



Department of Transportation

Office of Project Development

700 E Broadway Avenue

Pierre, South Dakota 57501-2586 605/773-3268

FAX: 605/773-2614

September 16, 2016

ADDENDUM NO. 1

RE: Item #4, September 21, 2016 Letting - NH 0100(105)419, PCN 01V5, Minnehaha County - Grading, PCC Surfacing, Structure, Curb & Gutter, Roadway Lighting, Traffic Signal, Storm Sewer

TO WHOM IT MAY CONCERN:

The following addenda to the plans shall be inserted and made a part of your proposal for the referenced project.

SPECIAL PROVISIONS: Please remove the Special Provisions checklist and replace with attached Special Provisions checklist revised 9/15/16.

Please remove the "Special Provision for Contract Time", dated 8/19/16 and replace with the "Special Provision for Contract Time", dated 9/15/16.

BID ITEM FILE: *Bidders must log in to retrieve the addendum bid item file that must be loaded into the SDEBS to incorporate the revisions listed here.*

Bid Items were added:

Bid Item 110E0210 "Remove Building(s)"

Bid Item 450E2207 "36" RCP Sloped End with Bars, Furnish"

Bid Item 450E2209 "36" RCP Sloped End, Install"

Quantities for Bid Items were changed:

Bid Item 120E0010 "Unclassified Excavation" changed from 1,109,855 to 1,127,260 CyYd

Bid Item 450E0182 "36" RCP Class 2, Furnish" changed from 36 ft to 2,916 ft

Bid Item 450E0190 "36" RCP, Install" changed from 36 ft to 2,916 ft

Bid item 464E0100 "Controlled Density Fill" changed from 174.0 to 348.0 CuYd

Bid Item 620E1020 "2 Post Panel" changed from 171 to 173 Each

Bid Item 635E0050 Breakaway Base Luminaire Pole with Arm, 50' Mounting Height from 56 Each to 58 Each

Bid Item 635E3700 "Roadway Luminaire, LED with Photoelectric Cell" changed from 58 Each to 60 Each

Bid Item 635E5020 "2' Diameter Footing" changed from 478.0 Ft to 494.0 Ft

Bid Item 635E8120 "2" Rigid Conduit, Schedule 40" changed from 11,520 Ft to 11,870 Ft

Bid Item 635E8830 "2/2/2/4 Aluminum Wire" changed from 25,985 Ft to 26,360 Ft

Bid Item 635E9710 "2/C #10 AWG Copper Pole and Bracket Cable" changed from 3,770 Ft to 3,900 Ft

Bid Items were removed:

Bid Item 450E3042 "42" RCP Arch Class 2, Furnish"
Bid Item 450E3050 "42" RCP Arch, Install"
Bid Item 450E4608 "42"RCP Arch Sloped End, Furnish"
Bid Item 450E4609 "42"RCP Arch Sloped End, Install"
Bid Item 634E0135 "Traffic Control Supervisor"

PLANS: Please destroy sheets A1, A2, B2, B5, B10, B13, B14, B15, B18, B23, B31,B48, B59, B61, B83, C2, L2, L3, L4, L8, L9, L10, L12, L26, L27, L30, L32, AND Z29 and replace with the enclosed sheets, dated 9/6/16, and 9/15/16.

Sheet A1: **Bid Items were added:**

Bid Item 110E0210 "Remove Building(s)"
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Bid Item 634E0135 "Traffic Control Supervisor"

Sheet A2: **Quantities for Bid Items were changed:**

Bid Item 635E0050 Breakaway Base Luminaire Pole with Arm, 50' Mounting Height from 56 Each to 58 Each
Bid Item 635E3700 "Roadway Luminaire, LED with Photoelectric Cell" changed from 58 Each to 60 Each
Bid Item 635E5020 "2' Diameter Footing" changed from 478.0 Ft to 494.0 Ft
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Sheet B2: **Bid Items were added:**

Bid Item 110E0210 "Remove Building(s)"
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Bid Item 450E4609 "42"RCP Arch Sloped End, Install"

Sheet B5: TABLE OF UNCLASSIFIED EXCAVATION was revised.

Sheet B10: REMOVAL OF BUILDING(S) and RESTRICTED WORK AREA notes were added.

Sheets B13, B14, & B15: Columns for "42" RCP Arch Pipe" and "42" RCP Arch Sloped End" were deleted, column for "36" circular sloped end" was added, and quantities for "36" Circular Pipe" and "Controlled Density Fill" were revised.

Sheet B18: TABLE OF FENCE QUANTITIES was revised.

Sheet B23: HORIZONTAL ALIGNMENT DATA was revised.

Sheet B31: 30' barbed wire gate and 2-2 post panel at station 806+60-200" was added.

Sheet B48: Parcel 88 temporary easement note was added.

Sheets B59, B61: Pipes and notes from (8) 42" arch RCP to (10) 36" round RCP were revised and showed construction elements of future project PCN 00WN.

Sheet B83: Standard plate 450.13 was replaced with 450.14

Sheet C2: Bid Item 634E0135 "Traffic Control Supervisor" was removed.

Sheet L2: **Quantities for Bid Items were changed:**

Bid Item 635E0050 Breakaway Base Luminaire Pole with Arm, 50' Mounting Height from 56 Each to 58 Each

Bid Item 635E3700 "Roadway Luminaire, LED with Photoelectric Cell" changed from 58 Each to 60 Each

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Bid Item 635E9710 "2/C #10 AWG Copper Pole and Bracket Cable" changed from 3,770 Ft to 3,900 Ft

Sheet L3: TABLE OF FOOTING DATA and LUMINAIRES notes were revised.

Sheet L4: TRAFFIC SIGNAL HEADS and CONTROLLER CABINET notes were revised.

Sheet L8 & L9: TABLE FOR CONDUIT & CABLE QUANTITIES was revised.

Sheet L10: OVERALL LAYOUT was revised.

Sheet L12: ESTIMATE OF QUANTITIES was revised.

Sheet L26: CONDUIT LAYOUT was revised.

Sheet L27: SIGNAL CONDUIT LAYOUT was revised.

Sheet L30: SIGNAL WIRING DIAGRAM was revised.

Sheet L32: LIGHTING WIRING DIAGRAM was revised.

Sheet Z29: Pipes and notes from (8) 42" arch RCP to (10) 36" round RCP were revised and showed construction elements of future project PCN 00WN.

Sincerely,

Sam Weisgram
Engineering Supervisor

SW/cj

CC: Craig Smith, Mitchell Region Engineer
Travis Dressen, Sioux Falls Area Engineer

REV. 9/15/16

SPECIAL PROVISIONS

PROJECT NUMBER(S): NH 0100(105)419 PCN: 01V5

TYPE OF WORK: GRADING, PCC SURFACING, STRUCTURE, CURB & GUTTER,
ROADWAY LIGHTING, TRAFFIC SIGNAL, STORM SEWER

COUNTY: MINNEHAHA

The following clauses have been prepared subsequent to the Standard Specifications for Roads and Bridges and refer only to the above described improvement, for which the following Proposal is made.

The Contractor's attention is directed to the need for securing from the Department of Environment & Natural Resources, Foss Building, Pierre, South Dakota, permission to remove water from public sources (lakes, rivers, streams, etc.). The Contractor should make his request as early as possible after receiving his contract, and insofar as possible at least 30 days prior to the date that the water is to be used.

Greg Johnson is the official in charge of the Sioux Falls Career Center for Minnehaha County.

THE FOLLOWING ITEMS ARE INCLUDED IN THIS PROPOSAL FORM:

Special Provision for Contract Time, dated 9/15/16.

Special Provision Regarding Right of Entry/Work Limits, dated 8/24/16.

Special Provision for Subletting of Contract, dated 8/19/16.

Special Provision for On-The-Job Training Program, dated 3/10/16.

Special Provision Regarding Section 404 of the Clean water Act, dated 8/24/16.

Special Conditions.

Special Provision Regarding Railroad Insurance Requirements, dated 7/11/16.

NOTE: The contractor WILL NOT be granted permission to proceed with any work on Railroad Right-of-Way until he has been notified by the Railroad that his insurance has been approved and the insurances and certificates has been provided to the SDDOT Area Office.

Special Provision For Working on Railroad Property, dated 7/11/16.

**Special Provision for Contractor Furnished Mix Designs for
PCC Pavement, dated 8/15/16.**

**Special Provision for Contractor Staking with Machine Control
Grading Option, dated 8/19/16.**

**Agreement to Sell Materials (Judy Roddel, Trustee of the Judy Roddel Trust, Ronald G
Tysdal and Jean A Tysdal as Trustees of the Ronald D and Jean A Tysdal Living Trust,
and Tysdal Developments Inc)**

Special Provision for Optical Activated Emergency Vehicle Pre-Emption System

Special Provision for Controller Cabinet

**Special provision for Wireless, Battery-Powered Magnetometer Detection System for
Presence Detection Application**

Special Provision for Traffic Signal Controller

Special Provision for Traffic Signal Heads

List of Utilities.

Special Provision for Contractor Administered Preconstruction Meeting, dated 4/18/13.

Fuel Adjustment Affidavit, DOT form 208 dated 7/15.

Standard Title VI Assurance, dated 3/1/16.

Special Provision For Disadvantaged Business Enterprise, dated 5/20/15.

Special Provision For EEO Affirmative Action Requirements on Federal and Federal-aid
Construction Contracts, dated 9/1/97.

Special Provision For Required Contract Provisions Federal-aid Construction Contracts, Form
FHWA 1273 (Rev. May/1/12), dated 4/30/13.

Required Contract Provisions Federal-aid Construction Contracts, Form
FHWA 1273 (Rev. 5/1/12).

Special Provision for Cargo Preference Act, dated 1/20/16.

Special Provision Regarding Minimum Wage on Federal-Aid Projects, dated 4/30/13.

Wage and Hour Division US Department of Labor Washington DC.

- US Dept. of Labor Decision Number SD150001, dated 10/9/15.

Special Provision for Supplemental Specifications to 2015 Standard Specifications for Roads
and Bridges, dated 6/1/16.

Special Provision for Errata to 2015 Standard Specifications for Roads and Bridges,
dated 6/1/16.

Special Provision for Price Schedule for Miscellaneous Items, dated 10/14/15.

Special Provision Regarding Storm Water Discharge, dated 5/3/13.

General Permit for Storm Water Discharges Associated with Construction

Activities, dated 2/1/10. <http://denr.sd.gov/des/sw/Permits/ConstructionGeneralPermit2010.pdf>

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**STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION**

**SPECIAL PROVISION
FOR
CONTRACT TIME**

**PROJECT NH 0100(105)419; PCN 01V5
MINNEHAHA COUNTY**

SEPTEMBER 15, 2016

Maple Street Intersection Working Day Count Requirement

The Contractor will complete all work for the closure of the Maple Street intersection within 14 working days. The Department will count working days in accordance with Section 8.6 A except the Department will only count working days on days the Contractor has the intersection closed to traffic. The Contractor will place either gravel or permanent surfacing to open the road to traffic.

If the Contractor does not complete the work within the working day completion requirement, the Department will make a disincentive assessment in the amount of \$500 per working day.

Substantial Completion

The Contractor will substantially complete the project by the November 3, 2017 substantial completion date.

The Department will consider the work substantially complete when all lanes are opened to unimpeded traffic and all work is completed except the following:

Permanent pavement markings, placement of granular base for shared use path, asphalt surfacing for shared use path, colored median PCC pavement, and permanent erosion control measures.

Following the substantial completion of the project, the Department will allow single lane closures for the completion of the remaining items of work (including, but not limited to, Permanent pavement markings, placement of granular base for shared use path, asphalt surfacing for shared use path, colored median PCC pavement, and permanent erosion control measures.). The Department will allow single lane closures during daylight hours only and only when the Contractor is actively performing work. Daylight hours will be defined as sunrise to sunset.

If the Contractor does not substantially complete the project by the substantial completion requirement, the Department will make a disincentive assessment in the amount of \$1500 per working day. The Department will count working days in accordance with Section 8.6 C.

Field Work Completion

The Contractor will complete the project by the July 20, 2018 field work completion date.

Failure to Complete on Time

The Contractor will substantially complete the project prior to the substantial completion requirement or the substantial completion requirement as amended by formally approved time extension. If the Contractor does not complete the work by the substantial completion requirement or the substantial completion requirement as amended by formally approved time extension, the Department will assess liquidated damages in accordance with Section 8.8 in addition to the disincentive assessment for substantial completion. The Department will assess liquidated damages for each working day the work (project) is late until the Contractor substantially completes the work.

In the event the Contractor does not substantially complete the work on time, the Department will count working days in accordance with Section 8.6 C.

The Contractor will complete all work on the project prior to the field work completion requirement or the field work completion requirement as amended by formally approved time extension. If the Contractor does not complete all work by the field work completion requirement or the field work completion requirement as amended by formally approved time extension, the Department will assess liquidated damages in accordance with Section 8.8. The Department will assess liquidated damages for each working day the work (project) is late until the Contractor completes all field work.

In the event the Contractor does not complete all field work on time, the Department will count working days in accordance with Section 8.6 C.

Expected Adverse Weather Days

The Department has provided Attachment 1 for information purposes only as a guide to bidders. This table depicts the typical number of adverse weather days expected for any given month, based on historical records. The Department will consider this project a grading project in Zone 6.

The Department will consider expected adverse weather days cumulative in nature over the time period when the Contractor is actively pursuing completion of the work. The Department will not consider adverse weather days during an extended period of time when the Contractor is not pursuing completion of the work. When considering a time

extension for working day count completion, substantial completion, or field work completion of the project, the Engineer will compare the total number of expected adverse weather days against the total number of actual adverse weather days for the time period during which the work was being completed.

* * * * *

ATTACHMENT 1

Figure A - Expected Adverse Weather Days for South Dakota

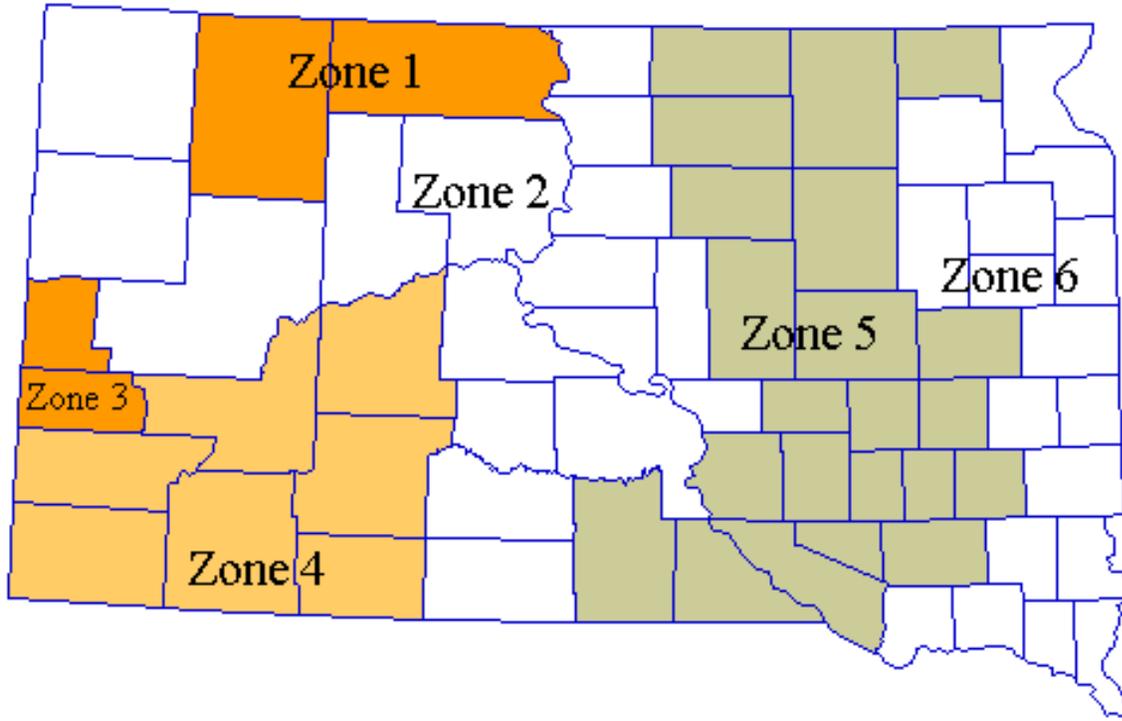


Table 1 - Expected Adverse Weather Days for South Dakota

	Grading Projects						Surfacing and Structural Projects					
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6
Jan	18	18	16	16	22	24	18	18	15	16	21	23
Feb	19	18	12	14	19	21	19	18	12	14	19	21
Mar	12	10	9	8	11	13	12	10	9	8	10	12
Apr	6	5	8	5	6	6	5	4	6	4	4	4
May	6	6	8	6	6	6	5	5	6	4	4	5
Jun	7	6	7	6	7	8	5	5	5	4	5	6
Jul	5	5	6	5	6	7	4	4	5	3	4	5
Aug	4	4	5	4	5	6	3	3	4	3	4	4
Sep	3	3	4	3	4	5	2	2	3	2	3	4
Oct	4	3	5	3	4	4	3	3	4	2	3	3
Nov	11	9	8	7	10	12	11	9	8	7	10	11
Dec	21	19	15	14	20	22	21	19	15	14	20	22

NOTE: Includes Holidays and Weekends.

ESTIMATE OF QUANTITIES

GRADING - Section B

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	15.070	Mile
009E3245	Final Cross Section Survey	2.688	Mile
009E3250	Miscellaneous Staking	2.688	Mile
009E3280	Slope Staking	2.688	Mile
009E3290	Structure Staking	1	Each
009E3300	Three Man Survey Crew	40.0	Hour
100E0100	Clearing	Lump Sum	LS
110E0210	Remove Building(s)	Lump Sum	LS
110E0600	Remove Fence	3,030	Ft
110E1010	Remove Asphalt Concrete Pavement	17,076.0	SqYd
120E0010	Unclassified Excavation	1,127,260	CuYd
120E0420	Contractor Furnished Select Subgrade Topping	104,360	CuYd
120E1000	Muck Excavation	13,749	CuYd
120E2000	Undercutting	49,797	CuYd
120E6100	Water for Embankment	9,650.0	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
380E2564	4" Barrier Type Colored Median PCC Pavement	3,558.0	SqYd
380E2566	6" Barrier Type Colored Median PCC Pavement	57.0	SqYd
380E4090	10" PCC Fillet Section	39.0	SqYd
421E0100	Pipe Culvert Undercut	3,130	CuYd
450E0122	18" RCP Class 2, Furnish	6,722	Ft
450E0130	18" RCP, Install	6,722	Ft
450E0142	24" RCP Class 2, Furnish	1,838	Ft
450E0145	24" RCP Class 5, Furnish	352	Ft
450E0150	24" RCP, Install	2,190	Ft
450E0162	30" RCP Class 2, Furnish	1,018	Ft
450E0170	30" RCP, Install	1,018	Ft
450E0182	36" RCP Class 2, Furnish	2,916	Ft
450E0190	36" RCP, Install	2,916	Ft
450E0192	42" RCP Class 2, Furnish	930	Ft
450E0195	42" RCP Class 5, Furnish	184	Ft
450E0200	42" RCP, Install	1,114	Ft
450E0202	48" RCP Class 2, Furnish	158	Ft
450E0210	48" RCP, Install	158	Ft
450E0225	60" RCP Class 5, Furnish	240	Ft
450E0230	60" RCP, Install	240	Ft
450E0262	84" RCP Class 2, Furnish	14	Ft
450E0267	84" RCP Class 4000D, Furnish	404	Ft
450E0270	84" RCP, Install	418	Ft
450E0304	108" RCP Class 4, Furnish	186	Ft
450E0310	108" RCP, Install	186	Ft
450E2008	18" RCP Flared End, Furnish	9	Each
450E2009	18" RCP Flared End, Install	9	Each
450E2016	24" RCP Flared End, Furnish	11	Each
450E2017	24" RCP Flared End, Install	11	Each
450E2024	30" RCP Flared End, Furnish	1	Each
450E2025	30" RCP Flared End, Install	1	Each
450E2028	36" RCP Flared End, Furnish	1	Each
450E2029	36" RCP Flared End, Install	1	Each
450E2032	42" RCP Flared End, Furnish	3	Each
450E2033	42" RCP Flared End, Install	3	Each
450E2036	48" RCP Flared End, Furnish	1	Each
450E2037	48" RCP Flared End, Install	1	Each
450E2044	60" RCP Flared End, Furnish	1	Each
450E2045	60" RCP Flared End, Install	1	Each

GRADING - Section B cont'd

450E2060	84" RCP Flared End, Furnish	2	Each
450E2061	84" RCP Flared End, Install	2	Each
450E2207	36" RCP Sloped End with Bars, Furnish	10	Each
450E2209	36" RCP Sloped End, Install	10	Each
450E2254	108" RCP Sectional End, Furnish	2	Each
450E2255	108" RCP Sectional End, Install	2	Each
450E2304	18" RCP Safety End, Furnish	1	Each
450E2307	18" RCP Safety End, Install	1	Each
450E2308	24" RCP Safety End, Furnish	2	Each
450E2311	24" RCP Safety End, Install	2	Each
450E3082	72" RCP Arch Class 2, Furnish	258	Ft
450E3090	72" RCP Arch, Install	258	Ft
450E4532	72" RCP Arch Flared End, Furnish	1	Each
450E4533	72" RCP Arch Flared End, Install	1	Each
450E4759	18" CMP 16 Gauge, Furnish	428	Ft
450E4760	18" CMP, Install	428	Ft
450E4769	24" CMP 16 Gauge, Furnish	160	Ft
450E4770	24" CMP, Install	160	Ft
450E4779	30" CMP 16 Gauge, Furnish	290	Ft
450E4780	30" CMP, Install	290	Ft
450E5010	18" CMP Elbow, Furnish	5	Each
450E5011	18" CMP Elbow, Install	5	Each
450E5015	24" CMP Elbow, Furnish	2	Each
450E5016	24" CMP Elbow, Install	2	Each
450E5020	30" CMP Elbow, Furnish	4	Each
450E5021	30" CMP Elbow, Install	4	Each
450E5211	18" CMP Flared End, Furnish	5	Each
450E5212	18" CMP Flared End, Install	5	Each
450E5215	24" CMP Flared End, Furnish	1	Each
450E5216	24" CMP Flared End, Install	1	Each
450E5219	30" CMP Flared End, Furnish	2	Each
450E5220	30" CMP Flared End, Install	2	Each
450E5227	42" CMP Flared End, Furnish	2	Each
450E5228	42" CMP Flared End, Install	2	Each
450E5406	18" CMP Safety End, Furnish	2	Each
450E5407	18" CMP Safety End, Install	2	Each
450E5549	42" CMP Arch 14 Gauge, Furnish	12	Ft
450E5550	42" CMP Arch, Install	12	Ft
450E6027	42" CMP Arch Safety End with Bars, Furnish	2	Each
450E6029	42" CMP Arch Safety End, Install	2	Each
450E7618	18" Steel Pipe, Furnish	56	Ft
450E7642	42" Steel Pipe, Furnish	348	Ft
450E8007	18" Concrete/Steel Pipe Transition, Furnish	2	Each
450E8009	18" RCP to CMP Transition, Furnish	1	Each
450E8010	18" Pipe Transition, Install	3	Each
450E8014	24" RCP to CMP Transition, Furnish	1	Each
450E8015	24" Pipe Transition, Install	1	Each
450E8019	30" RCP to CMP Transition, Furnish	2	Each
450E8020	30" Pipe Transition, Install	2	Each
450E8027	42" Concrete/Steel Pipe Transition, Furnish	2	Each
450E8030	42" Pipe Transition, Install	2	Each
451E1277	1.5" Water Service	1	Each
451E5118	Bore and Jack 18" Pipe	56	Ft
451E5142	Bore and Jack 42" Pipe	348	Ft
462E0100	Class M6 Concrete	215.4	CuYd
464E0100	Controlled Density Fill	348.0	CuYd
480E0100	Reinforcing Steel	40,863	Lb
600E0300	Type III Field Laboratory	1	Each

Rev 9/15/2016 JHU

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	A1	A6

Plotting Date: 9/16/2016

INDEX OF SHEETS

A1 to A3 Estimate of Quantities for Sections B,C,D,E, F, L, M, and S
A4 and A6 Environmental Commitments

GRADING - Section B cont'd

620E0020	Type 2 Right-of-Way Fence	13,269	Ft
620E0040	Type 4 Right-of-Way Fence	9,922	Ft
620E1020	2 Post Panel	173	Each
620E1030	3 Post Panel	13	Each
635E8220	2" Rigid Conduit, Schedule 80	260	Ft
635E8240	4" Rigid Conduit, Schedule 80	260	Ft
650E1060	Type F66 Concrete Curb and Gutter	1,213	Ft
650E1100	Type F610 Concrete Curb and Gutter	33,586	Ft
650E6100	10" Concrete Valley Gutter	24	Ft
651E0060	6" Concrete Sidewalk	704	SqFt
651E7000	Type 1 Detectable Warnings	104	SqFt
670E1200	Type B Frame and Grate Assembly	120	Each
670E5340	4' x 11' Precast Concrete Type S Drop Inlet Lid	5	Each
670E5400	Precast Drop Inlet Collar	120	Each
671E6007	Type A7 Manhole Frame and Lid	3	Each
680E0240	4" Corrugated Polyethylene Drainage Tubing	284	Ft
680E0260	6" Corrugated Polyethylene Drainage Tubing	176	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	2,850	Ft
680E0660	6" Slotted Corrugated Polyethylene Drainage Tubing	2,144	Ft
680E2000	Concrete Headwall for Underdrain	5	Each
680E2500	Porous Backfill	2,007.0	Ton
700E0110	Class A Riprap	4,021.2	Ton
700E0210	Class B Riprap	541.3	Ton
831E0110	Type B Drainage Fabric	4,947	SqYd
998E0100	Railroad Protective Insurance	Lump Sum	LS

TRAFFIC CONTROL - Section C

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	625.5	SqFt
634E0120	Traffic Control Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	27	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	2,300	Ft
634E0640	Temporary Pavement Marking	10,620	Ft
634E1002	Detour Signing	2,107.0	SqFt
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each

SPECIFICATIONS

Standard Specifications for Roads & Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

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EROSION & SEDIMENT CONTROL – Section D

Bid Item Number	Item	Quantity	Unit
110E1690	Remove Sediment	27.0	CuYd
110E1693	Remove Erosion Control Wattle	850	Ft
110E1695	Remove Sediment Filter Bag	5,000	Ft
110E1700	Remove Silt Fence	4,000	Ft
230E0010	Placing Topsoil	59,902	CuYd
230E0020	Placing Contractor Furnished Topsoil	19,605	CuYd
730E0100	Cover Crop Seeding	36	Bu
730E0206	Type D Permanent Seed Mixture	5,775	Lb
730E0212	Type G Permanent Seed Mixture	1,229	Lb
730E0251	Special Permanent Seed Mixture 1	1,306	Lb
730E0252	Special Permanent Seed Mixture 2	58	Lb
732E0100	Mulching	209.9	Ton
734E0044	Soil Stabilizer	30	Acre
734E0102	Type 2 Erosion Control Blanket	2,727	SqYd
734E0131	Type 1 Turf Reinforcement Mat	9,135	SqYd
734E0154	12" Diameter Erosion Control Wattle	2,532	Ft
734E0165	Remove and Reset Erosion Control Wattle	850	Ft
734E0180	Sediment Filter Bag	3,208	Ft
734E0325	Surface Roughening	19.4	Acre
734E0510	Shaping for Erosion Control Blanket	1,203	Ft
734E0602	Low Flow Silt Fence	17,083	Ft
734E0610	Mucking Silt Fence	1,000	CuYd
734E0620	Repair Silt Fence	3,500	Ft
734E0680	Flocculent Housing Unit	2	Each
734E0683	500K Gallon Treatment Flocculent Bag	2	Each
734E0845	Sediment Control at Inlet with Frame and Grate	123	Each
734E0847	Sediment Control at Type S Reinforced Concrete Drop Inlet	60	Ft
734E5000	Dewatering	200	Hour
734E5010	Sweeping	8	Hour
900E1310	Concrete Washout Facility	2	Each
900E1320	Construction Entrance	4	Each

STRUCTURES – Section E

Str. No. 50-242-177 12'x10' Box Culvert			
Bid Item Number	Item	Quantity	Unit
420E0200	Structure Excavation, Box Culvert	137	CuYd
421E0200	Box Culvert Undercut	386	CuYd
460E0120	Class A45 Concrete, Box Culvert	357.9	CuYd
460E0204	Anti-Graffiti Coating	6,755.0	SqFt
480E0100	Reinforcing Steel	58,185	Lb
621E0040	4' Chain Link Fence with Top Rail	134	Ft

10'x10' Junction Box			
Bid Item Number	Item	Quantity	Unit
420E0400	Structure Excavation, Miscellaneous	34	CuYd
462E0100	Class M6 Concrete	13.8	CuYd
480E0100	Reinforcing Steel	2,621	Lb
671E6007	Type A7 Manhole Frame and Lid	1	Each

SURFACING – Section F

Bid Item Number	Item	Quantity	Unit
120E6200	Water for Granular Material	809.6	MGal
260E1010	Base Course	33,477	Ton
260E2010	Gravel Cushion	33,509	Ton
260E3010	Gravel Surfacing	379	Ton
320E0007	PG 64-28 Asphalt Binder	910.2	Ton
320E1050	Class E Asphalt Concrete	16,253.1	Ton
320E3000	Compaction Sample	3	Each
330E0100	SS-1h or CSS-1h Asphalt for Tack Coat	19.1	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	9.9	Ton
330E2000	Sand for Flush Seal	187.0	Ton
380E0090	10" Nonreinforced PCC Pavement	76,137	SqYd
380E1070	10" Miscellaneous PCC Pavement	227	SqYd
380E6000	Steel Bar	44,938	Each
380E6110	Insert Steel Bar in PCC Pavement	26	Each

SIGNALS AND LIGHTING – Section L

Bid Item Number	Item	Quantity	Unit
110E1530	Remove Signal Pole Footing	1	Each
110E1540	Remove Luminaire Pole Footing	3	Each
635E0050	Breakaway Base Luminaire Pole with Arm, 50' Mounting Height	58	Each
635E2065	Signal Pole with 65' Mast Arm	2	Each
635E2165	Signal Pole with 65' Mast Arm and Luminaire Arm	2	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	60	Each
635E4030	3 Section Vehicle Signal Head	11	Each
635E4050	5 Section Vehicle Signal Head	2	Each
635E4080	3 Section Directional Vehicle Signal Head	12	Each
635E5020	2' Diameter Footing	494.0	Ft
635E5030	3' Diameter Footing	60.0	Ft
635E5310	Special Electrical Junction Box	40	Each
635E5400	Electrical Service Cabinet	4	Each
635E5430	Traffic Signal Controller	1	Each
635E5450	Side Mounted Cabinet	1	Each
635E5515	Signal Head Battery Backup and Flash System	1	Each
635E5545	Wireless In Pavement Traffic Sensor	44	Each
635E5555	Wireless Access Point	4	Each
635E5558	Wireless Repeater	3	Each
635E5560	Emergency Vehicle Preemption Unit	1	Each
635E5570	Optical Detector	4	Each
635E5900	Pedestrian Push Button	2	Each
635E5910	Pedestrian Push Button Pole	2	Each
635E5922	Pedestrian Signal Head with Countdown Timer	2	Each
635E5930	Pedestrian Crossing Sign	2	Each
635E6200	Miscellaneous, Electrical	Lump Sum	LS
635E7500	Remove and Reset Luminaire Pole	3	Each
635E7510	Remove and Reset Signal Pole	1	Each
635E7530	Relocate Signal Equipment	Lump Sum	LS
635E8025	2.5" Rigid Galvanized Steel Conduit	985	Ft
635E8030	3" Rigid Galvanized Steel Conduit	740	Ft
635E8040	4" Rigid Galvanized Steel Conduit	400	Ft
635E8050	5" Rigid Galvanized Steel Conduit	10	Ft
635E8108	0.75" Rigid Conduit, Schedule 40	80	Ft
635E8115	1.5" Rigid Conduit, Schedule 40	270	Ft
635E8120	2" Rigid Conduit, Schedule 40	11,870	Ft
635E8130	3" Rigid Conduit, Schedule 40	5,850	Ft
635E8140	4" Rigid Conduit, Schedule 40	80	Ft
635E8215	1.5" Rigid Conduit, Schedule 80	45	Ft
635E8220	2" Rigid Conduit, Schedule 80	305	Ft
635E8230	3" Rigid Conduit, Schedule 80	1,305	Ft
635E8410	1/2" Innerduct, SDR 13.5	26,565	Ft
635E8420	1.5" Innerduct, SDR 13.5	75	Ft
635E8830	2/2/2/4 Aluminum Wire	26,360	Ft
635E9011	1/C #1 AWG Copper Wire	1,680	Ft
635E9014	1/C #4 AWG Copper Wire	165	Ft
635E9020	1/C #10 AWG Copper Wire	10,175	Ft
635E9023	3/C #12 AWG Copper Wire	270	Ft
635E9302	2/C #14 AWG IMSA Copper Cable, K1	110	Ft
635E9304	4/C #14 AWG IMSA Copper Cable, K1	1,370	Ft
635E9307	7/C #14 AWG IMSA Copper Cable, K1	30	Ft
635E9325	25/C #14 AWG IMSA Copper Cable, K1	1,325	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	3,900	Ft
635E9800	Preemption Cable	3,230	Ft



SECTION B ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	15.070	Mile
009E3245	Final Cross Section Survey	2.688	Mile
009E3250	Miscellaneous Staking	2.688	Mile
009E3280	Slope Staking	2.688	Mile
009E3290	Structure Staking	1	Each
009E3300	Three Man Survey Crew	40.0	Hour
100E0100	Clearing	Lump Sum	LS
110E0210	Remove Building(s)	Lump Sum	LS
110E0600	Remove Fence	3,030	Ft
110E1010	Remove Asphalt Concrete Pavement	17,076.0	SqYd
120E0010	Unclassified Excavation	1,127,260	CuYd
120E0420	Contractor Furnished Select Subgrade Topping	104,360	CuYd
120E1000	Muck Excavation	13,749	CuYd
120E2000	Undercutting	49,797	CuYd
120E6100	Water for Embankment	9,650.0	MGal
250E0020	Incidental Work, Grading	Lump Sum	LS
380E2564	4" Barrier Type Colored Median PCC Pavement	3,558.0	SqYd
380E2566	6" Barrier Type Colored Median PCC Pavement	57.0	SqYd
380E4090	10" PCC Fillet Section	39.0	SqYd
421E0100	Pipe Culvert Undercut	3,130	CuYd
450E0122	18" RCP Class 2, Furnish	6,722	Ft
450E0130	18" RCP, Install	6,722	Ft
450E0142	24" RCP Class 2, Furnish	1,838	Ft
450E0145	24" RCP Class 5, Furnish	352	Ft
450E0150	24" RCP, Install	2,190	Ft
450E0162	30" RCP Class 2, Furnish	1,018	Ft
450E0170	30" RCP, Install	1,018	Ft
450E0182	36" RCP Class 2, Furnish	2,916	Ft
450E0190	36" RCP, Install	2,916	Ft
450E0192	42" RCP Class 2, Furnish	930	Ft
450E0195	42" RCP Class 5, Furnish	184	Ft
450E0200	42" RCP, Install	1,114	Ft
450E0202	48" RCP Class 2, Furnish	158	Ft
450E0210	48" RCP, Install	158	Ft
450E0225	60" RCP Class 5, Furnish	240	Ft
450E0230	60" RCP, Install	240	Ft
450E0262	84" RCP Class 2, Furnish	14	Ft
450E0267	84" RCP Class 4000D, Furnish	404	Ft
450E0270	84" RCP, Install	418	Ft
450E0304	108" RCP Class 4, Furnish	186	Ft
450E0310	108" RCP, Install	186	Ft
450E2008	18" RCP Flared End, Furnish	9	Each
450E2009	18" RCP Flared End, Install	9	Each
450E2016	24" RCP Flared End, Furnish	11	Each
450E2017	24" RCP Flared End, Install	11	Each
450E2024	30" RCP Flared End, Furnish	1	Each
450E2025	30" RCP Flared End, Install	1	Each
450E2028	36" RCP Flared End, Furnish	1	Each
450E2029	36" RCP Flared End, Install	1	Each
450E2032	42" RCP Flared End, Furnish	3	Each
450E2033	42" RCP Flared End, Install	3	Each
450E2036	48" RCP Flared End, Furnish	1	Each
450E2037	48" RCP Flared End, Install	1	Each
450E2044	60" RCP Flared End, Furnish	1	Each
450E2045	60" RCP Flared End, Install	1	Each

450E2060	84" RCP Flared End, Furnish	2	Each
450E2061	84" RCP Flared End, Install	2	Each
450E2207	36" RCP Sloped End with Bars, Furnish	10	Each
450E2209	36" RCP Sloped End, Install	10	Each
450E2254	108" RCP Sectional End, Furnish	2	Each
450E2255	108" RCP Sectional End, Install	2	Each
450E2304	18" RCP Safety End, Furnish	1	Each
450E2307	18" RCP Safety End, Install	1	Each
450E2308	24" RCP Safety End, Furnish	2	Each
450E2311	24" RCP Safety End, Install	2	Each
450E3082	72" RCP Arch Class 2, Furnish	258	Ft
450E3090	72" RCP Arch, Install	258	Ft
450E4532	72" RCP Arch Flared End, Furnish	1	Each
450E4533	72" RCP Arch Flared End, Install	1	Each
450E4759	18" CMP 16 Gauge, Furnish	428	Ft
450E4760	18" CMP, Install	428	Ft
450E4769	24" CMP 16 Gauge, Furnish	160	Ft
450E4770	24" CMP, Install	160	Ft
450E4779	30" CMP 16 Gauge, Furnish	290	Ft
450E4780	30" CMP, Install	290	Ft
450E5010	18" CMP Elbow, Furnish	5	Each
450E5011	18" CMP Elbow, Install	5	Each
450E5015	24" CMP Elbow, Furnish	2	Each
450E5016	24" CMP Elbow, Install	2	Each
450E5020	30" CMP Elbow, Furnish	4	Each
450E5021	30" CMP Elbow, Install	4	Each
450E5211	18" CMP Flared End, Furnish	5	Each
450E5212	18" CMP Flared End, Install	5	Each
450E5215	24" CMP Flared End, Furnish	1	Each
450E5216	24" CMP Flared End, Install	1	Each
450E5219	30" CMP Flared End, Furnish	2	Each
450E5220	30" CMP Flared End, Install	2	Each
450E5227	42" CMP Flared End, Furnish	2	Each
450E5228	42" CMP Flared End, Install	2	Each
450E5406	18" CMP Safety End, Furnish	2	Each
450E5407	18" CMP Safety End, Install	2	Each
450E5549	42" CMP Arch 14 Gauge, Furnish	12	Ft
450E5550	42" CMP Arch, Install	12	Ft
450E6027	42" CMP Arch Safety End with Bars, Furnish	2	Each
450E6029	42" CMP Arch Safety End, Install	2	Each
450E7618	18" Steel Pipe, Furnish	56	Ft
450E7642	42" Steel Pipe, Furnish	348	Ft
450E8007	18" Concrete/Steel Pipe Transition, Furnish	2	Each
450E8009	18" RCP to CMP Transition, Furnish	1	Each
450E8010	18" Pipe Transition, Install	3	Each
450E8014	24" RCP to CMP Transition, Furnish	1	Each
450E8015	24" Pipe Transition, Install	1	Each
450E8019	30" RCP to CMP Transition, Furnish	2	Each
450E8020	30" Pipe Transition, Install	2	Each
450E8027	42" Concrete/Steel Pipe Transition, Furnish	2	Each
450E8030	42" Pipe Transition, Install	2	Each
451E1277	1.5" Water Service	1	Each
451E5118	Bore and Jack 18" Pipe	56	Ft
451E5142	Bore and Jack 42" Pipe	348	Ft
462E0100	Class M6 Concrete	215.4	CuYd
464E0100	Controlled Density Fill	348.0	CuYd
480E0100	Reinforcing Steel	40,863	Lb
600E0300	Type III Field Laboratory	1	Each

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	B2	B108

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620E0020	Type 2 Right-of-Way Fence	13,269	Ft
620E0040	Type 4 Right-of-Way Fence	9,922	Ft
620E1020	2 Post Panel	173	Each
620E1030	3 Post Panel	13	Each
635E8220	2" Rigid Conduit, Schedule 80	260	Ft
635E8240	4" Rigid Conduit, Schedule 80	260	Ft
650E1060	Type F66 Concrete Curb and Gutter	1,213	Ft
650E1100	Type F610 Concrete Curb and Gutter	33,586	Ft
650E6100	10" Concrete Valley Gutter	24	Ft
651E0060	6" Concrete Sidewalk	704	SqFt
651E7000	Type 1 Detectable Warnings	104	SqFt
670E1200	Type B Frame and Grate Assembly	120	Each
670E5340	4' x 11' Precast Concrete Type S Drop Inlet Lid	5	Each
670E5400	Precast Drop Inlet Collar	120	Each
671E6007	Type A7 Manhole Frame and Lid	3	Each
680E0240	4" Corrugated Polyethylene Drainage Tubing	284	Ft
680E0260	6" Corrugated Polyethylene Drainage Tubing	176	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	2,850	Ft
680E0660	6" Slotted Corrugated Polyethylene Drainage Tubing	2,144	Ft
680E2000	Concrete Headwall for Underdrain	5	Each
680E2500	Porous Backfill	2,007.0	Ton
700E0110	Class A Riprap	4,021.2	Ton
700E0210	Class B Riprap	541.3	Ton
831E0110	Type B Drainage Fabric	4,947	SqYd
998E0100	Railroad Protective Insurance	Lump Sum	LS

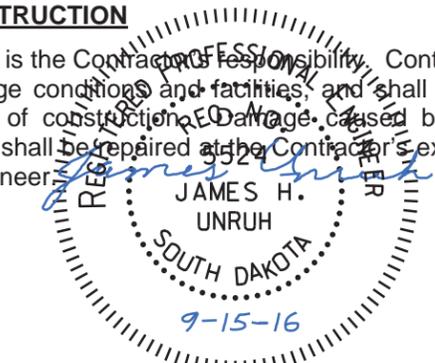
TYPE III FIELD LABORATORY

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".

DRAINAGE DURING CONSTRUCTION

Drainage during construction is the Contractor's responsibility. Contractor shall be aware of existing drainage conditions and facilities, and shall provide for drainage during all phases of construction. Damage caused by improper temporary drainage facilities shall be repaired at the Contractor's expense and to the satisfaction of the Engineer.



Plotting Date: 9/15/2016

TABLE OF EXCAVATION QUANTITIES BY BALANCES

Station	to Station	Topsoil Excavation (CuYd)	Unstable Excavation (CuYd)	Excavation (CuYd)	* Undercut (CuYd)	* Muck (CuYd)	Total Excavation (CuYd)	* (1) Contractor Furnished Select Subgrade Topping (CuYd)	(2) Topsoil Waste (CuYd)	(3) Out-of-Balance Waste (CuYd)	(4) Out-of-Balance Unstable Waste (CuYd)	(5) (7) Waste (CuYd)	(6) Haul (CuYdSta)	(6) Out-of-Balance Haul (CuYdSta)
Hwy 100														
787+09	873+60	51,653	1,972	819,069	40,851	13,749	927,293	80,290	4,657	86,151		5,651	19,221,300	353,000
Rice Street														
0+00	59+00	13,495	14,098	115,402	8,946	0	151,940	24,070	999		14,098		561,000	862,000
Timberline Avenue														
68+50	72+00	363	1,336	76	0	0	1,774	0	0		1,336		5,323	166,000
East Cactus Hills Access Road														
		100	0	0	0	0	100		52					
West Cactus Hills Access Road														
included in Hwy 100 mainline quantities														
Totals:		65,610	17,405	934,546	49,797	13,749	1,081,108	104,360	5,708	86,151		5,651	19,787,623	1,381,000

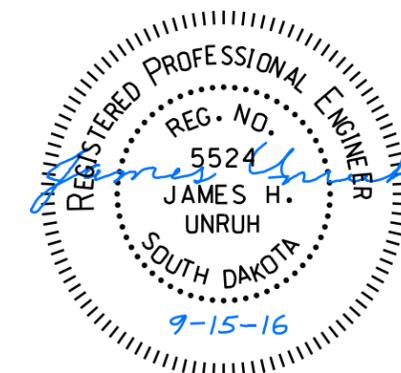
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TABLE OF UNCLASSIFIED EXCAVATION

Excavation (includes topsoil and unstable excavation quantities)	1,017,562
Undercut	49,797
Topsoil (from Section D)	59,902
Total	1,127,260

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

- (1) Volume is in-place with no shrinkage.
- (1) Select subgrade topping borrow quantity is based on the assumption that Select Subgrade Topping is not available within the project limits. If suitable material is available on-site, the overall earthwork balance would change.
- (2) Excess topsoil shall be utilized within the project limits.
- (3) This waste material shall be utilized for Rice Street, Timberline Road, and Cactus Hill east access grading
- (4) This waste material may be used in the Hwy100 embankment outside of the 2:1 slope from the shoulder PI (see Typical Grading Section station 839+00 to 856+60).
- (5) Overall project earthwork balance shows a slight excess of material. Excess material shall be stockpiled within the project limits at a location determined by the Engineer. Excess material will be used on the Hwy100 Rice Street to I-90 project (PCN 00X8 and PCN 00WN)
- (6) Quantity is not a bid item and is for information only.
- (7) Project PCN00KB (Hwy100 from Madison St. to Maple St.) yielded a small amount of excess grading material that was stockpiled at Maple St. This material will be quantified during PCN01V5 construction and earthwork quantities will be adjusted accordingly. The contractor shall utilize this grading material for Hwy100 fill material immediately north of Maple Street.



SHRINKAGE FACTORS

Roadway Section	% Shrinkage
Hwy100	25
Rice St	25
Timberline Ave	30
East Cactus Hills access road	30
Topsoil	40

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.

technicians should run split sample moisture tests twice a day to assure compliance.

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

The final Unclassified Excavation quantity shall be based on measured cross sections.

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

GRADING OPERATIONS

Most of the embankment will be constructed from high silt soils. Soils will be considered to have high silt content if they have more than 60% passing the #200 sieve and a PI less than 20. These soils will be adequate to build the lower portion of the embankment, but will not be allowed in the upper two feet of the subgrade. Past experience with soils of this nature indicates that the moisture content is key to controlling embankment stability. The soil in this part of the embankment shall be at optimum moisture to 4% below optimum moisture at the time of compaction (+0% to -4%). A moisture content approximately 2% below optimum moisture has worked well on past projects. The contractor will be required to perform moisture testing hourly, in accordance with SD108 as set forth in the Materials Manual. DOT field

There is approximately 6 inches of topsoil available and considered suitable for topping inslopes, ditches and backslopes. This thickness of topsoil is considered to hold true for the right-of-way area outside the backslopes and inslopes of the present grade.

Compaction of earth embankment shall be per the Specified Density Method.

Water for Embankment is estimated at the rate of 10 gal/cuyd.

Rock is not anticipated to be encountered within the project limits.

HAUL

Included in the Table of Excavation Quantities by Balances is Haul. This is not a pay item and is for informational purposes only.

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



INCIDENTAL WORK, GRADING

"Incidental Work, Grading" shall consist of the removal and disposal of existing culverts.

TABLE OF INCIDENTAL WORK, GRADING			
Station to	Station	L/R	Remarks
785+88	785+88	R	Take out 84" RCP Flared End
4+83	4+83	L/R	Take out 2.75'x4' - 82' CM Arch Pipe
4+90	4+90	L/R	Take out 2.75'x4' - 82' CM Arch Pipe
29+53	29+53	L/R	Take out 60" - 104' CM Pipe

DROP INLETS

Where drop inlets are constructed within areas of curb and gutter, the Contractor shall construct weep holes of at least 3 inches in diameter in the drop inlet walls. The weep holes shall be constructed at the same elevation as the adjacent top of the earthen subgrade and shall be maintained clean and open at all times until the permanent surfacing is placed. The drop inlets shall 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 shall 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 shall be incidental to the contract unit prices for the components of the drop inlets.

The plan shown quantities of the drop inlet components such as Class M6 Concrete, Reinforcing Steel, Type B Frame and Grate Assembly, Precast Drop Inlet Collar, and Precast Concrete Type S Drop Inlet Lid will be the basis of payment for these items.

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

ADJOINING DROP INLETS

The 18" opening between the drop inlets represents a diameter measurement. For ease of construction, the 18" opening can also be the specified dimension constructed square. If the adjoining walls are poured separately, the joint between the two inlets at the opening shall be grouted. No additional payment shall be made for the work to construct the openings.

TABLE OF CLASS B RIPRAP AND DRAINAGE FABRIC

Station	L/R	Culvert Size	Riprap Size (ft)	Class B Riprap (ton)	Type B Drainage Fabric (SqYd)
820+12	100' L	48" round	30x16	74.7	84
826+01	93' L	30" round	30x16	74.7	84
843+00	224' L	30" round	20x12	37.3	48
856+60	218' R	18" & 24"	30x16	74.7	84
866+00	223' R	30" round	30x16	74.7	84
18+66	157' L	2-42" round	36x30	168.0	164
69+80	116' L	18" round	20x12	37.3	48
Total:				541.3	596

TABLE OF CLASS A FIELDSTONE RIPRAP AND DRAINAGE FABRIC

Station	to Sta.	L/R	Riprap Size (ft)	Class A Riprap (ton)	Type B Drainage Fabric (SqYd)
840+90	841+60	222' R	70x41	491.1	432
843+40	844+10	225' R	70x41	491.1	432
845+90	846+60	230' R	70x41	491.1	432
848+40	849+10	236' R	70x41	491.1	432
850+36	851+13	240' R	77x41	540.2	472
853+90	854+60	240' R	70x41	491.1	432
850+90	854+00	varies L	310x29	1,025.5	1,719
Total:				4,021.2	4,351

TYPE 1 DETECTABLE WARNINGS

Detectable warnings shall be in compliance with the Americans with Disability Act regulations. The detectable warnings shall be installed according to the manufacturer's installation instructions.

A concrete thickness equal to the adjacent concrete sidewalk thickness and 2 inches of granular cushion material shall be placed below the Type 1 Detectable Warnings. When concrete is placed below the detectable warnings then the concrete thickness shall be transitioned at the rate of 1" per foot to match the adjacent concrete sidewalk thickness.

The detectable warnings shall be a brick red color for application in concrete curb ramps. Cast iron plates may be a natural patina (weathered steel). When Type 1 Detectable Warnings are specified, the Contractor shall furnish and install only one of the products listed in the Type 1 Detectable Warnings table.

Type 1 Detectable Warnings	
Product	Manufacturer
Detectable Warning Plate Cast Iron Plate	Neenah Foundry Company Neenah, WI 800-558-5075 http://www.neenahfoundry.com/
Detectable Warning Plate Cast Iron Plate	Deeter Foundry Lincoln, NE 800-234-7466 http://www.deeter.com/
Detectable Warning Plate Cast Iron Plate	East Jordan Iron Works, Inc. 301 Spring Street East Jordan, MI 49727 800-626-4653 http://www.ejiw.com
CAST-DWD Cast Iron Plate	Key 3 Casting (Northern Foundry) 555 West 25 th Street Hibbing, MN 55746 218-263-8871 http://www.armorcastprod.com/

PVC PIPE AND WATER SERVICE AT STA. 800+50

The Contractor shall install PVC pipe across Hwy 100 at Sta. 800+50 as shown on the plans. The PVC pipe shall be Schedule 80 White PVC pipe. All costs for the PVC pipe shall be included in the contract unit price per foot for "2" Rigid Conduit, Schedule 80" and "4" Rigid Conduit, Schedule 80". The PVC pipes shall be capped at the pipe ends and shall have markers installed at the pipe ends per the marker detail in City of Sioux Falls standard plate 950.14. Caps and markers shall be incidental to the contract unit price per foot for the conduit being installed.

- The 2" PVC pipe shall have electrical cable within it. See Section L for the electrical cable specifications and payment.
- The 4" PVC pipe shall have a water service pipe installed within it. See below for the water service pipe specifications and payment.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	B10	B108

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The Contractor shall install water service pipe within the proposed 4" PVC conduit being installed across Hwy 100 at Sta. 800+50. The water service pipe shall be 1.5" White PVC Pressure Pipe, SDR-21 (200 psi) as manufactured by Northern Pipe Products or approved equal. The pipe shall meet ASTM D-2241 specifications. All costs for the water service pipe shall be included in the contract unit price per each for "1.5" Water Service". The water service pipe shall be capped at the ends of the pipe to allow a connection to be made in the future. The caps shall be incidental to the contract unit price per each for 1.5" Water Service.

REMOVAL OF BUILDING(S)

Included in these plans is the removal and disposal of one building located in the southwest quadrant of the E. 60th Street N. and N. Timberline Avenue intersection. The location and type of building is as follows:

Station	L/R	Type
Hwy100 896+00	L	Residence

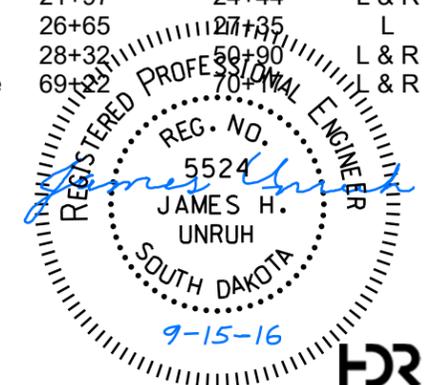
This building shall be removed in accordance with Section 110 of the Specifications and all local codes. The disconnecting and capping of utility services shall be the responsibility of the Contractor.

This building has not been inspected for asbestos. The Contractor shall be responsible for providing an asbestos inspection and following all local, state, and federal regulations regarding the removal of asbestos, if found. All costs for the inspection shall be incidental to the contract lump sum price for "Remove Building(s)". All costs for removal of the asbestos shall be handled during construction by CCO.

RESTRICTED WORK AREA

The Contractor work limits are confined to the area within the existing right of way adjacent to the parcels noted in the table below. The Engineer will notify the Contractor of the date and time when work outside of the existing right of way may proceed. It is anticipated possession will be secured by September 30, 2016.

Parcel No.	Owner	Highway	Station	to	Station	L/R
88	NSP/Xcel	Hwy100	839+93		869+89	L & R
96	NSP/Xcel	Rice St	6+75		12+34	L & R
94	NSP/Xcel	Rice St	12+34		18+54	L & R
95	Ellis & Eastern	Rice St	21+97		24+44	L & R
98	Ellis & Eastern	Rice St	26+65		27+35	L
89	NSP/Xcel	Rice St	28+32		50+90	L & R
97	NSP/Xcel	Timberline	69+22		70+14	L & R



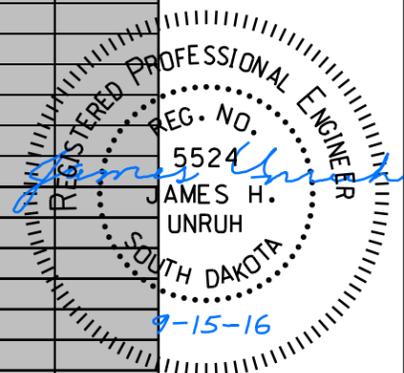
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	B13	B108

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TABLE OF REINFORCED CONCRETE PIPE

Station Offset (L/R)	Circular																							Arch			Pipe Undercut (CuYd)	Controlled Density Fill (CuYd)	
	Circular												Flared End						Safety End		Sloped End	Sec End	Arch						
	18"	24"	24"	30"	36"	42"	42"	48"	60"	84"	84"	108"	18"	24"	30"	36"	42"	48"	60"	84"	18"	24"	36"	108"	72"	Flared End			72"
	Cl 2	Cl 2	Cl 5	Cl 2	Cl 2	Cl 2	Cl 5	Cl 2	Cl 5	Cl 2	Cl 4000 D	Cl 4	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(Ft)	(EA)			(Ft)
787+50.00-53.67' L TO 788+06.90-8.69' L	72																												
787+65.20-53.84' R TO 787+78.00-53.67' R	14																												
788+89.58-104.00' L TO 787+20.80-102.27' R																								258	1		358		
787+82.00-53.67' R TO 789+98.00-53.67' R	216																												
787+12.10-107.10' R TO 786+98.30-108.80' R											14																6		
787+18.80-109.30' R TO 787+21.70-119.40' R						12										1											4		
790+00 - 52.67' L TO 8.67' R	62																												
790+00.00 - 10.67' R TO 13.33' R	4																												
790+00.00 - 15.33' R TO 52.17' R	38																												
790+02.00-53.67' R TO 792+43.00-53.67' R	242																												
792+45.00 - 53.67' L TO 8.67' R	62																												
792+45.00 - 10.67' R TO 13.33' R	4																												
792+45.00 - 15.33' R TO 53.67' R	38																												
792+46.50 TO 794+98.50 - 53.67' R	252																												
795+00.00 - 52.67' L TO 15.33' L	38																												
795+00.00 - 13.33' L TO 13.33' R	28																												
795+00.00 - 15.33' R TO 52.67' R	38																												
798+75.00 - 52.67' L TO 15.33' L	38																												
798+75.00 - 13.33' L TO 13.33' R	28																												
798+75.00 - 15.33' R TO 52.67' R	38																												
798+80.60 TO 800+98.00 - 53.67' R	218																												
801+00.00 - 52.67' L TO 15.33' L	38																												
801+00.00 - 13.33' L TO 13.33' R	28																												
801+00.00 - 15.33' R TO 52.17' R	38																												
801+02.00 TO 802+24.20 - 53.67' R		122																										29	
802+26.00-55.67' R TO 124.70' R		64													1													15	
802+28.20 TO 803+98.00 - 53.67' R				170																								45	
804+00.00 - 52.67' L TO 15.33' L	38																												
804+00.00 - 13.33' L TO 13.33' R	28																												
804+00.00 - 15.33' R TO 51.67' R	38																												
804+07.00 TO 806+98.0 - 53.67' R				296																								78	
807+00.00 - 52.67' L TO 15.33' L	38																												
807+00.00 - 13.33' L TO 13.33' R	28																												
807+00.00 - 15.33' R TO 52.17' R	38																												
807+02.00 TO 809+94.50 - 57.63' R				292																								77	
810+00.00 - 52.67' L TO 15.33' L	38																												
810+00.00 - 13.33' L TO 13.33' R	28																												
810+00.00 - 15.33' R TO 54.13' R	40																												
810+00.00 - 61.13' R TO 185.80' R	120												1																
810+05.50 TO 812+94.50 - 57.63' R						288																						88	
813+00.00 - 52.67' L TO 15.33' L	38																												
813+00.00 - 13.33' L TO 13.33' R	28																												
813+00.00 - 15.33' R TO 54.13' R	40																												
813+05.50 TO 815+94.50 - 57.63' R						290																						89	
816+00.00 - 52.67' L TO 15.33' L	38																												
816+00.00 - 13.33' L TO 13.33' R	28																												
816+00.00 - 15.33' R TO 54.13' R	40																												
816+05.00 TO 818+94.50 - 57.63' R						290																						89	
819+00.00 - 52.67' L TO 15.33' L	38																												



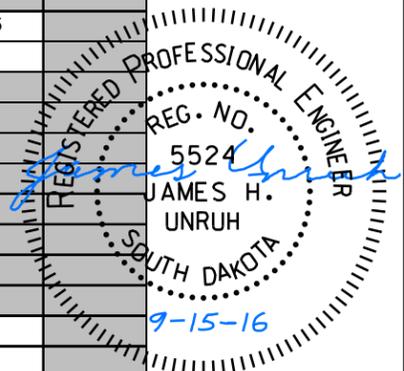
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	B14	B108

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TABLE OF REINFORCED CONCRETE PIPE (CONTINUED)

Station Offset (L/R)	Circular																Arch				Pipe Undercut (CuYd)	Controlled Density Fill (CuYd)										
	Circular											Flared End					Safety End		Sloped End	Sec End			Arch									
	18"	24"	24"	30"	36"	42"	42"	48"	60"	84"	84"	108"	18"	24"	30"	36"	42"	48"	60"	84"			18"	24"	36"	48"	60"	84"	72"	72"	72"	Flared End
(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(Ft)	(EA)	(Ft)	(EA)			
819+00.00 - 13.33' L TO 13.33' R	(28)																															
819+00.00 - 15.33' R TO 54.13' R	40																															
819+05.50-53.67' R TO 819+55.80-59.42' R						50																								15		
819+44.70-103.54' R TO 819+58.34-63.27' R					36										1															10		
819+60.00-99.65' L TO 820+11.78-57.32' R											158							1												52		
821+50.00 - 52.67' L TO 15.33' L	38																															
821+50.00 - 13.33' L TO 13.33' R	28																															
821+50.00 - 15.33' R TO 52.67' R	38																															
821+50.00 TO 823+98.50 - 53.67' R	248																															
824+00.00 - 52.67' L TO 15.33' L	38																															
824+00.00 - 13.33' L TO 13.33' R	28																															
824+00.00 - 15.33' R TO 52.67' R	38																															
824+01.50 TO 825+93.00 - 53.67' R	192																															
826+00.00 - 52.67' L to 15.33' L	38																															
826+00.00 - 13.33' L to 13.33' R	28																															
826+00.00 - 15.33' R to 52.17' R	38																															
826+02.00-53.67' R to 826+43.90-59.30' R		44																												11		
826+46.90-57.60' R to 827+01.10-92.50' L				154											1															40		
826+45.60-62.40' R to 826+17.40-139.50' R		78													1															19		
826+48.70-60.70' R to 827+28.50-53.67' R	80																															
830+50.00 - 52.67' L to 15.33' L	38																															
830+50.00 - 13.33' L to 13.33' R	28																															
830+50.00 - 15.33' R to 52.67' R	38																															
830+51.50 to 832+98.50 - 53.67' L	244																															
833+00.00 - 52.67' L to 15.33' L	38																															
833+00.00 - 13.33' L to 13.33' R	28																															
833+00.00 - 15.33' R to 52.67' R	38																															
833+01.50 to 835+98.00 - 53.67' L	292																															
836+00.00 - 52.17' L to 15.33' L	38																															
836+00.00 - 13.33' L to 13.33' R	28																															
836+00.00 - 15.33' R to 52.67' R	38																															
836+02.00 to 838+98.00 - 53.67' L		292																												70		
839+00.00 - 52.17' L to 15.33' L	38																															
839+00.00 - 13.33' L to 13.33' R	28																															
839+00.00 - 15.33' R to 52.67' R	38																															
839+02.00 to 841+98.00 - 53.67' L		292																												70		
842+00.00 - 51.67' L TO 15.33' L	38																															
842+00.00 - 13.33' L TO 13.33' R	28																															
842+00.00 - 15.33' R TO 52.67' R	38																															
842+02.00-53.67' L to 842+97.00-60.00' L				94																										25		
843+00.00 - 63.10' L to 67.10' L				4																										1		
845+30.00 - 52.67' L to 15.33' L	38																															
845+30.00 - 13.33' L to 13.33' R	28																															
845+30.00 - 15.33' R to 52.67' R	38																															
845+31.50 to 847+98.50 - 53.67' L	264																															
848+00.00 - 52.67' L to 15.33' L	38																															
848+00.00 - 13.33' L to 13.33' R	28																															
848+00.00 - 15.33' R to 52.67' R	38																															
848+01.50 to 850+78.50 - 53.67' L	274																															
850+80.00 - 52.67' L to 15.33' L		38																												9		
850+80.00 - 13.33' L to 13.33' R		28																												7		



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TABLE OF REINFORCED CONCRETE PIPE (CONTINUED)

Station Offset (L/R)	Circular																						Arch				Pipe Undercut (CuYd)	Controlled Density Fill (CuYd)
	Circular												Flared End		Safety End		Sloped End	Sec End	Arch									
	18"	24"	24"	30"	36"	42"	42"	48"	60"	84"	84"	108"	18"	24"	30"	36"	42"	48"	60"	84"	18"	24"	36"	108"	72"	72"		
(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(EA)	(Ft)	(EA)			
850+80.00 - 15.33' R to 52.67' R		38																								9		
850+80.00 - 54.67' R to 58.67' R		4																									1	
851+00.00 - 198.10' L to 224.50' R											404										2						554	
856+60.00 - 52.67' L to 15.33' L	38																											
856+60.00 - 13.33' L to 13.33' R	28																											
856+60.00 - 15.33' R to 52.67' R	38																											
856+60.00 - 54.67' R to 58.67' R	4																											
857+63.53-125.35' L to 856+65.40-213.27' R			352											2													85	
858+81.50 to 859+98.50 - 14.33' R	118																											
860+00.00 - 52.67' L to 15.33' L	38																											
860+00.00 - 13.33' L to 13.33' R	28																											
860+00.00 - 15.33' R to 52.67' R	38																											
860+01.50 to 862+98.00 - 53.67' R	298																											
863+00.00 - 52.67' L to 15.33' L	38																											
863+00.00 - 13.33' L to 13.33' R	28																											
863+00.00 - 15.33' R to 52.17' R	38																											
863+02.00 to 865+98.00 - 53.67' R		296																									71	
866+00.00 - 82.00' L to 54.67' L	38											1																
866+00.00 - 52.67' L to 15.33' L	38																											
866+00.00 - 13.33' L to 10.67' L	4																											
866+00.00 - 8.67' L to 52.17' R	62																											
866+00.00 - 55.17' R to 61.20' R				8																						2		
866+35.80-97.10' L to 866+70.20-123.00' R		212												2													51	
868+30.00 - 52.67' L to 15.33' L	38																											
868+30.00 - 13.33' L to 10.67' L	4																											
868+30.00 - 8.67' L to 64.17' R	74																											
868+35.50 to 869+98.50 - 65.67' R	164																											
870+50.00-52.67' L to 870+30.00-15.33' L	44																											
870+30.00 - 13.33' L to 10.67' L	4																											
870+30.00-8.67' L to 870+00.00-64.67' R	80																											
870+00.00-66.67' R to 870+32.60-138.44' R		80												1													19	
13+50 - 70' L to 13+50 - 54' R	112												2															
18+54 - 142' L to 40' L							92									1											28	
18+78 - 142' L to 40' L							92									1											28	
21+14 - 153' R to 23+27 - 26' R	232												1															
27+00 - 222' L to 101' L	110												2															
28+80 - 75' L to 61' R		122												1								1					29	
29+58 - 132' L to 29+79 - 122' R									240									1									89	
38+30 - 111' L to 38+85 - 99' R											186												2				303	
41+15 - 54' L to 47' R		90												1								1					22	
46+75 -194' L to 48+09 - 74' R (10 pipes)					2,880																		10				623	348
52+50 - 53' L to 67' R	54												1									1						
47+58 - 81' L to 47+74 - 88' L	12												1															
92+53 - 27' L to 24' R		38												2													9	
Totals	6,722	1,838	352	1,018	2,916	930	184	158	240	14	404	186	9	11	1	1	3	1	1	2	1	2	10	2	258	1	3,130	348

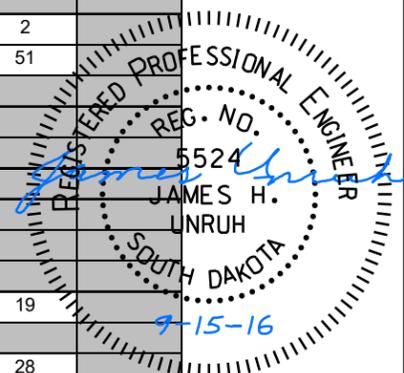


TABLE OF STORM SEWER DROP INLETS AND JUNCTION BOXES

Station	Offset	Inlet Type	Class M6 Concrete (CuYd)	Reinforcing Steel (Lb)	Frame and Grate				
					Type B Frame and Grate Assembly (Each)	Precast Drop Inlet Collar (Each)	Type A7 Manhole Frame and Lid (Each)	Type S Inlet Lid (Each)	
842+00.00	14.33	L	DOT 2x3 Type B	0.95	187.0	1	1		
842+00.00	14.33	R	DOT 2x3 Type B	0.89	179.2	1	1		
842+00.00	53.67	R	DOT 2x3 Type B	1.18	210.2	1	1		
843+00.00	60.00	L	DOT 5x5 JB	4.54	824.5			1	
845+30.00	53.67	L	DOT 2x3 Type B	0.85	174.0	1	1		
845+30.00	14.33	L	DOT 2x3 Type B	1.01	194.6	1	1		
845+30.00	14.33	R	DOT 2x3 Type B	0.87	176.3	1	1		
845+30.00	53.67	R	DOT 2x3 Type B	1.08	196.3	1	1		
848+00.00	53.67	L	DOT 2x3 Type B	0.80	174.0	1	1		
848+00.00	14.33	L	DOT 2x3 Type B	1.00	194.0	1	1		
848+00.00	14.33	R	DOT 2x3 Type B	0.87	176.3	1	1		
848+00.00	53.67	R	DOT 2x3 Type B	1.09	198.6	1	1		
850+80.00	53.67	L	DOT 2x3 Type B	0.78	169.7	1	1		
850+80.00	14.33	L	DOT 2x3 Type B	1.22	232.5	1	1		
850+80.00	14.33	R	DOT 2x3 Type B	1.22	231.7	1	1		
850+80.00	53.67	R	DOT 2x3 Type B	1.73	298.6	1	1		
856+60.00	53.67	L	DOT 2x3 Type B	0.94	178.1	1	1		
856+60.00	14.33	L	DOT 2x3 Type B	1.28	230.5	1	1		
856+60.00	14.33	R	DOT 2x3 Type B	1.35	239.5	1	1		
856+60.00	53.67	R	DOT 2x3 Type B	1.75	290.8	1	1		
858+80.00	14.33	R	DOT 2x3 Type B	1.35	232.2	1	1		
860+00.00	53.67	L	DOT 2x3 Type B	0.93	176.9	1	1		
860+00.00	14.33	L	DOT 2x3 Type B	1.12	208.5	1	1		
860+00.00	14.33	R	DOT 2x3 Type B	1.12	216.3	1	1		
860+00.00	53.67	R	DOT 2x3 Type B	1.11	208.2	1	1		
863+00.00	53.67	L	DOT 2x3 Type B	0.91	175.0	1	1		
863+00.00	14.33	L	DOT 2x3 Type B	1.09	205.6	1	1		
863+00.00	14.33	R	DOT 2x3 Type B	1.17	215.4	1	1		
863+00.00	53.67	R	DOT 3x4 Type B	1.94	303.4	1	1		
866+00.00	53.67	L	DOT 2x3 Type B	1.16	213.7	1	1		
866+00.00	14.33	L	DOT 2x3 Type B	1.41	247.3	1	1		
866+00.00	9.67	L	DOT 2x3 Type B	1.40	245.3	1	1		
866+00.00	53.67	R	DOT 3x4 Type B	2.27	354.2	1	1		
868+30.00	53.67	L	DOT 2x3 Type B	0.93	177.8	1	1		
868+30.00	14.33	L	DOT 2x3 Type B	1.12	209.3	1	1		
868+30.00	9.67	L	DOT 2x3 Type B	1.13	210.2	1	1		
868+30.00	65.67	R	DOT 2x3 Type B	0.97	189.6	1	1		
868+34.00	65.67	R	DOT 2x3 Type B	0.97	189.6	1	1		
870+00.00	64.67	R	DOT 3x4 Type B	2.26	342.9	1	1		
870+30.00	14.33	L	DOT 2x3 Type B	1.13	210.2	1	1		
870+30.00	9.67	L	DOT 2x3 Type B	1.14	211.1	1	1		
870+50.00	53.67	L	DOT 2x3 Type B	0.93	177.8	1	1		
23+30	24.00	R	DOT 4x11 Type S	3.59	625.6				1
Total :			215.40	40,863.0	120	120	3	5	

FENCING

Post type and sequence: Right-of-way fence shall be constructed using alternate wood and steel posts.

Gates: Final gate locations will be determined by the Engineer in consultation with landowner and/or tenants. There is no bid item for wire gates; they are incidental to the right-of-way fence bid item.

Fence locations and post panels: Final locations will be determined by the Engineer in consultation with landowner and/or tenants.

BRACE PANELS FOR ROW FENCE

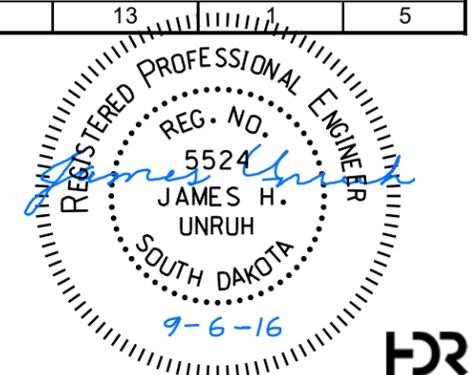
The E-Z Brace or an approved equal may be utilized as an alternate horizontal brace in the brace panels if approved by the Engineer. The E-Z Brace shall be attached to each wood post utilizing two 5/16" x 3" lag screws. Holes of appropriate diameter, based on wood post condition, shall be drilled before placement of lag screws. The following are contacts regarding the E-Z Brace:

 Roger Papka
 E-Z Brace
 1160 Karen St.
 Watertown, SD 57201
 605-881-6142

 Dennis Mack
 E-Z Brace
 108 18th St. NE
 Watertown, SD 57201
 605-881-4990

TABLE OF FENCE QUANTITIES

Station to	Station	L/R	Right-of-Way Fence			Post Panels		Gates	
			Remove Fence Ft	Type 2 Ft	Type 4 Ft	2 post panel Each	3 post panel Each	24' barbed wire gate Each	30' barbed wire gate Each
Hwy100									
787+31 536' R (along Maple St)			40	40		2		1	
787+26	840+47	L		5,638		29	5		
800+10	817+20	L		1,845		22			3
787+25	839+96	R		5,746		36	6		
840+47	870+46	L			3,237	29	2		1
839+96	869+37	R			3,790	34			
Rice Street									
23+33	31+99	R			884	8			
35+25	55+42	R			2,011	13			1
23+33	45+51	L/R	2,593						
28+61	28+16	L/R	189						
27+07	29+12	L	208						
Total:			3,030	13,269	9,922	173	13	1	5



HORIZONTAL ALIGNMENT DATA

Rev 9/15/2016 JHU

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	B23	B108

Plotting Date: 9/15/2016

Hwy100 Mainline

Type	Station			Northing	Easting
POB	785+00.00			473296.44	2945201.83
		TL=815.49	N 2° 24' 48" W		
PC	793+15.49			474111.21	2945167.49
PI	802+93.48	R = 11,100.00	Delta = 10° 04' 13" R	475088.32	2945126.31
PT	812+66.42			476057.58	2945256.61
		TL=1,749.16	N 7° 39' 25" E		
PC	830+15.58			477791.15	2945489.67
PI	844+55.21	R = 3,400.00	Delta = 45° 53' 52" L	479217.94	2945681.49
PT	857+39.20			480348.65	2944790.40
		TL=1,753.92	N 38° 14' 27" W		
PC	874+93.12			481726.21	2943704.78
PI	879+22.43	R = 1,330.00	Delta = 35° 46' 46" R	482063.40	294339.05
PT	883+23.66			482492.32	2943420.61
		TL=4,639.84	N 02° 27' 41" W		
PI	929+63.50		Delta = 0° 00' 51" L	487127.87	2943221.34
		TL=1,364.48	N 02° 28' 32" W		
POE	943+27.97			488491.08	2943162.40

Rice Street

Type	Station			Northing	Easting
POB	-0+02.38			479314.58	2941700.03
		TL=327.29	N 32° 34' 38" E		
PC	3+24.91			479590.37	2941876.25
PI	4+76.79	R = 1,190.00	Delta = 14° 32' 49" L	479718.36	2941958.03
PT	6+27.04			479862.78	2942005.04
		TL= 494.97	N 18° 01' 49" E		
PC	11+22.01			480333.44	2942158.25
PI	17+01.82	R = 1,190.00	Delta = 51° 57' 14" R	480884.78	2942337.71
PT	22+01.06			481083.24	2942882.50
		TL= 1,098.94	N 69° 59' 04" E		
PI	33+00.00			481459.38	2943915.06
		TL= 1,759.46	N 69° 58' 45" E		
PC	50+59.46			482061.75	2945568.19
PI	52+31.56	R = 1,190.00	Delta = 16° 27' 31" R	482120.68	2945729.90
PT	54+01.30			482131.37	2945901.67
		TL= 539.67	N 86° 26' 15" E		
POE	59+40.97			482164.90	2946440.30

Timberline Road

Type	Station			Northing	Easting
POB	67+95.97			481071.93	2942852.72
		TL=43.11	N 6° 32' 58" W		
PC	68+39.08			481114.76	2942847.80
PI	69+03.25	R = 200.00	Delta = 35° 34' 45" R	481178.52	2942840.48
PT	69+63.27			481234.63	2942871.62
		TL=88.64	N 29° 01' 46" E		
PC	70+51.92			481312.14	2942914.64
PI	71+08.63	R = 200.00	Delta = 31° 39' 42" L	481361.72	2942942.15
PT	71+62.44			481418.37	2942939.55
		TL=92.76	N 2° 37' 55" W		
POE	72+55.20			481511.04	2942935.29

Cactus Hills East Access

Type	Station			Northing	Easting
POB	90+00.00			482118.06	2945165.10
		TL=400.00	S 20° 01' 15" E		
POE	94+00.00			481742.23	2945302.04

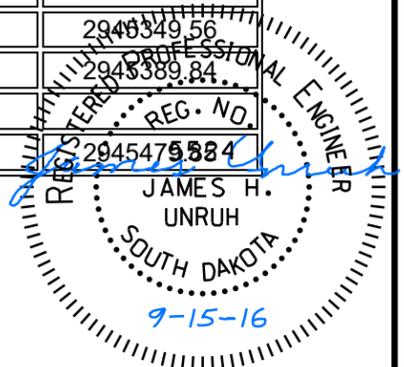
Rice Street Temporary Widening for Maintenance of Traffic

Type	Station			Northing	Easting
POB	200+00.00			480536.01	2942245.75
		TL=303.73	N 28° 53' 06" E		
PC	203+03.73			480801.96	2942392.47
PI	204+90.25	R = 1,227.00	Delta = 17° 17' 11" R	480938.36	2942519.67
PT	206+73.93			481030.80	2942681.66
		TL= 243.22	N 60° 23' 43" E		
POE	209+17.15			481150.95	2942893.10

Cactus Hills West Access Road

Type	Station			Northing	Easting
POB	300+00.00			478963.62	2945247.28
		TL=188.41	S 26° 33' 53.31" E		
PC	301+88.41			478795.10	2945331.54
PI	302+28.72	R = 62.00	Delta = 66° 03' 56.10" L	478759.04	2945349.56
PT	302+59.89			478760.89	2945389.84
		TL= 40.319	N 87° 22' 10.59" E		
POE	303+50.00			478765.03	2945475.884

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/96) SF = 0.99986486 Vertical Datum: NAVD 88



Hwy 100

Sec. 6-T101N-R48W

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	B31	B108

FILE: ...\\Sheets\\B-Grading\\B31
PLOTTING DATE: 09-06-2016

REV DATE: 09-06-2016
INITIAL: JHU

798+75.00 - 52.67' L to 15.33' L
Install 18" - 38' RC Pipe
(Between Drop Inlets)

798+75.00 - 13.33' L to 13.33' R
Install 18" - 28' RC Pipe
(Between Drop Inlets)

798+75.00 - 15.33' R to 52.67' R
Install 18" - 38' RC Pipe
(Between Drop Inlets)

798+80.60 to 800+98.00 - 53.67' R
Install 18" - 218' RC Pipe
(Between Drop Inlets)

801+00.00 - 52.67' L to 15.33' L
Install 18" - 38' RC Pipe
(Between Drop Inlets)

801+00.00 - 13.33' L to 13.33' R
Install 18" - 28' RC Pipe
(Between Drop Inlets)

801+00.00 - 15.33' R to 52.17' R
Install 18" - 38' RC Pipe
(Between Drop Inlets)

801+02.00 to 802+24.20 - 53.67' R
Install 24" - 122' RC Pipe
(Between Drop Inlets)

802+26.00-55.67' R to 124.70' R
Install 24" - 64' RC Pipe
and 1 Flared End
(Between Drop Inlet and End Inlet)

802+28.20 to 803+98.00-53.67' R
Install 30" - 170' RC Pipe
(Between Drop Inlets)

804+00.00 - 52.67' L to 15.33' L
Install 18" - 38' RC Pipe
(Between Drop Inlets)

804+00.00 - 13.33' L to 13.33' R
Install 18" - 28' RC Pipe
(Between Drop Inlets)

804+00.00 - 15.33' R to 51.67' R
Install 18" - 38' RC Pipe
(Between Drop Inlets)

804+07.00 to 806+98.00 - 53.67' R
Install 30" - 296' RC Pipe
(Between Drop Inlets)

807+00.00 - 52.67' L to 15.33' L
Install 18" - 38' RC Pipe
(Between Drop Inlets)

807+00.00 - 13.33' L to 13.33' R
Install 18" - 28' RC Pipe
(Between Drop Inlets)

807+00.00 - 15.33' R to 52.17' R
Install 18" - 38' RC Pipe
(Between Drop Inlets)

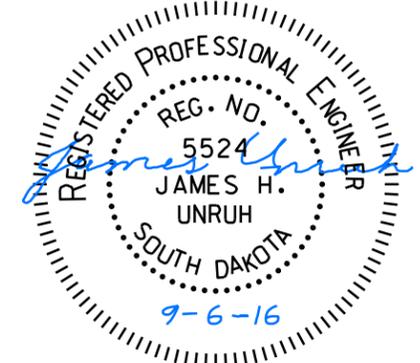
807+02.00 to 809+94.50 - 57.63' R
Install 30" - 292' RC Pipe
(Between Drop Inlets)

804+00 to 810+00 - 80' R
Install 600' - 4" Slotted Drainage Tubing

810+00 - 60' R to 80' R
Install 20' - 4" Solid Drainage Tubing
Connect to Drop Inlet

800+50 - 100' L to 160' R
Install 260' - 2" PVC Pipe Conduit
Install 260' - 4" PVC Pipe Conduit
(beside 2" conduit)
Install 260' - 1.5" White PVC Pressure Pipe
(inside 4" conduit)

806+60 - 200' L
30' barbed
wire gate



Alignment

800+42 - 120' L
30' barbed
wire gate

2 PP

3-2 PP

2 PP

Type 2 fence

Type 2 fence

2-2 PP

2-2 PP

2 PP

2 PP

2-2 PP

1/16 Line

2-2 PP

2 PP

2-2 PP

2 PP

800+00

805+00

Hwy 100

810+00

Slotted Drainage Tubing

Type 2 fence

Slotted Drainage Tubing

PI 802+93.48
N 475088.32
E 2945126.31
Del 10°04'13" R
Dc 0°30'58"
T 977.98'
L 1950.92'
R 11000.00'

803+98 - 214' R
Do Not Disturb Tree

Install 2'x 3' Type B Drop
Inlets, Type B Frame &
Grate and 6" Concrete Collars
at the Following Locations:

- 798+75.00 - 53.67' L
- 798+75.00 - 14.33' L
- 798+75.00 - 14.33' R
- 798+75.00 - 53.67' R
- 798+79.00 - 53.67' R
- 801+00.00 - 53.67' L
- 801+00.00 - 14.33' L
- 801+00.00 - 14.33' R
- 804+00.00 - 53.67' L
- 804+00.00 - 14.33' L
- 804+00.00 - 14.33' R
- 807+00.00 - 53.67' L
- 807+00.00 - 14.33' L
- 807+00.00 - 14.33' R

Install 3'x 4' Type B Drop
Inlets, Type B Frame &
Grate and 6" Concrete Collars
at the Following Locations:

- 801+00.00 - 53.67' R

Install 4'x 4' Type B Drop
Inlets, Type B Frame &
Grate and 6" Concrete Collars
at the Following Locations:

- 802+26.20 - 53.67' R
- 804+00.00 - 53.67' R
- 804+05.00 - 53.67' R
- 807+00.00 - 53.67' R



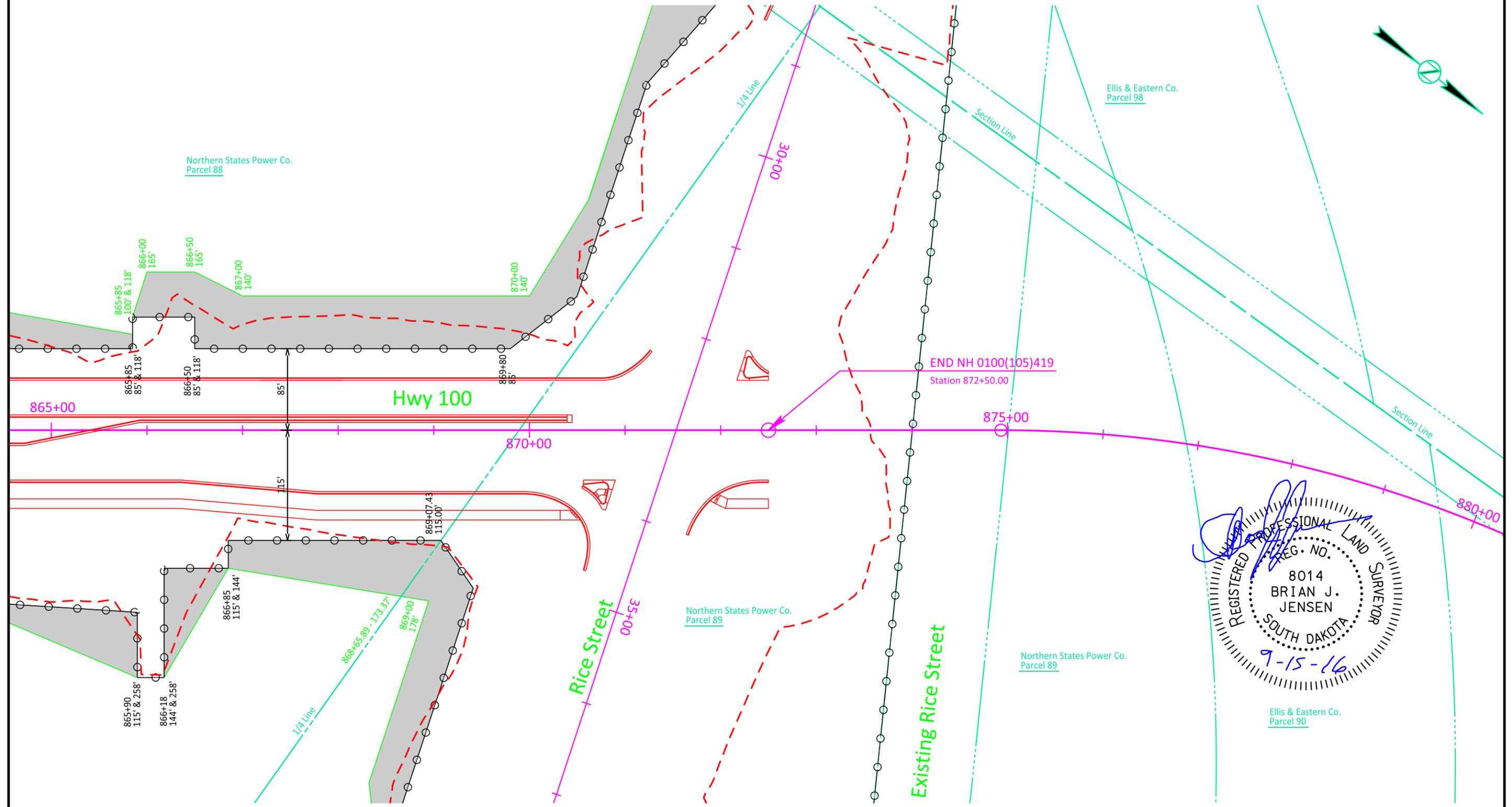
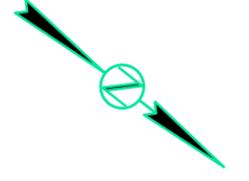
Hwy 100 ROW

Sec. 31-T102N-R48W

Sec. 36-T102N-R49W

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	B48	B108

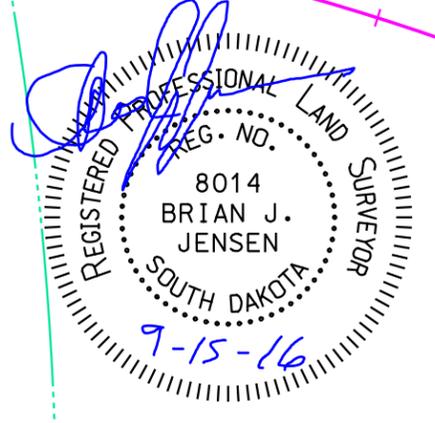
FILE: ...\\Sheets\\B-Grading\\B48 ROW PLOTTING DATE: 09-15-2016
 REV DATE: 9/15/2016 INITIAL: JHU



Parcel 88
 865+85 L to 27+98.64 (Rice Street) R
 Temporary Easement for
 Grading Containing
 0.9 ac. (37394 sq ft),
 more or less

Parcel 88
 866+18 to 866+85 R
 Temporary Easement for
 Grading Containing
 0.1 ac. (3820 sq ft),
 more or less

Parcel 88
 866+85 to 869+07.43 R
 Temporary Easement for
 Grading Containing
 0.2 ac. (9118 sq ft),
 more or less



Ellis & Eastern Co.
 Parcel 90



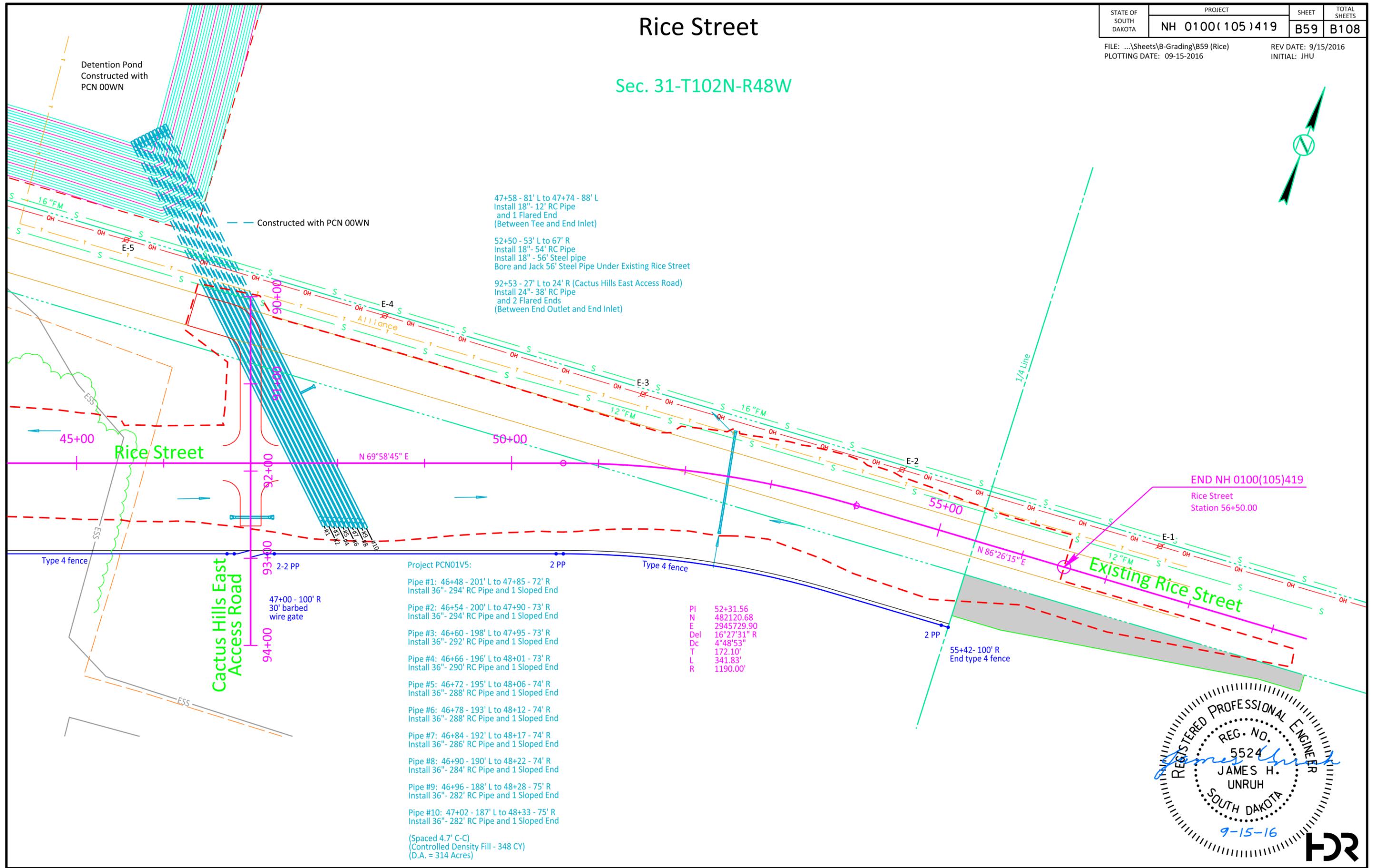
Rice Street

Sec. 31-T102N-R48W

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	B59	B108

FILE: ...\\Sheets\\B-Grading\\B59 (Rice)
PLOTING DATE: 09-15-2016

REV DATE: 9/15/2016
INITIAL: JHU



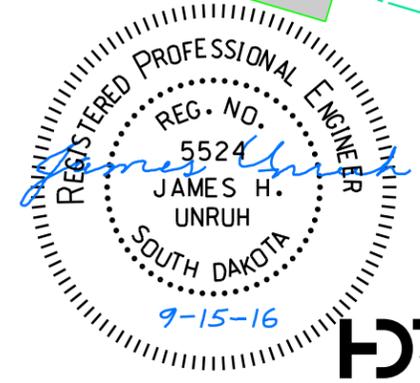
47+58 - 81' L to 47+74 - 88' L
Install 18" - 12' RC Pipe
and 1 Flared End
(Between Tee and End Inlet)

52+50 - 53' L to 67' R
Install 18" - 54' RC Pipe
Install 18" - 56' Steel pipe
Bore and Jack 56' Steel Pipe Under Existing Rice Street

92+53 - 27' L to 24' R (Cactus Hills East Access Road)
Install 24" - 38' RC Pipe
and 2 Flared Ends
(Between End Outlet and End Inlet)

- Project PCN01V5: 2 PP
- Pipe #1: 46+48 - 201' L to 47+85 - 72' R
Install 36" - 294' RC Pipe and 1 Sloped End
 - Pipe #2: 46+54 - 200' L to 47+90 - 73' R
Install 36" - 294' RC Pipe and 1 Sloped End
 - Pipe #3: 46+60 - 198' L to 47+95 - 73' R
Install 36" - 292' RC Pipe and 1 Sloped End
 - Pipe #4: 46+66 - 196' L to 48+01 - 73' R
Install 36" - 290' RC Pipe and 1 Sloped End
 - Pipe #5: 46+72 - 195' L to 48+06 - 74' R
Install 36" - 288' RC Pipe and 1 Sloped End
 - Pipe #6: 46+78 - 193' L to 48+12 - 74' R
Install 36" - 288' RC Pipe and 1 Sloped End
 - Pipe #7: 46+84 - 192' L to 48+17 - 74' R
Install 36" - 286' RC Pipe and 1 Sloped End
 - Pipe #8: 46+90 - 190' L to 48+22 - 74' R
Install 36" - 284' RC Pipe and 1 Sloped End
 - Pipe #9: 46+96 - 188' L to 48+28 - 75' R
Install 36" - 282' RC Pipe and 1 Sloped End
 - Pipe #10: 47+02 - 187' L to 48+33 - 75' R
Install 36" - 282' RC Pipe and 1 Sloped End

PI 52+31.56
N 482120.68
E 2945729.90
Del 16°27'31" R
Dc 4'48'53"
T 172.10'
L 341.83'
R 1190.00'



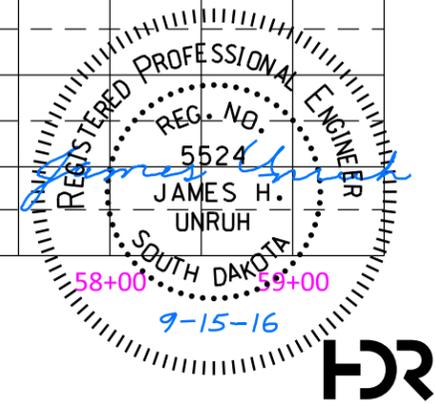
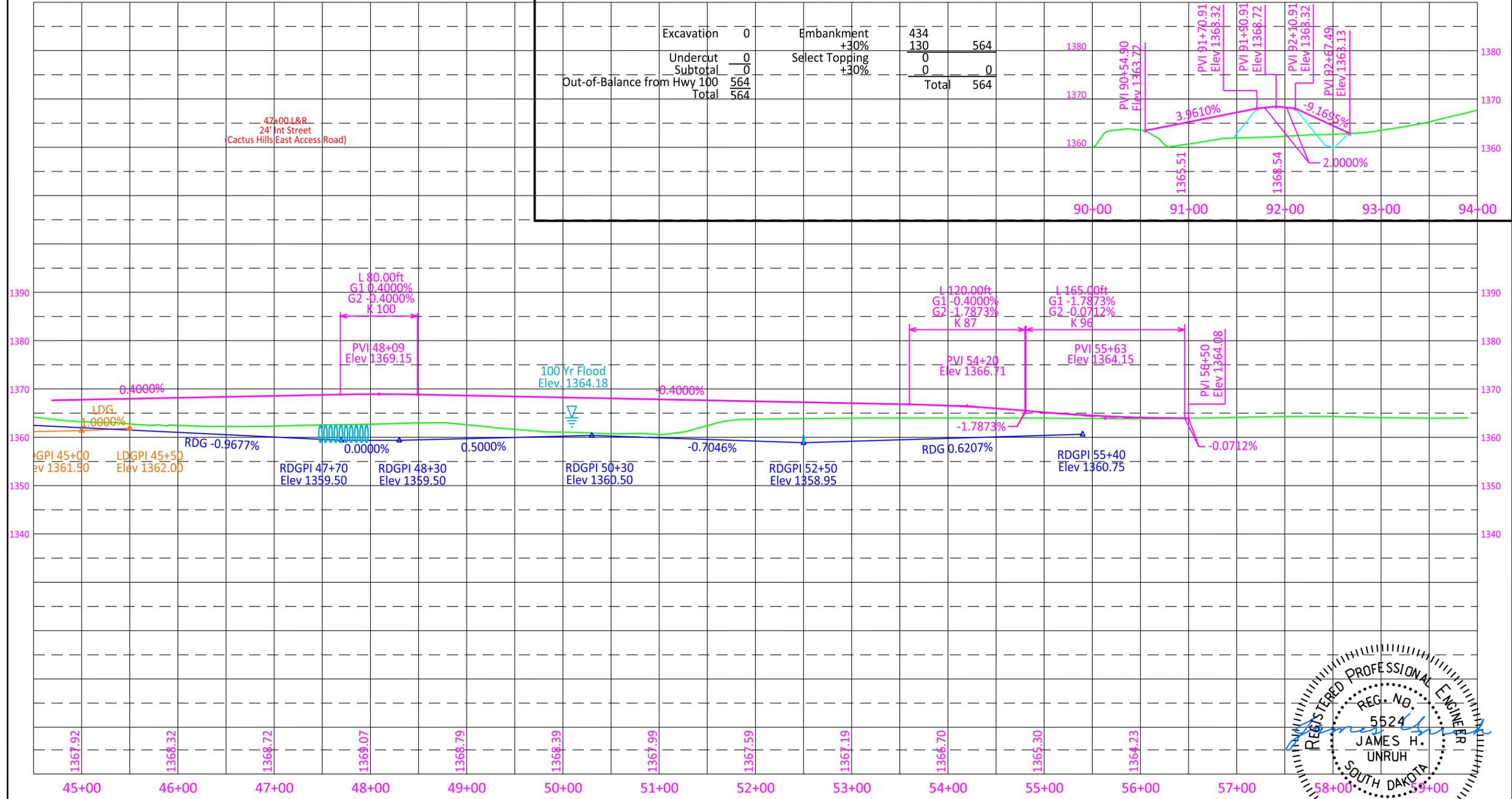
Rice Street

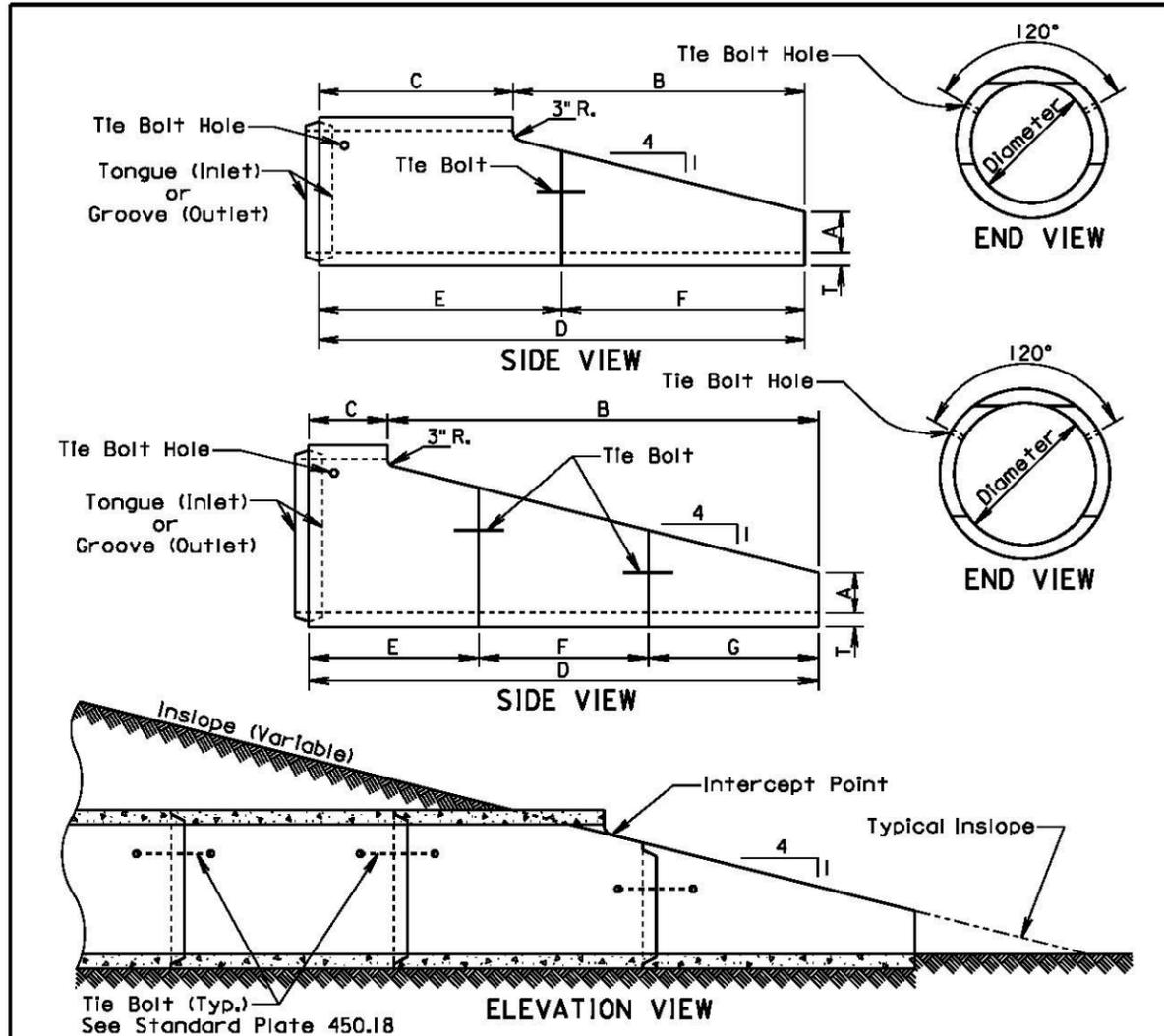
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	B61	B108

FILE: ...\\Sheets\\B-Grading\\B61 (Rice) REV DATE: 9/15/2016
 PLOTTING DATE: 09-15-2016 INITIAL: JHU

Cactus Hills East Access Road

Excavation	0	Embankment	434	
		+30%	130	564
Undercut	0	Select Topping	0	
Subtotal	0	+30%	0	0
Out-of-Balance from Hwy 100	564			
Total	564		Total	564





Dia. (In.)	T (In.)	A (In.)	B (In.)	C (In.)	D (In.)	E (In.)	F (In.)	G (In.)
36	4	12	86.5	57.5	144	72	72	
42	4.5	12	110.5	33.5	144	72	72	
48	5	12	134.5	33.5	168	96	72	
54	5.5	12	158.5	33.5	192	96	96	
60	6	12	182.5	33.5	216	72	72	72

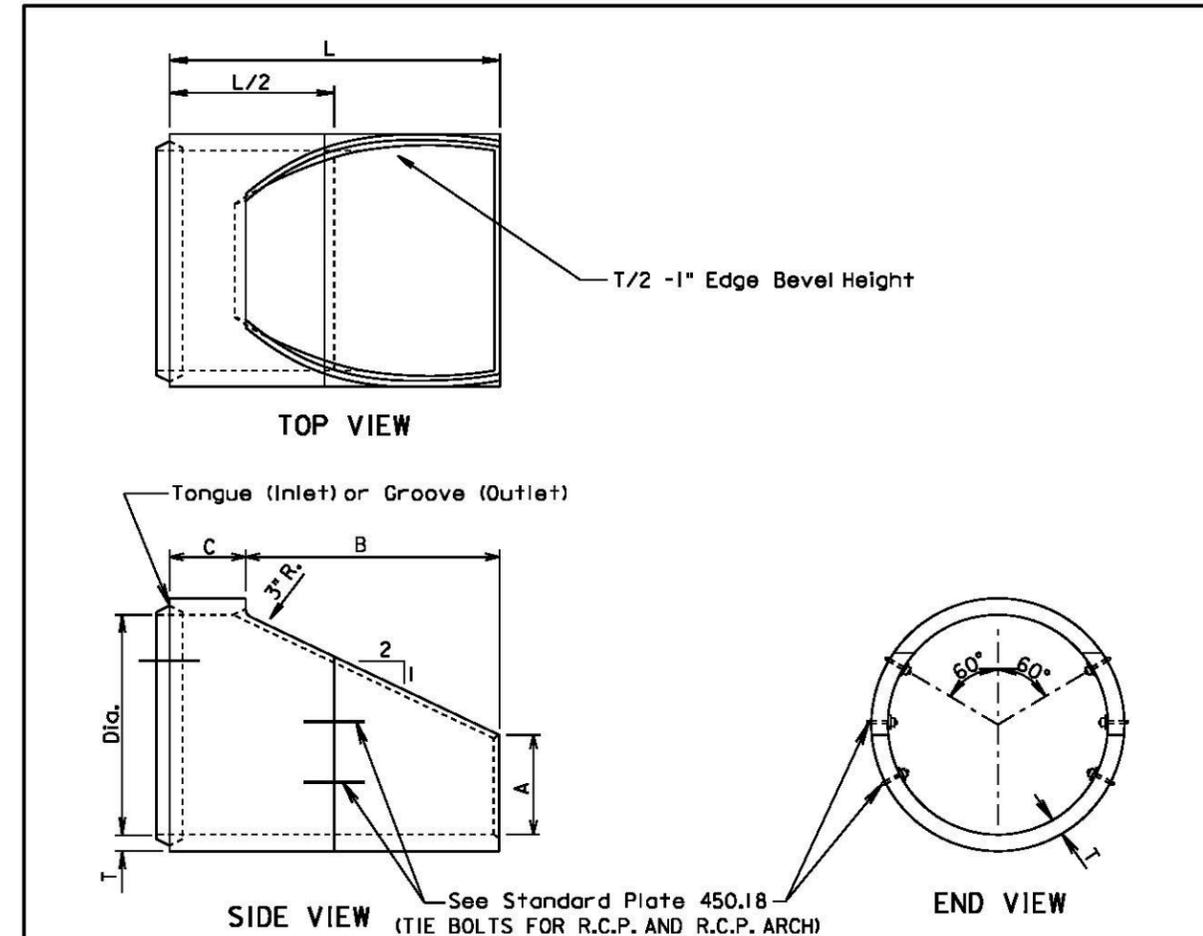
GENERAL NOTE:

The length of concrete pipe shown in the construction plans is between sloped ends. If bars are specified in the plans, then the bar assemblies shall be constructed in accordance with Standard Plate 450.15.

August 31, 2013

S D D O T	R. C. P. SLOPED ENDS WITH OR WITHOUT BARS	PLATE NUMBER 450.14
		Sheet 1 of 1

Published Date: 3rd Qtr. 2016



Dia. (in.)	T (in.)	L (ft.)	INLET END			OUTLET END		
			A (in.)	B (in.)	C (in.)	A (in.)	B (in.)	C (in.)
96	9	12	42	104	40	44	99	45
108	10	16	42	128	64	44	123	69
120	11	16	42	152	40	44	147	45

GENERAL NOTES:

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

Reinforcement per Class 2 RCP with double reinforcement in the upper 120 degrees of the full barrel portion.

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

June 26, 2015

S D D O T	R. C. P. SECTIONAL ENDS	PLATE NUMBER 450.16
		Sheet 1 of 1

Published Date: 2nd Qtr. 2016

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
634E0010	Flagging	100.0	Hour
634E0110	Traffic Control Signs	625.5	SqFt
634E0120	Traffic Control Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	27	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	2,300	Ft
634E0640	Temporary Pavement Marking	10,620	Ft
634E1002	Detour Signing	2,107.0	SqFt
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each

SEQUENCE OF OPERATIONS

Requests to deviate from the sequence of operations shall be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence shall be submitted for review a minimum of one week prior to potential implementation.

PHASE 1

1. Install Phase 1 traffic control.
2. Install proposed utilities and roadway.
3. HWY 100, from Maple St to Rice St, shall remain closed during this phase.
4. See Special Provisions for Contract Time for sequencing and timelines.

PHASE 2

1. Install Phase 2 traffic control.
2. Install temporary surfacing on south side of Rice St, at west end, to carry traffic during the Rice St west end tie-in work.
3. Install proposed utilities and roadway.
4. HWY 100, Maple St to Rice St, shall remain closed during this phase.
5. See Special Provisions for Contract Time for sequencing and timelines.

PHASE 3

1. Install Phase 3 traffic control.
2. Install temporary surfacing on north side of Rice St, just west of Timberline Ave, to carry traffic during the Rice St center segment tie-in work.
3. Install proposed utilities and roadway.
4. HWY 100, Maple St to Rice St, shall remain closed during this phase.
5. See Special Provisions for Contract Time for sequencing and timelines.

PHASE 4

1. Install Phase 4 traffic control.
2. Close Timberline Ave, from 60th St N to Rice St.
3. Install temporary surfacing on south side of Rice St, at east end, to carry traffic during the Rice St east end tie-in work.
4. Install proposed utilities and roadway.
5. HWY 100, Maple St to Rice St, shall remain closed during this phase.
6. Timberline Ave, from 60th St N to Rice St, shall remain closed during this phase.
7. See Special Provisions for Contract Time for sequencing and timelines.

PHASE 5

1. Install Phase 5 traffic control.
2. Install proposed utilities and roadway.
3. HWY 100, from Maple St to Rice St, shall remain closed during this phase.
4. See Special Provisions for Contract Time for sequencing and timelines.

INCIDENTS

An incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic such as an accident, hazardous materials spill, or similar event. The Contractor shall set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, the City of Sioux Falls, and local emergency response entities to the meeting. The Contractor shall conduct the meeting.

The Contractor will assist to maintain traffic as required by these plan notes and as agreed to at the meeting. The Contractor will be required to modify messages on portable changeable message signs or relocate portable changeable message signs. The Contractor may be asked to provide flaggers to direct or detour of traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic incident lasting for more than two hours. Ground mounted advance warning signs may be covered and additional portable warning signs provided.

No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message signs. Costs for flagging shall be paid at the contract unit price per hour for "Flagging". Cost for the relocation of an advanced warning sign due to an incident shall be 50% of the designated sign rate as per Section 634.5 Basis of Payment in the Specifications. Cost for additional signs shall be paid at the contract unit price per square foot "Traffic Control Signs".

REMOVE EXISTING PAVEMENT MARKING

Existing pavement markings which conflict with the desired traffic patterns detailed in the traffic control layouts shall be removed by the Contractor unless otherwise shown.

CONTRACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGNS

The Contractor shall program the portable changeable message signs near the project work limits with the following messages for use during normal traffic flow:

REDUCED SPEED or ROAD WORK AHEAD
TWO WAY TRAFFIC EXPECT DELAYS

During peak times when traffic queues exist or during incident management:

SLOW TRAFFIC AHEAD or CRASH AHEAD
BE PREPARED TO STOP BE PREPARED TO STOP

The Engineer may approve alternate messages to fit project conditions.

The portable changeable message signs shall be located as determined by the Project Engineer. The signs shall not be stored long term on the shoulders of the roadway.

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GENERAL MAINTENANCE OF TRAFFIC

Existing guide, route, informational logo, regulatory, and warning signs shall be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including but not limited to, traffic signal heads, delineation, and signing shall be the responsibility of the Contractor.

All R1-1 STOP, R2-1 SPEED LIMIT, and R5-1 DO NOT ENTER signs shall have a mounting height of five feet even when mounted on portable supports.

Unless otherwise stated in these plans, no work will be allowed during hours of darkness.

All construction operations shall be conducted in the general direction of traffic movement.

The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent shall be used, as determined by the Engineer.

Temporary Flexible Vertical Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5' spacing.

Proposed permanent markings and signs shall be installed, per the Engineer's determination, before continuing to the next phase. If the Contractor is unable to install permanent markings, interim markings shall be installed to match the intent of the proposed markings.

Additional traffic control setup details are shown in the standard plate section. Upon approval from the Engineer, these plates shall be used as necessary by the Contractor to complete miscellaneous operations throughout the project. Signs installed for these setups shall be paid accordingly per square foot of the sign installed.



SECTION L ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
110E1530	Remove Signal Pole Footing	1	Each
110E1540	Remove Luminaire Pole Footing	3	Each
635E0050	Breakaway Base Luminaire Pole with Arm, 50' Mounting Height	58	Each
635E2065	Signal Pole with 65' Mast Arm	2	Each
635E2165	Signal Pole with 65' Mast Arm and Luminaire Arm	2	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	60	Each
635E4030	3 Section Vehicle Signal Head	11	Each
635E4050	5 Section Vehicle Signal Head	2	Each
635E4080	3 Section Directional Vehicle Signal Head	12	Each
635E5020	2' Diameter Footing	494.0	Ft
635E5030	3' Diameter Footing	60.0	Ft
635E5310	Special Electrical Junction Box	40	Each
635E5400	Electrical Service Cabinet	4	Each
635E5430	Traffic Signal Controller	1	Each
635E5450	Side Mounted Cabinet	1	Each
635E5515	Signal Head Battery Backup and Flash System	1	Each
635E5545	Wireless In Pavement Traffic Sensor	44	Each
635E5555	Wireless Access Point	4	Each
635E5558	Wireless Repeater	3	Each
635E5560	Emergency Vehicle Preemption Unit	1	Each
635E5570	Optical Detector	4	Each
635E5900	Pedestrian Push Button	2	Each
635E5910	Pedestrian Push Button Pole	2	Each
635E5922	Pedestrian Signal Head with Countdown Timer	2	Each
635E5930	Pedestrian Crossing Sign	2	Each
635E6200	Miscellaneous, Electrical	Lump Sum	LS
635E7500	Remove and Reset Luminaire Pole	3	Each
635E7510	Remove and Reset Signal Pole	1	Each
635E7530	Relocate Signal Equipment	Lump Sum	LS
635E8025	2.5" Rigid Galvanized Steel Conduit	985	Ft
635E8030	3" Rigid Galvanized Steel Conduit	740	Ft
635E8040	4" Rigid Galvanized Steel Conduit	400	Ft
635E8050	5" Rigid Galvanized Steel Conduit	10	Ft
635E8108	0.75" Rigid Conduit, Schedule 40	80	Ft
635E8115	1.5" Rigid Conduit, Schedule 40	270	Ft
635E8120	2" Rigid Conduit, Schedule 40	11,870	Ft
635E8130	3" Rigid Conduit, Schedule 40	5,850	Ft
635E8140	4" Rigid Conduit, Schedule 40	80	Ft
635E8215	1.5" Rigid Conduit, Schedule 80	45	Ft
635E8220	2" Rigid Conduit, Schedule 80	305	Ft
635E8230	3" Rigid Conduit, Schedule 80	1,305	Ft
635E8410	1/2" Innerduct, SDR 13.5	26,565	Ft
635E8420	1.5" Innerduct, SDR 13.5	75	Ft
635E8830	2/2/2/4 Aluminum Wire	26,360	Ft
635E9011	1/C #1 AWG Copper Wire	1,680	Ft
635E9014	1/C #4 AWG Copper Wire	165	Ft
635E9020	1/C #10 AWG Copper Wire	10,175	Ft
635E9023	3/C #12 AWG Copper Wire	270	Ft
635E9302	2/C #14 AWG IMSA Copper Cable, K1	110	Ft
635E9304	4/C #14 AWG IMSA Copper Cable, K1	1,370	Ft
635E9307	7/C #14 AWG IMSA Copper Cable, K1	30	Ft
635E9325	25/C #14 AWG IMSA Copper Cable, K1	1,325	Ft
635E9710	2/C #10 AWG Copper Pole and Bracket Cable	3,900	Ft
635E9800	Preemption Cable	3,230	Ft

SUPPLYING AS BUILT PLANS

If the traffic signal systems or roadway lighting systems are constructed differently than what is stated in the plans, the Contractor shall supply as built plans to the Engineer and a copy shall be sent to the Traffic Design Engineer. The as built plans may include conduit layouts, wiring diagrams, or other drawings depicting the changes from the original plans.

SHOP DRAWING AND CATALOG CUTS SUBMITTAL

The Contractor shall submit shop drawings and catalog cuts in accordance with Section 985 of the Specifications.

PDF submittals shall be sent to the following email address:

Lance.McQueen@hdrinc.com

Upon review of the submittals, they will be sent by the Engineer to the following email addresses for concurrence of approvals or remarks:

John.Less@state.sd.us
Pete.Longman@state.sd.us
HHoftiezer@siouxfalls.org

ON-SITE INSPECTION

An on-site inspection of the traffic signals shall be conducted before acceptance of the project, once the traffic signals are completed and operational. The on-site inspection shall be conducted by the Contractor, Region Traffic Engineer, City Traffic Engineer and Consultant Design Engineer.

MISCELLANEOUS, ELECTRICAL

"Miscellaneous, Electrical" work includes, but is not limited to:

- PVC junction boxes installed within the pedestrian underpass (15 Each)
- Connecting / tying to existing conduits and junction boxes
- Removal of existing traffic and lighting junction boxes
- Removal/abandonment of existing lighting and traffic conduits and cables

LIGHTNING PROTECTION

All luminaire poles and service cabinets shall be equipped with industrial lightning arrestors compliant with current NEMA and UL Standards for lightning arrestors. Cost for ground rods and lightning arrestors shall be incidental to the contract unit price for the corresponding luminaire pole and service cabinet bid item.

CONDUIT INSTALLATION

Each end of each conduit shall be marked with a 1/2-inch dia. x 12-inch long reinforcing bar driven flush with the finished grade, except when the conduit end terminates inside a junction box. The ends of each conduit run shall be capped to prevent water and soil from entering. This work shall be done by the Lighting Contractor and shall not be disturbed by the Grading Contractor.

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REMOVE AND RESET LUMINAIRE POLE

Existing luminaire poles and luminaires along Timberline Avenue and Rice Street shall be removed, salvaged and reset at the locations shown on the plans.

It shall be the Contractor's responsibility to obtain the bolt circle pattern and anchor bolts for the salvaged poles from the original pole manufacturer. The Contractor shall determine the original pole manufacturer.

Luminaire poles and luminaires damaged during relocation shall be repaired or replaced by the Contractor at no cost to the State.

All costs involved with removing and resetting the existing luminaire poles and luminaires, including new anchor bolts with associated hardware, shall be incidental to the contract unit price per each for "Remove and Reset Luminaire Pole".

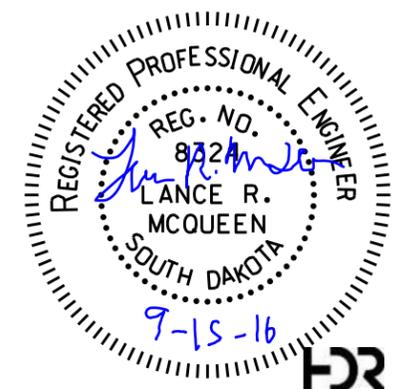
REMOVE AND RESET SIGNAL POLE

The existing signal pedestal pole at the northwest corner of Timberline Avenue and Rice Street shall be removed, salvaged and reset at the location shown on the plans.

It shall be the Contractor's responsibility to obtain the bolt circle pattern and anchor bolts for the salvaged poles from the original pole manufacturer. The Contractor shall determine the original pole manufacturer.

Signal poles damaged during relocation shall be repaired or replaced by the Contractor at no cost to the State.

All costs involved with removing and resetting the existing pedestal signal pole, including new anchor bolts with associated hardware, shall be incidental to the contract unit price per each for "Remove and Reset Signal Pole".



RELOCATE SIGNAL EQUIPMENT

The existing flashing red beacon signal head located on the existing pedestal signal pole at the northwest corner of Timberline Avenue and Rice Street shall be removed, salvaged and reset on the reinstalled pedestal signal pole.

The existing flashing red beacon signal head shall be banded to pedestal signal pole. The Contractor shall make all necessary connections to make the flasher system operational.

All costs to relocate the flashing red beacon signal head shall be incidental to the contract lump sum price for "Relocate Signal Equipment".

REMOVE LUMINAIRE POLE FOOTING

The footings of salvaged luminaire poles shall be removed by the Contractor to a minimum of 2' below the ground surface. Restoration of the disturbed area shall be to the satisfaction of the Engineer.

All costs for removing the footings of the salvaged luminaire poles shall be incidental to the contract unit price per each for "Remove Luminaire Pole Footing".

REMOVE SIGNAL POLE FOOTING

The footings of salvaged signal poles shall be removed by the Contractor to a minimum of 2' below the ground surface. Restoration of the disturbed area shall be to the satisfaction of the Engineer.

All costs for removing the footings of the existing signal poles shall be incidental to the contract unit price per each for "Remove Signal Pole Footing".

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	*Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
L1-L56, RL1, RL2	2' - 0"	8' - 0"	1' - 8"	54' - 9"	8-#7 x 7' - 6"
S1, S3, S3, S4	3' - 0"	15' - 0"	2' - 8"	145' - 9"	14-#8 x 14' - 6"
REL3, REL4, REL5	2' - 0"	8' - 0"	1' - 8"	54' - 9"	8-#7 x 7' - 6"
RES1	2' - 0"	6' - 0"	1' - 8"	44' - 3"	8-#7 x 5' - 6"

*Footing depth shall be below ground level.
**The size of all spirals shall be #3.

SOILS INFORMATION

The subsurface conditions within the limits of the project consist of brown silt-clay to clay-silt with occasional gravel layers throughout. Groundwater may be encountered at cylindrical footing locations within the deep cut sections of the project.

During construction of the cylindrical footings, concrete placement operations should closely follow excavation procedures. The longer the excavations are left open the more likely caving may occur. If caving soils are encountered during excavation, casing may be required to construct the cylindrical footings. All costs for the casings shall be incidental to the footing costs.

Concrete shall not be dropped through standing water. If water is present in the excavation it shall be removed prior to concrete placement or the concrete shall be tremied.

SPECIAL ELECTRICAL JUNCTION BOX

The proposed electrical junction boxes for traffic, innerduct and lighting shall be the 12", 24", or 30" diameter junction boxes as shown on City of Sioux Falls standard plates #635.31, 635.33 and 635.70.

All costs for the electrical junction boxes, regardless of the type or size, shall be included in the contract unit price per each for "Special Electrical Junction Box".

POLES

Cantilever traffic signal supports, including anchor bolts, shall be designed for fatigue in accordance with Fatigue Importance Category II without galloping and truck induced gusts.

Signal poles shall have rotatable mast arms.

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LUMINAIRES

The accepted design for the Hwy 100 and Rice Street roadway luminaires shall provide 1.1 and greater average maintained foot-candles and a uniformity ratio (average maintained to minimum maintained foot-candles) of 3:1 and less using the following parameters:

L1-L56, S3, S4
 Setback: 6 Ft.
 Lamp Loss Factor (LLF): 0.8
 Width of Lighted Area: 104 Ft.
 Spacing: 302 Ft.
 Configuration: Opposite
 Mounting Height: 50 Ft.
 Arm Extension Length: 8 Ft.
 Luminaire: Type 2 - 315W LED

RL1, RL2
 Setback: 6 Ft. and 10 Ft.
 Lamp Loss Factor (LLF): 0.8
 Width of Lighted Area: 88 Ft.
 Spacing: 265 Ft.
 Configuration: One Sided
 Mounting Height: 50 Ft.
 Arm Extension Length: 15 Ft.
 Luminaire: Type 3 - 315W LED

The following luminaires meet the requirements for this design:

- Type 2 - 315W LED
 - Cooper Navion NAV-AE-06-E-UNV-SL2-10K-AP-PER or approved equal
 - voltage shall be universal 120-277V
 - Distribution shall be Type 2 with spill control
 - Absolute Lumens shall be 30,444
 - CCT shall be 4000K
 - Driver shall be Non-Dimming
 - Color shall be grey
 - Surge Protection shall be provided
 - A photocontrol receptacle shall be provided
- Type 3 - 315W LED
 - Cooper Navion NAV-AE-06-E-UNV-T3-10K-AP-PER or approved equal
 - voltage shall be universal 120-277V
 - Distribution shall be Type 3
 - Absolute Lumens shall be 31,062
 - CCT shall be 4000K
 - Driver shall be Non-Dimming
 - Color shall be grey
 - Surge Protection shall be provided
 - A photocontrol receptacle shall be provided

Three copies of the isofootcandle charts and utilization curves shall be furnished to the Engineer for approval. The Contractor must get approval from the Engineer prior to installation of the luminaires.



ELECTRICAL SERVICE CABINET

All costs to furnish and install the Electrical Service Cabinets as shown on the plans and as discussed below shall be incidental to the contract unit price per each for "Electrical Service Cabinet".

The Contractor shall follow the City of Sioux Falls standard plates #635.41 and 635.42 as provided in the plans. Single meter pedestals shall be installed for each service cabinet shown on the plans.

Contact Jerry Jongeling (#605-373-6979) at the City Lighting Shop to verify the field location of the service cabinets.

MULTICONDUCTOR CONTROL CABLE FOR SIGNAL CIRCUITS

The cable furnished for signal circuits shall be furnished with the number and size of the conductors shown in the plans and shall meet the specifications for either of the two types specified below.

1. General Purpose Control Cable with stranded copper conductors, ICEA S-61-402, PE-PV Insulated (20-10), 600 volts.
2. General Purpose Control Cable, with standard copper conductors, Aerial and Duct., IMSA 20-1, 600 volts.

The Conductor Jackets for the above cables shall be color coded in accordance with IMSA 19-1 Table 5.1.

TRAFFIC SIGNAL WIRING

The Contractor shall use Buchanan crimp connectors and insulating caps, or approved equal, on all wire terminations in the signal bases.

All costs for this work shall be incidental to the signal bid items.

TRAFFIC SIGNAL HEADS

Traffic signal heads for vehicle and pedestrian traffic signal heads shall be furnished and installed by the Contractor, as specified in the special provisions. See the special provisions for measurement and payment.

In addition to the special provisions for the traffic signal heads, the following specifications shall also apply:

- vehicle signal backplates shall be furnished with a 3" wide yellow retro-reflective strip on the perimeter face of the signal backplate
- pedestrian signal heads shall be two separate 12"x12" signal heads. The man/hand display head shall be mounted above the countdown timer display head as shown below:



CONTROLLER CABINET

Controller cabinets shall be furnished and installed by the Contractor to meet the specifications discussed below and in the special provisions. See the special provisions for measurement and payment.

Controller cabinets shall be Size P Cabinet, Catalog No. EL712, Base Mount as manufactured by Siemens or approved equal. The cabinet dimensions shall be 56"H, 44"W, 25.5"D. The cabinet shall have four anchor points, one per corner at a 40 3/4" Width and 18 1/2" Depth. Anchor points shall be internal to the cabinet housing.

Controller cabinets shall have an LED light panel mounted and wired under the lower shelf of the cabinet to allow the entire cabinet interior to be illuminated when the LED light is turned on.

The controller cabinets shall be mounted on a concrete footing. The proposed footing is shown in the standard details. A 100% silicone caulk shall be used to seal the cabinet flange to the concrete footing to prevent the incursion of water and shall be placed around the total distance of the flange.

The Contractor shall provide a 3'x4'x 4" thick concrete pad in front of the controller cabinet door, against the footing base.

All costs to furnish and install the controller cabinet footing and concrete pad shall be incidental to the contract unit price per each for "Traffic Signal Controller".

SIDE MOUNTED CABINET FOR FIBER OPTIC CABLE

The side mounted cabinet for the fiber optic cable shall be mounted on the side of the proposed controller cabinet at the locations shown on the plans.

The side mounted cabinet for the fiber optic cable:

- shall meet standards for a NEMA Traffic Enclosure for fiber optic cable
- shall have dimensions of 32"H, 20"W, 14"D or 34"H, 20"W, 14"D
- shall be furnished with a plain door
- shall not have ventilation louvers
- shall be DT-34 Enclosure Type 2 as manufactured by Brown Traffic Products Inc.; 32H20W14D cabinet as manufactured by Southern Manufacturing; or approved equal

The side mounted cabinet shall be plumb and level in reference to the back side of the controller cabinet. The Contractor must take precautions when positioning the side mounted cabinet to avoid damaging wire or equipment within the controller cabinet while drilling the mounting holes and the access hole. The access hole shall be two inch diameter and shall be drilled through the side mounted cabinet into the controller cabinet. A grommet or bushing shall be installed in the two inch diameter hole to prevent damage during pull through of the fiber optic cable.

The side mounted cabinet shall be mounted and tightened securely to the controller cabinet using a minimum of four bolts. A bead of clear silicon caulking shall be placed in all gaps between the side mounted cabinet and controller cabinet to prevent water intrusion into either cabinet.

All costs to furnish and install the side mounted cabinet as discussed above shall be incidental to the contract unit price per each for "Side Mounted Cabinet".

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TRAFFIC SIGNAL CONTROLLER

The traffic signal controller shall be furnished and installed by the Contractor to meet the specifications discussed below and in the special provisions. See the special provisions for measurement and payment.

Two sets of wiring diagrams and one maintenance and operation manual shall be supplied for the controller. The Contractor shall place all diagrams and manuals in the controller cabinet.

The traffic signal controller shall be compatible with existing controllers installed along SD 11 / Veterans Pkwy, Madison Street to 57th Street.

The Contractor shall deliver the traffic signal controller to the City of Sioux Falls for programming. The City will program the controller and contact the Contractor for controller pick-up. The Contractor shall install the programmed controller in the controller cabinet. Contact Gary Styke (#605-367-6133) of the City of Sioux Falls for drop-off information.

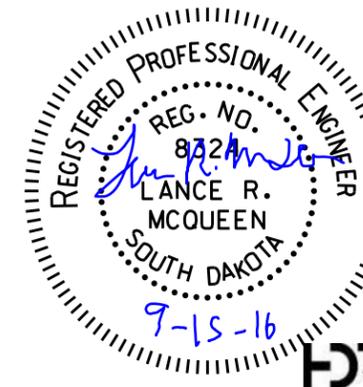
PVC JUNCTION BOX FOR FUTURE PEDESTRIAN UNDERPASS LIGHTS

At the proposed future light locations within the pedestrian underpass, PVC junction boxes shall be installed at the locations of the future light locations. See Section E for further details and locations of the boxes / future lights.

The PVC junction boxes shall be:

- 6" tall x 6" wide x 4" deep PVC junction boxes with a removable cover
- Carlon PVC Junction Box # E987R or approved equal
- The junction boxes shall be installed with the 4" depth into the wall/fillet of the pedestrian underpass.
- The front of the junction box shall be mounted flush with the face of the wall/fillet of the pedestrian underpass.

All costs for the PVC junction boxes shall be included in the contract lump sum price for "Miscellaneous, Electrical".

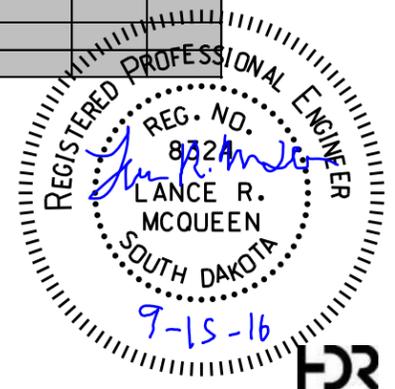


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TABLE FOR CONDUIT & CABLE QUANTITIES

Location to Location	Steel Conduit				PVC Conduit						Innerduct		Cable*														
	RGSC				Sch 40			Sch 80			SDR 13.5																
	2.5" (Ft)	3" (Ft)	4" (Ft)	5" (Ft)	.75" (Ft)	1.5" (Ft)	2" (Ft)	3" (Ft)	4" (Ft)	1.5" (Ft)	2" (Ft)	3" (Ft)	0.5" (Ft)	1.5" (Ft)	2/2/2/4 (Ft)	1C #1 (Ft)	1C #4 (Ft)	1C #10 (Ft)	3C #12 (Ft)	2/C #14 (Ft)	4/C #14 (Ft)	7/C #14 (Ft)	25/C #14 (Ft)	Pole & Bracket (Ft)	PC (Ft)	CAT5** (Ft)	
L36	L38						310								325										65		
L38	L40							310							650										65		
L40	L42							310							650										65		
L42	L44							310							650										65		
L44	L46							310							650										65		
L46	L48							310							650										65		
L48	JL5							110							230												
JL5	JL6									45								50									
JL6	T1					40												40									
T1	T15					230												210									
JL5	L50							205							430										65		
L50	L52							305							640										65		
L52	L54							305							640										65		
L54	L56							260							540										65		
L56	JL9							90							200												
JL9	JL10												120		125												
JL10	S3						20								45										65		
JL10	RL2						130								145										65		
JL10	JL11												175					180									
L35	L37						240					60			315										65		
L37	L39							305							630										65		
L39	L41							300							620										65		
L41	L43							300							630										65		
L43	L45							300							620										65		
L45	L47							300							630										65		
L47	L49							305							640										65		
L49	L51							305							640										65		
L51	L53							305							640										65		
L53	L55							260							540										65		
L55	JL12							90							190												
JL12	JL9												140		290												
JL12	S4						110								120										65		
JL12	RL1						220								230										65		
JL12	JL13												300					305									
Transformer	JL7												80					285									
JL7	JL8							180							555												
JL8	LC2							20							75												
JL8	LC3							20							75												
LC2	JL9								25						180												
RES1	REL3												75		95												
REL3	REL4						195								410												
REL4	REL5						155								330												
REL5	LC4						35								120												
LC4	Transformer												170		525												

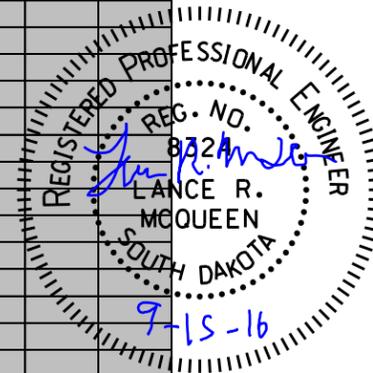


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TABLE FOR CONDUIT & CABLE QUANTITIES

Location to Location		Steel Conduit				PVC Conduit						Innerduct		Cable*													
		RGSC				Sch 40				Sch 80		SDR 13.5															
		2.5"	3"	4"	5"	.75"	1.5"	2"	3"	4"	1.5"	2"	3"	0.5"	1.5"	2/2/2/4	1C #1	1C #4	1C #10	3C #12	2/C #14	4/C #14	7/C #14	25/C #14	Pole & Bracket	PC	CAT5**
(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)	
Fiber																											
EJF2	JF2	115											930					315									
JF1	JF2	145											435					150									
JF2	JF3												1635					550									
JF3	JF4												1635					550									
JF4	JF5												1635					550									
JF5	JF6												1740					585									
JF6	JF7												1635					550									
JF7	JF8												1605					545									
JF8	JF9												1755					590									
JF9	JF10												1635					550									
JF10	JF11												1635					550									
JF11	JF12												1635					550									
JF12	JF13												1635					555									
JF13	JF14												1635					550									
JF14	JF15												1635					550									
JF15	JF16												1635					550									
JF16	JF17												1680					565									
JF17	CC1				10									75				20									
JF17	JF18	285																									
JF17	JF19	145											435					150									
JF19	JF20	295																									
Signals																											
EJS2	JS2			110																							
JS2	JS1		140																								
LC3	CC1							35									165										
CC1	JS3			40																							
JS3	JS6			135																							
JS6	S4		105																								
JS6	JS7		270																								
JS7	S1		20																								
JS3	JS4			115																							
JS4	S3		20																								
S3	PB2				20																						
JS4	JS5		175																								
JS5	S2		10																								
S2	PB1				60																						
CC1	S1																						480		1110	520	
CC1	S2																						360		850	400	
CC1	S3																						190		530	230	
CC1	S4																						295		740	335	
S3	PB2																						35				
S1	PB1																						75				
	S1																							315	15		
	S2																							395			
	S3																							330	15		
	S4																							330			
Total:		985	740	400	10	80	270	11870	5850	80	45	305	1305	26565	75	26360	1680	165	10175	270	110	1370	30	1325	3900	3230	1485



*All cable quantities shown include 6' of slack/coil installed in each junction box, unless shown otherwise.
 **Incidental to Wireless Access Point bid items.



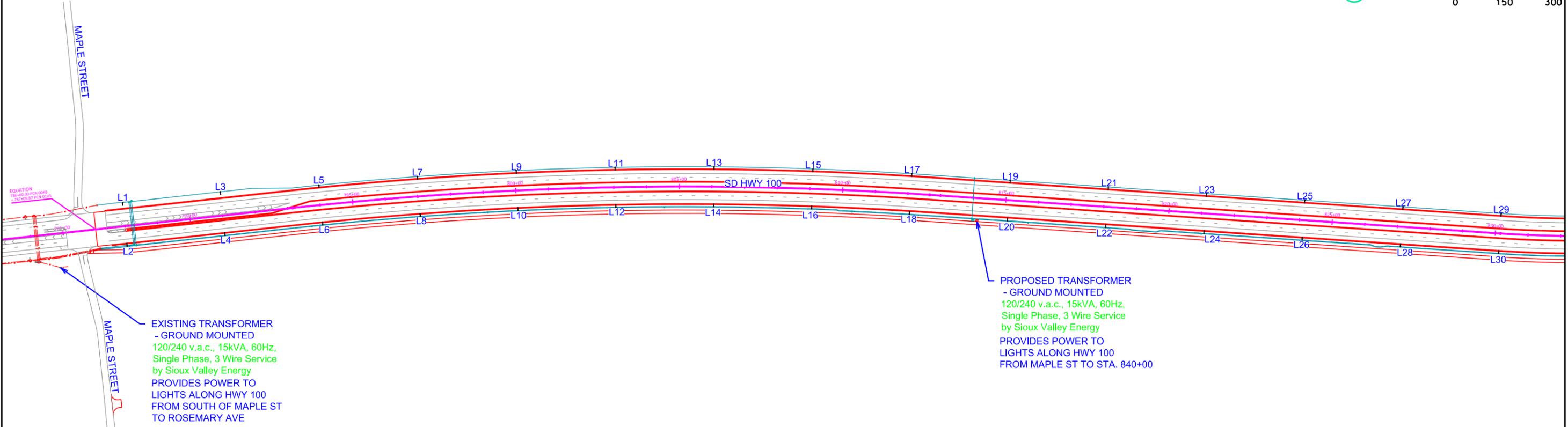
OVERALL LAYOUT

Hwy 100

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	L10	L46

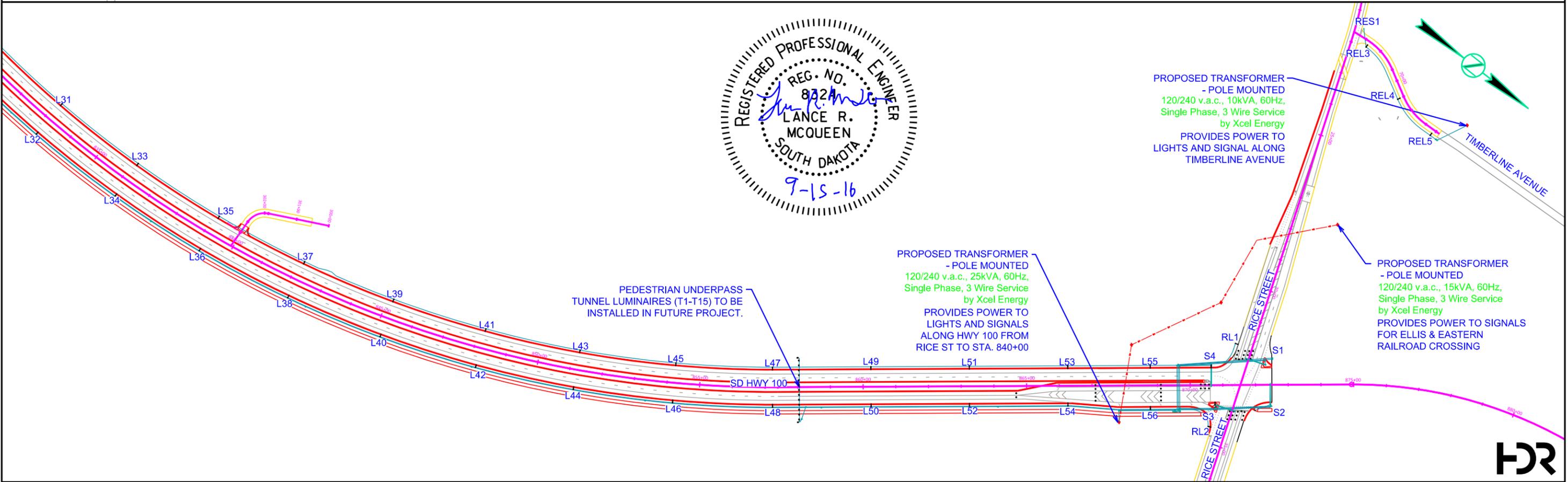
FILE: ...Overall Layout
PLOTTING DATE: 09-14-2016

REV DATE: 9/15/2016
INITIAL: LRM



EXISTING TRANSFORMER
- GROUND MOUNTED
120/240 v.a.c., 15kVA, 60Hz,
Single Phase, 3 Wire Service
by Sioux Valley Energy
PROVIDES POWER TO
LIGHTS ALONG HWY 100
FROM SOUTH OF MAPLE ST
TO ROSEMARY AVE

PROPOSED TRANSFORMER
- GROUND MOUNTED
120/240 v.a.c., 15kVA, 60Hz,
Single Phase, 3 Wire Service
by Sioux Valley Energy
PROVIDES POWER TO
LIGHTS ALONG HWY 100
FROM MAPLE ST TO STA. 840+00



PEDESTRIAN UNDERPASS
TUNNEL LUMINAIRES (T1-T15) TO BE
INSTALLED IN FUTURE PROJECT.

PROPOSED TRANSFORMER
- POLE MOUNTED
120/240 v.a.c., 25kVA, 60Hz,
Single Phase, 3 Wire Service
by Xcel Energy
PROVIDES POWER TO
LIGHTS AND SIGNALS
ALONG HWY 100 FROM
RICE ST TO STA. 840+00

PROPOSED TRANSFORMER
- POLE MOUNTED
120/240 v.a.c., 10kVA, 60Hz,
Single Phase, 3 Wire Service
by Xcel Energy
PROVIDES POWER TO
LIGHTS AND SIGNAL ALONG
TIMBERLINE AVENUE

PROPOSED TRANSFORMER
- POLE MOUNTED
120/240 v.a.c., 15kVA, 60Hz,
Single Phase, 3 Wire Service
by Xcel Energy
PROVIDES POWER TO SIGNALS
FOR ELLIS & EASTERN
RAILROAD CROSSING



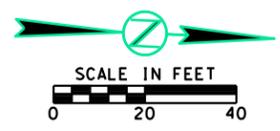
CONDUIT LAYOUT

Hwy 100

STATE OF SOUTH DAKOTA	PROJECT NH 0100(105)419	SHEET L12	TOTAL SHEETS L46
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FILE: ...Conduit Layout Sta. 784+00
PLOTTING DATE: 09-14-2016

REV DATE: 9/15/2016
INITIAL: LRM



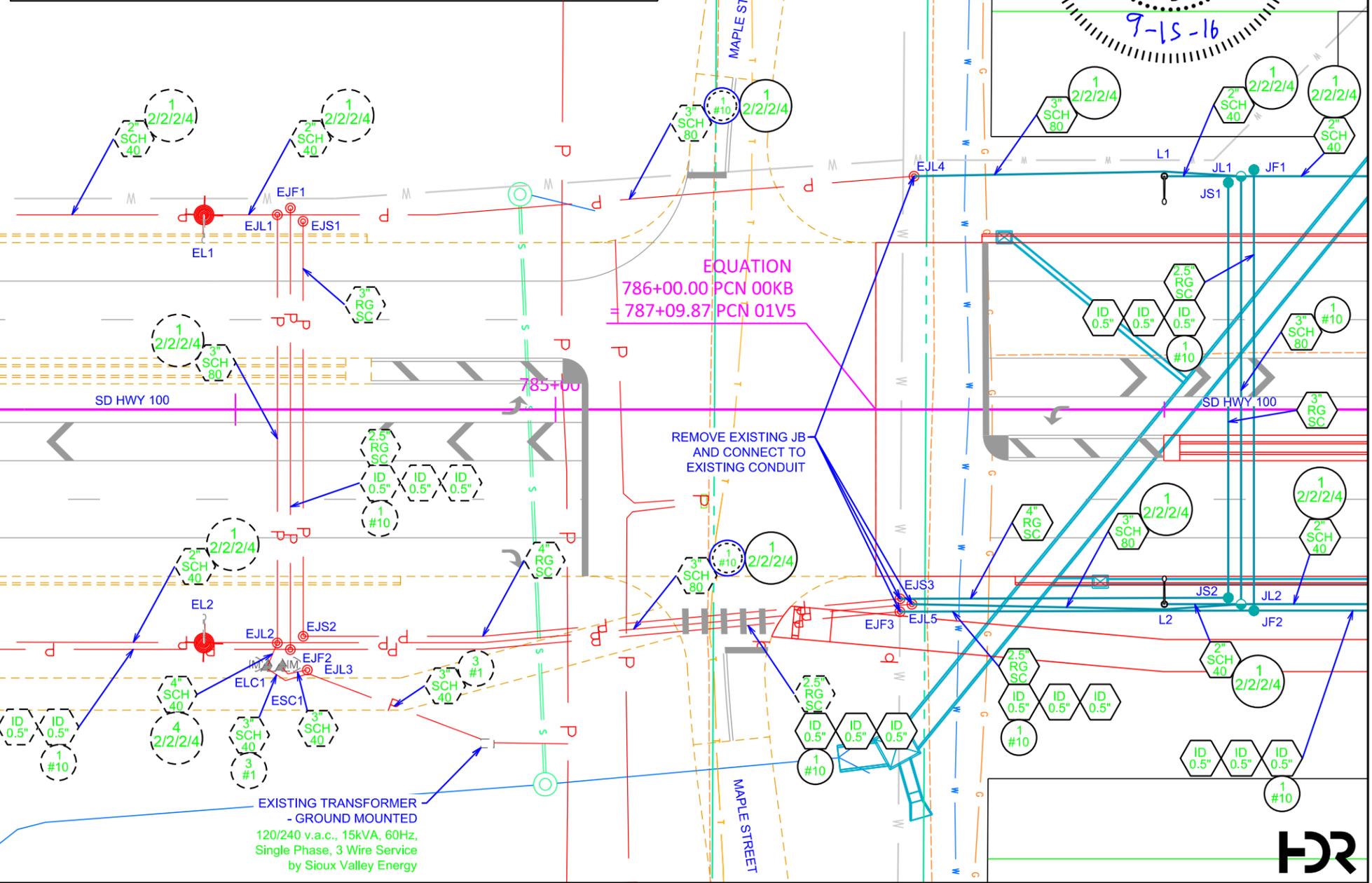
ESTIMATE OF QUANTITIES			
KEY	ITEM	QUANTITY	UNIT
	RELOCATE SIGNAL EQUIPMENT (ES1 / RES1)	LUMP SUM	LS
⚡	BREAKAWAY BASE LUMINAIRE POLE, 50' MOUNTING HEIGHT W/ 8' ARM (L1-L56)	56	EACH
⚡	BREAKAWAY BASE LUMINAIRE POLE, 50' MOUNTING HEIGHT W/ 15' ARM (RL1-RL2)	2	EACH
○	ROADWAY LUMINAIRE, LED WITH PHOTOELECTRIC CELL (L1-L56, RL1, RL2)	58	EACH
○	2' DIAMETER FOOTING (L1-L56, RL1, RL2, REL3, REL4, REL5, RES1)	494	FT
○	12" DIAMETER ELECTRICAL JUNCTION BOX (JL11,JL13,JF18,JF20)	4	EACH
○	24" DIAMETER ELECTRICAL JUNCTION BOX (JL1-JL10,JL12,JS5,JS7)	13	EACH
○	30" DIAMETER ELECTRICAL JUNCTION BOX (JS1-JS4,JS6,JF1-JF17,JF19)	23	EACH
▲	ELECTRICAL SERVICE CABINET (LC1-LC4)	4	EACH
Ⓜ	METER SOCKET (NOT A BID ITEM)	4	EACH
RG SC	2.5" RIGID GALVANIZED STEEL CONDUIT	985	FT
RG SC	3" RIGID GALVANIZED STEEL CONDUIT	740	FT
RG SC	4" RIGID GALVANIZED STEEL CONDUIT	400	FT
RG SC	5" RIGID GALVANIZED STEEL CONDUIT	10	FT
SCH 40	0.75" RIGID CONDUIT, SCHEDULE 40	80	FT
SCH 40	1.5" RIGID CONDUIT, SCHEDULE 40	270	FT
SCH 40	2" RIGID CONDUIT, SCHEDULE 40	11870	FT
SCH 40	3" RIGID CONDUIT, SCHEDULE 40	5850	FT
SCH 40	4" RIGID CONDUIT, SCHEDULE 40	80	FT
SCH 80	1.5" RIGID CONDUIT, SCHEDULE 80	45	FT
SCH 80	2" RIGID CONDUIT, SCHEDULE 80	305	FT
SCH 80	3" RIGID CONDUIT, SCHEDULE 80	1305	FT
ID 0.5"	0.5" INNERDUCT, SDR 13.5	26565	FT
ID 1.5"	1.5" INNERDUCT, SDR 13.5	75	FT
2/2/2/4	2/2/2/4 ALUMINUM WIRE	26360	FT
#1	1/C #1 AWG COPPER WIRE	1680	FT
#4	1/C #4 AWG COPPER WIRE	165	FT
#10	1/C #10 AWG COPPER WIRE	10175	FT
#12	3/C #12 AWG COPPER WIRE	270	FT
#10	2/C #10 AWG COPPER POLE AND BRACKET CABLE	3900	FT

REMOVAL ITEMS			
KEY	ITEM	QUANTITY	UNIT
⚡	REMOVE AND RESET EXISTING LUMINAIRE POLE (40' MOUNTING HEIGHT W/ 8' ARM AND 400W LUMINAIRE) (EL3 / REL3, EL4 / REL4, EL5 / REL5)	3	EACH
⚡	REMOVE EXISTING LUMINAIRE POLE FOOTING (EL3,EL4,EL5)	3	EACH
⚡	REMOVE AND RESET EXISTING SIGNAL POLE (ES1 / RES1)	1	EACH
⚡	REMOVE EXISTING SIGNAL POLE FOOTING (ES1)	1	EACH
⊙	REMOVE EXISTING ELECTRICAL JUNCTION BOX (EJS3,EJF3,EJL4,EJL5)	LUMP SUM*	LS
#10	REMOVE EXISTING 1/C #10 AWG COPPER WIRE	LUMP SUM*	LS

*INCLUDED IN THE BID ITEM "MISCELLANEOUS, ELECTRICAL"

PROPOSED ITEM LOCATIONS	
ITEM	STATION-OFFSET
L1	788+00.02 - 72.67' LT
L2	788+00.02 - 60.67' RT
JL1	788+24.00 - 72.67' LT
JL2	788+24.00 - 60.67' RT
JS1	788+20.00 - 70.67' LT
JS2	788+20.00 - 58.67' RT
JF1	788+28.00 - 74.67' LT
JF2	788+28.00 - 62.67' RT

REMOVAL ITEMS	
EJL4	
EJL5	
EJS3	
EJF3	



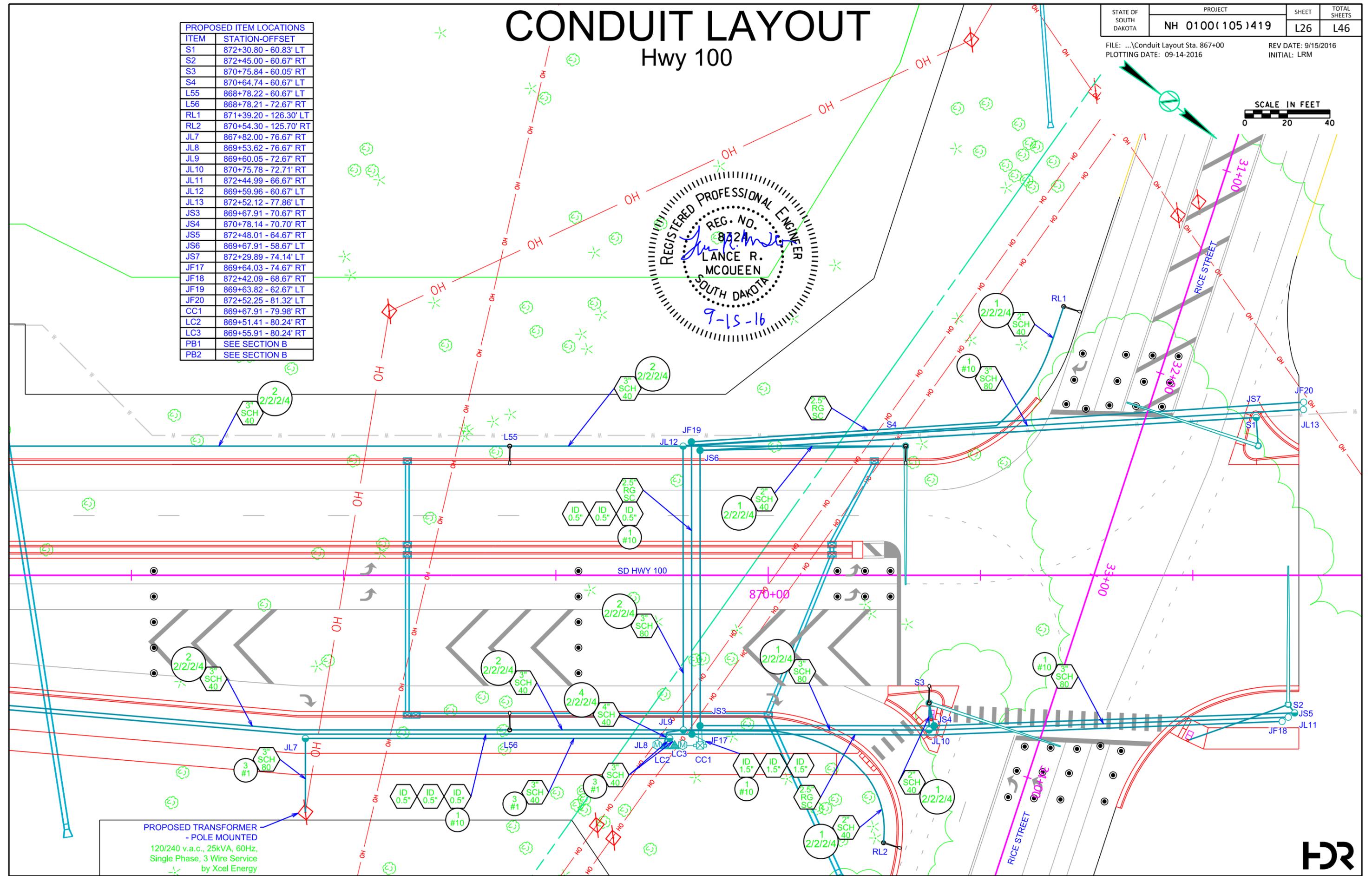
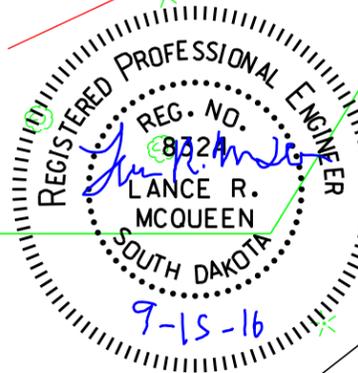
CONDUIT LAYOUT

Hwy 100

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	L26	L46

FILE: ...Conduit Layout Sta. 867+00
 PLOTTING DATE: 09-14-2016
 REV DATE: 9/15/2016
 INITIAL: LRM

ITEM	STATION-OFFSET
S1	872+30.80 - 60.83' LT
S2	872+45.00 - 60.67' RT
S3	870+75.84 - 60.05' RT
S4	870+64.74 - 60.67' LT
L55	868+78.22 - 60.67' LT
L56	868+78.21 - 72.67' RT
RL1	871+39.20 - 126.30' LT
RL2	870+54.30 - 125.70' RT
JL7	867+82.00 - 76.67' RT
JL8	869+53.62 - 76.67' RT
JL9	869+60.05 - 72.67' RT
JL10	870+75.78 - 72.71' RT
JL11	872+44.99 - 66.67' RT
JL12	869+59.96 - 60.67' LT
JL13	872+52.12 - 77.86' LT
JS3	869+67.91 - 70.67' RT
JS4	870+78.14 - 70.70' RT
JS5	872+48.01 - 64.67' RT
JS6	869+67.91 - 58.67' LT
JS7	872+29.89 - 74.14' LT
JF17	869+64.03 - 74.67' RT
JF18	872+42.09 - 68.67' RT
JF19	869+63.82 - 62.67' LT
JF20	872+52.25 - 81.32' LT
CC1	869+67.91 - 79.98' RT
LC2	869+51.41 - 80.24' RT
LC3	869+55.91 - 80.24' RT
PB1	SEE SECTION B
PB2	SEE SECTION B



PROPOSED TRANSFORMER
 - POLE MOUNTED
 120/240 v.a.c., 25kVA, 60Hz,
 Single Phase, 3 Wire Service
 by Xcel Energy



SIGNAL CONDUIT LAYOUT

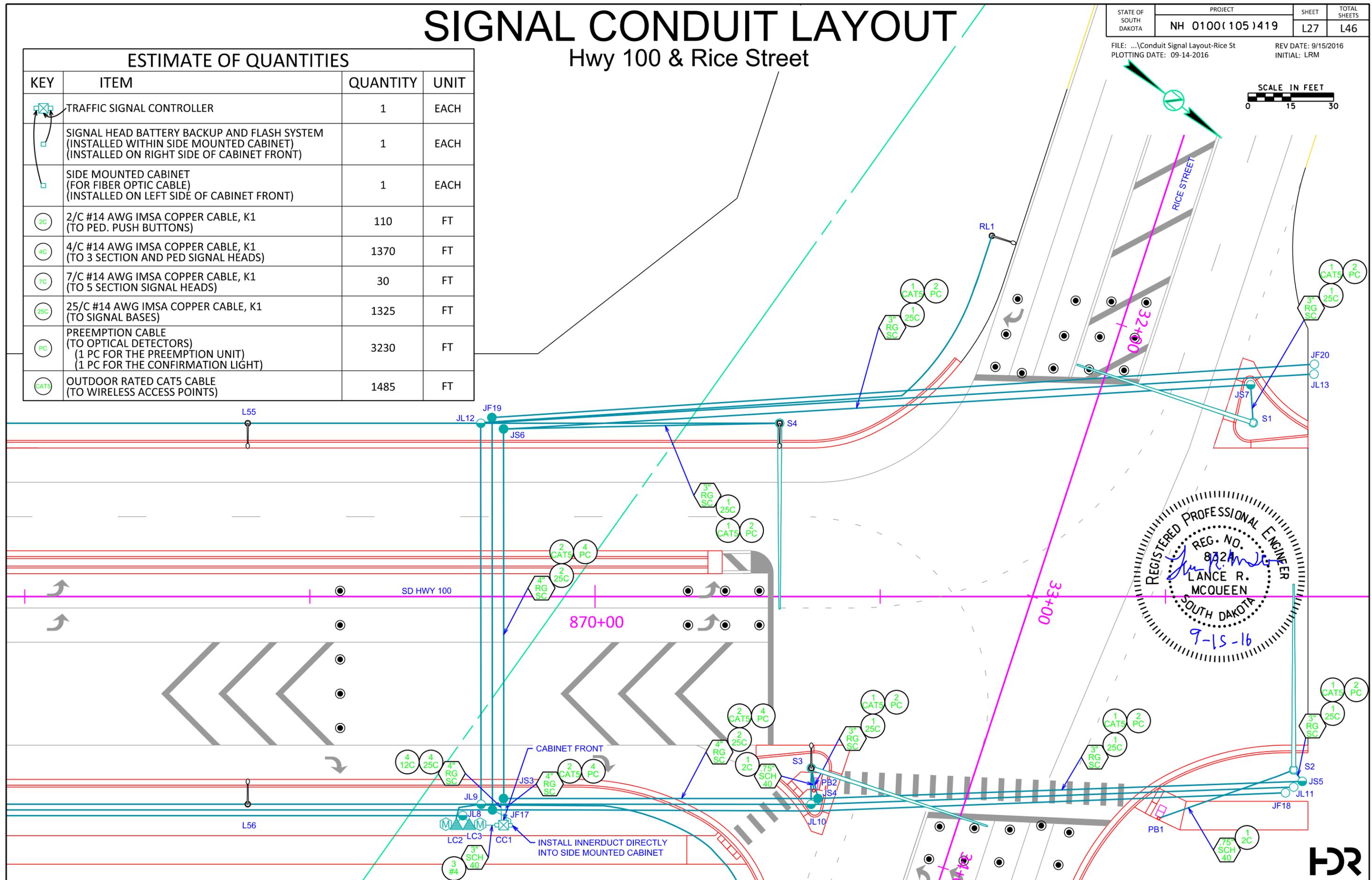
Hwy 100 & Rice Street

STATE OF SOUTH DAKOTA	PROJECT NH 0100(105)419	SHEET L27	TOTAL SHEETS L46
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FILE: ...Conduit Signal Layout-Rice St
PLOTTING DATE: 09-14-2016
REV DATE: 9/15/2016
INITIAL: LRM



ESTIMATE OF QUANTITIES			
KEY	ITEM	QUANTITY	UNIT
	TRAFFIC SIGNAL CONTROLLER	1	EACH
	SIGNAL HEAD BATTERY BACKUP AND FLASH SYSTEM (INSTALLED WITHIN SIDE MOUNTED CABINET) (INSTALLED ON RIGHT SIDE OF CABINET FRONT)	1	EACH
	SIDE MOUNTED CABINET (FOR FIBER OPTIC CABLE) (INSTALLED ON LEFT SIDE OF CABINET FRONT)	1	EACH
	2/C #14 AWG IMSA COPPER CABLE, K1 (TO PED. PUSH BUTTONS)	110	FT
	4/C #14 AWG IMSA COPPER CABLE, K1 (TO 3 SECTION AND PED SIGNAL HEADS)	1370	FT
	7/C #14 AWG IMSA COPPER CABLE, K1 (TO 5 SECTION SIGNAL HEADS)	30	FT
	25/C #14 AWG IMSA COPPER CABLE, K1 (TO SIGNAL BASES)	1325	FT
	PREEMPTION CABLE (TO OPTICAL DETECTORS) (1 PC FOR THE PREEMPTION UNIT) (1 PC FOR THE CONFIRMATION LIGHT)	3230	FT
	OUTDOOR RATED CAT5 CABLE (TO WIRELESS ACCESS POINTS)	1485	FT



SIGNAL WIRING DIAGRAM

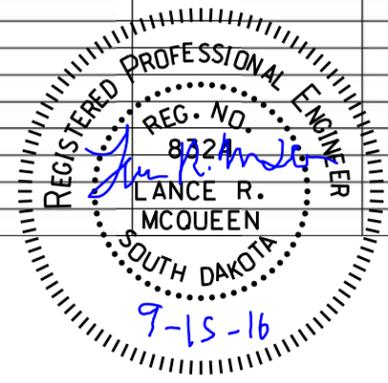
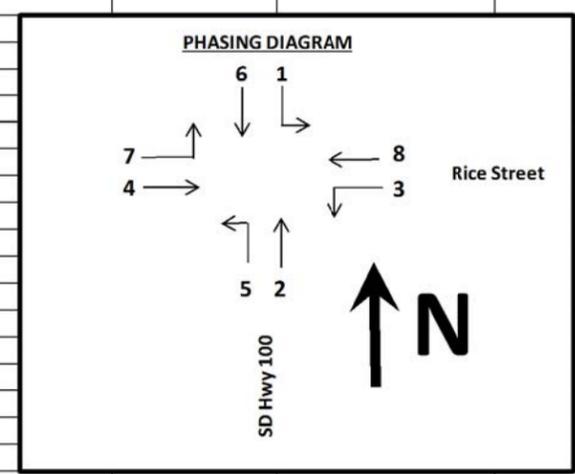
Hwy 100 & Rice Street

STATE OF SOUTH DAKOTA	PROJECT NH 0100(105)419	SHEET L30	TOTAL SHEETS L46
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FILE: ...Signal Wiring Diagram
PLOTTING DATE: 09-14-2016

REV DATE: 9/15/2016
INITIAL: LRM

CORNER	S3 - Southeast			CORNER	S4-Southwest			CORNER	S1-Northwest			CORNER	S2-Northeast		
	Cable # or color		Controller		Cable # or color		Controller		Cable # or color		Controller		Cable # or color		Controller
Phase # 4			Terminal	Phase # 6			Terminal	Phase # 8			Terminal	Phase # 2			Terminal
Head No.	Wire Color	Head Color	Designation	Head No.	Wire Color	Head Color	Designation	Head No.	Wire Color	Head Color	Designation	Head No.	Wire Color	Head Color	Designation
16,17,18	Red	Red	4 R	22,23,24	Red	Red	6 R	3,4,5	Red	Red	8 R	9,10,11,12	Red	Red	2 R
	Orange	Amber	4 Y		Orange	Amber	6 Y		Orange	Amber	8 Y		Orange	Amber	2 Y
	Green	Green	4 G		Green	Green	6 G		Green	Green	8 G		Green	Green	2 G
	White	Ground/neutral	CB		White	Ground/neutral	CB		White	Ground/neutral	CB		White	Ground/neutral	CB
Phase # 2 Ped				Phase # 1				Phase # 3				Phase # 2 Ped			
Head No.				Head No.				Head No.				Head No.			
27	Black/White	Don't Walk	9 R	20,21	Red/Black	<< Red <<	1 R	1,2	Red/Black	<< Red <<	3 R	26	Black	Don't Walk	9 R
	Blue/Black	Walk	9 G		Orange/Black	<< Amber <<	1 Y		Orange/Black	<< Amber <<	3 Y		Blue	Walk	9 G
	White/Black	Ground/neutral	CB		Green/Black	<< Green <<	1 G		Green/Black	<< Green <<	3 G		White/Black	Ground/neutral	CB
					White	Ground/neutral	CB		White	Ground/neutral	CB				
Phase # 7				Phase # 3				Phase # 5				Phase # 5			
Head No.				Head No.				Head No.				Head No.			
14,15	Red/Black	<< Red <<	7 R	25	Red/Black	<< Red <<	3 R	6	Red/Black	<< Red <<	5 R	7,8	Red/Black	<< Red <<	5 R
	Orange/Black	<< Amber <<	7 Y		Orange/Black	<< Amber <<	3 Y		Orange/Black	<< Amber <<	5 Y		Orange/Black	<< Amber <<	5 Y
	Green/Black	<< Green <<	7 G		Green/Black	<< Green <<	3 G		Green/Black	<< Green <<	5 G		Green/Black	<< Green <<	5 G
	White	Ground/neutral	CB		White	Ground/neutral	CB		White	Ground/neutral	CB		White	Ground/neutral	CB
Phase # 1								Phase # 5				Phase # 7			
Head No.								Head No.				Head No.			
19	Red/Black	<< Red <<	1 R					5	Red			13	Red/Black	<< Red <<	7 R
	Orange/Black	<< Amber <<	1 Y						Orange	See Phase #8, Head No. 5 above			Orange/Black	<< Amber <<	7 Y
	Green/Black	<< Green <<	1 G						Green				Green/Black	<< Green <<	7 G
	White	Ground/neutral	CB						Black/Red	<<Amber>>	1 Y		White	Ground/neutral	CB
Phase # 1									Blue/White	<<Green<<	1 G				
Head No.									White	Ground/neutral	CB				
18	Red														
	Orange	See Phase #4, Head No. 18 above													
	Green														
	Black/Red	<<Amber>>	5 Y												
	Blue/White	<<Green<<	5 G												
	White	Ground/neutral	CB												
PED. P.B.' s												PED. P.B.' s			
	Blue/Red	Phase 2	L 11										Bue/Red	Phase 2	L 11
	Red/white	Phase 4	L 9										Red/white	Phase 4	L 9
	Blue/Red	Phase 6	Q 11										Blue/Red	Phase 6	Q 11
	Red/white	Phase 8	Q 9										Red/white	Phase 8	Q 9
	White/Red	P.B. common	R 9 ~12										White/Red	P.B. common	R 9 ~12



LIGHTING WIRING DIAGRAM

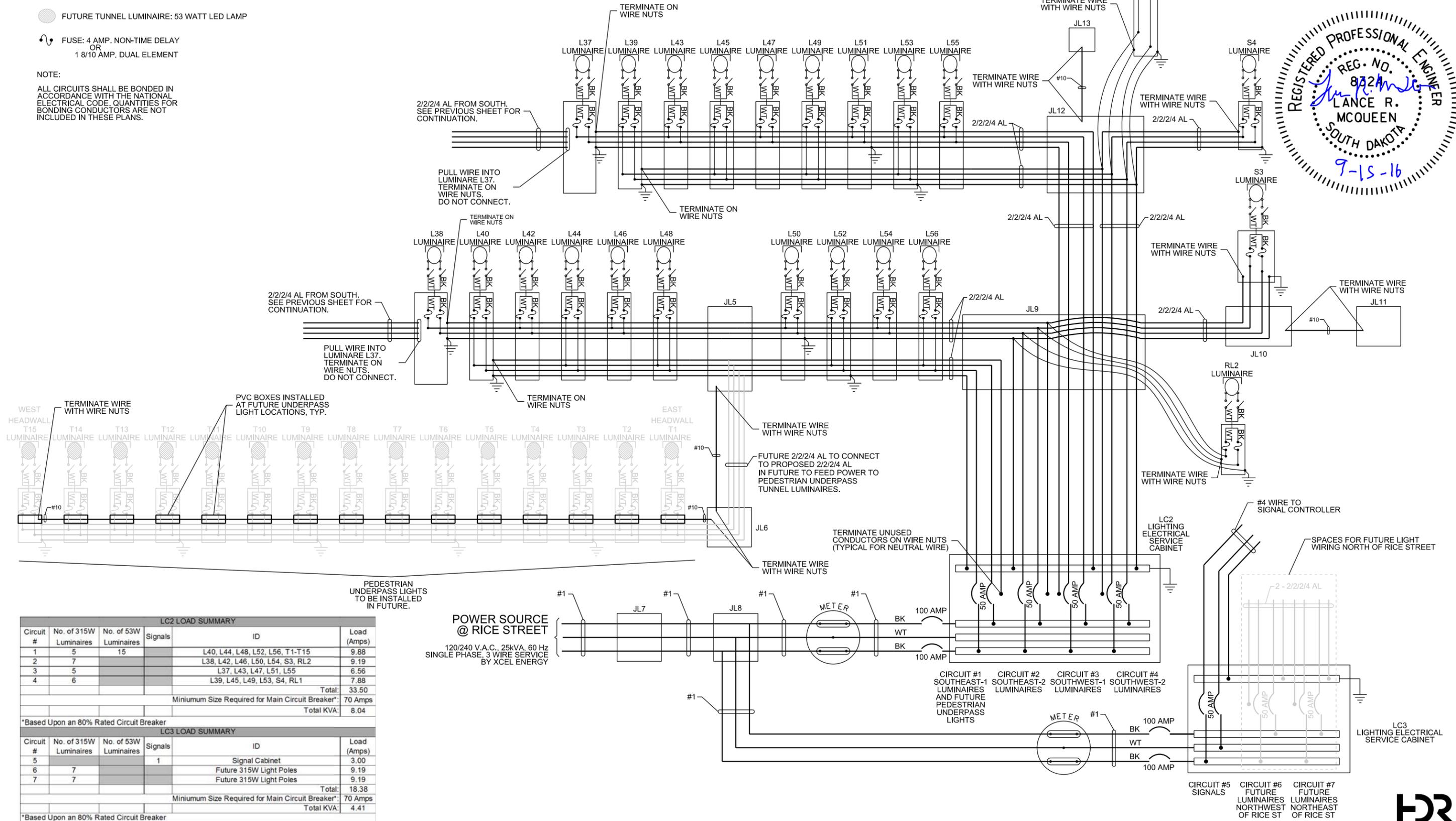
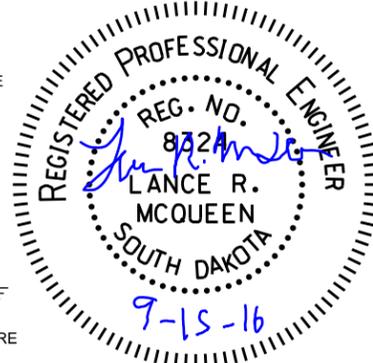
Hwy 100 - Sta. 840+00 to Rice St

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	L32	L46

FILE: ...Lighting Wiring - Rice St
 PLOTTING DATE: 09-14-2016
 REV DATE: 9/15/2016
 INITIAL: LRM

- LEGEND:**
- LUMINAIRE: 315 WATT LED LAMP
 - FUTURE TUNNEL LUMINAIRE: 53 WATT LED LAMP
 - ⚡ FUSE: 4 AMP. NON-TIME DELAY OR 1 8/10 AMP. DUAL ELEMENT

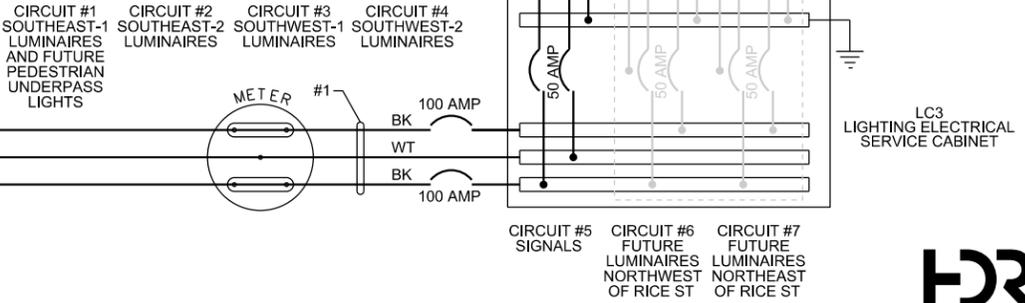
NOTE:
 ALL CIRCUITS SHALL BE BONDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. QUANTITIES FOR BONDING CONDUCTORS ARE NOT INCLUDED IN THESE PLANS.



LC2 LOAD SUMMARY					
Circuit #	No. of 315W Luminaires	No. of 53W Luminaires	Signals	ID	Load (Amps)
1	5	15		L40, L44, L48, L52, L56, T1-T15	9.88
2	7			L38, L42, L46, L50, L54, S3, RL2	9.19
3	5			L37, L43, L47, L51, L55	6.56
4	6			L39, L45, L49, L53, S4, RL1	7.88
Total:					33.50
Minimum Size Required for Main Circuit Breaker*:					70 Amps
Total KVA:					8.04

LC3 LOAD SUMMARY					
Circuit #	No. of 315W Luminaires	No. of 53W Luminaires	Signals	ID	Load (Amps)
5			1	Signal Cabinet	3.00
6	7			Future 315W Light Poles	9.19
7	7			Future 315W Light Poles	9.19
Total:					18.38
Minimum Size Required for Main Circuit Breaker*:					70 Amps
Total KVA:					4.41

POWER SOURCE @ RICE STREET
 120/240 V.A.C., 25kVA, 60 Hz
 SINGLE PHASE, 3 WIRE SERVICE
 BY XCEL ENERGY



Underground utilities are shown at the approximate depths as provided by the utility owners unless SUE data is available.

Rice Street

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0100(105)419	Z29	Z30

FILE: ...Z-Pipe Sections\Z02-Z30.dgn
PLOTTING DATE: 09-15-2016

REV DATE: 9/15/2016
INITIAL: JHU

Project PCN01V5:

Pipe #1: 46+48 - 201' L to 47+85 - 72' R
Install 36"-294' RC Pipe and 1 Sloped End

Pipe #2: 46+54 - 200' L to 47+90 - 73' R
Install 36"-294' RC Pipe and 1 Sloped End

Pipe #3: 46+60 - 198' L to 47+95 - 73' R
Install 36"-292' RC Pipe and 1 Sloped End

Pipe #4: 46+66 - 196' L to 48+01 - 73' R
Install 36"-290' RC Pipe and 1 Sloped End

Pipe #5: 46+72 - 195' L to 48+06 - 74' R
Install 36"-288' RC Pipe and 1 Sloped End

Pipe #6: 46+78 - 193' L to 48+12 - 74' R
Install 36"-288' RC Pipe and 1 Sloped End

Pipe #7: 46+84 - 192' L to 48+17 - 74' R
Install 36"-286' RC Pipe and 1 Sloped End

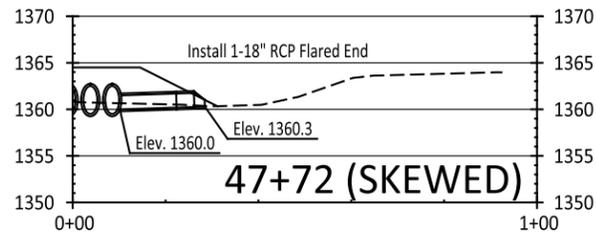
Pipe #8: 46+90 - 190' L to 48+22 - 74' R
Install 36"-284' RC Pipe and 1 Sloped End

Pipe #9: 46+96 - 188' L to 48+28 - 75' R
Install 36"-282' RC Pipe and 1 Sloped End

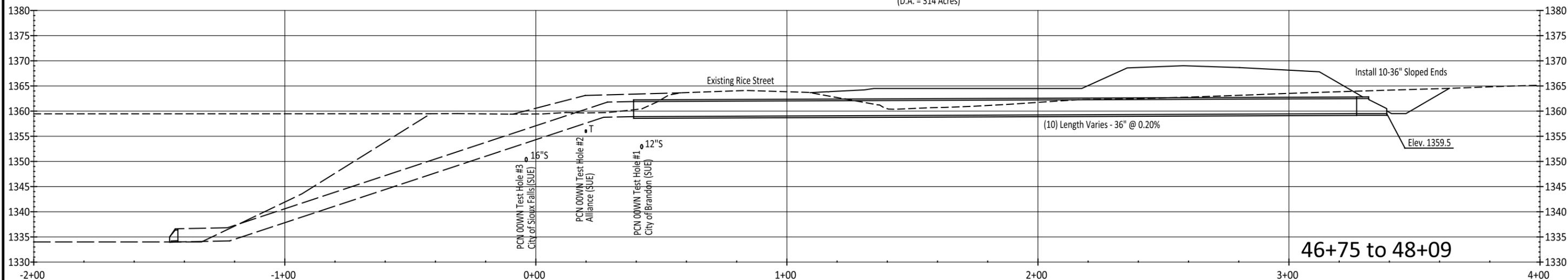
Pipe #10: 47+02 - 187' L to 48+33 - 75' R
Install 36"-282' RC Pipe and 1 Sloped End

(Spaced 4.7' C-C)
(Controlled Density Fill - 348 CY)
(D.A. = 314 Acres)

47+58 - 81' L to 47+74 - 88' L
Install 18"-12' RC Pipe
(Between Tee and End Inlet)



— Constructed with PCN 00WN



46+75 to 48+09

