

Section C: Traffic Control Plans

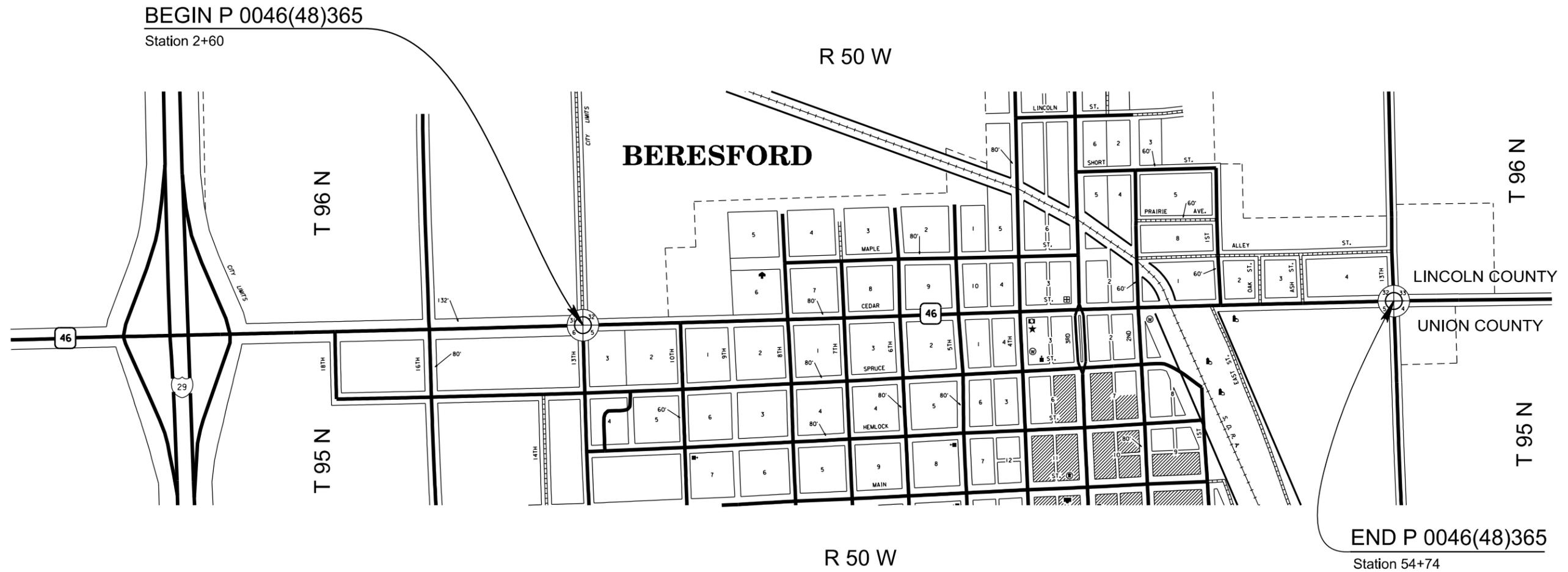
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0046(48)365	C1	C20

INDEX OF SHEETS

- C1 General Layout W/Index
- C2-C4 Estimate and Notes
- C5-C13 Traffic Control Layouts
- C14 Sign Tables
- C15 Typical Layout for Mobile Operations
- C16-C20 Standard Plates

Plot Scale - 1:48600

Plotted From - trya1m145



SECTION C-ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
110E1400	Remove Pavement Marking, 4" or Equivalent	3,600	Ft
260E2060	Gravel Cushion, Modified	289.0	Ton
320E1200	Asphalt Concrete Composite	37.0	Ton
634E0010	Flagging	200	Hour
634E0100	Traffic Control	7,597	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0330	Raised Pavement Markers	28,000	Ft
634E0610	4" Temporary Pavement Marking Tape Type 2	864	Ft
634E0640	Temporary Pavement Marking	18,000	Ft
634E1002	Detour Signing	325.1	SqFt
900E1080	Orange Plastic Safety Fence	600	Ft

SEQUENCE OF OPERATIONS

The Contractor shall follow the following Sequence of Operations unless an alternate Sequence of Operations is submitted in writing two weeks prior to the pre-construction meeting and approved by the Engineer prior to the start of work.

- The project shall consist of two phases, constructed one half at a time:
 - Phase 1A – SD 46 (Cedar St.) EB Lanes construction from 2+60 to 30+70 (4th St.)
 - Phase 1B – SD 46 (Cedar St.) EB Lanes construction from 30+70 to 54+74 (East 13th St/Louise Ave.)
 - Phase 2A – SD 46 (Cedar St.) WB Lanes construction from 2+60 to 30+70 (4th St.)
 - Phase 2B – SD 46 (Cedar St.) WB Lanes construction from 30+70 to 54+74 (East 13th St/Louise Ave.)
- Construction shall be completed one-half roadway width at a time, with traffic being maintained at all times.
- The following intersection shall be kept open at all times: Cedar & 3rd Street. Closure time of all other streets intersecting the project shall be kept to a minimum and shall not exceed 2 consecutive intersections closed at one time.
- Left & Right turns will be prohibited as directed by the Engineer.
- Mail service and emergency vehicle access shall be maintained at all times.
- Existing street lighting shall be maintained as much as practical. The City of Beresford will remove and reset poles as necessary. The Contractor shall coordinate with the City of Beresford to minimize delays.
- The Contractor shall hold weekly public meetings. Also, prior to the start of any work on the project, the Contractor shall hold an initial public meeting to discuss project sequences, traffic control, goals, etc. The Contractor will be responsible for securing a time and location for these meetings.
- When work begins on the project, the Contractor shall be responsible for maintaining the entire project. This shall include, but is not limited to, all surface maintenance, drainage, weed control and traffic signs.
- Detailed description of each Phase is as follows:

SEQUENCE OF OPERATIONS cont:

Phase 1:

- Construct temporary widening on the east end of Cedar St. to accommodate two-way traffic on the westbound lane east of East 13th St/Louise Avenue.
- Move two-way traffic onto the westbound lanes of Cedar St. as per Sheets C8 and C9.
- Grade, complete utility work, install storm sewer, curb and gutter, sidewalk, and surface the eastbound lanes with PCCP. The railroad crossing shall be replaced by others. The replacement shall be completed prior to placing the PCCP at the railroad crossing.

Phase 2:

- Construct temporary widening on the east end of Cedar St. to accommodate two-way traffic on the eastbound lane east of East 13th St/Louise Avenue.
- Move two-way traffic onto the eastbound lanes of Cedar St. as per Sheets C10 and C11.
- Grade, complete utility work, install storm sewer, curb and gutter, sidewalk, and surface the westbound lanes with PCCP.
- Remove the temporary widening on the east end of Cedar St.
- Place permanent pavement markings.

RAILROAD CROSSING REPLACEMENT COORDINATION

The Contractor shall coordinate with the D & I Railroad, a division of L.G. Everest Inc. of Sioux Falls, SD, phone number 605-330-6578, to facilitate the replacement of the railroad crossing during phase 1 of construction. The Contractor shall install the detour signing and close SD Highway 46 to through traffic for the replacement per Sheet C6. Upon completion of the railroad crossing modification the Contractor shall remove the closure and the detour signing.

SAWING CONCRETE

The Contractor shall saw the existing pavement full depth where new PCCP or asphalt concrete meets the existing pavement. Also, full depth sawing may be required at the intersections and at an offset parallel to the centerline in order to maintain two-way traffic on existing pavement. The cost for this work shall be incidental to the contract unit price per square yard for Remove Concrete Pavement.

MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of permanent traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. 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 to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

MAINTENANCE OF TRAFFIC cont:

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

Existing stop signs that are temporarily removed shall be reset prior to the end of each day's work. A stop sign on portable supports must be used whenever a permanent ground mounted stop sign is removed. Cost for this work shall be included in the contract unit price per unit for Traffic Control.

Removal of the existing surfacing shall not occur more than 600 feet in advance of the first underground work crew. Grading and gravel cushion placement shall be within 1200 feet of the first underground work crew.

The Contractor will be required to maintain drainage on the project during the course of construction. This work will include the installation of Contractor furnished pipe to temporarily connect the old storm sewer to the new storm sewer system, performing the necessary shaping, and all other needed miscellaneous work. No separate payment will be made for this work. All costs of maintaining the drainage shall be incidental to the contract unit price for Gravel Cushion, Modified.

Where phased construction of the intersections is indicated it should be understood that the pouring sequence shall correspond with the joint details shown on the pavement layout. Each phase may require two or more individual pours.

200 tons of Gravel Cushion, Modified have been provided for traffic control purposes to maintain traffic during construction. When directed by the Engineer, the Gravel Cushion, Modified shall be salvaged and used for the final shaping of the base. Cost for removal, disposal and/or reuse of this material shall be incidental to the contract unit price for the various bid items.

The Contractor shall notify the County Dispatcher and the Beresford Police Department prior to the closure of and upon reopening of any intersection.

Throughout the project, the Contractor must maintain local traffic and access to businesses and residences at all times. Adequate passage and ramping shall be provided. The Contractor shall keep businesses and residents informed of construction sequences in areas which have a direct effect on their access.

Construction signs shall not obscure existing signs and be a minimum of 50' to 100' from any existing signs.

Placement of temporary R1-1 STOP signs, as directed by the Engineer, will also be required where major business approaches enter the project. R1-1 STOP signs will be measured and paid for by the unit.

Enough signs and barricades have been included in the Estimate of Quantities to pay the Contractor for the maximum number of each of these devices that will be required on the project at one time. The Contractor will be required to remove and reset individual traffic control devices during the differing phases of construction as detailed in these plans. Each traffic control device will only be paid for one time no matter how many times it has to be moved.

CELEBRATION COORDINATION

The City of Beresford hosts a celebration. No work will be allowed that would impede two-way traffic in all directions through the intersection of Cedar Street and 3rd Street from Friday through Sunday, June 12th, 2015 through June 14th, 2015 during the Wheels and Squeals celebration.

PEDESTRIAN TRAFFIC ACCOMODATIONS

The Contractor shall accommodate pedestrian and bicycle traffic. The Contractor shall maintain pedestrian traffic, including those with disabilities, at all times. In times of inclement weather, the Contractor may be required to place a temporary boardwalk or other approved surface to maintain this traffic. Cost for this temporary surface shall be incidental to the various contract items. The Contractor shall install pedestrian traffic control as per Standard Plates 634.33 and 634.35 for sidewalks that will be closed during construction. Payment for these signs will be based on the contract unit price per unit for Traffic Control.

Longitudinal channelizing devices or orange plastic safety fence with a continuous detectable edging shall be used to protect pedestrian traffic from open excavations. All costs to furnish, install, maintain and remove the safety fence shall be incidental to the contract unit price per foot for Orange Plastic Safety Fence.

The Contractor shall maintain pedestrian traffic on one side of Cedar Street at all times.

The Contractor shall submit a plan for maintaining pedestrian and bicycle traffic to the Area Engineer for approval two weeks prior to the preconstruction meeting.

All costs of pedestrian and bicycle traffic maintenance, except signs paid for by the unit and orange plastic safety fence paid for by the foot, shall be incidental to the various traffic control contract bid items.

EXISTING MAILBOXES AND NEWSPAPER CONTAINERS

The Contractor will be required to relocate on temporary supports existing mailboxes and newspaper containers affected by the project as necessary in order to provide continuous mail service to the local residents and businesses throughout the project. It is anticipated that the Contractor will be required to relocate these mailboxes at least twice during construction. The Engineer will approve the material used for temporary supports. Cost of this work shall be incidental to various contract items. The Contractor shall coordinate this work with the Beresford Postmaster at (605) 763-2862.

INCIDENTS

An incident is an emergency road user occurrence or unplanned event that impedes the flow of traffic such as an accident, hazardous materials spill or similar event.

The Contractor shall set up a meeting prior to start of work to plan and coordinate the response to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, the City of Beresford representative and local emergency response entities to the meeting.

The Contractor will be required to flag traffic, relocate signs, and adjust traffic control devices as required to warn approaching motorists of the incident and resulting queued traffic.

The Contractor shall provide adequate personnel to accomplish the necessary traffic control work in the event of an incident.

Flagging for incidents shall be paid for at contract prices.

Costs for all other work shall be incidental to the contract unit price per unit for Traffic Control.

TEMPORARY STOP BARS

White Temporary Pavement Marking Tape – Type 2 shall be used for the stop bars as detailed in these plans and paid for at the contract unit price per foot for 4” Temporary Pavement Marking Tape – Type 2.

DETOUR SIGNING

The Contractor will be required to install, maintain and remove the detour traffic signing in accordance with the Specifications, the MUTCD and as detailed in these plans. Detour sign locations may be modified as required for the phase of construction in progress. Detour signing shall be installed on breakaway ground mounted supports. All costs for furnishing, installing, maintaining and removing detour signs, posts and mounting hardware shall be incidental to the contract unit price per square foot for Detour Signing.

RAISED PAVEMENT MARKERS

Raised Pavement Markers shall be used as temporary pavement marking on existing concrete, new concrete and asphalt concrete areas that will not be removed. Also, Raised Pavement Markers shall be used on all traffic control tapers.

The raised pavement markers shall be attached to the roadway surface with a bituminous adhesive capable of being removed from the roadway.

Cost for furnishing, installing, maintaining (including cleaning and replacing, if necessary), removing markers and bituminous adhesive shall be included in the contract unit price per foot for Raised Pavement Markers.

REMOVE PAVEMENT MARKING

Existing pavement marking which conflicts with the desired traffic patterns detailed in traffic control layouts in the plans shall be removed by the Contractor unless otherwise shown. Removal of pavement marking shall be paid at the contract unit price per foot for Remove Pavement Marking, 4” or Equivalent.

PHASES 1 & 2 - TEMPORARY WIDENING AND SURFACING

The following work shall be completed at the beginning of Phases 1 & 2:

Widen the east end of Cedar St. Widening outside the existing asphalt surfacing will be required from station 55+40 to station 56+85 from 16 feet right and left to 22 feet right and left, then from station 56+85 to station 57+75 taper from 22 feet right and left to the existing 16 feet right and left. This widening will accommodate the traffic control layouts on sheets C9 and C11.

The existing topsoil shall be removed and stockpiled for replacement upon restoration of the inslopes. Additional material removed, to achieve the required depth for the placement of surfacing, shall be placed on the inslope and compacted for the temporary widening to the satisfaction of the Engineer. This material shall be removed from the project upon completion of the construction and the inslopes shall be returned to their previous condition. Topsoil shall be replaced during the restoration. All costs to prepare the shoulders for the temporary widening shall be incidental to the related items.

The surfacing shall consist of 8” (2-4” lifts) of Gravel Cushion, Modified and 3” of Asphalt Concrete Composite with the top of the surface elevation constructed to match the existing roadway elevations and slope.

An estimated 89 tons of Gravel Cushion, Modified and 37 tons of Asphalt Concrete Composite are included in the Estimate of Quantities for surfacing of the temporary widening areas. After completion of the project, the temporary surfacing shall be removed and disposed of by the Contractor.

PHASES 1 & 2 - TEMPORARY WIDENING AND SURFACING cont:

Gravel Cushion, Modified and Asphalt Concrete Composite shall be compacted to the satisfaction of the Engineer.

All costs to furnish, haul, place, compact, remove and dispose of the surfacing materials shall be paid for at the contract unit price per ton for Asphalt Concrete Composite and Gravel Cushion, Modified, respectively.

TABLE OF TEMPORARY SURFACING QUANTITIES

Location	Gravel Cushion Modified (Ton)	Asphalt Concrete Composite (Ton)
Phases 1 & 2	89	37
Maintenance of Traffic	<u>200</u>	<u>0</u>
Totals	289	37

ASPHALT CONCRETE COMPOSITE

Asphalt Concrete Composite shall be furnished by the Contractor.

Mineral aggregate for Asphalt Concrete Composite shall conform to the requirements of the Specifications for Class E, Type 1.

The asphalt binder used in the mixture shall be PG 64-22, 64-28, or 64-34 Asphalt Binder.

All other requirements in the Specifications for Asphalt Concrete Composite shall apply.

TRAFFIC CONTROL, MISCELLANEOUS

All necessary traffic control devices to separate and maintain traffic shall be included in the contract lump sum price for Traffic Control, Miscellaneous.

The Contractor will be required to install and maintain "trailblazing" signs to businesses along the project that have their access affected by construction activities. A maximum of 2 signs with a maximum size of 3' wide by 2' high may be furnished by an individual business. The Contractor will be required to install the signs on temporary supports, maintain and relocate them as necessary, and remove and return the signs to the owners at the completion of the work. Cost of this work shall be included in the contract lump sum price for Traffic Control, Miscellaneous. It is estimated that 6 signs will be furnished to the Contractor. If the number actually installed deviates from this number, the Traffic Control, Miscellaneous item will be adjusted either up or down at the rate of \$75 per sign for the total deviation from 6.

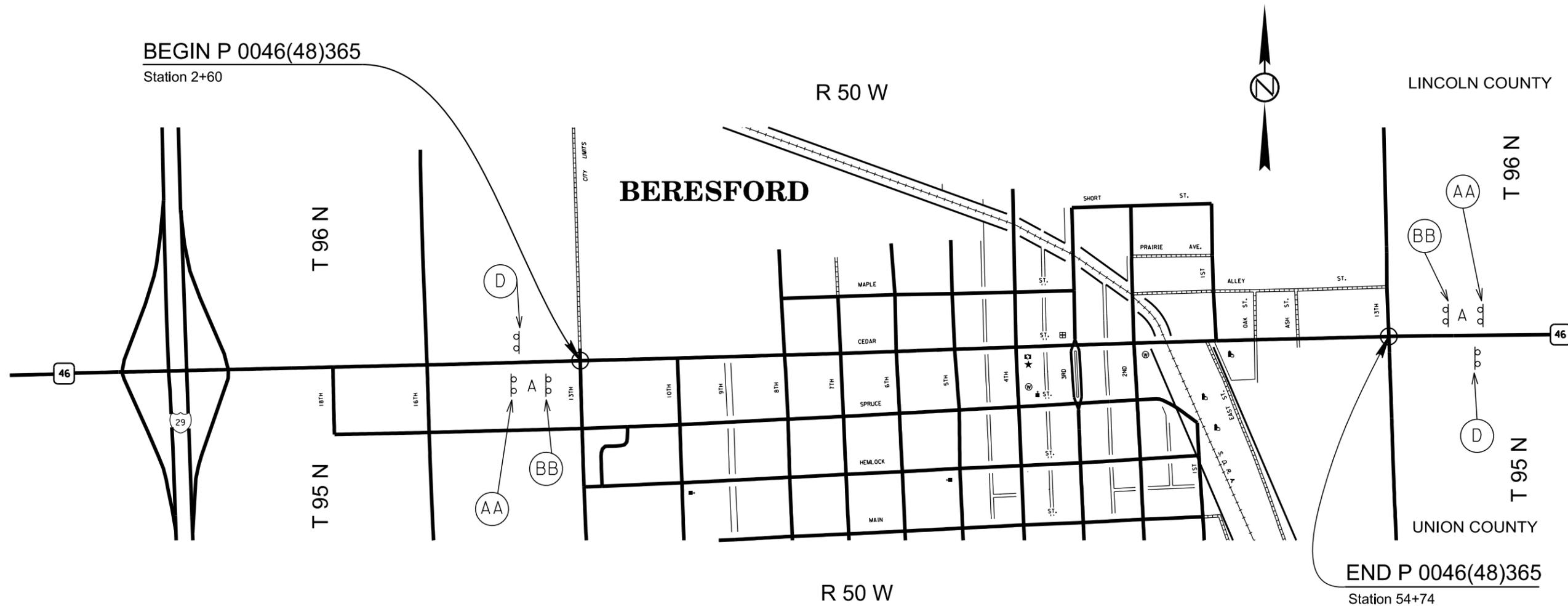
CONTRACTOR FURNISHED PROGRESS SCHEDULES

Prior to the preconstruction meeting the Contractor shall furnish the Engineer two copies of a bar chart method progress schedule. The schedule shall consist of a construction schedule and a brief written narrative. The schedule shall contain the following information:

1. A time scale to graphically show percentage of work scheduled for the completion within the contract completion requirements.
2. Definition and relation of work activities to contract pay items.
3. Work activities (prime contractor and all subcontractor activities) in the order the work will be performed including submittals, approvals, deliveries, temporary traffic control, and permanent signing/stripping.
4. All major work activities that are controlling factors in the completion of the work.
5. The time required for each activity and its relationship in time to other activities.
6. The total expected time to complete all work.
7. The expected work shifts in days per week and hours per day and the days when work is not expected to be performed.

The schedule shall be updated, revised and resubmitted on a monthly interval until the project is substantially complete. There will be no direct payment for the contractor furnished schedule. All costs associated with the schedule shall be incidental to the related items. Failure to properly submit the required construction schedules will result in the withholding of progress payments until an approved schedule is received.

TRAFFIC CONTROL FIXED LOCATION SIGNS GROUND MOUNTED SUPPORT



END
ROAD WORK
G20-2
(36"X 18")



ROAD WORK
NEXT IMILE
G20-1
(48"X 24")



SIGNS FOR
WORK ACTIVITY
CURRENTLY IN
PROGRESS

NOTES:

Signs are to be placed 50' -100'
from intersections or other signs.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)	
	(A)	(B)
0 - 30	200	200
35 - 40	200	200
45 - 50	350	350
55	500	500
60 - 65	500	1000
75	500	2600

Overwidth Vehicle Restriction Signing

I

NO VEHICLES OVER 10FT. WIDE

SPECIAL B
(72"x 24")
< Black Legend/White Background

INSTALL 25' - 100' FROM BEGINNING OF PROJECT

O

WIDTH RESTRICTION
10 FT. MAXIMUM
7 MILES AHEAD
USE ALT ROUTE

< Black Legend/Orange Background
< Black Legend/White Background
SPECIAL A
(120"x 60")

M

WIDTH RESTRICTION
10 FT. MAXIMUM
1 MILE AHEAD
USE ALT ROUTE

< Black Legend/Orange Background
< Black Legend/White Background
SPECIAL A
(120"x 60")

J

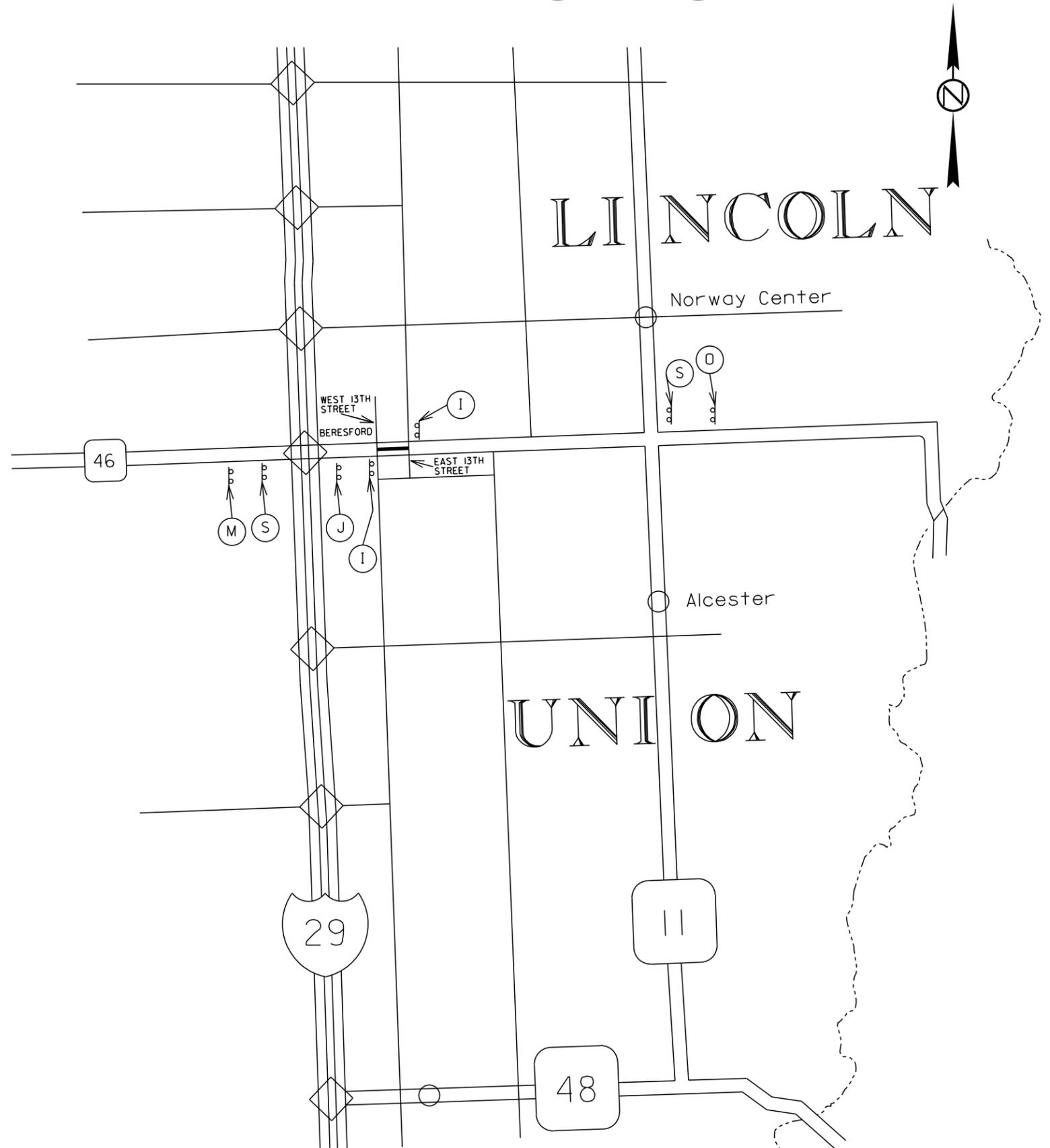
WIDTH RESTRICTION
10 FT. MAXIMUM
0.5 MILE AHEAD
USE ALT ROUTE

< Black Legend/Orange Background
< Black Legend/White Background
SPECIAL A
(120"x 60")

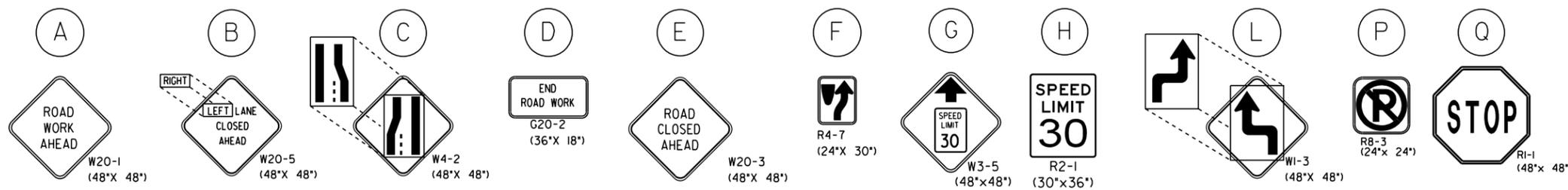
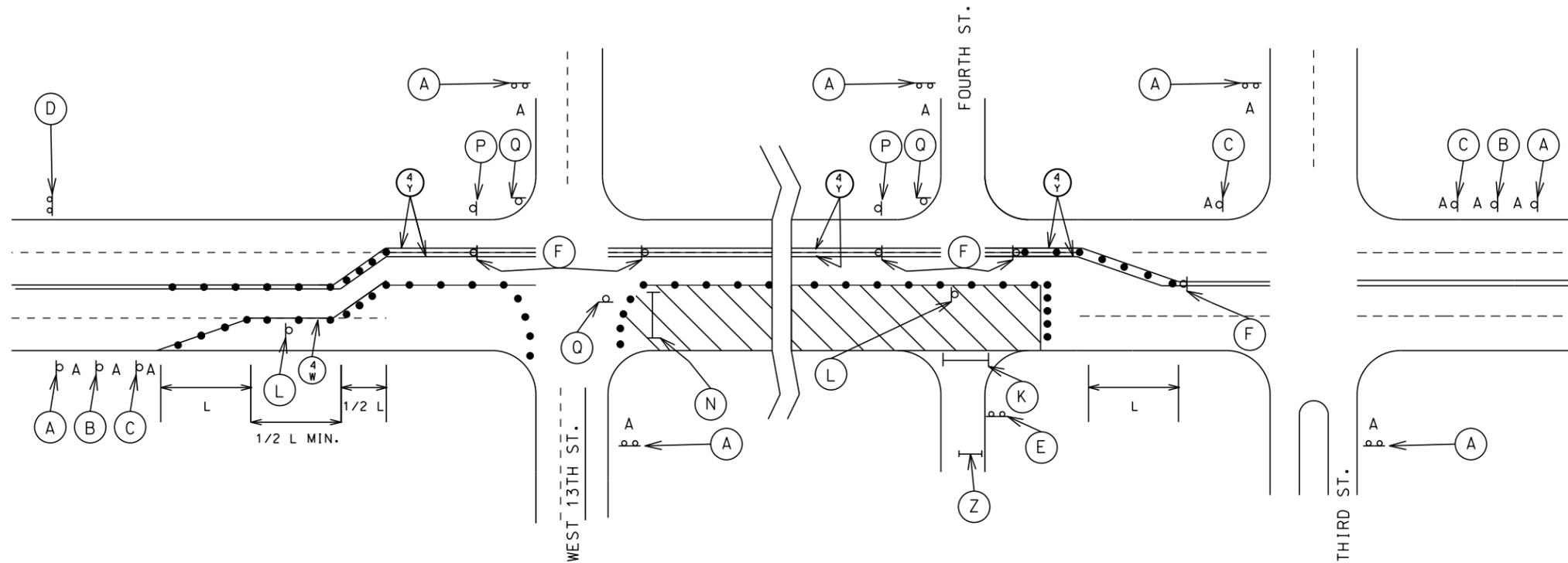
S

**VEHICLES OVER 10 FT. WIDE
EXIT HERE**

SPECIAL C
(72"x 36")
< Black Legend/White Background



TRAFFIC CONTROL PHASE 1A EAST BOUND LANES CONSTRUCTION



NOTES:

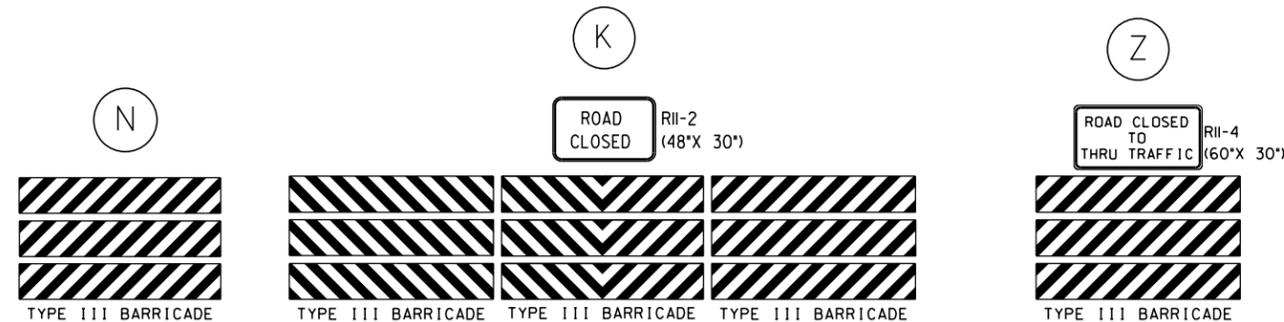
Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes on SD HWY 46.

- REFLECTORIZED DRUMS - 25 ft. spacing on tapers & 50 ft maximum spacing on tangent, unless otherwise shown.

④ - 4" YELLOW TEMPORARY PAVEMENT MARKING

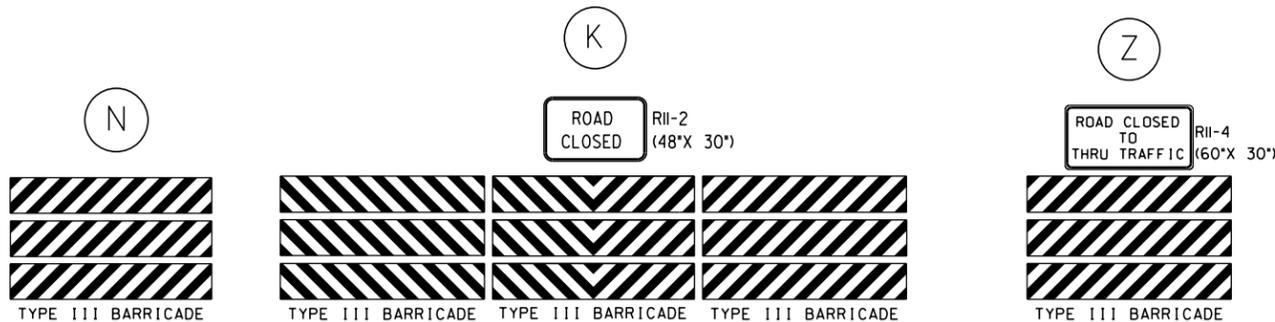
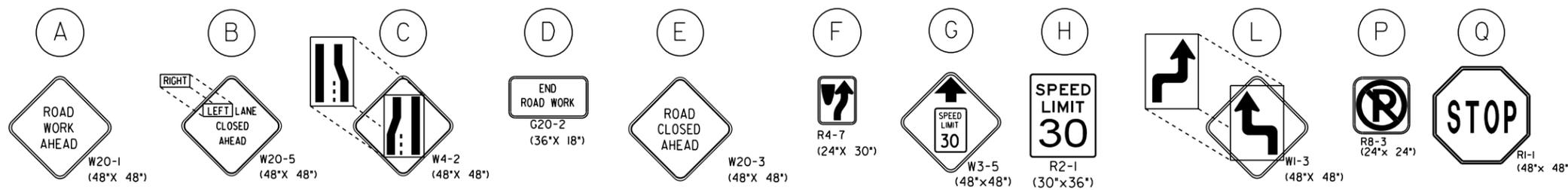
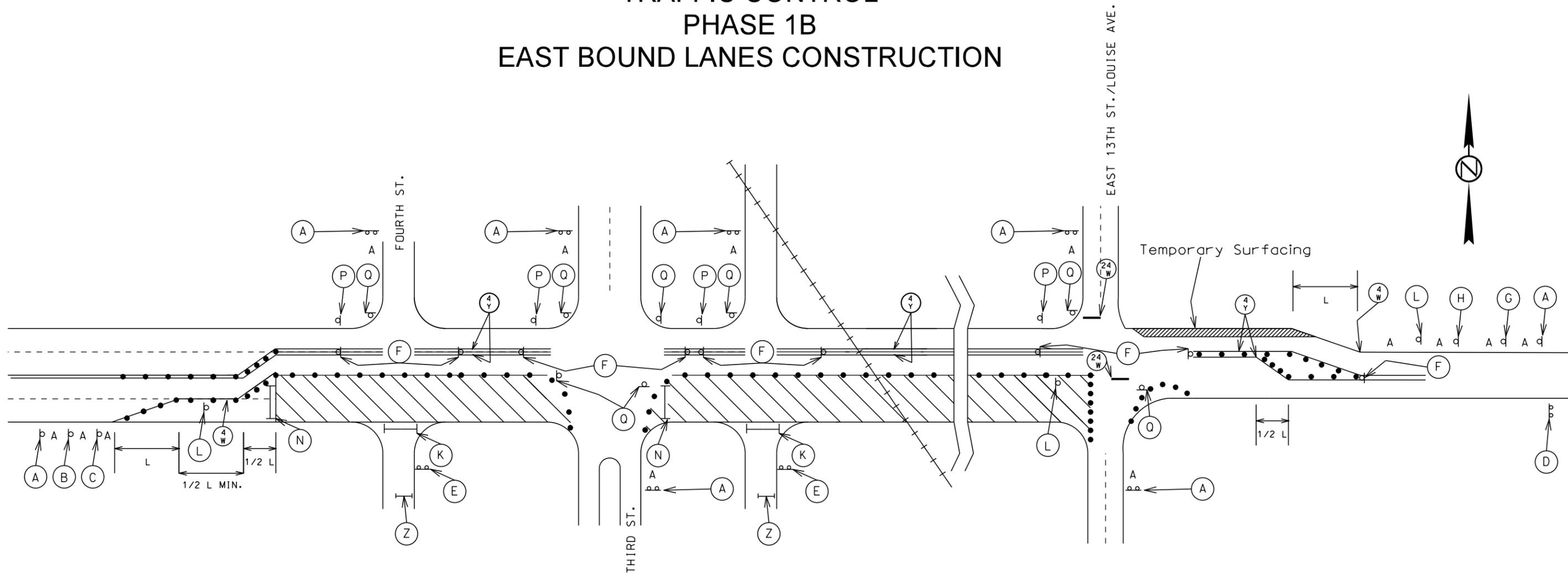
④ - 4" WHITE TEMPORARY PAVEMENT MARKING



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



TRAFFIC CONTROL PHASE 1B EAST BOUND LANES CONSTRUCTION



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



NOTES:

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

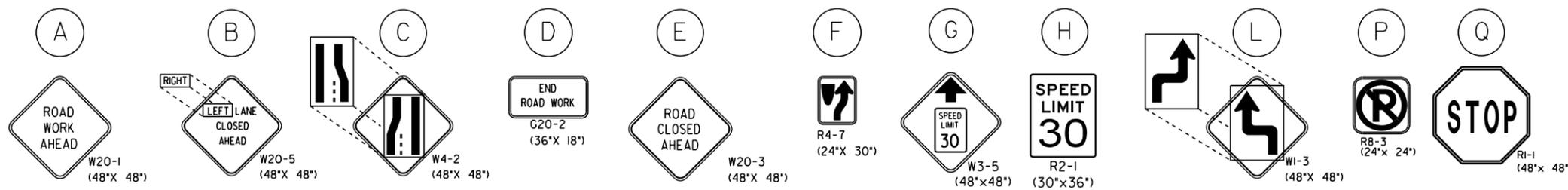
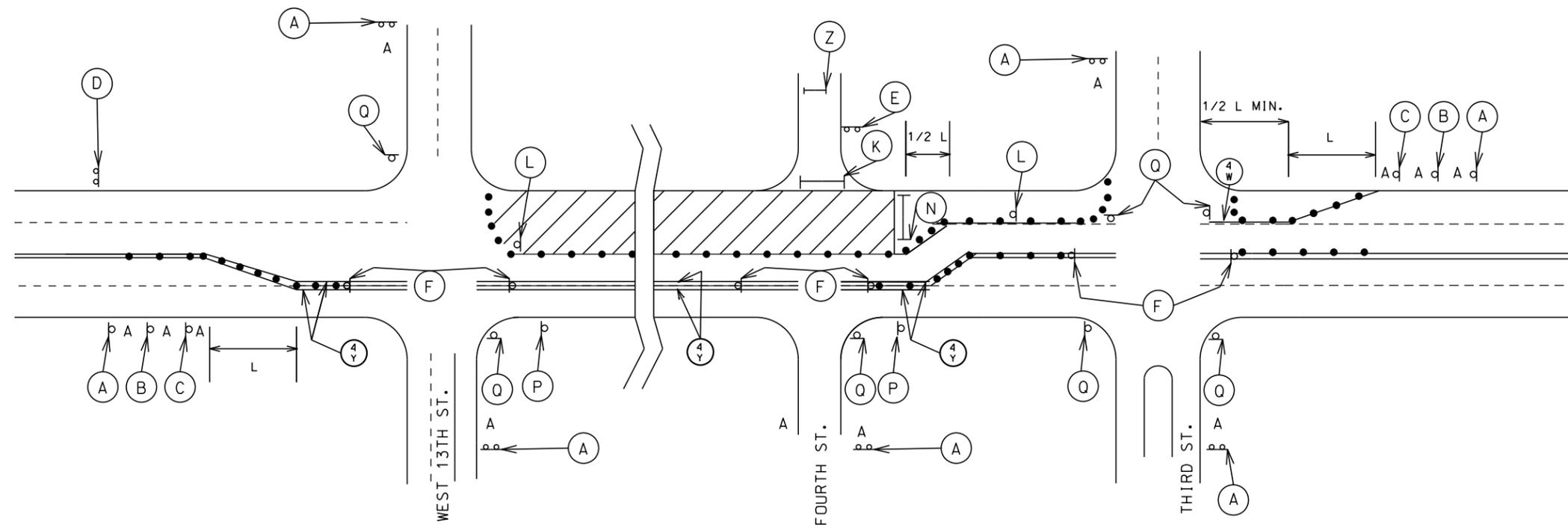
The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes on SD HWY 46.

- REFLECTORIZED DRUMS - 25 ft. spacing on tapers & 50 ft maximum spacing on tangent, unless otherwise shown.

④_Y - 4" YELLOW TEMPORARY PAVEMENT MARKING

④_W - 4" WHITE TEMPORARY PAVEMENT MARKING

TRAFFIC CONTROL PHASE 2A WEST BOUND LANES CONSTRUCTION



NOTES:

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

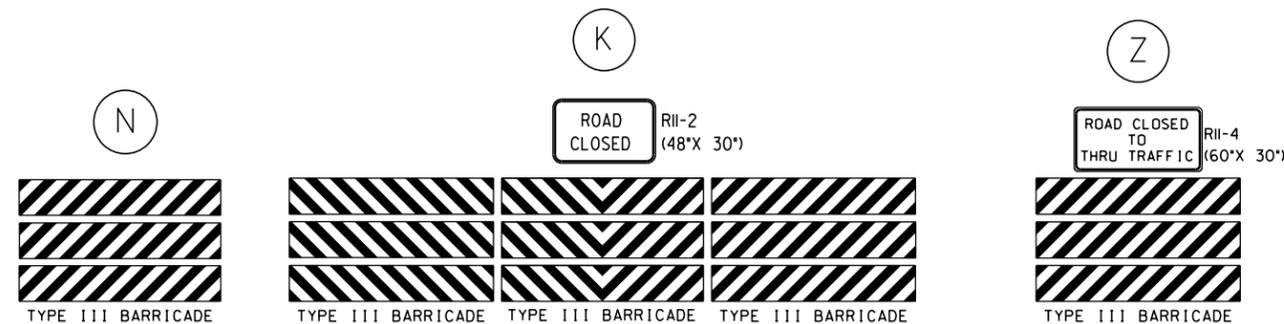
The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes on SD HWY 46.

- REFLECTORIZED DRUMS - 25 ft. spacing on tapers & 50 ft maximum spacing on tangent, unless otherwise shown.

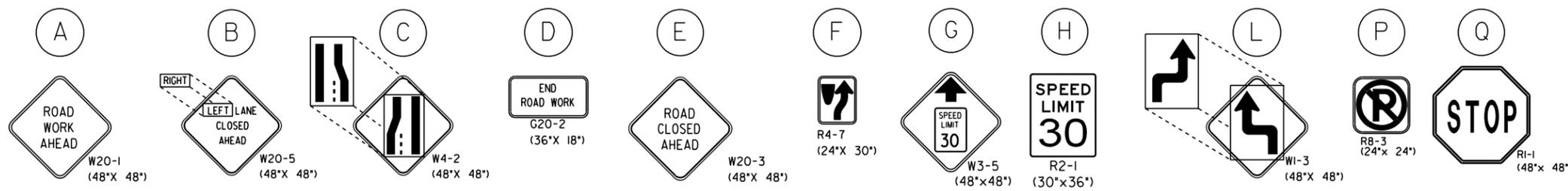
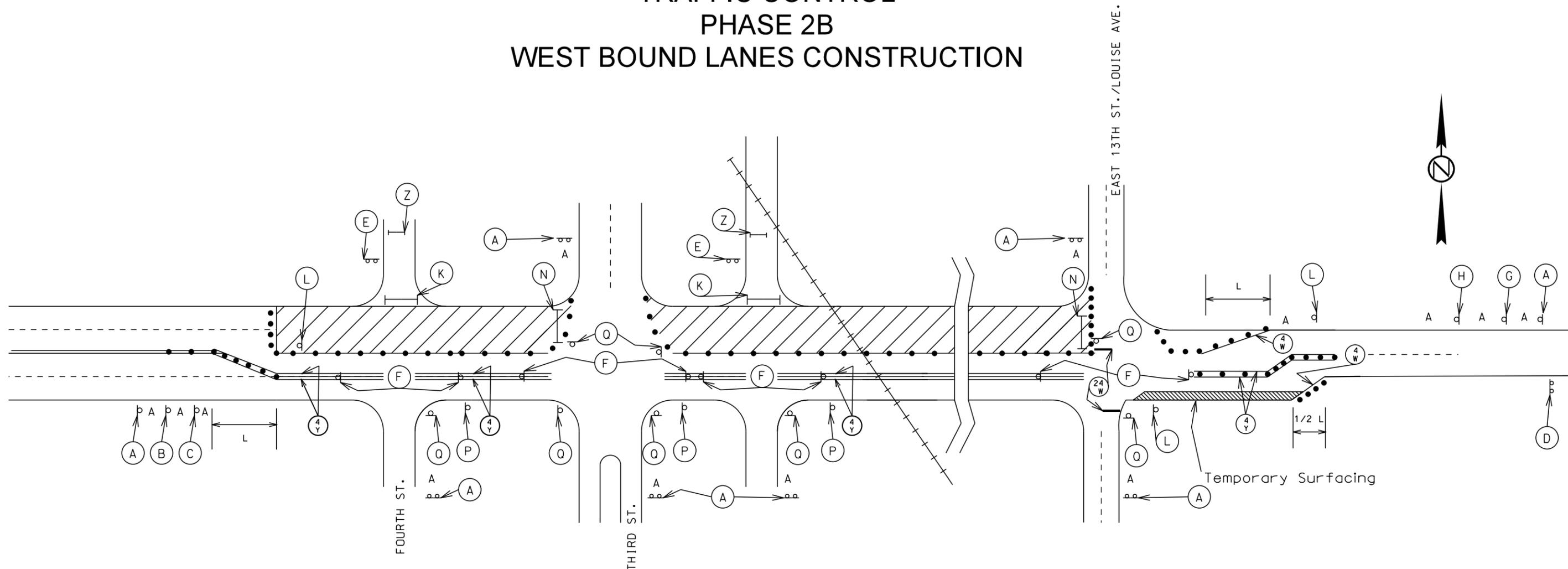
④ - 4" YELLOW TEMPORARY PAVEMENT MARKING

④ - 4" WHITE TEMPORARY PAVEMENT MARKING

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



TRAFFIC CONTROL PHASE 2B WEST BOUND LANES CONSTRUCTION



NOTES:

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

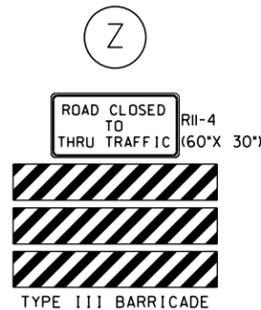
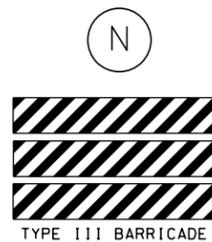
The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes on SD HWY 46.

- REFLECTORIZED DRUMS - 25 ft. spacing on tapers & 50 ft maximum spacing on tangent, unless otherwise shown.

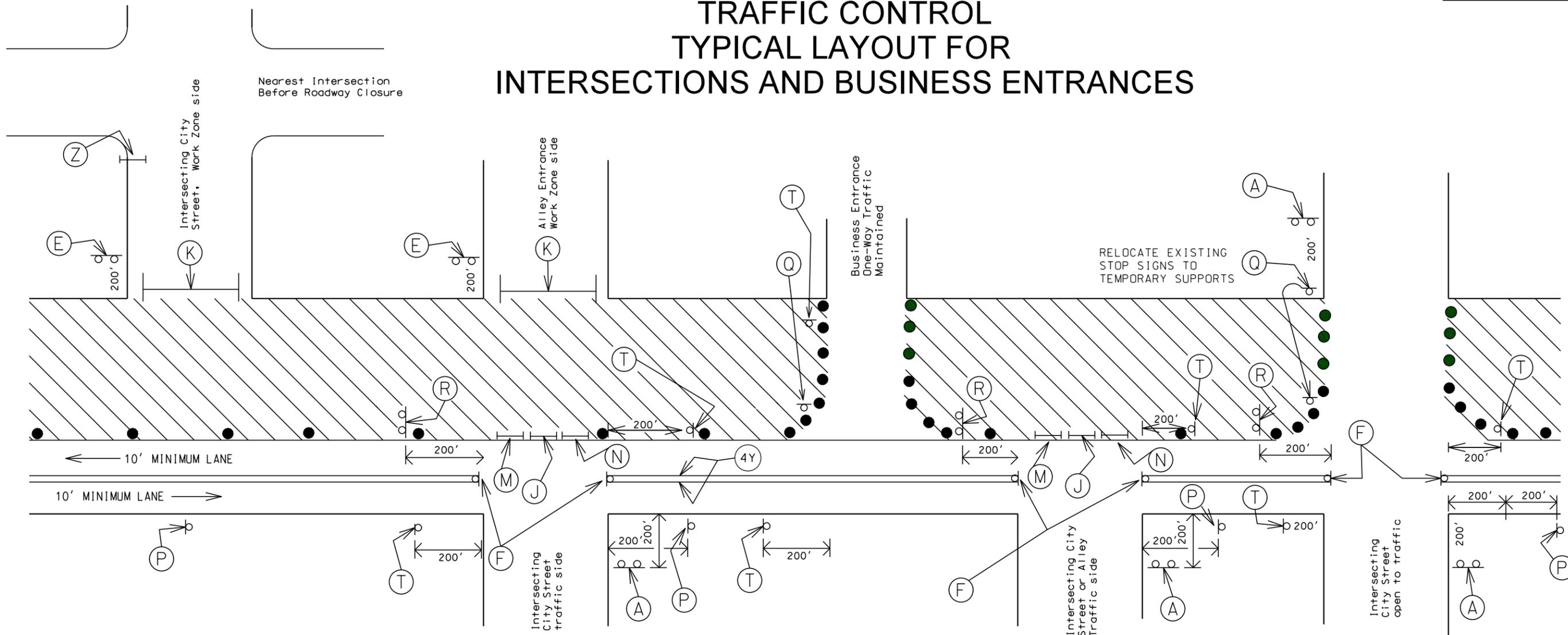
④ - 4" YELLOW TEMPORARY PAVEMENT MARKING

④ - 4" WHITE TEMPORARY PAVEMENT MARKING

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



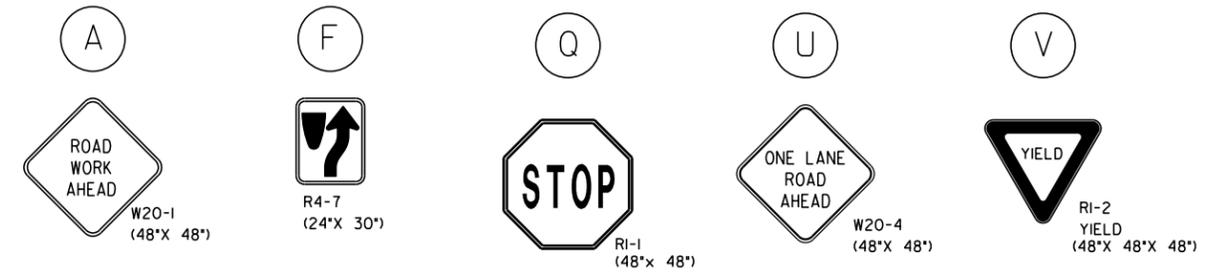
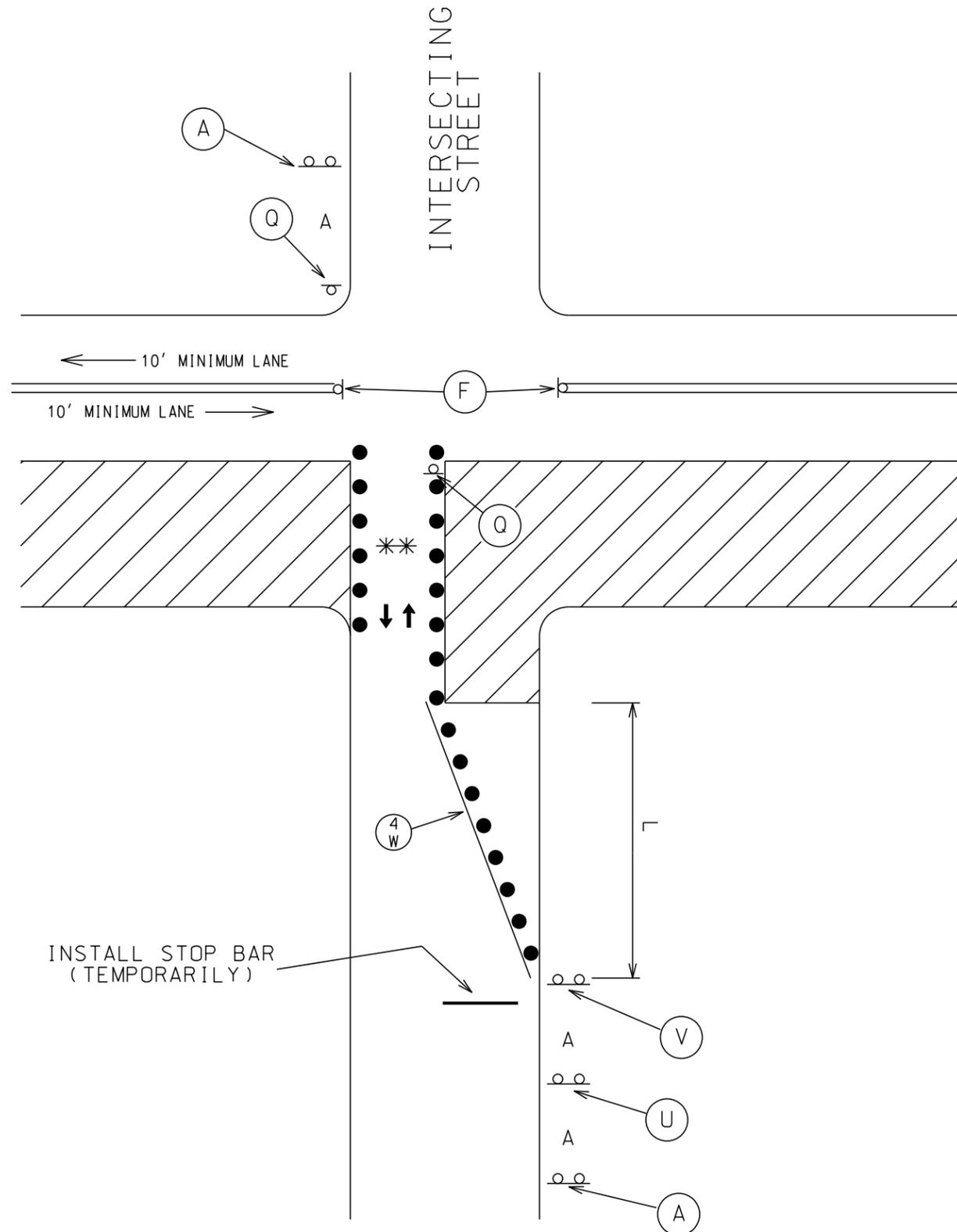
TRAFFIC CONTROL TYPICAL LAYOUT FOR INTERSECTIONS AND BUSINESS ENTRANCES



<p>(A)</p> <p>W20-1 (48"X 48")</p>	<p>(E)</p> <p>W20-3 (48"X 48")</p>	<p>(F)</p> <p>R4-7 (24"X 30")</p>	<p>(J)</p> <p>W1-7 (48"X 24")</p> <p>TYPE III BARRICADE</p>	<p>(K)</p> <p>R11-2 (48"X 30")</p> <p>TYPE III BARRICADE</p>
<p>(M)</p> <p>TYPE III BARRICADE</p>	<p>(N)</p> <p>TYPE III BARRICADE</p>	<p>(Q)</p> <p>R1-1 (48"X 48")</p>	<p>(R)</p> <p>W8-17 (48"X 48")</p>	<p>(P)</p> <p>R8-3 (24"X 24")</p>
				<p>(T)</p> <p>R3-2 (24"X 24")</p>
				<p>(Z)</p> <p>R11-4 (60"X 30")</p> <p>TYPE III BARRICADE</p>

- NOTES:**
- WORK ZONE
 - REFLECTORIZED DRUMS - 25' SPACING ON TAPERS & 50' MAXIMUM SPACING ON TANGENT, UNLESS OTHERWISE SHOWN.
 - 4Y - 4" YELLOW RAISED PAVEMENT MARKERS
- Signs are to be placed 50' -100' from intersections or other signs.
- USE W8-17 SHOULDER DROP-OFF SYMBOL, ADJACENT TO FULL DEPTH CONCRETE PAVEMENT REMOVAL AREAS. INSTALL SIGNS AT 300'-400' SPACING THROUGHOUT THE PROJECT WHEN APPLICABLE.
- INSTALL R8-3 NO PARKING SYMBOL AND R 3-2 NO LEFT TURNS SIGNS AT 300'-400' SPACING THROUGHOUT THE PROJECT AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL INTERSECTION CONSTRUCTION (TYPICAL)



NOTES:

Remove existing pavement markings in all tapers and in other areas designated by the Engineer where they conflict with the temporary traffic control plan.

The Contractor will be required to maintain two way traffic at all times, with a minimum of 10 ft. lanes on Cherry Street.

● REFLECTORIZED DRUMS

④ Y - 4" YELLOW TEMPORARY PAVEMENT MARKING

④ W - 4" WHITE TEMPORARY PAVEMENT MARKING

*** - 10' MINIMUM LANE WIDTH

▨ WORK ZONE

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

ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-1	48" x 24"	ROAD WORK NEXT 1 MILE	2	24	48
G20-2	36" x 18"	END ROAD WORK	2	17	34
R1-1	48" x 48"	STOP	25	34	850
R1-2	48" x 48"	YIELD	2	34	68
R2-1	30" x 36"	SPEED LIMIT 30	1	23	23
R3-2	24" x 24"	NO LEFT TURN (SYMBOL)	2	16	32
R4-7	24" x 30"	KEEP RIGHT (SYMBOL)	26	18	468
R8-3	24" x 24"	NO PARKING (SYMBOL)	11	16	176
R9-9	24" x 12"	SIDEWALK CLOSED	6	15	90
R9-10	24" x 12"	SIDEWALK CLOSED, ARROW, USE OTHER SIDE	2	15	30
R9-11	24" x 18"	SIDEWALK CLOSED AHEAD, ARROW, CROSS HERE	2	15	30
R9-11a	24" x 12"	SIDEWALK CLOSED, ARROW, CROSS HERE	2	15	30
R11-2	48" x 30"	ROAD CLOSED	8	27	216
R11-4	60" x 30"	ROAD CLOSED TO THRU TRAFFIC	8	30	240
W1-3	48" x 48"	REVERSE TURN SIGN (LEFT OR RIGHT)	3	34	102
W1-7	48" x 24"	LARGE ARROW - HORZ. DOUBLE HEAD	7	24	168
W3-4	48" x 48"	BE PREPARED TO STOP	2	34	68
W3-5	48" x 48"	SPEED REDUCTION (30 MPH)	1	34	34
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	2	34	68
W8-1	36" x 36"	BUMP	8	27	216
W8-11	48" x 48"	UNEVEN LANES	2	34	68
W8-17	48" x 48"	SHOULDER DROP-OFF	6	34	204
W13-1P	24" x 24"	ADVISORY SPEED PLATE	2	16	32
W20-1	48" x 48"	ROAD WORK AHEAD	26	34	884
W20-3	48" x 48"	ROAD CLOSED 500 FEET	2	34	68
W20-3	48" x 48"	ROAD CLOSED AHEAD	8	34	272
W20-4	48" x 48"	ONE LANE ROAD AHEAD	2	34	68
W20-5	48" x 48"	LT. OR RT. LANE CLOSED AHEAD	2	34	68
W20-7	48" x 48"	FLAGGER	4	34	136
W21-5	48" x 48"	SHOULDER WORK	2	34	68
SPECIAL	72" x 24"	NO VEHICLES OVER 10 FT.	2	29	58
SPECIAL	120" x 60"	WIDTH RESTRICTION 10 FT. MAX ___ MILES AHEAD	3	80	240
SPECIAL	72" x 36"	VEHICLES OVER 10 FT. WIDE EXIT HERE	2	36	72
*****	*****	TYPE III BARRICADE - 8 FT. SINGLE SIDED	48	40	1920
*****	*****	TYPE III BARRICADE - 8 FT. DOUBLE SIDED	8	56	448
TOTAL UNITS			7597		

ITEMIZED LIST FOR DETOUR SIGNING

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	SQ. FT. PER SIGN	SQ. FT.
M1-5	24" x 24"	SD ROUTE MARKER	29	4	116
M3-2	24" x 12"	DIRECTION MARKER - EAST	15	2	30
M3-4	24" x 12"	DIRECTION MARKER - WEST	14	2	28
M4-8	24" x 12"	DETOUR	27	2	54
M4-8a	24" x 18"	END DETOUR	2	3	6
M5-1	21" x 15"	ADVANCE TURN 90 DEGREE (LEFT OR RIGHT)	8	2.19	17.52
M6-1	21" x 15"	DIRECTION ARROW - HORIZONTAL SINGLE HEAD	8	2.19	17.52
M6-3	21" x 15"	DIRECTION ARROW - VERTICAL SINGLE HEAD	11	2.19	24.09
W20-2	48" x 48"	DETOUR AHEAD	2	16	32
TOTAL SQ. FT.			325.13		

MOBILE OPERATIONS ON MULTI-LANE ROAD (TYPICAL)

Notes for Mobile Operation on Multi-lane Road (Typical)

Standard:

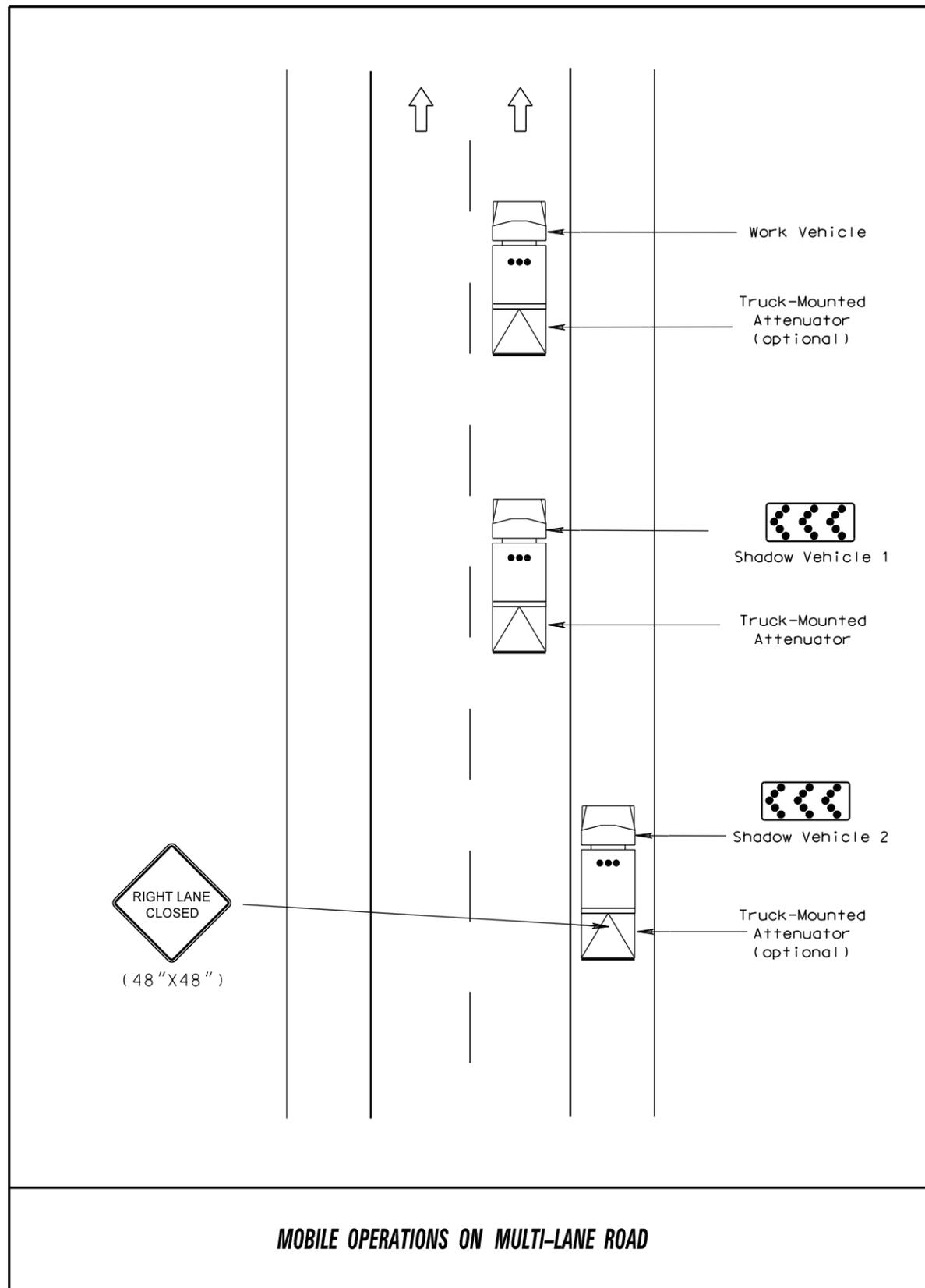
1. Arrow panels shall, as a minimum, be Type B, with a size of 1500 x 750 mm (60 x 30 in).

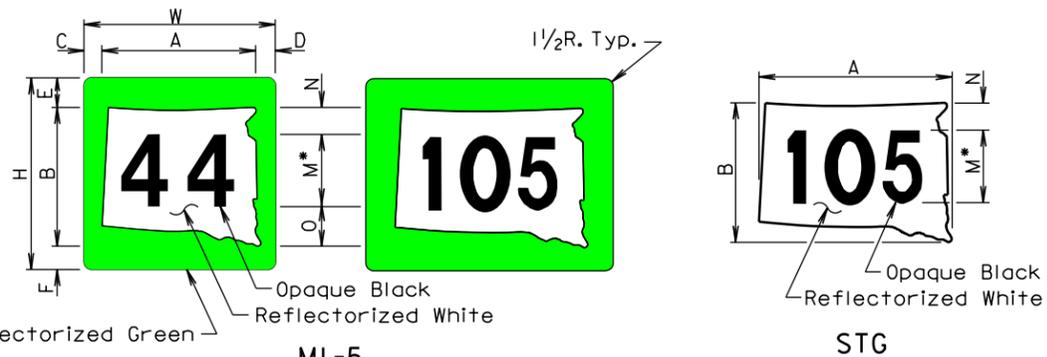
Guidance:

2. Vehicles used for these operations should be made highly visible with appropriate equipment, such as: high-intensity rotating, flashing, oscillating, or strobe lights, signs, and arrow panels.
3. Shadow Vehicle 1 shall be equipped with an arrow panel and truck-mounted attenuator.
4. Shadow Vehicle 2 shall be equipped with an arrow panel. An appropriate lane closure sign should be placed on Shadow Vehicle 2 so as not to obscure the arrow panel.
5. Shadow Vehicle 2 should travel at a varying distance from the work operation so as to provide adequate sight distance for vehicular traffic approaching from the rear.
6. The spacing between the work vehicles and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.
7. Work should normally be accomplished during off-peak hours.
8. The advanced warning sign shall read LEFT LANE CLOSED and the chevron direction shall be changed when working within the left passing lane.

Option:

9. A truck-mounted attenuator may be used on Shadow Vehicle 2.
10. On high-speed roadways, a third shadow vehicle (not shown) may be used with Shadow Vehicle 1 in the closed lane, Shadow Vehicle 2 straddling the edge line, and Shadow Vehicle 3 on the shoulder.
11. Where adequate shoulder width is not available, Shadow Vehicle 3 may drive partially in the lane.



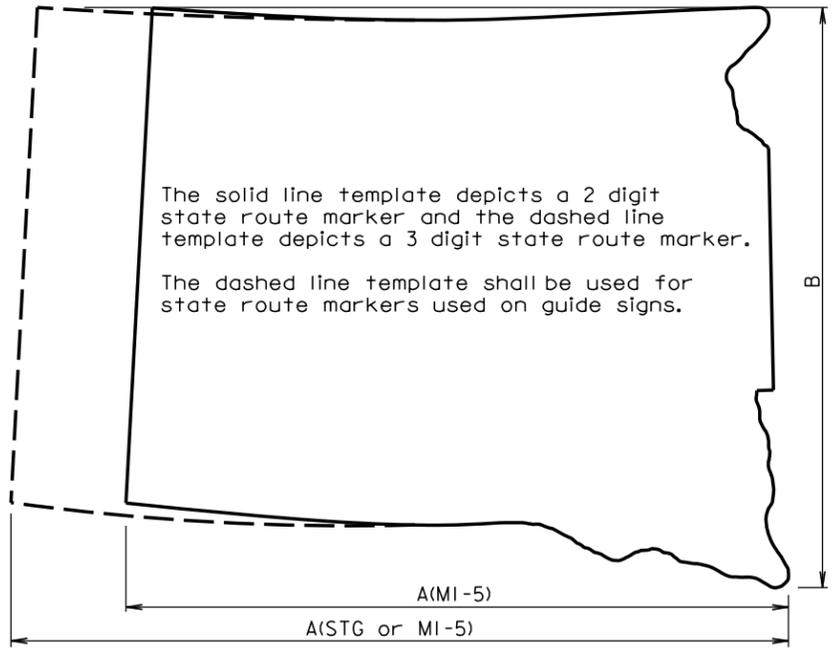


SIGN CODE	WxH	A	B	C	D	E	F	M*	N	O
MI-5	24x24	20 1/2	18	2	1 1/2	3 1/2	2 1/2	12D	2	4
MI-5**	30x24	24	18	2 1/4	1 3/4	3 1/2	2 1/2	12D	2	4
MI-5	30x30	25 5/8	22 1/2	2 1/2	1 7/8	4 3/8	3 1/8	15D	2 1/2	5
MI-5	36x36	30 3/4	27	3	2 1/4	5 1/4	3 3/4	18D	3	6

SIGN CODE	AxB	M*	N
STG-24	24x18	10D	4
STG-32	32x24	12D	4 3/4
STG-48	48x36	18D	7
STG-64	64x48	24D	9 1/2

*In the few cases where there is not enough space for the numerals, the standard "D" series font may be replaced with "C" series font if approved by the Engineer.

** 3 Digits



TEMPLATE FOR STATE ROUTE MARKER

GENERAL NOTES:

The unit for all dimensions shown is inches.
 Numerals shall be "D" series font for all state route markers except as noted above.

December 23, 2003

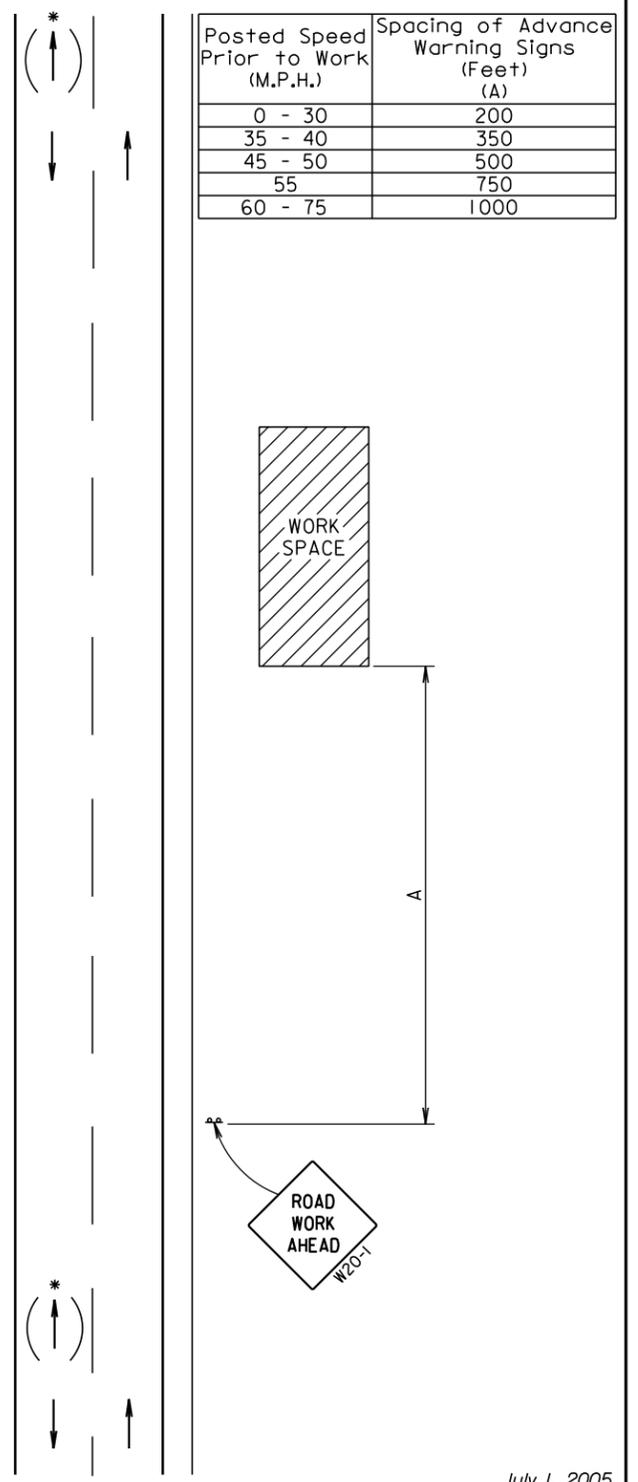
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

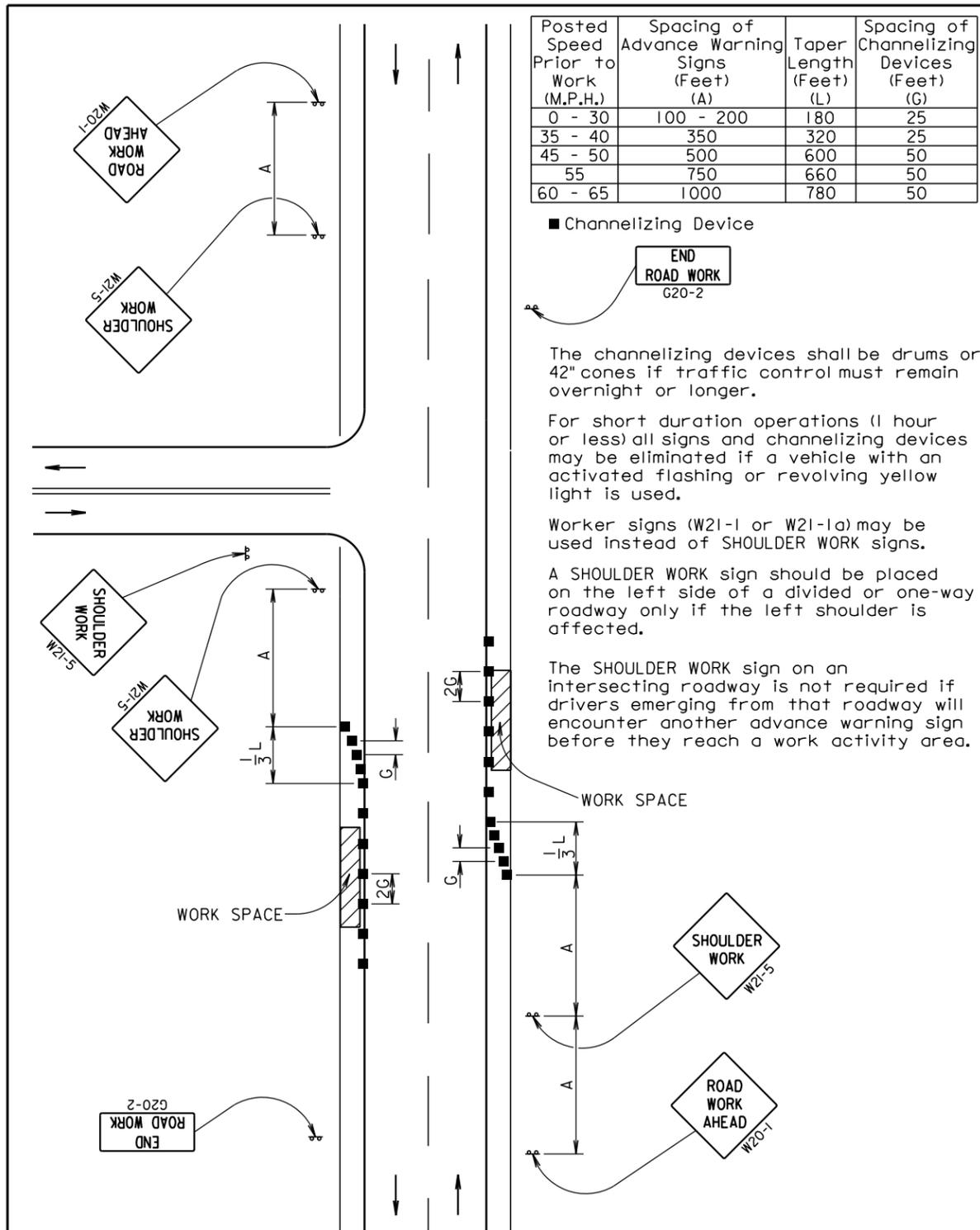
The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

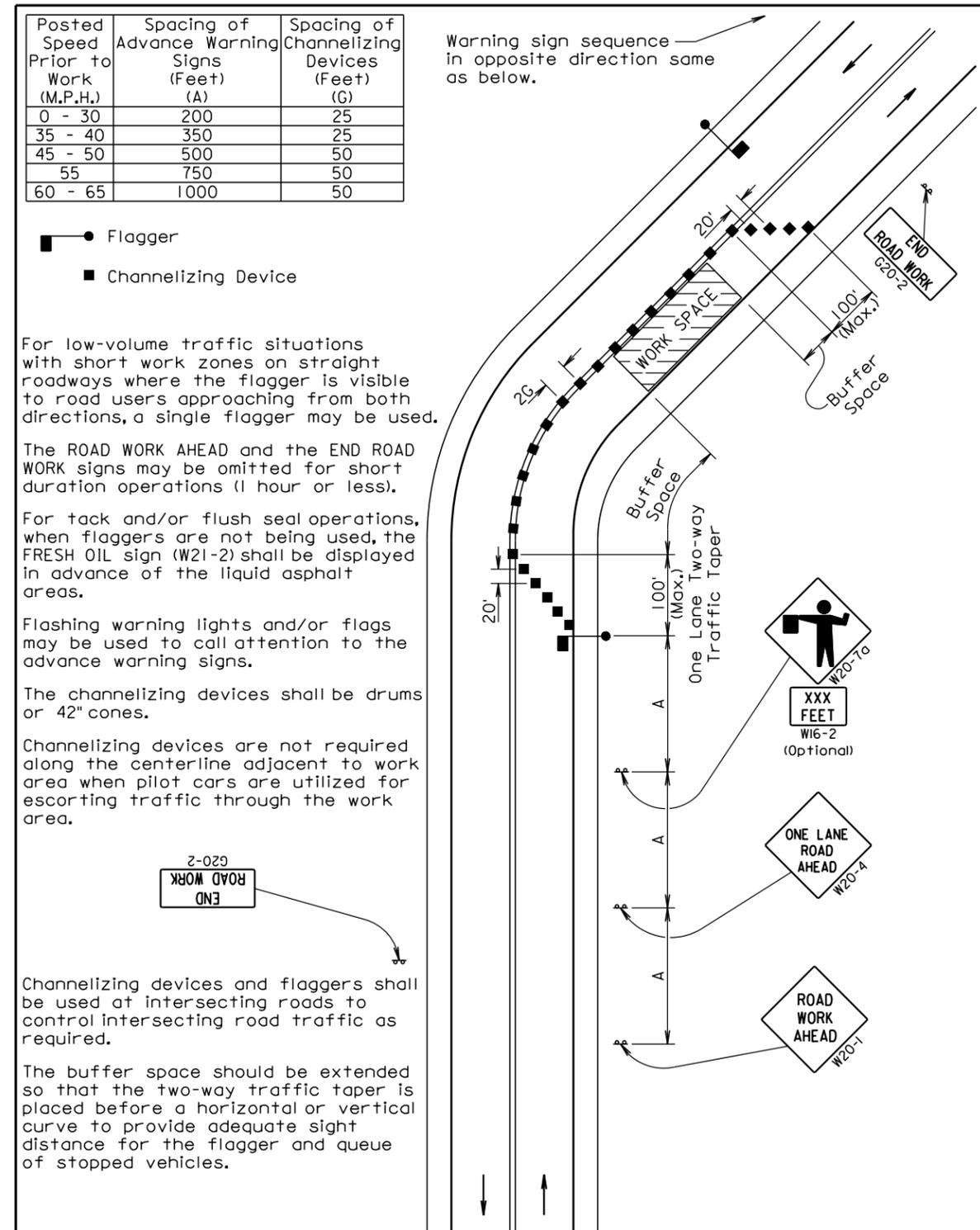
For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



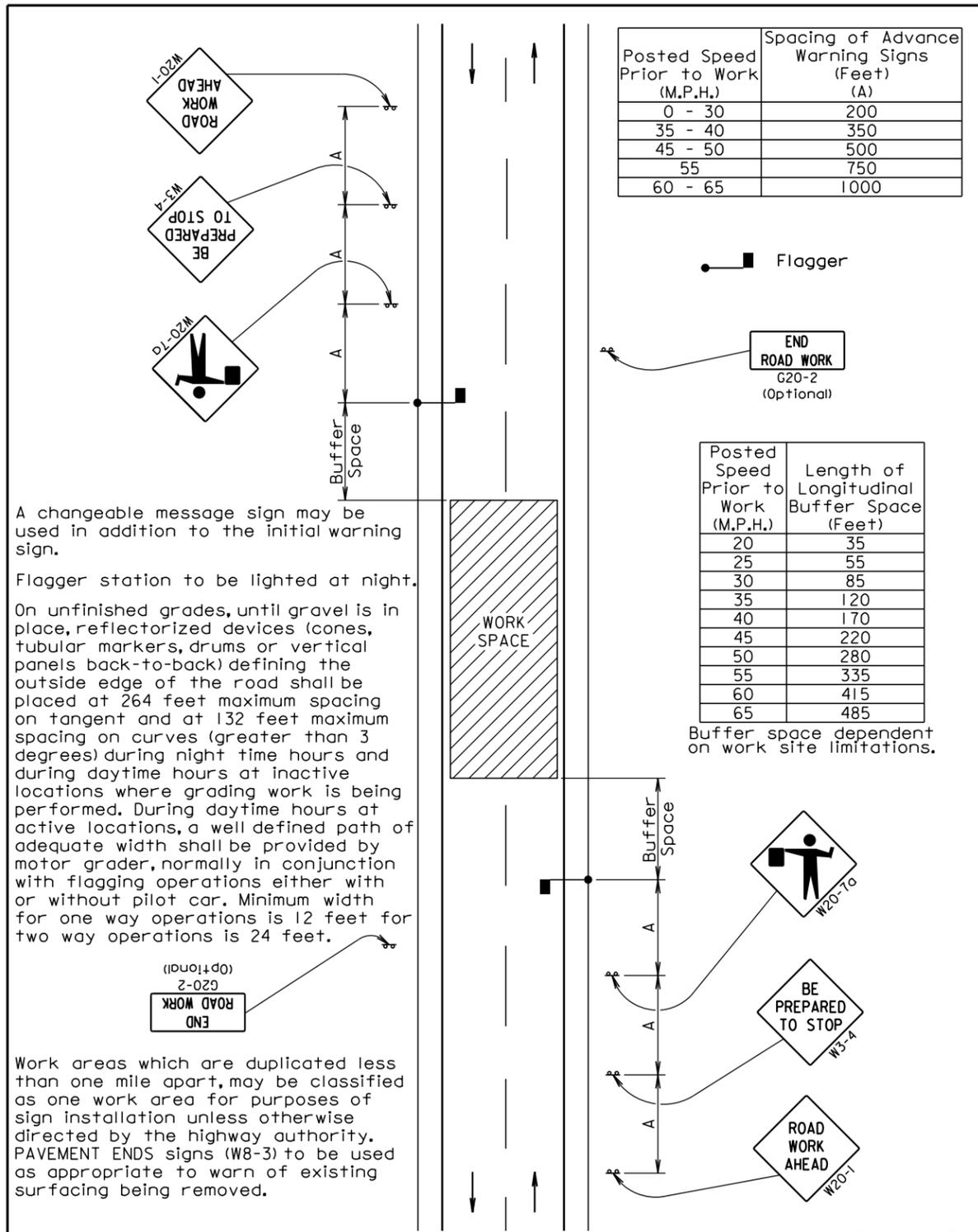
July 1, 2005



February 14, 2011



February 14, 2011



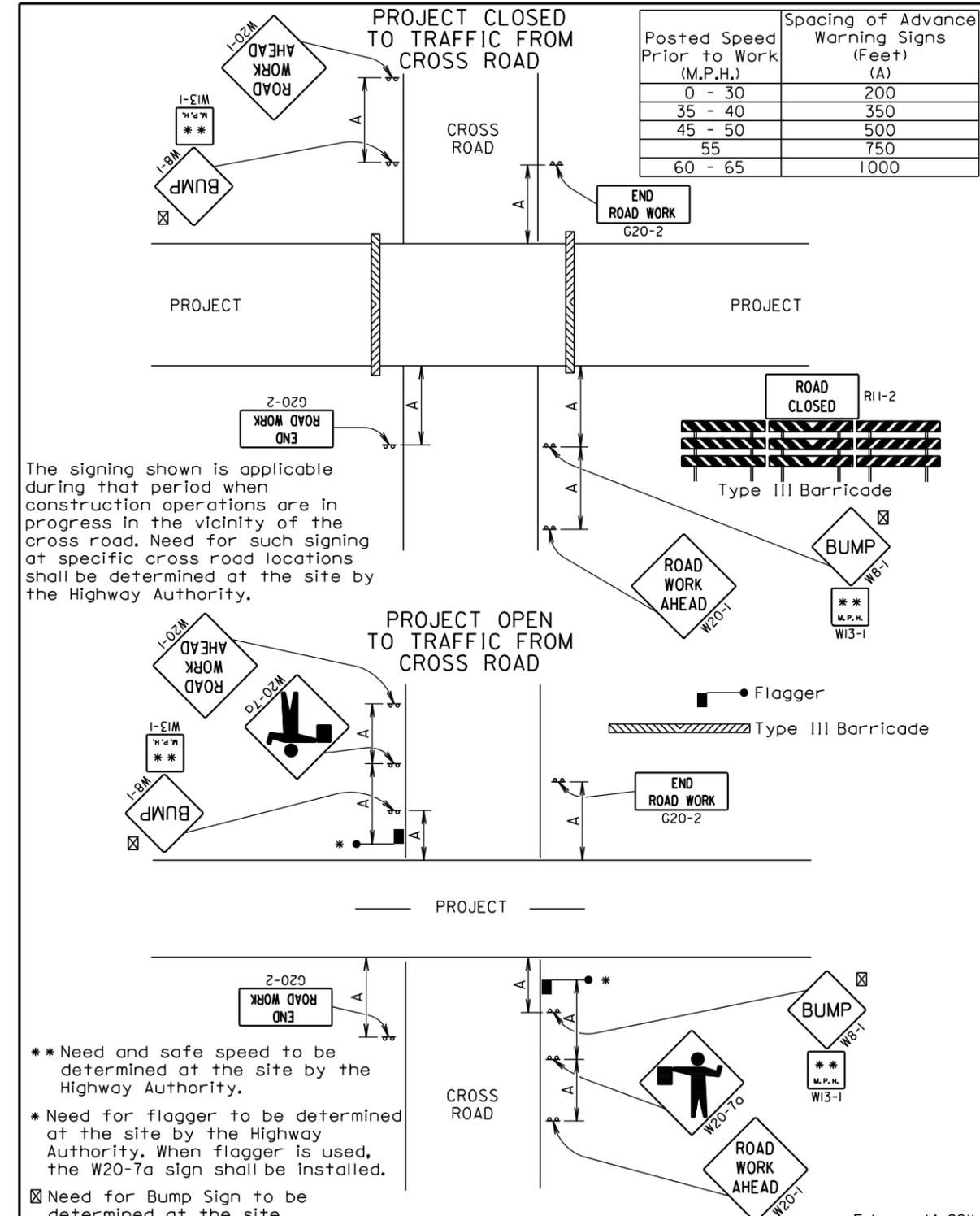
A changeable message sign may be used in addition to the initial warning sign.

Flagger station to be lighted at night.

On unfinished grades, until gravel is in place, reflectorized devices (cones, tubular markers, drums or vertical panels back-to-back) defining the outside edge of the road shall be placed at 264 feet maximum spacing on tangent and at 132 feet maximum spacing on curves (greater than 3 degrees) during night time hours and during daytime hours at inactive locations where grading work is being performed. During daytime hours at active locations, a well defined path of adequate width shall be provided by motor grader, normally in conjunction with flagging operations either with or without pilot car. Minimum width for one way operations is 12 feet for two way operations is 24 feet.

Work areas which are duplicated less than one mile apart, may be classified as one work area for purposes of sign installation unless otherwise directed by the highway authority. PAVEMENT ENDS signs (W8-3) to be used as appropriate to warn of existing surfacing being removed.

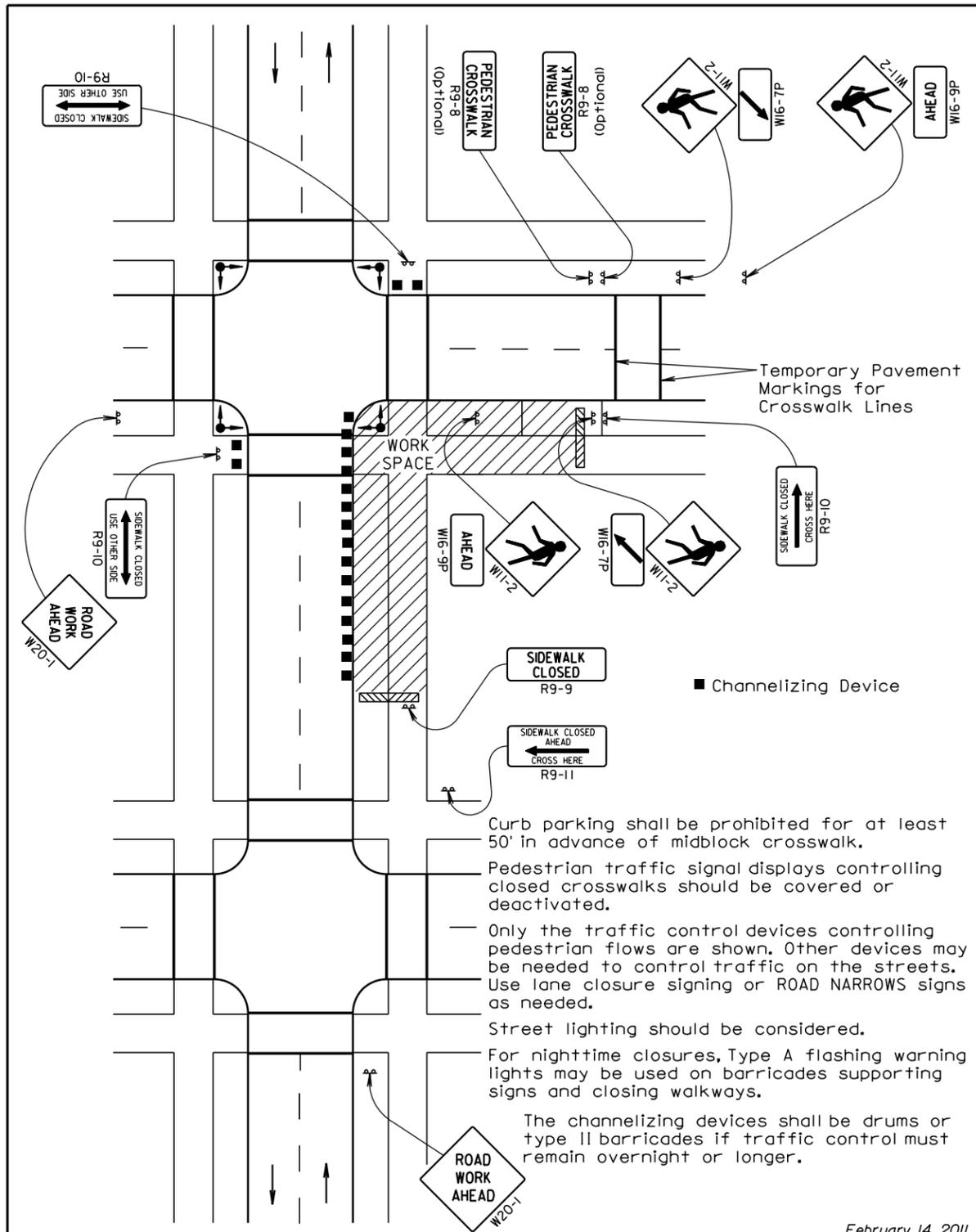
February 14, 2011



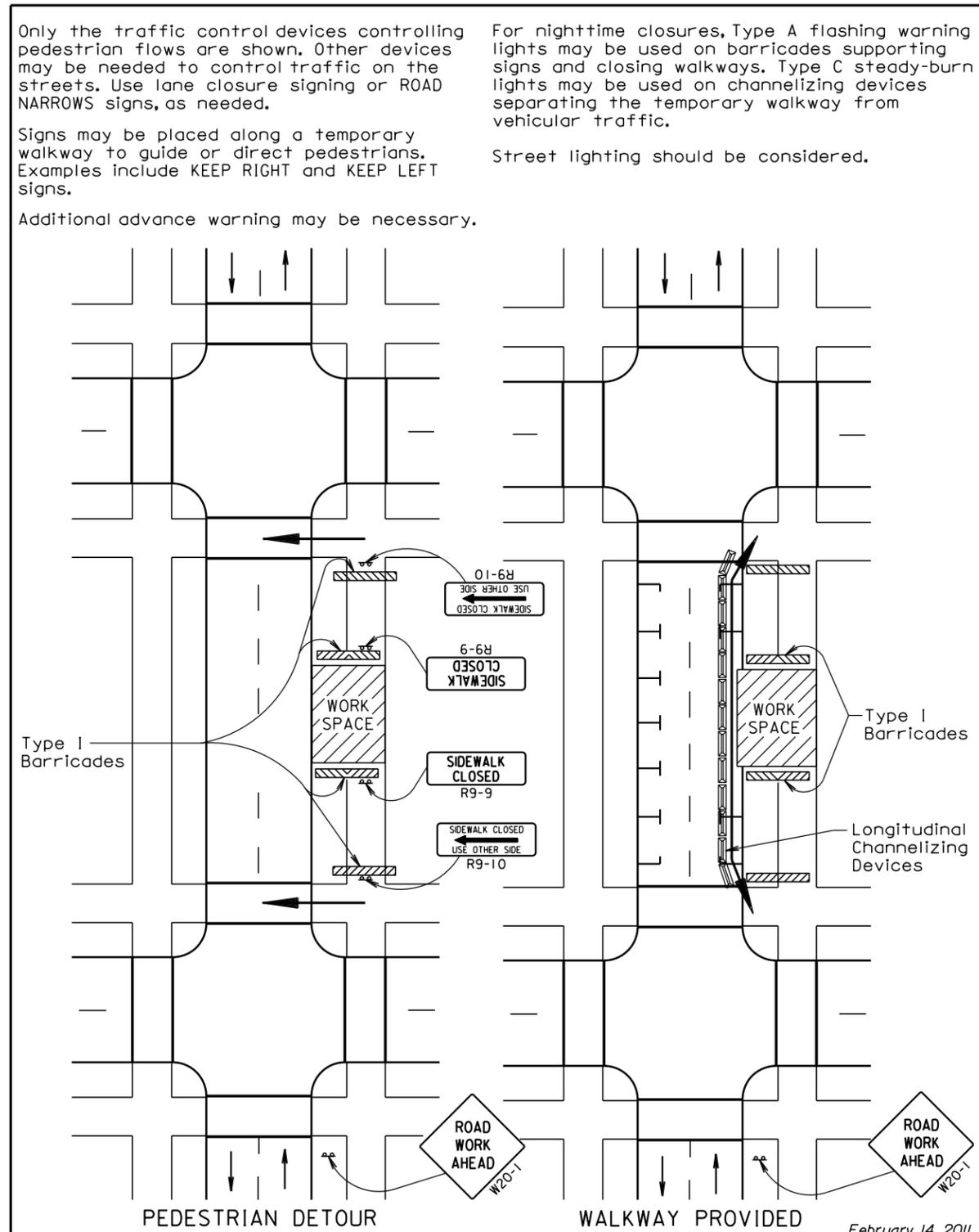
The signing shown is applicable during that period when construction operations are in progress in the vicinity of the cross road. Need for such signing at specific cross road locations shall be determined at the site by the Highway Authority.

- ** Need and safe speed to be determined at the site by the Highway Authority.
- * Need for flagger to be determined at the site by the Highway Authority. When flagger is used, the W20-7a sign shall be installed.
- ☒ Need for Bump Sign to be determined at the site.

February 14, 2011



February 14, 2011



Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing or ROAD NARROWS signs, as needed.

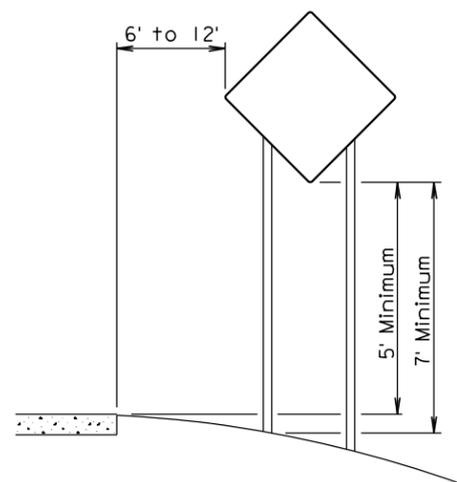
Signs may be placed along a temporary walkway to guide or direct pedestrians. Examples include KEEP RIGHT and KEEP LEFT signs.

Additional advance warning may be necessary.

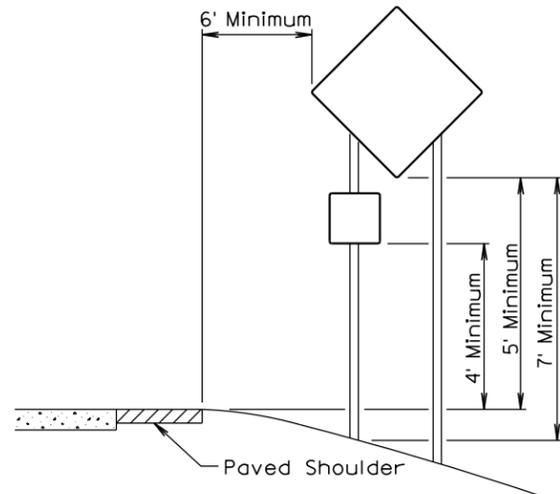
For nighttime closures, Type A flashing warning lights may be used on barricades supporting signs and closing walkways. Type C steady-burn lights may be used on channelizing devices separating the temporary walkway from vehicular traffic.

Street lighting should be considered.

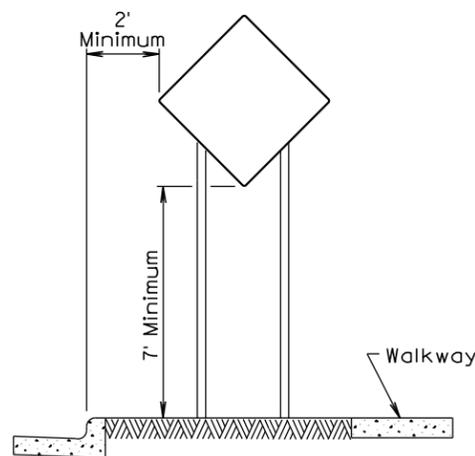
February 14, 2011



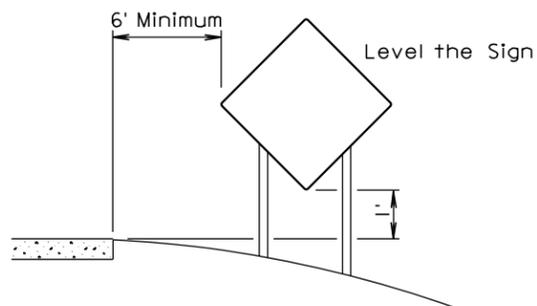
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE

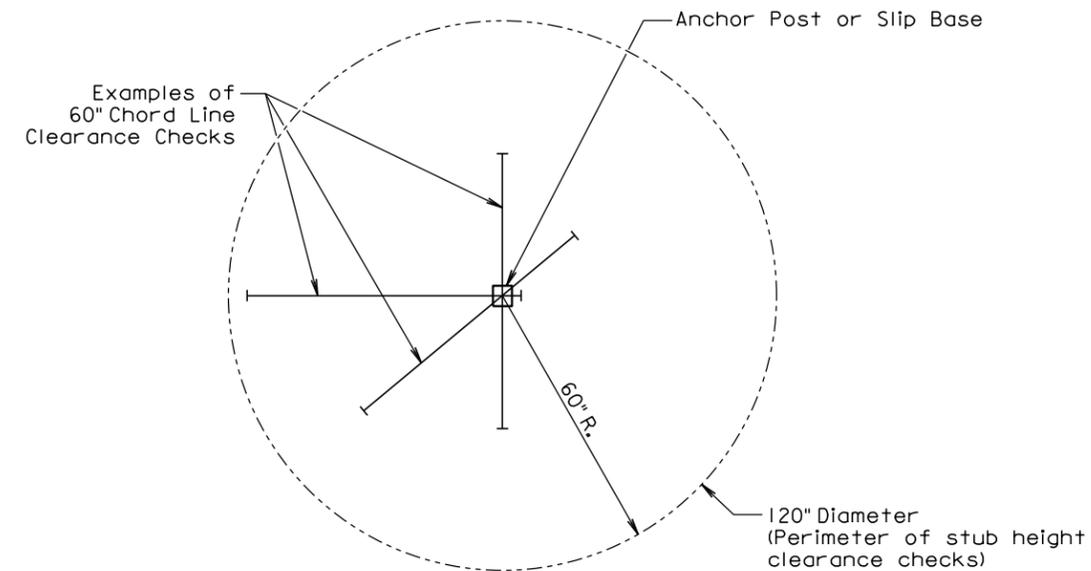


URBAN DISTRICT

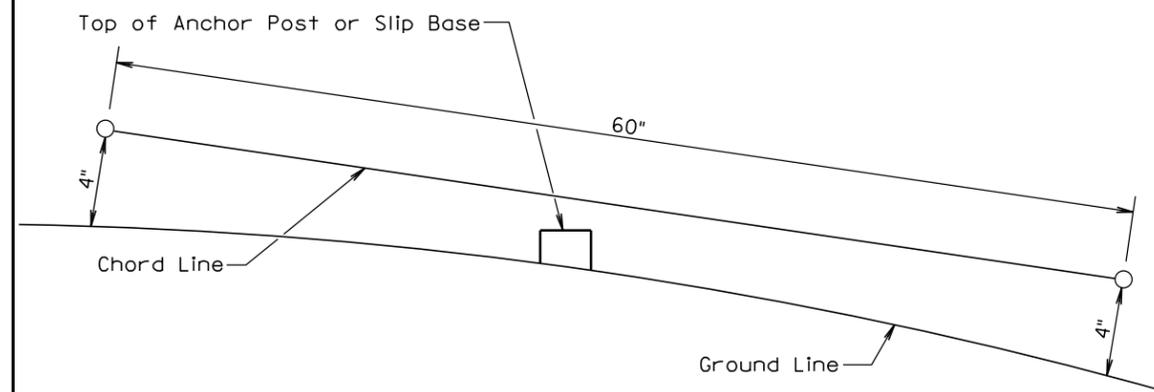


RURAL DISTRICT 3 DAY MAXIMUM

February 14, 2011



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL 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 shall 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.

July 1, 2005