

WKE

PROJECT ID:  
WITH: N/A

2060-16-70

COUNTY:

MILWAUKEE

DEC 2015

ORDER OF SHEETS

- Section No. 1 Title  
Section No. 2 Typical Sections and Details  
Section No. 3 Estimate of Quantities  
Section No. 3 Miscellaneous Quantities  
~~Section No. 4 Right of Way Plat~~  
Section No. 5 Plan and Profile  
Section No. 6 Standard Detail Drawings  
Section No. 7 Sign Plates  
~~Section No. 8 Structure Plans~~  
~~Section No. 9 Computer Earthwork Data~~  
~~Section No. 9 Cross Sections~~

TOTAL SHEETS = 116

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

STH 241 CITY OF MILWAUKEE

LAYTON AVENUE AND GRANGE AVENUE INTERSECTIONS

STH 241  
MILWAUKEE COUNTY

STATE PROJECT NUMBER

2060-16-70

STATE PROJECT

2060-16-70

FEDERAL PROJECT

PROJECT

CONTRACT



DESIGN DESIGNATION

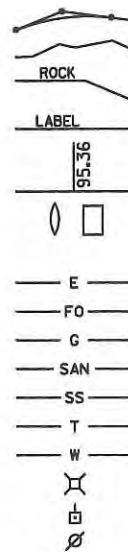
STH 241

A.A.D.T. (2016) = 30,700 - 39,600  
A.A.D.T. (2036) = 35,100 - 43,500  
D.H.V. = 3,650 - 4,525  
D.D. = 59/41  
T. = 5.3%  
DESIGN SPEED = 45 MPH  
ESALS = N/A

CONVENTIONAL SYMBOLS

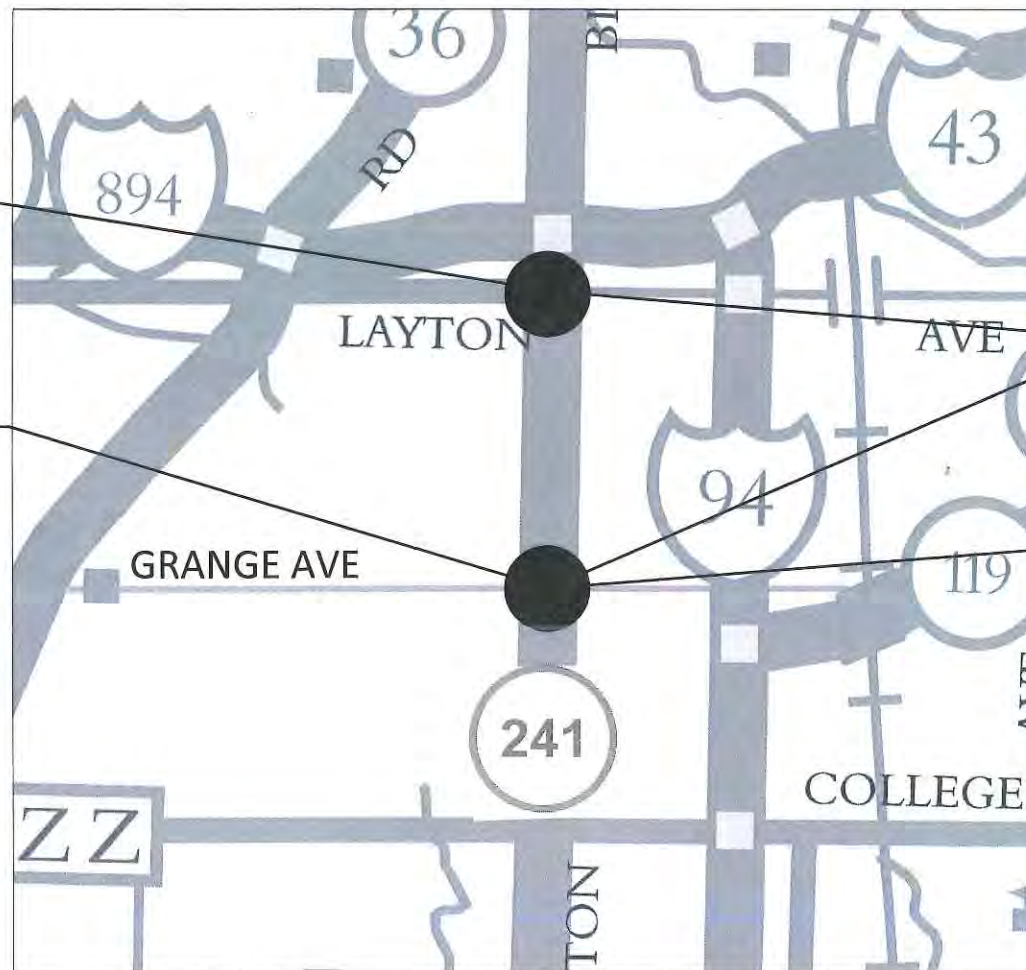
- PLAN  
CORPORATE LIMITS  
PROPERTY LINE  
LOT LINE  
LIMITED HIGHWAY EASEMENT  
EXISTING RIGHT OF WAY  
PROPOSED OR NEW R/W LINE  
SLOPE INTERCEPT  
REFERENCE LINE  
EXISTING CULVERT  
PROPOSED CULVERT (Box or Pipe)  
COMBUSTIBLE FLUIDS  
MARSH AREA  
WOODED OR SHRUB AREA

- PROFILE  
GRADE LINE  
ORIGINAL GROUND  
MARSH OR ROCK PROFILE (To be noted as such)  
SPECIAL DITCH  
GRADE ELEVATION  
CULVERT (Profile View)  
UTILITIES  
ELECTRIC  
FIBER OPTIC  
GAS  
SANITARY SEWER  
STORM SEWER  
TELEPHONE  
WATER  
UTILITY PEDESTAL  
POWER POLE  
TELEPHONE POLE



END PROJECT  
STA. 199+28.03

BEGIN PROJECT 2060-16-70  
STA. 147+41.25  
X=595,380.0065  
Y=265,446.6042



SCALE 0 1/2 MILE

TOTAL NET LENGTH OF CENTERLINE = 0.000 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, MILWAUKEE COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988, NAVD 88 (2012)

EXCEPTION TO NET CENTERLINE LENGTH  
STA. 153+39.98 - STA. 197+61.31

EXCEPTION TO NET CENTERLINE LENGTH  
STA. 147+94.53 - STA. 152+84.25

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY

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Designer WISDOT  
Project Manager CHRISTINE HANNA  
Regional Examiner STEVE CHOJNACKI  
Regional Supervisor REEM SHAHIN

APPROVED FOR THE DEPARTMENT

DATE: 4/23/15 Christine Hanna (Signature)

E



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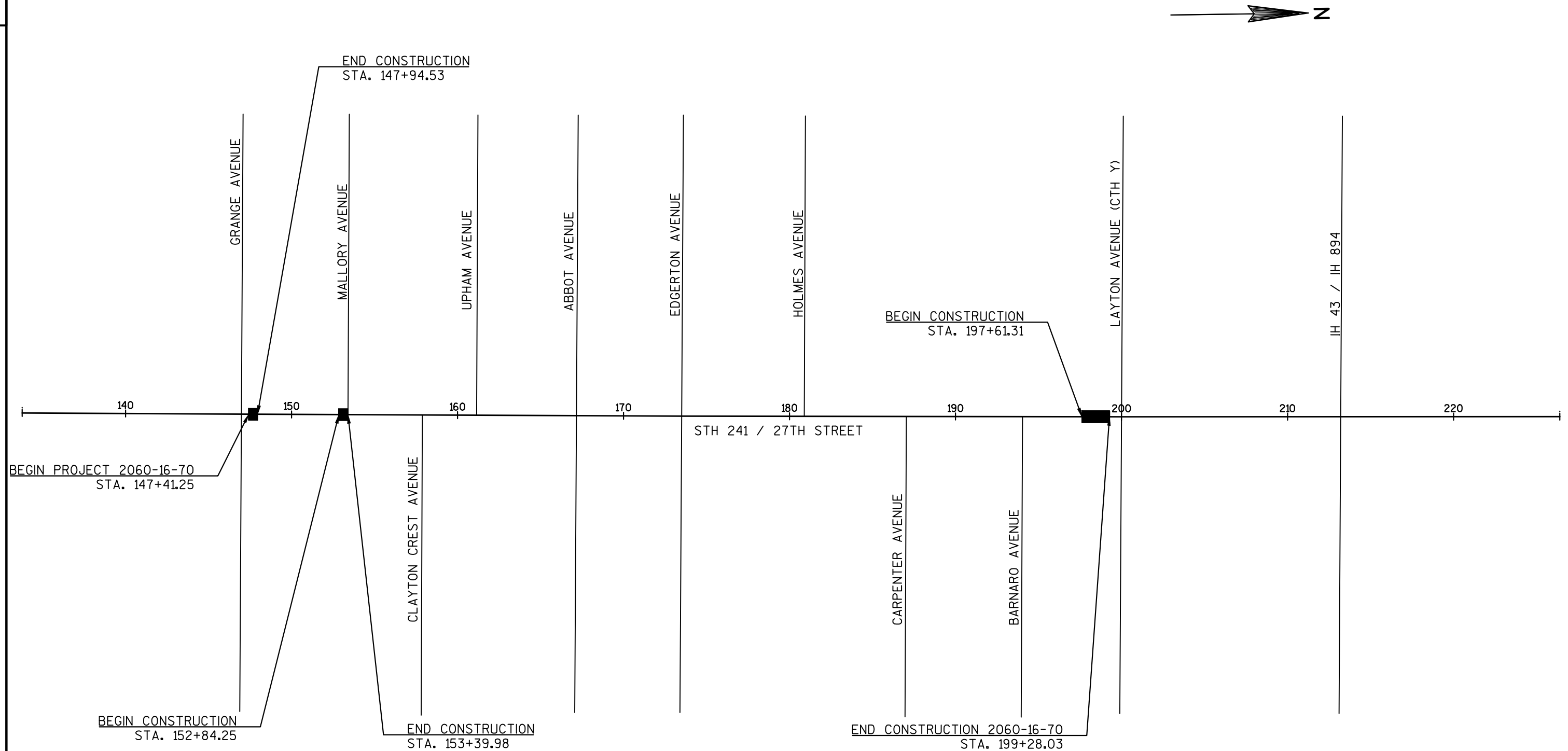
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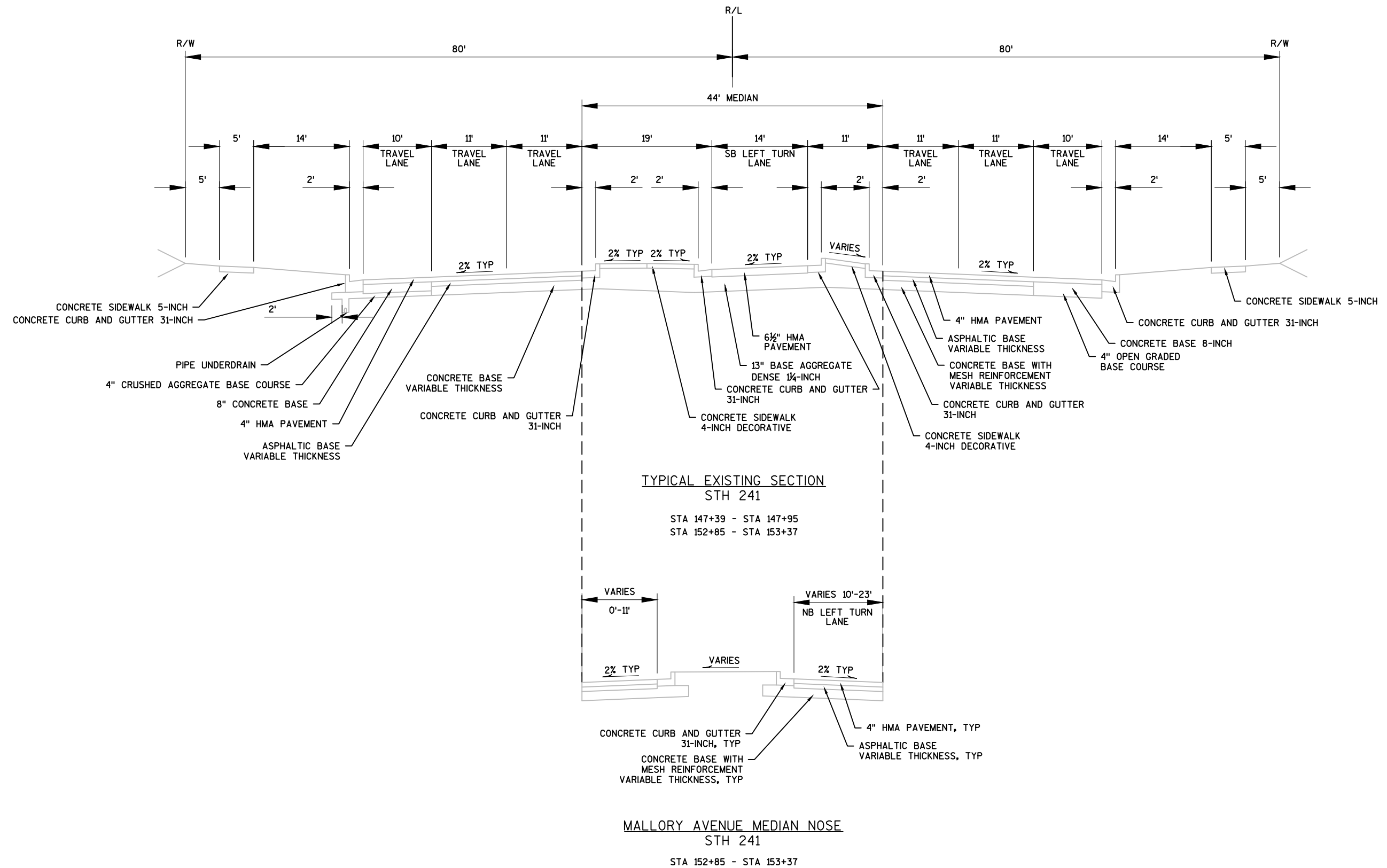
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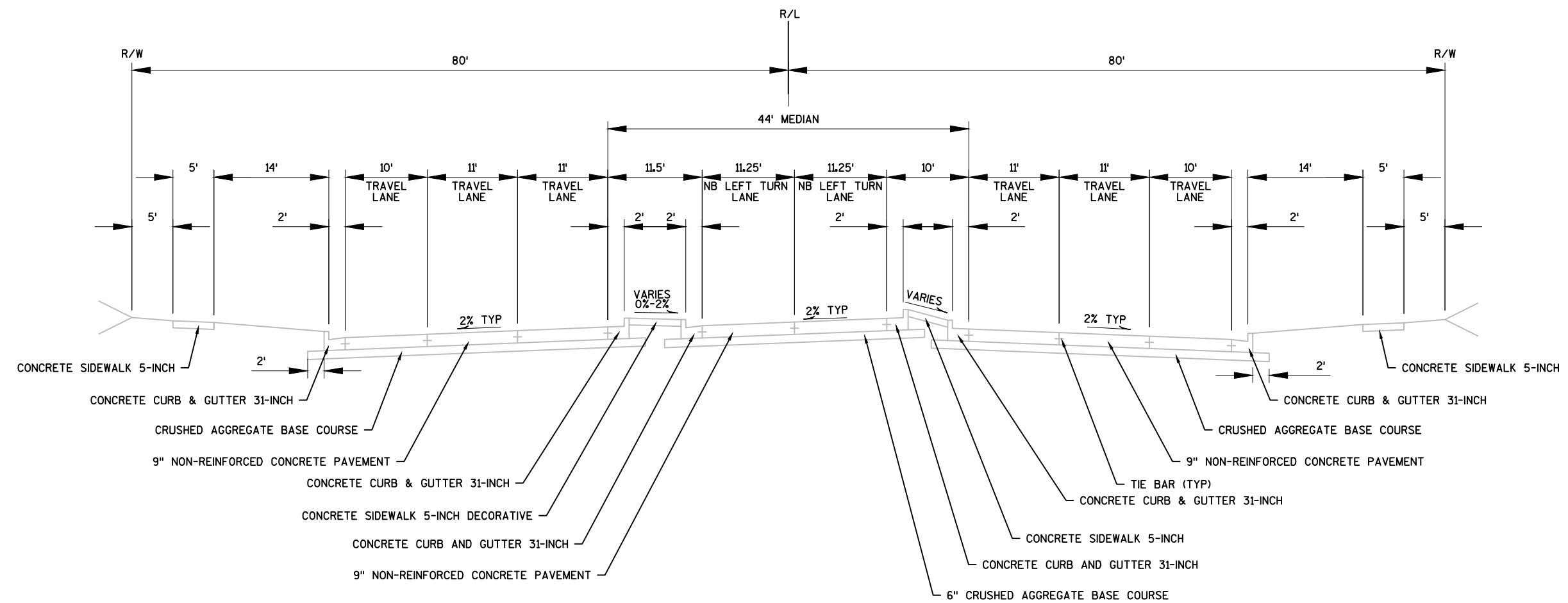


Dial 811 or (800) 242-8511  
www.DiggersHotline.com



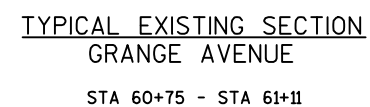
PROJECT NO:2060-16-70	HWY:STH 241	COUNTY:MILWAUKEE	PROJECT OVERVIEW	SHEET	E
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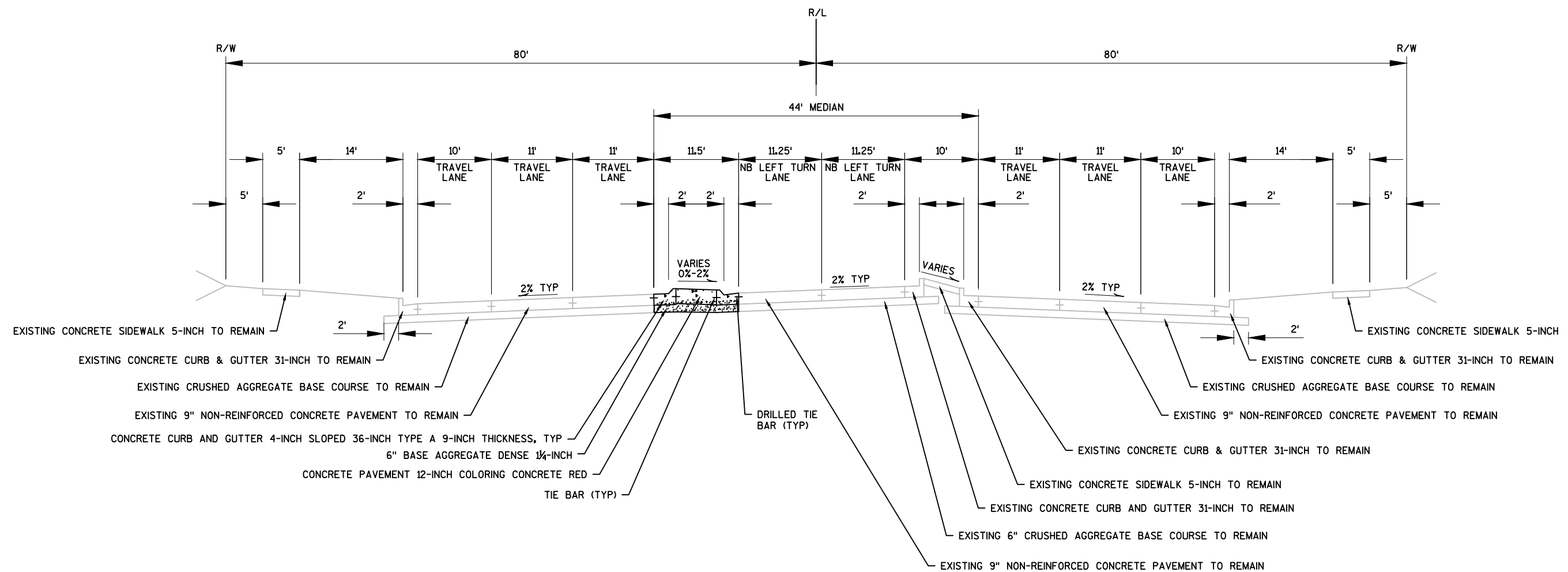


TYPICAL EXISTING SECTION  
STH 241

STA 197+61 - STA 199+28

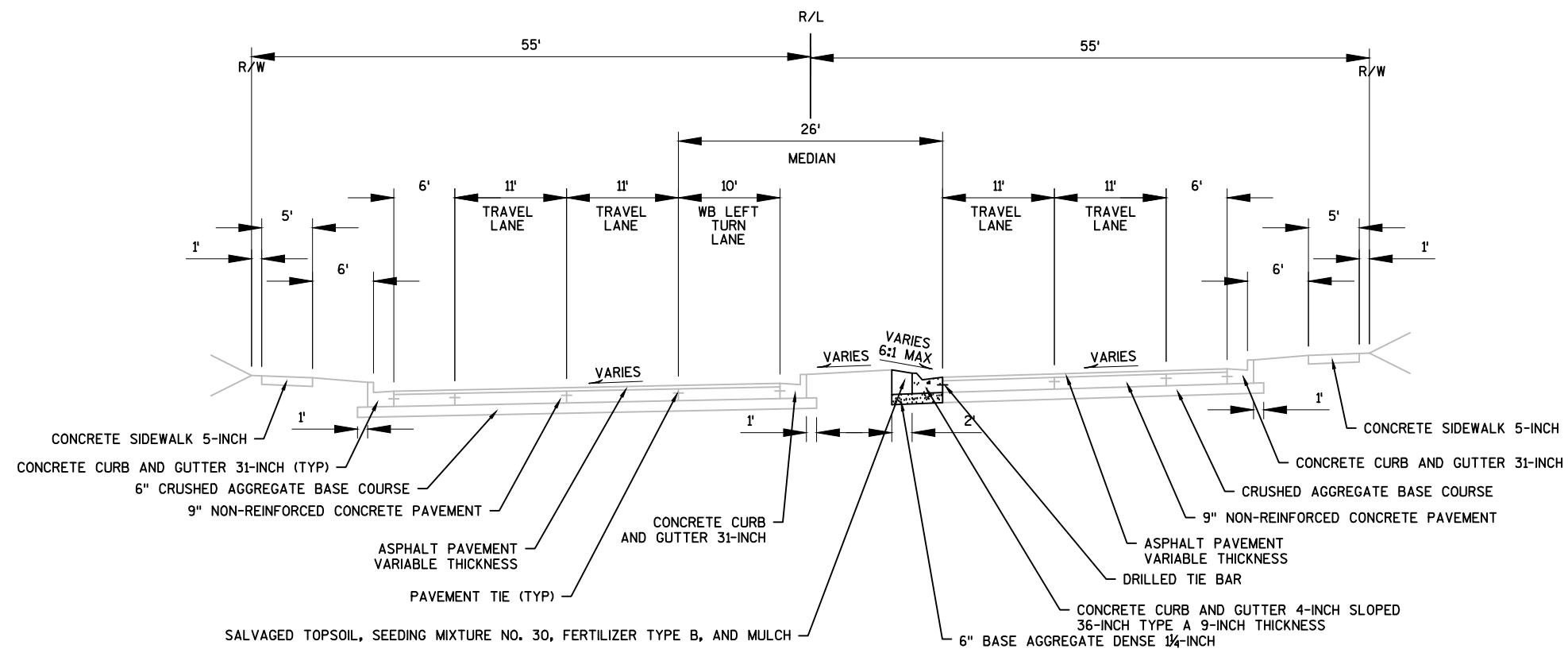






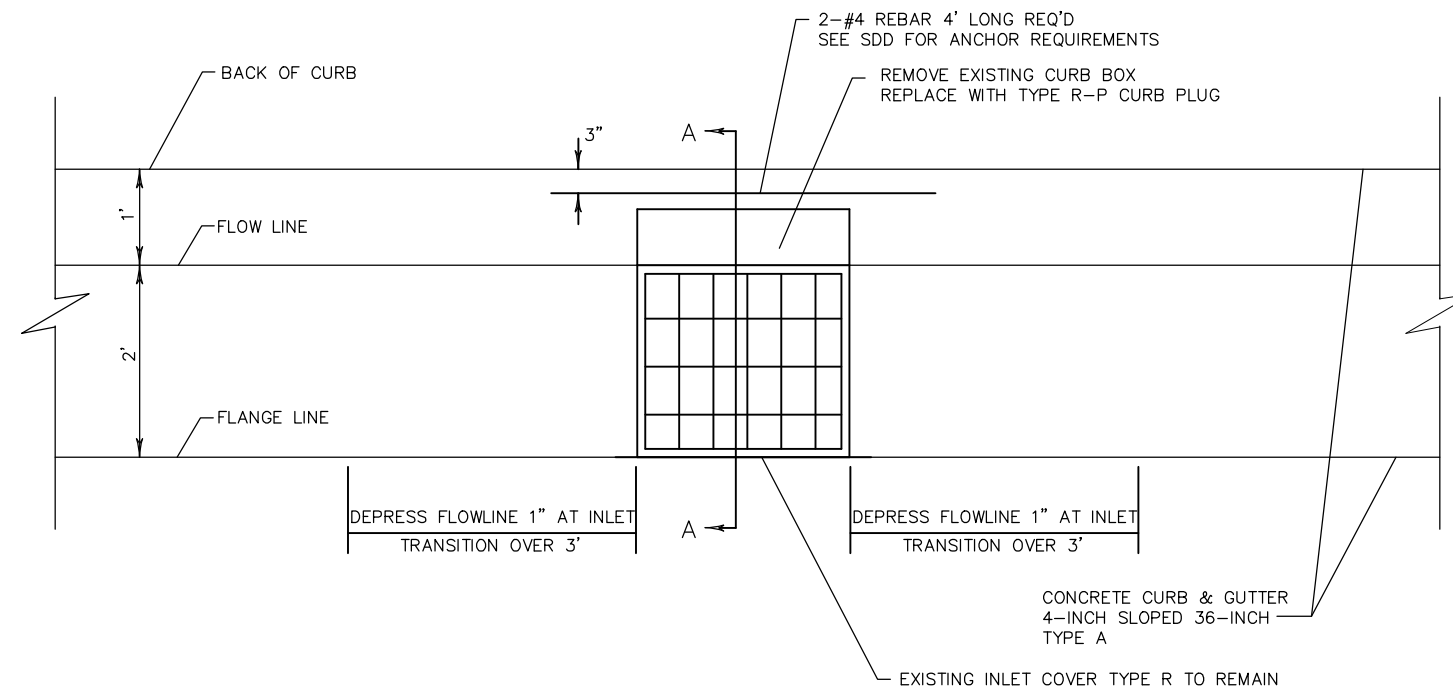
TYPICAL FINISHED SECTION  
STH 241

STA 197+61 - STA 199+28

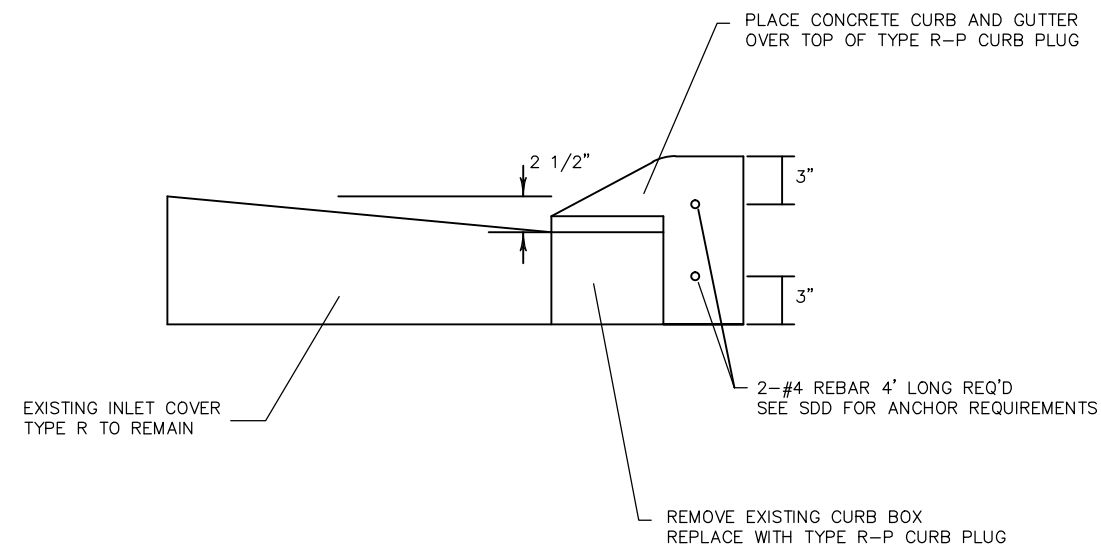


TYPICAL FINISHED SECTION  
GRANGE AVENUE

STA 60+75 - STA 61+11



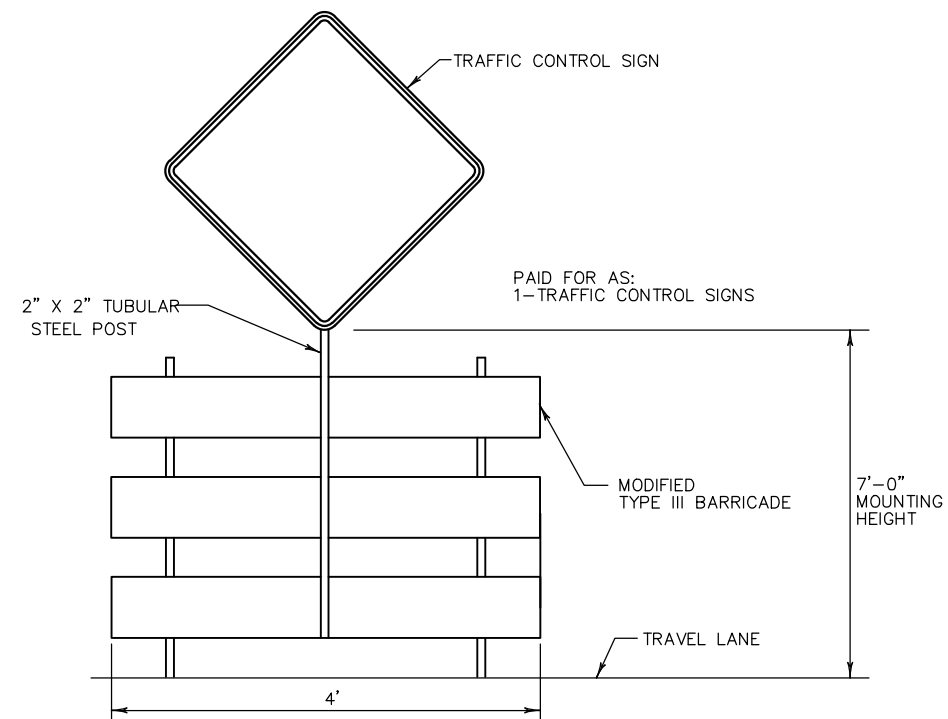
PLAN VIEW



SECTION A-A

INLET COVERS, TYPE RNOTES

1. SEE SDD "MANHOLES, MANHOLE, & INLET COVERS" FOR ADDITIONAL INFORMATION.
2. THE TWO 3-FOOT LONG CURB TRANSITION SEGMENTS ARE PAID AS CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE A.
3. THE 4-FOOT LENGTHS OF #4 REBAR ARE INCIDENTAL TO THE BID ITEM "INLET COVERS TYPE R".



TEMPORARY MOUNTED TRAFFIC CONTROL SIGN

RUNOFF COEFFICIENT TABLE

	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS	.08 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33 .50	.19 .34	.28 .41	.38 .56
MEDIAN STRIP-TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPE-TURF			.25 .32			.27 .34			.28 .36			.30 .38
PAVEMENT:												
ASPHALT	.70 - .95											
CONCRETE	.80 - .95											
BRICK	.70 - .80											
DRIVES, WALKS	.75 - .85											
ROOFS	.75 - .95											
GRAVEL ROADS, SHOULDERS	.40 - .60											

TOTAL PROJECT AREA = 3.10 ACRES  
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.08 ACRES

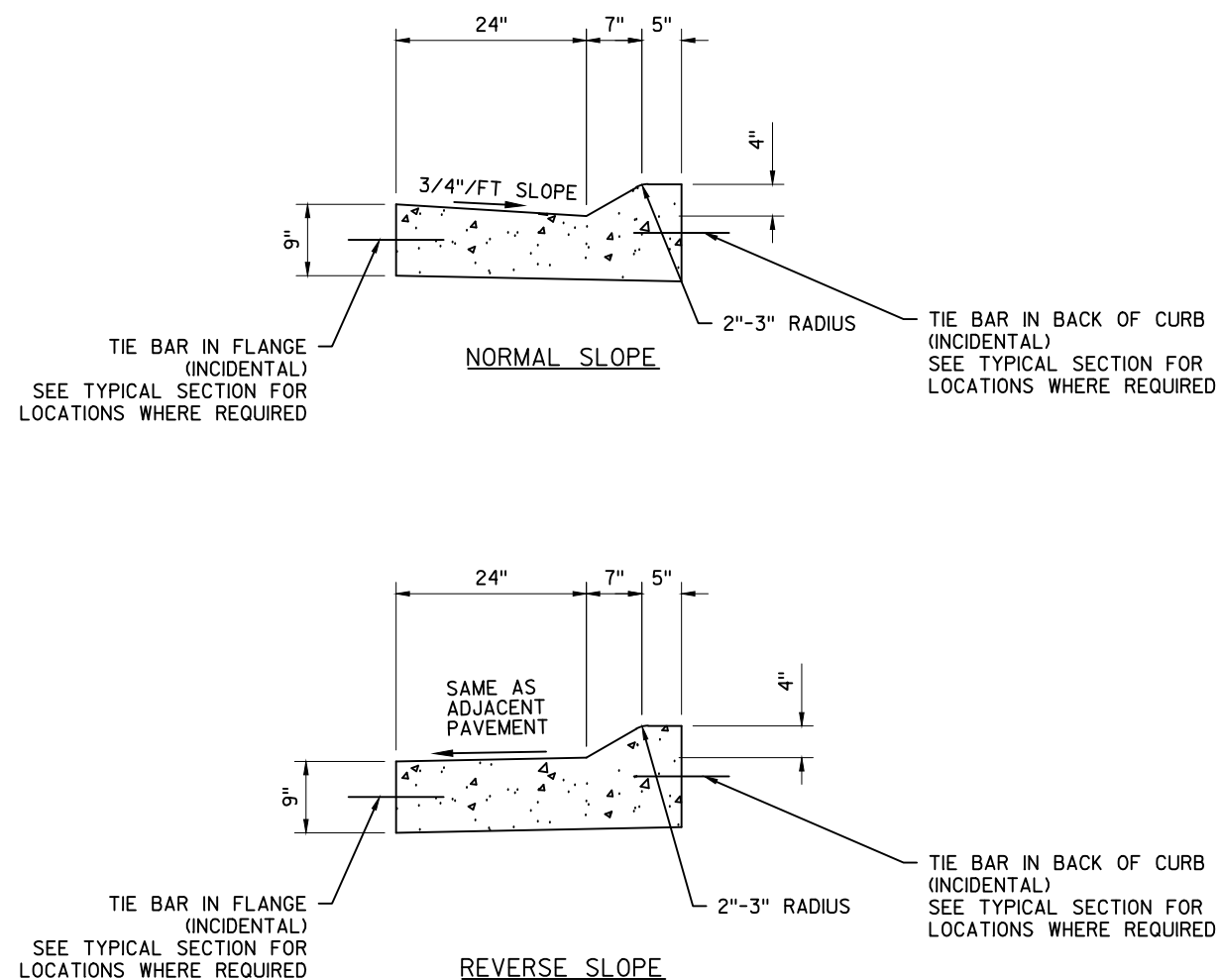


SEE SIGNING PLAN FOR LOCATIONS



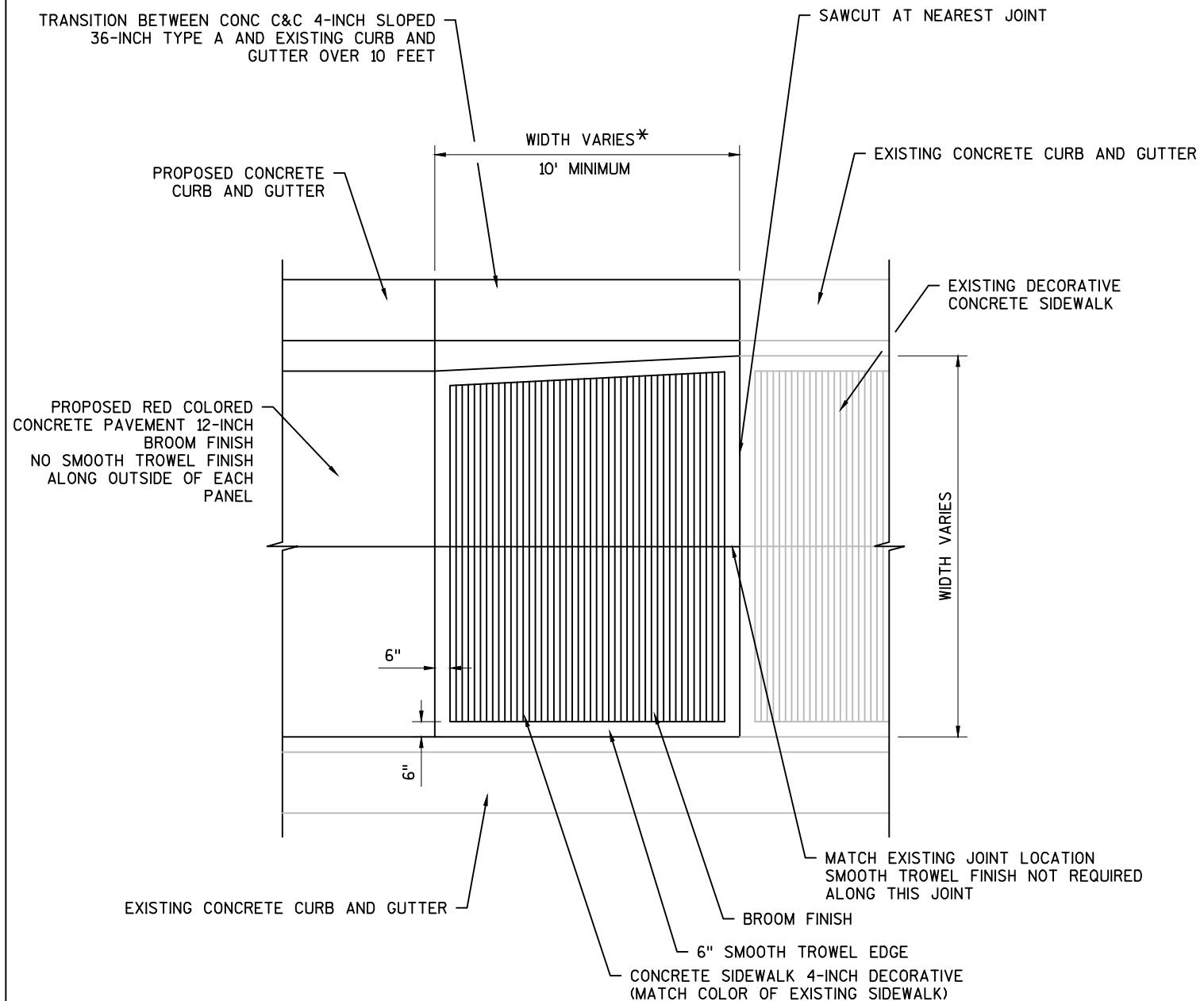
SEE PLAN DETAILS FOR LOCATIONS AND DIMENSIONS OF  
INDIVIDUAL MEDIANS

\* DISTANCE TO BE DETERMINED IN FIELD BASED ON SIGN SIZE AND LOCATION.  
TWO FOOT MINIMUM CLEARANCE BETWEEN THE EDGE OF SIGN AND FACE OF  
CURB IS REQUIRED. SEE SIGN PLATE A4-3B FOR SIGN POST INSTALLATION DETAILS



CONCRETE CURB AND GUTTER 4-INCH SLOPED  
36-INCH TYPE A 9-INCH THICKNESS

NOTE: CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE A 9-INCH THICKNESS HES SHALL USE SAME DIMENSIONS SHOWN IN THIS DETAIL



CONCRETE SIDEWALK 4-INCH DECORATIVE

\* CONTRACTOR TO DETERMINE IF JOINTS ARE REQUIRED  
PROVIDE SMOOTH TROWEL FINISH ALONG JOINT TO MATCH EXISTING DECORATIVE CONCRETE

2



CONCRETE MEDIAN SLOPED NOSE TYPE 1 DETAIL  
GRANGE AVENUE MEDIAN AT STH 241

1. SEE PLAN DETAILS FOR STATIONS AND OFFSETS OF SLOPED NOSE CORNERS
2. MATCH EXISTING ELEVATIONS ALONG FLANGE OF SLOPED NOSE AND CURB AND GUTTER

PROJECT NO:2060-16-70
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HWY: STH 241

COUNTY: MILWAUKEE

## CONSTRUCTION DETAILS



SHEET

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CONCRETE MEDIAN SLOPED NOSE TYPE 1 DETAIL  
 STH 241 MEDIAN AT MALLORY AVENUE

## LEGEND

- ①  REMOVING CONCRETE CURB AND GUTTER
- ②  REMOVING CONCRETE SIDEWALK
- ③ EXCAVATION COMMON
- ④ SAWING ASPHALT
- ⑤ SAWING CONCRETE



145+00

146+00

147+00

148+00

149+00

150+00

GRANGE AVENUE

00+85

00+65

00+45

00+25

REMOVE COMMUNICATIONS VAULT  
SEE TRAFFIC SIGNAL REMOVAL PLAN

STH 241 R/L

STH 241 / 27TH STREET

REMOVE SIGNAL POLE AND CONCRETE BASE  
SEE TRAFFIC SIGNAL REMOVAL PLAN

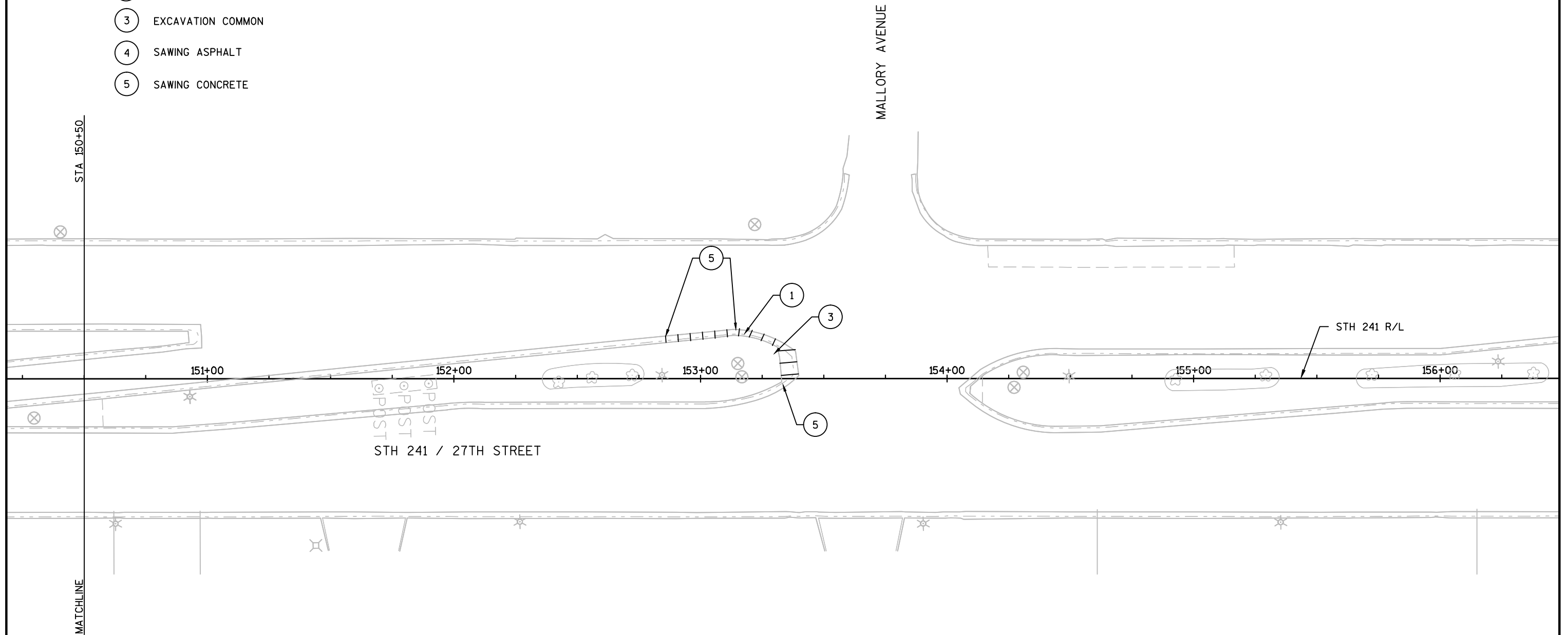
REMOVE TRAFFIC SIGNAL POLE AND BASE  
SEE TRAFFIC SIGNAL REMOVAL PLAN

STA 150+50

MATCHLINE

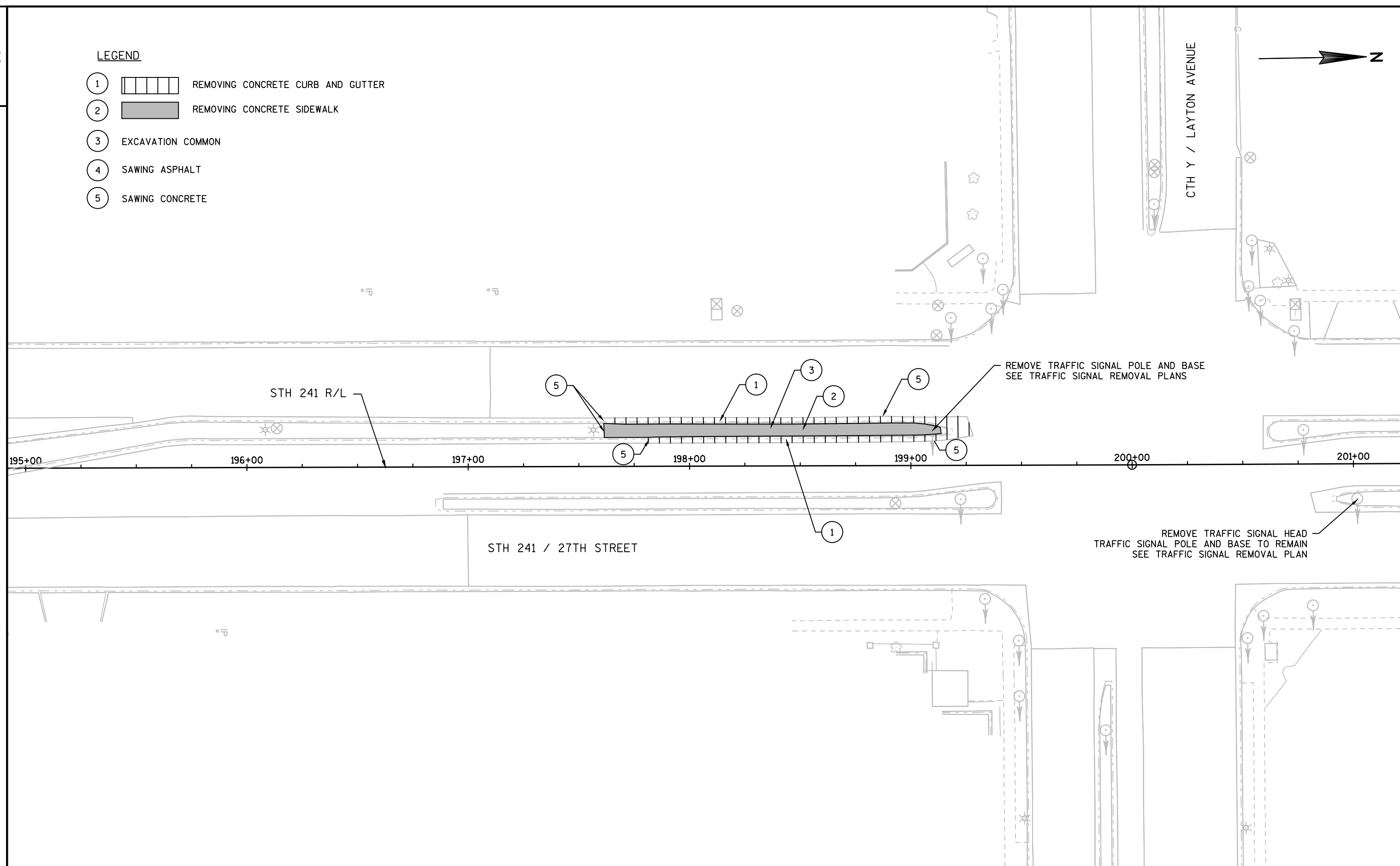
LEGEND

- 1 REMOVING CONCRETE CURB AND GUTTER
- 2 REMOVING CONCRETE SIDEWALK
- 3 EXCAVATION COMMON
- 4 SAWING ASPHALT
- 5 SAWING CONCRETE



## LEGEND

- ① REMOVING CONCRETE CURB AND GUTTER  
② REMOVING CONCRETE SIDEWALK  
③ EXCAVATION COMMON  
④ SAWING ASPHALT  
⑤ SAWING CONCRETE



PROJECT NO:2060-16-70

HWY:STH 241

COUNTY:MILWAUKEE

REMOVALS

SHEET

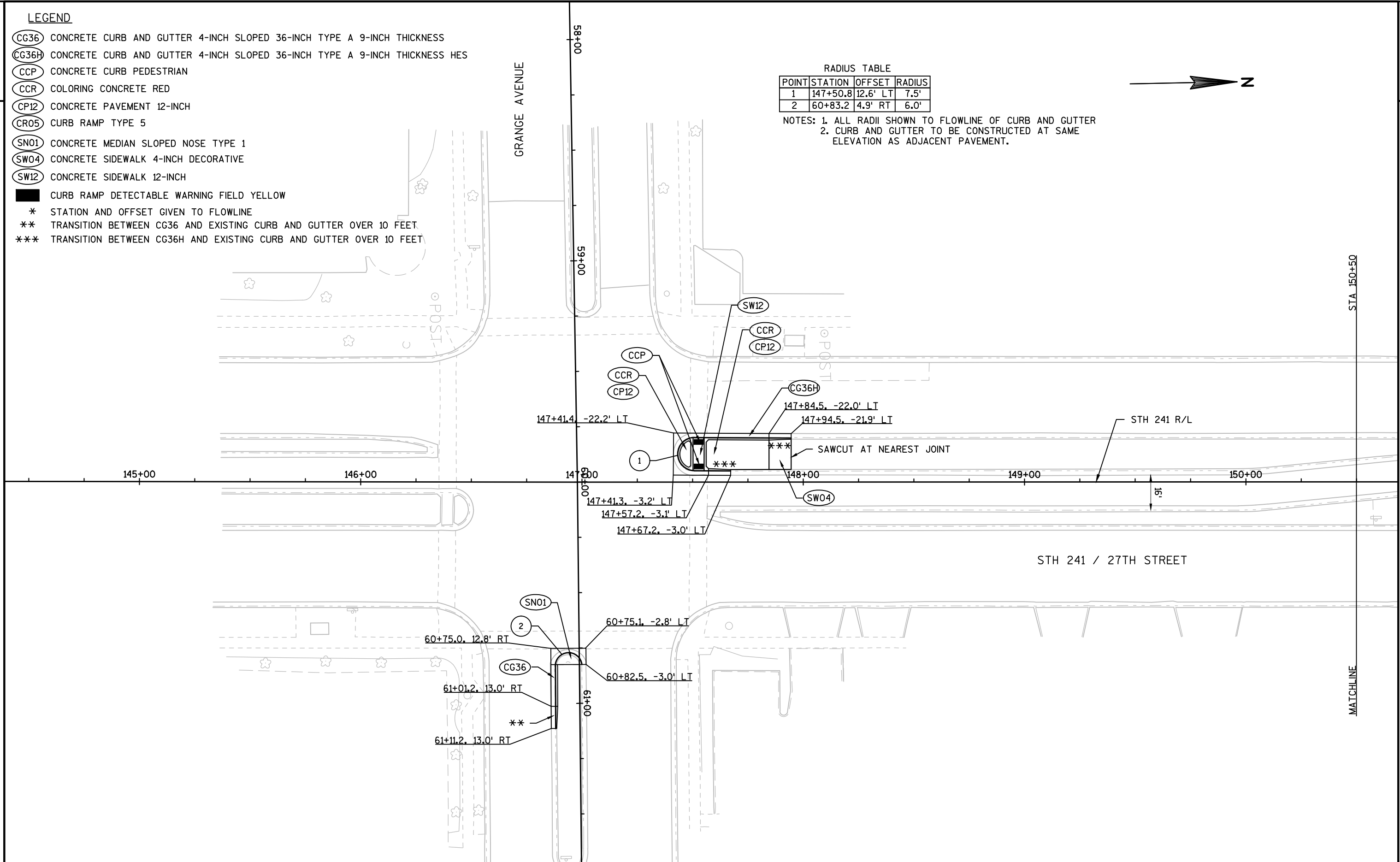
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LEGEND

- CG36 CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE A 9-INCH THICKNESS
- CG36H CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE A 9-INCH THICKNESS HES
- CCP CONCRETE CURB PEDESTRIAN
- CCR COLORING CONCRETE RED
- CP12 CONCRETE PAVEMENT 12-INCH
- CR05 CURB RAMP TYPE 5
- SN01 CONCRETE MEDIAN SLOPED NOSE TYPE 1
- SW04 CONCRETE SIDEWALK 4-INCH DECORATIVE
- SW12 CONCRETE SIDEWALK 12-INCH
- CURB RAMP DETECTABLE WARNING FIELD YELLOW
- \* STATION AND OFFSET GIVEN TO FLOWLINE
- \*\* TRANSITION BETWEEN CG36 AND EXISTING CURB AND GUTTER OVER 10 FEET
- \*\*\* TRANSITION BETWEEN CG36H AND EXISTING CURB AND GUTTER OVER 10 FEET

RADIUS TABLE			
POINT	STATION	OFFSET	RADIUS
1	147+50.8	12.6' LT	7.5'
2	60+83.2	4.9' RT	6.0'

NOTES: 1. ALL RADII SHOWN TO FLOWLINE OF CURB AND GUTTER  
2. CURB AND GUTTER TO BE CONSTRUCTED AT SAME ELEVATION AS ADJACENT PAVEMENT.



## LEGEND

- (CG36) CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE A 9-INCH THICKNESS  
(CG36H) CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE A 9-INCH THICKNESS HES  
(CCP) CONCRETE CURB PEDESTRIAN  
(CCR) COLORING CONCRETE RED  
(CP12) CONCRETE PAVEMENT 12-INCH  
(CR05) CURB RAMP TYPE 5  
(SN01) CONCRETE MEDIAN SLOPED NOSE TYPE 1  
(SW04) CONCRETE SIDEWALK 4-INCH DECORATIVE  
(SW12) CONCRETE SIDEWALK 12-INCH  
■ CURB RAMP DETECTABLE WARNING FIELD YELLOW  
\* STATION AND OFFSET GIVEN TO FLOWLINE  
\*\* TRANSITION BETWEEN CG36 AND EXISTING CURB AND GUTTER OVER 10 FEET  
\*\*\* TRANSITION BETWEEN CG36H AND EXISTING CURB AND GUTTER OVER 10 FEET

## RADIUS TABLE

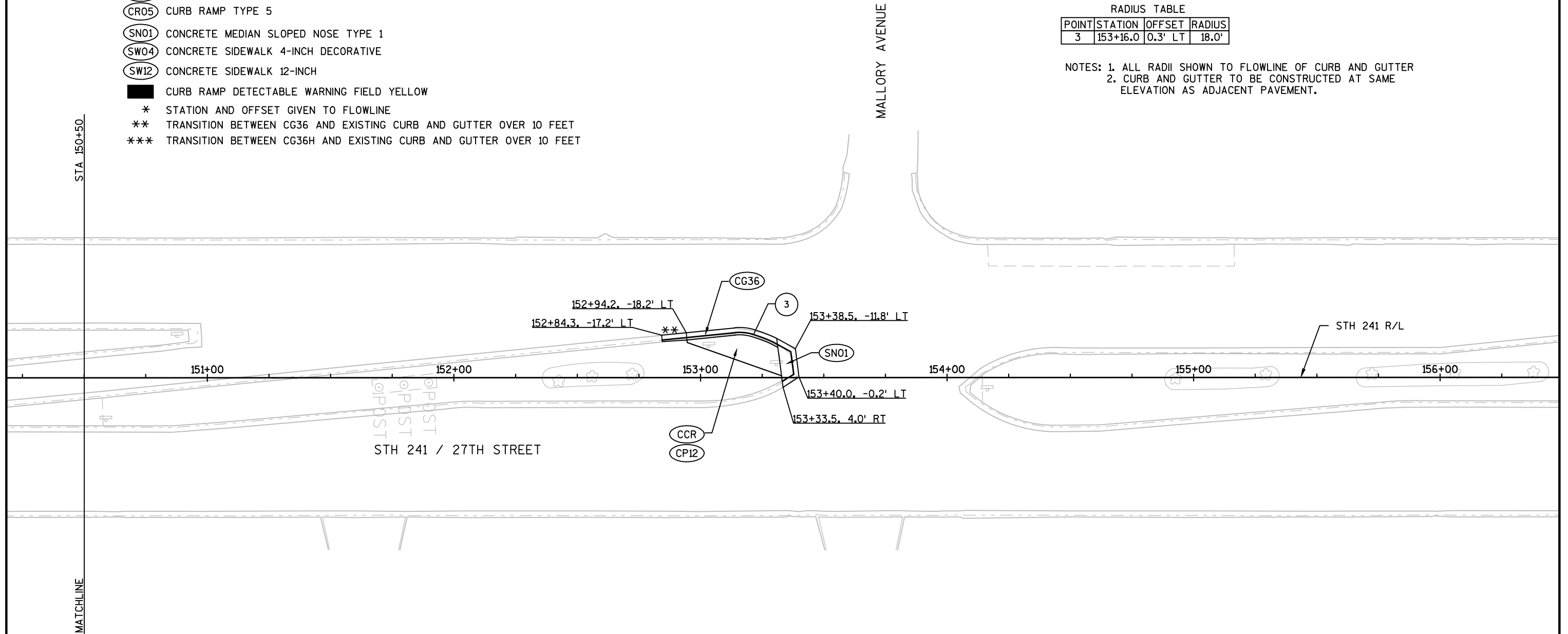
POINT	STATION	OFFSET	RADIUS
3	153+16.0	0.3' LT	18.0'

NOTES: 1. ALL RADII SHOWN TO FLOWLINE OF CURB AND GUTTER  
2. CURB AND GUTTER TO BE CONSTRUCTED AT SAME ELEVATION AS ADJACENT PAVEMENT.



STA 150+50

MATCHLINE



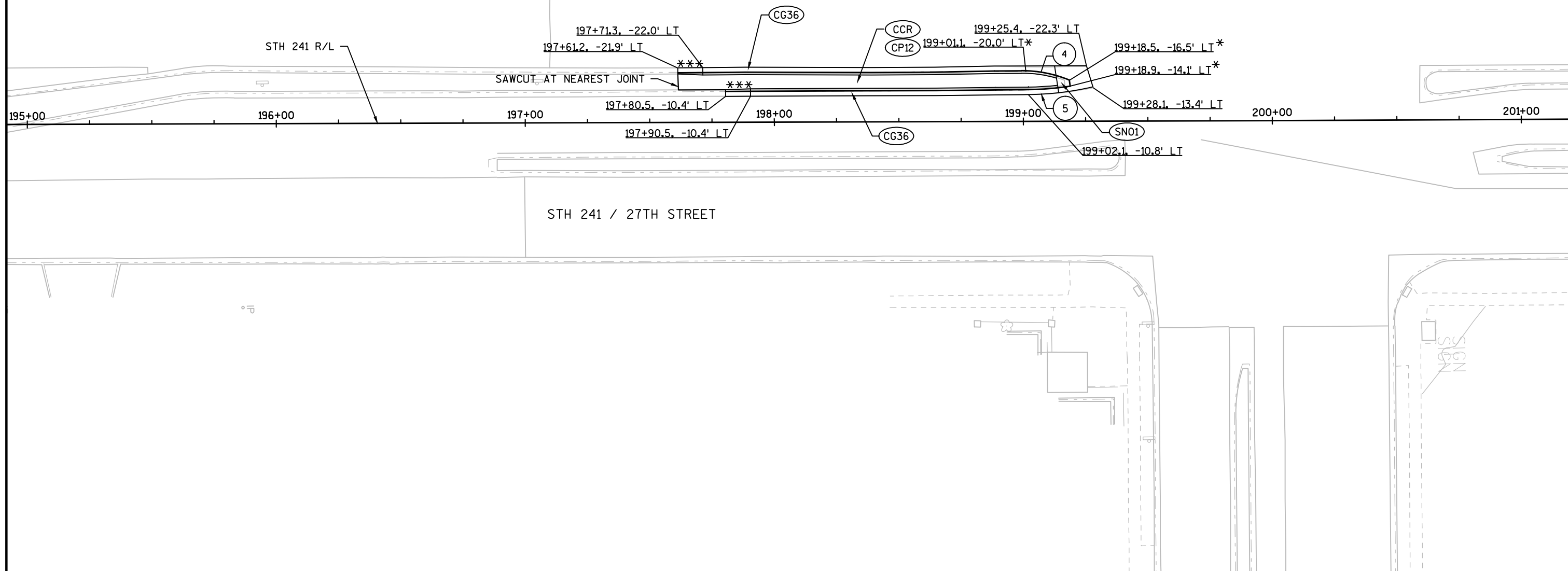
## LEGEND

- (CG36) CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE A 9-INCH THICKNESS  
(CG36H) CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE A 9-INCH THICKNESS HES  
(CCP) CONCRETE CURB PEDESTRIAN  
(CCR) COLORING CONCRETE RED  
(CP12) CONCRETE PAVEMENT 12-INCH  
(CR05) CURB RAMP TYPE 5  
(SN01) CONCRETE MEDIAN SLOPED NOSE TYPE 1  
(SW04) CONCRETE SIDEWALK 4-INCH DECORATIVE  
(SW12) CONCRETE SIDEWALK 12-INCH  
CURB RAMP DETECTABLE WARNING FIELD YELLOW  
\* STATION AND OFFSET GIVEN TO FLOWLINE  
\*\* TRANSITION BETWEEN CG36 AND EXISTING CURB AND GUTTER OVER 10 FEET  
\*\*\* TRANSITION BETWEEN CG36H AND EXISTING CURB AND GUTTER OVER 10 FEET

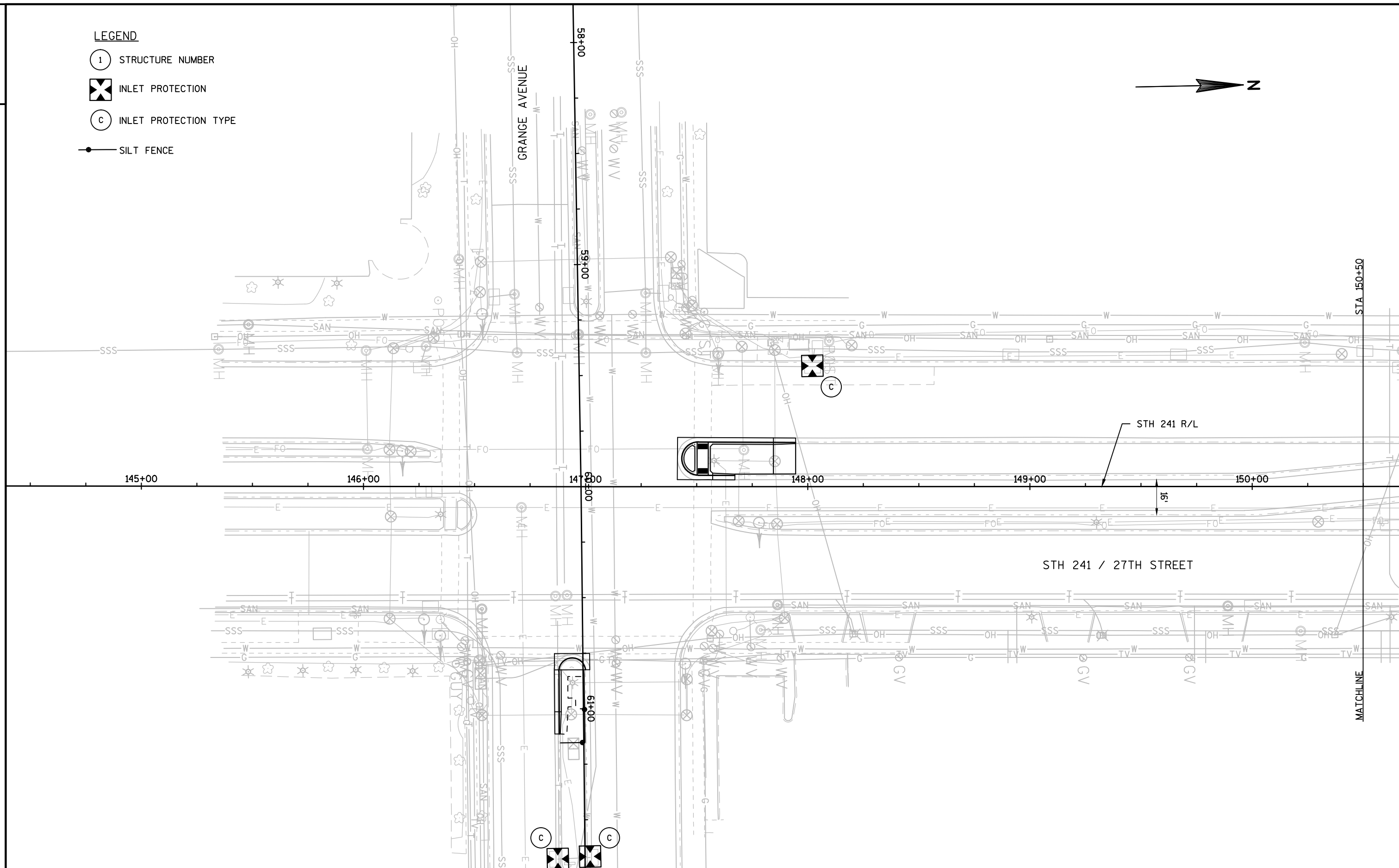
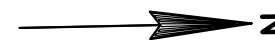
RADIUS TABLE

POINT	STATION	OFFSET	RADIUS
4	198+99.4	29.7' RT	50.0'
5	199+01.2	130.8' LT	118.0'

NOTES: 1. ALL RADII SHOWN TO FLOWLINE OF CURB AND GUTTER  
2. CURB AND GUTTER TO BE CONSTRUCTED AT SAME ELEVATION AS ADJACENT PAVEMENT.



—●— SILT FENCE



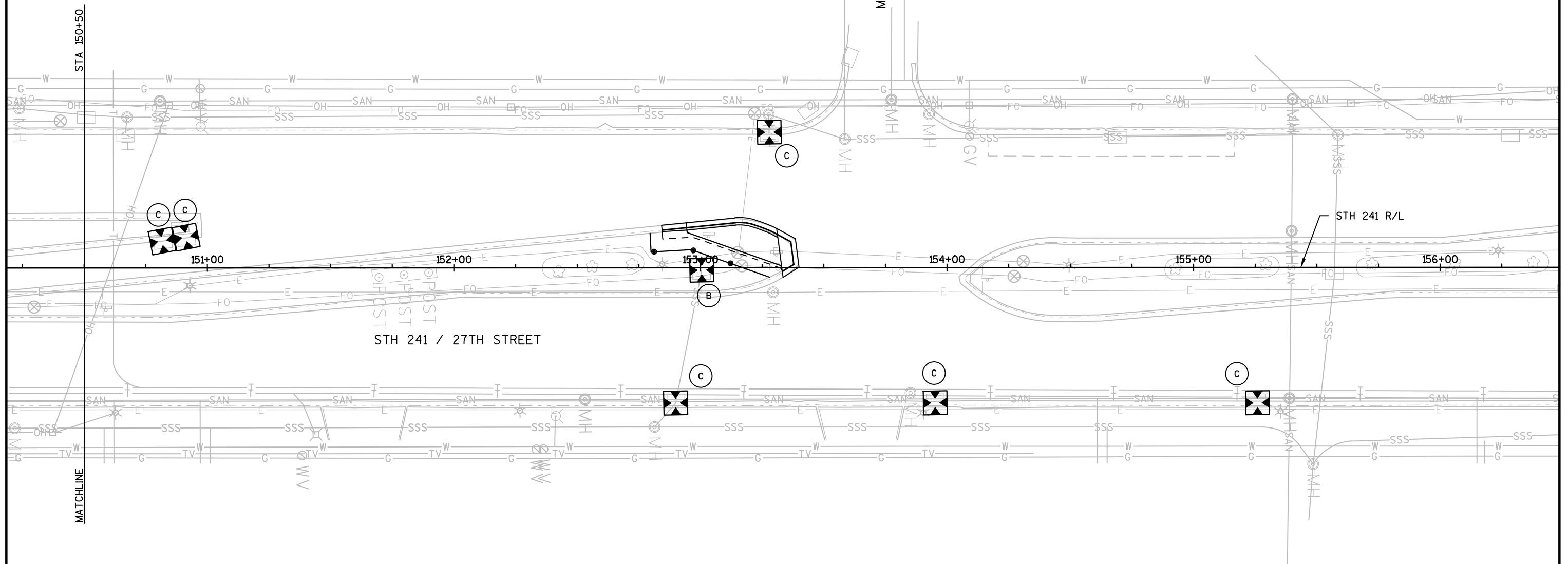
LEGEND

1 STRUCTURE NUMBER

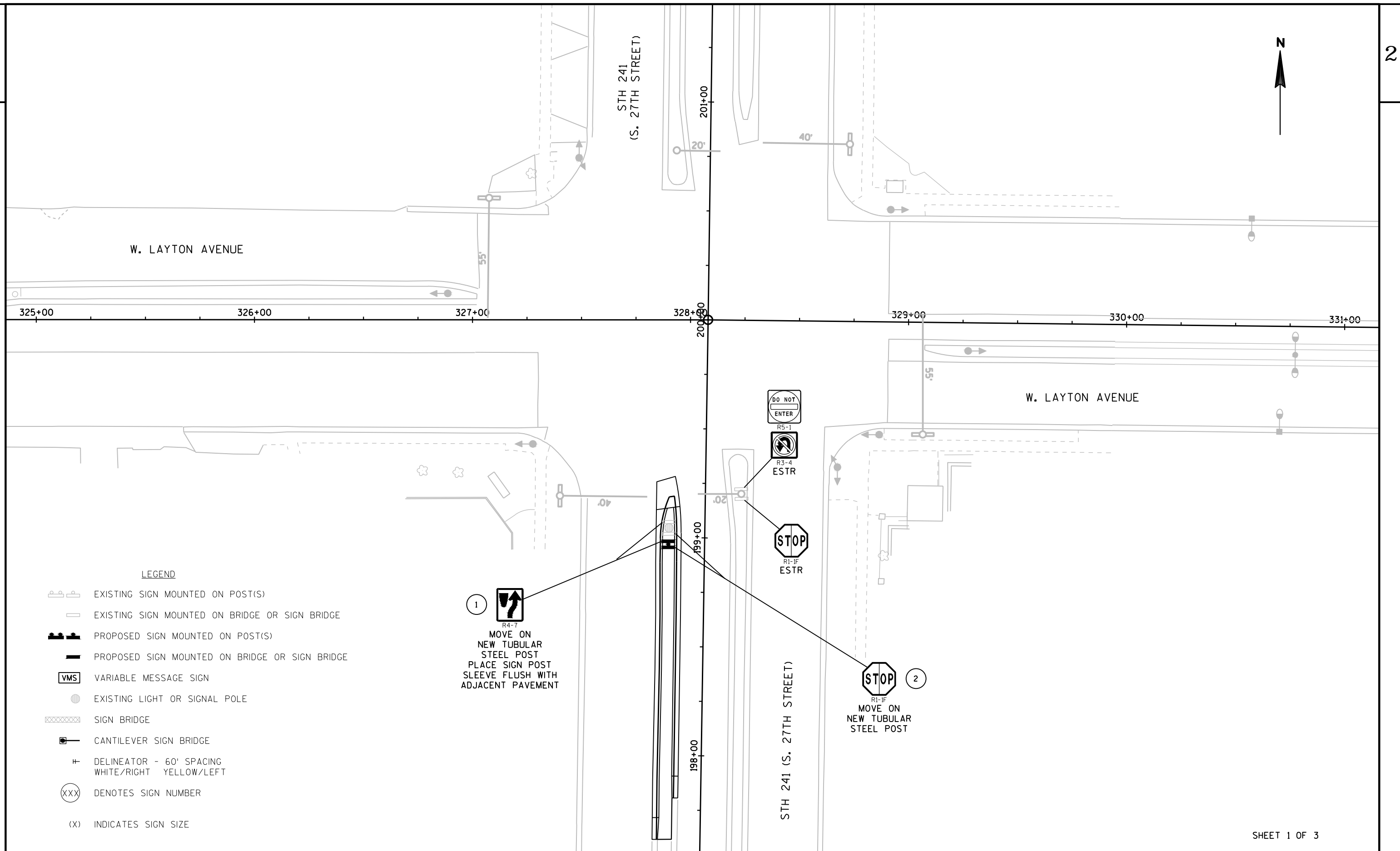
✕ INLET PROTECTION

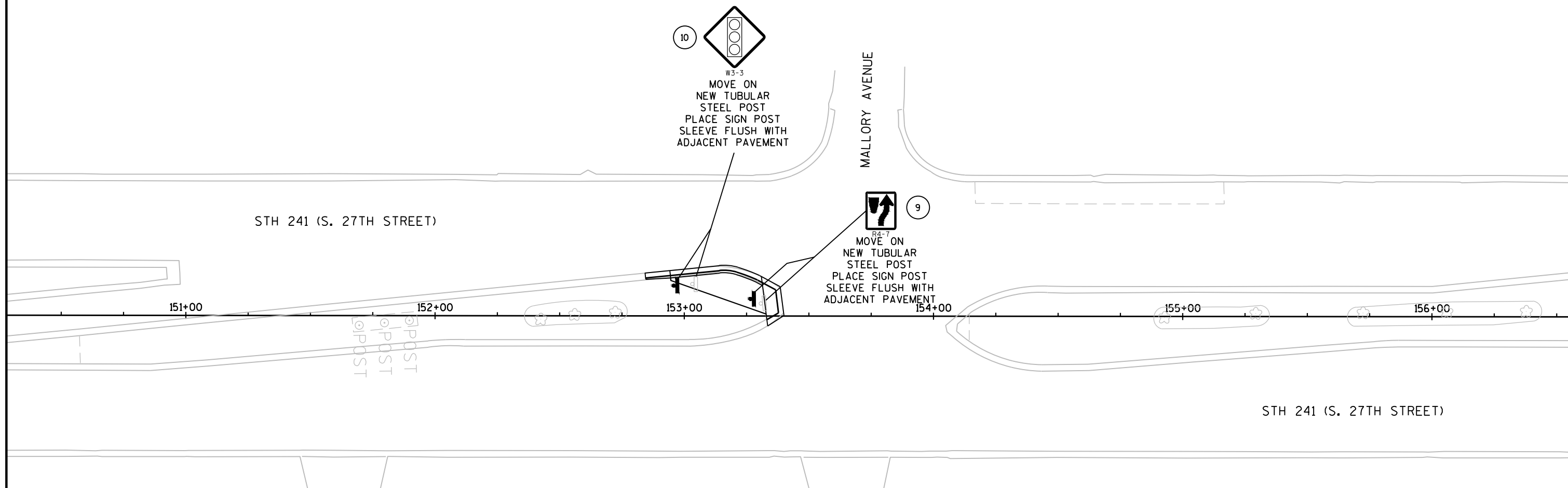
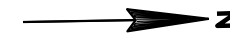
C INLET PROTECTION TYPE

● SILT FENCE







**LEGEND**

- EXISTING SIGN MOUNTED ON POST(S)
- EXISTING SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
- PROPOSED SIGN MOUNTED ON POST(S)
- PROPOSED SIGN MOUNTED ON BRIDGE OR SIGN BRIDGE
- VARIABLE MESSAGE SIGN
- EXISTING LIGHT OR SIGNAL POLE
- SIGN BRIDGE
- CANTILEVER SIGN BRIDGE
- DELINEATOR - 60' SPACING  
WHITE/RIGHT YELLOW/LEFT
- DENOTES SIGN NUMBER
- INDICATES SIGN SIZE

SHEET 2 OF 3

PROJECT NO: 2060-16-70

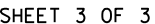
HWY: STH 241

COUNTY: MILWAUKEE

PERMANENT SIGNING PLAN

SHEET

E



## CONSTRUCTION NOTES:

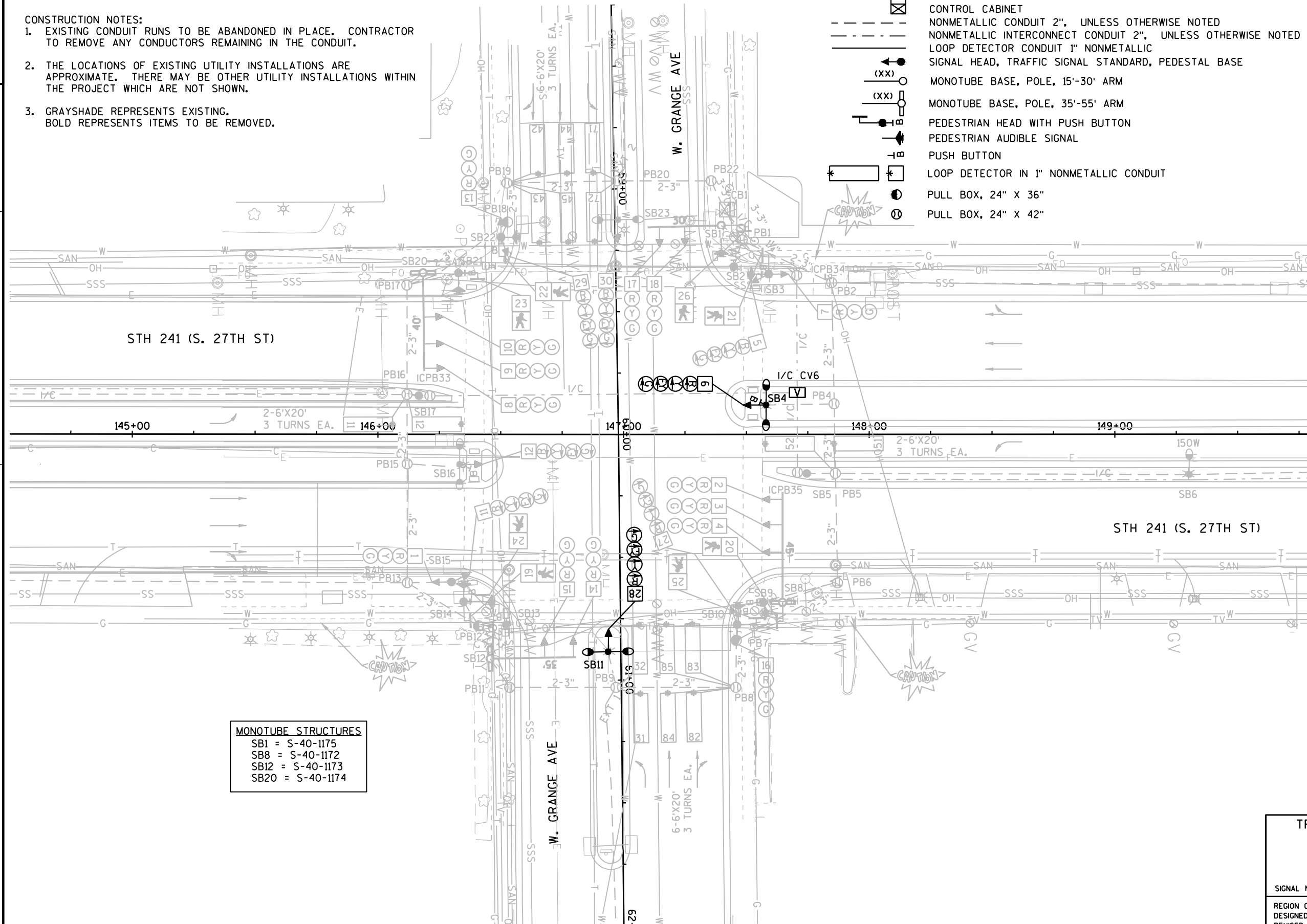
1. EXISTING CONDUIT RUNS TO BE ABANDONED IN PLACE. CONTRACTOR TO REMOVE ANY CONDUCTORS REMAINING IN THE CONDUIT.
2. THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT WHICH ARE NOT SHOWN.
3. GRAYSHADE REPRESENTS EXISTING. BOLD REPRESENTS ITEMS TO BE REMOVED.

## LEGEND

- CONTROL CABINET
- NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED
- NONMETALLIC INTERCONNECT CONDUIT 2", UNLESS OTHERWISE NOTED
- LOOP DETECTOR CONDUIT 1" NONMETALLIC
- SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE
- MONOTUBE BASE, POLE, 15'-30' ARM
- MONOTUBE BASE, POLE, 35'-55' ARM
- PEDESTRIAN HEAD WITH PUSH BUTTON
- PEDESTRIAN AUDIBLE SIGNAL
- PUSH BUTTON
- LOOP DETECTOR IN 1" NONMETALLIC CONDUIT
- PULL BOX, 24" X 36"
- PULL BOX, 24" X 42"

- LUMINAIRE, TRAFFIC POLE, TRANSFORMER BASE
- SIGNAL HEAD NUMBER
- RED CIRCULAR INDICATOR
- YELLOW CIRCULAR INDICATOR
- GREEN CIRCULAR INDICATOR
- RED ARROW
- YELLOW ARROW
- GREEN ARROW
- WALK/DON'T WALK INDICATOR 16" (COUNTDOWN TIMER)
- COMMUNICATION VAULT
- LANE DESIGNATION FOR INFO ONLY
- NONMETALLIC INTERCONNECT CONDUIT 2", UNLESS OTHERWISE NOTED
- COMMUNICATIONS VAULT

NOTE:  
ALL LENSES ARE 12-INCH



MONOTUBE STRUCTURES  
SB1 = S-40-1175  
SB8 = S-40-1172  
SB12 = S-40-1173  
SB20 = S-40-1174

TRAFFIC CONTROL SIGNAL  
STH 241 & W. GRANGE AVENUE  
CITIES OF GREENFIELD/MILWAUKEE  
MILWAUKEE COUNTY

SIGNAL NO. S40-1110

REGION CONTACT: D. DEDRICK  
DESIGNED BY:  
REVISED BY: BMD

PAGE 1 OF 1

PROJECT NO: 2060-16-70

HWY: STH 241

COUNTY: MILWAUKEE

TRAFFIC SIGNAL REMOVAL PLAN

SHEET

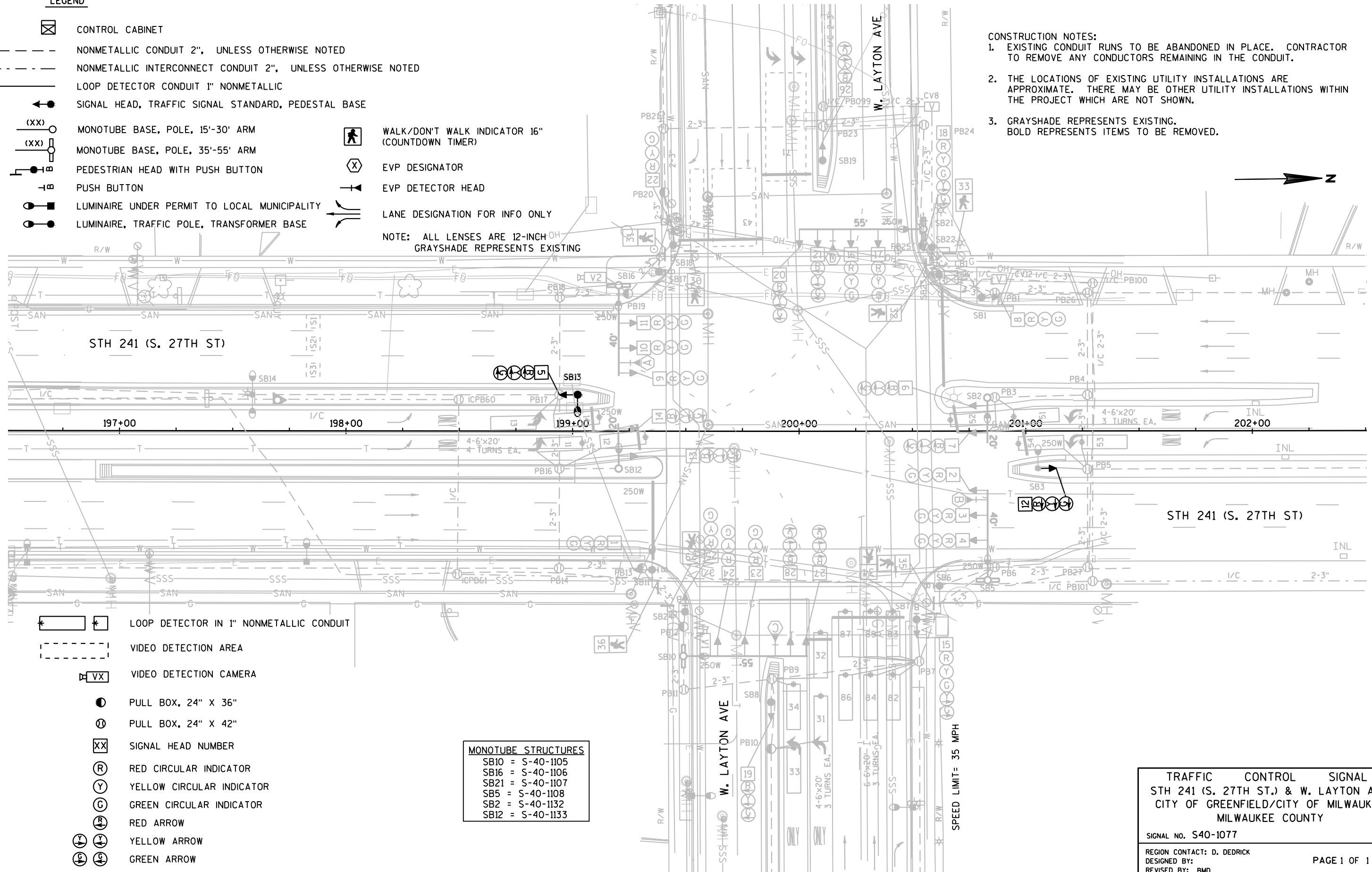
E

## LEGEND

	CONTROL CABINET		WALK/DON'T WALK INDICATOR 16" (COUNTDOWN TIMER)
	NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED		EVP DESIGNATOR
	NONMETALLIC INTERCONNECT CONDUIT 2", UNLESS OTHERWISE NOTED		EVP DETECTOR HEAD
	LOOP DETECTOR CONDUIT 1" NONMETALLIC		LANE DESIGNATION FOR INFO ONLY
	SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE	NOTE: ALL LENSES ARE 12-INCH GRAYSHADE REPRESENTS EXISTING	
	MONOTUBE BASE, POLE, 15'-30' ARM		
	MONOTUBE BASE, POLE, 35'-55' ARM		
	PEDESTRIAN HEAD WITH PUSH BUTTON		
	PUSH BUTTON		
	LUMINAIRE UNDER PERMIT TO LOCAL MUNICIPALITY		
	LUMINAIRE, TRAFFIC POLE, TRANSFORMER BASE		

## CONSTRUCTION NOTES:

- EXISTING CONDUIT RUNS TO BE ABANDONED IN PLACE. CONTRACTOR TO REMOVE ANY CONDUCTORS REMAINING IN THE CONDUIT.
- THE LOCATIONS OF EXISTING UTILITY INSTALLATIONS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT WHICH ARE NOT SHOWN.
- GRAYSHADE REPRESENTS EXISTING.  
BOLD REPRESENTS ITEMS TO BE REMOVED.



MONOTUBE STRUCTURES	
SB10	= S-40-1105
SB16	= S-40-1106
SB21	= S-40-1107
SB5	= S-40-1108
SB2	= S-40-1132
SB12	= S-40-1133

TRAFFIC CONTROL SIGNAL  
STH 241 (S. 27TH ST.) & W. LAYTON AVE  
CITY OF GREENFIELD/CITY OF MILWAUKEE  
MILWAUKEE COUNTY

SIGNAL NO. S40-1077

REGION CONTACT: D. DEDRICK  
DESIGNED BY:  
REVISED BY: BMD

PAGE 1 OF 1

PROJECT NO: 2060-16-70

HWY: STH 241

COUNTY: MILWAUKEE

TRAFFIC SIGNAL REMOVAL PLAN

SHEET

E

## CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL HAVE THE PULL BOXES AND CONDUIT RUNS INSPECTED 5 WORKING DAYS PRIOR TO PLACING SIGNAL CABLE INTO SYSTEM. CONTACT THE WISDOT ELECTRICAL FIELD UNIT TO MAKE ARRANGEMENTS. (414) 266-1170.
2. THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT WHICH ARE NOT SHOWN.
3. ALL LUMINAIRES ARE 250 WATT HPS UNLESS OTHERWISE NOTED.
4. PB4 TO REMAIN. ADJUST HEIGHT DURING CONSTRUCTION.
5. SB4 AND SB11 LOCATIONS MAY NOT BE ADJUSTED.
6. MAINTAIN 11 FT MINIMUM CLEARANCE BETWEEN SB4 AND OVERHEAD ELECTRICAL LINES.

SEE DETAIL 4

STH 241 (S. 27TH ST)

145+00

2-6'X20'  
3 TURNS EA.

146+00

147+00

148+00

149+00

150+

SPEED LIMIT= 40 MPH

SEE DETAIL 3

## MONOTUBE STRUCTURES

SB1 = S-40-1175  
SB8 = S-40-1172  
SB12 = S-40-1173  
SB20 = S-40-1174

W. GRANGE AVE

SPEED LIMIT= 30 MPH

SEE DETAIL 2

## LEGEND

- CONTROL CABINET  
NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED  
NONMETALLIC INTERCONNECT CONDUIT 2", UNLESS OTHERWISE NOTED  
LOOP DETECTOR CONDUIT 1" NONMETALLIC  
SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE  
MONOTUBE BASE, POLE, 15'-30' ARM  
MONOTUBE BASE, POLE, 35'-55' ARM  
PEDESTRIAN HEAD WITH PUSH BUTTON  
PEDESTRIAN AUDIBLE SIGNAL  
PUSH BUTTON  
LOOP DETECTOR IN 1" NONMETALLIC CONDUIT  
PULL BOX, 24" X 36"  
PULL BOX, 24" X 42"

SPEED LIMIT= 40 MPH

SEE DETAIL 1

147+80.26, -11.29' LT

I/C CV6

SB4

PB4

2-6'X20'  
3 TURNS EA.

STH 241 (S. 27TH ST)

- LUMINAIRE, TRAFFIC POLE, TRANSFORMER BASE  
SIGNAL HEAD NUMBER  
RED CIRCULAR INDICATOR  
YELLOW CIRCULAR INDICATOR  
GREEN CIRCULAR INDICATOR  
RED ARROW  
YELLOW ARROW  
GREEN ARROW  
WALK/DON'T WALK INDICATOR 16" (COUNTDOWN TIMER)  
COMMUNICATION VAULT  
LANE DESIGNATION FOR INFO ONLY  
NONMETALLIC INTERCONNECT CONDUIT 2", UNLESS OTHERWISE NOTED  
COMMUNICATIONS VAULT

## NOTE:

ALL LENSES ARE 12-INCH

GRAYSHADE REPRESENTS EXISTING

## REVISION

REV. NO.	MOVE SB4 AND SB11; ADD FOUR SECTION HEAD FOR PHASE SEVEN, THREE; REPLACE I/C CV6			
	APPROVAL RECOMMENDED		APPROVED	
9	REGION		CENTRAL OFFICE	
	DATE	BY	DATE	BY
	7-20-15		7-23-15	
TRAFFIC CONTROL SIGNAL STH 241 & W. GRANGE AVENUE CITIES OF GREENFIELD/MILWAUKEE MILWAUKEE COUNTY CABINET TYPE: TS2 SIGNAL NO. S40-1110 CONTROLLER TYPE: ECONOLITE				
WISCONSIN DEPARTMENT OF TRANSPORTATION				
APPROVAL RECOMMENDED DATE 11/19/75 R. L. MOE REGION TRAFFIC ENGINEER				
APPROVED DATE 12/3/75 W. N. V. STATE TRAFFIC ENGINEER				
REGION CONTACT: D. DEDRICK DESIGNED BY: REVISED BY: BMD			PAGE 1 OF 4	

PROJECT NO: 2060-16-70

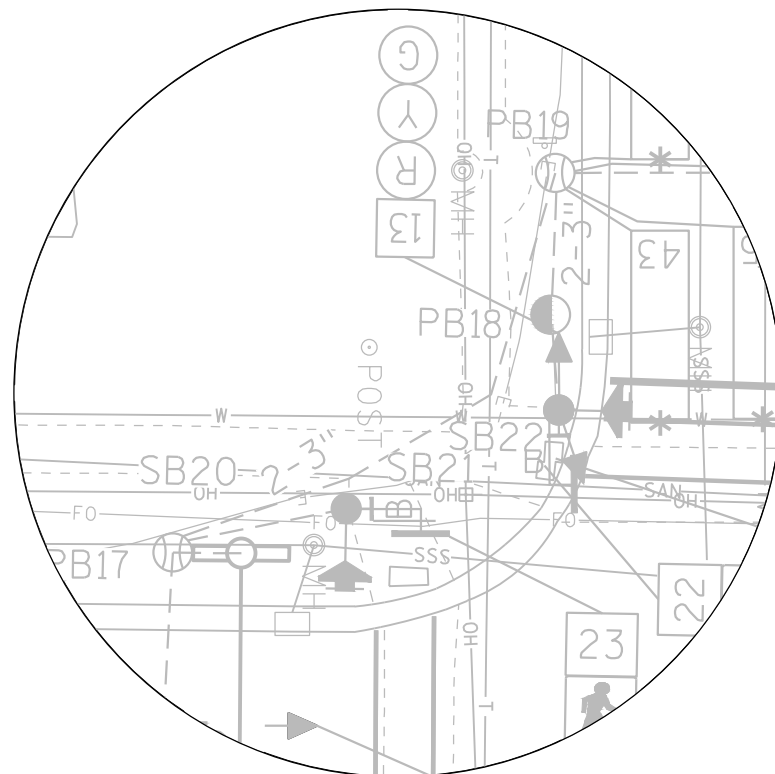
HWY: STH 241

COUNTY: MILWAUKEE

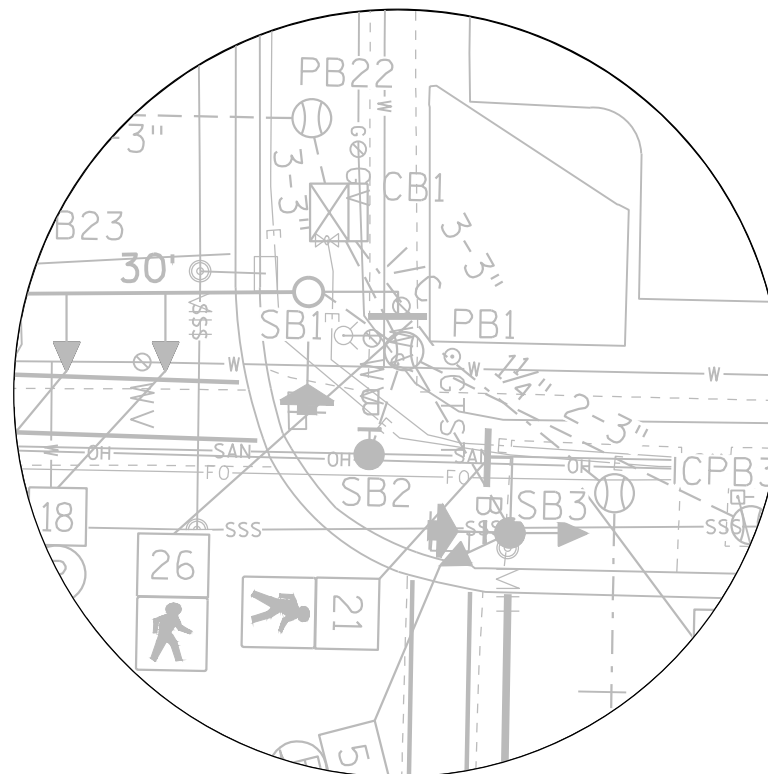
TRAFFIC SIGNAL PLAN

SHEET

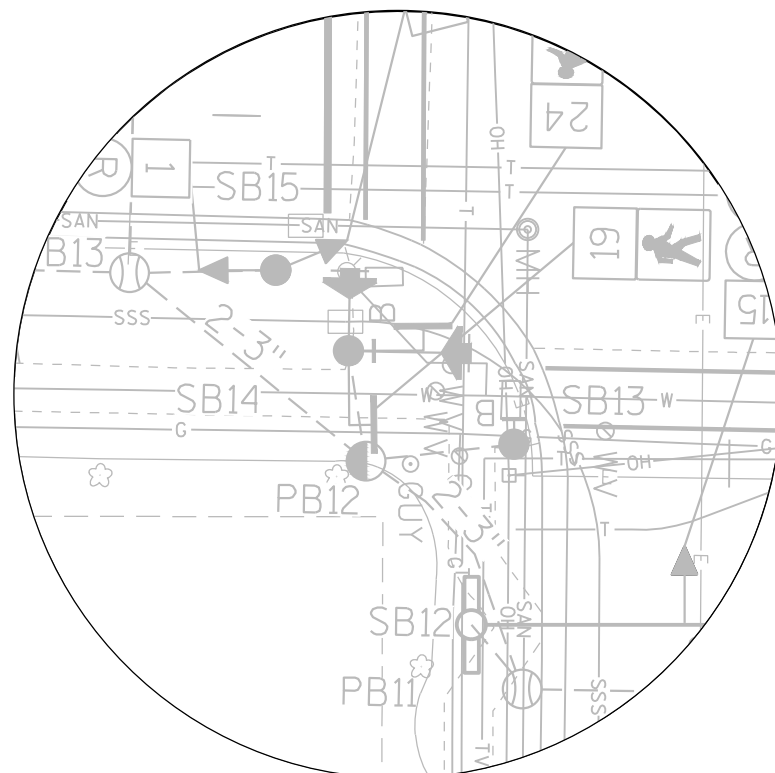
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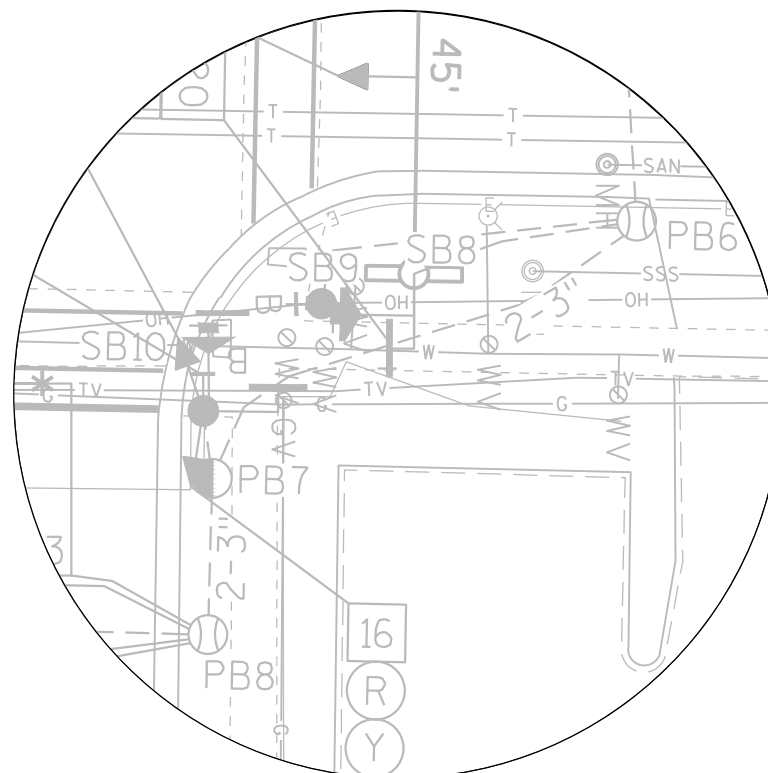
DETAIL 4



DETAIL 1



DETAIL 3



DETAIL 2

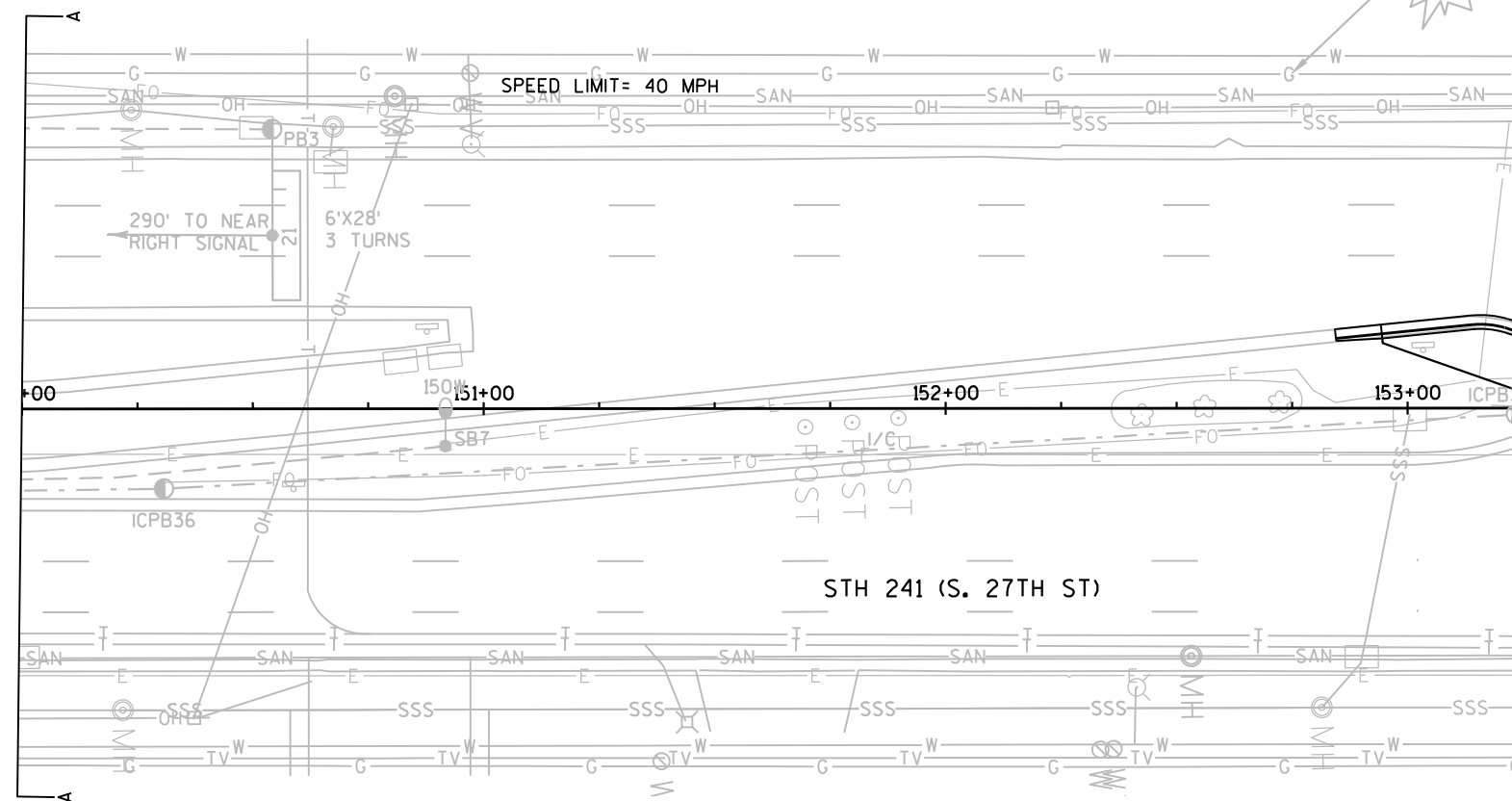
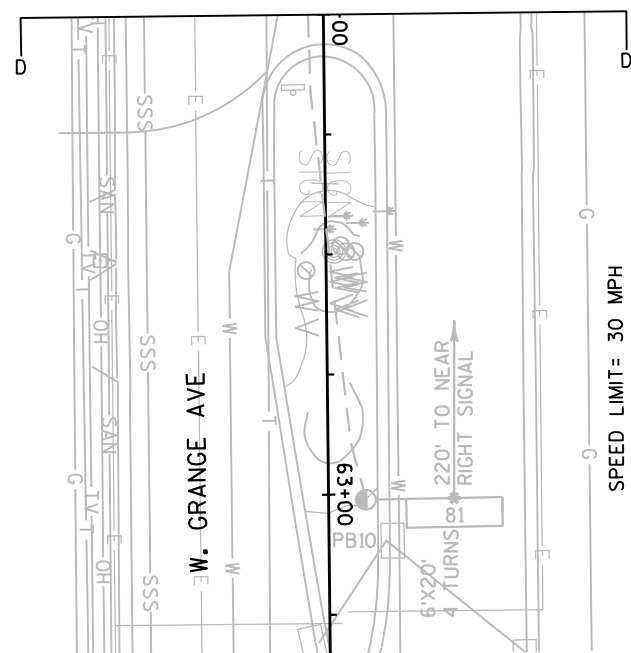
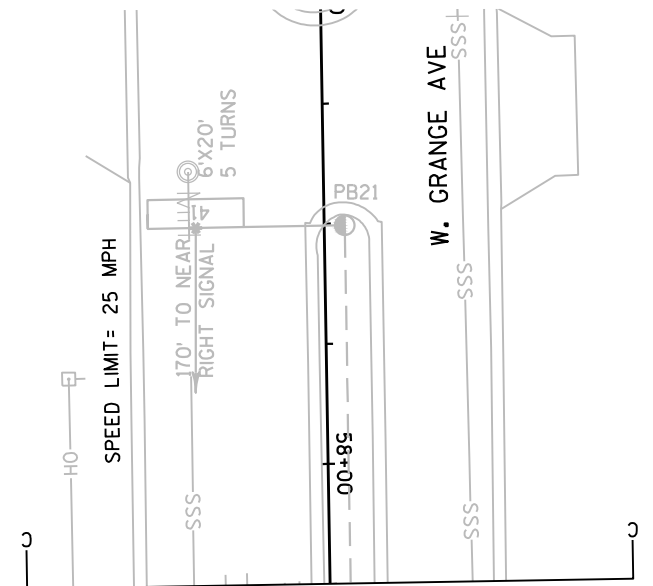
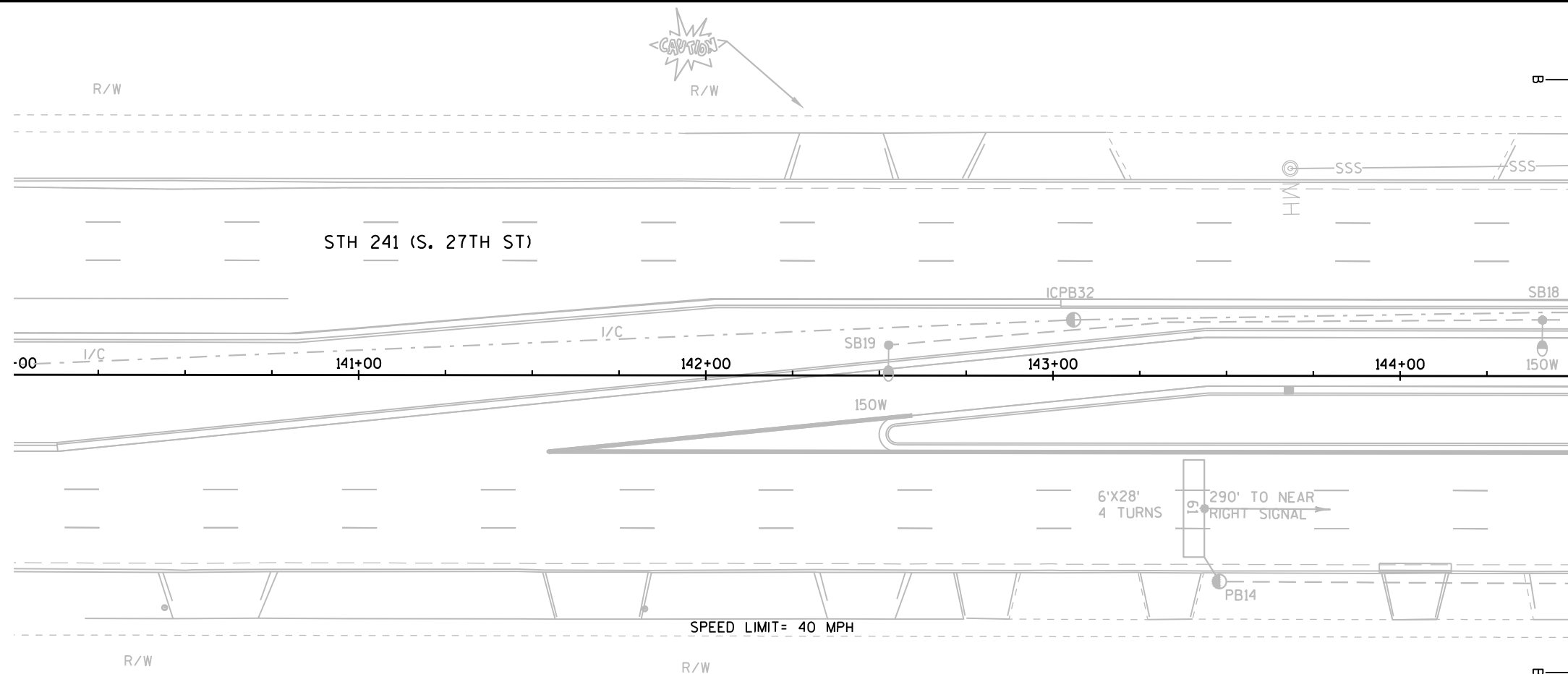


TRAFFIC CONTROL SIGNAL  
STH 241 & W. GRANGE AVENUE  
CITIES OF GREENFIELD/MILWAUKEE  
MILWAUKEE COUNTY

SIGNAL NO. S40-1110

REGION CONTACT: D. DEDRICK  
DESIGNED BY:  
REVISED BY: BMD

PAGE 2 OF 4



TRAFFIC CONTROL SIGNAL	
STH 241 & W. GRANGE AVENUE	
CITIES OF GREENFIELD/MILWAUKEE	
MILWAUKEE COUNTY	
SIGNAL NO. S40-1110	
REGION CONTACT: D. DEDRICK	PAGE 3 OF 4
DESIGNED BY:	
REVISED BY: BMD	

PROJECT NO:2060-16-70

HWY:STH 241

COUNTY:MILWAUKEE

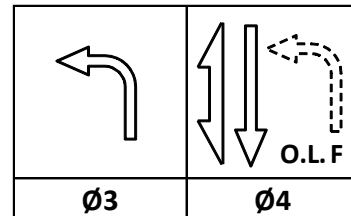
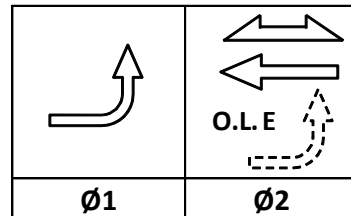
TRAFFIC SIGNAL PLAN

SHEET

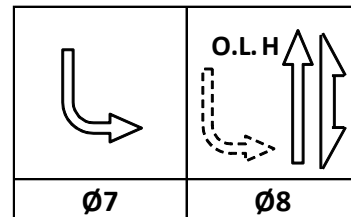
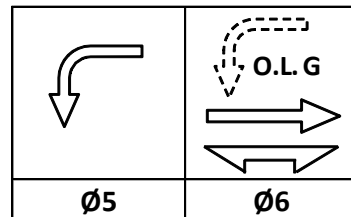
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	HEAD NUMBERS	FLASH
Ø1	5,6	R
Ø2	7,8,9,10	R
Ø3	29,30,32	R
Ø4	13,14,15	R
Ø5	11,12	R
Ø6	1,2,3,4	R
Ø7	27,28,31	R
Ø8	16,17,18	R
Ø2P	21,22	
Ø4P	23,24	
Ø6P	19,20	
Ø8P	25,26	
OLE	5,6	-
OLF	29,30,32	-
OLG	11,12	-
OLH	27,28,31	-

RING 1



RING 2



BARRIER



## CONTROLLER LOGIC

PHASE NUMBER	PHASE LOCKING	DUAL ENTRY W / Ø	PHASE RECALL	PHASE ACTIVE
1		6	---	X
2	X	6	MIN	X
3		8	---	X
4		8	---	X
5		2	---	X
6	X	2	MIN	X
7		4	---	X
8		4	---	X

TYPE OF INTERCONNECT/COMMUNICATION	
NONE	
CLOSED LOOP	
TWISTED PAIR	
FIBER OPTIC*	
FIBER OPTIC (ETHERNET)	X
RADIO	
CELL MODEM	

TYPE OF COORDINATION	
NONE	
TBC	X
TRAFFIC RESPONSIVE	X
ADAPTIVE	
*LOCATION OF MASTER CONTROLLER NO:	S-
SIGNAL SYSTEM NO:	SS- 00-63

TYPE OF LIGHTING	
BY OTHER AGENCY	
IN TRAFFIC CABINET	X
IN SEPARATE DOT LIGHTING CABINET	

TYPE OF PRE-EMPT	
NONE	X
RAILROAD	
EMERGENCY VEHICLE	
GTT	
TOMAR	
HARDWIRE	
OTHER	
LIFT BRIDGE	
QUEUE DETECTION	

## DETECTOR LOGIC

DETECTOR INPUT	3	1	7	5	11	9	15	13
PLAN LOOP DETECTOR*(S)	41	11,12	51,52	44,45	84,85	81		
CALLED PHASE	4	1	5	4	8	8		
CALL OPTION		X	X	X	X			
DELAY TIME								
EXTENTION OPTION	X	X	X	X	X	X		
EXTEND TIME	X					X		
USE ADDED INITIAL								
CROSS SWITCH PHASE		2	6					

DETECTOR INPUT	4	2	8	6	12	10	16	14
PLAN LOOP DETECTOR*(S)	42,43	21	61	71,72	31,32	82,83		
CALLED PHASE	4	2	6	7	3	8		
CALL OPTION	X	X	X	X	X	X		
DELAY TIME	X					X		
EXTENTION OPTION	X	X	X	X	X	X		
EXTEND TIME								
USE ADDED INITIAL		X	X					
CROSS SWITCH PHASE				8	4			

19	17	23	21	27	25	31	29

20	18	24	22	28	26	32	30

DETECTOR INPUT  
PLAN LOOP DETECTOR\*(S)  
CALLED PHASE  
CALL OPTION  
DELAY TIME  
EXTENTION OPTION  
EXTEND TIME  
USE ADDED INITIAL  
CROSS SWITCH PHASE

DETECTOR INPUT  
PLAN LOOP DETECTOR\*(S)  
CALLED PHASE  
CALL OPTION  
DELAY TIME  
EXTENTION OPTION  
EXTEND TIME  
USE ADDED INITIAL  
CROSS SWITCH PHASE

STH 241 & W. GRANGE AVENUE CITIES OF GREENFIELD/MILWAUKEE MILWAUKEE COUNTY	
SIGNAL NO: S40-1110	CABINET TYPE: TS2
CONTROLLER TYPE: ECONOLITE	
DATE: 07/2015	PAGE NO. 4 OF 4

PROJECT ID:	2060-16-70
INTERSECTION:	STH 241 & W GRANGE AVE

Signal Wire Color Coding	BLK - black	RED - red	GRN - green
	WHT - white	BLU - blue	ORG - orange

CB1 TO	AWG14 # OF CONDUCTORS	HEAD NO.	SIGNAL INDICATION WIRE COLOR									PED BUTTON
			RED	YELLOW	GREEN	<RED>	<YELLOW>	<GREEN>	<FLASHING YELLOW>	D/WALK	WALK	
SB4	12	6				RED	ORG	GRN	WHT/BLK			
SB11	12	28				RED/BLK	ORG/BLK	GRN/BLK	BLK/WHT			
		32				RED	ORG	GRN	WHT/BLK			
SB23	12 <sup>1</sup>	31				RED/BLK	ORG/BLK	GRN/BLK	BLK/WHT			

- \*Use the white conductor in the cable assembly as the grounded conductor for all traffic signal indications
  - \*Ensure the grounded conductor in the feeder cable and the pole cables are both 18" longer than the ungrounded conductors.
  - \*At the signal bases, connect one terminal from the pedestrian push buttons to the color indicated in the chart. Connect the other terminal to the grounded coi
  - \*Reconnect the grounding conductors wherever the circuit has been interrupted to ensure the grounding circuit is complete.
- <sup>1</sup> USE EXISTING 12-CT TRAFFIC SIGNAL CABLE

Equipment Grounding Conductor 10 AWG Green XLP	
From	To
SB3	SB4
SB4	SB5
SB10	SB11
SB11	SB12

Lighting UF #12 w/ground	
From	To
CB1	SB4
SB4	SB6
SB6	SB11
SB11	SB16

## LEGEND

CONTROL CABINET

NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED

NONMETALLIC INTERCONNECT CONDUIT 2", UNLESS OTHERWISE NOTED

LOOP DETECTOR CONDUIT 1" NONMETALLIC

SIGNAL HEAD, TRAFFIC SIGNAL STANDARD, PEDESTAL BASE

MONOTUBE BASE, POLE, 15'-30' ARM

MONOTUBE BASE, POLE, 35'-55' ARM

PEDESTRIAN HEAD WITH PUSH BUTTON

PUSH BUTTON

LUMINAIRE UNDER PERMIT TO LOCAL MUNICIPALITY

LUMINAIRE, TRAFFIC POLE, TRANSFORMER BASE

 WALK/DON'T WALK INDICATOR 16"  
(COUNTDOWN TIMER)

EVP DESIGNATOR

EVP DETECTOR HEAD

LANE DESIGNATION FOR INFO ONLY

NOTE: ALL LENSES ARE 12-INCH  
GRAYSHADE REPRESENTS EXISTING

## CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL HAVE THE PULL BOXES AND CONDUIT RUNS INSPECTED 5 WORKING DAYS PRIOR TO PLACING SIGNAL CABLE INTO SYSTEM. CONTACT THE WISDOT ELECTRICAL FIELD UNIT TO MAKE ARRANGEMENTS. (414) 266-1170.
2. THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT WHICH ARE NOT SHOWN.
3. ALL LUMINAIRES ARE LED-C UNLESS OTHERWISE NOTED.
4. PB17 TO REMAIN. ADJUST HEIGHT DURING CONSTRUCTION.

SEE DETAIL 1

SPEED LIMIT= 40 MPH

STH 241 (S. 27TH ST)

SEE DETAIL 4

197+00

198+00

199+00

SAN 200+00

201+00

202+00

STH 241 (S. 27TH ST)

SEE DETAIL 2

LOOP DETECTOR IN 1" NONMETALLIC CONDUIT

VIDEO DETECTION AREA

VIDEO DETECTION CAMERA

PULL BOX, 24" X 36"

PULL BOX, 24" X 42"

SIGNAL HEAD NUMBER

RED CIRCULAR INDICATOR

YELLOW CIRCULAR INDICATOR

GREEN CIRCULAR INDICATOR

RED ARROW

YELLOW ARROW

GREEN ARROW

## MONOTUBE STRUCTURES

SB10 = S-40-1105

SB16 = S-40-1106

SB21 = S-40-1107

SB5 = S-40-1108

SB2 = S-40-1132

SB12 = S-40-1133

SEE DETAIL 3

INSTALL EVP IN ALL DIRECTIONS;  
CHANGE SB7 TO 15; STANDARD;  
PLAN UPDATE 12/2/13REMOVE ANTENNA FROM SB21  
4/25/11ESTABLISH EB STOPLINE VIDEO  
DETECTION ZONE; REPLACE LOOP 41  
8/6/10INSTALL ETHERNET SWITCH, RADIO  
ANTENNAS, & VIDEO DETECTION  
CAMERAS 11/25/08REPLACE CABINET & CONTROLLER;  
RECONSTRUCT SIGNAL 2008

## REVISION

REV. NO.	REMOVE SB13; MOVE HEAD 5 TO SB1 AND MOVE HEAD 12 TO SB 11			
	APPROVAL RECOMMENDED		APPROVED	
14	REGION		CENTRAL OFFICE	
	DATE	BY	DATE	BY
	7-20-15		7-23-15	

TRAFFIC CONTROL SIGNAL  
STH 241 (S. 27TH ST.) & W. LAYTON AVE  
CITY OF GREENFIELD/CITY OF MILWAUKEE  
MILWAUKEE COUNTY  
CABINET TYPE: TS1  
SIGNAL NO. S40-1077 CONTROLLER TYPE: EPAC-NTCIP

WISCONSIN DEPARTMENT OF TRANSPORTATION  
APPROVAL RECOMMENDED  
DATE 10/7/83  
APPROVED  
DATE 12/12/84  
JOHN A. WHITE  
REGION TRAFFIC ENGINEER  
H. O. PRICE  
STATE TRAFFIC ENGINEER

REGION CONTACT: D. DEDRICK  
DESIGNED BY:  
REVISED BY: BMD  
PAGE 1 OF 4

PROJECT NO: 2060-16-70

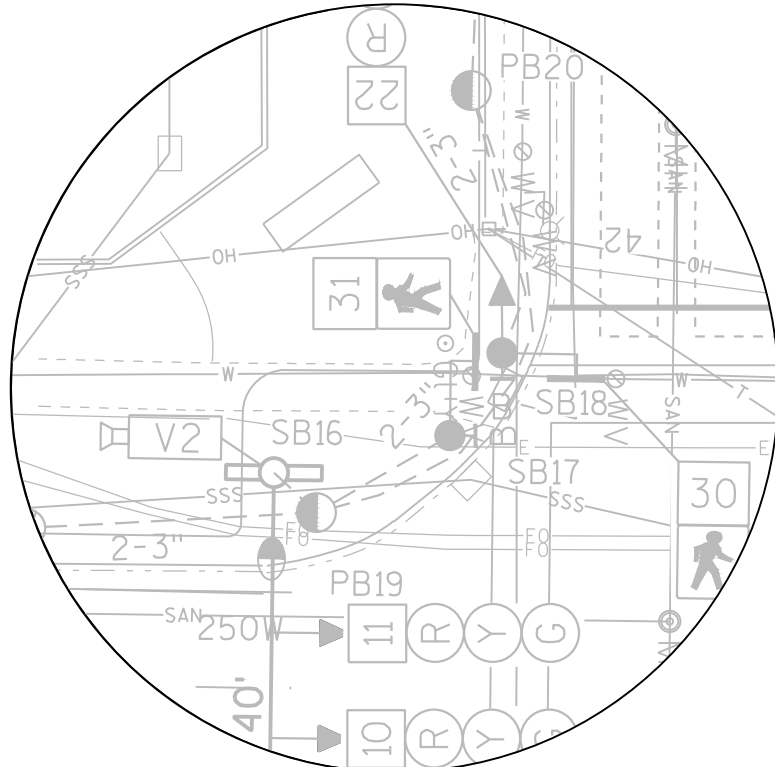
HWY: STH 241

COUNTY: MILWAUKEE

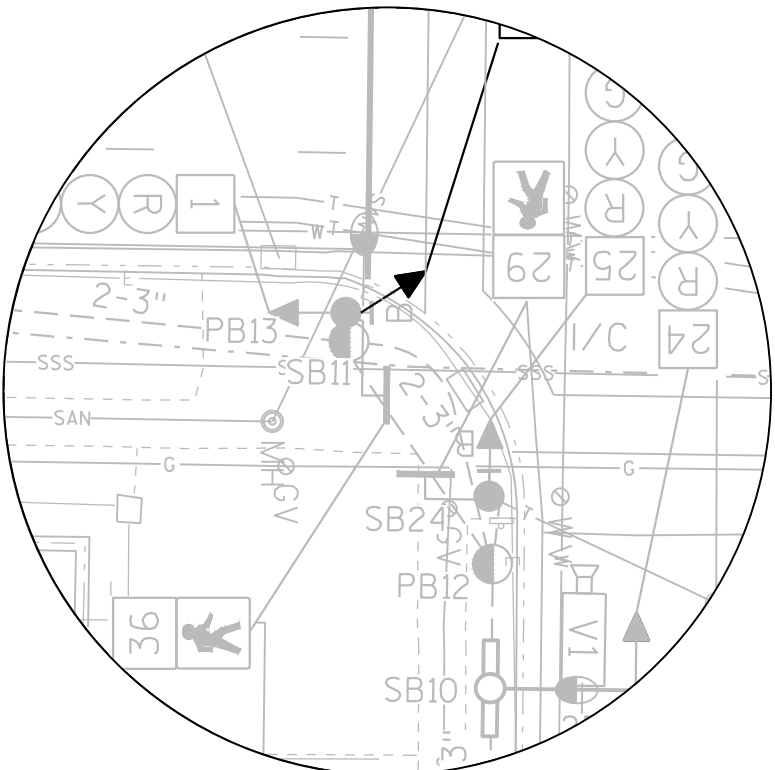
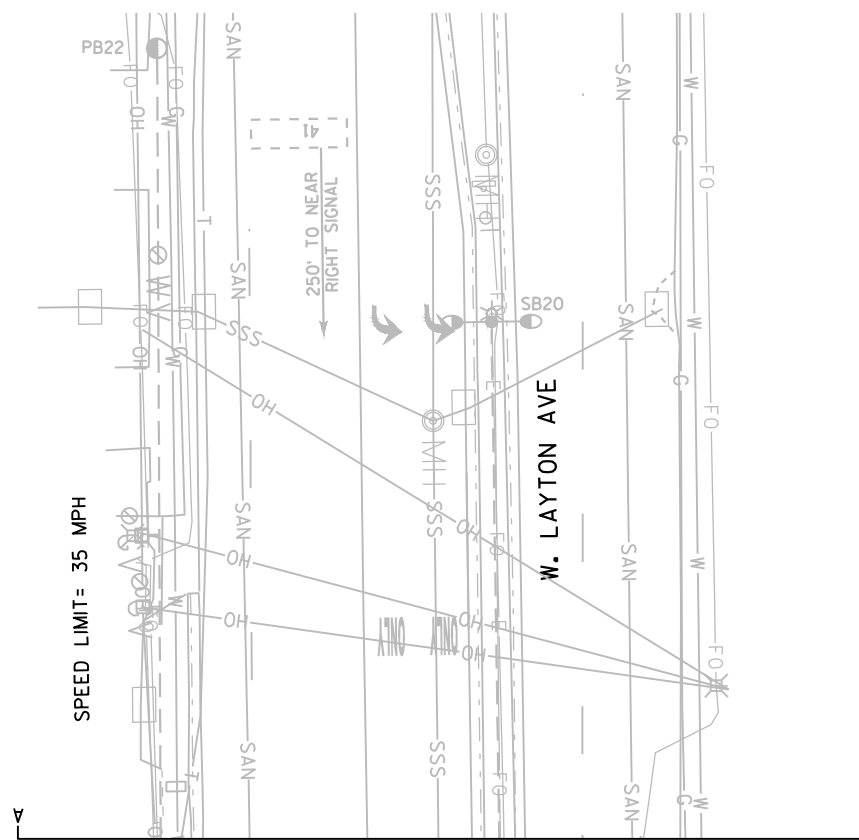
TRAFFIC SIGNAL PLAN

SHEET

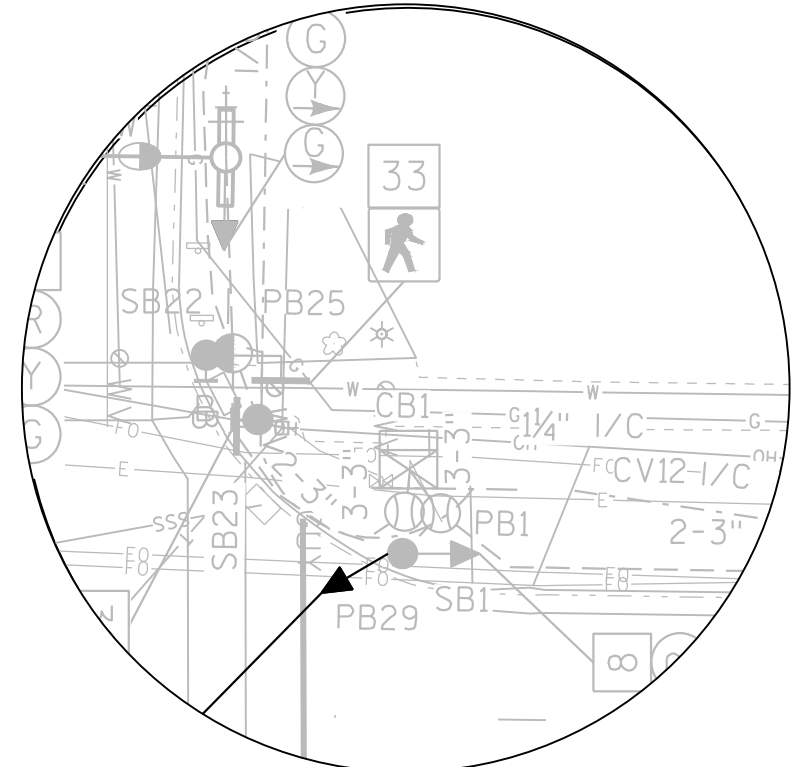
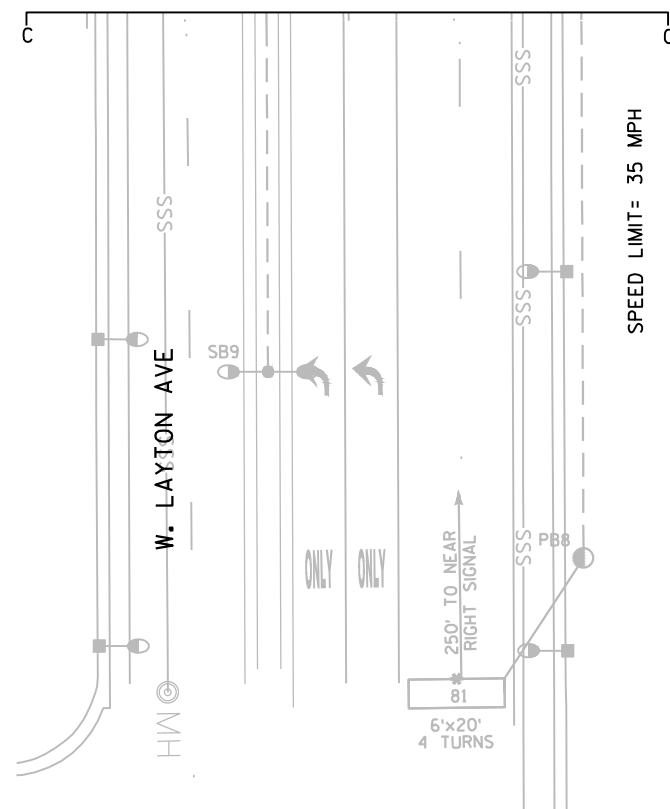
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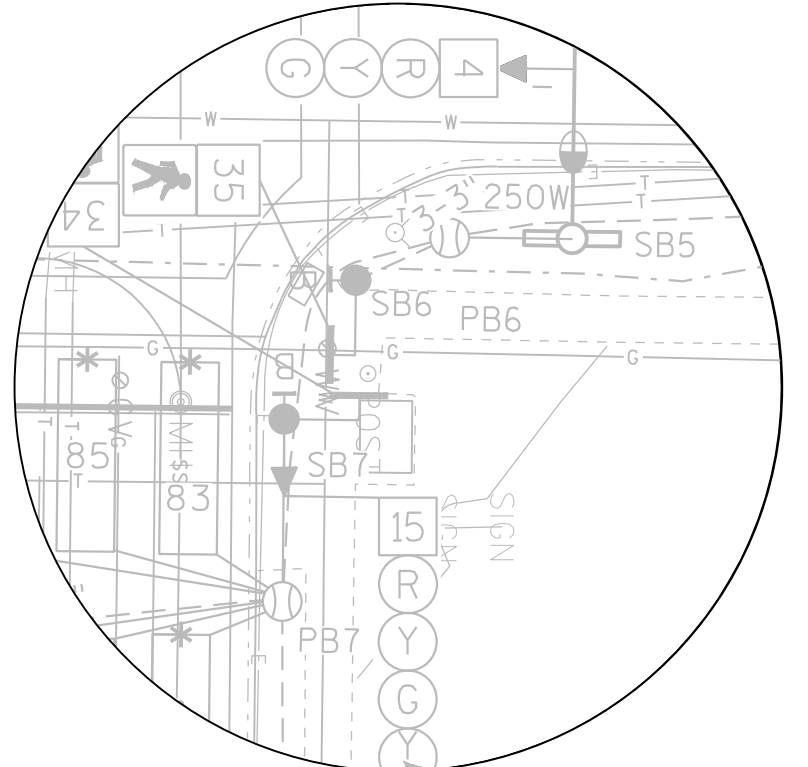
DETAIL 4



DETAIL 3



DETAIL 1



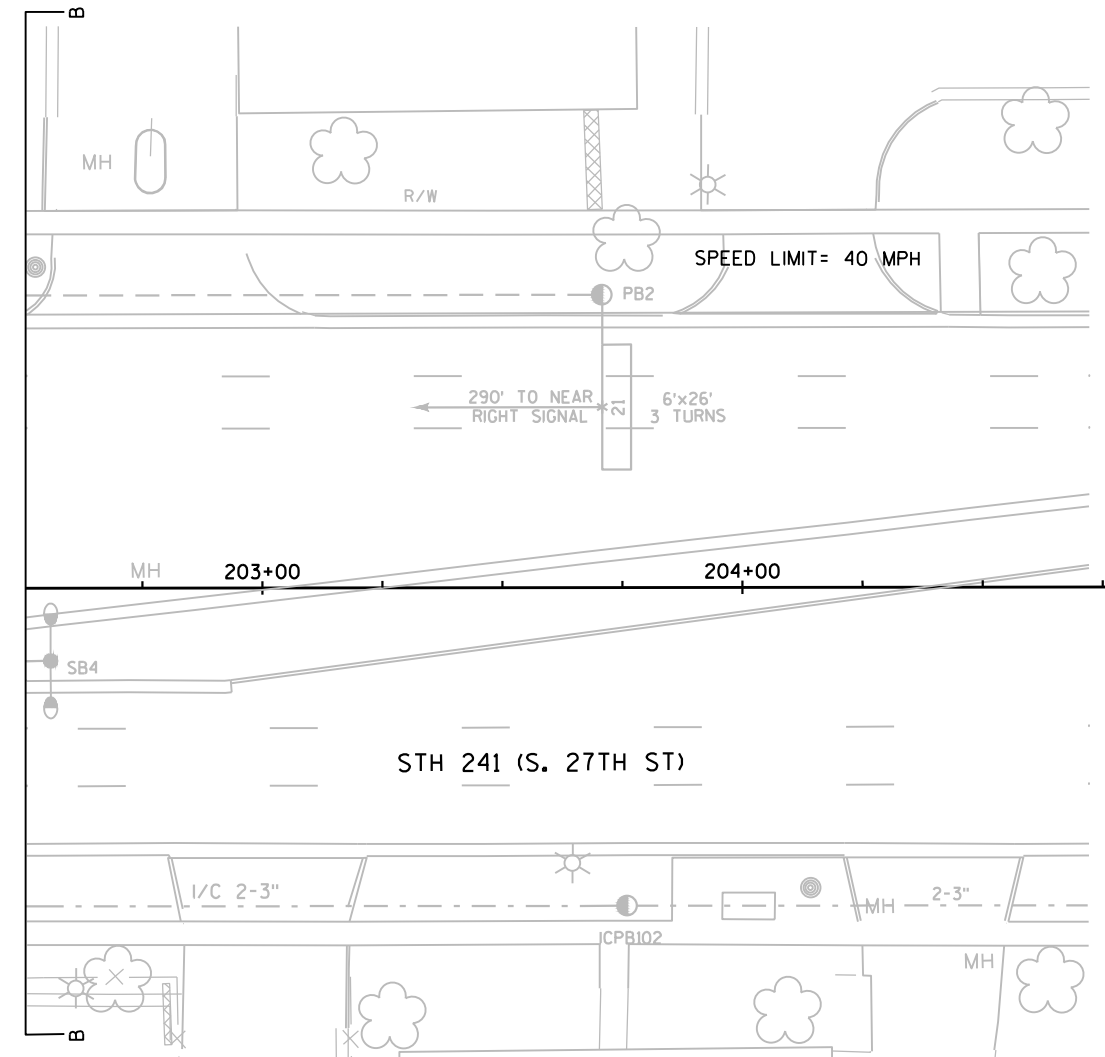
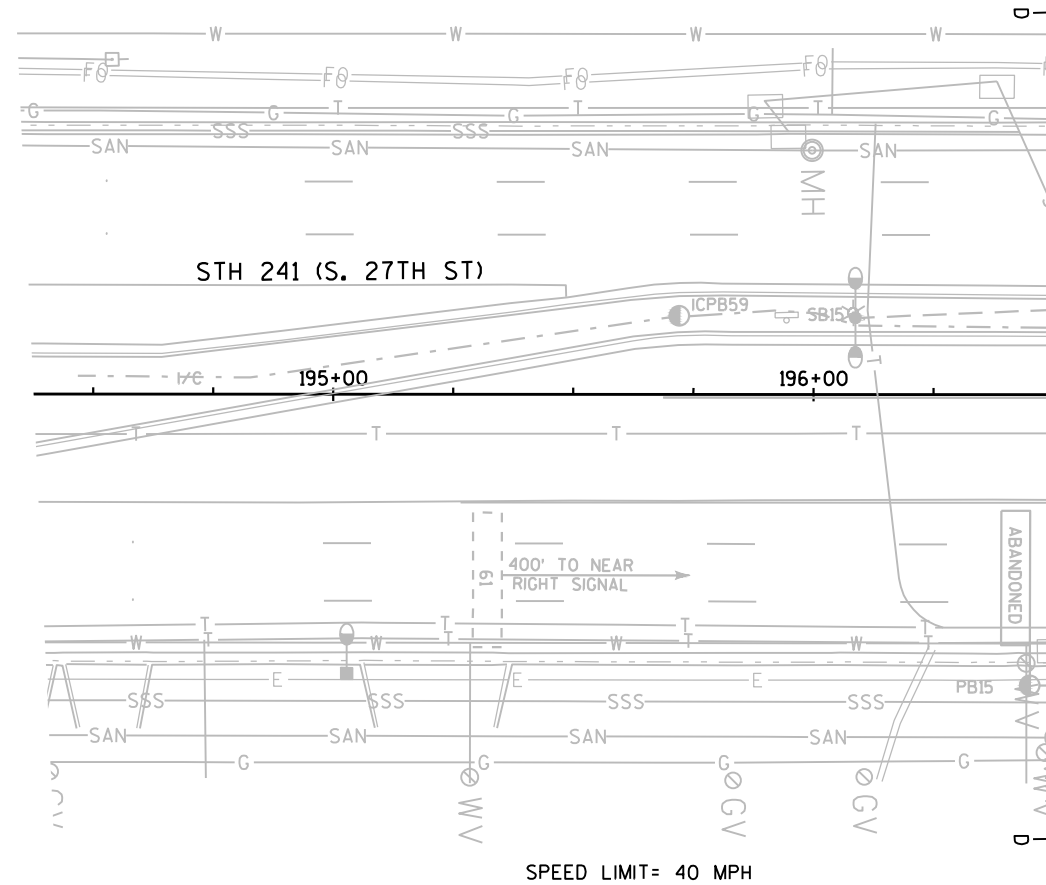
DETAIL 2

TRAFFIC CONTROL SIGNAL  
STH 241 (S. 27TH ST.) & W. LAYTON AVE  
CITY OF GREENFIELD/CITY OF MILWAUKEE  
MILWAUKEE COUNTY

SIGNAL NO. S40-1077

REGION CONTACT: D. DEDRICK  
DESIGNED BY:  
REVISED BY: BMD

PAGE 2 OF 4



TRAFFIC CONTROL SIGNAL STH 241 (S. 27TH ST.) & W. LAYTON AVE CITY OF GREENFIELD/CITY OF MILWAUKEE MILWAUKEE COUNTY
SIGNAL NO. S40-1077
REGION CONTACT: D. DEDRICK DESIGNED BY: REVISED BY: BMD
PAGE 3 OF 4

PROJECT NO:2060-16-70

HWY:STH 241

COUNTY:MILWAUKEE

TRAFFIC SIGNAL PLAN

SHEET

E

## RING 2



SHEET NO: E

PROJECT ID:	2060-16-70
INTERSECTION:	STH 241 & W LAYTON AVE

Signal Wire Color Coding	BLK - black	RED - red	GRN - green
	WHT - white	BLU - blue	ORG - orange

CB1 TO	AWG14 # OF CONDUCTORS	HEAD NO.	SIGNAL INDICATION WIRE COLOR									PED BUTTON
			RED	YELLOW	GREEN	<RED>	<YELLOW>	<GREEN>	<FLASHING YELLOW>	D/WALK	WALK	
SB1	12 <sup>1</sup>	5				RED	ORG	GRN				
		8				RED/BLK	ORG/BLK	GRN/BLK				
SB11	12 <sup>1</sup>	12				RED/BLK	ORG/BLK	GRN/BLK				

\*Use the white conductor in the cable assembly as the grounded conductor for all traffic signal indications

\*Ensure the grounded conductor in the feeder cable and the pole cables are both 18" longer than the ungrounded conductors.

\*At the signal bases, connect one terminal from the pedestrian push buttons to the color indicated in the chart. Connect the other terminal to the grounded conductor.

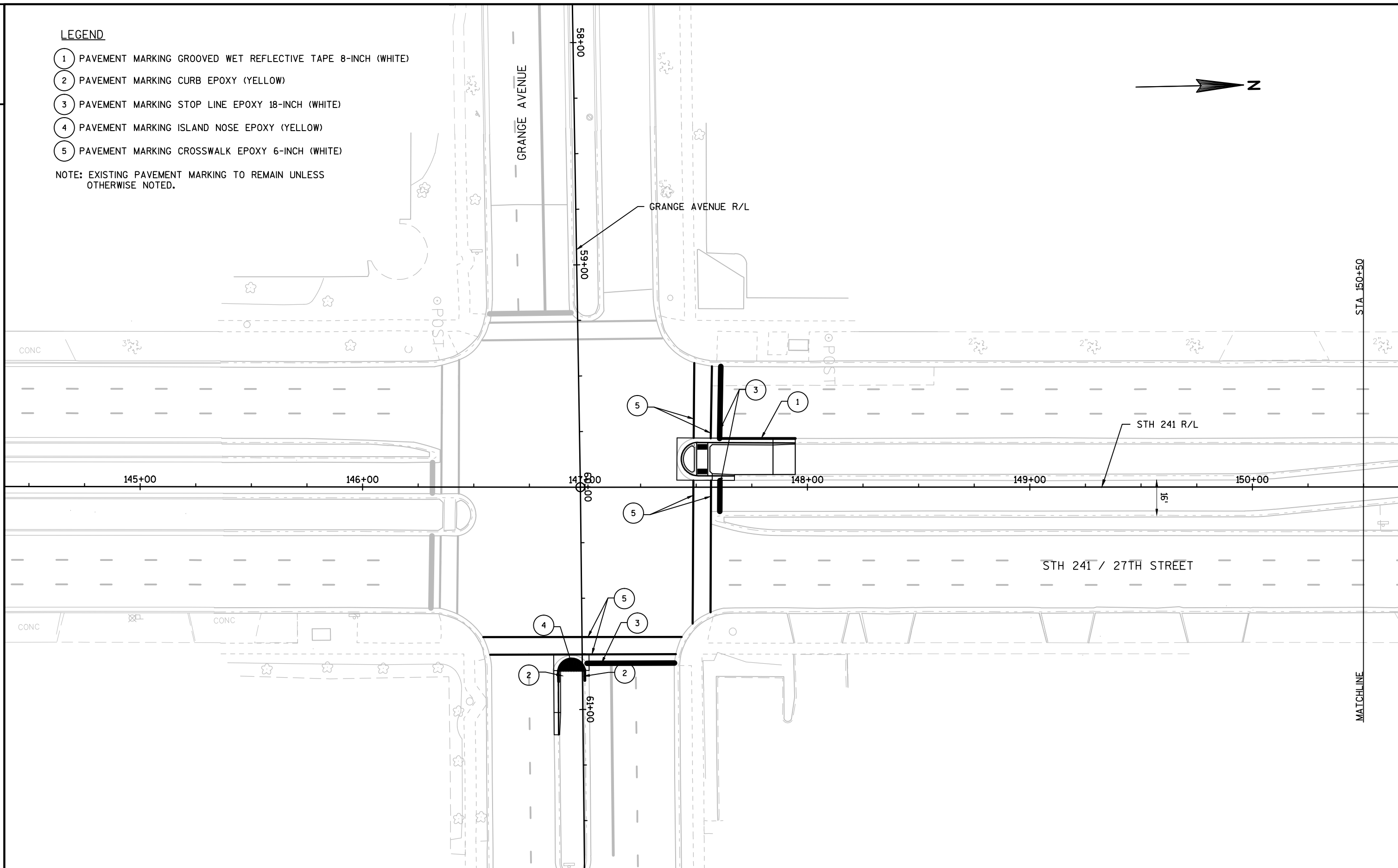
\*Reconnect the grounding conductors wherever the circuit has been interrupted to ensure the grounding circuit is complete.

<sup>1</sup> USE EXISTING 12-CT TRAFFIC SIGNAL CABLE

## LEGEND

- 1 PAVEMENT MARKING GROOVED WET REFLECTIVE TAPE 8-INCH (WHITE)
- 2 PAVEMENT MARKING CURB EPOXY (YELLOW)
- 3 PAVEMENT MARKING STOP LINE EPOXY 18-INCH (WHITE)
- 4 PAVEMENT MARKING ISLAND NOSE EPOXY (YELLOW)
- 5 PAVEMENT MARKING CROSSWALK EPOXY 6-INCH (WHITE)

NOTE: EXISTING PAVEMENT MARKING TO REMAIN UNLESS OTHERWISE NOTED.



- 1 PAVEMENT MARKING GROOVED WET REFLECTIVE TAPE 8-INCH (WHITE)
- 2 PAVEMENT MARKING CURB EPOXY (YELLOW)
- 3 PAVEMENT MARKING STOP LINE EPOXY 18-INCH (WHITE)
- 4 PAVEMENT MARKING ISLAND NOSE EPOXY (YELLOW)
- 5 PAVEMENT MARKING CROSSWALK EPOXY 6-INCH (WHITE)



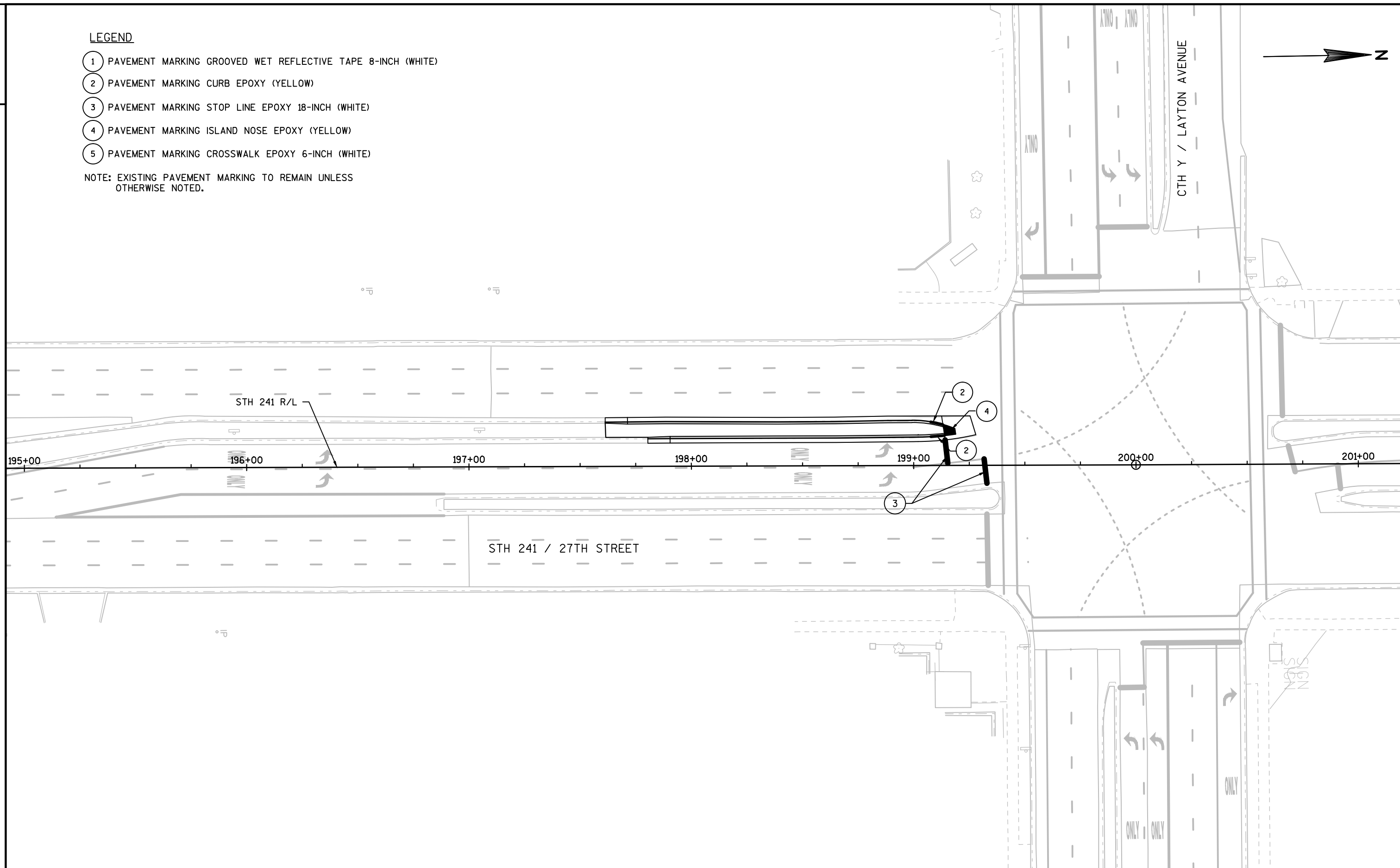
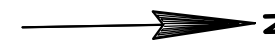
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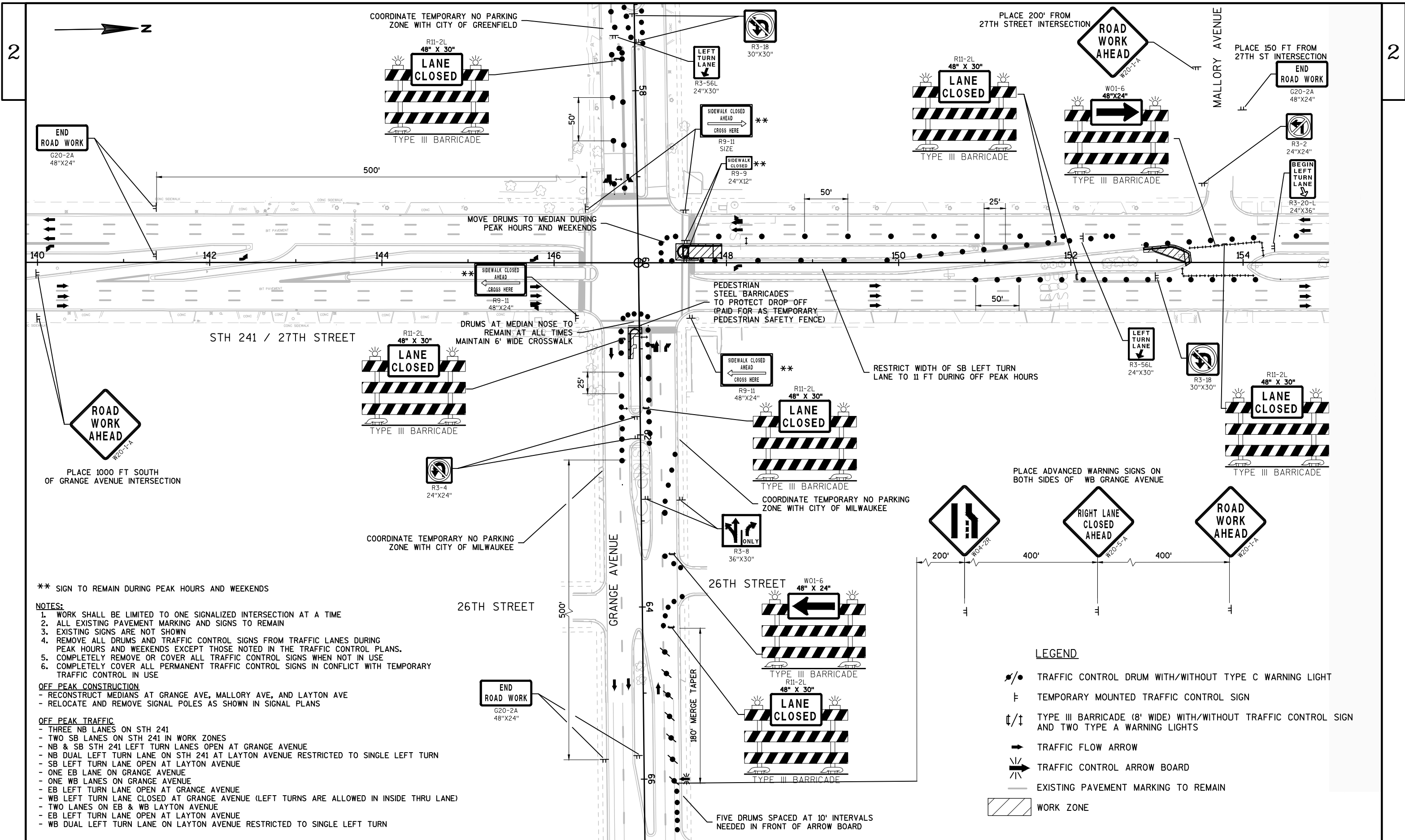


LEGEND

- ① PAVEMENT MARKING GROOVED WET REFLECTIVE TAPE 8-INCH (WHITE)
- ② PAVEMENT MARKING CURB EPOXY (YELLOW)
- ③ PAVEMENT MARKING STOP LINE EPOXY 18-INCH (WHITE)
- ④ PAVEMENT MARKING ISLAND NOSE EPOXY (YELLOW)
- ⑤ PAVEMENT MARKING CROSSWALK EPOXY 6-INCH (WHITE)

NOTE: EXISTING PAVEMENT MARKING TO REMAIN UNLESS OTHERWISE NOTED.





\*\* SIGN TO REMAIN DURING PEAK HOURS AND WEEKENDS

**NOTES:**

1. WORK SHALL BE LIMITED TO ONE SIGNALIZED INTERSECTION AT A TIME
2. ALL EXISTING PAVEMENT MARKING AND SIGNS TO REMAIN
3. EXISTING SIGNS ARE NOT SHOWN
4. REMOVE ALL DRUMS AND TRAFFIC CONTROL SIGNS FROM TRAFFIC LANES DURING PEAK HOURS AND WEEKENDS EXCEPT THOSE NOTED IN THE TRAFFIC CONTROL PLANS.
5. COMPLETELY REMOVE OR COVER ALL TRAFFIC CONTROL SIGNS WHEN NOT IN USE
6. COMPLETELY COVER ALL PERMANENT TRAFFIC CONTROL SIGNS IN CONFLICT WITH TEMPORARY TRAFFIC CONTROL IN USE

**OFF PEAK CONSTRUCTION**

- RECONSTRUCT MEDIANS AT GRANGE AVE, MALLORY AVE, AND LAYTON AVE
- RELOCATE AND REMOVE SIGNAL POLES AS SHOWN IN SIGNAL PLANS

**OFF PEAK TRAFFIC**

- THREE NB LANES ON STH 241
- TWO SB LANES ON STH 241 IN WORK ZONES
- NB & SB STH 241 LEFT TURN LANES OPEN AT GRANGE AVENUE
- NB DUAL LEFT TURN LANE ON STH 241 AT LAYTON AVENUE RESTRICTED TO SINGLE LEFT TURN
- SB LEFT TURN LANE OPEN AT LAYTON AVENUE
- ONE EB LANE ON GRANGE AVENUE
- ONE WB LANES ON GRANGE AVENUE
- EB LEFT TURN LANE OPEN AT GRANGE AVENUE
- WB LEFT TURN LANE CLOSED AT GRANGE AVENUE (LEFT TURNS ARE ALLOWED IN INSIDE THRU LANE)
- TWO LANES ON EB & WB LAYTON AVENUE
- EB LEFT TURN LANE OPEN AT LAYTON AVENUE
- WB DUAL LEFT TURN LANE ON LAYTON AVENUE RESTRICTED TO SINGLE LEFT TURN

PROJECT NO:2060-16-70

HWY:STH 241

COUNTY:MILWAUKEE

TRAFFIC CONTROL/STAGING - OFF PEAK HOURS

SHEET

E

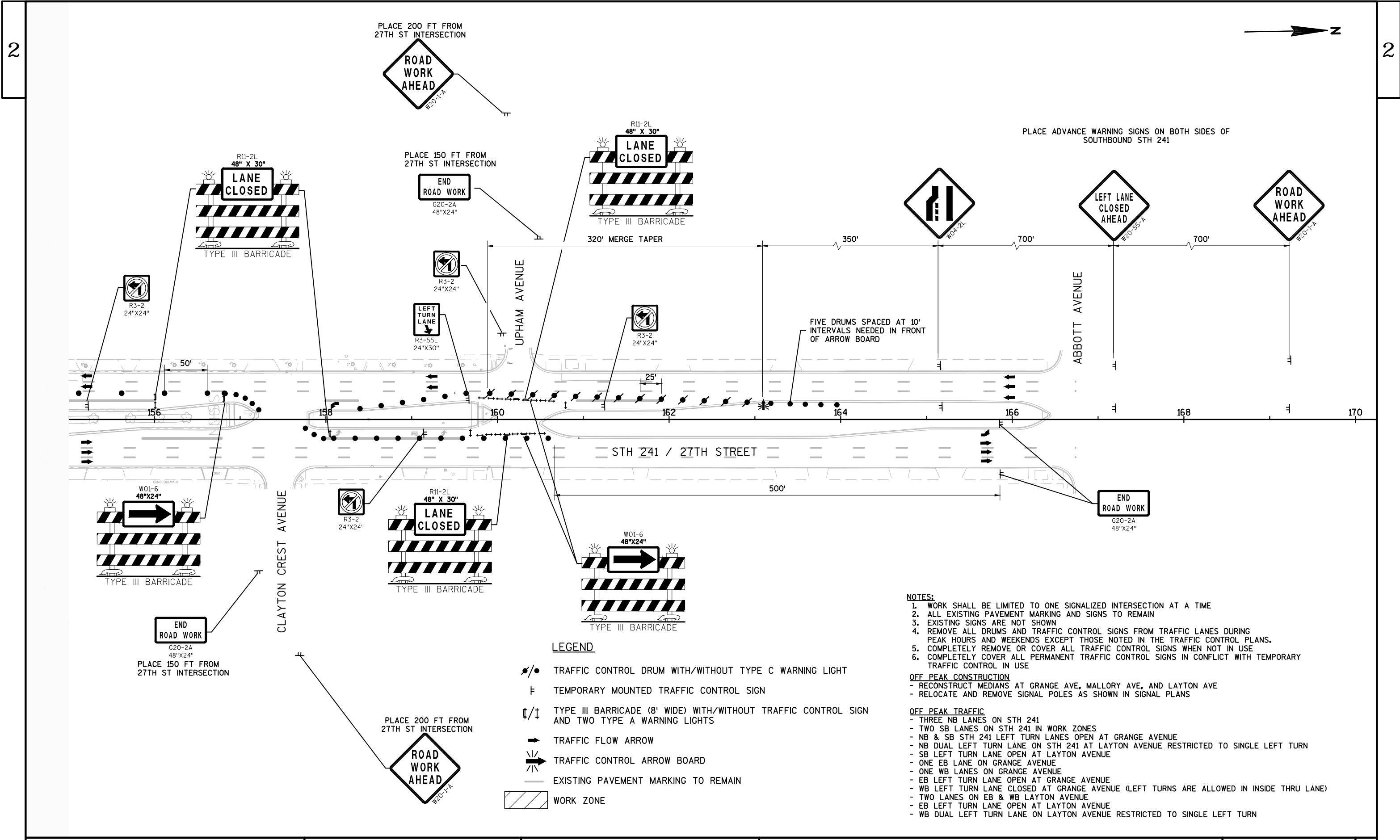
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LAYOUT NAME - 025001\_TC - 025001-TC

PLOT DATE : 7/22/2015 1:59 PM

PLOT BY : BLACKWOOD, JAMES W PLOT NAME :

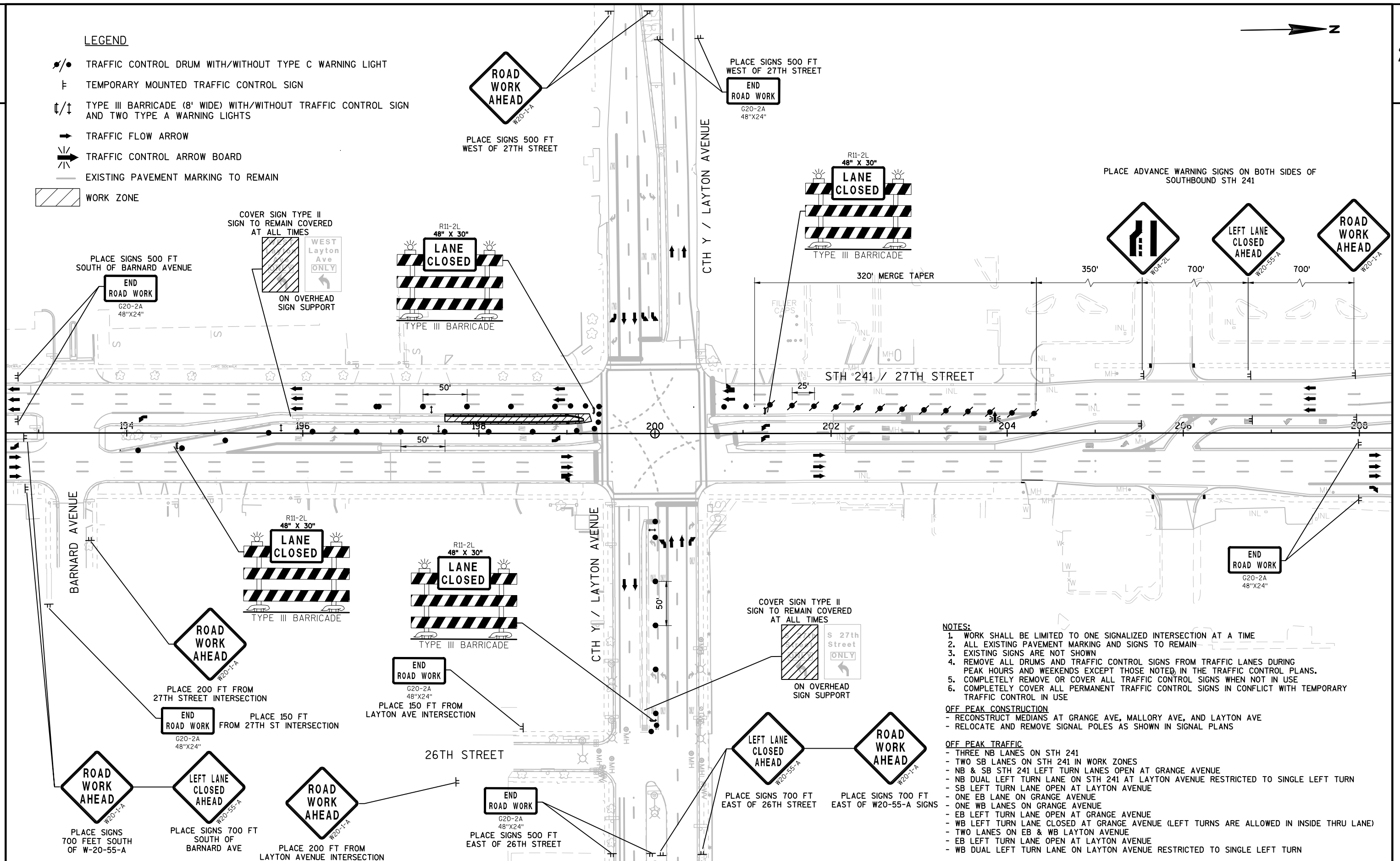
PLOT SCALE : 1 IN:100 FT

WISDOT/CADDs SHEET 42



## LEGEND

- /● TRAFFIC CONTROL DRUM WITH/WITHOUT TYPE C WARNING LIGHT
- ⊢ TEMPORARY MOUNTED TRAFFIC CONTROL SIGN
- ⊢/⊢ TYPE III BARRICADE (8' WIDE) WITH/WITHOUT TRAFFIC CONTROL SIGN AND TWO TYPE A WARNING LIGHTS
- ➔ TRAFFIC FLOW ARROW
- ➔ TRAFFIC CONTROL ARROW BOARD
- EXISTING PAVEMENT MARKING TO REMAIN
- ▨ WORK ZONE



PROJECT NO: 2060-16-70

HWY: STH 241

COUNTY: MILWAUKEE

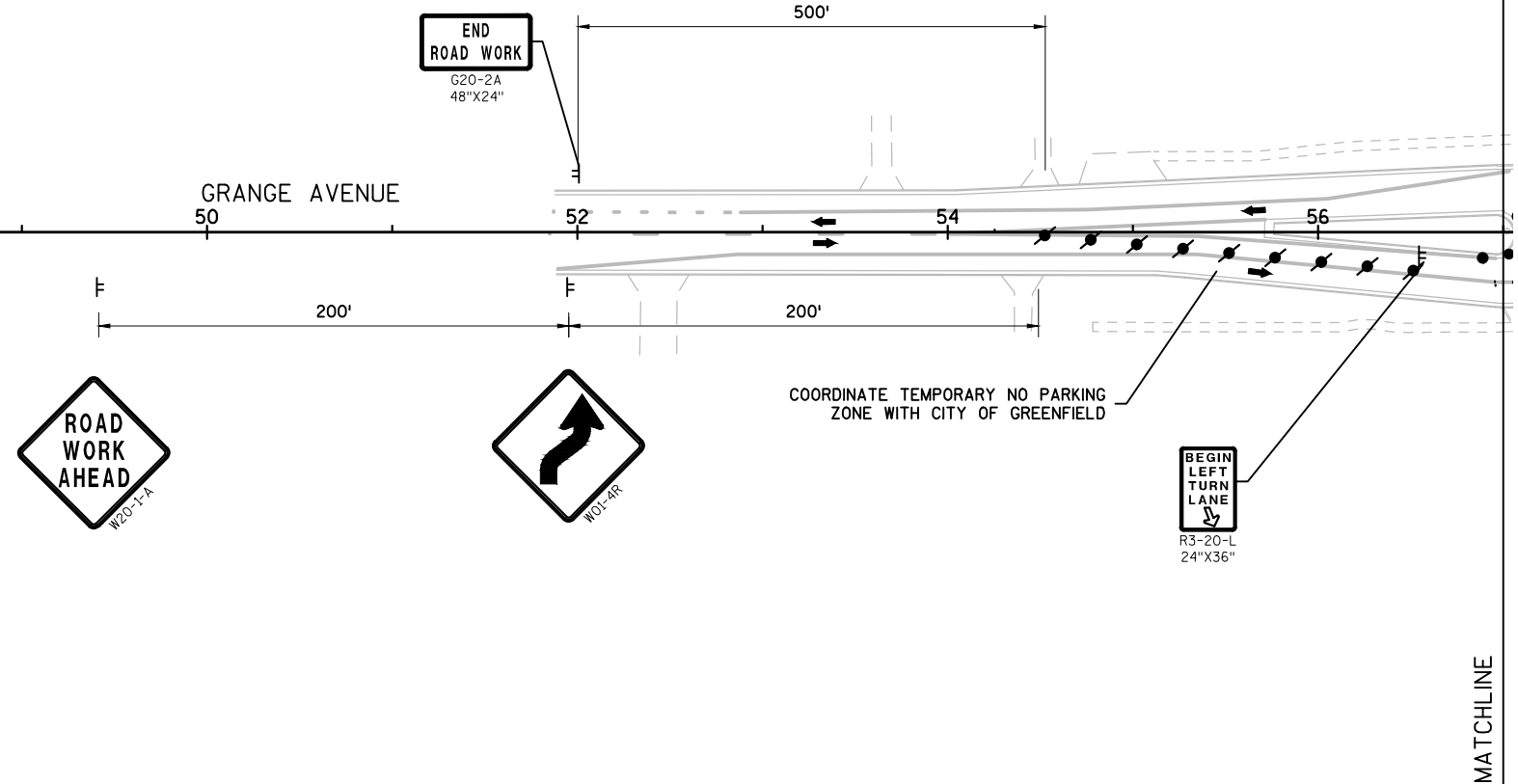
TRAFFIC CONTROL/STAGING - OFF PEAK HOURS

SHEET

E

## LEGEND

- /• TRAFFIC CONTROL DRUM WITH/WITHOUT TYPE C WARNING LIGHT  
⌄ TEMPORARY MOUNTED TRAFFIC CONTROL SIGN  
⌄/⌄ TYPE III BARRICADE (8' WIDE) WITH/WITHOUT TRAFFIC CONTROL SIGN AND TWO TYPE A WARNING LIGHTS  
➡ TRAFFIC FLOW ARROW  
➡ TRAFFIC CONTROL ARROW BOARD  
— EXISTING PAVEMENT MARKING TO REMAIN  
▨ WORK ZONE



## NOTES:

1. WORK SHALL BE LIMITED TO ONE SIGNALIZED INTERSECTION AT A TIME
2. ALL EXISTING PAVEMENT MARKING AND SIGNS TO REMAIN
3. EXISTING SIGNS ARE NOT SHOWN
4. REMOVE ALL DRUMS AND TRAFFIC CONTROL SIGNS FROM TRAFFIC LANES DURING PEAK HOURS AND WEEKENDS EXCEPT THOSE NOTED IN THE TRAFFIC CONTROL PLANS.
5. COMPLETELY REMOVE OR COVER ALL TRAFFIC CONTROL SIGNS WHEN NOT IN USE
6. COMPLETELY COVER ALL PERMANENT TRAFFIC CONTROL SIGNS IN CONFLICT WITH TEMPORARY TRAFFIC CONTROL IN USE

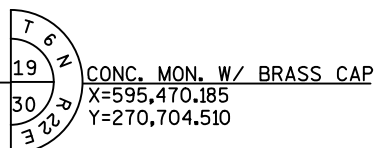
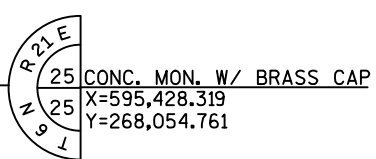
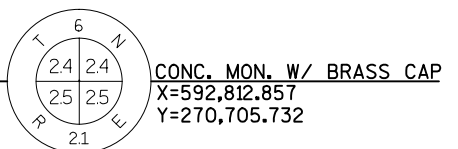
## OFF PEAK CONSTRUCTION

- RECONSTRUCT MEDIANS AT GRANGE AVE, MALLORY AVE, AND LAYTON AVE
- RELOCATE AND REMOVE SIGNAL POLES AS SHOWN IN SIGNAL PLANS

## OFF PEAK TRAFFIC

- THREE NB LANES ON STH 241
- TWO SB LANES ON STH 241 IN WORK ZONES
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- NB DUAL LEFT TURN LANE ON STH 241 AT LAYTON AVENUE RESTRICTED TO SINGLE LEFT TURN
- SB LEFT TURN LANE OPEN AT LAYTON AVENUE
- ONE EB LANE ON GRANGE AVENUE
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- TWO LANES ON EB & WB LAYTON AVENUE
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→ **Z**



DATE 15SEP15		E S T I M A T E O F Q U A N T I T I E S			
LINE					2060-16-70
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0010	204.0150	Removing Curb & Gutter	LF	505.000	505.000
0020	204.0155	Removing Concrete Sidewalk	SY	195.000	195.000
0030	204.0195	Removing Concrete Bases	EACH	3.000	3.000
0040	204.9060.S	Removing (item description) 01. COMMUNICATIONS VAULT	EACH	1.000	1.000
0050	205.0100	Excavation Common	CY	203.000	203.000
0060	213.0100	Finishing Roadway (project) 01. ID 2060-16-70	EACH	1.000	1.000
0070	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	160.000	160.000
0080	405.0100	Coloring Concrete Red	CY	61.000	61.000
0090	415.0120	Concrete Pavement 12-Inch	SY	180.000	180.000
0100	416.0610	Drilled Tie Bars	EACH	148.000	148.000
0110	601.0600	Concrete Curb Pedestrian	LF	25.000	25.000
0120	602.0505	Curb Ramp Detectable Warning Field Yellow	SF	16.000	16.000
0130	611.0557	Manhole Covers Type Q-Communications	EACH	1.000	1.000
0140	611.0648	Inlet Covers Type R	EACH	2.000	2.000
0150	611.2104	Manholes Communication 4-FT Diameter	EACH	1.000	1.000
0160	611.8115	Adjusting Inlet Covers	EACH	2.000	2.000
0170	619.1000	Mobilization	EACH	1.000	1.000
0180	620.0300	Concrete Median Sloped Nose	SF	370.000	370.000
0190	624.0100	Water	MGAL	3.000	3.000
0200	625.0500	Salvaged Topsoil	SY	95.000	95.000
0210	627.0200	Mulching	SY	150.000	150.000
0220	628.1104	Erosion Bales	EACH	25.000	25.000
0230	628.1504	Silt Fence	LF	140.000	140.000
0240	628.1520	Silt Fence Maintenance	LF	70.000	70.000
0250	628.1905	Mobilizations Erosion Control	EACH	2.000	2.000
0260	628.1910	Mobilizations Emergency Erosion Control	EACH	1.000	1.000
0270	628.7010	Inlet Protection Type B	EACH	3.000	3.000
0280	628.7015	Inlet Protection Type C	EACH	19.000	19.000
0290	628.7504	Temporary Ditch Checks	LF	25.000	25.000
0300	629.0210	Fertilizer Type B	CWT	0.100	0.100
0310	630.0130	Seeding Mixture No. 30	LB	1.800	1.800
0320	630.0200	Seeding Temporary	LB	1.400	1.400
0330	634.0618	Posts Wood 4x6-Inch X 18-FT	EACH	2.000	2.000
0340	634.0816	Posts Tubular Steel 2x2-Inch X 16-FT	EACH	5.000	5.000
0350	637.2210	Signs Type II Reflective H	SF	20.000	20.000
0360	637.2230	Signs Type II Reflective F	SF	20.000	20.000
0370	638.2102	Moving Signs Type II	EACH	10.000	10.000
0380	638.2602	Removing Signs Type II	EACH	2.000	2.000
0390	638.3000	Removing Small Sign Supports	EACH	4.000	4.000
0400	643.0100	Traffic Control (project) 01. ID 2060-16-70	EACH	1.000	1.000
0410	643.0300	Traffic Control Drums	DAY	2,035.000	2,035.000
0420	643.0420	Traffic Control Barricades Type III	DAY	610.000	610.000
0430	643.0705	Traffic Control Warning Lights Type A	DAY	1,220.000	1,220.000
0440	643.0715	Traffic Control Warning Lights Type C	DAY	355.000	355.000
0450	643.0800	Traffic Control Arrow Boards	DAY	25.000	25.000
0460	643.0900	Traffic Control Signs	DAY	1,000.000	1,000.000
0470	643.0920	Traffic Control Covering Signs Type II	EACH	7.000	7.000
0480	643.1050	Traffic Control Signs PCMS	DAY	15.000	15.000
0490	644.1616.S	Temporary Pedestrian Safety Fence	LF	20.000	20.000
0500	646.0883.S	Pavement Marking Grooved Wet Reflective Tape 8-Inch	LF	40.000	40.000

DATE 15SEP15		E S T I M A T E O F Q U A N T I T I E S			
LINE				2060-16-70	
NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	QUANTITY
0510	647.0456	Pavement Marking Curb Epoxy	LF	50.000	50.000
0520	647.0566	Pavement Marking Stop Line Epoxy 18-Inch	LF	115.000	115.000
0530	647.0606	Pavement Marking Island Nose Epoxy	EACH	3.000	3.000
0540	647.0766	Pavement Marking Crosswalk Epoxy 6-Inch	LF	370.000	370.000
0550	650.4500	Construction Staking Subgrade	LF	325.000	325.000
0560	650.5500	Construction Staking Curb Gutter and Curb & Gutter	LF	450.000	450.000
0570	650.8500	Construction Staking Electrical Installations (project) 01. ID 2060-16-70	LS	1.000	1.000
0580	650.9910	Construction Staking Supplemental Control (project) 01. ID 2060-16-70	LS	1.000	1.000
0590	652.0225	Conduit Rigid Nonmetallic Schedule 40 2-Inch	LF	9.000	9.000
0600	653.0900	Adjusting Pull Boxes	EACH	2.000	2.000
0610	654.0102	Concrete Bases Type 2	EACH	2.000	2.000
0620	655.0230	Cable Traffic Signal 5-14 AWG	LF	38.000	38.000
0630	655.0240	Cable Traffic Signal 7-14 AWG	LF	88.000	88.000
0640	655.0260	Cable Traffic Signal 12-14 AWG	LF	568.000	568.000
0650	655.0305	Cable Type UF 2-12 AWG Grounded	LF	787.000	787.000
0660	655.0515	Electrical Wire Traffic Signals 10 AWG	LF	485.000	485.000
0670	655.0610	Electrical Wire Lighting 12 AWG	LF	468.000	468.000
0680	657.0255	Transformer Bases Breakaway 11 1/2-Inch Bolt Circle	EACH	2.000	2.000
0690	657.0310	Poles Type 3	EACH	2.000	2.000
0700	657.0609	Luminaire Arms Single Member 4-Inch Clamp 6-FT	EACH	4.000	4.000
0710	658.0110	Traffic Signal Face 3-12 Inch Vertical	EACH	2.000	2.000
0720	658.0115	Traffic Signal Face 4-12 Inch Vertical	EACH	4.000	4.000
0730	658.0215	Backplates Signal Face 3 Section 12-Inch	EACH	2.000	2.000
0740	658.0220	Backplates Signal Face 4 Section 12-Inch	EACH	4.000	4.000
0750	658.0615	Led Modules 12-Inch Red Arrow	EACH	6.000	6.000
0760	658.0620	Led Modules 12-Inch Yellow Arrow	EACH	10.000	10.000
0770	658.0625	Led Modules 12-Inch Green Arrow	EACH	6.000	6.000
0780	658.5069	Signal Mounting Hardware (Location) 01. STH 241 & LAYTON AVENUE	LS	1.000	1.000
0790	658.5069	Signal Mounting Hardware (Location) 02. STH 241 & GRANGE AVENUE	LS	1.000	1.000
0800	659.0125	Luminaires Utility HPS 250 Watts	EACH	4.000	4.000
0810	690.0150	Sawing Asphalt	LF	40.000	40.000
0820	690.0250	Sawing Concrete	LF	565.000	565.000
0830	SPV.0090	Special 01. CONC CURB AND GUTTER 4-IN SLOPED 36-INCH TYPE A 9-INCH THICKNESS	LF	365.000	365.000
0840	SPV.0090	Special 02. CONC CURB AND GUTTER 4-IN SLOPED 36-INCH TYPE A 9-INCH THICKNESS	LF	85.000	85.000
0850	SPV.0105	Special 01. REMOVE TRAFFIC SIGNALS STH 241 & LAYTON AVE	LS	1.000	1.000
0860	SPV.0105	Special 02. REMOVE TRAFFIC SIGNALS STH 241 & GRANGE AVE	LS	1.000	1.000
0870	SPV.0165	Special 01. CONCRETE SIDEWALK 12-INCH	SF	75.000	75.000
0880	SPV.0165	Special 02. CONCRETE SIDEWALK 4-INCH DECORATIVE	SF	135.000	135.000

3

REMOVALS

					204.0150	204.0155
					REMOVING	REMOVING
ROADWAY	STATION	STATION	SIDE		CURB & GUTTER	CONC SIDEWALK
					LF	SY
STH 241	147+41	-	147+95	MEDIAN	85	80
	152+84	-	153+39	MEDIAN	70	---
	197+61	-	199+28	MEDIAN	300	110
	STH 241 SUBTOTAL				455	190
GRANGE AVE	60+75	-	61+11	MEDIAN	50	5
	GRANGE AVE SUBTOTAL				50	5
PROJECT TOTAL					505	195

BASE AGGREGATE DENSE 1 1/4-INCH

					305.0120
ROADWAY	STATION		STATION	SIDE	TONS
STH 241	147+41	-	147+95	MEDIAN	40
	152+84	-	153+39	MEDIAN	30
	197+61	-	199+28	MEDIAN	75
	STH 241 TOTALS				145
GRANGE AVE	60+75	-	61+11	MEDIAN	15
	GRANGE AVE SUBTOTAL				15
PROJECT TOTAL					160

3

EARTHWORK SUMMARY			A	B	C	D	E	F	G	H	I
			ITEM #205.0100		*	*	*	*	*	*	ITEM #208.0100
Division	From/To Station	Location	Common Excavation (1) (CY)		Salvaged/ Unusable Pavement Material (2) (CY)	Available Material (3) (CY)	Unexpanded Fill (CY)	Expanded Fill (4) (CY)	Mass Ordinate +/- (5) (CY)	Waste (CY)	Borrow (CY)
			Cut (2) (CY)	EBS Excavation (CY)							
1	147+41 - 147+95	STH 241	55	0	15	40	0	0	40		
	152+84 - 153+39	STH 241	33	0	4	29	0	0	29		
	197+61 - 199+28	STH 241	101	0	31	70	0	0	70		
	60+75 - 61+11	GRANGE AVE	14	0	3	0	0	0	0		
Division 1 Subtotal			203	0	53	139	0	0	139	139	
Grand Total			203	0	53	139	0	0	139	139	0
Total Common Exc			203								

- 1) Common Excavation is the sum of the Cut (A) and EBS Excavation (B) columns. Item number 205.0100
- 2) Salvaged/Unsuable Pavement Material (C) is included in Cut (A).
- 3) Available Material = Cut - Salvaged/Unusuable Pavement Material
- 4) Expanded Fill (G) = (Unexpanded Fill (F)) \* Expanded Fill Factor (1.20)
- 5) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates a waste volume of material within the Division. Minus indicates a borrow volume of material within the Division.

ALL ITEMS CATEGORY 0010 UNLESS NOTED

CONCRETE PAVEMENT AND SIDEWALK ITEMS

ROADWAY	STATION	STATION	SIDE	405.0100	415.0120	602.0505	SPV.0165.01	SPV.0165.02
				COLORING CONCRETE RED CY	CONC PAVT 12-INCH SY	CURB RAMP DETECTALE WARNING FIELDS YELLOW SF	CONCRETE SIDEWALK 12-INCH SF	CONC SIDEWALK 4-INCH DECORATIVE SF
STH 241	147+41	- 147+95	MEDIAN	17	50	16	75	135
	152+84	- 153+39	MEDIAN	12	35	---	---	---
	197+61	- 199+28	MEDIAN	32	95	---	---	---
PROJECT TOTALS				61	180	16	75	135

DRILLED TIE BARS

					416.0610
ROADWAY	STATION		STATION	SIDE	EACH
STH 241	147+41	-	147+95	MEDIAN	4
	152+84	-	153+39	MEDIAN	4
	197+61	-	199+28	MEDIAN	115
	STH 241 SUBTOTAL				123
GRANGE AVE	60+75	-	61+11	MEDIAN	25
	GRANGE AVE SUBTOTAL				25
PROJECT TOTAL					148

CONCRETE CURB AND GUTTER AND SLOPED NOSES

					SPV.0090.01	SPV.0090.02	601.0600	620.0300	650.5500
					CONCRETE CURB AND GUTTER 4-INCH		CONCRETE	CONCRETE	CONSTRUCTION
					SLOPED 36-INCH TYPE A 9-INCH THICKNESS		CURB	MEDIAN	STAKING
						HES	PEDESTRIAN	SLOPED NOSE	CURB AND GUTTER
ROADWAY	STATION	STATION	SIDE	LF	LF	LF	SF	LF	
STH 241	147+41	- 147+95	MEDIAN	---	85	25	---	85	
	152+84	- 153+39	MEDIAN	50	---	---	115	50	
	197+61	- 199+28	MEDIAN	285	---	---	135	285	
	STH 241 SUBTOTAL			335	85	25	250	420	
GRANGE AVE	60+75	- 61+11	MEDIAN	30	---	---	120	30	
	GRANGE AVE SUBTOTAL			30	0	0	120	30	
PROJECT TOTAL				365	85	25	370	450	

\*\* ADDITIONAL CONSTRUCTION STAKING ITEMS FOUND ELSEWHERE

ALL ITEMS CATEGORY 0010 UNLESS NOTED

3

WATER

LOCATION	624.0100 MGAL
BASE AGGREGATE PLACEMENT	2.5
UNDISTRIBUTED/DUST CONTROL	0.5
	3.0

EROSION CONTROL ITEMS

					628.1104 EROSION BALES	628.1504 SILT FENCE	628.1520 SILT FENCE MAINTENANCE	628.1905 MOBILIZATIONS EROSION CONTROL	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL	628.7010 INLET PROTECTION TYPE B	628.7015 INLET PROTECTION TYPE C	628.7504 TEMPORARY DITCH CHECKS
ROADWAY	STATION	STATION	LOCATION		EACH	LF	LF	EACH	EACH	EACH	EACH	LF
STH 241	147+41	-	147+95	MEDIAN	---	---	---	---	---	---	1	---
	152+84	-	153+39	MEDIAN	---	60	30	---	---	1	6	---
	197+61	-	199+28	MEDIAN	---	---	---	---	---	---	5	---
	STH 241 SUBTOTAL				0	60	30	0	0	1	12	0
GRANGE AVE	60+75	-	61+11	MEDIAN	---	50	25	---	---	---	2	---
	GRANGE AVE SUBTOTAL				0	50	25	0	0	0	2	0
UNDISTRIBUTED					25	30	15	2	1	2	5	25
PROJECT TOTALS					25	140	70	2	1	3	19	25

3

RESTORATION ITEMS

				625.0500 SALVAGED TOPSOIL	627.0200 MULCHING	629.0210 FERTILIZER TYPE B	630.0130 SEEDING MIXTURE NO. 30	630.0200 SEEDING TEMPORARY
ROADWAY	STATION	STATION	LOCATION	SY	SY	CWT	LB	LB
STH 241	147+41	- 147+95	MEDIAN	---	---	---	---	---
	152+84	- 153+39	MEDIAN	35	60	0.04	0.7	0.5
	197+61	- 199+28	MEDIAN	---	---	---	---	---
	STH 241 SUBTOTAL			35	60	0.04	0.7	0.5
GRANGE AVE	60+75	- 61+11	MEDIAN	40	60	0.04	0.7	0.6
	GRANGE AVE SUBTOTAL			40	60	0.04	0.7	0.6
UNDISTRIBUTED				20	30	0.02	0.4	0.3
PROJECT TOTALS				95	150	0.10	1.8	1.4

INLET COVERS TYPE R

ROADWAY	STATION	OFFSET	SIDE	611.0648 INLET COVERS TYPE R EACH	611.8115 ADJUSTING INLET COVERS EACH
STH 241	199+00	21'	LT	1	1
	199+00	12'	LT	1	1
	PROJECT TOTALS			2	2

EXISTING INLET CASTING AND GRATE TO REMAIN  
REMOVE CURB BOX AND REPLACE WITH TYPE R-P PLUG  
ADJUST INLET COVER IF NEEDED TO MATCH ADJACENT PAVEMENT

ALL ITEMS CATEGORY 0010 UNLESS NOTED

PROJECT NO: 2060-16-70

HWY: STH 241

COUNTY: MILWAUKEE

MISCELLANEOUS QUANTITIES

SHEET NO:

E

3

TRAFFIC CONTROL	
	643.0100
PROJECT	EACH
2060-16-70	1
PROJECT TOTAL	1

PAVEMENT MARKING

				646.0883.S GROOVED WET REFLECTIVE TAPE 8-INCH (WHITE)	647.0456 CURB EPOXY (YELLOW)	647.0566 STOP LINE EPOXY 18-INCH (WHITE)	647.0606 ISLAND NOSE EPOXY (YELLOW)	647.0766 CROSSWALK EPOXY 6-INCH (WHITE)
ROADWAY	STATION		STATION	LF	LF	LF	EACH	LF
STH 241	147+41	-	147+95	40	---	50	---	190
	152+84	-	153+39	---	25	---	1	---
	197+61	-	199+28	---	15	25	1	---
	STH 241 SUBTOTAL			40	40	75	2	190
GRANGE AVE	60+75	-	61+11	---	10	40	1	180
	GRANGE AVE SUBTOTAL			0	10	40	1	180
PROJECT TOTALS				40	50	115	3	370

3

TRAFFIC CONTROL ITEMS

		643.0300	643.0420	643.0705	643.0715	643.0800	643.0900	643.0920	643.1050	644.1616.S
		TRAFFIC	TRAFFIC CONTROL	TRAFFIC CONTROL	TRAFFIC CONTROL	TRAFFIC CONTROL	TRAFFIC	TRAFFIC CONTROL	TRAFFIC CONTROL	TEMPORARY
		CONTROL	BARRICADES	WARNING LIGHTS	WARNING LIGHTS	ARROW	CONTROL	COVERING SIGNS	SIGNS PCMS	PEDESTRIAN
		DRUMS	TYPE III			BOARDS	SIGNS	TYPE II	*	SAFETY FENCE
LOCATION	* DURATION DAYS	DAYS	DAYS	TYPE A DAYS	TYPE C DAYS	* EACH	DAYS	DAYS	EACH	LF
GRANGE AND MALLORY INTERSECTIONS	10	1810	530	1060	290	2	20	680	---	20
LAYTON AVENUE INTERSECTION	5	225	80	160	65	1	5	320	2	---
UNDISTRIBUTED	---	---	---	---	---	---	---	---	5	---
PROJECT TOTALS		2035	610	1220	355	---	25	1000	7	15

\*FOR INFORMATION ONLY

NOTE: SIGNALIZED INTERSECTIONS MAY NOT BE CONSTRUCTED AT SAME TIME  
LANE CLOSURES WILL ONLY BE ALLOWED DURING OFF PEAK HOURS  
TRAFFIC CONTROL DEVICES TO BE REMOVED FROM TRAVEL LANES AND TURN LANES DURING PEAK HOURS AND WEEKENDS  
TRAFFIC CONTROL DEVICES WILL ONLY BE PAID FOR ON DAYS WHEN THEY ARE IN USE.

ALL ITEMS CATEGORY 0010 UNLESS NOTED

							CONSTRUCTION STAKING**		
							***		
							650.4500	650.8500	650.9910.01
							CONSTRUCTION STAKING		
							SUBGRADE	ELECTRICAL INSTALLATION	SUPPLEMENTAL CONTROL
								ID 2060-16-70	ID 2060-16-70
ROADWAY	STATION		STATION	SIDE	LF		LS	LS	
STH 241	147+41	-	147+95	MEDIAN	55		---	---	
	152+84	-	153+39	MEDIAN	60		---	---	
	197+61	-	199+28	MEDIAN	170		---	---	
	STH 241 SUBTOTAL				285		0	0	
GRANGE AVE	60+75	-	61+11	MEDIAN	40		---	---	
	GRANGE AVE SUBTOTAL				40		0	0	
PROJECT TOTAL					325		1	1	

\*\* ADDITIONAL CONSTRUCTION STAKING ITEMS FOUND ELSEWHERE  
\*\*\* CATEGORY 0020

SAWING ITEMS						
				690.0150 SAWING ASPHALT	690.0250 SAWING CONCRETE	
ROADWAY	STATION		STATION	SIDE	LF	LF
STH 241	147+41	-	147+95	MEDIAN	40	85
	152+84	-	153+39	MEDIAN	---	80
	197+61	-	199+28	MEDIAN	---	335
	STH 241 SUBTOTAL				40	500
GRANGE AVE	60+75	-	61+11	MEDIAN	---	65
	GRANGE AVE SUBTOTAL				0	65
PROJECT TOTAL					40	565

ALL ITEMS CATEGORY 0010 UNLESS NOTED

TYPE II PERMANENT SIGNING -

2060-16-70 27th Street

SIGN NO.	SIGN CODE & SIZE	SIGN MESSAGE	SIGN SIZE W x H [IN.] x [IN.]	637.2210 SIGNS TYPE II REFLECTIVE H [SF]	637.2230 SIGNS TYPE II RELFECTIVE F [SF]	638.2602 REM SIGNS TYPE II [EA]	638.3000 REM SMALL SIGN SUP [EA]	638.2102 MOVING SIGNS TYPE II [EA]	634.0618 WOOD POSTS 4"X 6"x18' [EA]	634.0816 POSTS TUBULAR STEEL 2" X 2" X 16' [EA]	MOUNT ON SAME POST AS SIGN #	REMARKS / NEW SIGN LOCATION
1	R4-7	KEEP RIGHT						1		1		
2	R1-1F	FOLDING STOP						1			1	
3	R1-1F	FOLDING STOP						1				MOUNT ON SIGNAL POLE
4	R10-50L	LEFT TURN YIELD ON FLASHING YELLOW ARROW						1			3	MOUNT ON SIGNAL POLE
5	R5-1	DO NOT ENTER						1			3	MOUNT ON SIGNAL POLE
6	R10-50L	LEFT TURN YIELD ON FLASHING YELLOW ARROW						1				MOUNT ON LIGHT POLE
7	R4-7	KEEP RIGHT						1			6	MOUNT ON LIGHT POLE
8	R1-1F	FOLDING STOP						1			6	MOUNT ON LIGHT POLE
9	R4-7	KEEP RIGHT					1	1		1		
10	W3-3	SIGNAL AHEAD					1	1		1		
UNDISTRIBUTED				20.000	20.000	2	2		2	2	--	--
TOTALS				20.000	20.000	2	4	10	2	5	--	--

STH 241 & W. GRANGE AVENUE  
MILWAUKEE COUNTY  
CATEGORY 0030  
S40-1110

REMOVE COMMUNICATIONS VAULT	
204.9060.S.01 REMOVING COMMUNICATIONS VAULT EACH	
VAULT NO.	VAULT EACH
I/C CV6	1
TOTAL	1

COMMUNICATION MANHOLES			
		611.2104 MANHOLES COMMUNICATION 4-FT DIAMETER EACH	611.0557 MANHOLE COVERS TYPE Q COMMUNICATIONS EACH
VAULT NO.	LOCATION*		
I/C CV6	147+70.5, 16.9'LT	1	1
TOTAL		1	1

\* FINAL LOCATION TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

\*\* QUANTITIES SHOWN ELSEWHERE ON PLAN

STH 241 & W. GRANGE AVENUE  
MILWAUKEE COUNTY  
CATEGORY 0020  
S40-1110

REMOVING CONCRETE BASES	
204.0195 REMOVING CONCRETE BASES EACH	
SIGNAL BASE NO.	
SB4	1
SB11	1
**TOTAL	2

CONDUIT		
652.0225 CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH L.F.		
FROM	TO	
PB4	SB4	5
PB9	SB11	4
TOTAL		9

PULL BOXES		
653.0900 ADJUSTING PULL BOXES EACH		
PULL BOX NO.	LOCATION	
PB4	147+85.1, 11.3'LT	1
**TOTAL		1

CONCRETE BASES		
654.0102 CONCRETE BASES TYPE 2 EACH		
SIGNAL BASE NO.	LOCATION*	
SB4	147+80.3, 11.3'LT	1
SB11	60+97.4, 5.1'RT	1
TOTAL		2

\* FINAL LOCATION TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

STH 241 & W. GRANGE AVENUE  
MILWAUKEE COUNTY  
CATEGORY 0020  
S40-1110

TRAFFIC SIGNAL CABLE AND WIRE		
		655.0610 ELECTRICAL WIRE LIGHTING 12 AWG
FROM	TO	L.F.
SB4	LUMIN. (2)	234
SB11	LUMIN. (2)	234
TOTAL		468

TRAFFIC SIGNAL CABLE AND WIRE		
		655.0240 CABLE TRAFFIC SIGNAL 7-14 AWG
FROM	TO	L.F.
SB4	HEAD 6	22
SB11	HEAD 28	22
SB11	HEAD 32	22
SB23	HEAD 31	22
TOTAL		88

TRAFFIC SIGNAL MOUNTING HARDWARE	
	658.5069.02 SIGNAL MOUNTING HARDWARE L.S.
LOCATION	
STH 241 & W. GRANGE AVENUE	1
TOTAL	1

TRAFFIC SIGNAL CABLE AND WIRE			
		655.0260	655.0305 CABLE TYPE UF 2-12 AWG GROUNDED
FROM	TO	L.F.	L.F.
CB1	SB4	170	
CB1	SB11	398	
CB1	SB4		170
SB4	SB6		216
SB6	SB1		401
TOTAL		568	787

TRAFFIC SIGNAL CABLE AND WIRE		
		655.0515 ELECTRICAL WIRE TRAFFIC SIGNALS 10 AWG
FROM	TO	L.F.
SB3	SB4	173
SB4	SB5	84
SB10	SB11	135
SB11	SB12	93
TOTAL		485

REMOVE TRAFFIC SIGNALS	
	SPV.0105.02 REMOVE TRAFFIC SIGNALS L.S.
LOCATION	
STH 241 & W. GRANGE AVENUE	1
TOTAL	1

POLES				
	657.0255 BASES BREAKAWAY 11 1/2-INCH BOLT CIRCLE EACH	657.0310 POLES TYPE 3 EACH	657.0609 LUMINAIRE ARMS SINGLE MEMBER 4-INCH CLAMP 6-FT EACH	659.0125 LUMINAIRES UTILITY HPS 250 WATTS EACH
SIGNAL BASE NO.				
SB4	1	1	2	2
SB11	1	1	2	2
TOTAL	2	2	4	4

FACES						
	658.0115 TRAFFIC SIGNAL FACE 4-12 INCH VERTICAL EACH	658.0220 BACKPLATES SIGNAL FACE 4 SECTION 12-INCH EACH	658.0615 LED MODULES 12-INCH RED ARROW EACH	658.0620 LED MODULES 12-INCH YELLOW ARROW EACH	658.0625 LED MODULES 12-INCH GREEN ARROW EACH	
SIGNAL HEAD NO.	SIGNAL BASE NO.					
HEAD 6	SB4	1	1	1	2	1
HEAD 28	SB11	1	1	1	2	1
HEAD 31	SB23	1	1	1	2	1
HEAD 32	SB11	1	1	1	2	1
**TOTAL		4	4	4	8	4

\*\* QUANTITIES SHOWN ELSEWHERE ON PLAN

STH 241 & W. LAYTON AVENUE  
MILWAUKEE COUNTY  
CATEGORY 0020  
S40-1077

PULL BOXES		
		653.0900
PULL BOX NO.	LOCATION	ADJUSTING PULL BOXES EACH
PB17	198+94.2, 17.1'LT	1
TOTAL		1

TRAFFIC SIGNAL MOUNTING HARDWARE	
658.5069.01	
SIGNAL MOUNTING HARDWARE L.S.	
LOCATION	
STH 241 & W. LAYTON AVENUE	
1	
TOTAL	
1	

		FACES				
		658.0110	658.0215	658.0615	658.0620	658.0625
		TRAFFIC	BACKPLATES			
		SIGNAL FACE	SIGNAL FACE	LED MODULES	LED MODULES	LED MODULES
		3-12 INCH	3 SECTION	12-INCH	12-INCH	12-INCH
SIGNAL HEAD NO.	SIGNAL BASE NO.	VERTICAL EACH	12-INCH EACH	RED ARROW EACH	YELLOW ARROW EACH	GREEN ARROW EACH
HEAD 5	SB1	1	1	1	1	1
HEAD 12	SB11	1	1	1	1	1
**TOTAL		2	2	2	2	2

REMOVING CONCRETE BASES	
204.0195	
REMOVING CONCRETE BASES EACH	
SIGNAL BASE NO.	
SB13	1
**TOTAL	
1	

TRAFFIC SIGNAL CABLE AND WIRE		
655.0230		
CABLE TRAFFIC SIGNAL 5-14 AWG L.F.		
FROM	TO	
SB1	HEAD 5	19
SB11	HEAD 12	19
TOTAL		38

REMOVE TRAFFIC SIGNALS	
SPV.0105.01	
REMOVE TRAFFIC SIGNALS L.S.	
LOCATION	
STH 241 & W. LAYTON AVENUE	
1	
TOTAL	
1	

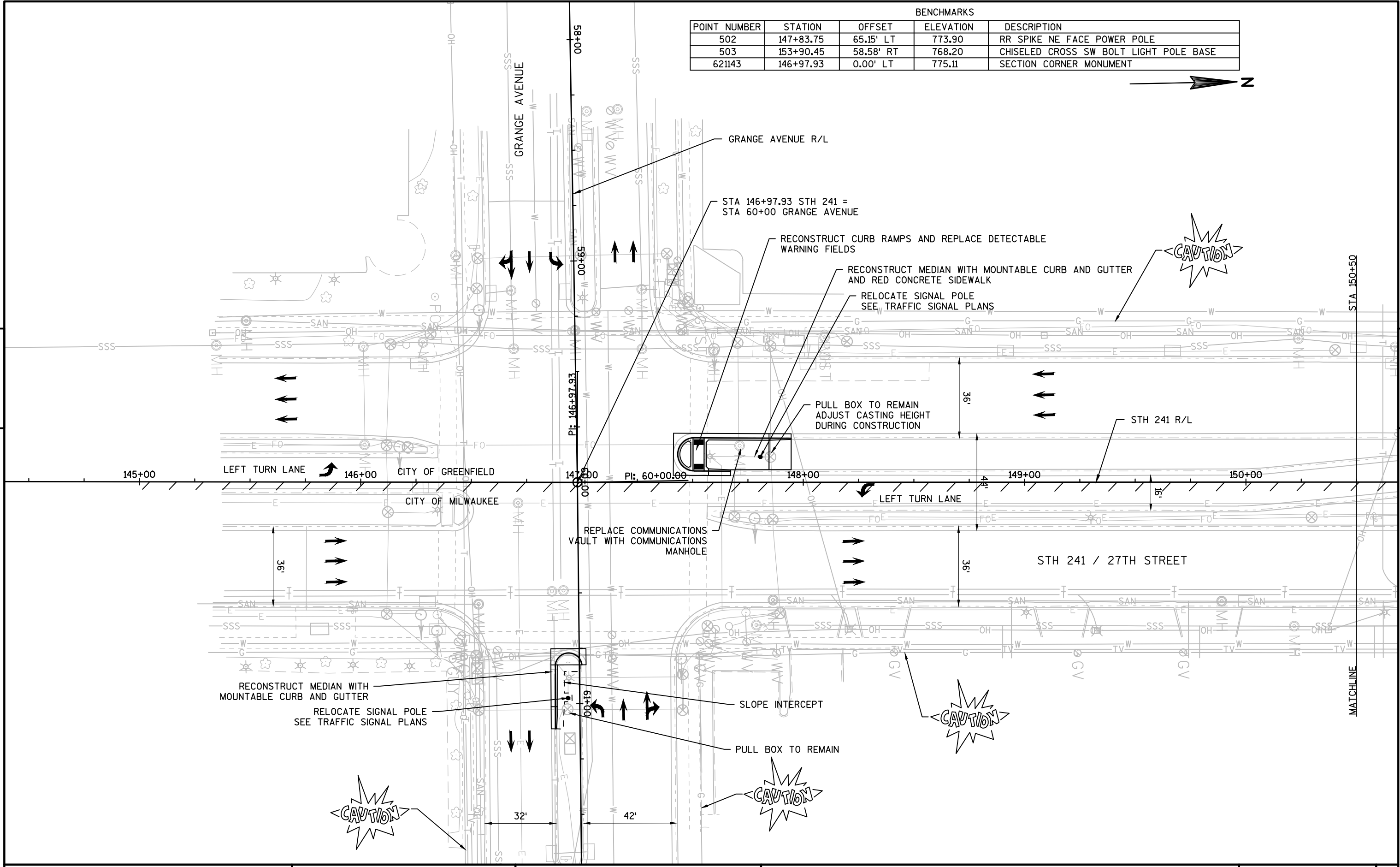
\*\* QUANTITIES SHOWN ELSEWHERE ON PLAN

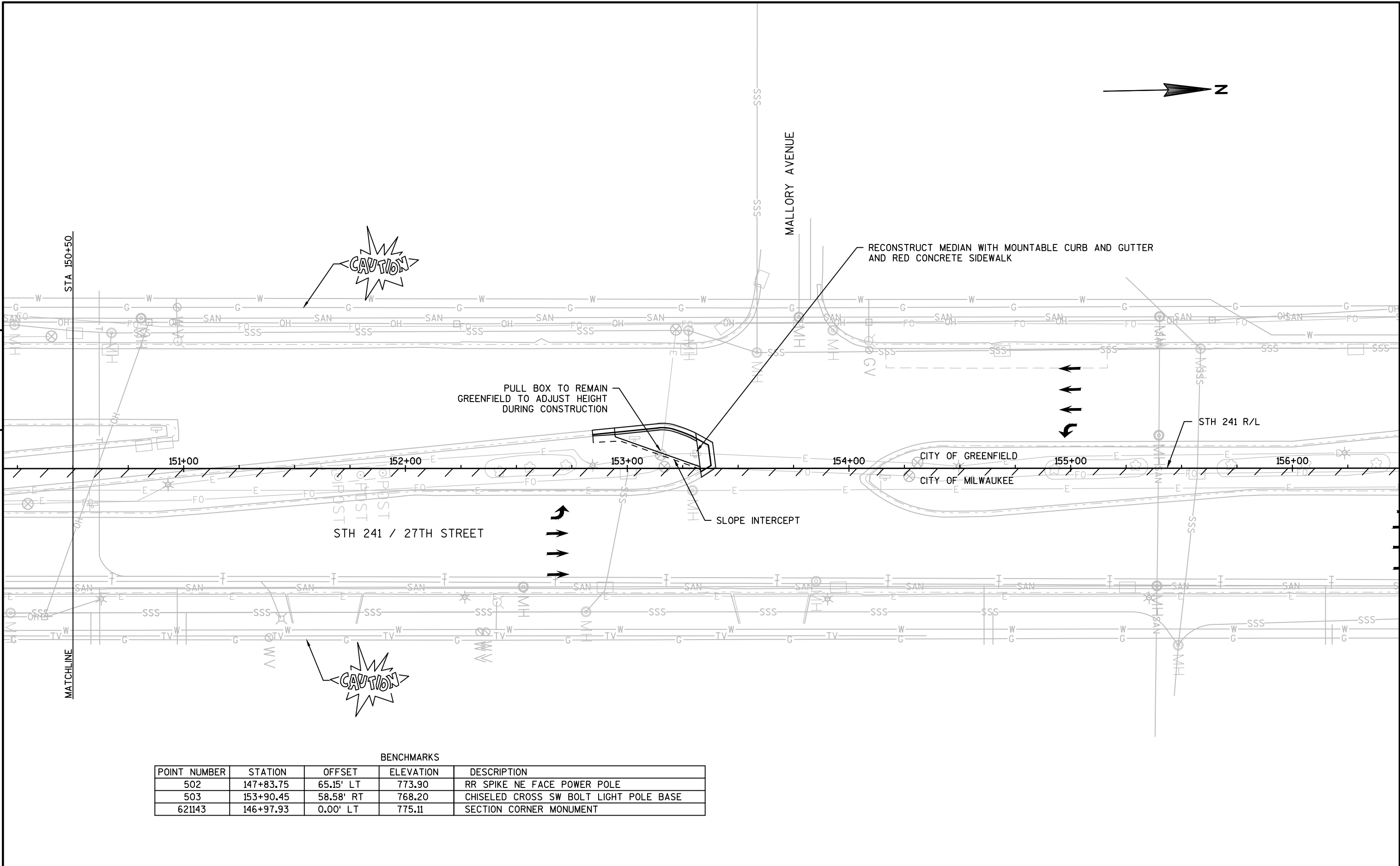
BENCHMARKS				
POINT NUMBER	STATION	OFFSET	ELEVATION	DESCRIPTION
502	147+83.75	65.15' LT	773.90	RR SPIKE NE FACE POWER POLE
503	153+90.45	58.58' RT	768.20	CHISELED CROSS SW BOLT LIGHT POLE BASE
621143	146+97.93	0.00' LT	775.11	SECTION CORNER MONUMENT



5

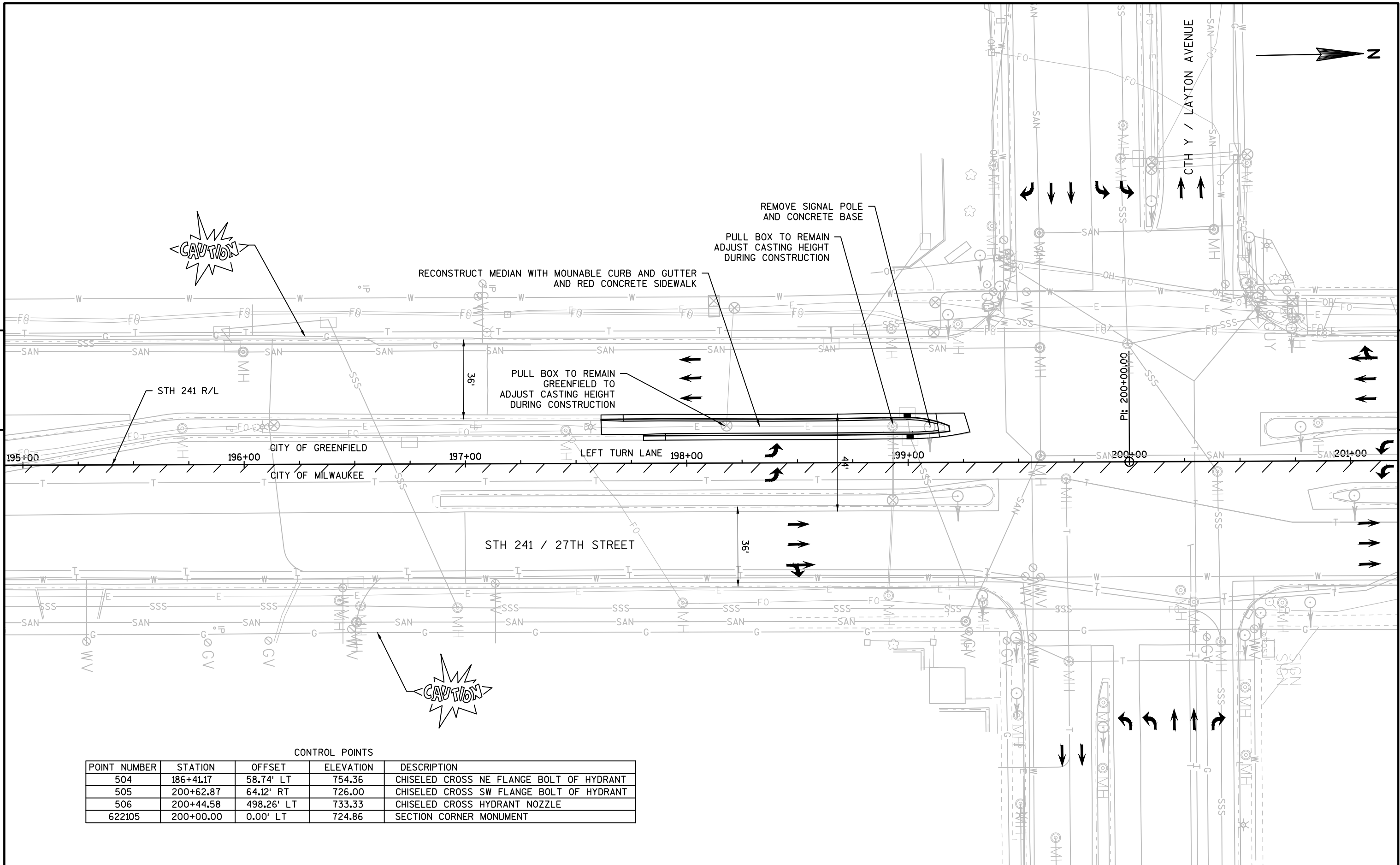
5





BENCHMARKS

POINT NUMBER	STATION	OFFSET	ELEVATION	DESCRIPTION
502	147+83.75	65.15' LT	773.90	RR SPIKE NE FACE POWER POLE
503	153+90.45	58.58' RT	768.20	CHISELED CROSS SW BOLT LIGHT POLE BASE
621143	146+97.93	0.00' LT	775.11	SECTION CORNER MONUMENT

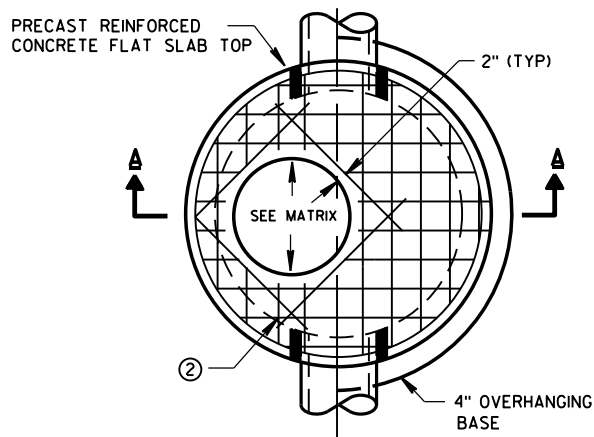


CONTROL POINTS

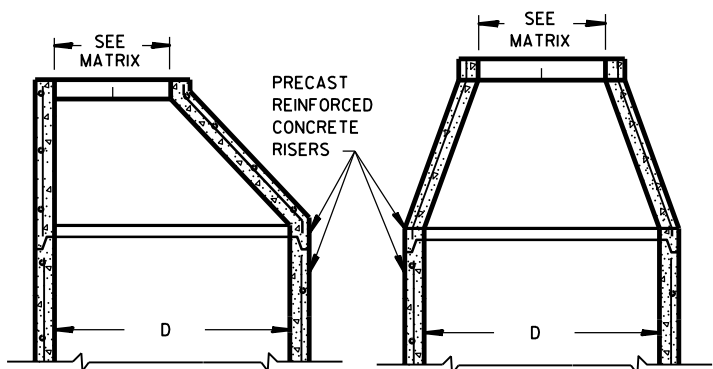
POINT NUMBER	STATION	OFFSET	ELEVATION	DESCRIPTION
504	186+41.17	58.74' LT	754.36	CHISELED CROSS NE FLANGE BOLT OF HYDRANT
505	200+62.87	64.12' RT	726.00	CHISELED CROSS SW FLANGE BOLT OF HYDRANT
506	200+44.58	498.26' LT	733.33	CHISELED CROSS HYDRANT NOZZLE
622105	200+00.00	0.00' LT	724.86	SECTION CORNER MONUMENT

Standard Detail Drawing List

08B09-01	MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER
08D05-16A	CURB RAMPS TYPES 1 AND 1-A
08D05-16B	CURB RAMPS TYPES 2 AND 3
08D05-16C	CURB RAMPS TYPES 4A AND 4A1
08D05-16D	CURB RAMPS TYPE 4B AND 4B1
08D05-16E	CURB RAMPS TYPES 5, 6, 7A, 7B & 8
08D17-06	MANHOLES, MANHOLE & INLET COVERS
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
09B02-09	CONDUIT
09C02-07	CONCRETE BASES, TYPES 1, 2, 5, & 6
09C03-04	TRANSFORMER/PEDESTAL BASES
09E01-14B	POLE MOUNTINGS FOR TRAFFIC SIGNALS AND LIGHTING UNITS, TYPE 3 (HEAVY DUTY)
09E01-14G	HARDWARE DETAILS FOR POLE MOUNTINGS
09E03-05	NON-FREEWAY LIGHTING UNIT POLE WIRING
09H08-02	COMMUNICATIONS MANHOLE DETAILS
11B02-02	CONCRETE MEDIAN NOSE
13C01-18	CONCRETE PAVEMENT LONGI TUDINAL JOINTS AND TIES
13C13-08	URBAN DOWELED CONCRETE PAVEMENT
13C18-03A	CONCRETE PAVEMENT JOINTING
13C18-03B	CONCRETE PAVEMENT STEEL REINFORCEMENT
13C18-03C	CONCRETE PAVEMENT JOINT TIES
13C18-03D	CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES
15C05-02	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M. P. H. OR LESS
15C08-16A	PAVEMENT MARKING (MAINLINE)
15C08-16F	PAVEMENT MARKING (ISLANDS)
15C33-01	STOP LINE AND CROSSWALK PAVEMENT MARKING
15D20-03	TRAFFIC CONTROL, SINGLE LANE CLOSURE, NON-FREEWAY/EXPRESSWAY
15D21-03	TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE
15D30-02A	TRAFFIC CONTROL, PEDESTRIAN ACCOMMODATION
15D30-02B	TRAFFIC CONTROL, TEMPORARY ADA COMPLIANT PEDESTRIAN ACCOMMODATION
15D30-02C	TRAFFIC CONTROL, PEDESTRIAN ACCOMMODATION
16A01-06	LANDMARK REFERENCE MONUMENTS AND COVERS

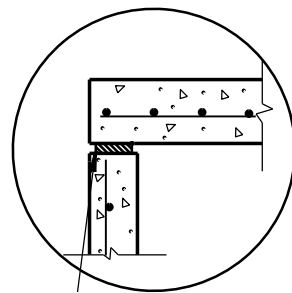


PLAN VIEW CIRCULAR OPENING

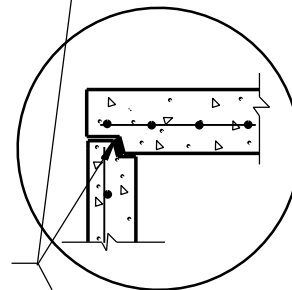


OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

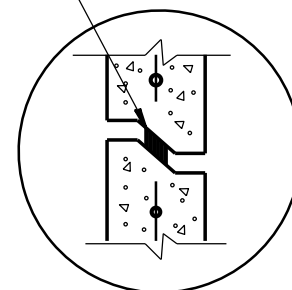
OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP



TOP WITH PLAIN END JOINT



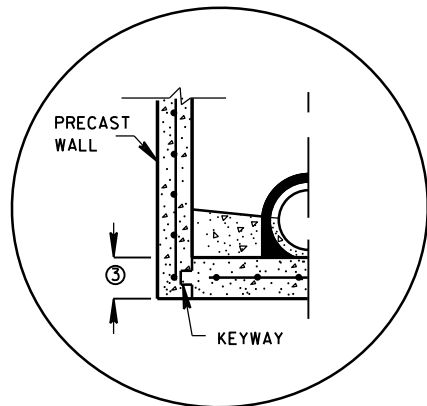
TOP WITH TONGUE AND GROOVE JOINT



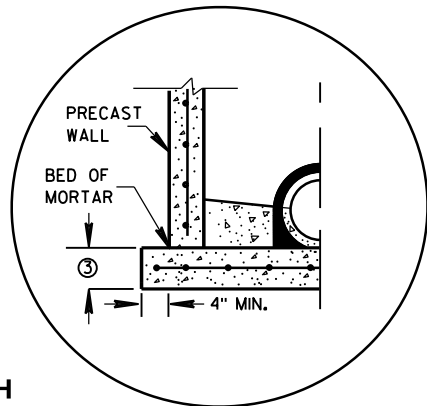
RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"

JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C990 (TYP)

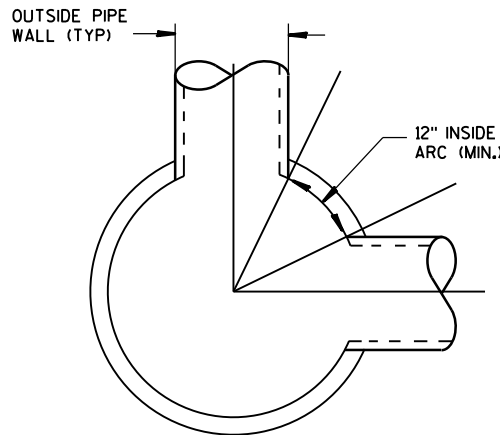


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION

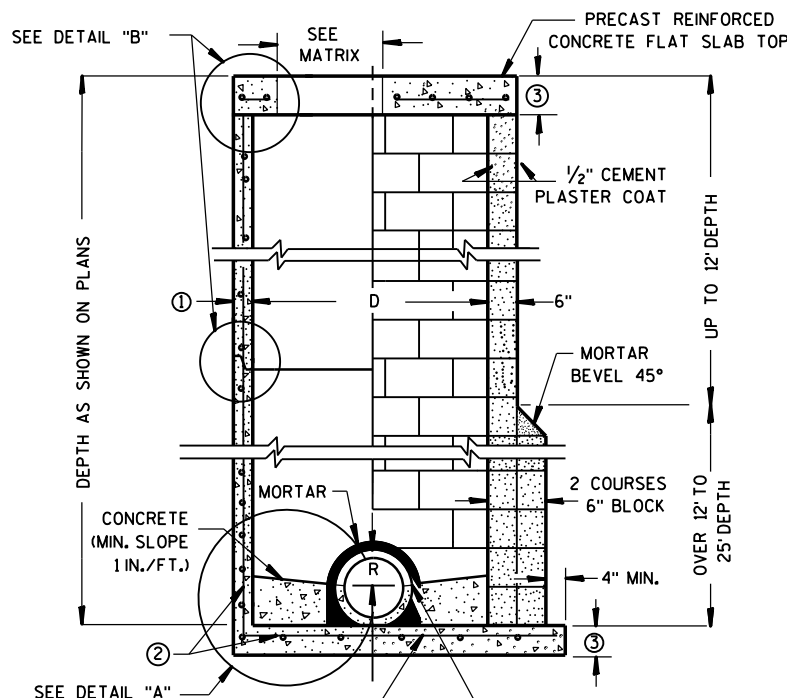


SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "C"



CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES

PRECAST REINFORCED CONCRETE BLOCK WITH CONCRETE WITH MONOLITHIC BASE CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ②

MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS. UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST MANHOLE UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATE THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF GRANULAR BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

PRECAST REINFORCED CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES. THE CONE TOPS SHALL BE INSTALLED ON A BED OF MORTAR.

ECCENTRIC CONE TOPS MAY BE USED ON ALL STRUCTURES, AND CONCENTRIC CONE TOPS SHALL BE USED ONLY ON STRUCTURES 5 FEET OR LESS IN DEPTH, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STEPS MEETING AASHTO M199 AND THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH: 16 INCH C-C MAXIMUM SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM LENGTH OF 10 INCHES; MINIMUM WALL EMBEDMENT OF 3 INCHES. FERROUS METAL STEPS NOT PAINTED OR TREATED TO RESIST CORROSION SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 1 INCH.

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF 1/2" AND MEET THE REQUIREMENTS OF ASTM A615.

CERTIFICATION SHALL BE PROVIDED THAT INSTALLED STEPS WHEN TESTED IN ACCORDANCE WITH SECTION 10 OF AASHTO T280 CAN WITHSTAND A VERTICAL LOAD OF 800 LBS. AND A HORIZONTAL LOAD OF 400 LBS.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

CONCRETE BLOCK WILL NOT BE PERMITTED FOR STRUCTURES GREATER THAN 4 FEET IN DIAMETER.

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

ALL PRECAST MANHOLE UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.

4" OVERHANGING BASES ARE REQUIRED FOR ALL CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

① MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT, 7 INCHES FOR 6-FT, 8 INCHES FOR 7-FT AND 9 INCHES FOR 8-FT DIAMETER PRECAST MANHOLES.

② FOR PRECAST MANHOLES PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.

③ PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".

MANHOLE COVER OPENING MATRIX

MANHOLE COVER TYPE	C	ALL J'S	K	L	M
OPENING SIZE (FT)					
2 DIA.	X	X		X	
3 DIA.			X		X

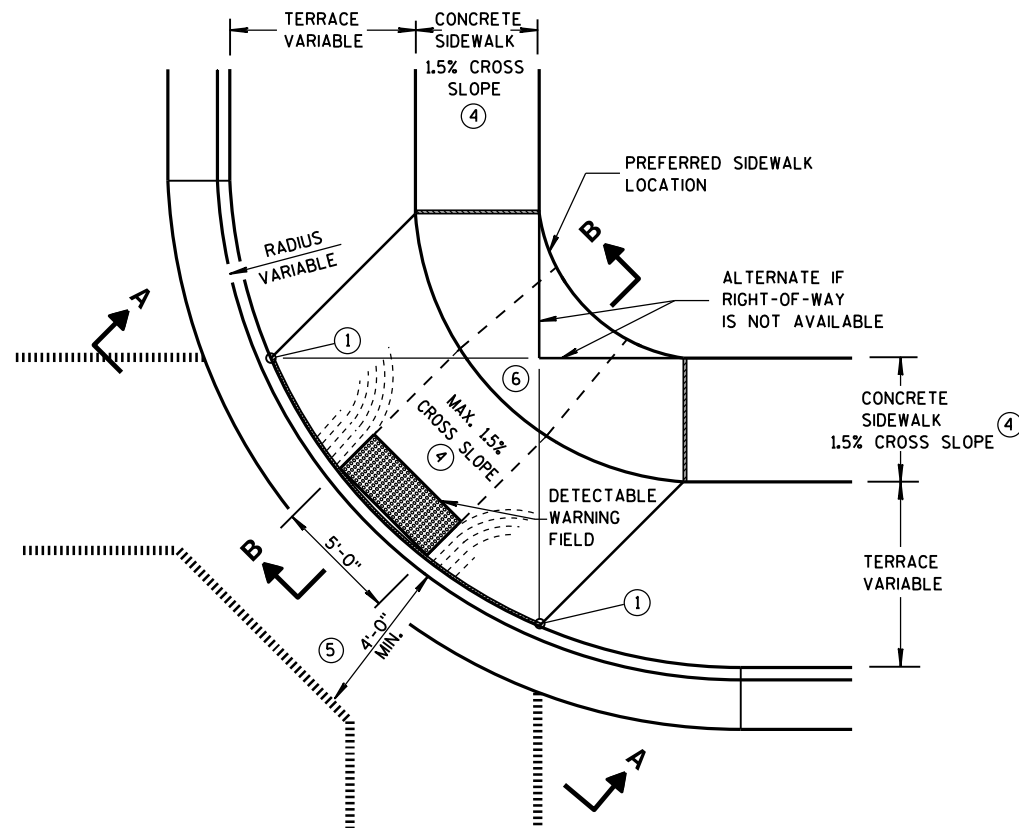
PIPE MATRIX

MANHOLE SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18
5-FT	36	24
6-FT	42	36
7-FT	48	36
8-FT	60	42

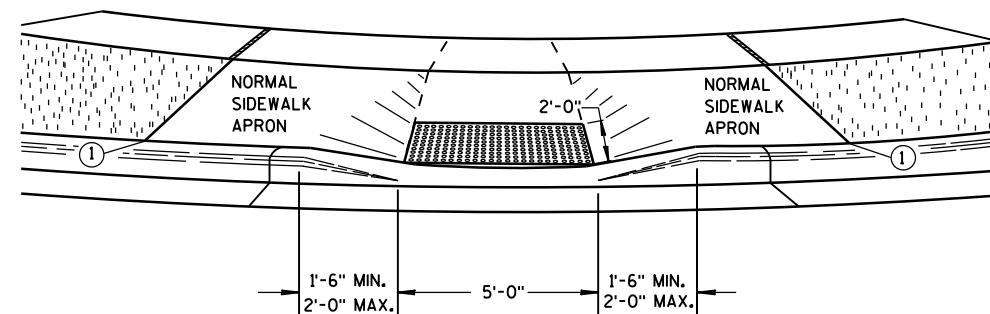
MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
6/5/2012 /S/ Jerry H. Zogg  
DATE ROADWAY STANDARDS DEVELOPMENT  
FHWA ENGINEER

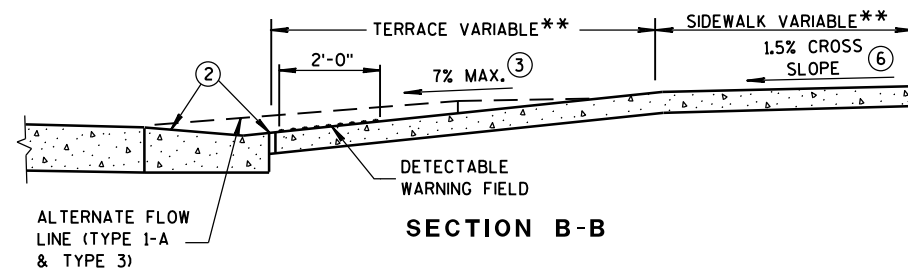


**PLAN VIEW  
TYPE 1 RAMP**  
(CENTER OF CORNER RADIUS)

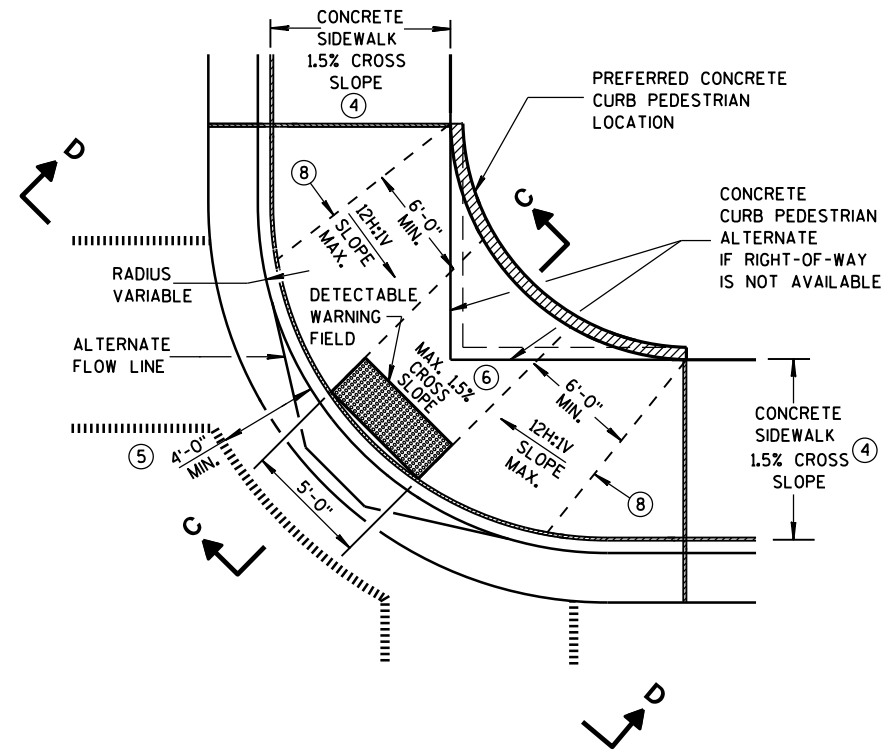


**VIEW A-A**

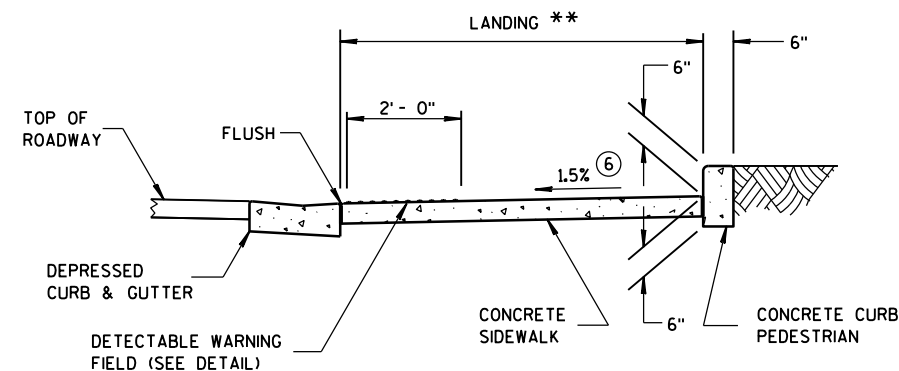
\*\* WIDTH SHOWN ELSEWHERE  
IN THE PLANS



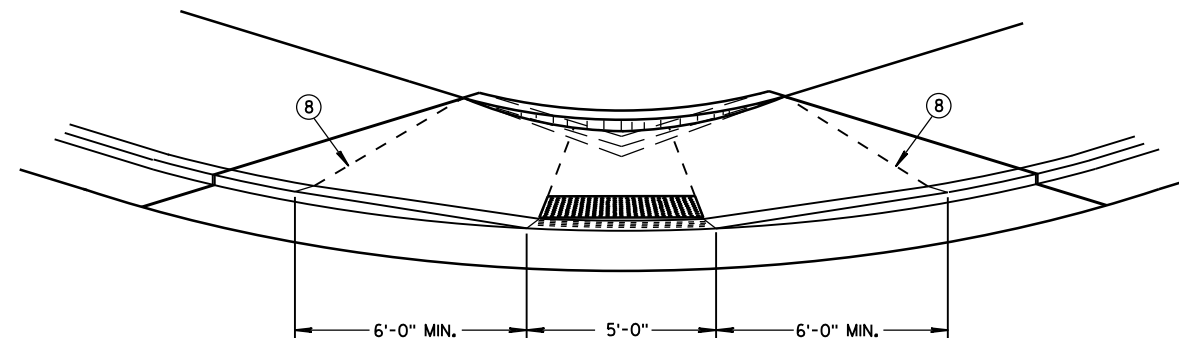
**SECTION B-B**



**PLAN VIEW  
TYPE 1-A RAMP**  
(NO TERRACE)



**SECTION C-C**



**VIEW D-D**

## GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

WHEN NECESSARY, THE SIDEWALK ELEVATION MAY BE LOWERED TO MEET THE HIGH POINT ON THE RAMP.

TYPE 1 RAMPS SHALL HAVE A NORMAL SIDEWALK APRON AND CURB ON BOTH SIDES OF RAMP.

DETECTABLE WARNING FIELD SHALL BE MEASURED AND PAID BY THE SQUARE FOOT AS "CURB RAMP DETECTABLE WARNING FIELD". THE CONCRETE PEDESTRIAN CURB, IF NEEDED, SHALL BE MEASURED AND PAID BY THE LINEAL FOOT AS "CONCRETE CURB PEDESTRIAN". CONCRETE SIDEWALK IN THE CURB RAMP AREA SHALL BE MEASURED AND PAID BY THE SQUARE FOOT AS CONCRETE SIDEWALK, INCLUDING THE AREA UNDER THE DETECTABLE WARNING FIELD.

SELECT CURB RAMP DETECTABLE WARNING FIELD MATERIALS AND DEVICES FROM THE DEPARTMENT'S APPROVED MATERIALS LIST. THE COLOR OF THE DETECTABLE WARNING FIELD IS SPECIFIED ELSEWHERE AND IS INCIDENTAL TO THE BID ITEM OF "CURB RAMP DETECTABLE WARNING FIELD".

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

SURFACE TEXTURE OF THE RAMP SHALL BE OBTAINED BY COARSE BROOMING TRANSVERSE TO THE SLOPE OF THE RAMP.

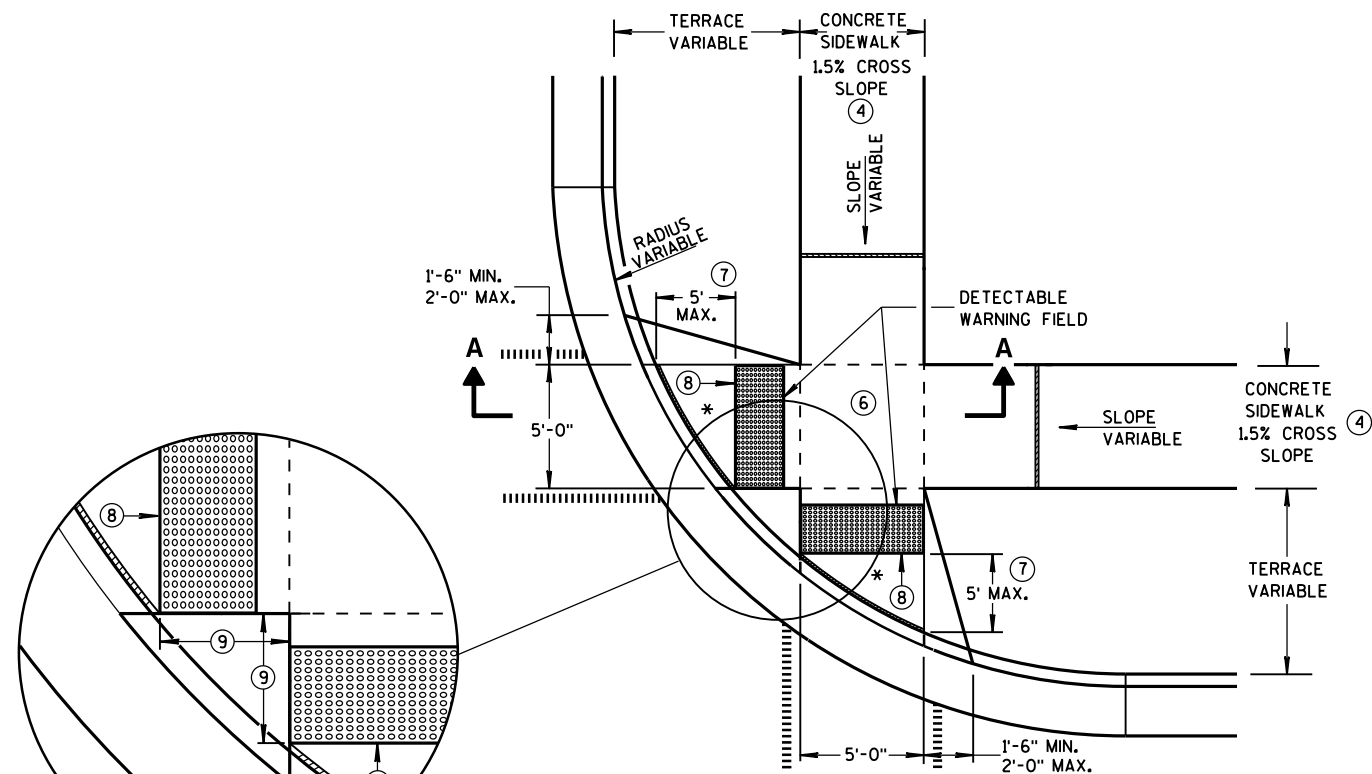
- ① THIS POINT IS AN EXTENSION OF OUTSIDE EDGE OF APPROACHING SIDEWALK WHERE IT MEETS THE BACK OF CONCRETE CURB.
- ② GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE DRAINAGE AWAY FROM CURB RAMP AT GUTTER FLAG INTERFACE. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED.
- ③ ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ④ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- ⑤ PROVIDE A LEVEL LANDING IN THE STREET AND GUTTER AREA. (2% MAXIMUM SLOPE IN ANY DIRECTION). WHEN THE GUTTER SLOPE EXCEEDS 2%, CONSTRUCT THE LEVEL LANDING IN THE STREET AREA.
- ⑥ PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET (MINIMUM 4 FEET X 4 FEET).
- ⑧ PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.

## LEGEND

- 1/2" EXPANSION JOINT-SIDEWALK
- - - - CONTRACTION JOINT FIELD LOCATED
- ||||| PAVEMENT MARKING CROSSWALK (WHITE)
- ALTERNATIVE LAYOUT

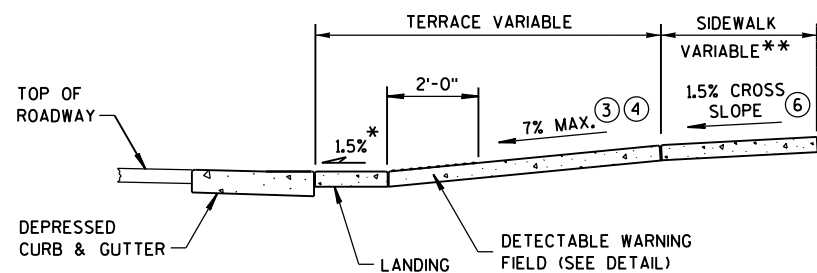
**CURB RAMPS  
TYPES 1 AND 1-A**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



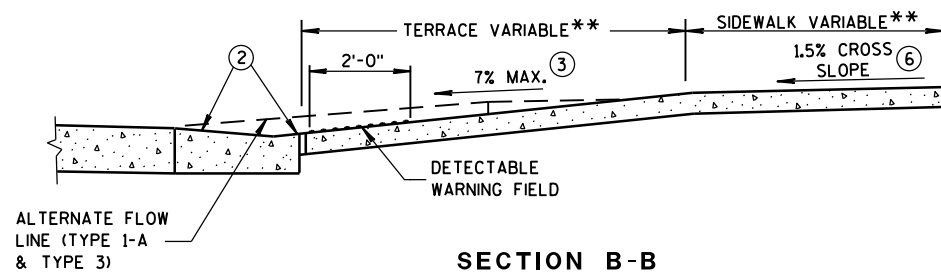
**PLAN VIEW  
TYPE 2 RAMP**  
(ON LINE WITH SIDEWALK)

\* MAXIMUM 2.0% SLOPE  
IN ALL DIRECTIONS IN  
FRONT OF GRADE BREAK



**SECTION A-A**

\*\* WIDTH SHOWN ELSEWHERE  
IN THE PLANS



**SECTION B-B**

## GENERAL NOTES

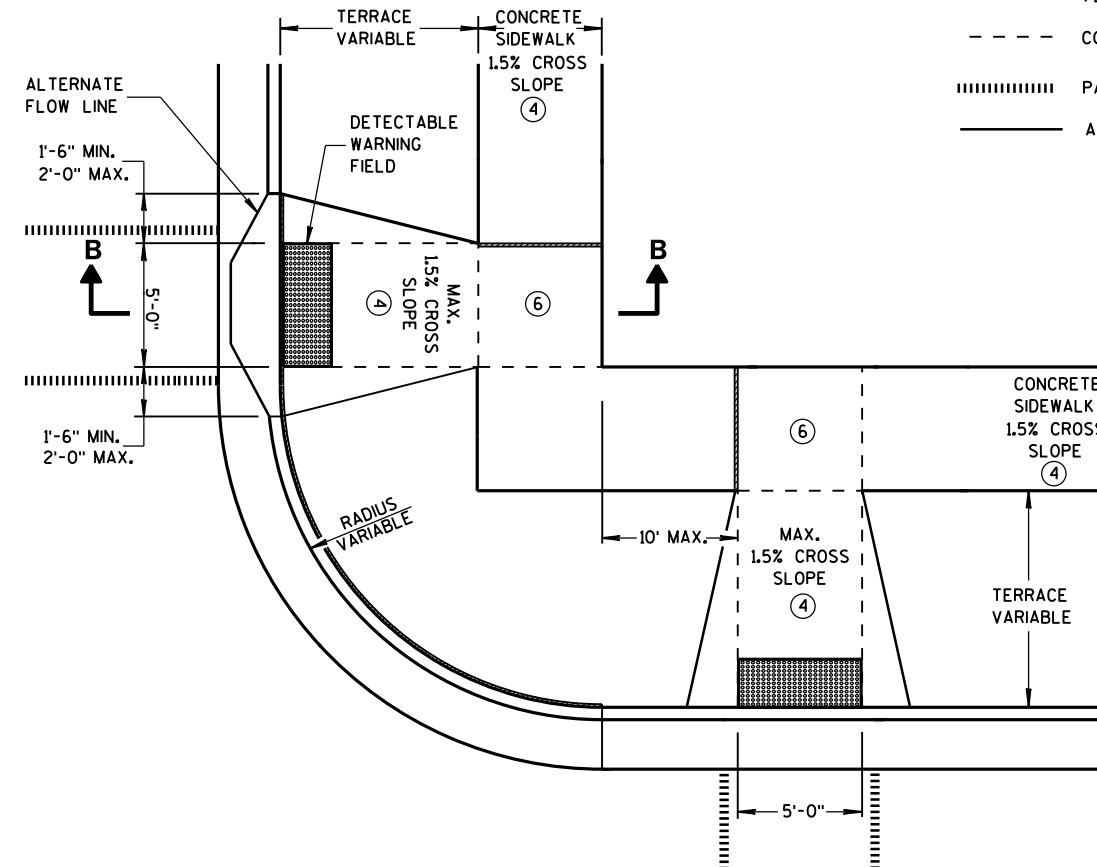
USE THE TYPE 3 RAMP ONLY WHEN A TYPE 1 OR TYPE 2 CANNOT BE ACHIEVED BECAUSE OF FIELD CONDITIONS.

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

- ② GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE DRAINAGE AWAY FROM CURB RAMP AT GUTTER FLAG INTERFACE. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED.
- ③ ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ④ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- ⑥ PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET (MINIMUM 4 FEET X 4 FEET).
- ⑦ WHEN THIS DISTANCE EXCEEDS 5 FEET, USE MULTIPLE DETECTABLE WARNING PANELS ACROSS THE RAMP AND STAGGER ADDITIONAL DETECTABLE WARNING PANEL(S) FORWARD TO REDUCE THIS DISTANCE.
- ⑧ PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.
- ⑨ WHEN THIS DISTANCE IS LESS THAN 6'-0", IT MAY BE DIFFICULT TO ACHIEVE A 7% SLOPE OR FLATTER ALONG THE RAMP. REDUCE CURB HEIGHT IN TRIANGLE AREA TO ACHIEVE 7% SLOPE OR FLATTER ON RAMP. 2" MINIMUM CURB HEIGHT.

## LEGEND

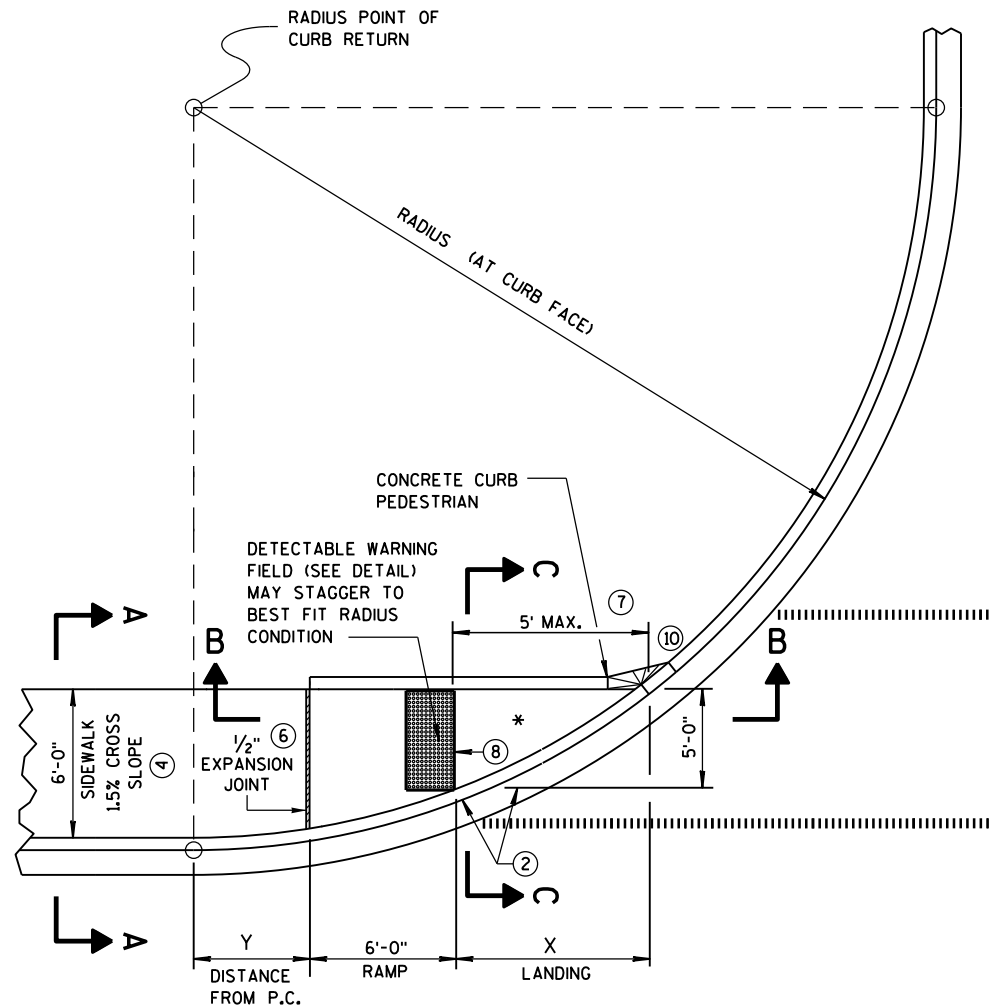
- 1/2" EXPANSION JOINT-SIDEWALK
- - - CONTRACTION JOINT FIELD LOCATED
- ||||| PAVEMENT MARKING CROSSWALK (WHITE)
- ALTERNATIVE LAYOUT



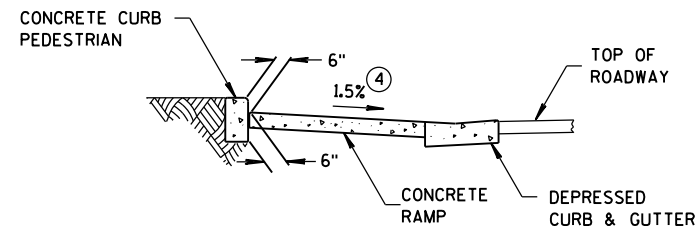
**PLAN VIEW  
TYPE 3 RAMP**  
(OUTSIDE OF CROSSWALK AREA)

**CURB RAMPS  
TYPES 2 AND 3**

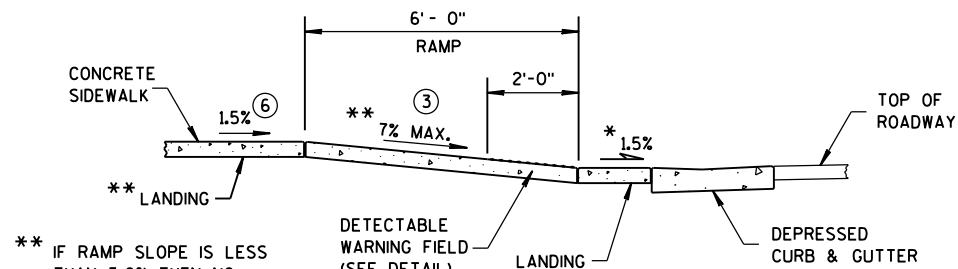
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



**CURB RAMP TYPE 4A**  
PLAN VIEW



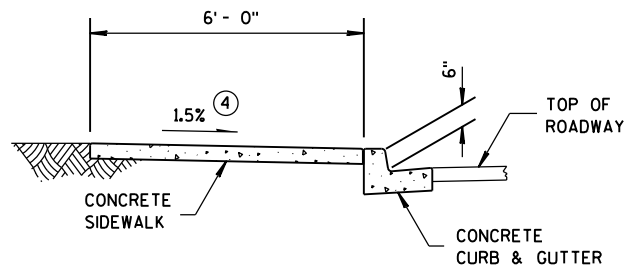
**SECTION C-C FOR TYPE 4A**



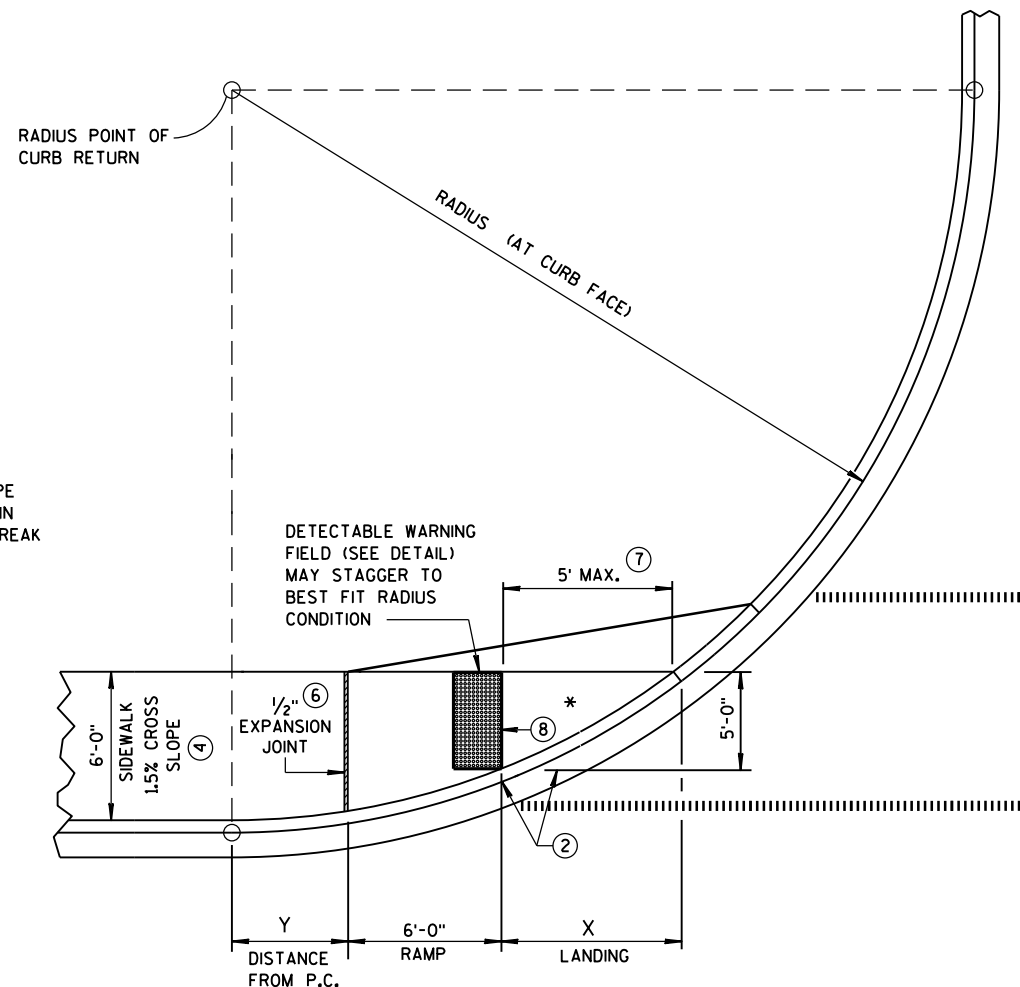
**SECTION B-B FOR TYPE 4A**

RADIUS (AT CURB FACE)	X	Y
20 FEET	6'-1 3/4"	2'-7 1/4"
30 FEET	7'-11 3/4"	4'-8 1/4"
40 FEET	9'-5 1/4"	6'-5"
50 FEET	10'-8 3/4"	7'-11 1/4"
60 FEET	11'-10 1/4"	9'-3 1/2"

INTERMEDIATE RADII CAN BE INTERPOLATED



**SECTION A-A FOR TYPE 4A**



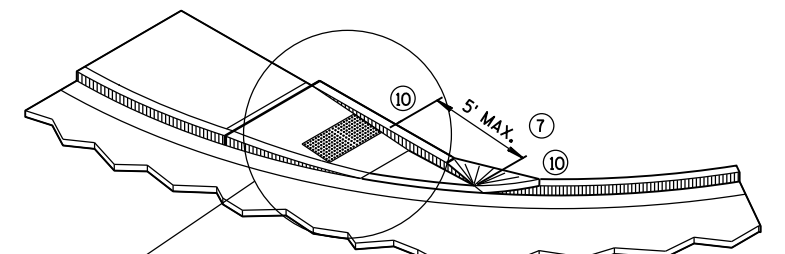
**CURB RAMP TYPE 4A1**  
PLAN VIEW

**GENERAL NOTES**

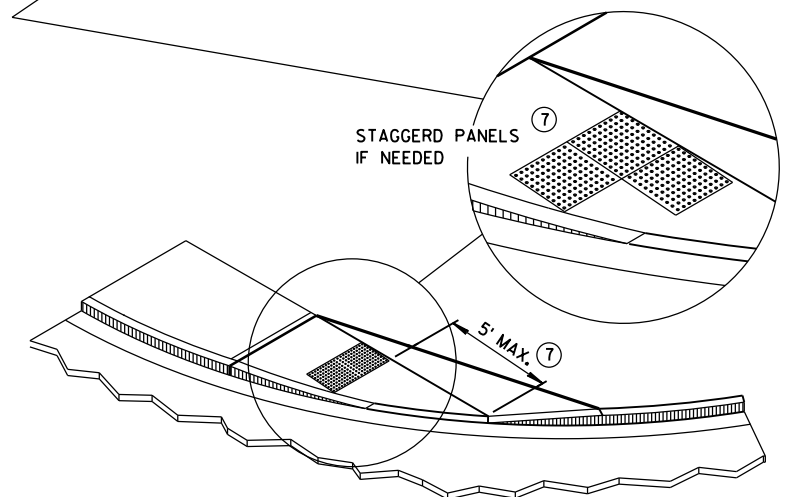
AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

- GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE DRAINAGE AWAY FROM CURB RAMP AT GUTTER FLAG INTERFACE. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED.
- ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET (MINIMUM 4 FEET X 4 FEET).
- WHEN THIS DISTANCE EXCEEDS 5 FEET, USE MULTIPLE DETECTABLE WARNING PANELS ACROSS THE RAMP AND STAGGER ADDITIONAL DETECTABLE WARNING PANEL(S) FORWARD TO REDUCE THIS DISTANCE.
- PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.
- INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS). DO NOT MARK TRANSITION NOSE.



**ISOMETRIC VIEW FOR TYPE 4A**



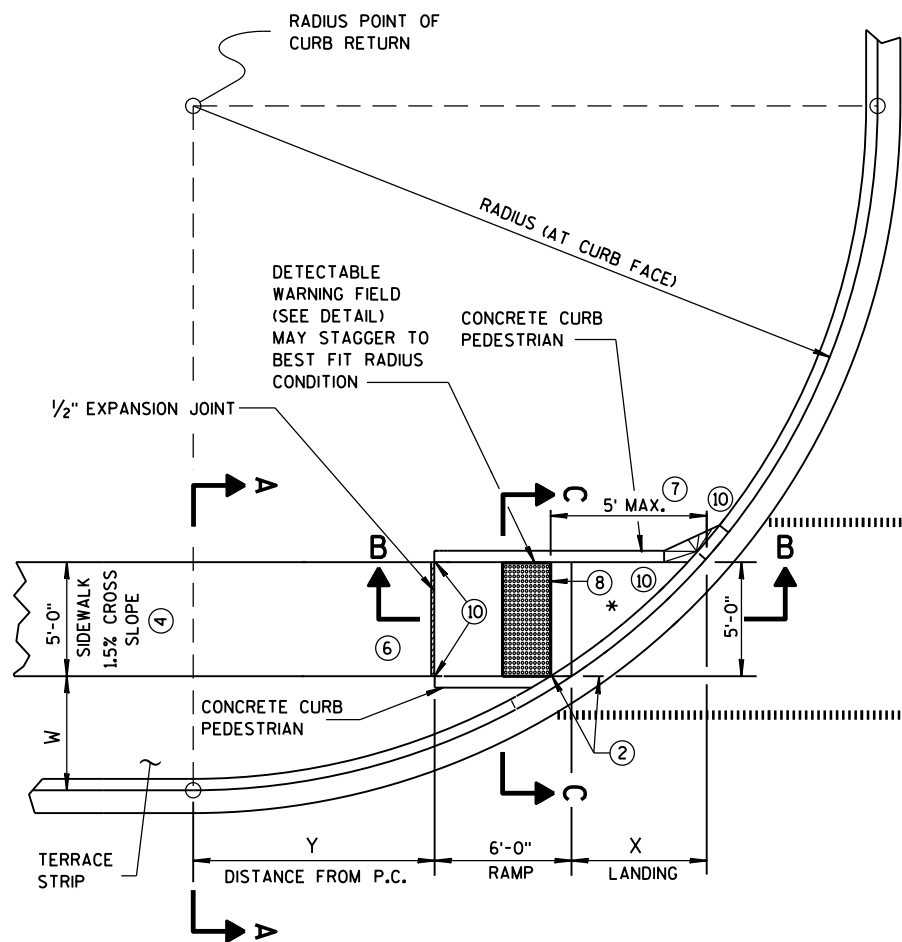
**ISOMETRIC VIEW FOR TYPE 4A1**

**LEGEND**

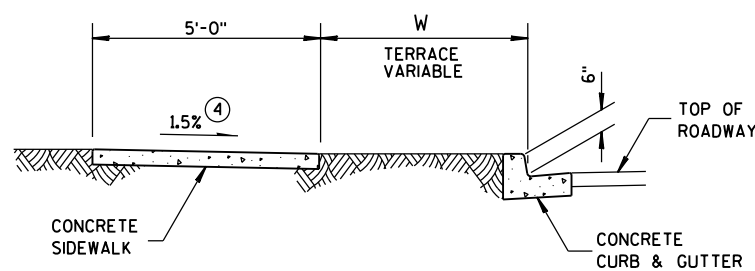
- 1/2" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)

**CURB RAMPS**  
**TYPES 4A AND 4A1**

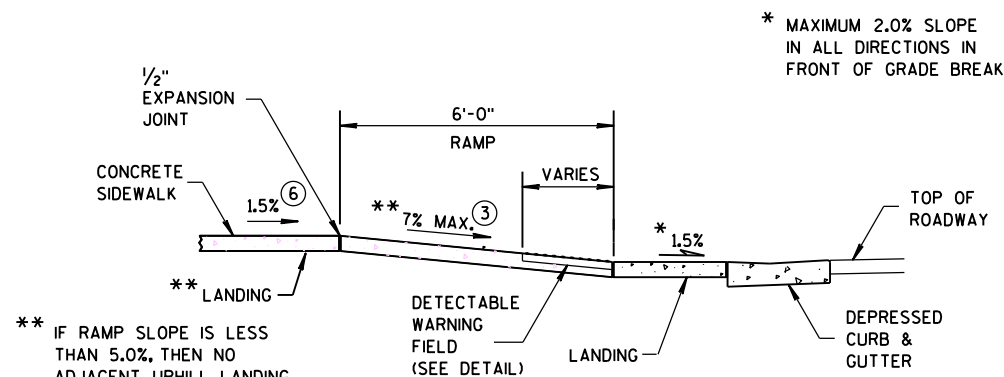
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



**CURB RAMP TYPE 4B  
PLAN VIEW**



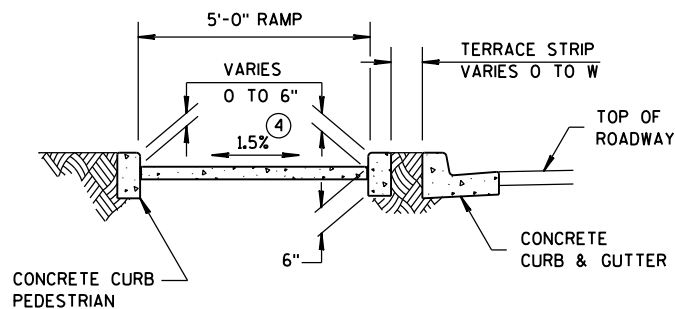
**SECTION A-A FOR TYPE 4B**



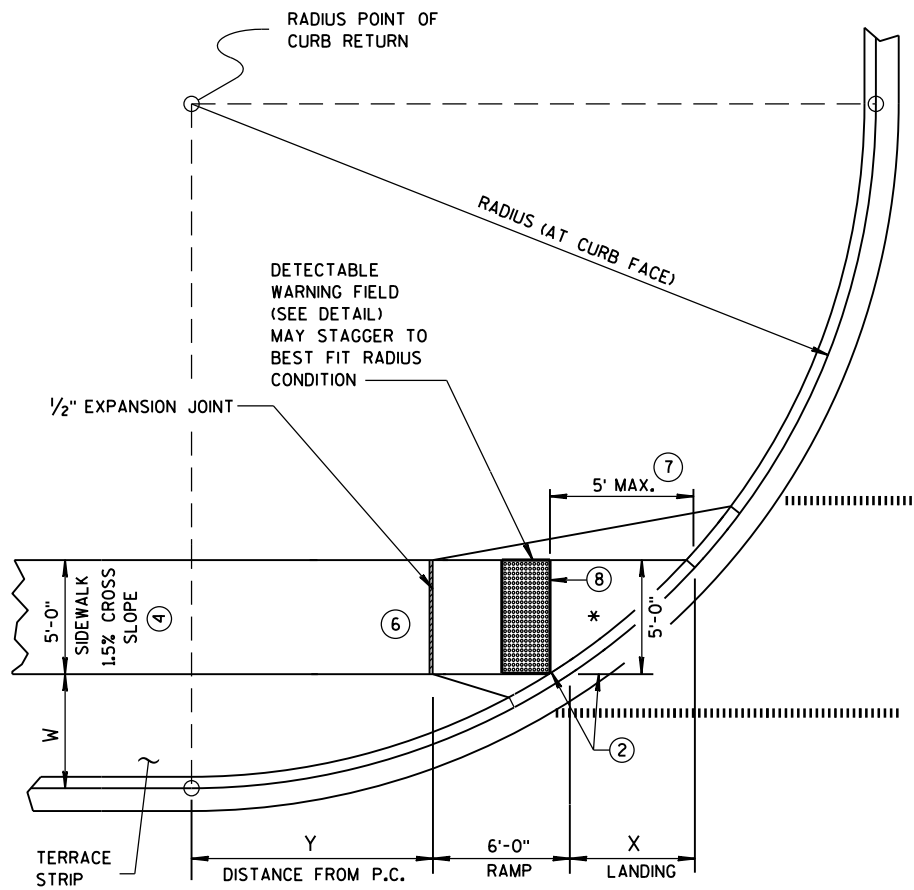
**SECTION B-B FOR TYPE 4B**

\*\* IF RAMP SLOPE IS LESS THAN 5.0%, THEN NO ADJACENT UPHILL LANDING IS REQUIRED

- LEGEND**
- 1/2" EXPANSION JOINT-SIDEWALK
  - CONTRACTION JOINT FIELD LOCATED
  - PAVEMENT MARKING CROSSWALK (WHITE)



**SECTION C-C FOR TYPE 4B**

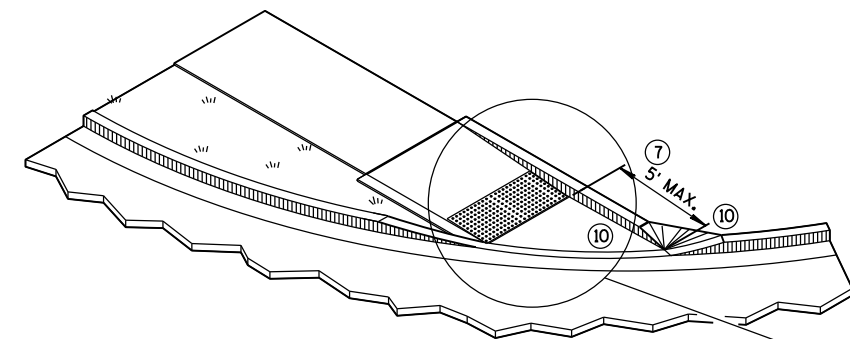


**CURB RAMP TYPE 4B1  
PLAN VIEW**

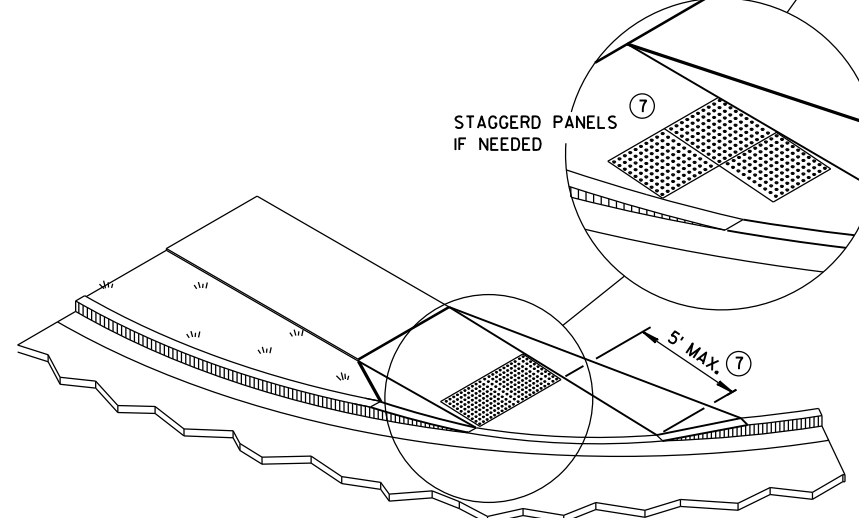
RADIUS (AT CURB FACE)	W = 3' - 0"		W = 4' - 0"		W = 5' - 0"		W = 6' - 0"		W = 7' - 0"	
	X	Y	X	Y	X	Y	X	Y	X	Y
20 FEET	5'-5 1/2"	4'-6 1/2"	4'-8 1/2"	6'-0"	4'-1"	7'-2 3/4"	3'-7"	8'-3 1/2"	3'-1 1/2"	9'-2 1/2"
30 FEET	7'-3 3/4"	7'-1"	6'-5 1/2"	8'-11 1/2"	5'-9 1/4"	10'-7"	5'-2 1/2"	12'-0"	4'-8 3/4"	13'-3 1/4"
40 FEET	8'-9 1/2"	9'-2 1/2"	7'-10"	11'-5 1/4"	7'-1"	13'-4 1/2"	6'-5 3/4"	15'-3/4"	5'-11 1/2"	16'-7 1/4"
50 FEET	10'-3/4"	11'-3/4"	9'-1/4"	13'-7 1/4"	8'-2 1/2"	15'-9 1/2"	7'-6 1/2"	17'-9"	6'-11 3/4"	19'-6 1/4"
60 FEET	11'-2 1/2"	12'-8 3/4"	10'-3/4"	15'-6 1/2"	9'-2 1/4"	17'-11 3/4"	8'-5 3/4"	20'-1 3/4"	7'-10 1/2"	22'-1 1/2"

**GENERAL NOTES**

- INTERMEDIATE RADII CAN BE INTERPOLATED
- AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS. DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.
- 2 GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE DRAINAGE AWAY FROM CURB RAMP AT GUTTER FLAG INTERFACE. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED.
  - 3 ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
  - 4 ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
  - 6 PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET (MINIMUM 4 FEET X 4 FEET).
  - 7 WHEN THIS DISTANCE EXCEEDS 5 FEET, USE MULTIPLE DETECTABLE WARNING PANELS ACROSS THE RAMP AND STAGGER ADDITIONAL DETECTABLE WARNING PANEL(S) FORWARD TO REDUCE THIS DISTANCE.
  - 8 PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.
  - 10 INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS). DO NOT MARK TRANSITION NOSE.



**ISOMETRIC VIEW FOR TYPE 4B**



**ISOMETRIC VIEW FOR TYPE 4B1**

**CURB RAMPS  
TYPE 4B AND 4B1**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



\*\*\* DETAILS TO BE DETERMINED  
BY DESIGNER



NOTE: THESE PARALLEL AND PARALLEL/PERPENDICULAR CURB RAMPS  
MAY BE USED AT INTERSECTIONS AND MID BLOCK LOCATIONS.

- ② GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE DRAINAGE AWAY FROM CURB RAMP AT GUTTER FLAG INTERFACE. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED.
- ③ ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ④ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- ⑥ PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET (MINIMUM 4 FEET X 4 FEET).
- ⑩ INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS). DO NOT MARK TRANSITION NOSE.
- ⑪ SLOPE SIDEWALK TOWARD LANDING AS SHOWN WHERE THERE IS NO TERRACE OR WHERE THE TERRACE WIDTH IS LESS THAN 6 FEET WIDE.
- ⑫ THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO A RAILROAD CROSSING SHALL BE 15 FEET ± 0.1' FROM THE FACE OF THE GATE ARM IF THE GATE ARM EXTENDS ACROSS THE SIDEWALK. WHERE THERE IS NO PEDESTRIAN GATE, THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO THE RAILROAD CROSSING SHALL BE 15 FEET FROM THE NEAREST RAIL.
- ⑬ DO NOT INSTALL DETECTABLE WARNING FIELDS IF MEDIAN WIDTH BETWEEN BACK OF CURBS IS LESS THAN 6 FEET.



\* THE C DIMENSION IS 50% TO 65% OF THE D DIMENSION.



### TRUNCATED DOMES DETECTABLE WARNING PATTERN DETAIL



### DETECTABLE WARNING FIELD (TYPICAL)

### CURB RAMPS TYPES 5, 6, 7A, 7B & 8

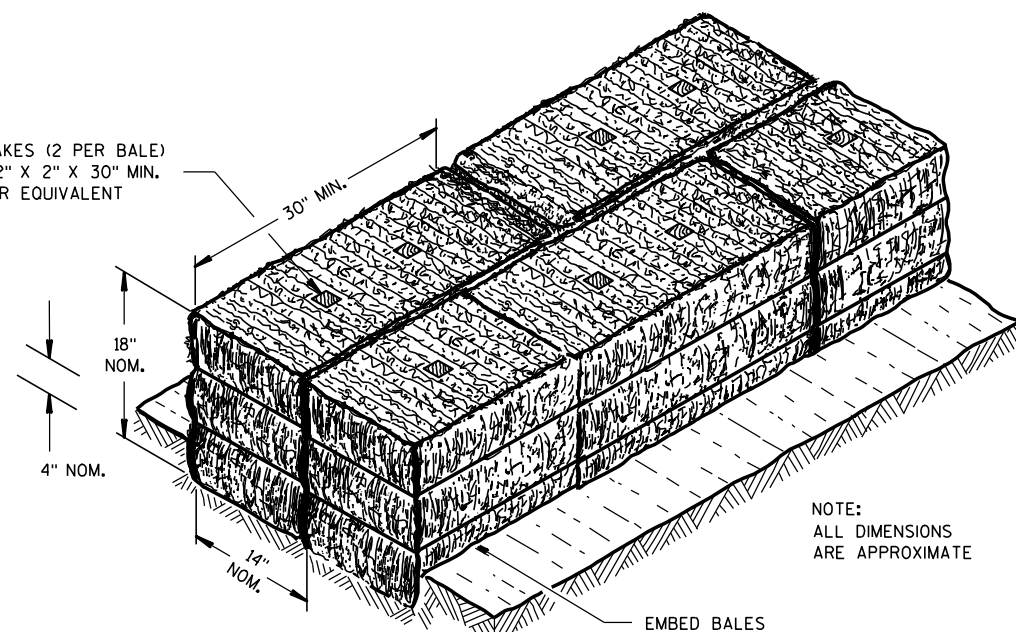
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
June, 2015  
DATE  
FHWA

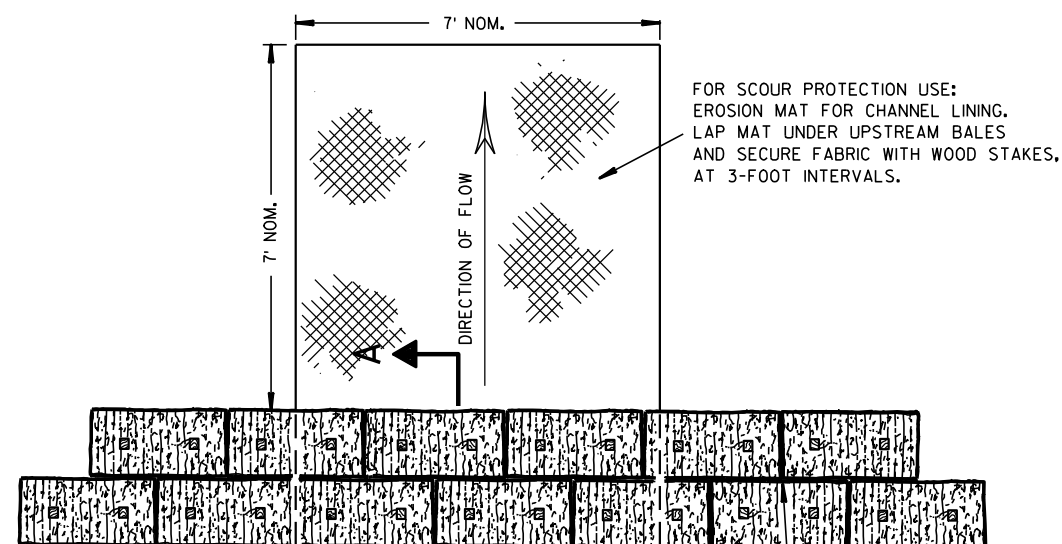
/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER



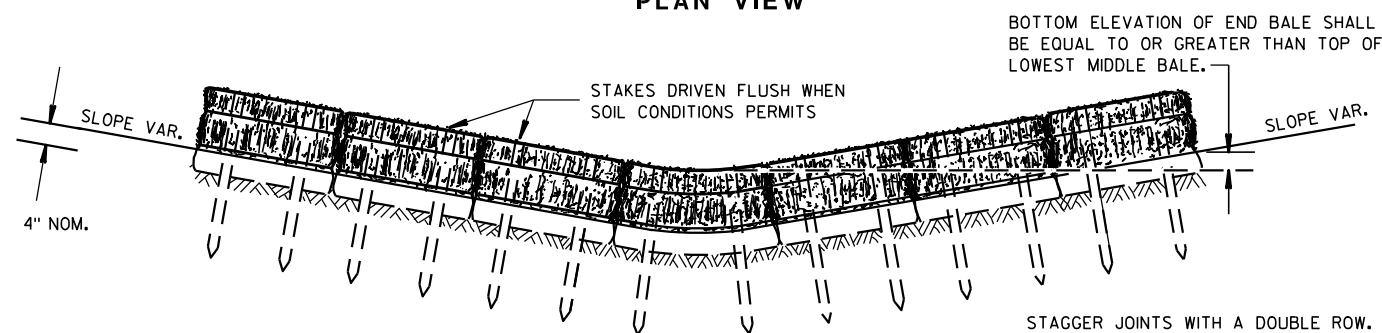
WOOD STAKES (2 PER BALE)  
NOMINAL 2" X 2" X 30" MIN.  
LENGTH OR EQUIVALENT



SECTION A-A



PLAN VIEW



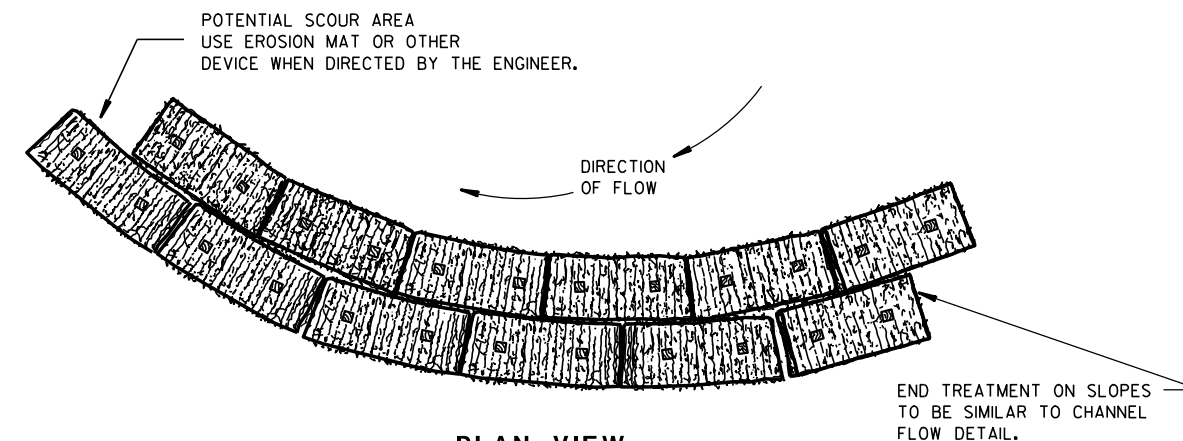
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

## GENERAL NOTES

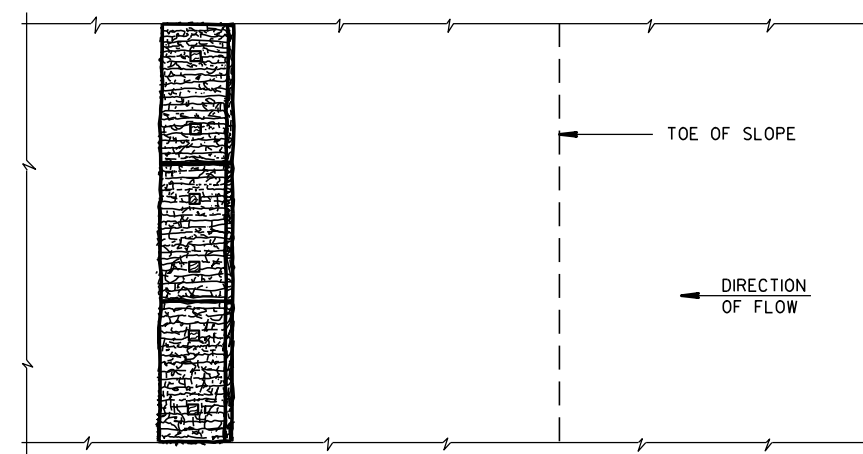
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

- ① TEMPORARY DITCH CHECKS EITHER EROSION BALES OR MANUFACTURED SHALL BE PAID FOR UNDER THE BID ITEM OF TEMPORARY DITCH CHECK. THE DEPARTMENT WILL NOT PAY FOR TEMPORARY DITCH CHECKS CONSTRUCTED OF A SINGLE ROW OF EROSION BALES.

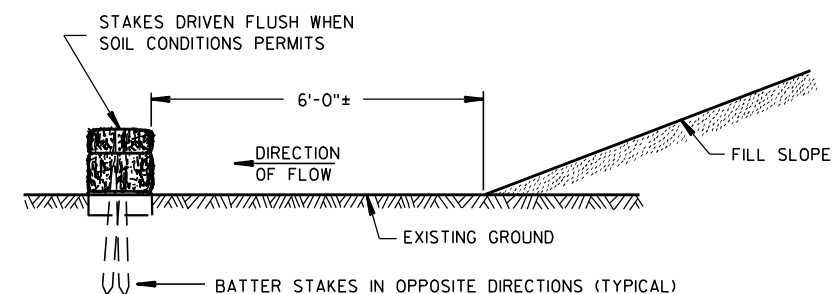


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF  
EROSION BALES / TEMPORARY  
DITCH CHECKS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02  
DATE/S/ Beth Canestra  
CHIEF ROADWAY DEVELOPMENT ENGINEER

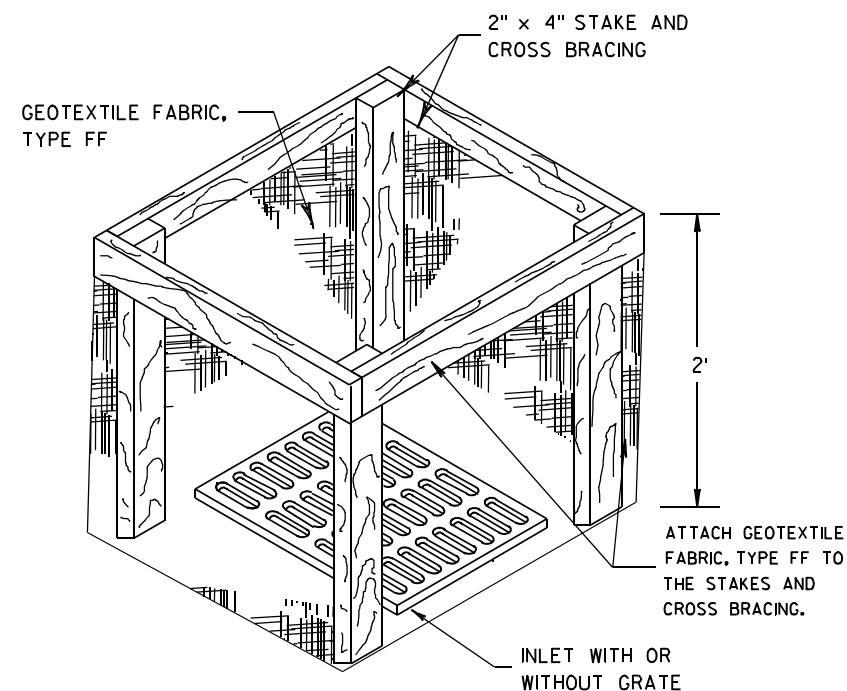
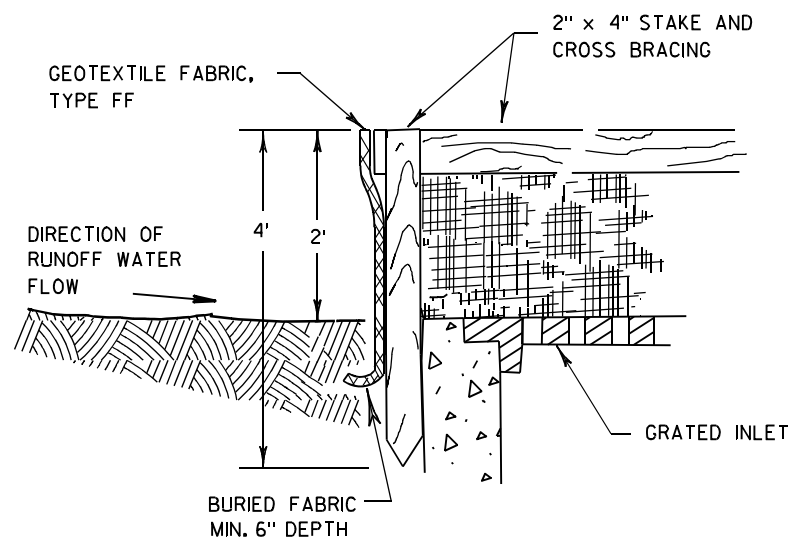
FHWA



- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1½" X 1½" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



<div>SILT FENCE</div>	
<div>STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION</div>	
<div>APPROVED</div>	
<div>4-29-05</div>	<div>/S/ Beth Canestra</div>
<div>DATE</div>	<div>CHIEF ROADWAY DEVELOPMENT ENGINEER</div>
<div>FHWA</div>	



**INLET PROTECTION, TYPE A**

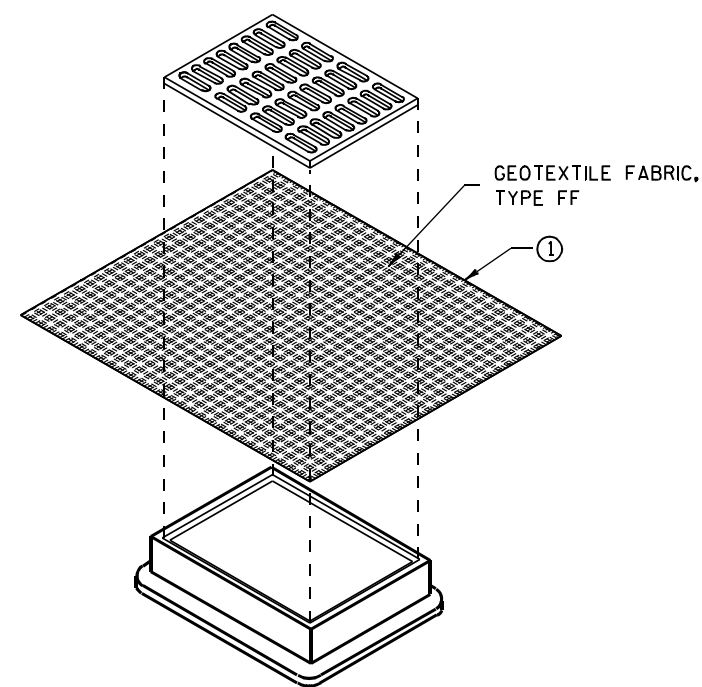
**GENERAL NOTES**

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

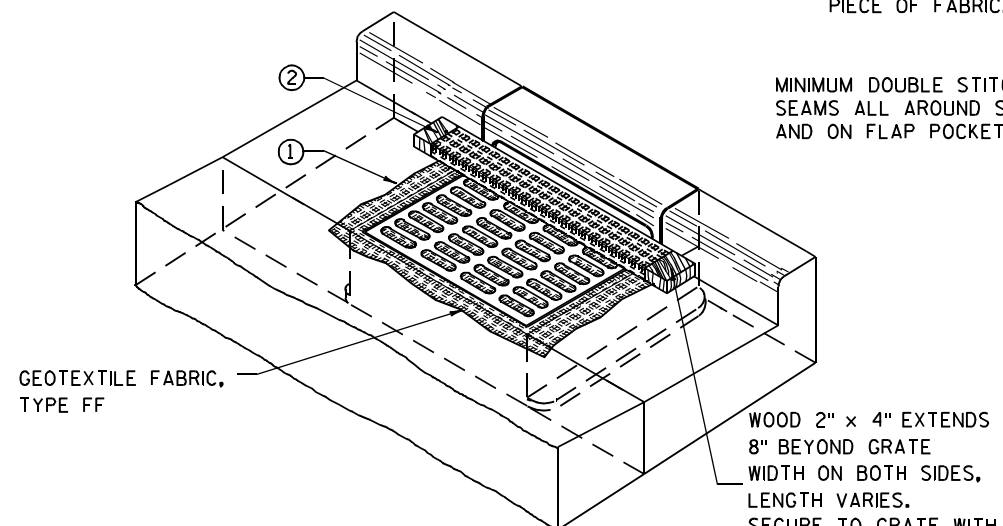
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- ① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
- ③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.



**INLET PROTECTION, TYPE B  
(WITHOUT CURB BOX)**

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



**INLET PROTECTION, TYPE C (WITH CURB BOX)**

**INSTALLATION NOTES**

**TYPE B & C**

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

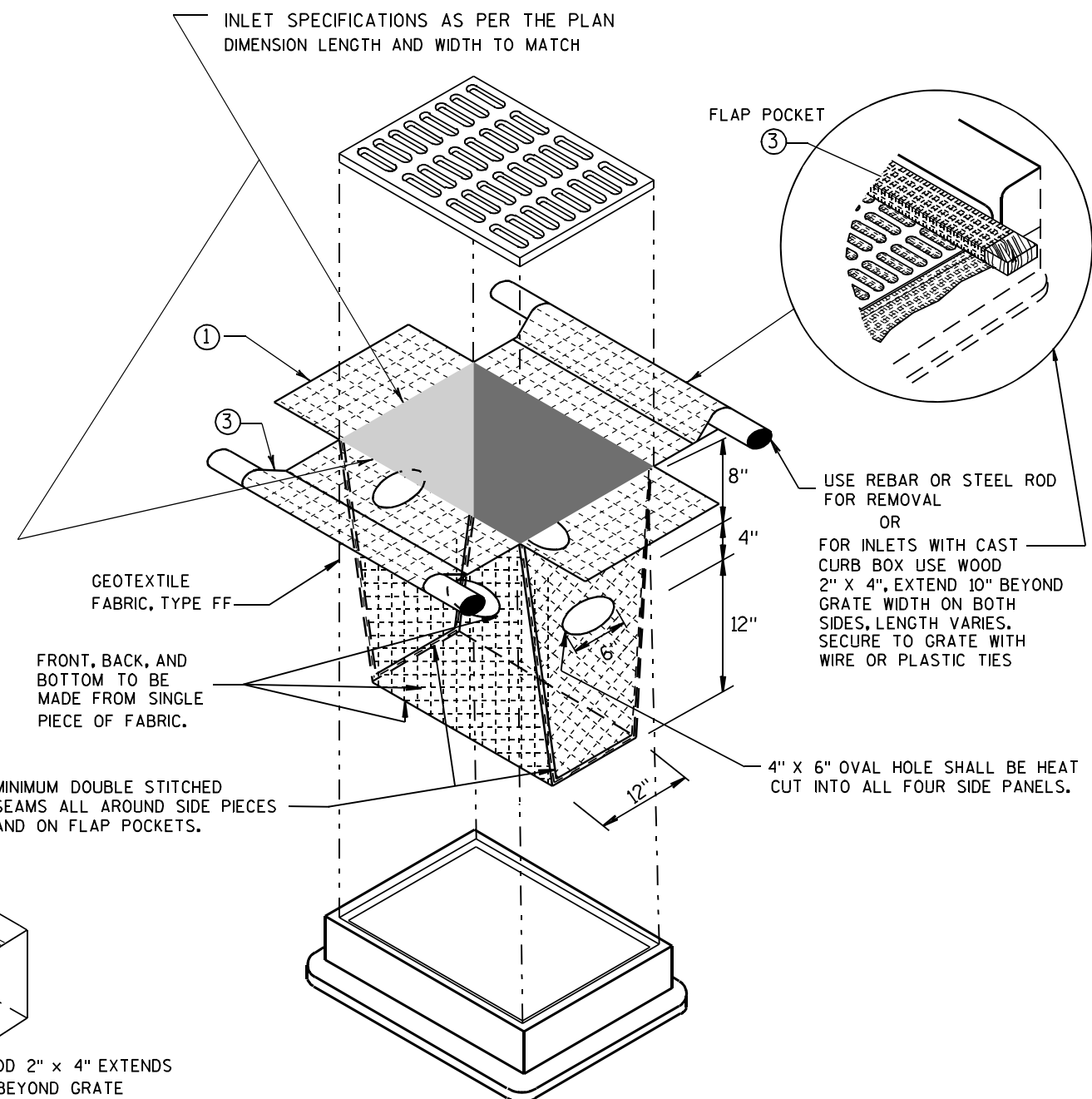
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

**TYPE D**

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.



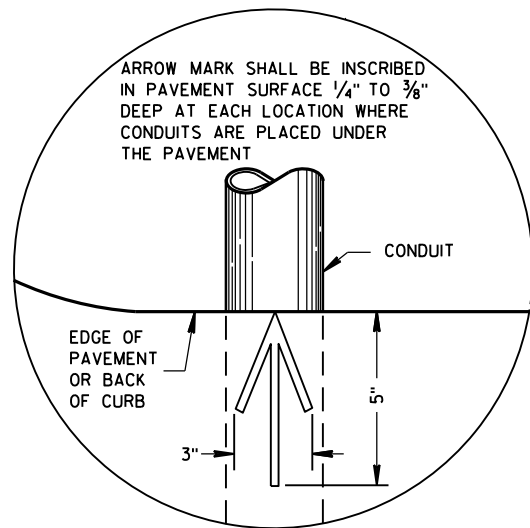
**INLET PROTECTION, TYPE D**

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE ② )

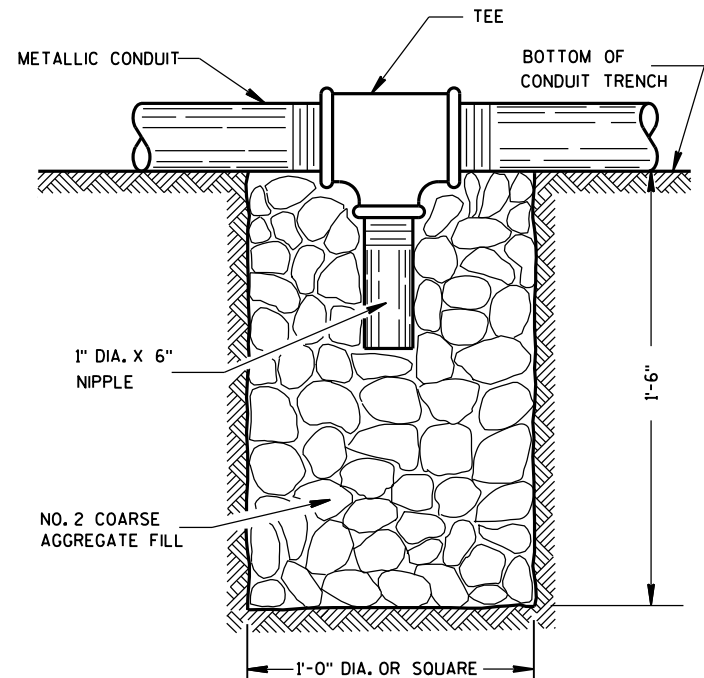
**INLET PROTECTION  
TYPE A, B, C, AND D**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
10/16/02 /S/ Beth Cannestra  
DATE  
FHWA CHIEF ROADWAY DEVELOPMENT ENGINEER

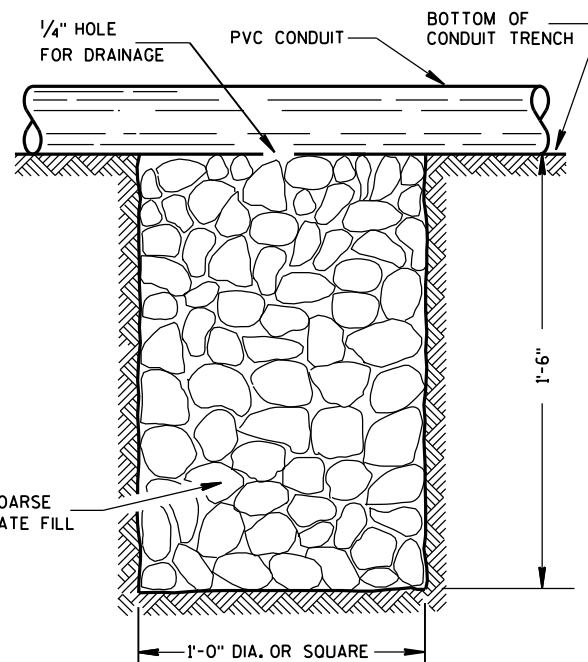


PLAN VIEW  
ARROW MARK



NOTE: INSTALL AT LOCATIONS WHERE METALLIC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR METALLIC CONDUIT



NOTE: INSTALL AT LOCATIONS WHERE PVC CONDUITS CANNOT BE PITCHED TO DRAIN INTO A PULL BOX.

DRAIN SUMP FOR PVC CONDUIT

## GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

METALLIC (STANDARD SPECIFICATION 652.2.2) OR NONMETALLIC (STANDARD SPECIFICATION 652.2.3) CONDUIT SHALL BE FURNISHED AND PLACED AS SHOWN.

DEPTH OF CONDUIT INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES MINIMUM AND 36 INCHES MAXIMUM.

DEPTH OF CONDUIT INSTALLED THAT IS NOT BELOW THE TRAVELED WAY SHALL BE 18 INCHES MINIMUM AND 36 INCHES MAXIMUM.

ANY EXCEPTION TO THE MAXIMUM DEPTH SHALL BE ONLY WITH THE WRITTEN APPROVAL OF THE ENGINEER.

THE TRENCH SHALL NOT BE BACKFILLED PRIOR TO INSPECTION OF THE CONDUIT.

ALL METALLIC CONDUIT RACEWAY ENDS SHALL BE REAMED AND THREADED.

ALL METALLIC CONDUIT IN WHICH WIRE OR CABLE IS TO BE INSTALLED SHALL BE BUSHED WITH APPROVED THREADED BUSHINGS BEFORE INSTALLATION OF THE WIRE OR CABLE.

ALL METALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT TO BE INSTALLED SHALL BE CAPPED WITH THREADED PROTECTIVE CAPS, AS APPROVED BY THE ENGINEER.

ALL NONMETALLIC CONDUIT SHALL BE CAPPED OR PLUGGED IMMEDIATELY AFTER INSTALLATION AND SHALL REMAIN CAPPED OR PLUGGED UNTIL WIRE/CABLES ARE INSTALLED.

NONMETALLIC CONDUITS IN WHICH WIRE OR CABLE IS NOT BEING INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

BENDING OF PVC ELECTRICAL CONDUIT SHALL BE ACCOMPLISHED BY USING A BLANKET OR EMERSION TYPE TANK DESIGNED FOR THE PURPOSE OF BENDING PVC ELECTRICAL CONDUIT.

ALL CUT ENDS SHALL BE TRIMMED INSIDE AND OUTSIDE TO REMOVE ALL ROUGH EDGES ON NONMETALLIC CONDUIT. (SEE NEC 347.5)

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY U.L. LISTED ADAPTER FITTINGS SHALL BE USED.

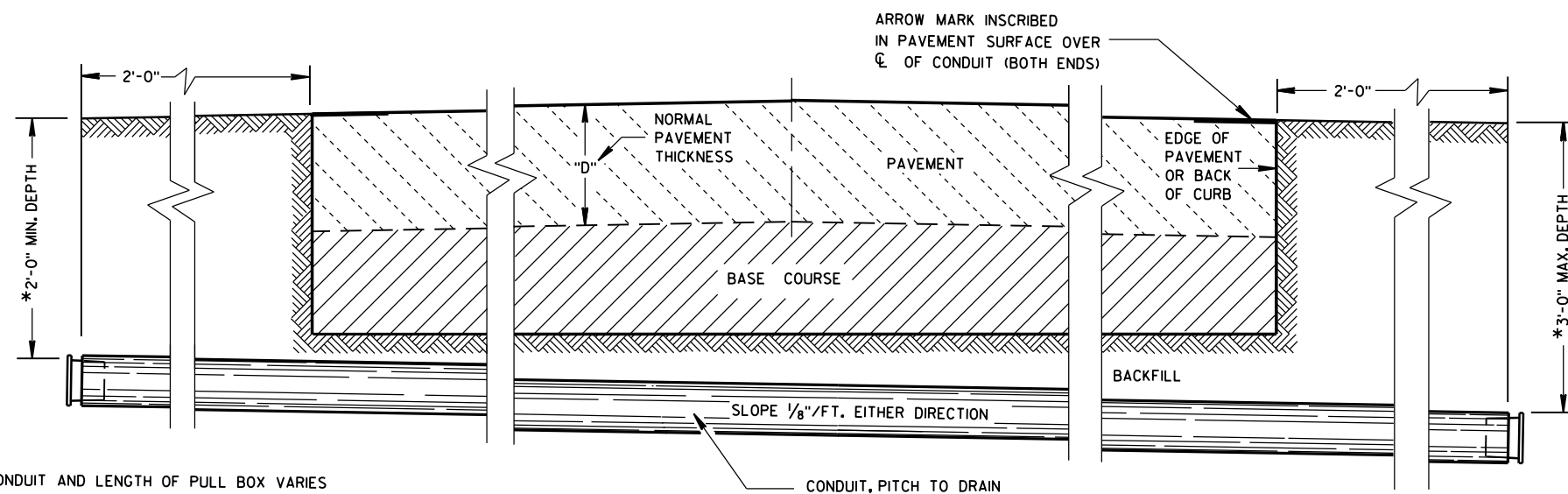
PRIOR TO CONDUIT ACCEPTANCE, CONDUIT CAPS OR PLUGS SHALL BE REMOVED, AND THE CAPS, PLUGS AND CONDUIT ENDS SHALL BE THOROUGHLY CLEANED AND THEN THE CAPS OR PLUGS REINSTALLED TO ENSURE THAT THE CAPS OR PLUGS CAN BE EASILY REMOVED IN THE FUTURE.

ALL CONDUIT BEING FURNISHED AND INSTALLED SHALL HAVE THE U.L. LABEL FIRMLY ATTACHED.

CONDUIT RUNS SHALL BE THE SAME SIZE OF CONDUIT FROM ONE END TO THE OTHER (FROM PULL BOX TO PULL BOX-OR-JUNCTION BOX TO JUNCTION BOX-OR-BASE TO BASE, ETC.).

TRACER WIRE SHALL BE INSTALLED AS STATED IN THE STANDARD SPECIFICATION, ITEM 652.3.1.1.

ALL CONDUIT RUNS SHALL BE STRAIGHT (WITHOUT BENDS) FROM PULL BOX TO PULL BOX, PULL BOX TO BASE AND BASE TO BASE AS SHOWN ON THE PLANS.



\*DEPTH OF CONDUIT AND LENGTH OF PULL BOX VARIES WITH HEIGHT OF CURB USED. ALSO SEE PULL BOX S.D.D. 9B4

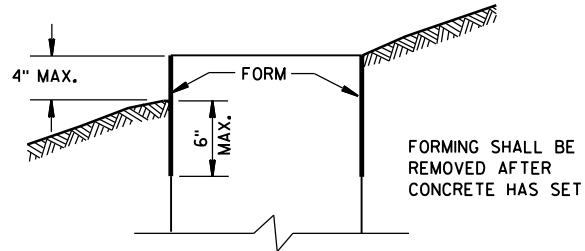
SIDE ELEVATION  
DETAIL FOR CONDUIT UNDER PAVED HIGHWAYS

## CONDUIT

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
June, 2015 /S/ Ahmet Demirbilek  
DATE STATE ELECTRICAL ENGINEER  
FHWA

FORM DEPTH SHALL BE NO MORE THAN 6" BELOW GRADE ON THE LOWER SIDE OF BASE



## FORMING DETAIL

QUANTITY REQUIREMENTS	CONCRETE BASE TYPE		
	1	2	5 & 6
APPROX. CUBIC YARDS OF CONCRETE	0.40	0.57	0.40
LBS. OF HOOP BAR STEEL	NONE	23	16
LBS. OF VERTICAL BAR STEEL	NONE	60	18

## GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

BASES SHALL BE EXCAVATED BY USE OF A CIRCULAR AUGER.

TOP SURFACES OF CONCRETE BASES SHALL BE TROWEL FINISHED SMOOTH AND LEVEL.

CONDUIT SIZES AND LOCATIONS SHALL BE AS SHOWN ON THE PLANS.

THE FINAL OR TERMINATING CONCRETE BASE IN A CONDUIT RUN SHALL HAVE A 6" EXIT STUB INSTALLED FOR FUTURE CABLING USE. THE EXIT STUB SHALL BE SIZED AS USED THROUGHOUT THE CONDUIT RUN AS SHOWN AT THE ENTRANCE OF THE BASE.

MINIMUM BENDING RADIUS OF CONDUIT IS EQUAL TO 6 X THE DIAMETER.

CONDUIT HEIGHT ABOVE CONCRETE BASES SHALL BE 1 INCH. ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED.

ALL CONDUIT ENDS AT THE TOP OF CONCRETE BASES SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC IMMEDIATELY AFTER PLACEMENT AND BEFORE CONCRETE IS POURED. CONDUITS IN WHICH WIRE OR CABLE IS NOT INSTALLED SHALL REMAIN CAPPED OR PLUGGED.

## GENERAL NOTES (CONTINUED)

BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF CONCRETE BASES BEFORE INSTALLATION OF CABLE OR WIRE.

ENDS OF CONDUIT INSTALLED BELOW GRADE FOR FUTURE USE SHALL BE CAPPED IF METALLIC OR PLUGGED IF NONMETALLIC.

WHEN REQUIRED TO CONNECT NONMETALLIC CONDUIT TO METALLIC CONDUIT, ONLY ADAPTER FITTINGS, U.L. LISTED FOR ELECTRICAL USE, SHALL BE USED.

IF A BASE REQUIRES A DEEP FORM BECAUSE OF LOOSE DIRT OR FILL, THE FORM SHALL BE REMOVED BEFORE BACKFILLING AROUND THE BASE. BACKFILL SHALL BE TAMPED TIGHT AGAINST THE BARE CONCRETE BASE IN LAYERS OF 1 FOOT OR LESS.

A NO. 4 AWG, STRANDED COPPER EQUIPMENT GROUNDING CONDUCTOR SHALL BE EXOTHERMICALLY WELDED TO THE EQUIPMENT GROUNDING ELECTRODE (GROUND ROD) FOR TYPE 1, TYPE 2, TYPE 5, AND TYPE 6 BASES.

THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE FURNISHED AND INSTALLED TO ENTER THE BASE OF THE TYPE 2 AND TYPE 5 BASES THROUGH A 1 INCH CONDUIT INSTALLED FOR GROUNDING PURPOSES, LEAVING A 4 FOOT COIL OF WIRE ABOVE THE CONCRETE BASE. THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE NEATLY COILED AND THE COILS TIED TOGETHER.

ANCHOR RODS SHALL BE THREADED 12" IN LENGTH ON EACH END OF THE ROD. ANCHOR RODS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 654.2.1 OF THE STANDARD SPECIFICATIONS.

WASHERS AND LOCK WASHERS ARE REQUIRED ON ALL ANCHOR RODS.

WHEN ANCHOR RODS USING THE ALTERNATE "L" BEND ARE FURNISHED, THE 4" "L" BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR ROD BAR LENGTH. THE "L" BEND END SHALL NOT BE THREADED.

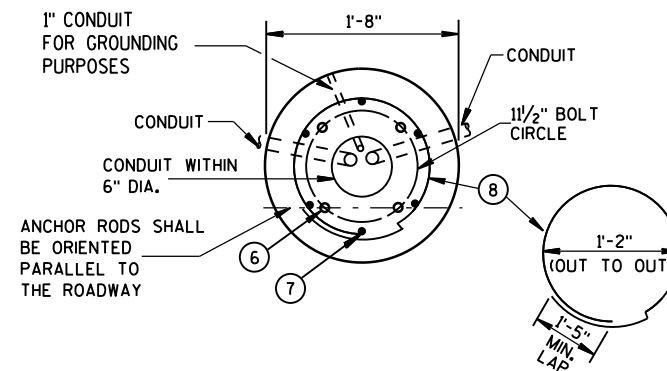
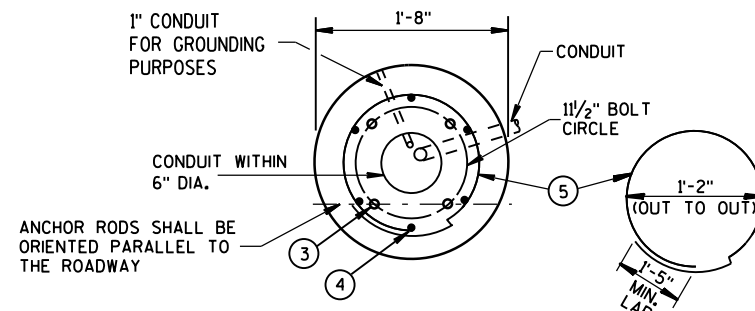
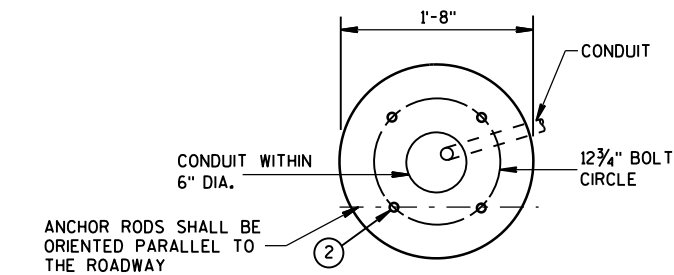
ANCHOR RODS SHALL BE INSTALLED WITH MISALIGNMENTS OF LESS THAN 1:40 FROM VERTICAL.

WELDING OF THE ANCHOR RODS TO THE CAGE IS UNACCEPTABLE. TIE WIRES SHALL BE USED.

BAR STEEL REINFORCEMENT SHALL BE COATED WITH POWDERED EPOXY RESIN IN ACCORDANCE WITH SECTION 505 OF THE STANDARD SPECIFICATIONS (LATEST EDITION).

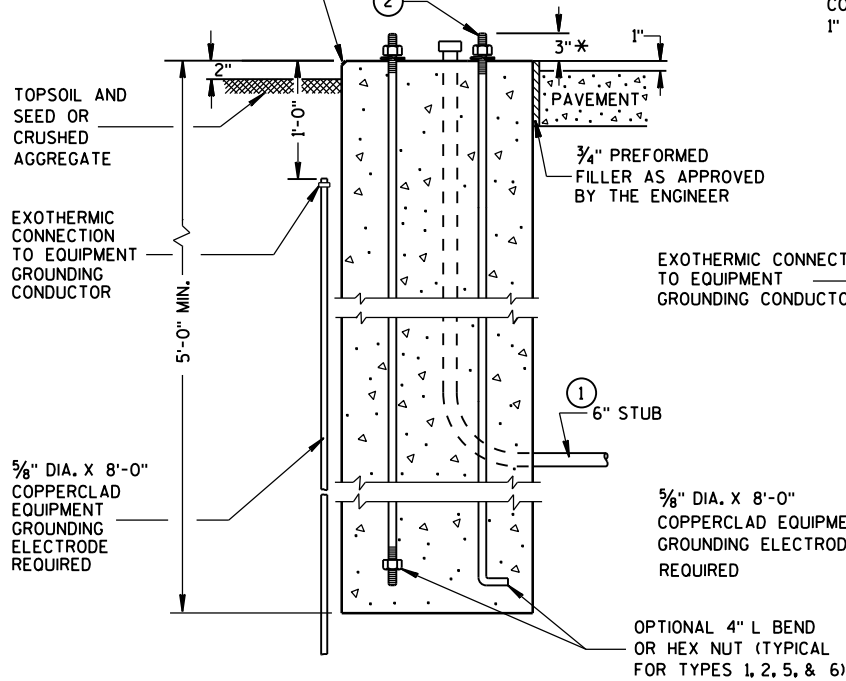
- 1 THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE AND INSTALLED BELOW THE TRAVELED WAY SHALL BE 24 INCHES. THE MINIMUM DEPTH OF CONDUIT EXITING THE CONCRETE BASE THAT IS NOT INSTALLED BELOW THE TRAVELED WAY SHALL BE 18 INCHES. THE MAXIMUM DEPTH OF ALL CONDUIT SHALL BE 36 INCHES EXCEPT WITH WRITTEN APPROVAL BY THE ENGINEER.

- 2 (4) 1" DIA. X 3'-6" ANCHOR RODS.  
3 (4) 1" DIA. X 5'-0" ANCHOR RODS.  
4 (6) NO. 6 X 6'-8" BAR STEEL REINFORCEMENT.  
5 (7) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.  
6 (4) 1" DIA. X 3'-6" ANCHOR RODS.  
7 (6) NO. 4 X 4'-8" BAR STEEL REINFORCEMENT.  
8 (5) NO. 4 X 5'-1" BAR STEEL REINFORCEMENT @ 1'-0" C-C.

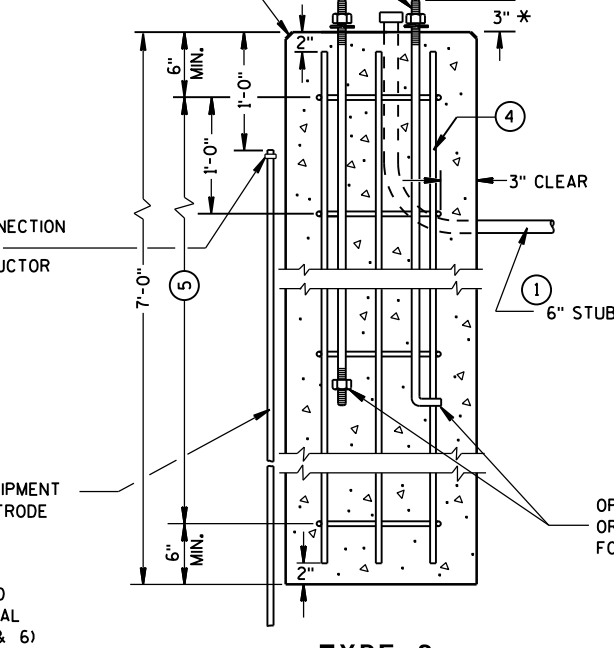


FORM ALL EXPOSED CONCRETE. PROVIDE 1" CHAMFER ALL AROUND

## HALF SECTION IN UNPAVED AREA (TYPICAL FOR TYPES 1, 2, 5, & 6)

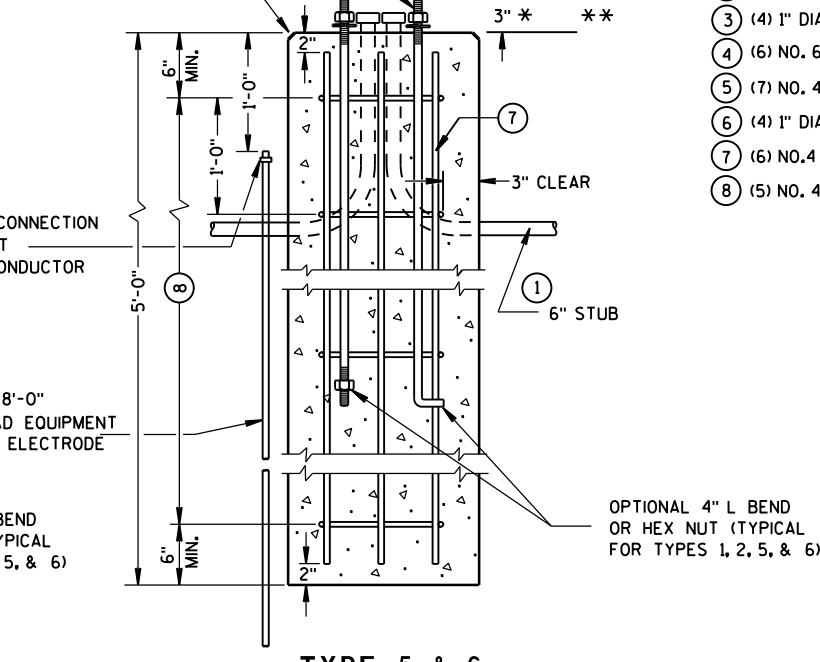


FORM ALL EXPOSED CONCRETE. PROVIDE 1" CHAMFER ALL AROUND



## TYPE 2 CONCRETE BASES

FORM ALL EXPOSED CONCRETE. PROVIDE 1" CHAMFER ALL AROUND



## TYPE 5 & 6

\* ANY ANCHOR ROD PROJECTION SHORTER THAN 2 3/4" OR LONGER THAN 3 3/4" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

\*\* FOR NONBREAKAWAY INSTALLATIONS, 4 1/2" ± ANCHOR ROD PROJECTION WITH THE USE OF LEVELING NUTS. RODENT SCREEN REQUIRED.

## CONCRETE BASES, TYPES 1, 2, 5, & 6

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2014

DATE

/S/ Ahmet Demirbilek

STATE ELECTRICAL ENGINEER

FHWA

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

FOUR (4) BOLTS SHALL BE FURNISHED WITH EACH TRANSFORMER BASE. BOLTS SHALL BE 1" DIAMETER, 4" IN LENGTH, WITH WASHERS, LOCK WASHERS AND NUTS. BOLTS, NUTS AND WASHERS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 641.2.2 OF THE STANDARD SPECIFICATIONS.

LEVELING SHIMS, IF NEEDED, SHALL BE DESIGNED FOR THE PURPOSE AND USED UNDER CAST BASES WHEN PLUMBING POLES OR STANDARDS DURING INSTALLATION. THE USE OF WASHERS IN LIEU OF PROPER LEVELING SHIMS IS NOT ACCEPTABLE.

SHIM LENGTH SHALL BE LONG ENOUGH TO COMPLETELY COVER THE AREA UNDER THE LENGTH AND WIDTH OF THE BASE MOUNTING FLANGE.

DOUBLE NUTTING IS NOT ACCEPTABLE FOR LEVELING OR MOUNTING PURPOSES.

A NEMA APPROVED, U.L. LISTED, COPPER WITH BRASS OR STAINLESS STEEL SET SCREW, DIRECT BURY RATED, MECHANICAL CONNECTOR (LUG), SIZED TO ACCEPT AWG. #10 TO #4 COPPER STRANDED WIRE SHALL BE FURNISHED AND INSTALLED IN THE PEDESTAL AND TRANSFORMER BASES.

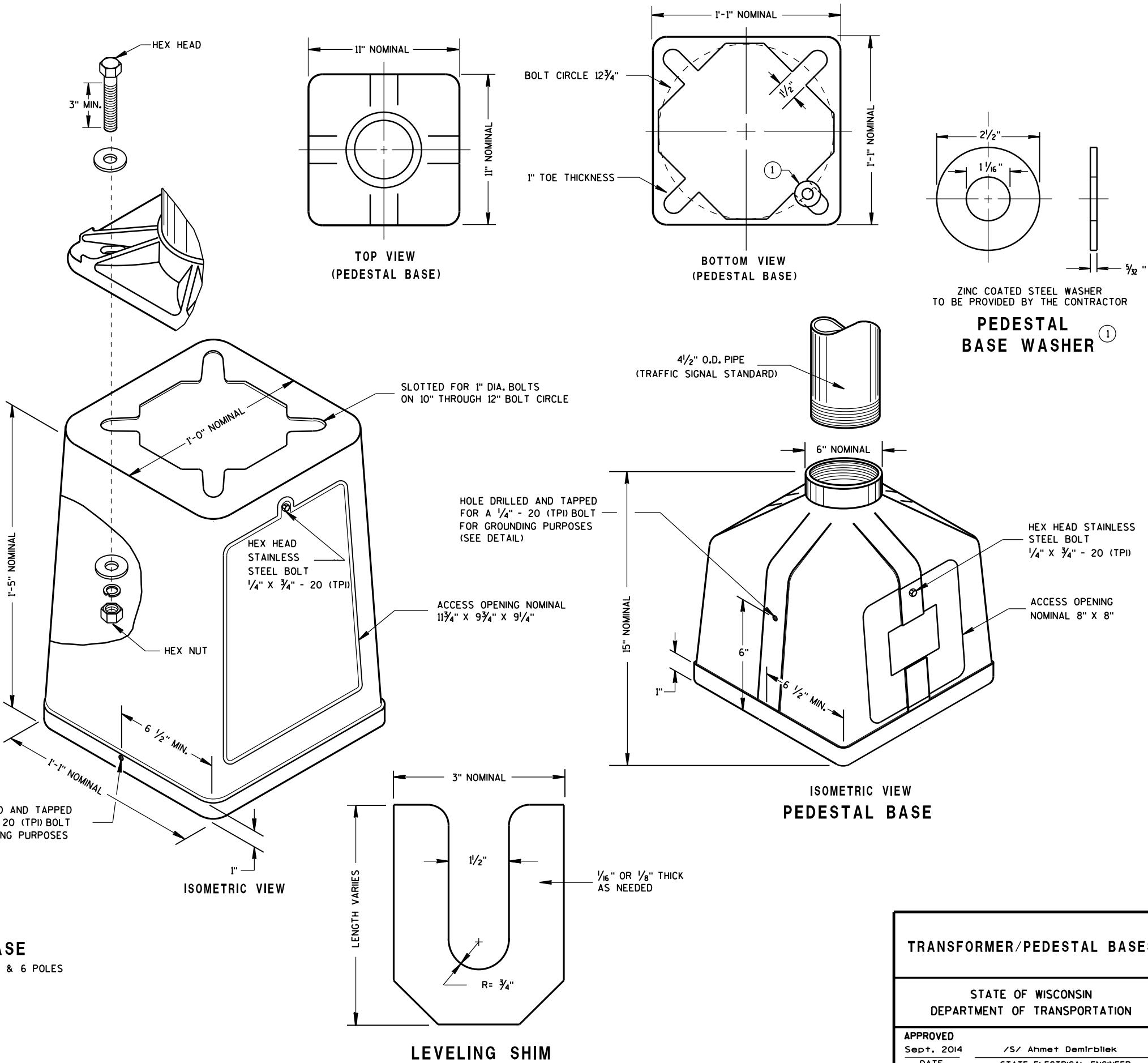
THE MECHANICAL CONNECTOR SHALL BE INSTALLED USING A 1/4" - 20 (TPI) STAINLESS STEEL HEX HEAD BOLT OF SUFFICIENT LENGTH TO FIRMLY ATTACH THE LUG TO THE BASE.

SHOULD THE MANNER OF ATTACHMENT OF THE LUG REQUIRE WASHERS, HEX NUTS, LOCK WASHER - THEY SHALL BE STAINLESS STEEL AS IS THE BOLT. THE MANNER OF ATTACHMENT SHALL NOT BLOCK ACCESSIBILITY TO WIRE PLACEMENT IN THE CONNECTOR.

PEDESTAL BASE COLLAR THREADING SHALL BE TAPERED AND IN ACCORDANCE WITH NATIONAL PIPE THREADING DIMENSIONS.

BASE COLLAR THREADING SHALL EXTEND INTO THE BASE COLLAR WITH SUFFICIENT DEPTH TO ACCEPT THE INSTALLATION OF TRAFFIC SIGNAL STANDARDS TO A DEPTH OF 1/2", THEN TIGHTENING TO A POINT OF BEING IMMOVABLE.

THE ACCESS DOOR SHALL BE OF THE SAME MATERIAL AS THE BASE.



TYPICAL MECHANICAL  
CONNECTOR LUG  
TO BE FURNISHED WITH EACH BASE

TRANSFORMER BASE  
INTENDED FOR USE WITH TYPE 2, 3, 4, 5 & 6 POLES

TRANSFORMER/PEDESTAL BASES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

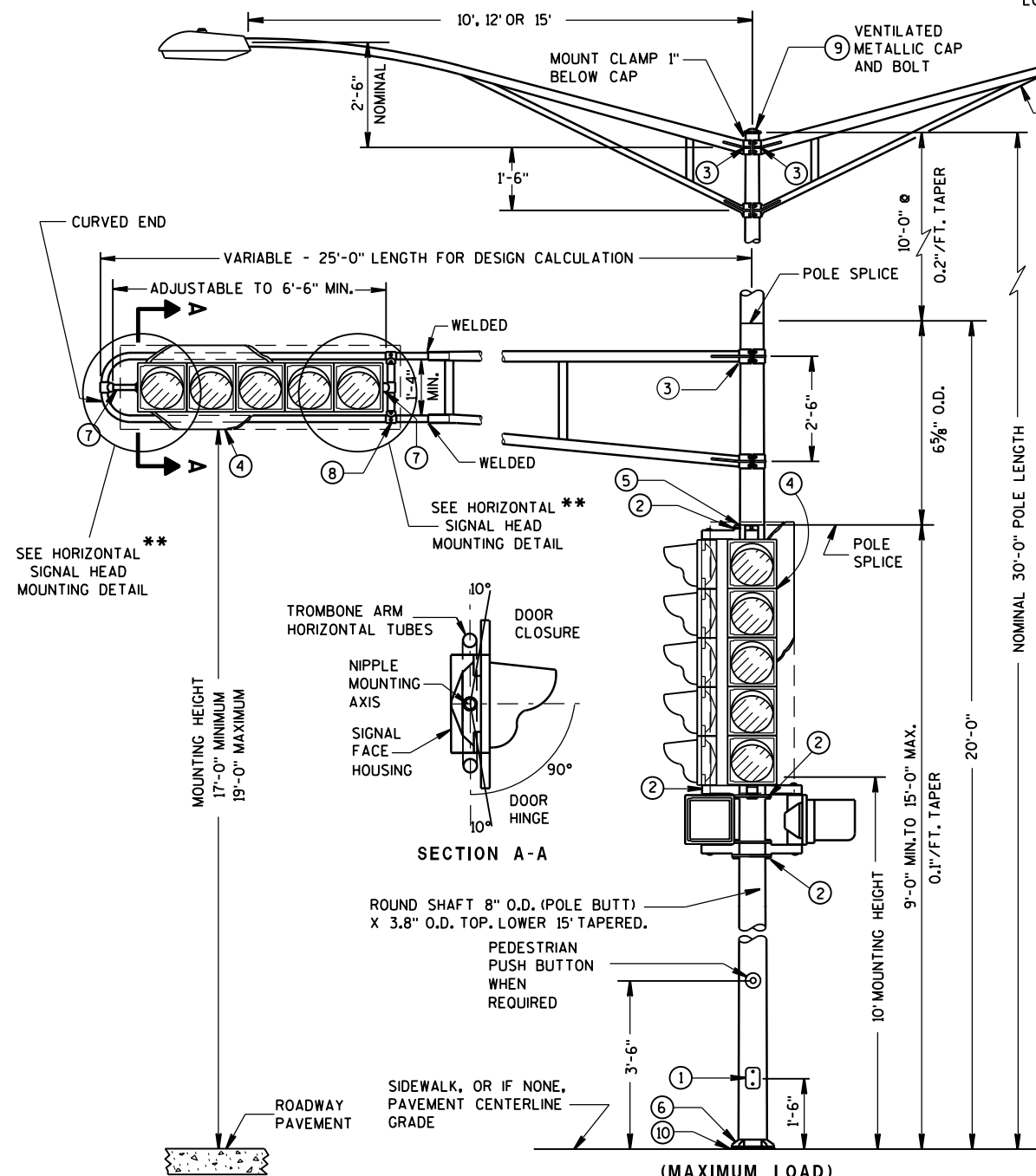
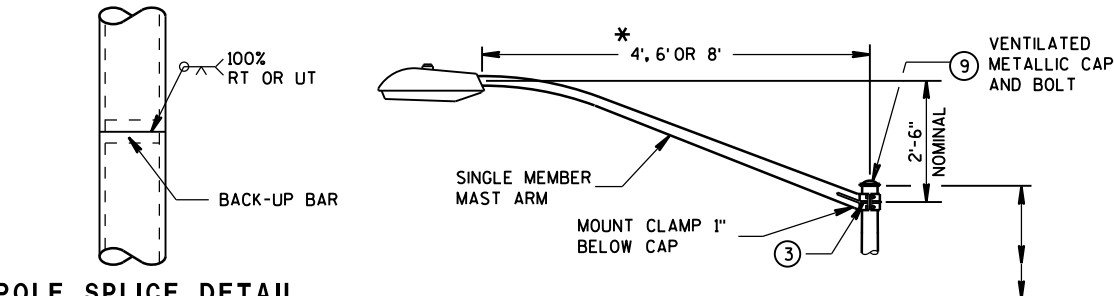
APPROVED  
Sept. 2014 /S/ Ahmet Demirbilek  
DATE STATE ELECTRICAL ENGINEER  
FHWA

**FOR MANUFACTURERS USE ONLY**

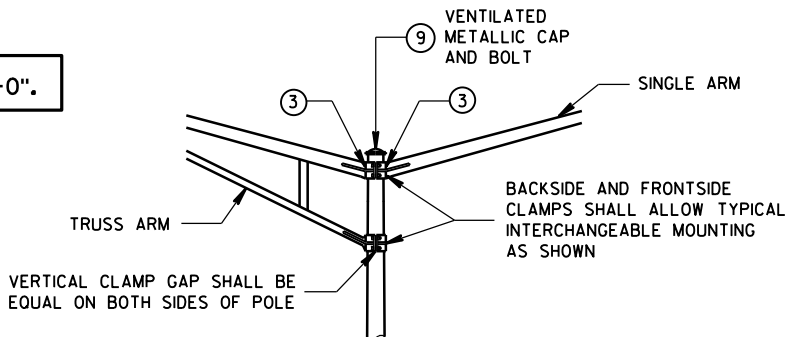
WELD TO BE 100% R.T. OR U.T. TESTED AS PER THE REQUIREMENTS OF AWS D 1.5-88. RECORDS OF COMPLIANCE OF SUCH TESTING SHALL BE FURNISHED TO THE OFFICE OF DESIGN/BRIDGE FOR VERIFICATION AND APPROVAL.

\* RISE FOR 4' ARM SHALL BE 2'-0".

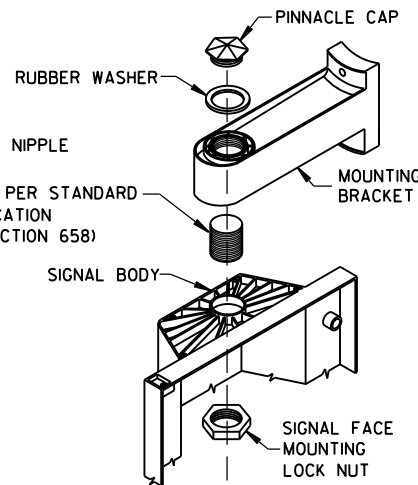
**POLE SPLICE DETAIL**



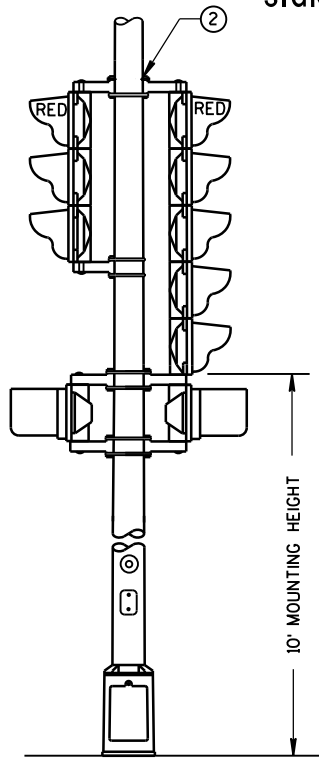
**INTERCHANGEABLE MOUNTING DETAIL**



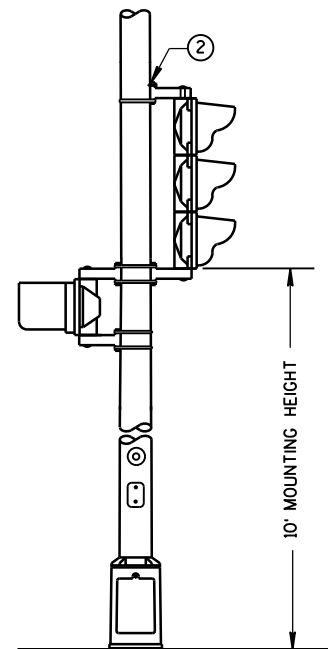
LUMINAIRE  
WT. - 50 LBS.  
EFFECTIVE PROJECTED  
AREA FOR WIND  
LOADING = 1.5 SQ. FT.



**SIGNAL FACE MOUNTING DETAIL  
(BANDED)**



TYPICAL MOUNTING OF BACK TO BACK  
3 AND 5 SECTION SIGNAL FACES



TYPICAL MOUNTING OF 3 SECTION  
SIGNAL FACE

**TYPE 3 POLE MOUNTING CONFIGURATION**

**GENERAL NOTES**

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

ALL TYPE 3 POLE MOUNTINGS SHALL BE DESIGNED TO INCLUDE TWIN 15' ARMS WITH LUMINAIRES.

POLES SHALL BE GALVANIZED STEEL.

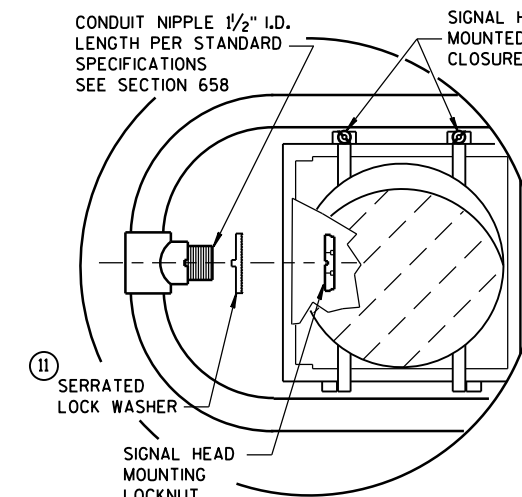
SECTION 657, POLES, OF THE STANDARD SPECIFICATIONS SHALL APPLY TO THIS DRAWING.

A PULL WIRE/ROPE IN ACCORDANCE WITH STANDARD SPECIFICATION 652, SHALL BE INSTALLED IN EACH TROMBONE ARM RACEWAY DURING THE MANUFACTURING PROCESS.

THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 2 3/8 INCHES IN OUTSIDE DIAMETER. THE STRAIGHT PORTION OF THE SLIPFITTER END OF THE LUMINAIRE MAST ARM SHALL BE A NOMINAL 12 INCHES IN LENGTH.

WHEN TRANSFORMER BASES ARE USED, WIRE CONNECTIONS SHALL BE MADE IN THE TRANSFORMER BASE.

- ① 4" X 6" REINFORCED HANDHOLE & COVER ASSEMBLY WITH 2 (TWO) 1/4" X 3/4" - 20 TPI HEX HEAD STAINLESS STEEL BOLTS.
- ② SIGNAL FACE MOUNTING BRACKETS, MOUNT WITH CAP SCREWS AND BANDING. (SEE STANDARD SPECIFICATIONS - SEC. 658)
- ③ GROMMETS, 1" CHASE NIPPLES OR 1" CLOSE CONDUIT NIPPLES WITH BUSHINGS SHALL BE PROVIDED FOR 1 3/8" HOLE IN POLE SHAFT FOR WIRING.
- ④ SECURELY MOUNT DULL BLACK POLYCARBONATE BACKPLATES, PROJECTING 5" BEYOND ALL SIDES OF THE SIGNAL FACE HOUSING, PER MANUFACTURER'S RECOMMENDATIONS.
- ⑤ POLE MOUNTED SIGNAL FACES SHALL REQUIRE 1 OR MORE MOUNTING SPACERS UNDER THE TOP MOUNTING BRACKET(S) AS REQUIRED, TO PLUMB THE SIGNAL FACE.
- ⑥ TYPE 3 POLE CONFIGURATIONS SHALL BE MOUNTED DIRECTLY TO THEIR CONCRETE BASES.
- ⑦ MOUNTING BRACKET NIPPLES FOR THE SIGNAL FACE(S) SHALL BE 2 INCHES IN LENGTH AND 1 1/2 INCHES IN DIAMETER. (SEE STANDARD SPECIFICATION - SECTION 658)
- ⑧ VERTICAL STRUT (ADJUSTABLE). ONE (1) SET SCREW (1/4" X 3/4" - 20 TPI, STAINLESS STEEL, HEX HEAD) INTO EACH ARM MEMBER IF STRUT IS THE SLIDING TYPE.
- ⑨ FURNISH AND INSTALL VENTILATED, CAST, METALLIC (ALUMINUM ALLOY) CAPS. FASTEN CAPS WITH ONE (1) 1/4" X 3/4" - 20 TPI STAINLESS STEEL, HEX HEAD BOLT.
- ⑩ SHIMMING, IF NEEDED, SHALL BE LOCATED BETWEEN THE CONCRETE FOUNDATION AND POLE.
- ⑪ USE SERRATED LOCK WASHERS WITH NOTCHES BETWEEN END TEE AND SIGNAL HEAD.

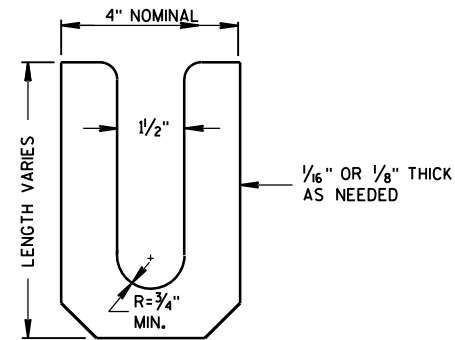


**HORIZONTAL SIGNAL HEAD MOUNTING DETAIL \*\***

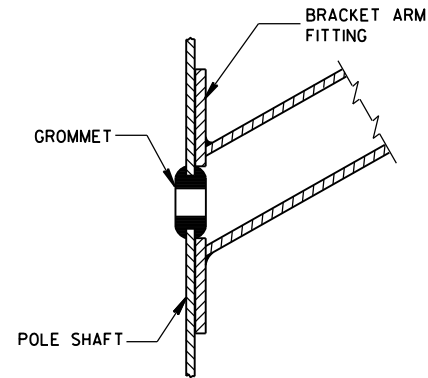
\*\* SIGNAL HEAD ATTACHMENT ALSO APPLYS TO MOUNTING AT CROSS BAR

**POLE MOUNTINGS FOR  
TRAFFIC SIGNALS AND  
LIGHTING UNITS, TYPE 3  
(HEAVY DUTY)**

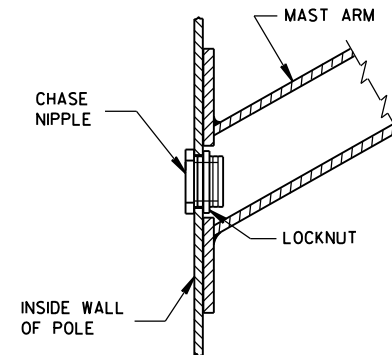
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



**LEVELING SHIM**  
SHALL BE ALUMINUM



**TYPICAL APPLICATION OF GROMMET IN POLE SHAFT**



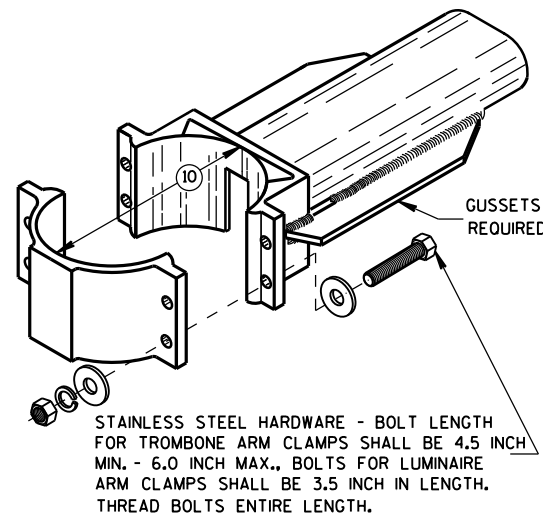
**TYPICAL APPLICATION OF CHASE NIPPLE IN POLE SHAFT**

## GENERAL NOTES

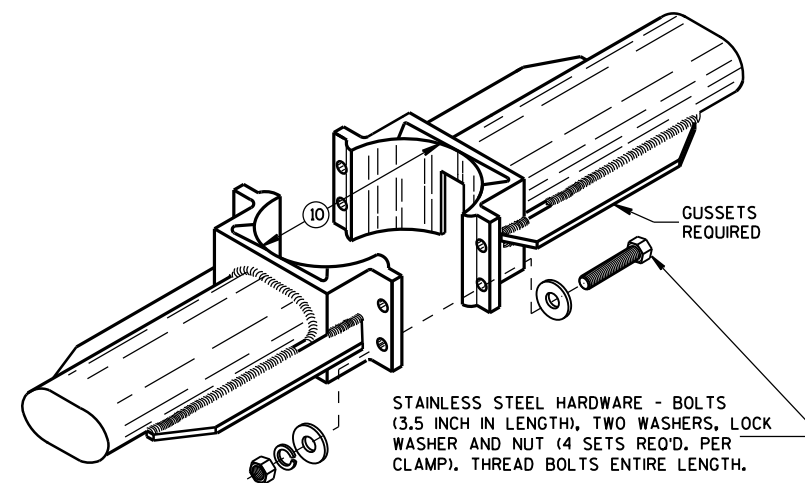
CLAMP BOLT-NUT TIGHTENING TORQUE SHALL BE INDICATED BY INDENT STAMPING (1/2 INCH NUMERALS AND LETTERS) OR WEATHERPROOF PRINTING ON THE INSIDE OF THE CLAMP THAT IS WELDED TO THE ARM MEMBER.

- ⑩ 4.5" I.D. FOR LUMINAIRE MAST ARM CLAMP.  
6.625" I.D. FOR TROMBONE MAST ARM CLAMP.
- ⑪ INDIVIDUAL BASE PLATE ANCHOR ROD COVERS. (4 REQUIRED)
- ⑫ BASE PLATE SLOTTED TO ACCEPT 11" THROUGH 12" BOLT  
CIRCLE USING 1" DIAMETER ANCHOR RODS.
- ⑬ LEVELING SHIMS, DESIGNED FOR THE PURPOSE, SHALL BE USED WHEN PLUMBING  
POLES. THE USE OF WASHERS IN LIEU OF PROPER LEVELING SHIMS IS NOT  
ACCEPTABLE. LEVELING SHIMS SHALL BE USED ONLY BETWEEN THE TOP OF THE  
CONCRETE BASE AND A METALLIC BASE PLATE.

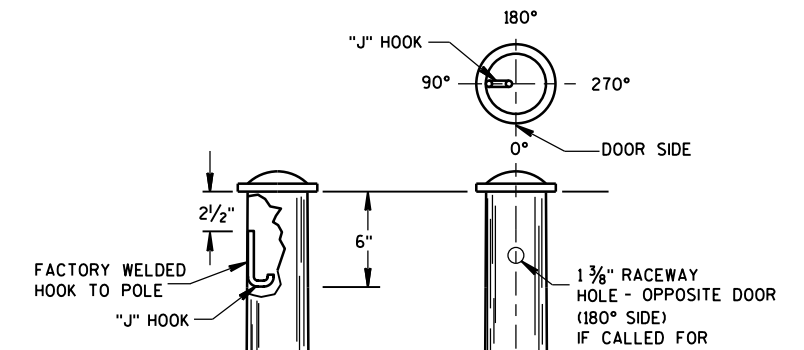
SHIMS SHALL BE LONG ENOUGH AND WIDE ENOUGH TO COMPLETELY COVER THE  
AREA UNDER THE LENGTH AND WIDTH OF THE BASE MOUNTING FLANGE.



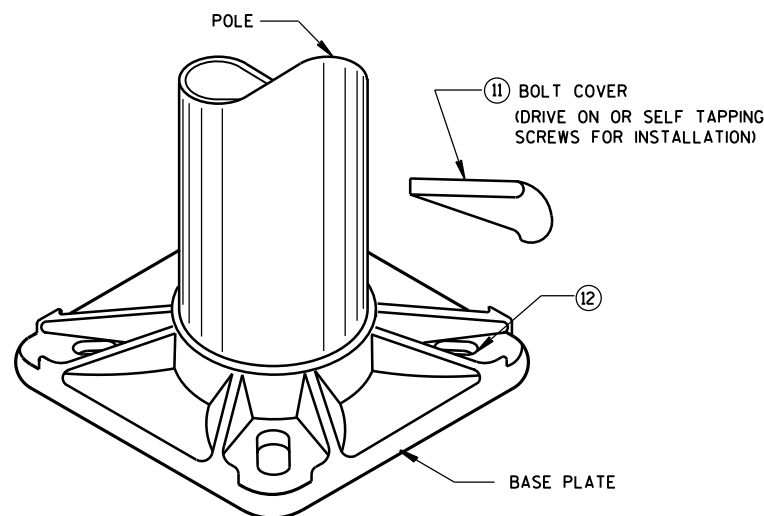
**TYPICAL TROMBONE MAST ARM AND SINGLE LUMINAIRE MAST ARM MOUNTING CLAMP**



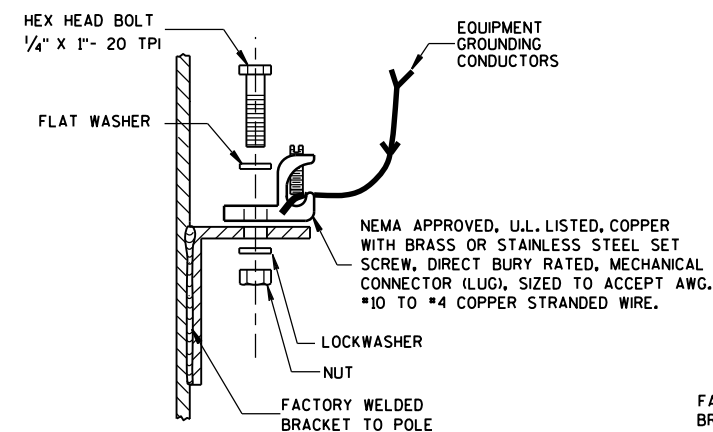
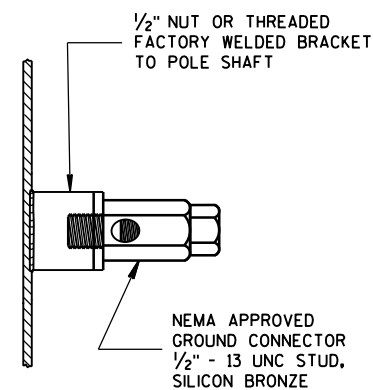
**TYPICAL LUMINAIRE MAST ARM (DOUBLE) MOUNTING BRACKETS**



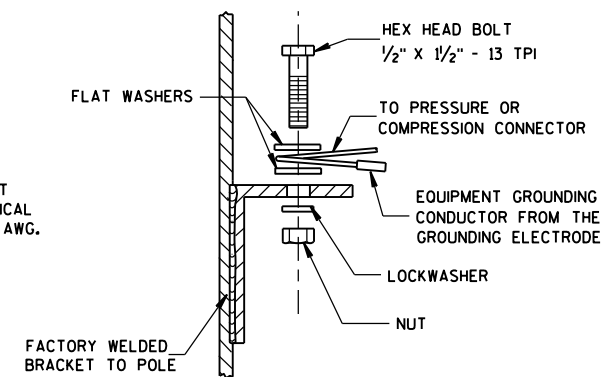
**TYPICAL "J" HOOK LOCATION**



**BASE PLATE**



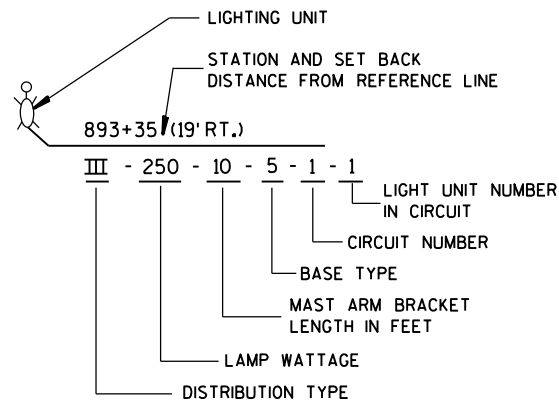
**TYPICAL GROUNDING CONNECTIONS**  
NUT, BOLT AND WASHERS SHALL  
BE STAINLESS STEEL



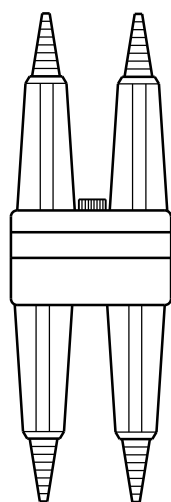
## HARDWARE DETAILS FOR POLE MOUNTINGS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

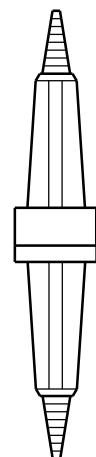
APPROVED  
Feb. 2015  
DATE /S/ Ahmet Demirbilek  
STATE ELECTRICAL ENGINEER  
FHWA



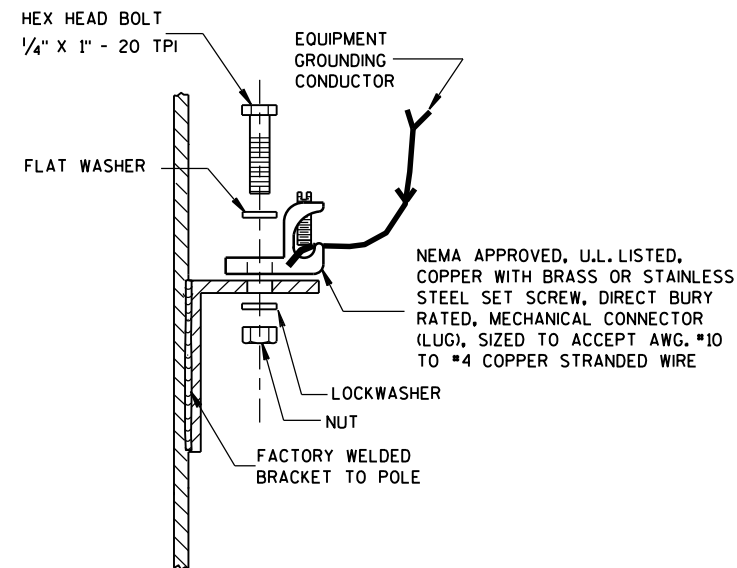
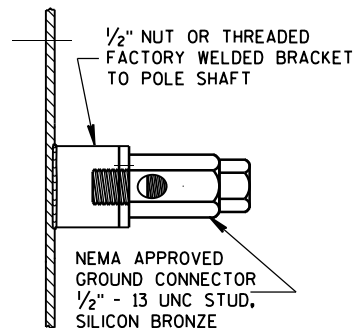
**LIGHTING UNIT CODE  
(TYPICAL)**



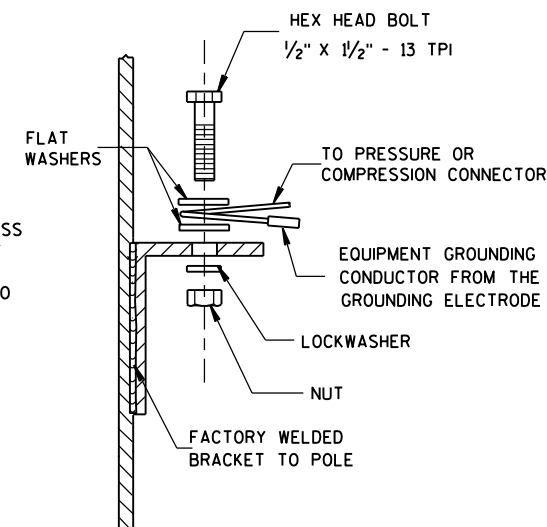
**DETAIL "A"  
BREAKAWY  
DOUBLE POLE WITH  
WATERPROOF  
INSULATING BOOT**



**DETAIL "B"  
BREAKAWY  
SINGLE POLE WITH  
WATERPROOF  
INSULATING BOOT**

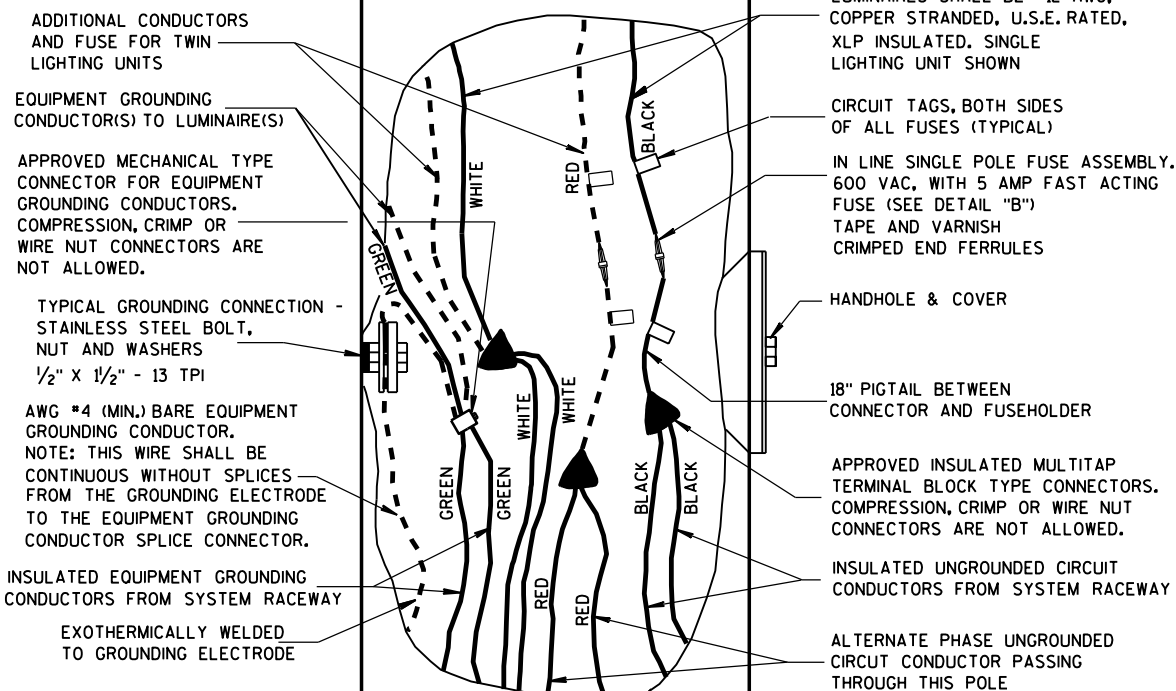


**TYPICAL GROUNDING CONNECTIONS**  
NUT, BOLT, WASHERS AND LOCKWASHERS SHALL BE STAINLESS STEEL

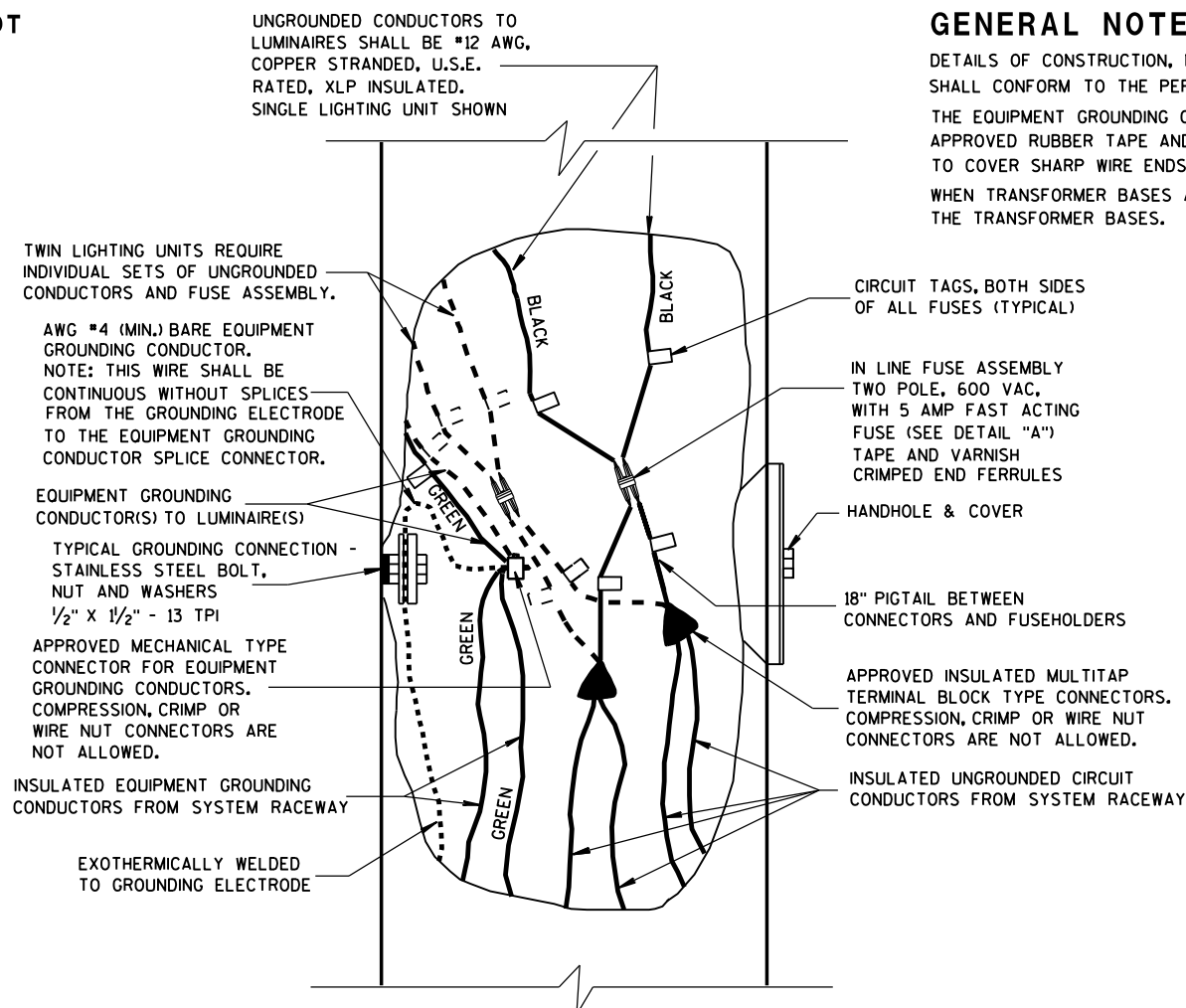


**GENERAL NOTES**

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.  
THE EQUIPMENT GROUNDING CONNECTOR SHALL BE TAPED WITH 3 WRAPS (MINIMUM) OF APPROVED RUBBER TAPE AND THEN 3 WRAPS (MINIMUM) OF APPROVED VINYL TAPE TO COVER SHARP WIRE ENDS AFTER THE CONNECTION IS COMPLETED.  
WHEN TRANSFORMER BASES ARE USED, ALL WIRING CONNECTIONS SHALL OCCUR WITHIN THE TRANSFORMER BASES.



**3 WIRE - 120, 240 OR 480 VAC (UNGROUND CONDUCTOR)  
WITH GROUNDED CONDUCTOR AND  
WITH EQUIPMENT GROUNDING CONDUCTOR**

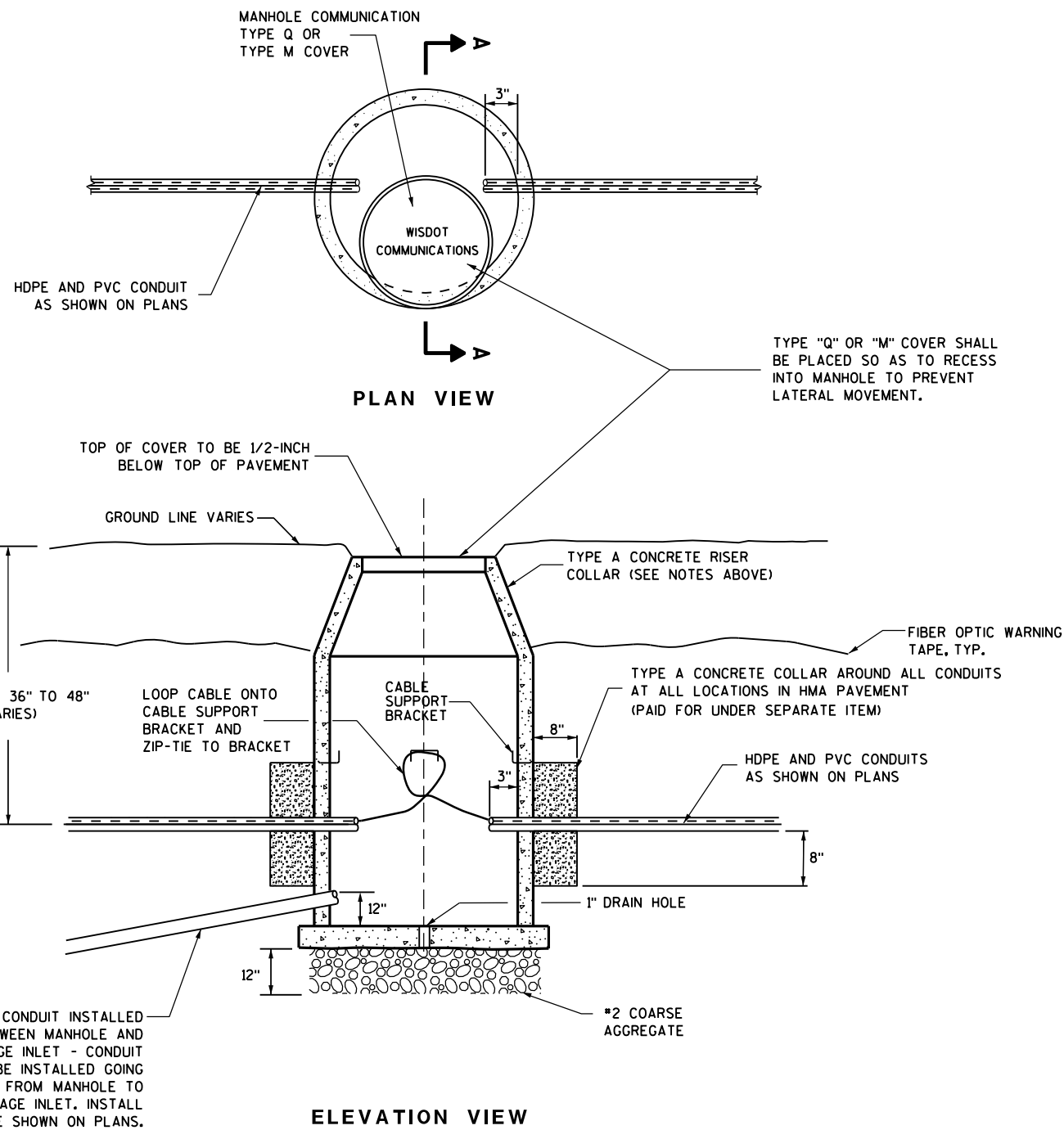


**2 WIRE - 240 OR 480 VAC (UNGROUND CONDUCTORS)  
WITH EQUIPMENT GROUNDING CONDUCTOR**

**NON-FREWAY LIGHTING UNIT  
POLE WIRING**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
Sept. 2014 /S/ Ahmet Demirbilek  
DATE STATE ELECTRICAL ENGINEER  
FHWA



## GENERAL NOTES

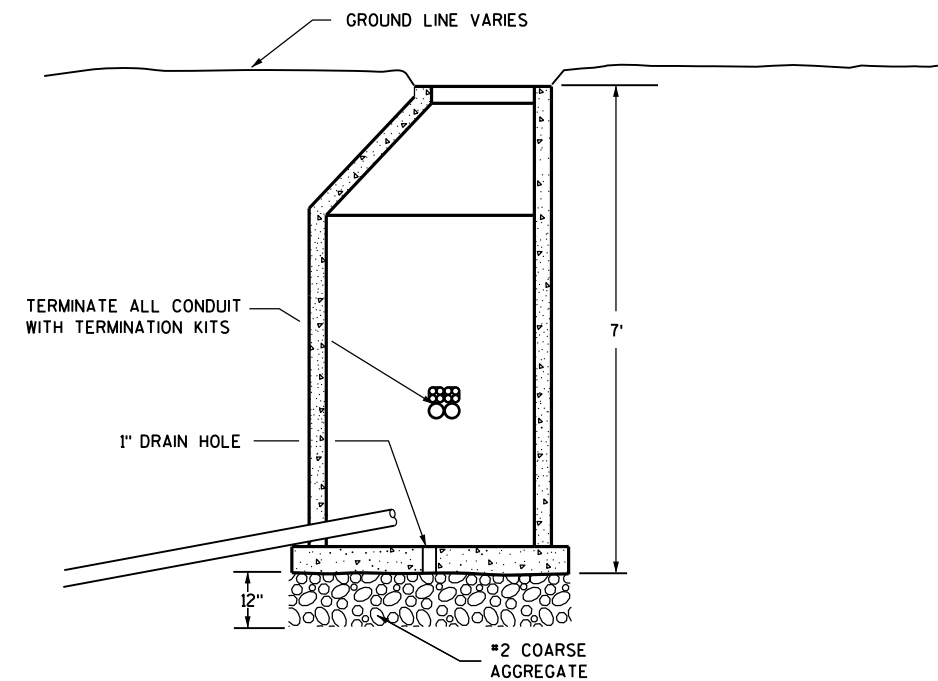
ALL OPENINGS IN STRUCTURE MUST BE CORED OR BLOCKED OUT AT TIME OF FABRICATION, OR CORED AT TIME OF PLACEMENT.

FOR MANHOLES PLACED OUTSIDE PAVED AREA, TYPE "M" COVERS SHALL BE INSTALLED SO THAT THE FRAME AND LID ARE RECESSED INTO THE TOP OF THE CONCRETE MANHOLE AS TO PREVENT LATERAL MOVEMENT OF THE COVER. THE FRAME SHALL BE INVERTED AND PLACED INTO THE OPENING OF THE MANHOLE PROTRUDING LESS THAN 1-INCH ABOVE THE TOP OF THE CONCRETE.

FOR MANHOLES WITHIN PAVED AREAS, TYPE "Q" COVERS SHALL BE USED.

MANHOLE COVERS TO BE IMPRINTED WITH "WISDOT COMMUNICATIONS" IN 2-INCH LETTERING.

ALL MANHOLES, INLETS, AND PULL BOXES LOCATED WITHIN WARRANTED HMA PAVEMENT SHALL BE COVER PLATED AT OR BELOW THE TOP OF THE BASE COURSE AND COVERS BROUGHT TO FINAL GRADE PRIOR TO PLACING THE TOP SMA LAYER. ALL WORK IS INCIDENTAL TO OTHER ITEMS OF WORK.



SECTION A-A

## COMMUNICATIONS MANHOLE

### COMMUNICATIONS MANHOLE DETAILS

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

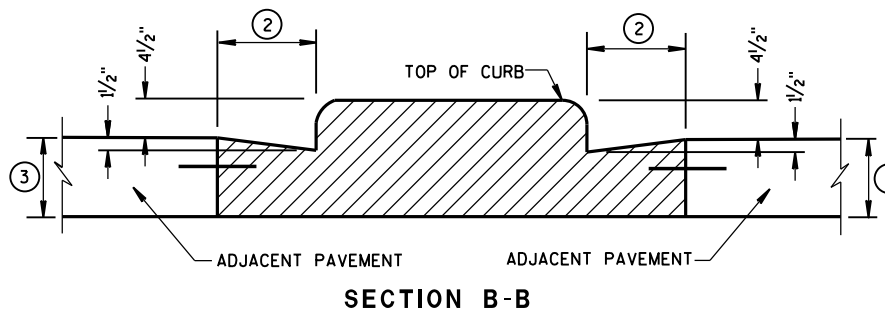
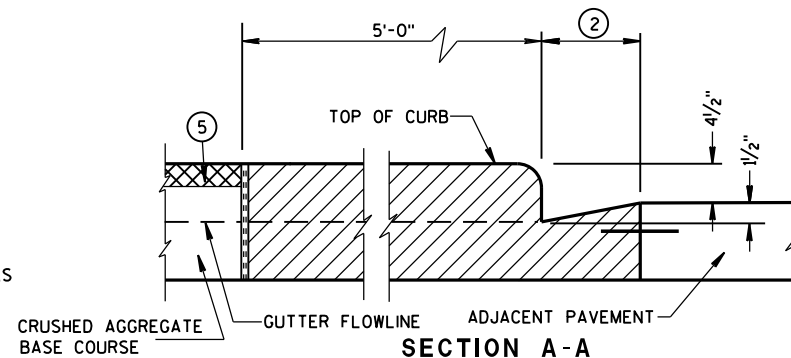
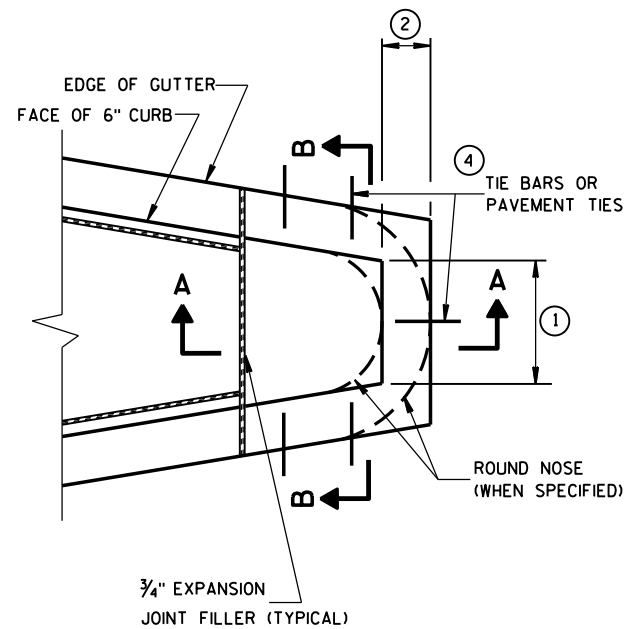
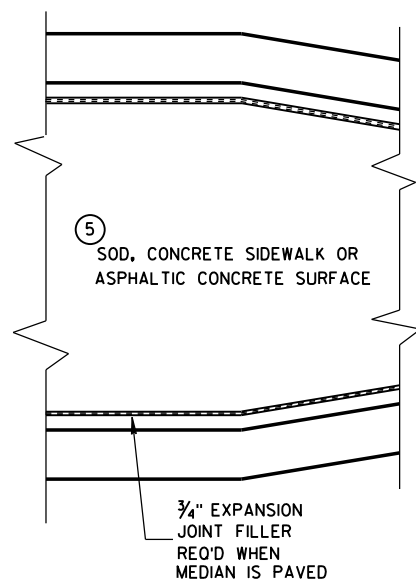
June, 2015

DATE

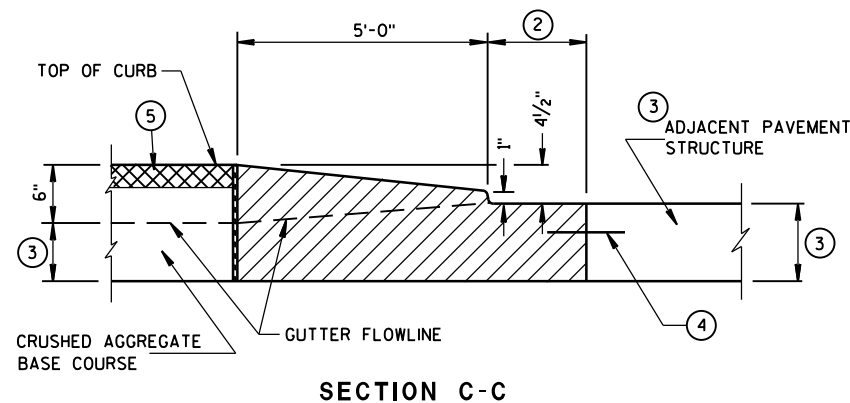
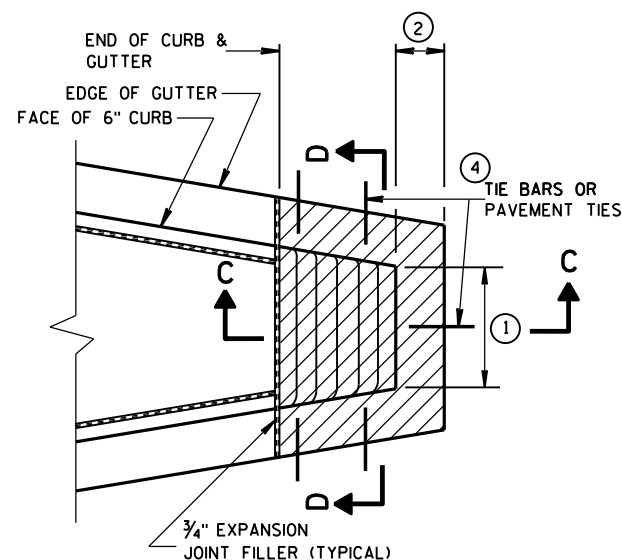
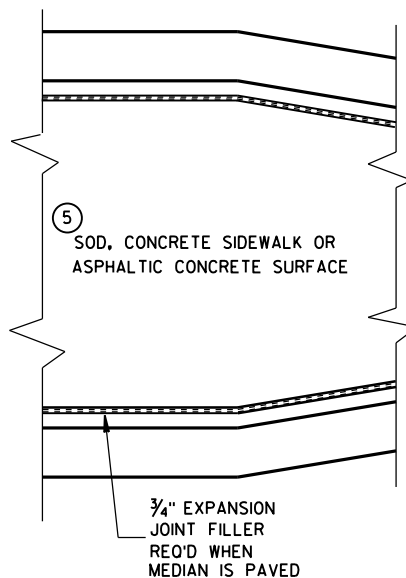
FHWA

/S/ Ahmet Demirelek

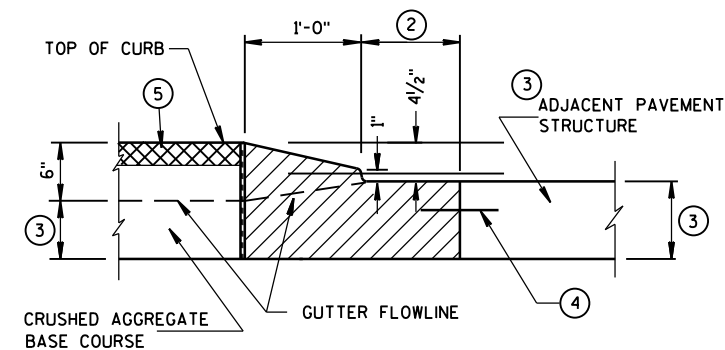
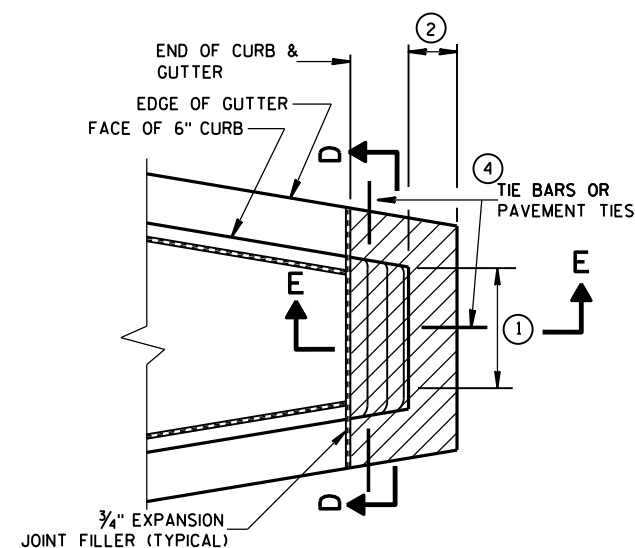
STATE ELECTRICAL ENGINEER



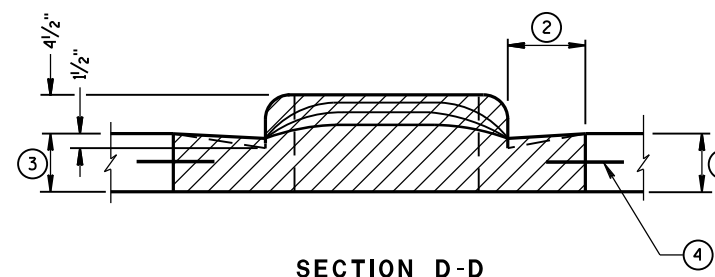
CONCRETE MEDIAN BLUNT NOSE DETAIL



CONCRETE MEDIAN SLOPED NOSE TYPE 1



CONCRETE MEDIAN SLOPED NOSE TYPE 2



## GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

- ① SEE PLAN FOR MEDIAN NOSE WIDTH AND RADIUS (FOR ROUND NOSE ALTERNATE).
- ② WIDTH OF GUTTER TO MATCH EXISTING ADJACENT GUTTER OR AS SPECIFIED ELSEWHERE IN THE PLAN.
- ③ DEPTH EQUAL TO ADJACENT PAVEMENT. ADJACENT PAVEMENT STRUCTURE DETAILS ARE SHOWN ON THE PLAN. TYPICAL OPTIONS ARE:
  - (1) NEW OR EXISTING CONCRETE PAVEMENT.
  - (2) ASPHALTIC CONCRETE PAVEMENT OVER NEW OR EXISTING CONCRETE BASE COURSE.
  - (3) ASPHALTIC CONCRETE PAVEMENT OVER CRUSHED AGGREGATE BASE COURSE.

- ④ TIE BARS OR PAVEMENT TIES REQUIRED IN NEW CONCRETE PAVEMENT OR CONCRETE BASE COURSE. TIE BARS SHALL BE NO. 4 X 2'-0" SPACED AT 2'-0" C-C.

PAVEMENT TIES REQUIRED IN EXISTING CONCRETE BASE COURSE. PAVEMENT TIES SHALL BE NO. 6 X 1'-0" SPACED AT 3'-0" C-C INSTALLED ON A HORIZONTAL SKEW OF 6:1. THE DIRECTION OF SKEW SHALL ALTERNATE AFTER EVERY ONE OR TWO BARS.

- ⑤ SURFACE TYPE AND DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

CONCRETE MEDIAN NOSE

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

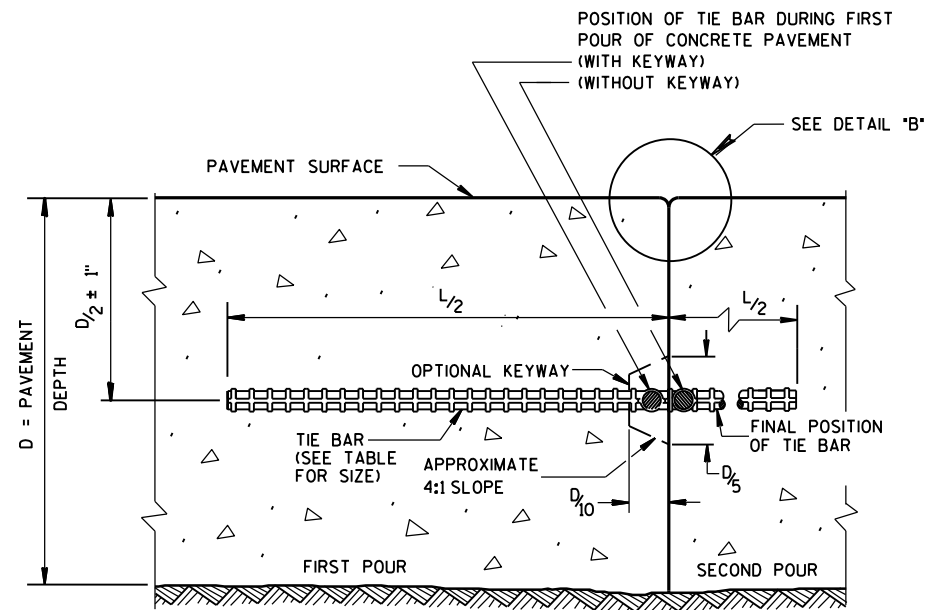
APPROVED

6/8/2006

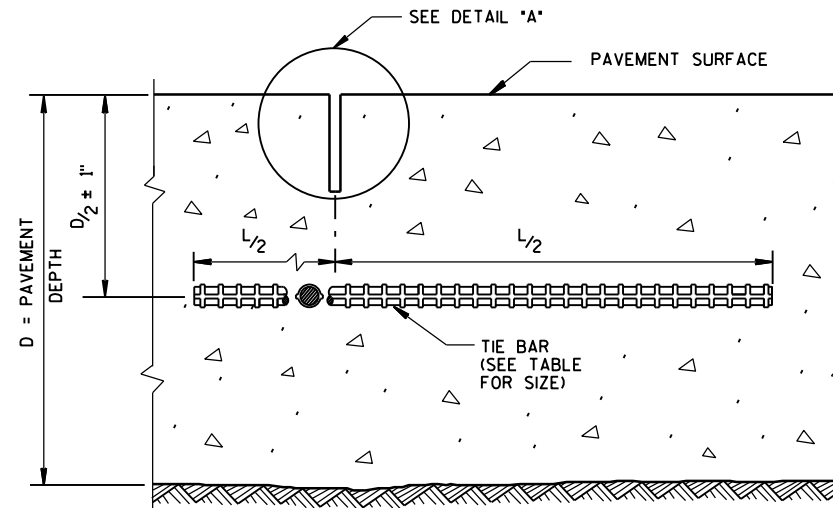
DATE

FHWA

/S/ Jerry H. Zogg  
ROADWAY STANDARDS DEVELOPMENT  
ENGINEER



CONSTRUCTION JOINT



SAWED JOINT

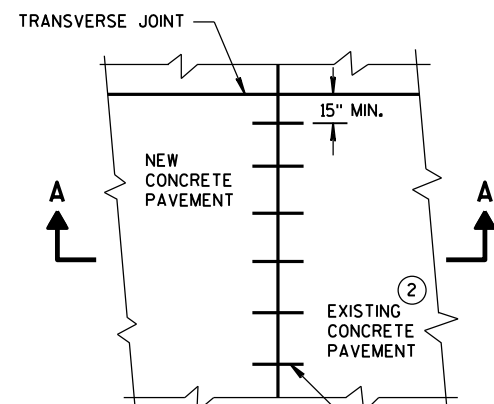
## GENERAL NOTES

DO NOT SEAL OR FILL LONGITUDINAL JOINTS.

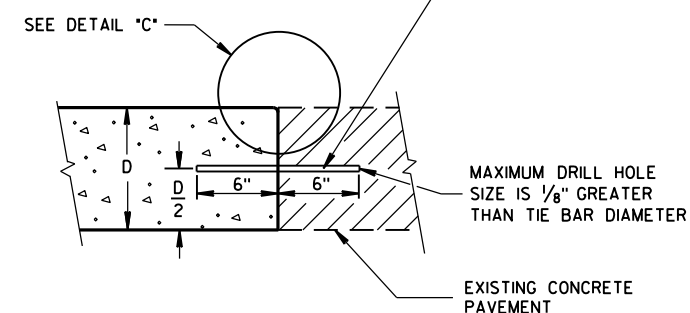
CREATE A LONGITUDINAL JOINT FOR PAVEMENT WIDTHS GREATER THAN 15 FEET.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

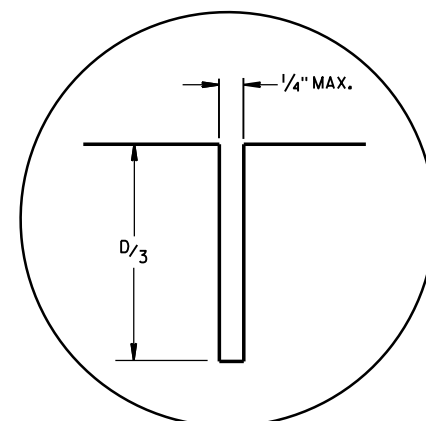
- ① ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.
- ② PAVEMENT THAT WAS IN PLACE PRIOR TO THE CONTRACT.



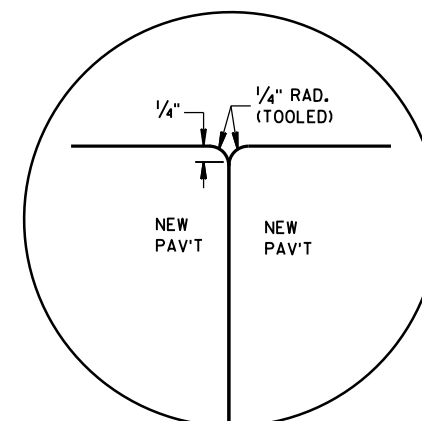
PLAN VIEW



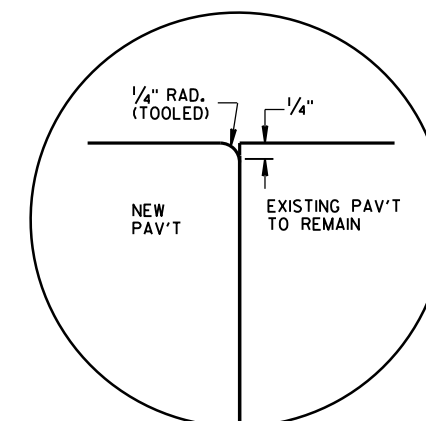
SECTION A-A  
LONGITUDINAL CONSTRUCTION JOINT  
TIE BARS ANCHORED  
INTO EXISTING PAVEMENT



DETAIL "A"



DETAIL "B"



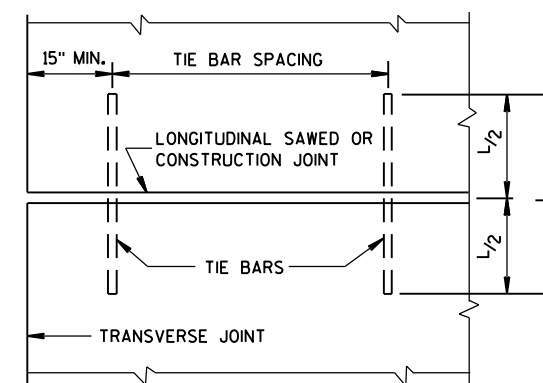
DETAIL "C"

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

\* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

\*\* CONFORM TO 15" MINIMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

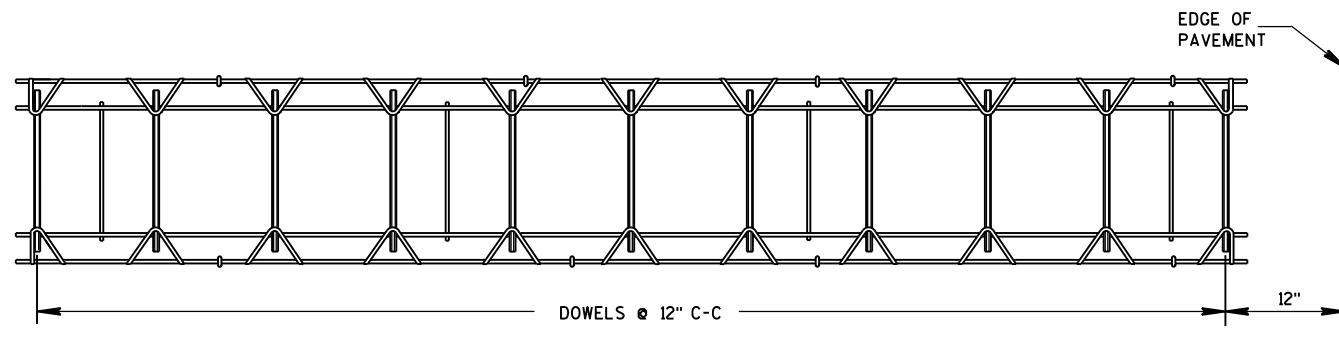


PLAN VIEW  
SHOWING LOCATION OF TIE BARS

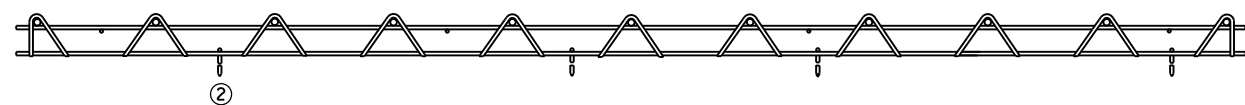
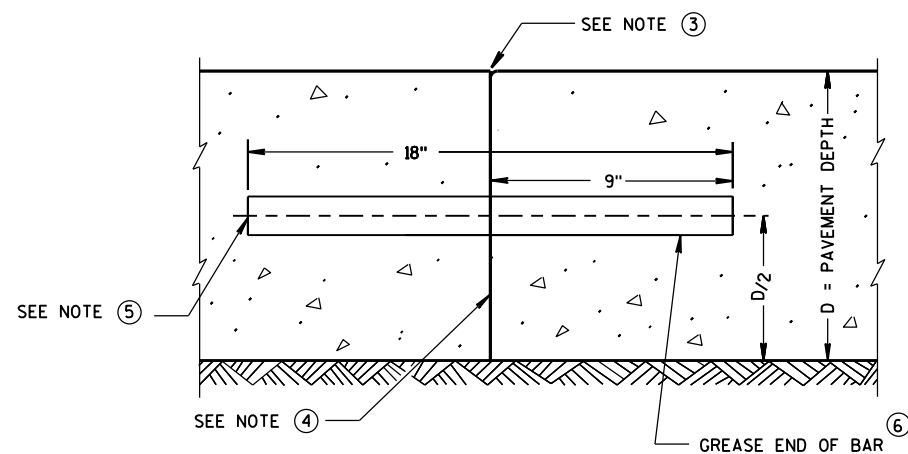
CONCRETE PAVEMENT  
LONGITUDINAL JOINTS AND TIES

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

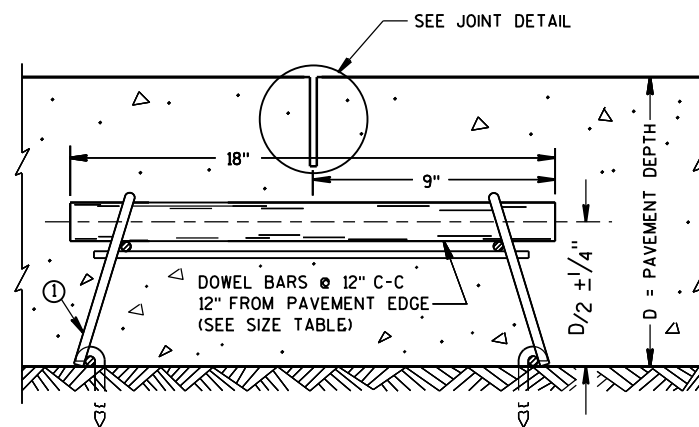
APPROVED  
June, 2015 /S/ Peter Kemp, P.E.  
DATE PAVEMENT SUPERVISOR  
FHWA



PLAN VIEW

SIDE VIEW  
CONTRACTION JOINT DOWEL ASSEMBLY ①

TRANSVERSE CONSTRUCTION JOINT



DOWELED CONTRACTION JOINT

PAVEMENT DEPTH, DOWEL BAR SIZE  
AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
5 1/2", 6", 6 1/2"	NONE	12'
7", 7 1/2"	1"	14'
8", 8 1/2"	1 1/4"	15'
9", 9 1/2"	1 1/4"	15'
10" & ABOVE	1 1/2"	15'

## GENERAL NOTES

## CONTRACTION JOINTS

CONSTRUCT TRANSVERSE CONTRACTION JOINTS NORMAL TO THE CENTERLINE. SHOW THE LOCATION OF CONTRACTION JOINTS THROUGH INTERSECTIONS ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT SEAL OR FILL CONTRACTION JOINTS.

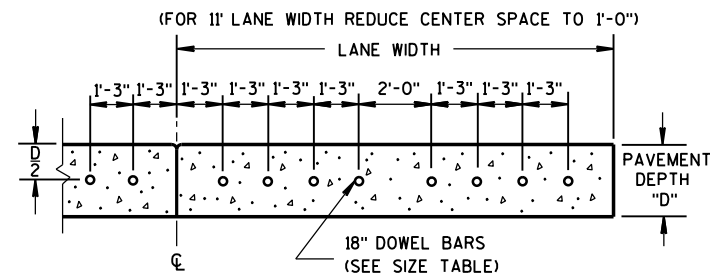
INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

FOR PAVEMENT SLABS OF VARYING WIDTHS, LOCATE THE OUTER MOST DOWEL BAR SO THAT THE CENTER OF THE BAR IS A MINIMUM OF 6 INCHES AND A MAXIMUM OF 18 INCHES FROM THE LONGITUDINAL JOINT AND THE FREE EDGE OF PAVEMENT.

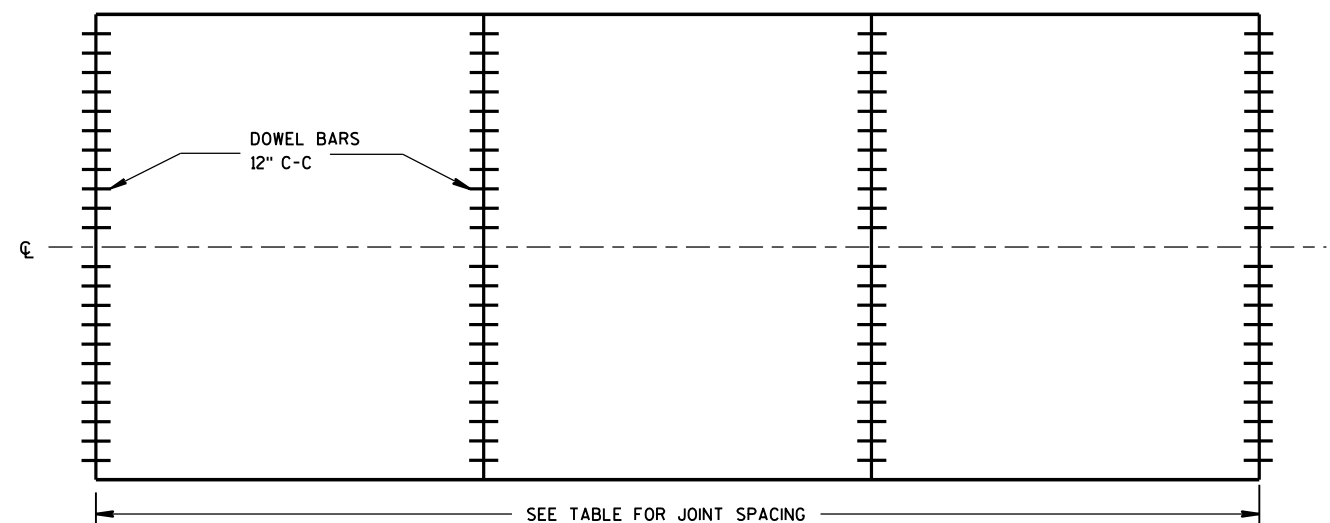
## CONSTRUCTION JOINTS

LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.

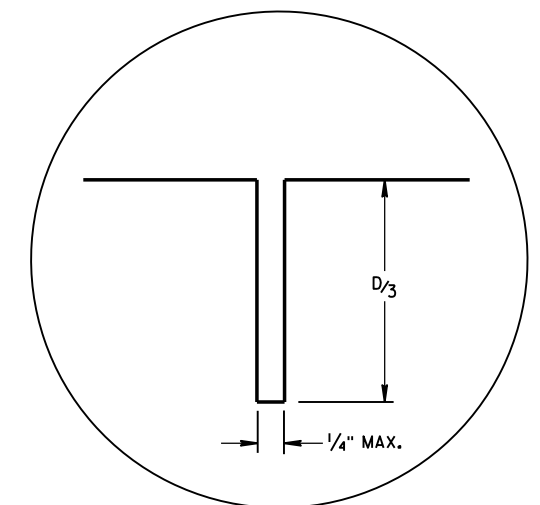
- ① OBTAIN THE ENGINEER'S APPROVAL FOR THE USE OF ALTERNATIVE DESIGNS OF THE DOWEL ASSEMBLY. USE MECHANICAL DOWEL BAR INSERTERS OR DOWEL ASSEMBLIES WHEN CONSTRUCTING CONTRACTION JOINTS.
- ② SECURE BASKETS WITH ANCHORS TO HOLD DOWEL BARS IN THE CORRECT POSITION AND ALIGNMENT. TYPE, LOCATION, NUMBER AND LENGTH OF ANCHORS ARE DEPENDENT UPON FIELD CONDITIONS.
- ③ FORM OR SAW CONSTRUCTION JOINTS. PROVIDE A 1/4-INCH RADIUS AT FORMED JOINTS.
- ④ PROVIDE A SMOOTH VERTICAL FACE FOR THE ENTIRE DEPTH OF THE PAVEMENT WHEN FORMING CONSTRUCTION JOINTS.
- ⑤ INSTALL DOWEL BARS AT CONSTRUCTION JOINTS BY FORMING OR DRILLING. INSTALL FORMED DOWEL BARS 12 INCHES C-C AND 12 INCHES FROM PAVEMENT EDGE. REMOVE EXCESS CONCRETE FROM THE FREE END OF THE DOWEL BAR IF DOWEL BARS ARE FORMED THROUGH A HEADER BOARD. INSTALL DRILLED DOWEL BARS ACCORDING TO *DRILLED DOWEL BAR CONSTRUCTION JOINT* DETAIL.
- ⑥ APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.
- ⑦ ANCHOR DOWEL BARS INTO DRILLED HOLES WITH AN EPOXY. MAXIMUM DRILLED HOLE SIZE IS 1/8-INCH GREATER THAN DOWEL BAR DIAMETER, 9 INCHES IN LENGTH.



DRILLED DOWEL BAR CONSTRUCTION JOINT ⑦



CONTRACTION JOINT LOCATIONS



JOINT DETAIL

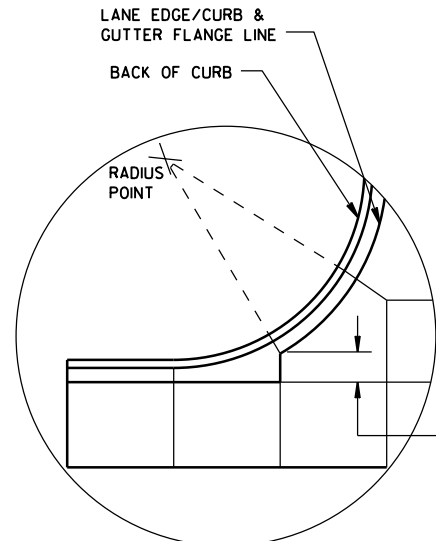
URBAN DOWELED  
CONCRETE PAVEMENTSTATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

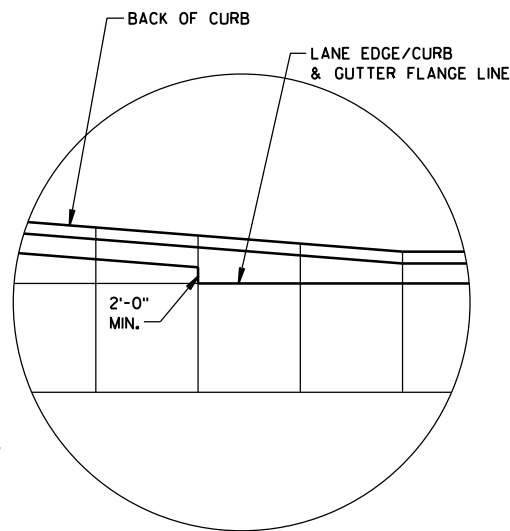
5/3/2013  
DATE

FHWA

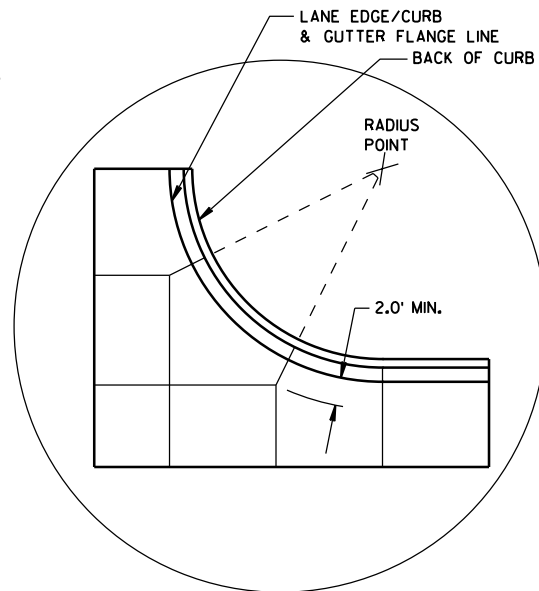
/S/ Deb Bischoff  
PAVEMENT POLICY & DESIGN ENGINEER



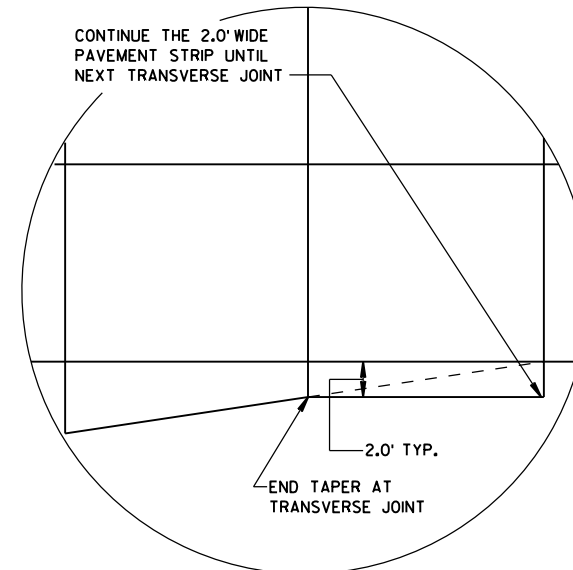
DETAIL "A"



DETAIL "B"



DETAIL "C"



DETAIL "D"

## GENERAL NOTES

THE PRIMARY ROADWAY CONTROLS THE TRANSVERSE JOINT PATTERN.

ALIGN NEW JOINTS WITH EXISTING JOINTS OR CRACKS.

CONSTRUCT TRANSVERSE JOINTS PERPENDICULAR TO THE ROADWAY.

ADJUST TRANSVERSE JOINTS TO ALIGN WITH UTILITY FIXTURES (E.G. MANHOLES AND INLETS) IN THE PAVEMENT STRUCTURE WHEN POSSIBLE. WATER VALVES DO NOT REQUIRE JOINT ADJUSTMENT.

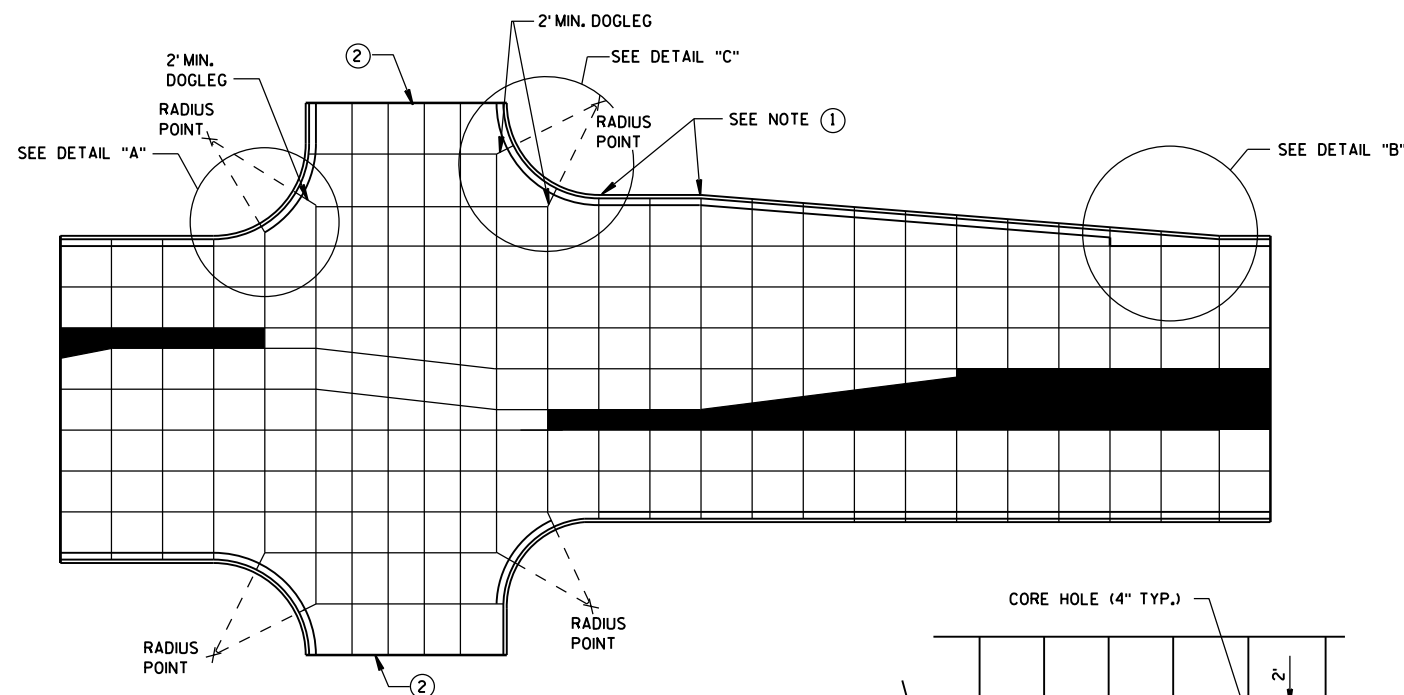
AVOID SLABS LESS THAN 2 FEET WIDE OR GREATER THAN 15 FEET WIDE.

SEE TABLE FOR TRANSVERSE JOINT SPACING. JOINT SPACING SPECIFIED IS MAXIMUM AND ACTUAL SPACING CAN BE ADJUSTED TO ACCOMMODATE INTERSECTIONS.

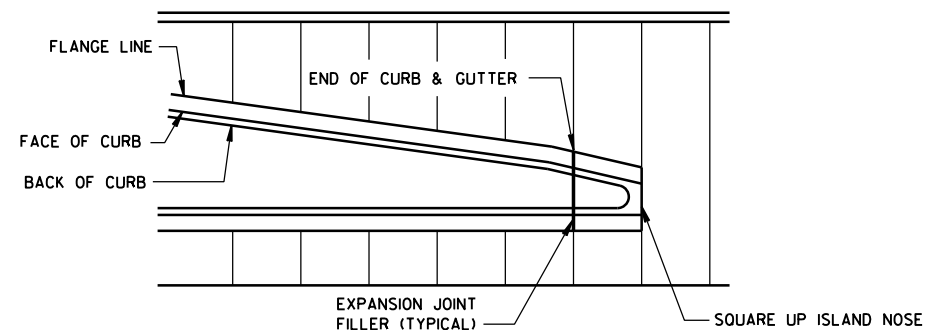
AVOID ANGLES LESS THAN 60° BY DOGLEGGING JOINTS THROUGH CURVE RADIUS POINTS. USE 90° ANGLES WHEN POSSIBLE.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

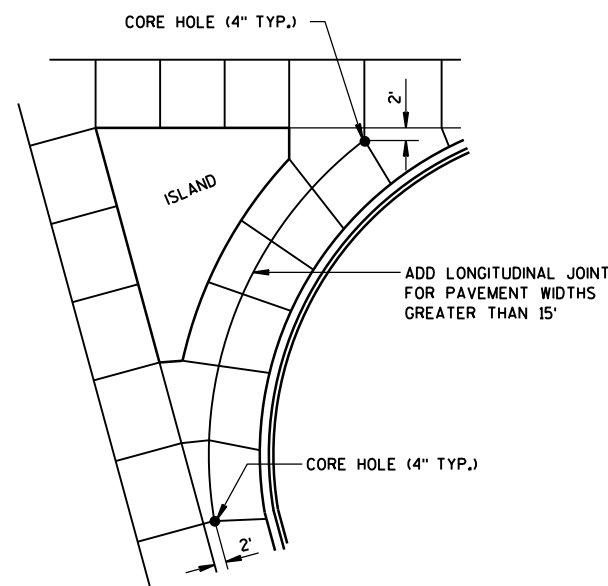
1. PROVIDE TRANSVERSE JOINTS AT ALL PAVEMENT WIDTH CHANGES.
2. CONSTRUCT DOWELED EXPANSION JOINT ON THE SIDE ROAD OF AN INTERSECTION IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH. ALIGN EXPANSION JOINT WITH EDGE OF RADIUS.
3. THE ENGINEER MAY APPROVE SLIGHT VARIATIONS FROM THESE JOINTING DETAILS.



STANDARD INTERSECTION



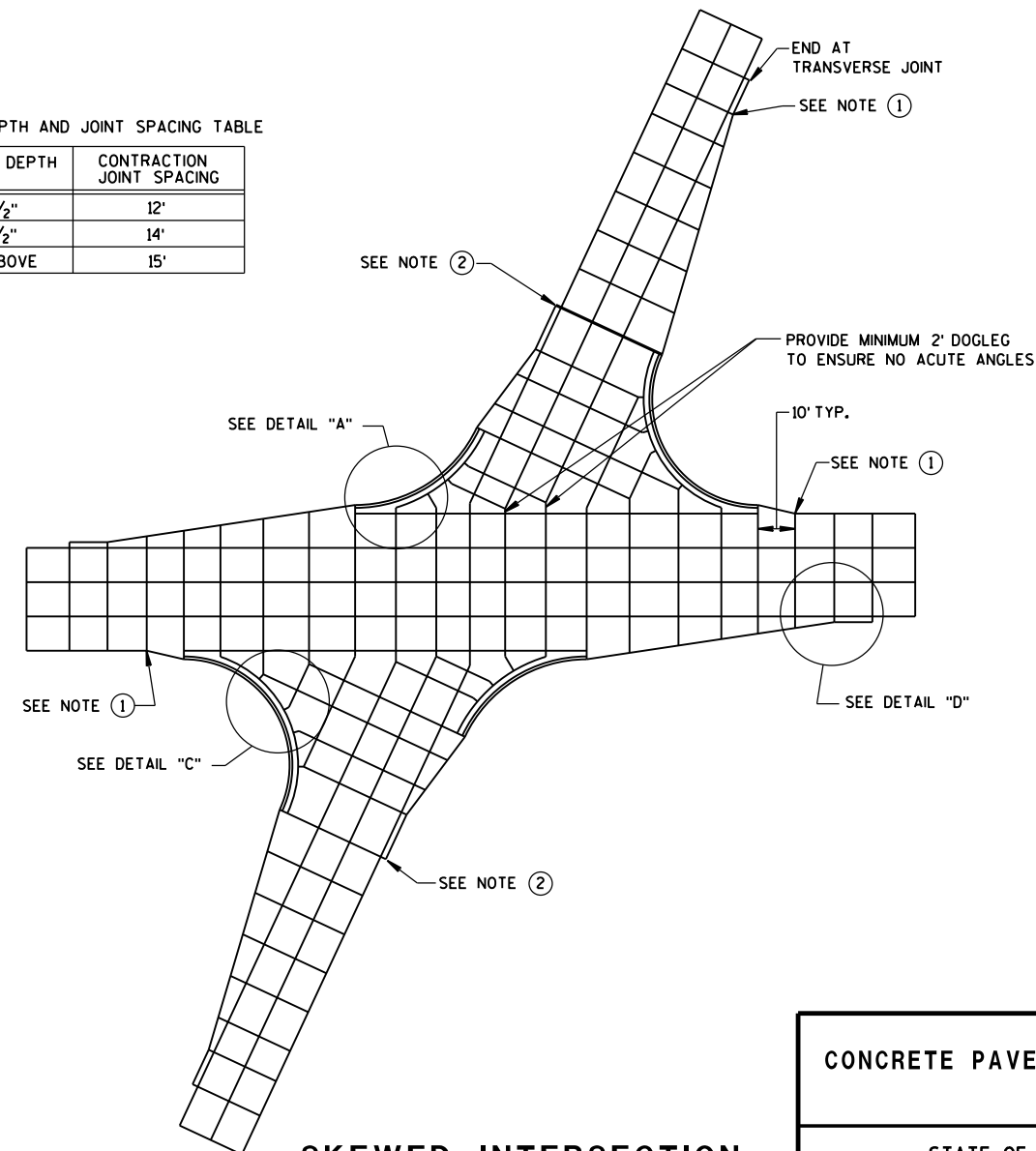
APPROACH TO MEDIAN



LARGE RIGHT TURN

PAVEMENT DEPTH AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	CONTRACTION JOINT SPACING
6", 6 1/2"	12'
7", 7 1/2"	14'
8" & ABOVE	15'



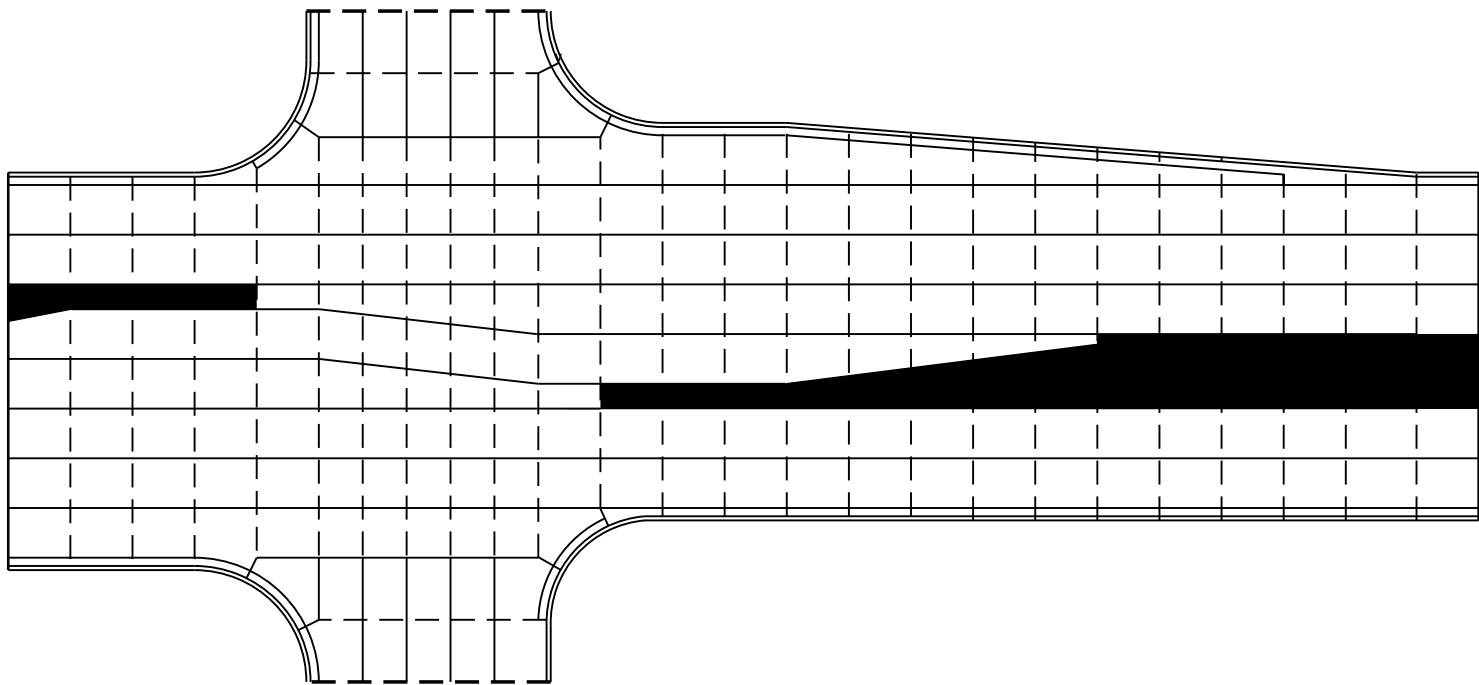
SKewed INTERSECTION

CONCRETE PAVEMENT JOINTING

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

LEGEND

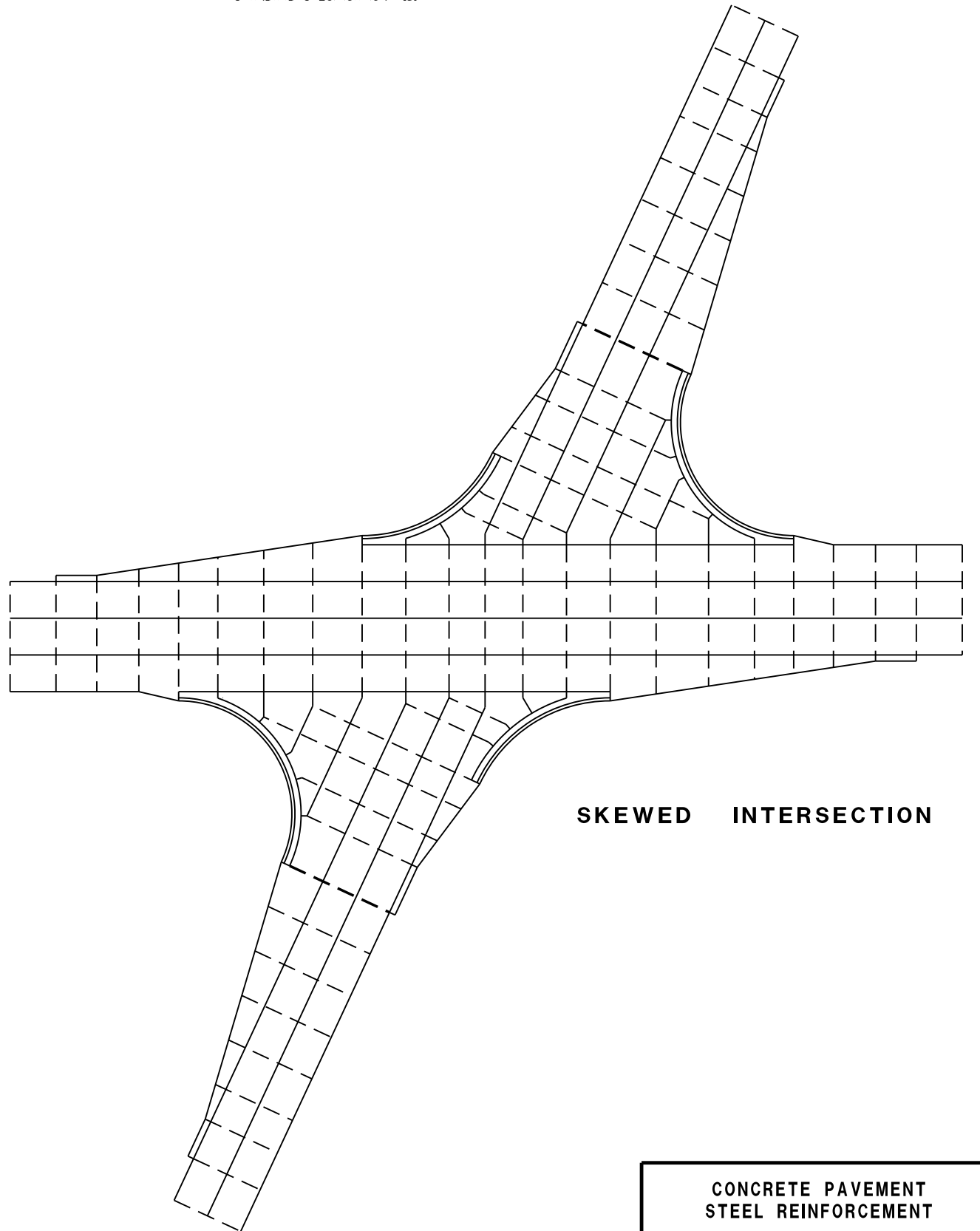
- POTENTIAL DOWELED EXPANSION JOINT
- - - DOWELED JOINT
- \_\_\_\_\_ TIED JOINT



STANDARD INTERSECTION

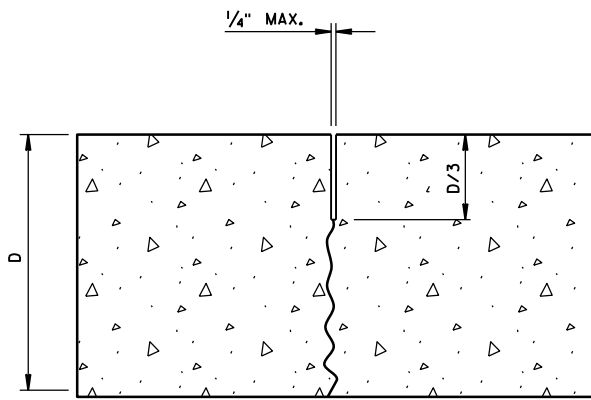
GENERAL NOTES

USE AN EXPANSION JOINT FILLER MEETING THE REQUIREMENTS OF STANDARD SPECIFICATION 415.

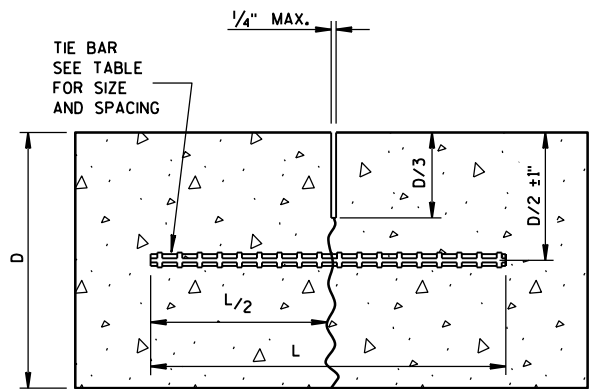


SKewed INTERSECTION

CONCRETE PAVEMENT STEEL REINFORCEMENT
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION



UNDOWELED-TRANSVERSE



TIED LONGITUDINAL

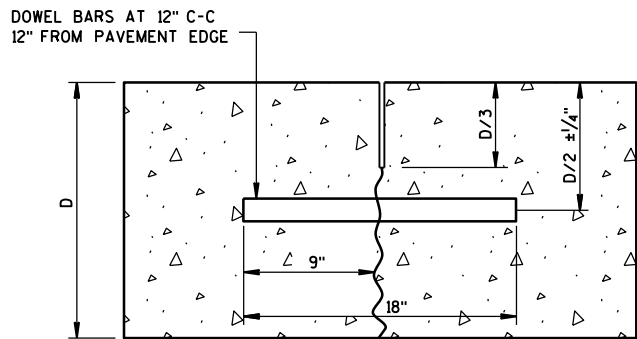
PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

\* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

\*\* CONFORM TO 15" MINIMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

GENERAL NOTES

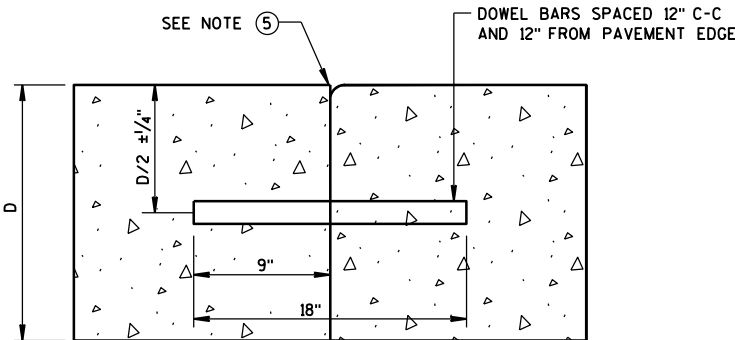
- USE DOWELED EXPANSION JOINTS ON SIDE ROADS AT INTERSECTIONS (TO ISOLATE THE SIDE ROAD FROM THE THROUGH STREET) IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH.
- SPACE CONTRACTION JOINTS IN ACCORDANCE WITH 13C4, 13C11 OR 13C13.
- LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.
- CONSTRUCTION JOINTS CAN BE FORMED OR SAWED.
- IF JOINT IS FORMED, PROVIDE A 1/4-INCH RADIUS.
- ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.



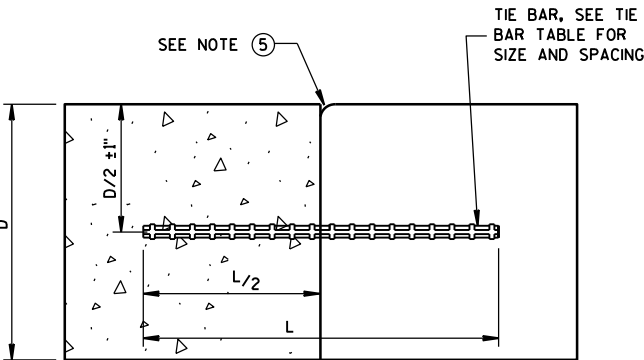
DOWELED-TRANSVERSE

CONTRACTION JOINTS

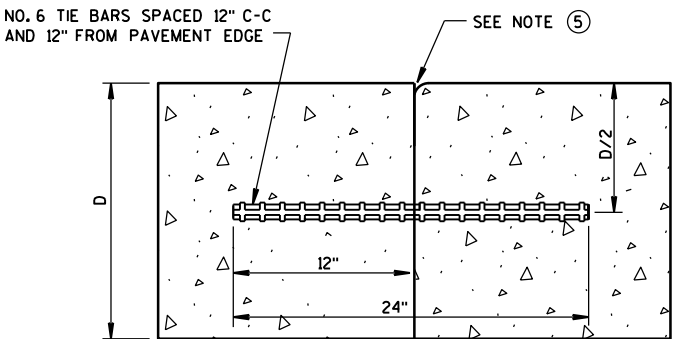
SEE NOTE ②



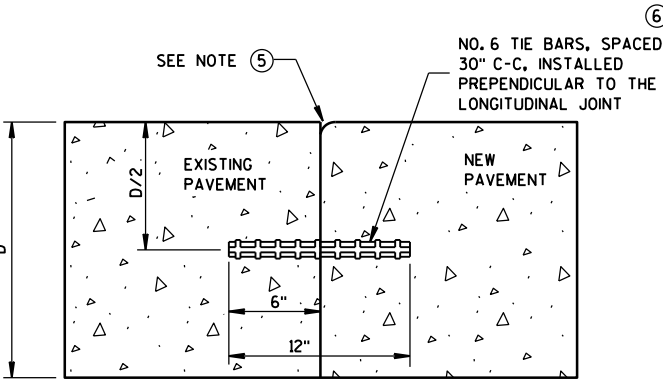
DOWELED TRANSVERSE ③



TIED LONGITUDINAL



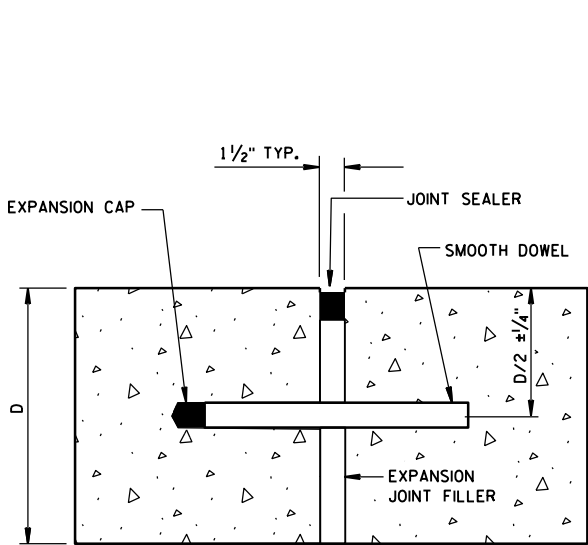
TIED TRANSVERSE ③  
(FOR USE ON NON-DOWELED PAVEMENTS ONLY)



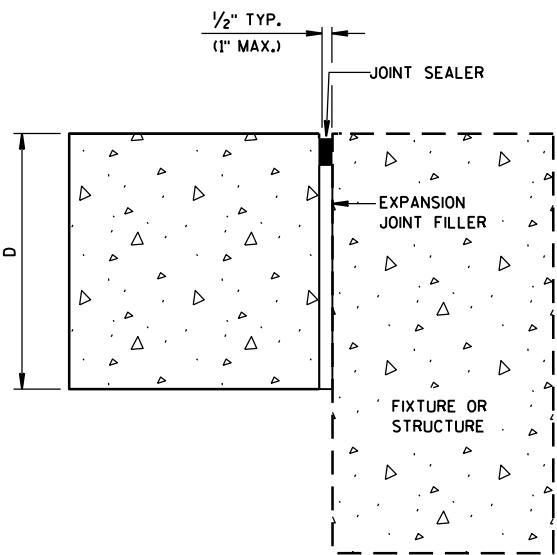
TIED LONGITUDINAL TO EXISTING

CONSTRUCTION JOINTS

SEE NOTE ④



DOWELED-TRANSVERSE  
SEE NOTE ①

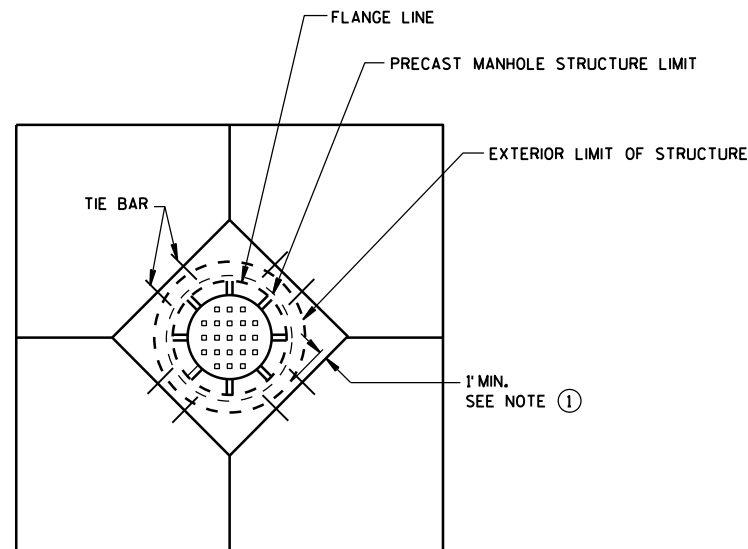


UNTIED-LONGITUDINAL

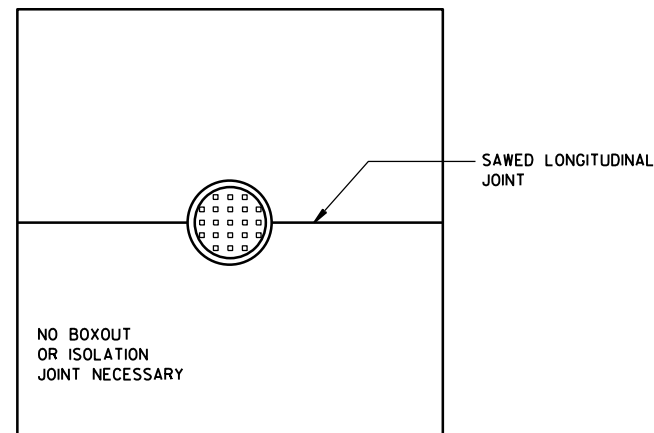
EXPANSION JOINTS

CONCRETE PAVEMENT  
JOINT TYPES

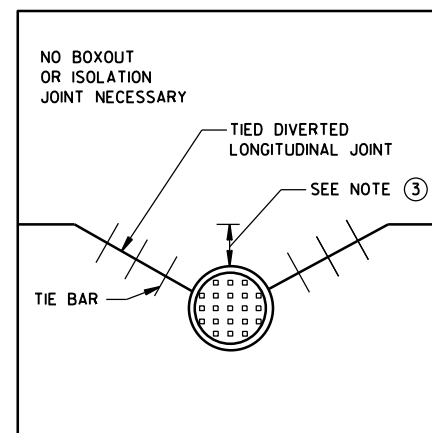
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



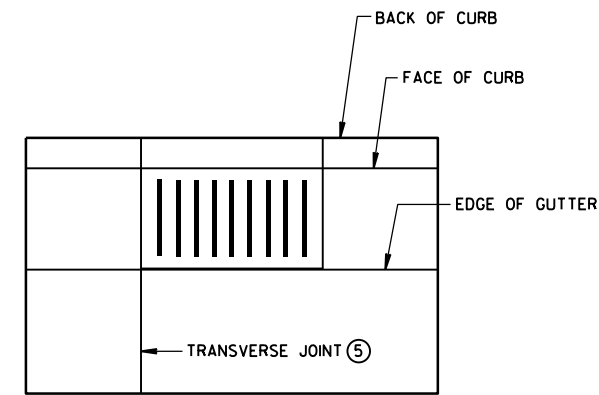
**DIAGONAL MANHOLE BOXOUT  
FOR CONSTRUCTION JOINTS**



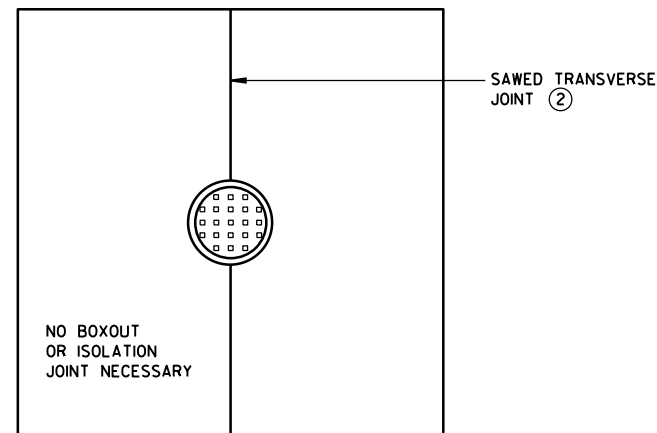
**MANHOLE WITH  
LONGITUDINAL JOINT**



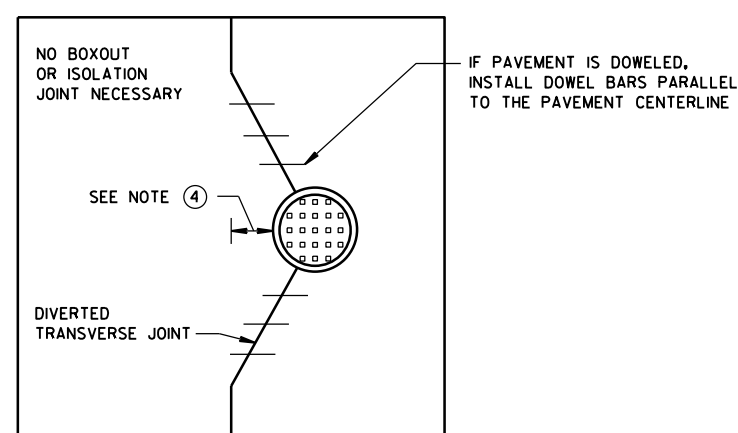
**MANHOLE WITH DIVERTED  
LONGITUDINAL CONTRACTION JOINT**



**INLET WITH  
TRANSVERSE JOINT**



**MANHOLE WITH  
TRANSVERSE JOINT**



**MANHOLE WITH DIVERTED  
TRANSVERSE CONTRACTION JOINT**

**GENERAL NOTES**

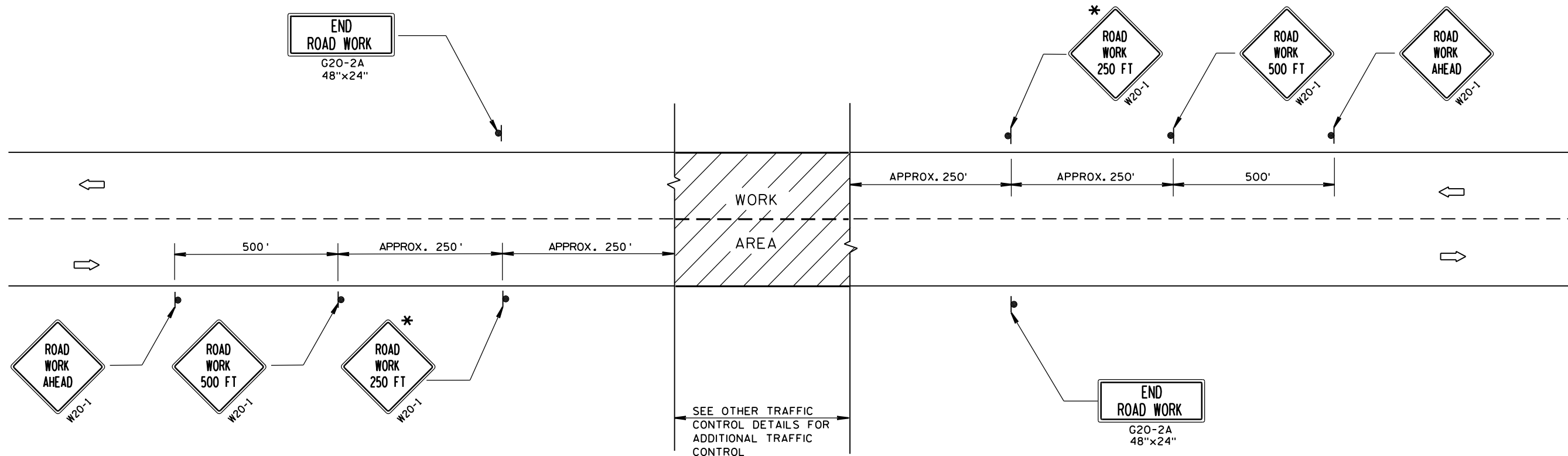
- ① USE BOXOUTS WHEN UTILITY STRUCTURE IS IN THE PATH OF CONSTRUCTION JOINTS. PROVIDE A 1-FOOT MINIMUM CLEARANCE BETWEEN THE EXTERIOR LIMIT OF THE STRUCTURE TO THE DIAMOND BOXOUT.
- ② ADJUST TRANSVERSE JOINT TO INTERSECT MANHOLE IF POSSIBLE.
- ③ IF DISTANCE BETWEEN THE LONGITUDINAL JOINT AND THE EDGE OF MANHOLE IS 2 FEET OR LESS, DIVERT THE LONGITUDINAL JOINT AT A 2:1 TAPER RATE TO THE CENTER OF THE MANHOLE. IF THE DISTANCE IS GREATER THAN 2 FEET, DO NOT DIVERT THE JOINT AND SAW AS NORMAL. PLACE REBAR REINFORCEMENT AROUND THE MANHOLE.
- ④ IF DISTANCE FROM THE EDGE OF THE MANHOLE TO THE NEAREST TRANSVERSE JOINT IS 4 FEET OR LESS, REDIRECT JOINT TO INTERSECT THE CENTER OF THE MANHOLE. IF DISTANCE IS GREATER THAN 4 FEET, DO NOT DIVERT THE JOINT AND SAW AS NORMAL. PLACE REBAR REINFORCEMENT AROUND THE MANHOLE.
- ⑤ ALIGN TRANSVERSE JOINT WITH ONE EDGE OF INLET WHEN PRACTICAL.

**CONCRETE PAVEMENT  
JOINTING AT UTILITY FIXTURES**

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
June, 2015  
DATE  
FHWA

/S/ Peter Kemp, P.E.  
PAVEMENT SUPERVISOR



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL

## GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS.

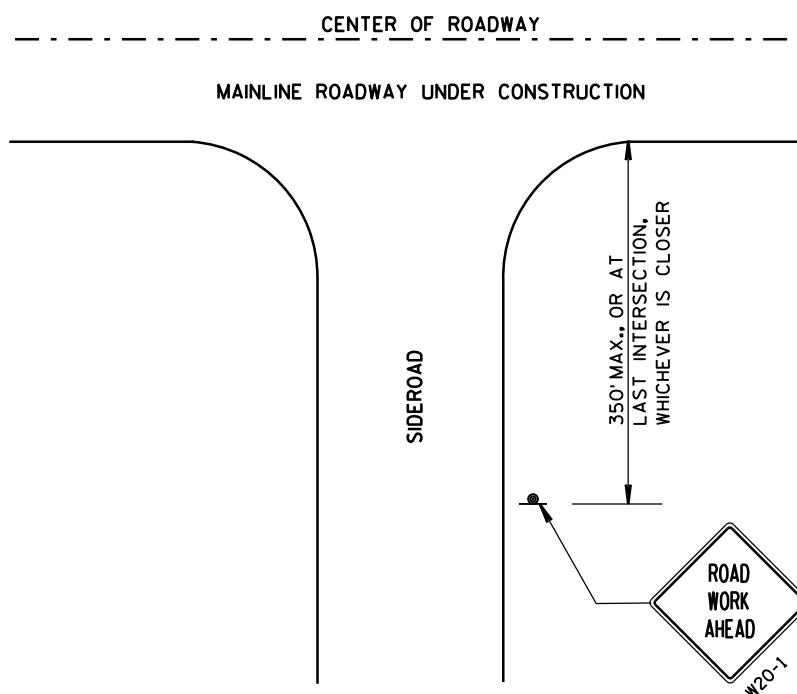
THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS, 36"x36" SIGNS MAY BE USED INSTEAD OF 48"x48" SIGNS.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

IF A "STOP" SIGN MUST BE REMOVED FOR A WORK OPERATION, A TEMPORARY "STOP" SIGN SHALL BE PLACED PRIOR TO THE SIGN REMOVAL, OR A FLAGGER SHALL BE PROVIDED UNTIL THE SIGN IS RE-ESTABLISHED.

\* THE THIRD W20-1 SIGN IS REQUIRED ONLY IF THERE IS AN INTERSECTION BETWEEN THE "ROAD WORK 500 FT" SIGN AND THE WORK ZONE. ADJUST THE PLACEMENT OF THIS SIGN BASED ON INTERSECTION LOCATION AND OTHER FIELD CONDITIONS.



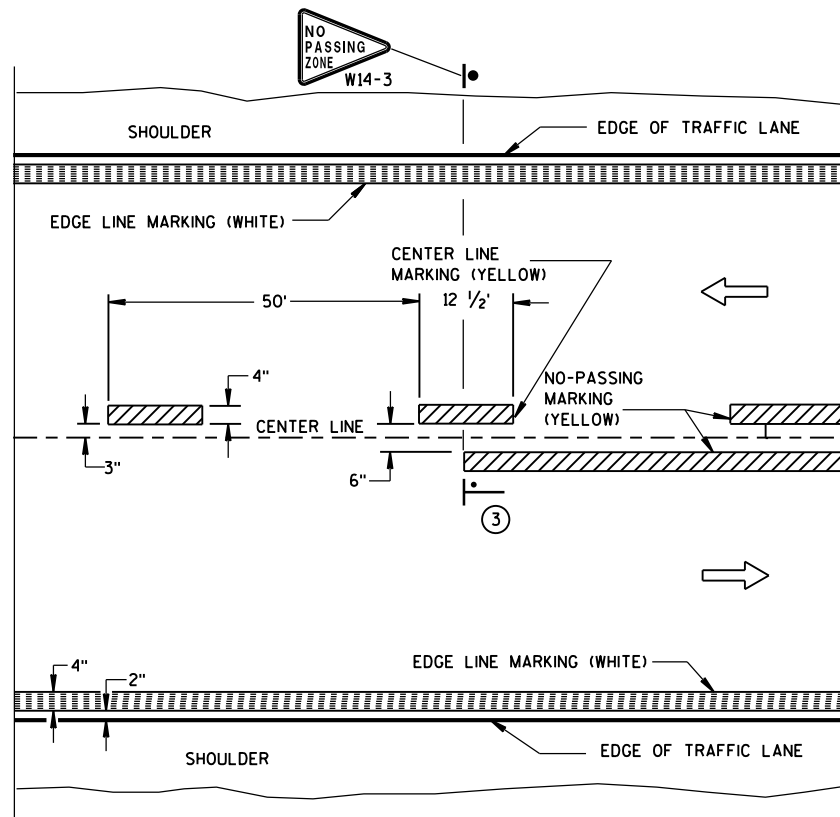
## LEGEND

- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA

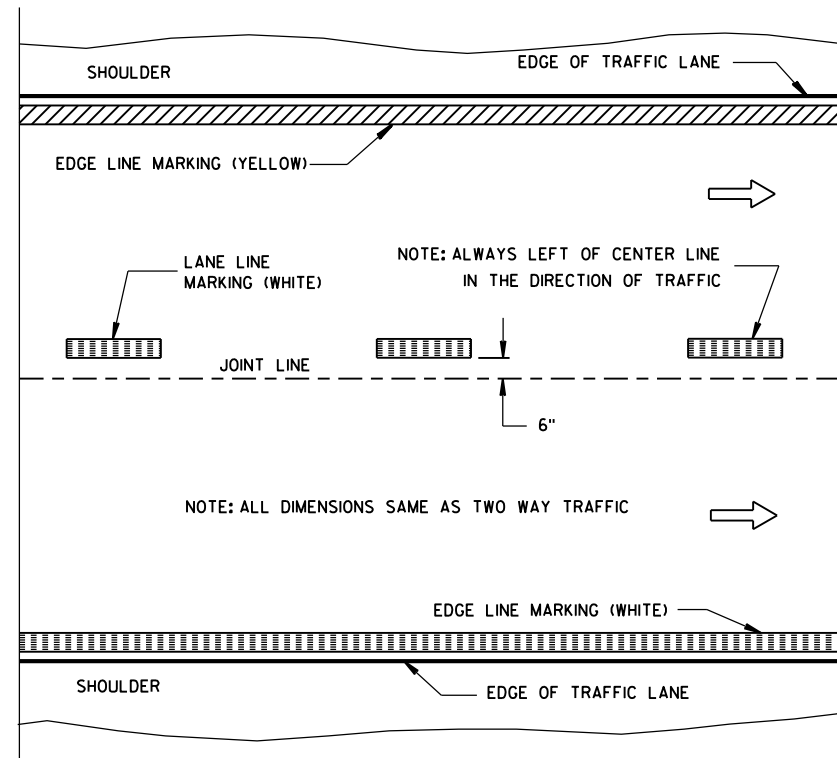
TRAFFIC CONTROL, ADVANCE  
WARNING SIGNS 40 M.P.H.  
OR LESS TWO-WAY UNDIVIDED  
ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
8/2013 /S/ Travis Feltes  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA

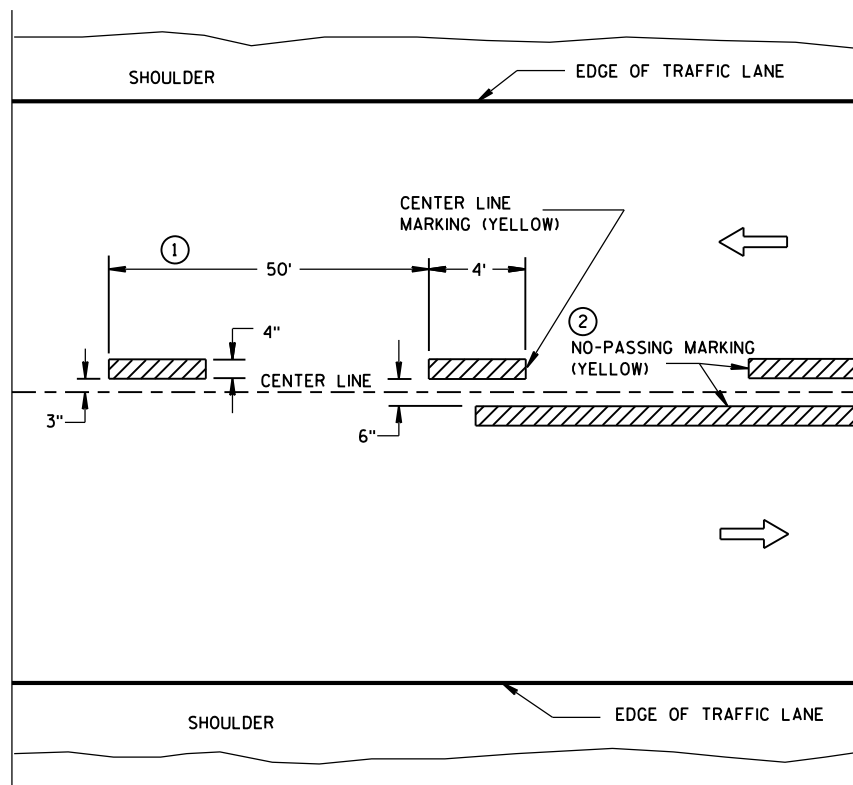


TWO WAY TRAFFIC

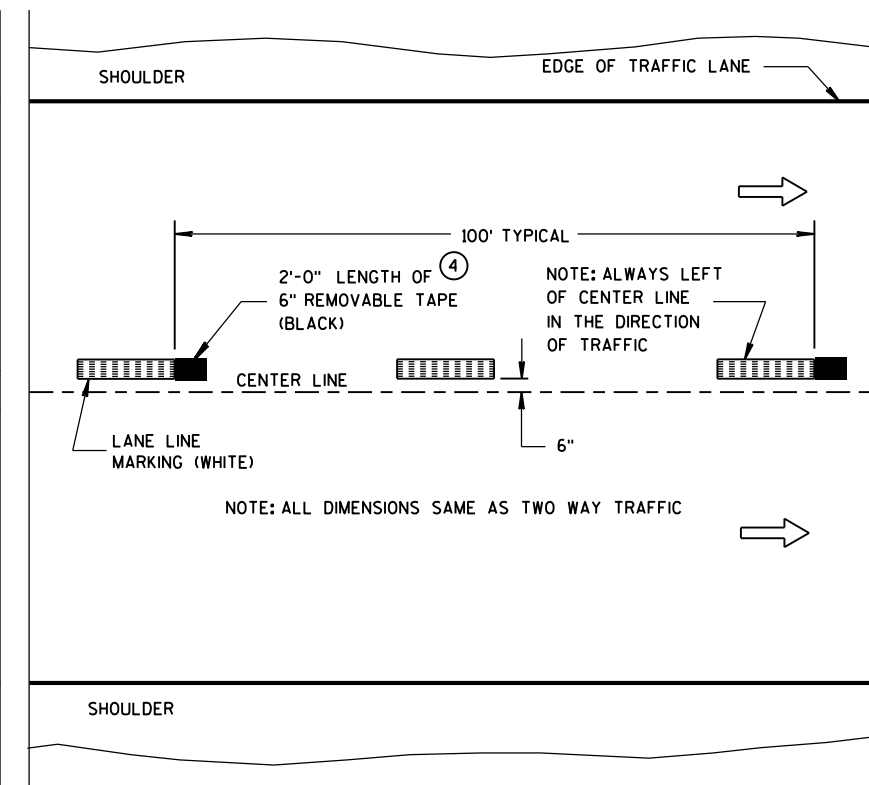


ONE WAY TRAFFIC

## PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING  
(SHOWS CYCLE FOR TEMPORARY CENTER LINE OR TEMPORARY LANE LINE MARKING)

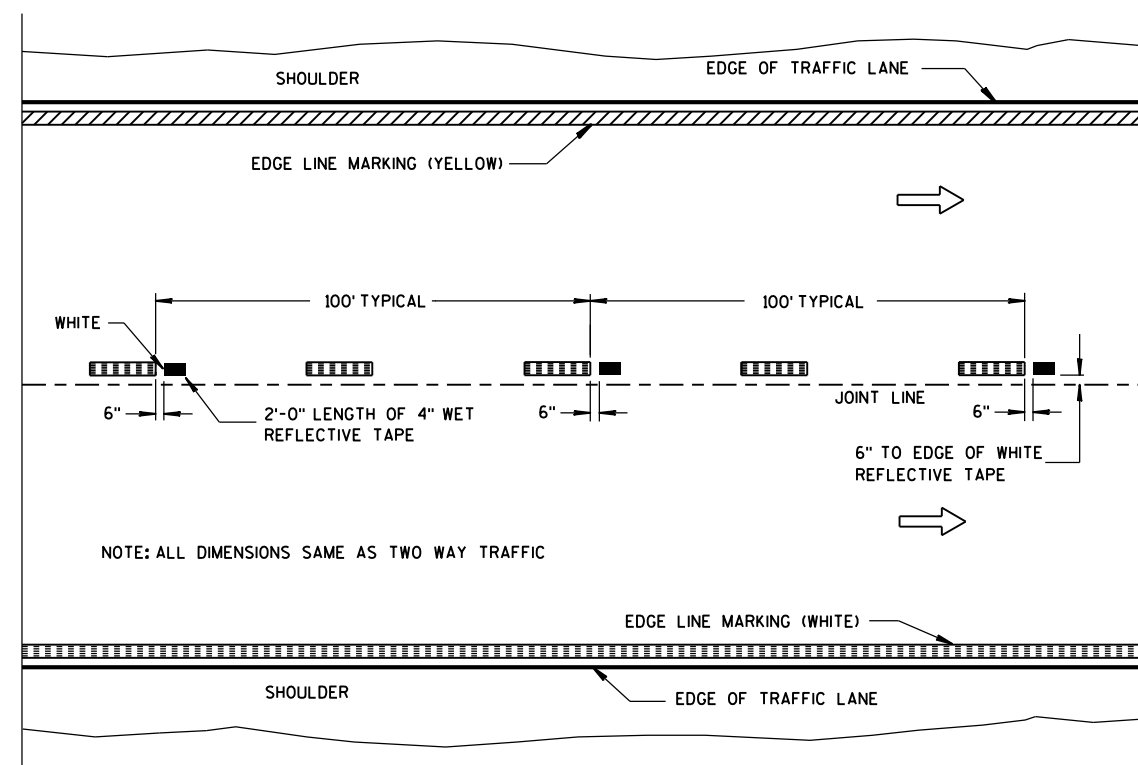
## GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

- ① HALF CYCLE LENGTHS (25'±) WITH 2' MINIMUM STRIPE LENGTHS SHALL BE PROVIDED ON ROADWAYS (INCLUDING TEMPORARY TRAVELED WAYS) WITH REVERSE CURVATURE, CURVATURE OF OVER 5 DEGREES OR WHEN DIRECTED BY THE ENGINEER TO MARK UNUSUAL ALIGNMENT OF THE TRAVELED WAY.
- ② NO PASSING ZONE TEMPORARY PAVEMENT MARKING IS REQUIRED TO BE PLACED, WHERE APPROPRIATE, ALONG WITH CENTERLINE TEMPORARY PAVEMENT MARKING WHEN A SAME DAY PERMANENT PAVEMENT MARKING ITEM IS INCLUDED IN THE CONTRACT.
- ③ NO PASSING ZONE MARKINGS ARE PLACED ACCORDING TO "T" MARKINGS. IF EXISTING NO PASSING ZONE W14-3 SIGNS ARE BEYOND 50 FEET IN EITHER DIRECTION, THE SIGNS SHALL BE MOVED TO THE "T" MARKINGS.
- ④ CONCRETE ONLY.

## NOTE

ARROW SYMBOL (→) SHOWS DIRECTION OF TRAVEL



WET REFLECTIVE TAPE SUPPLEMENT TO  
SPRAYED OR NON WET REFLECTIVE TAPE LANE LINE

## LEGEND

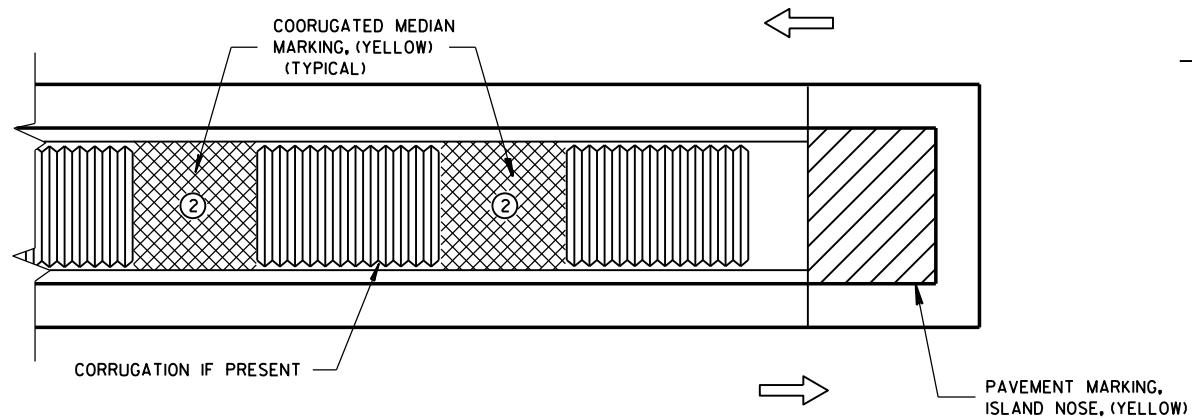
- "T" MARKING
- POST MOUNTED SIGN

PAVEMENT MARKING  
(MAINLINE)

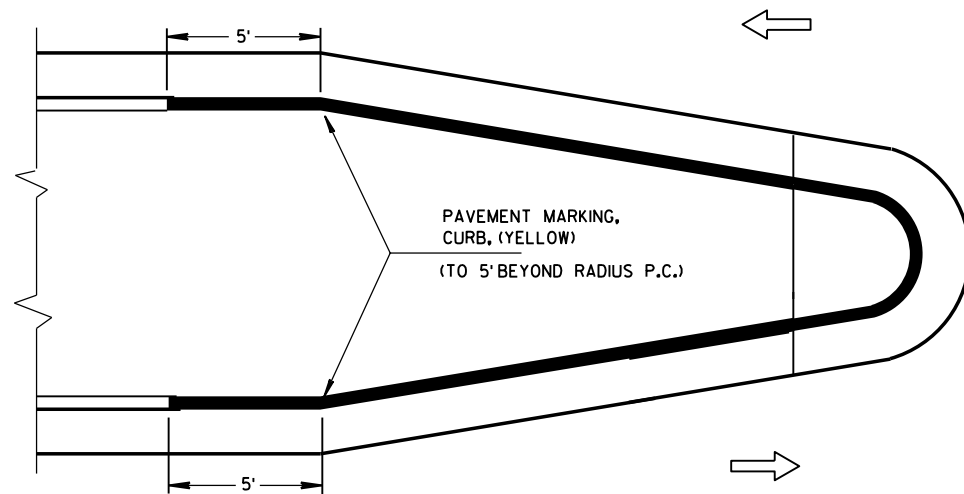
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
5-13-2013  
DATE  
FHWA

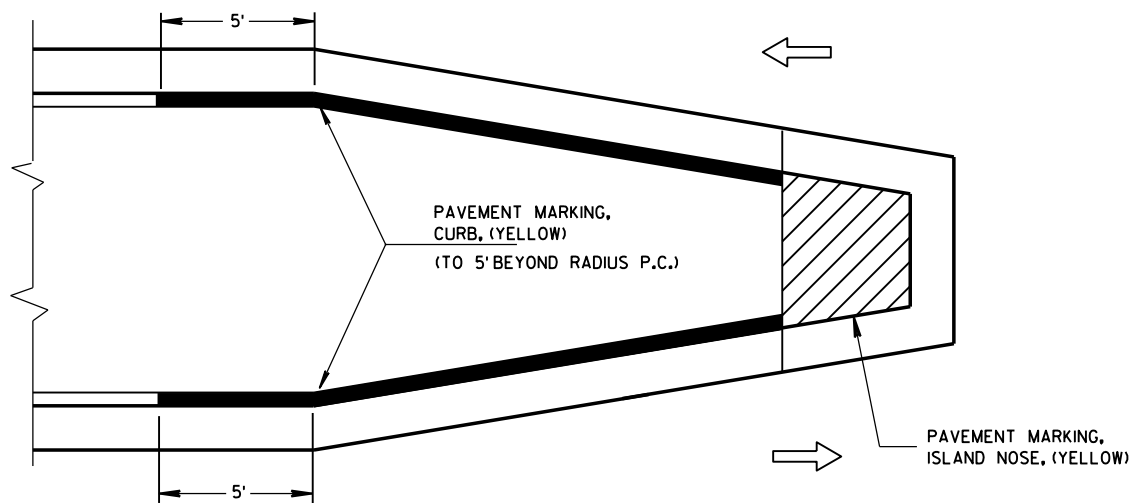
/S/ Travis Feltes  
STATE TRAFFIC ENGINEER



MEDIAN ISLAND WITH SQUARE BLUNT NOSE

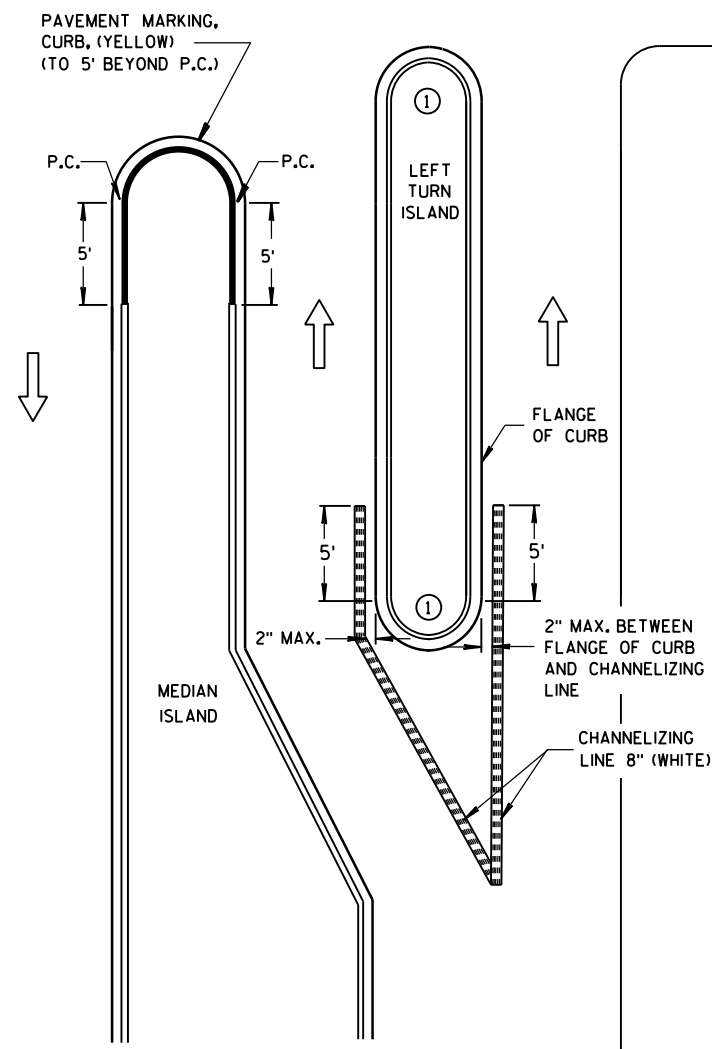


MEDIAN ISLAND WITH ROUND BLUNT NOSE



MEDIAN ISLAND WITH SLOPED NOSE

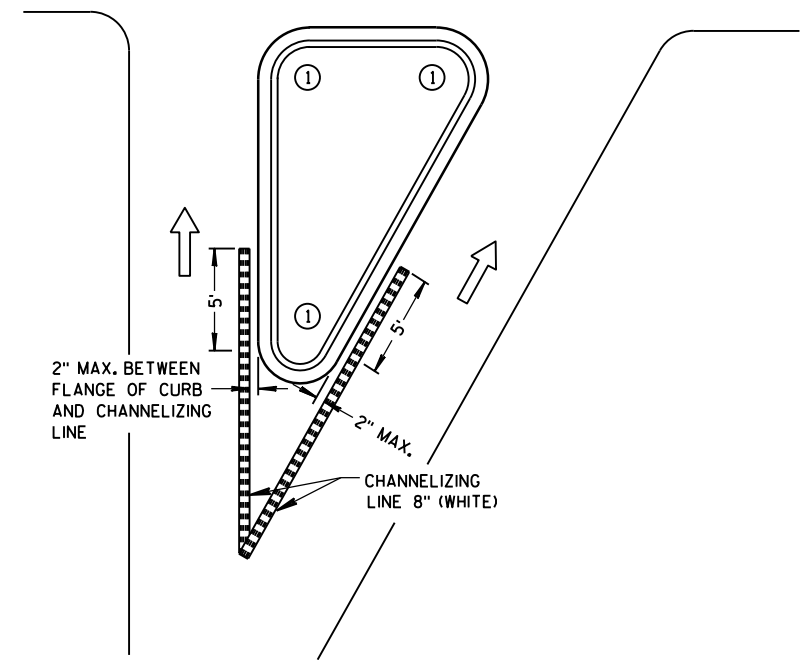
TYPICAL PLACEMENT OF PAVEMENT MARKING ON MEDIAN ISLANDS



LEFT TURN & MEDIAN ISLAND

GENERAL NOTES

- 1 DO NOT MARK CURB NOSES THAT SEPARATE LANES OF TRAFFIC TRAVELING IN THE SAME DIRECTION.
- 2 WHEN CONCRETE CORRUGATED MEDIAN IS CONSTRUCTED TO SEPARATE TRAFFIC OPERATING IN THE OPPOSING DIRECTION YELLOW PAVEMENT MARKING SHALL BE APPLIED TO THE FLAT PORTION OF THE CONCRETE CORRUGATED MEDIAN. THE ITEM OF PAVEMENT MARKING, CONCRETE CORRUGATED MEDIAN, WILL BE MEASURED IN PLACE AND AND ACCEPTED IN ACCORDANCE WITH THE CONTRACT AND PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FOOT.



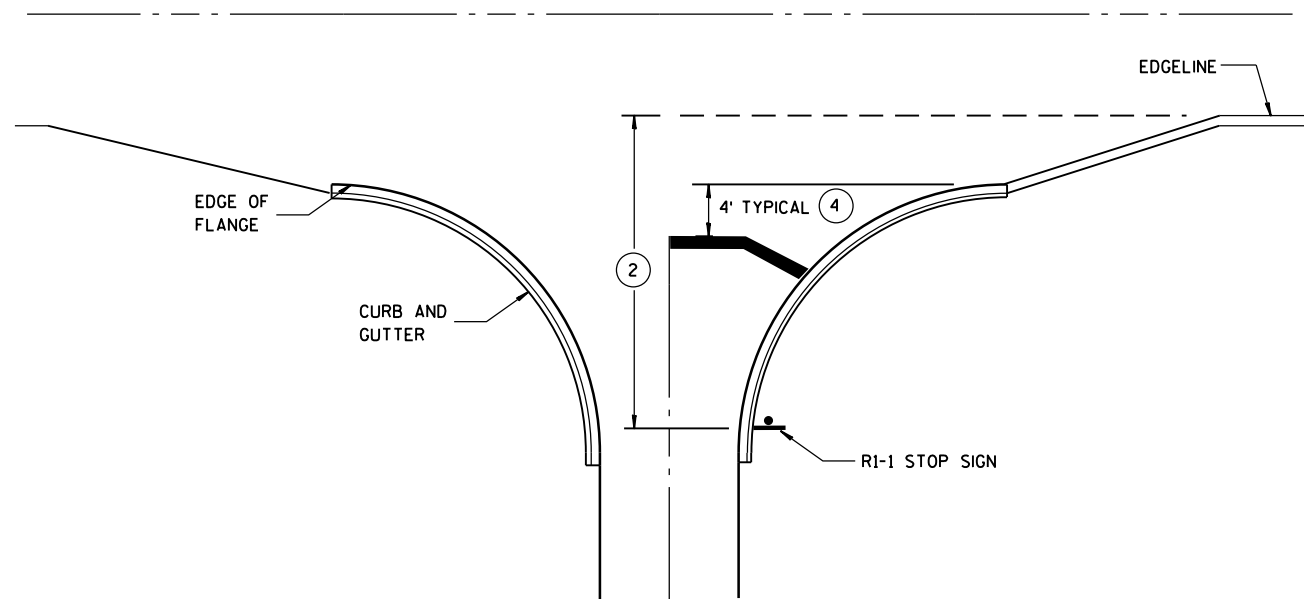
RIGHT TURN ISLAND

LEGEND

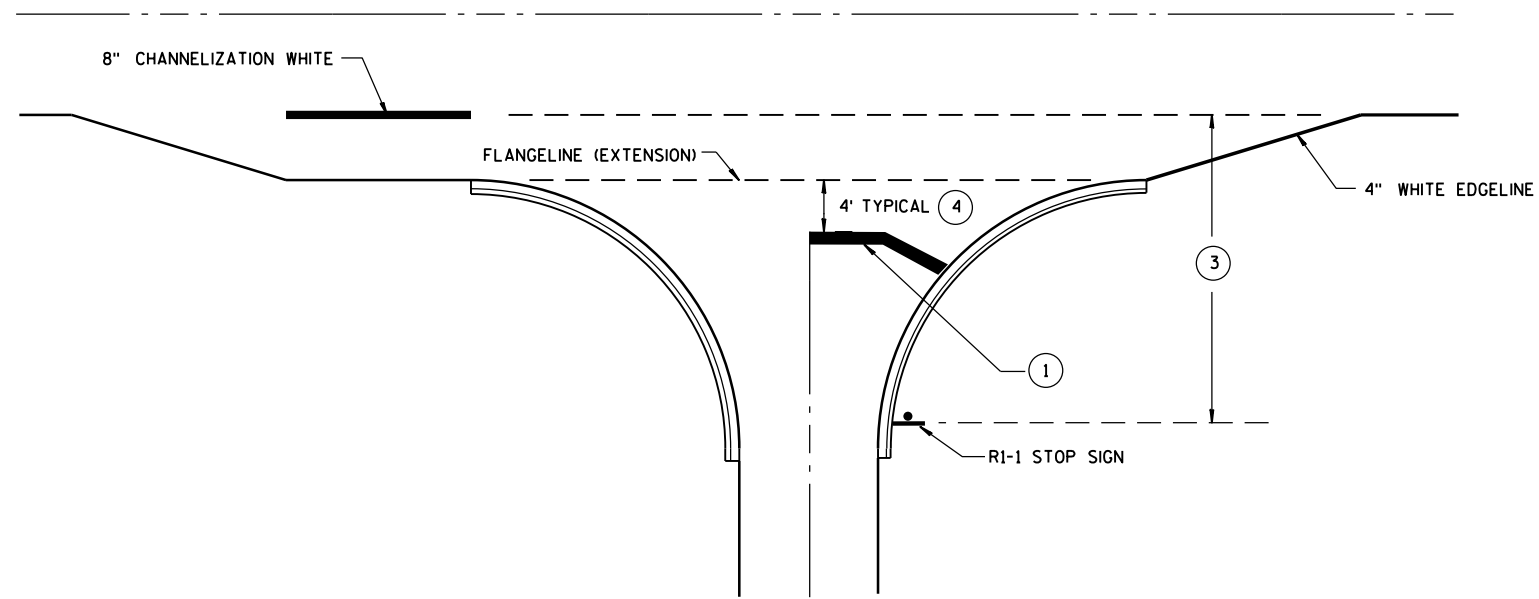
- ISLAND NOSE MARKING
- CURB MARKING
- CORRUGATED MEDIAN MARKING
- DIRECTION OF TRAVEL

PAVEMENT MARKING (ISLANDS)

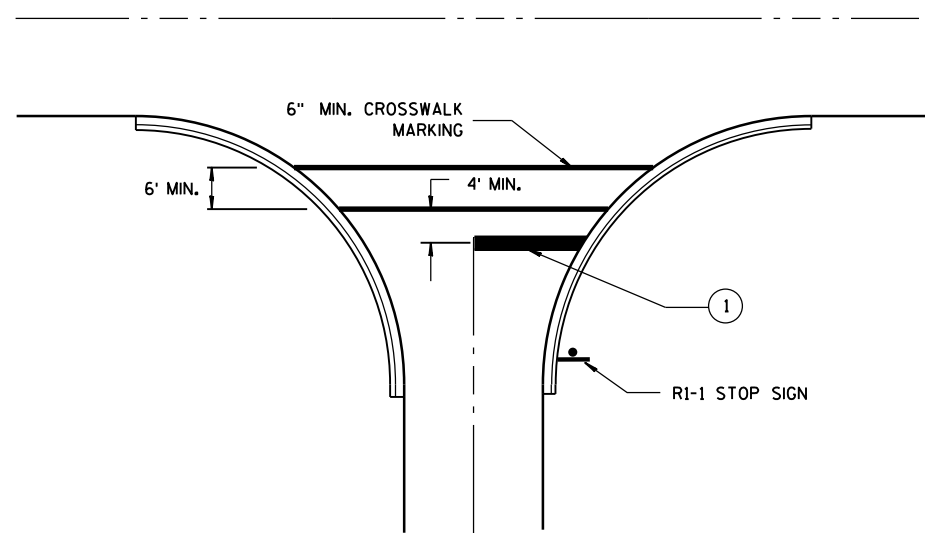
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION



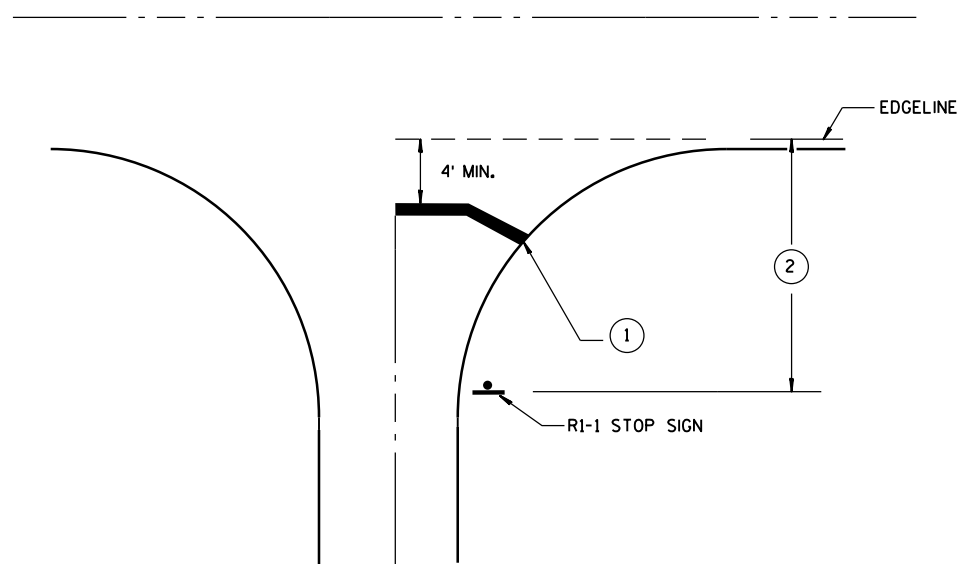
**TYPICAL STOP LINE PAVEMENT MARKING  
WITH CURB AND GUTTER**



**TYPICAL STOP LINE PAVEMENT MARKING  
FOR SIDEROADS WITH RIGHT TURN LANE**



**TYPICAL STOP LINE PAVEMENT MARKING  
FOR SIDEROADS WITH CROSSWALK MARKING**



**TYPICAL STOP LINE PAVEMENT MARKING  
WITHOUT CURB AND GUTTER**

### GENERAL NOTES

- ① 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE PROJECT ENGINEER BASED ON VISIBILITY AND SIGHT LINES.
- ② IF STOP SIGN IS LESS THAN OR EQUAL TO 40 FEET FROM THE EDGE LINE THAN NO STOP LINE IS REQUIRED.
- ③ IF STOP SIGN IS LESS THAN OR EQUAL TO 30 FEET FROM THE FLANGELINE EXTENSION THAN NO STOP LINE IS REQUIRED.
- ④ MOVE CLOSER TO EDGE OF TRAVEL LANE AS NEEDED FOR VISIBILITY AND SIGHT LINES.

### STOP LINE AND CROSSWALK PAVEMENT MARKING

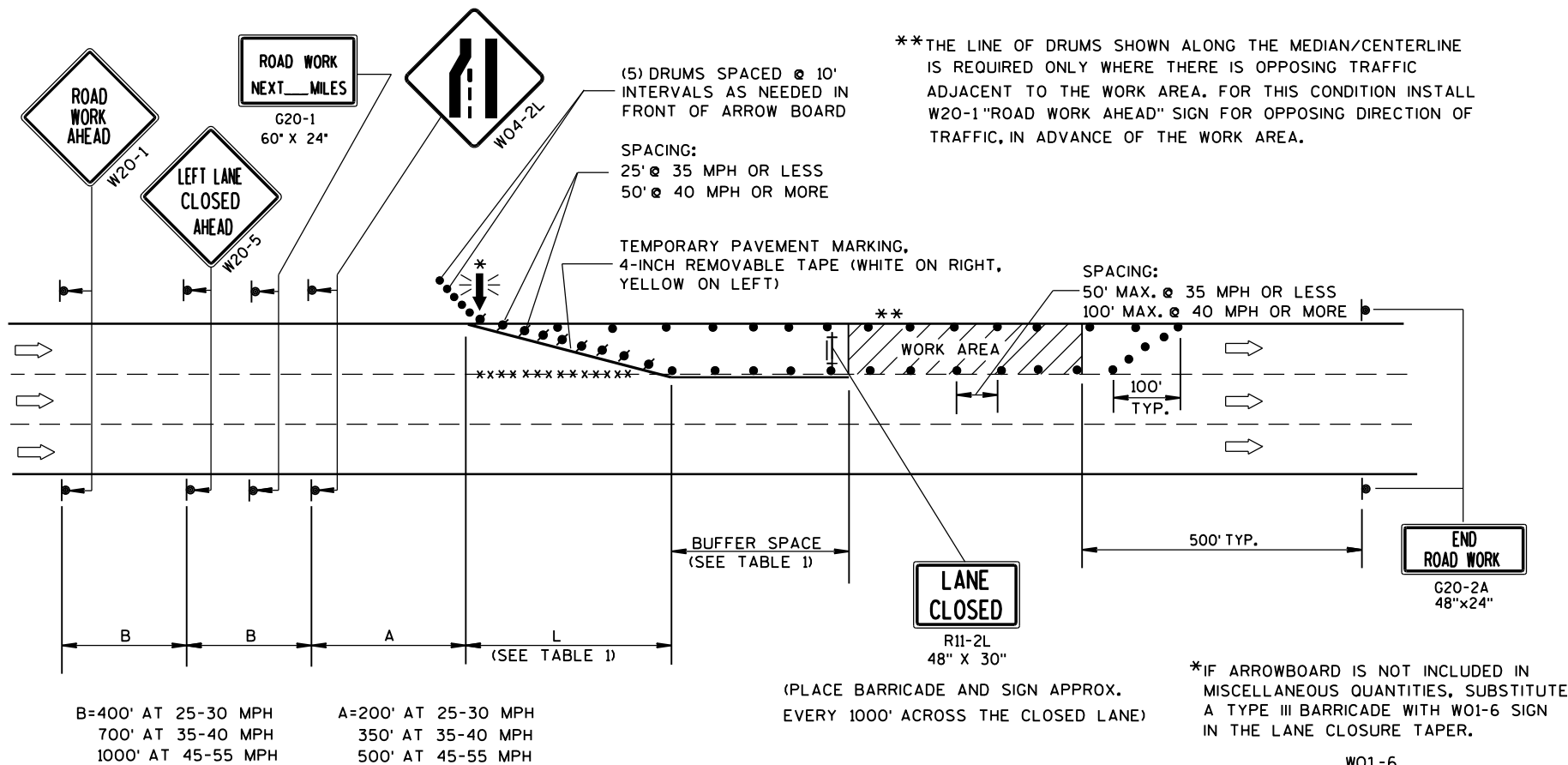
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED

4/30/2013  
DATE

FHWA

/S/ Travis Feltz  
STATE TRAFFIC ENGINEER



GENERAL NOTES

THIS LANE CLOSURE DETAIL IS TYPICAL FOR CLOSING THE LEFT LANE. FOR A RIGHT LANE CLOSURE, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR ROADWAYS WITH EITHER TWO OR THREE LANES IN EACH DIRECTION.

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

REMOVE PAVEMENT MARKINGS AND PLACE TEMPORARY PAVEMENT MARKING, REMOVABLE TAPE IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

ON UNDIVIDED ROADWAYS, OMIT THE SIGNS SHOWN ON LEFT SIDE OF ROAD.

W20-1, G20-1 AND G20-2A SIGNS ARE NOT REQUIRED IF THE LANE CLOSURE IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT.

OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

CONSIDER GEOMETRICS WHEN LOCATING SIGNS AND ARROWBOARDS SO THE APPROACHING DRIVER HAS A CLEAR VIEW OF THE ARROWBOARDS AND LANE CLOSURE DRUMS.

PLACE THE ARROWBOARD AS CLOSE AS POSSIBLE TO THE BEGINNING OF THE LANE CLOSURE TAPER, PREFERABLY ON THE SHOULDER OR TERRACE.

CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

TABLE 1  
TAPER AND BUFFER SPACE  
FOR 12' LANE WIDTH

S	L	BUFFER SPACE
25	125'	55'
30	180'	85'
35	245'	120'
40	320'	170'
45	540'	220'
50	600'	280'
55	660'	335'

FOR LANE WIDTH OTHER THAN 12':

L = WS AT 45 MPH OR GREATER

$L = \frac{WS^2}{60}$  AT 40 MPH OR LESS

L = TAPER LENGTH IN FEET

S = NON-CONSTRUCTION SPEED LIMIT (MPH)

W = WIDTH OF LANE CLOSURE

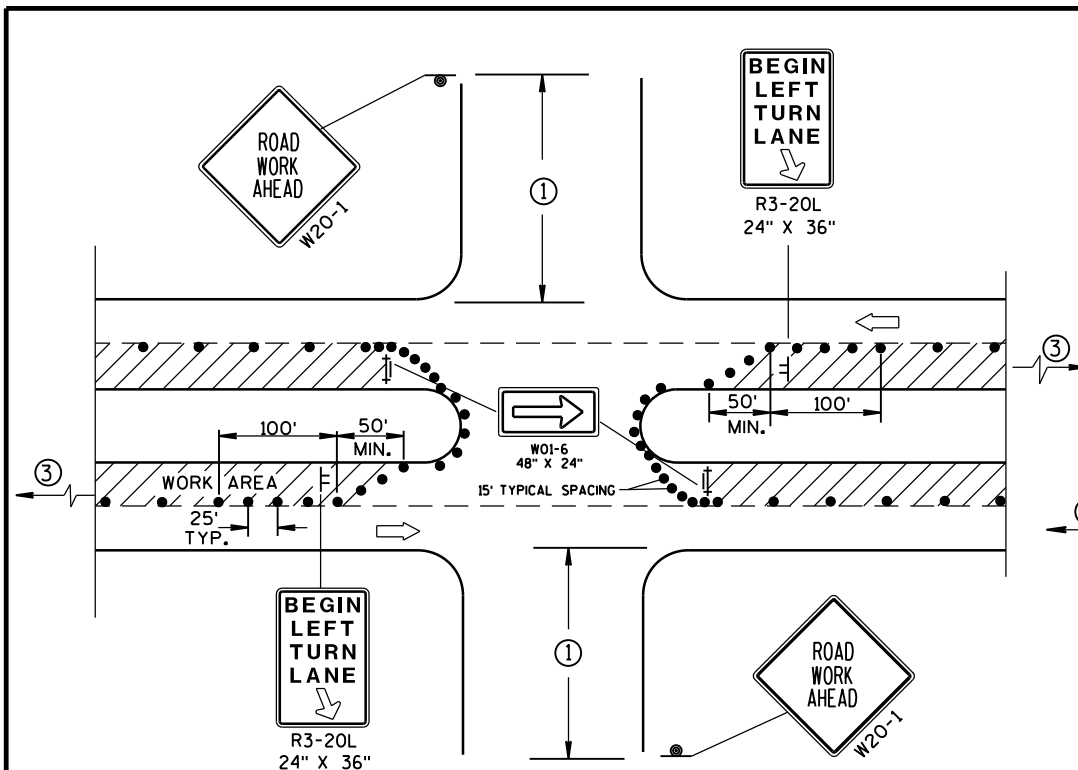
LEGEND

- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- FLASHING ARROW BOARD
- DIRECTION OF TRAFFIC
- REMOVING PAVEMENT MARKING (SEE GENERAL NOTES)
- WORK AREA

TRAFFIC CONTROL,  
SINGLE LANE CLOSURE,  
NON-FREEWAY/EXPRESSWAY

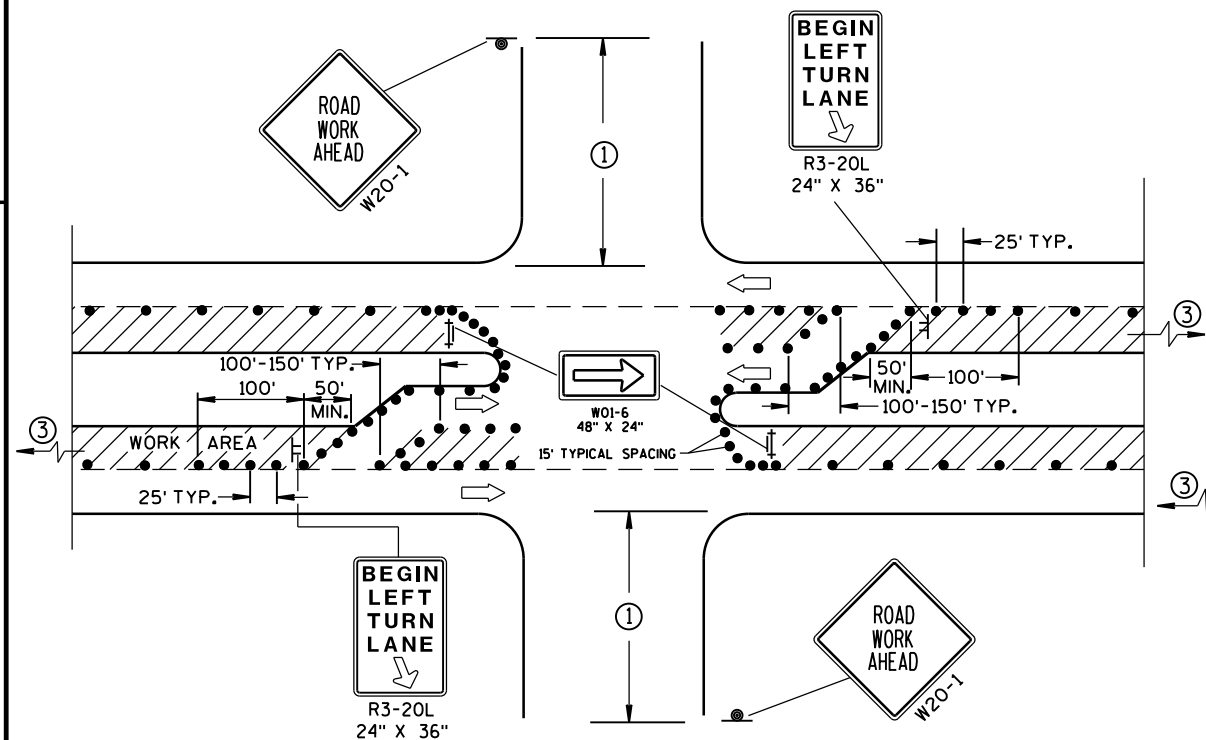
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
Feb. 2015 /S/ Travis Feltes  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA

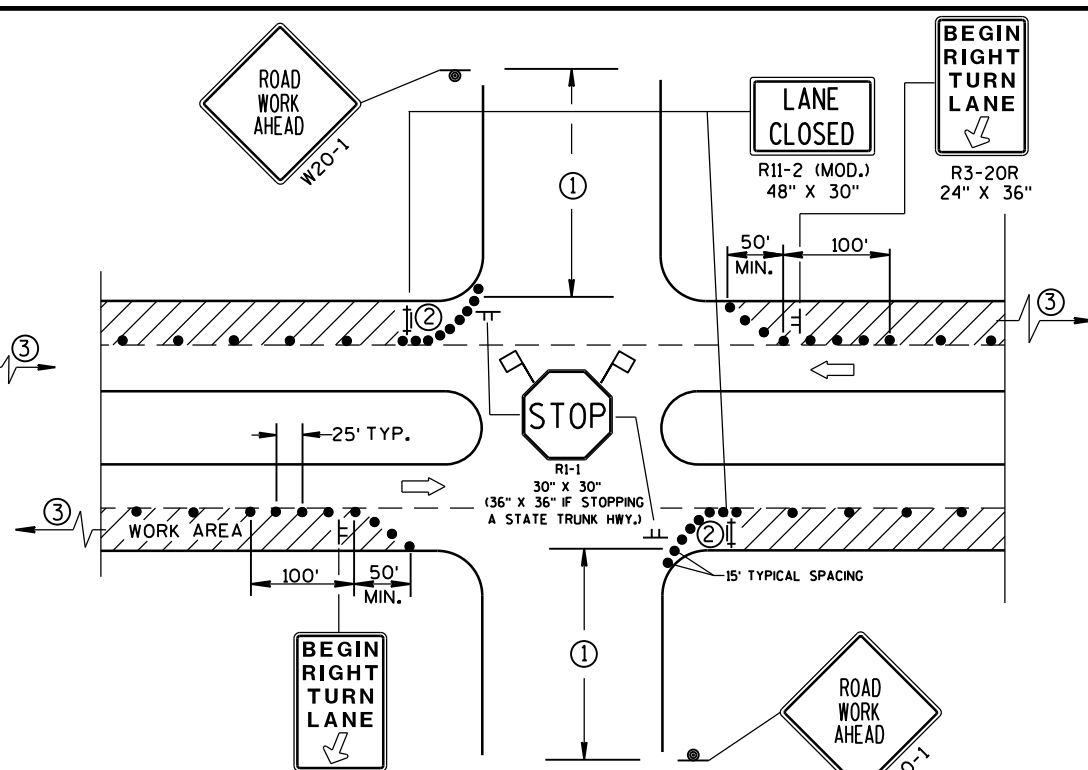


DETAIL A  
FOR LEFT LANE CLOSURE AT  
INTERSECTION OR MEDIAN OPENING

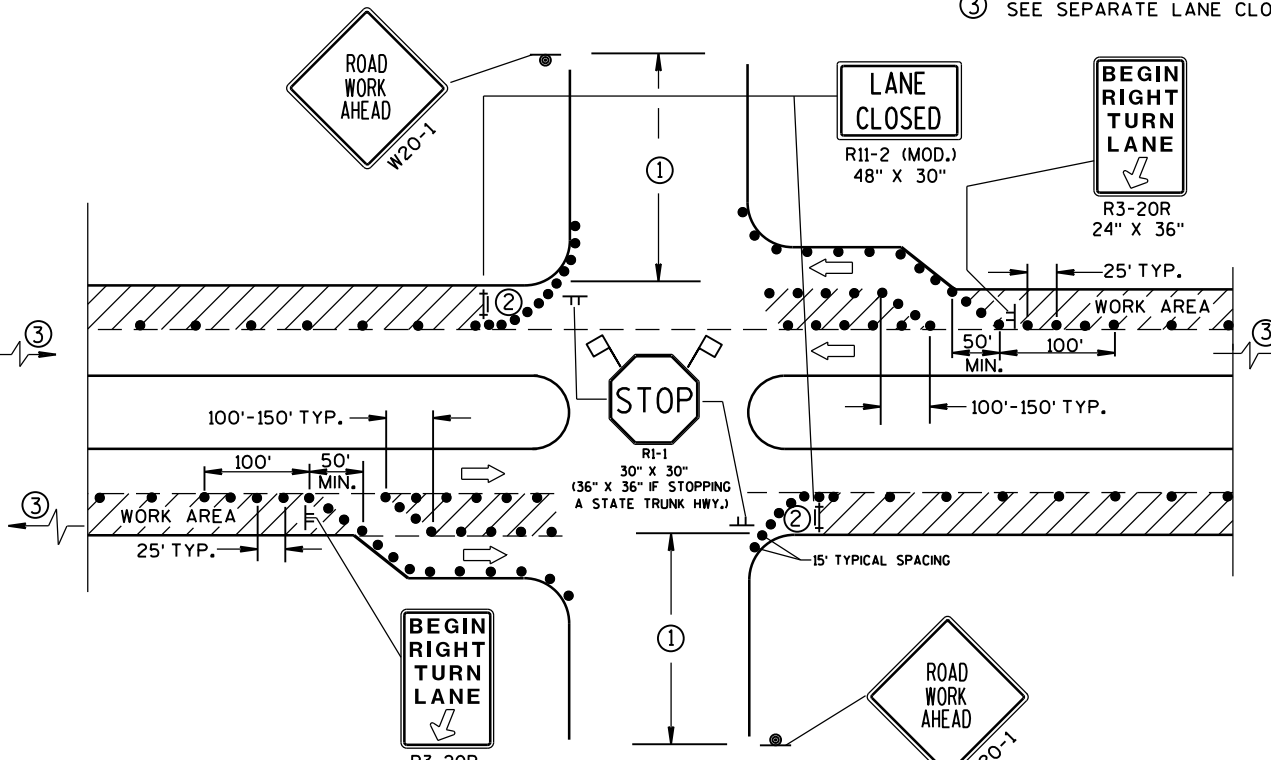
PROVIDE TURN LANES AT  
INTERSECTIONS WHENEVER  
STAGING OF WORK ALLOWS.  
TAPER AND TURN LANE  
LENGTHS BASED ON FIELD  
CONDITIONS AS APPROVED  
BY THE ENGINEER.



DETAIL C  
FOR LEFT LANE CLOSURE AT INTERSECTION OR  
MEDIAN OPENING (WITH LEFT TURN BAY OPEN)



DETAIL B  
FOR RIGHT LANE CLOSURE  
AT INTERSECTION



DETAIL D  
FOR RIGHT LANE CLOSURE AT INTERSECTION  
(WITH RIGHT TURN BAY OPEN)

## GENERAL NOTES

THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.

THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" SIGNS MAY BE USED IF APPROVED BY DISTRICT TRAFFIC UNIT.

"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, OR THAT WILL BE PLACED IN A CLOSED LANE, MAY BE MOUNTED ON PORTABLE SUPPORTS.

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

CHANNELIZING DEVICES PLACED ADJACENT TO WORK AREA SHALL BE PULLED BACK FROM THE TRAVEL LANE WHEN WORK IS NOT IN PROGRESS.

BARRICADES IN A CLOSED LANE THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY RE-ESTABLISHED UPON COMPLETION OF THE OPERATION OR, FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

- 500' TYPICAL OR AT LAST INTERSECTION, WHICHEVER IS CLOSER.  
350' IF 35-40 MPH.  
200' IF 25-30 MPH.
- ALSO USE BARRICADE AND 15-FOOT TYPICAL DRUM SPACING AT COMMERCIAL DRIVEWAYS.
- SEE SEPARATE LANE CLOSURE DETAIL FOR ADDITIONAL TRAFFIC CONTROL.

## LEGEND

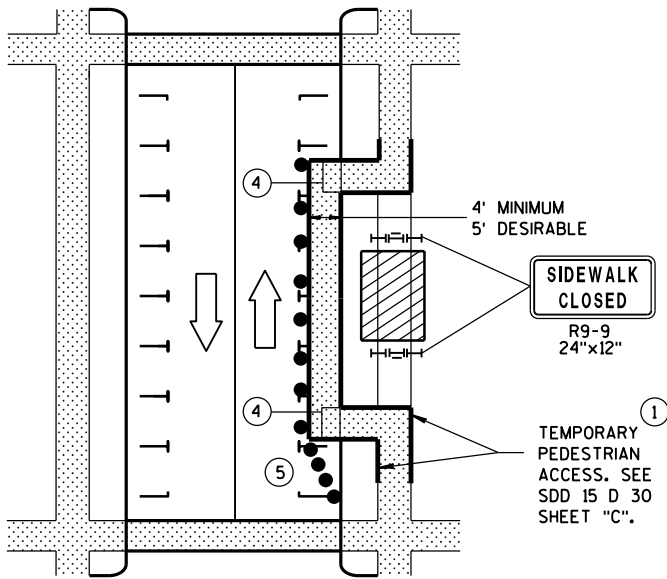
- TRAFFIC CONTROL DRUM
- SIGN ON PERMANENT SUPPORT
- SIGN ON TEMPORARY SUPPORT (5' MIN. MOUNTING HEIGHT)
- TYPE III BARRICADE WITH ATTACHED SIGN AND TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- FLAGS, 16" X 16" MIN., (ORANGE)
- WORK AREA

## TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE

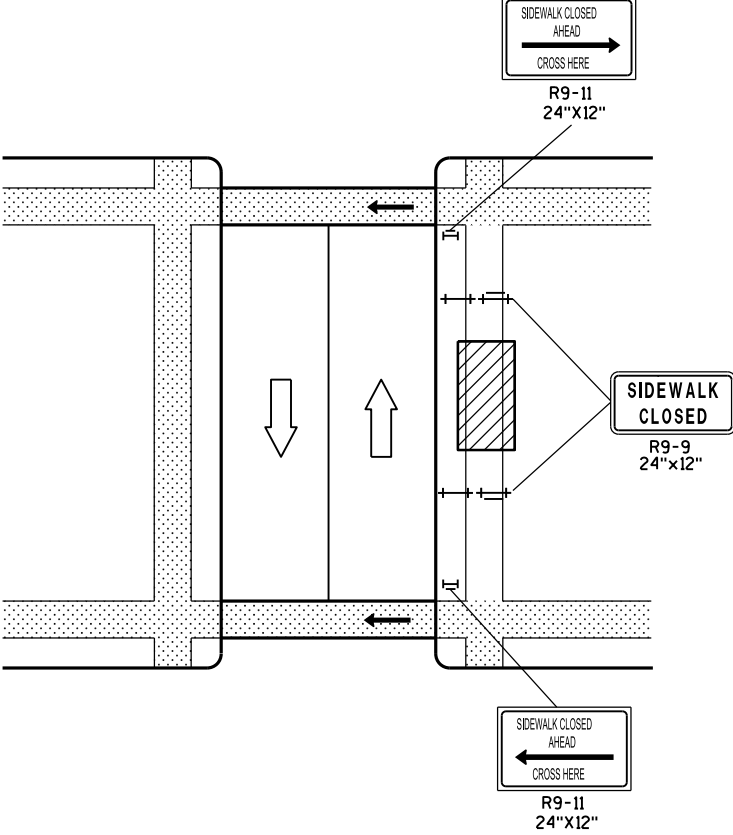
STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

APPROVED  
Nov. 2014 /S/ Travis Feltes  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA

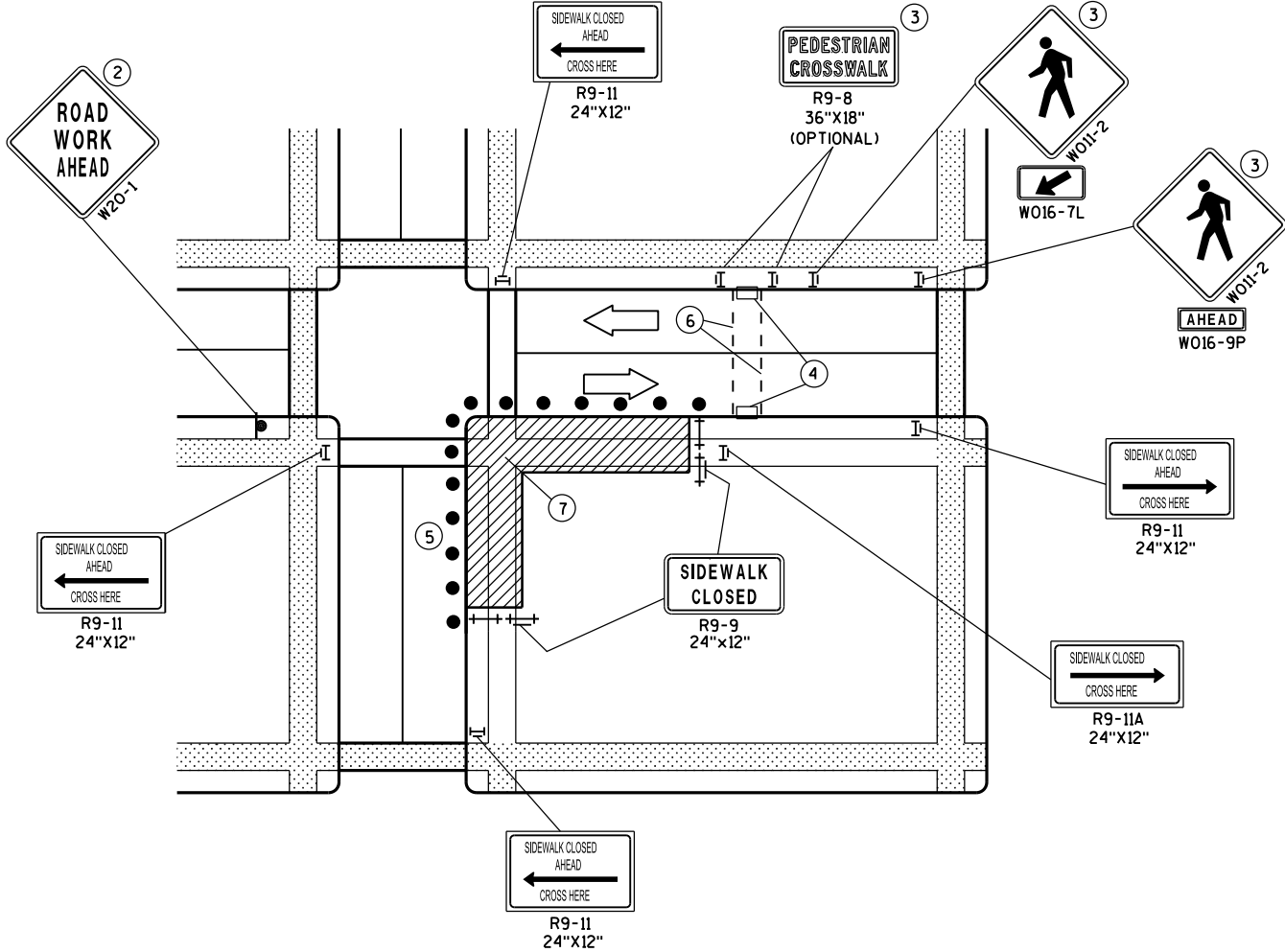
NOTE: MAY BE USED ON ROADWAY WITH POSTED SPEED OF LESS THAN 40 MPH.



MID-BLOCK SIDEWALK CLOSURE IN PARKING LANE

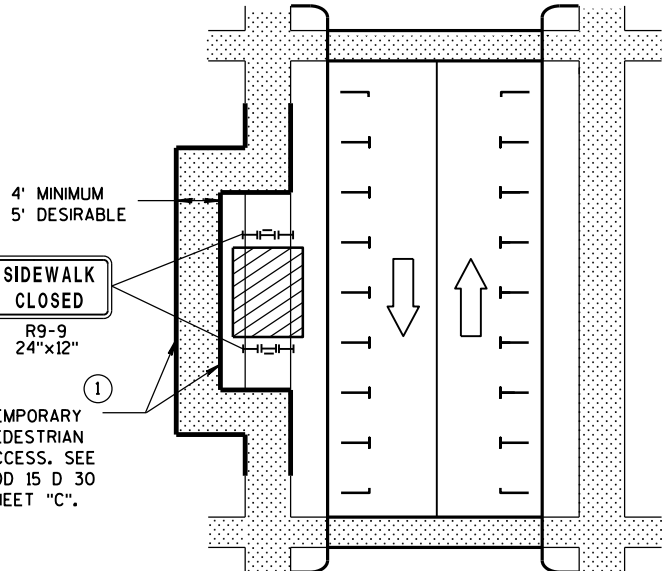


MID-BLOCK SIDEWALK CLOSURE



CORNER SIDEWALK CLOSURE WITH TEMPORARY CROSSWALK

NOTE: LAYOUT SAME AS ABOVE.



SIDEWALK DIVERSION

GENERAL NOTES

WHEN CLOSING OR RELOCATING CROSSWALKS OR SIDEWALKS, PROVIDE DETECABLE TEMPORARY FACILITIES AND INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH EXISTING PEDESTRIAN FACILITIES.

TEMPORARY TRAFFIC CONTROL DEVICES FOR PEDESTRIANS ARE SHOWN. OTHER DEVICES MAY BE NECESSARY TO CONTROL VEHICULAR TRAFFIC. STAGE WORK, AS NECESSARY, TO PROVIDE A TEMPORARY PEDESTRIAN ACCESS ROUTE AT ALL TIMES. FOR ROADWAYS WITH NO AVAILABLE DETOURS, MAINTAIN ONE OPEN SIDEWALK AT ALL TIMES.

"WO" SIGN IS THE SAME AS "W" SIGN EXCEPT THE BACKGROUND IS ORANGE.

FOR NIGHTTIME CLOSURE USE TYPE "A" FLASHING WARNING LIGHTS ON BARRICADES, SUPPORTING SIGNS AND CLOSING SIDEWALK. USE TYPE "C" STEADY BURN LIGHTS ON CHANNELIZING DEVICES SEPARATING THE WORK AREA FROM VEHICULAR TRAFFIC.

PEDESTRIAN TRAFFIC SIGNAL DISPLAY CONTROLLING CLOSED CROSSWALK SHALL BE COVERED OR DEACTIVATED.

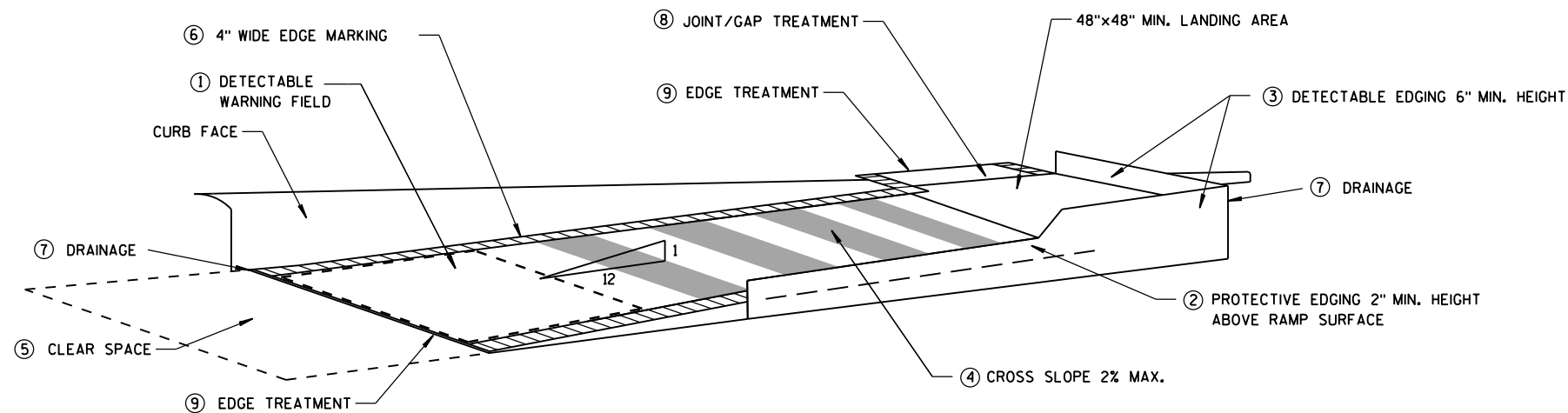
POST MOUNTED SIGNS LOCATED ADJACENT TO A SIDEWALK SHALL HAVE A 7 FOOT MINIMUM CLEARANCE FROM THE BOTTOM OF THE SIGN TO THE SIDEWALK SURFACE.

ALTERNATE SIDEWALK WORK BETWEEN LEFT AND RIGHT SIDE OF ROADWAY TO MAINTAIN PEDESTRIAN ACCESS.

- 1 IF SIDEWALK CLOSURE AFFECTS AN ACCESSIBLE AND DETECTABLE FACILITY, MAINTAIN ACCESSIBILITY AND DETECTABILITY ALONG THE ALTERNATE PEDESTRIAN ROUTE.
- 2 "ROAD WORK AHEAD" SIGNS ARE NOT REQUIRED IF THE SIDEWALK CLOSURE OCCURS WITHIN A LARGER WORK ZONE WHERE ADVANCE WARNING SIGNS ARE ALREADY PRESENT, OR IF THE WORK AREA AND EQUIPMENT ARE MORE THAN 2 FEET BEHIND THE CURB.
- 3 IF TEMPORARY PEDESTRIAN CROSSWALK IS NOT PROVIDED, OMIT R9-8 AND W011-2 SIGN ASSEMBLIES. IF PROVIDED INCLUDE ON BOTH SIDES OF THE CROSSWALK.
- 4 TEMPORARY CURB RAMPS. SEE SDD 15 D 30 SHEET "B".
- 5 DRUMS OR BARRICADES AT 25 FOOT SPACING. STREET PARKING SHALL BE PROHIBITED FOR AT LEAST 50 FEET IN ADVANCE OF THE MID-BLOCK CROSSWALK.
- 6 TEMPORARY PAVEMENT MARKING FOR CROSSWALK LINES.
- 7 LIMIT WORK TO ONE QUADRANT AT A TIME TO MINIMIZE PEDESTRIAN DISRUPTION.

LEGEND

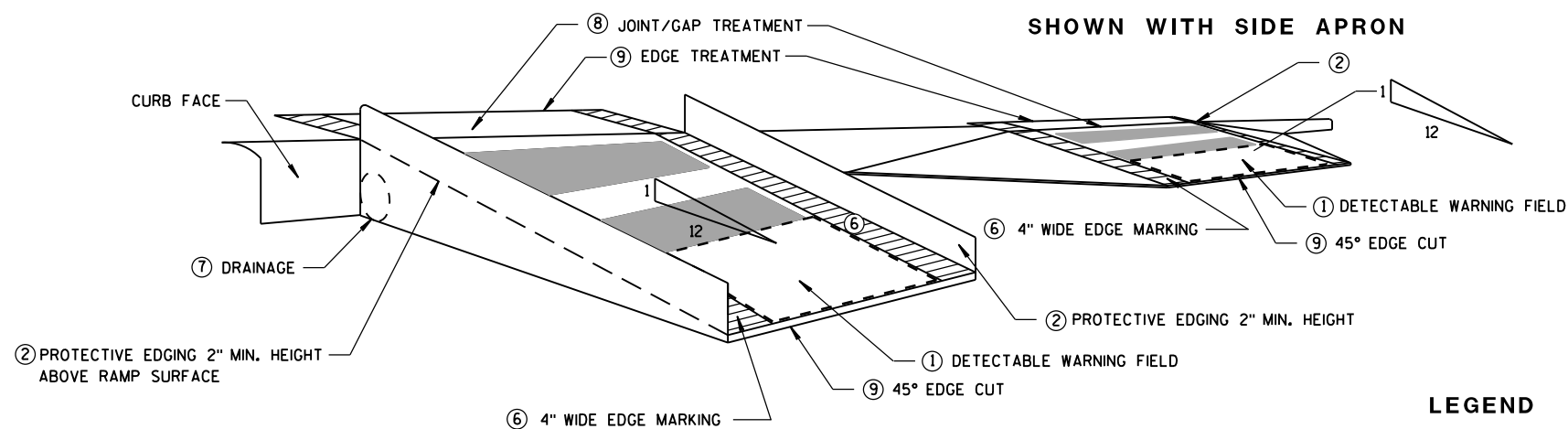
	SIGN ON PERMANENT SUPPORT		DIRECTION OF TRAFFIC
	UNDER PEDESTRIAN TRAFFIC		TRAFFIC CONTROL DRUM
	WORK AREA		
	PEDESTRIAN CHANNELIZATION DEVICE		
	TYPE II BARRICADE WITH/WITHOUT SIGN (ALL WITH ONE WARNING LIGHT, TYPE A, LOW-INTENSITY FLASHING)		
	TYPE III BARRICADE WITH/WITHOUT SIGN (ALL WITH ONE WARNING LIGHT, TYPE A, LOW-INTENSITY FLASHING)		



TEMPORARY CURB RAMP  
PARALLEL TO CURB

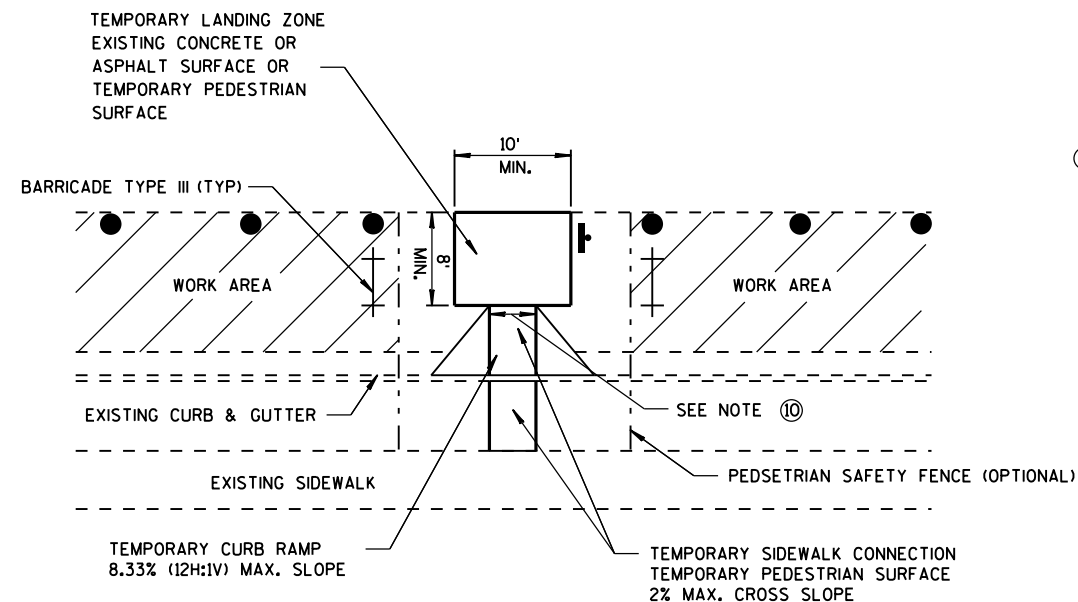
GENERAL NOTES

- NOTIFY THE BUS COMPANY 7 DAYS IN ADVANCE OF THE BUS STOP RELOCATION.  
ALTERNATE SIDEWALK WORK BETWEEN LEFT AND RIGHT SIDE OF ROADWAY  
TO MAINTAIN PEDESTRIAN ACCESS.
- 1 CURB RAMPS SHALL BE 48" MIN. WIDTH WITH A FIRM, STABLE AND SLIP RESISTANT SURFACE. INSTALL CONTRASTING DETECTABLE WARNING FIELD AT PEDESTRIAN STREET CROSSINGS. REFER TO SDD 8D5 SHEET "E".
  - 2 PROTECTIVE EDGING WITH A 2" MIN. HEIGHT SHALL BE INSTALLED WHEN A CURB RAMP OR LANDING PLATFORM HAS A VERTICAL DROP OF 6" OR GREATER OR HAS A SIDE APRON SLOPE STEEPER THAN 1:3 (33%). PROTECTIVE EDGING SHOULD BE CONSIDERED WHEN CURB RAMPS OR LANDING PLATFORMS HAVE A VERTICAL DROP OF 3" OR MORE.
  - 3 DETECTABLE EDGING WITH 6" MIN. HEIGHT AND CONTRASTING COLOR SHALL BE INSTALLED ON ALL CURB RAMP LANDINGS WHERE THE WALKWAY CHANGES DIRECTION (TURNS).
  - 4 CURB RAMPS AND LANDINGS SHALL HAVE A 1:50 (2%) MAX. CROSS-SLOPE.
  - 5 CLEAR SPACE OF 48"x48" MIN. SHALL BE PROVIDED ABOVE AND BELOW THE CURB RAMP.
  - 6 THE CURB RAMP WALKWAY EDGE SHALL BE MARKED WITH A YELLOW COLOR, 4" WIDE MARKING, UNLESS A CONTRASTING DETECTABLE WARNING FIELD IS PROVIDED.
  - 7 DO NOT RESTRICT WATER FLOW IN THE GUTTER SYSTEM.
  - 8 LATERAL JOINTS OR GAPS BETWEEN SURFACES SHALL BE LESS THAN 1/2" WIDTH.
  - 9 CHANGES BETWEEN SURFACE HEIGHTS SHALL NOT EXCEED 1/2". LATERAL EDGES SHALL BE VERTICAL UP TO 1/4" HIGH, AND BEVELED AT 1:2 BETWEEN 1/4" AND 1/2".
  - 10 5' WIDE MIN. WITH PEDESTRIAN SAFETY FENCE, 10' WIDE MIN. WITHOUT PEDESTRIAN SAFETY FENCE.



SHOWN WITH PROTECTIVE EDGE

TEMPORARY CURB RAMP  
PERPENDICULAR TO CURB



TEMPORARY BUS STOP PAD

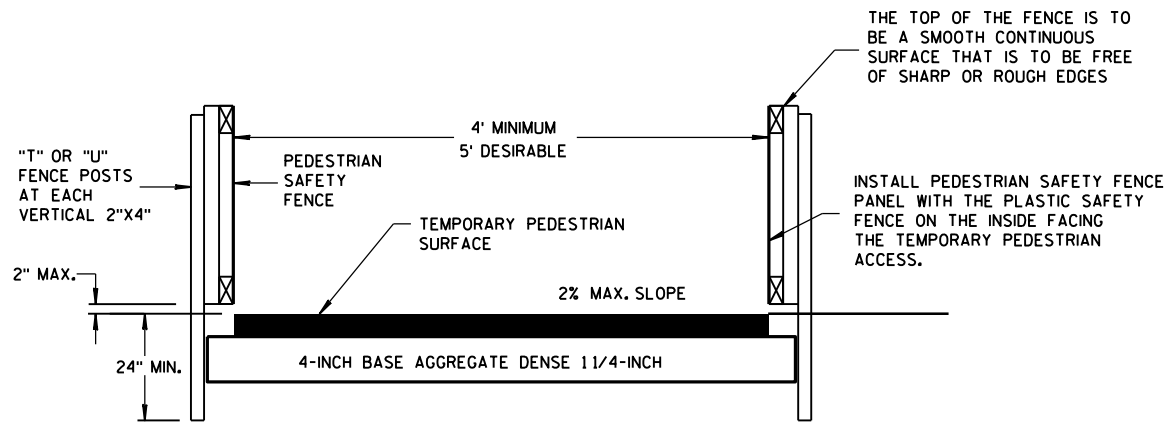
LEGEND

- WORK AREA
- TYPE III BARRICADE
- TRAFFIC CONTROL DRUM

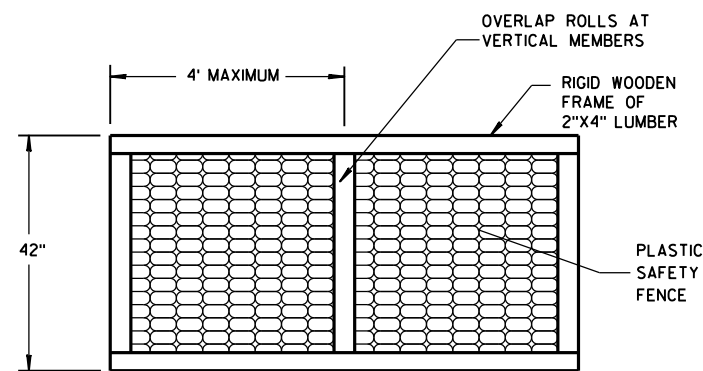
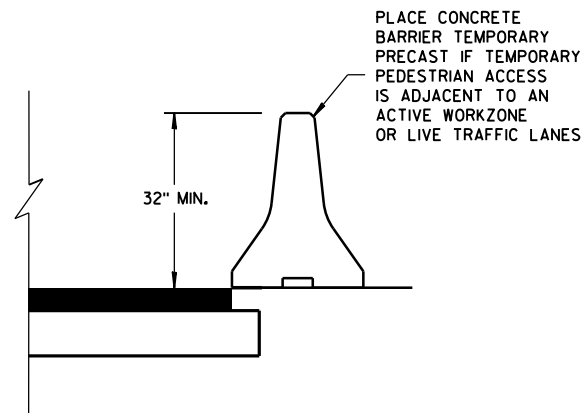
TRAFFIC CONTROL,  
TEMPORARY ADA COMPLIANT  
PEDESTRIAN ACCOMMODATION

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

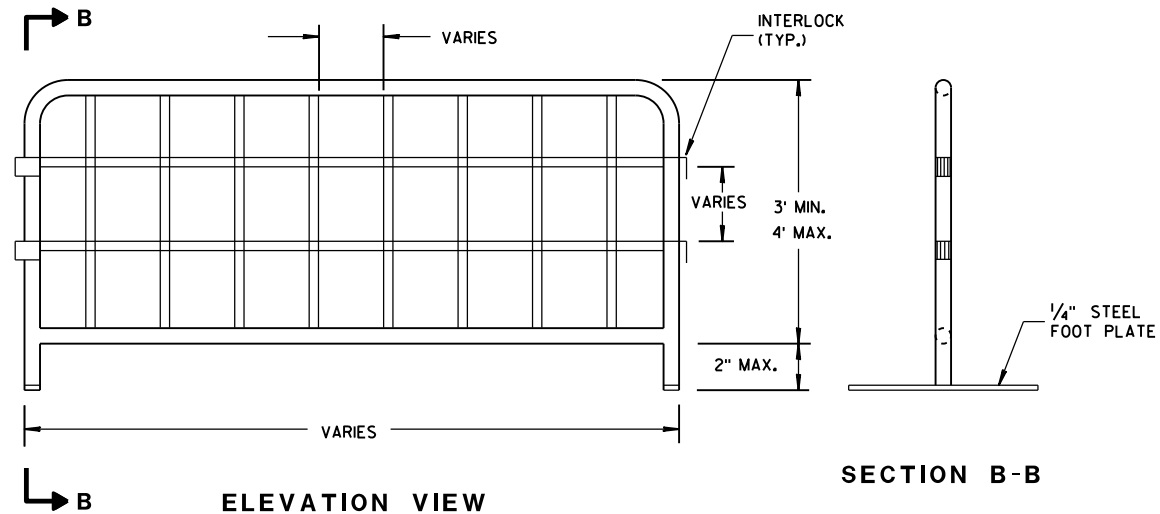
APPROVED  
March 2015 /S/ Travis Feltes  
DATE STATE TRAFFIC ENGINEER OF DESIGN  
FHWA



TEMPORARY PEDESTRIAN ACCESS

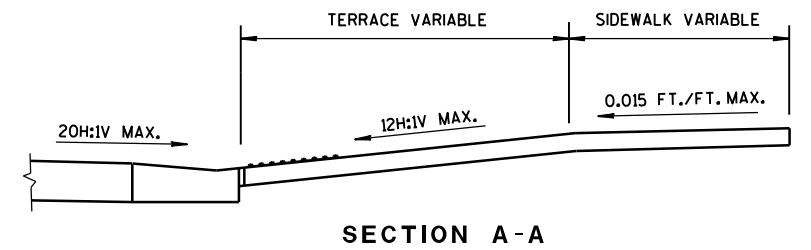


PEDESTRIAN SAFETY FENCE

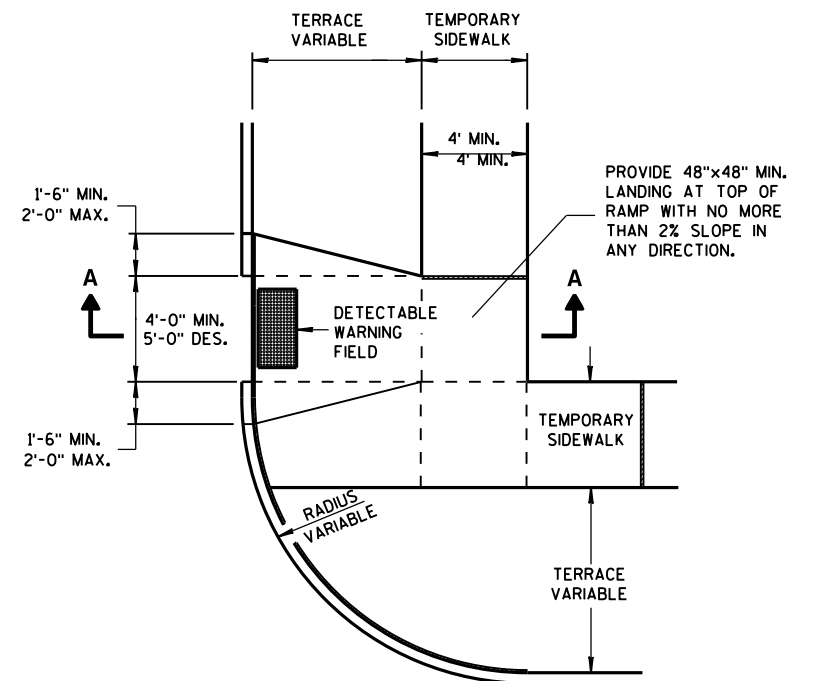


TEMPORARY PEDESTRIAN STEEL BARRICADE

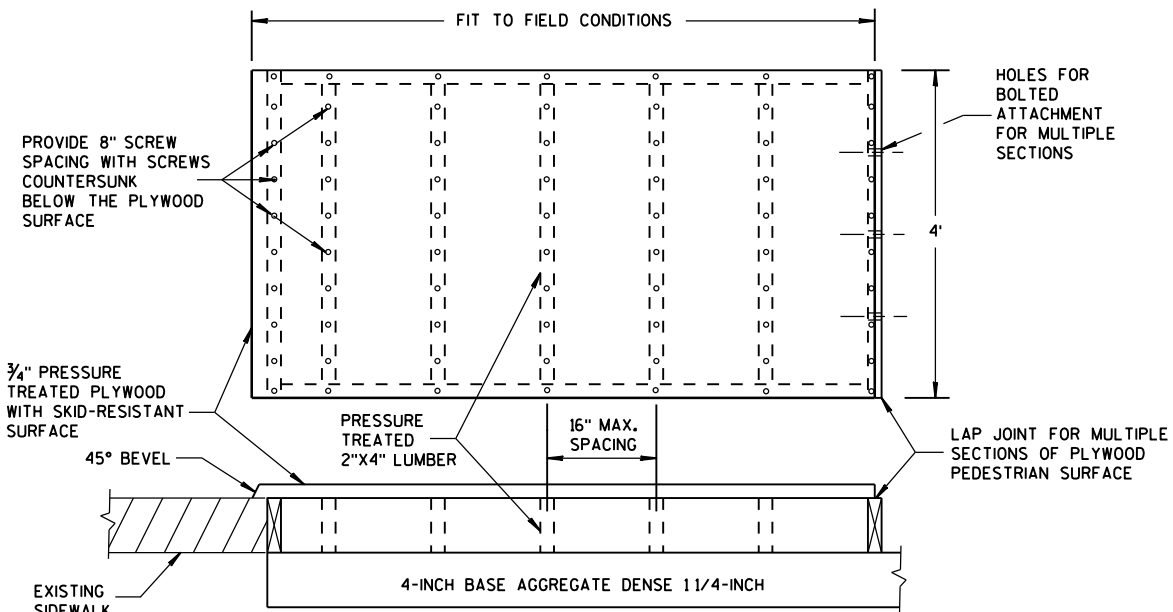
GENERAL NOTES  
① INTERCHANGEABLE WITH THE PEDESTRIAN SAFETY FENCE.



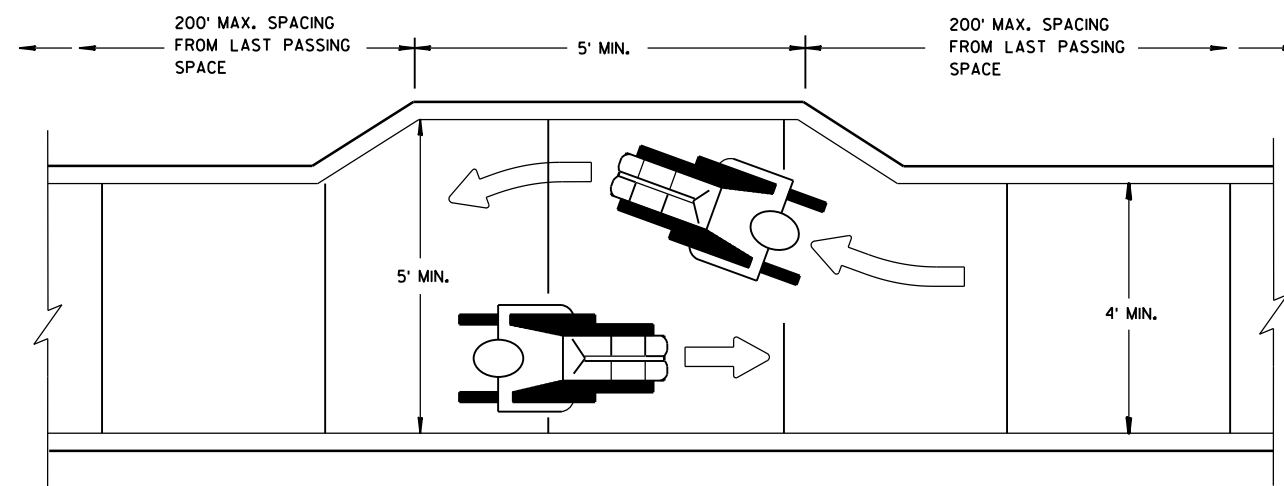
SECTION A-A



PLAN VIEW  
TEMPORARY TYPE 3 RAMP  
(OUTSIDE OF CROSSWALK AREA)



TEMPORARY PEDESTRIAN SURFACE PLYWOOD



NARROW SIDEWALK PASSING DETAIL

TRAFFIC CONTROL, PEDESTRIAN ACCOMMODATION	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED March 2015 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN
FHWA	

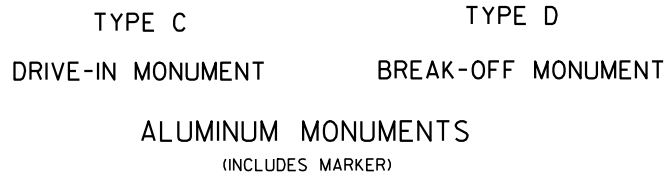


U.S. DEPT. OF TRANSPORTATION

UNLAWFUL TO DISTURB

3 1/4" D

**S.D.D. 16 A 1-6**



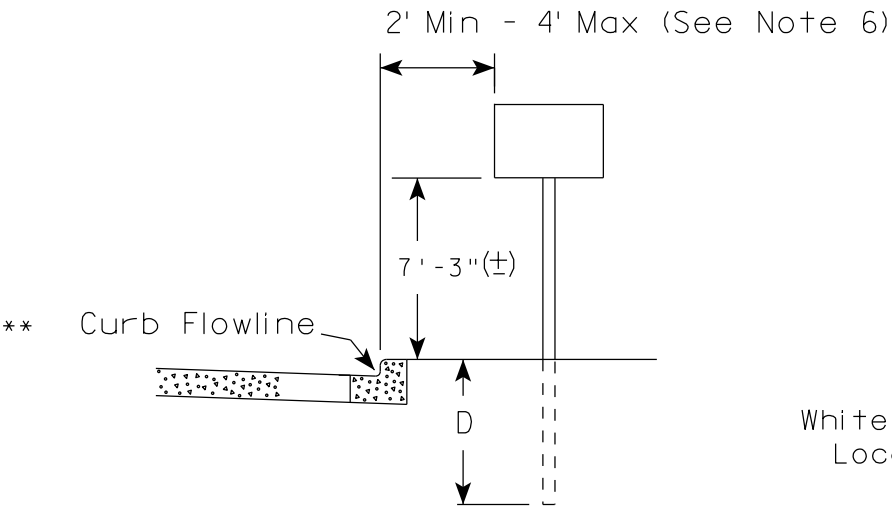
A diagram of a circular structure, possibly a cell or a microfluidic chamber, with two internal components labeled A and B. Component A is located in the upper right quadrant, and component B is located in the lower left quadrant. Both components have an arrow pointing towards the center of the circle. The circle is divided into four quadrants by a horizontal and a vertical line. The components A and B are positioned in opposite quadrants.

APPROVED  
9/22/1999 /S/ Rory L. Rhinesmith  
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER  
FHWA

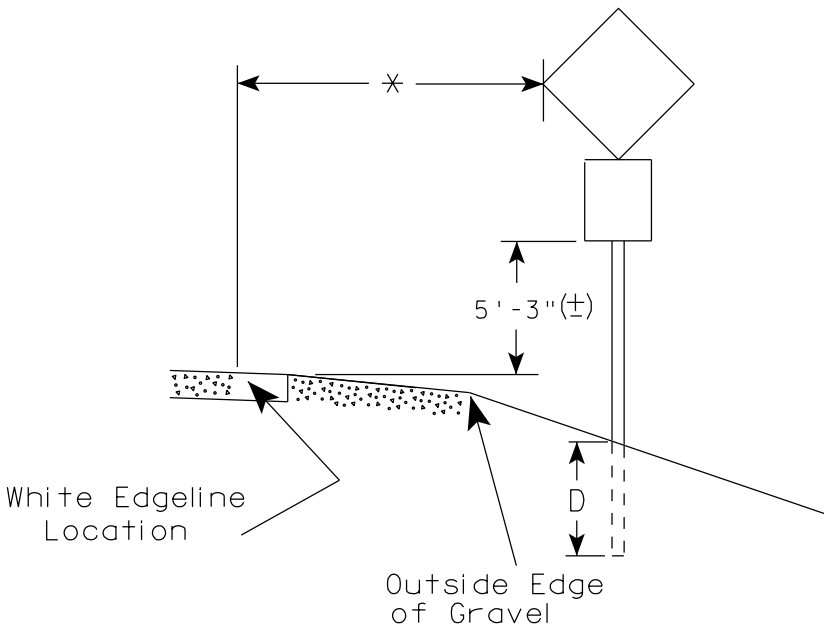
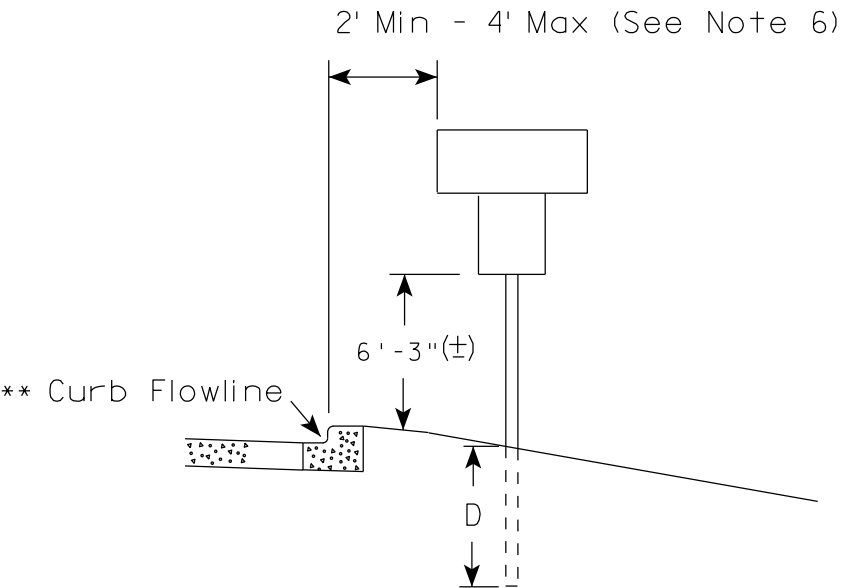
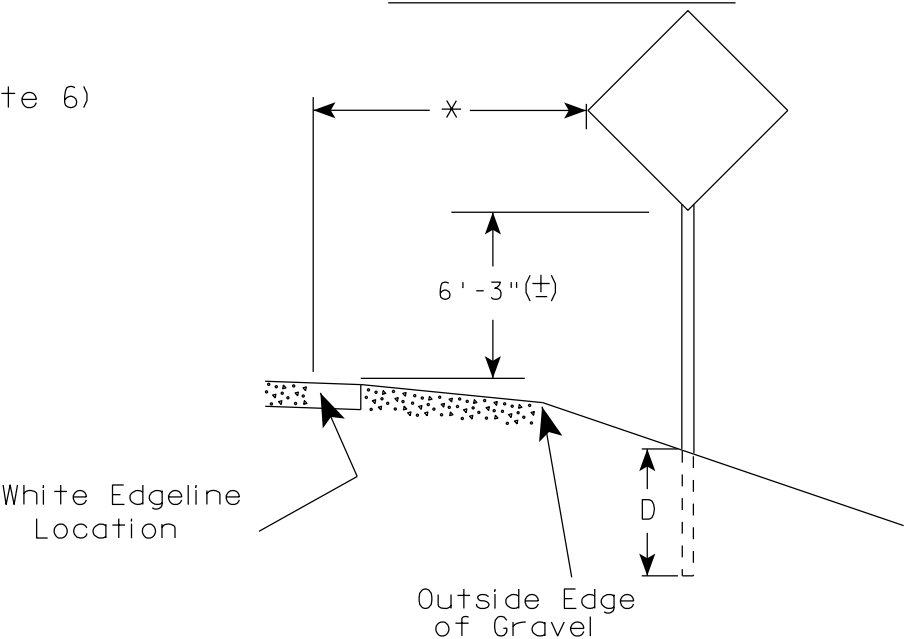
6

**S.D.D. 16 A 1-6**

URBAN AREA



RURAL AREA (See Note 2)



POST EMBEDMENT DEPTH

Area of Sign Installation ( Sq.Ft. )	D ( Min )
20 or Less	4'
Greater than 20	5'

GENERAL NOTES

1. Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
2. If signs are mounted on barrier wall, see A4-10 sign plate.
3. For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
4. Minimum mounting height for J assemblies (A2-1S) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
5. Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
7. The (±) tolerance for mounting height is 3 inches.
8. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.
9. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Enhanced Reference Markers, Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4'-3" (±).

×× The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.

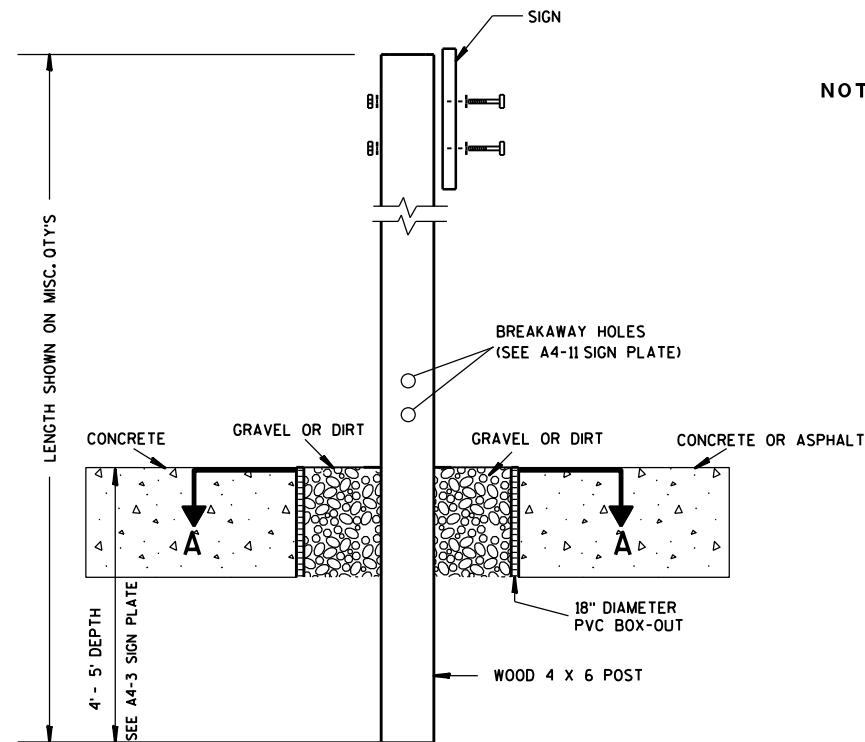
\* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION  
OF PERMANENT TYPE II  
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED  
*Matthew R. Rauch*  
for State Traffic Engineer

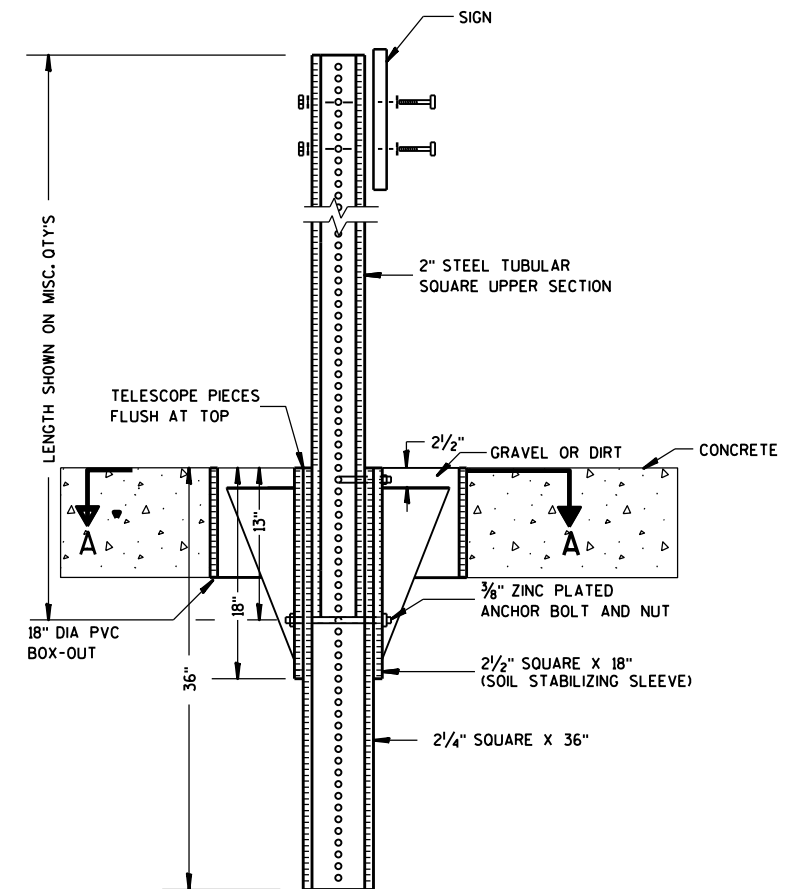
DATE 7/23/15 PLATE NO. A4-3.20



### ELEVATION VIEW

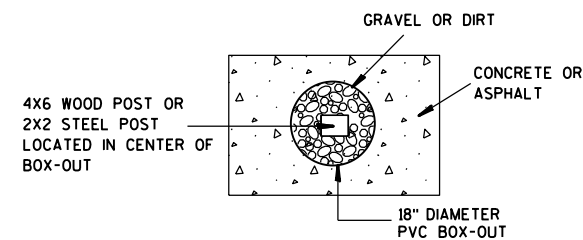
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

- NOTES: 1. ALL MATERIAL TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION
2. SEE SIGN PLATE A4-8 FOR SIGN HARDWARE REQUIREMENTS
3. 18 INCH X 18 INCH SQUARE BOX-OUTS MAY BE USED FOR INSTALLATIONS IN EXISTING CONCRETE OR ASPHALT LOCATIONS.



### ELEVATION VIEW

DETAIL OF STEEL 2 X 2 SIGN POST IN BOX-OUT



### PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST  
BOX-OUTS  
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 1/27/14 PLATE NO. A4-3B.1

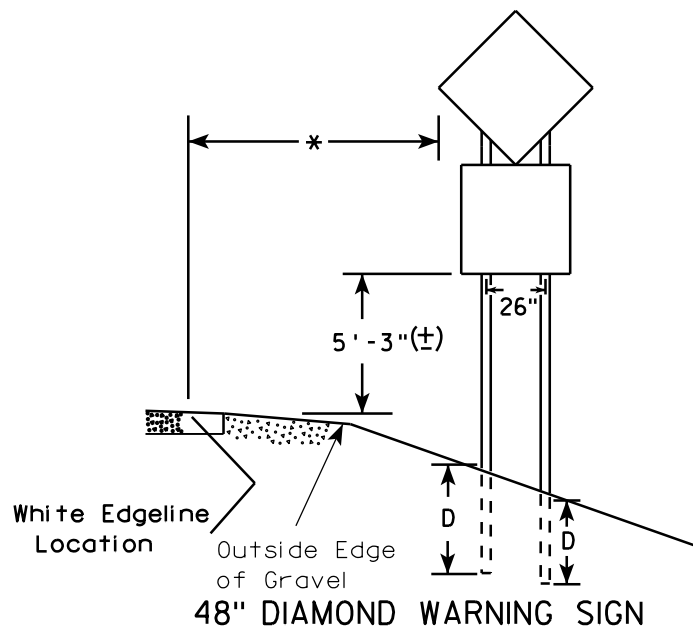
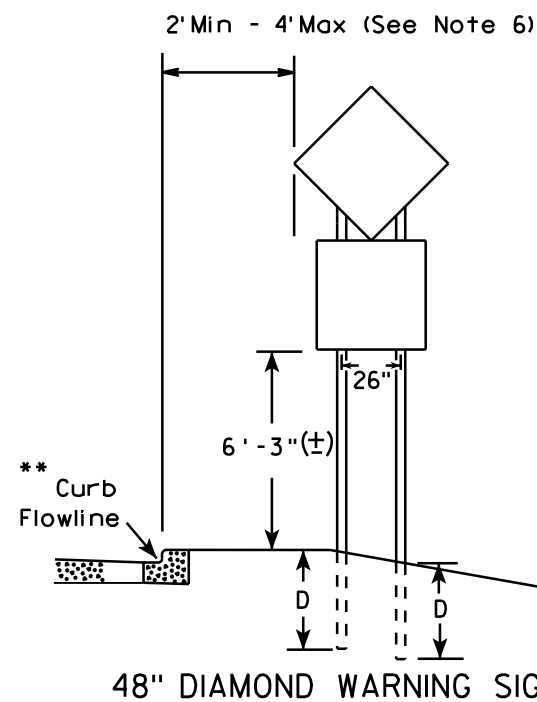
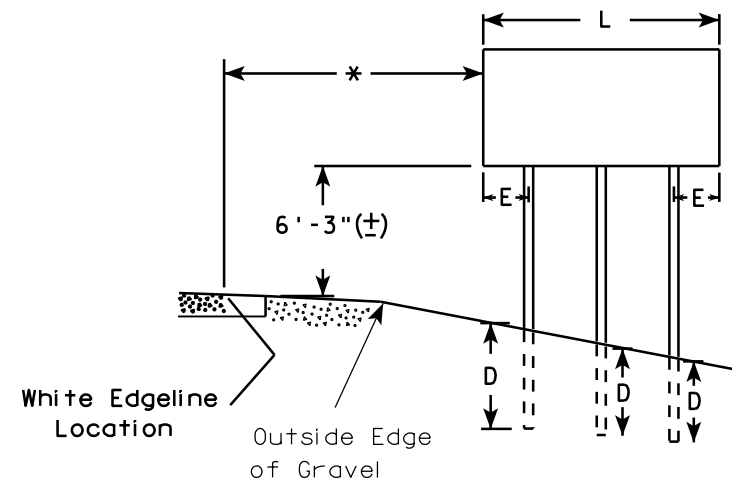
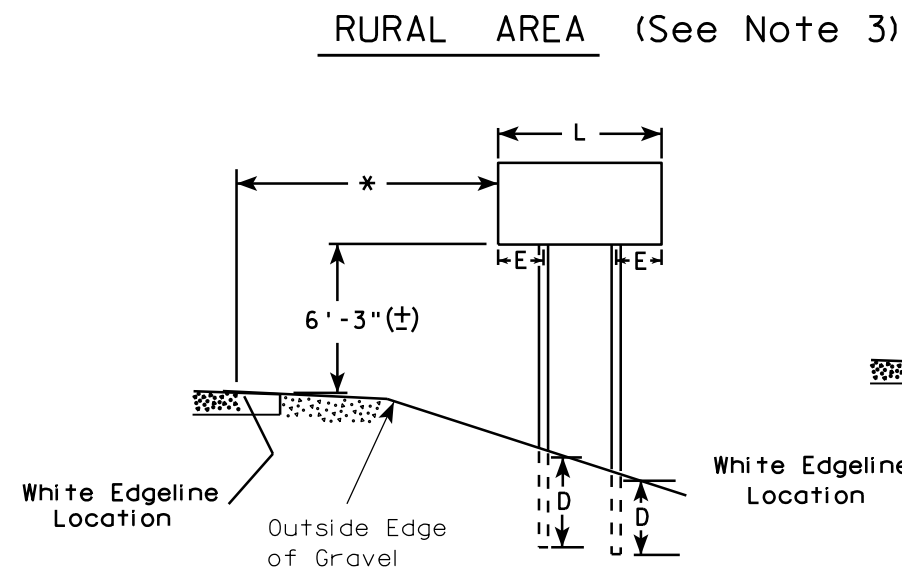
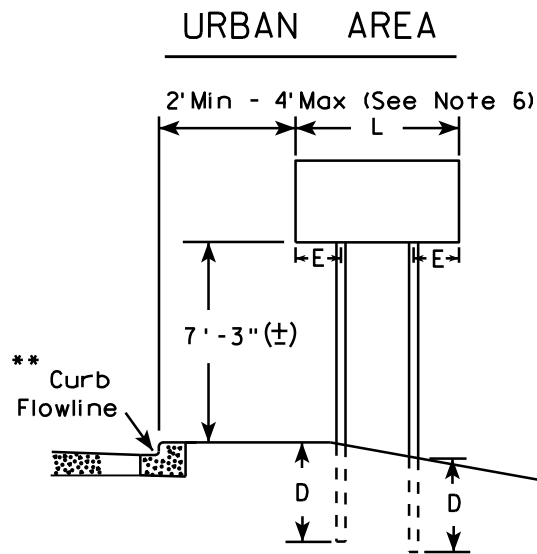
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



- GENERAL NOTES**
1. For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
  2. See tables below for required number of posts.
  3. For expressways and freeways, mounting height is 7'-3" (±) or 6'-3" (±) depending upon existence of sub-sign.
  4. The (±) tolerance for mounting height is 3 inches.
  5. Minimum mounting height for J assemblies (A2-1S) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
  6. Offset distance shall be consistent with existing signs or consistent throughout length of project.
  7. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the engineer.
  8. The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±). The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4'-3" (±).

\* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

\*\* The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs is measured from the flow line.

\*\*\* See A4-3 sign plate for signs 4' or less in width and less than 20 S.F. in area.

\*\*\*

SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
L	E
Greater than 48" Less than 60"	12"
60" to 120"	L/5

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 120" less than 168"	12"

SIGN SHAPE OTHER THAN DIAMOND (FOUR POSTS REQUIRED)	
L	E
168" and greater	12"

POST EMBEDMENT DEPTH

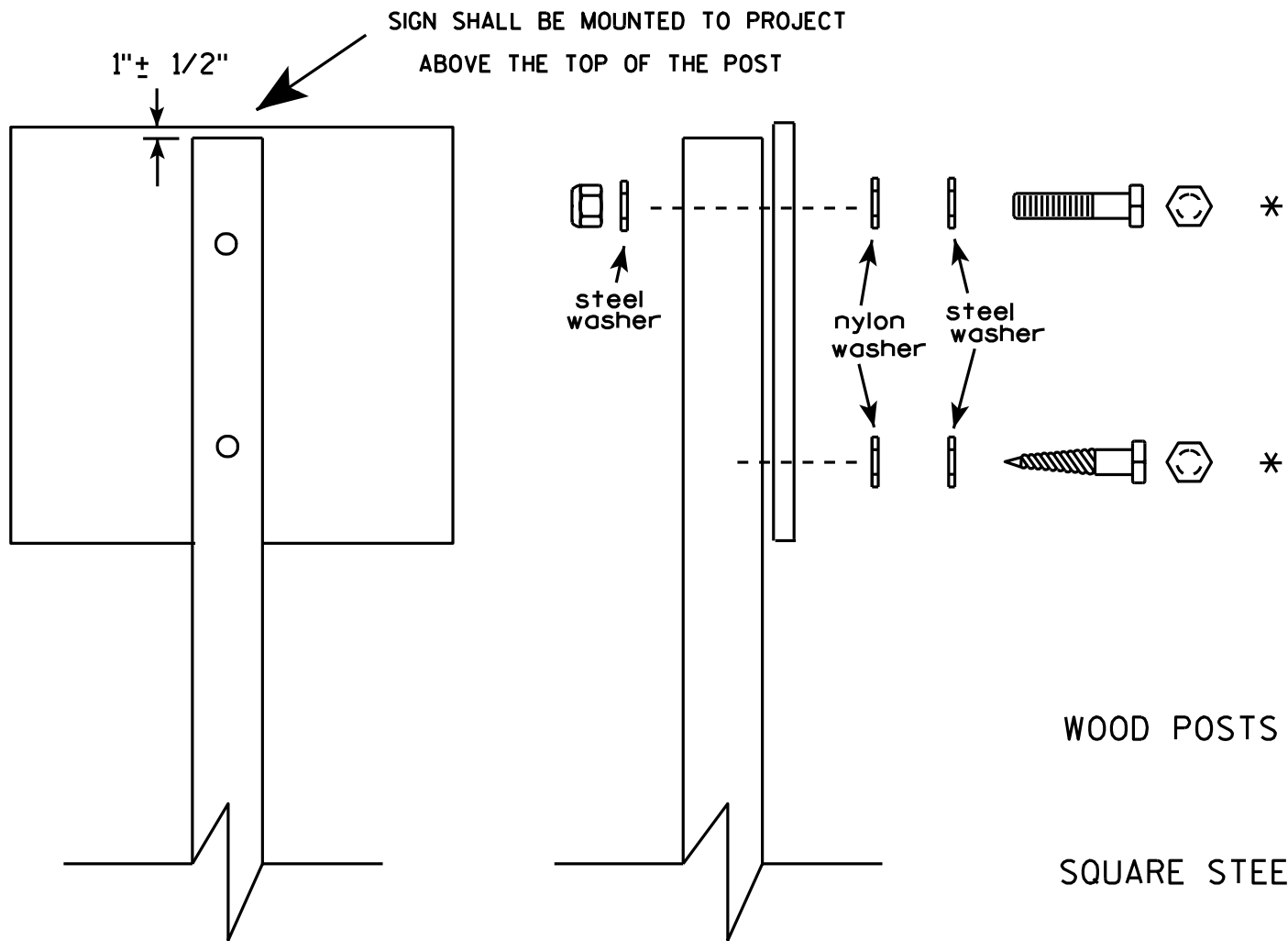
Area of Sign Installation ( Sq. Ft. )	D ( Min )
20 or Less	4'
Greater than 20	5'

TYPICAL INSTALLATION  
OF TYPE II SIGNS  
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 7/23/15 PLATE NO. A4-4.14

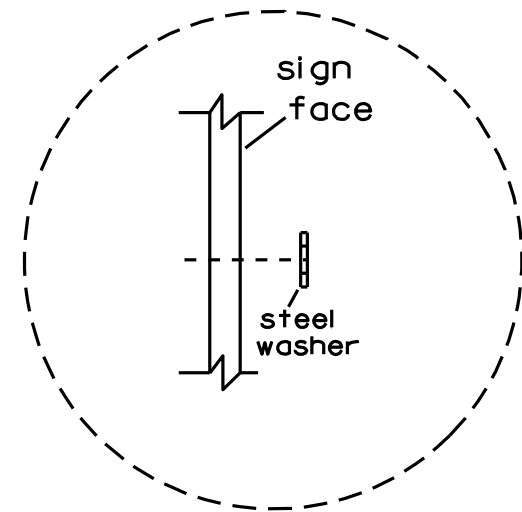


Nuts, bolts and lags used for mounting signs shall have hexagonal heads and shall be either :

- a. Hot dip galvanized in accordance with ASTM Designation: A 153, Class D, or SC 3
- b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.

Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

- WOOD POSTS (4" x 4" or 4" x 6")  
LAG SCREWS - 3/8" X 3"  
MACHINE BOLTS - 5/16" X 6-1/2" or 7" Length w/ nuts
- SQUARE STEEL POSTS (2" x 2")  
MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts  
RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL  
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH
- WASHERS (ALL POSTS) -  
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL  
1-1/4" O.D. X 3/8" I.D. X .080 NYLON for all Type H signs.

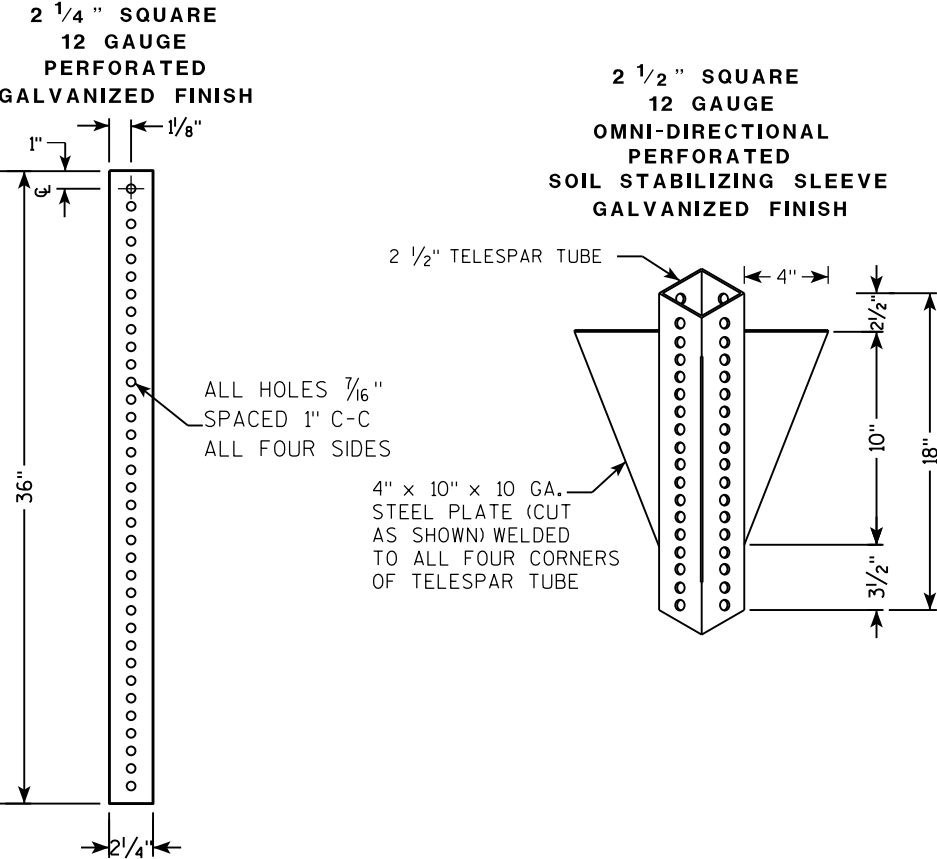


Washer Placement when Sign Has Other Than Type H or Type F Face

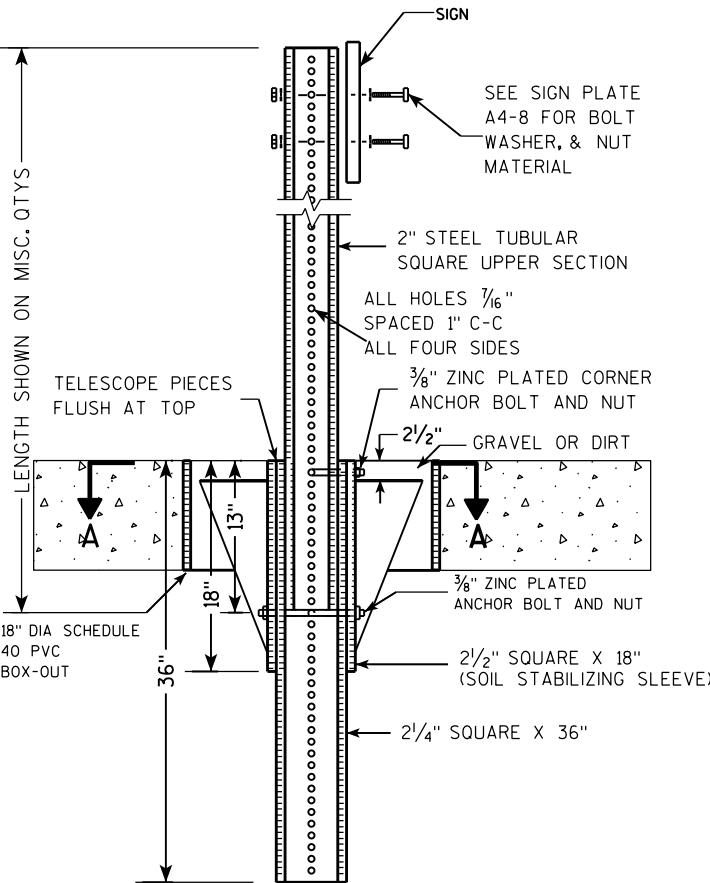
\* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require the use of 3 fasteners.

ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 3/23/10	PLATE NO. A4-8.7

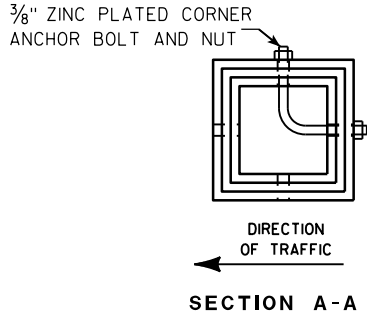
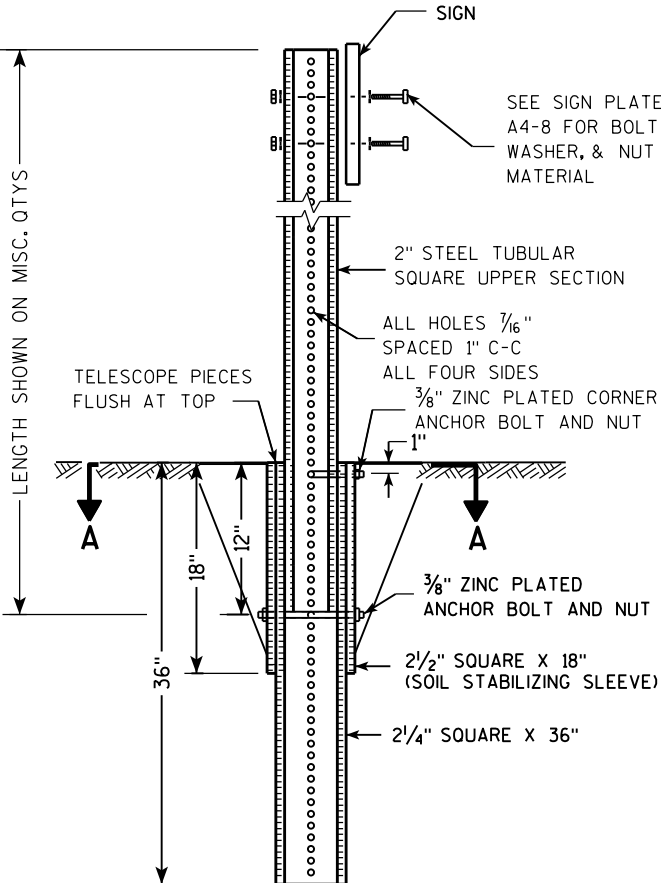
TELESCOPIC TUBING ANCHORS  
TWO PIECE SYSTEM



DETAIL OF TUBULAR STEEL SIGN POST  
(IN POURED CONCRETE OR ASPHALT)



DETAIL OF TUBULAR STEEL SIGN POST  
(IN LOCATIONS OTHER THAN POURED CONCRETE OR ASPHALT)



Area of Sign Installation (Sq. Ft.)	Number of Required Posts
9 or less	1
Greater than 9 less than or equal to 18	2
Greater than 18 less than or equal to 27	3

Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

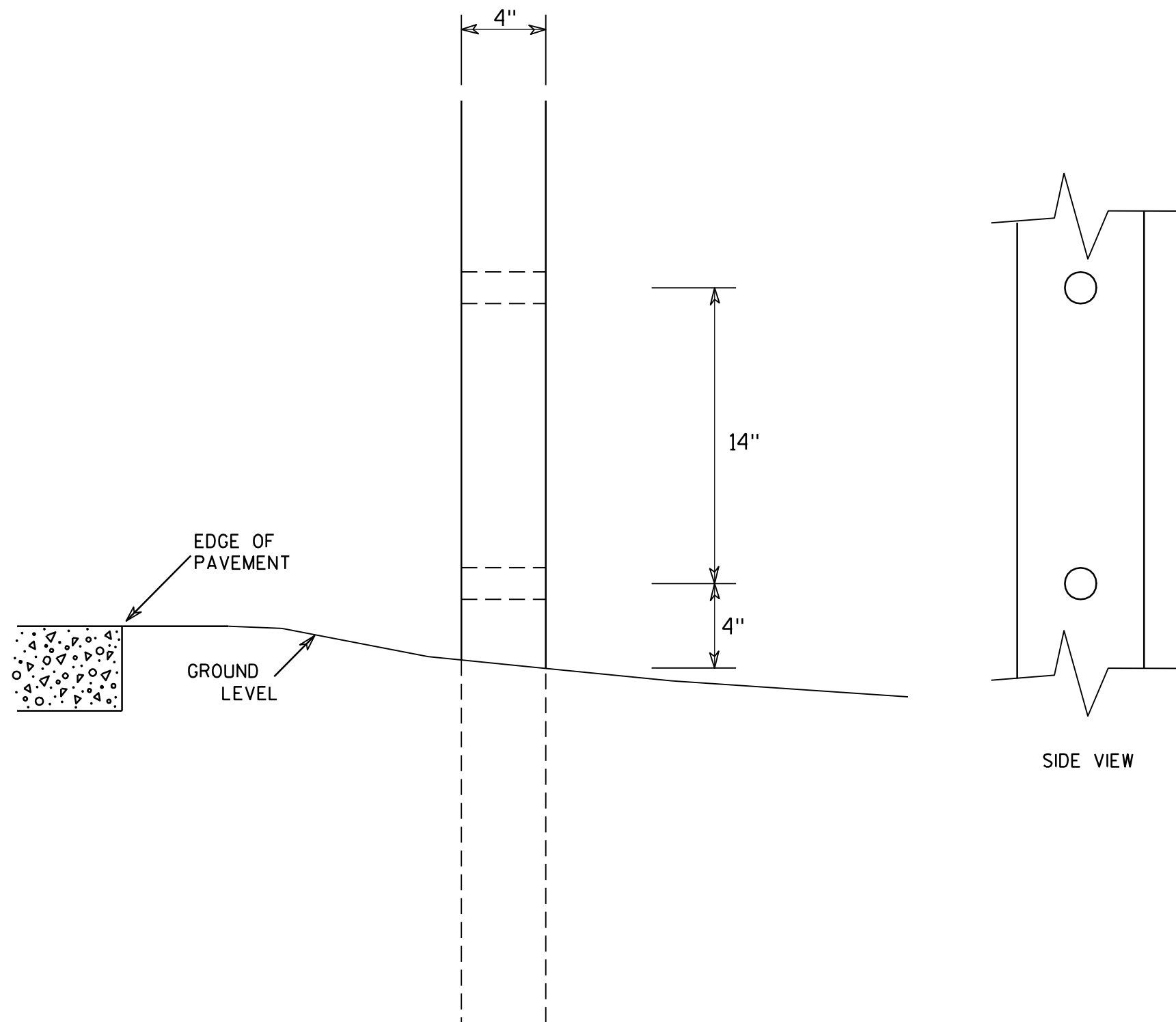
TUBULAR STEEL  
SIGN POST  
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 2/05/15 PLATE NO. A4-9.9

7

GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1½" diameter holes drilled perpendicular to the roadway centerline.

7

**4 X 6 WOOD POST  
MODIFICATIONS**

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

*Chester J. Spang*  
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

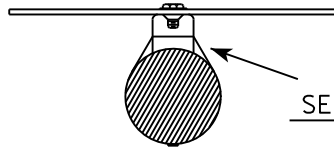
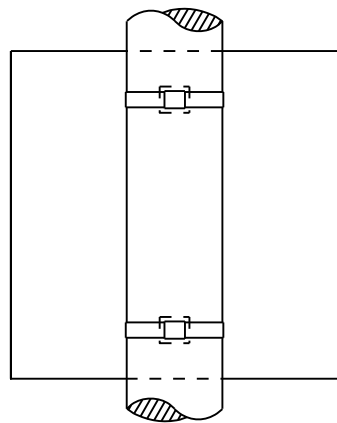
COUNTY:

SHEET NO:

E

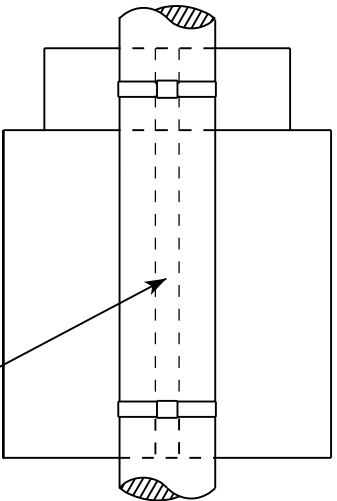
BANDING

SINGLE SIGN

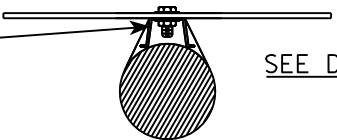


SEE DETAIL A

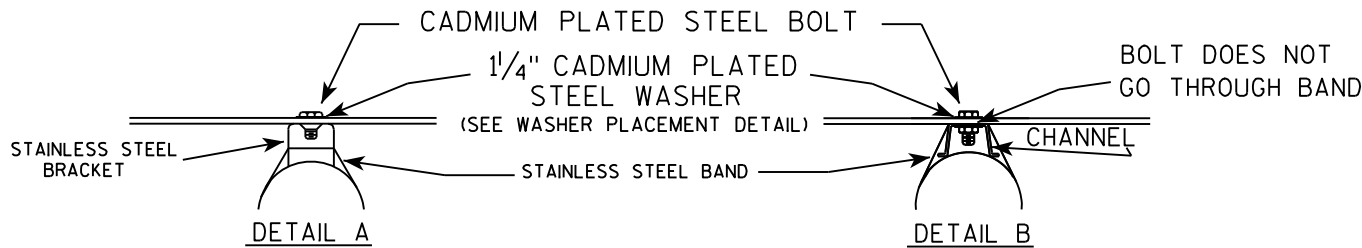
"J" ASSEMBLY



CHANNEL  
SEE TYPICAL PANEL  
INSTALLATION SHEET



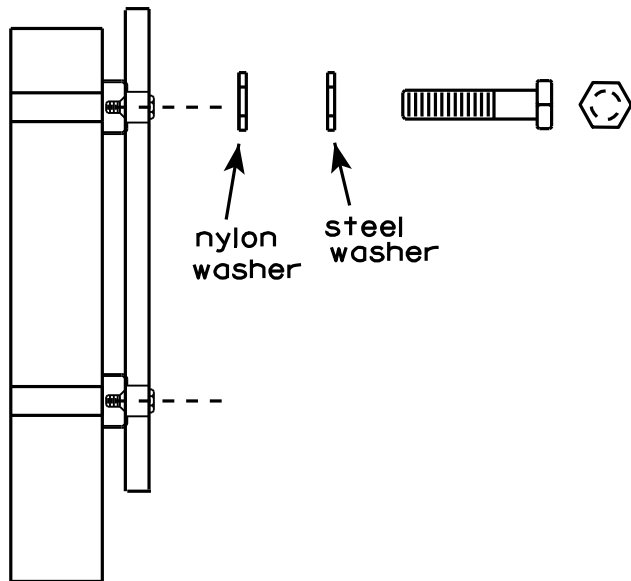
SEE DETAIL B



GENERAL NOTES

1. Any sign over 3 feet in width shall use the V-Block banding method. See A5-10 standard plate.
2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be  $\frac{3}{4}$ " in width and 0.025" thickness.

WASHER PLACEMENT



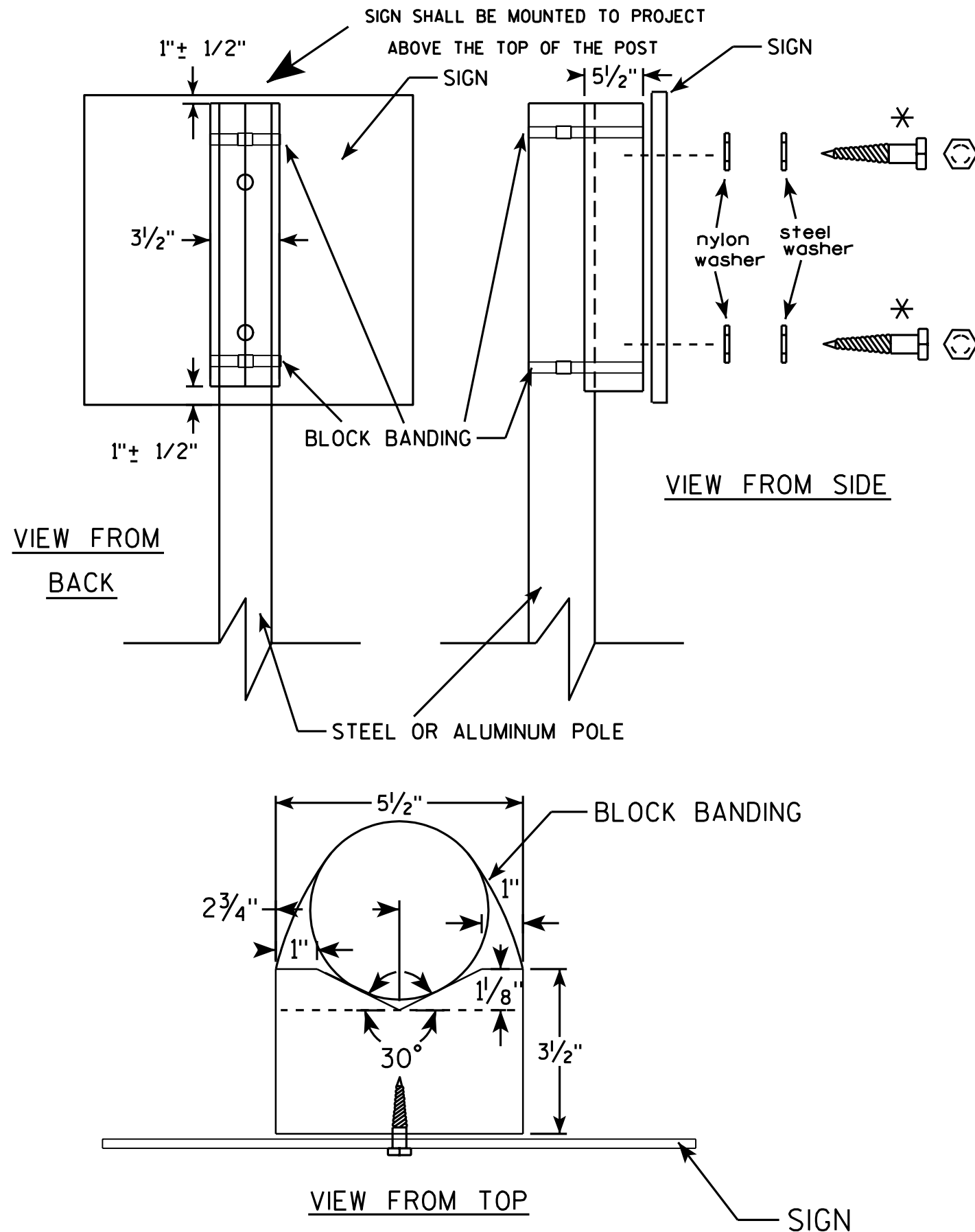
WASHERS (ALL POSTS) -  
1-1/4" O.D. X  $\frac{3}{8}$ " I.D. X  $\frac{1}{16}$ " STEEL  
1-1/4" O.D. X  $\frac{3}{8}$ " I.D. X .080 NYLON  
FOR ALL TYPE H SIGNS

STANDARD SIGN  
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 8/16/13 PLATE NO. A5-9.3



## GENERAL NOTES

1. WOOD 4"x6" POST MATERIAL SHALL CONFORM TO 507.2.2 OF THE WISDOT STANDARD SPECIFICATIONS
2. BLOCK BANDING AND CLIPS SHALL BE STAINLESS STEEL, 3/4" WIDTH AND 0.025" THICKNESS
3. SIGNS 3' OR GREATER IN HEIGHT SHALL UTILIZE 3 BLOCK BANDS. SIGNS UNDER 3' IN HEIGHT SHALL UTILIZE 2 BLOCK BANDS
4. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA, BUT NORMALLY THERE ARE TWO. FOR SIGNS GREATER THAN 9 S.F. 3 FASTENERS SHALL BE USED.
5. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
  - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D, or
  - b. Cadmium plated in accordance with ASTM Designation : B 766 TYPE 3, Class 12, or
  - c. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3.
6. ALL BOLTS SHALL HAVE HEXAGONAL HEADS.
7. STEEL WASHERS SHALL BE 1 1/4" O.D. X 3/8" I.D. X 1/16"
8. NYLON WASHERS SHALL BE 1 1/4" O.D. X 3/8" I.D. X .080 FOR TYPE H OR TYPE F FACE SIGN

✱ LAG BOLTS SHALL BE 3/8" X 2 1/2"

BLOCK BANDING DETAIL  
( V-BLOCK OPTION )

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

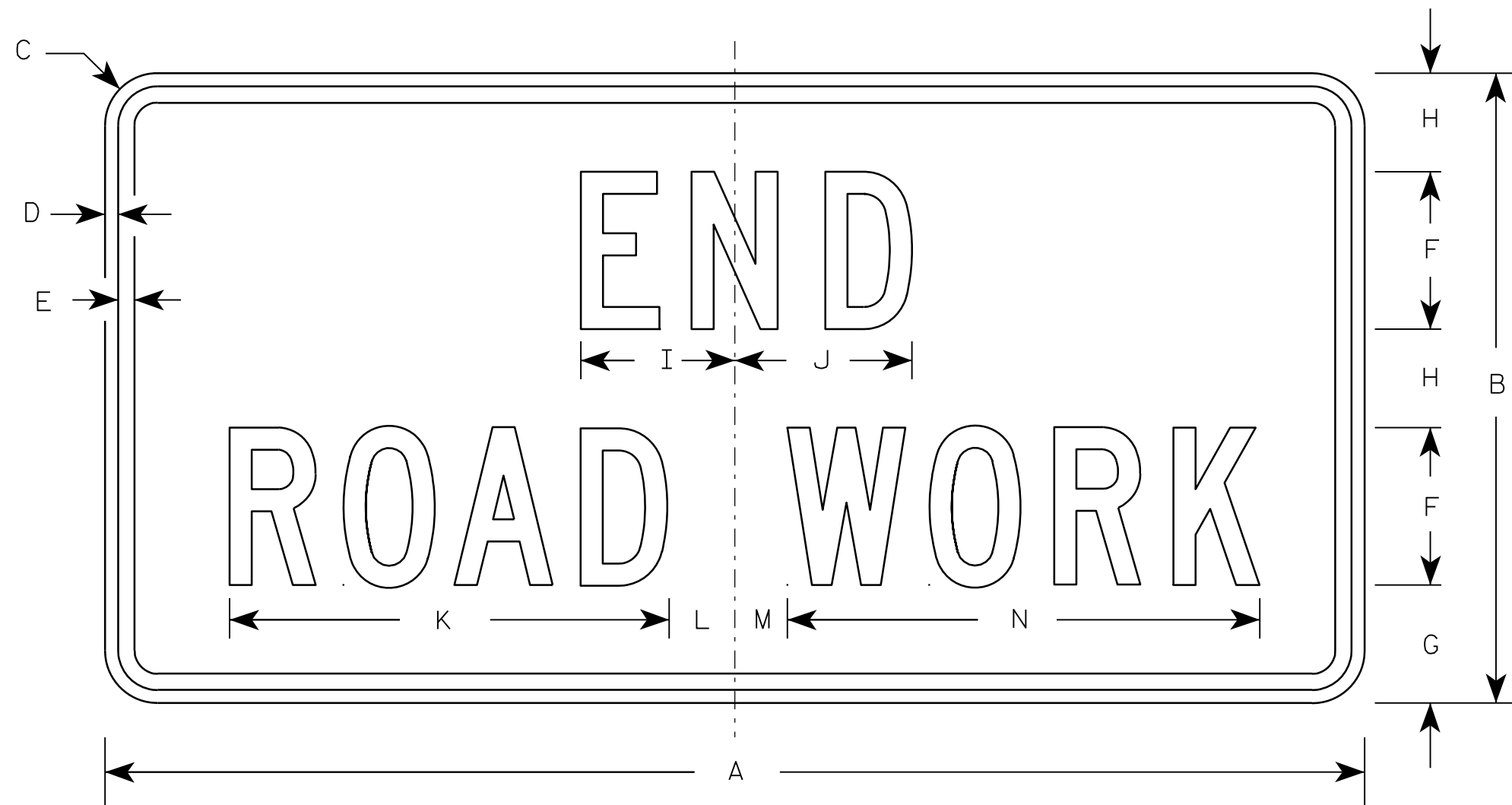
DATE 7/12/07 PLATE NO. A5-10.1

PROJECT NO:

SHEET NO:

E

7



G20-2A

Metric equivalent  
for this sign is:

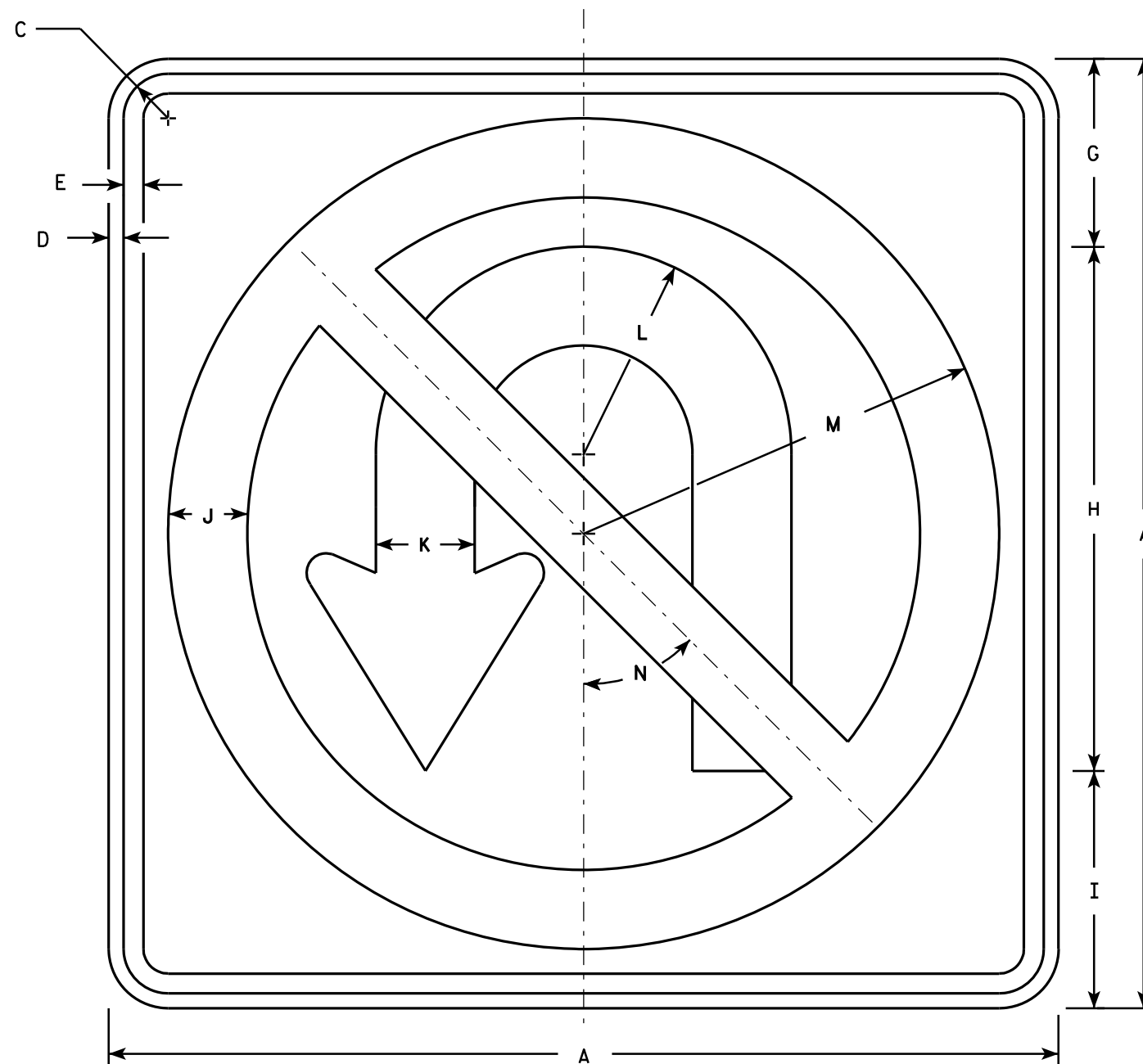
SIZE	
1	900 mm X 450 mm
2	1200 mm X 600 mm
3	1200 mm X 600 mm
4	1200 mm X 600 mm
5	1200 mm X 600 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area sq. m.
1	36	18	1 1/8	3/8	1/2	4	3 3/4	2 1/2	4 1/8	4 1/8	11 1/8	2	1	12 1/8													4.5	0.41
2	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72
3	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72
4	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72
5	48	24	1 1/2	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0	0.72

NOTES

- Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- Color:  
Background - Orange  
Message - Black
- Message Series - C
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

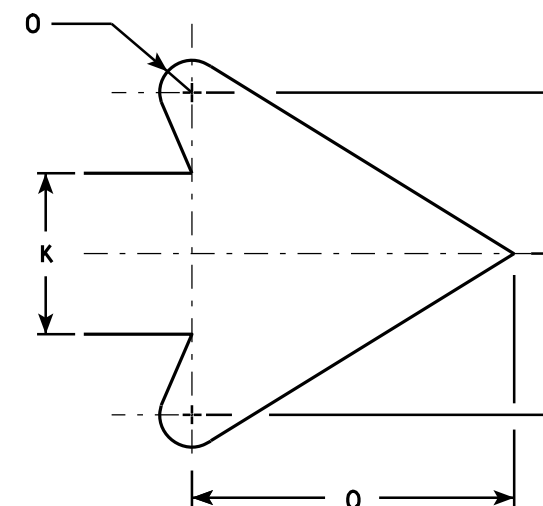
7



R3-4

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - White  
Message - See note 4
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. Border & Arrow are non reflective black, the circle with diagonal bar is reflective red.

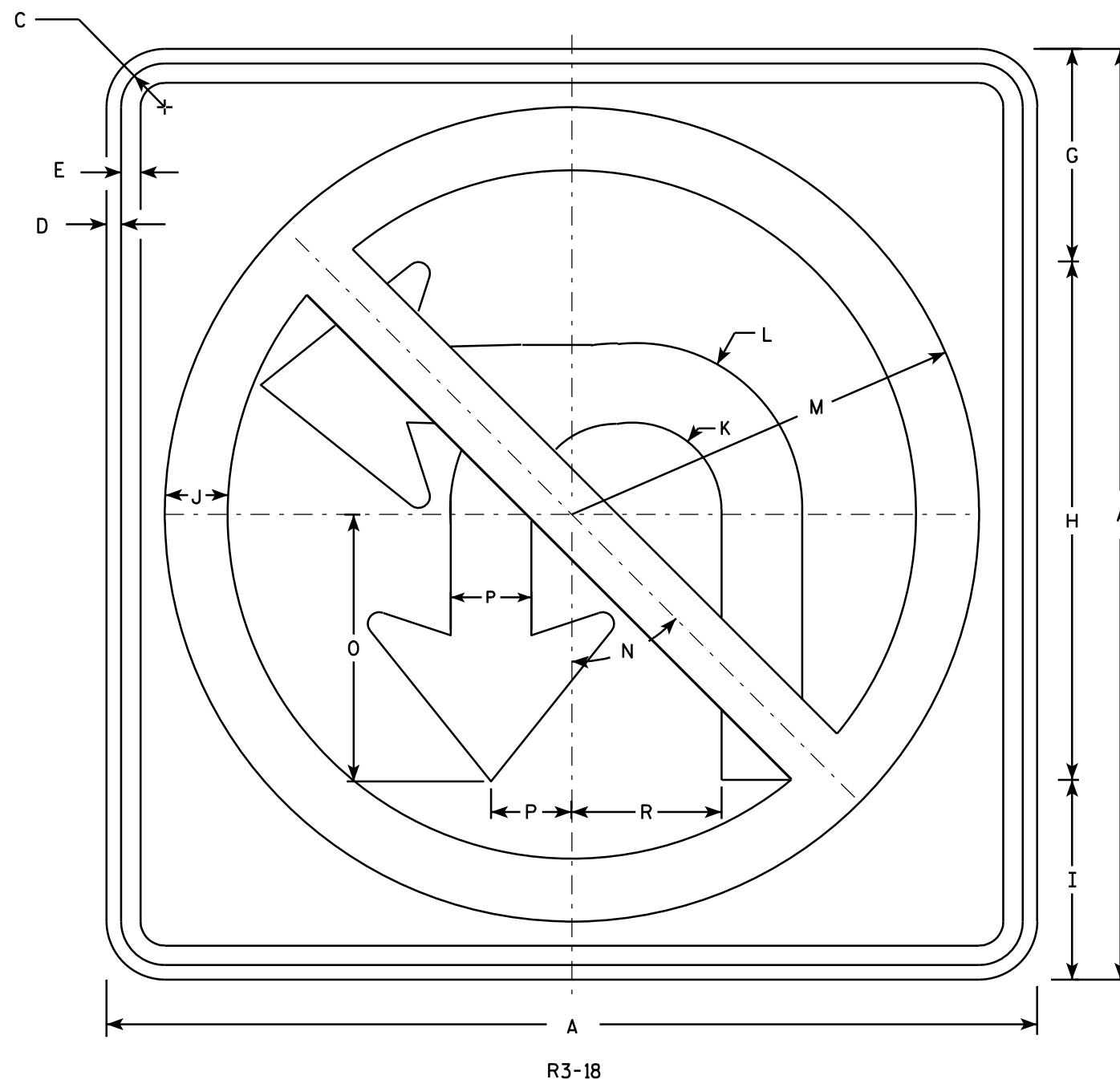


ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24		1 1/8	3/8	1/2		4 3/4	13 1/4	6	2	2 1/2	5 1/4	10 1/2	45°	1/2		5										4.0
2M	36		1 5/8	5/8	3/4		7 1/8	19 7/8	9	3	3 3/4	7 7/8	15 3/4	45°	3/4		7 5/8										9.0
3	36		1 5/8	5/8	3/4		7 1/8	19 7/8	9	3	3 3/4	7 7/8	15 3/4	45°	3/4		7 5/8										9.0
4	36		1 5/8	5/8	3/4		7 1/8	19 7/8	9	3	3 3/4	7 7/8	15 3/4	45°	3/4		7 5/8										9.0
5	36		1 5/8	5/8	3/4		7 1/8	19 7/8	9	3	3 3/4	7 7/8	15 3/4	45°	3/4		7 5/8										9.0

STANDARD SIGN	
R3-4	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 12/08/10	PLATE NO. R3-4.11

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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### NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - White  
Message - See note 4
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. Border & Arrow are non reflective black, the circle with diagonal bar is reflective red.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24		1 1/8	3/8	1/2		5 1/2	13 3/8	5 1/8	1 5/8	2 1/4	4 1/4	10 1/2	45°	6 7/8	2 1/8		3 7/8									4.0
2M	36		1 5/8	5/8	3/4		8 1/4	20	7 3/4	2 1/2	3 3/8	6 1/2	15 3/4	45°	10 3/8	3 1/8		5 3/4									9.0
3	36		1 5/8	5/8	3/4		8 1/4	20	7 3/4	2 1/2	3 3/8	6 1/2	15 3/4	45	10 3/8	3 1/8		5 3/4									9.0
4	36		1 5/8	5/8	3/4		8 1/4	20	7 3/4	2 1/2	3 3/8	6 1/2	15 3/4	45	10 3/8	3 1/8		5 3/4									9.0
5	48		2 1/4	3/4	1		11	26 3/4	10 1/4	3 1/4	4 5/8	8 5/8	21	45°	13 3/4	4 1/8		7 3/4									16.0

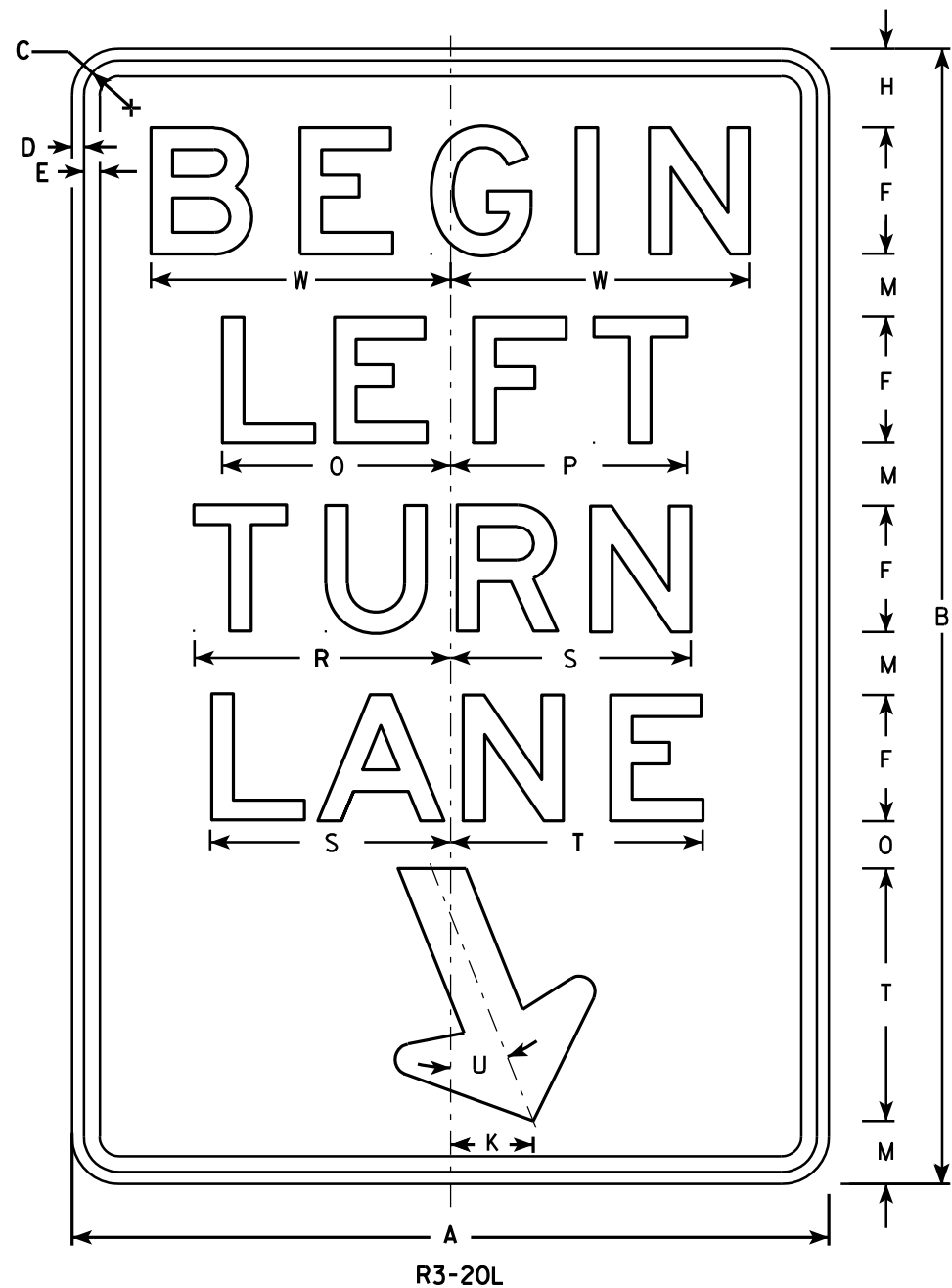
### STANDARD SIGN R3-18

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

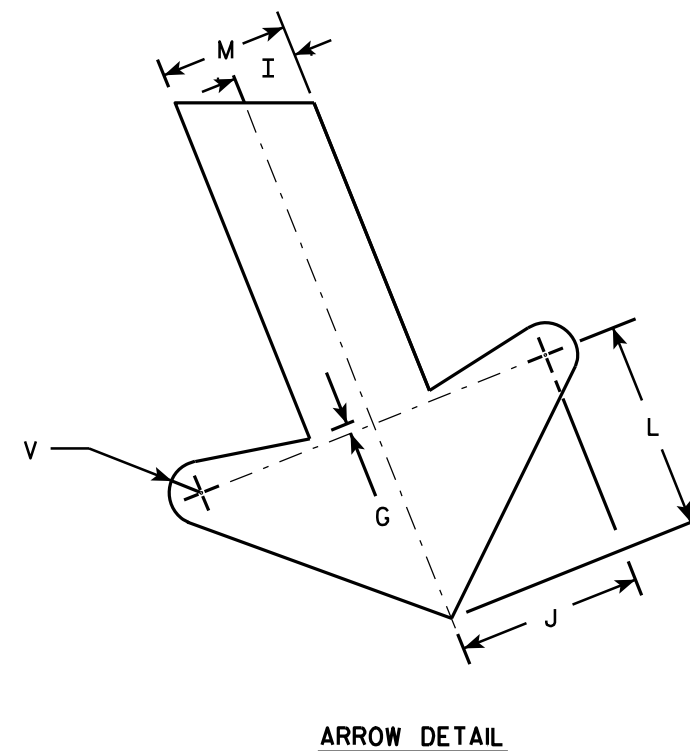
DATE 11/21/10 PLATE NO. R3-18.2

PROJECT NO: HWY: COUNTY: SHEET NO: E



NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - White  
Message - Black
3. Message Series - E
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



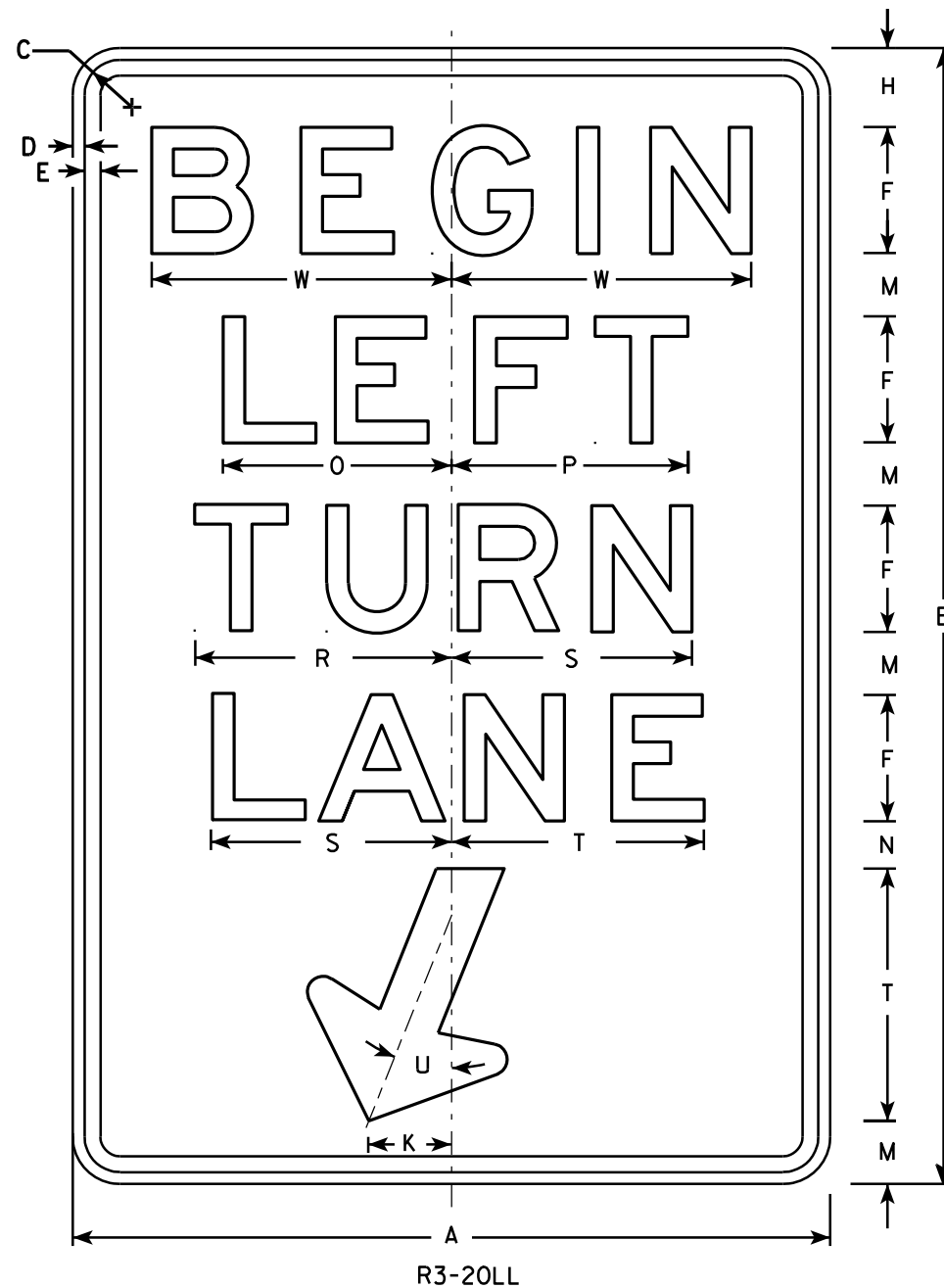
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	36	1 1/8	3/8	1/2	4	1/4	2 1/2	1	2 7/8	2 5/8	3 1/4	2	1 1/2	7 1/4	7 1/2		8 1/8	7 5/8	8	22°	1/2	9 1/2				6.0
2M	24	36	1 1/8	3/8	1/2	4	1/4	2 1/2	1	2 7/8	2 5/8	3 1/4	2	1 1/2	7 1/4	7 1/2		8 1/8	7 5/8	8	22°	1/2	9 1/2				6.0
3	36	54	1 3/4	1/2	5/8	6	3/8	3 3/4	1 1/2	4 1/4	4	4 7/8	3	2 1/4	10 7/8	11 1/4		12 1/4	11 1/2	12	22°	3/4	13 1/4				13.5
4																											
5																											

STANDARD SIGN  
R3-20L

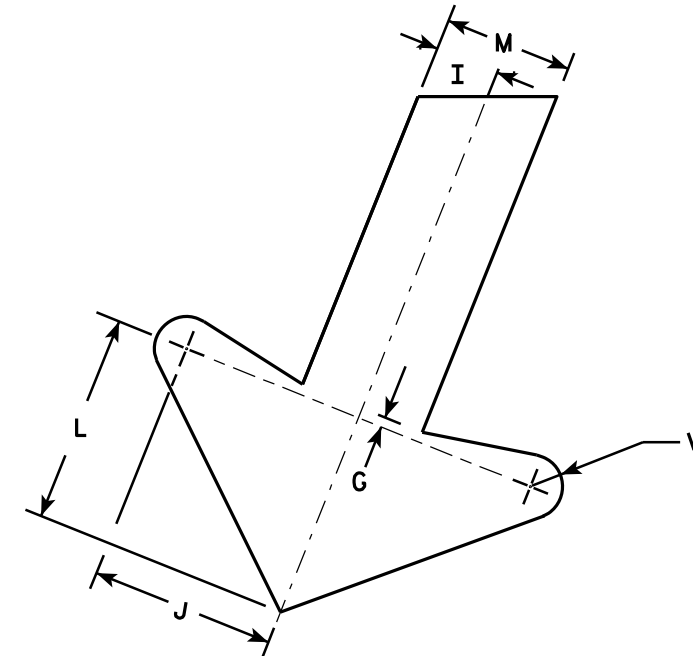
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 10/18/10 PLATE NO. R3-20L.7



- NOTES**
1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
  2. Color:  
Background - White  
Message - Black
  3. Message Series - E
  4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



**ARROW DETAIL**

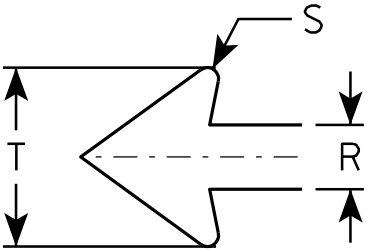
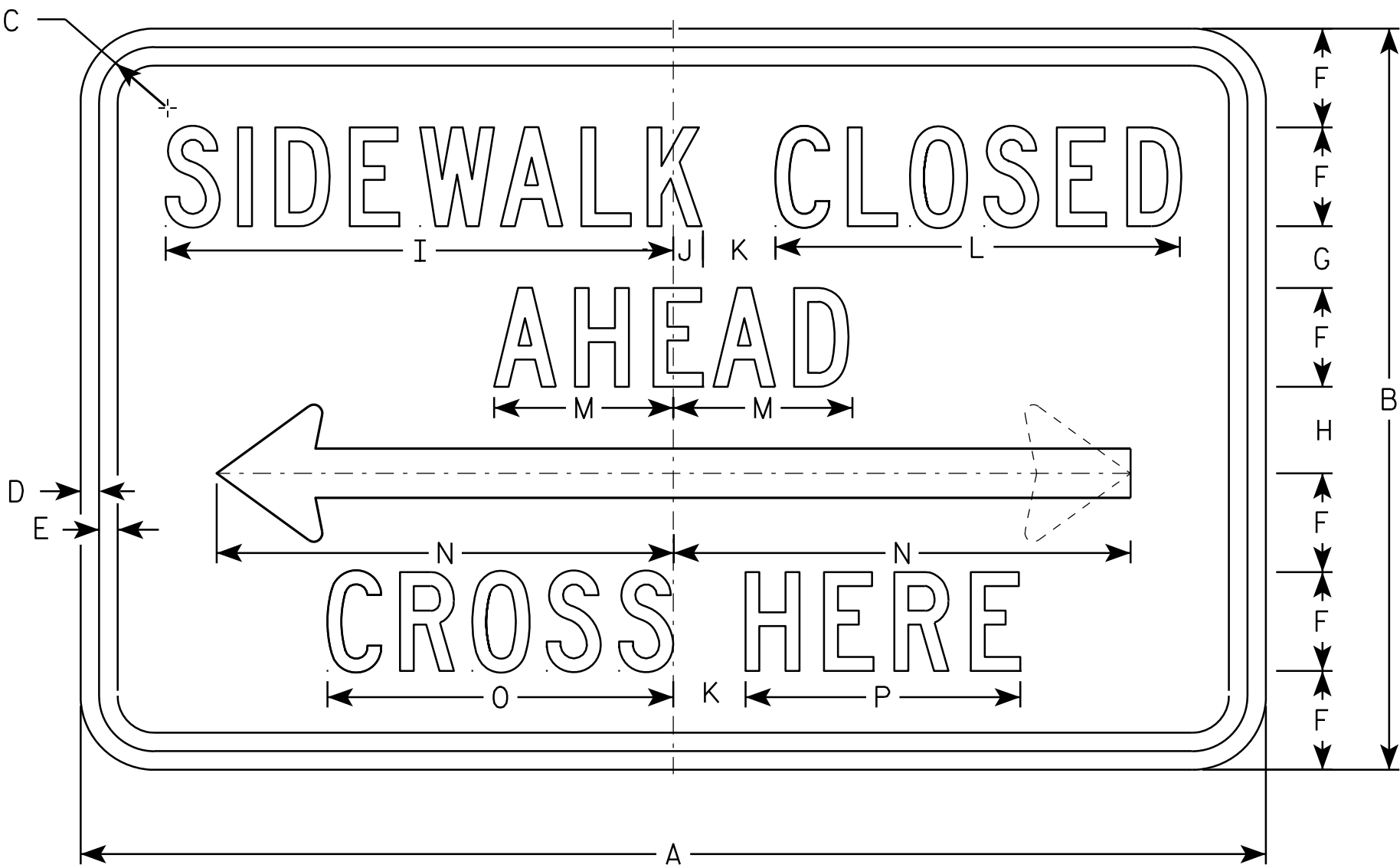
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	36	1 1/8	3/8	1/2	4	1/4	2 1/2	1	2 7/8	2 5/8	3 1/4	2	1 1/2	7 1/4	7 1/2		8 1/8	7 5/8	8	22°	1/2	9 1/2				6.0
2M	24	36	1 1/8	3/8	1/2	4	1/4	2 1/2	1	2 7/8	2 5/8	3 1/4	2	1 1/2	7 1/4	7 1/2		8 1/8	7 5/8	8	22°	1/2	9 1/2				6.0
3	36	54	1 3/4	1/2	5/8	6	3/8	3 3/4	1 1/2	4 1/4	4	4 7/8	3	2 1/4	10 7/8	11 1/4		12 1/4	11 1/2	12	22°	3/4	13 1/4				13.5
4																											
5																											

<b>STANDARD SIGN</b> <b>R3-20LL</b>	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 10/18/10	PLATE NO. R3-20LL.1

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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NOTES

- 1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:  
Background - White  
Message - Black
- 3. Message Series - C except Size 1 is Series D
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



R9-11

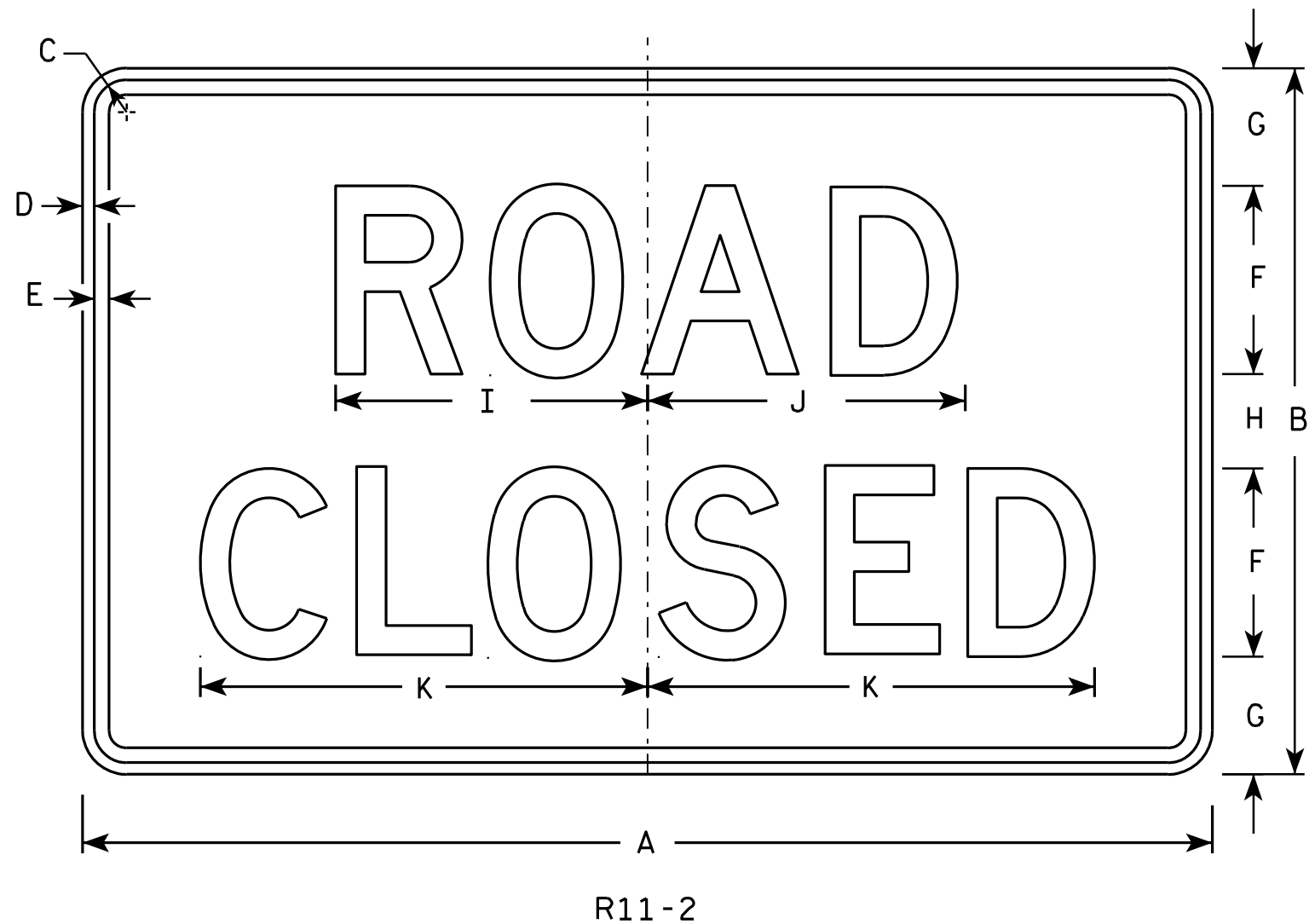
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24	12	1 1/8	3/8	3/8	1 1/2	1 1/2	1 1/2	9 3/4	5/8	1 1/2	7 5/8	3 1/2	9 1/4	6 5/8	5 1/8		1	1/8	2 3/4							2.0
2S	48	30	2 3/4	3/4	3/4	4	2 1/2	3 1/2	20 1/2	1 1/4	3	16 3/8	7 1/4	18 1/2	14	11 1/8		2	3/8	5 1/2							10.0
2M	48	30	2 3/4	3/4	3/4	4	2 1/2	3 1/2	20 1/2	1 1/4	3	16 3/8	7 1/4	18 1/2	14	11 1/8		2	3/8	5 1/2							10.0
3																											
4																											
5																											

STANDARD SIGN  
R9-11

WISCONSIN DEPT OF TRANSPORTATION

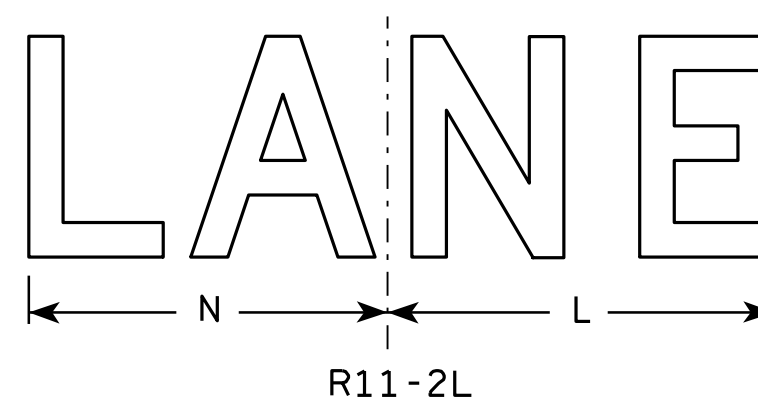
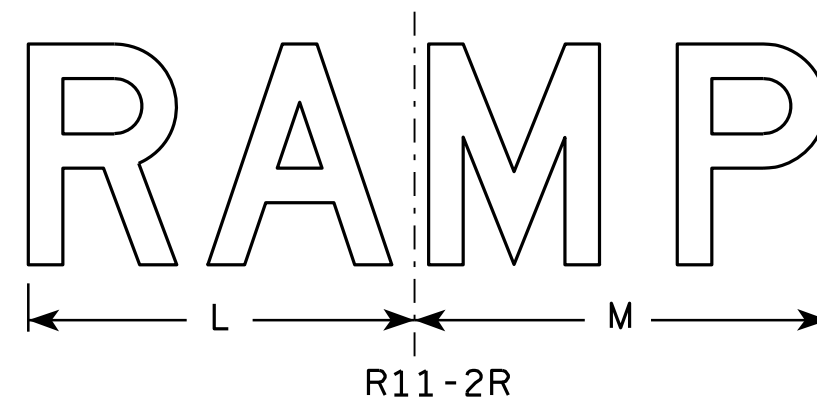
APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 8/17/2012 PLATE NO. R9-11.2



### NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - White  
Message - Black
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Modify the message as required.



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	30	1 3⁄8	1⁄2	5⁄8	8	5	4	13 1⁄4	13 1⁄2	19	14	15	13													10.0
2M	48	30	1 3⁄8	1⁄2	5⁄8	8	5	4	13 1⁄4	13 1⁄2	19	14	15	13													10.0
3	48	30	1 3⁄8	1⁄2	5⁄8	8	5	4	13 1⁄4	13 1⁄2	19	14	15	13													10.0
4	48	30	1 3⁄8	1⁄2	5⁄8	8	5	4	13 1⁄4	13 1⁄2	19	14	15	13													10.0
5	48	30	1 3⁄8	1⁄2	5⁄8	8	5	4	13 1⁄4	13 1⁄2	19	14	15	13													10.0

### STANDARD SIGN R11-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-2.10

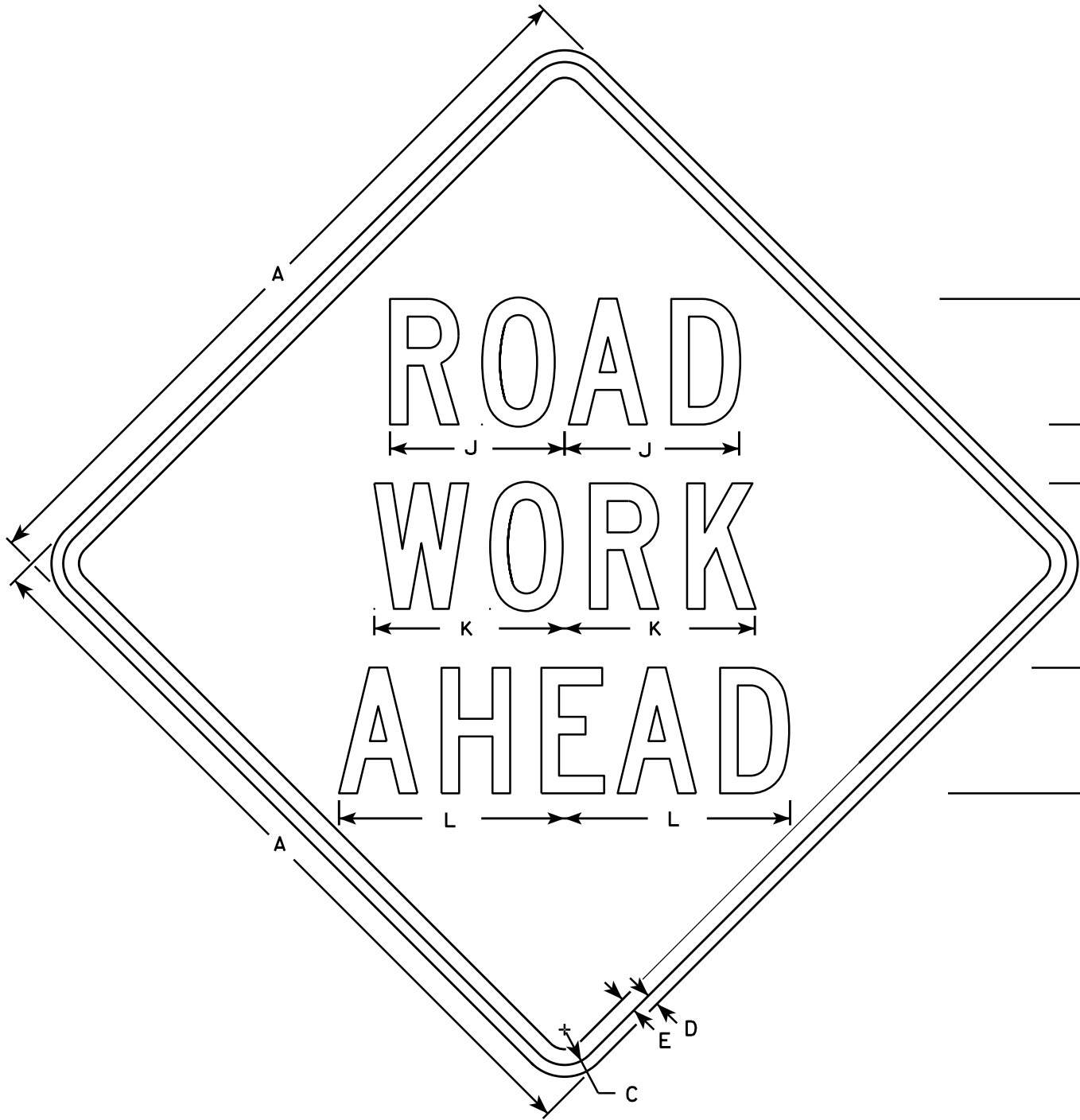
PROJECT NO:

HWY:

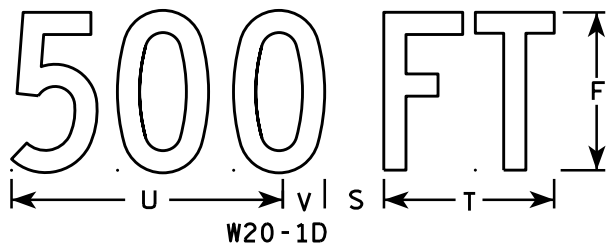
COUNTY:

SHEET NO:

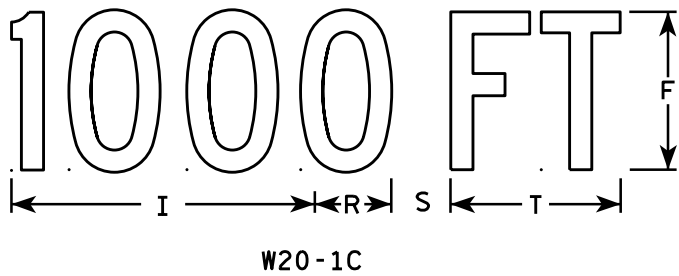
E



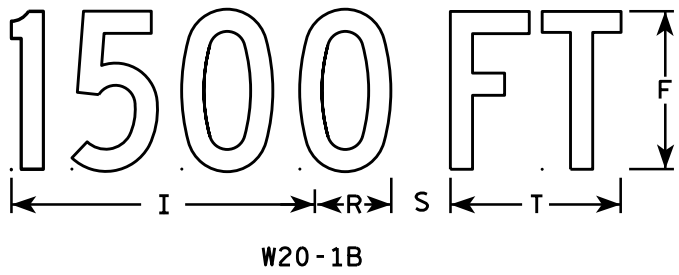
W20-1A



W20-1D



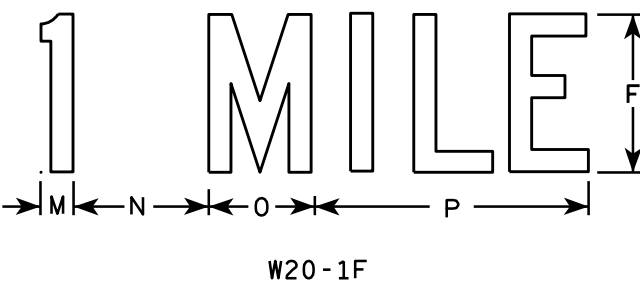
W20-1C



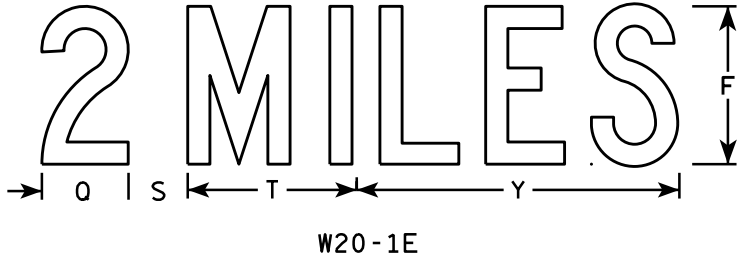
W20-1B



W20-1G



W20-1F



W20-1E

NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:  
Background - Orange  
Message - Black
- 3. Message Series - C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 3/8	1/2	5/8	5	2 5/8	3 1/4	10 1/8	7	7 5/8	8 7/8	1 1/8	4 1/2	3 1/2	9		2 1/2	2 1/4	5 5/8	9	1 3/8	8	1 3/4	10 3/4	6	9.0
2S	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
2M	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
3	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
4	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0
5	48		2 1/4	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13 3/4	2 1/8	11 7/8	2 3/4	16 3/8	9	16.0

STANDARD SIGN  
W20-1A, B, C, D, F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED \_\_\_\_\_  
State Traffic Engineer

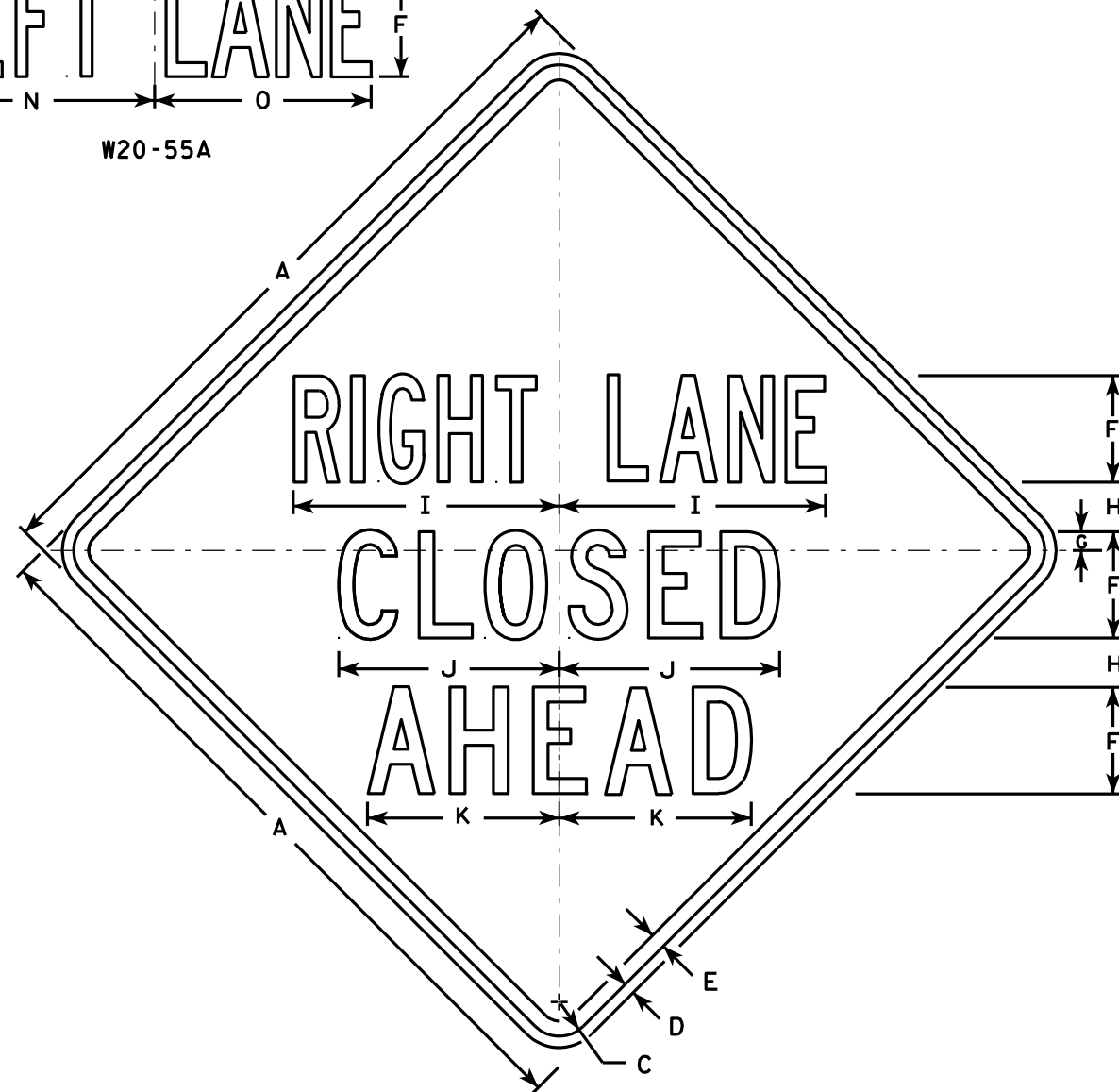
DATE 5/07/15 PLATE NO. W20-1.10

CENTER LANE

W20-56A

LEFT LANE

W20-55A



W20-5A

500 FT

W20-5D

1000 FT

W20-5C

1500 FT

W20-5B

1/2 MILE

W20-5G

1 MILE

W20-5F

### NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - Orange  
Message - Black
3. Message Series - See Note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. "-----LANE" is Series B.  
All other copy is Series C.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	6	1 5/8	5/8	3/4	5	7/8	2 1/2	13 1/8	10 3/4	9 1/2	14 1/4	13 5/8	12	12	1 3/8	1 1/8	4 1/2	3 1/2	9	1 7/8	5 5/8	10 1/8	2 1/2	1 3/4	8	9.0
2S	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0
2M	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0
3	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0
4	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0
5	48	8	2 1/4	3/4	1	7	1 1/4	3 1/4	17 1/2	14 3/8	12 5/8	19	18 3/8	16	14 1/4	1 7/8	1 1/2	6	4 5/8	12	2 5/8	7 1/2	13 1/2	3 3/8	2 3/8	10 5/8	16.0

PROJECT NO:

HWY:

COUNTY:

STANDARD SIGN  
W20-5A, B, C, D, F & G

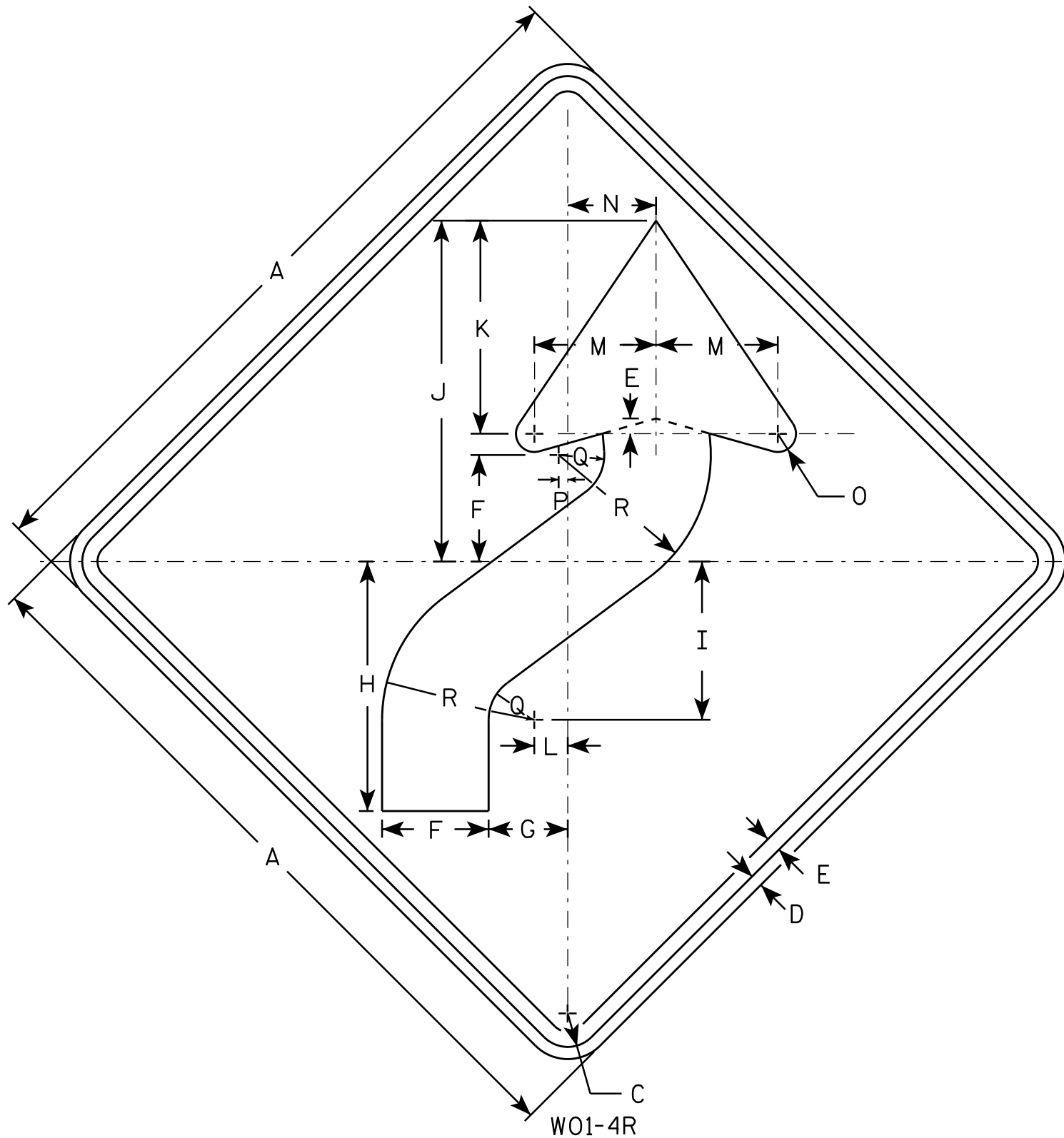
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 3/18/11 PLATE NO. W20-5.11

SHEET NO:

E



### NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:  
Background - Orange  
Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. W01-4L is the same as W01-4R except the arrow is reversed along the vertical centerline.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5/8	5/8	3/4	5 1/4	4	12 3/8	7 7/8	16 7/8	10 1/2	1 5/8	6	4 1/2	1	1/2	2 1/4	7 1/2									9.0
2S	48		2 1/4	3/4	1	7	5 1/4	16 1/2	10 1/2	22 1/2	14	2 1/4	8	6	1 1/4	5/8	3	10									16.0
2M	48		2 1/4	3/4	1	7	5 1/4	16 1/2	10 1/2	22 1/2	14	2 1/4	8	6	1 1/4	5/8	3	10									16.0
3	48		2 1/4	3/4	1	7	5 1/4	16 1/2	10 1/2	22 1/2	14	2 1/4	8	6	1 1/4	5/8	3	10									16.0
4	48		2 1/4	3/4	1	7	5 1/4	16 1/2	10 1/2	22 1/2	14	2 1/4	8	6	1 1/4	5/8	3	10									16.0
5	48		2 1/4	3/4	1	7	5 1/4	16 1/2	10 1/2	22 1/2	14	2 1/4	8	6	1 1/4	5/8	3	10									16.0

## STANDARD SIGN W01-4

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 11/18/13 PLATE NO. W01-4.1

PROJECT NO:

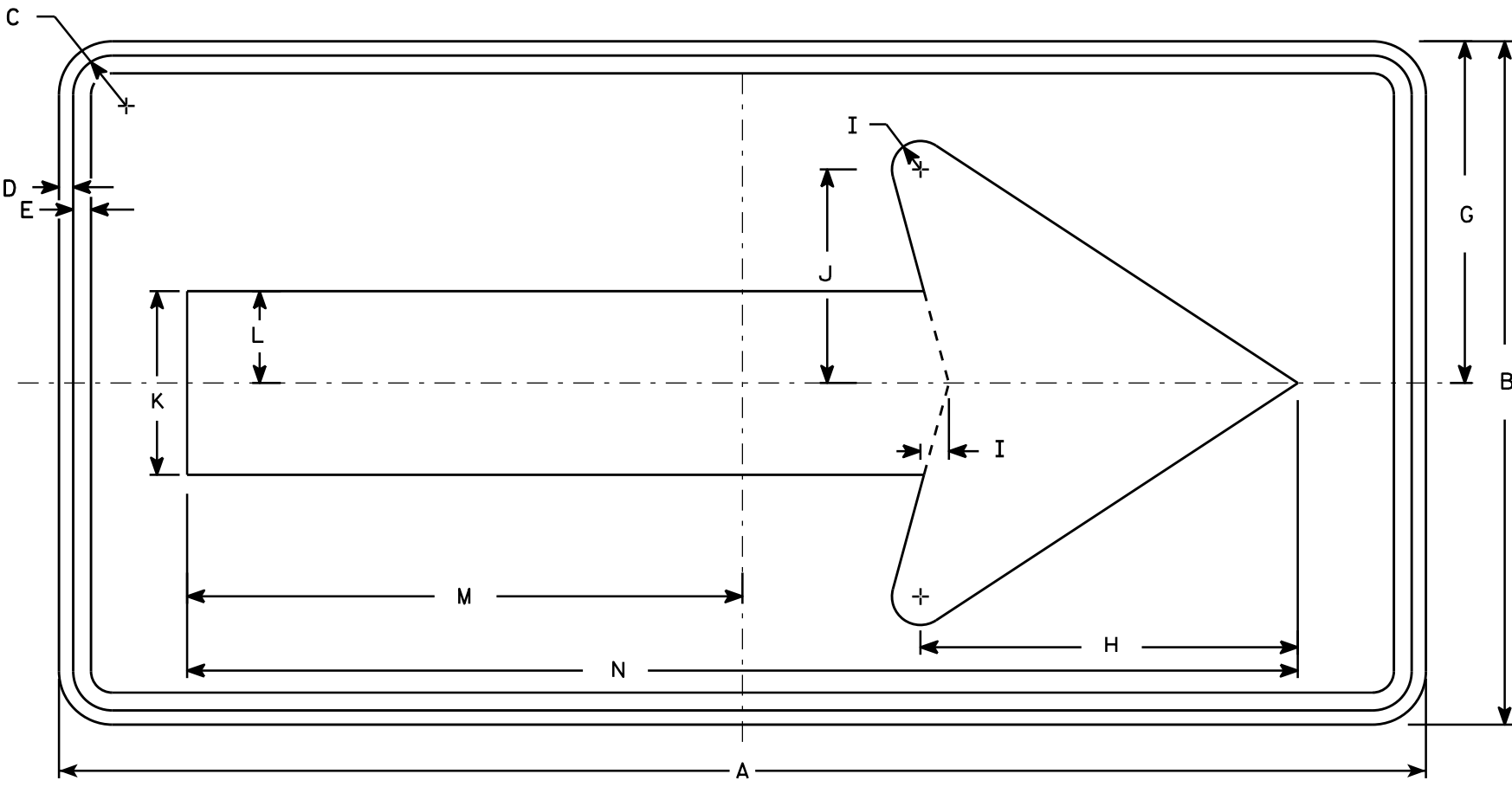
HWY:

COUNTY:

SHEET NO:

E

7



W01-6

NOTES

- 1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:  
Background - Orange  
Message - Black
- 3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	24	1 3/8	1/2	5/8		12	13 1/4	1	7 1/2	6 1/2	3 1/4	19 1/2	39													8.0
2M	48	24	1 3/8	1/2	5/8		12	13 1/4	1	7 1/2	6 1/2	3 1/4	19 1/2	39													8.0
3	60	30	1 3/8	1/2	5/8		15	16 1/4	1 1/4	9 1/4	8	4	24 3/8	48 3/4													12.5
4	60	30	1 3/8	1/2	5/8		15	16 1/4	1 1/4	9 1/4	8	4	24 3/8	48 3/4													12.5
5	60	30	1 3/8	1/2	5/8		15	16 1/4	1 1/4	9 1/4	8	4	24 3/8	48 3/4													12.5

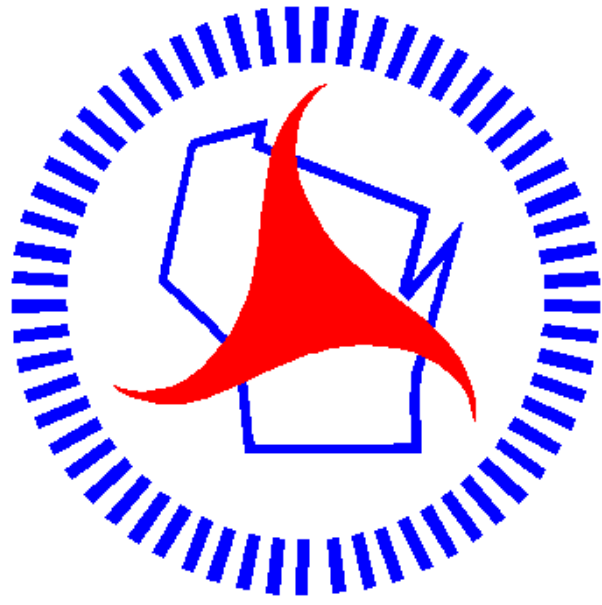
STANDARD SIGN

W01-6

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*  
for State Traffic Engineer

DATE 11/18/13 PLATE NO. W01-6.1



## ***Wisconsin Department of Transportation***

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