FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B1	B54

Plotting Date: 04-03-2025

SECTION B - GRADING PLANS

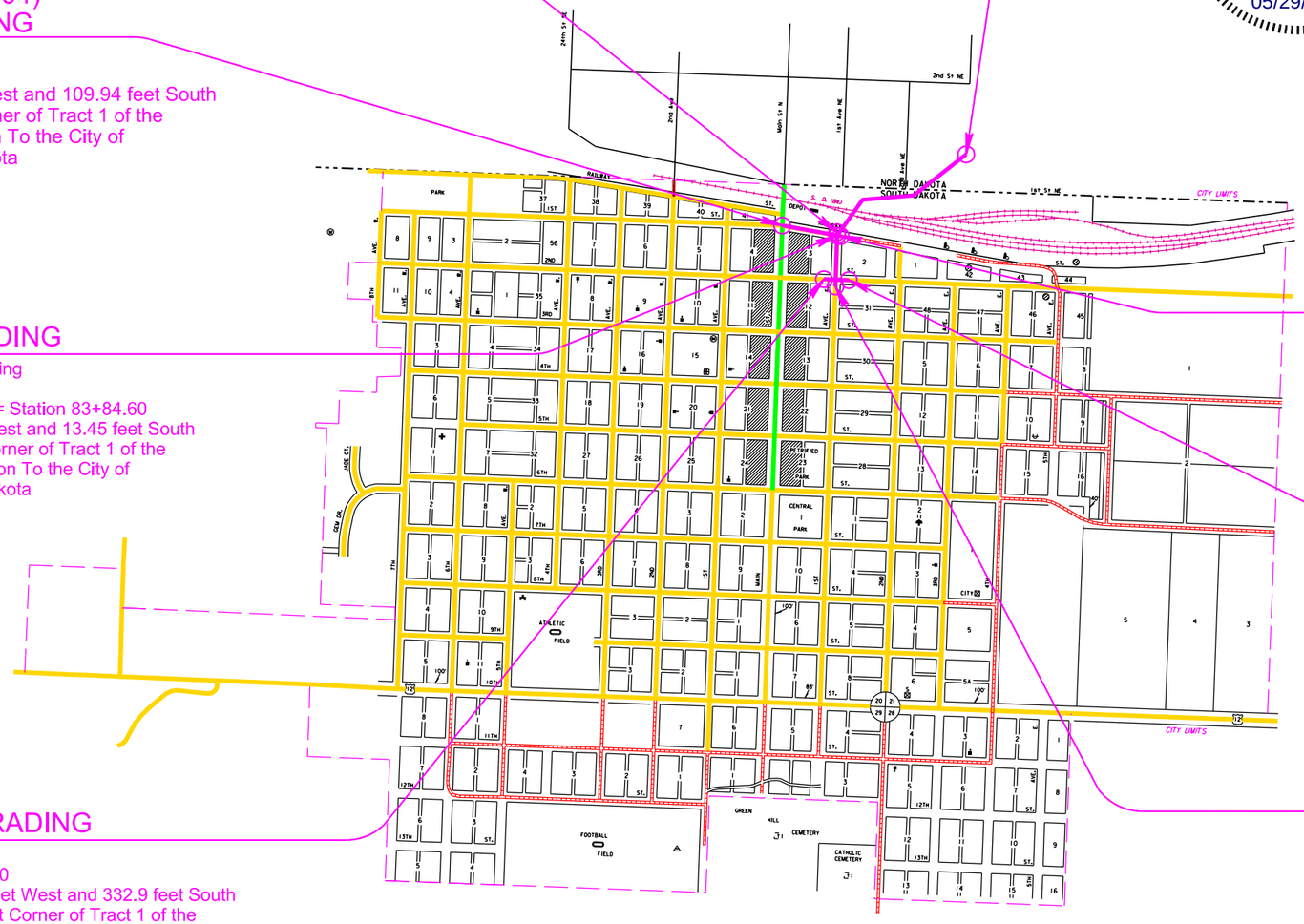
INDEX OF SHEETS

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

END GRADING
1st Avenue East
Station 104+00.00
located 80.5 feet West and 64.52 feet North
of the Southeast Corner of Tract 1 of the
CHS Second Addition To the City of
Lemmon, South Dakota

END GRADING
Storm Sewer Crossing
Station 207+20.49
located 79.3 feet East and 90.95 feet North
of the Northeast Corner of Section 20 -
Township 23 North - Range 16 East of
the B.H.M.

BEGIN P 6542(04)
BEGIN GRADING
1st Street East
Station 80+00.00
located 53.58 feet West and 109.94 feet South
of the Northwest Corner of Tract 1 of the
CHS Second Addition To the City of
Lemmon, South Dakota



BEGIN GRADING
Storm Sewer Crossing
Station 200+00.00
Station 200+00.00 = Station 83+84.60
located 82.9 feet West and 13.45 feet South
of the Southeast Corner of Tract 1 of the
CHS Second Addition To the City of
Lemmon, South Dakota

END P 6542(04)
END GRADING
1st Street East
Station 84+82.00
located 13.6 feet East and 29.57 feet South
of the Southeast Corner of Tract 1 of the
CHS Second Addition To the City of
Lemmon, South Dakota

END GRADING
2nd Street East
Station 45+00.00
located 23.1 feet East and 338.8 feet South
of the Southeast Corner of Tract 1 of the
CHS Second Addition To the City of
Lemmon, South Dakota

BEGIN GRADING
2nd Street East
Station 43+00.00
located 173.8 feet West and 332.9 feet South
of the Southeast Corner of Tract 1 of the
CHS Second Addition To the City of
Lemmon, South Dakota

BEGIN GRADING
1st Avenue East
Station 99+00.00
located 93.8 feet West and 435.5 feet South
of the Southeast Corner of Tract 1 of the
CHS Second Addition To the City of
Lemmon, South Dakota

August 20, 2025

HDR

Plotted From - CBOBZIEN

File - ...\Section B\Title Sheet.dgn

SECTION B ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.334	Mile
009E3250	Miscellaneous Staking	0.300	Mile
009E3301	Engineer Directed Surveying/Staking	174.0	Hour
110E0300	Remove Concrete Curb and/or Gutter	919	Ft
110E0400	Remove Drop Inlet	7	Each
110E0460	Remove Manhole	2	Each
110E0480	Remove Manhole Frame and Lid	2	Each
* 110E0520	Remove Sewer Pipe	298	Ft
110E0530	Remove Storm Sewer Pipe	750	Ft
110E1010	Remove Asphalt Concrete Pavement	4,185.0	SqYd
110E1100	Remove Concrete Pavement	36.4	SqYd
110E1130	Remove Concrete Driveway Pavement	162.0	SqYd
110E1140	Remove Concrete Sidewalk	219.0	SqYd
110E5800	Salvage Fence	202	Ft
120E0010	Unclassified Excavation	2,542	CuYd
120E2000	Undercutting	1,104	CuYd
120E6100	Water for Embankment	15.0	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
380E4010	6" PCC Fillet Section	155.9	SqYd
450E7666	66" Steel Pipe, Furnish	180	Ft
* 451E1004	4" PVC Sewer Pipe	146	Ft
451E5166	Bore and Jack 66" Pipe	180	Ft
* 451E6080	Adjust Water Valve Box	7	Each
* 451E6102	Water Main Lowering	5	Each
* 451E6105	Connect To Existing Water Main	10	Each
* 451E7005	Adjust Sewer Service	1	Each
* 451E7010	Reconnect Sewer Service	3	Each
* 451E7016	Connect to Existing Sewer Main	1	Each
451E7500	Locate Utilities	2	Each
462E0250	Cellular Grout	130.6	CuYd
600E0200	Type II Field Laboratory	1	Each
620E3000	Install Fence	71	Ft
650E0060	Type B66 Concrete Curb and Gutter	1,126	Ft
650E4660	Type P6 Concrete Gutter	192	Ft
650E6260	6" Concrete Valley Gutter	13.0	SqYd
670E1010	2' x 3' Type B Drop Inlet	12	Each
670E1030	5.5' x 3' Type B Drop Inlet	2	Each
670E1200	Type B Frame and Grate	16	Each
671E0550	Special Manhole	2	Each
671E1072	72" Manhole	4	Each
671E1096	96" Manhole	5	Each
671E1120	120" Manhole	1	Each
671E6007	Type A7 Manhole Frame and Lid	11	Each
671E7000	Reset Manhole Frame and Lid	2	Each
671E7010	Adjust Manhole	2	Each
998E0100	Railroad Protective Insurance	Lump Sum	LS

*** - Denotes Non-Participating**

SECTION B ESTIMATE OF QUANTITIES CONTINUED

Section B - Grading - PCN 09V7 Storm Sewer Material - Alternate A - RCP

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E0112	15" RCP Class 2, Furnish	226	Ft
450E0120	15" RCP, Install	226	Ft
450E0122	18" RCP Class 2, Furnish	26	Ft
450E0130	18" RCP, Install	26	Ft
450E0182	36" RCP Class 2, Furnish	46	Ft
450E0190	36" RCP, Install	46	Ft
450E0202	48" RCP Class 2, Furnish	448	Ft
450E0210	48" RCP, Install	448	Ft
450E0222	60" RCP Class 2, Furnish	682	Ft
450E0230	60" RCP, Install	682	Ft
450E2044	60" RCP Flared End, Furnish	1	Each
450E2045	60" RCP Flared End, Install	1	Each

Section B - Grading - PCN 09V7 Storm Sewer Material - Alternate B - HDPE

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E5239	60" CMP Flared End, Furnish	1	Each
450E5240	60" CMP Flared End, Install	1	Each
450E7009	15" High Density Polyethylene Pipe, Furnish	226	Ft
450E7010	15" High Density Polyethylene Pipe, Install	226	Ft
450E7019	18" High Density Polyethylene Pipe, Furnish	26	Ft
450E7020	18" High Density Polyethylene Pipe, Install	26	Ft
450E7049	36" High Density Polyethylene Pipe, Furnish	46	Ft
450E7050	36" High Density Polyethylene Pipe, Install	46	Ft
450E7069	48" High Density Polyethylene Pipe, Furnish	158	Ft
450E7070	48" High Density Polyethylene Pipe, Install	158	Ft
450E7089	60" High Density Polyethylene Pipe, Furnish	974	Ft
450E7090	60" High Density Polyethylene Pipe, Install	974	Ft

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste.

TABLE OF WATER FOR EMBANKMENT

Location	Type	Area (SF)	Depth	Water (Mgal)
Surfacing Grading	Undercut	40753.5	12"	15.0

TYPE II FIELD LABORATORY

The lab will be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection will be provided with a multi-port wireless router. The internet connection will be a minimum speed of 5 Mbps unless limited by job location and approved by the DOT. Prior to installing the wireless router, the Contractor will submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. These items will be incidental to the contract unit price per each for "Type II Field Laboratory".

The Contractor will be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor will contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

Montana-Dakota Utilities – Tanner Lewis – 701-456.7119
West River Cooperative Telephone Company – Tyrell Ellingson – 605-490-1601

Prior to excavation in or adjacent to BNSF (Burlington Northern Santa Fe) Railway ROW and in conjunction with contacting the SD One-Call and ND One-Call, the Contractor will call the BNSF Utility Locate number 1-800-533-2891.

LOCATE UTILITIES

The work consists of the Contractor excavating material to locate and verify depth of an existing utility line (private or public) when directed by the Engineer to determine if changes are necessary to project scope or quantity of contract bid items. Payment will be at the contract unit "Locate Utilities" per each for all labor, equipment and materials needed. A quantity of 2 estimated locations have been included in these plans.

TABLE OF LOCATE AND VERIFY UTILTIES

Station	to	Station	Type	L/R	Quantity (Each)
81+90.47		81+97.51	Fiber	L/R	1
200+45.00		205+45.00	Railroad	L/R	1
				Total:	2

SHRINKAGE FACTOR: Embankment +10%

See Table of Excavation Quantities at the end of the notes for Additional Details of Unclassified Excavation.

TABLE OF UNCLASSIFIED EXCAVATION

Excavation	1216
Undercut	1104
Topsoil	222
Total Unclassified Excavation	2542

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
06/18/2025

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

When plan quantities are used for payment, the Unclassified Excavation quantity will be used for final payment and the plans quantity of Topsoil listed in the Table of Unclassified Excavation will be adjusted according to field measurements.

The following paragraphs are general earthwork information and information in regard to computing the Unclassified Excavation quantity when final cross sections are taken in the field:

The Topsoil quantity in the Table of Unclassified Excavation is an estimate. When finaling a project, the total quantity of field measured Topsoil will be used in place of the estimated Topsoil quantity. The quantity of Topsoil from the cuts will be paid for twice as Unclassified Excavation, as it will be in both the Excavation and Topsoil quantities. This will be full compensation for Excavation, which includes necessary undercutting to provide space for placement of topsoil.

The Excavation quantities from individual balances and the Table of Unclassified Excavation have been reduced by the volume of in place surfacing that will be removed and/or salvaged.

The volume of in place Asphalt Surfacing removed will NOT be paid for as Unclassified Excavation.

Undercutting will be paid separately as noted below.

UNDERCUTTING

In all cut sections, the earthen subgrade will be undercut 1 feet below the earthen subgrade surface. The undercut will extend from behind the curb to behind the opposite curb as needed for paving operations. Shallow embankment sections, fills less than 1 feet in height measured at the finished subgrade shoulders, will be undercut to ensure a minimum 1-foot height of earth embankment for the entire width of the roadbed. The undercut material or other suitable material, as directed by the Engineer, will then be replaced and recompacted to the density specified for the section being constructed.

Intersecting streets will be undercut to the same depth as the Mainline roadway out to the limits of asphalt concrete / PCC pavement and curb & gutter placement on the intersecting street. Quantities are included in the “Table of Undercutting”.

The Table shown is for bidding purposes, payment will be made in accordance with the contract unit price per cubic yard for “Undercutting”.

TABLE OF UNDERCUTTING QUANTITIES URBAN

Station	to	Station	Description	Quantity (CuYd)
80+49.85		84+41.85	1st Street	609.77
100+20.21		102+97.70	1st Avenue E	288.00
43+35.48		44+57.57	2nd Street	180.42
43+50 R			Int. Street	25.50
			Total:	1103.69

TABLE OF PCC PAVEMENT REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
80+00.00		84+51.80	L	36.4
			Total:	36.4

6” CONCRETE VALLEY GUTTER (4’ WIDE)

Payment for “6” Concrete Valley Gutter” will be based on plans quantity. If additions or reductions to the area of PCC valley gutters are ordered by the Engineer, payment will be made in accordance with the contract unit price per square yard for “6” Concrete Valley Gutter”.

TABLE OF 6” CONCRETE VALLEY GUTTER (4’ WIDE)

Station	to	Station	L/R	Quantity (SqYd)
83+73.7		84+01.9	R	13
			Total:	13

PIPE CULVERT UNDERCUT

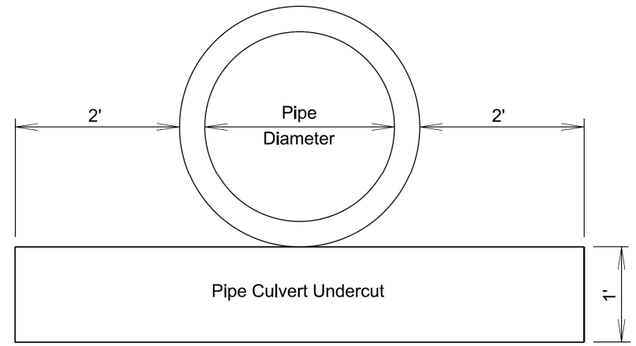
Pipe culvert undercut may be required for this project. The Engineer will determine which pipe will be undercut in accordance with Section 421 of the Specifications.

If pipe culvert undercut is required, the table below contains the rate for one-foot depth of pipe culvert undercut per foot of pipe length. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length. The table below contains the rate for one-foot depth of pipe culvert undercut per foot of pipe length and should be used as an aid in determining the actual amount of undercut to be performed during construction. The table is derived from the drawing below and conforms to the Specifications. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

PIPE CULVERT UNDERCUT CONTINUED

Pipe culvert undercut will be incidental to the corresponding pipe install bid item.

Pipe Diameter (In)	Round Pipe Undercut Rate for 1’ Depth (CuYd/Ft)	Arch Pipe Undercut Rate for 1’ Depth (CuYd/Ft)
24	0.2407	0.2577
30	0.2623	0.2847
36	0.2840	0.3110
42	0.3056	0.3337
48	0.3272	0.3596
54	0.3488	0.3827
60	0.3704	0.4105
66	0.3920	---
72	0.4136	0.4630
78	0.4352	---
84	0.4568	0.5123
90	0.4784	---



SALVAGED ITEMS

The Contractor will coordinate with City personnel to determine the materials deemed salvageable. Care will be taken not to damage the structural properties of the items during dismantling and transporting. All broken concrete and materials not salvaged will be disposed of in accordance with the Specifications. All costs for salvaging and transporting the items will be incidental to the contract lump sum price for “Incidental Work, Grading”. In preparation of bid, the Contractor will make a visual inspection of the project to verify the extent of the work and material involved.

SALVAGED ITEMS CONTINUED

Items to be considered for salvage include but are not limited to:

- Manhole Castings
- Drop Inlet Castings
- Sign Supports

SALVAGE FENCE

Fence removal from Sta. 82+30.9 to 83+55.4 is a combination of Wire Mesh and Wooden 4”x4” Posts. Fence removal from Station 205+34.2 to 206+38.7 is barbed 4-wire with metal posts. The Contractor will coordinate with the adjacent landowner to determine an appropriate location to stockpile the salvaged material.

REMOVAL OF GRAVEL SURFACING

See note for “GRAVEL SURFACING” in Section F.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
43+35.44		44+57.64	L	417
43+35.44		44+57.64	R	430
80+00.00		84+51.80	L	964
80+00.00		84+51.80	R	1035
100+33.20		102+88.70	L	656
100+33.20		102+88.70	R	683
			Total:	4185

TABLE OF REMOVE SEWER PIPE

Station to	L/R	Station	L/R	Quantity (Ft)
83+84.5	L	83+32	L	85
100+02.50	L	102+12.80	L	213
			Total:	298

TABLE OF CONCRETE CURB AND/OR GUTTER REMOVAL

Station	to	Station	L/R	Quantity (Ft)
43+27.50		43+60.40	R	50
44+06.57		44+10.63	R	45
80+34.04		80+63.04	L	32
80+92.85		81+95.08	L	103
82+70.03		83+52.97	L	83
82+30.92		83+46.05	R	116
84+14.33		84+23.43	R	17
100+23.93		101+53.20	L	162
101+73.95		102+57.10	L	84
100+23.00		101+46.80	R	136
101+70.50		102+42.70	R	72
102+66.20		102+85.20	R	19
			Total	919

TABLE OF CONCRETE DRIVEWAY PAVEMENT REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
81+95.15		82+69.98	L	71
80+53.30		81+13.40	R	70
101+46.80		102+65.50	R	21
			Total:	162

TABLE OF SIDEWALK REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
43+27.49		43+60.09	R	18
100+28.10		102+88.72	L	201
			Total:	219

TABLE OF FENCE SALVAGE & REMOVAL

Station	to	Station	L/R	Quantity (Ft)
82+30.9		83+55.4	R	131
*205+34.2		206+38.7	R	71
			Total:	202

*Noted in plan sheets to reinstall

TABLE OF MANHOLE WITH FRAME AND LID REMOVAL

Station	L/R	Quantity (Each)
83+74.90	L	1
100+09.90	L	1
	Total:	2

TABLE OF DROP INLET REMOVAL

All costs for removal of the frame and grate assembly will be incidental to the contract unit price per each for “Remove Drop Inlet”.

Station	L/R	Quantity (Each)
43+61.35	R	1
44+08.59	R	1
83+49.10	L	1
83+51.00	R	1
84+32.10	R	1
100+29.70	R	1
100+23.30	L	1
	Total:	7

TABLE OF REMOVE STORM SEWER PIPE

Station	to	L/R	Station	L/R	Quantity (Ft)
43+72.60		L	43+35.07	L	39
43+73.43		R	43+62.06	R	11
43+74.11		L	43+74.24	R	54
43+75.22		R	44+07.79	R	33
43+75.54		L	44+63.24	L	89
81+21.20		L	81+27.20	L	6
82+43.70		L	82+49.70	L	6
83+31.90		L	83+75.70	L	45
83+49.10		L	83+49.40	L	11
83+49.40		L	83+51.10	R	35
83+76.40		L	83+74.90	L	10
83+78.90		L	83+74.90	L	8
100+09.90		L	103+33.80	L	324
100+25.20		L	100+23.30	L	14
100+25.20		L	100+29.70	R	32
102+73.66		R	102+85.02	R	33
				Total:	750

CELLULAR GROUT FOR BORE AND JACK

The Contractor will submit a proposed grouting procedure to the Engineer at least two weeks prior to beginning this work.

Bulkheads will be constructed at each end of the 48” RCP and 66” Steel casing railroad crossing. Each bulkhead will be constructed to withstand the pressure of the grouting operation. The bulkhead will extend from the end of the existing pipe inward a minimum depth of 18 inches and will be free from leaks.

Pressure grouting will be done to ensure all the voids are filled including all breaks or holes in and around the existing pipe.

The grout will be a cellular grout (grout with pre-generated foam) with a minimum 28-day compressive strength of 100 pounds per square inch. If water is not present within the pipe a low-density grout with a minimum of 30 pounds per cubic foot wet density may be used. When it is not possible to dewater the existing pipe, a high-density grout with a minimum of 70 pounds per cubic foot will be used which may include approved sand. The foaming agent used will meet the requirements of ASTM C869 when tested in accordance with ASTM C796.

Both of the cellular grout mix designs will be submitted to the Engineer for approval prior to use. The mix design submittal will include the base cement slurry mix per cubic yard, expansion factor from the foaming agent, and the cellular grout wet density (pounds per cubic foot).

The Contractor will install a bypass valve adjacent to the location where the pressure grouting hose is attached for obtaining samples to be checked for wet density. The wet density of the cellular grout will be checked by the Contractor to verify the proper minimum wet density before the cellular grout filling operations begin and at a minimum once every two hours during production. The Engineer will document the results of the density checks.

CELLULAR GROUT FOR BORE AND JACK CONTINUED

Cellular grout will be wasted until the cellular grout meets the minimum wet density required; however, if 0.5 cubic yards or more of base cement slurry is wasted trying to meet density requirements, then that quantity will not be included for payment.

If grout holes are utilized, cylindrical wooden plugs or other approved plugs will be inserted to plug holes until the grout has set. After the plugs are removed the holes will be filled with concrete.

The quantity of cellular grout was estimated based on volume of the existing pipe and voids outside the existing pipe.

The quantity of base cement slurry ordered will be approved by the Engineer. The quantity of base cement slurry needed will be calculated to the nearest tenth of a cubic yard using the approved mix design, expansion factor of the foaming agent, and estimated amount of cellular grout. The quantity for payment to the nearest tenth of a cubic yard of "Cellular Grout" is a calculated quantity based on the amount of base cement slurry used on the project to the nearest tenth of a cubic yard, expansion factor of the foaming agent, and approved mix design.

All costs for furnishing and installing the cellular grout including bulkhead construction, inlet bevel construction, and incidentals necessary to satisfactorily complete the work will be included in the contract unit price for related items.

TABLE OF CELLULAR GROUT BORE AND JACK

Station	to	Station	L/R	Quantity (CuYd)
201+02.10*		202+82.10	L/R	40.9
201+02.10**		202+82.10	L/R	89.7
Total:				130.6

The quantity at each location includes an additional 5% to account for void and waste volume outside the existing pipe.

*First Grouting Quantity is to fill 2" Void outside of 66" Steel Casing
** Second Grouting Quantity is to fill void between Steel casing and 48" RCP.

CONCRETE PIPE CONNECTIONS

Pipe connections to existing pipes, manholes, junction boxes, and drop inlets will be done by breaking a hole into the existing structure and inserting the pipe. A concrete collar will then be poured around the pipe in the area of the connection.

When it is not possible to use a normal pipe joint (male-female ends), connections to existing pipe will be made by placing a 2' wide by 6" thick M6 concrete collar around the outside of the connection. The concrete collar will be reinforced with 6x6 W2.9 x W2.9 wire mesh.

All costs for constructing the concrete collars including materials and labor will be incidental to the contract unit price per foot for the corresponding pipe contract item.

PIPE COVER

The earthen subgrade cover for some pipe installations is less than one foot. The Contractor will take the necessary precautions to ensure the structural properties of the pipes are not damaged after installation and prior to the placement of final surfacing. Any additional costs for preventing damage to these pipes will be incidental to the contract unit price per foot for the corresponding pipe installation contract item.

STORM SEWER

Reinforced concrete pipe may be bell and spigot. The pipe sections will 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 will be plugged with grout.

Watertight joints are required for reinforced concrete pipe, drop inlets, manholes, and 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 will extend for a distance of 10 feet beyond the water main. This measurement will be from the sealed concrete joint to the outer most surface of the water main.

Watertight joint seals will conform to the following requirements:

1. Reinforced Concrete Pipe (Circular): Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe will be sealed with a mastic joint seal conforming to the requirements of ASTM C990 and encased with a minimum 2-foot wide by 6-inch thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.

2. Reinforced Concrete Pipe (Arch): Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe joints will be sealed with a hydrophilic flexible water stop seal and wrapped with a 1-foot wide strip of fabric above the cradle. The fabric will conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop will be from the list below.

3. Drop Inlets, Manholes, and Junction Boxes: Joints will be sealed with one of the following methods:

   A. A flexible strip seal placed in the joints conforming to the requirements of ASTM C990 and the perimeter encased with a minimum 2-foot wide by 6-inch thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.

   B. A hydrophilic flexible water stop seal placed in the joints and a 1-foot wide strip of fabric wrapped around the perimeter of the pipe. The fabric will conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop will be from the list below.

   C. A self-adhesive external joint seal wrap. The seal wrap will be from the list below.

Approved List of Self-adhesive Joint Wrap

Product	Manufacturer
Mar Mac Seal Wrap	Mar Mac Construction Products McBee, SC 843-335-5909 www.marmac.com
ConWrap CS-212	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 http://www.conseal.com

Approved List of Hydrophilic Flexible Water Stop Seal:

Product	Manufacturer
Waterstop RX	Cetco Hoffman Estates, IL 800-527-9948 www.cetco.com
Conseal CS-231	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 http://www.conseal.com

Gaskets and seals (mastic, waterstop, and seal wraps) will be installed in accordance with the Manufacturer's recommendations.

The cost for furnishing and installing all gaskets, mastic joint seal, water stop seal, seal wrap, concrete collars, and for plugging the lift holes will be incidental to the contract unit price per foot for the corresponding pipe contract item.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

BORE AND JACK RCP PIPE

The Contractor will install 48” RCP from Sta. 201+01 to 202+86 by boring a casing pipe as specified in the “Bore and Jack Steel Pipe” note, then jacking the 48” RCP pipe through said steel pipe. The pipe will be installed by boring and jacking methods as specified herein unless an alternate plan is submitted in writing and approved by the Engineer and Railroad.

The Contractor will submit to the Engineer for approval, a design analysis for the RCP for jacking.

The pipe wall thickness will be determined by the pipe manufacturer.

The variation in laying length of two opposite sides of each pipe section will not be more than 3/8-inch.

The Contractor will submit a pipe type such that the pipe joint will contain a steel band around the exterior of the pipe and have a mastic seal.

Each section of pipe will have 2 threaded pipe inserts cast through the pipe wall located 2 feet from each end and 180 degrees apart. Refer to the RCP for Jacking Threaded Insert Detail.

It is preferred that lifting holes through the pipe wall are not provided. However, if lifting holes are provided in the pipe then the holes will be plugged using a wire mesh and grout or other manufactured plugs as approved by the Engineer.

Any single end crack in the joint will be cause for rejection of an individual section of pipe.

Acceptance testing of pipe at the plant will meet the requirements of the three-edge load bearing test to produce a 0.01-inch crack in at least three sections of pipe.

The manufacturer will supply 4 concrete cylinders for compressive strength testing.

The manufacturer will submit three initial copies of shop drawings to the Engineer for review a minimum of fifteen days prior to manufacturing the pipe. One reviewed copy will be sent back to the manufacturer who will then make any necessary changes and then send six final copies to the Engineer for approval and distribution. The shop drawings will contain the following information:

1. Detailed dimensions of pipe and joint, including diameters, wall thickness, laying length, and joint tongue and groove.
2. Concrete compressive strength, concrete mix design, admixtures, if any, and curing process.
3. Gasket or mastic type, specifications, and dimensions.
4. Reinforcing steel type, specification and grade, placement tolerance, diameter and area of circumferential, longitudinal and special reinforcement.

BORE AND JACK RCP PIPE CONTINUED

5. Location and dimensions of joint area where jacking force will be applied and maximum allowable jacking force in pounds per square inch on this area.

The jacking pit will be constructed of sufficient size to accommodate equipment and workmen and no closer than 30 feet to the centerline of the Railroad Tracks. The pit walls will be sloped or shored to comply with all applicable State and Federal regulations. The Contractor will be responsible for the design of the pit floor and jacking thrust restraint wall to carry the cyclic loads and thrust applied by the Contractor's operation. Water will not be allowed to accumulate in the jacking pit. All components of the jacking pit will be removed after installation of the pipe unless otherwise allowed by the Engineer.

The pipe will be pushed into position from a jacking pit with hydraulic jacks while simultaneously excavating at the forward end of the pipe. Each pipe section will be jacked from the jacking pit as the excavation at the boring head progresses so that the excavation is supported by the boring head or the pipe at all points.

Jacking thrust will be applied to the pipe by means of a yoke or frame designed to distribute the thrust uniformly around the pipe joint. The thrust will be applied to the pipe joint only in the location and only to the maximum force recommended by the pipe manufacturer. The pipe will be jacked into place without visible damage to the pipe or joint. A ¾-inch plywood cushion will be used between the yoke and each pipe joint.

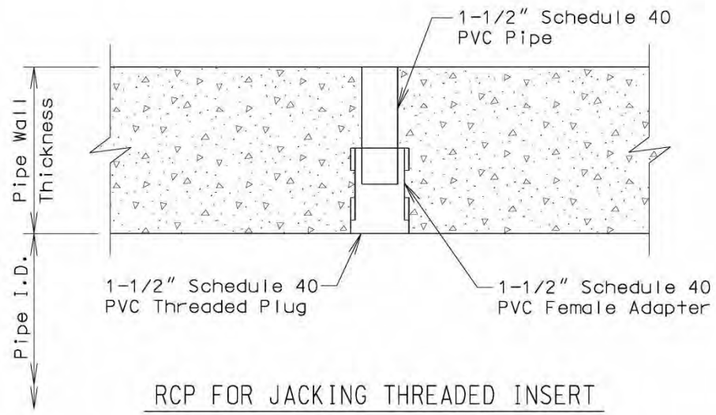
Upon completion of the pipe jacking operation, the annular space between the pipe and the bored excavation and all voids around the outside face of the pipe will be filled with grout. The grout will be pumped through the threaded pipe inserts at sufficient pressure to force the grout into the annular space and voids as directed by the Engineer. The grout will be a Portland cement and sand mix or other material approved by the Engineer.

Payment for furnishing the jacking pipe will be incidental to the contract unit price per foot for “48” Class II RCP, Furnish”.

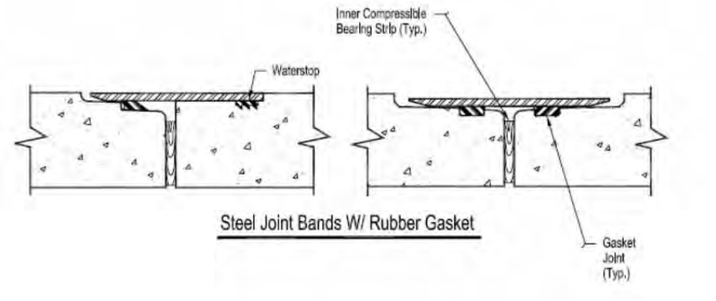
All costs involved with boring and jacking the pipe including labor, equipment, and materials, including pressure grouting, and all costs related to constructing and backfilling the jacking pit will be incidental to the contract unit price per foot for “48” RCP, Install”.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

BORE AND JACK RCP PIPE CONTINUED



RCP FOR JACKING THREADED INSERT



Steel Joint Bands W/ Rubber Gasket

BORE AND JACK STEEL PIPE

The Contractor will install a 66” Smooth Steel Pipe at station 201+01 to 202+86 by boring and jacking the pipe through the existing railroad embankment. The pipe will be installed by boring and jacking methods as specified herein unless an alternate plan is submitted in writing and approved by the Railroad and Engineer.

Smooth steel pipe for boring and jacking will meet or exceed the requirements of ASTM A1097 Grade B, with a minimum yield strength of 35,000 psi. Hydrostatic testing will not be required for this application. The pipe will be required to have a minimum wall thickness of 0.875 inches.

The exterior of the steel pipe will be coated with a fusion bonded epoxy coating and an abrasion resistant overcoat or a two-component coal tar epoxy. The coal tar will meet the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tneme-Tar, or an approved equal. Applications of the coatings will be in conformance with the manufacturer’s recommendations.

BORE AND JACK STEEL PIPE CONTINUED

The Contractor will be responsible for providing cathodic protection if other measures do not meet BNSF's cathodic protection requirements, as noted in BNSF's "UTILITY ACCOMMODATION POLICY".

The pipe joints will be welded by a certified welder in accordance with Section 410.3 D of the Specifications. After the welding has been completed, the exposed area will be coated with 3M Scotchkote Liquid Epoxy 328 or a two-component coal tar epoxy meeting the requirements of Sherwin-Williams Targuard, Tnemec Hi-Build Tneme-Tar, or an approved equal.

The jacking pit will be constructed of sufficient size to accommodate equipment and workmen. The pit walls will be sloped or shored to comply with all applicable State and Federal regulations. The Contractor will be responsible for the design of the pit floor and jacking thrust restraint wall to carry the cyclic loads and thrust applied by the Contractor's operation. Water will not be allowed to accumulate in the jacking pit. All components of the jacking pit will be removed after installation of the pipe unless otherwise allowed by the Engineer.

The pipe will be pushed into position from a jacking pit with hydraulic jacks while simultaneously excavating at the forward end of the pipe. Each pipe section will be jacked from the jacking pit as the excavation at the boring head progresses so that the excavation is supported by the boring head or the pipe at all points.

Jacking thrust will be applied to the pipe by means of a yoke or frame designed to distribute the thrust uniformly around the pipe joint. The thrust will be applied to the pipe joint only in the location and only to the maximum force recommended by the pipe manufacturer. The pipe will be jacked into place without visible damage to the pipe or joint.
The boring head excavation will be circular with a maximum diameter equal to the outside diameter of the jacking pipe plus 1 inch. The Contractor will take whatever corrective action is necessary to prevent running, flowing, or squeezing ground conditions at the cutting face from causing large voids or significant loss of soil that may cause surface settlement.

The Contractor will control the alignment and grade of the pipe installation to meet the following tolerances:

1. Maximum horizontal deviation from plan shown alignment will be less than 0.15% of pipe length from the downstream end of pipe to the point of measurement.

2. Maximum vertical deviation from plan shown alignment will be less than 0.075% of pipe length from the downstream end of pipe to the point of measurement.

All material excavated by the boring head for the pipe installation will be disposed of by the Contractor. The excavated material from the boring pit will be used as backfill for the pit and compacted into place to the satisfaction of the Engineer.

Payment for furnishing the pipe will be included in the contract unit price per foot for "66" Steel Pipe, Furnish".

All costs involved with boring and jacking the pipe including labor, equipment, welding, materials, disposal of waste material, constructing and backfilling the jacking pit, and excavating and backfilling the embankment will be included in the contract unit price per foot for the "Bore and Jack 66" Pipe".

BORE AND JACK STEEL PIPE CONTINUED

Due to the nature of the soils at the bore and jack location, the boring head excavation may not be advanced beyond the leading end of the casing.

The Contractor is advised that additional precautionary measures may be necessary to prevent caving and/or inflow of materials during boring operations. Any settlement, displacement, or other damage to the railroad and/or embankment will be repaired by the Contractor, as directed by the Engineer, at no additional cost to the Owner.

RAILROAD COORDINATION

The Contractor is required to give BNSF at least 30 days advanced notice, in writing, before any work is started on the site. To avoid hazards, BNSF may have representatives present. If deemed necessary, for the purpose of inspection and any issuance of appropriate instructions for railway operations, the Contractor will coordinate all necessary work with the local roadmaster and any other persons deemed pertinent by BNSF.

Flagging, insurance, site access and equipment staging agreements not covered under the BNSF permit obtained by the City of Lemmon (21W-11198), will be provided as specified by BNSF requirements.

All costs to reimburse BNSF for flagging services provided will be the responsibility of the Contractor and will be incidental to the associated contract unit prices.

The Contractor will provide a copy of all documents required by BNSF to complete the project work, including but not limited to: Railroad protective insurance, certifications allowing entrance to BNSF property (safety, training, etc..), Contractor Right-of-Entry Agreements, if required, to the Engineer.

RAILROAD TRACK MONITORING PLAN

A survey crew will continually monitor the elevation and alignment of the railroad track above the proposed Bore and Jack during the entire procedure. If track movement or loss of ballast exceeds 1/4 inch during the jacking or boring operations, all work must stop, and the Railroad must be notified. The Railroad may take any actions necessary to ensure safe passage of trains. The Contractor must immediately submit a corrective plan of action to the Railroad and Engineer for review and approval. The Railroad must review and approve the proposed repair procedure before a notice to proceed. The finished repair must be inspected by the Railroad before the track can be placed back into service.

An estimated **144** hours for Contractor survey monitoring are included in the project quantities. All costs will be included in the contract bid item "Engineer Directed Surveying/Staking".

SALVAGING OF FRAMES, GRATES, AND LIDS

The Contractor will take precautions to salvage existing manhole or drop inlet frames, grates and lids.

Frames, grates, and lids that are salvaged by the Contractor will be stockpiled at the City of Lemmon City Shop at 211 1st Ave W, Lemmon, SD.

Payment for salvaging components were not included in the plans and will be incidental to the contract unit price "Incidental Work, Grading".

DROP INLETS

Where drop inlets are constructed within areas of curb and gutter, the Contractor will construct weep holes of at least 3 inches in diameter in the drop inlet walls. The weep holes will be constructed at the same elevation as the adjacent top of the earthen subgrade and will be maintained clean and open at all times until the permanent surfacing is placed. The drop inlets will be covered throughout construction operations as necessary with an Engineer approved cover to provide safe travel for motorists and to prevent materials from entering the storm sewer system. After the permanent surfacing has been placed, the Contractor will seal the weep holes with grout and remove all debris from the drop inlet. All costs involved with the coverings, weep holes, and removing debris from the drop inlets will be incidental to the contract unit prices for the components of the drop inlets.

All costs to Furnishing and Install Pre-Cast Reinforced Concrete Drop Inlets will be paid per each to the contract unit price "2'x3' Type B Drop Inlet" as indicated in the plans.

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 unit prices as indicated above.

MANHOLES

All costs to Furnishing and Install Pre-Cast Reinforced Concrete Round Manholes per the Detail Plate will be paid per each to the contract unit price for the associated size of Manhole as indicated in the plans.

The callouts included in these plans are for bidding purposes based on the pipe size, junction locations, and anticipated construction schedule requirements. The successful bidder (Contractor) is allowed to submit an alternative to the proposed structural type, and size, if they so choose with the approval of the Engineer. Any alternative structural type and size (such as cast in-place, square or rectangular manholes, etc..) must be approved by the Engineer prior to production or procurement of materials. The Contractor should not anticipate any changes will be allowed.

If cast in-place structures are allowed, the Contractor will be responsible for all structural design and submittals for review if sizes are not included in SDDOT Standard Plates.

If additions or reductions to the number of manholes are ordered by the Engineer, payment for the components required to construct the manholes will be made at the contract unit prices as indicated above.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

ADJUSTMENT OF MANHOLES

The Contractor will adjust manholes to the extent necessary on this project. Adjusting the manholes may consist of removing the upper course of brick or removing the concrete walls, replacing the removed materials with brick or Class M6 concrete, placing adjusting rings if necessary, and resetting the manhole frame and lid. The elevation of the lid will be set at the same elevation of the adjacent new pavement or surrounding ground. All manhole frames, lids, and rings that are cracked or broken due to carelessness of the Contractor will be replaced with new manhole frames, lids, and rings that conform with the Specifications at the Contractor's expense. Manholes will be adjusted to the satisfaction of the Engineer. All costs involved in adjusting the manholes will be incidental to the contract unit price per each for "Adjust Manhole".

The Engineer may direct adjustment of manholes that were not included in these plans. Payment for adjusting manholes that were not included in the plans will be at the contract unit price per each for "Adjust Manhole" and "Reset Manhole Frame and Lid".

ADJUSTMENT OF WATER VALVES AND CURB STOPS

The Contractor will adjust water valves and water stops to the extent necessary on this project. Adjusting the water valves and curb stops may consist of removing the valve risers or curb stop riser and replacing or adjusting risers. The elevation of the valve lid or curb stop will be set at the same elevation of the adjacent new pavement or surrounding ground. All frames and Risers that are cracked or broken due to carelessness of the Contractor will be replaced with new lids and risers that conform with the Specifications at the Contractor's expense. Valves and water stops will be adjusted to the satisfaction of the Engineer. All costs involved in adjusting the Water Valves and Water Stops will be incidental to the contract unit price "Adjust Water Valve Box".

The Engineer may direct adjustment of Water Valves that were not included in these plans. Payment for adjusting valves and water stops that were not included in the plans will be incidental to the contract unit price "Adjust Water Valve Box".

TABLE FOR ADJUSTMENT OF WATER VALVES

Station	Adjustment
43+52.74 R	Vertical
43+96.41 R	Vertical
44+00.57 R	Vertical
99+88.53 L	Vertical
99+88.18 R	Vertical
100+40 R	Vertical
102+87 R	Vertical

TABLE OF TYPE B66 CONCRETE CURB AND GUTTER

Station	to	Station	L/R	Quantity (Ft)
43+27.50		43+45.13	R	14.7
43+60.13		43+60.13	R	5.0
44+06.78		44+06.89	R	30.7
44+26.78		44+48.46	R	18.7
80+36.36		80+67.62	L/R	37.1
81+07.75		84+41.85	L	334.1
80+53.25		80+96.48	R	43.2
81+14.73		81+35.22	R	20.5
81+63.21		81+93.22	R	30
82+16.22		83+57.45	R	141.2
84+23.39		84+41.85	R	18.5
100+14.63		100+15.83	R	20
100+22.96		100+23.94	L	17.51
100+42.95		101+55.52	L	112.6
101+71.53		102+71.46	L	99.9
100+43.69		101+49.12	R	92.4
101+69.13		102+51.63	R	82.5
102+71.63		102+78.31	R	6.7
			Total:	1125.29

TABLE OF TYPE P6 CONCRETE CURB AND GUTTER

Station	to	Station	L/R	Quantity (Ft)
80+67.62		81+17.75	L	50.13
80+96.48		81+14.73	R	18.25
81+35.22		81+63.21	R	27.99
81+93.22		82+16.22	R	23.00
102+71.46		102+87.46	L	16.00
101+49.12		101+69.13	R	20.01
101+55.52		101+71.53	L	16.01
102+51.63		102+71.63	R	20.00
			Total:	191.39

6" PCC FILLET SECTIONS

Payment for "6" PCC Fillet Section" will be based on plans quantity. If additions or reductions to the area of PCC fillet sections are ordered by the Engineer, payment will be made in accordance with the contract unit price per square yard for "6" PCC Fillet Section".

TABLE OF 6" PCC FILLET SECTION

Station	to	Station	L/R	Radius (Ft)	Quantity (SqYd)
43+45.12		43+60.13	R	17.67	15.7
44+06.78		44+26.78	R	22.67	22.2
83+57.45		83+74.77	R	18.67	13.24
84+01.89		84+23.39	R	18.67	20.22
100+14.63		100+53.68	R	42.67	62.2
100+22.96		100+42.96	L	22.67	22.3
			Total:		155.86

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
06/18/2025

WATER MAIN

Contractors License: The Contractor will obtain a “South Dakota State Sewer and Water Plumbing Contractor’s License” prior to commencing construction.

WATER MAIN LOWERING

An estimated **5** water main lowering(s) will be required to install the proposed storm sewer. All costs to lower the water main at necessary crossings included but not limited to, furnishing and installing piping, bends, and restraints will be included in the contract unit price “Water Main Lowering”.

All costs to reconnect and reestablish service to the Water Main Lowering(s) will be included in the contract unit price “Connect to Existing Water Main”.

WATERMAIN SHUTDOWNS AND TEMPORARY FACILITIES

All valve operation will be done by City of Lemmon staff.

Provide minimum 48-hour notice for any shutdowns of existing watermains with the City of Lemmon.

The Contractor is responsible for all communication and notification with adjacent properties. Plan in advance to have all required equipment, materials, and labor on hand at the time of undertaking the connections so that work can proceed continuously to complete connections in the minimum time. Coordinate operation of existing valves and other appurtenances with the City of Lemmon. If a water service interruption affects a customer, who for legitimate reasons cannot be without service for the time in question, either reschedule the work to a time the customer can be without service or arrange to supply temporary service for said customer.

If service will not be restored within **8** hours from the start of loss to service, a temporary water supply will be required.

Provide temporary sanitary facilities for businesses or customers that will be without service during the connections.

All costs will be incidental to the contract unit prices for related items.

WATER MAIN AND APPURTENANCES

All ductile iron pipe and fittings will be wrapped with polyethylene tube material to protect the pipe from any future corrosion. The poly material will be installed per manufacturers specifications and the ductile iron handbook from DIPRA and ANSI A21.5 (AWWA C105).

Provide Polyvinyl Chloride Pipe meeting the requirements of AWWA C900 or C905 or C909 or the latest revision thereof and furnished in Cast Iron Pipe equivalent outside diameters with elastomeric joints.

Furnish PVC pipes smaller than 16-inches with a pressure class of PC150 with a DR of 18, PVC pipes 16-inches and larger with a pressure class of PC235 with a DR of 18.

Utilize a pipe material supplier that is ISO 9001 or 9002 registered. Provide shop drawings for Engineer approval.

Provide restrained joints for vertical adjustments. Obtain approval for all restrained jointing systems, except for preapproved systems. Preapproved restraining systems for Polyvinyl Chloride pipe include Certa-Lok, Yellowmine, and EBAA Iron Inc. Furnish Ductile Iron fittings manufactured in accordance with AWWA/ANSI C153/A21.53 or AWWA/ANSI C110/A21.10. Furnish Ductile Iron fittings with a working pressure of 350 pounds per square inch conforming with AWWA/ANSI C153/A21.53 or AWWA/ANSI C110/A21.10.

Provide all Cast Iron and Ductile Iron fittings as cement mortar lined and with an exterior bituminous seal conforming with AWWA/ANSI C104/A21.4. Install all fittings utilizing mechanical restrains in addition to thrust blocking.

All water distribution materials will meet NSF / ANSI Standard 61 – Drinking Water System Components, Health Effects, NSF/ANSI 61, and NSF/ANSI 372. The Contractor or Supplier may submit appropriate documentation to the Engineer for any materials not listed in the Supplemental Standard Specifications. This documentation must be provided no later than 7 days prior to bid opening

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

INSULATION BOARD

Furnish and install the insulation required to protect the watermain at all water main lowering(s) at storm sewer crossings with less than 36” of horizontal and/or vertical cover. Provide insulation board meeting the following requirements:

- Thermal conductivity of not more than 0.28 BTU per hour per square foot per degree Fahrenheit per inch of thickness as tested in accordance with ASTM C177 is required.
- Not to absorb moisture to an extent greater than 2.5 percent by volume as tested in accordance with ASTM D2842.
- Compression strength greater than 20 psi as tested in accordance with ASTM D-1621.
- Minimum density of 1.3 pounds per cubic feet as tested in accordance with ASTM D-1622.
- Specifically designed for protection of underground utilities. Install in accordance with the manufacturer's recommendations.

Furnish and install a minimum of 4-inches thick of insulation centered over the watermain. Offset the insulation board joints between each layer. Install pipe bedding material between pipe and insulation.

All costs to furnish and install insulation board and pipe bedding will be included in the contract unit prices “Water Main Lowering”.

WATER MAIN DISINFECTION

The Contractor must submit a plan to complete the water main lowering. When minor water main work occurs (i.e. tie-in connections of new water main to existing water main, water main adjustments, installation of new valves on existing main or any other work deemed minor by the Engineer) the existing main may be returned to service once the line has been flushed by City Staff.

Water that is discharged during water main flushing must not reach a stream, river, or water way if the chlorine residual exceeds 0.05 mg/L.

TABLE OF WATERMAIN LOWERINGS

Station to	L/R	Station	L/R	Water Main Lowering (Each)	Reconnect to Existing Water Main (Each)
44+31.68	R	44+51.85	R	1	2
83+97.02*	L	83+99.05*	L	1	2
100+00.76	R	100+20.77	R	1	2
100+52.52	R	100+79.52	R	1	2
205+66.29	L	205+66.29	R	1	2
			Total:	5	10

***Water Main Lowering will require Vertical and Horizontal Offset to avoid Proposed Manhole.**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B10	B54

FOR BIDDING PURPOSES ONLY

SANITARY SEWER - GENERAL

1. Contractors License. The Contractor will obtain a “South Dakota State Sewer and Water Plumbing Contractor’s License” prior to commencing construction.

2. The Contractor will notify the Engineer and City Staff upon completion of the sanitary sewer work. Inspection of the sanitary sewer will be made by the City, or consultant if applicable, and the Contractor to identify and note any deficiencies. The expense of any necessary television inspection will be borne entirely by the Contractor. The expense of any additional television inspections beyond the initial inspection due to Contractor errors will be borne entirely by the Contractor. Televising will not occur unless the following conditions are met:

- Appropriate vehicle access i.e. level, free of mud holes, and capable of supporting televising vehicles is provided to all sanitary sewer manholes access points.
- Manholes/structures are exposed and easily accessible. Buried manholes are not acceptable.
- Manhole frames and lids per the City’s standard plates are properly installed.
- Interior manhole work is complete, i.e. manhole inverts and pipe penetration complete, welding complete.
- Manholes, pipes, etc. are clean and free of debris including lumber or wood forms, gravel/dirt, etc. More than a one-half gallon container of gravel or dirt per 400' and in each manhole is unacceptable.
- The Contractor will place water in pipes to assist in identifying sags

Corrective actions will be provided to the project manager, who will provide them to the Contractor. After corrections are made, the television request may be submitted again, in writing, and the process will begin again and be repeated until the infrastructure has been accepted. Paving may occur but is not recommended until the sewer infrastructure has been reviewed and accepted. A time extension will not be considered due to the Contractor waiting for the sewer to be televised. The Contractor is still responsible for correcting items not meeting the engineering design standards after the initial inspection through the warranty period. Cleaning and maintenance of the sanitary sewer and storm drainage systems will be the responsibility of the Contractor until final completion. Weather delays and unforeseen circumstances may delay televising.

3.The Contractor is responsible for all backup prevention plans, which will be submitted to the Engineer for record.

SANITARY SEWER SERVICE CROSSINGS

An estimated **1** service crossing is included in the project quantities. All costs to adjust the sanitary service line will be included in the contract unit price “Adjust Sewer Service”.

See “Table for Sanitary Sewer Pipe” for estimate quantities”. These quantities are estimates only and the Contractor will consider the need for more or less pipe, based on field conditions, and should not expect to request additional compensation due to changes in pipe length, unless approved by the engineer.

Due to the depth of the Sanitary sewer main, all service adjustments will be made to lower the service line below the proposed storm sewer pipe. A minimum 18” of clearance will be maintained between the service line and the proposed storm sewer. The Contractor may lower the crossing to maintain 36” of cover at their own cost, refer to the “Insulation Board” note in other sheets of this note section for all sewer service crossings.

All mainline sanitary sewer pipe and fittings must be SDR 26 in accordance with the Special Provisions. All costs associated with this pipe material classification will be incidental to the respective PVC sanitary sewer pipe bid items.

All 4” sanitary sewer service pipe and fittings must meet Schedule 40 wall thickness. Sewer Services 6”or larger must meet mainline pipe note above.

Reconnect existing sanitary sewer service lines to new sewer service lines using Fernco Strongback RC Series Repair Couplings, Shear Guard repair couplings by Indiana Seal, or approved equal.

All costs to reconnect to the existing sanitary sewer service lines will be included in the contract unit price “Reconnect Sewer Service”

All costs to connect the sewer service to the existing sanitary sewer main will be included in the contract unit price “Connect to existing Sewer Main”.

Make connections to PVC pipe by coring a hole and install an approved saddle-type tapping tee.

Alternatively, the Contractor may install a new manufactured PVC tee by cutting out a section of pipe and installing a new section with a tee or wye. Make connections to the host pipe at a smooth vertical cut, butted closely to the new PVC using a shielded flexible gasketed repair coupling to hold it in place. Ensure the host pipe inverts between new and old pipe are smooth.

If the Contractor uses the alternative method, CCTV inspection video for manhole to manhole pipe inspection will be submitted to the engineer for review at no additional cost to the Owner.

The City of Lemmon may not be able to field locate existing water or sanitary sewer service lines to properties. The locations of all sanitary sewer service lines shown on the Construction Drawings are taken from existing plans or “2014 Sewer Televising Report”. These documents may be requested from HDR Engineering, 3231 Greensboro Dr, Suite 200, Bismarck, ND 58503.

All sewer pipe relocation not noted above will be included in the contract unit price “4" PVC Sewer Pipe”

TABLE OF PVC SANITARY SEWER PIPE

Station to	L/R	Station	L/R	Circular Pipe			
				4"	6"	8"	10"
**83+84.59	L	84+43.31	L	120			
*102+12.80	L	102+12.10	R	26			
		Total:		146	0	0	0

*Service Crossing bid item
** PVC Sewer Pipe bid item

Referenced Standards:
1. American Iron and Steel Institute (AISI).
2. ASTM International (ASTM):
a. C443, Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
b. D1785, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
c. D2466, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
d. D2467, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
3. American Water Works Association (AWWA):
a. C800, Standard for Underground Service Line Valves and Fittings.
4. International Plumbing Code (IPC).
5. Underwriters Laboratories, Inc. (UL).

TABLE PVC SANITARY SEWER CONNECTIONS

Station to	L/R	Station	L/R	Reconnect Sanitary Sewer Service	Connect to Existing Sanitary Sewer Main
				(Each)	(Each)
83+84.59	L	84+69.27	L	2	
102+12.80	L	102+12.10	R	1	1
		Total:		3	1

ALTERNATE BID A/B:

In evaluating Bids, the Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive or substitute Bids for which Owner determines funds will be available at the time of award.

HDPE STORM SEWER

High-density polyethylene (HDPE) pipe or HDPE Steel-Reinforced Polyethylene (SRPE) will meet the material and performance requirements of ASTM F2306 or the latest edition of AASHTO M294 Type S or AASHTO M252 Type S or ASTM F2562"Standard Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage" or AASHTO Designation M335 and MP-40. HDPE pipe will be joined with soil tight joints meeting the requirements of AASHTO M294 Paragraph 7.9.3 or ASTM F2306 Paragraph 6.6.3.3 or ASTM D3212 "Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals. Fittings may be joined using soil tight couplers or at manufacturers requirements. Junctions with concrete structures will meet requirements of ASTM C923. Installation will be per manufacturer's recommendations and/or ASTM D2331, whichever is more stringent. The Contractor will provide the Engineer all pipe product information, installation recommendations and instructions, and additional literature, as requested, for review and approval prior to ordering pipe.

The classification of HDPE or HDPE Steel-Reinforced Polyethylene (SRPE) pipe supplied will meet E-80 load rating for this project.

The Contractor will include all necessary data to ensure the installed pipe will maintain line and grade within the pipe trench during high flow events for construction and post construction. An example would be an anchoring system.

If additional pipe bedding or pipe undercutting is required per manufacturers installation requirements, all additional costs will be included in the associated bid items.

Approved List of HDPE Pipe:

Product	Manufacturer
DuroMaxx (30" or Larger) A-2000 (15"-36")	Contech ES West Chester, OH 800-338-1122 https://www.conteches.com/
SRPE Pipe	Colonial Construction Materials Oilville, VA 23129 800-436-6287 https://colonial-materials.com/

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Revised 06/18/2025

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B12	B54

TABLE OF CONSTRUCTION STAKING

(See Special Provision for Contractor Staking)

Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Grade Staking: Length (Mile)	Grade Staking: Lane Factor	Grade Staking: *Sets of Stakes	Grade Staking: **Grade Staking Quantity (Mile)	Miscellaneous Staking Quantity (Mile)
1st Street East	80+00	84+82	2	482	0.091	1	2	0.182	0.091
1st Avenue East	100+00	104+00	2	400	0.076	1	2	0.152	0.076
Storm Sewer Outfall	200+00	207+00	0	700	0.133	0	1	0	0.133
							Totals:	0.334	0.300

* 1 = Blue Top Stakes Only (Asphalt Concrete Pavement)
2 = Blue Top and Paving Hub

** Grade Staking Quantity = (Length) x (Lane Factor) x (Sets of Stakes)

An estimated **30** hours of miscellaneous surveying/staking has been included in the project quantities. All cost will be included in the bid item “Engineer Directed Surveying/Staking”.

TABLE OF EXCAVATION QUANTITIES

Station	to	Station	Topsoil Exc. (CuYd)	(2) Excavation (CuYd)	(1) Total Excavation (CuYd)
2nd Street					
43+25		44+63	7.0	120	127
1st Street					
80+49.66		84+52.20	15.0	854	869
1st Avenue					
100+42.96		102+87.46	13.0	242	255
Storm Sewer RR Crossing and Outlet					
200+00.00		207+20.00	187.0		187
		Project Total	**222**	**1,216**	**1,438**

(1) The quantities for these items are in the Estimate of Quantities under their respective contract items.

(2) It is anticipated that there will be waste from grading, underground utility installation and excavation activities. It is the Contractor's responsibility to dispose of the excess material per SDDOT requirements.

TABLE OF STORM SEWER DROP INLETS AND MANHOLES

ID	Station	Offset		Type	Pre-Cast Drop Inlet Size 2'x3' (Each)	Pre-Cast Drop Inlet Size 5.5'x3' (Each)	Pre-Cast Manhole Round Size 72" (Each)	Pre-Cast Manhole Round Size 96" (Each)	Pre-Cast Manhole Round Size 120" (Each)	Pre-Cast Manhole Round Size 144" (Each)	Frame and Grate / Lid: Type B Frame and Grate (Each)	Frame and Grate / Lid: Type A7 (Each)	Frame and Grate / Lid: Reset Manhole Frame and Lid (Each)	Adjust Manhole (Each)	Adjustments: Adjustment Ring (Incidential) (Each)	Adjustments: Pre-Cast Collar (Incidential) (Each)
DI1	84+29.36	21.67	L	Precast 2x3 Type B	1						1					1
DI1	84+29.36	21.67	L	Precast 2x3 Type B	1						1					1
DI2	84+31.13	21.67	R	Precast 2x3 Type B	1						1					1
DI3	83+30.18	21.67	L	Precast 2x3 Type B	1						1					1
DI4	83+29.51	21.67	R	Precast 2x3 Type B	1						1					1
DI5	82+45.12	21.67	L	Precast 2x3 Type B	1						1					1
DI6	81+23.02	21.67	L	Precast 2x3 Type B	1						1					1
DI7	81+22.98	21.67	R	Precast 2x3 Type B	1						1					1
DI8	100+71.80	15.67	R	Precast 2x3 Type B	1						1					1
DI9	43+37.29	21.64	L	Precast 2x3 Type B	1						1					1
DI10	43+41.73	21.67	R	Precast 2x3 Type B	1						1					1
DI11A	44+42.28	11.92	L	Precast 5.5x3 Type B		1					1					1
DI11B	44+45.87	11.92	L	Precast 5.5x3 Type B		1					1					1
DI12	44+41.65	13.67	R	Precast 2x3 Type B	1						1					1
MH1	204+96.50	0.00	L/R	Precast 96" Round				1				1			6	
MH2	203+10.30	0.00	L/R	Precast 96" Round				1				1			6	
MH3	83+95.30	20.40	L	Precast 144" Round						1		1			6	
MH4	83+75.00	20.50	L	Precast 144" Round						1		1			6	
MH5	83+30.10	10.70	L	Precast 96" Round				1				1			6	
MH6	82+45.40	10.80	L	Precast 72" Round			1					1			6	
MH7	81+23.00	10.70	L	Precast 72" Round			1					1			6	
MH8	102+96.80	14.40	L	Precast 96" Round				1				1			6	
MH9	100+71.80	15.80	L	Precast 96" Round				1			2					
MH10	43+74.11	10.03	L	Precast 120" Round					1			1			1	
MH11	43+74.17	35.23	R	Precast 72" Round			1					1			1	
MH12	43+38.18	9.71	L	Precast 72" Round			1					1			1	
EXSSMH1	83+89.35	0.83	R	Existing Sanitary Sewer Manhole									1	1		
EXSSMH2	99+99.95	0.27	R	Existing Sanitary Sewer Manhole									1	1		
				Total:	12	2	4	5	1	2	16	11	2	2	51	14

FOR BIDDING PURPOSES ONLY

TABLE OF STORM SEWER PIPE - Alt A

Station Offset (L/R)	Circular							
	Reinforced Concrete						Steel Encasement Pipe	
	15"	18"	36"	48"	60"	Flared End	66"	
	Cl 2	Cl 2	Cl 2	Cl 2	Cl 2	60"		
	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(EA)	(Ft)	
2nd Street								
43+74.11 - 10.03' L to 43+37.29 - 21.64' L			30					
43+38.18 - 9.71' L to 43+37.29 - 21.64' L	10							
43+38.18 - 9.71' L to 43+41.73 - 21.67' R	28							
43+71.11 - 10.03' L to 44+45.87 - 11.92' L				64				
44+42.28 - 11.92' L to 44+41.65 - 13.67' R	22							
43+74.11 - 10.03' L to 43+74.17 - 35.23' R				40				
43+74.17 - 35.23' R to 43+74.19 - 44.81' R				8				
1st Street								
81+23.09 13.6' L to 81+23.07 20.7' L	8							
81+23.01 7.8' L to 81+22.99 20.7' R	30							
82+45.36 13.7' L to 82+45.19 20.7' L	8							
83+29.99 6.8' L to 83+29.52 20.7' R	28							
83+30.13 14.6' L to 83+30.25 20.7' L	8							
83+33.17 11.4' L to 83+69.66 19.3' L				38				
83+80.50 20.5' L to 83+89.84 20.3' L				10				
84+01.24 20.7' L to 84+26.07 21.62' L		26						
84+31+19 20.7' L to 84+31.18 20.7' R	42							
1st Avenue								
103+38.50 7.8' L to 102+99.27 13.8' L					40			
102+94.28 14.4' L to 100+74.43 15.8' L					220			
100+71.78 11.9' L to 100+71.78 14.7' R	28							
100+70.28 15.7' R to 100+56.98 15.7' R	14							
100+69.15 15.5' L to 100+14.19 9.2' L					56			
100+05.84 8.7' L to 99+97.83 8.7' L				8				
100+10.18 13.4' L to 100+10.13 21.1' L			8					
100+10.23-4.0' L to 100+10.25-4.0' R			8					
Railroad Crossing/North Lemmon								
200+26.89 17.8' L to 200+18.89 17.7' L					8			
206+84.35 0' L/R						1		
206+81.32 0' L/R to 204+99.18 0' L/R					176			
204+93.88 0' L/R to 203+12.98 0' L/R					182			
203+10.3 0' L/R to 200+35.24 0' L/R				280				
202+72.53 0' L/R to 200+92.51 0' L/R							180	
Project Total:	**226**	**26**	**46**	**448**	**682**	**1**	**180**	

TABLE OF ALTERNATIVE STORM SEWER PIPE - Alt B

Station Offset (L/R)	Circular							
	High Density Polyethylene Pipe					Corrugated Metal	Steel Encasement Pipe	
	15"	18"	36"	48"	60"	Flared End	66"	
						60"		
	(Ft)	(Ft)		(Ft)	(Ft)	(EA)	(Ft)	
2nd Street								
43+74.11 - 10.03' L to 43+37.29 - 21.64' L			30					
43+38.18 - 9.71' L to 43+37.29 - 21.64' L	10							
43+38.18 - 9.71' L to 43+41.73 - 21.67' R	28							
43+71.11 - 10.03' L to 44+45.87 - 11.92' L				64				
44+42.28 - 11.92' L to 44+41.65 - 13.67' R	22							
43+74.11 - 10.03' L to 43+74.17 - 35.23' R				40				
43+74.17 - 35.23' R to 43+74.19 - 44.81' R				8				
1st Street								
81+23.09 13.6' L to 81+23.07 20.7' L	8							
81+23.01 7.8' L to 81+22.99 20.7' R	30							
82+45.36 13.7' L to 82+45.19 20.7' L	8							
83+29.99 6.8' L to 83+29.52 20.7' R	28							
83+30.13 14.6' L to 83+30.25 20.7' L	8							
83+33.17 11.4' L to 83+69.66 19.3' L				38				
83+80.50 20.5' L to 83+89.84 20.3' L					10			
84+01.24 20.7' L to 84+26.07 21.62' L		26						
84+31+19 20.7' L to 84+31.18 20.7' R	42							
1st Avenue								
103+38.50 7.8' L to 102+99.27 13.8' L					40			
102+94.28 14.4' L to 100+74.43 15.8' L					220			
100+71.78 11.9' L to 100+71.78 14.7' R	28							
100+70.28 15.7' R to 100+56.98 15.7' R	14							
100+69.15 15.5' L to 100+14.19 9.2' L					58			
100+05.84 8.7' L to 99+97.83 8.7' L				8				
100+10.18 13.4' L to 100+10.13 21.1' L			8					
100+10.23-4.0' L to 100+10.25-4.0' R			8					
Railroad Crossing/North Lemmon								
200+26.89 17.8' L to 200+18.89 17.7' L					8			
206+84.35 0' L/R						1		
206+81.32 0' L/R to 204+99.18 0' L/R					176			
204+93.88 0' L/R to 203+12.98 0' L/R					182			
203+10.3 0' L/R to 200+35.24 0' L/R					280			
202+72.53 0' L/R to 200+92.51 0' L/R							180	
Project Total:	**226**	**26**	**46**	**158**	**974**	**1**	**180**	

FOR BIDDING PURPOSES ONLY

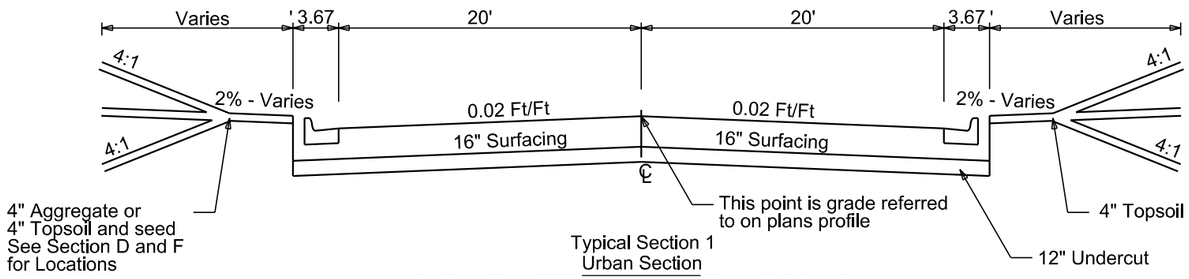
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B14	B54

Plotting Date: 04-03-2025

Typical Grading Section

43+35.45 to 43+63.10
80+84.95 to 83+60.00
84+25.94 to 84+41.85

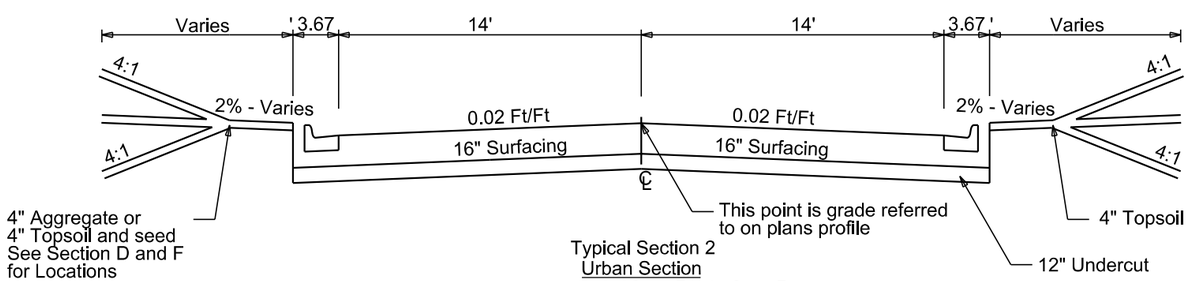
Transition Roadway Intersecting:
43+63.10 to 44+04.08
83+60.00 to 84+41.85



Typical Section 1
Urban Section

2nd Street East - 47' West of 1st Avenue Alignment to Intersection
1st Street East - Main Ave to 56' East of 1st Ave E

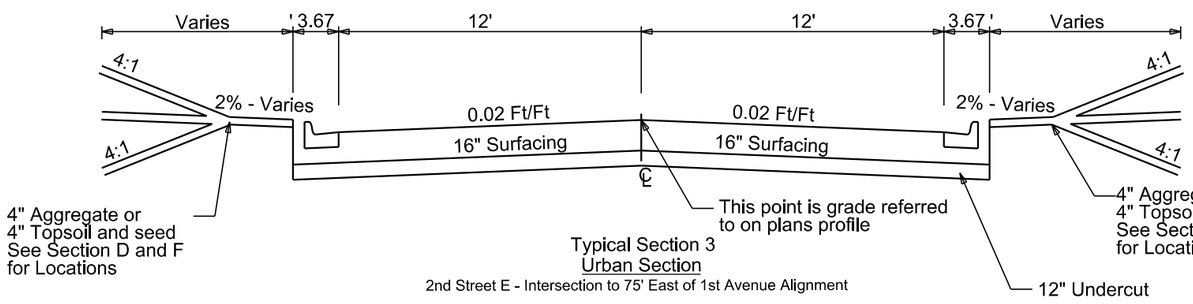
100+20.15 to 102+93.93



Typical Section 2
Urban Section

1st Avenue E - 2nd Street E to 1st Street E

40+04.08 to 44+57.67



Typical Section 3
Urban Section

2nd Street E - Intersection to 75' East of 1st Avenue Alignment

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
10974
Craig M.
Mizera
SOUTH DAKOTA
05/29/2025

Plotted From - CBOBZIEN

File - ...\Typical Section Sheet File 1.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B15	B54

FOR BIDDING PURPOSES ONLY

HORIZONTAL ALIGNMENT DATA

1st Street East Mainline

Type	Station			Northing	Easting
POB	80+00.00			776856.180	1419184.288
		TL= 24.82	S 87°27'12" E		
PC	80+24.82			776855.077	1419209.083
PI	80+42.98	R = 300.00	Delta = 06°56'06" R	776854.270	1419227.243
PT	80+61.13			776851.275	1419245.173
		TL= 421.32	S 80°31'05" E		
POE	84+82.45			776781.870	1419660.733

1st Avenue East Mainline

Type	Station			Northing	Easting
POB	99+00.00			776376.138	1419553.383
		TL= 100.00	N 01°36'17" E		
PI	100+00.00			776476.099	1419556.183
		TL= 400.00	N 01°29'48" E		
POE	104+00.00			776875.962	1419566.630

2nd Street East Mainline

Type	Station			Northing	Easting
POB	40+00.00			776487.580	1419173.516
		TL= 840.62	S 88°18'21" E		
PI	48+40.62			776462.729	1420013.771
		TL= 733.13	S 88°12'52" E		
PI	55+73.75			776439.884	1420746.546
		TL= 1121.52	S 88°24'12" E		
POE	57+50.00			776434.974	1420945.474

Outfall Pipe Alignment

Type	Station			Northing	Easting
POB	200+00.00			776797.990	1419564.220
		TL= 310.34	N 37°14'60" E		
PT	203+10.34			777045.020	1419752.060
		TL= 186.19	N 82°08'56" E		
PT	204+96.53			777070.450	1419936.510
		TL= 223.96	N 53°01'48" E		
POE	207+20.49			777205.140	1420115.440

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
10974
Craig M.
Mizera
SOUTH DAKOTA
05/29/2025

CONTROL DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B16	B54

HORIZONTAL AND VERTICAL CONTROL POINTS

POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP 150	NOT ON PROJECT		Iron Pin	776500.544	1419890.420	2565.17
CP 160	NOT ON PROJECT		Iron Pin	774620.999	1420354.887	2568.68
CP 151	NOT ON PROJECT		Iron Pin	776708.732	1419896.538	2566.70
CP 152	NOT ON PROJECT		Iron Pin	776378.145	1421928.900	2564.49
CP 153	NOT ON PROJECT		Iron Pin	776563.312	1421934.418	2563.00
CP 154	NOT ON PROJECT		Iron Pin	774390.306	1420284.139	2566.69
CP 155	NOT ON PROJECT		Iron Pin	774395.461	1420142.241	2565.89
CP 156	NOT ON PROJECT		Iron Pin	774294.051	1420141.220	2566.17
CP 157	NOT ON PROJECT		Iron Pin	774289.754	1420281.055	2567.06
CP 158	NOT ON PROJECT		Iron Pin	775384.397	1420380.306	2562.15
CP 159	NOT ON PROJECT		Iron Pin	774616.766	1420504.833	2575.02
CP 800	NOT ON PROJECT		Iron Pin	776748.493	1419658.996	2565.30
CP 801	NOT ON PROJECT		Iron Pin	776811.440	1419647.133	2566.01
CP 802	NOT ON PROJECT		Iron Pin	777069.558	1420454.232	2567.90
CP 803	NOT ON PROJECT		Iron Pin	776940.813	1419480.077	2569.53
CP 804	NOT ON PROJECT		Iron Pin	776925.965	1419477.550	2569.10
CP 805	NOT ON PROJECT		Rebar	776910.028	1419663.705	2569.38
CP 806	NOT ON PROJECT		Iron Pin	776966.117	1419237.863	2567.60
CP 807	NOT ON PROJECT		Rebar	777151.073	1419907.917	2568.56
CP 808	NOT ON PROJECT		Stone	777030.682	1423079.043	2557.58

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B17	B54

Plotting Date: 04-03-2025

LEGEND

- Anchor
- Antenna
- Approach
- Assumed Corner
- Azimuth Marker
- BBQ Grill/ Fireplace
- Bearing Tree
- Bench Mark
- Box Culvert
- Bridge
- Brush/Hedge
- Buildings
- Bulk Tank
- Cattle Guard
- Cemetery
- Centerline
- Cistern
- Clothes Line
- Concrete Symbol
- Control Point
- Creek Edge
- Curb/Gutter
- Curb
- Dam Grade/Dike/Levee
- Deck Edge
- Ditch Block
- Doorway Threshold
- Drainage Profile
- Drop Inlet
- Edge Of Asphalt
- Edge Of Concrete
- Edge Of Gravel
- Edge Of Other
- Edge Of Shoulder
- Electric Transformer/Power Junction Box
- Fence Barbwire
- Fence Chainlink
- Fence Electric
- Fence Miscellaneous
- Fence Rock
- Fence Snow
- Fence Wood
- Fence Woven
- Fire Hydrant
- Flag Pole
- Flower Bed
- Gas Valve Or Meter
- Gas Pump Island
- Grain Bin
- Guardrail
- Gutter
- Guy Pole
- Haystack
- Highway ROW Marker
- Interstate Close Gate
- Iron Pin
- Irrigation Ditch
- Lake Edge
- Lawn Sprinkler
- Mailbox
- Manhole Electric
- Manhole Gas
- Manhole Miscellaneous
- Manhole Sanitary Sewer
- Manhole Storm Sewer
- Manhole Telephone
- Manhole Water
- Merry-Go-Round
- Microwave Radio Tower
- Miscellaneous Line
- Miscellaneous Property Corner
- Miscellaneous Post
- Overhang Or Encroachment
- Overhead Utility Line — OH —
- Parking Meter
- Pedestrian Push Button Pole
- Pipe With End Section
- Pipe With Headwall
- Pipe Without End Section
- Playground Slide
- Playground Swing
- Power And Light Pole
- Power And Telephone Pole
- Power Meter
- Power Pole
- Power Pole And Transformer
- Power Tower Structure
- Propane Tank
- Property Pipe
- Property Pipe With Cap
- Property Stone
- Public Telephone
- Railroad Crossing Signal
- Railroad Milepost Marker
- Railroad Profile
- Railroad ROW Marker
- Railroad Signs
- Railroad Switch
- Railroad Track
- Railroad Trestle
- Rebar
- Rebar With Cap
- Reference Mark
- Retaining Wall
- Riprap
- River Edge
- Rock And Wire Baskets
- Rockpiles
- Satellite Dish
- Septic Tank
- Shrub Tree
- Sidewalk
- Sign Face
- Sign Post
- Slough Or Marsh
- Spring
- Stream Gauge
- Street Marker
- Subsurface Utility Exploration Test Hole
- Telephone Fiber Optics — T/F —
- Telephone Junction Box
- Telephone Pole
- Television Cable Jct Box
- Television Tower
- Test Wells/Bore Holes
- Traffic Sign Double Face
- Traffic Sign One Post
- Traffic Sign Two Post
- Traffic Signal
- Trash Barrel
- Tree Belt
- Tree Coniferous
- Tree Deciduous
- Tree Stumps
- Triangulation Station
- Underground Electric Line — P —
- Underground Gas Line — G —
- Underground High Pressure Gas Line — HG —
- Underground Sanitary Sewer — S —
- Underground Storm Sewer — S —
- Underground Tank
- Underground Telephone Line — T —
- Underground Television Cable — TV —
- Underground Water Line — W —
- Water Fountain
- Water Hydrant
- Water Meter
- Water Tower
- Water Valve
- Water Well
- Weir Rock
- Windmill
- Wingwall
- Witness Corner

- State and National Line
- County Line
- Section Line
- Quarter Line
- Sixteenth Line
- Property Line
- Construction Line
- Existing R.O.W. Line
- New R.O.W. Line
- Cut and Fill Limits
- Existing Control of Access Line
- New Control of Access Line
- Proposed R.O.W. Line (After Property Disposal)

- Drainage Arrow
- Extremely Sensitive Area — ESS —

- Remove Concrete Pavement
- Remove Concrete Driveway Pavement
- Remove Asphalt Concrete Pavement
- Remove Concrete Sidewalk
- Remove Concrete Median Pavement
- Remove Concrete Curb and/or Gutter

- Detectable Warning
- Pedestrian Push Button Pole and 30" x 48" Clear Space with 1.5% slope

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

HDR

Plot Scale - 1:0.999998

Plotted From - CBOBZIEN

File - ...\Section B\B17_Legend.dgn

FOR BIDDING PURPOSES ONLY

Existing Conditions, Removals, and Inplace Utilities

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B18	B54

Plotting Date: 04-21-2025

Legend

- Existing Roadway
- Limits of Construction
- Remove Existing Roadway
- Item to be Taken Out
- Existing ROW
- Remove Driveway Pavement
- Remove Curb and/or Gutter
- Remove Sidewalk
- Remove Gravel Surfacing

SCALE IN FEET 0 20 40

Remove Existing Junction Boxes (EJB)
At the Following Locations:
83+49.9 - 21.5' L
(Remove Manhole)

Take Out Driveway Pavement
At the Following Locations:
81+95.15 to 82+69.98 L
80+53.3 to 81+13.4 R
(Remove Concrete Driveway Pavement)

Remove Existing Drop Inlets (EDI)
with Frame and Grate
at the Following Locations:
83+49.1 - 21.9' L
83+51.0 - 23.8' R
84+32.1 - 25.1' R
(Remove Drop Inlet)

Take Out 12" RCP
At the Following Locations:
83+49.1 - 21.9'L to 83+49.4 - 10.8'L
83+49.4 - 10.8'L to 83+51.0 - 23.8' R
(Remove Storm Sewer Pipe)

Take Out Curb and Gutter
At the Following Locations:
80+36.07 to 80+63.04 L
80+92.85 to 81+95.08L
82+30.90 to 83+56.10 R
82+70.03 to 83+52.97 L
84+14.30 to 84+23.40 R
(Remove Concrete Curb and/or Gutter)

AVOIDANCE AREA
DO NOT DISTURB
ESS1

83+84.5 - 11.3' L TO 83+32.8 - 74.9' L
TAKE OUT 4" - 85' - PVC PIPE
(Remove Sewer Pipe)

RR
Parcel 2

80+00.0 TO 84+51.8 L
TAKE OUT 964 SY PAVEMENT
(Remove Asphalt Concrete Pavement)

80+34.04 TO 80+50.99 L
TAKE OUT 36.4 SY PCC PAVEMENT
(Remove Concrete Pavement)

DO NOT DISTURB
LANDSCAPING

DO NOT DISTURB
SIGN

CHS 2ND ADDITION

CHS INC
Parcel 1

GRADING TIE LINE

TRACT 1

Take Out 42" RCP
At the Following Locations:
81+24.20 - 10.7' L
82+46.70 - 10.8' L
83+31.9 - 10.8' L to 83+75.7 - 10.7'L
(Remove Storm Sewer Pipe)

83+76.4 - 10.8' L TO 83+74.9 - 21.5' L
TAKE OUT 48" - 10' - RC PIPE
(Remove Storm Sewer Pipe)

83+78.9 - 27.5' L TO 83+74.9 - 21.5' L
TAKE OUT 60" - 8' - RC PIPE
(Remove Storm Sewer Pipe)

EJB#4

EDI#4

EDI#2

EJB#3

EDI#3

EDI#1

80+00

81+00

82+00

83+00

84+00

84+82

104+00

105+00

102+00

1st Street

Main Street

13th Avenue Terrace

CITY OF LEMMON
Parcel 10

LOT 16

80+00.0 R TO 84+51.8 R
TAKE OUT 1071 SY PAVEMENT
(Remove Asphalt Concrete Pavement)

LOT 15

CITY OF LEMMON

BLAIR L JOHNSON TRUST FBO

LOT 14

BLAIR L JOHNSON TRUST FBO

LOT 13

LOT 12

BLAIR L JOHNSON TRUST FBO

LOT 11

BLAIR L JOHNSON TRUST FBO

Parcel 1
80+46.08 to 84+64.16 L
Temporary Easement containing
7474 sq ft, more or less

Parcel 1
83+62.01 to 84+58.41 L
Permanant Easement containing
3981 sq ft, more or less

GRADING TIE LINE

82+30.9 - 25.7' R TO 83+55.4 - 30.1' R
TAKE OUT & SALVAGE 131' FENCE
(Salvage Fence)

SHARI SMITH
Parcel 12

LEMMON ORIGINAL

BLOCK 3

LOT 2

SHARI SMITH

LEMMON ORIGINAL

DAKOTA PROPANE GAS

DAKOTA

LIMITS OF CONSTRUCTION

Parcel 13

GRADING TIE LINE

Parcel 14

DAKOTA PROPANE GAS

HARVEST STATES COOPERATIVES

LOT 6

BLOCK 2

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Plotted From - CBOBZIEN

File - ...\Section B\B18_Removal_Plan.dgn

FOR BIDDING PURPOSES ONLY

Existing Conditions, Removals, and Inplace Utilities

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B19	B54

Plotting Date: 04-21-2025

SCALE IN FEET
0 20 40

Legend
- Existing Roadway
- Limits of Construction
- Remove Existing Roadway
- Item to be Taken Out
- Existing ROW
- Remove Driveway Pavement
- Remove Curb and/or Gutter
- Remove Sidewalk
- Temporary Easement
- Remove Aggregate Surfacing

Take Out Curb and Gutter
At the Following Locations:
43+27.50 to 43+60.40 R
44+06.57 to 44+10.63 R
100+23.0 to 101+46.80 R
100+23.93 to 101+53.20 L
101+73.95 to 102+57.10 L
101+70.50 to 102+42.70 R
102+66.20 to 102+85.20 R
(Remove Concrete Curb and/or Gutter)

Take Out 24" RCP
At the Following Locations:
100+09.9 - 8.6' L to 100+10.0 - 48.0' L
100+09.9 - 8.6' L to 100+10.6 - 78.81' R
(Remove Storm Sewer Pipe)

100+28.1 TO 102+88.7 L
TAKE OUT 201 SY EXISTING SIDEWALK
(Remove Concrete Sidewalk)

Take Out 12" RCP
At the Following Locations:
43+74.19 - 23.6' R to 43+61.58 - 24.3' R
43+74.19 - 23.6' R to 44+07.96 - 21.6' R
100+25.2 - 8.6' L to 100+29.7 - 4.0' R
100+25.2 - 8.6' L to 100+23.3 - 22.5' L
102+73.4 - 7.4' L to 102+84.9 - 23.8' R
(Remove Storm Sewer Pipe)

Remove Existing Junction Boxes (EJB)
At the Following Locations:
100+09.9 - 8.6' L
(Remove Manhole)
(Remove Manhole Frame and Lid)

Remove Existing Drop Inlets (EDI)
with Frame and Grate
at the Following Locations:
43+61.58 - 24.3' R
44+07.96 - 21.6' R
100+23.3 - 22.5' L
100+29.7 - 24.0' R
(Remove Drop Inlet)

Take Out 48" RCP
At the Following Locations:
100+09.9 - 8.6' L to 103+33.8 - 7.0' L
(Remove Storm Sewer Pipe)

100+33.2 TO 102+88.7 L
TAKE OUT 656 SY EXISTING PAVEMENT
(Remove Asphalt Concrete Pavement)

100+02.5 - 1.5' L TO 102+12.8 - 13.4' L
TAKE OUT 4" - 213' - PVC PIPE
(Remove Sewer Pipe)

43+27.5 TO 43+60.0 R
TAKE OUT 18 SY EXISTING SIDEWALK
(Remove Concrete Sidewalk)

101+46.8 TO 102+65.5 R
TAKE OUT 21 SY DRIVEWAY PAVEMENT
(Remove Concrete Driveway Pavement)

43+25.46 R TO 44+82.85 R
TAKE OUT 417 SY EXISTING PAVEMENT
(Remove Asphalt Concrete Pavement)

100+33.2 TO 102+88.7 R
TAKE OUT 682 SY EXISTING PAVEMENT
(Remove Asphalt Concrete Pavement)

43+25.46 L TO 44+67.67 L
TAKE OUT 430 SY EXISTING PAVEMENT
(Remove Asphalt Concrete Pavement)

Parcel 1
80+46.08 to 84+64.16 L
Temporary Easement containing
7474 sq ft, more or less

Parcel 1
83+62.01 to 84+58.41 L
Permanant Easement containing
3981 sq ft, more or less

LEMMON ORIGINAL
B&C PLUMBING & HEATING LLC
LOT 1
LOT 2
LOT 3
BLOCK 12
BLOCK 3
SHARI SMITH
Parcel 11
LOT 2
LOT 5
BLOCK 2
DAKOTA PROPANE GAS
Parcel 13
LOT 4
DAKOTA PROPAN GAS
RR
Parcel 2
T ADDITION
KURT BORRIS
S 50' OF LOTS 7 & 8
STOCKS ELECTRIC SALES & SERVICE CO
CHS INC
W 41' OF LOT 6 & E 25' OF N 90' OF LOT 7
BLOCK 31
N 90' LOT 8
1st Avenue East
1st Avenue Back
2nd Street
1st Street
EXISTING 42" RC PIPE
EXISTING 60" RC PIPE
GRADING TIE LINE
LIMITS OF CONSTRUCTION
DO NOT DISTURB
Sewer Cleanout (Approx.)
EDI#1
EDI#2
EDI#3
EDI#5
EDI#6
EDI#7
EDI#8
EJB#3
EJB#5
99+00
100+00
101+00
102+00
103+00
104+00
43+00
44+00
45+00
83+00
84+00
84+82
202+00

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Plotted From - CBOBZIEN

File - ...\Section B\B19_Removal_Plan.dgn

FOR BIDDING PURPOSES ONLY

Existing Conditions, Removals, and Inplace Utilities

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B20	B54

Plotting Date: 04-21-2025

Legend

- Existing Roadway
- Limits of Construction
- Remove Existing Roadway
- Item to be Taken Out
- Existing ROW
- Remove Driveway Pavement
- Remove Curb and/or Gutter
- Remove Sidewalk
- Temporary Easement
- Remove Aggregate Surfacing

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

SCALE IN FEET
0 20 40

AVOIDANCE AREA
DO NOT DISTURB
ESS1

EDI#15
EJB#4
EDI#17
EJB#2
EJB#1

104+00
201+00
202+00
203+00
204+00
205+00
206+00
84+82

RR Parcel2
RR
RR Parcel 2
RR Parcel 2

LIMITS OF CONSTRUCTION/GRADING TIE LINE

Sec 20 - T23N - R16W
Sec 21 - T2

Parcel 4A
206+32 to 207+31 L/R
Permanent Easement containing
6360 sq ft, more or less

205+95.64 - 20.2' L TO 206+51.8 23.16' R
SALVAGE 71' FENCING
(Salvage Fence)

TOM MUNYON
Parcel 3A

BLOCK 12A LOT 1
BLOCK 12

EFES#1
EFES#2

Parcel 1
83+62.01 to 84+58.41 L
Permanant Easement containing
3981 sq ft, more or less

Parcel 2
202+38 to 206+13 L/R
Temporary Easement containing
16489.87 sq ft, more or less

Parcel 3A
205+84 to 206+77 L/R
Permanent Easement containing
3146 sq ft, more or less

MON ORIGINAL
Parcel 14

Plotted From - CBOBZIEN
File - ...\Section BIB20_Removal_Plan.dgn

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B21	B54

Plotting Date: 04-03-2025

Curb and Gutter Layout Plan

NOTE: UNLESS OTHERWISE SPECIFIED, ALL CURB AND GUTTER IS TYPE B66

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

CHS 2ND ADDITION

CHS INC
Parcel 1

TRACT 1

83+57.45 R TO 83+75.90 R
INSTALL 8" PCC FILLET SECTION
RADIUS 18.67' - 13.24 SqYd

RR
Parcel 2

SCALE IN FEET
0 20 40

80+00 81+00 82+00 83+00 84+00 84+82
104+00 103+00 102+00 201+00 202+00 203+00

1st Street
Main Street
1st Avenue East

CITY OF LEMMON
Parcel 10

LOT 16

LOT 11

BLAIR L JOHNSON TRUST ERO

DAKOTA PROPAN GAS

LEMMON ORIGINAL
84+01.89 R TO 84.23.39 R
INSTALL 8" PCC FILLET SECTION
RADIUS 18.67' - 20.22 SqYd

DAKOTA PROPANE GAS
Parcel 13

BLOCK 2

LOT 6

DAKOTA PROPANE GAS

LOT 4

Parcel 14

HARVEST STATES COOPERATIVES

LOT 3

	Sta.	T.C. Elev.			Sta.	T.C. Elev.	
1a	80+36.36 - 30.09' LT	2567.75	Tie Into Existing	9	80+85.02 - 22.67' RT	2567.09	
1b	80+36.42 - 28.86' LT	2567.74	Curb Radius	10	80+96.48 - 22.67' RT	2567.09	Driveway Transition
1c	80+40.58 - 24.19' LT	2567.70	Curb Radius	11	81+14.73 - 22.67' RT	2567.02	Driveway Transition
1d	80+50.63 - 23.45' LT	2567.64	P.V.I.	12	81+35.22 - 22.67' RT	2566.95	Driveway Transition
2	80+67.62 - 22.96' LT	2567.45	Driveway Transition	13	81+63.21 - 22.67' RT	2566.84	Driveway Transition
3	80+84.95 - 22.67' LT	2566.76		14	81+93.22 - 22.67' RT	2566.72	Approach Transition
4	81+07.75 - 22.67' LT	2567.06	Driveway Transition	15	82+16.22 - 22.67' RT	2566.63	Approach Transition
5	84+31.30 - 22.67' LT	2565.79	P.V.I.	16	83+57.45 - 22.67' RT	2566.07	Curb Radius
6	84+41.85 - 22.67' LT	2565.85	End Curb and Gutter	17	84+23.39 - 22.67' RT	2565.81	Curb Radius
7	80+53.25 - 24.16' RT	2567.06	Tie Into Existing	18	84+31.08 - 22.67' RT	2565.79	P.V.I.
8	80+60.73 - 23.79' RT	2567.07		19	84+41.85 - 22.67' RT	2565.85	End Curb and Gutter

Plotted From - CBOBZIEN

File - ...\CG_1st Street - Sta. 80+00 to 84+82

FOR BIDDING PURPOSES ONLY

Curb and Gutter Layout Plan

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B22	B54

Plotting Date: 04-03-2025

SCALE IN FEET
0 20 40

	Sta.	T.C. Elev.			Sta.	T.C. Elev.	
20	43+25.45 - 23.58' LT	2564.47	Tie Into Existing	33	44+57.66 - 14.67' LT	2564.64	PI
21	43+35.45 - 22.67' LT	2564.68	PI	34	44+40.49 - 14.67' LT	2564.63	Curb Radius
22	43+46.03 - 22.67' LT	2564.66	Curb Radius	35	44+11.83 - 25.58' LT	2564.92	Curb High Point
23	100+43.94 - 16.67' LT	2564.71	Curb Radius	36	100+53.68 - 16.67' RT	2564.76	Curb Radius
24	101+32.73 - 16.65' LT	2565.17	P.V.C.	37	101+32.70 - 16.67' RT	2565.17	P.V.C.
25	101+55.52 - 16.65' LT	2565.38	Driveway Transition	38	101+49.12 - 16.67' RT	2565.32	Driveway Transition
26	101+71.53 - 16.65' LT	2565.53	Driveway Transition	39	101+69.13 - 16.67' RT	2565.5	Driveway Transition
27	102+30.87 - 16.63' LT	2566.07	P.V.C.	40	102+30.87 - 16.67' RT	2566.07	P.V.C.
28	102+50.98 - 16.63' LT	2566.23	P.V.I.	41	102+51.03 - 16.67' RT	2566.19	P.V.I.
29	102+70.93 - 16.63' LT	2566.20	P.V.T.	42	102+51.63 - 16.67' RT	2566.19	Driveway Transition
30	102+71.46 - 16.63' LT	2566.19	Driveway Transition	43	102+70.89 - 16.67' RT	2565.96	P.V.T.
31	102+87.46 - 16.63' LT	2566.08	Driveway Transition	44	102+71.63 - 16.67' RT	2566.12	Driveway Transition
32	44+67.63 - 15.96' LT	2564.66	End Concrete	45	102+78.31 - 16.67' RT	2567.06	Curb Radius

100+22.96 L TO 100+42.96 L
INSTALL 8" PCC FILLET SECTION
RADIUS 22.67' - 22.3 SqYd

43+45.12 R TO 43+60.13 R
INSTALL 8" PCC FILLET SECTION
RADIUS 17.67' - 15.7 SqYd

100+14.63 R TO 100+53.68 R
INSTALL 8" PCC FILLET SECTION
RADIUS 42.67' - 62.2 SqYd

44+06.78 R TO 44+26.78 R
INSTALL 8" PCC FILLET SECTION
RADIUS 22.67' - 22.2 SqYd

	Sta.	T.C. Elev.			Sta.	T.C. Elev.	
46	43+27.46 - 23.93' RT	2564.10	Tie Into Existing	52	44+06.89 - 65.44' RT	2564.25	Tie Into Existing
47	43+39.94 - 22.67' RT	2564.43	PI	53	44+06.80 - 42.72' RT	2564.17	
48	43+45.13 - 22.67' RT	2564.45	Curb Radius	54	44+06.78 - 34.70' RT	2564.26	Curb Radius
49	43+55.78 - 27.11' RT	2564.57	Curb High Point	55	44+26.78 - 14.67' RT	2564.65	Curb Radius
50	43+60.13 - 37.80' RT	2564.33	Curb Radius	56	44+48.46 - 14.67' RT	2564.17	End Curb
51	43+60.08 - 42.79' RT	2564.23	Tie Into Existing				

REGISTERED PROFESSIONAL ENGINEER
REG. No. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Plotted From - CBOBZIEN

File - ...\CG_1st Avenue East - Sta. 100+00 to 104+00

FOR BIDDING PURPOSES ONLY

Revised: 06/18/2025

Roadway and Storm Sewer Plan

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B23	B54

Plotting Date: 06-18-2025

SCALE IN FEET
0 20 40

Legend

- Existing Roadway
- Limits of Construction
- Proposed Roadway
- Proposed Storm Sewer Pipe
- Existing ROW
- Proposed Storm Sewer Inlet
- Site Storm Water Flow Direction
- Temporary Easement
- Proposed Storm Sewer MH

LOT 11 — BLAIR L JOHNSON TRUST FBO
LEMMON AREA MEDICAL ASSOCIATION
Install 2' X 3' Precast Concrete Type B Drop Inlet with Type B Frame & Grate at the following locations:
43+37.29 - 21.64' L
43+41.73 - 21.67' R
44+41.65 - 13.67' R

Install 72" Precast Manhole with A7 Frame and Lid Frame and Grate at the following locations:
43+74.17 -35.23' R
43+38.18 - 9.71' L

LOT 3 — SHARI SMITH

Sewer Cleanout (Approx.)

SHARI SMITH — LOT 9
Install 5.5' X 3' Precast Concrete Type B Drop Inlet with Type B Frame & Grate at the following locations:
44+42.28 - 11.92' L
44+45.87 - 11.92' L

Install 120" Precast Manhole with A7 Frame and Lid at the following locations:
100+10.2 -8.7' L or 43+74.11 - 10.03' L

LOT 4 — SHARI SMITH

43+74.11 - 10.03' L to 43+37.29 - 21.64' L
Install 36" - 30' RCP
(Between Manholes)

SHARI SMITH Parcel 11

43+38.18 - 9.71' L to 43+37.29 -21.64' L
Install 15" - 10' RCP
(Between Manhole and Drop Inlet)

LOT 7 — SHARI SMITH

LOT 6 — SHARI SMITH

GRADING TIE LINE

SHARI SMITH

101+00

1st Avenue East

43+74.11 - 10.03' L to 44+45.87 - 11.92' L
Install 48" - 64' RCP
(Between Manhole and Drop Inlet)

44+42.28 - 11.92' L to 44+41.65 - 13.67' R
Install 15" - 22' RCP
(Between Drop Inlets)

44+45.87 - 11.92' L to 44+63.23 - 11.24' L
Install 36" - 16' RCP
(Between Drop Inlet and Transition)

SHARI SMITH Parcel 2

GRADING TIE LINE

36" to 24" TRANSITION

DI#9

MH#10

DI#11A&B

MH#12

2nd Street

Main Street

DI#12

DI#10

MH#11

DACOTAH BANK — LOT 18

DACOTAH BANK — LOT 17

DACOTAH BANK — LOT 16

EXISTING 18" RC PIPE

DACOTAH BANK — LOT 15

DACOTAH BANK — LOT 14

48" to 42" TRANSITION

B&C PLUMBING & HEATING LLC

43+38.18 - 9.71' L to 43+41.73 -21.67' R
Install 15" - 28' RCP
(Between Manhole and Drop Inlet)

LOT 2 — EXISTING 42" RC PIPE

B&C PLUMBING & HEATING LLC — BLOCK 12

B&C PLUMBING & HEATING LLC — LOT 3

99+00

1st Avenue East

STOCKS ELECTRIC SALES & SERVICE CO

CHS INC

GRADING TIE LINE

43+74.11 - 10.03' L to 43+74.17 - 35.23' R
Install 48" - 40' RCP
(Between Manholes)

43+74.17 - 35.23' R to 43+74.19 - 44.81' R
Install 48" - 8' RCP
(Between Manhole and Transition)

W 41' OF LOT 6 & E 25' OF N 90' OF LOT 7

W 41' OF N 90' OF LOT 7 & LOT 8

1ST ADDITION

BLOCK 31

KURT BORRIS — S 50' OF LOTS 7 & 8

JOSH HOFF & LANNY HOFF — LOTS 4 & 5 & E 9' OF LOT 6

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
06/18/2025

Plotted From - CBOBZIEN

File - ...\B23_Storm_Sewer_Plan.dgn

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B24	B54

Plotting Date: 04-21-2025

Roadway and Storm Sewer Profile

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Excavation	120
Undercut	205.92
Topsoil	7
	333

Refer to Section Z
for additional Junction Box
and Drop Inlet Information

PVI 40+50
Elev 2565.86

PVI 40+85
Elev 2566.08

PVI 43+00
Elev 2565.00

L 40.00ft
G1 -1.1000%
G2 0.4000%
K 27

PVI 43+83
Elev 2564.78

L 35.00ft
G1 -0.6765%
G2 0.5000%
K 30

PVI 45+59
Elev 2564.98

FUTURE PHASE PROFILE

JB#

DI#2

DI#3

0.6262%

-0.5000%

-1.1000%

0.4000%

-0.6765%

0.5000%

Begin Pavement
43+35.45
2564.68

End Pavement
44+56.89
2564.47

Match Existing
44+67.63
2564.55

MH#11

MH#10

DI#11A&B

Match Existing
43+25.45
2564.37

40' - 24"RCP @ 0.50%

32' - 36"RCP
@ 0.50%

64' - 48"RCP @ 0.17%

16' - 36"RCP
@ 0.17%

263' - 36"RCP @ 0.17%

116' - 24"RCP @ 0.76%

113' - 24"RCP @ 0.69%

2559.81

2558.93

2558.67

2558.48

2558.48

2557.71

2557.56

2557.71

2556.88

2556.99

2557.00

PVI 43+37
Elev 2564.60

PVI 44+41
Elev 2564.39

L 50.00ft
G1 0.6262%
G2 -0.5000%
K 44

L 19.00ft
G1 0.4000%
G2 -0.6765%
K 18

L 44.00ft
G1 0.5000%
G2 -0.5000%
K 44

2600 2595 2590 2585 2580 2575 2570 2565 2560 2555 2550 2545 2540 2535 2530

40+00 41+00 42+00 43+00 44+00 45+00 46+00

Plotted From - CBOBZIEN

File - ...\B24_Storm_Sewer_Profile.dgn

FOR BIDDING PURPOSES ONLY

Roadway and Storm Sewer Plan

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B25	B54

Plotting Date: 04-15-2025

SCALE IN FEET
0 20 40

Legend

- Existing Roadway
- Limits of Construction
- Proposed Roadway
- Proposed Storm Sewer Pipe
- Existing ROW
- Proposed Storm Sewer Inlet
- Site Storm Water Flow Direction
- Temporary Easement
- Proposed Storm Sewer MH

Install 72" Precast Manhole and A7 Frame and Lid at the following locations:
81+23.0 - 10.7' L
82+45.4 - 10.8' L

Install 2' X 3' Precast Concrete Type B Drop Inlet and Type B Frame & Grate at the following locations:
81+22.98-21.7' R
81+23.02-21.7' L
82+45.12-21.6' R
83+29.51-21.7' R
83+30.18-21.7' L
84+29.36-21.7' L (Double)
84+31.13-21.7' R

83+30.1 - 10.7' L to 83+30.2 - 21.67' L
Install 15" - 8' RCP
(Between Manhole and Drop Inlet)

Install 96" Precast Manhole and A7 Frame and Lid at the following locations:
83+30.1 - 10.7' L

Install 144" Special Precast Manhole and A7 Frame and Lid at the following locations:
83+75.0 - 20.5' L
83+95.3 - 20.4' L

AVOIDANCE AREA
DO NOT DISTRUB
ESS1

RR
Parcel 2

CHS 2ND ADDITION

81+23 - 10.7' L TO 81+23.0 -21.67' L
Install 15" - 8' RCP
(Between Manhole and Drop Inlet)

82+45.4 - 10.8' L TO 82+45.1 - 21.68' L
Install 15" - 8' RCP
(Between Manhole and Drop Inlet)

CHS INC
Parcel 1

9' SPACING BETWEEN EXISTING PIPE AND PROPOSED CASING

EXISTING 60" RC PIPE

EXISTING 42" RC PIPE

TRACT 1

GRADING TIE LINE

200+23.0 - CL TO 84+29.4 - 21.67' L
Install 18" - 26' RCP
(Between Manhole and Drop Inlet)

DI#6 DI#5 DI#3 DI#1 DI#7 DI#4 DI#2

MH#7 MH#6 MH#5 MH#4 MH#3 MH#8

EJB#4 EDI#4

80+00 81+00 82+00 83+00 84+00 84+82 104+00 103+00 102+00

1st Street 1st Avenue East Main Street

EXISTING 12" RC PIPE

CITY OF LEMMON
Parcel 10

LOT 16

81+23.0 - 10.7' L TO 81+23.0 -21.67' R
Install 15" - 30' RCP
(Between Manhole and Drop Inlet)

CITY OF LEMMON

BLAIR L JOHNSON TRUST FBO
LOT 14

BLAIR L JOHNSON TRUST FBO
LOT 13

LOT 12

BLAIR L JOHNSON TRUST FBO
LOT 11

Parcel 1
80+46.08 to 84+64.16 L
Temporary Easement containing
7474 sq ft, more or less

Parcel 1
83+62.01 to 84+58.41 L
Permanant Easement containing
3981 sq ft, more or less

GRADING TIE LINE

83+30.1 - 10.7' L TO 83+29.5 - 21.67' R
Install 15" - 28' RCP
(Between Manhole and Drop Inlet)

83+30.1 - 10.7' L to 83+75.0 - 20.5' L
Install 48" - 38' RCP
(Between Manholes)

SHARI SMITH
Parcel 12

LOT 1

LEMMON
BLOCK 3

83+80.5 - 20.5' L to 83+95.3 - 20.4' L
Install 48" - 10' RCP
(Between Manholes)

LOT 2

200+26.89 - 17.8' L to 200+18.8 - 17.7' L or
83+75.0 - 20.5' L to 83+81.4 - 32.0' L
Install 60" - 8' RCP
(Between Manhole and Existing Pipe)

SHARI SMITH

STA 83+85.6 - 5.1' L TO 84+43.3 - 74.8' L
INSTALL 4" - 120' - PVC SANITARY

84+31.1 - 21.67' L TO 21.67' R
Install 15" - 42' RCP
(Between Drop Inlets)

LEMMON ORIGINAL

DAKOTA PROPANE GAS
Parcel 13

DAKOTA PROPANE GAS

Parcel 14

HARVEST STATES COOPERATIVES

LOT 6 BLOCK 2 LOT 5 LOT 4 LOT 3

Plotted From - CBOBZIEN

File - ...\B25_Storm_Sewer_Plan.dgn

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B26	B54

Plotting Date: 04-03-2025

Temporary Easement Plan

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

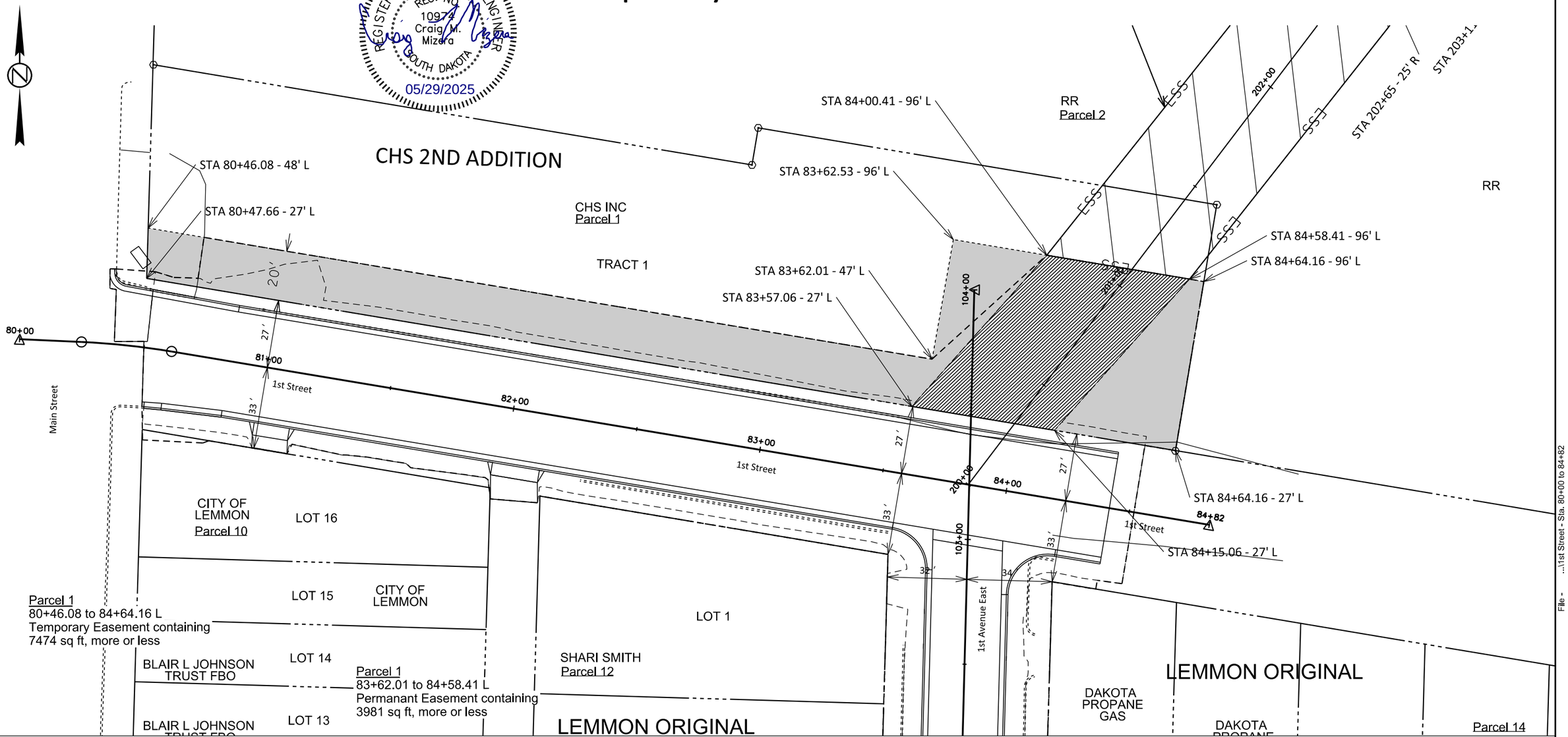


TABLE OF RIGHT-OF-WAY AND EASEMENTS

PARCEL NO.	STATION TO STATION	SIDE	TYPE	PURPOSE	AREA REQ'D (sf)	OWNER	DESCRIPTION
1	80+46.08 to 84+64.16	L	Temporary	Construction Easement	7474	CHS Inc.	Tract 1 of The CHS 2nd Addn
1	83+56.08 to 84+57.79	L	Permanent	Drainage Easement	3981	CHS Inc.	Tract 1 of The CHS 2nd Addn

SCALE IN FEET
0 20 40

Permanent Easement
Temporary Easement
Proposed Roadway
Roadway Centerline
Existing R.O.W./ Property Lines
Limits of Construction

Plotted From - CBOBZIEN

File - ...\1st Street - Sta. 80+00 to 84+82

FOR BIDDING PURPOSES ONLY

Roadway and Storm Sewer Profile

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B27	B54

Plotting Date: 04-21-2025

REGISTERED PROFESSIONAL ENGINEER
REG. No. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Excavation	854
Undercut	609.77
Topsoil	15
	1,479

PVI 80+51
Elev 2567.27

81+05.57 R
14' Drive

82+04.71 R
19' Alley Appr

PVI 84+30
Elev 2565.78

PVI 84+74
Elev 2566.00

0.3942%

0.5000%

2561.95
2561.52
2557.27
2557.26
Existing 42"RCP

2561.45
2556.88
2556.86
Existing 42"RCP

2561.11
2560.68
2556.61
2556.59
Existing 42"RCP

38' - 48"RCP
@ 0.30%

2556.18
2556.18
2556.18
2556.18
2556.18
2556.18

2558.59
2558.49
15"RCP @ 1.00%

2567.27 2567.24 2567.16 2567.08 2567.00 2566.92 2566.84 2566.76 2566.69 2566.61 2566.53 2566.45 2566.37 2566.29 2566.21 2566.13 2566.05 2565.98 2565.90 2565.82 2565.83 2565.93 2566.00

80+00 81+00 82+00 83+00 84+00 85+00 86+00

2600 2595 2590 2585 2580 2575 2570 2565 2560 2555 2550 2545 2540 2535 2530

Plotted From - CBOBZIEN

File - ...\B27_Storm_Sewer_Profile.dgn

FOR BIDDING PURPOSES ONLY

Roadway and Storm Sewer Plan

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B28	B54

Plotting Date: 04-03-2025

Legend

SCALE IN FEET 0 20 40

- Existing Roadway
- Limits of Construction
- Proposed Roadway
- Proposed Storm Sewer Pipe
- Existing ROW
- Proposed Storm Sewer Inlet
- Site Storm Water Flow Direction
- Temporary Easement
- Proposed Storm Sewer MH

100+10.2 -8.7' L to 100+10.1 - 21.1' L
Install 36" - 8' RCP
(Between Manhole and Existing Pipe)
100+10.2 - 8.7' L to 99+97.8 - 8.7' L
Install 48" - 8' RCP
(Between Manhole and Existing Pipe)
100+10.2 - 8.7' L to 100+10.4 - 4.0' R
Install 36" - 8' RCP
(Between Manhole and Existing Pipe)

Install 2' X 3' Precast Concrete Type B Drop Inlet with Type B Frame & Grate at the following locations:
100+71.8 - 15.67' RT

Install 96" Precast Manhole with Double Type B Frame and Grate at the following locations:
100+71.8 -15.8' L

Install 96" Precast Manhole with A7 Frame and Lid at the following locations:
102+96.8 -14.4' L

Install 120" Precast Manhole with A7 Frame and Lid at the following locations:
100+10.2 -8.7' L or 43+74.11 - 10.03

100+71.8 - 15.8' L to 102+96.8 - 14.4' L
Install 60" - 220' RCP
(Between Manholes)

100+10.2 - 8.7' L to 100+71.8 - 15.8' L
Install 60" - 56' RCP
(Between Manholes)

102+96.8 - 14.4' L to 83+75.0 - 20.5' L
Install 60" - 40' RCP
(Between Manholes)

STA 99+88.53 L ADJUST WATER VALVE RISER VERTICAL

EXISTING 24" RC PIPE

SHARI SMITH
Parcel 11

48" to 42" TRANSITION

EXISTING 42" RC PIPE

GRADING TIE LINE

Sewer Cleanout (Approx.)

SANITARY SEWER SERVICE ADJUSTMENT

MH#12 MH#11 MH#10 MH#9 MH#8 MH#5 MH#4 MH#3

DI#10 DI#9 DI#8 DI#4 DI#3 DI#2 DI#1 DI#12 DI#11A&B

99+00 100+00 101+00 102+00 103+00 104+00 43+00 44+00 45+00 83+00 84+00 84+82

1st Avenue East

2nd Street

1st Street

Parcel 1
80+46.08 to 84+64.16 L
Temporary Easement containing
7474 sq ft, more or less

Parcel 1
83+62.01 to 84+58.41 L
Permanant Easement containing
3981 sq ft, more or less

MH#3 & MH4
SEE SHEET B25

TIE MH#4 TO EXISTING 60" RCP

EXISTING 60" RCP

9' SPACING BETWEEN EXISTING 60" RCP AND CASING

48" RCP

48" RCP W/ 66" SMOOTH STEEL PIPE CASING

AVOIDANCE AREA
DO NOT DISTRUB
ESS1

100+71.78-11.9' L to 100+71.78-14.7' R
Install 15" - 28' RCP
(Between Manhole and Drop Inlet)

STA 100+40 R ADJUST WATER VALVE RISER VERTICAL

STA 102+87 R ADJUST WATER VALVE RISER VERTICAL

STA 99+88.18 R ADJUST WATER VALVE RISER VERTICAL

36" to 24" TRANSITION

W 25' OF N 90' OF LOT 7 & S 50' OF LOTS 7 & 8

W 41' OF LOT 6 & E 25' OF N 90' OF LOT 7

EXISTING 24" RC PIPE

LOT 6 LOT 5 LOT 4 LOT 3 LOT 2 LOT 1

BLOCK 3 BLOCK 2 BLOCK 31

SHARI SMITH LOT 12 LOT 5 LOT 4 LOT 1

LEMMON ORIGINAL

1ST ADDITION

B&C PLUMBING & HEATING LLC

KURT BORRIS

STOCKS ELECTRIC SALES & SERVICE CO

CHS INC

DAKOTA PROPANE GAS
Parcel 13

DAKOTA PROPANE GAS

DAKOTA PROPAN GAS

RR Parcel 2

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Plotted From - CBOBZIEN

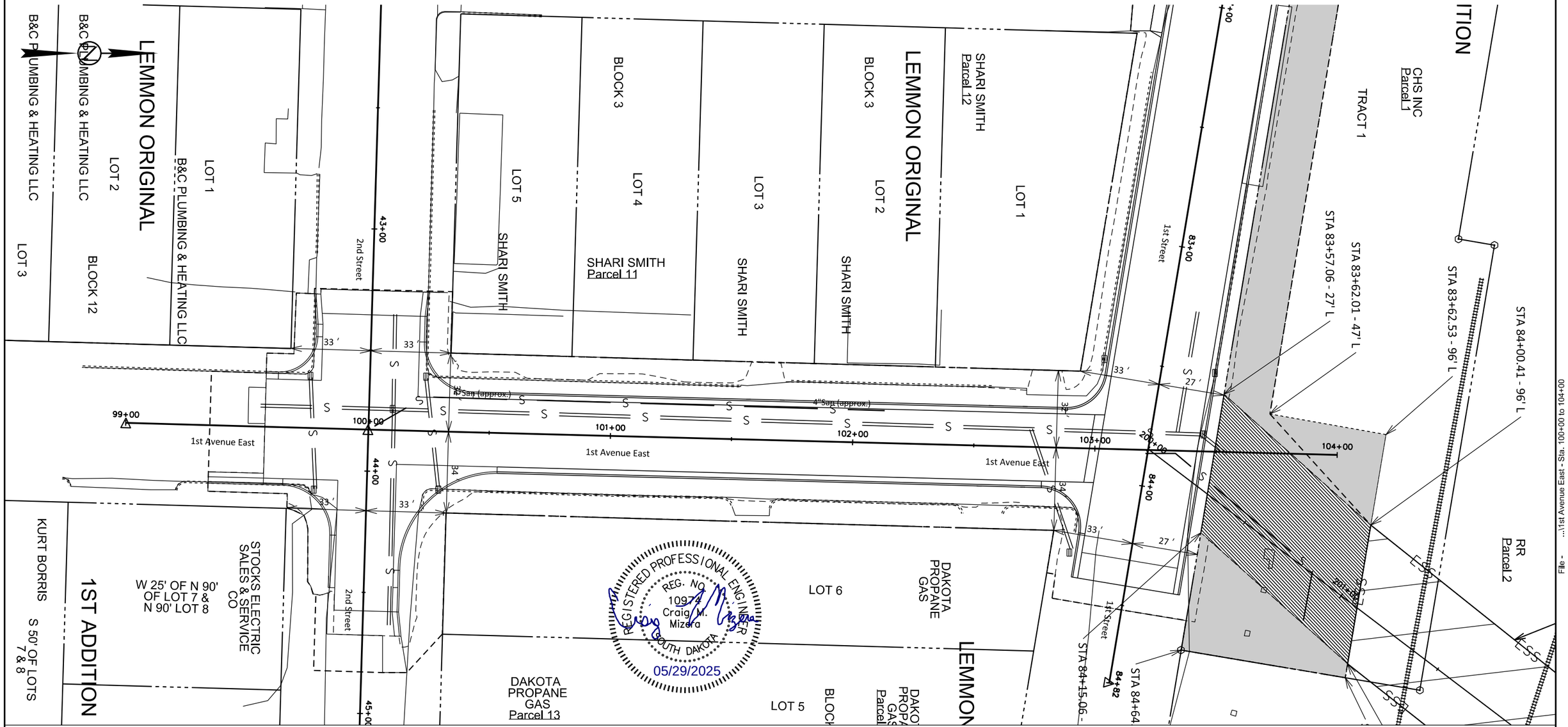
File - ...\1st Avenue East - Sta. 100+00 to 104+00

FOR BIDDING PURPOSES ONLY

Temporary Easement Plan

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B29	B54

Plotting Date: 04-03-2025



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

TABLE OF RIGHT-OF-WAY AND EASEMENTS

PARCEL NO.	STATION TO STATION	SIDE	TYPE	PURPOSE	AREA REQ'D (sf)	OWNER	DESCRIPTION

SCALE IN FEET
0 20 40

Permanent Easement
Temporary Easement
Proposed Roadway
Roadway Centerline
Existing R.O.W./ Property Lines
Limits of Construction

HDR

Plotted From - CBOBZIEN

File - ...\1st Avenue East - Sta. 100+00 to 104+00

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B30	B54

Plotting Date: 04-21-2025

Roadway and Storm Sewer Profile

Excavation	242
Undercut	288
Topsoil	13
	543

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

PVI 100+16
Elev 2564.43

PVI 101+33
Elev 2565.04

PVI 102+51
Elev 2566.13

PVI 102+98
Elev 2565.55

0.5214%

0.9199%

-1.2461%

8' - 48"RCP
@ 0.06%

38' - 48"RCP
@ 0.06%

2557.71

56' - 60"RCP @ 0.22%

220' - 60"RCP @ 0.22%

40' - 60"RCP @ 0.22%

2556.89

2556.78

2556.76

2558.52

2556.28

2556.27

2556.18

2556.18

L 40.00ft
G1 0.9199%
G2 -1.2461%
K 18

2564.04 2564.18 2564.32 2564.45 2564.56 2564.66 2564.77 2564.87 2564.98 2565.11 2565.29 2565.48 2565.66 2565.84 2566.01 2565.98 2565.77 2565.90

2600 2595 2590 2585 2580 2575 2570 2565 2560 2555 2550 2545 2540 2535 2530

100+00 101+00 102+00 103+00 104+00 46+00

Plotted From - CBOBZIEN

File - ...\B30_Storm_Sewer_Profile.dgn

FOR BIDDING PURPOSES ONLY

Roadway and Storm Sewer Plan

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B31	B54

Plotting Date: 04-03-2025

SCALE IN FEET
0 20 40

Legend

- Existing Roadway
- Limits of Construction
- Proposed Roadway
- Proposed Storm Sewer Pipe
- Existing ROW
- Proposed Storm Sewer Inlet/JB
- Site Storm Water Flow Direction
- Temporary Easement
- Proposed Storm Sewer MH

200+92.5 - CL to 202+72.5 - CL
Install 66" - 180' Smooth Steel Pipe
Dry Jack and Bore
(Between Bore Pits)

201+00 - L/R to 202+50 - L/R
Do Not Disturb
Railroad

EXISTING 60" RCP

PROPOSED BORE AND JACK PIT LOCATION

AVOIDANCE AREA
DO NOT DISTURB
ESS1

PROPOSED BORE AND JACK PIT LOCATION

STATE LINE

JB#3

MH#2

GRADING TIE LINE

EXISTING SPUR TRACK

48" RCP W/ 66" STEEL CASING

83+95.3 - 20.4' L to 203+10.3 - CL
Install 48" - 280' RCP
(Between Manholes)

Install 96" Precast Manhole
with A7 Frame and Lid
at the following locations:
203+10.3 - CL
204+96.5 - CL

RR
203+10.3 - CL to 204+96.5 - CL
Install 60" - 182' RCP
(Between Manholes)

204+96.5 - CL to 206+84.4 - CL
Install 60" - 176' RCP
Install 60" RCP Flared End
(Between FES and Manhole)

MH#1

FES#1

Parcel 4A
206+32 to 207+31 L/R
Permanent Easement containing
6360 sq ft, more or less

Parcel 2
202+38 to 206+13 L/R
Temporary Easement containing
16489.87 sq ft, more or less

Parcel 3A
205+84 to 206+77 L/R
Permanent Easement containing
3146 sq ft, more or less

205+34.2 - 39' L TO 206+38.7 - 4.8' R
REINSTALL 71' SALVAGED FENCE

TOM MUNYON
Parcel 3A

Drainge Ditch

BLOCK 12A LOT 1

Sec 20 - T23N - R1

S - 21 - T2

11th Street

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Plotted From: CBOBZIEN

File - ...\Bore pipe under railroad

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B32	B54

Plotting Date: 04-03-2025

Temporary Easement Plan

AVOIDANCE AREA
DO NOT DISTURB
ESS1

STA 202+38 - 25' L

STA 203+21 - 27' L

ESS

202+00

203+00

SS

STA 202+65 - 25' R

STA 203+11 - 25' R

RR

204+00

205+00

206+00

207+00

207+20

501

See BNSF Permit
for addtional information

RR
Parcel 2

Sec 20 - T23N - R16W

STA 205+07 - 26' R

RR
Parcel 2

STA 206+13 - 25' R

Sec 21 - T23N - R16W

STA 205+84 - 41' L

STA 205+91 - 50' L

STA 205+00
25' L

STA 205+50
25' L

TOM MUNYON
Parcel 3A

BLOCK 12A LOT 16

BLOCK 12A LOT 15

BLOCK 12A LOT 14

BLOCK 12A LOT 13

BLOCK 12A LOT 12

BLOCK 12A LOT 11

BLOCK 12A LOT 10

BLOCK 12A LOT 9

BLOCK 12A LOT 8

STA 207+31 - 50' L

ANNE CHRISTMAN
Parcel 4A

STA 207+31 - 50' R

STA 206+97 - 50' R

Sec 35 - T129N - R92W

NORTHWEST TOWNSITE COMPANY'S ADDITION

100' Drainage Easement

BLOCK 12A LOT 7

BLOCK 12A LOT 6

BLOCK 12A LOT 5

...\Bore pipe under railroad

File -

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
10974
Craig M.
Mizera
SOUTH DAKOTA
05/29/2025

Plotted From - CBOBZIEN

Parcel 2
202+38 to 206+13 L/R
Temporary Easement containing
16489.87 sq ft, more or less

Parcel 3A
205+84 to 206+77 L/R
Permanent Easement containing
3146 sq ft, more or less

Parcel 4A
206+32 to 207+31 L/R
Permanent Easement containing
6360 sq ft, more or less

SCALE IN FEET
0 20 40

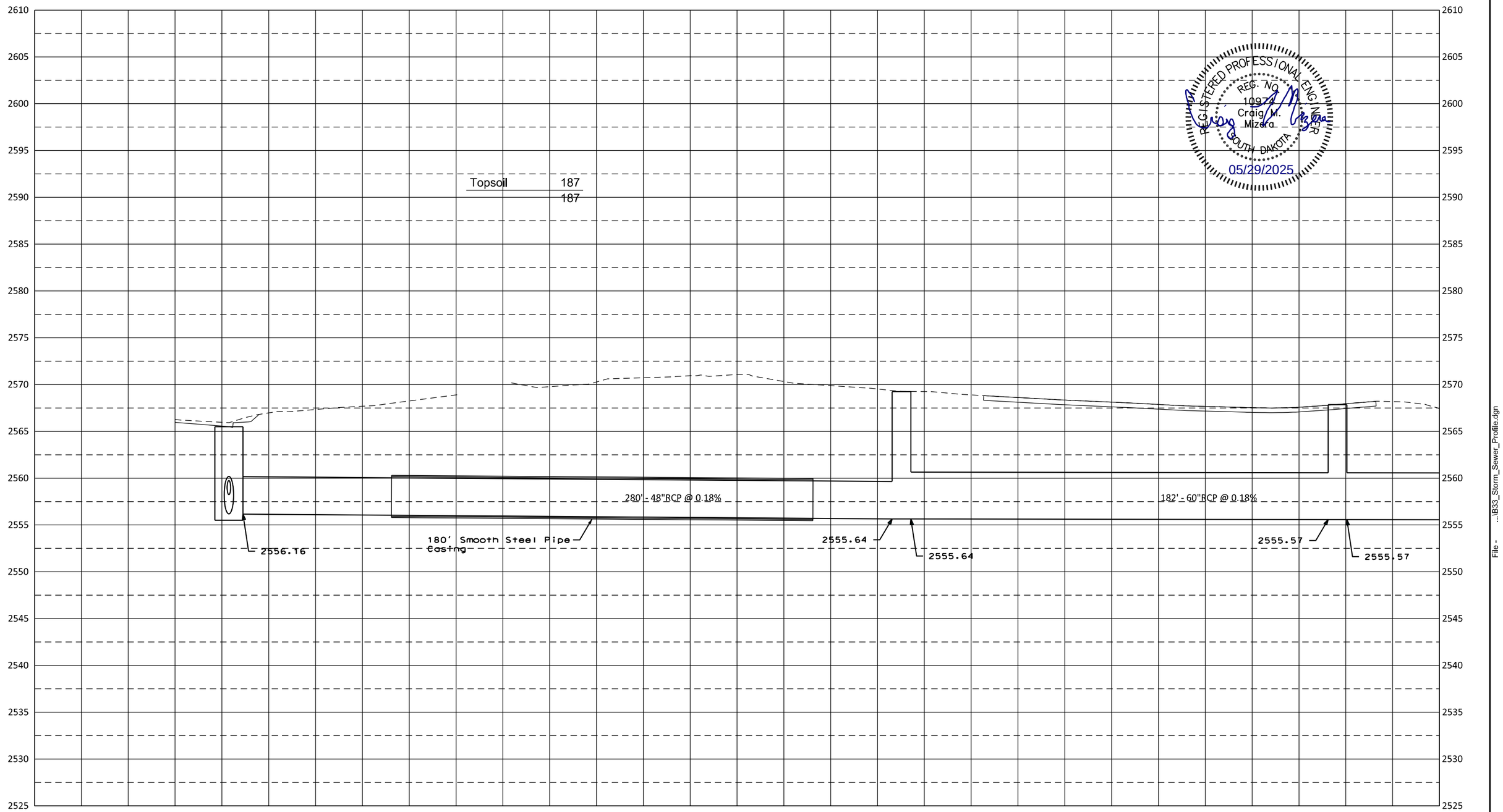
Permanent Easement
Temporary Easement
Proposed Roadway
Storm Sewer Centerline
Existing R.O.W./ Property Lines
Limits of Construction

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B33	B54

Plotting Date: 04-21-2025

Roadway and Storm Sewer Profile



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Plotted From - CBOBZIEN

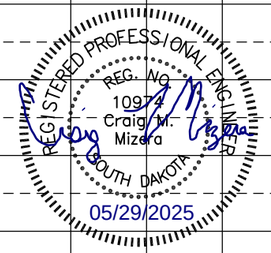
File - ...\B33_Storm_Sewer_Profile.dgn

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B34	B54

Plotting Date: 04-03-2025

Roadway and Storm Sewer Profile



Plotted From - CBOBZIEN

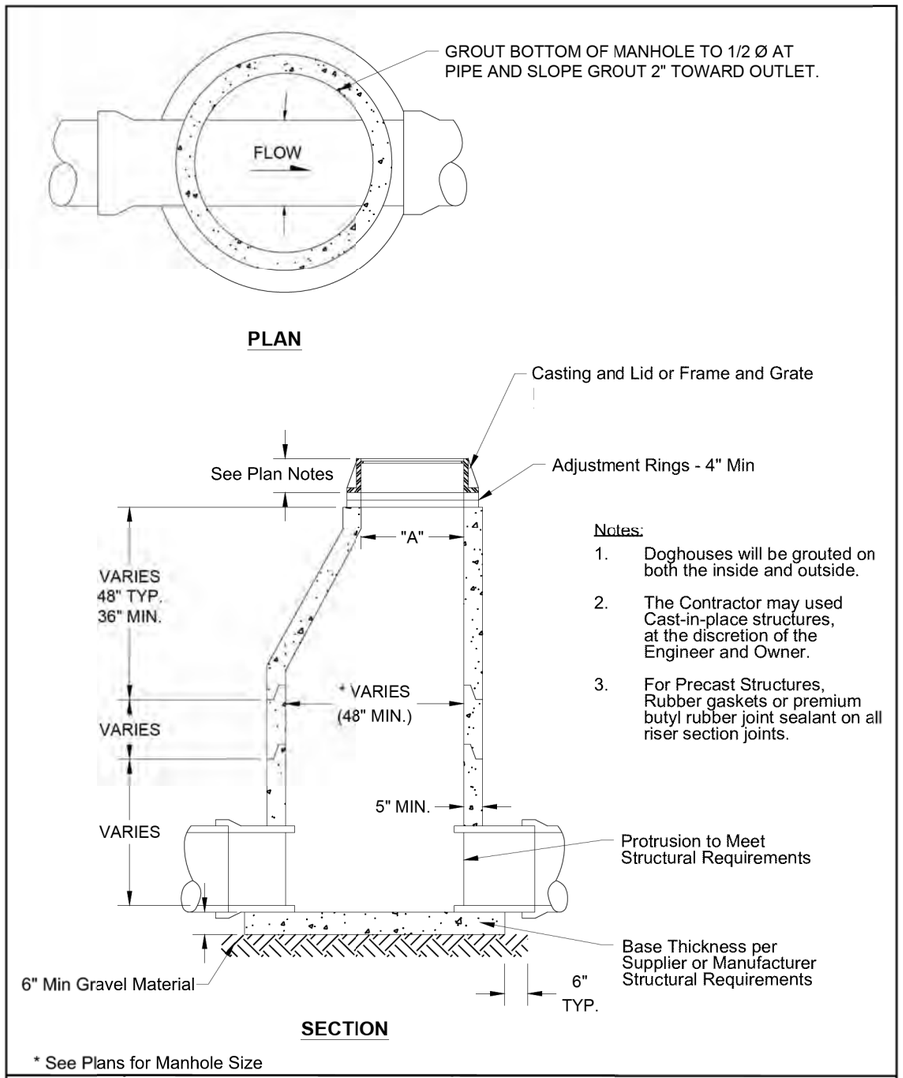
File - ...\Bore pipe under railroad 2

FOR BIDDING PURPOSES ONLY

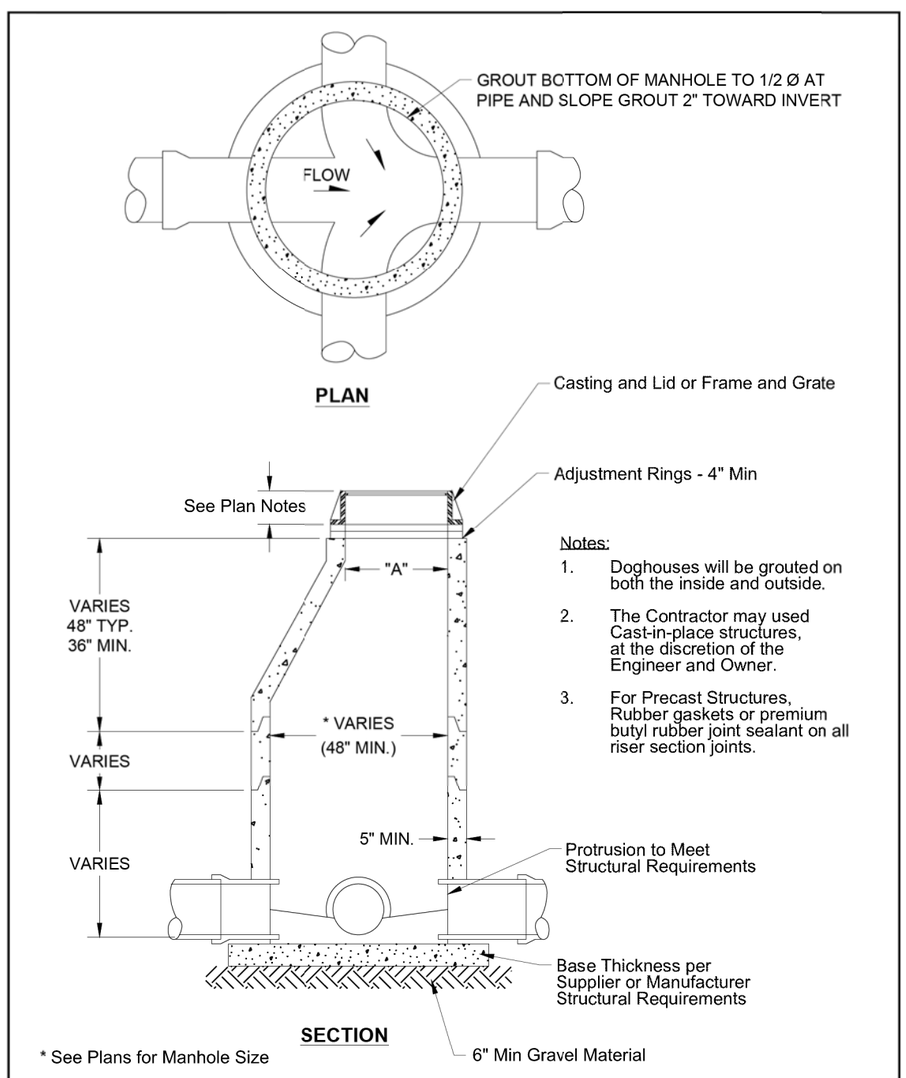
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B35	B54

Plotting Date: 04-15-2025

Special Plates



Manhole Detail 1 - Eccentric Cone Riser
NTS



Manhole Detail 2 - Eccentric Cone Riser
NTS

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10977
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

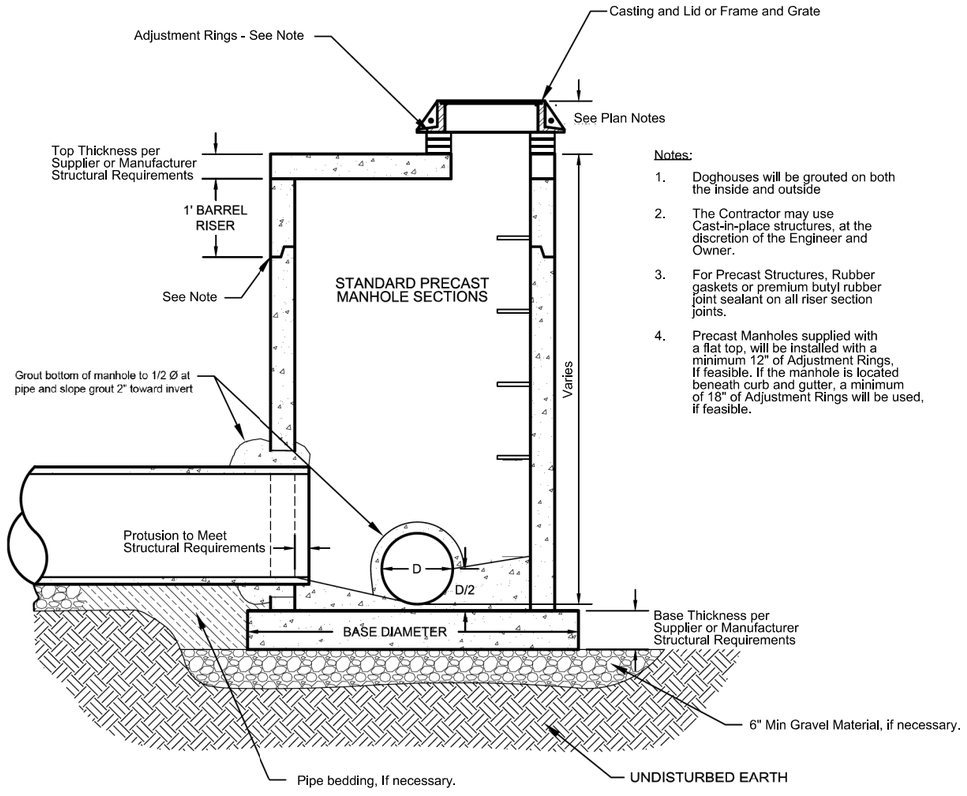
Plotted From: CBOBZIEN

File - ...\B35_Special_Plates.dgn

Special Plates

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B36	B54

Plotting Date: 04-03-2025

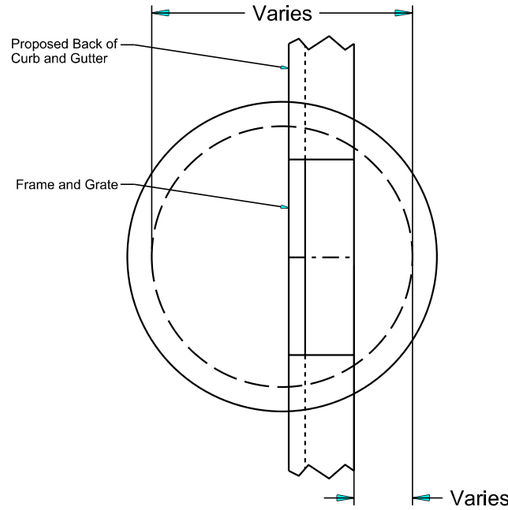


Notes:

1. Doghouses will be grouted on both the inside and outside
2. The Contractor may use Cast-in-place structures, at the discretion of the Engineer and Owner.
3. For Precast Structures, Rubber gaskets or premium butyl rubber joint sealant on all riser section joints.
4. Precast Manholes supplied with a flat top, will be installed with a minimum 12" of Adjustment Rings, If feasible. If the manhole is located beneath curb and gutter, a minimum of 18" of Adjustment Rings will be used, if feasible.

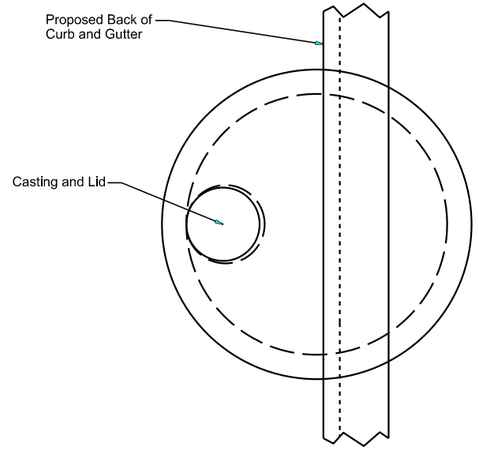
Section

Manhole Detail 3 - Flat Top
NTS



Plan View

Flat Top with Double Type B Frame and Grate
NTS



Notes:

1. Where Indicated in the plans, manhole casting and lid to be installed outside the roadway surfacing.
2. If the manhole casting and lid is indicated, in the plans, to be installed within the roadway surfacing, a box out is required. See Section F for requirements.

Plan View

Flat Top with Type A Casting and Lid
NTS

Manhole Detail 4 - Flat Top
NTS

Plotted From - CBOBZIEN

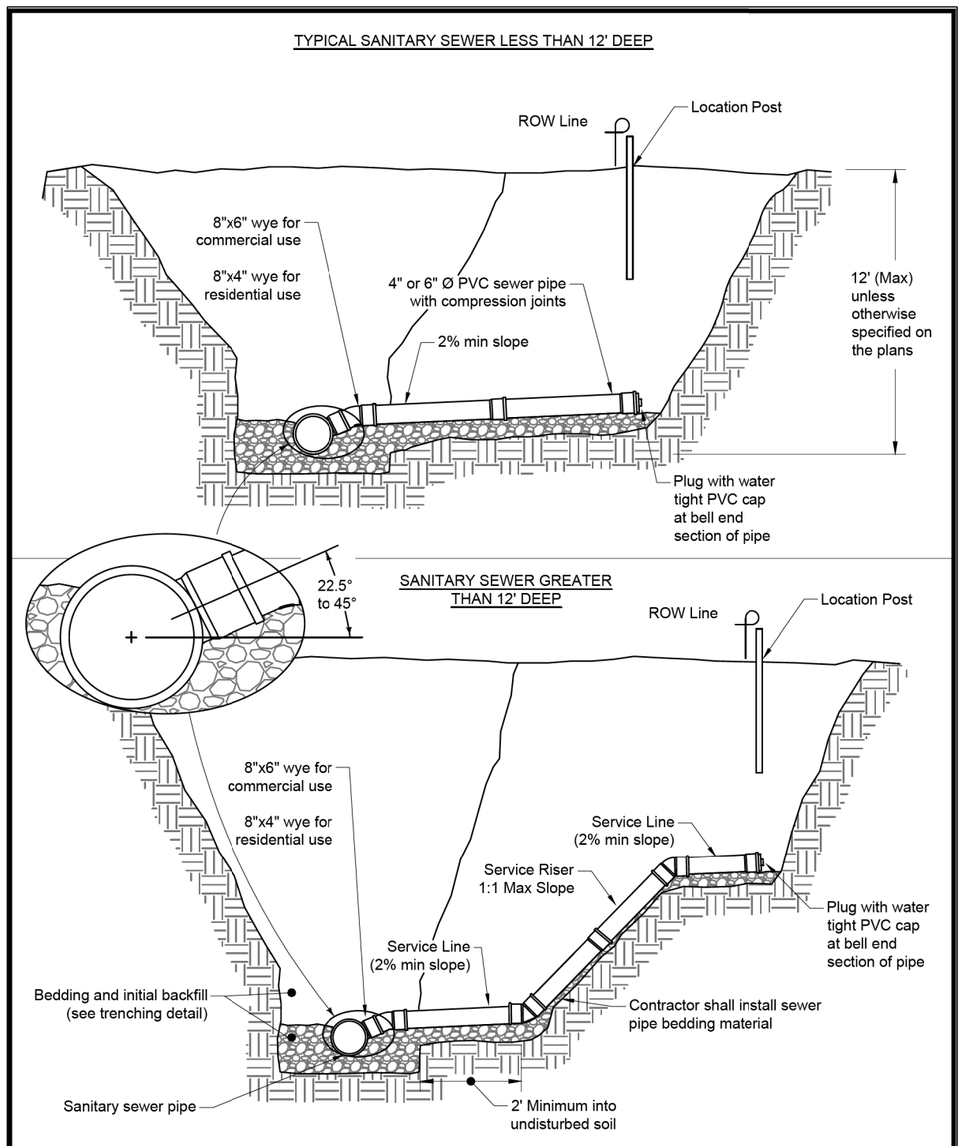
File - ...\Typical Precast Manhole - Flat Top

FOR BIDDING PURPOSES ONLY

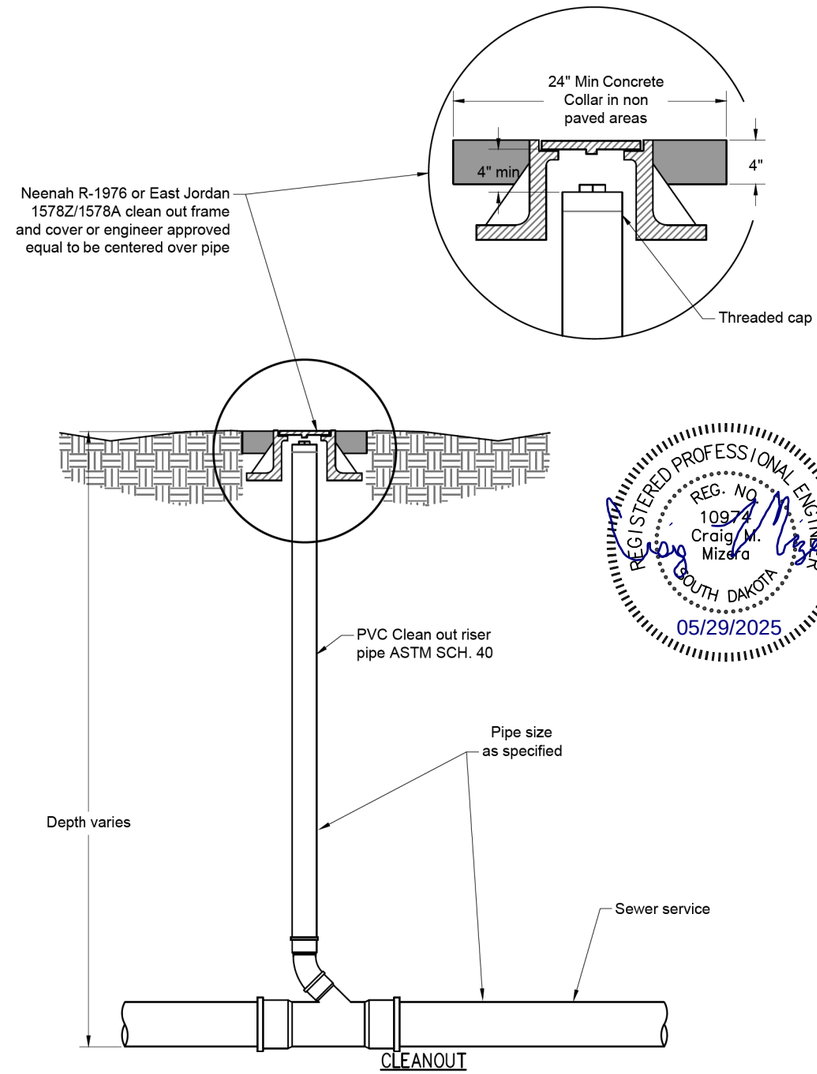
Special Plates

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B37	B54

Plotting Date: 04-03-2025



Typical Sanitary Sewer Service and Riser



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Cleanout Manhole Frame and Cover

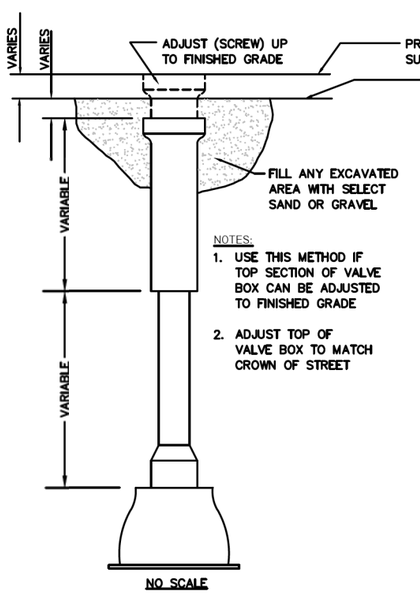
Plotted From - CBOBZIEN

File - ...\Typical Sewer Riser and Cleanout

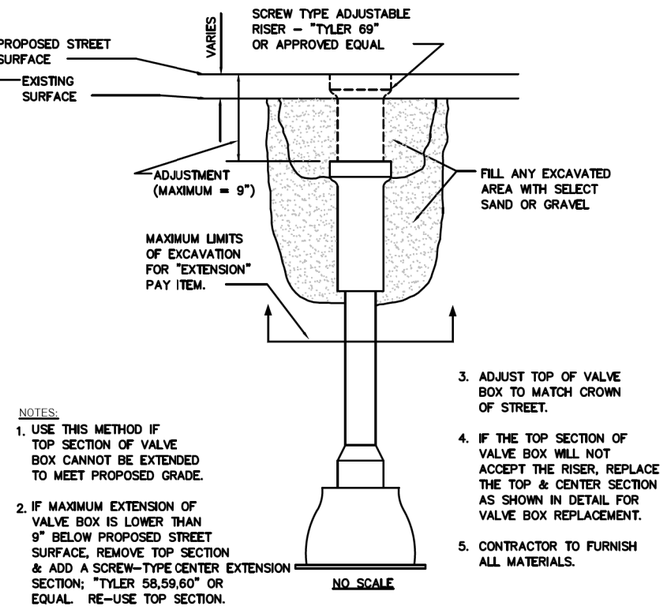
Special Plate

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B38	B54

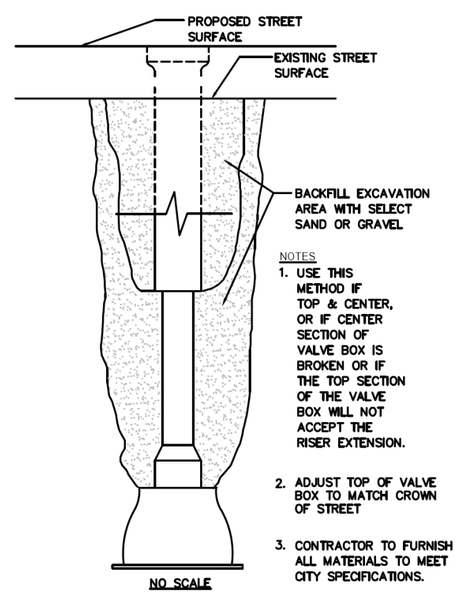
Plotting Date: 04-03-2025



VALVE BOX ADJUSTMENT



VALVE BOX EXTENSION
(OR REPLACEMENT OF TOP SECTION)



VALVE BOX INSTALLATION

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

VALVE BOX
ADJUSTMENT/ REPLACEMENT

Plotted From - CBOBZIEN

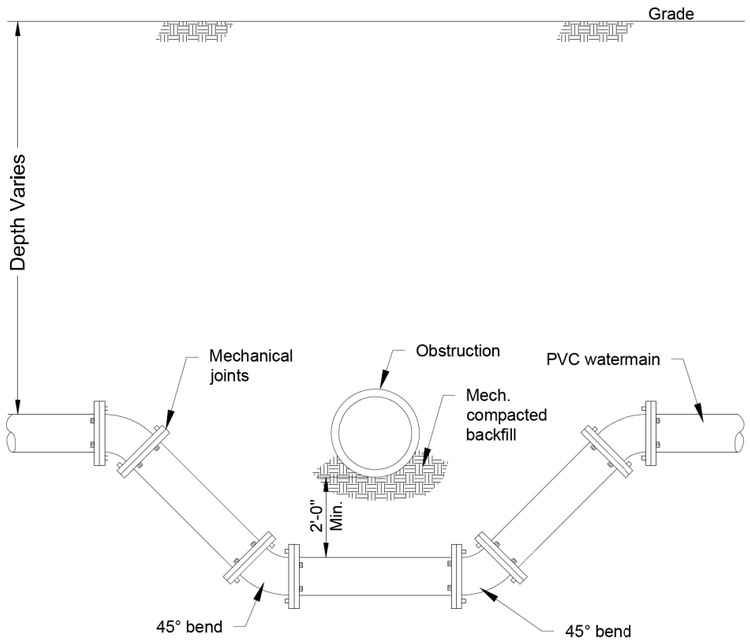
File - ...\Water Valve Adjustment

Special Plate

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B39	B54

Plotting Date: 04-03-2025



Notes:

1. See Insulation Instructions in Plan Notes.
2. Tie rods will be allowed in place of mechanical joint restraints.
3. Minimum seperation show. Verify requirements for insulation.

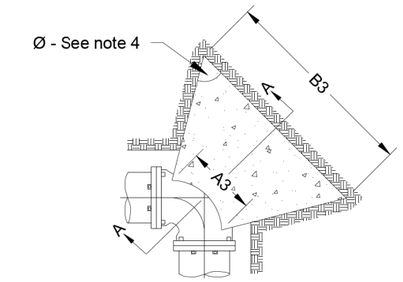
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Typical Detail
Water Main Lowering

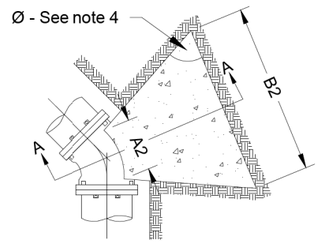
Notes:

1. Shape of back of buttress may vary as long as poured against firm undisturbed earth.
2. Dimension C1, C2,& C3 should be large enough to make angle Ø equal to or larger than 45°.
3. Dimension A1, A2, & A3 should be as large as possible without interfering with MJ bolts.
4. Ø = 45° Minimum.
5. Place polyethylene between concrete & pipe.

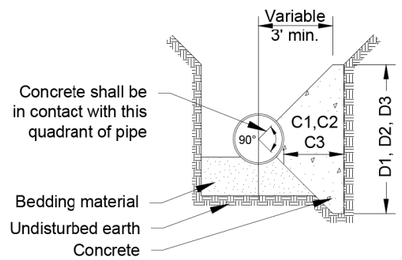
PIPE SIZE	22 1/2 ° BEND		45° BEND		90° BEND	
	B1	D1	B2	D2	B3	D3
6"	1'-5"	1'-5"	1'-5"	1'-5"	1'-5"	1'-5"
8"	1'-5"	1'-5"	2'-1"	1'-6"	2'-8"	2'-0"
12"	1'-10"	1'-10"	3'-4"	2'-0"	4'-9"	2'-6"
16"	3'-0"	2'-0"	3'-10"	3'-0"	6'-2"	3'-6"
20"	3'-6"	2'-8"	5'-6"	3'-4"	8'-4"	4'-0"
24"	4'-4"	3'-0"	6'-10"	3'-10"	6'-2"	3'-6"
30"	-	-	9'-3"	6'-0"	17'-0"	6'-0"



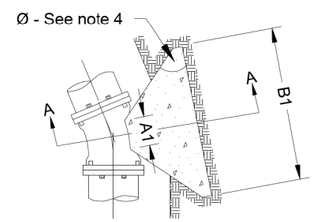
PLAN 90° BENDS



PLAN 45° BENDS



SECTION A-A



PLAN 22 1/2° BENDS

Typical Detail
Concrete Thrust Block

Plotted From - CBOBZIEN

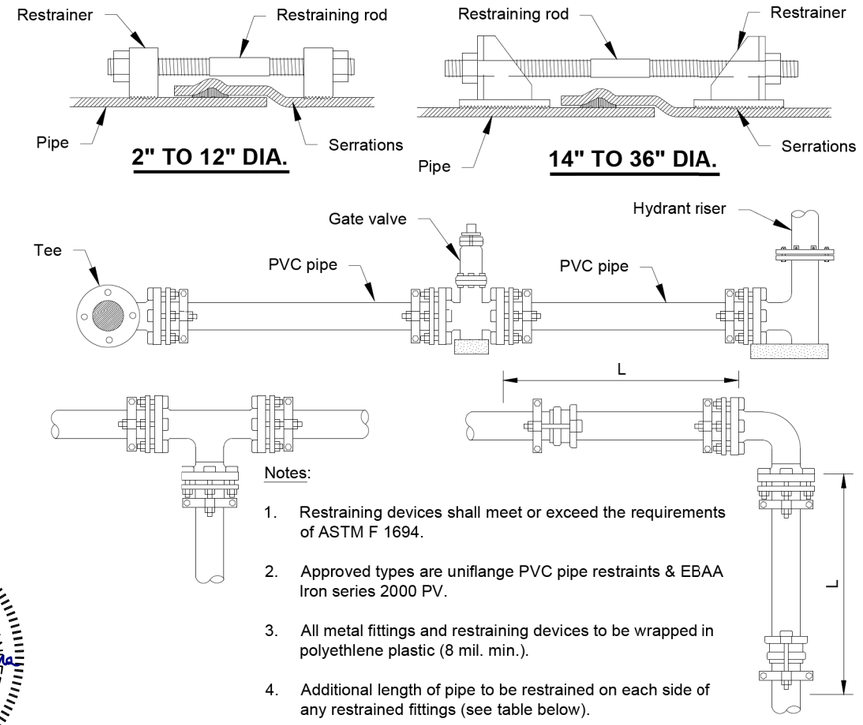
File - ...\Section B\Water Main Lowering

Special Plate

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B40	B54

Plotting Date: 04-03-2025



Notes:

1. Restraining devices shall meet or exceed the requirements of ASTM F 1694.
2. Approved types are uniflange PVC pipe restraints & EBAA Iron series 2000 PV.
3. All metal fittings and restraining devices to be wrapped in polyethlene plastic (8 mil. min.).
4. Additional length of pipe to be restrained on each side of any restrained fittings (see table below).

TYPICAL INSTALLATIONS

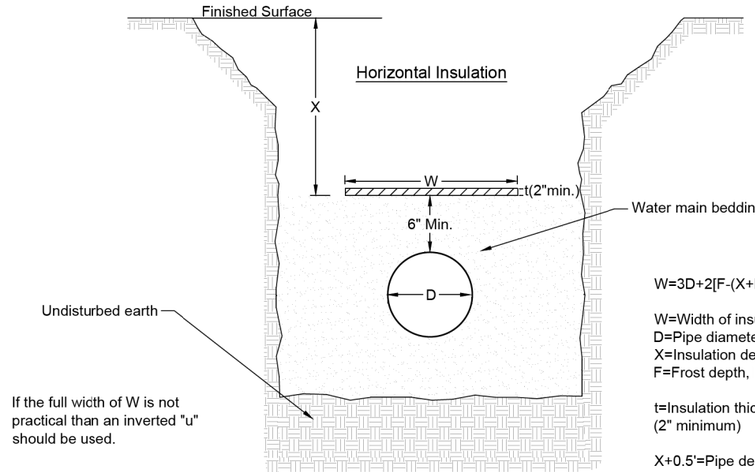
RESTRAINED LENGTHS OF PVC PIPE						
NOM. PIPE SIZE	90° BEND (L)	45° BEND (L)	22.5° BEND (L)	11.25° BEND (L)	SIZE ON SIZE TEE (L)*	VALVE DEAD-END (L)
6"	19'	8'	4'	2'	2'	35'
8"	25'	11'	5'	3'	13'	45'
10"	31'	13'	6'	3'	23'	55'
12"	36'	15'	8'	4'	33'	65'
16"	47'	20'	10'	5'	52'	84'

* Recommended restrained lengths for tees are for the branch outlet and assume a minimum 10' section of pipe attached to each side of the run. Restraint devices are also required on both run joints of the tee itself.

SIZE	45° VERT. OFFSET * (L)	22.5° VERT. OFFSET * (L)
6"	15'/8'	7'/4'
8"	19'/11'	9'/5'
10"	23'/13'	11'/6'
12"	27'/15'	13'/8'
16"	35'/20'	17'/10'

* First number is the recommended restrained length on each side of the down bend. The second number is the length for each side of the up bend.

Typical Detail
Example of Restaining Rod

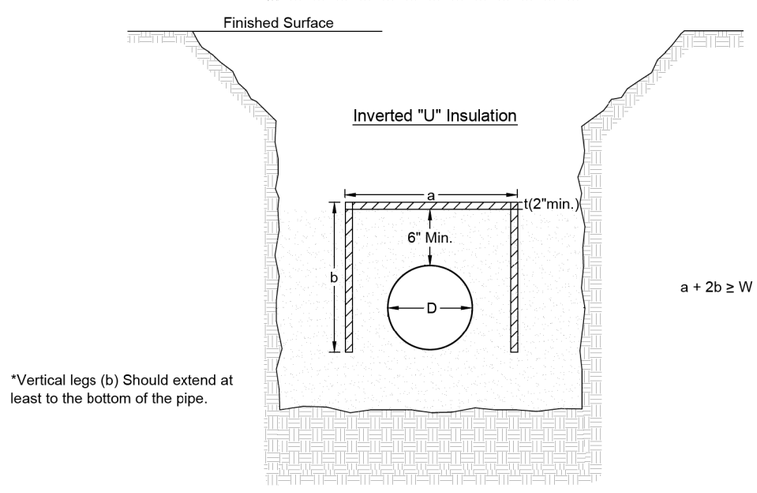


W=3D+2[F-(X+D+0.5)]

W=Width of insulation, Ft.
D=Pipe diameter, Ft.
X=Insulation depth, Ft.
F=Frost depth, Ft. (use 6')

t=Insulation thickness, In. (2" minimum)

X+0.5'=Pipe depth



a + 2b ≥ W

*Vertical legs (b) Should extend at least to the bottom of the pipe.

**This detail is a general guideline. Insulation of water main will be determined on a case by case situation depending on the following factors: depth, pipe diameter, flow, location, and proximity to bedrock.

Typical Detail
Insulation

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10974
Craig M. Mizera
SOUTH DAKOTA
05/29/2025

Plotted From - CBOBZIEN

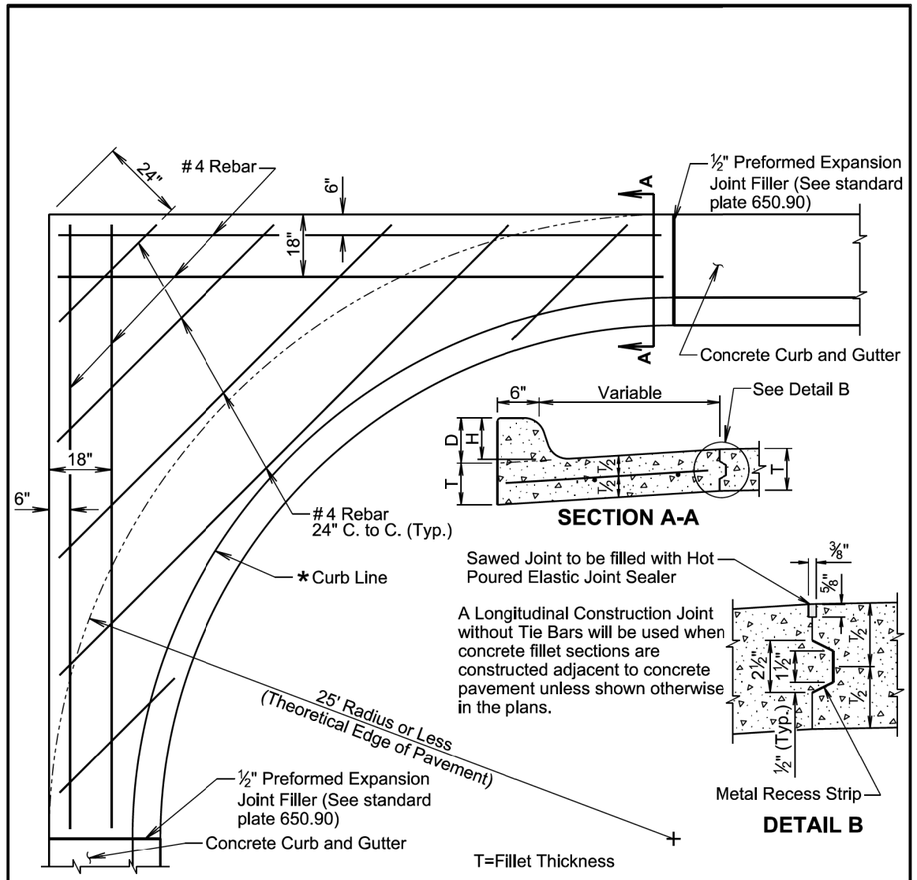
File - ...\Water Main Restraints

Standard Plates

Revised: 06/18/2025

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B41	B54

Plotting Date: 06-18-2025



* If a curb ramp is constructed adjacent to a PCC fillet section, the curb will need to be modified. Refer to the corresponding curb ramp standard plate or other special details in the plans for modification of the PCC fillet section.

March 31, 2024

Published Date: 2026	SDDOT	PCC FILLET SECTION WITH TYPE B CURB AND GUTTER	PLATE NUMBER 380.30
			Sheet 1 of 2

GENERAL NOTES:

For fillets with irregular shapes or bump outs:

1) The 6" and 18" offset #4 rebar will be included on any side next to pavement or driveways (not along the Curb and Gutter).

2) All remaining area will have #4 rebar spaced 24" center to center in a square pattern.

Dimensions D, H, and T will conform to those shown on the appropriate curb and gutter standard plate.

All rebar will be in conformance with Sections 480 and 1010 of the Specifications. All rebar will have a minimum of 3 inches of clear cover.

Class M6 Concrete will be used in construction of the fillets.

The concrete curb will be monolithic with the concrete fillet. No separate payment for this curb will be made as the curb is considered a part of the fillet.

Joints will be constructed at 10-foot intervals except when fillets are constructed adjacent to PCC Pavement. If there is adjacent PCC Pavement the joints will be extended from edge of pavement through the fillet section as directed by the Engineer.

The cost for all materials, labor, and incidentals necessary to construct the PCC fillet section with curb and gutter will be incidental to the contract unit price per square yard for the corresponding PCC fillet section contract item.

March 31, 2024

Published Date: 2026	SDDOT	PCC FILLET SECTION WITH TYPE B CURB AND GUTTER	PLATE NUMBER 380.30
			Sheet 2 of 2

Standard Plates

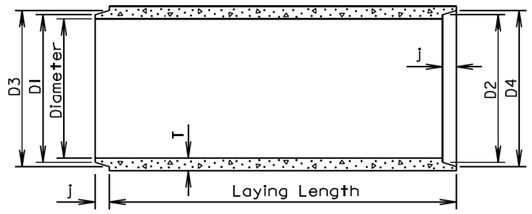
Revised: 06/18/2025

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B42	B54

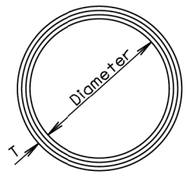
Plotting Date: 06-18-2025

TOLERANCES IN DIMENSIONS

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



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

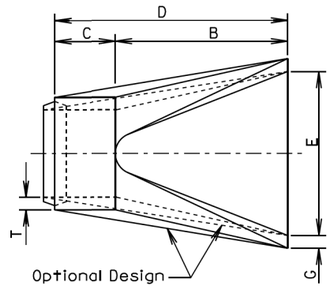
Construction of R. C. P. shall conform to the requirements of Section 990 of the Specifications.

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

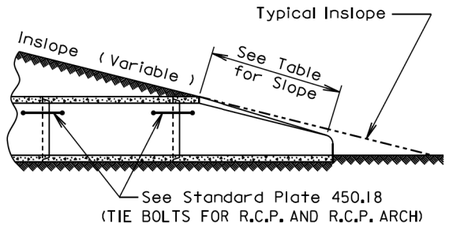
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322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

June 26, 2015

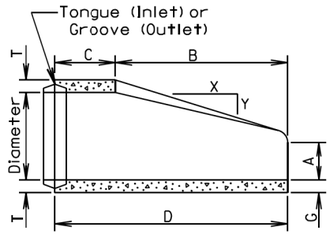
Published Date: 2026	SDDOT	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
			Sheet 1 of 1



TOP VIEW



SLOPE DETAIL

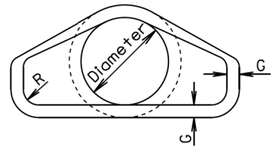


LONGITUDINAL SECTION

GENERAL NOTES:

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

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



END VIEW

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

June 26, 2015

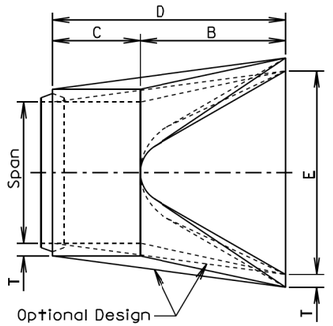
Published Date: 2026	SDDOT	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
			Sheet 1 of 1

Standard Plates

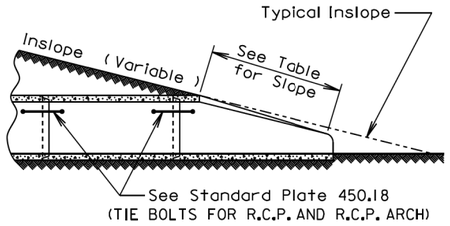
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B43	B54

Revised: 06/18/2025

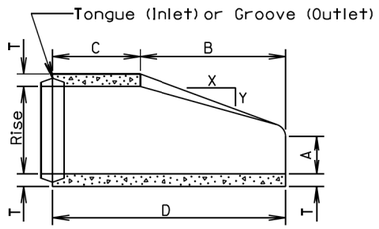
Plotting Date: 06-18-2025



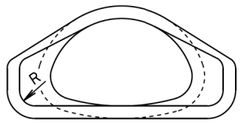
TOP VIEW



SLOPE DETAIL



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

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

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

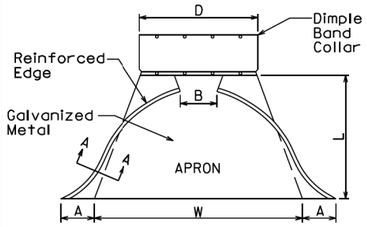
* Size (in.)	Approximate Weight of Section (lbs.)	Rise (in.)	Span (in.)	Slope (X:Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	R (in.)
18	1100	13 1/2	22	3:1	2 1/2	7	27	45	72	36	2
24	1750	18	28 1/2	3:1	3 1/2	8 1/2	39	33	72	48	3
30	3300	22 1/2	36 1/4	3:1	4	9 1/2	50	46	96	60	3
36	4350	26 5/8	43 3/4	3:1	4 1/2	1 1 1/8	60	36	96	72	6
42	5250	31 5/16	51 1/8	3:1	4 1/2	15 13/16	60	36	96	78	6
48	6400	36	58 1/2	3:1	5	21	60	36	96	84	6
54	7850	40	65	3:1	5 1/2	25 1/2	60	36	96	90	6
60	9500	45	73 1/2	3:1	6	31	60	36	96	96	6
72	13550	54	88	2:1	7	31	60	39	99	120	6
84	17950	62	102	2:1	8	28 1/2	83	19	102	144	6

*Equivalent Diameter of Circular R. C. P.

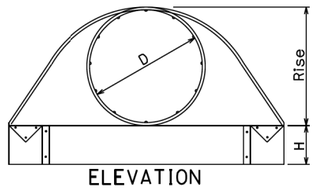
June 26, 2015

Published Date: 2026	SDDOT	R. C. P. ARCH FLARED ENDS	PLATE NUMBER 450.11
			Sheet 1 of 1

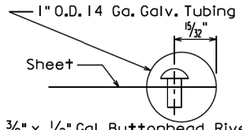
Alternate Type Connector Sections may be used with approval of the Engineer.



PLAN

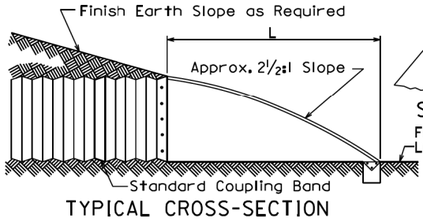


ELEVATION



3/8" x 1/2" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

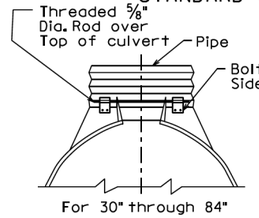
TUBING ATTACHMENT DETAILS
SECTION A-A



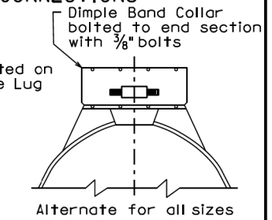
TYPICAL CROSS-SECTION

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

STANDARD CONNECTIONS

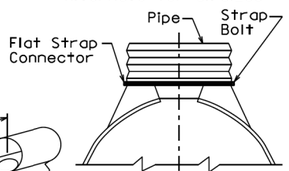


For 30" through 84"

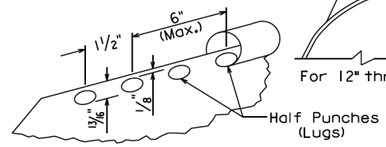


Alternate for all sizes

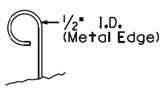
NOTE:
Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.



For 12" through 24" only



SECTION A-A (alternate)



SECTION A-A (alternate)

GENERAL NOTES:

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

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

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

March 31, 2000

Published Date: 2026	SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35
			Sheet 1 of 1

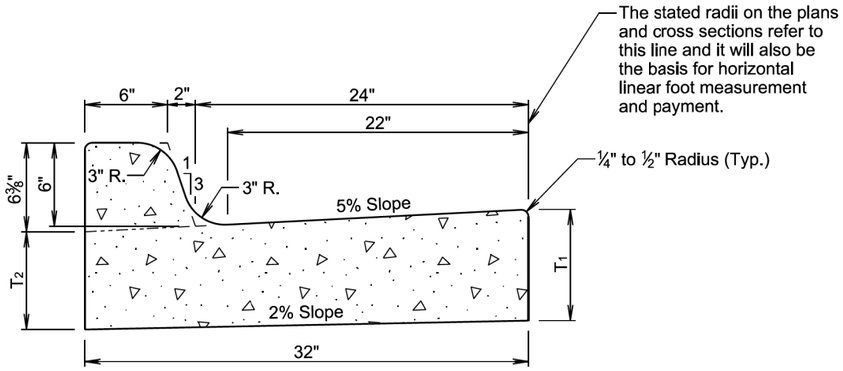
Plotted From - CBOBZIEN

File - ...\B43_Standard_Plates.dgn

Standard Plates

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B44	B54

Plotting Date: 06-18-2025



TYPE B CONCRETE CURB AND GUTTER				
Type	T_1 (Inches)	T_2 (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B66	6	5 1/16	0.057	17.7
B67	7	6 1/16	0.065	15.4
B68	8	7 1/16	0.073	13.7
B68.5	8.5	7 9/16	0.077	13.0
B69	9	8 1/16	0.081	12.3
B69.5	9.5	8 9/16	0.085	11.7
B610	10	9 1/16	0.090	11.2
B610.5	10.5	9 9/16	0.094	10.7
B611	11	10 1/16	0.098	10.2
B611.5	11.5	10 9/16	0.102	9.8
B612	12	11 1/16	0.106	9.4

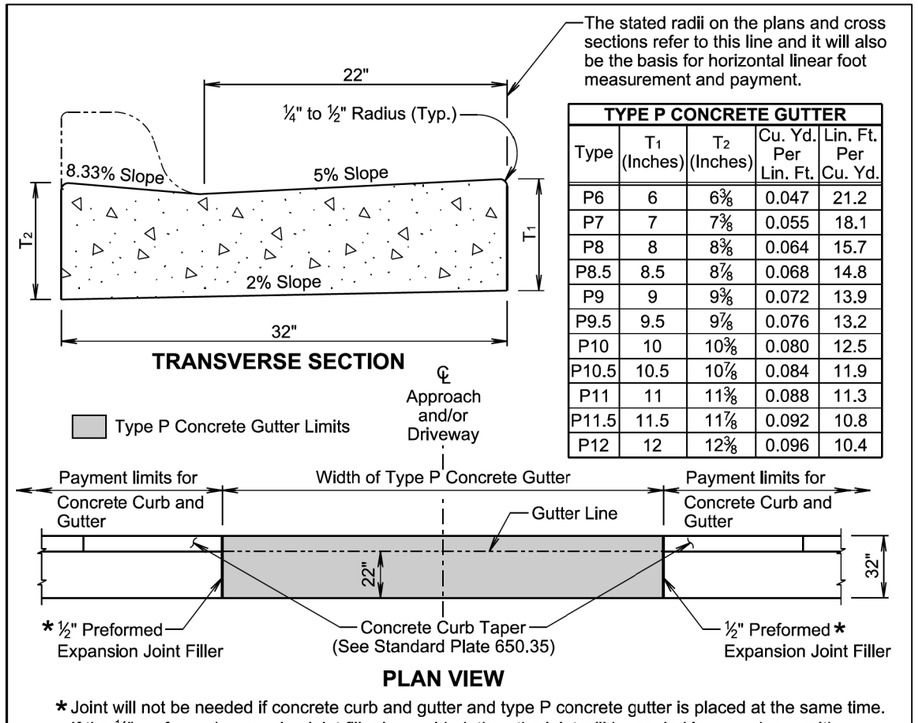
GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment will be by one of the methods shown on standard plate 380.21.

See standard plate 650.90 for expansion and contraction joints in the curb and gutter.

January 22, 2023

Published Date: 2026	SDDOT	TYPE B CONCRETE CURB AND GUTTER	PLATE NUMBER 650.01
			Sheet 1 of 1



TYPE P CONCRETE GUTTER				
Type	T_1 (Inches)	T_2 (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
P6	6	6⅜	0.047	21.2
P7	7	7⅜	0.055	18.1
P8	8	8⅜	0.064	15.7
P8.5	8.5	8⅞	0.068	14.8
P9	9	9⅜	0.072	13.9
P9.5	9.5	9⅞	0.076	13.2
P10	10	10⅜	0.080	12.5
P10.5	10.5	10⅞	0.084	11.9
P11	11	11⅜	0.088	11.3
P11.5	11.5	11⅞	0.092	10.8
P12	12	12⅜	0.096	10.4

* Joint will not be needed if concrete curb and gutter and type P concrete gutter is placed at the same time. If the ½" preformed expansion joint filler is provided, then the joint will be sealed in accordance with standard plate 650.90.

GENERAL NOTES:

The concrete for the type P concrete gutter will comply with the requirements of the specifications for class M6 concrete.

When concrete gutter longitudinally adjoins new concrete pavement, the method of attachment will be by one of the methods shown on standard plate 380.21.

Transverse contraction joints will be constructed at 10-foot intervals in the concrete gutter except when concrete gutter is constructed adjacent to mainline PCC pavement. When concrete gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint will be constructed in the concrete gutter at each mainline PCC pavement transverse contraction joint location.

When concrete gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete gutter will be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

When concrete gutter is not placed monolithically with the mainline PCC pavement and when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete gutter will be 1½ inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint will be at least ¼ the thickness of the concrete.

January 22, 2023

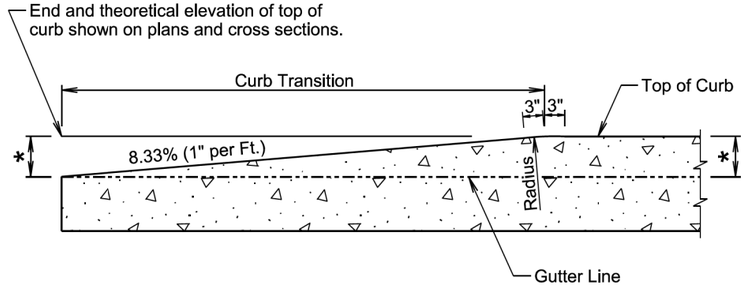
Published Date: 2026	SDDOT	TYPE P CONCRETE GUTTER	PLATE NUMBER 650.30
			Sheet 1 of 1

Standard Plates

Revised 06/18/2025

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B45	B54

Plotting Date: 06-18-2025

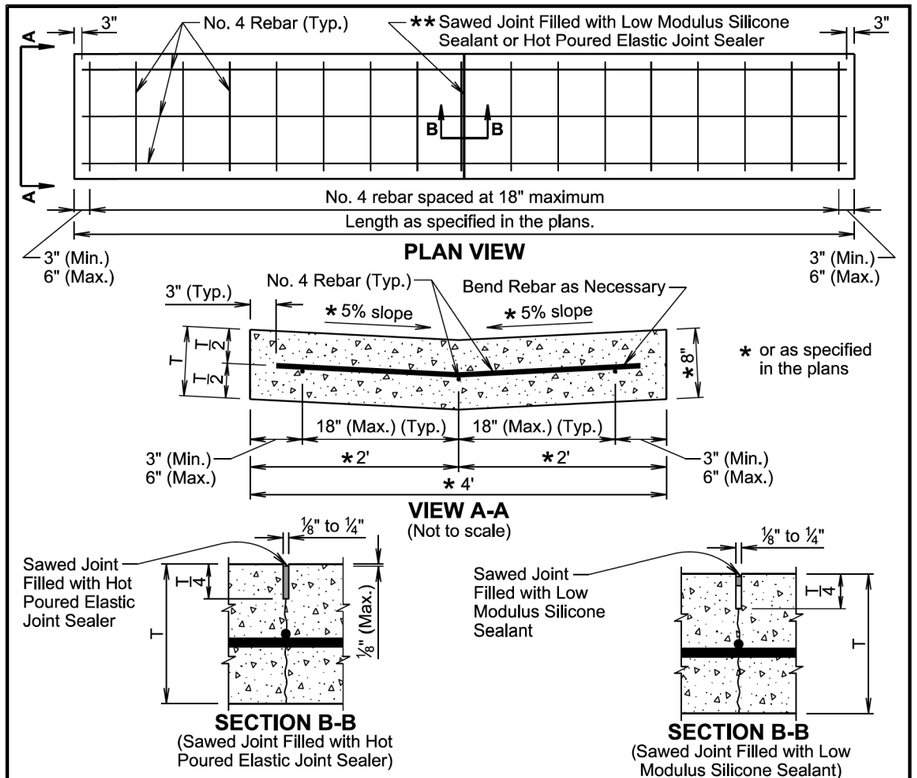


* Height of Curb

LONGITUDINAL SECTION
(Concrete Curb Taper)

December 23, 2019

Published Date: 2026	SDDOT	CONCRETE CURB TAPER	PLATE NUMBER 650.35
			Sheet 1 of 1



GENERAL NOTES:

The concrete will comply with the specifications for class M6 concrete.

The reinforcing steel will comply with the requirements of specification sections 480 and 1010.

If a lap splice is provided the No. 4 rebar will be lapped a minimum of 12 inches.

** The sawed joints will be spaced at 12 feet; however, when the length of the valley gutter is 12 feet to 24 feet there will be a joint at the midpoint of the length. The saw cut to control cracking will be a minimum of ¼ the thickness of the pavement.

All hot poured elastic joint sealer material spilled on the surface of the concrete pavement will be removed as soon as the material has cooled. The extent of removal of material will be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material will be borne by the Contractor.

The silicone sealant will be bonded to the sides of a clean joint to completely seal the joint as approved by the Engineer.

All costs for furnishing and installing the valley gutter including materials, equipment, labor, and incidentals will be included in the contract unit price per square yard for the corresponding Valley Gutter contract item.

December 23, 2019

Published Date: 2026	SDDOT	VALLEY GUTTER	PLATE NUMBER 650.40
			Sheet 1 of 1

Plotted From - CBOBZIEN

File - ...\B45_Standard_Plates.dgn

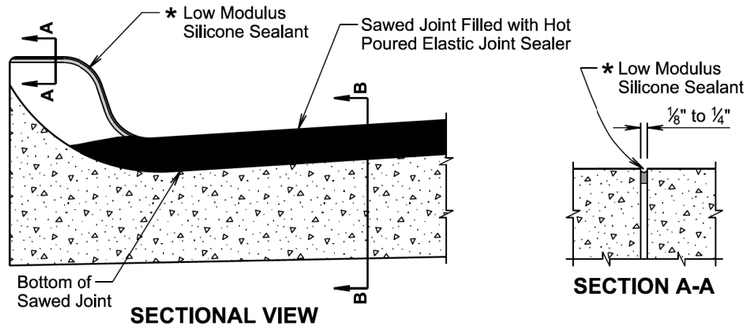
Standard Plates

FOR BIDDING PURPOSES ONLY

Revised: 06/18/2025

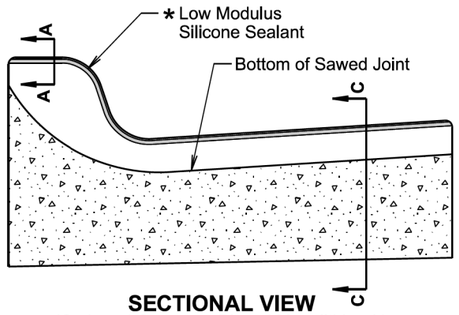
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B46	B54

Plotting Date: 06-18-2025

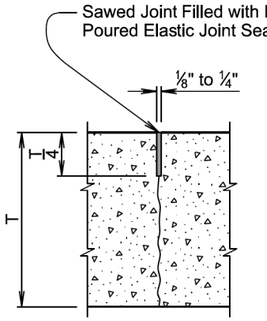


SECTIONAL VIEW
(Curb and Gutter Placed Monolithic with Adjacent Mainline PCC Pavement)

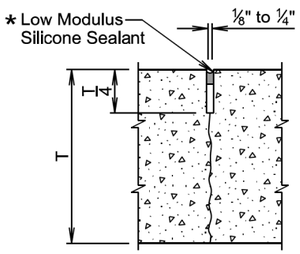
SECTION A-A



SECTIONAL VIEW
(Curb and Gutter not Placed Monolithic with Adjacent Mainline PCC Pavement or Mainline Surfacing is not PCC Pavement)



SECTION B-B

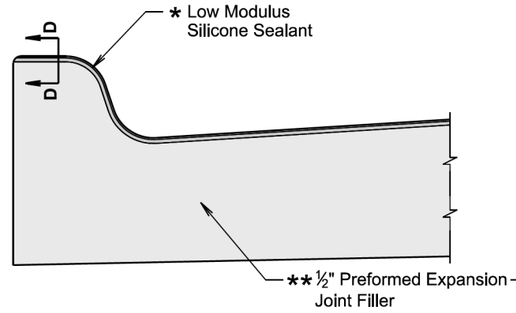


SECTION C-C

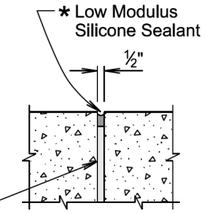
* The silicone sealant will be placed such that it completely seals the joint and is bonded to the sides of the clean joint as approved by the Engineer.

December 23, 2019

Published Date: 2026	SDDOT	JOINTS IN CONCRETE CURB AND GUTTER	PLATE NUMBER 650.90
			Sheet 1 of 2



SECTIONAL VIEW
(Curb and Gutter at ½" Preformed Expansion Joint Filler Location)



SECTION D-D

* The silicone sealant will be placed such that it completely seals the joint and is bonded to the sides of the clean joint as approved by the Engineer.

GENERAL NOTES:

For illustrative reason, only the type B curb and gutter is shown.

** A ½-inch preformed expansion joint filler will be placed transversely in the curb and gutter at the following locations:

At each junction between the radius return of curb and gutter, and curb and gutter which is parallel to the project centerline.

At each junction between new curb and gutter and existing curb and gutter.

Transverse contraction joints will be constructed at 10 foot intervals in the concrete curb and gutter except when the concrete curb and gutter is constructed adjacent to mainline PCC pavement. When concrete curb and gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint will be constructed in the concrete curb and gutter at each mainline PCC pavement transverse contraction joint location.

When concrete curb and gutter is not placed monolithically with the mainline PCC pavement or when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete curb and gutter will be 1½ inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint will be at least ¼ the thickness of the concrete and the joint will be sealed in accordance with the details shown above.

December 23, 2019

Published Date: 2026	SDDOT	JOINTS IN CONCRETE CURB AND GUTTER	PLATE NUMBER 650.90
			Sheet 2 of 2

Plotted From - CBOBZIEN

File - ...\B46_Standard_Plates.dgn

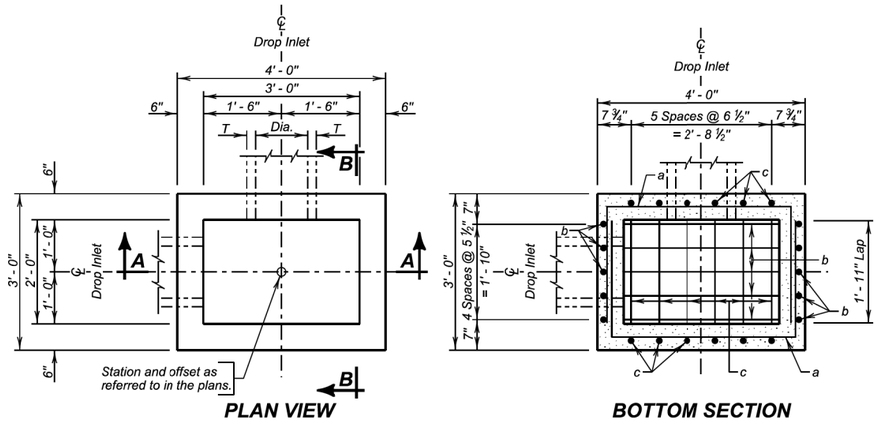
Standard Plates

FOR BIDDING PURPOSES ONLY

Revised: 06/18/2025

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B47	B54

Plotting Date: 06-18-2025



ESTIMATED QUANTITIES

ITEM	UNIT	CONSTANT QUANTITY	VARIABLE QUANTITY
✳ Class M6 Concrete	Cu. Yd.	0.26	0.22H
Reinforcing Steel	Lb.	51.19	28.97H
Frame and Grate Assembly	Each	1	———

DROP INLETS FOR 12" TO 24" DIAMETER PIPE

SPECIFICATIONS

Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES:

Design Live Load: HL-93. No construction loading in excess of legal load was considered.

Reinforcing steel shall conform to ASTM A615 grade 60. The d bars shall be lapped 12 inches with the b and c bars. Cut and bend reinforcing steel as required to place pipe(s) through the drop inlet wall.

Drop inlet may be precast. If precast drop inlet details differ from this standard plate, submit a checked design done by a SD registered P.E. and shop plans to the Office of Bridge Design for approval.

✳ Reduce total quantities of concrete by the amount of concrete displaced by the pipe(s). 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 inlet shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering drop inlet must fit between the inside face of walls and shall not enter through the corners.

Maximum R.C.P. diameter shall not exceed 18 inches on the 2-foot wide side and shall not exceed 24 inches (24 inches for R.C. arch) on the 3-foot wide side of the drop inlet.

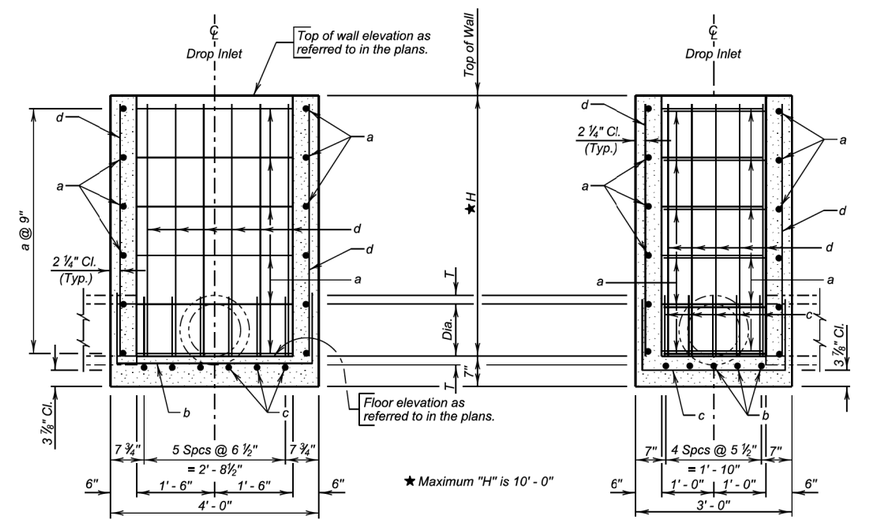
The dimension of H is in feet. Maximum H is 10 feet.

PIPE DISPLACEMENT REDUCTIONS

	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 ¼	0.04
	18	2 ½	0.05
	24	3	0.09
R.C. ARCH	18	2 ½	0.05
	24	3 ½	0.09

March 31, 2024

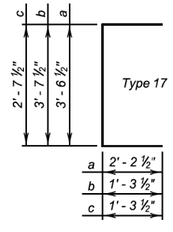
Published Date: 2026	SDDOT	2'X 3' TYPE B REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.01
			Sheet 1 of 2



REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
a	2.67H	4	8' - 0"	17	
b	5	5	6' - 3"	17	
c	6	4	5' - 3"	17	
d	22	4	H - 2"	Str.	

NOTE:
All dimensions are out to out of bars.



March 31, 2024

Published Date: 2026	SDDOT	2'X 3' TYPE B REINFORCED CONCRETE DROP INLET	PLATE NUMBER 670.01
			Sheet 2 of 2

Plotted From - CBOBZIEN

File - ...\B47_Standard_Plates.dgn

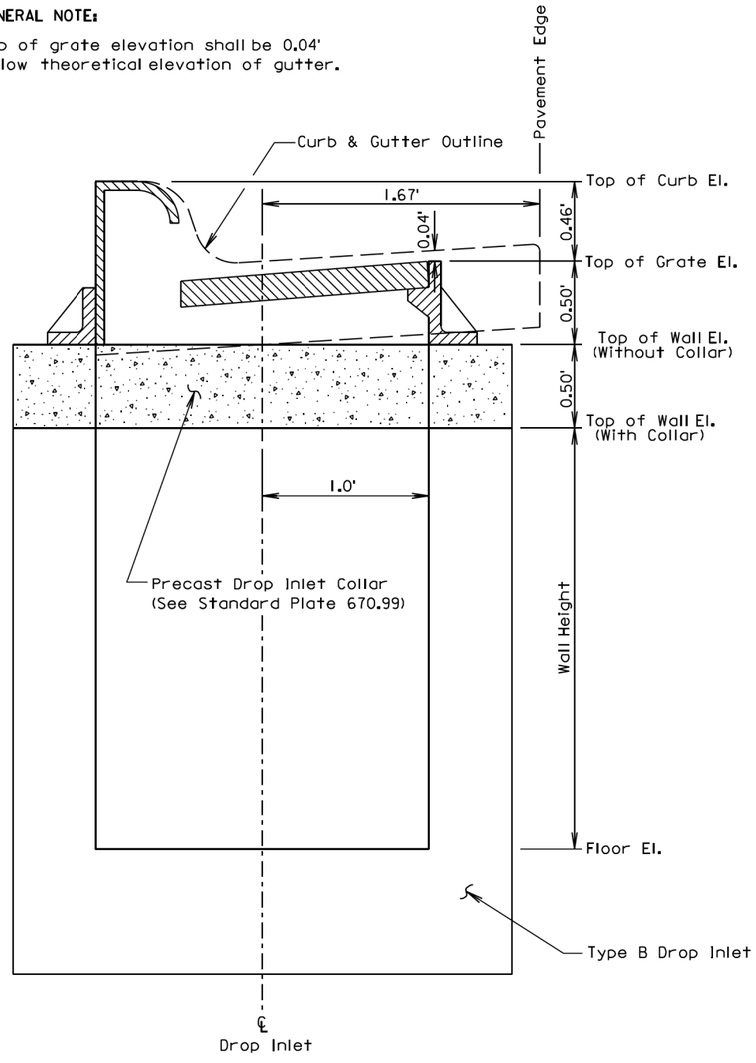
Standard Plates

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B48	B54

Plotting Date: 06-18-2025

GENERAL NOTE:

Top of grate elevation shall be 0.04' below theoretical elevation of gutter.



June 26, 2011

Published Date: 2026	SDDOT	INSTALLATION OF TYPE B DROP INLET	PLATE NUMBER 670.75 Sheet 1 of 1

Plotted From - CBOBZIEN

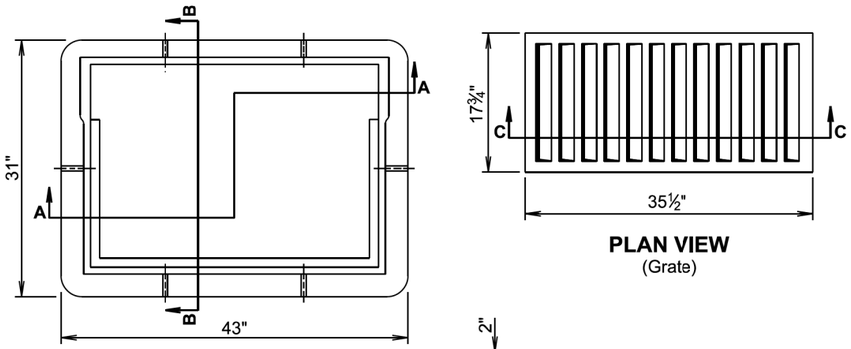
File - ...\B48_Standard_Plates.dgn

Standard Plates

Revised: 06/18/2025

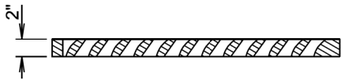
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B49	B54

Plotting Date: 06-18-2025



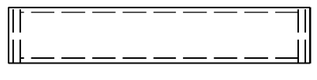
PLAN VIEW
(Frame)

PLAN VIEW
(Grade)

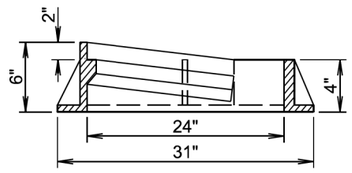


SECTION C-C

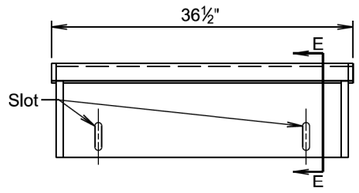
SECTION A-A



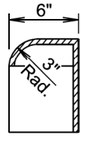
TOP VIEW
(Curb Box)



SECTION B-B



ELEVATION VIEW
(Curb Box)



SECTION E-E

GENERAL NOTES:

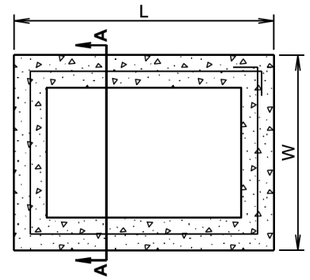
The product dimensions may vary from those shown on the standard plate depending on the manufacturer. Grate size and configuration will be similar to the standard plate for hydraulic capacity and bicycle safety. Any variation in dimensions will be approved by the Engineer and the type B frame and grate assembly will be from a manufacturer on the approved products lists.

Design load for the grate will meet the requirements of AASHTO HL-93.

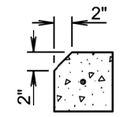
The curb box will be adjustable 6" to 9".

June 1, 2022

Published Date: 2026	SDDOT	TYPE B FRAME AND GRATE	PLATE NUMBER 670.80
			Sheet 1 of 1

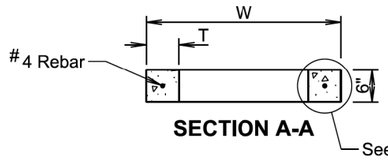


PLAN VIEW



For Type D Drop Inlets only:
Use Precast Drop Inlet Collar with
2" chamfer on L sides only.

DETAIL B



SECTION A-A

INFORMATIONAL QUANTITIES					
FRAME AND GRATE TYPE	L (Ft-in)	W (Ft-in)	T (in)	CLASS M6 CONCRETE (CuYd)	REINFORCING STEEL (Lb)
TYPE A, B, and E	4'-0"	3'-0"	6	0.11	9
TYPE C	5'-0"	4'-0"	6	0.15	11
TYPE D	4'-0"	2'-6"	6	0.10	8

GENERAL NOTES:

All reinforcing steel will conform to ASTM A615, Grade 60.

The ½" diameter bar will lap 6"± and will be centered in the concrete.

The cost of furnishing and installing Precast Drop Inlet Collars, including labor, materials, and incidentals will be incidental to the contract unit price per Each for "Precast Drop Inlet Collar".

June 1, 2022

Published Date: 2026	SDDOT	PRECAST DROP INLET COLLAR	PLATE NUMBER 670.99
			Sheet 1 of 1

Plotted From - CBOBZIEN

File - ...\B49_Standard_Plates.dgn

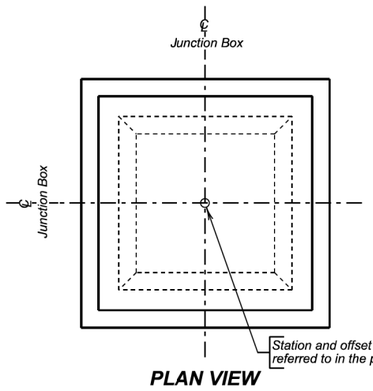
Standard Plates

FOR BIDDING PURPOSES ONLY

Revised: 06/18/2025

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B50	B54

Plotting Date: 06-18-2025



PLAN VIEW

SPECIFICATIONS

Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES

Design Live Load: HL-93. 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 and minimum fill over the junction box of 2 feet.

Reinforcing steel shall conform to ASTM A615 Grade 60. Cut and bend reinforcing steel as required to place pipe(s) through junction box wall.

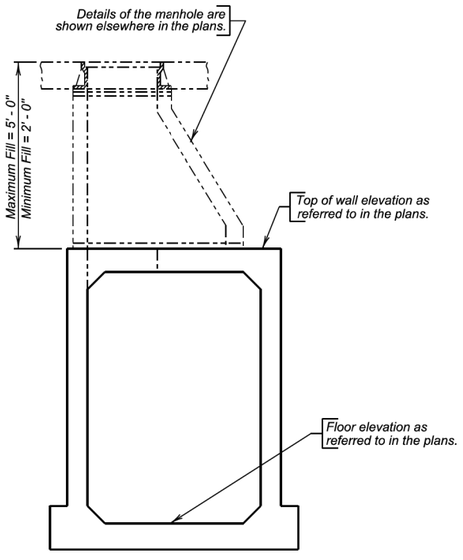
Junction box may be precast. If precast junction box details differ from this standard plate, submit a checked design done by a SD registered P.E. and shop plans to the Office of Bridge Design for approval.

Use 1 inch clear cover on all reinforcing steel unless otherwise noted.

All exposed edges shall be chamfered ¾ inch.

Junction box shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering junction box must fit between the inside face of walls and shall not enter through the corners.

The cost of furnishing and installing the manhole steps shall be incidental to the contract unit price per pound for "Reinforcing Steel".



ELEVATION VIEW

PIPE DISPLACEMENT REDUCTIONS

	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 ¼	0.04
	18	2 ½	0.06
	24	3	0.11
	30	3 ½	0.16
	36	4	0.23
	42	4 ½	0.31
	48	5	0.40
	54	5 ½	0.50

ESTIMATED QUANTITIES

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

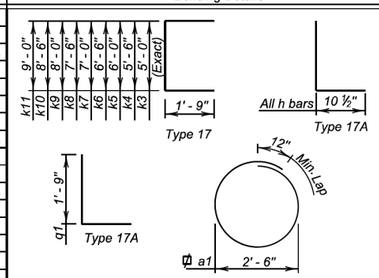
⚹ *Reduce total quantities of concrete by the amount of concrete displaced by the pipe(s). Quantity shown includes reduction for a 24-inch diameter manhole opening. The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard.*

May 9, 2020

Published Date: 2026	SDDOT	5'X 5' JUNCTION BOX	PLATE NUMBER 671.01
			Sheet 1 of 3

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type	Bending Details
H = 4' - 0"	⌀ a1	1	6	9' - 0"	T3	
	▼ a2	4	–	———	—	
	h3	28	4	5' - 9"	17A	
	k3	48	4	8' - 6"	17	
	m1	18	5	6' - 9"	Str.	
	n1	18	5	5' - 9"	Str.	
	p1	52	4	5' - 0"	Str.	
	q1	8	4	3' - 6"	17A	
H = 4' - 6"	⌀ a1	1	6	9' - 0"	T3	
	▼ a2	4	–	———	—	
	h4	28	4	6' - 3"	17A	
	k4	48	4	9' - 0"	17	
	m1	18	5	6' - 9"	Str.	
	n1	18	5	5' - 9"	Str.	
	p1	52	4	5' - 0"	Str.	
	q1	8	4	3' - 6"	17A	
H = 5' - 0"	⌀ a1	1	6	9' - 0"	T3	
	▼ a2	5	–	———	—	
	h5	28	4	6' - 9"	17A	
	k5	48	4	9' - 6"	17	
	m1	18	5	6' - 9"	Str.	
	n1	18	5	5' - 9"	Str.	
	p1	52	4	5' - 0"	Str.	
	q1	8	4	3' - 6"	17A	
H = 5' - 6"	⌀ a1	1	6	9' - 0"	T3	
	▼ a2	5	–	———	—	
	h6	28	4	7' - 3"	17A	
	k6	48	4	10' - 0"	17	
	m1	18	5	6' - 9"	Str.	
	n1	18	5	5' - 9"	Str.	
	p1	60	4	5' - 0"	Str.	
	q1	12	4	3' - 6"	17A	
H = 6' - 0"	⌀ a1	1	6	9' - 0"	T3	
	▼ a2	6	–	———	—	
	h7	28	4	7' - 9"	17A	
	k7	48	4	10' - 6"	17	
	m1	18	5	6' - 9"	Str.	
	n1	18	5	5' - 9"	Str.	
	p1	60	4	5' - 0"	Str.	
	q1	12	4	3' - 6"	17A	
H = 6' - 6"	⌀ a1	1	6	9' - 0"	T3	
	▼ a2	6	–	———	—	
	h8	28	4	8' - 3"	17A	
	k8	48	4	11' - 0"	17	
	m1	18	5	6' - 9"	Str.	
	n1	18	5	5' - 9"	Str.	
	p1	68	4	5' - 0"	Str.	
	q1	16	4	3' - 6"	17A	
H = 7' - 0"	⌀ a1	1	6	9' - 0"	T3	
	▼ a2	7	–	———	—	
	h9	28	4	8' - 9"	17A	
	k9	48	4	11' - 6"	17	
	m1	18	5	6' - 9"	Str.	
	n1	18	5	5' - 9"	Str.	
	p1	68	4	5' - 0"	Str.	
	q1	16	4	3' - 6"	17A	
H = 7' - 6"	⌀ a1	1	6	9' - 0"	T3	
	▼ a2	7	–	———	—	
	h10	28	4	9' - 3"	17A	
	k10	48	4	12' - 0"	17	
	m1	18	5	6' - 9"	Str.	
	n1	18	5	5' - 9"	Str.	
	p1	68	4	5' - 0"	Str.	
	q1	16	4	3' - 6"	17A	
H = 8' - 0"	⌀ a1	1	6	9' - 0"	T3	
	▼ a2	8	–	———	—	
	h11	28	4	9' - 9"	17A	
	k11	48	4	12' - 6"	17	
	m1	18	5	6' - 9"	Str.	
	n1	18	5	5' - 9"	Str.	
	p1	76	4	5' - 0"	Str.	
	q1	20	4	3' - 6"	17A	



LEGEND FOR PLACING RE-STEEL

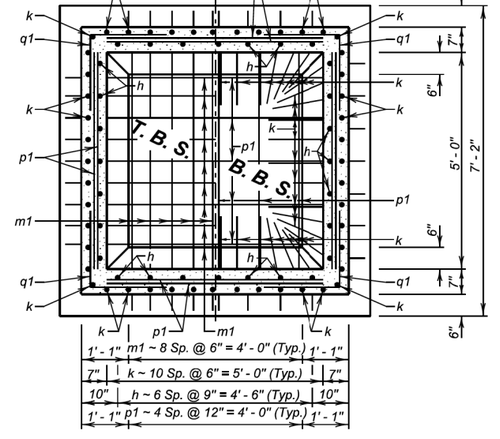
T. B. S. - Top of Bottom Slab

B. B. S. - Bottom of Bottom Slab

▼ *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.



SEC. A - A

May 9, 2020

Published Date: 2026	SDDOT	5'X 5' JUNCTION BOX	PLATE NUMBER 671.01
			Sheet 2 of 3

Plotted From - CBOBZIEN

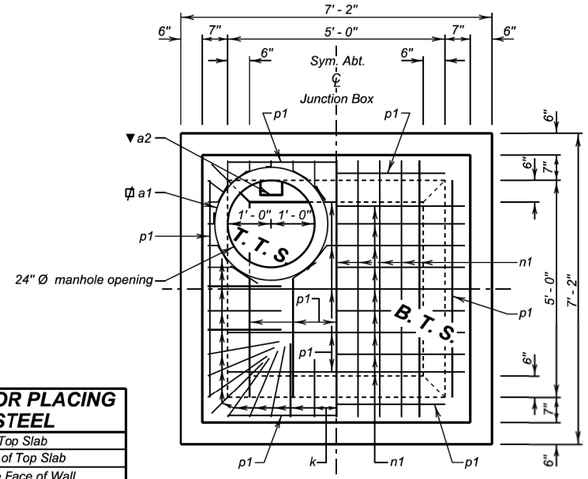
File - ...\B50_Standard_Plates.dgn

Standard Plates

Revised: 06/18/2025

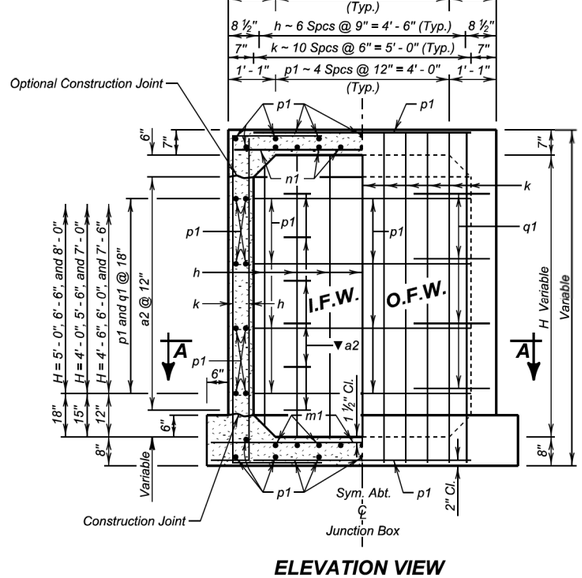
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B51	B54

Plotting Date: 06-18-2025



PLAN VIEW

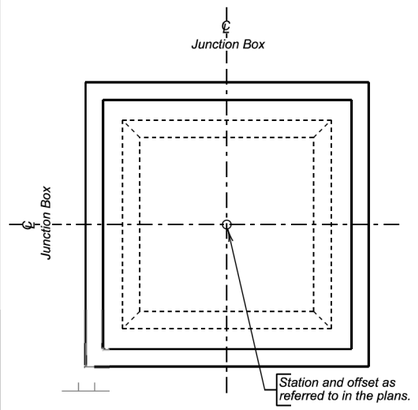
LEGEND FOR PLACING RE-STEEL
T. T. S. - Top of Top Slab
B. T. S. - Bottom of Top Slab
O. F. W. - Outside Face of Wall
I. F. W. - Inside Face of Wall



ELEVATION VIEW

May 9, 2020

Published Date: 2026	SDDOT	5'X 5' JUNCTION BOX	PLATE NUMBER 671.01
			Sheet 3 of 3



PLAN VIEW

SPECIFICATIONS

Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES

Design Live Load: HL-93. 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 and minimum fill over the junction box of 2 feet.

Reinforcing steel shall conform to ASTM A615 Grade 60. Cut and bend reinforcing steel as required to place pipe(s) through junction box wall.

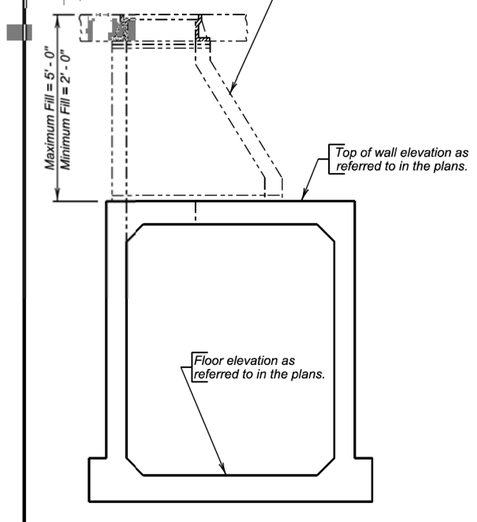
Junction box may be precast. If precast junction box details differ from this standard plate, submit a checked design done by a SD registered P.E. and shop plans to the Office of Bridge Design for approval.

Use 1 inch clear cover on all reinforcing steel unless otherwise noted.

All exposed edges shall be chamfered ¾ inch.

Junction box shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering junction box must fit between the inside face of walls and shall not enter through the corners.

The cost of furnishing and installing the manhole steps shall be incidental to the contract unit price per pound for "Reinforcing Steel".



ELEVATION VIEW

PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 ¼	0.04
	18	2 ½	0.06
	24	3	0.11
	30	3 ½	0.16
	36	4	0.23
	42	4 ½	0.31
	48	5	0.40
	54	5 ½	0.50

ESTIMATED QUANTITIES		
ITEM	✳Class M6 Concrete	Reinforcing Steel
UNIT	Cu. Yd.	Lb.
H = 4' - 0"	5.53	1186
H = 4' - 6"	5.82	1215
H = 5' - 0"	6.10	1286
H = 5' - 6"	6.39	1316
H = 6' - 0"	6.67	1345
H = 6' - 6"	6.96	1416
H = 7' - 0"	7.24	1445
H = 7' - 6"	7.52	1475
H = 8' - 0"	7.81	1545

✳Reduce total quantities of concrete by the amount of concrete displaced by the pipe(s). Quantity shown includes reduction for a 24-inch diameter manhole opening. The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard.

May 9, 2020

Published Date: 2026	SDDOT	6'X 6' JUNCTION BOX	PLATE NUMBER 671.02
			Sheet 1 of 3

Standard Plates

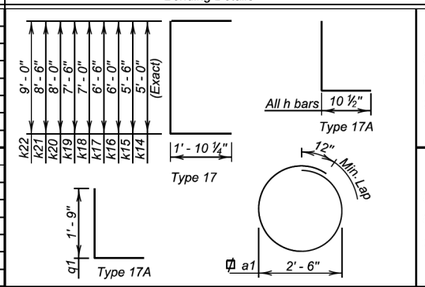
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B52	B54

Plotting Date: 06-18-2025

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
H = 4' - 0"	⌀ a1	1	6	9' - 0"	T3
	▼ a2	4	–	———	—
	h14	32	4	5' - 9"	17A
	k14	56	4	8' - 9"	17
	m2	22	6	7' - 9"	Str.
	n2	22	6	6' - 9"	Str.
	p2	56	4	6' - 0"	Str.
	q1	8	4	3' - 6"	17A
H = 4' - 6"	⌀ a1	1	6	9' - 0"	T3
	▼ a2	4	–	———	—
	h15	32	4	6' - 3"	17A
	k15	56	4	9' - 3"	17
	m2	22	6	7' - 9"	Str.
	n2	22	6	6' - 9"	Str.
	p2	56	4	6' - 0"	Str.
	q1	8	4	3' - 6"	17A
H = 5' - 0"	⌀ a1	1	6	9' - 0"	T3
	▼ a2	5	–	———	—
	h16	32	4	6' - 9"	17A
	k16	56	4	9' - 9"	17
	m2	22	6	7' - 9"	Str.
	n2	22	6	6' - 9"	Str.
	p2	64	4	6' - 0"	Str.
	q1	12	4	3' - 6"	17A
H = 5' - 6"	⌀ a1	1	6	9' - 0"	T3
	▼ a2	5	–	———	—
	h17	32	4	7' - 3"	17A
	k17	56	4	10' - 3"	17
	m2	22	6	7' - 9"	Str.
	n2	22	6	6' - 9"	Str.
	p2	64	4	6' - 0"	Str.
	q1	12	4	3' - 6"	17A
H = 6' - 0"	⌀ a1	1	6	9' - 0"	T3
	▼ a2	6	–	———	—
	h18	32	4	7' - 9"	17A
	k18	56	4	10' - 9"	17
	m2	22	6	7' - 9"	Str.
	n2	22	6	6' - 9"	Str.
	p2	64	4	6' - 0"	Str.
	q1	12	4	3' - 6"	17A
H = 6' - 6"	⌀ a1	1	6	9' - 0"	T3
	▼ a2	6	–	———	—
	h19	32	4	8' - 3"	17A
	k19	56	4	11' - 3"	17
	m2	22	6	7' - 9"	Str.
	n2	22	6	6' - 9"	Str.
	p2	72	4	6' - 0"	Str.
	q1	16	4	3' - 6"	17A
H = 7' - 0"	⌀ a1	1	6	9' - 0"	T3
	▼ a2	7	–	———	—
	h20	32	4	8' - 9"	17A
	k20	56	4	11' - 9"	17
	m2	22	6	7' - 9"	Str.
	n2	22	6	6' - 9"	Str.
	p2	72	4	6' - 0"	Str.
	q1	16	4	3' - 6"	17A

Bending Details



	Mk.	No.	Size	Length	Type
H = 7' - 6"	⌀ a1	1	6	9' - 0"	T3
	▼ a2	7	–	———	—
	h21	32	4	9' - 3"	17A
	k21	56	4	12' - 3"	17
	m2	22	6	7' - 9"	Str.
	n2	22	6	6' - 9"	Str.
	p2	72	4	6' - 0"	Str.
	q1	16	4	3' - 6"	17A
H = 8' - 0"	⌀ a1	1	6	9' - 0"	T3
	▼ a2	8	–	———	—
	h22	32	4	9' - 9"	17A
	k22	56	4	12' - 9"	17
	m2	22	6	7' - 9"	Str.
	n2	22	6	6' - 9"	Str.
	p2	80	4	6' - 0"	Str.
	q1	20	4	3' - 6"	17A

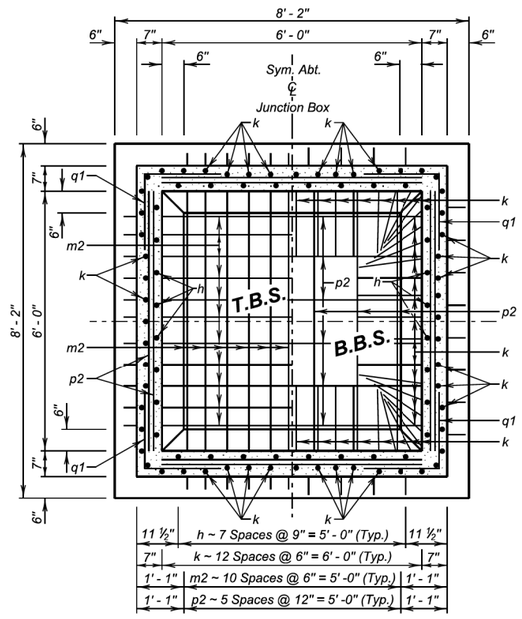
LEGEND FOR PLACING RE-STEEL

T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab

▼ Cast iron Manhole Steps (R - 1980 - C) from Neenah Foundry or equivalant.

⌀ Locate in center of top slab with 3" clearance at manhole opening.

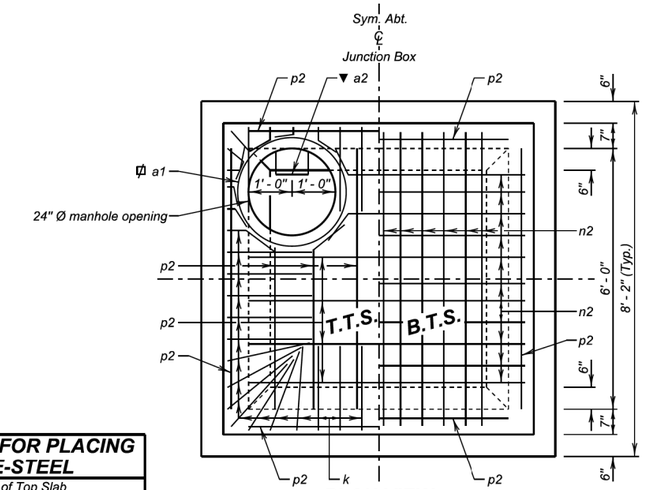
All dimensions are out to out of bars.



SEC. A - A

May 9, 2020

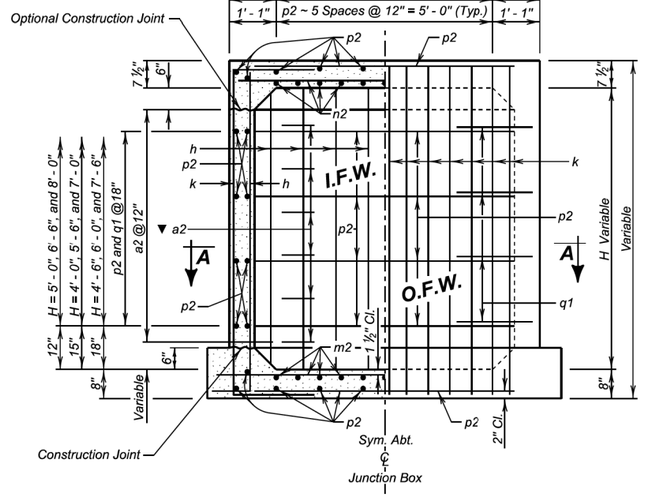
Published Date: 2026	SDDOT	6'X 6' JUNCTION BOX	PLATE NUMBER 671.02
			Sheet 2 of 3



PLAN VIEW

LEGEND FOR PLACING RE-STEEL

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



ELEVATION VIEW

May 9, 2020

Published Date: 2026	SDDOT	6'X 6' JUNCTION BOX	PLATE NUMBER 671.02
			Sheet 3 of 3

Plotted From - CBOBZIEN

File - ...\B52_Standard_Plates.dgn

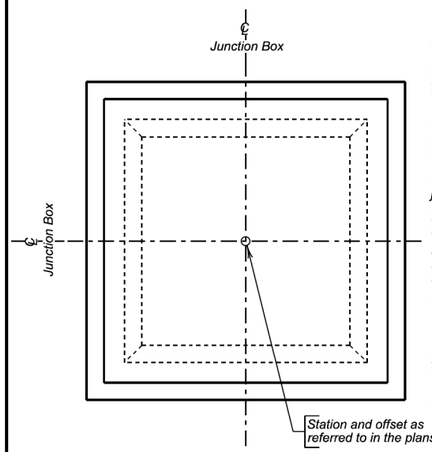
Standard Plates

FOR BIDDING PURPOSES ONLY

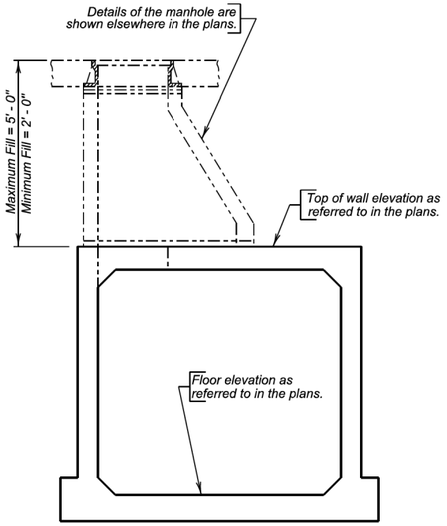
Revised: 06/18/2025

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B53	B54

Plotting Date: 06-18-2025



PLAN VIEW



ELEVATION VIEW

SPECIFICATIONS

Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition.

Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, Current Edition and required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

GENERAL NOTES

Design Live Load: HL-93. 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 and minimum fill over the junction box of 2 feet.

Reinforcing steel shall conform to ASTM A615 Grade 60. Cut and bend reinforcing steel as required to place pipe(s) through junction box wall.

Junction box may be precast. If precast junction box details differ from this standard plate, submit a checked design done by a SD registered P.E. and shop plans to the Office of Bridge Design for approval.

Use 1 inch clear cover on all reinforcing steel unless otherwise noted.

All exposed edges shall be chamfered ¾ inch.

Junction box shown may be modified by the addition or omission of connecting pipes as noted elsewhere in the plans. All pipes entering junction box must fit between the inside face of walls and shall not enter through the corners.

The cost of furnishing and installing the manhole steps shall be incidental to the contract unit price per pound for "Reinforcing Steel".

PIPE DISPLACEMENT REDUCTIONS

	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 ¼	0.04
	18	2 ½	0.06
	24	3	0.11
	30	3 ½	0.16
	36	4	0.23
	42	4 ½	0.31
	48	5	0.40
	54	5 ½	0.50

ESTIMATED QUANTITIES

ITEM	✳Class M6 Concrete	Reinforcing Steel
UNIT	Cu. Yd.	Lb.
H = 4' - 0"	7.09	1506
H = 4' - 6"	7.42	1541
H = 5' - 0"	7.75	1622
H = 5' - 6"	8.08	1657
H = 6' - 0"	8.40	1692
H = 6' - 6"	8.73	1773
H = 7' - 0"	9.06	1808
H = 7' - 6"	9.39	1843
H = 8' - 0"	9.71	1924

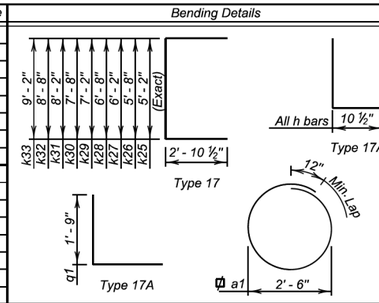
✳Reduce total quantities of concrete by the amount of concrete displaced by the pipe(s). Quantity shown includes reduction for a 24-inch diameter manhole opening. The total quantity of concrete shall be computed to the nearest hundredth of a cubic yard.

May 9, 2020

Published Date: 2026	SDDOT	7'X 7' JUNCTION BOX	PLATE NUMBER 671.03
			Sheet 1 of 3

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
H = 4' - 0"	℄ a1	1	6	9' - 0"	T3
	▼ a2	4	–	———	—
	h25	40	4	5' - 9"	17A
	k25	64	4	9' - 3"	17
	m3	26	6	8' - 9"	Str.
	n3	26	6	7' - 9"	Str.
	p3	60	4	7' - 0"	Str.
	q3	8	4	3' - 6"	17A
H = 4' - 6"	℄ a1	1	6	9' - 0"	T3
	▼ a2	4	–	———	—
	h26	40	4	6' - 3"	17A
	k26	64	4	9' - 9"	17
	m3	26	6	8' - 9"	Str.
	n3	26	6	7' - 9"	Str.
	p3	60	4	7' - 0"	Str.
	q1	8	4	3' - 6"	17A
H = 5' - 0"	℄ a1	1	6	9' - 0"	T3
	▼ a2	5	–	———	—
	h27	40	4	6' - 9"	17A
	k27	64	4	10' - 3"	17
	m3	26	6	8' - 9"	Str.
	n3	26	6	7' - 9"	Str.
	p3	68	4	7' - 0"	Str.
	q1	12	4	3' - 6"	17A
H = 5' - 6"	℄ a1	1	6	9' - 0"	T3
	▼ a2	5	–	———	—
	h28	40	4	7' - 3"	17A
	k28	64	4	10' - 9"	17
	m3	26	6	8' - 9"	Str.
	n3	26	6	7' - 9"	Str.
	p3	68	4	7' - 0"	Str.
	q1	12	4	3' - 6"	17A
H = 6' - 0"	℄ a1	1	6	9' - 0"	T3
	▼ a2	6	–	———	—
	h29	40	4	7' - 9"	17A
	k29	64	4	11' - 3"	17
	m3	26	6	8' - 9"	Str.
	n3	26	6	7' - 9"	Str.
	p3	68	4	7' - 0"	Str.
	q1	12	4	3' - 6"	17A
H = 6' - 6"	℄ a1	1	6	9' - 0"	T3
	▼ a2	6	–	———	—
	h30	40	4	8' - 3"	17A
	k30	64	4	11' - 9"	17
	m3	26	6	8' - 9"	Str.
	n3	26	6	7' - 9"	Str.
	p3	76	4	7' - 0"	Str.
	q1	16	4	3' - 6"	17A
H = 7' - 0"	℄ a1	1	6	9' - 0"	T3
	▼ a2	7	–	———	—
	h31	40	4	8' - 9"	17A
	k31	64	4	12' - 3"	17
	m3	26	6	8' - 9"	Str.
	n3	26	6	7' - 9"	Str.
	p3	76	4	7' - 0"	Str.
	q1	16	4	3' - 6"	17A
H = 7' - 6"	℄ a1	1	6	9' - 0"	T3
	▼ a2	7	–	———	—
	h32	40	4	9' - 3"	17A
	k32	64	4	12' - 9"	17
	m3	26	6	8' - 9"	Str.
	n3	26	6	7' - 9"	Str.
	p3	76	4	7' - 0"	Str.
	q1	16	4	3' - 6"	17A
H = 8' - 0"	℄ a1	1	6	9' - 0"	T3
	▼ a2	8	–	———	—
	h33	40	4	9' - 9"	17A
	k33	64	4	13' - 3"	17
	m3	26	6	8' - 9"	Str.
	n3	26	6	7' - 9"	Str.
	p3	84	4	7' - 0"	Str.
	q1	20	4	3' - 6"	17A



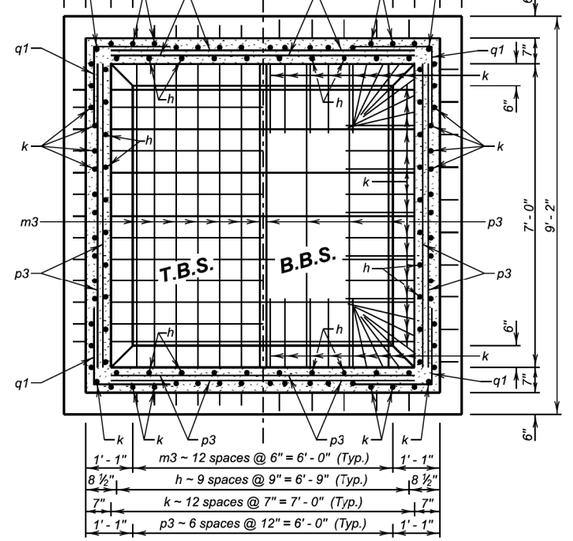
LEGEND FOR PLACING RE-STEEL

T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab

▼ 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.



SEC. A - A

May 9, 2020

Published Date: 2026	SDDOT	7'X 7' JUNCTION BOX	PLATE NUMBER 671.03
			Sheet 2 of 3

Plotted From - CBOBZIEN

File - ...\B53_Standard_Plates.dgn

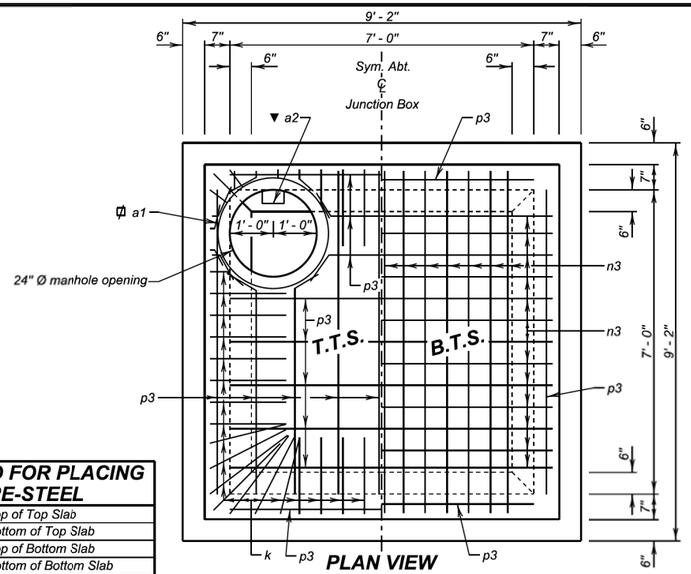
Standard Plates

FOR BIDDING PURPOSES ONLY

Revised: 06/18/2025

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6542(04)	B54	B54

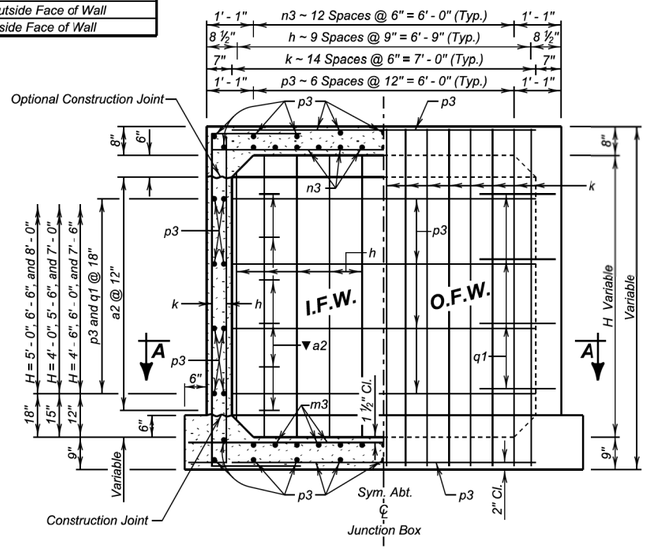
Plotting Date: 06-18-2025



PLAN VIEW

LEGEND FOR PLACING RE-STEEL

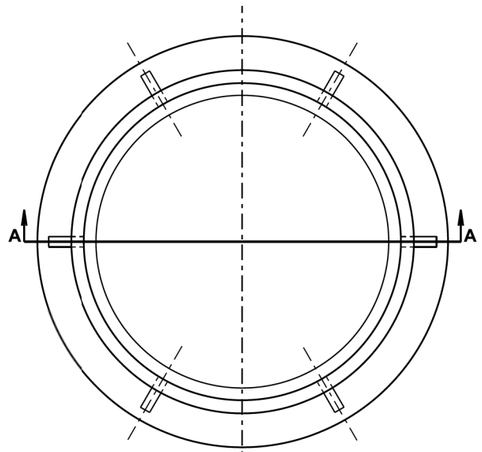
T. T. S.	Top of Top Slab
B. T. S.	Bottom of Top Slab
T. B. S.	Top of Bottom Slab
B. B. S.	Bottom of Bottom Slab
O. F. W.	Outside Face of Wall
I. F. W.	Inside Face of Wall



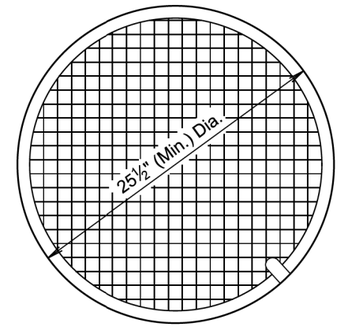
ELEVATION VIEW

May 9, 2020

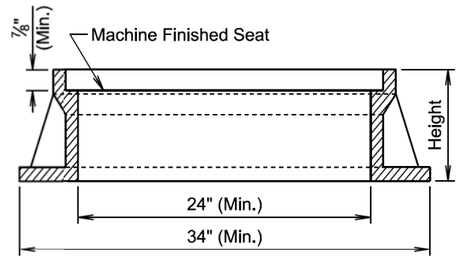
Published Date: 2026	SDDOT	7'X 7' JUNCTION BOX	PLATE NUMBER 671.03
			Sheet 3 of 3



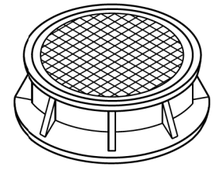
PLAN VIEW
(Frame)



PLAN VIEW
(Lid)



SECTION A-A



ISOMETRIC VIEW

TYPE	HEIGHT (Inches)
A7	7
A8	8
A9	9
A10	10

GENERAL NOTES:

The product dimensions may vary from those shown on the standard plate depending on the manufacturer. Any variation in dimensions will be approved by the Engineer and the type A manhole frame and lid will be from a manufacturer on the approved products lists.

Design load for the grate will meet the requirements of AASHTO HL-93.

Geometric pattern on top of lid other than that shown will be approved by the Engineer.

June 1, 2022

Published Date: 2026	SDDOT	TYPE A MANHOLE FRAME AND LID	PLATE NUMBER 671.10
			Sheet 1 of 1

Plotted From - CBOBZIEN

File - ...\B54_Standard_Plates.dgn