

# Section B: Grading Plans

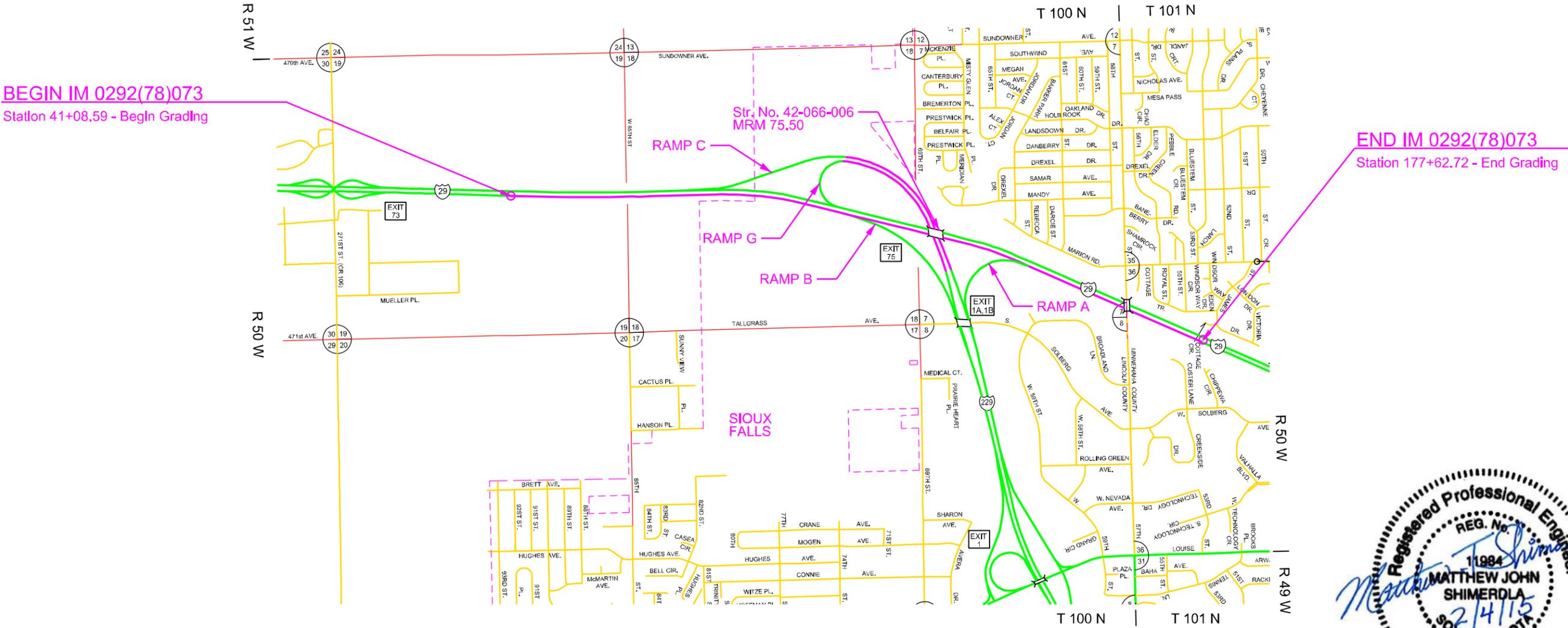
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B1	TOTAL SHEETS B42
-----------------------	---------------------------	-------------	---------------------

Plotting Date: 1/20/2015

### INDEX OF SHEETS

- B1 General Layout with Index
- B2-B6 Estimate with General Notes and Tables
- B7 Table of Pipe Quantities
- B8-B9 Borrow Pit Information Sheets
- B10-B11 Typical Sections
- B12-B13 Horizontal Alignment Data
- B14 Control Data
- B15 Existing Topography Symbology and Legend
- B16-B36 Grading Plan & Profile Sheets
- B37-B40 Standard Plates



8181 East Tufts Ave. 303-694-2770 (Phone)  
 Denver, CO 80237 303-694-3946 (Fax)

Plot Scale - 1:200

Plotted From - michelle miller

Plot Name -

File - ...rdppj\LINCO511\title5.dgn

**SECTION B ESTIMATE OF QUANTITIES**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	3.434	Mile
009E3245	Final Cross Section Survey	3.017	Mile
009E3250	Miscellaneous Staking	3.017	Mile
009E3280	Slope Staking	3.017	Mile
009E3290	Structure Staking	1	Each
009E3300	Three Man Survey Crew	40.0	Hour
100E0100	Clearing	Lump Sum	LS
110E0500	Remove Pipe Culvert	4	Ft
110E0700	Remove 3 Cable Guardrail	2,242	Ft
110E0730	Remove Beam Guardrail	426.0	Ft
110E0740	Remove 3 Cable Guardrail Anchor Assembly	10	Each
110E1100	Remove Concrete Pavement	16,489.0	SqYd
110E7000	Remove Crossover Closure for Reset	179	Ft
110E7510	Remove Pipe End Section for Reset	9	Each
120E0010	Unclassified Excavation	84,703	CuYd
120E0400	Select Subgrade Topping	46,094	CuYd
120E0500	Option Borrow Excavation	83,445	CuYd
120E1000	Muck Excavation	5,881	CuYd
120E6100	Water for Embankment	1,421.0	MGal
270E0020	Salvage and Stockpile Asphalt Mix Material	1,488.9	Ton
270E0040	Salvage and Stockpile Asphalt Mix and Granular Base Material	15,027.6	Ton
450E0102	12" RCP Class 2, Furnish	130	Ft
450E0110	12" RCP, Install	130	Ft
450E0142	24" RCP Class 2, Furnish	550	Ft
450E0150	24" RCP, Install	550	Ft
450E0162	30" RCP Class 2, Furnish	66	Ft
450E0170	30" RCP, Install	66	Ft
450E0232	66" RCP Class 2, Furnish	80	Ft
450E0240	66" RCP, Install	80	Ft
450E0242	72" RCP Class 2, Furnish	16	Ft
450E0250	72" RCP, Install	16	Ft
450E0400	12" RCP Bend, Furnish	1	Each
450E0401	12" RCP Bend, Install	1	Each
450E0448	66" RCP Bend, Furnish	2	Each
450E0449	66" RCP Bend, Install	2	Each
450E2200	24" RCP Sloped End, Furnish	4	Each
450E2201	24" RCP Sloped End, Install	4	Each
450E3012	24" RCP Arch Class 2, Furnish	300	Ft
450E3020	24" RCP Arch, Install	300	Ft
450E3032	36" RCP Arch Class 2, Furnish	392	Ft
450E3040	36" RCP Arch, Install	392	Ft
450E4600	24" RCP Arch Sloped End, Furnish	2	Each
450E4601	24" RCP Arch Sloped End, Install	2	Each
450E4606	36" RCP Arch Sloped End, Furnish	2	Each
450E4607	36" RCP Arch Sloped End, Install	2	Each
450E9001	Reset Pipe End Section	9	Each
462E0200	Controlled Density Fill	1.4	CuYd
600E0300	Type III Field Laboratory	1	Each
629E9010	Interim Crossover Closure	448	Ft
629E9050	Reset Crossover Closure	179	Ft
630E1010	Straight Class A W Beam Guardrail with Wood Posts	450.0	Ft
630E1200	Straight Class A W Beam Rail	275.0	Ft
630E2020	W Beam Guardrail Tangent End Terminal	2	Each
671E1042	42" Manhole	1	Each
671E6007	Type A7 Manhole Frame and Lid	1	Each

**GRADING OPERATIONS**

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

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

Special ditch grades and other sections of the roadway different than the typical sections shall be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer shall contact the Designer for the proposed change.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets shall be cut with a 10-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

On superelevated curves, the grade referred to on the profile is the centerline grade elevation prior to calculating superelevation.

A copy of the soils profile is available for review at the Mitchell Region and Sioux Falls Area offices.

**RESTRICTED WORK AREA**

The Contractor's work limits shall be confined to the area within the existing right-of-way.

**TYPE III FIELD LABORATORY**

The lab shall be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection shall be provided with a multi-port wireless router. The internet connection shall be a minimum speed of 512 Kb unless limited by job location and approved by the DOT. Prior to installing the wireless router the Contractor shall 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.

The Contractor shall submit a copy of each monthly bill for calls charged to this phone at the end of each month. The Project Engineer will then audit the bills to ensure all calls are legitimate and then initiate a Construction Change Order (CCO) to reimburse the Contractor for the actual phone calls made, including local and long distance calls. Reimbursement will not be made for fees associated with the purchase, installation, disconnection, monthly line charges, and incidentals involved in the installation, maintenance, and disconnection of the phone (including attachments). These items shall be incidental to the contract unit price per each for "Type III Field Laboratory".

**FOR BIDDING PURPOSES ONLY**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B2	B42

Revised: 02-19-2015 (MRK)

**UTILITIES**

The Contractor shall 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 shall 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.

**CLEARING**

Before clearing activities begin, the Contractor shall contact the Engineer to determine the limits of clearing for the project. If the trees or shrubs that are supposed to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor shall replace them with the same size and type at the Contractor's expense.

**TRAFFIC DIVERSION**

The traffic diversion constructed for this project shall be left in place.

**RAMP DETOURS**

Ramp detours shall be constructed according to the layout provided in these plans at the following locations:

- Exit 75: I29 SB Off Ramp to I229 NB (Ramp G)
- Exit 75: I29 SB On Ramp from I229 SB (Ramp C)

Existing drainage impacted by the ramp detours shall be addressed. The Contractor shall be responsible for sizing the pipes if pipes are necessary to drain water under the ramp detours. The Contractor shall provide sloped end sections for all 30-inch and smaller diameter pipe used in ramp detours. If the Contractor provides 36-inch or larger diameter pipe in the ramp detours, then the pipe shall be extended to a minimum of 30 feet from the nearest edge of traveled lane or farther due to higher fill sections. All costs for pipe, pipe end sections, and other costs associated with the temporary modification of existing drainage shall be incidental to the various contract items needed to construct the ramp detours.

Material quantities necessary for constructing the ramp detours are as specified in Section F - Surfacing Plans.

All ramp detours constructed for this project shall be left in place. The Contractor shall provide Interim Crossover Closures for each ramp detour.

**SHRINKAGE FACTOR:**

Name of Road	Station to	Station	% Shrink Embankment
I-29	41+09	113+60	+40%
I-29 NB Diversion	13+65	28+40	+25%
I-29	128+29	177+63	+30%
Ramp C	40+00	64+00	+25%

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B3	B42



**TABLE OF EXCAVATION QUANTITIES BY BALANCES**

Name of Road	Station to	Station	Excavation (CuYd)	*** Undercut for Select Topping (CuYd)	* Muck Exc. (CuYd)	* Option Borrow Exc. (CuYd)	Total Excavation (CuYd)	Out-of-Balance Exc. (CuYd)	** Out-of-Balance Waste (CuYd)	** Dead Haul (CuYdSta)	** Option Borrow Haul (CuYdSta)	** Haul (CuYdSta)	* Select Subgrade Topping (CuYd)
I29 NB	41+09	48+44	1303	1147	410	0	2860	0	0	0	0	2003	1962
I29 NB	48+44	108+11	5147	9820	5471	9888	30326	0	0	1,018,464	181386	0	18459
I29 NB	109+90	113+60	288	473	0	3626	4387	0	0	221,186	3354	0	1208
I29 NB Diversion	13+65	17+33	7806	0	0	0	7806	0	0	0	0	10857	0
I29 NB Diversion	17+33	18+27	2780	0	0	0	2780	0	0	0	0	703	0
I29 NB Diversion	18+27	20+37	1752	0	0	23626	25378	0	0	1,346,682	6769	0	0
I29 NB Diversion	21+80	28+40	601	0	0	29603	30204	5682	0	1,628,165	28067	62502	0
I29 NB	128+29	134+00	809	688	0	8898	10395	2207	0	0	22417	79452	1945
I29 NB	134+80	152+23	2801	3436	0	0	6237	0	0	489,390	0	20756	5187
I29 NB	152+23	177+63	3644	4715	0	0	8359	0	2207	0	0	16965	7749
I229 Ramp C	42+00	64+00	4609	8215	0	0	12824	0	5978	0	0	33414	9584
Crossover 1	Ramp G	Ramp C	40	0	0	0	40	208	0	0	0	416	0
Crossover 2	Ramp C	Ramp G	68	0	0	0	68	88	0	0	0	176	0
Crossover 3	74+73	79+89	59	0	0	197	256	0	0	19,109	246	0	0
Crossover 4	101+22	106+23	41	0	0	107	148	0	0	7,490	134	0	0
Totals:			31,748	28,494	5,881	75,945	142,068	8,185	8,185	4,730,486	242,373	227,244	46,094

\* The quantities for these items are in the Estimate of Quantities under their respective bid items.

\*\* The quantities for these items are for information only.

\*\*\* Undercutting for Select Topping shall be mixed with salvaged surfacing material and used as "Select Subgrade Topping" material. Undercutting for Select Topping shall be paid for once under "Unclassified Excavation".

**TABLE OF UNCLASSIFIED EXCAVATION**

Excavation	31,748
Undercutting for Select Topping	28,494
Topsoil	9,954
Salvaged Asphalt Mix Material (from Section F)	788
Salvaged Asphalt Mix and Granular Base Material (from Section F)	7,951
Waste Material (as directed by the Engineer, from Section F)	5,768
<b>Total</b>	<b>84,703</b>

project, the Unstable Material Excavation quantity shall be added to the Excavation quantity to compute the Unclassified Excavation quantity.

Out-of-Balance Excavation is material obtained from waste generated from excavation from other balances. The quantity of Out-of-Balance Excavation is included in the Excavation quantity in the balance where it is excavated and is paid for once as Unclassified Excavation.

The Topsoil quantity in the Table of Unclassified Excavation is an estimate. When finaling a project, the total quantity of field measured Topsoil shall 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.

As shown in the Table of Unclassified Excavation (above and in Section F), the estimated quantity of 7,951 cubic yards of Salvaged Asphalt Mix and Granular Base Material from fill sections shall be added to the Excavation quantity to determine the Unclassified Excavation quantity. When finaling a

project, the quantities of Salvaged Asphalt Mix and Granular Base Material from fill sections and off-alignment roadways or obliterated old roads will not be adjusted according to field measurements. The quantity of Salvaged Asphalt Mix and Granular Base Material from cut sections will not be added to the Excavation quantity as it is already in the cuts on the final cross sections.

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

The Excavation quantities from individual balances and the table above have been reduced by the volume of in place concrete pavement that will be removed.

When finaling a project, the estimated quantity of 2,153 cubic yards of Concrete Pavement removed from the Ramp C cut sections shall be subtracted from the Unclassified Excavation quantity for final payment. The quantity of Concrete Pavement from cut sections subtracted from the Unclassified Excavation quantity shall be plans quantity and will not be adjusted according to field measurements.

**PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY**

When plan quantities are used for payment, the Unclassified Excavation quantity shall be used for final payment. If final cross sections are taken in the field, add all of the items in the Table of Unclassified Excavation using the following procedures:

The Unstable Material Excavation quantity is included in the Excavation quantity listed in the Table of Unclassified Excavation. When finaling a

**TABLE OF OPTION BORROW EXCAVATION**

	(CuYd)
Option Borrow Excavation	75,945
Topsoil in Option Borrow Pits	7,500
<b>Total:</b>	<b>83,445</b>

**HAUL**

Included in the Table of Excavation Quantities by Balances are Dead Haul, Option Borrow Haul and Haul. They are not pay items and are for informational purposes only.

Dead Haul: Estimated quantity (CuYdSta) for moving borrow excavation material or option borrow excavation material from the borrow or option borrow site to the centerline mainline station listed in the Table of Borrow Pits.

Option Borrow Haul: Estimated quantity (CuYdSta) for moving option borrow excavation material from the centerline mainline station listed in the Table of Borrow Pits to the locations where it is needed throughout the earthwork balance.

Haul: Estimated quantity (CuYdSta) for moving unclassified excavation material to the locations where it is needed throughout the earthwork balance. The quantity also includes haul for moving Out-of-Balance Excavation material from an earthwork balance to another earthwork balance.

For Purpose of Extra Haul Computations:

Average Haul = Haul/Unclassified Excavation  
= 227,244/31,748 = 7.2 Sta.

Average Option Borrow Haul = (Option Borrow Haul+Dead Haul)/Total Option Borrow Excavation = (242,373 + 4,730,486)/75,945 = 65.5 Sta.

**UNDERCUTTING FOR SELECT SUBGRADE TOPPING**

After the existing asphalt is removed, the existing gravel cushion/ base course shall be removed and stockpiled. The removed PCCP will be crushed to a minus 2.5 inch size.

In all cut sections, the subgrade will be undercut to a depth of 1.5 feet. The undercut area will be scarified to a depth of 6 inches and recompacted by the Specified Density Method. The salvaged gravel cushion/ base course will be blended with the soil taken from the undercut and used as Select Subgrade Topping to backfill the undercut. The blended backfill material will consist of a mix of approximately 2 parts undercut soil to 1 part salvaged surfacing and gravel cushion/ base course.

In fill sections, the top 1.5 feet of subgrade will be constructed with the Select Subgrade Topping. To obtain the Select Subgrade Topping, the salvaged granular material will be mixed with new embankment material at the same 2:1 rate as the undercut backfill. Shallow embankment sections, i.e. fills less than 1.5 feet in height measure at the finished subgrade shoulder, will be undercut to ensure the upper 1.5 feet of subgrade is constructed with Select Subgrade Topping.

Payment to remove the undercut shall be paid for once as Unclassified Excavation.

All cost associated with the crushing, mixing, and placement of the Select Subgrade Topping material shall be included in the contract unit price per cubic yard for Select Subgrade Topping.

Select Subgrade Topping shall be compacted with sheepsfoot or other approved rollers. Compaction shall be as per 260.3.D. Additional test strips will be made as required by changes in soil types. Moisture requirements will be determined in accordance with SD 104, except the optimum and field moisture will be determined using material passing a 3/4-inch sieve. Density testing will be performed a minimum of 1 per half mile per lift. Moisture testing will be performed a minimum of 1 per day.

Select Topping will not be required on the NB Diversion or any other area that will not become part of the permanent roadway.

**UNSTABLE MATERIAL EXCAVATION**

The areas of unstable material excavation are drawn on the cross sections with a normal depth of 2 feet. The estimated quantity of 4,529 cubic yards of unstable material excavation shall be paid for at the contract unit price per cubic yard for "Unclassified Excavation".

All areas designated as Unstable shall be excavated. The unstable material excavated on this project shall be placed outside the subgrade shoulder in fill sections or stockpiled and used as topsoil.

Field measurement of unstable material excavation shall not be made. However, if there are additional areas of unstable material excavation other than what is shown in the plans, the Engineer shall direct removal of these areas and the additional areas will be measured according to the Engineer.

**TABLE OF UNSTABLE MATERIAL EXCAVATION**

Station	to Station	L/R	Depth (Ft)	Quantity (CuYd)
43+50	47+00	R	2	419
69+50	81+00	R	2	1,759
130+00	131+00	R	2	368
18+50	20+00 (Diversion)	R	2	1,506
21+50	23+00 (Diversion)	R	2	477
60+00	60+50 (I229 Ramp C)	R	2	0
61+00	62+00 (I229 Ramp C)	R	2	0
<b>Total:</b>				<b>4,529</b>

**MUCK EXCAVATION**

The areas of muck excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 5,881 cubic yards of muck excavation shall be paid for at the contract unit price per cubic yard for "Muck Excavation".

Muck excavation consists of the removal of highly organic and/or highly saturated material from the designated areas shown on the cross sections. Highly organic muck material shall not be used in the embankment but may be used as topsoil. Non-organic muck material may be used as embankment

**FOR BIDDING PURPOSES ONLY**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B4	B42

outside of the fill subgrade shoulder if it is properly handled and dried prior to placement in the embankment.

Field measurement of muck excavation will not be made unless the Engineer orders additional excavation, or when the Engineer determines, in accordance with Section 120.3.A.1 of the Specifications, that the classification of excavation be changed.

If the areas designated as muck excavation can be removed with similar equipment and procedures as used for unclassified excavation, the material shall be measured and paid for as "Unclassified Excavation".

**TABLE OF MUCK EXCAVATION**

Station	to Station	L/R	Depth (Ft)	Quantity (CuYd)
47+00	62+00	R	3	3,495
64+00	65+00	R	3	337
68+50	69+50	R	3	334
90+00	92+50	R	3	791
98+00	102+00	R	3	924
<b>Total:</b>				<b>5,881</b>

**SALVAGE AND STOCKPILE ASPHALT MIX MATERIAL and SALVAGE AND STOCKPILE ASPHALT MIX AND GRANULAR BASE MATERIAL**

An estimated 1,488.9 tons (787.7 Cubic Yards) of asphalt mix material shall be salvaged from the entire length of the existing highway and stockpiled at a site satisfactory to the Engineer.

An estimated 15,027.6 tons (7,951.1 Cubic Yards) of asphalt mix and granular base material shall be salvaged from the entire length of the existing highway (including ramps) and stockpiled at a site satisfactory to the Engineer.

The quantities of salvage asphalt mix material and salvage asphalt mix and granular base material may vary from the plans. No adjustment will be made to the contract unit prices for variations of the quantities of "Salvage and Stockpile Asphalt Mix Material" and "Salvage and Stockpile Asphalt Mix and Granular Base Material."

A table of estimated salvageable material quantities is located in Section F – Surfacing. These quantities were used to compute the unclassified excavation quantities.



**TABLE OF BORROW PITS**

Site	Station	L/R	Dead Haul Distance (Sta)	Option Borrow Exc. (CuYd)	Dead Haul (CuYdSta)
1	70+50	R	103	9,888	1,018,464
2	112+50	R	61	3,626	221,186
3	130+00	R	55	8,898	489,390
4	19+50 (Div)	R	57	23,626	1,346,682
5	25+00 (Div)	R	55	29,603	1,628,165
8	77+30	M	97	197	19,109
9	103+70	M	70	107	7,490
Totals:			75,945	4,730,486	

Stations in the above table are not pit locations, but stations where the borrow is interjected into the earthwork balance for haul calculations.

The quantities listed in the above table for Dead Haul are for information only. The Dead Haul and Option Borrow Excavation quantities are also included in the Table of Excavation Quantities by Balances.

**REMOVAL OF EXISTING CONCRETE PAVEMENT**

**I229 Ramp C STA. 42+00 to STA. 64+00**

**I229 Ramp G (based on Ramp C STA. 37+00 to 64+00)**

Existing asphalt concrete and/or existing asphalt concrete patch work that was placed above the existing concrete pavement is included in the quantity for "Remove Concrete Pavement". The Contractor shall dispose of the concrete pavement and asphalt concrete at a site approved by the Engineer.

The existing 9 inch dowel jointed P.C.C. Pavement on I229 Ramp C is typically 38 feet wide. The existing 9 inch dowel jointed P.C.C. Pavement on I229 Ramp G is typically 25 feet wide.

The existing contraction joints are spaced at approximately 46.5 feet.

The aggregate in the existing P.C.C. pavement is quartzite.

**TABLE OF CONCRETE PAVEMENT REMOVAL**

Station to	Station	L/R	Quantity (SqYd)
42+00	64+00 (Ramp C)	L&R	9289
37+00	64+00 (Ramp G)	70'R	7200
Total:			16,489

**CONTROLLED DENSITY FILL FOR PIPE**

Controlled density fill shall be a flowable mortar material. Materials shall be in accordance with the Specifications, except as modified below. The mix design shall be the following:

Material	Rate per Cubic Yard
Portland Cement Type I, II, III, or V	100 Lb
Fine Aggregate	2600 Lb
Coarse Aggregate	None
Water	60 Gal
Fly Ash, Type C	300 Lb

The fine aggregate shall be natural sand consisting of mineral aggregate particles conforming to the following gradation requirements:

Passing 3/8 Inch Sieve	100%
Passing No. 200 Sieve	0-10%

The mix design shown above is designed to produce a minimum compressive strength of 100 psi. The Engineer may allow adjustments to the proportion of water at the site to provide the necessary consistency of the mix.

Controlled density fill shall be contained within the required limits with sandbags or other methods approved by the Engineer.

The Contractor shall prevent the flotation or movement of the culvert due to the buoyant force from the controlled density fill until the controlled density fill hardens.

All costs for furnishing and installing the controlled density fill, including sandbags, labor, materials, equipment and incidentals necessary to complete the work shall be included in the contract unit price per cubic yard for "Controlled Density Fill."

Plans quantity will be the basis for payment unless otherwise ordered by the Engineer.

Station	Quantity (CuYd)	Fill Height (between pipes)
90+79	1.4	Haunch
Total:		1.4

**CONCRETE PIPE CONNECTIONS**

Pipe connections to existing pipes, manholes, junction boxes, and drop inlets shall be done by breaking a hole into the existing structure and inserting the pipe. A concrete collar shall 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 shall be made by placing a 2' wide by 6" thick M6 concrete collar around the outside of the connection. The concrete collar shall be reinforced with 6x6 W2.9 x W2.9 wire mesh.

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

**FOR BIDDING PURPOSES ONLY**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B5	B42

**TABLE OF MANHOLES**

Station	L/R	Frame and Lid Type	Size (Diameter)	Depth	Quantity (Each)
122+14	R	A7	42"	4 Ft	1

**TABLE OF SUPERELEVATION**

Station	to	Station	
I29 Mainline			
41+08.59		80+20.45	- Normal Crown Section
80+20.45		80+83.55	- Superelevation Transition
80+83.55		94+70.36	- 5729' Radius Curve Right 0.034'/ Superelevation Rate Point of Rotation 12' Right of NB Centerline
94+70.36		95+32.90	- Superelevation Transition
95+32.90		114+31	- Normal Crown Section
I29 NB Diversion			
13+60.00		27+39.06	Normal Crown Section
27+39.06		28+02.06	- Superelevation Transition
28+02.06		28+40.00	- 4300' Radius Curve Right 0.034'/ Superelevation Rate Point of Rotation at Diversion Centerline
I29 Mainline			
128+41.16		134+83.74	- 5760' Radius Curve Right 0.034'/ Superelevation Rate Point of Rotation 12' Right of NB Centerline
134+83.74		135+46.33	- Superelevation Transition
135+46.33		177+62.72	- Normal Crown Section
Ramp C			
37+00.00		56+51.97	- 1898' Radius Curve Right 0.06'/ Superelevation Rate Point of Rotation at Ramp Centerline
56+51.97		58+74.97	- Superelevation Transition
58+74.97		64+00.00	- Normal Crown Section



**TABLE OF GUARDRAIL**

**FOR BIDDING PURPOSES ONLY**

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B6	B42

Revised: 02-18-2015 (MRK)

Location	Remove 3 Cable Guardrail (Ft)	Remove 3 Cable Guardrail Anchor Assembly (Each)	Remove Beam Guardrail (Ft)	Remove Crossover Closure for Reset (Ft)	Straight Class A W Beam Guardrail with Wood Posts (Ft)	Straight Class A W Beam Rail (Ft)	W Beam Guardrail Tangent End Terminal (Each)	Interim Crossover Closure (Ft)	Reset Crossover Closure (Ft)	* Traffic Control Concrete Movable Barrier (Each)	* Concrete Barrier End Protection (Each)
Sta. 42+41.31-0' L to Sta. 43+46.92-0' L				106					106		
Sta. 43+92.92-0' L to Sta. 44+65.31-0' L				73					73		
Sta. 51+07.45-17' R to Sta. 54+70.86-18' R	364										
Sta. 51+15.96-69' R to Sta. 54+71.20-69' R	355										
Sta. 76+41.97-0' L to Sta. 78+95.40-0' L								253			
Sta. 101+11-73' L to Sta. 102+01-75' L	90	2									
Sta. 101+11-23' L to Sta. 102+01-19.3' L	90	2									
Sta. 102+10.24-0' L to Sta. 104+45.05-0' L								195			
Sta. 102+26-19' R to Sta. 105+91-19' R	365	2									
Sta. 102+35-75.5' R to Sta. 105+92-84' R	358	2									
Sta. 58+41 R to Sta. 63+48 R (I229 Ramp C)	320	1	224								
Sta. 58+98 L to Sta. 63+48 L (I229 Ramp C)	300	1	202								
Temporary Bridge Structure											
Begin Bridge Sta. 17+65 to 21+77-14' L					225	137.5	1				
Begin Bridge Sta. 17+65 to 21+77-16' R					225	137.5	1				
Sta. 38+35 to Sta. 62+15-2' L (I229 Ramp C)										191	2
Sta. 58+44 to Sta. 59+57-16' R (I229 Ramp C)										9	1
Sta. 61+31 to Sta. 62+06-22' L (I229 Ramp C)										6	1
Totals:	2,242	10	426	179	450	275	2	448	179	206	4

\* The quantities for these items are in the Section C – Traffic Control estimate of quantities under their respective bid items.

**TABLE OF CONSTRUCTION STAKING**

(See Special Provision for Contractor Staking)

Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Grade Staking				Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking (Each)	Final Cross Section Survey (Mile)
					Length (Mile)	Lane Factor	*Sets of Stakes	**Grade Staking Quantity (Mile)				
I29 (2 Lanes AC Pavement)	43+09	110+00	2	6,891	1.305	1	1	1.305	1.305	1.305	0	1.305
I29 (Transition from 2 Lanes Widening to 2 Lanes Diversion AC Pavement)	110+00	114+31	2	431	0.082	1	1	0.082	0.082	0.082	0	0.082
I29 NB Diversion (2 Lanes AC Pavement)	13+60	28+40	2	1,480	0.280	1	1	0.280	0.280	0.280	1	0.280
I29 (Transition from 2 Lanes Diversion to 2 Lanes Widening AC Pavement)	128+41	135+41	2	700	0.133	1	1	0.133	0.133	0.133	0	0.133
I29 (2 Lanes AC Pavement)	135+41	177+63	2	4,222	0.800	1	1	0.800	0.800	0.800	0	0.800
I229 Ramp C (2 Lanes PCCP)	42+00	64+00	2	2,200	0.417	1	2	0.834	0.417	0.417	0	0.417
Totals:								3.434	3.017	3.017	1	3.017

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

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

# TABLE OF PIPE QUANTITIES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA

PROJECT  
IM 0292(78)073

SHEET  
B7  
TOTAL SHEETS  
B42

Station-Offset (L/R)	Reinforced Concrete										Remove Pipe End Section for Reset	Reset Pipe End Section	RCP Pipe Bend	Remove Pipe Culvert	
	Circular					Arch		Arch Sloped End		Sloped End					
	12" CI 2	24" CI 2	30" CI 2	66" CI 2	72" CI 2	24" CI 2	36" CI 2	24"	36"	24"					
Ft	Ft	Ft	Ft	Ft	Ft	Ft	Each	Each	Each	Each	Each	Each	Each	Ft	
62+55 to 65+05 - 55'R		250								2					
69+51 - 88' R			22								1	1			
76+19 to 79+19-0' R		300								2					
90+79 - 112' R			22								1	1			
90+79 - 112' R			22								1	1			
102+00 to 105+00 - 0' R						300		2							
118+23.87 - 89' R	76										1	1	1		
122+13.54 - 80' R	54										1	1		4	
130+43 - 69' R					16						1	1			
157+06.17 - 94' R				40							1	1	1		
159+06.17 - 92' R				40							1	1	1		
59+02 to 60+66 - 130' R (Ramp C)											1	1			
59+53 - 30' L to 61+81 - 37' L (Ramp C)							164								
							228		2						
<b>Total:</b>	130	550	66	80	16	300	392	2	2	4	9	9	3	4	



# PIT INFORMATION SHEET

## BORROW

### Sheet 1 OF 2

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B8	TOTAL SHEETS B42
-----------------------	---------------------------	-------------	---------------------

Plotting Date: 01/22/2015

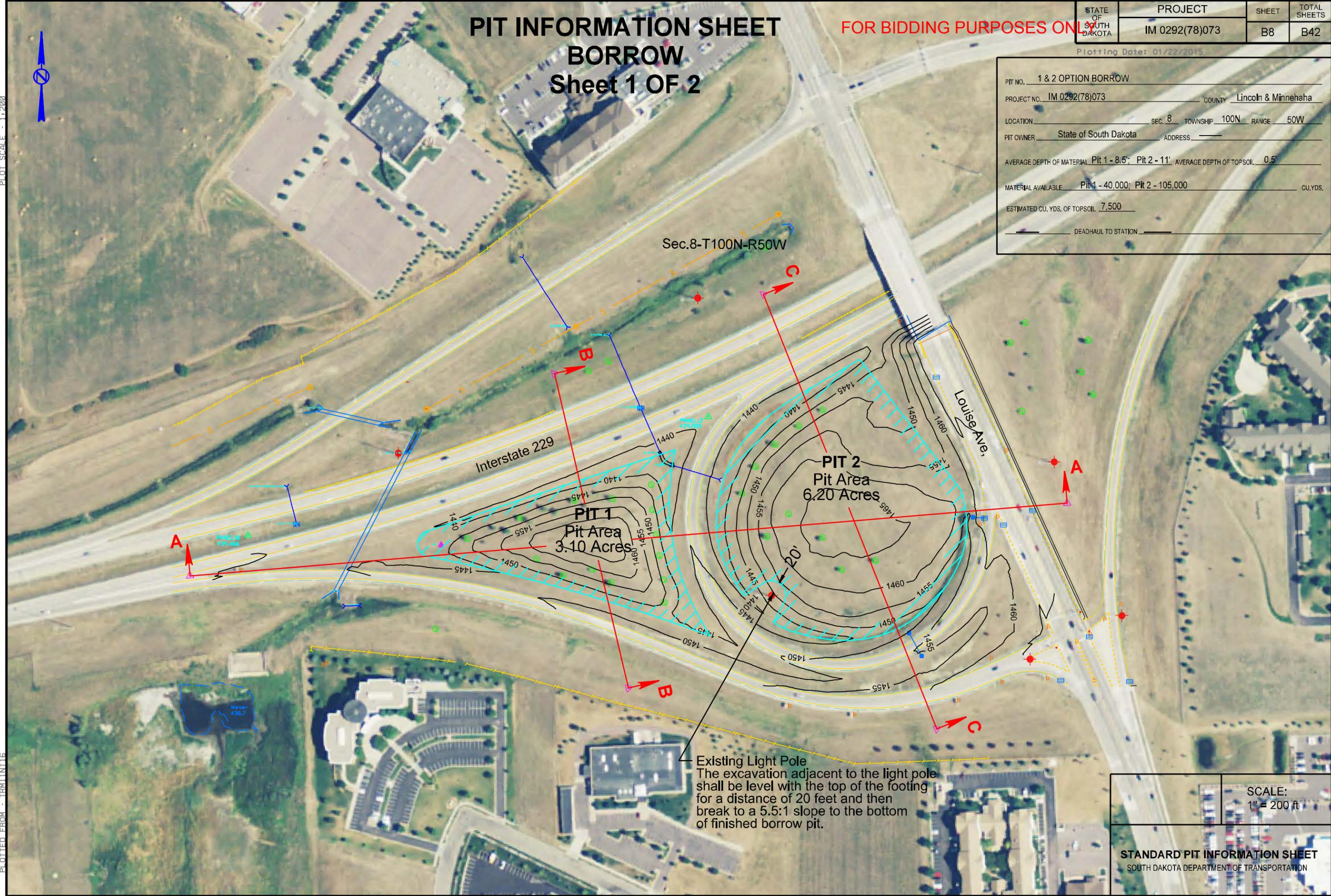
PIT NO.	1 & 2 OPTION BORROW		
PROJECT NO.	IM 0292(78)073	COUNTY	Lincoln & Minnehaha
LOCATION	SEC. 8	TOWNSHIP	100N RANGE 50W
PIT OWNER	State of South Dakota ADDRESS _____		
AVERAGE DEPTH OF MATERIAL	Pit 1 - 8.5'; Pit 2 - 11'	AVERAGE DEPTH OF TOPSOIL	0.5'
MATERIAL AVAILABLE	Pit 1 - 40,000; Pit 2 - 105,000 CU.YDS.		
ESTIMATED CU. YDS. OF TOPSOIL	7,500		
DEADHAUL TO STATION	_____		

PLOT SCALE - 1:200

PLOT NAME -

FILE - ... \PITS\LINCO511\PI1182.0511.DGN

PLOTTED FROM - IRMIN116



Existing Light Pole  
The excavation adjacent to the light pole shall be level with the top of the footing for a distance of 20 feet and then break to a 5.5:1 slope to the bottom of finished borrow pit.

SCALE:  
1" = 200 ft

STANDARD PIT INFORMATION SHEET  
SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

# PIT INFORMATION SHEET BORROW Sheet 2 OF 2

FOR BIDDING PURPOSES ONLY

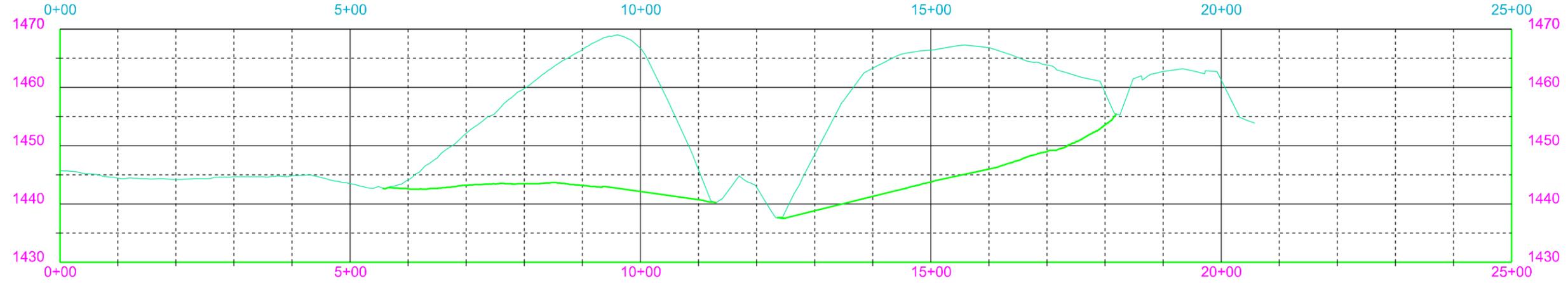
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B9	B42

Plotting Date: 01/22/2015

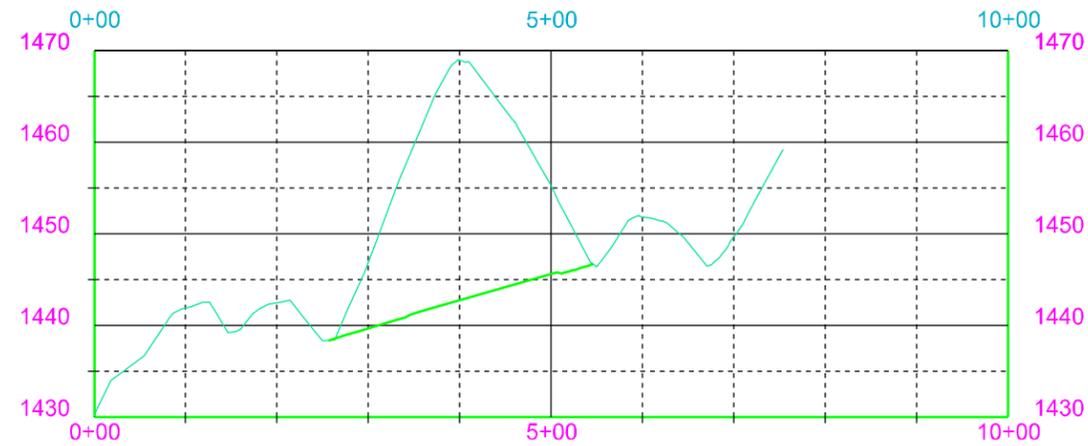
PLOT SCALE - 1:200

PLOT NAME - 2

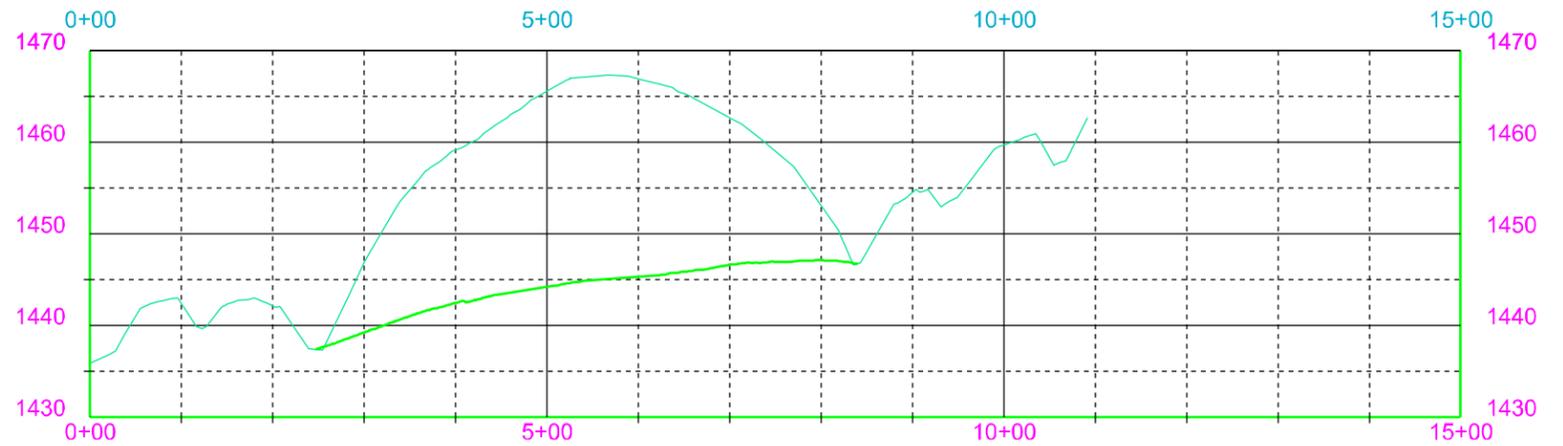
## SECTION A-A



## SECTION B-B



## SECTION C-C



PLOTTED FROM - IRWIN116

FILE - ... \PITS\LIN0511\PIT1&2.0511.DGN

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B10	B42

Plotting Date: 1/20/2015

# TYPICAL SURFACING & GRADING SECTIONS

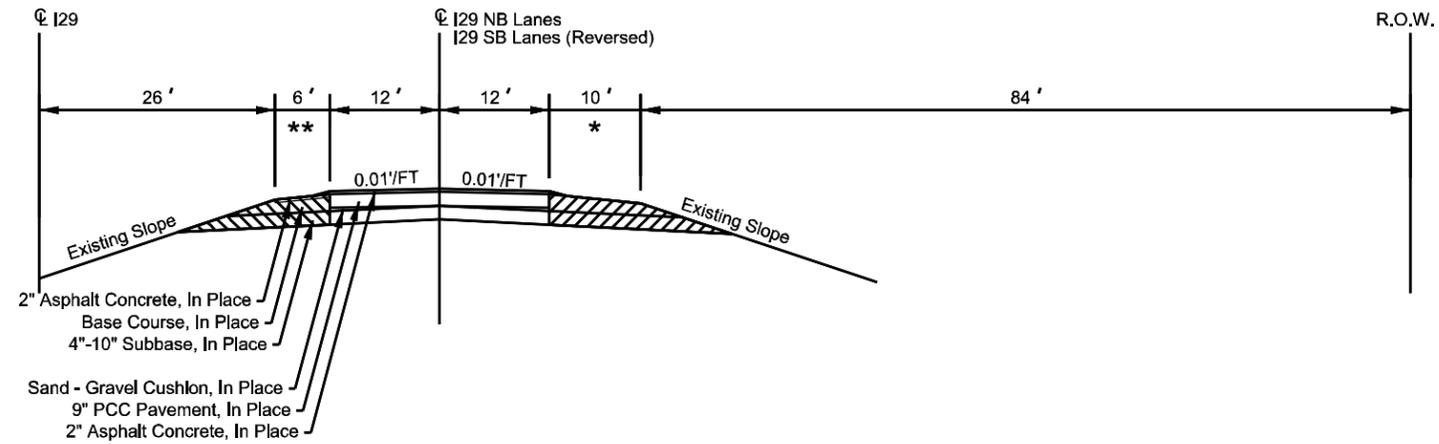
 Salvage & Stockpile Asphalt Concrete & Granular Base Material per Section F (Surfacing Plans)

\* NB Outside Shoulder Removed and Salvaged From Sta. 41+09 to Sta. 113+65 and From Sta. 128+44 to Sta. 177+63.

NB Inside Shoulder Removed and Salvaged From  
 \*\* Sta 68+73 to Sta. 76+80 and Sta. 104+10 to Sta 110+72.  
 SB Inside Shoulder Removed and Salvaged from Sta. 78+23 to Sta. 79+54 and Sta. 101+27 to Sta. 102+59.

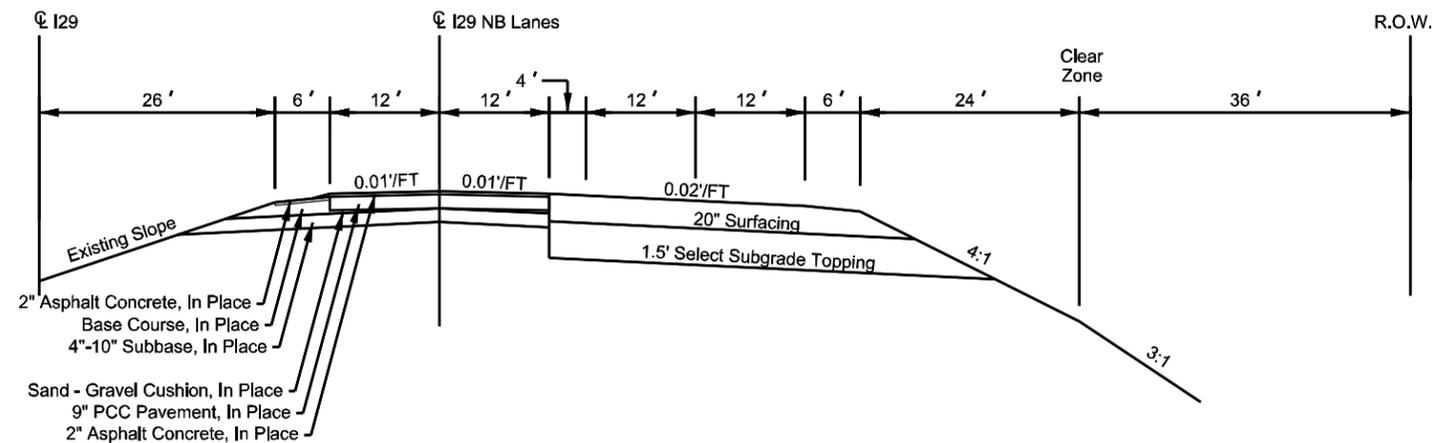
## I29 NB LANES

Inplace Surfacing  
 Sta. 41+08.59 to Sta. 113+65  
 Sta. 128+44 to Sta. 177+62.72



## I29 NB LANES

Temporary AC Pavement next to PCC Pavement  
 Sta. 41+08.59 to Sta. 113+65  
 Sta. 128+44 to Sta. 177+62.72



Plot Scale - 1:20

Plotted From - michelle miller

Plot Name -

File - ...rdp\j\lnc0511\typ\_01.dgn

FOR BIDDING PURPOSES ONLY

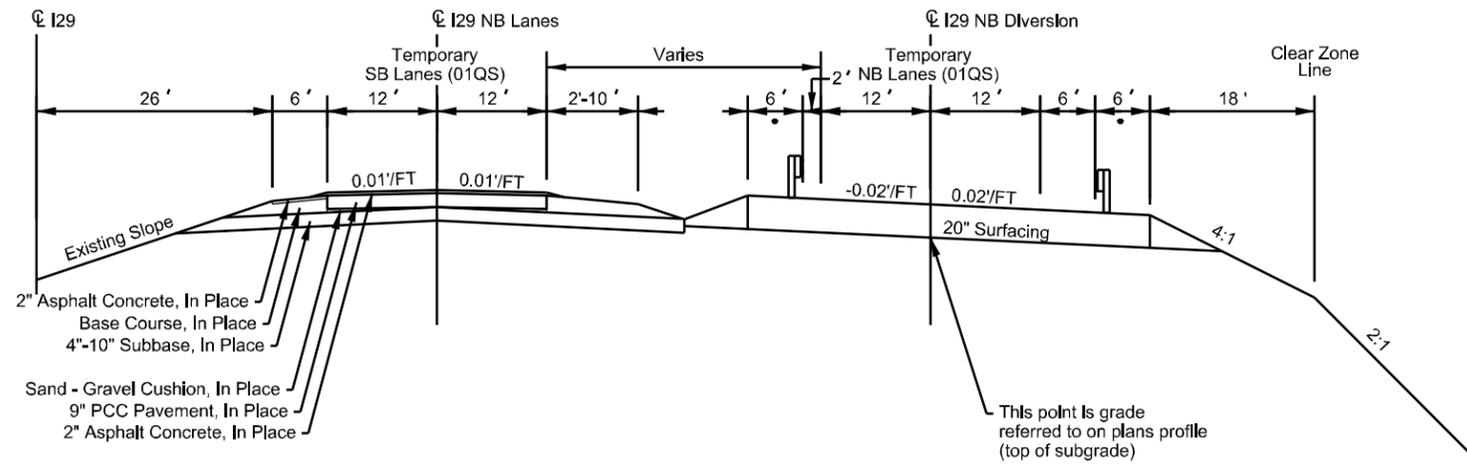
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B11	B42

Plotting Date: 1/23/2015

# TYPICAL SURFACING & GRADING SECTIONS

## I29 NB DIVERSION

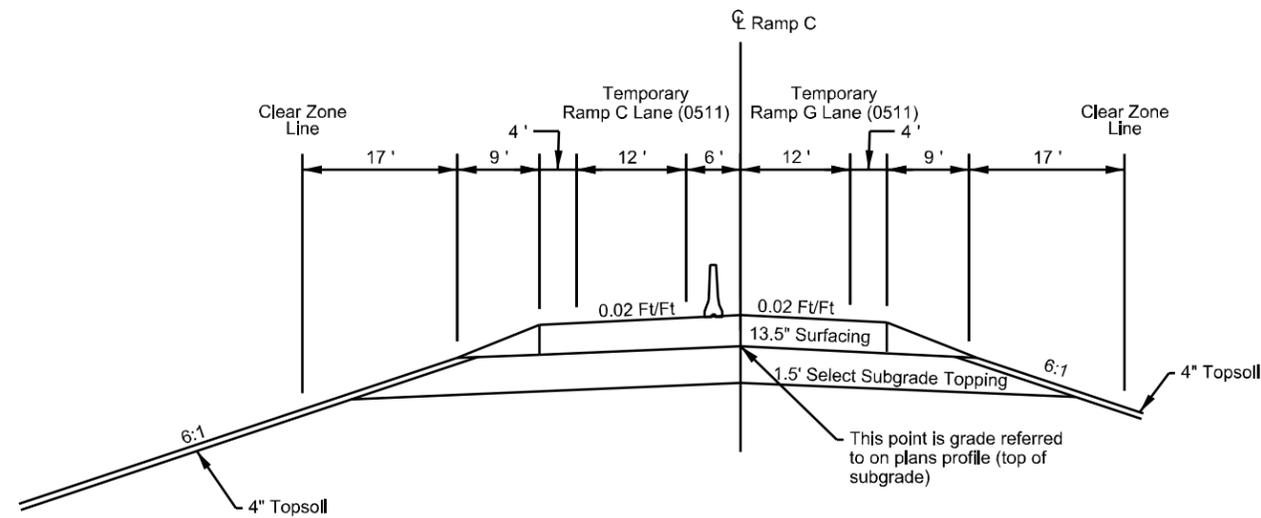
Sta. 13+65 to Sta. 28+40



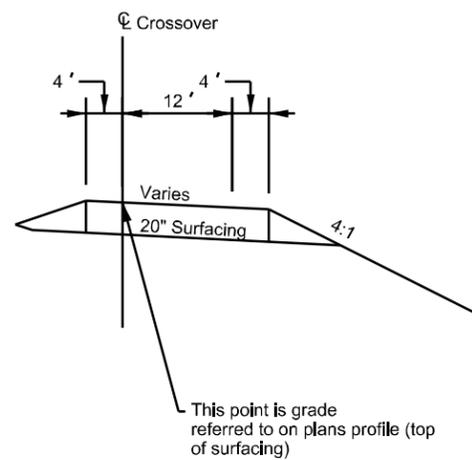
\* W Beam Guardrail, Tangent End Terminal, and 6' pavement next to shoulder from Sta. 17+64.53 L&R to Sta. 20+37.53 L&R

## I229 Ramp C

Sta. 42+00.00 to Sta. 64+00.00



## Crossover



Plot Scale - 1:20

Plotted From - geoff\_babovec

Plot Name -

File - ...rdp\j\INC0511\typ\_02.dgn

# HORIZONTAL ALIGNMENT DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B12	TOTAL SHEETS B42
-----------------------------	---------------------------	--------------	------------------------

## MAINLINE

Type	Station		Northing	Easting
POB	24+86		432448.183	290958.440
		TL= 1743	N 0°25'27" E	
PI	42+29		434191.247	2906971.342
		TL= 687	N 0°32'12" E	
PC	49+15		434877.894	2906977.774
PI	55+11	R = 25000	Delta = 2°43'47" L	435473.542
PT	61+07		436068.779	2906960.558
		TL= 1918	N 2°11'35" W	
PC	80+24		437985.097	2906887.168
PI	87+77	R = 5729	Delta = 14°58'29" R	438737.500
PT	95+22		439471.796	2907024.934
		TL= 3023	N 12°46'54" E	
PC	125+45		442420.224	2907693.804
PI	130+44	R = 5760	Delta = 9°54'39" R	442907.261
PT	135+41		443368.014	2907996.956
		TL= 3749	N 22°41'32" E	
POE	172+90		446826.816	2909443.257

## I29 NB Diversion

Type	Station		Northing	Easting
POB	9+90		440888.334	2907418.063
		TL = 10	N 12°46'54" E	
PC	10+00		440898.086	2907420.276
PI	12+22	R = 8075	Delta = 3°08'44" R	441114.311
PRC	14+43		441327.518	2907530.170
PI	17+36	R = 9422	Delta = 3°33'41" L	441609.199
PT	20+29		441895.329	2907673.284
		TL = 724	N 12°21'57" E	
PC	27+53		442602.997	2907828.432
PI	31+42	R = 4300	Delta = 10°19'36" R	442982.535
PT	35+28		443341.009	2908061.537
		TL = 22	N 22°41'32" E	
POE	35+50		443360.878	2908069.845

## Ramp C (I229 SB to I29 SB)

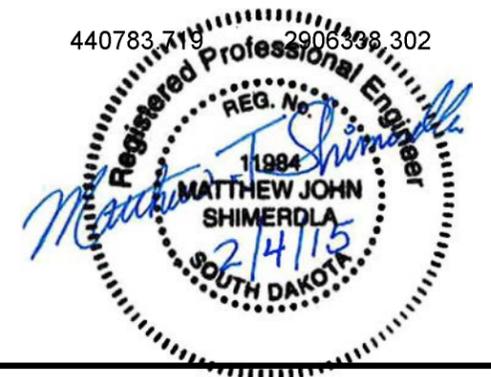
Type	Station		Northing	Easting
			N 7°02'45" E	
POB/PC	37+00		440316.127	2906218.674
PI	48+02	R = 1898	Delta = 60°16'17" R	441409.622
PT	56+97		441834.510	2907370.423
		TL= 686	N 67°19'03" E	
PC	63+82		442095.925	2908003.064
PI	65+41	R = 14200	Delta = 1°16'56" R	442160.193
POE/PT	67+00		442218.167	2908297.584
			N 68°35'58" E	

## Ramp G (I29 SB to I229 NB)

Type	Station		Northing	Easting
POB	0+00		440210.450	2907141.195
		TL = 142.33	S 16°20'33" W	
PC	1+42		440073.874	2907101.147
PI	7+68	R = 416	Delta = 172°13'58" R	434190.518
CC			440190.987	2906701.754
PT	13+93		440253.048	2906309.034
		TL = 126	N 8°34'32" E	
PC	15+20		440377.960	2906309.034
PI	16+87	R = 1990	Delta = 9°34'50" R	440542.408
CC			440048.664	2908271.384
POE/PT	18+53		440699.970	2906391.210
			N 19°06'23" E	

## Crossover 1 (I229 Ramp G to I229 Ramp C)

Type	Station		Northing	Easting
			N 37°11'40" W	
POB/PC	33+00		439930.784	2906362.555
PI	33+93	R = 431	Delta = 24°15'11" R	440004.569
PCC	34+82		440094.844	2906285.816
PI	38+44	R = 1162	Delta = 34°35'49" R	440447.455
POE/PC	41+84		440783.799	2906398.302
C			N 21°39'20" E	



The coordinates shown on this sheet are based on a Modified South Dakota State Plane Coordinate System. South Zone (NAD 83) SF = 0.99984263

# HORIZONTAL ALIGNMENT DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B13	TOTAL SHEETS B42
-----------------------	---------------------------	--------------	---------------------

## Crossover 2 (I229 Ramp C to I229 Ramp G)

Type	Station		Northing	Easting
		N 67°19'03" E		
POB/P C	60+23		441960.402	2907671.634
PI	61+96	R = 1444	442026.942	2907830.838
PT	63+67		442054.096	2908001.238
		TL= 109		
		N 80°56'45" E		
PC	64+75		442071.215	2908108.665
PI	65+74	R = 1432	442086.738	2908206.074
POE/PT	66+72		442115.470	2908300.436
		N 73°46'49" E		

## Crossover 3 (I29 Median at I229 Ramp C)

Type	Station		Northing	Easting
POB	14+00		437343.811	2906941.750
		TL = 92		
		N 2°11'35" W		
PC	14+92		437435.805	2906938.227
PI	18+06	R = 2039	437749.043	2906926.231
PT	21+14		438044.206	2906820.678
		TL = 386		
		N 19°40'39" W		
POE	25+00		438400.534	2906693.253

## Crossover 4 (I29 Median at I229 Ramp G)

Type	Station		Northing	Easting
POB	14+00		440640.014	2907321.415
		TL = 103		
		S 12°47'17" W		
PC	15+03		440539.058	2907298.423
PI	18+22	R = 1912	440228.379	2907227.906
PCC	21+35		439957.349	2907060.465
PI	23+29	R = 410	439791.965	2906958.290
POE/PT	24+97		439766.225	2906765.713



# CONTROL DATA

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B14	TOTAL SHEETS B42
-----------------------------	---------------------------	--------------	------------------------

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP10	171+07	12' R	REBAR & CAP STAMPED "SDDOT SURVEY POINT" - 11'+/- EAST OF CENTER OF MEDIAN MRM 76.19+0.259	446653.540	2909383.806	1449.72
CP11	149+85	11' R	MRM 76.03 - REBAR & CAP STAMPED "SDDOT SURVEY POINT" - 10'+/- EAST OF CENTER OF MEDIAN	444695.587	2908563.907	1476.90
CP12	138+30	147' R	MRM 75.81 - NGS POINT OQ0986 - ALONG EAST ROW FENCE - 10'+/- SOUTH OF BEGINNING OF CHAIN LINK FENCE	443578.103	2908243.741	1477.49
CP13	121+96	24' R	MRM 75.50 - 2" DURANAIL & WASHER STAMPED "SDDOT CONTROL PT" DRILLED INTO TOP OF NW WINGWALL OF NB I29 NOTES BRIDGE OVER 229	442074.523	2907640.387	1511.28
CP14	117+31	20' R	MRM 75.41 - REBAR & CAP STAMPED "SDDOT SURVEY POINT" - 3' BEHIND GUARDRAIL (MEDIAN SIDE) FOR NB 1-29 BRIDGE OVER 229	441621.950	2907533.161	1508.62
CP15	105+79	11' R	MRM 75.20 - NGS POINT OQ0985 - I29-075.5 - 5' NORTH OF WEST SIGN BRIDGE FOOTING (IN MEDIAN)	440500.323	2907269.897	1489.27
CP16	94+14	229' L	MRM 74.95 - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - IN GORE AREA - 230'+/- WEST OF I29 CENTERLINE	439413.577	2906777.791	1499.98
CP17	85+41	1' L	MRM 74.79 - REBAR & CAP "SDDOT SURVEY POINT" - CENTER OF MEDIAN	438501.653	2906889.210	1507.38
CP18	73+62	148' R	MRM 74.57 - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - 1' WEST OF NORTH POST OF 2 POST PANEL ALONG EAST ROW OF I-29	437329.330	2907059.987	1519.59
CP19	65+72	1' R	MRM 74.40 - REBAR AND CAP STAMPED "SDDOT SURVEY POINT" - CENTER OF MEDIAN	436534.251	2906943.610	1519.03
CP20	52+35	147' L	MRM 74.13 - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - 1' EAST OF WEST ROW FENCE - MIDDLE OF 2 POST PANEL	435197.040	2906831.246	1525.61
CP21	43+55	148' L	MRM 73.96 - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - 1' EAST OF WEST ROW FENCE IN MIDDLE OF NORTH 2 POST PANEL	434318.531	2906824.455	1522.42
CP22	35+14	13' L	MRM 73.80 - 5/8" x 5' REBAR & CAP STAMPED "SDDOT CONTROL POINT" - 14'+/- WEST OF CENTER OF MEDIAN	433476.366	2906953.541	1519.58

The coordinates shown on this sheet are based on a modified South Dakota State Plane Coordinate System.  
 South Zone (NAD 83) SF = 0.99984263  
 The elevations shown on this sheet are based on NAVD/88.

# EXISTING TOPOGRAPHY SYMBOLOGY AND LEGEND

Plot Scale - 1:200

Plotted From - tpr14419

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

File - ...Seed\English\toposymb.dgn

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B16	B42

Plotting Date: 1/22/2015

I29 NB/SB

42+41.31 to 43+46.92  
Remove 106' Crossover Closure For Reset  
42+41.31 to 43+46.92  
Reset 106' Crossover Closure

43+92.92 to 44+65.31  
Remove 73' Crossover Closure For Reset  
43+92.92 to 44+65.31  
Reset 73' Crossover Closure

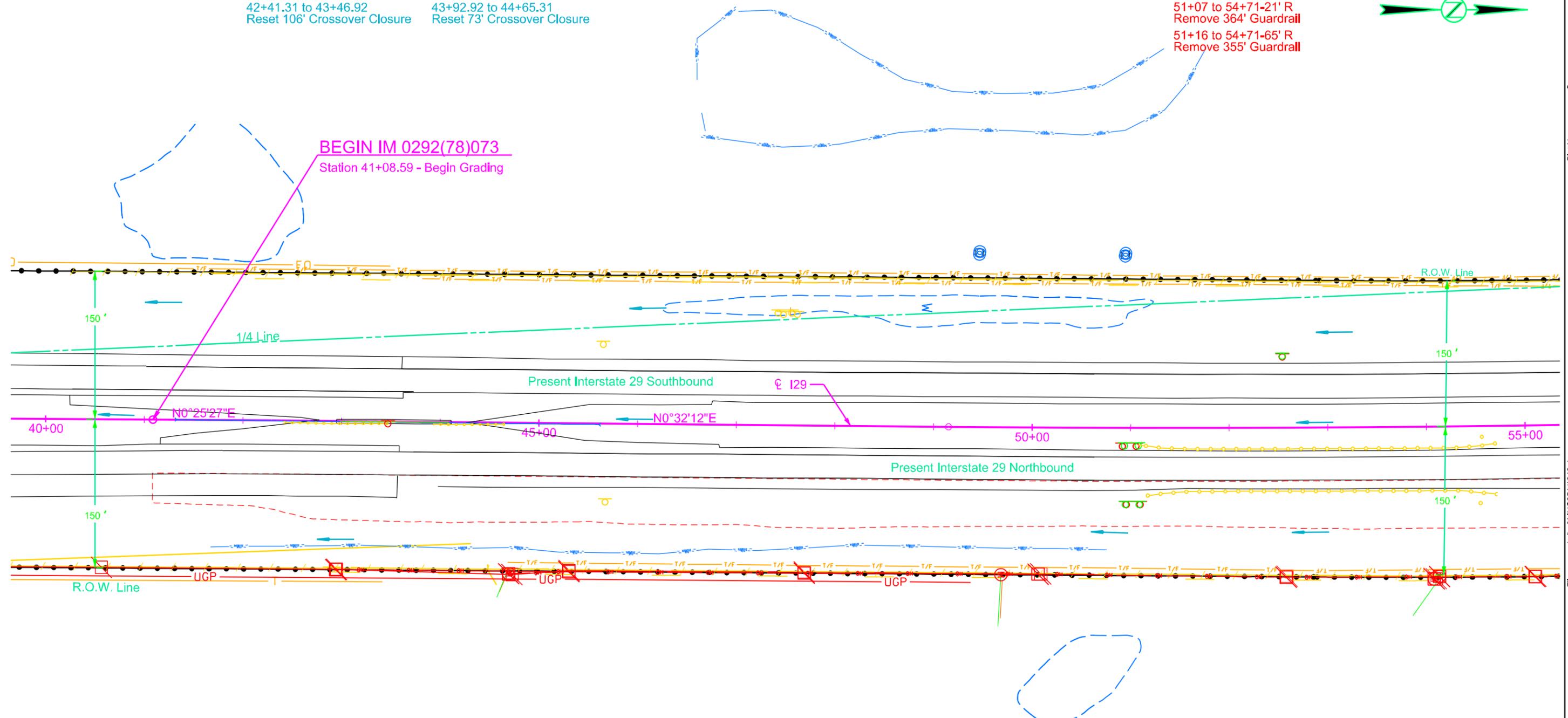
54+56 - 11' R & 78' R  
Remove & Salvage Sign Bridge Vertical Supports (See Section S)

51+07 to 54+71-21' R  
Remove 364' Guardrail

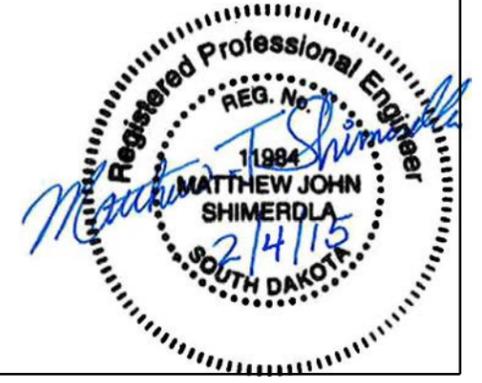
51+16 to 54+71-65' R  
Remove 355' Guardrail



BEGIN IM 0292(78)073  
Station 41+08.59 - Begin Grading



Sec. 19 - T100N - R50W



Plot Scale - 1:100

Plotted From - michelle miller

Plot Name -

File - ...rdppl\INC0511\040.dgn

I29 NB/SB

FOR BIDDING PURPOSES ONLY

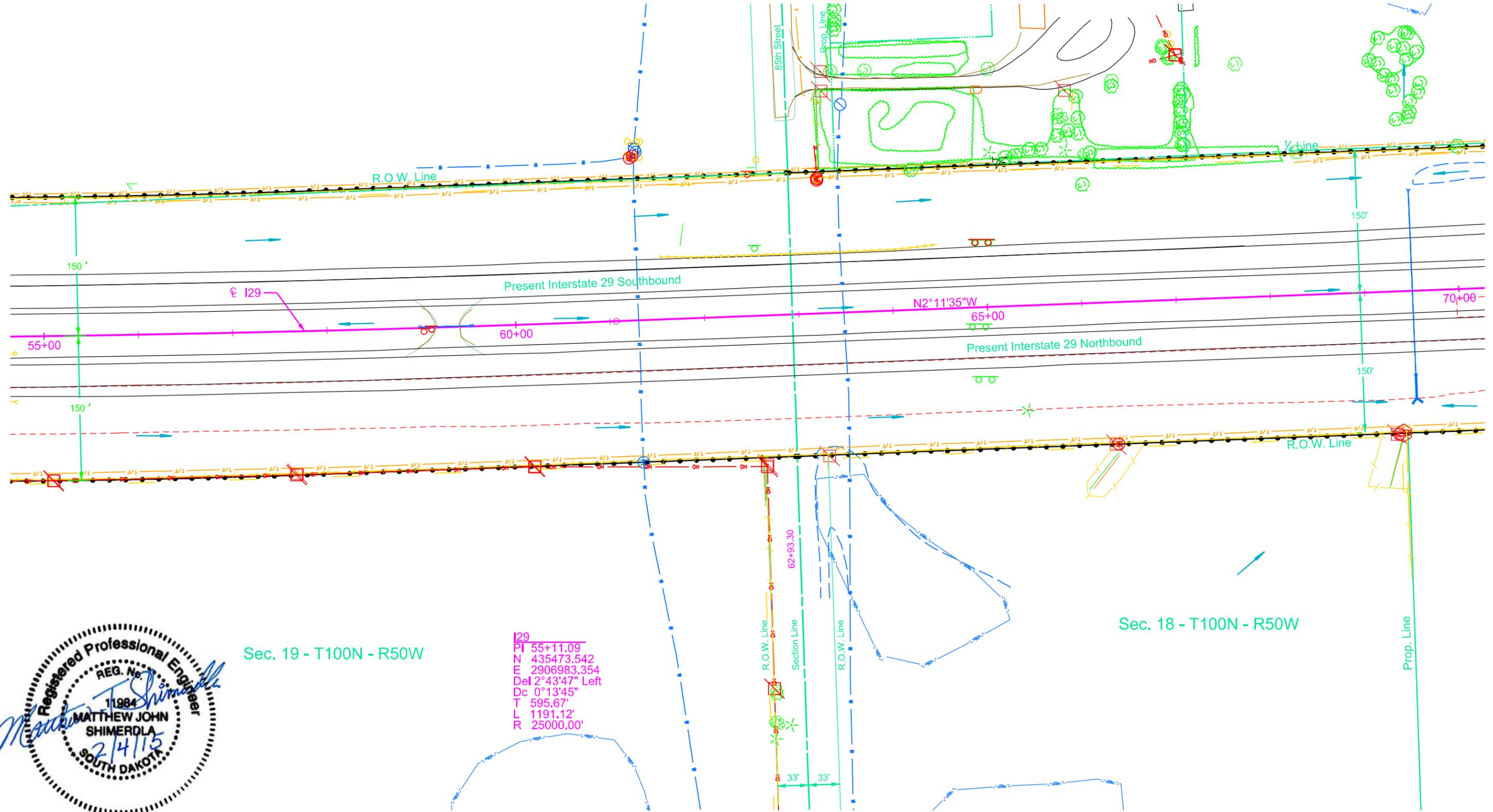
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B17	B42
Plotting Date: 1/22/2015			

69+51 - 88' R Remove Pipe End Section For Reset  
 69+51 - 88' R Install 30" - 21' RCP & Reset 1 Sloped End Section

Plot Scale - 1:100

Plot Name -

File - ...rdpjl\INC0511\055.dgn



Sec. 19 - T100N - R50W

Sec. 18 - T100N - R50W

I29  
 PI 55+11.09  
 N 435473.542  
 E 2906983.354  
 Del 2°43'47" Left  
 Dc 0°13'45"  
 T 595.67'  
 L 1191.12'  
 R 25000.00'



Plotted From - mitchelle miller

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B18	TOTAL SHEETS B42
-----------------------	---------------------------	--------------	---------------------

Plotting Date: 1/22/2015

### I29 NB/SB

76+19 to 79+19 - 0' R  
Install 24"-300' RCP  
& 2 Sloped End Section

76+42 to 78+95 - 0' R  
Install 253' Interlm Crossover  
Closure

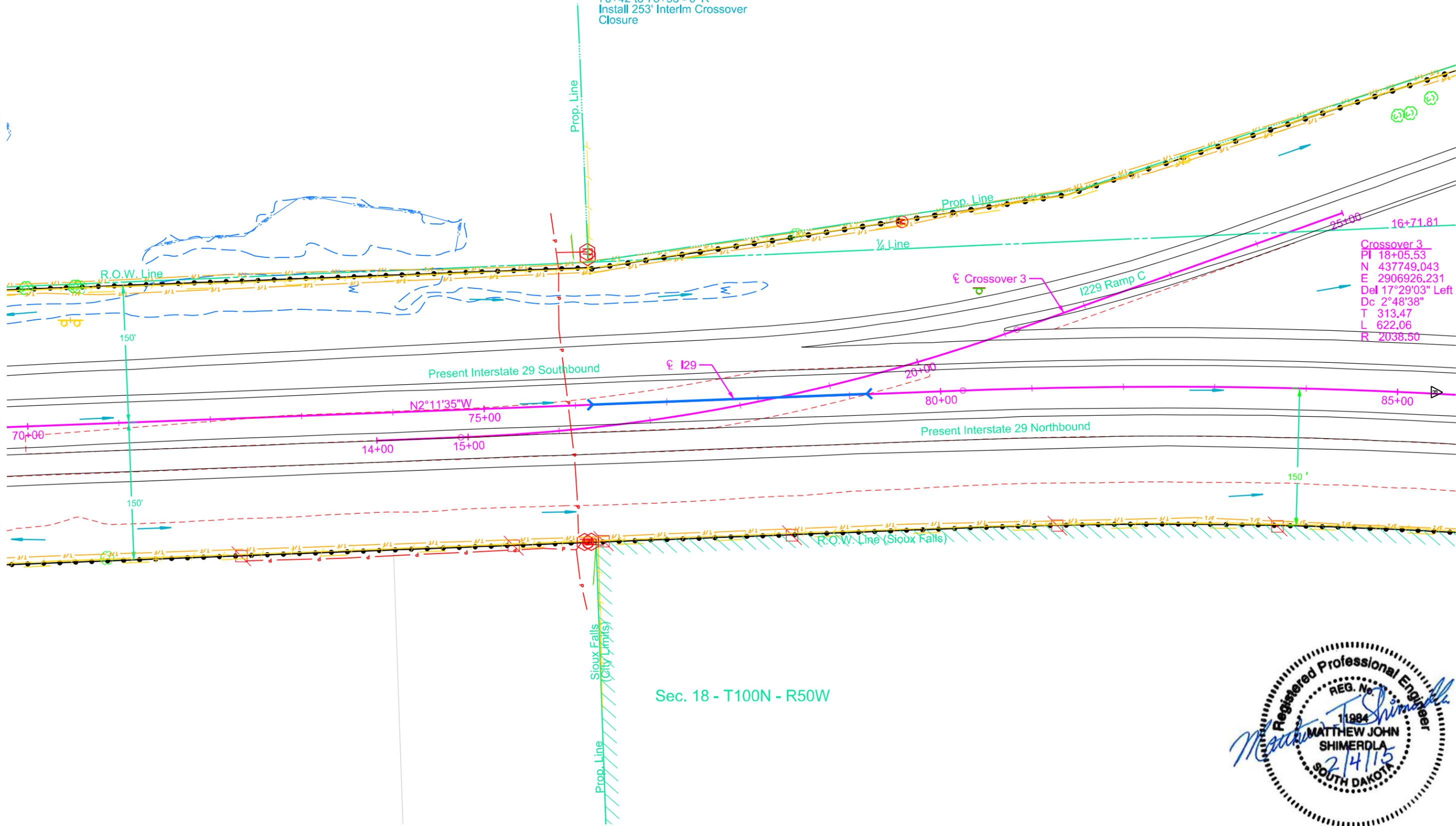


Plot Scale - 1:100

Plotted From - michelle miller

Plot Name - 7

File - ...rdppl\INC0511\070.dgn



Sec. 18 - T100N - R50W



**FOR BIDDING PURPOSES ONLY**

### Median Crossover Profile I229 Ramp C to SB I29

Crossover 3  
14+92  
Begin Work

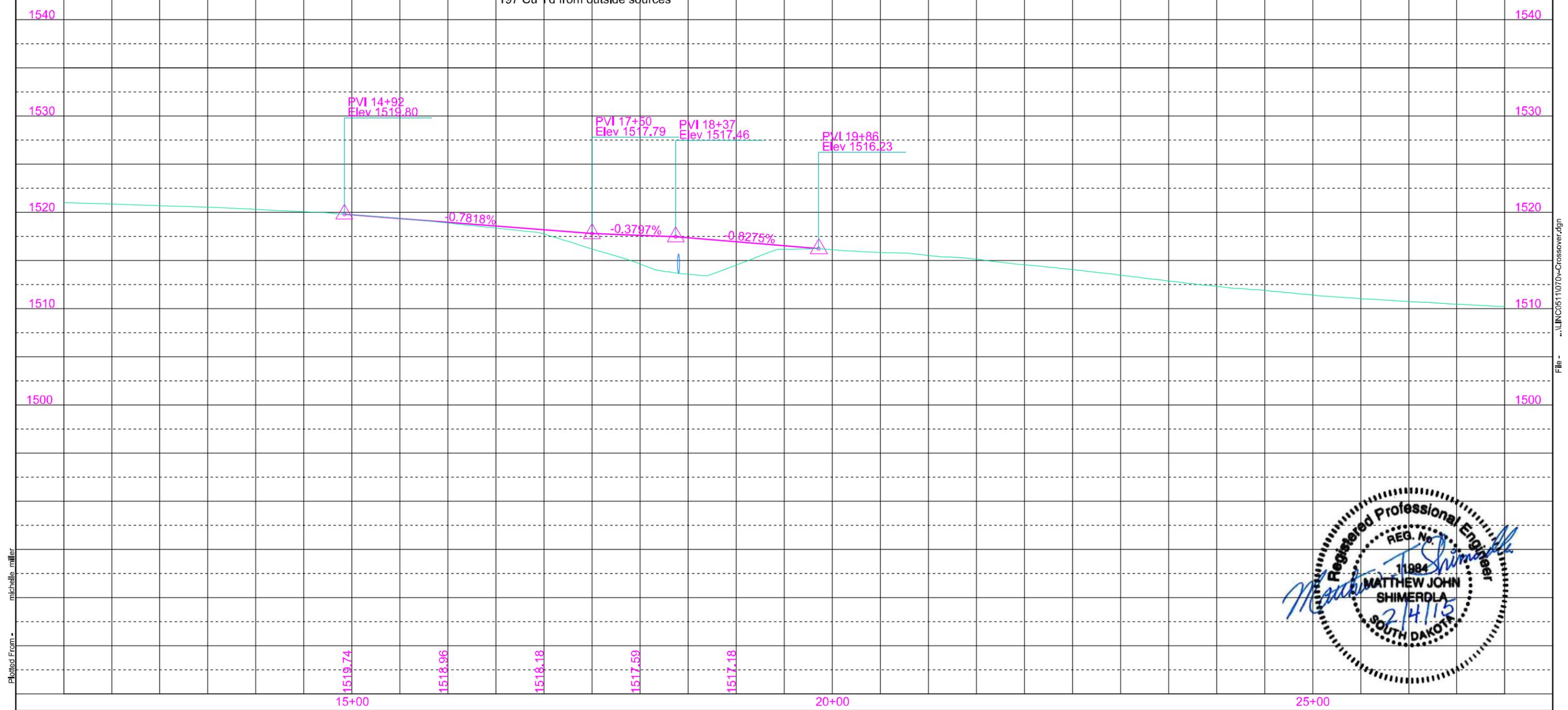
Crossover 3  
19+36  
End Work

BORROW	EXC	59	EMB	183
		197	+40%	73
		256		256

Out of balance excavation is to be obtained as follows and will be paid for only once as unclassified excavation:  
197 Cu Yd from outside sources

Plot Scale -  
1:100

Plot Name -



Plotted From -  
michelle miller

File -  
...\\LINC0511070-Crossover.dgn



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B20	B42

Plotting Date: 1/22/2015

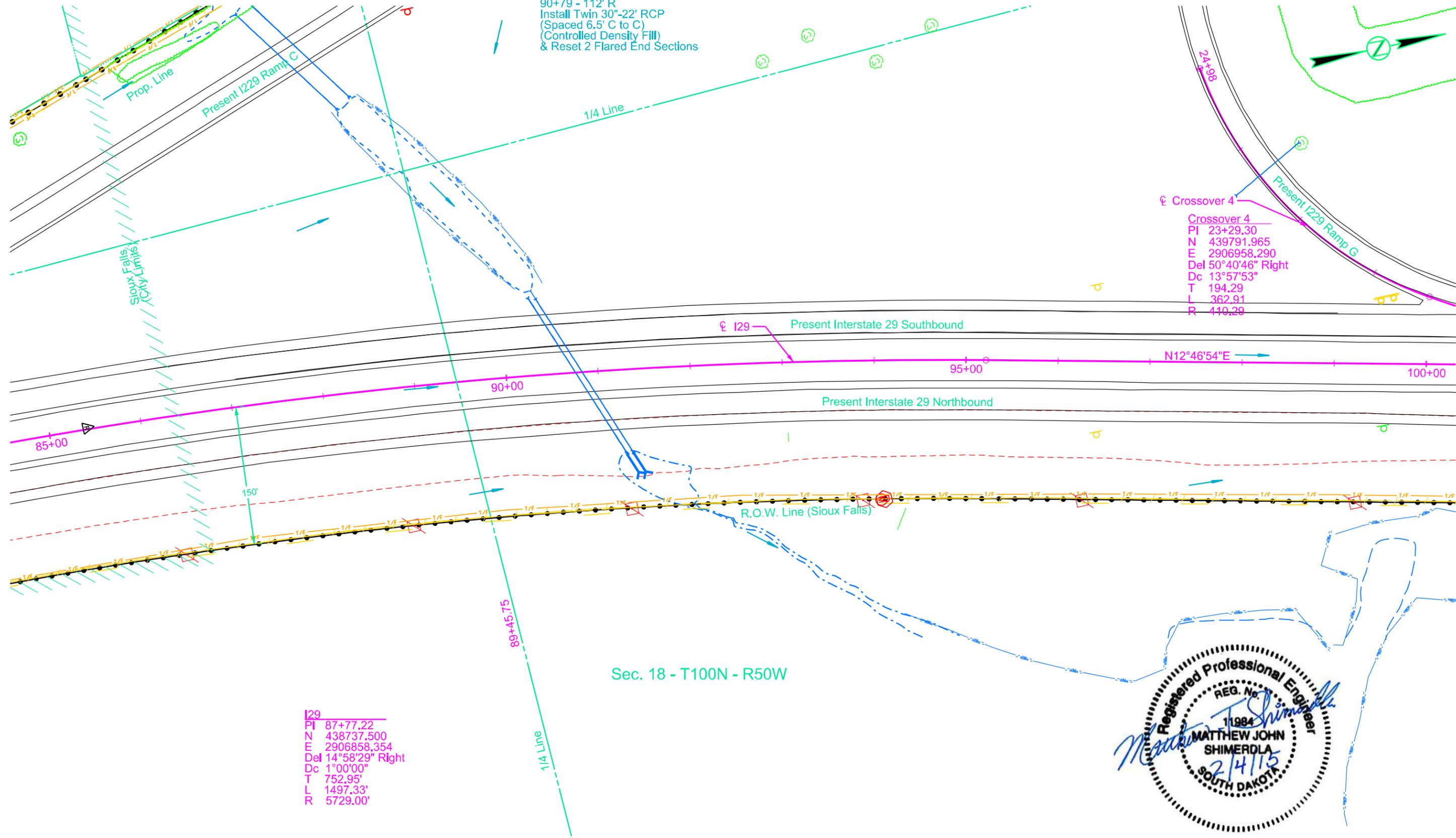
### I29 NB/SB

90+79 - 112' R  
Remove 2 Pipe End Sections for Reset

90+79 - 112' R  
Install Twin 30"-22' RCP  
(Spaced 6.5' C to C)  
(Controlled Density Fill)  
& Reset 2 Flared End Sections

Plot Scale - 1:100

Plot Name - 9

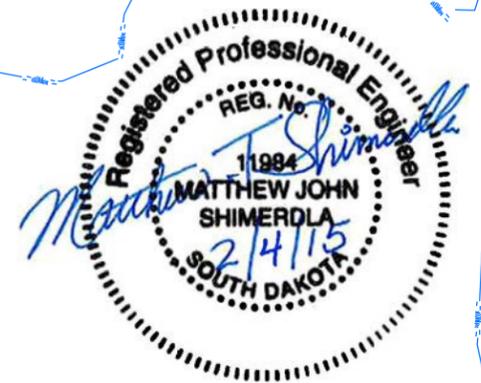


€ Crossover 4

Crossover 4  
PI 23+29.30  
N 439791.965  
E 2906958.290  
Del 50°40'46" Right  
Dc 13°57'53"  
T 194.29  
L 362.91  
R 410.29

I29  
PI 87+77.22  
N 438737.500  
E 2906858.354  
Del 14°58'29" Right  
Dc 1°00'00"  
T 752.95'  
L 1497.33'  
R 5729.00'

Sec. 18 - T100N - R50W



Plotted From - michelle\_miller

File - ...rdp\j\INC0511\085.dgn

# I29 NB/SB I29 NB DIVERSION

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B21	TOTAL SHEETS B42
-----------------------	---------------------------	--------------	---------------------

Plotting Date: 1/22/2015

101+35 - 18' L  
Remove & Salvage Overhead  
Sign Bridge (See Section S)  
101+11-23' L to 102+01-19' L  
Remove 90' Guardrail  
101+11-73' L to 102+01-75' L  
Remove 90' Guardrail

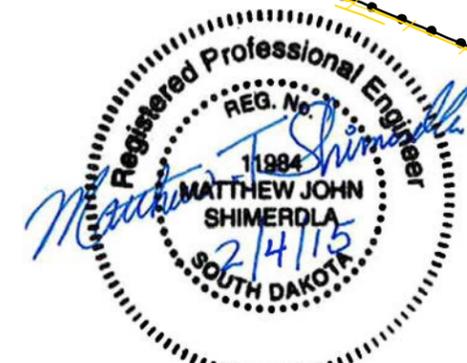
102+26 to 105+91 - 19' R  
Remove 365' Guardrail  
102+35-75' R to 105+92-84' R  
Remove 358' Guardrail

105+74 - 13' R  
Remove & Salvage Overhead  
Sign Bridge (See Section S)  
102+00 to 105+00 - 0' R  
Install 24"-300'  
Arch RCP &  
2 Sloped End Sections  
102+10 to 104+45 - 0' R  
Install 195' Interim Crossover  
Closure

Crossover 4  
PI 18+22.12  
N 440228.379  
E 2907227.906  
Del 18°55'11" Right  
Dc 2°59'48"  
T 318.58  
L 631.36  
R 1912.00

I29 NB DIVERSION  
PI 12+21.72  
N 441114.311  
E 2907469.327  
Del 3°08'44" Right  
Dc 0°42'34"  
T 221.72'  
L 443.33'  
R 8075.00'

Sec. 18 - T100N - R50W



Plot Scale - 1:100

Plotted From - michelle miller

Plot Name -

File - ...rdppl\UNC0511100.dgn

**FOR BIDDING PURPOSES ONLY**

Plotting Date: 1/22/2015

### Median Crossover Profile SB I29 to I229 Ramp G

Plot Scale - 1:100

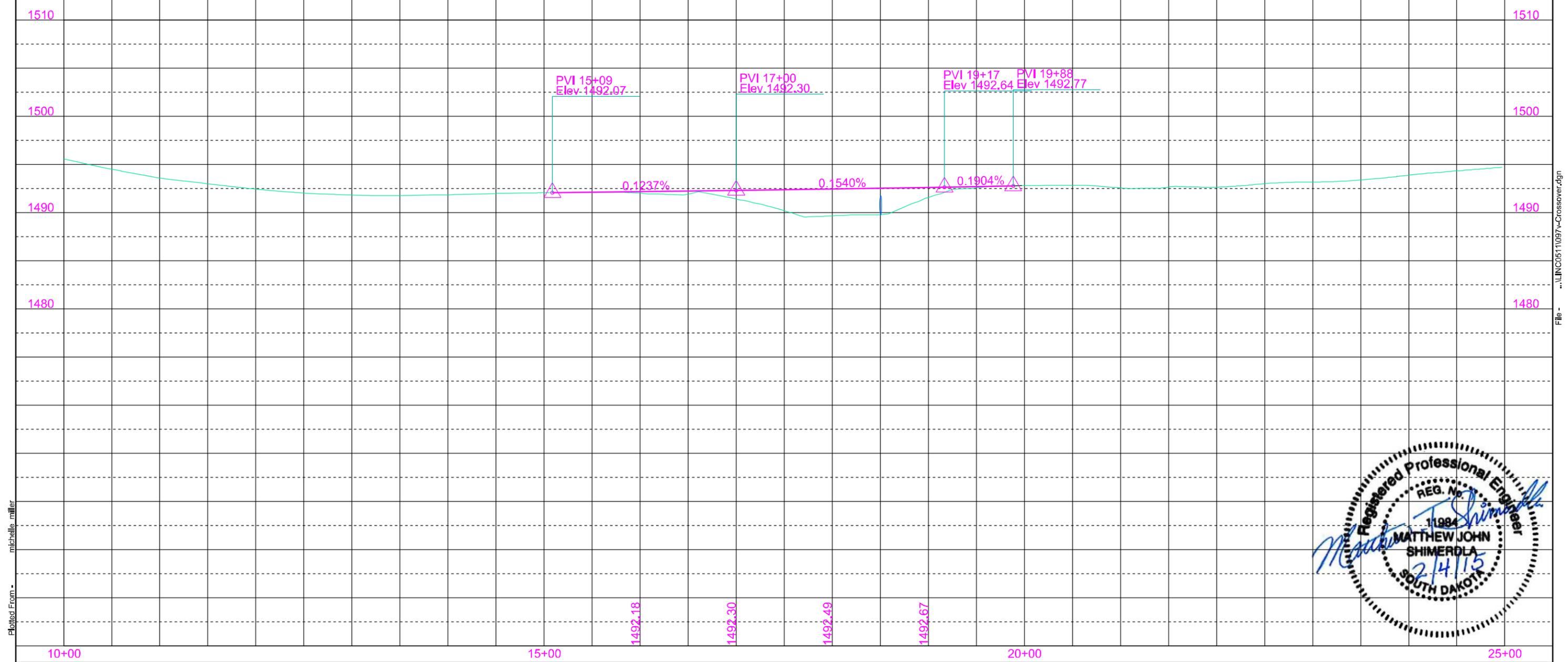
Plot Name -

Crossover 4  
15+09  
Begin Work

Crossover 4  
19+17  
End Work

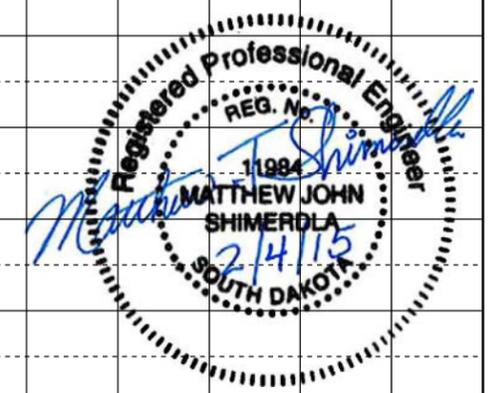
BORROW	EXC	41	EMB	106
		107	+40%	42
		148		148

Out of balance excavation is to be obtained as follows and will be paid for only once as unclassified excavation:  
107 Cu Yd from outside sources



Plotted From - michelle miller

File - ...\\LINC0511097\Crossover.dgn



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B23	TOTAL SHEETS B42
-----------------------	---------------------------	--------------	---------------------

Plotting Date: 1/22/2015

### I29 NB DIVERSION

Plot Scale - 1:100

Plot Name -

EXC	7806	EMB	6245
UNDERCUT	0	+25%	1561
	7806		7806

I29 NB Diversion  
+3+65  
Begin Work

1520

1520

1510

1510

I29 NB Sta. 113+64.88  
Widening

PVI 13+65  
Elev 1499.97  
Diversion Profile

1500

1500

2.5834%

1490

1490

Plotted From - mitchelle miller

1480

1480



10+00

15+00

FILE - ...rdppl\INC0511100v.dgn

17+65 to 20+40-14' L (Diversion)  
Install 225' W Beam Guardrail &  
1 Tangent End Terminal

118+23.87 - 89' R  
Remove Pipe End  
Section

122+13.54 - 80' R  
Remove 4' RCP &  
Pipe End Section

### I29 NB/SB I29 NB DIVERSION

20+40 to 21+77-14' L (Diversion)  
Install 137.5' W Beam Guardrail  
on Temporary Bridge

**FOR BIDDING PURPOSES ONLY**

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B24	TOTAL SHEETS B42
-----------------------	---------------------------	--------------	---------------------

Plotting Date: 2/2/2015  
Revised: 02-02-2015

17+65 to 20+40-16' R (Diversion)  
Install 225' W Beam Guardrail &  
1 Tangent End Terminal

118+23.87 - 89' R  
Install 10° Vertical Bend  
12" -76' RCP  
& 1 Flared End Section

122+13.54 - 76' R  
Install 42" -4' Vertical  
Manhole, 1 Type A7  
Manhole Frame and Lld,  
12" -54' RCP &  
1 Flared End Section

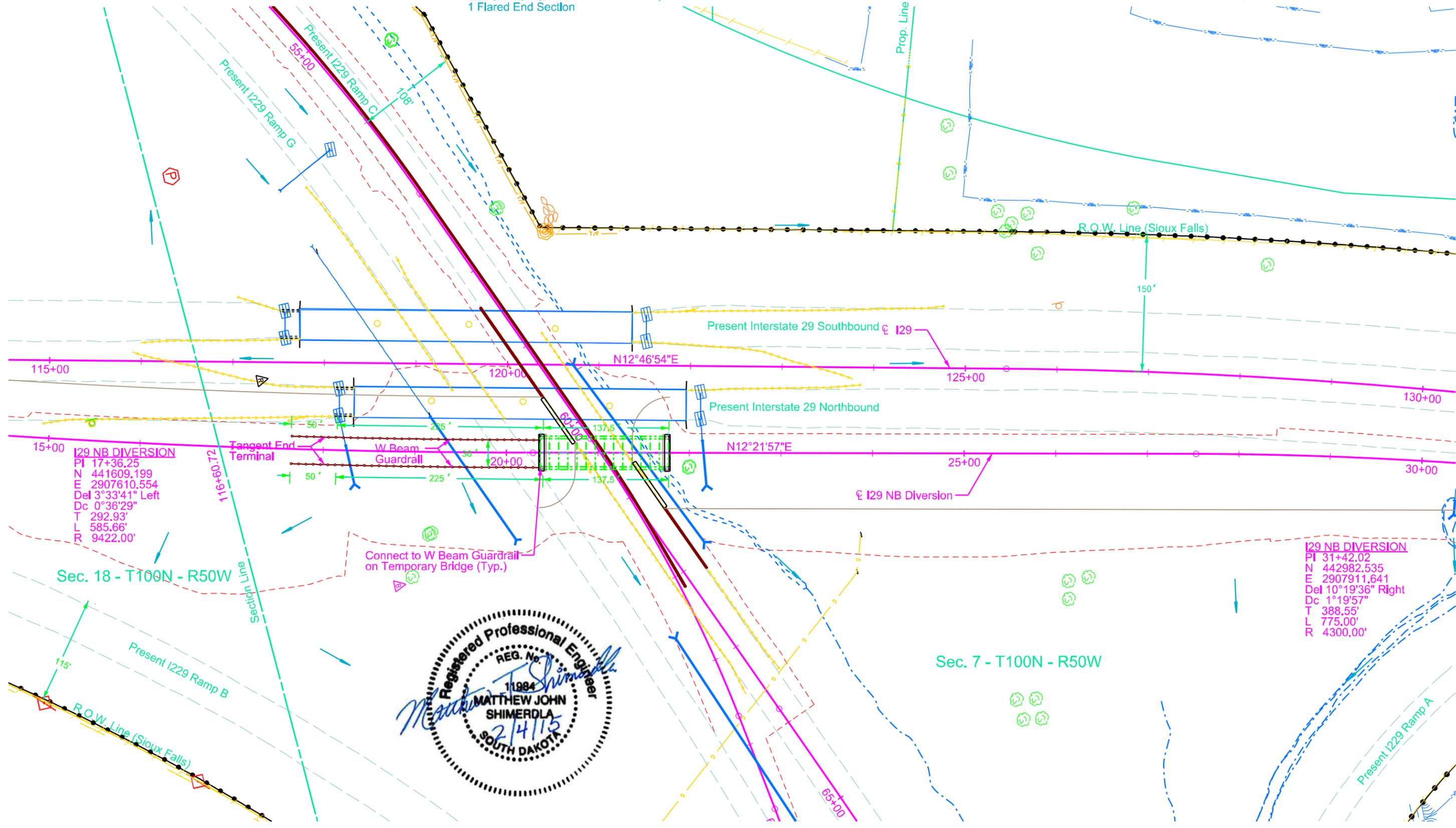
20+37 to 21+80  
(Diversion)  
Install Temporary Bridge  
(see Section E -  
Structures)

20+40 to 21+77-16' R (Diversion)  
Install 137.5' W Beam Guardrail  
on Temporary Bridge



Plot Scale - 1:100

Plot Name -



I29 NB DIVERSION  
 PI 17+36.25  
 N 441609.199  
 E 2907610.554  
 Del 3°33'41" Left  
 Dc 0°36'29"  
 T 292.93'  
 L 585.66'  
 R 9422.00'

I29 NB DIVERSION  
 PI 31+42.02  
 N 442982.535  
 E 2907911.641  
 Del 10°19'36" Right  
 Dc 1°19'57"  
 T 388.55'  
 L 775.00'  
 R 4300.00'



Plotted From - geoff\_babovrec

File - ...rdp\j\INC0511115.dgn

FOR BIDDING PURPOSES ONLY

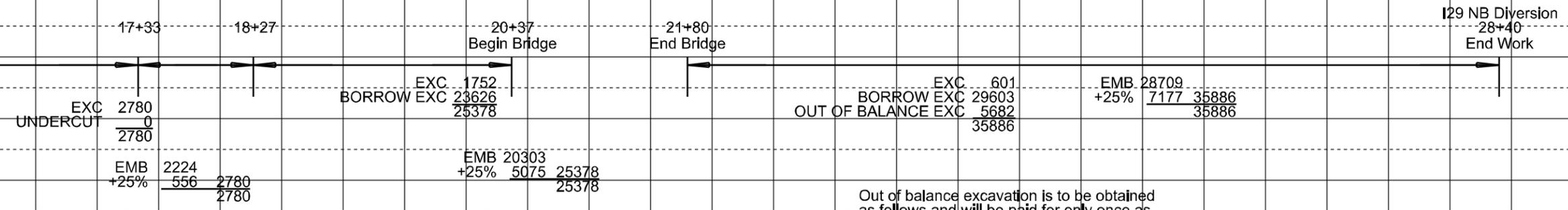
STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B25	TOTAL SHEETS B42
-----------------------	---------------------------	--------------	---------------------

Plotting Date: 1/22/2015

### I29 NB DIVERSION

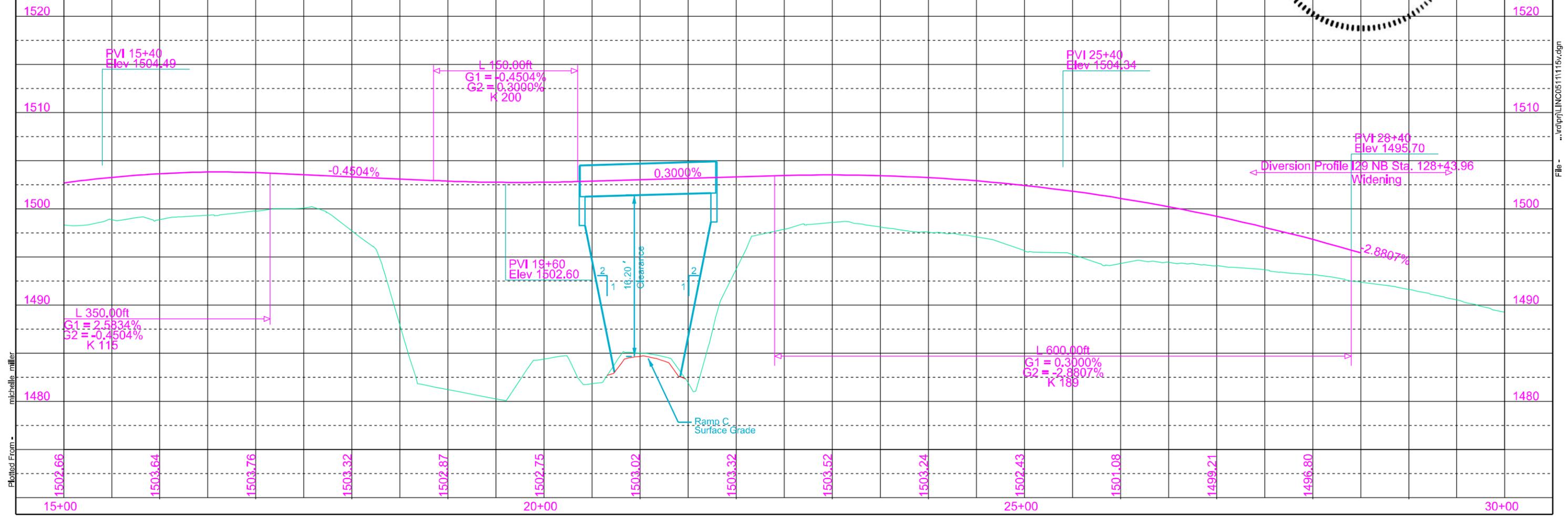
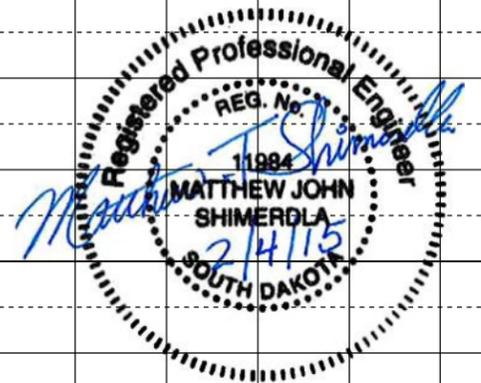
Plot Scale - 1:100

Plot Name -



Out of balance excavation is to be obtained as follows and will be paid for only once as unclassified excavation:  
23626 Cu Yd from outside sources

Out of balance excavation is to be obtained as follows and will be paid for only once as unclassified excavation:  
29603 Cu Yd from outside sources  
5682 Cu Yd from I229 Ramp C



Plotted From - mitchelle miller

File - ...rdppl\INC051115.rdg





I29 NB/SB

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B27	TOTAL SHEETS B42
-----------------------	---------------------------	--------------	---------------------

Plotting Date: 1/22/2015

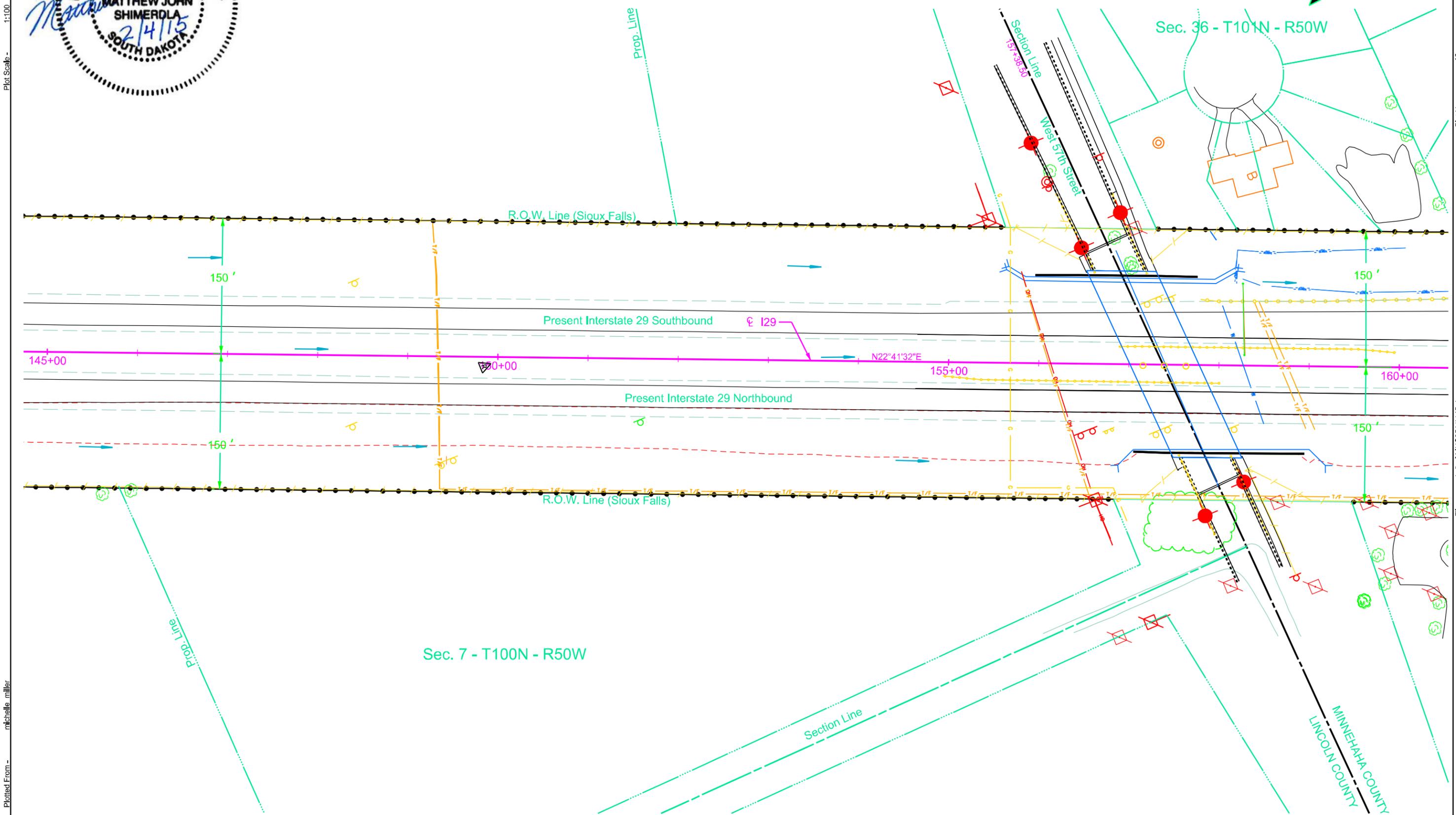
156+89 - 112' R to 159+19 - 110' R  
Retain 18" - 246' Arch RCP & 2 18"  
45° Arch RCP Bends & 2 Safety  
End Sections with Bars

155+64 - 105' L to 158+19 - 106' L  
Retain Twin 30" - 254' Arch RCP &  
4 - 30" 30° Arch RCP Bends & 4  
Sloped End Sections with Bars



Plot Scale - 1:100

Plot Name - 16



Plotted From - michelle miller

File - ...rdp\j\LINCO511145.dgn

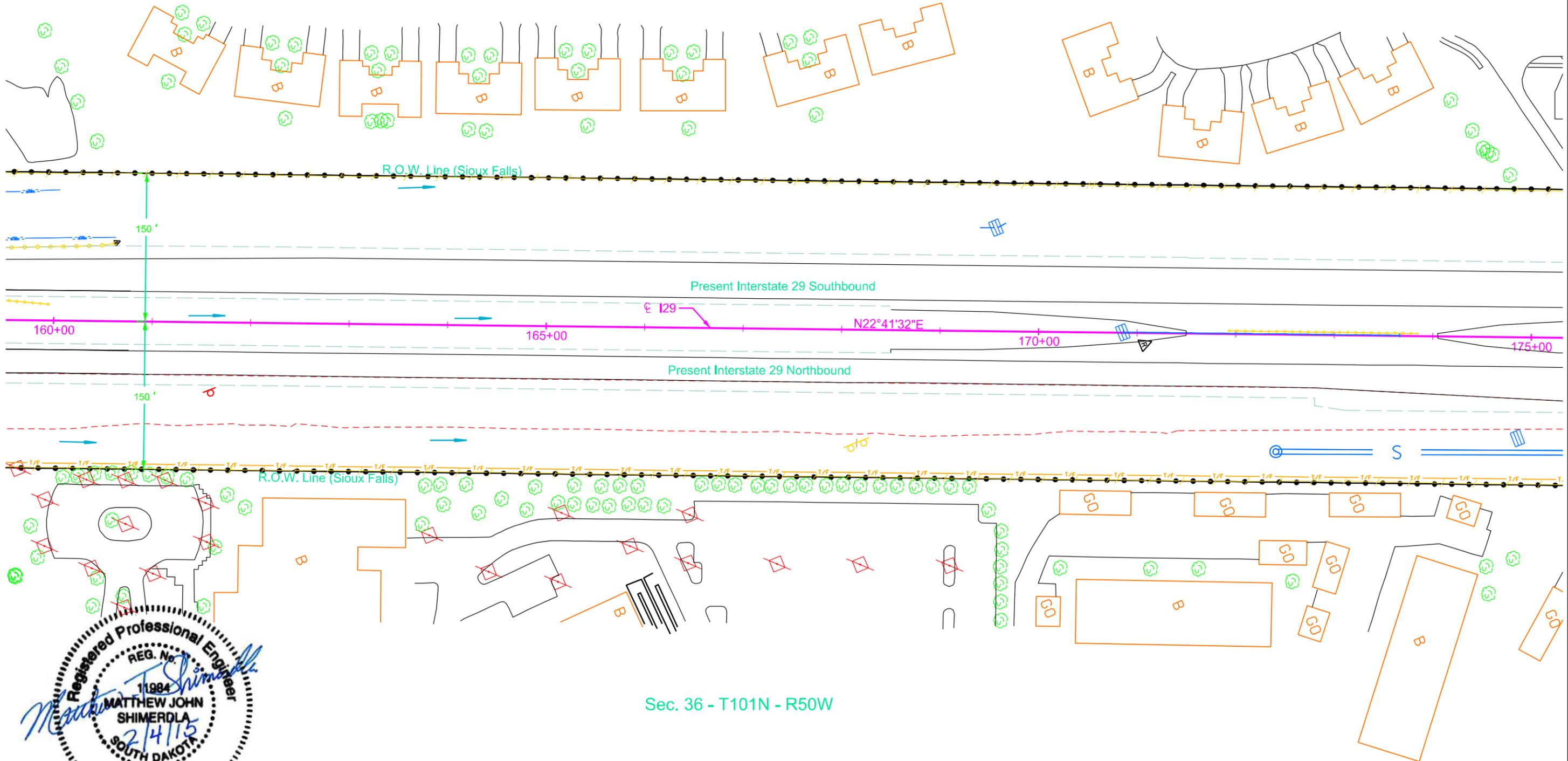
I29 NB/SB

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B28	B42
Plotting Date: 1/22/2015			

Plot Scale - 1:100

Plot Name -



Sec. 36 - T101N - R50W



Plotted From - mitchelle miller

File - ...rdppl\LIN\C0511\160.dgn

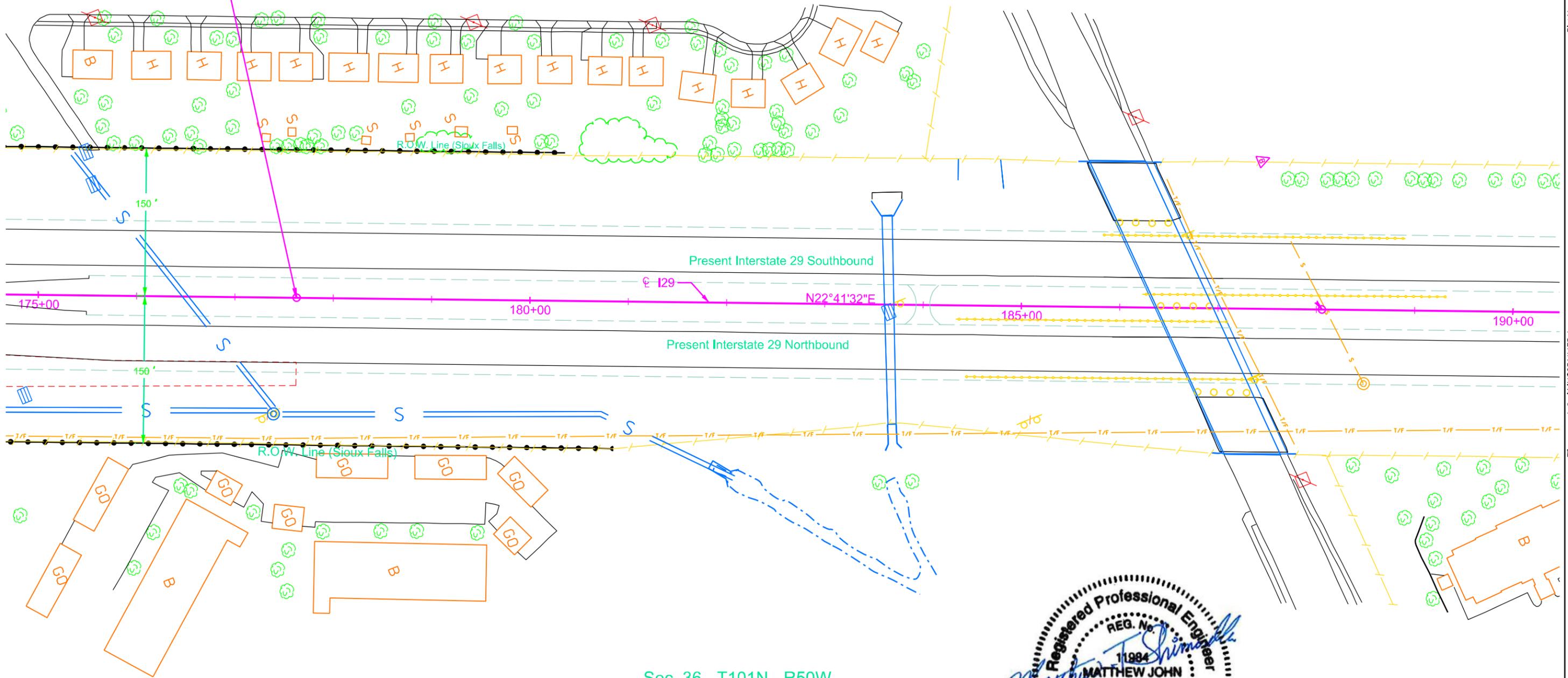
I29 NB/SB

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B29	B42
Plotting Date:		1/22/2015	



END IM 292(78)073  
Station 177+62.72



Sec. 36 - T101N - R50W



Plot Scale - 1:100

Plotted From - michelle miller

Plot Name -

File - ...rdpjl\INC0511\175.dgn

# I229 Ramp C

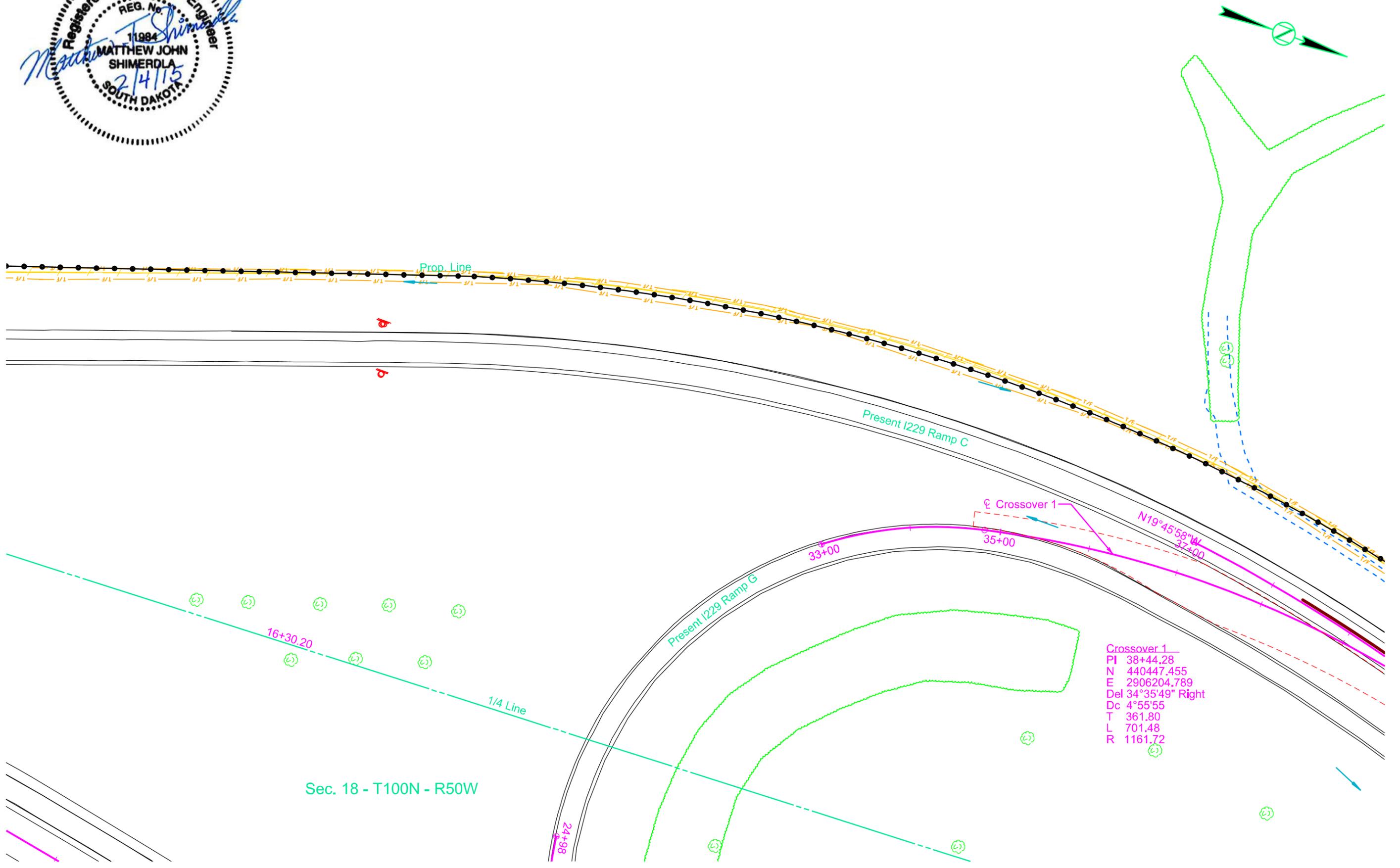
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B30	B42
Plotting Date: 1/20/2015			



Plot Scale - 1:100

Plot Name -



Plotted From - michelle miller

File - ...LINC0511\I229 Ramp C\25.dgn

Sec. 18 - T100N - R50W

## Ramp Crossover Profile I229 Ramp G to I229 Ramp C

FOR BIDDING PURPOSES ONLY

Plot Scale - 1:100

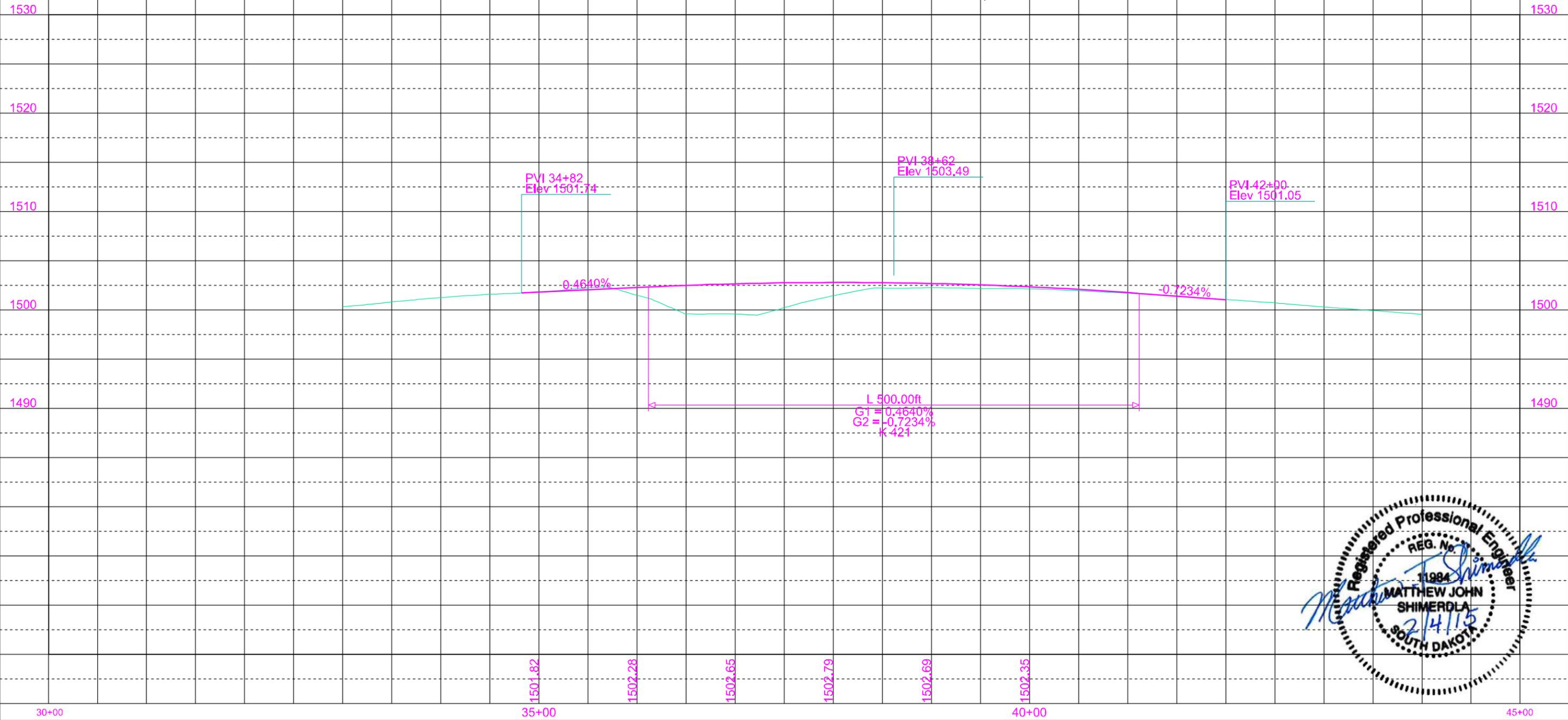
Plot Name -

Crossover 1  
34+82  
Begin Work

Crossover 1  
42+00  
End Work

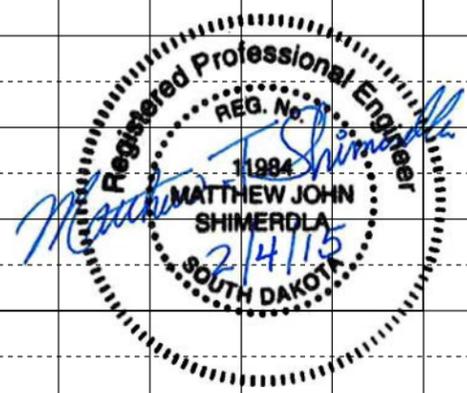
OUT OF BALANCE EXC	40	EMB	198
EXC	208	+25%	50
EXC	248		248

Out of balance excavation is to be obtained as follows and will be paid for only once as unclassified excavation:  
208 Cu Yd from I229 Ramp C



Plotted From - mitchelle miller

File - ..\I229 Ramp C\331-Crossover.dgn



# I229 Ramp C

## FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(78)073	B32	B42

Plotting Date: 1/20/2015

38+35 to 62+15 - 2' L  
Install Traffic Control Movable Concrete Barrier  
& 2 Temporary Concrete Barrier End Protection  
(See Section C - Traffic Control)

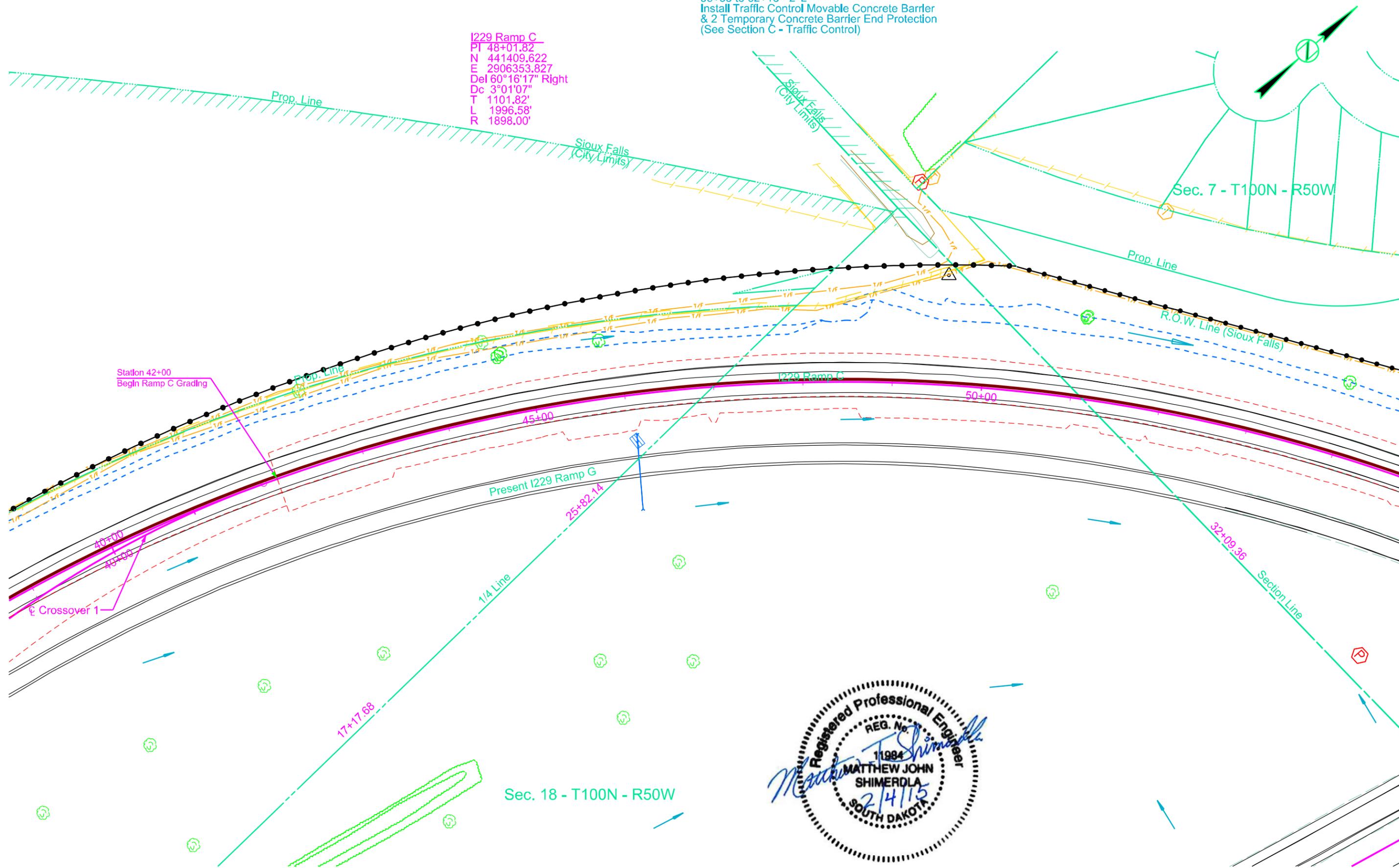
I229 Ramp C  
PI 48+01.82  
N 441409.622  
E 2906353.827  
Del 60°16'17" Right  
Dc 3°01'07"  
T 1101.82'  
L 1996.58'  
R 1898.00'

Plot Scale - 1:100

Plotted From - michelle miller

Plot Name - 21

File - ...LINC0511\I229 Ramp C\40.dgn



**FOR BIDDING PURPOSES ONLY**

Plotting Date: 1/20/2015

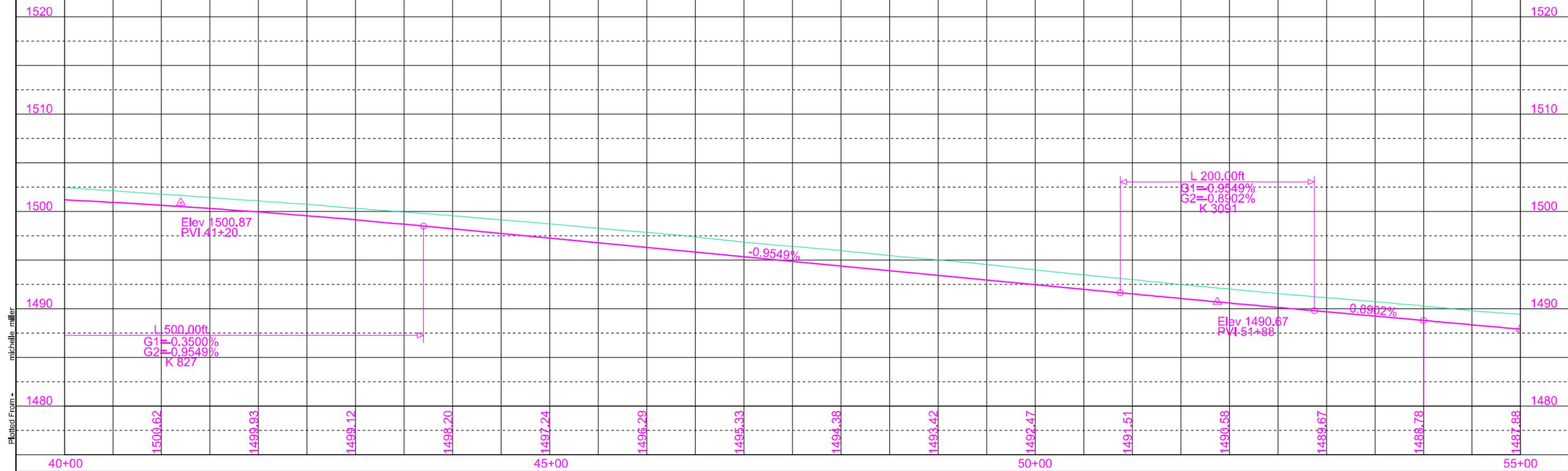
### I229 Ramp C

Plot Scale -  
1:100

I229 Ramp C  
42+00  
Begin Work

EXC	4609	EMB	0
UNDERCUT	8215	+25%	0
	12824	SELECT SUBGRADE TOPPING	5477
		+25%	1369
		+WASTE	5978
			12824

Waste is to be wasted as follows:  
 5682 Cu Yd to I229 NB Diversion  
 208 Cu Yd to Crossover 1 (I229 Ramp G to I229 Ramp C)  
 88 Cu Yd to Crossover 2 (I229 Ramp C to I229 Ramp G)



Plotted From -  
michelle miller

Plot Name -  
22

File -  
...\\LINC051\I229 Ramp C\40v.dgn

58+41 to 60+55 - 16' R  
Remove 224' Beam Guardrail

59+56.88 to 60+16.88- 16' R  
Install Gravity Large Concrete Block Wall  
(see Section E - Structures)

59+02 - 57' R  
Remove 1 End Section  
For Reset

### I229 Ramp C

60+55 to 63+48 - 16' R  
Remove 300' 3 Cable Guardrail

**FOR BIDDING PURPOSES ONLY**

STATE OF SOUTH DAKOTA

PROJECT  
IM 0292(78)073

SHEET  
B34  
TOTAL SHEETS  
B42

Plotting Date: 1/23/2015

58+98 to 60+99 - 22' L  
Remove 202' Beam Guardrail

58+47 to 59+54 - 16' R  
Install Traffic Control Movable  
Concrete Barrier & 1 Temporary  
Concrete Barrier End Protection  
(See Section C - Traffic Control)

59+02 to 60+66 - 130' R  
Install 36"-164' Arch RCP  
& Reset 1 Sloped End Section

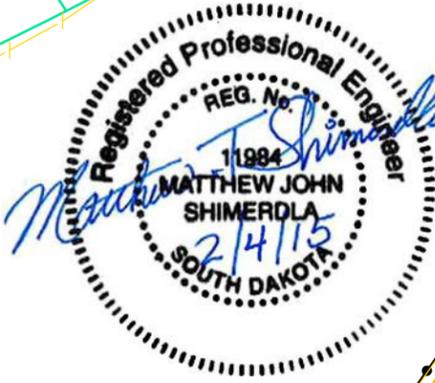
59+53 - 30' L to 61+81 - 37' L  
Install 36"-228' Arch RCP  
& 2 Sloped End Sections

60+99 to 63+48 - 22' L  
Remove 300' 3 Cable Guardrail

60+71.33 to 61+31.33 - 22' L  
Install Gravity Large Concrete Block Wall  
(see Section E - Structures)

62+55 to 65+05 - 55' R  
Install 24"-250' RCP &  
2 Sloped End Sections

61+31 to 62+06 - 22' L  
Install Traffic Control Movable  
Concrete Barrier & 1 Temporary  
Concrete Barrier End Protection  
(See Section C - Traffic Control)



I229 Ramp C  
PI 65+41.13  
N 442160.193  
E 2908149.657  
Del 1°16'56" Right  
Dc 0°24'13"  
T 158.88'  
L 317.74  
R 14200.00'

Sec. 7 - T100N - R50W

Station 64+00  
End Ramp C Grading

Crossover 2  
PI 61+95.59  
N 442026.942  
E 2907830.838  
Del 13°37'42" Right  
Dc 3°58'04"  
T 172.55  
L 343.47  
R 1444.00

Sec. 18 - T100N - R50W

Plot Scale - 1:100

Plotted From - geoff\_babovec

Plot Name - 23

File - ...LINC0511\I229 Ramp C\55.dgn

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT IM 0292(78)073	SHEET B35	TOTAL SHEETS B42
-----------------------	---------------------------	--------------	---------------------

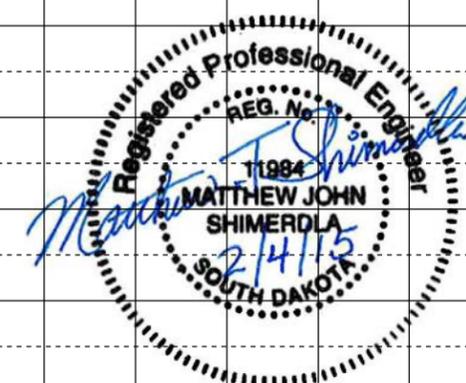
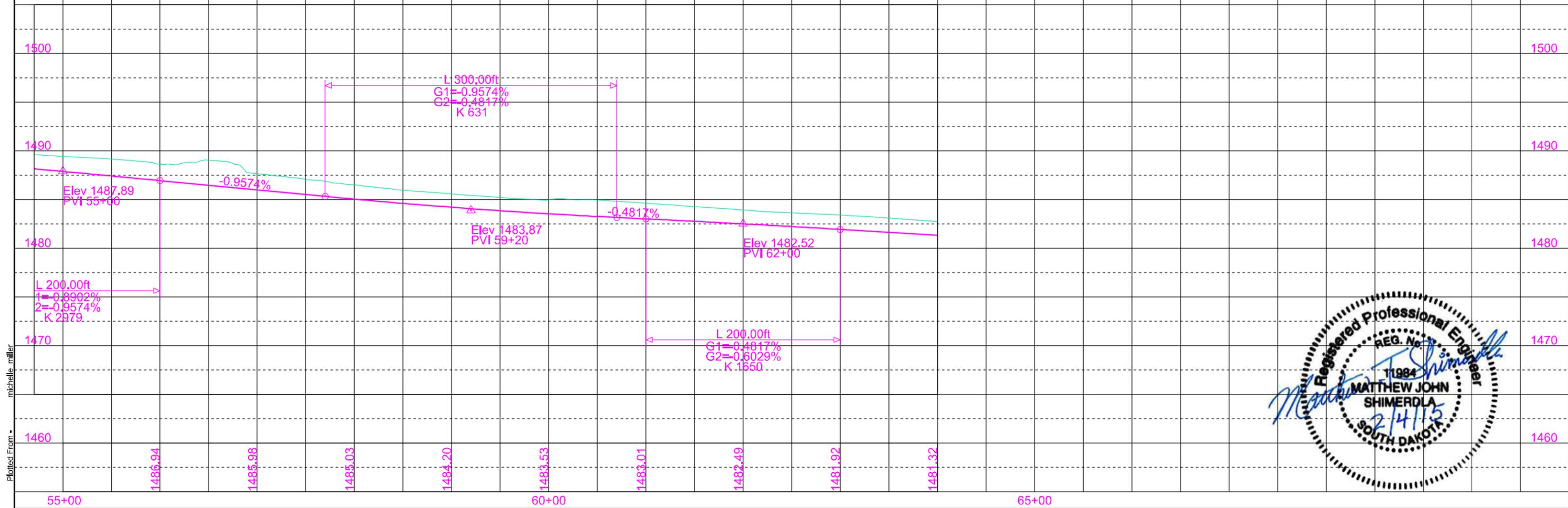
Plotting Date: 1/20/2015

### I229 Ramp C

I229 Ramp C  
64+00  
End Work

Plot Scale -  
1:100

Plot Name -



Plotted From -  
michelle miller

File - ...\\LINC051\I229 Ramp C\B35.dgn

Plotting Date: 1/20/2015

## Ramp Crossover Profile I229 Ramp C to I229 Ramp G

FOR BIDDING PURPOSES ONLY

Plot Scale - 1:100

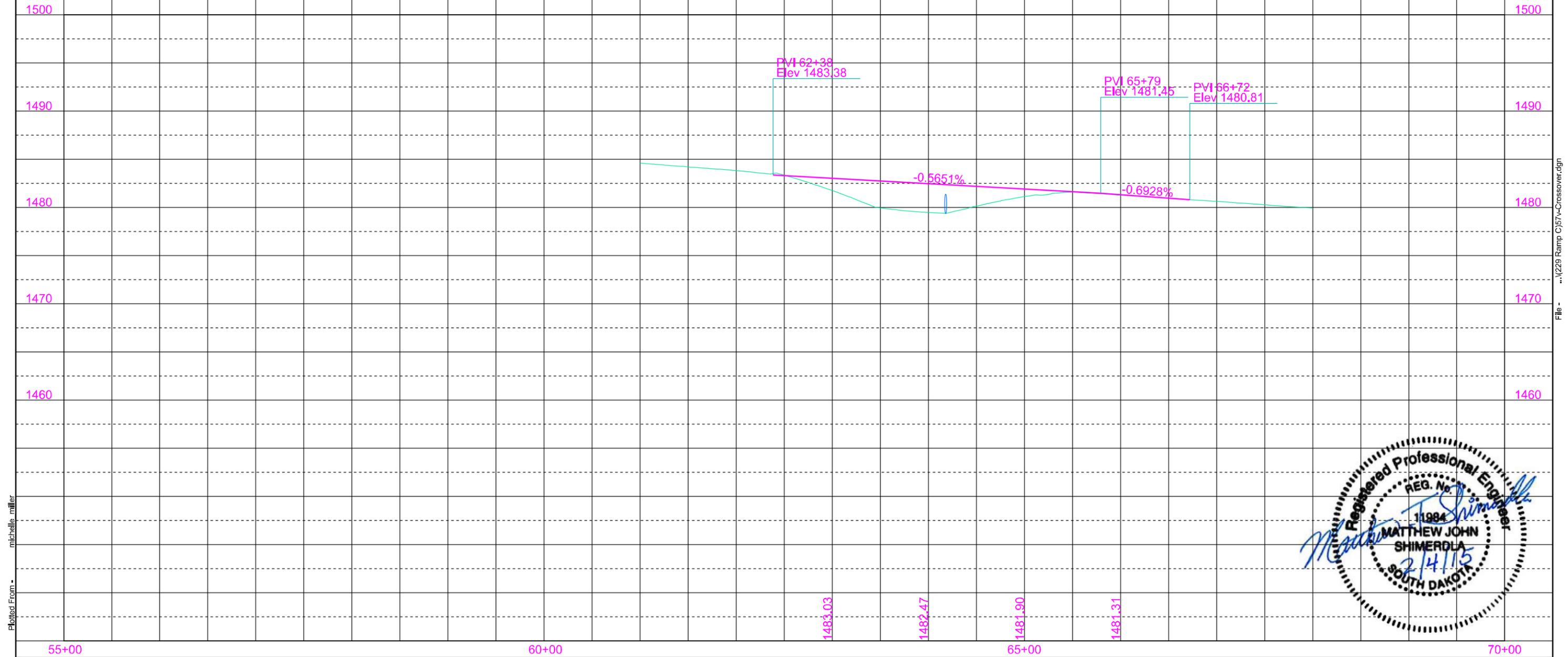
Plot Name -

Crossover 2  
62+38  
Begin Work

Crossover 2  
66+72  
End Work

OUT OF BALANCE	EXC	68	EMB	125
	EXC	88	+25%	31
		156		156

Out of balance excavation is to be obtained as follows and will be paid for only once as unclassified excavation:  
88 Cu Yd from I229 Ramp C



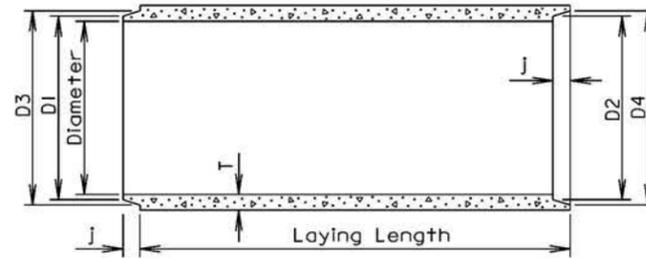
Plotted From - mitchelle miller

File - ..\I229 Ramp C\574-Crossover.dgn

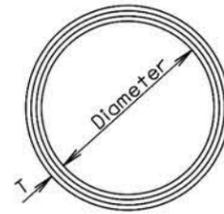


**TOLERANCES IN DIMENSIONS**

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



LONGITUDINAL SECTION



END VIEW

**GENERAL NOTES:**

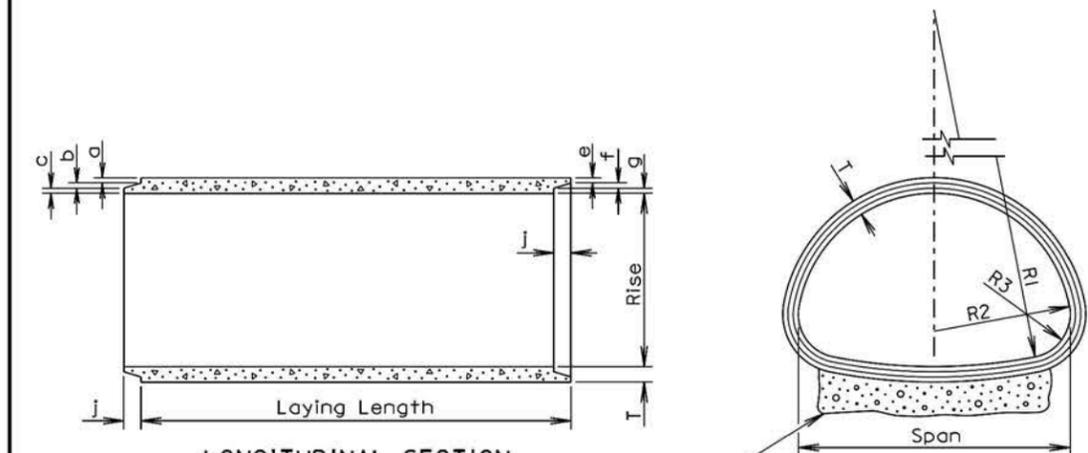
Construction of R.C.P. shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.

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

Diam. (in.)	Approx. Wt./Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 3/8	14 1/4
15	127	2 1/4	2	16 1/2	16 1/8	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 3/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 5/8	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 3/8	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

March 31, 2000

Published Date: 4th Qtr. 2014	S D D O T	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
			Sheet 1 of 1



LONGITUDINAL SECTION

END VIEW

**TOLERANCES IN DIMENSIONS**

Radial dimensions at joints:  $\pm 1/8$ " for 65" span or less and  $\pm 1/4$ " for longer spans.  
 Rise and Span:  $\pm 2\%$  of tabular values.  
 Length of Joint (J):  $\pm 1/4$ ".  
 Wall thickness (T): not less than design T by more than 5% or  $\frac{3}{16}$ ", whichever is greater.  
 Laying length: shall not underrun by more than  $\frac{1}{2}$ ".

Gravel Bedding Material shall be supplied for 102" to 169" spans. It shall be placed to a thickness of 6" (min.) x 85% of the Span x Length of culvert and shall conform to the gradation requirements for gravel surfacing except material may be screened or may be plan provided material.

* Size (in.)	Approx. Wt./Ft. (lb.)	Rise (in.)	Span (in.)	T (in.)	a (in.)	b (in.)	c (in.)	j (in.)	e (in.)	f (in.)	g (in.)	R1 (in.)	R2 (in.)	R3 (in.)
18	170	13 1/2	22	2 1/2	1 3/8	3/8	3/4	2	1 1/8	3/8	1	27 1/2	13 3/4	5 1/4
24	320	18	28 1/2	3 1/2	1 5/8	1/2	1 3/8	3	1 3/8	1/2	1 5/8	40 1/16	14 3/4	4 5/8
30	450	22 1/2	36 1/4	4	1 13/16	5/8	1 9/16	3 1/2	1 9/16	5/8	1 13/16	51	18 3/4	6 1/8
36	600	26 5/8	43 3/4	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	62	22 1/2	6 1/2
42	740	31 5/16	51 1/8	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	73	26 1/4	7 3/4
48	890	36	58 1/2	5	2 1/4	3/4	2	5	2	3/4	2 1/4	84	30	8 7/8
54	1100	40	65	5 1/2	2 1/2	3/4	2 1/4	5	2 1/4	3/4	2 1/2	92 1/2	33 3/8	10
60	1400	45	73 1/2	6	3 3/16	3/4	1 15/16	5	2 3/4	3/4	2 1/2	105	37 1/2	11
72	1900	54	88	7	3 13/16	1	2 3/16	6	3 1/4	1	2 3/4	126	45	13 5/16
84	2500	62	102	8	4 1/8	1	2 7/8	6	3 1/2	1	3 1/2	162 1/2	52	14 1/2
96	3300	78	122 3/8	9	4 1/2	1	3 1/2	7	4	1	4	218	62	20
108	4200	88	138 1/2	10	5	1	4	7	4 1/2	1	4 1/2	269	70	22
120	5100	96 7/8	154	11	5 1/2	1	4 1/2	7	5	1	5	301 3/8	78	24
132	5100	106 1/2	168 3/4	10		1	4	7	4 1/2	1	4 1/2	329	85 5/8	26 7/8

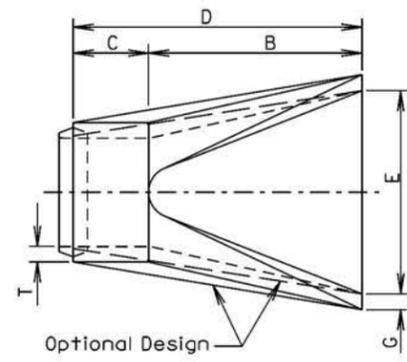
\* Equivalent Diameter of Circular R.C.P.

**GENERAL NOTES:**

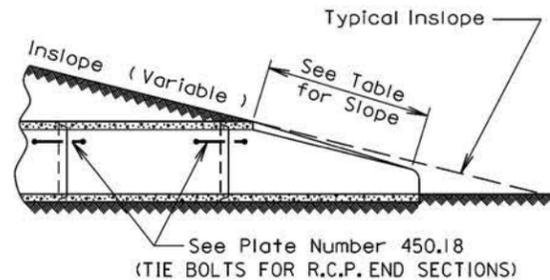
Construction of R.C.P. Arch shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges. Not more than 2 four foot sections shall be permitted near the ends of any culvert. Four foot lengths shall be used only to secure the required length of culvert.

March 31, 2000

Published Date: 4th Qtr. 2014	S D D O T	REINFORCED CONCRETE PIPE ARCH	PLATE NUMBER 450.02
			Sheet 1 of 1



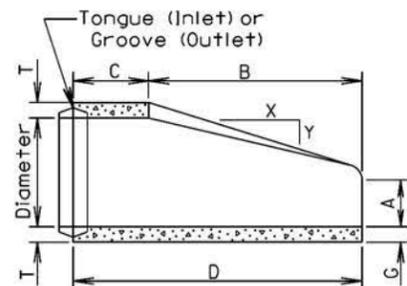
TOP VIEW



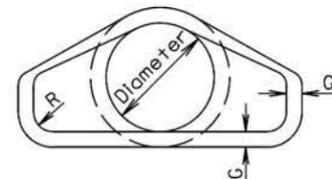
SLOPE DETAIL

GENERAL NOTES:

Lengths of concrete pipe shown on Plan Sheets are between flared Ends only.  
Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.



LONGITUDINAL SECTION

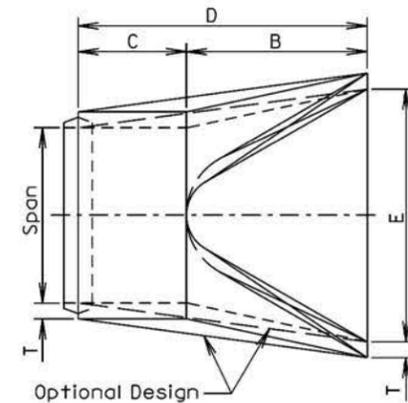


END VIEW

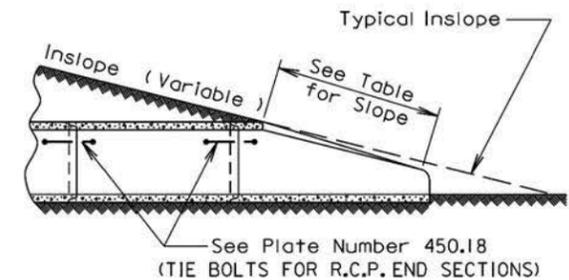
Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4:1	2	4	24	48 7/8	72 7/8	24	2	1 1/2
15	740	2.4:1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3:1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4:1	2 3/4	9	36	37 1/2	73 1/2	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 1/2	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

March 31, 2000

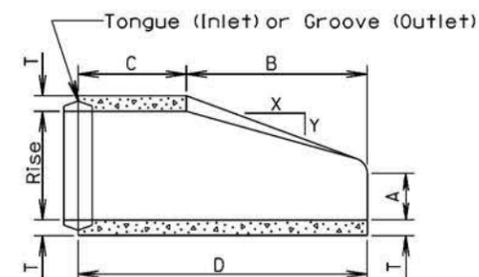
<b>S D D O T</b>	<b>R. C. P. FLARED ENDS</b>	PLATE NUMBER <b>450.10</b>
	Published Date: 4th Qtr. 2014	Sheet 1 of 1



TOP VIEW



SLOPE DETAIL



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

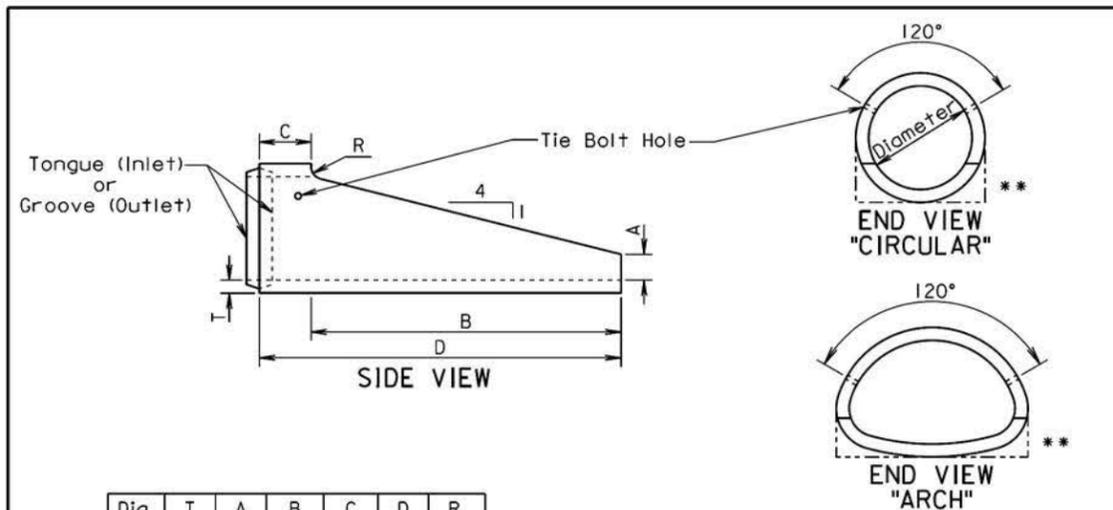
Lengths of concrete pipe shown on Plan Sheets are between Flared Ends only.  
Construction of R.C.P. Arch Flared End shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.

* 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	11 1/8	60	36	96	72	6
42	5250	31 5/16	51 1/8	3:1	4 1/2	15 3/16	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.

March 31, 2000

<b>S D D O T</b>	<b>R. C. P. ARCH FLARED ENDS</b>	PLATE NUMBER <b>450.11</b>
	Published Date: 4th Qtr. 2014	Sheet 1 of 1

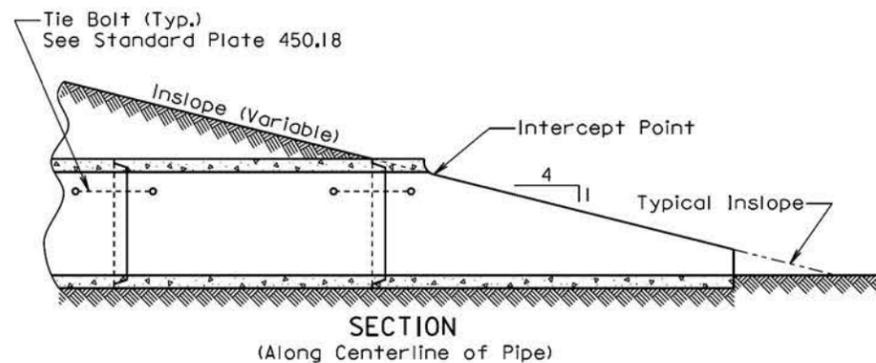


Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	6	72	12	84	3
30	3 1/2	7 1/2	90	12	102	3 1/2
FOR ARCH PIPE						
* 24	3	6	48	12	60	3
* 30	3 1/2	7 1/2	60	12	72	3 1/2
* 36	4 1/2	8 5/8	66	30	96	0
* 42	4 1/2	10	77 1/4	18 3/4	96	0

ALTERNATE

Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	9	72	12	84	0
30	3 1/2	11	90	12	102	0
FOR ARCH PIPE						
* 24	3	9	48	12	60	0
* 30	3 1/2	11	60	12	72	0

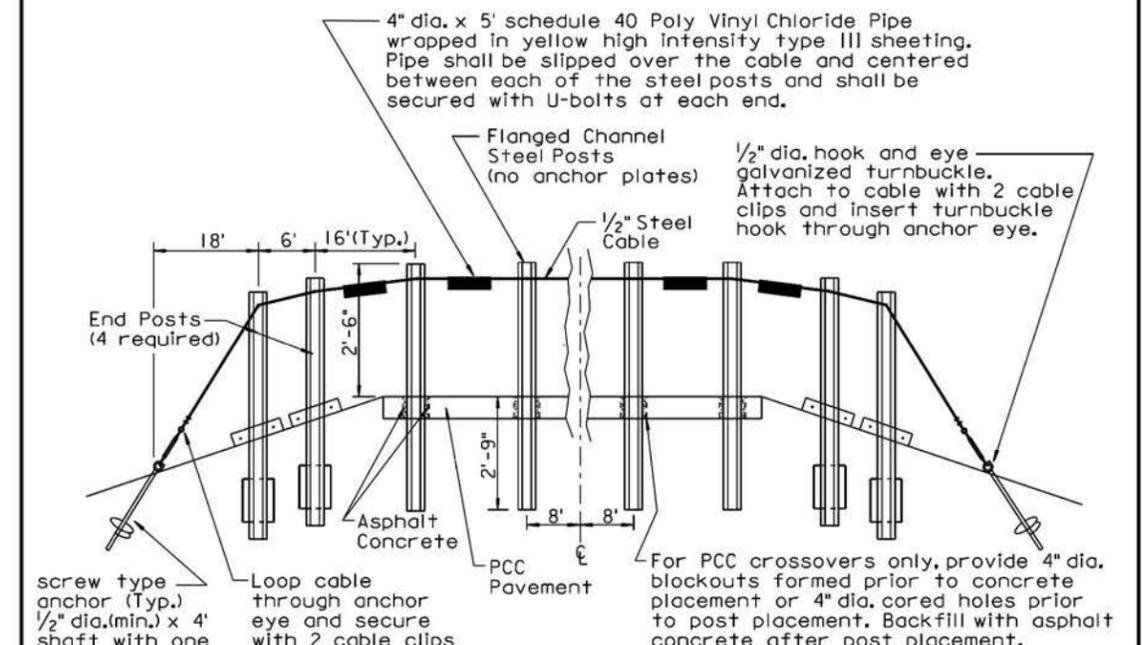
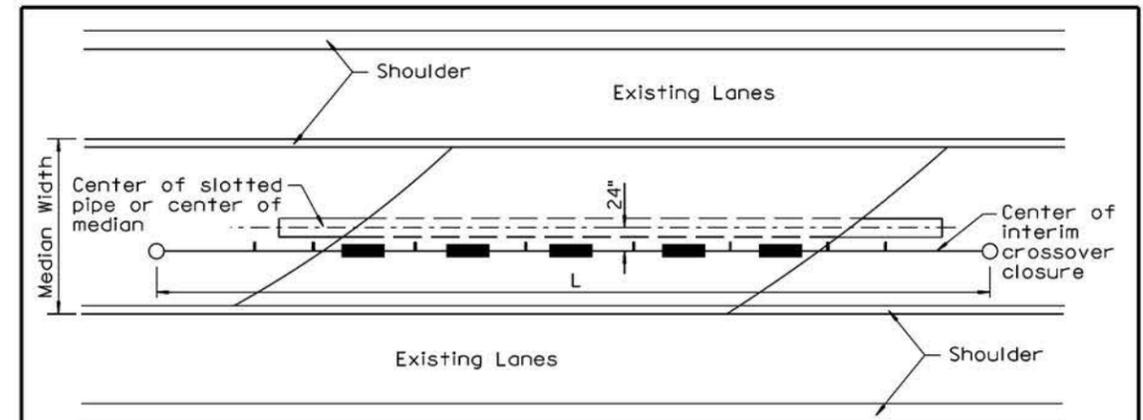
\* Equivalent Diameter of Circular R.C.P.  
 \*\* Acceptable Flat Bottom Alternate.



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

September 22, 2006

Published Date: 4th Qtr. 2014	S D D O T	R. C. P. SLOPED ENDS	PLATE NUMBER 450.13
			Sheet 1 of 1



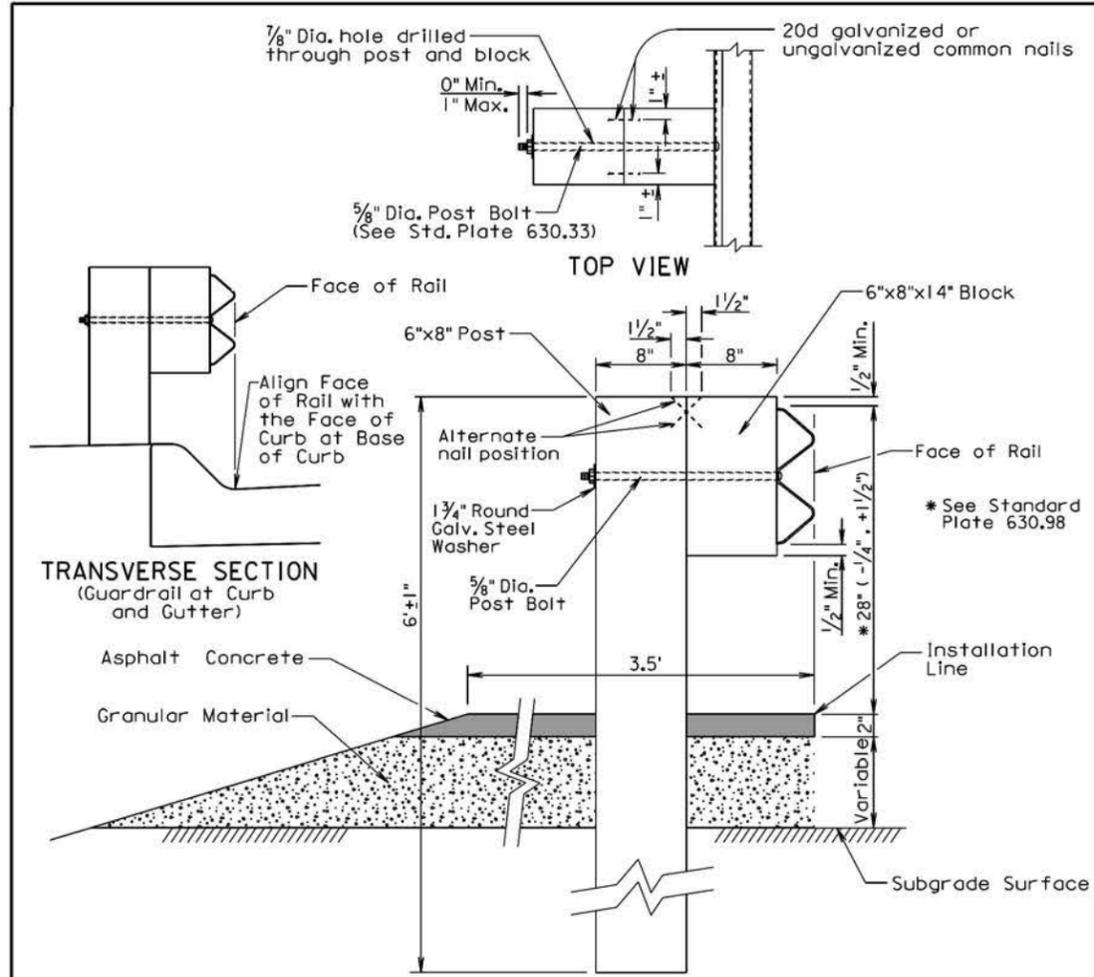
MEDIAN WIDTH	NO. OF PVC PIPES	NO. OF U-BOLTS	NO. OF FLANGED CHANNEL STEEL POSTS	PAY LENGTH L
60'	5	10	4	128'

GENERAL NOTES:  
 All costs for materials, backfilling holes with asphalt concrete, labor, equipment, and incidentals necessary to construct the interim crossover closure shall be incidental to the contract unit price per Ft for "Interim Crossover Closure". The costs of coring holes or providing blockouts in the surfacing shall be incidental to the surfacing bid item(s).  
 The Interim Crossover Closure shall be constructed using 3 cable guardrail posts with hook bolts. For specific details of the 3 cable guardrail hardware and installation, see Standard Plate 629.01 sheets 1 through 6.

March 31, 2000

Published Date: 4th Qtr. 2014	S D D O T	INTERIM CROSSOVER CLOSURE	PLATE NUMBER 629.41
			Sheet 1 of 1

Plot Scale - 1:204.762



**GENERAL NOTES:**

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

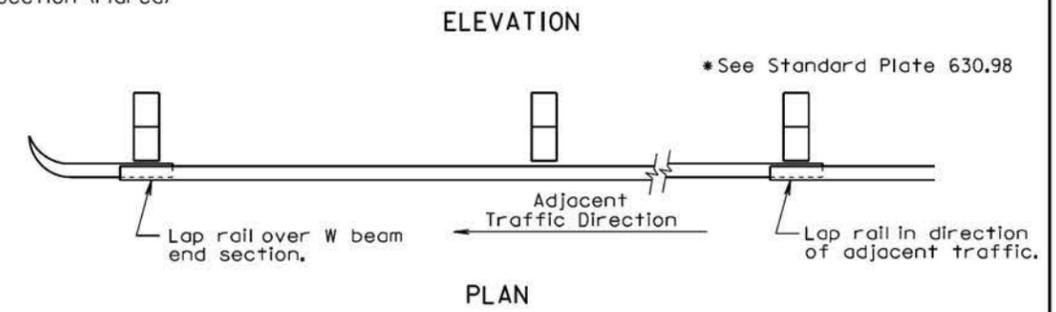
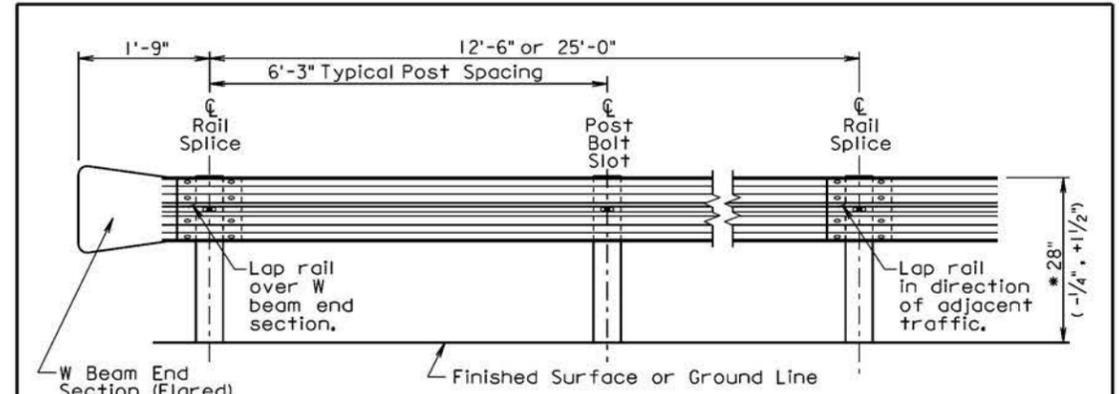
Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).

The top of posts and top of block shall have a true square cut. The top of post and top of block shall be flush.

December 23, 2010

<b>SD DOT</b>	<b>W BEAM GUARDRAIL POST INSTALLATION</b>	PLATE NUMBER <b>630.31</b>
	Published Date: 4th Qtr. 2014	Sheet 1 of 1



W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	5'-0"
3'-1 1/2"	3'-9"

For Informational Purposes Only

**GENERAL NOTES:**

All W beam rail shall be Type I.

There will be no separate payment for furnishing and installing W Beam End Sections (Flared) and W Beam Terminal Connectors. All costs for the W Beam End Sections (Flared) and W Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.

W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

All costs for constructing W beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

December 16, 2014

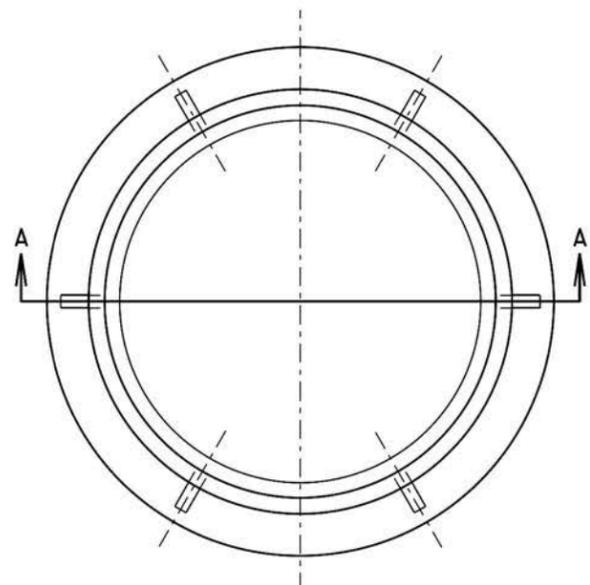
<b>SD DOT</b>	<b>W BEAM GUARDRAIL INSTALLATION</b>	PLATE NUMBER <b>630.32</b>
	Published Date: 4th Qtr. 2014	Sheet 1 of 1

Plotted From - michelle\_miller

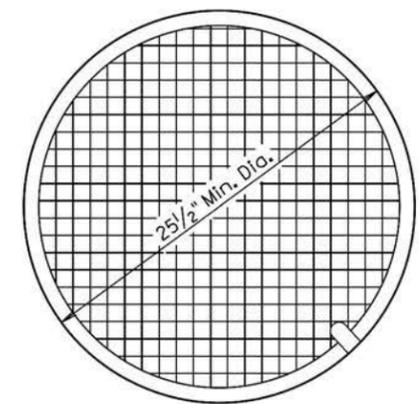
Plot Name - 31

File - ...rd\proj\INC0511\PlateB-6.dgn

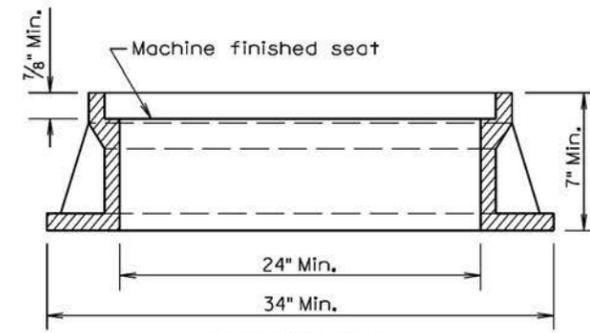




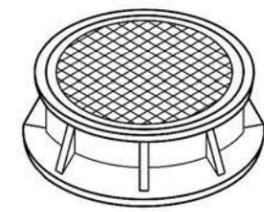
PLAN OF FRAME



PLAN OF LID



SECTION A-A



ASSEMBLED VIEW

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

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

March 31, 2000

Published Date: 4th Qtr. 2014	<b>S D D O T</b>	<b>TYPE A MANHOLE FRAME AND LID</b>	PLATE NUMBER 671.10
			Sheet 1 of 1