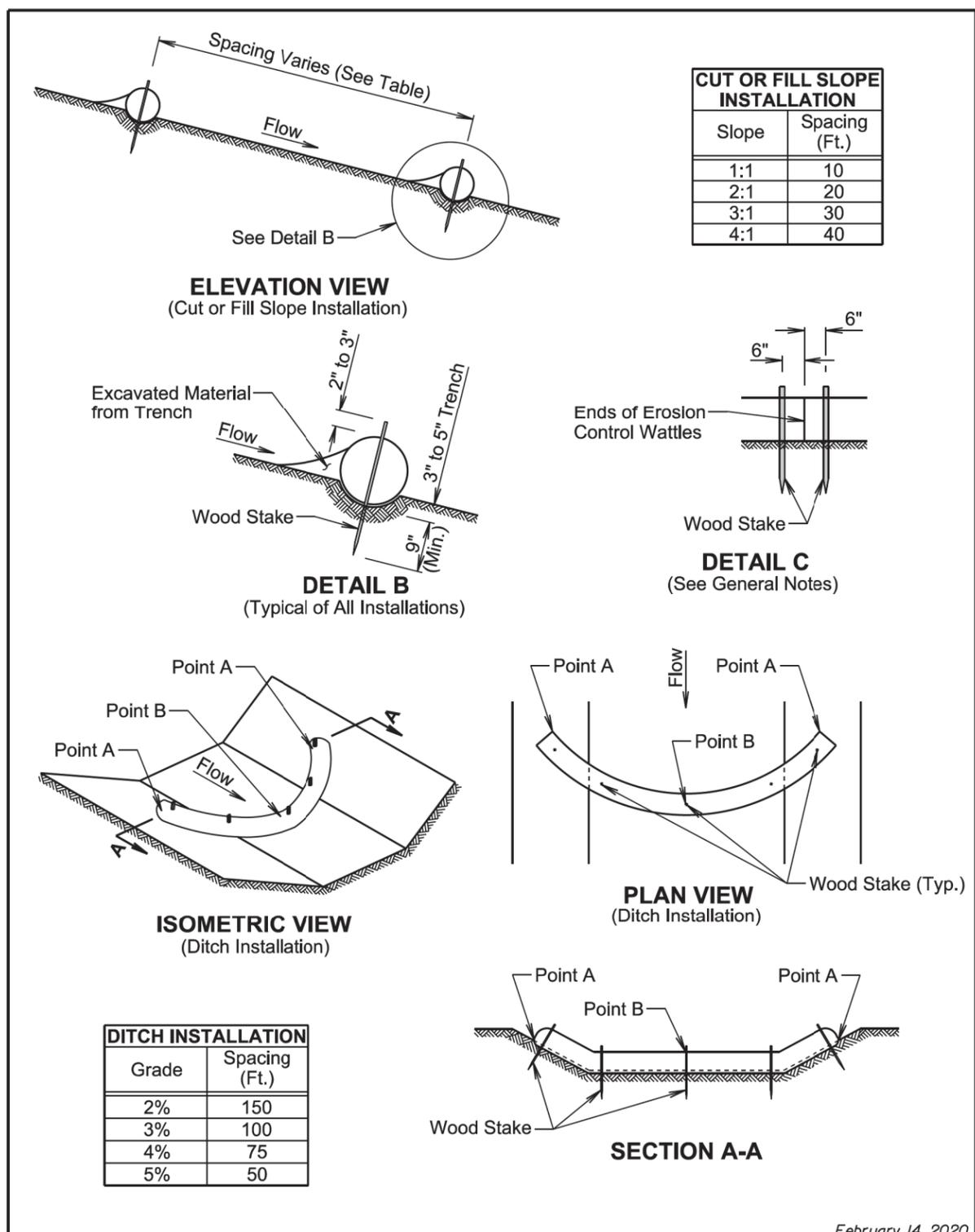
PLATE NUMBER  
734.04

Sheet 2 of 2

PLOT SCALE - 1:200

PLOT NAME - 11

FILE - ... \STD PLATES\STD 734 PLATES.DGN



February 14, 2020

Published Date: 2026	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

**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

Published Date: 2026	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

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