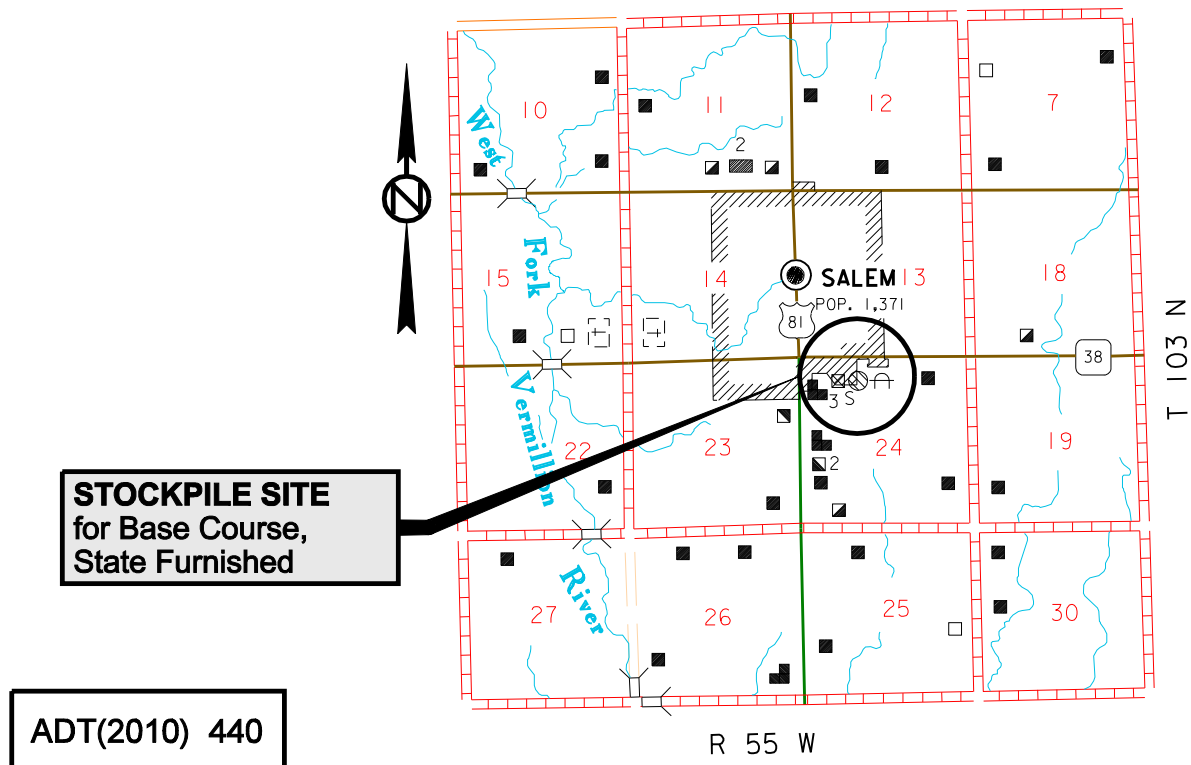
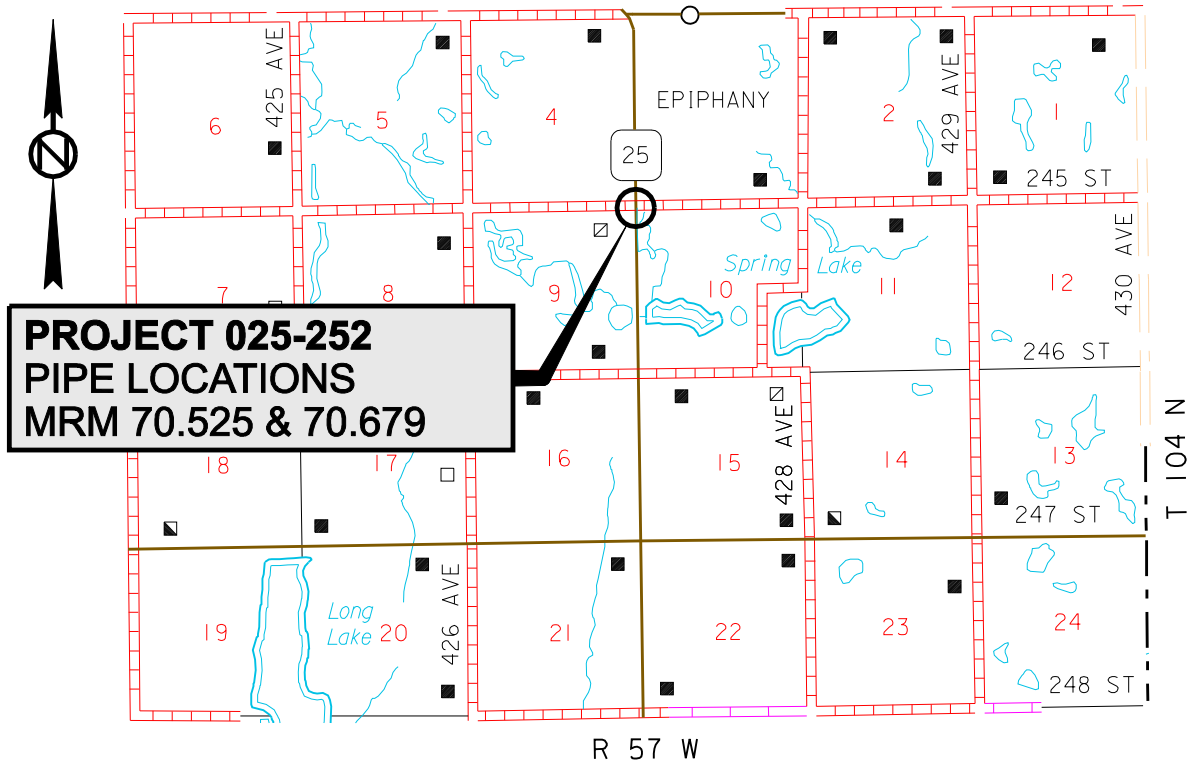


025-252 HANSON COUNTY PIPE REPLACEMENT PCN 124Y



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HANSON COUNTY**

INDEX OF SHEETS

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Sheets 3 to 6	Notes
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Sheets 9 to 12	Standard Plates

ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0500	Remove Pipe Culvert	96	Ft
110E0510	Remove Pipe End Section	4	Each
110E1010	Remove Asphalt Concrete Pavement	58.0	SqYd
120E0010	Unclassified Excavation	300	CuYd
120E0600	Contractor Furnished Borrow	100	CuYd
250E0010	Incidental Work	Lump Sum	LS
260E1090	Base Course, State Furnished	50.0	Ton
320E1200	Asphalt Concrete Composite	30.0	Ton
421E0100	Pipe Culvert Undercut	35	CuYd
450E0142	24" RCP Class 2, Furnish	96	Ft
450E0150	24" RCP, Install	96	Ft
450E2200	24" RCP Sloped End, Furnish	2	Each
450E2201	24" RCP Sloped End, Install	2	Each
450E2308	24" RCP Safety End, Furnish	2	Each
450E2311	24" RCP Safety End, Install	2	Each
634E0010	Flagging	120	Hour
634E0100	Traffic Control	306	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS

SPECIFICATIONS

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

SCOPE OF WORK

The following scope of work and sequence of operation shall be as shown below unless otherwise approved by the Engineer:

1. Install traffic control to complete the installation of the impermeable water barrier on both ends of the existing pipe. Traffic shall be maintained with flaggers.
2. Set up workspace lane closure maintaining traffic on one-half the roadway.
3. Dewater site and remove surfacing as marked by the Engineer.
4. Excavate to and remove existing CMP and end section from half the roadway closed to traffic.
5. Prepare pipe bed. Install new 24" RCP and end section with tie bolts while maintaining traffic on the other half. Backfill and compact to the satisfaction of the Engineer. Restore inslopes.
6. Haul and place Base Course, State Furnished from the SDDOT maintenance yard at Salem.
7. Switch traffic control and repeat steps 2 through 6 as necessary.
8. Seed and mulch disturbed areas.

UTILITIES

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

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

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to the DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3268). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

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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.

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:

1. 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.
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

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

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

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) shall be incidental to the various contract items.

UNCLASSIFIED EXCAVATION

The basis for payment for Unclassified Excavation will be plans quantity. Additional quantities will be included for payment only in the event that work sites other than those shown on the plans are added to the contract.

CONTRACTOR FURNISHED BORROW

In the event that Contractor Furnished Borrow is necessary to complete the work, a quantity has been provided.

The Contractor shall provide a suitable site for Contractor Furnished Borrow material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. Some of the Contractor Furnished Borrow may be obtained from ditch cleanout at pipe ends. Borrow material shall be approved by the Engineer.

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. Removing and replacing topsoil will not be measured for payment but 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.

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 shall be incidental to the contract unit price per cubic yard for Contractor Furnished Borrow.

The basis for payment for Contractor Furnished Borrow will be plans quantity. Additional quantities will be included for payment only in the event that work sites other than those shown on the plans are added to the contract.

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

BASE COURSE, STATE FURNISHED

Base Course, State Furnished shall be obtained from the South Dakota Department of Transportation Stockpile Site located at the Salem Maintenance Yard along SD38, Section 24 –T103N-R55W, in McCook County and may be used without further testing.

Compaction shall be to the satisfaction of the Engineer.

The material is royalty free to the Contractor. Furnish cost to the State for Base Course, State Furnished is \$4.76 per ton.

ASPHALT CONCRETE COMPOSITE

Mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements for Class E, Type 1.

The asphalt binder used in the mixture shall be PG 58-28, PG 64-28 or PG 58-34 Asphalt Binder.

All other requirements in the Standard Specifications for Asphalt Concrete Composite shall apply.

TIE BOLTS FOR RCP CULVERTS

Tie Bolts shall be installed on all sections of new culvert and on new culvert ends.

REINFORCED CONCRETE PIPE

All reinforced concrete pipe used on this project is Class II unless otherwise noted in the plans.

CULVERT REPLACEMENT AT MRM 70.525

The work shall be performed half roadway width at a time.

The Contractor shall perform excavation, remove 24" x 52' CMP and two end sections, replace with new 24" x 52' RCP & two Sloped Ends and replace excavated material at SD25 MRM 70.525. Complete minor ditch shaping at the inlet/outlet to restore the inslope.

The existing 24" CMP and end sections shall be disposed of by the Contractor.

The object markers shall be reset at the new culvert ends.

All work to complete the installation shall be included in the contract unit prices for the various items.

CULVERT REPLACEMENT AT MRM 70.679

The work shall be performed half roadway width at a time.

The Contractor shall perform excavation, remove 24" x 44' CMP and two end sections, and replace with new 24" x 44' RCP & two Safety Ends and replace excavated material at SD25 MRM 70.679; at the west intersection of SD25 and 245th Street. Complete minor ditch shaping at the inlet/outlet to restore the inslope.

The existing 24" CMP and end sections shall be disposed of by the Contractor.

All work to complete the installation shall be included in the contract unit prices for the various items.

EROSION CONTROL

The Contractor shall be responsible for erosion control during the replacement. The lump sum price for Erosion Control shall include material, equipment, labor and incidentals necessary to insure no sediment leaves the project. DOT Maintenance forces will seed and mulch all disturbed areas upon completion of the replacement.

INCIDENTAL WORK

The Contractor shall install an impermeable water barrier on each end of the work site and dewater the work area before excavation begins. Sump pits and pumping will be allowed provided the work site remains dry.

The Contractor shall provide a description of the water barrier when submitting a bid for the work. The plan will be reviewed, amended if necessary, and must be approved prior to beginning the work.

Cost for impermeable barrier/dewatering the site including material, equipment, installation, maintenance and removal of the barrier shall be included in the contract lump sum for Incidental Work.

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GENERAL MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

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.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.



If the Contractor cannot complete the removal and replacement in one day, the area shall be backfilled prior to nightfall and the installation completed the next day. Base Course, State Furnished shall be placed prior to returning traffic to the disturbed area. Cost for Flagging shall be included in the contract unit price per hour for Flagger.

ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	2	17	34
W20-1	48" x 48"	ROAD WORK AHEAD	2	34	68
W20-4	48" x 48"	ONE LANE ROAD AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	2	34	68
W21-5	48" x 48"	SHOULDER WORK	2	34	68
TOTAL UNITS					306

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

 Flagger
 Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

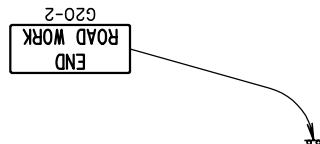
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices shall be drums or 42" cones.

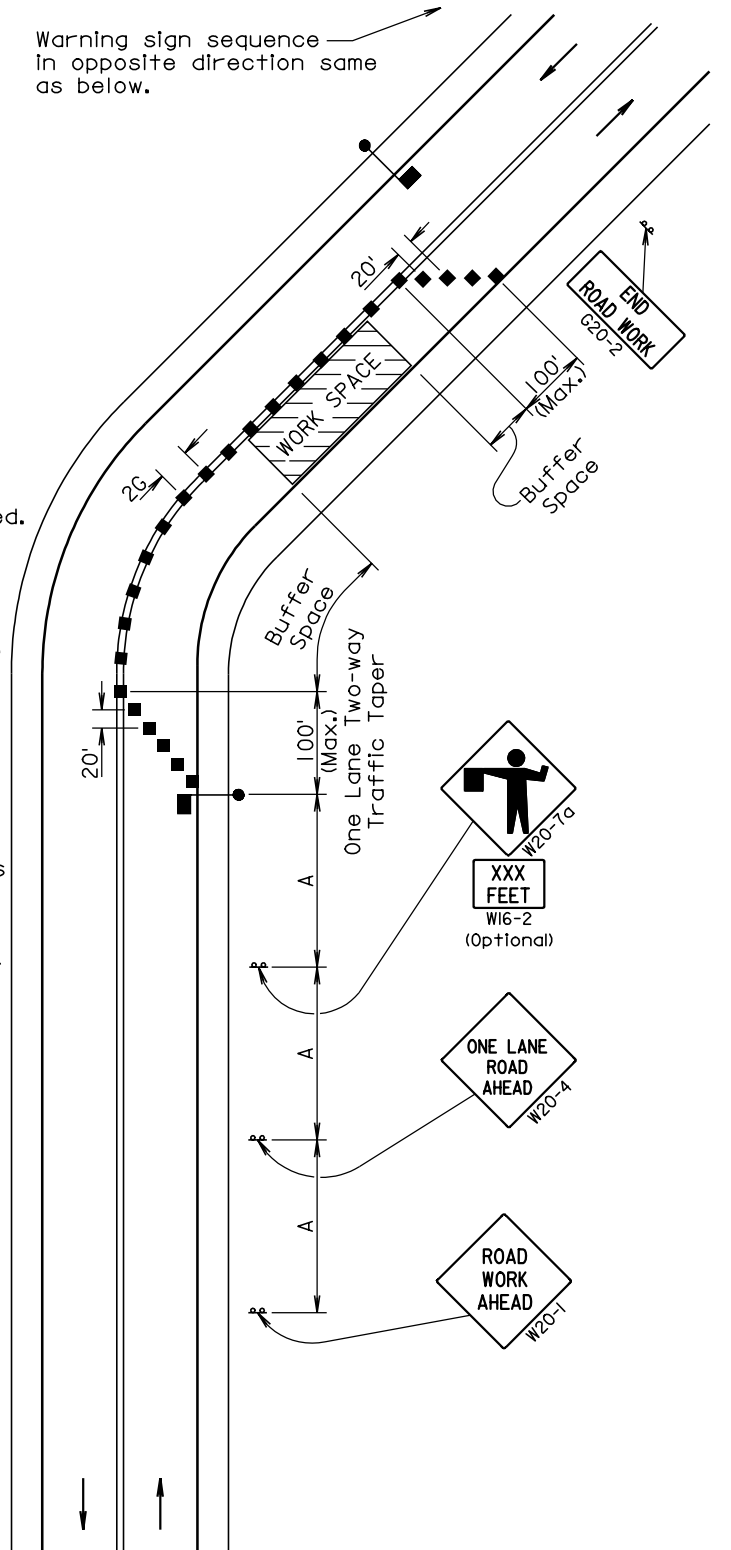
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.



Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

Warning sign sequence —
in opposite direction same
as below.



February 14, 2011

Published Date: 2nd Qtr. 2011

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER
634.23

Sheet 1 of 1

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HANSON COUNTY**

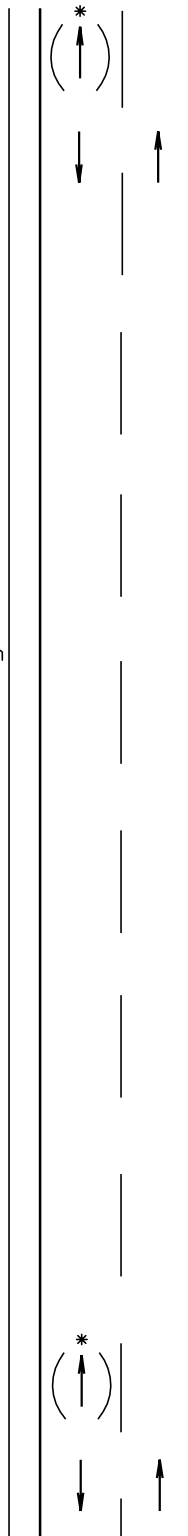
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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.

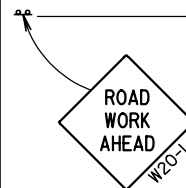
The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* 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



July 1, 2005

Published Date: 2nd Qtr. 2011

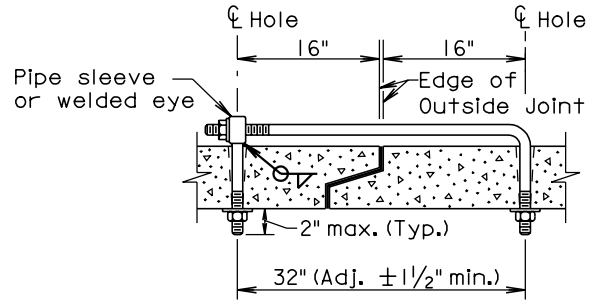
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**GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER**

**PLATE NUMBER
634.01**

Sheet 1 of 1

**025-252
HANSON COUNTY**



ADJUSTABLE EYE BOLT TIE

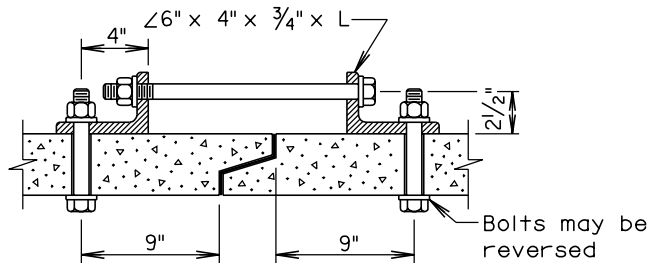
GENERAL NOTES:

Tie bolts to be furnished with 2 washers and 2 nuts except for the $\frac{9}{16}$ " rod which has unthreaded legs.

Use $\frac{9}{16}$ " rod diameter and $\frac{5}{8}$ " thread diameter for pipe wall thickness of 2" to $3\frac{1}{4}$ ".

Use $\frac{11}{16}$ " rod diameter and $\frac{3}{4}$ " thread diameter for pipe wall thickness of $3\frac{1}{2}$ " to $6\frac{1}{2}$ ".

Use $\frac{29}{32}$ " rod diameter and 1" thread diameter for pipe wall thickness of 7" and larger.

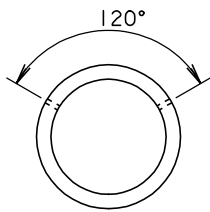


ANGLE AND BOLT TIE

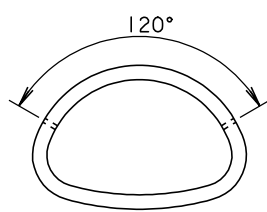
GENERAL NOTES:

L = 4" for $\frac{3}{4}$ " Bolt. L = 6" for 1" Bolt.

Use $\frac{3}{4}$ " Tie Bolts for pipe diameters less than 48".



**END VIEW
"CIRCULAR"**



**END VIEW
"ARCH"**

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: 2nd Qtr. 2011

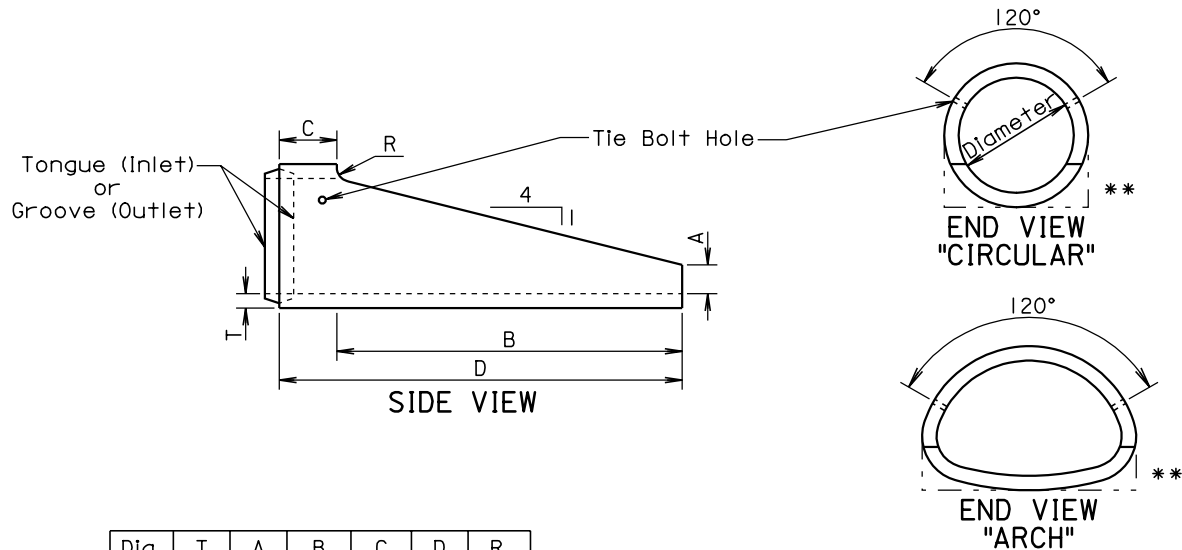
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**TIE BOLTS FOR
R.C.P. END SECTIONS**

**PLATE NUMBER
450.18**

Sheet 1 of 1

**025-252
HANSON COUNTY**



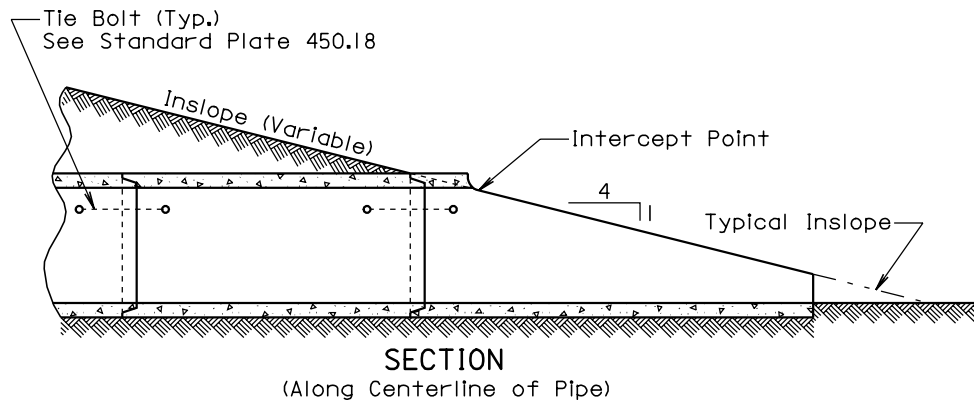
Dia. (In.)	T (In.)	A (In.)	B (In.)	C (In.)	D (In.)	R (In.)
FOR CIRCULAR PIPE						
24	3	6	72	12	84	3
30	3½	7½	90	12	102	3½
FOR ARCH PIPE						
* 24	3	6	48	12	60	3
* 30	3½	7½	60	12	72	3½
* 36	4½	8⅝	66	30	96	0
* 42	4½	10	77¼	18¾	96	0

ALTERNATE

Dia. (In.)	T (In.)	A (In.)	B (In.)	C (In.)	D (In.)	R (In.)
FOR CIRCULAR PIPE						
24	3	9	72	12	84	0
30	3½	11	90	12	102	0
FOR ARCH PIPE						
* 24	3	9	48	12	60	0
* 30	3½	11	60	12	72	0

* Equivalent Diameter of Circular R.C.P.

** Acceptable Flat Bottom Alternate.



GENERAL NOTE:

The length of concrete pipe shown in the construction plans is between sloped ends.

September 22, 2006

Published Date: 2nd Qtr. 2011

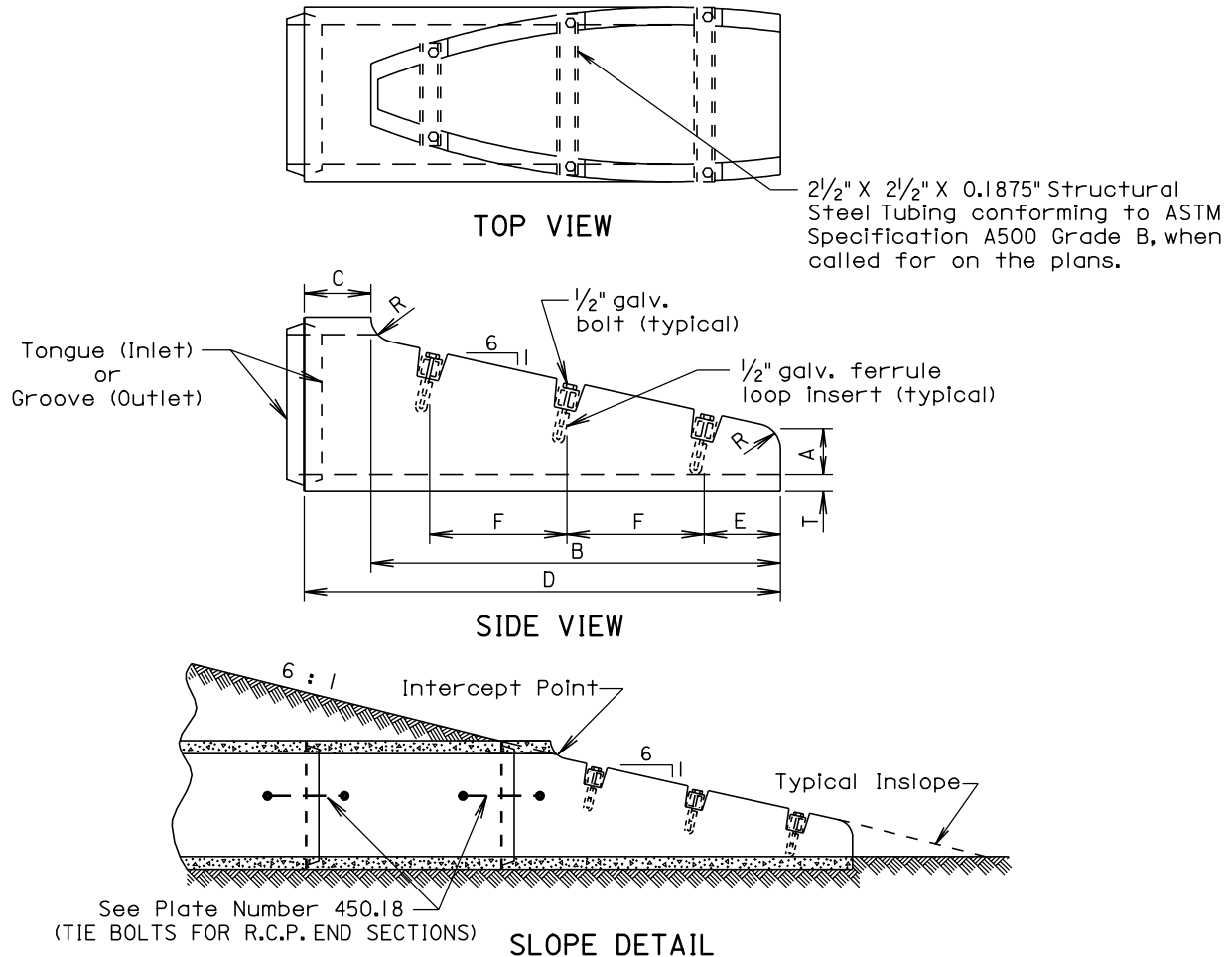
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R. C. P. SLOPED ENDS

**PLATE NUMBER
450.13**

Sheet 1 of 1

**025-252
HANSON COUNTY**



Dia. (In.)	T (In.)	R (In.)	A (In.)	B (In.)	C (In.)	D (In.)	E (In.)	F (In.)	No. Sections	No. Bars
FOR CIRCULAR PIPE										
15	2 1/4	3	6	48	9	57	6	18	1	3
18	2 1/2	3	6	69	9	78	9	24	1	3
*24	3	3	6	111	9	120	6	24	1 or 2	5
FOR ARCH PIPE										
**18	2 1/2	1	6	39	33	72	6	24	1	2

*The use of 2 sections must be an approved design.
 **Equivalent Diameter of Circular R. C. P.

GENERAL NOTES:

Lengths of concrete pipe shown on Plan Sheets are between Safety Ends only.
 Safety ends without bars are acceptable with or without the bar notches.
 Bars shall be galvanized after fabrication according to ASTM 123.

March 31, 2000

Published Date: 2nd Qtr. 2011

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**R. C. P. SAFETY ENDS
WITH OR WITHOUT BARS**

**PLATE NUMBER
450.12**

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HANSON COUNTY**

TOLERANCES IN DIMENSIONS

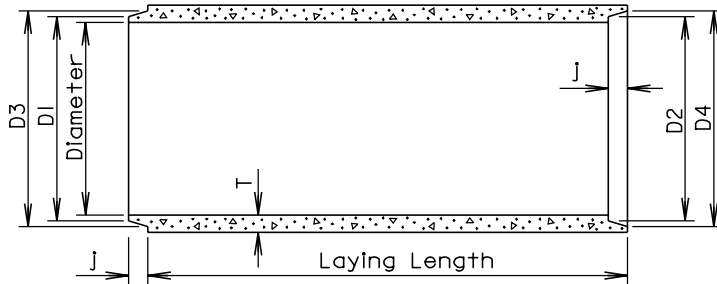
Diameter: $\pm 1.5\%$ for 24" Dia. or less and $\pm 1\%$ or $\frac{3}{8}"$ whichever is more for 27" Dia. or greater.

Diameters at Joints: $\pm 3/16"$ for 30" Dia. or less and $\pm 1/4"$ for 36" or greater.

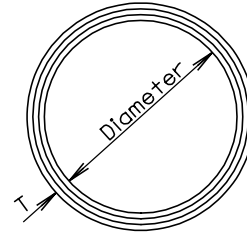
Length of Joint (J): $\pm 1/4"$.

Wall thickness (T): not less than design T by more than 5% or $\frac{3}{16}"$, whichever is greater.

Laying length: shall not underrun by more than $\frac{1}{2}"$.



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

Construction of R.C.P. shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.

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

March 31, 2000

Published Date: 2nd Qtr. 2011

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REINFORCED CONCRETE PIPE

**PLATE NUMBER
450.01**

Sheet 1 of 1