

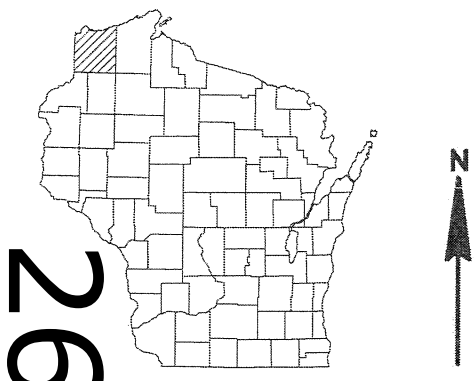
SUP
PROJECT ID: 8510-01-71 & 8510-03-71
WITH: NA
COUNTY: DOUGLAS

NOV 2017

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 = 156



DESIGN DESIGNATION

A.A.D.T.	(2019)	=	1900
A.A.D.T.	(2039)	=	2700
D.H.V.		=	(2039)
D.D.		=	60/40
T.		=	12.4%
DESIGN SPEED		=	60 MPH
ESALS		=	197,100

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	

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PLAN OF PROPOSED IMPROVEMENT

PORT WING - SUPERIOR

ENGDAHL ROAD TO USH 2/USH 53 MILLER CREEK BRIDGE B-16-0053

STH 13 STH 13
DOUGLAS COUNTY DOUGLAS COUNTY

STATE PROJECT NUMBER
8510-01-71

STATE PROJECT NUMBER
8510-03-71

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
8510-01-71	WISC 2017525	1
8510-03-71		

STRUCTURE B-16-052
STA 550+95.00

EQUATION
STA 204+16.77 BK.=
STA 516+40.00 AH.

BEGIN PROJECT
8510-01-71
STA 25+19.19
Y=278749.915
X=178197.715

BEGIN PROJECT
8510-03-71
STA 624+53.42
Y=279139.018
X=205598.460

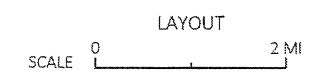
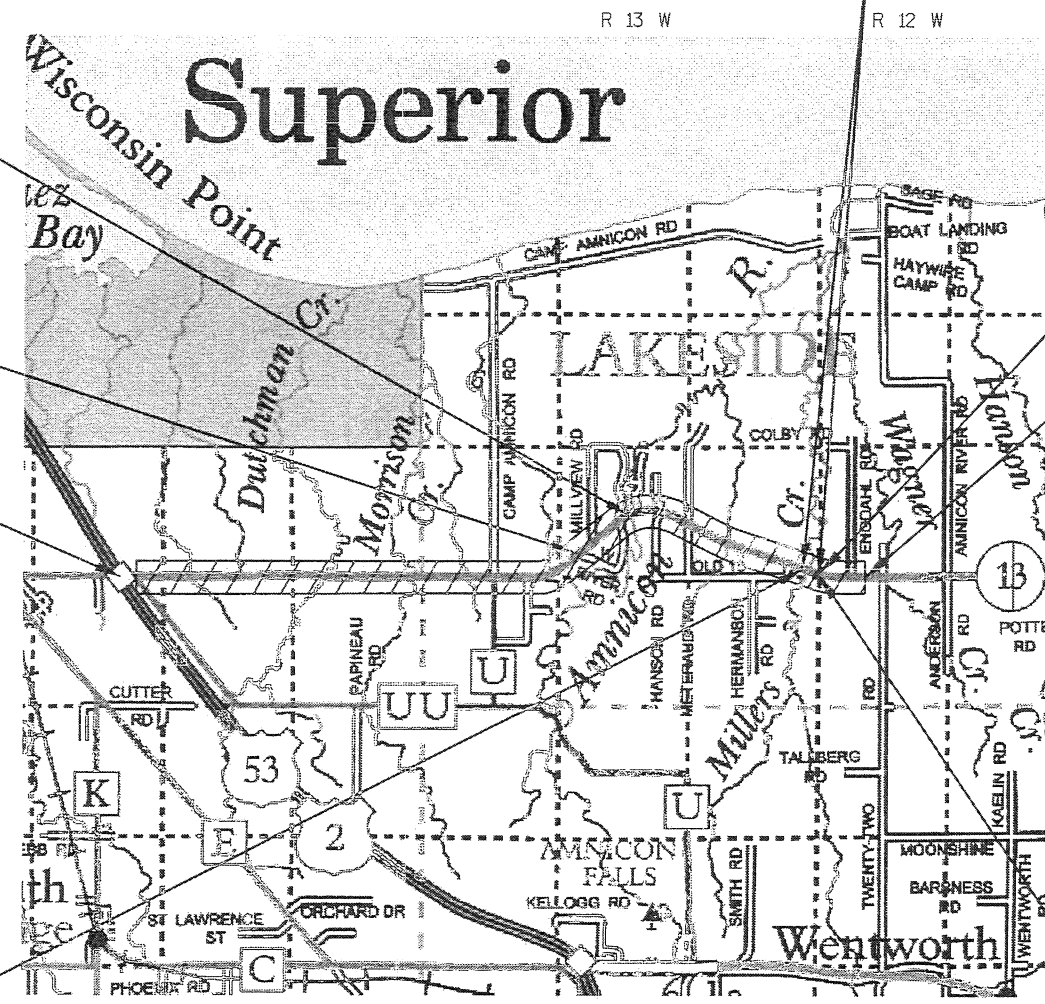
EXCEPTION TO NET C/L LENGTH PROJECT 8510-01-71
STA 624+53.42 - STA 631+80.88

STRUCTURE B-16-053
STA 628+00.00

END PROJECT
8510-01-71
STA 645+13.68
Y=278759.791
X=207609.447

T 49 N

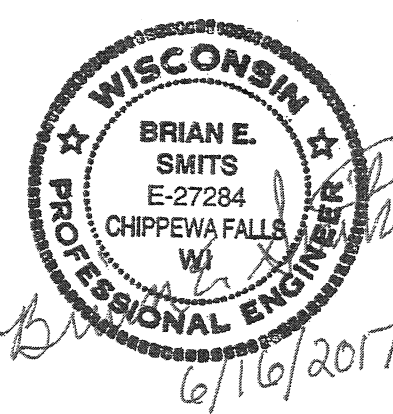
T 48 N



TOTAL NET LENGTH OF CENTERLINE PROJECT 8510-01-71 = 5.828 MI
TOTAL NET LENGTH OF CENTERLINE PROJECT 8510-03-71 = 0.138 MI
TOTAL NET LENGTH OF CENTERLINE = 5.966 MI

POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM COORDINATES (WISCRS), DOUGLAS COUNTY, NAD 83 2011 IN US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

ORIGINAL PLANS PREPARED BY:
CBS SQUARED INC.



STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY	
Surveyor	CBS SQUARED INC.
Designer	CBS SQUARED INC.
Project Manager	BRENDAN DIRKES
Regional Examiner	
Regional Supervisor	ANDREW STENSLAND

APPROVED FOR THE DEPARTMENT
DATE: 6/20/17 *Brendan Dirkes*
(Signature)

GENERAL NOTES

THERE ARE UTILITY FACILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE THEIR CONSTRUCTION ACTIVITIES WITH A CALL TO DIGGER'S HOTLINE AND/OR A DIRECT CALL TO THE UTILITIES THAT HAVE FACILITIES IN THE AREA.

NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.

THE LOCATION OF ALL DRIVEWAYS WILL BE DETERMINED BY THE ENGINEER.

A VERTICAL SAWCUT SHALL BE MADE THROUGH EXISTING DRIVEWAYS AND PAVEMENTS AT REMOVAL LIMITS.

MATCH EXISTING SUPERELEVATIONS ALONG HORIZONTAL CURVES. STAKING SUPERELEVATION TRANSITIONS IN THE FIELD SHALL BE INCIDENTAL TO THE PROJECT.

WHEN THE QUANTITY OF BASE AGGREGATE IS MEASURED BY THE TON OR CUBIC YARD, THE DEPTH OR THICKNESS OF THE LAYER SHOWN ON THE PLANS IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

RESHAPE AND SEED ANY PREVIOUSLY GRASSED AREAS THAT ARE DISTURBED BY OPERATIONS OUTSIDE THE NORMAL CONSTRUCTION LIMITS.

EXISTING RIGHT OF WAY IS BASED OFF OF DOUGLAS COUNTY GIS. CONTRACTOR SHALL FIELD VERIFY EXACT LIMITS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY CONFLICTS.

UTILITY CONTACTS

ALAN NICKELL
CENTURYLINK - COMMUNICATION LINE
P.O. BOX 181
SALON SPRINGS, WI 54873 (715)
378-2131 CELL: (715) 566-3879
ALAN.NICKELL@CENTURYLINK.COM

JOHN QUADE
CHARTER COMMUNICATIONS -
COMMUNICATION LINE
640 GARFIELD AVE
DULUTH, MN 55802
(218) 348-8401
JOHN.QUADE@CHARTER.COM

JEROD STAMPER
EAST CENTRAL ENERGY - ELECTRICITY
3617 E BAUMGARTNER ROAD
SUPERIOR, WI 54880
(715) 399-6169 CELL: (218) 393-1273
JEROD.STAMPER@ECEMN.COM

JAMES DAHLBERG
DAHLBERG LIGHT AND POWER COMPANY - ELECTRICITY
9221 E MAIN
P.O. BOX 300
SOLON SPRING, WI 54873-0300
(715) 378-2205

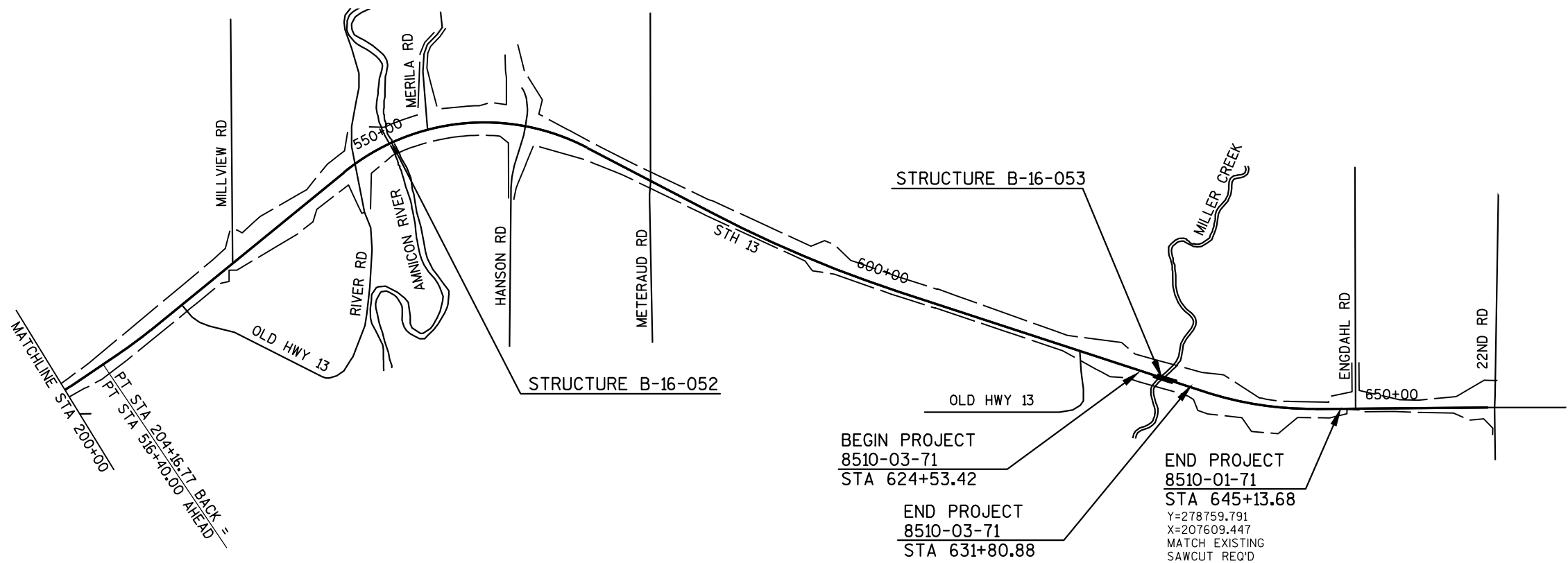
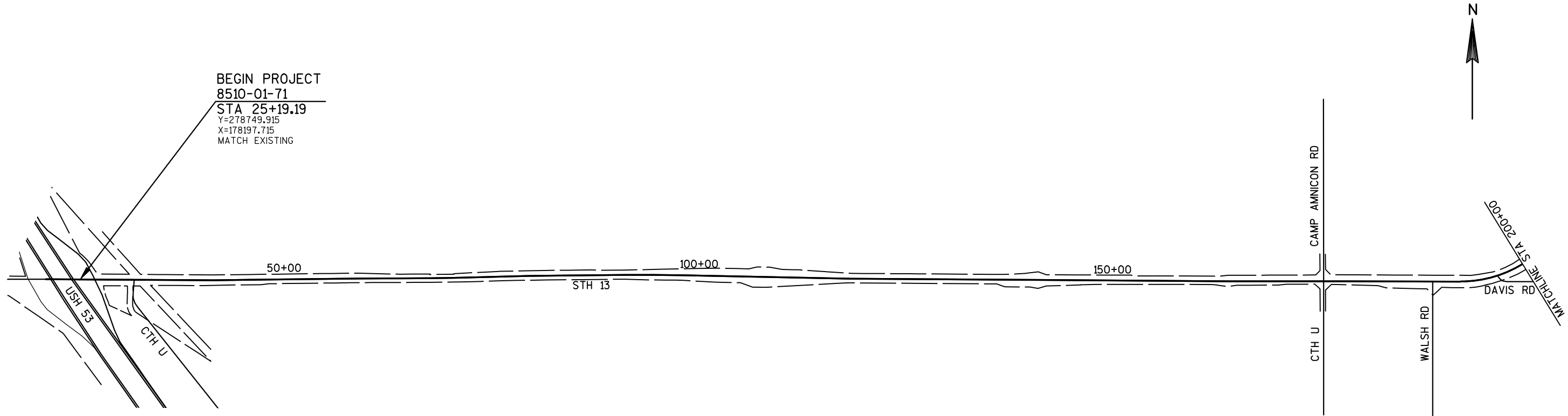
DEAN WILL
ENBRIDGE ENERGY - GAS/PETROLEUM
10 BARDEN AVE
SUPERIOR, WI 54880
(715) 398-8348
DENN.WILL@ENBRIDGE.COM

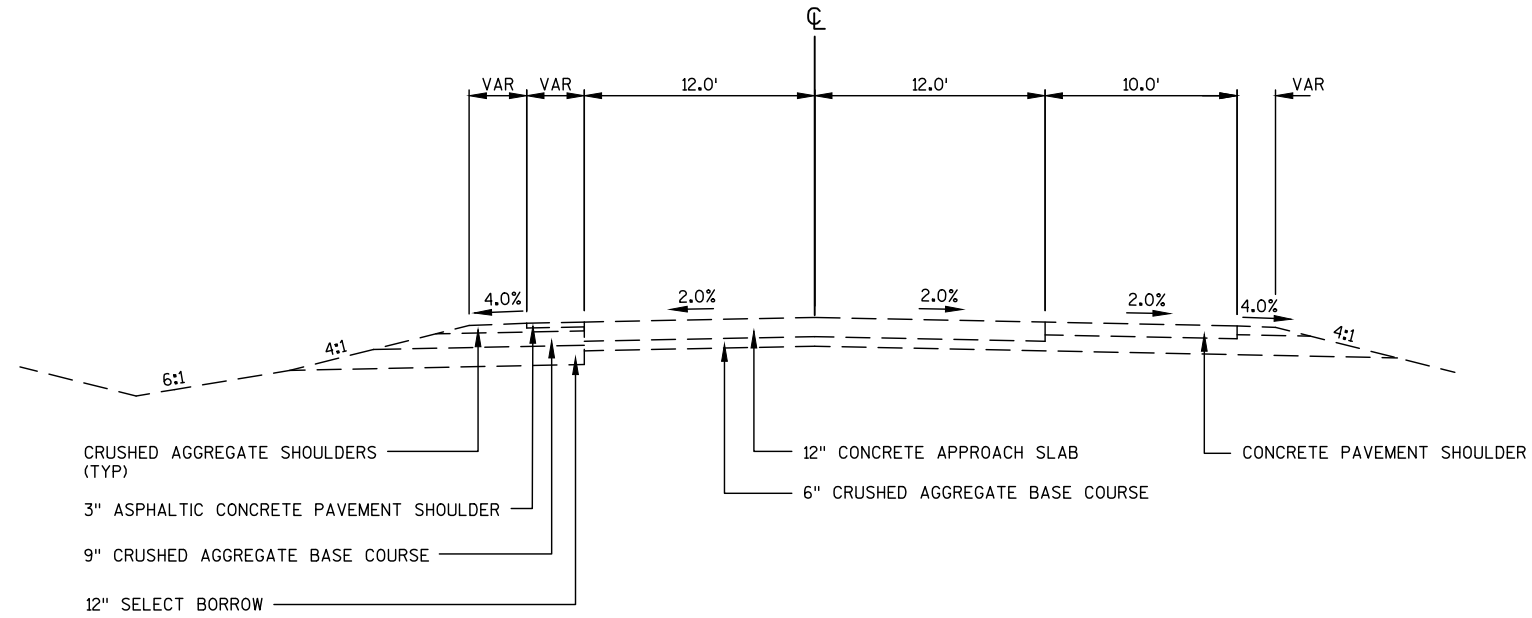
GUY FOLSOM
NORVADO - COMMUNICATION LINE
P.O. BOX 67
CABLE, WI 54821
(715) 798-7123 CELL: (715) 580-8123
GFOLSOM@NORVADO.COM



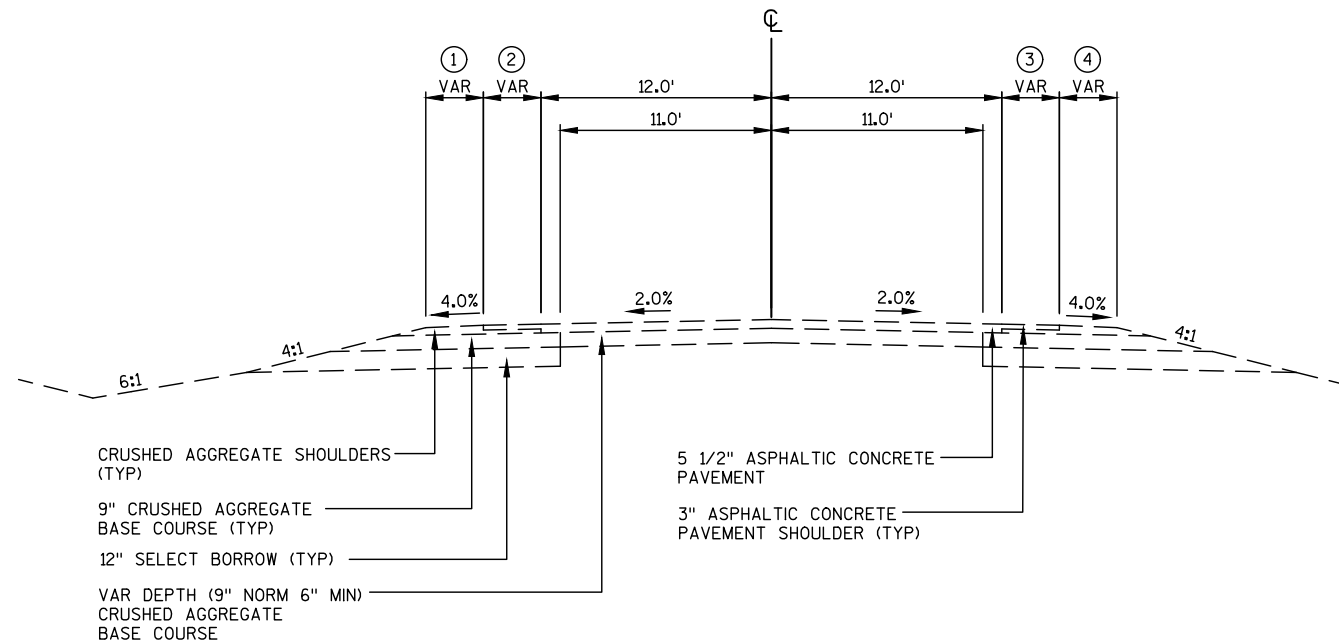
WISCONSIN DNR LIAISON

AMY CRONK
DNR NORTHERN REGION
810 W. MAPLE STREET
SPOONER, WI 54801
(715) 635-4229
AMY.CRONK@WISCONSIN.GOV





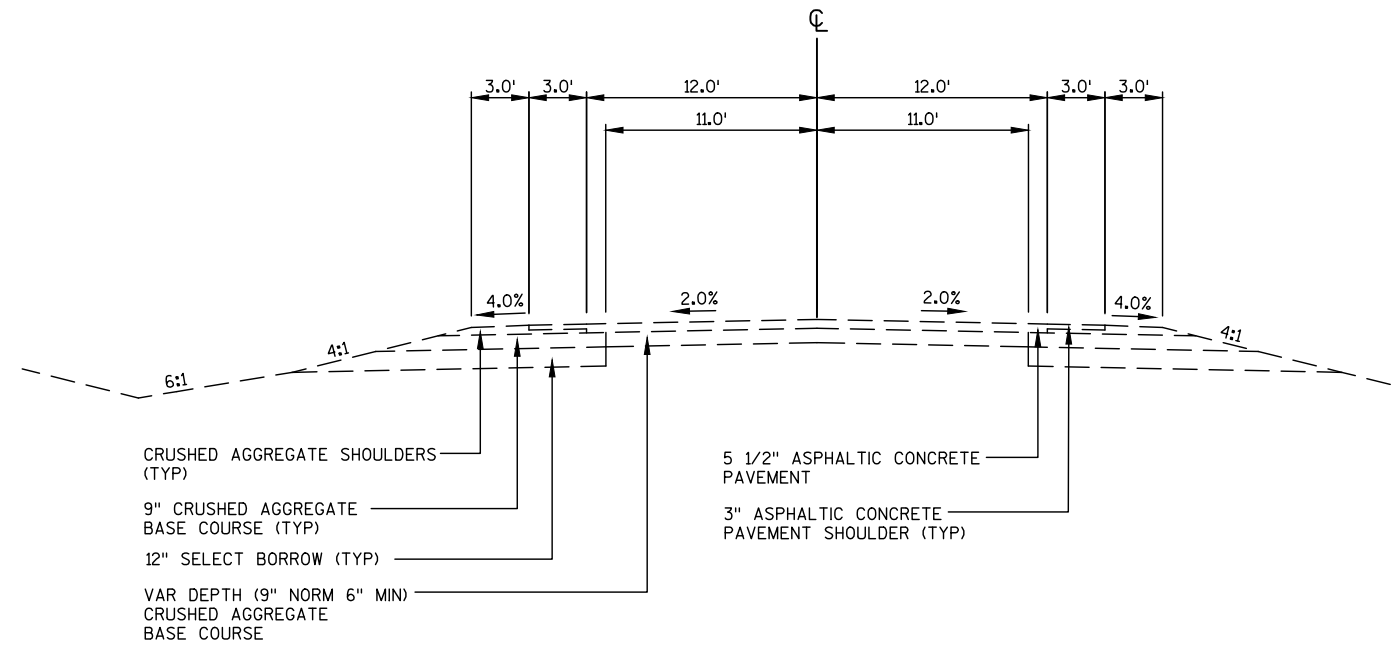
TYPICAL EXISTING SECTION
STA 25+19.19 TO STA 25+46.54



TYPICAL EXISTING SECTION
STA 25+46.54 TO STA 33+89.24

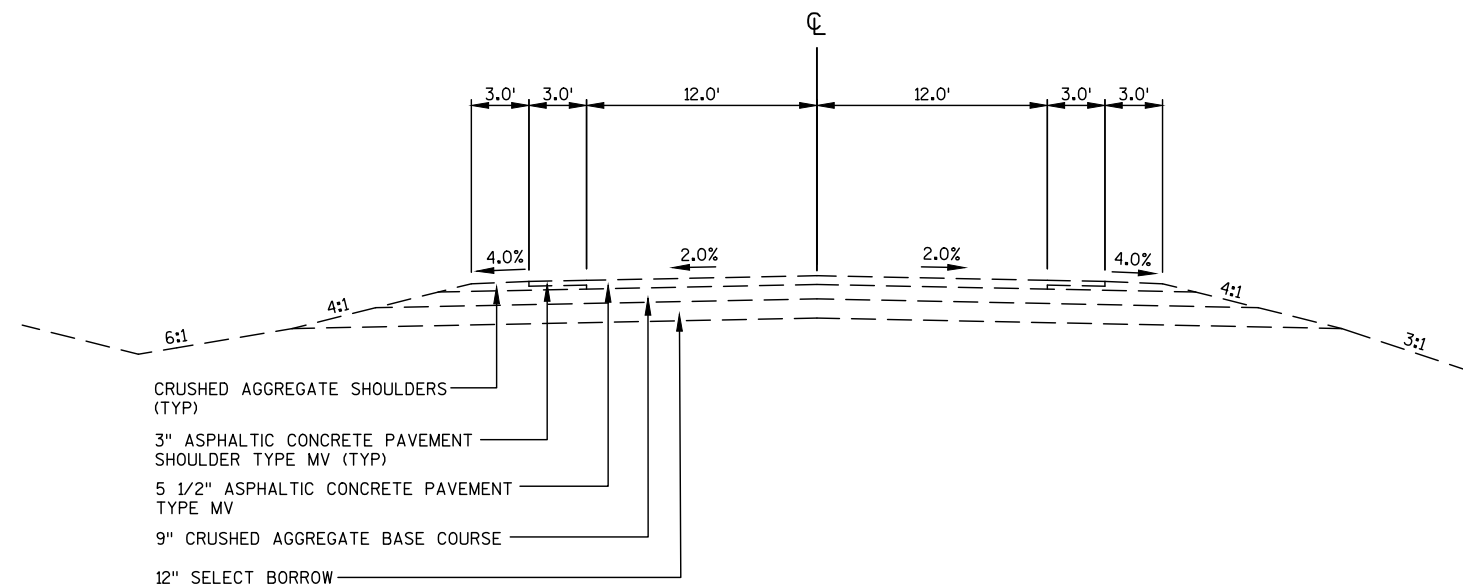
NOTES:

- ① 11.0' FROM STA 25+46.54 TO STA 26+21.07
7.0' FROM STA 27+82.27 TO STA 31+81.27
- ② VARIES 5.0' TO 13.0' FROM STA 25+46.54 TO STA 26+21.07
12.0' FROM STA 27+82.27 TO STA 28+82.60
VARIES 12.0' TO 3.0' FROM STA 28+82.60 TO STA 31+81.24
- ③ VARIES 10.0' TO 0.0' FROM STA 25+46.54 TO STA 25+83.61
0' FROM STA 25+83.61 TO STA 27+01.02
10.0' FROM STA 28+39.25 TO STA 30+56.50
VARIES 12.0' TO 3.0' FROM STA 31+81.78 TO STA 32+45.24
- ④ VARIES 2.0' TO 12.0' FROM STA 25+46.54 TO STA 25+83.61
12.0' FROM STA 25+83.61 TO STA 27+01.02
2.0' FROM STA 28+39.25 TO STA 30+56.50
VARIES 0' TO 10.0' FROM STA 31+81.78 TO STA 32+45.24
VARIES 10.0' TO 3.0' FROM STA 33+71.13 TO STA 33+89.24



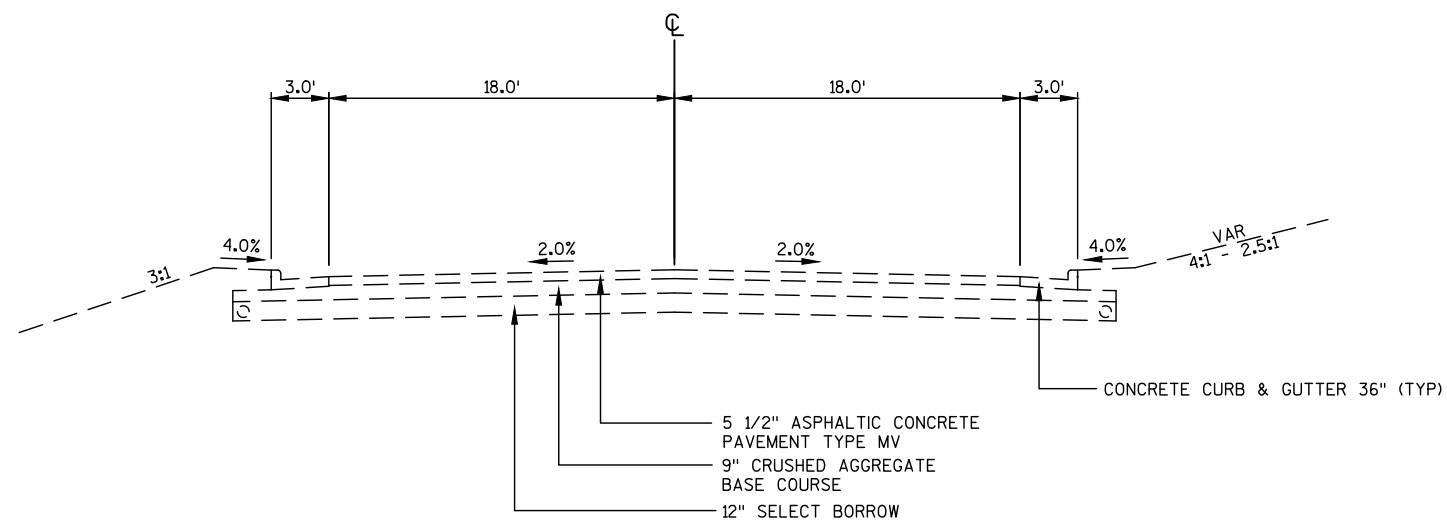
TYPICAL EXISTING SECTION

STA 25+46.54 TO STA 61+00.00
STA 67+03.00 TO STA 70+04.00 RT
STA 77+00.00 TO STA 98+53.00
STA 118+03.00 TO STA 136+03.00
STA 152+53.00 TO STA 189+83.00



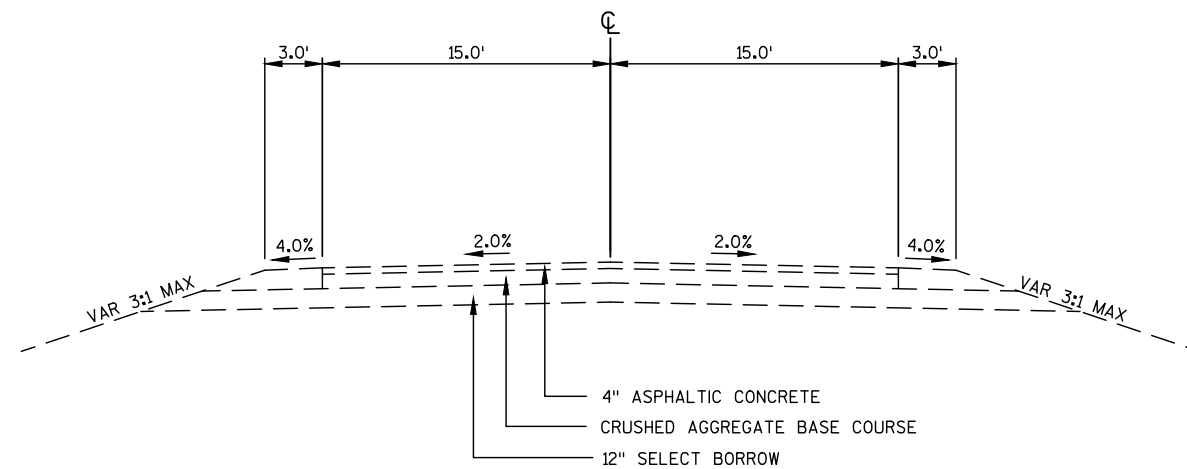
TYPICAL EXISTING SECTION

STA 61+00.00 TO STA 67+03.00
STA 70+04.00 RT TO STA 77+00.00
STA 71+57.00 LT TO STA 77+00.00
STA 98+53.00 TO STA 118+03.00
STA 136+03.00 TO STA 152+53.00



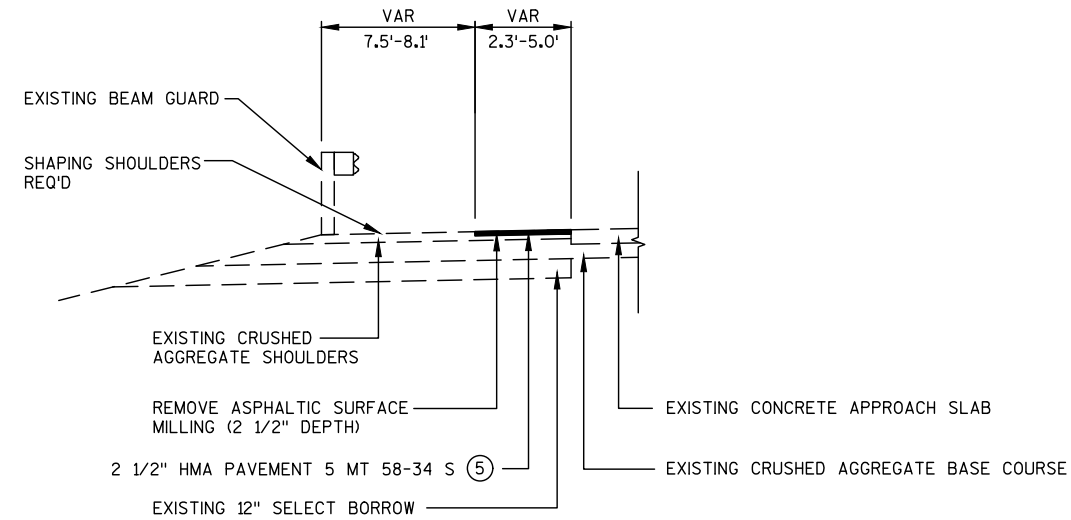
TYPICAL EXISTING SECTION

STA 67+03.00 TO STA 70+04.00 RT
STA 67+03.00 TO STA 71+57.00 LT

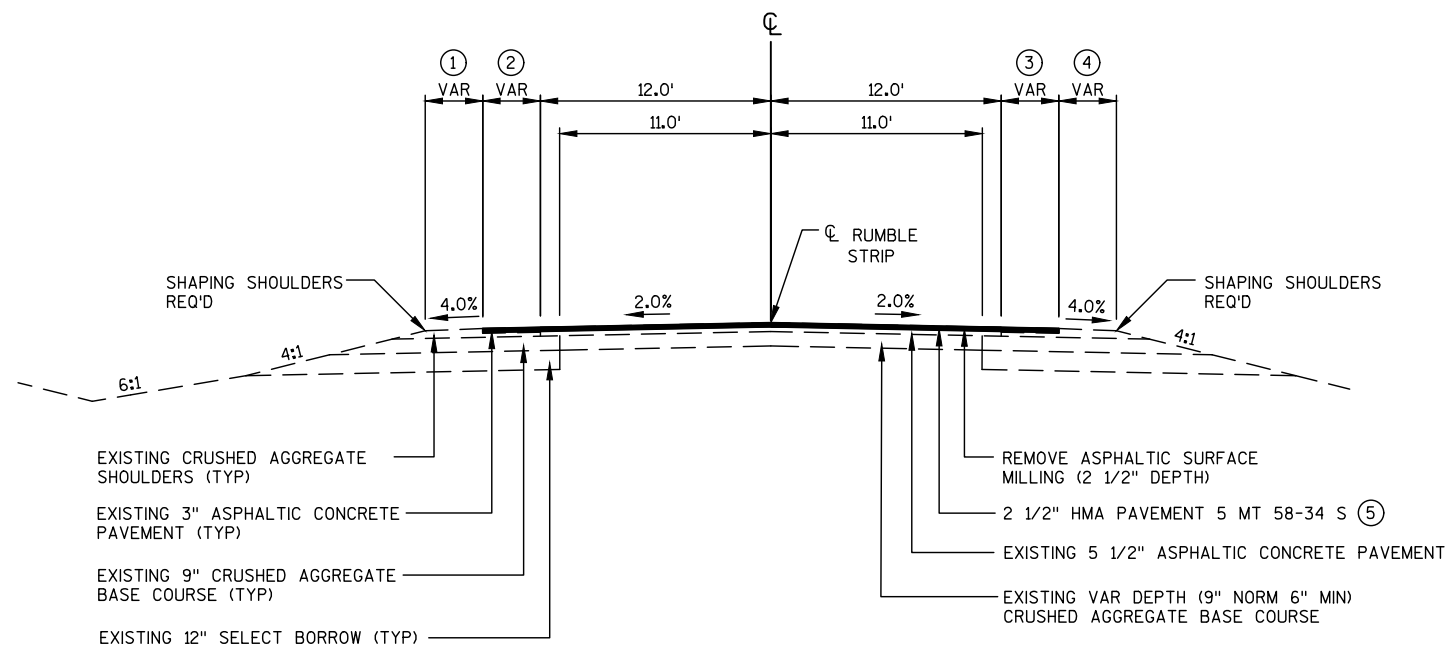


TYPICAL EXISTING SECTION

STA 189+83.00 TO STA 550+29.00
STA 551+61.00 TO STA 627+59.00
STA 629+00.00 TO STA 645+14.00



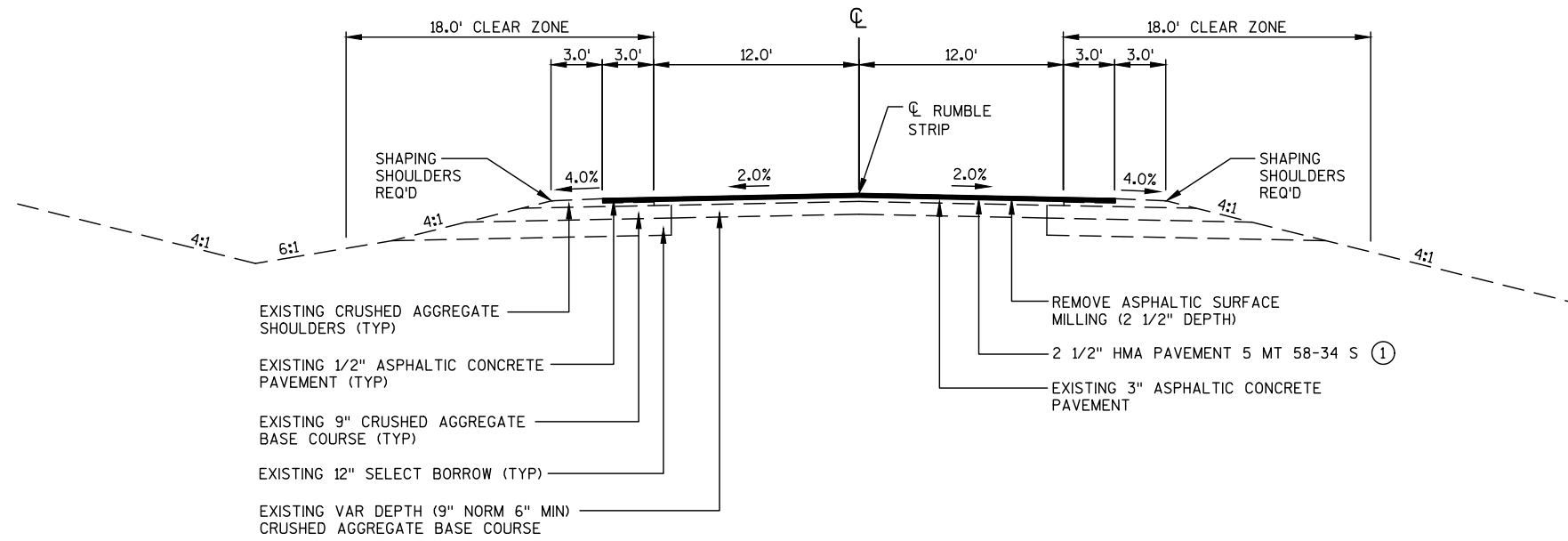
PARTIAL FINISHED SECTION
STA 25+19.19 LT TO STA 25+46.54 LT



TYPICAL FINISHED SECTION
STA 25+46.54 TO STA 33+89.24

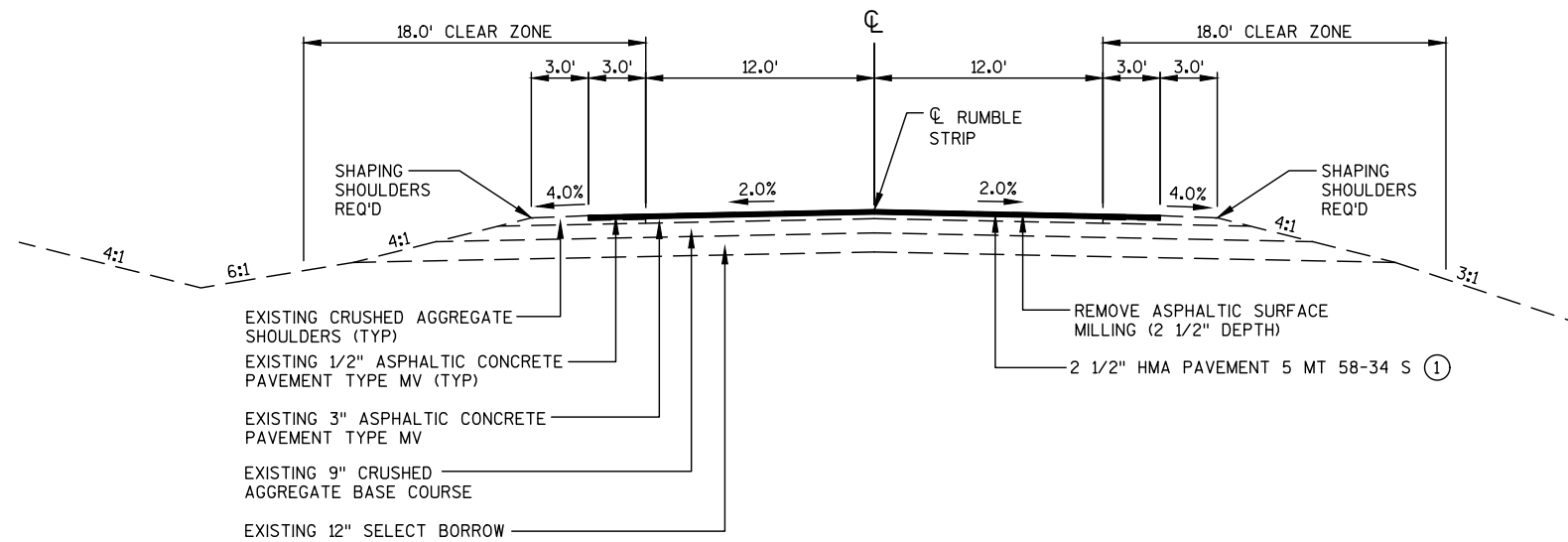
NOTES:

- ① 11.0' FROM STA 25+46.54 TO STA 26+21.07
7.0' FROM STA 27+82.27 TO STA 31+81.27
- ② VARIES 5.0' TO 13.0' FROM STA 25+46.54 TO STA 26+21.07
12.0' FROM STA 27+82.27 TO STA 28+82.60
VARIES 12.0' TO 3.0' FROM STA 28+82.60 TO STA 31+81.24
- ③ VARIES 10.0' TO 0.0' FROM STA 25+46.54 TO STA 25+83.61
0' FROM STA 25+83.61 TO STA 27+01.02
10.0' FROM STA 28+39.25 TO STA 30+56.50
VARIES 12.0' TO 3.0' FROM STA 31+81.78 TO STA 32+45.24
- ④ VARIES 2.0' TO 12.0' FROM STA 25+46.54 TO STA 25+83.61
12.0' FROM STA 25+83.61 TO STA 27+01.02
2.0' FROM STA 28+39.25 TO STA 30+56.50
VARIES 0' TO 10.0' FROM STA 31+81.78 TO STA 32+45.24
VARIES 10.0' TO 3.0' FROM STA 33+71.13 TO STA 33+89.24
- ⑤ 2.5 INCH HMA PAVEMENT OVERLAY SHALL BE CONSTRUCTED IN TWO LAYERS. THE LOWER LAYER SHALL BE 1.0 INCH AND THE UPPER LAYER SHALL BE 1.5 INCHES.



TYPICAL FINISHED SECTION

STA 25+46.54 TO STA 61+00.00
STA 67+03.00 TO STA 70+04.00 RT
STA 77+00.00 TO STA 98+53.00
STA 118+03.00 TO STA 136+03.00
STA 152+53.00 TO STA 189+83.00



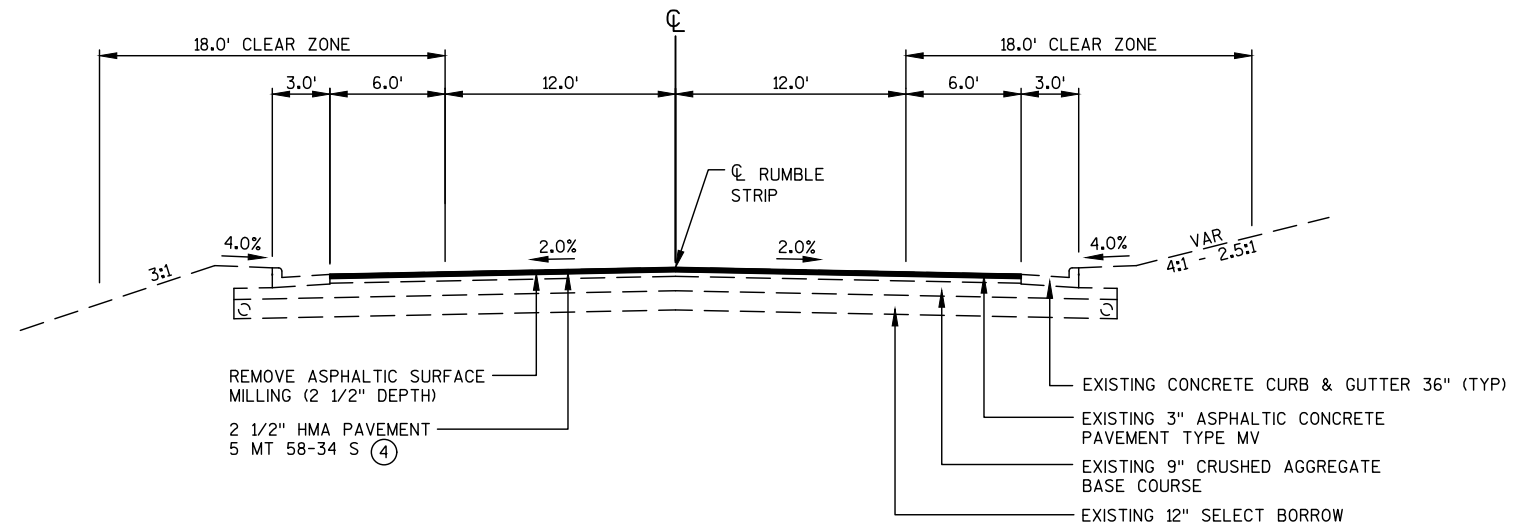
TYPICAL FINISHED SECTION

STA 61+00.00 TO STA 67+03.00
STA 70+04.00 RT TO STA 77+00.00
STA 71+57.00 LT TO STA 77+00.00
STA 98+53.00 TO STA 118+03.00
STA 136+03.00 TO STA 152+53.00

NOTES:

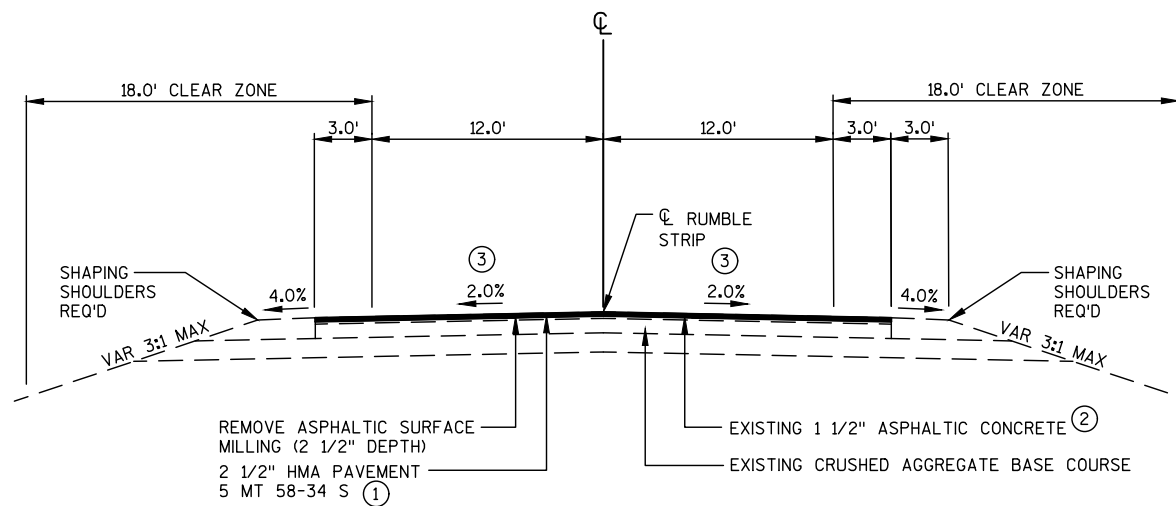
①

2.5 INCH HMA PAVEMENT OVERLAY SHALL BE CONSTRUCTED IN TWO LAYERS. THE LOWER LAYER SHALL BE 1.0 INCH AND THE UPPER LAYER SHALL BE 1.5 INCHES.



TYPICAL FINISHED SECTION

STA 67+03.00 TO STA 70+04.00 RT
STA 67+03.00 TO STA 71+57.00 LT

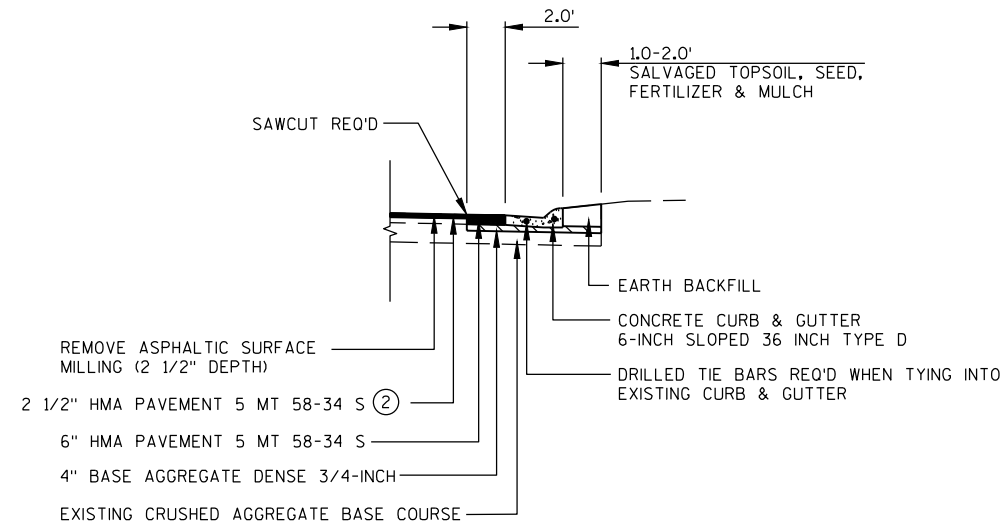


TYPICAL FINISHED SECTION

STA 189+83.00 TO STA 550+29.00
STA 551+61.00 TO STA 627+30.93
STA 629+26.89 TO STA 645+14.00

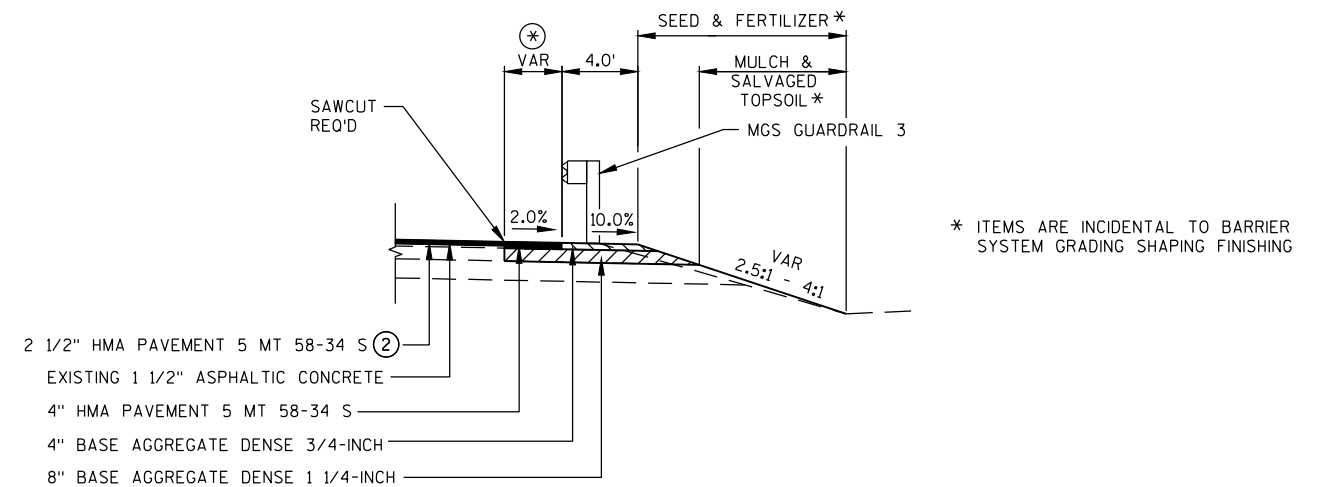
NOTES:

- ① HMA PAVEMENT OVERLAY DEPTH VARIES FROM 2.5" TO 4.2" STA 624+94.50 STA 627+30.93 AND STA 629+26.89 TO STA 632+18.05 TO MATCH APPROACH SLAB SURFACE. REFER TO PROFILE IN PLAN SHEET.
- 2.5 INCH TO 4.2 INCH VARIABLE DEPTH HMA PAVEMENT OVERLAY AT THE MILLER CREEK BRIDGE APPROACHES SHALL BE CONSTRUCTED IN TWO LAYERS. THE LOWER LAYER SHALL BE VARIABLE 1.0 INCH TO 2.7 INCHES AND THE UPPER LAYER SHALL BE 1.5 INCHES.
- ② 1.5" OF NEW HMA PAVEMENT, 5 MT 58-34 S IMMEDIATELY NEXT TO APPROACH SLABS WHERE PAVEMENT IS REMOVED FOR SLAB CONSTRUCTION.
- ③ TRANSITION CROSS SLOPE FROM 2.0% TO 1.5% FROM STA 627+08.04 TO STA 627+30.93 AND FROM 2.0% TO 1.5% FROM STA 629+26.89 TO STA 629+54.02.
- ④ 2.5 INCH HMA PAVEMENT OVERLAY SHALL BE CONSTRUCTED IN TWO LAYERS. THE LOWER LAYER SHALL BE 1.0 INCH AND THE UPPER LAYER SHALL BE 1.5 INCHES.



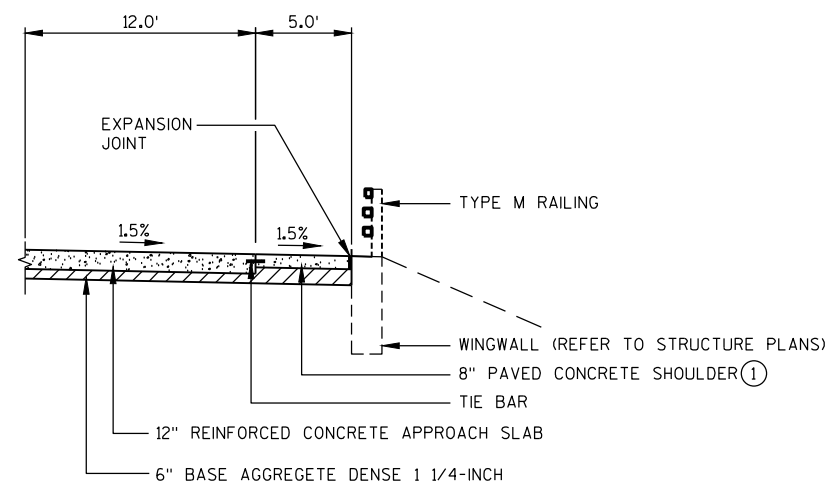
TYPICAL FINISHED CURB AND GUTTER REPLACEMENT SECTION

STA 525+85.68 TO STA 526+10.83 RT
 STA 532+92.76 TO STA 533+20.07 LT
 STA 545+96.91 TO STA 546+16.31 RT
 STA 546+71.62 TO STA 547+25.15 RT
 STA 563+84.27 TO STA 564+06.64 RT
 STA 620+31.44 TO STA 620+57.39 RT



TYPICAL FINISHED BEAM GUARD SECTION

STA 547+36.13 TO STA 550+28.82 RT 2.0'
 STA 547+62.18 TO STA 550+28.82 LT 4.0'
 STA 551+61.08 TO STA 553+48.05 RT 0.0'
 STA 551+61.08 TO STA 553+81.19 LT 4.0'
 STA 625+23.79 TO STA 627+30.93 RT 3.0'
 STA 625+62.20 TO STA 627+30.93 LT 3.0'
 STA 629+26.89 TO STA 630+90.63 RT 3.0'
 STA 629+26.89 TO STA 631+30.52 LT 2.0'

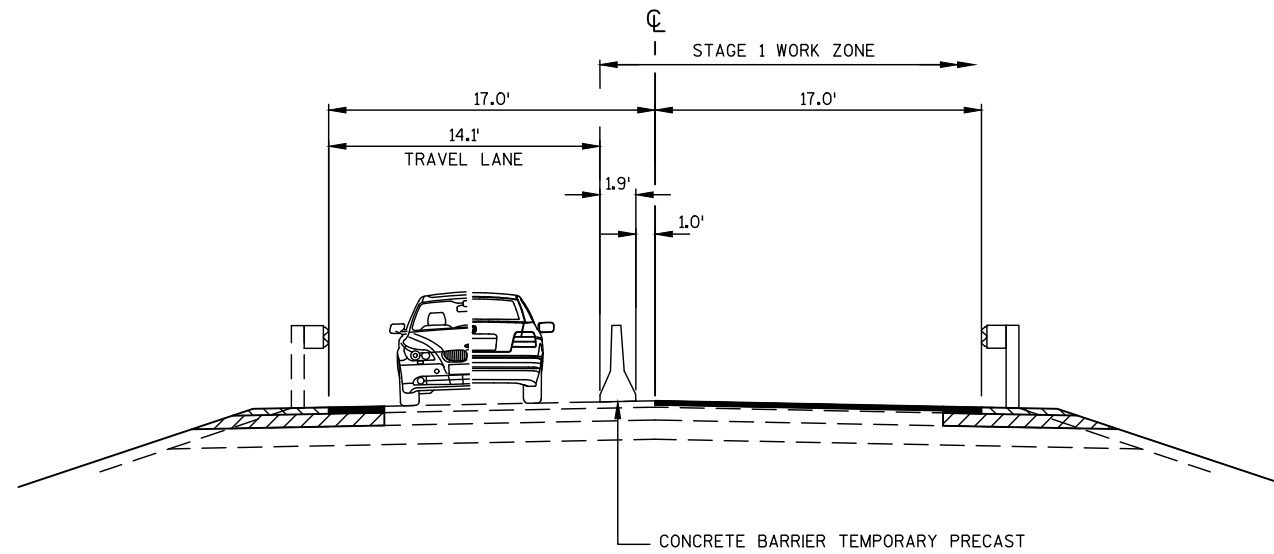


TYPICAL FINISHED SECTION

STA 627+30.93 TO STA 627+72.26
 STA 628+85.36 TO STA 629+26.89

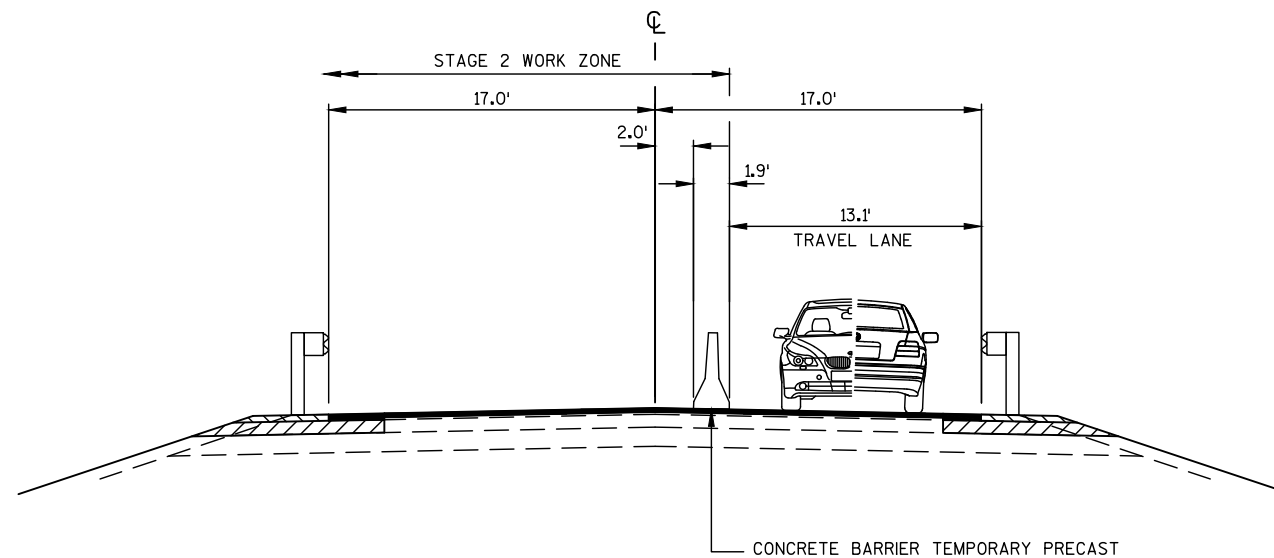
NOTES:

- ① 4" HMA PAVEMENT 5 MT 58-34 S AT STA 627+30.93 LT TO STA 627+43.06 LT AND STA 629+13.98 RT TO STA 629+26.89 RT
- ② 2.5 INCH HMA PAVEMENT OVERLAY SHALL BE CONSTRUCTED IN TWO LAYERS. THE LOWER LAYER SHALL BE 1.0 INCH AND THE UPPER LAYER SHALL BE 1.5 INCHES.



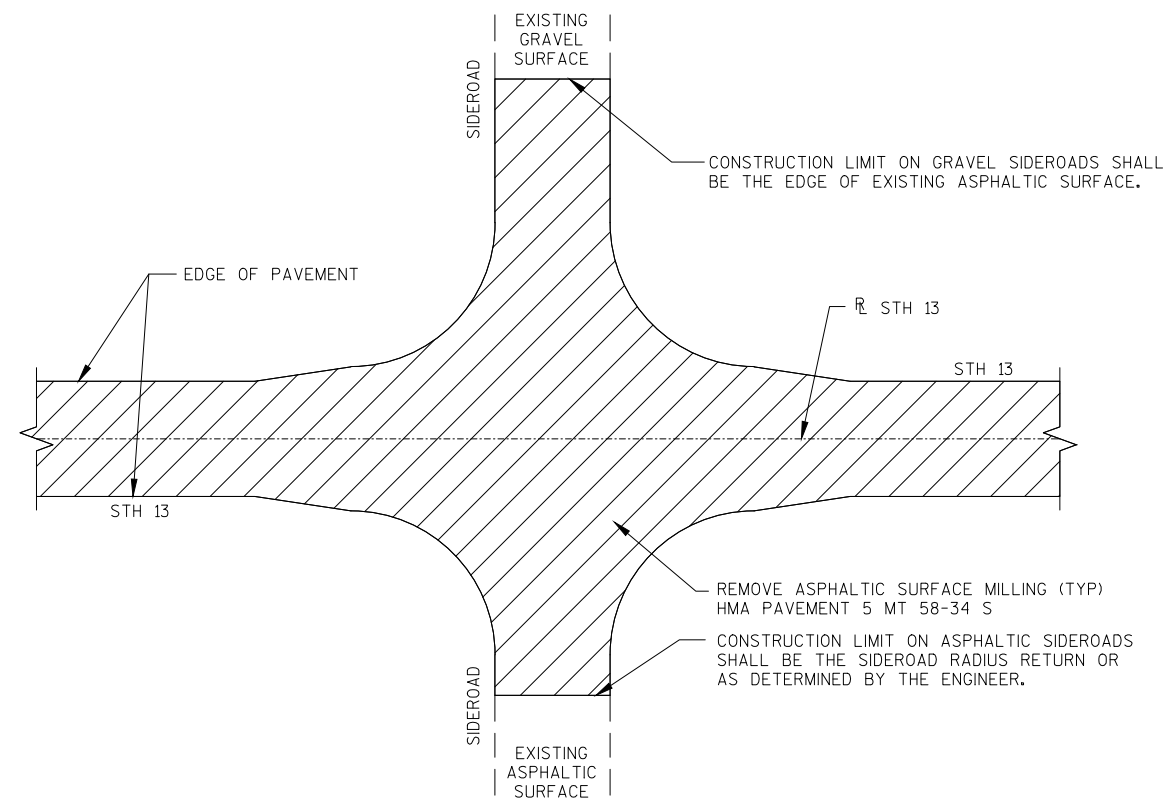
TYPICAL FINISHED SECTION - STAGE 1

AMNICON RIVER BRIDGE APPROACH
MILLER CREEK BRIDGE APPROACH

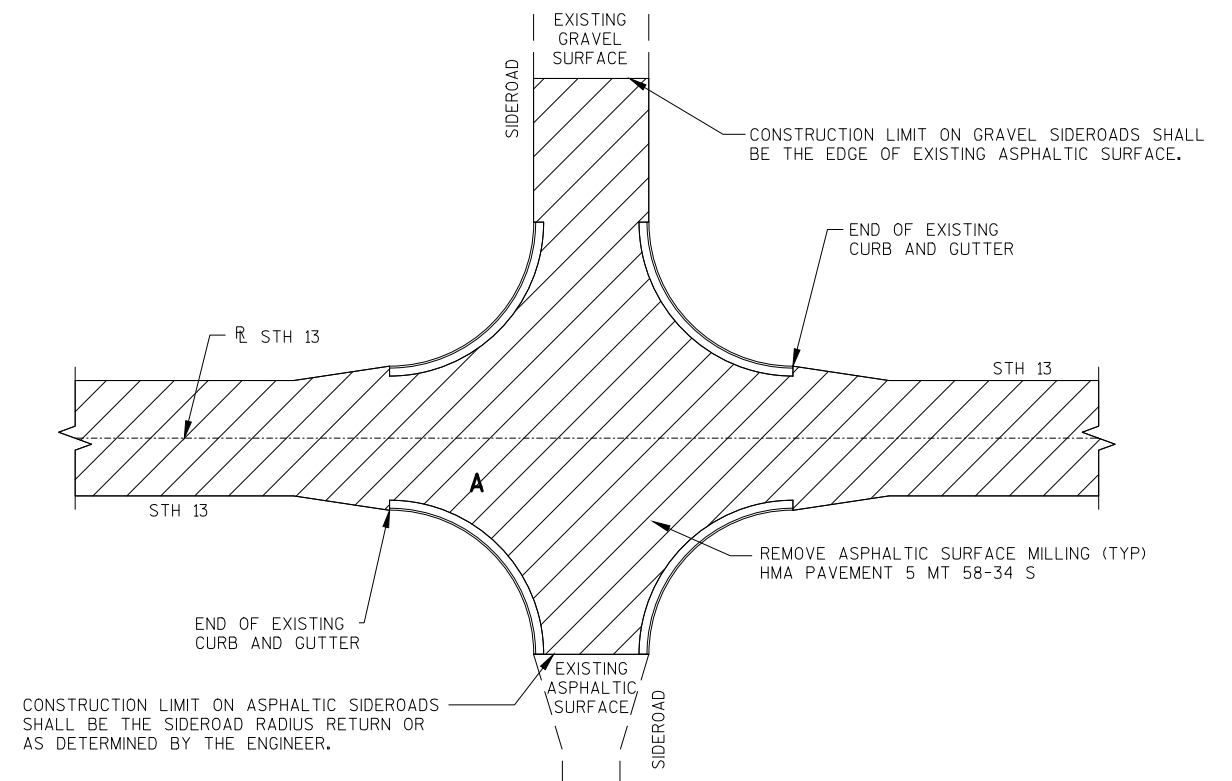


TYPICAL FINISHED SECTION - STAGE 2

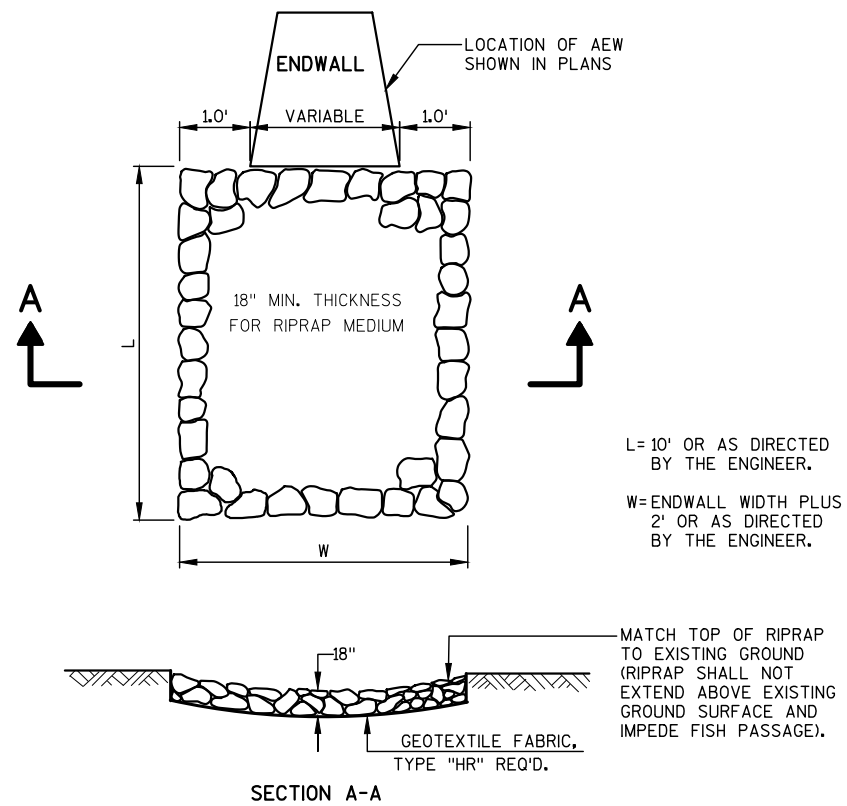
AMNICON RIVER BRIDGE APPROACH
MILLER CREEK BRIDGE APPROACH



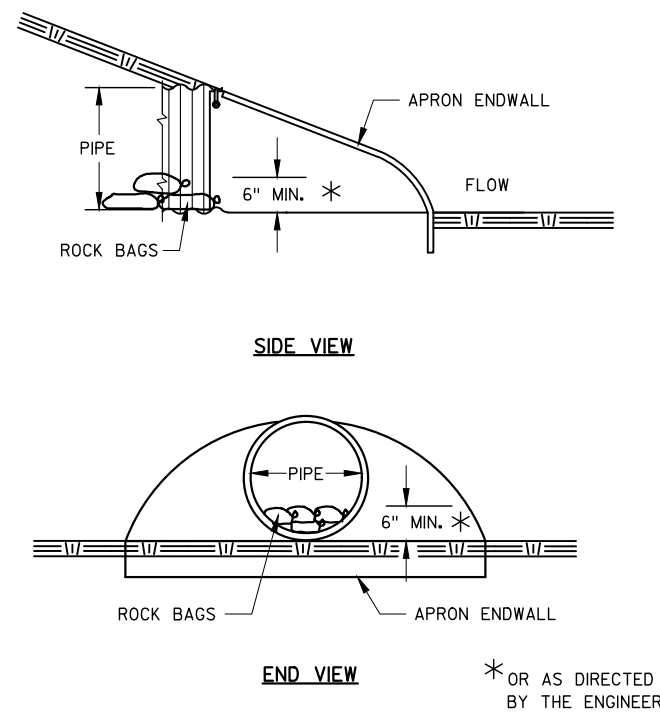
SIDEROAD/INTERSECTION PAVING WITH NO CURB & GUTTER



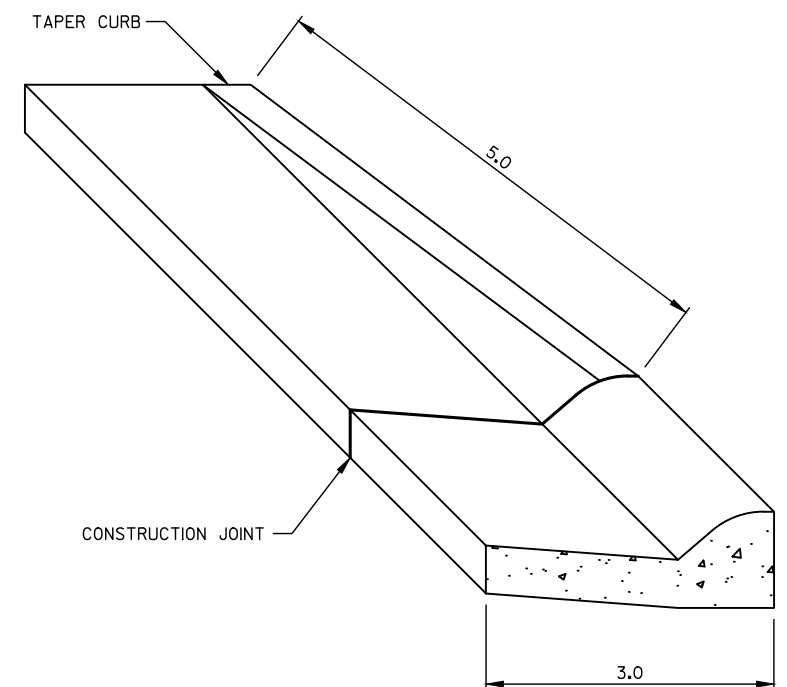
SIDEROAD/INTERSECTION PAVING WITH CURB & GUTTER



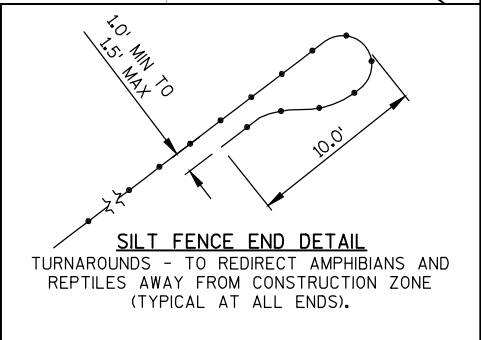
RIPRAP TREATMENT

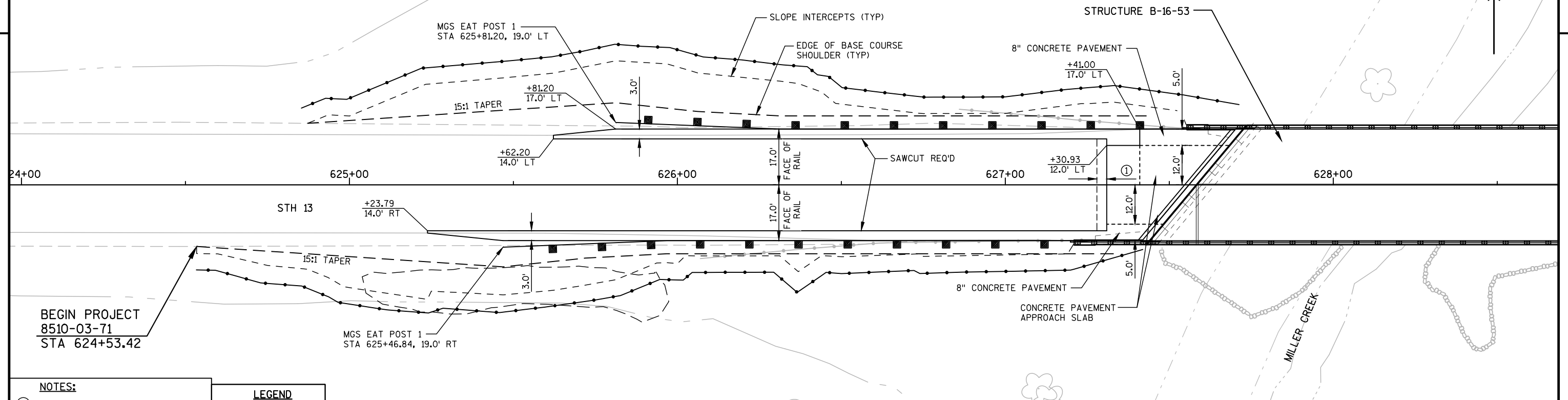


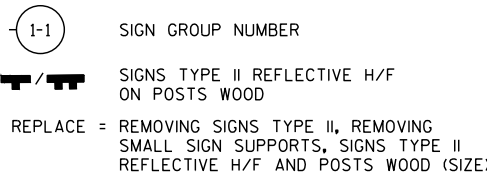
RIPRAP TREATMENT



CURB & GUTTER TERMINI







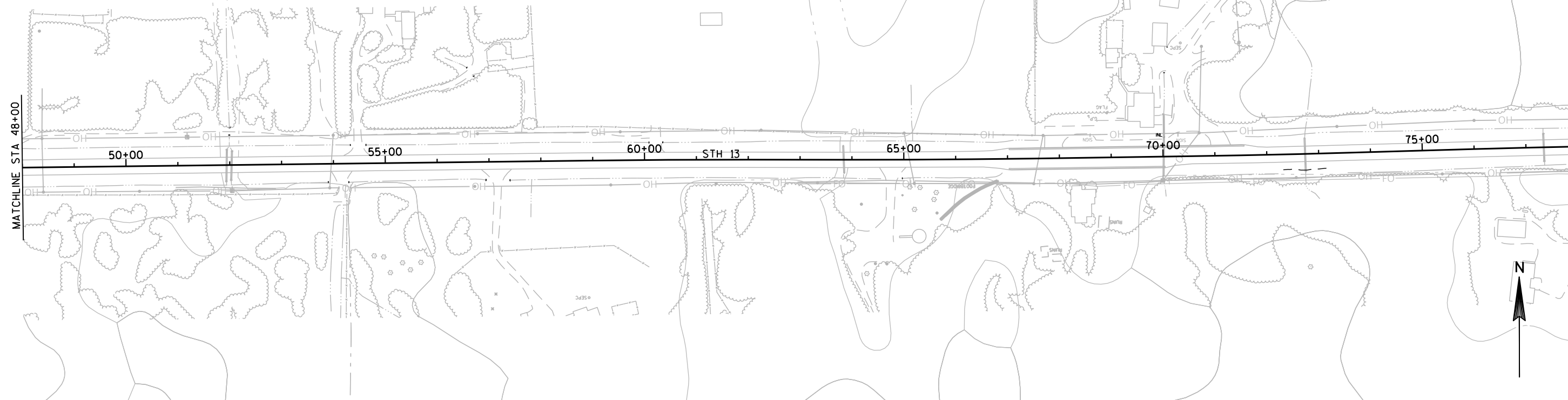
PAVEMENT MARKING NOTES:

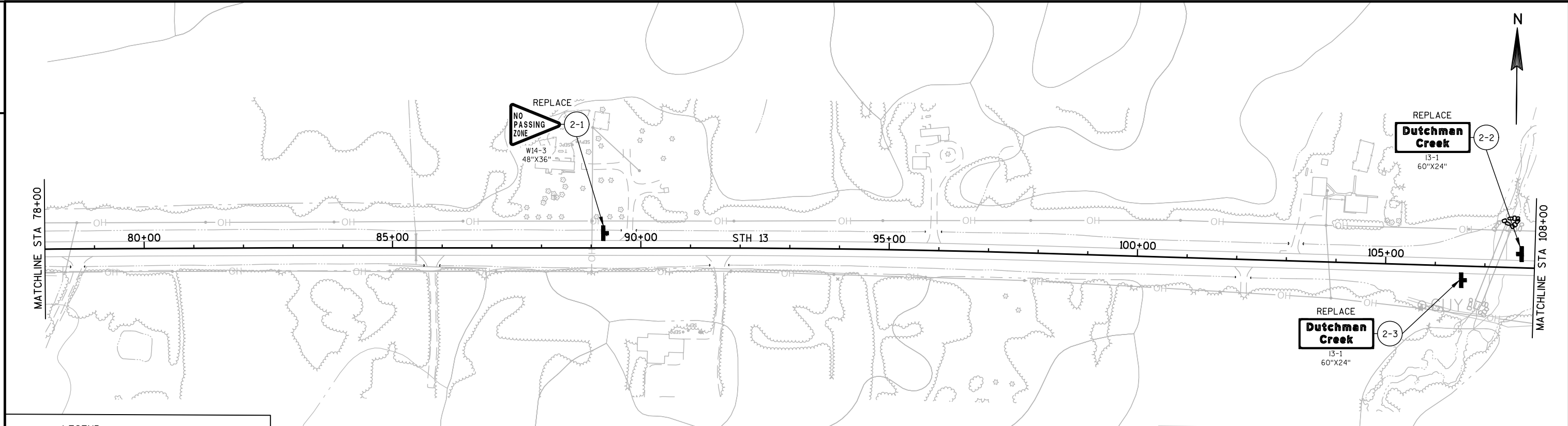
ALL PAVEMENT MARKINGS SHALL BE EPOXY.

REFER TO SDD 15C8 "PAVEMENT MARKING (MAINLINE)" FOR PLACEMENT OF LONGITUDINAL CENTERLINE & EDGETLINE MARKINGS.

REFER TO SDD 15C35 "PAVEMENT MARKING (INTERSECTIONS)" FOR PLACEMENT OF MARKINGS THROUGH THE INTERSECTIONS.

(A) PAVEMENT MARKING STOP LINE EPOXY 18-INCH





LEGEND

1-1 SIGN GROUP NUMBER

SIGNS TYPE II REFLECTIVE H/F ON POSTS WOOD

REPLACE = REMOVING SIGNS TYPE II, REMOVING SMALL SIGN SUPPORTS, SIGNS TYPE II REFLECTIVE H/F AND POSTS WOOD (SIZE)

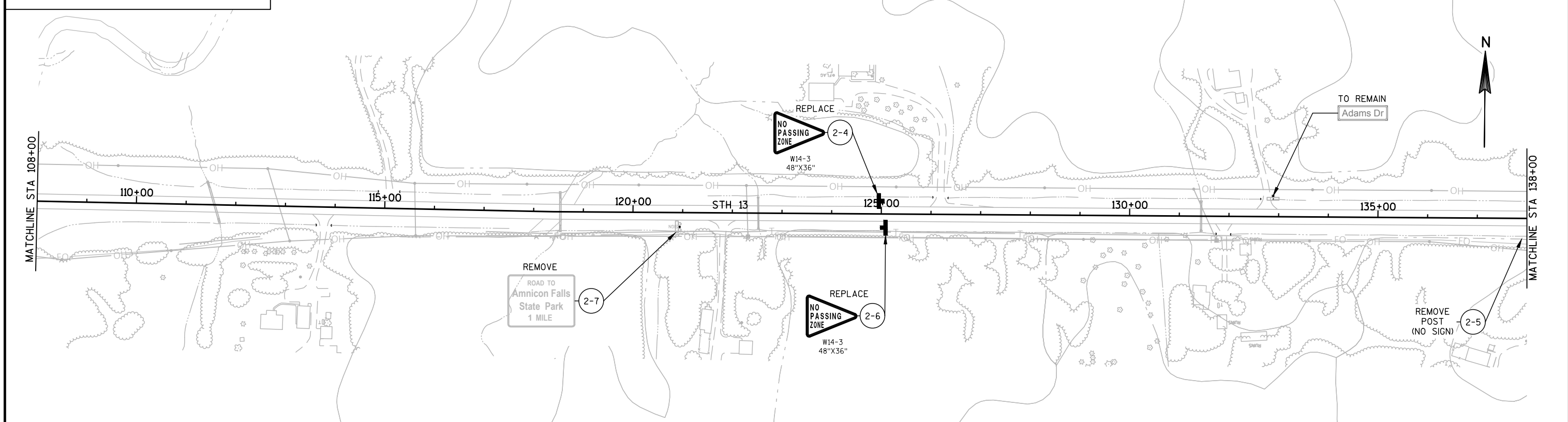
REMOVE = REMOVING SMALL SIGN SUPPORTS.

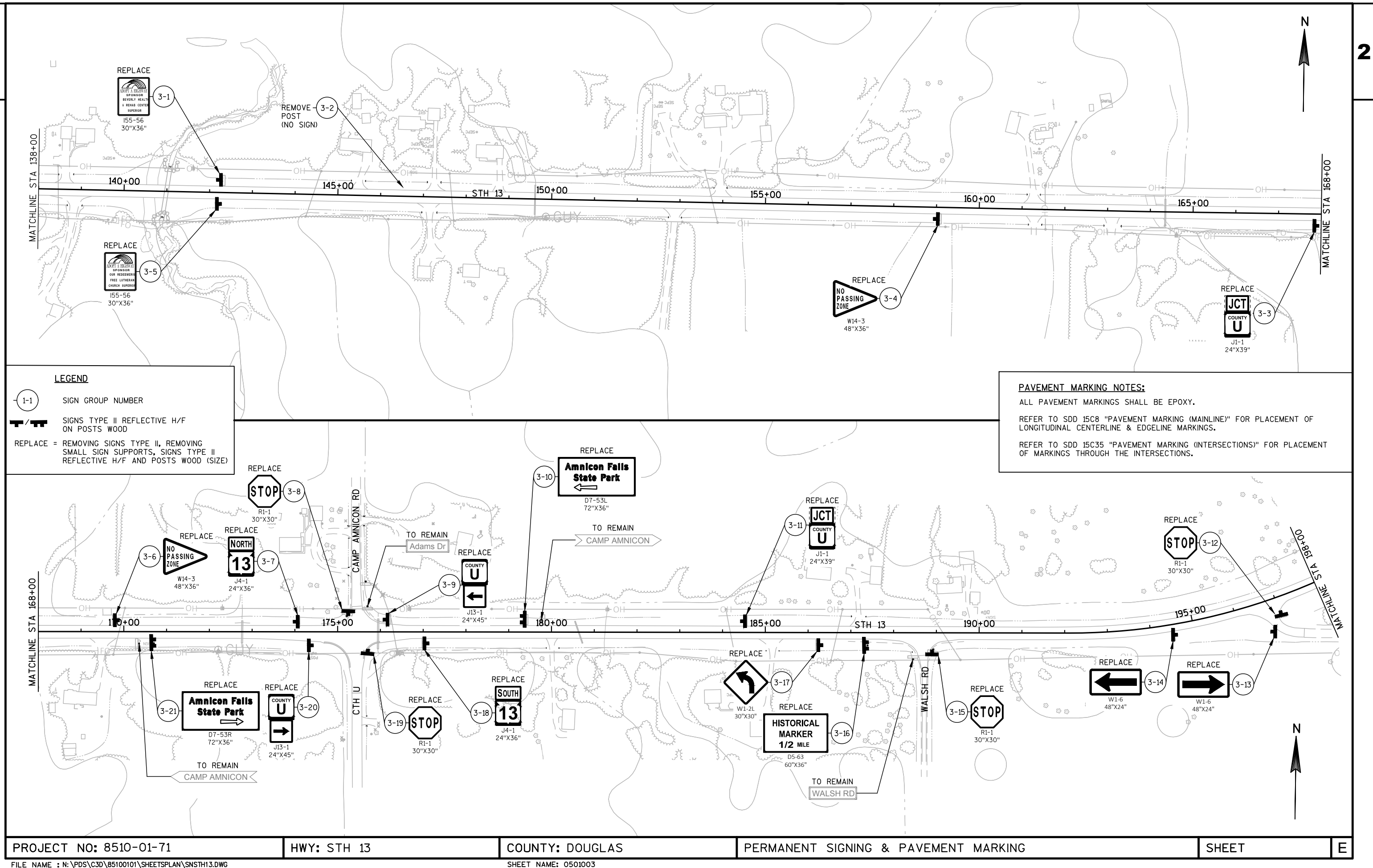
PAVEMENT MARKING NOTES:

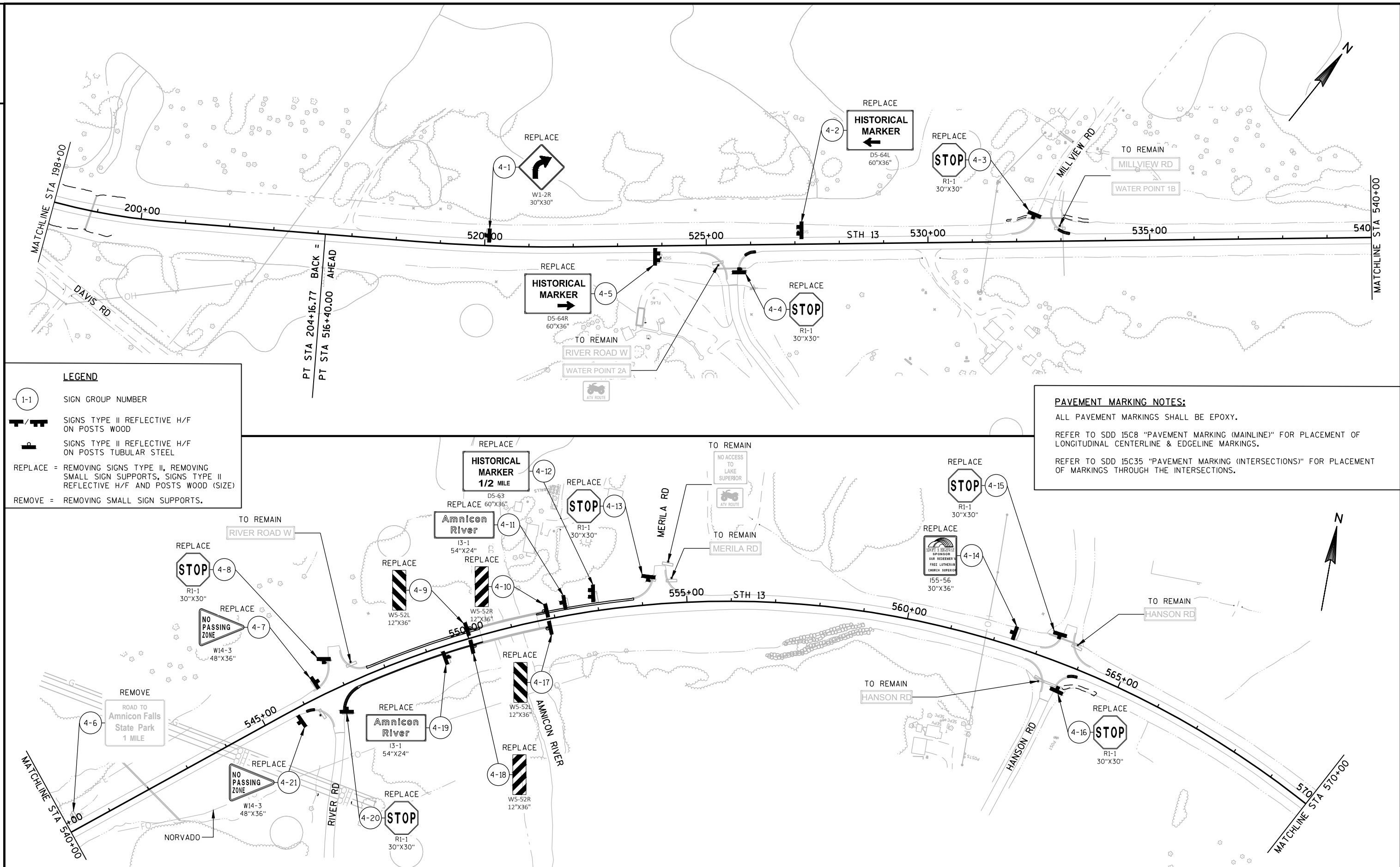
ALL PAVEMENT MARKINGS SHALL BE EPOXY.

REFER TO SDD 15C8 "PAVEMENT MARKING (MAINLINE)" FOR PLACEMENT OF LONGITUDINAL CENTERLINE & EDGETLINE MARKINGS.

REFER TO SDD 15C35 "PAVEMENT MARKING (INTERSECTIONS)" FOR PLACEMENT OF MARKINGS THROUGH THE INTERSECTIONS.







LEGEND

- 1-1 SIGN GROUP NUMBER
- SIGNS TYPE II REFLECTIVE H/F ON POSTS WOOD
- SIGNS TYPE II REFLECTIVE H/F ON POSTS TUBULAR STEEL
- REPLACE = REMOVING SIGNS TYPE II, REMOVING SMALL SIGN SUPPORTS, SIGNS TYPE II REFLECTIVE H/F AND POSTS WOOD (SIZE)
- REMOVE = REMOVING SMALL SIGN SUPPORTS.

PAVEMENT MARKING NOTES:

ALL PAVEMENT MARKINGS SHALL BE EPOXY.

REFER TO SDD 15C8 "PAVEMENT MARKING (MAINLINE)" FOR PLACEMENT OF LONGITUDINAL CENTERLINE & EDGELINE MARKINGS.

REFER TO SDD 15C35 "PAVEMENT MARKING (INTERSECTIONS)" FOR PLACEMENT OF MARKINGS THROUGH THE INTERSECTIONS.



LEGEND

1-1 SIGN GROUP NUMBER

SIGNS TYPE II REFLECTIVE H/F ON POSTS WOOD

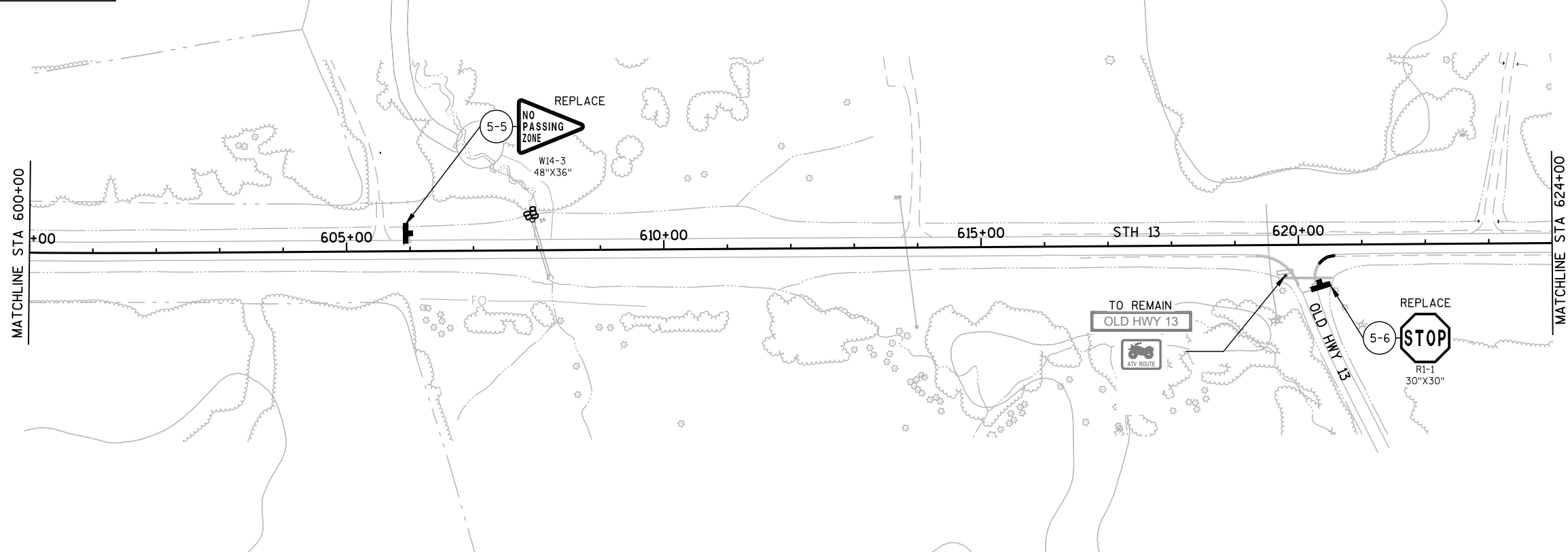
REPLACE = REMOVING SIGNS TYPE II, REMOVING SMALL SIGN SUPPORTS, SIGNS TYPE II REFLECTIVE H/F AND POSTS WOOD (SIZE)

PAVEMENT MARKING NOTES:

ALL PAVEMENT MARKINGS SHALL BE EPOXY.

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REFER TO SDD 15C35 "PAVEMENT MARKING (INTERSECTIONS)" FOR PLACEMENT OF MARKINGS THROUGH THE INTERSECTIONS.



LEGEND

1-1

SIGN GROUP NUMBER

T/T

SIGNS TYPE II REFLECTIVE H/F
ON POSTS WOOD

T

SIGNS TYPE II REFLECTIVE H/F
ON POSTS TUBULAR STEEL

REPLACE = REMOVING SIGNS TYPE II, REMOVING
SMALL SIGN SUPPORTS, SIGNS TYPE II
REFLECTIVE H/F AND POSTS WOOD (SIZE)

EXCEPTION TO NET C/L LENGTH PROJECT 8510-01-71
STA 624+53.42 TO STA 631+80.88

REPLACE
Miller Creek
13-1
36"x24"

REPLACE
NO PASSING ZONE
W14-3
48"x36"

REPLACE
W5-52L
12"x36"

REPLACE
W5-52R
12"x36"

END PROJECT
8510-03-71
STA 631+80.88

REPLACE
W5-52L
12"x36"

REPLACE
W5-52R
12"x36"

REPLACE
W1-2L
30"x30"

REPLACE
Miller Creek
13-1
36"x24"

REPLACE
NO PASSING ZONE
W14-3
48"x36"

MATCHLINE STA 624+00

BEGIN PROJECT
8510-03-71
STA 624+53.42

625+00

630+00

635+00

640+00

645+00

650+00

ENGDAHL RD

STH 13

GUY

PAVEMENT MARKING NOTES:

ALL PAVEMENT MARKINGS SHALL BE EPOXY.

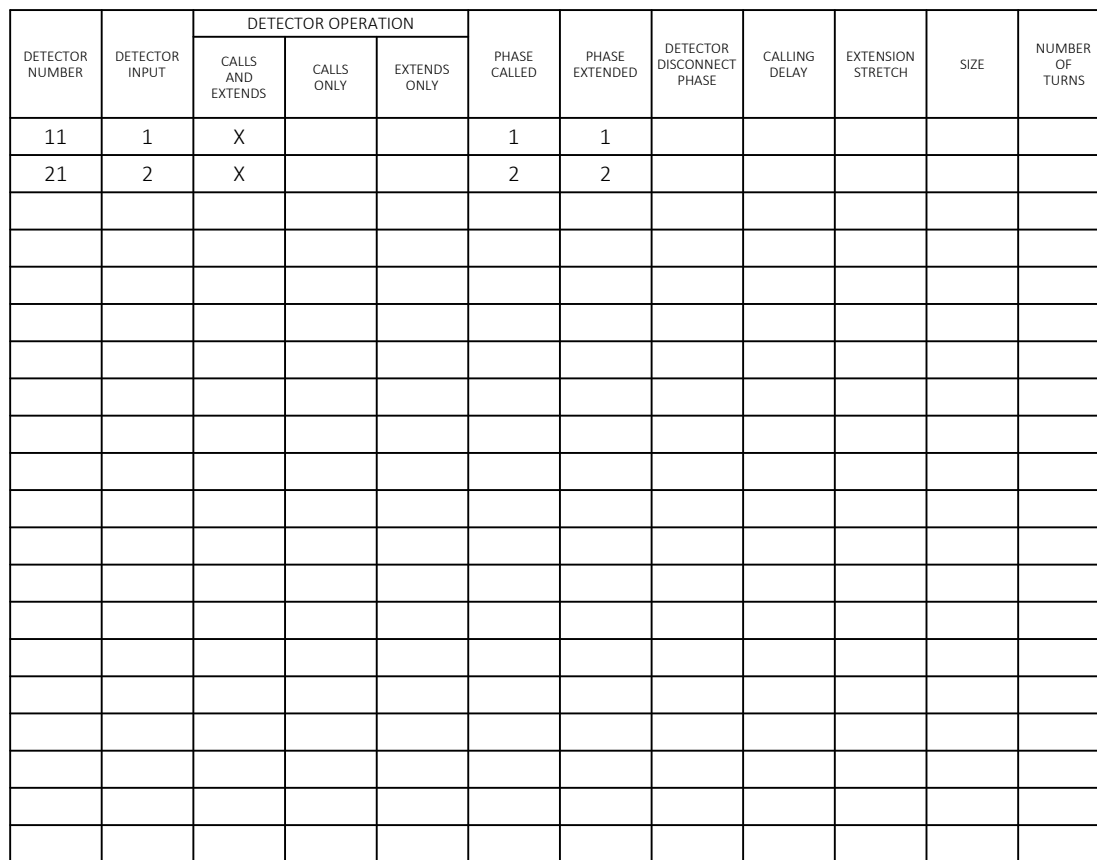
REFER TO SDD 15C8 "PAVEMENT MARKING (MAINLINE)" FOR PLACEMENT OF LONGITUDINAL CENTERLINE & EDGELINE MARKINGS.

REFER TO SDD 15C35 "PAVEMENT MARKING (INTERSECTIONS)" FOR PLACEMENT OF MARKINGS THROUGH THE INTERSECTIONS.

PROJECT NO: 8510-01-71 & 8510-03-71	HWY: STH 13	COUNTY: DOUGLAS	PERMANENT SIGNING & PAVEMENT MARKING	SHEET	E
FILE NAME : N:\PDS\C3D\85100101\SHEETSPLAN\SNSTH13.DWG		SHEET NAME: 0501006			

DETECTOR LOGIC

CONTROLLER LOGIC



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

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

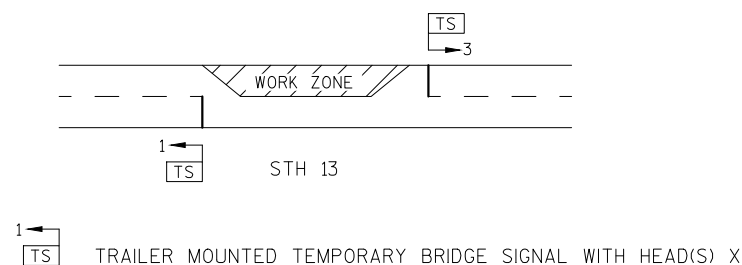
TYPE OF PRE-EMPT	
NONE	X
RAILROAD	
EMERGENCY VEHICLE	
3M	
TOMAR	
HARDWIRE	
OTHER (GPS)	
LIFT BRIDGE	
QUEUE DETECTOR	

TYPE OF INTERCONNECT COMMUNICATION	
NONE	X
TBC	
CLOSED LOOP TWISTED PAIR*	
CLOSED LOOP FIBER OPTIC*	
RADIO	
*LOCATION OF MASTER CONTROLLER NO:	
SIGNAL SYSTEM #:	

PHASE ON	NONCONFLICTING PHASE ALLOWED TO TIME CONCURRENTLY	PHASES IN CONFLICT WITH PHASE ON
1		2
2		1
3		
4		
5		
6		
7		
8		

** CLEARANCE TO A PHASE IN CONFLICT WITH THIS PHASE ON (SEE CHART 1)

SIGNAL TRAILER CONFIGURATION



TRAFFIC SIGNAL TIMING PLAN WITH VEHICLE DETECTION

PHASE	DURATION (SEC)				
	MIN GREEN	MAX GREEN	PASSAGE	Y	R
1	10	100.0	3.0	3.5	20.0
2	10	100.0	3.0	3.5	20.0

TRAFFIC SIGNAL TIMING PLAN NO VEHICLE
DETECTION (PRETIMED)

PHASE	DURATION (SEC)		
	GREEN	YELLOW	RED
1	21.5	3.5	20.0
2	21.5	3.5	20.0

GENERAL NOTES:

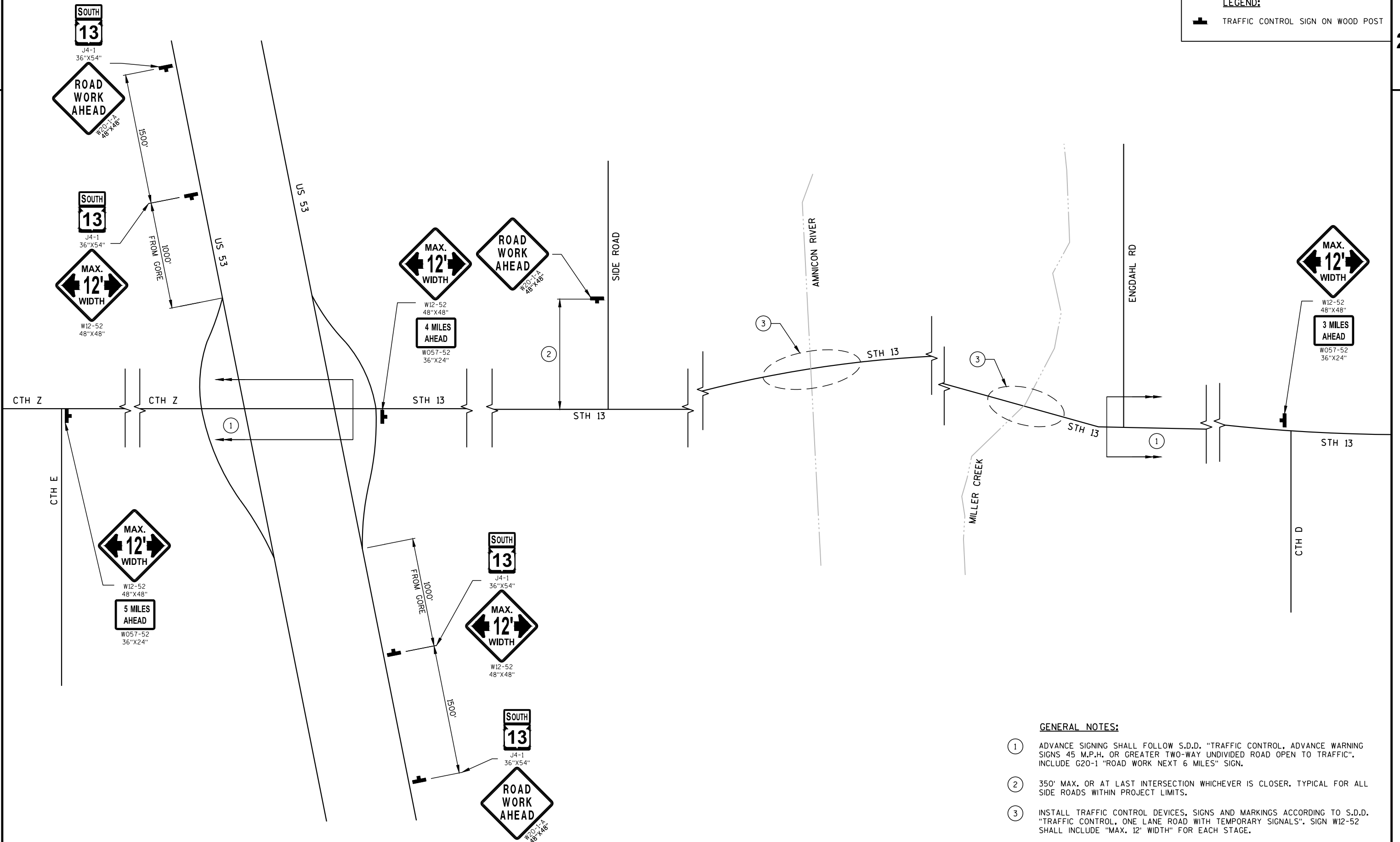
- 1) IN THE EVENT OF ANY CHANGES TO STAGING PLAN ELEMENTS, INCLUDING BUT NOT LIMITED TO STOP BAR LOCATIONS, POSTED REGULATORY SPEED LIMITS, OR POSTED ADVISORY SPEED LIMITS WITHIN THE SINGLE LANE WORKZONE, CONTINUED USE OF SIGNAL TIMINGS PROVIDED SHALL BE APPROVED BY THE ENGINEER.
- 2) TIMINGS BASED ON 25 MPH AVERAGE WORKZONE TRAVEL SPEED. THE ENGINEER SHALL MODIFY TIMINGS IF SLOWER AVERAGE SPEEDS ARE OBSERVED WITHIN THE SINGLE LANE WORKZONE.

TRAFFIC CONTROL SIGNAL
STH 13 SINGLE LANE STAGING WORK ZONE
DOUGLAS COUNTY

SIGNAL NO. N/A
CONTROLLER TYPE: TEMP
DATE: MARCH 2017

LEGEND:

TRAFFIC CONTROL SIGN ON WOOD POST



GENERAL NOTES:

- ADVANCE SIGNING SHALL FOLLOW S.D.D. "TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC". INCLUDE G20-1 "ROAD WORK NEXT 6 MILES" SIGN.
- 350' MAX. OR AT LAST INTERSECTION WHICHEVER IS CLOSER. TYPICAL FOR ALL SIDE ROADS WITHIN PROJECT LIMITS.
- INSTALL TRAFFIC CONTROL DEVICES, SIGNS AND MARKINGS ACCORDING TO S.D.D. "TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS". SIGN W12-52 SHALL INCLUDE "MAX. 12' WIDTH" FOR EACH STAGE.

Estimate Of Quantities

		8510-01-71	8510-03-71			
Line	Item	Item Description	Unit	Total	Qty	Qty
0002	203.0100	Removing Small Pipe Culverts	EACH	7.000	7.000	
0004	203.0200	Removing Old Structure (station) 01. 635+45	LS	1.000	1.000	
0006	203.0225.S	Debris Containment (structure) 01. B-16-052	LS	1.000	1.000	
0008	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 627+60	LS	1.000		1.000
0010	204.0110	Removing Asphaltic Surface	SY	47.000	47.000	
0012	204.0120	Removing Asphaltic Surface Milling	SY	109,011.000	107,119.000	1,892.000
0014	204.0150	Removing Curb & Gutter	LF	189.000	189.000	
0016	204.0165	Removing Guardrail	LF	752.000	324.000	428.000
0018	205.0100	Excavation Common	CY	103.000		103.000
0020	206.1000	Excavation for Structures Bridges (structure) 01. B-16-053	LS	1.000		1.000
0022	210.1500	Backfill Structure Type A	TON	160.000		160.000
0024	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 8510-01-71	LS	1.000	1.000	
0026	211.0100	Prepare Foundation for Asphaltic Paving (project) 02. 8510-03-71	LS	1.000		1.000
0028	213.0100	Finishing Roadway (project) 01. 8510-01-71	EACH	1.000	1.000	
0030	213.0100	Finishing Roadway (project) 02. 8510-03-71	EACH	1.000		1.000
0032	305.0110	Base Aggregate Dense 3/4-Inch	TON	2,608.000	2,437.000	171.000
0034	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	984.000	435.000	549.000
0036	305.0500	Shaping Shoulders	STA	616.000	604.000	12.000
0038	415.0080	Concrete Pavement 8-Inch	SY	46.000		46.000
0040	415.0410	Concrete Pavement Approach Slab	SY	147.000		147.000
0042	416.0610	Drilled Tie Bars	EACH	10.000	10.000	
0044	440.4410	Incentive IRI Ride	DOL	21,629.000	21,629.000	
0046	455.0605	Tack Coat	GAL	15,041.000	15,001.000	40.000
0048	460.2000	Incentive Density HMA Pavement	DOL	9,400.000	9,220.000	180.000
0050	460.6245	HMA Pavement 5 MT 58-34 S	TON	15,678.000	15,402.000	276.000
0052	465.0475	Asphalt Center Line Rumble Strips 2-Lane Rural	LF	23,545.000	23,063.000	482.000
0054	502.0100	Concrete Masonry Bridges	CY	211.000		211.000
0056	502.3100	Expansion Device (structure) 01. B-16-053	LS	1.000		1.000
0058	502.3200	Protective Surface Treatment	SY	788.000		788.000
0060	502.3210	Pigmented Surface Sealer	SY	134.000	134.000	
0062	502.4206	Adhesive Anchors No. 6 Bar	EACH	148.000		148.000
0064	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	43,852.000		43,852.000
0066	505.0904	Bar Couplers No. 4	EACH	20.000		20.000
0068	505.0905	Bar Couplers No. 5	EACH	500.000		500.000
0070	505.0907	Bar Couplers No. 7	EACH	10.000		10.000
0072	509.0301	Preparation Decks Type 1	SY	6.000	6.000	
0074	509.0302	Preparation Decks Type 2	SY	3.000	3.000	

Estimate Of Quantities

		8510-01-71	8510-03-71			
Line	Item	Item Description	Unit	Total	Qty	Qty
0076	509.1500	Concrete Surface Repair	SF	34.000	14.000	20.000
0078	509.5100.S	Polymer Overlay	SY	501.000	501.000	
0080	509.9050.S	Cleaning Parapets	LF	337.000	337.000	
0082	511.1200	Temporary Shoring (structure) 01. B-16-053	SF	94.000		94.000
0084	513.4061	Railing Tubular Type M (structure) 01. B-16-053	LF	364.000		364.000
0086	516.0500	Rubberized Membrane Waterproofing	SY	46.000		46.000
0088	517.0900.S	Preparation and Coating of Top Flanges (structure) 01. B-16-053	LS	1.000		1.000
0090	517.3000.S	Structure Overcoating Cleaning and Priming (structure) 01. B-16-53	LS	1.000		1.000
0092	520.1024	Apron Endwalls for Culvert Pipe 24-Inch	EACH	5.000	5.000	
0094	520.1036	Apron Endwalls for Culvert Pipe 36-Inch	EACH	1.000	1.000	
0096	520.1048	Apron Endwalls for Culvert Pipe 48-Inch	EACH	2.000	2.000	
0098	520.1060	Apron Endwalls for Culvert Pipe 60-Inch	EACH	1.000	1.000	
0100	521.0124	Culvert Pipe Corrugated Steel 24-Inch	LF	26.000	26.000	
0102	521.0136	Culvert Pipe Corrugated Steel 36-Inch	LF	8.000	8.000	
0104	521.0148	Culvert Pipe Corrugated Steel 48-Inch	LF	8.000	8.000	
0106	601.0557	Concrete Curb & Gutter 6-Inch Sloped 36-Inch Type D	LF	189.000	189.000	
0108	603.8000	Concrete Barrier Temporary Precast Delivered	LF	784.000	392.000	392.000
0110	603.8125	Concrete Barrier Temporary Precast Installed	LF	1,568.000	784.000	784.000
0112	606.0200	Riprap Medium	CY	77.000	29.000	48.000
0114	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	240.000		240.000
0116	614.0010	Barrier System Grading Shaping Finishing	EACH	8.000	4.000	4.000
0118	614.2300	MGS Guardrail 3	LF	666.000	334.000	332.000
0120	614.2500	MGS Thrie Beam Transition	LF	316.000	158.000	158.000
0122	614.2610	MGS Guardrail Terminal EAT	EACH	8.000	4.000	4.000
0124	618.0100	Maintenance And Repair of Haul Roads (project) 01. 8510-01-71	EACH	1.000	1.000	
0126	618.0100	Maintenance And Repair of Haul Roads (project) 02. 8510-03-71	EACH	1.000		1.000
0128	619.1000	Mobilization	EACH	1.000	0.770	0.230
0130	628.1504	Silt Fence	LF	2,278.000	1,121.000	1,157.000
0132	628.1520	Silt Fence Maintenance	LF	2,278.000	1,121.000	1,157.000
0134	628.1905	Mobilizations Erosion Control	EACH	11.000	8.000	3.000
0136	628.1910	Mobilizations Emergency Erosion Control	EACH	6.000	4.000	2.000
0138	628.7555	Culvert Pipe Checks	EACH	44.000	44.000	
0140	633.5200	Markers Culvert End	EACH	17.000	17.000	
0142	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	41.000	37.000	4.000
0144	634.0618	Posts Wood 4x6-Inch X 18-FT	EACH	42.000	41.000	1.000
0146	634.0814	Posts Tubular Steel 2x2-Inch X 14-FT	EACH	8.000	4.000	4.000
0148	637.2210	Signs Type II Reflective H	SF	488.740	476.740	12.000

Estimate Of Quantities

		8510-01-71		8510-03-71		
Line	Item	Item Description	Unit	Total	Qty	Qty
0150	637.2230	Signs Type II Reflective F	SF	136.720	107.350	29.370
0152	638.2602	Removing Signs Type II	EACH	81.000	72.000	9.000
0154	638.3000	Removing Small Sign Supports	EACH	95.000	88.000	7.000
0156	642.5001	Field Office Type B	EACH	1.000	0.750	0.250
0158	643.0100	Traffic Control (project) 01. 8510-01-71	EACH	1.000	1.000	
0160	643.0100	Traffic Control (project) 02. 8510-03-71	EACH	1.000		1.000
0162	643.0300	Traffic Control Drums	DAY	2,700.000	360.000	2,340.000
0164	643.0420	Traffic Control Barricades Type III	DAY	90.000	12.000	78.000
0166	643.0715	Traffic Control Warning Lights Type C	DAY	1,080.000	144.000	936.000
0168	643.0900	Traffic Control Signs	DAY	5,010.000	3,762.000	1,248.000
0170	645.0120	Geotextile Type HR	SY	86.000	86.000	
0172	646.0106	Pavement Marking Epoxy 4-Inch	LF	59,504.000	58,049.000	1,455.000
0174	646.0126	Pavement Marking Epoxy 8-Inch	LF	140.000	140.000	
0176	646.0406	Pavement Marking Same Day Epoxy 4-Inch	LF	37,605.000	36,695.000	910.000
0178	646.0600	Removing Pavement Markings	LF	600.000	300.000	300.000
0180	647.0576	Pavement Marking Stop Line Epoxy 24-Inch	LF	50.000	50.000	
0182	648.0100	Locating No-Passing Zones	MI	5.870	5.730	0.140
0184	649.0400	Temporary Pavement Marking Removable Tape 4-Inch	LF	8,500.000	4,250.000	4,250.000
0186	649.0402	Temporary Pavement Marking Paint 4-Inch	LF	123,092.000	120,180.000	2,912.000
0188	649.1400	Temporary Pavement Marking Stop Line Removable Tape 24-Inch	LF	68.000	34.000	34.000
0190	650.4500	Construction Staking Subgrade	LF	1,096.000	513.000	583.000
0192	650.5000	Construction Staking Base	LF	1,096.000	513.000	583.000
0194	650.5500	Construction Staking Curb Gutter and Curb & Gutter	LF	189.000	189.000	
0196	650.6500	Construction Staking Structure Layout (structure) 01. B-16-053	LS	1.000		1.000
0198	650.8000	Construction Staking Resurfacing Reference	LF	61,996.000	61,268.000	728.000
0200	650.9910	Construction Staking Supplemental Control (project) 01. 8510-01-71	LS	1.000	1.000	
0202	650.9910	Construction Staking Supplemental Control (project) 02. 8510-03-71	LS	1.000		1.000
0204	650.9920	Construction Staking Slope Stakes	LF	1,157.000	544.000	613.000
0206	661.0100	Temporary Traffic Signals for Bridges (structure) 01. B-16-052	LS	1.000	1.000	
0208	661.0100	Temporary Traffic Signals for Bridges (structure) 02. B-16-53	LS	1.000		1.000
0210	690.0150	Sawing Asphalt	LF	2,029.000	1,210.000	819.000
0212	690.0250	Sawing Concrete	LF	15.000	15.000	
0214	715.0415	Incentive Strength Concrete Pavement	DOL	500.000		500.000
0216	715.0502	Incentive Strength Concrete Structures	DOL	1,266.000		1,266.000
0218	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	2,000.000	2,000.000	

Estimate Of Quantities

				8510-01-71	8510-03-71		
Line	Item	Item Description	Unit	Total	Qty	Qty	
0220	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	630.000	630.000		
0222	SPV.0025	Special 10. Abutment Undercut Slurry Backfill	CF	100.000		100.000	
0224	SPV.0060	Special 01. Cleaning Painting And Lubricating Bearings	EACH	16.000		16.000	
0226	SPV.0090	Special 01. Sawing Pavement Deck Preperation Areas	LF	112.000	112.000		
0228	SPV.0090	Special 02. Ditch Cleaning	LF	400.000	400.000		
0230	SPV.0180	Special 01. Fast Set Deck Patching	SY	6.000	6.000		

3

REMOVING SMALL PIPE CULVERTS

STATION	LOCATION	203.0100 EACH	REMARKS
STH 13			
111+57	RT	1	REMOVE 3' EXISTING CMP & AEW
149+61	RT	1	REMOVE 4' EXISTING CMP & AEW
198+86	LT	1	REMOVE 4' EXISTING CMP & AEW
563+50	RT	1	REMOVE 8' EXISTING CMP & AEW
608+07	LT	1	REMOVE EXISTING AEW
620+13	RT	2	REMOVE 18' EXISTING CMP & BOTH AEW
ITEM TOTAL		7	

REMOVING CURB & GUTTER

STATION - STATION	LOCATION	204.0150 LF
STH 13		
525+88.27 - 526+11.36	RT	25
532+95.07 - 533+20.02	LT	28
545+96.83 - 546+14.50	RT	19
546+75.37 - 547+25.70	RT	66
563+86.45 - 564+06.88	RT	22
620+32.88 - 620+57.34	RT	29
ITEM TOTAL		189

SHAPING SHOULDERS

STATION	LOCATION	305.0500 STA
STH 13		
25+19.19 - 70+00	LT & RT	90
70+00 - 115+00	LT & RT	90
115+00 - 160+00	LT & RT	90
160+00 - 204+16.77 B.K./516+40 A.H.	LT & RT	90
204+16.77 B.K./516+40 A.H. - 550+28.82	LT & RT	68
551+61.08 - 571+00	LT & RT	40
571+00 - 624+53.42	LT & RT	108
631+80.88 - 645+13.68	LT & RT	28
ITEM TOTAL		604

REMOVING OLD STRUCTURE (635+45)

STATION	LOCATION	203.0200.01 LS	REMARKS
STH 13			
635+45	LT	1	REMOVE EXISTING 60-INCH AEW
ITEM TOTAL		1	

REMOVING GUARDRAIL

STATION - STATION	LOCATION	204.0165 LF
STH 13		
549+43.66 - 550+14.18	LT	82
549+43.92 - 550+16.31	RT	82
551+73.05 - 552+43.40	RT	80
551+75.38 - 552+43.73	LT	80
ITEM TOTAL		324

DRILLED TIE BARS

STATION	LOCATION	416.0610 EACH
STH 13		
525+88.27	RT	2
532+95.07	LT	2
546+14.50	RT	2
563+86.45	RT	2
620+32.88	RT	2
ITEM TOTAL		10

REMOVING ASPHALTIC SURFACE

STATION - STATION	LOCATION	204.0110 SY	REMARKS
STH 13			
525+88.27 - 526+11.36	RT	6	C&G REPLACEMENT AREA
532+97.07 - 533+20.02	LT	7	C&G REPLACEMENT AREA
545+96.83 - 546+14.50	RT	5	C&G REPLACEMENT AREA
546+75.37 - 547+25.70	RT	16	C&G REPLACEMENT AREA
563+86.45 - 564+06.88	RT	6	C&G REPLACEMENT AREA
620+32.88 - 620+57.34	RT	7	C&G REPLACEMENT AREA
ITEM TOTAL		47	

PREPARE FOUNDATION FOR ASPHALTIC PAVING (8510-01-71)

STATION - STATION	LOCATION	211.0100.01 LS
25+19.19 - 645+13.68	LT & RT	1
ITEM TOTAL		1

BASE COURSE ITEMS

STATION - STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	REMARKS
STH 13				
25+19.19 - 624+53.42	LT & RT	2182		SHOULDER SHAPING MATERIAL
631+80.88 - 645+13.68	LT & RT	98		SHOULDER SHAPING MATERIAL
525+85.68 - 526+11.59	RT	5		C&G REPLACEMENT AREA
532+92.78 - 533+20.49	LT	5		C&G REPLACEMENT AREA
545+96.82 - 546+16.31	RT	4		C&G REPLACEMENT AREA
546+71.62 - 547+25.15	RT	12		C&G REPLACEMENT AREA
547+25.15 - 550+28.46	RT	40	135	GUARDRAIL REPLACEMENT AREA
547+62.18 - 550+29.11	LT	32	131	GUARDRAIL REPLACEMENT AREA
551+60.62 - 553+81.19	LT	26	107	GUARDRAIL REPLACEMENT AREA
551+78.35 - 553+48.05	RT	24	62	GUARDRAIL REPLACEMENT AREA
563+84.27 - 564+06.74	RT	4		C&G REPLACEMENT AREA
620+29.83 - 620+57.73	RT	5		C&G REPLACEMENT AREA
ITEM TOTAL		2437	435	

HMA PAVEMENT ITEMS

STATION	LOCATION	455.0605 TACK COAT GAL	460.6245 HMA PAVEMENT 5 MT 58-34 S TON
STH 13			
25+19.19 - 70+00	LT & RT	2388	2452
70+00 - 115+00	LT & RT	2094	2150
115+00 - 160+00	LT & RT	2085	2140
160+00 - 204+16.77 B.K./516+40 A.H.	LT & RT	2274	2335
204+16.77 B.K./516+40 A.H. - 550+28.82	LT & RT	1784	1832
551+61.08 - 571+00	LT & RT	1102	1132
571+00 - 624+53.42	LT & RT	2629	2699
631+80.88 - 645+13.68	LT & RT	645	662
ITEM TOTAL		15001	15402

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER
ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

PROJECT NO: 8510-01-71

HWY: STH 13

COUNTY: DOUGLAS

MISCELLANEOUS QUANTITIES

SHEET

E

3

ASPHALTIC CENTERLINE RUMBLE STRIPS 2-LANE RURAL

		465.0475
STATION	LOCATION	LF
STH 13		
25+19.19 - 70+00	LT & RT	3281
70+00 - 115+00	LT & RT	4500
115+00 - 160+00	LT & RT	4500
160+00 - 204+16.77 B.K./516+40 A.H.	LT & RT	2817
204+16.77 B.K./516+40 A.H. - 550+03.82	LT & RT	1764
551+86.08 - 571+00	LT & RT	714
571+00 - 624+53.42	LT & RT	4154
631+80.88 - 645+13.68	LT & RT	1333
ITEM TOTAL		23063

MIDWEST GUARDRAIL SYSTEM ITEMS

		614.2300	614.2500	614.2610
		MGS	MGS	MGS
		GUARDRAIL 3	THRIE BEAM	GUARDRAIL
STATION - STATION	LOCATION	LF	TRANSITION	TERMINAL EAT
			LF	EACH
STH 13				
548+39.20 - 550+14.18	RT	85	39.5	1
548+41.33 - 550+16.31	LT	82	39.5	1
551+73.05 - 553+48.05	LT	82	39.5	1
551+75.38 - 553+50.38	RT	85	39.5	1
ITEM TOTAL		334	158	4

3

CULVERT PIPE ITEMS

		521.0124	521.0136	521.0148	520.1024	520.1036	520.1048	520.1060				
		CULVERT PIPE			APRON ENDWALLS FOR CULVERT PIPE				SALVAGED*	FERTILIZER*	SEEDING*	
		CORRUGATED STEEL							TOPSOIL	MULCHING*	TYPE A	MIXTURE
STATION - STATION	LOCATION	24-INCH	36-INCH	48-INCH	24-INCH	36-INCH	48-INCH	60-INCH	SY	SY	CWT	NO. 30
		LF	LF	LF	EACH	EACH	EACH	EACH				LB
STH 13												
111+57	RT		8			1			27	27	0.02	0.5
149+61	LT & RT	4			2				28	28	0.02	0.5
198+86	LT	4			1				18	18	0.01	0.3
563+50	RT			8			1		34	34	0.02	0.6
608+07	LT						1		20	20	0.01	0.4
620+13	LT & RT	18			2				45	45	0.03	0.8
635+45	LT							1	24	24	0.02	0.4
ITEM TOTAL		26	8	8	5	1	2	1				

* ITEMS SHOWN FOR REFERENCE ONLY. ITEMS INCIDENTAL TO THE CULVERT PIPE AND ENDWALL ITEMS.

EROSION CONTROL ITEMS

		606.0200	628.1504	628.1520	628.7555	645.0120
		RIPRAP	SILT	SILT	CULVERT	GEOTEXTILE
		MEDIUM	FENCE	FENCE	PIPE	TYPE HR
STATION - STATION	LOCATION	CY	LF	MAINTENANCE	CHECKS	SY
				LF	EACH	
STH 13						
107+15	LT	13				37
111+57	RT				6	
149+61	RT				4	
198+86	RT				4	
547+21.27 - 550+30.70	RT		340	340		
547+51.12 - 550+30.56	LT		299	299		
551+57.84 - 553+70.47	RT		233	233		
551+59.88 - 553+98.30	LT		249	249		
563+50	RT				8	
608+07	LT	7			8	23
620+13	RT				4	
635+45	LT	9			10	26
ITEM TOTAL		29	1121	1121	44*	86

* CULVERT PIPE CHECKS INSTALLED AT INLET END OF CULVERT

CONCRETE CURB & GUTTER 6-INCH
SLOPED 36-INCH TYPE D

		601.0557
STATION - STATION	LOCATION	LF
STH 13		
525+88.27 - 526+11.36	RT	25
532+97.07 - 533+20.02	LT	28
545+96.83 - 546+14.50	RT	19
546+75.37 - 547+25.70	RT	66
563+86.45 - 564+06.88	RT	22
620+32.88 - 620+57.34	RT	29
ITEM TOTAL		189

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER
ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

PROJECT NO: 8510-01-71

HWY: STH 13

COUNTY: DOUGLAS

MISCELLANEOUS QUANTITIES

SHEET

E

BARRIER SYSTEM GRADING SHAPING FINISHING

614.0010						
STATION - STATION	LOCATION	EACH	SALVAGED*	MULCHING*	FERTILIZER*	SEEDING*
			TOPSOIL SY	SY	TYPE A CWT	MIXTURE NO. 30 LB
STH 13						
547+36.10 - 550+09.80	RT	1	111	111	0.13	3.6
551+79.90 - 553+56.60	RT	1	176	176	0.15	4.2
547+62.20 - 550+09.80	LT	1	136	136	0.14	3.9
551+79.90 - 553+81.20	LT	1	60	60	0.08	2.3
ITEM TOTAL		4				

* ITEMS SHOWN FOR REFERENCE ONLY. ITEMS INCIDENTAL TO THE ITEM
BARRIER SYSTEM GRADING SHAPING FINISHING.

MOBILIZATIONS EROSION CONTROL ITEMS

STATION - STATION	LOCATION	628.1905	628.1910
		MOBILIZATIONS EROSION CONTROL EACH	MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
STH 13	LT & RT	8	4
ITEM TOTAL		8	4

MARKERS CULVERT END

STATION	LOCATION	633.5200 EACH
STH 13		
70+01	RT	1
111+57	RT	1
149+61	LT & RT	2
175+95	LT & RT	2
180+64	RT	1
198+86	LT & RT	2
532+70	LT	2
563+50	RT	1
573+17	RT	1
608+07	LT & RT	1
620+13	RT	2
635+45	LT	1
ITEM TOTAL		17

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER
ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

PERMANENT SIGNING ITEMS

SIGN GROUP NUMBER	SIGN CODE	SIGN MESSAGE	SIZE	637.2210	637.2230	634.0616	634.0618	634.0814	638.2602	638.3000	REMARKS
				SIGNS TYPE II REFLECTIVE H SF	SIGNS TYPE II REFLECTIVE F SF	POSTS WOOD 16-FT EACH	4X6-INCH X 18-FT EACH	POSTS TUBULAR STEEL 2X2-INCH X 14-FT EACH	REMOVING SIGNS TYPE II EACH	REMOVING SMALL SIGN SUPPORTS EACH	
1-1	J3-3	END 13 / WEST 2 / NORTH 53	72 X 57	28.50			2		1	2	
1-2	D1-3	ASHLAND SPOONER / SUPERIOR	66 X 36	16.50			2		1	2	
1-3	W13-3	RAMP SPEED 15	24 X 30		5.00		1		1	2	
1-4	J13-1	COUNTY Z	24 X 45	7.50			1		1	1	
1-5	J13-1	COUNTY UU	24 X 45	7.50			1		1	1	
1-6	J13-1	COUNTY UU	24 X 45	7.50			1		1	1	
1-7	R1-1	STOP	30 X 30	5.18		1			1	1	
1-8	J13-1	COUNTY Z	24 X 45	7.50			1		1	2	
1-9	J2-4	EAST 2 / SOUTH 53 / WEST 2 / NORTH 53	96 X 57	38.00			2		1	2	
1-10	J1-4	END13 / JCT 2 / JCT 53 / JCT COUNTY Z	96 X 39	26.00			2		1	2	
1-11	R2-1	SPEED LIMIT	24 X 30	5.00		1			1	1	
1-12	W14-3	NO PASSING ZONE	48 X 36		5.56		1		1	1	
1-13	R59-51	STOP FOR SCHOOL BUS FLASHING RED LIGHTS	36 X 36	9.00			1		1	1	
1-14	D2-2	PORT WING / BAYFIELD	78 X 24	13.00			2		1	2	
1-15	I55-56	ADOPT A HIGHWAY	30 X 36	7.50			1		1	1	ROLLUP SIGN BRACKET IS INCIDENTAL
1-16	R1-1	STOP	30 X 30	5.18		1			1	1	
1-17	J4-1	SOUTH 13	24 X 36	6.00			1		1	1	
1-18	J12-1	STH 13 / RIGHT ARROW	24 X 45	7.50			1		1	1	
1-19	R1-1	STOP	30 X 30	5.18		1			1	1	
1-20	R1-1	STOP	30 X 30	5.18		1			1	1	
2-1	W14-3	NO PASSING ZONE	48 X 36		5.56	1			1	1	
2-2	I3-1	DUTCHMAN CREEK	60 X 24	10.00		1			1	1	
2-3	I3-1	DUTCHMAN CREEK	60 X 24	10.00		1			1	1	
2-4	W14-3	NO PASSING ZONE	48 X 36		5.56	1			1	1	
2-5		POST								1	POST WITH NO SIGN ATTACHED
2-6	W14-3	NO PASSING ZONE	48 X 36		5.56		1		1	1	
2-7		ROAD TO AMNICON FALLS STATE PARK								1	
3-1	I55-56	ADOPT A HIGHWAY	30 X 36	7.50			1		1	1	ROLLUP SIGN BRACKET IS INCIDENTAL
3-2		POST								1	POST WITH NO SIGN ATTACHED
3-3	J1-1	JCT COUNTY U	24 X 39	6.50		1			1	1	
3-4	W14-3	NO PASSING ZONE	48 X 36		5.56	1			1	1	
3-5	I55-56	ADOPT A HIGHWAY	30 X 36	7.50			1		1	1	ROLLUP SIGN BRACKET IS INCIDENTAL
3-6	W14-3	NO PASSING ZONE	48 X 36		5.56		1		1	1	
3-7	J4-1	NORTH STH 13	24 X 36	6.00		1			1	1	
3-8	R1-1	STOP	30 X 30	5.18		1			1	1	
3-9	J13-1	COUNTY U / LEFT ARROW	24 X 45	7.50		1			1	1	
3-10	D7-53L	AMNICON FALLS STATE PARK	72 X 36	18.00			2		1	2	
3-11	J1-1	JCT COUNTY U	24 X 39	6.50		1			1	1	
3-12	R1-1	STOP	30 X 30	5.18		1			1	1	
3-13	W1-6	RIGHT ARROW	48 X 24		8.00	1			1	1	
3-14	W1-6	LEFT ARROW	48 X 24		8.00	1			1	1	
3-15	R1-1	STOP	30 X 30	5.18			1		1	1	
3-16	D5-63	HISTORICAL MARKER 1/2 MILE	60 X 36	15.00			2		1	2	
3-17	W1-2L	ROAD CURVES LEFT	30 X 30		6.25		1		1	1	
3-18	J4-1	SOUTH STH 13	24 X 36	6.00		1			1	1	
3-19	R1-1	STOP	30 X 30	5.18		1			1	1	
3-20	J13-1	COUNTY U / RIGHT ARROW	24 X 45	7.50		1			1	1	
3-21	D7-53R	AMNICON STATE PARK	72 X 36	18.00			2		1	2	
4-1	W1-2R	ROAD CURVES RIGHT	30 X 30		6.25		1		1	1	
4-2	D5-64L	HISTORICAL MARKER / LEFT ARROW	60 X 36	15.00			2		1	2	
4-3	R1-1	STOP	30 X 30	5.18		1			1	1	
4-4	R1-1	STOP	30 X 30	5.18		1			1	1	
4-5	D5-64R	HISTORICAL MARKER / RIGHT ARROW	60 X 36	15.00			2		1	2	
4-6		ROAD TO AMNICON FALLS STATE PARK							1	1	
4-7	W14-3	NO PASSING ZONE	48 X 36		5.56	1			1	1	

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER
ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

PERMANENT SIGNING ITEMS

SIGN GROUP NUMBER	SIGN CODE	SIGN MESSAGE	SIZE	637.2210	637.2230	634.0616	634.0618	634.0814	638.2602	638.3000	REMARKS
				SIGNS TYPE II REFLECTIVE H SF	SIGNS TYPE II REFLECTIVE F SF	POSTS WOOD 16-FT EACH	4X6-INCH X 18-FT EACH	POSTS TUBULAR STEEL 2X2-INCH X 14-FT EACH	REMOVING SIGNS TYPE II EACH	REMOVING SMALL SIGN SUPPORTS EACH	
4-8	R1-1	STOP	30 X 30	5.18		1			1	1	
4-9	W5-52L	BRIDGE HASH MARKS	12 X 36		3.00			1	1	1	
4-10	W5-52R	BRIDGE HASH MARKS	12 X 36		3.00			1	1	1	
4-11	I3-1	AMNICON RIVER	54 X 24	9.00		1			1	1	
4-12	D5-63	HISTORICAL MARKER	60 X 36	15.00			2		1	2	
4-13	R1-1	STOP	30 X 30	5.18			1		1	1	
4-14	I55-56	ADOPT A HIGHWAY	30 X 36	7.50		1			1	1	ROLLUP SIGN BRACKET IS INCIDENTAL
4-15	R1-1	STOP	30 X 30	5.18		1			1	1	
4-16	R1-1	STOP	30 X 30	5.18		1			1	1	
4-17	W5-52L	BRIDGE HASH MARKS	12 X 36		3.00			1	1	1	
4-18	W5-52R	BRIDGE HASH MARKS	12 X 36		3.00			1	1	1	
4-19	I3-1	AMNICON RIVER	54 X 24	9.00		1			1	1	
4-20	R1-1	STOP	30 X 30	5.18		1			1	1	
4-21	W14-3	NO PASSING ZONE	48 X 36		5.56		1		1	1	
5-1	R1-1	STOP	30 X 30	5.18		1			1	1	
5-2	W14-1	DEAD END	30 X 30		6.25	1			1	1	
5-3	W14-3	NO PASSING ZONE	48 X 36		5.56	1			1	1	
5-4	R1-1	STOP	30 X 30	5.18		1			1	1	
5-5	W14-3	NO PASSING ZONE	48 X 36		5.56	1			1	1	
5-6	R1-1	STOP	30 X 30	5.18		1			1	1	
ITEM TOTAL				476.74	107.35	37	41	4	72	88	

TRAFFIC CONTROL ITEMS

STATION - STATION	643.0300	643.0420	643.0715	643.0900	603.8000	603.8125	661.0103.01
	DRUMS DAY	BARRICADES TYPE III DAY	WARNING LIGHTS TYPE C DAY	SIGNS DAY	CONCRETE BARRIER TEMPORARY PRECAST DELIVERED LF	CONCRETE BARRIER TEMPORARY PRECAST INSTALLED LF	TEMPORARY TRAFFIC SIGNALS FOR BRIDGES (B-16-052) LS
STH 13	360	12	144	3762	392	784	1
ITEM TOTAL	360	12	144	3762	392	784	1

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER
ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

3

PAVEMENT MARKING ITEMS

STATION - STATION	LOCATION	646.0106	646.0126	646.0406	647.0576	646.0600	648.0100	649.0400		649.0402	649.1400
		PAVEMENT MARKING				REMOVING PAVEMENT MARKINGS LF	LOCATING NO-PASSING ZONES MILES	TEMPORARY PAVEMENT MARKING			
		EPOXY 4-INCH (WHITE) LF	EPOXY 8-INCH (WHITE) LF	SAME DAY EPOXY 4-INCH (YELLOW CL) LF	STOP LINE EPOXY 24-INCH LF			REMOVABLE TAPE 4-INCH		PAINT 4-INCH (YELLOW CL) LF	STOP LINE REMOVABLE TAPE 24-INCH LF
		(YELLOW CL) LF	(WHITE) LF	(YELLOW CL) LF	(YELLOW CL) LF			(YELLOW CL) LF	(WHITE) LF	(YELLOW CL) LF	(YELLOW CL) LF
STH 13											
25+19.19 - 70+00	LT & RT	8602	140	2948	50		0.85			17924	
70+00 - 115+00	LT & RT	9000		3699			0.86			18000	
115+00 - 160+00	LT & RT	9000		6490			0.86			18000	
160+00 - 204+16.77 B.K./516+40 A.H.	LT & RT	8354		6754			0.84			17668	
204+16.77 B.K./516+40 A.H. - 571+00	LT & RT	10080		9838		300	1.04	1400	2850	21840	34
571+00 - 624+53.42	LT & RT	10347		4865			1.02			21416	
631+80.88 - 645+13.68	LT & RT	2666		2101			0.26			5332	
SUBTOTAL								1400	2850		
ITEM TOTAL		58049	140	36695	50	300	5.73	4250		120180	34

CONSTRUCTION STAKING

STATION - STATION	LOCATION	650.4500	650.5000	650.5500	650.8000	650.9910.01	650.9920
		SUBGRADE LF	BASE LF	CURB GUTTER AND CURB & GUTTER LF	RESURFACING REFERENCE LF	SUPPLEMENTAL CONTROL (8510-01-71) LS	SLOPE STAKES LF
STH 13	LT & RT			189	61268	1	544
547+55 - 550+29	LT & RT	275	275				
551+60 - 553+98	LT & RT	238	238				
ITEM TOTAL		513	513	189	61268	1	544

SAWING ASPHALT

STATION - STATION	LOCATION	690.0150	REMARKS
STH 13			
525+85.68 - 526+10.83	RT	31	C & G REPLACEMENT AREA
532+92.76 - 533+19.02	LT	33	C & G REPLACEMENT AREA
545+97.13 - 546+16.31	RT	24	C & G REPLACEMENT AREA
546+71.62 - 550+28.46	RT	375	C & G AND GUARDRAIL REPLACEMENT AREA
547+62.18 - 550+28.46	LT	278	GUARDRAIL REPLACEMENT AREA
551+60.62 - 553+81.19	LT	231	GUARDRAIL REPLACEMENT AREA
551+73.05 - 553+48.05	RT	174	GUARDRAIL REPLACEMENT AREA
563+84.27 - 564+06.40	RT	28	C & G REPLACEMENT AREA
620+29.83 - 620+56.52	RT	36	C & G REPLACEMENT AREA
ITEM TOTAL		1210	

DITCH CLEANING

STATION	LOCATION	SPV.0090.02
STH 13		
70+01	RT	50
175+95	LT & RT	100
180+64	RT	50
198+86	RT	50
532+70	LT	100
573+17	RT	50
ITEM TOTAL		400

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER
ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

PROJECT NO: 8510-01-71

HWY: STH 13

COUNTY: DOUGLAS

MISCELLANEOUS QUANTITIES

SHEET

E

3

3

REMOVING ASPHALTIC SURFACE MILLING

STATION - STATION	LOCATION	204.0120 SY
STH 13		
624+53.42 - 627+33.00	LT & RT	961
629+29.00 - 631+80.88	LT & RT	931
ITEM TOTAL		1892

REMOVING GUARDRAIL

STATION - STATION	LOCATION	204.0165 LF
STH 13		
626+07.01 - 627+25.41	RT	129
626+85.95 - 627+59.81	LT	85
628+97.98 - 629+71.70	RT	84
629+32.74 - 630+52.18	LT	130
ITEM TOTAL		428

EARTHWORK SUMMARY

STATION - STATION	LOCATION	(1) 205.0100 EXCAVATION COMMON CY	(2) SAVALGED/UNUSABLE PAVEMENT MATERIAL CY	(3) AVAILABLE MATERIAL CY	REMARKS
STH 13					
627+30 - 627+72	RT	50	11	39	INCLUDES ASPHALT REMOVAL
628+85 - 629+29	RT	53	12	41	INCLUDES ASPHALT REMOVAL
ITEM TOTAL		103			

(1) EXCAVATION COMMON, ITEM NUMBER 205.0100, IS THE TOTAL VOLUME OF CUT AND INCLUDES THE UNUSABLE PAVEMENT MATERIAL
(2) SALVAGED/UNUSABLE MATERIAL IS INCLUDED IN THE EXCAVATION COMMON
(3) AVAILABLE MATERIAL = EXCAVATION COMMON - UNUSABLE PAVEMENT MATERIAL

PREPARE FOUNDATION FOR ASPHALTIC PAVING (8510-03-71)

STATION - STATION	LOCATION	211.0100.02 LS
624+53.42 - 631+80.88	LT & RT	1
ITEM TOTAL		1

BASE COURSE ITEMS

STATION - STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	REMARKS
STH 13				
624+53.42 - 627+33.04	RT	40	129	GUARDRAIL REPLACEMENT AREA
624+87.26 - 627+43.06	LT	59	118	GUARDRAIL REPLACEMENT AREA
627+33.04 - 627+72.26	LT & RT		35	CONCRETE APPROACH PANEL AREA
628+89.07 - 629+29.02	LT & RT		40	CONCRETE APPROACH PANEL AREA
629+00.69 - 631+60.63	RT	36	117	GUARDRAIL REPLACEMENT AREA
629+34.93 - 631+80.88	LT	36	110	GUARDRAIL REPLACEMENT AREA
ITEM TOTAL		171	549	

SHAPING SHOULDERS

STATION	LOCATION	305.0500 STA
STH 13		
624+53.42 - 627+33.04	LT & RT	6
629+29.01 - 631+80.88	LT & RT	6
ITEM TOTAL		12

CONCRETE PAVEMENT 8-INCH

STATION - STATION	LOCATION	415.0080 SY
STH 13		
627+33 - 627+72	LT & RT	22
628+85 - 629+29	LT & RT	24
ITEM TOTAL		46

CONCRETE PAVEMENT APPROACH SLAB

STATION - STATION	LOCATION	415.0410 SY
STH 13		
627+33.04 - 627+68.09	LT & RT	67
628+89.07 - 629+29.02	LT & RT	80
ITEM TOTAL		147

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER
ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

3

HMA PAVEMENT ITEMS

		455.0605	460.6245
		TACK COAT	HMA
		GAL	PAVEMENT
STATION	LOCATION	5 MT 58-34 S	TON
STH 13			
624+53.42 - 627+33.04	LT & RT	20	140
629+29.01 - 631+80.88	LT & RT	20	136
ITEM TOTAL		40	276

EROSION CONTROL ITEMS

		628.1504	628.1520
		SILT	SILT
		FENCE	FENCE
STATION - STATION	LOCATION	LF	MAINTENANCE
STH 13			
624+53.42 - 627+41.93	RT	299	299
624+85.35 - 627+71.26	LT	293	293
628+85.99 - 631+63.76	RT	285	285
629+15.13 - 631+85.56	LT	280	280
ITEM TOTAL		1157	1157

3

ASPHALTIC CENTERLINE RUMBLE STRIPS 2-LANE RURAL

		465.0475
		LF
STATION	LOCATION	
STH 13		
624+53.42 - 631+80.88	LT & RT	482
ITEM TOTAL		482

BARRIER SYSTEM GRADING SHAPING FINISHING

		614.0010				
			SALVAGED*	MULCHING*	FERTILIZER*	SEEDING*
			TOPSOIL	SY	TYPE A	MIXTURE
STATION - STATION	LOCATION	EACH	SY	SY	CWT	NO. 30
STH 13						LB
624+53.42 - 627+33.00	RT	1	116	116	0.14	4.1
624+87.23 - 627+33.00	LT	1	191	191	0.19	5.5
629+29.00 - 631+80.88	LT & RT	2	279	279	0.32	9.2
ITEM TOTAL		4				

* ITEMS SHOWN FOR REFERENCE ONLY. ITEMS INCIDENTAL TO THE ITEM BARRIER SYSTEM GRADING SHAPING FINISHING.

MIDWEST GUARDRAIL SYSTEM

		614.2300	614.2500	614.2610
		MGS	MGS	MGS
		GUARDRAIL 3	THRIE BEAM	GUARDRAIL
STATION - STATION	LOCATION	LF	LF	TERMINAL EAT
STH 13				EACH
625+46.84 - 627+21.84	RT	83	39.5	1
625+81.20 - 627+56.20	LT	83	39.5	1
629+01.15 - 630+76.10	RT	83	39.5	1
629+35.51 - 631+10.20	LT	83	39.5	1
ITEM TOTAL		332	158	4

MOBILIZATIONS EROSION CONTROL ITEMS

		628.1905	628.1910
		MOBILIZATIONS	MOBILIZATIONS
		EROSION CONTROL	EROSION CONTROL
STATION - STATION	LOCATION	EACH	EACH
STH 13	LT & RT	3	2
ITEM TOTAL		3	2

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

3

PERMANENT SIGNING ITEMS

SIGN GROUP NUMBER	SIGN CODE	SIGN MESSAGE	SIZE	637.2210	637.2230	634.0616	634.0618	634.0814	638.2602	638.3000	REMARKS
				SIGNS TYPE II REFLECTIVE H	SIGNS TYPE II REFLECTIVE F	POSTS WOOD 4X6-INCH X		POSTS TUBULAR STEEL 2X2-INCH X	REMOVING SIGNS	REMOVING SMALL SIGN SUPPORTS	
				SF	SF	16-FT EACH	18-FT EACH	14-FT EACH	TYPE II EACH	EACH	
6-1	W5-52L	BRIDGE HASH MARKS	12 X 36		3.00			1	1	1	
6-2	W5-52R	BRIDGE HASH MARKS	12 X 36		3.00			1	1	1	
6-3	W14-3	NO PASSING ZONE	48 X 36		5.56	1			1	1	
6-4	I3-1	MILLER CREEK	36 X 24	6.00		1			1		ATTACHED TO NO PASSING ZONE SIGN
6-5	W5-52L	BRIDGE HASH MARKS	12 X 36		3.00			1	1	1	
6-6	W5-52R	BRIDGE HASH MARKS	12 X 36		3.00			1	1	1	
6-7	W14-3	NO PASSING ZONE	48 X 36		5.56	1			1	1	
6-8	I3-1	MILLER CREEK	36 X 24	6.00		1			1		ATTACHED TO NO PASSING ZONE SIGN
6-9	W1-2L	ROAD CURVES LEFT	30 X 30		6.25		1		1	1	
ITEM TOTAL				12.00	29.37	4	1	4	9	7	

3

TRAFFIC CONTROL ITEMS

STATION - STATION	643.0300	643.0420	643.0715	643.0900	603.8000	603.8125	661.0103.02
	TRAFFIC CONTROL			SIGNS DAY	CONCRETE BARRIER	TEMPORARY TRAFFIC	SIGNALS FOR BRIDGES (B-16-053) LS
	DRUMS DAY	BARRICADES TYPE III DAY	WARNING LIGHTS TYPE C DAY		TEMPORARY PRECAST DELIVERED LF	INSTALLED LF	
STH 13	2340	78	936	1248	392	784	1
ITEM TOTAL	2340	78	936	1248	392	784	1

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER
ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.

PAVEMENT MARKING ITEMS

STATION - STATION	LOCATION	646.0106	646.0406	646.0600	648.0100	649.0400	649.0402	649.1400	
		PAVEMENT MARKING		REMOVING PAVEMENT MARKINGS LF	LOCATING NO-PASSING ZONES MILES	TEMPORARY PAVEMENT MARKING			
		EPOXY 4-INCH (WHITE) LF	EPOXY 4-INCH (YELLOW CL) LF			REMOVABLE TAPE 4-INCH		PAINT 4-INCH (YELLOW CL) LF	STOP LINE REMOVABLE TAPE 24-INCH LF
						(YELLOW CL) LF	(WHITE) LF		
STH 13									
624+53.42 - 631+80.88	LT & RT	1455	910	300	0.14	1400	2850	2912	
SUBTOTAL						1400	2850		
ITEM TOTAL		1455	910	300	0.14	4250	2912	34	

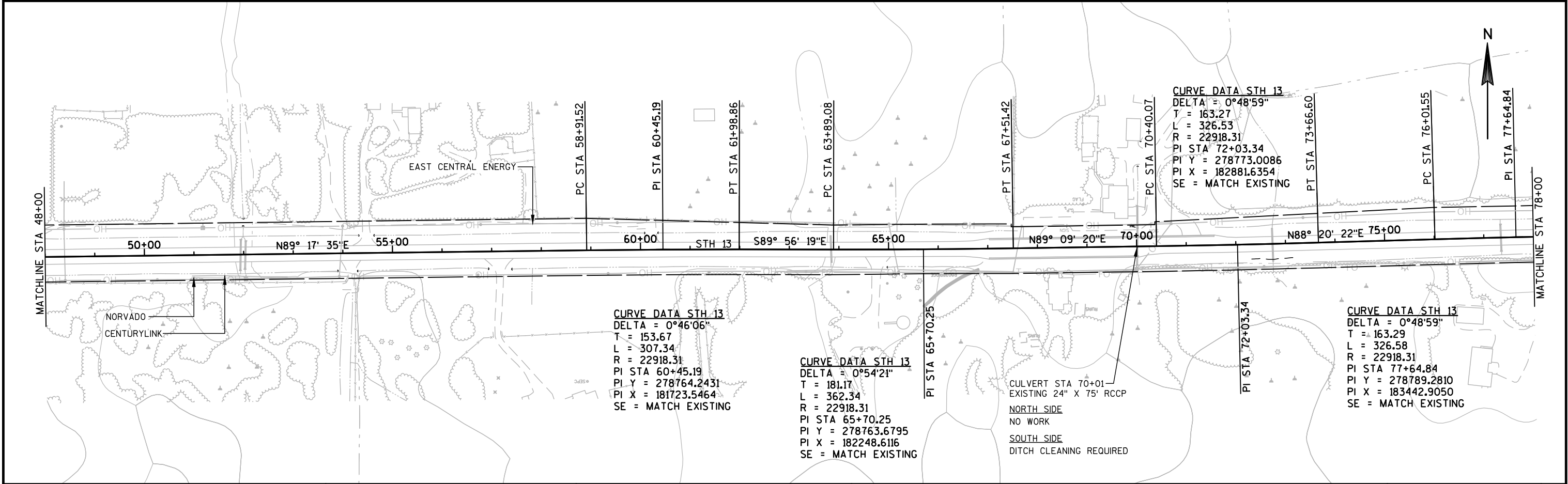
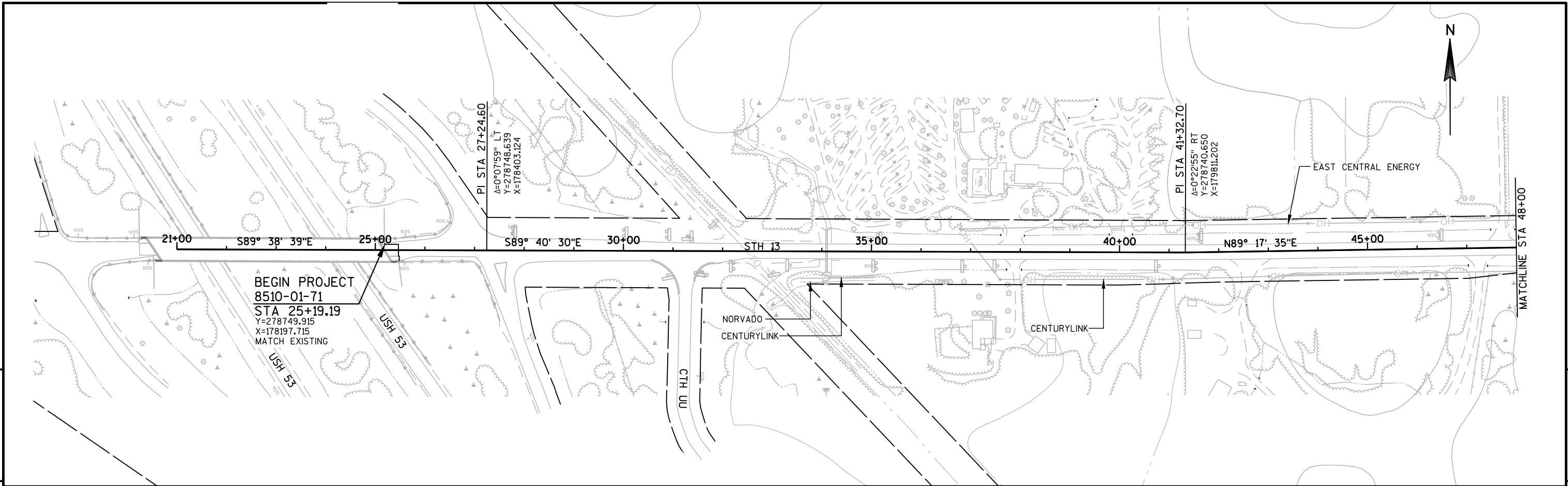
CONSTRUCTION STAKING

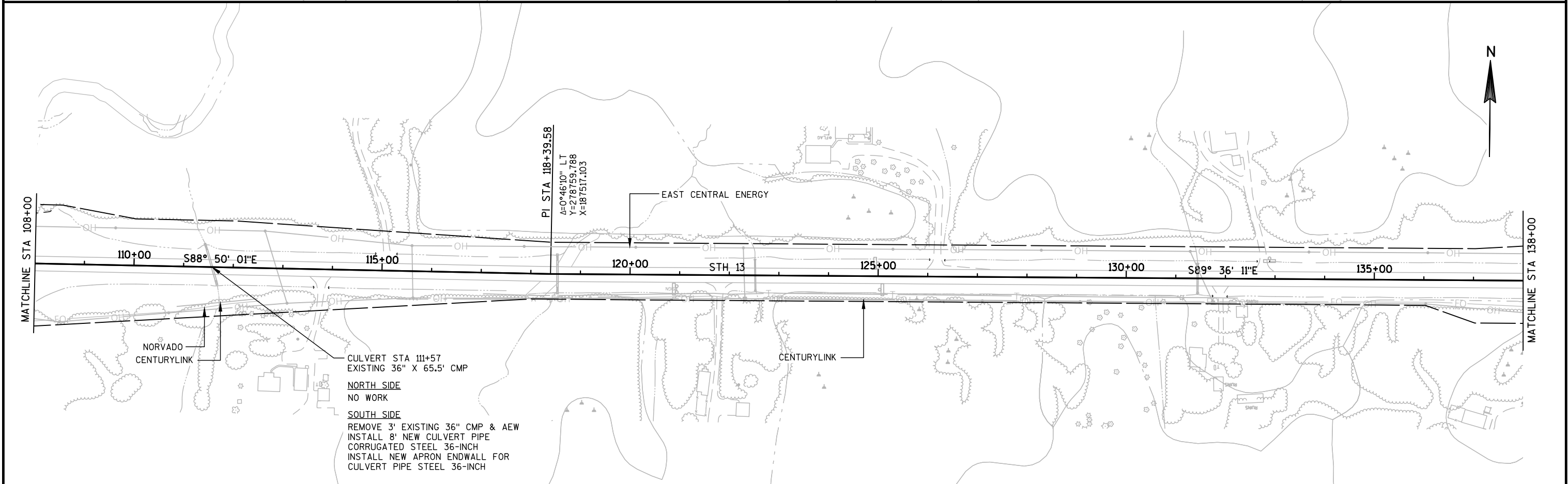
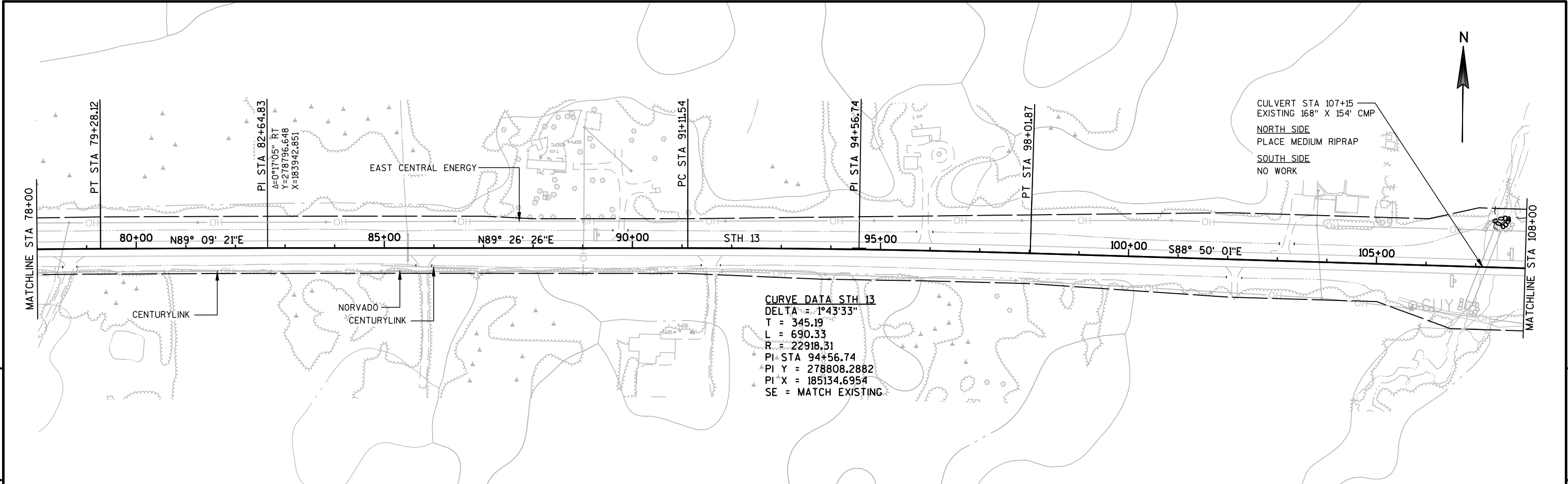
STATION - STATION	LOCATION	650.4500	650.5000	650.6500	650.8000	650.9910.02	650.9920
		SUBGRADE LF	BASE LF	STRUCTURE LAYOUT B-16-053 LS	RESURFACING REFERENCE LF	SUPPLEMENTAL CONTROL (8510-03-71) LS	SLOPE STAKES LF
CATEGORY 0010							
STH 13	LT & RT				728	1	613
624+53 - 627+56	LT & RT	303	303				
629+01 - 631+81	LT & RT	280	280				
CATEGORY 0010 SUBTOTALS		583	583	0	728	1	613
CATEGORY 0020							
B-16-053	LT & RT			1			
CATEGORY 0020 SUBTOTALS		0	0	1	0	0	0
ITEM TOTAL		583	583	1	728	1	613

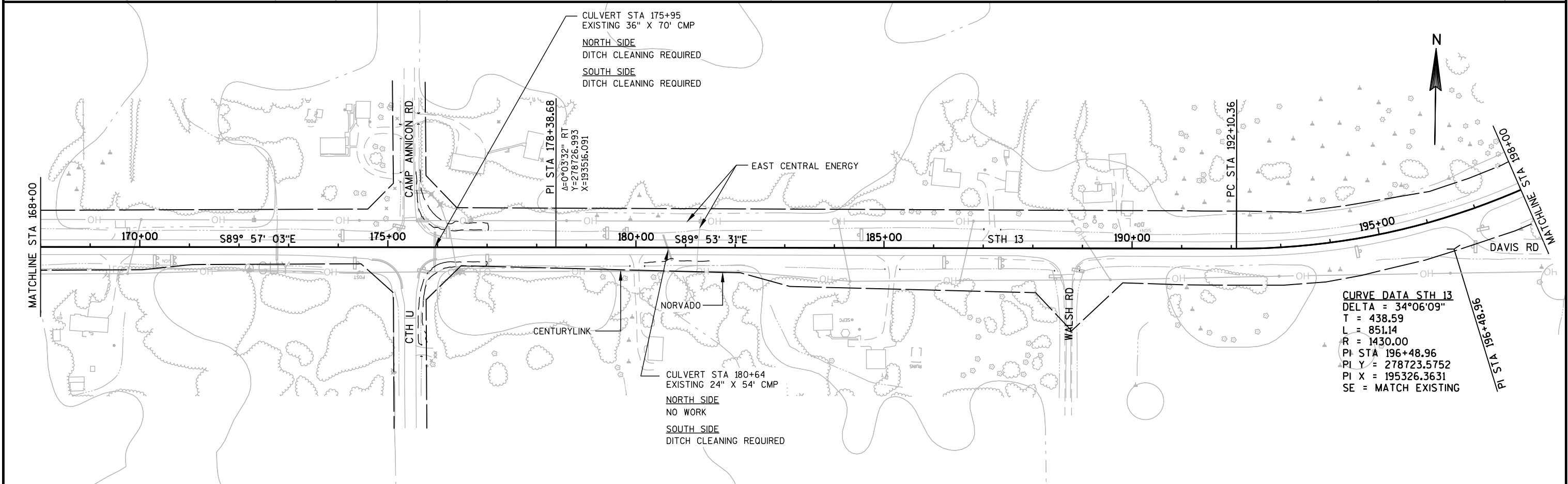
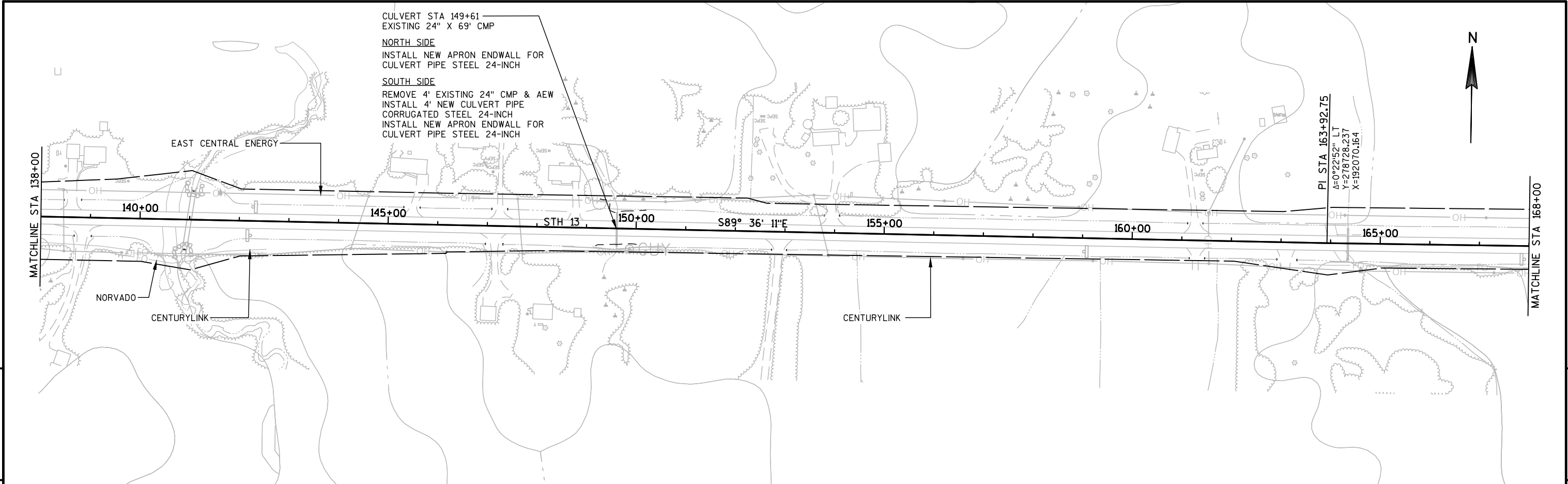
SAWING ASPHALT

STATION - STATION	LOCATION	690.0150 LF	REMARKS
STH 13			
625+23.79 - 627+33.04	RT	214	GUARDRAIL REPLACEMENT AREA
625+62.20 - 627+33.04	LT	175	GUARDRAIL REPLACEMENT AREA
627+30.04	LT & RT	28	APPROACH SLAB REPLACEMENT AREA
629+29.02 - 630+90.63	LT	167	GUARDRAIL REPLACEMENT AREA
629+29.02 - 631+30.52	RT	206	GUARDRAIL REPLACEMENT AREA
629+32.02	LT & RT	29	APPROACH SLAB REPLACEMENT AREA
ITEM TOTAL		819	

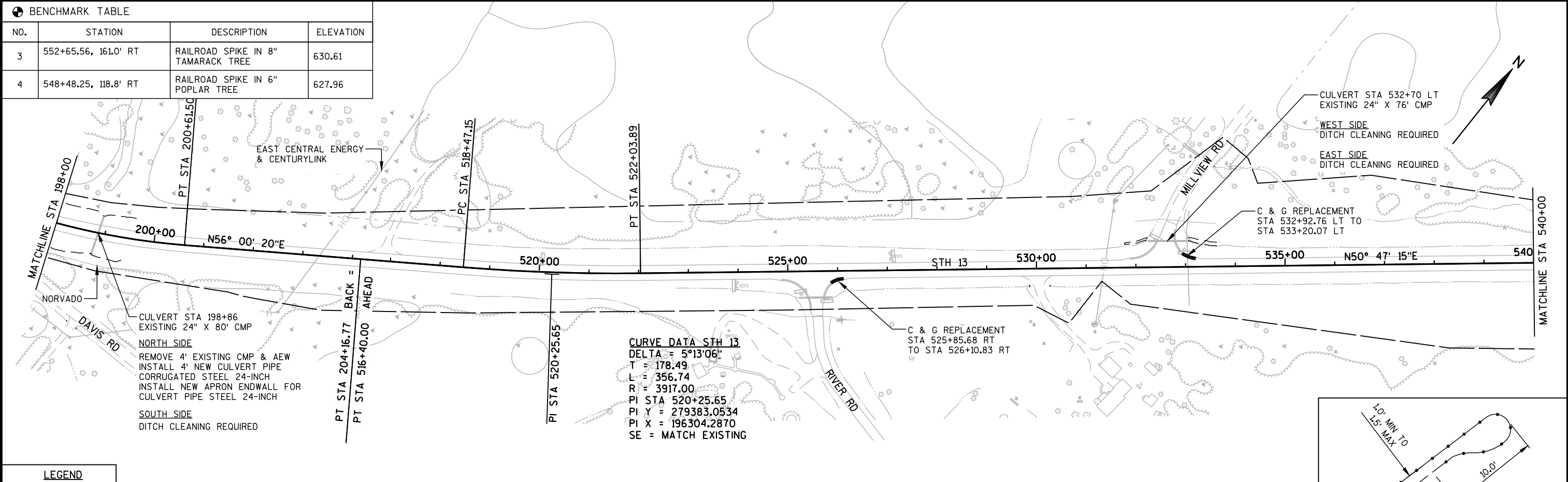
NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER
ESTIMATE CATEGORY 0010 UNLESS OTHERWISE NOTED.







BENCHMARK TABLE			
NO.	STATION	DESCRIPTION	ELEVATION
3	552+65.56, 161.0' RT	RAILROAD SPIKE IN 8" TAMARACK TREE	630.61
4	548+48.25, 118.8' RT	RAILROAD SPIKE IN 6" POPLAR TREE	627.96

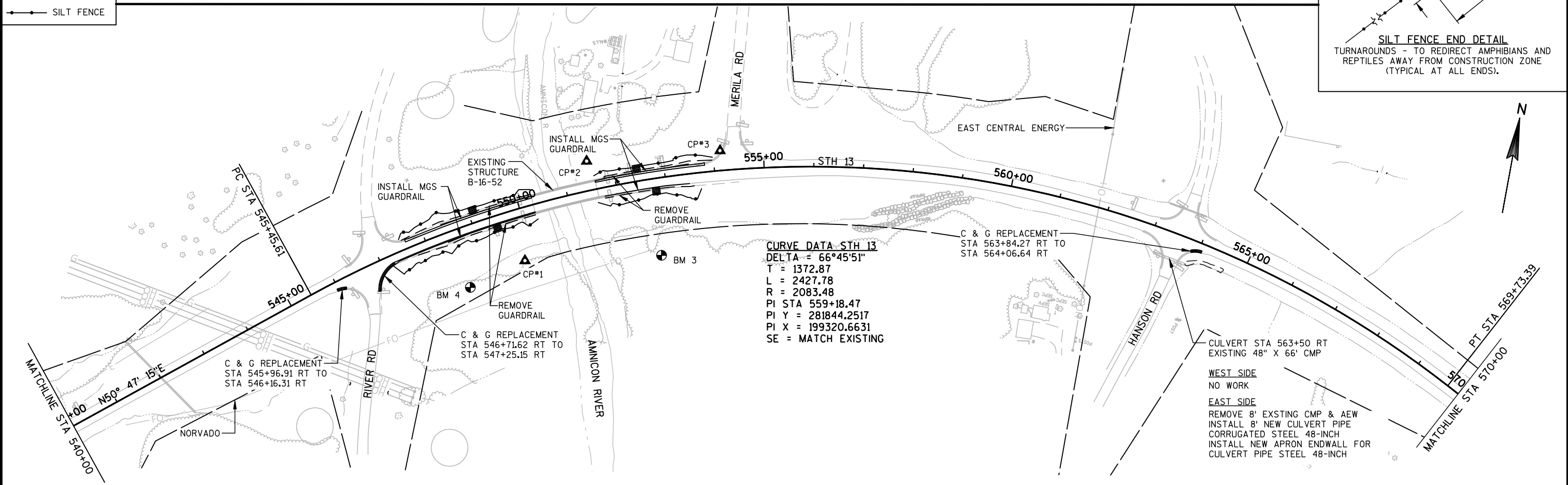


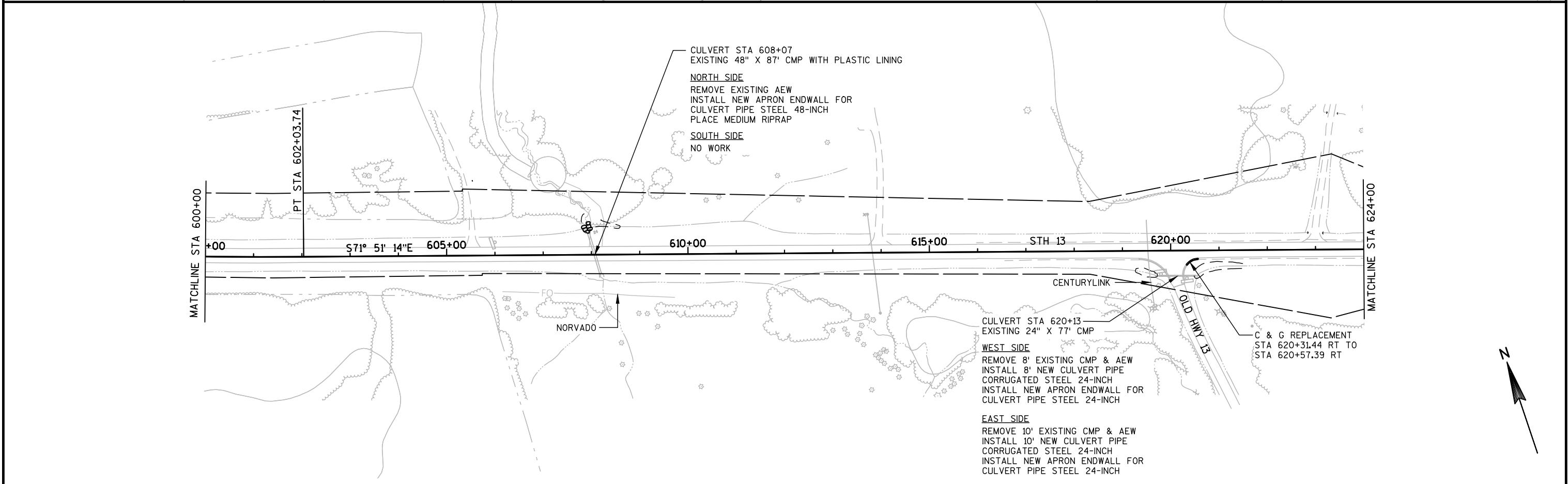
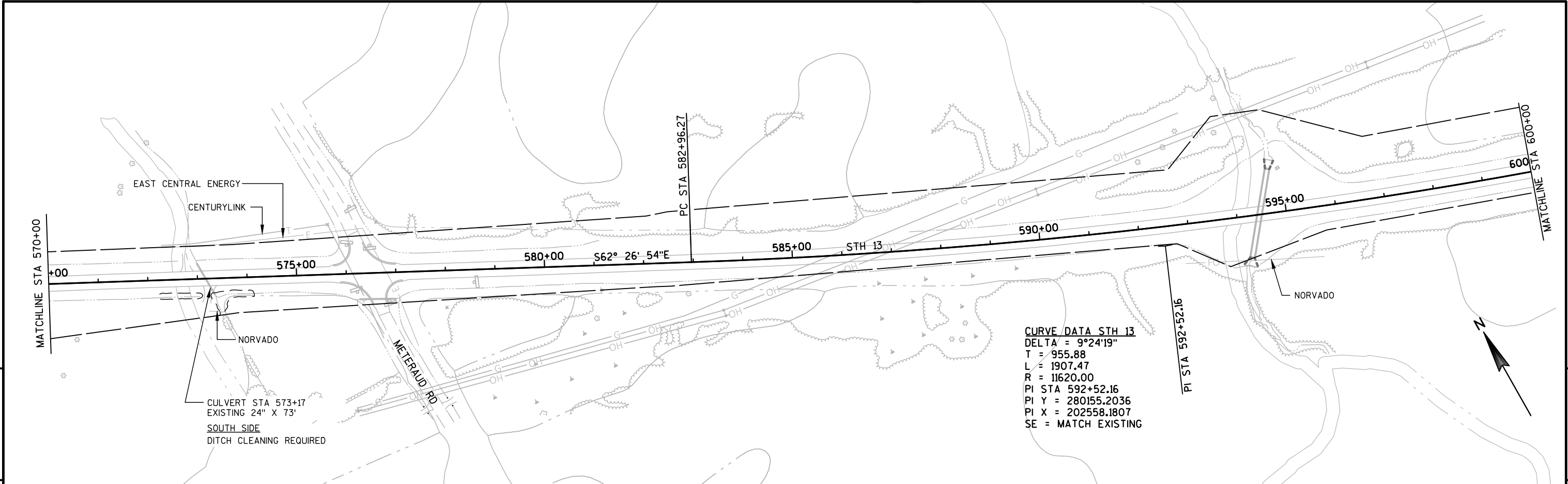
LEGEND

—●— SILT FENCE

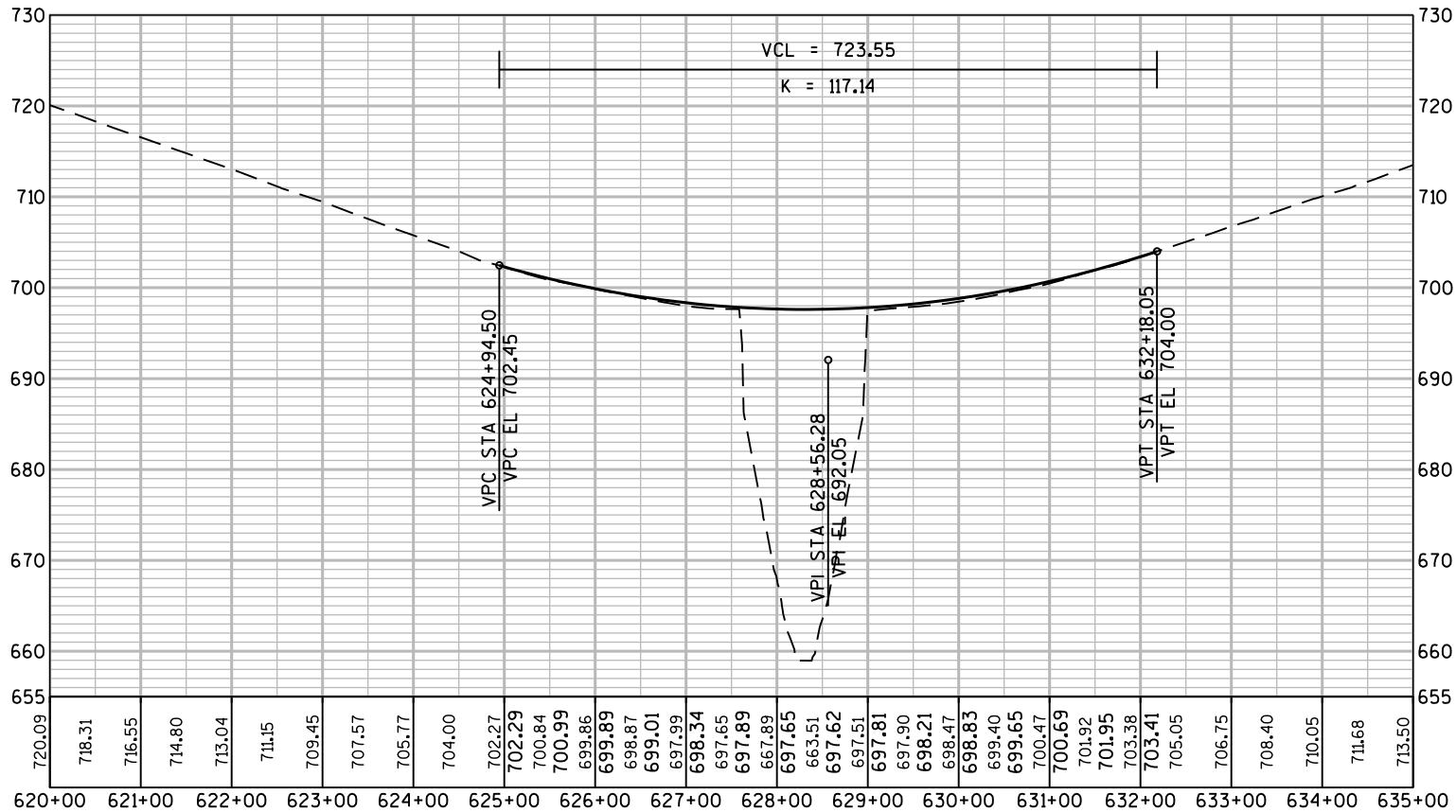
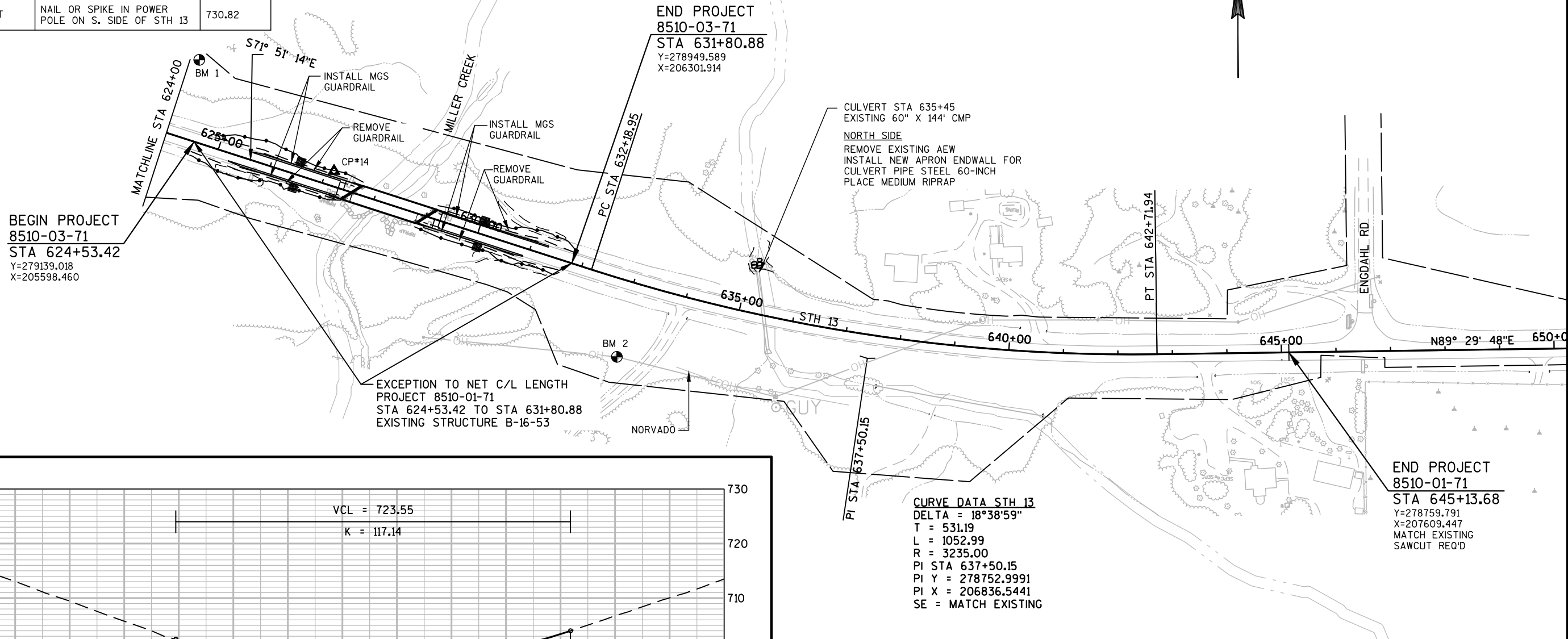
SILT FENCE END DETAIL

TURNAROUNDS - TO REDIRECT AMPHIBIANS AND REPTILES AWAY FROM CONSTRUCTION ZONE (TYPICAL AT ALL ENDS).



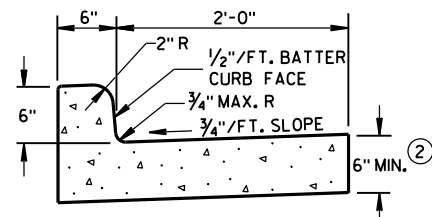


BENCHMARK TABLE				LEGEND
NO.	STATION	DESCRIPTION	ELEVATION	←●→ SILT FENCE
1	624+64.06, 97.9' LT	NAIL OR SPIKE IN 8" BIRCH TREE N. SIDE OF STH 13	700.77	
2	633+07.54, 138.6' RT	NAIL OR SPIKE IN POWER POLE ON S. SIDE OF STH 13	730.82	

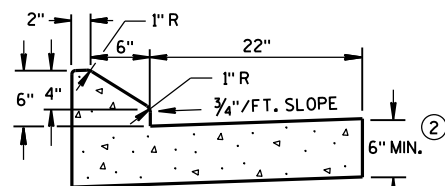


Standard Detail Drawing List

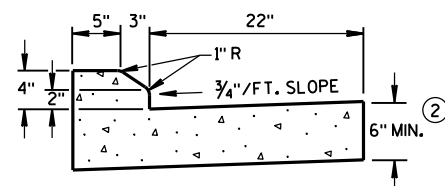
08D01-19	CONCRETE CURB, CONCRETE CURB AND GUTTER AND TIES
08E09-06	SILT FENCE
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
09G02-04A	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-04B	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-04C	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
13A03-06	CONCRETE PAVEMENT SHOULDERS
13A11-02A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-02B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13B02-08A	CONCRETE PAVEMENT APPROACH SLAB
13C01-18	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
14B07-14A	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14B	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14C	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14D	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14E	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14F	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14G	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-14H	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B42-04A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-04B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-04C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-02A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-04A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04K	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04L	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C04-03	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C06-08	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-17A	LONGITUDINAL MARKING (MAINLINE)
15C12-05	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C19-04A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15C33-02	STOP LINE AND CROSSWALK PAVEMENT MARKING
15C35-01A	PAVEMENT MARKING (INTERSECTIONS)
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D33-04	TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS



TYPES A & D ①

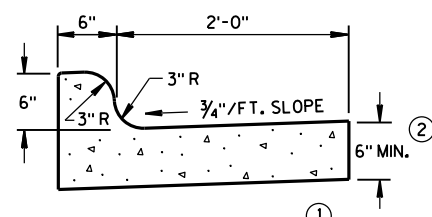


6" SLOPED CURB TYPES G & J ①



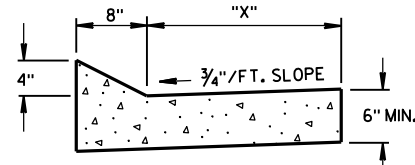
4" SLOPED CURB TYPES G & J ①

CONCRETE CURB & GUTTER 30"



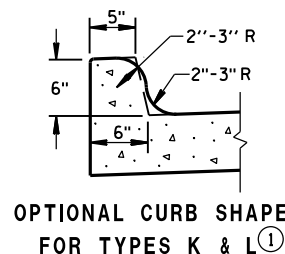
TYPES K & L ①

CONCRETE CURB & GUTTER 30"

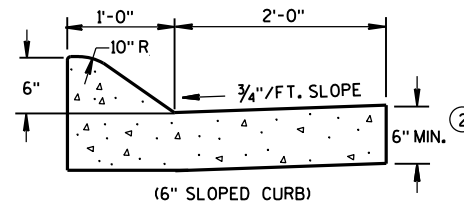


TYPES TBT & TBTT ①
CONCRETE CURB & GUTTER

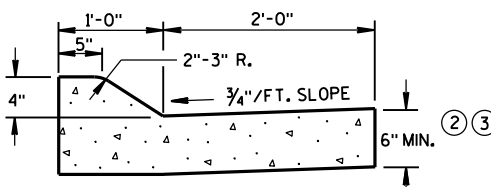
TBT & TBTT	"X"
30"	22"
36"	28"



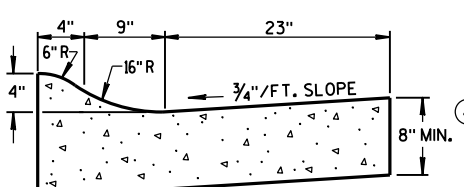
OPTIONAL CURB SHAPE
FOR TYPES K & L ①



(6" SLOPED CURB)



(4" SLOPED CURB)
TYPES A & D ①



4" SLOPED CURB TYPES R & T ① ⑤
CONCRETE CURB & GUTTER 36"

GENERAL NOTES

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

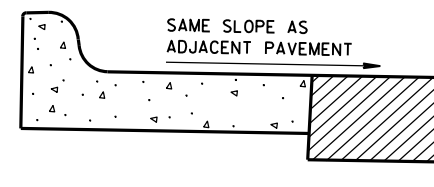
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

INTEGRAL CURB & GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB & GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE. A LONGITUDINAL CONSTRUCTION JOINT IS NOT REQUIRED WITH INTEGRAL CURB AND GUTTER.

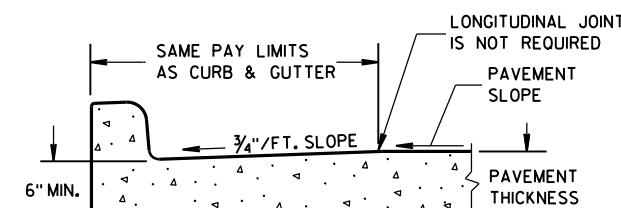
WHERE THE TRANSVERSE JOINTS IN THE PAVEMENT ARE REQUIRED TO BE SEALED, THE JOINTS IN THE INTEGRAL CURB AND GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME TYPE OF SEALANT. THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB AND GUTTER.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2'-0" BEHIND THE BACK OF CURBS.

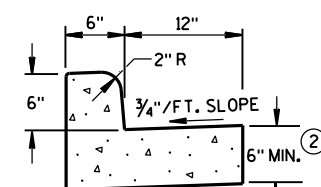
- TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K, R AND TBTT.
- THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.



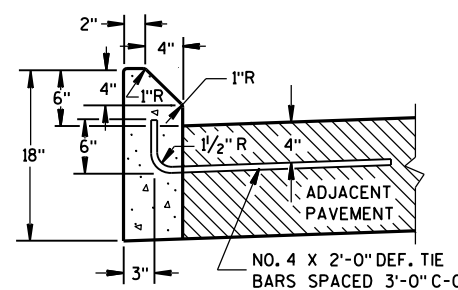
REVERSE SLOPE GUTTER
(TYPICAL FOR ALL CURB & GUTTER TYPES)



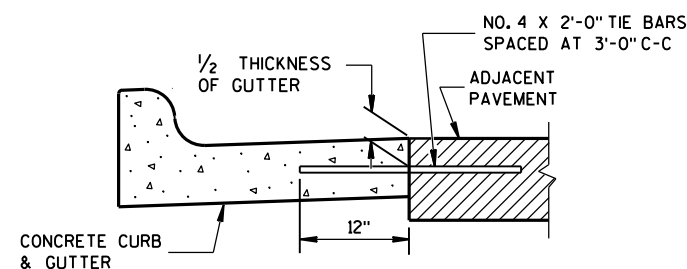
PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB & GUTTER



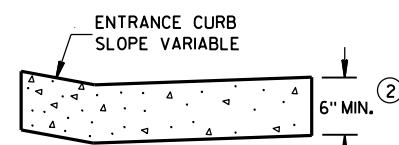
TYPES A & D
CONCRETE CURB & GUTTER 18"



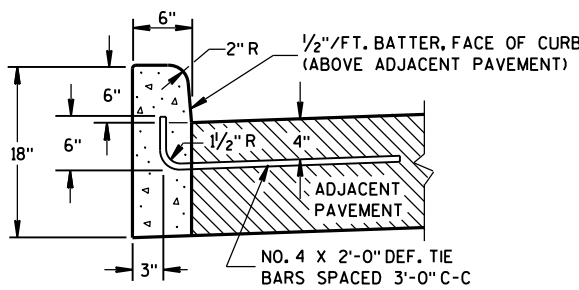
TYPES G & J



TYPICAL TIE BAR LOCATION ①

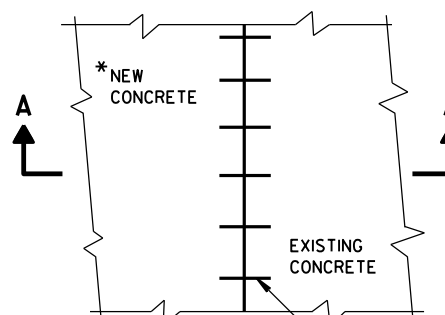


DRIVEWAY ENTRANCE CURB
(WHEN DIRECTED BY THE ENGINEER)



TYPES A & D

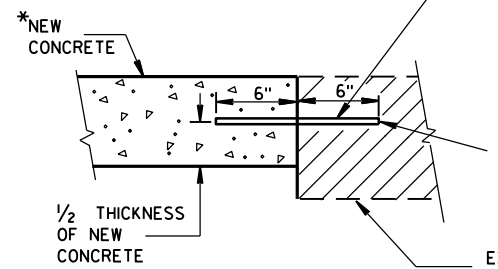
CONCRETE CURB



PLAN VIEW

* NEW CURB & GUTTER,
SURFACE DRAINS,
CONCRETE PAVEMENT
OR OTHER NEW CONCRETE.

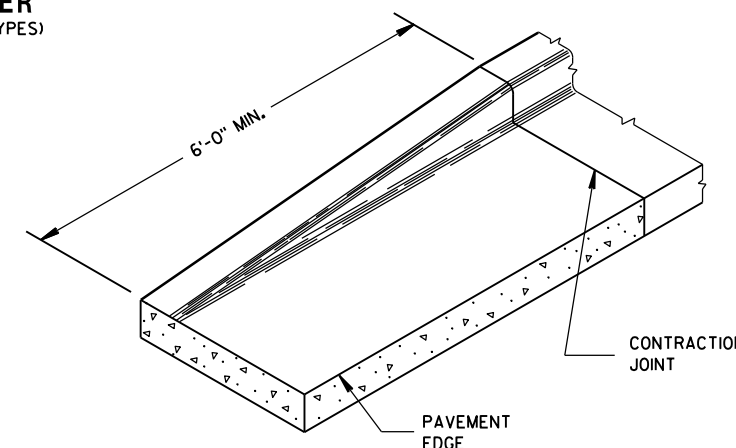
NO. 6 TIE BARS SPACED 2'-6" C-C,
INSTALLED PERPENDICULAR
TO THE LONGITUDINAL JOINT.



SECTION A-A
TIE BARS DRILLED
INTO EXISTING PAVEMENT

MAXIMUM DRILL HOLE
SIZE IS 1/8" GREATER
THAN TIE BAR DIAMETER

EXISTING CONCRETE



END SECTION CURB & GUTTER

CONCRETE CURB, CONCRETE
CURB & GUTTER AND TIES

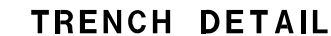
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2016
DATE
FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



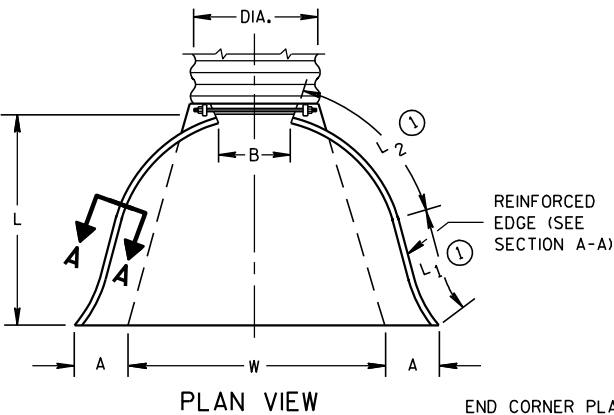
- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1 1/8" X 1 1/8" 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.



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

METAL APRON ENDWALLS												
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE		BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")			
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1	1 Pc.
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1	1 Pc.
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1	1 Pc.
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1	1 Pc.
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2	Pc.
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1	2	Pc.
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1	3	Pc.
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1	3	Pc.
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1	3	Pc.
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1	3	Pc.
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1	3	Pc.
78	.109x	.105x	18	42	12	87	—	—	132	1 1/2 to 1	3	Pc.
84	.109x	.105x	18	45	12	87	—	—	138	1 1/2 to 1	3	Pc.
90	.109x	.105x	18	37	12	87	—	—	144	1 1/2 to 1	3	Pc.
96	.109x	.105x	18	35	12	87	—	—	150	1 1/2 to 1	3	Pc.

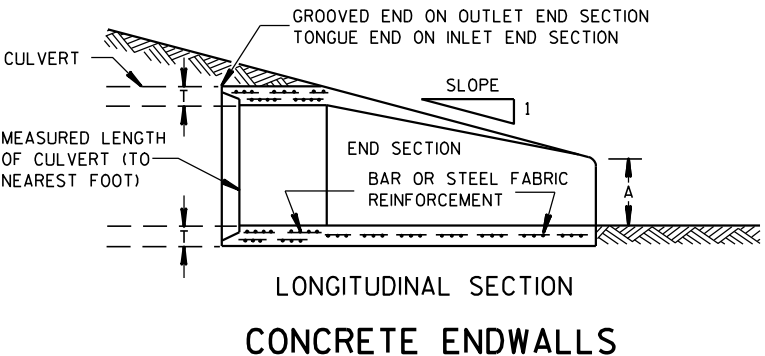
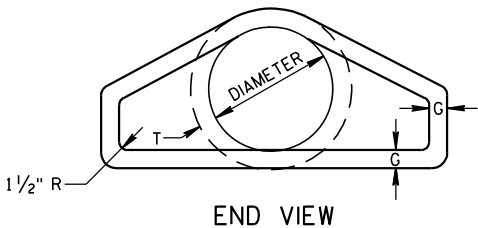
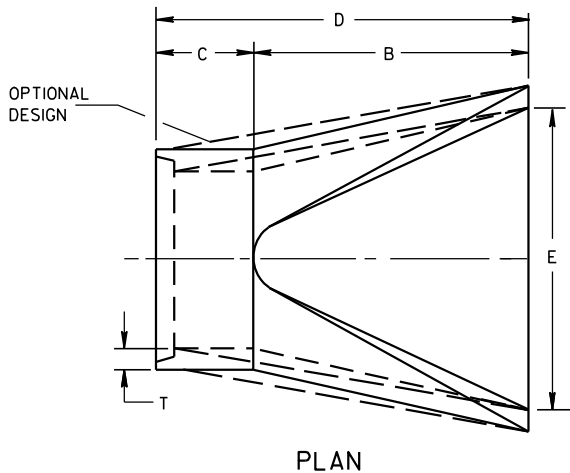
* EXCEPT CENTER PANEL
SEE GENERAL NOTES



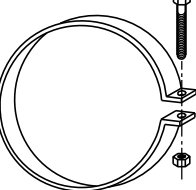
SIDE ELEVATION
METAL ENDWALLS

REINFORCED CONCRETE APRON ENDWALLS												
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE				
	T	A	B	C	D	E	G					
12	2	4	24	48 7/8	72 7/8	24	2	3 to 1				
15	2 1/4	6	27	46	73	30	2 1/4	3 to 1				
18	2 1/2	9	27	46	73	36	2 1/2	3 to 1				
21	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	3 to 1				
24	3	9 1/2	43 1/2	30	73 1/2	48	3	3 to 1				
27	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	3 to 1				
30	3 1/2	12	54	19 3/4	73 1/2	60	3 1/2	3 to 1				
36	4	15	63	34 3/4	97 3/4	72	4	3 to 1				
42	4 1/2	21	63	35	98	78	4 1/2	3 to 1				
48	5	24	72	26	98	84	5	3 to 1				
54	5 1/2	27	65	33 1/4-35	98 1/4-100	90	5 1/2	2 1/2 to 1				
60	6	30-35	60	39	99	96	5	2 to 1				
66	6 1/2	24-30	72-78	21-27	99	102	5 1/2	2 to 1				
72	7	24-36	78	21	99	108	6	2 to 1				
78	7 1/2	24-36	78	21	99	114	6 1/2	2 to 1				
84	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2 to 1				
90	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	1 1/2 to 1				

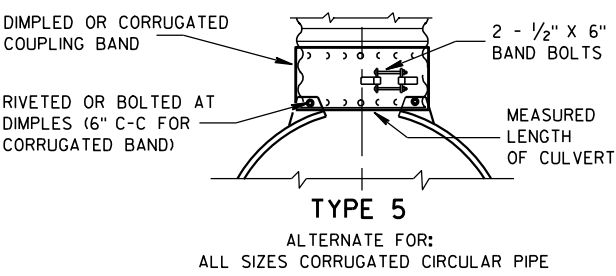
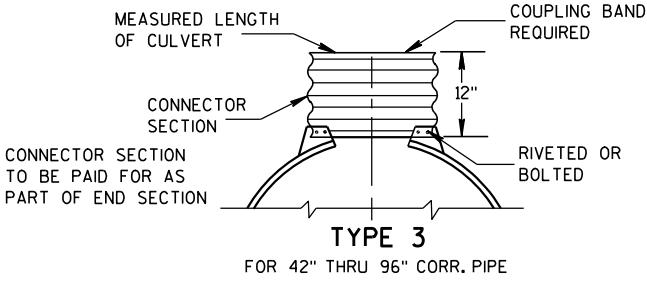
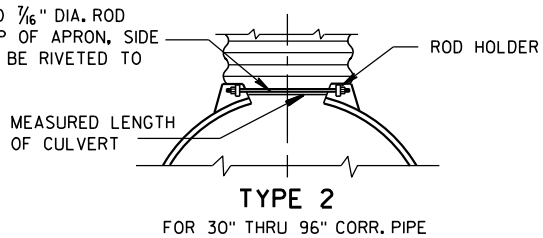
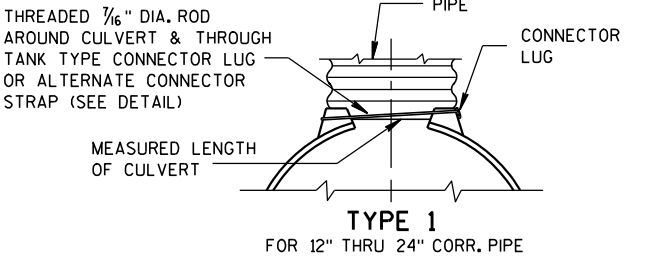
* MINIMUM
** MAXIMUM



1" WIDE, 12 GA. (0.109"
THICK) GALVANIZED STRAP
WITH STANDARD 6" X 1/2"
BAND BOLT AND NUT



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



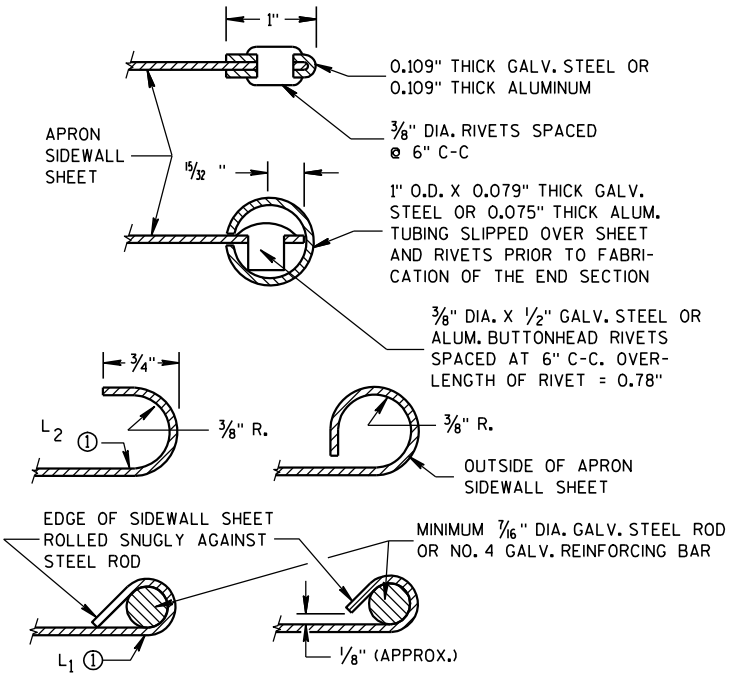
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL,
AND CORRUGATED BAND FITS INSIDE ENDWALL.
DIMPLED BAND MAY BE USED WITH HELICALLY
CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE
ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5
AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL
CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO
CIRCUMFERENTIAL CORRUGATIONS AT EACH END
USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



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.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL
OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR
ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE
OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND
LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL
THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND
LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH
OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE
PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS
FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS.
FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED
EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH
GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE
ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM
NUTS AND BOLTS FOR ALUMINUM UNITS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT
TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT
TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

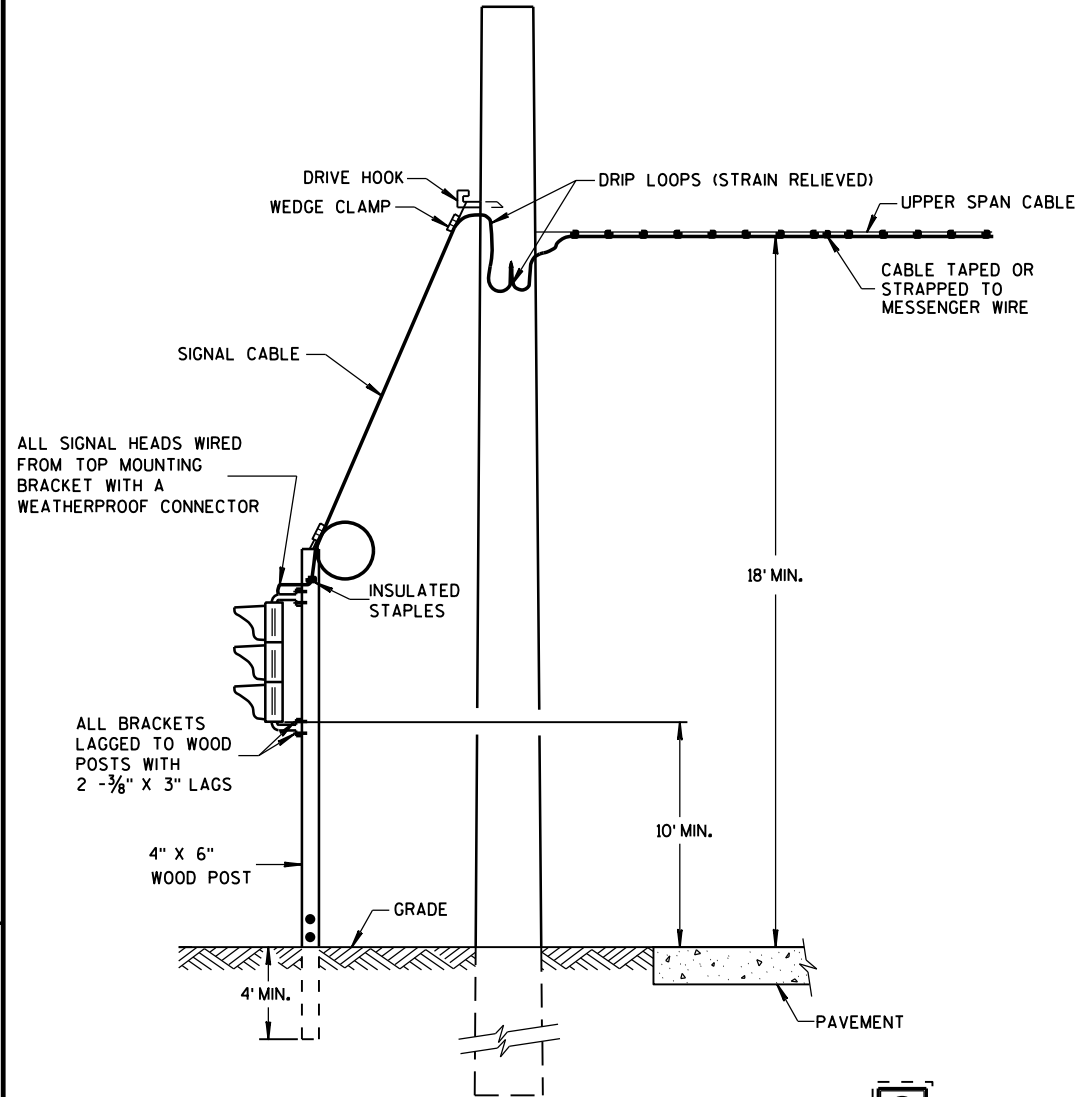
① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED
INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR
CULVERT PIPE

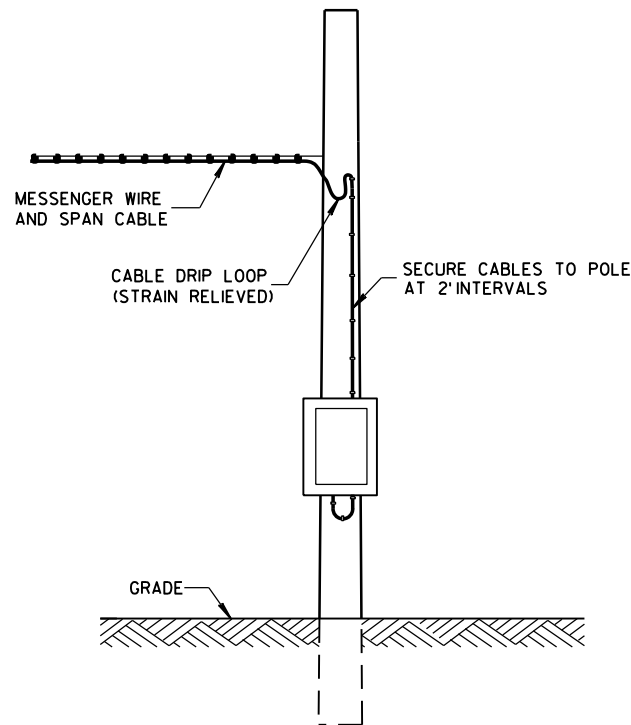
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94
DATE
/S/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

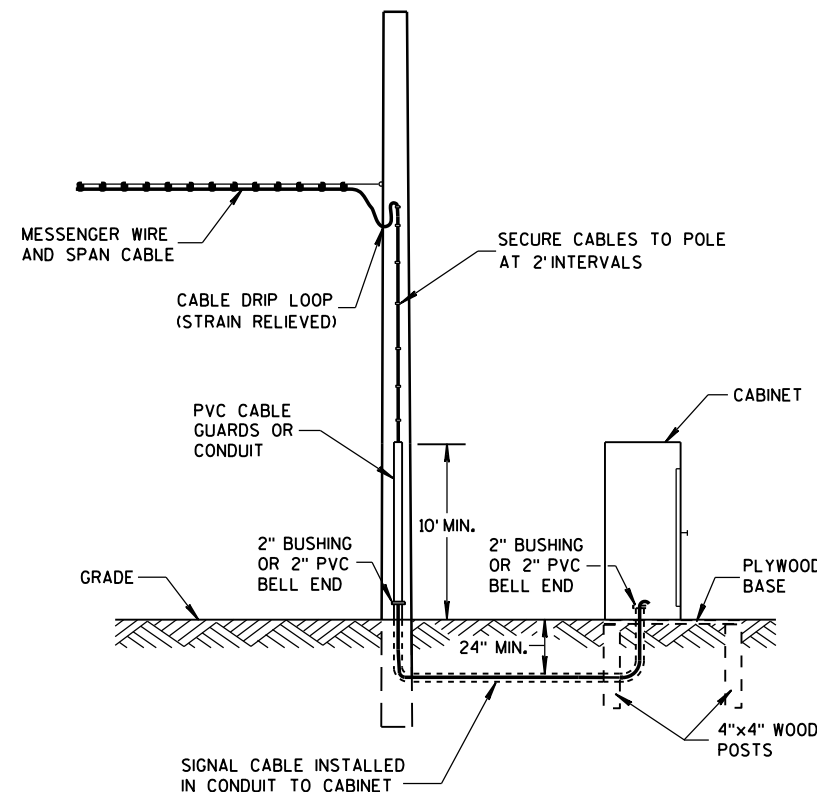
TYPICAL DROP TO TRAFFIC SIGNAL FACE



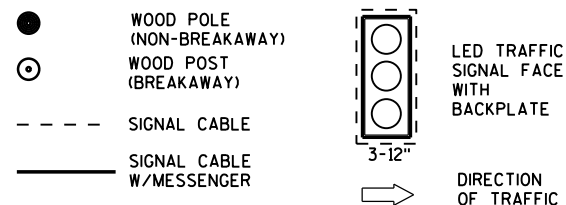
POLE MOUNT CABINET INSTALLATION



GROUND MOUNT CABINET INSTALLATION



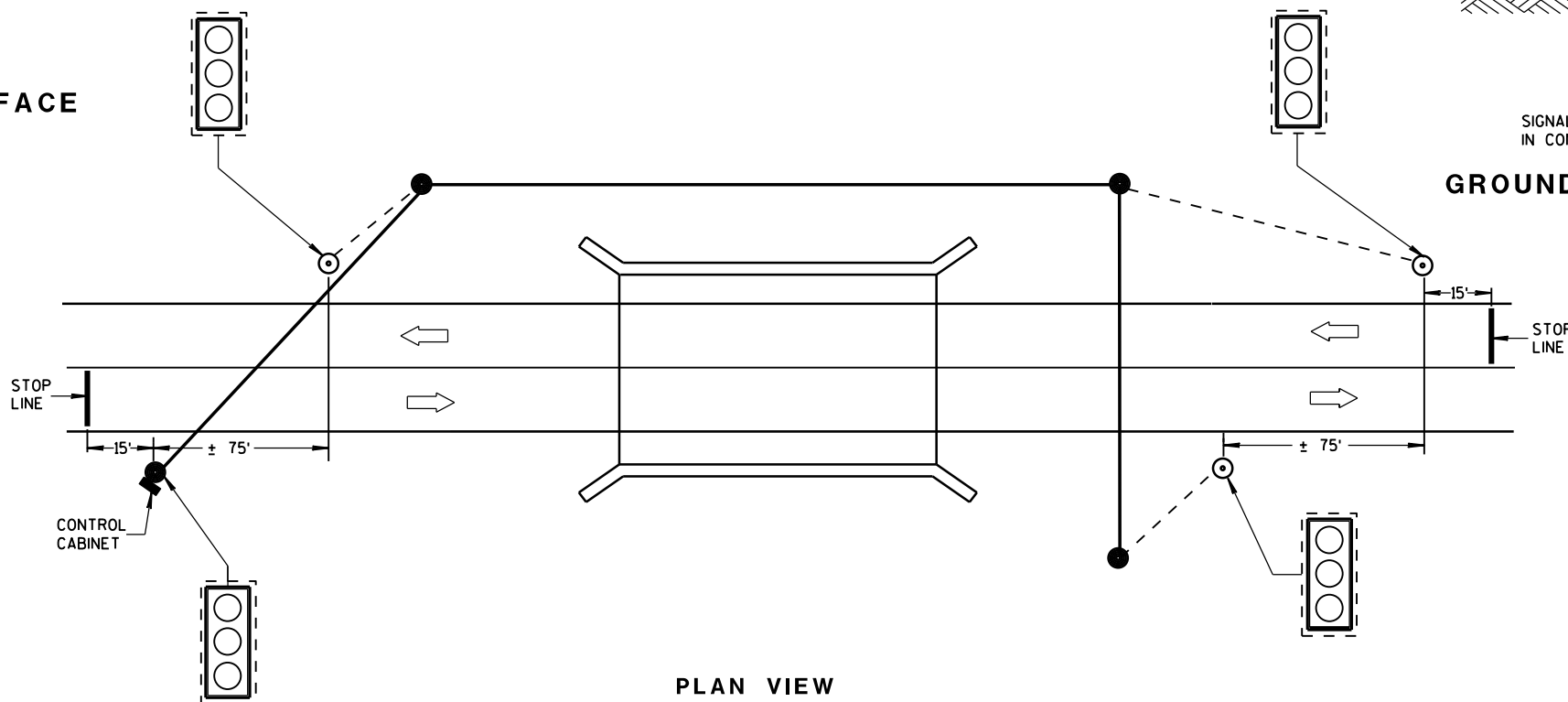
LEGEND



OFFSET DISTANCES FOR TEMPORARY NON-BREAKAWAY POLES	
SPEED LIMIT	OFFSET DISTANCE**
GREATER THAN 45 MPH	18 FT
45 MPH OR LESS	12 FT
45 MPH OR LESS W/ CURBS	2 FT
**NOTE: OFFSET MEASURED FROM OUTER EDGE OF OUTSIDE THRU LANE.	

MINIMUM POLE LENGTHS	CLASS	MINIMUM BURIAL DEPTHS
25 FEET	V	5 FEET
30 FEET	V	6 FEET
35 FEET	IV	7 FEET
40 FEET	IV	8 FEET
45 FEET	IV	9 FEET

**PLAN VIEW
TYPICAL BRIDGE TEMPORARY TRAFFIC SIGNAL LOCATION**



BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE: Sept., 2016 /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.

POLE MOUNTED TRAFFIC SIGNAL CONTROL CABINET MAYBE MOUNTED ON THE SERVICE POLE IF THE ELECTRICAL UTILITY ALLOWS THE INSTALLATION.

WHEN UTILITY POLES ARE USED TO SPAN THE TEMPORARY OVERHEAD CABLE, WRITTEN PERMISSION MUST BE OBTAINED FROM THE OWNER OF THE POLES AND GIVEN TO THE PROJECT MANAGER. ALL PERTINENT UTILITY AND CODE CLEARANCES SHALL BE MAINTAINED.

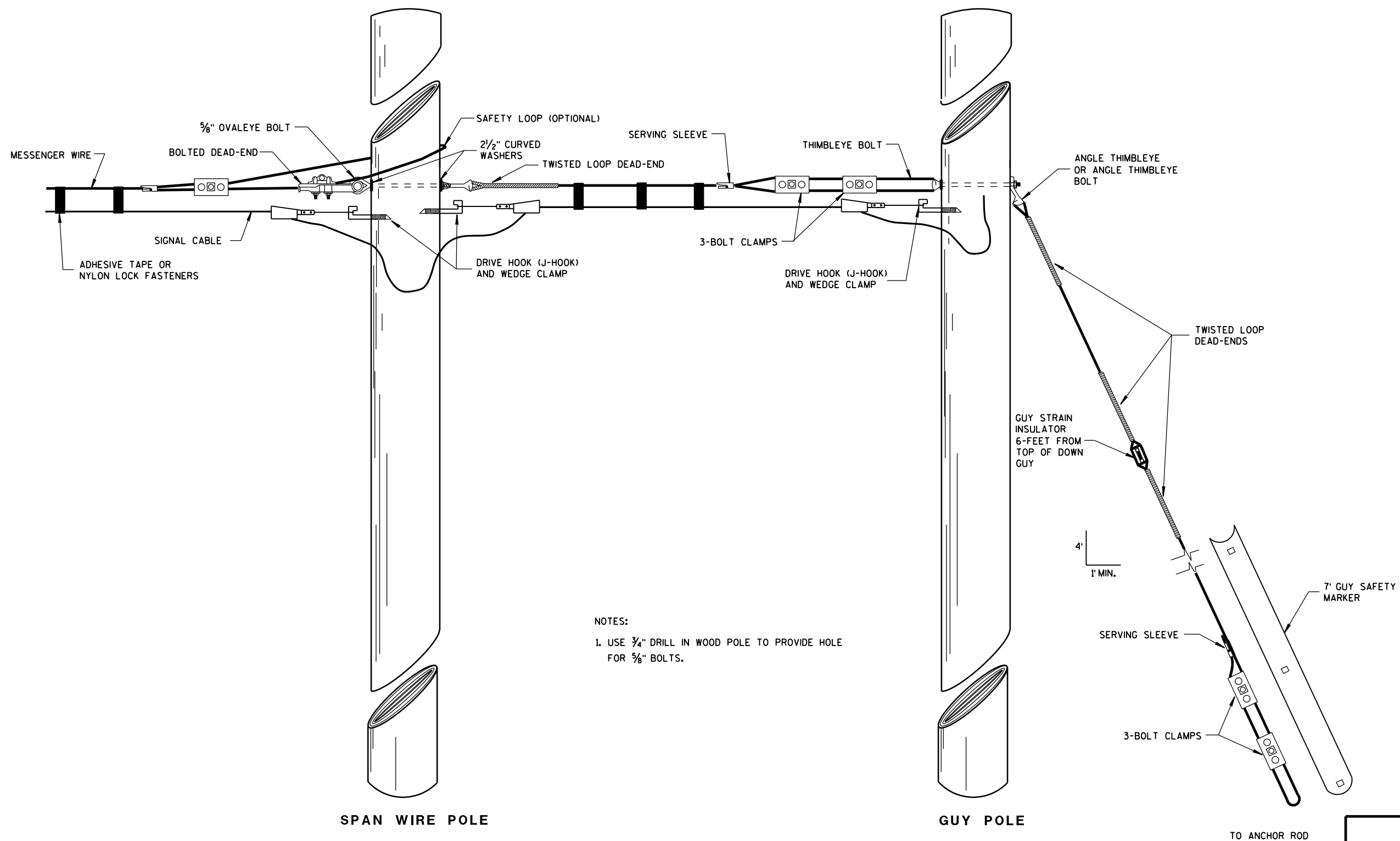
WOOD POLES (NONBREAKAWAY) SHALL BE NO CLOSER TO EDGE OF PAVEMENT THAN OFFSET DISTANCE CHART ALLOWS OR 4 FEET BEHIND PROTECTIVE BARRIER (BEAM GUARD, ETC.).

WOOD POSTS (BREAKAWAY) SHALL BE NO CLOSER THAN 2 FEET OUTSIDE OF SHOULDER.

VERTICAL CLEARANCE ETC. PER NEC.

TRAFFIC SIGNAL FACES SHALL BE TYPICALLY PLACED 12 FEET FROM EDGE OF PAVEMENT.

EACH TRAFFIC SIGNAL FACE SHALL HAVE A BACKPLATE.



TYPICAL DEAD-ENDINGS OR GUYING

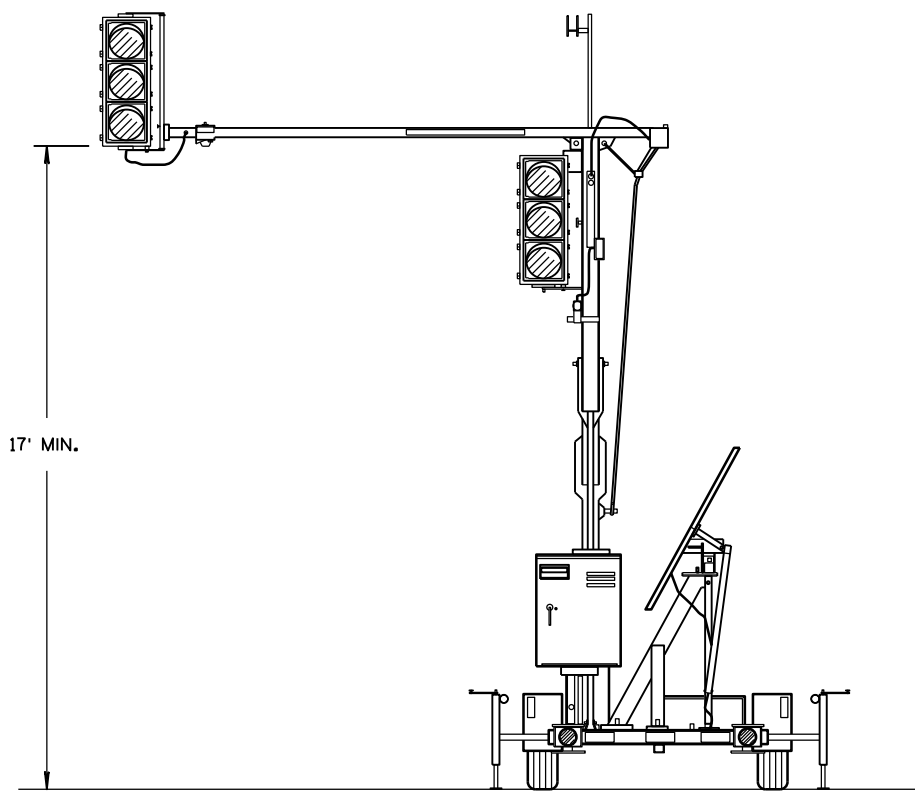
BRIDGE TEMPORARY
TRAFFIC SIGNAL INSTALLATIONSTATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept., 2016
DATE

FHWA

/S/ Ahmet Demirbilek
STATE ELECTRICAL ENGINEER

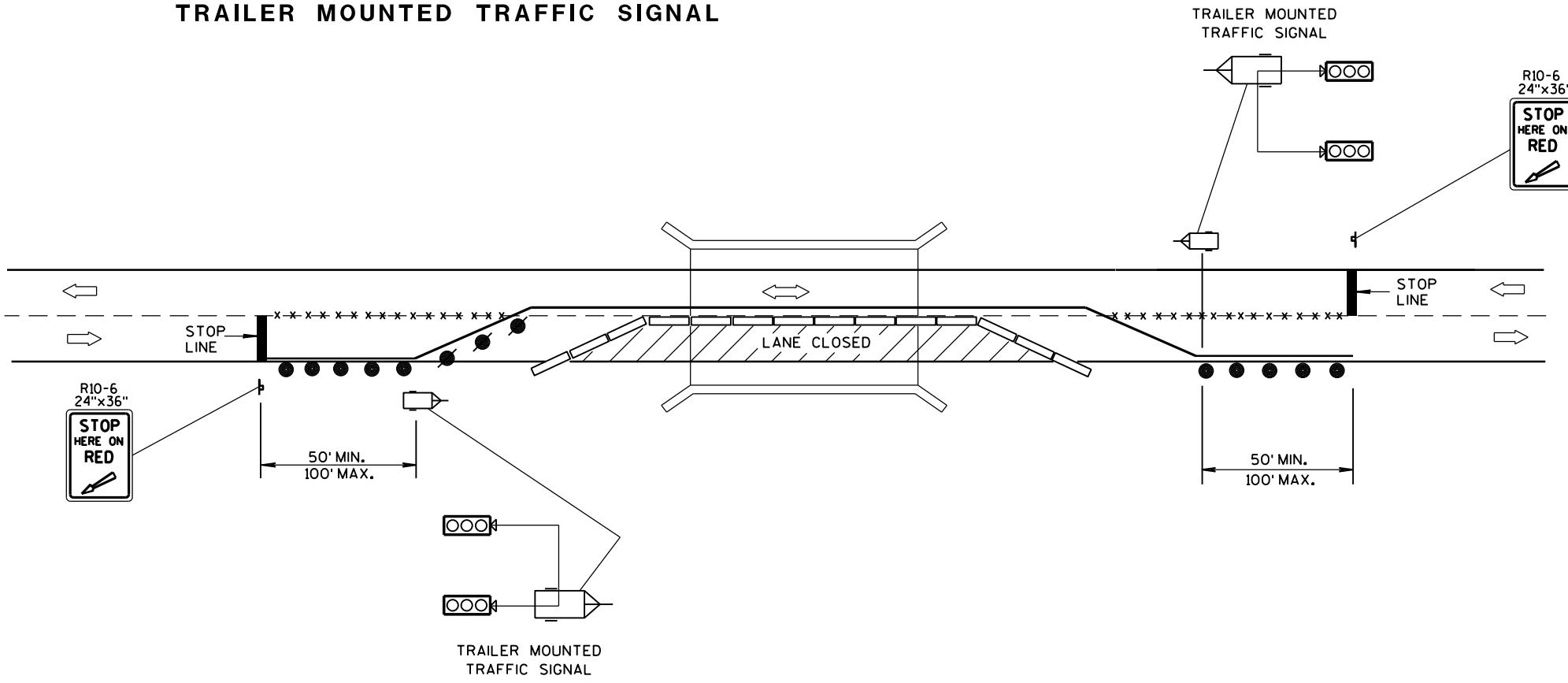


TRAILER MOUNTED TRAFFIC SIGNAL

GENERAL NOTES

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

SIGNING, PAVEMENT MARKING AND LANE CONTROL REQUIREMENTS SHALL CONFORM TO STANDARD DETAIL DRAWING 15 D 33.



TYPICAL TRAILER MOUNTED TRAFFIC SIGNAL LOCATION

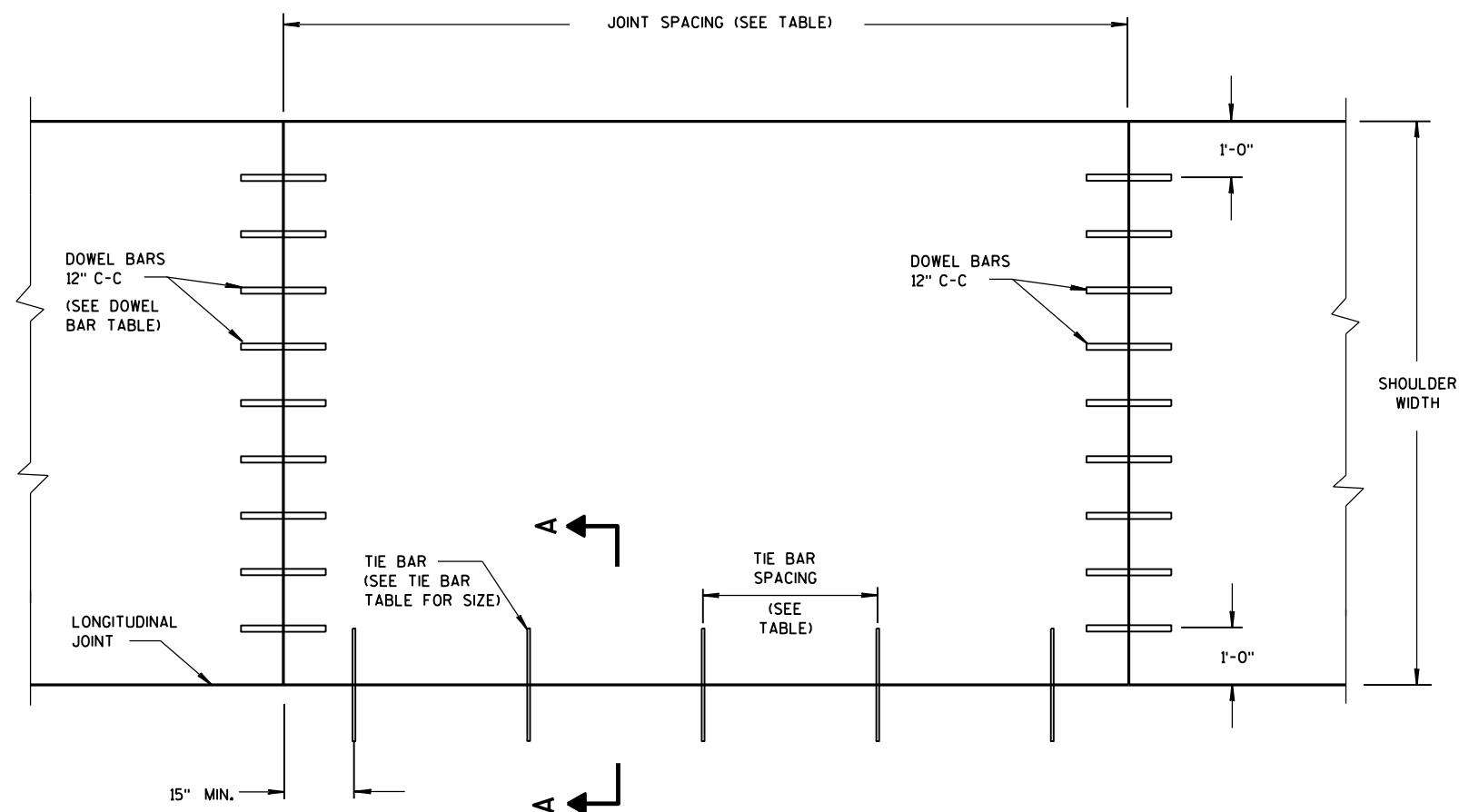
LEGEND

- POST MOUNTED SIGN
- REMOVING PAVEMENT MARKING
- DRUM WITH/WITHOUT WARNING LIGHT, TYPE C (STEADY-BURN)
- TEMPORARY PRECAST CONCRETE BARRIER
- TRAILER MOUNTED TRAFFIC SIGNAL
- DIRECTION OF TRAFFIC FLOW

BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016 /S/ Ahmet Demirbilek
DATE STATE ELECTRICAL ENGINEER
FHWA



PLAN VIEW
CONCRETE PAVEMENT SHOULDER

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.

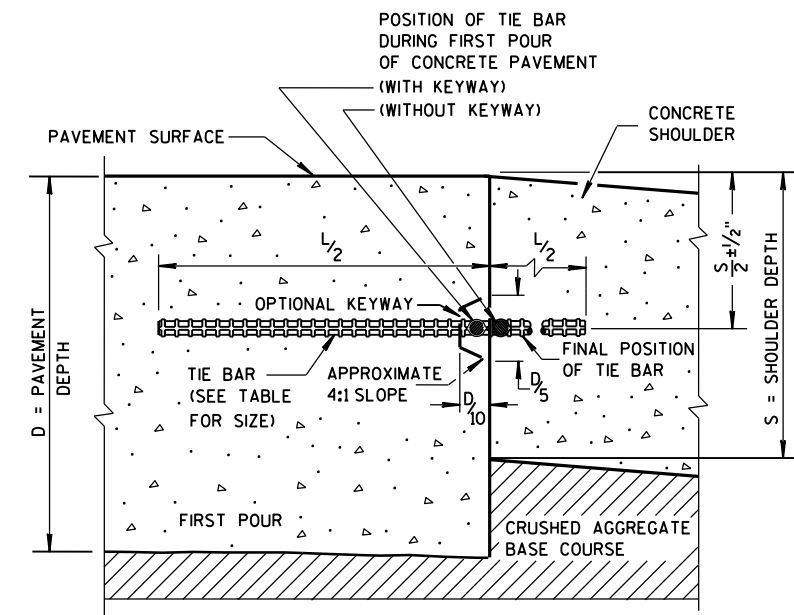
GENERAL NOTES

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.

TRANSVERSE JOINT DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

FINISH THE SHOULDER PAVEMENT CONFORMING TO SUBSECTION 415.3.8 OF THE STANDARD SPECIFICATIONS.

TIE BARS SHALL CONFORM TO SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.



SECTION A-A
LONGITUDINAL CONSTRUCTION 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'

*** FOR DOWELED CONCRETE SHOULDERS WITH TRAPEZOIDAL CROSS SECTIONS, CHOSE THE APPROPRIATE DOWEL BAR DIAMETER BASED ON THE SMALLER PAVEMENT DEPTH (LIKELY THE OUTSIDE EDGE OF THE SHOULDER). IF USING BASKETS, USE BASKETS FOR THE AVERAGE THICKNESS OF THE CROSS SECTION.

CONCRETE PAVEMENT SHOULDERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June, 2015

DATE

FHWA

/S/ Peter Kemp, P.E.

PAVEMENT SUPERVISOR

GENERAL NOTES

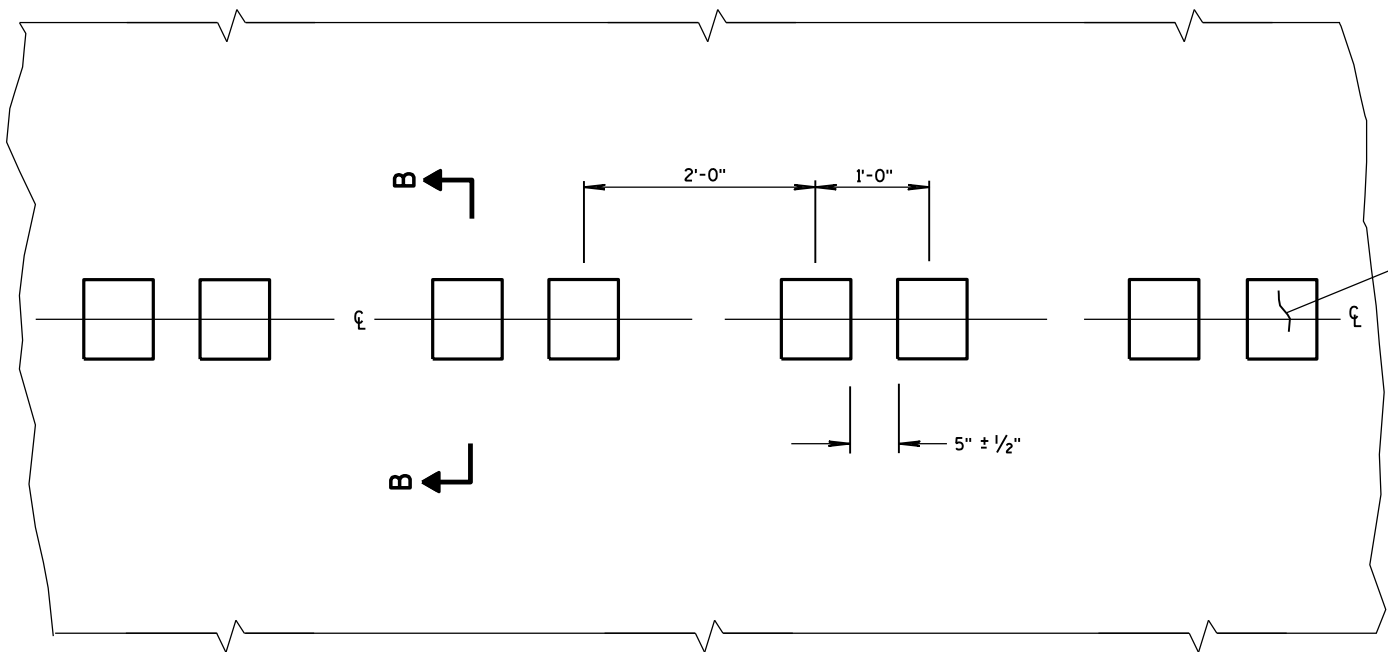
DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

DO NOT MILL CENTER LINE GROOVES THROUGH ANY INTERSECTION, MARKED CROSSWALK, NON-MOTORIZED PATH CROSSING, OR SNOWMOBILE CROSSING.

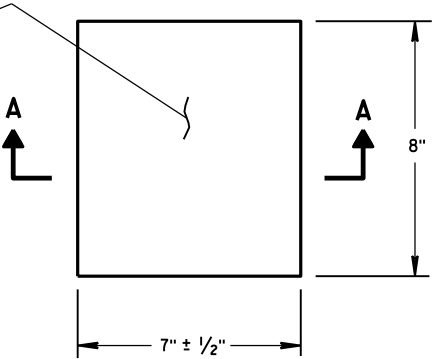
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

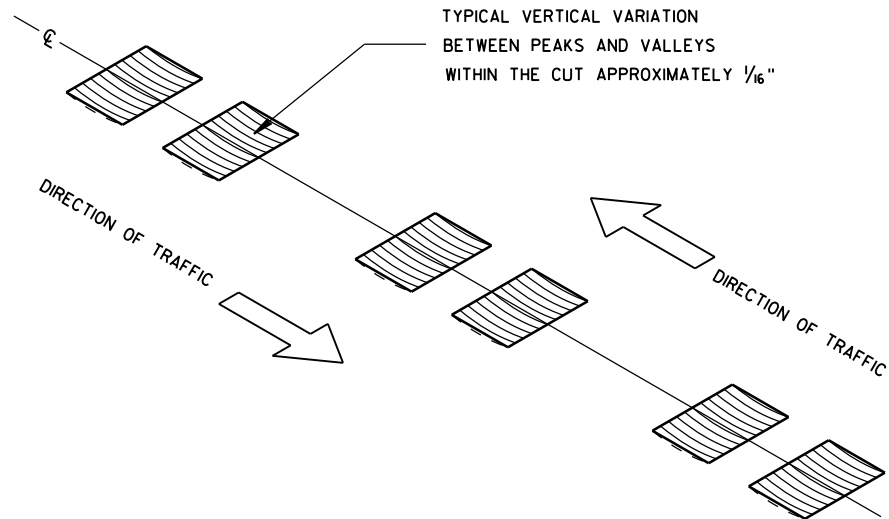
- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS, WHEN DIRECTED BY THE ENGINEER.



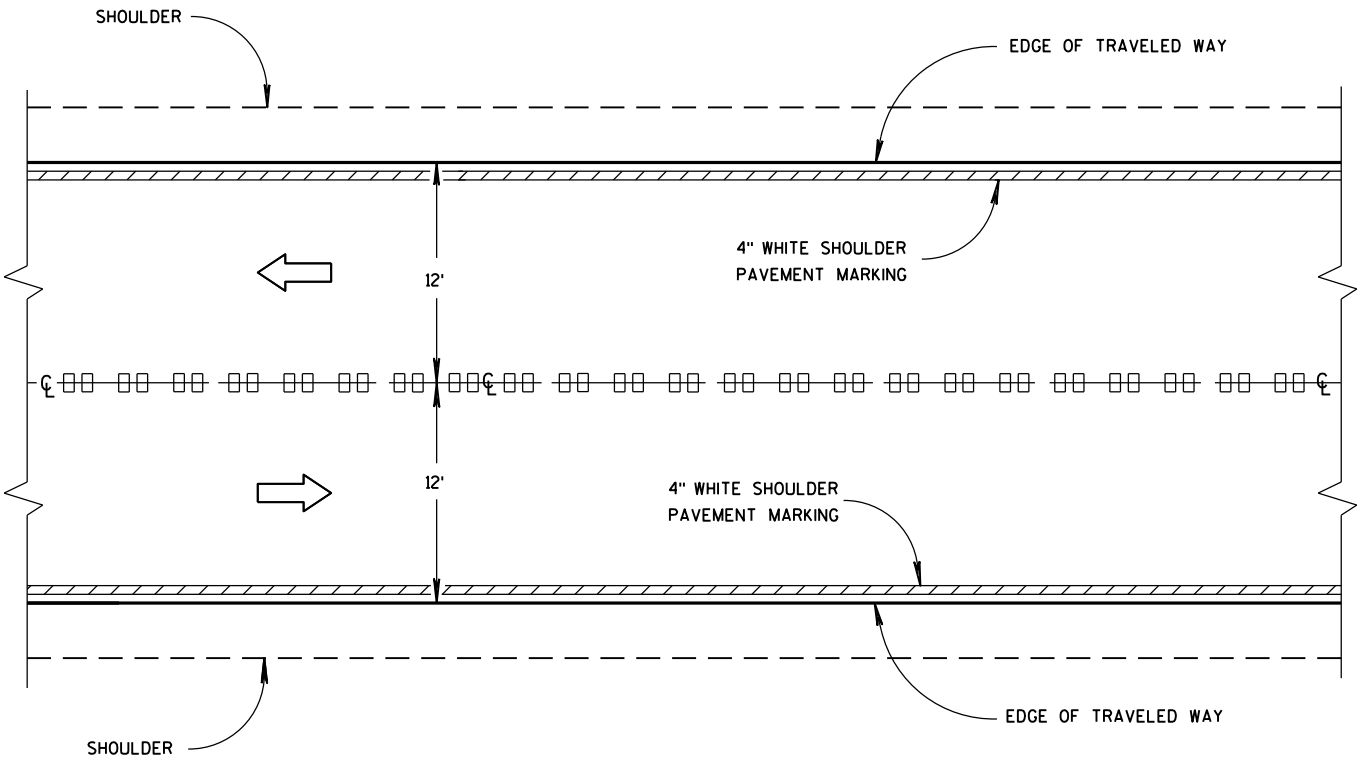
PLAN VIEW
CENTER LINE WITH GROOVES



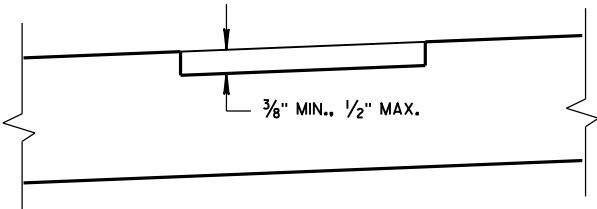
PLAN VIEW
(SINGLE GROOVE)



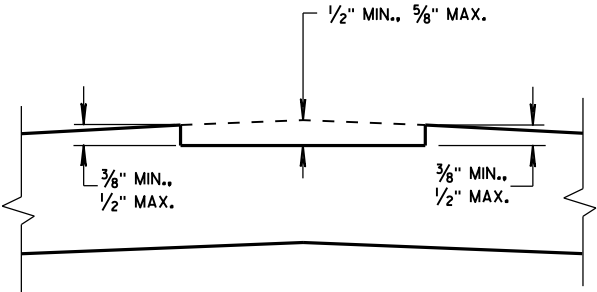
ISOMETRIC



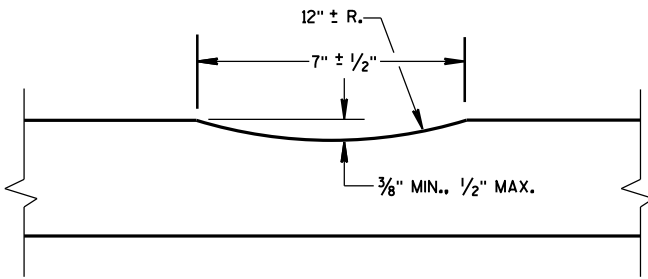
CENTER LINE GROOVES ON TWO-WAY ROADWAYS



SECTION B-B
SUPERELEVATED ROADWAY



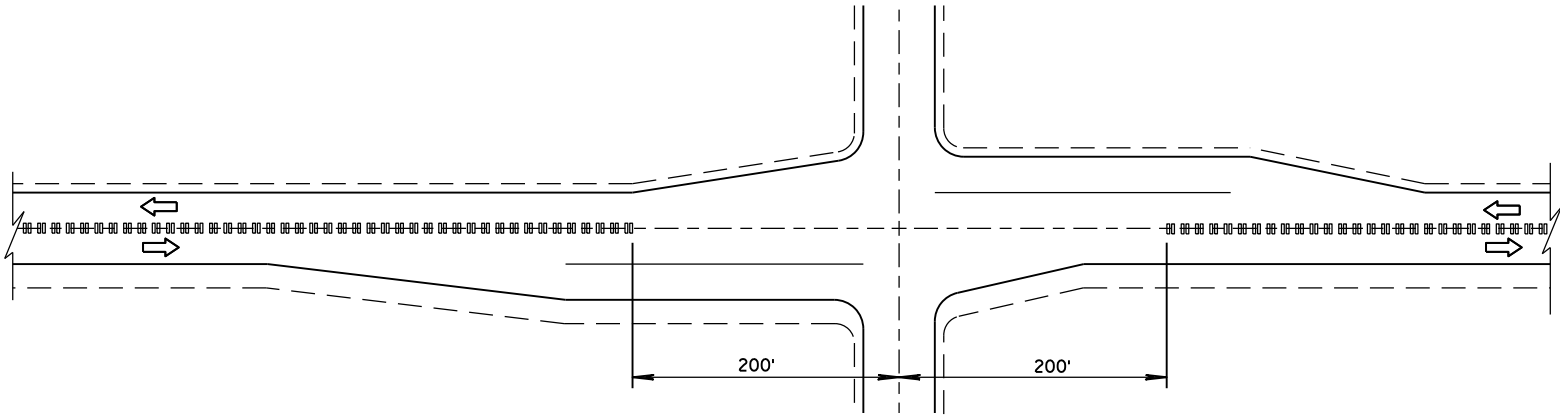
SECTION B-B
CROWNED ROADWAY



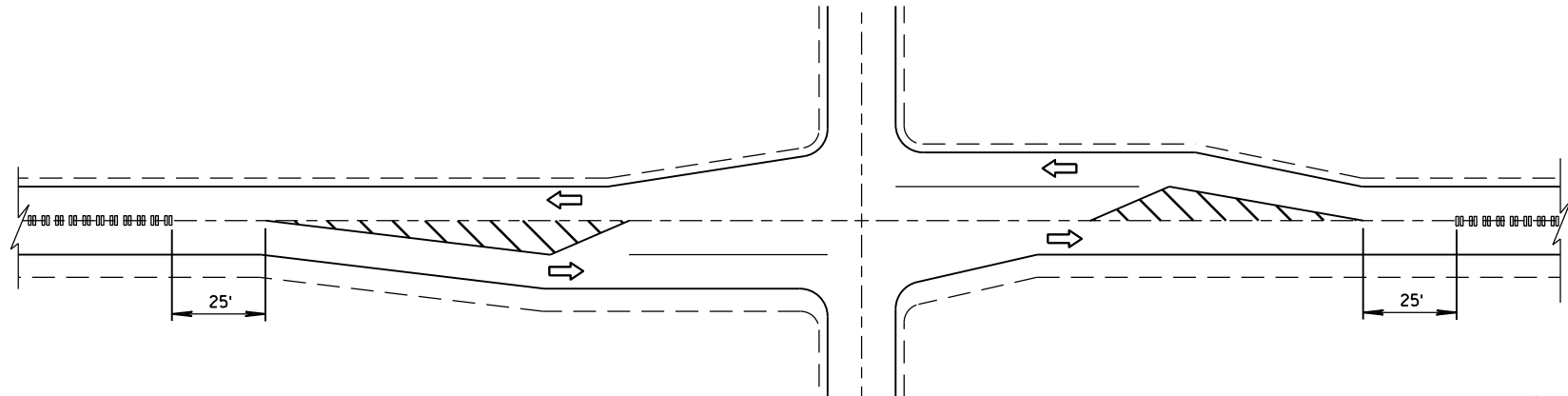
SECTION A-A

2-LANE RURAL
CENTER LINE RUMBLE STRIP,
MILLING

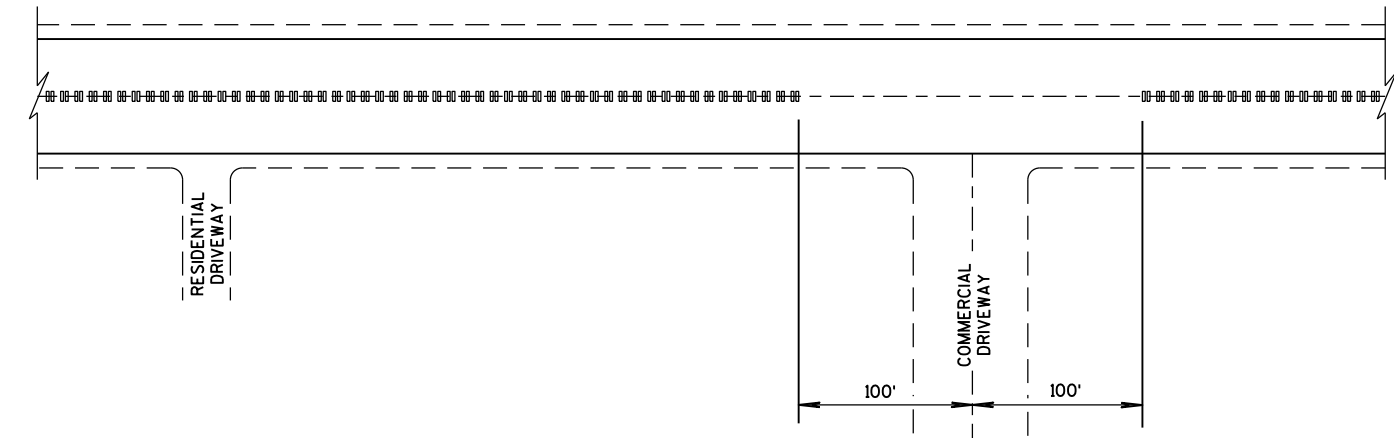
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



CENTER LINE GROOVES AT INTERSECTIONS

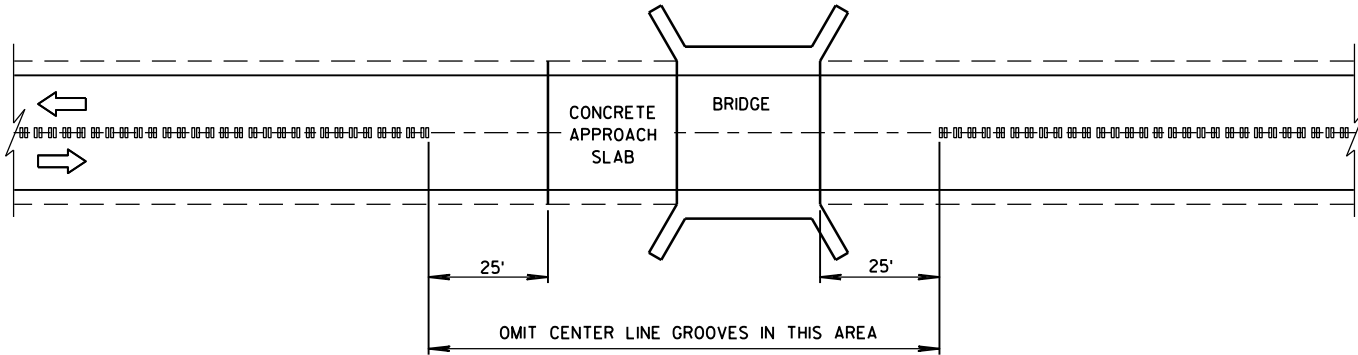


CENTER LINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)

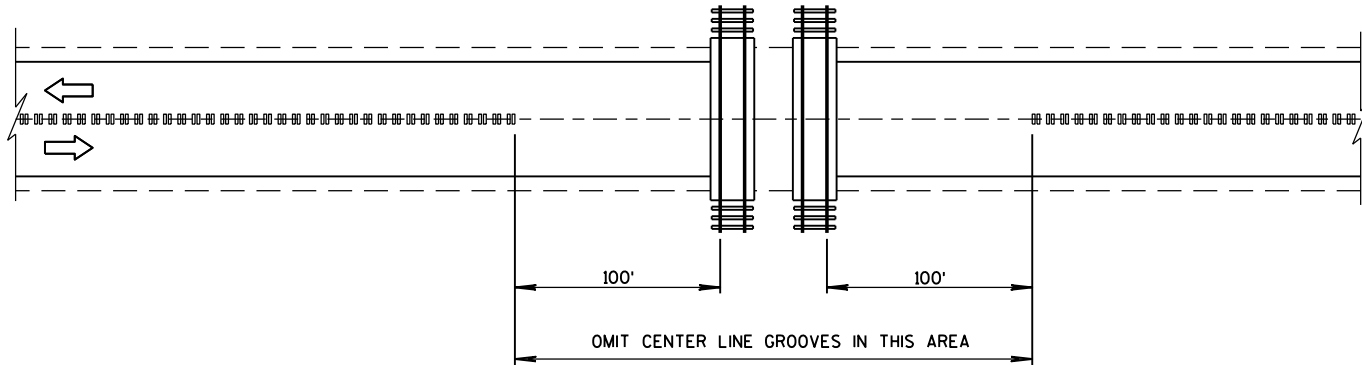


CENTER LINE GROOVES AT DRIVEWAYS¹

¹ CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS, WHEN DIRECTED BY THE ENGINEER.

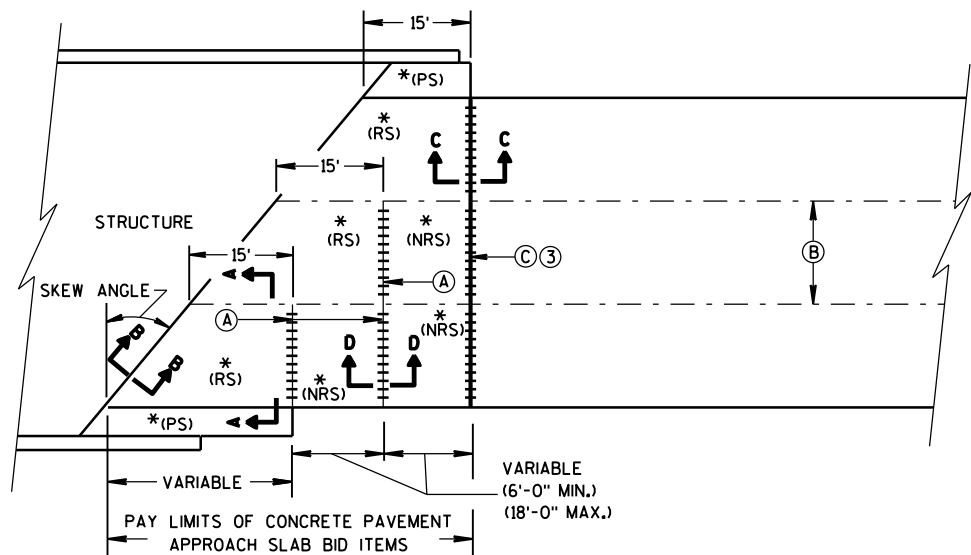


CENTER LINE GROOVES AT BRIDGES

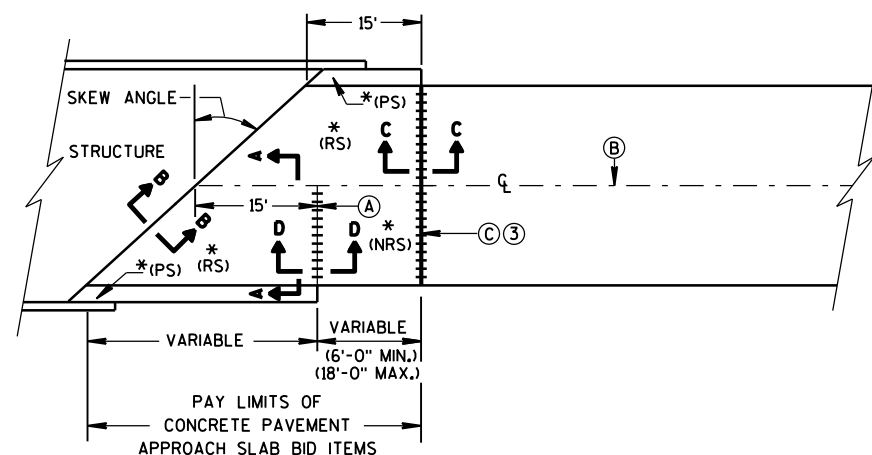


CENTER LINE GROOVES AT RAILROADS

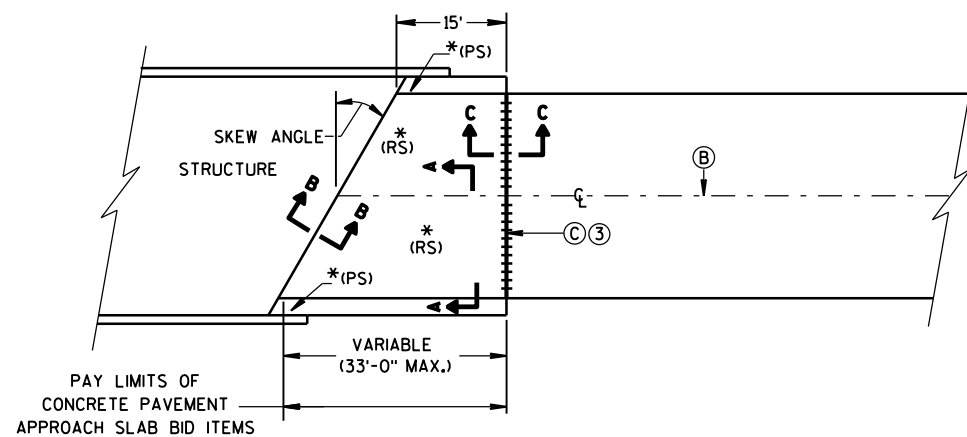
2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 5/15/2013 DATE	/S/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



**SKewed APPROACH
(PAVEMENT MORE THAN 2 LANES)**



**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**

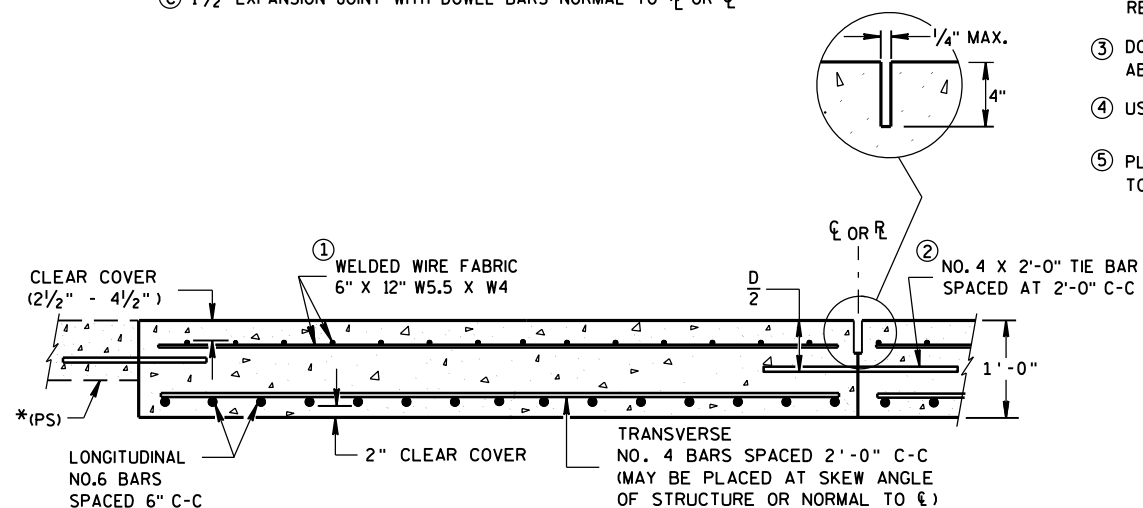


**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')
APPROACH SLAB AND ADJACENT PAVEMENT**

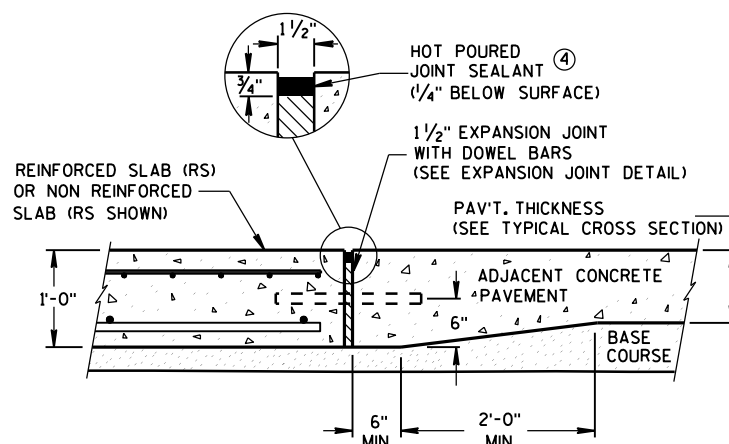
* (RS) = REINFORCED CONCRETE SLAB
* (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
(SEE DETAILS ELSEWHERE IN THE PLAN)
* (NRS) = NON-REINFORCED CONCRETE SLAB

*** STANDARD DOWEL BAR DIAMETER
(SEE SDD 13C11, & SDD 13C13)

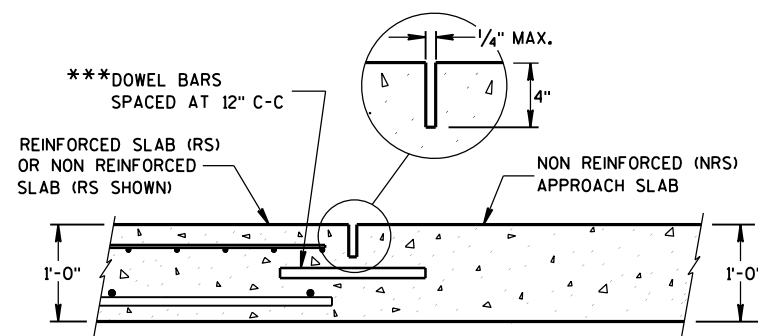
- (A) STANDARD CONTRACTION JOINT NORMAL TO ℓ OR ℓ_c
(B) STANDARD LONGITUDINAL JOINT WITH TIE BARS.
(C) 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO ℓ OR ℓ_c



**SECTION A-A
REINFORCEMENT POSITIONING DETAIL**



**SECTION C-C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**



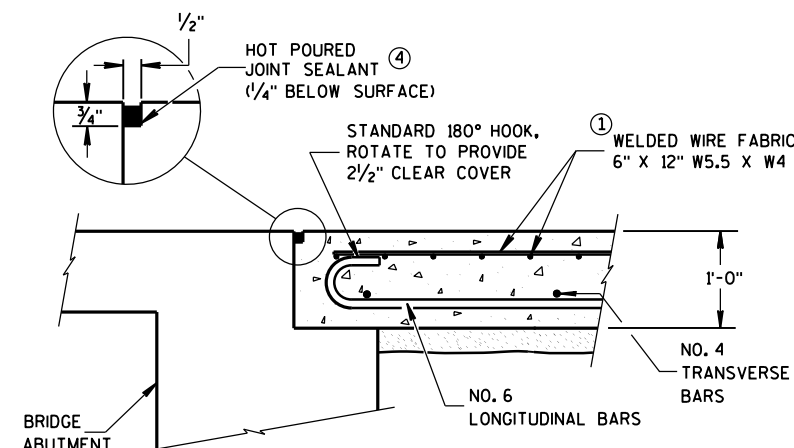
**SECTION D-D
CONTRACTION JOINT**

GENERAL NOTES

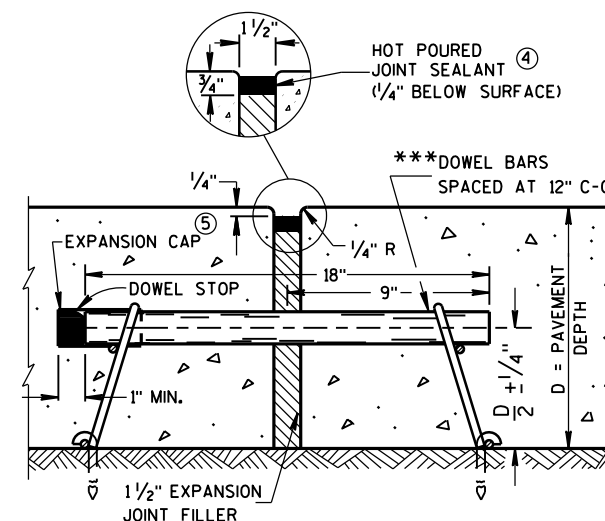
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

- THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2'-0" C-C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.
- THE CONTRACTOR MAY OMIT TIE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.
- DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- USE A JOINT SEALANT MEETING THE REQUIREMENTS OF ASTM D6690.
- PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.



**SECTION B-B
BEND DETAIL
BOTTOM REINFORCEMENT**

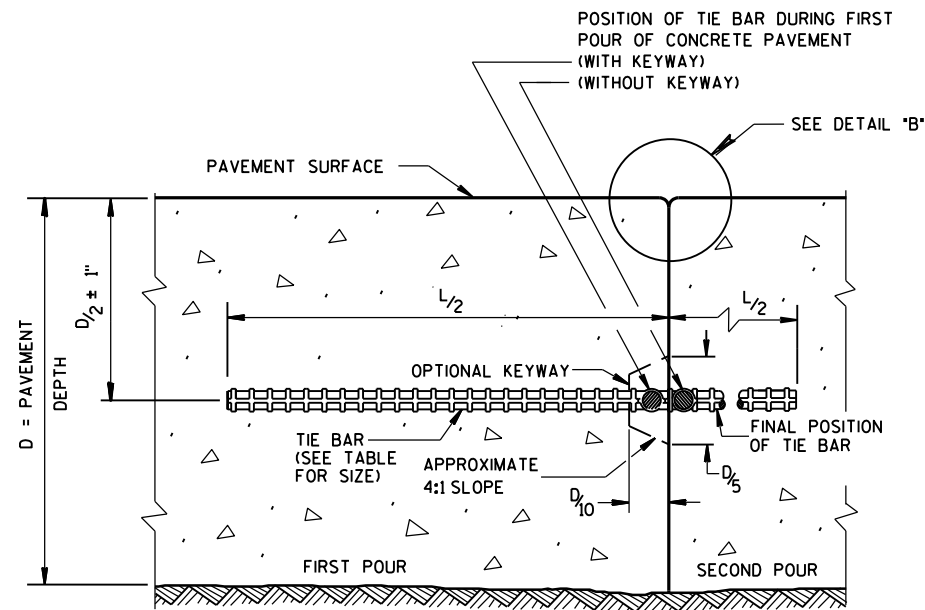


EXPANSION JOINT DETAIL

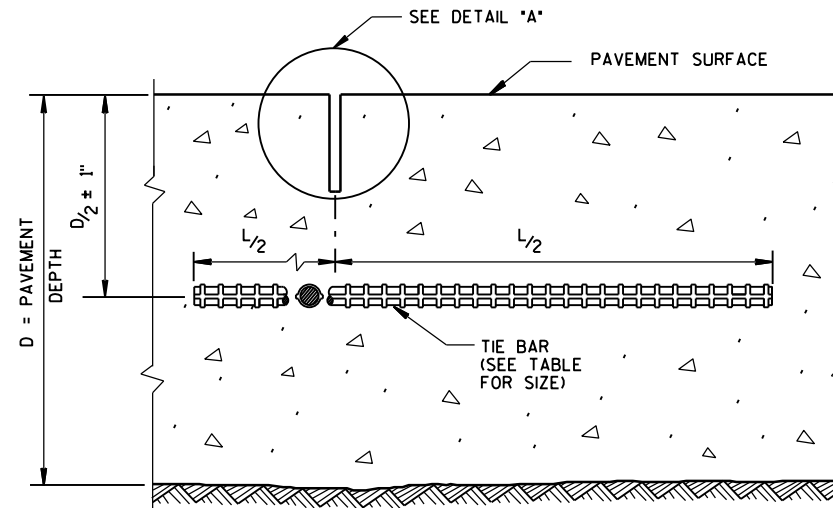
**CONCRETE PAVEMENT
APPROACH SLAB**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



CONSTRUCTION JOINT



SAWED JOINT

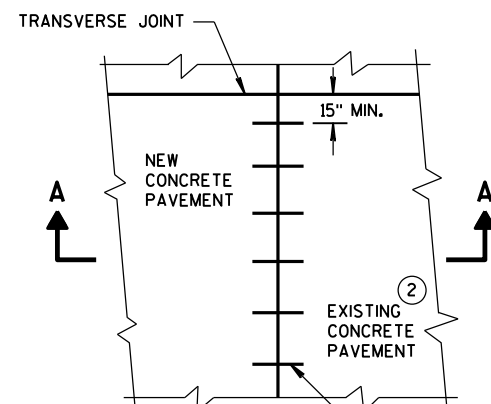
GENERAL NOTES

DO NOT SEAL OR FILL LONGITUDINAL JOINTS.

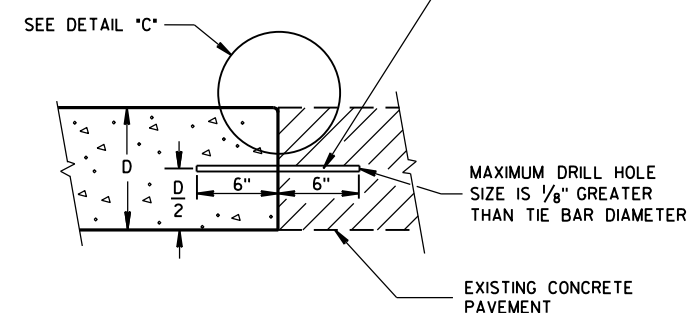
CREATE A LONGITUDINAL JOINT FOR PAVEMENT WIDTHS GREATER THAN 15 FEET.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

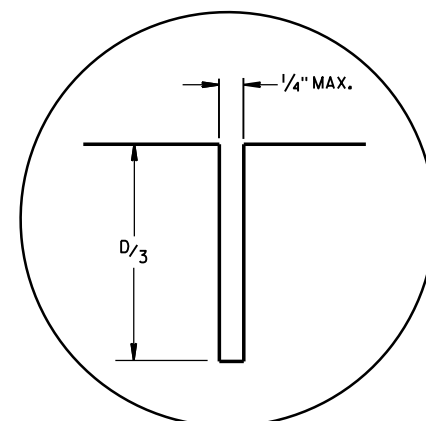
- ① ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.
- ② PAVEMENT THAT WAS IN PLACE PRIOR TO THE CONTRACT.



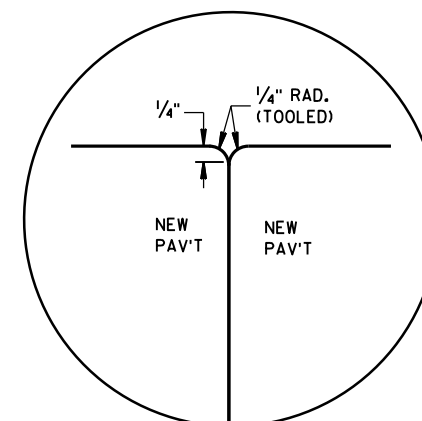
PLAN VIEW



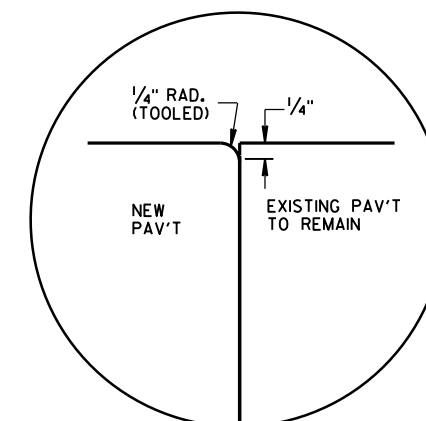
SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT
TIE BARS ANCHORED
INTO EXISTING PAVEMENT



DETAIL "A"



DETAIL "B"



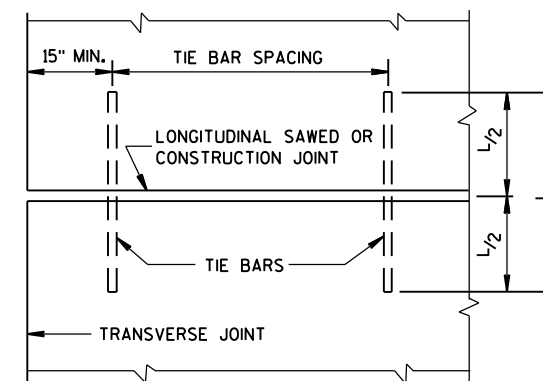
DETAIL "C"

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.

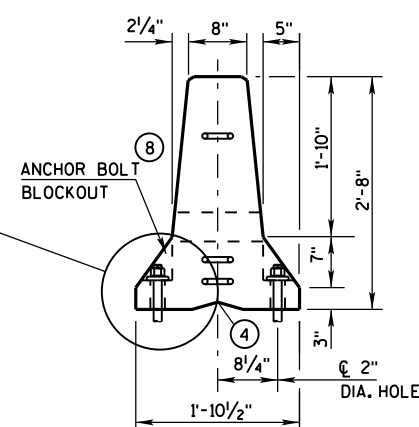
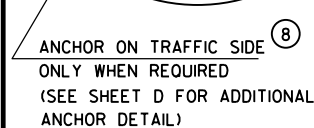


PLAN VIEW
SHOWING LOCATION OF TIE BARS

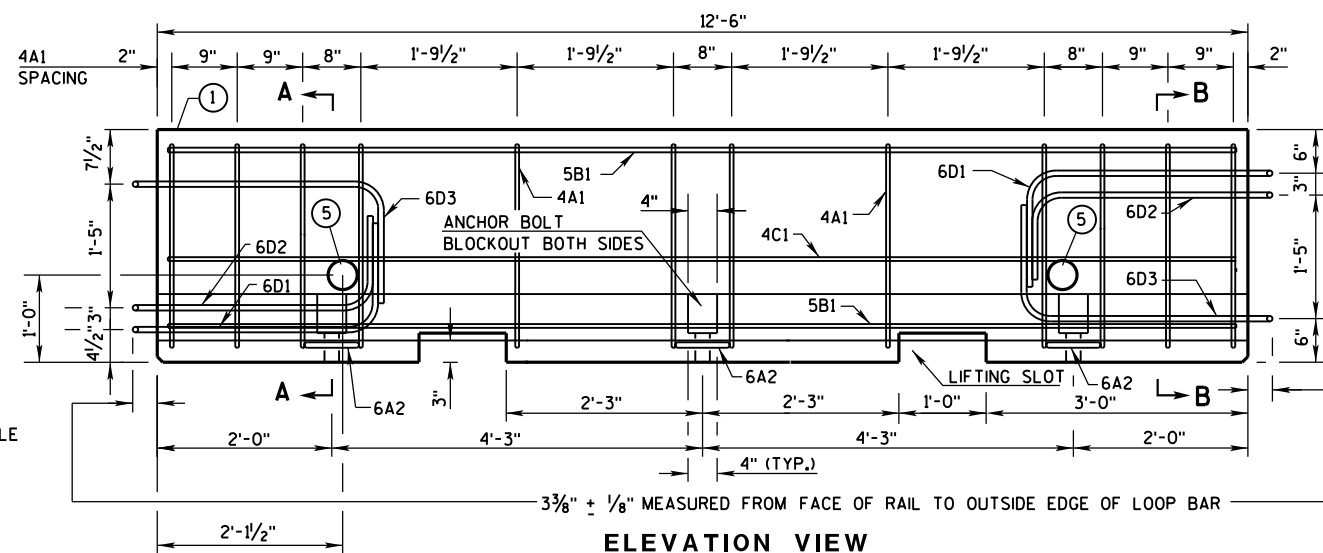
CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

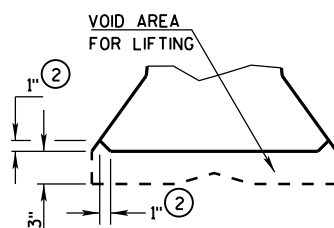
APPROVED
June, 2015 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR
FHWA



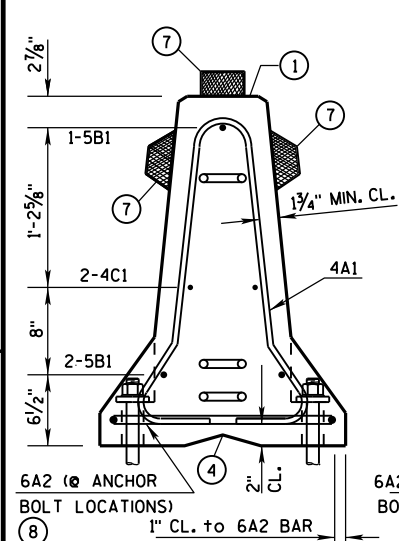
END VIEW



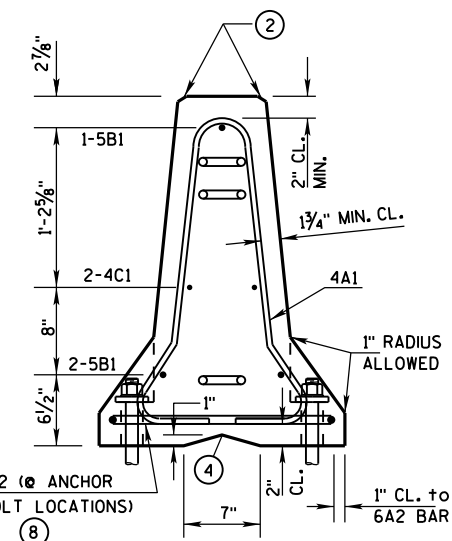
ELEVATION VIEW



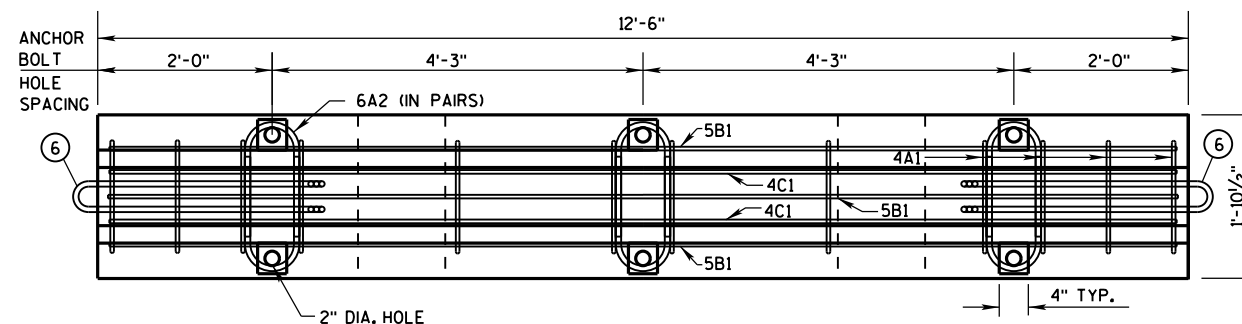
DETAIL "B"
LIFTING SLOT DETAIL



SECTION A-A
(STIRRUP PLACEMENT)

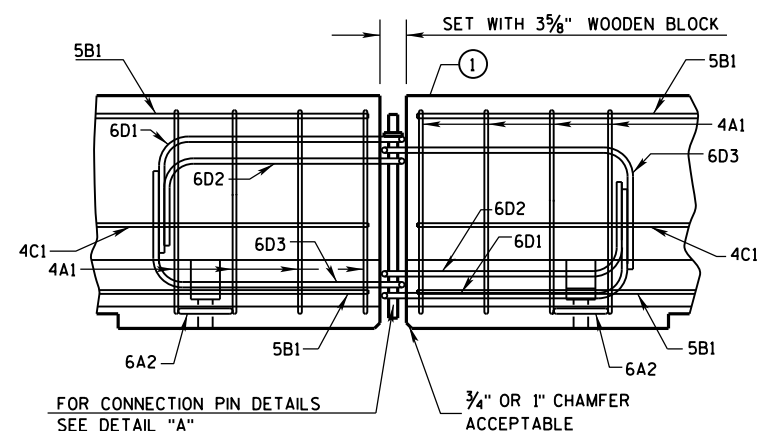


SECTION B-B
(STIRRUP PLACEMENT)

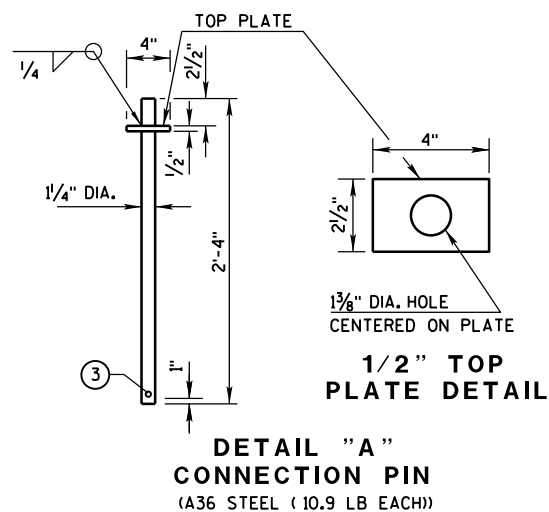


PLAN VIEW

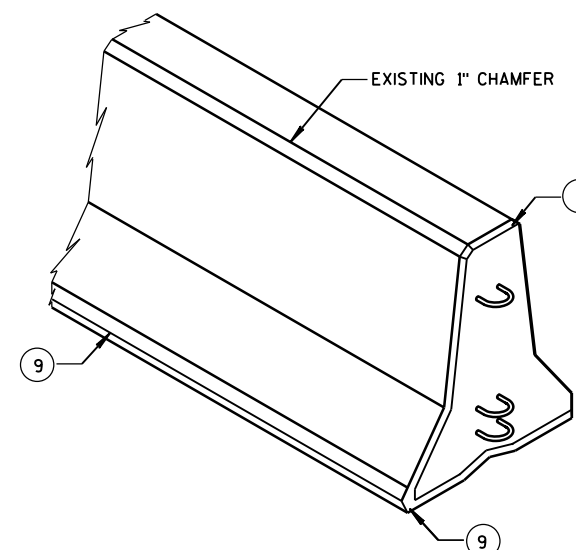
DETAILS OF BARRIER SECTION



DETAILS OF BARRIER CONNECTION



DETAIL "A"
CONNECTION PIN
(A36 STEEL (10.9 LB EACH))



GENERAL NOTES

THESE GENERAL NOTES APPLY TO SHEETS 14B7-14(d) THRU 14B7-14(h).

DO NOT INTERMIX CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" (CBTP12.5) WITH OTHER TEMPORARY CONCRETE BARRIERS.

USE ASTM A-615, GRADE 60, DEFORMED STEEL BARS FOR BARS 4A1, 6A2, 5B1 AND 4C1 IN THE BARRIER SECTION AND FOR 4V1, 4V2, 4V3, 4V4, 4V5, 4V6, 4F1, 4F2 AND 5F3 IN THE BARRIER TAPER SECTION.

LOOP BARS 6D1, 6D2 AND 6D3 SHALL BE $\frac{3}{4}$ " SMOOTH STEEL BARS WITH A MINIMUM YIELD STRENGTH OF 60 KSI, A TENSILE STRENGTH OF NOT LESS THAN 1.25 TIMES THE YIELD STRENGTH BUT A MINIMUM OF 80 KSI, A MINIMUM 14% ELONGATION IN 8 INCHES AND PASSING A 180 DEGREE BEND TEST USING A $3\frac{1}{2}$ " PIN BEND DIAMETER FOR BEND TESTS. THE LOOPS SHALL BE INSTALLED WITHIN $\frac{1}{8}$ " OF THE PLAN DIMENSION.

CONSTRUCT LIFTING SLOTS AS SPECIFIED ON THE PLANS TO FACILITATE THE DRAINAGE OF WATER AFTER INSTALLATION.

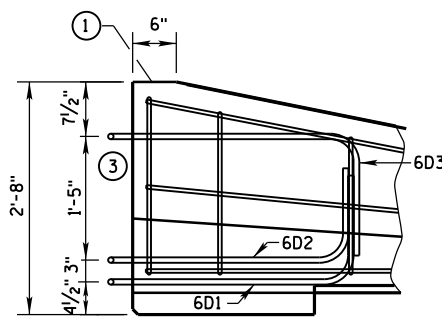
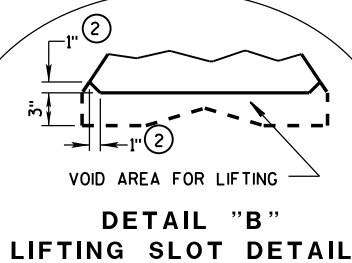
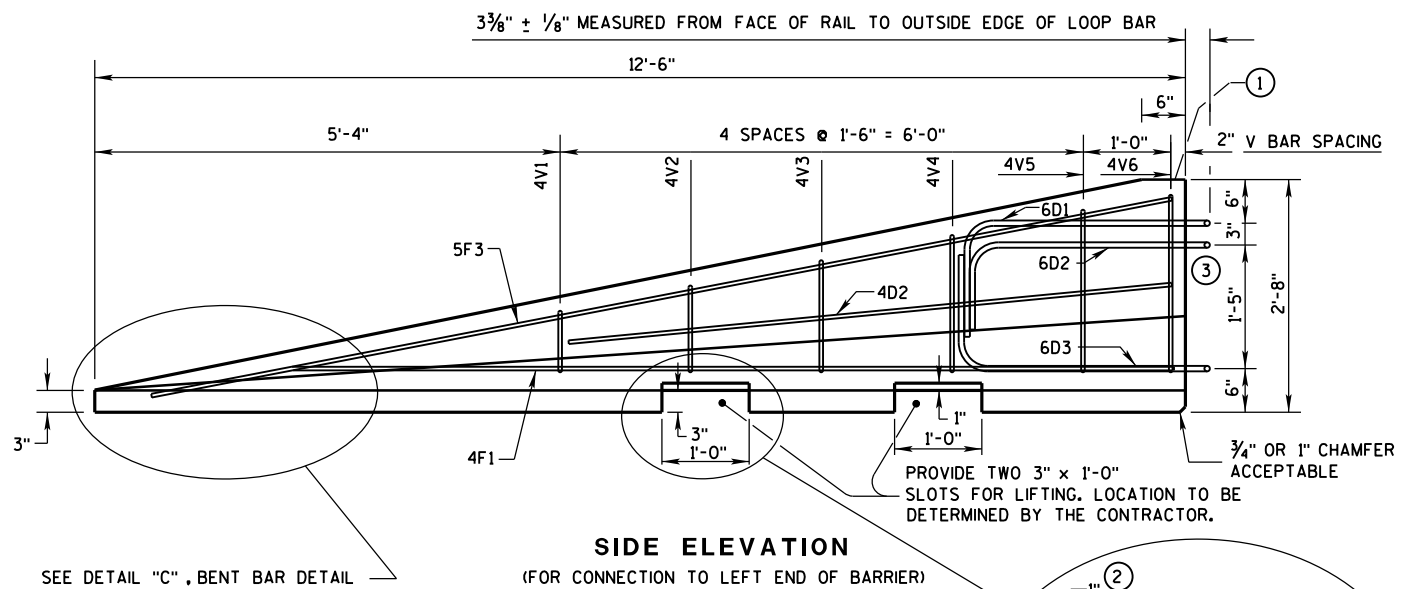
PLACE BARRIER ON A PAVED SURFACE. REMOVE ALL LOOSE DIRT AND SAND FROM THE ROADWAY SURFACE PRIOR TO PLACEMENT OF THE BARRIER.

INSTALL MECHANICAL OR ADHESIVE ANCHORS PER MANUFACTURER'S RECOMMENDATIONS.
PROVIDE MANUFACTURER'S INFORMATION TO PROJECT ENGINEER.

- ① MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
 - a. TYPE: WICBTP
 - b. MANUFACTURER
 - c. DATE MANUFACTURED (MONTH AND YEAR)
- ② 1" CHAMFER TO PREVENT SPALLING.
- ③ A $\frac{3}{8}$ " HOLE IN THE CONNECTION PIN, AT THE LOCATION SHOWN, IS ACCEPTABLE, BUT NOT REQUIRED..
- ④ "V" NOTCH IS OPTIONAL.
- ⑤ THE 4" DIAMETER, 11 GAUGE STEEL, ROUND MECHANICAL TUBING SLEEVE FOR LIFTING (OPTIONAL).
- ⑥ NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.
- ⑦ USE DELINEATORS CONFORMING TO SECTION 633 OF THE STANDARD SPECIFICATIONS. CONTRACTOR MAY USE ALTERNATE SHAPES AND HOUSING. INSTALL DELINEATORS ACCORDING TO MANUFACTURES INSTRUCTION. INSTALL YELLOW REFLECTORS WHEN BARRIER IS LOCATED TO THE LEFT OF TRAFFIC AND WHITE REFLECTORS WHEN BARRIER IS LOCATED TO THE RIGHT OF TRAFFIC. SPACE DELINEATORS A MAXIMUM OF 25 FEET APART. PROVIDE TOP MOUNTED DELINEATORS IN ADDITION TO THE SIDE MOUNTED DELINEATORS ON ALL BARRIER INSTALLATIONS LOCATED ON A CURVED ALIGNMENT LONGER THAN 200 FEET AND ON BARRIERS USED TO SEPARATE OPPOSING TRAFFIC.
- ⑧ SEE SHEET D FOR ANCHORING CRITERIA.
- ⑨ 1" CHAMFER OPTIONAL.

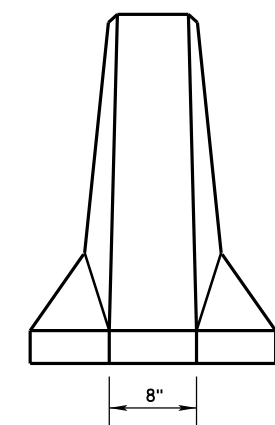
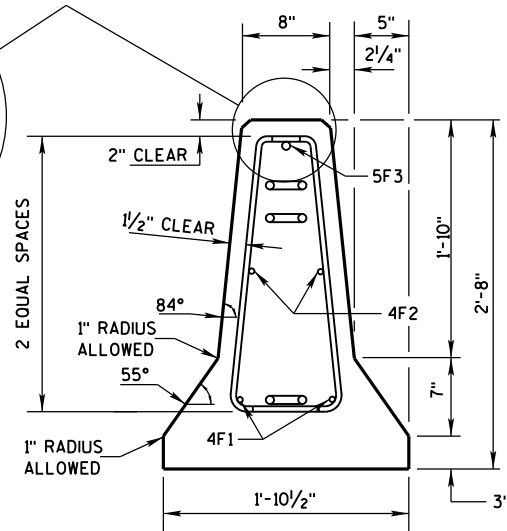
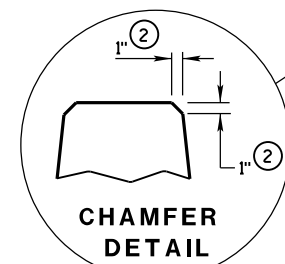
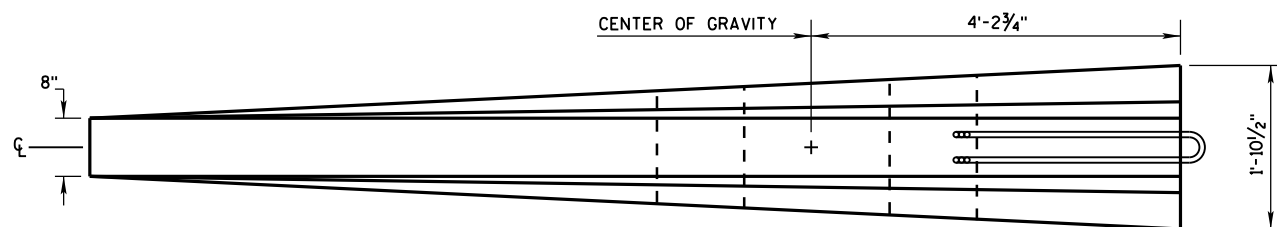
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

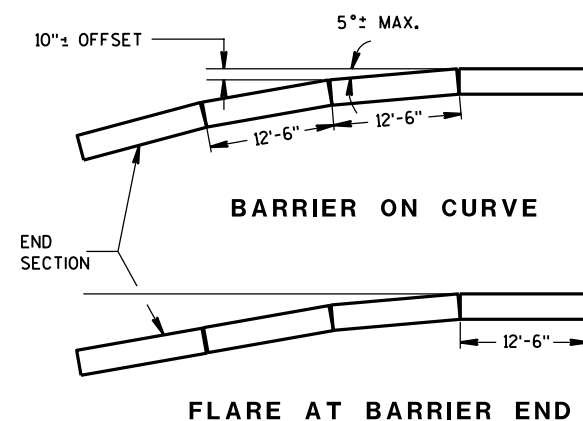


GENERAL NOTES

- ① MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
 - a. TYPE WICBTP
 - b. MANUFACTURER
 - c. DATE MANUFACTURED (MONTH AND YEAR)
- ② 1" CHAMFER TO PREVENT SPALLING.
- ③ NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.



DETAILS OF BARRIER TAPER SECTION



POSTED SPEED, (MPH)	FLARE RATE
40 OR LESS	6:1
45 OR GREATER	8:1

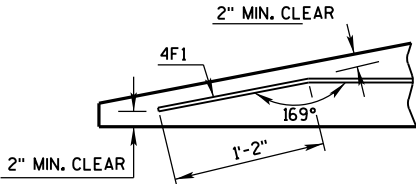
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

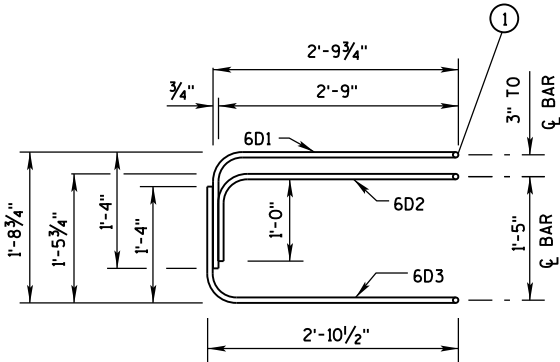
BARRIER TAPER SECTION
BILL OF MATERIALS

(PER 12'-6" BARRIER TAPER SECTION)

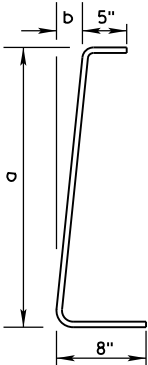
BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
4V1	4	2	1'-11"
4V2	4	2	2'-2"
4V3	4	2	2'-6"
4V4	4	2	2'-9"
4V5	4	2	3'-2"
4V6	4	2	3'-4"
4F1	4	2	12'-0"
4F2	4	2	7'-6"
5F3	5	1	11'-9"
LOOP ASSEMBLY			
6D1	6	1	8'-5"
6D2	6	1	7'-7"
6D3	6	1	8'-6"



DETAIL "C"
BENT BAR DETAIL



ELEVATION
LOOP BAR ASSEMBLY



BAR	a	b
V1	10"	1"
V2	1'-1"	1 1/4"
V3	1'-5"	1 5/8"
V4	1'-8"	1 7/8"
V5	2'-0 1/2"	2 3/8"
V6	2'-3"	2 3/4"

4V BARS
2 AT EACH SIZE REQUIRED
FOR STIRRUP ASSEMBLY

TAPER BARRIER SECTION

GENERAL NOTES

① NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.

BARRIER SECTION
BILL OF MATERIALS

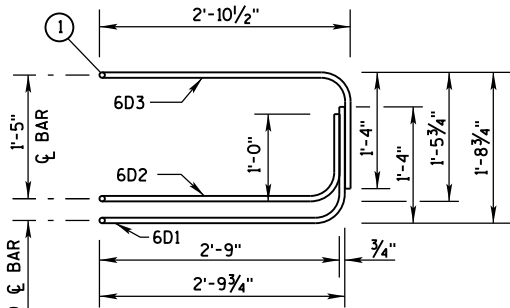
(PER 12'-6" BARRIER SECTION)

BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
4A1	4	12	6'-0"
6A2	6	6	2'-11"
5B1	5	3	12'-2"
4C1	4	2	12'-2"
LOOP ASSEMBLY			
6D1	6	2	8'-5"
6D2	6	2	7'-7"
6D3	6	2	8'-6"

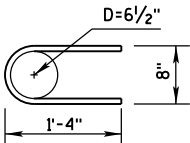


PLAN VIEW
LOOP BAR ASSEMBLY

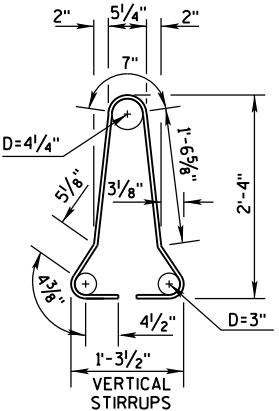
(MARKED END SHOWN, INVERT FOR OTHER END)



ELEVATION VIEW



6A2

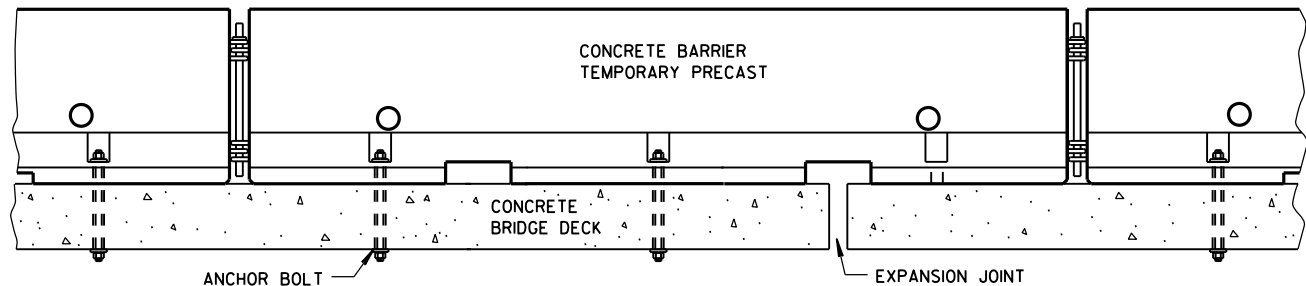
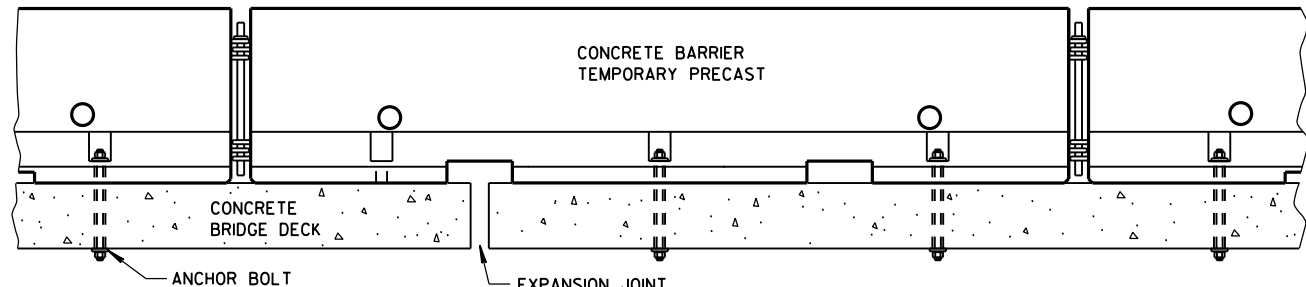


4A1

BARRIER SECTION

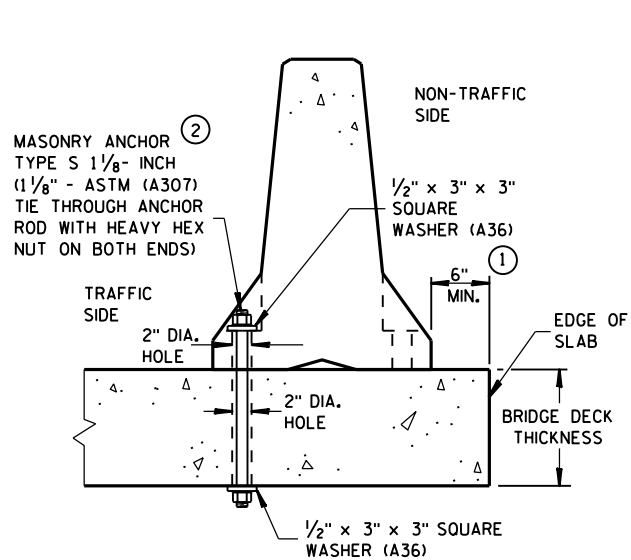
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



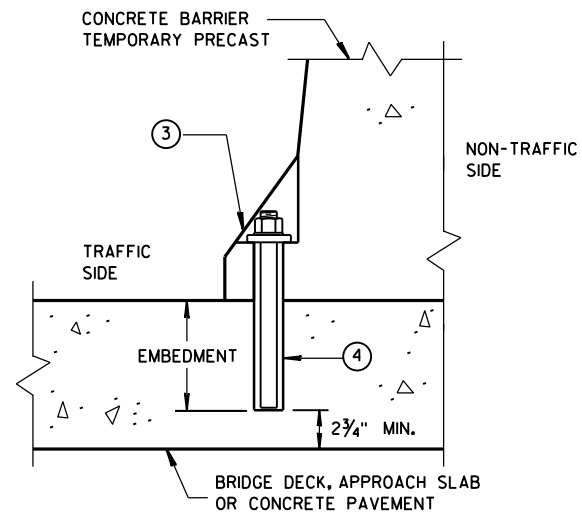
TREATMENT AT BRIDGE DECK EXPANSION JOINTS

(NO SINGLE CONCRETE BARRIER SECTION SHALL BE ANCHORED TO BOTH THE BRIDGE DECK AND THE APPROACH SLAB. ALL ANCHOR BOLT LOCATIONS SHALL BE ANCHORED TO THE DECK IN ACCORDANCE WITH THE DETAIL. NO MORE THAN ONE ANCHOR BOLT SHALL BE ELIMINATED FROM A BARRIER SECTION WHEN SPANNING AN EXPANSION JOINT.)



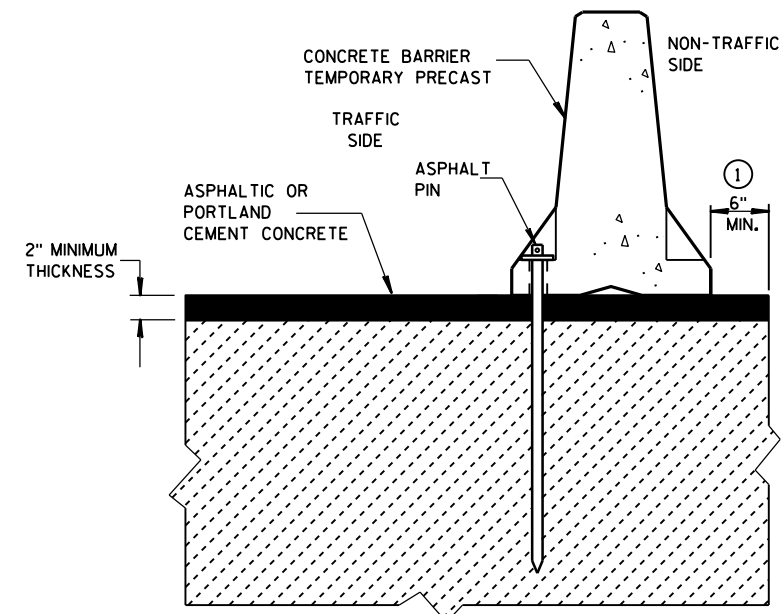
THROUGH BOLTED ANCHOR INSTALLATION ON BRIDGE DECK

(DO NOT USE ON CONCRETE BRIDGE DECK WITH ASPHALT OVERLAY)



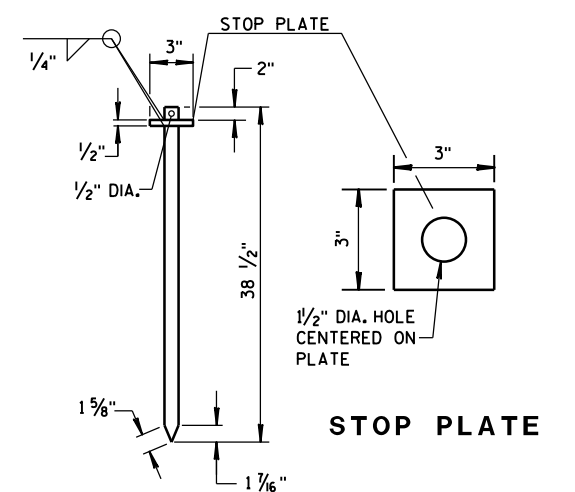
REMOVABLE ADHESIVE BONDED ANCHOR INSTALLATION ON CONCRETE BRIDGE DECK, CONCRETE APPROACH SLAB, OR CONCRETE PAVEMENT

(DO NOT USE ON CONCRETE WITH AN ASPHALTIC OVERLAY)

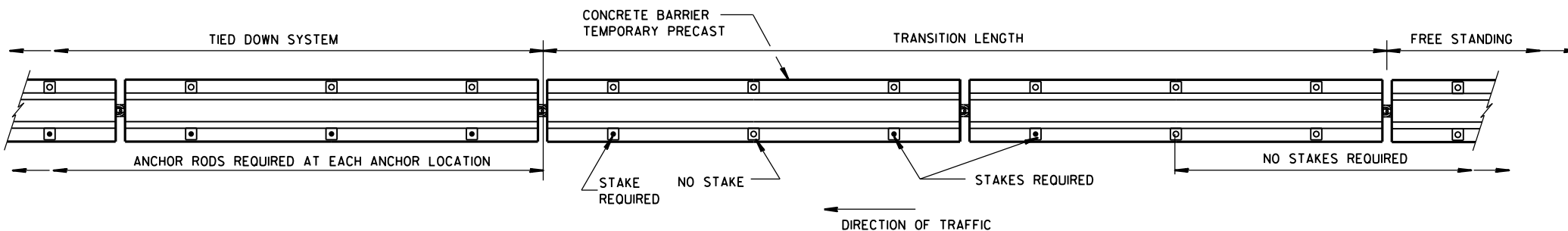


STAKE DOWN INSTALLATION FOR ASPHALTIC OR PORTLAND CEMENT CONCRETE SURFACE

(STAKING IS INCIDENTAL TO CONCRETE BARRIER TEMPORARY PRECAST)



ASPHALT PIN
(ASTM A36 STEEL)



PLAN VIEW

FREE STANDING TRANSITION TO TIED-DOWN SYSTEM

(PLACE TRANSITION IN A TANGENT SECTION OF BARRIER PARALLEL TO THE ROADWAY. IF TRANSITION OCCURS ON STRUCTURAL SLAB, ANCHOR AS SHOWN.)

GENERAL NOTES

- ① CONCRETE BARRIER TEMPORARY PRECAST, 12'-6" SHALL BE ANCHORED IF:
THE DISTANCE TO A 2 FOOT OR GREATER DROPOFF THAT IS STEEPER THAN 3H : 1V,
FOR EXAMPLE THE EDGE OF A BRIDGE DECK OR A DROPOFF AT THE EDGE OF PAVEMENT,
IS LESS THAN 4 FEET FROM THE SIDE OF THE BARRIER CLOSEST TO THE DROPOFF
AND THE POSTED SPEED IS 45 MPH OR GREATER, OR

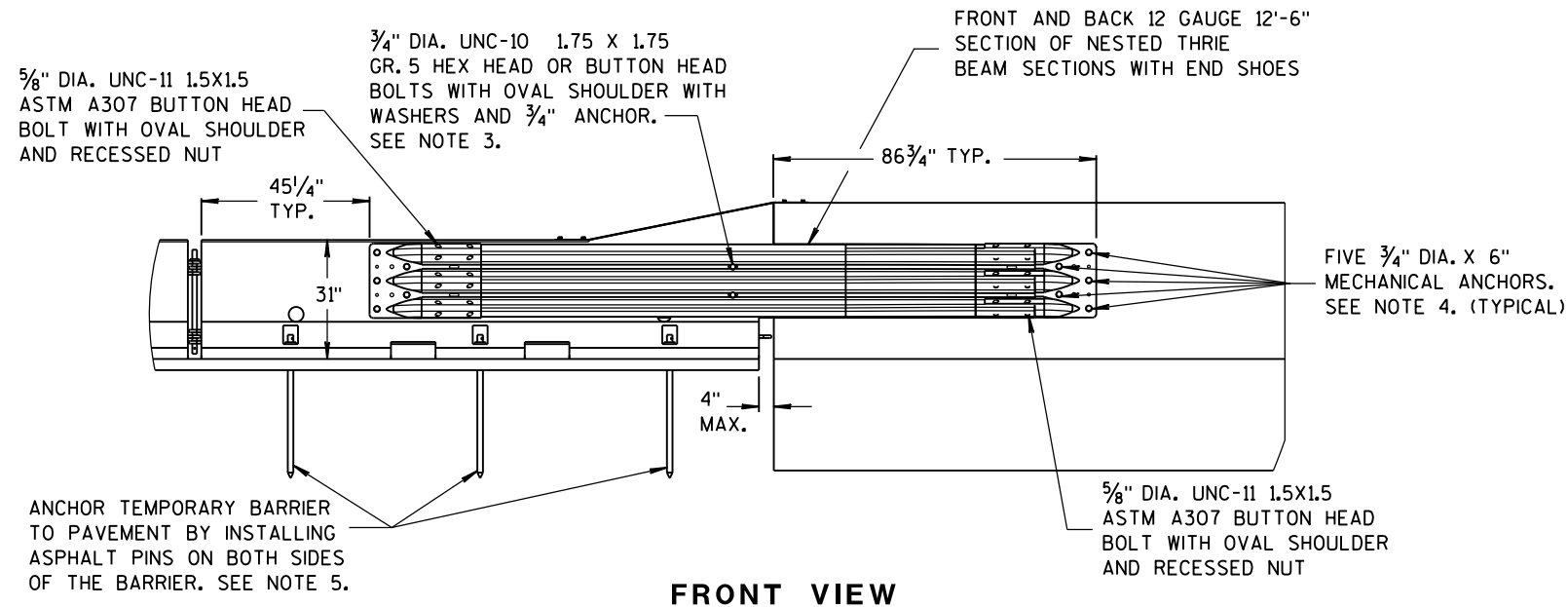
THE DISTANCE TO A 2 FOOT OR GREATER DROPOFF THAT IS STEEPER THAN 3H : 1V,
FOR EXAMPLE THE EDGE OF A BRIDGE DECK OR A DROPOFF AT THE EDGE OF PAVEMENT,
IS LESS THAN 2 FEET FROM THE SIDE OF THE BARRIER CLOSEST TO THE DROPOFF
AND THE POSTED SPEED IS 40 MPH OR LESS.
- ② ANCHORING IS INCIDENTAL TO CONCRETE BARRIER TEMPORARY PRECAST.

WITH THE APPROVAL OF THE ENGINEER, REMOVABLE ADHESIVE BONDED ANCHOR BOLT
INSTALLATION MAY BE USED IN LIEU OF THROUGH BOLTED ANCHOR INSTALLATION. THE ADHESIVE
BONDED ANCHOR BOLT MUST BE REMOVABLE. USE ASTM (A307) MASONRY ANCHORS TYPE
S 1 1/8"-INCH, EMBEDDED TO A DEPTH SUFFICIENT TO DEVELOP THE ULTIMATE CAPACITY OF THE
ANCHOR BOLT AND PROVIDE DOCUMENTATION TO CONFIRM THIS.

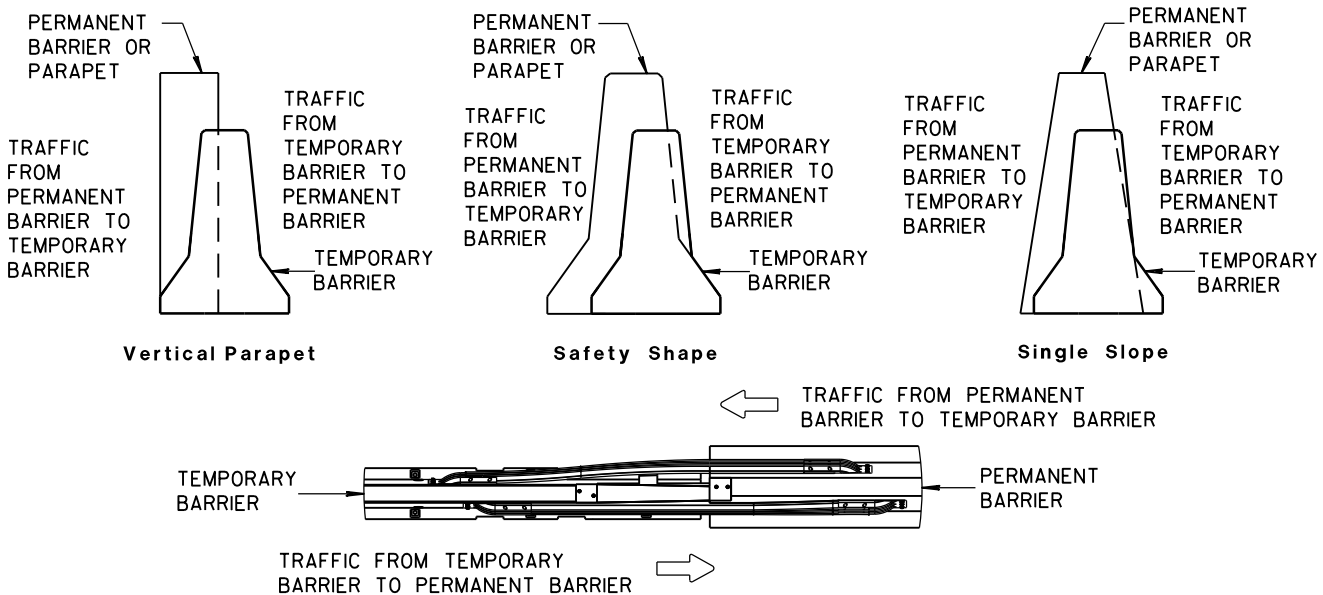
UPON REMOVAL OR RELOCATION OF THE BARRIER UNITS, REMOVE ALL ANCHOR BOLTS AND COMPLETELY
FILL IN THE REMAINING HOLES IN CONCRETE BRIDGE DECKS, CONCRETE APPROACH SLABS AND CON-
CRETE PAVEMENTS THAT ARE TO REMAIN, WITH A NON-SHRINK COMMERCIAL GROUT OR MATERIAL
IDENTIFIED ON THE CURRENT WISDOT APPROVED PRODUCTS LIST.
- ③ 1/8" DIAMETER A307 THREADED ROD, 1/2" x 3" x 3" SQUARE PLATE WASHER WITH ASTM A36 STEEL,
ASTM A563A HEAVY HEX NUT.
- ④ ADHESIVE ANCHORS WITH A MINIMUM BOND STRENGTH OF 1,800 PSI AND 5/4" EMBEDMENT. SEE 603.2
AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



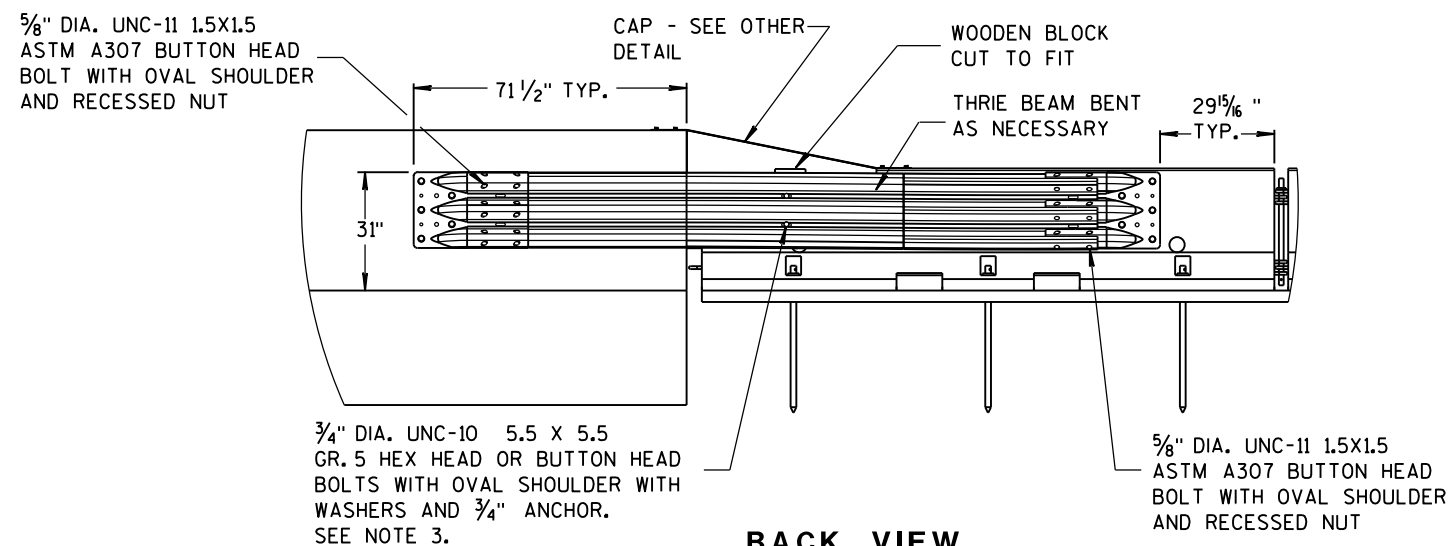
FRONT VIEW



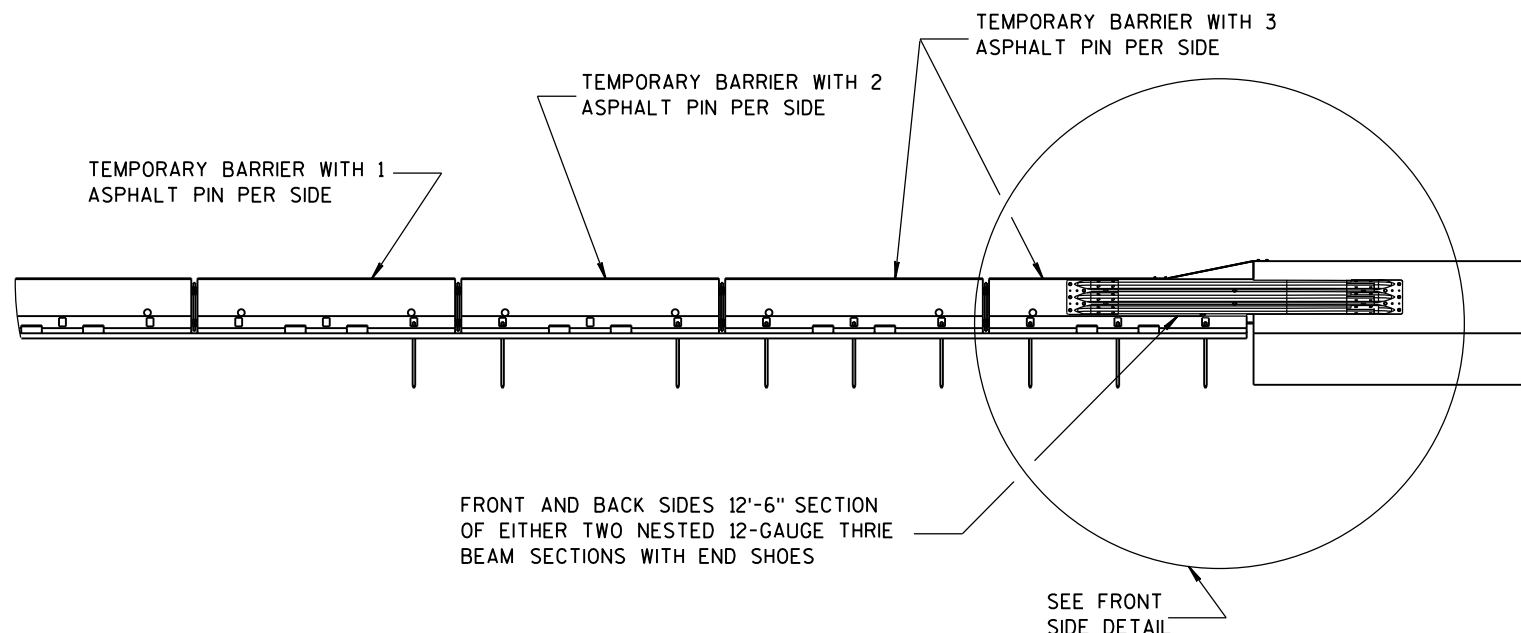
TEMPORARY BARRIER PLACEMENT FOR BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM

NOTES

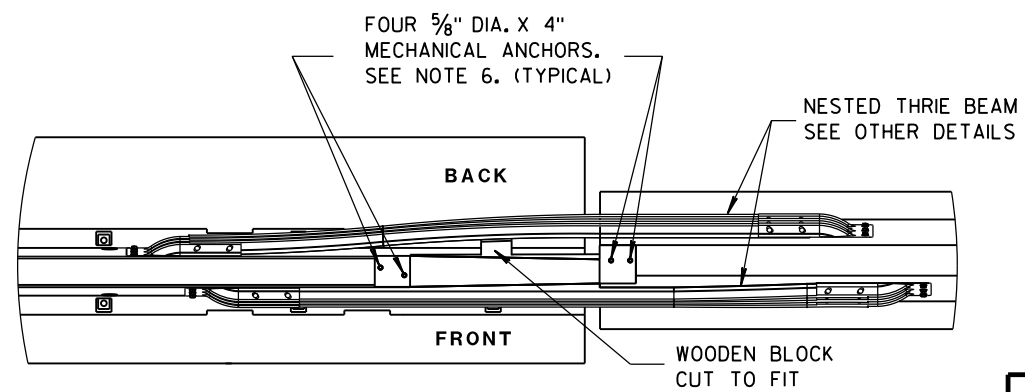
1. CAP END PLATE PLACED FLUSH WITH UPSTREAM END OF PERMANENT BARRIER OR PARAPET.
2. THRIE BEAM PIECES ARE OFFSET 15 1/4" TO PREVENT INTERFERENCE FROM THE ANCHORS ON OPPOSING SIDES.
3. MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 9.48 KIPS AND ULTIMATE SHEAR LOAD 10.48 KIPS.
4. MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 17.9 KIPS AND ULTIMATE SHEAR LOAD 21.96 KIPS.
5. MAY BE USED ON CONCRETE OR ASPHALT PAVEMENTS. ASPHALT OPTION SHOWN. FOR CONCRETE OPTION SEE OTHER DETAILS.
6. MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 12.14 KIPS AND ULTIMATE SHEAR LOAD 17.5 KIPS.



BACK VIEW



FRONT VIEW

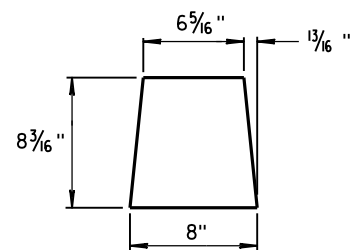


PLAN VIEW

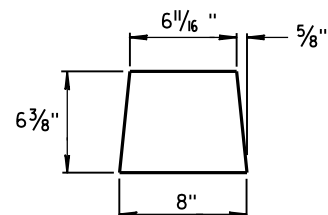
BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

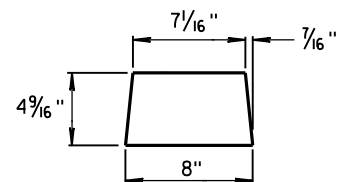
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



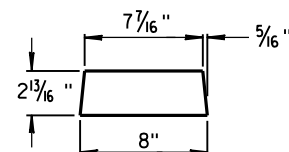
GUSSET 1



GUSSET 2

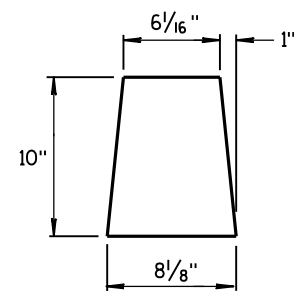


GUSSET 3

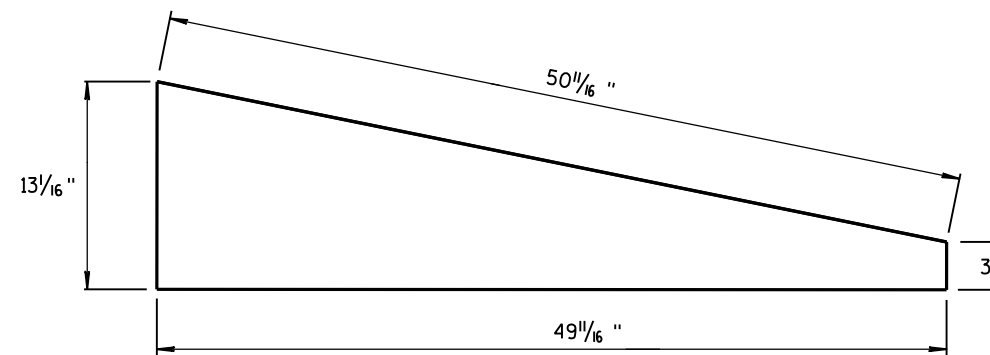


GUSSET 4

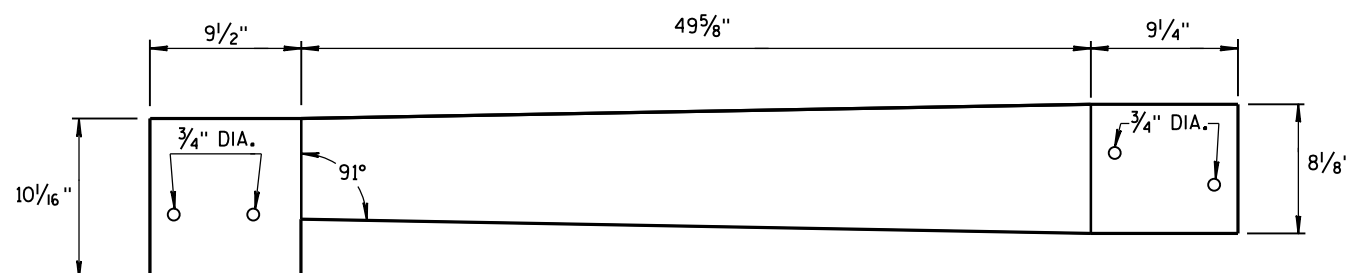
GUSSETS



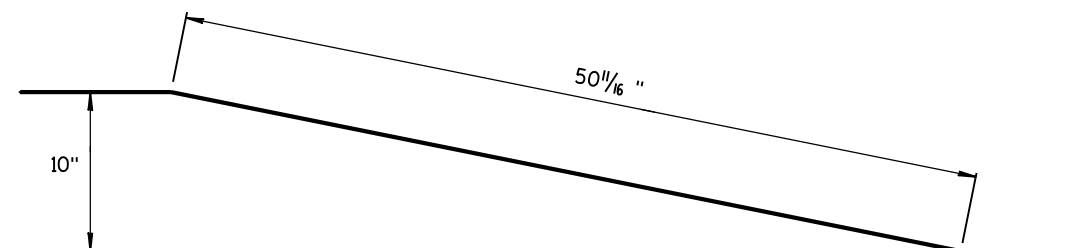
END PLATE



SIDE PLATE

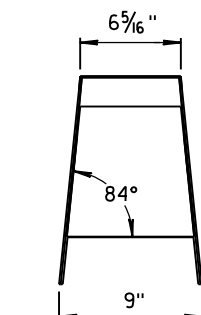
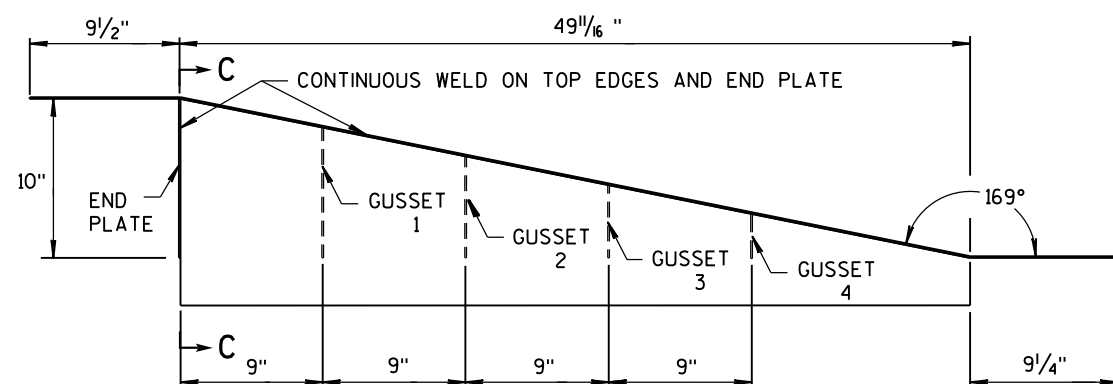
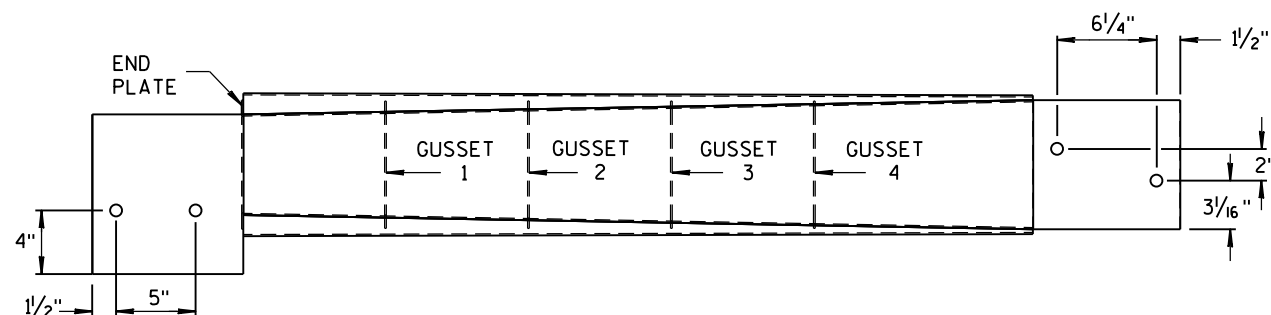


TOP PLATE



**SIDE, TOP AND END PLATES FOR CAP
FROM TEMPORARY CONCRETE BARRIER
TO 42" PERMANENT CONCRETE BARRIER**

SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 GALVANIZED STEEL.



SECTION C-C

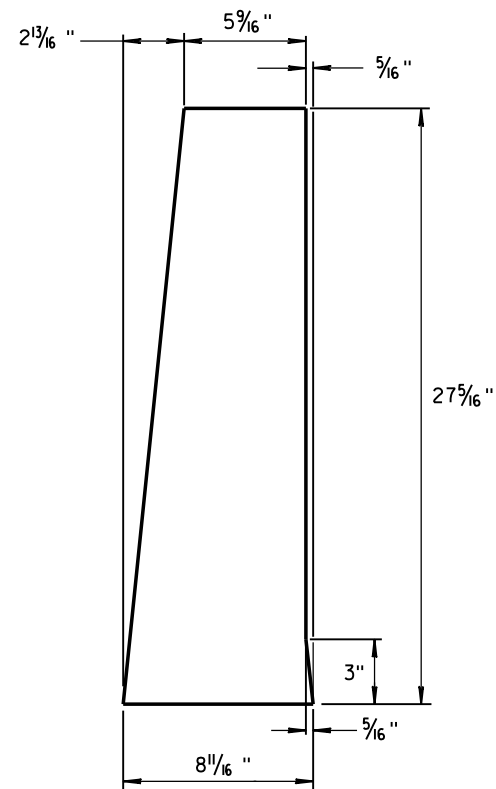
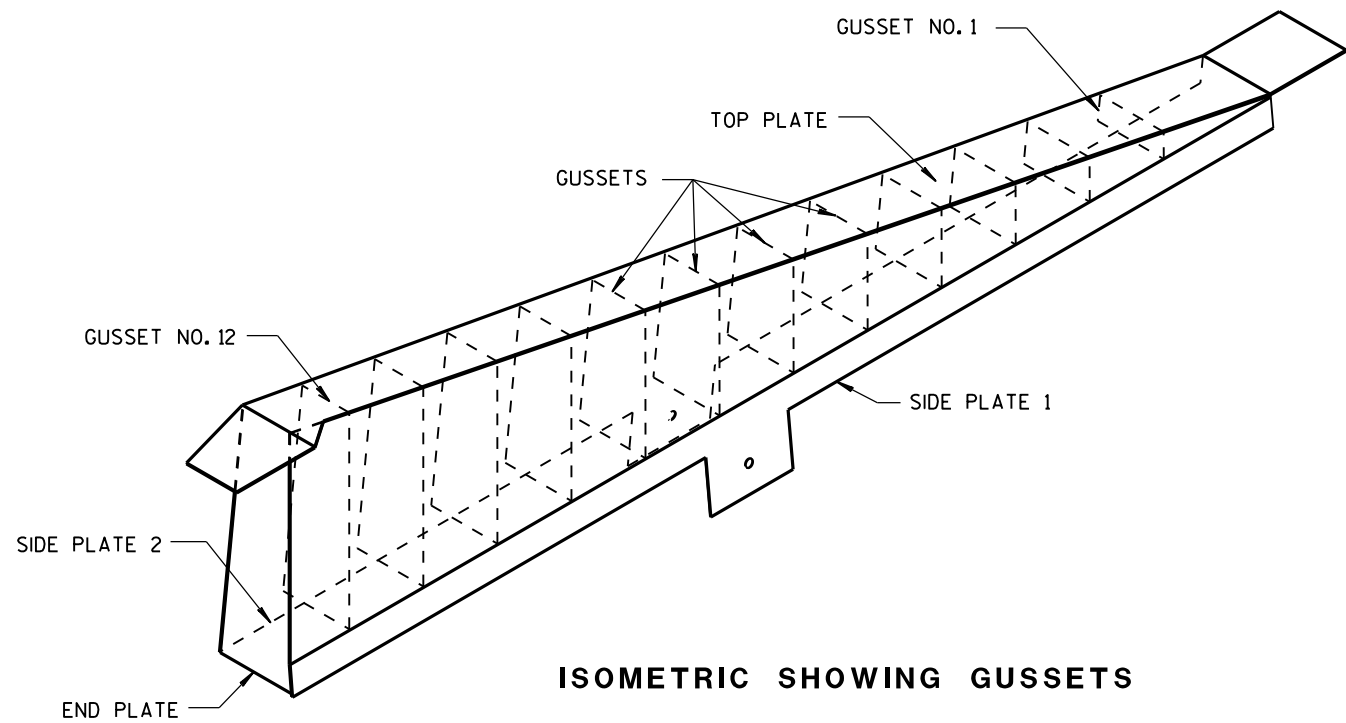
NOTES

1. FOUR GUSSETS AND END PLATE ARE STITCH WELDED ON THREE SIDES.
2. TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE, AND GUSSETS.

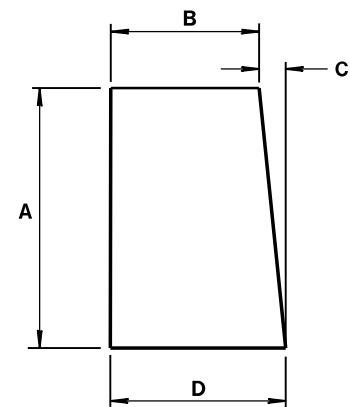
**CAP DETAILS FOR TEMPORARY CONCRETE
BARRIER TO 42" PERMANENT CONCRETE BARRIER**

**CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



END PLATE
1/8" STEEL PLATE

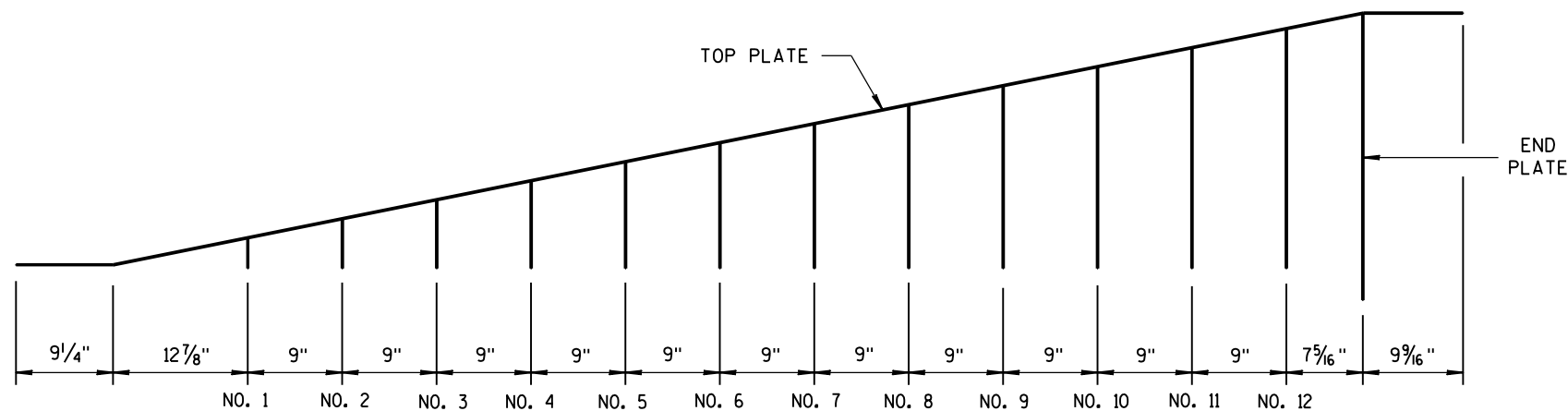


GUSSETS 1 - 12
ALL GUSSETS 1/8" STEEL PLATE

GUSSET DIMENSIONS				
GUSSET NO.	A	B	C	D
1	2 7/8"	7 3/4"	1/4"	8
2	4 1/16 "	7 9/16 "	1/2"	8
3	6 1/2"	7 3/8"	1 1/16 "	8 1/16 "
4	8 5/16"	7 3/16"	7/8"	8 1/16 "
5	10 1/8"	7"	1 1/16 "	8 1/16 "
6	11 5/16 "	6 13/16 "	1 1/4"	8 1/16 "
7	13 3/4"	6 5/8"	1 7/16 "	8 1/16 "
8	15 9/16 "	6 7/16 "	1 9/16 "	8 1/16 "
9	17 3/8"	6 1/4"	1 13/16 "	8 1/16 "
10	19 3/16"	6 1/16"	1 15/16 "	8 1/16 "
11	21"	5 7/8"	2 3/16"	8 1/16 "
12	22 13/16 "	5 11/16 "	2 5/16"	8 1/16 "

SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 STEEL AND GALVANIZED.

GUSSETS AND END PLATE ARE STITCH WELDED ON 3 SIDES. TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE AND GUSSETS.

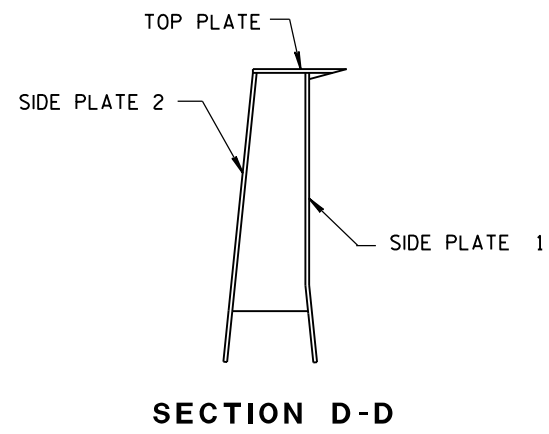
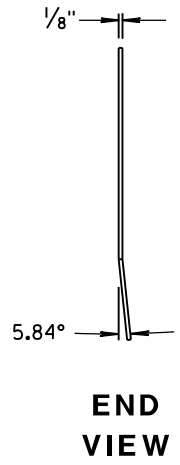
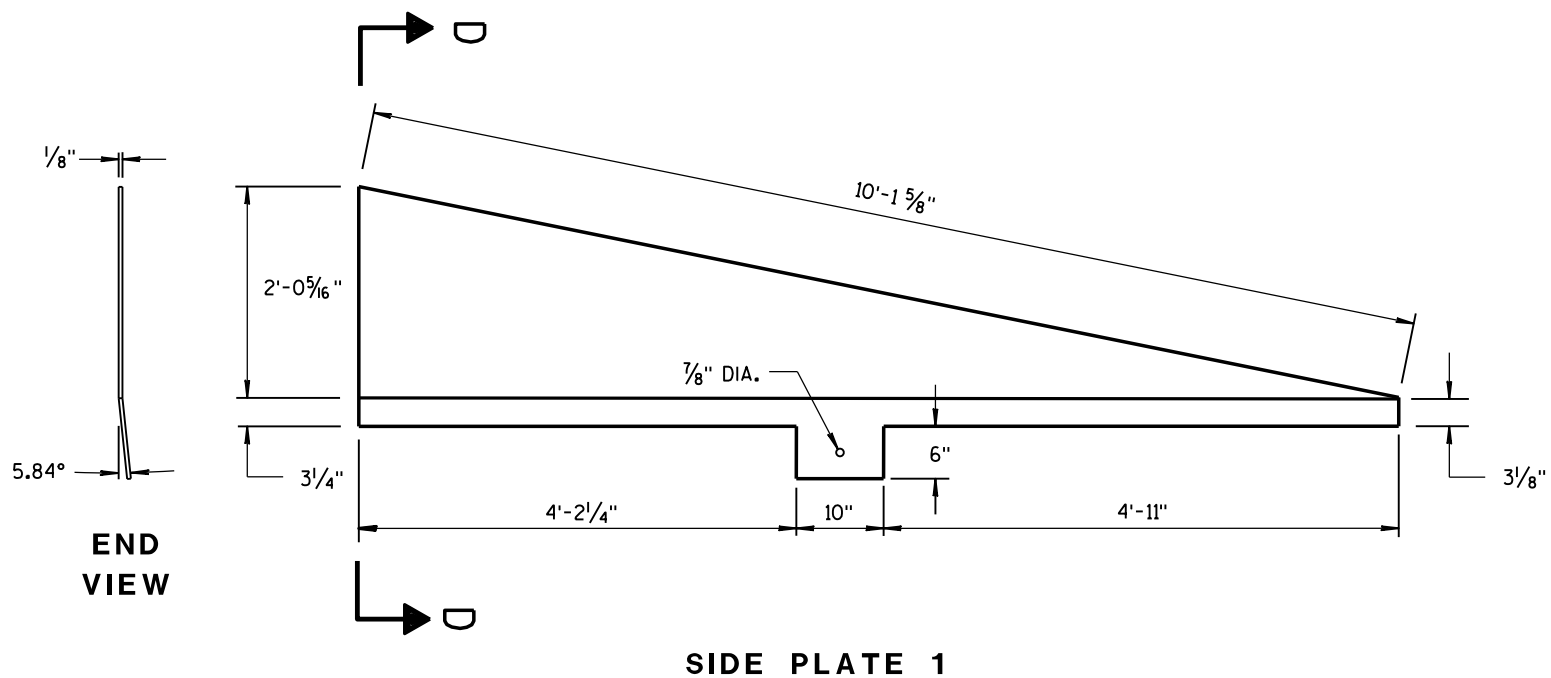
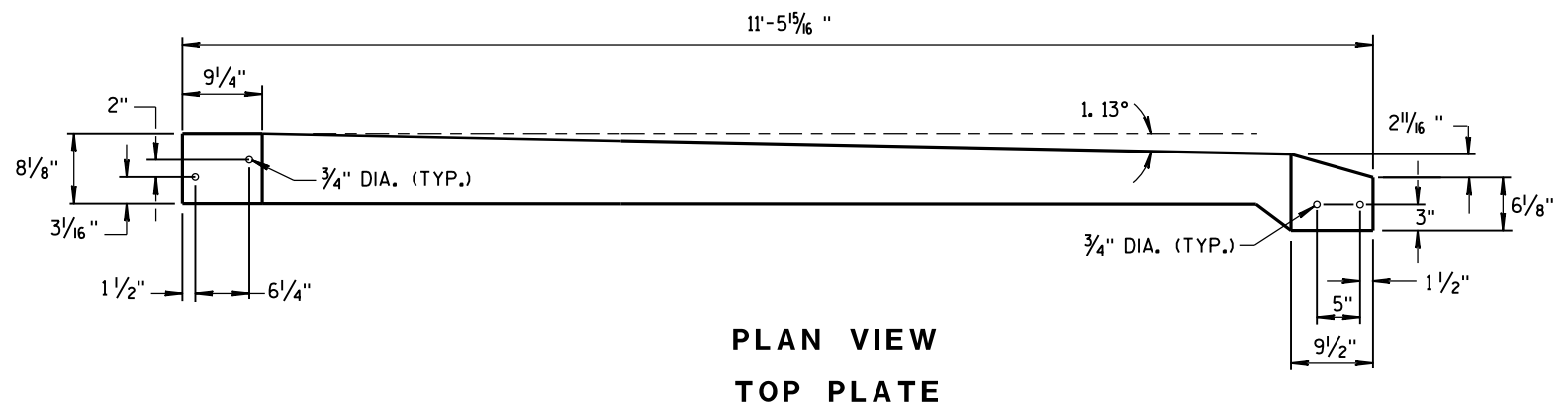
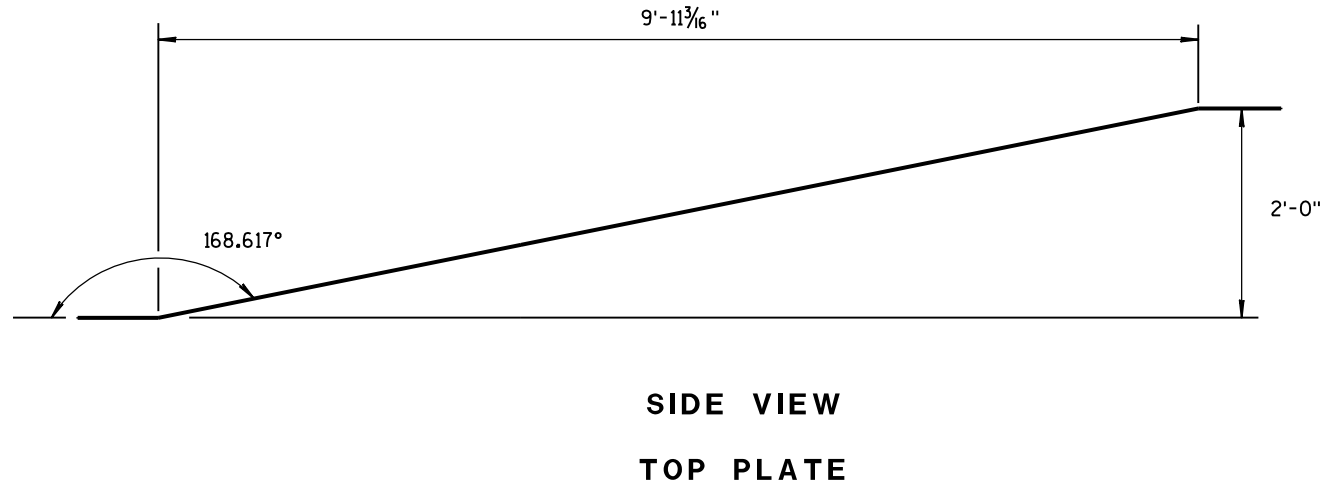
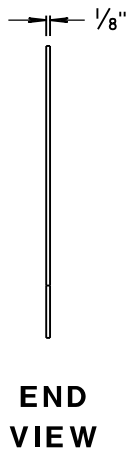
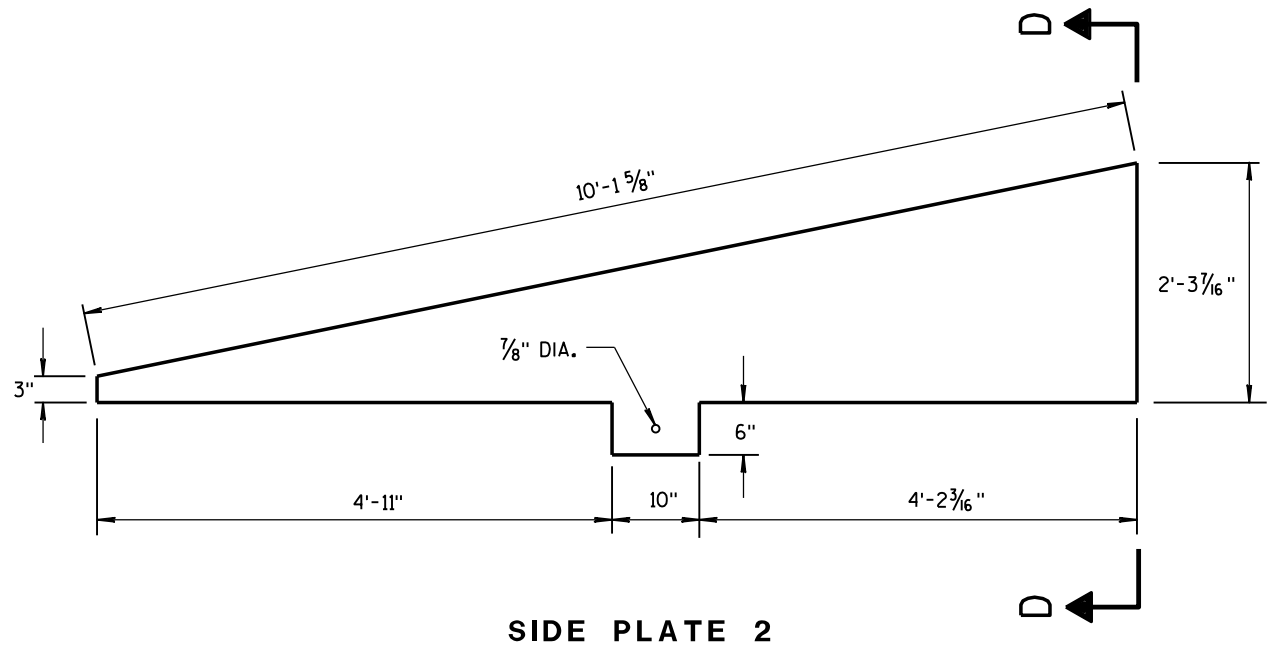


GUSSET LOCATION

CAP DETAILS FOR TEMPORARY CONCRETE
BARRIER TO 56" PERMANENT CONCRETE BARRIER

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

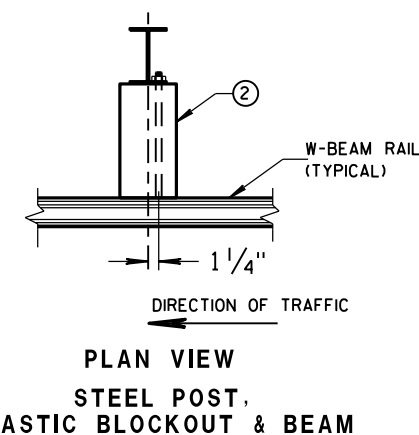
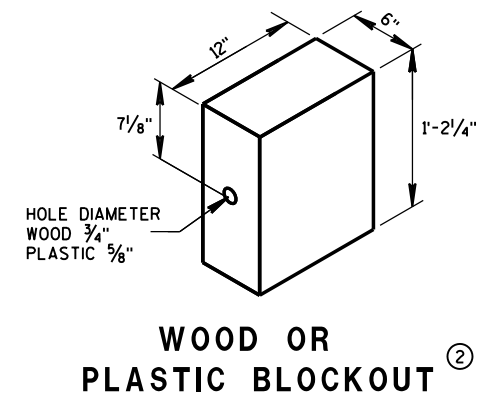
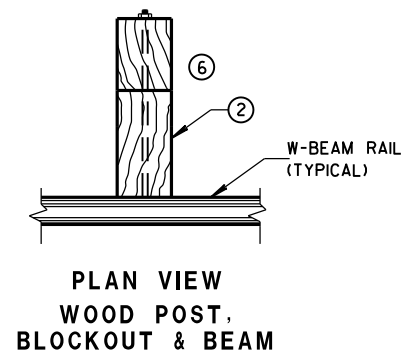
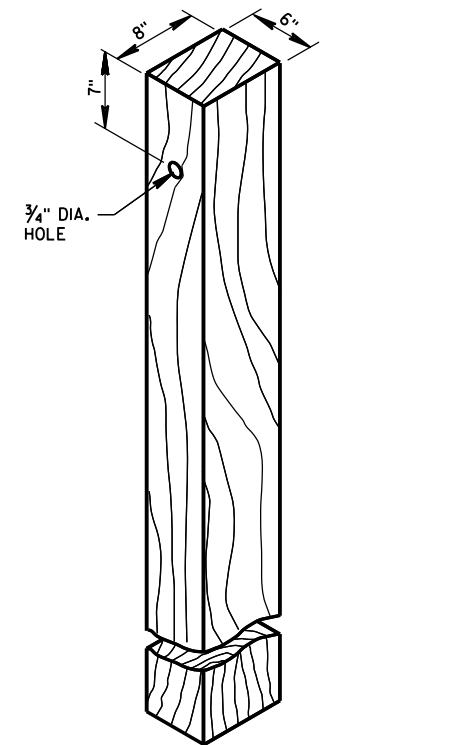
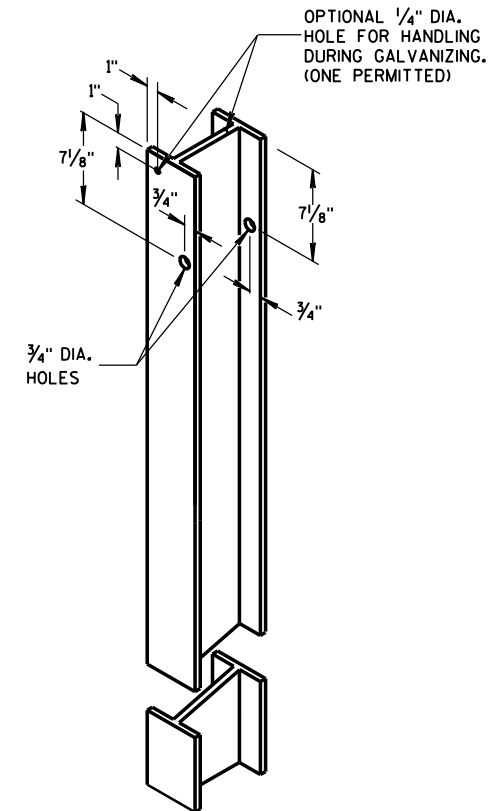
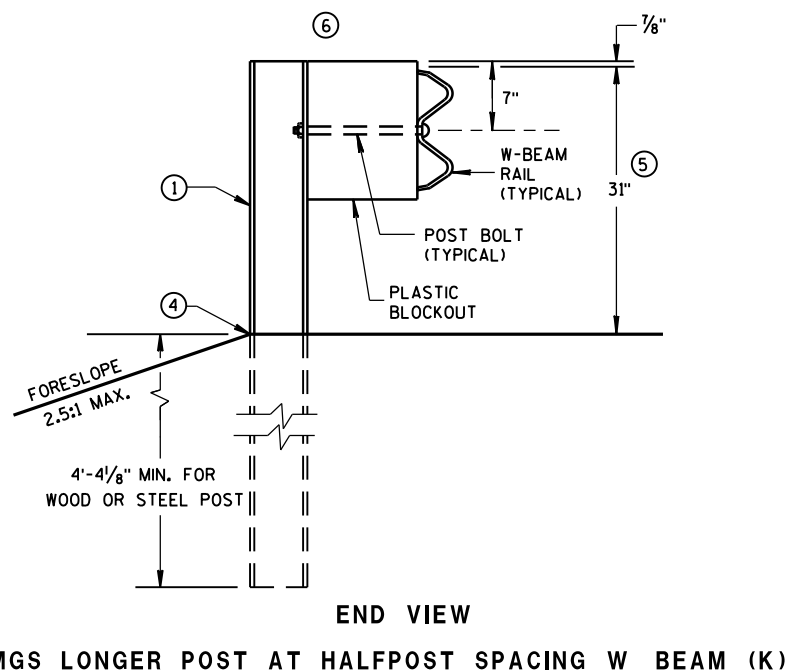
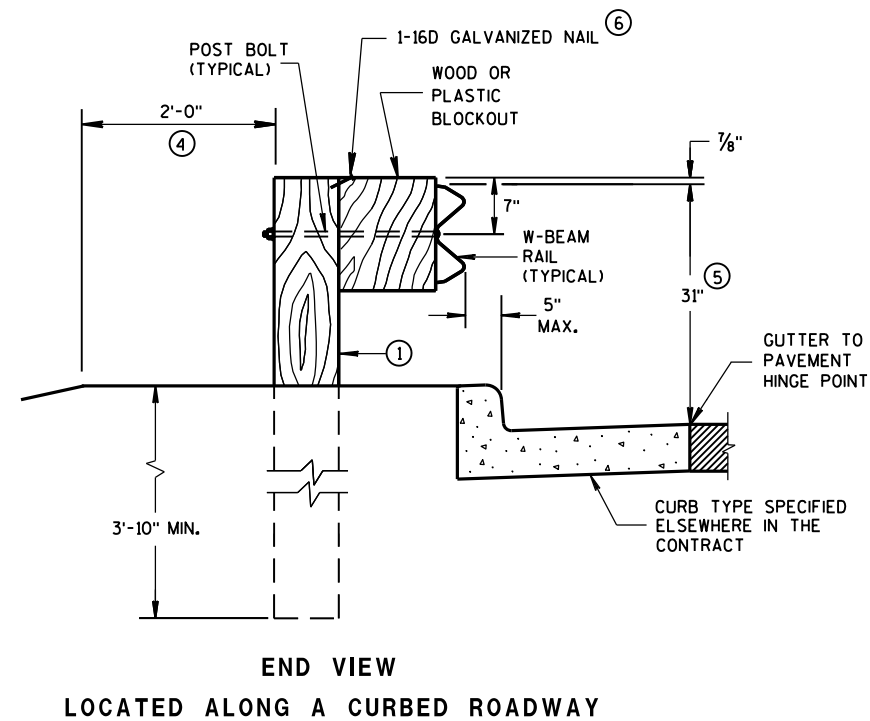
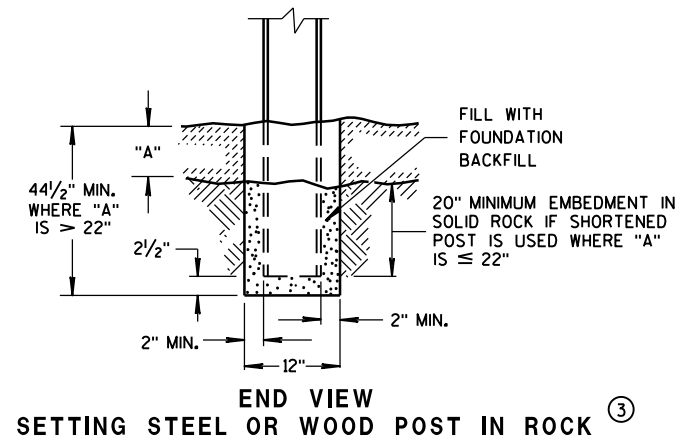
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



**CAP DETAILS FOR TEMPORARY CONCRETE
BARRIER TO 56" PERMANENT CONCRETE BARRIER**

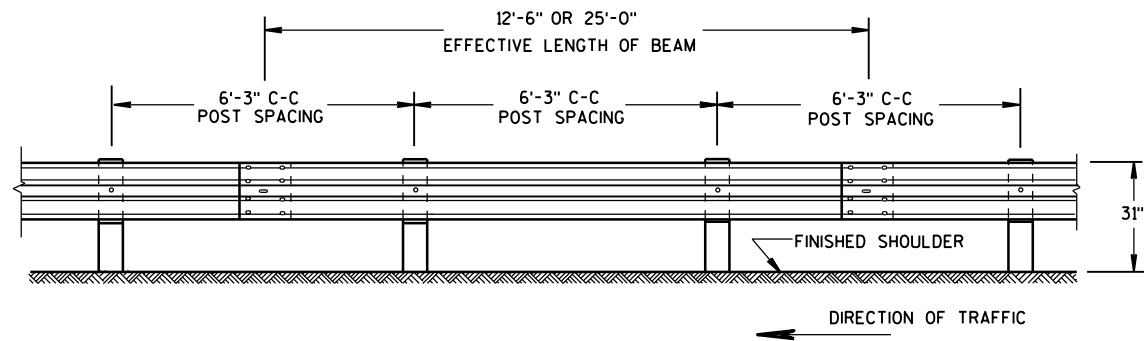
CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2014 DATE	/S/ Jerry H. Zogg ROADWAY STANDARD DEVELOPMENT ENGINEER
FHWA	

- ① WOOD OR STEEL POSTS (W6X9 OR W6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½ INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



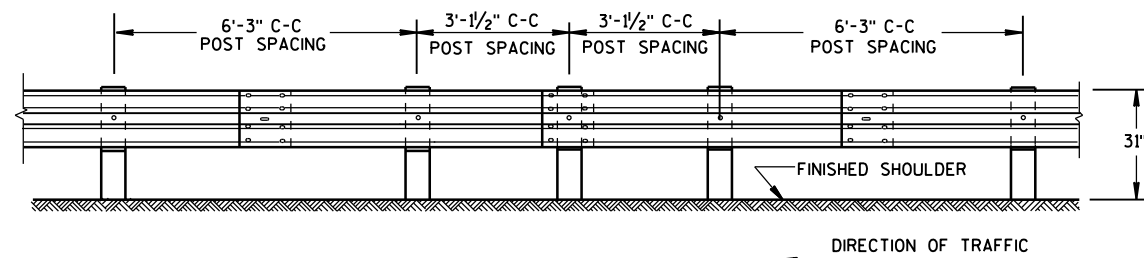
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



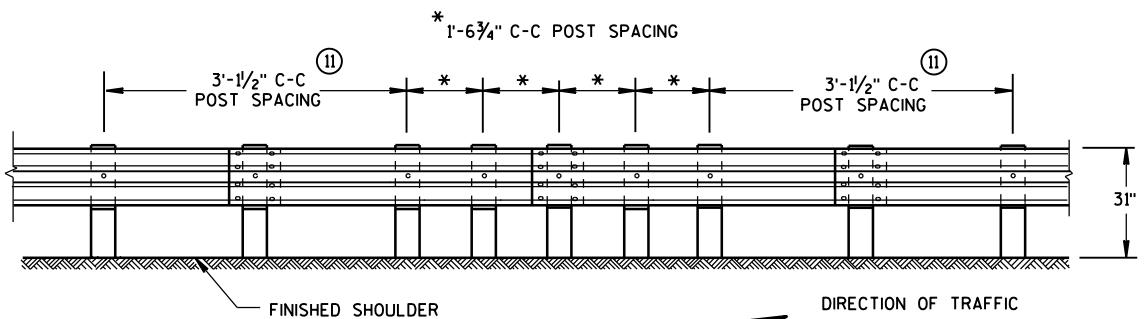
FRONT VIEW

POST SPACING STANDARD INSTALLATION



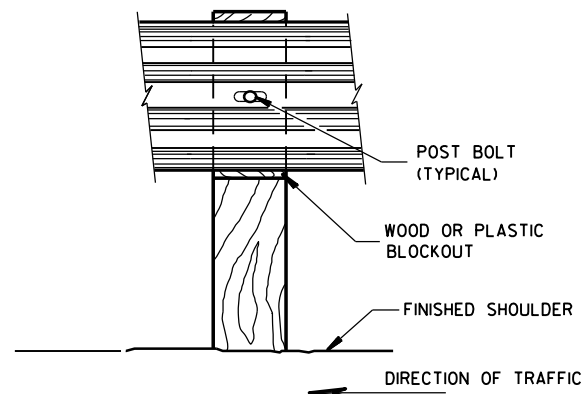
FRONT VIEW

HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)

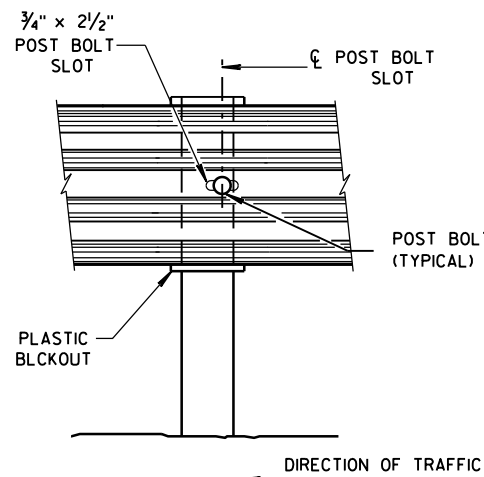


FRONT VIEW

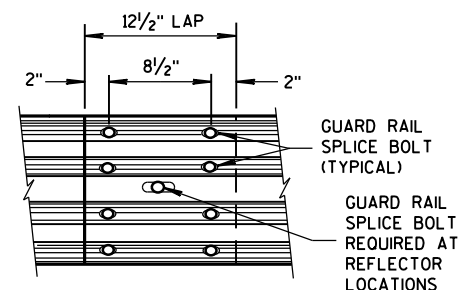
QUARTER POST SPACING (QS)



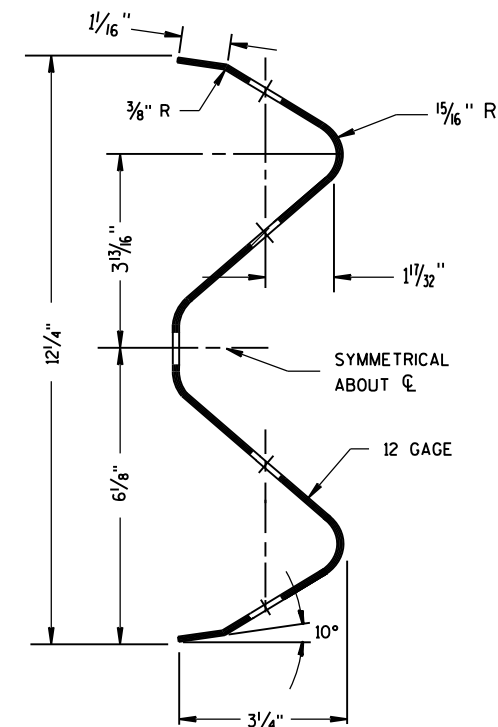
FRONT VIEW AT WOOD POST



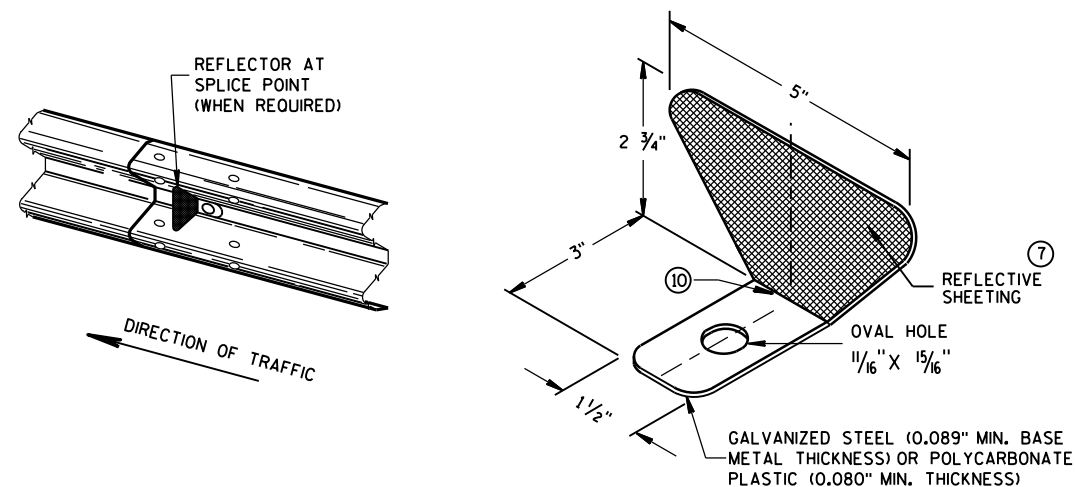
FRONT VIEW AT STEEL POST



FRONT VIEW
MID-SPAN BEAM SPLICE



SECTION THRU W-BEAM RAIL



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

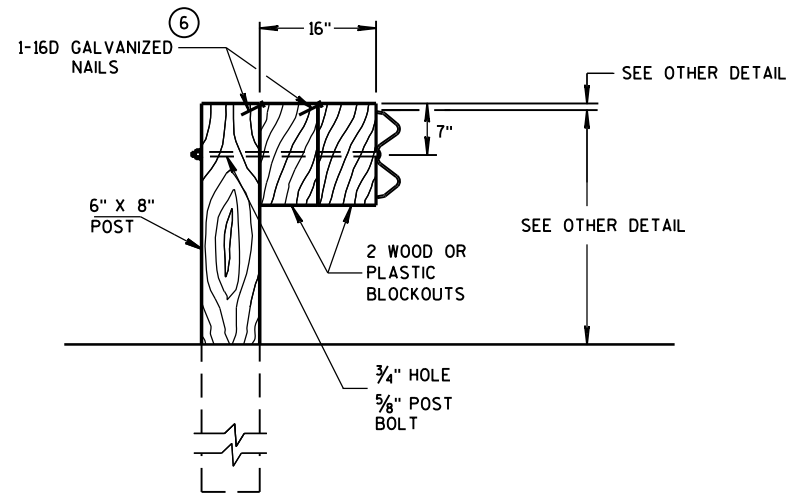
- ⑦ PROVIDE SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH YELLOW REFLECTIVE SHEETING. SHEETING IS TYPE H. SEE STANDARD SPECIFICATION 637.
 - ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
 - ⑨ REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.
 - ⑩ PROVIDE AN ANGLE OF BEND OF $90^\circ \pm 1^\circ$ FOR TWO-SIDED REFLECTORS.
 - ⑪ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A $\frac{5}{8}$ " DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES $\frac{5}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND $\frac{5}{8}$ " DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A $\frac{5}{8}$ " DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES $\frac{5}{8}$ " DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

REFLECTOR SPACING

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 ⑨	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2 ⑩	3
	> 200'	100' C-C	2	

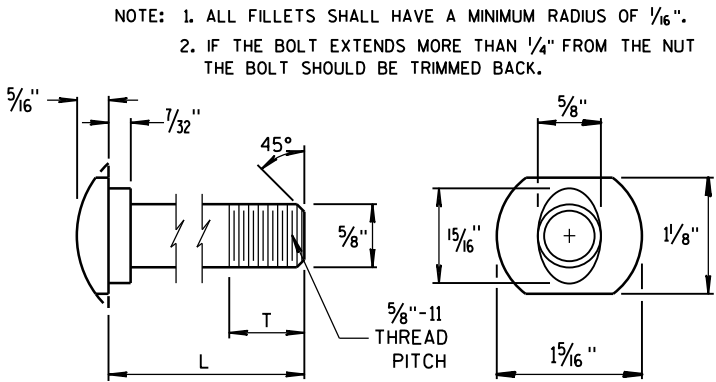
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

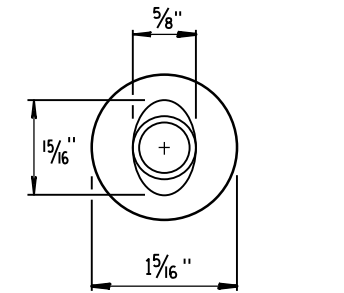


DETAIL FOR 16" BLOCKOUT DEPTH

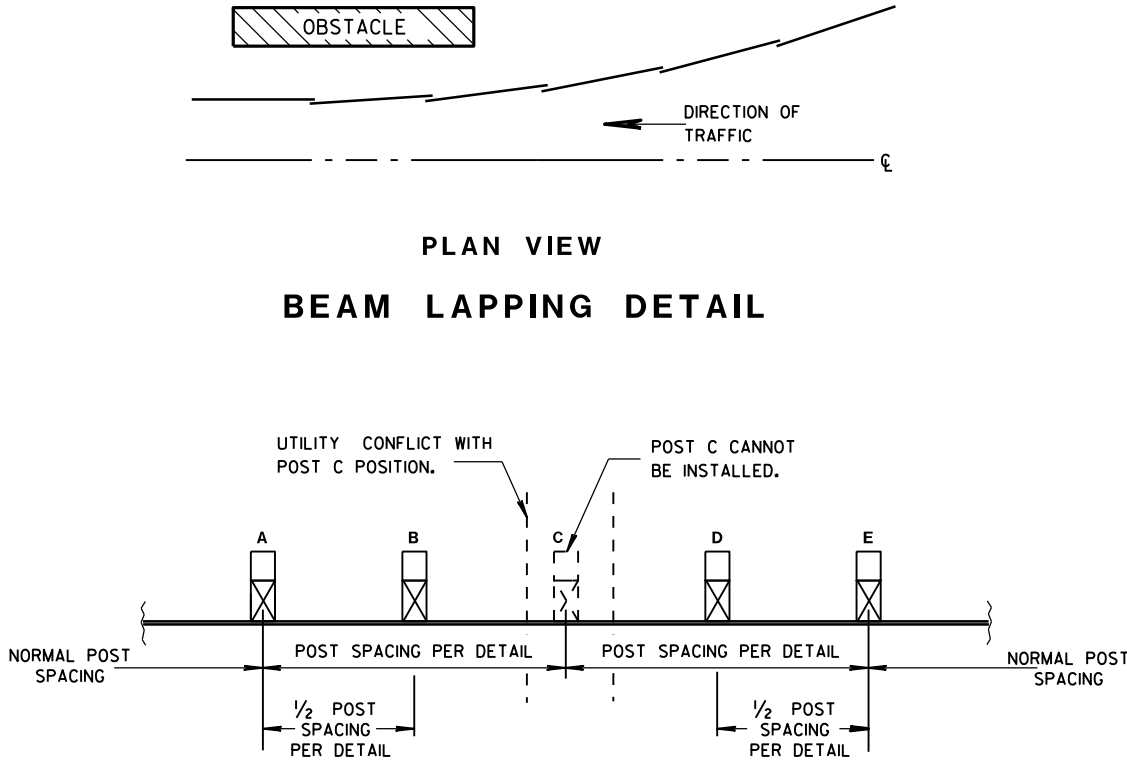
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



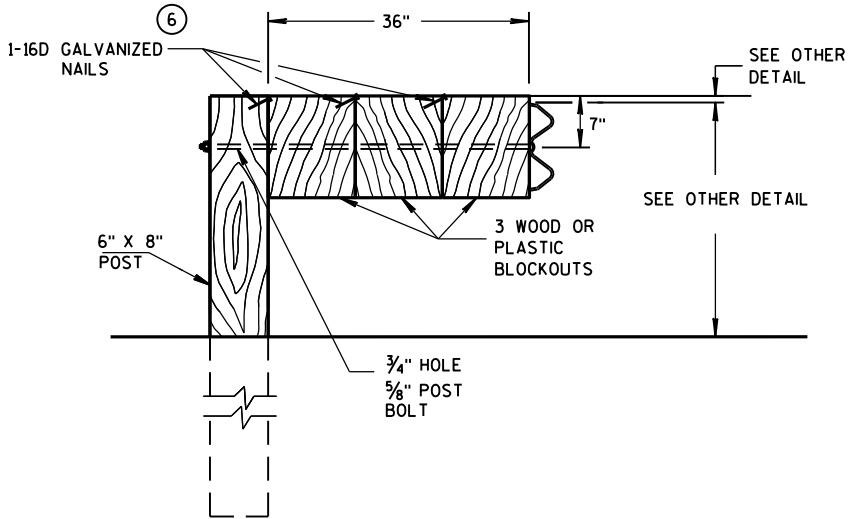
POST BOLT TABLE



ALTERNATE BOLT HEAD



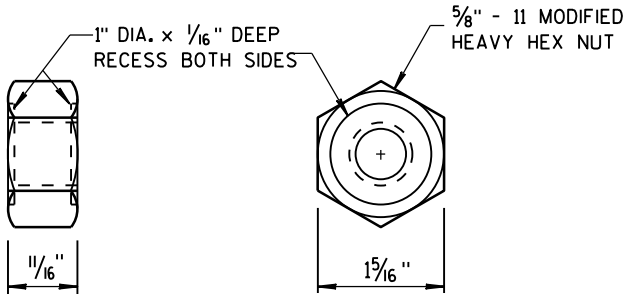
POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



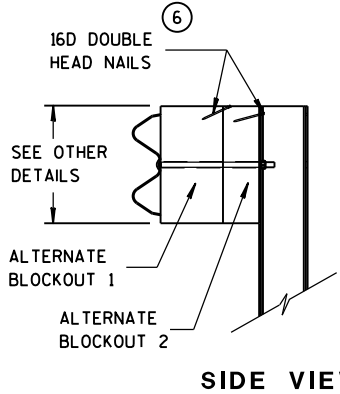
DETAIL FOR 36" BLOCKOUT DEPTH

NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

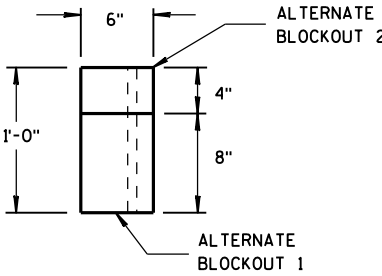
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.



POST BOLT, SPLICE BOLT AND RECESS NUT



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2016
DATE /S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

GENERAL NOTES

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.
- (C) DIFFERENT MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.
- (D) THE TOP OF THE STEEL TUBE ON POST 1 AND POST 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.
- (E) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS, ONE SCREW PER CORNER.
- (G) 1/2" DIAMETER X 3" LONG LAG BOLT AND WASHER.
- (H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.
- (I) DIMENSIONS MAY VARY. SEE MANUFACTURE'S INFORMATION.

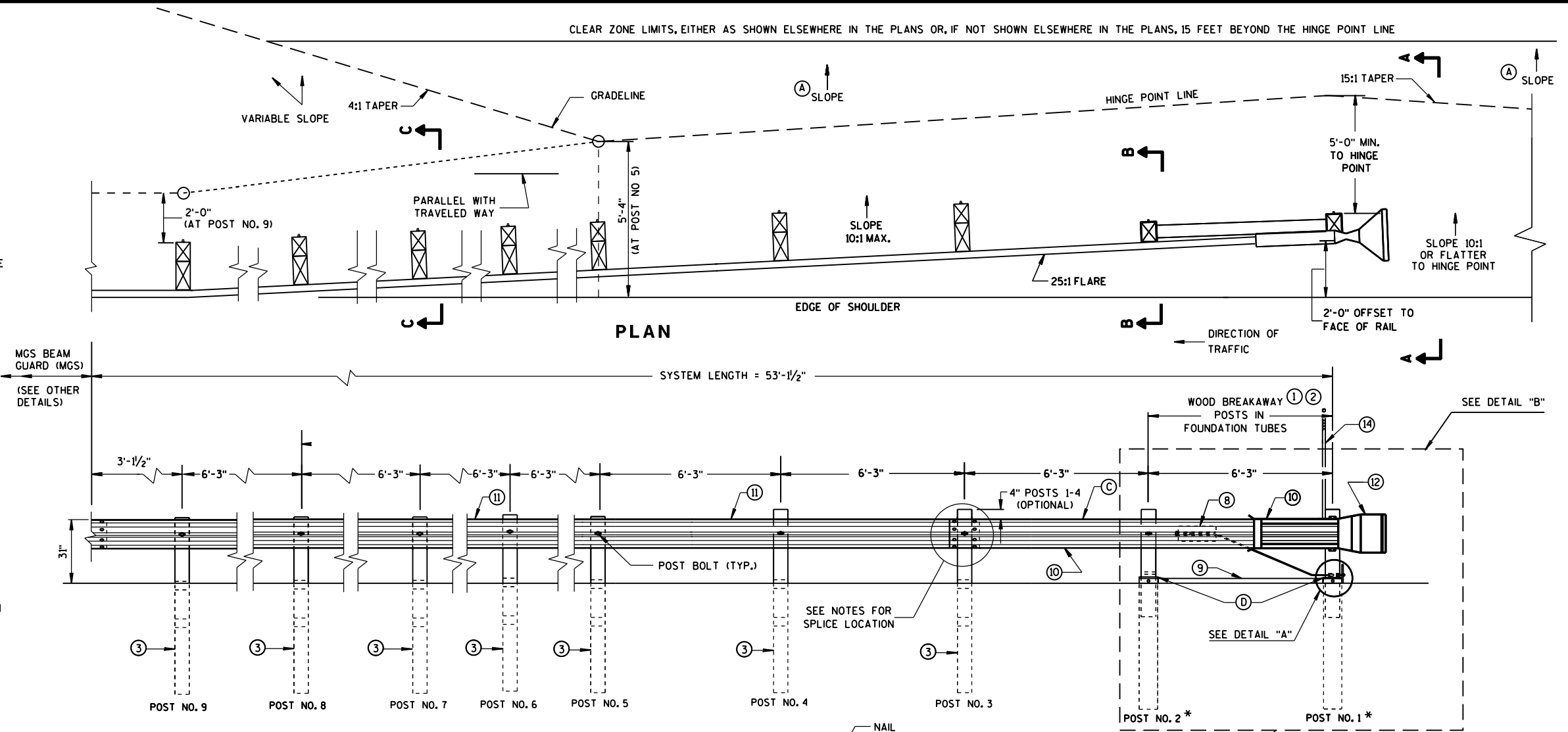
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

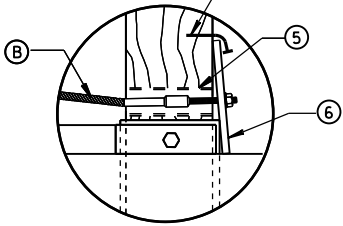
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

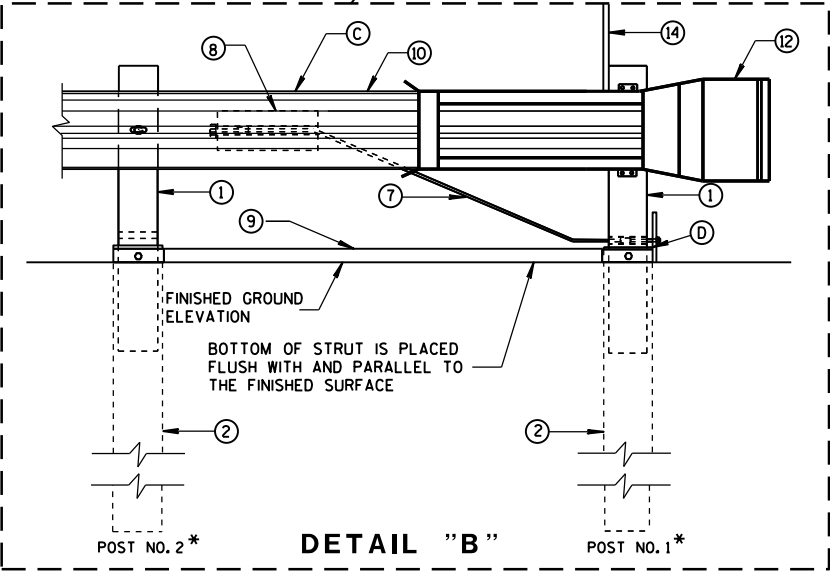
THE CENTER OF THE UPPER 3/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.



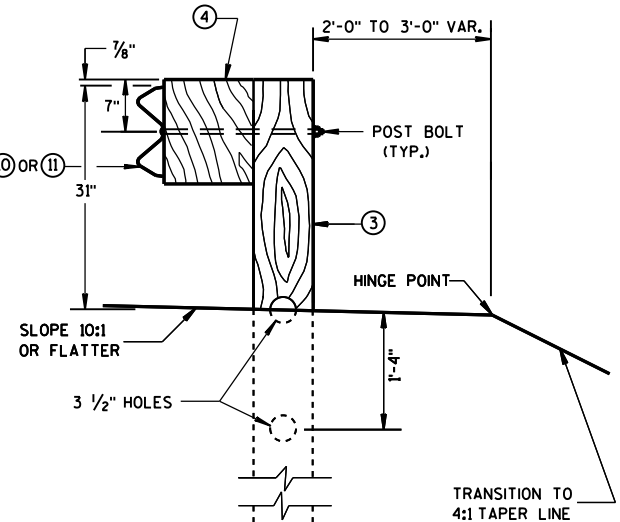
ELEVATION



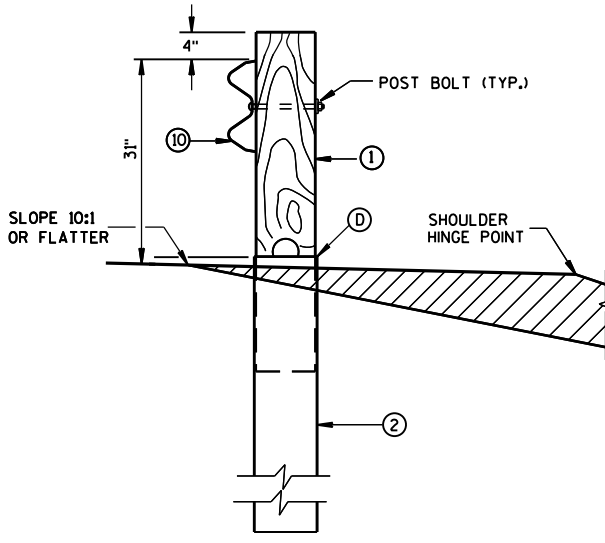
DETAIL "A"



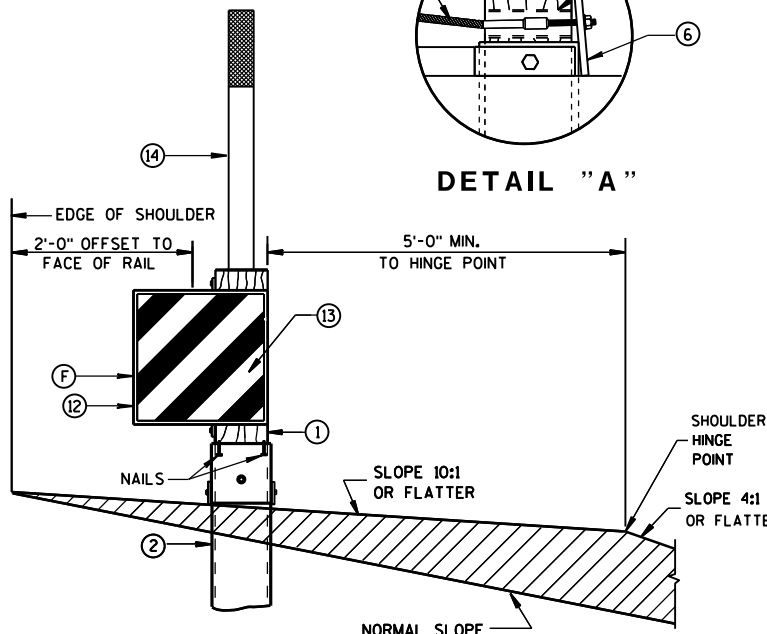
DETAIL "B"



SECTION C-C
TYPICAL AT POST NOS. 3-9



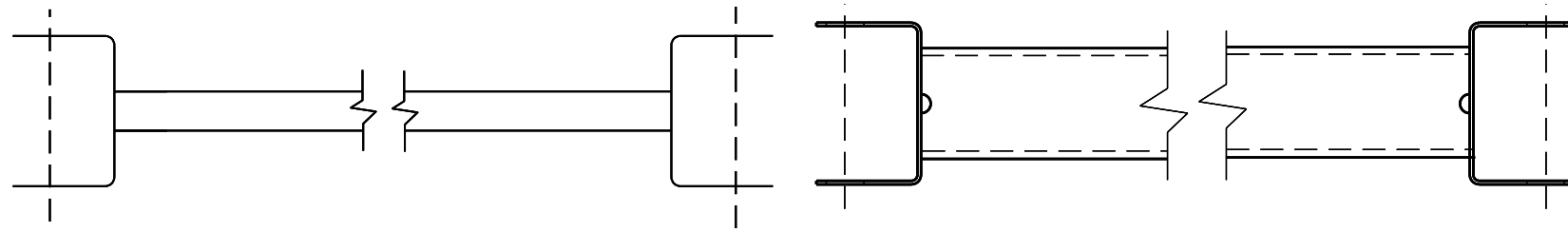
SECTION B-B
TYPICAL AT POST NO. 2*



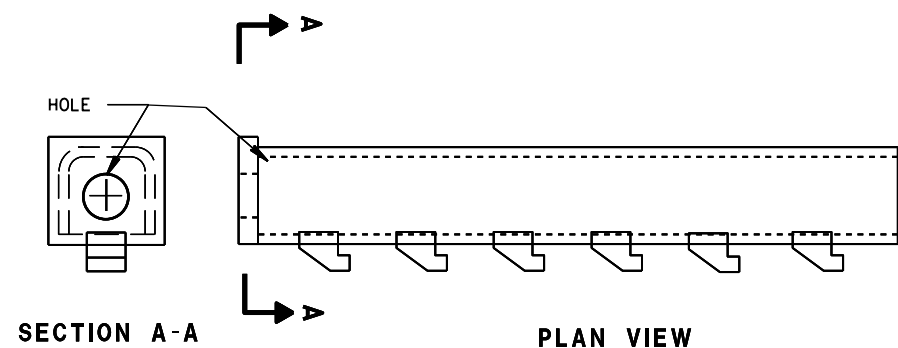
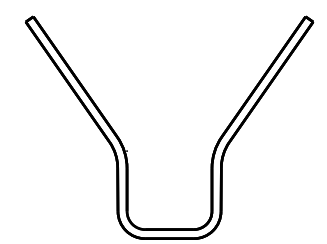
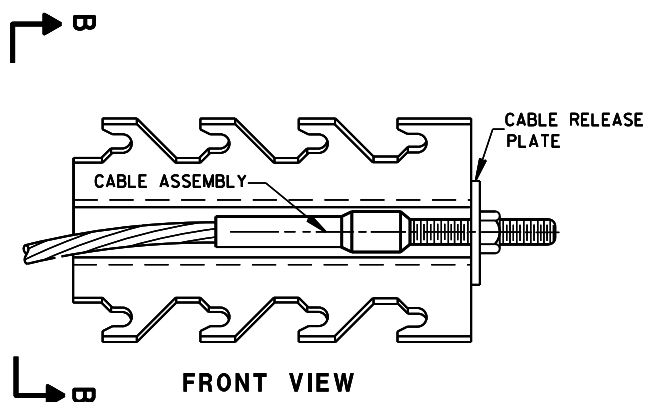
SECTION A-A
TYPICAL AT POST NO. 1*

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



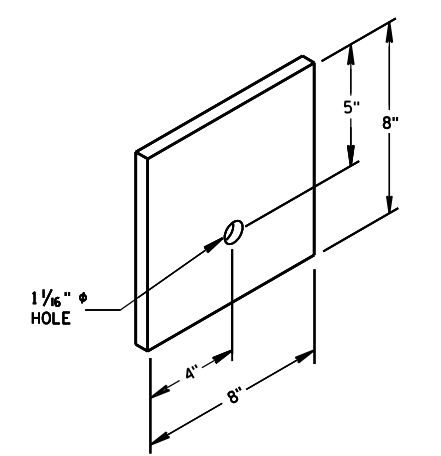
9 H
GENERIC GROUND STRUT



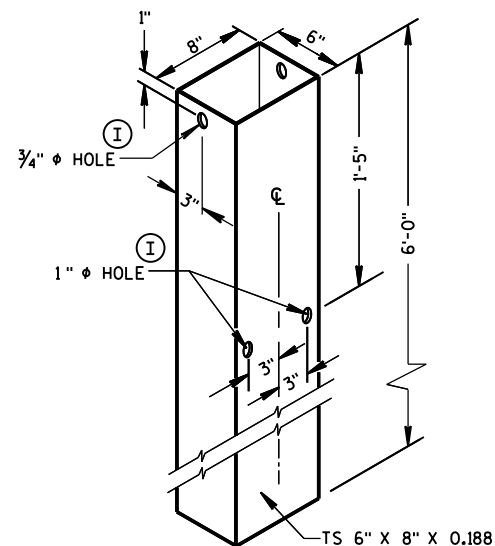
8 H
GENERIC ANCHOR CABLE BOX

BILL OF MATERIALS

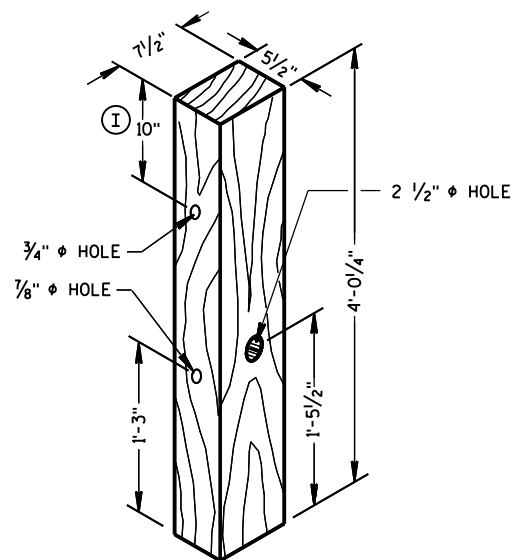
PART NO.	DESCRIPTION
MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.	
①	WOOD BREAKAWAY POST
②	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
⑪	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
⑫	END SECTION EAT
⑬	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS
⑭	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)



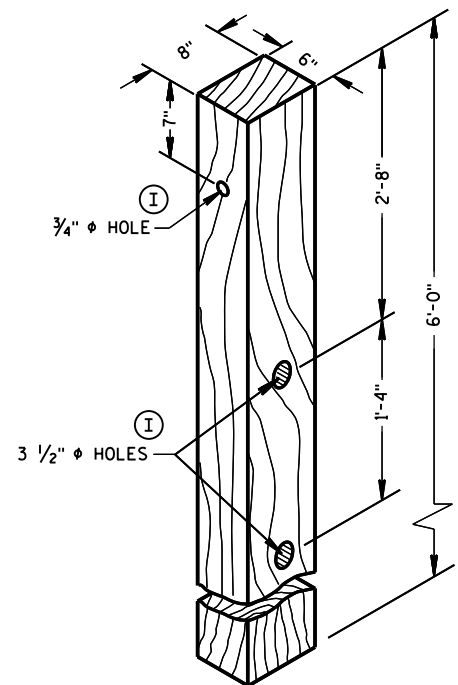
⑥
BEARING PLATE



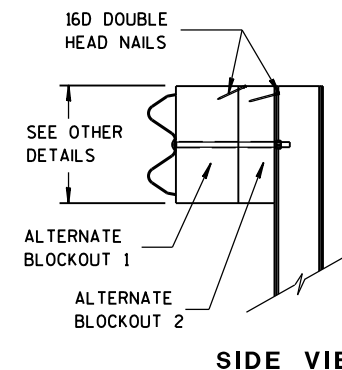
FOUNDATION TUBE ②



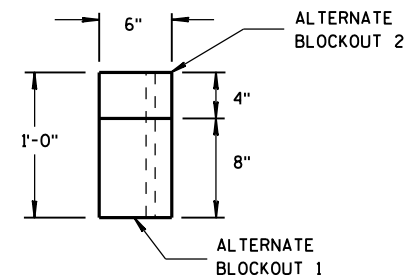
POSTS NUMBER 1 AND 2
WOOD BREAKAWAY POST ①



POSTS NUMBER 3-9
WOOD CRT POST ③

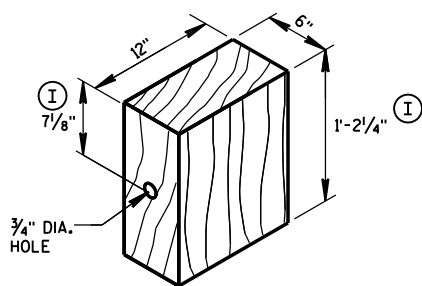


SIDE VIEW



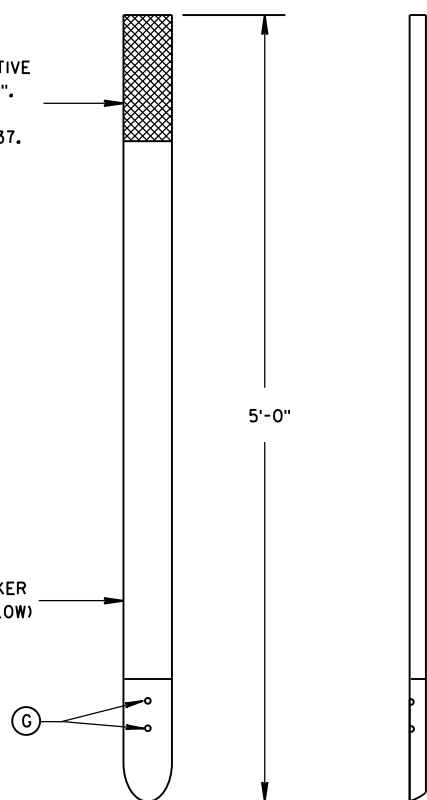
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL



WOOD BLOCKOUT ④
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

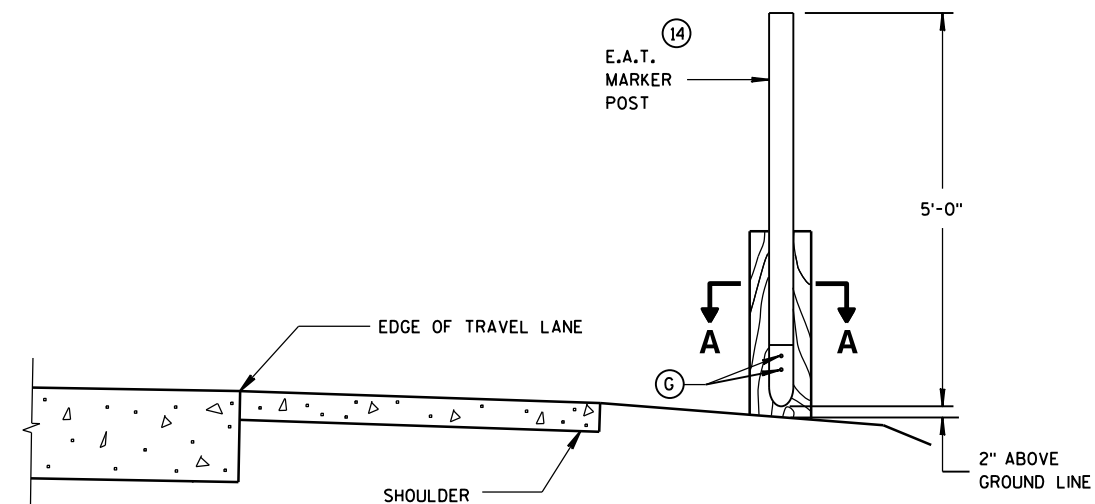
TYPE H
YELLOW REFLECTIVE
SHEETING 3" X 9".
SEE STANDARD
SPECIFICATION 637.



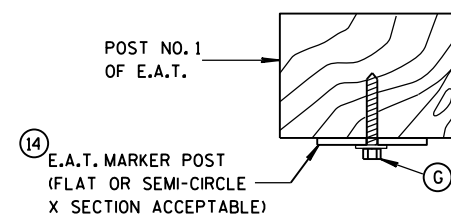
FRONT VIEW

SIDE VIEW

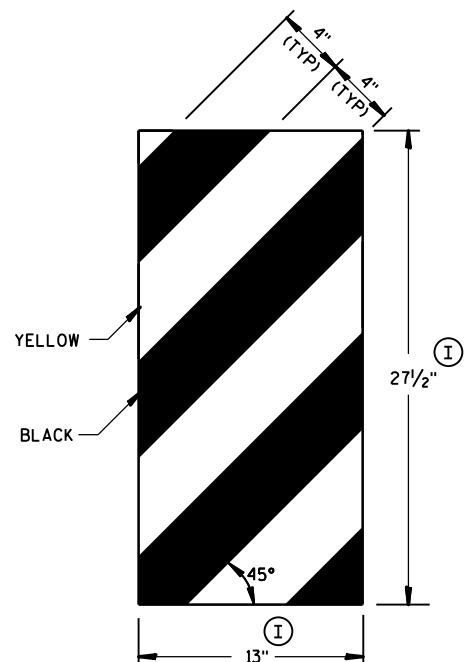
E.A.T. MARKER POST ⑭



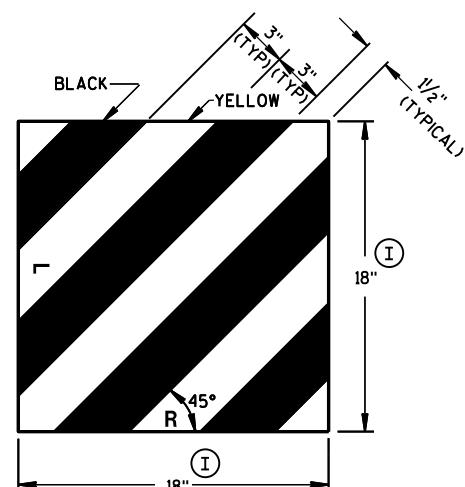
TYPICAL INSTALLATION OF E.A.T.
MARKER POST BACKSIDE OF POST NO. 1
(E.A.T. AND RAIL REMOVED FOR CLARITY)



SECTION A-A



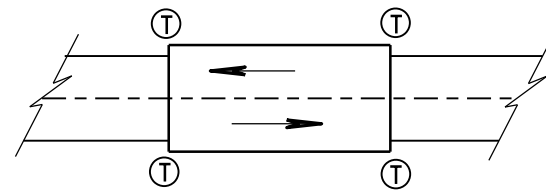
GENERIC REFLECTIVE SHEETING ⑬ ①



MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

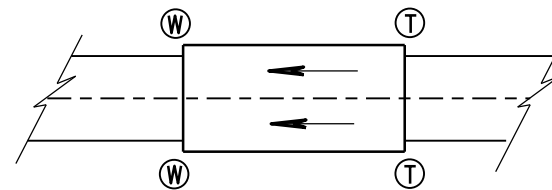
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2014 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



TWO WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION



ONE WAY TRAFFIC

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

GENERAL NOTES

IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

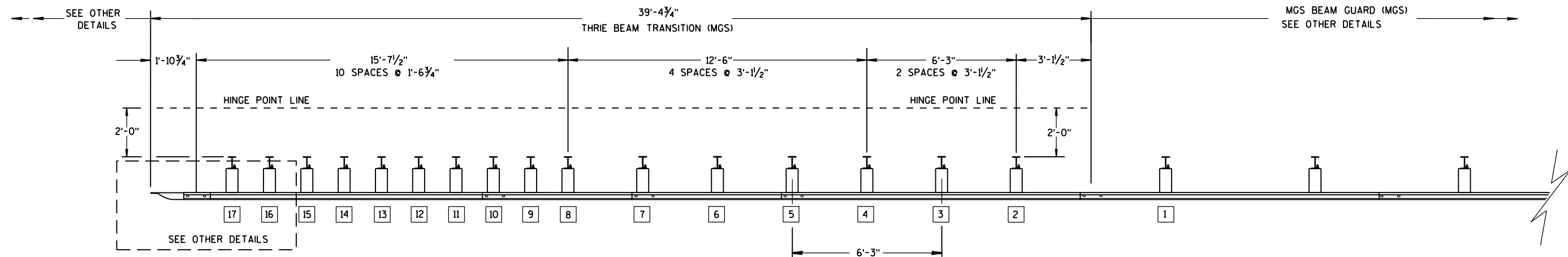
TRANSITION USES STEEL POSTS ONLY.

SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

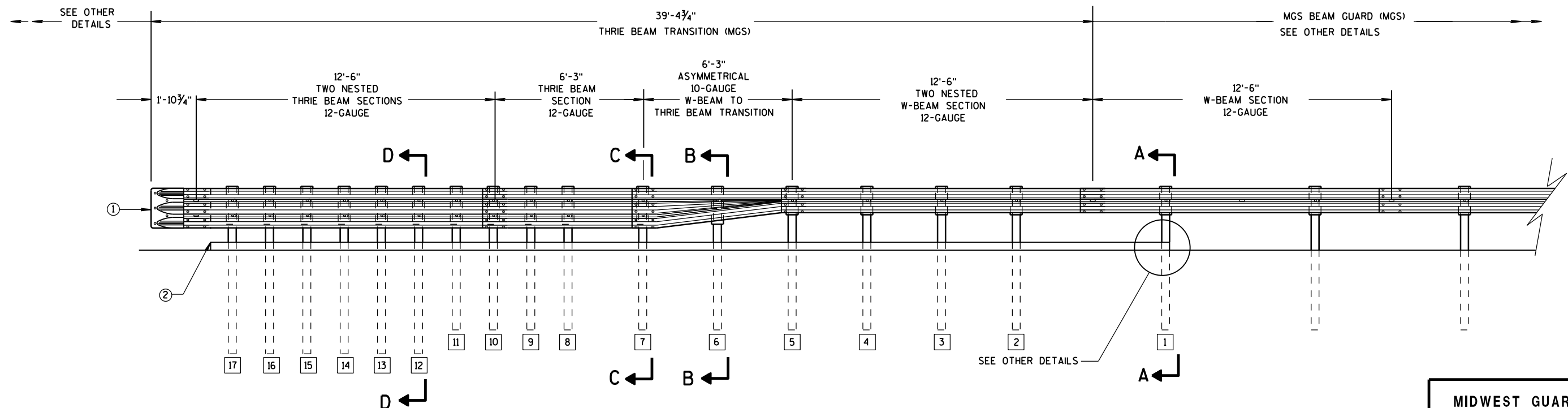
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE



PLAN VIEW



ELEVATION VIEW

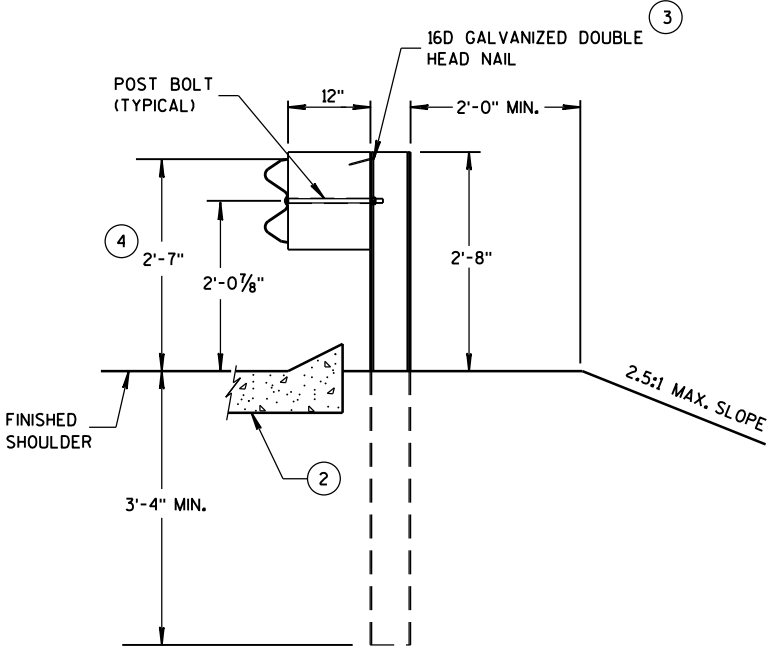
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

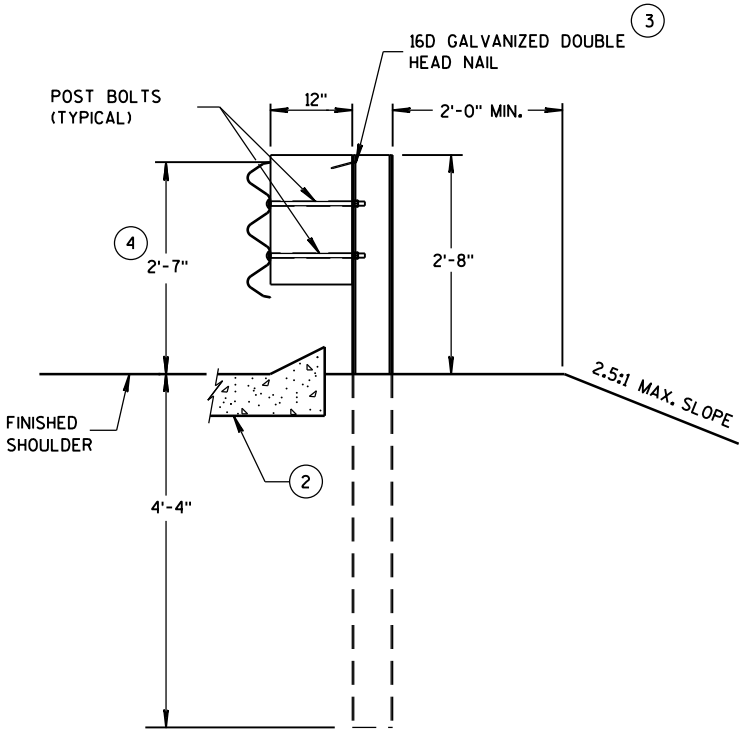
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

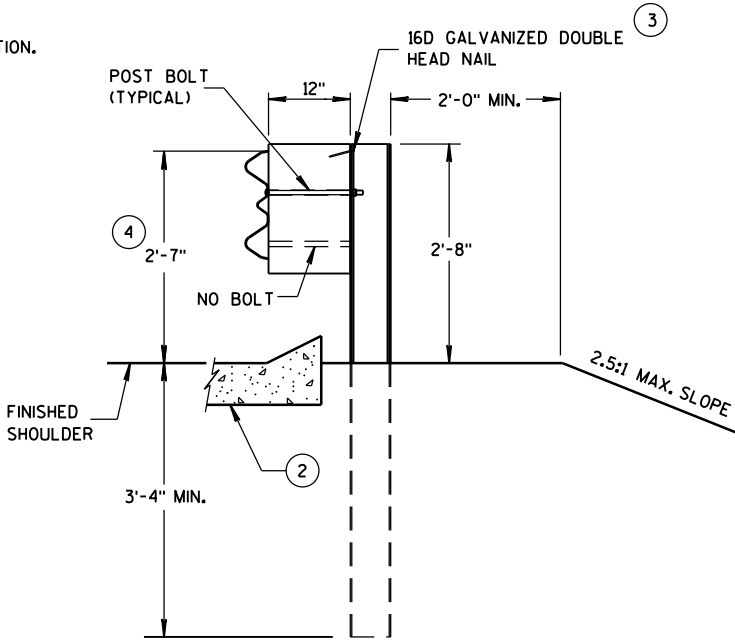
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



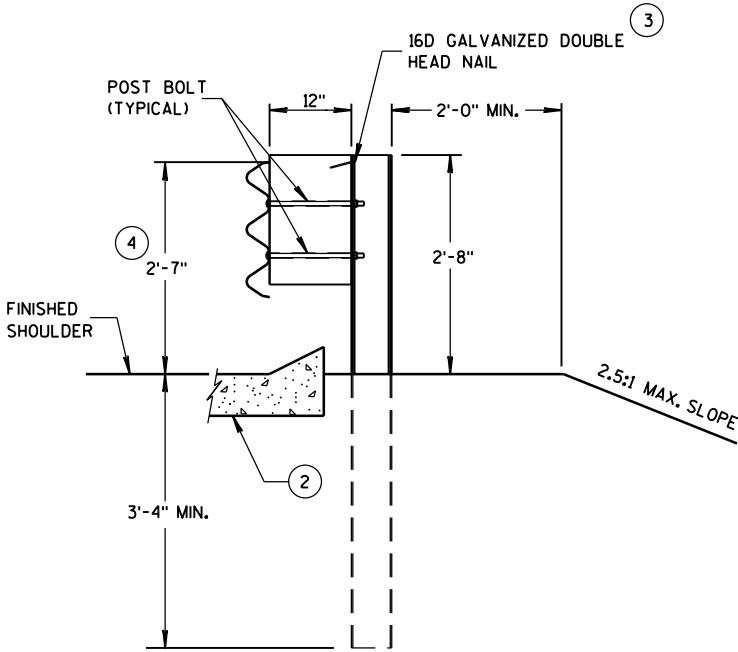
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

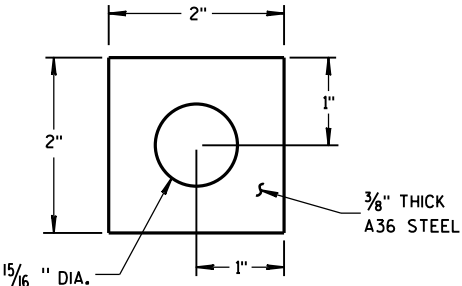
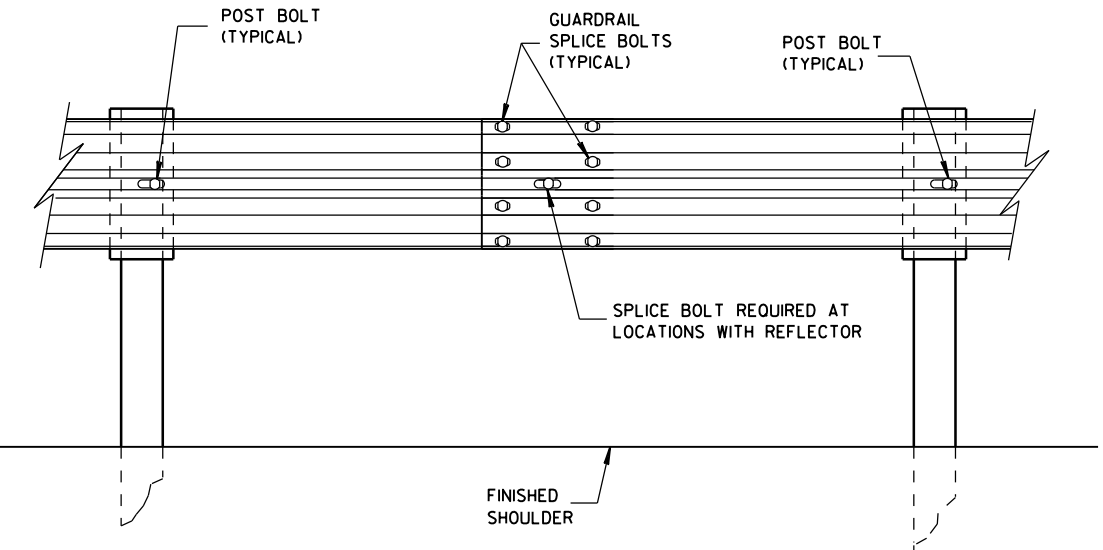
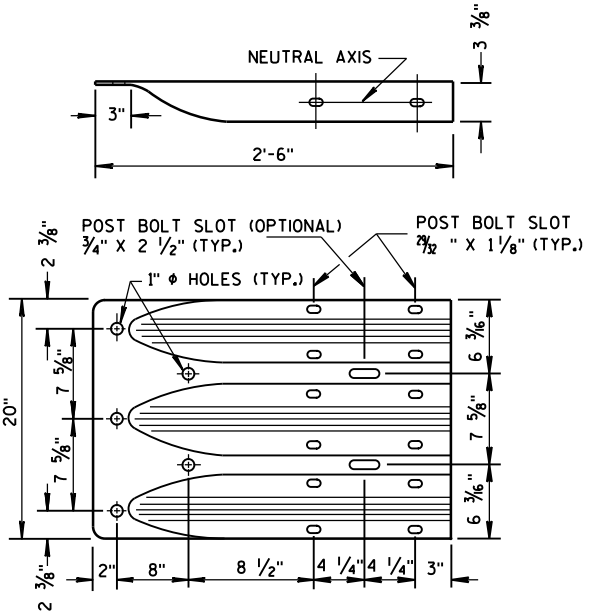


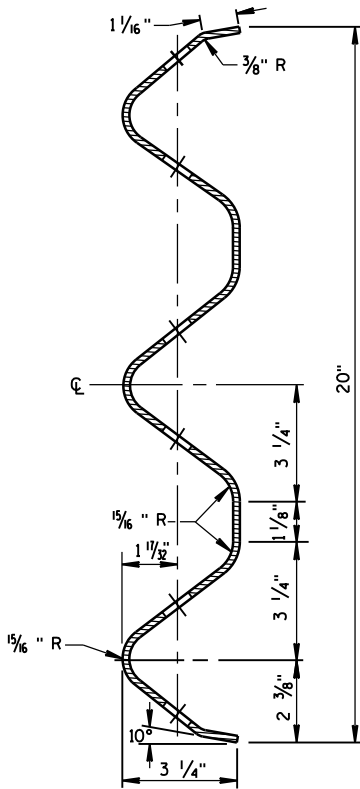
PLATE WASHER DETAIL



SPLICE DETAIL



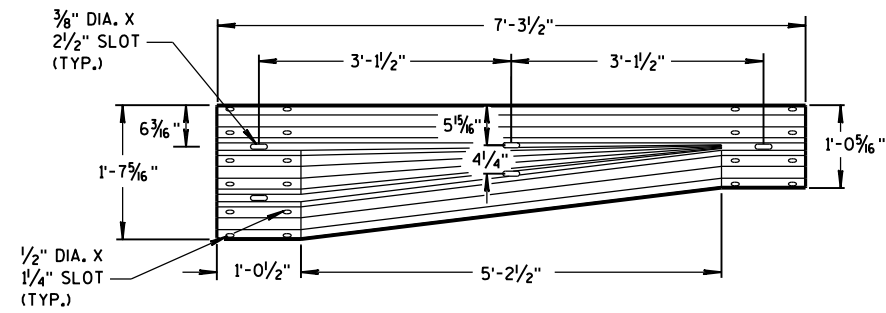
THRIE BEAM
TERMINAL CONNECTOR



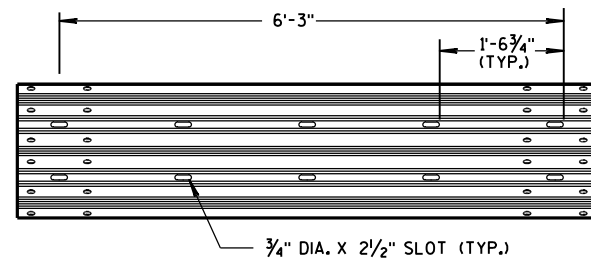
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

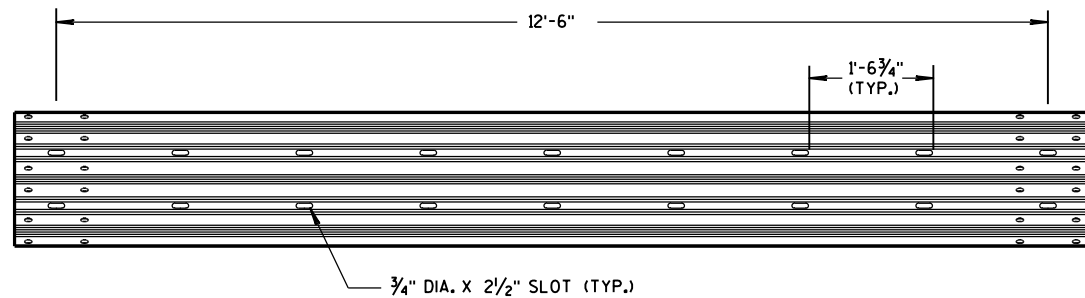
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



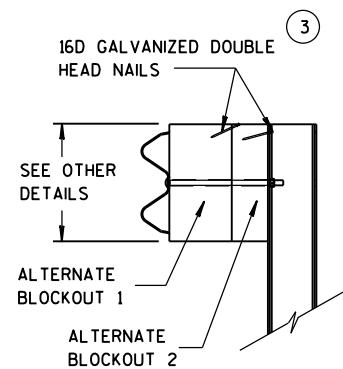
W-BEAM TO THRIE BEAM TRANSITION SECTION



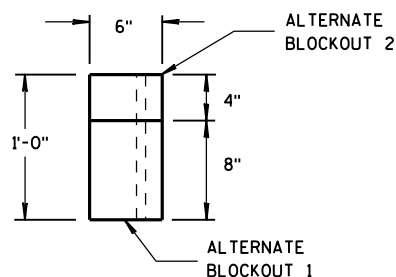
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

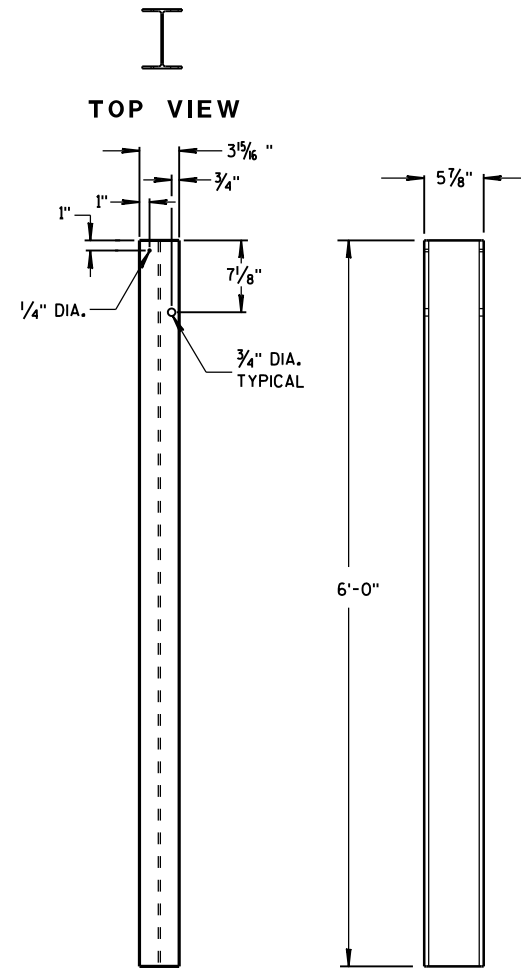


SIDE VIEW



TOP VIEW

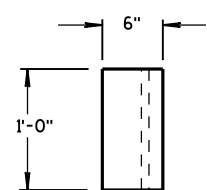
ALTERNATE WOOD BLOCKOUT DETAIL



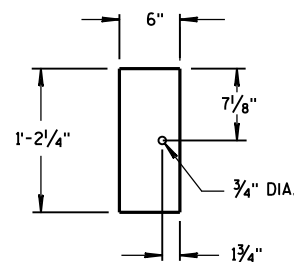
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

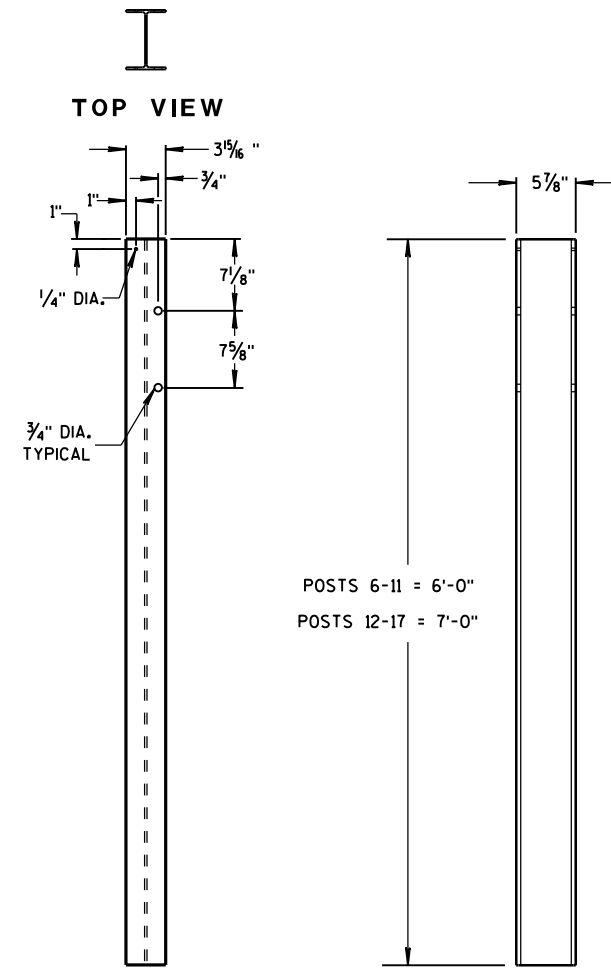


TOP VIEW



FRONT VIEW

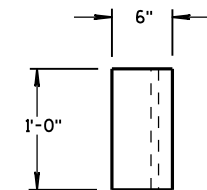
BLOCKOUT
POSTS 1-5



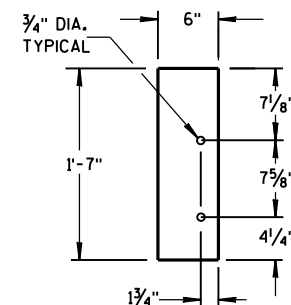
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT
POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

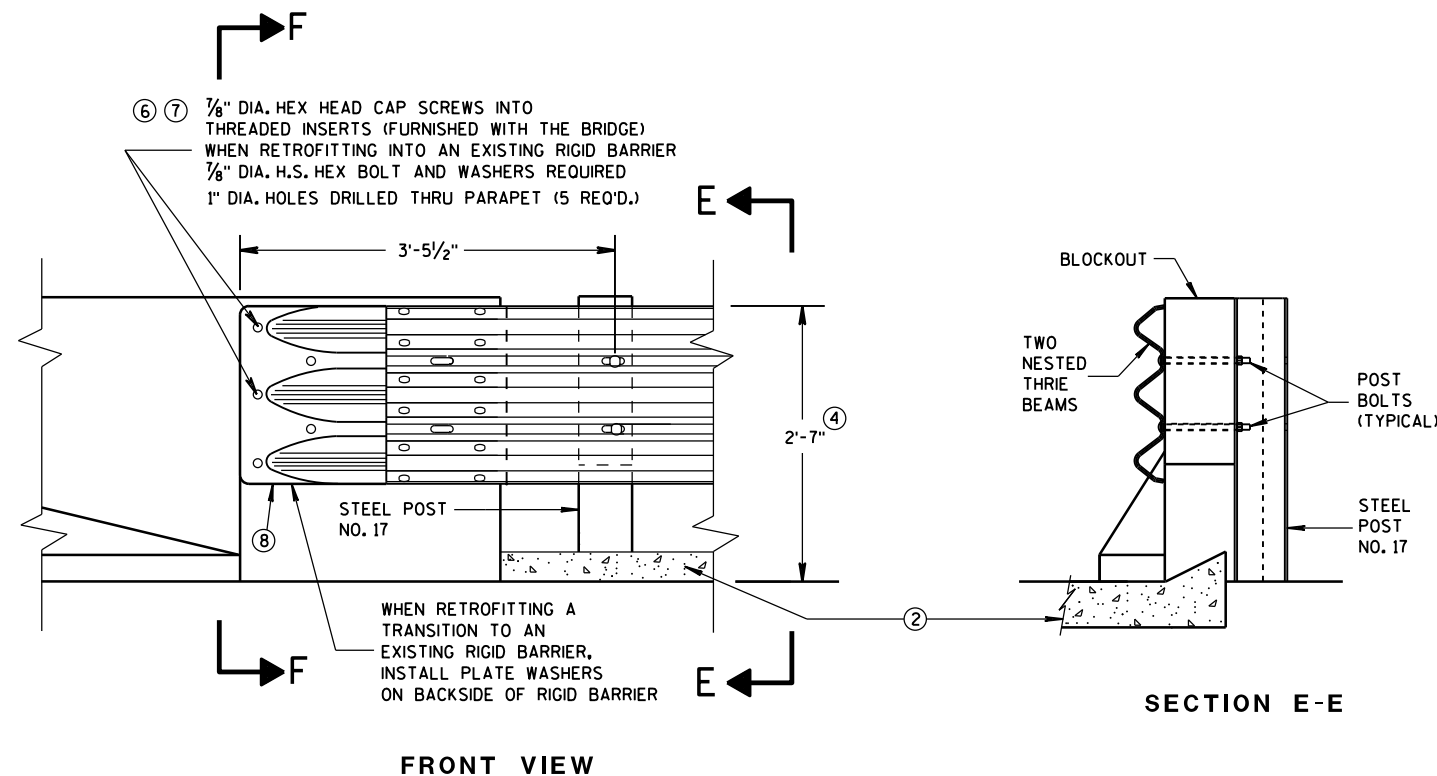
BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.

③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

⑤ WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

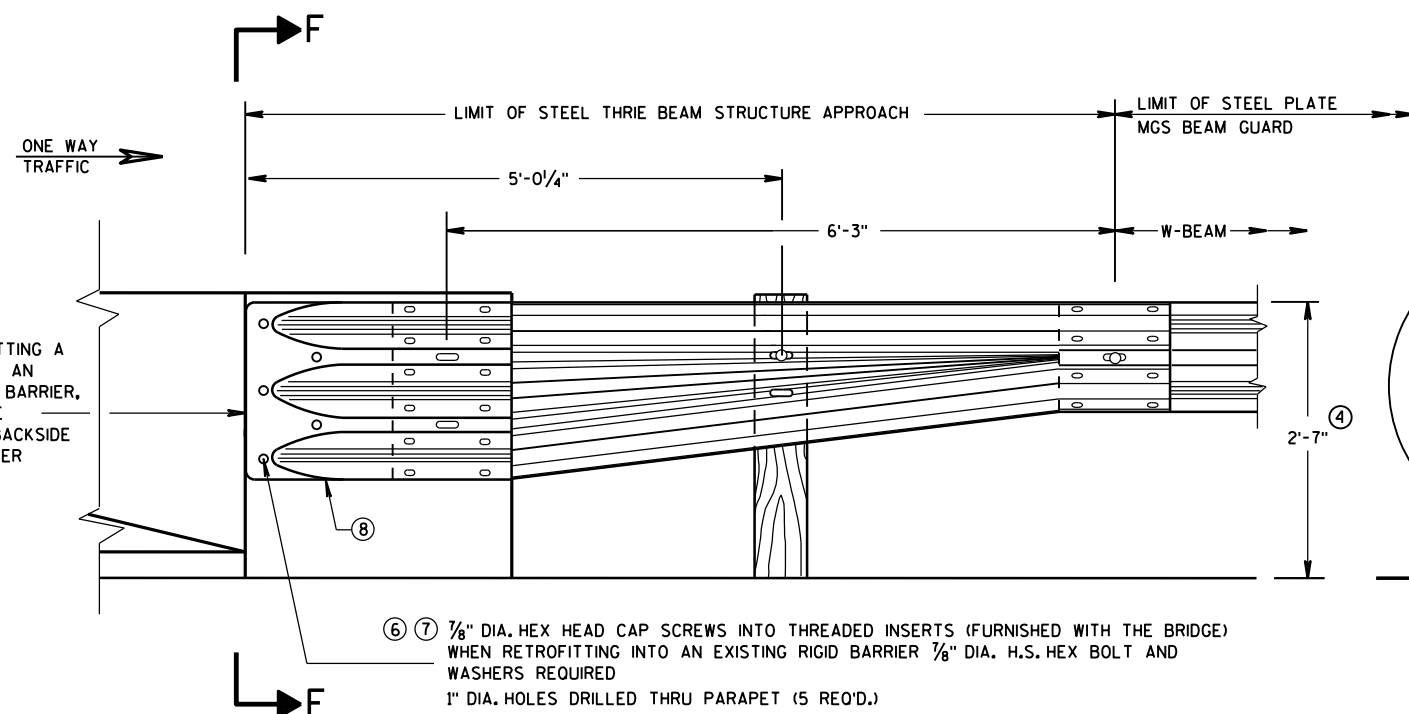
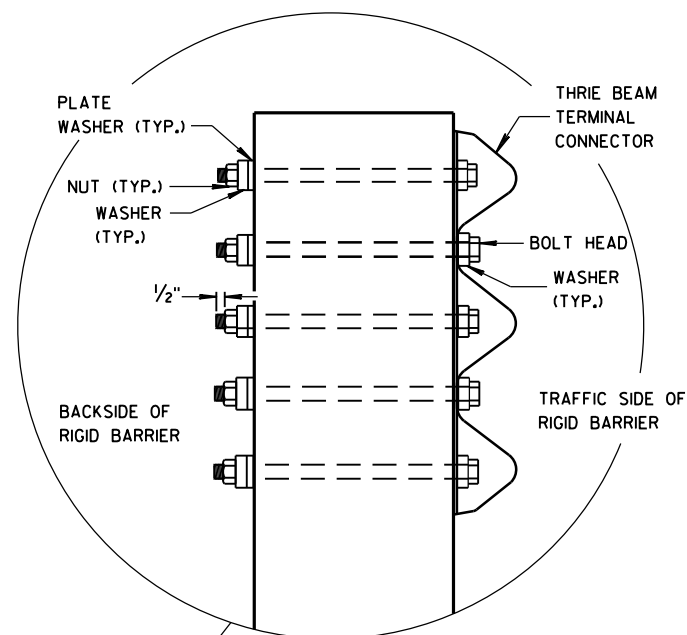


THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

GENERAL NOTES

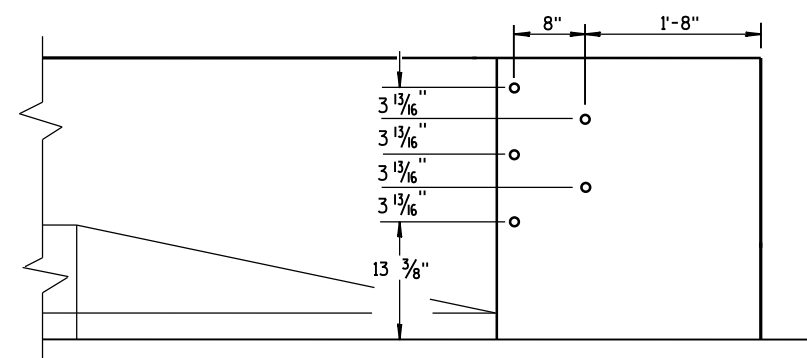
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".



W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

SECTION F-F



DRILL HOLE LOCATION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

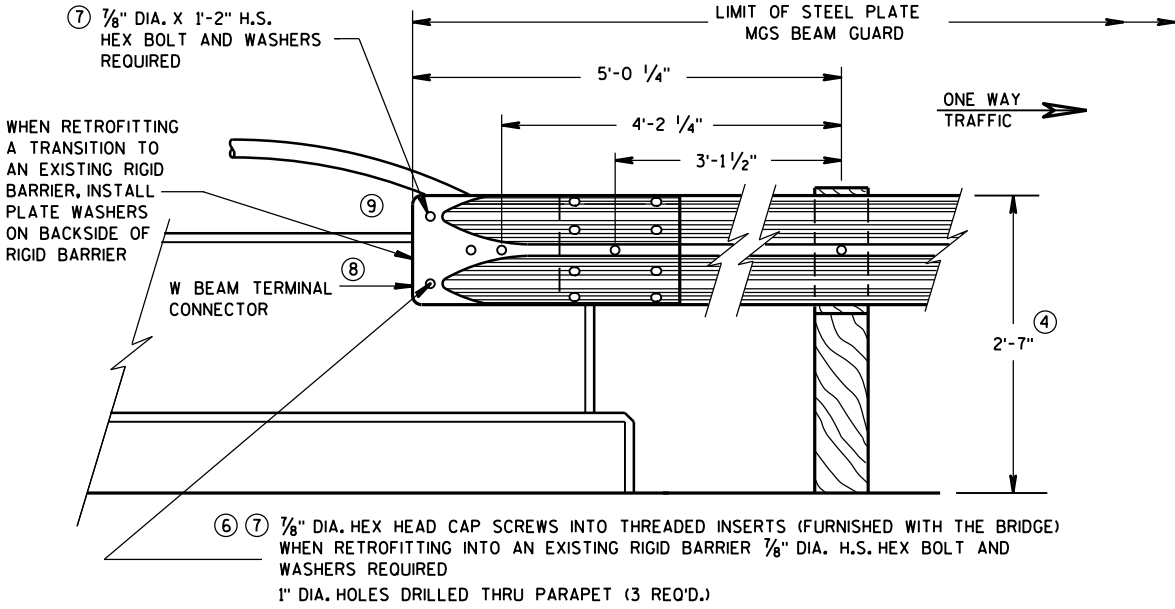
APPROVED
June, 2015
DATE
FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

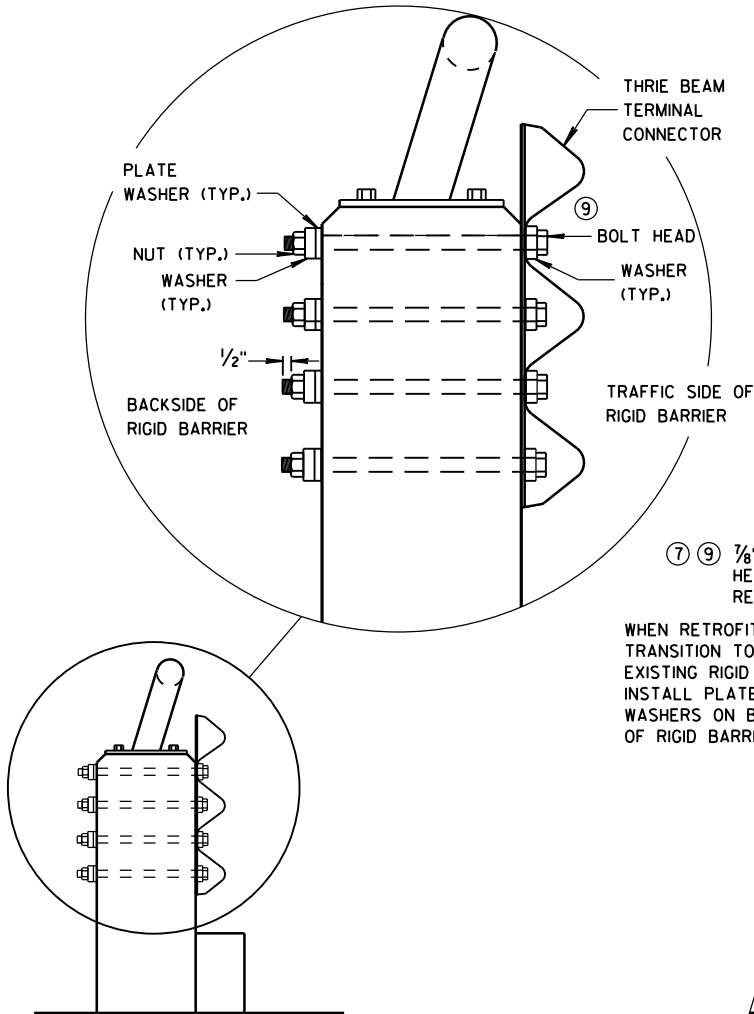
GENERAL NOTES

THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

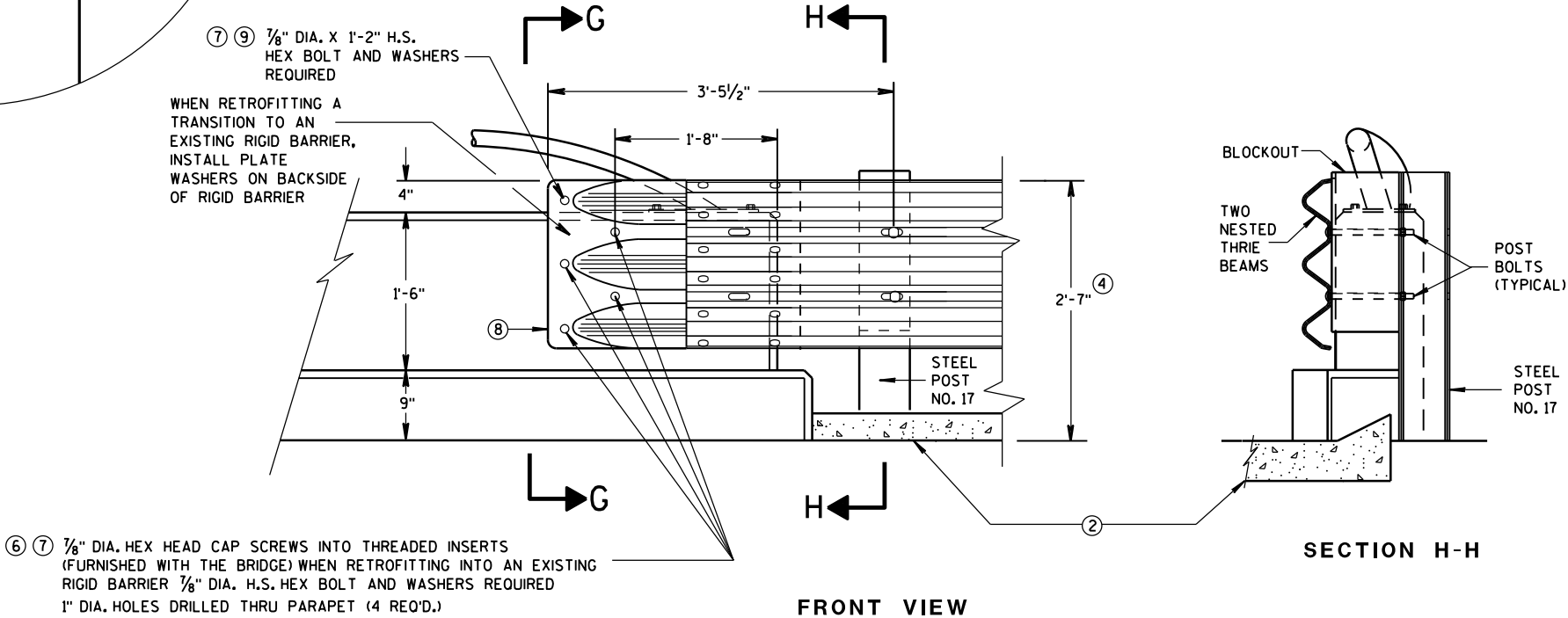
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X $\frac{5}{8}"$ THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 $\frac{1}{2}"$.
- ⑨ BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.



FRONT VIEW
W BEAM CONNECTION TO VERTICAL FACE PARAPET
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



SECTION G-G



FRONT VIEW

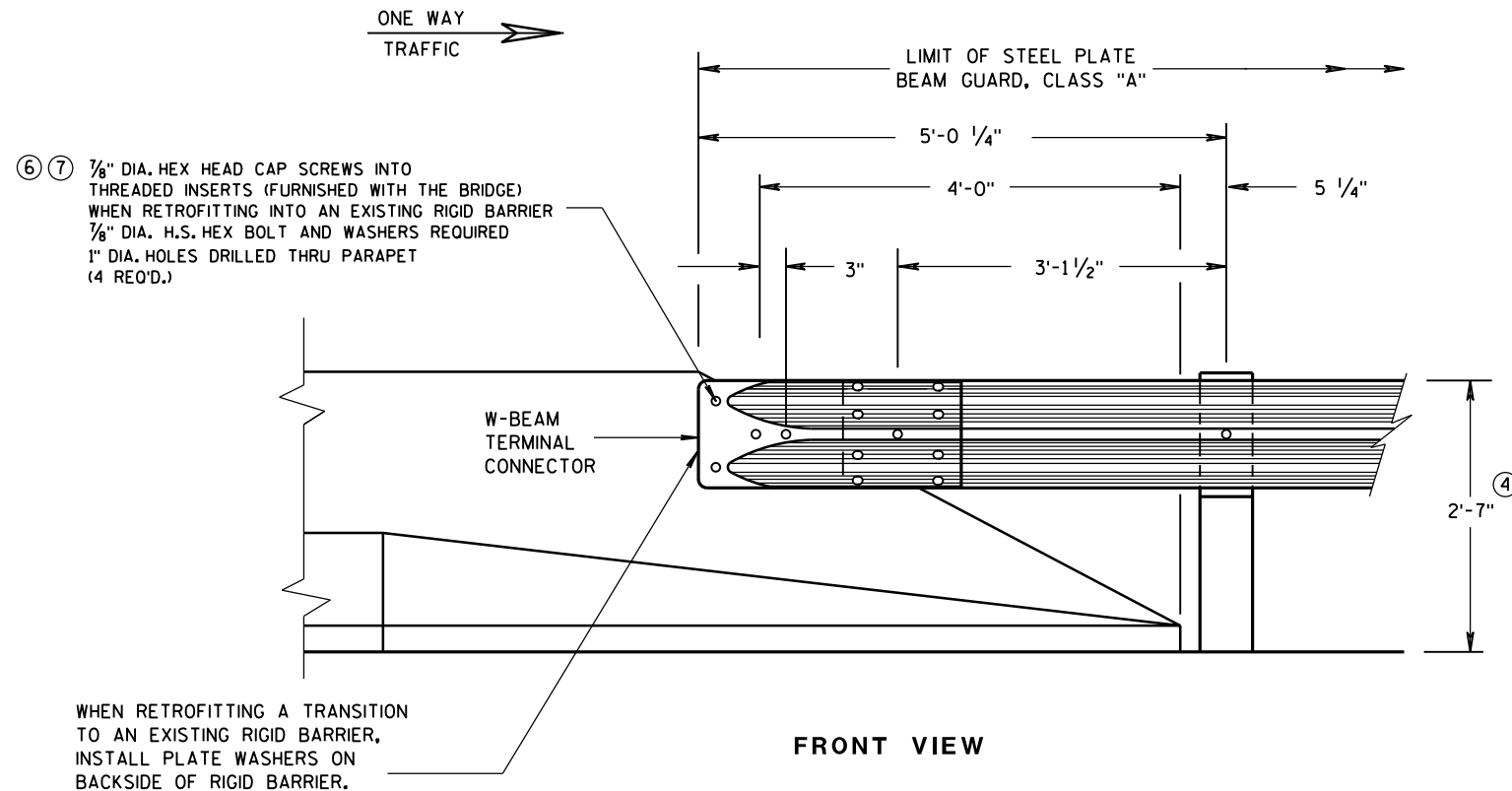
THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

SECTION H-H

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

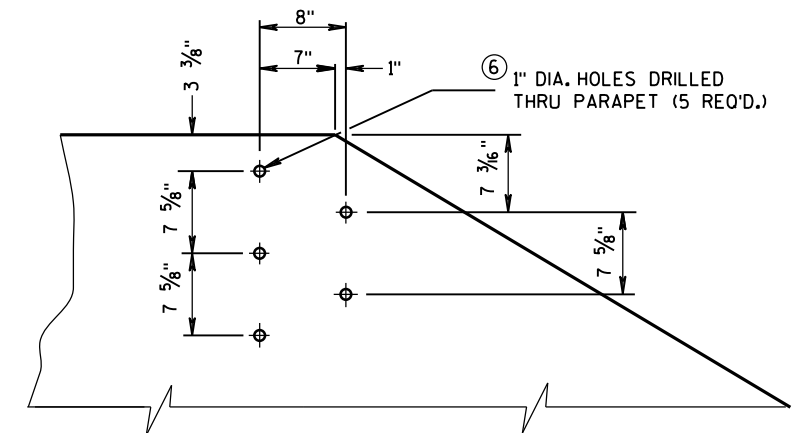
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

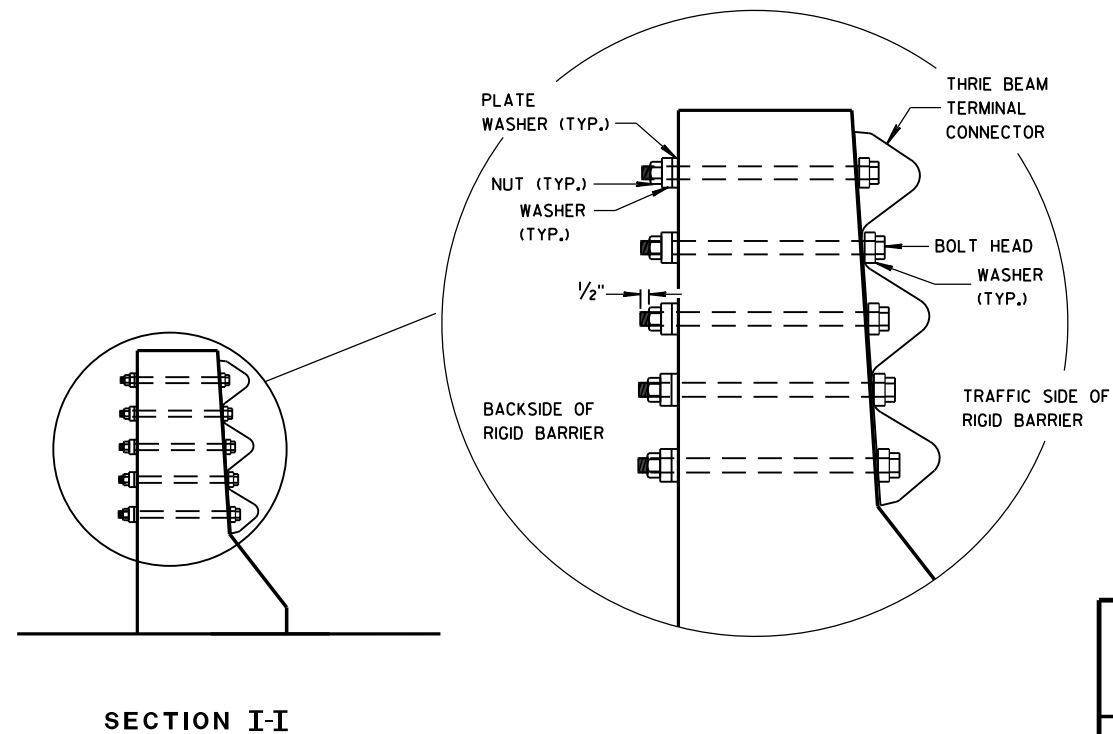
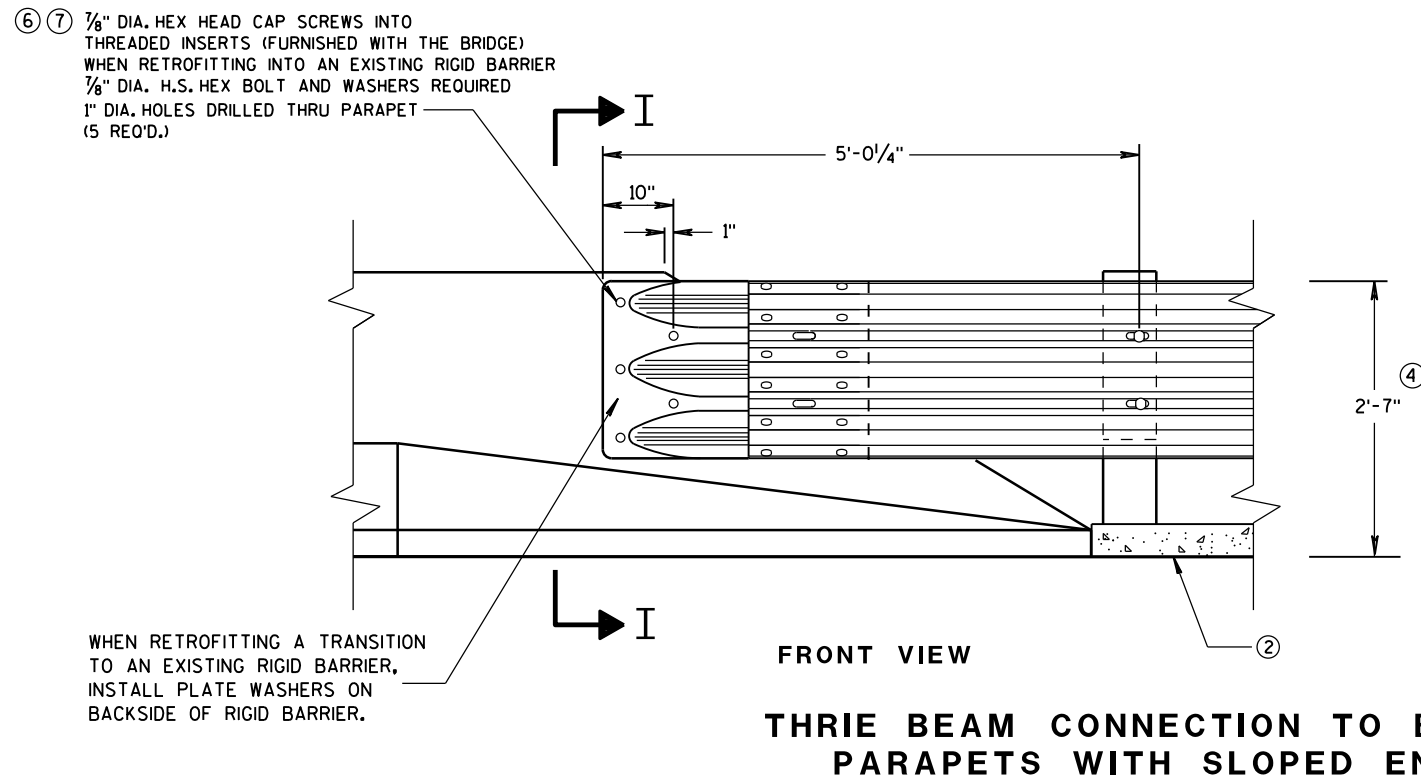


GENERAL NOTES

- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION

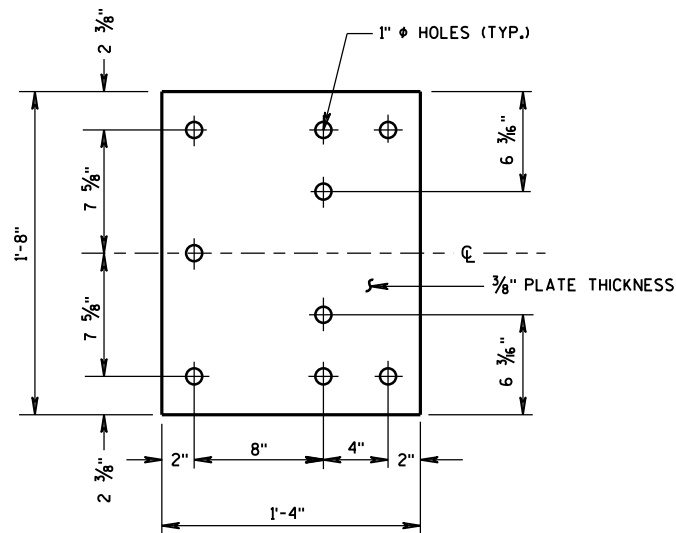


MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

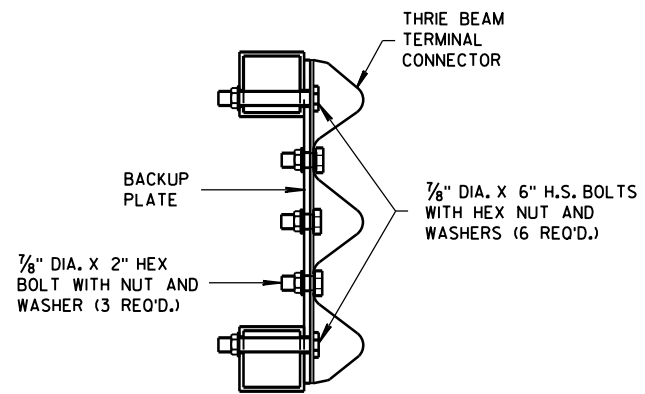
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE
FHWA

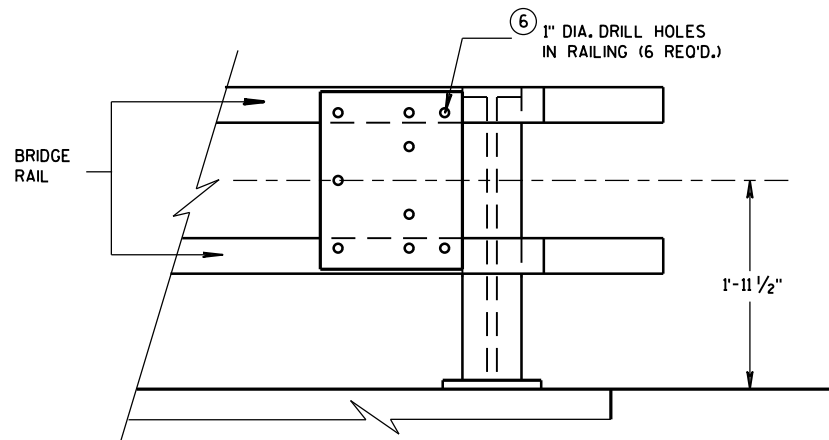
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



BACK-UP PLATE DETAIL



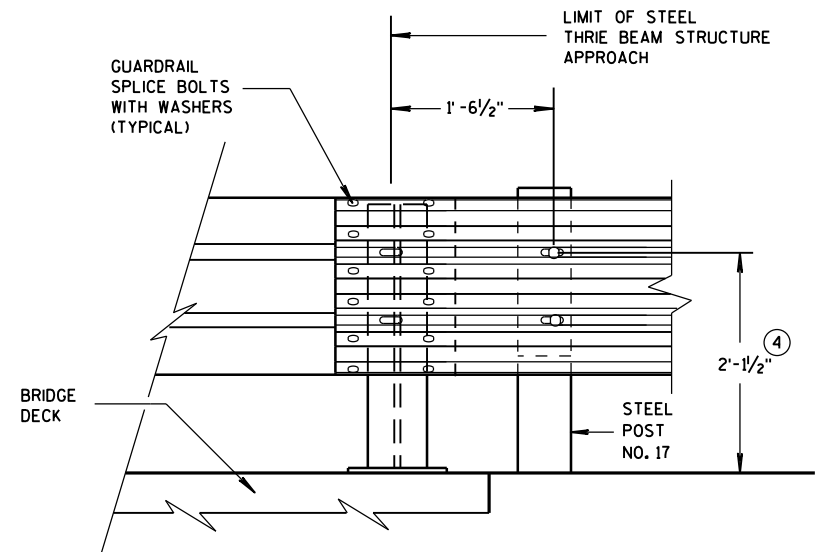
SECTION J-J



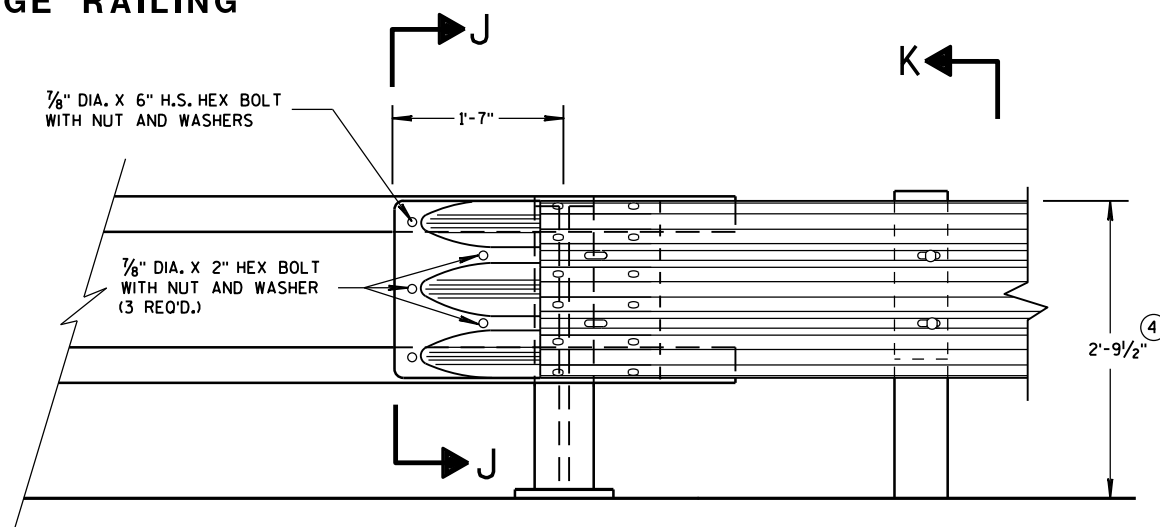
BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING HOLES THROUGH THE PAPER, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

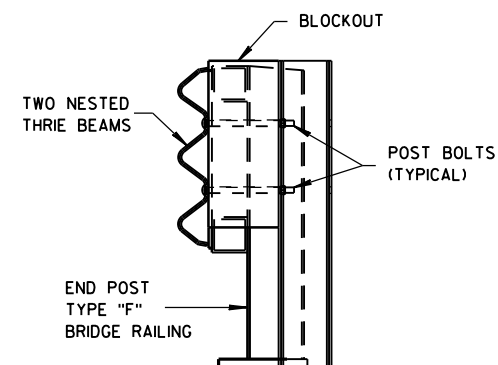


FRONT VIEW
THRIE BEAM CONNECTION TO
STEEL RAILING TYPE "W"



FRONT VIEW

THRIE BEAM CONNECTION TO
TUBULAR RAILING TYPE "F"



SECTION K-K

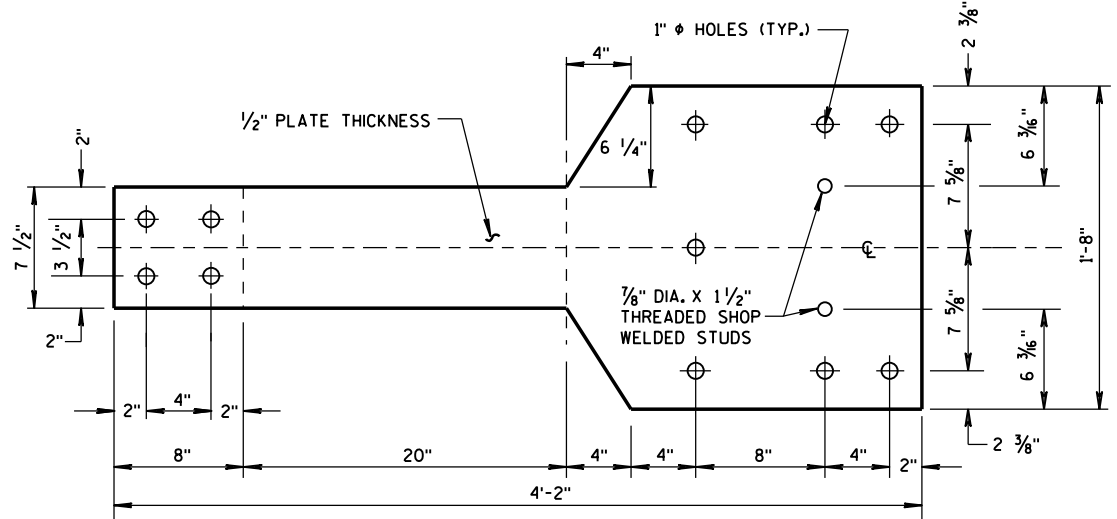
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

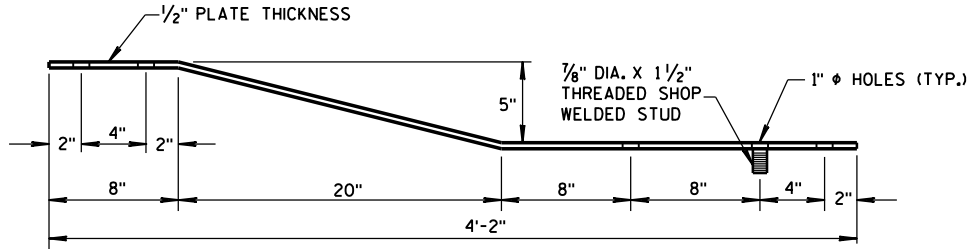
APPROVED
June, 2015 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

GENERAL NOTES

④ TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.

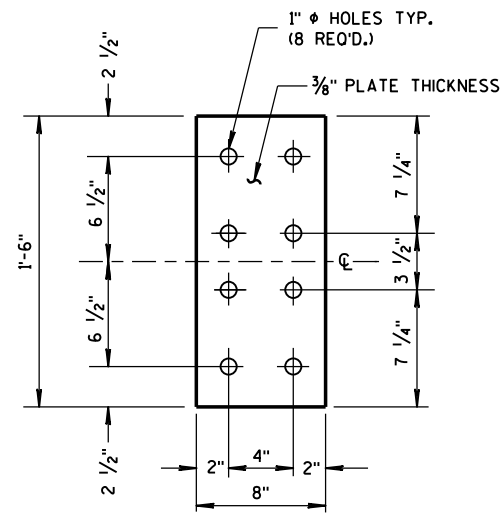


FRONT VIEW



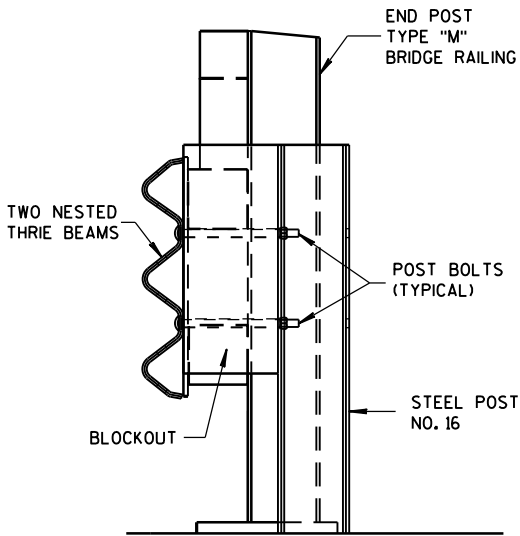
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

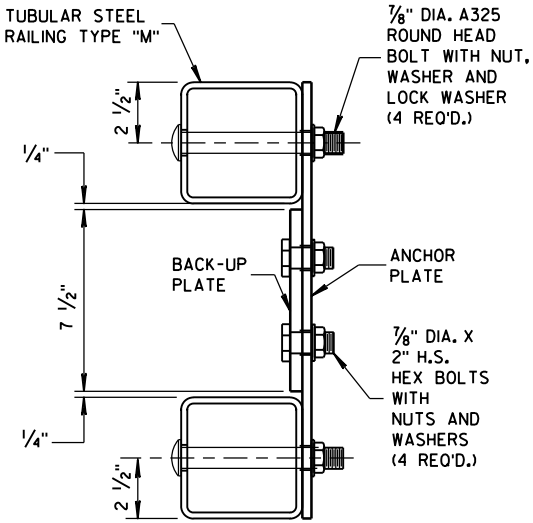


FRONT VIEW

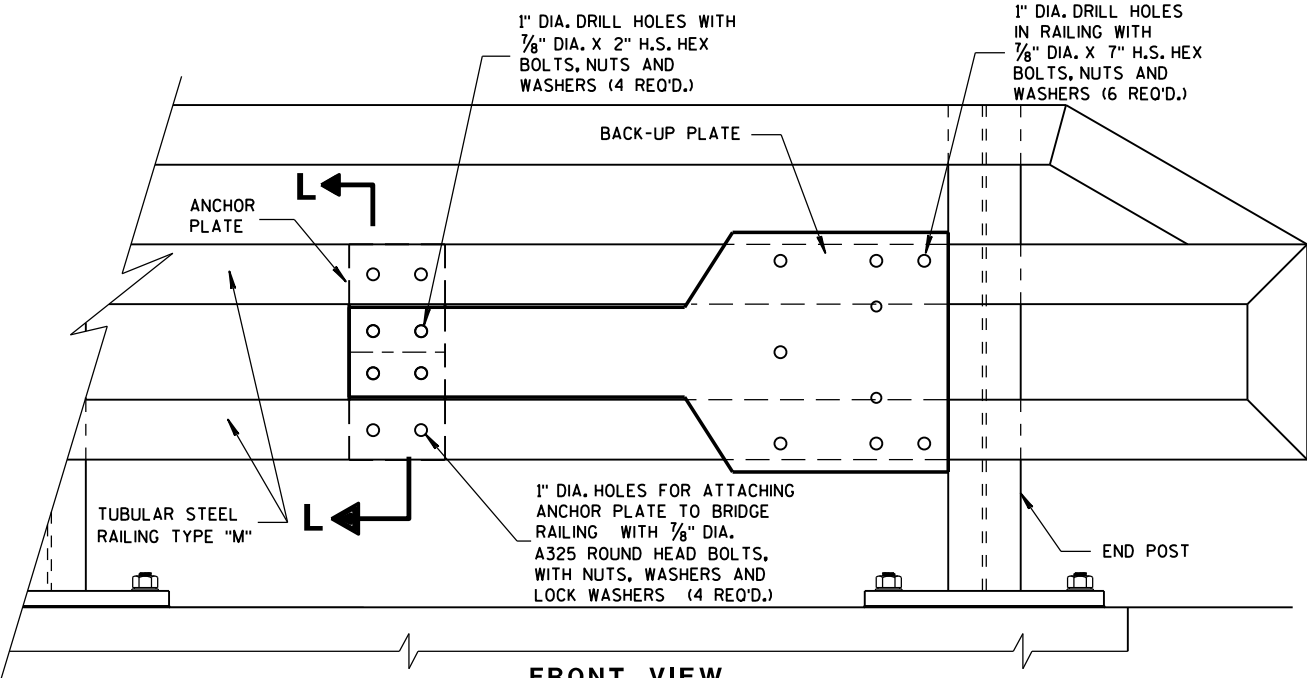
ANCHOR PLATE DETAIL, TYPE "M"



SECTION M-M

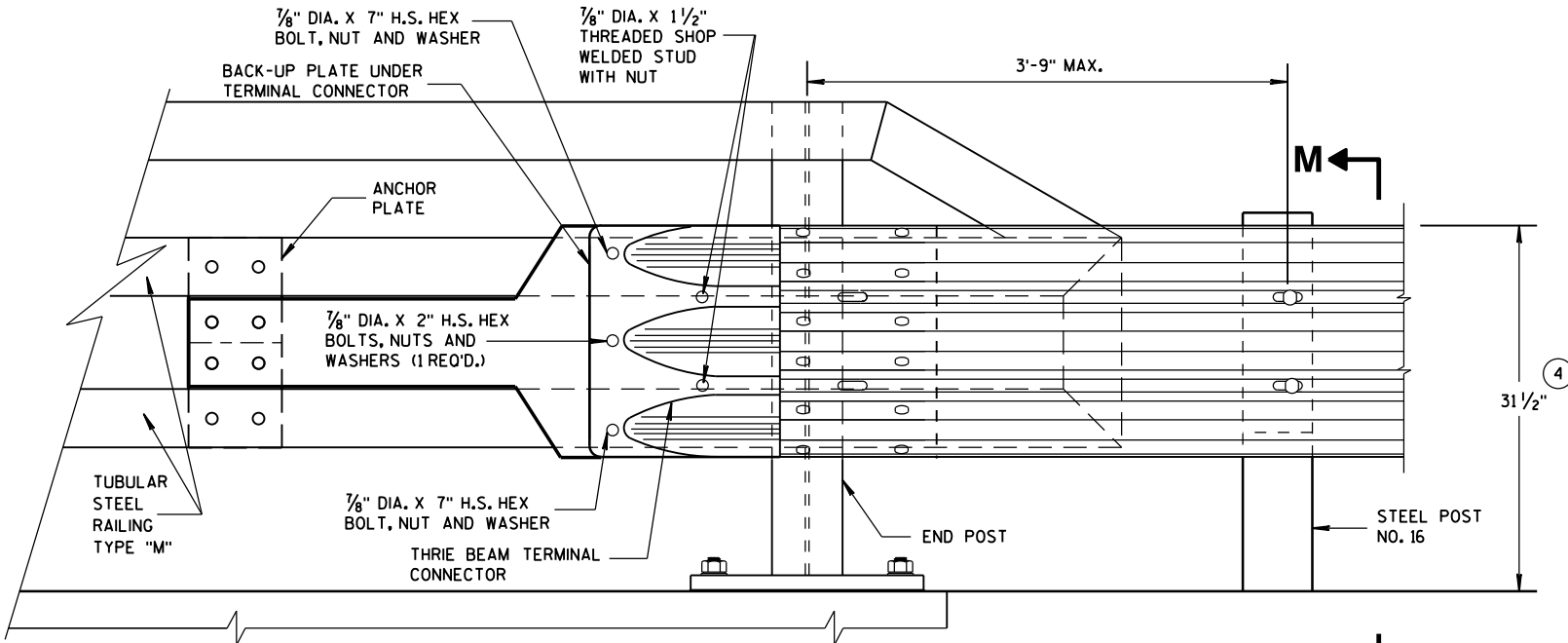


SECTION L-L

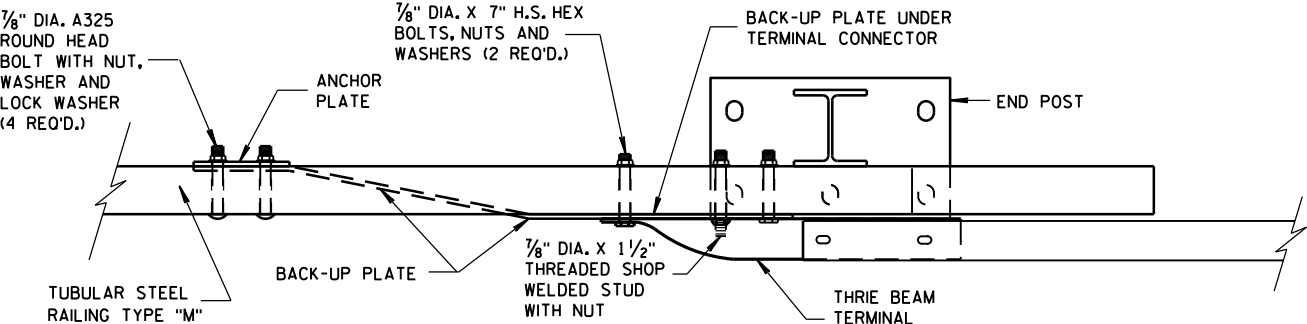


FRONT VIEW

ANCHOR AND BACK-UP PLATE MOUNTING TO BRIDGE RAILING, TYPE "M"



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June, 2015

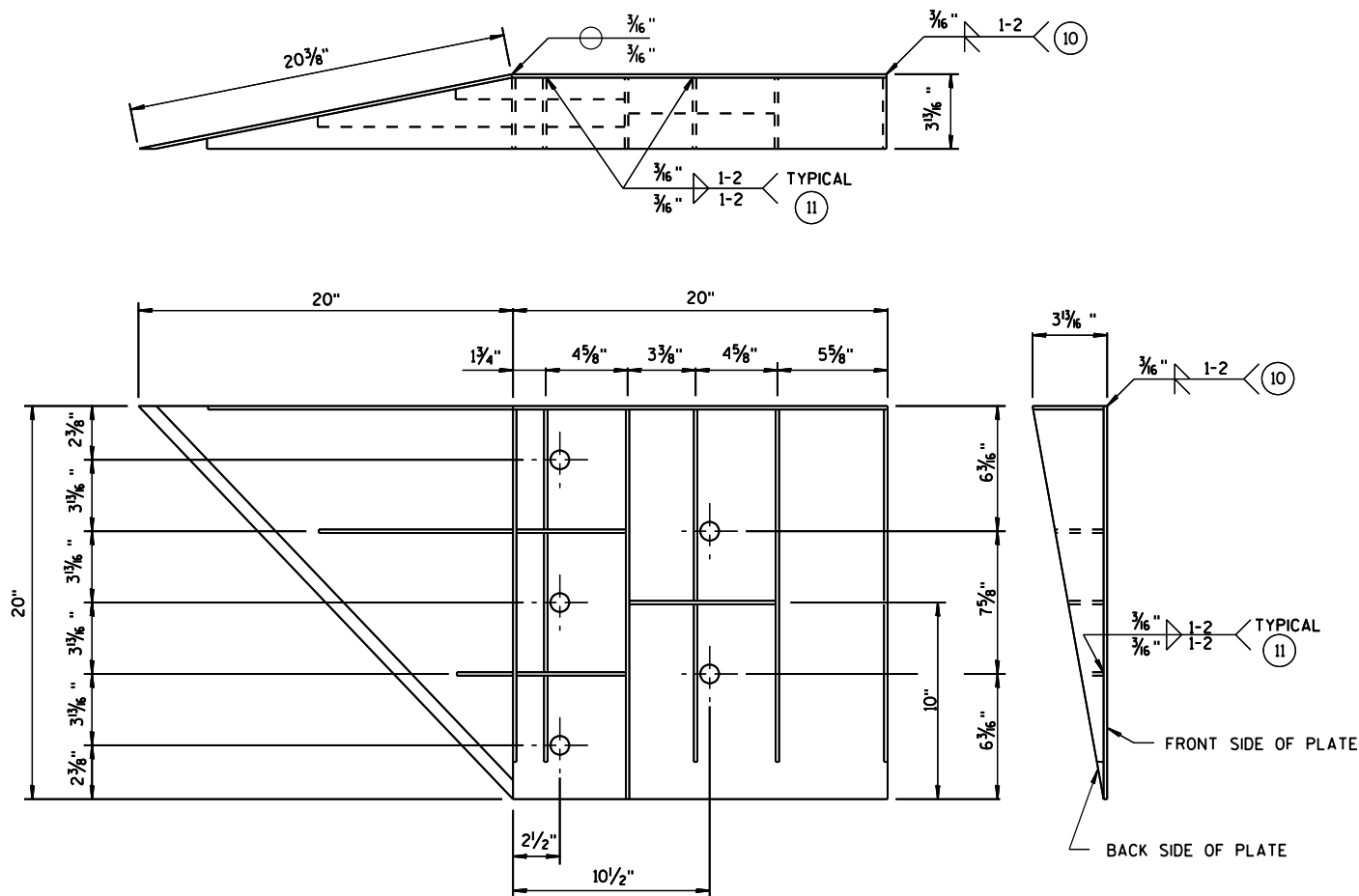
DATE

FHWA

/s/ Jerry H. Zogg

ROADWAY STANDARDS DEVELOPMENT

ENGINEER

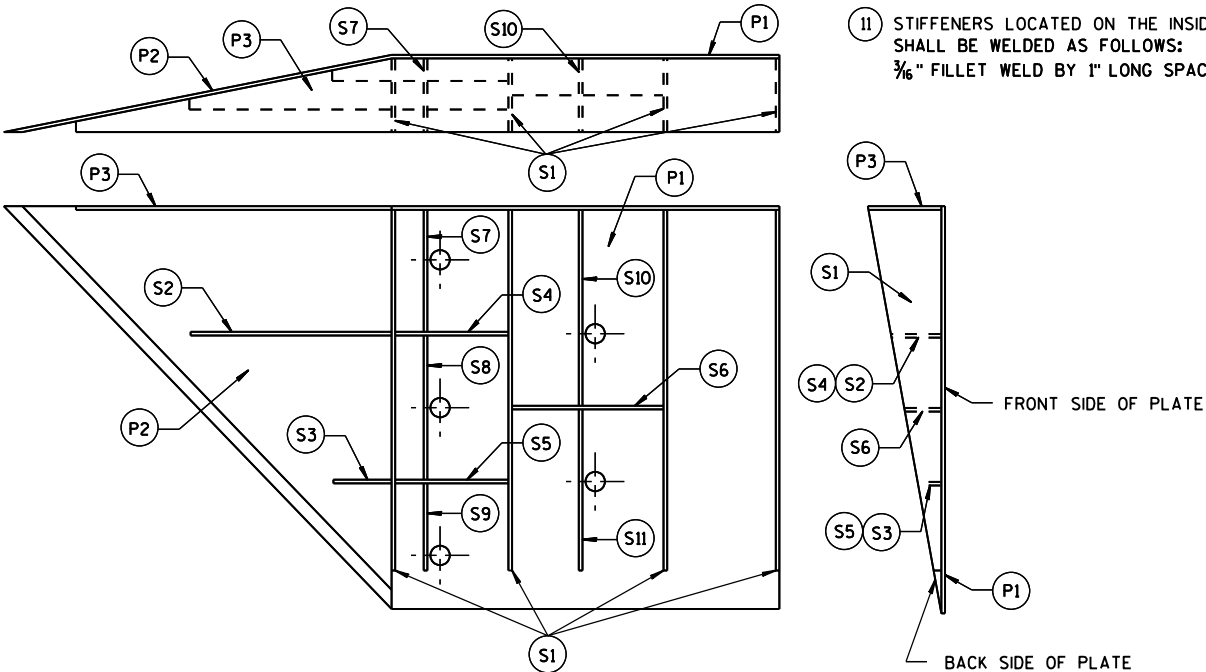


WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

SINGLE SLOPE CONNECTION PLATE

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)				
PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 9/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 1/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 1/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 9/16" x 6" x 3 5/8" x 5 1/8"	1/4"
S8	1		1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 7/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 1/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 1/16"	1/4"

PLATE AND STIFFENER IDENTIFICATION
(VIEWED FROM BACK SIDE OF PLATE)



GENERAL NOTES

- COVER PLATE PANELS ARE 3/16" THICK.
- ALL STIFFENERS ARE 1/4" THICK.
- CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.
- FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.
- ALL HOLE DIAMETERS SHALL BE 1".
- FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

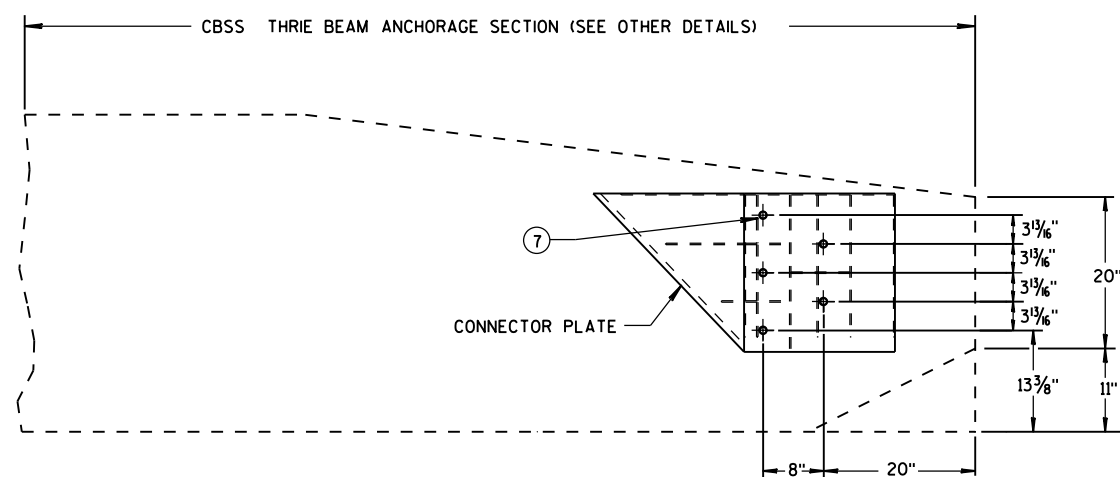
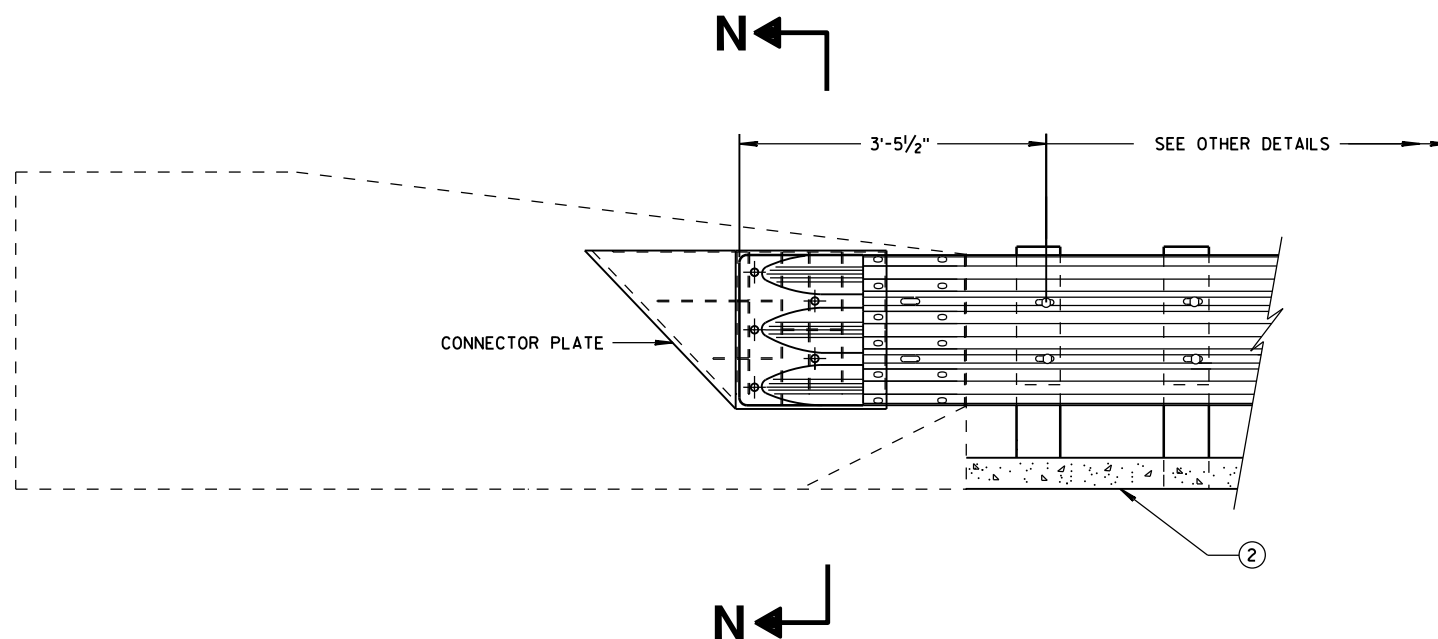
- 10 STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- 11 STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA ENGINEER

THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



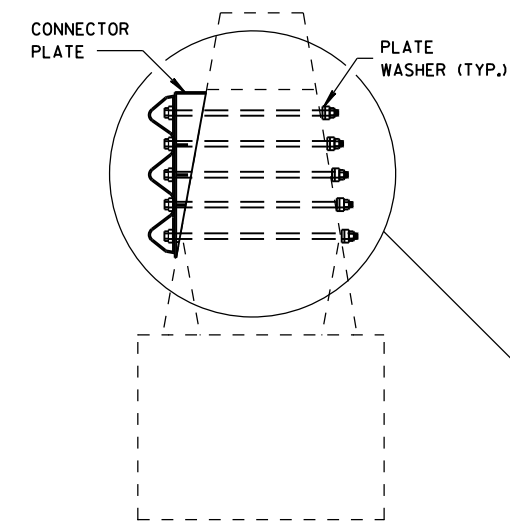
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

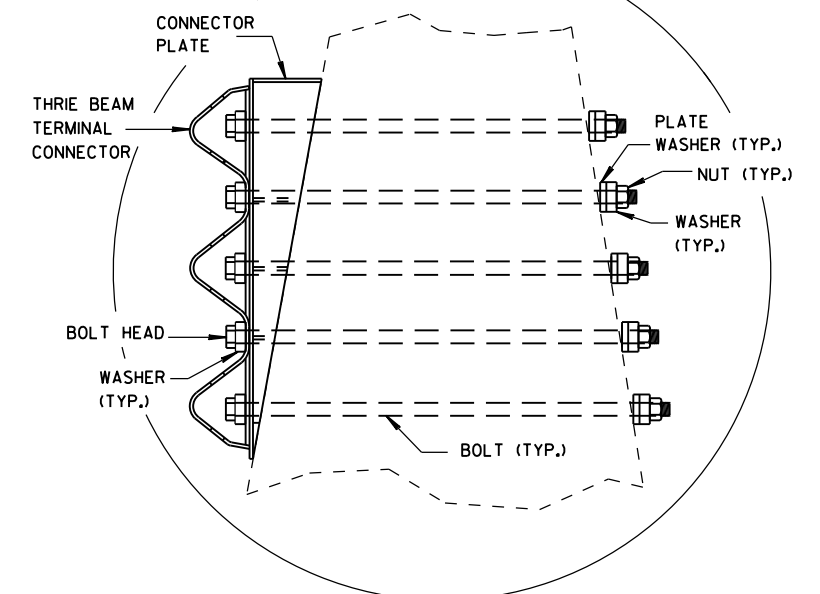
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

(2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

(7) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



SECTION N-N



MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June, 2015

DATE

FHWA

/s/ Jerry H. Zogg

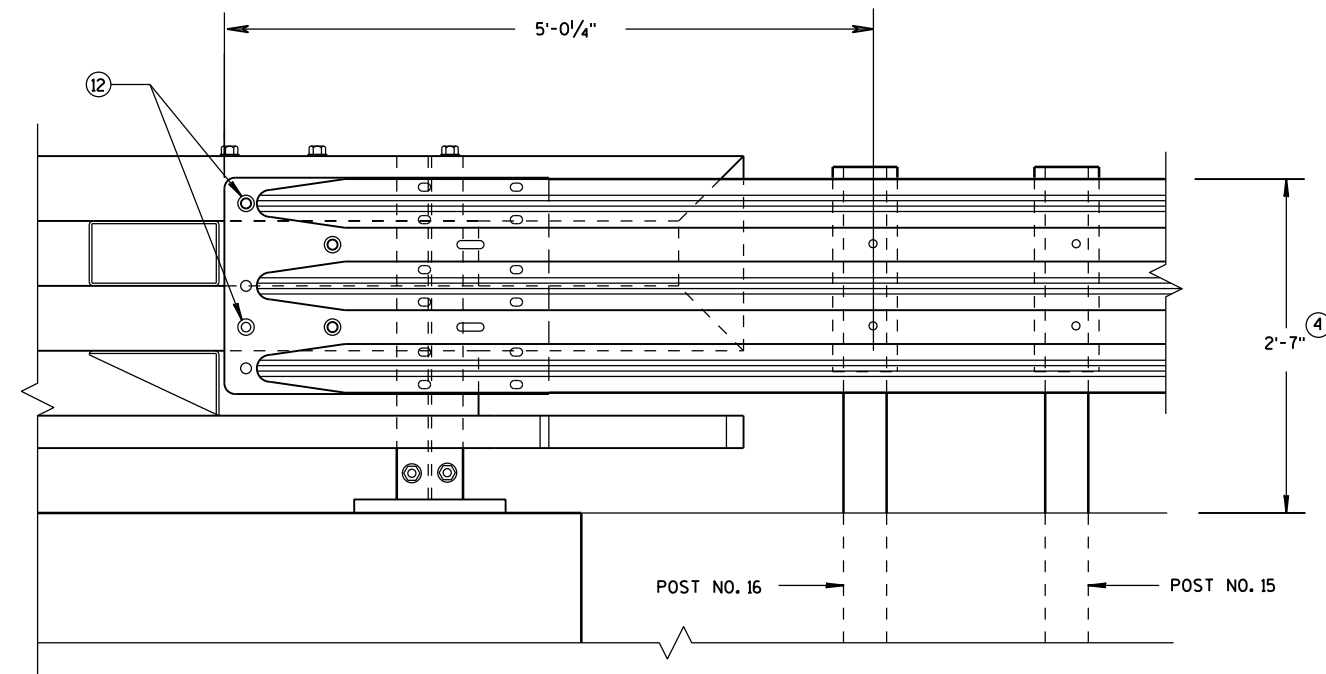
ROADWAY STANDARDS DEVELOPMENT

ENGINEER

GENERAL NOTES

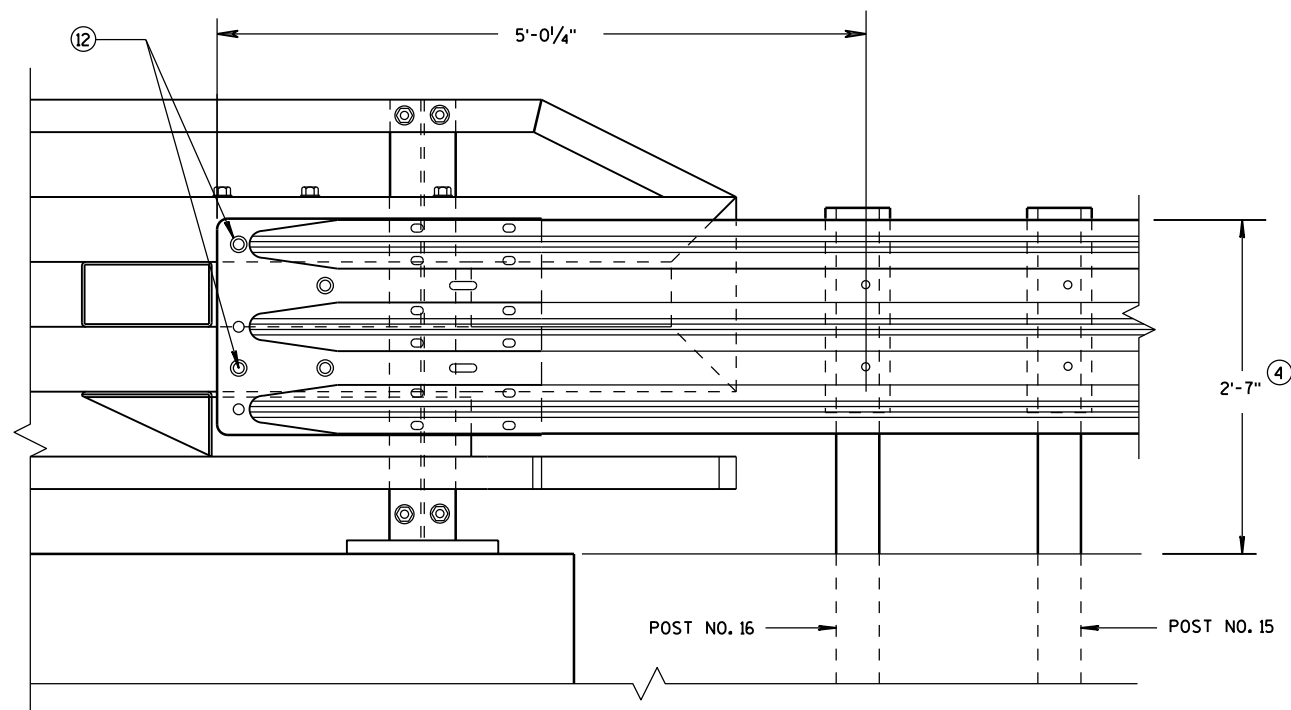
④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.

⑫ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND $\frac{1}{2}$ -INCH BEYOND NUT.



ELEVATION OF DETAIL AT NY3 END POST

THRIE BEAM RAIL ATTACHMENT



ELEVATION OF DETAIL AT NY4 END POST

THRIE BEAM RAIL ATTACHMENT

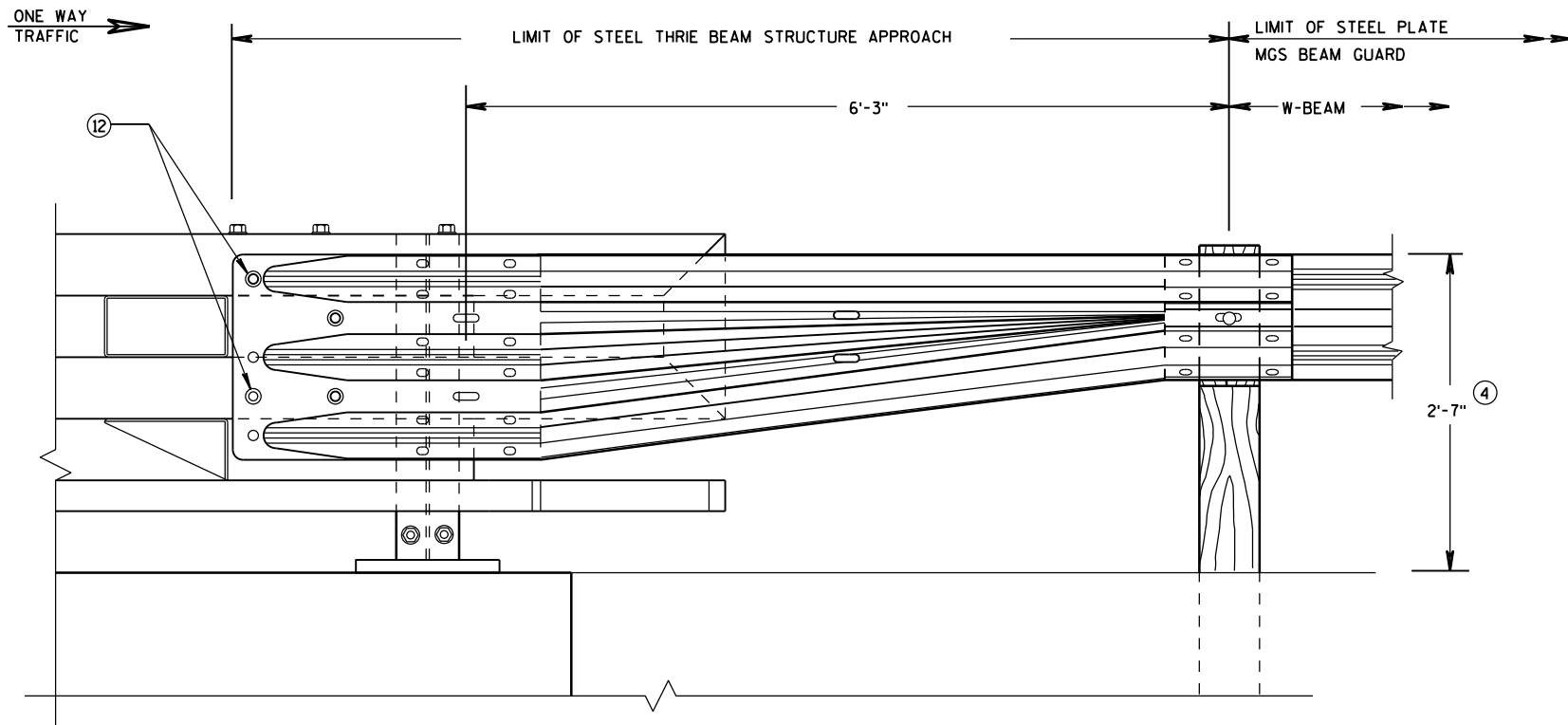
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE

FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

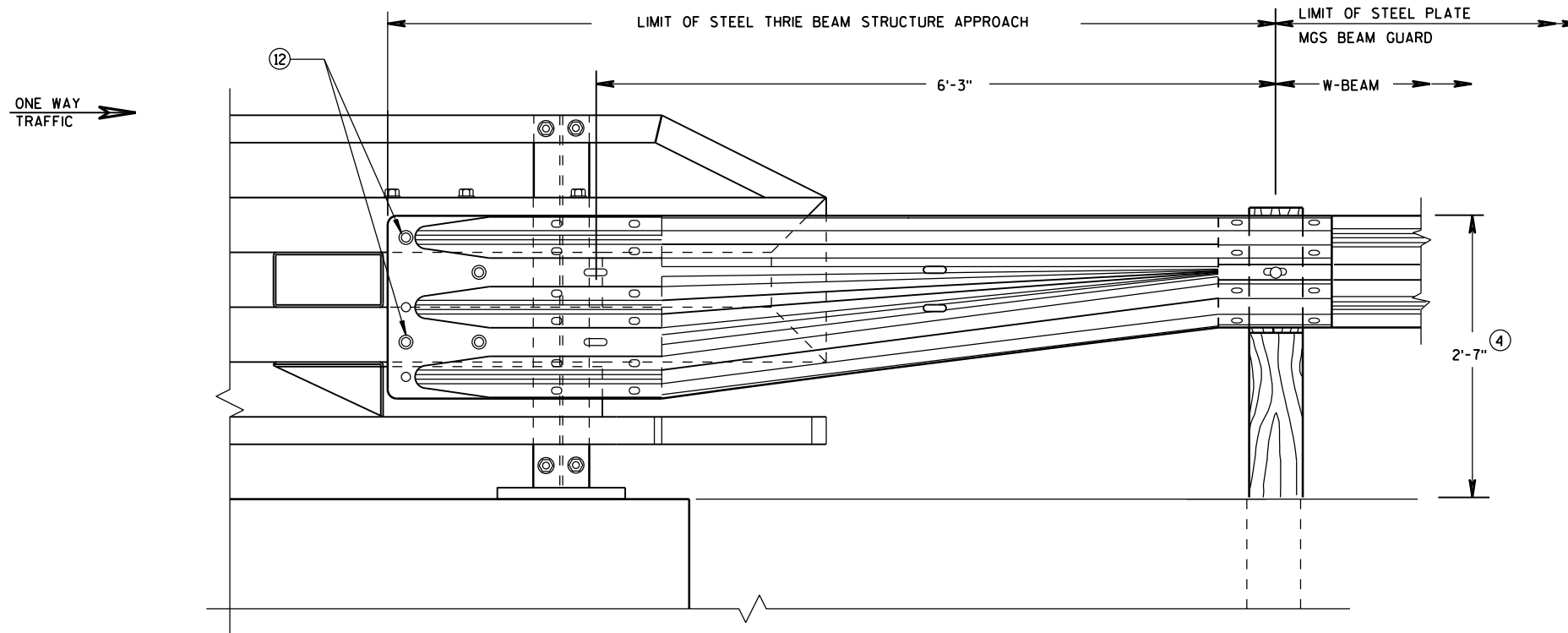


FRONT VIEW

**W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY3"**
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑫ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND $\frac{1}{2}$ -INCH BEYOND NUT.



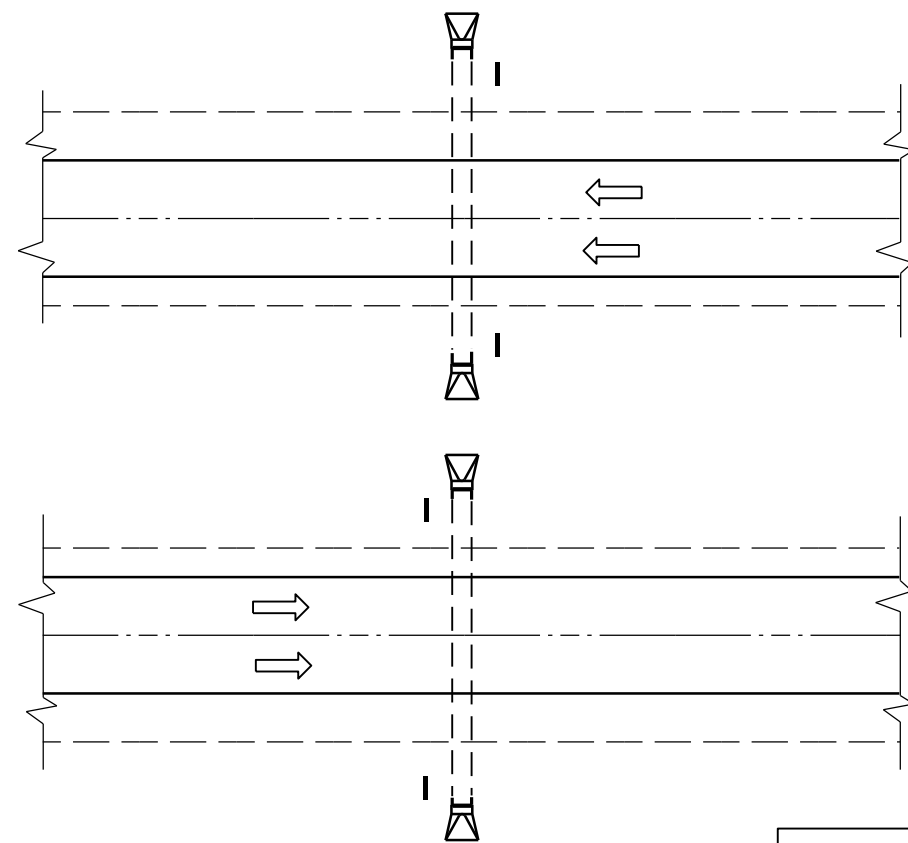
FRONT VIEW

**W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY4"**
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

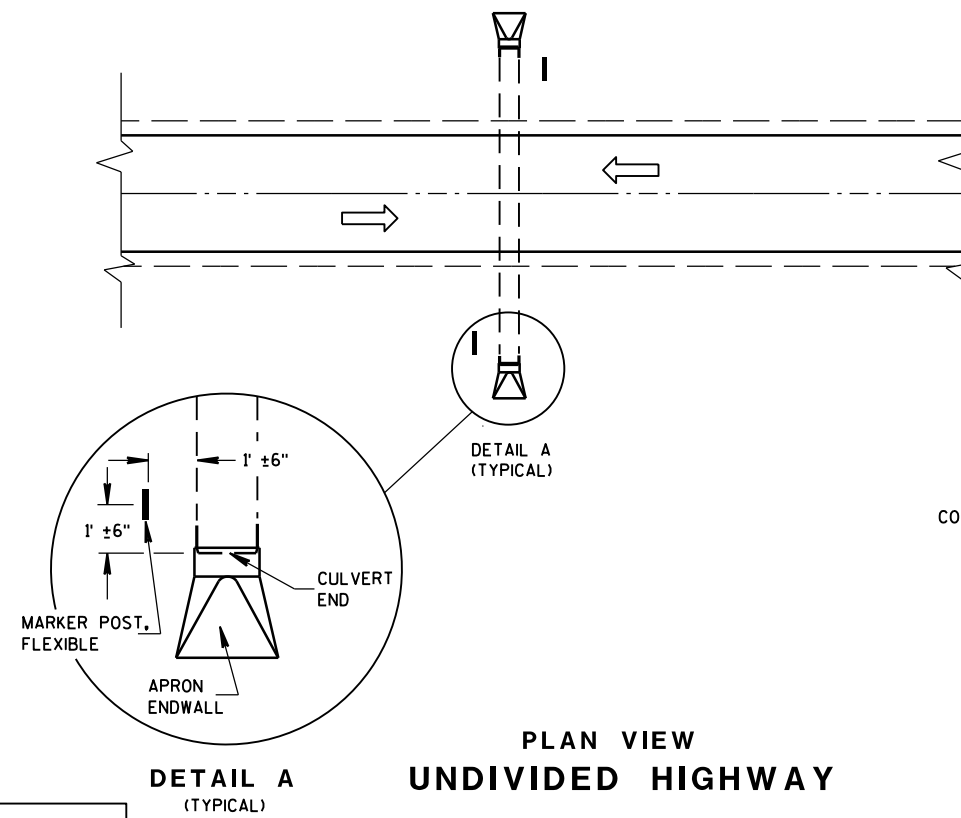
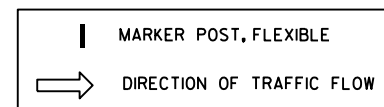
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED June, 2015	/S/ Jerry H. Zogg
DATE	ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



PLAN VIEW
DIVIDED HIGHWAY

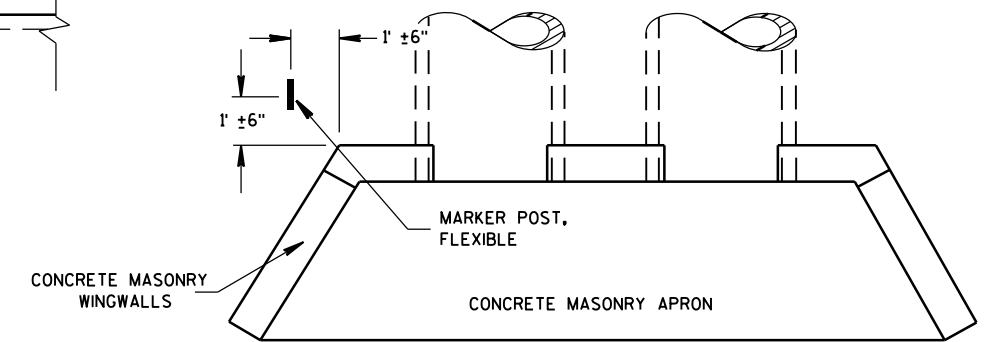


PLAN VIEW
UNDIVIDED HIGHWAY

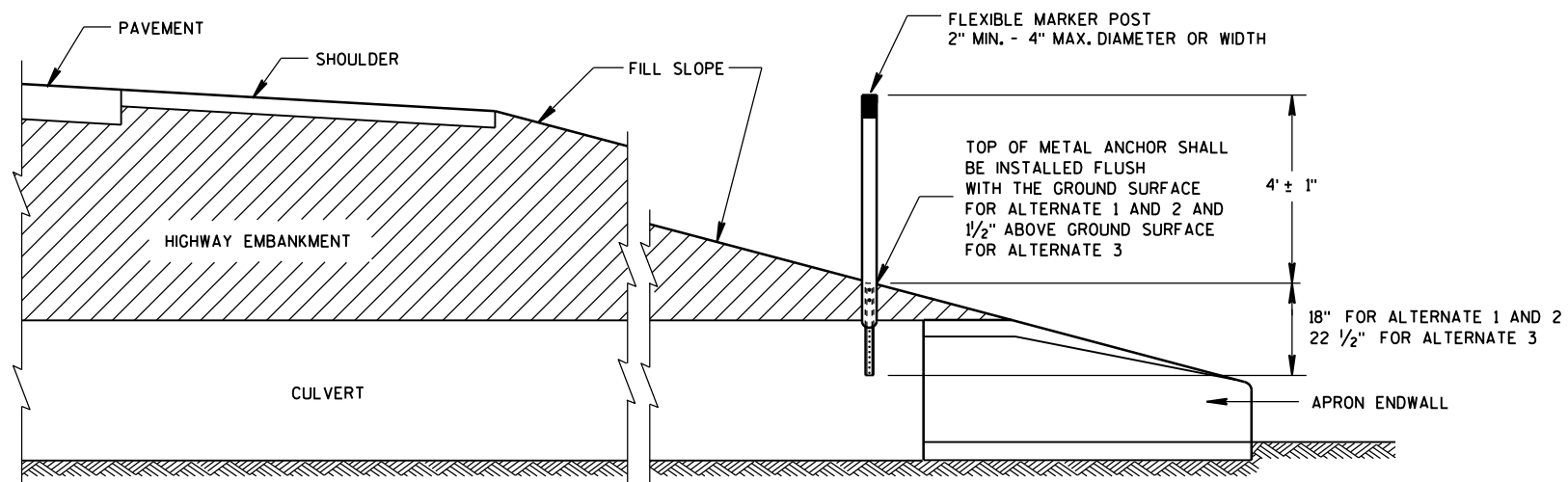
FLEXIBLE MARKER POST LOCATION

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.



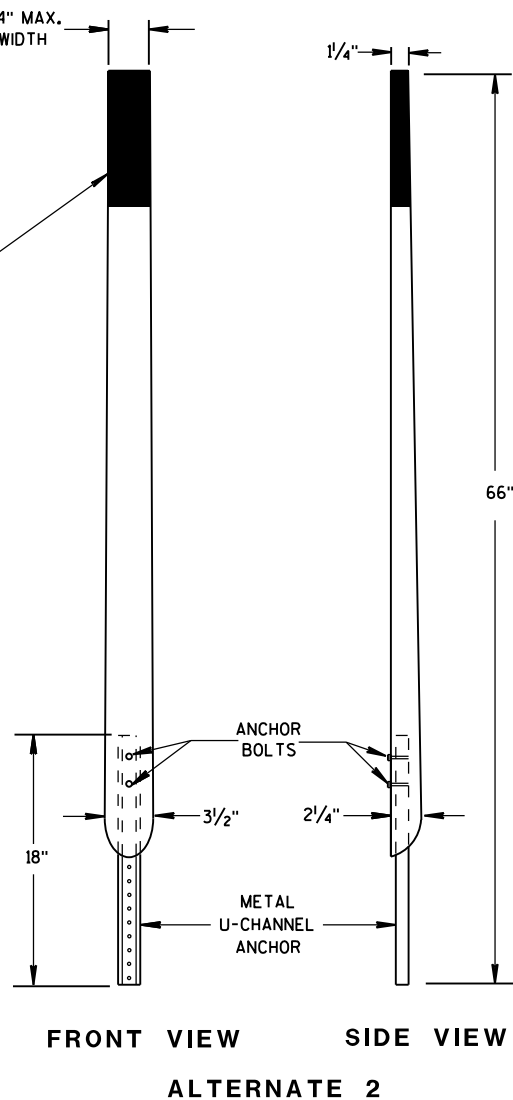
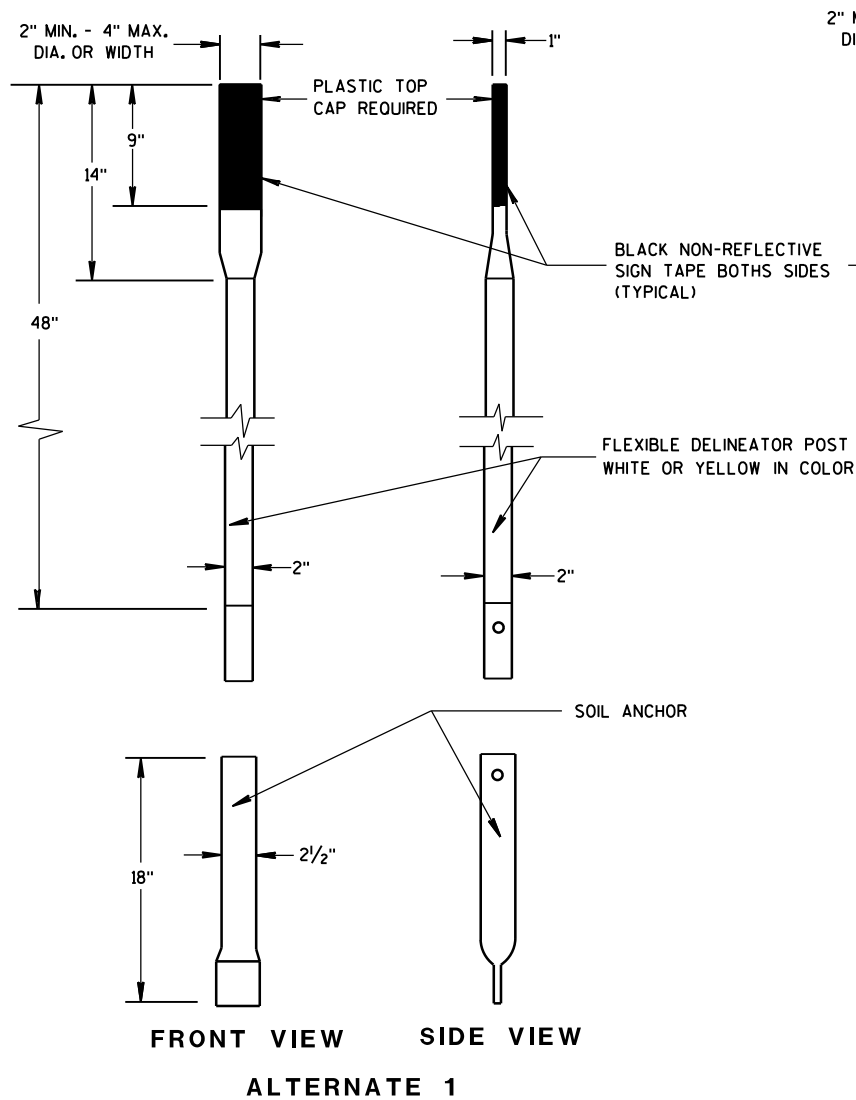
PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH



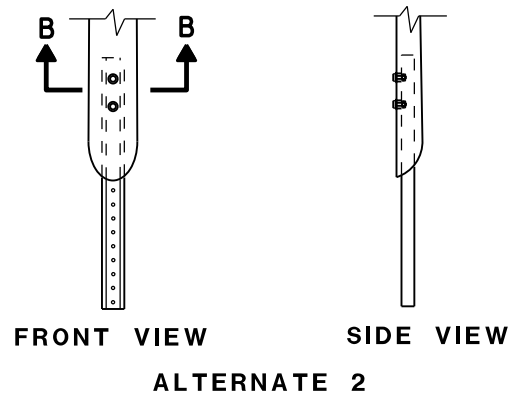
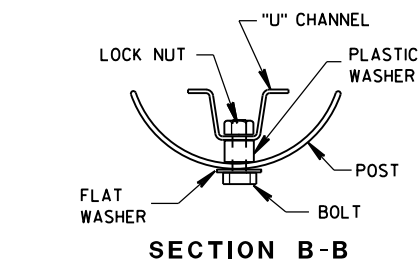
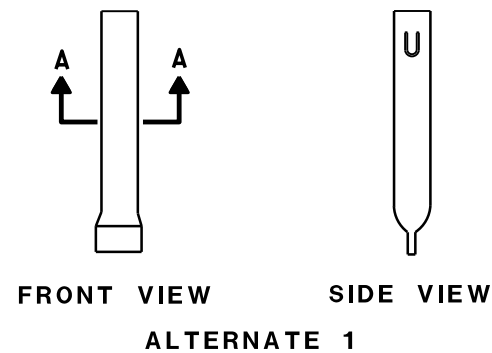
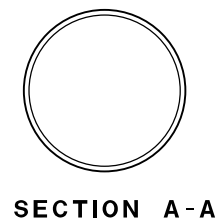
CROSS SECTION
FLEXIBLE MARKER POST

FLEXIBLE MARKER POST
FOR CULVERT END

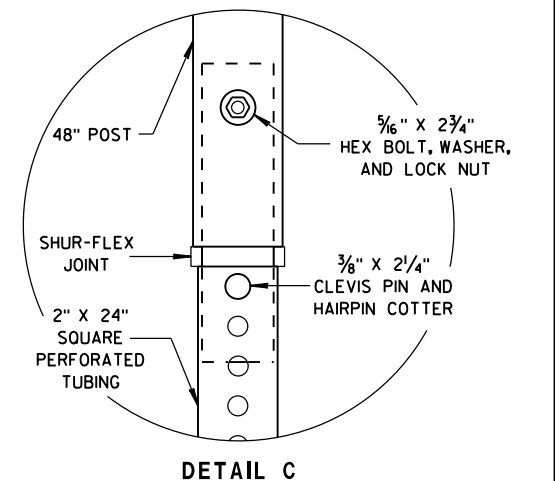
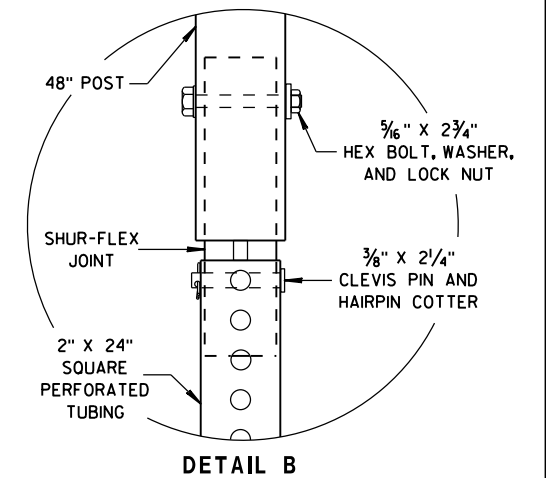
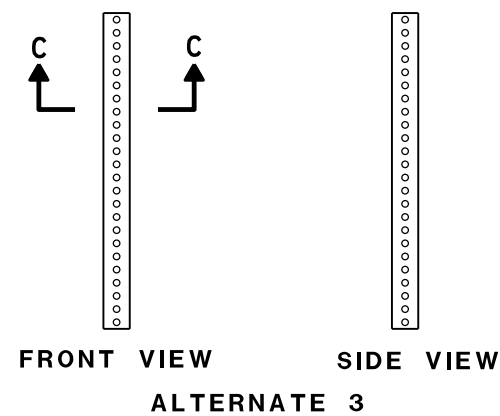
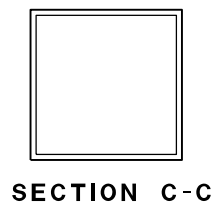
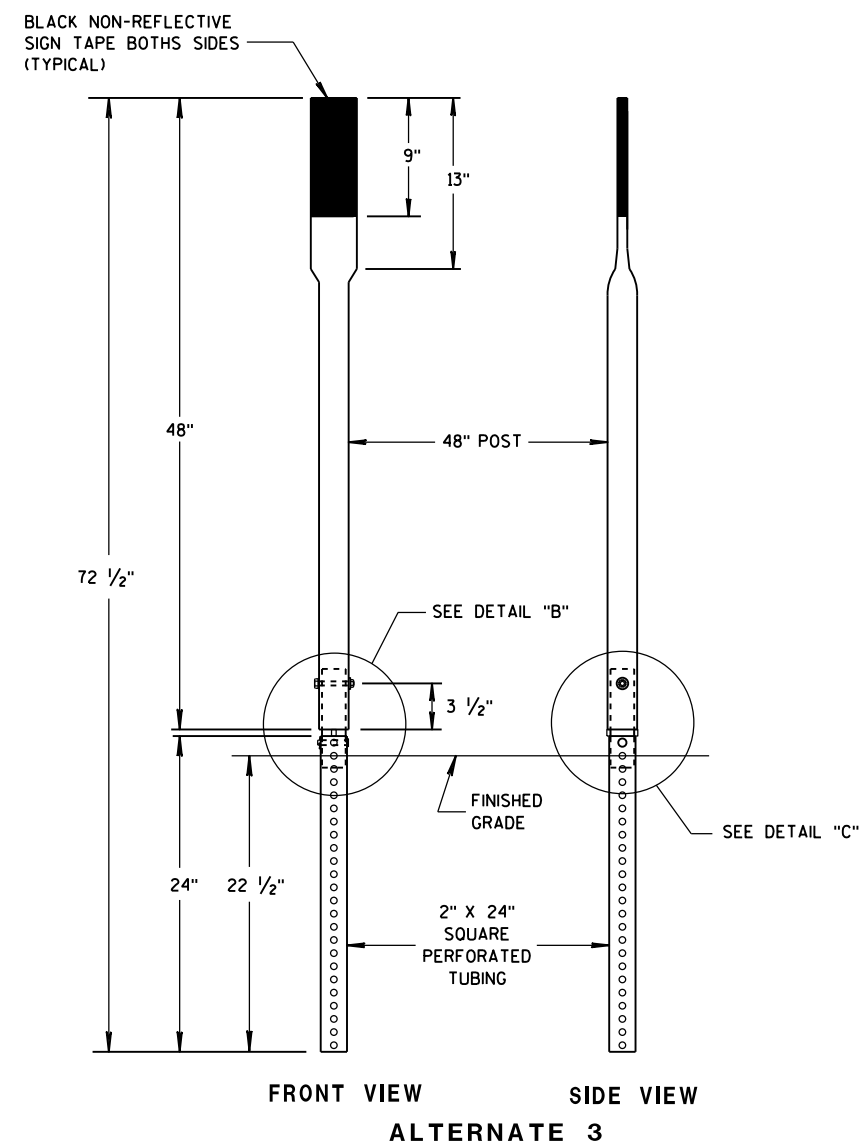
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



FLEXIBLE MARKER POSTS



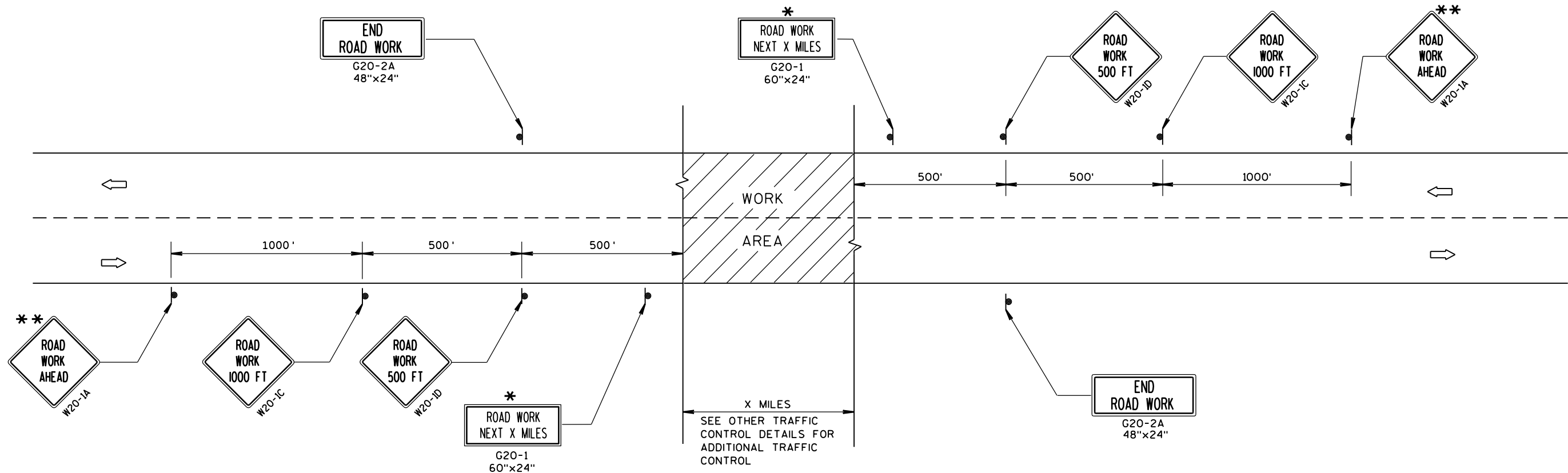
FLEXIBLE MARKER POST ANCHORS



FLEXIBLE MARKER POST FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/1/2012 /S/ Travis Feltes
DATE STATE TRAFFIC ENGINEER OF DESIGN
FHWA



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 MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

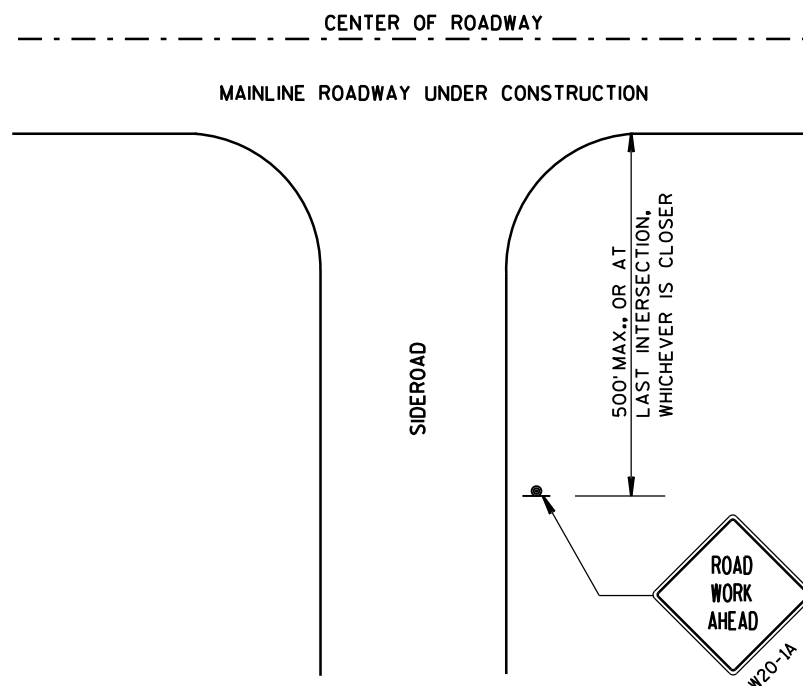
ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

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.

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

** PLACE ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



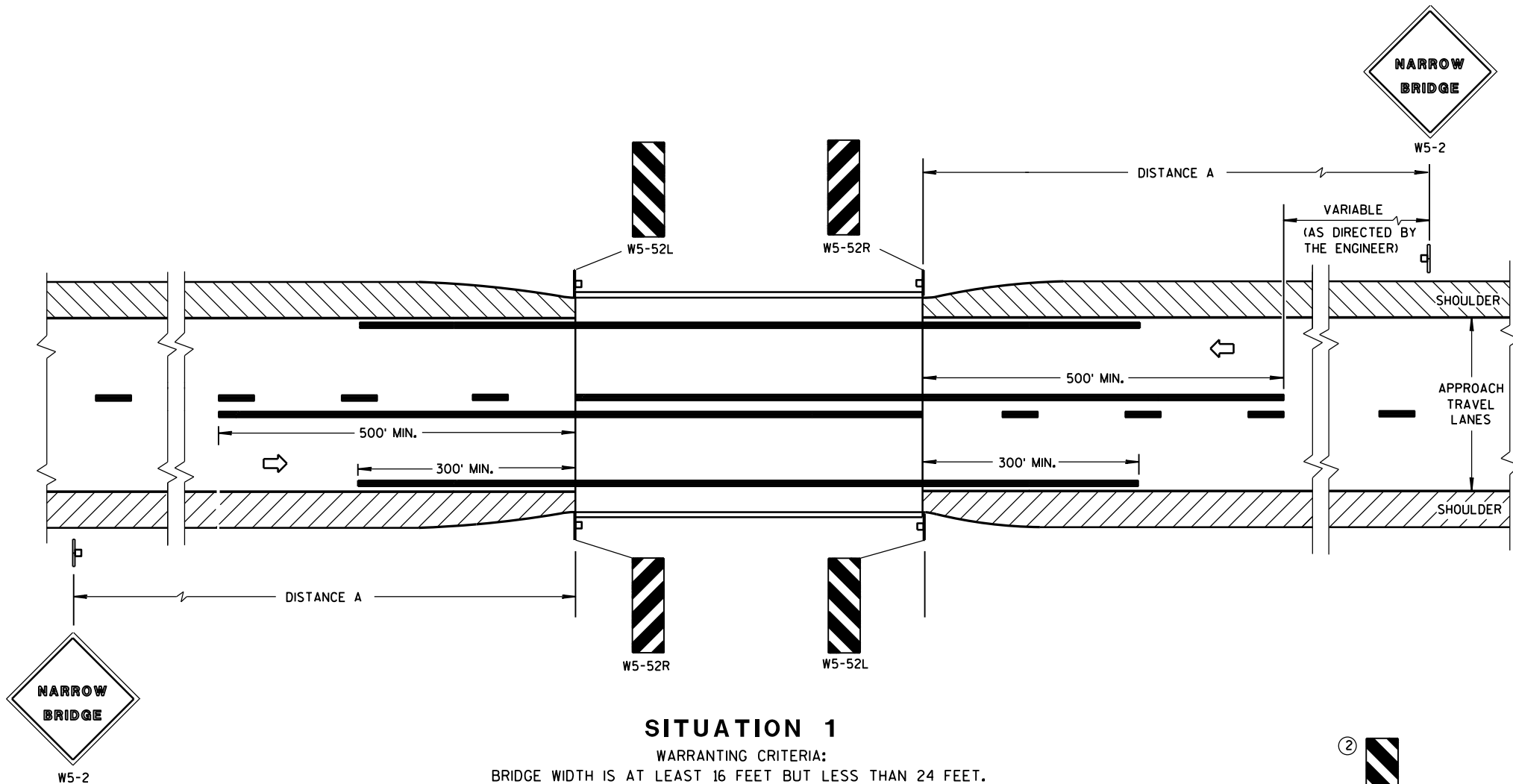
LEGEND

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

TRAFFIC CONTROL, ADVANCE
WARNING SIGNS 45 M.P.H.
OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept. 2015 /S/ Peter Amokobe Atepe
DATE STATEWIDE WORK ZONE TRAFFIC
FHWA SAFETY ENGINEER

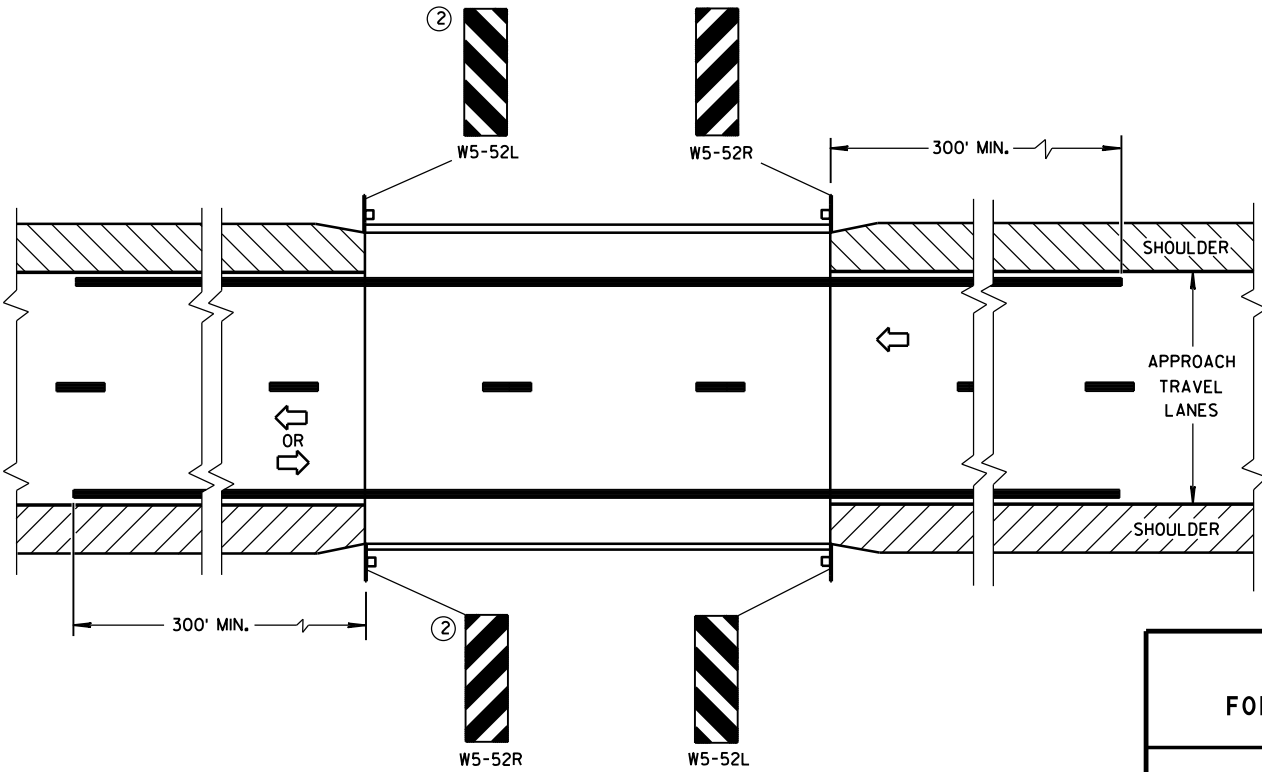


SITUATION 1

WARRANTING CRITERIA:
BRIDGE WIDTH IS AT LEAST 16 FEET BUT LESS THAN 24 FEET.

DISTANCE TABLE

POSTED OR 85th PERCENTILE SPEED	DISTANCE "A"
25	150'
30	200'
35	250'
40	300'
45	400'
50	550'
55	750'



SITUATION 2

WARRANTING CRITERIA:
1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

GENERAL NOTES

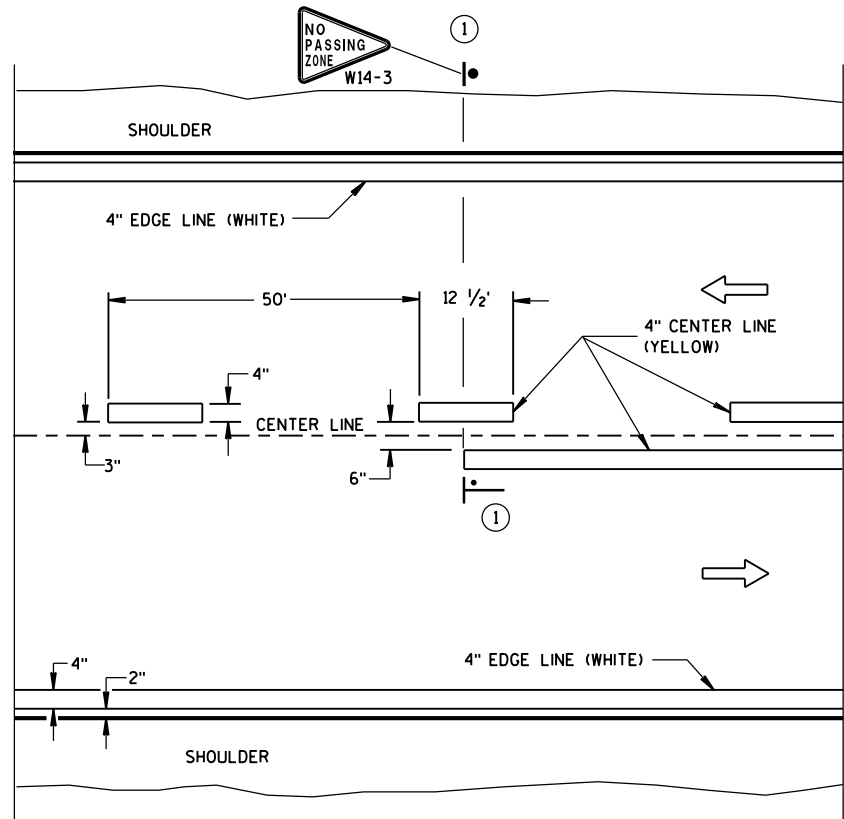
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

- ① LOCATE W5-52 SIGN POST(S) BEHIND GUARDRAIL WHEN PRESENT.
- ② OMIT ON ONE-WAY TRAVELLED WAYS.
- ③ EDGE OF W5-52 SIGN SHALL BE PLACED IN LINE WITH FACE OF CURB OR PARAPET.

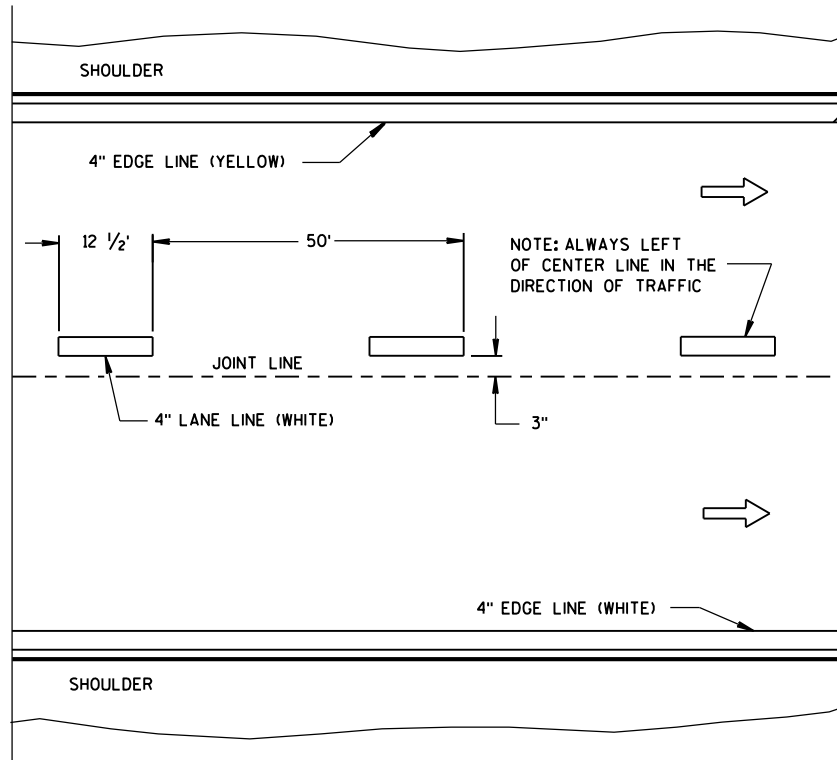
**SIGNING & MARKING
FOR TWO LANE BRIDGES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-18-16 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA

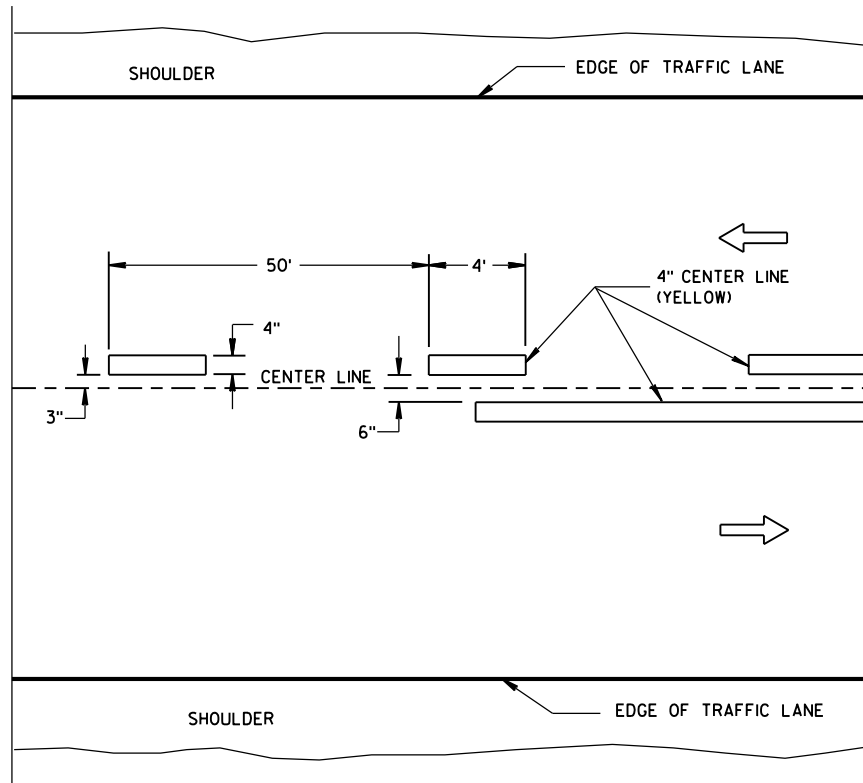


TWO WAY TRAFFIC

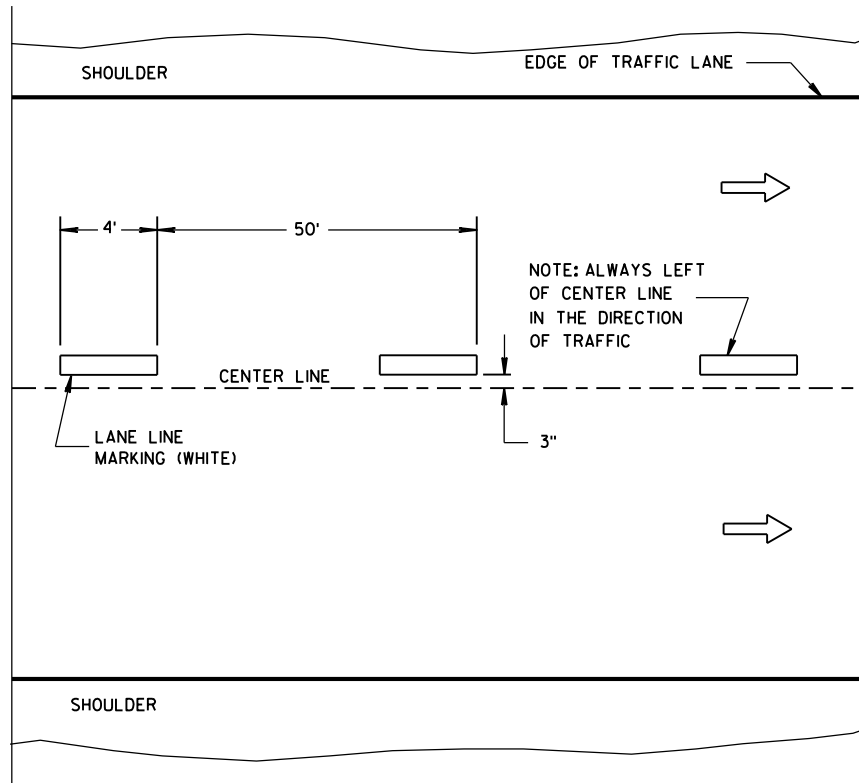


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

GENERAL NOTES

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

① NO PASSING ZONE W14-3 SIGN SHALL BE LOCATED WITHIN 50 FEET OF THE "T" MARKING.

NOTE

ARROW SYMBOL (→) SHOWS DIRECTION OF TRAVEL

LEGEND

—•— "T" MARKING

● POST MOUNTED SIGN

LONGITUDINAL MARKING
(MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA

LEGEND

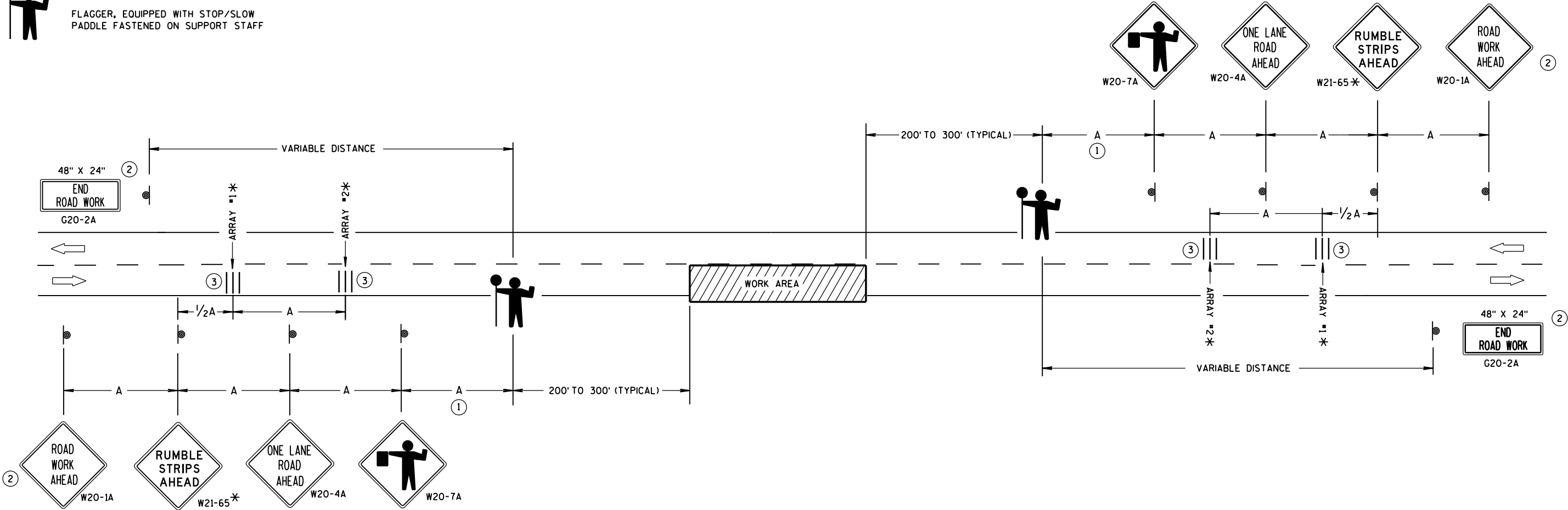
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA
- FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

SPEED LIMIT	SPACING A
25-35 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



USE OF THE "BE PREPARED TO STOP" SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING A.



TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

GENERAL NOTES

DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

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

THE FIRST ADVANCE WARNING SIGN SHOULD TYPICALLY BE LOCATED IN ADVANCE OF THE ANTICIPATED TRAFFIC BACKUP OR QUEUE.

"W0" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS. PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

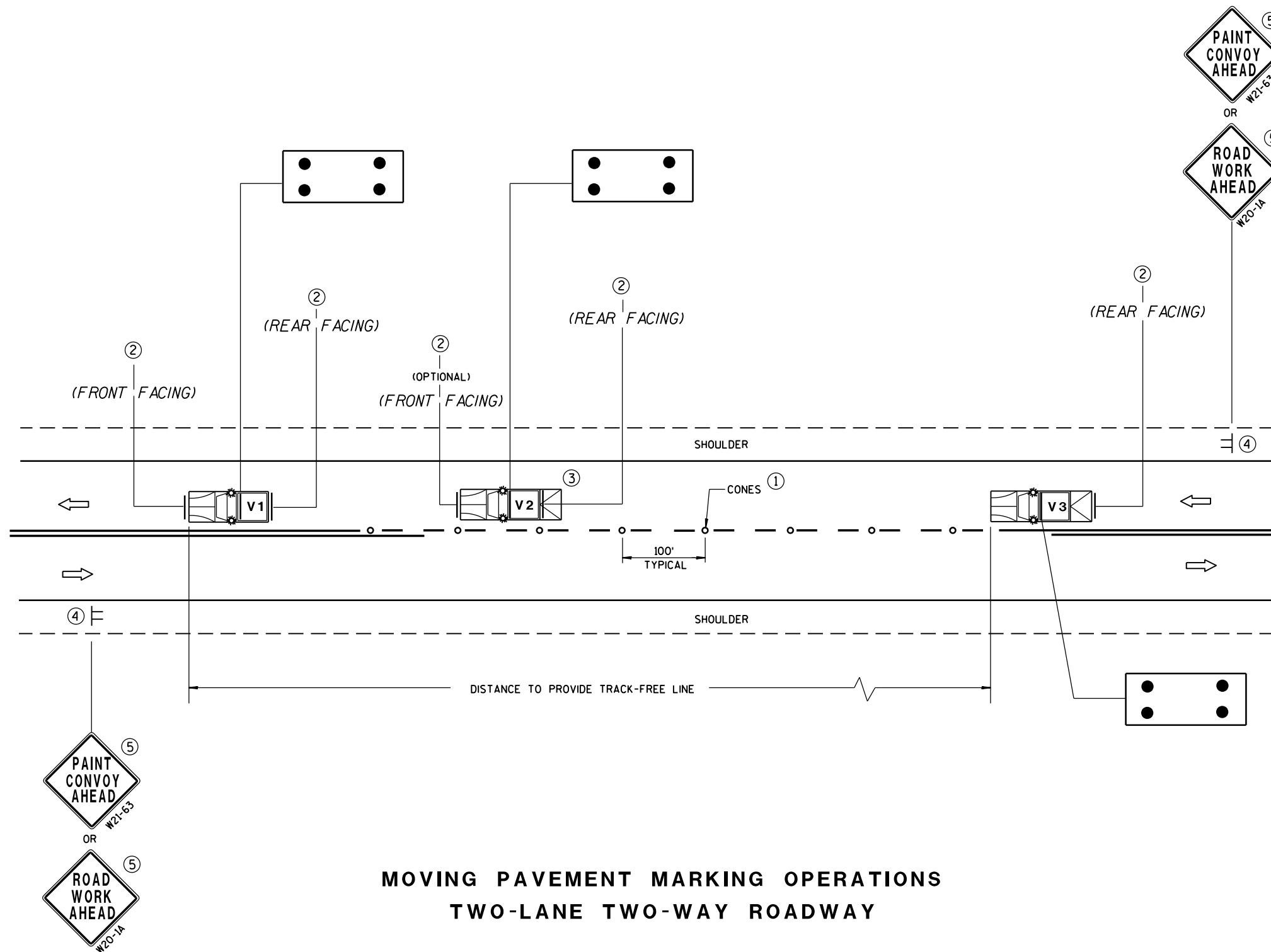
FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT, REMOVE TEMPORARY RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

- * UTILIZE TEMPORARY RUMBLE STRIPS WHEN FLAGGING OPERATION IS ANTICIPATED TO BE STATIONARY IN EXCESS OF TWO HOURS.
- ① FOR A MOVING WORK OPERATION, SIGNING AND TEMPORARY RUMBLE STRIPS (IF USED) SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3,500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- ③ EACH TEMPORARY RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December, 2016 /S/ Andrew Heldtke
DATE WORK ZONE ENGINEER
FHWA



MOVING PAVEMENT MARKING OPERATIONS TWO-LANE TWO-WAY ROADWAY

GENERAL NOTES

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL OPERATING IN CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE SPECIFIED.

IF SPEED LIMIT IS 40 MPH OR LESS STATIONARY SIGNS MAY BE OMITTED IF CONES ARE USED.

ALTERNATE SIGN MESSAGES, SUCH AS "PAINT CREW AHEAD" OR "ROAD PAINTING AHEAD" MAY BE USED.

DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

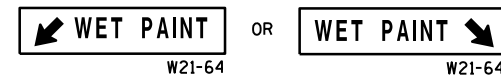
THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS.

THIS DRAWING SHALL BE USED FOR CENTERLINE OR EDGELINE MARKING.

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR TURN THE STATIONARY WARNING SIGNS AWAY FROM TRAFFIC.

① CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

② USE STANDARD SIGN W21-64 WITH APPROPRIATE ARROW.



③ OPTIONAL TRUCK-MOUNTED ATTENUATOR.

④ SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.

⑤ IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1 OR W21-63 ARE NOT REQUIRED.

LEGEND

V1 LEAD VEHICLE

V2 SHADOW VEHICLE

V3 TRAIL VEHICLE WITH TMA

TMA TRUCK-MOUNTED ATTENUATOR

SIGN ON TEMPORARY SUPPORT

DIRECTION OF TRAFFIC

CONES

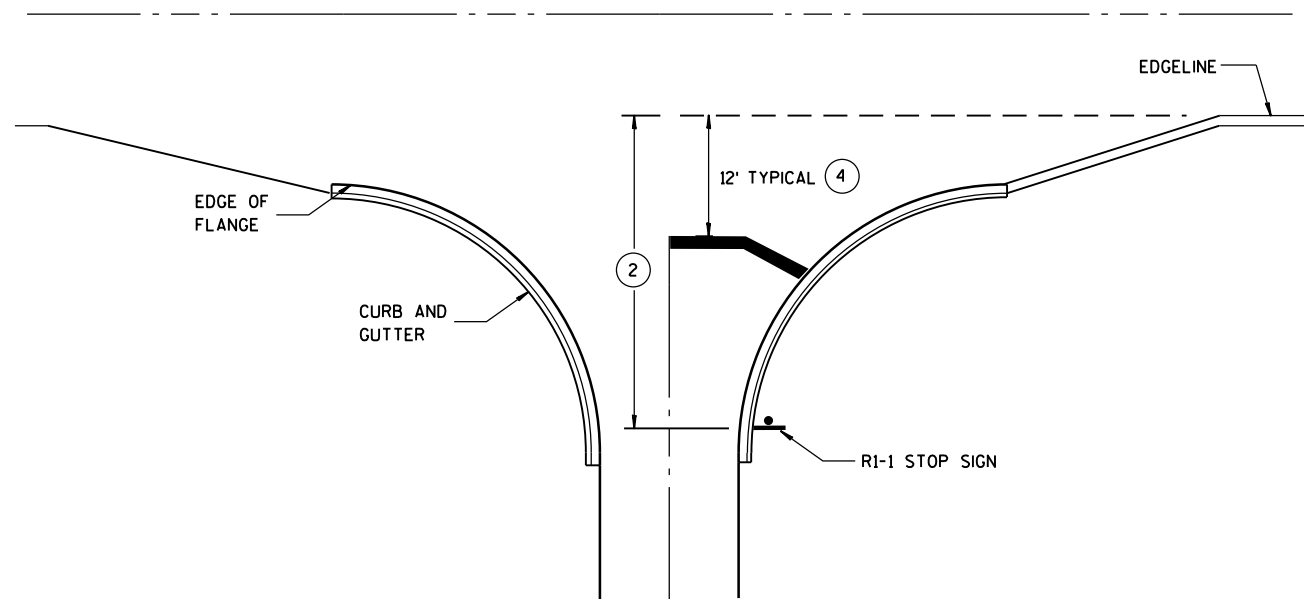
FLASHING ARROW PANEL (CAUTION)

MOVING PAVEMENT MARKING
OPERATION
TWO-LANE TWO-WAY ROADWAY

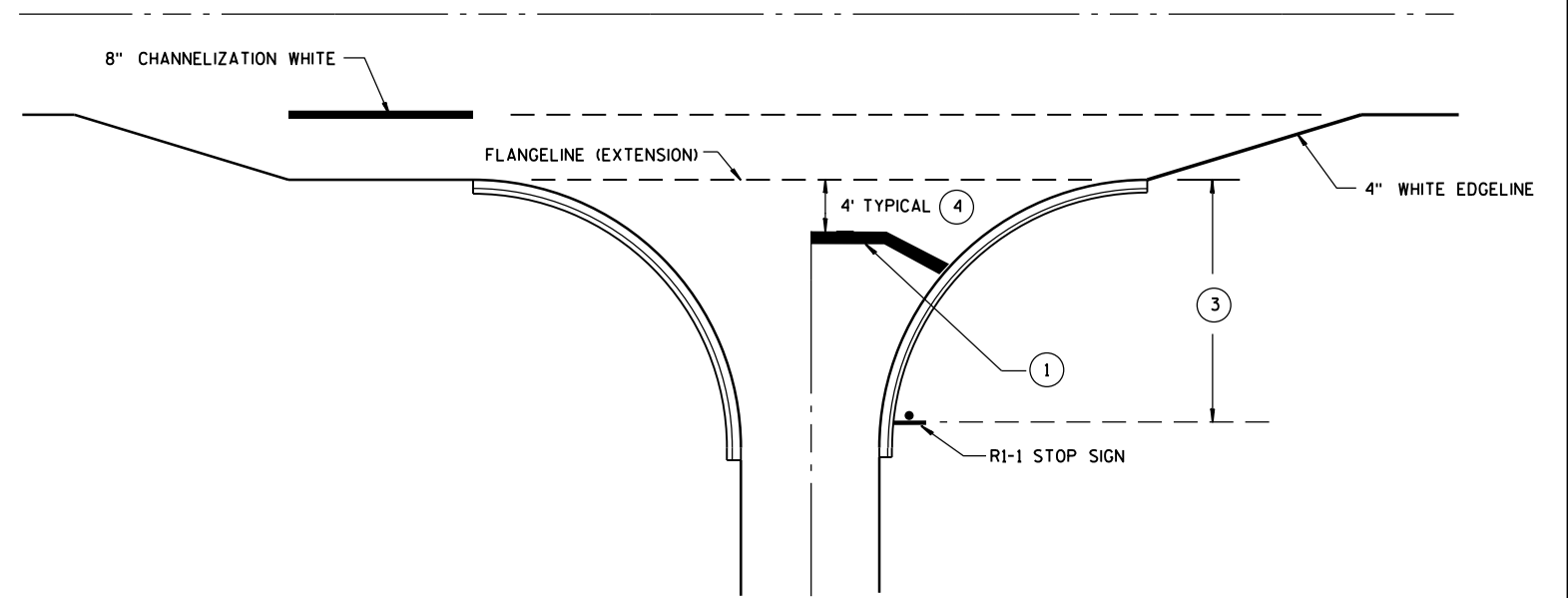
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2016
DATE
FHWA

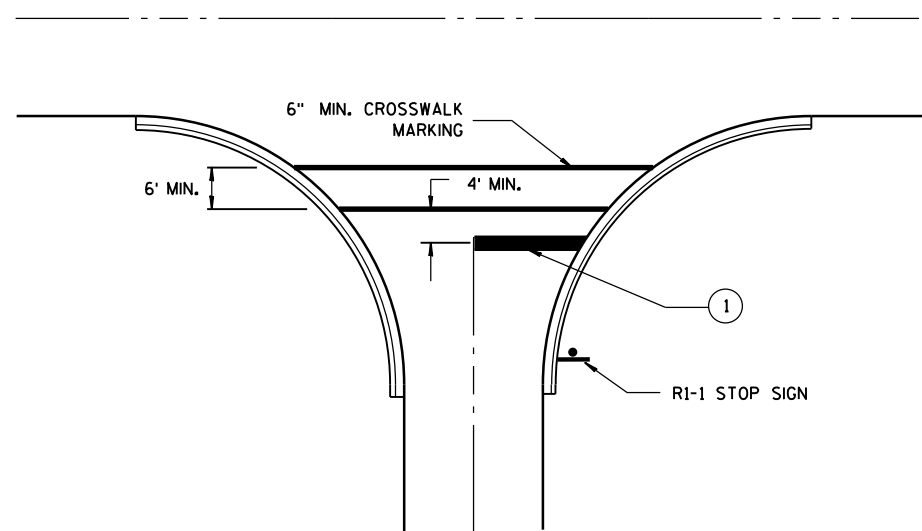
/S/ Peter Amakobe Atepe
STATEWIDE WORK ZONE TRAFFIC
SAFETY ENGINEER



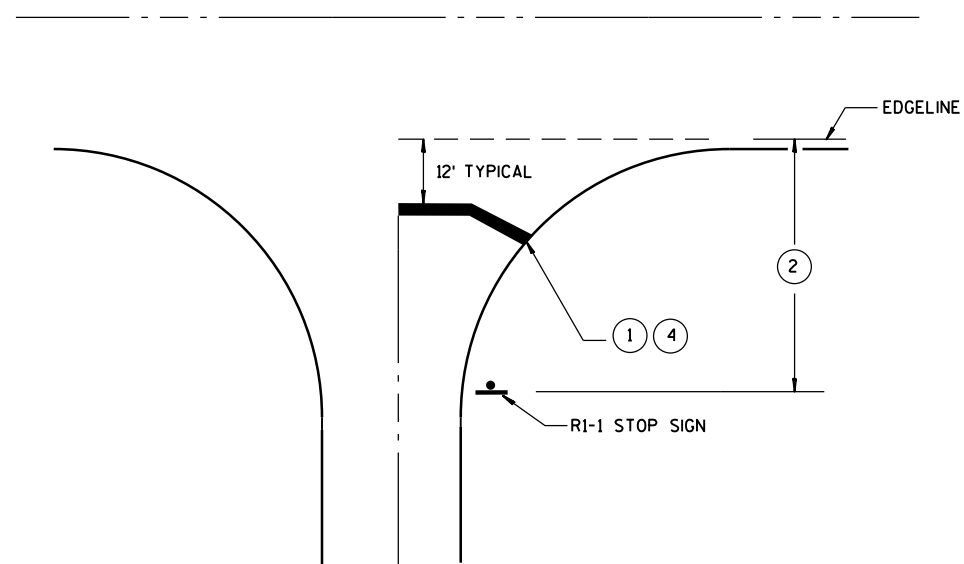
**TYPICAL STOP LINE PAVEMENT MARKING
WITH CURB AND GUTTER**



**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. (NO CLOSER THAN 4 FEET).

STOP LINE AND CROSSWALK PAVEMENT MARKING

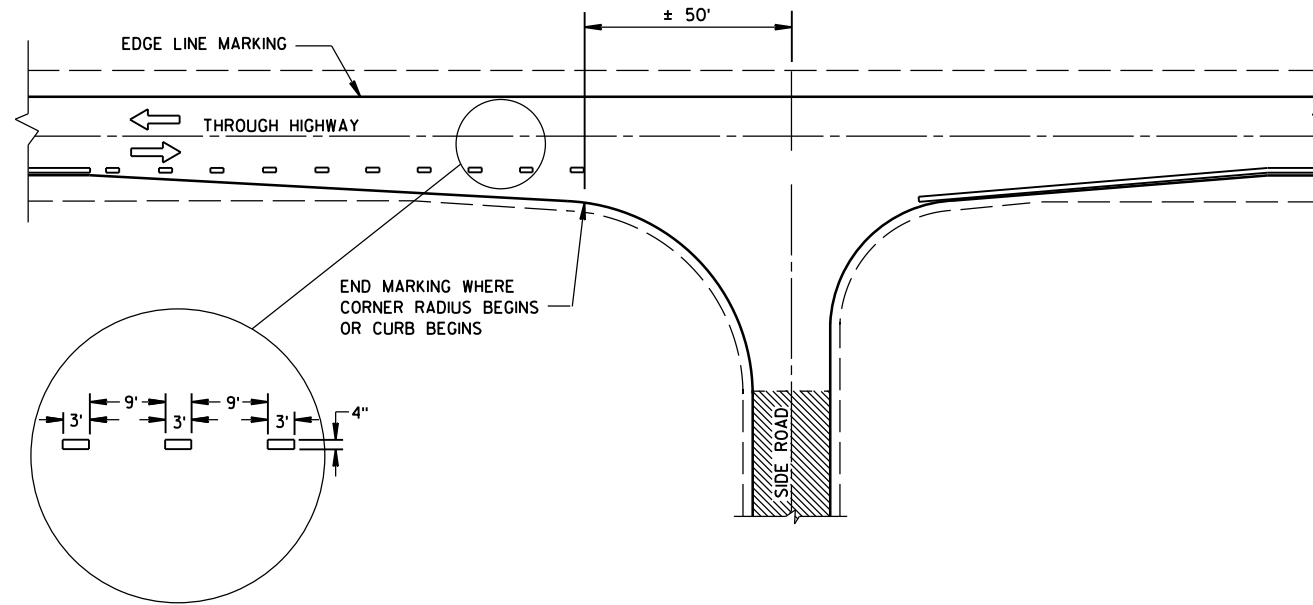
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

4-18-2016
DATE

FHWA

/S/ Matthew R. Rauch
STATE SIGNING AND MARKING ENGINEER



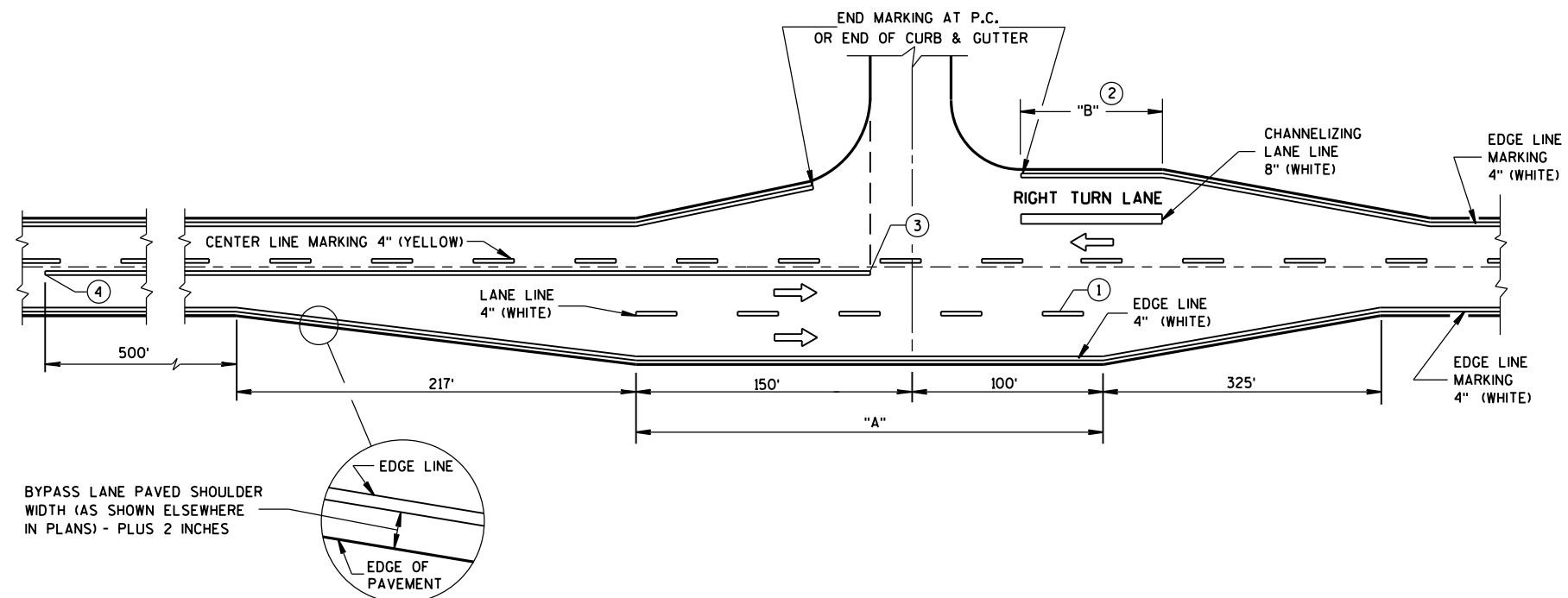
MINOR INTERSECTION WITHOUT CURBS

GENERAL NOTES

EDGE LINES SHALL BE OMITTED THROUGH INTERSECTIONS. EDGE LINES SHALL BE CONTINUED THROUGH DRIVEWAYS.

- ① WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.
- ② WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
- ③ BARRIER LINE ENDS AT SIDE ROAD PAVEMENT/SURFACE EDGE EXTENSION.
- ④ BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER.

ARROW SYMBOL () SHOWS DIRECTION OF TRAVEL



MAJOR INTERSECTIONS
(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANES)

**PAVEMENT MARKING
(INTERSECTIONS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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.

ALL SIGNS ARE 48" X 48" 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 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.

W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.

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

TABLE A

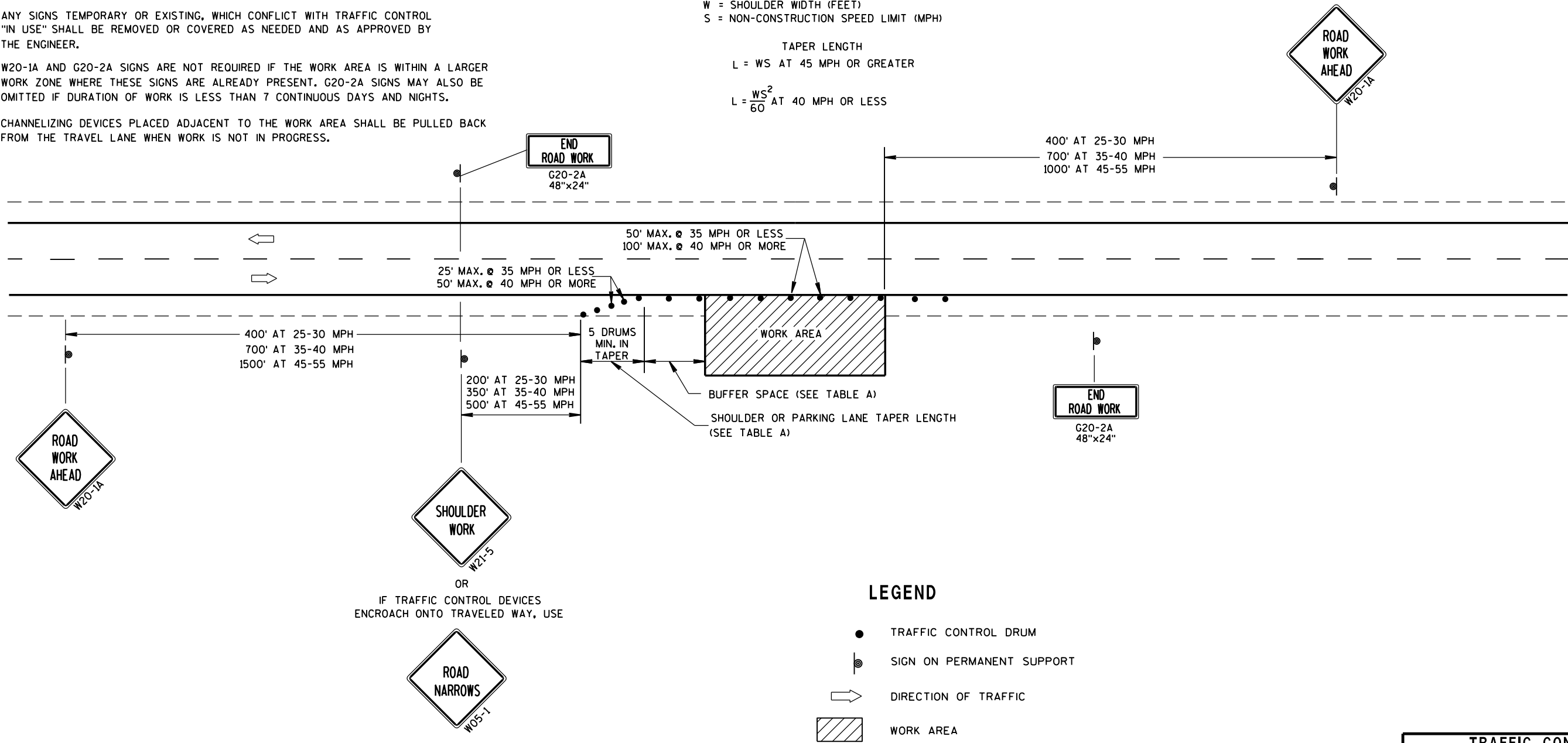
SHOULDER TAPER LENGTH (FEET)					BUFFER SPACE (FEET)
S	W	4	6	8	
30	20	30	40	50	200
35	30	45	55	70	250
40	40	55	75	90	305
45	60	90	120	150	360
50	70	100	135	170	425
55	75	110	150	185	495

W = SHOULDER WIDTH (FEET)
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH
L = WS AT 45 MPH OR GREATER

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

SHOULDER TAPER LENGTH = $\frac{1}{3}L$



LEGEND

- TRAFFIC CONTROL DRUM
- ⦿ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ▨ WORK AREA

TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED July 14, 2015 DATE	/S/ Peter Amakobe Atepe STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA	

LEGEND

- SIGN ON PERMANENT SUPPORT
- REMOVING PAVEMENT MARKING
- TYPE III BARRICADE WITH ATTACHED SIGN
- CONCRETE BARRIER TEMPORARY PRECAST
- FLAGS, 16" x 16" MIN., (ORANGE)
- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- ASPHALTIC PAVEMENT WIDENING
- DIRECTION OF TRAFFIC
- 4" X 6" WOOD POST
- TEMPORARY SIGNAL WITH BACKPLATE AND 12-INCH LENSES ON BREAKAWAY POLE

INSTALL ON EACH APPROACH AT THE CLOSEST INTERSECTION WITH A STATE OR COUNTY TRUNK HIGHWAY, OR AS DIRECTED BY THE ENGINEER. WIDTH ON SIGN TO BE APPROX. 1-FOOT LESS THAN AVAILABLE WIDTH. (OMIT IF AVAILABLE WIDTH IS MORE THAN 16 FEET.)

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 MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

"WO" IS THE SAME AS "W" 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.

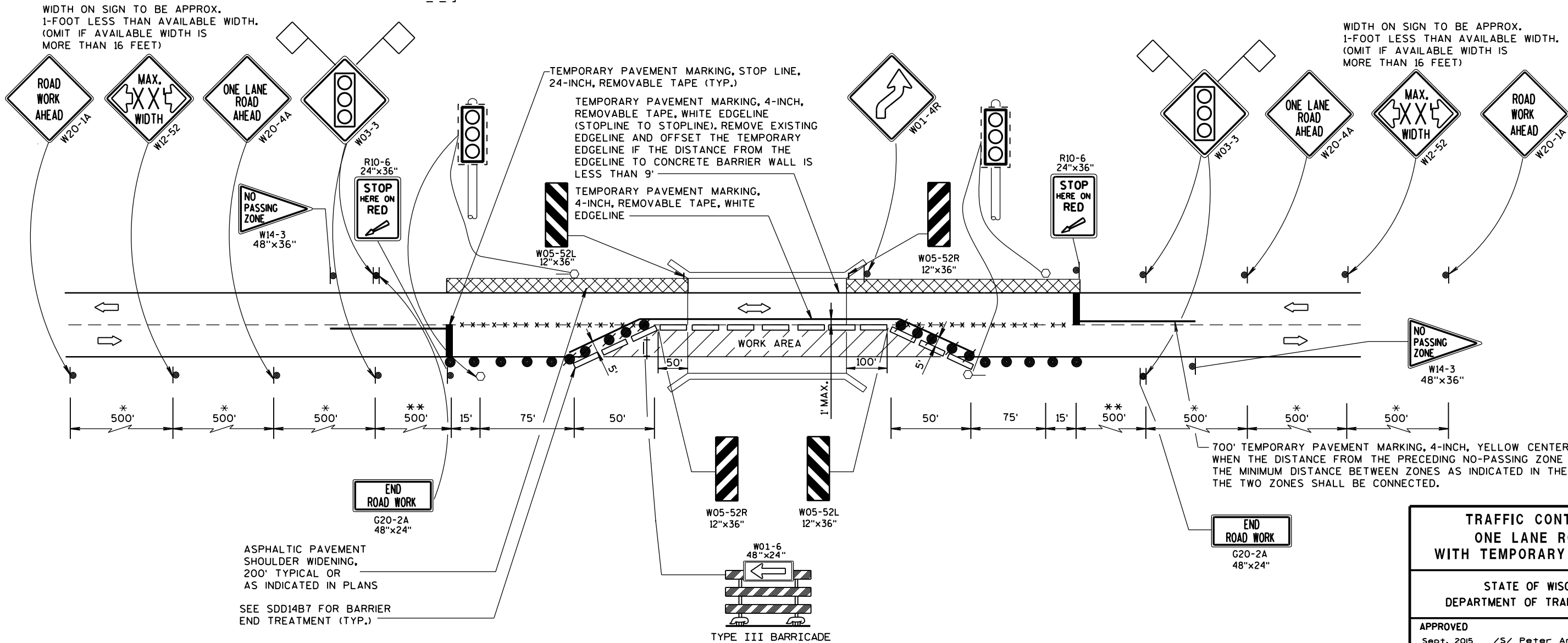
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

PLACE TEMPORARY PAVEMENT MARKING EDGELINE AND CENTERLINE, AND REMOVE EXISTING PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS OR AS NOTED ON DETAIL.

* 500-FOOT SPACING SHOWN IS FOR ROADWAYS WITH A PRE-CONSTRUCTION REGULATORY SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350-FOOT TYPICAL SPACING. FOR 25-30 MPH, USE 200-FOOT TYPICAL SPACING.

** USE 300' SPACING IF PRE-CONSTRUCTION REGULATORY SPEED LIMIT IS 35 MPH OR LESS.

6



TRAFFIC CONTROL,
ONE LANE ROAD
WITH TEMPORARY SIGNALS

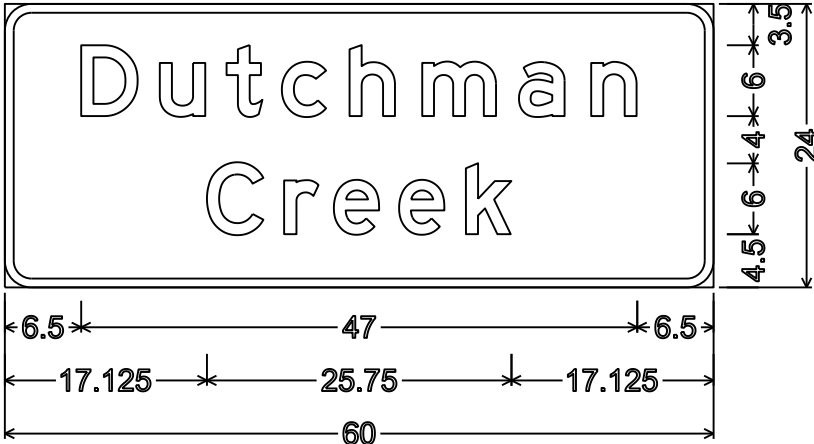
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept. 2015 /S/ Peter Amakobe Atepe
DATE STATEWIDE WORK ZONE TRAFFIC
FHWA SAFETY ENGINEER

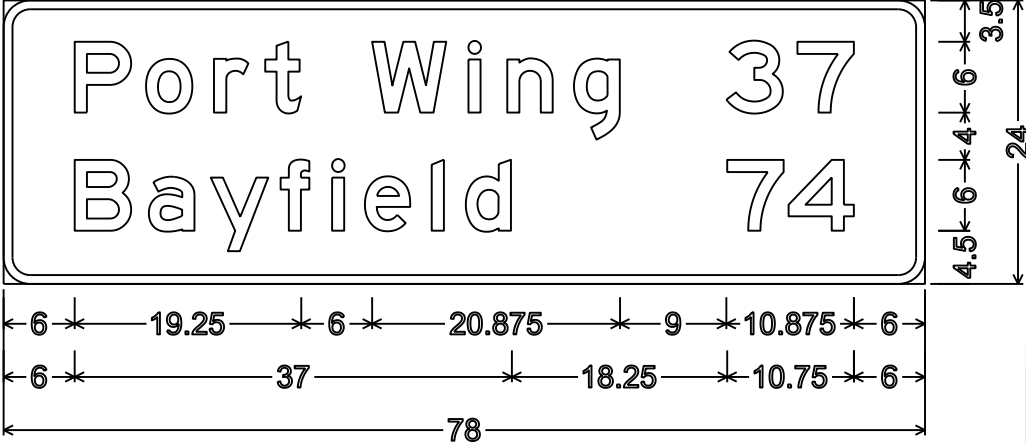
6

NOTES

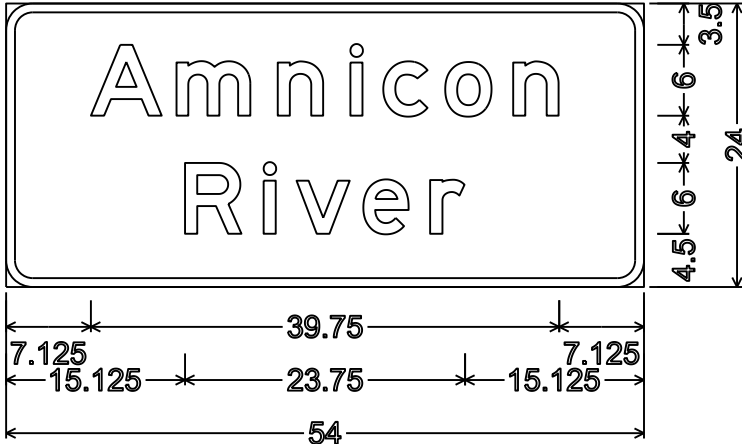
- 1. All Signs Type II - Type H Reflective
- 2. Color:
Background - Green except as noted
Message - White
- 3. Message Series - E except as noted



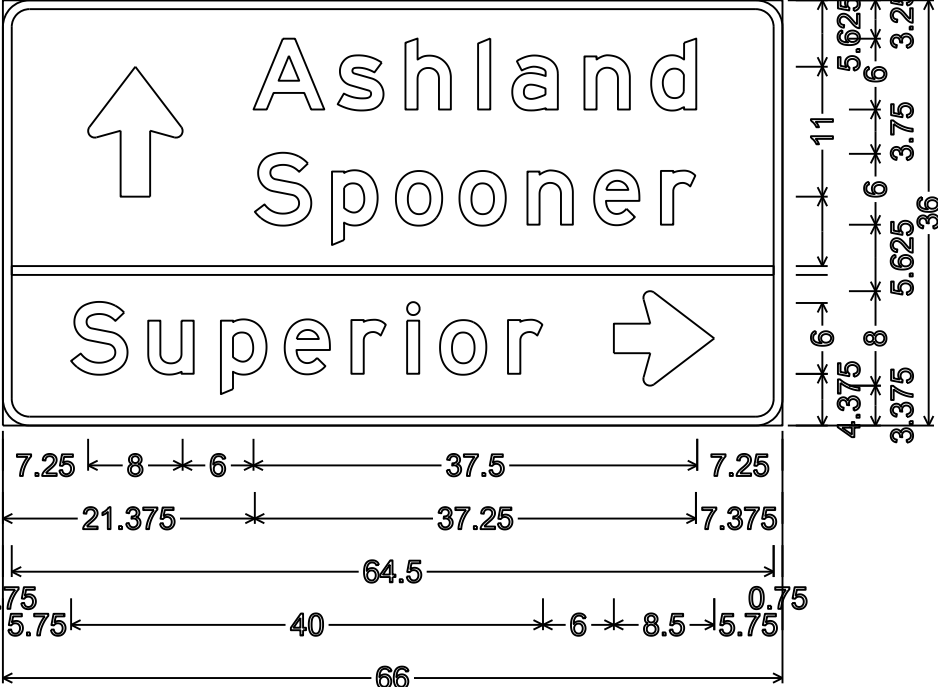
I3-1;
2.250" Radius, 0.750" Border



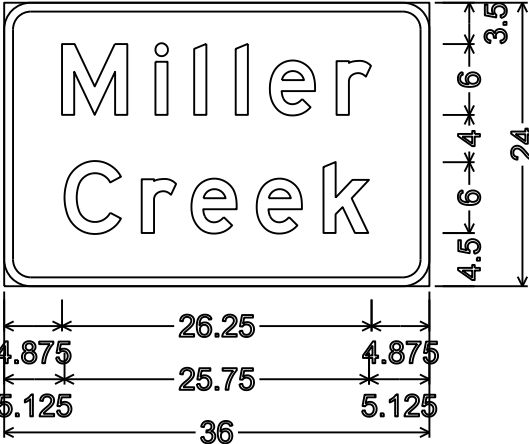
D2-2; 2.250" Radius, 0.750" Border



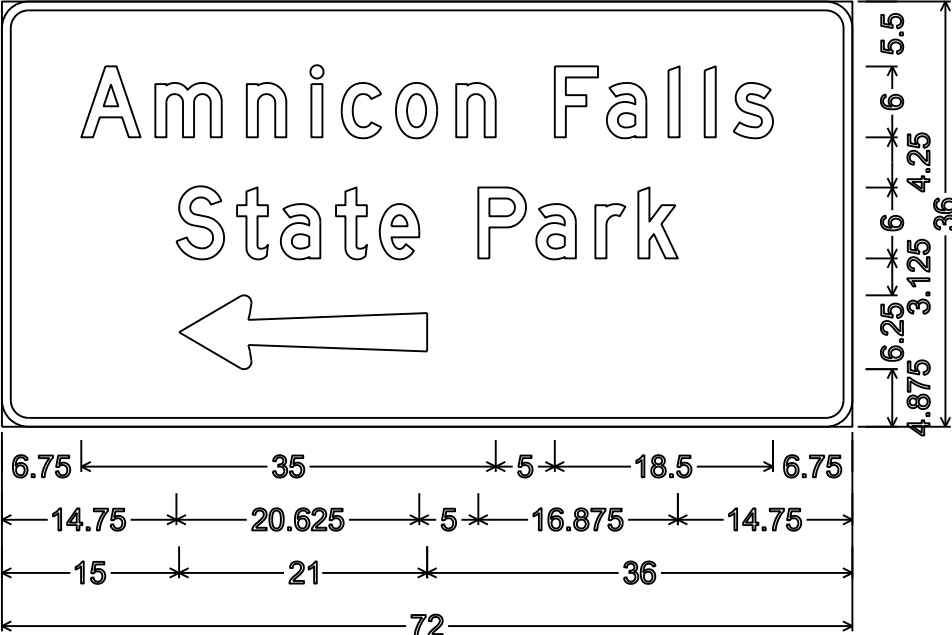
I3-1;
2.250" Radius, 0.750" Border



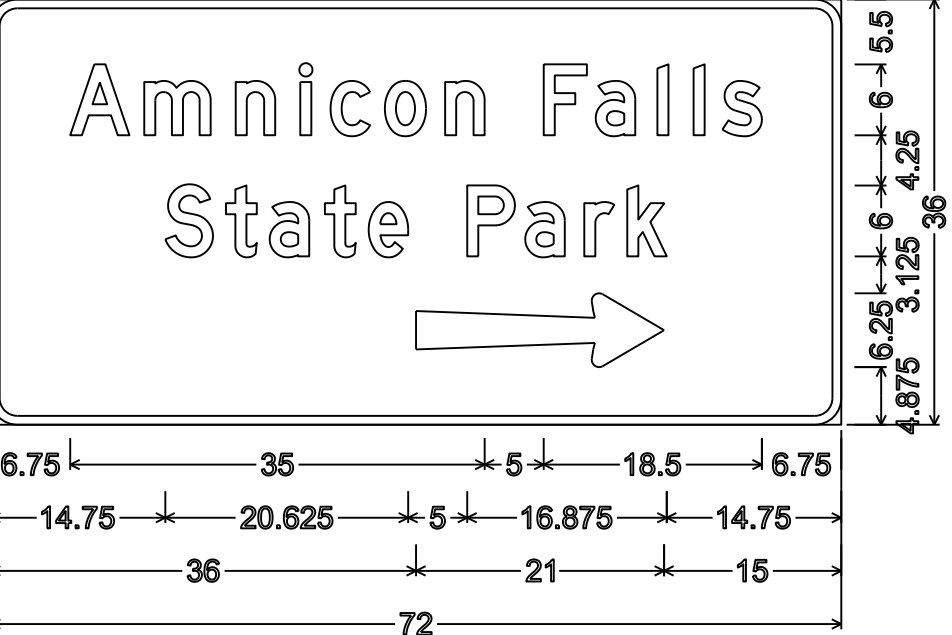
D1-3; 2.250" Radius, 0.750" Border



I3-1;
2.250" Radius, 0.750" Border

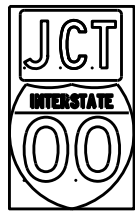


D7-53L; 2.250" Radius, 0.750" Border, White on Brown;
"Amnicon" D; "Falls" D; "State" D; "Park" D

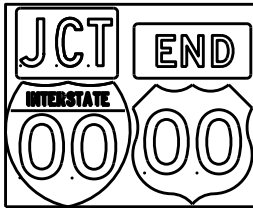


D7-53R; 2.250" Radius, 0.750" Border, White on Brown;
"Amnicon" D; "Falls" D; "State" D; "Park" D

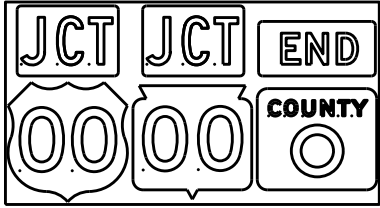
TYPICAL ASSEMBLIES



J1-1



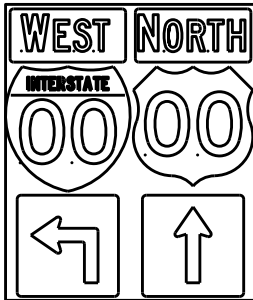
J1-2



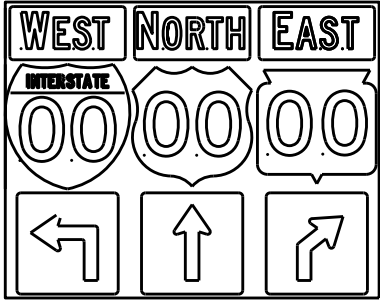
J1-3



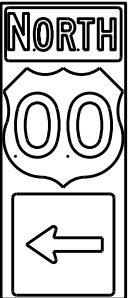
J2-1



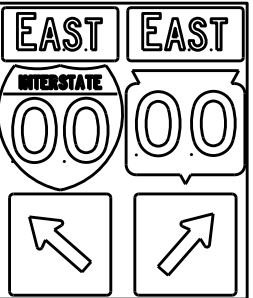
J2-2



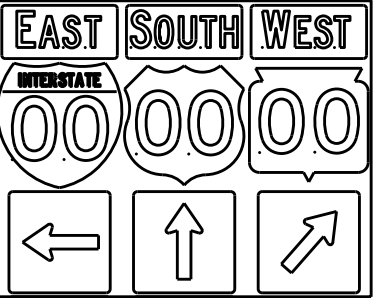
J2-3



J3-1



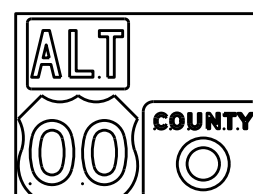
J3-2



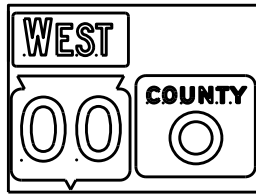
J3-3



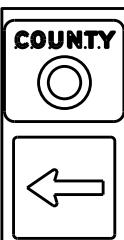
J4-1



J4-2



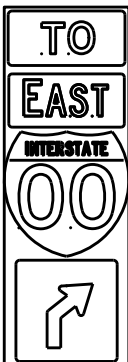
J4-2



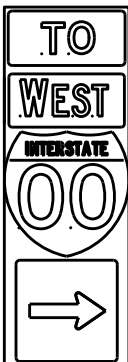
J13-1



J12-1



J32-1



J33-1



J23-1

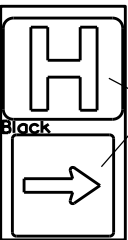


J22-1



JV

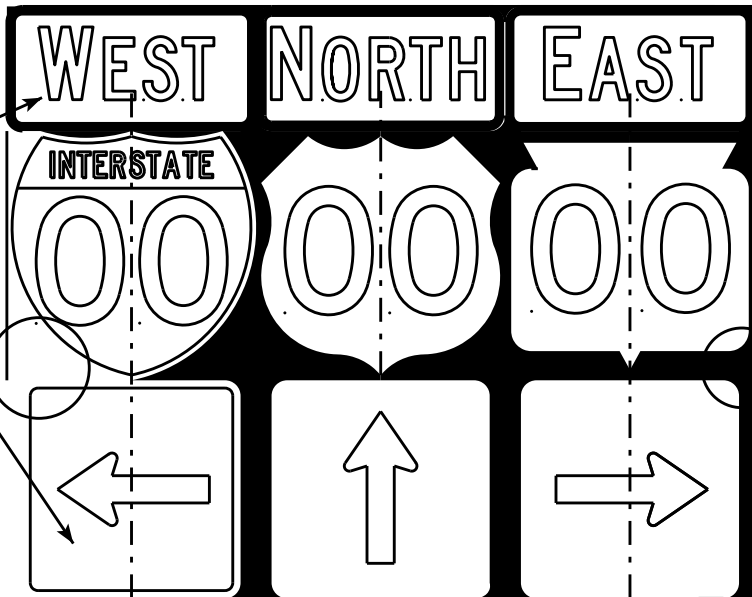
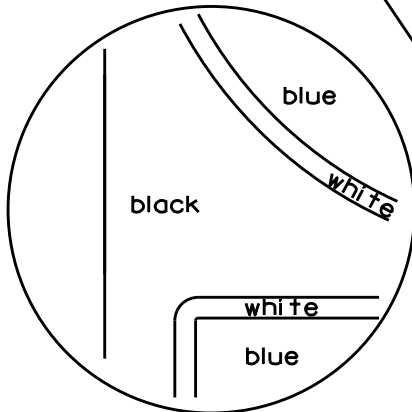
(Typical Vertical J-Assembly
See Note 10 and 11)



JH-1

Blue Background

[blue background
with interstate]



[black background]

ROUTE MARKERS & COMPONENTS
IN TYPICAL ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 2/06/14 PLATE NO. A2-1S.8

NOTES

1. Signs are Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Black Non-reflective
Message - see Note 5
3. Message Series - See Note 5
4. Corners shall be square or rounded if base material is plywood. If base material is metal the corners shall be rounded.
5. The colors and message spacing on each marker shall be according to the applicable route marker panel specifications.
6. Certain marker heads require the component pieces to be the same color. As an example, all the components used with an M1-1 Interstate marker shall be blue.
7. Single panel j-assemblies shall only be used with route marker shields that are same size. If the route marker shields are different size use multiple piece component.
8. Route assemblies that have 24 inch route shields and have dimensions greater than 48 inches (both vertical and horizontal) shall have one horizontal splice between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 inches or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
9. Route assemblies that have 36 inch shields and have dimensions greater than 48 inches (both vertical and horizontal) shall have two horizontal splices. One horizontal splice shall be between the cardinal direction and route shields and the other horizontal splice shall be between the arrows and route shields. Vertical splices shall not be used on route assemblies with a horizontal dimension of 144 or less. The contractor shall not use more than one vertical joint per sign and the joint shall be between route shields.
10. All Vertical J Assemblies are given a Sign Code of JV
11. For JV Assemblies that have a mixture of Interstate and non Interstate shields, arrows and cardinals shall be white on blue.

PROJECT NO:

FILE NAME : C:\CAEFiles\Projects\tr_stdplate\A21S.DGN

PLOT DATE : 06-FEB-2014 14:10

PLOT BY : mscs.ja

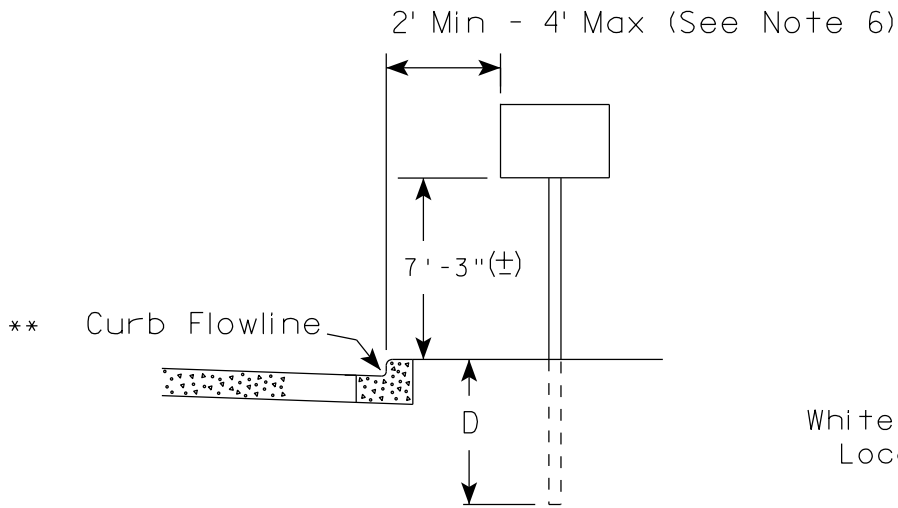
PLOT NAME :

SHEET NO:

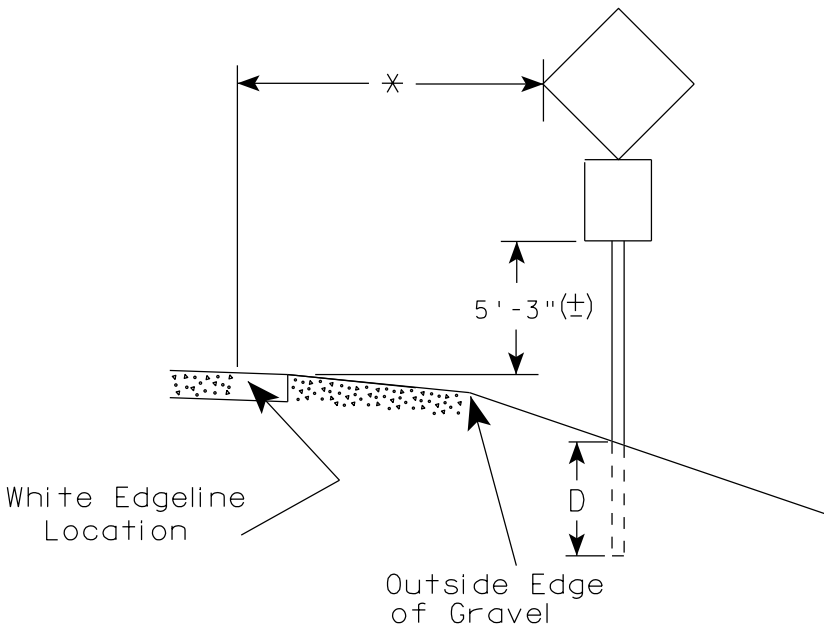
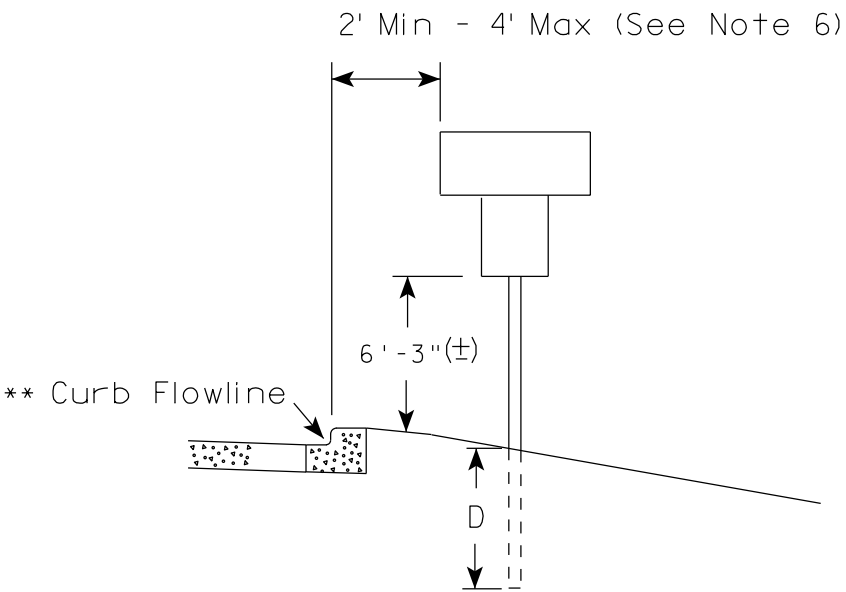
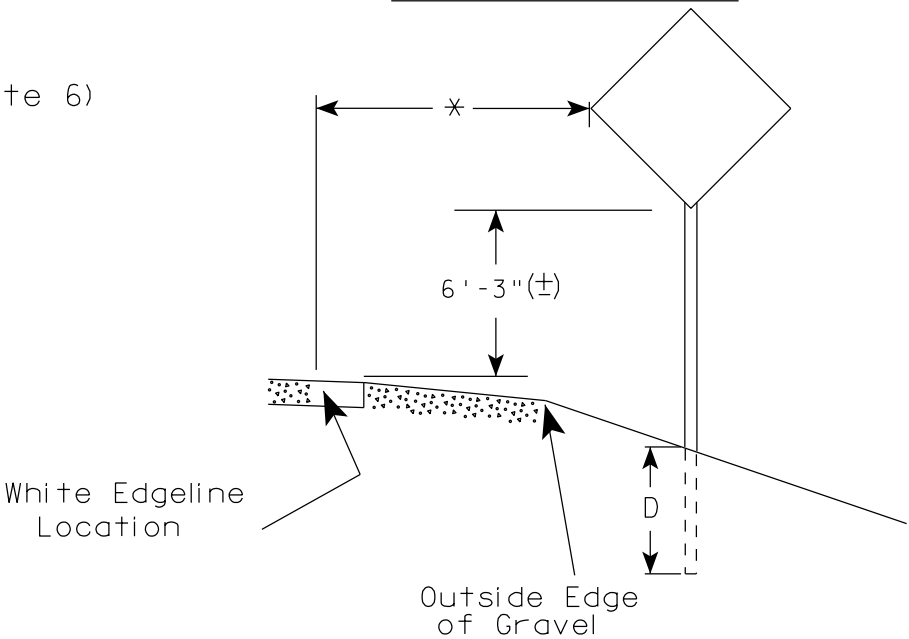
E

WISDOT/CADDs SHEET 42

URBAN AREA



RURAL AREA (See Note 2)



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" (±).

POST EMBEDMENT DEPTH

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

* * 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.

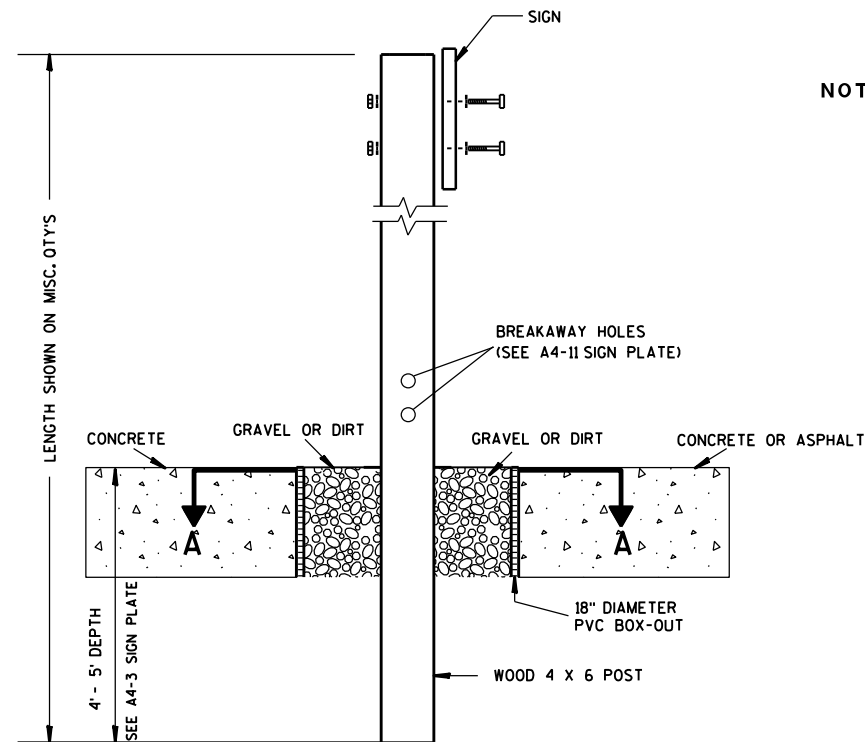
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

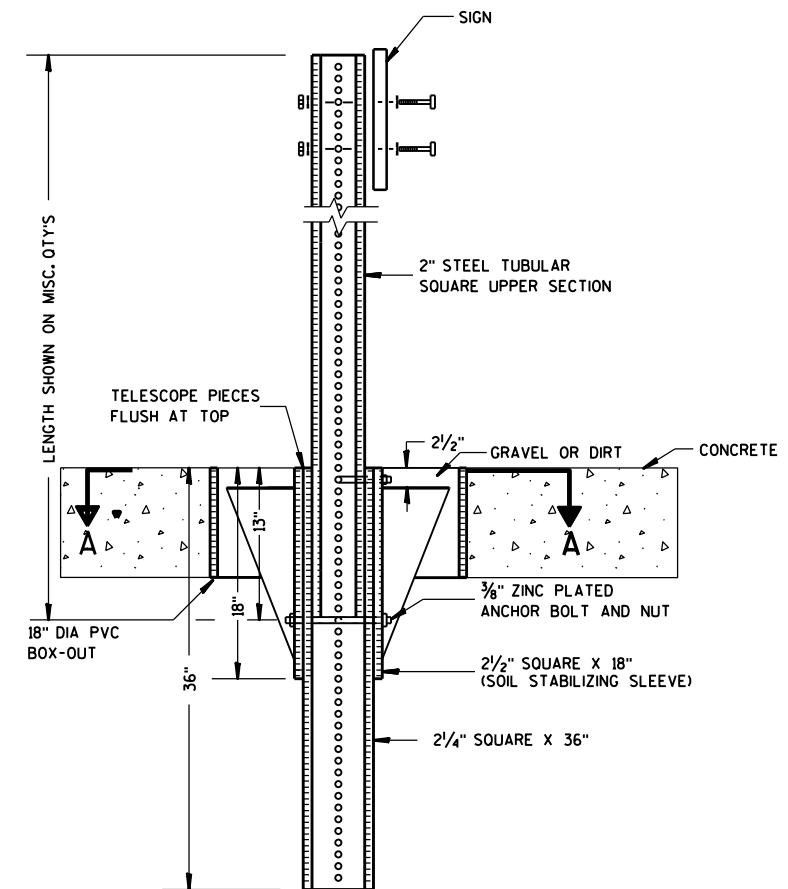
DATE 7/23/15 PLATE NO. A4-3.20



ELEVATION VIEW

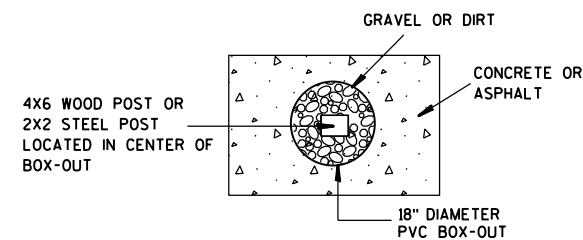
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

- 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

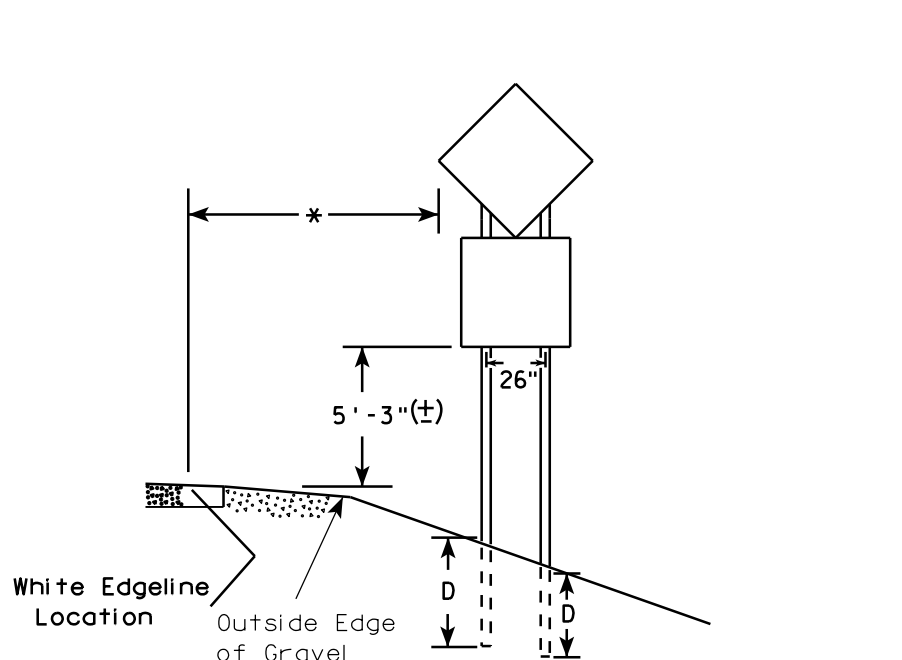
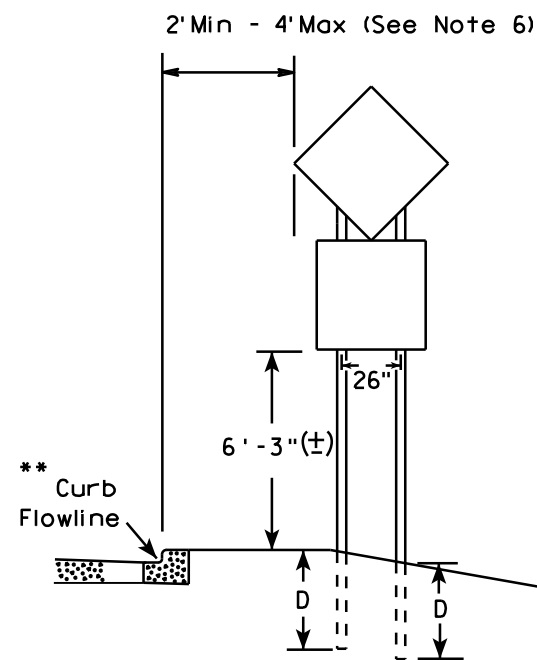
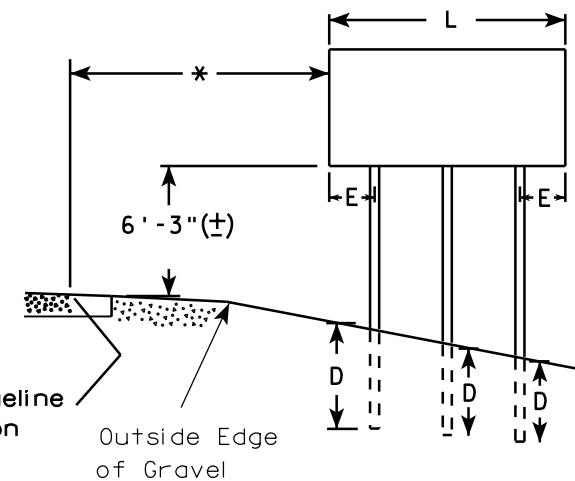
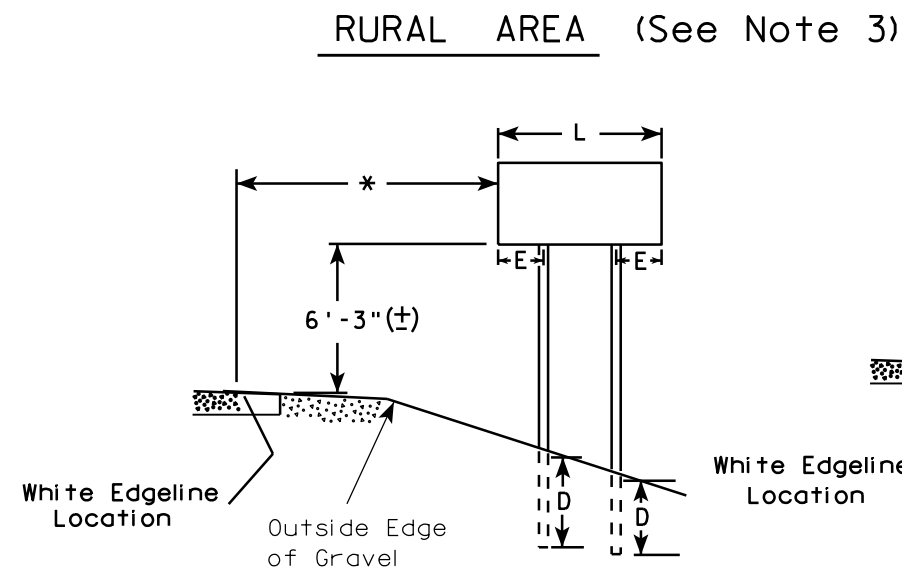
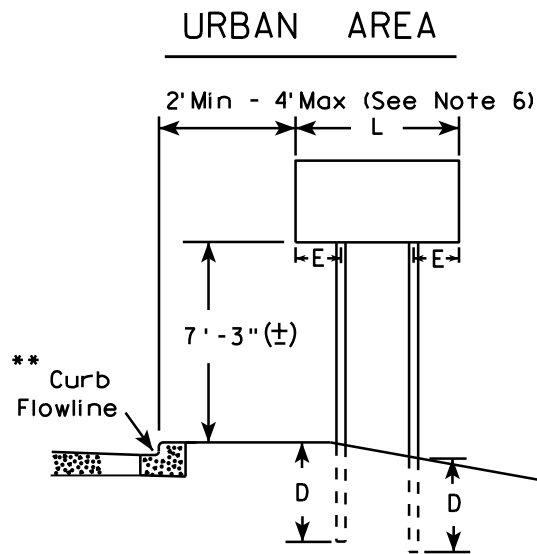
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



48" DIAMOND WARNING SIGN

48" DIAMOND WARNING SIGN

- 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

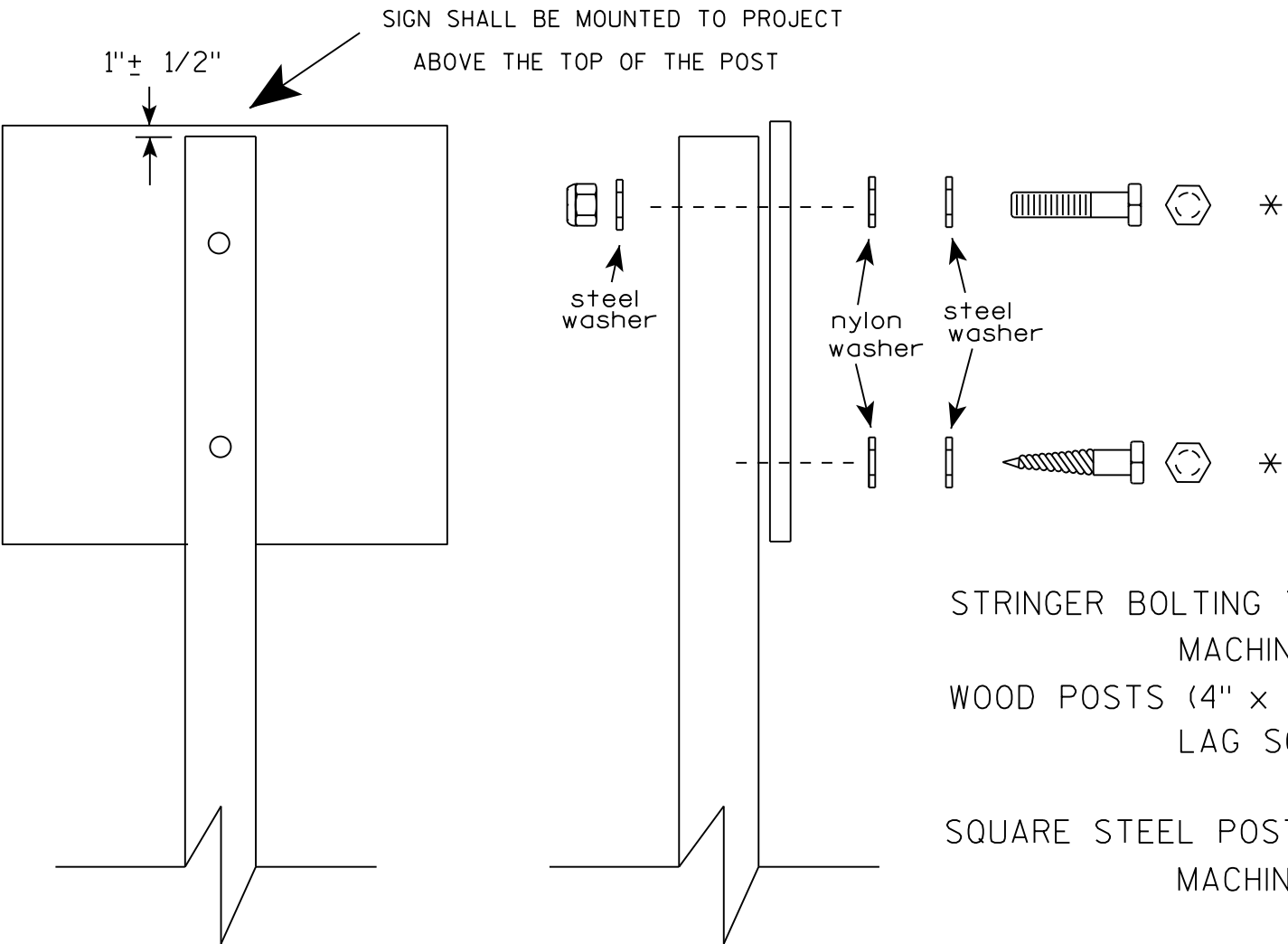
Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

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.

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - $\frac{5}{16}$ " X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - $\frac{3}{8}$ " X 3" (NO STRINGERS ON BACK OF SIGN)
 - $\frac{3}{8}$ " X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - $\frac{3}{8}$ " X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 - $\frac{3}{8}$ " X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - $\frac{9}{32}$ " (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 $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ " STEEL
 - 1-1/4" O.D. X $\frac{3}{8}$ " I.D. X .080 NYLON

* 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.

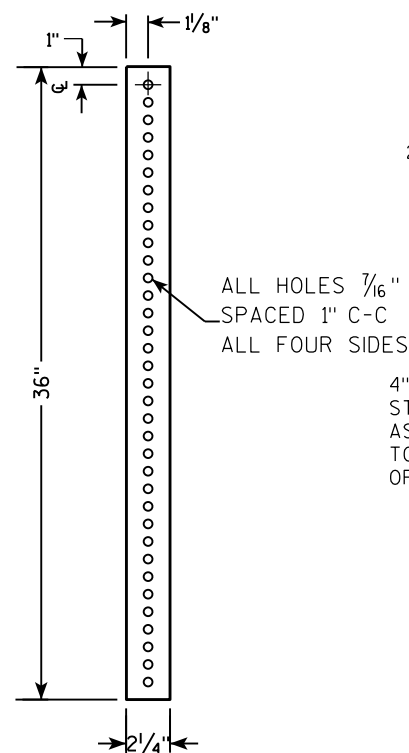
ATTACHMENT OF SIGNS
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

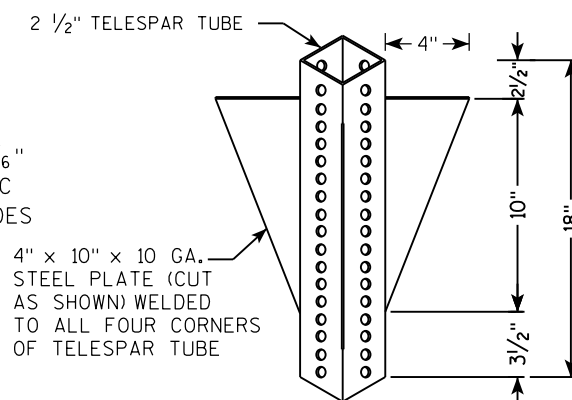
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 8/11/16 PLATE NO. A4-8.8

**2 1/4 " SQUARE
12 GAUGE
PERFORATED
GALVANIZED FINISH**



**2 1/2" SQUARE
12 GAUGE
OMNI-DIRECTIONAL
PERFORATED
SOIL STABILIZING SLEEVE
GALVANIZED FINISH**



TECHNICAL DRAWING OF A VERTICAL SIGN POST ASSEMBLY.

Labels and Dimensions:

- TELESCOPE PIECES FLUSH AT TOP**: Indicated by arrows pointing to the top of the vertical sections.
- 2" STEEL TUBULAR SQUARE UPPER SECTION**: The main vertical post.
- ALL HOLES $\frac{7}{16}$ " SPACED 1" C-C ALL FOUR SIDES**: Specification for the post's perforations.
- SIGN**: The top horizontal section.
- SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL**: Reference to a sign plate for hardware.
- $\frac{3}{8}$ " ZINC PLATED CORNER ANCHOR BOLT AND NUT**: Hardware for the upper section.
- 2 1/2" GRAVEL OR DIRT**: The material filling the base of the post.
- $\frac{3}{16}$ " ZINC PLATED ANCHOR BOLT AND NUT**: Hardware for the base.
- 2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)**: The sleeve around the base of the post.
- 2 1/4" SQUARE X 36"**: The base plate.
- 18" DIA SCHEDULE 40 PVC BOX-OUT**: The base of the post.
- 36"**: Total height of the post assembly.
- 18"**: Height of the base plate.
- 13"**: Height of the soil stabilizing sleeve.

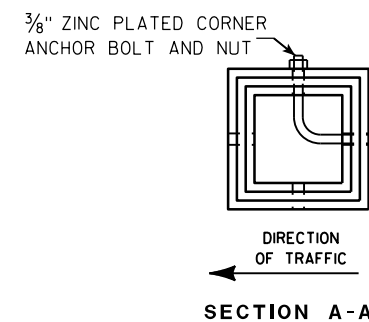
TECHNICAL DRAWING OF A SIGNPOST ASSEMBLY.

Side View (Left):

- Overall height dimension: LENGTH SHOWN ON MISC. QTYS.
- Top section: 2" STEEL TUBULAR SQUARE UPPER SECTION.
- Telescope pieces: TELESCOPE PIECES FLUSH AT TOP.
- Vertical dimensions from ground line: 36", 18", 12".
- Ground line with downward arrow 'A'.

End View (Right):

- Top: SIGN.
- Fasteners: SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL.
- Upper section: 2" STEEL TUBULAR SQUARE UPPER SECTION.
- Hole specifications: ALL HOLES $\frac{7}{16}$ " SPACED 1" C-C ALL FOUR SIDES.
- Corner fasteners: $\frac{3}{8}$ " ZINC PLATED CORNER ANCHOR BOLT AND NUT (1" from corner).
- Main fasteners: $\frac{3}{8}$ " ZINC PLATED ANCHOR BOLT AND NUT.
- Soil stabilizing sleeve: 2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE).
- Post section: 2 1/4" SQUARE X 36".
- Ground line with downward arrow 'A'.



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

PROJECT NO:

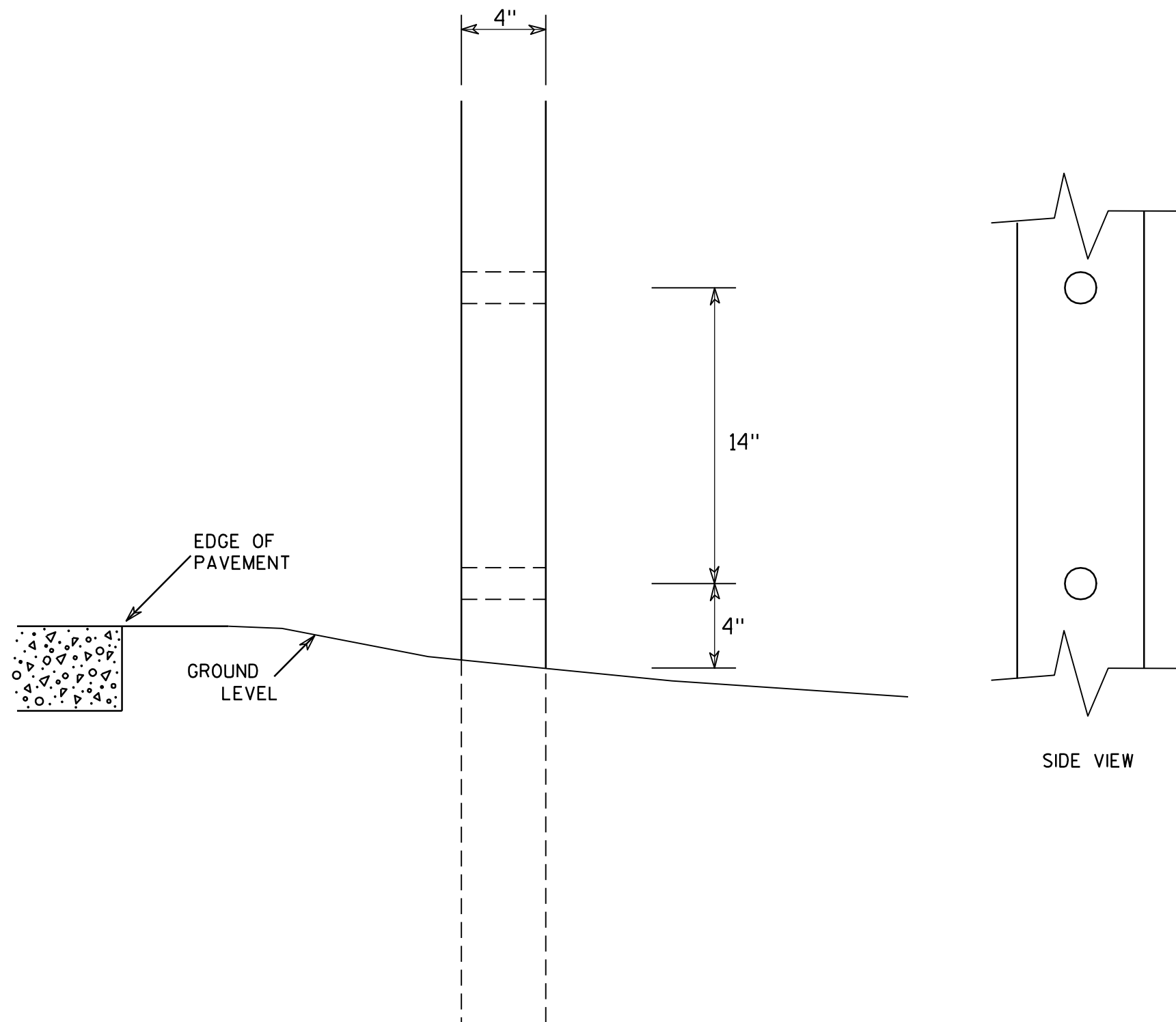
HWY:

COUNTY:

SHEET NO:

T

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:

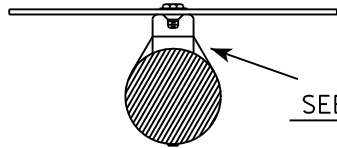
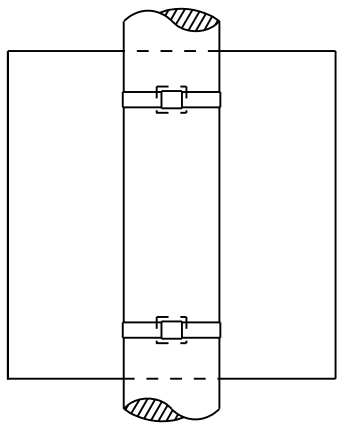
COUNTY:

SHEET NO:

E

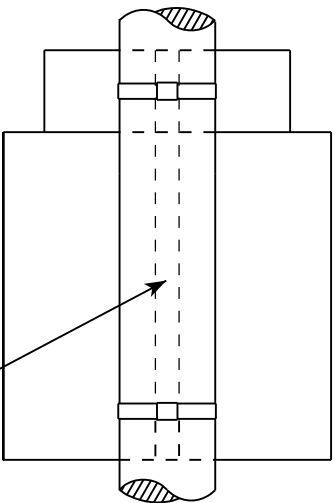
BANDING

SINGLE SIGN

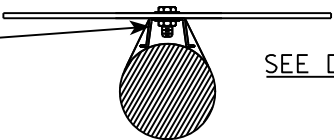


SEE DETAIL A

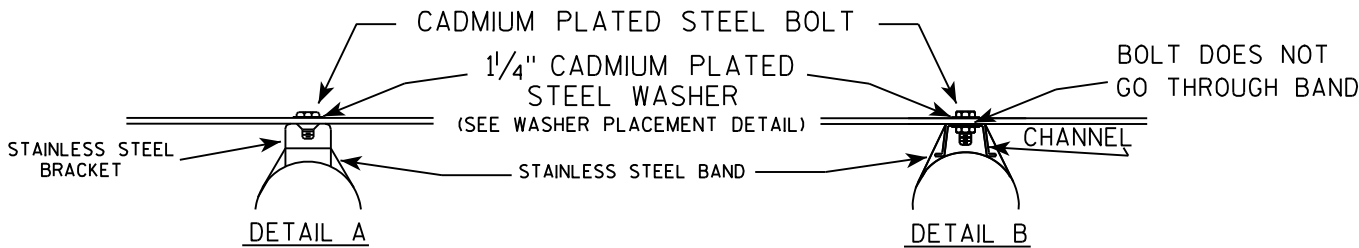
"J" ASSEMBLY



CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



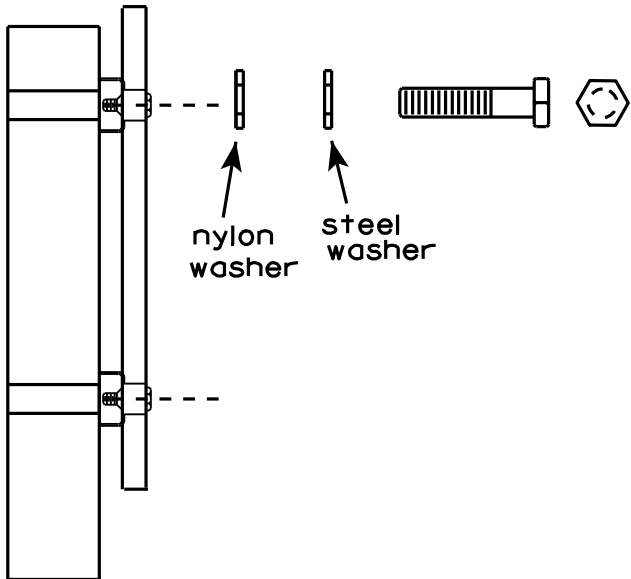
SEE DETAIL B



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

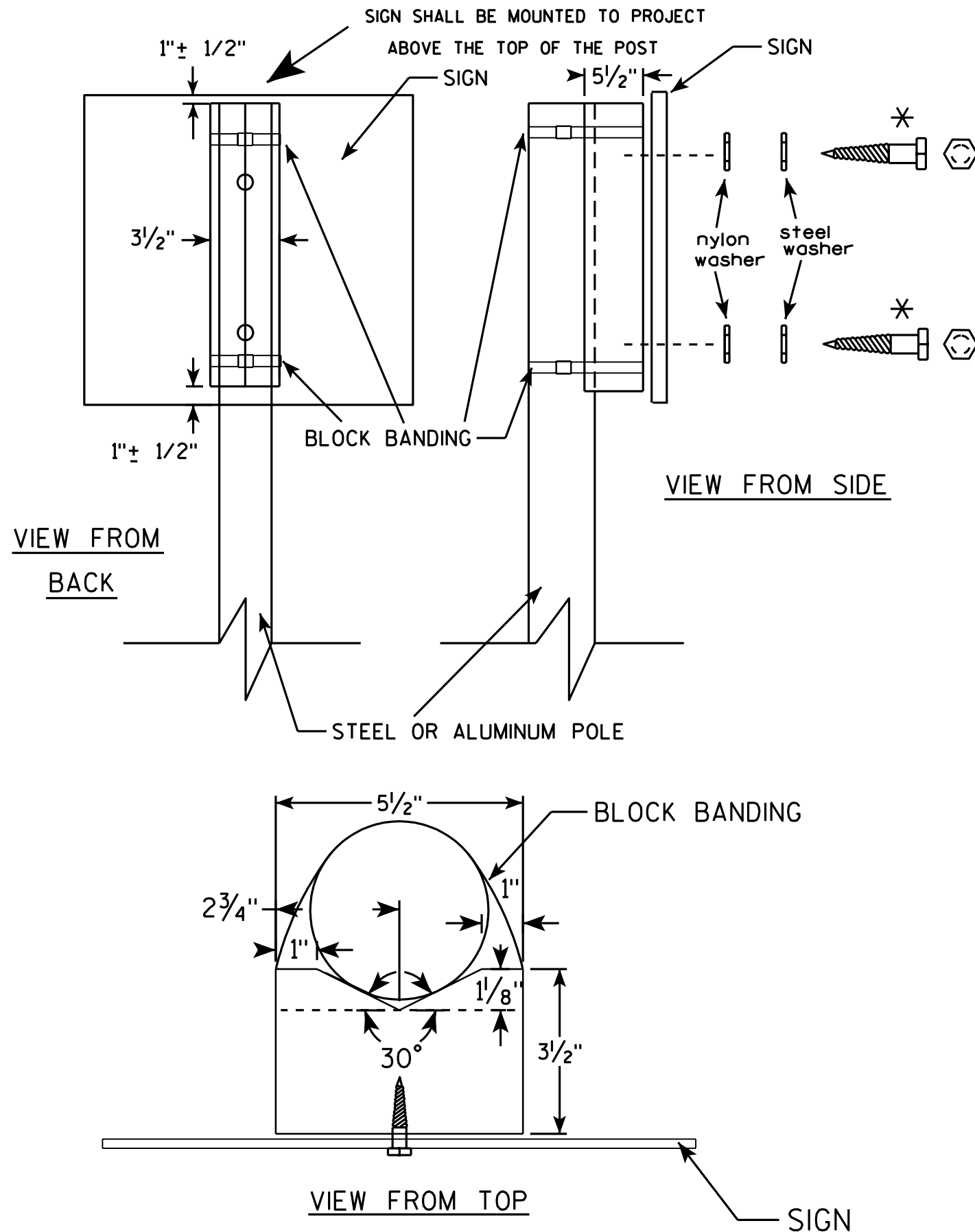
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



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

50, 53, 60, 61, 62, 63

7

LEVELS ON - 2, 3, 5, 6



D5-63 * See Note 5

Metric equivalent
for this sign is:

SIZE	
1	
2	1500 mm X 900 mm
3	
4	
5	

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 m2
1																												
2	60	36	2 1/4		3/4	6	4	5 1/2	4 1/4	25	17		5	1	12												15.0	1.35
3																												
4																												
5																												

STATE PROJECT NUMBER:

FILE NAME : C:\Users\Projects\tr_std\plate\D563.DGN

PLOT DATE : 09-JAN-2002 13:18

ORG DATE : 3/23/99

Originator : Don Kluever

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 - Brown
Message - White
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. Substitute appropriate numerals and optically adjust spacing to achieve proper balance.

STANDARD SIGN
D5-63

WISCONSIN DEPT OF TRANSPORTATION

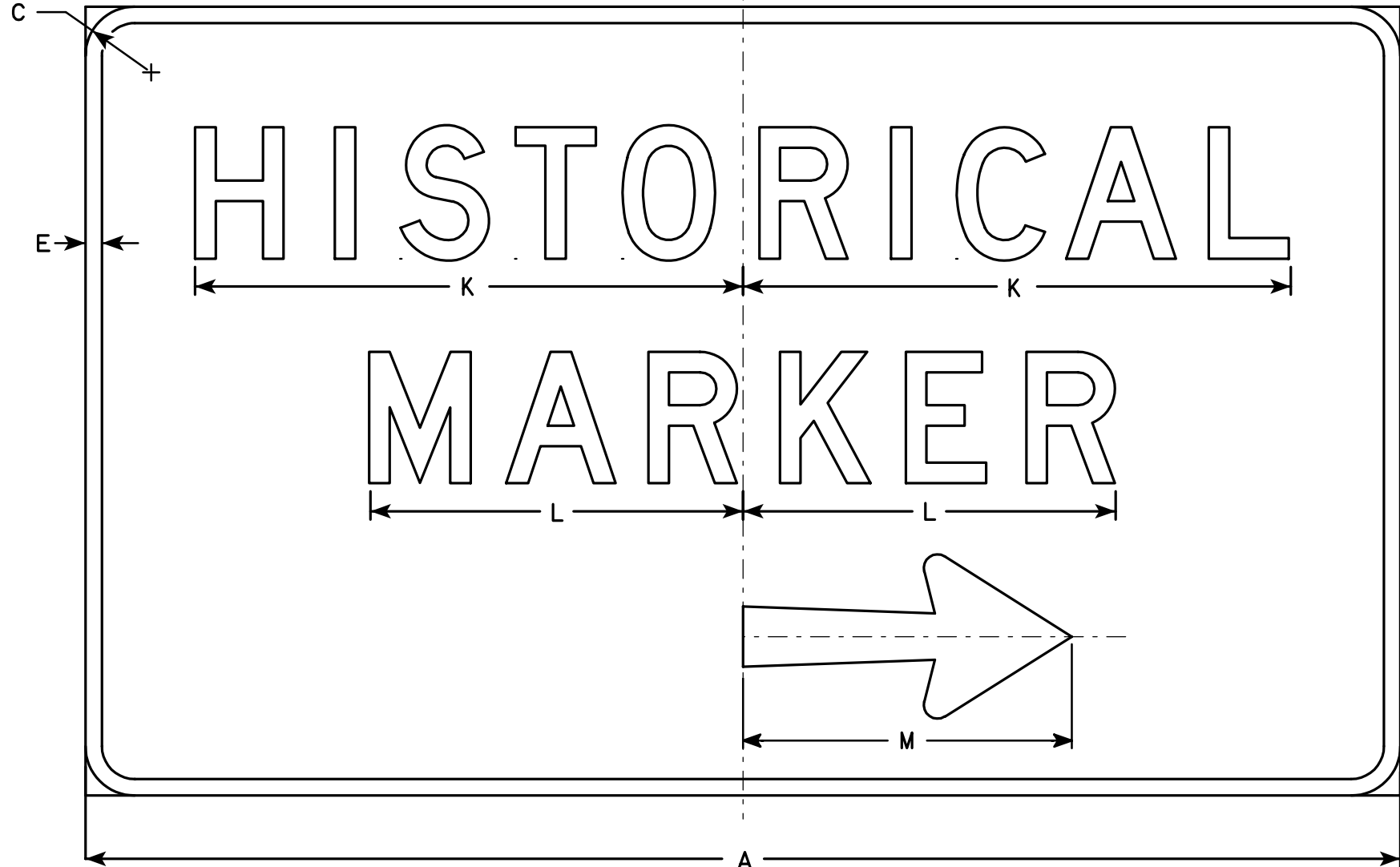
APPROVED
Christa J. Spang
for State Traffic Engineer

DATE 3/23/99 PLATE NO. D5-63.9

58, 59, 60, 61, 62, 63

7

LEVELS ON - 2, 3, 5, 6, 10.



D5-64R

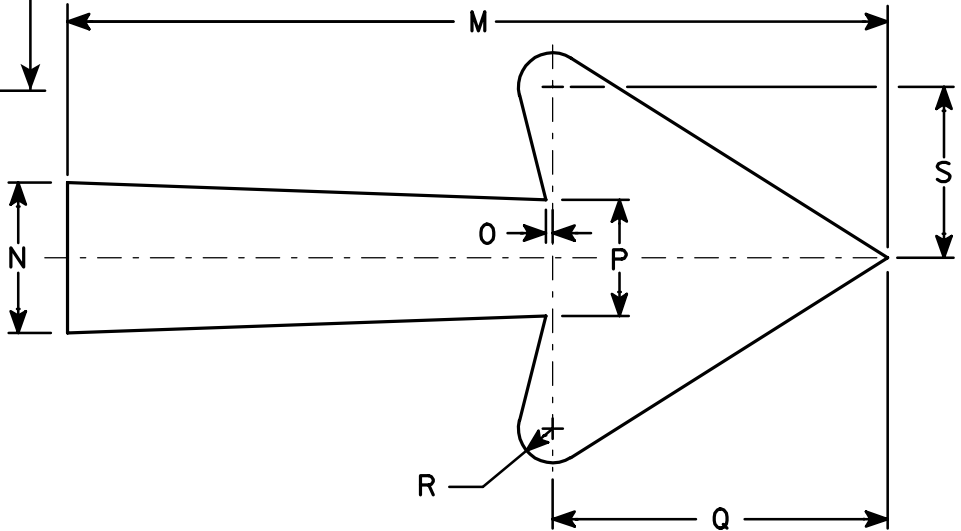
Metric equivalent
for this sign is:

SIZE	
1	
2	1500 mm X 900 mm
3	
4	
5	

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 m ²
1																												
2	60	36	2 1/4		3/4	6	5 1/2	4 1/4	7	7 1/4	25	17	15	2 3/4	1/8	2 1/8	6 1/8	5/8	3 1/8								15.0	1.35
3																												
4																												
5																												

NOTES

1. Sign Is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Brown
Message - White
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. D5-64L is the same as D5-64R except the arrow is reversed.



Arrow Detail

STANDARD SIGN
D5-64

WISCONSIN DEPT OF TRANSPORTATION
APPROVED
Charles J. Sperry
for State Traffic Engineer
DATE 1/09/02 PLATE NO. D5-64.5

STATE PROJECT NUMBER:

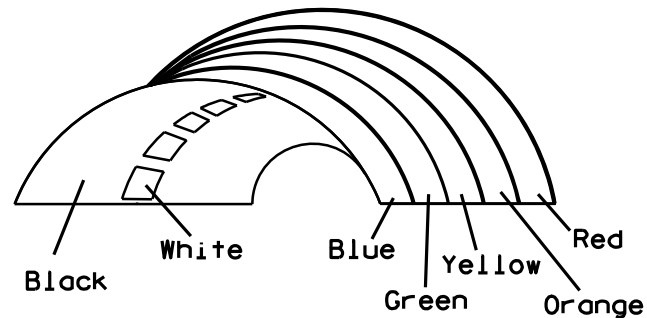
SHEET NO:

E



* VARIES

Background Colors of Symbol*



*1/4" Black Border between each color of rainbow and border of rainbow

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 5)
- 3. Message Series - (See Note 6)
- 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. Border - Blue
Line 1 - Red
Line 2 - Black
Line 3-5 - Blue
- 6. Line 1 - Dutch 8011L
Line 2 - Series E
Line 3-5 - Series C
- 7. Contractor shall provide and install a new post bracket in accordance with the I55-56B sign 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																											
2	30	36	1 1/2	1/2	5/8	3	2	3 1/2	2 7/8	1	8	2 1/8	11 1/4	11 1/8	9 3/8	1 1/4		3/4	12 5/8	7 1/2							7.5
3																											
4																											
5																											

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

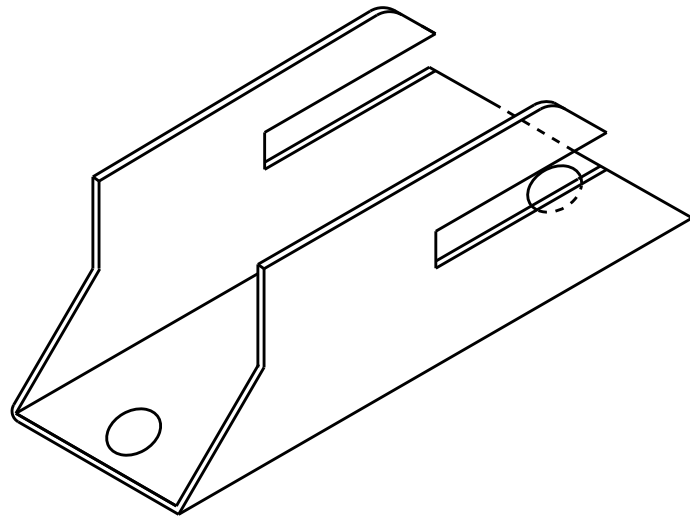
STANDARD SIGN
I55-56

WISCONSIN DEPT OF TRANSPORTATION

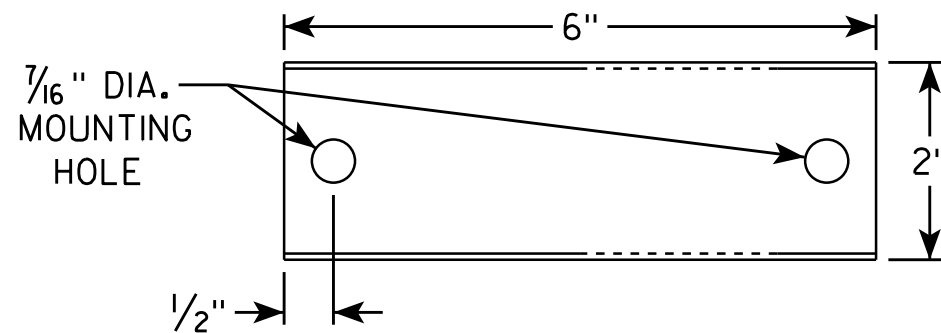
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 4/27/11 PLATE NO. I55-56.3

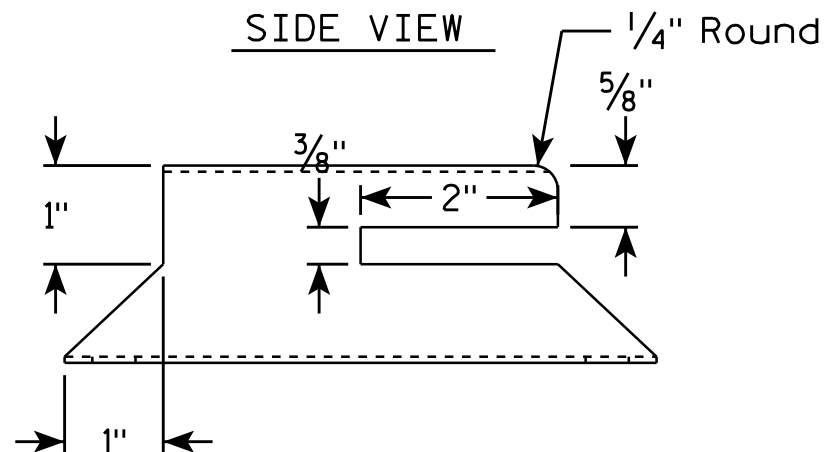
ISOMETRIC VIEW



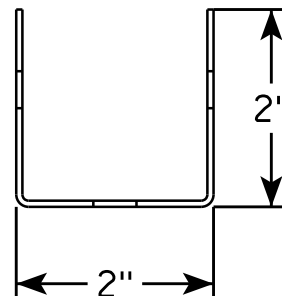
TOP VIEW



SIDE VIEW



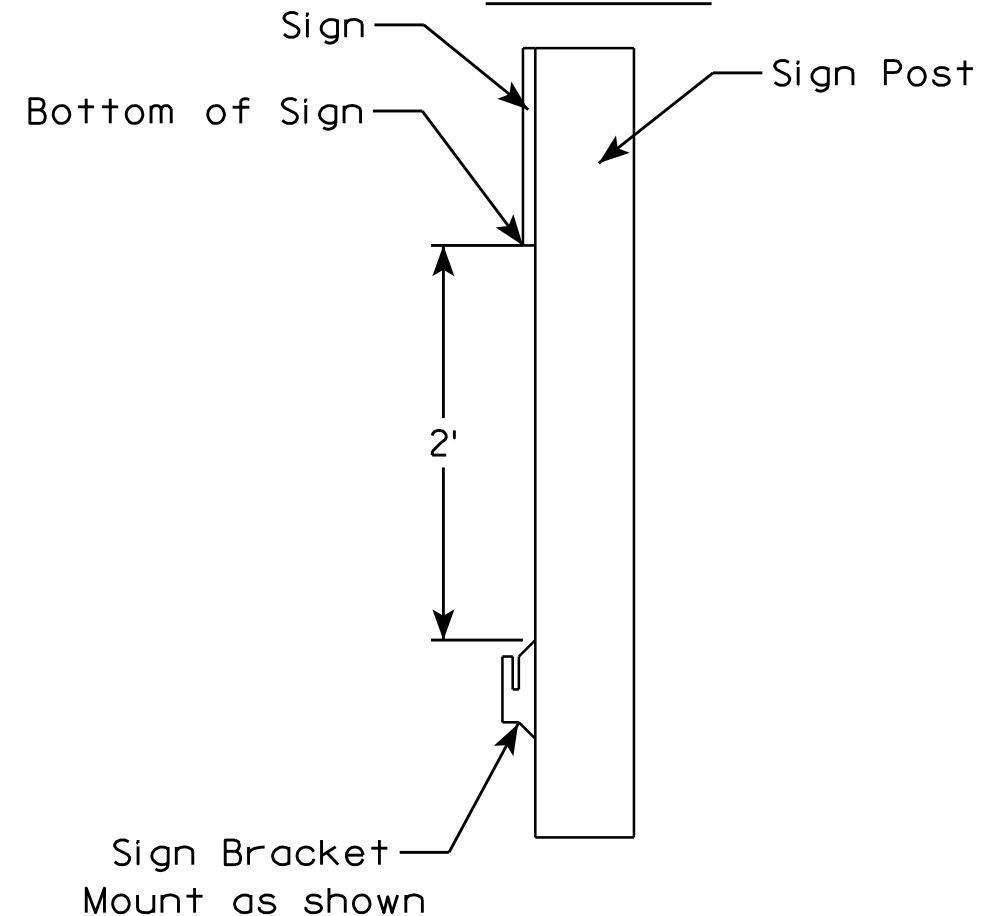
END VIEW



NOTES

1. Must be capable of permanent attachment to a wood or steel channel sign post utilizing the fastening hardware specified on the A4-8 sign plate.
2. Shall be entirely primed and painted with two coats of a black powder coated enamel paint.
3. Shall be made with 12 gauge steel, and incorporate no welds, no hinged components, no threaded lock-type components, and no parts which are loose or can be separated from the main body.
4. Shall have rounded edges with at least 1/8" radii.
5. Shall not have unrounded and uncoated metal edges which can contact the back surface of the roll-up sign.
6. Top of bracket shall be mounted 2' below the bottom of the I55-56 sign.
7. Cost of bracket and fastening hardware shall be incidental to the I55-56 sign.

SIDE VIEW



ROLLUP SIGN BRACKET
I55-56B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 4/26/16 PLATE NO. I55-56B.2

PROJECT NO:

HWY:

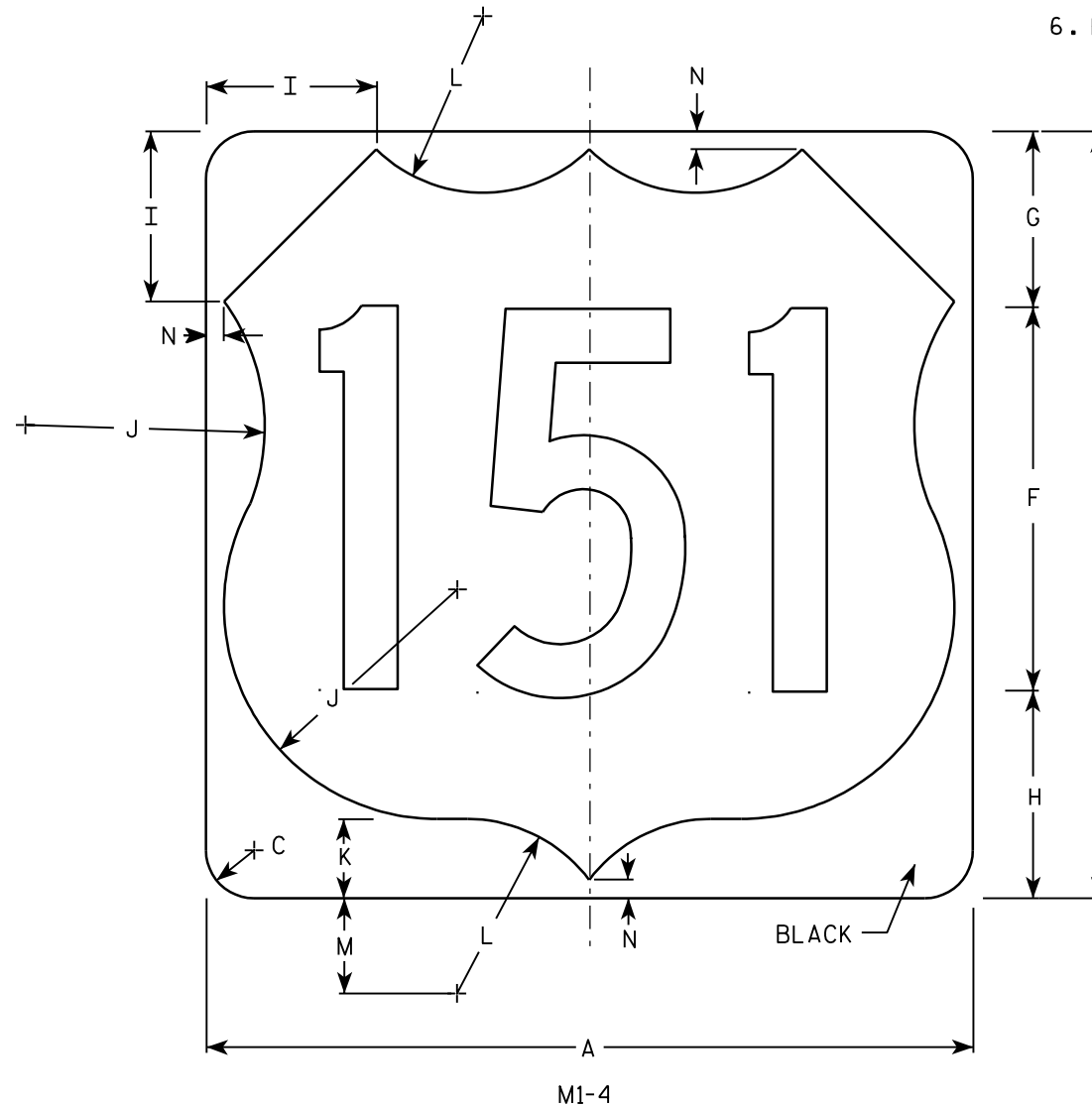
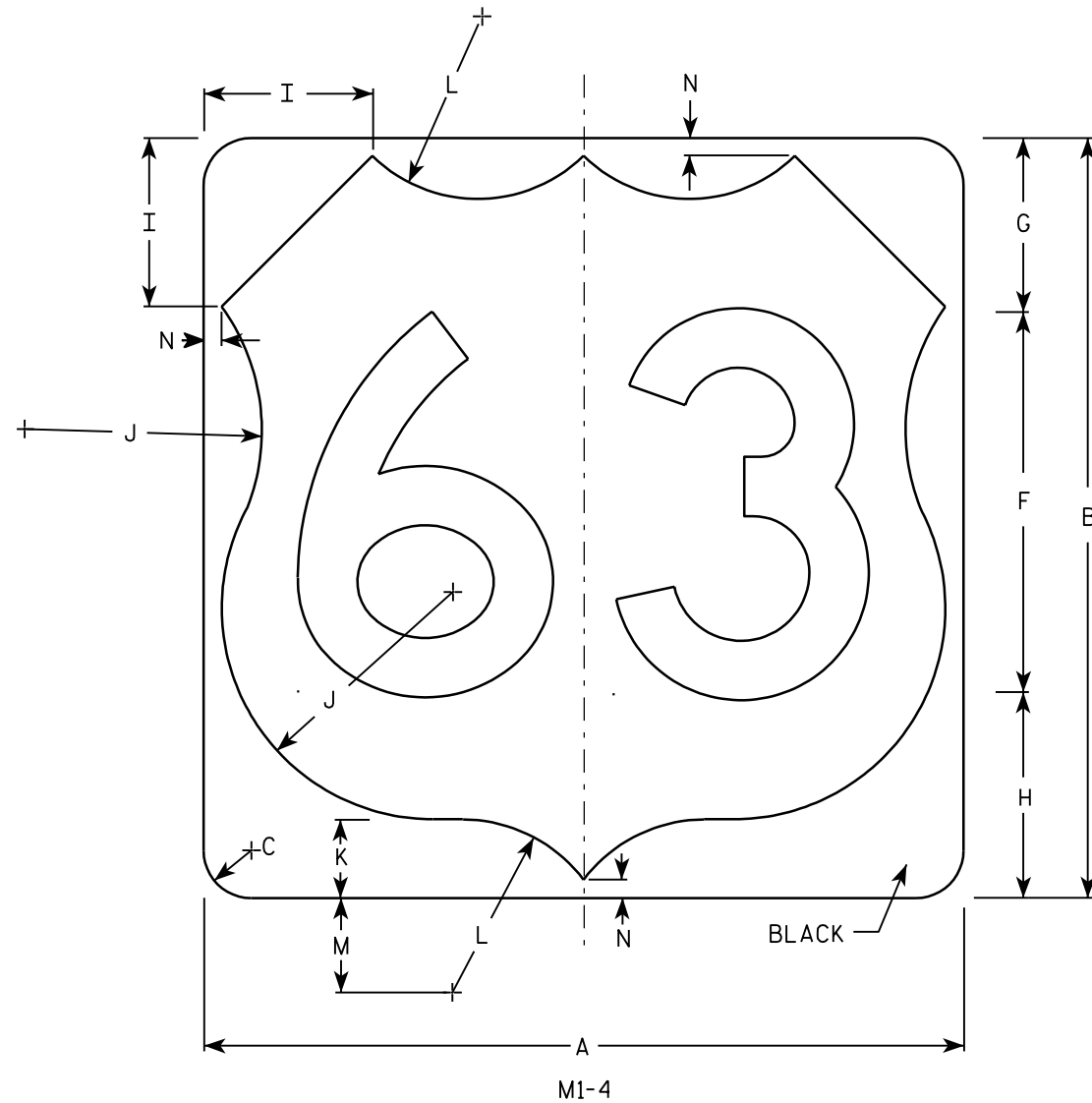
COUNTY:

SHEET NO:

E

NOTES

1. Sign is Type II - See Note 6 - reference
WIS DOT Standard Specification for HIGHWAY
and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White & Black - See Note 6
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. Substitute appropriate numerals and adjust
spacing as per Plate A10-1.
6. Permanent Signs
Background - Type H Reflective
Detour or other temporary signs
Background - Reflective



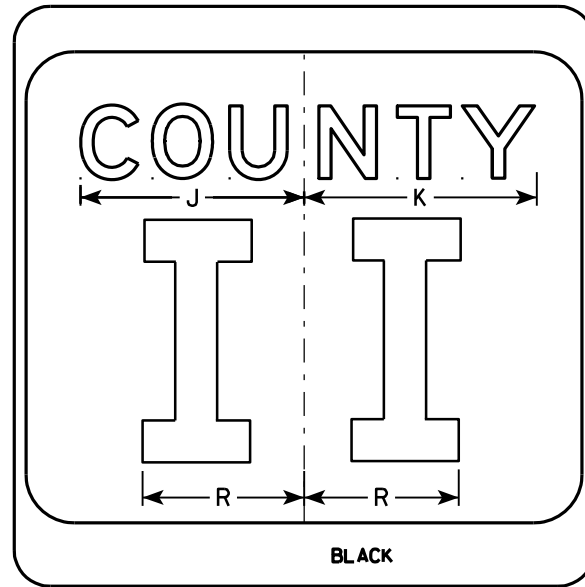
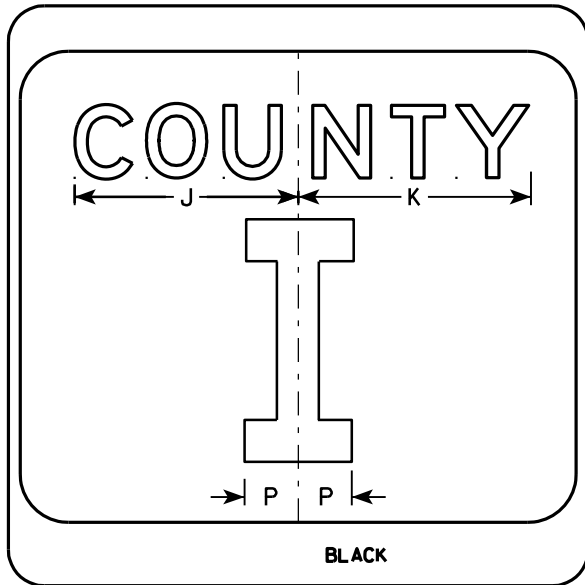
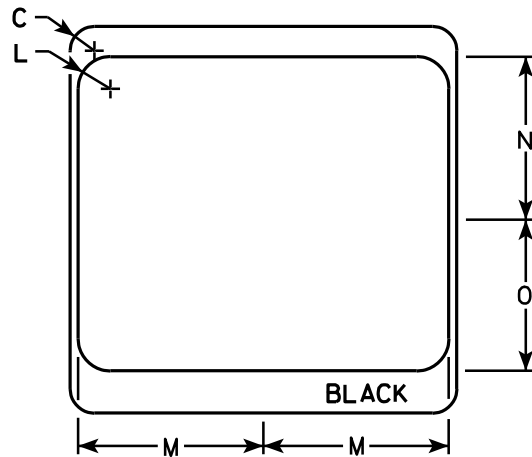
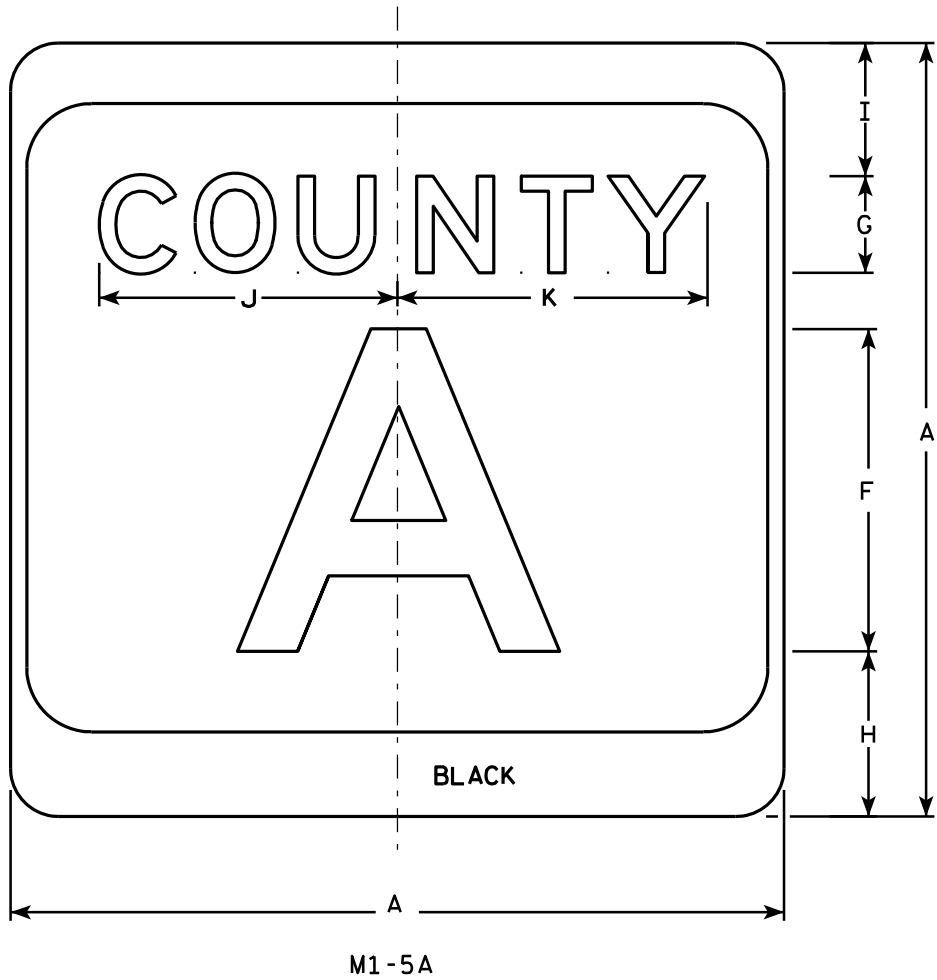
Metric equivalent
for this sign is:

SIZE	
1	
2	600 mm X 600 mm
3	900 mm X 900 mm
4	900 mm X 900 mm
5	900 mm X 900 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	Areq sq. ft.	Area m ²
1																												
2	24	24	1 1/2			12	5 1/2	6 1/2	5	7 1/2	2 1/2	5 1/2	3	1/2													4.0	.36
3	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0	.81
4	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0	.81
5	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0	.81

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E
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7



NOTES

1. Sign is Type II - see Note 7 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White & Black - See Note 7
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. Message Series E for 1 letter.
Message Series D for 2 letters unless message is too big then Series C.
Message Series C for 3 letters unless message is too big then Series B.
6. Substitute appropriate letters & optically center to achieve proper balance.
7. Permanent Signs
Background - Type H Reflective
Detour or temporary Signs
Background - Reflective

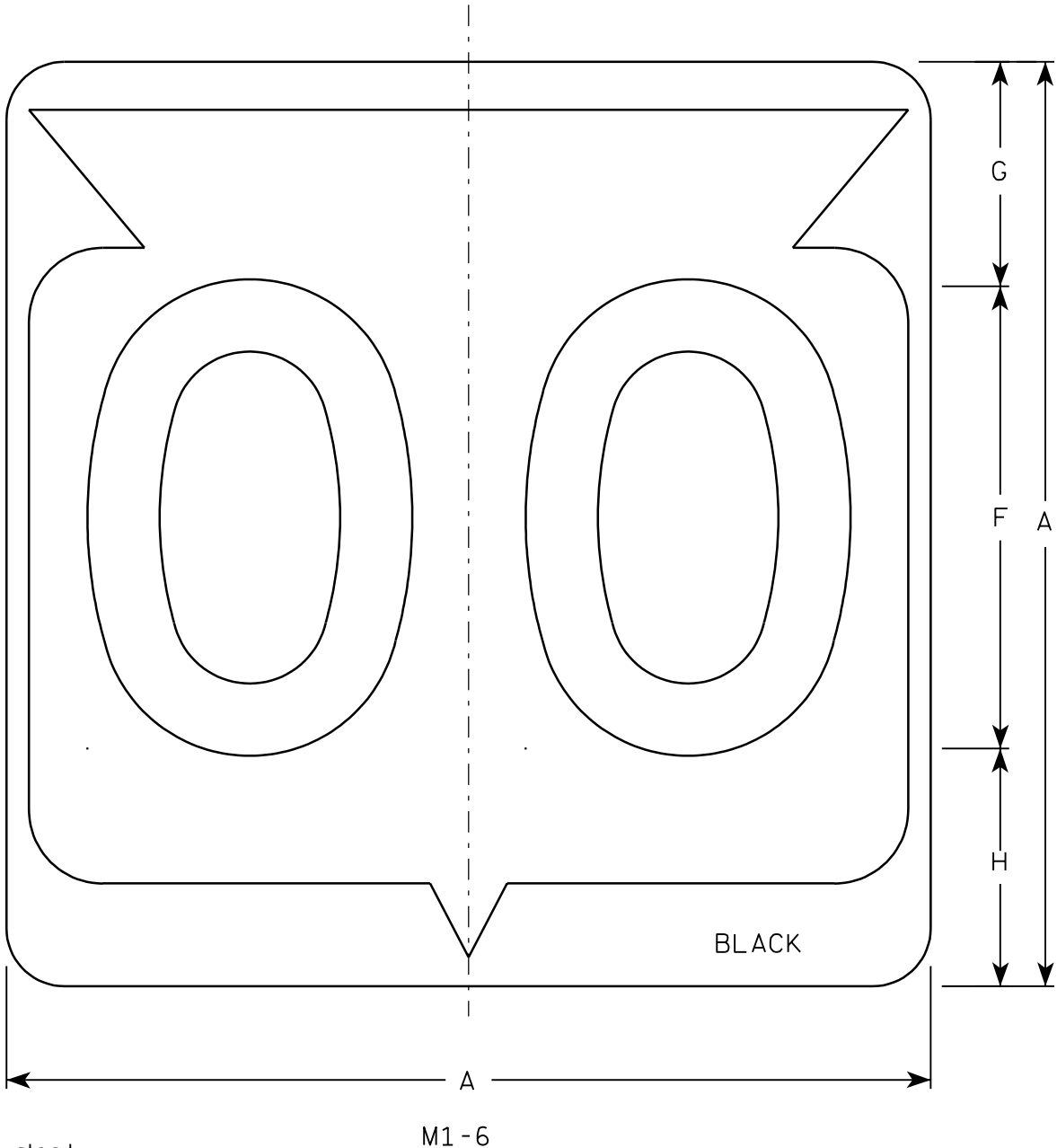
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24		1 1/2			10	3	5 1/8	4 1/8	9 1/4	9 5/8	2	11 1/2	10 1/8	9 3/8	2 1/4		6 5/8									4.0
3	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
4	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0
5	36		2 1/4			16	4	7 5/8	5 5/8	12 1/4	12 7/8	3	17 1/8	15 1/4	14	3 3/8		10									9.0

CTH MARKER	
M1-5A FOR ASSEMBLIES	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 9/27/11	PLATE NO. M1-5A.8

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
-------------	------	---------	-----------	---

7

7



Metric equivalent
for this sign is:

SIZE	
1	
2	600 mm X 600 mm
3	900 mm X 900 mm
4	900 mm X 900 mm
5	900 mm X 900 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 m ²
1																												
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0	.36
3	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0	.81
4	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0	.81
5	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0	.81

PROJECT NO:

HWY:

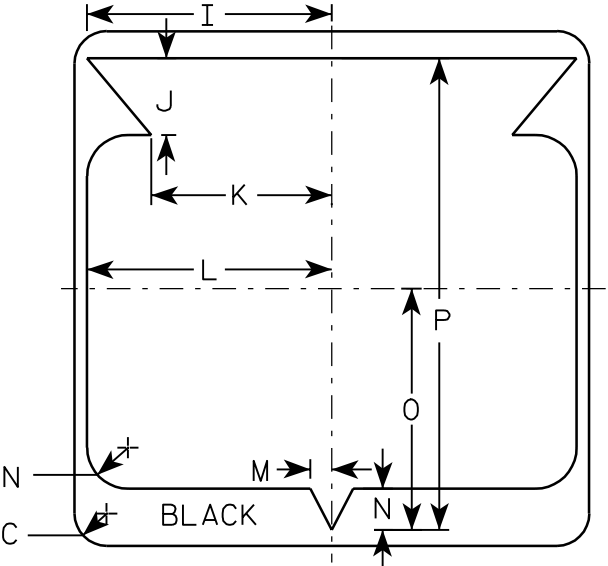
COUNTY:

SHEET NO:

E

NOTES

1. Sign is Type II - See Note 6 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White & Black - See Note 6
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. Substitute appropriate Series numerals and adjust spacing as per plate A10-1.
6. Permanent Signs
Background - Type H Reflective
Detour or temporary Signs
Background - Reflective



STATE ROUTE MARKER
M1-6 FOR ASSEMBLIES

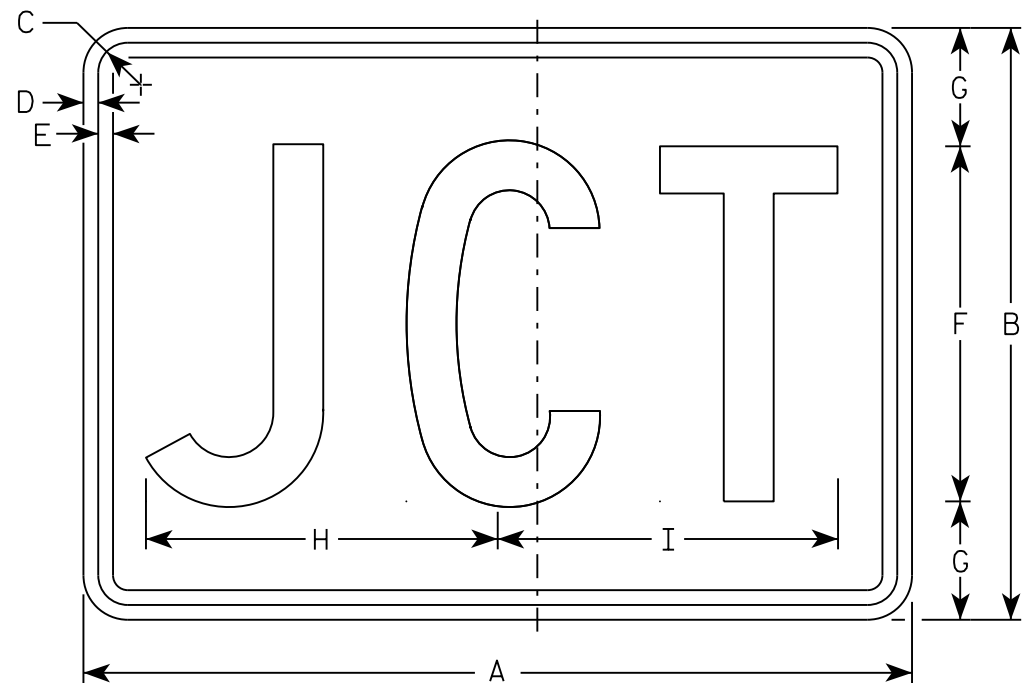
WISCONSIN DEPT OF TRANSPORTATION

APPROVED

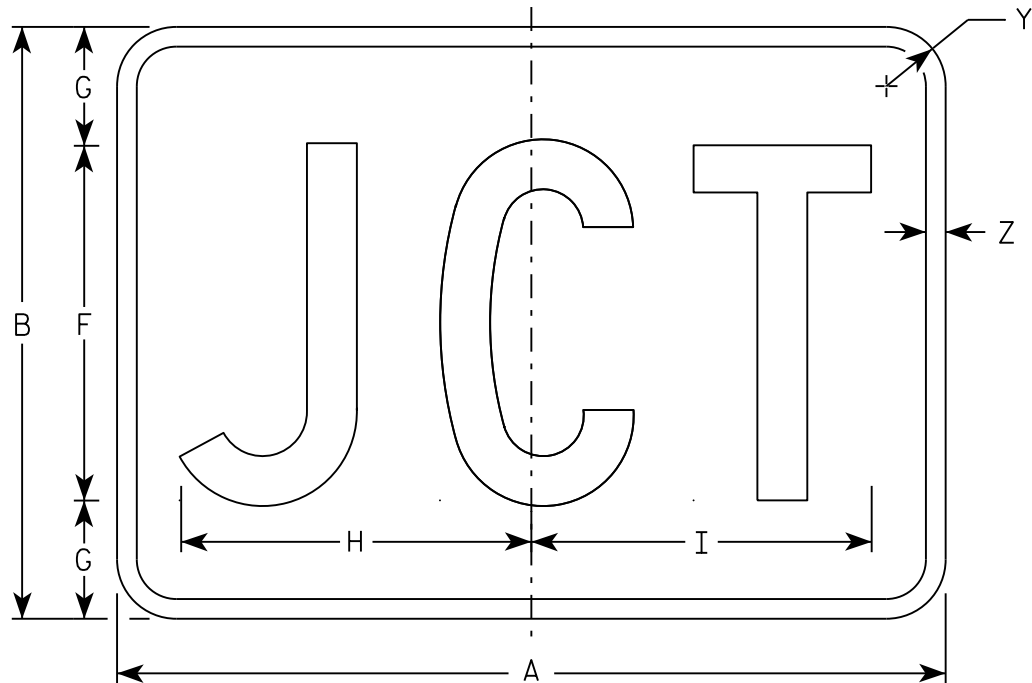
Chester J. Spang
for State Traffic Engineer

DATE 3/20/02

PLATE NO. M1-6.9



M2-1
MM2-1
MP2-1



MB2-1
MK2-1
MN2-1
MR2-1

NOTES

- 1. Sign is Type II - Type H
- 2. Color:
 - Background - See note 5
 - Message - See note 5
- 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.
- 5. M2-1 Background - White
 Message - Black
 MB2-1 Background - Blue
 Message - White
 MK2-1 Background - Green
 Message - White
 MM2-1 Background - White
 Message - Green
 MN2-1 Background - Brown
 Message - White
 MP2-1 Background - White
 Message - Blue
 MR2-1 Background - Brown
 Message - Yellow

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																											
2	21	15	1 1/8	3/8	3/8	9	3	8 7/8	8 5/8																1 1/2	1/2	2.20
3	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40
4	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40
5	30	21	1 1/8	3/8	3/8	13	4	12 7/8	12 3/8																1 1/2	1/2	4.40

STANDARD SIGN

M2 - 1

WISCONSIN DEPT OF TRANSPORTATION

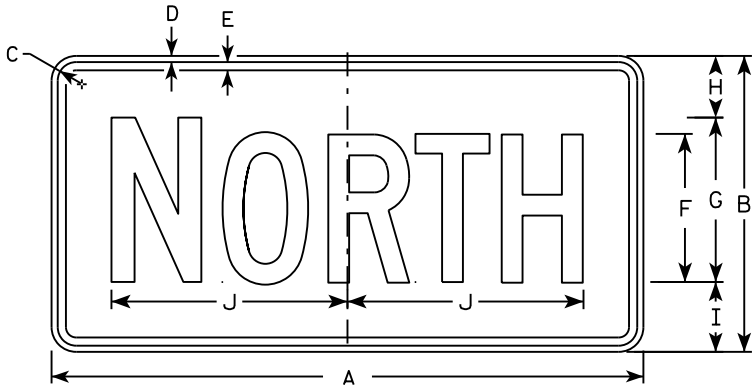
APPROVED

Matthew R. Rauch

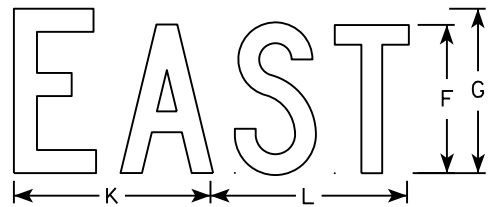
For State Traffic Engineer

DATE 10/15/15

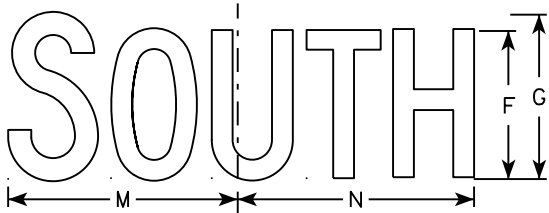
PLATE NO. M2-1.12



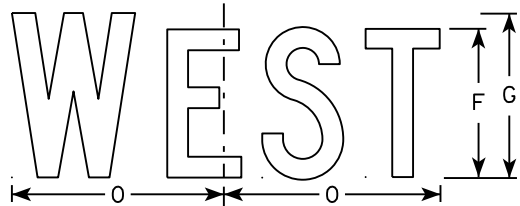
M3-1
MM3-1
MP3-1



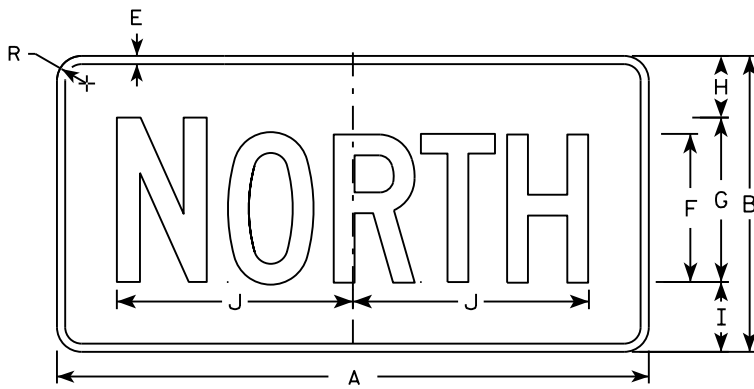
M3-2
MM3-2
MP3-2



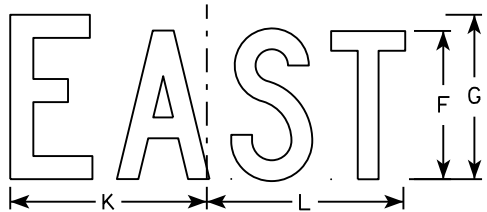
M3-3
MM3-3
MP3-3



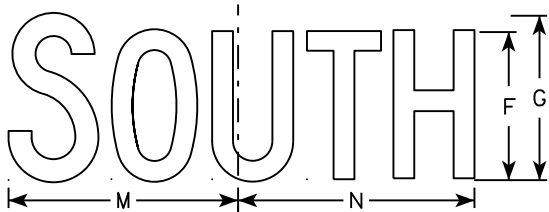
M3-4
MM3-4
MP3-4



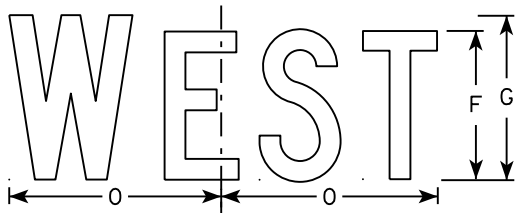
MB3-1
MK3-1
MN3-1



MB3-2
MK3-2
MN3-2



MB3-3
MK3-3
MN3-3



MB3-4
MK3-4
MN3-4

NOTES

1. All Signs Type II - Type H
2. Color:
Background - See note 5
Message - See note 5
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.
5. M3-1 thru M3-4 Background - White
Message - Black
MB3-1 thru MB3-4 Background - Blue
Message - White
MK3-1 thru MK3-4 Background - Green
Message - White
MM3-1 thru MM3-4 Background - White
Message - Green
MN3-1 thru MN3-4 Background - Brown
Message - White
MP3-1 thru MP3-4 Background - White
Message - Blue
6. Note the first letter of each direction is larger than the remainder of the message.

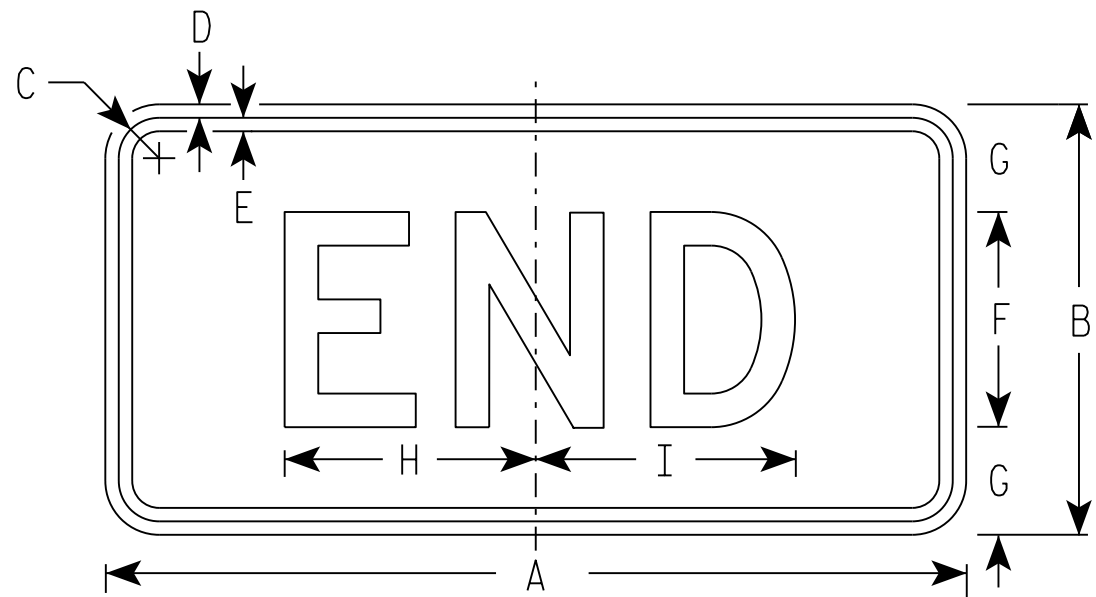
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4			1 1/2									2.00
3	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
4	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
5	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5

STANDARD SIGNS
M3-1 thru M3-4
SERIES

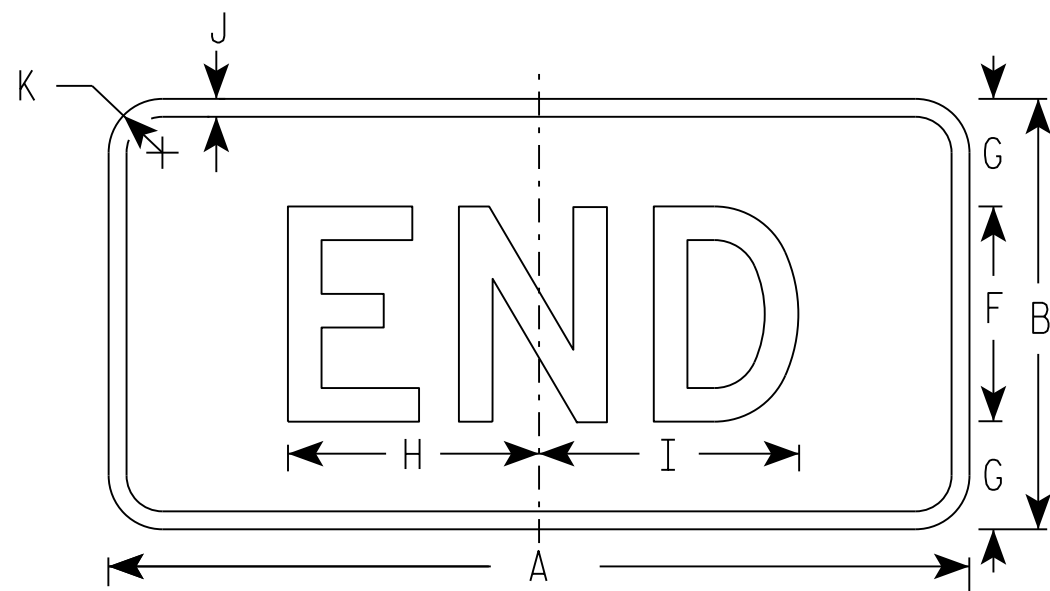
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M3-1.14



M4-6
MM4-6
MP4-6



MB4-6
MK4-6
MN4-6
MR4-6

NOTES

- Sign is Type II - Type H
- Color:
Background - See note 5
Message - See note 5
- Message Series - D
- 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.
- M4-6 Background - White
Message - Black
MB4-6 Background - Blue
Message - White
MK4-6 Background - Green
Message - White
MM4-6 Background - White
Message - Green
MN4-6 Background - Brown
Message - White
MP4-6 Background - White
Message - Blue
MR4-6 Background - Brown
Message - Yellow

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																											
2	24	12	1 1/8	3/8	3/8	6	3	7	7 1/4	1/2	1 1/2																2.00
3	36	18	1 1/8	3/8	1/2	9	4 1/2	12	11 7/8	1/2	1 1/2																4.5
4	36	18	1 1/8	3/8	1/2	9	4 1/2	12	11 7/8	1/2	1 1/2																4.5
5	36	18	1 1/8	3/8	1/2	9	4 1/2	12	11 7/8	1/2	1 1/2																4.5

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

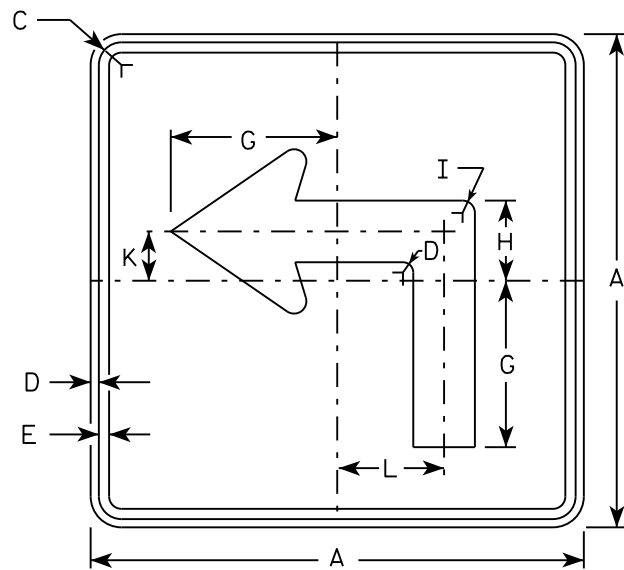
E

STANDARD SIGN
M4-6

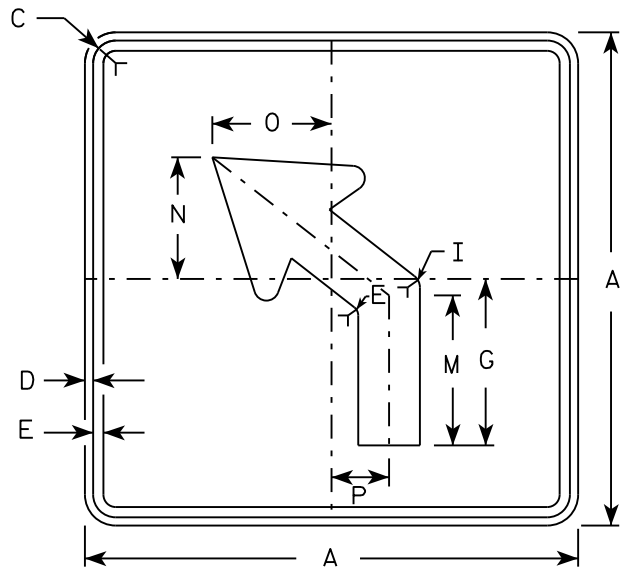
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

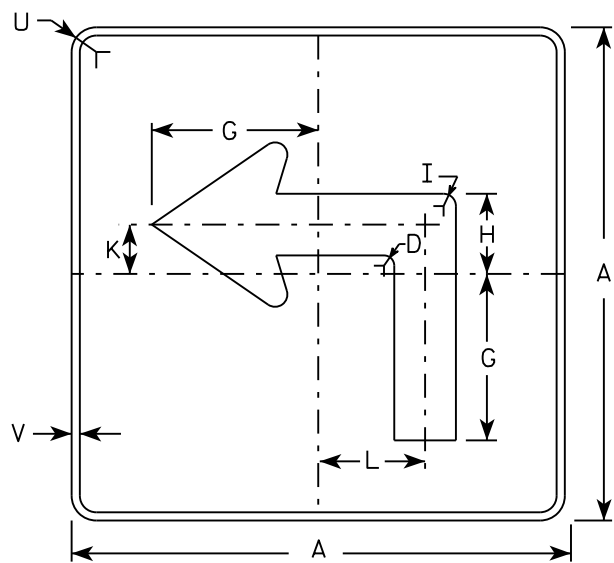
DATE 10/15/15 PLATE NO. M4-7.9



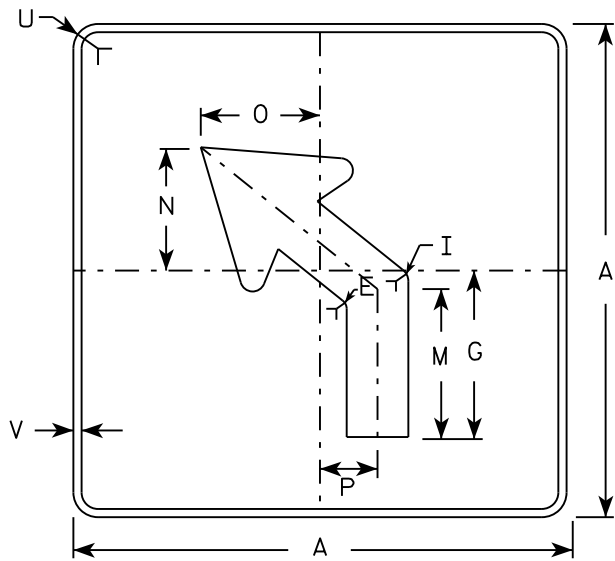
M5-1L
MM5-1L
M05-1L
MP5-1L



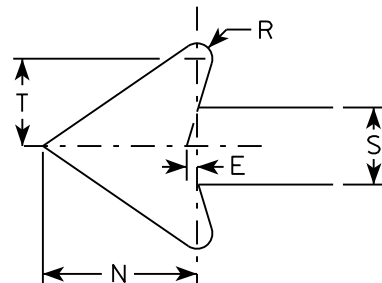
M5-2L
MM5-2L
M05-2L
MP5-2L



MB5-1L
MK5-1L
MN5-1L
MR5-1L



MB5-2L
MK5-2L
MN5-2L
MR5-2L



NOTES

- Signs are Type II - Type H reflective except as shown
- Color:
Background - See note 4
Message - See note 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.
- | | |
|-----------------|---|
| M5-1 and M5-2 | Background - White |
| | Message - Black |
| MB5-1 and MB5-2 | Background - Blue |
| | Message - White |
| MK5-1 and MK5-2 | Background - Green |
| | Message - White |
| MM5-1 and MM5-2 | Background - White |
| | Message - Green |
| MN5-1 and MN5-2 | Background - Brown |
| | Message - White |
| M05-1 and M05-2 | Background - Orange - Type F Reflective |
| | Message - Black |
| MP5-1 and MP5-2 | Background - White - Type H Reflective |
| | Message - Blue |
| MR5-1 and MR5-2 | Background - Brown |
| | Message - Yellow |
- M5-1R same as M5-1L except arrow points right.
- M5-2R same as M5-2L except arrow tilts right.

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																											
2	21		1 1/8	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3	1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25
4	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4	1 7/8	1/2					6.25

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

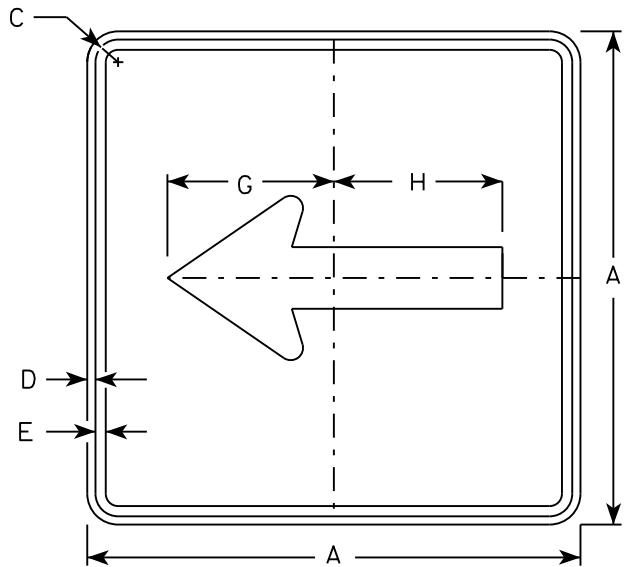
E

STANDARD SIGN
M5-1 & M5-2

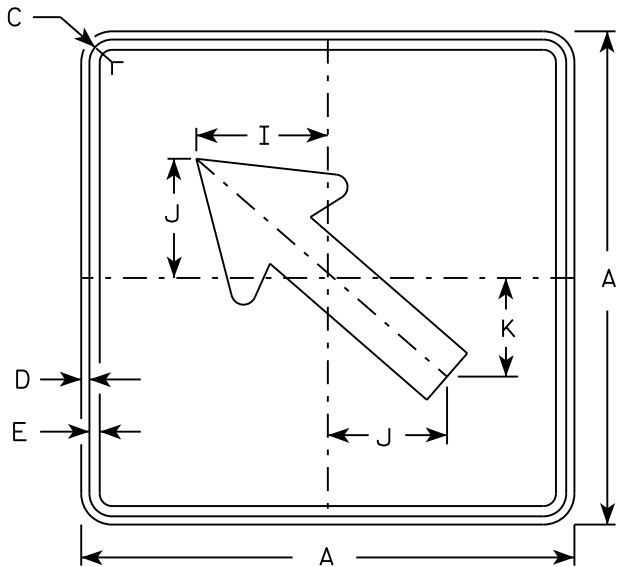
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

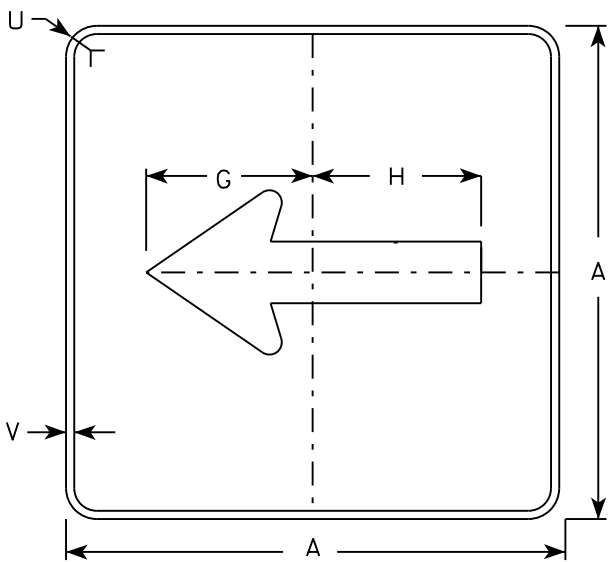
DATE 10/15/15 PLATE NO. M5-1.13



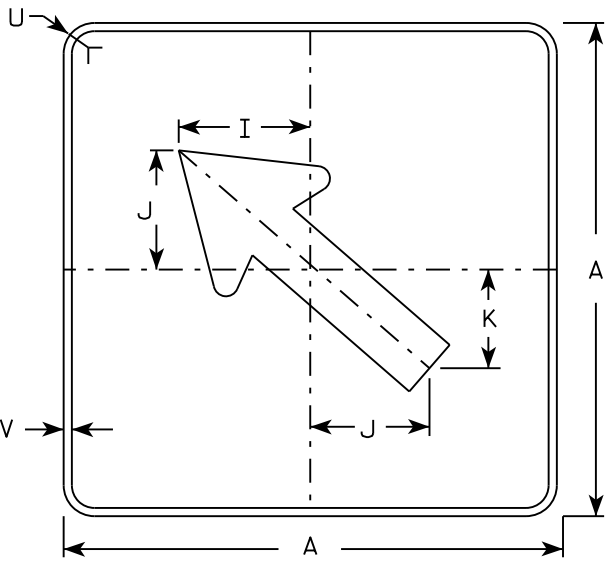
M6 - 1
MM6 - 1
M06 - 1
MP6 - 1



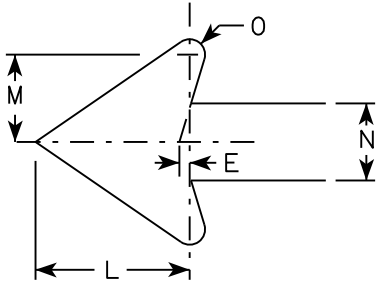
M6 - 2
MM6 - 2
M06 - 2
MP6 - 2



MB6 - 1
MK6 - 1
MN6 - 1
MR6 - 1



MB6 - 2
MK6 - 2
MN6 - 2
MR6 - 2



NOTES

- Signs are Type II - Type H except as Shown
- Color:
Background - See note 4
Message - See note 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.
- M6-1 and M6-2 Background - White
Message - Black
MB6-1 and MB6-2 Background - Blue
Message - White
MK6-1 and MK6-2 Background - Green
Message - White
MM6-1 and MM6-2 Background - White
Message - Green
MN6-1 and MN6-2 Background - Brown
Message - White
M06-1 and M06-2 Background - Orange - Type F Reflective
Message - Black
MP6-1 and MP6-2 Background - White
Message - Blue
MR6-1 and MR6-2 Background - Brown
Message - Yellow

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																											
2	21		1 1/8	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2						1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
4	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

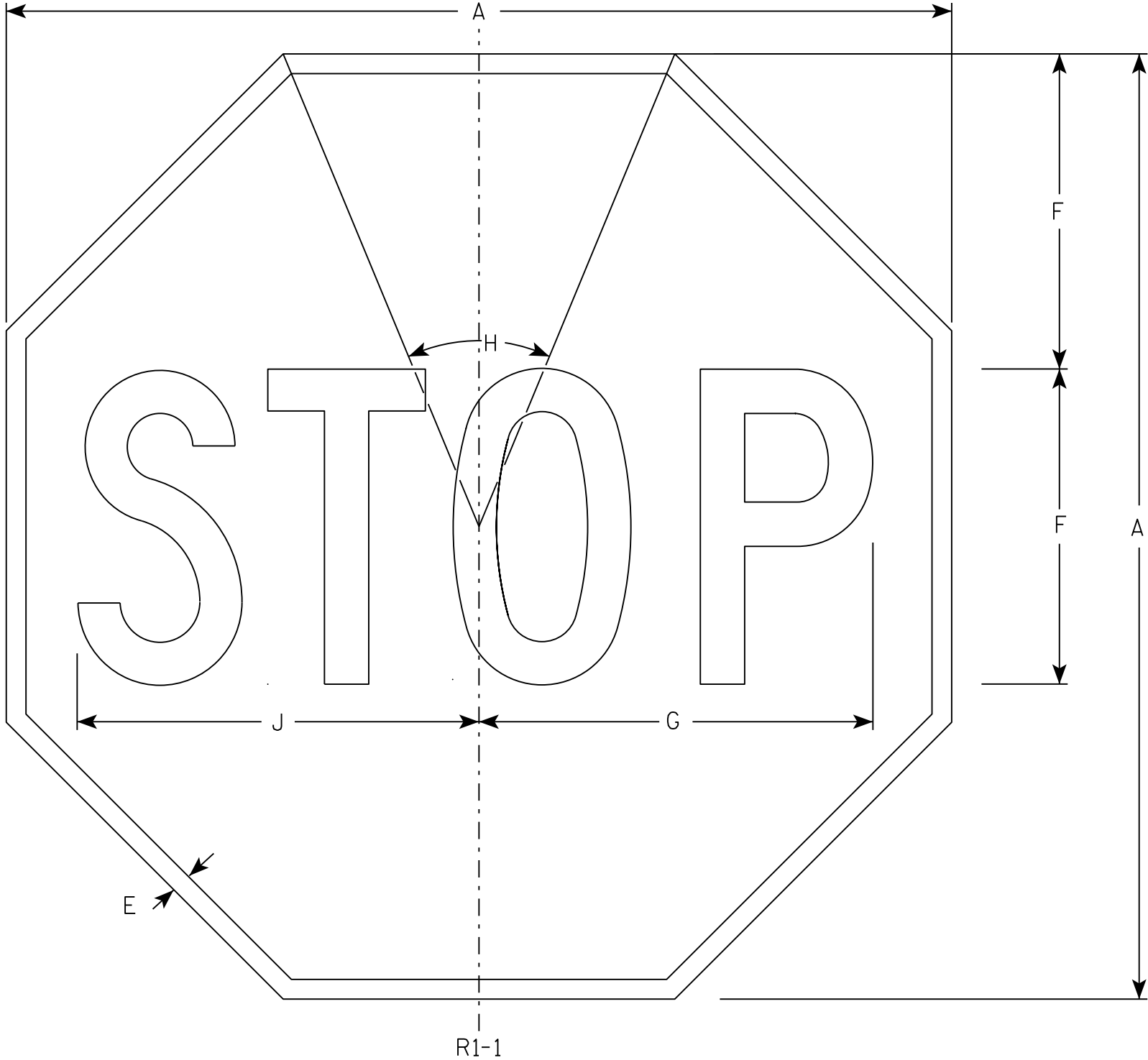
E

STANDARD SIGN
M6 - 1 & M6 - 2
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 10/15/15 PLATE NO. M6-1.15



NOTES

- 1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
 - Background - Red
 - Message - White
- 3. Message 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	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2S	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2M	36				3/4	12	15	45°		15 3/8																	7.46
3	36				3/4	12	15	45°		15 3/8																	7.46
4	48				1	16	20	45°		20 1/2																	13.25
5	48				1	16	20	45°		20 1/2																	13.25
6	18				3/8	6	7 3/4	45°		7 3/4																	1.86
7	12				1/4	4	5	45°		5 1/8																	0.78

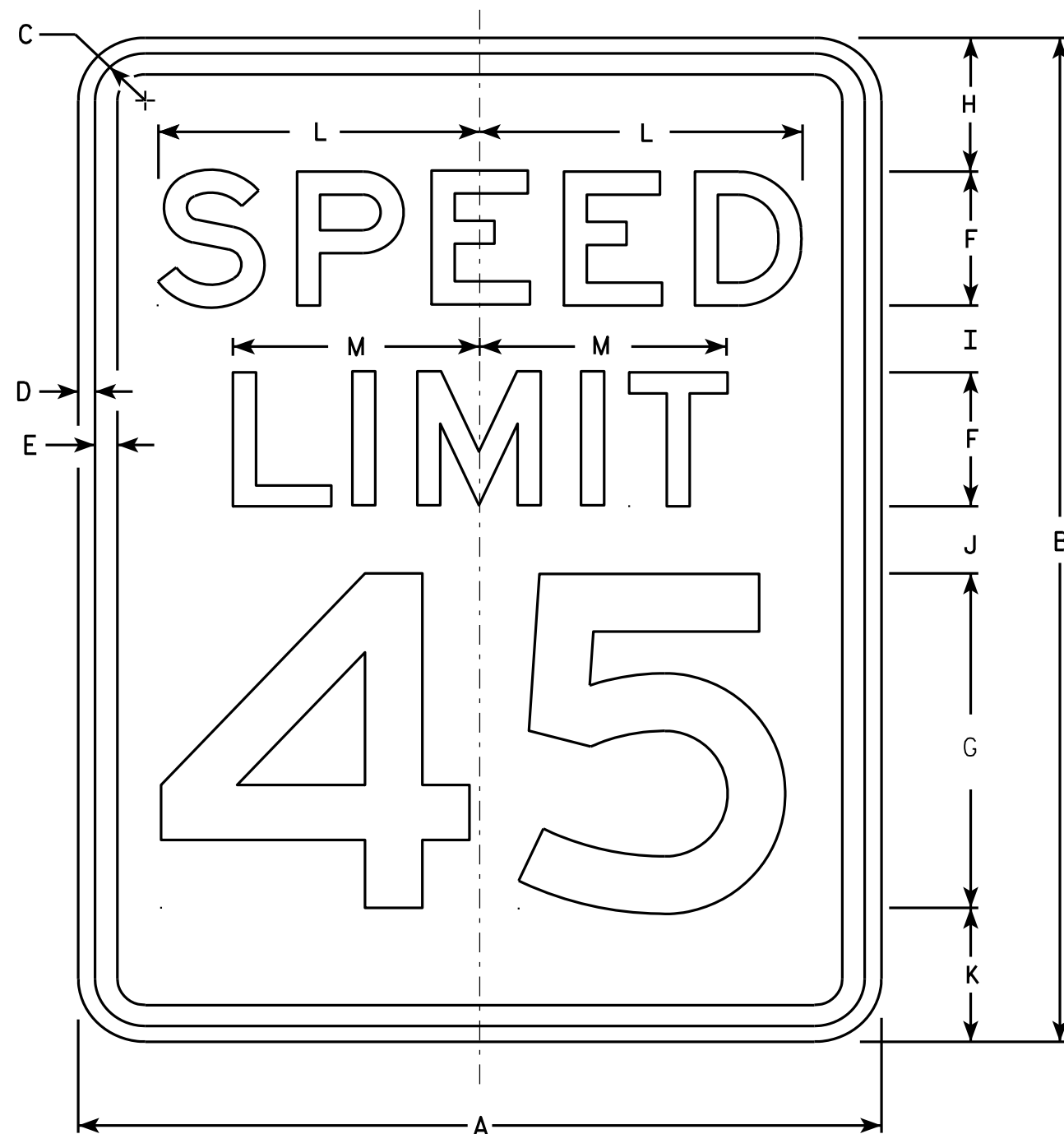
STANDARD SIGN

R1-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 11/12/15 PLATE NO. R1-1.13



R2-1

NOTES

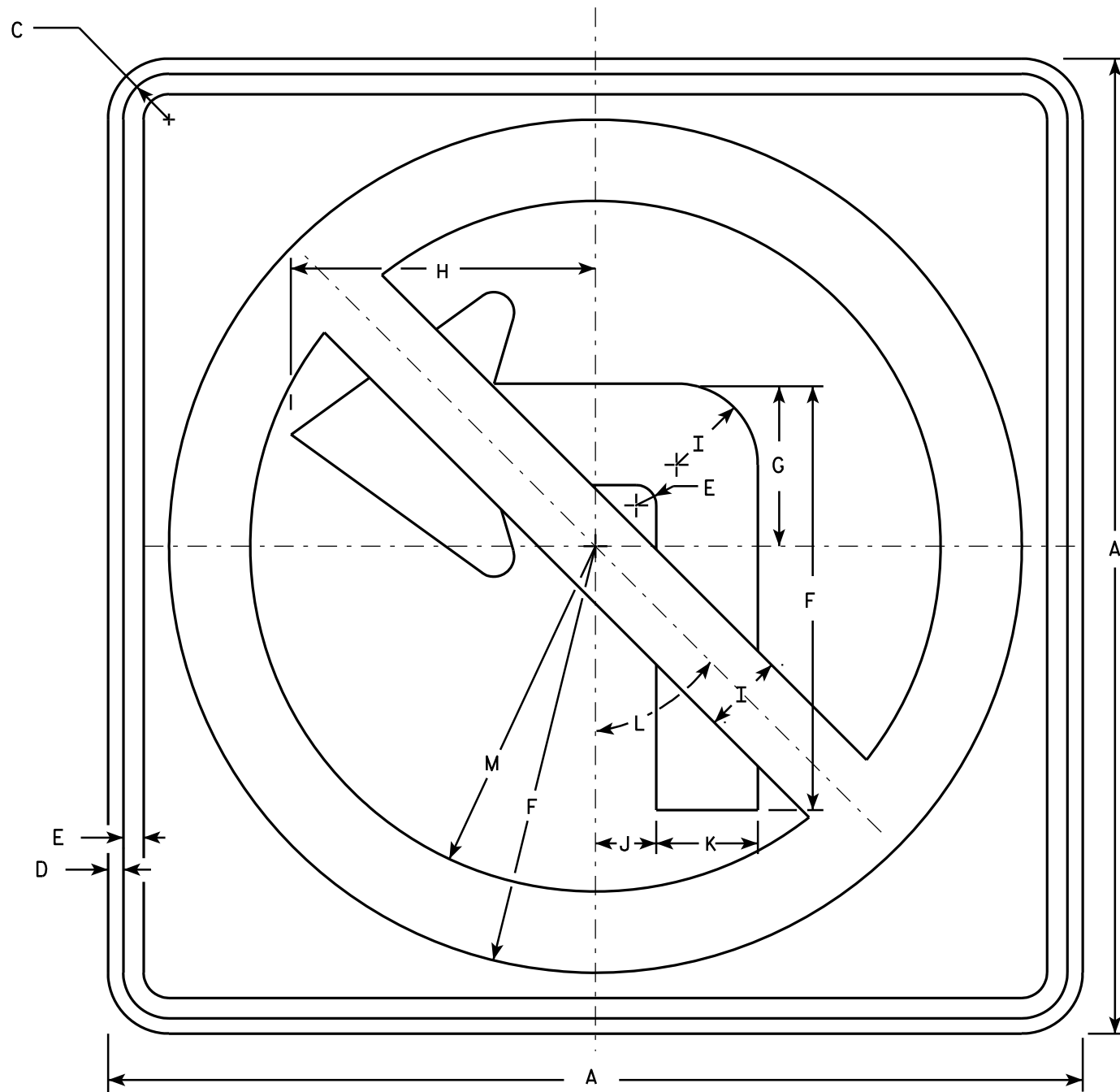
1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Black
3. Message Series - E
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as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

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	18	24	1 1/8	3/8	1/2	3	8	3	2	2	3	7 1/4	5 1/2														3.0
2S	24	30	1 1/8	3/8	1/2	4	10	3	2 1/4	3 3/8	3 3/8	9 5/8	7 3/8														5.0
2M	30	36	1 3/8	1/2	5/8	5	12	5	2 1/2	2 1/2	4	12	9 1/4														7.5
3	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
4	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
5	48	60	2 1/4	3/4	1	8	20	6	4 1/2	6 3/4	6 3/4	19 1/4	14 5/8														20.0

STANDARD SIGN R2-1

WISCONSIN DEPT OF TRANSPORTATION
APPROVED *Matthew R. Rauch*
For State Traffic Engineer
DATE 5/26/10 PLATE NO. R2-1.13

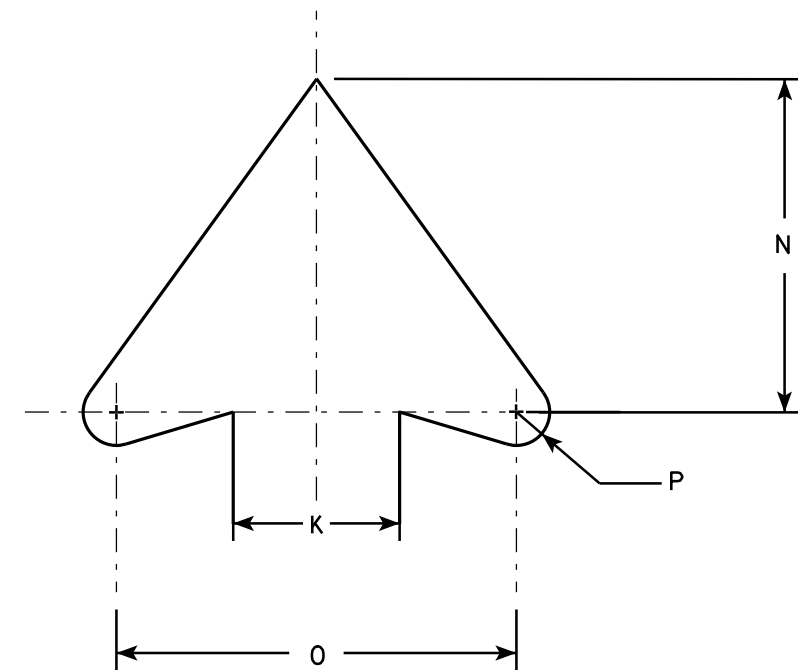
PROJECT NO: HWY: COUNTY: SHEET NO: E



R3-2

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 - 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	24		1 1/8	3/8	1/2	10 1/2	4	7 1/2	2	1 1/2	2 1/2	45°	8 1/2	5	6	1/2											4.0
2S	24		1 1/8	3/8	1/2	10 1/2	4	7 1/2	2	1 1/2	2 1/2	45°	8 1/2	5	6	1/2											4.0
2M	36		1 5/8	5/8	3/4	15 3/4	6	11 1/4	3	2 1/4	3 3/4	45°	12 3/4	7 1/2	9	3/4											9.0
3	36		1 5/8	5/8	3/4	15 3/4	6	11 1/4	3	2 1/4	3 3/4	45°	12 3/4	7 1/2	9	3/4											9.0
4	36		1 5/8	5/8	3/4	15 3/4	6	11 1/4	3	2 1/4	3 3/4	45°	12 3/4	7 1/2	9	3/4											9.0
5	48		2 1/4	3/4	1	21	8	15	4	3	5	45°	17	10	12	1											16.0

STANDARD SIGN R3-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/08/10 PLATE NO. R3-2.10

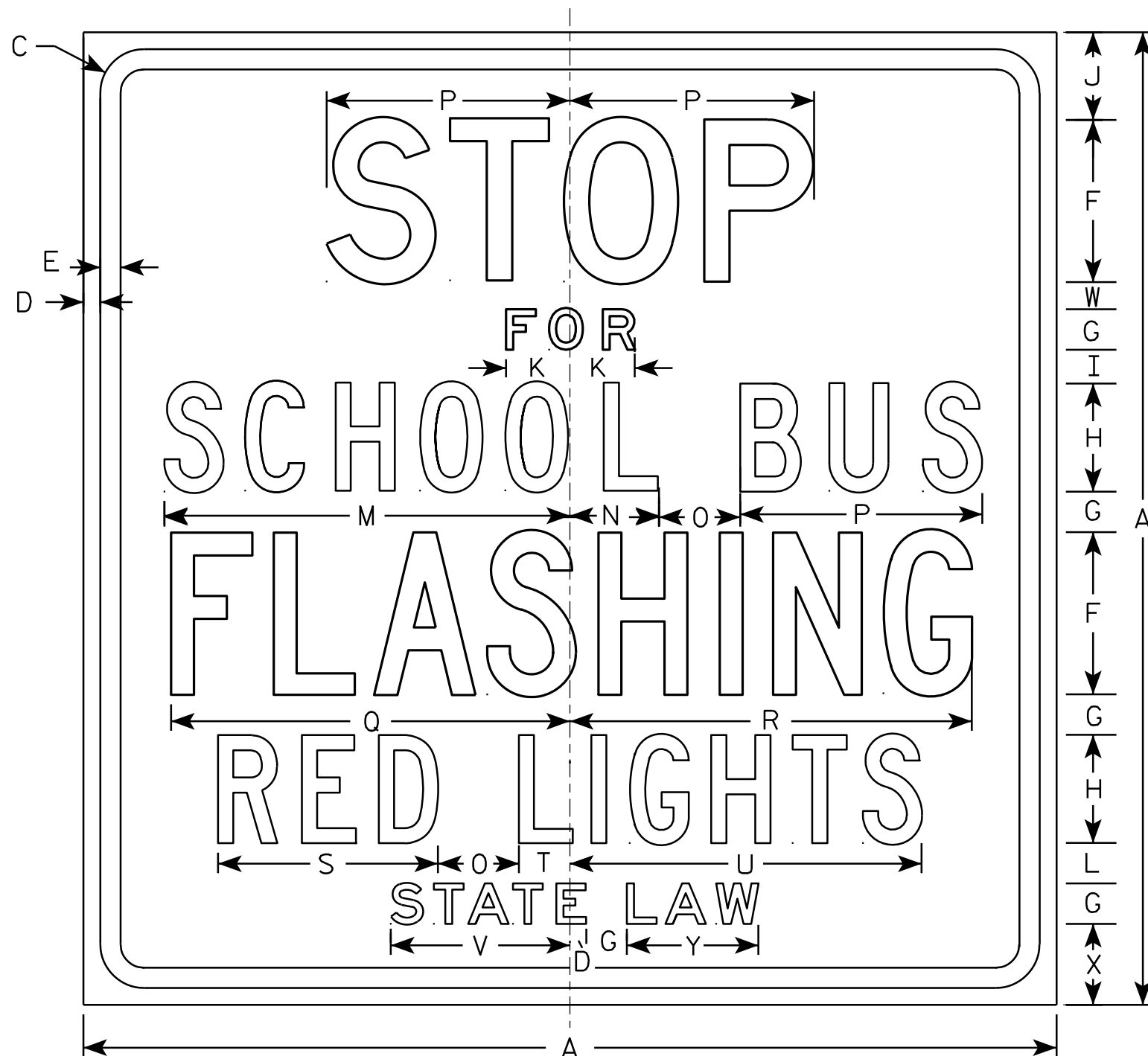
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



R59-51

NOTES

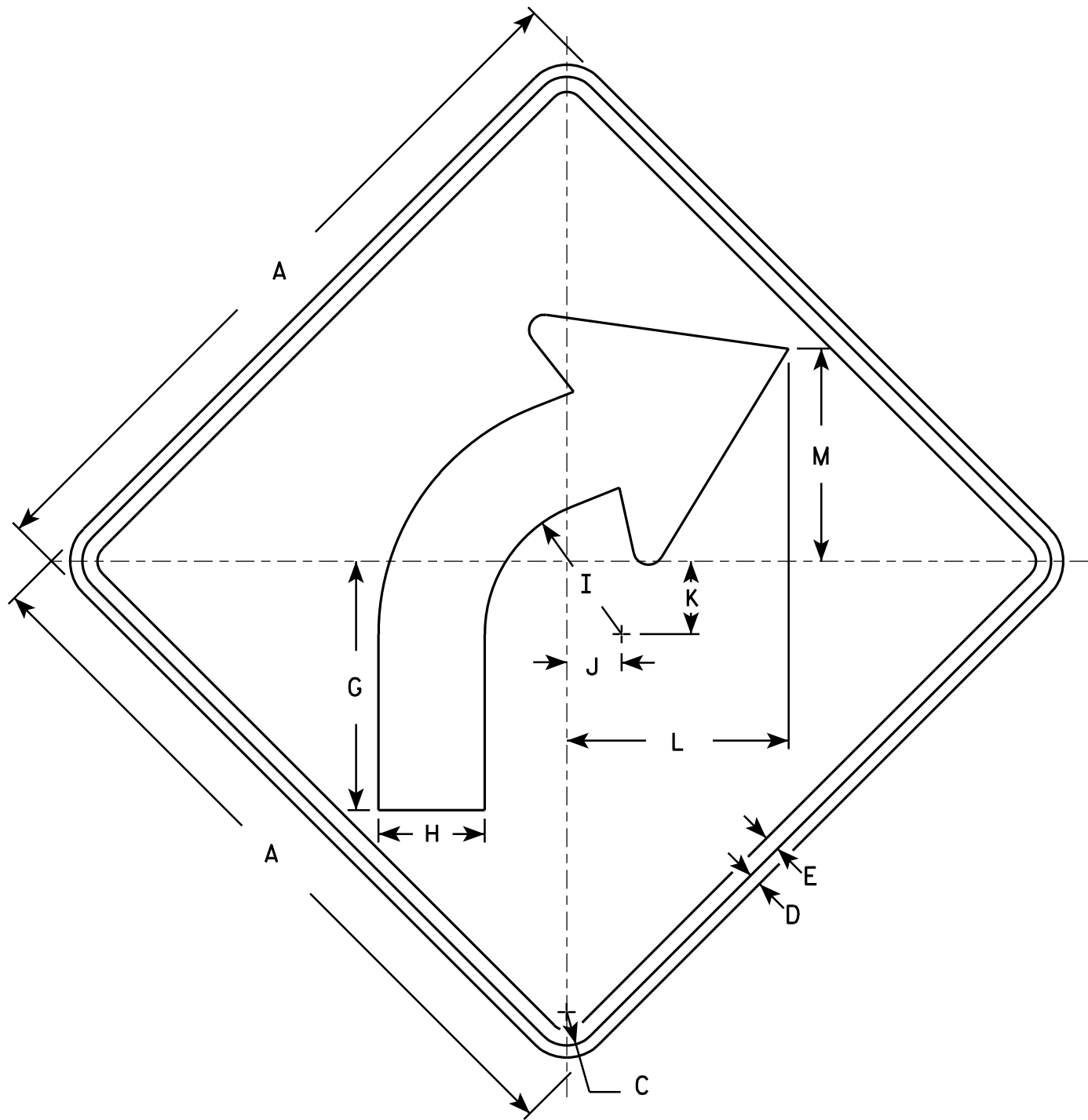
1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Line 1 is Series D
Lines 2 & 6 are Series E
Line 3, 4 & 5 are 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																											
2S	36		1 5⁄8	5⁄8	3⁄4	6	1 1⁄2	4	1 1⁄4	3 1⁄4	2 3⁄8	1 1⁄2	15	3 1⁄4	3	9	14 3⁄4	14 7⁄8	8 1⁄8	1 7⁄8	13	6 5⁄8	1	3	4 7⁄8		9.0
2M	36		1 5⁄8	5⁄8	3⁄4	6	1 1⁄2	4	1 1⁄4	3 1⁄4	2 3⁄8	1 1⁄2	15	3 1⁄4	3	9	14 3⁄4	14 7⁄8	8 1⁄8	1 7⁄8	13	6 5⁄8	1	3	4 7⁄8		9.0
3	48		2 1⁄4	3⁄4	1	8	2	6	1 1⁄4	4 3⁄4	3 1⁄4	1 1⁄2	20 1⁄4	5	3 5⁄8	12	19 1⁄2	20	11 5⁄8	3 3⁄4	19	9 1⁄2	1	3 1⁄2	6 3⁄4		16.0
4	48		2 1⁄4	3⁄4	1	8	2	6	1 1⁄4	4 3⁄4	3 1⁄4	1 1⁄2	20 1⁄4	5	3 5⁄8	12	19 1⁄2	20	11 5⁄8	3 3⁄4	19	9 1⁄2	1	3 1⁄2	6 3⁄4		16.0
5																											

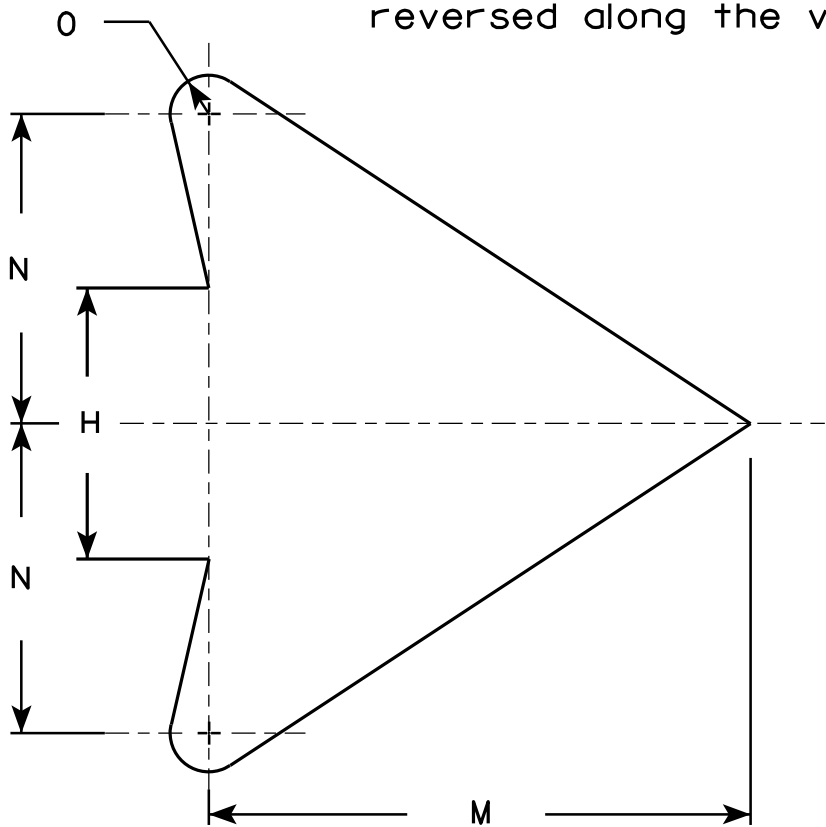
STANDARD SIGN R59-51	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 3/30/11	PLATE NO. R59-51.10

NOTES

1. Sign is Type II - Type F Reflective - reference
WIS DOT Standard Specification for HIGHWAY
and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
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. W1-2L is the same as W1-2R except the arrow is
reversed along the vertical centerline.



W1-2R



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	24		1 1/8	3/8	1/2		8 1/4	3 1/2	4 1/2	1 3/4	2 3/8	7 1/4	7	4	1/2												4.0
2S	30		1 3/8	1/2	5/8		10 1/4	4 3/8	5 5/8	2 1/4	3	9 1/8	8 3/4	5	5/8												6.25
2M	36		1 5/8	5/8	3/4		12 3/8	5 1/4	6 3/4	2 5/8	3 1/2	10 7/8	10 1/2	6	3/4												9.0
3	36		1 5/8	5/8	3/4		12 3/8	5 1/4	6 3/4	2 5/8	3 1/2	10 7/8	10 1/2	6	3/4												9.0
4	36		1 5/8	5/8	3/4		12 3/8	5 1/4	6 3/4	2 5/8	3 1/2	10 7/8	10 1/2	6	3/4												9.0
5	48		2 1/4	3/4	1		16 1/2	7	9	3 1/2	4 5/8	14 1/2	14	8	1												16.0

STANDARD SIGN
W1-2

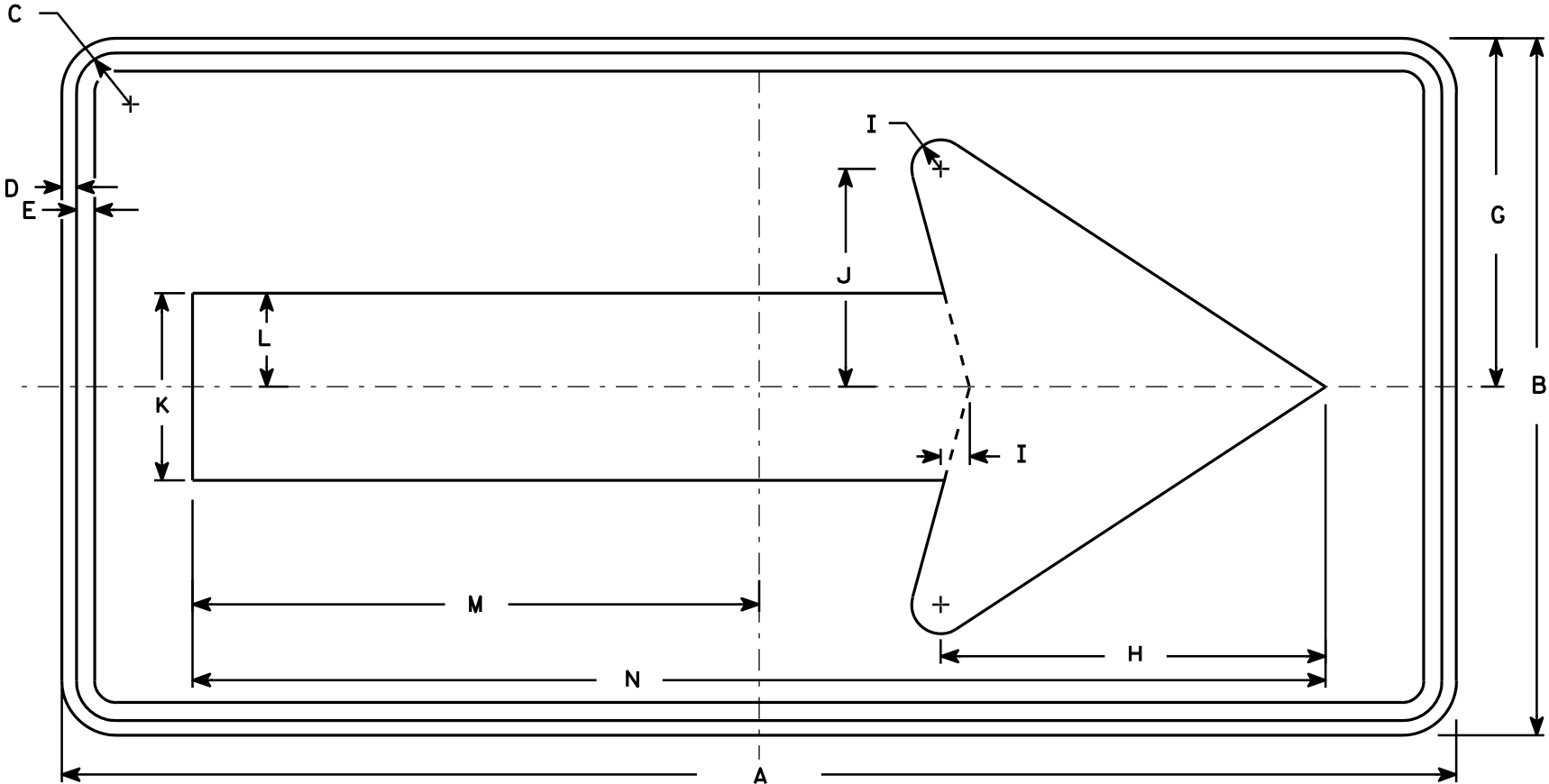
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 5/15/12 PLATE NO. W1-2.10

NOTES

- 1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- 2. Color:
Background - Yellow
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.



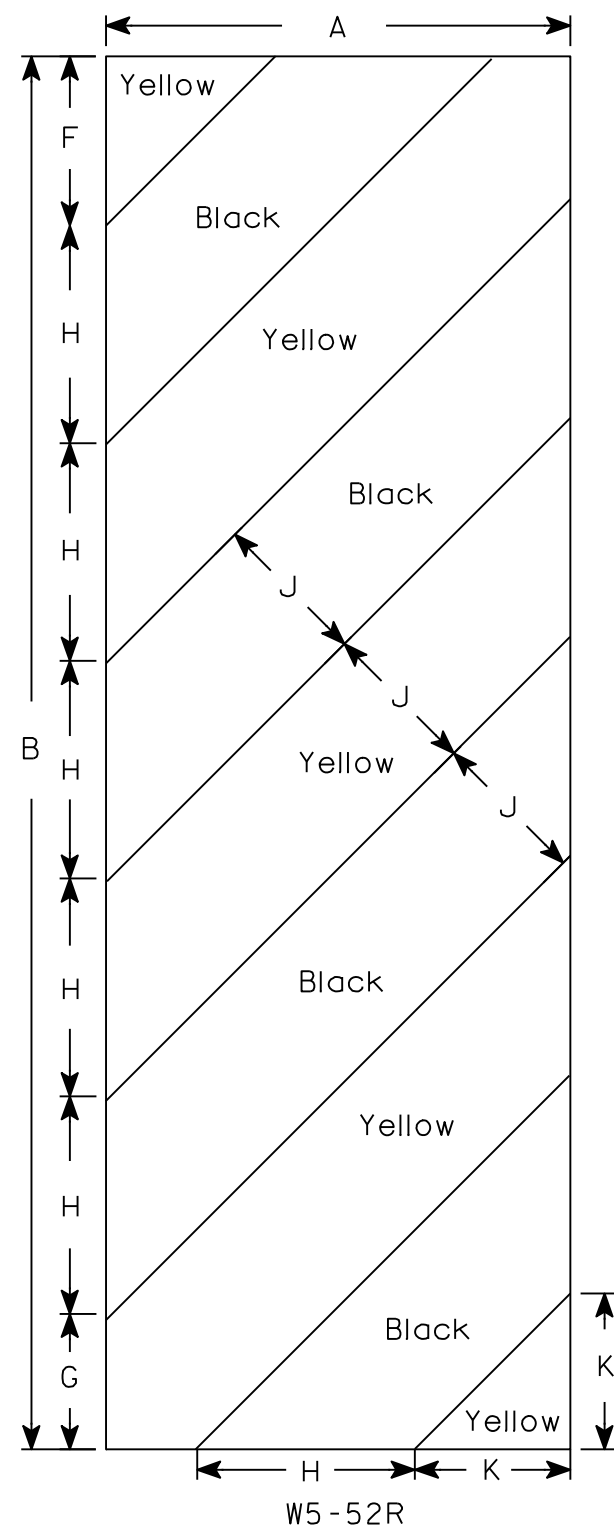
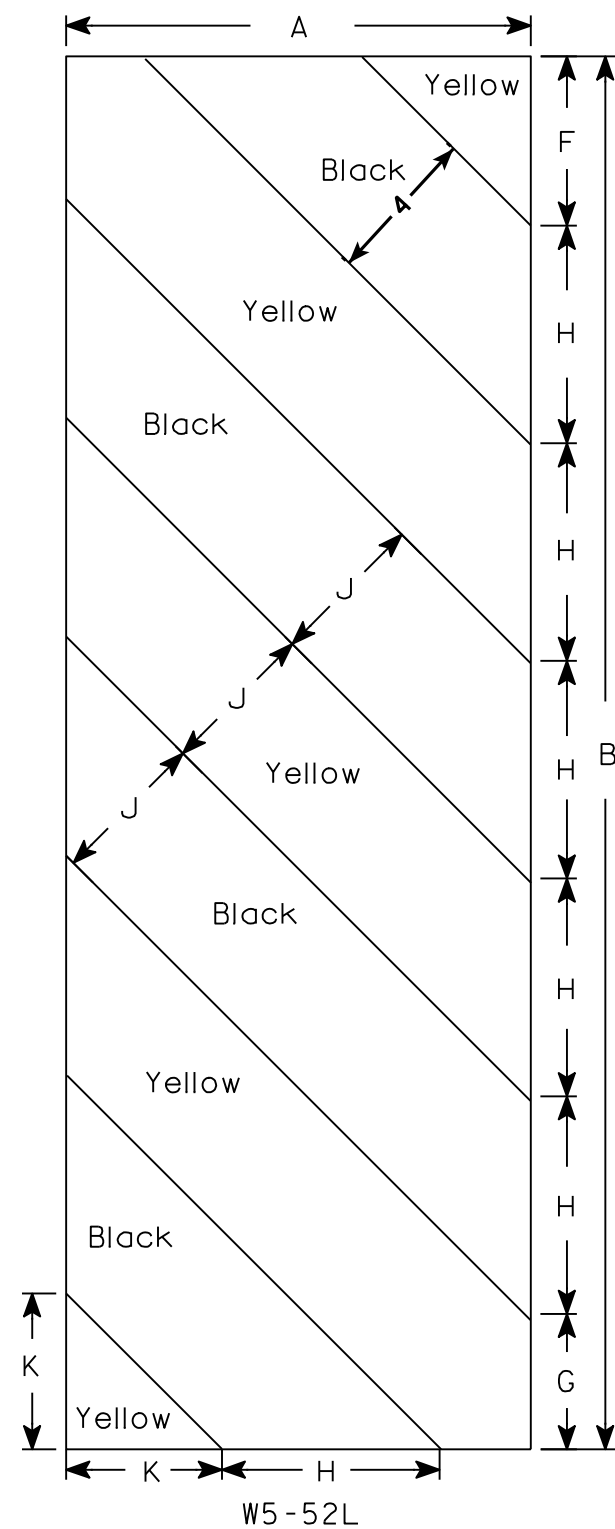
W1-6

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	18	1 1/8	3/8	3/8		9	10	3/4	5 5/8	4 3/4	2 3/8	14 5/8	29 1/4													4.5
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	96	48	2 1/4	3/4	1		24	26 1/2	2	15	13	6 1/2	39	78													32.0

STANDARD SIGN
W1-6

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 6/7/10 PLATE NO. W1-6.8



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
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. Alternate colors of stripes as shown.

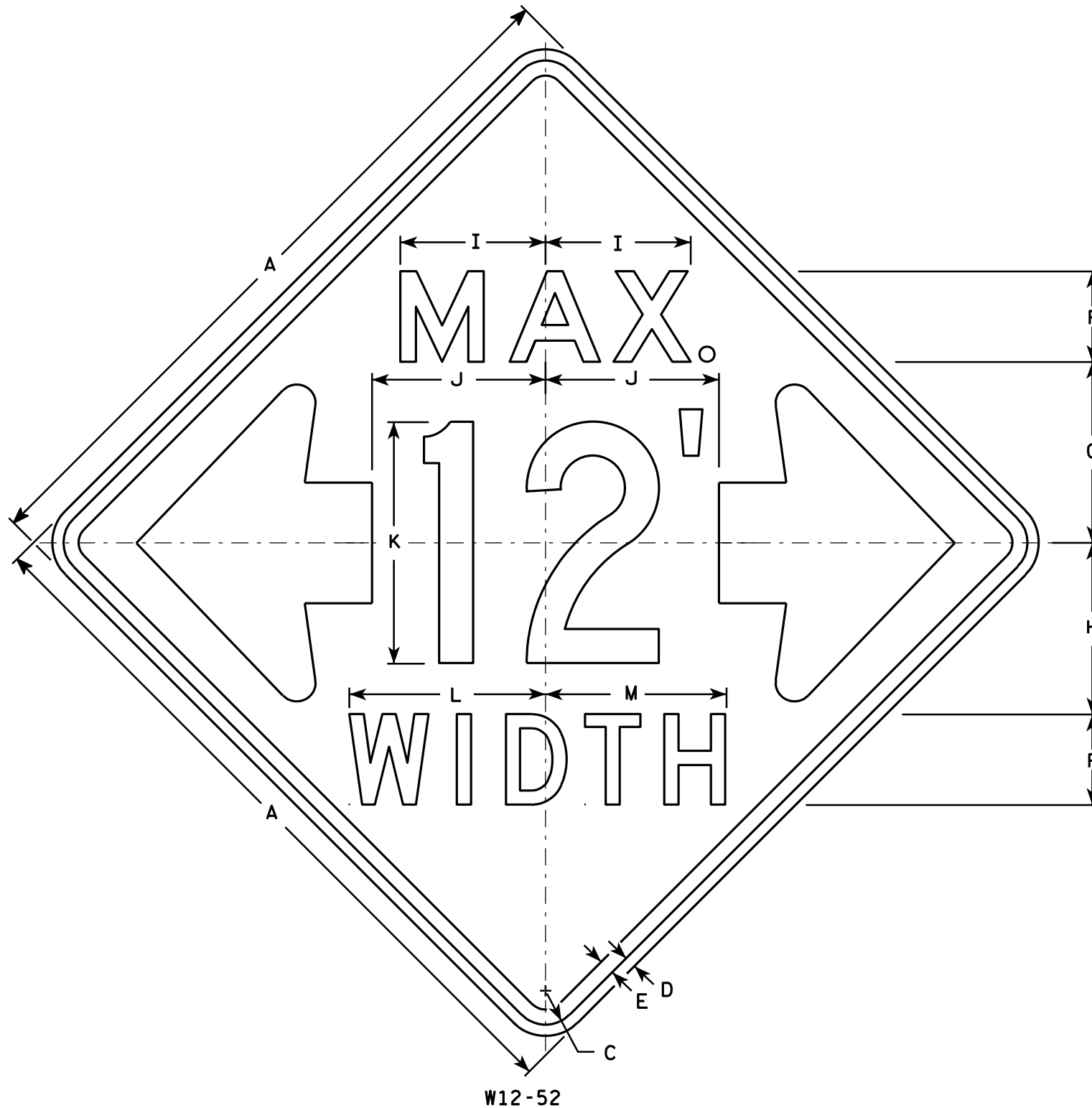
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	12	36				4 3⁄8	3 1⁄2	5 5⁄8	45°	4	4																3.0
2M	12	36				4 3⁄8	3 1⁄2	5 5⁄8	45°	4	4																3.0
3	18	54				6	5 1⁄2	8 1⁄2	45°	6	6 9⁄16																6.75
4																											
5																											

STANDARD SIGN
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

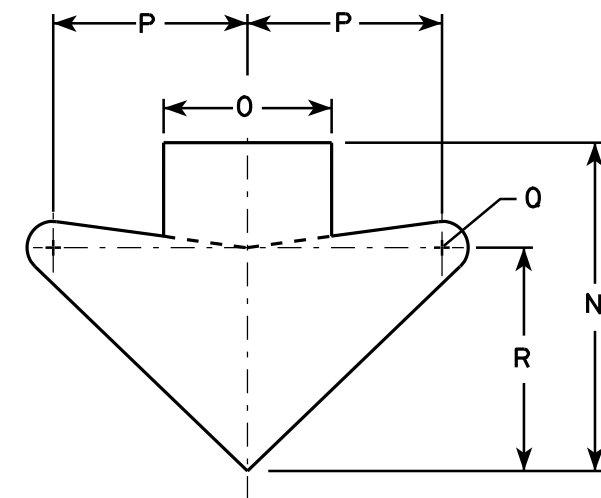
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/29/12 PLATE NO. W5-52.9



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 - See note 5
- 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.
- The top line is series E, the numerals are series C, and the bottom line is series D.
- Substitute appropriate numerals and adjust spacing as required.



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	48		2 1/4	3/4	1	6	12	11 3/8	9 5/8	11 1/2	16	13	12	15 5/8	8	9 1/4	1 1/4	10 5/8									16.0
2M	48		2 1/4	3/4	1	6	12	11 3/8	9 5/8	11 1/2	16	13	12	15 5/8	8	9 1/4	1 1/4	10 5/8									16.0
3																											
4																											
5																											

STANDARD SIGN W12-52

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
 For State Traffic Engineer

DATE 3/16/11 PLATE NO. W12-52.7

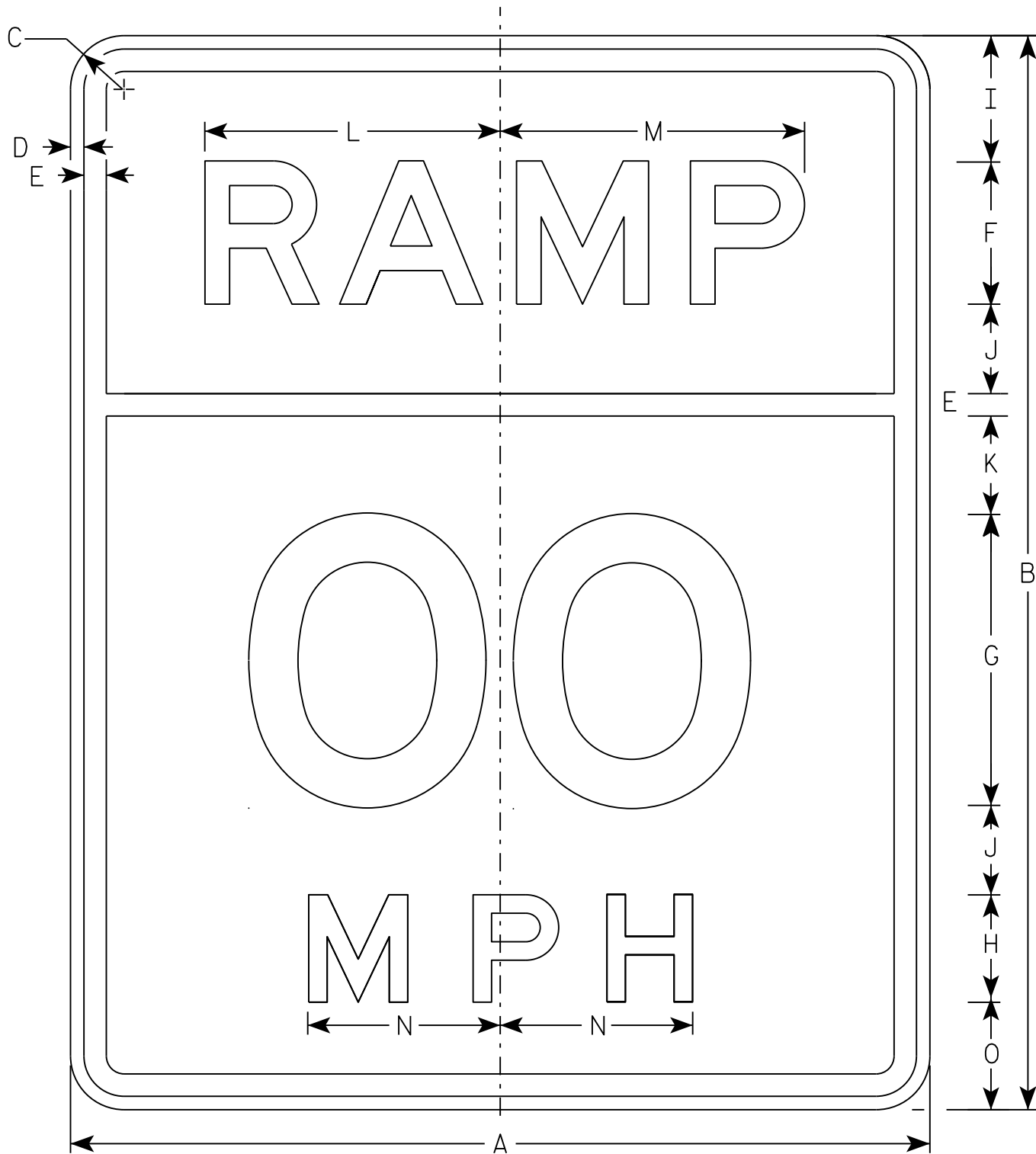
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



W13-3

NOTES

1. Sign is Type II - Type F Reflective
2. Color:
Background - Yellow
Message - Black
3. Message Series - E
4. Substitute appropriate numerals and optically space about centerline to achieve proper balance.

7

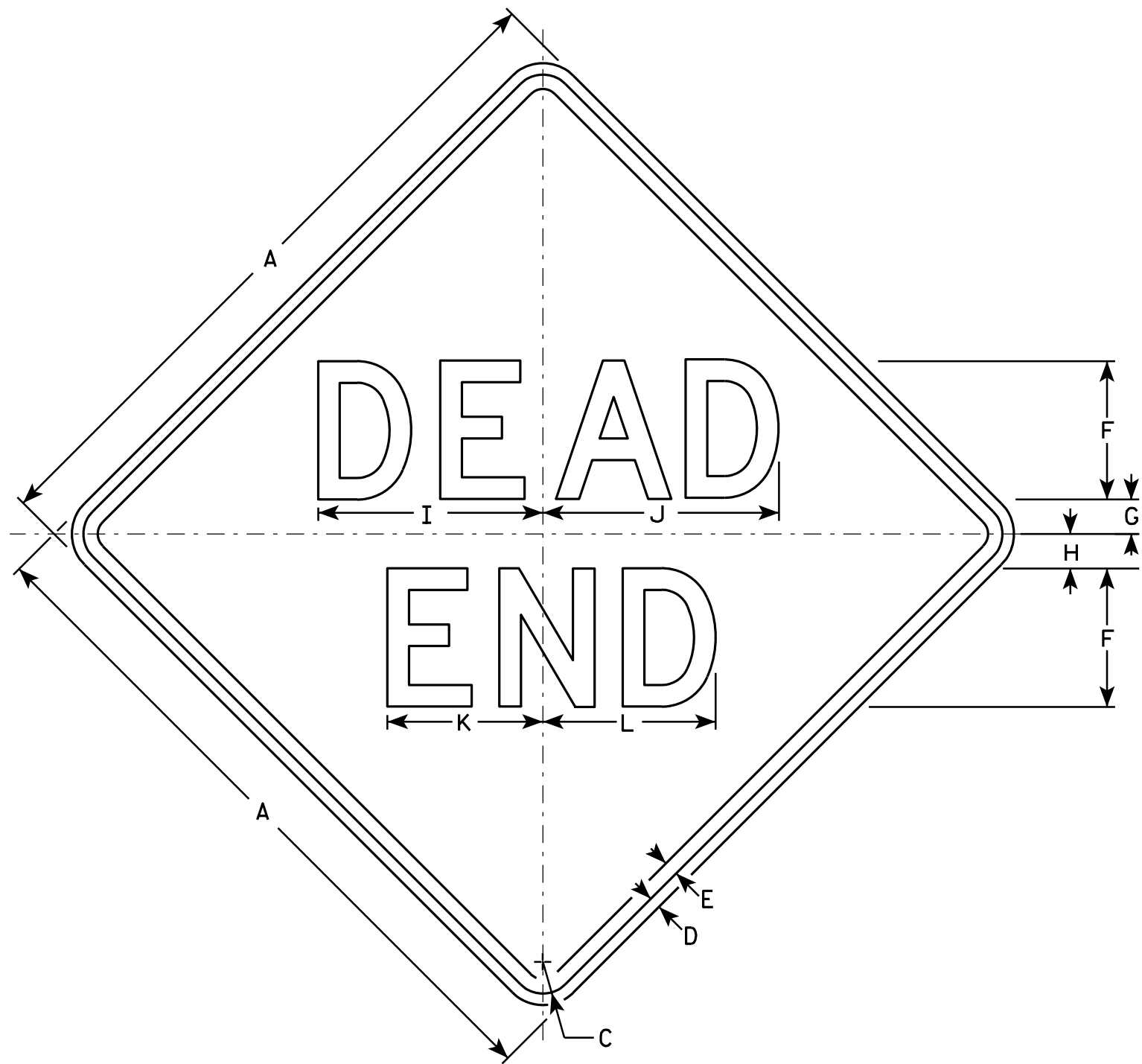
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24	30	1 1/8	3/8	5/8	4	8	3	3 1/2	2 1/2	2 7/8	8 1/4	8 1/2	5 3/8	3												5.0
2S	24	30	1 1/8	3/8	5/8	4	8	3	3 1/2	2 1/2	2 7/8	8 1/4	8 1/2	5 3/8	3												5.0
2M	24	30	1 1/8	3/8	5/8	4	8	3	3 1/2	2 1/2	2 7/8	8 1/4	8 1/2	5 3/8	3												5.0
3	36	48	1 5/8	5/8	7/8	6	12	4	6	4 1/8	5 1/8	13 1/2	13 5/8	7 1/8	6												12.0
4	36	48	1 5/8	5/8	7/8	6	12	4	6	4 1/8	5 1/8	13 1/2	13 5/8	7 1/8	6												12.0
5	48	60	2 1/4	3/4	1 1/4	8	16	6	7	5	5 3/4	16 1/2	17	10 5/8	6												20.0

STANDARD SIGN
W13-3

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/1/16 PLATE NO. W13-3.10



W14-1

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
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.

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		1 1/8	3/8	1/2	5	1	2	8 1/4	8 5/8	5 5/8	6 1/4															4.0
2S	30		1 3/8	1/2	5/8	6	1 1/2	2 1/2	9 3/4	10 1/4	6 3/4	7 1/2															6.25
2M	30		1 3/8	1/2	5/8	6	1 1/2	2 1/2	9 3/4	10 1/4	6 3/4	7 1/2															6.25
3	36		1 5/8	5/8	3/4	7	2	3	11 3/8	12	7 7/8	8 3/4															9.0
4																											
5																											

STANDARD SIGN
W14-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R. Rauch
for State Traffic Engineer

DATE 3/13/13 PLATE NO. W14-1.7

PROJECT NO:

HWY:

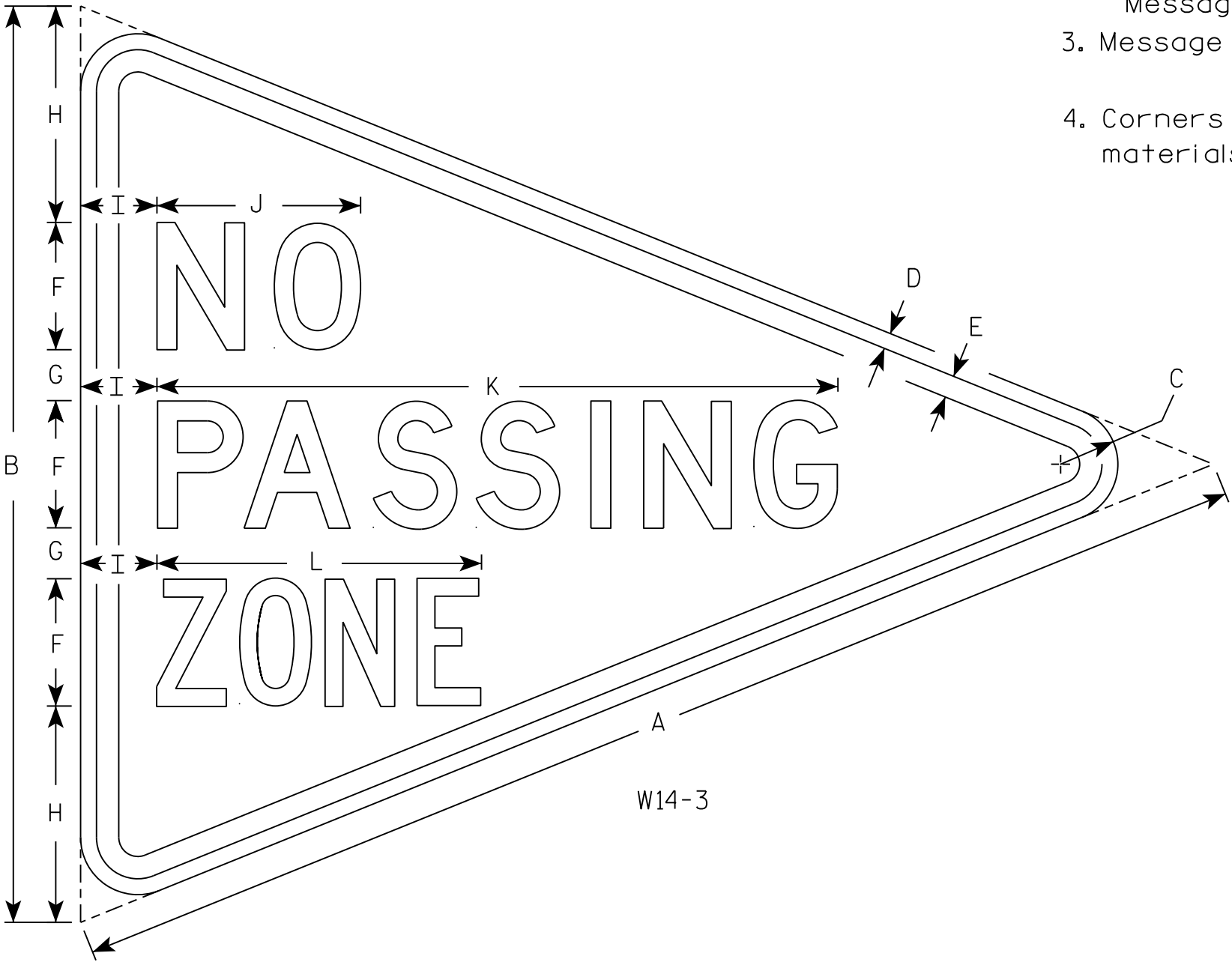
COUNTY:

SHEET NO:

E

NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Yellow
Message - Black
- 3. Message Series - Lines 1 and 2 are Series D.
Line 3 is series C.
- 4. Corners and borders shall be rounded on all base materials for this sign.



7

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	36	2 1/4	5/8	7/8	5	2	8 1/2	3	8	26 3/4	12 3/4															5.56
2M																											
3																											
4																											
5																											

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

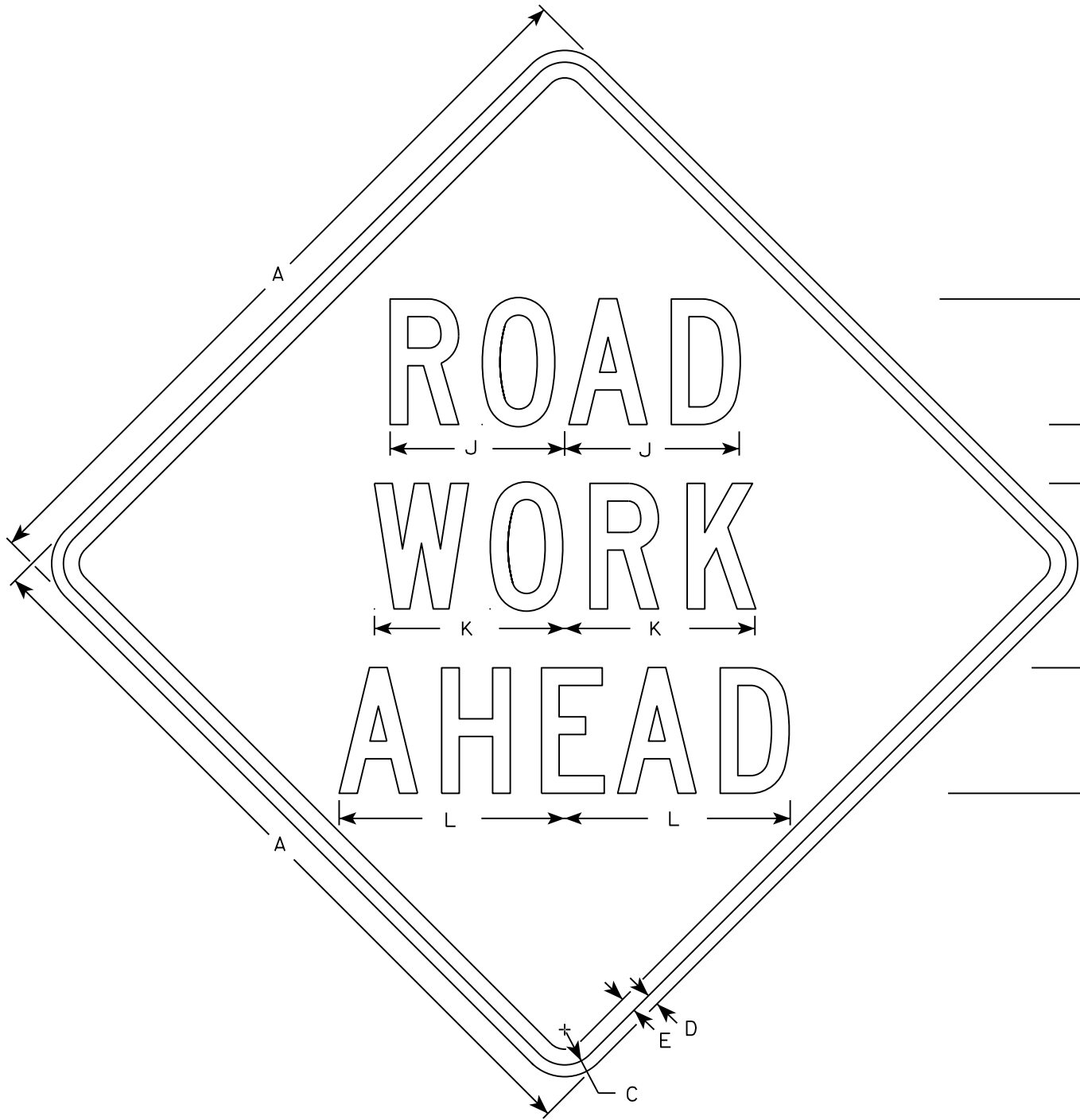
E

STANDARD SIGN
W14-3

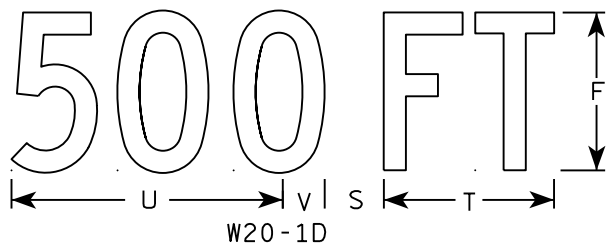
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

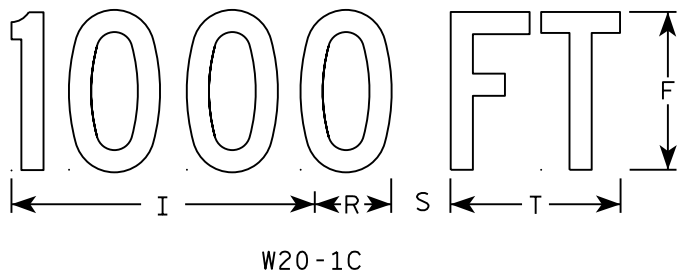
DATE 3/21/17 PLATE NO. W14-3.10



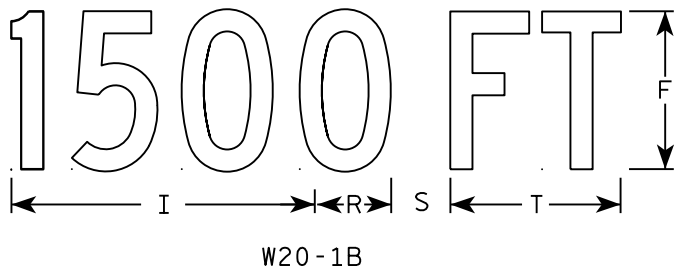
W20-1A



W20-1D



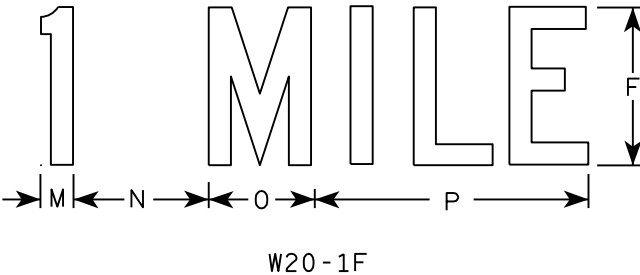
W20-1C



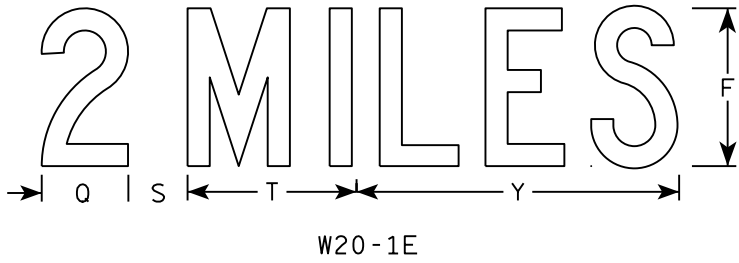
W20-1B



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

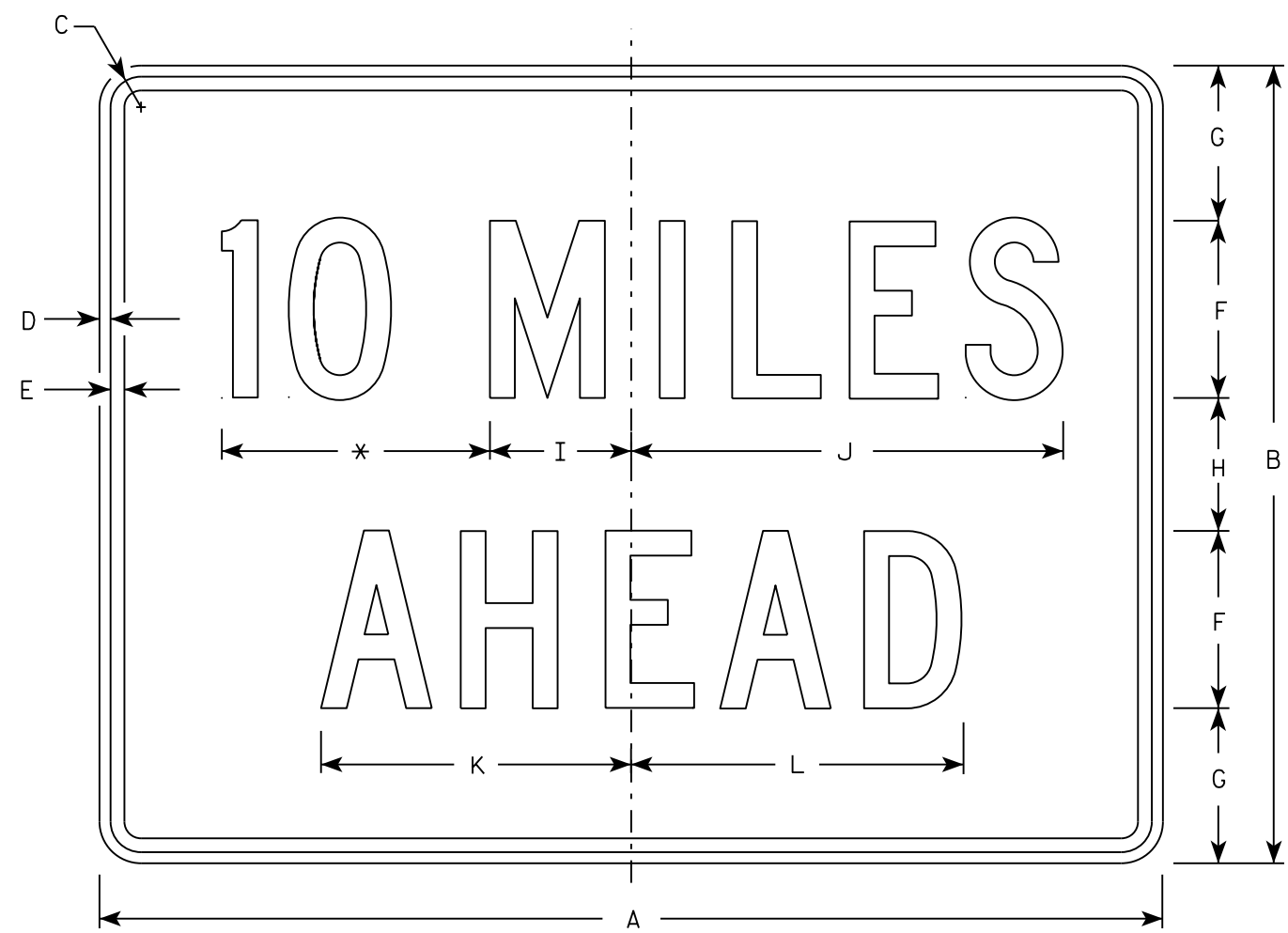
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

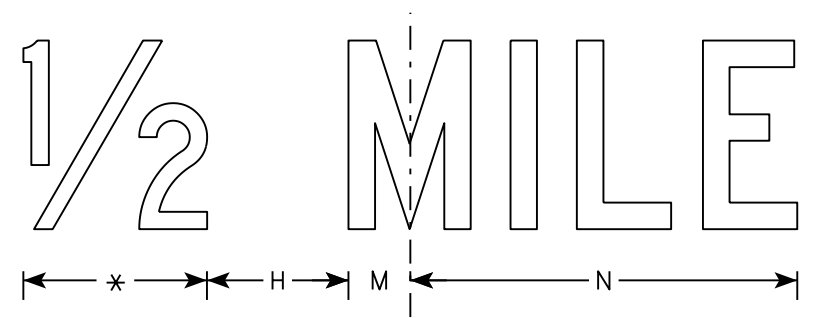
DATE 5/07/15 PLATE NO. W20-1.10

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.
- 5. Substitute appropriate numerals to the nearest quarter mile and optically adjust spacing to achieve proper balance.



W057-52



* See note 5

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	24	1 1/8	3/8	1/2	6	4 1/2	3	4 3/4	14 5/8	10 5/8	11 3/8	2	12													6.0
2S	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
2M	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
3	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
4	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
5	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0

STANDARD SIGN
W057-52

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 3/21/17 PLATE NO. W057-52.2

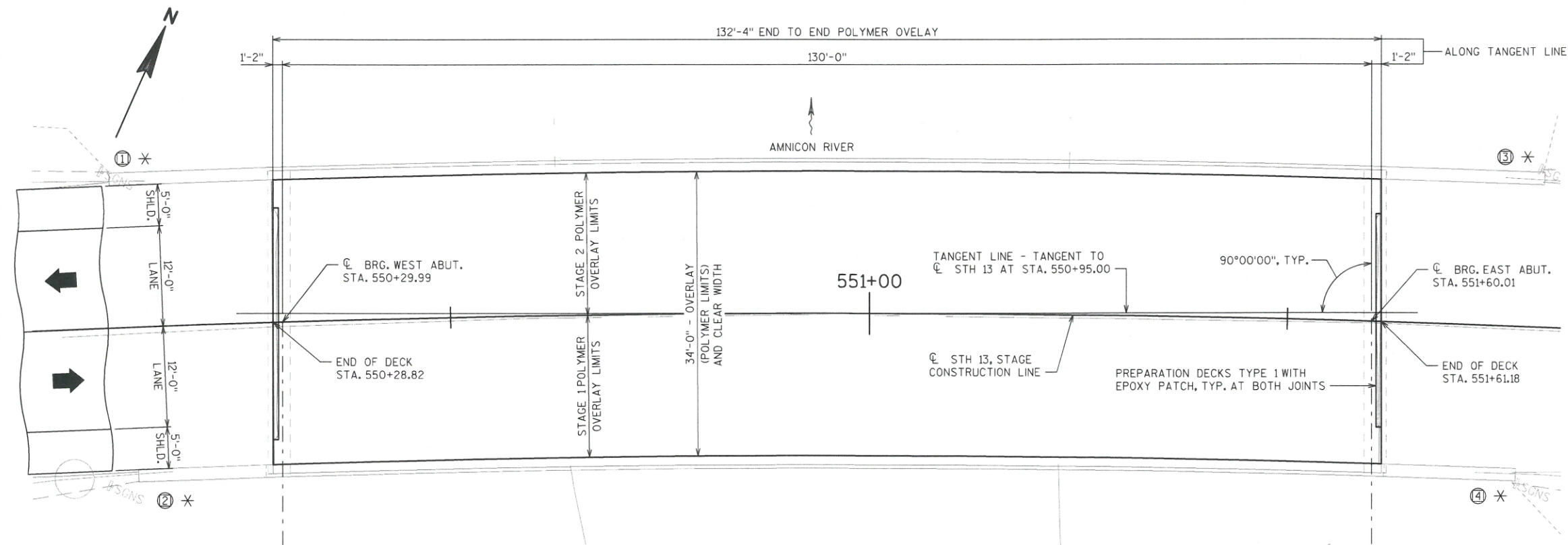
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



DESIGN DATA

LIVE LOAD:
 DESIGN LOADING: HS-20
 INVENTORY RATING: HS-28
 OPERATING RATING: HS-58
 WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

LIST OF DRAWINGS

1. POLYMER OVERLAY
2. TYPICAL SECTION AND STAGING

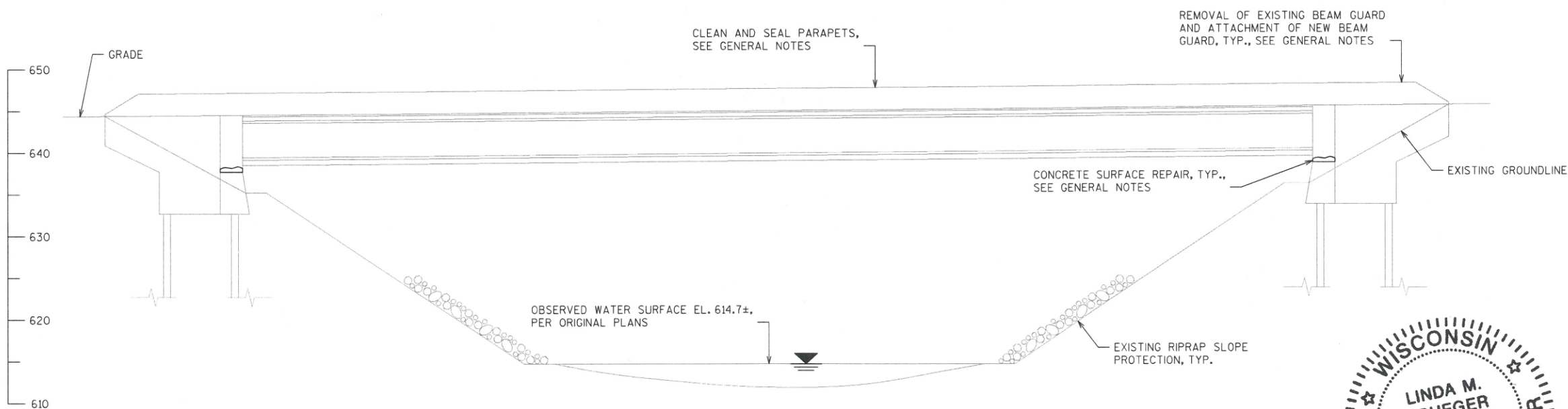
LEGEND

① INDICATES WING NUMBER

* CONNECT THREE BEAM GUARD RAIL TO EXISTING PARAPET AT ALL CORNERS, SEE GENERAL NOTES.

TRAFFIC DATA

STH 13
 A.A.D.T. = 1,900 (2019)
 A.A.D.T. = 2,700 (2039)
 RDS = 60 MPH

PLAN
POLYMER OVERLAY

TOTAL ESTIMATED QUANTITIES

ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL
203.0225.S.01	DEBRIS CONTAINMENT B-16-52	LS	1
502.3210	PIGMENTED SURFACE SEALER	SY	134
509.0301	PREPARATION DECKS TYPE 1	SY	6
509.0302	PREPARATION DECKS TYPE 2	SY	3
509.1500	CONCRETE SURFACE REPAIR	SF	14
509.5100.S	POLYMER OVERLAY	SY	501
509.9050.S	CLEANING PARAPETS	LF	337
SPV.0090.01	SAWING PAVEMENT DECK PREPARATION AREAS	LF	112
SPV.0180.01	FAST SET DECK PATCHING	SY	6

ELEVATION

LOOKING NORTH, NORMAL TO STH 13

BENCH MARKS

NO.	STATION	OFFSET	DESCRIPTION	ELEV.
3	552+65.56	160'± RT	RR SPIKE IN TAMARACK TREE	630.61
4	548+48.25	120'± RT	RR SPIKE IN POPLAR TREE	627.96

CURVE DATA

STH 13 - B-16-52
 $\Delta = 66^\circ-45'-51''$
 $T = 1,372.87'$
 $L = 2,427.78'$
 $R = 2,083.48'$
 P.I. STA. = 559+18.47 @ STH 13
 P.I. Y = 281844.25
 P.I. X = 199320.66
 S.E. = 0.052, MATCH EXISTING



STRUCTURE DESIGN CONTACTS
 BUREAU OF STRUCTURES:
 WILLIAM DREHER (608) 266-8489
 CONSULTANT:
 LINDA KRUEGER (608) 821-8704

NO.	DATE	REVISION	BY
Michael Baker MICHAEL BAKER INTERNATIONAL 7633 GANSER WAY SUITE 206 INTERNATIONAL MADISON, WI 53719			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION ACCEPTED <i>William C. Dreher</i> SDR 05/22/17 CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-16-52			
STH 13 OVER AMNICON RIVER			
COUNTY	DOUGLAS	TOWN/CITY/VILLAGE	LAKESIDE
DESIGN SPEC.	REHABILITATION N/A	DRAWN	TJN
DESIGNED	TJN	DESIGN	JRS
BY	CK'D.	BY	CK'D.
POLYMER OVERLAY			SHEET 1 OF 2

GENERAL NOTES

- DRAWINGS SHALL NOT BE SCALED.
- DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.
- AREAS OF "PREPARATION DECKS" SHALL BE DEFINED BY A SAW CUT. COST IS INCLUDED IN THE BID ITEM "SAWING PAVEMENT DECK PREPARATION AREAS".
- PREPARATION DECKS TYPE 1, PREPARATION DECKS TYPE 2 AND SAWING PAVEMENT DECK PREPARATION AREAS SHALL BE DETERMINED BY THE ENGINEER. DECK REPAIRS SHALL BE FILLED WITH FAST SET DECK PATCHING MATERIAL COMPATIBLE WITH THE PROPOSED OVERLAY SYSTEM. QUANTITIES SHOWN ON THE PLANS ARE APPROXIMATE.
- REMOVAL OF EXISTING BEAM GUARD AND ATTACHMENT OF NEW BEAM GUARD SHALL BE PAID FOR AND IS INCLUDED IN ROADWAY QUANTITIES, SEE ROADWAY PLANS.
- CLEAN AND SEAL THE TOP AND ROADWAY FACES OF THE EXISTING PARAPETS. COST OF CLEANING IS INCLUDED IN THE BID ITEM "CLEANING PARAPETS".
- PIGMENTED SURFACE SEALER SHALL BE APPLIED TO THE TOP AND ROADWAY FACES OF THE ENTIRE LENGTH OF EXISTING PARAPETS AFTER "CLEANING PARAPETS" IS COMPLETED.
- DECK SURFACE PREPARATION IS INCLUDED IN THE BID ITEM "POLYMER OVERLAY".
- FOR TRAFFIC CONTROL AND STAGE CONSTRUCTION DETAILS, SEE ROADWAY PLANS.
- PERFORM "CONCRETE SURFACE REPAIR" AT THE FOLLOWING LOCATIONS AND AS DIRECTED/VERIFIED BY THE FIELD ENGINEER. QUANTITIES SHOWN ON THE PLANS ARE APPROXIMATE.
- A.

WEST ABUT. DIAPH. AT WINGS 1 AND 2
- B.

EAST ABUT. DIAPH. AT WING 4
- C.

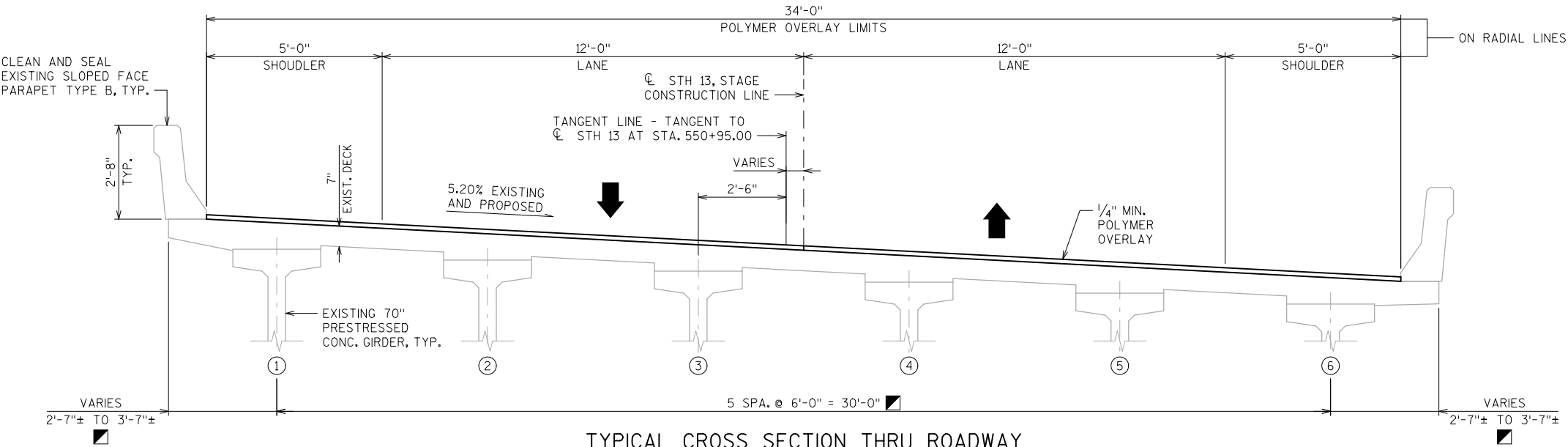
EAST ABUT. DIAPH. BETWEEN GIRDERS 1 AND 2
- D.

EAST ABUT. DIAPH. BETWEEN GIRDERS 2 AND 3

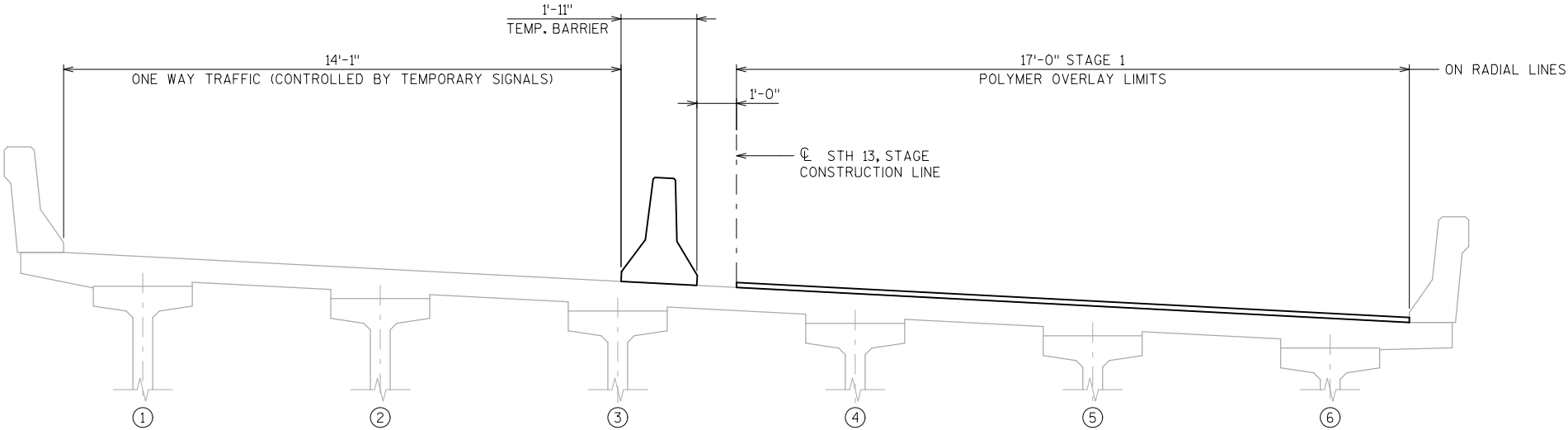
LEGEND

- ①

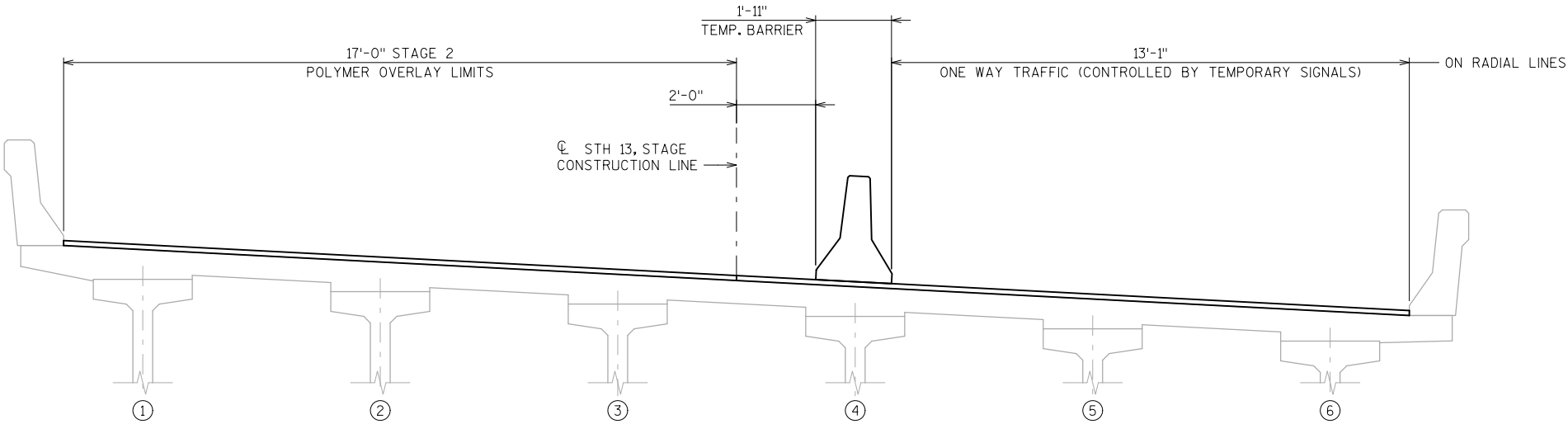
INDICATES GIRDER NUMBER
- DIMENSION TAKEN NORMAL TO CL GIRDER



TYPICAL CROSS SECTION THRU ROADWAY
LOOKING EAST



STAGE 1 CONSTRUCTION SECTION
LOOKING EAST



STAGE 2 CONSTRUCTION SECTION
LOOKING EAST

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-16-52			
DRAWN BY		PLANS CK'D.	JRS
TYPICAL SECTION AND STAGING			SHEET 2 OF 2

DESIGN DATA

LIVE LOAD:

DESIGN TRUCK: HS20
INVENTORY RATING: HS34
OPERATING RATING: HS58
WISCONSIN STANDARD PERMIT VEHICLE LOAD = 250 KIPS

MATERIAL PROPERTIES (NEW WORK)

CONCRETE MASONRY
SUPERSTRUCTURE.....f'c = 4,000 P.S.I.
ALL OTHERS.....f'c = 3,500 P.S.I.
STEEL REINFORCEMENT HIGH STRENGTH BAR, GRADE 60 fy = 60ksi

EXISTING STRUCTURE

THE EXISTING STRUCTURE IS A SINGLE SPAN STEEL GIRDER BRIDGE
FOUNDED ON CONCRETE ABUTMENTS. THE EXISTING BRIDGE IS 145'-10"
LONG AND 36'-0" WIDE. THE EXISTING FOUNDATIONS ARE SUPPORTED ON
HP10X42 STEEL PILES

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS OTHERWISE NOTED.

"PROTECTIVE SURFACE TREATMENT" SHALL BE APPLIED TO THE ENTIRE
ROADWAY DECK, EDGE, UNDERSIDE OF OVERHANGS, AND TOPS AND SIDES
OF WINGWALLS AS DETAILED ON THE PLANS.

THE FIRST DIGIT OF A THREE DIGIT BAR MARK OR FIRST TWO DIGITS OF
A FOUR DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

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

DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS
WHICH ARE AVAILABLE BY REQUEST FROM THE DEPARTMENT.

SUBSTRUCTURE AND EXPANSION JOINT STATIONS ARE BASED ON THE
PROPOSED BASELINE AND MAY DIFFER FROM THE ORIGINAL CONSTRUCTION
PLANS.

ALL CONCRETE REMOVAL SHALL BE DEFINED BY A 1 INCH DEEP SAW CUT.

EXPANSION JOINT ASSEMBLIES, INCLUDING ANCHOR STUDS AND HARDWARE
SHALL BE PAID FOR IN THE LUMP SUM PRICE BID AS "EXPANSION DEVICE
B-16-53"

THE CONTRACTOR SHALL SUPPLY A NEW NAME PLATE IN ACCORDANCE
WITH SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS AND THE
STANDARD DETAIL DRAWINGS. NAME PLATE TO SHOW ORIGINAL
CONSTRUCTION YEAR, 1985.

UTILIZE EXISTING BAR STEEL REINFORCEMENT WHERE SHOWN AND EXTEND
24 BAR DIAMETERS INTO NEW WORK, UNLESS SPECIFIED OTHERWISE.

VARIATIONS TO THE NEW GRADE LINE OVER 1/4" MUST BE SUBMITTED BY
THE FIELD ENGINEER TO THE STRUCTURES DESIGN SECTION FOR REVIEW.

FIELD WELDING TO THE EXISTING GIRDERS WILL NOT BE PERMITTED
UNLESS APPROVED BY THE ENGINEER.

TRAFFIC DATA

STH 13

AADT (2019) = 1,900
AADT (2039) = 2,700
TRUCK % = 12.4
D = 60/40
DESIGN SPEED = 60 MPH.

LIST OF DRAWINGS:

1. GENERAL PLAN & ELEVATION
2. TYPICAL SECTIONS
3. STAGED CONSTRUCTION DETAILS
4. ABUTMENT REMOVALS & DETAILS
5. ABUTMENT DETAILS
6. DECK
7. DECK DETAILS
8. TUBULAR RAILING TYPE M
9. STRIP SEAL EXPANSION JOINT

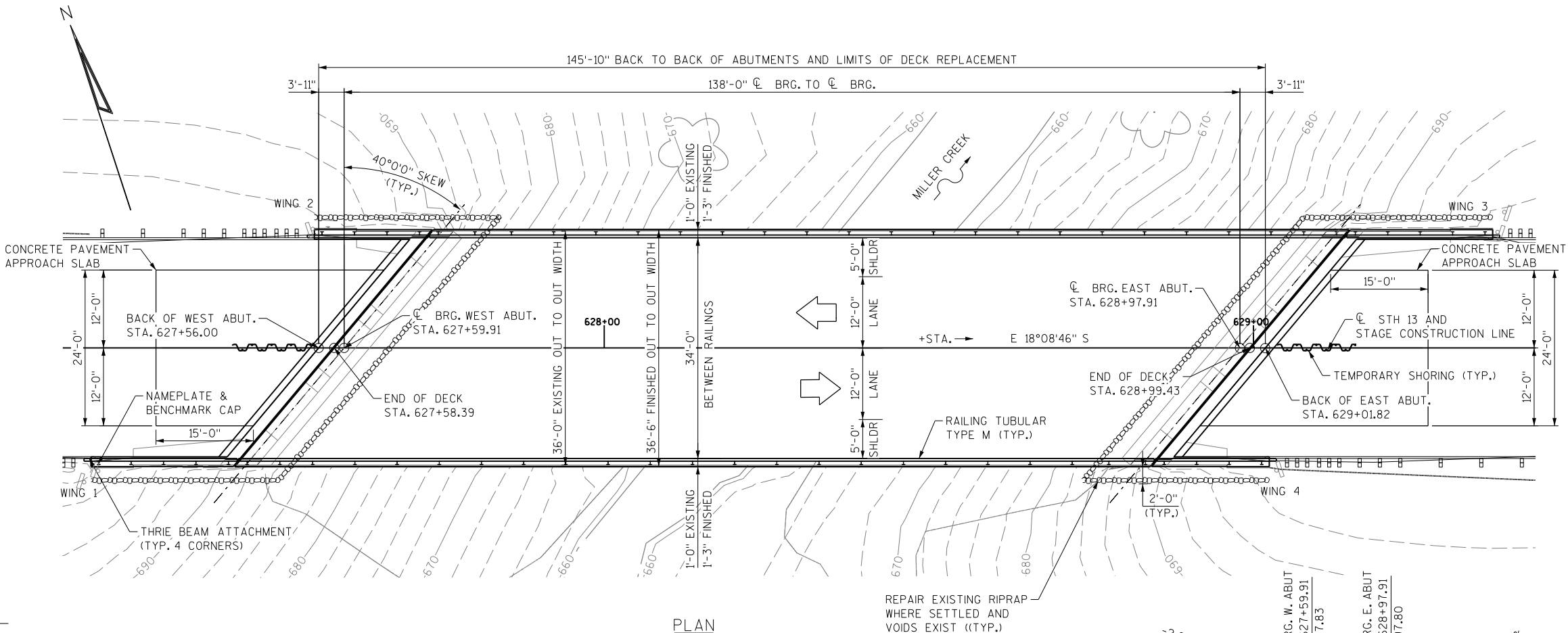
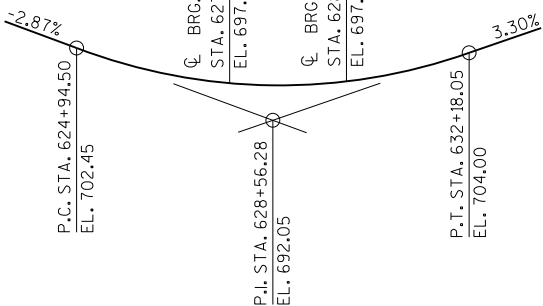
STRUCTURES DESIGN CONTACTS:

BRIDGE OFFICE:
WILLIAM DREHER, PE
(608) 266-8489

CONSULTANT:
WILLIAM J. ZIPPEL, PE, SE
ALFRED BENESCH & CO
1300 W CANAL ST, SUITE 150
MILWAUKEE, WI 53233
(414) 308-1321



PROFILE GRADE LINE, STH 13



PLAN

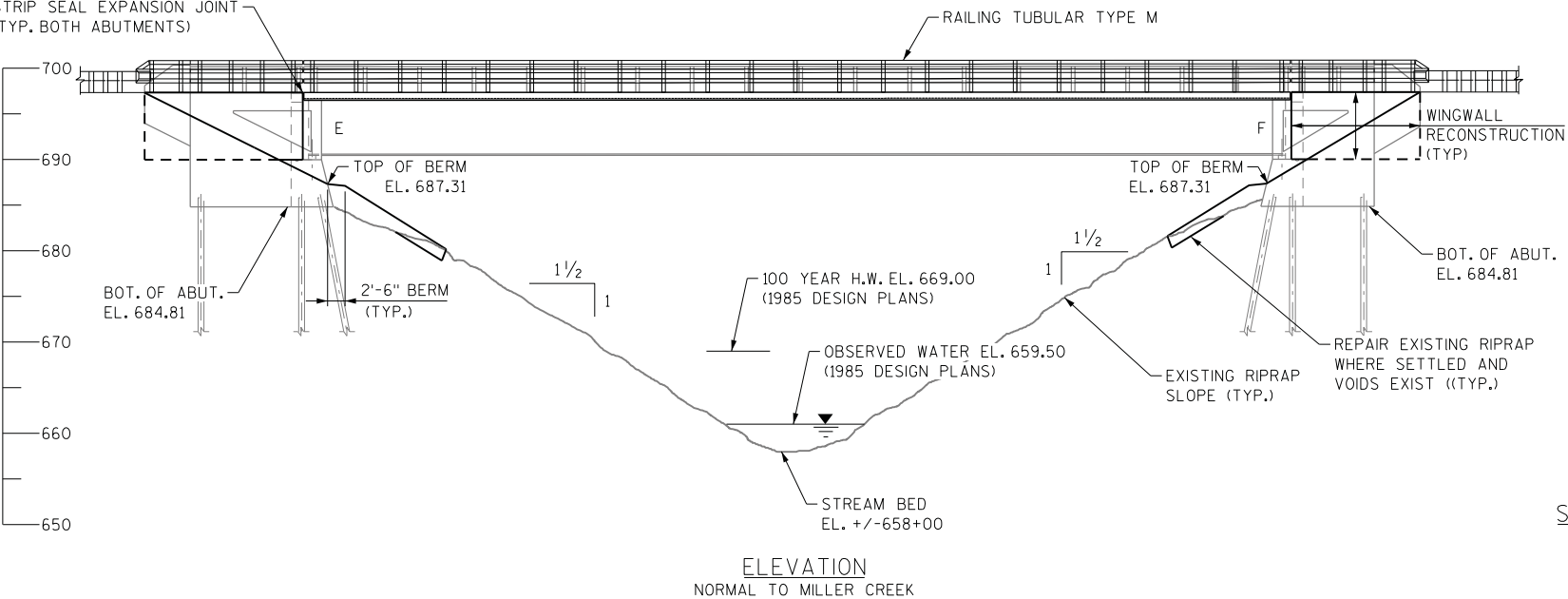
(SINGLE SPAN - STEEL GIRDERS)
CONCRETE DECK REPLACEMENT

REPAIR EXISTING RIPRAP
WHERE SETTLED AND
VOIDS EXIST ((TYP.))

BENCHMARKS

NAME	STATION/OFFSET	DESCRIPTION	ELEVATION
BM3	552+65.56, 161.0' RT	SET RR SPIKE IN 8" TAMARACK TREE	630.61
BM4	548+48.25, 118.8' RT	SET RR SPIKE IN 6" POPLAR TREE	627.96

STRIP SEAL EXPANSION JOINT
(TYP. BOTH ABUTMENTS)



ELEVATION

NORMAL TO MILLER CREEK

NO.	DATE	REVISION	BY
-----	------	----------	----

benesch
Alfred Benesch & Company
1300 West Canal Street, Suite 150
Milwaukee, Wisconsin 53233
414-308-1310 Job No. 20231.00

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED *William C. Dreher* SDR **08/30/17**
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-16-53

STH 13 OVER MILLER CREEK

COUNTY DOUGLAS TOWN/CITY/VILLAGE LAKESIDE

DESIGN SPEC. REHABILITATION N/A

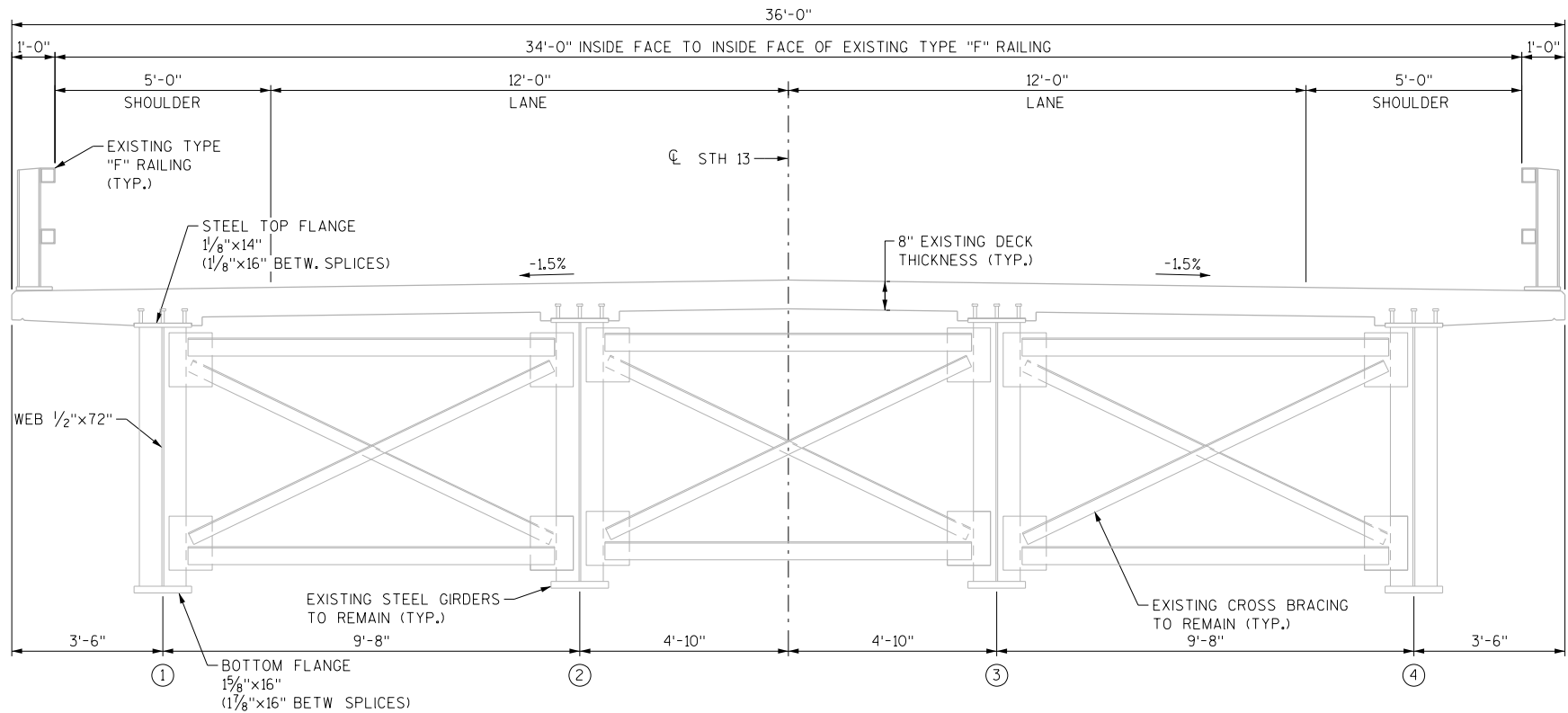
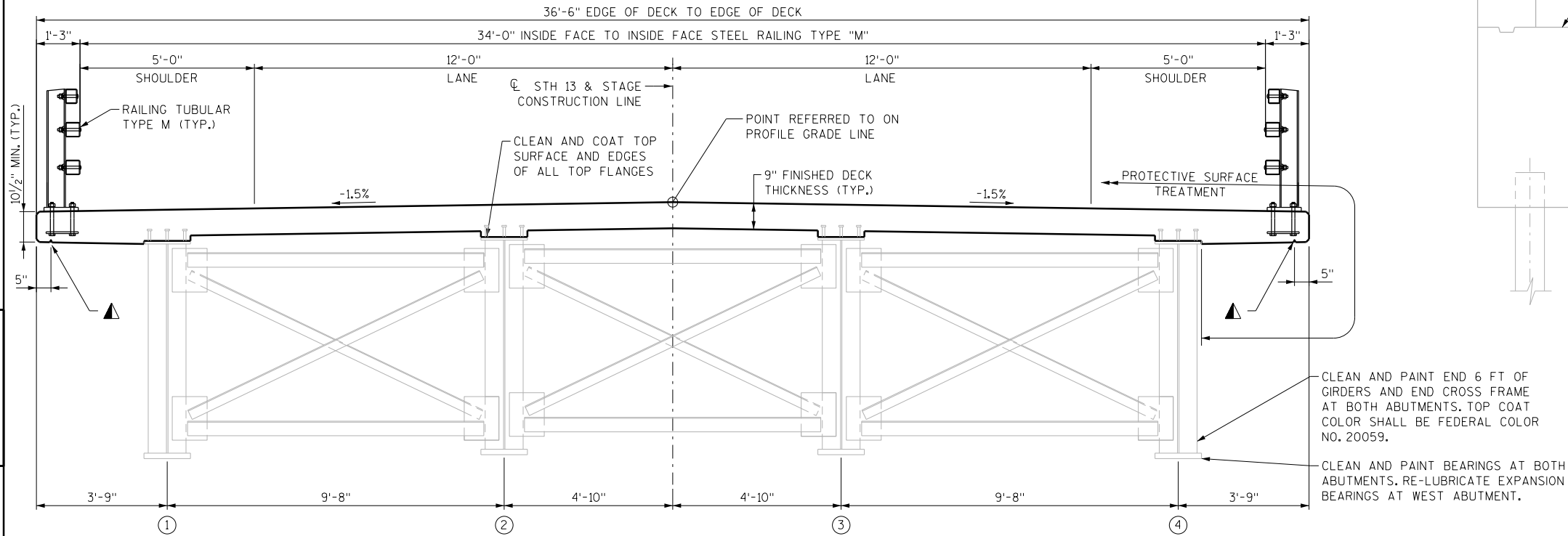
DESIGNED BY JAP DESIGN CK'D. WJZ DRAWN BY WJN PLANS CK'D. WJZ

GENERAL PLAN
AND ELEVATION

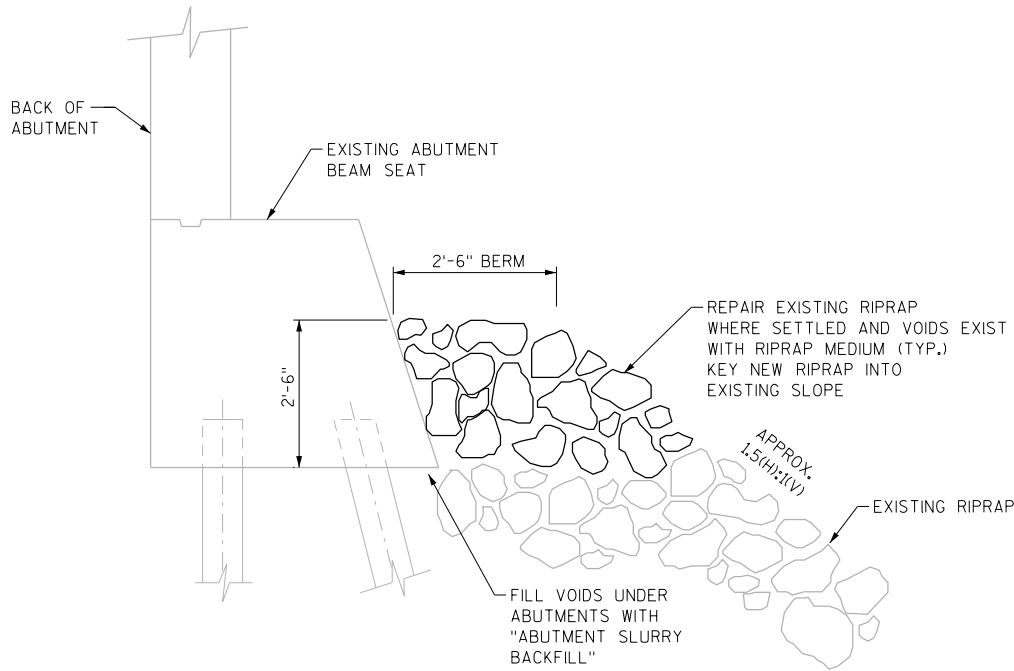
SHEET 1 OF 9

TOTAL ESTIMATE OF QUANTITIES

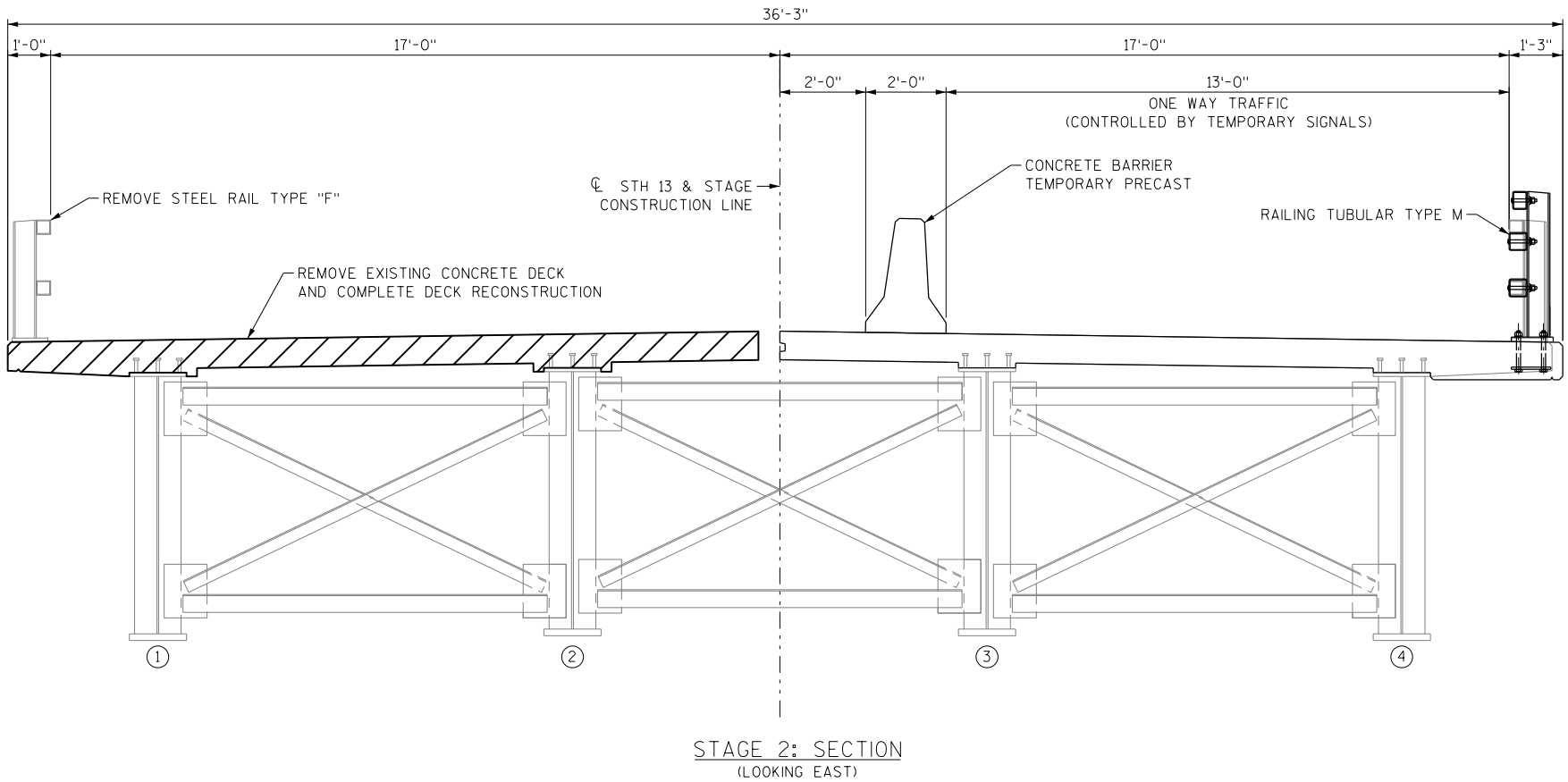
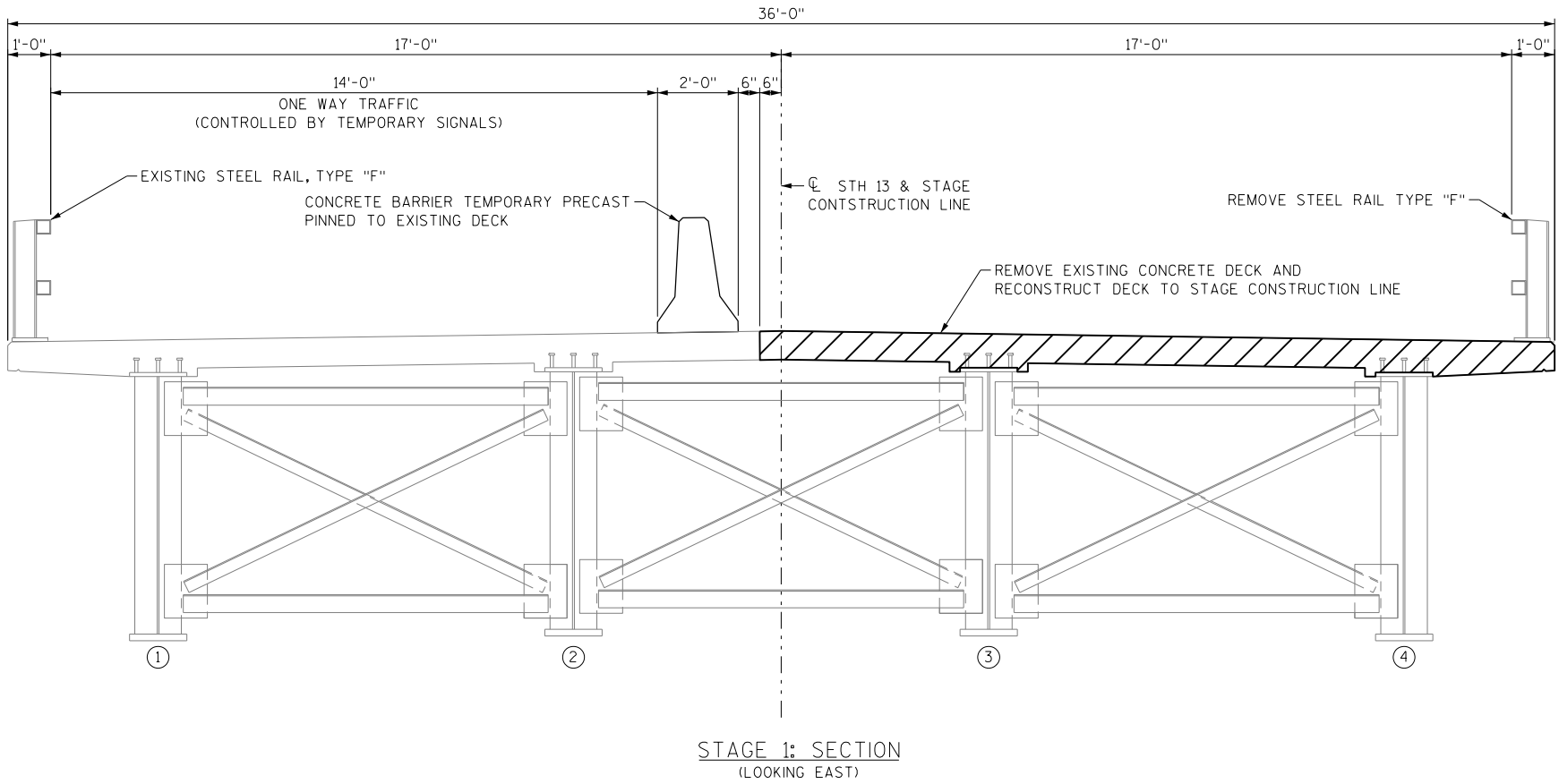
BID NO.	BID ITEMS	UNIT	SUPER	WEST ABUT	EAST ABUT	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 627+60	LS	1	----	----	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-16-53	LS	----	0.5	0.5	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	----	80	80	160
502.0100	CONCRETE MASONRY, BRIDGES	CY	153	29	29	211
502.3100	EXPANSION DEVICE B-16-53	LS	1	----	----	1
502.3200	PROTECTIVE SURFACE TREATMENT	SY	698	45	45	788
502.4206	ADHESIVE ANCHORS NO.6 BAR	EACH	----	74	74	148
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	36502	3675	3675	43852
505.0904	BAR COUPLERS NO. 4	EACH	8	6	6	20
505.0905	BAR COUPLERS NO. 5	EACH	488	6	6	500
505.0907	BAR COUPLERS NO. 7	EACH	10	----	----	10
509.1500	CONCRETE SURFACE REPAIR	SF	----	10	10	20
511.1200	TEMPORARY SHORING B-16-53	SF	----	47	47	94
513.4061	RAILING TUBULAR TYPE M B-16-53	LF	282	41	41	364
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	----	23	23	46
517.0900.S	PREPARATION AND COATING OF TOP FLANGES B-16-53	LS	1	----	----	1
517.3000.S	STRUCTURE OVERCOATING CLEANING AND PRIMING B-16-53	LS	1	----	----	1
606.0200	RIPRAP MEDIUM	CY	----	24	24	48
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	----	120	120	240
SPV.0025.	10. ABUTMENT UNDERCUT SLURRY BACKFILL	CF	----	75	25	100
SPV.0060.	01. CLEANING PAINTING AND LUBRICATING BEARINGS	EACH	----	8	8	16
NON-BID ITEMS						
	JOINT FILLER 1/2"					
	JOINT SEALER					
	NAME PLATE					

EXISTING TYPICAL SECTION
(LOOKING EAST)FINISHED TYPICAL SECTION
(LOOKING EAST)

▲ EXTEND 3/4" DRIP GROOVE TO END OF DECK (TYP.)

SECTION THROUGH ABUTMENT
(SLOPE REPAIR DETAILS)

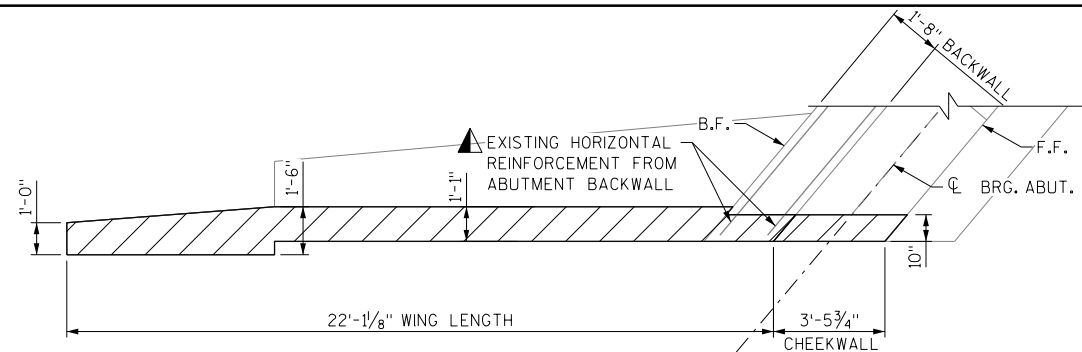
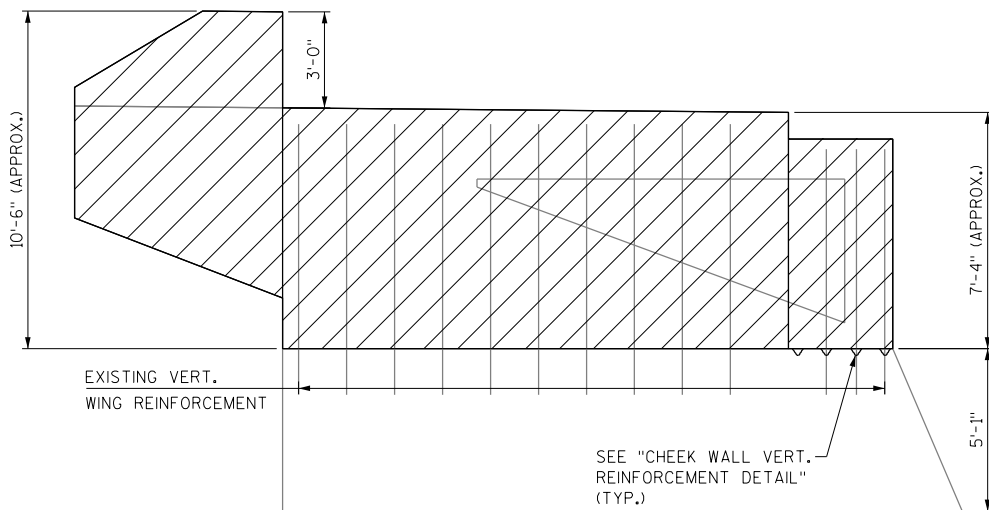
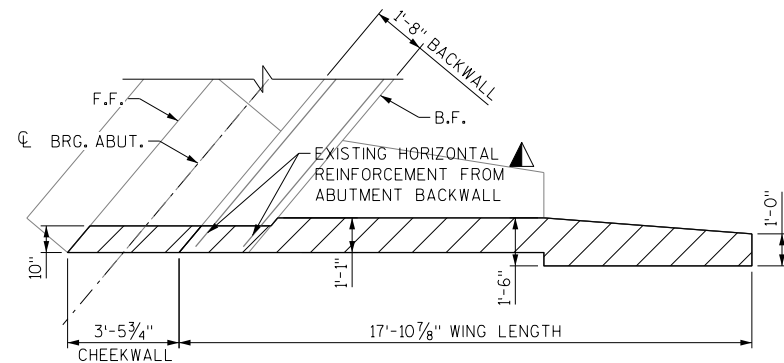
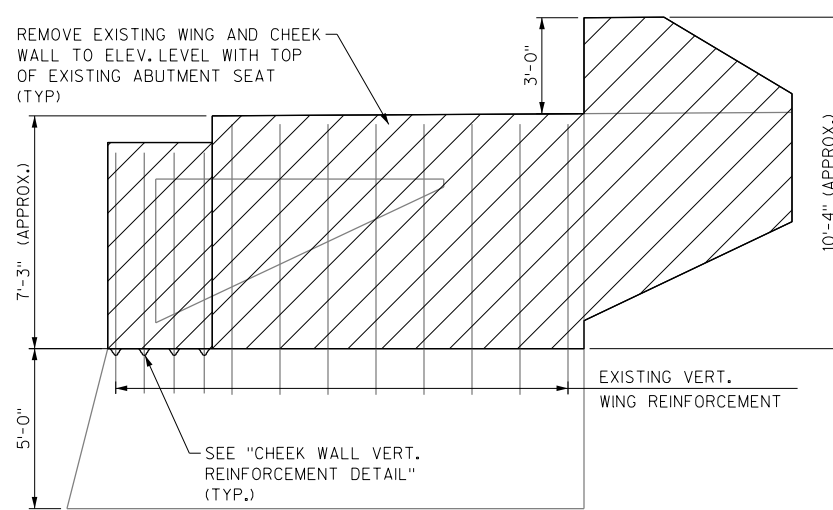
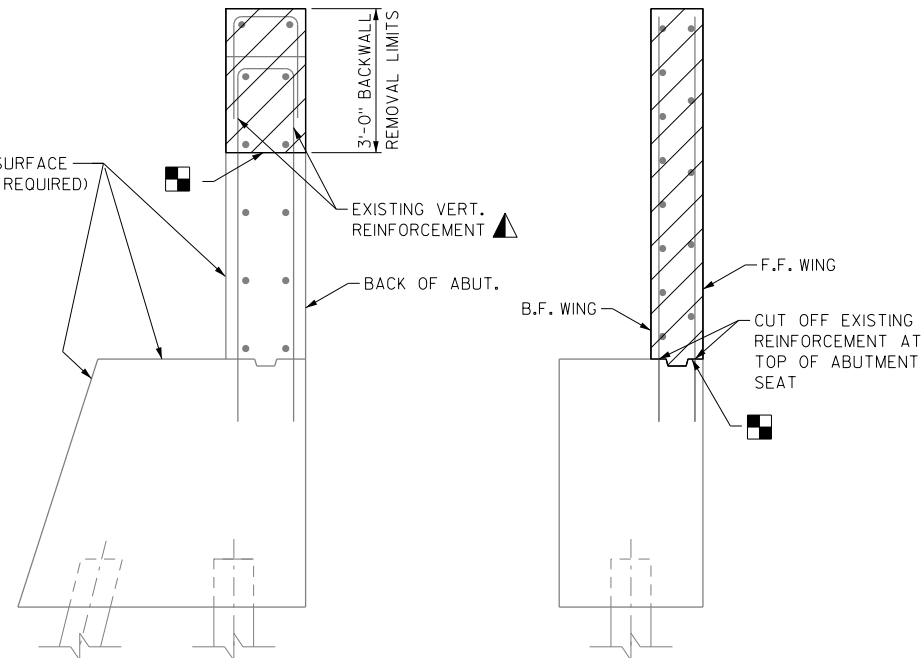
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-16-53	
DRAWN BY		WMN	PLANS CKD. WJZ
TYPICAL SECTIONS		SHEET 2 OF 9	



STATE PROJECT NUMBER
8510-03-71

NOTE:
SEE SPECIAL PROVISIONS FOR ADDITIONAL
STAGING REQUIREMENTS AND RESTRICTIONS

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-16-53	
DRAWN BY	JAP	PLANS CK'D.	WJZ
STAGED CONSTRUCTION DETAILS		SHEET 3 OF 9	

WING 1 PARTIAL PLAN
(WING 3 SIMILAR)WING 1 ELEVATION
(WING 3 SIMILAR)WING 2 PARTIAL PLAN
(WING 4 SIMILAR)WING 2 ELEVATION
(WING 4 SIMILAR)CONCRETE SURFACE
REPAIR (AS REQUIRED)

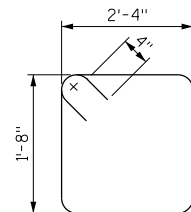
TYP. SECTION THRU ABUTMENT TYP. SECTION THRU WING

▲ CLEAN, STRAIGHTEN, AND INCORPORATE INTO NEW WORK.
DO NOT CUT, REPLACE DAMAGED OR CORRODED
REINFORCEMENT AS DIRECTED BY THE ENGINEER.

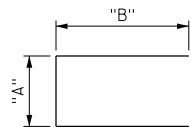
■ PREPARE CONCRETE SURFACE ACCORDING TO SECTION
509.3.7 OF THE STANDARD SPECIFICATIONS. COST IS
INCLUDED IN COST OF "REMOVING OLD STRUCTURE
STATION 627+60"

BILL OF BARS

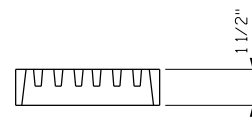
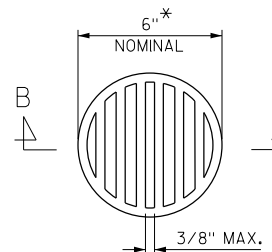
BAR NO.	COATED BAR	STAGE 1	STAGE 2	LENGTH	BENT BAR	BUNDLED	BAR SERIES	7350* COATED 0 * UNCOATED	LOCATION
		NO. REQ'D	NO. REQ'D						
A401	X	12	12	23'-7"					BACKWALL/HAUNCH HORIZONTAL BARS
A502	X	50	50	8'-8"	X				BACKWALL/HAUNCH STIRRUP BARS
A503	X	6	6	23'-7"					PAVING BLOCK HORIZONTAL BARS
A504	X	50	50	4'-9"	X				PAVING BLOCK U-BAR
A605	X	55	55	15'-10"	X				WINGWALL VERTICAL U-BAR
A606	X	37	37	3'-5"					WINGWALL VERTICAL FF
A607	X	37	37	4'-7"					WINGWALL VERTICAL BF
A408	X	8	8	17'-5"					WINGWALL 2 & 4 HORIZONTAL BARS - FF
A409	X	14	14	16'-4"					WINGWALL 2 & 4 HORIZONTAL BARS - BF
A410	X	8	8	21'-5"					WINGWALL 1 & 3 HORIZONTAL BARS - FF
A411	X	14	14	22'-4"					WINGWALL 1 & 3 HORIZONTAL BARS - BF
A612	X	1	1	17'-5"					WINGWALL 2 & 4 TOP HORIZONTAL BARS - FF
A613	X	1	1	16'-4"					WINGWALL 2 & 4 TOP HORIZONTAL BARS - BF
A614	X	1	1	21'-5"					WINGWALL 1 & 3 TOP HORIZONTAL BARS - FF
A615	X	1	1	22'-4"					WINGWALL 1 & 3 TOP HORIZONTAL BARS - BF
A516	X	24	24	8'-0"					PAVING BLOCK JOINT BARS



A502



BAR NO.	DIM "A"	DIM "B"
A504	1'-4"	1'-10"
A605	1'-2"	7'-6"



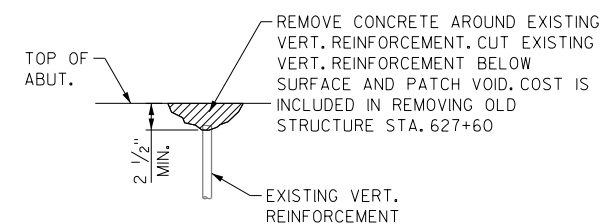
SECTION B-B

* NOTE: DIMENSIONS ARE APPROXIMATE. THE GRATE
IS SIZED TO FIT INTO A PIPE COUPLING.
ORIENT SHIELD SO SLOTS ARE VERTICAL.

THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE
IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE
ATTACHMENT OF THE SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD
SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO.10 X 1-INCH STAINLESS
STEEL SHEET METAL SCREWS.

THE RODENT SHIELD, PIPE COUPLING, AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE
BID ITEM "PIPE-UNDERDRAIN WRAPPED 6-INCH."

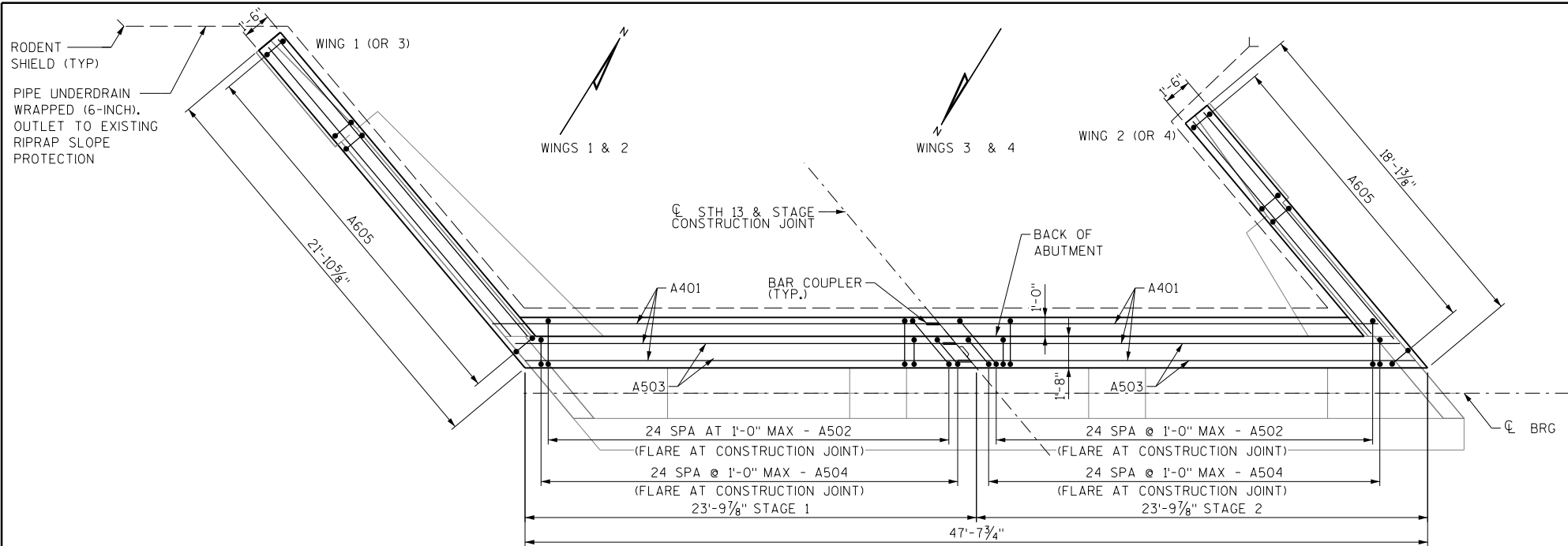
RODENT SHIELD

CHEEK WALL VERT.
REINFORCEMENT DETAIL

LEGEND:

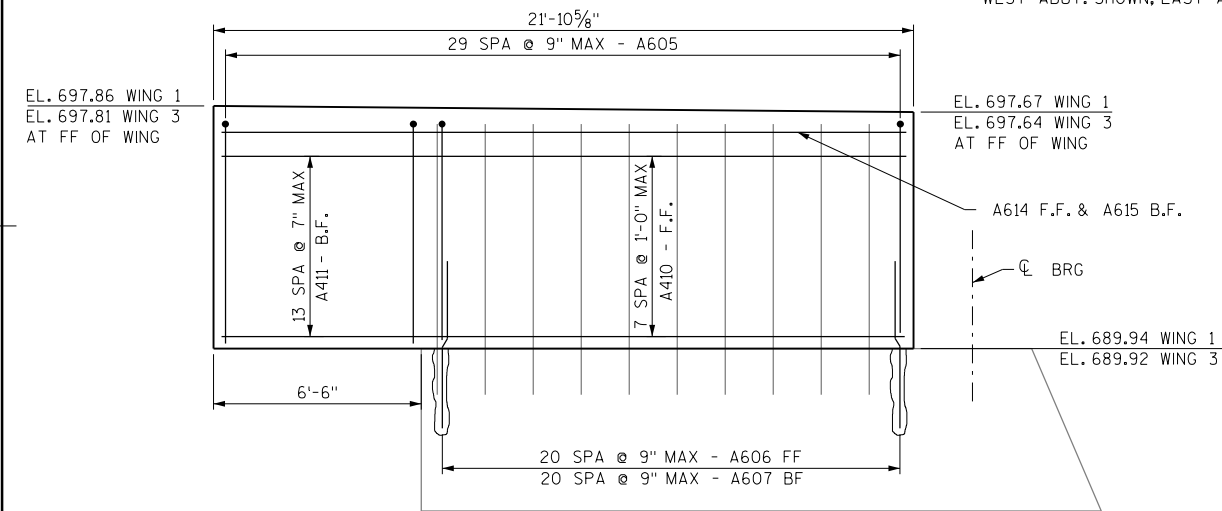
FF - FRONT FACE
BF - BACK FACE

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-16-53	
DRAWN BY JAP		PLANS CKD. WJZ	
ABUTMENT REMOVALS AND DETAILS		SHEET 4 OF 9	

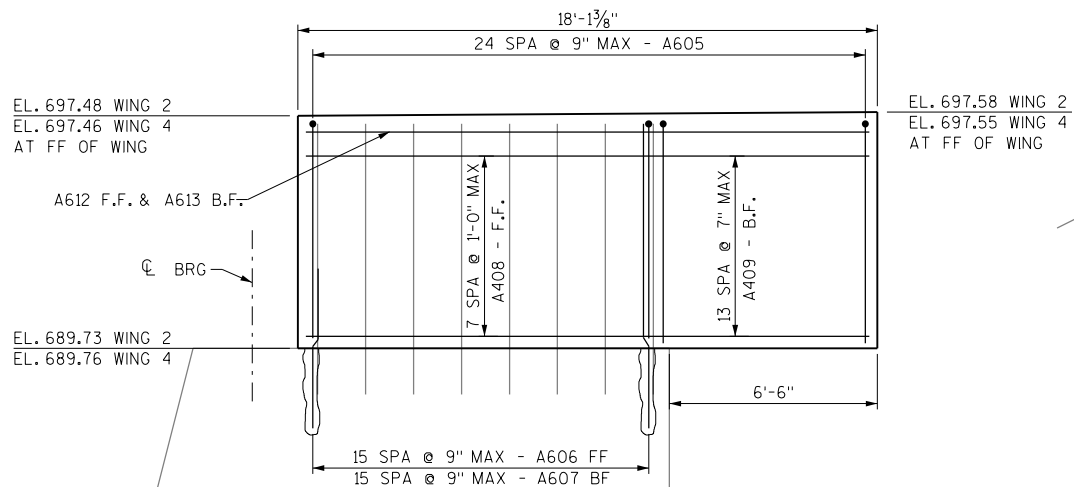


ABUTMENT PLAN
WEST ABUT. SHOWN, EAST ABUT. OPPOSITE

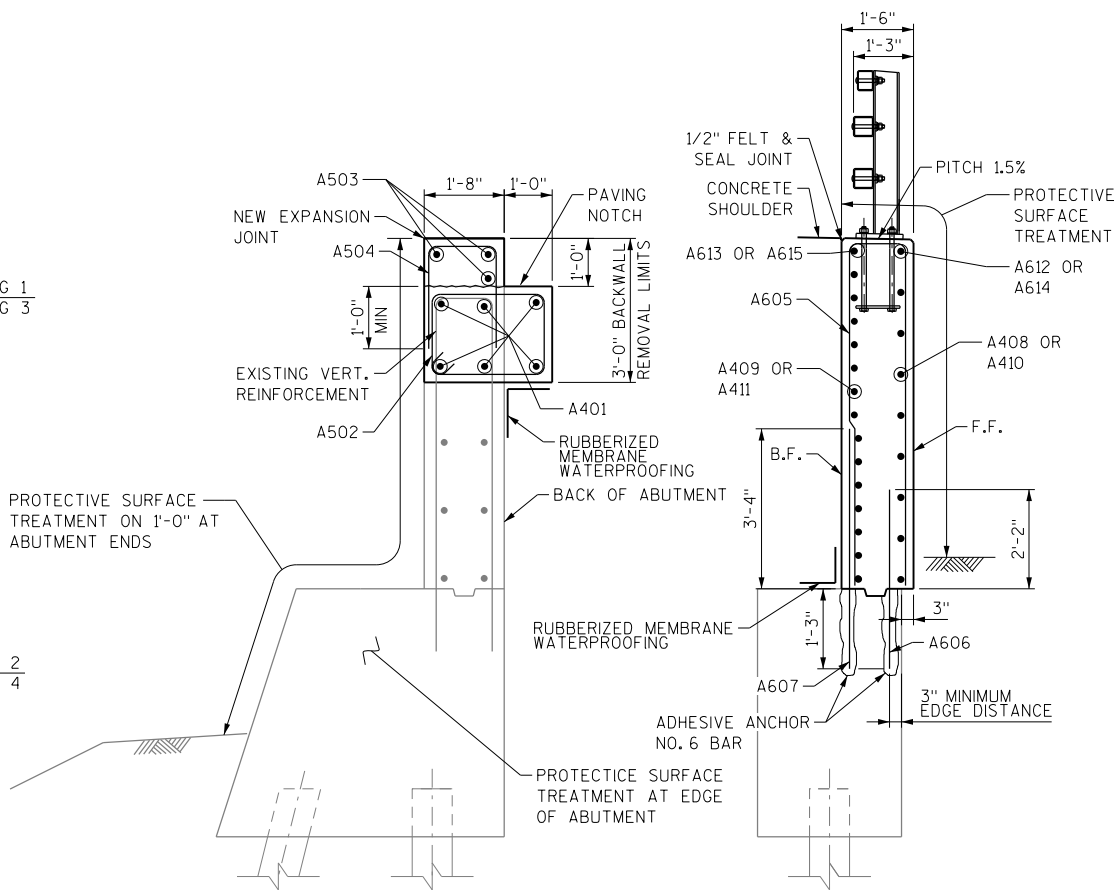
NOTE: SEE SHEET 7 FOR RAILING ANCHORAGE LOCATIONS



WING 1 ELEVATION
WING 3 SIMILAR

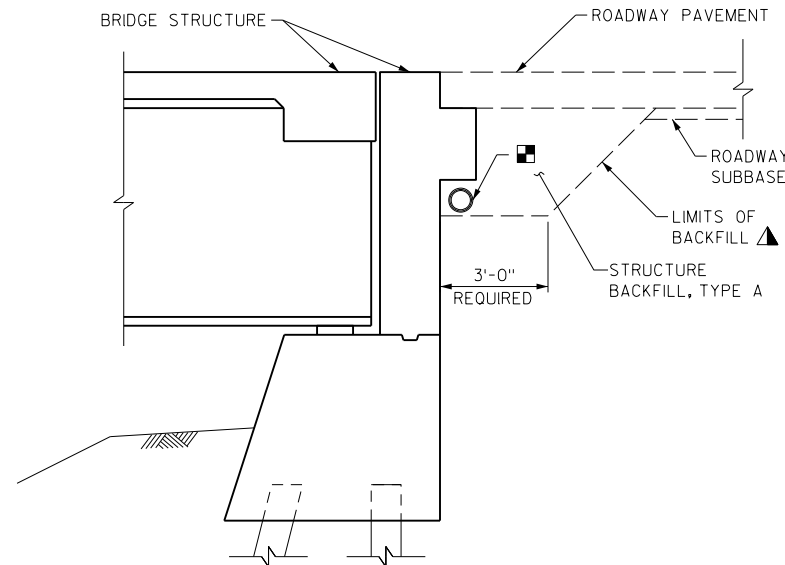


WING 4 ELEVATION
WING 2 SIMILAR



SECTION THRU ABUTMENT

SECTION THRU WING



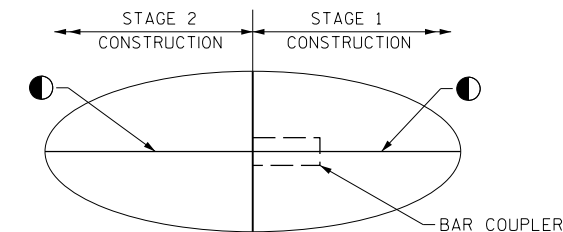
ABUTMENT BACKFILL

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-16-053" SHALL BE THE EXISTING GROUNDLINE

BACKFILL PAY LIMITS. BACKFILL BEYOND PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY CONTRACTOR.

AT THE BACKFACE OF ABUTMENT ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL.

PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.



BAR COUPLER DETAIL

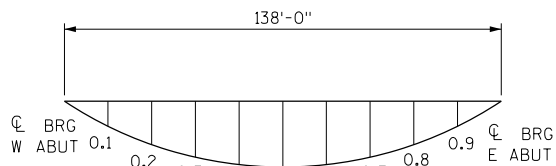
A401 & A503 BAR LENGTHS HAVE BEEN COMPUTED TO CL OF LONGIT. CONST. JOINT. MODIFY LENGTHS TO BAR COUPLER MANUFACTURER RECOMMENDATIONS.

LEGEND:
FF - FRONT FACE
BF - BACK FACE

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-16-53	
DRAWN BY		JAP	PLANS CKD. WJZ
ABUTMENT DETAILS		SHEET 5 OF 9	

NOTES:

1. SEE DECK DETAILS SHEET FOR RAILING ANCHOR LOCATIONS



DEFLECTION DIAGRAM

LOCATION	DEFLECTIONS (IN)			
	STAGE 2		STAGE 1	
	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4
CL BRG W ABUT	0.0	0.0	0.0	0.0
0.1	1.1	0.6	0.8	1.1
0.2	2.3	1.2	1.5	2.0
0.3	3.0	1.8	2.1	2.8
0.4	3.4	2.1	2.4	3.3
0.5	3.5	2.3	2.4	3.5
0.6	3.3	2.3	2.3	3.4
0.7	2.8	2.0	1.9	3.0
0.8	2.0	1.5	1.4	2.2
0.9	1.0	0.8	0.8	1.2
CL BRG E ABUT	0.0	0.0	0.0	0.0

FINISHED TOP OF DECK ELEVATIONS (FT)

LOCATION	NORTH EDGE OF DECK	GIRDER 1	GIRDER 2	CL OF STH 13	GIRDER 3	GIRDER 4	SOUTH EDGE OF DECK
CL BRG W ABUT	697.47	697.54	697.73	697.83	697.78	697.69	697.66
0.1	697.41	697.48	697.66	697.75	697.70	697.60	697.56
0.2	697.37	697.44	697.61	697.69	697.64	697.53	697.49
0.3	697.35	697.41	697.57	697.65	697.59	697.47	697.42
0.4	697.34	697.39	697.54	697.62	697.56	697.43	697.38
0.5	697.34	697.40	697.54	697.61	697.54	697.40	697.35
0.6	697.37	697.42	697.55	697.62	697.54	697.39	697.34
0.7	697.41	697.45	697.57	697.64	697.56	697.40	697.34
0.8	697.46	697.51	697.62	697.68	697.59	697.42	697.36
0.9	697.54	697.57	697.68	697.73	697.64	697.46	697.40
CL BRG E ABUT	697.62	697.66	697.75	697.80	697.71	697.52	697.45

'T' = HAUNCH HEIGHT AT CL GIRDER

TO DETERMINE 'T': AFTER EXISTING DECK HAS BEEN REMOVED ELEVATIONS OF THE TOP FLANGES SHALL BE TAKEN AT CENTERLINE OF BEARING AND AT 0.1 POINTS.

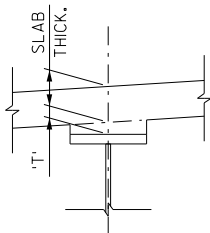
TOP OF DECK ELEVATION AT FINAL GRADE

- TOP OF STEEL ELEVATION AFTER EXISTING DECK HAS BEEN REMOVED

+ CONCRETE ONLY DEFLECTION (DOWNWARD DEFLECTION IS ADDED)

- SLAB THICKNESS

= 'T' VALUE FOR SETTING HAUNCH



PLAN

SECTION THROUGH DECK
(LOOKING EAST)

O INDICATES TOP/SLAB ELEV. LOCATION

* LONGITUDINAL CONSTRUCTION JOINT WITH KEYWAY.
SEE "LONGIT. CONSTRUCTION JOINT" DETAIL

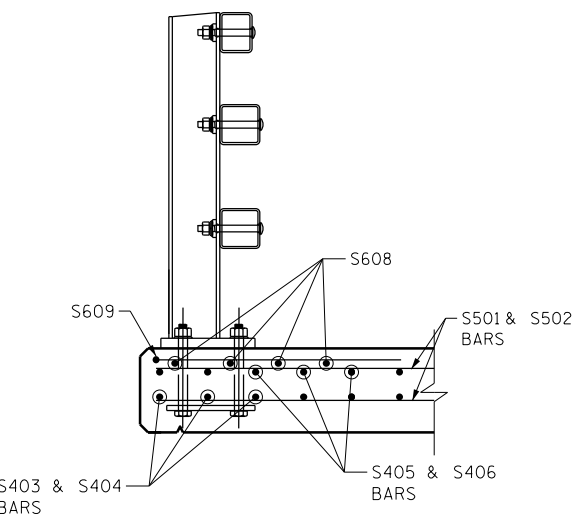
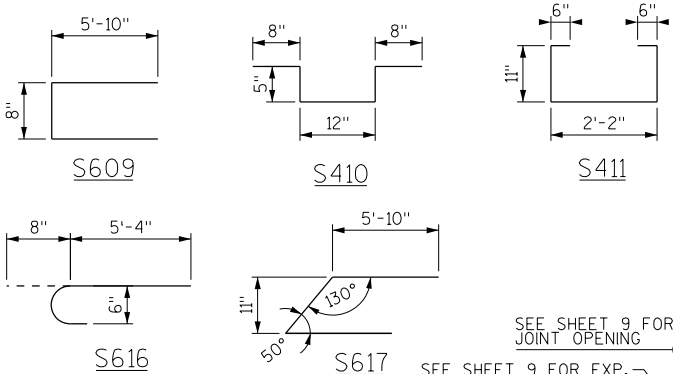
BILL OF BARS- DECK

BAR NO.	COATED BAR	STAGE 1	STAGE 2	LENGTH	BENT BAR	BUNDLED BAR SERIES	36502 # COATED 0 # UNCOATED
		NO. REQ'D	NO. REQ'D				LOCATION
S501	X	434	434	18'-1"			SLAB TRANSVERSE TOP AND BOTTOM
S502	X	100	100	9'-0"		X	SLAB TRANSVERSE TOP AND BOTTOM SERIES
S403	X	102	102	40'-0"			SLAB LONGITUDINAL BOTTOM, LONGITUDINAL HAUNCH
S404	X	34	34	25'-3"			SLAB LONGITUDINAL BOTTOM, LONGITUDINAL HAUNCH
S405	X	90	90	45'-0"			SLAB LONGITUDINAL TOP
S406	X	30	30	10'-3"			SLAB LONGITUDINAL TOP
S507	X	4	4	23'-7"			SLAB END OF DECK TOP AND BOTTOM
S608	X	84	84	6'-0"			SLAB LONGITUDINAL AT RAILING
S609	X	44	44	12'-0"	X		SLAB TRANSVERSE AT RAILING
S410	X	278	278	2'-10"	X		SLAB HAUNCH
S411	X	52	52	4'-8"	X		END DIAPHRAGM TRANSVERSE
S412	X	8	8	12'-2"			END DIAPHRAGM LONGITUDINAL TOP
S713	X	10	10	12'-2"			END DIAPHRAGM LONGITUDINAL BOTTOM
S414	X	8	8	6'-1"			STAGE LINE END DIAPHRAGM LONGITUDINAL TOP
S715	X	10	10	6'-1"			STAGE LINE END DIAPHRAGM LONGITUDINAL BOTTOM
S616	X	8	8	6'-0"	X		SLAB LONGITUDINAL AT CORNER RAILING
S617	X	2	2	12'-3"	X		SLAB TRANSVERSE AT CORNER RAILING

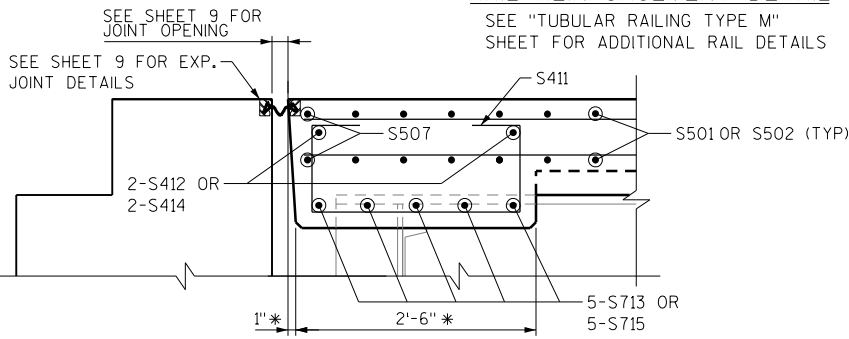
BAR SERIES TABLE

BAR NO.	NUMBER REQUIRED	LENGTH
S502	4 SERIES OF 25 @ STAGE 1 4 SERIES OF 25 @ STAGE 2	8" TO 17'-4"

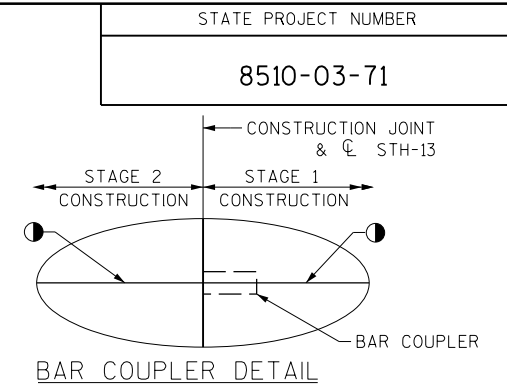
▲ LENGTH SHOWN FOR BAR SERIES IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS.



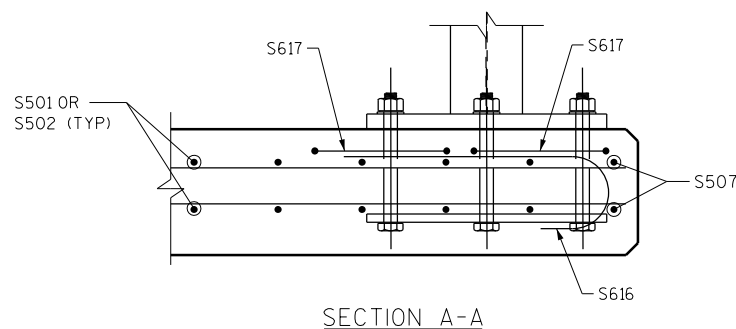
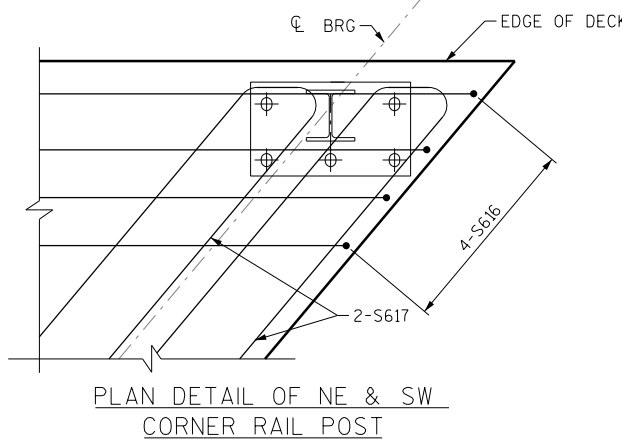
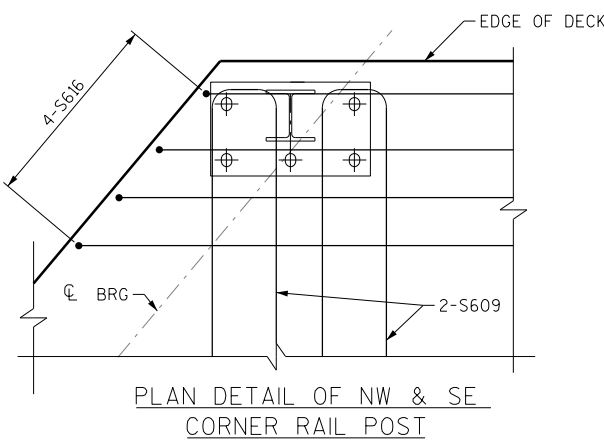
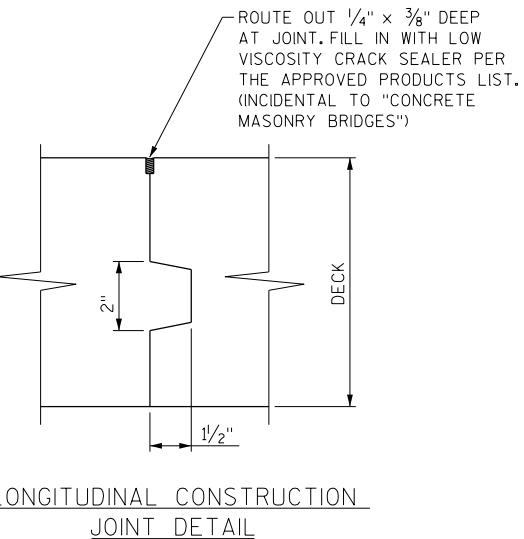
RAIL REINFORCEMENT DETAIL
SEE "TUBULAR RAILING TYPE M"
SHEET FOR ADDITIONAL RAIL DETAILS



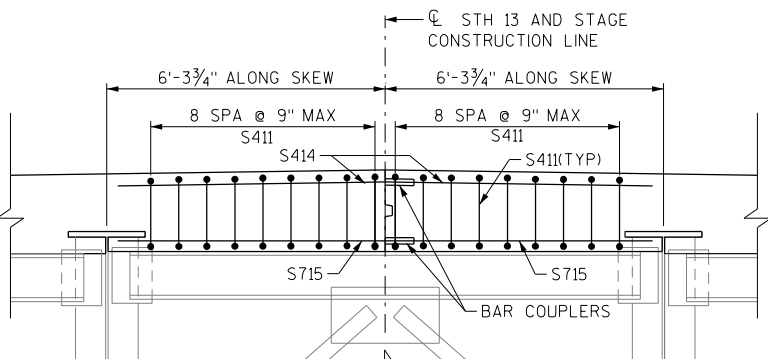
SECTION THRU END DIAPHRAGM
AND EXPANSION JOINT
* DIMENSION TAKEN NORMAL
TO CL OF JOINT.



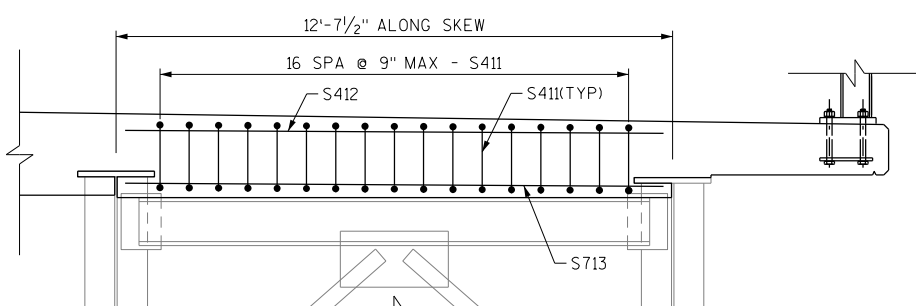
● S501, S502, S507, S414, & S415 BAR LENGTHS HAVE BEEN COMPUTED TO CL OF LONGIT. CONST. JOINT. MODIFY LENGTHS TO BAR COUPLER MANUFACTURER RECOMMENDATIONS.



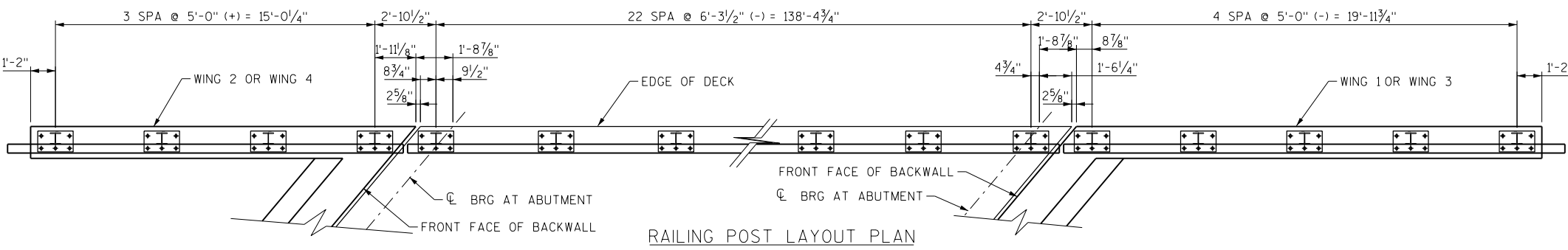
SECTION A-A



TRANSVERSE SECTION OF
END DIAPHRAGM AT STAGE LINE
(SHOWING ADDITIONAL DIAPHRAGM REINFORCEMENT ONLY)



TRANSVERSE SECTION OF
TYPICAL END DIAPHRAGM
(SHOWING ADDITIONAL DIAPHRAGM REINFORCEMENT ONLY)



RAILING POST LAYOUT PLAN

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-16-53	
DRAWN BY JAP		PLANS CKD. WJZ	
DECK DETAILS		SHEET 7 OF 9	

FILE= B16053-65-DECKDET.DGN
SCALE = 1:10

LEGEND

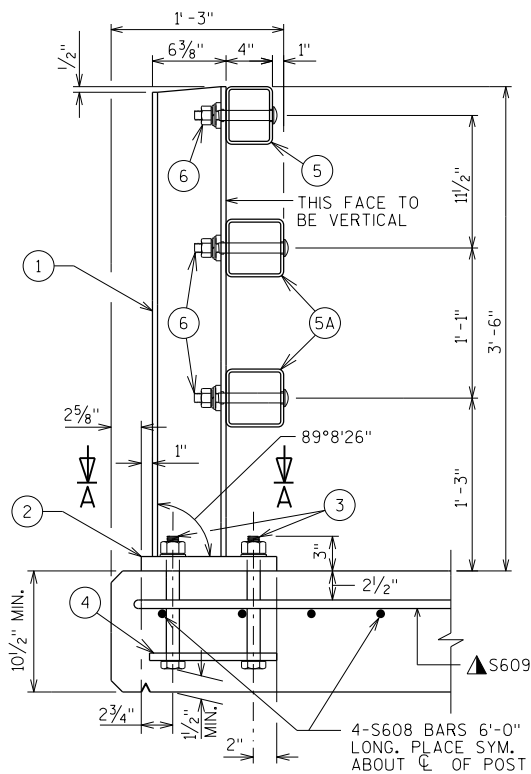
- W6 x 25 WITH $1\frac{1}{8}$ " X $1\frac{1}{2}$ " HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- PLATE $1\frac{1}{4}$ " X $11\frac{3}{4}$ " X 1'-8" WITH $1\frac{1}{8}$ " X $1\frac{1}{8}$ " SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ASTM A449 - $1\frac{1}{8}$ " DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED), 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE $10\frac{3}{4}$ " LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)
- $\frac{5}{8}$ " X 11" X 1'-8" ANCHOR PLATE (GALVANIZED) WITH $1\frac{1}{8}$ " DIA. HOLES FOR ANCHOR BOLTS NO. 3
- TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- 5A TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- $\frac{7}{8}$ " DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, $\frac{3}{16}$ " X $1\frac{1}{8}$ " X $1\frac{1}{8}$ " WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
- $\frac{1}{2}$ " THK. BACK-UP PLATE WITH 2 - $\frac{7}{8}$ " X $1\frac{1}{2}$ " THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.
- 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR $\frac{7}{8}$ " DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.
- SPLICE SLEEVE FABRICATED FROM $\frac{1}{4}$ " PLATE. PROVIDE "SLIDING FIT".
- $\frac{3}{8}$ " X $3\frac{5}{8}$ " X 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
- 10A $\frac{3}{8}$ " X $2\frac{5}{8}$ " X 2'-4" PLATE USED IN NO. 5. $\frac{3}{8}$ " X $3\frac{5}{8}$ " X 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.
- $\frac{7}{8}$ " ϕ A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE $\frac{5}{16}$ " X $1\frac{1}{4}$ " LONGIT. SLOTTED HOLES AT FIELD JOINTS AND $\frac{1}{8}$ " X $2\frac{1}{4}$ " MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.
- $\frac{7}{8}$ " DIA. X $1\frac{1}{2}$ " LONG THREADED SHOP WELDED STUDS (2 REQ'D.).
- $\frac{3}{8}$ " X 8" X 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.
- $\frac{7}{8}$ " DIA. X 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).
- 1" ϕ HOLES IN TUBES NO. 5A FOR $\frac{7}{8}$ " DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

GENERAL NOTES

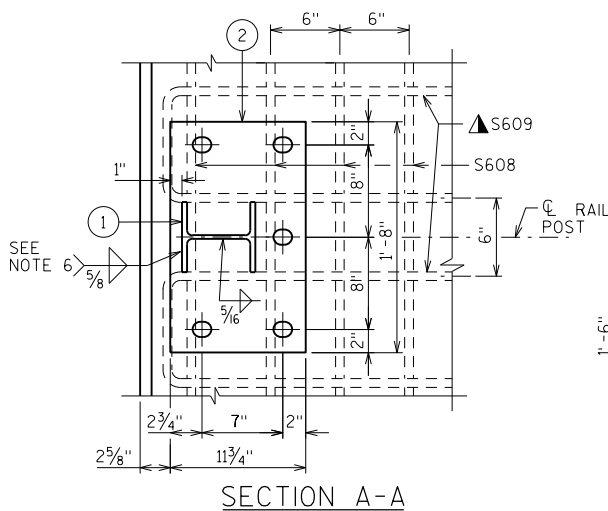
- BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-16-53" WHICH INCLUDES ALL ITEMS SHOWN.
- RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
- THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL $\frac{1}{8}$ TURN.
- RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
- ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
- WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
- FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
- ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.
- THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).

▲ TIE TO TOP MAT OF STEEL.

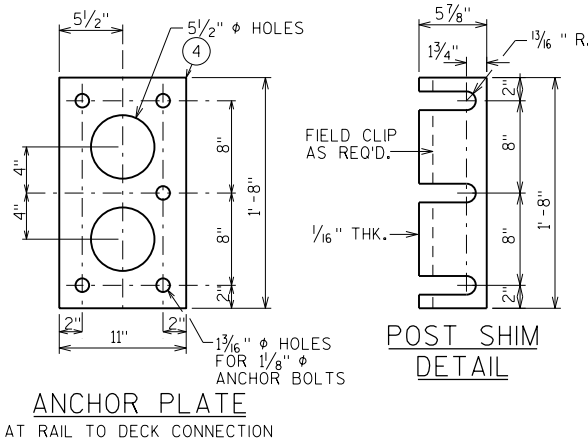
* FOR ANCHOR BOLTS IN WINGS, TACK WELD MAY BE USED IN FIELD AFTER ANCHOR PLATE IS IN POSITION IF REQ'D. FOR CONSTRUCTIBILITY.

■ RDWY. OPENING OR $2\frac{1}{2}$ " MIN. FOR STRIP SEAL EXP. JOINT

SECTION THRU RAILING ON DECK

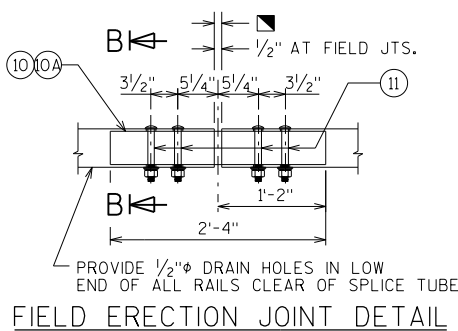


SECTION A-A

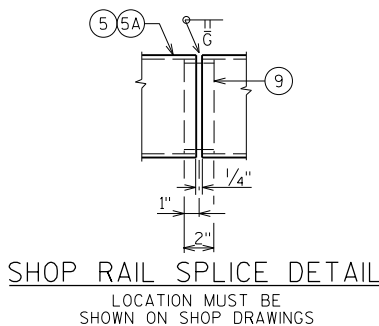


ANCHOR PLATE

AT RAIL TO DECK CONNECTION

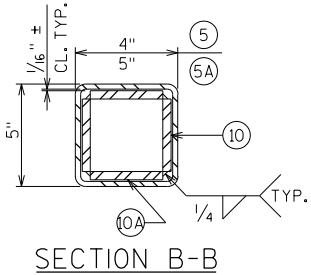


FIELD ERECTION JOINT DETAIL

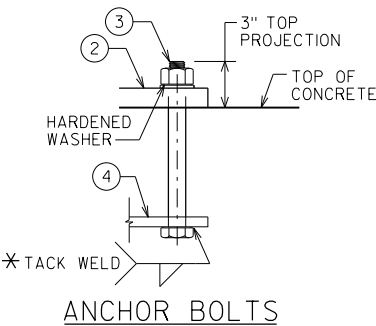


SHOP RAIL SPLICE DETAIL

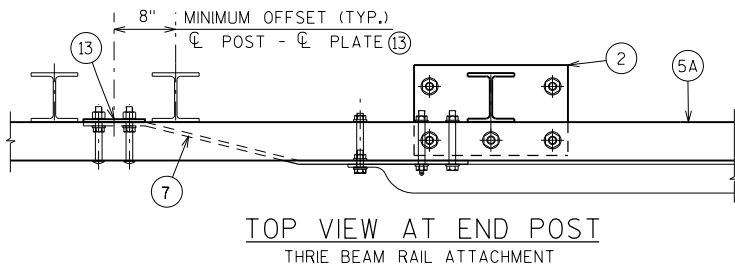
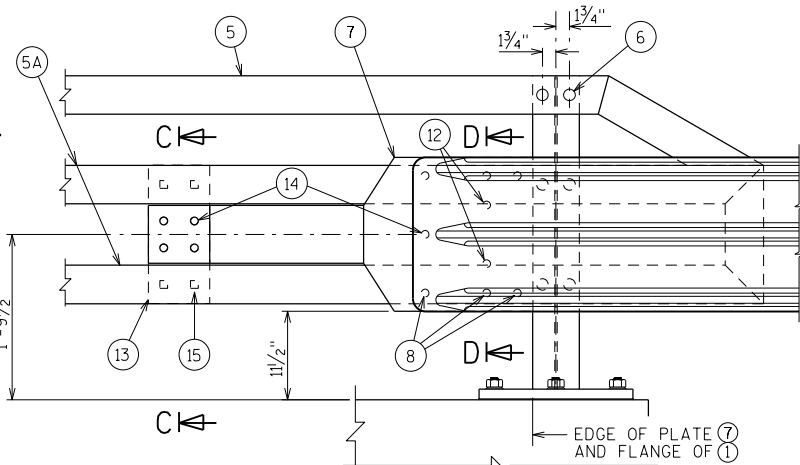
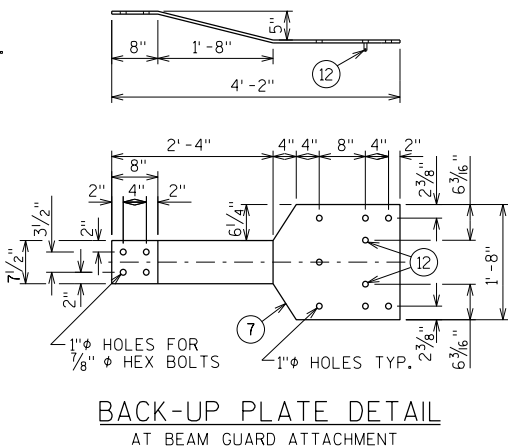
LOCATION MUST BE SHOWN ON SHOP DRAWINGS



SECTION B-B

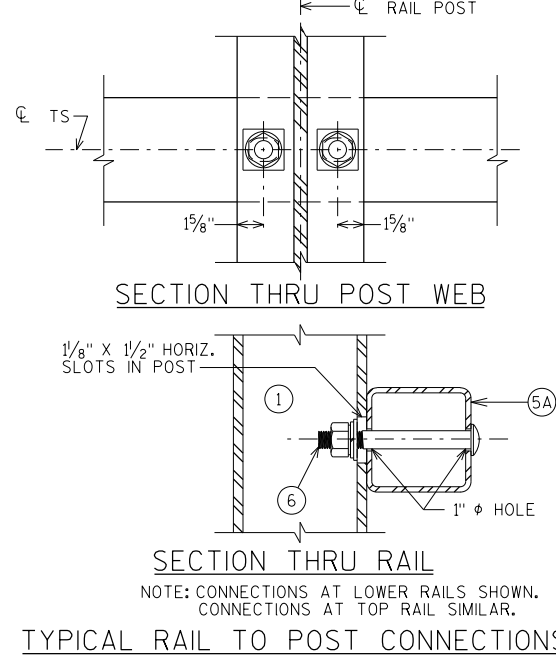


ANCHOR BOLTS

TOP VIEW AT END POST
THRIE BEAM RAIL ATTACHMENTDETAIL AT END POST
THRIE BEAM RAIL ATTACHMENT

BACK-UP PLATE DETAIL

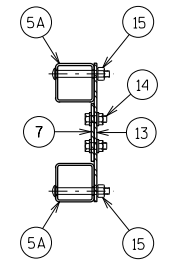
AT BEAM GUARD ATTACHMENT



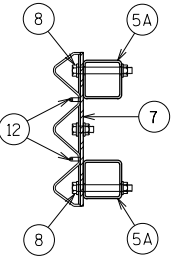
SECTION THRU POST WEB

SECTION THRU RAIL
NOTE: CONNECTIONS AT LOWER RAILS SHOWN.
CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS



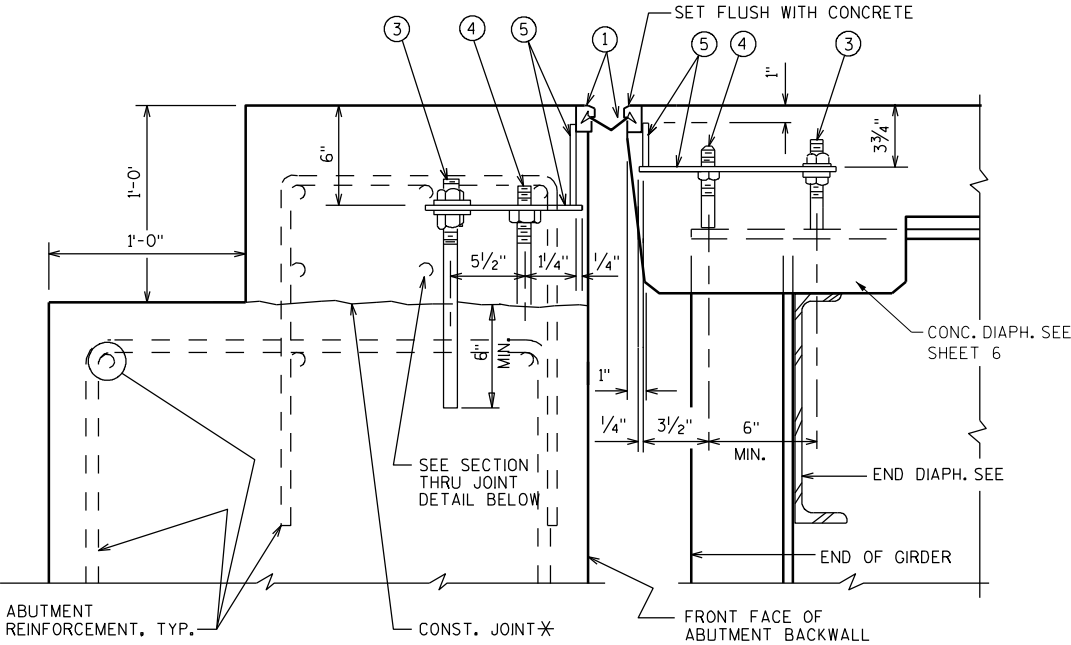
SECTION C-C



SECTION D-D

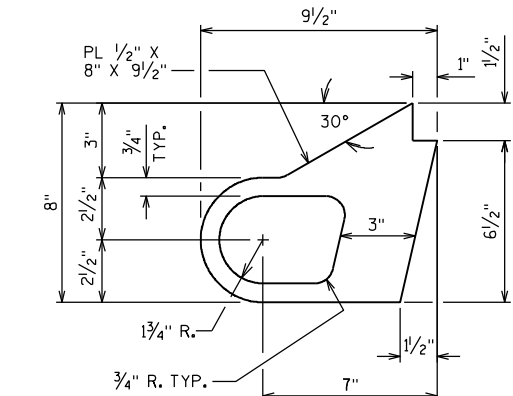
PART ELEVATION OF RAILING

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-16-53	
DRAWN BY		JAP	PLANS CKD. WJZ
TUBULAR RAILING TYPE M		SHEET 8 OF 9	

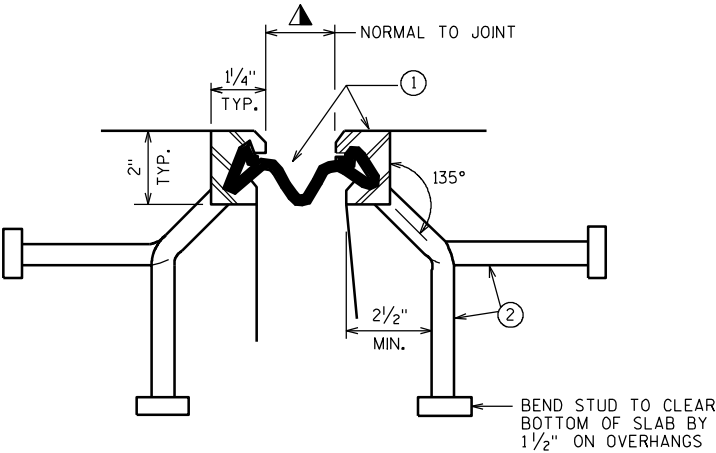


TYPICAL SECTION THRU JOINT AT STEEL GIRDER

NORMAL TO ϕ SUBSTRUCTURE

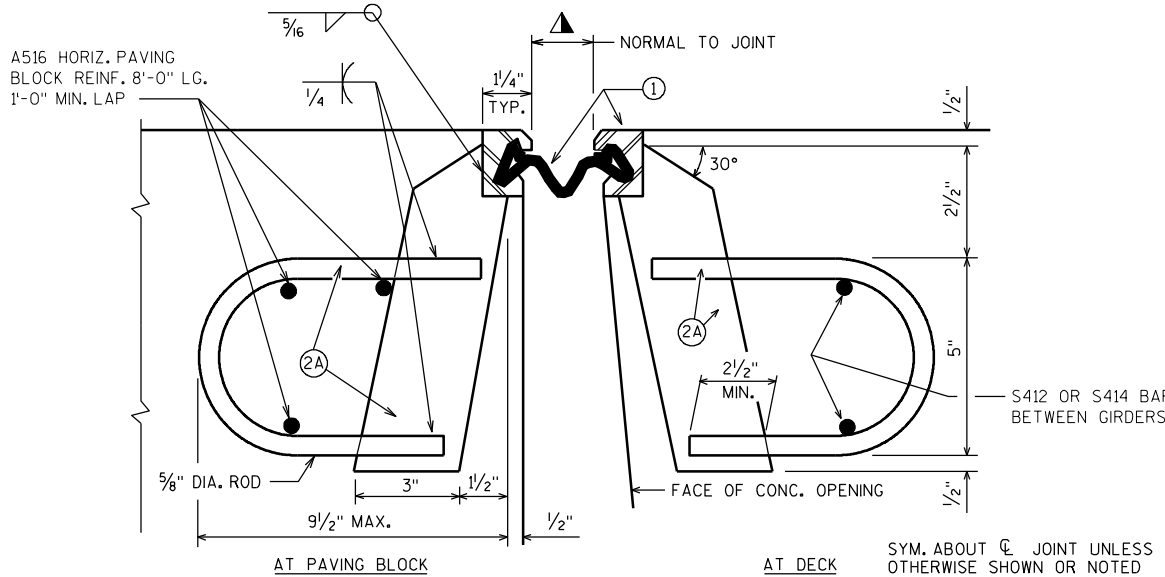


ALTERNATE STRIP SEAL ANCHOR



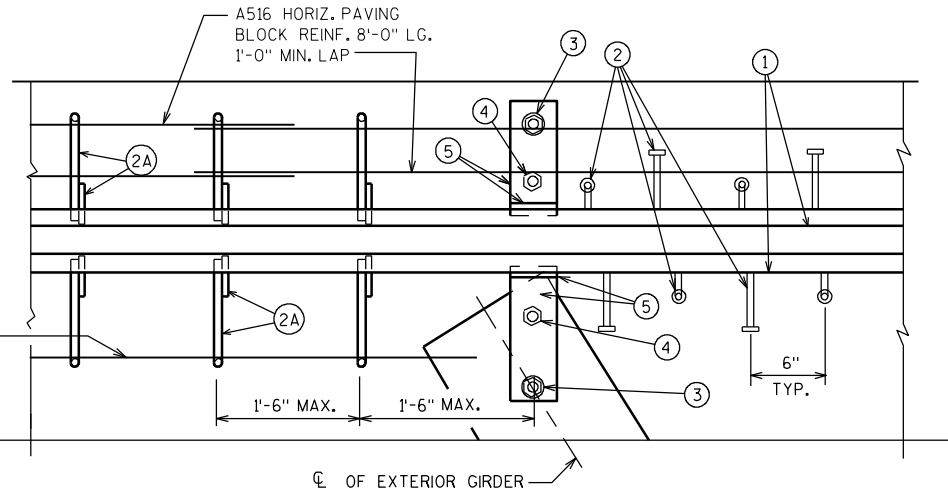
SECTION THRU JOINT

EXTERIOR GIRDER TO EDGE OF DECK, AND
AT PARAPETS, MEDIANS AND SIDEWALKS



SECTION THRU JOINT

ROADWAY TRAFFIC AREA BETWEEN EXTERIOR GIRDERS.



PART PLAN

LEGEND

- ▲ ① NEOPRENE STRIP SEAL (4-INCH) AND STEEL EXTRUSIONS. SET JOINT OPENING AT BOTH ABUTMENTS AT 2". JOINT OPENINGS GIVEN NORMAL TO JOINT
- ② STUDS 5/8" DIA. X 6 3/8" LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS AND BEND AS SHOWN AFTER WELDING.
- ②A 1/2" THICK ANCHOR PLATE WITH 5/8" DIA. ROD (OR ALTERNATE STRIP SEAL ANCHOR). WELD ROD TO ANCHOR PLATE. WELD ANCHOR PATE TO NO. 1 AT 1'-6" CENTERS BETWEEN GIRDERS.
- ③ 3/4" DIA. THREADED ROD WITH 2 NUTS AND PLATE WASHERS. WELD THREADED ROD TO TOP FLANGE OR ATTACH BY BOLTING THROUGH FLANGE. ON ABUTMENT SIDE, GROUT THREADED ROD INTO FIELD DRILLED HOLES IN ABUTMENT BACKWALL AS SHOWN.
- ④ 3/4" DIA. THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.
- ⑤ FABRICATE SUPPORT FROM 3" X 1/2" BAR AS SHOWN OR EQUIVALENT. ONE PER GIRDER PER SIDE. SHOP OR FIELD WELD TO NO. 1. IF FIELD WELDED, COVER WELDED AREAS WITH EPOXY-COATING MATERIAL. PROVIDE 1/2" DIA. HOLE FOR NO. 3 AND 1" DIA. HOLE FOR NO. 4

NOTES

ONE FIELD SPLICE PERMITTED IN STEEL EXTRUSIONS, UNLESS MORE ARE REQUIRED FOR STAGED CONSTRUCTION, HANDLING, OR GALVANIZING REQUIREMENTS. IF USED, DETAILS SHALL BE SUBMITTED FOR APPROVAL. NO SPLICING PERMITTED IN NEOPRENE STRIP SEAL.

AFTER FABRICATION, BUT BEFORE SHIPMENT, STRAIGHTEN STEEL STEEL EXTRUSIONS SUCH THAT THEY SHALL BE FREE FROM WARP, TWIST, AND SWEEP.

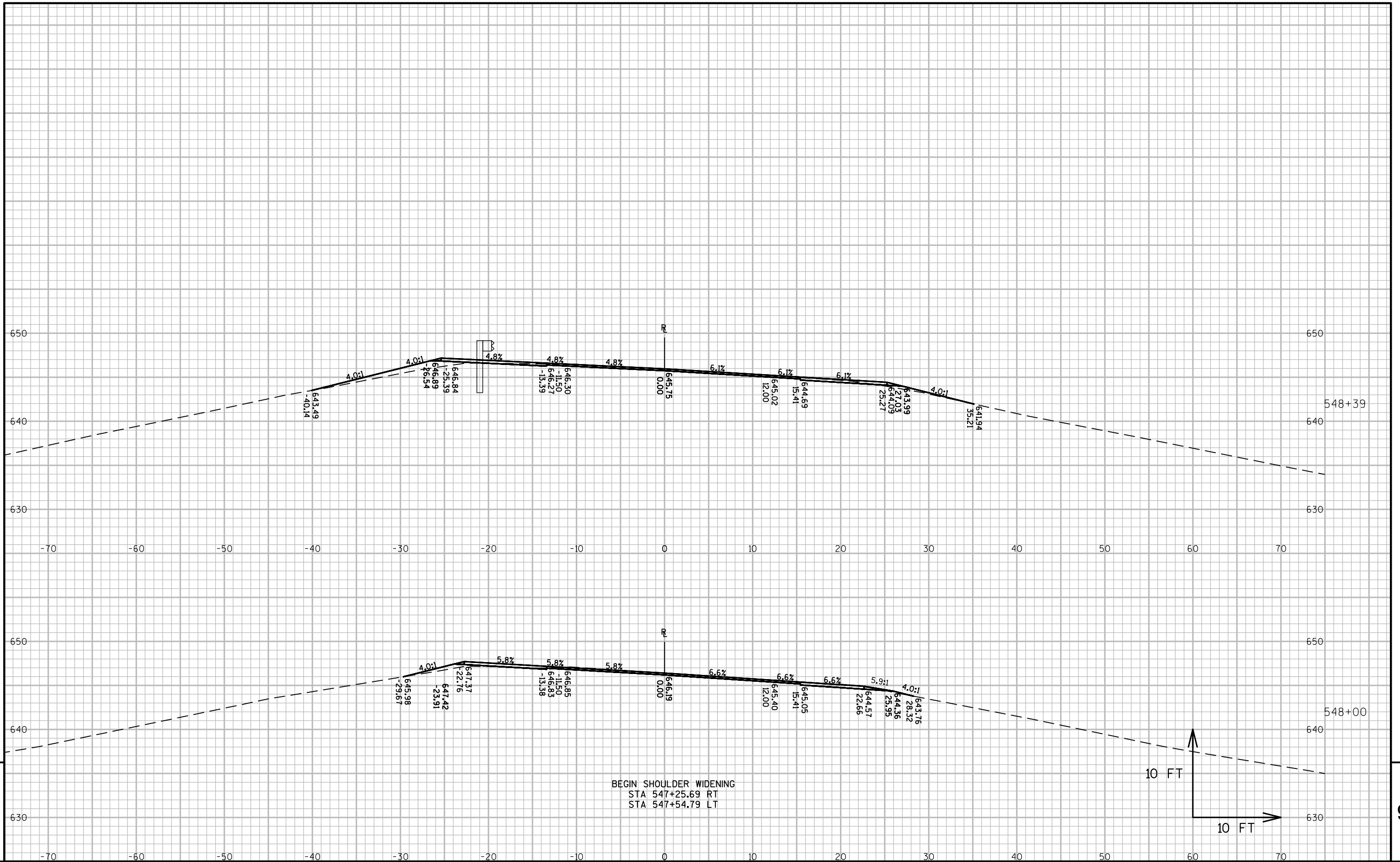
FABRICATOR SHALL PROVIDE MEANS OF KEEPING GALVANIZED EXTRUSIONS CLEAN AND SMOOTH DURING SHIPMENT AND PRIOR TO APPLYING LUBRICANT ADHESIVE FOR NEOPRENE GLAND INSTALLATION.

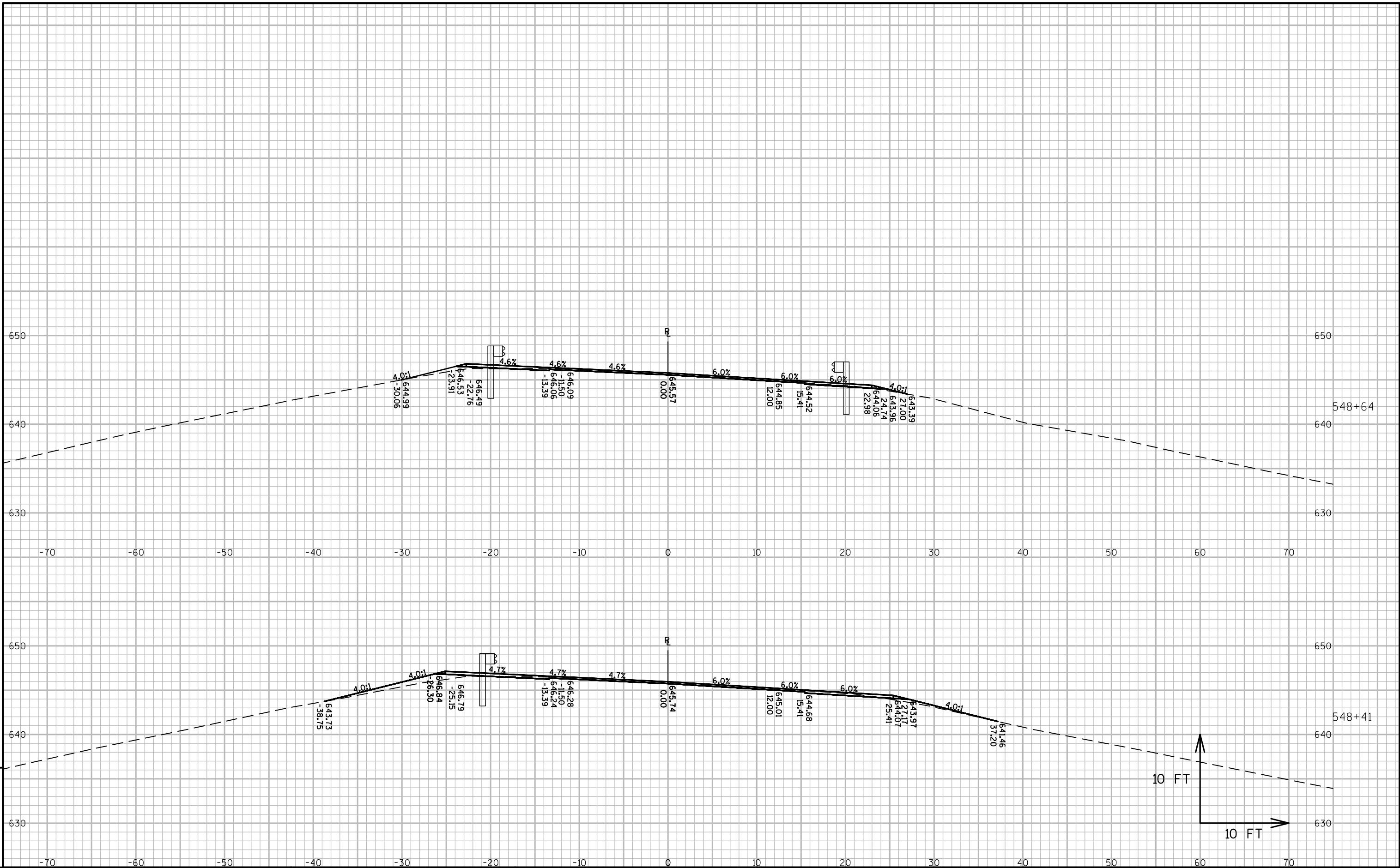
SANDBLAST PLATES, SUPPORTS AND EXTRUSIONS AFTER FABRICATION IN ACCORDANCE WITH SSPC SP. #6 "COMMERCIAL BLASAT CLEANING". AFTER BLAST CLEANING, THE PLATES, SUPPORTS, AND EXTRUSIONS SHALL BE HOT DIPPED GALVANIZED.

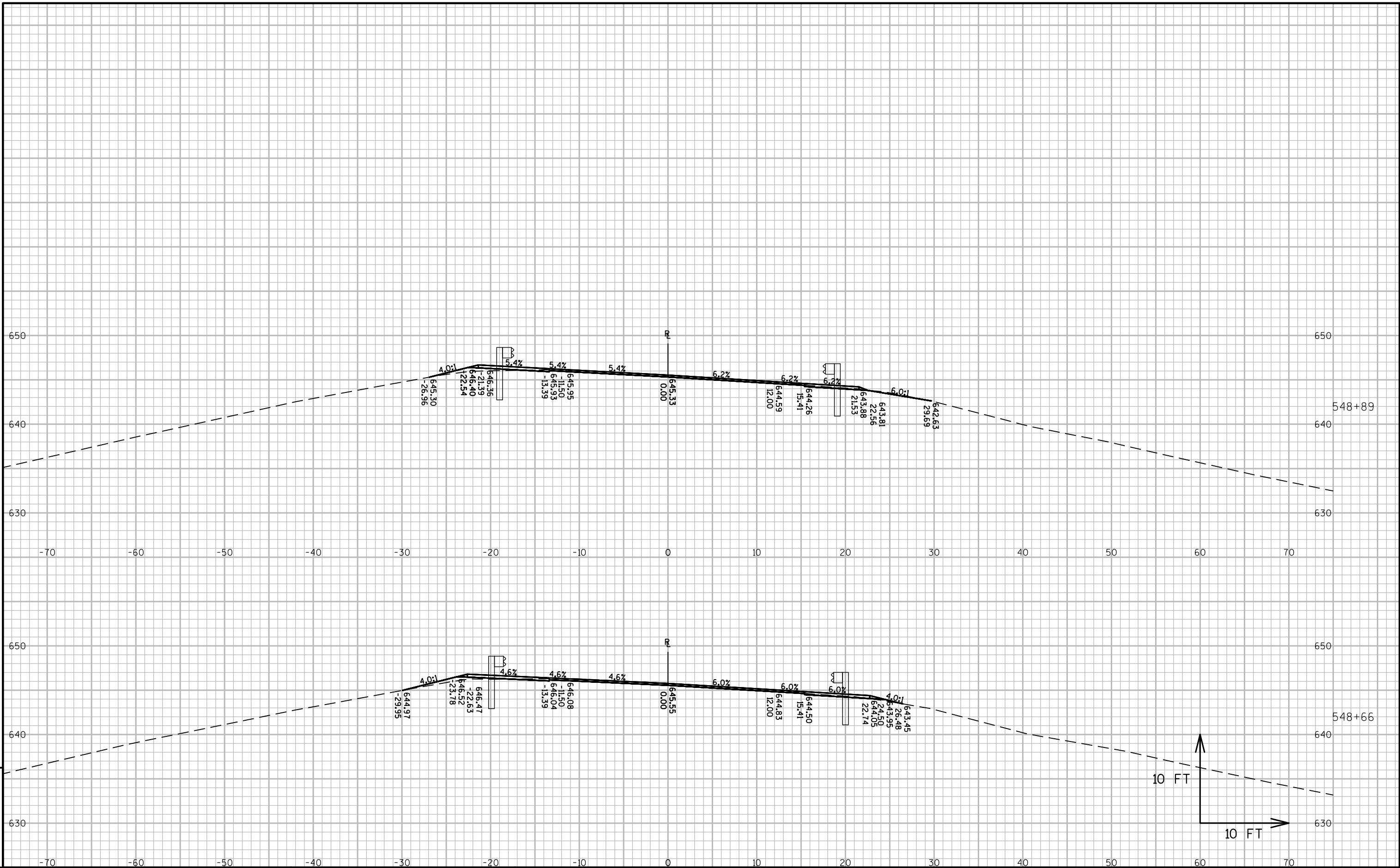
ANCHOR SYSTEM NO. 8 AND NO. 9 SHALL CONFORM TO ASTM A307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C AND D.

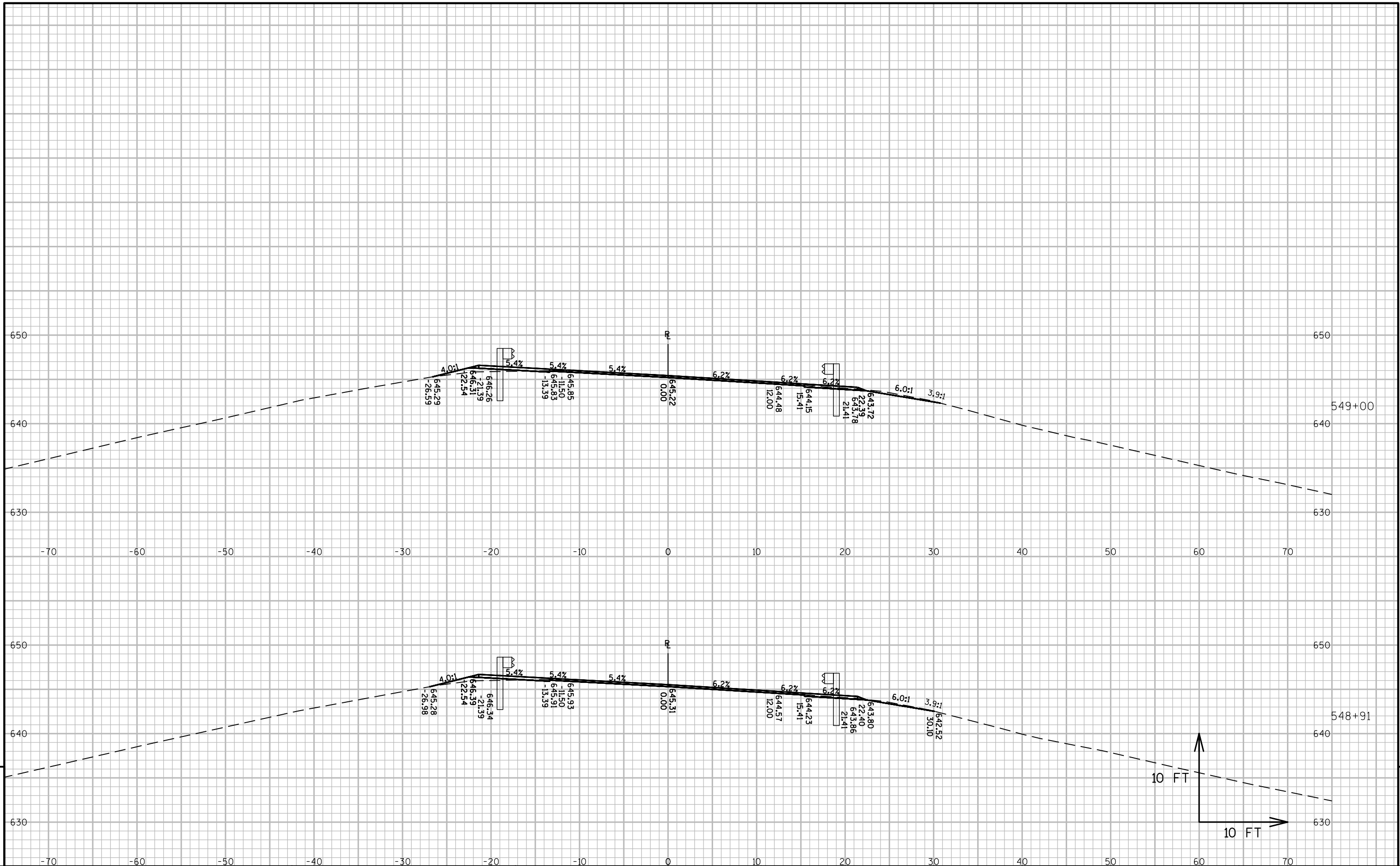
STRIP SEAL EXPANSION JOINT ASSEMBLIES AT BOTH ABUTMENTS, INCLUDING ANCHOR STUDS AND HARDWARE WILL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "EXPANSION DEVICE B-16-53.

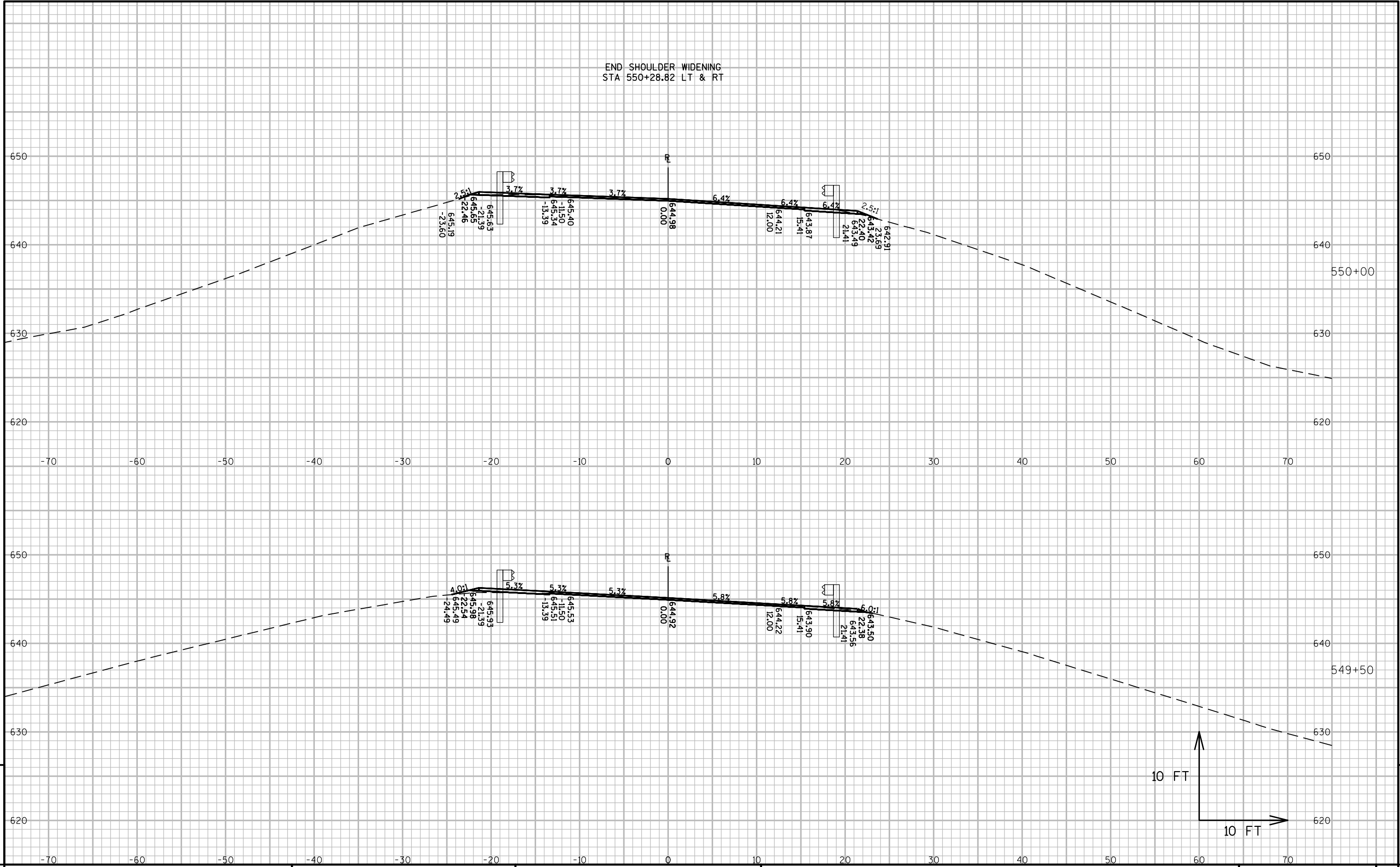
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-16-53	
DRAWN BY		JAP	PLANS CK'D. WJZ
STRIP SEAL EXPANSION JOINT			SHEET 9 OF 9





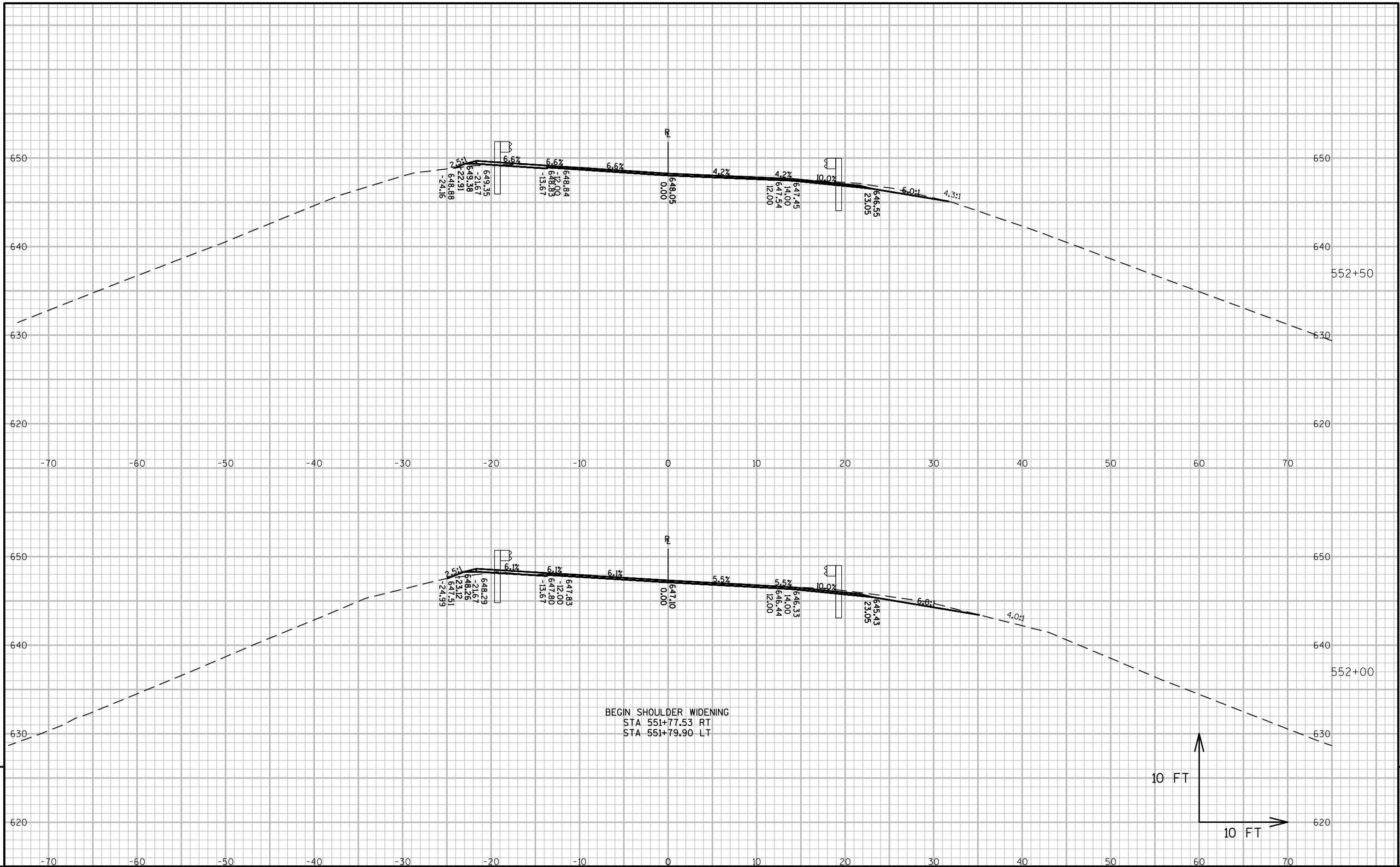


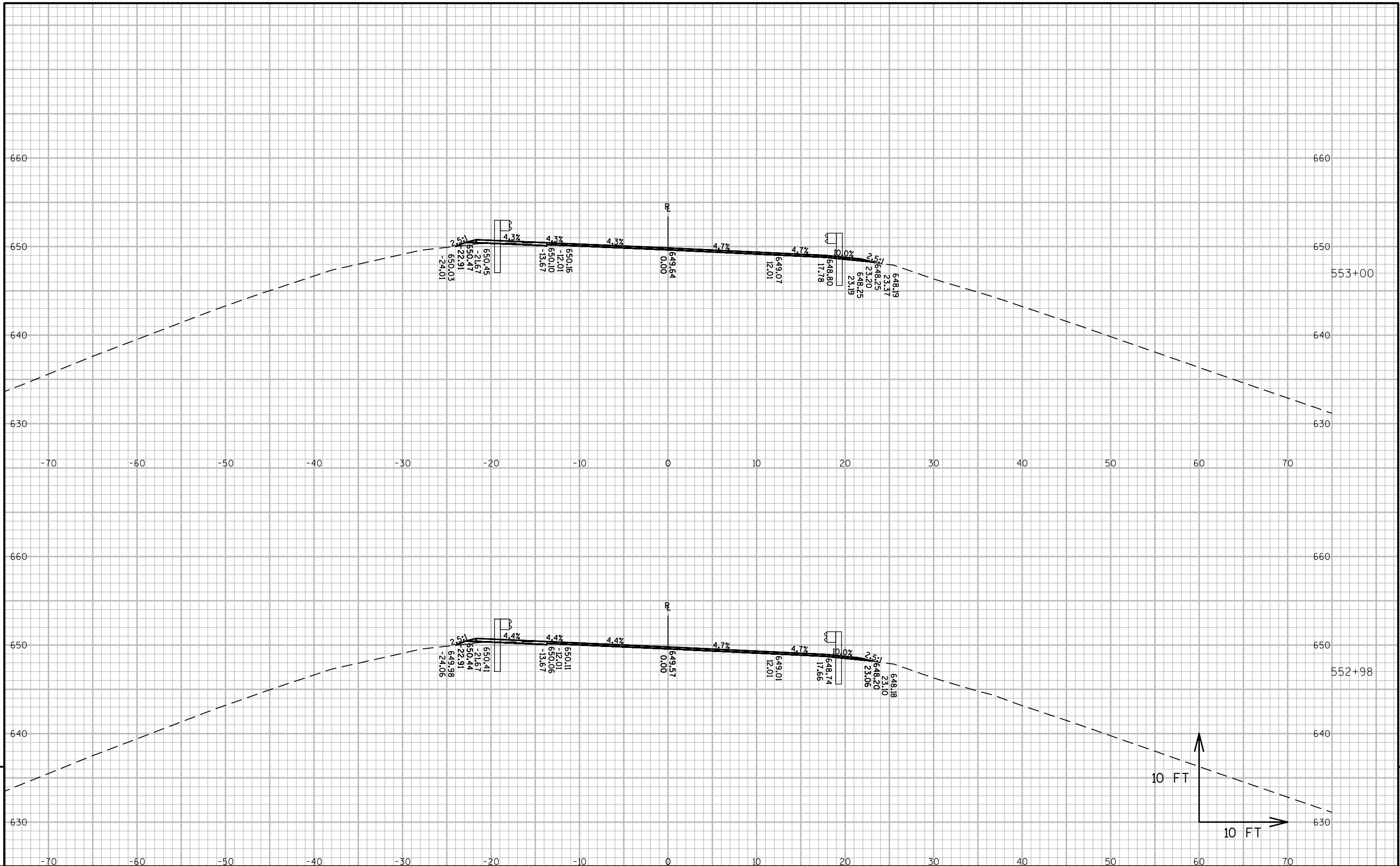


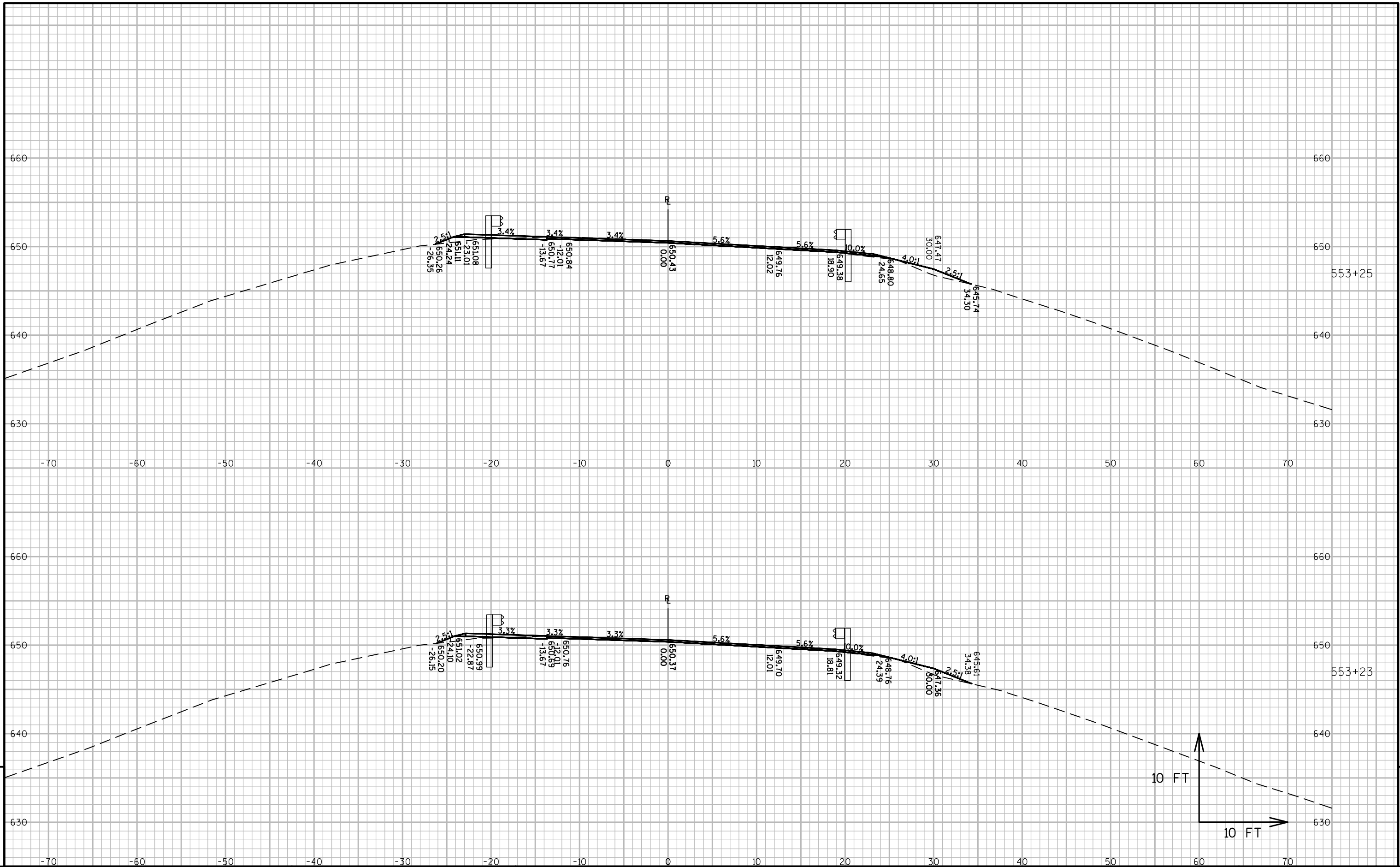


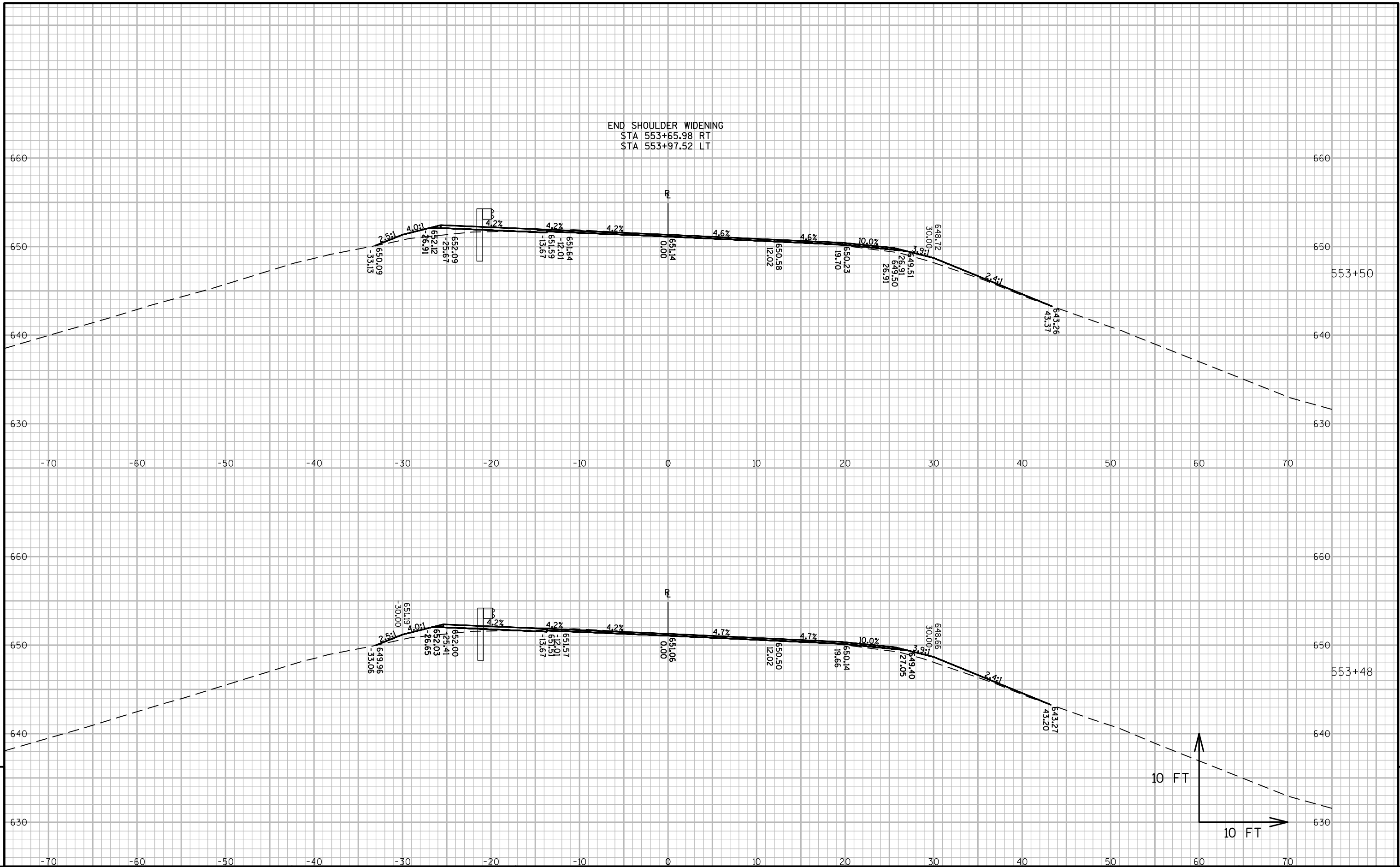
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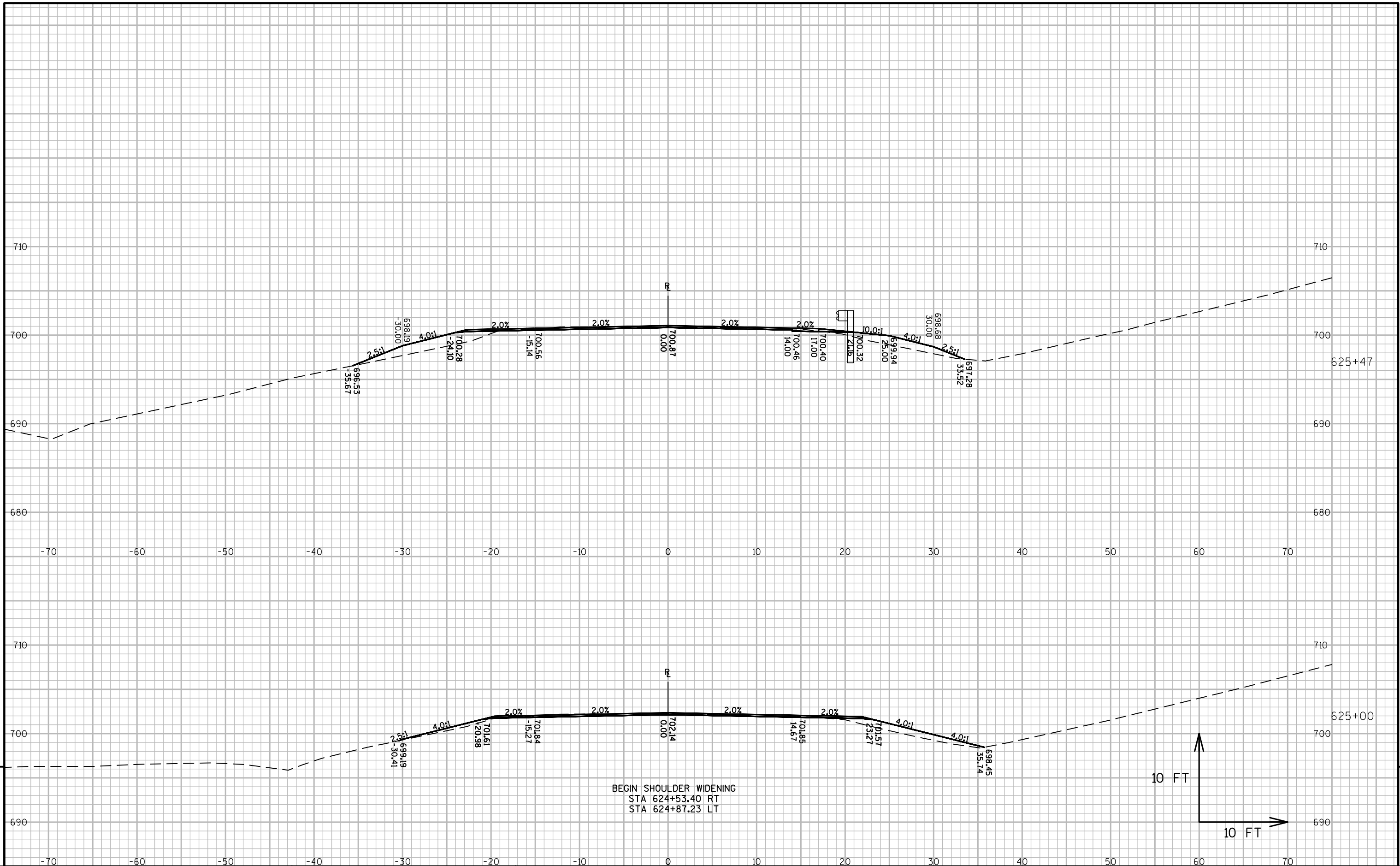
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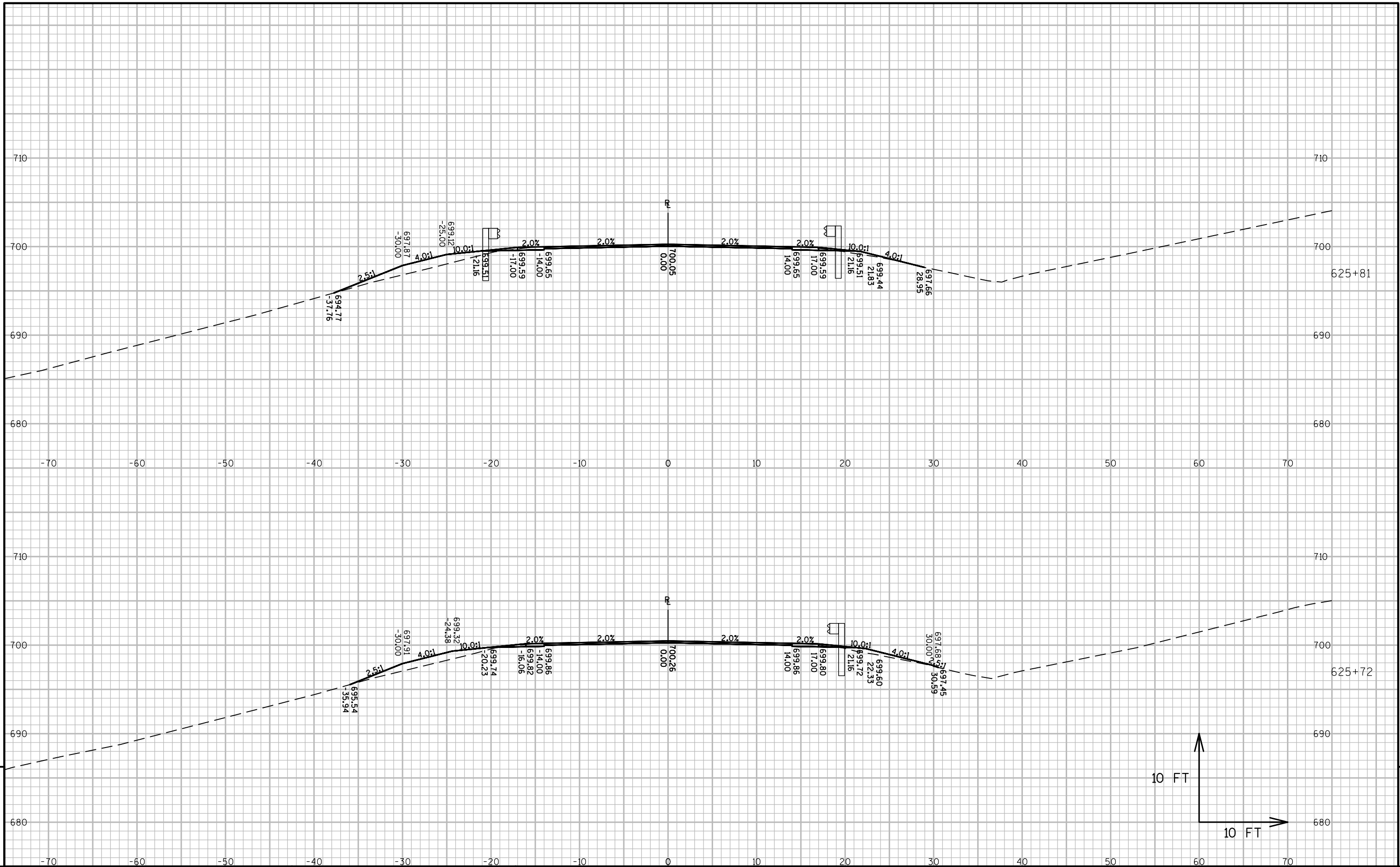


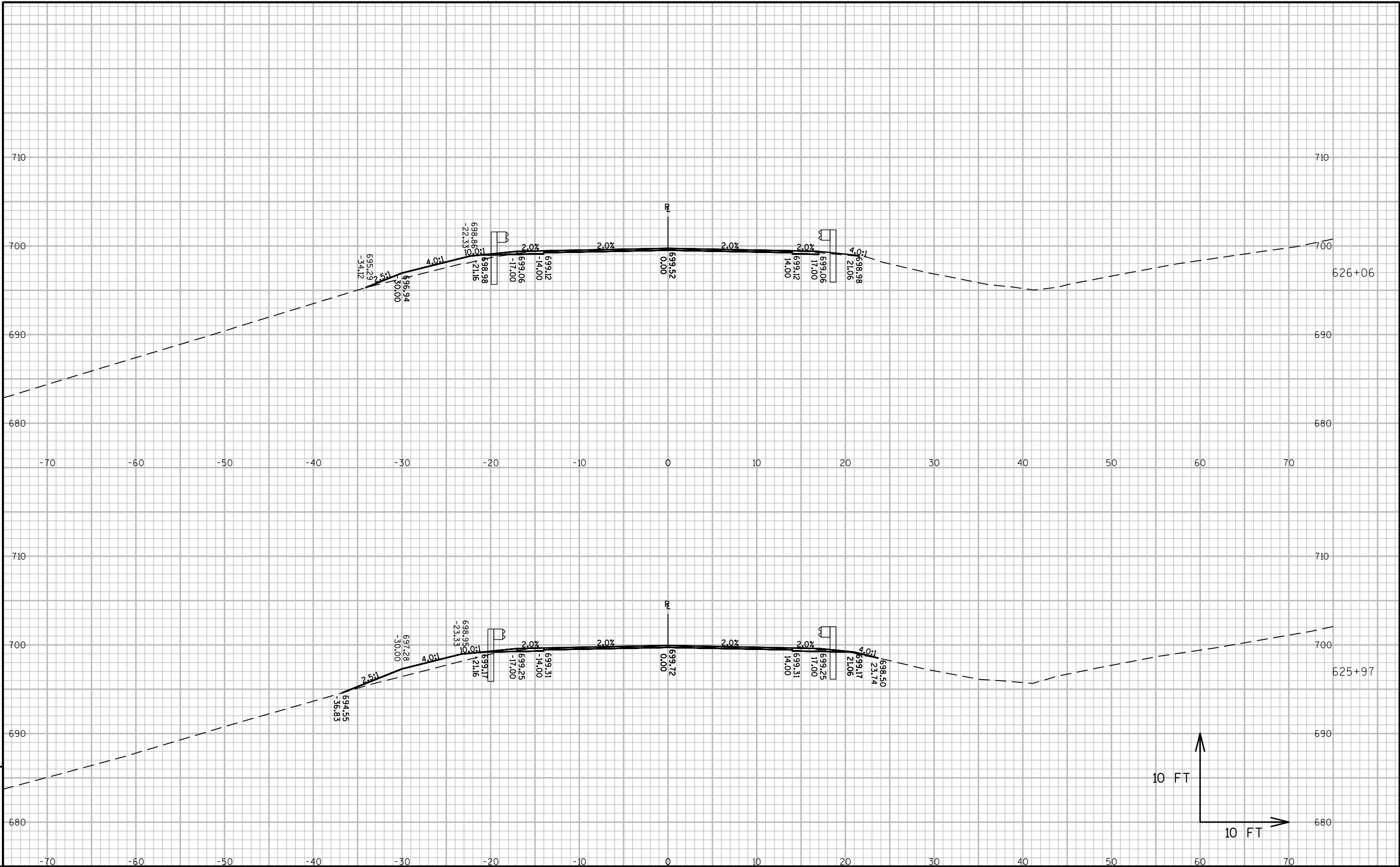


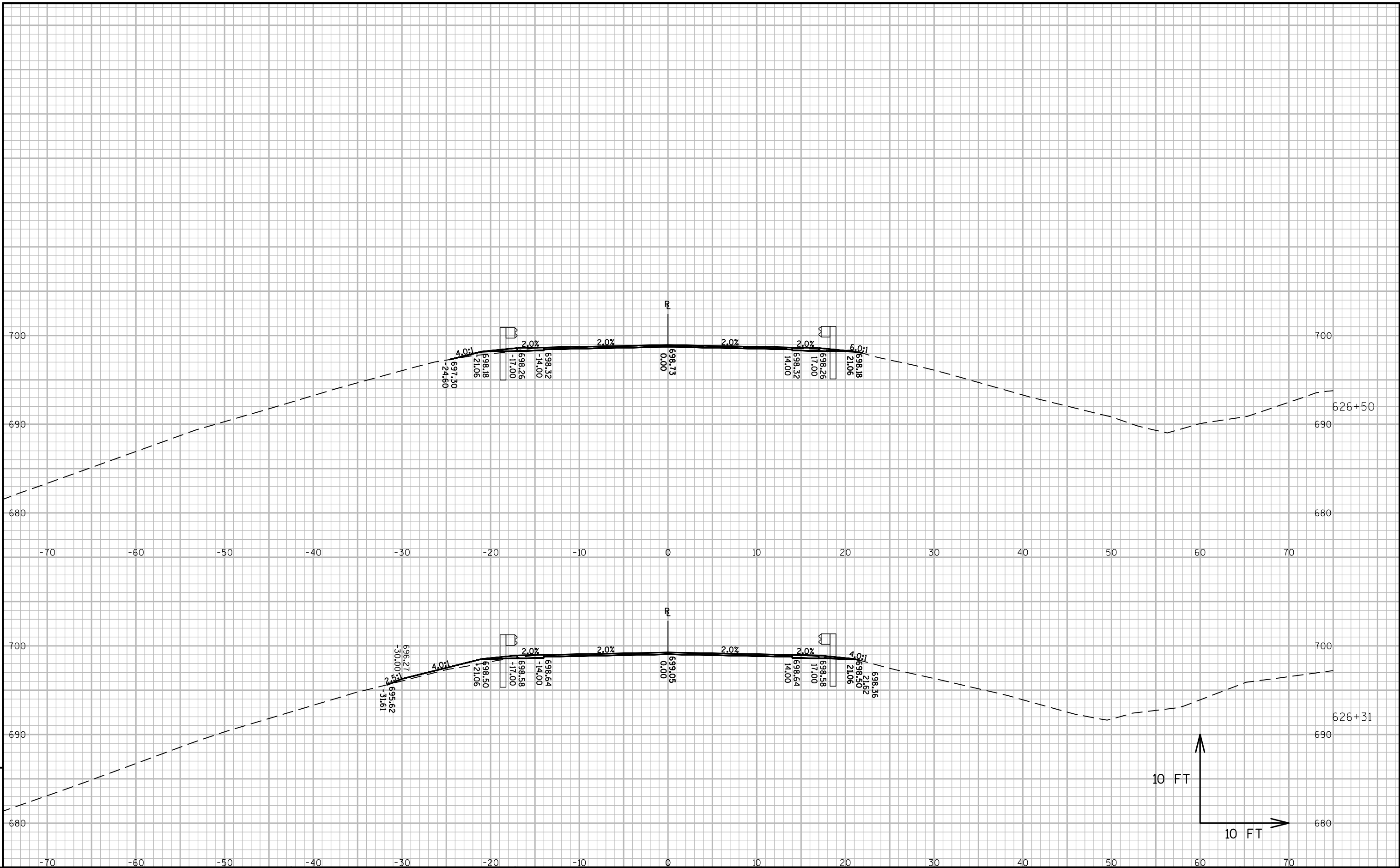


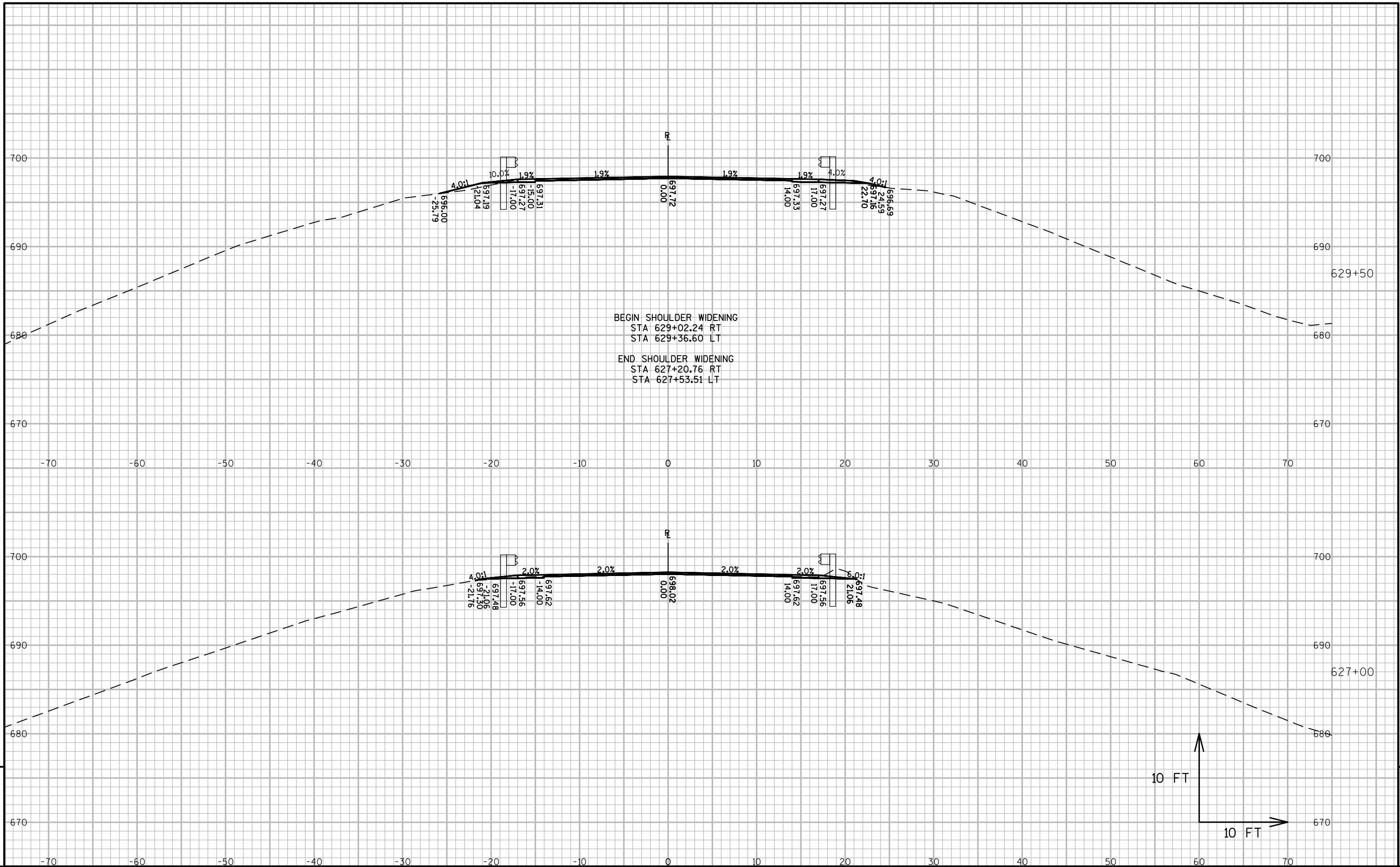


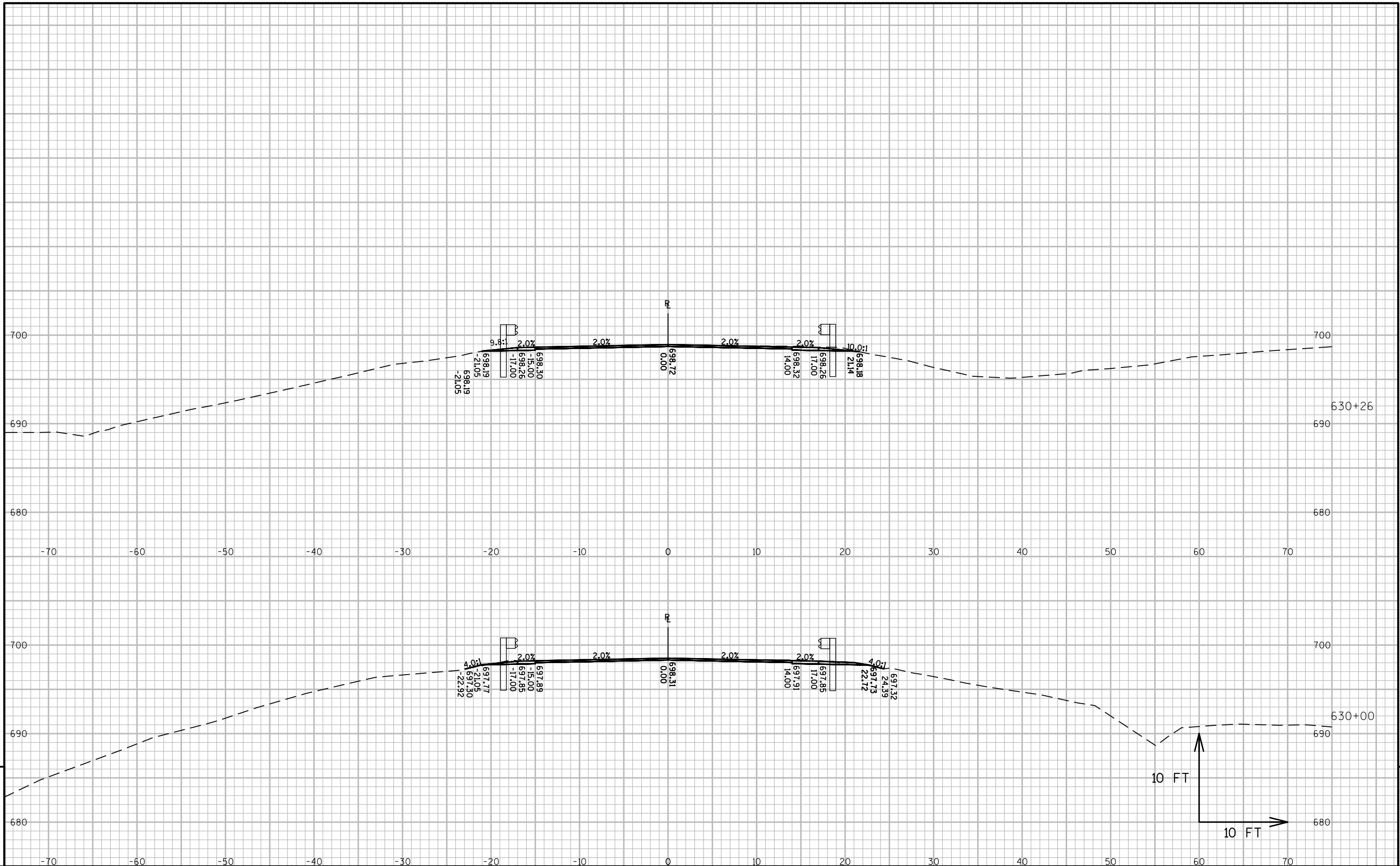


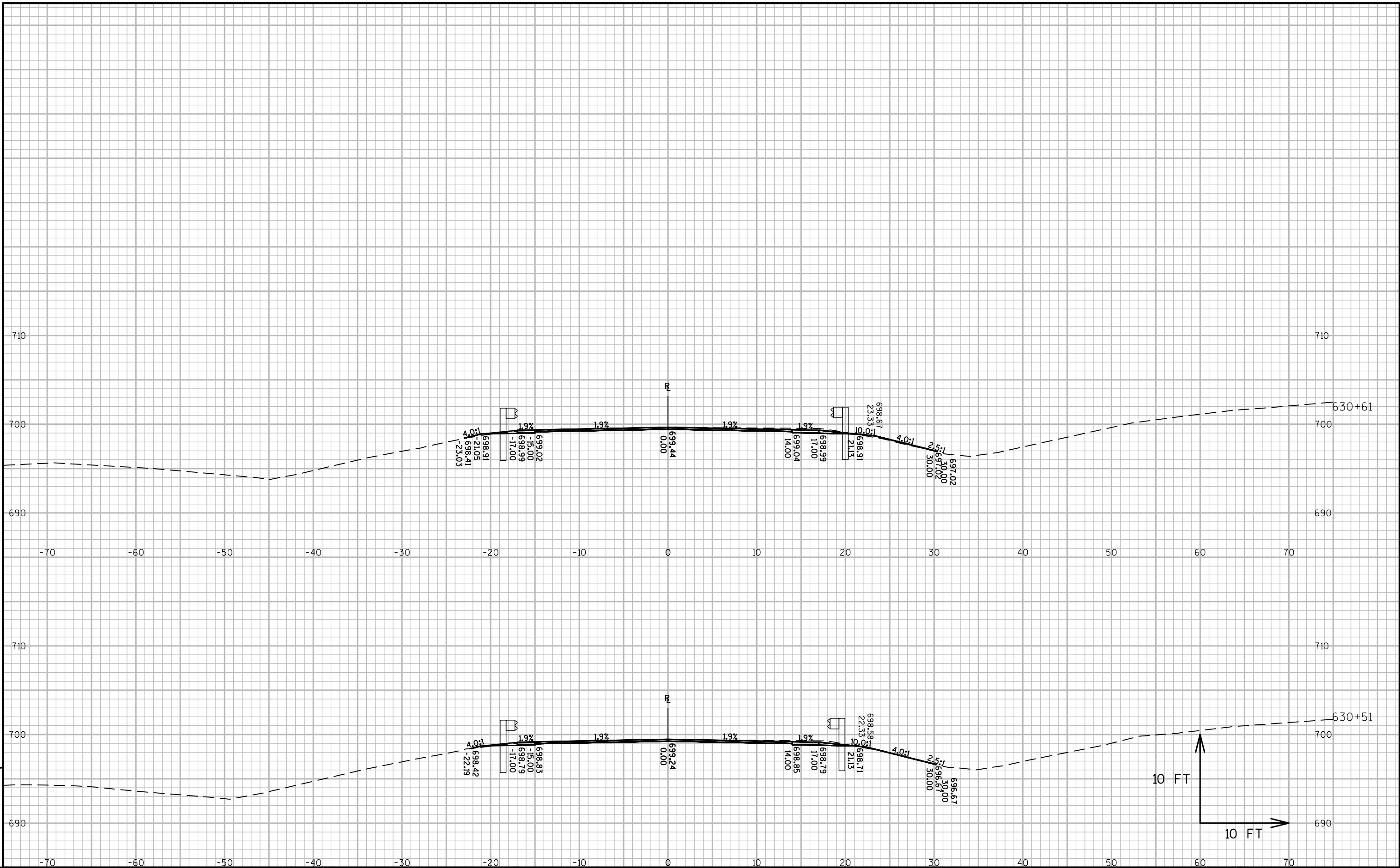


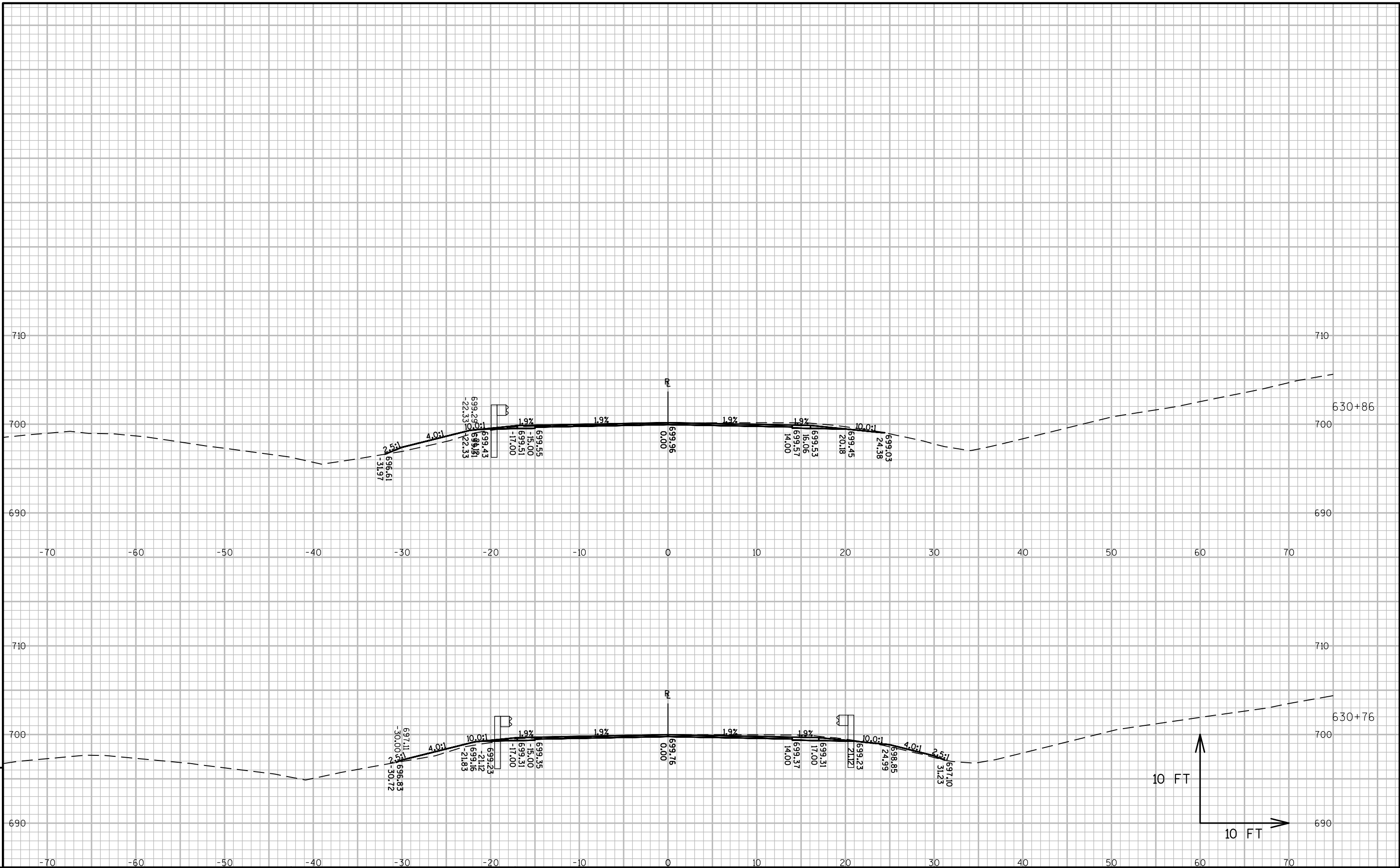


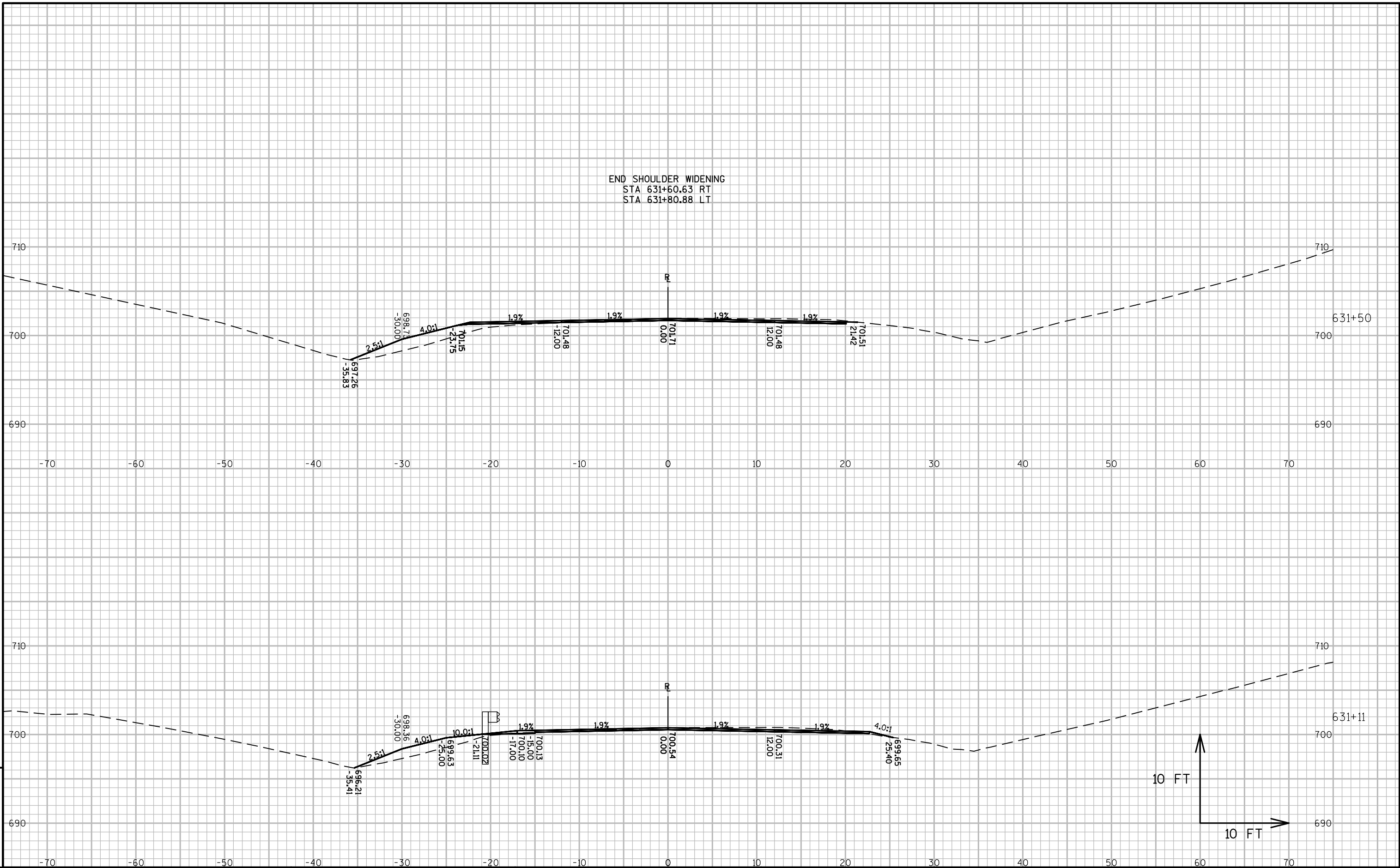






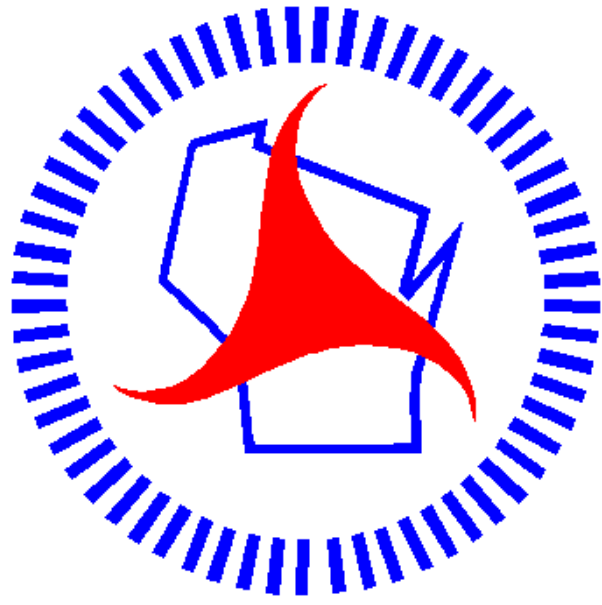






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