## STATE OF SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT 000P-471 PCN I7JX
US Hwy 85 & SD Hwy 34 - Butte County
US Hwy 85 & SD Hwy 34 - Intersection Signal Reconfiguration

STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	000P-471	1	9

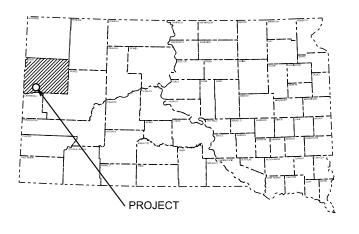
06/20/2024

#### NONSECTION INDEX OF SHEETS

Sheet 1: Sheets 2-3: Sheets 4-5 Sheet 6: Sheets 7-8: Sheet 9:

Title Sheet Notes Signal Layouts Conduit Layout Wiring Tables Standard Plates





DESIGN DESIGNATION US HWY 85 MRM 54.21

DESIGN DESIGNATION SD HWY 34 MRM 9.87

Signal Reconfiguration



#### **ESTIMATE OF QUANTITIES**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1520	Remove Signal Equipment	Lump Sum	LS
110E5110	Salvage Signal Equipment	Lump Sum	LS
634E0010	Flagging	25.0	Hour
634E0110	Traffic Control Signs	146.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	8	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
635E4090	4 Section Directional Vehicle Signal Head	8	Each
635E6200	Miscellaneous, Electrical	Lump Sum	LS
635E9505	5/C #14 AWG Copper Tray Cable, K2	450	Ft

#### **SPECIFICATIONS**

Standard Specifications for Roads & Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and/or 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: <a href="https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf">https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf</a> >

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 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 Environment 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 completely 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 of time 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.

STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	000P-471	2	9

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.

#### Action Taken/Required:

All earth disturbing activities 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 of 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 will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office 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.

#### **SCOPE OF WORK**

This project consists of removing and replacing with new, several traffic signal heads at the intersection of US HWY 85 & SD HWY 34 in Belle Fourche. The Contractor is encouraged to visit this site ahead of bidding and construction to see the work site.

#### **SEQUENCE OF OPERATIONS**

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

The following is a sequence of operations for the Contractor to follow:

- 1. Install traffic control
- 2. Remove old infrastructure
- 3. Install new 4-Section Vehicle Signal Heads
- 4. Verify signal operates correctly
- 5. Remove traffic control

Work on this project can be completed by closing the left turn lanes on US Hwy 85. Turn lanes will be closed with the use of barrels. The traffic signal will be put into all way red flash while work is being performed. Flagger signs and flagging hours have been included to help direct traffic while the signals are in all way red flash.

#### **US HWY 85 & SD HWY 34**

This project will consist of replacing eight 3-section directional traffic signal heads, and all of their contents with new 4-section directional traffic signal heads, to allow for Flashing Yellow Arrow operation, costs for this will be incidental to the contract price per each for "4-Section Directional Vehicle Signal Head." The Contractor will provide as-built drawings to the DOT depicting which spare wires were used for new connections for the additional Flashing Yellow Arrow bulbs. The Contractor will be responsible for all necessary changes within the traffic signal cabinet (changes to MMU, Controller, field wire terminations, etc.) to program Flashing Yellow Arrow configuration. All labor involved with these installations will be incidental to the contract lump sum price for "Miscellaneous Electrical".

The Contractor will make any necessary configuration/timing changes in the traffic signal controller to make Flashing Yellow Arrow operational. Signal timing will be provided by the DOT through JEO Consultants. The Contractor will verify that the signal functions correctly in Flashing Yellow Arrow configuration, all costs for this will be incidental to the contract lump sum price for "Miscellaneous Electrical".

#### **SALVAGE SIGNAL EQUIPMENT**

Removed signal heads and all their contents will be salvaged and delivered to RC Region Traffic yard at 2300 Eglin St in Rapid City, SD. Costs for removing heads from poles and delivery to R.C. will be incidental to contract lump sum price for "Salvage Signal Equipment".

Any equipment damaged during salvaging or delivery will be repaired or replaced by the Contractor at no cost to the State.

Contractor will contact Nick Wuebben, SDDOT RC Region traffic technician (605-381-9875) for delivery of salvaged cabinets.

#### 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:

John.Less@state.sd.us

#### **SUPPLYING AS BUILT PLANS**

If the new wiring and signal equipment 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 Rapid City Region Traffic Engineer. The as built plans may include conduit layouts, wiring diagrams, or other drawings depicting the changes from the original plans.

#### **NEW SIGNAL HEAD MOUNTING & WIRING**

The signal heads at the intersection of US HWY 85 & SD HWY 34 currently are mounted on Astro-brac style brackets, these will be reused by the Contractor.

The Contractor will utilize spare wires present in the base of poles and will pull new 5-Conductor Copper Tray Cable to the new heads from the base of poles. Existing 4-Conductor wiring from base of poles to old heads will be removed. The Contractor will label the newly used wires for FYA, in bases of poles, and in the traffic signal cabinet. All costs for new 5/C wiring will be incidental to the contract price per foot for "5/C #14 AWG Copper Tray Cable, K2." The Contractor will be provided with "Traffic Signal Wiring Tables" sheets in these plans, which depict current, in-place wiring. All costs for connecting existing wires, connecting spare wires, labeling wires, or extending spare wires will be incidental to the contract lump sum price for "Miscellaneous Electrical".

#### **SITE INSPECTION**

An on-site inspection of the new traffic signal equipment will be conducted before acceptance of the project. The on-site inspection will be conducted by the Project Engineer and Region Traffic Engineer with the Contractor.

#### **GENERAL TRAFFIC CONTROL**

The signal will be in flashing red during installation of the new signal heads. 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

STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	000P-471	3	9

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.

#### PRESS RELEASE ANNOUNCEMENTS

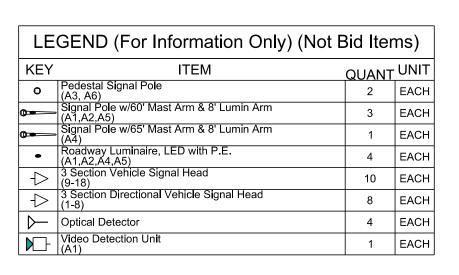
The SDDOT will prepare a press release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The SDDOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor will provide the Engineer with pertinent information 7 days prior to any phase change or any other major change that affects traffic flow.

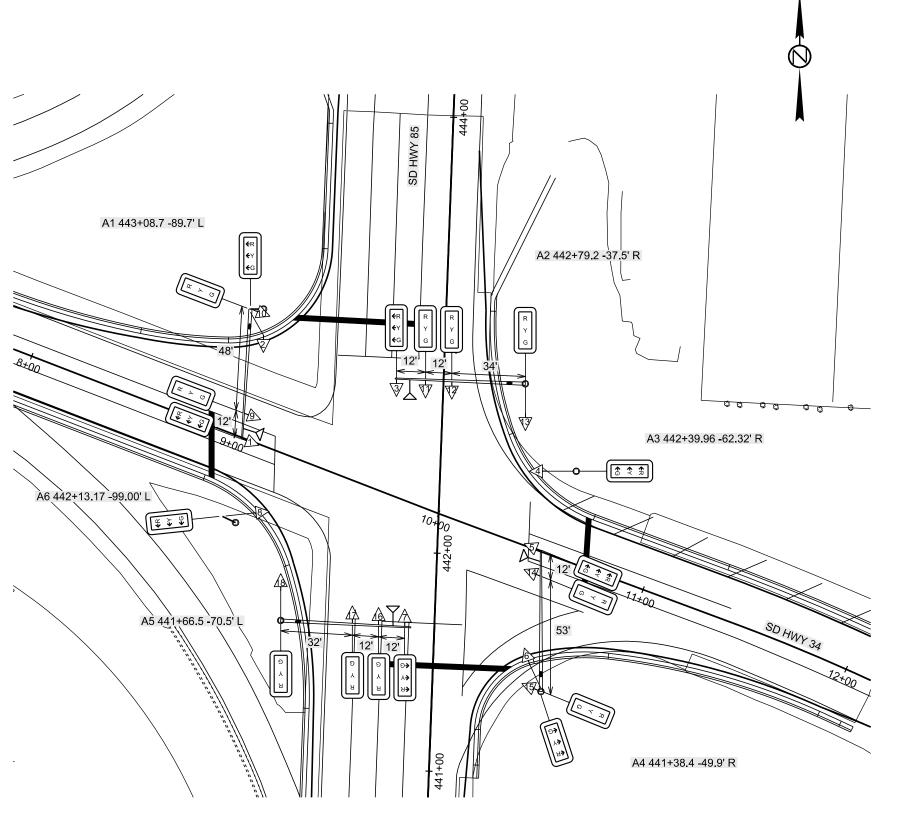
#### TABLE OF TRAFFIC CONTROL SIGNS

#### ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

			CONVENTIO	NAL ROAD				
SIGN CODE	SIGN DESCRIPTION	NUM BER	SIGN SIZE	SQFT PER SIGN	SQFT			
W20-1         ROAD WORK AHEAD           W20-7         FLAGGER (symbol)           G20-2         END ROAD WORK		4 4 4	48" x 48" 48" x 48" 36" x 18"	16.0 16.0 4.5	64.0 64.0 18.0			
			CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					

Plotting Date: 06/20/2024





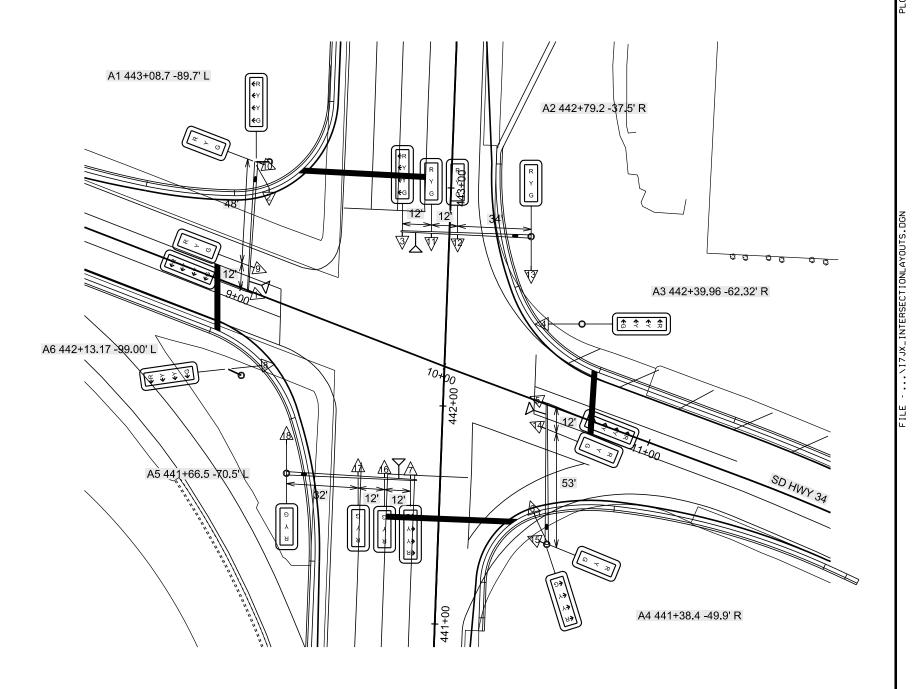
 STATE OF SOUTH DAKOTA
 PROJECT
 SHEET SHEETS
 TOTAL SHEETS

 9
 9
 9

Plotting Date: 06/20/2024

## SIGNAL LAYOUT SD HWY 85 & SD HWY 34

	ESTIMATE OF QUANTITIES				
KEY	ITEM	EST QUANT	·UNIT		
<b>€</b> R <b>€</b> Y <b>€</b> Y <b>€</b> G	4 Section Directional Vehicle Signal Head	8	EACH		

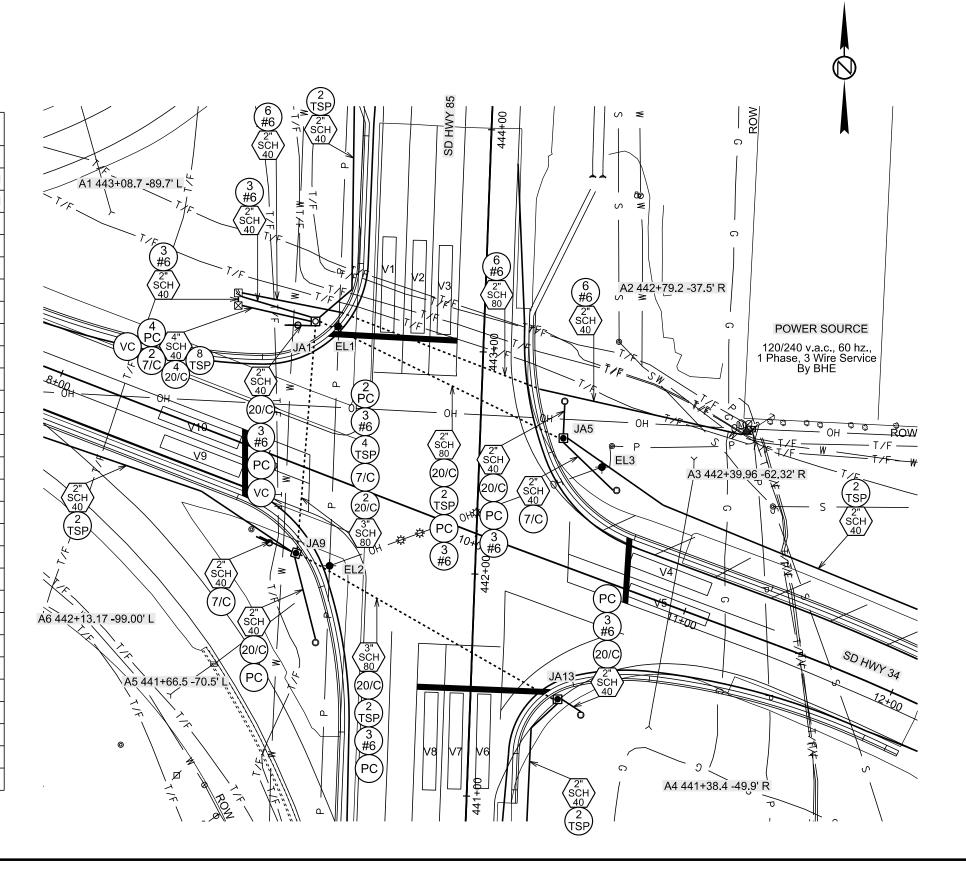


STATE OF SOUTH DAKOTA 000P-471 6 9

Plotting Date: 06/20/2024

# EXISTING CONDUIT LAYOUT SD HWY 85 & SD HWY 34

KEY	ITEM	QUANT	UNI
•	Remove Luminaire Pole (EL1-EL3)	3	EAC
•	Remove Luminaire Pole Footing (EL1-EL3)	3	EACH
0	2' Diameter Footing (A3,A6)	12	FT
0	3' Diameter Footing (A1,A2,A4,A5)	52	FT
	Type 1 Electrical Junction Box (JA3-JA4,JA7-JA8,JA11-JA12,JA15-JA16)	8	EACH
•	Type 2 Electrical Junction Box (JA5,JA9,JA13)	3	EACH
	Type 3 Electrical Junction Box	1	EACH
<b>A</b>	Electrical Service Cabinet	1	EACH
Ø	Galvanized Steel Utility Pole Not a Bid Item	1	EACH
0	Meter Socket Not a Bid Item	1	EACH
	Traffic Signal Controller	1	EACH
<b>\(\bar{\bar{\bar{\bar{\bar{\bar{\bar{</b>	Secondary Disconnect (Cost Included in Service Cabinet with Disconnect)	1	EACH
	Sawed-In, Preformed Detector Loop (E7-E8,N10-N13,S10-S13,W7-W8)	12	EACH
	Detector Unit Not a Bid Item	18	EACH
	Video Detection Zone (6' x 42') (V1-V3,V6-V8) Not a Bid Item	6	EACH
	Video Detection Zone (6' x 38') (V4,V5,V9,V10) Not a Bid Item	4	EACH
2" SCH 40	2" Rigid Conduit, Schedule 40	2,370	FT
SCH 40	4" Rigid Conduit, Schedule 40	55	FT
SCH 80	2" Rigid Conduit, Schedule 80	230	FT
3" SCH 80	3" Rigid Conduit, Schedule 80	255	FT
#6	1/C #6 AWG Copper Wire	3,325	FT
	4/C #14 AWG Copper Tray Cable, K2	845	FT
(7/C)	7/C #14 AWG Copper Tray Cable, K2	310	FT
20/0	20/C #14 AWG Copper Tray Cable, K2	885	FT
TSP	#16 AWG Copper Twisted Shielded Pair	4,520	FT
	2/C #10 AWG Copper Pole & Bracket Cable	260	FT
PC	Preemption Cable Not a Bid Item	1095	FT
(vc)	Video Detection Cable Not a Bid Item	90	FT



#### TRAFFIC SIGNAL WIRING TABLES

STATE OF	PROJECT	SHEET	TOTAL				
SOUTH DAKOTA	000P-471	7	9				

POLE:	A1	CABLE	SIZE:	26/C		POLE:	A2	CABLE	SIZE:	24/C		POLE:	А3	CABLE	SIZE:	9/C		POLE:	A4	CABLE	SIZE:	26/C	
CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND. COLOR	HEAD TERM.	HEAD NO.	Ø	CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND. COLOR	TEDM	HEAD NO.	Ø	CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND.	TEDM	HEAD NO.	Ø	CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND. COLOR	TEDM	HEAD NO.	Ø
3R	Red	R	R	1	3	5R	Red	R	R	3	5	7R	Red	R	R	4	7	7R	Red	R	R	5	7
<b>3Y</b>	Orange	O	Y	1	3	5 <b>Y</b>	Orange	O	Y	3	5	7 <b>G</b>	Blue	Bl	G	4	7	7 <b>Y</b>	Orange	O	Y	5	7
<b>3G</b>	Blue	Bl	G	1	3	5G	Blue	Bl	G	3	5	7 <b>Y</b>	Orange	О	Y	4	7	7G	Blue	Bl	G	5	7
N	Black	BK	N	1	3	N	Black	BK	N	3	5	N	Black	BK	N	4	7	N	Black	BK	N	5	7
5R	Red/Black	R	R	2	5	2R	Red/Black	R	R	11	2		Red/Black	R	DW	23	8P	4R	Red/Black	R	R	6	4
5Y	Orange/Black	O	Y	2	5	2Y	Orange/Black	О	Y	11	2		Blue/Black	BL	w	23	8P	4Y	Orange/Black	O	Y	6	4
5G	Blue/Black	BL	G	2	5	2G	Blue/Black	BL	G	11	2		Orange/Black	ВК	N	23	8P	4G	Blue/Black	BL	G	6	4
N	Yellow/Black	BK	N	2	5	N	Yellow/Black	BK	N	11	2		Yellow					N	Yellow/Black	BK	N	6	4
8R	Yellow/Red	R	R	9	8	2R	Yellow/Red	R	R	12	2		Brown					4R	Yellow/Red	R	R	14	4
8 <b>Y</b>	Orange/Red	O	Y	9	8	2Y	Orange/Red	О	Y	12	2							4G	Blue/Red	BL	G	14	4
8G	Blue/Red	BL	G	9	8	2G	Blue/Red	BL	G	12	2							4Y	Orange/Red	О	Y	14	4
N	Black/Red	BK	N	9	8	N	Black/Red	BK	N	12	2							N	Black/Red	BK	N	14	4
8R	Red/Blue	R	R	10	8	2R	Red/Blue	R	R	13	2							1R	Red/Blue	R	R	15	1
8 <b>Y</b>	Orange/Blue	О	Y	10	8	2Y	Orange/Blue	О	Y	13	2							1Y	Orange/Blue	О	Y	15	1
8G	Yellow/Blue	BL	G	10	8	2G	Yellow/Blue	BL	G	13	2							1G	Yellow/Blue	BL	G	15	1
N	Black/Blue	BK	N	10	8	N	Black/Blue	BK	N	13	2							N	Black/Blue	BK	N	15	1
	Brown/Red	R	DW	21	6 <b>P</b>		Red/Orange	R	DW	22	2P								Brown/Red	R	DW	24	4P
	Brown/Blue	BL	w	21	6P		Blue/Orange	BL	w	22	2P								Brown/Blue	BL	w	24	4P
	Brown/Black	BK	N	21	6P		Black/Orange	BK	N	22	2P								Brown/Black	BK	N	24	4P
	Red/Orange	R	DW	20	8P		Yellow												Red/Orange	R	DW	25	2P
	Blue/Orange	BL	w	20	8P		Brown												Blue/Orange	BL	w	25	2P
	Black/Orange	BK	N	20	8P		Brown/Black												Black/Orange	BK	N	25	2P
	Yellow						Brown/Red												Yellow				
	Brown						Brown/Blue												Brown				
	Yellow/Orange																		Yellow/Orange				
	Brown/Orange																		Brown/Orange				
	g																						
																							-
																							-

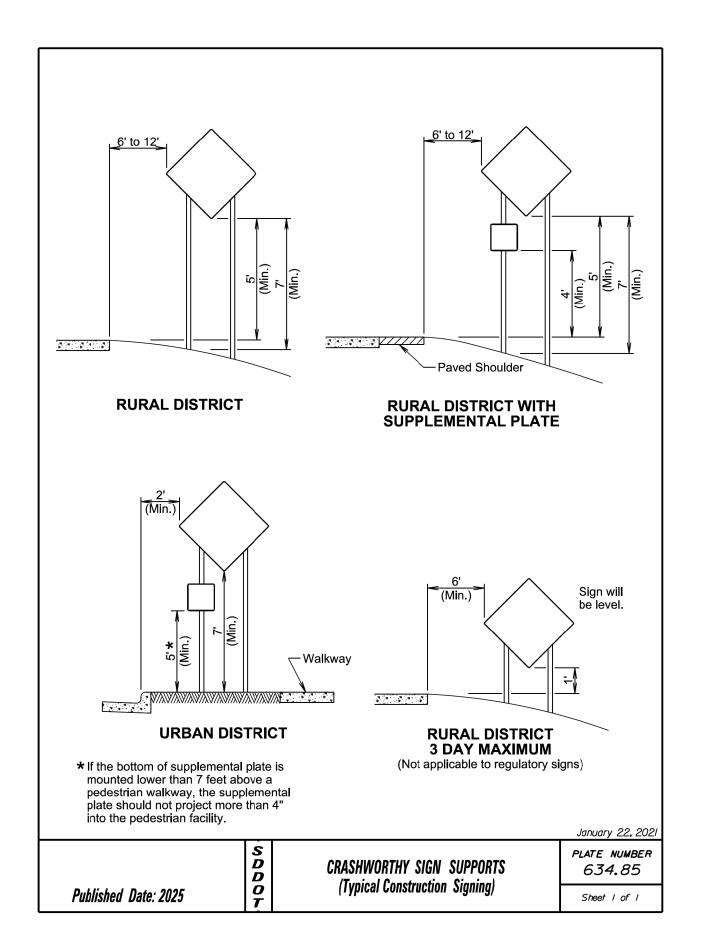
### TRAFFIC SIGNAL WIRING TABLES

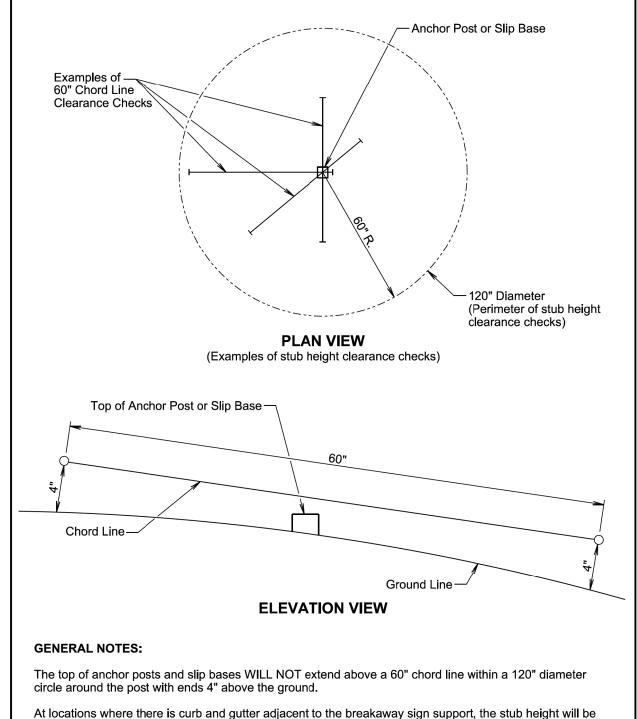
STATE OF	PROJECT	SHEET	TOTAL SHEETS			
SOUTH			ONLLTO			
DAKOTA	000P-471	Ω	a			

POLE:	<b>A</b> 5	CABLE	SIZE:	24/C		POLE:	<b>A</b> 6	CABLE	SIZE:	9/C								
	,.0	J, (JEE		, •			,10	27,322	J.==.	5,0								
CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND. COLOR	HEAD TERM.	HEAD NO.	Ø	CABINET TERM.	CABLE CONDUCTOR COLOR	POLE COND. COLOR	HEAD TERM.	HEAD NO.	Ø							
1R	Red	R	R	7	1	3R	Red	R	R	8	3							
1Y	Orange	О	Y	7	1	3Y	Orange	О	Y	8	3							
1G	Blue	Bl	G	7	1	3G	Blue	BL	G	8	3							
N	Black	BK	N	7	1	N	Black	BK	N	8	3							
6R	Red/Black	R	R	16	6		Red/Black	R	DW	27	4P							
6 <b>Y</b>	Orange/Black	O	Y	16	6		Blue/Black	BL	w	27	4P							
6G	Blue/Black	BL	G	16	6		Orange/Black	BK	N	27	4P							
N	Yellow/Black	BK	N	16	6		Yellow											
6R	Yellow/Red	R	R	17	6		Brown											
6 <b>Y</b>	Orange/Red	O	Y	17	6													
6G	Blue/Red	BL	G	17	6													
N	Black/Red	BK	N	17	6													
6R	Red/Blue	R	R	18	6													
6 <b>Y</b>	Orange/Blue	О	Y	18	6													
6G	Yellow/Blue	BL	G	18	6													
N	Black/Blue	BK	N	18	6													
	Red/Orange	R	DW	26	6P													
	Blue/Orange	BL	W	26	6P													
	Black/Orange	BK	N	26	6P													
	Yellow																	
	Brown/Block																	
	Brown/Black Brown/Red																	
	Brown/Blue														-			
	BIOWII/Blue																	

Plotting Date:

ate: 06/20/2024





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.

S D D O

Published Date: 2025

January 22, 2021

PLATE NUMBER

BREAKAWAY SUPPORT STUB CLEARANCE

634.99

Sheet I of I