

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

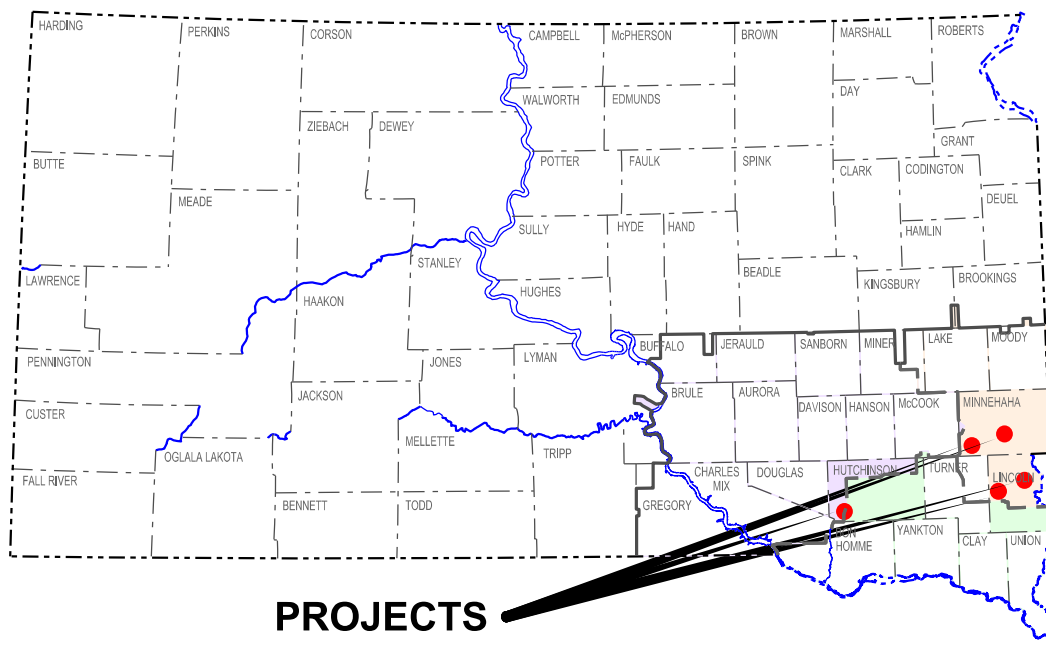
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 0020(212)	1	25

Plotting Date: 12/20/2023

PLANS FOR PROPOSED
PROJECTS PH 0020(212)
**US HIGHWAY 18 &
SD HIGHWAYS 11, 37,
42, 44 & 115**
**HUTCHINSON, LINCOLN
& MINNEHAHA COUNTIES**

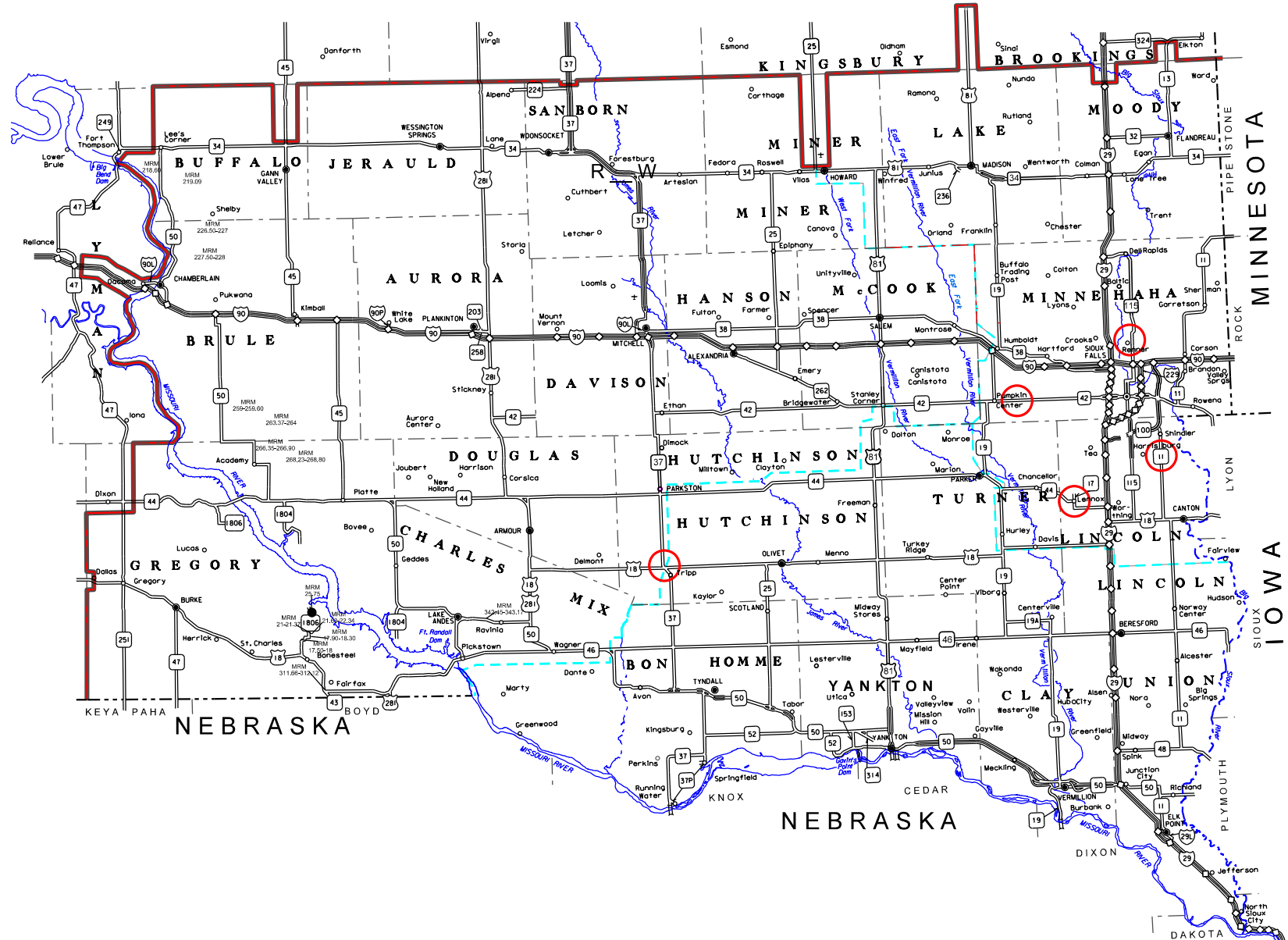
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PROJECTS

INTERSECTION IMPROVEMENTS
PCN 07A2



SD11 ADT (2022) 2,807
US18 ADT (2022) 664
SD42 ADT (2022) 2,891
SD44 ADT (2022) 1,440
SD115 ADT (2022) 4,056

STORM WATER PERMIT
(None required)

10

March 20, 2024

PLOT SCALE - 1" = 7000'

PLOTTED FROM - TRM111119

FILE - ... \REGION\NPR\NREG\07A2\TITLE.DGN

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E7150	Remove Sign for Reset	2	Each
320E7040	Grind 6" Transverse Rumble Strip in Asphalt Concrete	1,713.6	Ft
632E1340	2.5"x2.5" Perforated Tube Post	74.5	Ft
632E3205	Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity	29.6	SqFt
632E3500	Reset Sign	2	Each
632E3710	Radar Speed Sign, Solar Powered	2	Each
634E0010	Flagging	60.0	Hour
634E0110	Traffic Control Signs	922.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
635E0050	Breakaway Base Luminaire Pole with Arm, 50' Mounting Height	8	Each
635E2000	Pedestal Signal Pole	2	Each
635E3700	Roadway Luminaire, LED with Photoelectric Cell	8	Each
635E5020	2' Diameter Footing	76.0	Ft
635E5301	Type 1 Electrical Junction Box	4	Each
635E5400	Electrical Service Cabinet	1	Each
635E5910	Pedestrian Push Button Pole	4	Each
635E5980	Rectangular Rapid Flashing Beacon System	1	Each
635E8120	2" Rigid Conduit, Schedule 40	1,310	Ft
635E8220	2" Rigid Conduit, Schedule 80	175	Ft
635E9018	1/C #8 AWG Copper Wire	4,615	Ft
635E9502	2/C #14 AWG Copper Tray Cable, K2	80	Ft
635E9506	6/C #14 AWG Copper Tray Cable, K2	80	Ft
635E9708	2/C #8 AWG Copper Pole and Bracket Cable	520	Ft

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.

ENVIRONMENTAL COMMITMENTS (CONTINUED)

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

The Contractor will not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:

< <https://sdleastwanted.sd.gov/maps/default.aspx> >

< [South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04](https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04) >

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:

COMMITMENT H: WASTE DISPOSAL SITE

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.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 00202(212)	3	25

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COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

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.

SHPO/THPO review does not relieve the Contractor of the responsibility 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.

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the 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.

The Contractor is to sequence work so as to work in and complete one Area before continuing on to the next Area.

WORK DESCRIPTION

SD 42 & 459th Ave. – Add Transverse Rumble Strips on the northbound and southbound legs of 459th Ave. Add conspicuity tape to the existing Stop and Stop Ahead signs. Relocate the existing Stop Ahead signs to their proper location.

SD 115 & 258th St. – Add Radar Speed Feedback signs for northbound and southbound traffic on SD 115.

SD 11 & 273rd St. - Add Transverse Rumble Stips on the eastbound and westbound legs of 273rd St. Add conspicuity tape to the existing Stop Ahead signs.

US 18 & SD 37 – Add Intersection Lighting

US 44 & Main Street in Lennox – Add Pedestrian Activated Crossing System.

GENERAL TRAFFIC CONTROL

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

Portable sign supports will not be located on sidewalks, bicycle facilities, or other areas designated for pedestrian or bicycle traffic.

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

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

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

TRAFFIC CONTROL SIGNS

Traffic control signs have been included in a table for each site. Payment will only be for those signs used on each site.

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

Additional flagger warning signs and flagger hours have been included in the Estimate of Quantities for use on intersecting roads. These flaggers will be used as directed by the Engineer and will be used primarily during daytime hours.

It is required that the flaggers and pilot car operators be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for "Flagging".

REMOVE SIGN FOR RESET AND RESET SIGN

Signs that are scheduled for reset will be dismantled and reassembled to the extent needed by the Contractor to properly reset the sign. Signs will be handled with care so that the existing signs, posts, and bases are not damaged during the relocation process. The Contractor will replace and pay for any reset signs damaged in their care. The Contractor will remove and dispose of any existing posts for all reset signs that require use of new posts as shown in the Table of Permanent Signing.

All costs for removing, dismantling, and disposing of any existing posts will be incidental to the contract unit price per each for "Remove Sign for Reset". All costs for resetting the existing signs will be incidental to the contract unit price per each for "Reset Sign". All quantities for Remove Sign for Reset and Reset Sign will be per assembly at the contract unit price per each.

CONSPICUITY MARKING

Cost to furnish and install conspicuity marking shall be included in the contract unit price per square foot for Flat Aluminum Sign, Nonremovable Copy Super/Very High Intensity.

SQUARE TUBE ANCHOR SLEEVE

The Contractor will furnish and install new 2.5" x 2.5" x 18", 12 Gauge square tube anchor sleeve or equivalent components as approved by the Engineer for 2.0" x 2.0" perforated tube posts. A 2.25" x 2.25" x 4', 12 Gauge perforated tube post will be used as the anchor post for installation with the square tube anchor sleeve.

SQUARE TUBE POST SLEEVE

All 2.5" x 2.5", 10 Gauge perforated tube post will be sleeved with a 2-3/16" x 2-3/16" x 4', 10 Gauge perforated tube post.

SIGNPOST INSTALLATION IN CONCRETE

On concrete surfaces, a core will be drilled out for sign installation. The diameter will be sized accordingly depending on post size. Concrete surrounding the core must not be cracked or damaged.

All costs associated with installation in concrete will be incidental to the sign installation.

RADAR SPEED SIGN, SOLAR POWERED

The solar powered radar speed signs must operate continually 24 hours a day, 7 days a week, all year round.

The static portion of the radar speed sign (YOUR SPEED) faceplate shall have black legend on yellow ASTM D4956 Type XI sheeting with a minimum of 6" (height) lettering. The changeable message portion should have a black background with white or yellow LEDs.

The LED numeral height on the display must be a minimum of 12" for signs on roadways with speeds less than 45 mile per hour and a minimum of 18" for signs on roadways with speeds equal to or greater than 45 miles per hour.

The 12" speed display radar speed feedback sign should be a SAFEPACE EVOLUTION 12FM or equivalent.

The 18" speed display radar speed feedback sign should be a SAFEPACE 475 or equivalent.

The system will be self-contained with all components mounted within the housing and must be MUTCD compliant.

The LEDs will have a polycarbonate protective cover.

The solar powered radar speed signs must contain a battery system of adequate design and capacity to provide operation 24 hours per day, 7 days per week, 365 days per year considering the average number of cloudy, sunless days in South Dakota. The batteries must be field replaceable and have a 5-6 year service life. The batteries must be stored inside a weather proof enclosure.

The radar speed signs will be equipped with adjustable angle brackets to attach the radar speed sign to the 2.5" square tube post(s).

The radar speed signs must detect all incoming vehicles.

The radar speed sign assembly will be installed in conjunction with the appropriate R2-1 speed limit sign.

The solar panel will be mounted behind the speed limit sign facing to the south, or in case where the sign faces south, the solar panel may be mounted above the speed limit sign oriented toward the south and tilting down at 45° angle.

The solar powered radar speed signs will be programmed so that the feedback display does not flash at drivers at any time. The radar speed signs will also be programmed such that a strobe light is never displayed. The solar powered radar speed signs will provide a solid display of the speed of the driver followed by a solid display of "SLOW DOWN" as drivers exceed the speed limit in that area.

Any software required to setup or program the solar powered radar speed signs will be provided to the Mitchell Region Traffic Design Engineers at the South Dakota Department of Transportation in Mitchell, SD, 605-995-8129.

The Contractor will provide all labor and equipment necessary to install the solar powered radar speed signs. Payment for furnishing and installing the solar powered radar speed signs including the solar panel and faceplate will be paid for at the contract unit price per each for "Radar Speed Sign, Solar Powered".

RADAR SPEED SIGN, SOLAR POWERED (CONTINUED)

12" Speed Display Radar Sign Specs:

- Digit 12" (h), 936 LEDs
- Text Letter 6" (h), "YOUR SPEED" 2 lines static message
- Display Unit With Faceplate 23" (w) x 29" (h)
- Solar Panel 50-watt or 90-watt solar power

18" Speed Display Radar Sign Specs:

- Digit 18" (h), 112 LEDs per digit
- Text Letter 6" (h), "YOUR SPEED" 2 lines static message
- Display Unit 29.5" (w) x 24.6" (h)
- Display Unit With Faceplate 31.5" (w) x 42" (h)
- Solar Panel 50-watt or 90-watt Solar power

SUPPLYING AS BUILT PLANS

If the roadway lighting system or the rectangular rapid flashing beacon system are constructed differently than what is stated in the plans, the Contractor will supply as built plans to the Engineer and a copy will 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 SUBMITTALS

The Contractor will submit shop drawings and catalog cuts in accordance with Section 985 of the Specifications. PDF submittals will be sent to the following email addresses:

Stacy.Bartlett@state.sd.us
Joseph.Updike@state.sd.us
john.less@state.sd.us

LUMINAIRE POLES

Luminaire poles L1 to L8 will have a mounting height of 50 ft with 8 ft arms.

The pole fabricator will be responsible for the determining the diameter, length, and number of anchor bolts.

LUMINAIRES

The lighting design used the following parameters and provides 1.0 and greater average maintained foot-candles and uniformity ratios of 3:1 (average maintained to minimum maintained foot-candles) and 5:1 (maximum to minimum maintained foot candles):

Pole Setback:	Variable
Lamp Loss Factor (LLF):	0.8
Width of Lighted Area:	Variable
Luminaire Cycle Length:	Variable
Configuration:	One-Sided/Staggered
Mounting Height:	50-ft.
Arm Length	8-ft
Light Source:	LED

The following luminaires meet the requirements for this design:

- a.) Cooper Lighting: VERD-M-CA3-180-740-U-T3-AP-PR7-NPC
- b.) American Electric Lighting: ATB0_P454_MVOLT_R3_P7_PCLL

TABLE OF FOOTING DATA

Site Designation	Footing Diameter	* Footing Depth	**Spiral Diameter	**Spiral Length	Vertical Reinforcement
L1 – L8	2' - 0"	8' - 0"	1' - 8"	54' - 9"	8-#7 x 7' - 6"
P1, P2	2' - 0"	6' - 0"	1' - 8"	44' - 3"	8-#7 x 5' - 6"

* Footing depth will be below ground level.

** The size of all spirals will be #3.

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.

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.

WIRE SPLICING FOR LIGHTING

All wire splices for lighting will be made using TE Connectivity GTAP connectors, NSI Industries Polaris Blue connectors, or an approved equal.

PEDESTAL SIGNAL POLES

Pedestal signal poles may be aluminum. Aluminum poles will conform to the following requirements:

Aluminum will conform to ASTM B221, Alloy 6061, and Temper T6.

Poles will be round with a minimum outside pole diameter of 4 inches, and the pole assembly will have a square, cast aluminum base with aluminum access door. The base will conform to the breakaway requirements of NCHRP 350 or MASH. A grounding lug will be provided in the base.

The pole to base connection will be a threaded connection; threads will be 8 TPI, NPT. A collar (integral or non-integral) to prevent wind-induced loosening of pole will be provided. All bolt and connection threads will be coated with a commercially available anti-seize compound intended for use in aluminum-to-aluminum and steel-to-aluminum connections.

The pole finish will either be brushed satin or spun. The top of the pole will be sealed by the traffic signal head mounting hardware or by an aluminum cap.

Measurement and payment for aluminum poles will be as specified in Specifications Section 635.

RECTANGULAR RAPID FLASHING BEACON SYSTEM

The Rectangular Rapid Flashing Beacons (RRFB) system will consist of the following:

- Individual RRFB as shown in the plans
- Accessible Pedestrian Signal (APS) push buttons as shown in the plans
- W11-2 (crossing warning) signs as shown in the plans
- W16-7P (diagonal arrow) plaques as shown in the plans
- R10-25 (push button) signs as shown in the plans
- All necessary electronic programming and flash units, hardware, and wiring to make the system operational

Beacon Dimensions and Placement in Sign Assembly:

Each individual RRFB will consist of two rectangular-shaped yellow indications, each with an LED-array-based light source. The size of each indication will be at least 5 inches wide by at least 2 inches high.

The two indications will be aligned horizontally, with the longer dimension horizontal and with a minimum space between the two indications of at least 7 inches, measured from the nearest edge of one indication to the nearest edge of the other indication.

The outside edges of the RRFB will not project beyond the outside edges of the W11-2 sign.

Each RRFB will be located between, and immediately adjacent to, the bottom of the W11-2 sign and the top of the W16-7P plaque.

Beacon Flashing Requirements:

When actuated, the indications in each RRFB will flash in a rapidly flashing sequence. The RRFB will provide 75 flashing sequences per minute. During each 800-millisecond flashing sequence, the left and right RRFB indications will operate using the following sequence:

1. The indication on the left-hand side will be illuminated for approximately 50 milliseconds.
2. Both indications will be dark for approximately 50 milliseconds.
3. The indication on the right-hand side will be illuminated for approximately 50 milliseconds.
4. Both indications will be dark for approximately 50 milliseconds.
5. The indication on the left-hand side will be illuminated for approximately 50 milliseconds.
6. Both indications will be dark for approximately 50 milliseconds.
7. The indication on the right-hand side will be illuminated for approximately 50 milliseconds.
8. Both indications will be dark for approximately 50 milliseconds.
9. Both indications will be illuminated for approximately 50 milliseconds.
10. Both indications will be dark for approximately 50 milliseconds.
11. Both indications will be illuminated for approximately 50 milliseconds.
12. Both indications will be dark for approximately 250 milliseconds.

RECTANGULAR RAPID FLASHING BEACON SYSTEM (CONTINUED)

The light intensity of the indications during daytime conditions will meet the minimum specifications for Class 1 yellow peak luminous intensity in the Society of Automotive Engineers (SAE) Standard J595 (Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005.

Each RRFB will be equipped with an automatic signal dimming device to reduce illumination levels during periods of reduced ambient light.

Beacon Operation:

Each RRFB will be normally dark, will initiate operation only upon pedestrian actuation, and will cease operation 30 seconds after the pedestrian actuation.

All RRFB indications will simultaneously commence operation and simultaneously cease operation.

The programmed operation period will be immediately initiated upon each pedestrian actuation, including when the actuation occurs while the RRFB are already flashing and when the actuation occurs immediately after the indications have ceased flashing.

A small light directed at and visible to pedestrians in the crosswalk will be installed integral to the RRFB or push button, to give confirmation that each beacon is in operation.

Control Enclosure:

All enclosures will be aluminum and comply with the requirements for NEMA 3R type.

All materials and installation costs necessary for the operation of each system will be incidental to the contract unit price per each for "Rectangular Rapid Flashing Beacon System".

Accessible Pedestrian Signals:

Each APS will consist of an interactive vibrotactile pedestrian pushbutton with speaker, an informational sign, a latching light emitting diode (LED) indicator light, a solid-state electronic control board, a power supply, wiring, and all necessary mounting hardware. The operation and performance of the APS units will meet the requirements of MUTCD Sections 4E.08 to 4E.13. and the applicable sections of NEMA Standards Publication TS-2.

All mounting fasteners will be stainless steel; all threads will be coated with anti-seize compound meeting the requirements of USA Dept. of Defense specification MIL-PRF-907F.

The push button component of APS will meet the requirements of Section 985.1 S of the Specifications except that all housings and external hardware will be aluminum, powder coated yellow.

The APS control unit will include capability to monitor communications with the push buttons. Communication faults will automatically reset the control unit.

Two licensed copies of any APS programming software will be furnished. All software programming, firmware updates, and audio message programming of the APS will be through USB port or Ethernet connection.

PEDESTRIAN PUSH BUTTON POLE

Pedestrian push button poles will be aluminum and will conform to the following requirements:

Aluminum will conform to ASTM B221, Alloy 6061, and Temper T6.

Poles will be round with a minimum outside pole diameter of 4 inches, and the pole assembly will have a square, cast aluminum base with aluminum access door. The base will conform to the breakaway requirements of MASH.

The pole to base connection will be a threaded connection; threads will be 8 TPI, NPT. All bolt and connection threads will be coated with a commercially available anti-seize compound intended for use in aluminum-to-aluminum and steel-to-aluminum connections.

The pole finish will either be brushed satin or spun. The top of the pole will be sealed by an aluminum cap.

Anchor bolts for pedestrian push button poles may have hooked ends.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SD 42 & 459TH AVE

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					242.0

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS US 18 & SD 37

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					146.0

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SD 115

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					146.0

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SD 44 & MAIN ST

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					146.0

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS SD 11 & 273RD ST

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					242.0

SIGN REMOVAL DATA			
MRM	DESCRIPTION	SIGN SIZE (FT)	REMOVE TRAFFIC SIGN FOR RESET *
SD 115 NB			110E7150
91.774	← Renner 1		PT
SD 115 SB			
91.88	Renner 1 →		PT
TOTAL EACH			2

PERMANENT SIGN INSTALLATION TABLE

SIGN DATA								POST DATA						COMMENTS		
LOCATION	DIRECTION FACING	DESCRIPTION	CODE	WIDTH X HEIGHT (Ft)	AREA (SqFt)			OFFSET* (R)IGHT/ (L)EFT	POST LENGTHS (Ft)		(F)IXED/ (B)REAKAWAY**	(N)EW or (R)EUSE POST	QUANTITY (Ft)			
					EA	HI	DG		INSIDE	OUTSIDE			2"		2 1/4"	2 1/2"
					632E3103	632E3203	632E3205				IN	OUT	632E1320		632E1330	632E1340
SD 115 - NORTHBOUND																
MRM 91.75	South	45 MPH Warning Radar Feedback Sign		2 X 2 1.5 X 2.75			4.0 4.0	16'R							28.0	See Radar Speed Sign Installation Detail
MRM 91.79	South	← Renner 1		6 X 1.5				16' R	10'	A	N				10.0	Reset Existing Sign at New Location
SD 115 - SOUTHBOUND																
MRM 91.84	North	Renner 1 →		6 X 1.5				2' L	8.5'	S	N				8.5	Reset Existing Sign at New Location
MRM 91.88	North	45 MPH Warning Radar Feedback Sign		2 X 2 1.5 X 2.75			4.0 4.0	16'R							28.0	See Radar Speed Sign Installation Detail
SD 42 & 459th Ave																
Northbound	South	STOP Conspicuity Tape		0.33 X 5												Red Conspicuity Tape
Northbound	South	STOP AHEAD Conspicuity Tape		0.33 X 5												Flourescent Yellow Conspicuity Tape
Southbound	North	STOP Conspicuity Tape		0.33 X 5												Red Conspicuity Tape
Southbound	North	STOP AHEAD Conspicuity Tape		0.33 X 5												Flourescent Yellow Conspicuity Tape
SD 11 & 273rd St																
Eastbound	West	STOP Conspicuity Tape		0.33 X 5												Red Conspicuity Tape
Eastbound	West	STOP AHEAD Conspicuity Tape		0.33 X 5												Flourescent Yellow Conspicuity Tape
Westbound	East	STOP Conspicuity Tape		0.33 X 5												Red Conspicuity Tape
Westbound	East	STOP AHEAD Conspicuity Tape		0.33 X 5												Flourescent Yellow Conspicuity Tape
TOTALS THIS SHEET							29.6						0.0	0.0	74.5	

* - Distance from White or Yellow Edgeline, or Back of Curb, to Edge of Sign.

** - (F)ixed Base, or Breakaway (S)lip Base, (A)nchor Stub Post, (D)irect drive or (W)ood Post.

*** - Need and exact location of W14-3 No Passing Zone signs to be determined by the State prior to installation.

EA-Extruded Aluminum Panel Signs w/Removable Copy.

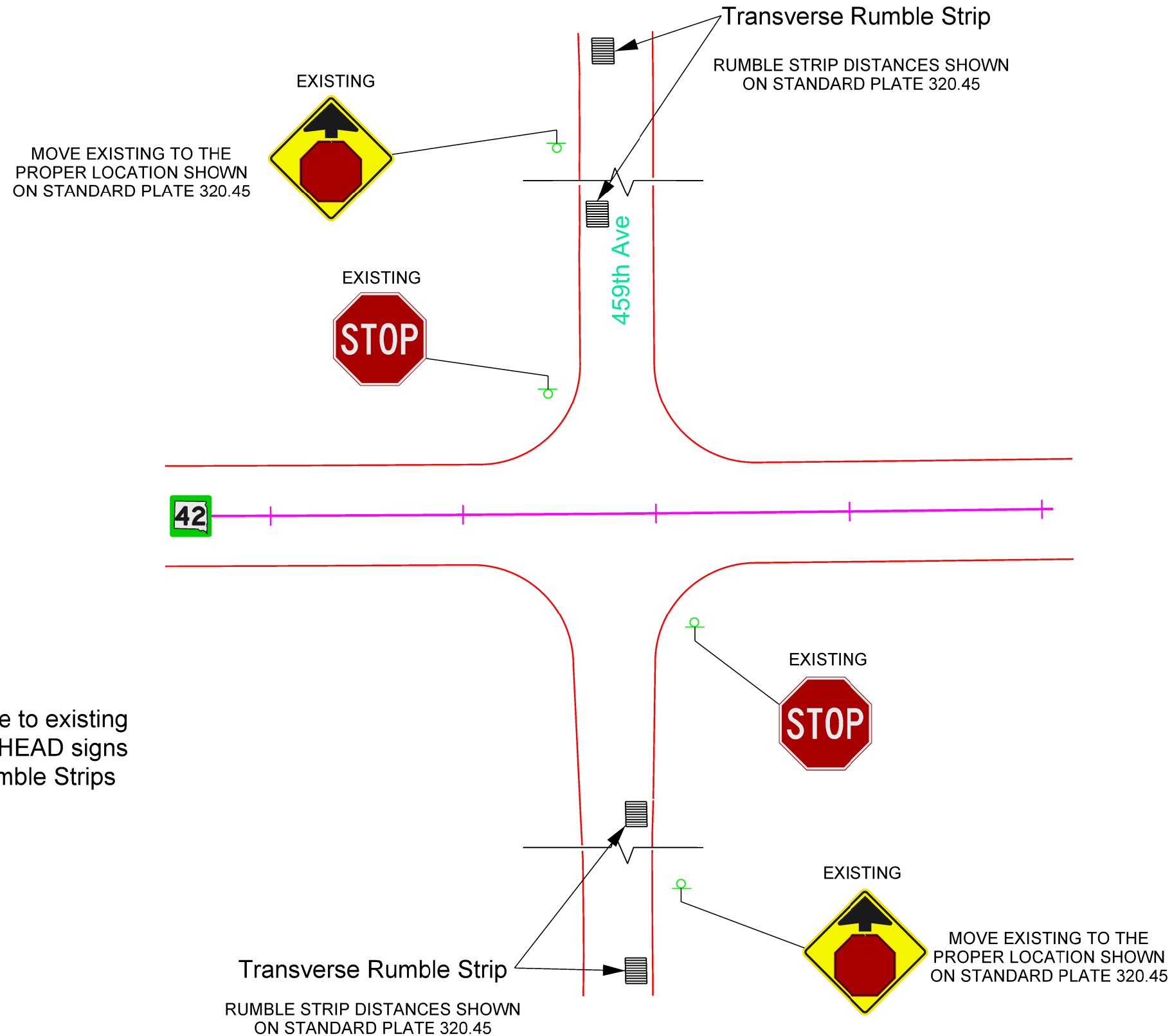
FA - Flat Aluminum Signs w/Nonremovable Copy - High Intensity Sheeting

DG - Flat Aluminum Signs w/Nonremovable

STATE OF SOUTH DAKOTA	PROJECT PH 0020(212)	SHEET 8	TOTAL SHEETS 25
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Plotting Date: 12/20/2023

SD 42 - 459th Ave.



PLOT SCALE - 1:64

PLOT NAME - 2

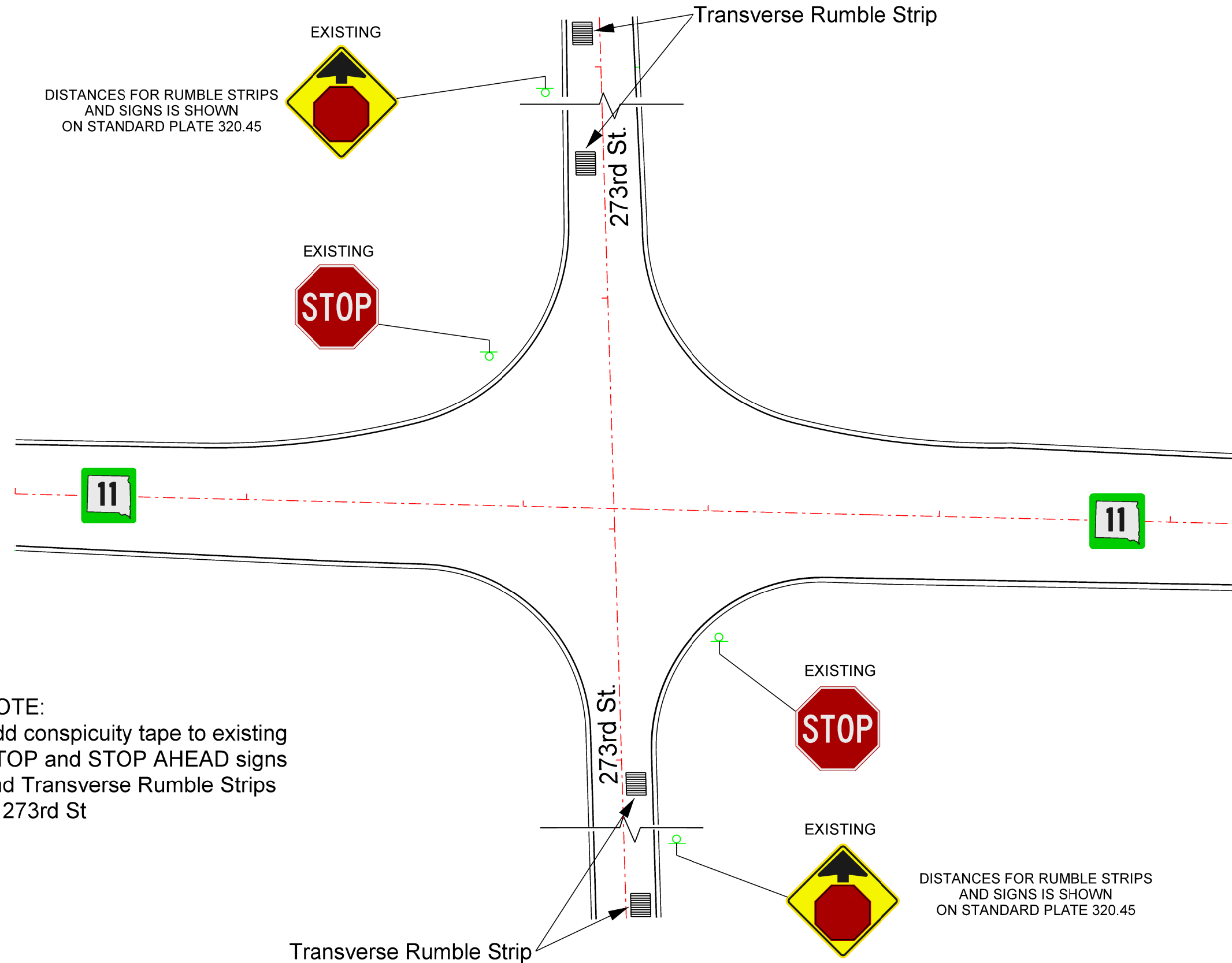
FILE - ... \PRJ\REG\0742\SD42&459.DGN

PLOTTED FROM - TRM111119

SD 11 & 273rd St

STATE OF SOUTH DAKOTA	PROJECT PH 0020(212)	SHEET 10	TOTAL SHEETS 25
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Plotting Date: 12/20/2023



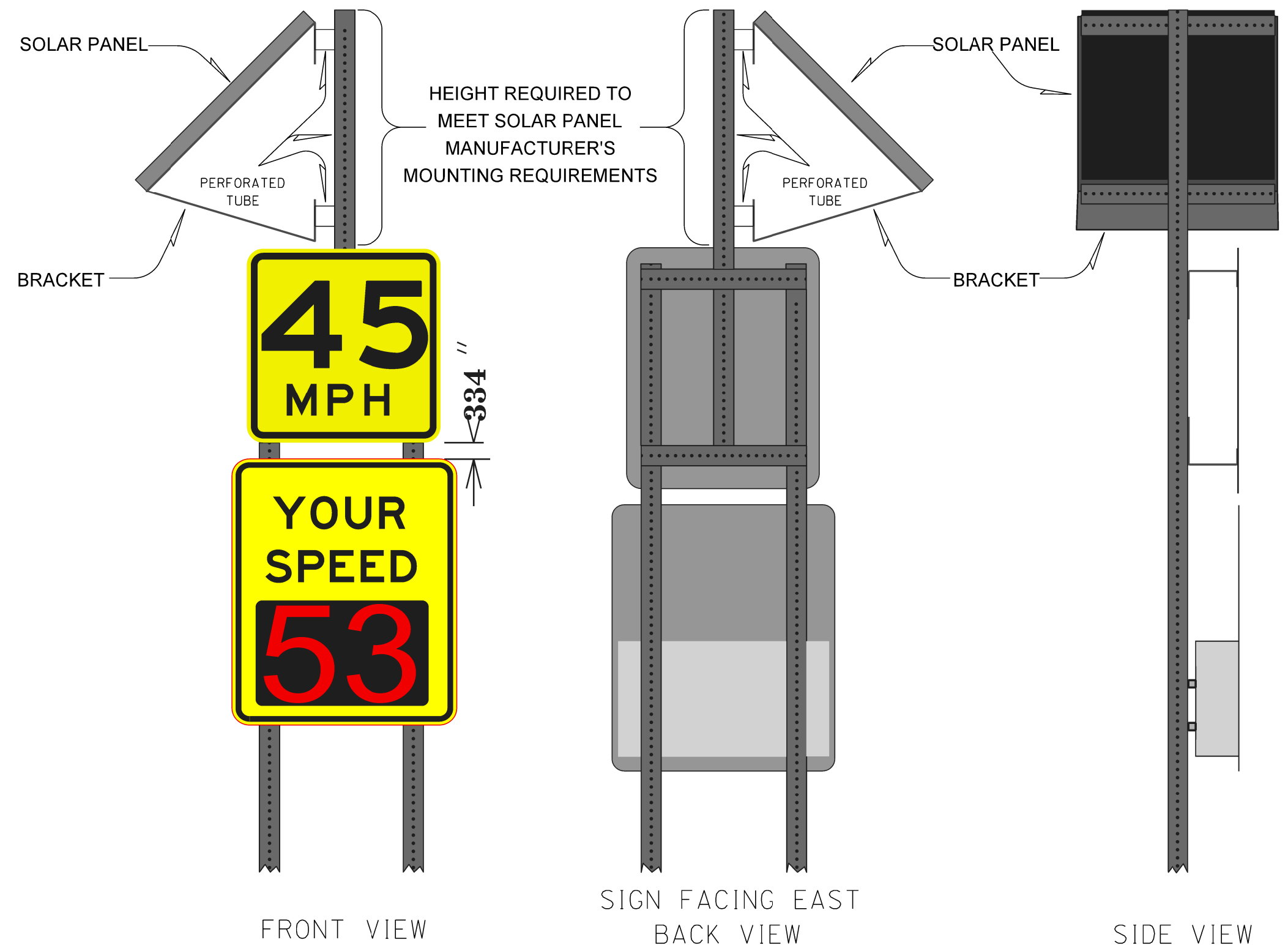
DISTANCES FOR RUMBLE STRIPS AND SIGNS IS SHOWN ON STANDARD PLATE 320.45

NOTE:
Add conspicuity tape to existing STOP and STOP AHEAD signs and Transverse Rumble Strips to 273rd St

DISTANCES FOR RUMBLE STRIPS AND SIGNS IS SHOWN ON STANDARD PLATE 320.45

SOLAR POWERED RADAR SPEED SIGN INSTALLATION

{TYPICAL}



PLOTTED FROM: ... IRM111119

FILE: ... APRUNREG07A2\STD PLATES.DGN

PLOT NAME: 5

CONDUIT AND CABLE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT PH 0020(212)	SHEET 12	TOTAL SHEETS 25
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Plotting Date: 12/20/2023

Location to Location		Rigid Conduit		Copper Wire		Pole and Bracket	
		Schedule 40	Schedule 80	1/C	2/C		
		2"	2"	#8	#8		
		Ft	Ft	AWG	AWG	Ft	Ft
Lighting							
Service Cabinet	JL1	80'		250'			
JL1	L3	150'		465'			
JL1	L4	110'		340'			
JL1	L5		175'	545'			
L3	L2	170'		530'			
L2	L1	230'		715'			
L5	L6	160'		495'			
L6	L7	185'		575'			
L7	L8	225'		700'			
Luminare Poles							
L1						65'	
L2						65'	
L3						65'	
L4						65'	
L5						65'	
L6						65'	
L7						65'	
L8						65'	
Total:		1,310'	175'	4,615'		520'	

Plot Scale - 1:200

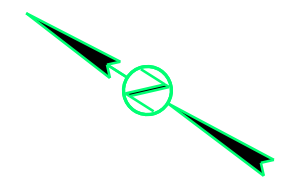
Plotted From - trm11119

File - ...apjhucho7A2\TableConduit.dgn

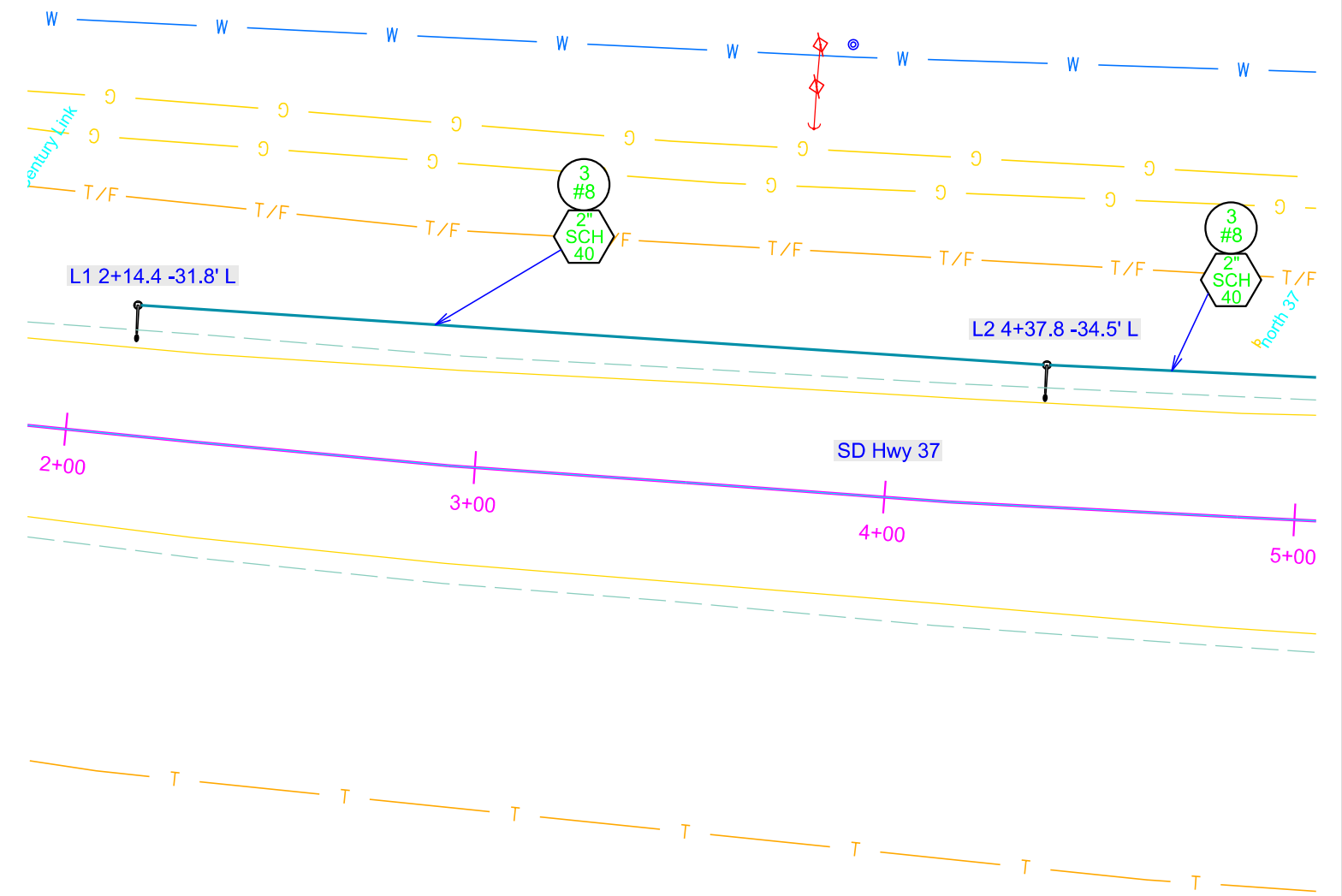
CONDUIT LAYOUT SD Hwy 37

STATE OF SOUTH DAKOTA	PROJECT PH 0020(212)	SHEET 13	TOTAL SHEETS 25
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Plotting Date: 02/12/2024
 Revised 01/08/2024 by JL
 Revised 02/12/24 by GB



ESTIMATE OF QUANTITIES			
KEY	ITEM	EST QUANT	UNIT
	Breakaway Base Luminaire Pole w/8' Arm 50' Mounting Height (L1-L8)	8	EACH
	Roadway Luminaire, LED with P.E. (L1-L8)	8	EACH
	2' Diameter Footing (L1-L8, P1, P2)	64	FT
	Type 1 Electrical Junction Box (JL1, JP1-JP3)	1	EACH
	Electrical Service Cabinet	1	EACH
	Galvanized Steel Utility Pole Not a Bid Item	1	EACH
	Meter Socket Not a Bid Item	1	EACH
	2" Rigid Conduit, Schedule 40	1,310	FT
	2" Rigid Conduit, Schedule 80	175	FT
	1/C #8 AWG Copper Wire	4,615	FT
	2/C #8 AWG Copper Pole and Bracket Cable	520	FT



Plot Scale - 1"=40'

Plotted From - lrm11119

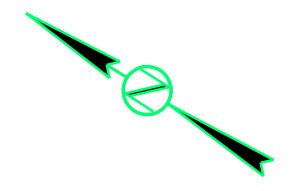
File - ...lighting/Revised002.c.dgn

CONDUIT LAYOUT

US Hwy 18 & SD Hwy 37

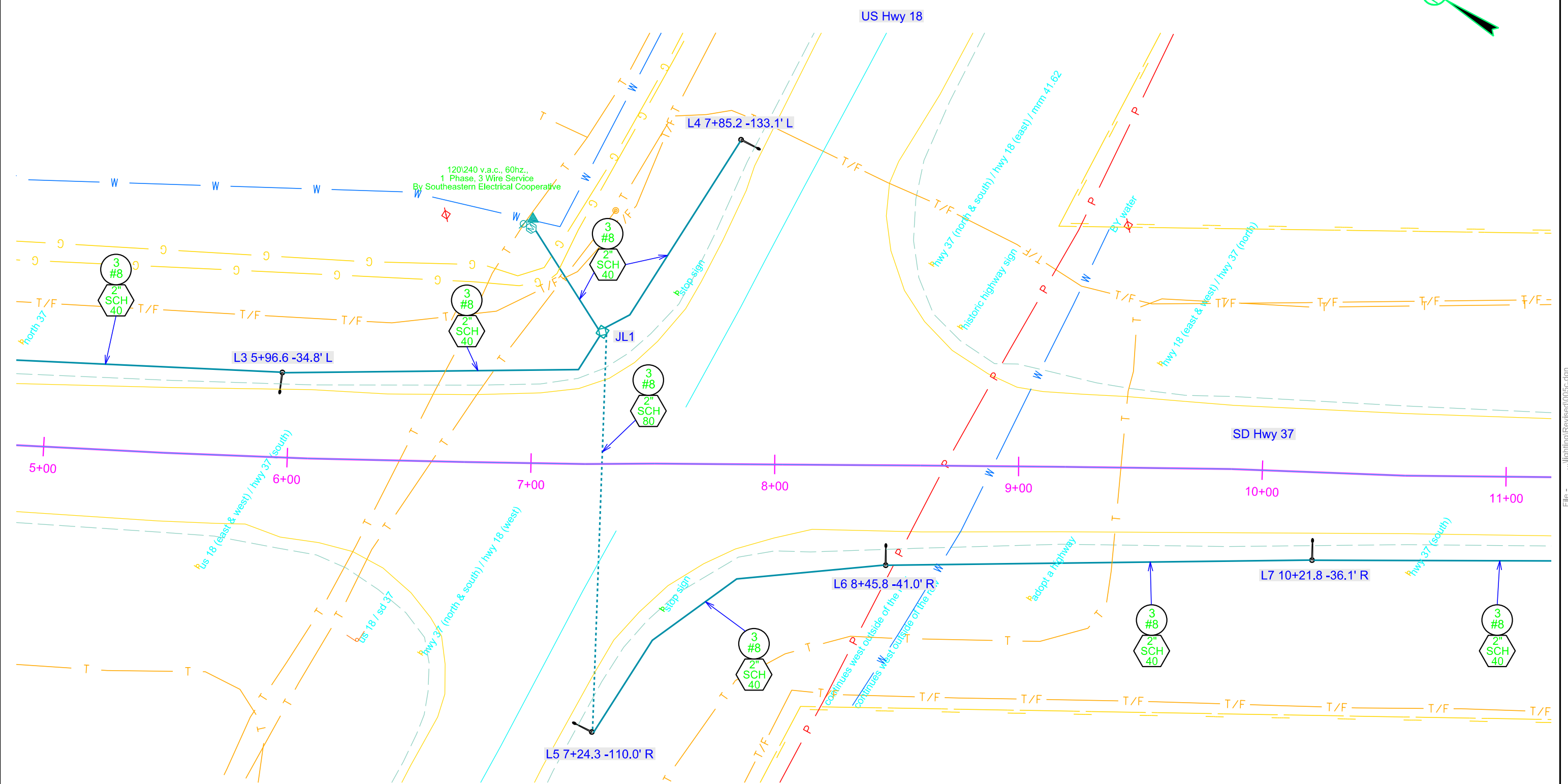
STATE OF SOUTH DAKOTA	PROJECT PH 0020(212)	SHEET 14	TOTAL SHEETS 25
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Plotting Date: 02/12/2024
Revised 02/12/24 by GB



Plot Scale - 1:40

Plotted From - jrm11119



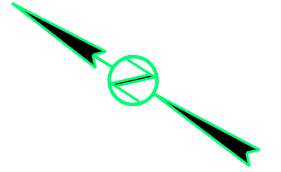
File - ...lighting/Revised005c.dgn

CONDUIT LAYOUT

SD Hwy 37

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 0020(212)	15	25

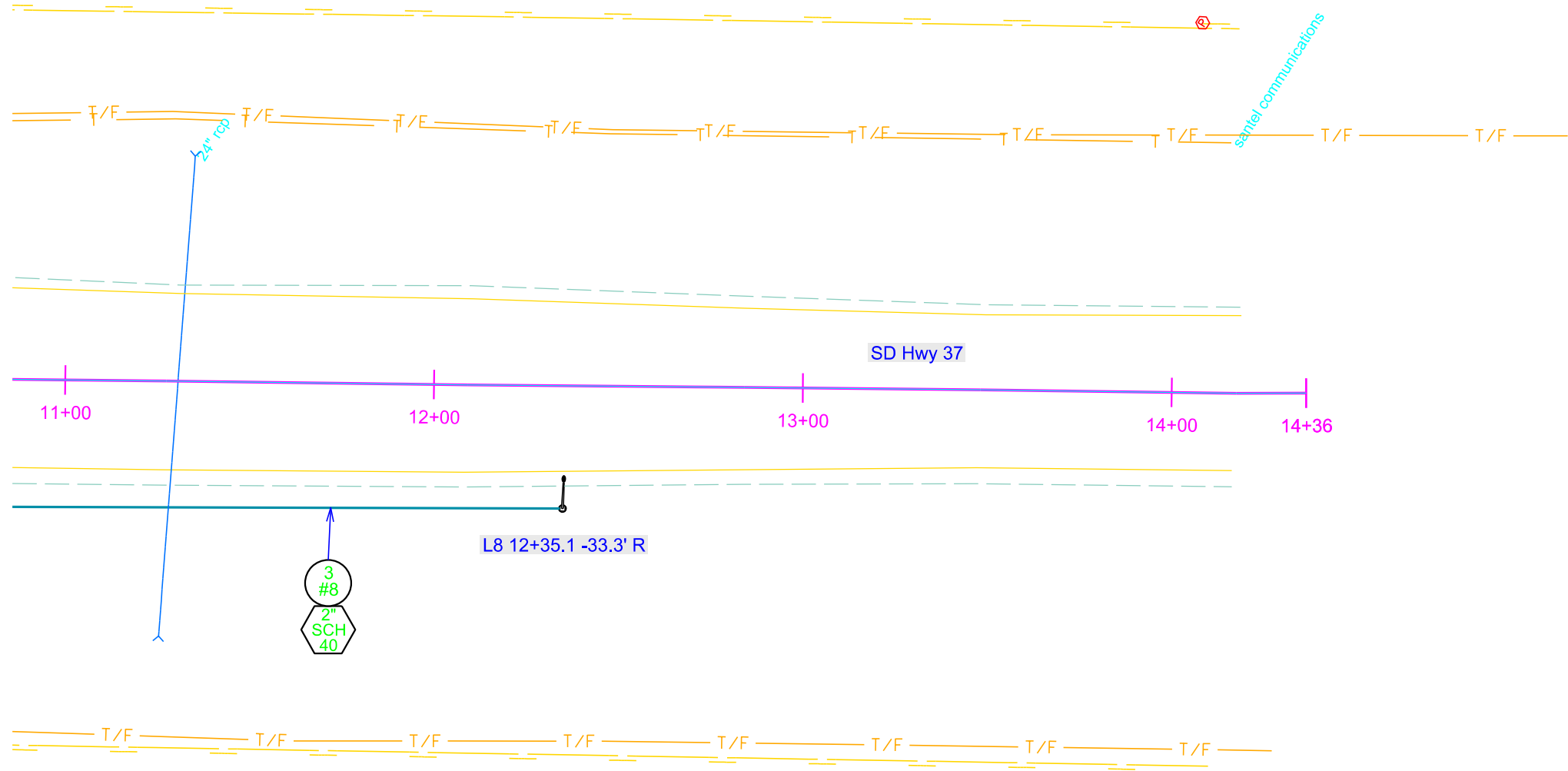
Plotting Date: 02/12/2024
 Revised 02/12/24 by GB



Plot Scale - 1:40

Plotted From - lrm11119

File - ...lighting/Revised011.c.dgn





WIRING DIAGRAM

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PH 0020(212)	16	25

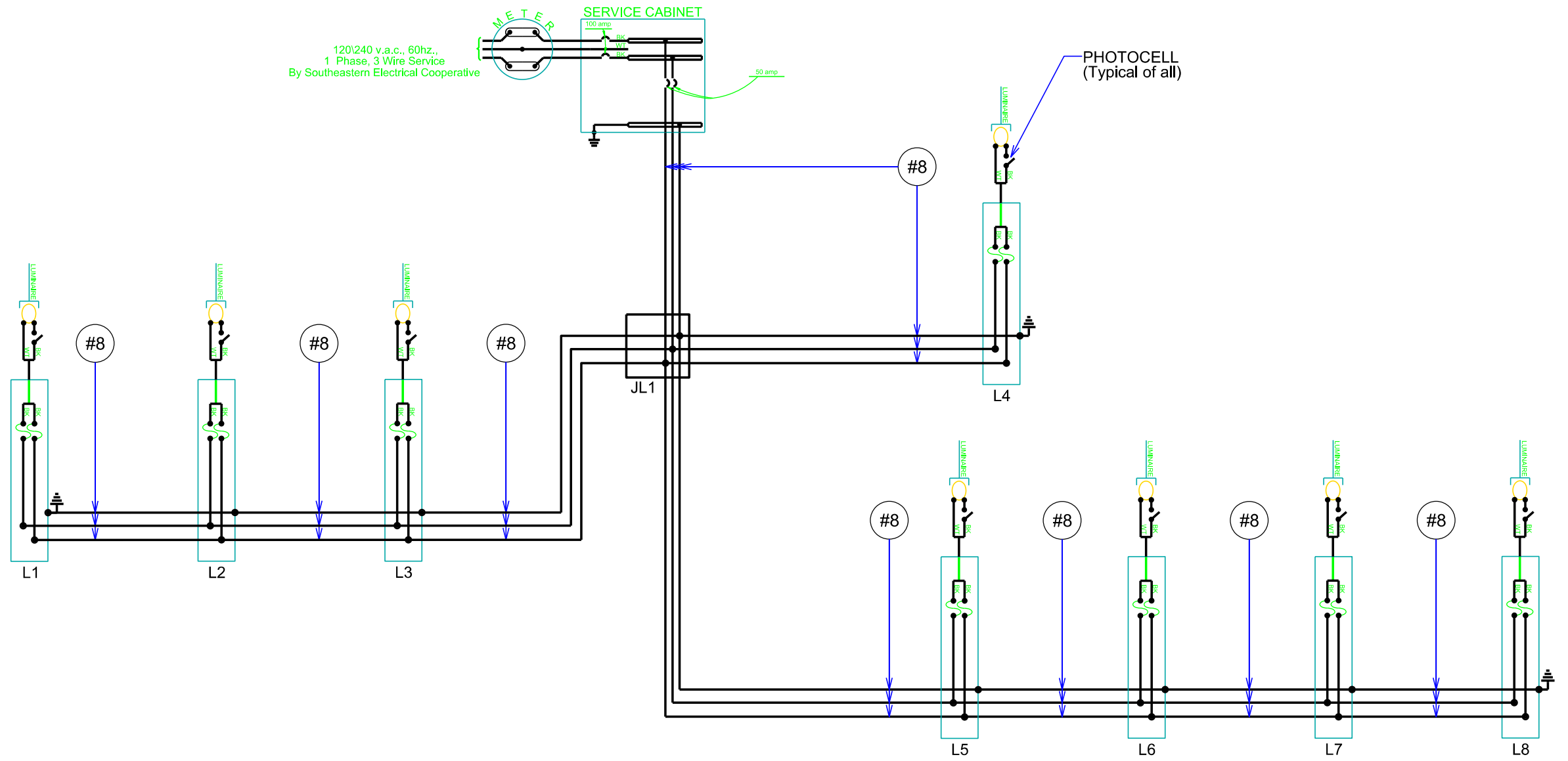
Plotting Date: 12/20/2023

Plot Scale - 1:40

Plotted From - trm11119

- LEGEND:**
-  FUSE: 10 amp.
 -  LUMINAIRE: LED

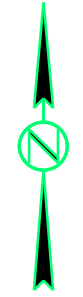
NOTE:
All circuits shall be bonded in accordance with the NATIONAL ELECTRICAL CODE. Quantities for bonding conductors are not included in these plans.



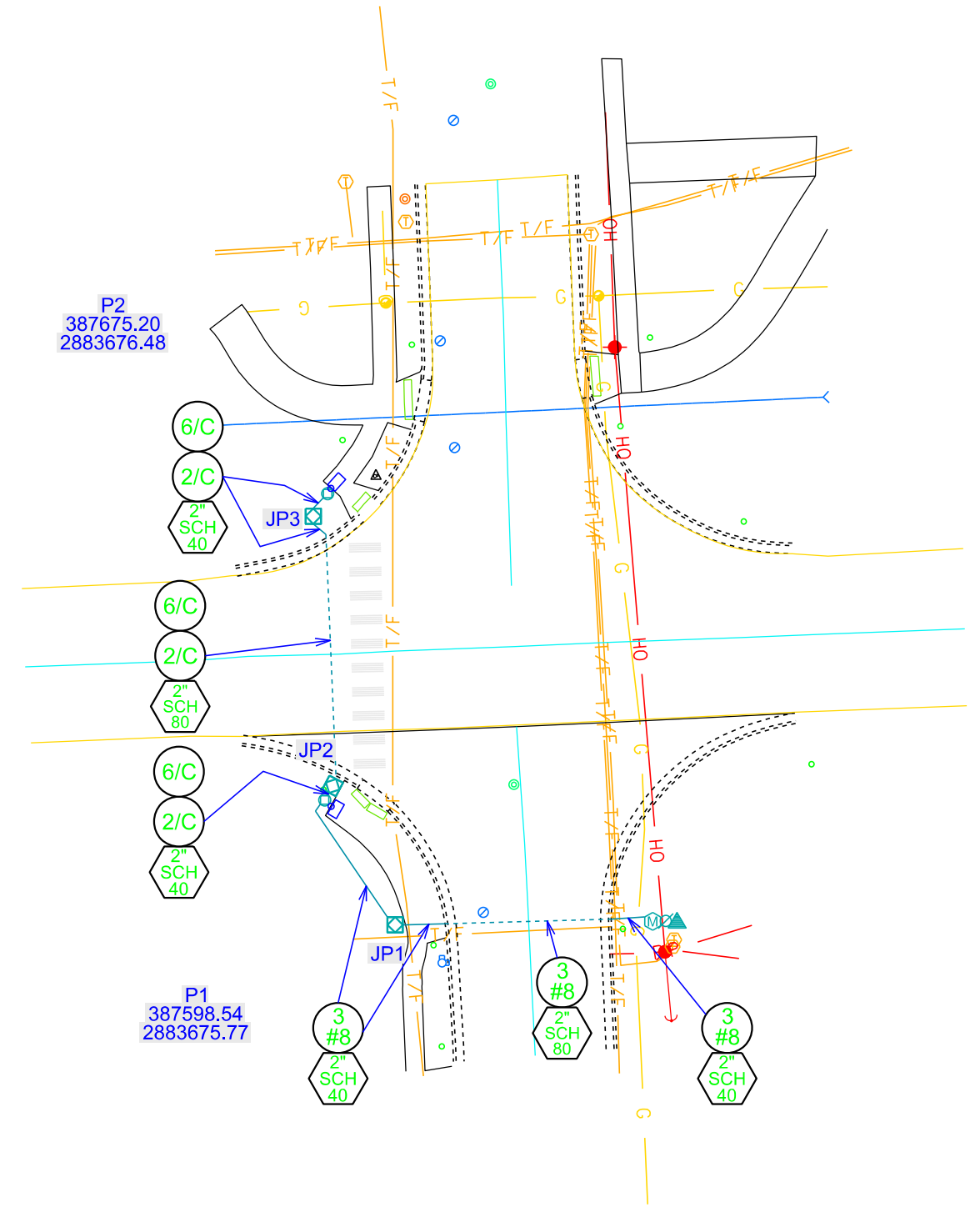
RECTANGULAR RAPID FLASHING BEACONS CONDUIT LAYOUT SD HWY 44 & MAIN ST.

STATE OF SOUTH DAKOTA	PROJECT P 0020(212)	SHEET 17	TOTAL SHEETS 25
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Plotting Date: 01/09/2024
Revised 01/08/2024 by JL



ESTIMATE OF QUANTITIES			
KEY	ITEM	EST QUANT	UNIT
○	2' Diameter Footing (L1-L8, P1, P2)	12	FT
⊠	Type 1 Electrical Junction Box (JL1, JP1-JP3)	3	EACH
○	Pedestal Signal Pole (P1-P2)	2	EACH
	Rectangular Rapid Flashing Beacon	1	EACH
▲	Electrical Service Cabinet	1	EACH
∅	Galvanized Steel Utility Pole Not a Bid Item	1	EACH
Ⓜ	Meter Socket Not a Bid Item	1	EACH
⬡ 2" SCH 40	2" Rigid Conduit, Schedule 40	67	FT
⬡ 2" SCH 80	2" Rigid Conduit, Schedule 80	105	FT
Ⓢ	1/C #8 AWG Copper Wire	205	FT
Ⓢ 6/C	6/C #14 Tray Cable	80	FT
Ⓢ 2/C	2/C #14 Tray Cable	80	FT



Plot Scale - 1:40

Plotted From - TRM111119

File - ...lighting\Revised\RRF\Bc.dgn

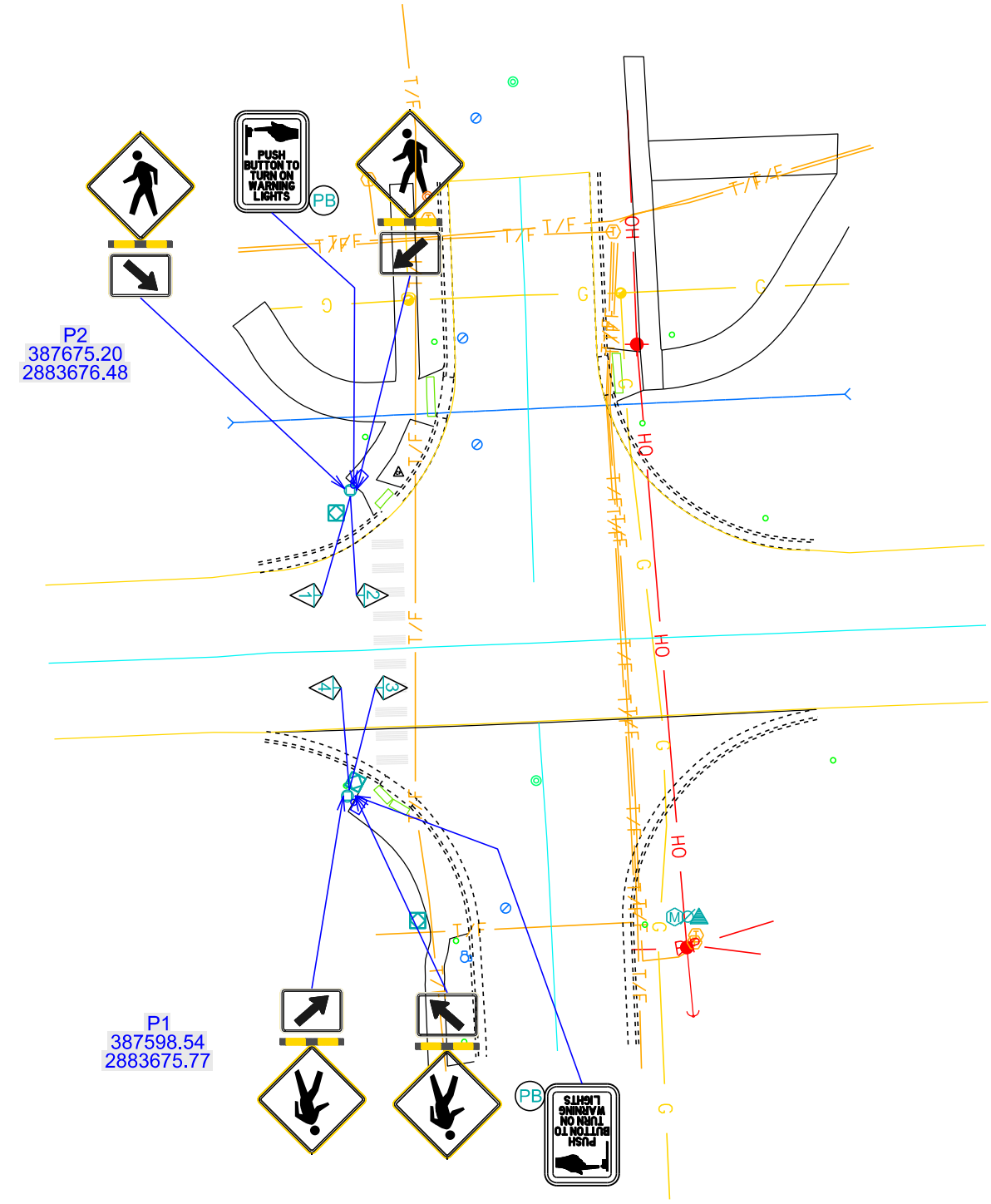
RECTANGULAR RAPID FLASHING BEACONS & SIGNS LAYOUT SD HWY 44 & MAIN ST.

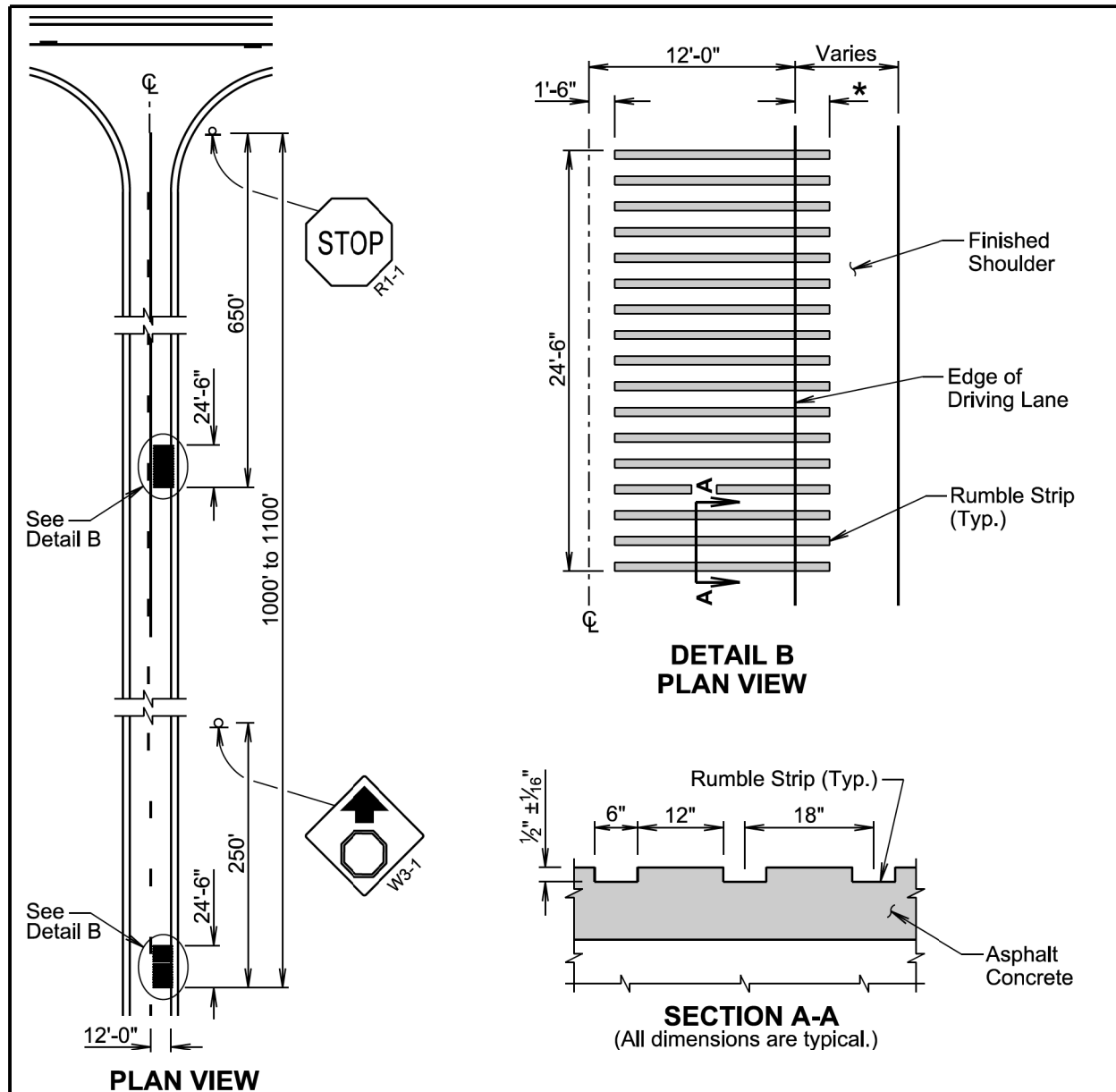
STATE OF SOUTH DAKOTA	PROJECT PH 0020(212)	SHEET 18	TOTAL SHEETS 25
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Plotting Date: 12/20/2023

Plot Scale - 1:40

Plotted From - trm11119





GENERAL NOTES:

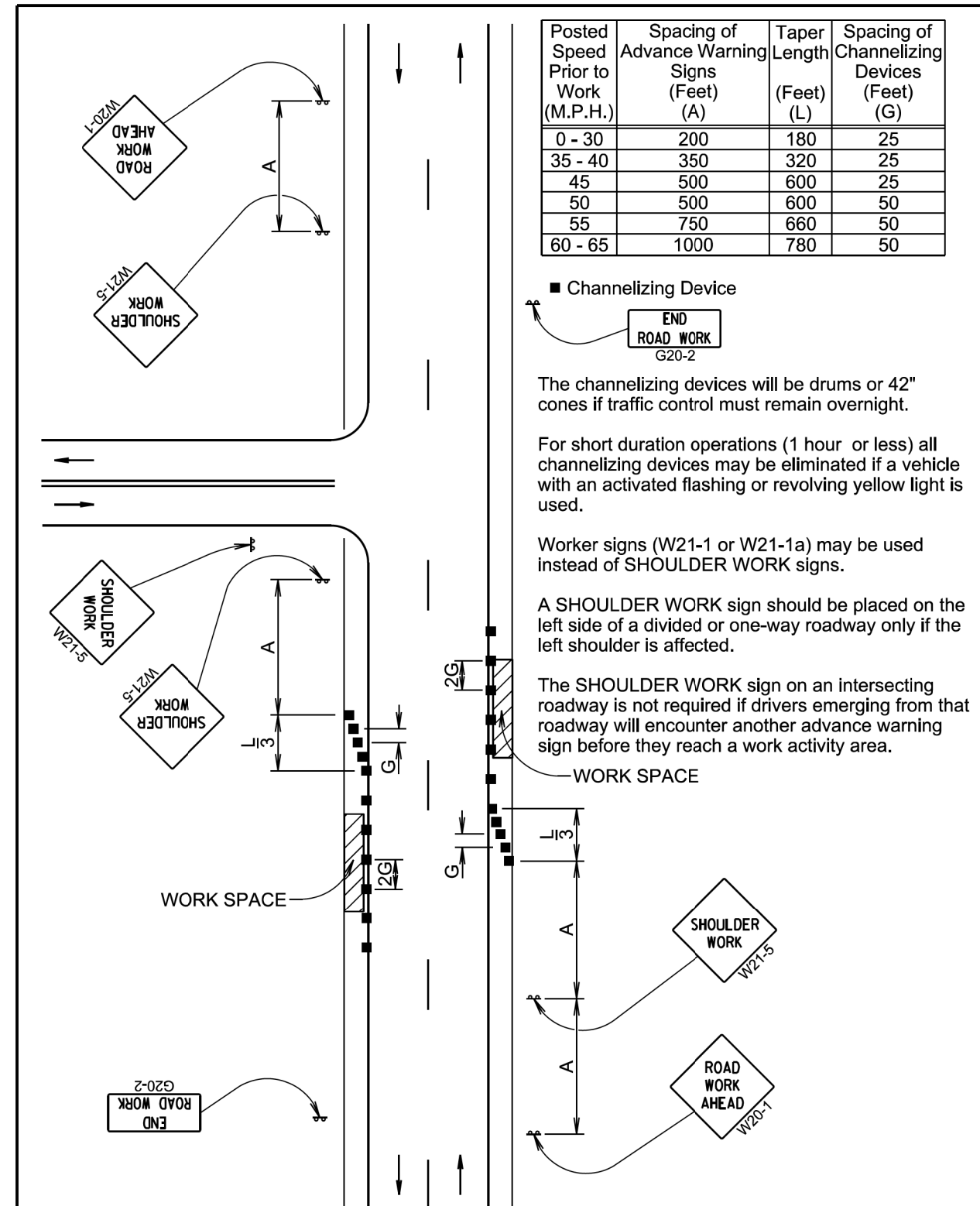
Transverse rumble strips will be constructed by grinding, routing, or cutting recessed indentations into the asphalt concrete as approved by the Engineer. The transverse rumble strips will receive a flush seal or fog seal as specified in the plans.

* The transverse rumble strips will extend into the finished shoulder as approved by the Engineer.

Measurement of the recessed transverse rumble strips will be to the nearest foot. Payment for constructing the recessed transverse rumble strips will be at the contract unit price per foot for "Grind 6" Transverse Rumble Strip in Asphalt Concrete".

January 22, 2021

Published Date: 2024	S D D O T	TRANSVERSE RUMBLE STRIP IN ASPHALT CONCRETE HIGHWAY ADJACENT TO STOP CONTROLLED INTERSECTION	PLATE NUMBER 320.45
			Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45	500	600	25
50	500	600	50
55	750	660	50
60 - 65	1000	780	50

■ Channelizing Device

END ROAD WORK G20-2

The channelizing devices will be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.

January 22, 2021

Published Date: 2024	S D D O T	WORK ON SHOULDERS	PLATE NUMBER 634.03
			Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45	500	25
50	500	50
55	750	50
60 - 65	1000	50

- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

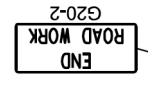
The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices will be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

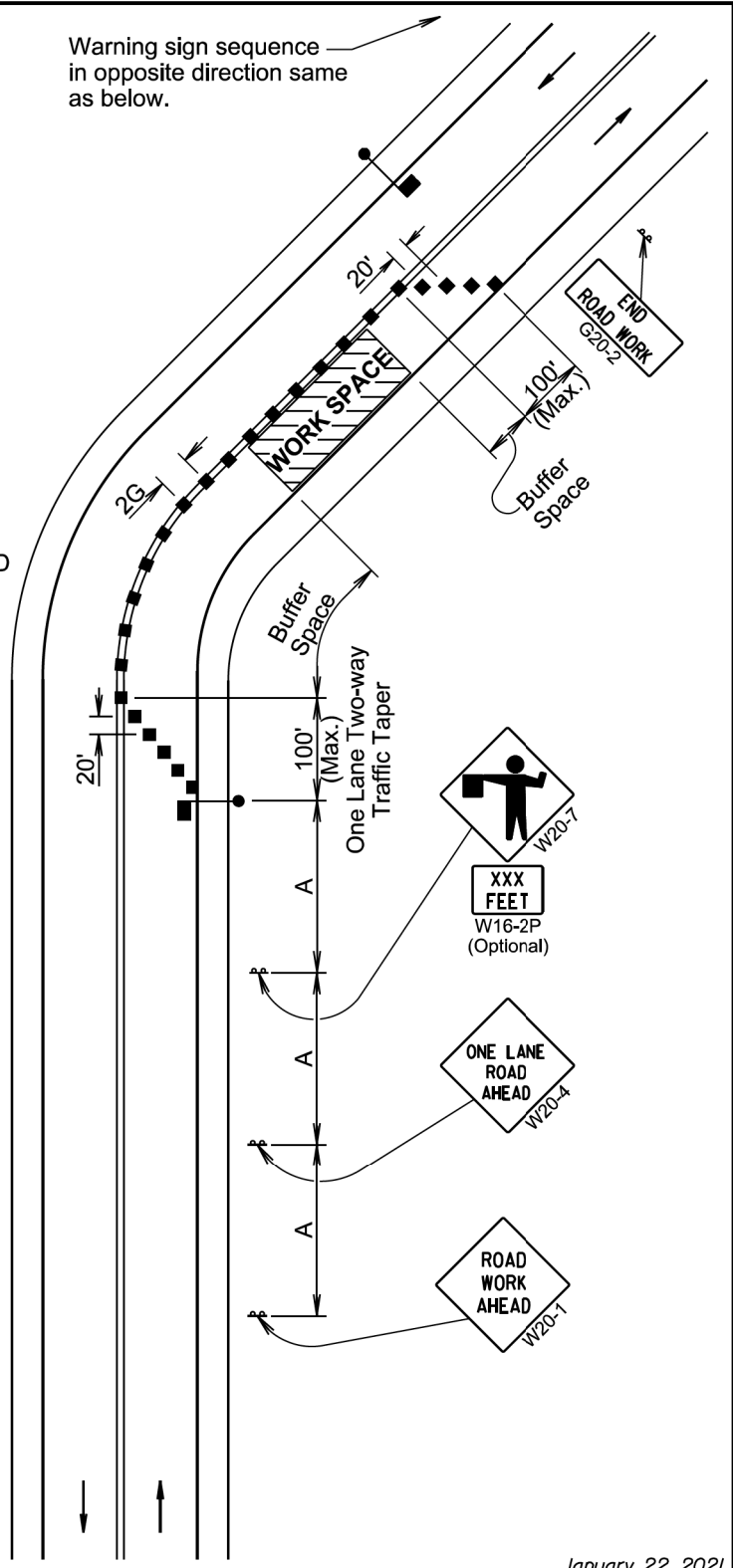


Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

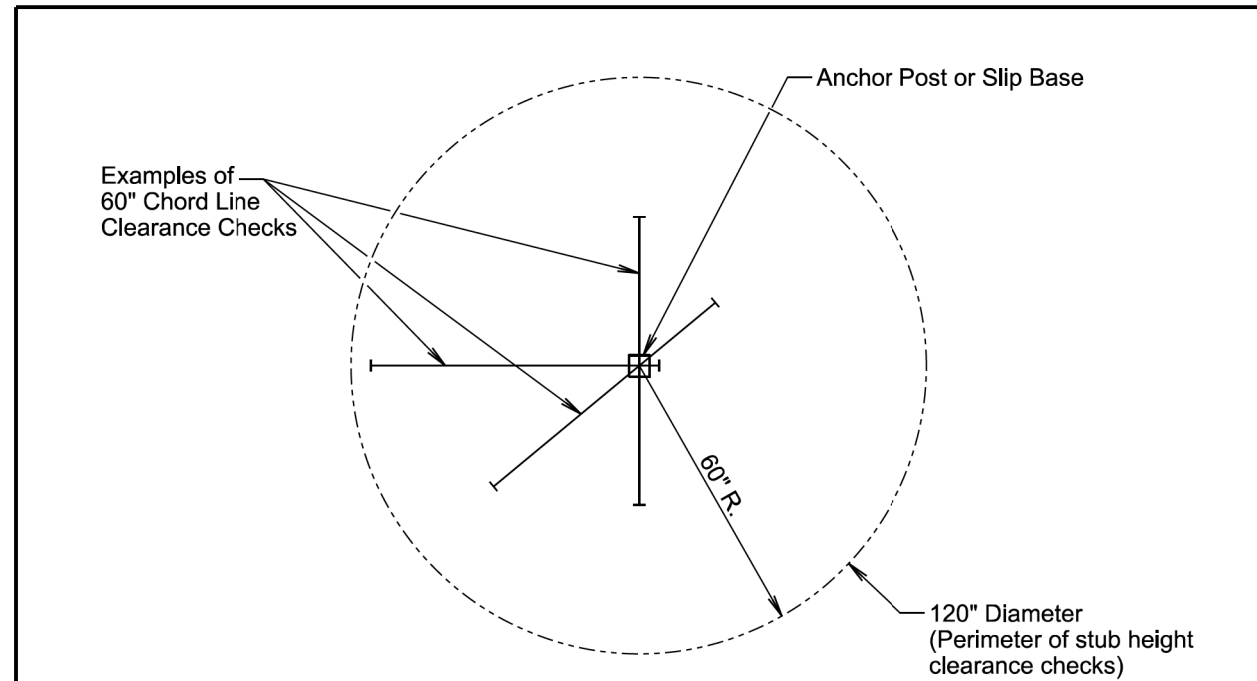
The length of A may be adjusted to fit field conditions.

Warning sign sequence in opposite direction same as below.

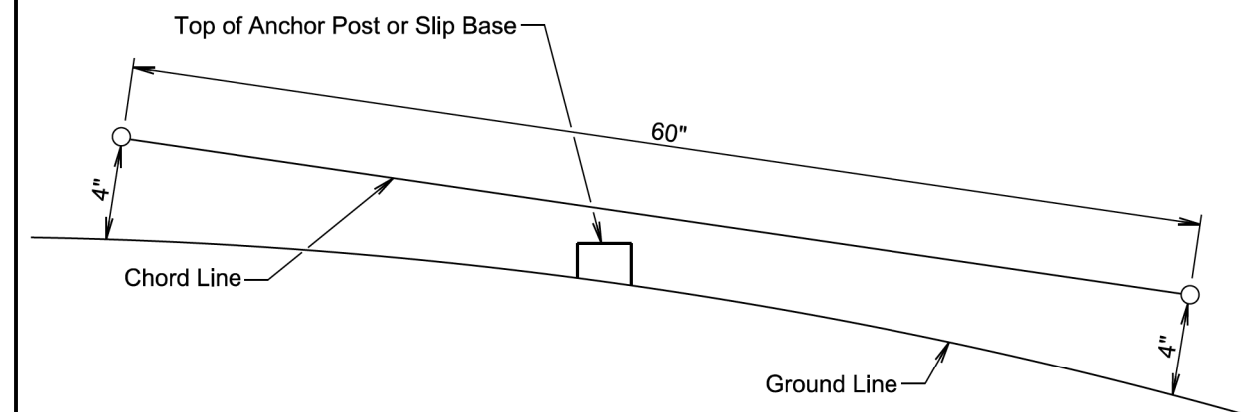


January 22, 2021

Published Date: 2024	S D D O T	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

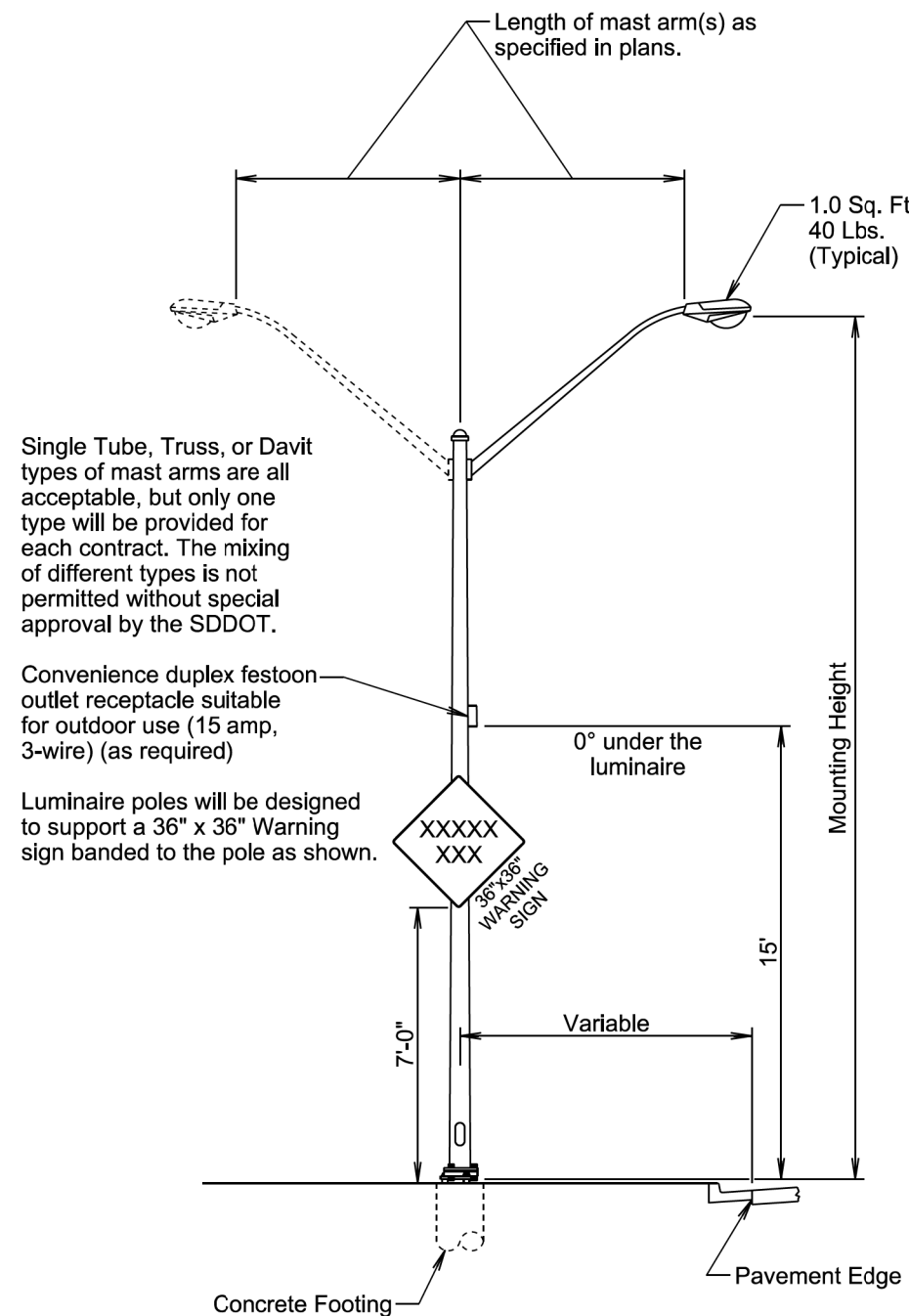
The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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: 2024	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1



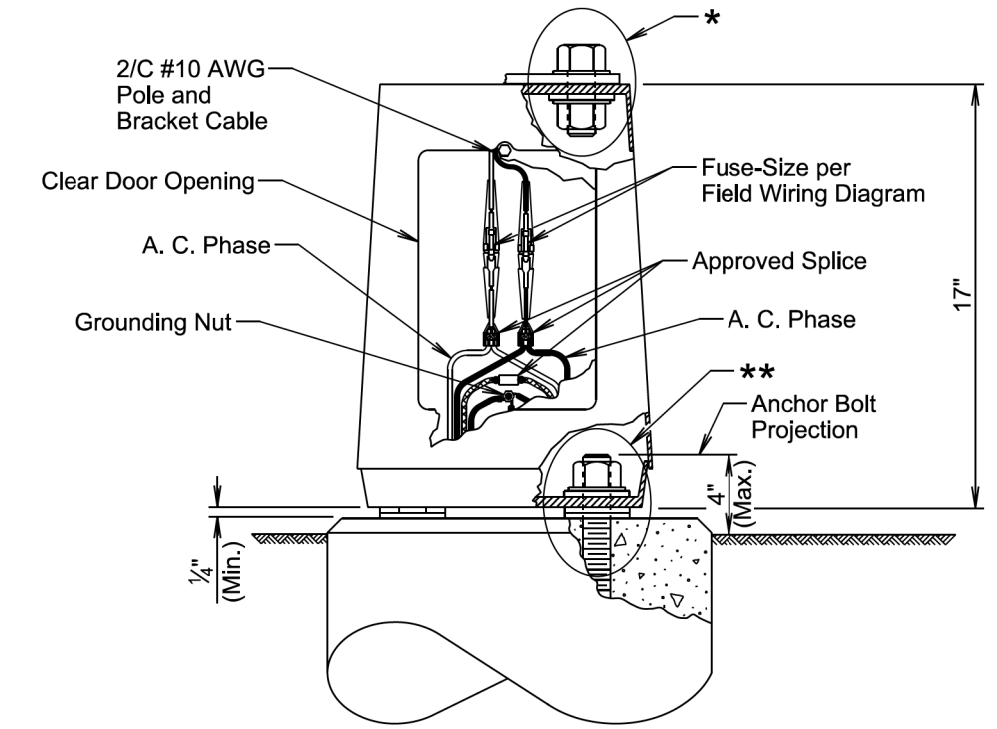
Single Tube, Truss, or Davit types of mast arms are all acceptable, but only one type will be provided for each contract. The mixing of different types is not permitted without special approval by the SDDOT.

Convenience duplex festoon outlet receptacle suitable for outdoor use (15 amp, 3-wire) (as required)

Luminaire poles will be designed to support a 36" x 36" Warning sign banded to the pole as shown.

November 19, 2022

Published Date: 2024	S D D O T	STEEL ROADWAY LUMINAIRE POLE WITH MAST ARM(S)	PLATE NUMBER 635.01
			Sheet 1 of 1



GENERAL NOTES:

Base details are provided for example only and are not intended to be a complete design.

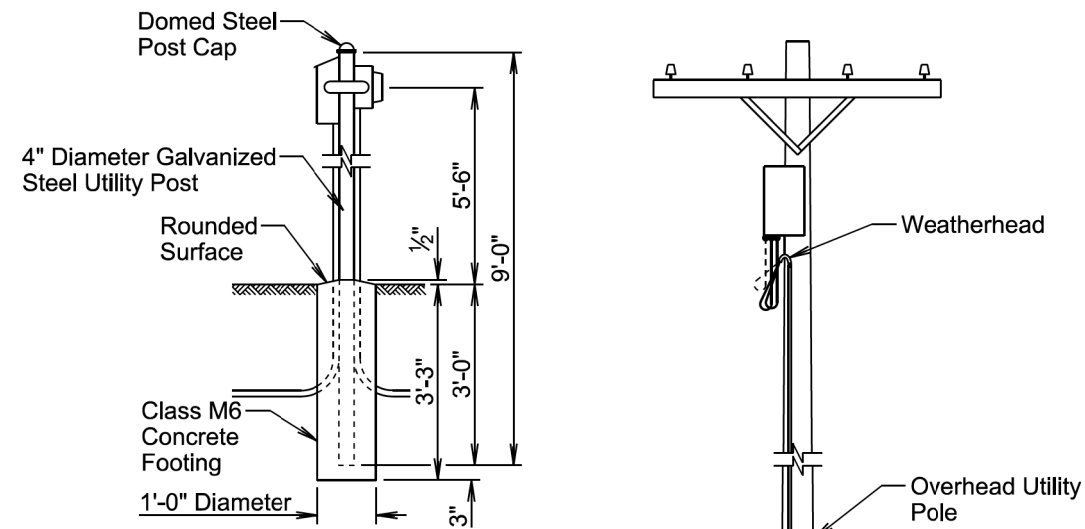
Fused connectors will be breakaway type.

* Hardware connecting the pole to the base will be installed in accordance with the manufacturer's recommendation.

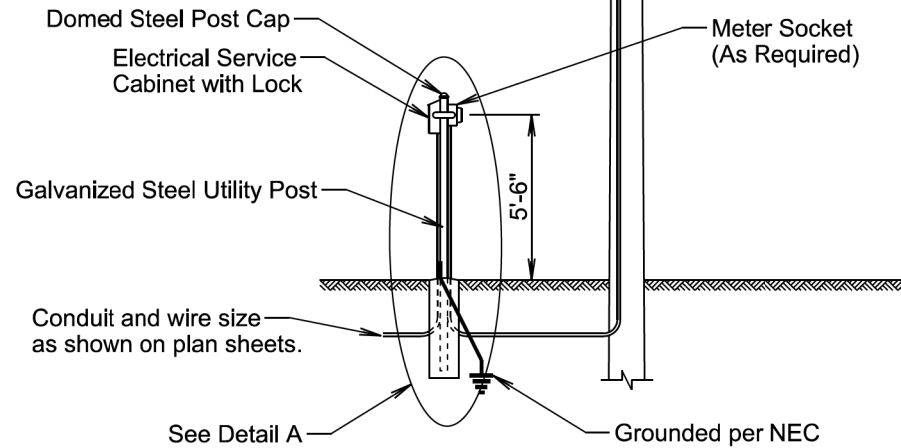
** Hardware connecting the base to the footing will be installed in accordance with the manufacturer's recommendation. The Contractor will install leveling devices in accordance with the manufacturer's recommendation if shimming is necessary to install the light poles plumb and level. The washers and shims will be installed around the anchor bolts.

November 19, 2022

Published Date: 2024	S D D O T	ROADWAY LUMINAIRE POLE BREAKAWAY TRANSFORMER BASE	PLATE NUMBER 635.21
			Sheet 1 of 1



DETAIL A



ELEVATION VIEW

GENERAL NOTES:

The service cabinet will include an externally mounted 15A receptacle outlet. The receptacle will be housed in a lockable NEMA 3R enclosure. The Contractor will furnish a lock and keys to the Engineer as directed.

The concrete for the post footing will be class M6 concrete.

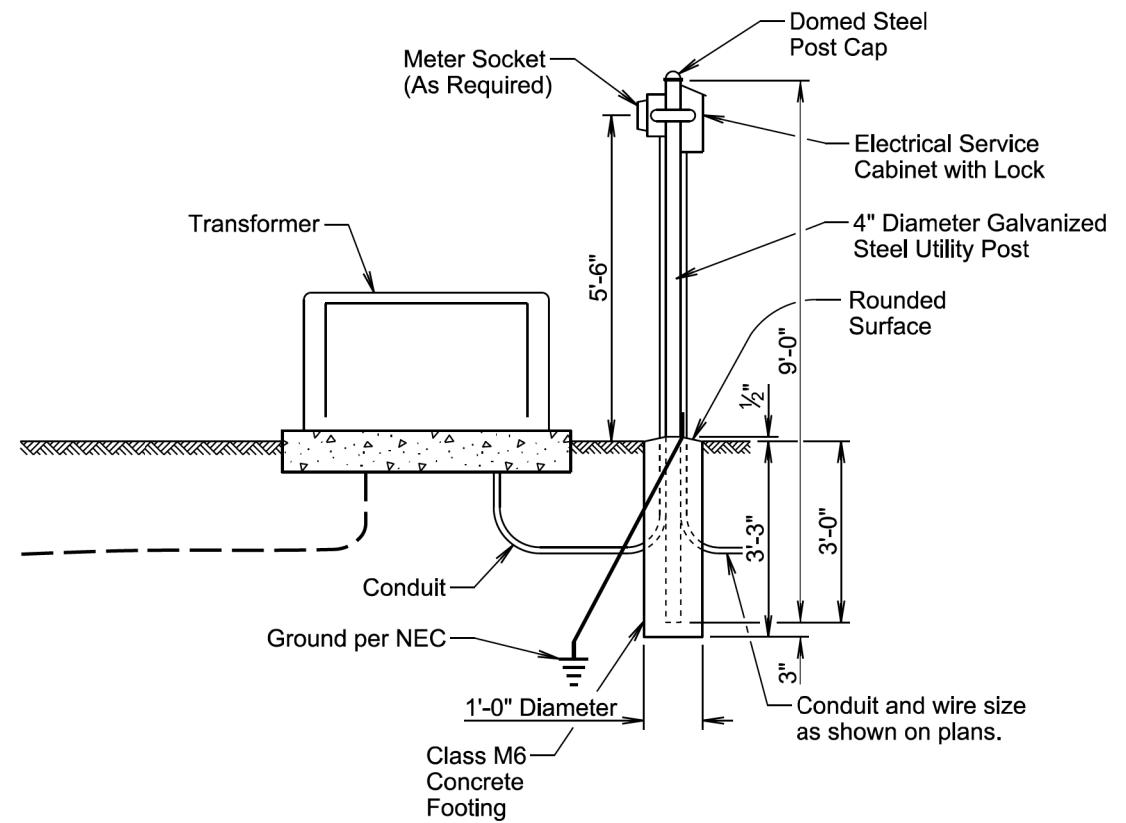
The 4" diameter galvanized steel utility post will be 9' long and will be in conformance with AASHTO Standard Specifications M181. The post will be Type 1 and either Grade 1 or Grade 2. The domed steel post cap will be in conformance with AASHTO Standard Specifications M181 and will be Type 1.

The Contractor will contact and coordinate his/her work with the Utility Companies regarding hookup requirements, fees, materials, and equipment necessary.

All costs for furnishing and installing all materials from the electrical service cabinet to the transformer including labor, equipment, hookup fees, all items within the cabinet, lockable enclosure with receptacle outlet, lock and keys, post, concrete footing, post cap, meter socket if required, conduit, and incidentals will be incidental to the contract unit price per each for "Electrical Service Cabinet".

November 19, 2022

<i>Published Date: 2024</i>	S D D O T	GALVANIZED STEEL UTILITY POST WITH OVERHEAD UTILITY POLE	PLATE NUMBER 635.35
			Sheet 1 of 1



ELEVATION VIEW

GENERAL NOTES:

The service cabinet will include an externally mounted 15A receptacle outlet. The receptacle will be housed in a lockable NEMA 3R enclosure. The Contractor will furnish a lock and keys to the Engineer as directed.

The concrete for the post footing will be class M6 concrete.

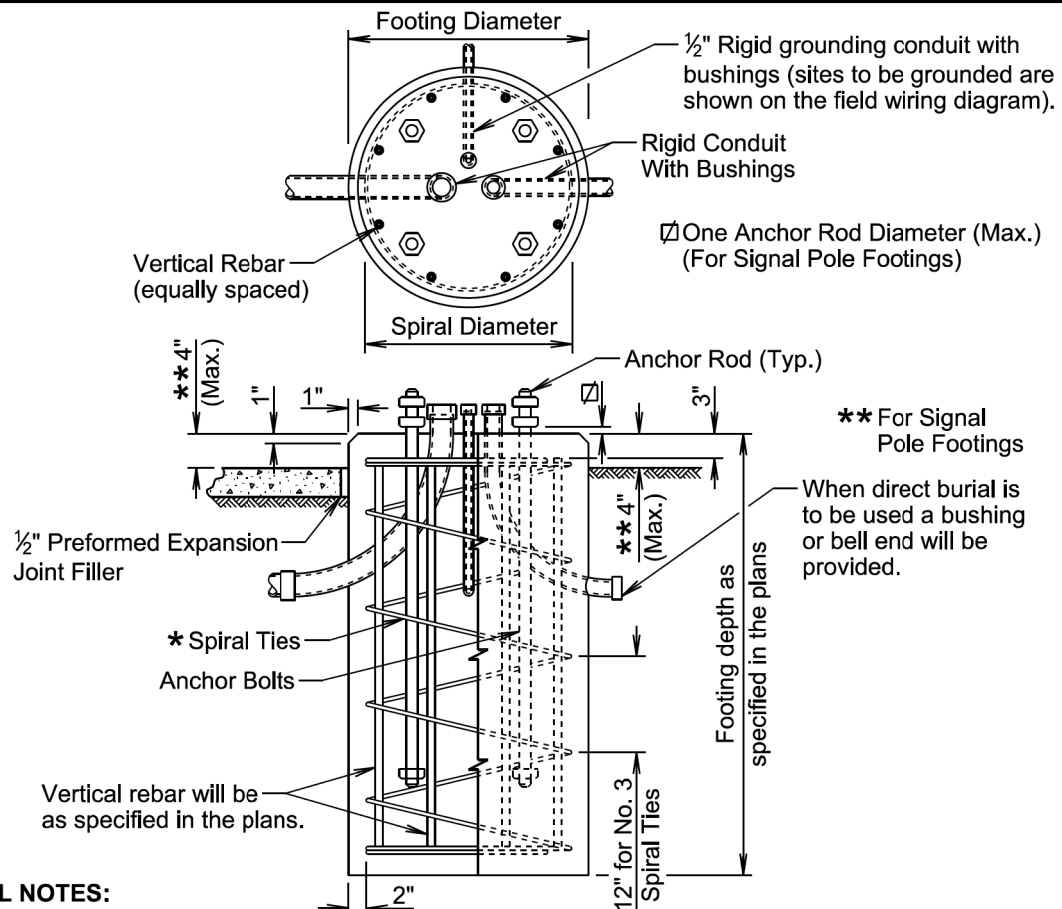
The 4" diameter galvanized steel utility post will be 9' long and will be in conformance with AASHTO Standard Specifications M181. The post will be Type 1 and either Grade 1 or Grade 2. The domed steel post cap will be in conformance with AASHTO Standard Specifications M181 and will be Type 1.

The Contractor will contact and coordinate his/her work with the Utility Companies regarding hookup requirements, fees, materials, and equipment necessary.

All costs for furnishing and installing all materials from the electrical service cabinet to the transformer including labor, equipment, hookup fees, all items within the cabinet, lockable enclosure with receptacle outlet, lock and keys, post, concrete footing, post cap, meter socket if required, conduit, and incidentals will be incidental to the contract unit price per each for "Electrical Service Cabinet".

November 19, 2022

<i>Published Date: 2024</i>	S D D O T	SERVICE FROM PAD MOUNTED TRANSFORMER WITH METER ON A GALVANIZED STEEL UTILITY POST	PLATE NUMBER 635.41
			Sheet 1 of 1



GENERAL NOTES:

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

Spiral ties will 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 will not project above the slip plane or fracture plane for breakaway poles.

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

The anchor rods will 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 will be incidental to the footing bid item(s).

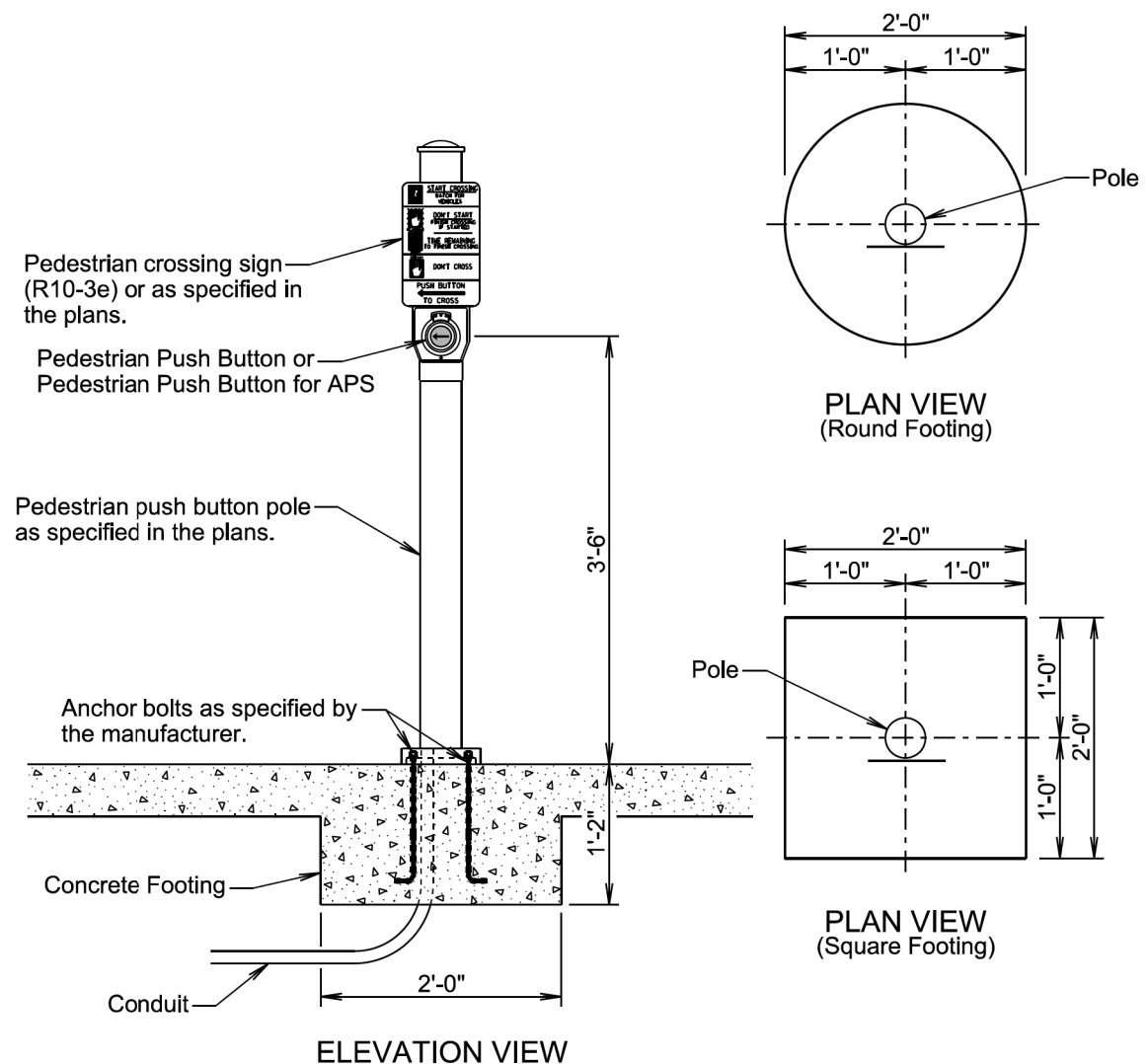
The pole will not be installed until the concrete has attained design strength (4000 psi).

The contour of the area surrounding the breakaway pole will 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.

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GENERAL NOTES:

The pedestrian push button pole will be as specified in the plans.

The Contractor will install either the round or the square concrete footing. For informational purpose, the quantity of concrete for one footing is 0.14 cubic yards for the round footing and 0.17 cubic yards for the square footing.

The concrete for the footing will be class M6 concrete.

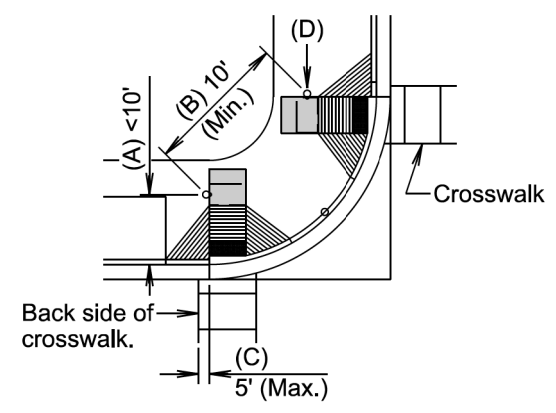
All costs for furnishing and installing the concrete footing will be incidental to the contract unit price per square foot for the corresponding concrete sidewalk bid item.

All costs for furnishing and installing the pedestrian push button pole including labor, equipment, and materials including the pole, cap, and the conduit in the footing will be incidental to the contract unit price per each for "Pedestrian Push Button Pole".

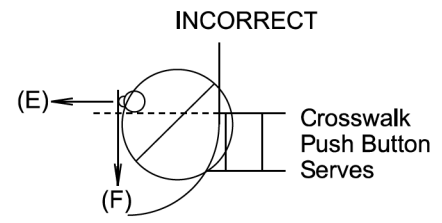
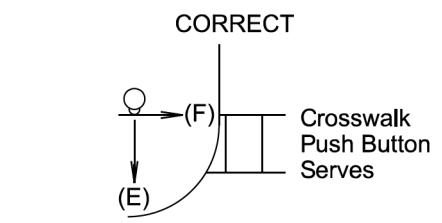
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S D D O T	PEDESTRIAN PUSH BUTTON POLE	PLATE NUMBER 635.57
		Sheet 1 of 2

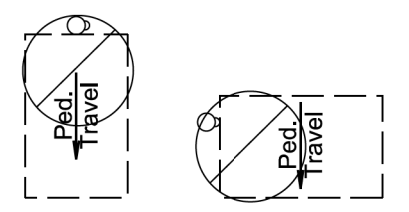
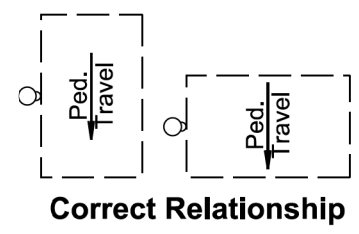
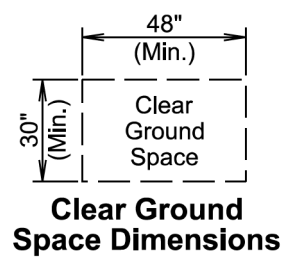
Published Date: 2024



Push Button Relationship To Curb Ramp And Crosswalk



Push Button Orientation To Crosswalk



Incorrect Relationship
Clear space not adjacent to push button
Push button not centered on clear space

General Notes:

Pedestrian Push Buttons Location and Orientation Requirements:

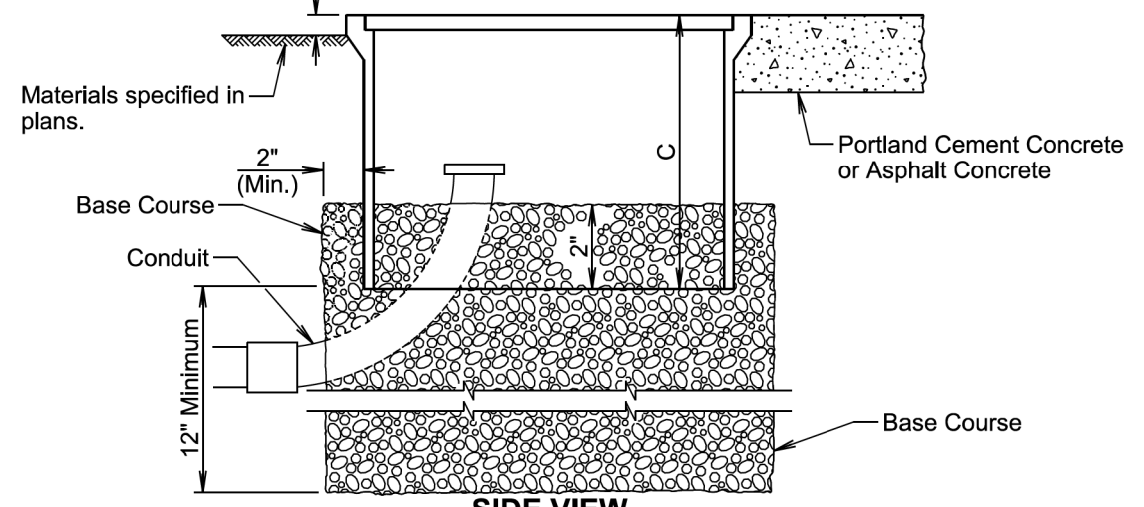
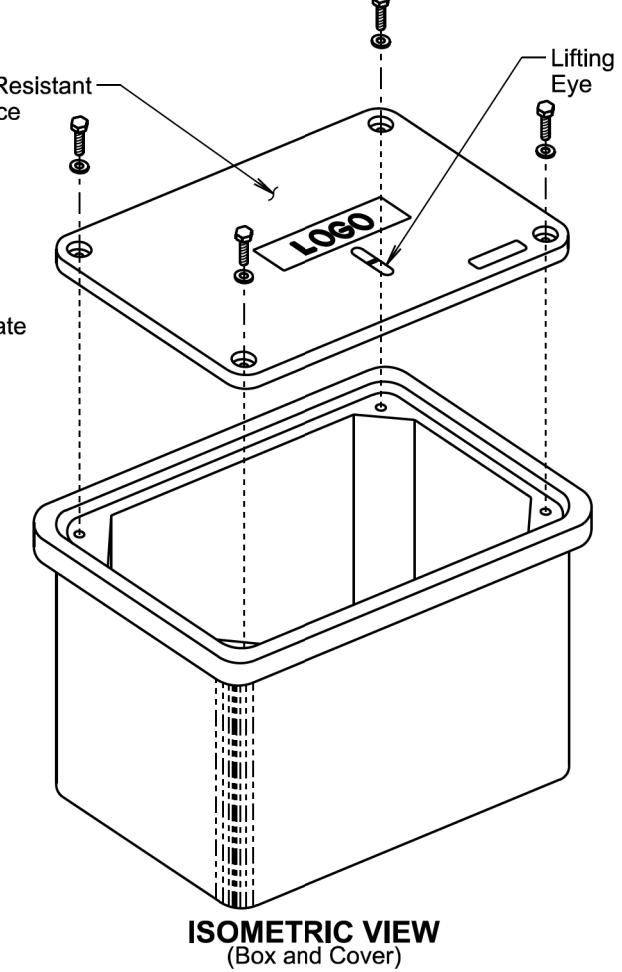
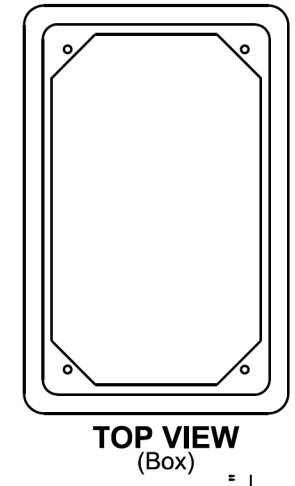
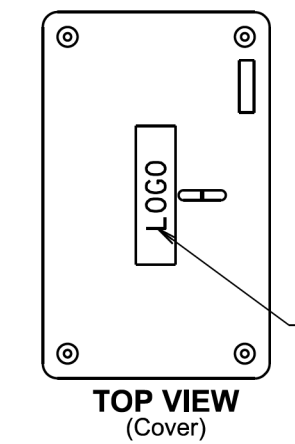
- (A) Within 10 feet from the front face of curb.
- (B) Where two push buttons are provided, the push buttons should have at least 10 feet of separation from each other.
- (C) If two curb ramps are used, the push button should be within 5 feet of the backside of the crosswalk.
- (D) The push button should be mounted adjacent to a clear ground space (within 10 inches maximum reach). The clear ground space will be a least 30 inches x 48 inches and will slope no more than 50:1 (2%) in any direction. The push button will be centered on either side of the clear ground space (either the 30 inch or 48 inch side). The 30 inch x 48 inch clear ground space shouldn't touch the detectable warning panel.
- (E) The push button should face the edge of roadway.
- (F) The push button face should be parallel to the crosswalk being used.

The push button poles will not interfere with the minimum clear width of the Pedestrian Access Route.

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SIDE VIEW
(Electrical Junction Box Installation Details)
(Buried No. 4 steel reinforcing bar not shown.)

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S D D O T	ELECTRICAL JUNCTION BOXES TYPE 1 THROUGH TYPE 4	PLATE NUMBER 635.65
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ELECTRICAL JUNCTION BOX			
TYPE	DESCRIPTION	APPROXIMATE COVER SIZE	MINIMUM DEPTH (C)
1	Open Bottom with Gasket	11"x18"	18"
2	Open Bottom with Gasket	13"x24"	18"
3	Open Bottom with Gasket	17"x30"	18"
3A	Open Bottom with Gasket	24"x36"***	24"
4	Open Bottom with Gasket	30"x48"***	24"

GENERAL NOTES:

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

The cover will have a lifting eye.

* The surface of the cover will have a minimum wet and dry coefficient of friction value of 0.5 as determined by ASTM F609.

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

*** Two piece covers will be used for Type 3A and Type 4 junction boxes.

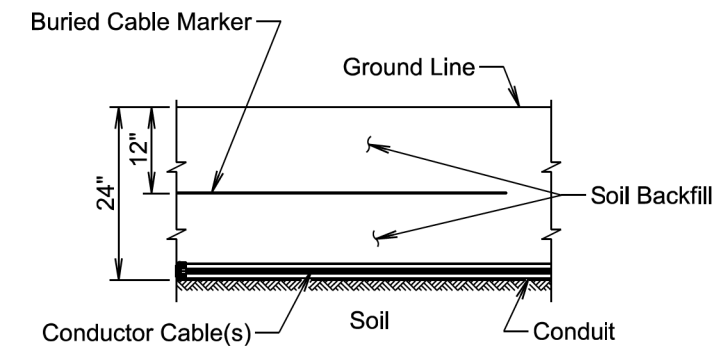
The electrical junction boxes will comply with the American National Standards Institute (ANSI)/Society of Cable Telecommunications Engineers (SCTE) 77 2007 Specification for Underground Enclosure Integrity. The loading requirement for all electrical junction boxes and covers will be Tier 22 of ANSI/SCTE 77 2007.

The electrical junction boxes will be UL listed.

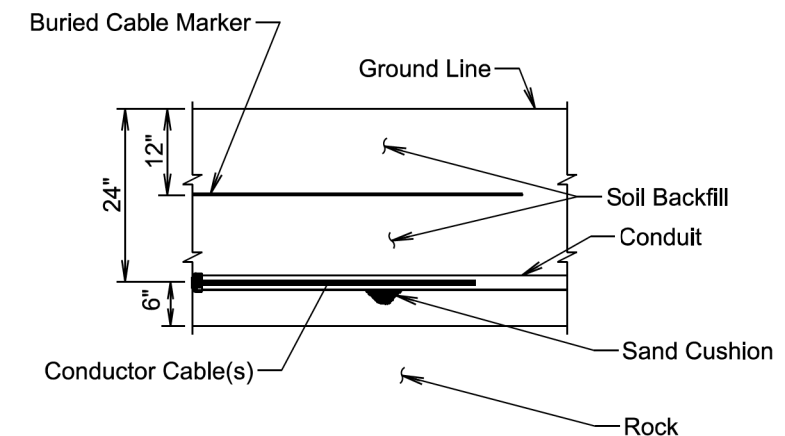
For junction boxes located outside of pavement, a No. 4 steel reinforcing bar with a minimum length of 18" will be buried adjacent to the long side of the junction box. All costs associated with furnishing and placing the steel reinforcing bar will be incidental to the contract unit price per each for "Type _ Electrical Junction Box".

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SECTION VIEW



SECTION VIEW

GENERAL NOTE:

The Buried Cable Marker will be plastic, approximately 6" wide, and will be capable of sustaining a minimum of a 350% tolerance of elongation without tearing. The Buried Cable Marker will 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 will be printed in a contrasting color on the cable marker. The Buried Cable Marker will be subject to approval by the Engineer. All costs associated with furnishing and installing the Buried Cable Marker will be incidental to the contract unit price per foot for the bid item used for the electrical conductor.

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