

GENERAL MAINTENANCE OF TRAFFIC

Sufficient traffic control devices have been included in these plans to sign one workspace on a two-lane section and one workspace on a four-lane section. If the Contractor elects to work on additional sites simultaneously, the cost for additional traffic control devices shall be incidental to the contract unit price per square foot for Traffic Control Signs.

MAINTENANCE OF TRAFFIC – PCC PAVEMENT REPAIR

A Type 3 Barricade shall be installed at the end of a lane closure taper as detailed in these plans. Additional Type 3 Barricades shall be installed facing traffic within the closed lane at a spacing of 1/4 mile.

Each mainline concrete repair location from which the in place concrete has been removed shall be marked with a minimum of two reflectorized drums. In areas containing numerous concrete repair locations, two reflectorized drums should be installed at a spacing of 660' alternating with the Type 3 Barricades.

Holes adjacent to centerline in the lane open to traffic created during removal and replacement of PCC Pavement Repair areas shall be filled with gravel and cold-mix asphalt concrete prior to opening the lane to traffic. Gravel and cold-mix asphalt concrete shall be furnished by the Contractor.

Holes in the asphalt concrete shoulders created during removal and replacement of PCC Pavement Repair areas shall be filled with gravel cushion material and hot-mix asphalt concrete (to match the shoulder surfacing) prior to opening the lane to traffic. Gravel cushion material and hot-mix asphalt concrete shall be furnished and installed by the Contractor at no additional cost to the State.

Cost for furnishing, hauling and placing gravel and asphalt concrete shall be incidental to the contract unit prices per square yard for Nonreinforced PCC Pavement Repair and Continuously Reinforced PCC Pavement Repair.

Damage to the shoulders, median or ditch due to the Contractor's operations shall be repaired by the Contractor, to the satisfaction of the Engineer, at no expense to the State. This includes the apparent routing of traffic onto these shoulders around the work zones.

Type B warning lights shall be placed on top of FLAGGER (Symbol) signs and shall conform to Section 634.3 A for warning lights and shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

The Contractor will be required to contact the City of Sioux Falls to adjust signal timings at interchanges to accommodate ramp traffic when a ramp lane is closed within a signalized interchange.

MAINTENANCE OF TRAFFIC (INTERSTATE HIGHWAYS)

Ramp traffic at all interchanges shall be maintained at all times. Traffic will be permitted on the ramp shoulders when necessary to allow traffic around a workspace.

Only one lane closure shall be allowed on mainline at any given time.

Single Lane closures in 3 lane and 4 lane sections shall be limited to 1 mile in length and shall not interfere with the operations of on/off ramps. Single lane closures in 2 lane sections shall be limited to 2 miles in length.

The Work Zone for closures utilizing Detail B shall end a minimum of 1,100 feet from an Off ramp.

The Work Zone for closures utilizing Detail C shall not begin within 1,100 feet of an On ramp.

Detail D shall be used only where 4 lanes exist between On/Off ramps and shall not interfere with ramp operations.

Detail E and single lane closures shall be used in the 3 lane sections between interchanges.

Detail F shall be used for the Tie Bar Retrofit. The lane closure and lane shifts shall be installed as shown prior to the work zone and shall not be moved or relocated until the limits of the Tie Bar Retrofit has been completed in its entirety.

Shoulder only closures will be allowed but work activities shall not be conducted simultaneously on the median and outside shoulders of the same directional set of lanes.

The use of interstate maintenance crossovers will not be permitted.

Traffic shall not be allowed on new concrete until it has achieved 3,500 psi as verified by the Engineer.

LIGHTING FOR NIGHT TIME WORK

Flagger stations, working construction equipment and active workspaces shall be lighted between sunset and sunrise. Nonglare light sources are to be provided.

Light levels as defined in NCHRP 476 shall be furnished and measured as:

- Level I: 59 lux (5 foot-candles),
- Level II: 108 lux (10 foot-candles),
- Level III: 215 lux (20 foot-candles).

Light in conformance with Level I is to be provided at the active workspaces.

Acceptable light sources for Level I are existing roadway lighting that produce 59 lux (5 foot-candles), Contractor furnished standalone lights, or vehicle/equipment mounted lights. Standalone units shall be marked with a minimum of two reflectorized drums on an approaching traffic side.

Light in conformance with Level II shall be provided at the locations of working construction equipment.

Light in conformance with Level III is to be provided where labor intensive work is being completed such as during hand work, pavement sawing, project inspection, materials testing and flagging.

Acceptable light sources for Level II and Level III will be Contractor furnished stand-alone lights or vehicle/equipment mounted lights.

Cost for this lighting shall be included in the contract lump sum price for Traffic Control, Miscellaneous.

PROTECTING DROP INLETS

When utilizing the shoulders to maintain traffic, the Contractor shall shift traffic away from the drop inlets where ever possible. If it is not possible to shift traffic away from the drop inlets, the Contractor shall protect the inlets by covering them with 1/2" thick plate steel. The plate steel shall be securely fastened to the concrete pavement adjacent to the drop inlet such that it does not move under traffic. Cost for the steel plate and anchors shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

MOBILE QUEUE WARNING SYSTEM

The Contractor shall furnish and install a mobile queue warning system. This system shall be capable of detecting slowed and stopped traffic prior to and within the work zone. The system shall be capable of detecting slowed and stopped traffic one mile in advance of the work zone and warn drivers of traffic congestion for two consecutive interchanges prior to the work zone. The system shall display the following messages depending on the traffic conditions detected:

During times of free flowing traffic:



During times of moderate congestion (30mph to 45mph)



and



During times of heavy congestion (below 30mph)



and



The placement of the message boards shall be prior to the off ramps for the two interchanges preceding the work as approved by the Engineer.

Cost for maintaining, providing technical support and making any necessary adjustments for the functional operation of the Mobile Queue Warning System shall be incidental to the contract unit price per month for Mobile Queue Detection System.

PORTABLE CHANGEABLE MESSAGE SIGN BOARDS

In addition to the details shown in the plans, Portable Changeable Message Sign boards shall be placed on the interstate On/Off ramps to warn over-width trucks of the narrowed lane conditions on I-29 as applicable.



and



The sign boards shall be placed at the beginning of the ramp such that it can be read by all turning traffic.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-2	YIELD	1	36"	3.9	3.9
R2-1	SPEED LIMIT 45	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 55	4	36" x 48"	12.0	48.0
R2-1	SPEED LIMIT 65	2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT 80	2	36" x 48"	12.0	24.0
R2-6aP	FINES DOUBLE (plaque)	2	36" x 24"	6.0	12.0
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16.0	32.0
W1-4b	REVERSE CURVE (two lanes shift) (L or R)	4	48" x 48"	16.0	64.0
W3-5	SPEED REDUCTION AHEAD (45 MPH)	2	48" x 48"	16.0	32.0
W3-5	SPEED REDUCTION AHEAD (55 MPH)	2	48" x 48"	16.0	32.0
W4-1	MERGE (symbol)	1	48" x 48"	16.0	16.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W5-4	RAMP NARROWS	1	48" x 48"	16.0	16.0
W7-3aP	NEXT __ MILES (plaque)	2	36" x 30"	7.5	15.0
W9-3	CENTER LANE CLOSED AHEAD	1	48" x 48"	16.0	16.0
W12-1	DOUBLE ARROW	1	48" x 48"	16.0	16.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	1	48" x 48"	16.0	16.0
W21-5a	LEFT or RIGHT SHOULDER CLOSED	2	48" x 48"	16.0	32.0
W21-5b	LEFT or RIGHT SHOULDER CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	48" x 24"	8.0	16.0
EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS					566.9
SQFT					

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	8 Each

ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Advance Warning Arrow Board	2 Each