

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECTS 014A-468
US HIGHWAY 14A
LAWRENCE COUNTY

Bridge Deck Repair
PCN i6rq

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	014A-468	1	5

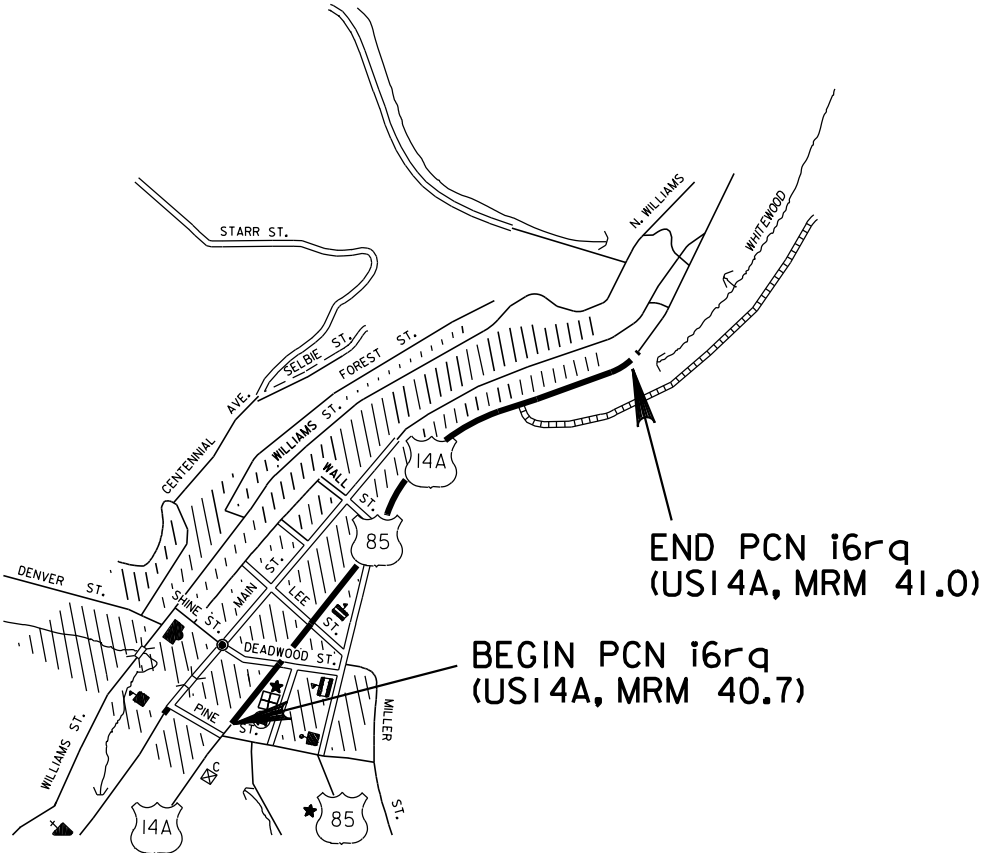
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- Sheet 1: Title Sheet
Sheet 2 - 3: Plan Notes and Quantities
Sheet 4 - 5: Standard Plates



US14A/85	
ADT (2018)	9888
ADT (2038)	13379
DHV	2114
D	51%
T DHV	2.1%
T ADT	4.6%
V	40 mph

STORM WATER PERMIT
None Required



ESTIMATE OF QUANTITIES, Bridge Deck Spall Repair (Deadwood, SD)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
491E0172	Concrete Patching Material, Bridge Deck	167.0	CuFt
550E0110	Concrete Removal Type 1B	100.0	SqYd
550E0120	Concrete Removal Type 1C	49.0	SqYd
550E0140	Concrete Removal Type B	37.0	Ft
634E0010	Flagging	200.0	Hour
634E0110	Traffic Control Signs	194.2	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	12	Each
634E0310	Temporary Flexible Vertical Markers (Tabs)	1,440	Ft
634E0420	Type C Advance Warning Arrow Board	2	Each

SPECIFICATIONS

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

CONTRACT TIME PROVISIONS

Contractor will have until November 4, 2022 to complete work. No work will be performed during the Days of '76 (July 25th-30th), Sturgis Motorcycle Rally (August 5th – August 14th) or Kool Deadwood Nights (August 24th-28th).

SEQUENCE OF OPERATIONS

- Contractor will begin work in the US14A eastbound drive lane. Numerous spalls are located in that lane northeast of Sherman St.
- Remaining work will be phased at discretion of the Engineer.

SCOPE OF BRIDGE WORK

Spall repair on the deck of Str. No. 41-161-156 along US 14A in Deadwood. The overall deck is 1,768' long and the roadway width is 48'.

- Install traffic control as needed.
- Begin repair of the bridge deck by removing all loose and delaminated concrete from the bridge deck surface in the locations requested.
- Clean the surface of the repair area and existing reinforcing steel with abrasive blasting.
- Place patch material and cure.
- Remove traffic control.

COORDINATION WITH THE CITY OF DEADWOOD

The City of Deadwood will be contacted 1 week prior to work being scheduled. When work is expected to impact turning movements of intersections along 14A, the City will need to ensure emergency services are aware of the temporary conditions.

Bob Nelson Jr., Public Works Director - Phone: (605) 578-3082

FLAGGING

Flagging has been included for use during spall repair near intersections on US14A. No intersections will be closed. When repairs can be completed near intersections without closing off cross traffic, a flagger will be used.

TRAFFIC CONTROL

The Contractor may choose the length of the lane closures based on the locations of repair areas. The Contractor will inspect the project prior to preparation of bid proposal to determine number of lane closures necessary to complete construction. Lane closures will not prohibit any movements at intersections.

Requests to deviate from the traffic control specified will be submitted in writing to the Engineer for review. Approval of alternate traffic control 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.

Contractor will not work on weekends and all traffic control will be removed by the end of the workday on Friday.

If contractor is not actively working or curing patches, traffic control will be removed.

Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage of the vegetation, surfacing, embankment, delineators, and existing signs resulting from such indiscriminate use will be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All materials and equipment will be stored within the lane closure during each work day and removed from lane closure at the end of the working day.

Vehicles working in traffic or alongside traffic will be equipped with a flashing amber light visible from all directions. The amber light will be mounted on the uppermost part of the Contractor's vehicle. Lights must have peak intensity within the range of 40 to 400 candelas and must flash at 75 ± 15 flashes per minute. Vehicle flasher/hazard lights are not acceptable.

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

Traffic approaching the project from intersecting roads and entrances must be adequately accommodated. Intersections or large commercial entrances may require additional signing, flaggers, and channelizing devices on a temporary basis until work activities pass these areas.

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

Type III barricades are provided to keep sidestreet or entrance traffic out of the work zone.

TEMPORARY PAVEMENT MARKING

Temporary Pavement Markings will consist of temporary flexible vertical markers (tabs). The Estimate of Quantities includes tabs for tapers based on the following:

US85 – 1440 feet (8 tapers at 180 feet/taper)

Prior to nightfall, tabs will be required for all tapers.

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 at no additional cost to the State.

All costs to furnish, install, maintain, and remove the tabs will be incidental to the contract unit price per foot for Temporary Flexible Vertical Markers (Tabs).

TABLE OF TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R3-7R	RIGHT LANE MUST TURN RIGHT	2	30" x 30"	6.3	12.6
R3-7L	LEFT LANE MUST TURN LEFT	2	30" x 30"	6.3	12.6
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W9-2	LANE ENDS MERGE LEFT	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT		194.2	

CONCRETE REMOVAL

Concrete breakout consists of Concrete Removal Type 1B, Type 1C, and Type B over the deck surface where necessary. Such removal will be in conformance with these plans and Section 550 of the Construction Specifications.

- 1. The existing deck will be broken out to the limits of unsound concrete. The Contractor will sound the area adjacent to the apparent spalled concrete periphery with chain drag or hammer to determine the limits of the loose and delaminated concrete. Breakout limits will be defined with a 3/4" deep sawcut. The Contractor will then remove the concrete down to the top layer of reinforcing steel in the deck within this limit. Removal will be by jackhammers or chipping hammers. Jack hammers and mechanical chipping tools will not be operated at an angle in excess of 45 degrees measured from the surface of the concrete. The edges of the resulting hole in the deck will be nearly vertical or tapered inward from the top down to a minimum depth of one inch. A reversed taper will not be permitted. Any reinforcing steel that is exposed by the concrete removal operations will be thoroughly cleaned by abrasive blasting. Care will be taken during the removal operations not to nick, gouge or in any other way damage the in-place reinforcing steel. Any damage to the in-place reinforcing steel caused by the removal operations will be repaired as directed by the Engineer at no cost to the Department.
- 2. Type B removals will be performed in all spall repair areas in order to ensure patching material will surround at least one reinforcing bar in order to ensure soundness of patch.
- 3. After removing all loose concrete to the defined limits, the area will be abrasive blast cleaned and blown clean with clean, dry, oil-free compressed air at 90 psi. The abrasive blasting will be to the extent that all surface latence is removed. Abrasive blasting will expose the coarse aggregate and remove rust from any exposed reinforcing steel.
- 4. All broken out concrete will be disposed of by the Contractor.
- 5. During concrete removal operations, no broken-out concrete will be allowed to fall into Whitewood Creek.
- 6. The contract unit price per square yard for "Concrete Removal Type 1B", "Concrete Removal Type 1C", and per linear foot for "Concrete Removal Type B" will include breaking out concrete, cleaning, abrasive blasting, and disposal of all broken out material.

CONCRETE PATCHING MATERIAL, BRIDGE DECK

Concrete patching material will be used to repair the deck areas where loose and delaminated concrete was removed.

- 1. Concrete used in the spall repair areas will consist of the following product or an approved equal (as approved by the Region Bridge Engineer in the Rapid City Region Office).

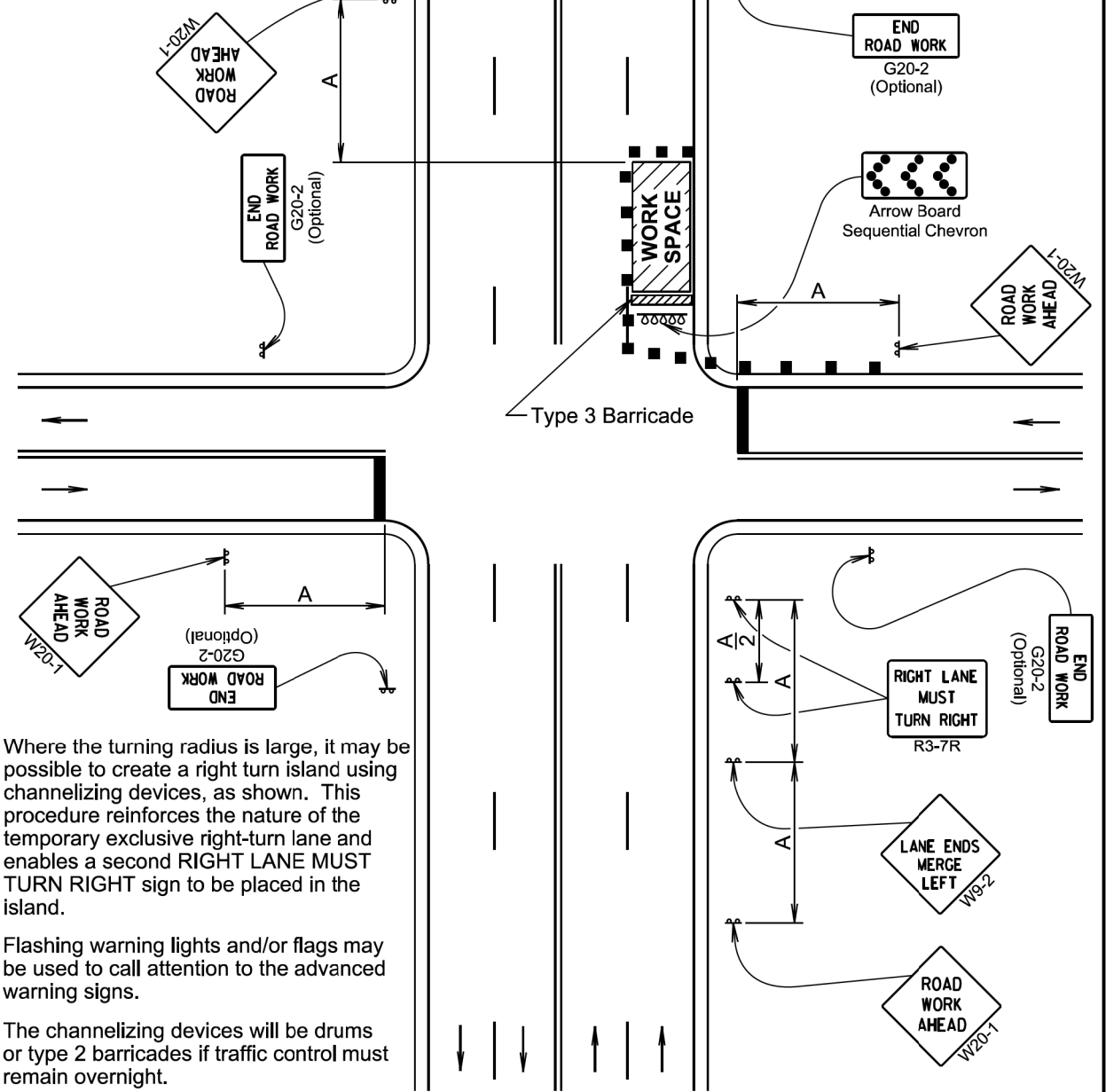
Express Repair
Euclid Chemical
19215 Redwood Road
Cleveland, OH, 44110
Telephone (800) 321-7628
Fax (216) 531-9596

In all repair areas, extend mix with 3/8" clean, well graded pea gravel as recommended by the Manufacturer.
- 2. The existing surface at the time of placement of the concrete patching material will be at least 40° F (4° C), measured by a thermometer placed against the concrete surface and covered with an insulating blanket. The concrete patching material will be mixed and placed in accordance with the manufacturer's technical data sheet. The Contractor will provide a manufacturer's technical data sheet to the Engineer prior to performing the work.
- 3. Immediately after finishing the concrete patching material, the surface of the concrete patching material will be covered with a double layer of wet burlap for a minimum of 12 hours. Following the wet cure, the burlap will be removed and the surface allowed to air dry until it is opened to traffic.
- 4. Concrete Patching Material, Bridge Deck will be measured to the nearest 0.1 cubic feet as determined from the theoretical yield per bag of Concrete Patching Material, Bridge Deck. Concrete Patching Material, Bridge Deck will be paid for at the contract unit price per cubic foot. Payment will be full compensation for all labor, equipment, materials, and all incidental work required to furnish, place and cure the concrete patching material within the removal areas.

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For intersection approaches reduced to a single lane, left-turning movements may be prohibited to maintain capacity for through traffic.

The standard procedure is to close on near side of the intersection any lane that is not carried through the intersection. However, when this results in the closing of a right lane having significant right-turning movements, then the right lane may be restricted to right turns only, as shown.

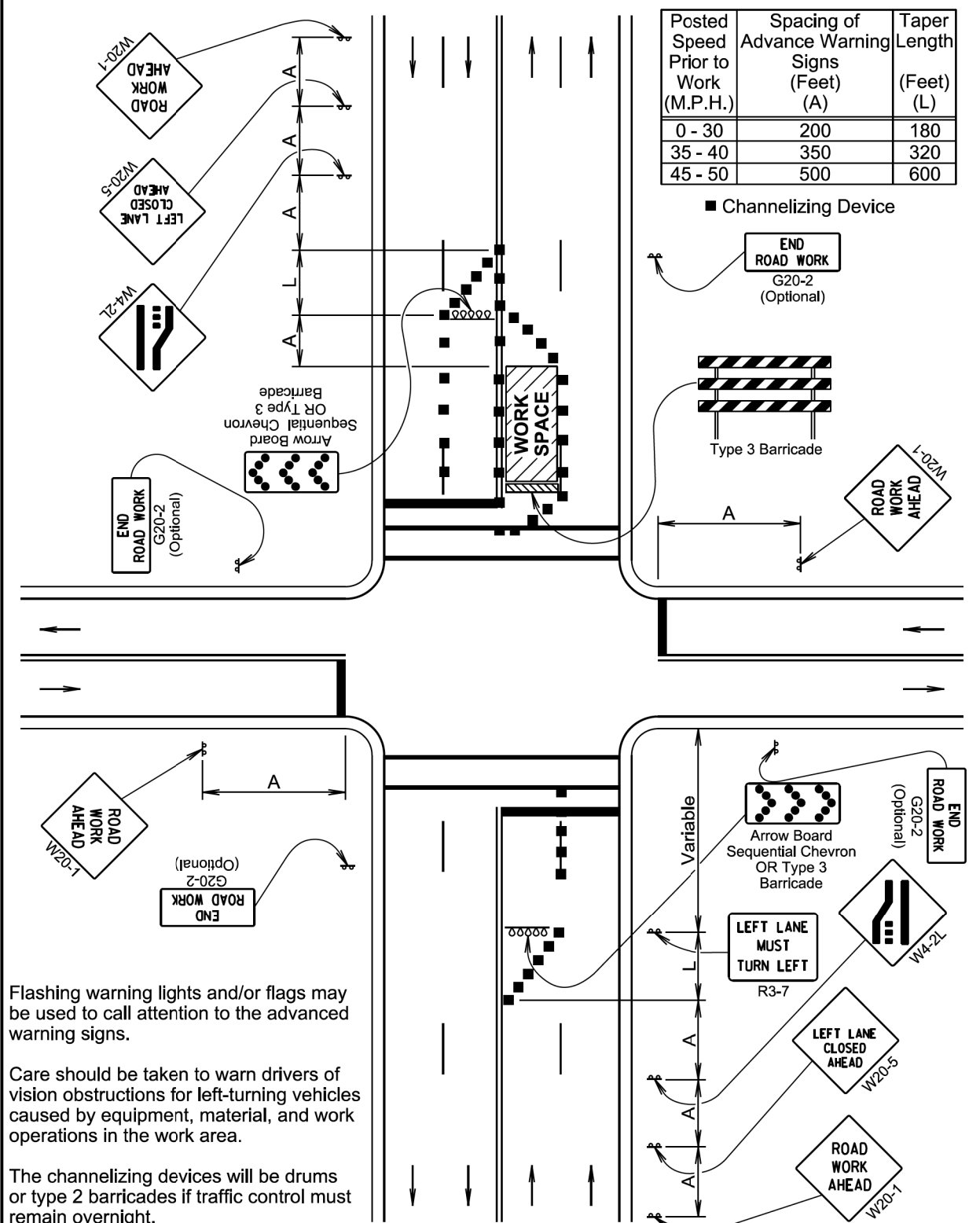


Where the turning radius is large, it may be possible to create a right turn island using channelizing devices, as shown. This procedure reinforces the nature of the temporary exclusive right-turn lane and enables a second RIGHT LANE MUST TURN RIGHT sign to be placed in the island.

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

The channelizing devices will be drums or type 2 barricades if traffic control must remain overnight.

January 22, 2021



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

Care should be taken to warn drivers of vision obstructions for left-turning vehicles caused by equipment, material, and work operations in the work area.

The channelizing devices will be drums or type 2 barricades if traffic control must remain overnight.

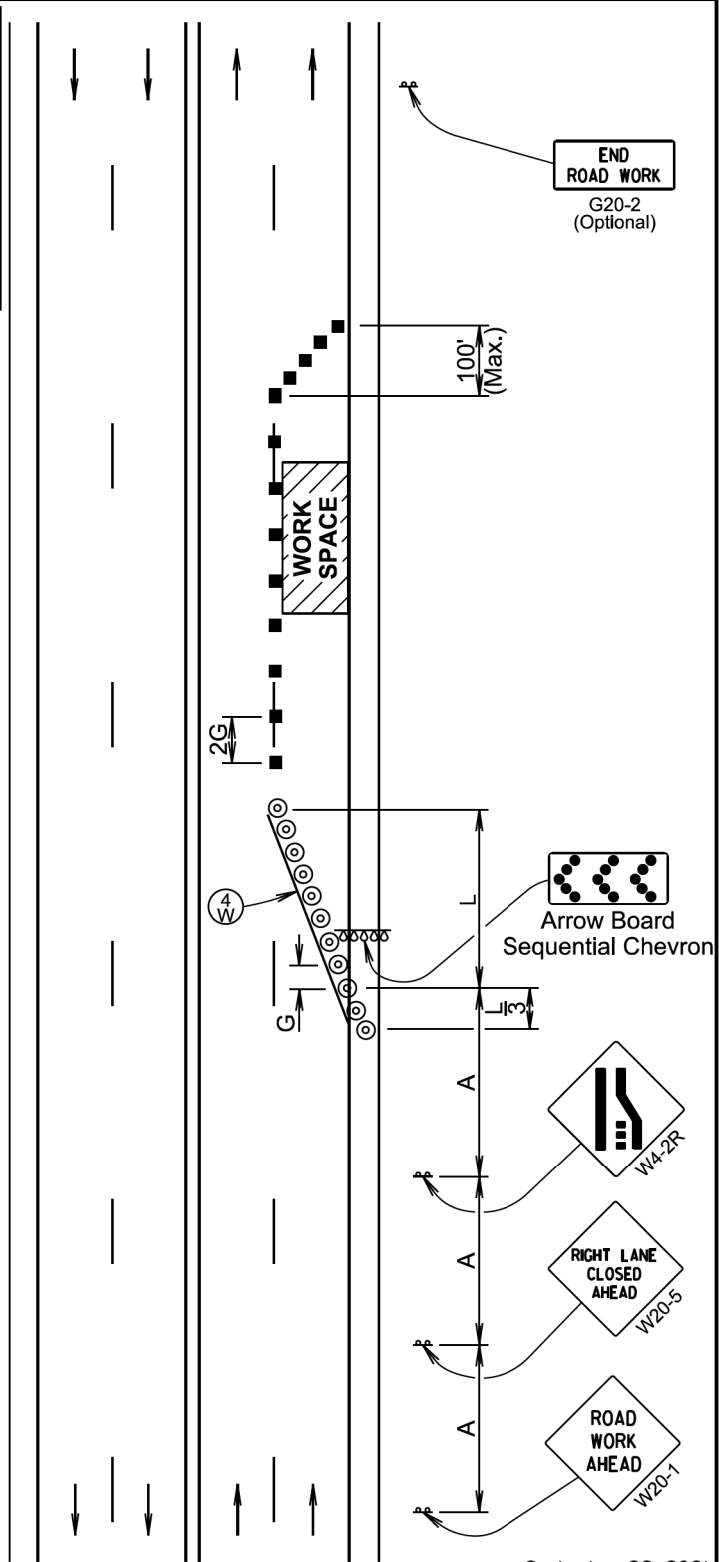
September 22, 2021

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 *

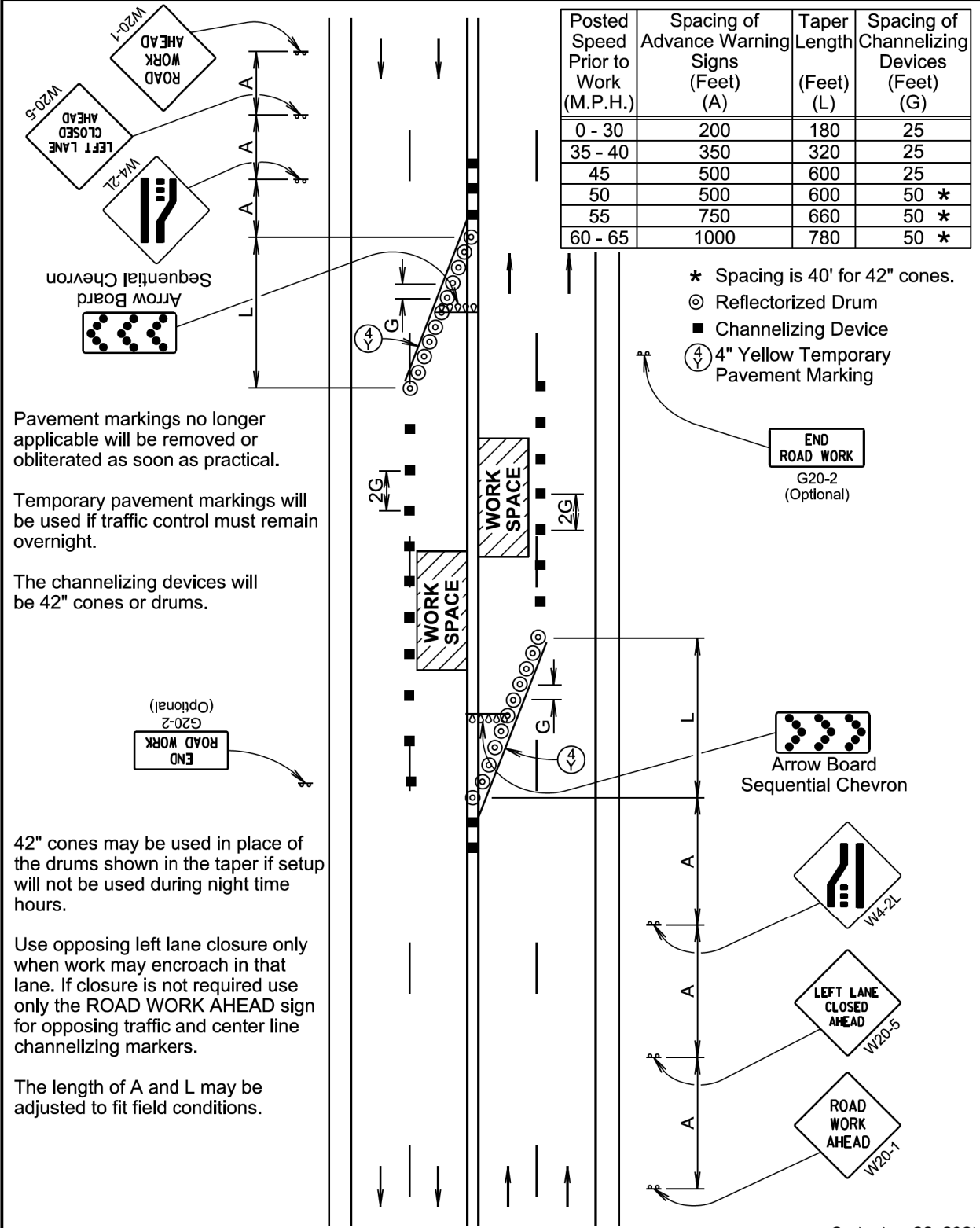
- * Spacing is 40' for 42" cones.
- ⊙

 ReflectORIZED Drum
- Channelizing Device
- ④ W

 4" White Temporary Pavement Marking
- The channelizing devices will be 42" cones or drums.
- 42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.
- Temporary pavement markings will be used if traffic control must remain overnight.
- The length of A and L may be adjusted to fit field conditions.



September 22, 2021



September 22, 2021