Section C: Traffic Control



STATE OF
SOUTH
DAKOTA

P-PH-B-PP 0013(49)121

PROJECT

SHEETTOTAL
SHEETSC1C13

Plotting Date:

12/05/2022

INDEX OF SHEETS

C1	General Layout with Index
C2 to C4	Estimate of Quantities and Plan Notes
C5	Fixed Location Sign Layout
C6	Detour and Road Closure Layout
C7	Detour Route Sign Details
C8 to C12	Standard Plates and Itemized List of Traffic Control
C13	Detour Signing Table

SECTION C ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
634E0010	Flagging	3,200.0	Hour
634E0020	Pilot Car	1,500.0	Hour
634E0110	Traffic Control Signs	1,146.4	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	14	Each
634E0600	4" Temporary Pavement Marking Tape Type I	17,152	Ft
634E0630	Temporary Pavement Marking	34.0	Mile
634E1002	Detour and Restriction Signing	364.0	SqFt

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.

Work will proceed according to the following sequence:

- 1. Remove existing fence and install temporary fence where necessary. Install sediment and erosion control along with perimeter control as needed in advance of grading operations.
- 2. Set up roadway closure and detour for structure replacement.

3. Set up Traffic Control for shoulder widening.

- a. The Contractor will restore traffic to one lane each direction at the end of each day, prior to nightfall.
- b. There shall be a minimum of two miles between simultaneous lane closures. Lane closures may be a maximum of 3 miles long. The maximum amount of total delay to the traveling public will be 15 minutes.
- c. The Contractor will only be allowed to have a shoulder drop off on one side of the road at any one location.
- d. Roadway closure location will not be considered part of the shoulder widening closure.
- e. Any areas where the shoulder is saw cut must be totally completed prior to the Contractor suspending operations for the year. Sawing in any location will not be allowed to take place more than 1 week prior to grading.
- 4. Complete grading, shoulder widening, pipe work and structure replacement.
- 5. Install surfacing and remove roadway closure at structure replacement location and install asphalt surfacing on widened shoulders.
- 6. Install permanent fencing.

- 7. Complete final erosion control.
- 8. Complete milling and asphalt concrete surfacing on roadway.
- 9. Grind rumble strips and stripes.
- 10. Complete flush seal and install permanent pavement markings.
- 11. Install permanent signing.
- 12. Remove fixed location construction signing.
- 13. Complete any remaining project cleanup.

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.

All temporary speed limit signs will have a minimum mounting height of 5 feet in rural locations, even when mounted on portable supports.

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.

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

Shoulder Drop Off signs will be used whenever routing traffic past a shoulder drop off condition as determined by the Engineer. At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize embankment material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the embankment material will not be steeper than a 4:1 within 30 feet of the traveled way.

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.

The Contractor will furnish, install, maintain, and remove TRUCK CROSSING (W8-6) signs daily. The TRUCK CROSSING signs will be displayed always when haul vehicles are hauling material. When hauling conditions no longer exist, the signs will be covered or removed from view. The exact number and location will be determined during construction. Payment for additional signs will be based on the contract unit price per square foot for "Traffic Control Signs".

GROOVED PAVEMENT (W8-15) signs with MOTORCYCLE (W8-15P) plaques are required in advance of areas that have been cold milled and are not resurfaced the same day. The GROOVED PAVEMENT sign assemblies will be installed a minimum of 1000 feet in advance of cold milled sections and remain in place until the sections have been resurfaced.

can be made.

A mobile work operation will be allowed provided the rumble strip or rumble stripe grooving, flush sealing, and pavement marking can be completed satisfactorily by a continuously moving work operation. A mobile work operation will require approval by the Engineer.

The Contractor will need to install LOOSE GRAVEL (W8-7) signs with advisory speed plaques (W13-1P) in areas where loose sand is present during the flush seal operation. LOOSE GRAVEL signs have been included in these plans for this.

Sufficient traffic control devices have been included in the plans to sign one workspace for shoulder widening work (Standard Plate 634.23), one workspace for culvert replacement work (Standard Plate 634.23), and one workspace for lane closure with stop signs (Standard Plate 634.25). These three closures discussed above will be the maximum closures paid for by the SDDOT.

The Road surface carrying traffic will be kept clean. Prior to opening a lane of traffic the Contractor will clean the road surface of any construction debris (mud, dirt, dust, gravel, etc.).

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The Contractor will notify businesses/homeowners a minimum of two weeks prior to construction to inform them of upcoming construction and again a minimum of 48 hours prior to any blocked access so appropriate arrangements

GENERAL TRAFFIC CONTROL, CONTINUED

When traffic is not controlled by pilot car, centerline delineation will be maintained and visible during all phases of construction, including no passing zone markings. At locations where the white edge line is missing or not visible, delineators, cones, or vertical panels will mark the shoulder at a maximum 100' spacing. The costs to maintain pavement markings as described will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

Where needed, Bump signs will be used with advisory speed plaques attached.

Fresh Oil signs will be used whenever traffic is routed past tack, prime or asphalt placement activities.

DETOUR SIGNING

The Contractor will furnish and install the detour signs as shown in these plans. Prior to installing the signs, the Contractor will mark the sign locations and review them with the Engineer. Detour signs will be installed on fixed location, ground mounted, breakaway supports. It will be the responsibility of the Contractor to maintain and reinstall these signs during the project as required by the construction progress. Upon completion of the project, the Contractor will remove the detour signs.

All costs for furnishing the signs, posts, and mounting hardware, and for installing, maintaining, covering, and removing the detour signs will be incidental to the contract unit price per square foot for "Detour and Restriction Signing".

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. Also included in the Estimate of Quantities are WAIT FOLLOW PILOT CAR signs for use on low volume intersecting roads as determined by the Engineer. WAIT FOLLOW PILOT CAR signs will not block the view of the stop sign.



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".

SHOULDER GRADING OPERATION

- 1. Remove surfacing on the shoulders and begin earth moving activities according to Section 120 of the Specifications and these Plan Notes, shoulders will be sawcut.
- 2. Vertical drop offs adjacent to the roadway will not be allowed to be left overnight. The Contractor will utilize embankment and/or granular material to ensure that there are no vertical drop offs; the slope shall not exceed 4:1 within 30' of the travelled way. No separate payment will be made for this work.
- 3. Prior to the application of prime the Contractor will reshape and compact the wedged material into the shoulder to the satisfaction of the Engineer.
- 4. Prior to opening a lane of traffic the shoulder will be marked with drums, 42" cones, or vertical panels at a maximum of 100' spacing. Drums or 42" cones will only be allowed when they will meet the minimum height requirements in the MUTCD of 28" above the driving surface. Crashworthy vertical panels will be required when the minimum height requirements for cones are not met. The Contractor will have a sufficient quantity of vertical panels on site to mark drop offs in the event of an emergency, or weather, delays the resumption of work. Complete grading and placement of surfacing materials as per the Specifications and Plan Notes.
- 5. Place asphalt concrete surfacing on shoulders.

While the Contractor is present and work is being completed the Contractor will be allowed to pilot car the traffic in a single lane through the project with minimal delineation. The Contractor will be required to restore traffic to one lane each direction prior to suspending work at the end of each day. The Contractor will coordinate the work so that all requirements for opening traffic to one lane each direction can be met prior to nightfall and/or forecasted weather events.

A minimum lane width of 12' will be maintained on the existing roadway through work areas. The Contractor will adjust traffic control items to accommodate local farm equipment and over width vehicles when necessary, up to 17' wide.

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 travelling 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.

PIPE REPLACEMENT

Pipe replacement will be phased half at a time to maintain an open lane of traffic. Traffic will be maintained by flaggers as per standard plate 634.23 or by setting up a lane closure using stop signs as per standard plate 634.25.

Shoulders may need to be overbuilt at these locations to allow for traffic to be maintained during the pipe installation. All costs for overbuilding shoulders and removal of the overbuilding will be incidental to various contract items.

TEMPORARY PAVEMENT MARKING

The total length of no passing zone on this project is estimated to be 2.9 miles.

It is estimated that 11 DO NOT PASS (R4-1) and 10 PASS WITH CARE (R4-2) signs will be required to mark the no passing zones, should the Contractor elect to use these signs.

Temporary flexible vertical markers (tabs) will be used to mark dashed centerline. No Passing Zones, and applicable lane lines. Paint will not be allowed for temporary pavement marking on the asphalt concrete wear course or after application of the flush seal.

Covers on the tabs will be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers will be properly disposed of. The Contractor will remove and properly dispose of the tabs after permanent pavement marking is applied. Method of removal will be nondestructive to the road surface and will be accomplished within one week of completion of the permanent pavement marking.

Full reflectivity of all temporary flexible vertical markers (tabs) is required at all times. The Contractor will be required to replace any missing or non-reflective tabs after each installation as detailed below at no additional cost to the State.

If the Engineer determines that an additional pass prior to the flush seal is not required, this application of the temporary pavement marking will be eliminated. If the flush seal is eliminated for the project, the application of the temporary pavement marking on top of the flush seal as well as the additional pass prior to the flush seal will be eliminated.

No adjustment in the contract unit price for "Temporary Pavement Marking" will be made because of a variation in quantities.

In the absence of a signed lane closure or pilot car operation, FLAGGER (W20-7) symbol signs and flaggers, or a shadow vehicle with rotating vellow lights or strobe lights will be positioned on the shoulder in advance of workers for both directions of traffic during the installation and removal of the temporary flexible vertical markers (tabs). The traffic control device used will be moved intermittently to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1) sign, a WORKER (W21-1) symbol sign or a BE PREPARED TO STOP (W3-4) sign will be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work must be approved by the Engineer.

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Quantities of Temporary Pavement Markings consist of:

- One pass on top of the milled surface
- One pass on the blade laid lift surface
- One pass on top of the final lift of asphalt concrete

One pass prior to the flush seal, length as determined by the Engineer One pass after the flush seal

TEMPORARY PAVEMENT MARKING, CONTINUED

Prior to nightfall, tabs will be required to mark centerline on segments of roadway where existing centerline markings have been removed and new markings have not been installed.

Temporary pavement marking for stop bars will consist of 4" temporary pavement marking tape type 1. Placement of each 24" white stop bar will be accomplished by placing six pieces of 4" x 12' tape adjacent to one another. Each workspace requires two stop bars which is an equivalent of approximately 144' of 4" tape (8 workspaces at 144' = 1152'). Temporary pavement marking tape type 1 will be required for centerline markings shown on standard plate 634.25.

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STATE OF SOUTH

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W20-1 ROAD WORK AHEAD signs along rural SD 13 will be mounted on portable supports and will be placed on intersecting roadways as directed by the Engineer. ROAD WORK AHEAD signs will be moved as necessary to keep current with the work activities.

* GROOVED PAVEMENT signs will only be visible when the condition exists. Signs will be covered or removed when the grooved road condition is not present.



>LOTTED FROM - TRBRINT12

DETOUR ROUTE SIGN DETAILS



2.0" Radius, 1.0" Border, Black on White; Rounded Rectangle 1.0" Radius Green; "CLOSED", D 2K;

2.0" Radius, 1.0" Border, Black on Orange; "JCT", D 2K; "TO ELKTON", D 2K; "USE DETOUR", D 2K;



2.0" Radius, 1.0" Border, Black on White; Rounded Rectangle 1.0" Radius Green; "CLOSED", D 2K;

2.0" Radius, 1.0" Border, Black on Orange; "ELKTON", D 2K; "TO JCT", D 2K; "USE DETOUR", D 2K;

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Sheet I of I

✤In situations where multiple work location a limited distance make it practical to place stationary signs, the distance between the advance warning sign and the work should exceed 5 miles.	not	
The ROAD WORK NEXT xx MILES sign m be used instead of the ROAD WORK AHE sign if the work locations occur over a dista of more than 2 miles.	ay AD ince	
Arrow board is required for intermittently a continuously moving mobile operations wh work exceeds 1 hour.	nd ' en UU UUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU	
**If the work space is on a divided highwa an advance warning sign should also be placed on the left side of the directional roadway.	y, NONK SI	
In situations where the distance between the advance warning signs and the work is 2 n to 5 miles, a Supplemental Distance plaqu should be used with the ROAD WORK AHEAD sign.	ne niles e Flash	Arrow Board hing Caution Mode d Attenuator onal)
All costs associated with the traffic control mobile operation including signs, arrow bo and equipment will be incidental to the con lump sum price for "Traffic Control, Miscellaneous".	for ards tract + SHI	DULDER NORK 55
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	ROAD WORK AHEAD	
	** NEXT XX MILES W7-3aP (Optional)	
	↓ †	January 22, 2021
S D D	MOBILE OPERATIONS ON SHOULDERS	plate number 634.04
Published Date: 2024		Sheet I of I

 Messages on signs will vary depending on the operation being conducted. Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legends on vehicle-mounted signs will be covered or turned from view when work is not in progress. Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow boards. Vehicle hazard warning signals will not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights. When an arrow board is used, it will be used in the caution mode. Marching Diamonds are acceptable. Arrow boards will, as a minimum, be Type B, with a size of 60" x 30". All costs associated with the traffic control for mobile operation including signs, arrow boards and equipment will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous". 	 Vehicle-mounted signs will be mounted in a manner such that they are not obscured by equipment or supplies. Sign legen on vehicle-mounted signs will be covered or turned from view when work is not in progress. Shadow and Work vehicles will display high-intensity rotating, flashing, oscillating, or strobe lights flags, signs, or arrow boards. Vehicle hazard warning signals will not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights. When an arrow board is used, it will be used in the caution mode. Marching Diamonds are acceptable Arrow boards will, as a minimum, the Type B, with a size of 60" x 30". All costs associated with the traffic control for mobile operation includi signs, arrow boards and equipmen will be incidental to the contract lur sum price for "Traffic Control, Miscellaneous".
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 Messages on signs will vary depending on the operation being conducted. 	being conducted.
	 Messages on signs will vary depending on the operation being conducted





Posted	Spacing of	Spacing of	of	
Speed Prior to	Signs	Devices	ng	
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(M.P.H.)	`(A) ´	`(G) ́		
0 - 30	200	25		
35 - 40	350	25		
45	500	25		
50	500	50		
55	750	50		
60 - 65		50		
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For low-with shour roadway to road u direction The RO/WORK s duration	volume traffic situa rt work zones on st s where the flagge users approaching t s, a single flagger i AD WORK AHEAD signs may be omitte operations (1 hour	tions raight from both may be use and the El ed for short or less).	ed. ND R	ROAD
For tack when fla FRESH in advan	and/or flush seal o ggers are not being OIL sign (W21-2) v ce of the liquid asp	perations, g used, the vill be displ halt areas.	ayed	
Flashing may be u advance	warning lights and used to call attentic warning signs.	l/or flags on to the		
The char or 42" co	nnelizing devices w ones.	/ill be drum	IS	
Channel along the area who escorting area.	izing devices are n e centerline adjace en pilot cars are uti g traffic through the <u>z-029</u> X80M 0Y08 ONJ	ot required nt to work lized for work		
Channel be used control ir required The buff so that th placed b curve to distance of stoppe	izing devices and f at intersecting road ntersecting road tra er space should be he two-way traffic to efore a horizontal of provide adequate s for the flagger and ed vehicles.	laggers wil ds to ffic as e extended aper is or vertical sight queue	I	Ť
The leng fit field c	ith of A may be adj onditions.	usted to		
Publish	ed Date: 2024		S D D O T	



5EX\TITLEB





Anchor Post or Slip Base Examples of — 60" Chord Line Clearance Checks 5 120" Diameter
 (Perimeter of stub height clearance checks) PLAN VIEW (Examples of stub height clearance checks) Top of Anchor Post or Slip Base-60" Chord Line Ground Line-**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 S PLATE NUMBER D D D O T 634.99 BREAKAWAY SUPPORT STUB CLEARANCE Published Date: 2024 Sheet I of I

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
R11-2	ROAD CLOSED	2	48" x 30"	10.0	20.0
R11-3a	ROAD CLOSED MILES AHEAD LOCAL TRAFFIC ONLY	4	60" x 30"	12.5	50.0
W1-4	REVERSE CURVE (L or R)	1	48" x 48"	16.0	16.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W7-3aP	NEXT MILES (plaque)	4	36" x 30"	7.5	30.0
W8-1	BUMP	4	48" x 48"	16.0	64.0
W8-6	TRUCK CROSSING	2	48" x 48"	16.0	32.0
W8-7	LOOSE GRAVEL	6	48" x 48"	16.0	96.0
W8-11	UNEVEN LANES	2	48" x 48"	16.0	32.0
W8-15	GROOVED PAVEMENT	4	48" x 48"	16.0	64.0
W8-15P	MOTORCYCLE (plaque)	4	24" x 18"	3.0	12.0
W8-17	SHOULDER DROP-OFF (symbol)	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	6	30" x 30"	6.3	37.8
W20-1	ROAD WORK AHEAD	8	48" x 48"	16.0	128.0
W20-2	DETOUR AHEAD	1	48" x 48"	16.0	16.0
W20-3	ROAD CLOSED1000 FEET AHEAD	1	48" x 48"	16.0	16.0
W20-3	ROAD CLOSED 500 FEET AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	6	48" x 48"	16.0	96.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
W21-2	FRESH OIL	10	48" x 48"	16.0	160.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-1	ROAD WORK NEXT 7 MILES	2	36" x 18"	4.5	9.0
G20-1	ROAD WORK NEXT 5 MILES	1	36" x 18"	4.5	4.5
G20-1	ROAD WORK NEXT 2 MILES	1	36" x 18"	4.5	4.5
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
SPECIAL	ONE LANE ROAD WAIT FOR PILOT CAR	4	30" x 18"	3.8	15.2
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 1146.4		1146.4	

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
DAKOTA	P-PH-B-PP 0013(49)121	C12	C13
Plotting	Date: 11/02/2022		

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

Sign		Width	Height		C	olor	Sq Ft	Total
Code	Quantity	Inches	Inches	Sign Description	Background	Legend/Border	per sign	Sq. Ft.
M1-5	19	24	24	SD 13 Route Marker	Green/White	Black	4.0	76.0
M3-1	9	24	12	Directional Marker (East)	White	Black/Green	2.0	18.0
M3-3	12	24	12	Directional Marker (West)	White	Black/Green	2.0	24.0
M4-6	2	24	12	End	Orange	Black	2.0	4.0
M4-8	21	24	12	Detour	Orange	Black	2.0	42.0
M5-1L	2	21	15	Advanced Turn Arrow (Up/Left)	White	Black	2.2	4.4
M5-1R	4	21	15	Advanced Turn Arrow (Up/Right)	White	Black	2.2	8.8
M6-1	6	21	15	Directional Arrow (Left/Right)	White	Black	2.2	13.2
M6-2	1	21	15	Directional Arrow (45 Degreee Left)	White	Black	2.2	2.2
M6-3	1	21	15	Directional Arrow (Up)	White	Black	2.2	2.2
АА	2	78	78	SD 13 Closed Elkton To Jct US 14 Use Detour	Orange / White	Black	42.3	84.6
A	2	78	78	SD 13 Closed Jct US 14 To Elkton Use Detour	Orange / White	Black	42.3	84.6
							TOTAL	364.0

DETOUR AND RESTRICTION SIGNING TABLE

STATE OF	PROJECT	SHEET TOTAL				
SOUTH DAKOTA	P-PH-B-PP 0013(49)121	C13	C13			
Plotting Date: 11/02/2022						

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