

CITY OF WATERTOWN, SOUTH DAKOTA
ENGINEERING DEPARTMENT

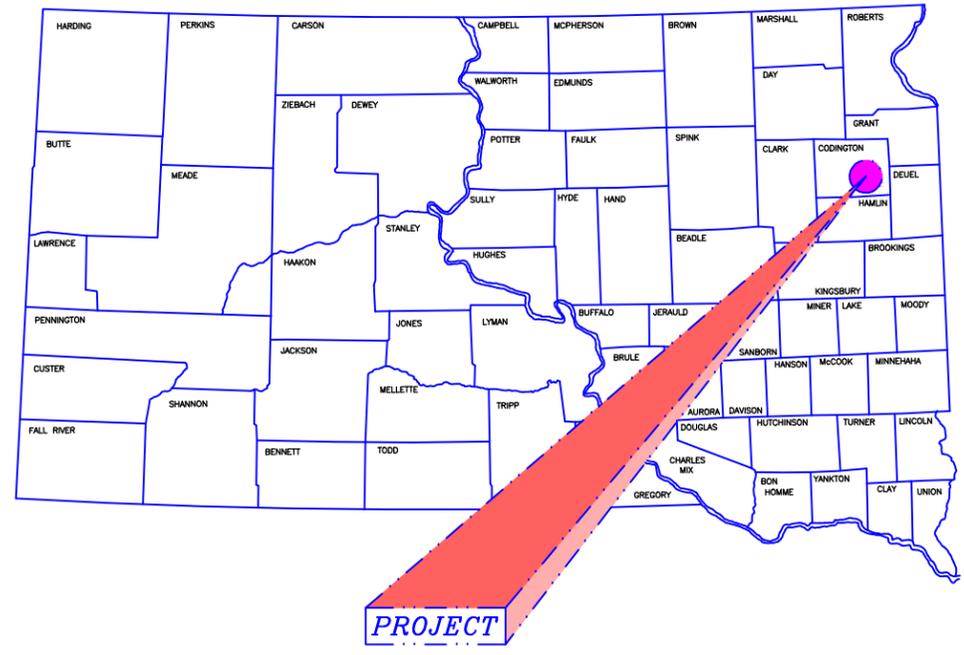
PLANS FOR PROPOSED
CITY PROJECT NO. 1406

5TH AVE. NW STORM SEWER CROSSING
STORM SEWER
PCN X03C

SHEET NO.	DESCRIPTION
Sheet No. 1	Title Sheet & Layout Map
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PLAN SHEETS LEGEND:

- Reference Point
- BM/Survey Monument
- ADA Panel
- Bollard
- Mail Box
- Property Pin
- Sign
- Sprinkler
- Street Sign
- Sump Pump Outlet
- Electric Manhole
- Electric Terminal
- Guy Wire
- Power Pole
- Stop Light
- Street Light
- Lift Station
- Sanitary Sewer Manhole
- Gas Meter
- Gas Valve
- Curb Stop
- Fire Hydrant
- Water Valve
- Communication Manhole
- Communication Terminal
- Storm Sewer Manhole
- Gas Line
- Overhead Power Line
- Sanitary Sewer Line
- Storm Sewer Line
- Abandoned Storm Sewer
- Communication Line
- Underground Power Line
- Water Line
- Fiber Optic Line
- Fence Line



Note:
It is the Contractor's responsibility to locate all existing utilities prior to any excavation.
South Dakota One Call 1-800-781-7474
SE1/4 Sec. 25-T117N-R53W

Phone Numbers:

Engineering Dept.	605-882-6202
Park & Recreation Dept.	605-882-6260
Police Dept.	605-882-6210
Fire Dept.	605-882-5030
Sewer Dept.	605-882-6241
After Hours:	605-882-6210
Street Dept.	605-882-6207
Solid Waste Dept.	605-882-6219
Municipal Utilities, Water Dept.	605-882-6233
After Hours:	605-882-6227
Municipal Utilities, Gas Dept.	605-882-6233
After Hours:	605-882-6227
Municipal Utilities, Electric Dept.	605-882-6233
After Hours:	605-882-6227
South Dakota, Dept. of Transportation	605-882-5166
South Dakota, One Call	800-781-7474
Codington County, Highway Shop	605-882-6270
Codington County, Highway Superintendent	605-882-6271
United States Post Office, Watertown, South Dakota	605-886-7765

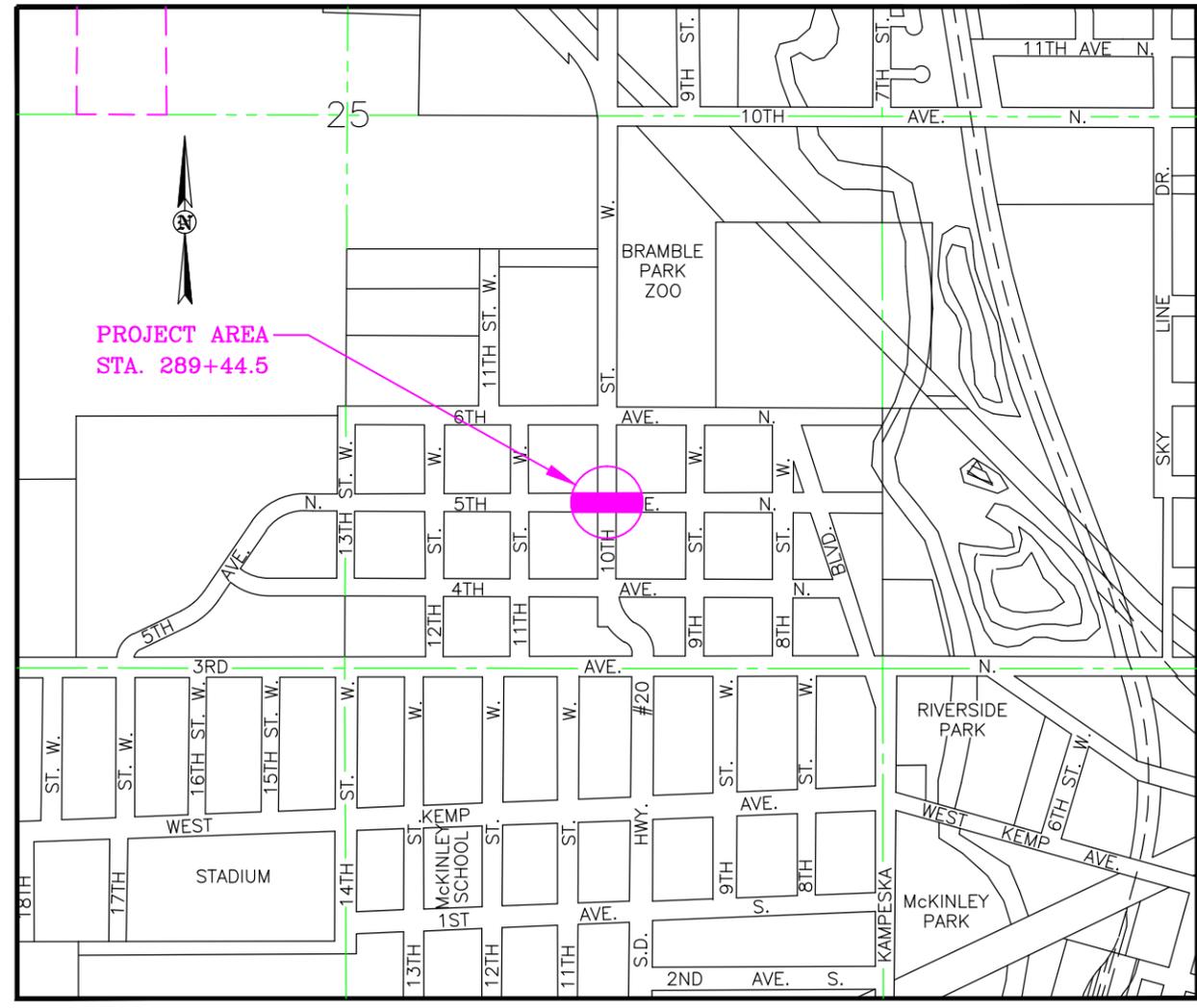


TABLE OF PIPE QUANTITIES

STATE OF SOUTH DAKOTA

PROJECT

1406

SHEET

3

TOTAL SHEETS

16

Reinforced Concrete

Arch* *pipe shape shall be Elliptical rather than Arch as stated in the bid item description

30"
CL2

LF

Station Offset (L/R)

289+44.24 65.10'L TO 289+44.37 34.09'L

30

289+44.37 34.09'L TO 289+44.66 33.58'R

64

289+44.66 33.58'R TO 289+44.77 60.08'R

24

Total: 118

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	1406	4	16

SPECIFICATIONS

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

EXISTING UTILITIES

Utilities within the limits of the proposed construction are to be adjusted by the utility owner unless otherwise indicated on these plans.

Fiber optic cable exists along the project. The approximate location is shown in the plans.

The Contractor shall contact SD One-Call at 1-800-781-7474 for utility lines and cable locations a minimum 48 hours prior to beginning of any earthwork or underground excavations. The Contractor shall be specific in defining the work areas so that cable locations cover the area of anticipated work limits.

WASTE DISPOSAL SITE

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

Construction and/or 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 Project 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 and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the 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.

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.

HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all designated option borrow sites provided within the plans.

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

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

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

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

GENERAL MAINTENANCE OF TRAFFIC

The Contractor will be required to maintain traffic in accordance with Section 634 of the South Dakota Standard Specifications and as detailed in the Traffic Control Plans.

One lane of traffic in each direction shall be maintained at all times on SD Highway 20.

Local access to entrances shall be maintained.

FOR BIDDING PURPOSES ONLY

Work activities will be conducted during daylight hours only unless approved by the Engineer.

During project construction, existing traffic control devices shall be removed, relocated and/or reset as necessary by the Contractor to safely maintain traffic. Payment for removal, relocation and/or resetting of traffic control devices shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

Locations of signs on traffic control layouts are diagrammatic, erect only those traffic control devices that are applicable to work in progress. All non-fixed location signs may be mounted on portable supports. The portable supports shall be constructed to yield upon impact to minimize hazards to motorists. The bottom of signs on portable or temporary supports shall not be less than three feet above the pavement in urban areas.

The contract unit price per Unit for Traffic Control shall include all labor, equipment and materials necessary to furnish, erect and maintain the traffic control devices for the duration of the project. Each sign or traffic control device will be paid for only once. Additional payment for relocation and re-use of a sign or traffic control device will not be made.

Indiscriminate driving and parking of vehicles in the construction area will not be permitted. Any damage to the vegetation, surfacing and embankment resulting from such indiscriminate use shall be repaired and/or restored by the Contractor to the satisfaction of the Engineer at no expense to the City of Watertown or the State of South Dakota.

The Contractor shall give 24 hour notice of any road closure to the Watertown Police Department at 882-6210.

The Contractor will be required to have a person available 24 hours/day, 7 days/week to maintain traffic control devices in accordance with Section 634 of the South Dakota Standard Specifications.

The Contractor shall fence or barricade off any open excavation during nighttime or non-working hours. All costs incurred for fencing or barricades shall be incidental to the various contract items.

REMOVE ASPHALT PAVEMENT

Removal limits shall be saw cut to full depth and the cut edge shall be protected until new surfacing is in place.

Any edges that need to be recut to provide a proper edge to pave next to, shall be done at the Contractor's expense.

All costs for cutting, removal, and disposal of the existing asphalt shall be included in the contract unit price per square yard for "Remove Asphalt Concrete Pavement".

TABLE OF ASPHALT PAVEMENT REMOVAL

Location	Quantity (SqYd)
289+44 71' L to 289+44 66' R	205
Total	205

FOR BIDDING PURPOSES ONLY

CONTAMINATED MATERIAL

Contaminated soil and/or known gas stations, undergrounds storage tanks, etc. are located within the project limits. Petroleum contaminated soil may be located at the following site:

Description	Station	L/R
Tesoro Gas Station	289+00	L

The Contractor shall give written notice, with a copy to the Area Engineer and the Department of Environment and Natural Resources (DENR), 30 days prior to the start of work. In addition, the Contractor shall give written notice to the Engineer 7 days prior to the commencement of the work so the Engineer may notify DENR of the day work will start.

The Contractor shall be responsible for having the existing underground utilities located in the construction area. Underground utilities damaged by the Contractor due to negligence shall be repaired at the Contractor's expense.

Petroleum contaminated soil may be disposed of at the City of Watertown Landfill (phone 605-882-6219). Measurement of "Contaminated Material Excavation" shall be in accordance with Section 120.4 of the Standard Specifications. All costs for excavating and transporting the contaminated materials to the disposal site and all fees charged per cubic yard by the disposal site shall be incidental to the contract unit price per cubic yard for "Contaminated Material Excavation".

The estimated quantity of Contaminated Material Excavation" is 100 cubic yards. The quantity of "Contaminated Material Excavation" may vary from the plans. No adjustment will be made of the contract unit price for variations in the quantity of "Contaminated Material Excavation".

STORM SEWER

Reinforced concrete sewer pipe may be either bell and spigot or tongue and groove. The pipe sections shall be adjoined such that the ends are fully entered and the inner surfaces are reasonably flush and even.

Lift holes in the reinforced concrete pipe shall be plugged with grout.

The end of the pipe at Sta. 289+44.77 60.08' R shall be plugged with 2 layers of 3/4" plywood and marked with a steel fence post for future locating.

Watertight joints are required for reinforced concrete pipe, drop inlets, manholes, or junction boxes where storm sewers run parallel to and within 10 feet horizontally from existing or proposed water mains.

Watertight joints are required where reinforced concrete pipes, drop inlets, manholes, or junction boxes cross water mains and are separated a distance of 18 inches or less, above or below, the water main.

If watertight joints are required then the watertight joints shall extend for a distance of 10 feet beyond the water main. This measurement shall be from the sealed concrete joint to the outer most surface of the water main.

Watertight joint seals shall conform to the following requirements:

1. Reinforced Concrete Pipe (Circular): Gasketed pipe shall conform to the requirements of ASTM C443. Non-gasketed concrete pipe shall be sealed with a mastic joint seal conforming to the requirements of ASTM

C990 and encased with a minimum 2' wide by 6" thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.

2. Reinforced Concrete Pipe (Arch and Ellipse): Joints shall be sealed with a waterstop seal meeting the requirements of ASTM C990. Waterstop seals shall consist of hydrophilic compounds such as Waterstop-RX or ConSeal CS-231.
3. Drop Inlets, Manholes, and Junction Boxes: Joints shall be sealed with a waterstop seal or seal wrap meeting the requirements of ASTM C990 or encased with a minimum 2' wide by 6" thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh. Waterstop seal shall contain hydrophilic compounds such as Waterstop-RX or ConSeal CS-231. Seal wrap shall be a self adhesive external joint wrap such as ConWrap CS-217 or Mar Mac Seal Wrap.

Gaskets and seals (mastic, watertstop, and seal wraps) shall be installed in accordance with the manufacturer's recommendations.

The cost of furnishing and installing all gaskets, mastic joint seal, waterstop seal, seal wrap, concrete collars, and for plugging the lift holes and end of pipe shall be incidental to the contract unit price bid per foot for the corresponding pipe bid item.

There are no known locations where watertight joints would be required.

DROP INLETS AND JUNCTION BOXES

The plan shown quantities of the drop inlet and junction box components such as Class M6 Concrete, Reinforcing Steel, and Frames and Grate/Lids will be the basis of payment for these items.

If additions or reductions to the number of drop inlets are ordered by the Engineer, payment for the components required to construct the drop inlets will be made at the contract prices for the components of the drop inlets.

Where existing pipe is to be connected to a new structure, the pipe shall be neatly cut at the location of the inside wall of the structure. All costs for cutting shall be incidental to the various contract items.

The Contractor has the option of using precast drop inlets.

In the event the drop inlets are precast off site and delivered to the site prior to discovering any or all obstacles which could result in a change in height required for placement of the drop inlets, the Contractor will be required to modify the precast units to fit actual on site conditions at no additional cost to the City of Watertown.

TABLE OF DROP INLETS AND QUANTITIES

Station	L / R	Drop Inlet Size	Drop Inlet Type	Class M6 Concrete (CuYd)	Reinf. Steel (Lb)	Frame and Grate/Lid Type
289+44.37	L	3X4	C	2.56	279	C
(H=8.30')				Totals 2.56	279	Total Type C Frame and Grate 1

TABLE OF JUNCTION BOXES AND QUANTITIES

Station	L / R	JB Size L'xW'	Class M6 Concrete (CuYd)	Reinf. Steel (Lb)	Frame and Lid/Grate Type
289+44.66	R	5X5	5.64	1071	A7
(H=7.50')			Totals 5.64	1071	Total Type A7 Frame and Lid 1

BASE COURSE

Base Course shall be furnished and installed in accordance with Section 260 and 882 of the South Dakota Standard Specification.

TABLE OF BASE COURSE

Location	Quantity (Ton)
289+44 71' L to 289+44 66' R	142
Total	142

ASPHALT CONCRETE COMPOSITE

Asphalt Concrete Composite shall be furnished and installed in accordance with Section 320 and 324 of the South Dakota Standard Specification. PG 64-22 Asphalt Binder shall be used. Sand is not required.

Emulsified Asphalt for Tack SS-1h or CSS-1h applied 14 feet wide (Rate=0.05 gallon per square yard).

TABLE OF ASPHALT

Location	Quantity (Ton)
289+44 71' L to 289+44 66' R	72
Total	72

SWEEPING

Vehicle tracking of sediment from the construction site shall be minimized. Sweeping shall be used if erosion and sediment control best management practices are not adequate to prevent sediment from being tracked onto street.

All costs for sweeping shall be incidental to the various contract items.

SEDIMENT CONTROL AT INLET WITH FRAME AND GRATE

This type of sediment control device should be used where there is pavement in the vicinity of the drop inlets and storm water or sediment could possibly enter the frame and grate. Sediment Control at Inlets with Frame and Grates shall be installed prior to working in the vicinity of the drop inlets.

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	1406	6	16

The Contractor shall be responsible for maintaining and repairing the sediment control devices for the duration of the project for which sediment control measures are required. Maintenance shall be scheduled to prevent storm water from backing up into the driving lane.

“Sediment Control at Inlet with Frame and Grate” will be paid for one time at each location, regardless of the number of times the sediment control devices are installed, inspected, cleaned, removed, repaired, or replaced. All costs associated with furnishing, installing, inspecting, maintaining, cleaning, sediment removal, and repairing Sediment Control at Inlets with Frames and Grates shall be incidental to the contract unit price per each for “Sediment Control at Inlet with Frame and Grate”.

Sediment collection devices shall be:

A sediment control device as shown on Standard Plate 734.10. Filter fabric used of constructing the sediment control at inlets with frames and grates shall be the same type of fabric that is used in high flow silt fence from the approved product list.

Installed devices per direction of the Engineer. Devices may not need to be installed.

TABLE OF SEDIMENT CONTROL AT INLET WITH FRAME AND GRATE

<u>Location</u>	<u>Quantity (Each)</u>
289+14 381' L	1
289+53 381' L	1
Total	2

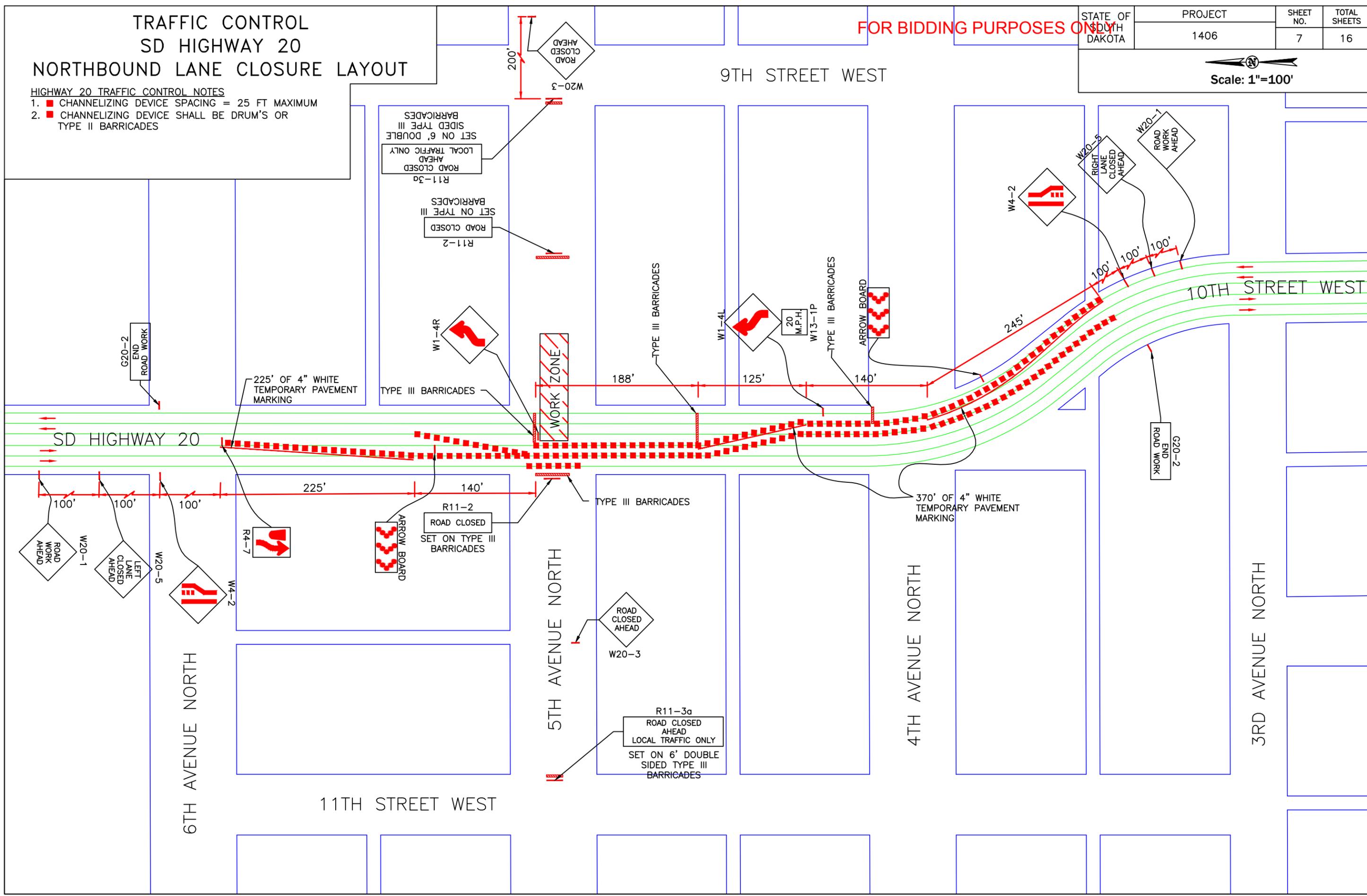
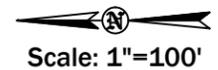
TRAFFIC CONTROL SD HIGHWAY 20 NORTHBOUND LANE CLOSURE LAYOUT

HIGHWAY 20 TRAFFIC CONTROL NOTES

1. CHANNELIZING DEVICE SPACING = 25 FT MAXIMUM
2. CHANNELIZING DEVICE SHALL BE DRUM'S OR TYPE II BARRICADES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1406	7	16



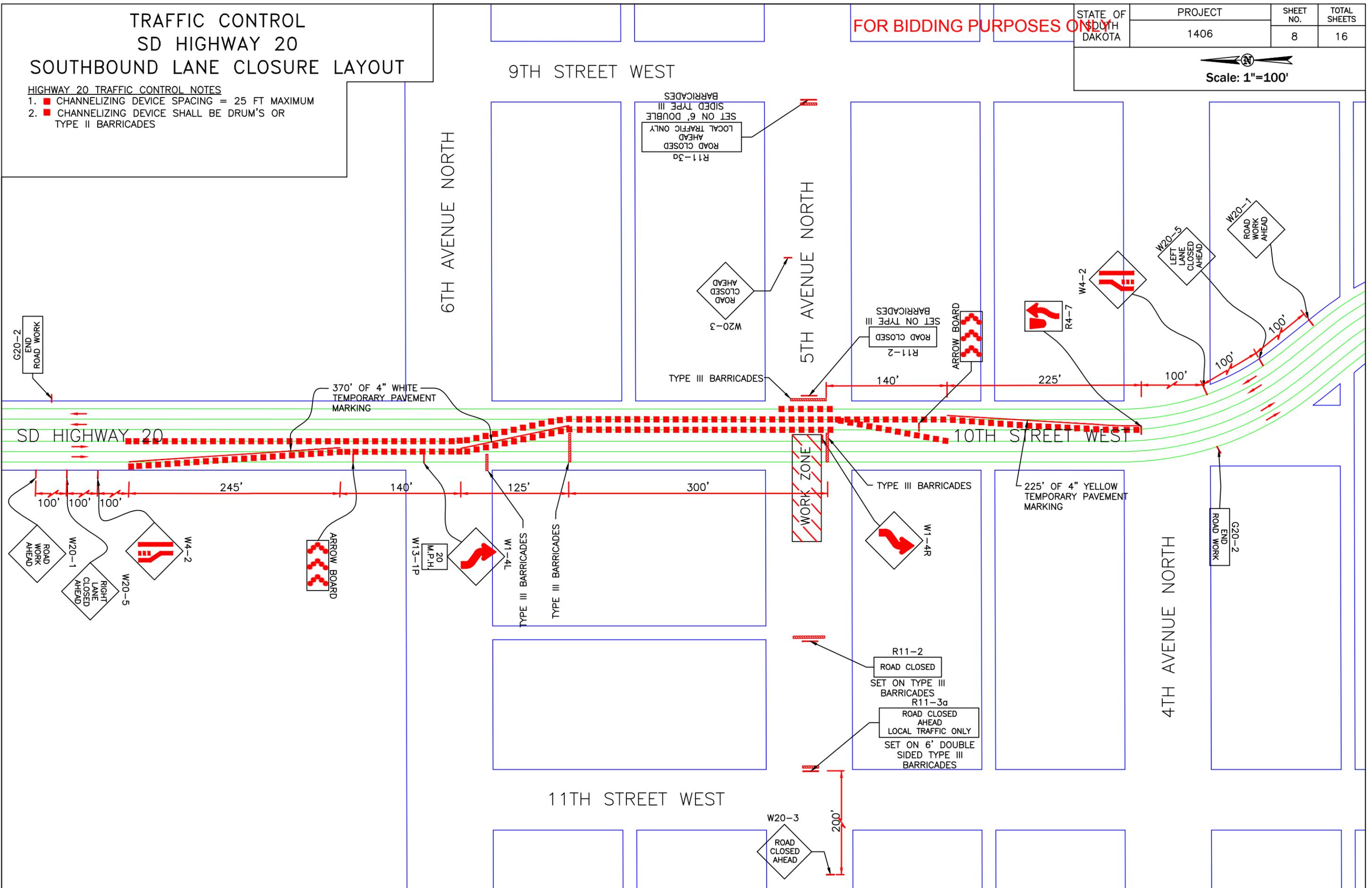
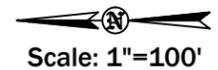
TRAFFIC CONTROL SD HIGHWAY 20 SOUTHBOUND LANE CLOSURE LAYOUT

HIGHWAY 20 TRAFFIC CONTROL NOTES

1. ■ CHANNELIZING DEVICE SPACING = 25 FT MAXIMUM
2. ■ CHANNELIZING DEVICE SHALL BE DRUM'S OR TYPE II BARRICADES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1406	8	16



Traffic Control Devices Inventory

Sign	Size	Description	# Signs	UPS	Units
G20-2	36"x18"	End Road Work	2	17	34
R4-7	24"x30"	Keep Right (Symbol)	1	18	18
R11-2	48"x30"	Road Closed	2	27	54
****	****	Type III Barricade (8', single sided, 5 units/ft)	11	40	440
R11-3a	60"x30"	Road Closed ## Miles Ahead Local Traffic Only	2	30	60
****	****	Type III Barricade (6', double sided, 7 units/ft)	2	42	84
W1-4	48"x48"	Reverse Curve Sign (Left or Right)	2	34	68
W4-2	48"x48"	Left or Right Lane Ends (Symbol)	2	34	68
W13-1P	30"x30"	Advisory Speed Plate	1	21	21
W20-1	48"x48"	Road Work Ahead	2	34	68
W20-3	48"x48"	Road Closed #### Ft. or Ahead	2	34	68
W20-5	48"x48"	Lt. or Rt. Lane Closed #### Ft. or Ahead	2	34	68
Total Units					1051

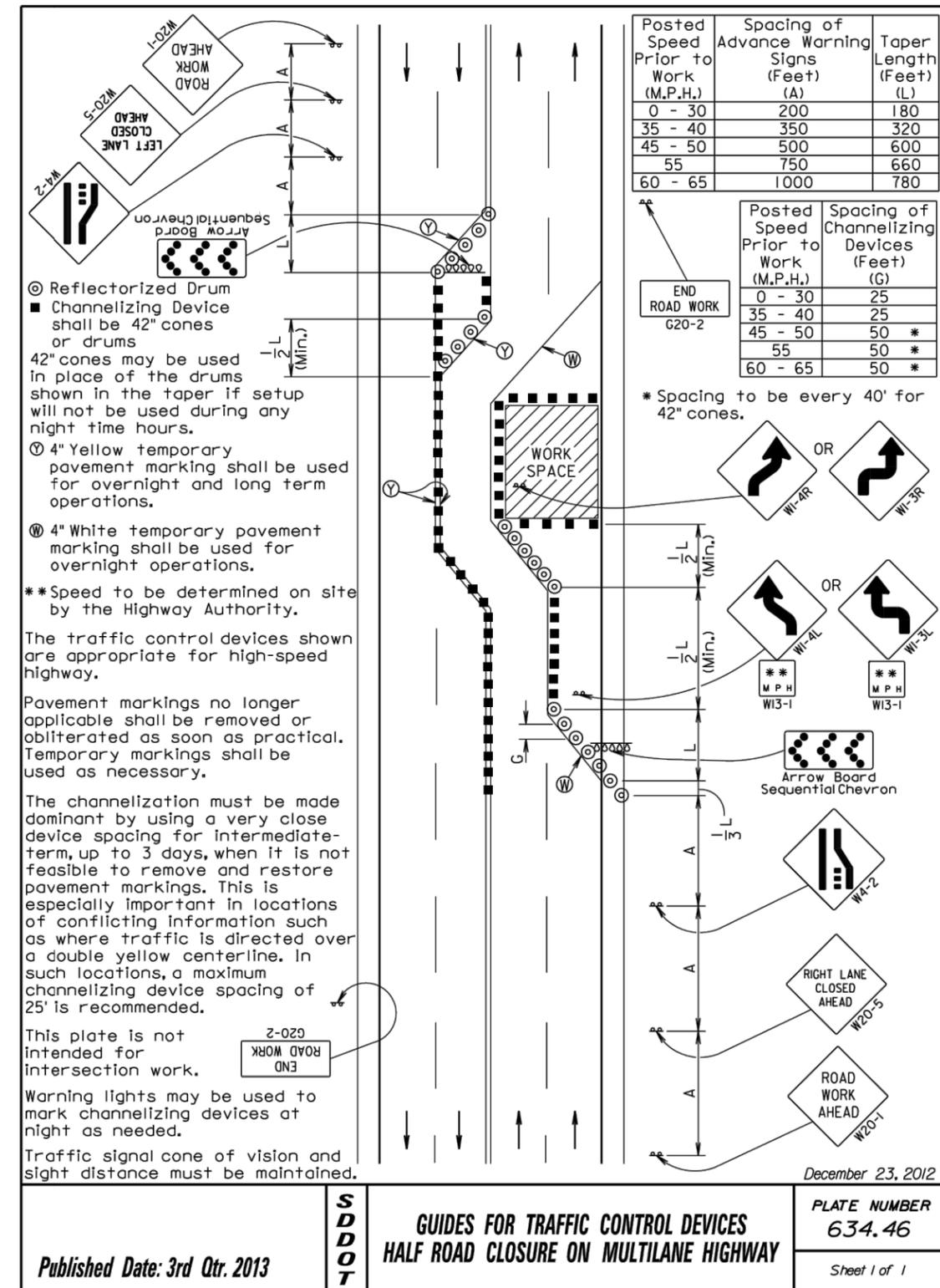
Type C Arrow Board = 2 Each
 4" Temporary Pavement Marking = 1190 Ft

NOTE: The exact location and spacing of signs shown to be determined in the field by the Engineer.

All costs for furnishing, installing and resetting channelizing devices shall be included in the Lump Sum price for "Traffic Control, Miscellaneous".

If a sign is required on a project and not listed in the above inventory, the units per sign will be determined as follows:

- Signs 36" x 36" will be measured at 27 units each and signs 48" x 48" will be measured at 34 units each, otherwise:
- If a sign measures less than 25" high and 25" wide, the units per sign will be computed as sign size (sq. ft.) x 3.
- If a sign measures between 23" high and 37" high, the units per sign will be computed as sign size (sq. ft.) x 1.2 + 15.



Published Date: 3rd Qtr. 2013

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**GUIDES FOR TRAFFIC CONTROL DEVICES
 HALF ROAD CLOSURE ON MULTILANE HIGHWAY**

PLATE NUMBER
 634.46

Sheet 1 of 1

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1406	10	16



Scale: 1"=40'

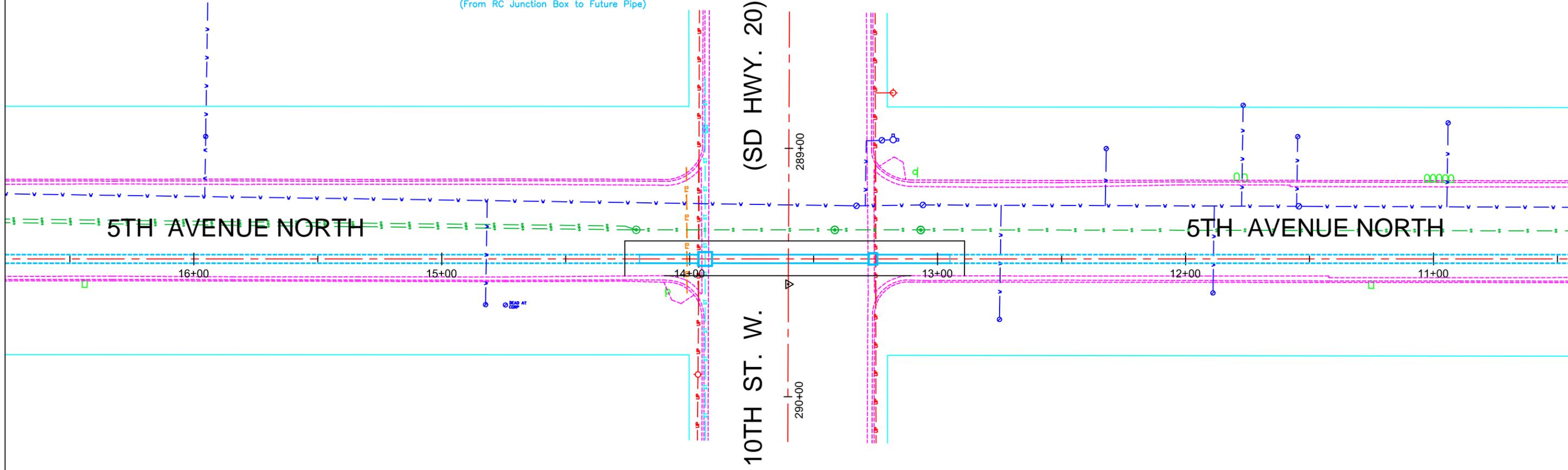
289+44.24 - 65.10' L to
289+44.37 - 34.09' L
Install 30" - 30' RC Elliptical Pipe
(From Exist. Pipe to Type C Drop Inlet)

289+44.37 - 34.09' L to
289+44.66 - 33.58' R
Install 30" - 64' RC Elliptical Pipe
(Between Type C Drop Inlet & RC Junction Box)

289+44.66 - 33.58' R to
289+44.77 - 60.08' R
Install 30" - 24' RC Elliptical Pipe
(From RC Junction Box to Future Pipe)

Install Type C Drop Inlet
with Type C Frame & Grate
at the following location:
289+44.37 - 34.09' L

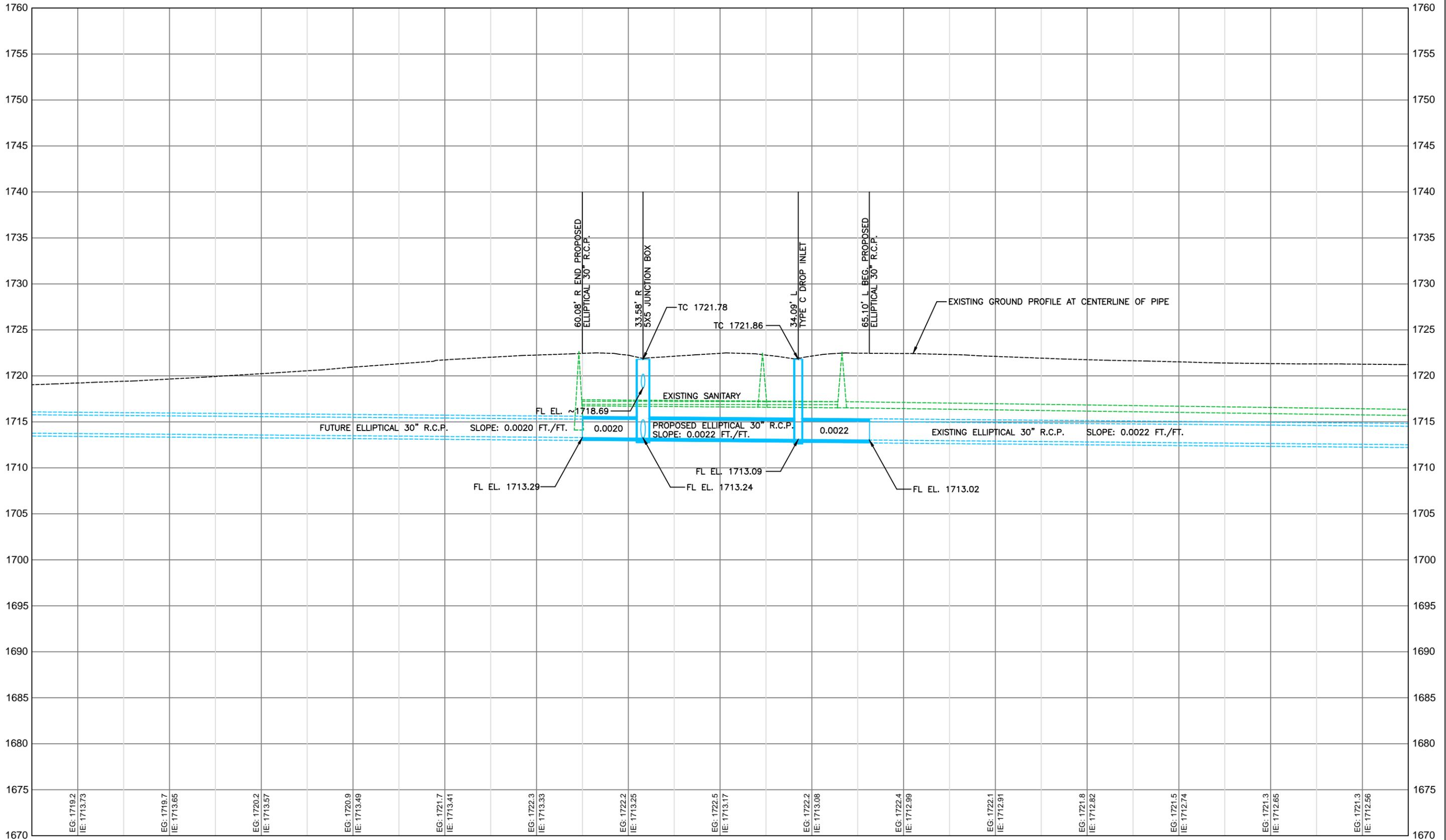
Install 5x5 Junction Box
with Type A Frame & Lid
at the following location:
289+44.66 - 33.58' R
(Connect 24" RCP from the north
& Exist. 18" RCP to the south)

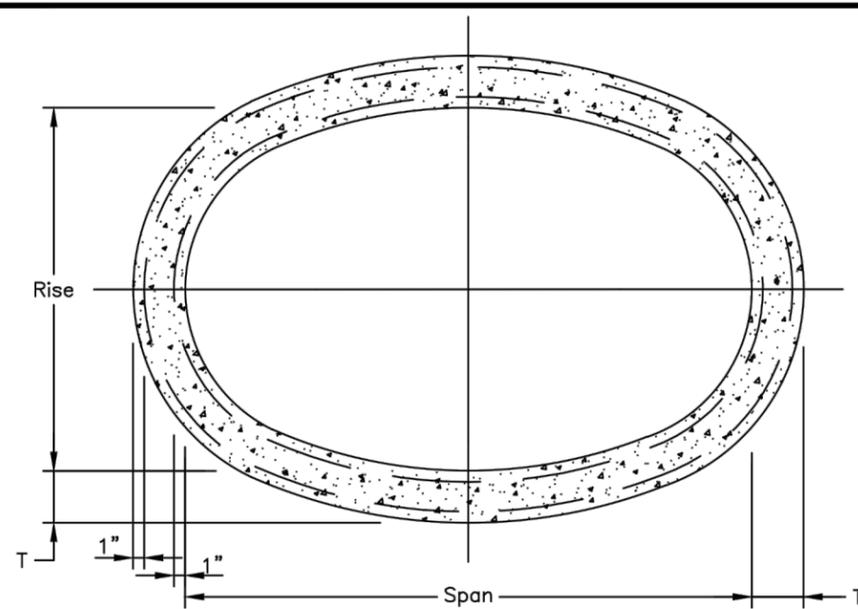


FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1406	11	16

Scales: 1"=40' Horz
1"=10' Vert

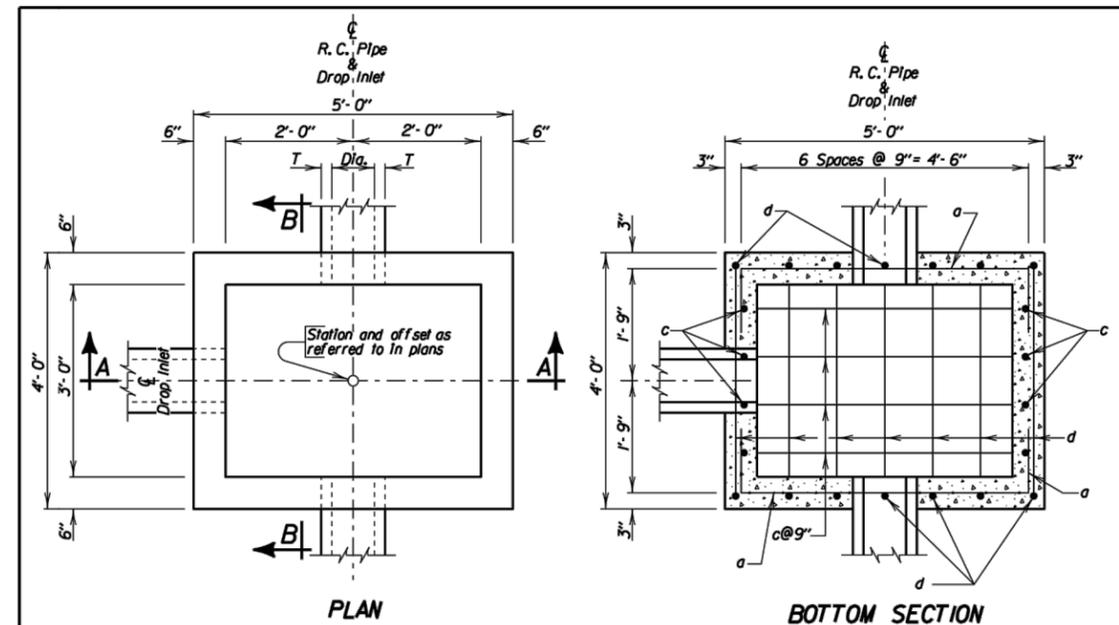




TYPICAL CROSS SECTION

Equivalent Size	Rise	Span	Water Area	Wall T	Wt./Ft.
Inches	Inches	Inches	Sq. Ft.	Inches	Lbs.
18	14	23	1.8	2 3/4	200
24	19	30	3.3	3 1/4	310
30	24	38	5.1	3 3/4	450
36	29	45	7.4	4 1/2	645
42	34	53	10.2	5	835
48	38	60	12.9	5 1/2	1050
54	43	68	16.6	6	1285
60	48	76	20.5	6 1/2	1550
66	53	83	24.8	7	1830
72	58	91	29.5	7 1/2	2130
78	63	98	34.6	8	2475
84	68	106	40.1	8 1/2	2830
90	72	113	46.1	9	3210
96	77	121	52.4	9 1/2	3615
102	82	128	59.2	9 3/4	3930
108	87	136	66.4	10	4265
114	92	143	74.0	10 1/2	4725
132	106	166	99.2	12	5965
144	116	180	118	13	7050

Elliptical pipe is manufactured to standard or special strengths in accordance with ASTM Specifications C507. Flexible compounds may be used for joint sealant.



PLAN

BOTTOM SECTION

ESTIMATED QUANTITIES			
ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
* Class M6 Concrete	Cu'd	0.43	0.29H
Reinforcing Steel	Lb	57	26.72H
Frame and Grate	Each	1	

PIPE DISPLACEMENT REDUCTIONS		
R.C. Pipe Diameter	T	Class M6 Concrete
Inches	Inches	Cu'd
12	2	0.03
15	2 1/4	0.04
18	2 1/2	0.05
24	3	0.09
30	3 1/2	0.14
36	4	0.20

DROP INLETS FOR 12" TO 36" DIAMETER PIPE

GENERAL NOTES:

* Reduce total quantities of concrete by the amount of concrete displaced by the pipe. The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard. The total quantity of reinforcing steel shall be computed to the nearest pound.

Drop Inlets shown may be modified by the addition or omission of connecting pipes as shown on the layouts.

Reinforcing steel shall conform to ASTM A615 Grade 60. The b bars shall be lapped 12 Inches. Cut and bend reinforcing steel as required to place pipes through the drop Inlet wall.

Pipe shall not enter through a corner of the drop Inlet.

Use 2" clear cover on all reinforcing steel unless otherwise noted.

Precasting of reinforced drop Inlets will be permissible. Prior to precasting, the Contractor shall submit details to the Engineer for approval.

Maximum pipe diameter shall not exceed 27 Inches on the 4 foot wide side and shall not exceed 36 Inches on the 5 foot wide side of the drop Inlet.

The dimension of H is in feet.

December 23, 2009

SPECIFICATION
REFERENCE
NO.
450



CITY OF WATERTOWN
ENGINEERING DEPARTMENT
RC ELLIPTICAL PIPE DETAIL

PLATE
NUMBER
450.W5

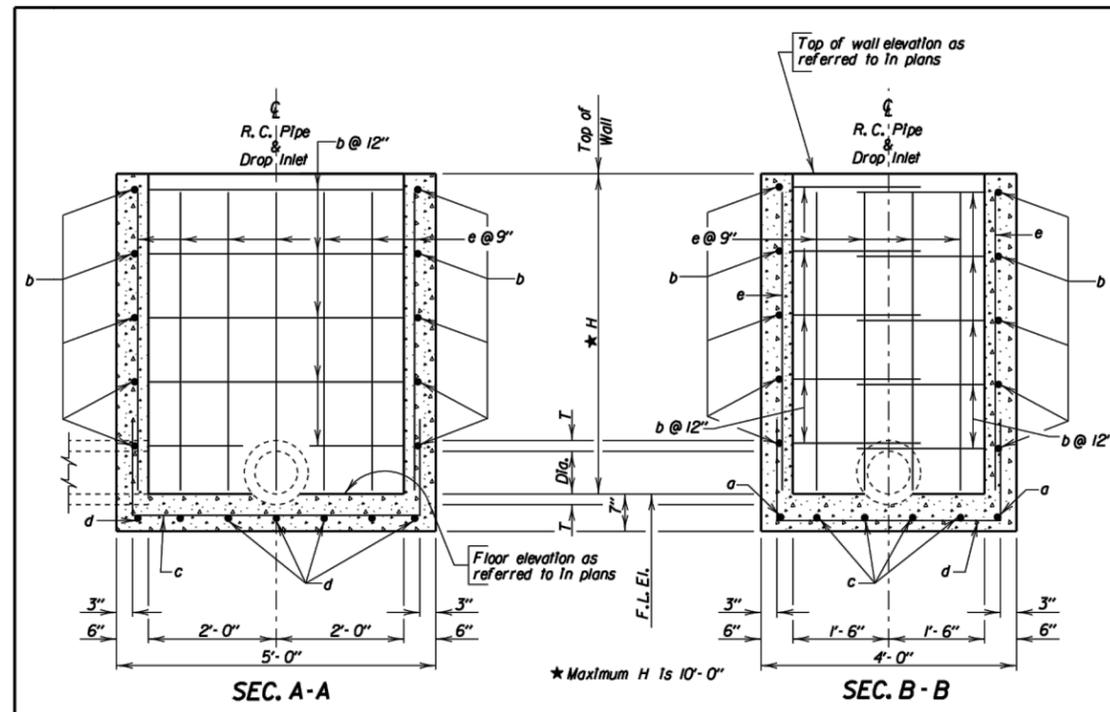
Published Date: 4th Qtr. 2013

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3' X 4' TYPE C
REINFORCED CONCRETE DROP INLET

PLATE NUMBER
670.10

Sheet 1 of 2



DROP INLETS FOR 12" TO 36" DIAMETER PIPE

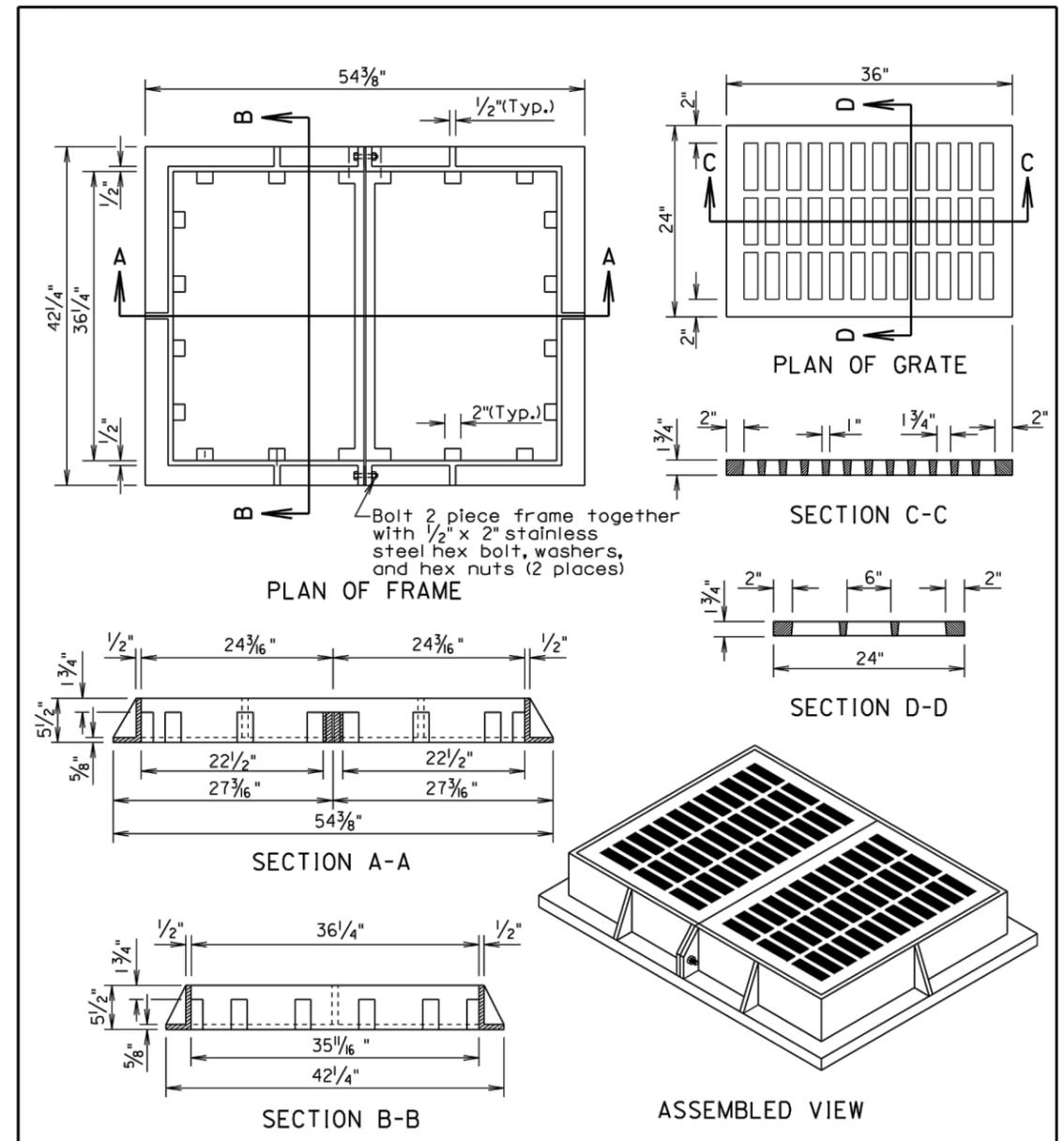
REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
a	2	4	6'-6"	17
b	2H	4	9'-0"	17
c	4	4	7'-6"	17
d	7	4	6'-6"	17
e	22	4	H - 2"	Str.

Bending Details	
TYPE 17	TYPE 17

NOTE: All dimensions are out to out of bars.

December 23, 2009

Published Date: 4th Qtr. 2013	S D D O T	3' X 4' TYPE C REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.10
			Sheet 2 of 2



GENERAL NOTE:
The total weight of the frame and grate shall be 850 pounds minimum.

March 31, 2000

Published Date: 4th Qtr. 2013	S D D O T	TYPE C FRAME AND GRATE	PLATE NUMBER 670.82
			Sheet 1 of 1

PLAN

SPECIFICATIONS

- Design Specifications: AASHTO Specifications for Highway Bridges, 1996 Edition (Service Load).
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications and/or Special Provisions as Included In the Proposal.

DESIGN MIX OF CONCRETE

- Mix shall be designed to produce a concrete having a minimum compressive strength of 4000 p.s.i., at 28 days.
- Type II Cement Is required.

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 Junction box is based on a maximum fill over the Junction box of 5 feet.
- Unit Stresses: Concrete $f_c = 1600$ p.s.i.
Reinforcing Steel $f_s = 24000$ p.s.i.
- All reinforcing steel shall conform to ASTM A615 Grade 60.
- All exposed edges shall be chamfered $\frac{3}{4}$ ".
- Use 1" clear cover on all reinforcing steel except as shown.
- The cost of furnishing and installing the manhole steps shall be incidental to the contract unit price per Lb. for "Reinforcing steel".
- Reinforcing steel shall be cut and bent in field as necessary to fit pipe and manhole openings. (Pipe openings are not shown in these details.) Number, size and location of pipes entering Junction box are shown elsewhere on plan sheets.
- All pipes entering the Junction box must fit between the Inside faces of the walls.

DETAIL OF CONNECTION BETWEEN PRECAST ECCENTRIC MANHOLE CONE SECTION AND JUNCTION BOX

ITEM	Class M6 Concrete	Reinforcing Steel
UNIT	Cu. Yd.	Lb.
H = 4' - 0"	4.37	821
H = 4' - 6"	4.61	846
H = 5' - 0"	4.85	908
H = 5' - 6"	5.10	933
H = 6' - 0"	5.34	958
H = 6' - 6"	5.58	1020
H = 7' - 0"	5.82	1045
H = 7' - 6"	6.06	1071
H = 8' - 0"	6.30	1132

NOTE:
For Informational purposes only, the estimated quantities for Junction Box height H are shown above. These quantities do not include quantity reduction for pipe openings, but do include the reduction for the 24" diameter manhole opening.

March 31, 2000

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5' X 5' JUNCTION BOX

PLATE NUMBER
671.01

Sheet 1 of 3

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
ql	1	6	9'-0"	T3
qa2	4	-	-	-
h3	28	4	5'-9"	17A
k3	48	4	8'-6"	17
ml	18	5	6'-9"	Str.
nl	18	5	5'-9"	Str.
pl	52	4	5'-0"	Str.
ql	8	4	3'-6"	17A
ql	1	6	9'-0"	T3
qa2	4	-	-	-
h4	28	4	6'-3"	17A
k4	48	4	9'-0"	17
ml	18	5	6'-9"	Str.
nl	18	5	5'-9"	Str.
pl	52	4	5'-0"	Str.
ql	8	4	3'-6"	17A
ql	1	6	9'-0"	T3
qa2	5	-	-	-
h5	28	4	6'-9"	17A
k5	48	4	9'-6"	17
ml	18	5	6'-9"	Str.
nl	18	5	5'-9"	Str.
pl	60	4	5'-0"	Str.
ql	12	4	3'-6"	17A
ql	1	6	9'-0"	T3
qa2	5	-	-	-
h6	28	4	7'-3"	17A
k6	48	4	10'-0"	17
ml	18	5	6'-9"	Str.
nl	18	5	5'-9"	Str.
pl	60	4	5'-0"	Str.
ql	12	4	3'-6"	17A
ql	1	6	9'-0"	T3
qa2	6	-	-	-
h7	28	4	7'-9"	17A
k7	48	4	10'-6"	17
ml	18	5	6'-9"	Str.
nl	18	5	5'-9"	Str.
pl	60	4	5'-0"	Str.
ql	12	4	3'-6"	17A
ql	1	6	9'-0"	T3
qa2	6	-	-	-
h8	28	4	8'-3"	17A
k8	48	4	11'-0"	17
ml	18	5	6'-9"	Str.
nl	18	5	5'-9"	Str.
pl	68	4	5'-0"	Str.
ql	16	4	3'-6"	17A
ql	1	6	9'-0"	T3
qa2	7	-	-	-
h9	28	4	8'-9"	17A
k9	48	4	11'-6"	17
ml	18	5	6'-9"	Str.
nl	18	5	5'-9"	Str.
pl	68	4	5'-0"	Str.
ql	16	4	3'-6"	17A

SEC. A-A

NOTE:
Cast Iron Manhole Steps (R - 1980 - C) from Neenah Foundry or equivalent.
Locate in center of top slab with 3" clearance at manhole opening.
All dimensions are out to out of bars.

March 31, 2000

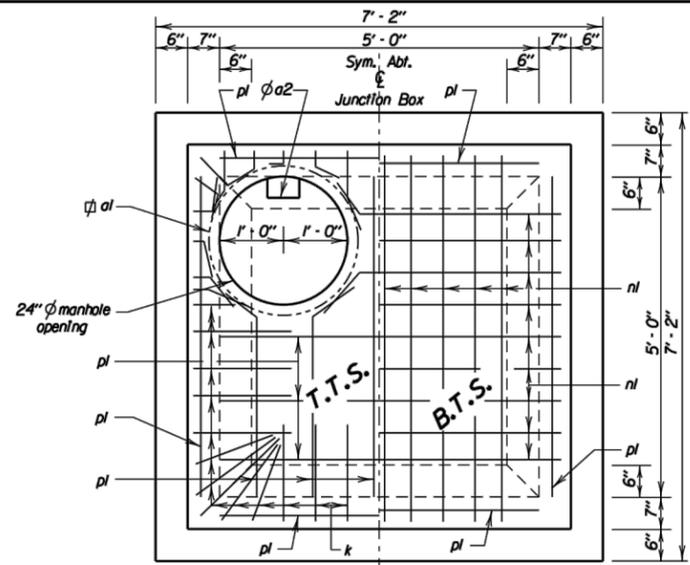
S
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5' X 5' JUNCTION BOX

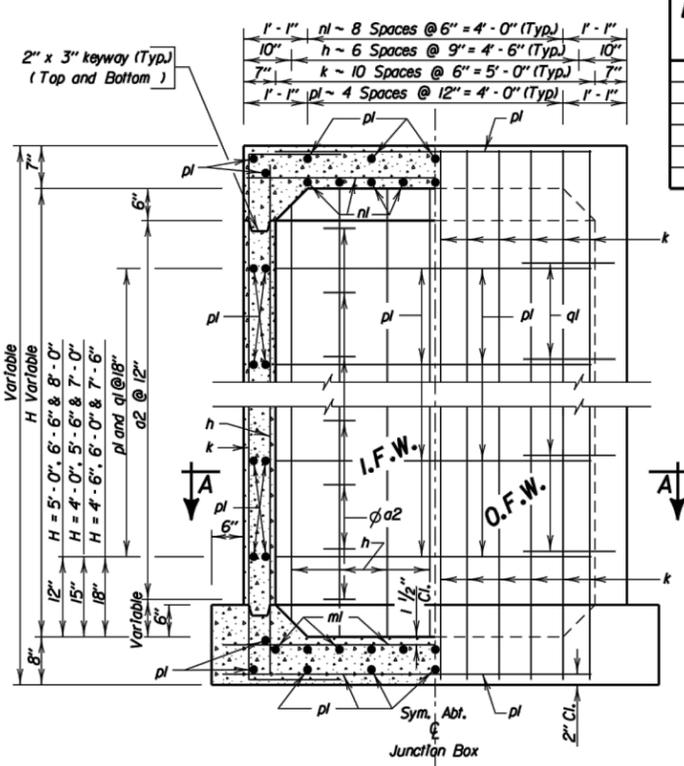
PLATE NUMBER
671.01

Sheet 2 of 3

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1406	15	16



PLAN



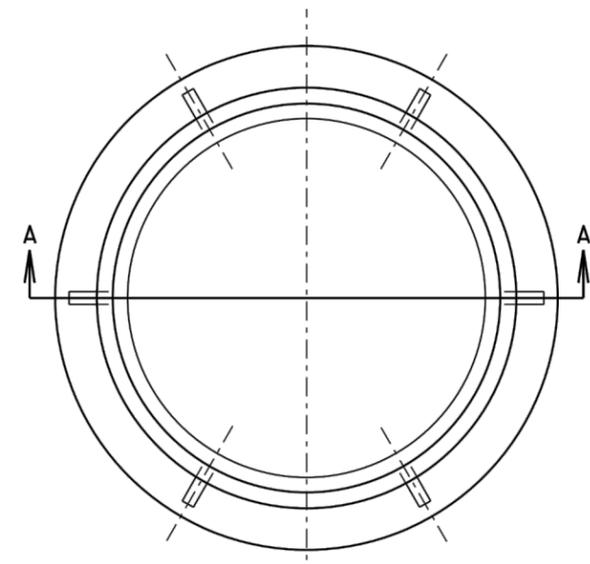
ELEVATION

LEGEND FOR PLACING RE-STEEL

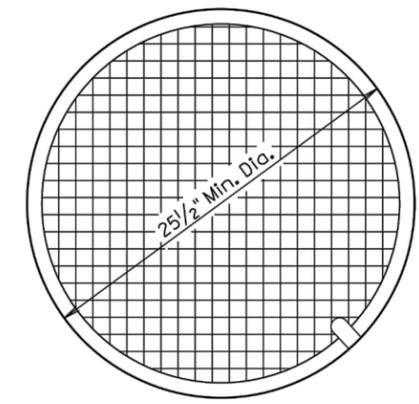
T. T. S. - Top of Top Slab
B. T. S. - Bottom of Top Slab
T. B. S. - Top of Bottom Slab
B. B. S. - Bottom of Bottom Slab
O. F. W. - Outside Face of Wall
I. F. W. - Inside Face of Wall

March 31, 2000

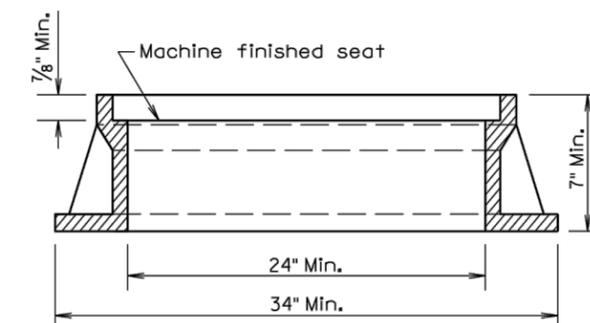
S D D O T	5' X 5' JUNCTION BOX	PLATE NUMBER 671.01
		Sheet 3 of 3
		Published Date: 4th Qtr. 2013



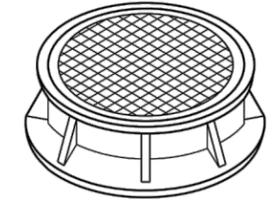
PLAN OF FRAME



PLAN OF LID



SECTION A-A



ASSEMBLED VIEW

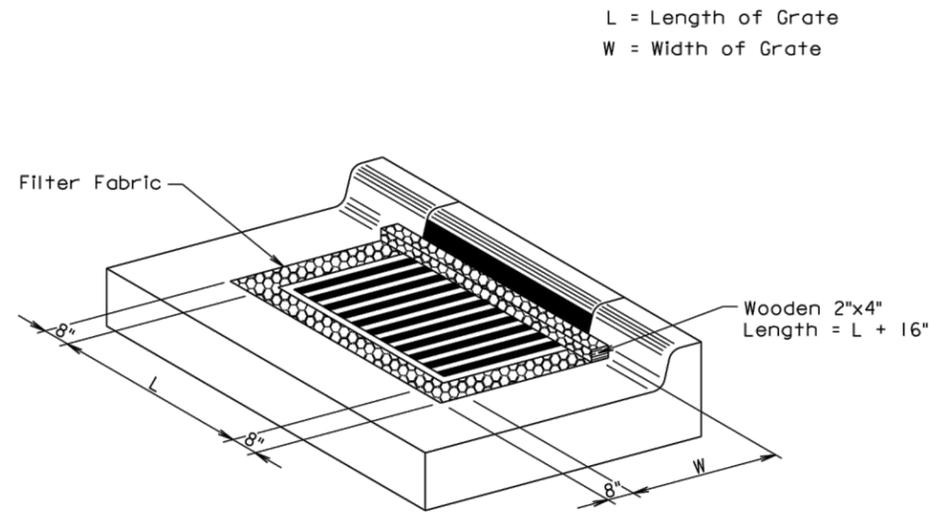
TYPE	HEIGHT	MIN. WEIGHT
A7	7"	400lbs.
A8	8"	440lbs.
A9	9"	470lbs.
A10	10"	480lbs.

GENERAL NOTE:
Geometric pattern on top of lid other than that shown shall be approved by the Engineer.

March 31, 2000

S D D O T	TYPE A MANHOLE FRAME AND LID	PLATE NUMBER 671.10
		Sheet 1 of 1
		Published Date: 4th Qtr. 2013

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	1406	16	16



ISOMETRIC VIEW

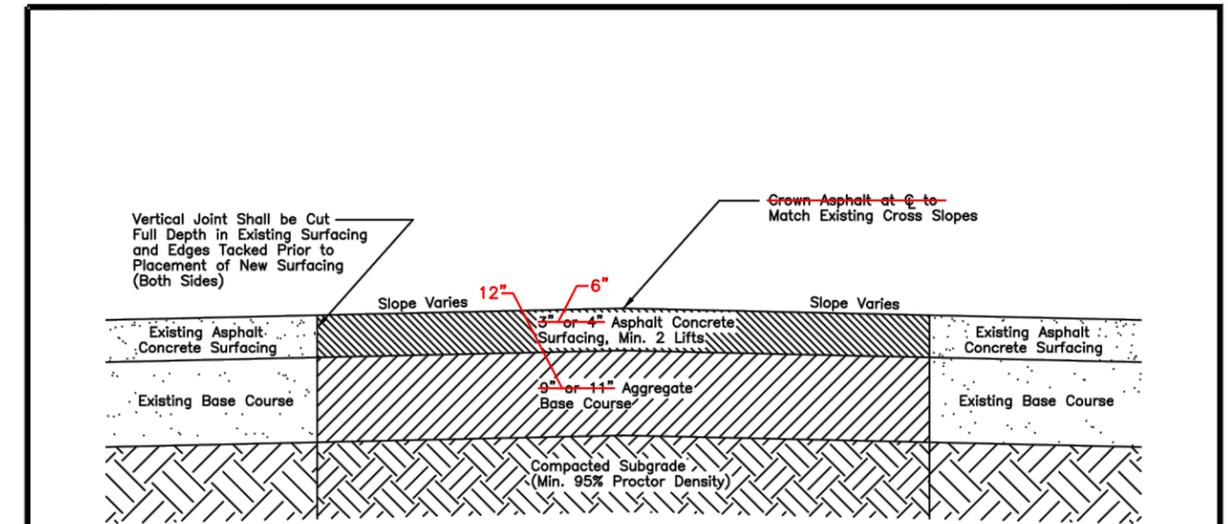
GENERAL NOTES:

- The grate and curb and gutter shown are for illustrative purposes only.
- The sediment control at inlet with frame and grate shall be placed at locations stated in the plans or at locations determined by the Engineer.
- The filter fabric shall be the type specified in the plans.
- The filter fabric shall be placed in the inlet opening prior to placing the grate. Approximately 18 inches of excess filter fabric shall be wrapped around the 2"x4" and stapled securely to the 2"x4" after the grate has been placed.
- The Contractor shall inspect and maintain the sediment control device once every week and within 24 hours after every rainfall event. The Contractor shall maintain the sediment control device by removing accumulated sediment and replacing torn filter fabric with new filter fabric.
- The removed sediment shall be placed at a location away from the drop inlet where the sediment will not be washed back into the drop inlet or other storm sewer system.
- All costs for furnishing, installing, inspecting, maintaining, removing, and replacing the sediment control device at the inlet including labor, equipment, and materials shall be incidental to the contract unit price per each for "Sediment Control at Inlet with Frame and Grate".

September 14, 2005

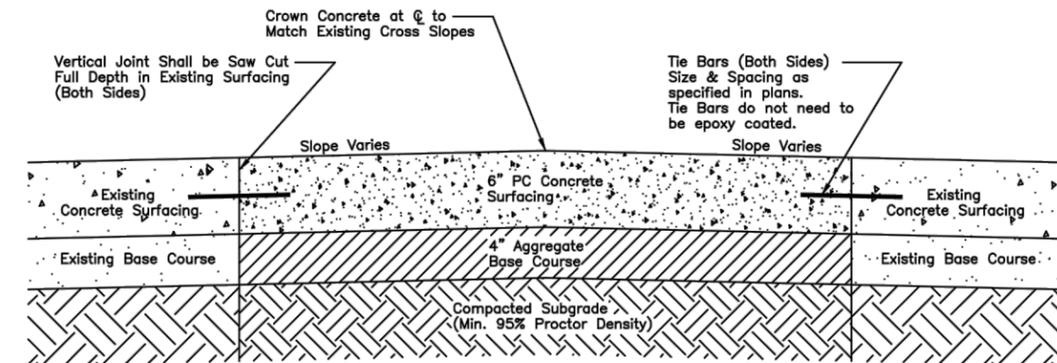
S D D O T	SEDIMENT CONTROL AT INLETS WITH FRAMES AND GRATES	PLATE NUMBER 734.10
		Sheet 1 of 1

Published Date: 4th Qtr. 2013



ASPHALT CONCRETE REPAIR DETAIL

Not to Scale



PC CONCRETE REPAIR DETAIL

Not to Scale

May 11, 2013

SPECIFICATION REFERENCE NO. 900		CITY OF WATERTOWN ENGINEERING DEPARTMENT STANDARD SEWER TRENCH SURFACE REPAIR DETAILS	PLATE NUMBER 900.W4
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