

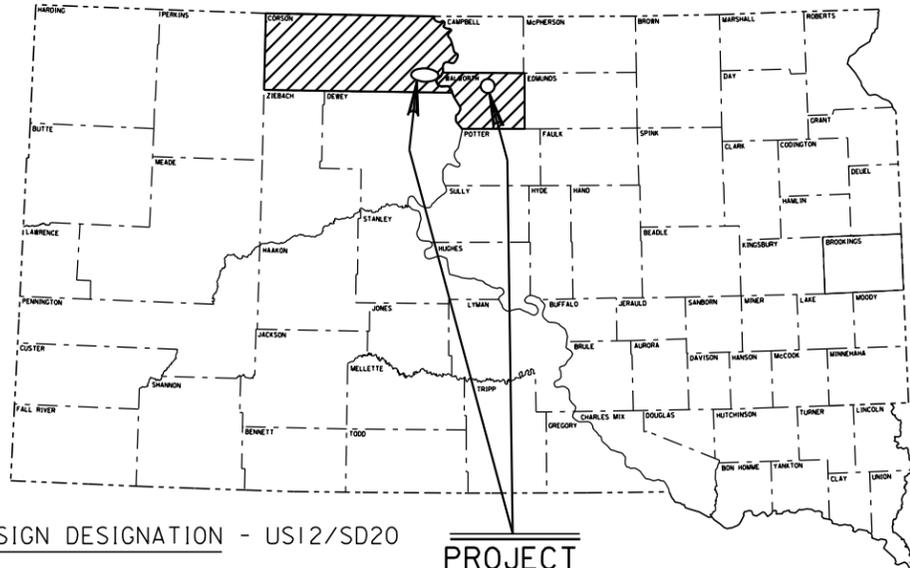
**STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED**

**PROJECT PH 0030(10)  
US HIGHWAYS 12 & 83  
CORSON & WALWORTH COUNTIES**

DURABLE PAVEMENT MARKING  
PCN 02MR

INDEX OF SHEETS

Sheet 1	Title Sheet
Sheets 2 & 3	Estimate and Notes
Sheets 4 to 12	Pavement Marking Layouts
Sheet 13	Pavement Marking Details & Sign Tab
Sheets 14 to 16	Standard Plates



DESIGN DESIGNATION - US12/SD20

ADT (2014)	1280
ADT (2034)	1747
DHV	297.0
D	51%
T DHV	8.5%
T ADT	18.7%
V	65 MPH

DESIGN DESIGNATION - US12/SD1806 S

ADT (2014)	1624
ADT (2034)	2217
DHV	376.9
D	51%
T DHV	7.7%
T ADT	16.9%
V	65 MPH

DESIGN DESIGNATION - US12/SD1806 N

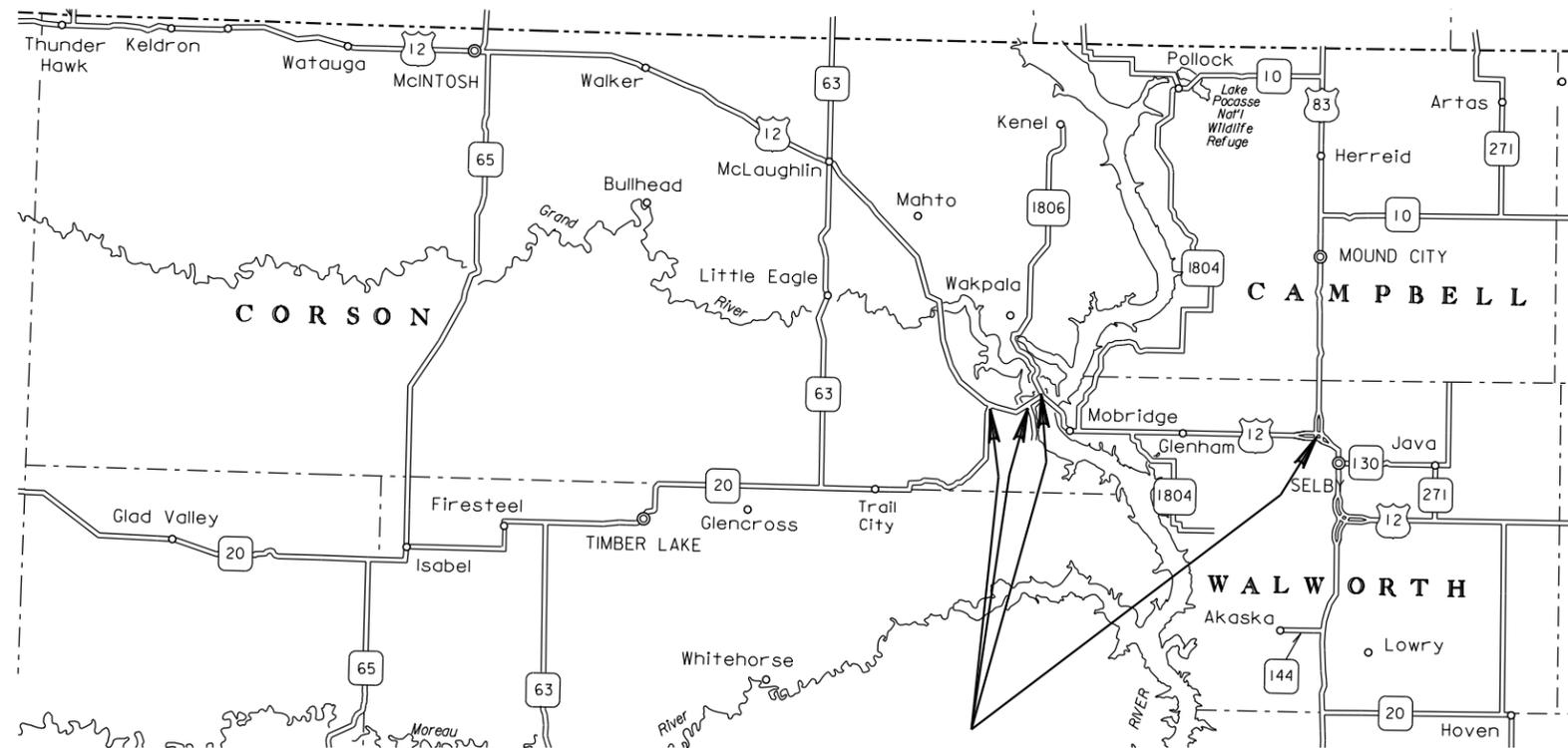
ADT (2014)	2053
ADT (2034)	2803
DHV	476.5
D	51%
T DHV	6.6%
T ADT	14.5%
V	65 MPH

DESIGN DESIGNATION US12/US83 N

ADT (2014)	1968
ADT (2034)	2017
DHV	219.8
D	50%
T DHV	8.9%
T ADT	19.5%
V	65 MPH

STORM WATER PERMIT  
(None Required)

LENGTH 2.125 MILES



PROJECT LOCATIONS



## ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
633E0010	Cold Applied Plastic Pavement Marking, 4"	55,835	Ft
633E0020	Cold Applied Plastic Pavement Marking, 8"	5,440	Ft
633E0030	Cold Applied Plastic Pavement Marking, 24"	2,125	Ft
633E0040	Cold Applied Plastic Pavement Marking, Arrow	25	Each
633E0046	Cold Applied Plastic Pavement Marking, Lane Reduction Arrow	3	Each
633E5000	Grooving for Cold Applied Plastic Pavement Marking, 4"	55,835	Ft
633E5005	Grooving for Cold Applied Plastic Pavement Marking, 8"	5,440	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	2,125	Ft
633E5025	Grooving for Cold Applied Plastic Pavement Marking, Arrow	25	Each
633E5031	Grooving for Cold Applied Plastic Pavement Marking, Lane Reduction Arrow	3	Each
634E0010	Flagging	100	Hour
634E0100	Traffic Control	612	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	2	Each

## SPECIFICATIONS

South Dakota Department of Transportation Standard Specifications for Roads and Bridges, 2004 Edition, Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

## GENERAL NOTES

Surface preparation, removal and cleaning work shall be conducted in such a manner as to control and minimize airborne dust and similar debris that may become a hazard to motor vehicle operation or nuisance to property owners.

Work will be allowed only during daylight hours.

Pavement markings removed shall be replaced with permanent pavement markings the same day, prior to nightfall.

## MAINTENANCE OF TRAFFIC

Traffic shall be maintained in accordance with the Manual on Uniform Traffic Control Devices and as follows:

Mobile operations shall have appropriate devices on the equipment (that is, high-intensity rotating, flashing, oscillating, or strobe lights, signs, or special lighting) all other equipment shall display flashing amber lights visible to traffic in all directions as a minimum, or shall use a separate vehicle with appropriate warning devices.

All cost for traffic control devices shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

## COLD APPLIED PLASTIC PAVEMENT MARKINGS

Cold Applied Plastic Pavement Markings shall be grooved, 3M Series 380 AW or approved equal.

## GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING

The Contractor shall establish a positive means for the removal of the grinding and/or grooving residue. Solid residue shall be removed from the pavement surfaces before being blown off by traffic action or wind. Residue shall not be permitted to flow across lanes being used by public traffic or into gutter or drainage facilities. Residue, whether in solid or slurry form, shall be disposed of in a manner that will prevent it from reaching any waterway in a concentrated state.

The groove depth shall be 100 mils with a tolerance of + 10 mils.

The groove shall be made using stacked diamond tipped blade cutting heads to prevent damage at the joints.

If damage to joints, joint sealant material, backer rod, etc. occurs, the grooving operation shall be stopped and modifications shall be made to the grooving operation to prevent further damage. Damage caused to joints, the joint sealant material, backer rod, etc. shall be repaired or replaced by the Contractor, as directed by the Engineer. No additional payment will be made for the repair work or any reapplication of the pavement marking in the area of the repair.

The bottom of the groove shall be uniform and free of loose material. The groove shall be flat and of uniform depth for the entire width of the groove.

## TABLE OF PAVEMENT MARKING QUANTITIES

(Cold Applied Plastic)

	US12 / SD20	US12 / SD1806 S	US12 / SD1806 N	US12 / US 83 N	TOTAL
4" White	3,840	3,625	5,230	13,960	26,655
4" Yellow	6,450	5,270	6,630	10,830	29,180
8" White	300	160	80	1,540	2,080
8" Yellow	0	0	0	3,360	3,360
24" White	12	12	12	12	48
24" Yellow	263	362	266	1,186	2,077
Left Arrow	2	4	4	3	13
Right Arrow	3	4	3	2	12
Lane Red Arrow	0	3	0	0	3

## ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived 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. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

### COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

#### Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

### COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

#### Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	PH 0030(10)	3	16

**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 shall 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 not be disposed of within the State ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway 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) shall 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 Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of 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 shall 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.

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) shall be incidental to the various contract items.

**COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES**

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all designated option borrow sites provided within the plans.

**Action Taken/Required:**

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: staging areas, borrow sites, waste disposal sites, and all material processing sites.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. 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; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

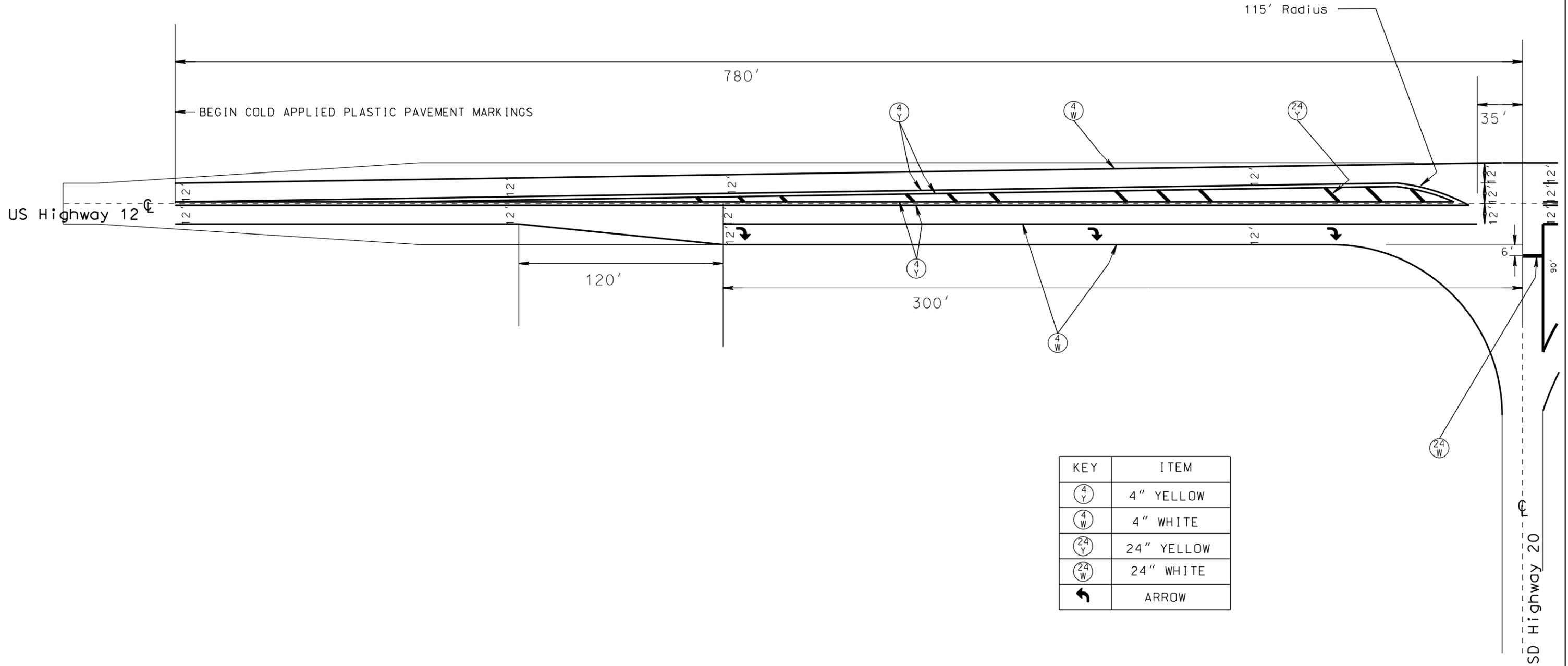
The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). 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.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

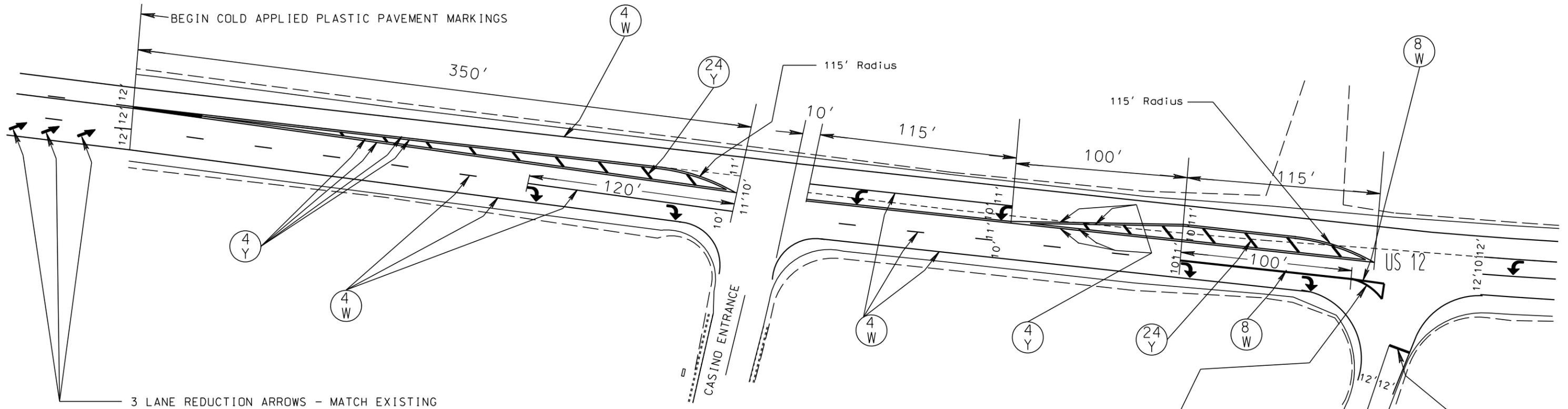
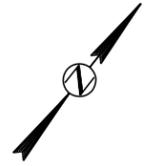
# PAVEMENT MARKING LAYOUT OF JUNCTION US12 & SD20



KEY	ITEM
⓪ 4 Y	4" YELLOW
⓪ 4 W	4" WHITE
⓪ 24 Y	24" YELLOW
⓪ 24 W	24" WHITE
↩	ARROW

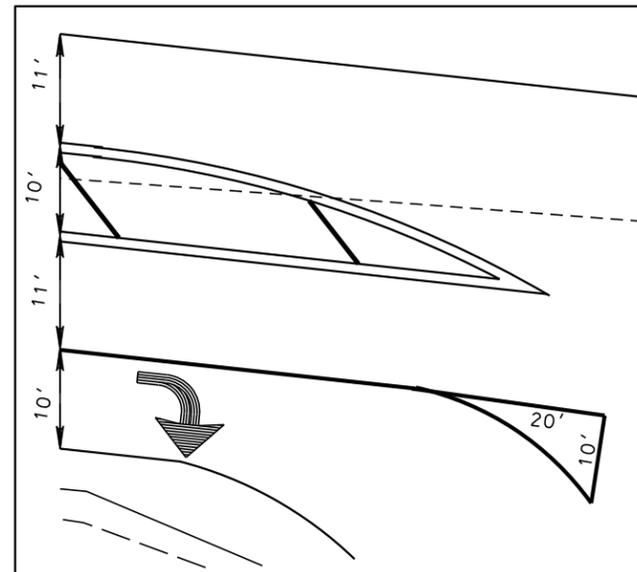


# PAVEMENT MARKING LAYOUT OF JUNCTION US12 & SD1806 S

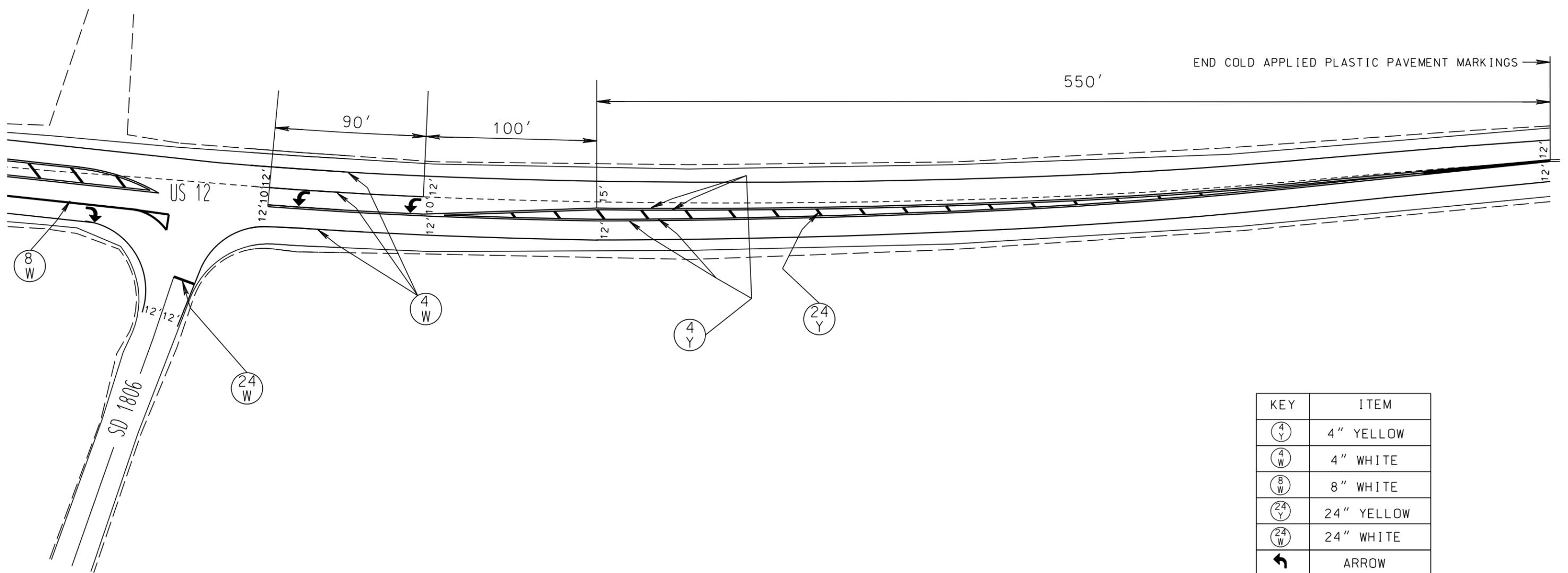


3 LANE REDUCTION ARROWS - MATCH EXISTING

KEY	ITEM
④ Y	4" YELLOW
④ W	4" WHITE
⑧ W	8" WHITE
②④ Y	24" YELLOW
②④ W	24" WHITE
↩	ARROW

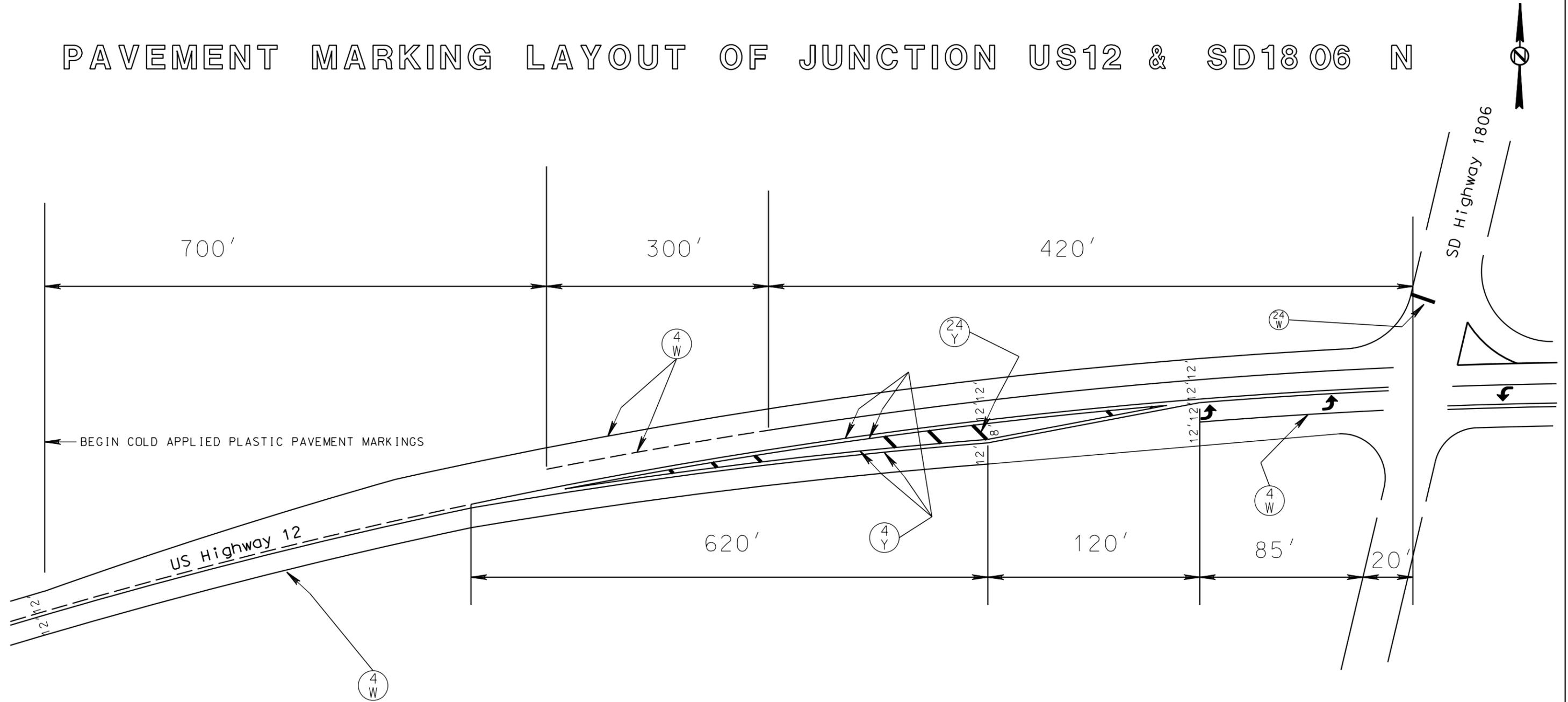


# PAVEMENT MARKING LAYOUT OF JUNCTION US12 & SD1806 S



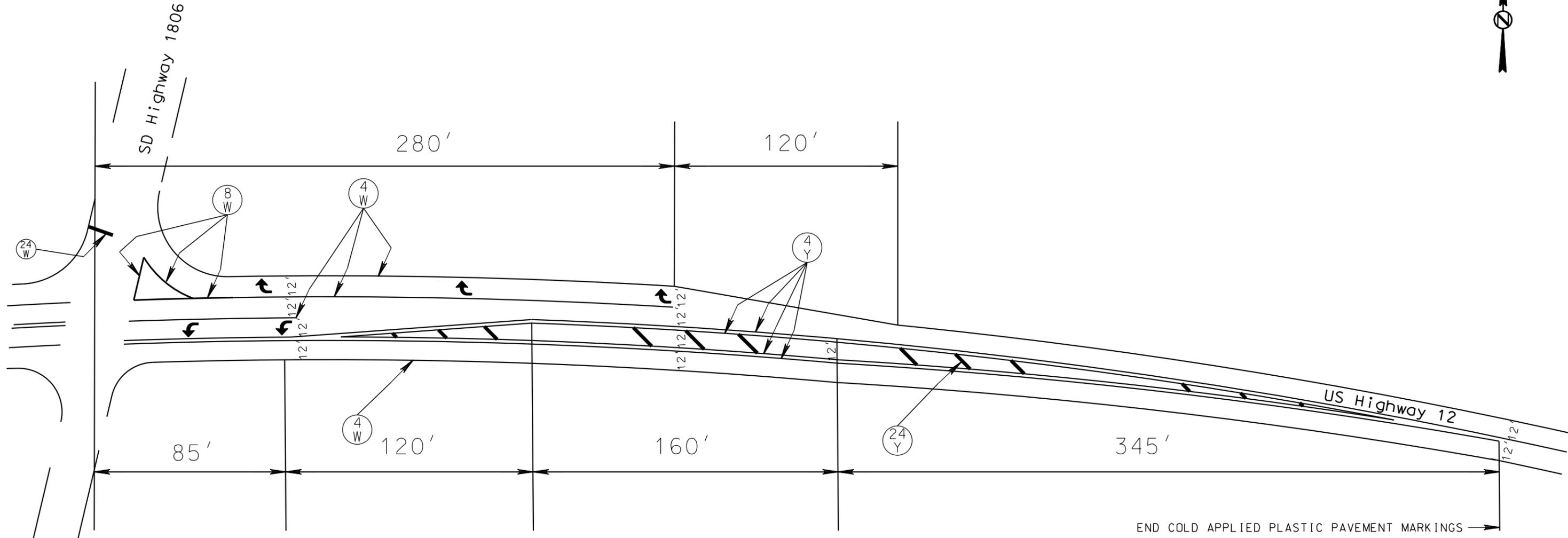
KEY	ITEM
④ Y	4" YELLOW
④ W	4" WHITE
⑧ W	8" WHITE
②④ Y	24" YELLOW
②④ W	24" WHITE
↩	ARROW

# PAVEMENT MARKING LAYOUT OF JUNCTION US12 & SD18 06 N



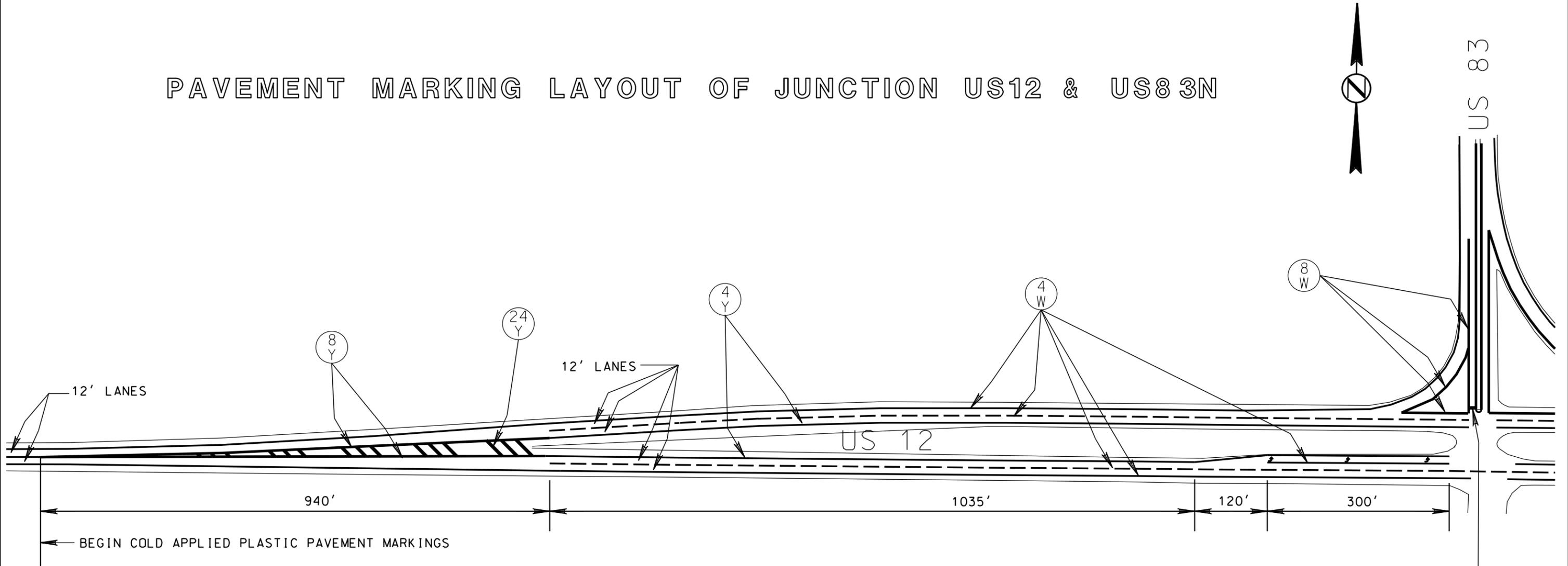
KEY	ITEM
(4 Y)	4" YELLOW
(4 W)	4" WHITE
(24 Y)	24" YELLOW
(24 W)	24" WHITE
↩	ARROW

# PAVEMENT MARKING LAYOUT OF JUNCTION US12 & SD18 06 N



KEY	ITEM
⓪ 4 Y	4" YELLOW
⓪ 4 W	4" WHITE
⓪ 8 W	8" WHITE
⓪ 24 Y	24" YELLOW
⓪ 24 W	24" WHITE
↩	ARROW

# PAVEMENT MARKING LAYOUT OF JUNCTION US12 & US83N

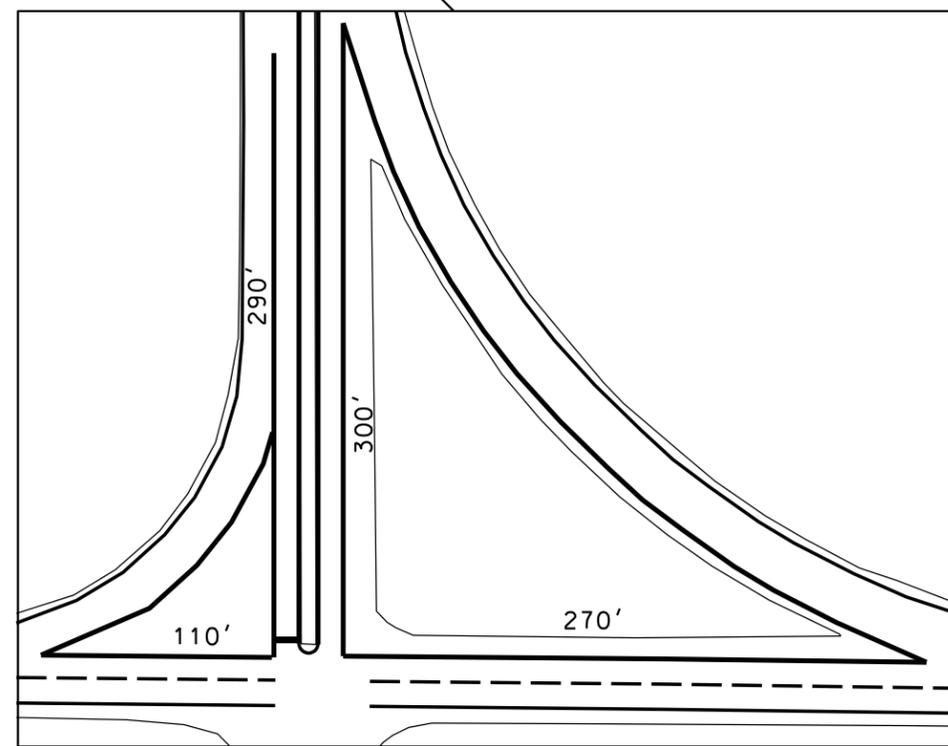
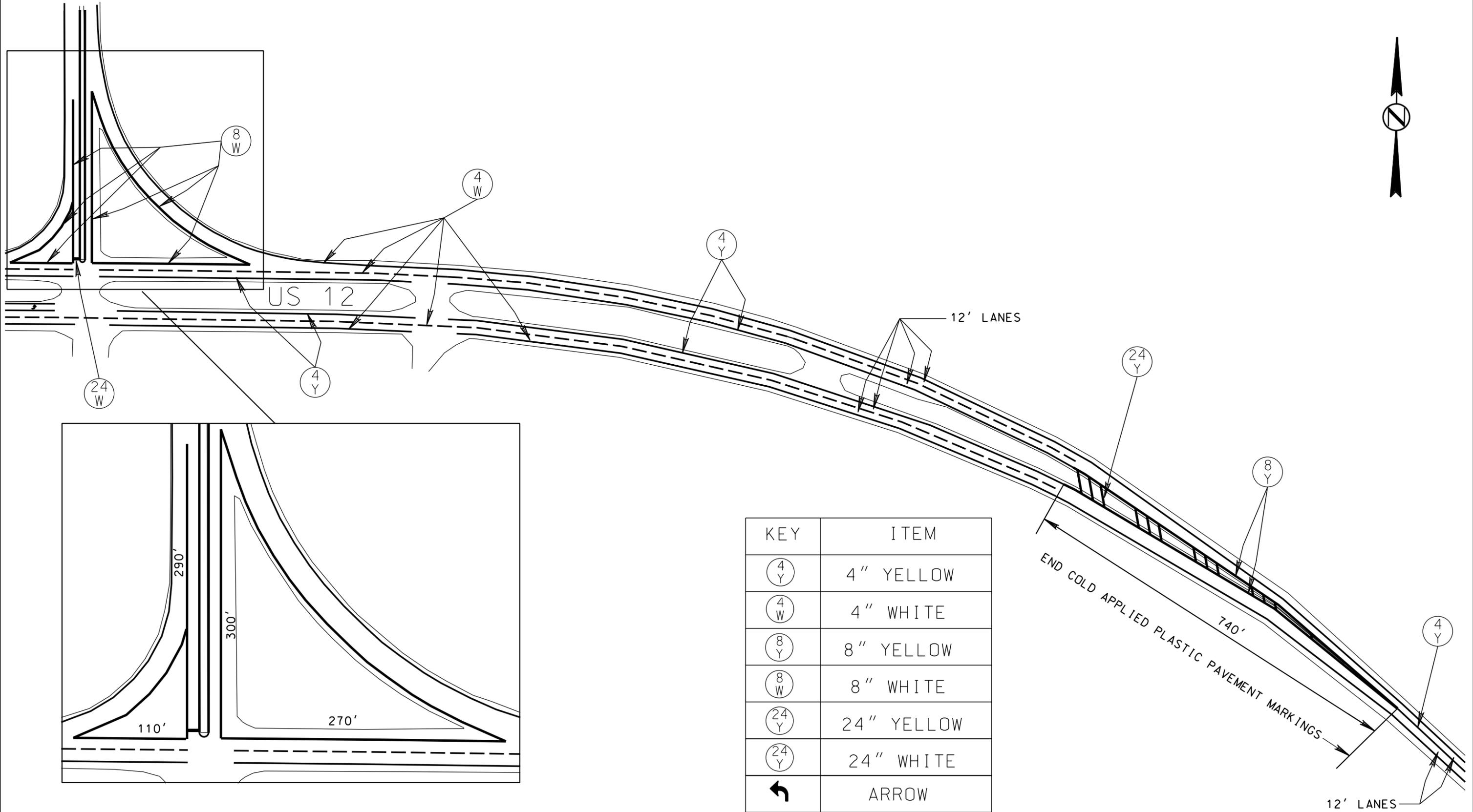


KEY	ITEM
(4 Y)	4" YELLOW
(4 W)	4" WHITE
(8 Y)	8" YELLOW
(8 W)	8" WHITE
(24 Y)	24" YELLOW
(24 W)	24" WHITE
↩	ARROW

US 83  
SN

(24 W)

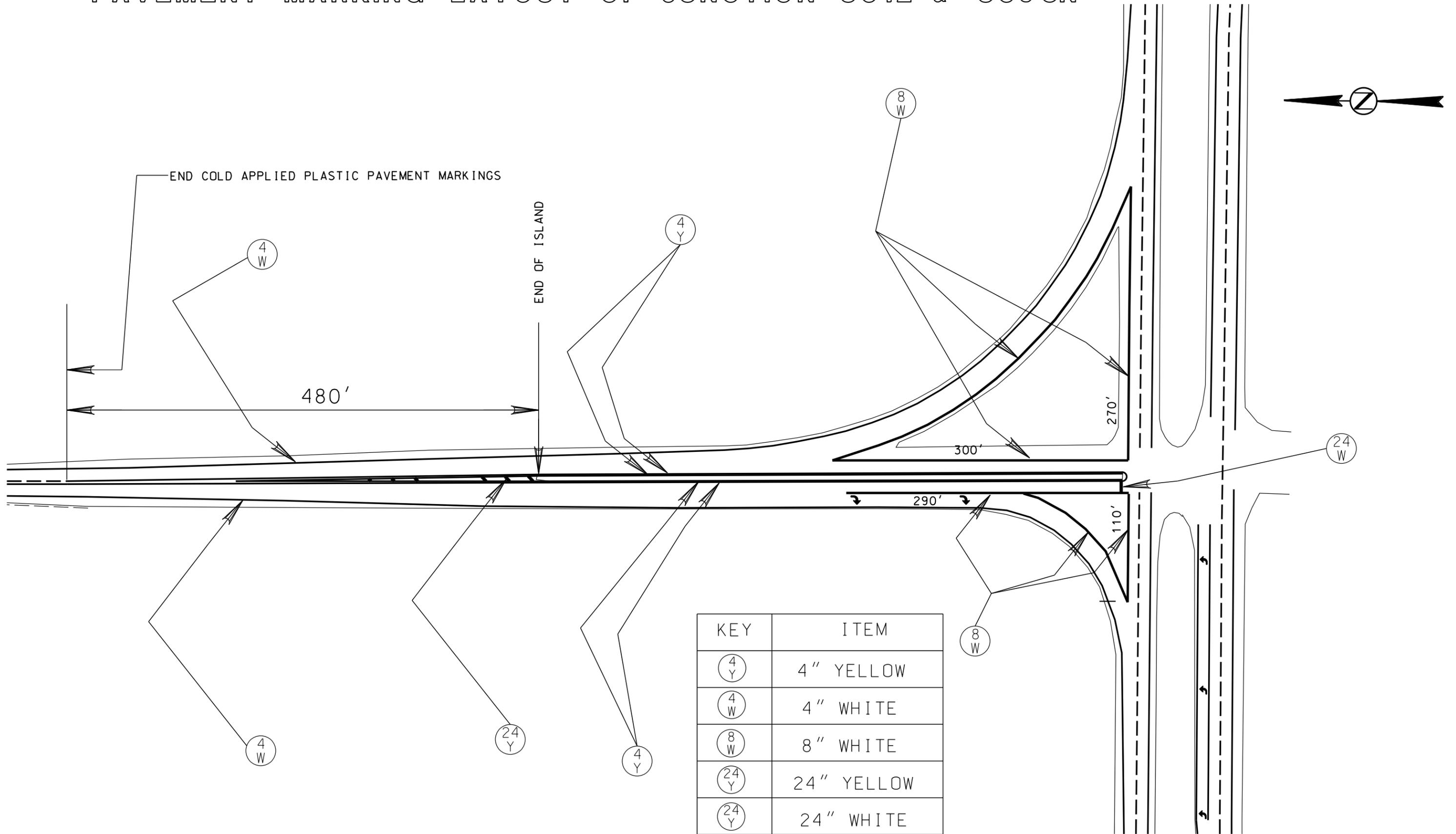
# PAVEMENT MARKING LAYOUT OF JUNCTION US12 & US83N



KEY	ITEM
(4 Y)	4" YELLOW
(4 W)	4" WHITE
(8 Y)	8" YELLOW
(8 W)	8" WHITE
(24 Y)	24" YELLOW
(24 W)	24" WHITE
↩	ARROW

# PAVEMENT MARKING LAYOUT OF JUNCTION US12 & US83N

END COLD APPLIED PLASTIC PAVEMENT MARKINGS

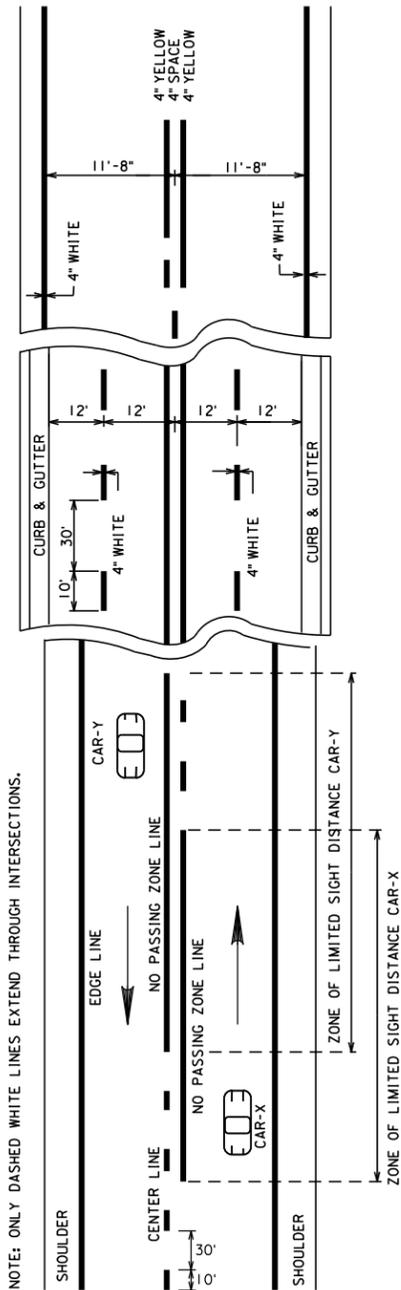


KEY	ITEM
④ Y	4" YELLOW
④ W	4" WHITE
⑧ W	8" WHITE
②④ Y	24" YELLOW
②④ W	24" WHITE
↶	ARROW

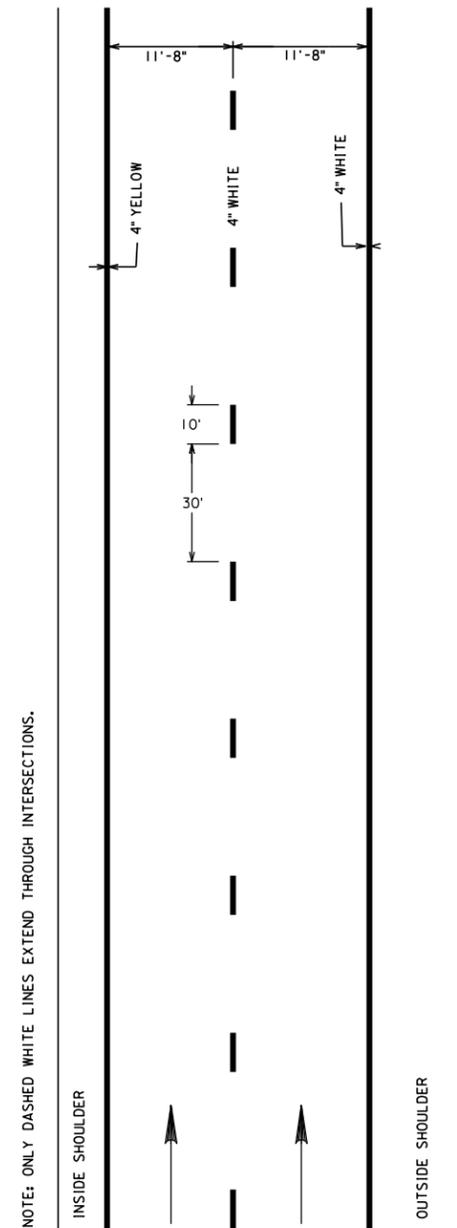
# PAVEMENT MARKING DETAILS AND SIGN TAB

## APPLICATION OF PAVEMENT MARKING FOR

### UNDIVIDED ROADWAY



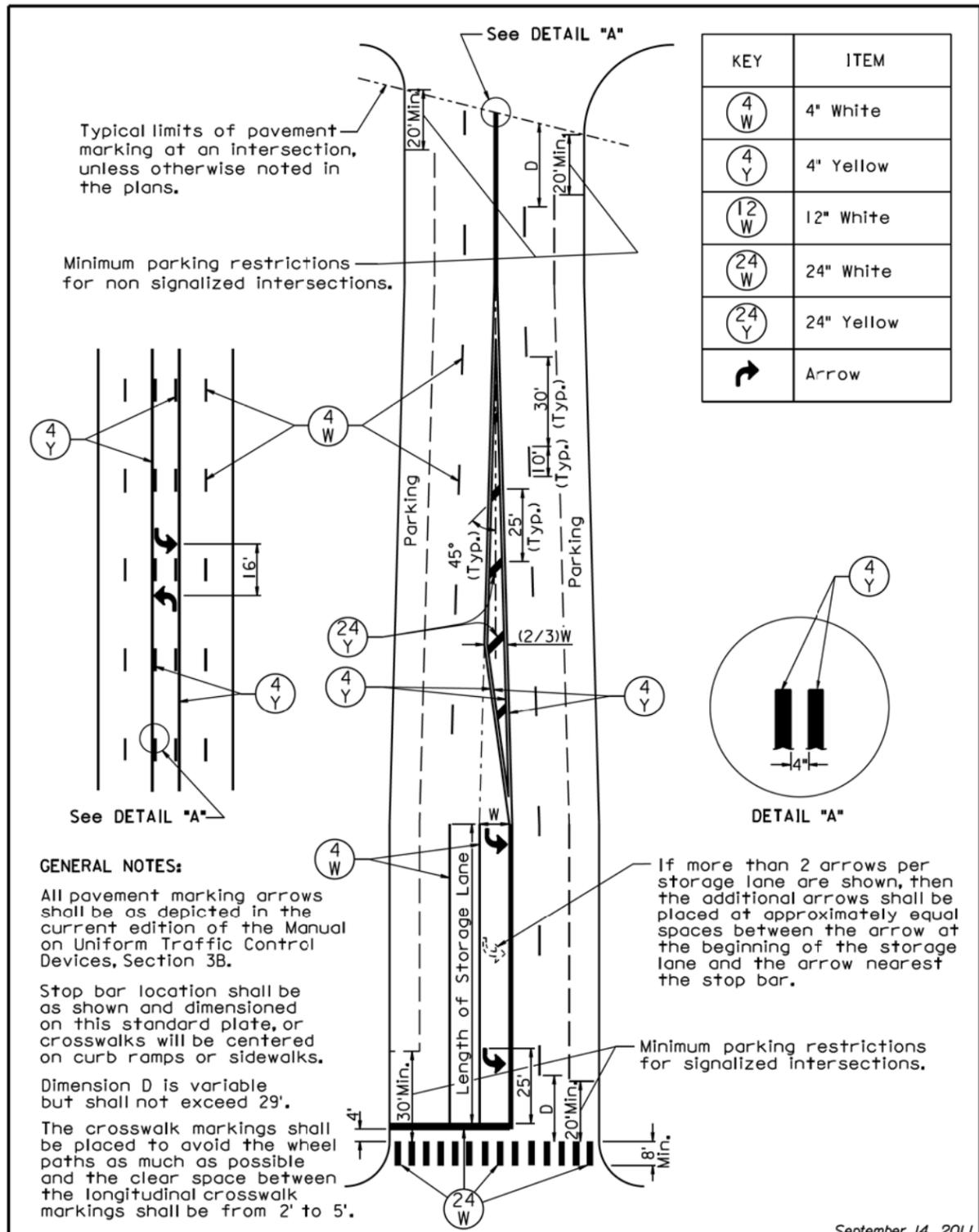
### DIVIDED ROADWAY (One direction shown)



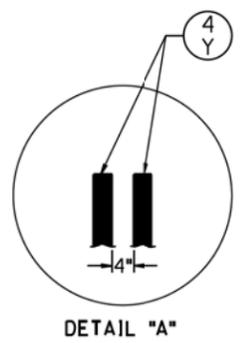
## SIGN TABULATION

### ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	UNITS PER SIGN	UNITS
W4-2	LEFT or RIGHT LANE ENDS (symbol)	4	48" x 48"	34	136
W20-1	ROAD WORK AHEAD	4	48" x 48"	34	136
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	34	68
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	4	48" x 48"	34	136
W20-7	FLAGGER (symbol)	3	48" x 48"	34	102
G20-2	END ROAD WORK	2	36" x 18"	17	34
<b>TOTAL UNITS</b>					<b>612</b>



KEY	ITEM
(4 W)	4" White
(4 Y)	4" Yellow
(12 W)	12" White
(24 W)	24" White
(24 Y)	24" Yellow
↶	Arrow



**GENERAL NOTES:**

All pavement marking arrows shall be as depicted in the current edition of the Manual on Uniform Traffic Control Devices, Section 3B.

Stop bar location shall be as shown and dimensioned on this standard plate, or crosswalks will be centered on curb ramps or sidewalks.

Dimension D is variable but shall not exceed 29'.

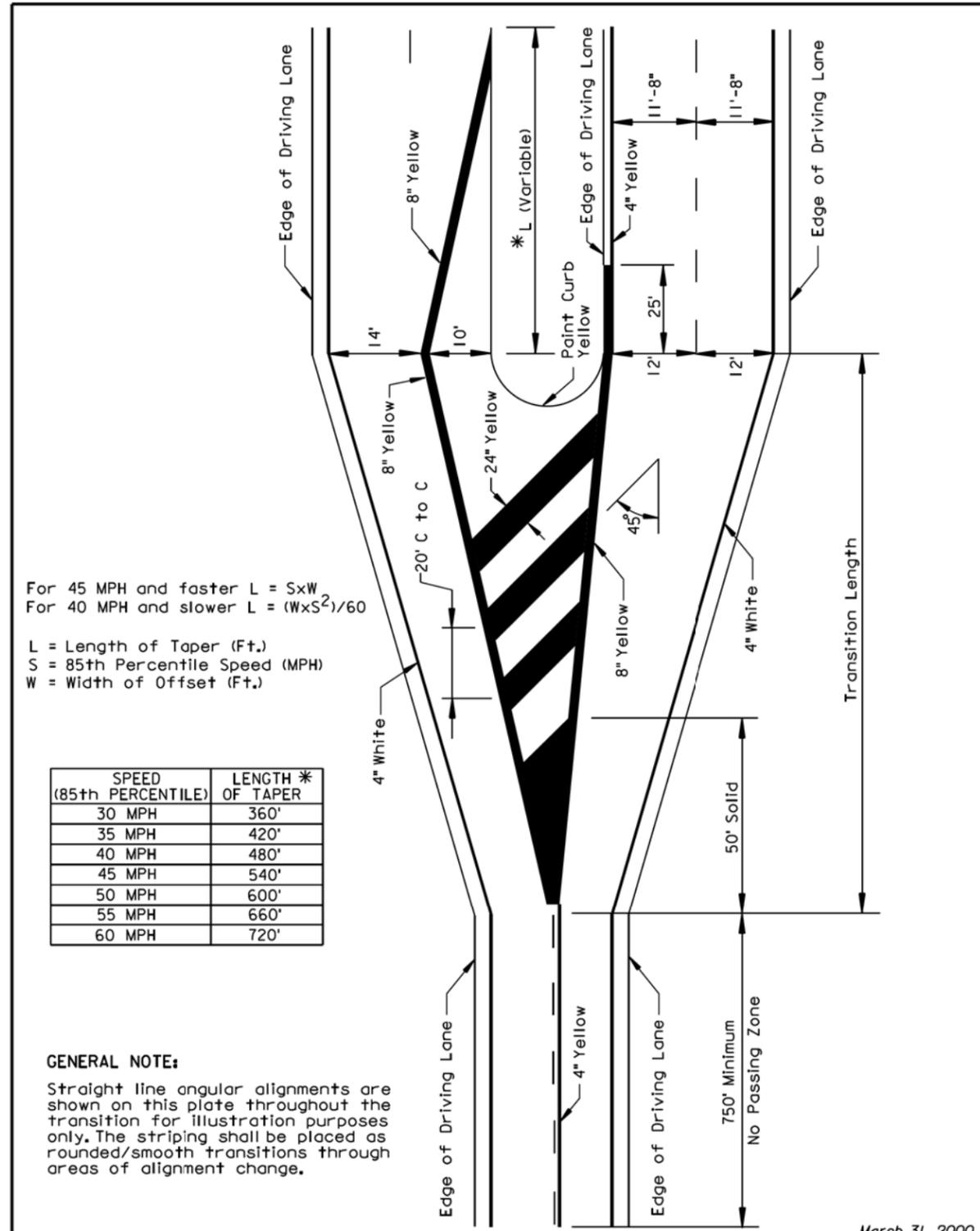
The crosswalk markings shall be placed to avoid the wheel paths as much as possible and the clear space between the longitudinal crosswalk markings shall be from 2' to 5'.

If more than 2 arrows per storage lane are shown, then the additional arrows shall be placed at approximately equal spaces between the arrow at the beginning of the storage lane and the arrow nearest the stop bar.

Minimum parking restrictions for signalized intersections.

September 14, 2011

<b>S D D O T</b>	<b>PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE</b>	PLATE NUMBER <b>633.01</b>
	Published Date: 1st Qtr. 2015	Sheet 1 of 1



For 45 MPH and faster  $L = S \times W$   
 For 40 MPH and slower  $L = (W \times S^2) / 60$

L = Length of Taper (Ft.)  
 S = 85th Percentile Speed (MPH)  
 W = Width of Offset (Ft.)

SPEED (85th PERCENTILE)	LENGTH * OF TAPER
30 MPH	360'
35 MPH	420'
40 MPH	480'
45 MPH	540'
50 MPH	600'
55 MPH	660'
60 MPH	720'

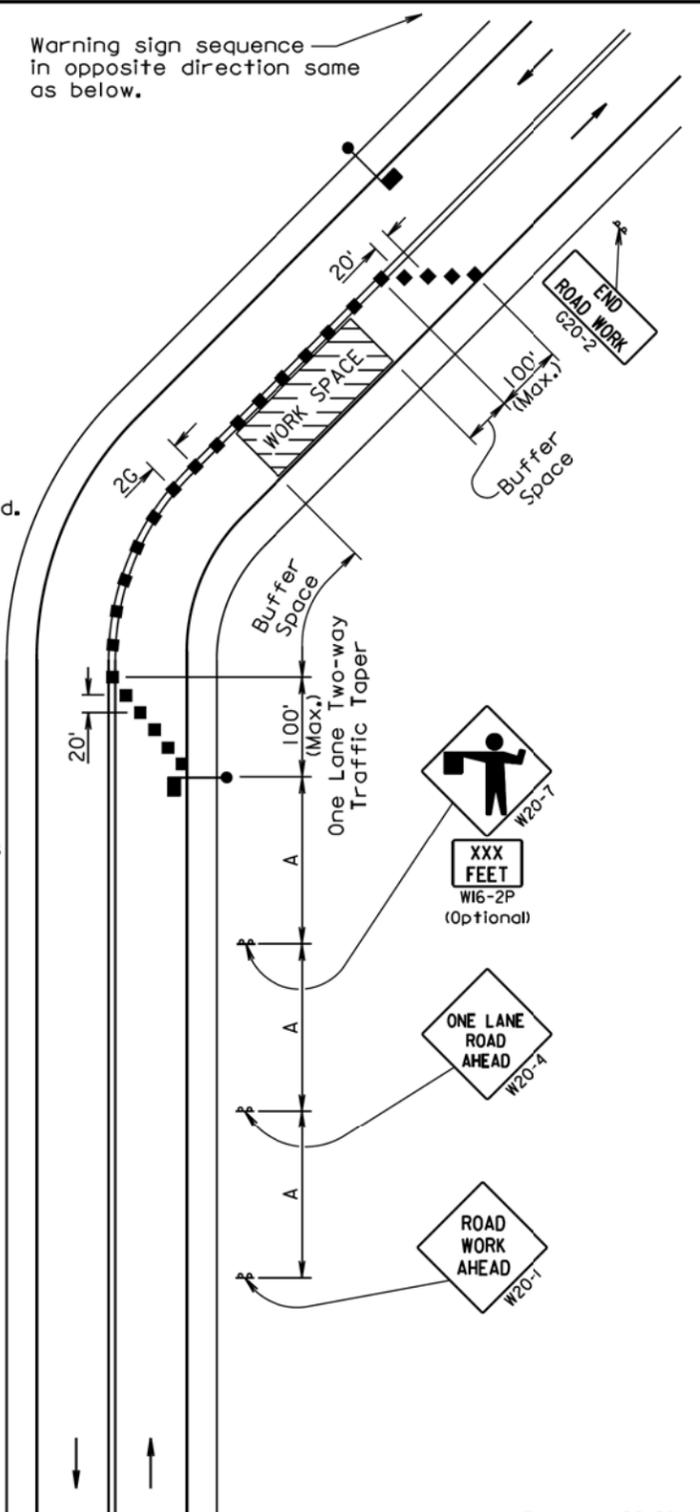
**GENERAL NOTE:**

Straight line angular alignments are shown on this plate throughout the transition for illustration purposes only. The striping shall be placed as rounded/smooth transitions through areas of alignment change.

March 31, 2000

<b>S D D O T</b>	<b>STANDARD APPROACH MARKINGS FOR TWO LANE TO FOUR LANE DIVIDED HIGHWAYS</b>	PLATE NUMBER <b>633.02</b>
	Published Date: 1st Qtr. 2015	Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 50	500	50
55	750	50
60 - 65	1000	50



For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

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

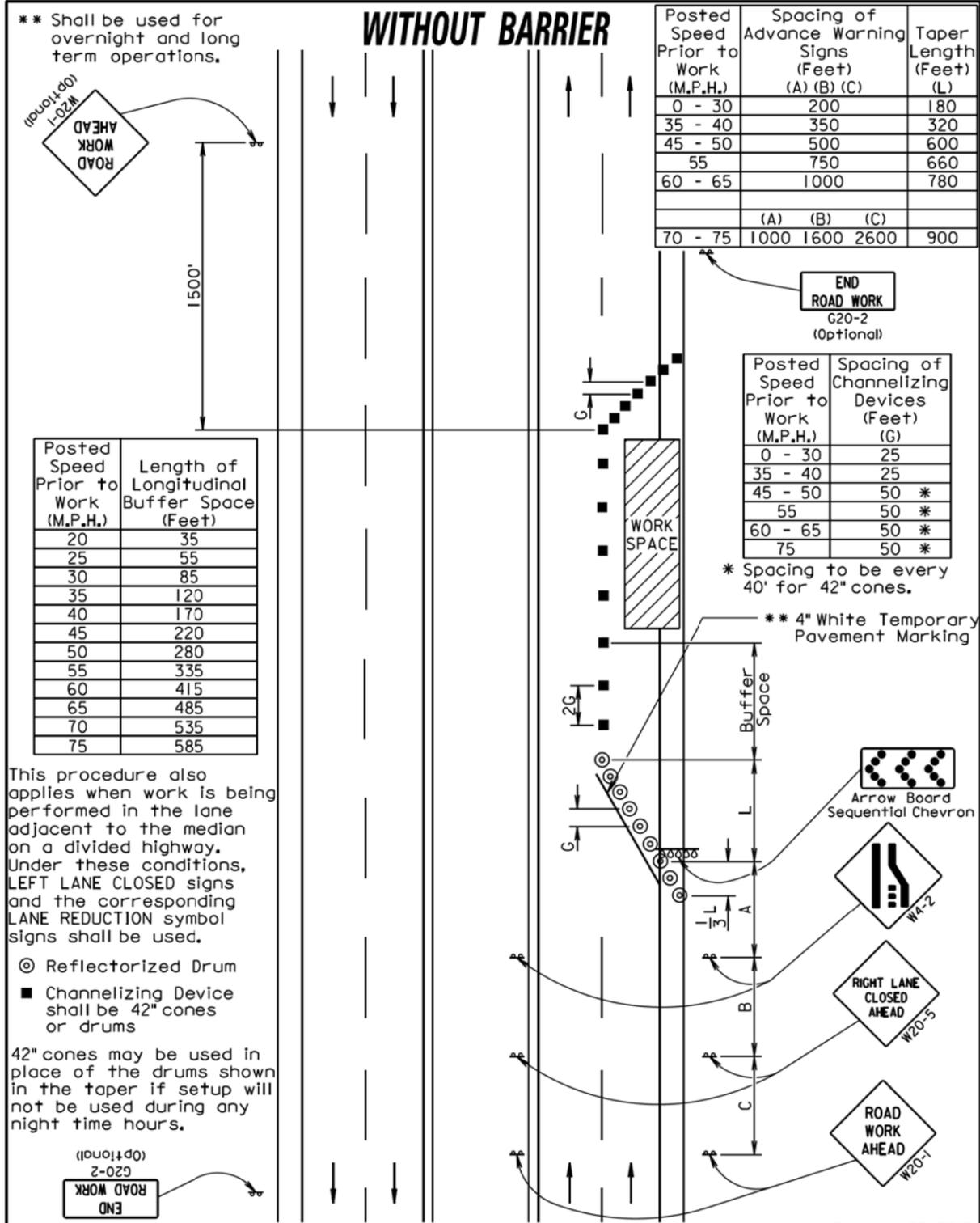
The channelizing devices shall be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.



\*\* Shall be used for overnight and long term operations.

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485
70	535
75	585

This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs shall be used.

⊙ Reflectorized Drum

■ Channelizing Device shall 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 any night time hours.

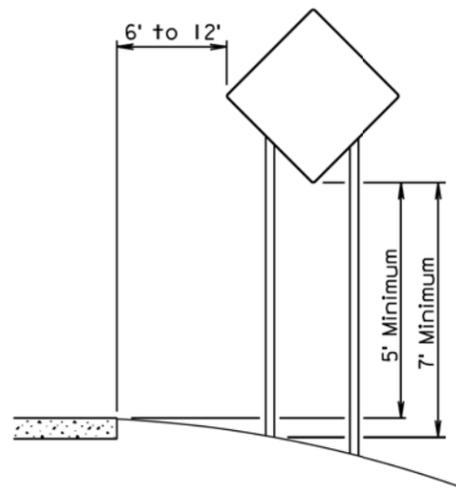
**WITHOUT BARRIER**

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 75	1000 1600 2600	900

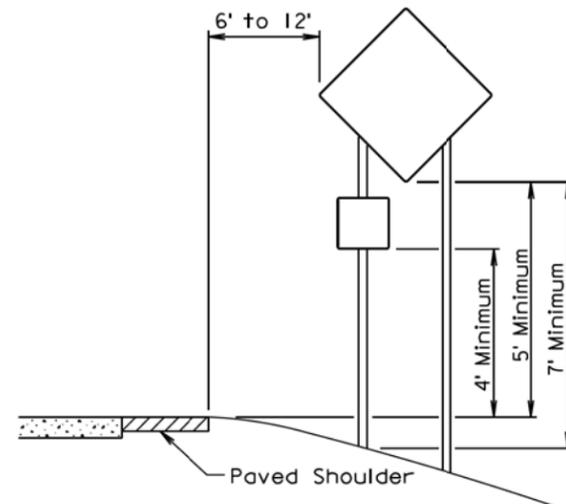
Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 40	25
45 - 50	50 *
55	50 *
60 - 65	50 *
75	50 *

\* Spacing to be every 40' for 42" cones.

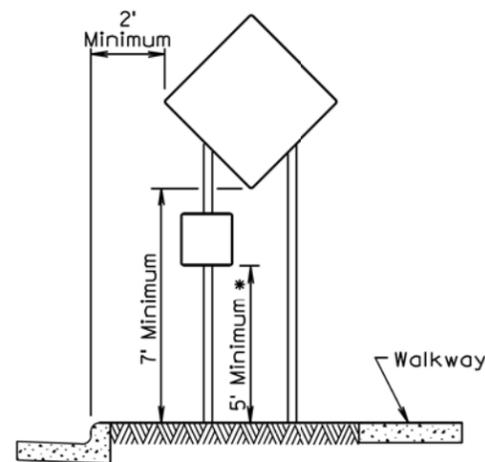
\*\* 4" White Temporary Pavement Marking



RURAL DISTRICT

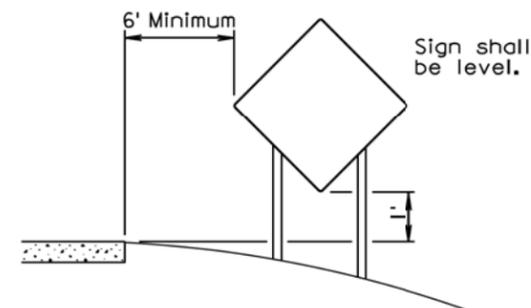


RURAL DISTRICT WITH  
SUPPLEMENTAL PLATE



URBAN DISTRICT

\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



RURAL DISTRICT  
3 DAY MAXIMUM  
(Not applicable to regulatory signs)

September 22, 2014

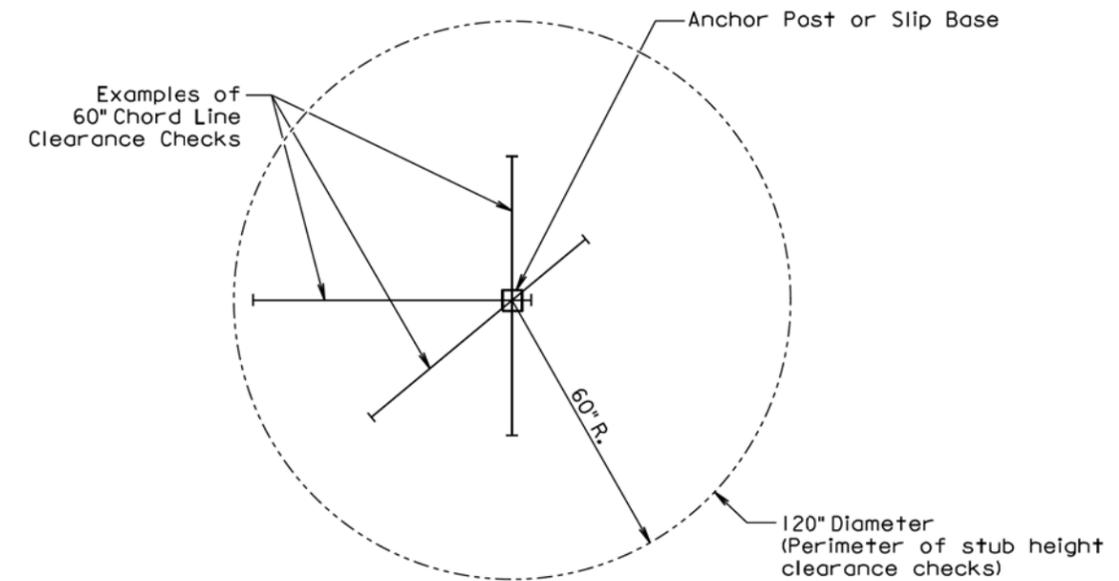
Published Date: 1st Qtr. 2015

**S  
D  
D  
O  
T**

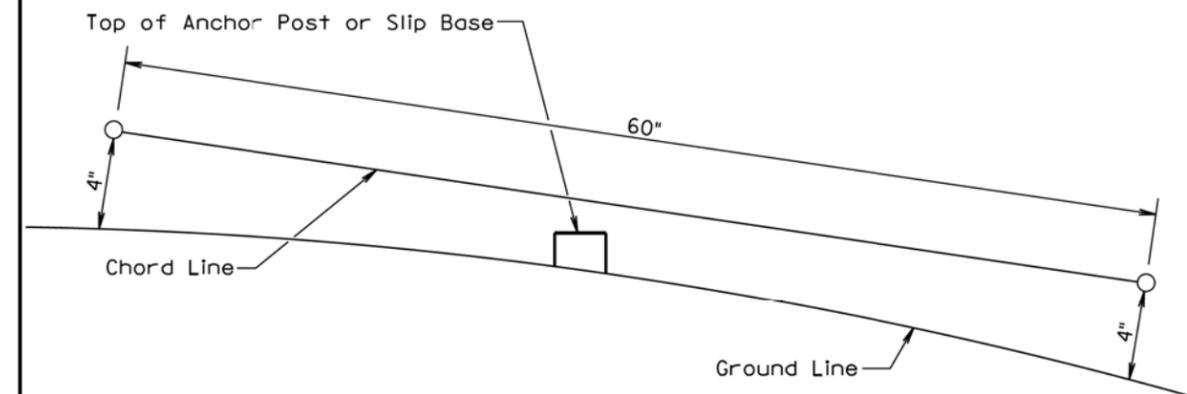
**CRASHWORTHY SIGN SUPPORTS**  
(Typical Construction Signing)

PLATE NUMBER  
634.85

Sheet 1 of 1



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

Published Date: 1st Qtr. 2015

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**BREAKAWAY SUPPORT STUB CLEARANCE**

PLATE NUMBER  
634.99

Sheet 1 of 1