

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED

PROJECT NO. 090W-391 & 047-392  
INTERSTATE HIGHWAY 90 & SD47  
LYMAN & GREGORY COUNTIES

BOX CULVERT APRON REPAIR, PIPE REPAIR,  
EROSION REPAIR, AND OUTLET PROTECTION  
PCN 10vm & 10xs

STATE OF SD	PROJECT	SHEET NO.	TOTAL SHEETS
	090W-391 & 047-392	1	13

INDEX OF SHEETS

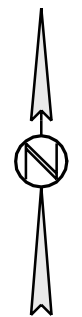
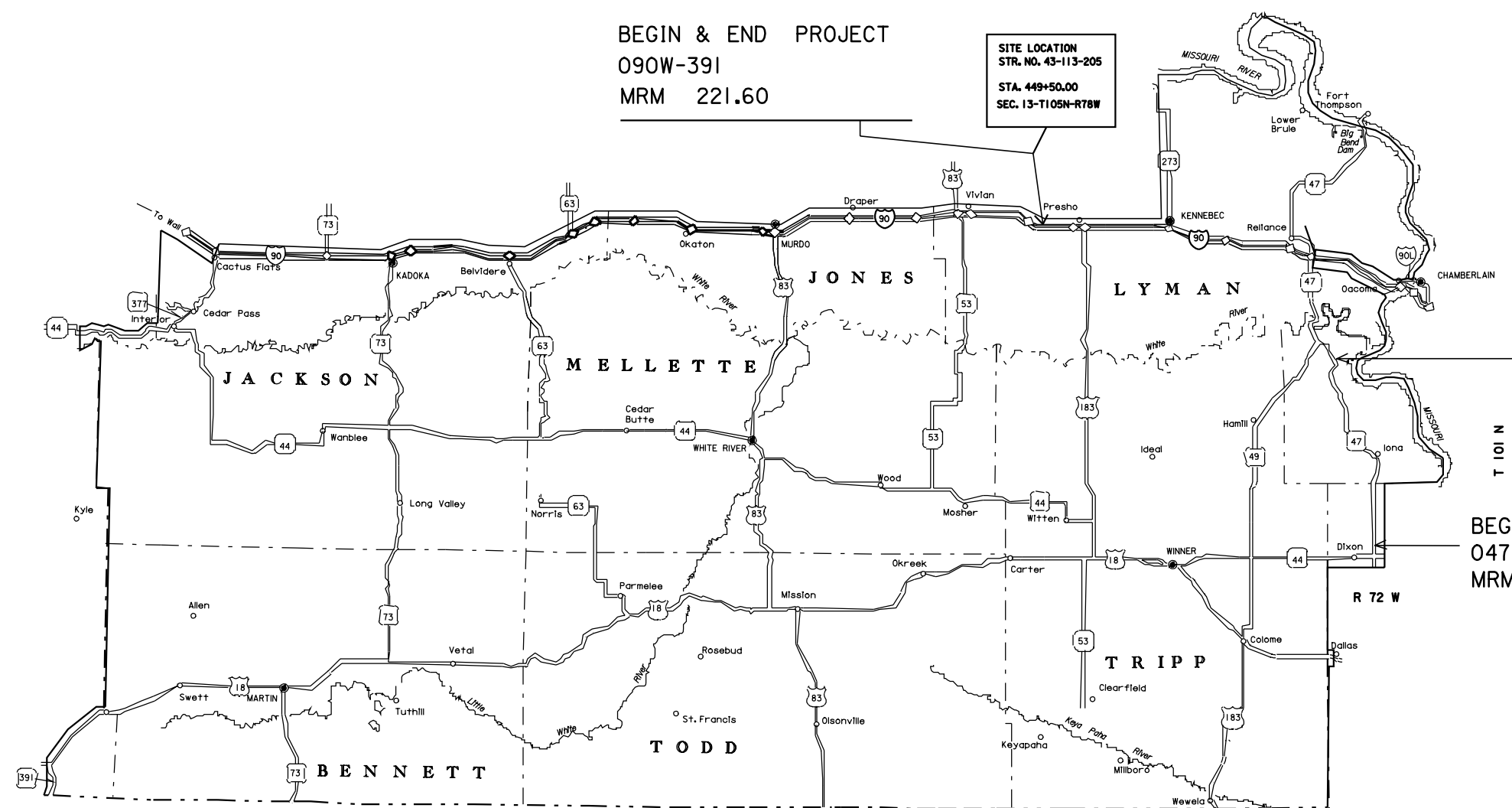
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090W-391  
LYMAN COUNTY  
10vm  
DESIGN DESIGNATION

ADT (2006)	6220
ADT (2026)	10295
DHV	1420
D	50%
T DHV	13.2%
T ADT	29.1%

047-392  
GREGORY & LYMAN COUNTIES  
10xs  
DESIGN DESIGNATION

ADT (2004)	435
ADT (2024)	755
DHV	130
D	50%
T DHV	10.2%
T ADT	22.4%



Estimate of Quantities

047-392 PCN I0XS

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E1700	Remove Silt Fence	100	Ft
110E7500	Remove Pipe for Reset	48	Ft
110E7510	Remove Pipe End Section for Reset	21	Each
120E0600	Contractor Furnished Borrow	885	CuYd
250E0010	Incidental Work	Lump Sum	LS
450E9000	Reset Pipe	48	Ft
450E9001	Reset Pipe End Section	21	Each
634E0010	Flagging	80	Hour
634E0100	Traffic Control	578	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
700E0210	Class B Riprap	396.5	Ton
730E0210	Type F Permanent Seed Mixture	19	Lb
734E0131	Type 1 Turf Reinforcement Mat	1,400.0	SqYd
734E0604	High Flow Silt Fence	400	Ft
734E0610	Mucking Silt Fence	15	CuYd
734E0620	Repair Silt Fence	100	Ft
831E0110	Type B Drainage Fabric	557	SqYd

090W-391 PCN I0VM

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E1700	Remove Silt Fence	25	Ft
260E2090	Gravel Cushion, State Furnished	25.0	Ton
460E0120	Class A45 Concrete, Box Culvert	9.9	CuYd
460E0300	Breakout Structural Concrete	25.9	CuYd
480E0100	Reinforcing Steel	749	Lb
634E0010	Flagging	20	Hour
634E0100	Traffic Control	204	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	Each
700E0210	Class B Riprap	157.5	Ton
730E0210	Type F Permanent Seed Mixture	2	Lb
734E0604	High Flow Silt Fence	100	Ft
734E0610	Mucking Silt Fence	5	CuYd
734E0620	Repair Silt Fence	25	Ft
831E0110	Type B Drainage Fabric	174	SqYd

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

CONCRETE APRON REPAIR

It is anticipated that the existing base beneath the new concrete apron area will contain voids and unstable areas. The Contractor will be required to rework the existing base to an estimated depth of two feet and recompact to the satisfaction of the Engineer. Actual depth of reworking and compacting may vary once existing concrete is removed and shall be at the discretion of the Engineer.

Any additional gravel cushion required to prepare the area shall be hauled and placed by the Contractor. Gravel cushion will be supplied by the State and can be obtained from the Department of Transportation at a stockpile located approximately one mile South of Presho on US183.

It has been estimated that approximately 25 tons may be needed. Cost of this State furnished material to the Contractor is \$9.00/ton. Payment for reworking the base shall be incidental to the contract unit price per cubic yard for Class A45 Concrete, Box Culvert. Payment for hauling and placing the gravel cushion shall be incidental to the contract unit price per ton for Gravel Cushion, State Furnished.

DESIGN MIX OF CONCRETE

The type of cement, concrete strength requirements, coarse aggregate requirements, slump and air requirements for the contract item Class A45 Concrete Box Culvert shall conform to the requirements of Section 460 of the Construction Specifications.

MAINTENANCE OF TRAFFIC – (090W – 391)

Traffic Control shall be as per Standard Plate 634.64 and shall be in place anytime workers or equipment are within the 30 foot clear zone as measured from the existing white edge line. The above mentioned traffic control devices shall be removed from the roadway prior to nightfall and when work is not being performed.

Traffic control signs furnished will be paid for only once. The cost of removing and resetting signs within project limits shall be incidental to the contract unit price per unit for Traffic Control.

The Contractor will not be allowed to use the maintenance crossovers at any time during the duration of the project. In addition, the Contractor is prohibited from driving through the interstate median to gain access to the project.

GENERAL MAINTENANCE OF TRAFFIC

All construction operations shall be conducted in the general direction of traffic movement. All signs shall be mounted on portable supports.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

Highway equipment working within traffic or adjacent to traffic shall, at all times, display an activated flashing or revolving amber light.

Traffic control signs furnished will be paid for only once. The cost of moving signs within project limits or from project to project shall be incidental to the contract unit price per unit for Traffic Control.

The Contractor shall furnish, install and maintain Truck Crossing signs. The exact number and location will be determined on construction.

PIPE NOTES

The excavation required to expose existing pipe and pipe ends will be incidental to the contract unit prices for Remove Pipe for Reset and Remove Pipe End Section for Reset.

**UTILITIES**

The Contractor shall contact the utility companies through South Dakota One Call prior to starting work. It shall be the responsibility of the Contractor to coordinate his work with the utility company to avoid damage to existing facilities.

**TIE BOLTS FOR RCP**

All RCP removed and reset, shall be tied together. Standard Plate 450.18 shall be adhered to.

**CONTRACTOR FURNISHED BORROW**

Contractor Furnished Borrow shall be required to fill in scour holes and other erosion as noted in the scope of work for the individual repair sites. All fill material shall meet with the approval of the Engineer. Borrow Areas within the right-of-way may be available with prior approval of the Engineer. The plans quantity for “Contractor Furnished Borrow” as shown in the Estimate of Quantities will be the basis of payment for this item unless the Engineer orders changes. The Contractor is responsible for obtaining all required permits and clearances for the borrow site.

Prior to placement of fill material, the Contractor will be required to remove 3 inches of topsoil and replace it on the newly constructed embankments. Payment for the above shall be incidental to the contract unit price per cubic yard for Contractor Furnished Borrow.

All work shall be accomplished within the right-of-way.

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

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

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

The Contractors attention should be drawn, and consideration given, to Section 7.21 of the Standard Specifications prior to the planning and procurement of Borrow sites for the Contractor Furnished Borrow required on this project.

**HISTORICAL PRESERVATION OFFICE CLEARANCES**

To obtain SHPO clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. The Contractor shall arrange and pay for this survey. In lieu of a cultural resources survey, the Contractor could request a literature search on the site and provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that no artifacts have been found on the site. Jim Donohue, State Archaeological Research Center at 605-394-1937 shall be contacted for a literature search.

If borrow material is furnished from within the current geographical reservation boundaries or historic boundaries of the Lake Traverse, Yankton, or Flandreau-Santee reservations, the Contractor shall obtain THPO (Tribal Historical Preservation Office) clearance from the Tribal Cultural Resources Officer. This requirement is in addition to the SHPO clearance. If no Tribal contact exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO and THPO responses, the Contractor should submit a cultural resources survey report or the results of the literature search along with a legal description of the site, a topographical map with the site clearly marked, and evidence of prior site disturbance to Dave Graves, DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-5727). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO approval. The Contractor is responsible for obtaining all required permits and clearances for the borrow and/or waste disposal site(s) prior to commencing construction activities at the borrow and/or waste disposal site(s). The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

Restoration of the Contractor furnished borrow site shall be the responsibility of the Contractor.

**FERTILIZING**

Application of fertilizer will not be required on this project.

**TYPE F PERMANENT SEED MIXTURE**

All disturbed areas within the right-of-way shall be seeded with Type F Permanent Seed Mixture.

Permanent Seeding will be measured and paid for where embankment work is accomplished.

Seeding of borrow areas within the right-of-way will be required as specified above but will not be measured for payment. Restoration of borrow areas outside the right-of-way will be as per agreement with the landowner and will not be paid for.

Hand seeding devices approved by the Engineer will be allowed. All seed broadcast, including the use of a hydroseeder, must be raked or dragged in (incorporated) with the top 1/4 to 1/2 inch of topsoil to the satisfaction of the Engineer.

Type F Permanent Seed Mixture shall consist of the following:

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

**MULCHING (HAY OR STRAW)**

Application of mulch will not be required on this project.

**HIGH FLOW SILT FENCE**

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

<http://www.state.sd.us/Applications/HC54ApprovedProducts/main.asp>



**HIGH FLOW SILT FENCE-CONTINUED**

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

The quantity of high flow silt fence needed was estimated at 500 feet.

The contract unit price per foot for High Flow Silt Fence will not be adjusted due to variations in the quantity of high flow silt fence used.

**MUCKING SILT FENCE**

Mucking silt fence shall consist of removing muck trapped by the silt fence and spreading the material evenly over the adjacent area to conform to the existing grade.

**REMOVE SILT FENCE**

Silt fence shall be removed when vegetation is established. Some or all of silt fence may be left on the project until vegetation is established.

**TABLE OF INCIDENTAL WORK**

<u>Hwy</u>	<u>MRM</u>	<u>Rt/Lt</u>	<u>Description</u>
047	32.2	Rt & Lt	Shape Inlet & Outlet Channel
047	32.2	Lt	Remove & Reset Fence
047	32.7	Rt & Lt	Shape Inlet & Outlet Channel
047	33.3	Lt	Shape Outlet Channel
047	34.6	Lt	Shape Outlet Channel
047	38.2	Rt	Remove Tree
047	54.5	Lt	Remove Excess Fill in Lt Ditch

**TABLE OF CLASS B RIPRAP**

<u>Hwy</u>	<u>MRM</u>	<u>Rt/Lt</u>	<u>Ton</u>
I90	221.6	Lt	157.5
047	32.2	Rt & Lt	93.3
047	32.7	Rt & Lt	93.3
047	33.3	Lt	62.2
047	34.3	Lt	62.2
047	34.6	Lt	62.2
047	38.2	Rt	23.3
<u>Total</u>			<u>554</u>

**TABLE OF TYPE B DRAINAGE FABRIC**

<u>Hwy</u>	<u>MRM</u>	<u>Rt/Lt</u>	<u>Sq. Yds.</u>
I90	221.6	Lt	174
047	32.2	Rt & Lt	132
047	32.7	Rt & Lt	132
047	33.3	Lt	85
047	34.3	Lt	85
047	34.6	Lt	85
047	38.2	Rt	38
<u>Total</u>			<u>731</u>

**TYPE 1 TURF REINFORCEMENT MAT**

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

<http://www.state.sd.us/Applications/HC54ApprovedProducts/main.asp>

Installation of the Turf Reinforcement Mat shall be according to the manufacturer's installation instructions.

**TABLE OF TYPE 1 TURF REINFORCEMENT MAT**

<u>Hwy</u>	<u>MRM</u>	<u>Rt/Lt</u>	<u>Sq. Yds.</u>
047	50.5	Lt	160
047	55.0	Rt & Lt	453
047	55.2	Rt & Lt	787
<u>Total</u>			<u>1,400</u>

**WASTE DISPOSAL SITE**

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the State ROW.

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	S.D.	090W-391 & 047-392	4	13

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

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

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

- Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
- Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

WASTE DISPOSAL SITE -continued

FED. HWY. ADMIN. NO.	STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
	S.D.	090W-391 & 047-392	5	13

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

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

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

SCOPE OF WORK

INTERSTATE 90 MRM 221.6

Box Culvert Apron removal and repair as per plan notes and details. Class B Riprap Installation as per plan notes and details.

SD47 MRM 32.2 to 55.2

**MRM 32.2** The site work on the right consists of removing and resetting the existing end section and one six foot section of the existing 48" RCP. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12' wide x 20' long x 2.5' deep on the right. The ditch North and South of the inlet shall be shaped as to allow for a smooth transition from the existing ditch profile to the inlet channel. The site work on the left consists of removing and resetting the existing end section and one six foot section of the existing 48" RCP. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12' wide x 40' long x 2.5' deep on the left. The ditch North and South of the outlet shall be shaped as to allow for a smooth transition from the existing ditch profile to the outlet channel. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. Payment for shaping the ditch on both ends of the pipe shall be incidental to the lump sum price for Incidental Work. Excess dirt removed on both the inlet and outlet shall be disposed of by the Contractor or used as Contractor Furnished Borrow at other locations throughout the project. All disturbed areas shall be seeded.

**MRM 32.2** The site work on the right consists of removing and resetting the existing end section and one six foot section of the existing 4'x6' Cattle Pass. The site work on the left consists of removing and resetting the existing end section and one six foot section of the existing 4'x6' RCP Cattle Pass. The existing fence on the left shall be removed and reset as necessary to perform the above described work. Payment for removing and resetting the existing fence shall be incidental to the lump sum price for Incidental Work. It is estimated that approximately 48' of fence will need to be removed and reset to perform the work. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas shall be seeded.

**MRM 32.7** The site work on the right consists of removing and resetting the existing end section and one 6 foot section of the existing 54" RCP. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12' wide x 20' long x 2.5' deep on the right. The inlet channel shall be shaped to allow drainage to the existing pipe. The site work on the left consists of removing and resetting the existing end section and one six foot section of the existing 54" RCP. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12' wide x 40' long x 2.5' deep on the left. The outlet channel shall be shaped to allow drainage away from the existing pipe. Payment for shaping the inlet and outlet channels shall be incidental to the lump sum price for Incidental Work. Excess dirt removed on both the inlet and outlet shall be disposed of by the Contractor or used as Contractor Furnished Borrow at other locations throughout the project. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas shall be seeded.

**MRM 33.3** The site work on the right consists of removing and resetting the existing end section of the existing 42" RCP. The site work on the left consists of removing and resetting the existing end section and one six foot section of the existing 42" RCP. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12' wide x 40' long x 2.5' deep on the left. The outlet channel shall be shaped to allow drainage away from the existing pipe. Payment for shaping the outlet channel shall be incidental to the lump sum price for Incidental Work. Excess dirt removed on the outlet shall be disposed of by the Contractor or used as Contractor Furnished Borrow at other locations throughout the project. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas shall be seeded.

**MRM 34.3** The site work on the right consists of removing and resetting the existing end section of the existing 48" RCP. The site work on the left consists of removing and resetting the existing end section and one six foot section of the existing 48" RCP. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12' wide x 40' long x 2.5' deep on the left. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas shall be seeded.

**MRM 34.6** The site work on the right consists of removing and resetting the existing end section of the existing 72" RCP. The site work on the left consists of removing and resetting the existing end section of the existing 72" RCP. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12' wide x 40' long x 2.5' deep on the left. The outlet channel shall be shaped to allow drainage away from the existing pipe. Payment for shaping the outlet channel shall be incidental to the lump sum price for Incidental Work. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas shall be seeded.

**MRM 35.2** The site work on the right consists of removing and resetting the existing end section of the existing 4' x 6' Cattle Pass. The site work on the left consists of removing and resetting the existing end section of the existing 4' x 6' Cattle Pass. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas shall be seeded.

**SCOPE OF WORK - CONTINUED**

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**SD47 MRM 32.2 to 55.2**

**MRM 38.2** The site work on the right consists of removing and resetting the existing end section of the existing 48" RCP. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12' wide x 15' long x 2.5' deep on the right. An existing tree approximately twenty feet off the end of the pipe shall also be removed. The tree has approximately twelve 3" – 4" limbs coming off the trunk and is approximately ten feet in height. Payment for removing the tree shall be incidental to the lump sum price for Incidental Work. The site work on the left consists of removing and resetting the existing end section of the existing 48" RCP. The site work on the left also consists of removing and resetting the existing end sections on both ends of the existing 30" Arch RCP located across the existing approach at this location. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas shall be seeded.

**MRM 41.1** The site work on the right consists of removing and resetting the existing end section of the existing 4' x 6' Cattle Pass. There is no work required on the left side. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas shall be seeded.

**MRM 41.3** The site work on the right consists of removing and resetting the existing end section of the existing 36" RCP. The site work on the left consists of removing and resetting the existing end section of the existing 36" RCP. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas shall be seeded.

**MRM 50.5** There is no work required on the right side. The site work on the left consists of filling in the existing 100' long x 4' wide x 4' deep washout in the left ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 120' long x 12' wide over the repair area. All disturbed areas shall be seeded.

**MRM 54.5** There is no site work required on the right. The site work on the left consists of removing existing ditch fill that has resulted from an existing slide area at this site. The amount of fill to be removed is approximately 100' long x 5' wide x 4' deep. This material shall be used as Contractor Furnished Borrow elsewhere on the project or disposed of by the Contractor. Payment for removal of this excess dirt shall be incidental to lump sum price for Incidental Work. All disturbed areas shall be seeded.

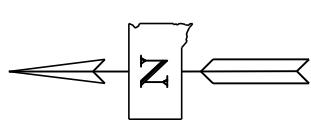
**MRM 55.0** The site work on the right consists of filling in the existing 200' long x 10' wide x 4' deep washout in the right ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 220' long x 12' wide over the repair area. The site work on the left consists of filling in the existing 100' long x 5' wide x 4' deep washout in the left ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 120' long x 12' wide over the repair area. All disturbed areas shall be seeded.

**MRM 55.2** The site work on the right consists of filling in the existing 250' long x 3' wide x 3' deep washout in the right ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 270' long x 12' wide over the repair area. The site work on the left consists of filling in the existing 300' long x 6' wide x 2' deep washout in the left ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 320' long x 12' wide over the repair area. All disturbed areas shall be seeded.

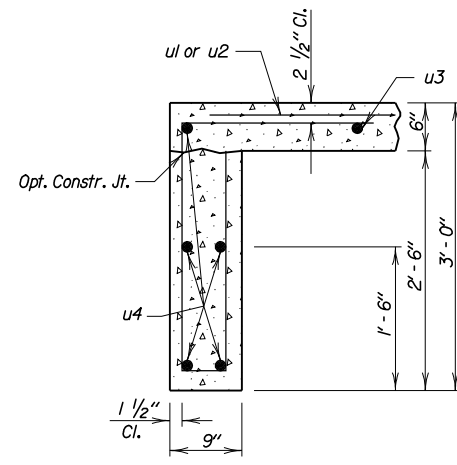
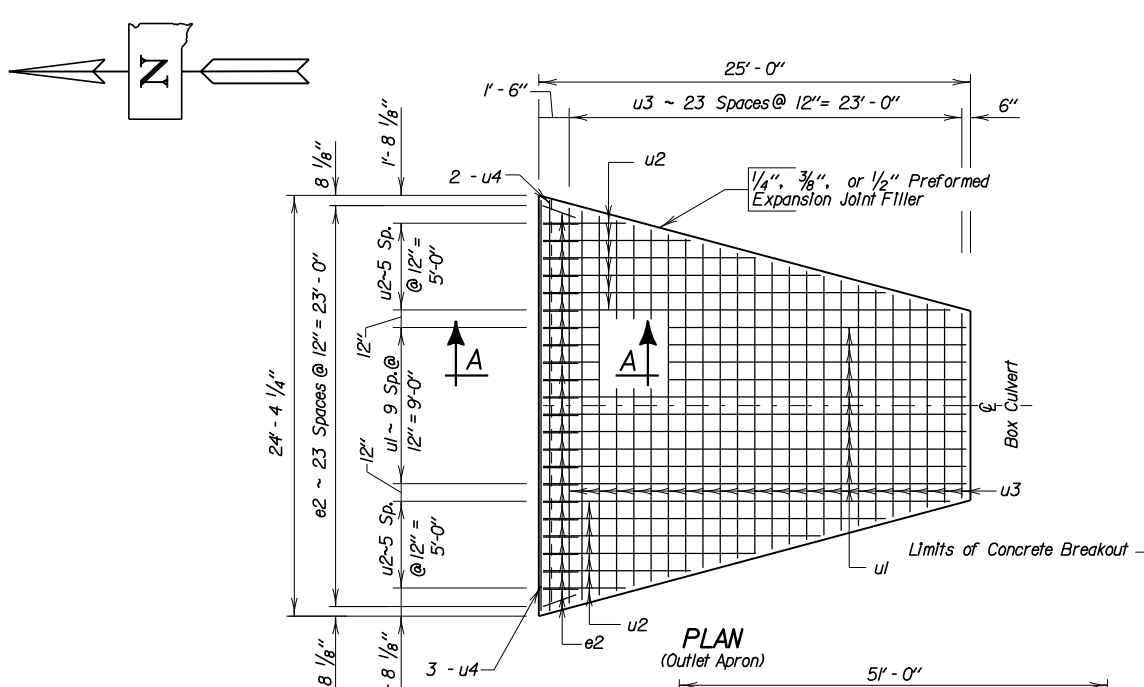
Installation Quantity by Location (MRM)		SD47													
Bid Item Description	32.2	32.7	33.3	34.3	34.6	35.2	38.2	41.1	41.3	50.5	54.5	55.0	55.2	Quantity	Unit
Mobilization														.50	LS
Remove Silt Fence														100	Ft
Remove Pipe for Reset	24	12	6	6										48	Ft
Remove Pipe End Section for Reset	4	2	2	2	2	2	4	1	2					21	Each
Contractor Furnished Borrow	20	10	10	10	10	10	20	5	10	70		450	260	885	CuYd
Incidental Work	.30	.15	.15		.10		.15				.15			1	LS
Reset Pipe	24	12	6	6										48	Ft
Reset Pipe End Section	4	2	2	2	2	2	4	1	2					21	Each
Flagging														80	Hour
Traffic Control														578	Unit
Traffic Control, Miscellaneous														.50	LS
Class B Riprap	93.3	93.3	62.2	62.2	62.2		23.3							396.5	Ton
Type F Permanent Seed Mixture	4	1.5	1.5	.5	1.0	1.0	.5	.5	.5	1.0	1.0	3.0	3.0	19.0	Lb
Type 1 Turf Reinforcement Mat										160		453	787	1400	SqYd
High Flow Silt Fence														400	Ft
Mucking Silt Fence														15	CuYd
Repair Silt Fence														100	Ft
Type B Drainage Fabric	132	132	85	85	85		38							557	SqYd

Installation Quantity by Location (MRM)		I90 WB	
Bid Item Description	221.6	Quantity	Unit
Mobilization	.50	.50	LS
Remove Silt Fence	25	25	Ft
Gravel Cushion, State Furnished	25	25	Ton
Class A45 Concrete, Box Culvert	9.9	9.9	CuYd
Breakout Structural Concrete	25.9	25.9	CuYd
Reinforcing Steel	749	749	Lb
Flagging	20	20	Hour
Traffic Control	204	204	Unit
Traffic Control, Miscellaneous	.50	.50	LS
Type C Advance Warning Arrow Panel	1	1	Each
Class B Riprap	157.5	157.5	Ton
Type F Permanent Seed Mixture	2	2	Lb
High Flow Silt Fence	100	100	Ft
Mucking Silt Fence	5	5	CuYd
Repair Silt Fence	25	25	Ft
Type B Drainage Fabric	174	174	SqYd

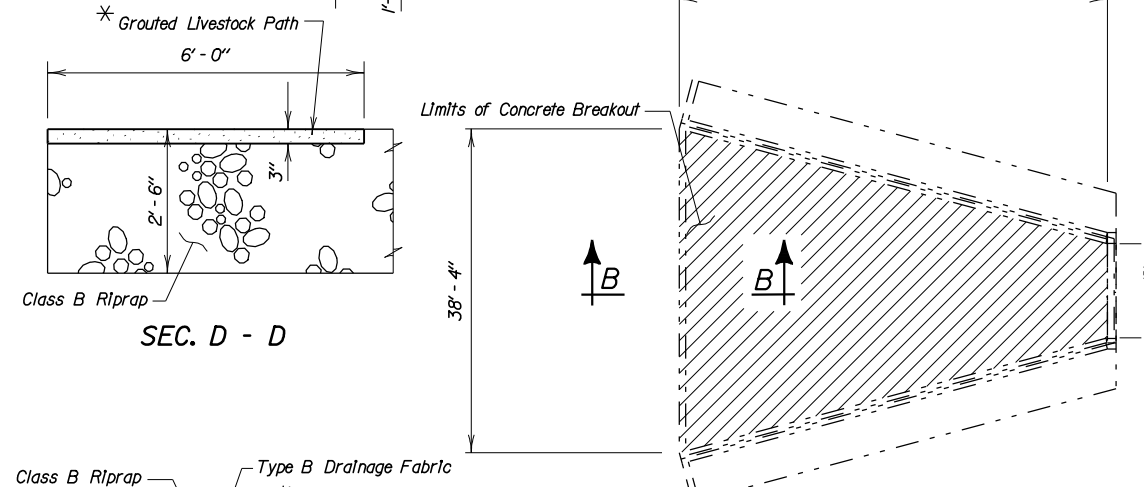




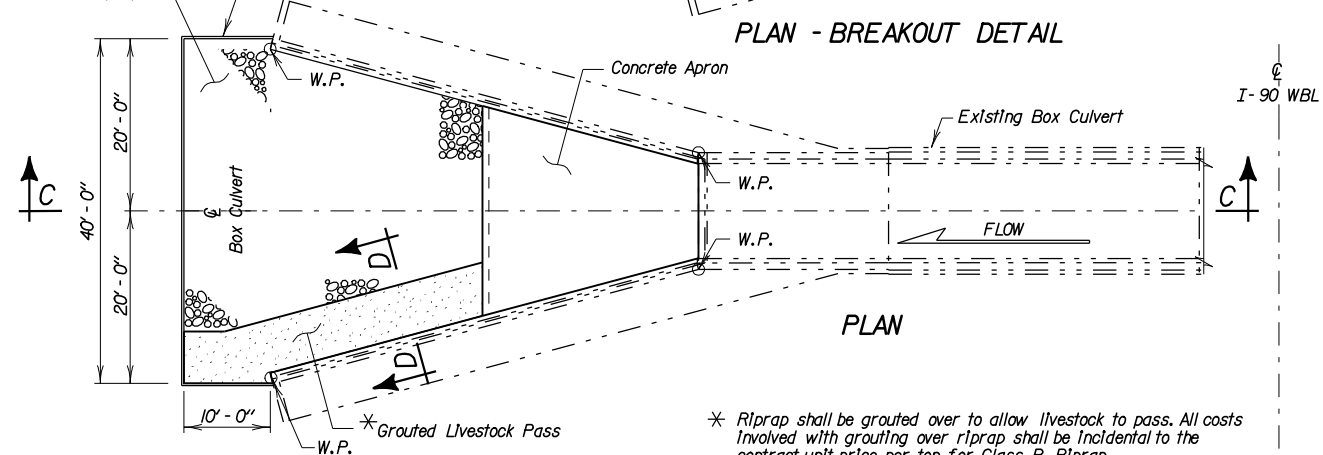
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		8	13



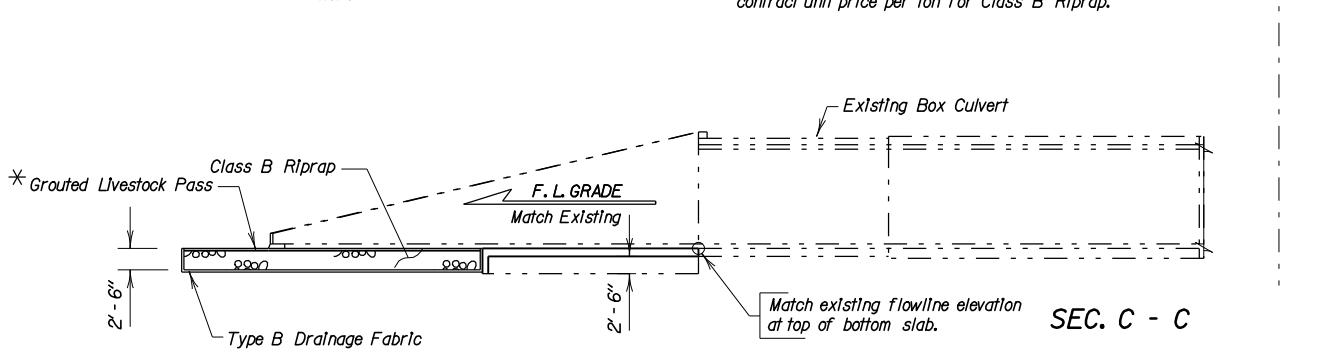
SEC. A - A



SEC. D - D



PLAN - BREAKOUT DETAIL



SEC. C - C

### SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges, 2002 Edition (Service Load).
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and required Provisions, Supplemental Specifications and/or Special Provisions as Included in the Proposal.

### GENERAL NOTES

- Unit Stresses: Concrete  $f_c = 1800$  p.s.i.  
Reinforcing Steel  $f_s = 24000$  p.s.i.
- All reinforcing steel shall conform to ASTM A615 Grade 60.
- All concrete shall be Class A45.
- All exposed edges shall be chamfered  $3/4$  inch.
- Use 2 inch clear cover on all reinforcing steel EXCEPT as shown.
- Care shall be taken to establish working points as shown.

### BREAKOUT STRUCTURAL CONCRETE

- This work shall consist of breaking out and disposing of structural concrete. All broken out concrete and other discarded material shall be disposed of in accordance with the WASTE DISPOSAL SITE notes found on this sheet.
- Breakout Structural Concrete will be paid for at the contract unit price per cubic yard for Breakout Structural Concrete. 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, breaking out concrete, and removing and disposing of all waste materials to satisfactorily complete the work.

### WASTE DISPOSAL SITE

- The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.
- Construction/demolition debris may not be disposed within the State ROW.
- The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program Issued by the Department of Environment and Natural Resources:
  - The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Engineer.
  - If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:
    - Construction/demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".
    - Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.
- The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-13, 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-6-13.
- All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

### REINFORCING SCHEDULE

OUTLET APRON					Bending Details	
Mk.	No.	Size	Length	Type		
e2	24	4	7'-6"	SI2		
u1	10	4	24'-6"	Str.		
u2	6	4	28'-9"	Str.		
u3	12	4	33'-9"	Str.		
u4	5	4	23'-9"	Str.		

See cutting diagram.

NOTE: All dimensions are out to out of bars.

### DETAILS AND 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
Class A45 Concrete, Box Culvert	Cu. Yd.	9.9
Reinforcing Steel	Lb.	749
Class B Riprap	Ton	157.5
Type B Drainage Fabric	Sq. Yd.	174
Breakout Structural Concrete	Cu. Yd.	25.9

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

### HYDRAULIC DATA

$Q_d$	1032 cfs
$A_d$	74 sq. ft.
$V_d$	14 fps
$Q_{100}$	1355 cfs
$V_{max}$	15.3 fps

$Q_d$  = Design discharge for the proposed culvert based on 50 year frequency. El. 1826.0

$Q_{100}$  = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1828.0

$V_{max}$  = Maximum computed outlet velocity for the proposed culvert based on a 100 year frequency.

### OUTLET APRON DETAILS

FOR

### 1- 12' X 12' BOX CULVERT

STA. 449+50.00  
Trib. to Medicine Crk.  
STR. NO. 43-113-205

0° SKEW  
SEC. 13-105N-R78W  
Maint. 090 W 391  
and 047-392

LYMAN COUNTY  
S. D. DEPT. OF TRANSPORTATION  
APRIL 2007

1 OF 1

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

DESIGNED BY PW/MM LYMN090W	DRAWN BY PW 090WVA01	CHECKED BY PW/MM
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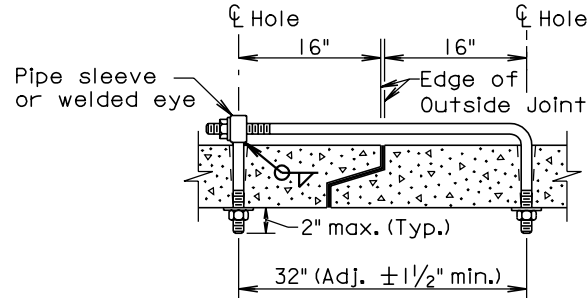
Kevin N. Goeden  
BRIDGE ENGINEER



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
SD	090W-391 & 047-392	9	13

SIGN CODE		SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-1		48" x 24"	ROAD WORK NEXT ## MILES	4	24	68
G20-2A		36" x 18"	END ROAD WORK		17	
M1-5		24" x 24"	SD ROUTE MARKER		16	
R1-1		48" x 48"	STOP		34	
R1-2		48" x 48"	YIELD		34	
R1-2a		48" x 24"	TO ONCOMING TRAFFIC		24	
R2-1		30" x 36"	SPEED LIMIT ##		23	
R2-5C		30" x 36"	SPEED ZONE AHEAD		23	
R4-1		24" x 30"	DO NOT PASS		18	
R4-2		24" x 30"	PASS WITH CARE		18	
SW12-1B		120" x 60"	HIGHWAY WORKERS GIVE'EM A BRAKE		80	
W1-1		48" x 48"	LEFT OR RIGHT TURN ARROW		34	
W1-2		48" x 48"	LEFT OR RIGHT CURVE ARROW		34	
W1-3		48" x 48"	REVERSE TURN SIGN (LEFT OR RIGHT)		34	
W1-4a		48" x 48"	REVERSE CURVE SIGN (LEFT OR RIGHT)		34	
W3-1A		48" x 48"	STOP AHEAD (SYMBOL)		34	
W3-2a		48" x 48"	YIELD AHEAD (SYMBOL)		34	
W3-3		48" x 48"	SIGNAL AHEAD (SYMBOL)		34	
W4-1		48" x 48"	MERGE (SYMBOL)		34	
W4-2		48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	2	34	68
W5-2		48" x 48"	NARROW BRIDGE		34	
W5-3		48" x 48"	ONE LANE BRIDGE		34	
W6-3		48" x 48"	TWO WAY TRAFFIC (SYMBOL)		34	
W7-3a		30" x 24"	NEXT ## MILES		18	
W8-1		36" x 36"	BUMP		27	
W8-6		48" x 48"	TRUCK CROSSING		34	
W8-7		36" x 36"	LOOSE GRAVEL		27	
W8-7A		36" x 36"	WINDROW		27	
W8-9a		48" x 48"	SHOULDER DROP-OFF		34	
W8-11		48" x 48"	UNEVEN LANES		34	
W12-1		36" x 36"	DOUBLE ARROW		27	
W13-1		24" x 24"	ADVISORY SPEED PLATE		16	
W20-1		48" x 48"	ROAD WORK ##### FT. OR AHEAD		34	170
W20-2		48" x 48"	DETOUR ##### FT. OR AHEAD		34	
W20-3		48" x 48"	ROAD CLOSED ##### FT. OR AHEAD		34	
W20-4		48" x 48"	ONE LANE ROAD ##### FT. OR AHEAD		34	
W20-5		48" x 48"	LT. OR RT. LANE CLOSED ##### FT. OR AHEAD	2	34	68
W20-7a		48" x 48"	FLAGGER	2	34	68
W20-7b		48" x 48"	BE PREPARED TO STOP	2	34	68
W21-1a		48" x 48"	WORKERS (SYMBOL)		34	
W21-2		36" x 36"	FRESH OIL		27	
W21-3		48" x 48"	ROAD MACHINERY AHEAD		34	
W21-5		48" x 48"	SHOULDER WORK		34	
SPECIAL		18" x 72"	EXIT ###		26	
SPECIAL		36" x 72"	45 DEGREE ARROW		36	
SPECIAL		48" x 36"	REDUCE SPEED LOOSE GRAVEL NEXT X MILES		30	
					TOTAL UNITS	782

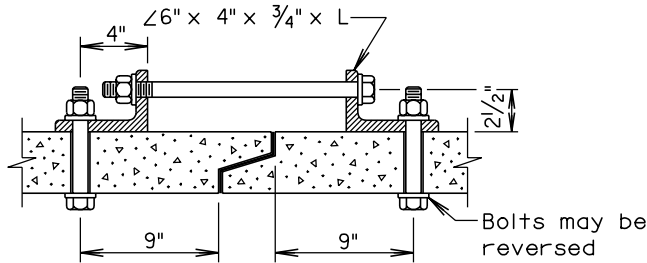
Plotting Date: 17-DEC-2007



ADJUSTABLE EYE BOLT TIE

GENERAL NOTES:

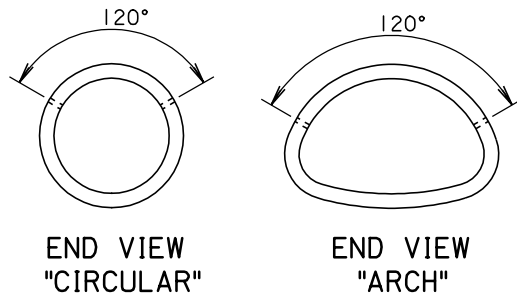
Tie bolts to be furnished with 2 washers and 2 nuts except for the 5/16" rod which has unthreaded legs.  
Use 5/16" rod diameter and 5/8" thread diameter for pipe wall thickness of 2" to 3 1/4".  
Use 1 1/16" rod diameter and 3/4" thread diameter for pipe wall thickness of 3 1/2" to 6 1/2".  
Use 29/32" rod diameter and 1" thread diameter for pipe wall thickness of 7" and larger.



ANGLE AND BOLT TIE

GENERAL NOTES:

L = 4" for 3/4" Bolt. L = 6" for 1" Bolt.  
Use 3/4" Tie Bolts for pipe diameters less than 48".



GENERAL NOTES:  
In lieu of Tie Bolts detailed above, Tecktonius Fasteners or other type Tie Bolt connections may be installed if approved by the Engineer.  
There will be no separate measurement or payment for Tie Bolts.  
The cost of the Tie Bolts shall be incidental to the contract unit price per Foot for the corresponding Bid Item for R.C.P. and/or R.C.P. Arch.  
The first three Sections (both inlet and outlet) on R.C.P. and R.C.P. Arch up to and including the 78" diameter or equivalent pipe shall be tied with Tie Bolts. Pipe sizes above 78" diameter or equivalent diameter shall have all Sections tied. Each End Section is considered as one section.

March 31, 2000

Published Date: 4th Qtr. 2007

S  
D  
D  
O  
T

TIE BOLTS FOR  
R.C.P. END SECTIONS

PLATE NUMBER  
450.18

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

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

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

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



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000



A



July 1, 2005

Published Date: 4th Qtr. 2007

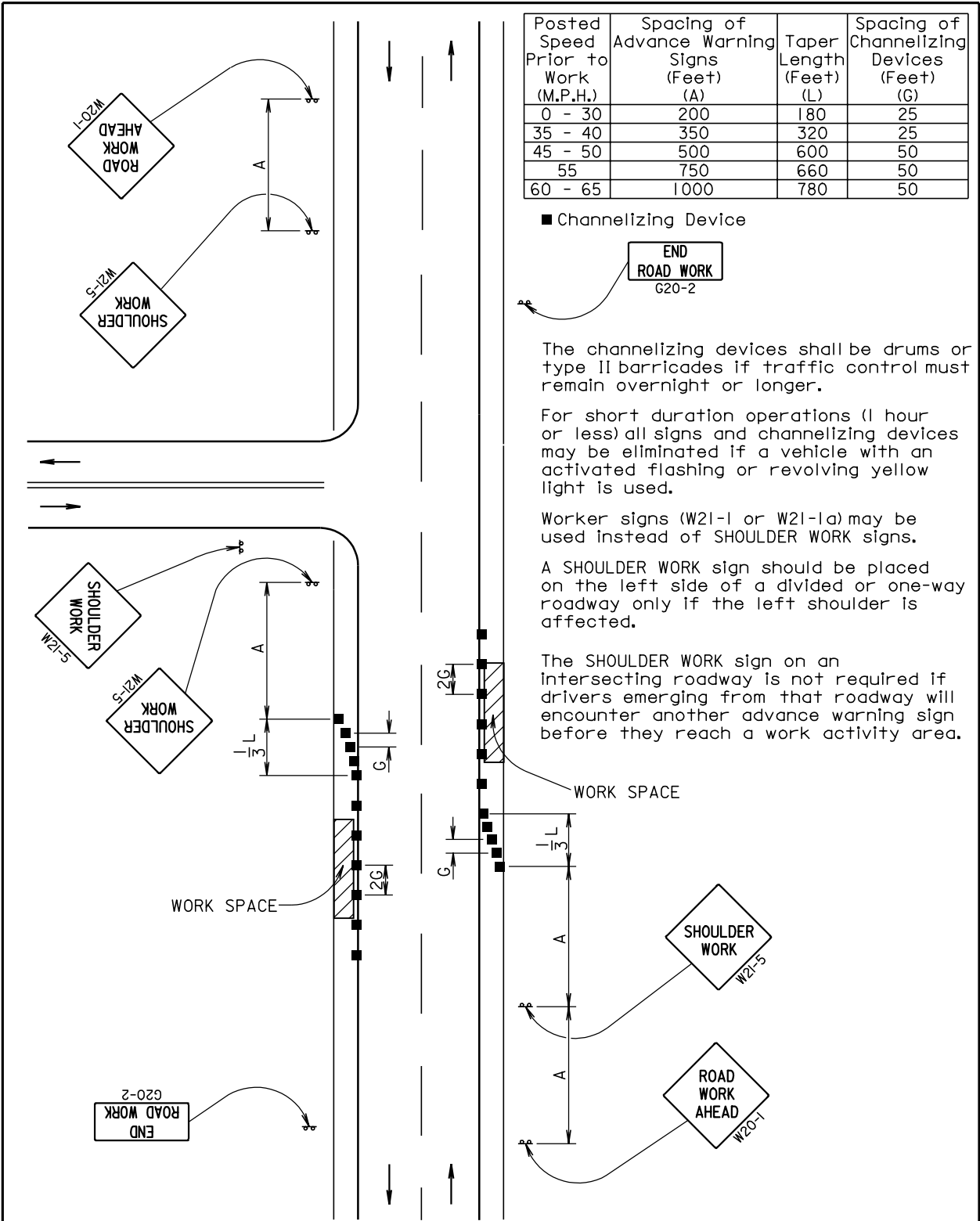
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GUIDES FOR TRAFFIC CONTROL DEVICES  
WORK BEYOND THE SHOULDER

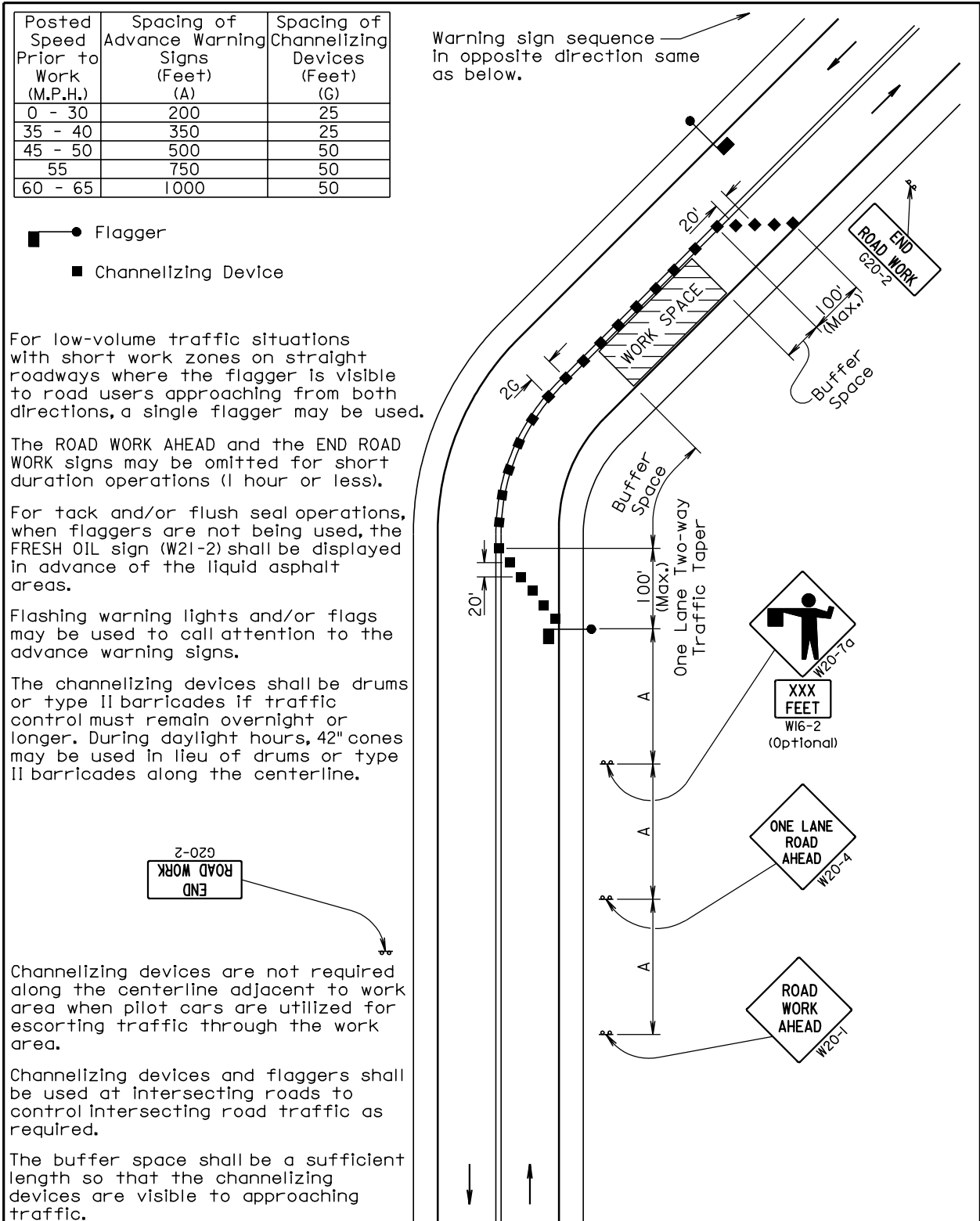
PLATE NUMBER  
634.01

Sheet 1 of 1

Plotting Date: 17-DEC-2007



July 1, 2005



June 26, 2006





