

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	083-351	1	22

Plotting Date: 11/15/2022

INDEX OF SECTIONS

Sheet 1:	Title Sheet
Sheets 2-5:	Estimate of Quantities & Notes
Sheets 6-19:	Original Plans
Sheets 20-22:	Standard Plates

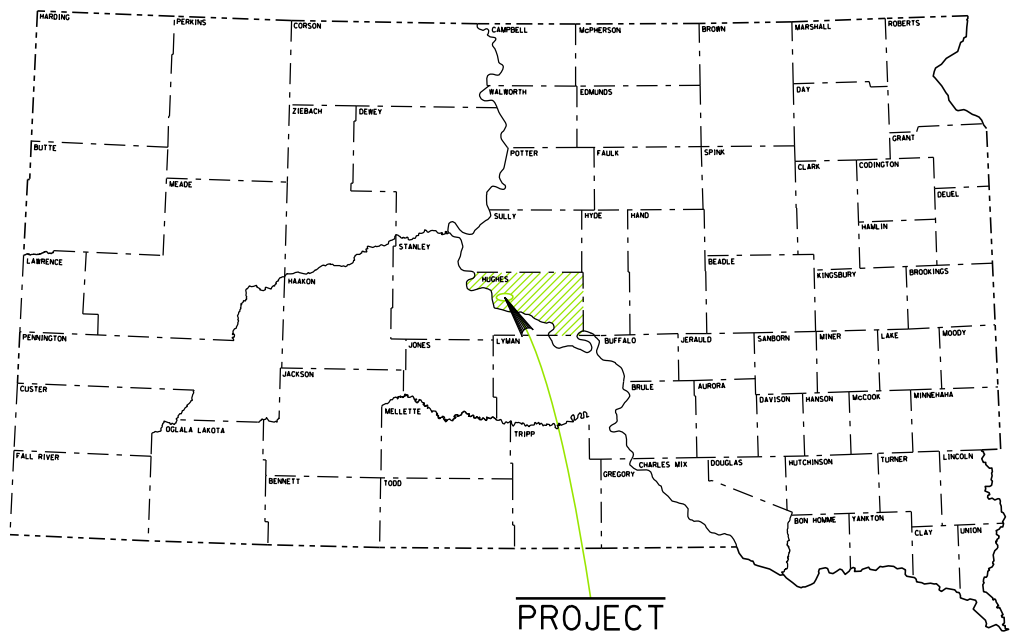
STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

**PROJECT**  
**083-351**  
**US HIGHWAY 83**  
**HUGHES COUNTY**

Commercial Vehicle License Plate  
Reader System Repair

PCN i6VW



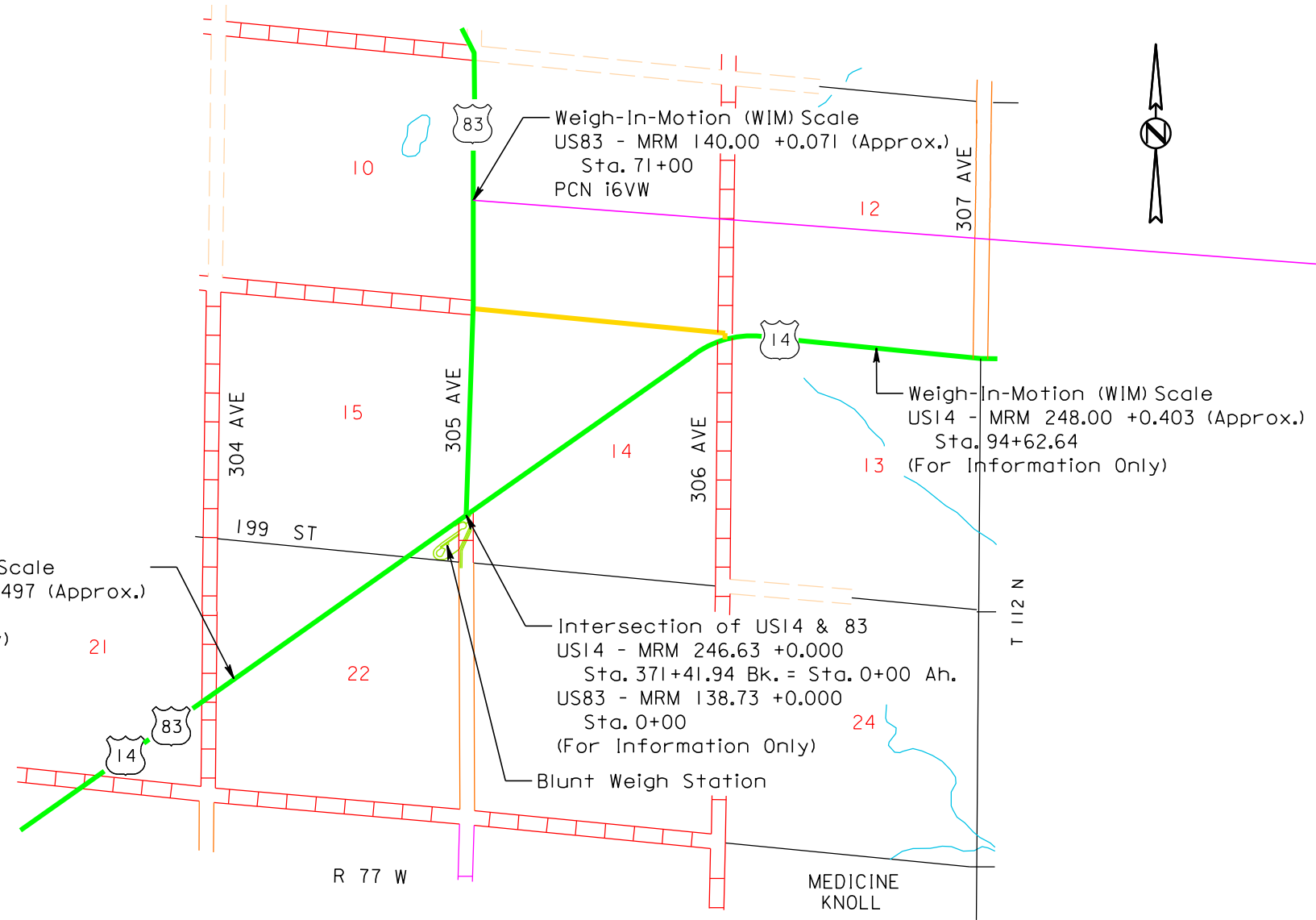
PROJECT

DESIGN DESIGNATION - US14

ADT (2015)	2575
ADT (2035)	3414
DHV	430
D	50%
T DHV	7.8%
T ADT	17.2%
V	65 MPH

DESIGN DESIGNATION - US83

ADT (2015)	1715
ADT (2035)	2274
DHV	287
D	50%
T DHV	9.2%
T ADT	20.3%
V	65 MPH



Weigh-In-Motion (WIM) Scale  
US14 - MRM 245.00 +0.497 (Approx.)  
Sta. 310+68.66  
(For Information Only)

Intersection of US14 & 83  
US14 - MRM 246.63 +0.000  
Sta. 371+41.94 Bk. = Sta. 0+00 Ah.  
US83 - MRM 138.73 +0.000  
Sta. 0+00  
(For Information Only)

STORM WATER PERMIT  
NONE REQUIRED

PLOTTED FROM - I:\3194.d

PLOTTED FROM - I:\PR25289

FILE - ... \MAINT2023\WIM\_I6VW\TITLE.DGN

**ESTIMATE OF QUANTITIES:**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3490	Commercial Vehicle License Plate Reader System	1	Each
110E0100	Remove Concrete Footing(s)	Lump Sum	LS
634E0010	Flagging	20.0	Hour
634E0110	Traffic Control Signs	147.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
635E2000	Pedestal Signal Pole	1	Each
635E5020	2' Diameter Footing	9.0	Ft
635E6200	Miscellaneous, Electrical	Lump Sum	LS
635E8110	1" Rigid Conduit, Schedule 40	43	Ft
635E8120	2" Rigid Conduit, Schedule 40	10	Ft
635E9020	1/C #10 AWG Copper Wire	643	Ft
734E0010	Erosion Control	Lump Sum	LS

**SPECIFICATIONS:**

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

**ENVIRONMENTAL COMMITMENTS:**

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

**COMMITMENT E: STORM WATER**

Construction activities constitute less than 1 acre of disturbance.

**Action Taken/Required:**

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

**COMMITMENT H: WASTE DISPOSAL SITE**

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

**Action Taken/Required:**

Construction and/or demolition debris may not be disposed of within the Public ROW.

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Agriculture and Natural Resources.

The waste disposal site(s) will not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Environmental Office and the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements will apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".

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

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06. Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) will be incidental to the various contract items.

**COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES**

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

**Action Taken/Required:**

All earth disturbing activities not designated within the plans require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

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

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

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

**UTILITIES:**

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

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

**COORDINATION BETWEEN CONTRACTORS:**

A separate contract for Project NH 0014(237)245 - PCN 06K7 will be awarded to another Contractor for Modify Intersection and PCC Surfacing on US Highway 14 from MRM 245.00+0.497 to MRM 246.73+0.237.

The Contractor will schedule work so as not to interfere with or hinder the progress of the work performed by other Contractors on the intersection modification and PCC surfacing project.

**SCOPE OF WORK:**

This project consists of Commercial Vehicle License Plate Reader System Repair along US Highway 83 at MRM 140.00 +0.071 Sta. 70+62.58 – 33' L. Work will include traffic control, removal of damaged existing items, placing a new pole footing, replacing conduits, replacing wiring back to the WIM cabinet and junction boxes, installation of a new pedestal signal pole, installation of a new Commercial Vehicle License Plate Reader System cameras and hardware, and Erosion Control.

The Contractor will install one (1) Commercial Vehicle Identification System and the system will consist of the equipment approximately as follows:

- One Overview Detector Camera, illuminator and power pack hardware
- One License Plate Reader (LPR) Camera, illuminator and power pack hardware

IRD-supplied equipment under this contract is approximately as follows:

- One Overview Detector Cameras, illuminator and power pack hardware, cameras will operate in visible and infrared lighting
- One License Plate Reader (LPR) Cameras, illuminator and power pack Hardware, cameras will operate in visible and infrared lighting

**SITE DESCRIPTION:**

The Commercial Vehicle Identification System consists of:

- one Overview Detection Camera and License Plate Reader Camera installed in the southbound lanes on US Hwy 83 East of Pierre and north of the Blunt Port of Entry

Sheet 7 through 19 are attached from the Original Plans for Information Only. Areas affected are highlighted in yellow and outlined in red.

**TRAFFIC CONTROL NOTES:**

Traffic will be maintained through the project at ALL times. The Contractor will maintain access on and off the highway for local residences and county roads. The Contractor may perform work on the roadway during daylight hours only, unless additional hours are approved by the Engineer.

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating,

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

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

All traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

**REMOVE CONCRETE FOOTING(S):**

Concrete footing(s) to be removed will be removed by the Contractor to a minimum of 2' below the ground surface. Restoration of the disturbed area will be to the satisfaction of the Engineer.

The existing footing located at MRM 140.00+0.071 (Sta. 70+62.58 – 33' L) will be removed by the Contractor as per these plans.

All costs for removing the concrete footing will be incidental to the contract lump sum price for "Remove Concrete Footing(s)".

**TABLE OF PEDESTAL SIGNAL POLE FOOTING DATA:**

Pole	Footing Diameter	# Footing Depth	** Spiral Diameter	** Spiral Length	Vertical Reinforcement
Illuminator, Overview Camera and License Plate Reader	2' - 0"	9' - 0"	1' - 8"	60' - 0"	8-#7 x 8' - 6"

# Footing depth will be below ground level.

\*\* The size of the spiral tie will be #3.

See Standard Plate 635.55 for pole footing details.

The new footing should be placed 36" (center to center) directly upstream (north) from the original footing to maintain proper distance from the roadway and working position relative to the weigh-in-motion platforms.

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.

Concrete will not be dropped through standing water. If water is present in the excavation it will be removed prior to concrete placement or the concrete will be tremied. If caving occurs during dewatering the concrete will be placed through a tremie or by means of a casing.

**COMMERCIAL VEHICLE IDENTIFICATION SYSTEM VENDOR:**

The Contractor will contract with a vendor to supply all of the required components and technical assistance to repair the Weigh-In Motion (WIM)

System in accordance with the plans and specifications. The SDDOT Intelligent Transportation Systems Program is aware of one vendor that can supply WIM system components that meets the requirements of these plans

and specifications. Use of any other vendor must be approved by the SDDOT Intelligent Transportation Systems Program. The following vendor is suggested:

International Road Dynamics (IRD)  
702 43rd Street East  
Saskatoon, SK Canada S7K3T9  
Phone (306) 653-6600 Fax (306) 242-5599

International Road Dynamics will henceforth be "IRD" in these plans.

Locations of IRD-supplied equipment are shown in the original plans. IRD will provide technical instructions and assistance during installation. All equipment and materials shown as supplied or installed by IRD will be supplied, installed, and paid for under this contract except where indicated otherwise.

All costs associated with the vendor contract, including equipment and technical assistance costs, will be incidental to the various bid items indicated in the plans

**DESIGN/MANUFACTURE:**

All equipment furnished under this contract, including any equipment purchased from other manufacturers, will be new and of the latest design currently in production. Used equipment or discontinued models will not be accepted.

**DELIVERY:**

The Contractor will coordinate equipment delivery dates and notify the SDDOT Project Engineer 30 days prior to equipment delivery. The Contractor will supply four (4) sets of system schematic drawings for review and approval at least 30 days prior to equipment delivery.

**INSTALLATION:**

The Contractor will coordinate equipment installation dates and notify the SDDOT Project Engineer 30 days prior to installation. The installation of all equipment will be the responsibility of the Contractor and will integrate directly with the existing Port of Entry equipment. The Contractor will install all material furnished by IRD in accordance to IRD specifications and installation instructions. SDDOT personnel must be present to observe and inspect the installation. The Contractor will coordinate with the manufacturer to correct any defective equipment or other technical problems. If unforeseen technical problems develop with this installation, the Contractor will provide all engineering and manufacturer's technical assistance needed for proper installation.

**STORAGE:**

Contractor may use an area designated by the Project Engineer within the Port of Entry to store new components of the Commercial Vehicle Identification System. Any components stored there will be the responsibility of the Contractor and will not be monitored by Port of Entry personnel. The Contractor will coordinate storage with the SDHP Motor Carrier Services group at (605) 773-4578.



**RISK OF DESTRUCTION OR DAMAGE:**

The Contractor will be responsible for any destruction or damage to equipment purchased or provided by SDDOT under this contract until the equipment has been installed as specified, inspected, and accepted by SDDOT.

**INCIDENTAL WORK:**

Incidental work includes but is not limited to the following items: Contractor will pull all wiring and terminate all connections. Contractor will coordinate all material deliveries with IRD. All costs for this incidental work will be incidental to the contract unit price for "Commercial Vehicle Identification System".

**INFORMATION TO BE SUBMITTED:**

**A. ITEMS TO BE SUBMITTED:**

Upon being awarded the project, the Contractor will submit the following information to the SDDOT Intelligent Transportation Systems Program:

- A technical description, system block diagram, equipment specifications, and an equipment list with model numbers and options of all equipment proposed to be furnished, including any equipment purchased from other manufacturers.
- A method by which replacement parts may be obtained. The WIM vendor must stock system replacement parts for a minimum of ten (10) years from which SDDOT may order.
- A warranty description, including the procedure and authorized warranty service station(s) used to obtain warranty service. The Contractor will warrant all equipment supplied, including equipment from other manufacturers, against defective materials and workmanship. The minimum warranty will be as follows:

"During the first 120 days following Installation Acceptance by SDDOT, all repairs, including factory labor and materials necessary to correct any failures will be made at the Contractor's sole cost. During the following 610 days, the warranty will be limited to the replacement of any materials including shipping charges. Any labor costs during the 610-day period will be the responsibility of SDDOT. SDDOT, at its discretion, may require that complete replacement modules be supplied."

If the Contractor's normal warranty exceeds the warranty terms specified in this section, the Contractor will provide a copy of the warranty in his bid proposal.

**B. AS-BUILT ITEMS TO BE SUBMITTED:**

If any elements of the Weigh-in-Motion System are constructed differently from what is stated in the plans, the Contractor will supply as-built plans to IRD to draft onto existing drawings for future reference. The final as-built plans will be furnished to the SDDOT Intelligent Transportation Systems Program. The as-built plans will include conduit layouts, wiring diagrams, or other drawings depicting the changes from the original plans.

A final electrical inspection will be conducted with the Electrical Engineer on record. The electrical inspection will be scheduled by the contractor prior to final completion of project. The contractor, SDDOT project engineer, and the

electrical engineer will all be present for the electrical inspection. As-built electrical plans will be prepared based on all information obtained during the final electrical inspection.

**INSTALL LICENSE PLATE READER CAMERA:**

Contractor will install camera equipment including camera housing and brackets/cabling on the License Plate Reader/Overview Camera pole. Contractor will install illuminator, power pack, and brackets/cabling on the License Plate Reader/Overview Camera pole. Contractor will furnish, install, and terminate all electrical wiring in accordance with plans to run power to the camera equipment and illuminator equipment.

All costs to install all camera and illuminator equipment, pull all wiring, and terminate all connections will be incidental to the contract unit price per each for "Commercial Vehicle Identification System".

**INSTALL OVERVIEW CAMERA:**

Contractor will install camera equipment including camera housing, surge arrester, power pack, and brackets/cabling on the License Plate Reader/Overview Camera pole. Contractor will furnish, install, and terminate all electrical wiring in accordance with plans to run power to the camera equipment.

All costs to install all camera equipment, pull all wiring, and terminate all connections will be incidental to the contract unit price per each for "Commercial Vehicle Identification System".

**OVERVIEW CAMERA, ILLUMINATOR AND LICENSE PLATE READER CAMERA POLES:**

Contractor will supply and install footings, bases and support structures (poles) for the Illuminator, Overview Camera and License Plate Reader systems. Contractor will install IRD supplied Illuminator, Overview Camera and License Plate Reader systems utilizing support structures. Contractor will determine height of poles to achieve the minimum height clearances required as shown in the plans (See Original Plans).

All costs to furnish and install poles will be incidental to the contract unit price per each for PEDESTAL SIGNAL POLE.

**TABLE OF PEDESTAL SIGNAL POLES – PCN i6VW**

Station/Offset	Location	Pole	Quantity Each
US Highway 83 – MRM 140.00 +0.071 Sta. 70+62.58 – 33' L.	Advance WIM	Overview Camera, License Plate Reader and Illuminator	1
		Total:	1

Stations/Offsets shown above are approximate. Offsets are from the centerline of the roadway to center of pole. See Original Construction Plans for additional details for the location of the poles. See Original Construction Plans for pole details.

**SYSTEM ACCEPTANCE:**

The testing procedures to demonstrate compliance with the contract requirements must be carried out jointly by the Contractor, IRD, and SDDOT personnel at the site.

Acceptance of the system will consist of two parts. The first part follows installation, calibration, and testing and is termed 'Installation Acceptance'.

The second part follows a successful 30-day performance period and is termed 'Final Acceptance'. The SDDOT Office of Research will review all acceptance testing results prior to Installation Acceptance and Final Acceptance.

**INSTALLATION ACCEPTANCE:**

The Contractor will test the system, as specified in Subsections A and B to SDDOT's satisfaction.

**A. COMMERCIAL VEHICLE AUTOMATIC SIGNALING TESTING**

Verify that the Mainline CMS signals vehicles that have been assigned a report" decision with a "Truck Must Exit to Weighstation" message.

Verify that the Mainline CMS signals vehicles that have been assigned a "bypass" decision with a "Truck OK to Bypass Weigh Station" message.

**B. AUTOMATIC LICENSE PLATE TESTING**

Determine the read accuracy rate (plate number and jurisdiction) of readable plates under reasonable conditions of weather, congestion etc. (including only plates from those jurisdictions for which the ALPR system was configured). Quantify read rate based on minimum 50 commercial vehicle plates tested during day time hours and 50 commercial vehicle plates tested during night time hours.

Record the results for reference as ALPR performance benchmark.

**UPON FINAL ACCEPTANCE:**

INSTALLATION ACCEPTANCE and after verbal notification by IRD to the SDDOT Project Engineer the system will undergo a 30-day performance period constituting 30 consecutive days in which no remedial action or intervention is required by the Contractor, IRD, or SDDOT personnel to view or obtain data and tables that are being accumulated.

Upon completion of 30 consecutive days of successful operation, beginning with the start of the most recent 30-day test period, the system will be considered accepted. SDDOT reserves the option to check the performance of the system at any time during the life of this contract following testing procedures outlined in Section 6.1. Major malfunctions will be taken into consideration of acceptance or rejection of the system.



**MEASUREMENT AND PAYMENT:**

Measurement for the Commercial Vehicle Identification System will not be made. The quantity shown in the plans will be the quantity used for payment.

Payment to the Contractor for the Commercial Vehicle Identification System portion of the contract will be made as follows:

The first partial payment will be 25% of the contract unit price per each for "Commercial Vehicle Identification System". The first partial payment will be made upon delivery of the IRD-supplied equipment under this contract as defined in the "DELIVERY" notes.

B. The second partial payment will be 45% of the contract unit price per each for "Commercial Vehicle Identification System". The second partial payment will be made upon Installation Acceptance as defined in the "INSTALLATION ACCEPTANCE" notes.

C. The final payment will be 30% of the contract unit price per each for "Commercial Vehicle Identification System". Final payment will be made upon Final Acceptance as defined in the "UPON FINAL ACCEPTANCE" notes.

Payment will be full compensation for labor, equipment, tools, materials, and all other items of work required to furnish, install, and test the Commercial Vehicle Identification System.

**EROSION CONTROL:**

The estimated area requiring erosion control is:

US83 MRM 140.00 +0.071 (Approx.) Sta. 71+00 - 0.1 Acres

All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, removing and replacing topsoil, seeding and mulching will be incidental to the contract lump sum price for "Erosion Control".

Limits of erosion control work will be determined by the Engineer during construction.

**MYCORRHIZAL INOCULUM:**

Mycorrhizal inoculum will consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier will provide certification of the fungal species claimed and the live propagule count. The inoculum will include the following fungal species:

- Glomus intraradices* 25%
- Glomus aggregatu* 25%
- Glomus mosseae* 25%
- Glomus etunicatum* 25%

All seed will be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed will be incidental to the contract lump sum price for "Erosion Control".

The mycorrhizal inoculum will be as shown below or an approved equal:

Product  
MycApply

Manufacturer  
Mycorrhizal Applications, Inc.  
Grants Pass, OR  
Phone: 1-866-476-7800  
www.mycorrhizae.com

**PERMANENT SEEDING:**

The areas to be seeded consist of disturbed areas within the project limits except for the top of roadways and temporary easements under cultivation.

Special Permanent Seed Mixture 1 will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk	3
Big Bluestem	Bison, Bonilla, Champ, Pawnee, Sunnyview	3
QuickGuard or Regreen -use April through November Oats or Spring Wheat -use April through May Winter Wheat -use August through November		10
Total:		26

**MULCHING (GRASS HAY OR STRAW):**

Grass Hay or Straw Mulch will be applied to all areas that are permanent seeded.

**TRAFFIC CONTROL SIGNS:**

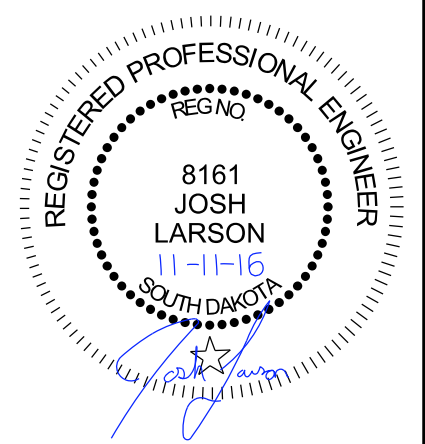
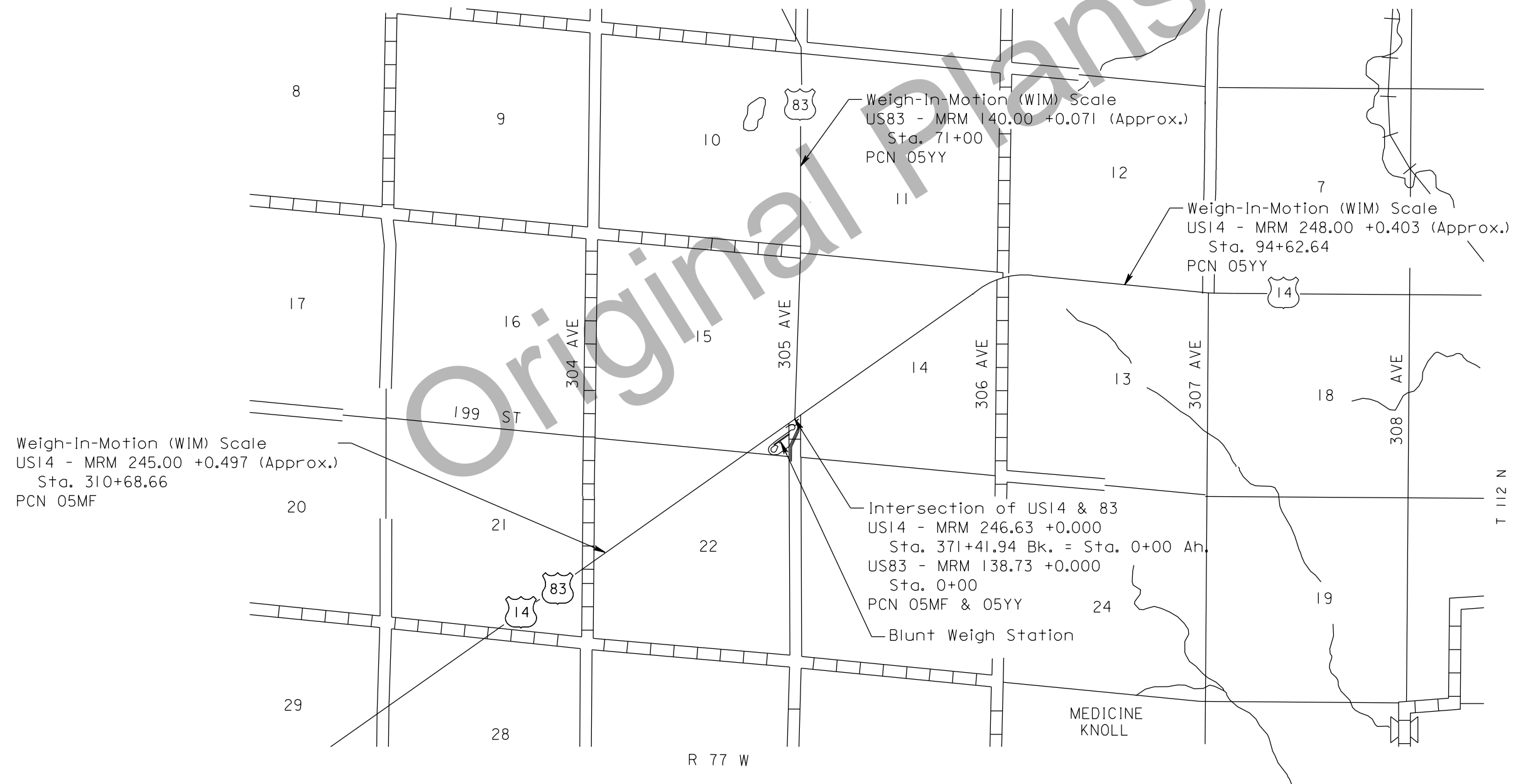
ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W16-2P	FEET (supplemental distance plaque)	2	30" x 24"	5.0	10.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					147.0

# SECTION G: WEIGH-IN-MOTION (WIM) SYSTEM

## INDEX OF SHEETS

G1	General Layout with Index
G2-G6	General Notes / Estimate of Quantities
G7-G9	Table of Conduit Quantities
G10	Overall Layout & Conduit Notes
G11-G22	Plan Sheets with Details
G23	Vehicle Detection Loop Details
G24	Piezo Sensor Details
G25-G26	Cabinet & Cabinet Foundation Details
G27-G36	Electrical Plan Sheets
G37-G38	Standard Plates



# TABLE OF CONDUIT AND CABLE QUANTITIES

STATE OF  
SOUTH  
DAKOTA

PROJECT

~~HR Y510(01)~~

~~HR Y609(01)~~

SHEET

G9

TOTAL  
SHEETS

G38

Plotting Date: 11/14/16

083-351

6 of 22

HR Y609(01) PCN 05YY		Rigid Conduit						Copper Wire					Junction Boxes																																		
		Schedule 40				Schedule 80																																									
		1"	1.25"	2"	3"	2"		1/C #0 AWG	1/C #1 AWG	1/C #8 AWG	1/C #10 AWG		Type 2	Type 3																																	
Location to Location		Ft	Ft	Ft	Ft	Ft						Each	Each																																		
<b>North of US Highway 14 &amp; US Highway 83 Intersection</b>																																															
<b>WIM Location SBL</b>																																															
WIM Cabinet	Pullbox - A			16	16								1																																		
WIM Cabinet	Pullbox - D			38									1																																		
<b>Pullbox - D</b>	<b>LPR3 - OVC3</b>			<b>10</b>																																											
Pullbox - A	Pullbox - B			20									1																																		
Pullbox - A	Loop (L1-3)	19																																													
Pullbox - A	WIM Scale (S1-3)			24																																											
Pullbox - A	Temp. Sensor (T1-3)	18																																													
Pullbox - A	Piezo (P1-3)	21																																													
Pullbox - A	Loop (L2-3)	22																																													
Pullbox - B	Pullbox - C					70							1																																		
Pullbox - C	Loop (L3-3)	15																																													
Pullbox - C	Piezo (P2-3)	15																																													
Pullbox - C	Piezo (P3-3)	15																																													
Pullbox - C	Loop (L4-3)	15																																													
Pullbox - D	Pullbox - J			1184									6																																		
<b>Changeable Message Sign SBL</b>																																															
Pullbox - J	Loop (L5-3)	17																																													
Pullbox - J	Pullbox - K			200									1																																		
Pullbox - K	Loop (L6-3)	17																																													
Pullbox - K	Pullbox - L			90									1																																		
Pullbox - L	Changeable Mess. Sign (CMS3)	28																																													
Pullbox - L	Pullbox - T			5507									27																																		
<b>Electrical</b>																																															
Electric Service (Scale House)	Electrical Service Board (ESB3)		6335			73				19968				11																																	
Electrical Service Board (ESB3)	Changeable Mess. Sign (CMS3)	28																																													
Electrical Service Board (ESB3)	WIM Cabinet	1512								4784				4																																	
<b>WIM Cabinet</b>	<b>LPR3 - OVC3</b>	<b>43</b>																																													
Sub Total HR Y609(01):		1785	6335	7089	16	143			0	19968	4784	1072	39	15																																	
<b>Total HR Y609(01):</b>		<b>3560</b>	<b>6335</b>	<b>25878</b>	<b>32</b>	<b>569</b>			<b>27591</b>	<b>19968</b>	<b>9583</b>	<b>2111</b>	<b>95</b>	<b>39</b>																																	



Original Plans



# SIGNAL CONDUITS:

## SIGNAL CONDUITS: (All conduit supplied by Contractor) (All wiring supplied by IRD)

- 1 1" CONDUIT  
1-LOOP WIRE
- 2 2" CONDUIT  
2-3PR 20AWG (SLC LEAD)  
4-2C 18AWG (OFF-SCLAE LEAD)
- 3 1" CONDUIT  
1-RG58 COAXIAL CABLE (PIEZO LEAD)
- 4 1" CONDUIT  
1-TEMPERATURE SENSOR LEAD
- 5 3" CONDUIT  
4-LOOP LEADS  
3-RG58 COAXIAL CABLE (PIEZO LEADS)  
1-TEMPERATURE SENSOR LEAD
- 6 2" CONDUIT  
2-3PR 20AWG (SLC LEAD)  
4-2C 18AWG (OFF-SCALE LEAD)
- 7 2" CONDUIT  
1-COMM CABLE (LPR)  
1-CAT5 CABLE (OVERVIEW CAMERA)
- 8 2" CONDUIT  
1-12 STRAND SINGLE MODE FIBER OPTIC CABLE  
(CMS/SCALE HOUSE)
- 9 2" CONDUIT  
1-2C 18AWG (LOOP LEADS)  
1-12 STRAND SINGLE MODE FIBER OPTIC CABLE  
(CMS/SCALE HOUSE)
- 10 2" CONDUIT  
1-CAT5 CABLE (OVERVIEW CAMERA)  
1-COMM CABLE (LPR)  
1-12 STRAND FIBER OPTIC CABLE (CMS/SCALE HOUSE)
- 11 2" CONDUIT  
2-LOOP LEADS  
2-RG58 COAXIAL CABLE (PIEZO LEAD)
- 12 2" CONDUIT  
2-2C 18AWG (LOOP LEADS)  
1-12 STRAND SINGLE MODE FIBER OPTIC CABLE (CMS/SCALE HOUSE)
- 13 2" CONDUIT  
1-12 STRAND SINGLE MODE FIBER OPTIC CABLE (CMS/SCALE HOUSE)

## SIGNAL CONDUITS: (Continued)

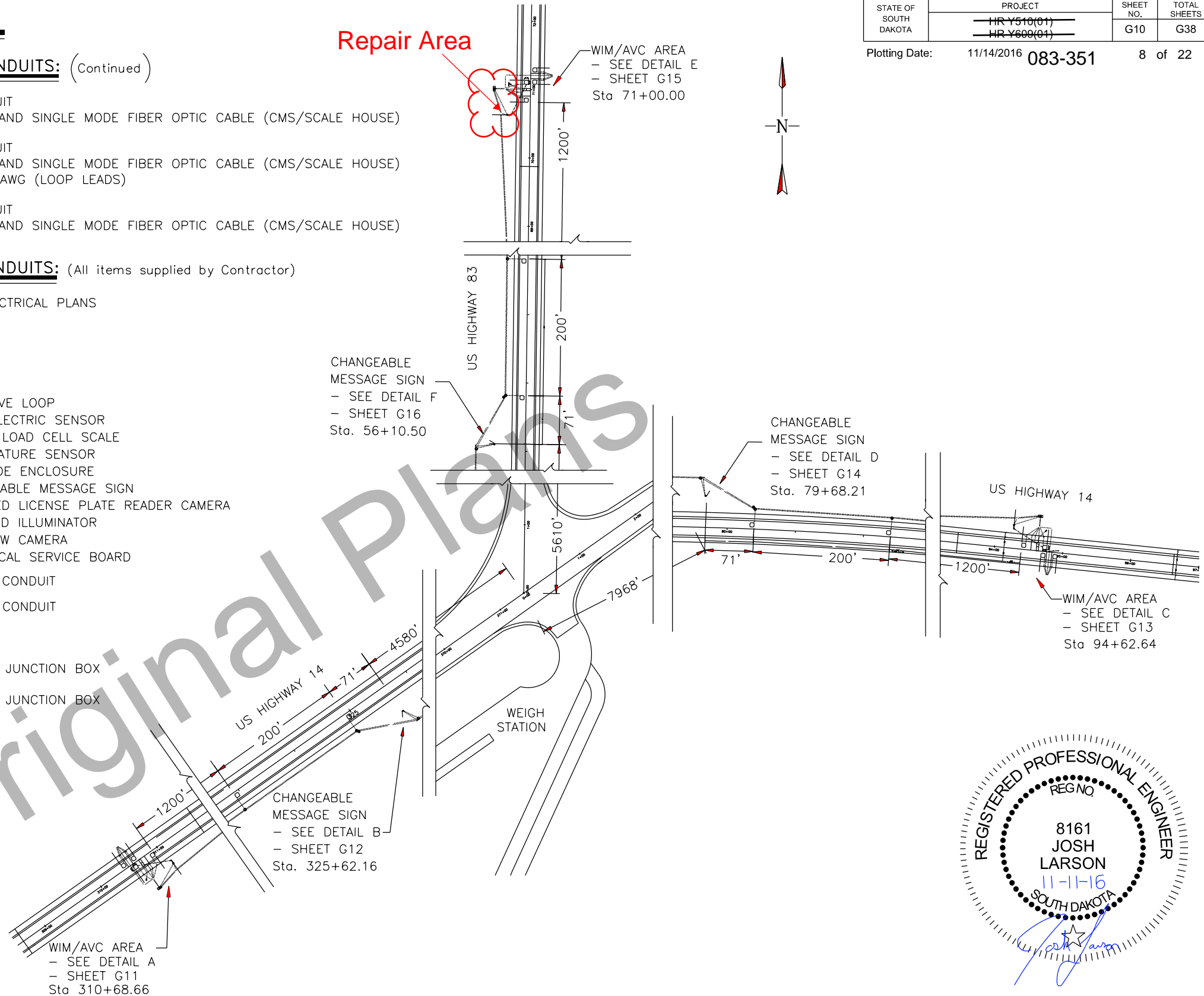
- 14 2" CONDUIT  
3-6 STRAND SINGLE MODE FIBER OPTIC CABLE (CMS/SCALE HOUSE)
- 15 2" CONDUIT  
2-6 STRAND SINGLE MODE FIBER OPTIC CABLE (CMS/SCALE HOUSE)  
2-2C 18AWG (LOOP LEADS)
- 16 2" CONDUIT  
2-6 STRAND SINGLE MODE FIBER OPTIC CABLE (CMS/SCALE HOUSE)

## POWER CONDUITS: (All items supplied by Contractor)

- 1 SEE ELECTRICAL PLANS

## LEGEND:

- L - INDUCTIVE LOOP
- P - PIEZOELECTRIC SENSOR
- S - SINGLE LOAD CELL SCALE
- T - TEMPERATURE SENSOR
- E - ROADSIDE ENCLOSURE
- CMS - CHANGEABLE MESSAGE SIGN
- IR-LPR - INFRARED LICENSE PLATE READER CAMERA
- IR-IL - INFRARED ILLUMINATOR
- OVC - OVERVIEW CAMERA
- ESB - ELECTRICAL SERVICE BOARD
- 1 - SIGNAL CONDUIT
- 1 - POWER CONDUIT
- A - NOTE
- Z - TYPE 2 JUNCTION BOX
- W - TYPE 3 JUNCTION BOX



## GENERAL NOTES:

TYPICAL LAYOUT IS SHOWN. OTHER SENSORS MAY BE REQUIRED AND ARE SHOWN IN PROJECT DOCUMENTATION.

SENSOR SPACING SHOWN IS TYPICAL SPACING REQUIREMENT, ACTUAL SENSOR SPACING MAY BE ALTERED TO SUIT SITE CONDITIONS BY THE IRD FIELD REPRESENTATIVE.

ALL CONNECTIONS BETWEEN SENSORS AND LEAD CABLES ARE DONE IN PULL BOX AND ARE SOLDERED THEN SEALED FOR WATERPROOFING. NUMBER AND PLACEMENT OF PULL BOXES NOT SHOWN.

CABLES MUST BE PROTECTED BY PVC SLEEVES WHERE THEY CROSS PAVEMENT JOINTS/CRACKS.

IRD RECOMMENDS THAT PULL BOXES BE NO FURTHER THAN 200' APART.  
IRD RECOMMENDS THE MINIMUM SIZE FOR PULL BOXES IS 18" X 18" X 12".

EXACT ROUTING OF CONDUIT TO BE DETERMINED ON SITE.

DRAWING NOT TO SCALE.

REV.	DESCRIPTION	DWN/DSN	APPR.	APPR.	DATE
A	INITIAL RELEASE	MyG/RCz	MyG	DPr	Nov 11/11

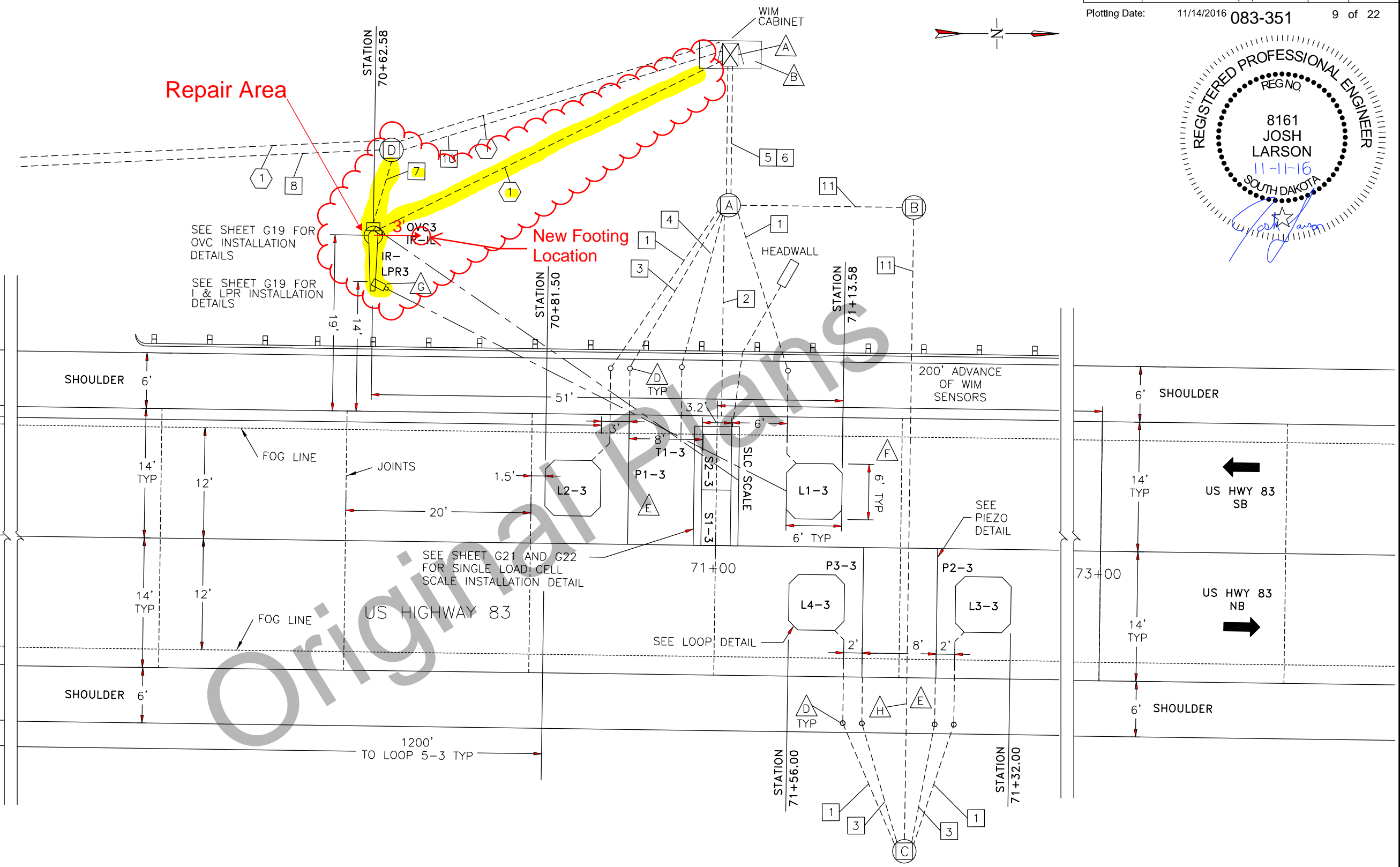
**CONFIDENTIAL**  
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**ird**<sup>®</sup>  
NOT TO SCALE  
SIZE: B  
DIMENSIONS IN: FEET

**INTERNATIONAL ROAD DYNAMICS INC.**  
**SASKATOON SASKATCHEWAN CANADA**  
DWG. TITLE: **SITE LAYOUT VIRTUAL WEIGH STATION BLUNT, SOUTH DAKOTA**  
DWG. No. **C11875003** REV.: A  
CAD FILE: C11875003.DWG



# DETAIL LAYOUT FOR NEW MAINLINE WIM SENSORS (DETAIL E)



**NOTES: (THIS SHEET ONLY)**

- A CABINET WITH WIM ELECTRONICS
- B CABINET BASE
- C INTENTIONALLY DELTETED
- D DRILL THROUGH SHOULDER FOR CONDUIT.
- E PAVEMENT ON EITHER SIDE OF EACH PIEZO MUST BE FREE OF JOINTS AND CRACKS FOR 4'. PAVEMENT ON EACH SIDE OF THE LOOP MUST BE FREE OF JOINTS AND CRACKS FOR 18".
- F SITE CONDITIONS AS PER ASTM E1318-09 FOR ALL LANES.
- G POLE LOCATION MUST ALLOW ADEQUATE RIGHT-OF-WAY OR PROTECT WITH GUARDRAIL OR USE OF BREAK-AWAY POLE AS REQUIRED BY LOCAL CONSTRUCTION CODES.
- H CONDUIT ~~SHALL~~ <sup>will</sup> BE PLACED USING BORING, JACKING OR ALTERNATIVE METHOD THAT DOES NOT REQUIRE THE SURFACE OF THE ROAD TO BE CUT.

REV.	DESCRIPTION	DWN/DSN	APPR.	APPR.	DATE
A	INITIAL RELEASE	MyG/RCz	MyG	DPr	Nov 11/11

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NOT TO SCALE

SIZE: B

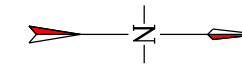
DIMENSIONS IN: FEET

INTERNATIONAL ROAD DYNAMICS INC.  
SASKATOON SASKATCHEWAN CANADA

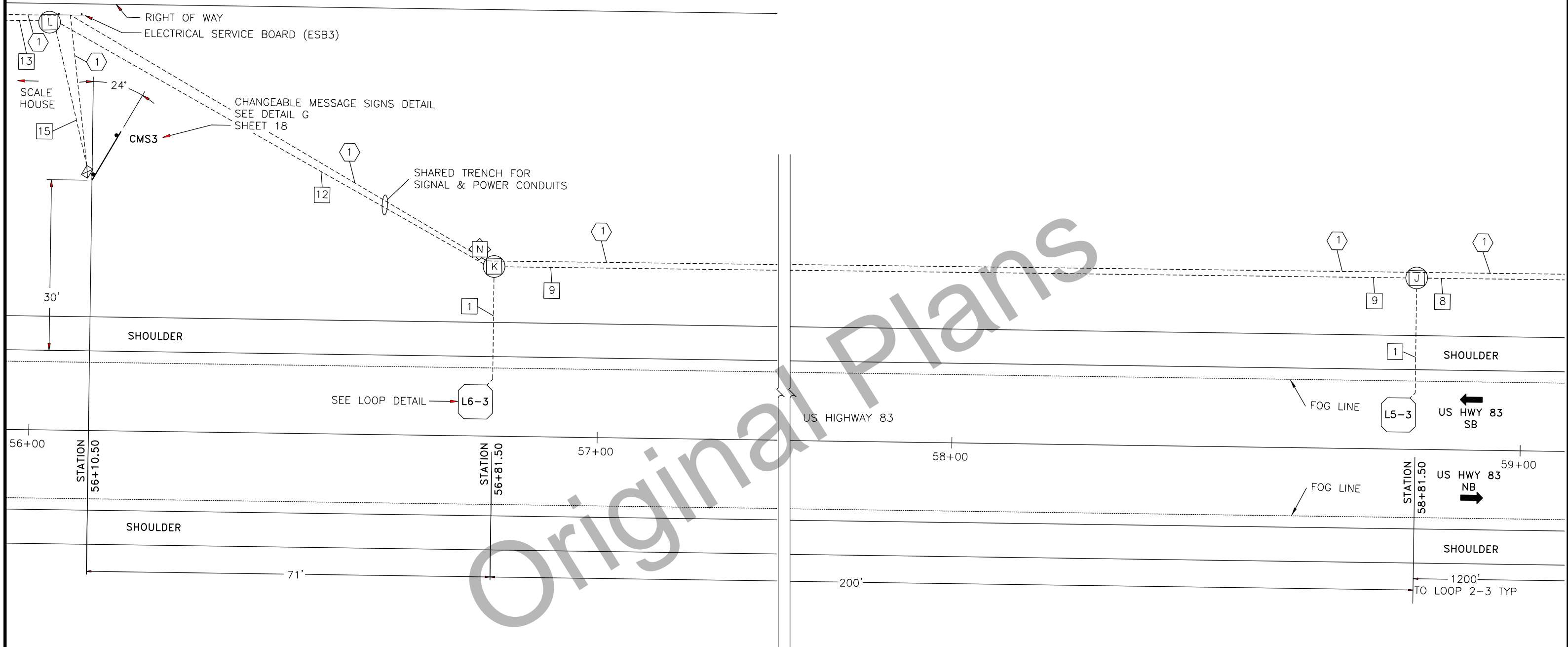
DWG. TITLE:  
**SITE LAYOUT  
VIRTUAL WEIGH STATION  
BLUNT, SOUTH DAKOTA**

DWG. No. <b>C11875003</b>	REV.: A
CAD FILE: C11875003.DWG	

# DETAIL F - CHANGEABLE MESSAGE SIGNS



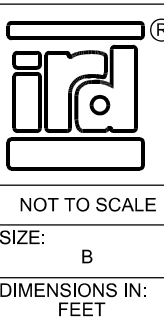
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	HR Y510(01) HR Y600(01)	G16	G38
Plotting Date: 11/14/2016		083-351 10 of 22	



REV.	DESCRIPTION	DWN/DSN	APPR.	APPR.	DATE
A	INITIAL RELEASE	MyG/RCz	MyG	DPr	Nov 11/11

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**INTERNATIONAL ROAD DYNAMICS INC.**  
**SASKATOON SASKATCHEWAN CANADA**

DWG. TITLE:

**SITE LAYOUT  
VIRTUAL WEIGH STATION  
BLUNT, SOUTH DAKOTA**

DWG. No. <b>C11875003</b>	REV.: A
CAD FILE: C11875003.DWG	

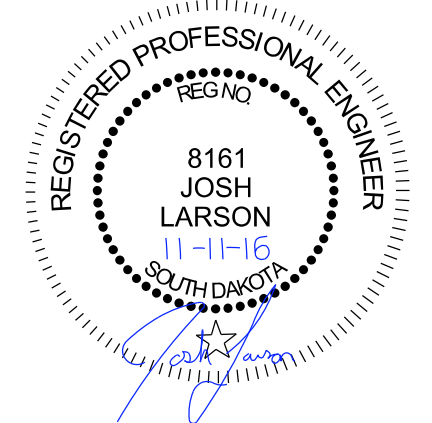


ILLUMINATOR, LICENSE PLATE READER,  
OVERVIEW CAMERA INSTALLATION DETAIL

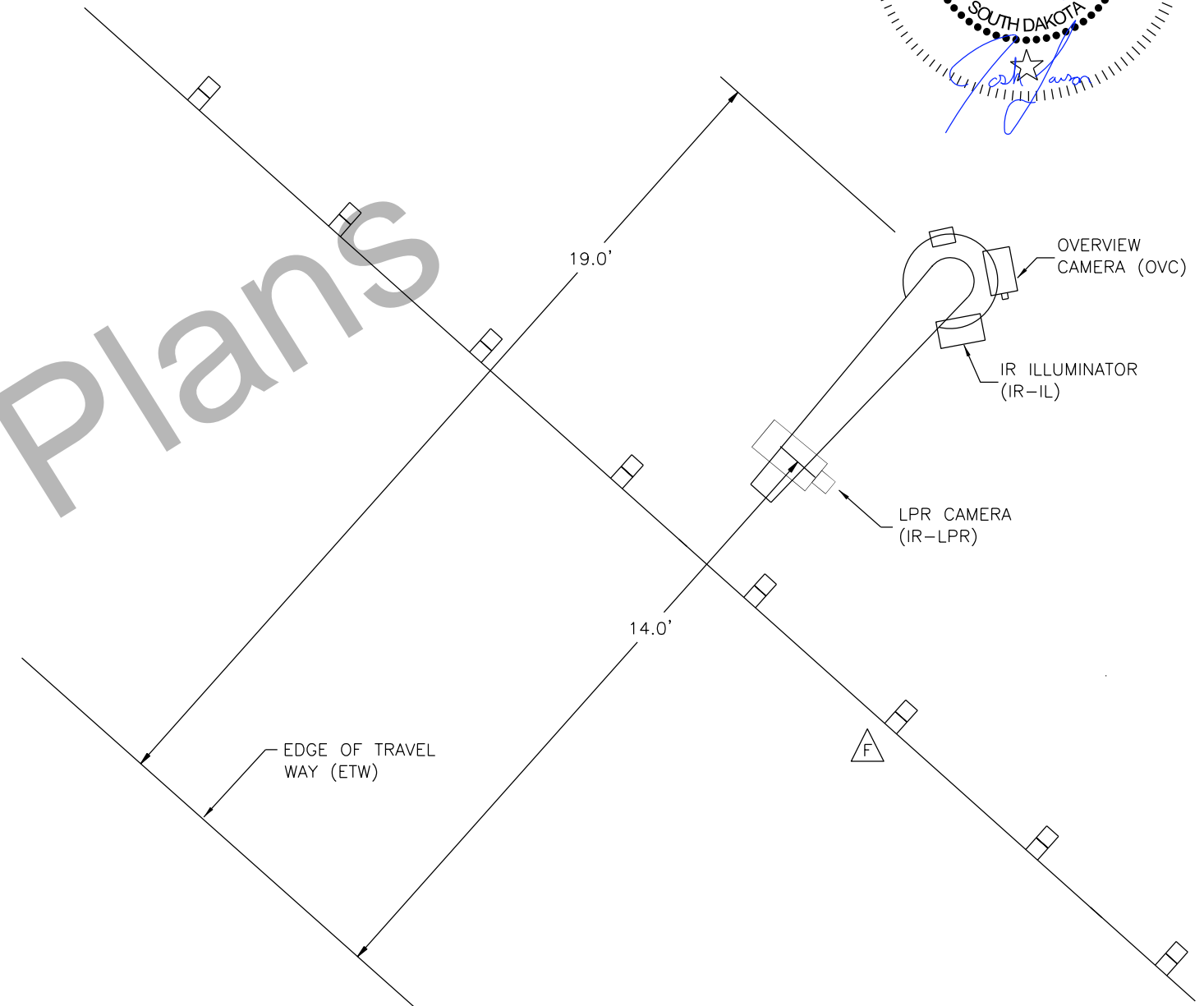
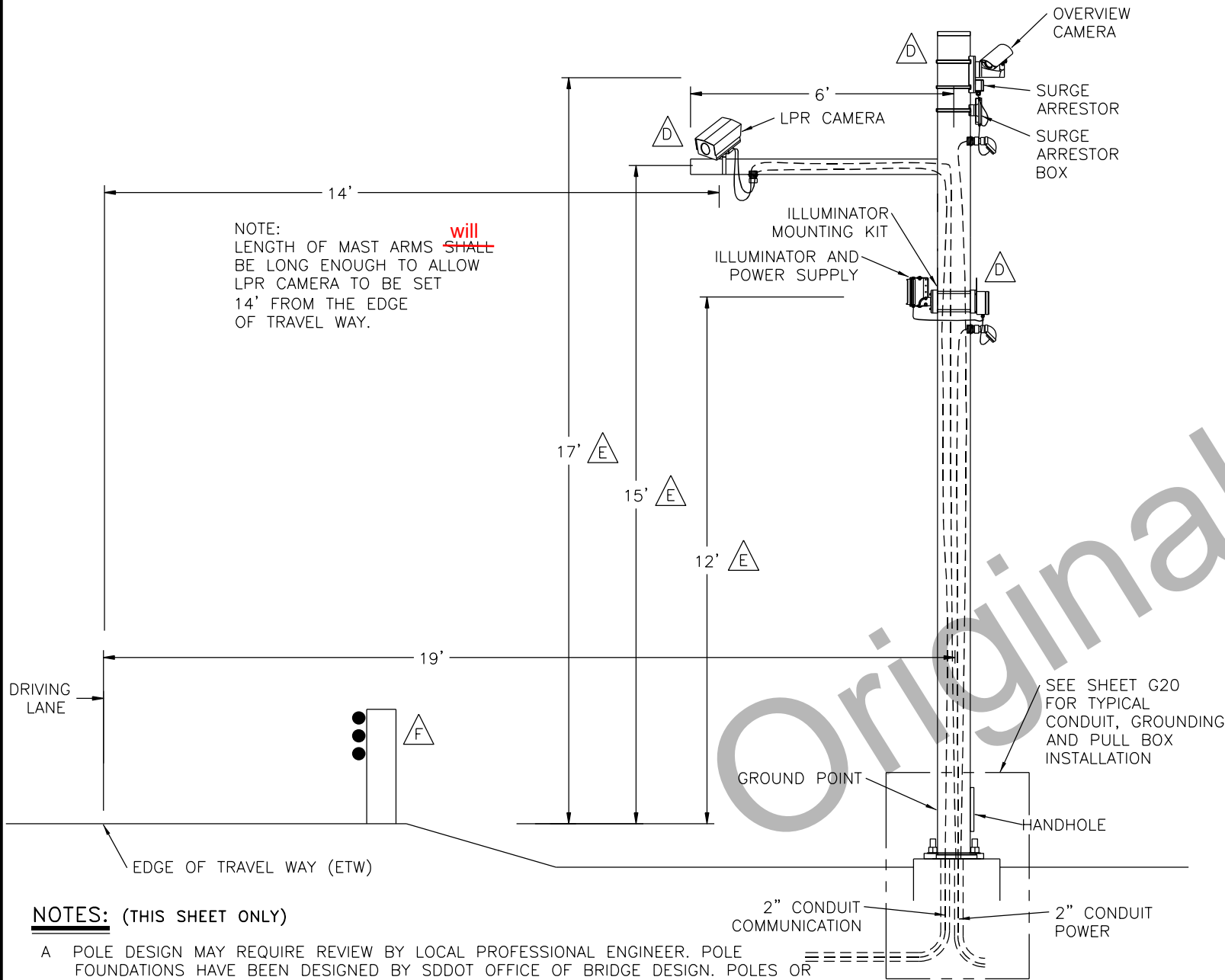
(VIEW FACING DOWNSTREAM)

ILLUMINATOR, LICENSE PLATE READER,  
OVERVIEW CAMERA INSTALLATION DETAIL

(TOP VIEW)



STATION 70+62.58 (SOUTHBOUND OVC, IR-IL, IR-LPR)  
STATION 94+25.22 (WESTBOUND OVC, IR-IL, IR-LPR)  
STATION 311+06.16 (EASTBOUND OVC, IR-IL, IR-LPR)



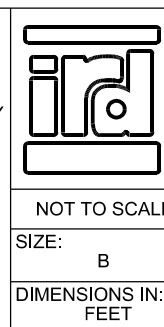
NOTES: (THIS SHEET ONLY)

- A POLE DESIGN MAY REQUIRE REVIEW BY LOCAL PROFESSIONAL ENGINEER. POLE FOUNDATIONS HAVE BEEN DESIGNED BY SDDOT OFFICE OF BRIDGE DESIGN. POLES OR CONFIGURATIONS DIFFERENT THAN THAT SHOWN MAY REQUIRE REDESIGN OF POLE FOOTINGS (ALL 3 POLES)
- B CONDUITS TO MEET LOCAL ELECTRIC CODE.
- C EQUIPMENT TO BE CONNECTED TO EARTH GROUND AND TESTED IN COMPLIANCE WITH NATIONAL ELECTRICAL CODE AND LOCAL STANDARDS.
- D CONTRACTOR TO SUPPLY 3/4" STAINLESS STEEL BANDING FOR ATTACHING CAMERAS AND 1/2" STAINLESS STEEL BANDING FOR ATTACHING THE ILLUMINATOR.
- E HEIGHT RELATIVE TO HIGHEST POINT OF ROADWAY.
- F GUARDRAIL IS REQUIRED - SEE SECTION F FOR DETAILS

REV.	DESCRIPTION	DWN/DSN	APPR.	APPR.	DATE
A	INITIAL RELEASE. ECO-10280	LPe/MyG	MyG	DPr	Nov 11/11

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**INTERNATIONAL ROAD DYNAMICS INC.**  
**SASKATOON SASKATCHEWAN CANADA**

DWG. TITLE:  
**SITE LAYOUT  
VIRTUAL WEIGH STATION  
BLUNT, SOUTH DAKOTA**

SIZE: B  
DIMENSIONS IN: FEET

DWG. No. **C11875003**  
CAD FILE: C11875003\_A.DWG

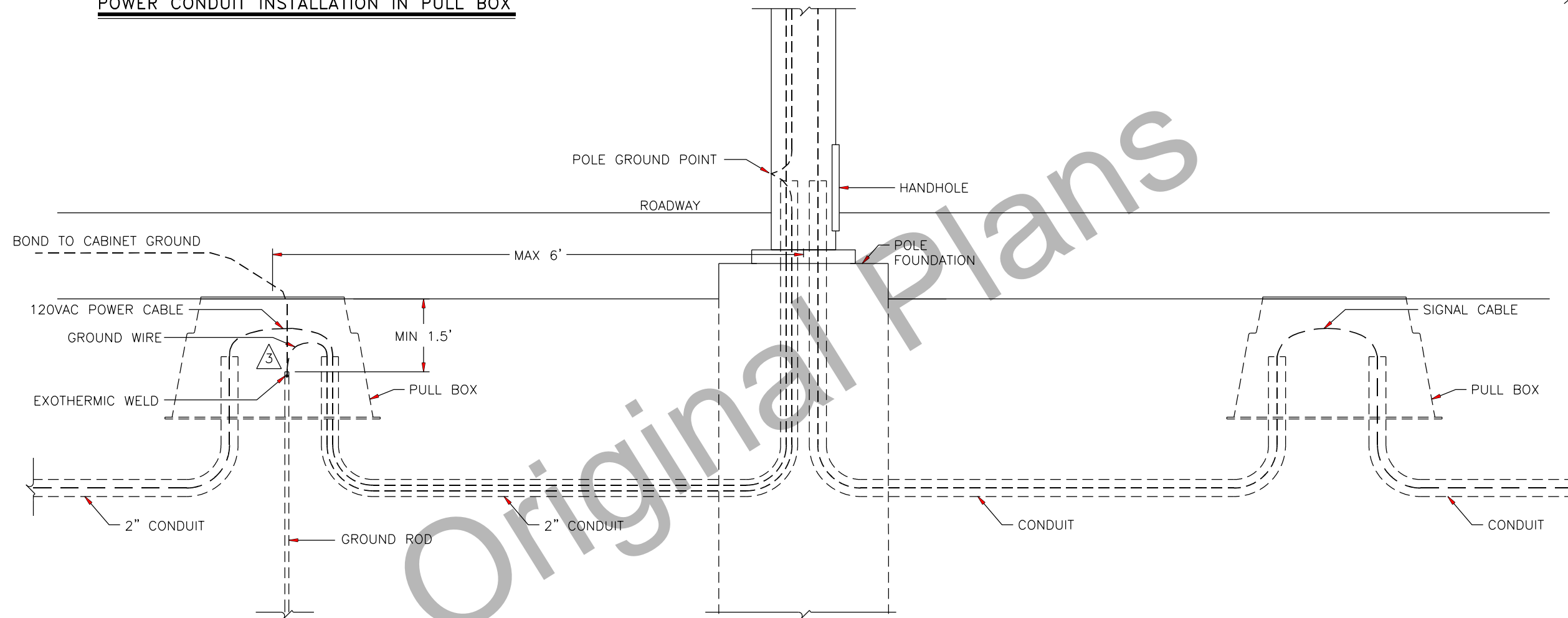
REV.: A

# ILLUMINATOR, LICENSE PLATE READER, OVERVIEW CAMERA INSTALLATION DETAIL

## REAR VIEW – FACING ROADWAY TYPICAL CONDUIT INSTALLATION IN PULL BOX



### POWER CONDUIT INSTALLATION IN PULL BOX



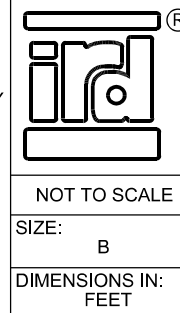
**NOTES:**

- 1 POLE AND FOUNDATION DESIGN NOT PROVIDED BY IRD.
- 2 CONDUITS TO MEET LOCAL ELECTRIC CODE.
- 3 EQUIPMENT TO BE CONNECTED TO EARTH GROUND AND TESTED IN COMPLIANCE WITH NATIONAL ELECTRICAL CODE AND LOCAL STANDARDS.

REV.	DESCRIPTION	DWN/DSN	APPR.	APPR.	DATE
A	INITIAL RELEASE	MyG/RCz	MyG	DPr	Nov 11/11

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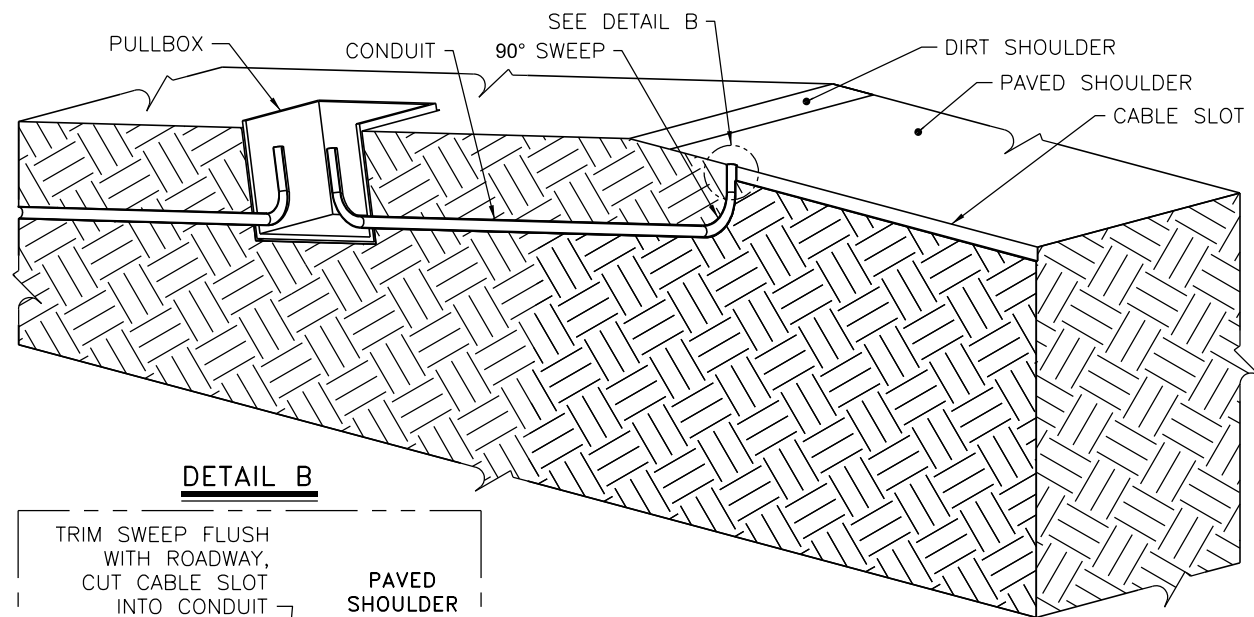
**INTERNATIONAL ROAD DYNAMICS INC.  
SASKATOON SASKATCHEWAN CANADA**

DWG. TITLE:  
**SITE LAYOUT  
VIRTUAL WEIGH STATION  
BLUNT, SOUTH DAKOTA**

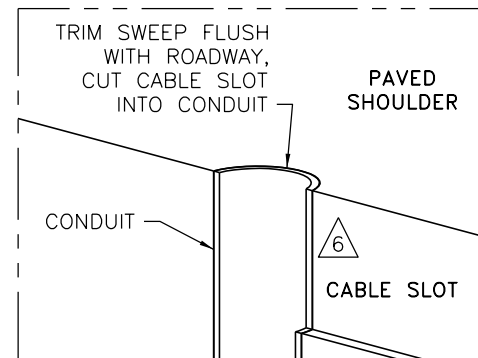
DWG. No. **C11875003** REV.: A

CAD FILE: C11875003.DWG

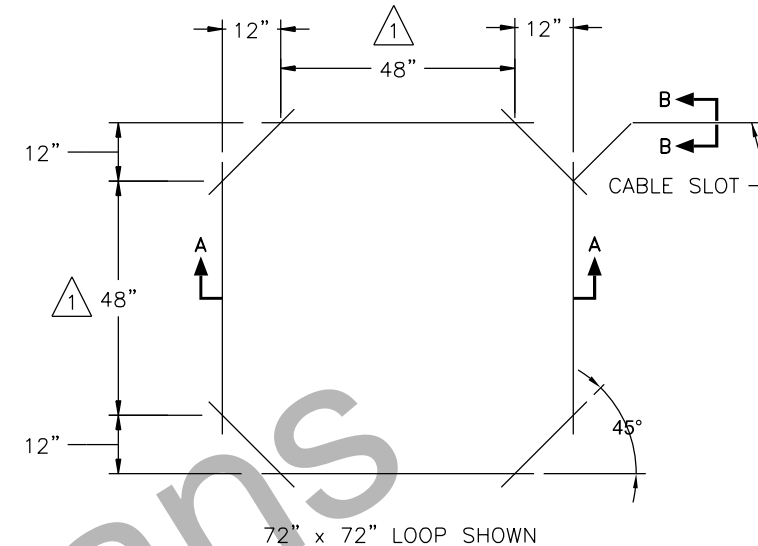
**CABLE ROUTING DETAILS**



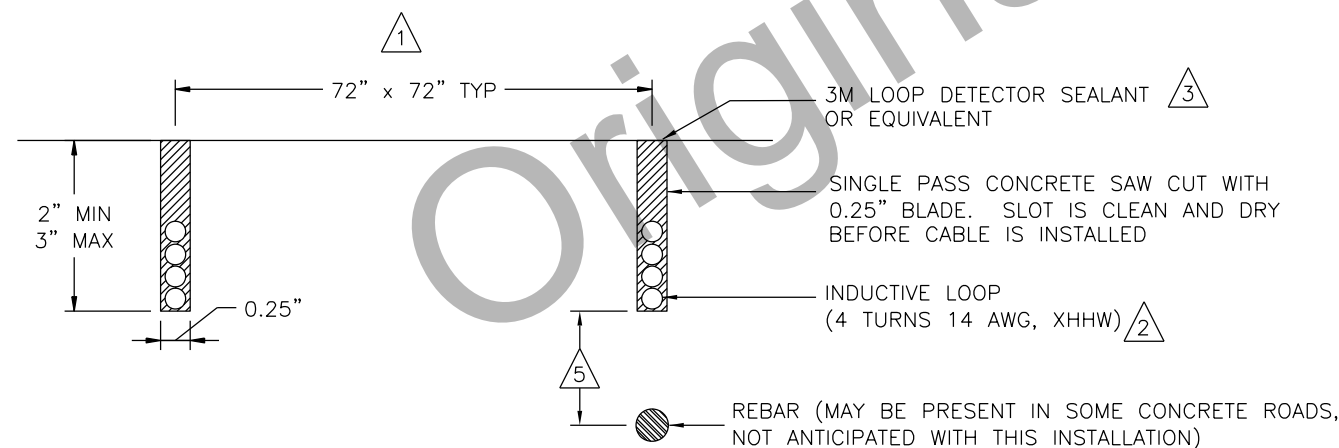
**DETAIL B**



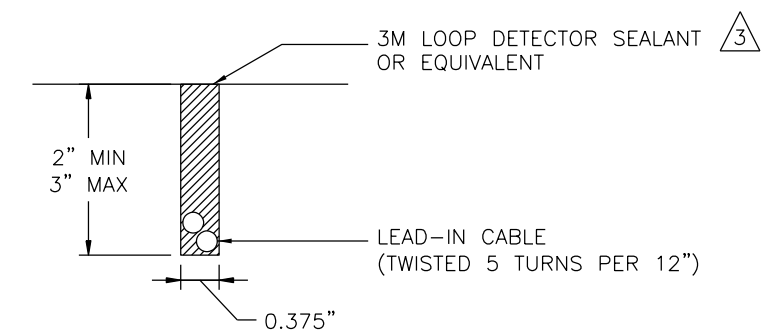
**OCTAGON LOOP DIMENSION DETAIL**



**SECTION A-A**



**SECTION B-B**



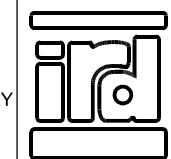
**NOTES:**

- 1 LOOP SIZE AS SPECIFIED ON SITE LAYOUT.
- 2 NUMBER OF TURNS AS SPECIFIED ON SITE LAYOUT.
- 3 USE CAULKING GUN
- 4 INSTALL ACCORDING TO WIM SYSTEM MANUFACTURER SPECIFICATIONS
- 5 IF THE LOOP IS INSTALLED OVER REBAR, THERE MUST BE A MINIMUM OF 2" CONCRETE BELOW AND A MINIMUM OF 1" FILL ABOVE THE WIRES.
- 6 CORE DRILL OR CUT NOTCH IN PAVED SHOULDER FOR SWEEP. PLUG SWEEP OPENING, COVER WITH LOOP SEALANT.

REV.	DESCRIPTION	DWN/DSN	APPR.	APPR.	DATE
A		MyG/RCz	MyG	DPr	Nov 11/11

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NOT TO SCALE  
SIZE: B  
DIMENSIONS IN: FEET

**INTERNATIONAL ROAD DYNAMICS INC. SASKATOON SASKATCHEWAN CANADA**

DWG. TITLE: **SITE LAYOUT VIRTUAL WEIGH STATION BLUNT, SOUTH DAKOTA**

DWG. No. **C11875003** REV.: A

CAD FILE: C11875003.DWG



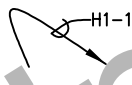



ABBREVIATIONS			
THESE ABBREVIATIONS COMPRISE A STANDARD LIST; NOT ALL ABBREVIATIONS MAY APPEAR ON THIS PROJECT.			
A or AMP	AMPERE	MCB	MAIN CIRCUIT BREAKER
A.C.	ALTERNATING CURRENT	MDP	MAIN DISTRIBUTION PANEL
A/E	ARCHITECT & ENGINEER	MFS	MAIN FUSIBLE SWITCH
A.F.F.	ABOVE FINISHED FLOOR	M.H.	METAL HALIDE
A.F.G.	ABOVE FINISHED GRADE	M.L.O.	MAIN LUG ONLY
A.H.J.	AUTHORITY HAVING JURISDICTION	MTD	MOUNTED
A.I.C.	AMPERE INTERRUPTING CURRENT	M.V.	MERCURY VAPOR
B.U.H.	BLAST UNIT HEATER	N.C.	NORMALLY CLOSED
b.c.	BELOW COUNTER	N.E.C.	NATIONAL ELECTRIC CODE
C or COND	CONDUIT	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CB OR C/B	CIRCUIT BREAKER	NEU	NEUTRAL
CCT	CIRCUIT	N.L.	NIGHT LIGHT
CU	COPPER	N.O.	NORMALLY OPEN
C.U.H.	CABINET UNIT HEATER	O.H.	OVERHEAD
D.C.	DIRECT CURRENT	P	POLE
DC	DISTRIBUTION CABINET	PB	PUSH BUTTON
DISC	DISCONNECT	PH	PHASE
DN	DOWN	PLBG	PLUMBING
E.C.	ELECTRICAL CONTRACTOR	pr	PAIR
EC	ELECTRICAL CABINET	P.R.V.	POWER ROOF VENTILATION
FBO	FURNISHED BY OTHERS	PS	PULL SWITCH
FLA	FULL LOAD AMPERES	PVC	PLASTIC CONDUIT
FLU	FLUORESCENT	PWR	POWER
FUS	FUSE OR FUSIBLE	QTZ	QUARTZ
G.C.	GENERAL CONTRACTOR	REC OR RECEPT	RECEPTACLE
GEN	GENERATOR	REFRIG	REFRIGERATOR
GND or GRD	GROUND	R.H.	RADIANT HEAT
HZ	HERTZ (CYCLES)	R.M.S.	ROOT MEAN SQUARE
ISO	ISOLATED / ISOLATION	SFR	SAFETY RECEPTACLE
IG	ISOLATED GROUND RECEPTACLE	SPR	SPLIT WIRE RECEPTACLE
I.C.	INTERRUPTING CURRENT	SCC	SHORT CIRCUIT CURRENT
I.M.C.	INTERMEDIATE METAL CONDUIT	SHLD	SHIELD OR SHIELDED
INC	INCANDESCENT	S.N.	SOLID NEUTRAL
JB	JUNCTION BOX	SW	SWITCH
KCMIL	THOUSAND CIRCULAR MIL	T.C.	TEMPERATURE CONTROL
KV	KILOVOLT	TC	TELEPHONE CABINET
KVA	KILOVOLT-AMPERE	TEL	TELEPHONE
KW	KILOWATT	TR or TRANS	TRANSFORMER
		U.G.	UNDERGROUND
		U.H.	UNIT HEATER
		U.V.	UNIT VENTILATOR
		V	VOLT
		W	WATT or WIRE
		w/	WITH
		WP	WEATHERPROOF
		WTR OR H2O	WATER
		XFMR	TRANSFORMER
		ø	PHASE



## INDEX OF ELECTRICAL DRAWINGS




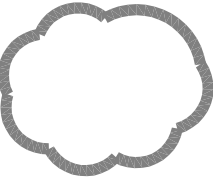
- ELECTRICAL TITLE SHEET
- SITE LAYOUT
- HWY 14 W - WIM ELECTRICAL PLAN
- HWY 14 W - CMB ELECTRICAL PLAN
- HWY 14 E - WIM ELECTRICAL PLAN
- HWY 14 E - CMB ELECTRICAL PLAN
- HWY 83 N - WIM ELECTRICAL PLAN
- HWY 83 N - CMB ELECTRICAL PLAN
- POWER ONELINE DIAGRAM
- ELECTRICAL IMAGES

CONDUIT		MOTORS	
	UNDERGROUND CONDUIT		MOTOR CONNECTION

HOMERUNS	
	1 - SINGLE POLE CIRCUIT (Circuit No's)

PANELS AND TERMINATIONS BOARDS	
	DISCONNECT SWITCH

OTHER	
	JUNCTION BOX
	LIGHTNING ARRESTOR

REFERENCE INDICATION	
	SEE NOTE INDICATED BY NUMBER
	SEE EQUIPMENT INDICATED BY NUMBER
	REVISION
	REVISION CLOUD



NO.	REVISION	BY	DATE

DESIGN	RLM	DATE	11-8-16
APPROV	MWJ	DATE	11-8-16
CHECKED	30-16227 ELEC.	JOB NO.	30-16227
SCALE	AS SHOWN	ISSUE	11-8-16

**pe group**  
PROFESSIONAL ENGINEERS

226 NORTH MAIN AVE. • PARKER, SD • 57068  
46639 262nd STREET • SIOUX FALLS, SD • 57107

PH: (605) 297-3647 • FAX: (605) 297-3681  
Email: info@pegrouppengr.com

VIRTUAL WEIGH STATION  
BLUNT, SOUTH DAKOTA

**ELECTRICAL TITLE SHEET**

REV. **G27**  
DWG. NO.

PANEL PB1 (TVSS)		VOLTS	120/240V	PHASE	1	WIRE	3	MAIN CAPACITY	200	AMPERES				
		MOUNTING	SURFACE	FEEDER SIZE	SEE ONLINE DIAGRAM			MAIN CONNECTION	MCB					
CCT NO	ITEM FED	DISTRIBUTION WATTS	WIRE SIZE	CIRCUIT BREAKER			N	CIRCUIT BREAKER			DISTRIBUTION WATTS	ITEM FED	CCT NO	
				AMP	POLES	FRAME		FRAME	POLES	AMP				
1	EXIST 4A	EXIST	EXIST	20	1	22KAIC	L1	22KAIC	1	20	12	EXIST	EXIST RECEPTACLE	2
3	EXIST 2B	EXIST	EXIST	20	1	22KAIC	L2	22KAIC	1	20	12	EXIST	EXIST RECEPTACLE	4
5	EXIST POLE LIGHT	EXIST	EXIST	20	1	22KAIC	L1	22KAIC	1	20	12	EXIST	EXIST RECEPTACLE	6
7	EXIST SIGNAL LIGHT	EXIST	EXIST	20	1	22KAIC	L2	22KAIC	1	20	12	EXIST	EXIST SUMP	8
9	EXIST SCALE	EXIST	EXIST	20	1	22KAIC	L1	22KAIC	1	20	-	0	SPARE	10
11	EXIST SCALE	EXIST	EXIST	20	1	22KAIC	L2	22KAIC	1	20	-	0	SPARE	12
13	SPARE	0	-	20	1	22KAIC	L1	22KAIC	1	20	-	0	SPARE	14
15	SPARE	0	-	20	1	22KAIC	L2	22KAIC	1	20	-	0	SPARE	16
17	EXIST ELECTRIC HEAT	EXIST	EXIST	40	2	22KAIC	L1	22KAIC	2	40	EXIST	EXIST	EXIST ELECTRIC HEAT	18
19	EXIST ELECTRIC HEAT	EXIST	EXIST	-	-	22KAIC	L2	22KAIC	-	-	EXIST	EXIST	EXIST ELECTRIC HEAT	20
21	SPARE	0	-	20	1	22KAIC	L1	22KAIC	1	30	10	2200	WEST CMS / WIM	22
23	SPARE	0	-	20	1	22KAIC	L2	22KAIC	1	30	10	2200	NORTH CMS / WIM	24
25	SPARE	0	-	20	1	22KAIC	L1	22KAIC	1	30	10	2200	EAST CMS / WIM	26
27	SPARE	0	-	20	1	22KAIC	L2	22KAIC	1	20	-	0	SPARE	28
29	SPARE	0	-	20	1	22KAIC	L1	22KAIC	1	30	-	0	SPARE	30

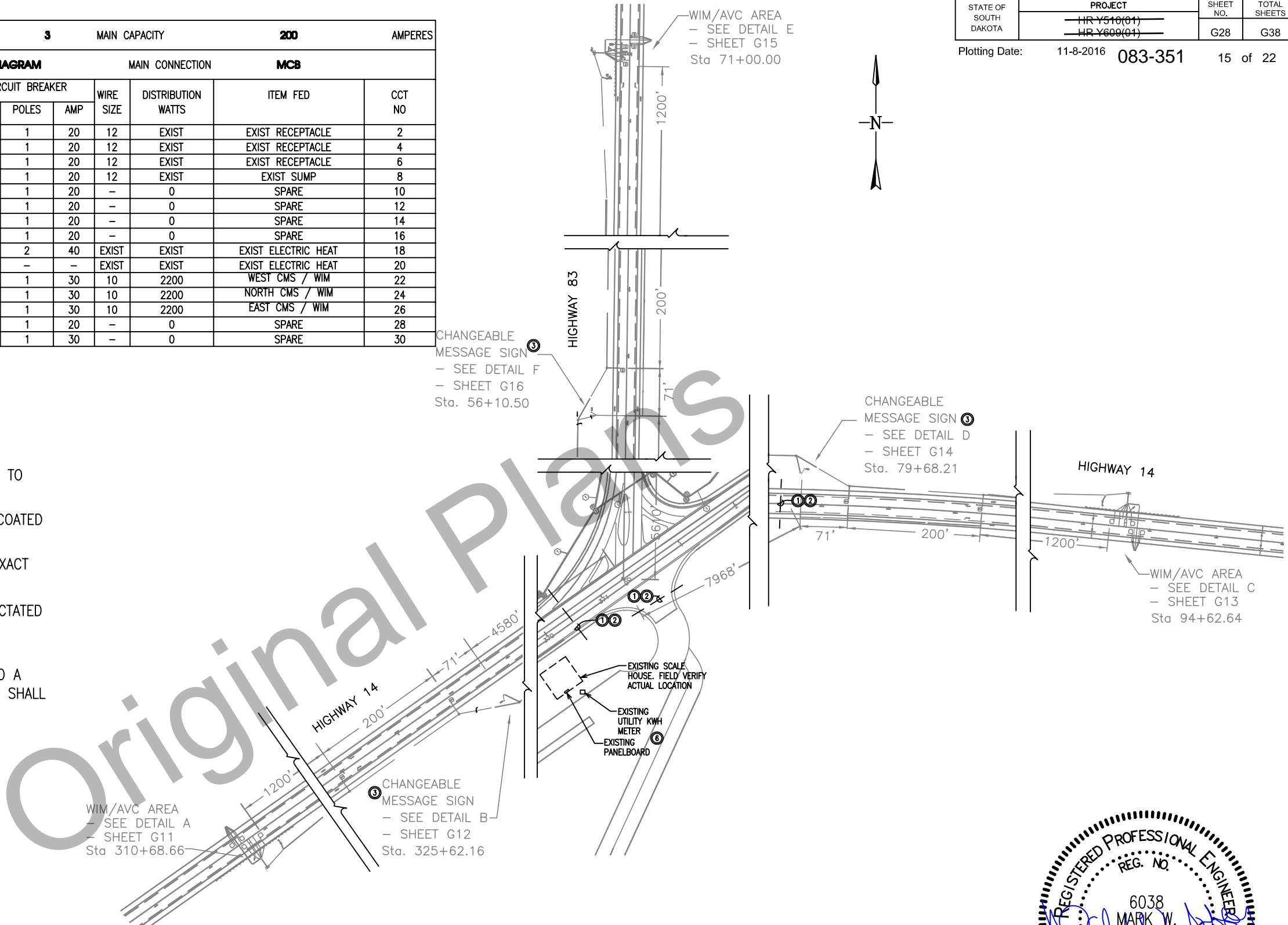
**NOTES**

- DIRECTIONAL BORE CONDUIT PASSING UNDER EXISTING ROADWAY. COORDINATE EXACT LOCATION OF ROADWAY CROSSING WITH DOT PRIOR TO INSTALLATION.
- PORTION OF CONDUIT RUN PASSING UNDER ROADWAY SHALL BE PVC COATED RIGID STEEL.
- LOCATE CMS ELECTRIC SERVICE BOARD AT FENCELINE. COORDINATE EXACT LOCATION AND ORIENTATION WITH DOT.
- PROVIDE 24"x24"x12" IN-GROUND PULLBOX EVERY 500 FT. OR AS DICTATED BY CONDUCTOR SPOOL LENGTH. BOX SHALL BE QUAZITE POLYMER CONCRETE OR APPROVED EQUAL.
- CONDUCTOR SPlicing WITHIN IN-GROUND J-BOXES SHALL BE KEPT TO A MINIMUM. WHERE SPlicing IS DONE, WATERPROOF SPlicing METHODS SHALL BE USED.

**SIGNAL CONDUITS:**

**POWER CONDUITS:** (All items supplied by Contractor)

- ① NOT USED
- ② CONSTANT POWER
- ③ LPR CAMERA POWER/ILLUMINATOR POWER
- ④ OVERVIEW CAMERA/ILLUMINATOR POWER



**ELECTRICAL SITE PLAN**



NO.	REVISION	BY	DATE

DRAWN	RLM	DATE	11-8-16
APPROVED	MWJ	DATE	11-8-16
CHECKED	30-16227 ELEC.	JOB NO.	30-16227
SCALE	AS SHOWN	ISSUE	11-8-16

**pe group**  
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46839 262nd STREET • SIOUX FALLS, SD • 57107

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Email: info@pegrouppengr.com

VIRTUAL WEIGH STATION  
BLUNT, SOUTH DAKOTA

**ELECTRICAL SITE PLAN**

REV.

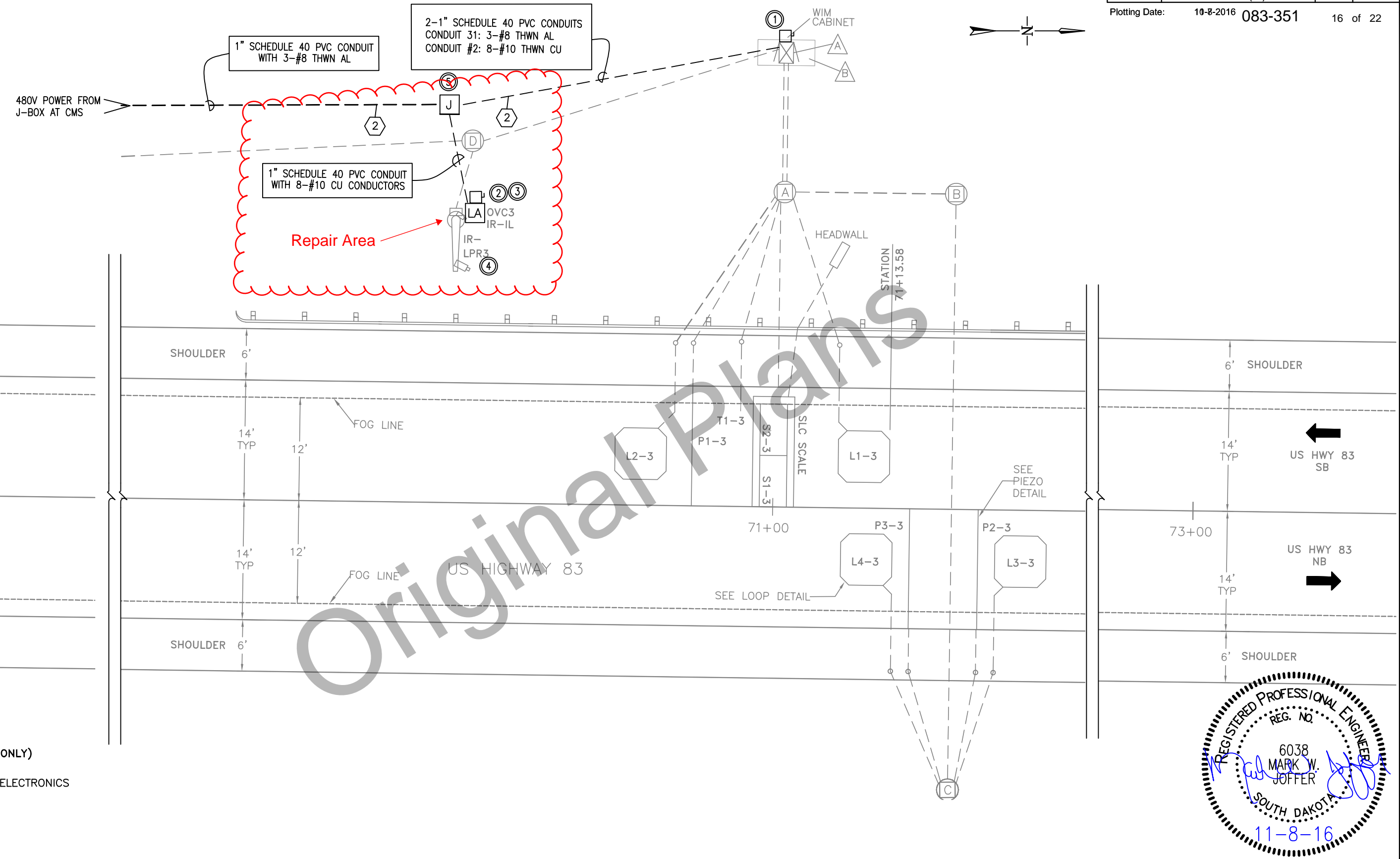
**G28**

DWG. NO.

# DETAIL LAYOUT FOR NEW MAINLINE WIM SENSORS (DETAIL E)

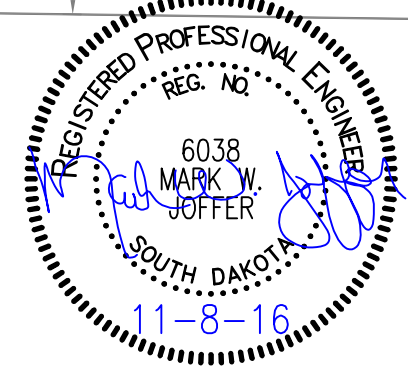
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	HR Y510(01) HR Y600(01)	G33	G38

Plotting Date: 10-8-2016 083-351 16 of 22



**NOTES: (THIS SHEET ONLY)**

- CABINET WITH WIM ELECTRONICS
- CABINET BASE



NO.	REVISION	BY	DATE

DESIGN: RLM	DATE: 11-8-16
APPROV: MWJ	DATE: 11-8-16
CONTRACT: 30-16227 ELEC.	JOB NO.: 30-16227
SCALE: AS SHOWN	ISSUE: 11-8-16

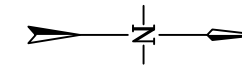
**pe Group**  
 PROFESSIONAL ENGINEERS  
 225 NORTH MAIN AVE. • PARKER, SD • 57088  
 46699 262nd STREET • SIOUX FALLS, SD • 57107  
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 Email: info@pegroupeng.com

**VIRTUAL WEIGH STATION**  
**BLUNT, SOUTH DAKOTA**  
**HWY 83 N - WIM ELECTRICAL PLAN**

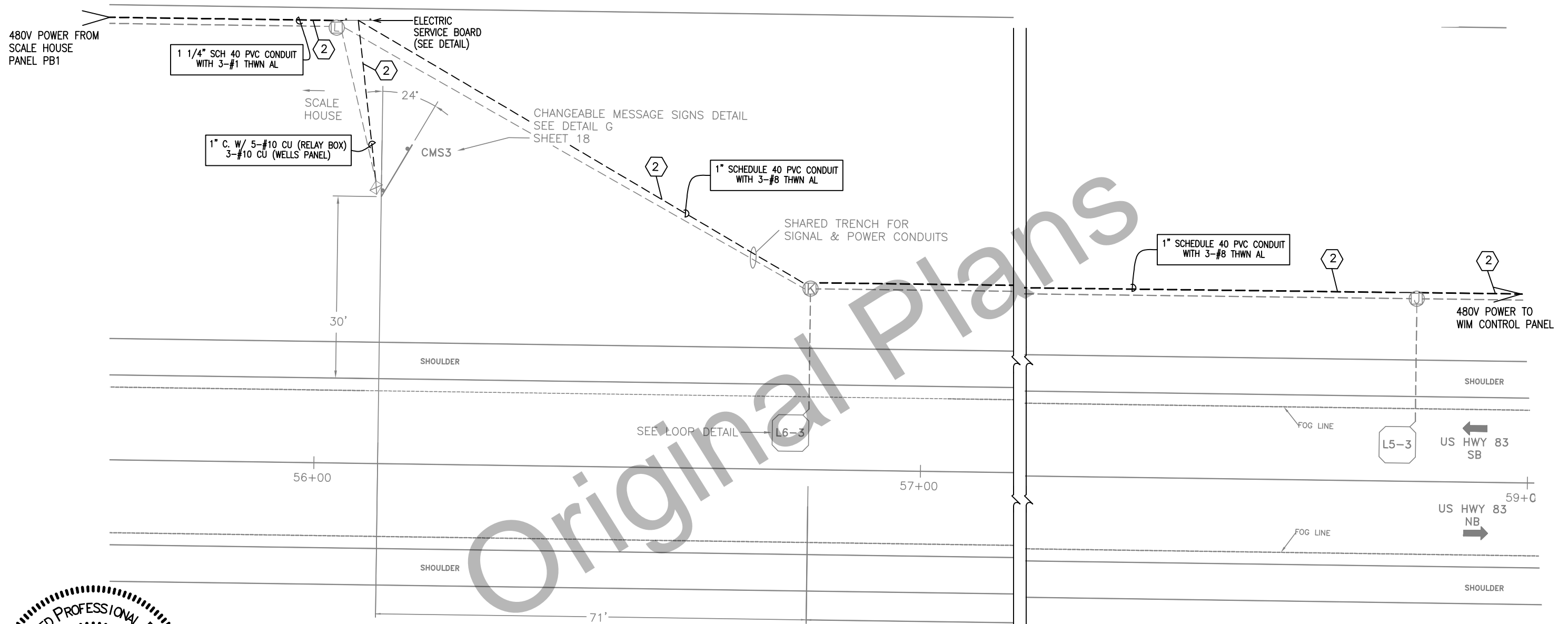
E33	DWS. NO.
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# DETAIL F - CHANGEABLE MESSAGE SIGNS



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	HR Y510(01) HR Y600(01)	G34	G38
Plotting Date: 11-8-2016 083-351		17 of 22	



DESIGN	RLM	DATE	11-8-16
APPROV	MWJ	DATE	11-8-16
CHECK	30-16227 ELEC.	DATE	30-16227
SCALE	AS SHOWN	DATE	11-8-16



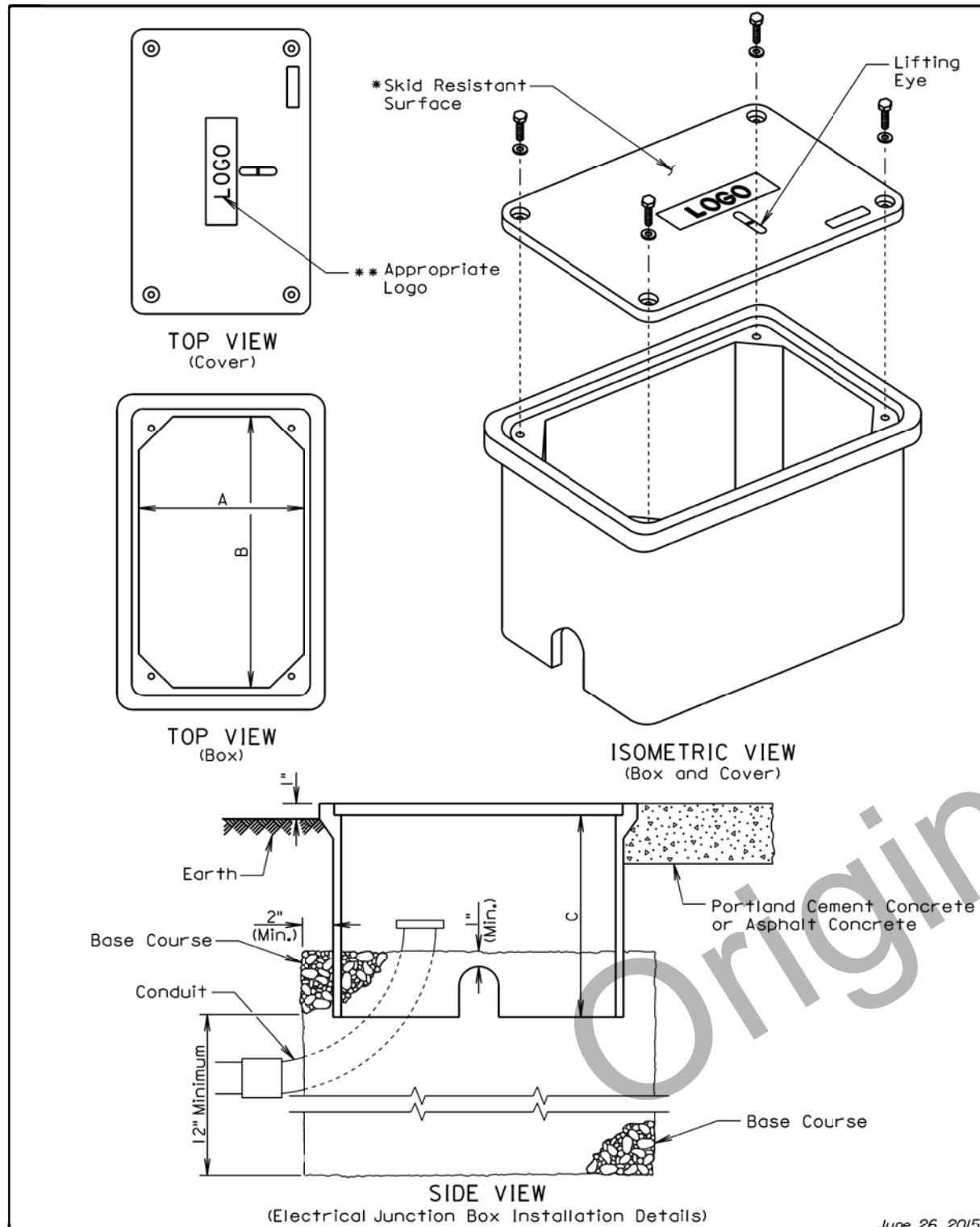
226 NORTH MAIN AVE. • PARKER, SD • 57063  
 46899 262nd STREET • SIOUX FALLS, SD • 57107  
 PH: (605) 297-3647 • FAX: (605) 297-3681  
 Email: info@pegrouppengr.com

VIRTUAL WEIGH STATION  
 BLUNT, SOUTH DAKOTA

HWY 83 N - CMS ELECTRICAL PLAN

G34

DWG. NO.



June 26, 2015

Published Date: 3rd Qtr. 2016	S D D O T	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65
			Sheet 1 of 2

**ELECTRICAL JUNCTION BOX**

TYPE	DESCRIPTION	DIMENSIONS		
		A	B	C
1	Open Bottom with Gasket	11"-15"	18"-21"	18" (Min.)
2	Open Bottom with Gasket	13"-18"	23"-28"	18" (Min.)
3	Open Bottom with Gasket	17"-22"	24"-30"	18" (Min.)
4	Open Bottom with Gasket	28"-33"	36"-48"	24" (Min.)

**GENERAL NOTES:**

The cover shall be gasketed with a minimum of two stainless steel bolts and washers.

The cover shall have a lifting eye.

\*The surface of the cover shall have a minimum wet and dry coefficient of friction value of 0.5 as determined by ASTM F 609.

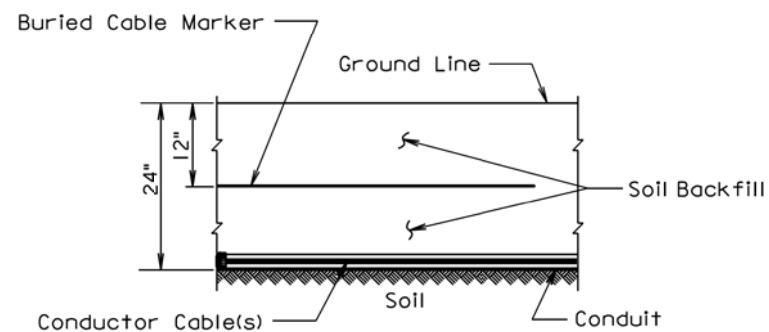
\*\*The cover of the junction box shall have the appropriate logo in one inch size letters and shall be recessed. When the junction box contains cables or wires for a traffic signal then the logo shall be "Signal". When the junction box contains lighting conductors then the logo shall be "Lighting".

The electrical junction boxes shall comply with the American National Standards Institute (ANSI)/Society of Cable Telecommunications Engineers (SCTE) 77 2007 Specification for Underground Enclosure Integrity. The loading requirement for all the electrical junction boxes shall be Tier 8 of ANSI/SCTE 77 2007.

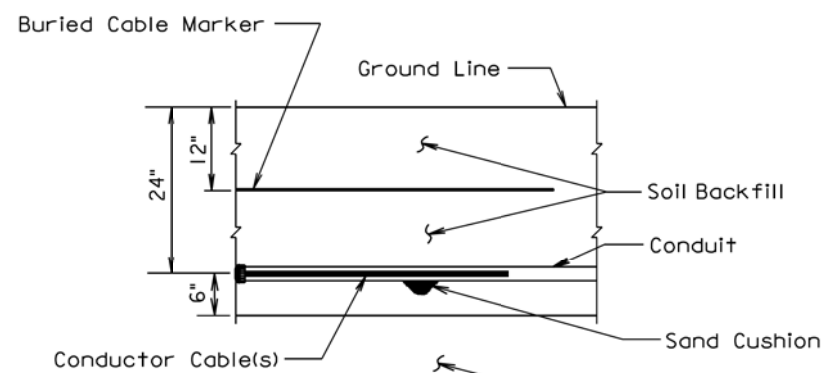
The electrical junction boxes shall be UL listed.

June 26, 2015

Published Date: 3rd Qtr. 2016	S D D O T	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65
			Sheet 2 of 2



SECTION VIEW



SECTION VIEW

**GENERAL NOTE:**

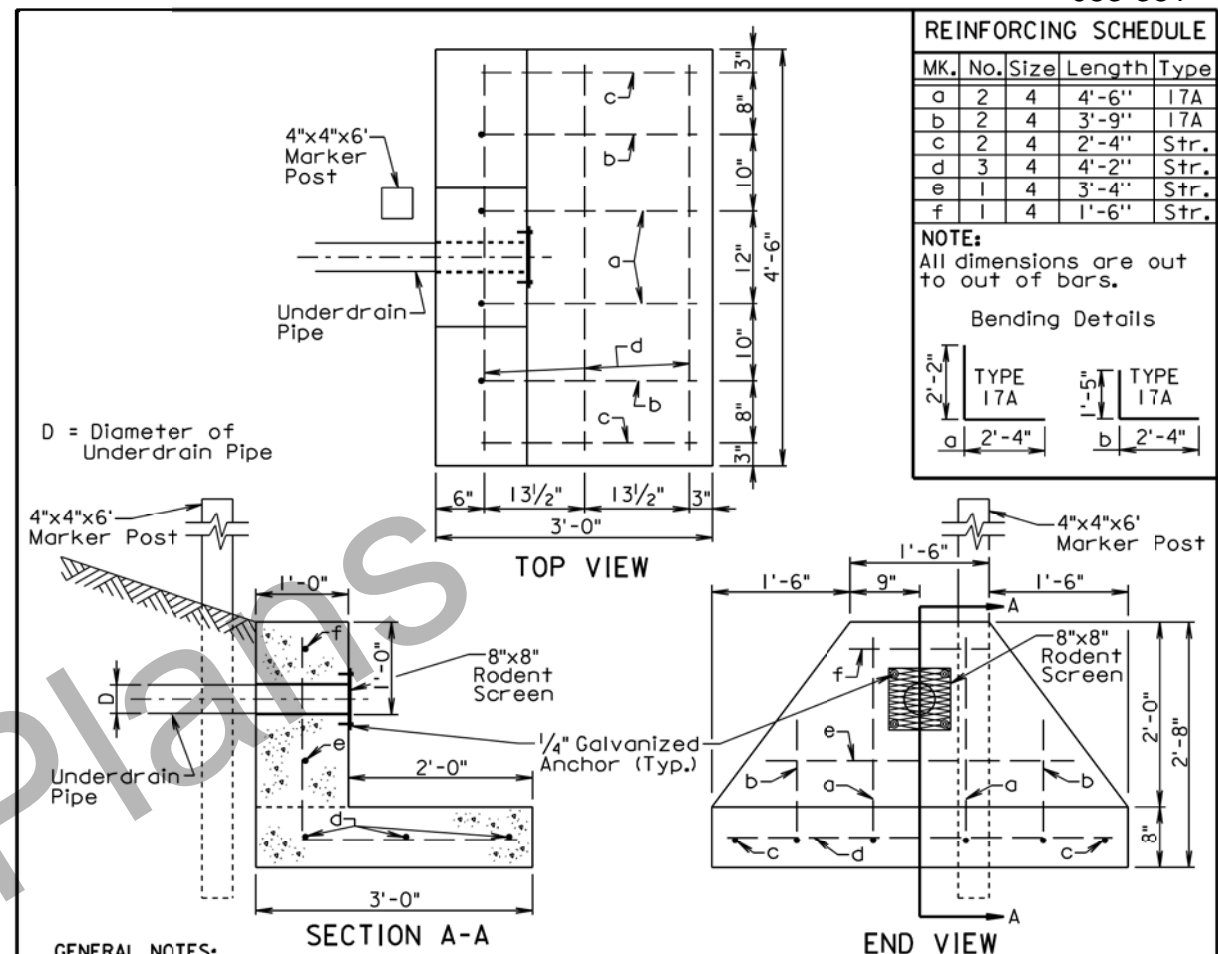
The Buried Cable Marker shall be plastic, approximately 6" wide, and shall be capable of sustaining a minimum of a 350% tolerance of elongation without tearing. The Buried Cable Marker shall have a life expectancy approximately equal to that of the conductor(s) beneath it. A phrase indicating the presence of a buried electric circuit below shall be printed in a contrasting color on the cable marker. The Buried Cable Marker shall be subject to approval by the Engineer. All costs associated with furnishing and installing the Buried Cable Marker shall be incidental to the contract unit price per Foot for the bid item used for the electrical conductor.

March 31, 2000

Published Date: 3rd Qtr. 2016

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T**CONDUIT INSTALLATION**PLATE NUMBER  
635.76

Sheet 1 of 1

**GENERAL NOTES:**

The concrete shall be Class M6. The concrete shall conform to the requirements of Section 462 of the Specifications except the minimum curing time shall be 72 hours. It is estimated that 0.55 cubic yards of concrete is required for each unit.

Four cast-in-place or drilled-in 1/4" galvanized anchors shall be placed in the headwall. Each galvanized anchor shall be placed approximately 1" from the outside corner of the rodent screen. It is preferred that the anchor location be centered at an opening in the rodent screen.

All reinforcing steel shall conform to ASTM A615 Grade 60. It is estimated that 25.7 pounds of reinforcing steel is required for each unit.

The underdrain pipe shall be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The 8"x8" rodent screen shall be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size shall be 1/2". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires. The rodent screen shall be centered about the hole in the headwall and fastened to the headwall with the appropriate bolts or nuts with washers.

A 4"x4"x6' marker post shall be placed at the approximate location as depicted in the above drawings for each concrete headwall. The marker post shall project 3'+ above the ground line. The marker post shall be cedar or treated with a wood preservative and shall be painted with two coats of white paint.

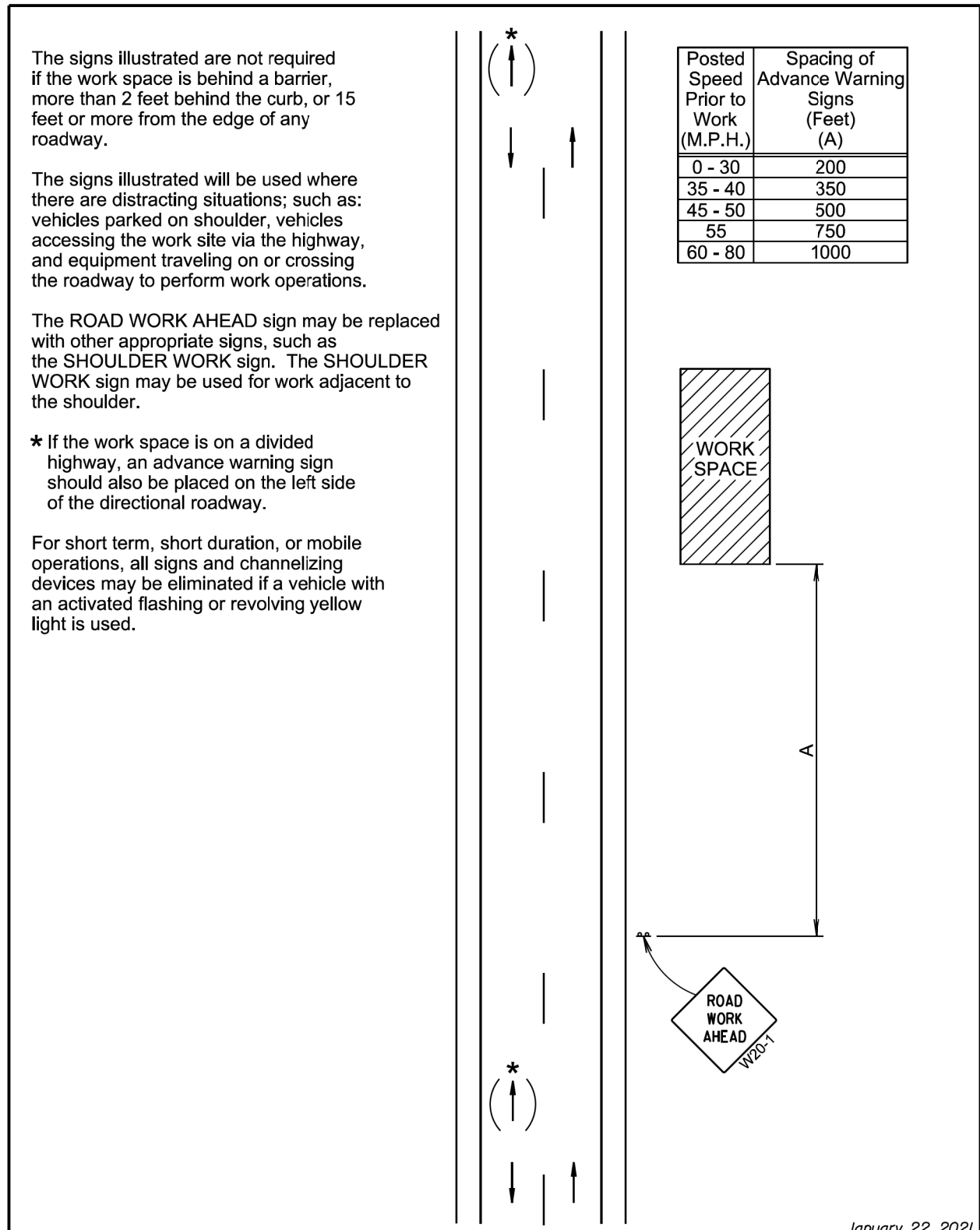
All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, rodent screen, anchors, and marker post shall be incidental to the contract unit price per each for "Concrete Headwall for Underdrain".

June 26, 2015

Published Date: 3rd Qtr. 2016

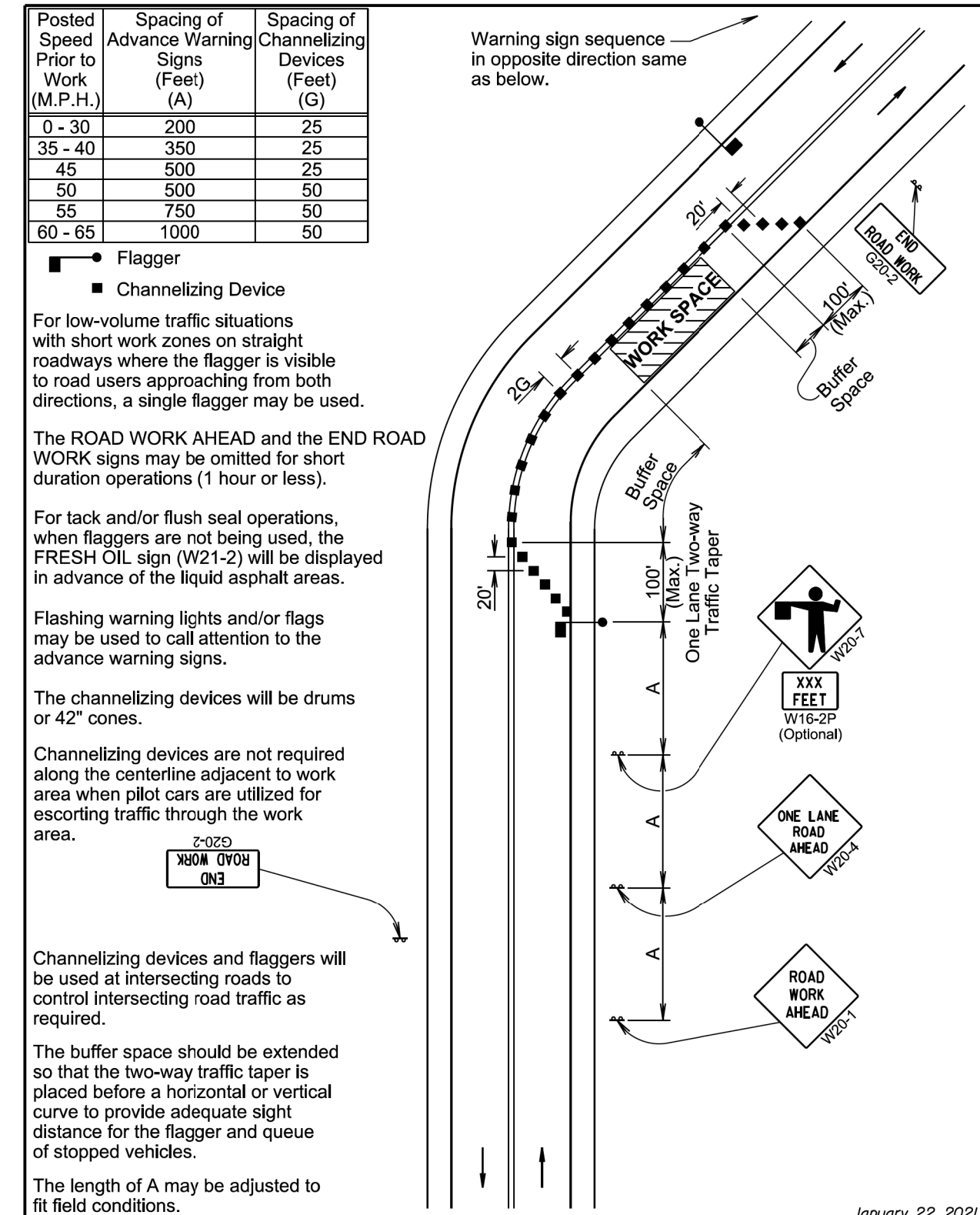
S  
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T**CONCRETE HEADWALL FOR UNDERDRAIN**PLATE NUMBER  
680.01

Sheet 1 of 1



January 22, 2021

<b>S D D O T</b>	<b>WORK BEYOND THE SHOULDER</b>	PLATE NUMBER <b>634.01</b>
	<i>Published Date: 4th Qtr. 2022</i>	Sheet 1 of 1



January 22, 2021

<b>S D D O T</b>	<b>LANE CLOSURE WITH FLAGGER PROVIDED</b>	PLATE NUMBER <b>634.23</b>
	<i>Published Date: 4th Qtr. 2022</i>	Sheet 1 of 1

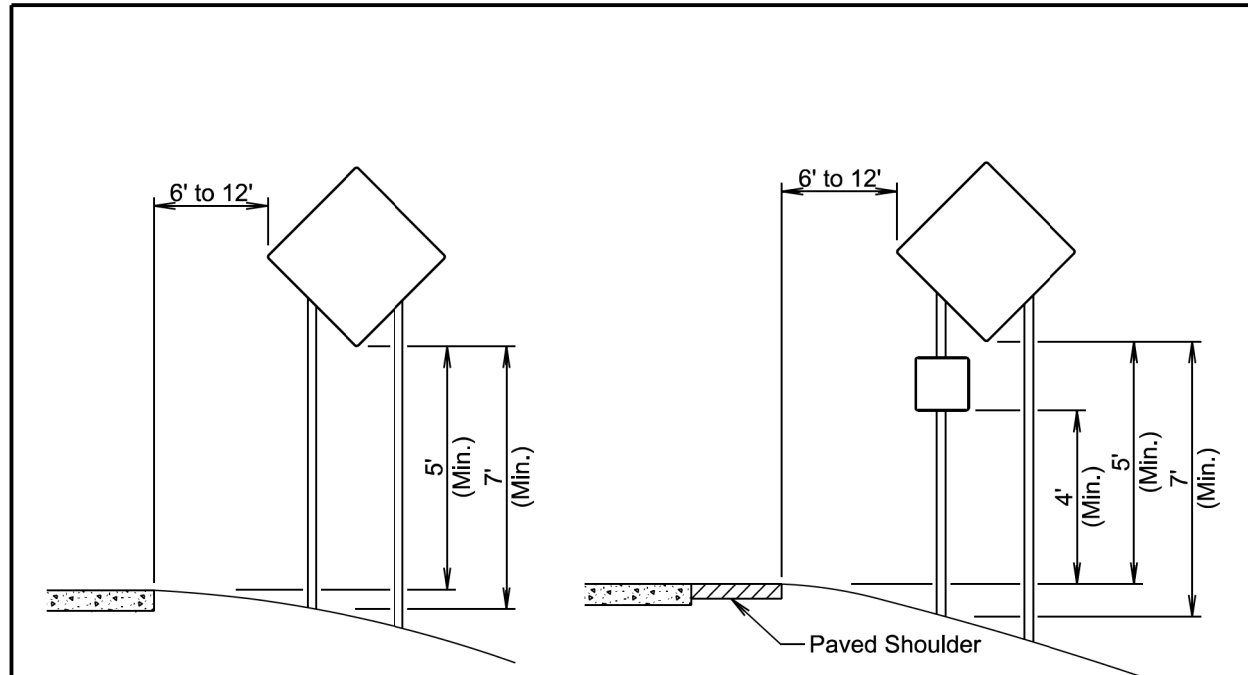
PLOT SCALE - 1:200

PLOTTED FROM - TRPR25289

PLOT NAME - 1

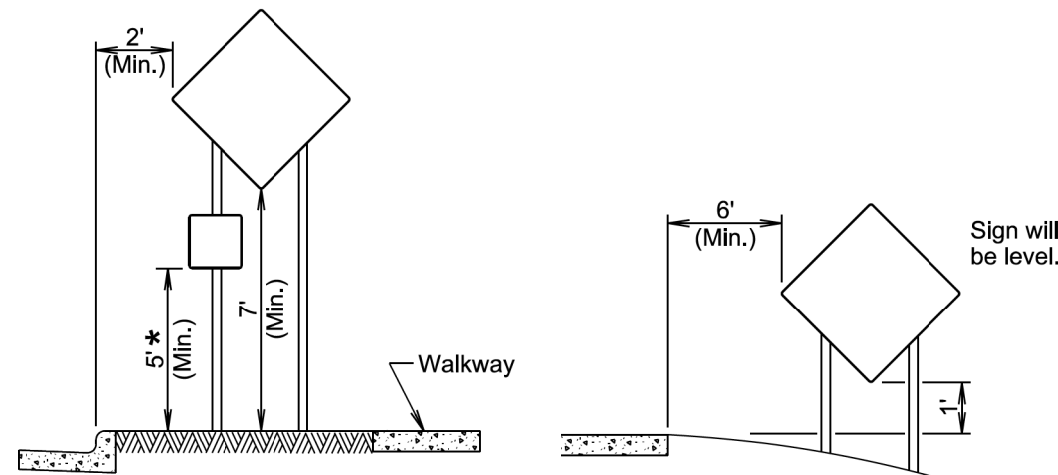
FILE - ... \MAINT2023\WIM\_16\WV\SP7.DGN





**RURAL DISTRICT**

**RURAL DISTRICT WITH SUPPLEMENTAL PLATE**



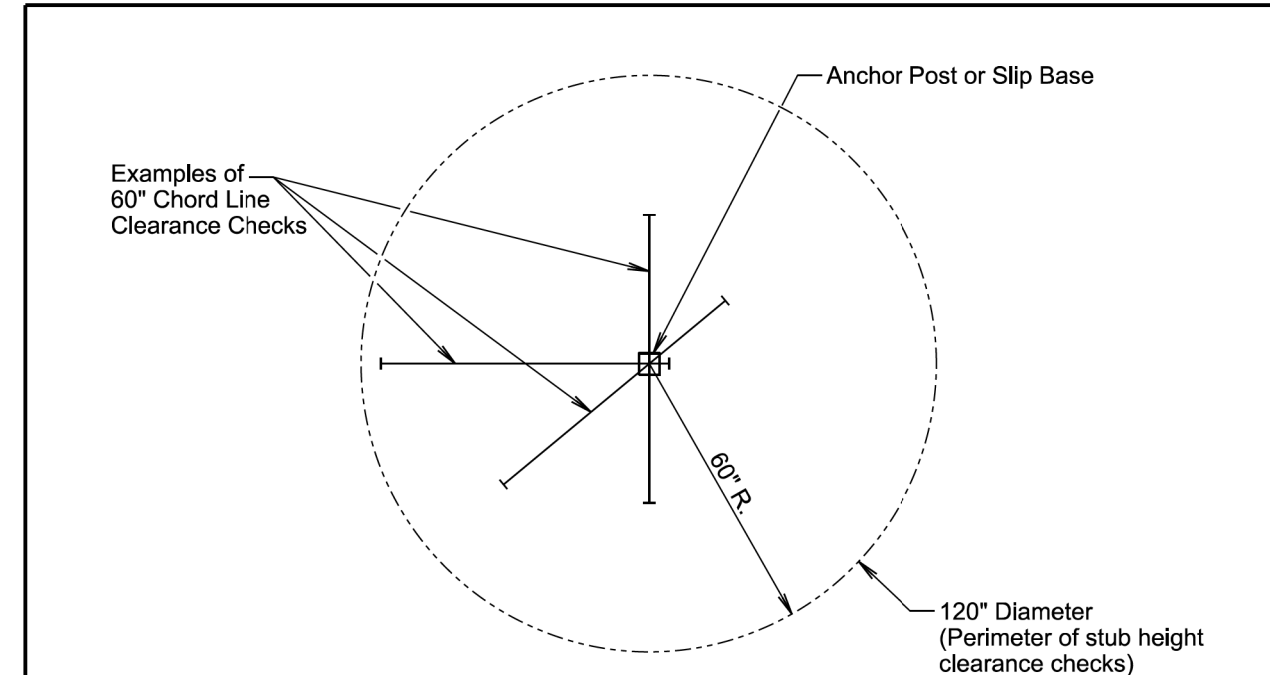
**URBAN DISTRICT**

**RURAL DISTRICT 3 DAY MAXIMUM**  
(Not applicable to regulatory signs)

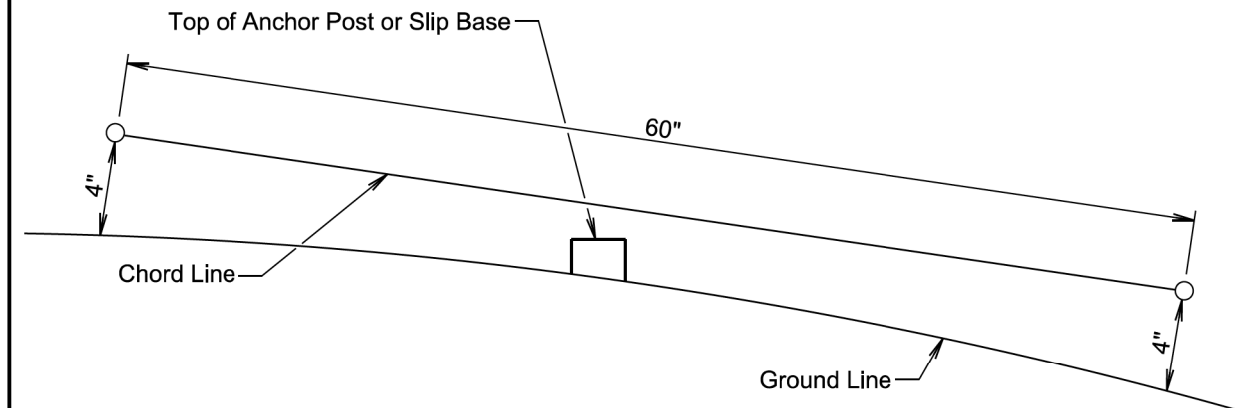
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 4th Qtr. 2022	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



**PLAN VIEW**  
(Examples of stub height clearance checks)



**ELEVATION VIEW**

**GENERAL NOTES:**

The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

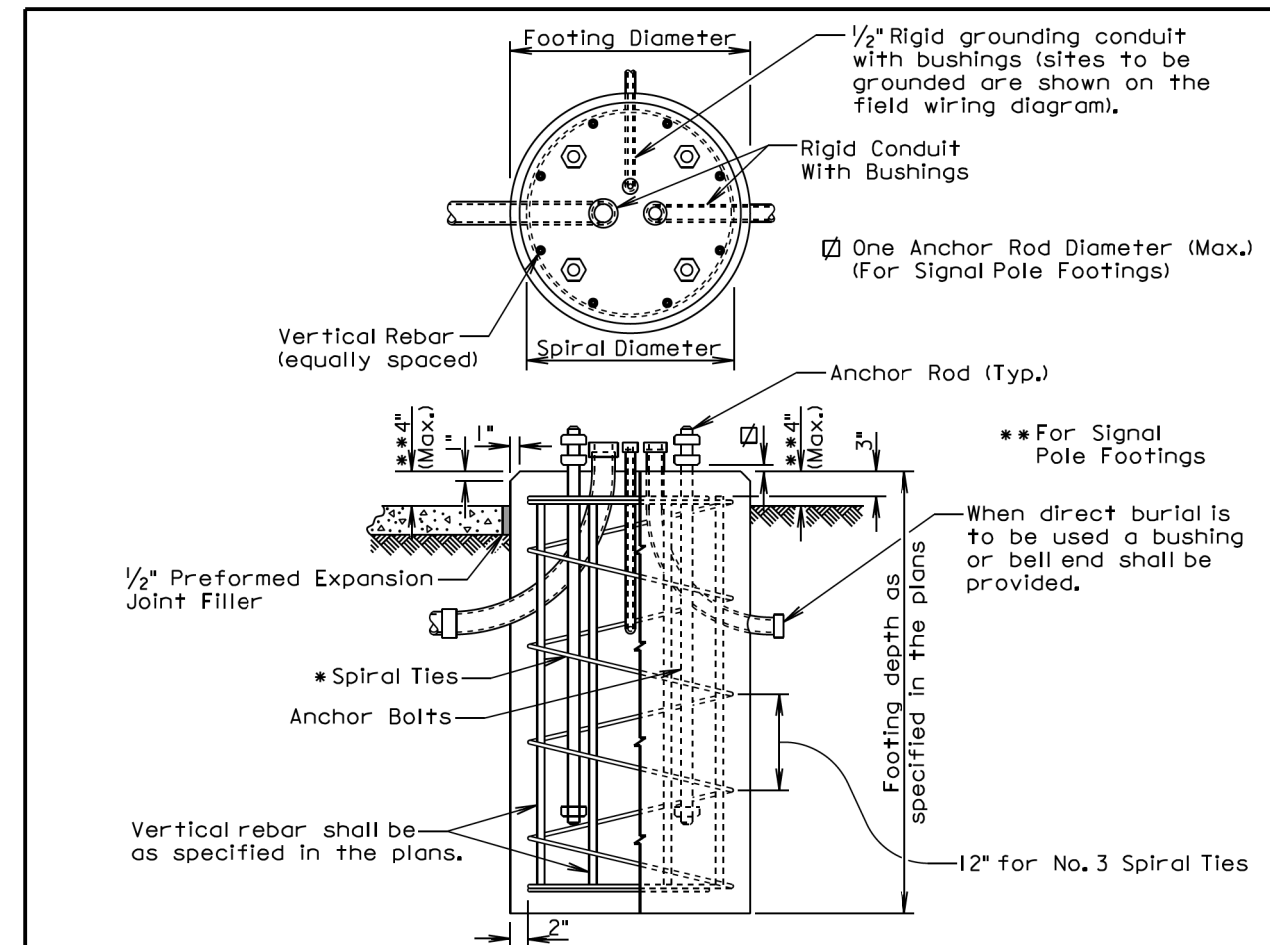
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 4th Qtr. 2022	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	083-351	22	22

Plotting Date: 11/15/2022



**GENERAL NOTES:**

\* Circular ties may be used in lieu of the spiral ties. The No. 3 ties shall be spaced 12 inches apart except for the top two which shall be spaced 6 inches apart. The ties shall be lapped 18 inches and the laps shall be staggered around the cage.

Spiral ties shall have 1-1/2 extra turns at each end.

See Section 985 of the Specifications for footing materials.

Conduits and bushings may project 2 1/2 inches to 6 inches above footing for fixed base poles but shall not project above the slip plane or fracture plane for breakaway poles.

Conduits shall be sealed water-tight during all phases of construction until poles are in place.

The anchor rods shall fit inside the reinforcing steel cage. If the anchor rods designed by the Pole Manufacturer do not fit, contact the Office of Bridge Design for footing redesign. No additional payment will be made for the redesigned footing.

Costs of conduit and conduit bushings shown on footing detail shall be incidental to the footing bid item(s).

The pole shall not be installed until the concrete has attained design strength (4000 psi).

The contour of the area surrounding the breakaway pole shall be flat, though not necessarily level for a distance of 5 feet in all directions. The Contractor may be required to provide finish grading at some breakaway pole locations.

June 26, 2015

<b>S D D O T</b>	<b>POLE FOOTING</b>	<b>PLATE NUMBER</b> 635.55
		Sheet 1 of 1

Published Date: 4th Qtr. 2022