

GRE NOVEMBER 2020
PROJECT ID: 9180-31-60
WITH: N/A

9180-31-60

COUNTY: OCONTO

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

OCONTO FALLS - OCONTO

USH 141 - USH 41

STH 22

OCONTO COUNTY

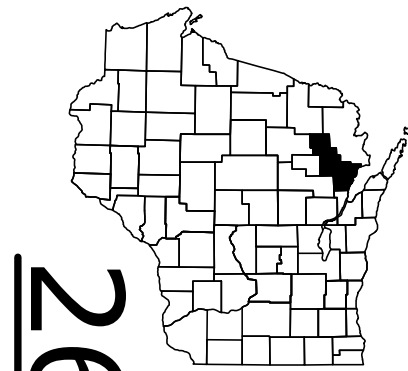
STATE PROJECT NUMBER
9180-31-60

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
9180-31-60	WISC 2020548	1

ORDER OF SHEETS

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

TOTAL SHEETS = 148



26

DESIGN DESIGNATION 9180-31-60

A.A.D.T.	2020	=	4,200
A.A.D.T.	2040	=	5,000
D.H.V.		=	555
D.D.		=	60/40
T.		=	10.8%
DESIGN SPEED		=	55 MPH
ESALS		=	1,300,000

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	

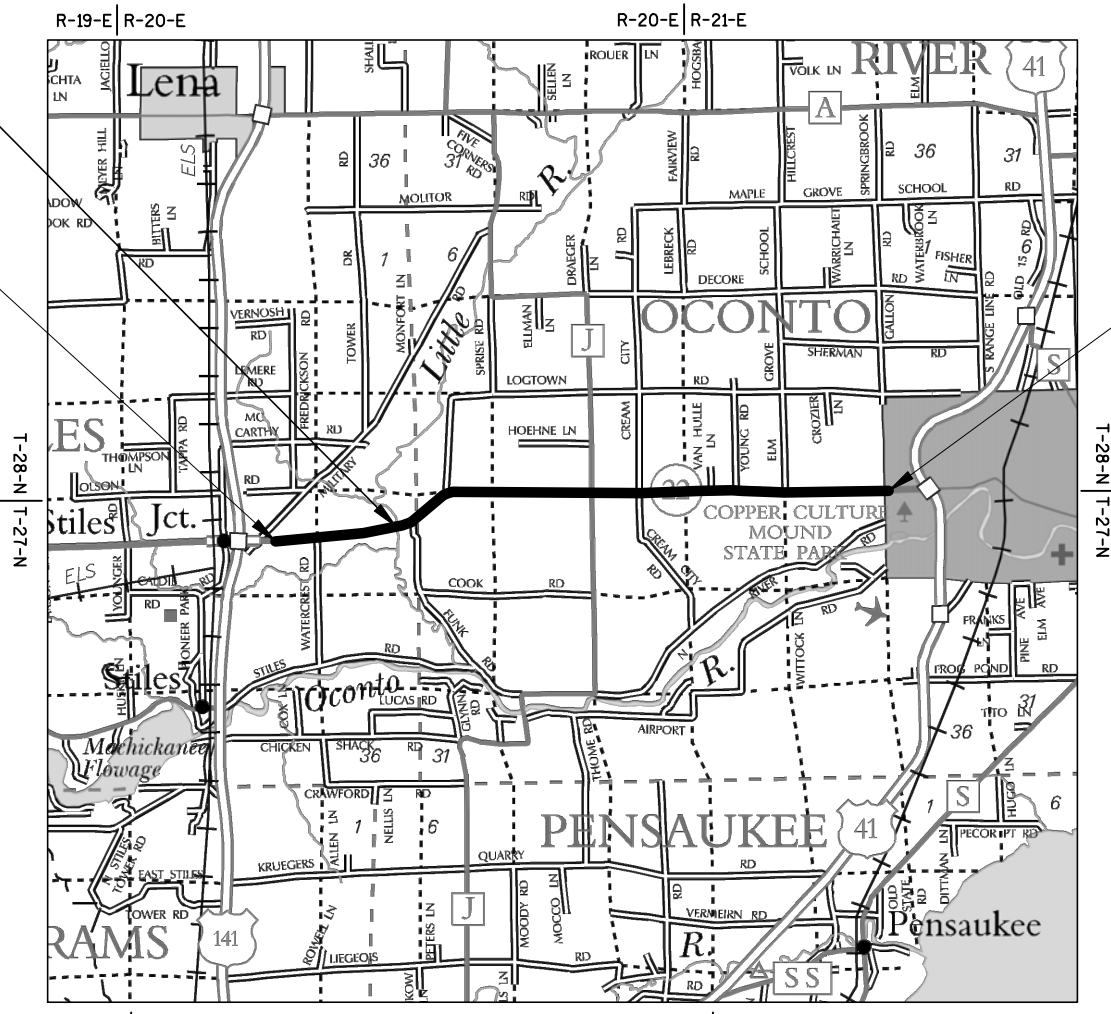
PROFILE

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	

EXCEPTION TO NET C/L LENGTH
STA 381+69 TO STA 382+91

BEGIN PROJECT
STA 312+88.39
Y=178497.6694
X=566662.2355

END PROJECT
STA 668+22.82



LAYOUT
SCALE 0 2 MI
TOTAL NET LENGTH OF CENTERLINE = 6.707 MILES

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

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NATIONAL AMERICAN VERTICAL DATUM OF (2012) (NAVD88).

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY	Surveyor	WISDOT NE REGION
Designer	K. LORENZ	
Project Manager	M. TERNES	
Regional Examiner		
Regional Supervisor	D. SEGERSTROM	

APPROVED FOR THE DEPARTMENT
DATE: 4/10/2020

(Signature)

E

GENERAL NOTES

THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

PAVING LIMITS AT INTERSECTIONS ARE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

UTILITIES

COMMUNICATIONS

CENTURYLINK
PETE JOHNSON
224 INDUSTRIAL DRIVE
NORTH PRAIRIE, WI 53153
PHONE: 715-938-1480
EMAIL: PETER.S.JOHNSON@CENTURYLINK.COM

NET LEC, LLC
DENNIS LAFAVE
450 SECURITY BLVD
P.O. BOX 19079
GREEN BAY, WI 54307-9079
PHONE: 920-619-9774
EMAIL: DLAFAVE@MI-TECH.COM

ELECTRICITY

ATC MANAGEMENT, INC.
CHRIS DAILEY
W 234 N 2000 RIDGEVIEW PARKWAY CT
P.O. BOX 47
WAUKESHA, WI 53187-0047
PHONE: 262-506-6884
EMAIL: CDAILEY@ATCLLC.COM

OCONTO ELECTRIC COOPERATIVE
JACK PARDY
7479 REA ROAD
OCONTO FALLS, WI 54154
PHONE: 920-846-2816
EMAIL: JPARDY@OCONTOELECTRIC.COM

SEWER/WATER

CITY OF OCONTO
JEREMY WUSTERBARTH
1616 MAIN STREET
OCONTO, WI 54153
PHONE: 920-834-7725
EMAIL: JEREMY@CITYOFOCONTO.COM

DNR AREA LIAISON

CONTACT: JIM DOPERALSKI
DEPARTMENT OF NATURAL RESOURCES
NORTHEAST REGION
2984 SHAWANO AVENUE
GREEN BAY, WI 54313
PHONE: 920-412-0165
EMAIL: JAMES.DOPERALSKI@WISCONSIN.GOV

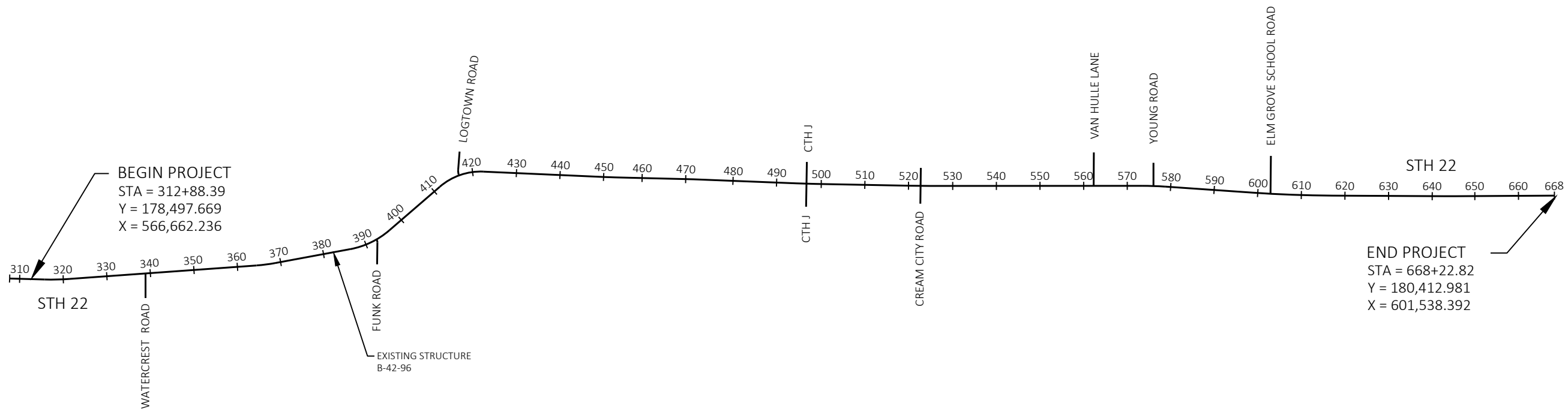
COUNTY SURVEYOR OR SURVEYS CONTACT PERSON

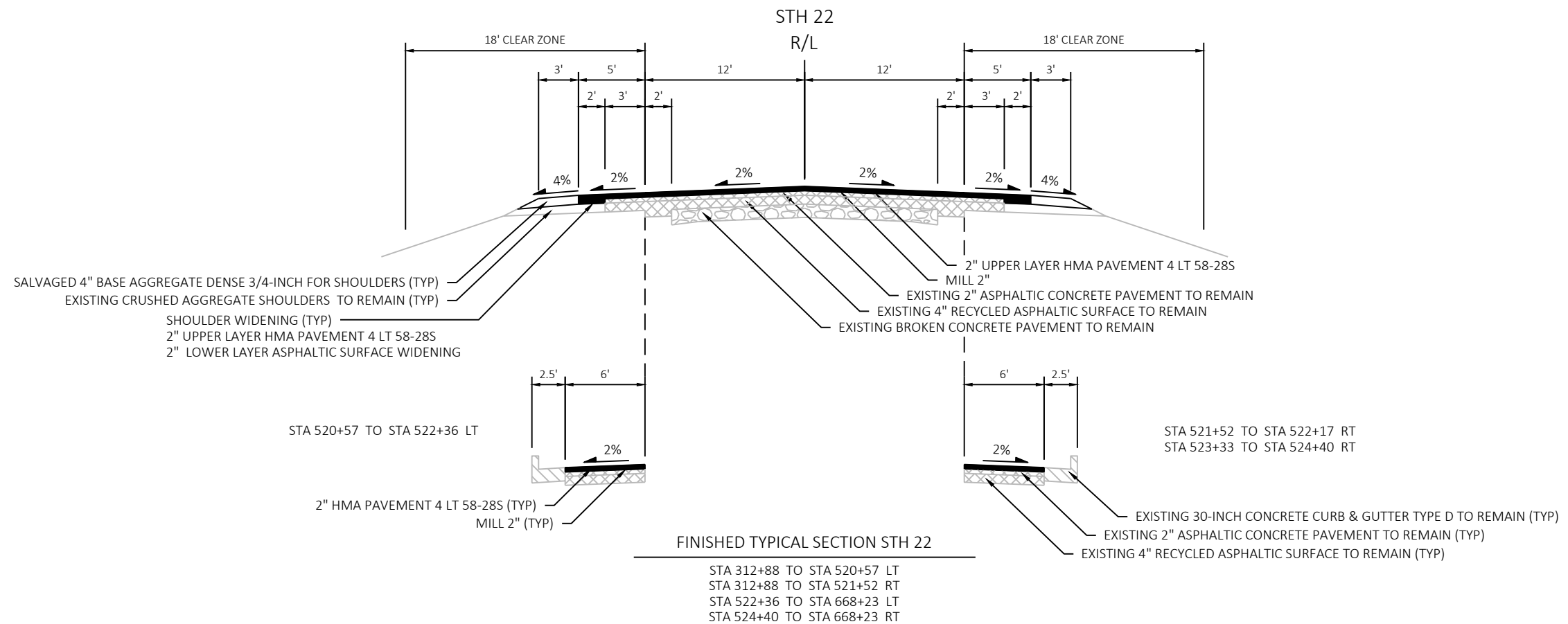
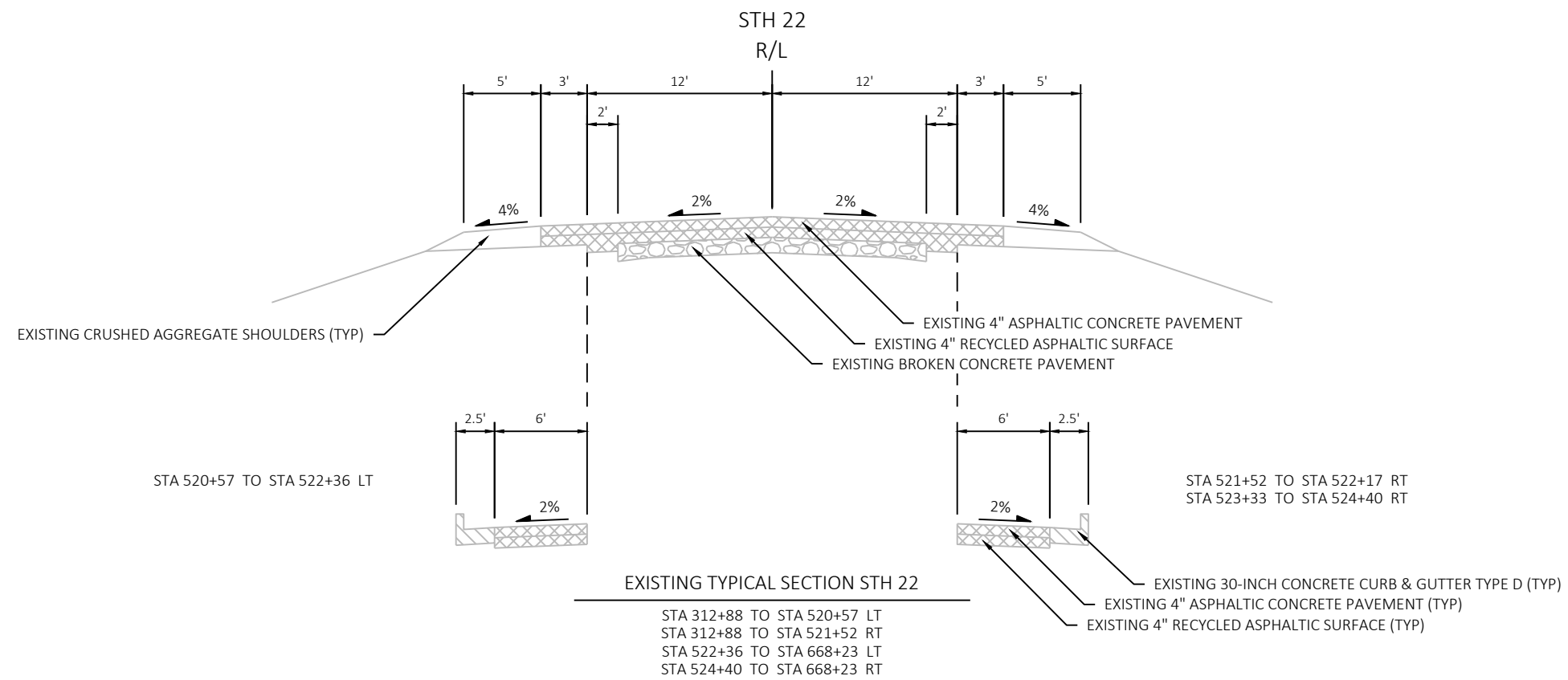
CONTACT: CORMAC MCINNIS
NORTHEAST REGIONAL SURVEY
COORDINATOR
GREEN BAY, WI 54304
PHONE: 920-492-5638
EMAIL: CORMAC.MCINNIS@DOT.WI.GOV

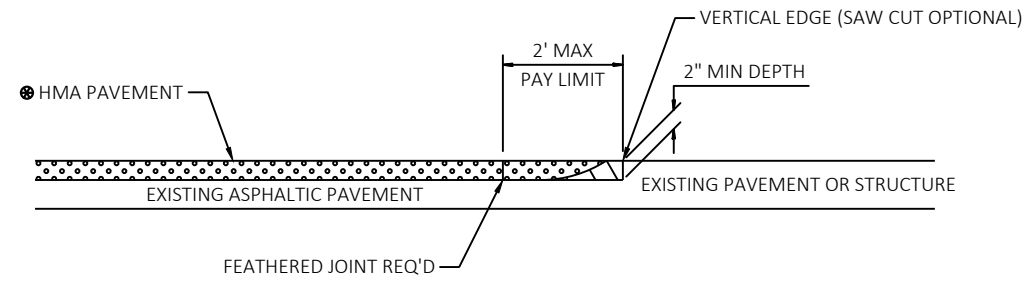
WISDOT CONTACT PERSON

CONTACT: MATTHEW TERNES, P.E.
NORTHEAST REGION PROJECT MANAGER
944 VANDERPERREN WAY
GREEN BAY, WI 54303
PHONE: 920-366-3028
EMAIL: MATTHEW.TERNES@DOT.WI.GOV







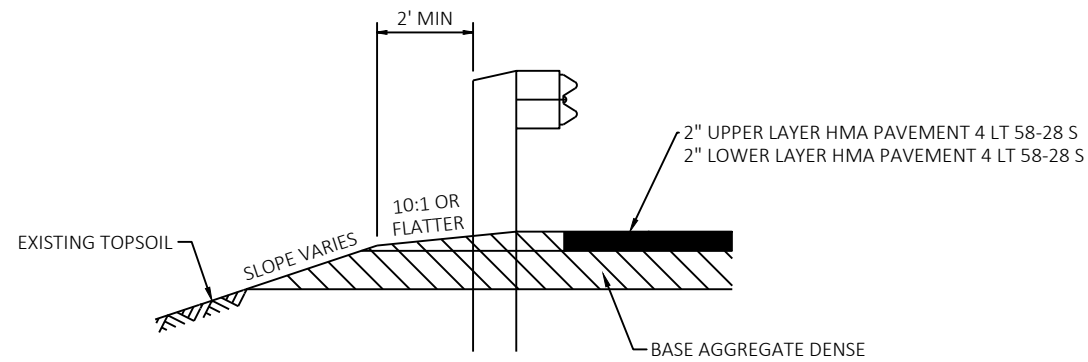


⊕ SEE TYPICAL CROSS SECTION FOR PAVEMENT TYPE AND THICKNESS OF INDIVIDUAL LAYERS

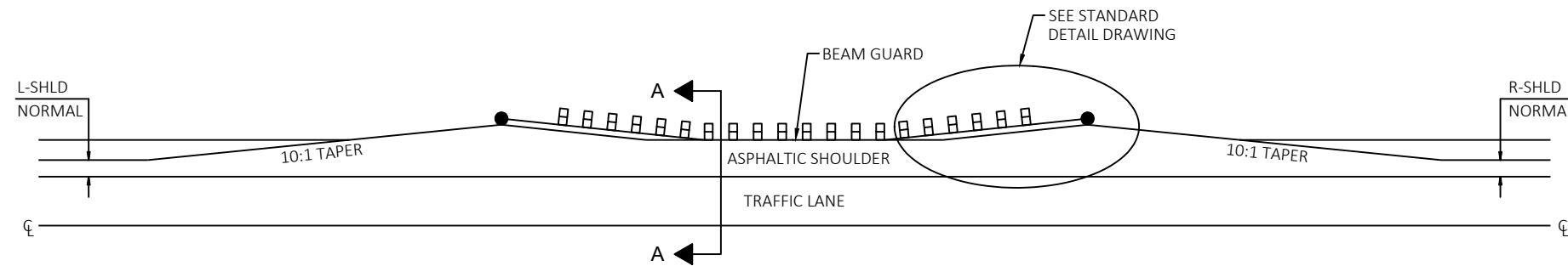
REMOVING ASPHALTIC SURFACE, MILLING

REMOVE ASPHALTIC SURFACE WEDGE AT BUTT JOINT TO CREATE VERTICAL EDGE

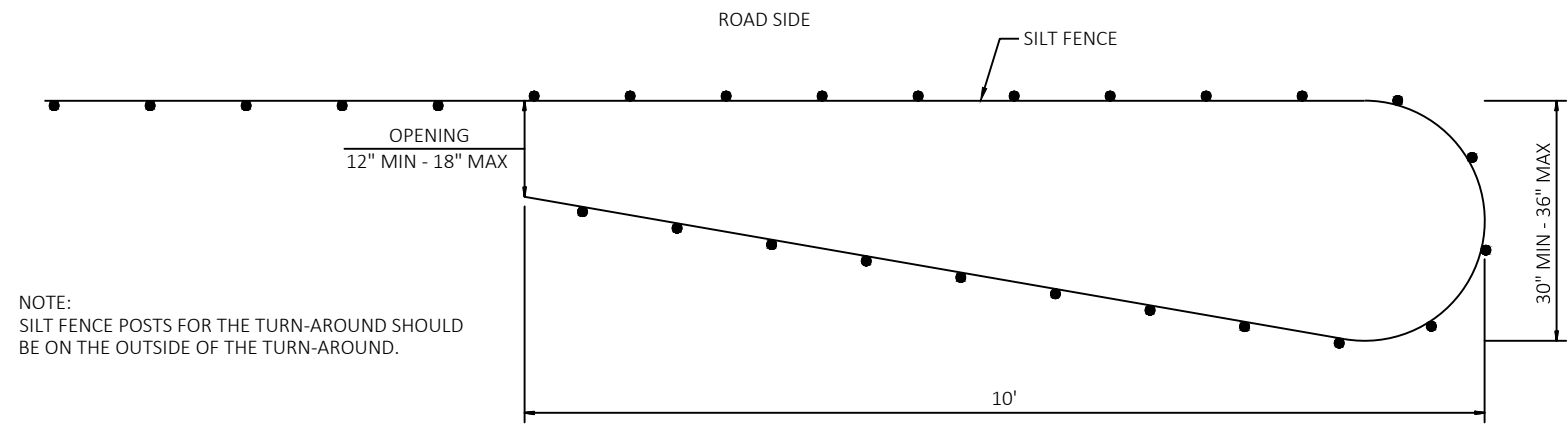
BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)



SECTION A-A



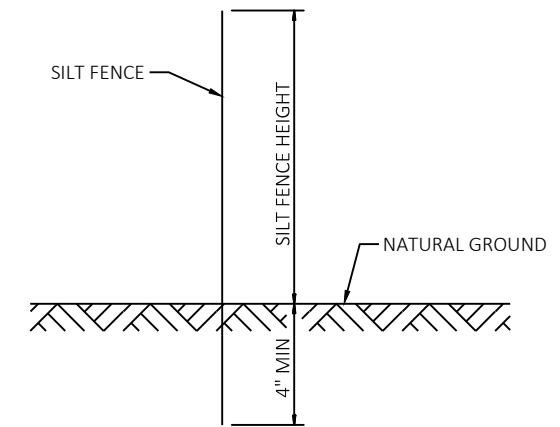
DETAIL FOR ASPHALTIC SHOULDER AT BEAM GUARD



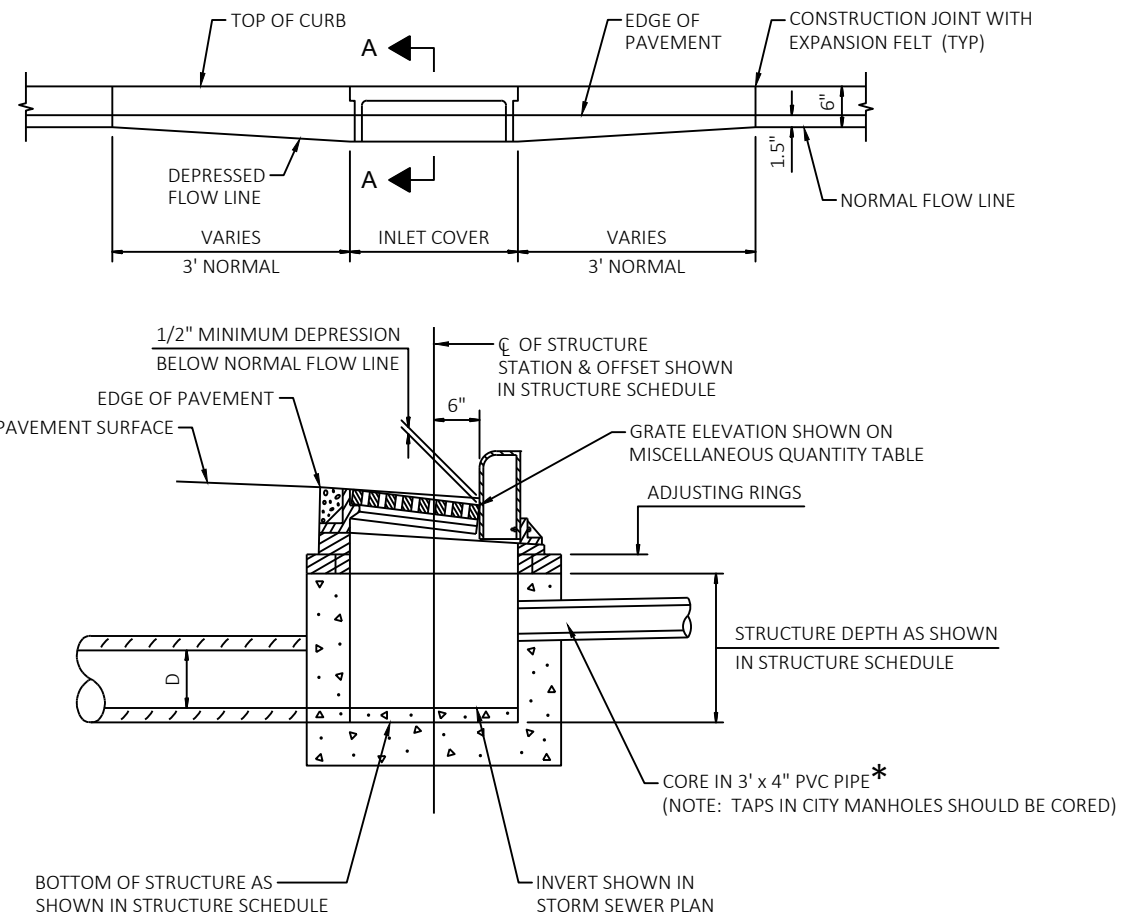
NOTE:
SILT FENCE POSTS FOR THE TURN-AROUND SHOULD
BE ON THE OUTSIDE OF THE TURN-AROUND.

PLAN VIEW

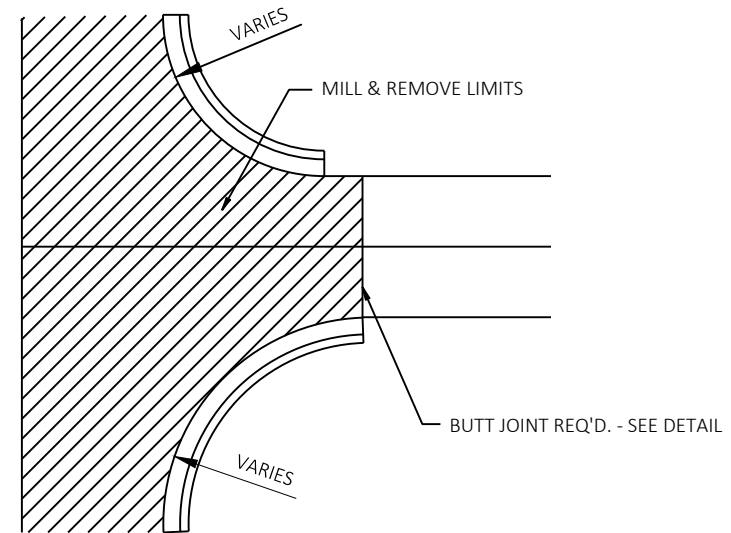
SILT FENCE TURN-AROUND DETAIL



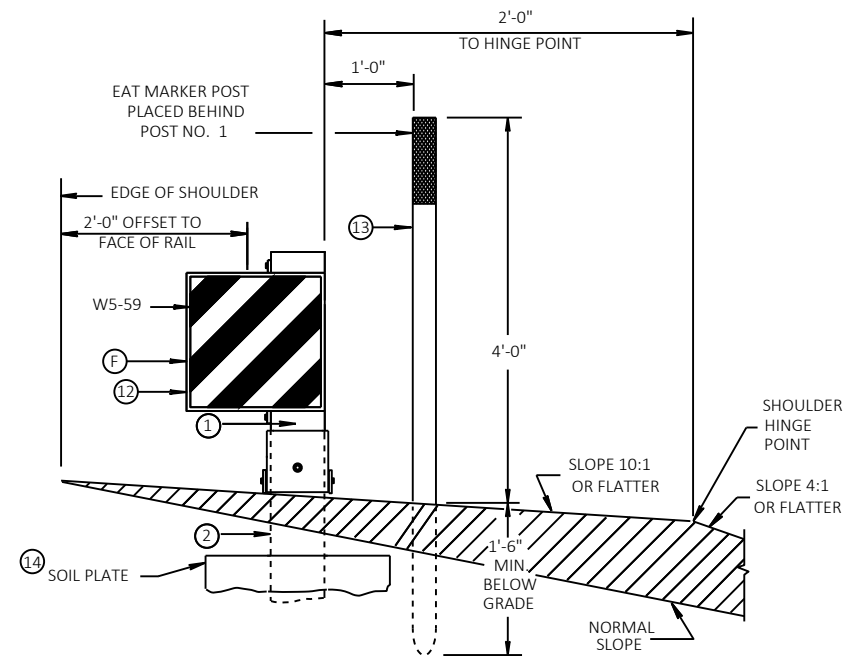
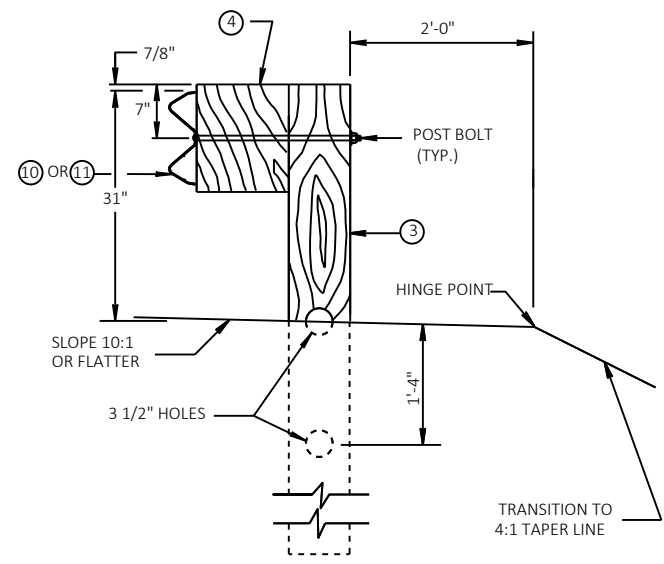
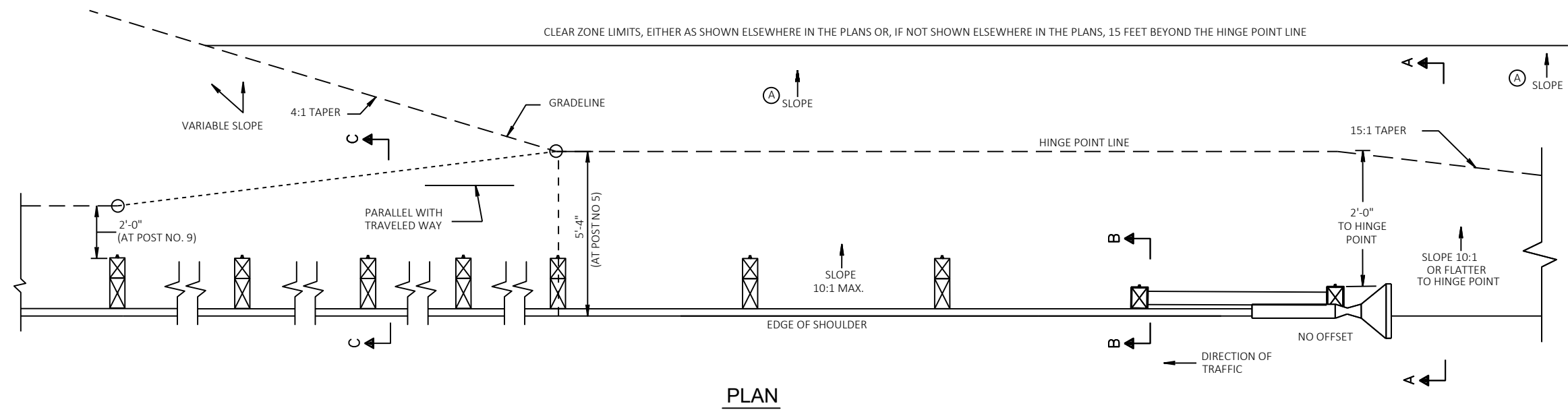
SIDE VIEW



SECTION A-A
DETAIL OF CURB AND GUTTER AT INLETS
 * STA 522+51, LT



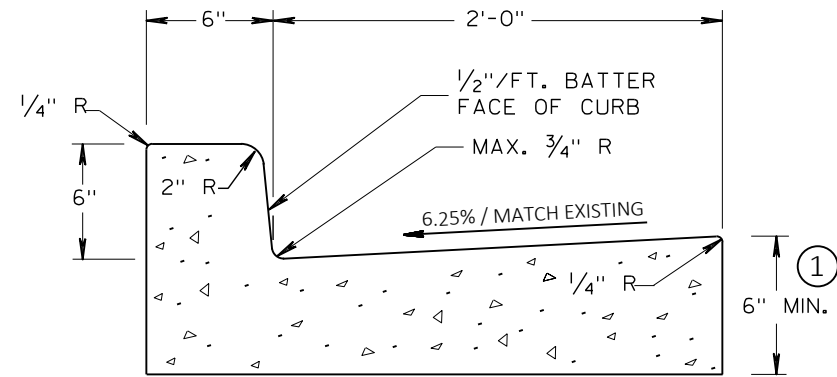
SIDEROAD PAVING DETAIL - CURB & GUTTER TO REMAIN



NOTE:
SEE SDD "MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)" FOR OTHER DETAILS AND NOTES.

MIDWEST GUARDRAIL SYSTEM EAT WITH NO OFFSET

STA 383+12 RT - STA 384+75 RT



CONCRETE CURB AND GUTTER TYPE D

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 TRAVERSE GUTTER SLOPE.

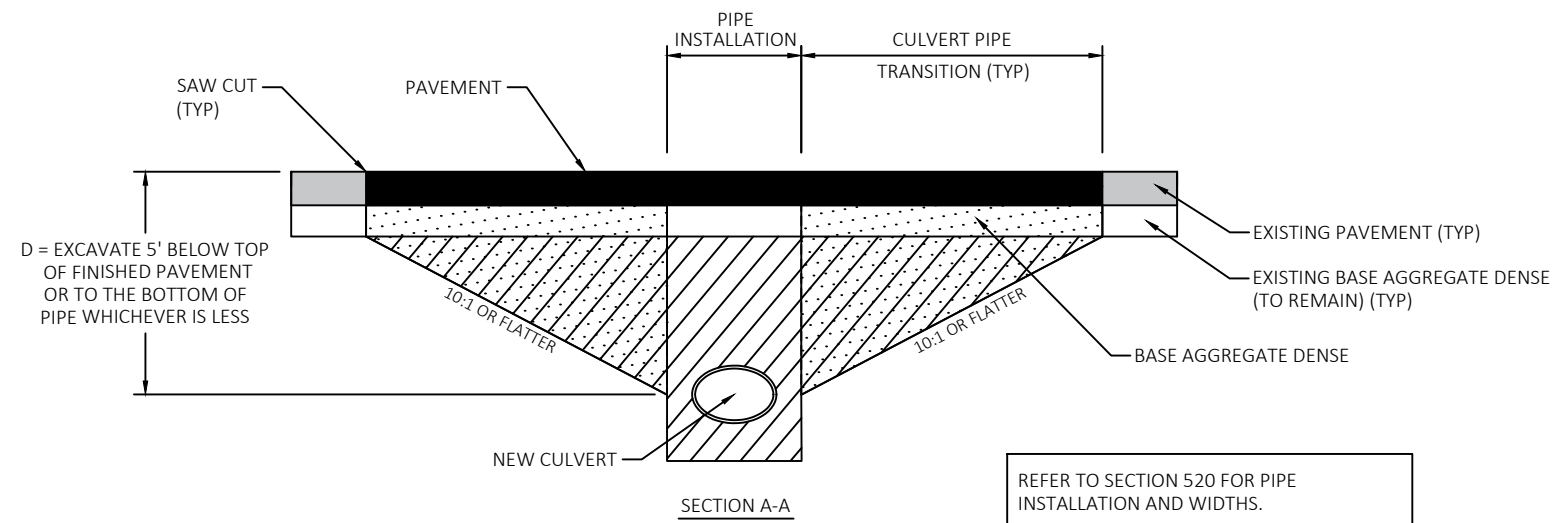
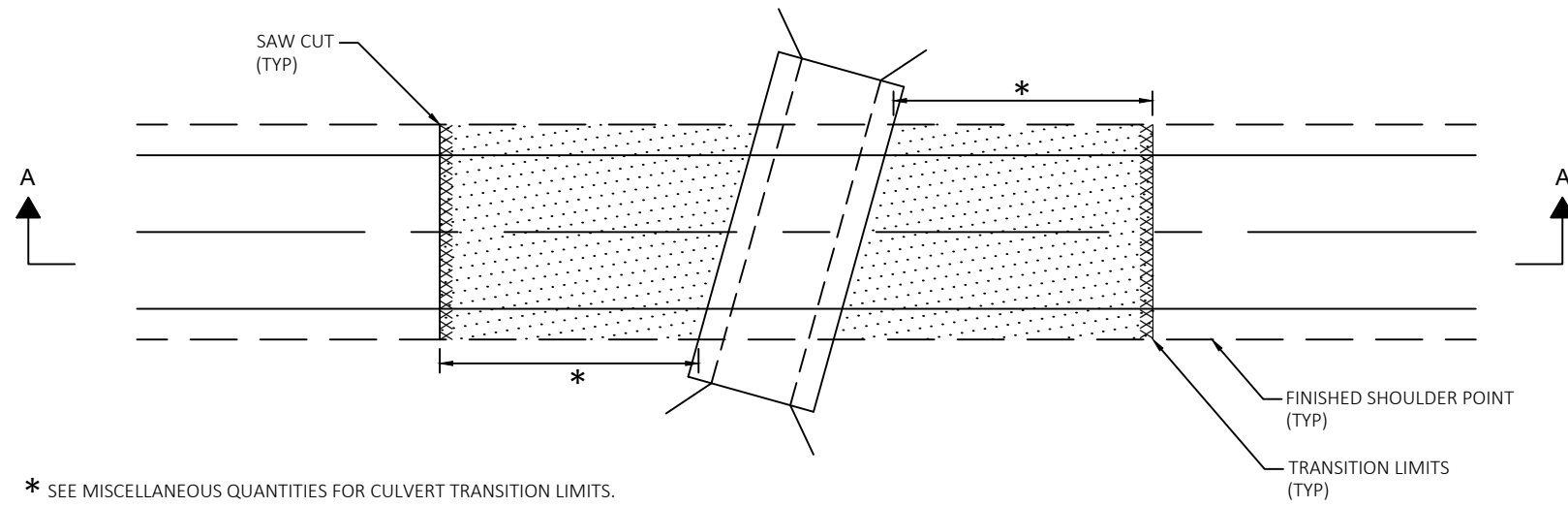
WHERE THE TRAVERSE JOINTS IN THE PAVEMENT ARE REQUIRED TO BE SEALED, THE JOINTS IN THE INTEGRAL CURB & GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME TYPE OF SEALANT, THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB & GUTTER.

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

① 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.

PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

PAVEMENT THICKNESS	MAXIMUM PANEL WIDTH
LESS THAN 10"	12'
10" & ABOVE	15'



COMMON EXCAVATION

FOUNDATION BACKFILL

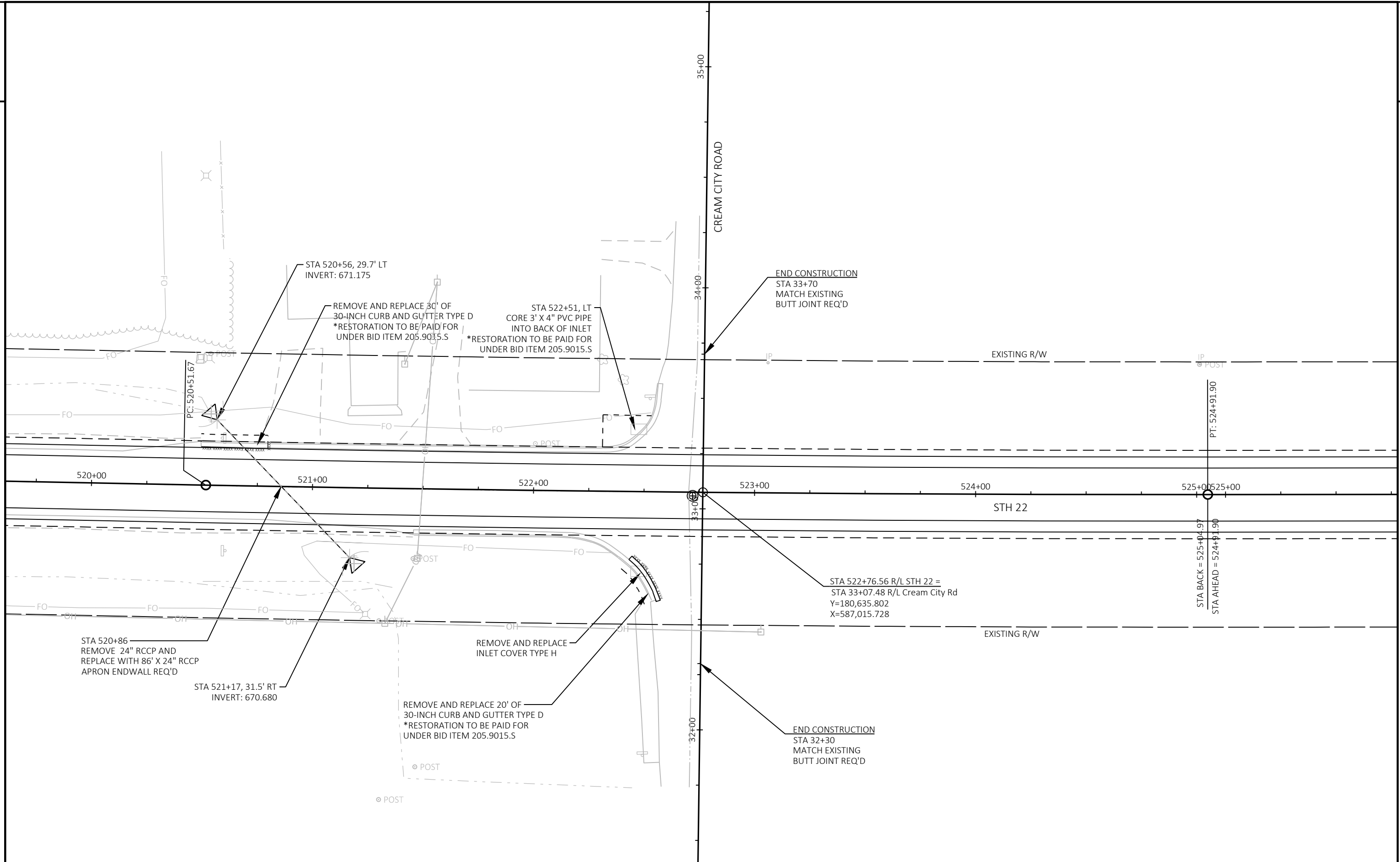
REFER TO SECTION 520 FOR PIPE INSTALLATION AND WIDTHS.

CONSTRUCT TRANSITION PERPENDICULAR TO CULVERT PIPE.

CULVERT PIPE TRANSITION AREAS WILL BE PAID UNDER THE SPV "CULVERT PIPE TRANSITION".

PAVEMENT SAW CUT TO BE PERPENDICULAR TO ROADWAY ALIGNMENT.

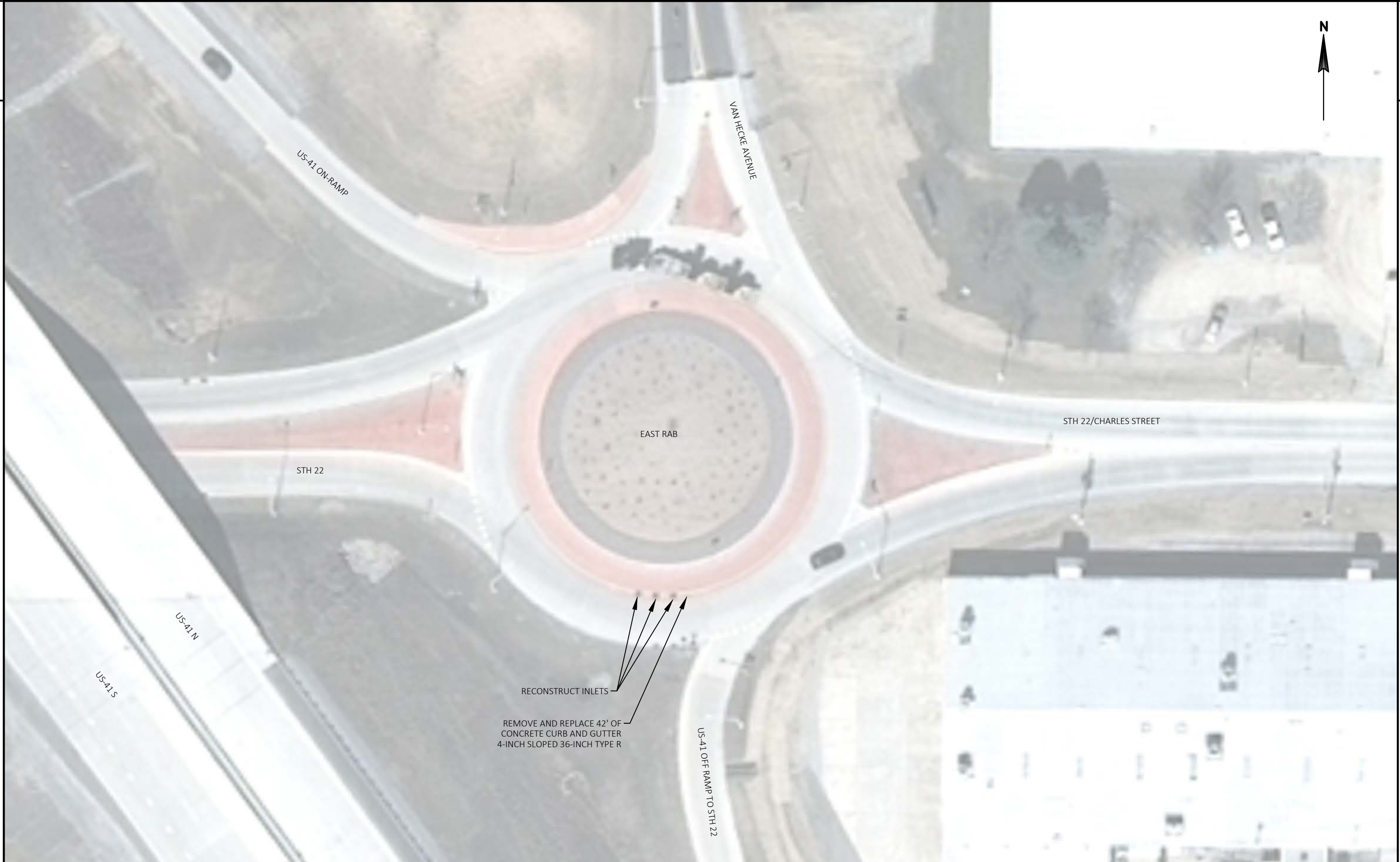
NEW CULVERT PIPES WITH TRANSITION



PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	INTERSECTION DETAIL (CREAM CITY RD)	SHEET	E
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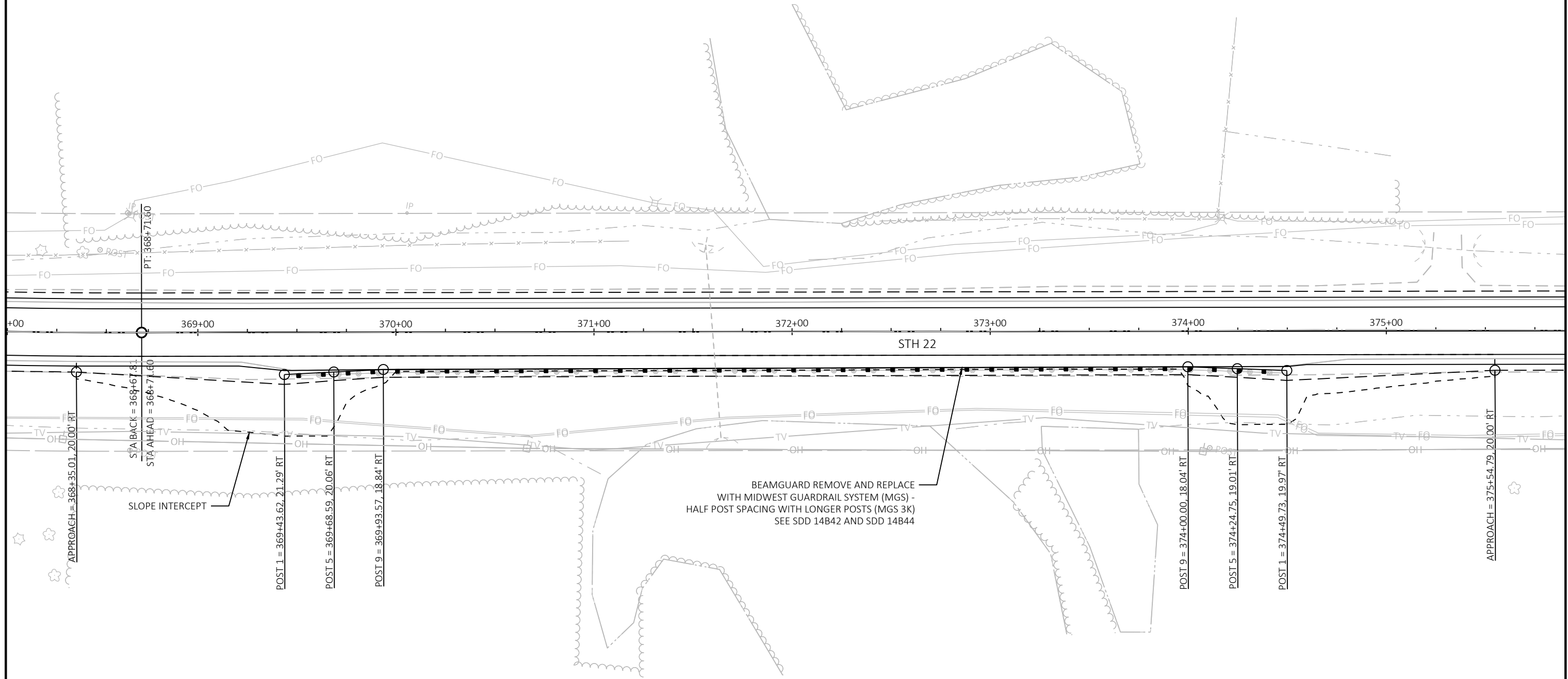
PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	WEST ROUNDABOUT DETAIL	SHEET	E
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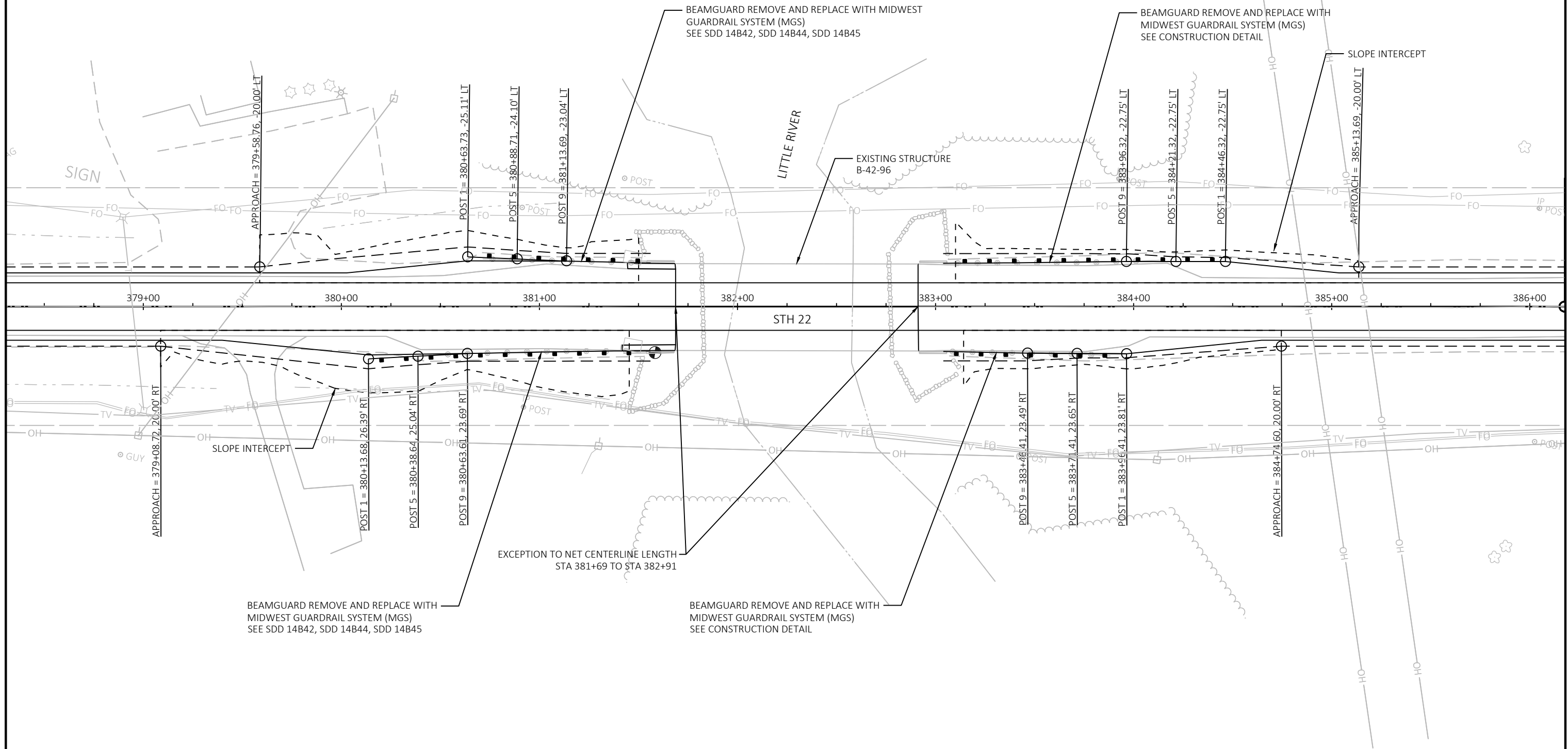


RECONSTRUCT INLETS

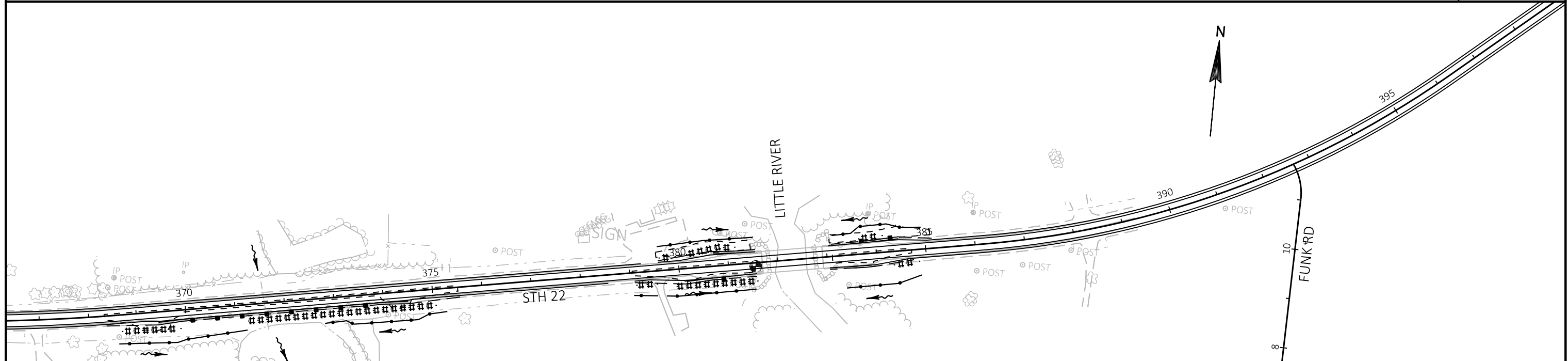
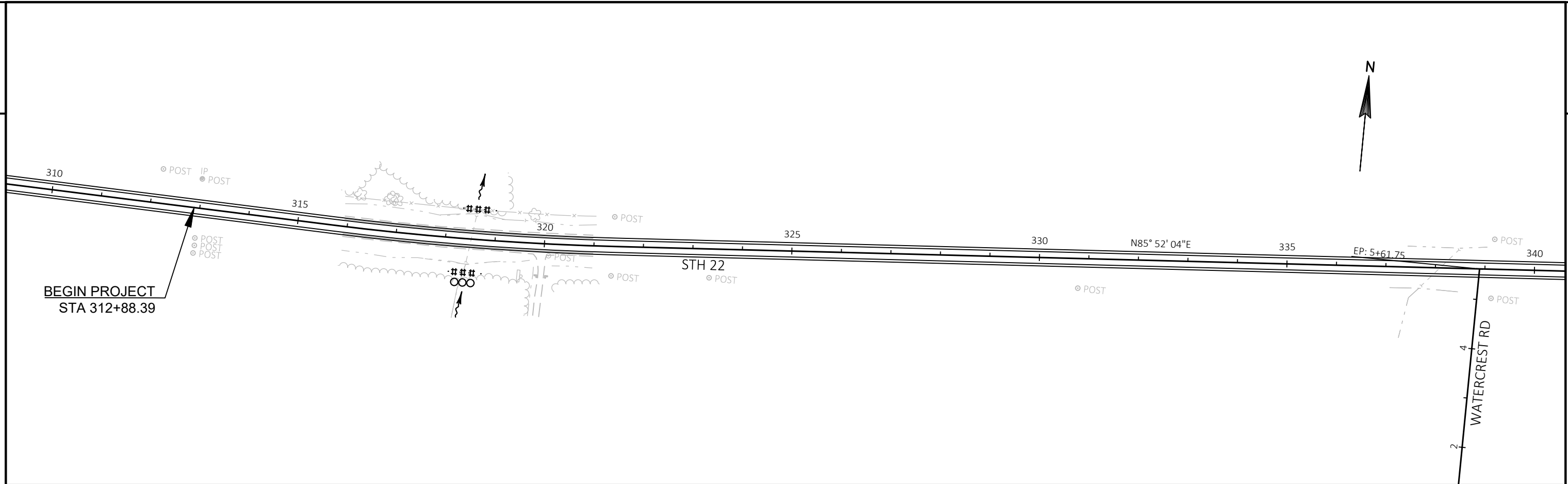
REMOVE AND REPLACE 42' OF
CONCRETE CURB AND GUTTER
4-INCH SLOPED 36-INCH TYPE R

PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	EAST ROUNDABOUT DETAIL	SHEET	E
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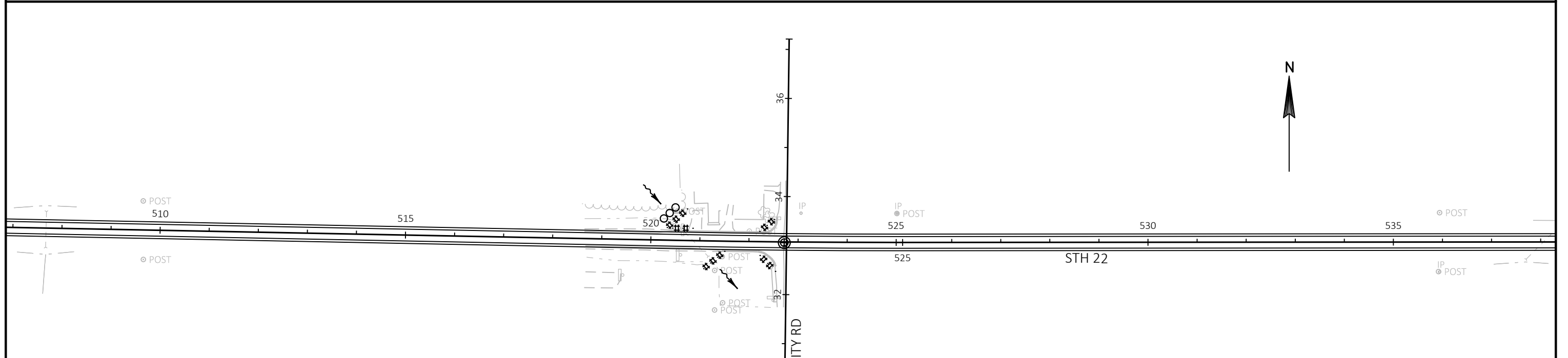
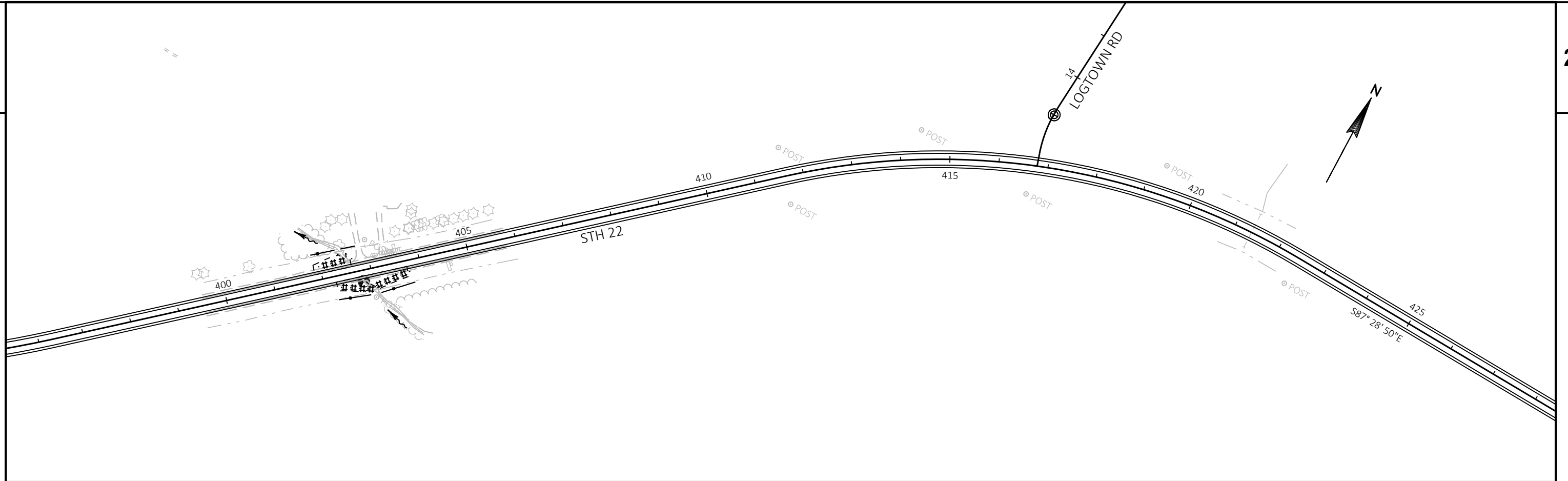


PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	PLAN DETAILS	SHEET	E
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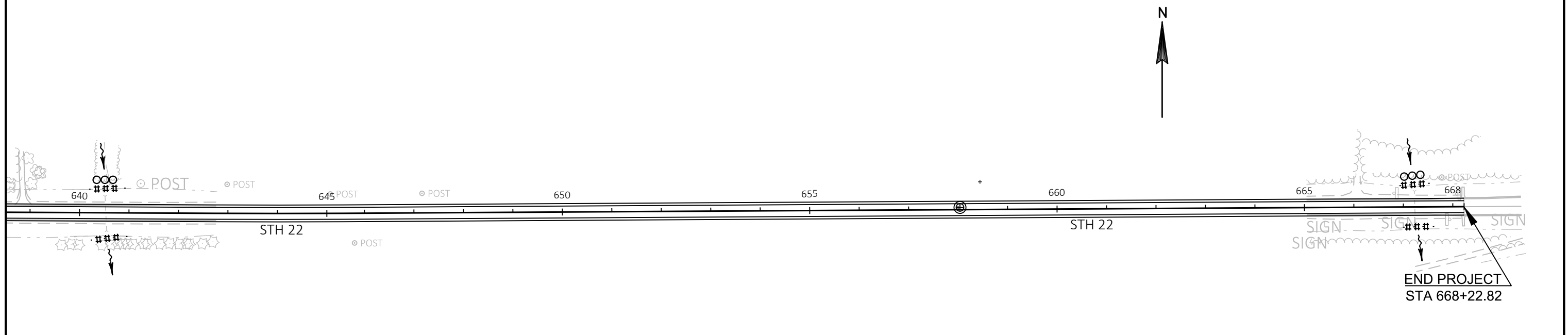
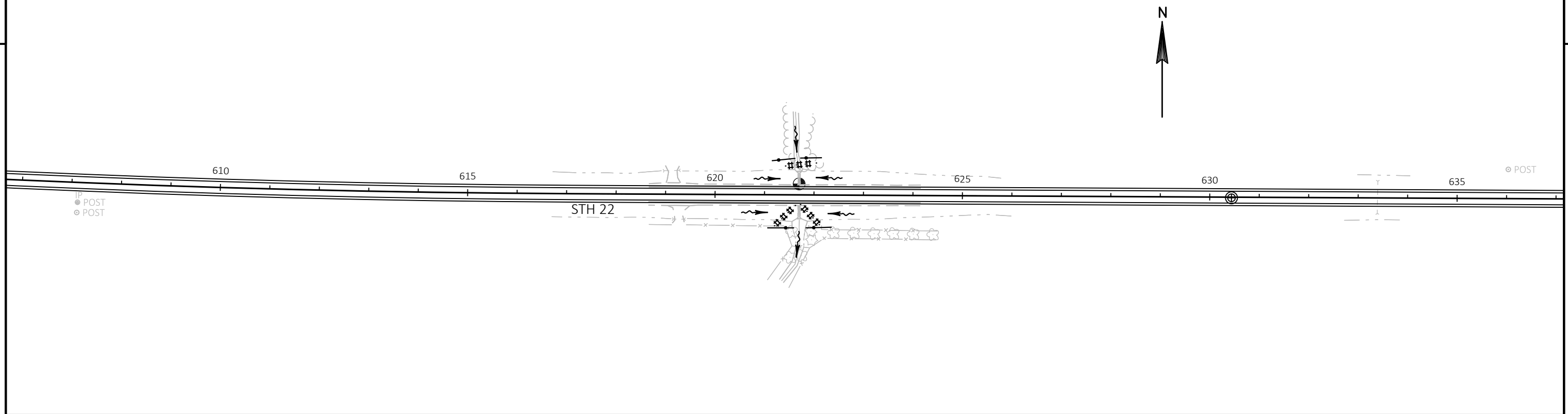


LEGEND	
#####	EROSION MAT CLASS I, TYPE B
—●—	SILT FENCE
- - -	SLOPE INTERCEPT
∞	CULVERT PIPE DITCH CHECK
~>	SURFACE WATER FLOW

PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	EROSION CONTROL	SHEET	E
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

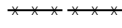

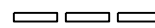





LEGEND	
#####	EROSION MAT CLASS I, TYPE B
—+—+—+—	SILT FENCE
- - - - -	SLOPE INTERCEPT
OO	CULVERT PIPE DITCH CHECK
~>	SURFACE WATER FLOW



LEGEND	
#####	EROSION MAT CLASS I, TYPE B
—●—●—●—	SILT FENCE
- - - - -	SLOPE INTERCEPT
○○	CULVERT PIPE DITCH CHECK
~>	SURFACE WATER FLOW

LEGEND

-  CRASH CUSHION
-  SIGN ON PERMANENT SUPPORT
-  REMOVING PAVEMENT MARKING
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  CONCRETE BARRIER TEMPORARY PRECAST
-  FLAGS 16"x16" MIN (ORANGE)
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  DIRECTION OF TRAFFIC

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.

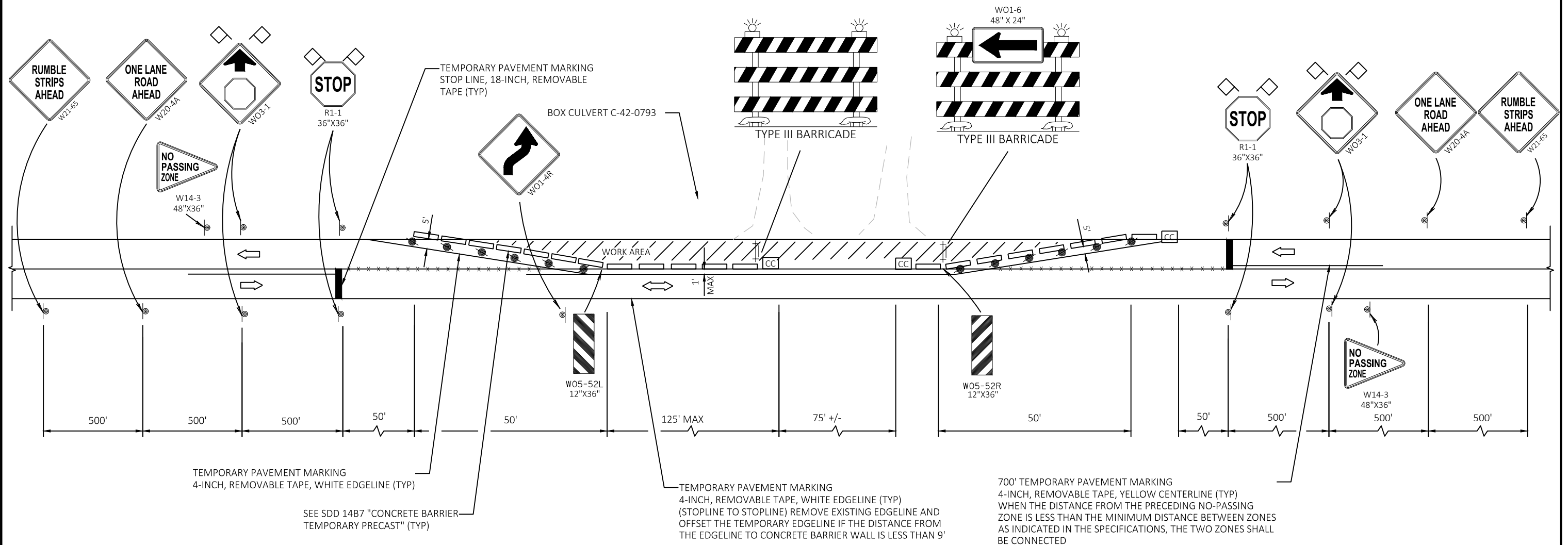
"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

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.



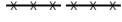

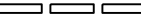



PLACE TEMPORARY PAVEMENT MARKING EDGELINE AND CENTERLINE, AND REMOVE EXISTING PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS OR AS NOTED ON DETAIL.

500-FOOT SPACING SHOWN IS FOR ROADWAYS WITH A PRE-CONSTRUCTION REGULATORY SPEED LIMIT OF 45 MPH OR MORE.



TRAFFIC CONTROL ONE LANE ROAD STOP CONDITION FOR WESTBOUND TRAFFIC - C-42-793

LEGEND

-  CRASH CUSHION
-  SIGN ON PERMANENT SUPPORT
-  REMOVING PAVEMENT MARKING
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  CONCRETE BARRIER TEMPORARY PRECAST
-  FLAGS 16"x16" MIN (ORANGE)
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  DIRECTION OF TRAFFIC

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.

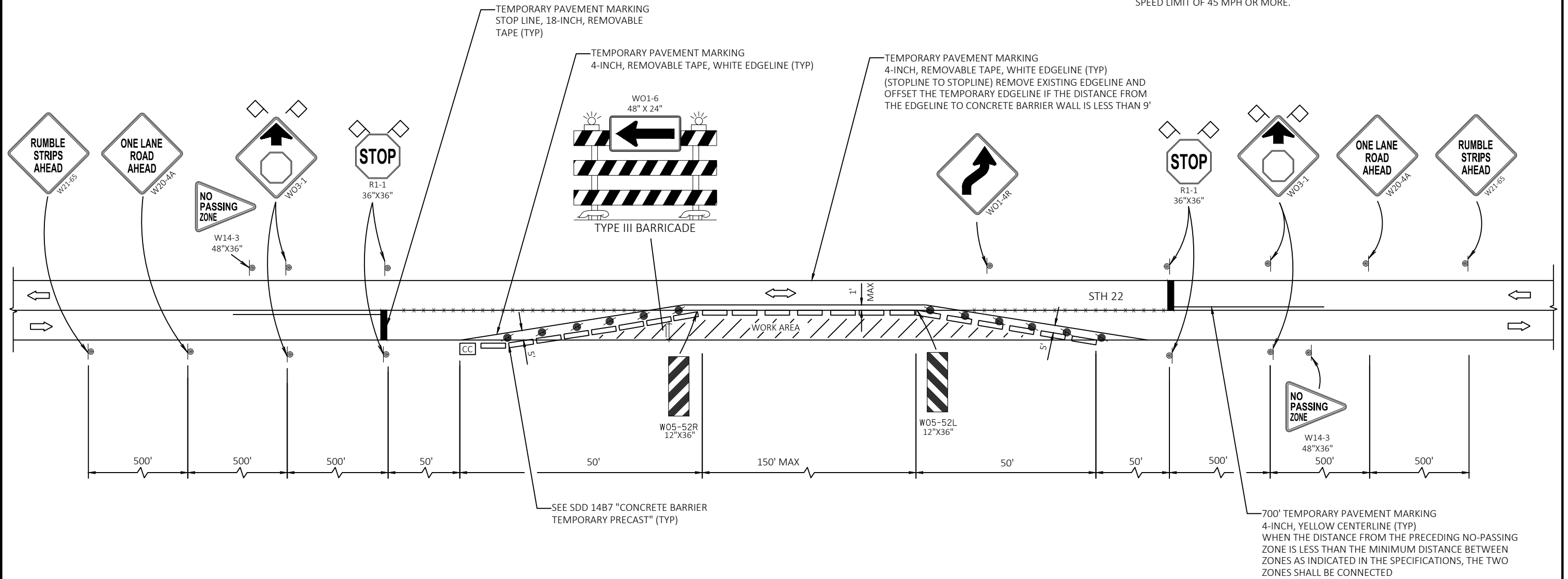
"WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.

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.



TRAFFIC CONTROL ONE LANE ROAD STOP CONDITION FOR EASTBOUND TRAFFIC - C-42-793



ELM GROVE SCHOOL RD



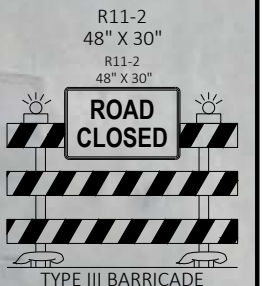
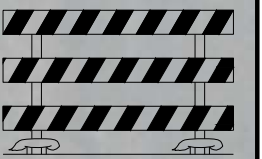
W20-3A
48" X 48"



W20-3C
48" X 48"



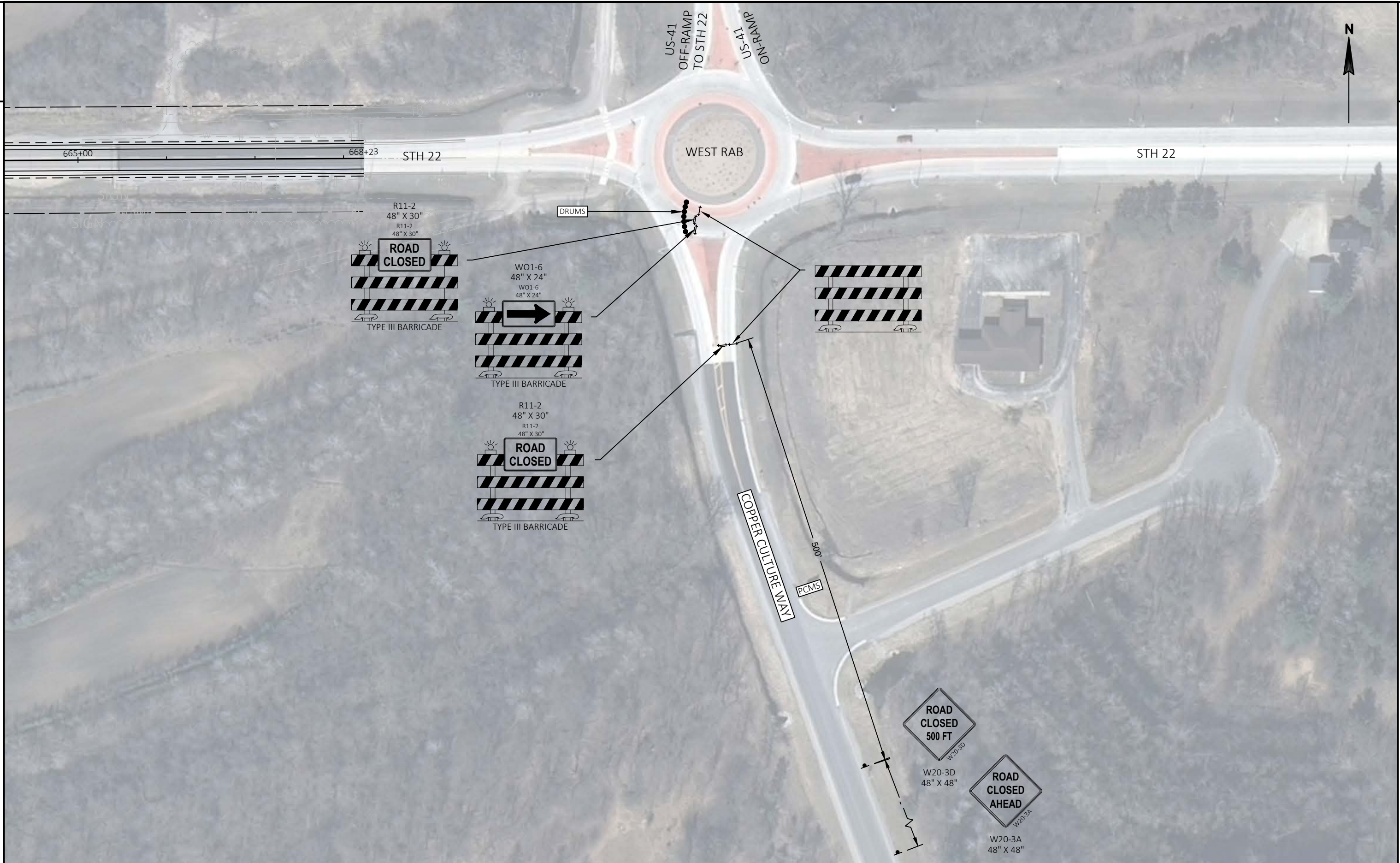
W20-3D
48" X 48"



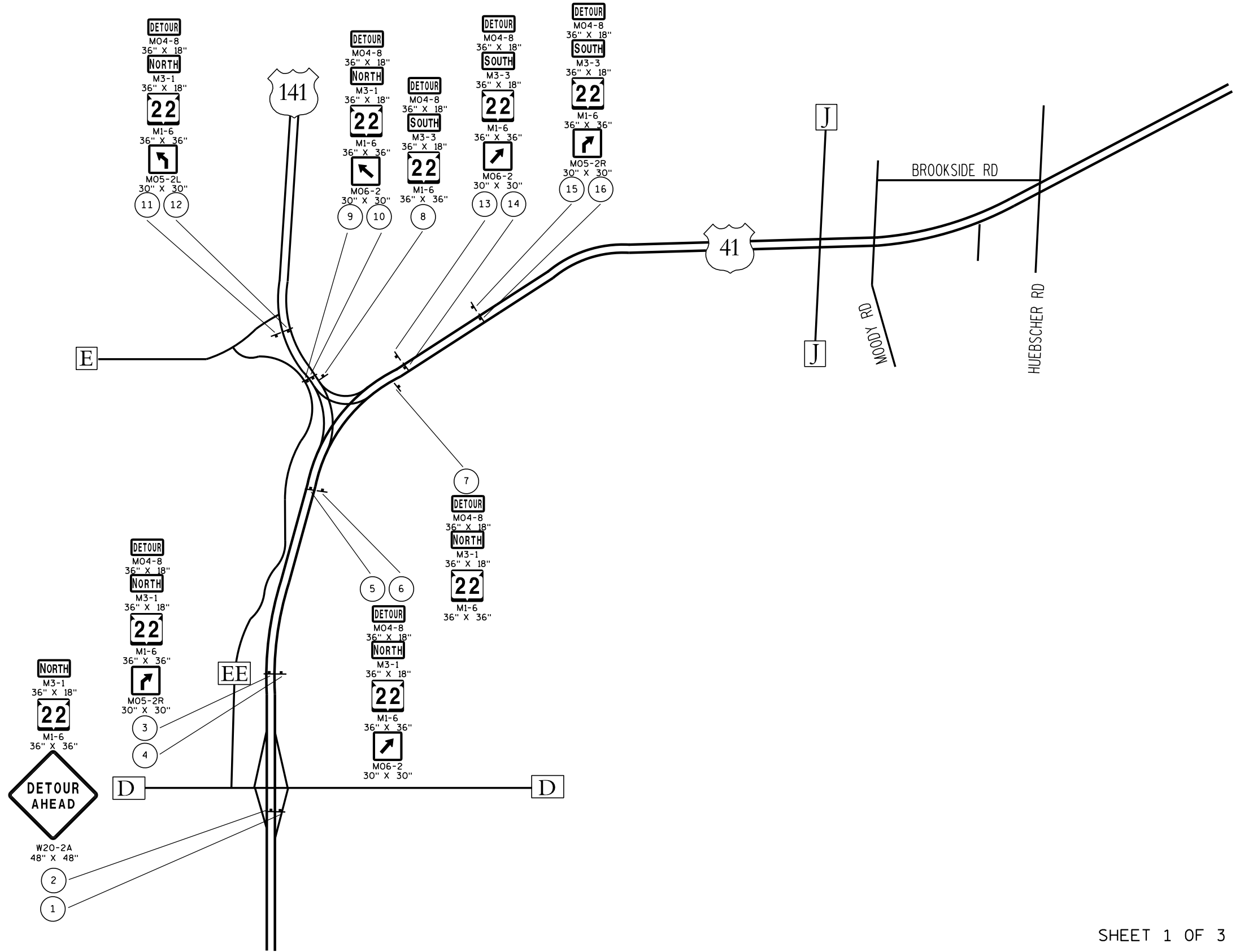
R11-2
48" X 30"
R11-2
48" X 30"

ROAD
CLOSED






TYPE III BARRICADE



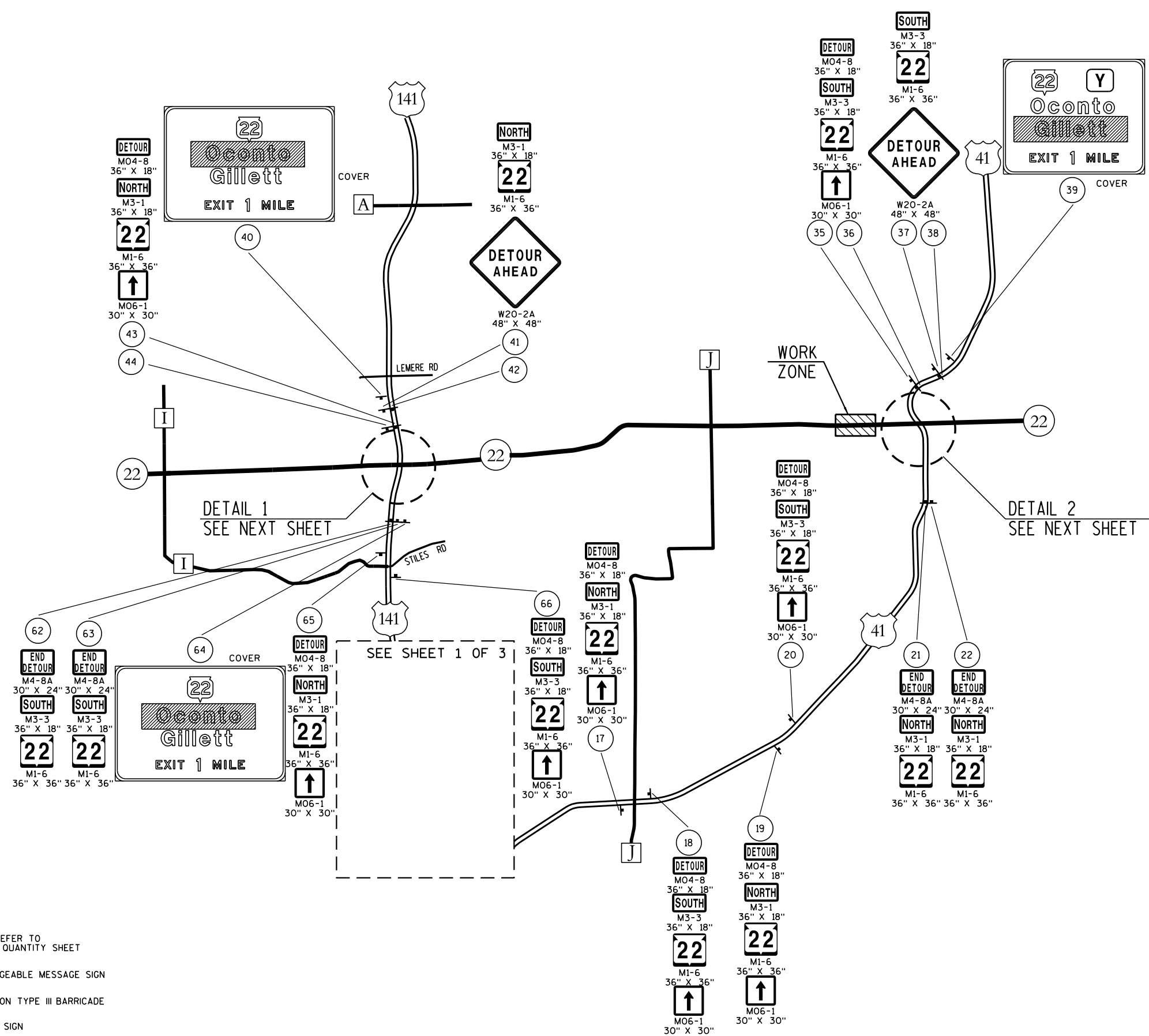
PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	TRAFFIC CONTROL	SHEET	E
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LEGEND

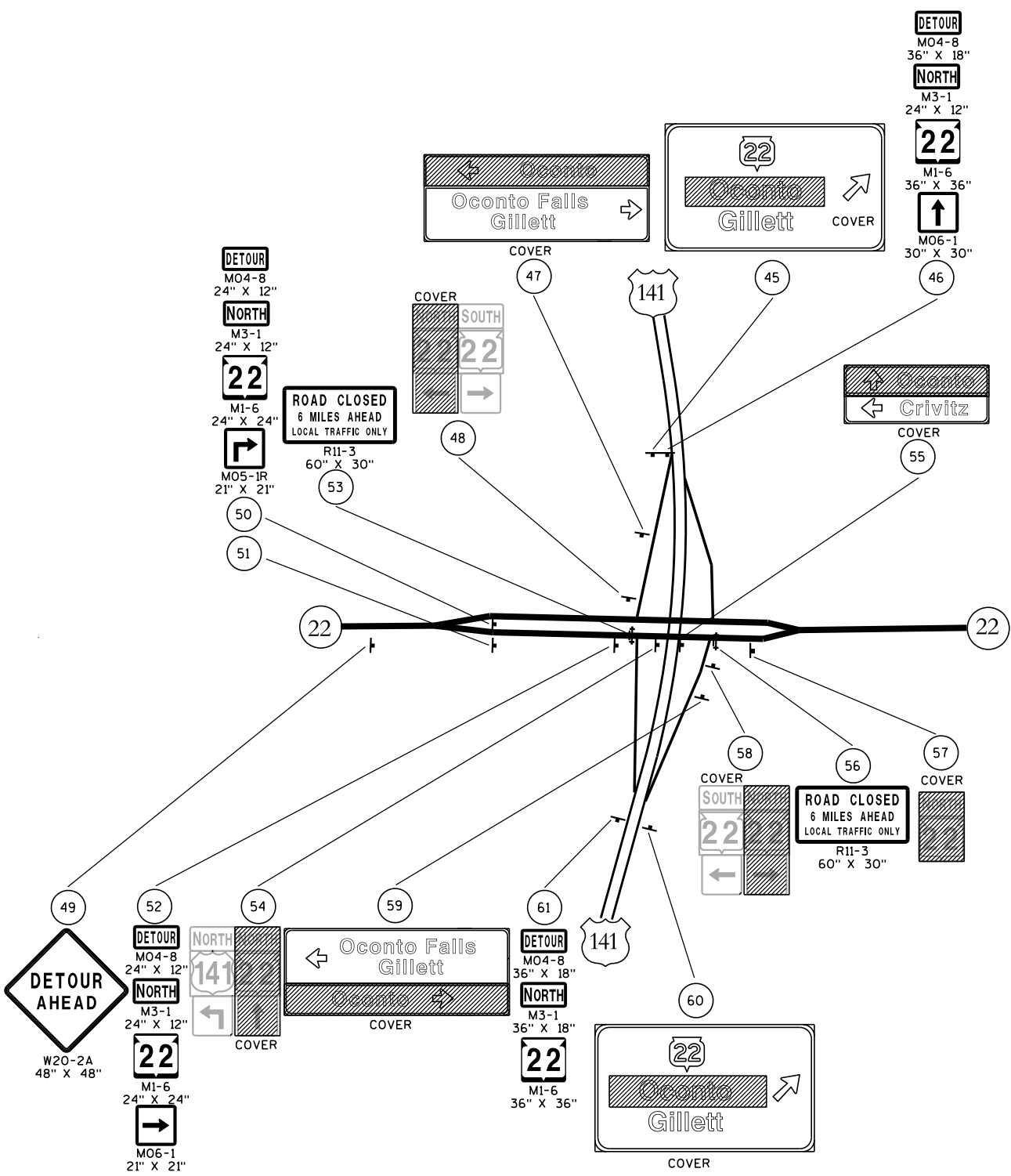
-  SIGN NUMBER, REFER TO MISCELLANEOUS QUANTITY SHEET
-   PORTABLE CHANGEABLE MESSAGE SIGN
-  SIGN MOUNTED ON TYPE III BARRICADE
-  POST MOUNTED SIGN

SHEET 1 OF 3
 PLAN SHEET PRODUCED
 BY WISDOT-NE REGION



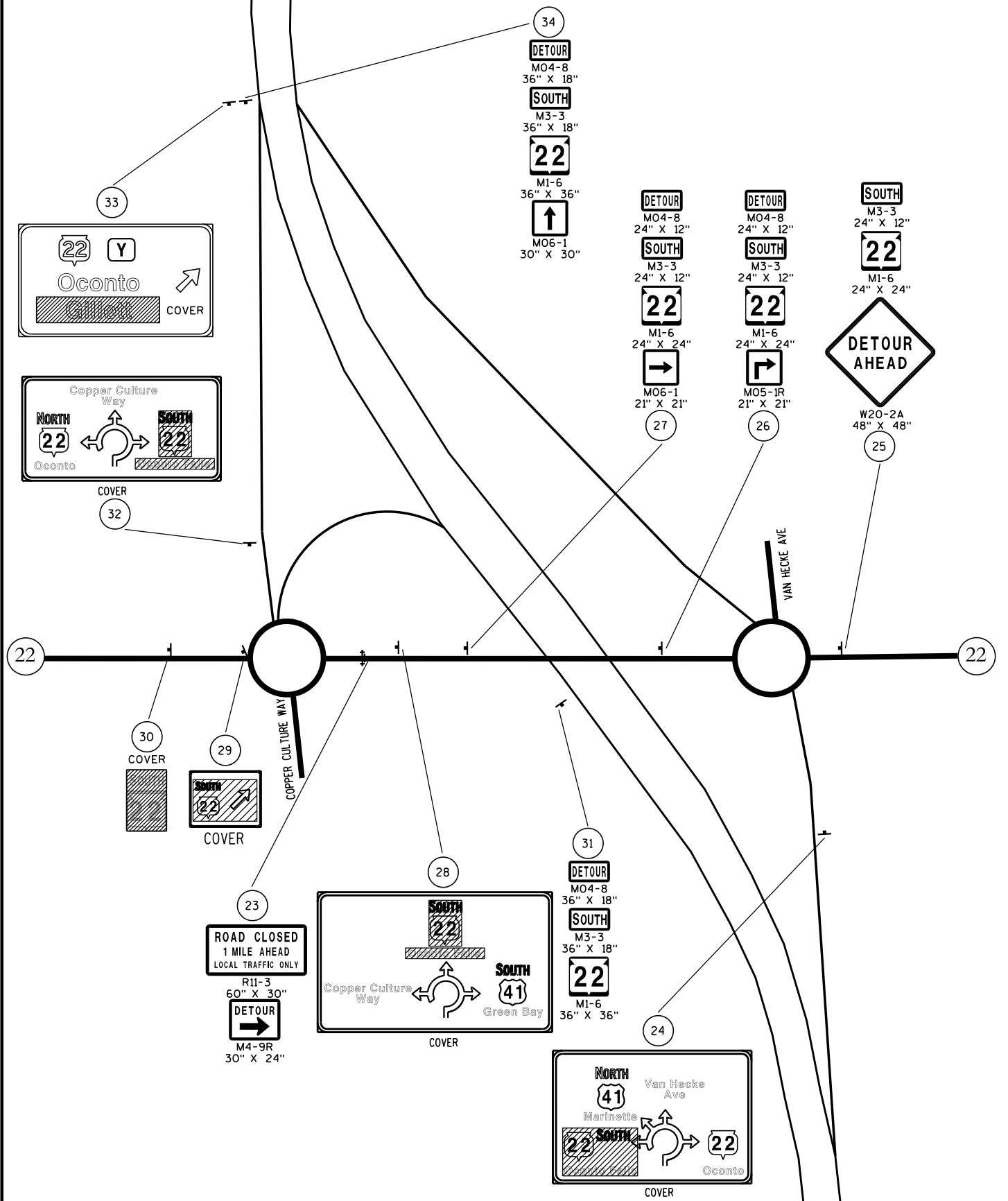
- LEGEND**
- (X) SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
 - ▲ PCMS (X) PORTABLE CHANGEABLE MESSAGE SIGN
 - ⇌ SIGN MOUNTED ON TYPE III BARRICADE
 - POST MOUNTED SIGN

SHEET 2 OF 3
 PLAN SHEET PRODUCED
 BY WisDOT-NE REGION



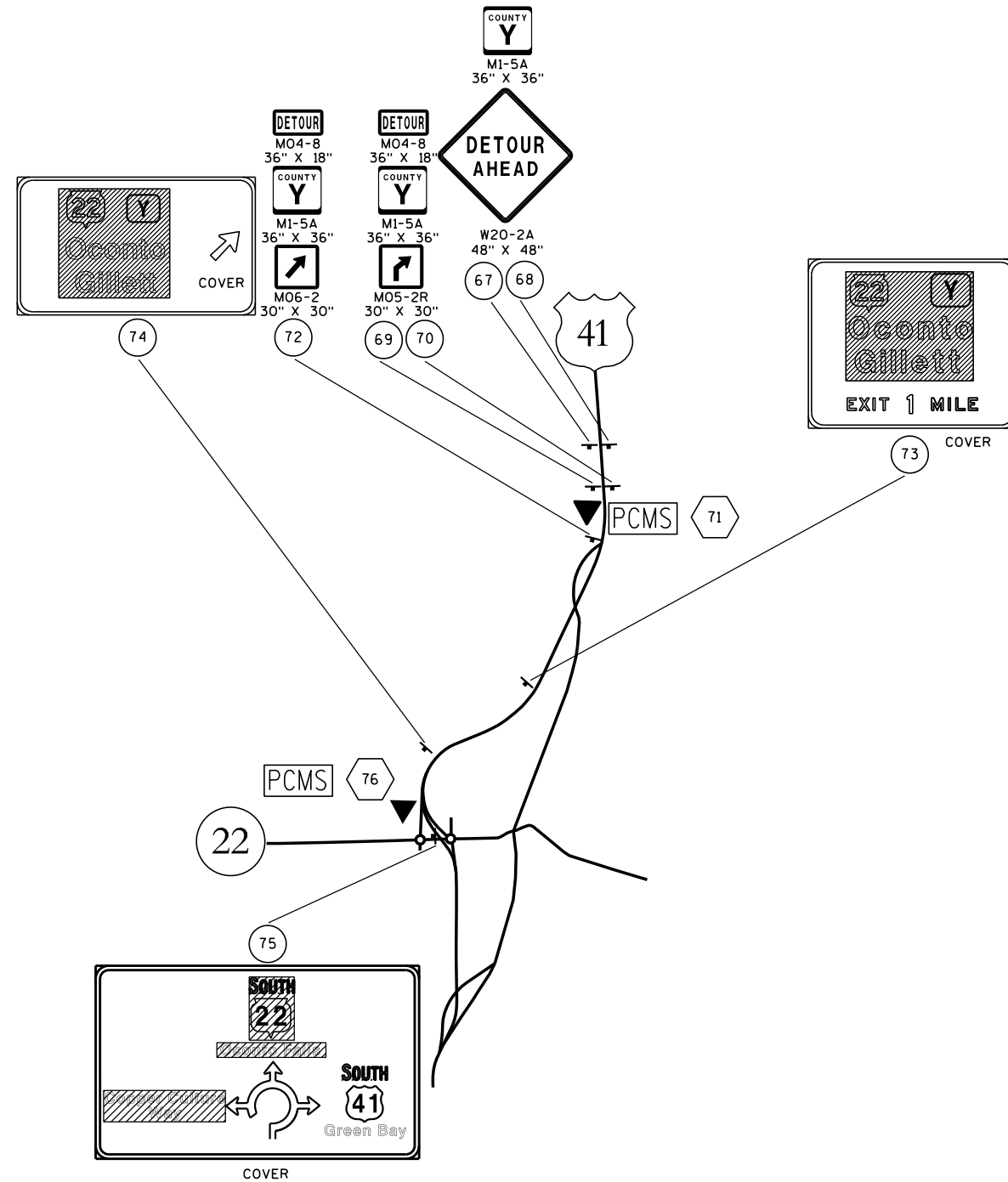
DETAIL 1

- LEGEND**
- (X) SIGN NUMBER. REFER TO MISCELLANEOUS QUANTITY SHEET
 - ⇐ SIGN MOUNTED ON TYPE III BARRICADE
 - ▬ POST MOUNTED SIGN



DETAIL 2

PLAN SHEET PRODUCED BY WisDOT-NE REGION



LEGEND

- SIGN NUMBER, REFER TO MISCELLANEOUS QUANTITY SHEET
- PORTABLE CHANGEABLE MESSAGE SIGN
- SIGN MOUNTED ON TYPE III BARRICADE
- POST MOUNTED SIGN

SHEET 1 OF 1
 PLAN SHEET PRODUCED
 BY WISDOT-NE REGION

Estimate Of Quantities

9180-31-60

Line	Item	Item Description	Unit	Total	Qty
0002	201.0120	Clearing	ID	18.000	18.000
0004	201.0220	Grubbing	ID	18.000	18.000
0006	203.0100	Removing Small Pipe Culverts	EACH	5.000	5.000
0008	203.0500.S	Removing Old Structure Over Waterway (station) 01. 402+71	LS	1.000	1.000
0010	203.0500.S	Removing Old Structure Over Waterway (station) 02. 621+70	LS	1.000	1.000
0012	204.0115	Removing Asphaltic Surface Butt Joints	SY	73.000	73.000
0014	204.0120	Removing Asphaltic Surface Milling	SY	119,799.000	119,799.000
0016	204.0150	Removing Curb & Gutter	LF	50.000	50.000
0018	205.0100	Excavation Common	CY	971.000	971.000
0020	205.9015.S	Grading Shaping and Finishing Intersection (location) 01. Cream City Road	LS	1.000	1.000
0022	206.2000	Excavation for Structures Culverts (structure) 01. C-42-793	LS	1.000	1.000
0024	210.2500	Backfill Structure Type B	TON	400.000	400.000
0026	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 9180-31-60	LS	1.000	1.000
0028	211.0400	Prepare Foundation for Asphaltic Shoulders	STA	708.000	708.000
0030	213.0100	Finishing Roadway (project) 01. 9180-31-60	EACH	1.000	1.000
0032	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	508.000	508.000
0034	455.0605	Tack Coat	GAL	10,373.000	10,373.000
0036	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	1.000	1.000
0038	460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH	1.000	1.000
0040	460.2005	Incentive Density PWL HMA Pavement	DOL	11,530.000	11,530.000
0042	460.2007	Incentive Density HMA Pavement Longitudinal Joints	DOL	14,205.000	14,205.000
0044	460.2010	Incentive Air Voids HMA Pavement	DOL	16,670.000	16,670.000
0046	460.5224	HMA Pavement 4 LT 58-28 S	TON	16,665.000	16,665.000
0048	465.0105	Asphaltic Surface	TON	2,212.000	2,212.000
0050	465.0110	Asphaltic Surface Patching	TON	100.000	100.000
0052	465.0315	Asphaltic Flumes	SY	11.000	11.000
0054	465.0425	Asphaltic Shoulder Rumble Strips 2-Lane Rural	LF	59,970.000	59,970.000
0056	465.0475	Asphalt Centerline Rumble Strips 2-Lane Rural	LF	32,163.000	32,163.000
0058	502.4205	Adhesive Anchors No. 5 Bar	EACH	52.000	52.000
0060	504.0100	Concrete Masonry Culverts	CY	40.000	40.000
0062	504.0900	Concrete Masonry Endwalls	CY	34.000	34.000
0064	505.0400	Bar Steel Reinforcement HS Structures	LB	3,240.000	3,240.000
0066	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	830.000	830.000
0068	509.1500	Concrete Surface Repair	SF	50.000	50.000
0070	516.0500	Rubberized Membrane Waterproofing	SY	28.000	28.000
0072	522.0124	Culvert Pipe Reinforced Concrete Class III 24-Inch	LF	180.000	180.000

Estimate Of Quantities

9180-31-60

Line	Item	Item Description	Unit	Total	Qty
0074	522.0130	Culvert Pipe Reinforced Concrete Class III 30-Inch	LF	24.000	24.000
0076	522.1024	Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch	EACH	6.000	6.000
0078	522.1030	Apron Endwalls for Culvert Pipe Reinforced Concrete 30-Inch	EACH	2.000	2.000
0080	522.2329	Culvert Pipe Reinforced Concrete Horizontal Elliptical Class HE-III 29x45-Inch	LF	124.000	124.000
0082	522.2348	Culvert Pipe Reinforced Concrete Horizontal Elliptical Class HE-III 48x76-Inch	LF	62.000	62.000
0084	522.2648	Apron Endwalls for Culvert Pipe Reinforced Concrete Horizontal Elliptical 48x76-Inch	EACH	2.000	2.000
0086	601.0411	Concrete Curb & Gutter 30-Inch Type D	LF	50.000	50.000
0088	601.0580	Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type R	LF	87.000	87.000
0090	603.8000	Concrete Barrier Temporary Precast Delivered	LF	500.000	500.000
0092	603.8125	Concrete Barrier Temporary Precast Installed	LF	500.000	500.000
0094	606.0300	Riprap Heavy	CY	100.000	100.000
0096	611.0430	Reconstructing Inlets	EACH	6.000	6.000
0098	611.0624	Inlet Covers Type H	EACH	1.000	1.000
0100	614.0010	Barrier System Grading Shaping Finishing	EACH	5.000	5.000
0102	614.0397	Guardrail Mow Strip Emulsified Asphalt	SY	226.000	226.000
0104	614.0905	Crash Cushions Temporary	EACH	4.000	4.000
0106	614.0920	Salvaged Rail	LF	593.000	593.000
0108	614.0925	Salvaged Guardrail End Treatments	EACH	6.000	6.000
0110	614.2300	MGS Guardrail 3	LF	100.000	100.000
0112	614.2330	MGS Guardrail 3 K	LF	400.000	400.000
0114	614.2500	MGS Thrie Beam Transition	LF	158.000	158.000
0116	614.2610	MGS Guardrail Terminal EAT	EACH	6.000	6.000
0118	618.0100	Maintenance And Repair of Haul Roads (project) 01. 9180-31-60	EACH	1.000	1.000
0120	619.1000	Mobilization	EACH	1.000	1.000
0122	624.0100	Water	MGAL	7.000	7.000
0124	628.1504	Silt Fence	LF	1,700.000	1,700.000
0126	628.1520	Silt Fence Maintenance	LF	1,700.000	1,700.000
0128	628.1905	Mobilizations Erosion Control	EACH	6.000	6.000
0130	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0132	628.7555	Culvert Pipe Checks	EACH	50.000	50.000
0134	630.0500	Seed Water	MGAL	44.400	44.400
0136	633.5200	Markers Culvert End	EACH	12.000	12.000
0138	642.5001	Field Office Type B	EACH	1.000	1.000
0140	643.0300	Traffic Control Drums	DAY	2,160.000	2,160.000
0142	643.0420	Traffic Control Barricades Type III	DAY	1,367.000	1,367.000

Estimate Of Quantities

9180-31-60

Line	Item	Item Description	Unit	Total	Qty
0144	643.0705	Traffic Control Warning Lights Type A	DAY	2,734.000	2,734.000
0146	643.0715	Traffic Control Warning Lights Type C	DAY	2,160.000	2,160.000
0148	643.0900	Traffic Control Signs	DAY	8,756.000	8,756.000
0150	643.0910	Traffic Control Covering Signs Type I	EACH	9.000	9.000
0152	643.0920	Traffic Control Covering Signs Type II	EACH	11.000	11.000
0154	643.1050	Traffic Control Signs PCMS	DAY	9.000	9.000
0156	643.5000	Traffic Control	EACH	1.000	1.000
0158	645.0120	Geotextile Type HR	SY	185.000	185.000
0160	646.1020	Marking Line Epoxy 4-Inch	LF	35,546.000	35,546.000
0162	646.1040	Marking Line Grooved Wet Ref Epoxy 4-Inch	LF	69,312.000	69,312.000
0164	646.9000	Marking Removal Line 4-Inch	LF	400.000	400.000
0166	649.0120	Temporary Marking Line Epoxy 4-Inch	LF	104,858.000	104,858.000
0168	649.0150	Temporary Marking Line Removable Tape 4-Inch	LF	4,165.000	4,165.000
0170	649.0850	Temporary Marking Stop Line Removable Tape 18-Inch	LF	60.000	60.000
0172	650.4500	Construction Staking Subgrade	LF	308.000	308.000
0174	650.5000	Construction Staking Base	LF	308.000	308.000
0176	650.6000	Construction Staking Pipe Culverts	EACH	7.000	7.000
0178	650.6500	Construction Staking Structure Layout (structure) 01. C-42-793	LS	1.000	1.000
0180	650.8000	Construction Staking Resurfacing Reference	LF	35,413.000	35,413.000
0182	650.9910	Construction Staking Supplemental Control (project) 01. 9180-31-60	LS	1.000	1.000
0184	690.0250	Sawing Concrete	LF	295.000	295.000
0186	715.0502	Incentive Strength Concrete Structures	DOL	500.000	500.000
0188	740.0440	Incentive IRI Ride	DOL	26,828.000	26,828.000
0190	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	2,000.000	2,000.000
0192	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	1,320.000	1,320.000
0194	SPV.0035	Special 01. Foundation Backfill	CY	621.000	621.000
0196	SPV.0060	Special 01. Grading, Shaping and Finishing Culvert Pipes and Apron Endwalls	EACH	12.000	12.000
0198	SPV.0060	Special 02. Grading, Shaping and Finishing Box Culvert and Wingwall	EACH	2.000	2.000
0200	SPV.0090	Special 01. Storm Lateral 4-Inch	LF	3.000	3.000
0202	SPV.0105	Special 01. Temporary Water Diversion - C-42-793	LS	1.000	1.000
0204	SPV.0105	Special 02. Temporary Water Diversion - C-42-797	LS	1.000	1.000

CLEARING

201. 0120				
CATEGORY	STATION	LOCATION	ID	REMARKS
0010	601+35	STH 22	18	TREE IN CLEARZONE LT
TOTAL 0010			<u>18</u>	

GRUBBING

201. 0220				
CATEGORY	STATION	LOCATION	ID	REMARKS
0010	601+35	STH 22	18	TREE IN CLEARZONE LT
TOTAL 0010			<u>18</u>	

REMOVING OLD STRUCTURE OVER WATERWAY (STATION) STA 621+70

203. 0500. S				
CATEGORY	STATION	LOCATION	LS	REMARKS
0010	621+70	STH 22	1	
TOTAL 0010			<u>1</u>	

REMOVING ASPHALTIC SURFACE BUTT JOINTS

204. 0115				
CATEGORY	STATION	LOCATION	SY	REMARKS
0010	312+88	STH 22	7	
0010	4+93	WATERCREST ROAD	5	
0010	11+03	FUNK ROAD	4	
0010	12+88	LOGTOWN ROAD	5	
0010	22+37	CTH J	7	
0010	24+04	CTH J	7	
0010	32+30	CREAM CITY ROAD	8	
0010	33+70	CREAM CITY ROAD	8	
0010	38+60	VAN HULLE ROAD	4	
0010	46+80	YOUNG ROAD	4	
0010	52+77	ELM GROVE SCHOOL ROAD	8	
0010	668+23	STH 22	7	
TOTAL 0010			<u>73</u>	

REMOVING SMALL PIPE CULVERTS

203. 0100						
CATEGORY	STATION	LOCATION	EACH	PIPE SIZE	TYPE	REMARKS
0010	STA 318+52	STH 22	1	30- INCH	RCCP	2 - 8' SECTIONS TO BE REMOVED ON EACH SIDE
0010	STA 433+24	STH 22	1	35x24- INCH	CMPA	
0010	STA 520+86	STH 22	1	24- INCH	RCCP	
0010	STA 640+53	STH 22	1	24- INCH	RCCP	
0010	STA 667+23	STH 22	1	24- INCH	RCCP	2 - 8' SECTIONS TO BE REMOVED ON EACH SIDE
TOTAL 0010			<u>5</u>			

REMOVING ASPHALTIC SURFACE MILLING

CATEGORY	STATION TO	STATION	LOCATION	204. 0120 SY	REMARKS
0010	312+88 -	381+69	STH 22	22937	
0010	382+91 -	668+23	STH 22	95107	
0010	4+93 -	5+45	WATERCREST ROAD	127	
0010	11+03 -	11+58	FUNK ROAD	122	
0010	12+17 -	12+88	LOGTOWN ROAD	174	
0010	22+37 -	23+11	CTH J (SOUTH)	247	
0010	23+45 -	24+04	CTH J (NORTH)	210	
0010	32+30 -	32+91	CREAM CITY ROAD (SOUTH)	244	
0010	33+25 -	33+70	CREAM CITY ROAD (NORTH)	170	
0010	38+17 -	38+60	VAN HULLE ROAD	96	
0010	46+17 -	46+80	YOUNG ROAD	126	
0010	52+17 -	52+77	ELM GROVE SCHOOL ROAD	240	
TOTAL 0010				<u>119799</u>	

CULVERT PIPE TRANSITION

CATEGORY	STATION	LOCATION	* FOUNDATION BACKFILL EXCAVATION COMMON SALVAGED UNUSABLE SPV. 0035. 01 205. 0100 PAVEMENT			REMARKS
			CY	CY	CY	
0010	433+24	STH 22	147	244	59	
0010	520+86	STH 22	44	102	33	
0010	621+70	STH 22	322	457	88	
0010	640+53	STH 22	108	168	48	
TOTAL 0010			<u>621</u>	<u>971</u>	<u>228</u>	

*ITEMS & QUANTITIES LISTED FOR BID INFORMATION ONLY

REMOVING CURB & GUTTER

CATEGORY	STATION TO	STATION	LOCATION	204. 0150 LF	REMARKS
0010	520+49 -	520+76	STH 22	30	LT
0010	522+45 -	522+49	STH 22	5	RT
0010	32+59 -	32+70	CREAM CITY ROAD	15	LT
TOTAL 0010				<u>50</u>	

GRADING SHAPING AND FINISHING INTERSECTION (LOCATION) CREAM CITY ROAD

CATEGORY	STATION	LOCATION	* * * * * 205. 9015. S EXCAVATION COMMON BORROW TOPSOIL FERTILIZER SEED EROSION MAT LS CY CY SY CWT LB SY CLASS I TYPE B							REMARKS
			LS	CY	CY	SY	CWT	LB	SY	
0010		CREAM CITY ROAD	1	0	4	25	0. 02	0. 44	25	
TOTAL 0010			<u>1</u>	<u>0</u>	<u>4</u>	<u>25</u>	<u>0. 02</u>	<u>0. 44</u>	<u>25</u>	

*ITEMS & QUANTITIES LISTED FOR BID INFORMATION ONLY

PREPARE FOUNDATION FOR ASPHALTIC PAVING (PROJECT) 9180-31-60

					211. 0100
CATEGORY	STATION TO	STATION	LOCATION		LS
0010	312+88	- 668+23	STH 22		1
TOTAL 0010					<u>1</u>

BASE AGGREGATE DENSE 1 1/4- INCH

					305. 0120
CATEGORY	STATION	LOCATION			TON
0010	433+24	STH 22			132
0010	520+86	STH 22			72
0010	621+70	STH 22			197
0010	640+53	STH 22			107
TOTAL 0010					<u>508</u>

ASPHALTIC SURFACE PATCHING

					465. 0110
CATEGORY	STATION	LOCATION			TON
0010	UNDISTRIBUTED	STH 22			100
TOTAL 0010					<u>100</u>

PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS

						211. 0400
CATEGORY	STATION TO	STATION	LOCATION			STA
0010	312+88	- 381+69	STH 22			69
0010	382+91	- 668+23	STH 22			285
0010	312+88	- 381+69	STH 22			69
0010	382+91	- 668+23	STH 22			285
TOTAL 0010						<u>708</u>

ASPHALTIC SURFACE

						465. 0105
CATEGORY	STATION TO	STATION	LOCATION			TON
0010	312+88	- 381+69	STH 22			168
0010	312+88	- 381+69	STH 22			168
0010	382+91	668+23	STH 22			697
0010	382+91	668+23	STH 22			697
0010	382+91	383+06	STH 22			9
0010	382+91	383+11	STH 22			12
0010	432+84	- 433+64	STH 22			119
0010	520+64	- 521+08	STH 22			65
0010			CREAM CITY ROAD			3
0010	621+11	- 622+29	STH 22			177
0010	640+05	- 641+01	STH 22			96
TOTAL 0010						<u>2212</u>

ASPHALTIC FLUMES

					465. 0315
CATEGORY	STATION	LOCATION			SY
0010	383+06	STH 22			5
0010	383+06	STH 22			7
TOTAL 0010					<u>11</u>

HMA SUMMARY

CATEGORY	STATION TO	STATION	LOCATION	455. 0605	460. 5224	460. 0105. S	460. 0110. S	REMARKS
				TACK COAT	HMA	HMA PWL	HMA PWL	
				GAL	TON	TEST STRIPS	TEST STRIP	
						VOLUMETRICS	DENSITY	
						4 LT 58-28 S	EACH	
0010	312+88	- 381+69	STH 22	986	1586	1	1	LT
0010	382+91	- 520+57	STH 22	1973	3172	-	-	LT
0010	312+88	- 381+69	STH 22	986	1586	-	-	RT
0010	382+91	- 521+52	STH 22	1987	3194	-	-	RT
0010	520+57	- 522+36	STH 22	25	44	-	-	LT
0010	521+52	- 524+40	STH 22	40	70	-	-	RT
0010	522+36	- 668+23	STH 22	2091	3361	-	-	LT
0010	524+40	- 668+23	STH 22	2091	3314	-	-	RT
0010	4+93	- 5+45	WATERCREST ROAD	16	28	-	-	
0010	11+03	- 11+58	FUNK ROAD	17	30	-	-	
0010	12+17	- 12+88	LOGTOWN ROAD	27	47	-	-	
0010	22+37	- 23+11	CTH J (SOUTH)	28	49	-	-	
0010	23+45	- 24+04	CTH J (NORTH)	25	43	-	-	
0010	32+30	- 32+91	CREAM CITY ROAD (SOUTH)	20	35	-	-	
0010	33+25	- 33+70	CREAM CITY ROAD (NORTH)	15	26	-	-	
0010	38+17	- 38+60	VAN HULLE ROAD	11	18	-	-	
0010	46+17	- 46+80	YOUNG ROAD	17	29	-	-	
0010	52+17	- 52+77	ELM GROVE SCHOOL ROAD	18	31	-	-	
TOTALS				10373	16665	1	1	

ASPHALTIC SHOULDER RUMBLE STRIPS 2-LANE RURAL

465. 0425					
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS
0010	312+88	- 319+54	STH 22	66	RT
0010	320+31	- 333+21	STH 22	1290	RT
0010	334+11	- 337+89	STH 22	378	RT
0010	339+84	- 345+84	STH 22	600	RT
0010	346+55	- 355+82	STH 22	927	RT
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0010	357+80	- 336+52	STH 22	872	RT
0010	367+45	- 378+95	STH 22	1150	RT
0010	383+17	- 387+84	STH 22	467	RT
0010	388+70	- 391+62	STH 22	292	RT
0010	393+58	- 406+72	STH 22	1314	RT
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0010	408+83	- 414+48	STH 22	565	RT
0010	415+27	- 418+98	STH 22	371	RT
0010	419+81	- 424+70	STH 22	489	RT
0010	425+47	- 427+40	STH 22	193	RT
0010	428+17	- 442+57	STH 22	1140	RT
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0010	443+35	- 449+89	STH 22	654	RT
0010	450+60	- 453+93	STH 22	333	RT
0010	456+40	- 467+13	STH 22	1073	RT
0010	471+47	- 491+74	STH 22	2027	RT
0010	499+91	- 518+00	STH 22	1809	RT
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0010	524+64	- 530+92	STH 22	628	RT
0010	531+65	- 546+99	STH 22	1534	RT
0010	547+76	- 555+27	STH 22	751	RT
0010	556+01	- 559+24	STH 22	323	RT
0010	560+05	- 569+65	STH 22	960	RT
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0010	570+43	- 579+03	STH 22	860	RT
0010	579+84	- 585+60	STH 22	576	RT
0010	586+33	- 590+06	STH 22	373	RT
0010	590+77	- 602+06	STH 22	1129	RT
0010	604+60	- 625+82	STH 22	2122	RT
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0010	626+88	- 643+16	STH 22	1628	RT
0010	643+96	- 647+13	STH 22	317	RT
0010	649+87	- 668+23	STH 22	1836	RT

SUBTOTAL 0010 29047

465. 0425					
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS
0010	312+88	- 322+87	STH 22	999	LT
0010	323+70	- 329+99	STH 22	629	LT
0010	330+80	- 356+38	STH 22	2558	LT
0010	357+42	- 364+78	STH 22	736	LT
0010	365+91	- 374+91	STH 22	900	LT
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0010	375+69	- 378+68	STH 22	299	LT
0010	383+16	- 387+77	STH 22	461	LT
0010	388+82	- 393+58	STH 22	476	LT
0010	396+10	- 402+42	STH 22	632	LT
0010	403+69	- 408+43	STH 22	474	LT
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0010	409+22	- 415+69	STH 22	647	LT
0010	417+99	- 427+89	STH 22	990	LT
0010	428+51	- 440+49	STH 22	1198	LT
0010	441+37	- 452+44	STH 22	1107	LT
0010	454+36	- 458+03	STH 22	367	LT
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0010	458+72	- 471+19	STH 22	1247	LT
0010	417+06	- 495+04	STH 22	2398	LT
0010	499+06	- 504+79	STH 22	573	LT
0010	505+49	- 515+13	STH 22	964	LT
0010	515+89	- 519+89	STH 22	400	LT
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0010	523+67	- 532+49	STH 22	882	LT
0010	533+15	- 540+50	STH 22	735	LT
0010	541+89	- 548+25	STH 22	636	LT
0010	549+00	- 561+57	STH 22	1257	LT
0010	563+17	- 573+03	STH 22	986	LT
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0010	577+02	- 580+54	STH 22	352	LT
0010	581+25	- 602+09	STH 22	2084	LT
0010	603+86	- 625+73	STH 22	2187	LT
0010	627+28	- 636+37	STH 22	939	LT
0010	639+40	- 646+13	STH 22	673	LT
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0010	646+86	- 668+23	STH 22	2137	LT

SUBTOTAL 0010 30923
GRAND TOTAL 59970

CULVERT PIPE SUMMARY

CATEGORY	STATION	LOCATION	504. 0900	522. 0124	522. 0130	522. 1024	522. 1030	522. 2329	522. 2348	522. 2648	633. 5200	REMARKS
			CONCRETE MASONRY ENDWALLS	CULVERT PIPE REINFORCED CONCRETE CLASS III	REINFORCED CONCRETE	APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE	REINFORCED CONCRETE	HORIZONTAL ELLIPTICAL CLASS III	REINFORCED CONCRETE	APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE	MARKERS CULVERT ENDS	
			CY	24- INCH LF	30- INCH LF	24- INCH EACH	30- INCH EACH	29X45- INCH LF	48X76- INCH LF	48X76- INCH EACH	EACH	
0010	318+52	STH 22			24		2				2	
0010	433+24	STH 22	34					124			2	
0010	520+86	STH 22		86		2					2	
0010	621+70	STH 22							62	2	2	
0010	640+53	STH 22		70		2					2	
0010	667+23	STH 22		24		2					2	
TOTALS			34	180	24	6	2	124	62	2	12	

ASPHALT CENTERLINE RUMBLE STRIPS 2-LANE RURAL

CATEGORY	STATION TO	STATION	LOCATION	465. 0475 LF	REMARKS
0010	312+88 -	336+89	STH 22	2401	
0010	340+89 -	381+44	STH 22	4055	
0010	383+16 -	390+67	STH 22	751	
0010	394+67 -	414+78	STH 22	2011	
0010	418+78 -	494+86	STH 22	7608	
0010	498+86 -	520+77	STH 22	2191	
0010	524+77 -	560+29	STH 22	3552	
0010	564+29 -	574+00	STH 22	971	
0010	578+00 -	600+93	STH 22	2293	
0010	604+93 -	668+23	STH 22	6330	
TOTAL 0010				32163	

CONCRETE CURB & GUTTER 30-INCH TYPE D

CATEGORY	STATION TO	STATION	LOCATION	601. 0411 LF	REMARKS
0010	520+49 -	520+76	STH 22	30	6.25% gutter slope, see construction detail
0010	522+45 -	522+49	STH 22	5	6.25% gutter slope, see construction detail
0010	32+59 -	32+70	CREAM CITY ROAD	15	6.25% gutter slope, see construction detail
TOTAL 0010				50	

CONCRETE CURB & GUTTER 4-INCH SLOPED 36-INCH TYPE R

CATEGORY	STATION	LOCATION	601. 0580 LF	REMARKS
0010		STH 22	45	WEST ROUNDABOUT
0010		STH 22	42	EAST ROUNDABOUT
TOTAL 0010			87	

CONCRETE BARRIER TEMPORARY PRECAST DELIVERED

					603.8000	
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS	
0010	400+72 -	403+22	STH 22	250	RT	
0010	400+97 -	403+97	STH 22	250	LT	
TOTAL 0010				<u>500</u>		

RI PRAP HEAVY

					*	606.0300	
CATEGORY	STATION	LOCATION	CY	REMARKS			
0010	621+70	STH 22	40				
TOTAL 0010			<u>40</u>				

*Additional quantities shown elsewhere

INLET COVERS TYPE H

					611.0624	
CATEGORY	STATION	LOCATION	EACH	REMARKS		
0010	522+47	STH 22	1	RT		
TOTAL 0010			<u>1</u>			

CONCRETE BARRIER TEMPORARY PRECAST INSTALLED

					603.8125	
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS	
0010	400+72 -	403+22	STH 22	250	RT	
0010	400+97 -	403+97	STH 22	250	LT	
TOTAL 0010				<u>500</u>		

RECONSTRUCTING INLETS

					611.0430	
CATEGORY	STATION	LOCATION	EACH	REMARKS		
0010		STH 22	3	EAST ROUNDABOUT		
0010		STH 22	3	WEST ROUNDABOUT		
TOTAL 0010			<u>6</u>			

GUARDRAIL MDW STRIP EMULSIFIED ASPHALT

					614.0397	
CATEGORY	STATION TO	STATION	LOCATION	SY	REMARKS	
0010	369+44 -	374+50	STH 22	226	RT	
TOTAL 0010				<u>226</u>		

BARRIER SYSTEM GRADING SHAPING FINISHING

CATEGORY	STATION TO	STATION	LOCATION	* * * * *										REMARKS
				614.0010	EXCAVATION	COMMON	BORROW	TOPSOIL	FERTILIZER	SEED	EROSION MAT	CONSTRUCTION	STAKING	
				EACH	CY		CY	SY	TYPE B	NO. 30	CLASS I	TYPE B	LF	
0010	369+44	- 374+50	STH 22	1	19		85	499	0.31	8.99	499		720	RT
0010	380+14	- 381+56	STH 22	1	17		17	146	0.09	2.63	146		237	RT
0010	380+64	- 381+56	STH 22	1	17		17	86	0.05	1.54	86		192	LT
0010	383+04	- 383+96	STH 22	1	11		7	64	0.04	1.15	64		161	RT
0010	383+04	- 384+46	STH 22	1	11		7	81	0.05	1.45	81		204	LT
TOTAL 0010				5	75		133	876	0.54	15.76	876		1514	

* ITEMS & QUANTITIES LISTED FOR BID INFORMATION ONLY

CRASH CUSHIONS TEMPORARY

614.0905

CATEGORY	STATION	LOCATION	EACH	REMARKS
0010	400+72	STH 22	1	RT
0010	402+72	STH 22	1	LT
0010	403+47	STH 22	1	LT
0010	403+97	STH 22	1	LT
TOTAL 0010			4	

WATER

624.0100

CATEGORY	STATION	LOCATION	MGAL	REMARKS
0010	433+24	STH 22	2	
0010	520+86	STH 22	1	
0010	621+70	STH 22	2	
0010	640+53	STH 22	2	
TOTAL 0010			7	

MOBILIZATIONS EROSION CONTROL

628.1905

CATEGORY	STATION TO	STATION	LOCATION	EACH	REMARKS
0010	312+88	- 668+23	STH 22	6	
TOTAL 0010				6	

MOBILIZATIONS EMERGENCY EROSION CONTROL

628.1910

CATEGORY	STATION TO	STATION	LOCATION	EACH	REMARKS
0010	312+88	- 668+23	STH 22	3	
TOTAL 0010				3	

SALVAGED RAIL

					614. 0920	
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS	
0010	369+47 -	374+51	STH 22	404		
0010	380+46 -	381+56	STH 22	60		
0010	380+71 -	381+56	STH 22	35		
0010	383+04 -	383+88	STH 22	34		
0010	383+04 -	384+14	STH 22	60		
TOTAL 0010				593		

MGS GUARDRAIL 3

					614. 2300	
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS	
0010	380+14 -	381+56	STH 22	50	RT	
0010	383+04 -	384+46	STH 22	50	LT	
TOTAL 0010				100		

MGS THRIE BEAM TRANSITION

					614. 2500	
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS	
0010	380+14 -	381+56	STH 22	39	RT	
0010	380+64 -	381+56	STH 22	39	LT	
0010	383+04 -	383+96	STH 22	39	RT	
0010	383+04 -	384+46	STH 22	39	LT	
TOTAL 0010				158		

SALVAGED GUARDRAIL END TREATMENTS

					614. 0925	
CATEGORY	STATION TO	STATION	LOCATION	EACH	REMARKS	
0010	369+47 -	374+51	STH 22	2		
0010	380+46 -	381+56	STH 22	1		
0010	380+71 -	381+56	STH 22	1		
0010	383+04 -	383+88	STH 22	1		
0010	383+04 -	384+14	STH 22	1		
TOTAL 0010				6		

MGS GUARDRAIL 3 K

					614. 2330	
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS	
0010	369+44 -	374+50	STH 22	400	RT	
TOTAL 0010				400		

MGS GUARDRAIL TERMINAL EAT

					614. 2610	
CATEGORY	STATION TO	STATION	LOCATION	EACH	REMARKS	
0010	369+44 -	374+50	STH 22	2	RT	
0010	380+14 -	381+56	STH 22	1	RT	
0010	380+64 -	381+56	STH 22	1	LT	
0010	383+04 -	383+96	STH 22	1	RT	
0010	383+04 -	384+46	STH 22	1	LT	
TOTAL 0010				6		

SEED WATER

630. 0500					
CATEGORY	STATION TO	STATION	LOCATION	MGAL	REMARKS
0010		318+52	STH 22	0.6	RT
0010		318+52	STH 22	0.6	LT
0010	369+44 -	374+50	STH 22	11.2	RT
0010	380+14 -	381+56	STH 22	3.3	RT
0010	380+64 -	381+56	STH 22	1.9	LT
<hr/>					
0010	383+04 -	383+96	STH 22	1.4	RT
0010	383+04 -	384+46	STH 22	1.8	LT
0010		402+71	STH 22	2.9	LT
0010		402+71	STH 22	6.3	RT
0010		433+24	STH 22	1.1	RT
<hr/>					
0010		433+24	STH 22	1.2	LT
0010		433+24	STH 22	1.3	
0010	520+49 -	520+79	STH 22	0.2	LT
0010		520+86	STH 22	0.5	LT
0010		520+86	STH 22	0.5	RT
<hr/>					
0010		520+86	STH 22	0.7	
0010		621+70	STH 22	1.7	RT
0010		621+70	STH 22	1.6	LT
0010		621+70	STH 22	2.0	
0010		640+53	STH 22	0.6	RT
<hr/>					
0010		640+53	STH 22	0.6	LT
0010		640+53	STH 22	1.1	
0010		667+23	STH 22	0.5	RT
0010		667+23	STH 22	0.5	LT
0010	CREAM CITY RD INT		STH 22	0.2	
<hr/>					
0010	CREAM CITY RD INT		STH 22	0.1	
<hr/>					
TOTAL 0010				44.4	

SILT FENCE

628. 1504						
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS	
0010	369+44 -	374+50	STH 22	515	RT	
0010	380+14 -	381+56	STH 22	230	RT	
0010	380+64 -	381+56	STH 22	195	LT	
0010	383+04 -	383+96	STH 22	155	RT	
0010	383+04 -	384+46	STH 22	185	LT	
<hr/>						
0010		402+71	STH 22	140	RT	
0010		402+71	STH 22	80	LT	
0010		621+70	STH 22	110	RT	
0010		621+70	STH 22	90	LT	
<hr/>						
TOTAL 0010				1700		

SILT FENCE MAINTENANCE

628. 1520						
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS	
0010	369+44 -	374+50	STH 22	515	RT	
0010	380+14 -	381+56	STH 22	230	RT	
0010	380+64 -	381+56	STH 22	195	LT	
0010	383+04 -	383+96	STH 22	155	RT	
0010	383+04 -	384+46	STH 22	185	LT	
<hr/>						
0010		402+71	STH 22	140	RT	
0010		402+71	STH 22	80	LT	
0010		621+70	STH 22	110	RT	
0010		621+70	STH 22	90	LT	
<hr/>						
TOTAL 0010				1700		

TRAFFIC CONTROL SUMMARY

CATEGORY	LOCATION	APPROX. SERVICE PERIOD DAYS	643. 0300 DRUMS		* 643. 0420 BARRICADES TYPE III		* 643. 0705 WARNING LIGHTS TYPE A		643. 0715 WARNING LIGHTS TYPE C		* 643. 0900 SIGNS		* 643. 1050 SIGNS PCMS		REMARKS
			NO. IN SERVICE	IN DAYS	NO. IN SERVICE	IN DAYS	NO. IN SERVICE	IN DAYS	NO. IN SERVICE	IN DAYS	NO. IN SERVICE	IN DAYS	NO. IN SERVICE	IN DAYS	
0010	STH 22	21	50	1050	29	609	58	1218	50	1050	50	1050	-	-	EASTBOUND
0010	STH 22	19	50	950	30	570	60	1140	50	950	50	950	-	-	WESTBOUND
0010	STH 22	5	20	100	10	50	20	100	20	100	2	10	-	-	C-42-797 CLOSURE
0010	STH 22	3	20	60	4	12	8	24	20	60	5	15	1	3	COPPER CULTURE WAY
0010	STH 22	3	-	-	2	6	4	12	-	-	4	12	-	-	MAINLINE AT ELM GROVE SCHOOL ROAD
TOTALS			2160		1247		2494		2160		2037		3		

*Additional quantities shown elsewhere

CULVERT PIPE CHECKS

CATEGORY	STATION	LOCATION	628. 7555 EACH	REMARKS
0010	318+52	STH 22	5	
0010	433+24	STH 22	20	
0010	520+86	STH 22	3	
0010	621+70	STH 22	16	
0010	640+53	STH 22	3	
0010	667+23	STH 22	3	
TOTAL 0010			50	

GEOTEXTILE TYPE HR

CATEGORY	STATION	LOCATION	* 645. 0120 SY	REMARKS
0010	621+70	STH 22	60	
TOTAL 0010			60	

*Additional quantity shown elsewhere

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 40 DAYS	643. 0900 SIGNS DAYS	643. 0420 BARRICADES TYPE III DAYS	643. 0705 WARNING LIGHTS TYPE A DAYS	643. 1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643. 0910 COVERING SIGNS TYPE I EACH	643. 0920 COVERING SIGNS TYPE II EACH	REMARKS
1	US 41/US 141, S. OF CTH D, PLACE 800' S. OF CTH D OVERPASS ON RIGHT SHOULDER	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	W 20-2A	48"X48"	1	40	40							
2	US 41/US 141, S. OF CTH D, PLACE 800' S. OF CTH D OVERPASS IN MEDIAN	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	W 20-2A	48"X48"	1	40	40							
3	US 41/US 141, N. OF CTH D, PLACE 2500' N. OF CTH D OVERPASS IN MEDIAN	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 5-2R	30"X30"	1	40	40							
4	US 41/US 141, N. OF CTH D, PLACE 2500' N. OF CTH D OVERPASS ON RIGHT SHOULDER	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 5-2R	30"X30"	1	40	40							
5	US 41/US 141, S. OF 41/141 SPLIT, PLACE 1000' S. OF 41/141 SPLIT IN MEDIAN	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-2	30"X30"	1	40	40							TILT RIGHT
6	US 41/US 141, S. OF 41/141 SPLIT, PLACE 1000' S. OF 41/141 SPLIT ON RIGHT SHOULDER	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-2	30"X30"	1	40	40							TILT RIGHT
7	US 41, N. OF 41/141 SPLIT, PLACE RIGHT OF EXISTING J4-1 SIGN	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
8	US 141, N. OF 41/141 SPLIT, PLACE 500' N. OF PENSAAKKEE RIVER	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
9	US 141, N. OF 41/141 SPLIT, PLACE 600' N. OF PENSAAKKEE RIVER ON RIGHT SHOULDER	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-2	30"X30"	1	40	40							TILT LEFT
10	US 141, N. OF 41/141 SPLIT, PLACE 600' N. OF PENSAAKKEE RIVER IN MEDIAN	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-2	30"X30"	1	40	40							TILT LEFT
11	US 141, S. OF CTH E, PLACE 1600' N. OF PENSAAKKEE RIVER ON RIGHT SHOULDER	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 5-2L	30"X30"	1	40	40							
12	US 141, S. OF CTH E, PLACE 1500' N. OF PENSAAKKEE RIVER IN MEDIAN	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 5-2L	30"X30"	1	40	40							
13	US 41, S. OF GALUSKA RD, PLACE 2000' S. OF GALUSKA RD ON RIGHT SHOULDER	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-2	30"X30"	1	40	40							TILT RIGHT
PAGE SUBTOTALS				48		1,920	0	0	0		0	0	

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 40 DAYS	643. 0900 SIGNS DAYS	643. 0420 BARRICADES TYPE III DAYS	643. 0705 WARNING LIGHTS TYPE A DAYS	643. 1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643. 0910 COVERING SIGNS TYPE I EACH	643. 0920 COVERING SIGNS TYPE II EACH	REMARKS
14	US 41, S. OF GALUSKA RD, PLACE 2000' S. OF GALUSKA RD IN MEDIAN	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-2	30"X30"	1	40	40							TILT RIGHT
15	US 41, S. OF FALK RD, PLACE 800' S. OF FALK RD ON RIGHT SHOULDER	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 5-2R	30"X30"	1	40	40							
16	US 41, S. OF FALK RD, PLACE 800' S. OF FALK RD IN MEDIAN	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 5-2R	30"X30"	1	40	40							
17	US 41, S. OF CTH J, PLACE 600' S. OF CTH J INTERSECTION	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
18	US 41, N. OF CTH J, PLACE 600' N. OF CTH J INTERSECTION	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
19	US 41, S. OF CTH SS, PLACE 600' S. OF CTH SS INTERSECTION	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
20	US 41, N. OF CTH SS, PLACE 600' N. OF CTH SS INTERSECTION	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
21	US 41, S. OF STH 22, PLACE ACROSS FROM SIGN #22 IN MEDIAN	M 4-8A	30"X24"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
22	US 41, S. OF STH 22, PLACE NEXT TO EXISTING TYPE I ADV SIGN	M 4-8A	30"X24"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
23		R 11-3	60"X30"	1	40	40	40	80					1 MILE AHEAD
		M 4-9R	30"X24"	1	40	40							
24	US 41 OFF-RAMP TO STH 22, COVER EXISTING D1-62 SIGN AS SHOWN									1		1	COVER "STH 22 SOUTH-MARINETTE"
25	STH 22, E. OF US 41 NB OFF-RAMP RAB, PLACE 150' E. OF RAB INTERSECTION	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	W 20-2A	48"X48"	1	40	40							
26	STH 22, BETWEEN US 41 RAMP RAB, PLACE 1000' E. OF US 41 SB RAB INTERSECTION	MD 4-8	24"X12"	1	40	40							
	"	M 3-3	24"X12"	1	40	40							
	"	M 1-6	24"X24"	1	40	40							22
	"	MD 5-1R	21"X21"	1	40	40							
27	STH 22, BETWEEN US 41 RAMP RAB, PLACE 500' E. OF US 41 SB RAB INTERSECTION	MD 4-8	24"X12"	1	40	40							
	"	M 3-3	24"X12"	1	40	40							
	"	M 1-6	24"X24"	1	40	40							22
	"	MD 6-1	21"X21"	1	40	40							RIGHT
28	STH 22, BETWEEN US 41 RAMP RAB, COVER EXISTING D1-62 SIGN AS SHOWN									1		1	COVER "STH 22 SOUTH-OCONTO FALLS"
PAGE SUBTOTALS				47		1,880	40	80	0		0	2	

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 40 DAYS	643. 0900 DETOUR SIGNS DAYS	643. 0420 BARRICADES TYPE III DAYS	643. 0705 WARNING LIGHTS TYPE A DAYS	643. 1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643. 0910 COVERING SIGNS TYPE I EACH	643. 0920 COVERING SIGNS TYPE II EACH	REMARKS
29	STH 22, AT US 41 SB RAMP RAB, COVER EXISTING SPLITTER ISLAND SIGN									1		1	COVER ENTIRE SIGN
30	STH 22, W. OF US 41 SB RAMP RAB, COVER EXISTING J4-1 SIGN									1		1	COVER ENTIRE SIGN
31	US 41, ON-RAMP FROM STH 22, PLACE RIGHT OF EXISTING J4-1 SIGN	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
32	US 41 OFF-RAMP TO STH 22, COVER EXISTING D1-62 SIGN AS SHOWN									1		1	
33	US 41, AT STH 22 OFF-RAMP, COVER EXISTING TYPE I SIGN AS SHOWN									1	1		
34	US 41, AT STH 22 OFF-RAMP, PLACE LEFT OF EXISTING TYPE I SIGN AT EXIT	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
35	US 41, N. OF STH 22, PLACE 2000' N. OF STH 22 OFF-RAMP ON RIGHT SHOULDER	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
36	US 41, N. OF STH 22, PLACE 2000' N. OF STH 22 OFF-RAMP IN MEDIAN	MD 4-8	36"X18"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
37	US 41, N. OF STH 22, PLACE 3500' N. OF STH 22 OFF-RAMP ON RIGHT SHOULDER	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	W 20-2A	48"X48"	1	40	40							
38	US 41, N. OF STH 22, PLACE 3500' N. OF STH 22 OFF-RAMP IN MEDIAN	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	W 20-2A	48"X48"	1	40	40							
39	US 41, N. OF STH 22, COVER EXISTING TYPE I SIGN AS SHOWN									1	1		COVER "GILLETT"
40	US 141, N. OF STH 22, COVER EXISTING TYPE I SIGN AS SHOWN									1	1		COVER "OCONTO"
41	US 141, N. OF STH 22, PLACE 3500' N. OF STH 22 OFF-RAMP ON RIGHT SHOULDER	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	W 20-2A	48"X48"	1	40	40							
42	US 141, N. OF STH 22, PLACE 3500' N. OF STH 22 OFF-RAMP IN MEDIAN	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	W 20-2A	48"X48"	1	40	40							
43	US 141, N. OF STH 22, PLACE 2000' N. OF STH 22 OFF-RAMP ON RIGHT SHOULDER	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
44	US 141, N. OF STH 22, PLACE 2000' N. OF STH 22 OFF-RAMP IN MEDIAN	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
45	US 141, AT STH 22 OFF-RAMP, COVER EXISTING TYPE I SIGN AS SHOWN									1	1		COVER "OCONTO"
PAGE SUBTOTALS				35		1,400	0	0	0		4	3	

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 40 DAYS	643. 0900 SIGNS DAYS	643. 0420 BARRICADES TYPE III DAYS	643. 0705 WARNING LIGHTS TYPE A DAYS	643. 1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643. 0910 COVERING SIGNS TYPE I EACH	643. 0920 COVERING SIGNS TYPE II EACH	REMARKS
46	US 141, AT STH 22 OFF-RAMP, PLACE LEFT OF EXISTING TYPE I SIGN	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
47	US 141, ON STH 22 OFF-RAMP, COVER EXISTING D1-3 SIGN AS SHOWN									1	1		COVER "OCONTO"
48	US 141, ON STH 22 OFF-RAMP, COVER EXISTING J3-2 SIGN AS SHOWN									1		1	COVER "NORTH 22 LT"
49	STH 22, W. OF US 141, PLACE 1000' W. OF DUAME RD	W 20-2A	48"X48"	1	40	40							
50	STH 22, W. OF US 141, PLACE 500' W. OF DUAME RD IN MEDIAN	MD 4-8	24"X12"	1	40	40							
	"	M 3-1	24"X12"	1	40	40							
	"	M 1-6	24"X24"	1	40	40							22
	"	MD 5-1R	21"X21"	1	40	40							
51	STH 22, W. OF US 141, PLACE 500' W. OF DUAME RD ON RIGHT SHOULDER	MD 4-8	24"X12"	1	40	40							
	"	M 3-1	24"X12"	1	40	40							
	"	M 1-6	24"X24"	1	40	40							22
	"	MD 5-1R	21"X21"	1	40	40							
52	STH 22, W. OF US 141, PLACE 200' E. OF DUAME RD ON RIGHT SHOULDER	MD 4-8	24"X12"	1	40	40							
	"	M 3-1	24"X12"	1	40	40							
	"	M 1-6	24"X24"	1	40	40							22
	"	MD 6-1	21"X21"	1	40	40							RIGHT
53	STH 22, AT US 141 SB RAMP, PLACE IN MEDIAN JUST W. OF RAMP INTERSECTION	R 11-3	60"X30"	1	40	40	40	80					6 MILES AHEAD
54	STH 22, BETWEEN US 141 RAMPS, COVER EXISTING J2-2 SIGN AS SHOWN									1		1	COVER "NORTH 22 AHEAD"
55	STH 22, BETWEEN US 141 RAMPS, COVER EXISTING D1-2 SIGN AS SHOWN									1		1	COVER "OCONTO"
56	STH 22, AT US 141 NB RAMP, PLACE IN MEDIAN JUST E. OF RAMP INTERSECTION	R 11-3	60"X30"	1	40	40	40	80					6 MILES AHEAD
57	STH 22, W. OF US 141, COVER EXISTING J4-1 SIGN AS SHOWN												COVER ENTIRE SIGN
58	US 141 OFF-RAMP TO STH 22, COVER EXISTING J3-2 SIGN AS SHOWN									1		1	COVER "NORTH 22 RIGHT"
59	US 141 OFF-RAMP TO STH 22, COVER EXISTING D1-3 SIGN AS SHOWN			1	40	40				1		1	COVER "OCONTO"
60	US 141, AT STH 22 OFF-RAMP, COVER EXISTING TYPE I SIGN AS SHOWN									1	1		COVER "OCONTO"
61	US 141, S. OF STH 22, PLACE RIGHT OF EXISTING J4-1 SIGN	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
62	US 141, S. OF STH 22, PLACE ACROSS FROM SIGN #63	M 4-8A	30"X24"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
63	US 141, S. OF STH 22, PLACE LEFT OF EXISTING TYPE I ADVANCED SIGN	M 4-8A	30"X24"	1	40	40							
	"	M 3-3	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
64	US 141, S. OF STH 22, COVER EXISTING TYPE I SIGN AS SHOWN									1	1		COVER "OCONTO"
65	US 141, N. OF CTH I, PLACE 750' N. OF CTH I INTERSECTION	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
66	US 141, S. OF CTH I, PLACE 750' S. OF CTH I INTERSECTION	MD 4-8	36"X18"	1	40	40							
	"	M 3-1	36"X18"	1	40	40							
	"	M 1-6	36"X36"	1	40	40							22
	"	MD 6-1	30"X30"	1	40	40							AHEAD
PAGE SUBTOTALS				37		1,480	80	160	0		3	5	

TRAFFIC CONTROL DETOUR SIGN SUMMARY - STH 22 OFF-RAMP CLOSURE

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 3 DAYS	643. 0900 SIGNS DAYS	643. 0420 BARRICADES TYPE III DAYS	643. 0705 WARNING LIGHTS TYPE A DAYS	643. 1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643. 0910 COVERING SIGNS TYPE I EACH	643. 0920 COVERING SIGNS TYPE II EACH	REMARKS
67	US 41, N. OF BUS 41 RAMP, PLACE 1/2 MILE N. OF BUS 41 RAMP EXIT ON RIGHT SHOULDER	M 1-5A	36"X36"	1	3	3							Y
	"	W 20-2A	48"X48"	1	3	3							
68	US 41, N. OF BUS 41 RAMP, PLACE 1/2 MILE N. OF BUS 41 RAMP EXIT IN MEDIAN	M 1-5A	36"X36"	1	3	3							Y
	"	W 20-2A	48"X48"	1	3	3							
69	US 41, N. OF BUS 41 RAMP, PLACE 1/4 MILE N. OF BUS 41 RAMP EXIT ON RIGHT SHOULDER	MD 4-8	36"X18"	1	3	3							
	"	M 1-5A	36"X36"	1	3	3							Y
	"	MD 5-2R	30"X30"	1	3	3							
70	US 41, N. OF BUS 41 RAMP, PLACE 1/4 MILE N. OF BUS 41 RAMP EXIT IN MEDIAN	MD 4-8	36"X18"	1	3	3							
	"	M 1-5A	36"X36"	1	3	3							Y
	"	MD 5-2R	30"X30"	1	3	3							
71	US 41, AT BUS 41 RAMP OFF-RAMP, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1					3				PLACE 3 DAYS DURING CLOSURE ON MAINLINE 41
72	US 41, N. OF BUS 41 RAMP, PLACE 1/4 MILE N. OF BUS 41 RAMP EXIT ON RIGHT SHOULDER	MD 4-8	36"X18"	1	3	3							
	"	M 1-5A	36"X36"	1	3	3							Y
	"	MD 6-2	30"X30"	1	3	3							TILT RIGHT
73	US 41, N. OF STH 22 OFF-RAMP, COVER EXISTING TYPE I SIGN AS SHOW									1	1		COVER REST OF SIGN NOT ALREADY COVERED AS PART OF INITIAL 22 CLOSURE
74	US 41, N. OF STH 22 OFF-RAMP, COVER EXISTING TYPE I SIGN AS SHOW									1	1		COVER REST OF SIGN NOT ALREADY COVERED AS PART OF INITIAL 22 CLOSURE
75	STH 22, BETWEEN 41 RAMP INTERSECTIONS, COVER EXISTING D1-62 SIGN AS SHOW									1		1	COVER "COPPER CULTURE WAY", REST OF COVERING WILL BE IN PLACE ALREADY
76	US 41 OFF-RAMP TO STH 22, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1					3				PLACE 3 DAYS PRIOR TO CLOSURE OF RAMP
PAGE SUBTOTALS				15		39	0	0	6		2	1	
PROJECT TOTALS				182		6,719	120	240	6		9	11	

MARKING LINE EPOXY 4-INCH

646. 1020					
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS
0010	312+88 -	681+69	STH 22	6881	YELLOW CENTERLINE
0010	382+91 -	668+23	STH 22	28532	YELLOW CENTERLINE
0010	22+37 -	23+11	CTH J	74	YELLOW CENTERLINE
0010	23+45 -	24+04	CTH J	59	YELLOW CENTERLINE

TOTAL 0010 35546

MARKING LINE GROOVED WET REF EPOXY 4-INCH

646. 1040					
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS
0010	312+88 -	338+35	STH 22	2547	WHITE EDGELINE, RT
0010	312+88 -	381+69	STH 22	6881	WHITE EDGELINE, LT
0010	382+91 -	416+25	STH 22	3334	WHITE EDGELINE, LT
0010	339+29 -	381+69	STH 22	4240	WHITE EDGELINE, RT
0010	382+91 -	392+12	STH 22	921	WHITE EDGELINE, RT
0010	393+10 -	496+08	STH 22	10298	WHITE EDGELINE, RT
0010	417+50 -	496+25	STH 22	7875	WHITE EDGELINE, LT
0010	497+40 -	521+46	STH 22	2406	WHITE EDGELINE, RT
0010	497+59 -	520+49	STH 22	2290	WHITE EDGELINE, LT
0010	523+22 -	562+00	STH 22	3878	WHITE EDGELINE, LT
0010	524+14 -	667+23	STH 22	14309	WHITE EDGELINE, RT
0010	562+77 -	575+48	STH 22	1271	WHITE EDGELINE, LT
0010	576+60 -	602+49	STH 22	2589	WHITE EDGELINE, LT
0010	603+50 -	668+23	STH 22	6473	WHITE EDGELINE, LT

TOTAL 0010 69312

MARKING REMOVAL LINE 4-INCH

646. 9000					
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS
0010	400+22 -	401+22	STH 22	100	FOR EASTBOUND
0010	400+47 -	401+47	STH 22	100	FOR WESTBOUND
0010	402+72 -	403+72	STH 22	100	FOR EASTBOUND
0010	403+47 -	404+47	STH 22	100	FOR WESTBOUND

TOTAL 0010 400

TEMPORARY MARKING LINE EPOXY 4-INCH

649. 0120					
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS
0010	312+88 -	381+69	STH 22	6881	YELLOW CENTERLINE
0010	382+91 -	668+23	STH 22	28532	YELLOW CENTERLINE
0010	312+88 -	338+35	STH 22	2547	WHITE EDGELINE, RT
0010	312+88 -	381+69	STH 22	6881	WHITE EDGELINE, LT
0010	382+91 -	416+25	STH 22	3334	WHITE EDGELINE, LT

0010	339+29 -	381+69	STH 22	4240	WHITE EDGELINE, RT
0010	382+91 -	392+12	STH 22	921	WHITE EDGELINE, RT
0010	393+10 -	496+08	STH 22	10298	WHITE EDGELINE, RT
0010	417+50 -	496+25	STH 22	7875	WHITE EDGELINE, LT
0010	497+40 -	521+46	STH 22	2406	WHITE EDGELINE, RT

0010	497+59 -	520+49	STH 22	2290	WHITE EDGELINE, LT
0010	523+22 -	562+00	STH 22	3878	WHITE EDGELINE, LT
0010	524+14 -	667+23	STH 22	14309	WHITE EDGELINE, RT
0010	562+77 -	575+48	STH 22	1271	WHITE EDGELINE, LT
0010	576+60 -	602+49	STH 22	2589	WHITE EDGELINE, LT

0010	603+50 -	668+23	STH 22	6473	WHITE EDGELINE, LT
0010	22+37 -	23+11	STH 22	74	YELLOW CENTERLINE
0010	23+45 -	24+04	STH 22	59	YELLOW CENTERLINE

TOTAL 0010 104858

TEMPORARY MARKING LINE REMOVABLE TAPE 4-INCH

649. 0150					
CATEGORY	STATION TO	STATION	LOCATION	LF	REMARKS
0010	400+22 -	403+72	STH 22	260	WHITE EDGELINE, LT, FOR EASTBOUND
0010	400+72 -	403+22	STH 22	400	WHITE EDGELINE, FOR EASTBOUND
0010	400+47 -	404+47	STH 22	305	WHITE EDGELINE, RT, FOR WESTBOUND
0010	400+97 -	403+97	STH 22	400	WHITE EDGELINE, FOR WESTBOUND
0010	393+22 -	400+22	STH 22	700	YELLOW CENTERLINE, FOR EASTBOUND

0010	393+47 -	400+47	STH 22	700	YELLOW CENTERLINE, FOR WESTBOUND
0010	403+72 -	410+72	STH 22	700	YELLOW CENTERLINE, FOR EASTBOUND
0010	404+47 -	411+47	STH 22	700	YELLOW CENTERLINE, FOR WESTBOUND

TOTAL 0010 4165

TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18-INCH

CATEGORY	STATION	LOCATION	649.0850 LF	REMARKS
0010	400+22	STH 22	15	RT, FOR EASTBOUND
0010	400+47	STH 22	15	RT, FOR WESTBOUND
0010	403+72	STH 22	15	LT, FOR EASTBOUND
0010	404+47	STH 22	15	LT, FOR WESTBOUND
TOTAL 0010			60	

CONSTRUCTION STAKING SUMMARY

CATEGORY	STATION TO	STATION	LOCATION	650.4500 SUBGRADE LF	650.5000 BASE LF	650.6000 PIPE CULVERTS EACH	650.6500 STRUCTURE LAYOUT LS	650.8000 RESURFACING REFERENCE LF	REMARKS
0010	312+88 -	381+69	STH 22					6881	
0010	382+91 -	668+23	STH 22					28532	
0010		318+52	STH 22			1			
0010		433+24	STH 22	80	80	2			
0010		520+86	STH 22	45	45	1			
0010		621+70	STH 22	118	118	1			
0010		640+53	STH 22	65	65	1			
0010		667+23	STH 22			1			
0020		402+71	STH 22				1		C-42-793
TOTAL 0010				308	308	7		35413	
TOTAL 0020							1		

SAWING CONCRETE

CATEGORY	STATION	LOCATION	690.0250 LF	REMARKS
0010	432+84	STH 22	30	
0010	433+64	STH 22	30	
0010	520+65	STH 22	30	
0010	521+08	STH 22	30	
0010	621+11	STH 22	30	
0010	622+29	STH 22	30	
0010	640+05	STH 22	30	
0010	641+01	STH 22	30	
0010		STH 22	30	CURB LT
0010		STH 22	25	CURB & INLET
TOTAL 0010			295	

STORM LATERAL 4-INCH

CATEGORY	STATION	LOCATION	SPV.0090.01 LF	REMARKS
0010	522+51	CREAM CITY ROAD	3	LT
TOTAL 0010			3	

GRADING, SHAPING AND FINISHING CULVERT PIPES AND APRON ENDWALLS

CATEGORY	STATION	LOCATION	SPV. 0060. 01 EACH	EXCAVATION CY	COMMON CY	BORROW CY	TOPSOIL SY	FERTILIZER	SEED	EROSION MAT		REMARKS
								TYPE B CWT	NO. 30 LB	CLASS I SY	TYPE B	
0010	318+52	STH 22	2	0	10	55	0.04	0.99	55			
0010	433+24	STH 22	2	0	18	103	0.06	1.85	103			
0010	520+86	STH 22	2	0	0	44	0.02	0.79	44			
0010	621+70	STH 22	2	0	11	144	0.09	2.60	144			
0010	640+53	STH 22	2	0	0	53	0.04	0.96	53			
0010	667+23	STH 22	2	0	8	44	0.02	0.79	44			
TOTAL 0010			12	0	47	443	0.27	7.98	443			

*ITEMS & QUANTITIES LISTED FOR BID INFORMATION ONLY

GRADING, SHAPING AND FINISHING BOX CULVERT AND WINGWALL

CATEGORY	STATION	LOCATION	SPV. 0060. 02 EACH	EXCAVATION CY	COMMON CY	BORROW CY	TOPSOIL SY	FERTILIZER	SEED	EROSION MAT CLASS		REMARKS
								TYPE B CY	NO. 30 LB	I TYPE B SY	CONSTRUCTION STAKING LF	
0010	402+71	STH 22	2	0	89	412	0.26	7.43	412		224	
TOTAL 0010			2	0	89	412	0.26	7.43	412		224	

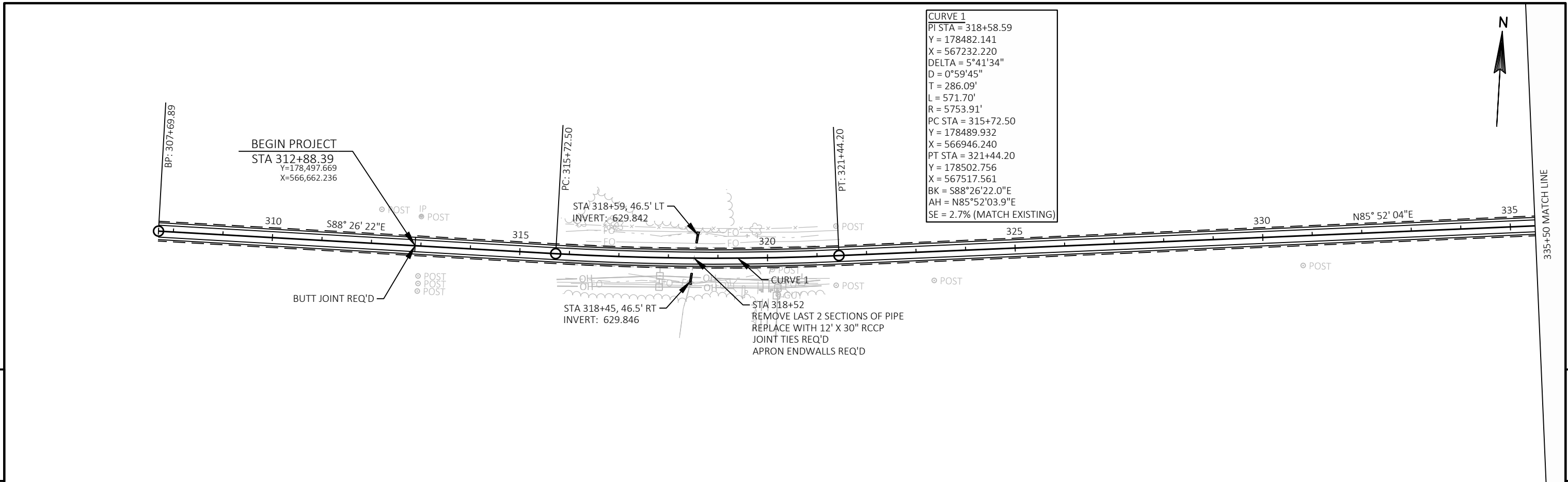
*ITEMS & QUANTITIES LISTED FOR BID INFORMATION ONLY

TEMPORARY WATER DIVERSION - C-42-793

CATEGORY	STATION	LOCATION	SPV. 0105. 01 LS	REMARKS
0010	402+71	STH 22	1	
TOTAL 0010			1	

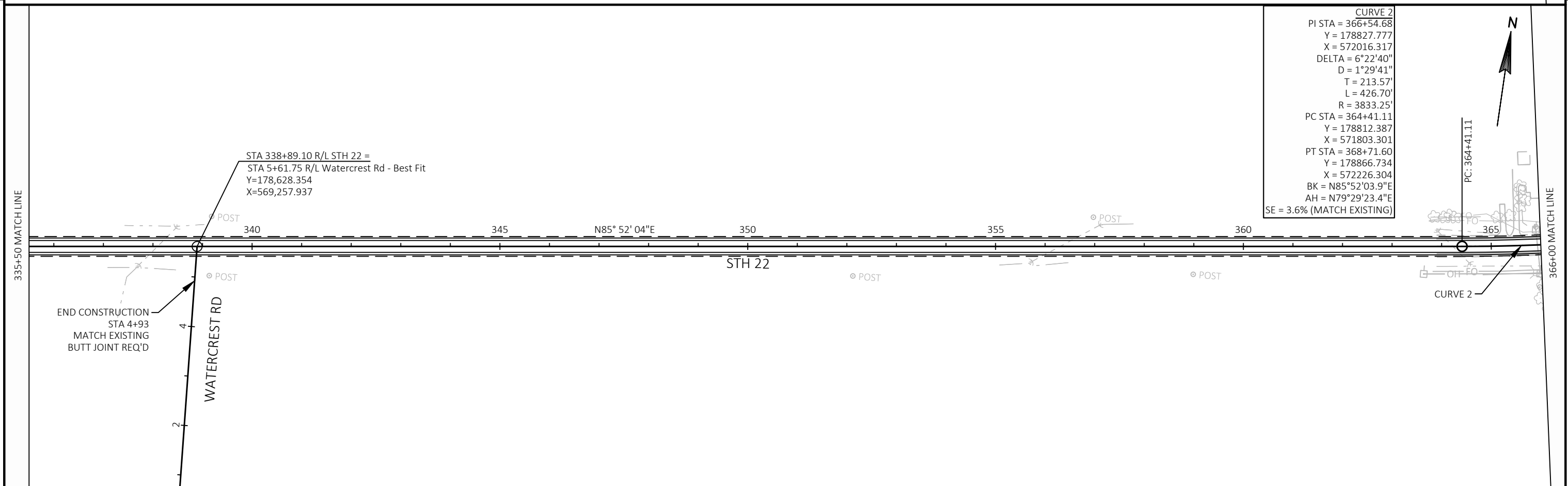
TEMPORARY WATER DIVERSION - C-42-797

CATEGORY	STATION	LOCATION	SPV. 0105. 02 LS	REMARKS
0010	621+70	STH 22	1	
TOTAL 0010			1	



5

5



PROJECT NO: 9180-31-60 HWY: STH 22 COUNTY: OCONTO PLAN SHEETS SHEET 5

BENCH MARKS			
POINT NAME	ELEVATION	STATION & OFFSET	DESCRIPTION
BM901	611.60	392+22 173'RT	HEIGHT MOD MON 5L71, LOCATED ON FUNK RD 200FT SOUTH OF ITS JUNCTION WITH STH 22
BM1000	610.40	381+59 23'RT	WISDOT AL CAP SET IN THE SW PARAPET WALL OF BRIDGE B-42-0096 OVER THE LITTLE RIVER

CURVE 3
 PI STA = 391+34.26
 Y = 179279.466
 X = 574451.003
 DELTA = 30°17'00"
 D = 3°00'01"
 T = 516.79'
 L = 1009.40'
 R = 1909.77'
 PC STA = 386+17.47
 Y = 179185.199
 X = 573942.886
 PT STA = 396+35.70
 Y = 179617.102
 X = 574842.246
 BK = N79°29'23.4"E
 AH = N49°12'23.0"E
 SE = 5.4% (MATCH EXISTING)

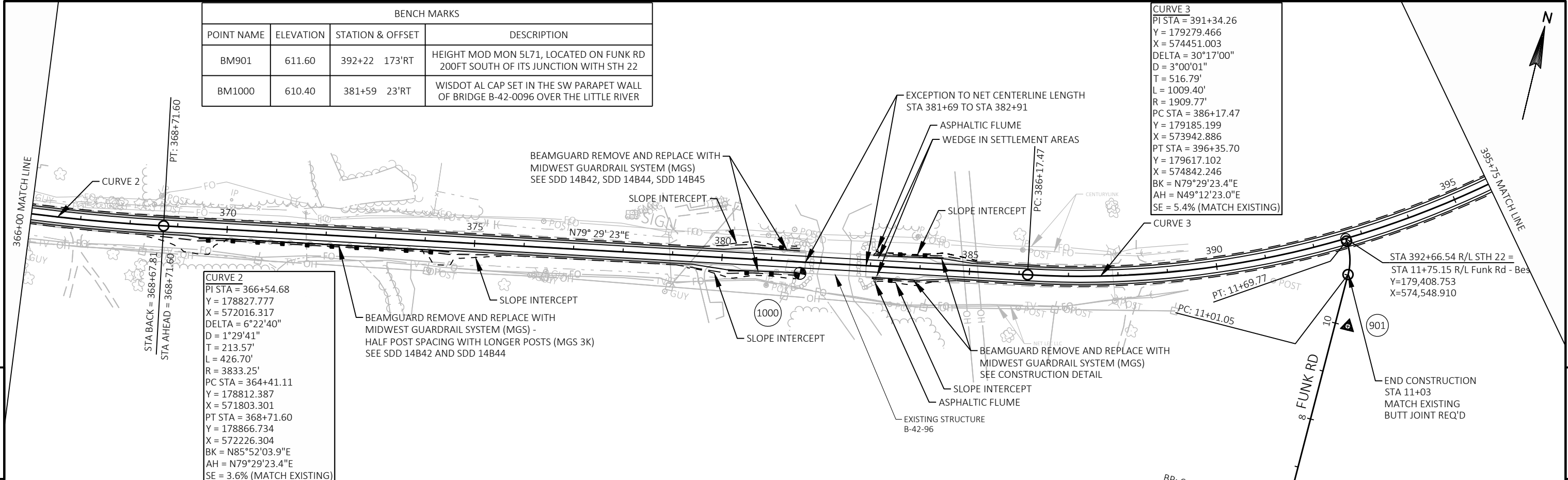
CURVE 2
 PI STA = 366+54.68
 Y = 178827.777
 X = 572016.317
 DELTA = 6°22'40"
 D = 1°29'41"
 T = 213.57'
 L = 426.70'
 R = 3833.25'
 PC STA = 364+41.11
 Y = 178812.387
 X = 571803.301
 PT STA = 368+71.60
 Y = 178866.734
 X = 572226.304
 BK = N85°52'03.9"E
 AH = N79°29'23.4"E
 SE = 3.6% (MATCH EXISTING)

BEAMGUARD REMOVE AND REPLACE WITH MIDWEST GUARDRAIL SYSTEM (MGS) - HALF POST SPACING WITH LONGER POSTS (MGS 3K) SEE SDD 14B42 AND SDD 14B44

BEAMGUARD REMOVE AND REPLACE WITH MIDWEST GUARDRAIL SYSTEM (MGS) SEE SDD 14B42, SDD 14B44, SDD 14B45

BEAMGUARD REMOVE AND REPLACE WITH MIDWEST GUARDRAIL SYSTEM (MGS) SEE CONSTRUCTION DETAIL

END CONSTRUCTION STA 11+03 MATCH EXISTING BUTT JOINT REQ'D



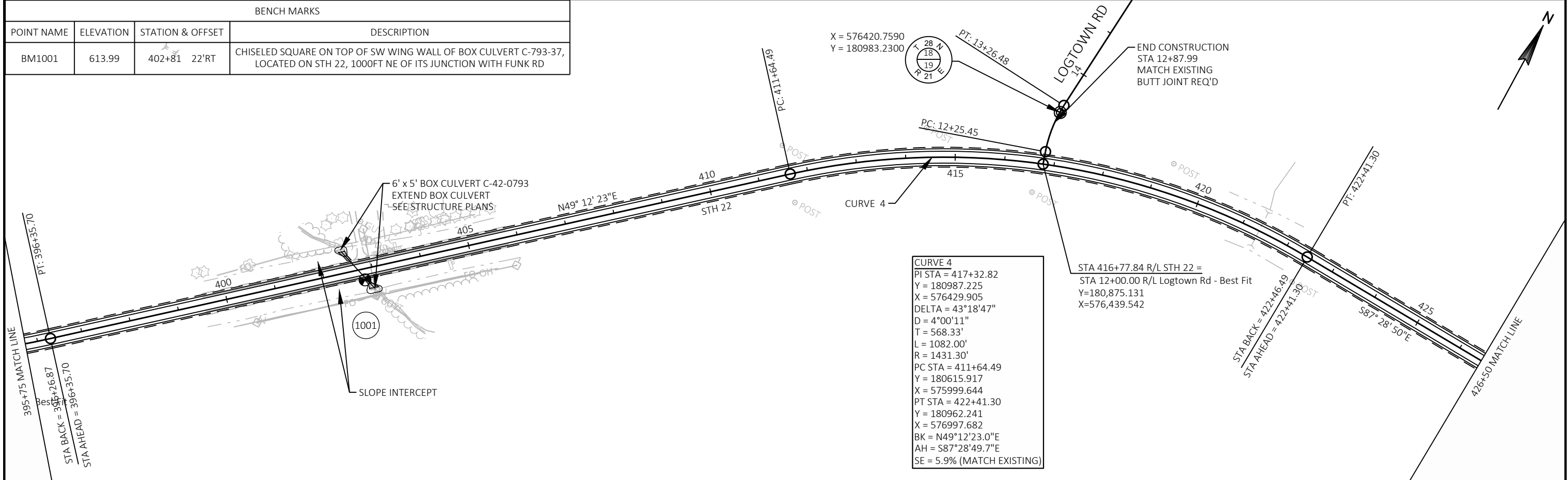
BENCH MARKS			
POINT NAME	ELEVATION	STATION & OFFSET	DESCRIPTION
BM1001	613.99	402+81 22'RT	CHISELED SQUARE ON TOP OF SW WING WALL OF BOX CULVERT C-793-37, LOCATED ON STH 22, 1000FT NE OF ITS JUNCTION WITH FUNK RD

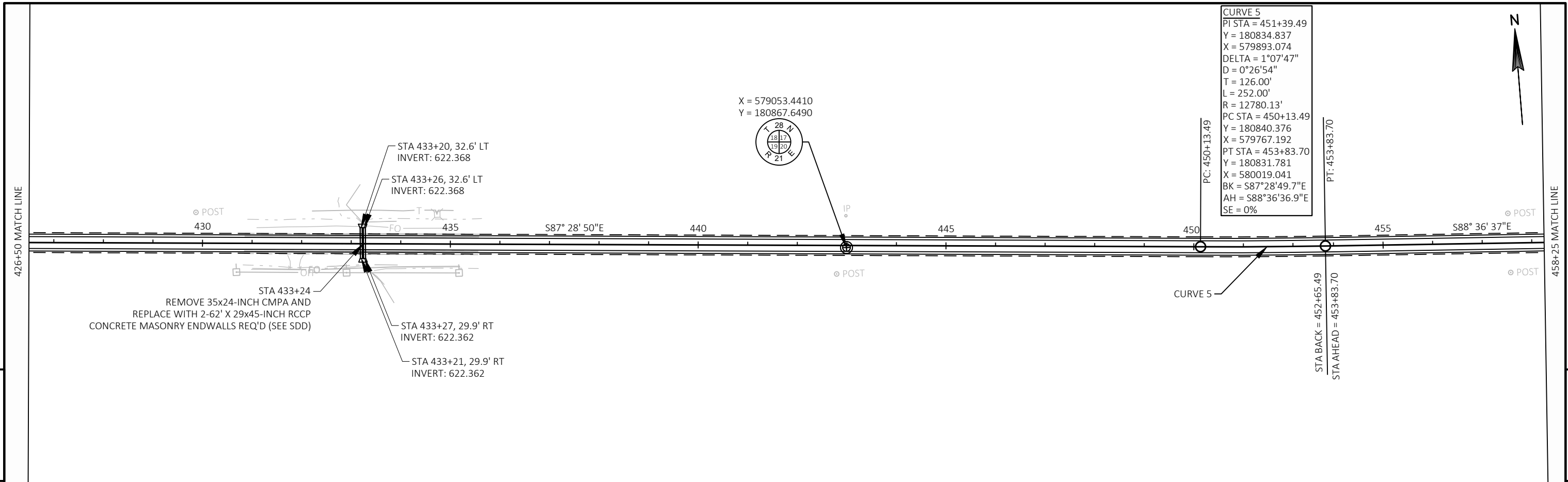
CURVE 4
 PI STA = 417+32.82
 Y = 180987.225
 X = 576429.905
 DELTA = 43°18'47"
 D = 4°00'11"
 T = 568.33'
 L = 1082.00'
 R = 1431.30'
 PC STA = 411+64.49
 Y = 180615.917
 X = 575999.644
 PT STA = 422+41.30
 Y = 180962.241
 X = 576997.682
 BK = N49°12'23.0"E
 AH = S87°28'49.7"E
 SE = 5.9% (MATCH EXISTING)

STA 416+77.84 R/L STH 22 = STA 12+00.00 R/L Logtown Rd - Best Fit
 Y=180,875.131
 X=576,439.542

6' x 5' BOX CULVERT C-42-0793
 EXTEND BOX CULVERT
 SEE STRUCTURE PLANS

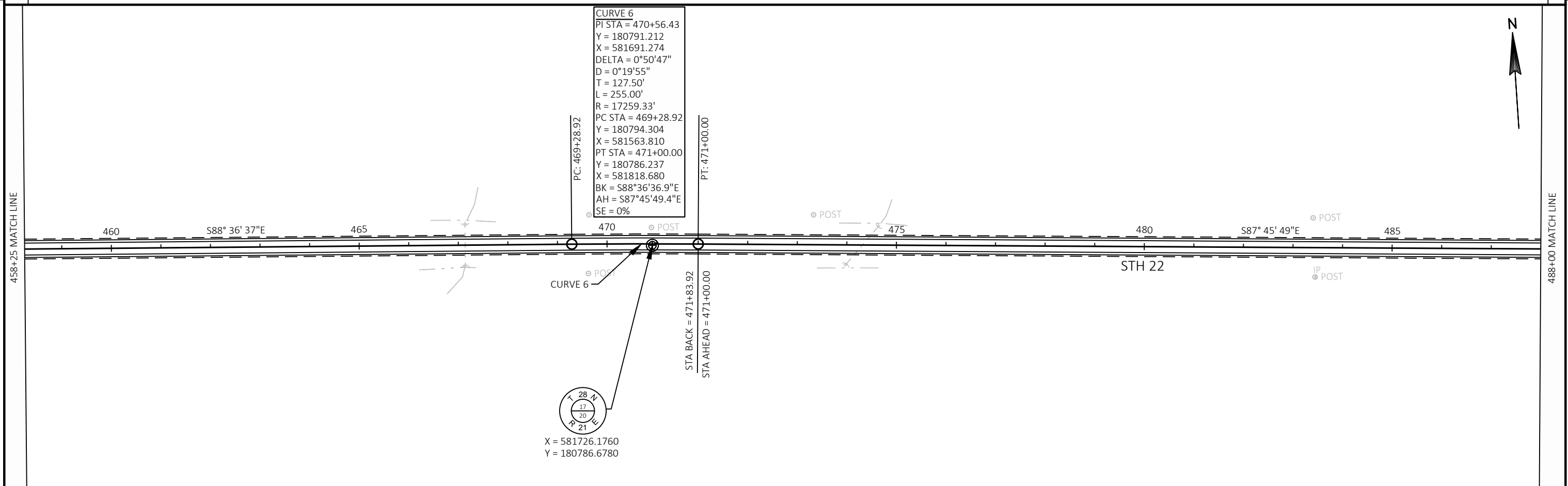
END CONSTRUCTION STA 12+87.99 MATCH EXISTING BUTT JOINT REQ'D

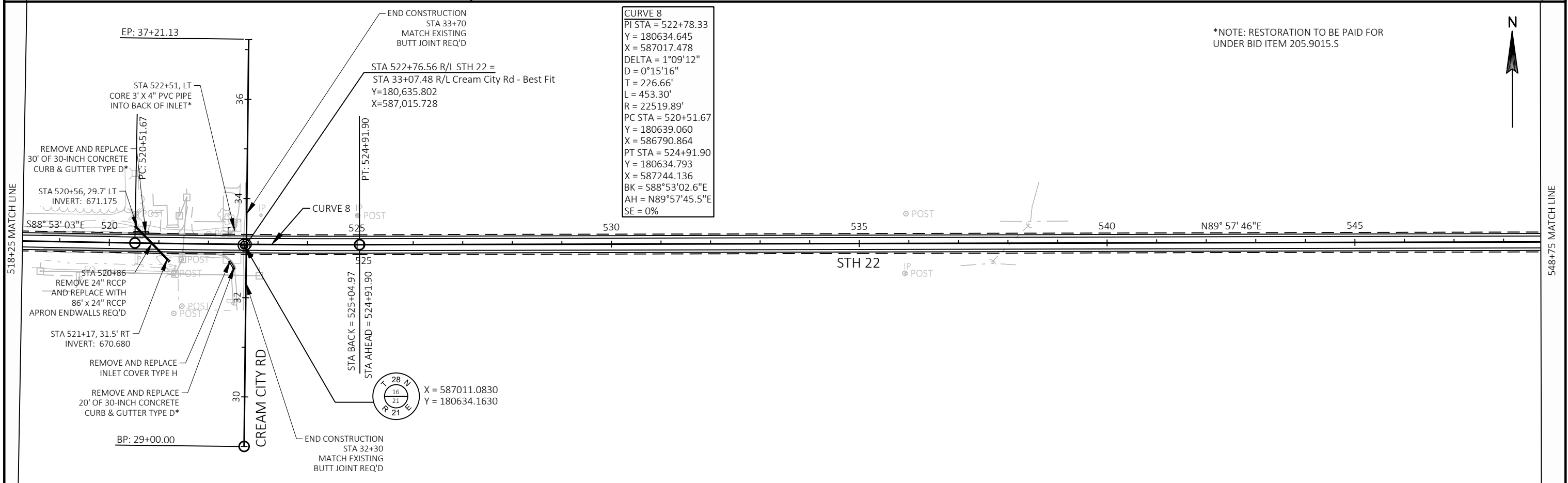
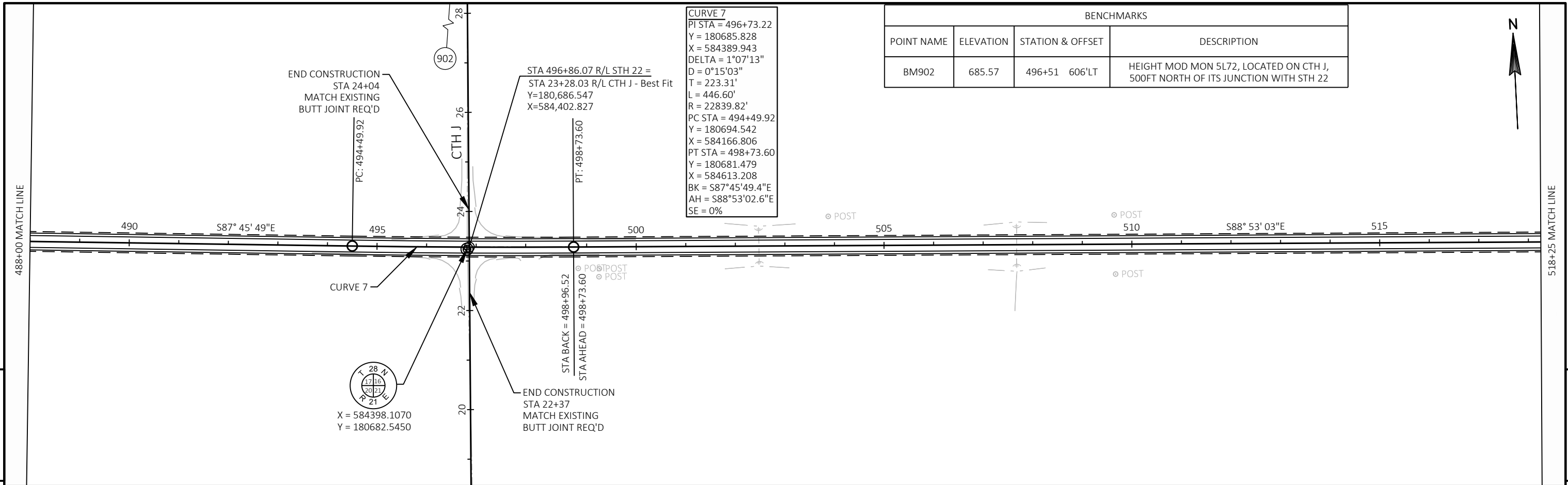




CURVE 5
 PI STA = 451+39.49
 Y = 180834.837
 X = 579893.074
 DELTA = 1°07'47"
 D = 0°26'54"
 T = 126.00'
 L = 252.00'
 R = 12780.13'
 PC STA = 450+13.49
 Y = 180840.376
 X = 579767.192
 PT STA = 453+83.70
 Y = 180831.781
 X = 580019.041
 BK = S87°28'49.7"E
 AH = S88°36'36.9"E
 SE = 0%

CURVE 6
 PI STA = 470+56.43
 Y = 180791.212
 X = 581691.274
 DELTA = 0°50'47"
 D = 0°19'55"
 T = 127.50'
 L = 255.00'
 R = 17259.33'
 PC STA = 469+28.92
 Y = 180794.304
 X = 581563.810
 PT STA = 471+00.00
 Y = 180786.237
 X = 581818.680
 BK = S88°36'36.9"E
 AH = S87°45'49.4"E
 SE = 0%





PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	PLAN SHEETS	SHEET	E
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BENCHMARKS			
POINT NAME	ELEVATION	STATION & OFFSET	DESCRIPTION
BM903	664.95	562+00 120'LT	HEIGHT MOD MON 5L73, LOCATED ON VAN HULLE LN, 100FT NORTH OF ITS JUNCTION WITH STH 22

CURVE 9
 PI STA = 576+02.61
 Y = 180638.125
 X = 592354.849
 DELTA = 3°59'58"
 D = 0°45'00"
 T = 266.76'
 L = 533.30'
 R = 7639.88'
 PC STA = 573+35.86
 Y = 180637.951
 X = 592088.091
 PT STA = 578+75.10
 Y = 180619.693
 X = 592620.970
 BK = N89°57'45.5"E
 AH = S86°02'16.2"E
 SE = 2.0% (MATCH EXISTING)

STA 576+00.06 R/L STH 22 =
 STA 46+00.00 R/L Young Rd - Best Fit
 Y=180,633.629
 X=592,352.244

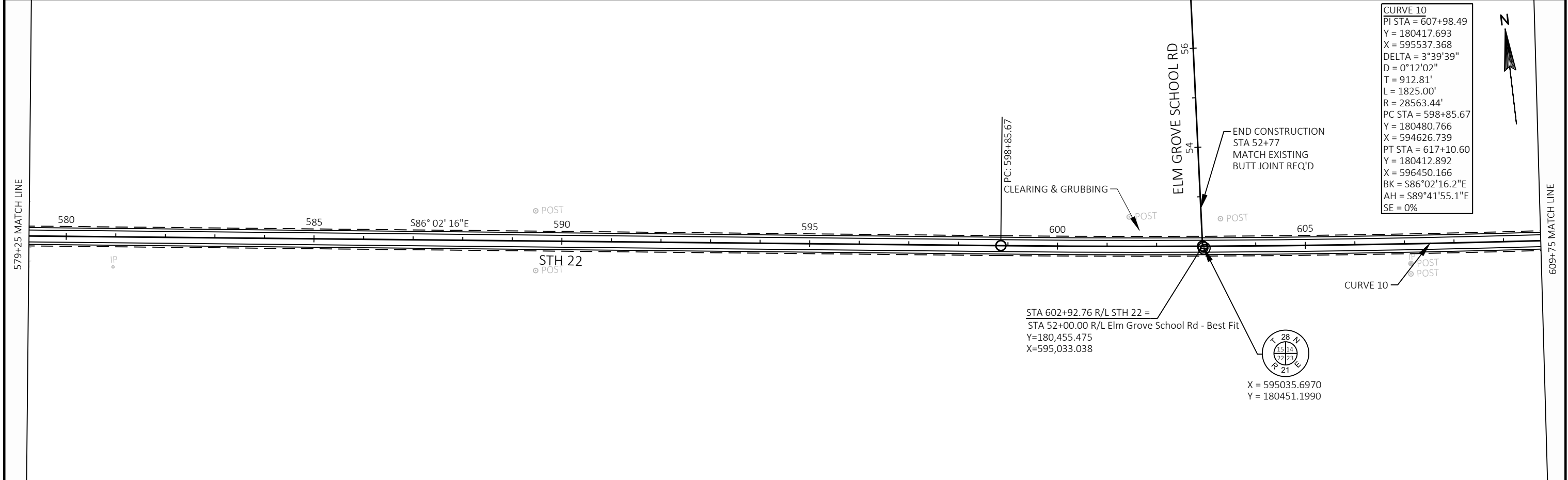
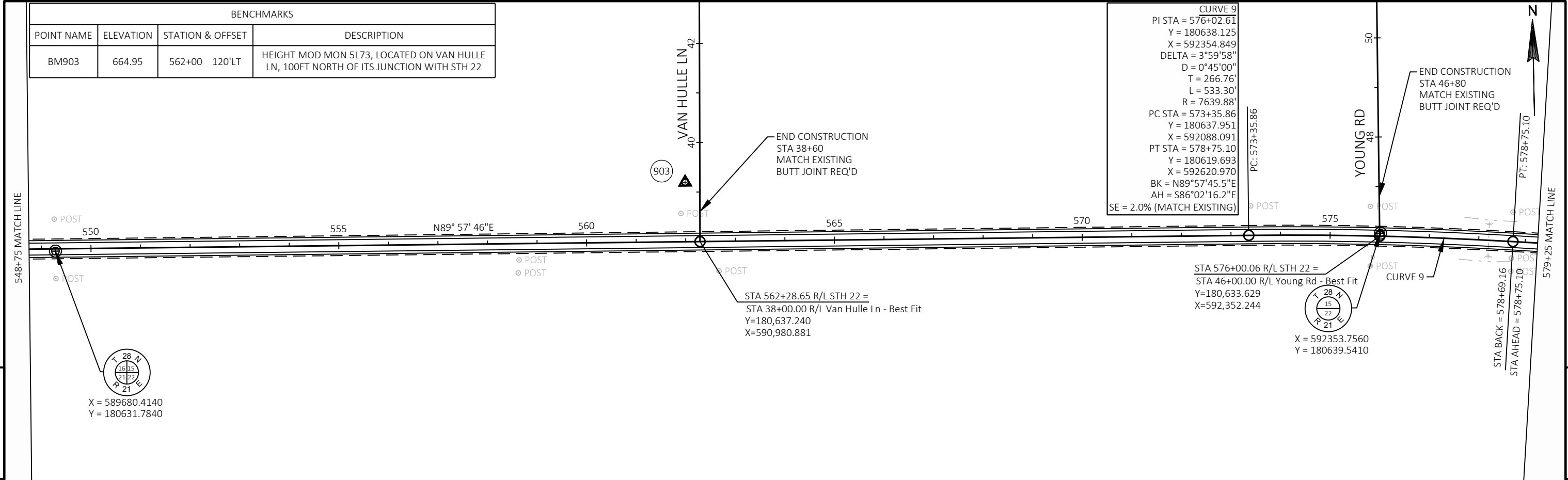
X = 592353.7560
 Y = 180639.5410

STA 562+28.65 R/L STH 22 =
 STA 38+00.00 R/L Van Hulle Ln - Best Fit
 Y=180,637.240
 X=590,980.881

CURVE 10
 PI STA = 607+98.49
 Y = 180417.693
 X = 595537.368
 DELTA = 3°39'39"
 D = 0°12'02"
 T = 912.81'
 L = 1825.00'
 R = 28563.44'
 PC STA = 598+85.67
 Y = 180480.766
 X = 594626.739
 PT STA = 617+10.60
 Y = 180412.892
 X = 596450.166
 BK = S86°02'16.2"E
 AH = S89°41'55.1"E
 SE = 0%

STA 602+92.76 R/L STH 22 =
 STA 52+00.00 R/L Elm Grove School Rd - Best Fit
 Y=180,455.475
 X=595,033.038

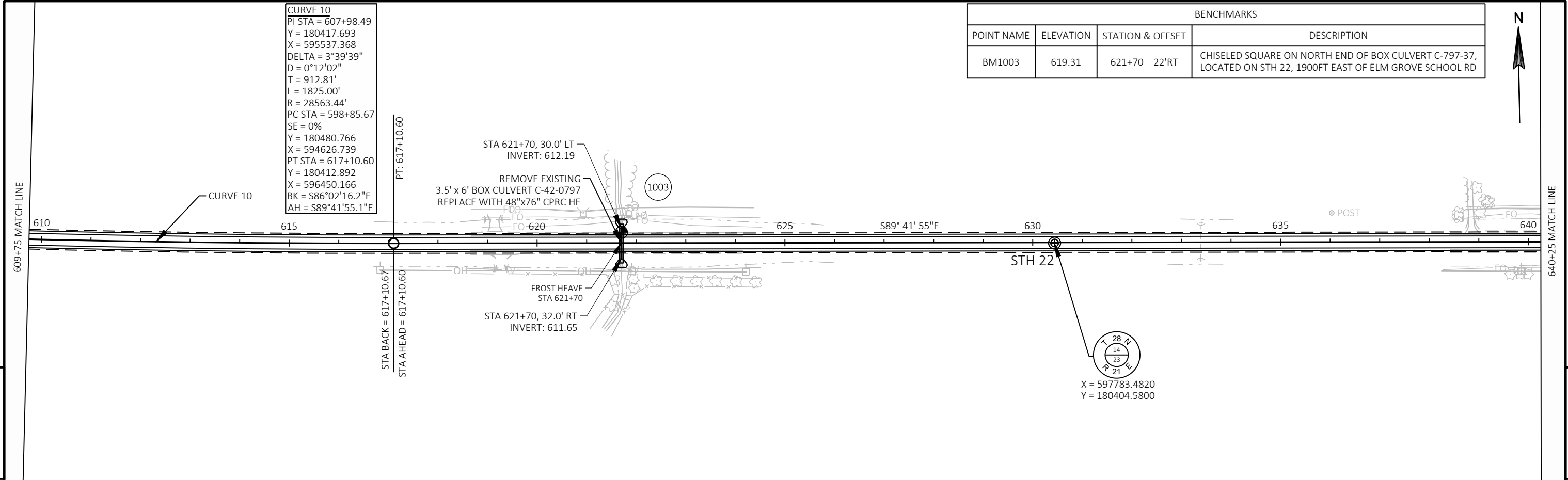
X = 595035.6970
 Y = 180451.1990



PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	PLAN SHEETS	SHEET	E
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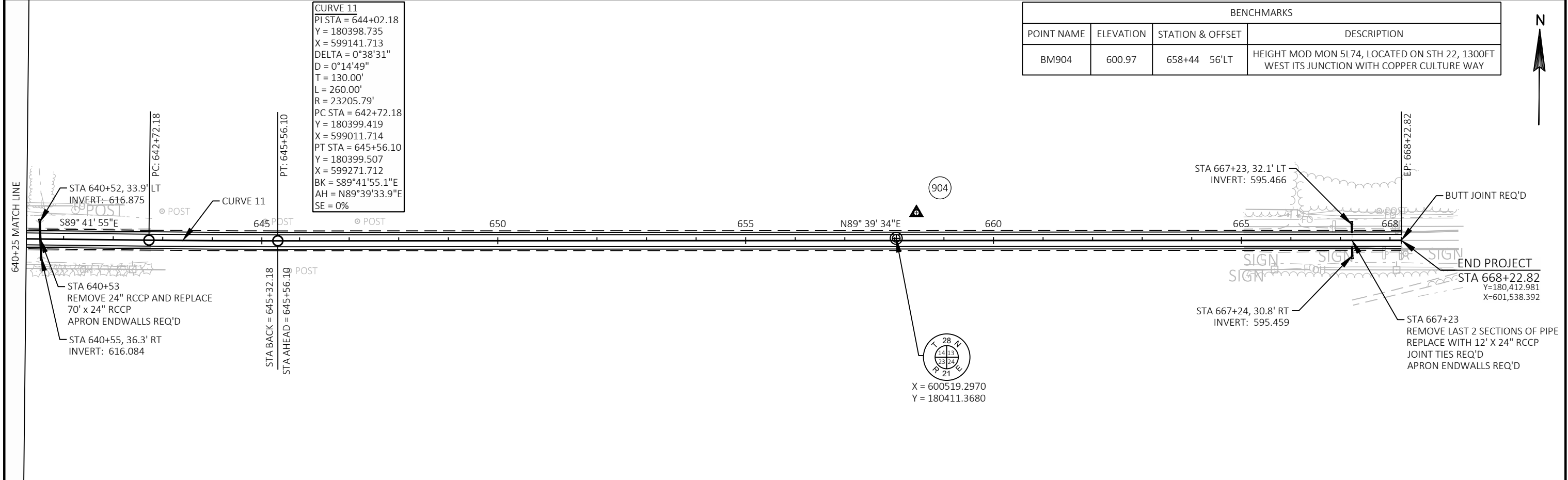
CURVE 10
 PI STA = 607+98.49
 Y = 180417.693
 X = 595537.368
 DELTA = 3°39'39"
 D = 0°12'02"
 T = 912.81'
 L = 1825.00'
 R = 28563.44'
 PC STA = 598+85.67
 SE = 0%
 Y = 180480.766
 X = 594626.739
 PT STA = 617+10.60
 Y = 180412.892
 X = 596450.166
 BK = S86°02'16.2"E
 AH = S89°41'55.1"E

BENCHMARKS			
POINT NAME	ELEVATION	STATION & OFFSET	DESCRIPTION
BM1003	619.31	621+70 22'RT	CHISELED SQUARE ON NORTH END OF BOX CULVERT C-797-37, LOCATED ON STH 22, 1900FT EAST OF ELM GROVE SCHOOL RD



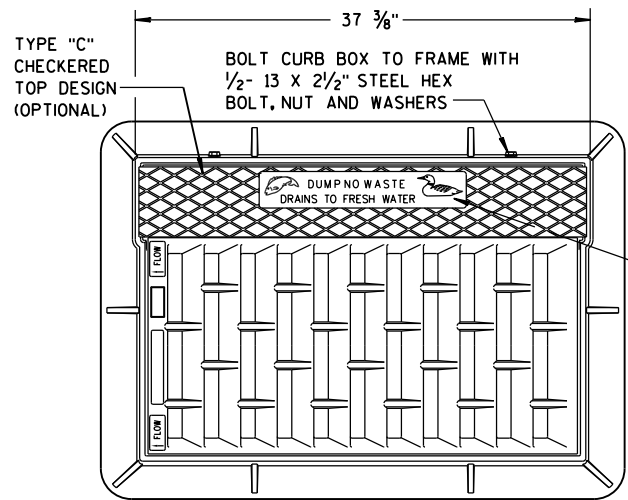
CURVE 11
 PI STA = 644+02.18
 Y = 180398.735
 X = 599141.713
 DELTA = 0°38'31"
 D = 0°14'49"
 T = 130.00'
 L = 260.00'
 R = 23205.79'
 PC STA = 642+72.18
 Y = 180399.419
 X = 599011.714
 PT STA = 645+56.10
 Y = 180399.507
 X = 599271.712
 BK = S89°41'55.1"E
 AH = N89°39'33.9"E
 SE = 0%

BENCHMARKS			
POINT NAME	ELEVATION	STATION & OFFSET	DESCRIPTION
BM904	600.97	658+44 56'LT	HEIGHT MOD MON 5L74, LOCATED ON STH 22, 1300FT WEST ITS JUNCTION WITH COPPER CULTURE WAY

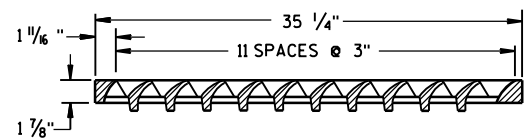
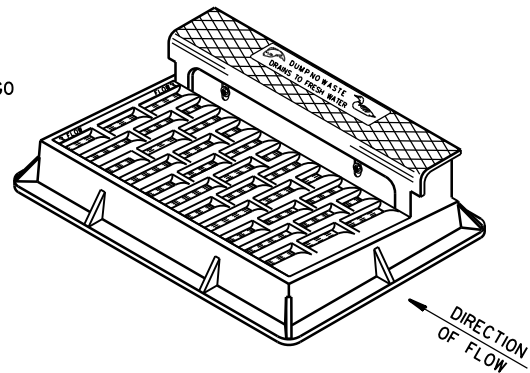


Standard Detail Drawing List

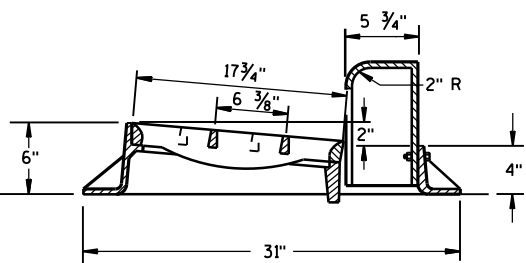
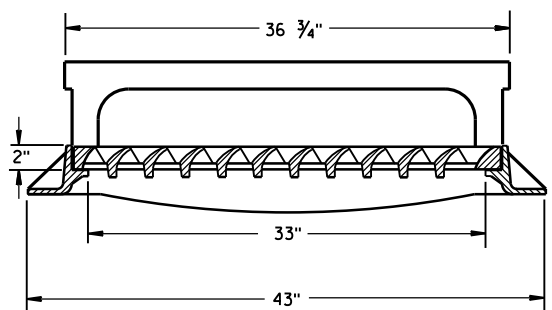
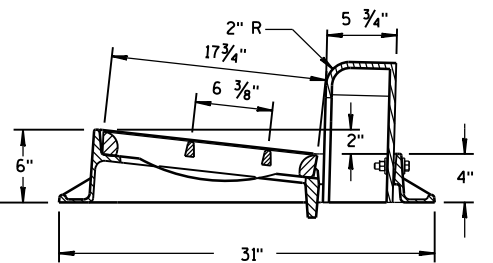
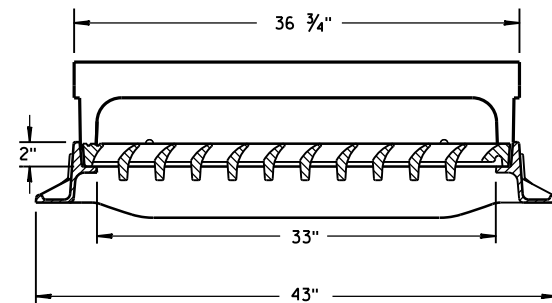
08A05-19A	INLET COVERS TYPE A, H, A-S, H-S & Z
08D01-21A	CONCRETE CURB & GUTTER
08D01-21B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D04-05	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08E09-06	SILT FENCE
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
08F10-01	CONCRETE MASONRY ENDWALLS FOR CULVERT PIPE AND PIPE ARCH
13A10-02A	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02B	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02C	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02D	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A11-03A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-03B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13C19-02	HMA LONGITUDINAL JOINTS
14B07-15A	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-15B	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-15C	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-15D	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-15E	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-15F	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-15G	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-15H	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B07-15I	CONCRETE BARRIER TEMPORARY PRECAST, 12' -6"
14B08-02A	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
14B08-02B	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
14B08-02C	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
14B08-02D	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
14B08-02E	CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS
14B28-03	GUARDRAIL MOW STRIP
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05E	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05F	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05I	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05J	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05K	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05L	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-08C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C03-05	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C08-20A	LONGITUDINAL MARKING (MAINLINE)
15C11-07A	CHANNELIZING DEVICES FLEXIBLE TUBULAR MARKER POST
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-07	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS
15D39-02	TRAFFIC CONTROL, DROP-OFF SIGNING
15D44-02	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES
15D45-02	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH LOOSE GRAVEL



**NOTE:
GRATE IS REVERSIBLE.**

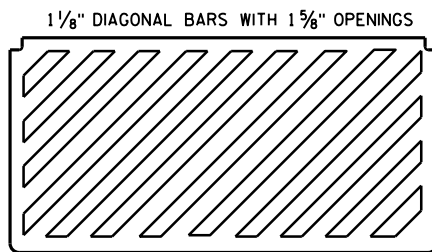


NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"



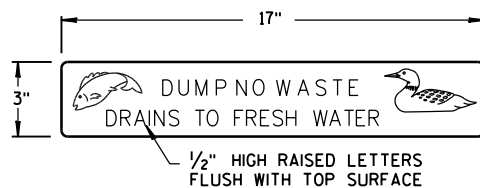
TYPE "H"

NOTE: EITHER CASTING IS ACCEPTABLE

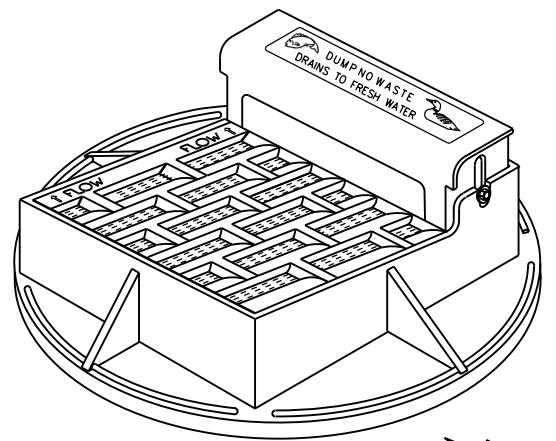


**SPECIAL GRATE FOR
TYPE "H" COVER**

(MEASURES 35 1/4" X 17 3/4" X 2")
(NOTED AS TYPE H-S ON DRAINAGE TABLE)

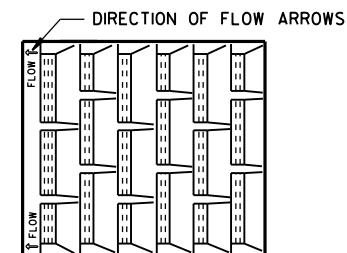


LOGO DETAIL



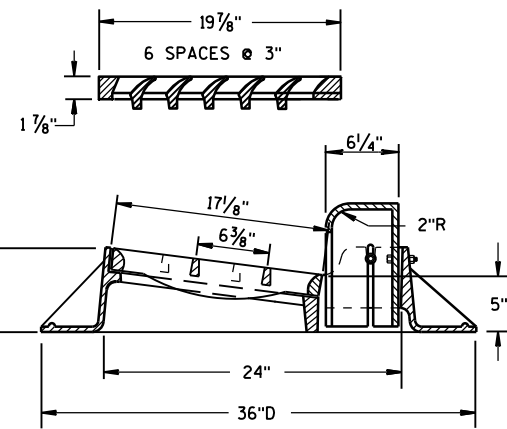
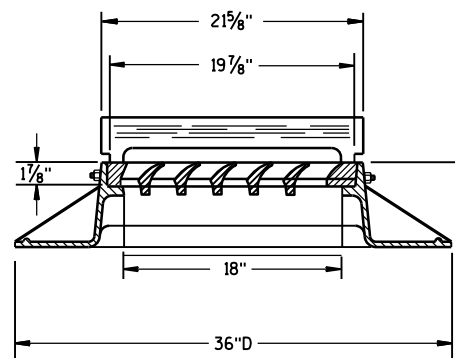
NOTE: CURB BOX ADJUSTABLE 4" TO 9"

**NOTE:
GRATE IS REVERSIBLE.**

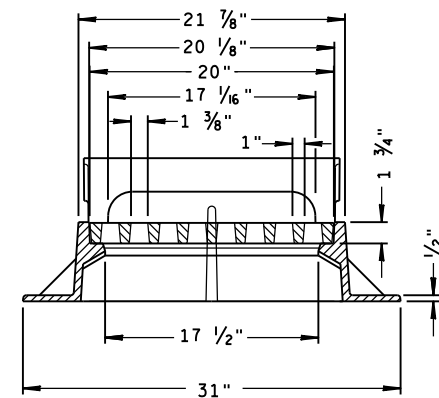
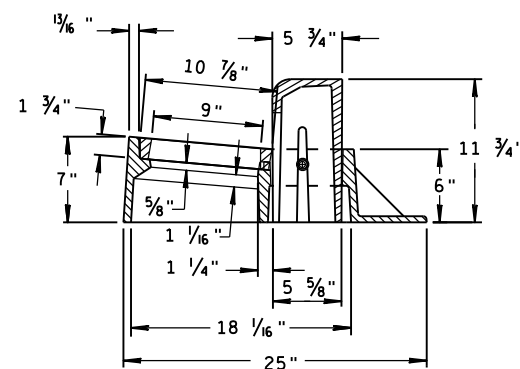


**SPECIAL GRATE FOR
TYPE "A" COVER**

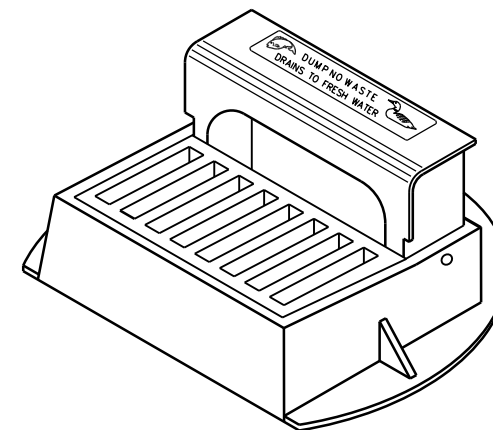
(MEASURES 19 3/4" X 17" X 1 1/8")
(NOTED AS TYPE A-S ON DRAINAGE TABLE)



TYPE "A"



TYPE "Z"

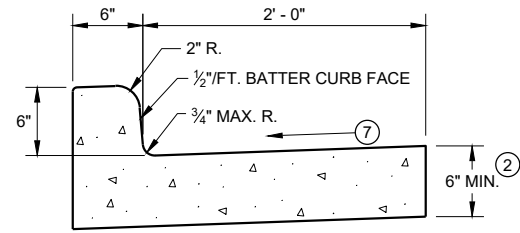


**INLET COVERS
TYPE A, H, A-S, H-S & Z**

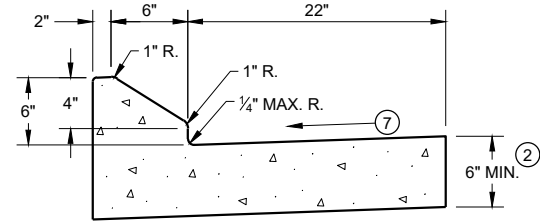
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11-27-13
DATE
FHWA

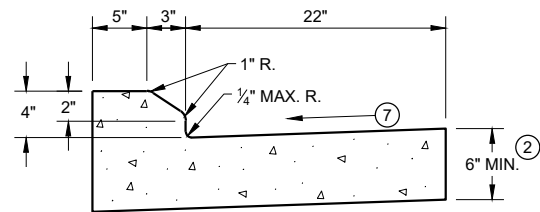
/s/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



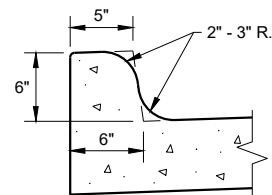
TYPES A^① & D



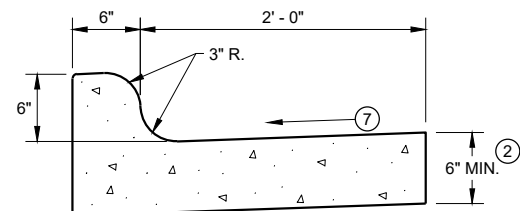
6" SLOPED CURB TYPES G^① & J



4" SLOPED CURB TYPES G^① & J

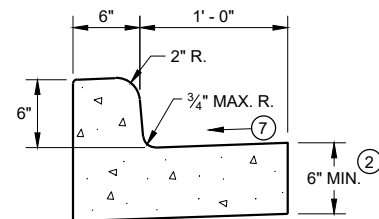


TYPES K^① & L
(OPTIONAL CURB SHAPE)



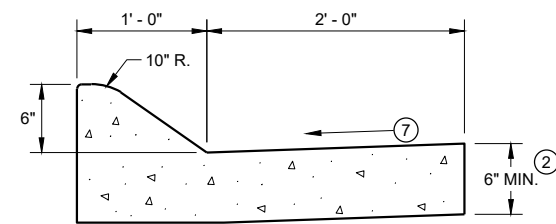
TYPES K^① & L

CONCRETE CURB AND GUTTER 30"

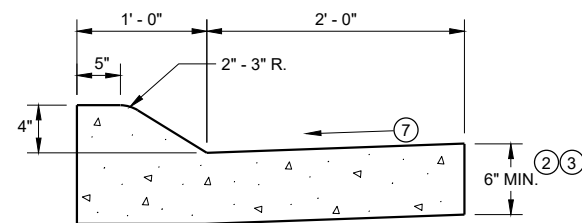


TYPES A^① & D

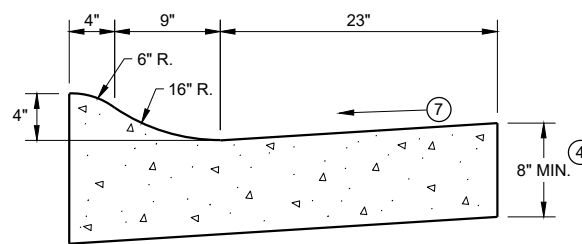
CONCRETE CURB AND GUTTER 18"



6" SLOPED CURB TYPES A^① & D



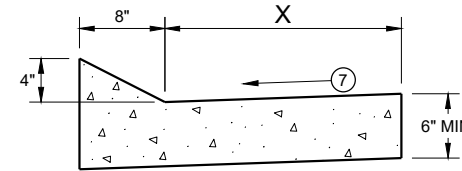
4" SLOPED CURB TYPES A^① & D



4" SLOPED CURB TYPES R^① & T^⑤

CONCRETE CURB AND GUTTER 36"

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

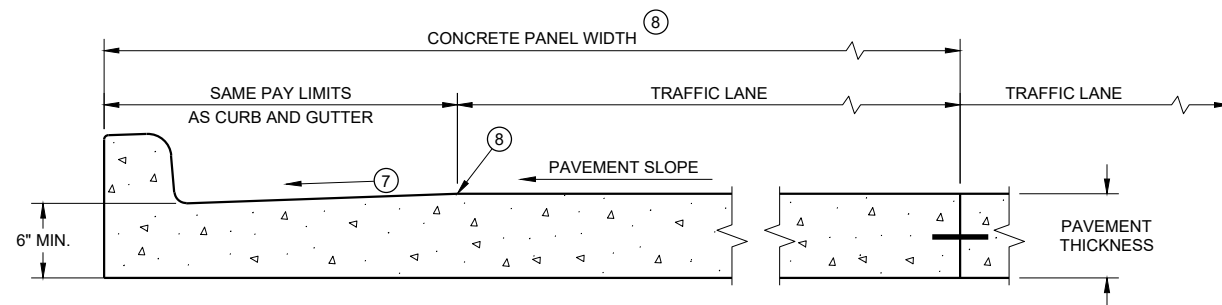


TYPES TBT & TBTT^①

CONCRETE CURB AND GUTTER

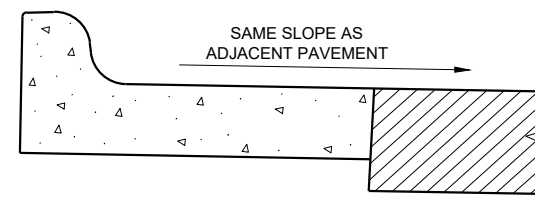
PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

PAVEMENT THICKNESS	MAXIMUM PANEL WIDTH
LESS THAN 10"	12'
10" & ABOVE	15'



PARTIAL SECTION OF PAVEMENT *
WITH INTEGRAL CURB AND GUTTER

* BIKE LANE IS NOT SHOWN



REVERSE SLOPE GUTTER^⑥
(TYPICAL FOR ALL CURB & GUTTER TYPES)

GENERAL NOTES

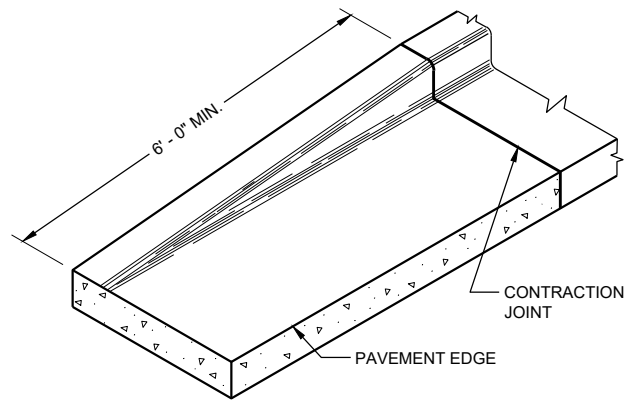
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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

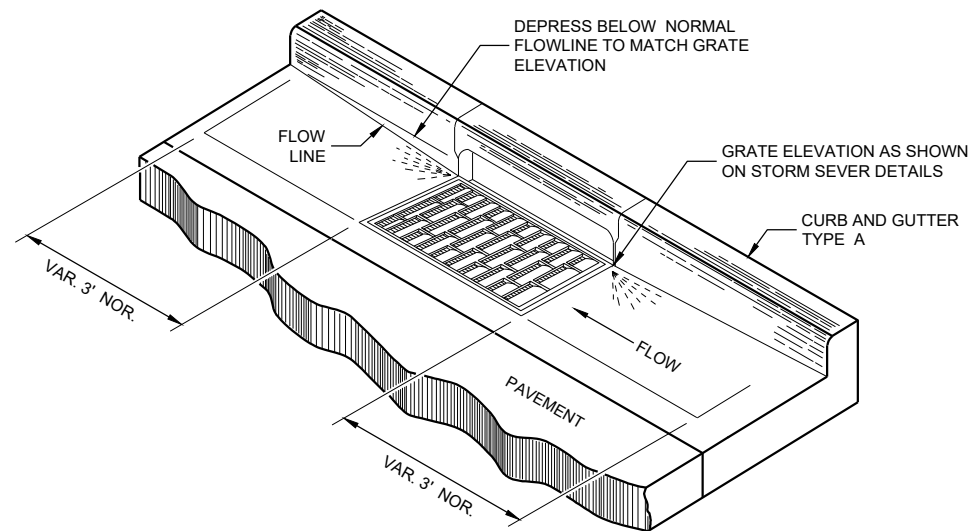
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

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

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② 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.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- ④ 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.
- ⑤ THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑥ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.
- ⑦ USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
- ⑧ INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.



END SECTION CURB AND GUTTER



DETAIL OF CURB AND GUTTER AT INLETS
(TYPICAL H INLET COVER SHOWN)

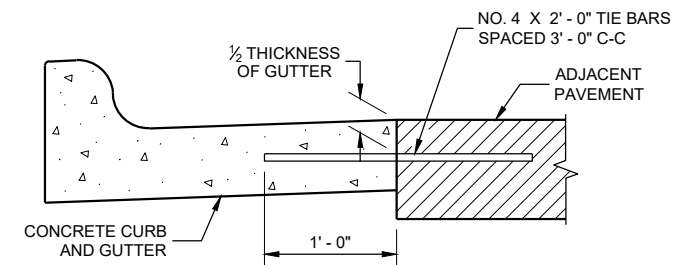
GENERAL NOTES

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

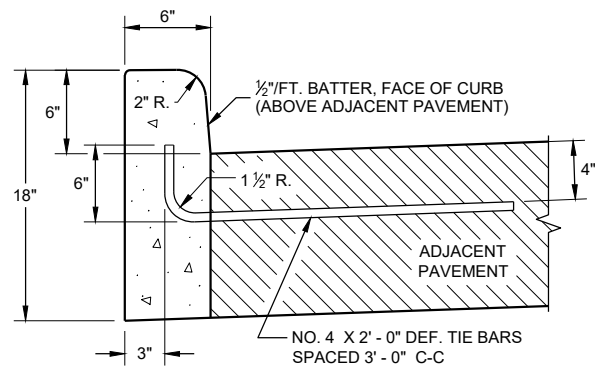
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

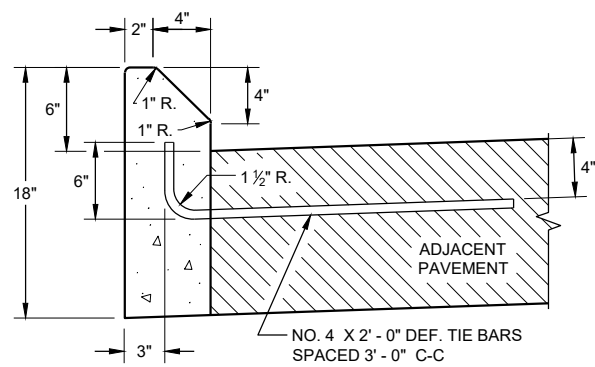
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑨ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.



TYPICAL TIE BAR LOCATION ①

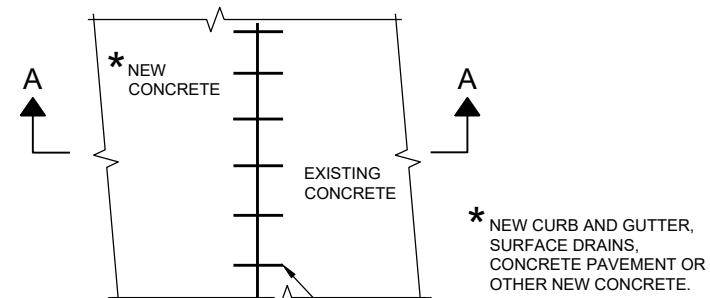


TYPES A ① & D

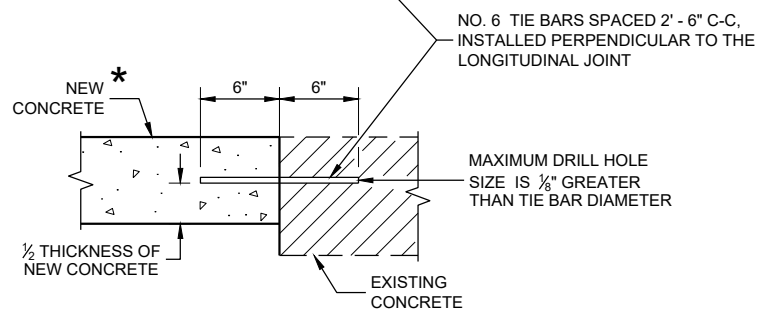


TYPES G ① & J

CONCRETE CURB

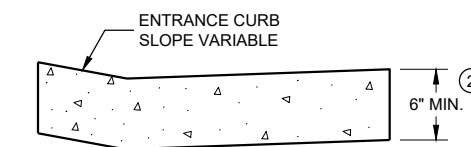


PLAN VIEW



SECTION A - A

TIE BARS DRILLED INTO EXISTING PAVEMENT



DRIVEWAY ENTRANCE CURB ⑨
(WHEN DIRECTED BY THE ENGINEER)

CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

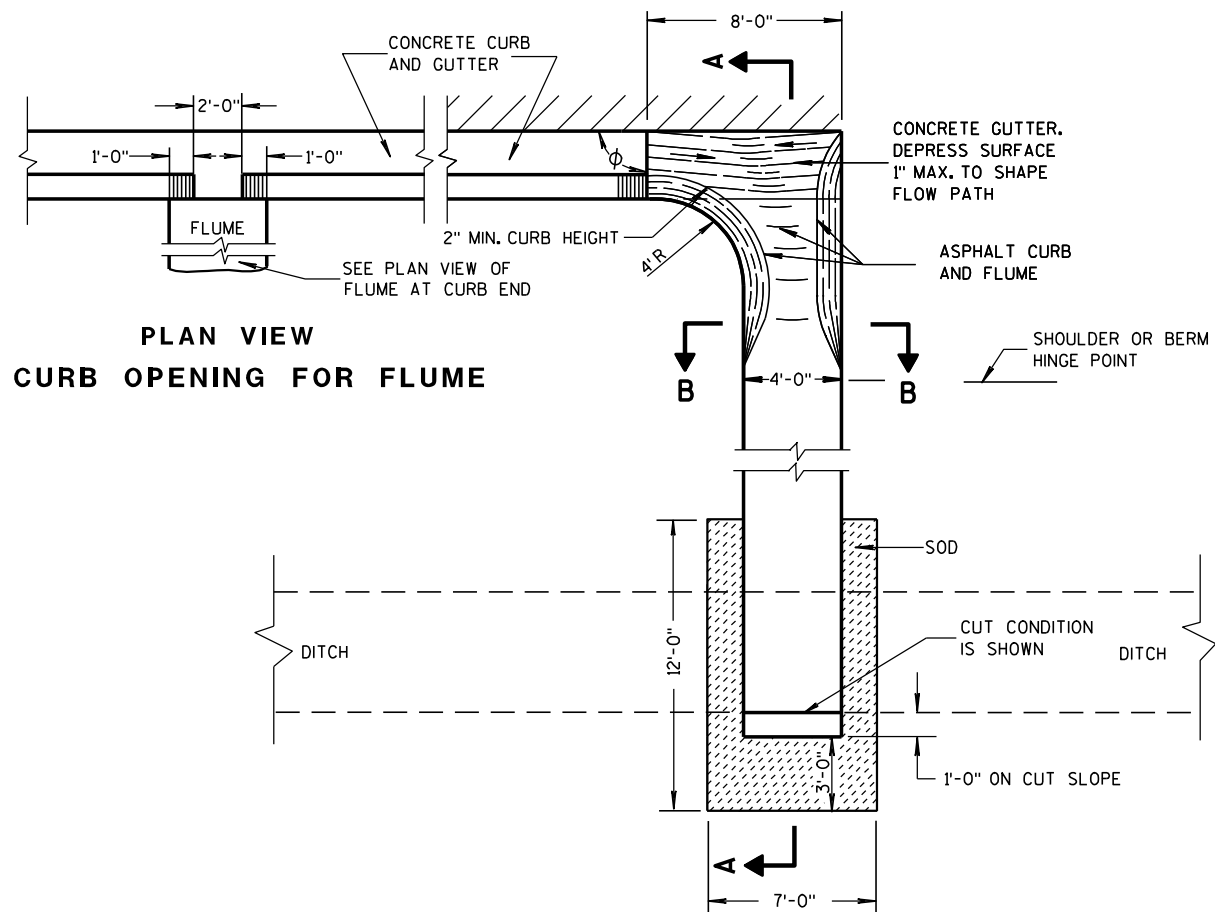
APPROVED
February 2020 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER

FHWA

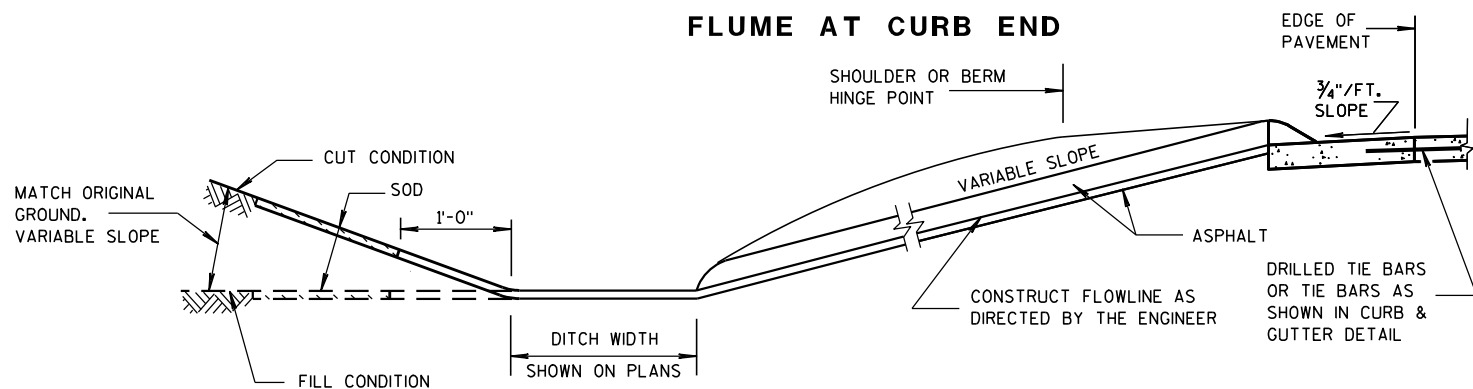
ASPHALTIC FLUME

NOTE: TAPER CURB ENDS TO GUTTER IN 1'-0"

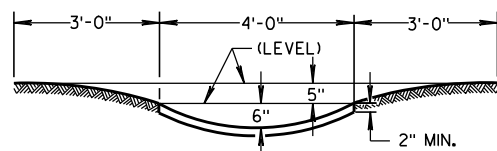
INCREASE ϕ FROM RIGHT ANGLE TO BEST FIT FIELD CONDITIONS



SECTION A-A



SECTION B-B



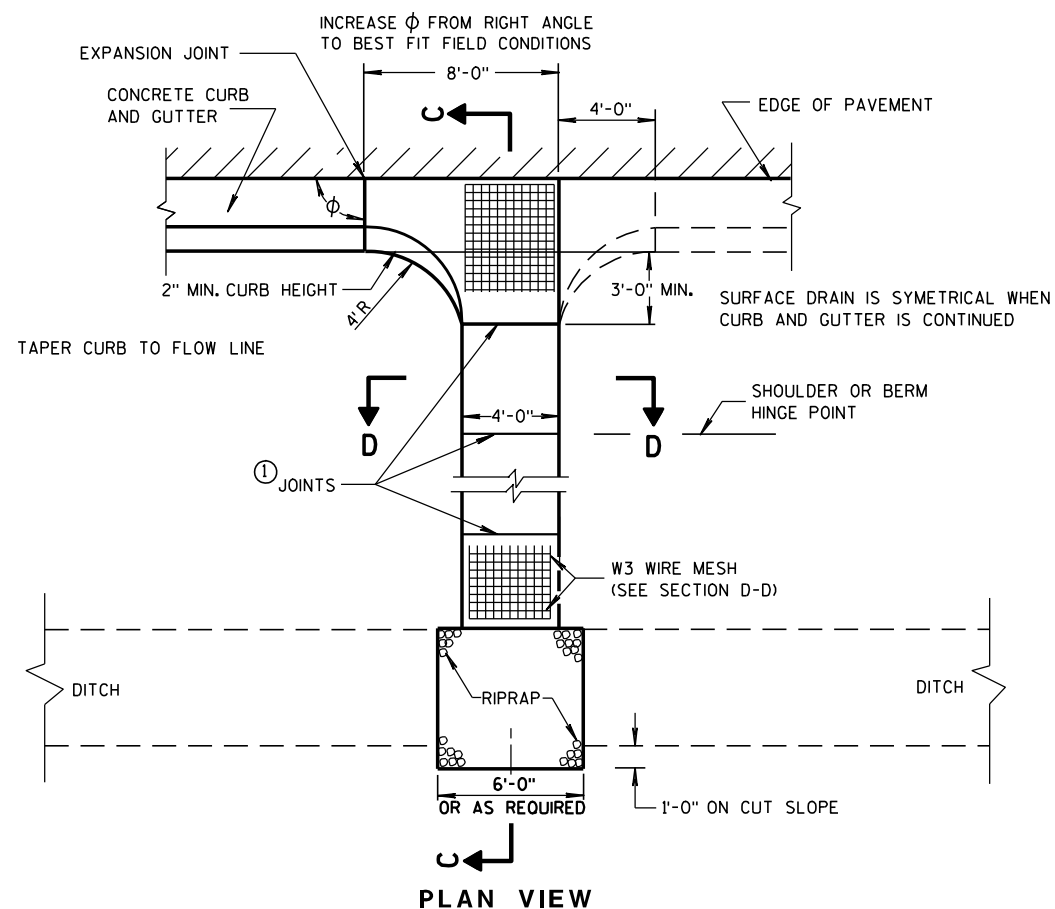
GENERAL NOTES

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

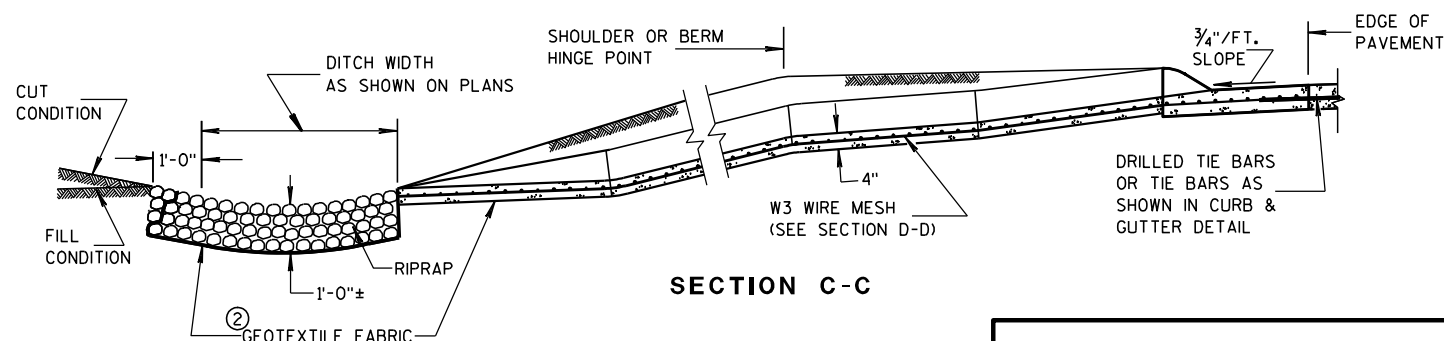
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

- ① JOINTS SHALL BE 1/8 TO 1/4 INCH WIDE BY 1 1/2 INCHES DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- ② GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- ③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

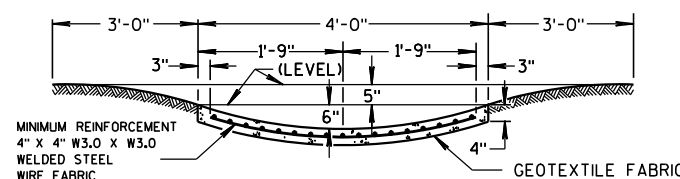
③ CONCRETE SURFACE DRAIN



SECTION C-C



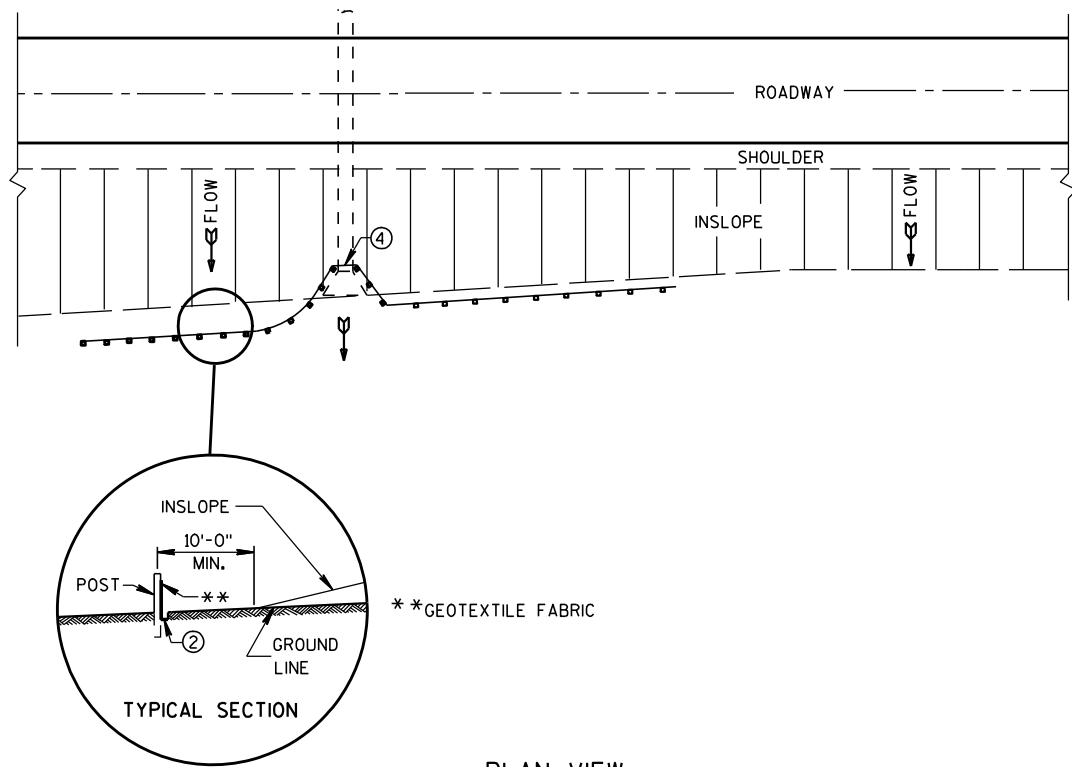
SECTION D-D



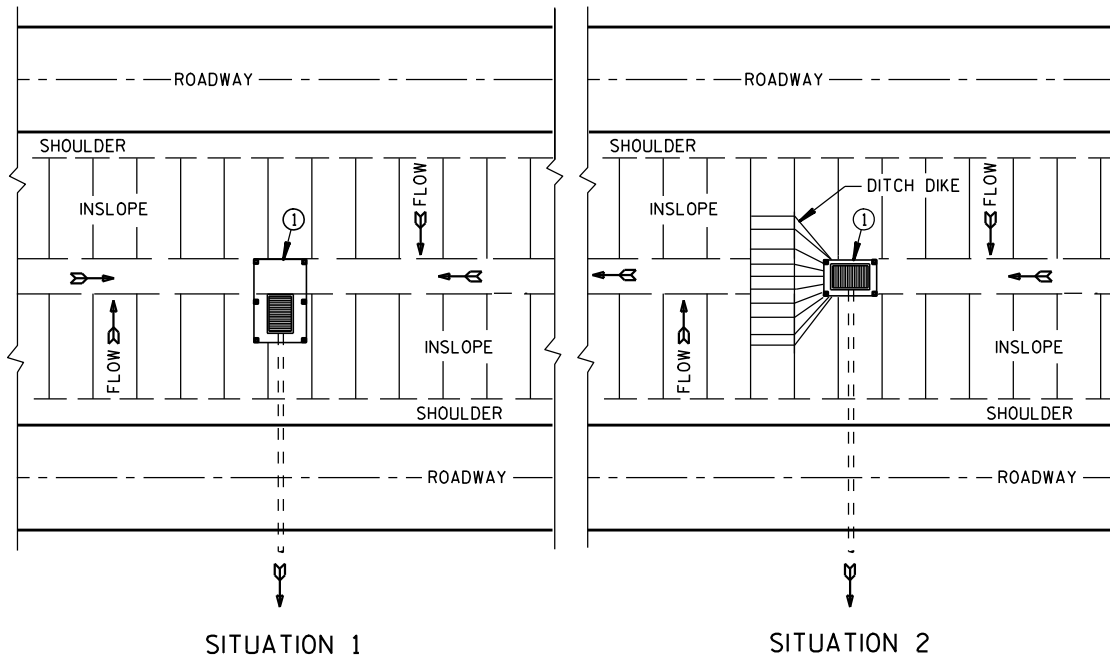
CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9-4-08 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA



PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE

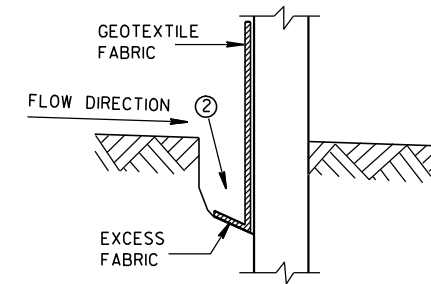


SITUATION 1 SITUATION 2
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

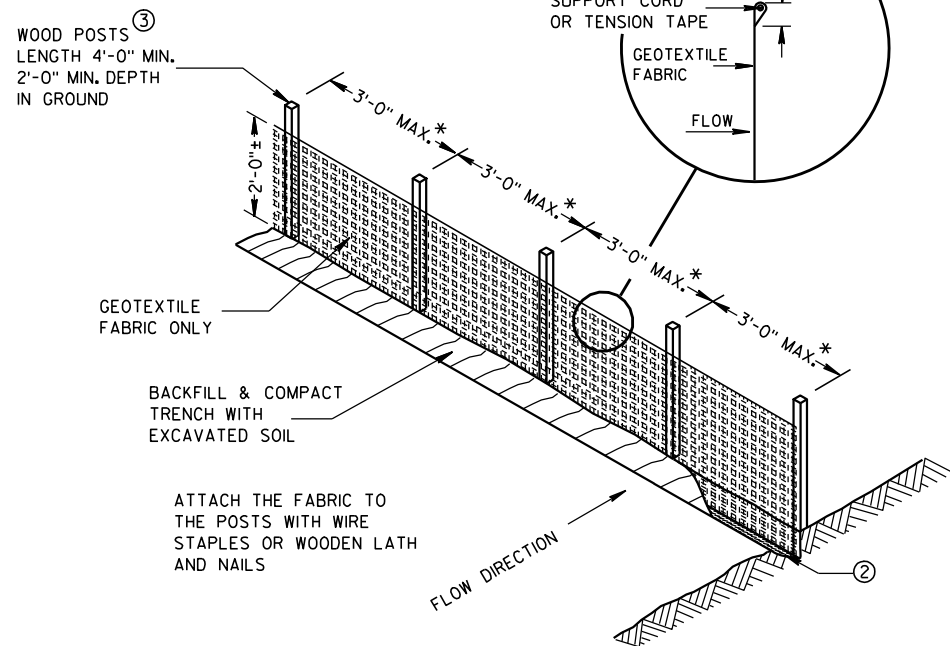
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

- 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.



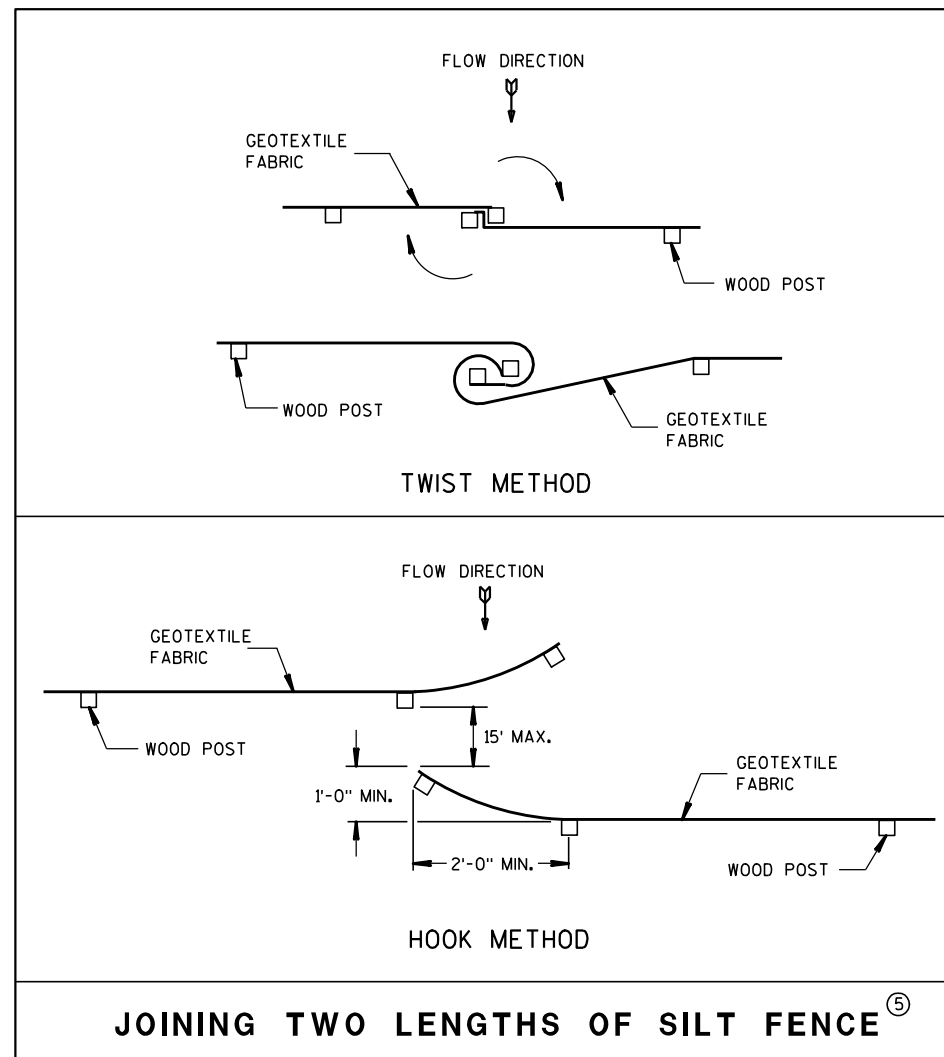
TRENCH DETAIL

NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS

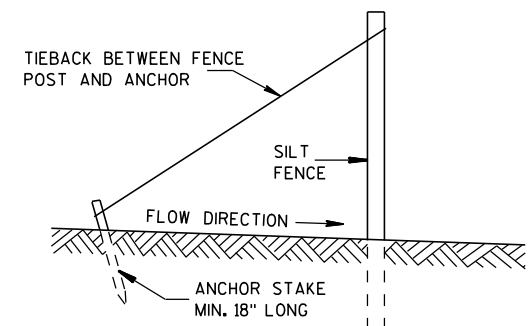


SILT FENCE

* NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.



JOINING TWO LENGTHS OF SILT FENCE ⑤

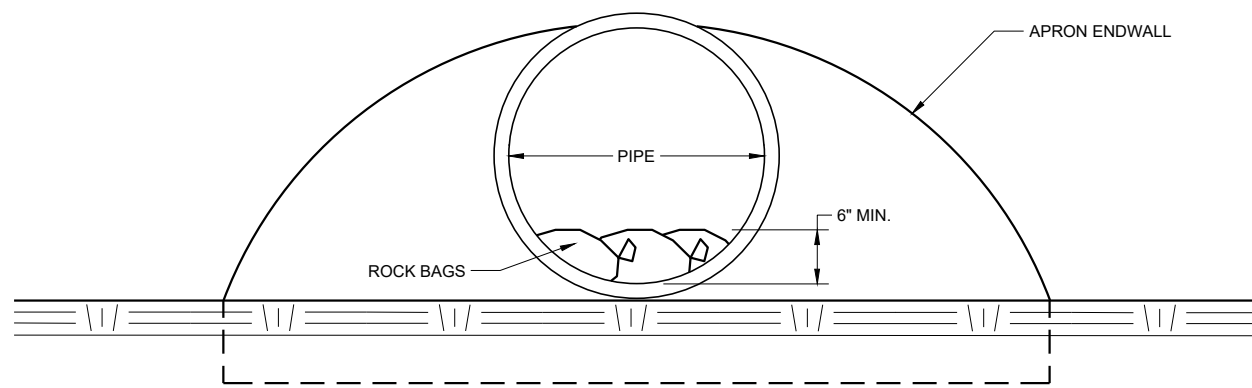


SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

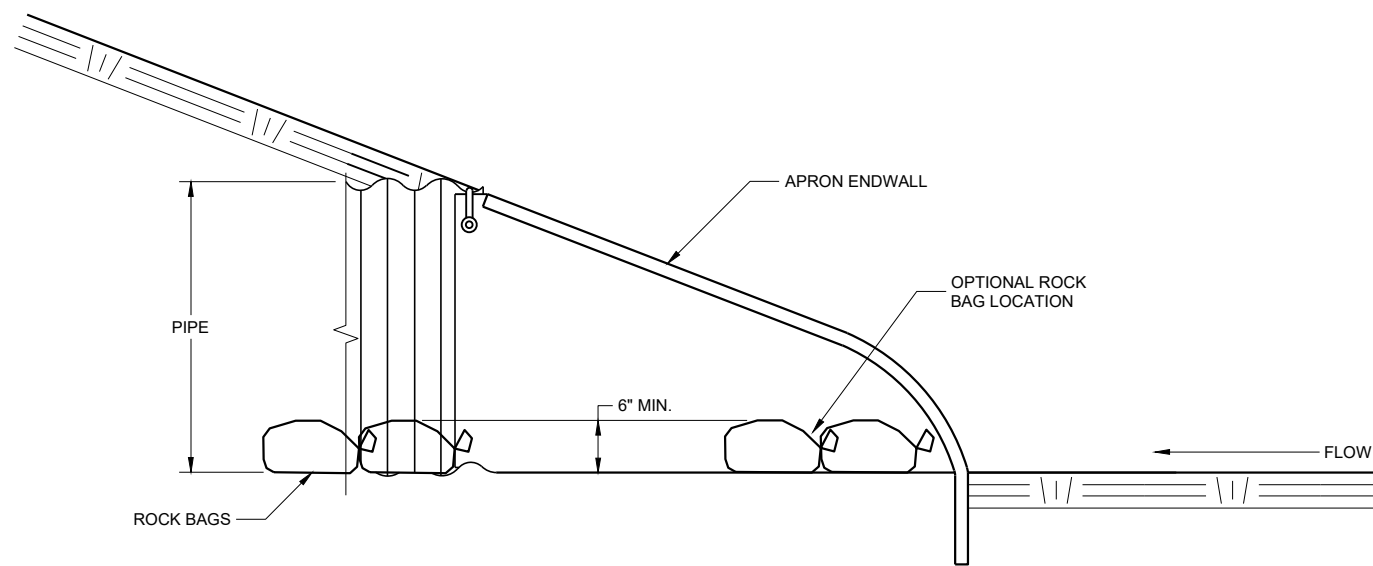
SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-29-05 /S/ Beth Canestra
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



END VIEW



SIDE VIEW

CULVERT PIPE CHECK
 (INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
 May 2019 /S/ Daniel Schave
 DATE EROSION CONTROL ENGINEER

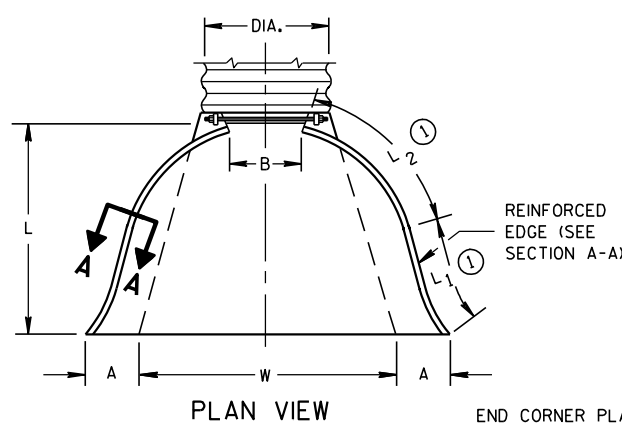
FHWA

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	L2	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1 Pc.
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 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	120	2 to 1	3 Pc.
66	.109x	.105x	18	36	12	87	—	120	144	2 to 1	3 Pc.
72	.109x	.105x	18	39	12	87	—	126	162	2 to 1	3 Pc.
78	.109x	.105x	18	42	12	87	—	132	180	1 1/2 to 1	3 Pc.
84	.109x	.105x	18	45	12	87	—	138	216	1 1/2 to 1	3 Pc.
90	.109x	.105x	18	37	12	87	—	144	270	1 1/2 to 1	3 Pc.
96	.109x	.105x	18	35	12	87	—	150	324	1 1/2 to 1	3 Pc.

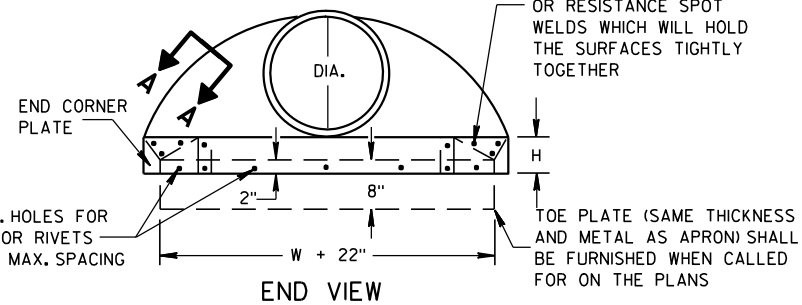
* EXCEPT CENTER PANEL SEE GENERAL NOTES

REINFORCED CONCRETE APRON ENDWALLS									
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE	
	T	A	B	C	D	E	G		
12	2	4	24	48 1/8	72 1/8	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	30-35	72-78	21-27	99	102	5 1/2	2 to 1	
72	7	30-35	78	21	99	108	6	2 to 1	
78	7 1/2	30-35	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	

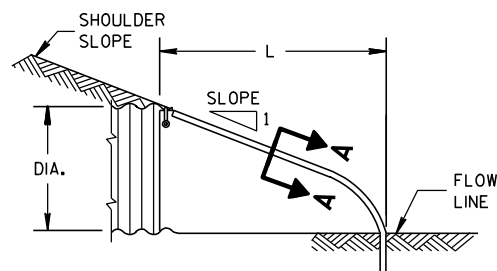
* MINIMUM
** MAXIMUM



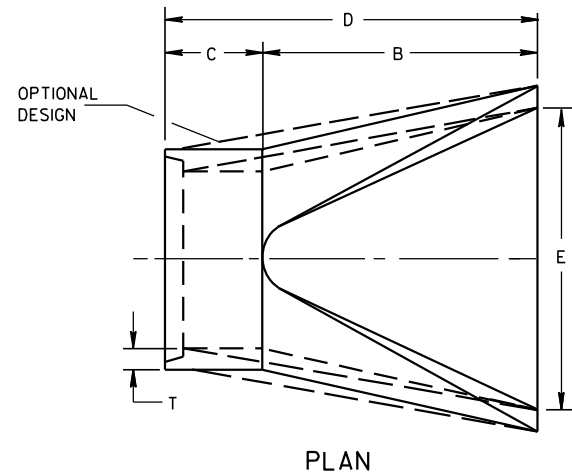
REINFORCED EDGE (SEE SECTION A-A)
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



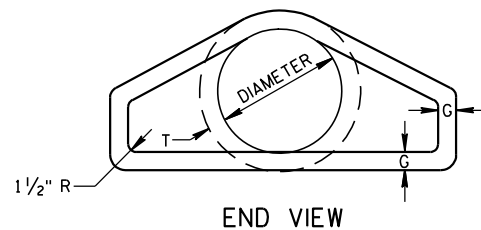
TOE PLATE (SAME THICKNESS AND METAL AS APRON) SHALL BE FURNISHED WHEN CALLED FOR ON THE PLANS



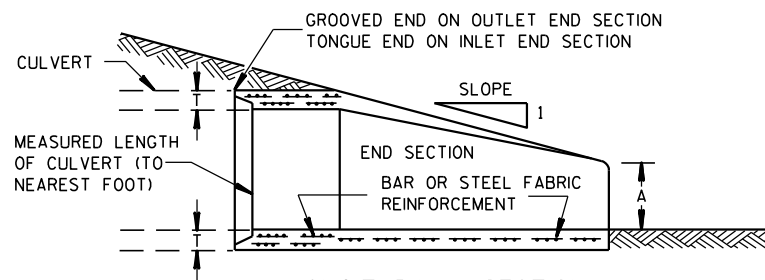
SIDE ELEVATION
METAL ENDWALLS



PLAN

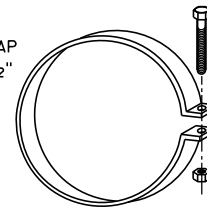


END VIEW



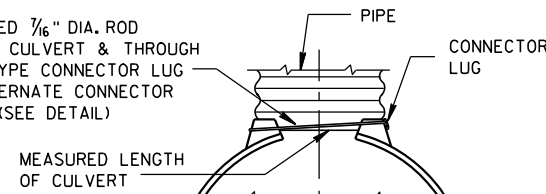
LONGITUDINAL SECTION
CONCRETE ENDWALLS

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

THREADED 3/16" DIA. ROD AROUND CULVERT & THROUGH TANK TYPE CONNECTOR LUG OR ALTERNATE CONNECTOR STRAP (SEE DETAIL)



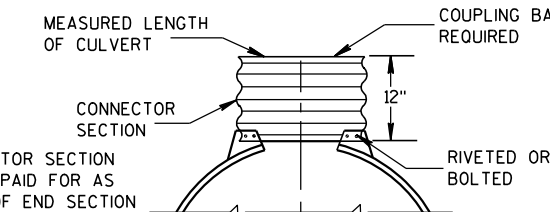
TYPE 1
FOR 12" THRU 24" CORR. PIPE

THREADED 3/16" DIA. ROD OVER TOP OF APRON, SIDE LUGS TO BE RIVETED TO APRON



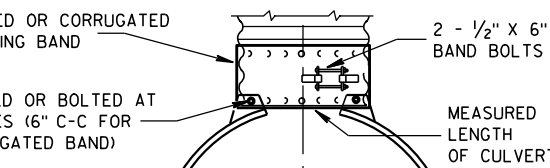
TYPE 2
FOR 30" THRU 96" CORR. PIPE

MEASURED LENGTH OF CULVERT
CONNECTOR SECTION TO BE PAID FOR AS PART OF END SECTION



TYPE 3
FOR 42" THRU 96" CORR. PIPE

DIMPLED OR CORRUGATED COUPLING BAND
RIVETED OR BOLTED AT DIMPLES (6" C-C FOR CORRUGATED BAND)



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

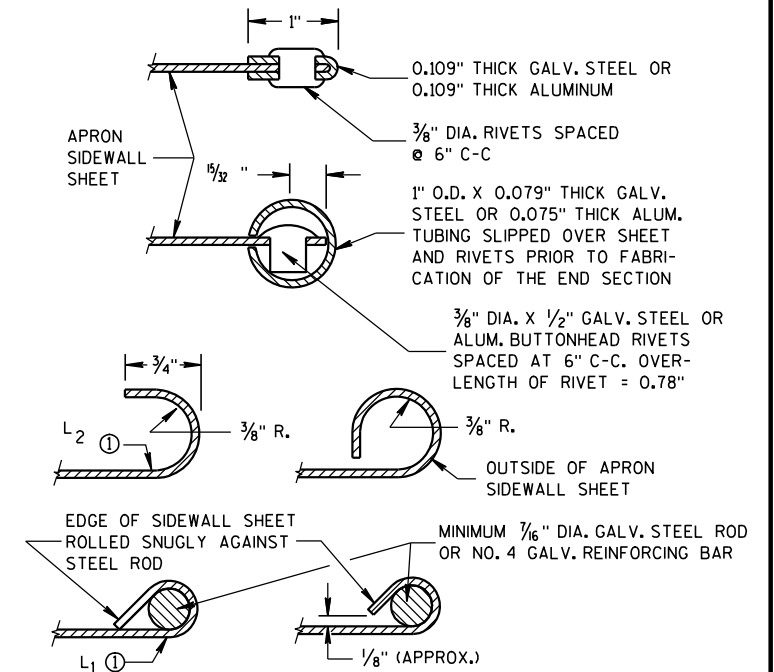
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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



SECTION A-A

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 VICE 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.

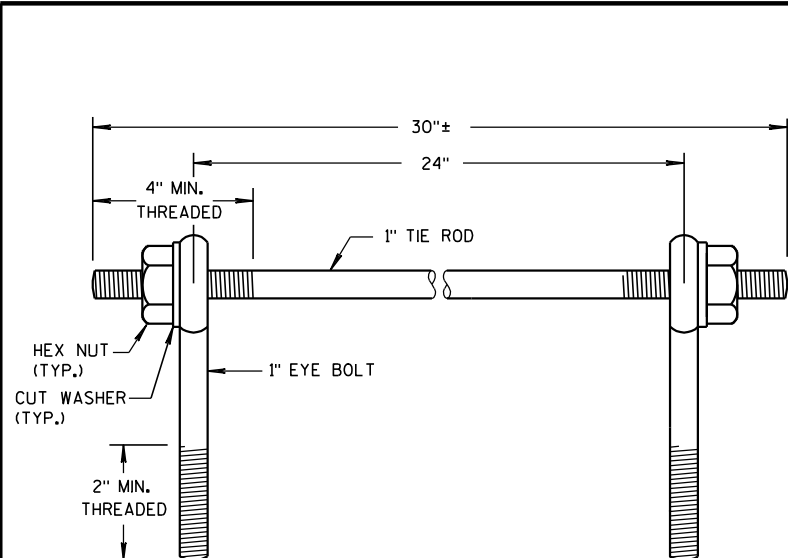
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

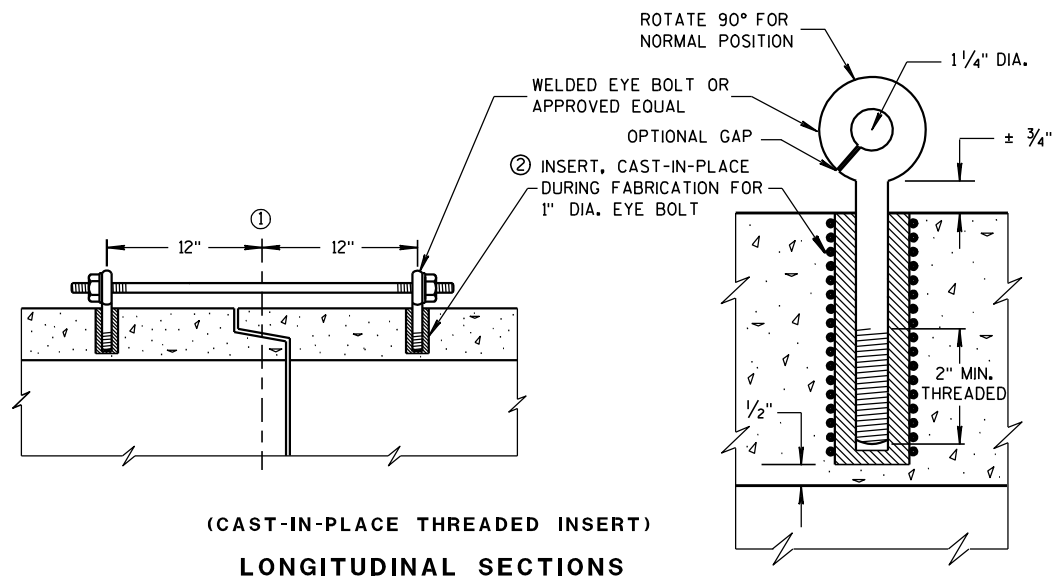
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



EYE BOLTS AND TIE ROD

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 1)



(CAST-IN-PLACE THREADED INSERT)
LONGITUDINAL SECTIONS

GENERAL NOTES

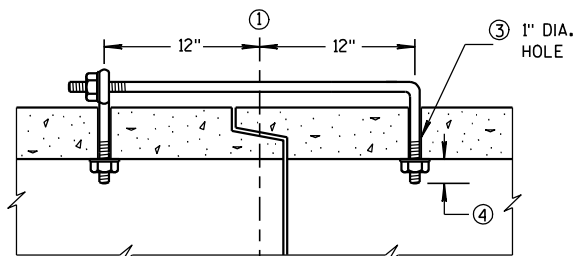
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT AND STORM SEWER PIPE SHALL BE TIED TOGETHER IN THE MANNER ILLUSTRATED BY THIS DETAIL AT LOCATIONS DESIGNATED IN THE STANDARD SPECIFICATIONS AND THE PLAN. THE CONTRACTOR MAY USE EITHER ALTERNATE 1, 2 OR 3 FOR DRAINAGE STRUCTURES. ONLY ALTERNATE 1 AND 3 MAY BE USED FOR CATTLE PASSES, UNLESS OTHERWISE STATED IN THE CONTRACT. THE MATERIALS, FABRICATION AND WORK NECESSARY TO TIE THE PIPE BY THIS DETAIL WILL BE CONSIDERED INCIDENTAL TO THE PIPE AND APRON ENDWALLS IF REQUIRED.

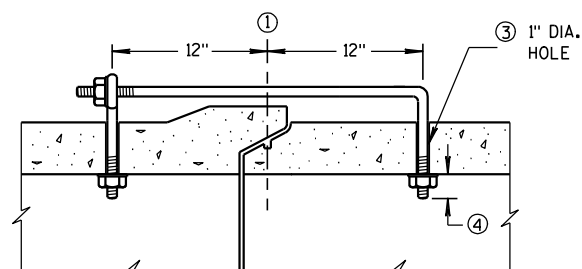
DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

- ① ϕ OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.
- ② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.
- ③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED 12 INCHES FROM ϕ OF TONGUE AND GROOVE.
- ④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.
- ⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.
- ⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN $\frac{1}{2}$ INCH OF THE INNER SURFACE OF THE PIPE.



(TONGUE & GROOVE PIPE)



(MODIFIED BELL PIPE)
LONGITUDINAL SECTION

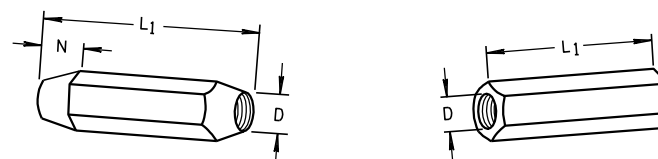
EYE BOLT DIMENSION TABLE

PIPE SIZE	L = LENGTH	
	TONGUE & GROOVE PIPE	MODIFIED BELL PIPE
18" TO 24"	4 1/2"	6 1/4"
30"	5"	7"
36"	5 1/2"	7"
42"	6"	
48"	6 1/2"	
60"	7 1/2"	
66"	8"	

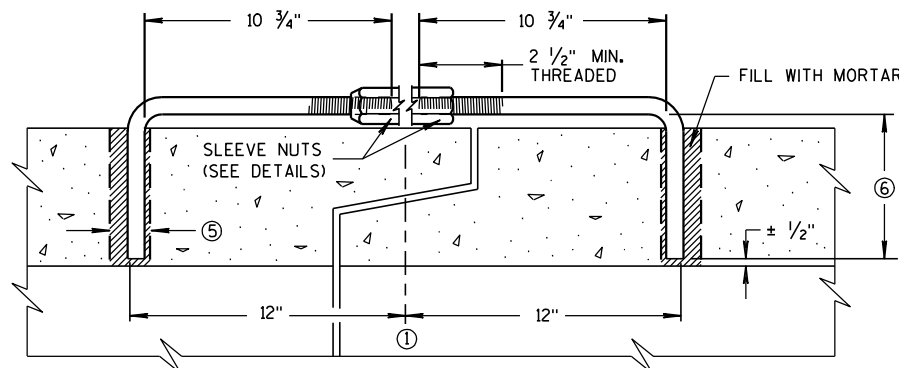
ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L ₁	N
12-60	5/8	5/8	5	1/2
66-84	3/4	3/4	5	1/2
90-108	1	1	7	1 1/6

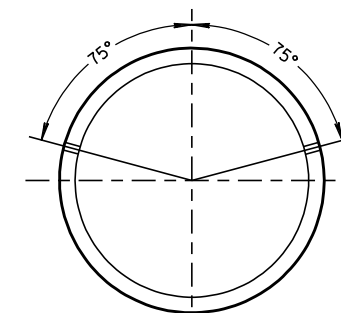
DIMENSIONS SHOWN ARE IN INCHES



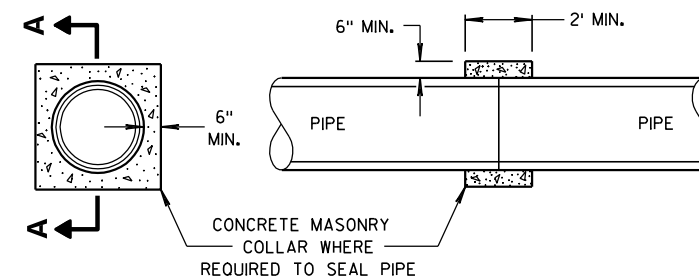
TAPERED PLAIN
RIGHT AND LEFT THREADS
SLEEVE NUTS



(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)
LONGITUDINAL SECTION
ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



PLACEMENT OF (2) CAST-IN-PLACE
INSERTS OR HOLES DURING FABRICATION
FOR PIPE SECTIONS REQUIRING TIE RODS
TRANSVERSE SECTION



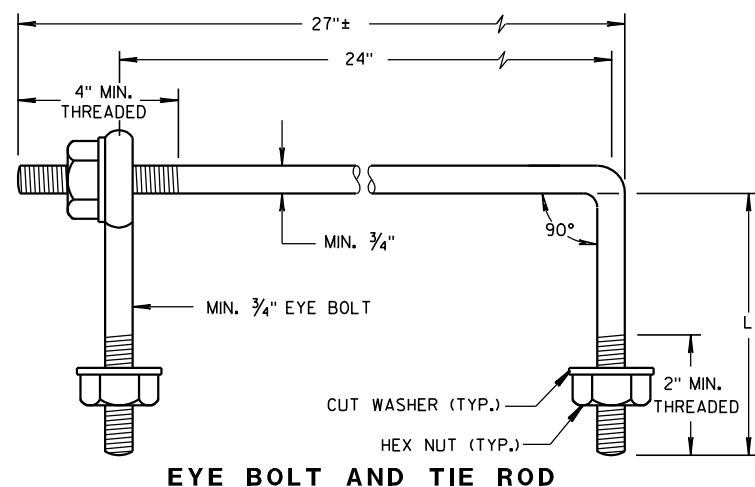
SECTION A-A
CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE
PIPE AND CONCRETE
COLLAR DETAIL

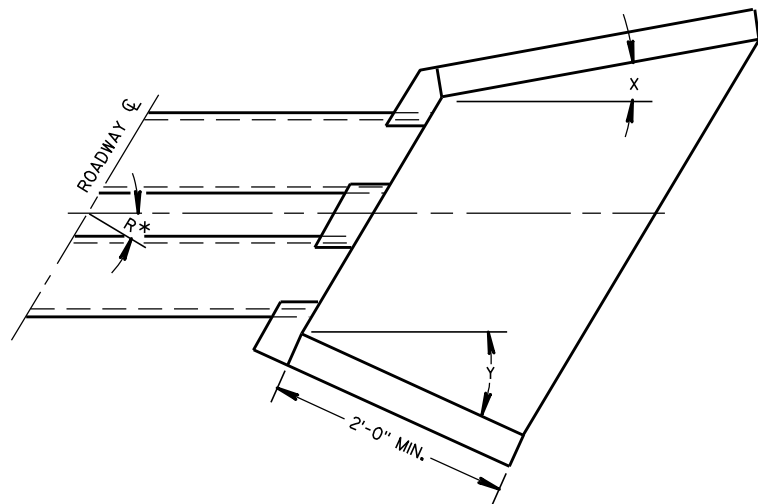
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)
EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 2)



EYE BOLT AND TIE ROD



WINGWALL ANGLE DETAILS

INLET			OUTLET		
R*	X	Y	R*	X	Y
0 - 7°	30°	30°	0 - 15°	15°	15°
8 - 22°	25°	"	16 - 45°	10°	"
23 - 37°	20°	"	46 - 75°	5°	"
38 - 52°	15°	"	OVER 75°	0°	"
53 - 67°	10°	"			
68 - 82°	5°	"			
OVER 82°	0°	"			

*R = NUMBER OF DEGREES RIGHT OR LEFT HAND FORWARD

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.

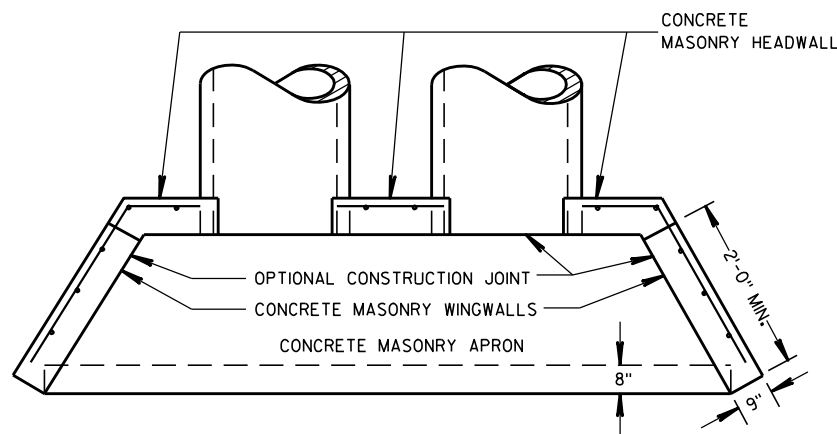
FILL SLOPES FLATTER THAN 2 1/2:1 SHALL BE WARPED TO MEET THE TOP OF THE WINGWALLS.

ALL STEEL REINFORCEMENT AND WELDED STEEL WIRE FABRIC SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE NOTED.

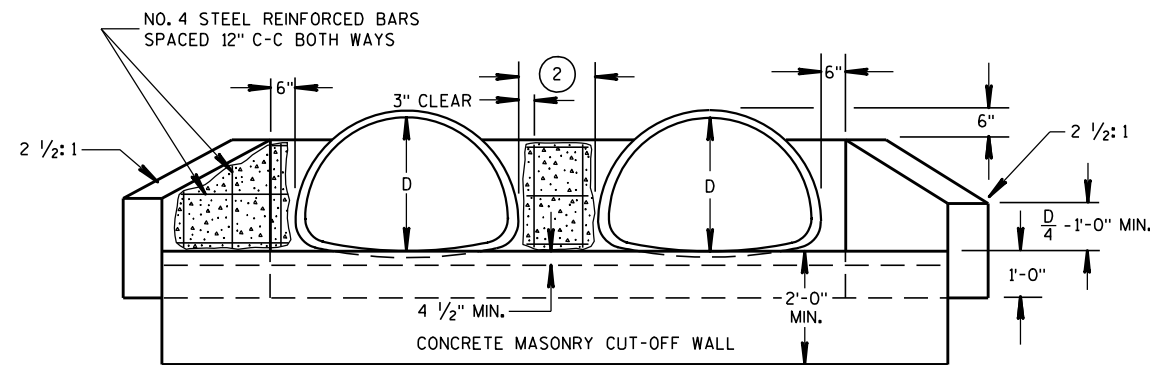
1 MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS SPACED 12" C-C IN BOTH DIRECTIONS.

2 THE SPACE BETWEEN PIPES SHALL BE AS FOLLOWS:

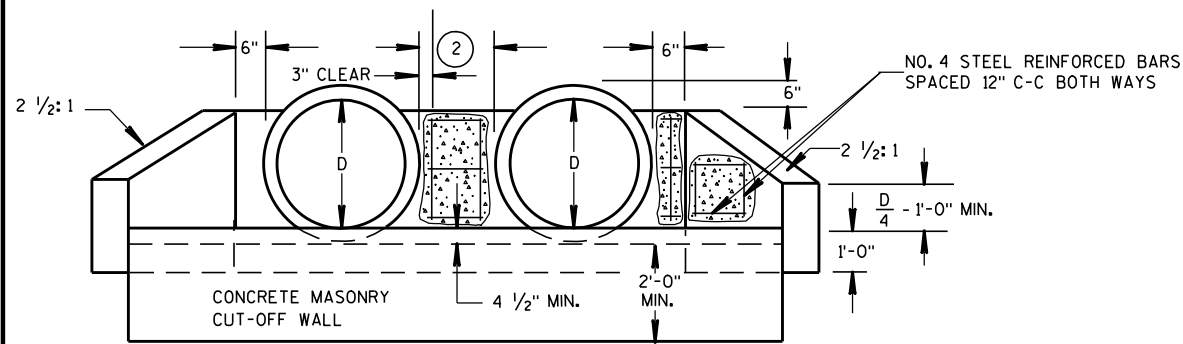
DIAMETER OR SPAN	SPACE
UP TO AND INCLUDING 48"	2'-0"
OVER 48" TO 72"	1/2 DIA. OR SPAN
OVER 72"	3'-0"



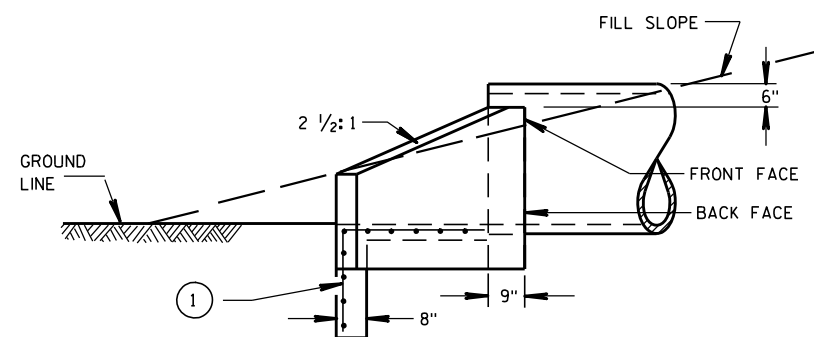
**PLAN VIEW
CULVERT PIPE AND PIPE ARCH**



**END ELEVATION
PIPE ARCH**



**END ELEVATION
CULVERT PIPE**



**SIDE ELEVATION
CULVERT PIPE AND PIPE ARCH**

6

6

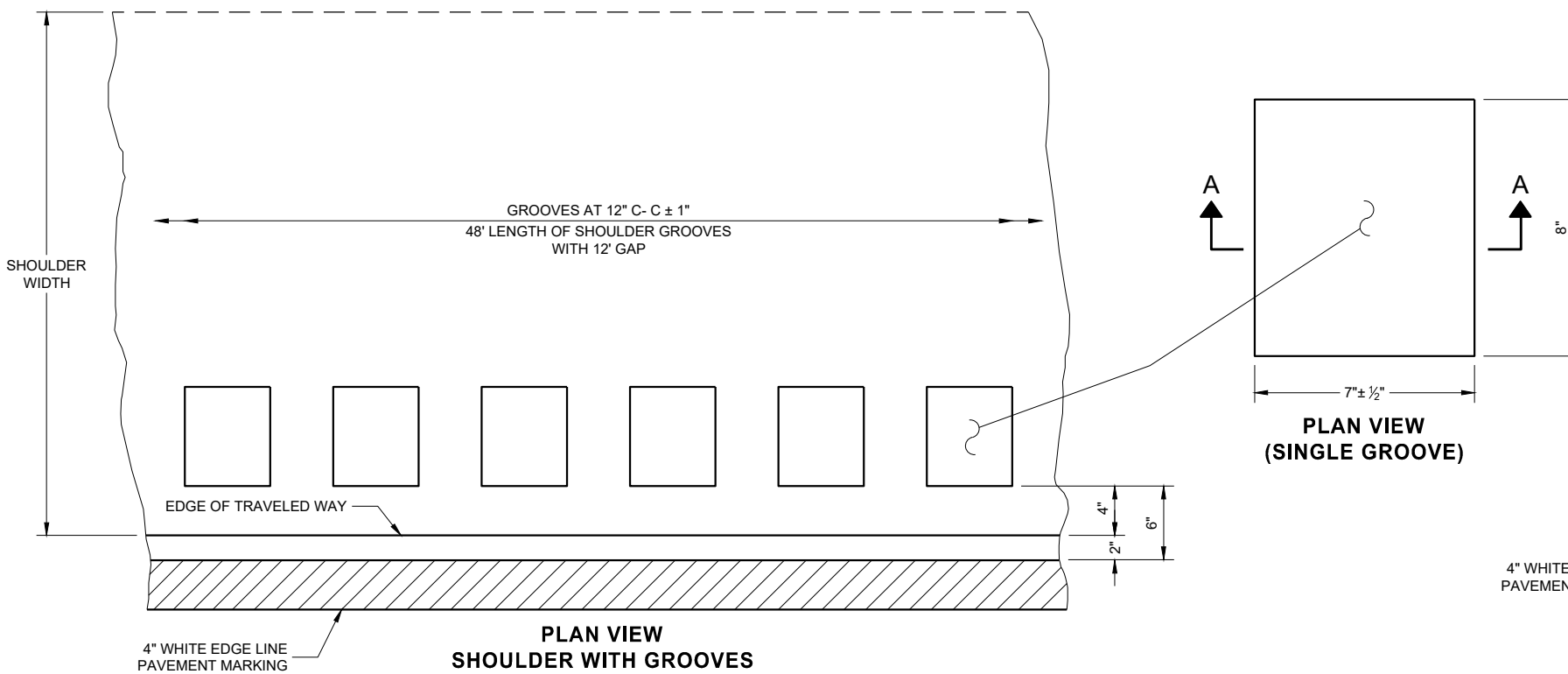
S.D.D. 8 F 10-1

S.D.D. 8 F 10-1

**CONCRETE MASONRY ENDWALLS
FOR CULVERT PIPE AND
PIPE ARCH**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9/14/98 /S/ Rory L. Rhinesmith
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



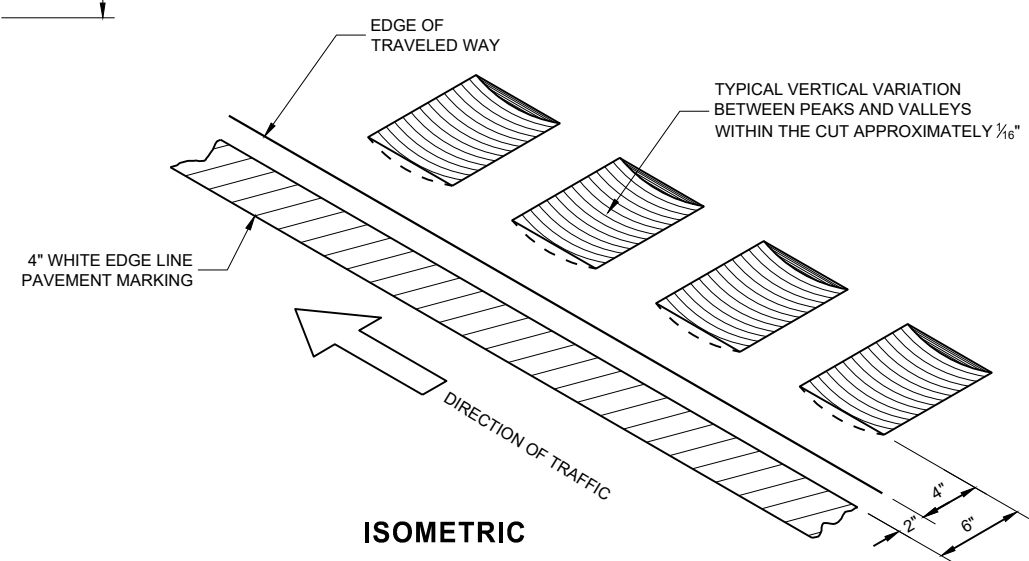
PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP

GENERAL NOTES

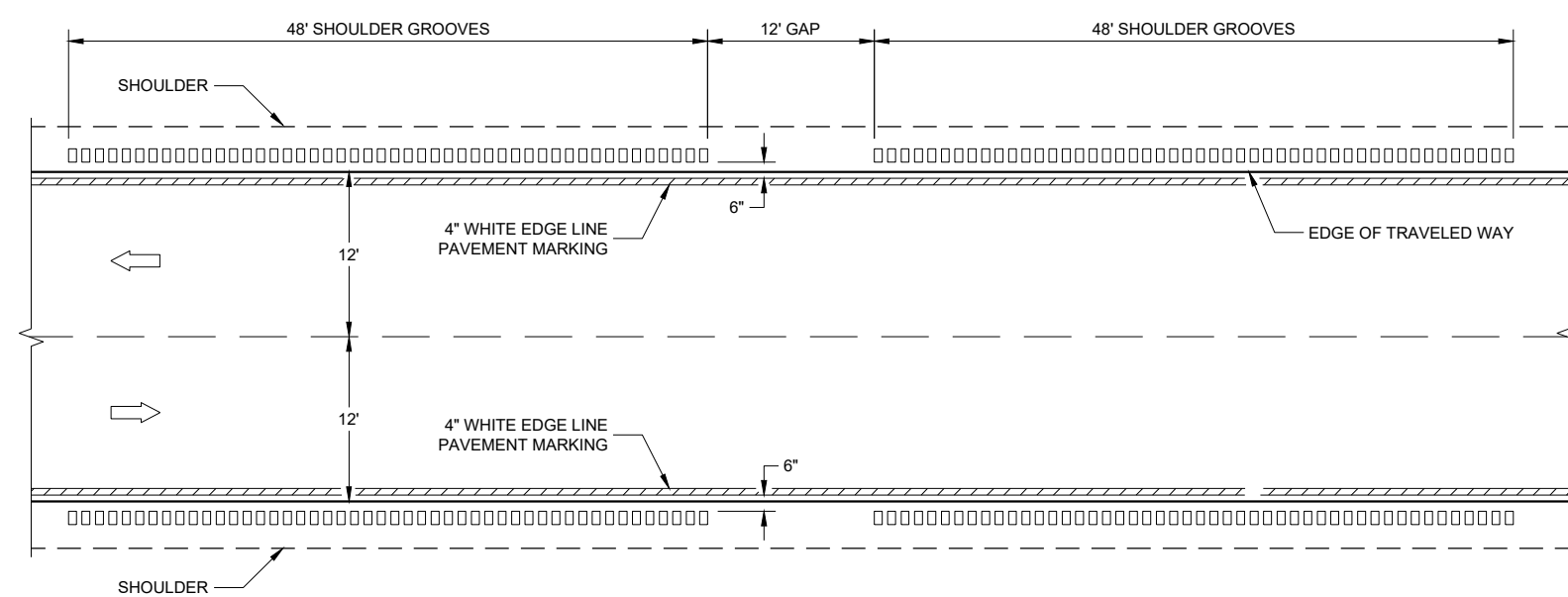
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

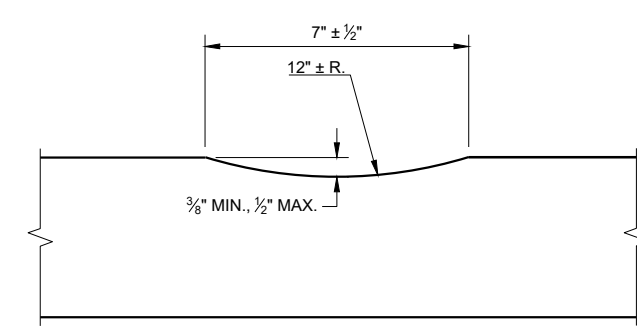
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



ISOMETRIC



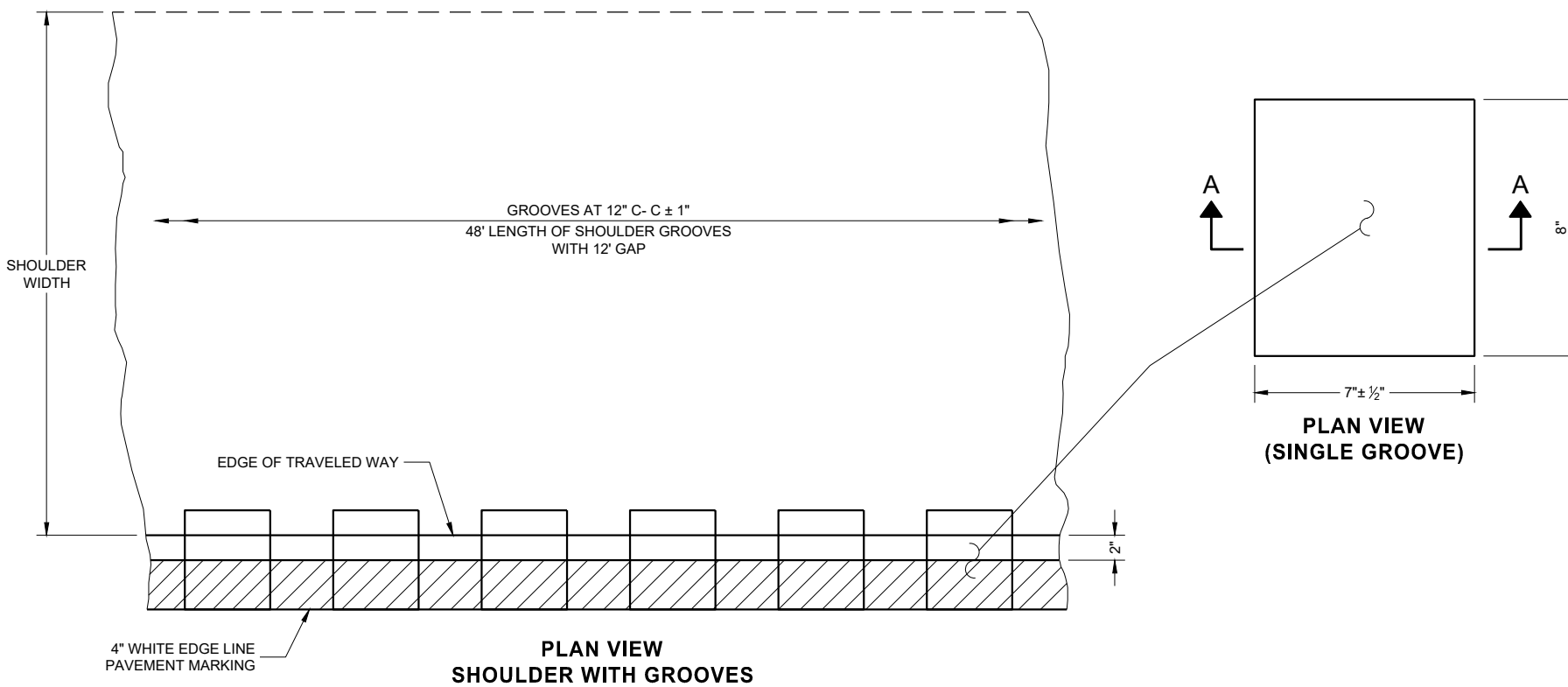
TYPE 1
2 - LANE SHOULDER RUMBLE STRIP



SECTION A - A

**2-LANE RURAL SHOULDER
RUMBLE STRIP, MILLING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



6

6

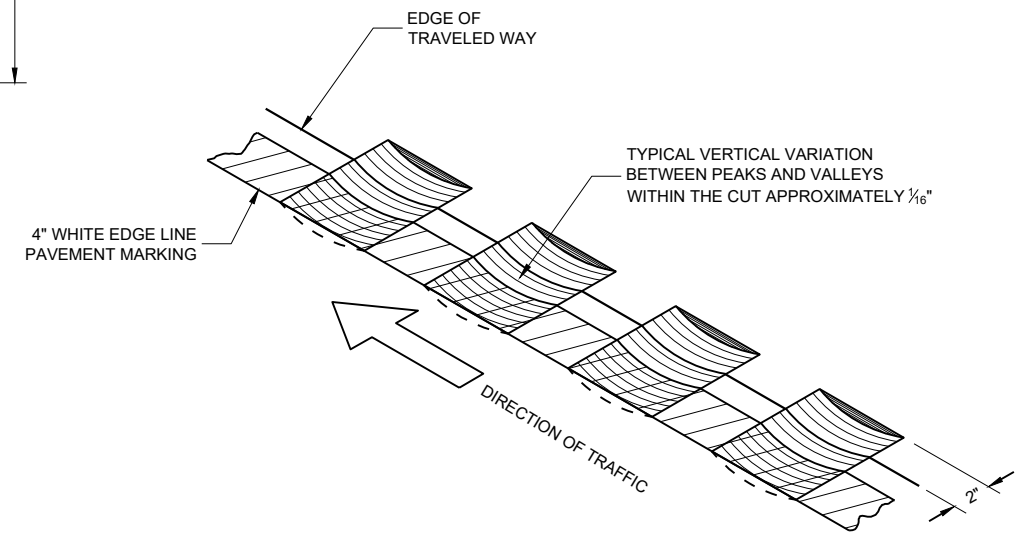
PLACEMENT DETAIL FOR TYPE 2 MILLED RUMBLE STRIP

GENERAL NOTES

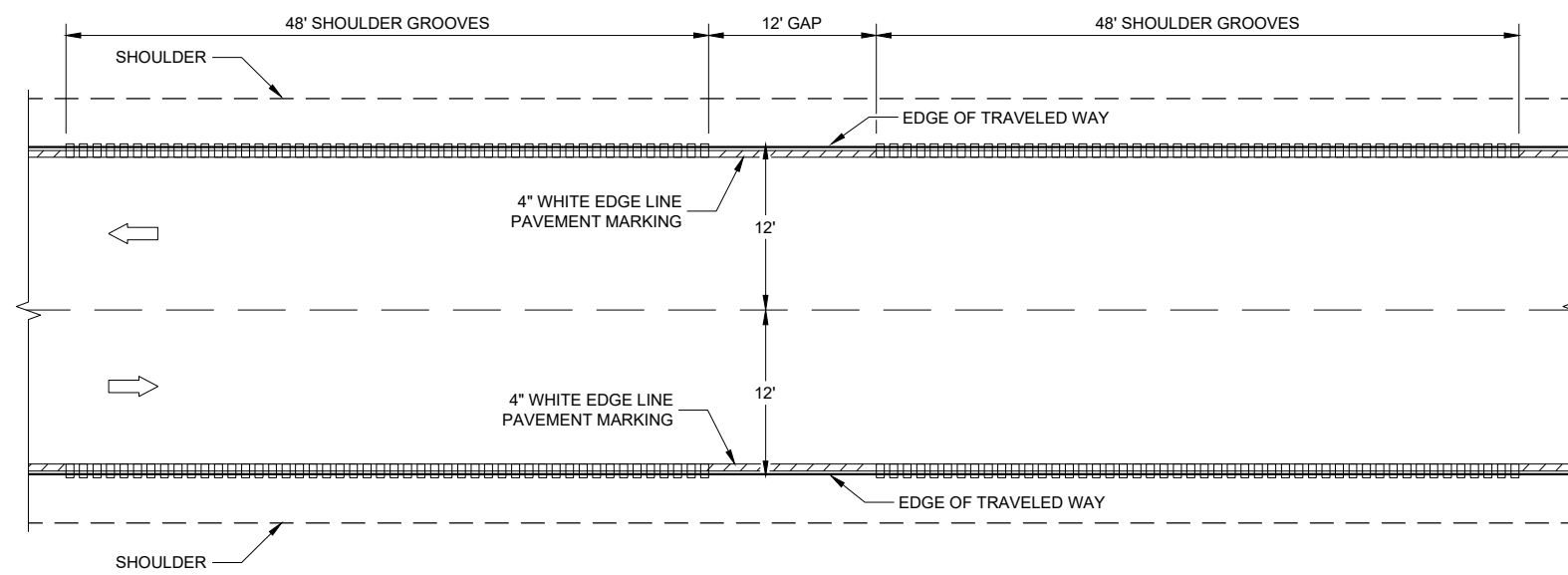
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

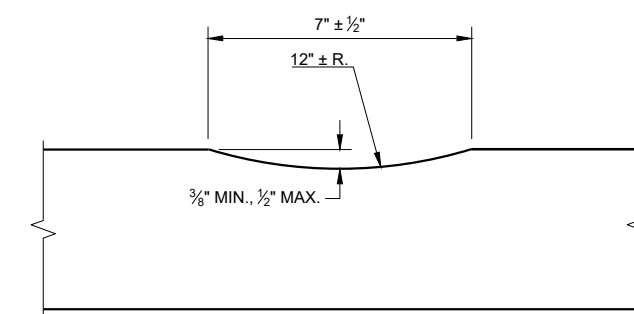
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



ISOMETRIC



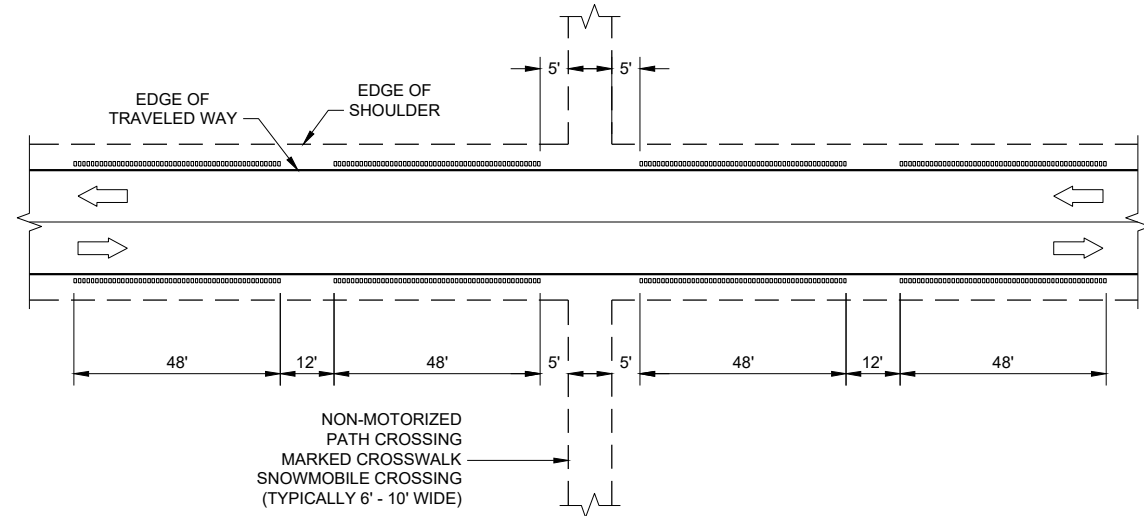
TYPE 2
2 - LANE SHOULDER RUMBLE STRIP



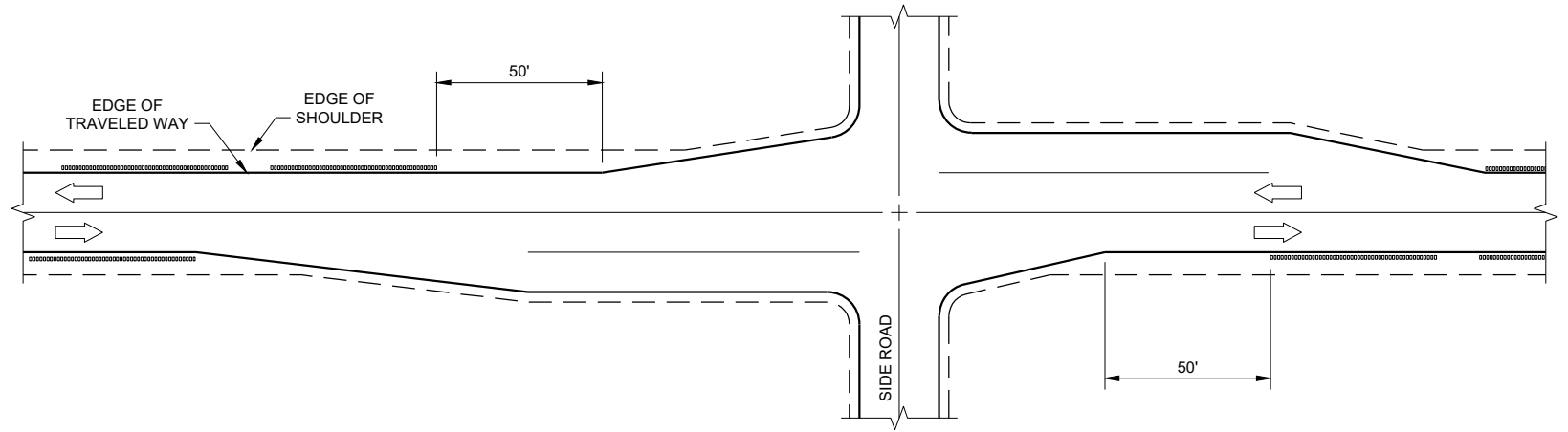
SECTION A - A

**2-LANE RURAL SHOULDER
RUMBLE STRIP, MILLING**

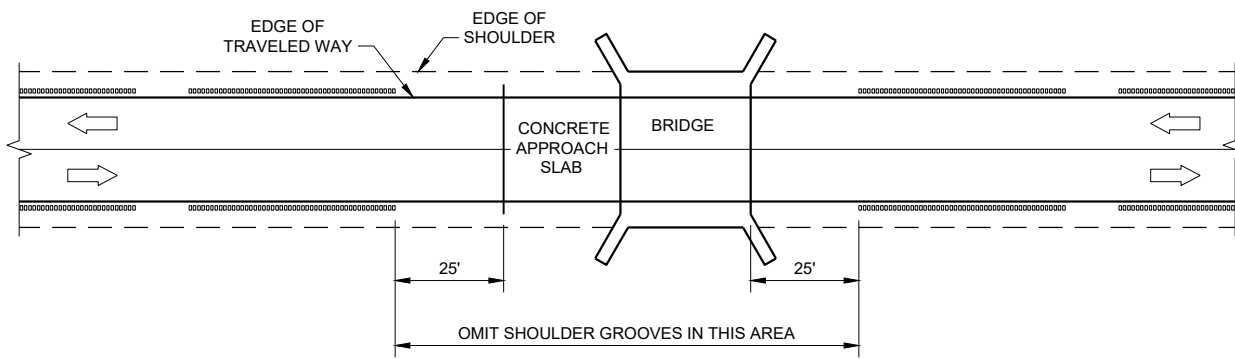
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



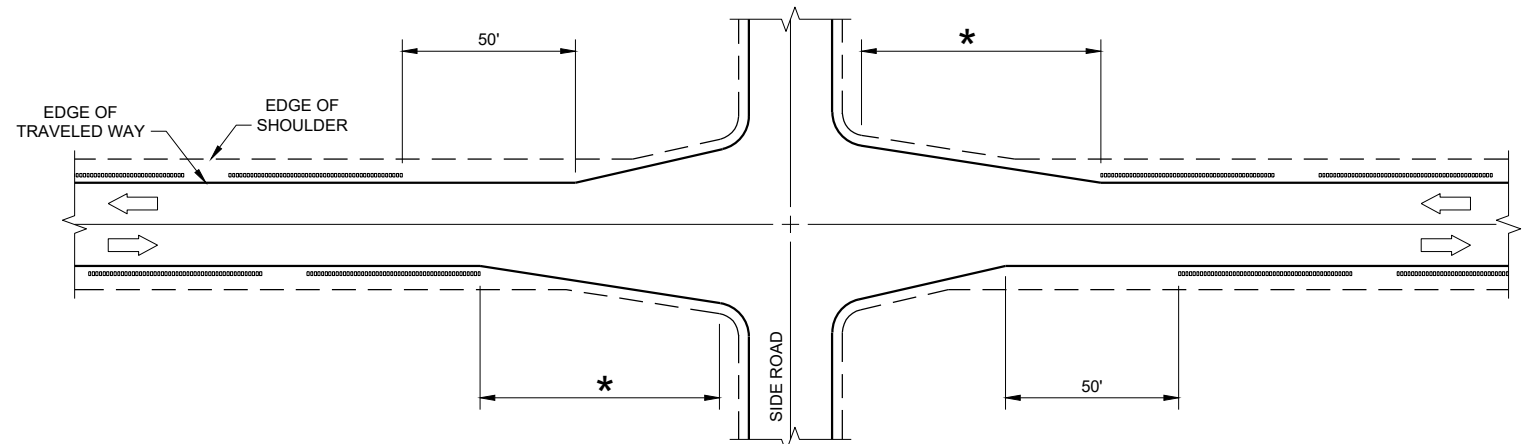
SHOULDER GROOVES AT MISCELLANEOUS CROSSINGS



SHOULDER GROOVES AT RIGHT TURN LANE

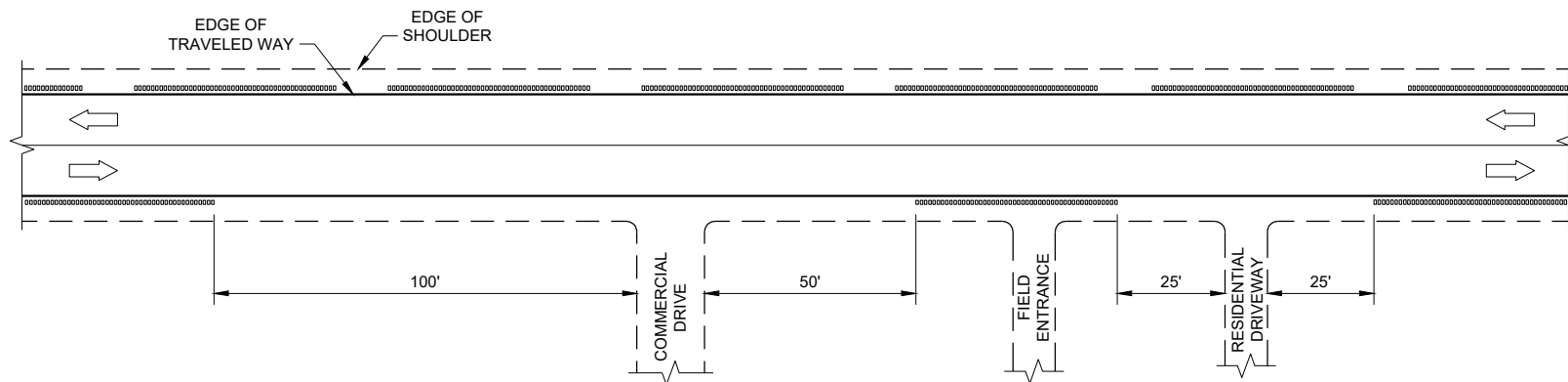


SHOULDER GROOVES AT BRIDGES



* GREATER OF 100' OR APPROACH TAPER LENGTH

SHOULDER GROOVES AT INTERSECTIONS WITH APPROACH TAPER



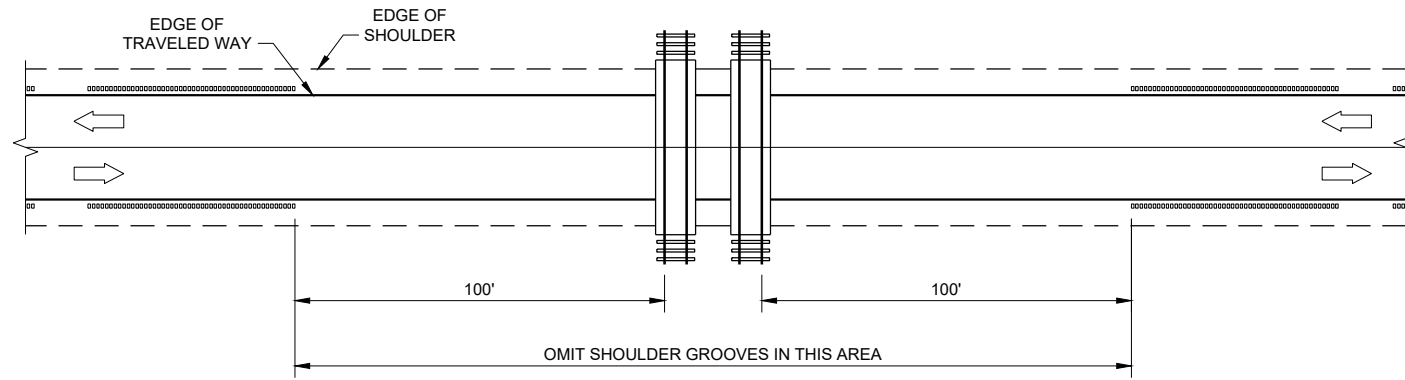
SHOULDER GROOVES AT DRIVEWAYS^①

GENERAL NOTES

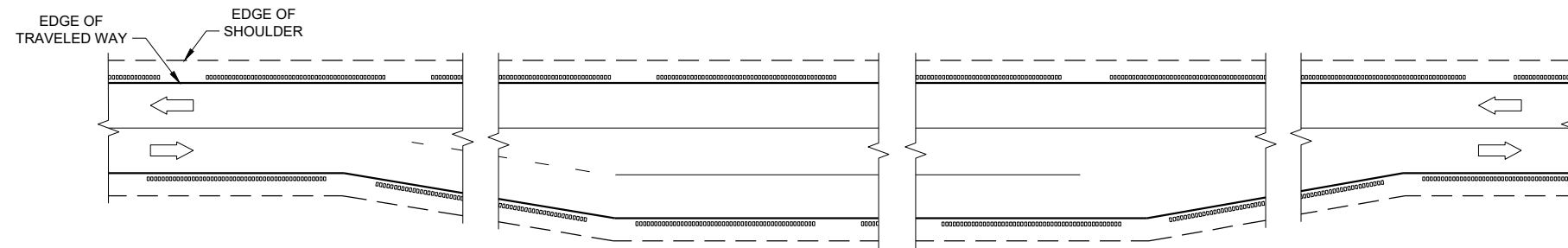
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.

**2-LANE RURAL SHOULDER
RUMBLE STRIP, MILLING**

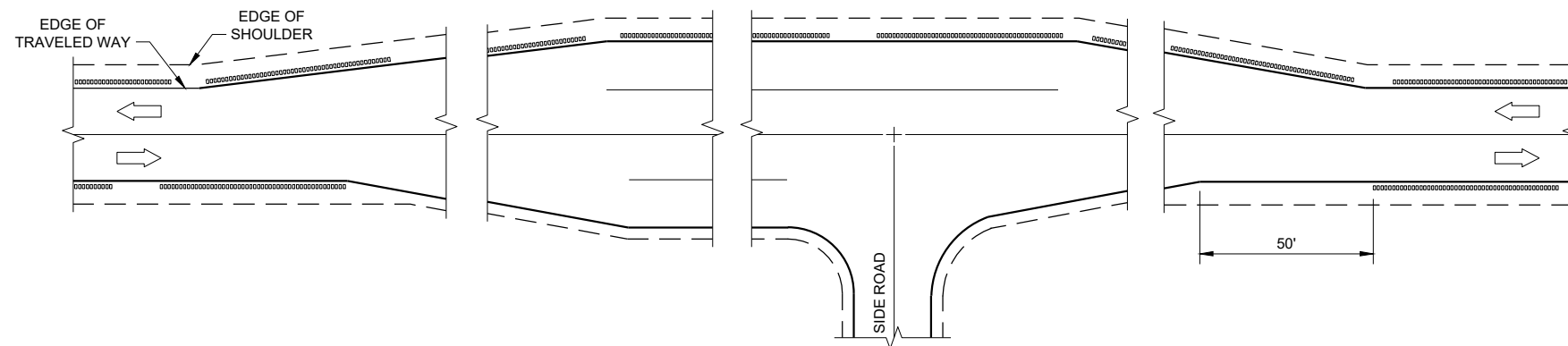
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



SHOULDER GROOVES AT RAILROADS



SHOULDER GROOVES AT PASSING AND CLIMBING LANES



SHOULDER GROOVES AT BYPASS LANES

**2-LANE RURAL SHOULDER
RUMBLE STRIP, MILLING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

GENERAL NOTES

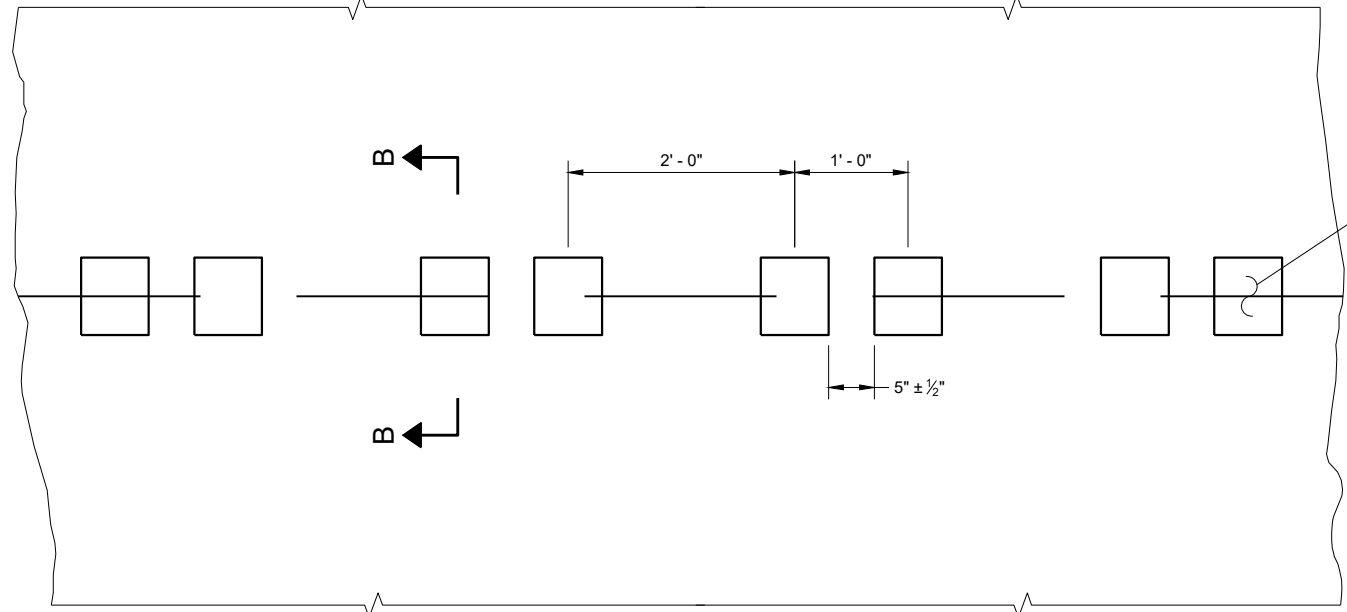
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

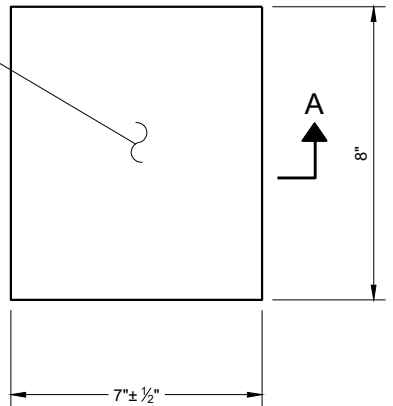
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

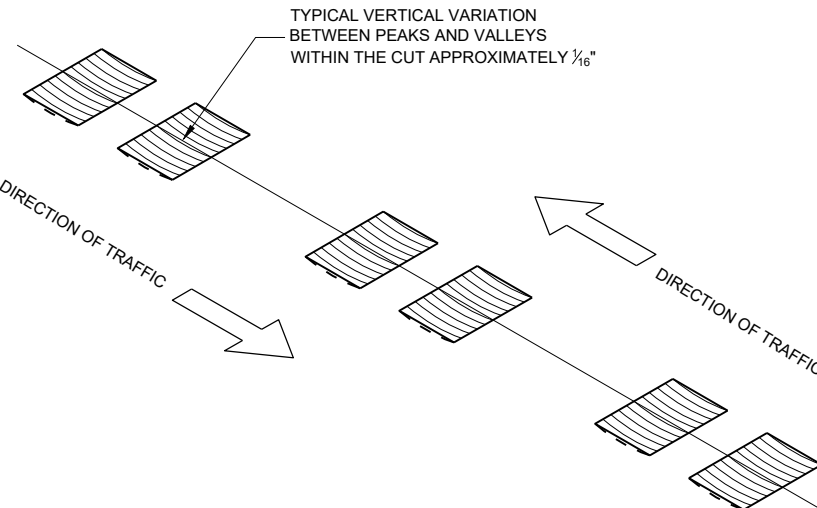
- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS, WHEN DIRECTED BY THE ENGINEER.



**PLAN VIEW
SHOULDER WITH GROOVES**

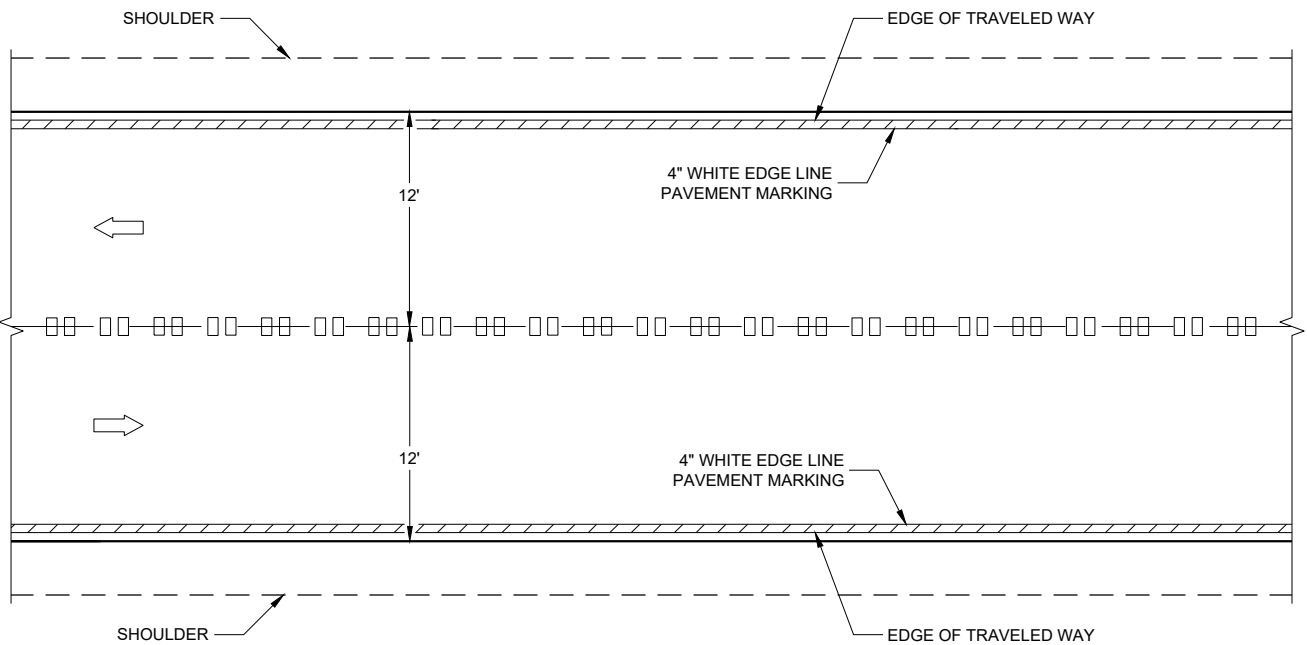


**PLAN VIEW
(SINGLE GROOVE)**

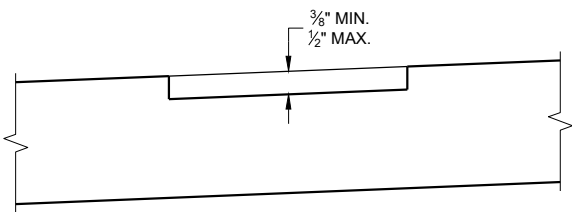


ISOMETRIC

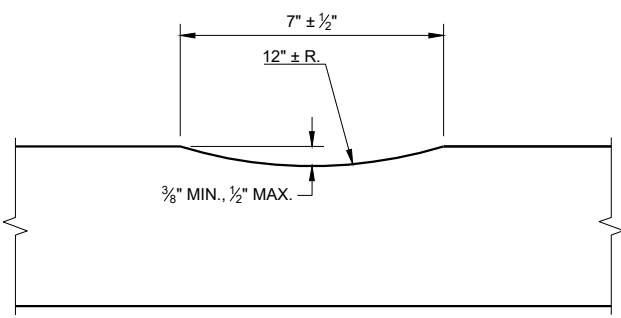
PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP



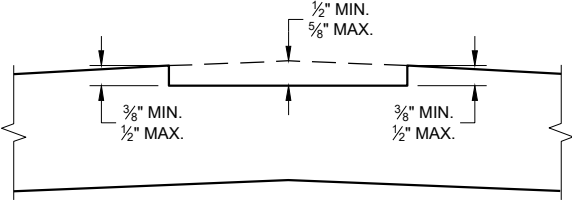
CENTERLINE GROOVES ON TWO-WAY ROADWAYS



**SECTION B - B
SUPERELEVATED ROADWAY**

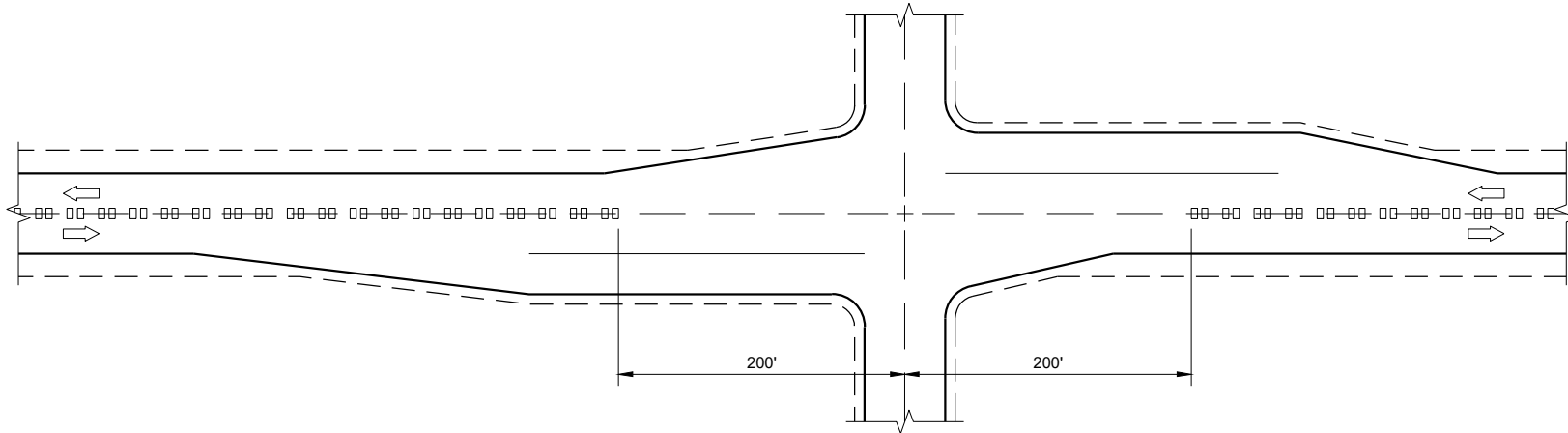


SECTION A - A

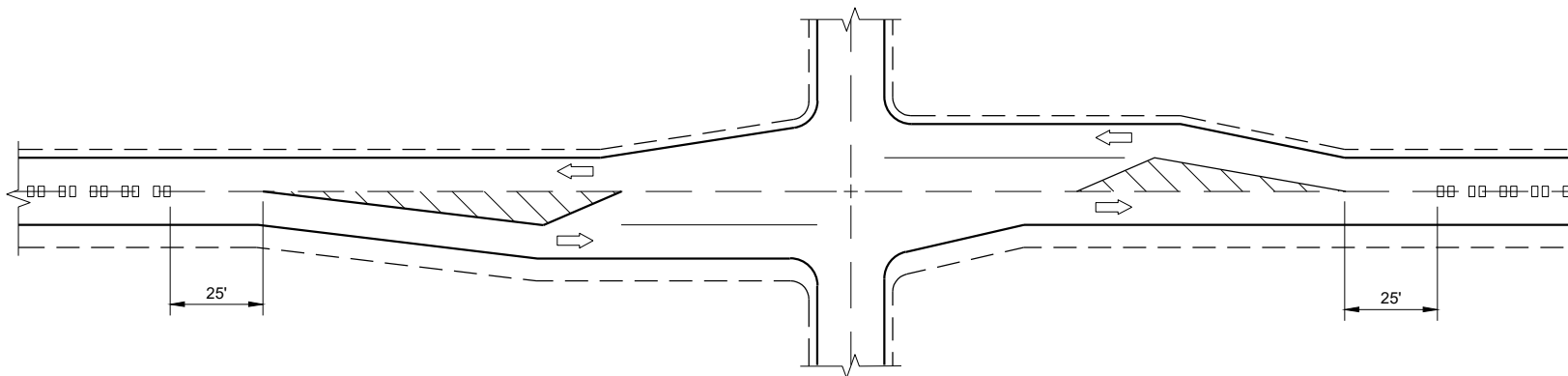


**SECTION B - B
CROWNED ROADWAY**

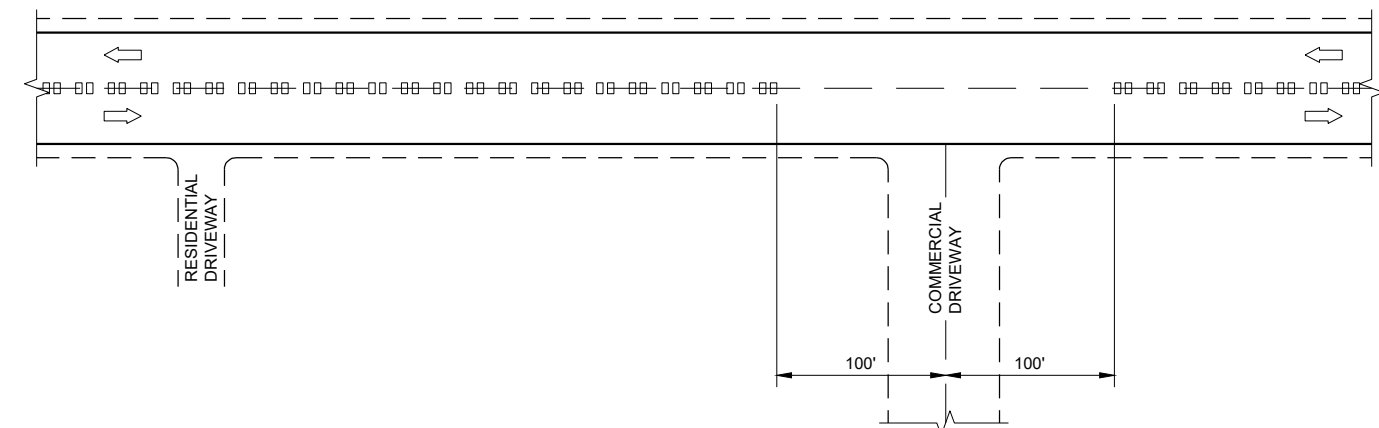
<p>2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING</p>
<p>STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION</p>



CENTERLINE GROOVES AT INTERSECTIONS



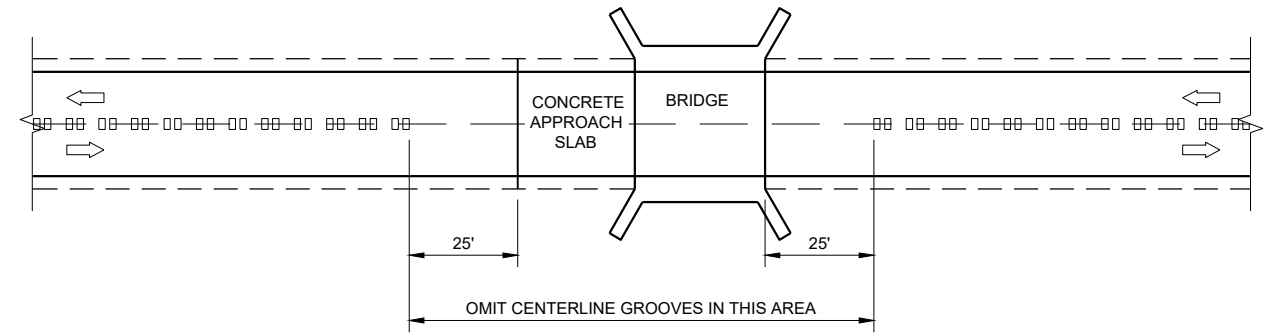
**CENTERLINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)**



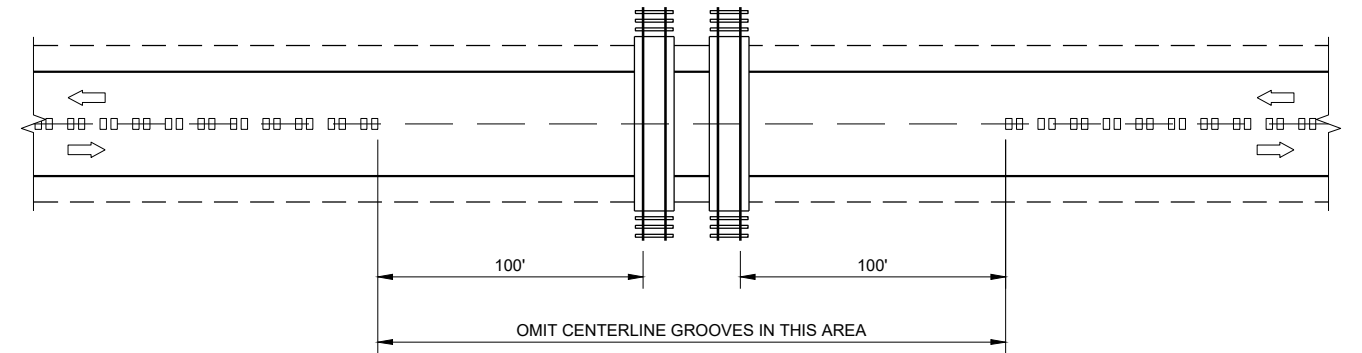
CENTERLINE GROOVES AT DRIVEWAYS^①

GENERAL NOTES

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



CENTERLINE GROOVES AT BRIDGES



CENTERLINE GROOVES AT RAILROADS

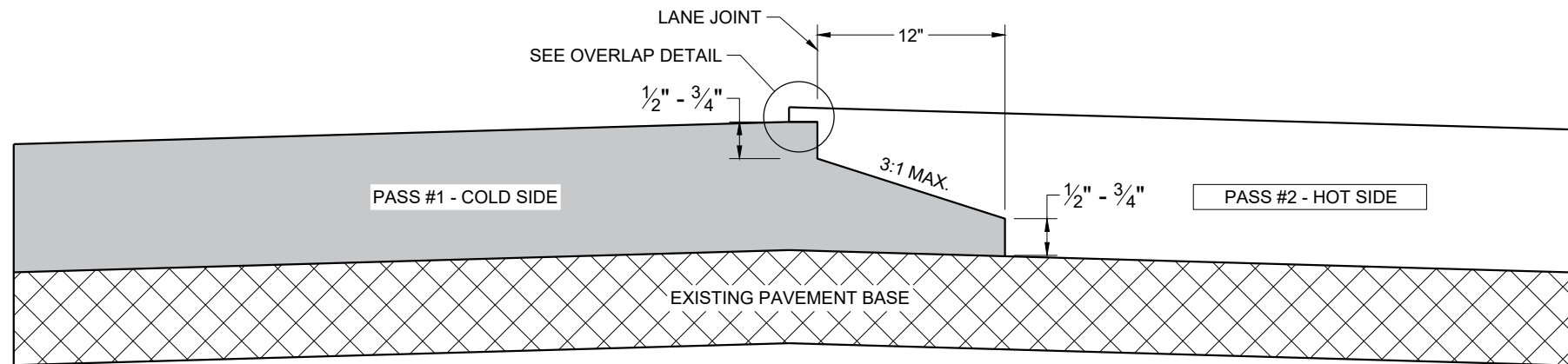
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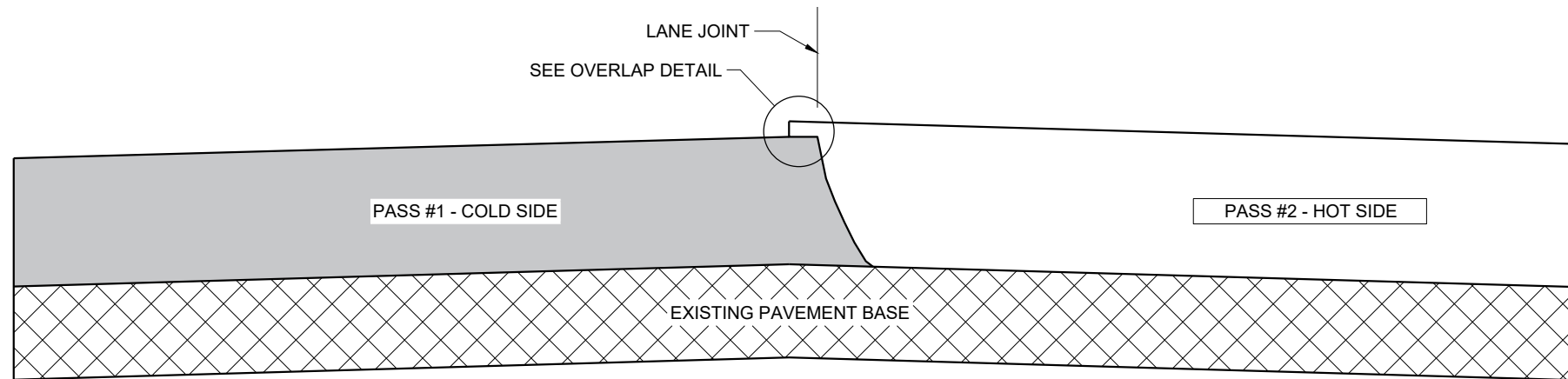
SDD 13A11 - 03b

SDD 13A11 - 03b

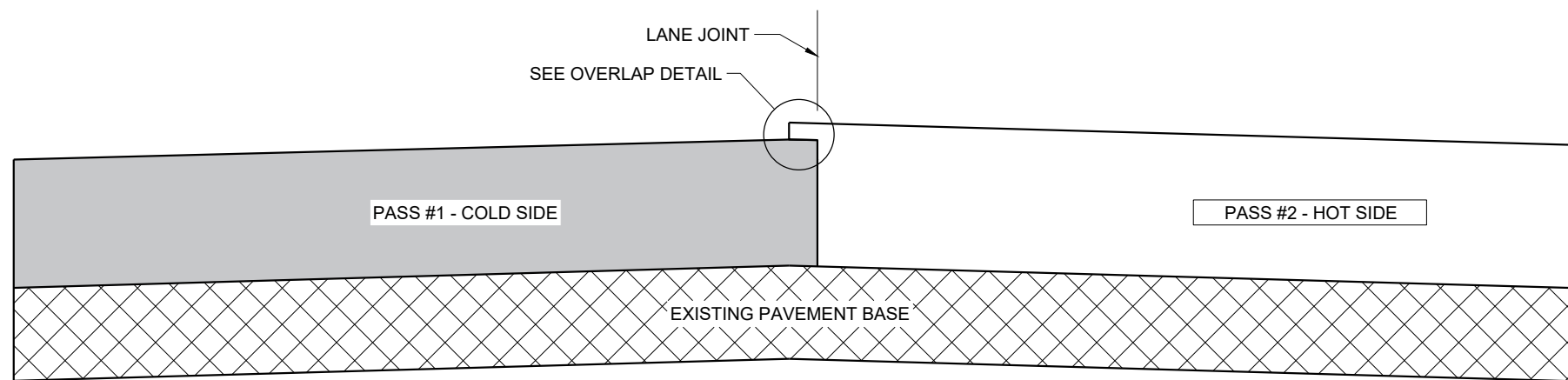
2-LANE RURAL CENTERLINE RUMBLE STRIP, MILLING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 7/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



TYPICAL PAVEMENT CROSS SECTION OF NOTCHED WEDGE LONGITUDINAL JOINT



TYPICAL PAVEMENT CROSS SECTION OF VERTICAL LONGITUDINAL JOINT



TYPICAL PAVEMENT CROSS SECTION OF MILLED LONGITUDINAL JOINT

GENERAL NOTES

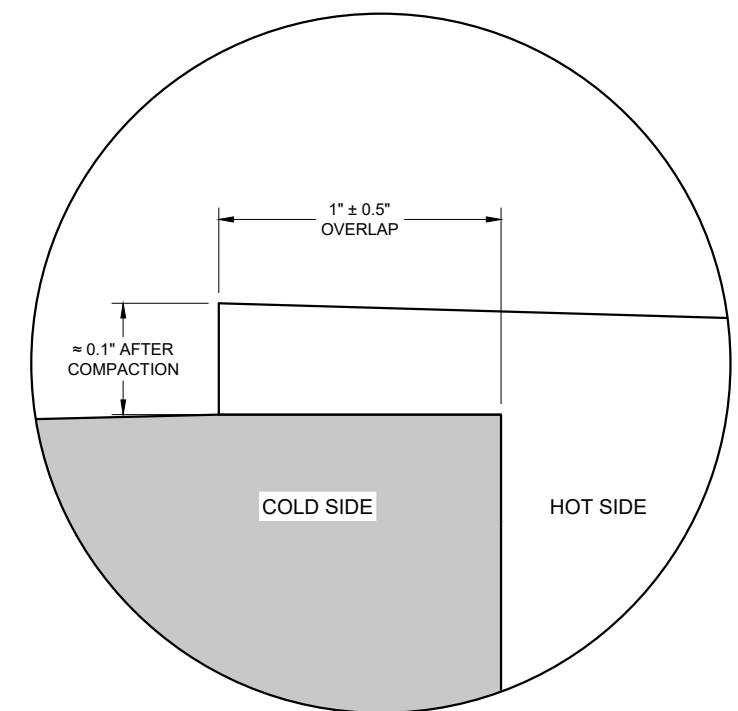
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

FOR ALL LONGITUDINAL JOINTS, ENSURE THE PAVER SCREED OVERLAPS THE PREVIOUSLY PLACED PAVEMENT BY $1" \pm 0.5"$ AND THE HOT SIDE OF THE JOINT REMAINS HIGHER THAN THE COLD SIDE BY APPROXIMATELY 0.1" AFTER FINAL COMPACTION.

ONLY REMOVE THE LONGITUDINAL NOTCHED WEDGE JOINT FOR SMA PAVEMENT OR AS DIRECTED BY THE ENGINEER TO ADDRESS SPECIFIC LENGTHS OF JOINT DAMAGED BY TRAFFIC.

WHEN MILLING BACK OR REMOVING ANY LONGITUDINAL JOINT, LIMIT THE MATERIAL REMOVED TO 2" FROM THE TOP NOTCH OR FROM THE VERTICAL JOINT EDGE ON THE COLD SIDE OF THE JOINT.

USE LONGITUDINAL MILLED JOINT AS PLANS SHOW OR THE AS THE ENGINEER DIRECTS.



OVERLAP DETAIL (TYPICAL)

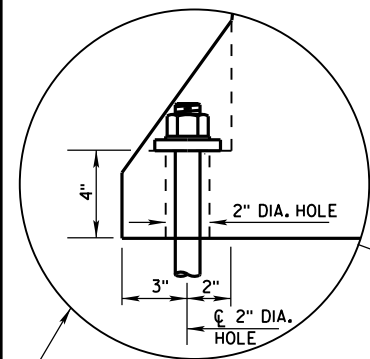
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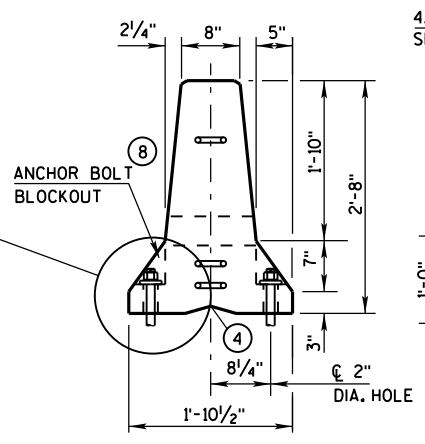
SDD 13C19 - 02

SDD 13C19 - 02

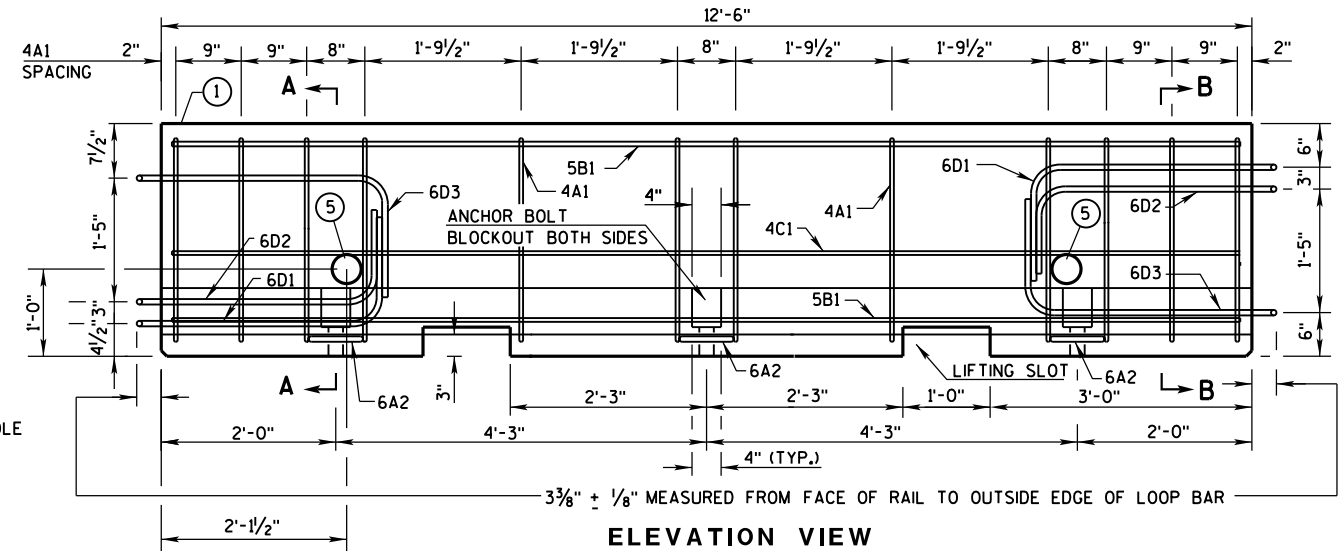
HMA LONGITUDINAL JOINTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED February 2020 DATE	/S/ Steven Hefel HMA PAVEMENT ENGINEER
<small>FHWA</small>	



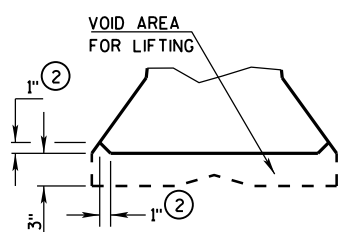
ANCHOR ON TRAFFIC SIDE (8) ONLY WHEN REQUIRED (SEE SHEET D FOR ADDITIONAL ANCHOR DETAIL)



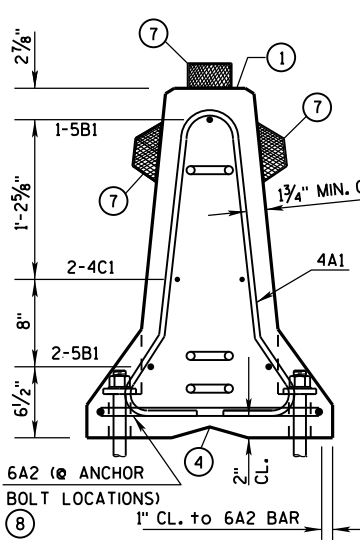
END VIEW



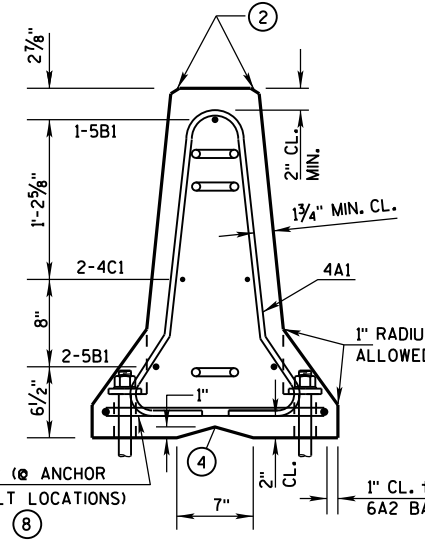
ELEVATION VIEW



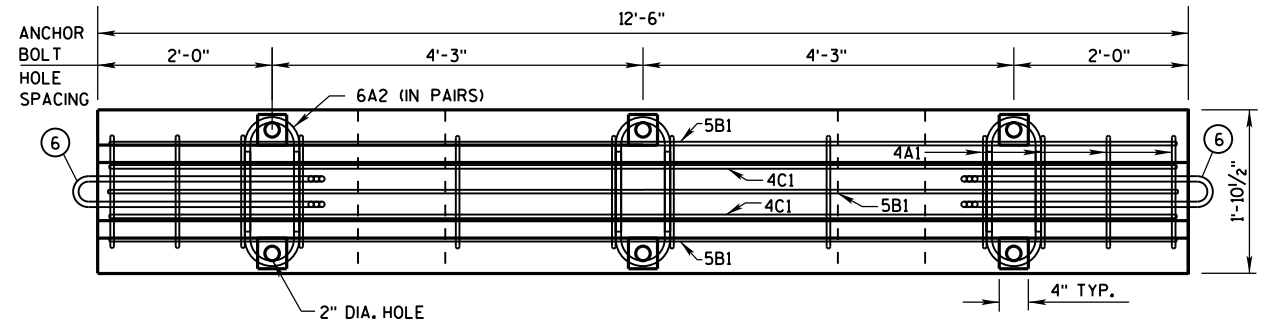
DETAIL "B" LIFTING SLOT DETAIL



SECTION A-A (STIRRUP PLACEMENT)



SECTION B-B (STIRRUP PLACEMENT)



PLAN VIEW

DETAILS OF BARRIER SECTION

GENERAL NOTES

THESE GENERAL NOTES APPLY TO SHEETS 14B7-15(d) THRU 14B7-15(i).

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 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 3-1/2" PIN BEND DIAMETER FOR BEND TESTS. THE LOOPS SHALL BE INSTALLED WITHIN 1/8" OF THE PLAN DIMENSION.

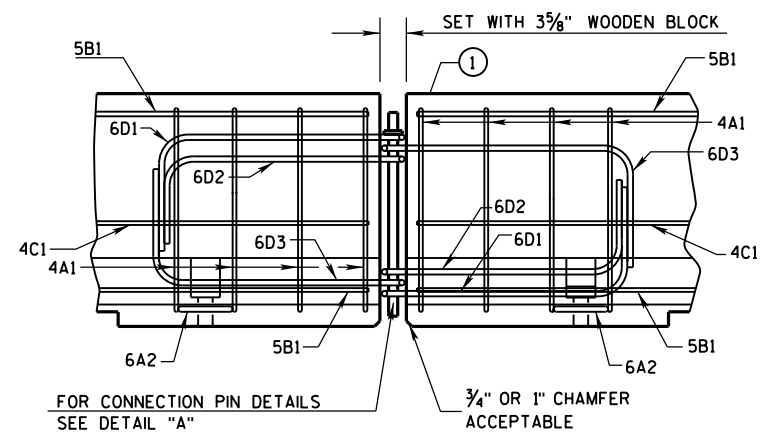
CONSTRUCT LIFTING SLOTS AS SPECIFIED ON THE PLANS TO FACILITATE THE DRAINAGE OF WATER AFTER INSTALLATION.

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

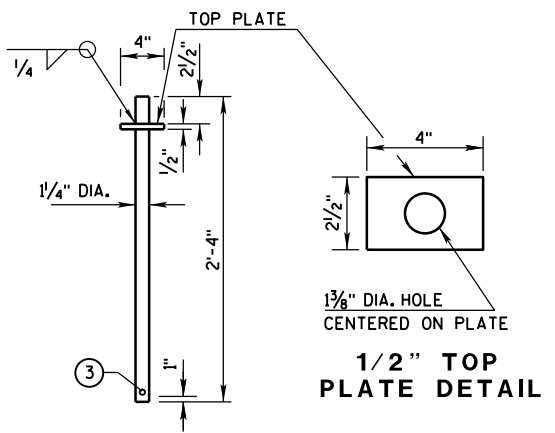
INSTALL MECHANICAL OR ADHESIVE ANCHORS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MANUFACTURER'S INFORMATION TO PROJECT ENGINEER.

- 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 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 MANUFACTURER'S 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 HOW TO ANCHOR BARRIER. SEE SHEET E FOR WHEN TO ANCHOR BARRIER.
- 9 1" CHAMFER OPTIONAL.

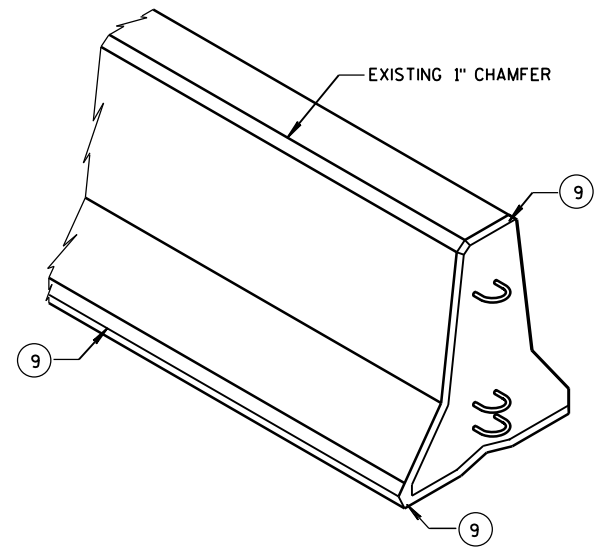
f'c = 4,000 psi



DETAILS OF BARRIER CONNECTION



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



CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

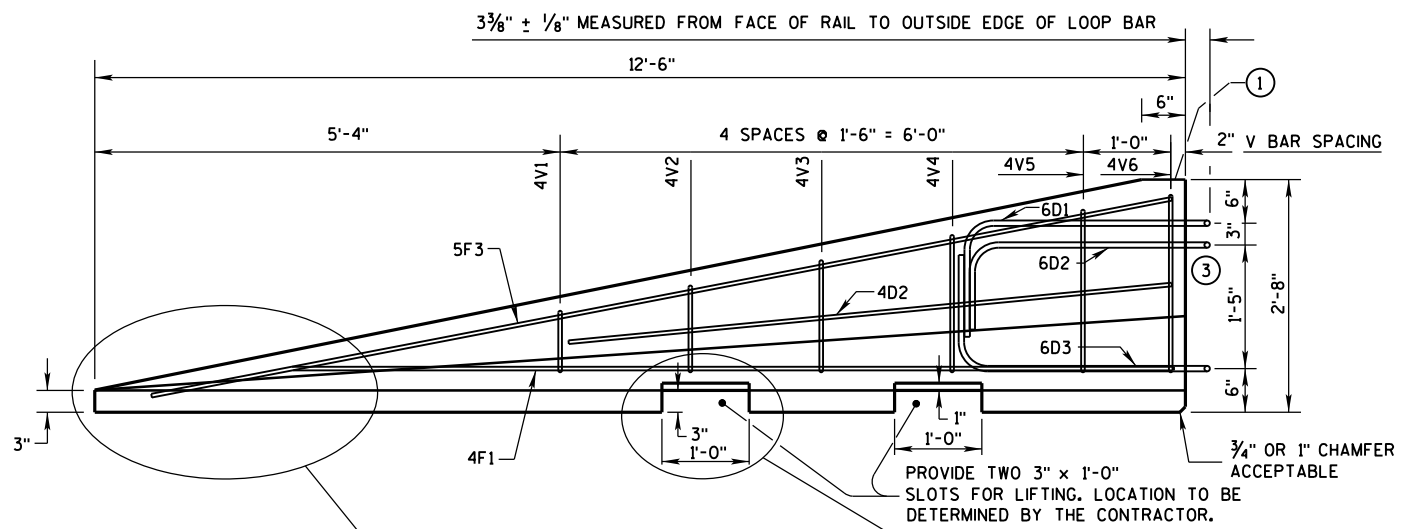
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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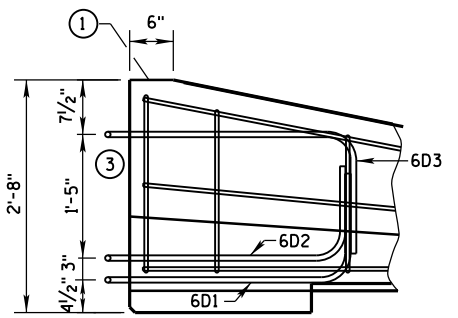
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S.D.D. 14 B 7-15a

S.D.D. 14 B 7-15a

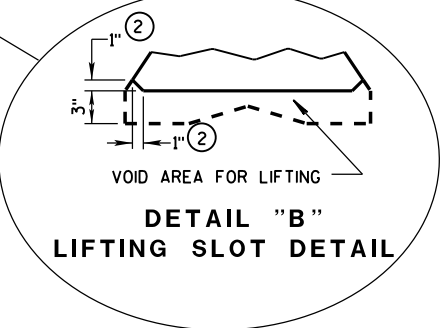


SIDE ELEVATION
(FOR CONNECTION TO LEFT END OF BARRIER)



SIDE ELEVATION

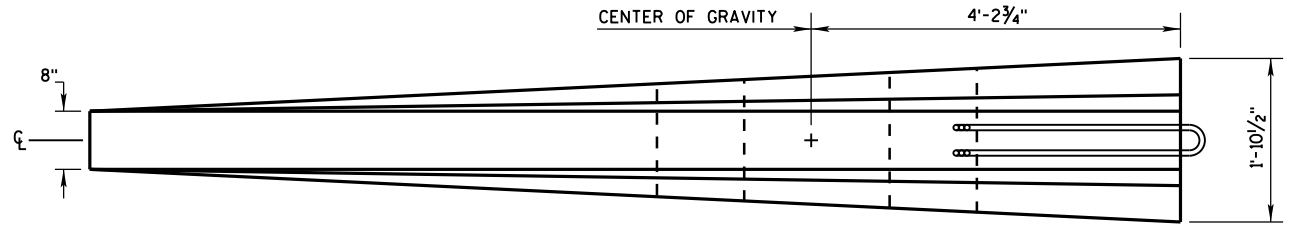
LOOP BAR ASSEMBLY INVERTED FOR OPPOSITE END.
(FOR CONNECTION TO RIGHT END OF BARRIER)



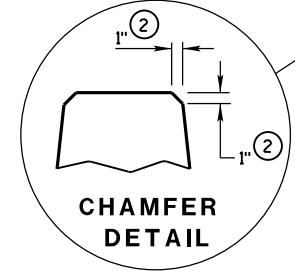
DETAIL "B"
LIFTING SLOT DETAIL

GENERAL NOTES

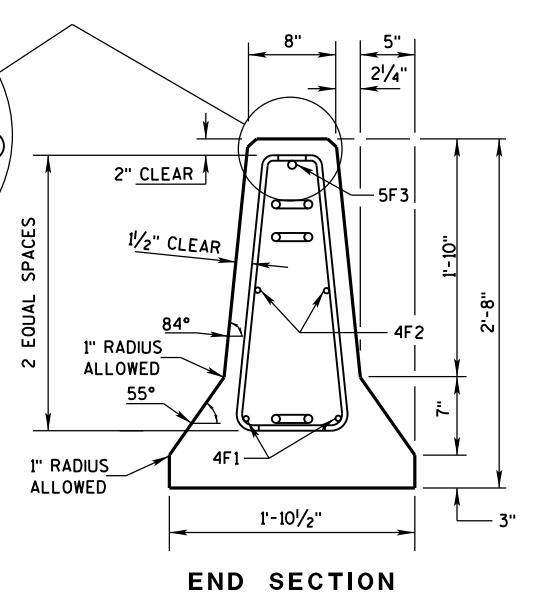
- ① MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
a. TYPE WICBTP
b. MANUFACTURER
c. DATE MANUFACTURED (MONTH AND YEAR)
- ② 1" CHAMFER TO PREVENT SPALLING.
- ③ NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.



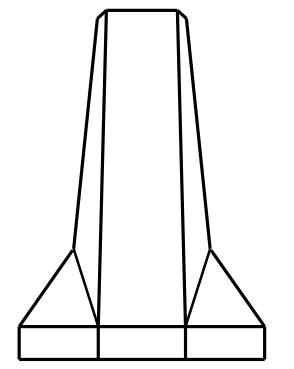
PLAN VIEW



CHAMFER DETAIL

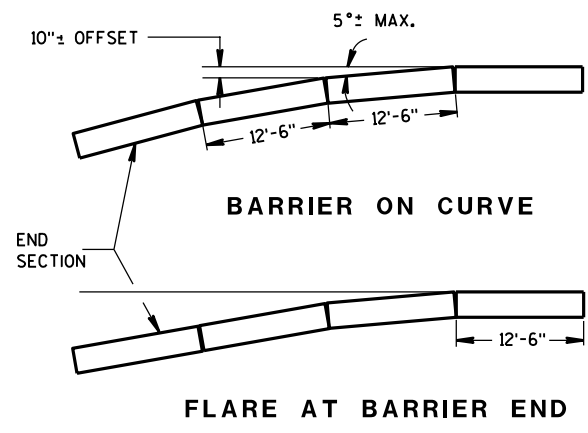


END SECTION



FRONT ELEVATION

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

GENERAL NOTES

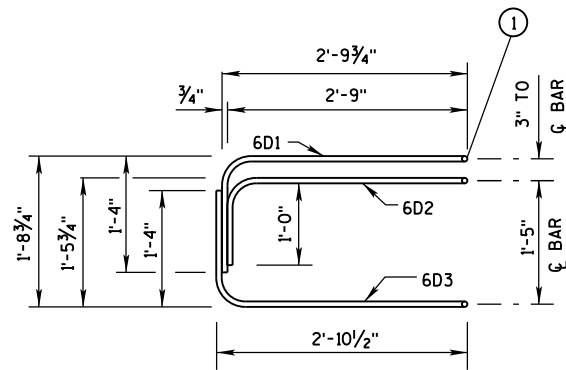
① NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.

BARRIER TAPER SECTION BILL OF MATERIALS

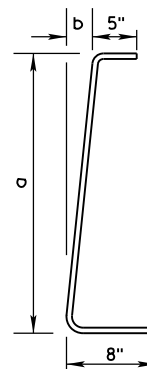
(PER 12'-6" BARRIER TAPER SECTION)

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			
BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
6D1	6	1	8'-5"
6D2	6	1	7'-7"
6D3	6	1	8'-6"

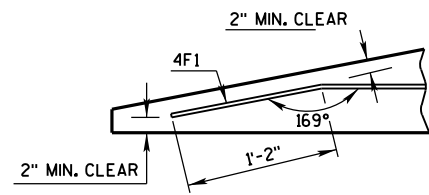


ELEVATION
LOOP BAR ASSEMBLY



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



DETAIL "C"
BENT BAR DETAIL

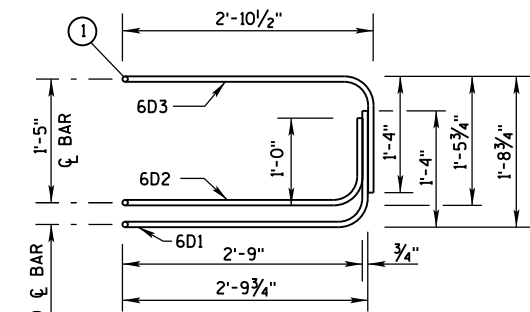
TAPER BARRIER SECTION

BARRIER SECTION BILL OF MATERIALS

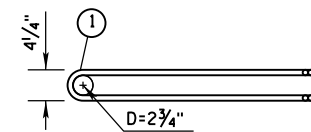
(PER 12'-6" BARRIER SECTION)

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"

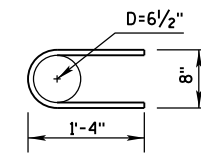
LOOP ASSEMBLY			
BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
6D1	6	2	8'-5"
6D2	6	2	7'-7"
6D3	6	2	8'-6"



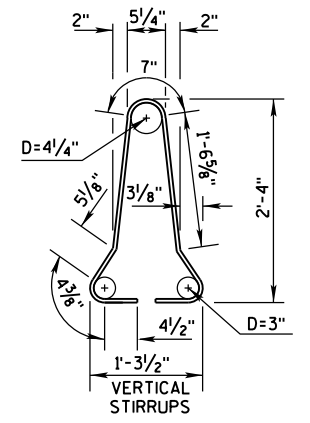
ELEVATION VIEW



PLAN VIEW
LOOP BAR ASSEMBLY
(MARKED END SHOWN, INVERT FOR OTHER END)



6A2

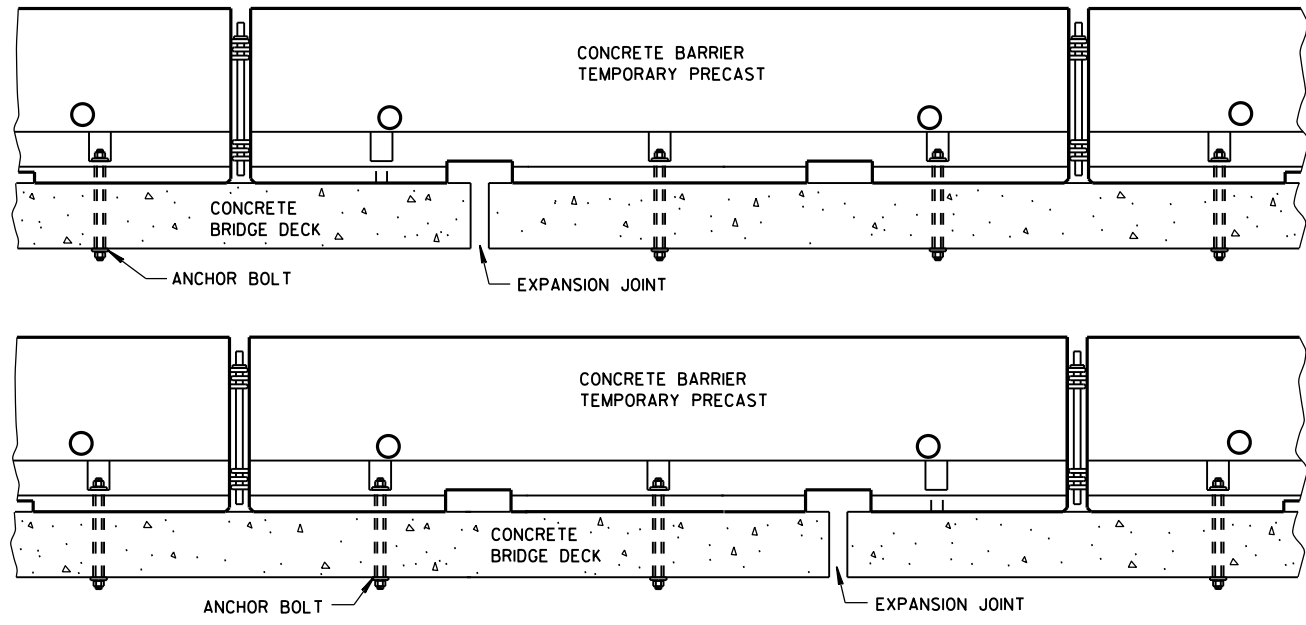


4A1

BARRIER SECTION

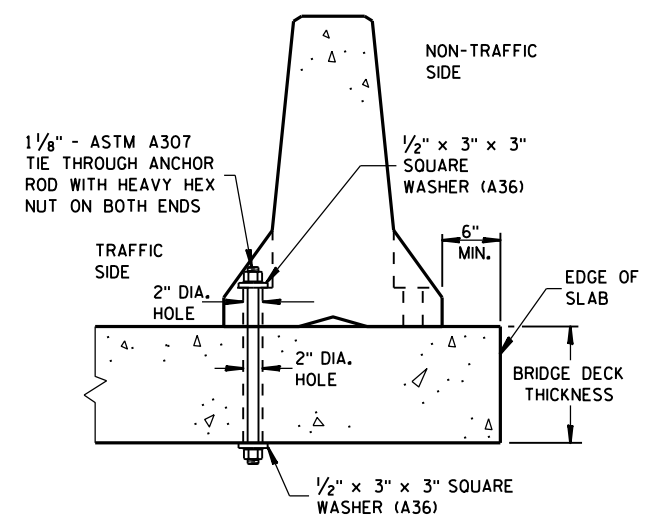
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



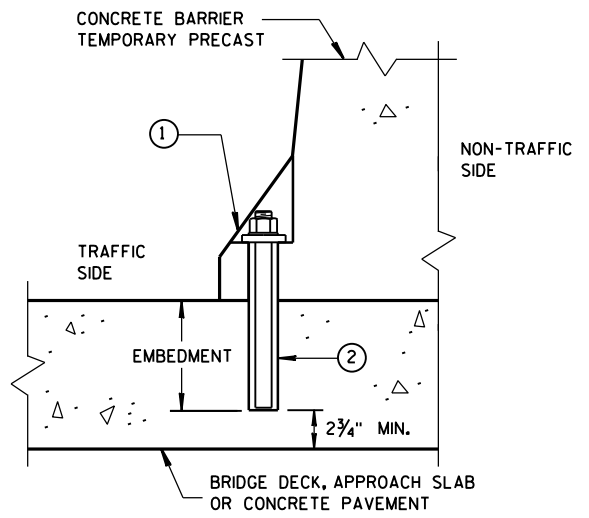
TREATMENT AT BRIDGE DECK EXPANSION JOINTS

(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 ANCHOR INSTALLATION ON CONCRETE BRIDGE DECK, CONCRETE APPROACH SLAB, OR CONCRETE PAVEMENT

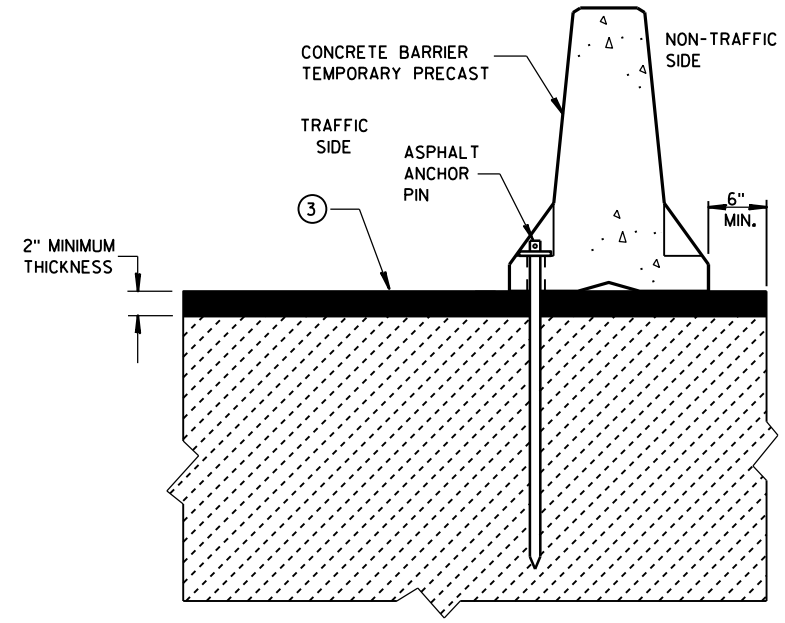
(DO NOT USE ON CONCRETE WITH AN ASPHALTIC OVERLAY)

GENERAL NOTES

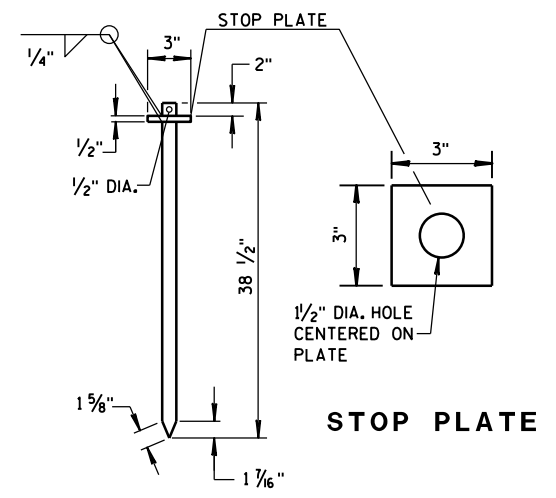
SEE SHEET E FOR WHEN TO ANCHOR. OTHER PARTS OF THE PLAN MAY SHOW ADDITIONAL LOCATIONS REQUIRING ANCHORING.

REMOVE ALL ANCHORS WHEN NO LONGER NEEDED. FILL CONCRETE PAVEMENTS, DECKS AND APPROACH SLABS WITH NON-SHRINK COMMERCIAL GROUT FROM THE APPROVED PRODUCT LIST. FILL ASPHALT PAVEMENTS WITH ASTM D6690 TYPE II RUBBERIZED CRACK FILLER.

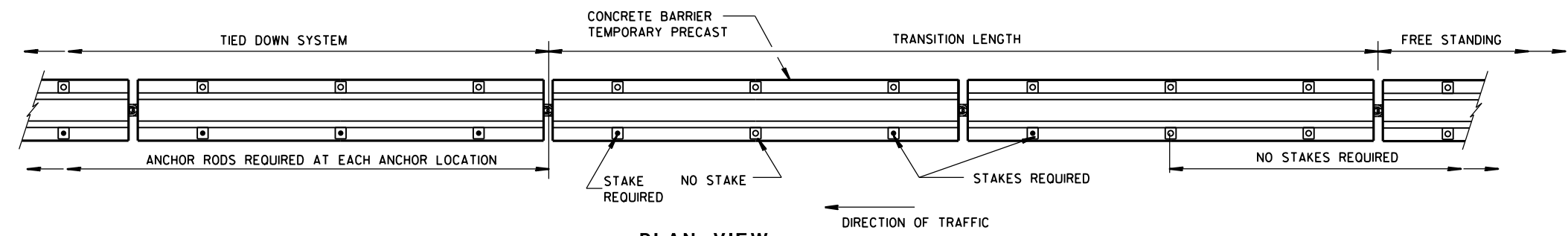
- ① 1/8" DIAMETER A307 THREADED ROD, 1/2" X 3" X 3" SQUARE PLATE WASHER WITH ASTM A36 STEEL, ASTM A563A HEAVY HEX NUT.
- ② ADHESIVE ANCHORS WITH A MINIMUM BOND STRENGTH OF 1,800 PSI AND 5/4" EMBEDMENT. SEE 603.2 AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.
- ③ ASPHALT SURFACE SHOWN. CONTRACTOR MAY DRILL THROUGH CONCRETE PAVEMENT AND THEN DRIVE ASPHALT ANCHOR PIN.



STAKE DOWN INSTALLATION FOR ASPHALTIC SURFACE



ASPHALT ANCHOR PIN (ASTM A36 STEEL)



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.)

CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

6

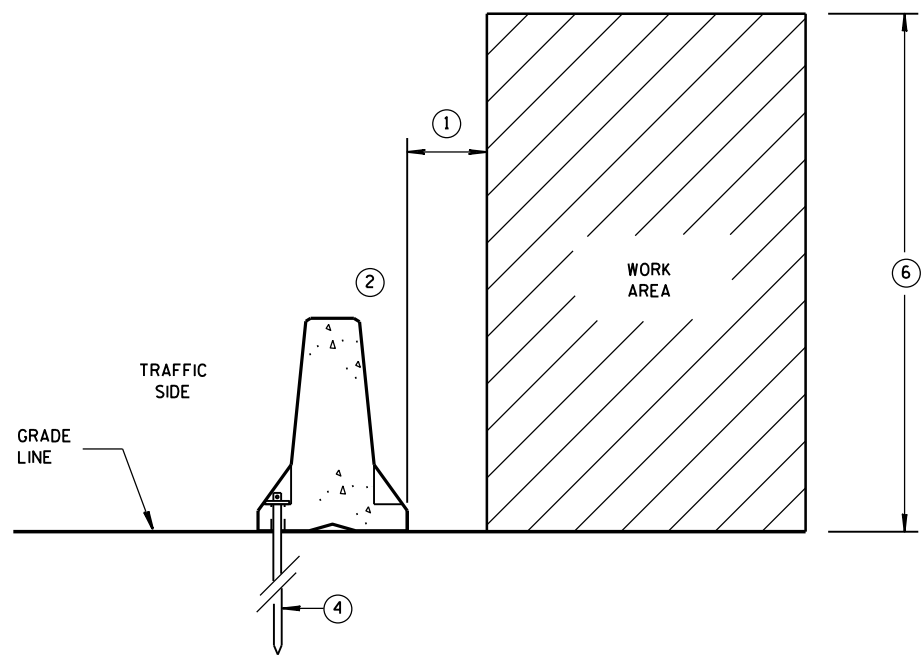
6

S.D.D. 14 B 7-15d

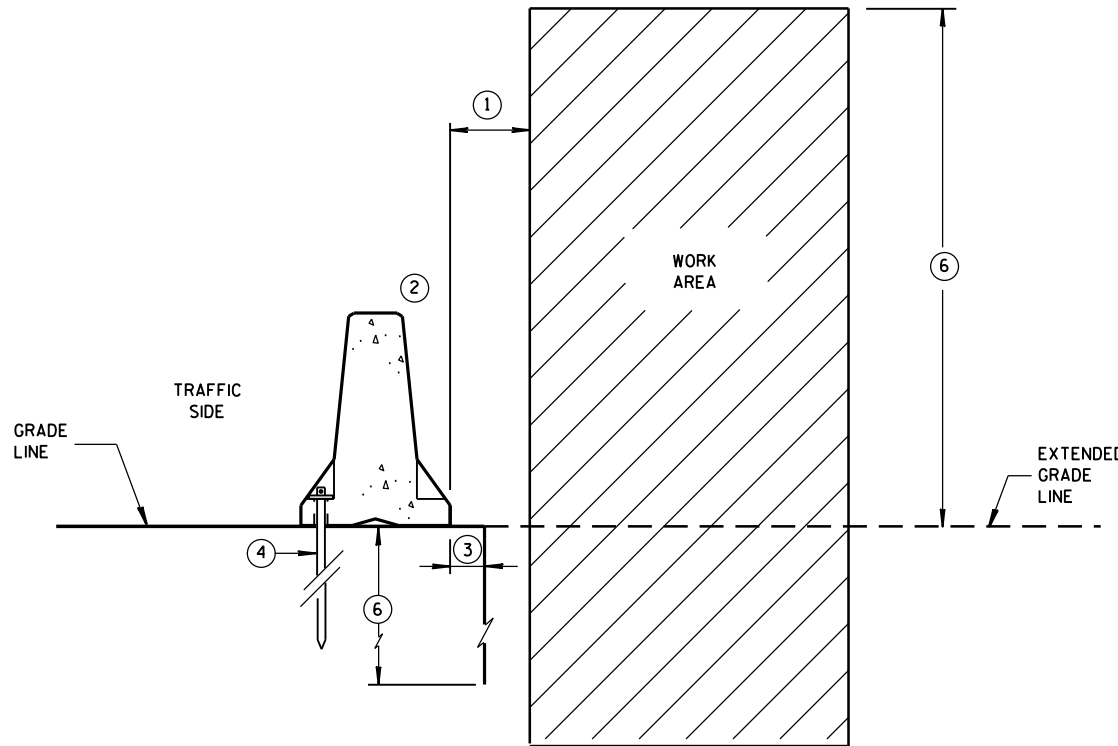
S.D.D. 14 B 7-15d

GENERAL NOTES

- ① WHEN OBJECTS EXTEND ABOVE THE GRADE, A MINIMUM OF 1 FOOT IS REQUIRED FROM BACK OF BARRIER TO OBJECT. SEE OTHER DETAILS FOR THE MINIMUM OFFSET FROM BACK OF BARRIER TO SLOPES OR VERTICAL DROPS.
- ② OBJECTS ARE NOT TO BE PLACED ON, MOUNTED TO, OR LEANED AGAINST THE BARRIER WITHOUT PERMISSION OF THE PROJECT ENGINEER.
- ③ SEE OTHER DETAIL ON SHEET "D" FOR SPACE REQUIREMENTS.
- ④ SEE BOLT THROUGH DECK, REMOVABLE ADHESIVE ANCHOR, OR A STAKE DOWN FOR ASPHALTIC SURFACE TREATMENT DETAILS. ASPHALTIC ANCHOR SHOWN.
- ⑤ DEPTH OF 3 FEET OR MORE.
- ⑥ Y = 6'-6".

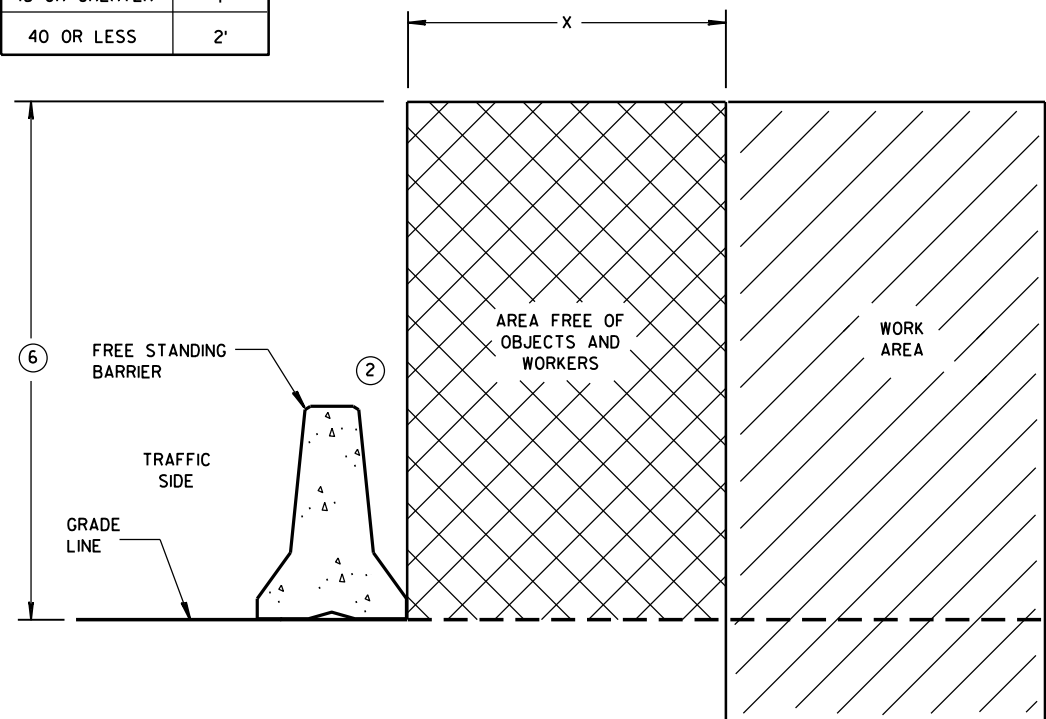


ANCHORED BARRIER SPACE REQUIREMENTS FOR HAZARDS EXTENDED ABOVE THE GRADE LINE

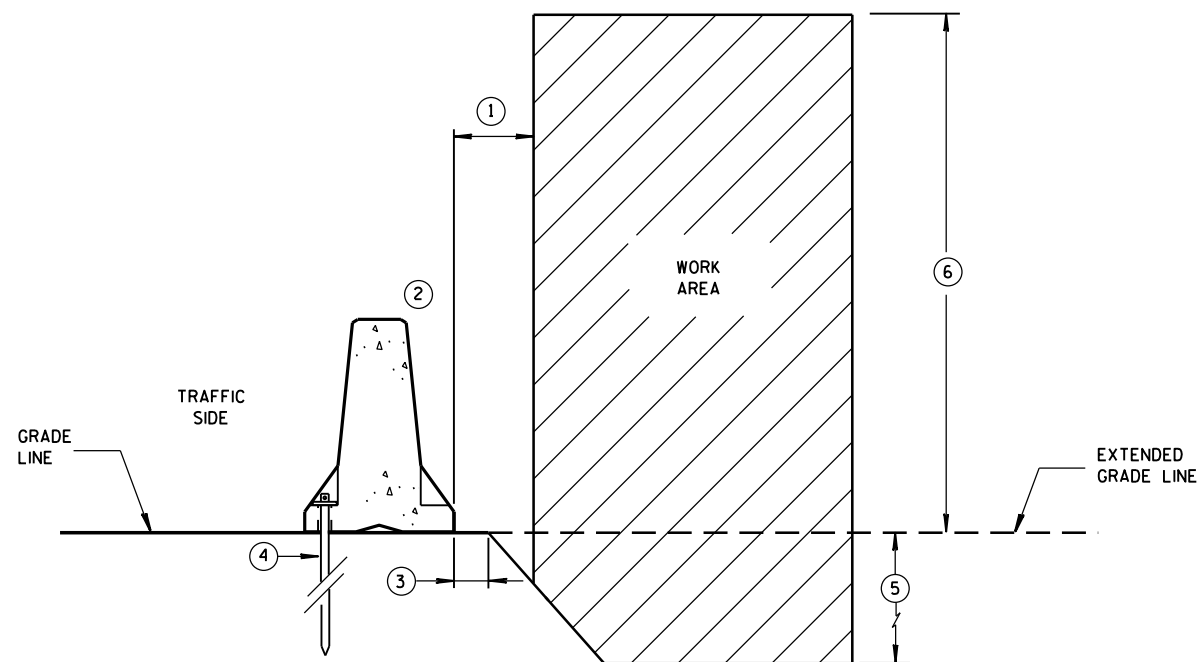


ANCHORED BARRIER SPACE REQUIREMENTS ON VERTICAL DROP OFFS

POSTED SPEED MPH	X
45 OR GREATER	4'
40 OR LESS	2'



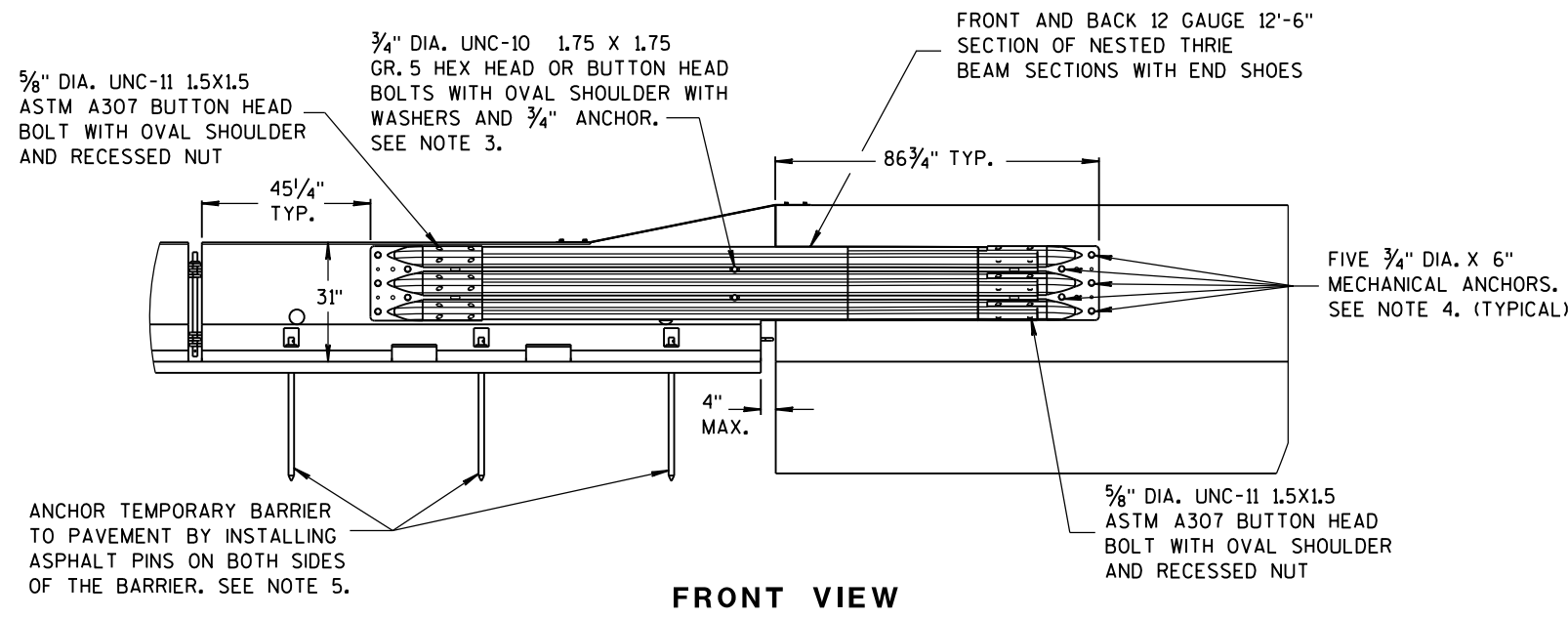
FREE STANDING BARRIER SPACE REQUIREMENTS



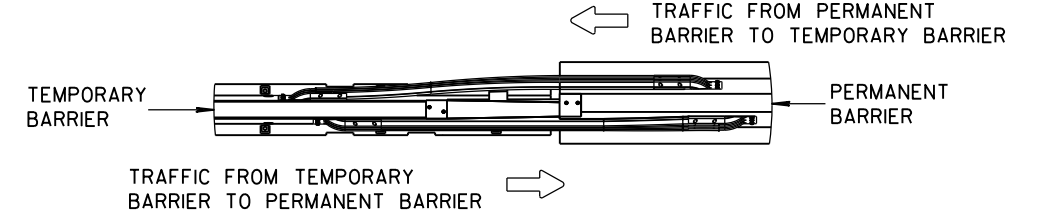
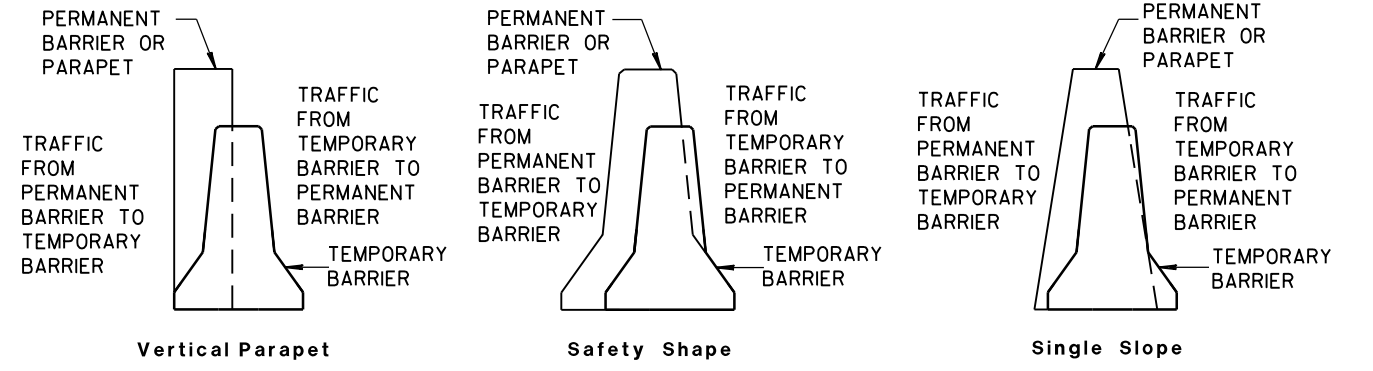
ANCHORED BARRIER SPACE REQUIREMENTS ON SLOPES

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

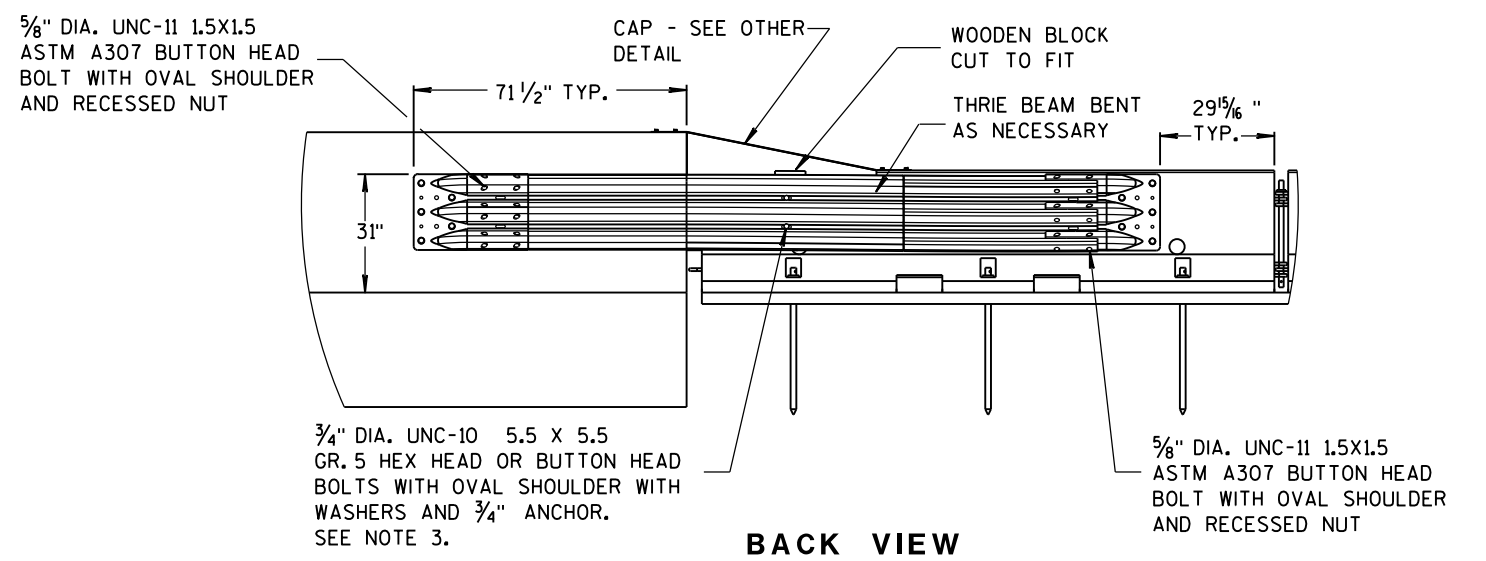


FRONT VIEW

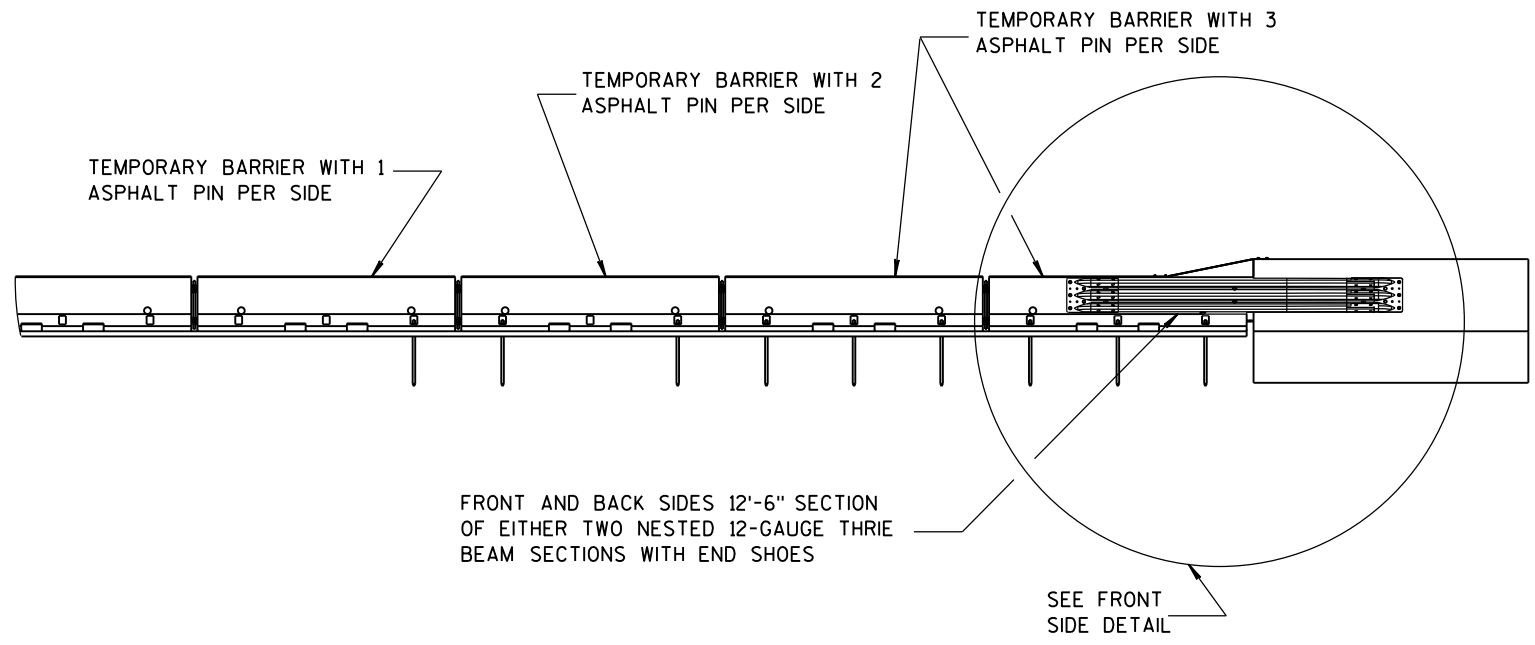


TEMPORARY BARRIER PLACEMENT FOR BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM

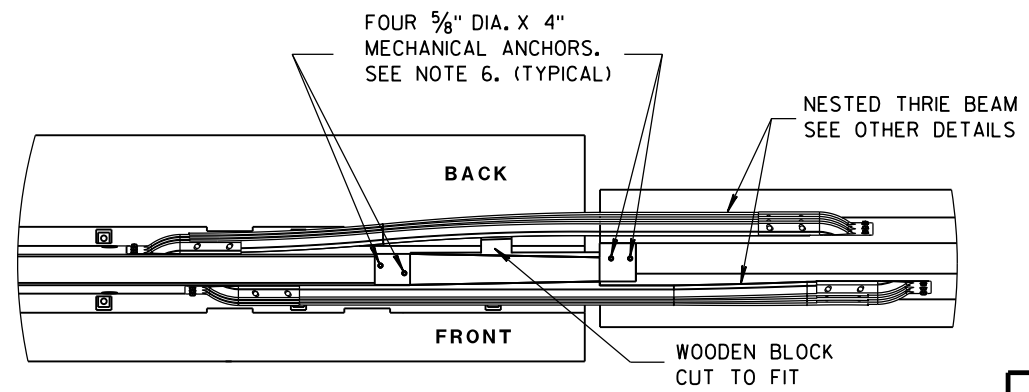
- NOTES**
- NESTED THRIE BEAM IS REQUIRED ON BOTH SIDES OF THE TEMPORARY BARRIER FOR ALL INSTALLATIONS REGARDLESS OF TRAFFIC.
- CAP END PLATE PLACED FLUSH WITH UPSTREAM END OF PERMANENT BARRIER OR PARAPET.
 - THRIE BEAM PIECES ARE OFFSET 15 1/4" TO PREVENT INTERFERENCE FROM THE ANCHORS ON OPPOSING SIDES.
 - MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 9.48 KIPS AND ULTIMATE SHEAR LOAD 10.48 KIPS.
 - MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 17.9 KIPS AND ULTIMATE SHEAR LOAD 21.96 KIPS.
 - MAY BE USED ON CONCRETE OR ASPHALT PAVEMENTS. ASPHALT OPTION SHOWN. FOR CONCRETE OPTION SEE OTHER DETAILS.
 - MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 12.14 KIPS AND ULTIMATE SHEAR LOAD 17.5 KIPS.



BACK VIEW



FRONT VIEW

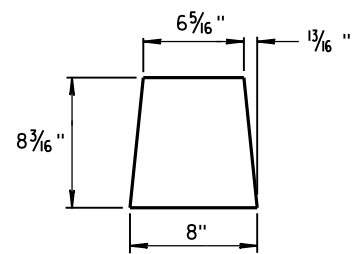


PLAN VIEW

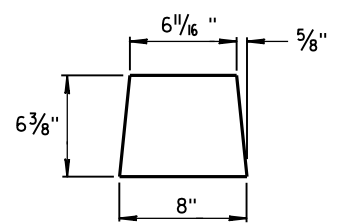
BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM

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

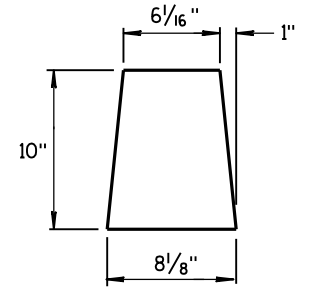
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



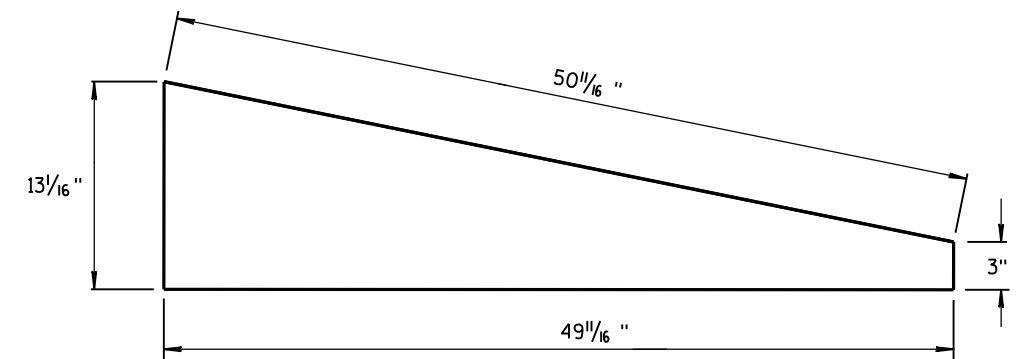
GUSSET 1



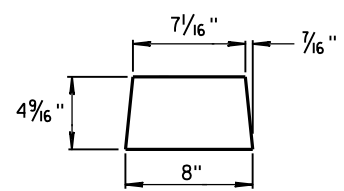
GUSSET 2



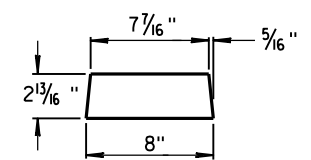
END PLATE



SIDE PLATE

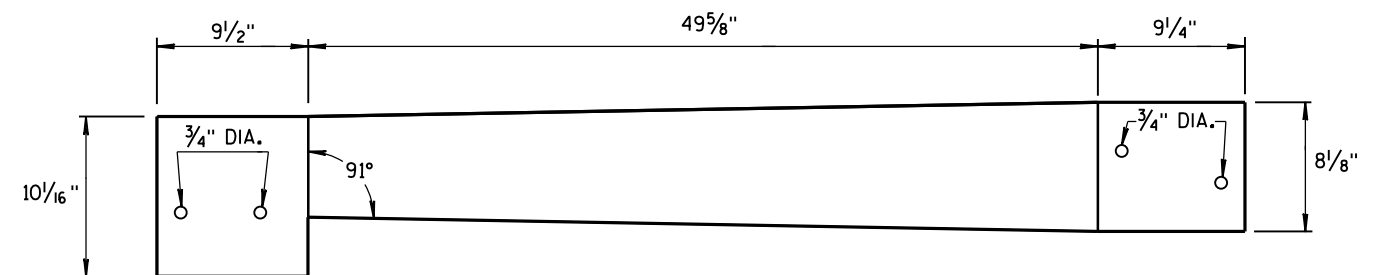


GUSSET 3

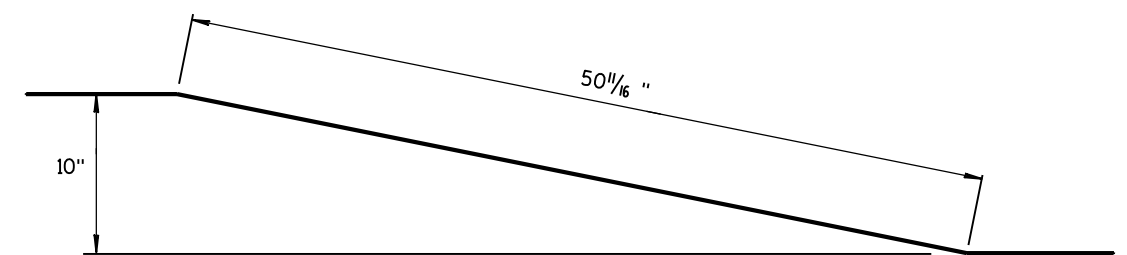


GUSSET 4

GUSSETS

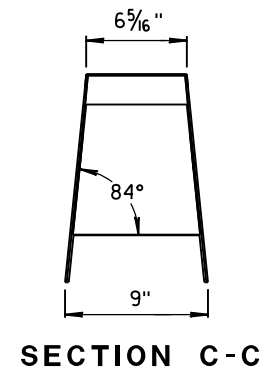
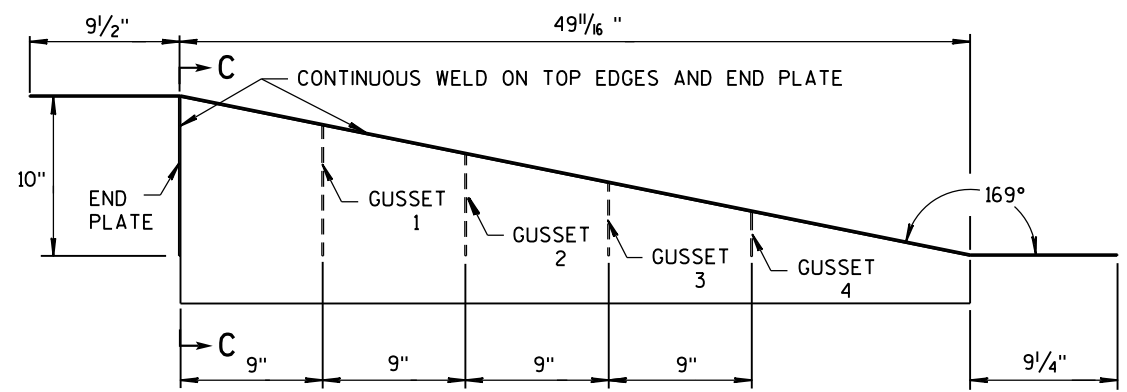
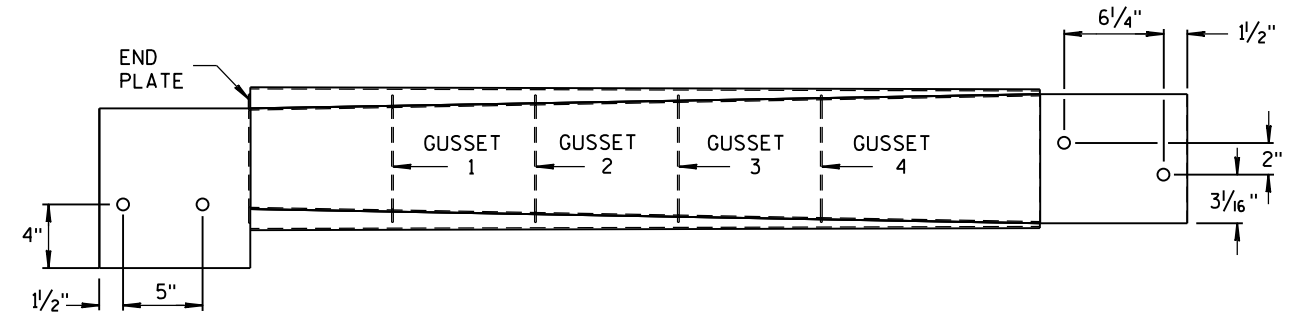


TOP PLATE



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

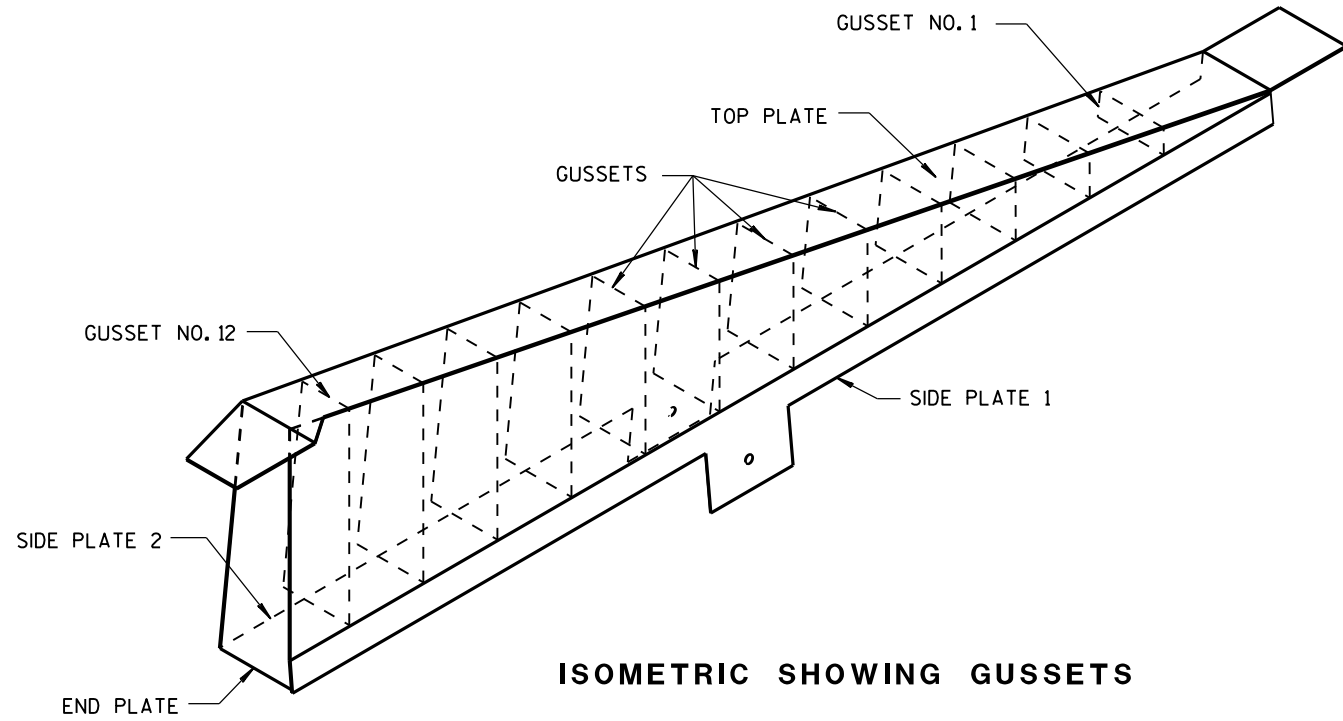
NOTES

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.

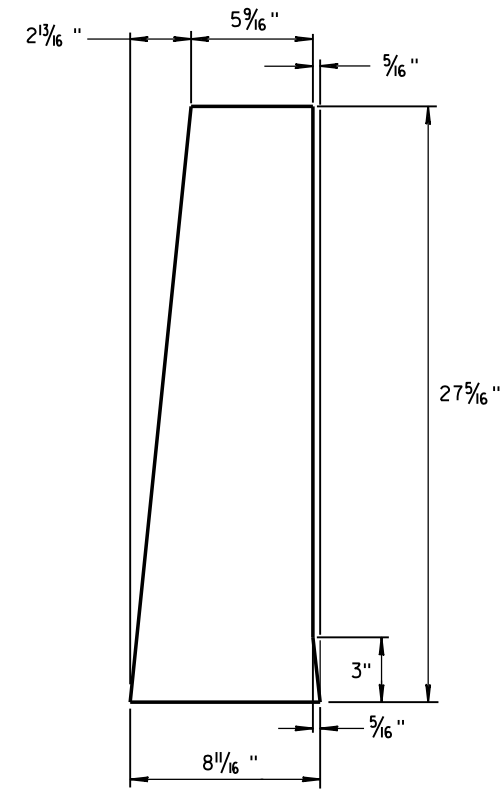
CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

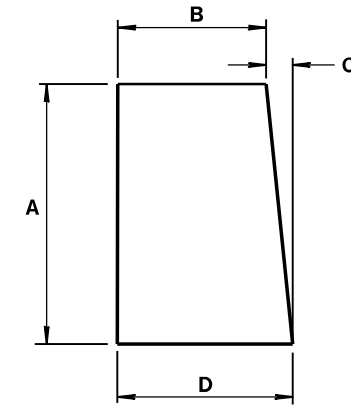


ISOMETRIC SHOWING GUSSETS



END PLATE

1/8" STEEL PLATE



GUSSETS 1 - 12

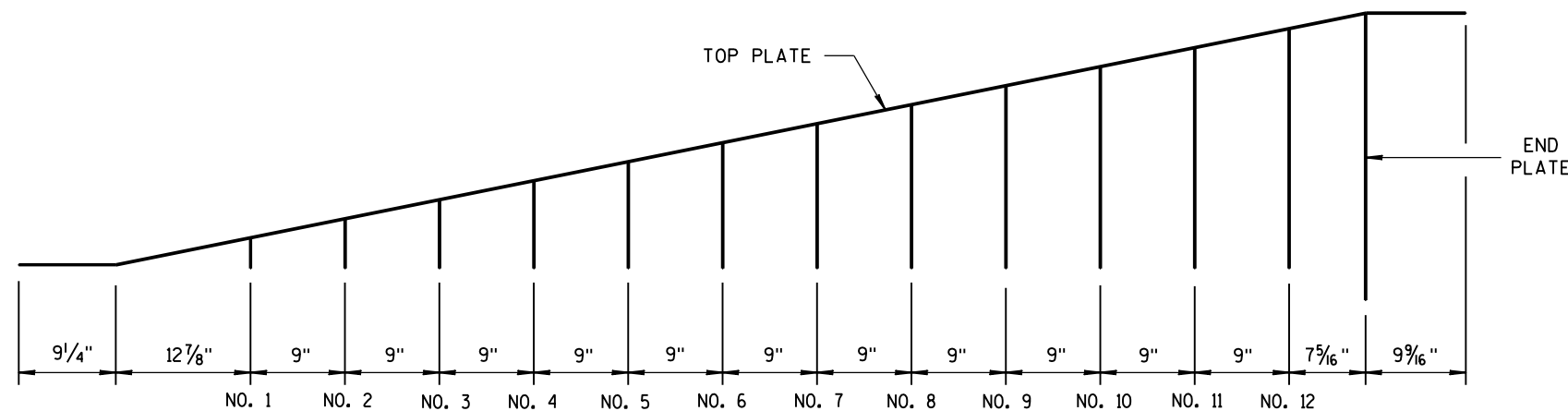
ALL GUSSETS 1/8" STEEL PLATE

GUSSET DIMENSIONS

GUSSET NO.	A	B	C	D
1	2 7/8"	7 3/4"	1/4"	8
2	4 1/16"	7 7/16"	1/2"	8
3	6 1/2"	7 3/8"	11/16"	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 3/16"	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.

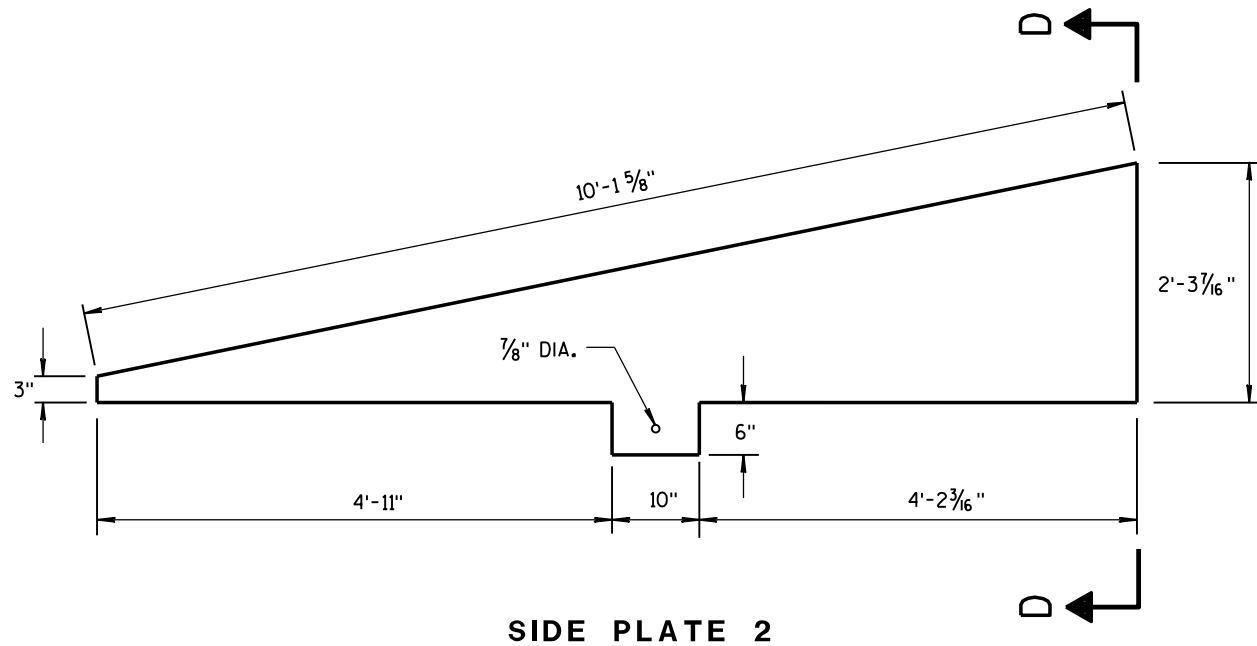


GUSSET LOCATION

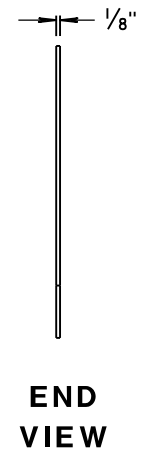
CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 56" PERMANENT CONCRETE BARRIER

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

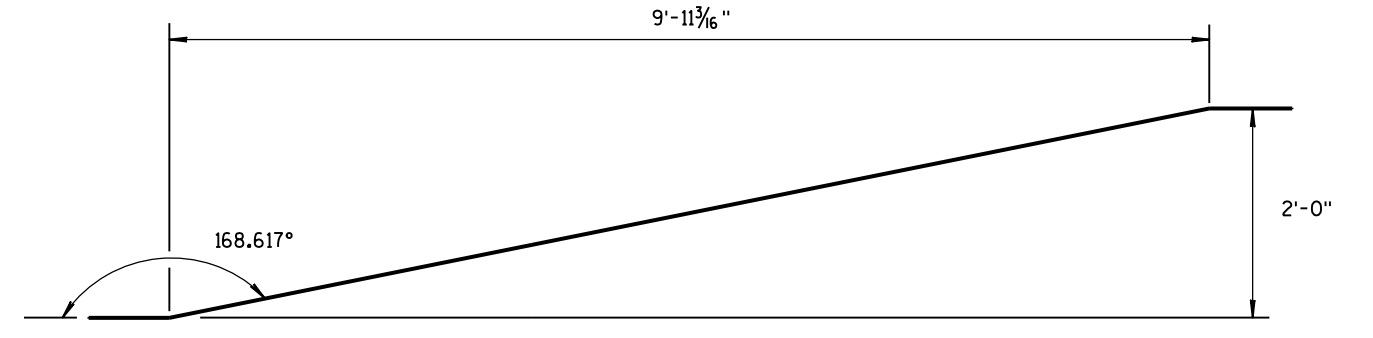
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



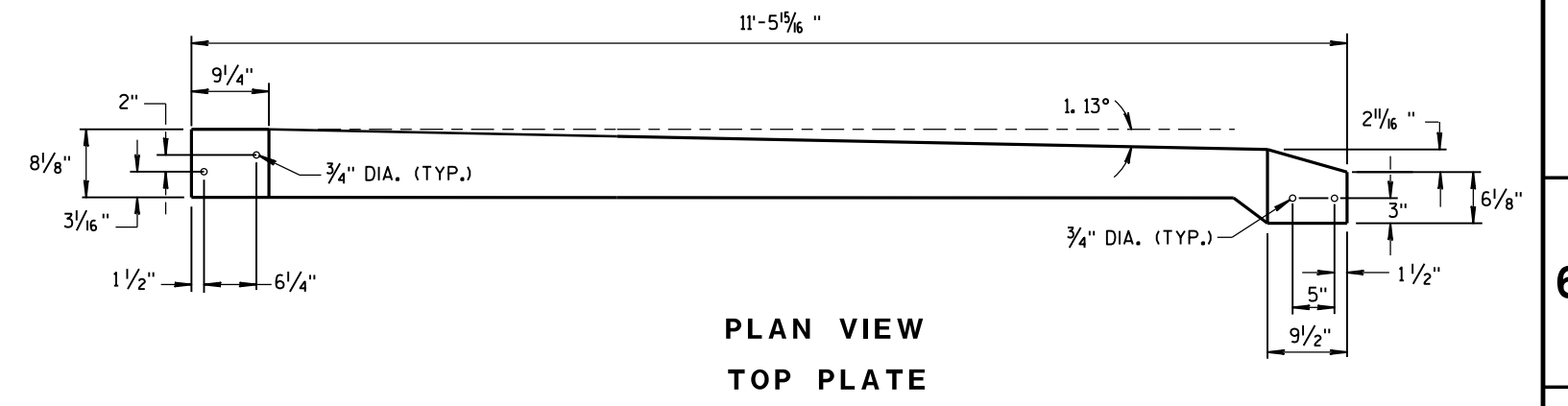
SIDE PLATE 2



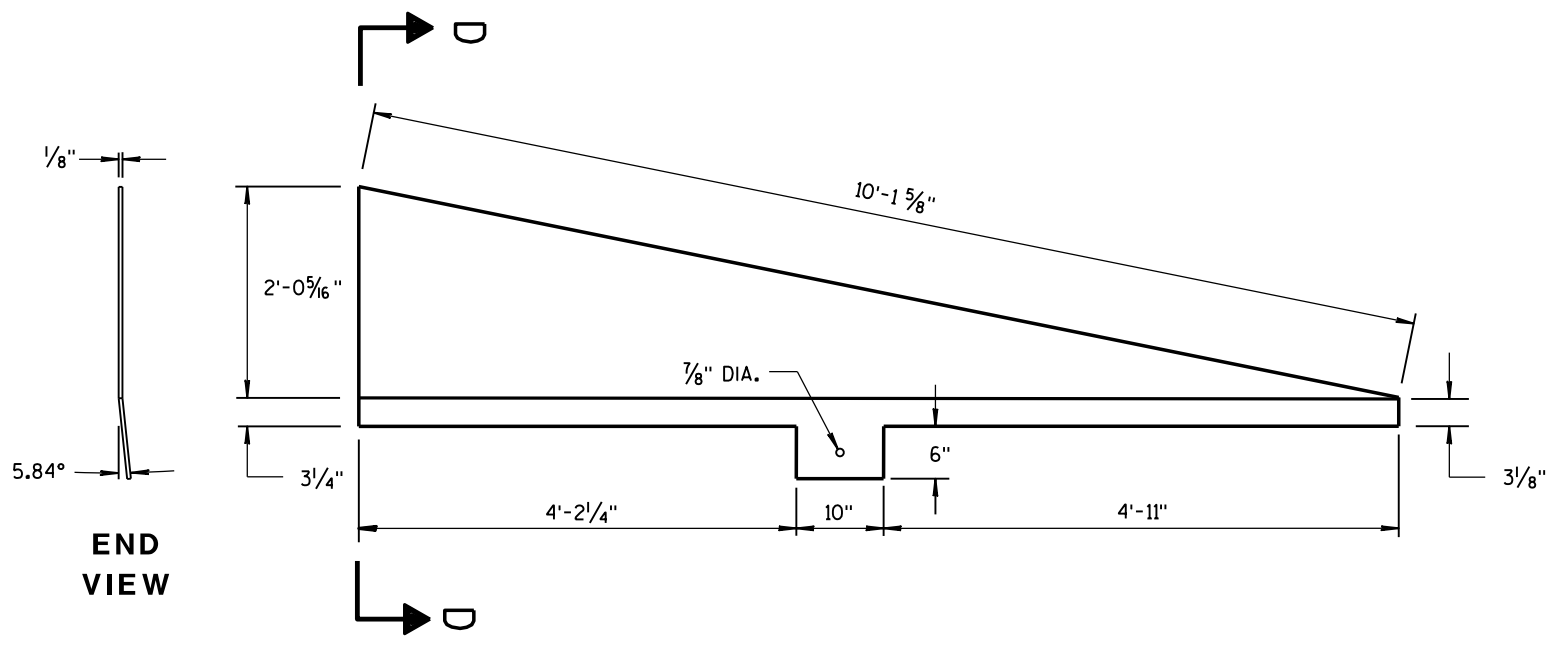
END VIEW



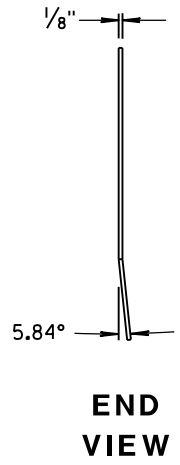
**SIDE VIEW
TOP PLATE**



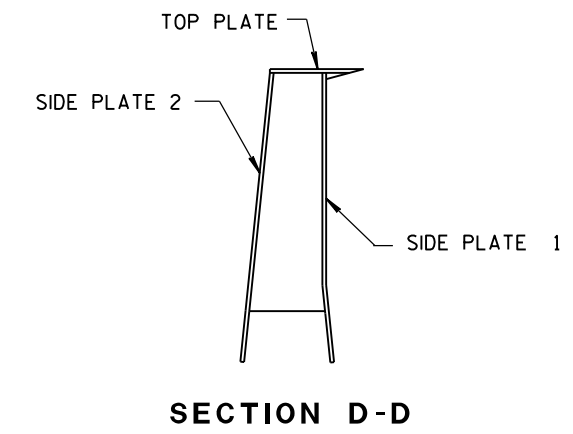
**PLAN VIEW
TOP PLATE**



SIDE PLATE 1



END VIEW



SECTION D-D

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

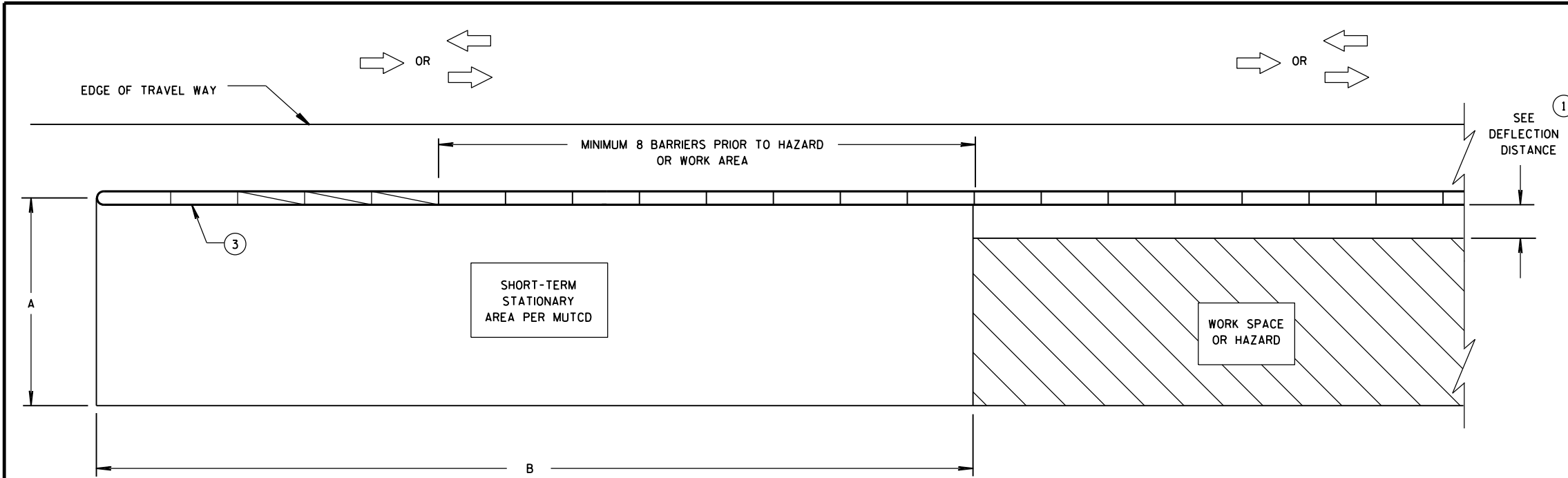
CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/s/ Rodney Taylor ROADWAY STANDARD DEVELOPMENT UNIT SUPERVISOR
FHWA	

6

6

S.D.D. 14 B 7-15i

S.D.D. 14 B 7-15i



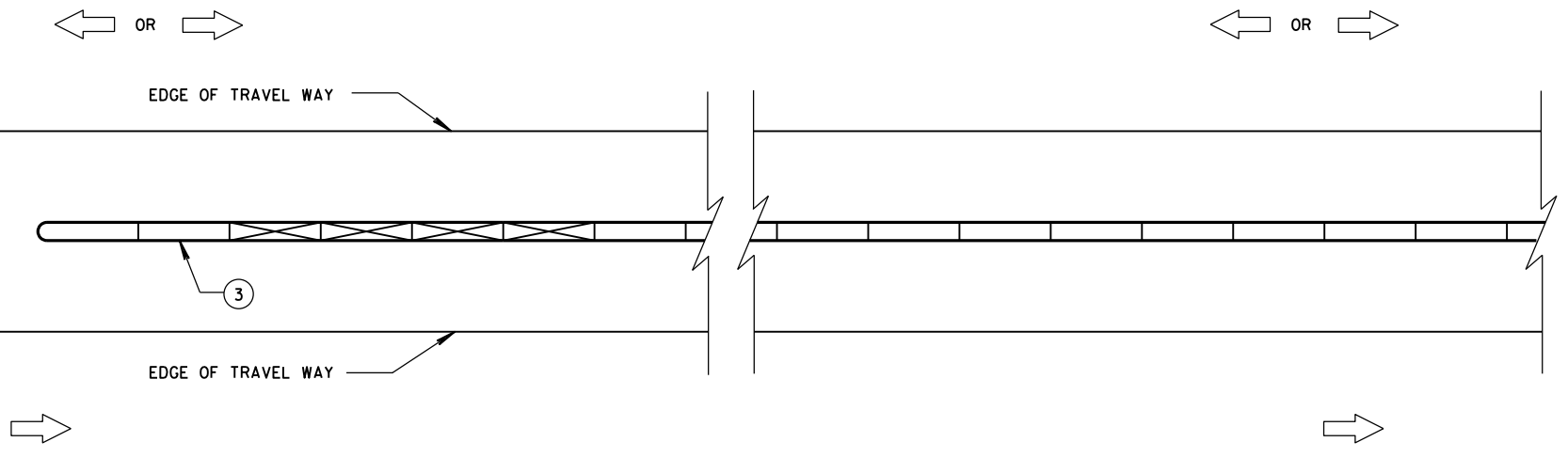
DIMENSION A TABLE ²

FACILITY	POSTED SPEED MPH	DIMENSION A	
		MIN. FT	MAX. FT
FREEWAY/EXPRESSWAY	ALL	15	20
NON-FREEWAY/EXPRESSWAY	GREATER THAN OR EQUAL TO 45	10	15
NON-FREEWAY/EXPRESSWAY	LESS THAN 45	8	10
AADT LESS THAN 1,500	ALL	8	10

**CRASH CUSHION/SAND BARREL ARRAY AND TEMPORARY BARRIER
INSTALLATION FOR TRAFFIC ON ONE SIDE OF BARRIER**

DIMENSION B TABLE ²

POSTED SPEEDS MPH	DIMENSION B FT
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645



**CRASH CUSHION/SAND BARREL ARRAY AND TEMPORARY BARRIER
INSTALLATION FOR TRAFFIC ON BOTH SIDES OF BARRIER**

LEGEND

- DIRECTION OF TRAVEL
- CRASH CUSHION OR SAND BARREL ARRAY
- SEE FREE STANDING TRANSITION TO TIED-DOWN SYSTEM DETAILS
- SEE BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM DETAILS
- 3 PINS PLACED ON TRAFFIC SIDE OF BARRIER
- PERMANENT CONCRETE BARRIER OR CONCRETE PARAPET
- FREE STANDING TEMPORARY BARRIER

GENERAL NOTES

SEE STANDARD DETAIL DRAWING 14B7 FOR MORE INFORMATION.

DETAILS PROVIDE A GENERAL LAYOUT OF TEMPORARY CONCRETE BARRIER, CRASH CUSHIONS, SAND BARREL ARRAYS AND TIE DOWN TRANSITIONS. DETAILS PROVIDED MAY NOT FIT ALL POSSIBLE SITUATIONS OR SITE CONDITIONS. SEE OTHER SECTIONS OF THE CONTRACT OR PROJECT ENGINEER FOR MORE DETAILS.

ADDITIONAL TEMPORARY BARRIER MAY BE REQUIRED TO PROTECT TRAVELING PUBLIC FROM HAZARDS, CONTRACTOR'S OPERATIONS OR TO CONTROL TRAFFIC.

TEMPORARY BARRIER MAY BE REQUIRED TO BE ANCHORED TO PAVEMENT OR BRIDGE DECK.

- FOR DETAILS ON CRASH CUSHION OR SAND BARREL ARRAYS SEE OTHER SECTIONS OF THE PLAN AND MANUFACTURE'S DETAILS.
- SLOPES LEADING TO TEMPORARY BARRIER, CRASH CUSHION OR SAND BARREL ARRAY ARE 10:1 OR LESS.
- 1 FOR DEFLECTION INFORMATION SEE STANDARD DETAIL DRAWING 14B7.
- 2 VALUES PROVIDED MAY NOT FIT ALL POSSIBLE SITUATIONS OR SITE CONDITIONS. SEE OTHER SECTIONS OF THE CONTRACT OR PROJECT ENGINEER FOR MORE DETAILS.
- 3 ANCHOR TEMPORARY BARRIER ACCORDING TO CRASH CUSHION OR SAND BARREL MANUFACTURER'S RECOMMENDATIONS. IF MANUFACTURER'S RECOMMENDATIONS ARE NOT PROVIDED, ANCHOR 3 PINS ON TRAFFIC SIDE.

**CRASH CUSHION/SAND BARREL
ARRAY AND OTHER TEMPORARY
BARRIER LAYOUT DETAILS**

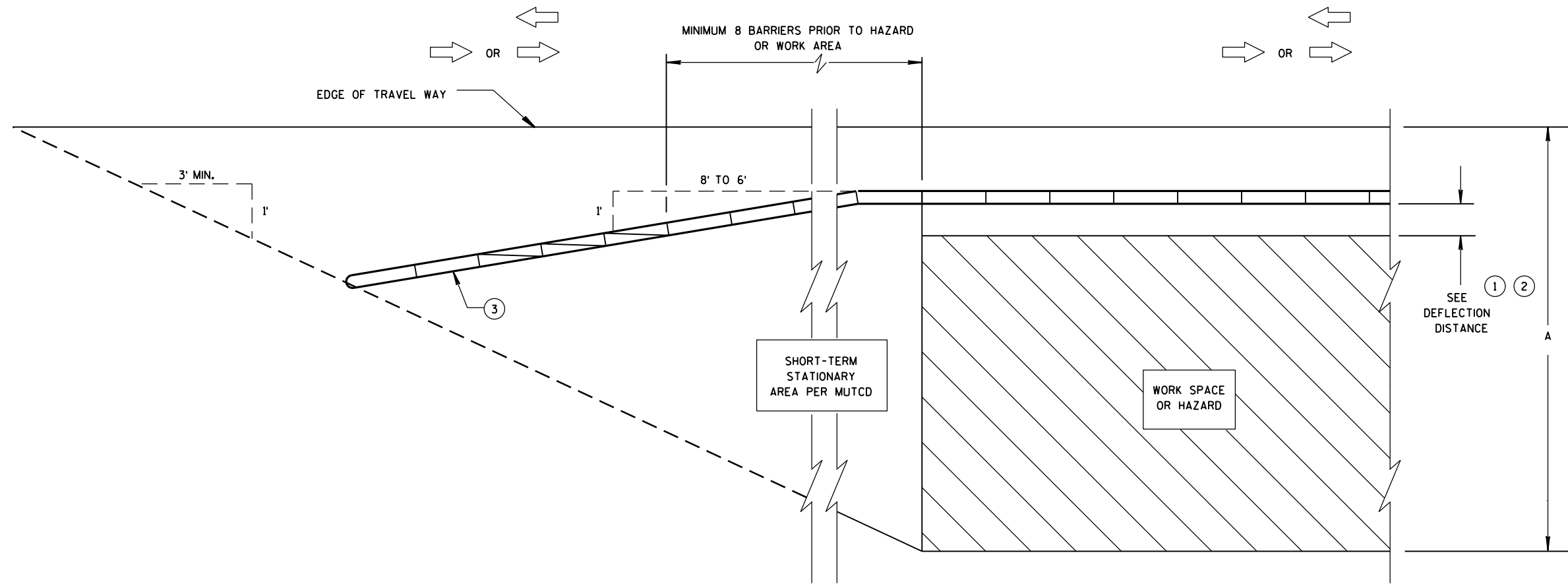
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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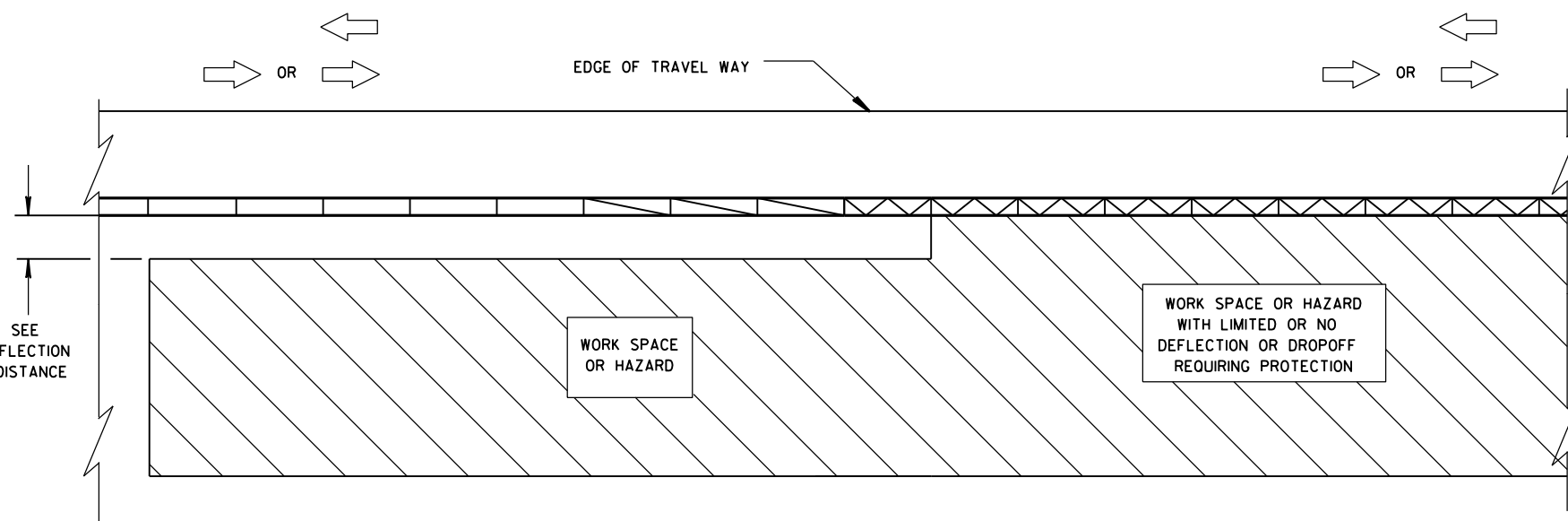
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S.D.D. 14 B 8-2a

S.D.D. 14 B 8-2a



**CRASH CUSHION/SAND BARREL ARRAY AND TEMPORARY BARRIER
INSTALLATION FOR TRAFFIC ON ONE SIDE - FLARED INSTALLATION**



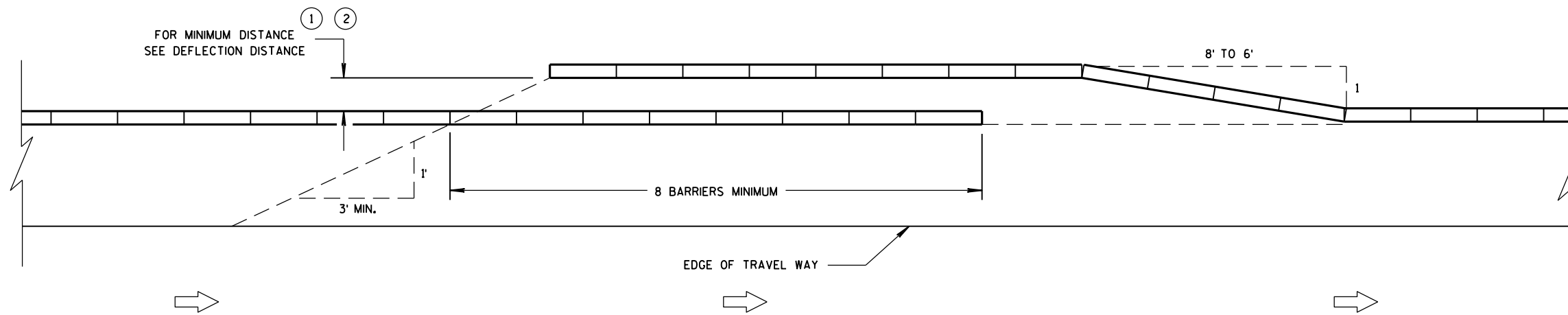
**TRANSITION FROM FREE STANDING TEMPORARY BARRIER
TO ANCHORED BARRIER**

LEGEND

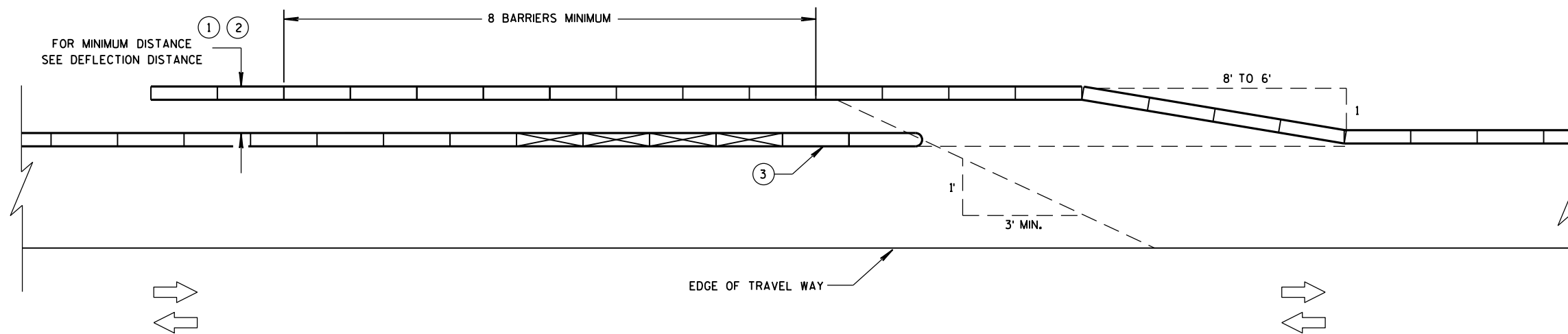
- DIRECTION OF TRAVEL
- CRASH CUSHION OR SAND BARREL ARRAY
- SEE FREE STANDING TRANSITION TO TIED-DOWN SYSTEM DETAILS
- SEE BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM DETAILS
- 3 PINS PLACED ON TRAFFIC SIDE OF BARRIER
- PERMANENT CONCRETE BARRIER OR CONCRETE PARAPET
- FREE STANDING TEMPORARY BARRIER

**CRASH CUSHION/SAND BARREL
ARRAY AND OTHER TEMPORARY
BARRIER LAYOUT DETAILS**

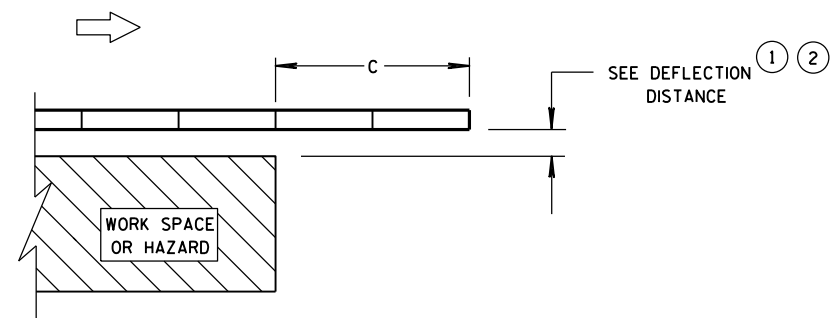
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



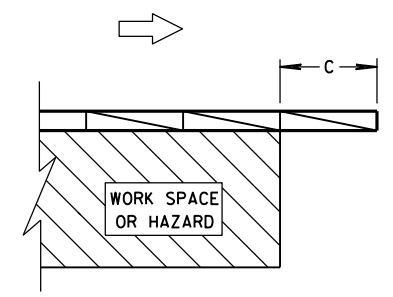
TEMPORARY BARRIER OVERLAP - ONE-WAY TRAFFIC



TEMPORARY BARRIER OVERLAP - TWO-WAY TRAFFIC



**ENDING TEMPORARY BARRIER
DOWNSTREAM - UNANCHORED**



**ENDING TEMPORARY BARRIER
DOWNSTREAM - ANCHORED**

LEGEND

- DIRECTION OF TRAVEL
- CRASH CUSHION OR SAND BARREL ARRAY
- SEE FREE STANDING TRANSITION TO TIED-DOWN SYSTEM DETAILS
- SEE BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM DETAILS
- 3 PINS PLACED ON TRAFFIC SIDE OF BARRIER
- PERMANENT CONCRETE BARRIER OR CONCRETE PARAPET
- FREE STANDING TEMPORARY BARRIER

**CRASH CUSHION/SAND BARREL
ARRAY AND OTHER TEMPORARY
BARRIER LAYOUT DETAILS**

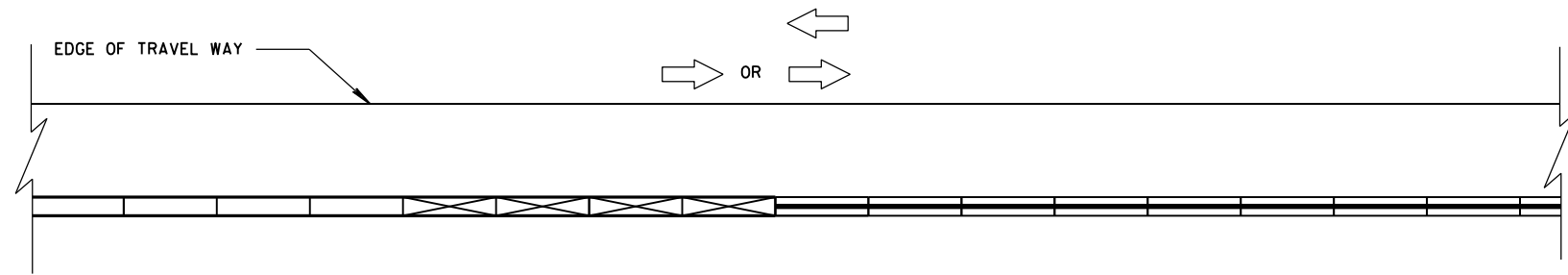
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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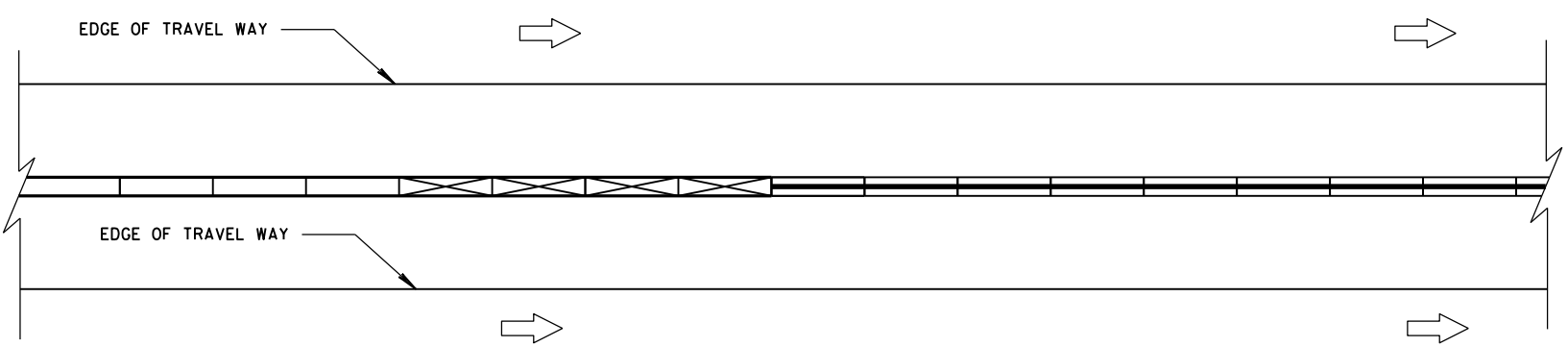
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S.D.D. 14 B 8-2c

S.D.D. 14 B 8-2c



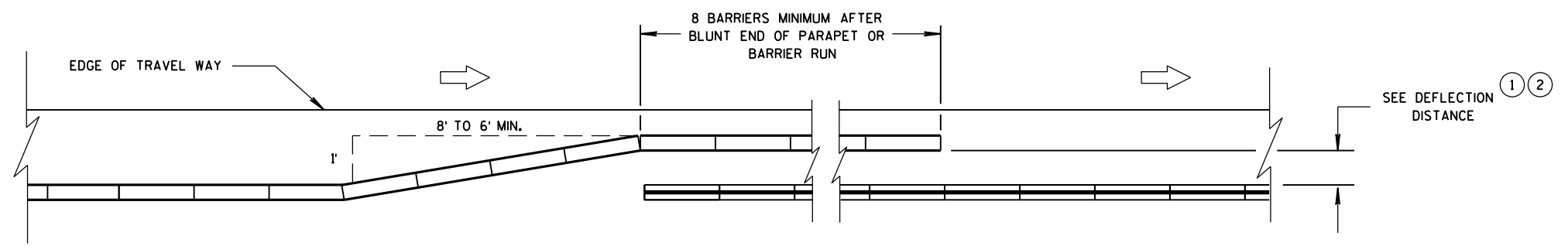
CONNECTING TEMPORARY BARRIER TO PERMANENT CONCRETE BARRIER-TRAFFIC ON ONE SIDE



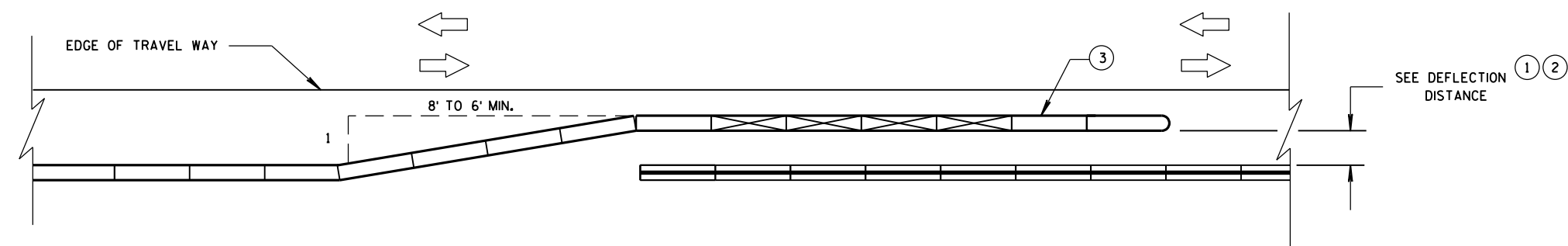
CONNECTING TEMPORARY BARRIER TO PERMANENT CONCRETE BARRIER-TRAFFIC ON BOTH SIDES

LEGEND

- DIRECTION OF TRAVEL
- CRASH CUSHION OR SAND BARREL ARRAY
- SEE FREE STANDING TRANSITION TO TIED-DOWN SYSTEM DETAILS
- SEE BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM DETAILS
- 3 PINS PLACED ON TRAFFIC SIDE OF BARRIER
- PERMANENT CONCRETE BARRIER OR CONCRETE PARAPET
- FREE STANDING TEMPORARY BARRIER



OVERLAPPING TEMPORARY BARRIER AND PERMANENT BARRIER - ONE WAY TRAFFIC



OVERLAPPING TEMPORARY BARRIER AND PERMANENT BARRIER - TWO WAY TRAFFIC

CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS

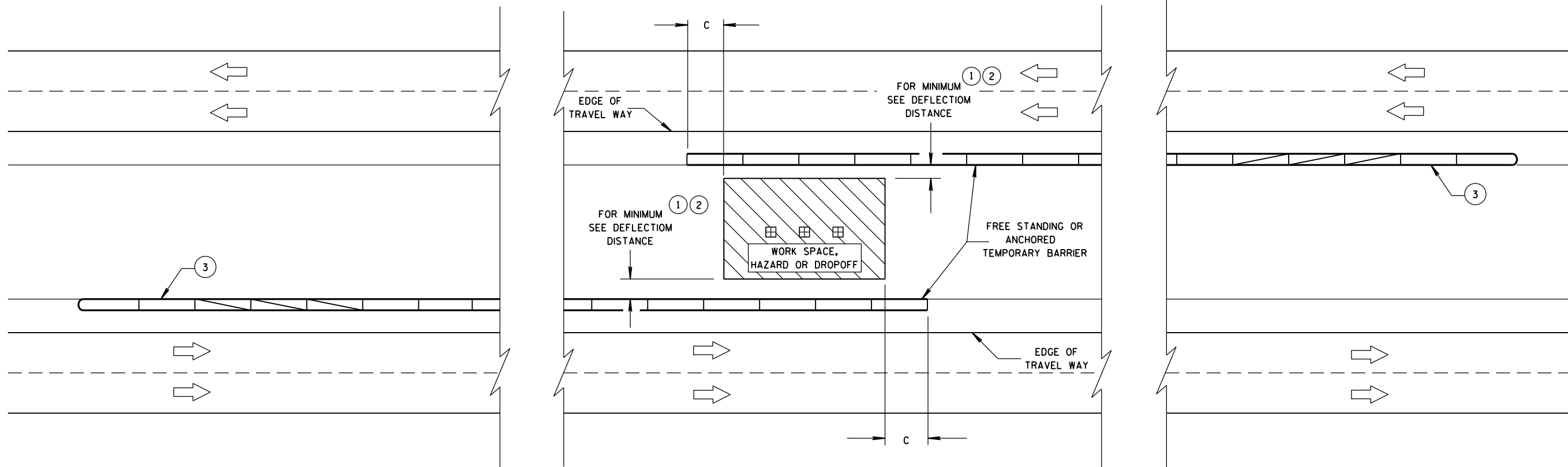
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

LEGEND

- DIRECTION OF TRAVEL
- CRASH CUSHION OR SAND BARREL ARRAY
- SEE FREE STANDING TRANSITION TO TIED-DOWN SYSTEM DETAILS
- SEE BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM DETAILS
- 3 PINS PLACED ON TRAFFIC SIDE OF BARRIER
- PERMANENT CONCRETE BARRIER OR CONCRETE PARAPET
- FREE STANDING TEMPORARY BARRIER

DIMENSION C TABLE ²

AVAILABLE DEFLECTION DISTANCE	MINIMUM LENGTH OF BARRIER BEYOND HAZARD FT
GREATER THAN 8'	12.5
LESS THAN OR EQUAL TO 8' BUT GREATER THAN 4'	50
LESS THAN OR EQUAL TO 4'	100



6

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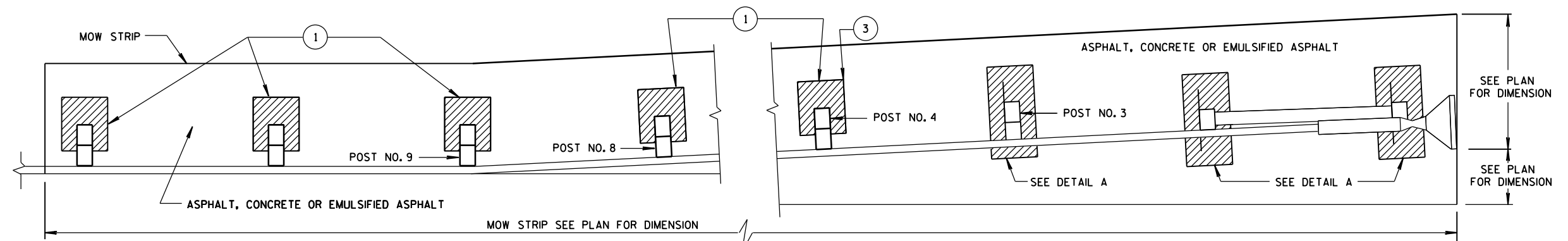
S.D.D. 14 B 8-2e

S.D.D. 14 B 8-2e

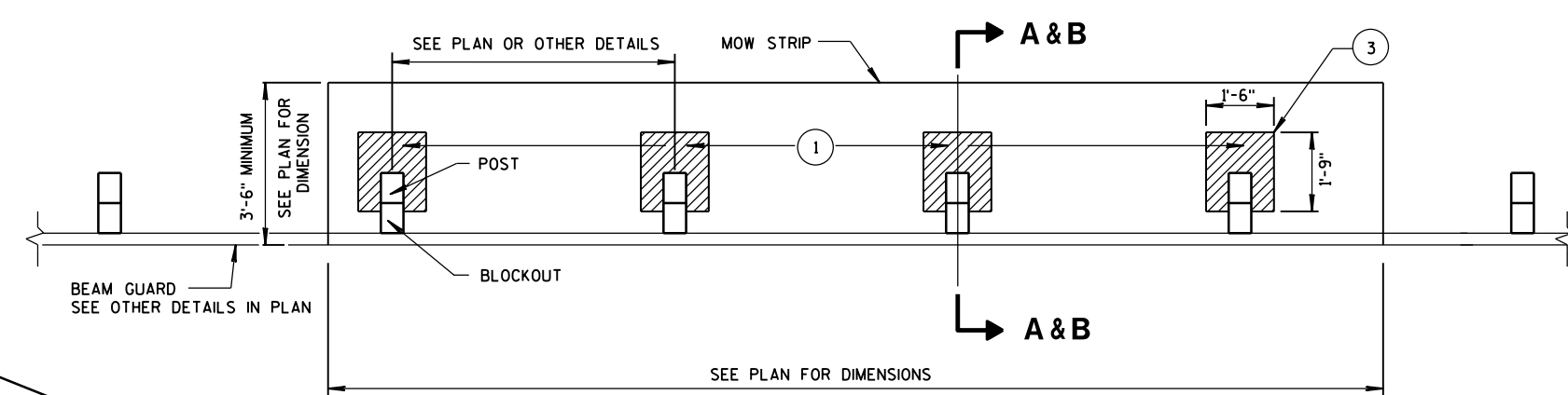
CRASH CUSHION/SAND BARREL ARRAY AND OTHER TEMPORARY BARRIER LAYOUT DETAILS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

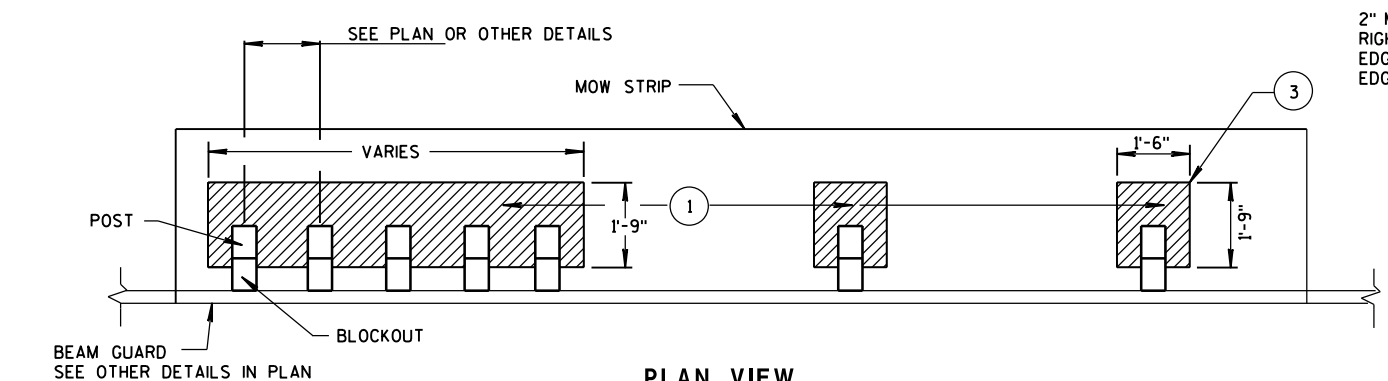
APPROVED
June, 2015 DATE /S/ Jerry H. Zogg
FHWA ROADWAY STANDARDS DEVELOPMENT ENGINEER



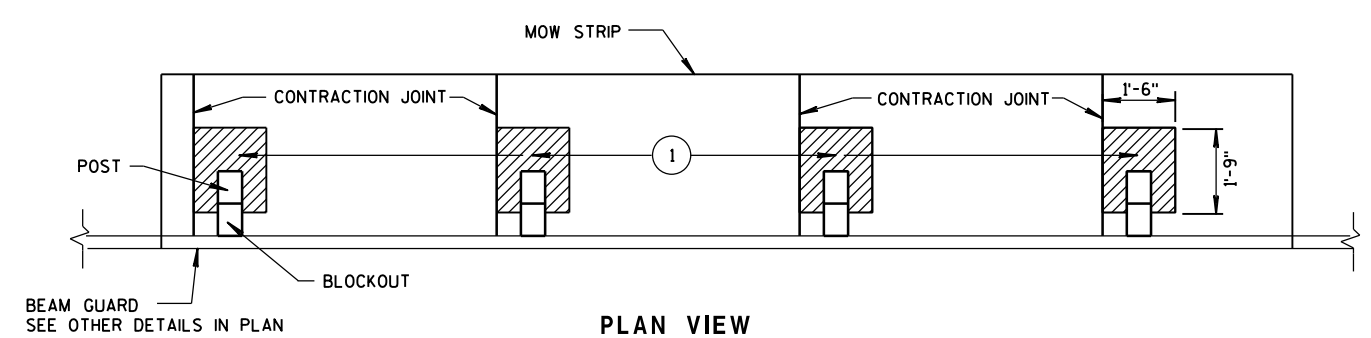
PLAN VIEW
MOW STRIP LAYOUT FOR ENERGY ABORING TERMINAL



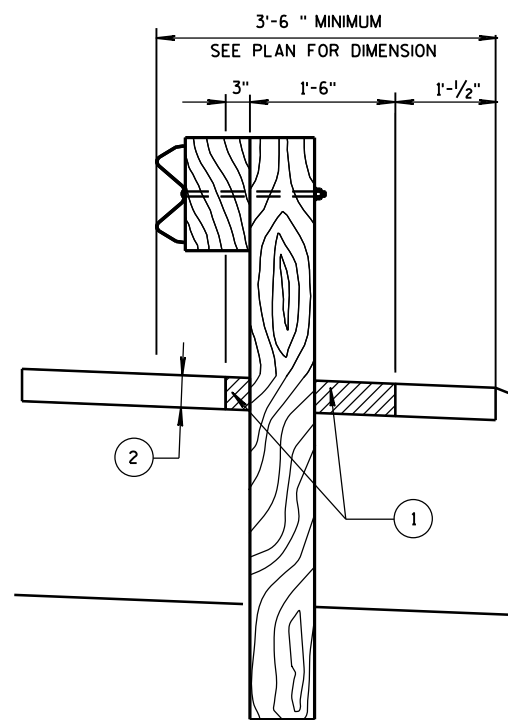
PLAN VIEW
MOW STRIP FOR TYPICAL BLOCKOUT LAYOUT



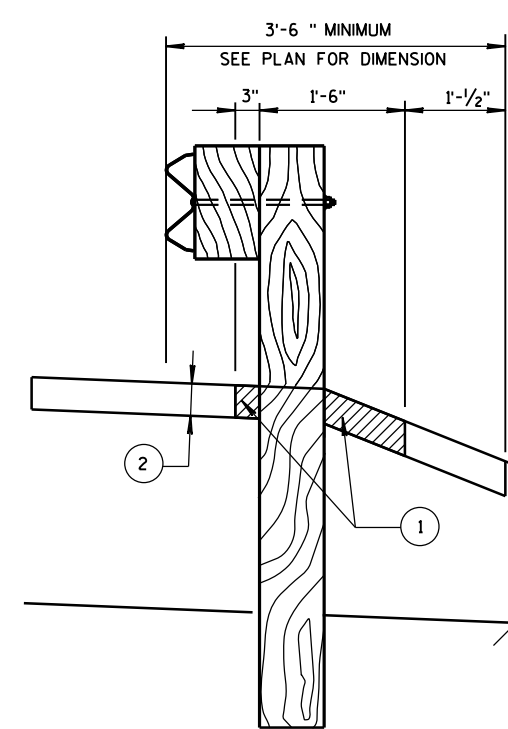
PLAN VIEW
MOW STRIP FOR TIGHT SPACING LAYOUT



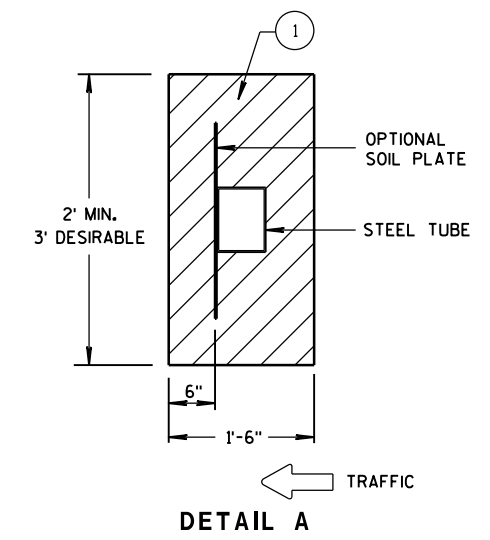
PLAN VIEW
JOINT PLACEMENT FOR CONCRETE MOW STRIP



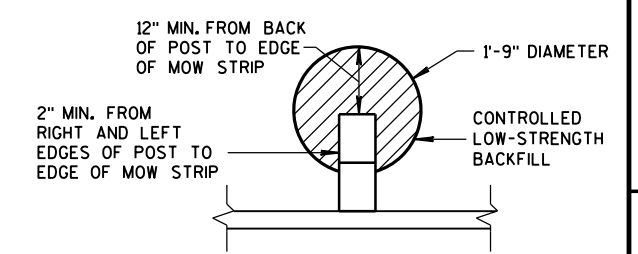
SECTION A-A



SECTION B-B



DETAIL A

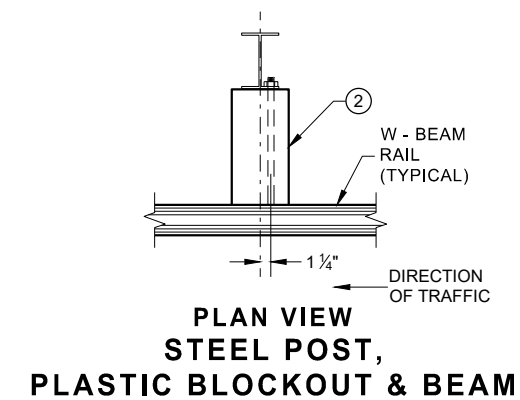
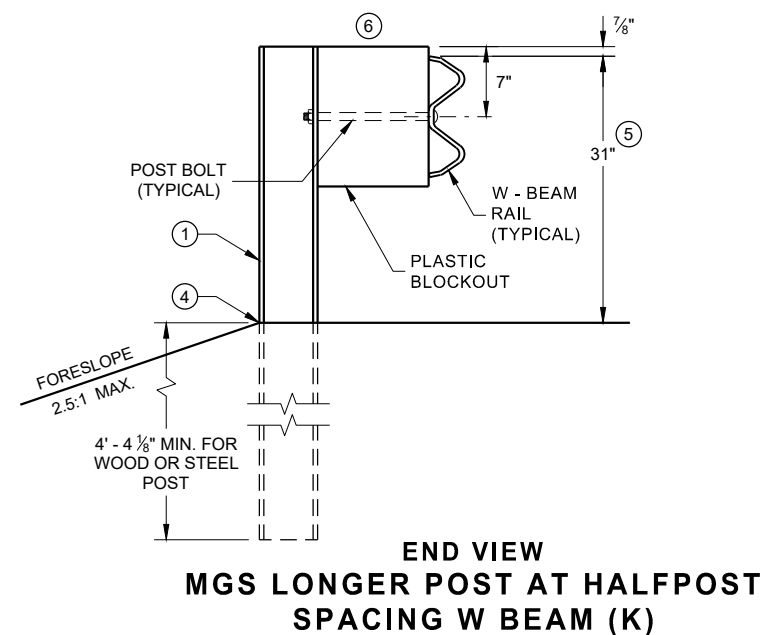
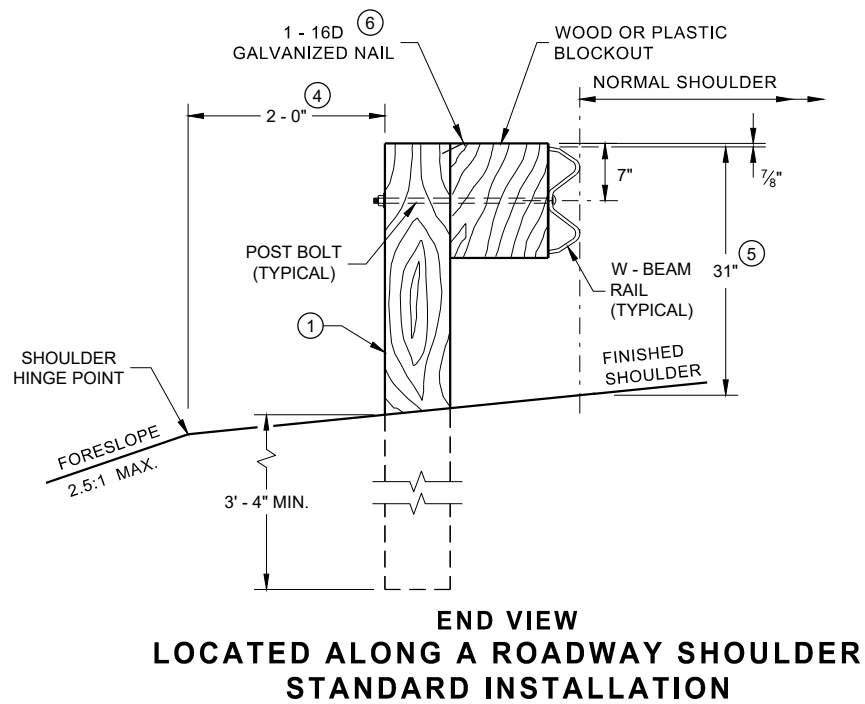
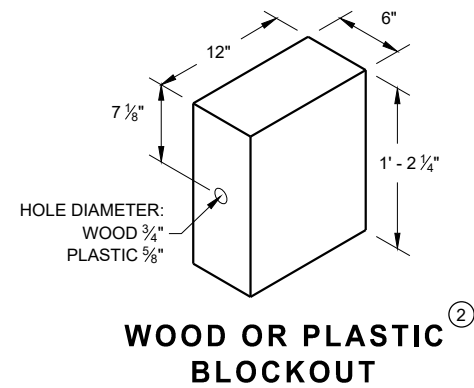
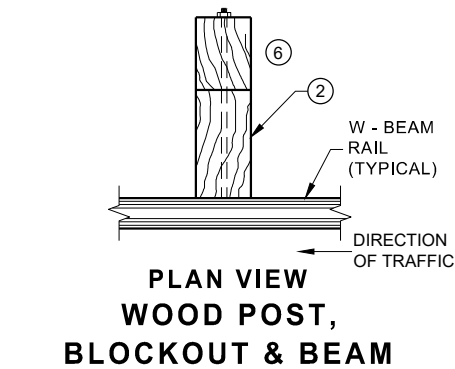
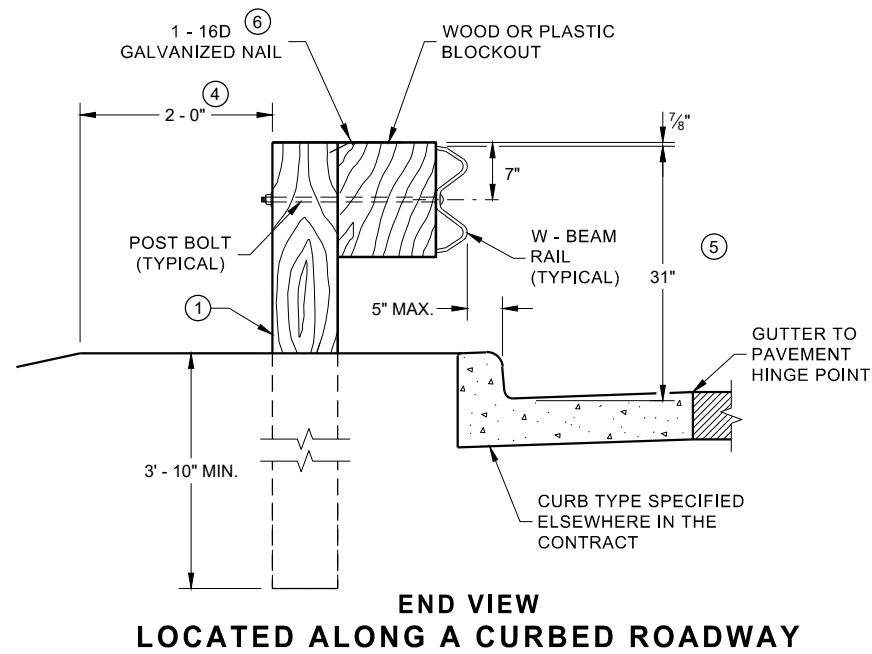
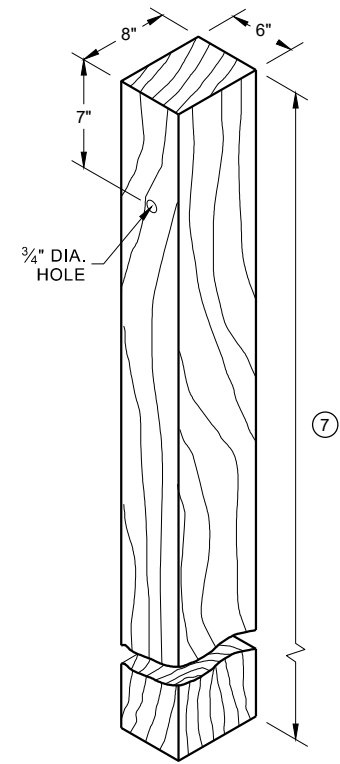
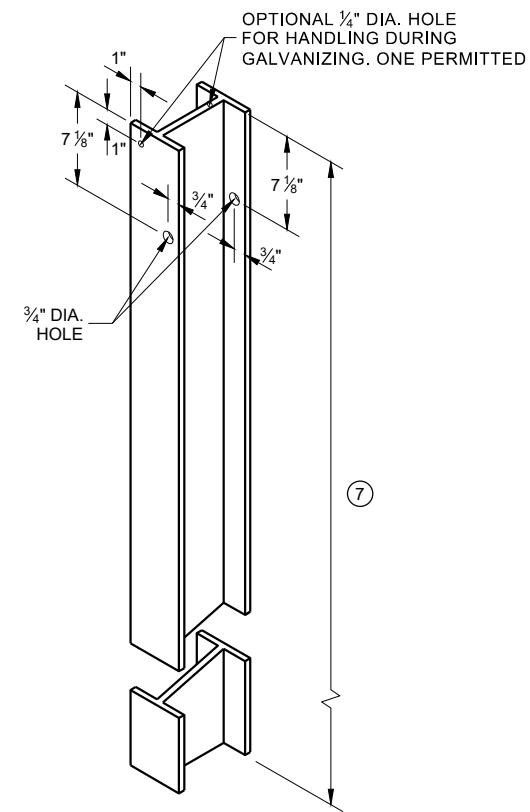
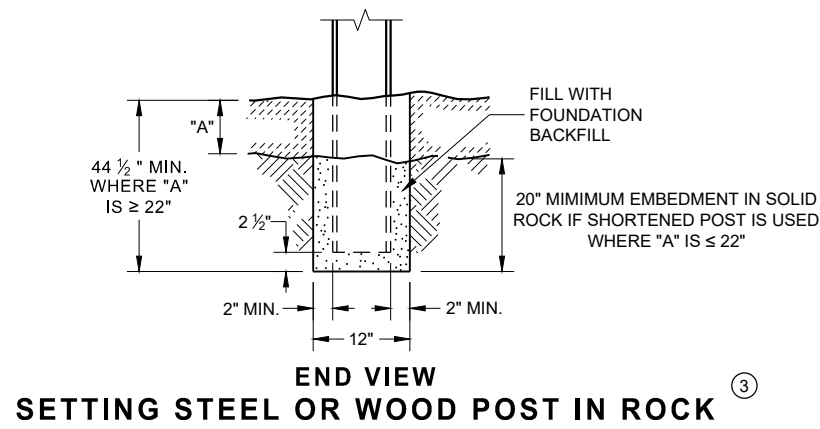


ALTERNATIVE HMA MOW STRIP DESIGN

- ① CONTROLLED LOW-STRENGTH BACKFILL OR EMULSIFIED ASPHALT.
- ② DEPTH OF MOW STRIP:
ASPHALT - 4"
CONCRETE - 4"
EMULSIFIED ASPHALT - 1" OR LESS
- ③ FOR EMULSIFIED ASPHALT MOW STRIP LEAVE OUTS NOT REQUIRED. (TYPICAL FOR ALL POSTS.)

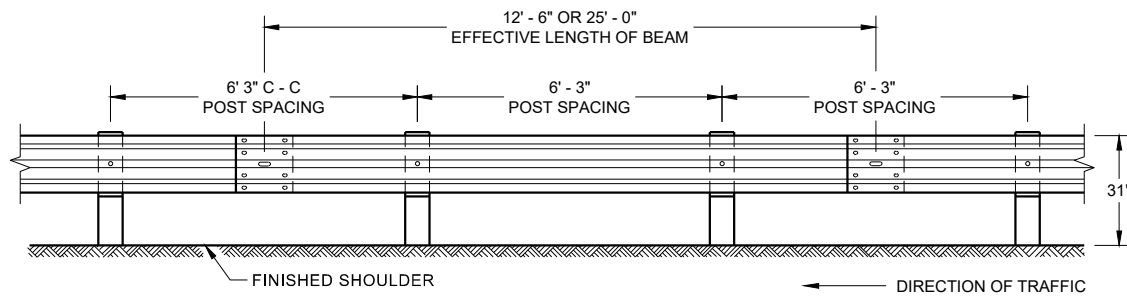
GUARDRAIL MOW STRIP	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2014	/s/ Jerry H. Zogg
DATE	ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

- 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 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE 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 27 3/4" 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.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0". TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

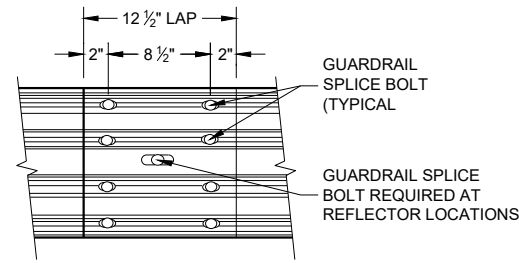


**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



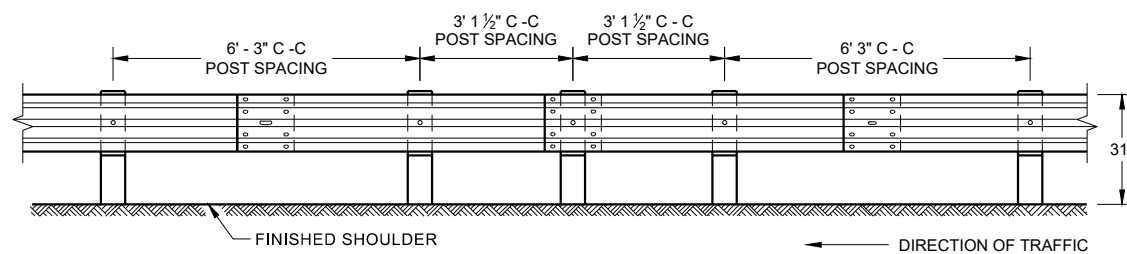
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



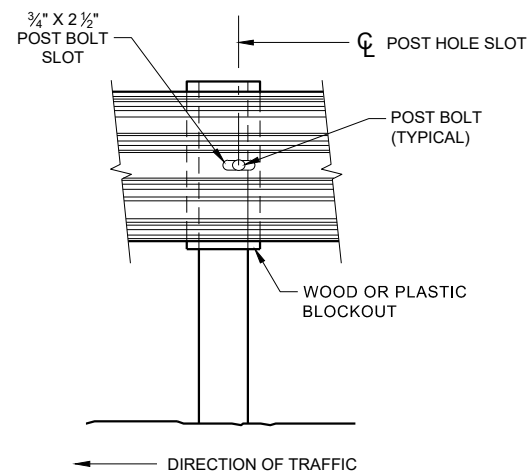
**FRONT VIEW
MID-SPAN BEAM SPLICE**

GENERAL NOTES

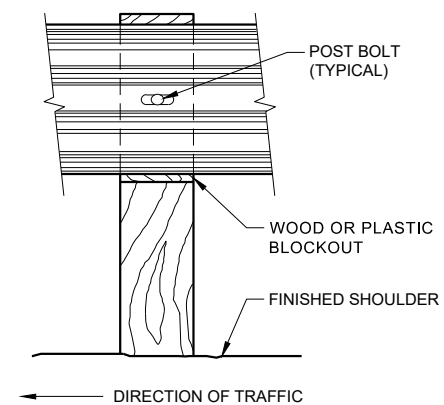
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
 - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



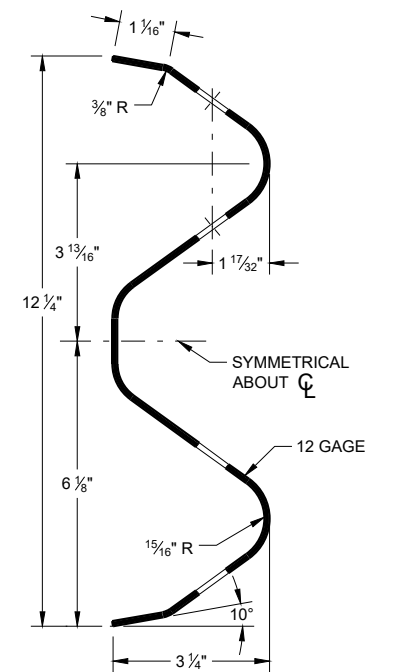
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



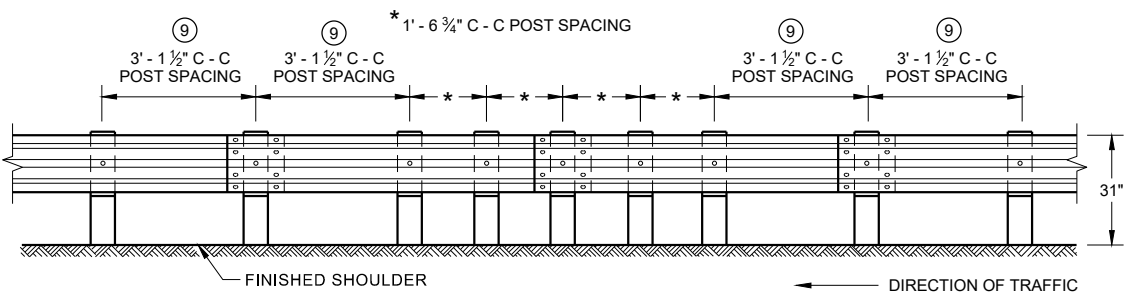
FRONT VIEW AT STEEL POST



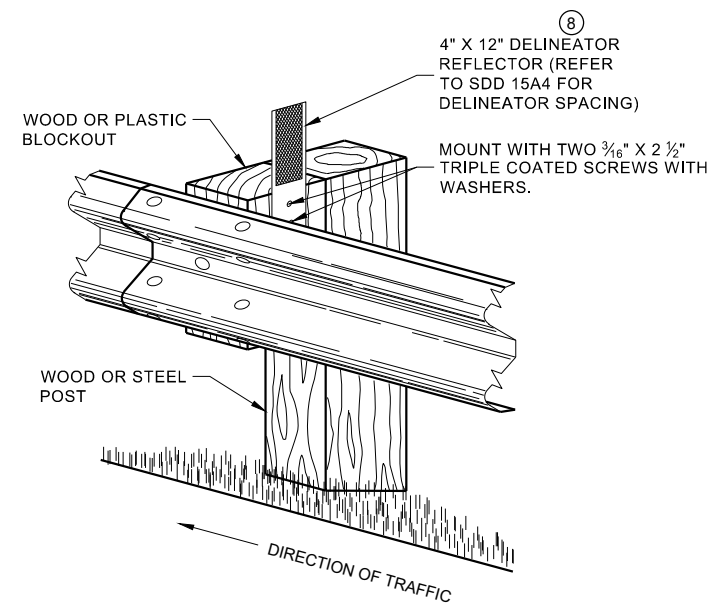
FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



**FRONT VIEW
QUARTER POST SPACING (QS)**



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

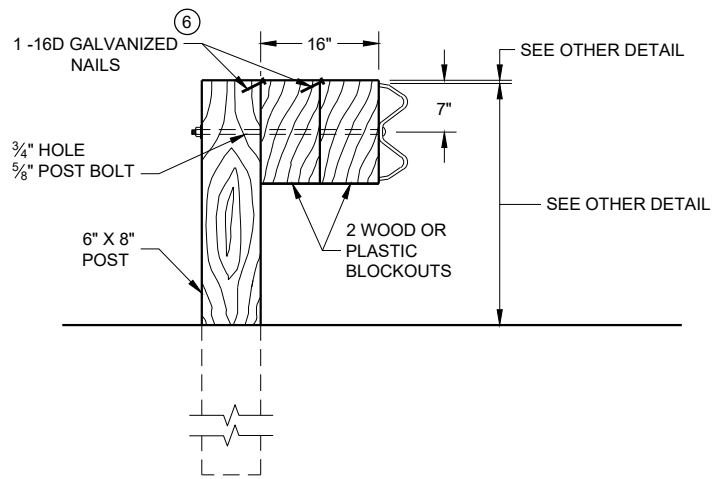
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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SDD 14B42 - 06b

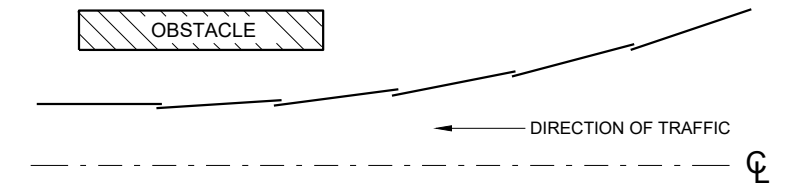
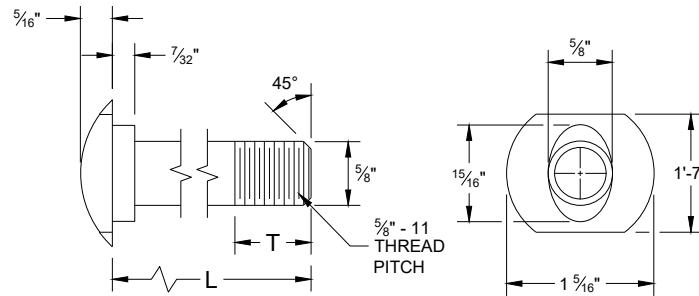
SDD 14B42 - 06b



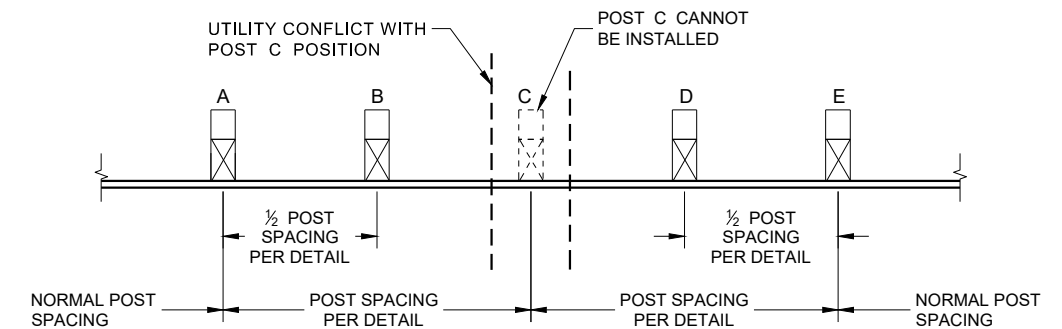
DETAIL FOR 16" BLOCKOUT DEPTH

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.

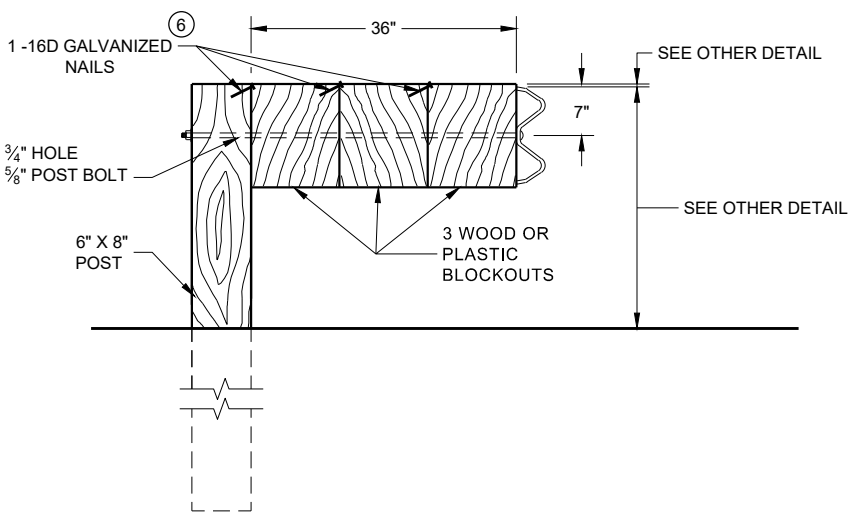
- NOTE:
1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3/16".
 2. IF THE BOLT EXTENDS MORE THAN 1/4" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.



**PLAN VIEW
BEAM LAPPING DETAIL**



**POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION**

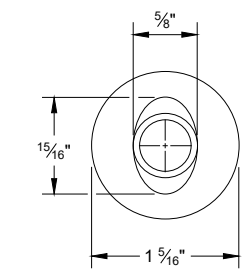


DETAIL FOR 36" BLOCKOUT DEPTH

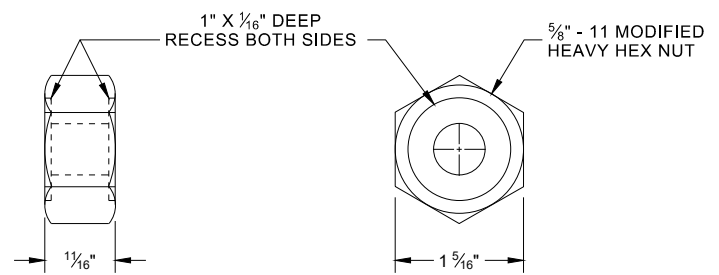
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

POST BOLT TABLE

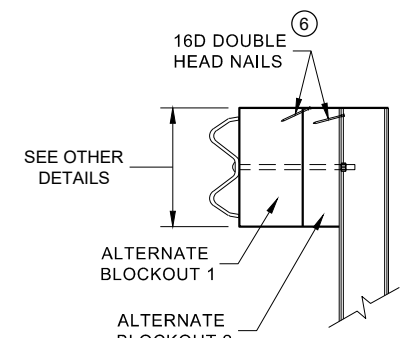
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



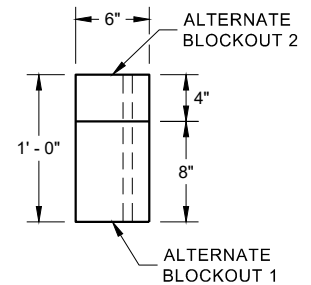
ALTERNATE BOLT HEAD



**POST BOLT, SPLICE BOLT
AND RECESS NUT**



SIDE VIEW



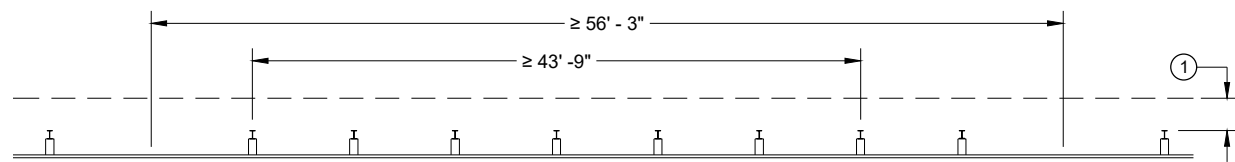
PLAN VIEW

**ALTERNATE WOOD
BLOCKOUT DETAIL**

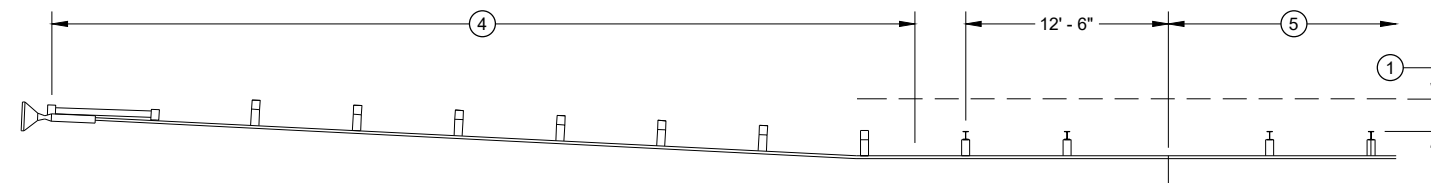
6 WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

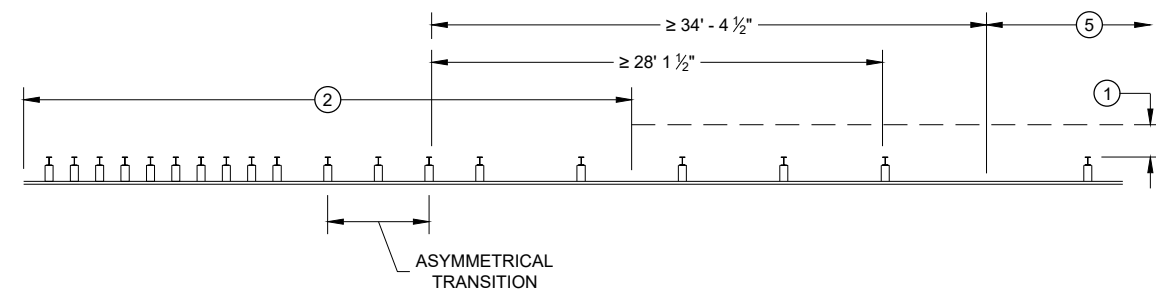
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



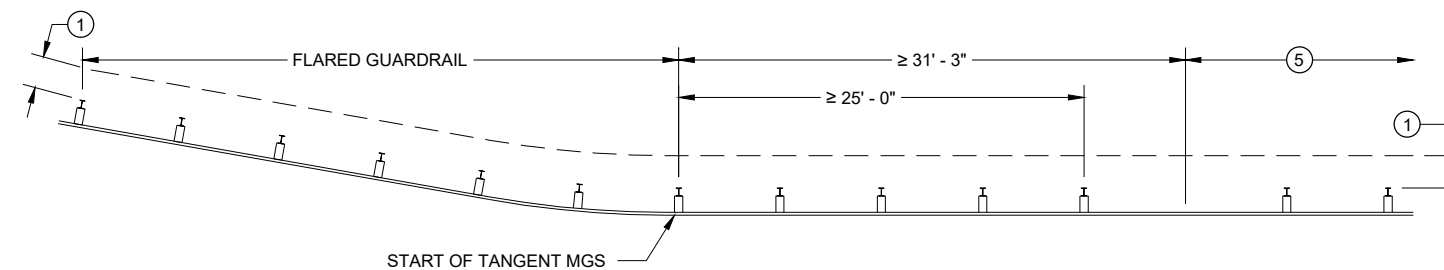
MISSING POST IN NORMAL BEAM GUARD RUN



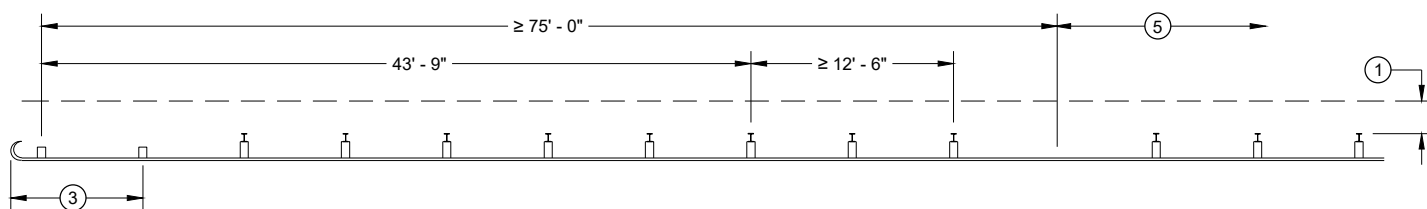
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



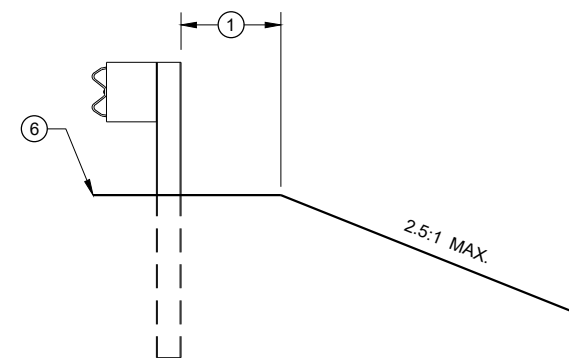
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



MISSING POST IN NORMAL BEAM GUARD RUN NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN NEAR TYPE 2 TERMINAL



CROSS SECTION VIEW

- ① MINIMUM OF 2 FEET OF GRADING BEHIND POST.
- ② SEE SDD 14B45 FOR MORE DETAILS.
- ③ SEE SDD 14B47 FOR MORE DETAILS.
- ④ SEE SDD 14B44 FOR MORE DETAILS.
- ⑤ SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
- ⑥ SEE PLAN FOR SHOULDER DESIGN.

6

6

SDD 14B42 - 06d

SDD 14B42 - 06d

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

FHWA

GENERAL NOTES

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE 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 MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. SEE MANUFACTURER'S INFORMATION.
 - (D) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF - TAPPING SCREWS. ONE SCREW PER CORNER.
 - (E) HARDWARE MAY VARY BETWEEN MANUFACTURER. SEE MANUFACTURER'S DRAWING FOR INFORMATION.
- DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

SEE SDD 14B42 FOR MORE INFORMATION.

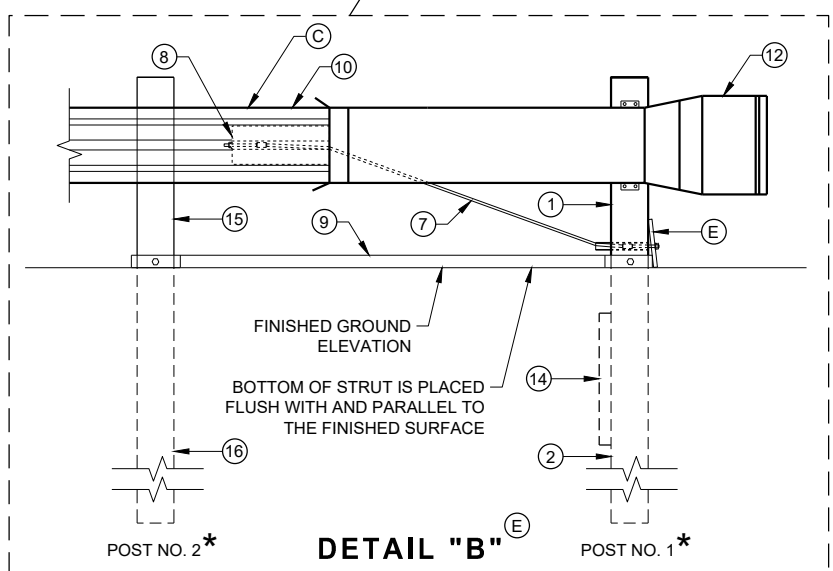
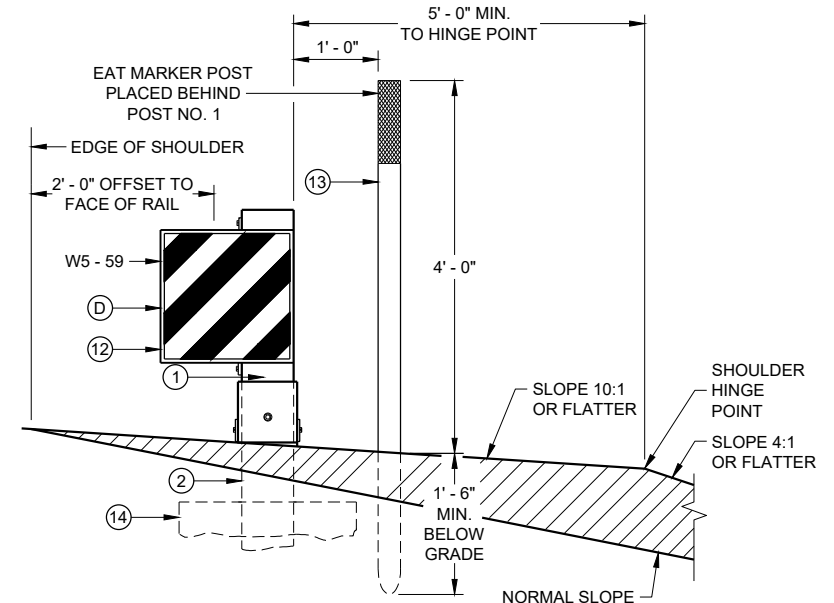
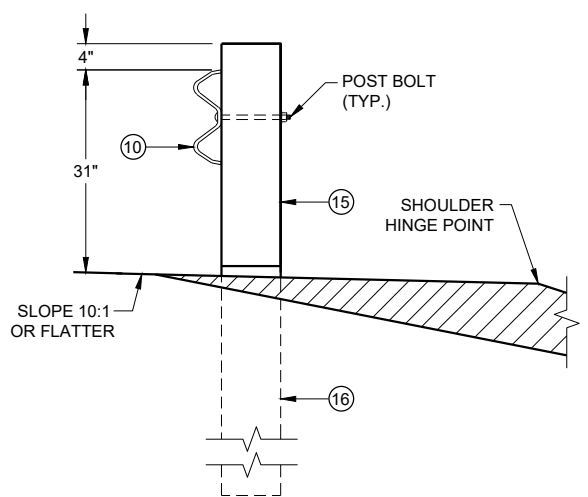
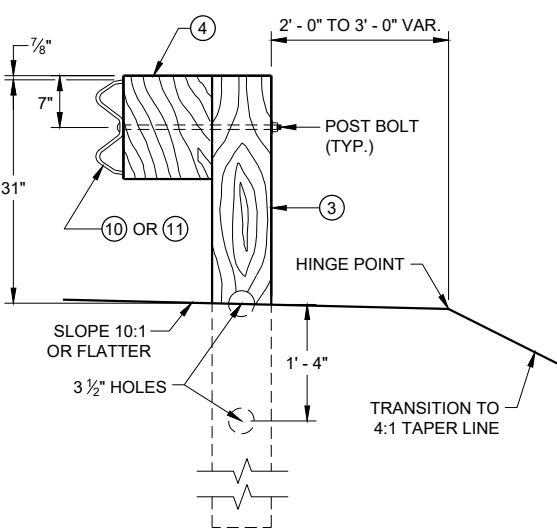
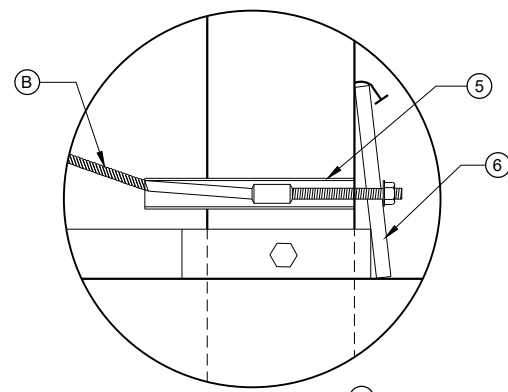
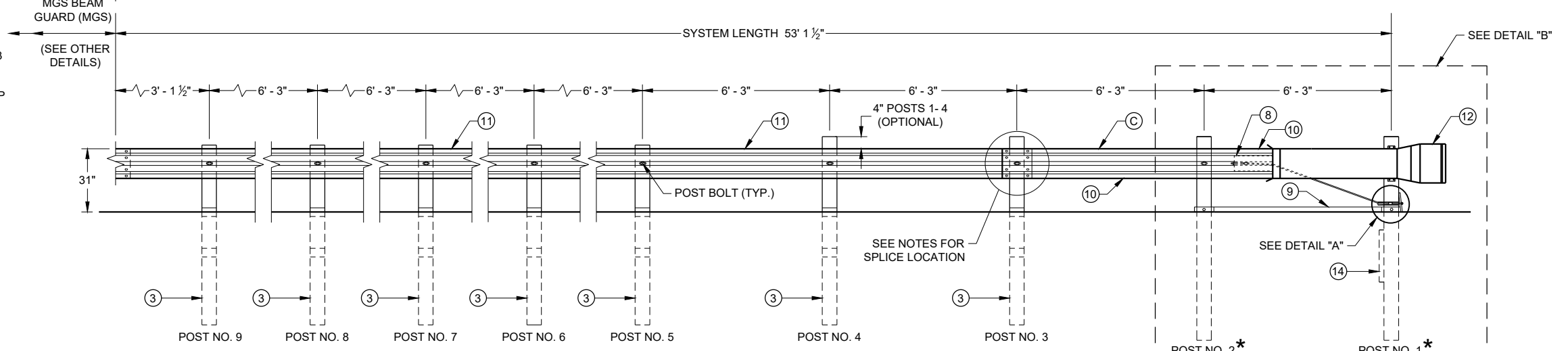
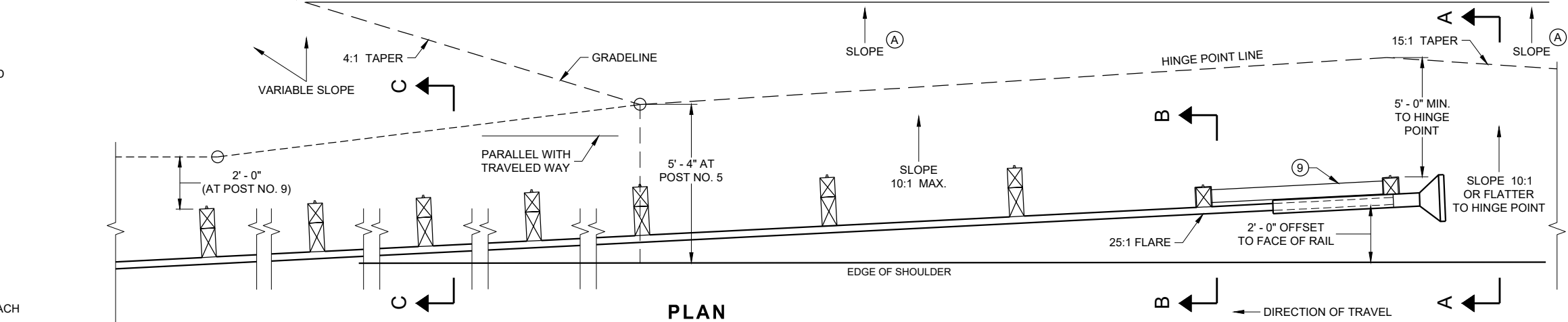
* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

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

SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

THE CENTER OF THE UPPER 3 1/2" 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. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.

CLEAR ZONE LIMITS, EITHER AS SHOWN ELSEWHERE IN THE PLANS OR, IF NOT SHOWN ELSEWHERE IN THE PLANS, 15 FEET BEYOND THE HINGE POINT LINE



**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

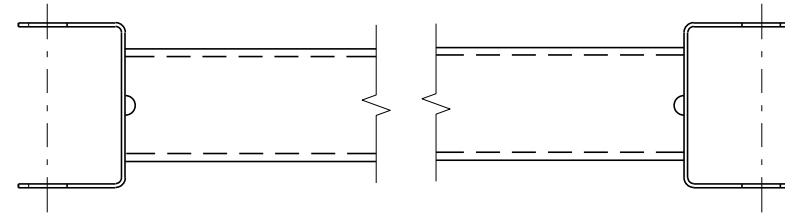
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SDD 14B44 - 04a

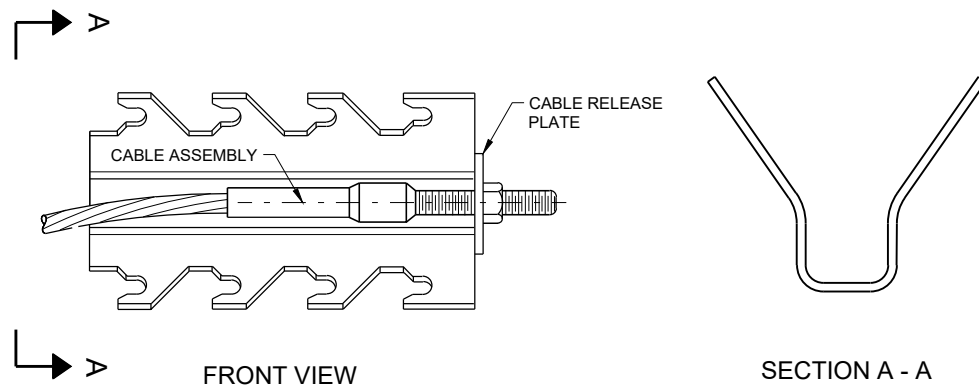
SDD 14B44 - 04a

BILL OF MATERIALS

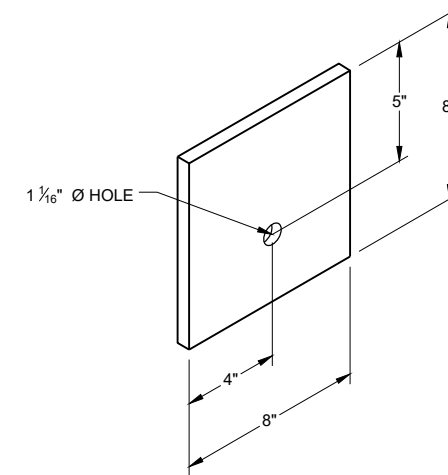
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
⑪	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
⑫	IMPACT HEAD
⑬	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)
⑭	SOIL PLATE
⑮	UPPER POST NO. 2
⑯	LOWER POST NO. 2



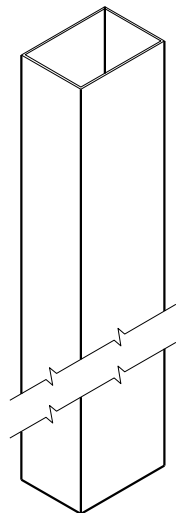
GENERIC GROUND STRUT ⑨ ⑤



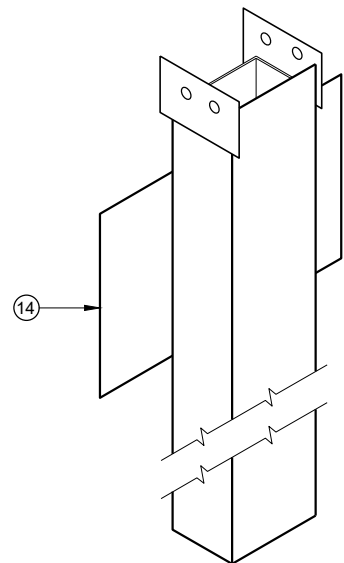
GENERIC ANCHOR CABLE BOX ⑨ ⑤



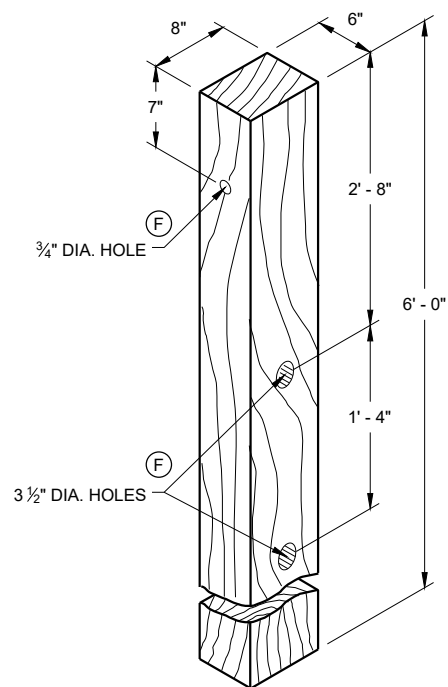
BEARING PLATE ⑥ ⑤



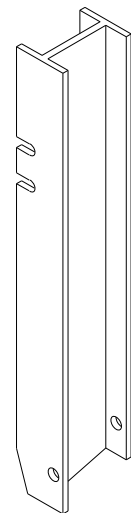
UPPER POST NO. 1 ⁽¹⁾ (E)



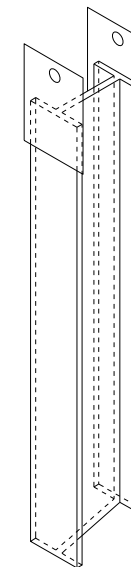
LOWER POST NO. 1 ⁽²⁾ (E)



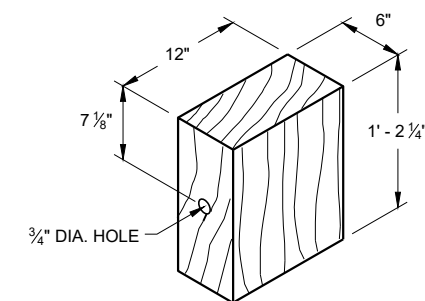
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



UPPER POST NO. 2 ⁽¹⁵⁾ (E)

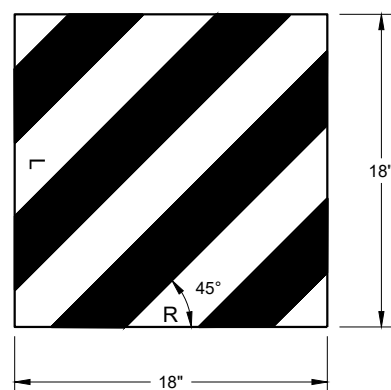


LOWER POST NO. 2 ⁽¹⁶⁾ (E)



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

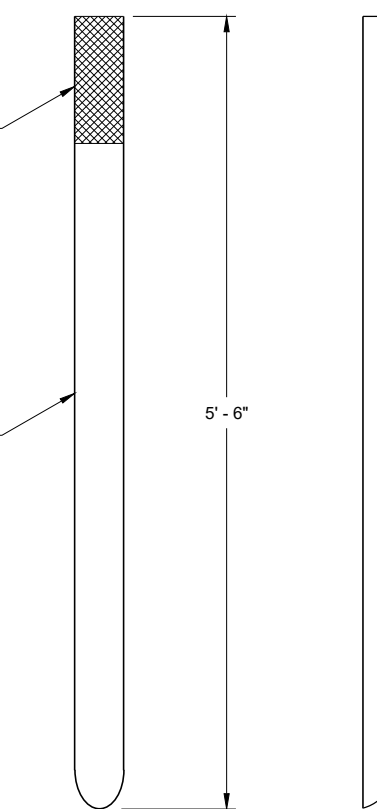
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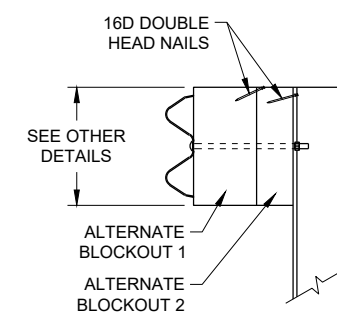
REFLECTIVE SHEETING DETAIL ^(E)

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

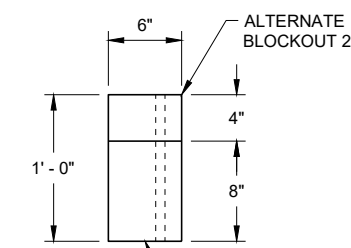
E.A.T. MARKER
POST (YELLOW)



FRONT VIEW SIDE VIEW
E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



TOP VIEW

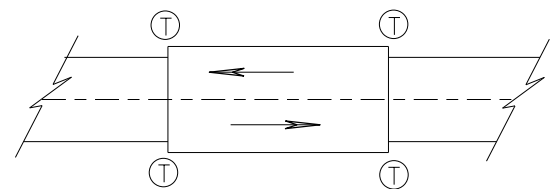
ALTERNATE WOOD
BLOCKOUT DETAIL

6

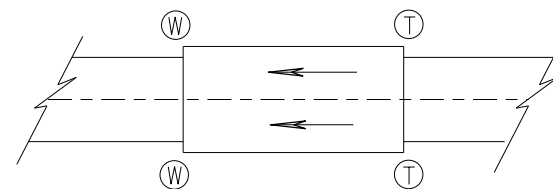
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

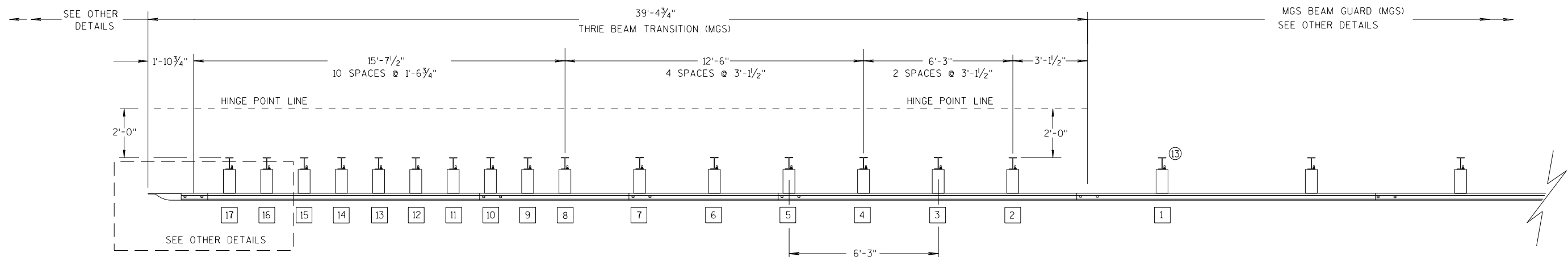
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

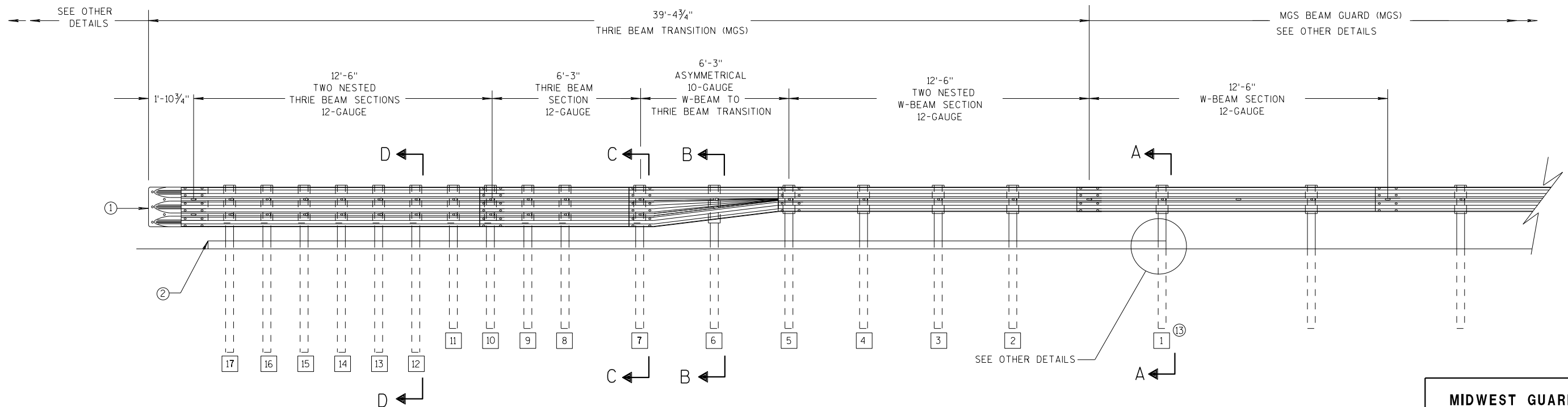
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

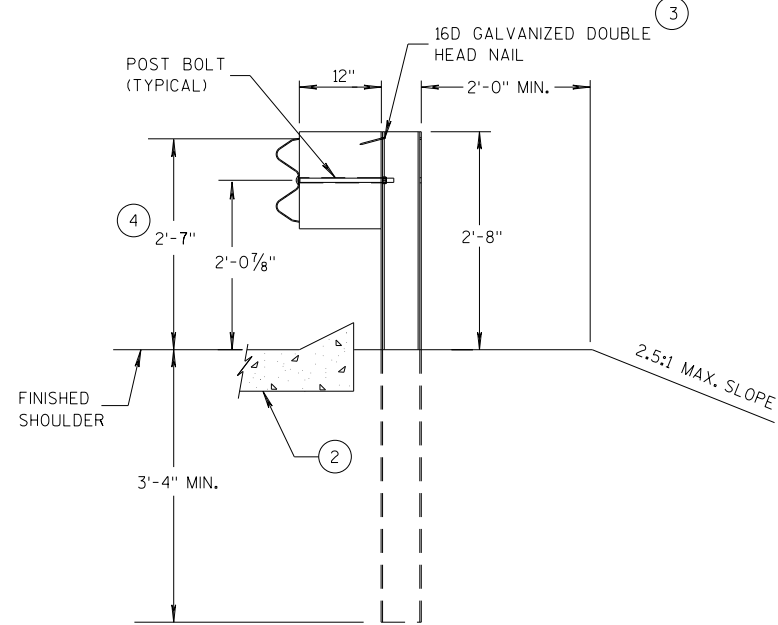
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

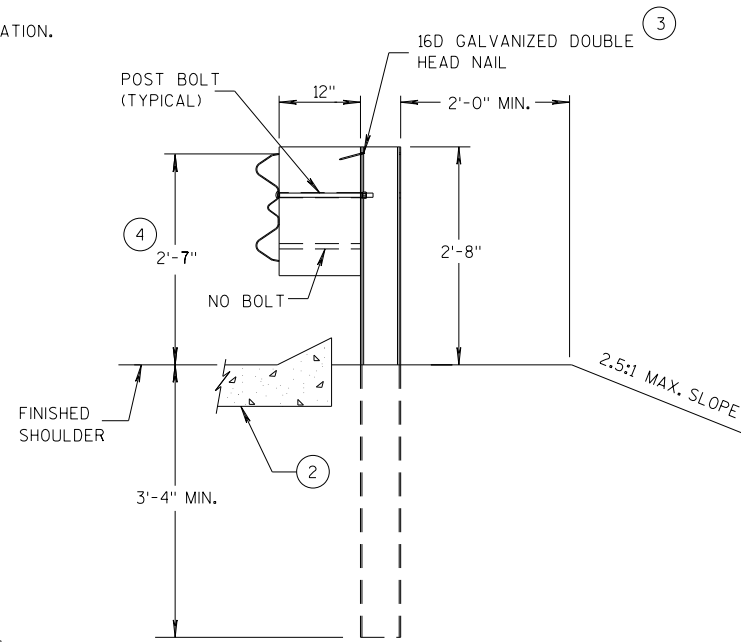
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

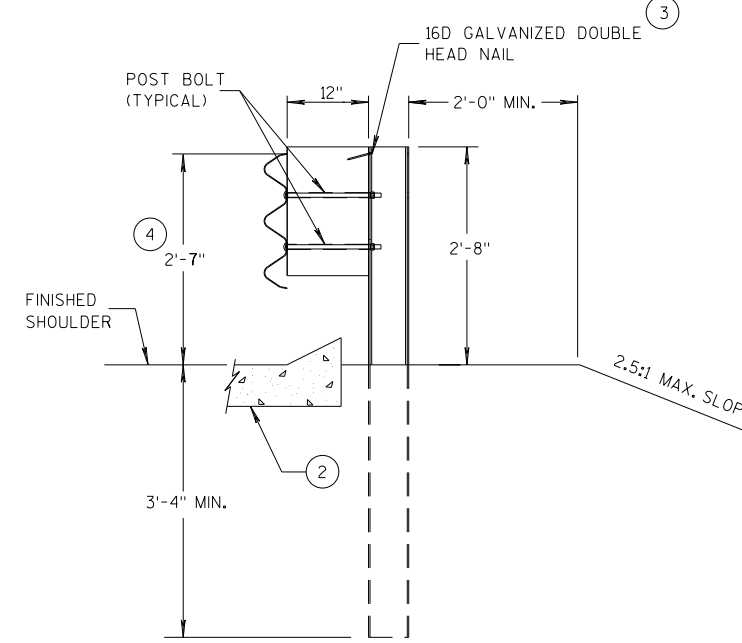
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".
- ⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42



**SECTION A-A
POSTS 1-5**



**SECTION B-B
POST 6**



**SECTION C-C
POSTS 7-11**

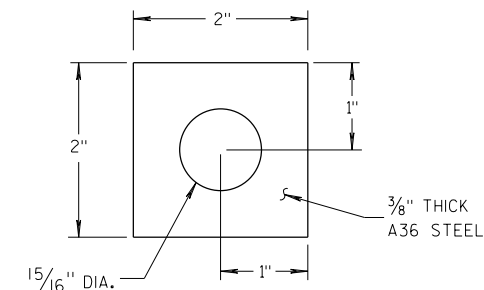
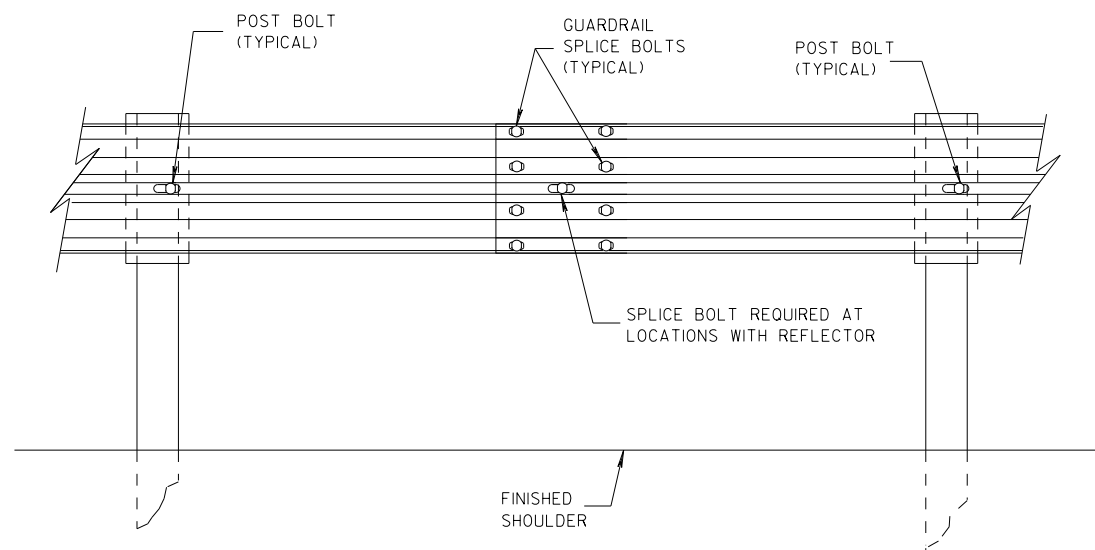
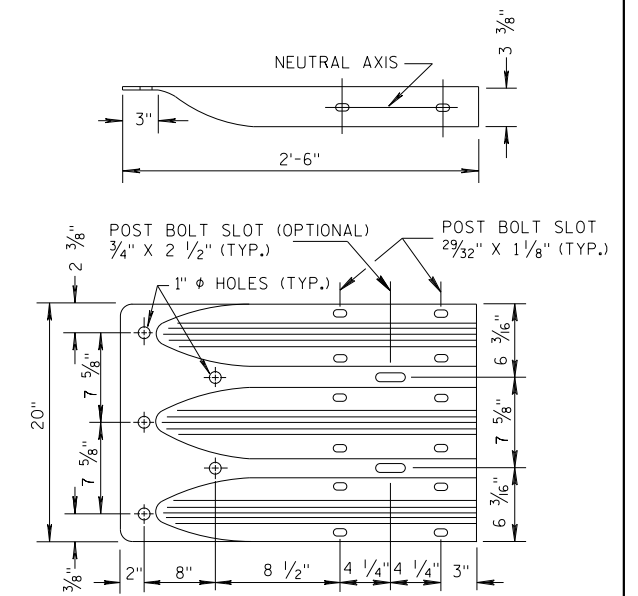


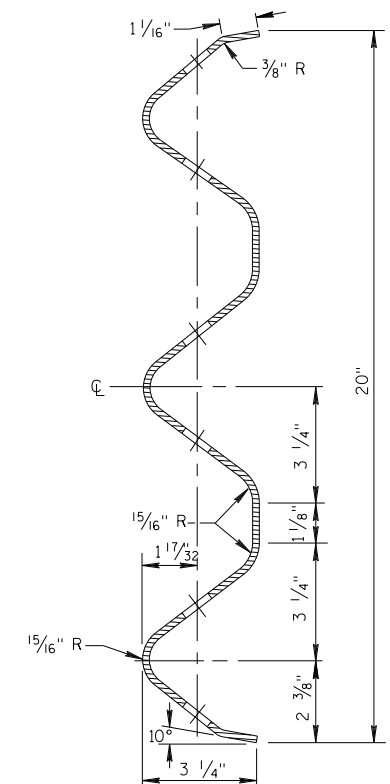
PLATE WASHER DETAIL



SPLICE DETAIL



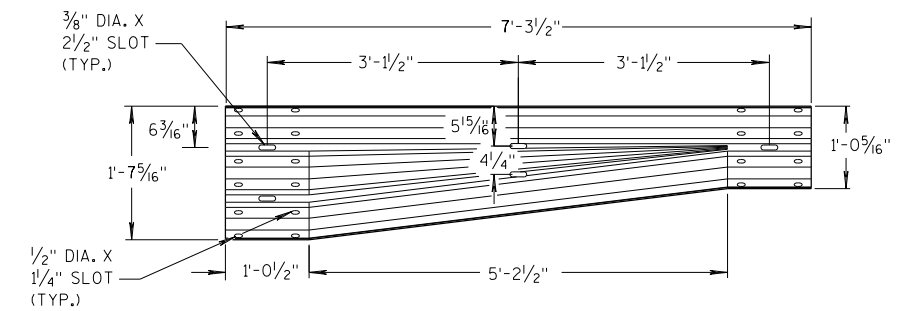
**THRIE BEAM
TERMINAL CONNECTOR**



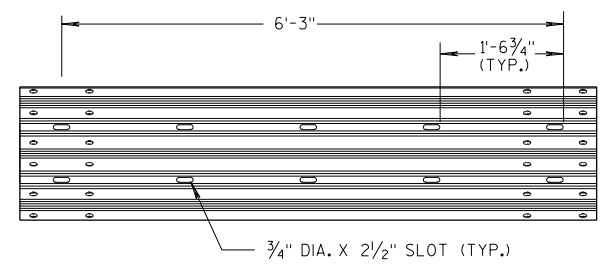
**SECTION THRU THRIE
BEAM RAIL ELEMENT**

**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

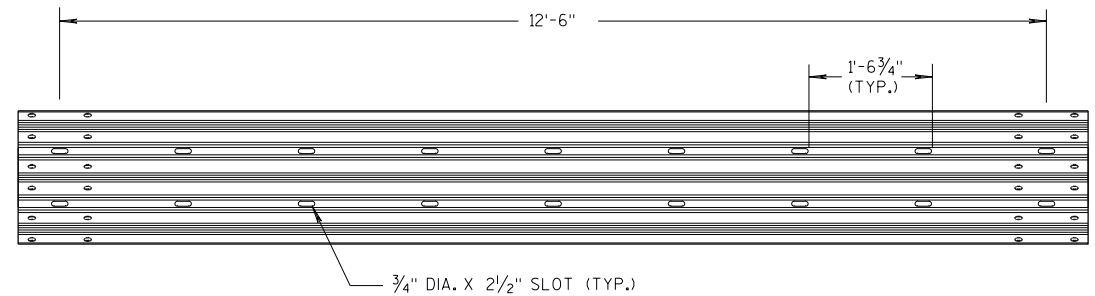
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



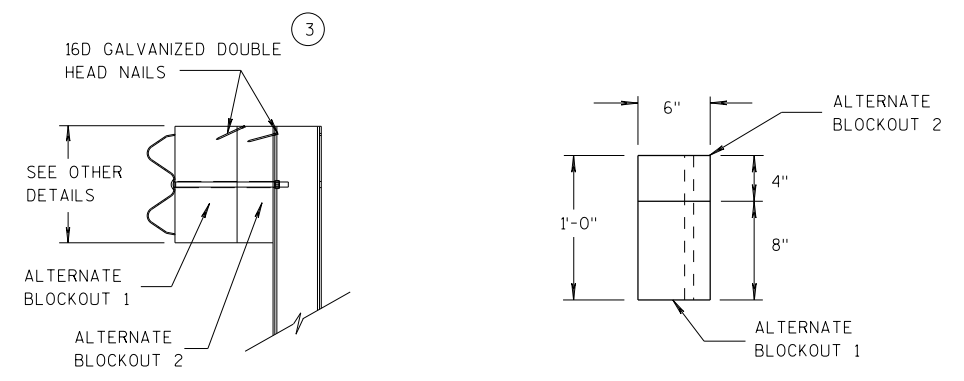
W-BEAM TO THRIE BEAM TRANSITION SECTION



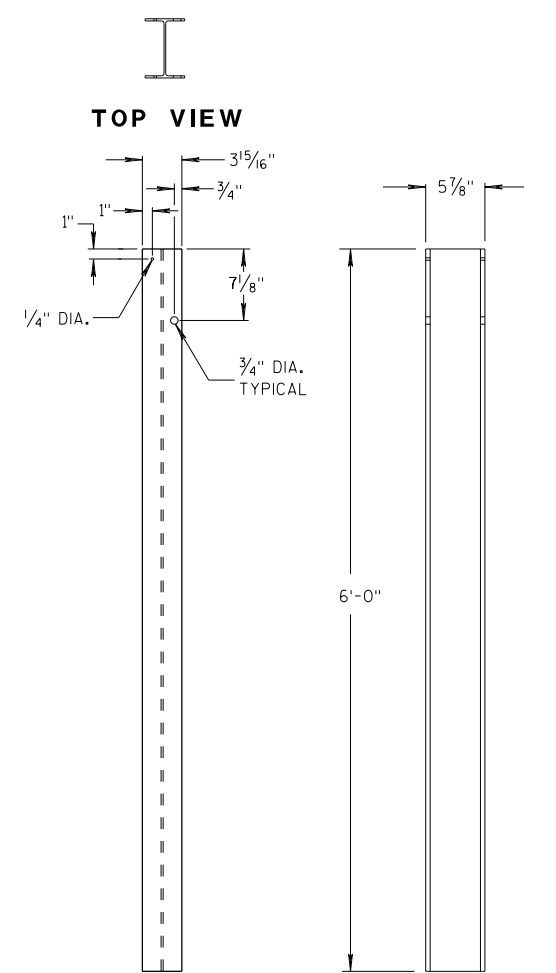
6'-3\"/>



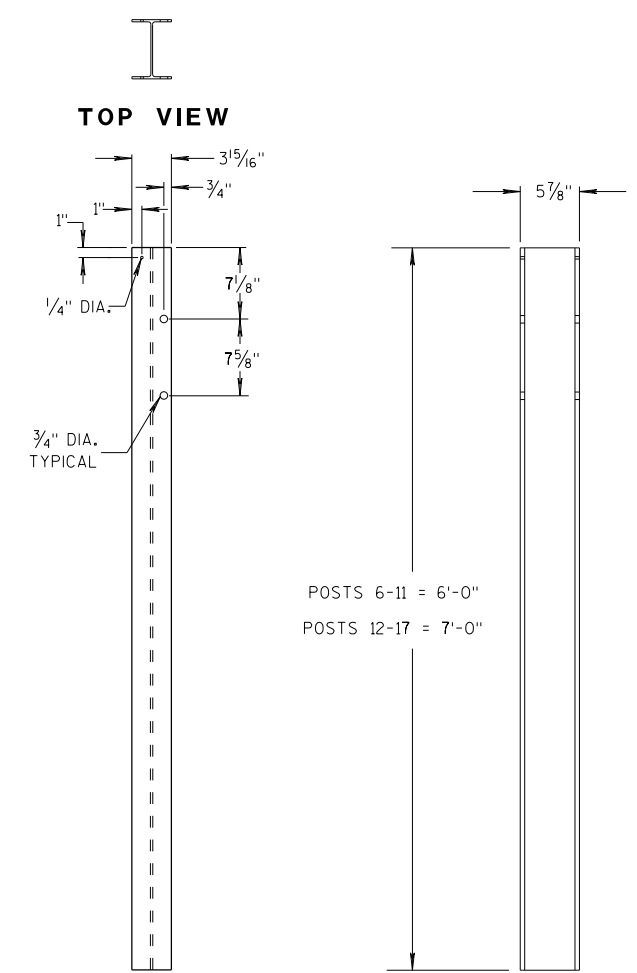
12'-6\"/>



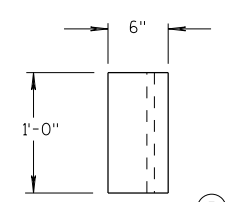
ALTERNATE WOOD BLOCKOUT DETAIL



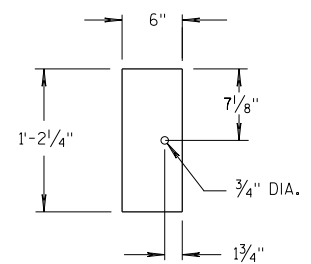
STEEL POSTS 1-5



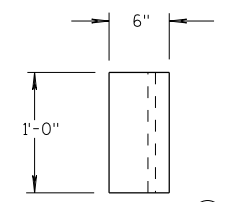
STEEL POSTS 6-17



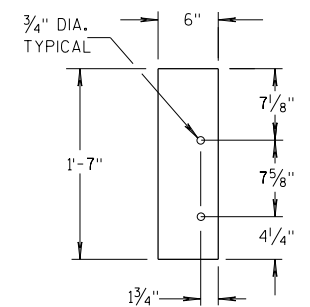
TOP VIEW



**FRONT VIEW
BLOCKOUT
POSTS 1-5**



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.
- (13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

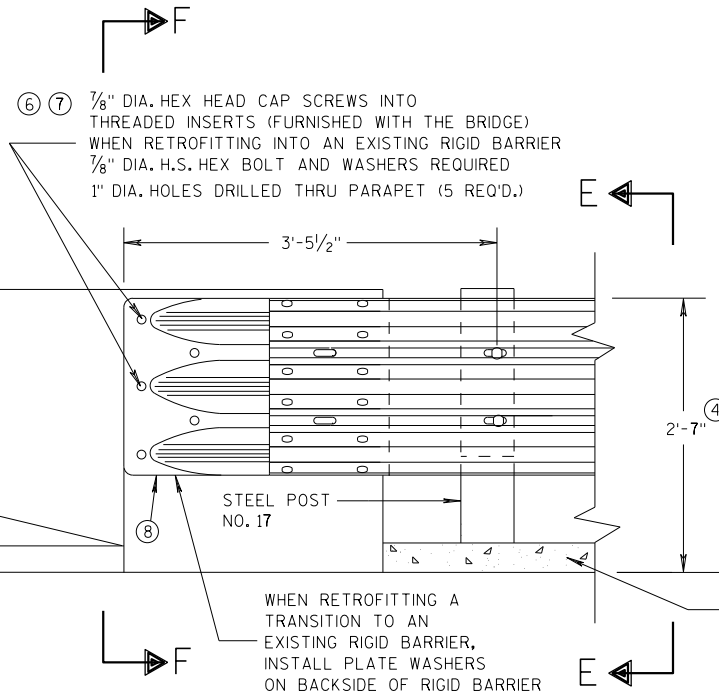
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

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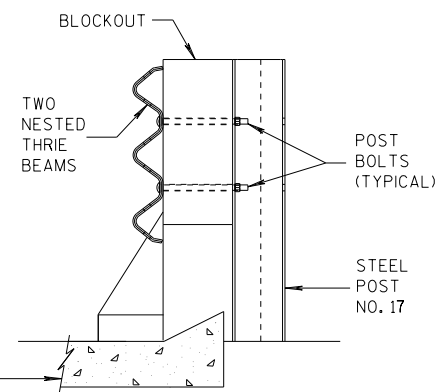
S.D.D. 14 B 45-5c

S.D.D. 14 B 45-5c

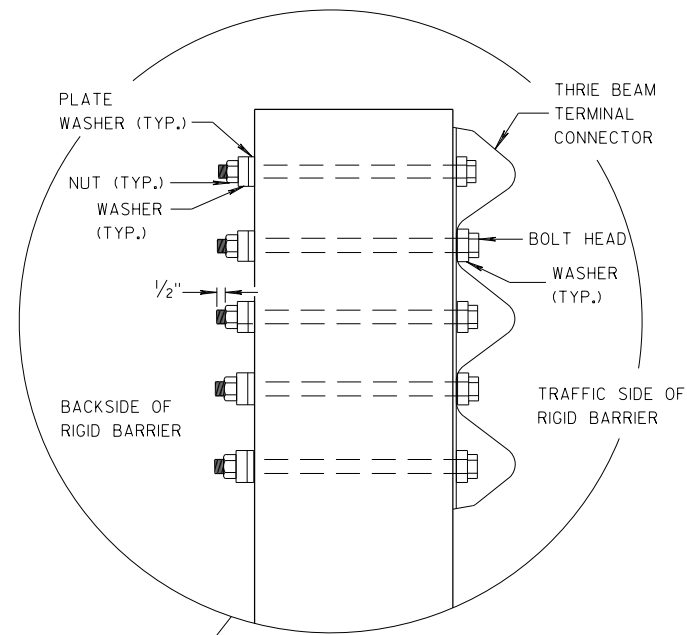


FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

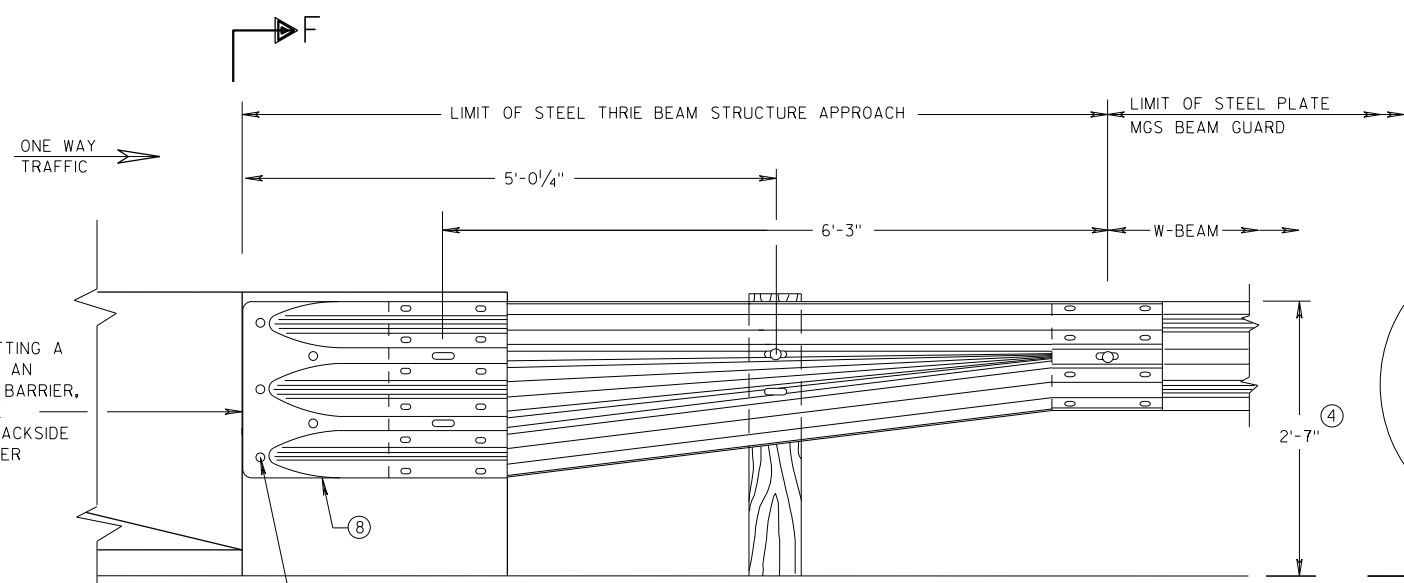


SECTION E-E



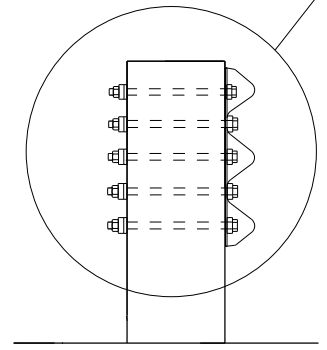
GENERAL NOTES

- 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 ± 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 5/32" 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".

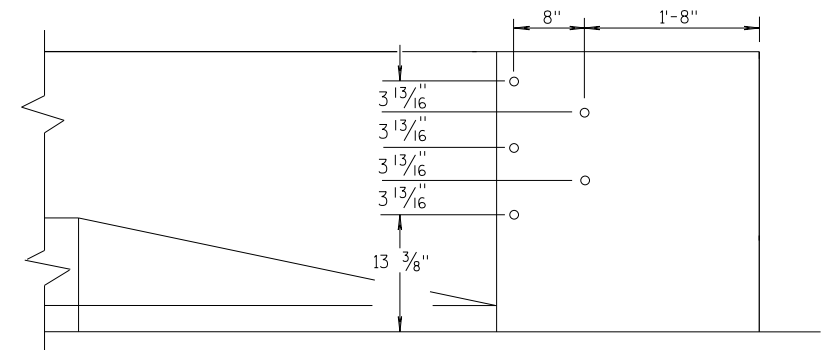


FRONT VIEW

**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 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

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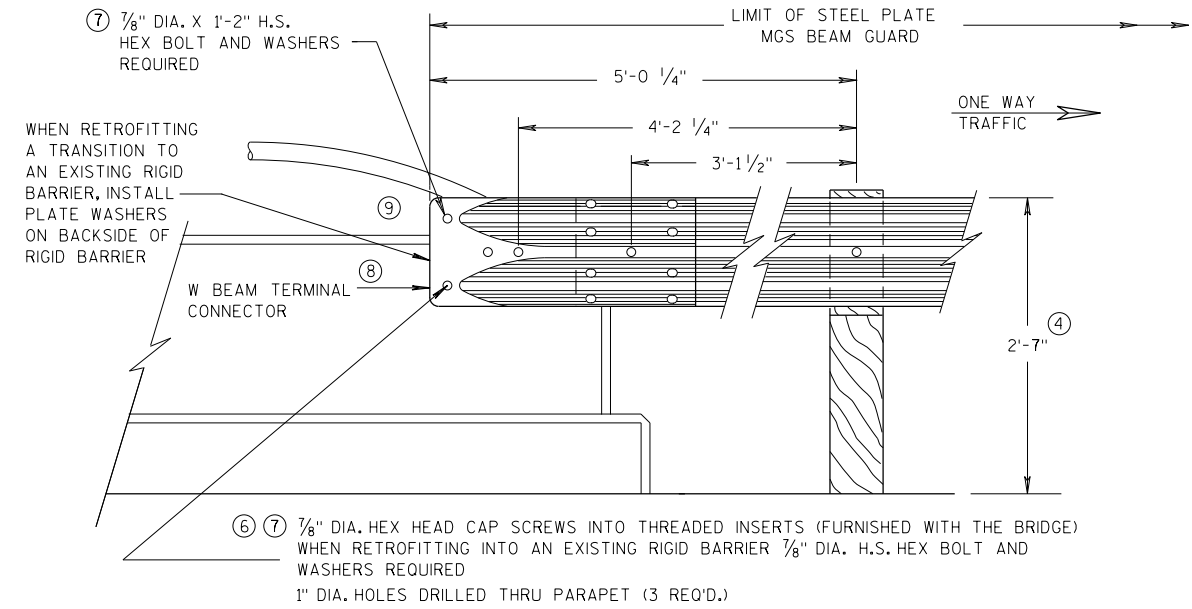
S.D.D. 14 B 45-5d

S.D.D. 14 B 45-5d

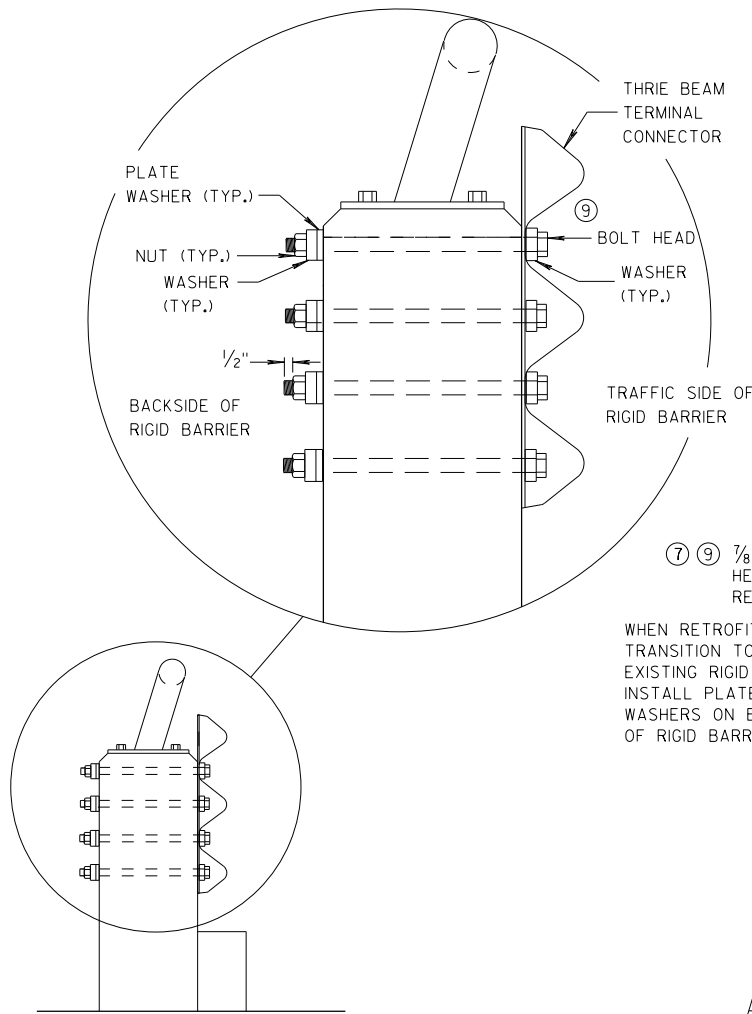
GENERAL NOTES

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

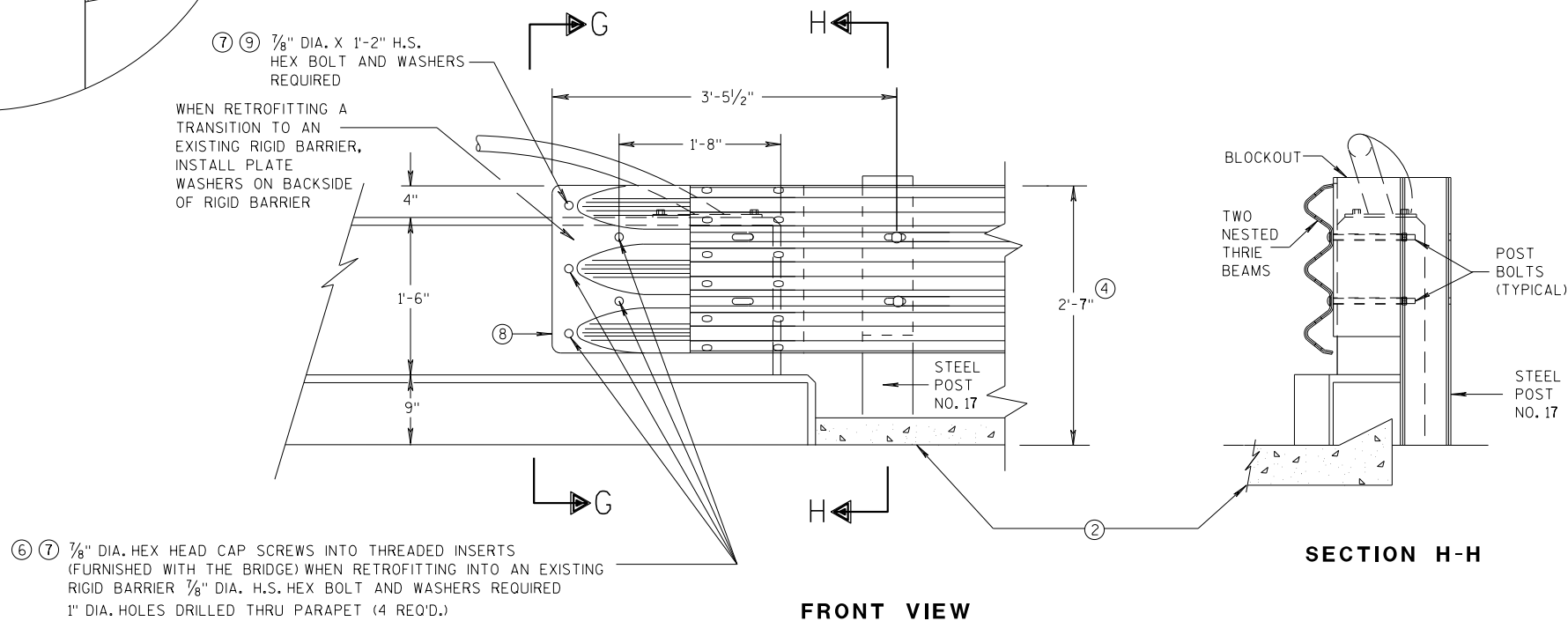
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH 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 5/32" 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".
- 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.



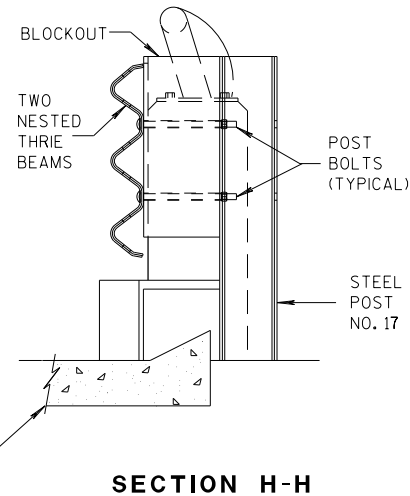
FRONT VIEW
W BEAM CONNECTION TO VERTICAL FACE PARAPET
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



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 07/2018	/s/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
DATE	FHWA

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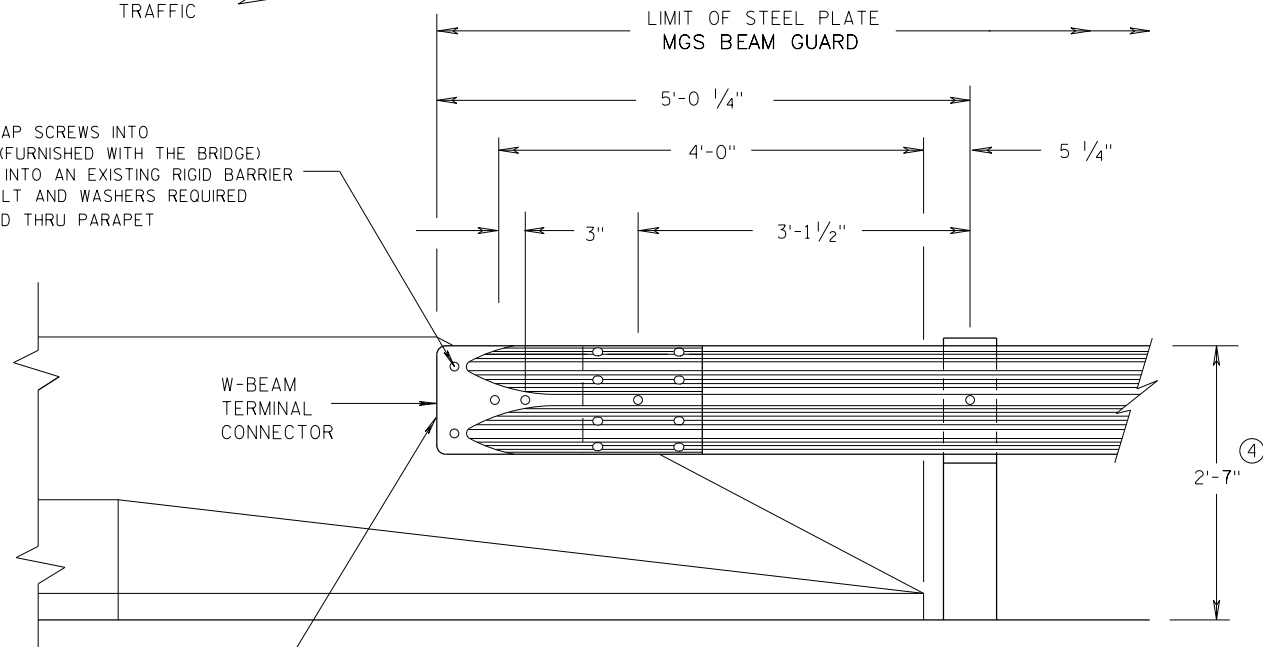
6

S.D.D. 14 B 45-5e

S.D.D. 14 B 45-5e

ONE WAY
TRAFFIC

⑥ ⑦ 7/8" DIA. HEX HEAD CAP SCREWS INTO
THREADED INSERTS (FURNISHED WITH THE BRIDGE)
WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER
7/8" DIA. H.S. HEX BOLT AND WASHERS REQUIRED
1" DIA. HOLES DRILLED THRU PARAPET
(4 REQ'D.)



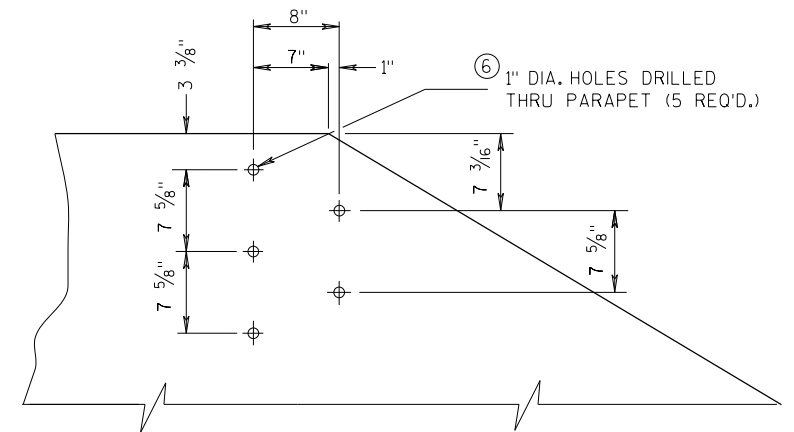
FRONT VIEW

**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS**

(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

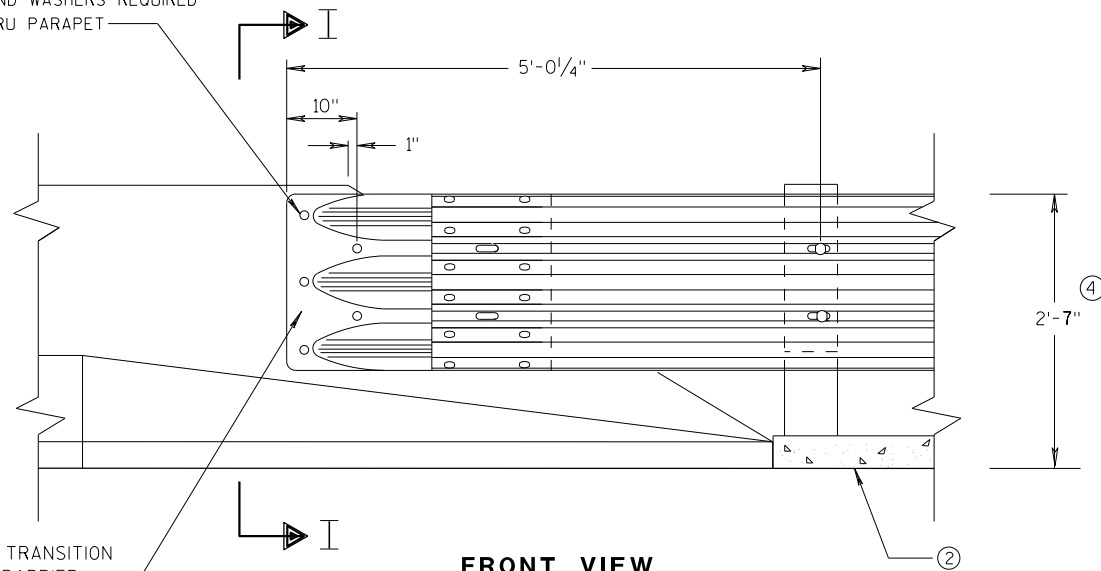
GENERAL NOTES

- 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 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



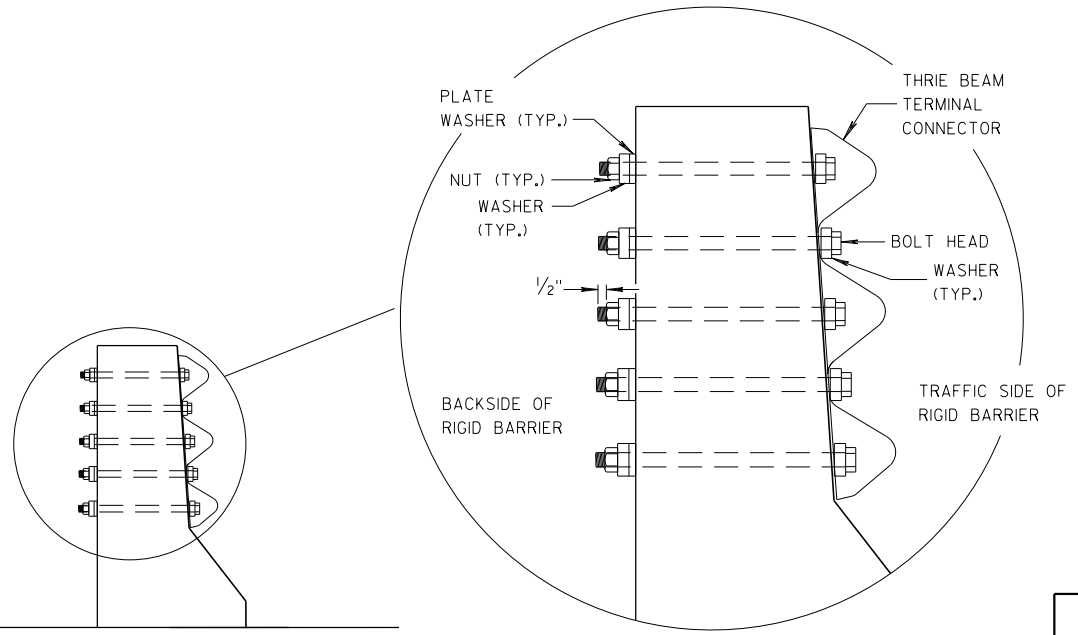
**DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION**

⑥ ⑦ 7/8" DIA. HEX HEAD CAP SCREWS INTO
THREADED INSERTS (FURNISHED WITH THE BRIDGE)
WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER
7/8" DIA. H.S. HEX BOLT AND WASHERS REQUIRED
1" DIA. HOLES DRILLED THRU PARAPET
(5 REQ'D.)



FRONT VIEW

**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



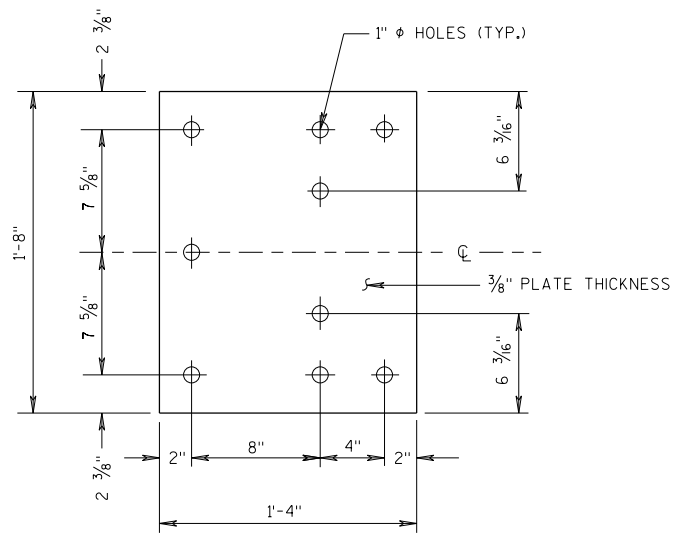
SECTION I-I

WHEN RETROFITTING A TRANSITION
TO AN EXISTING RIGID BARRIER,
INSTALL PLATE WASHERS ON
BACKSIDE OF RIGID BARRIER.

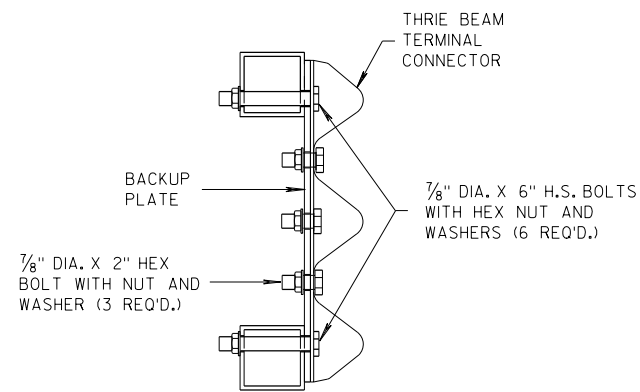
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

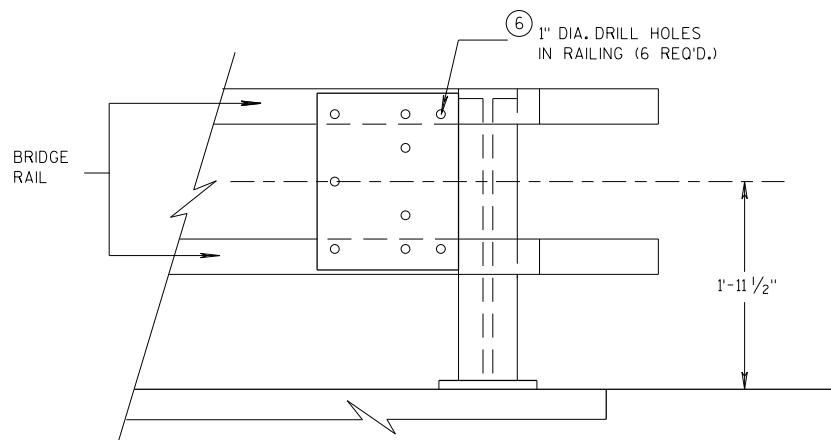
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



BACK-UP PLATE DETAIL



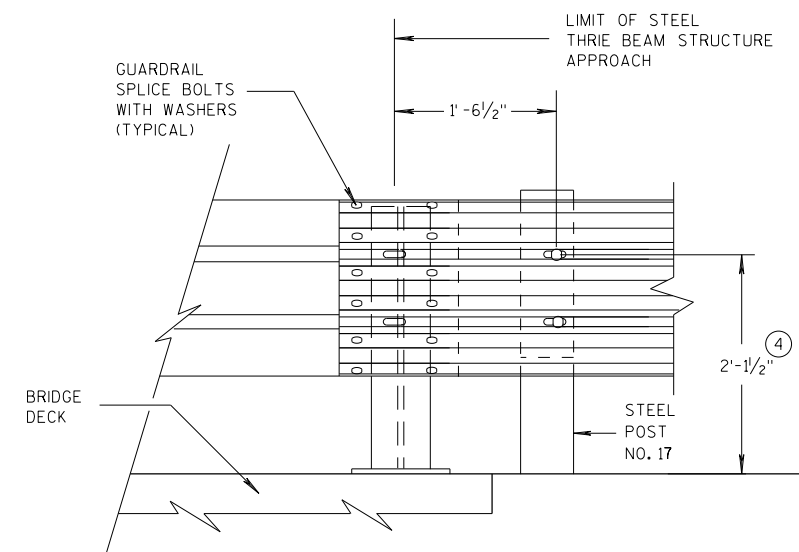
SECTION J-J



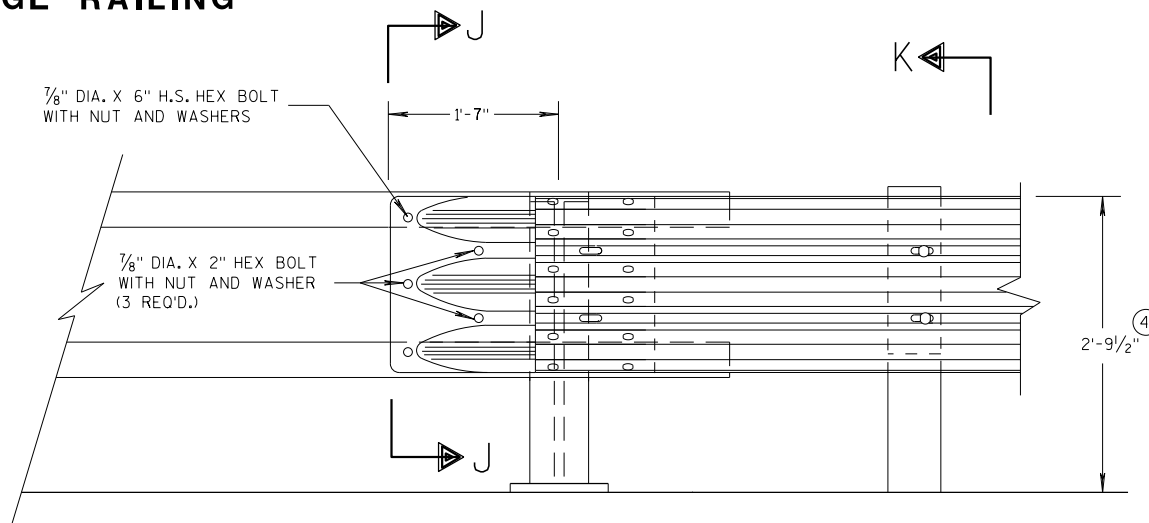
BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

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.

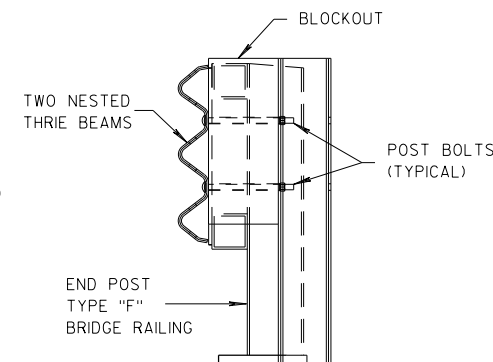


**FRONT VIEW
THRIE BEAM CONNECTION TO
STEEL RAILING TYPE "W"**



FRONT VIEW

**THRIE BEAM CONNECTION TO
TUBULAR RAILING TYPE "F"**

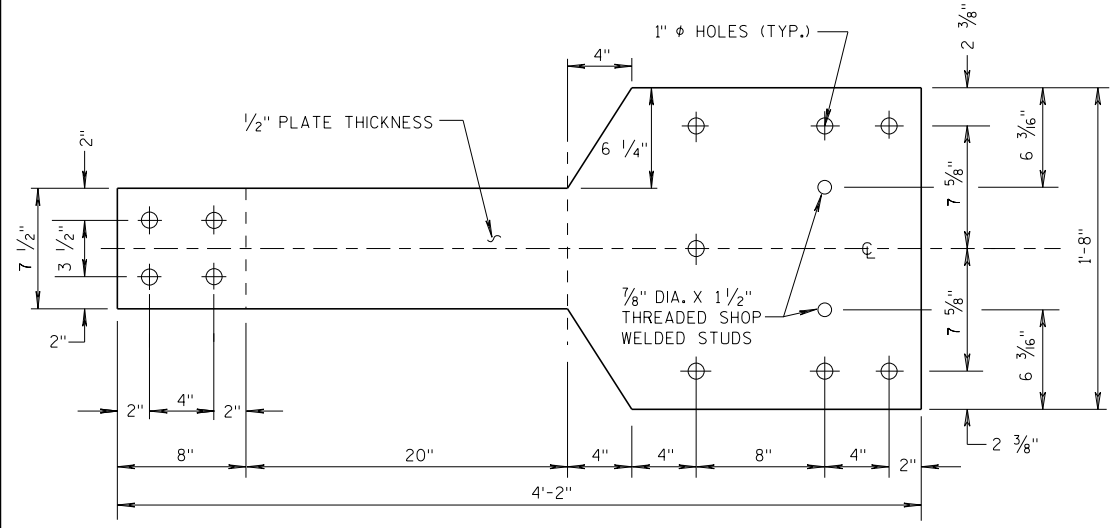


SECTION K-K

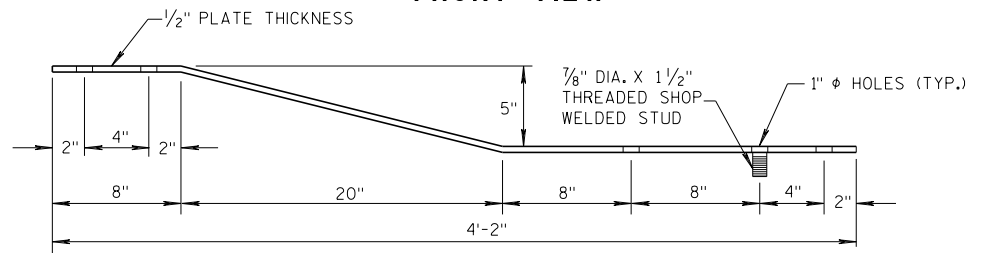
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

GENERAL NOTES

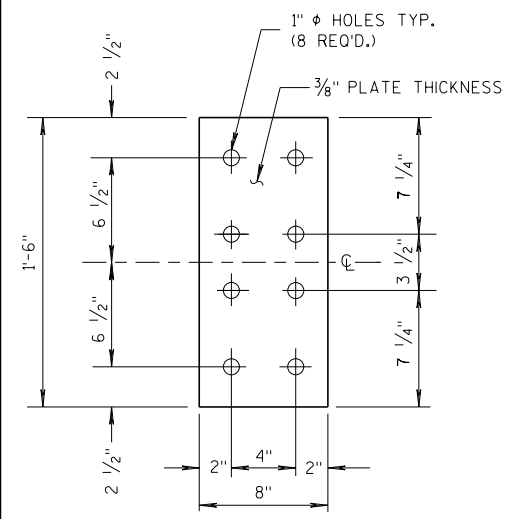
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



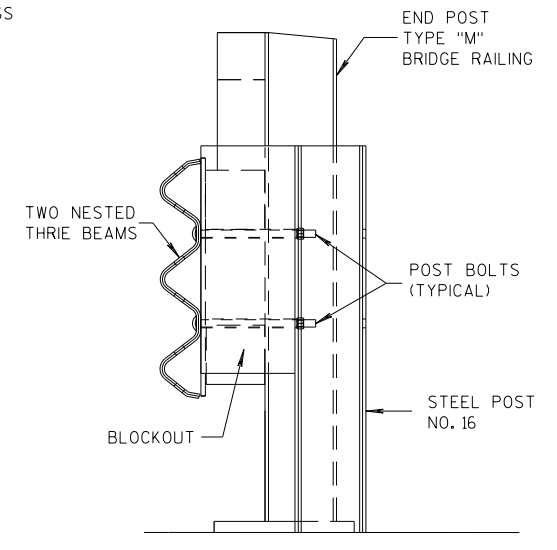
FRONT VIEW



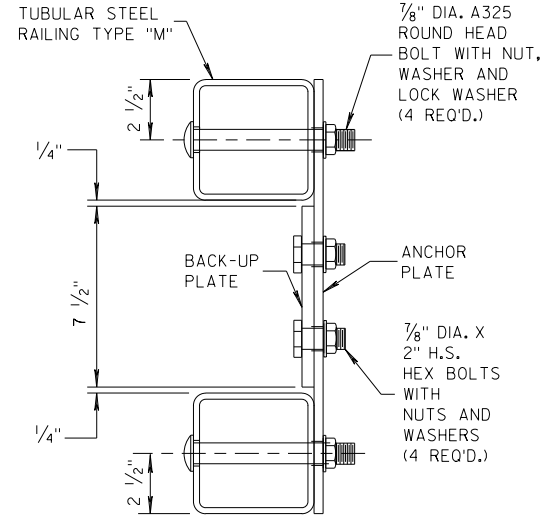
**PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"**



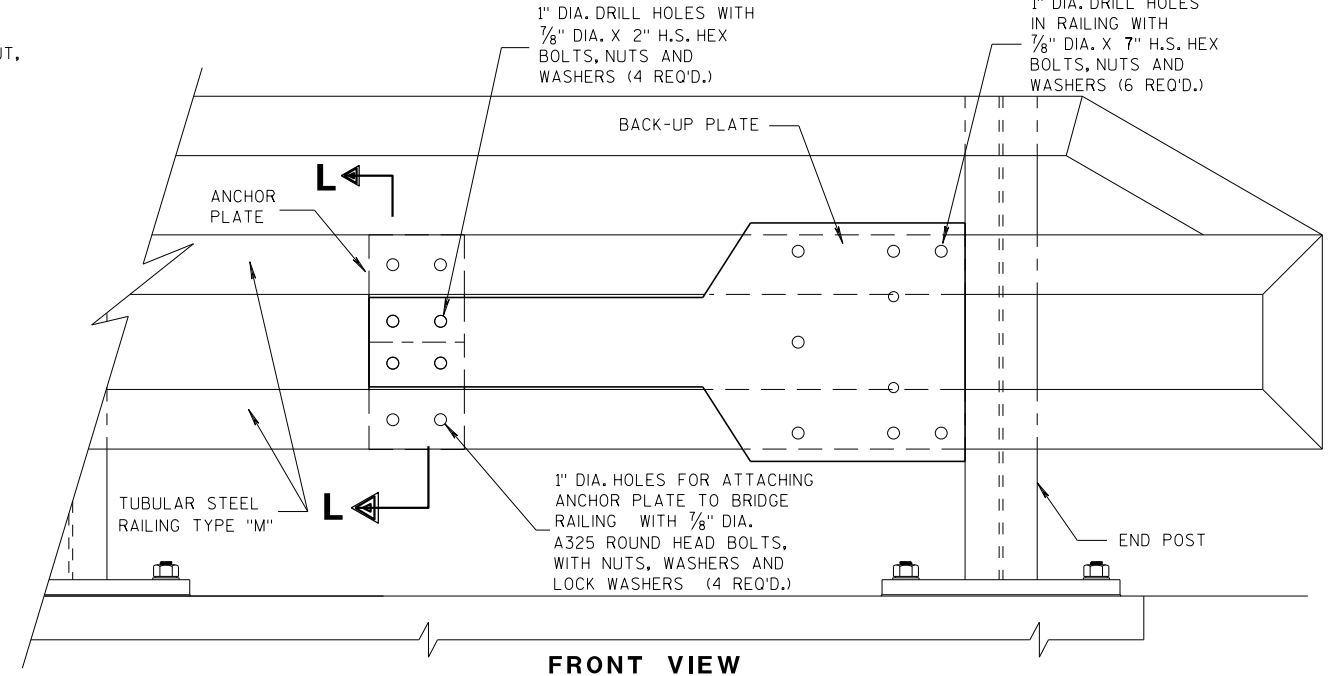
**FRONT VIEW
ANCHOR
PLATE DETAIL,
TYPE "M"**



SECTION M-M

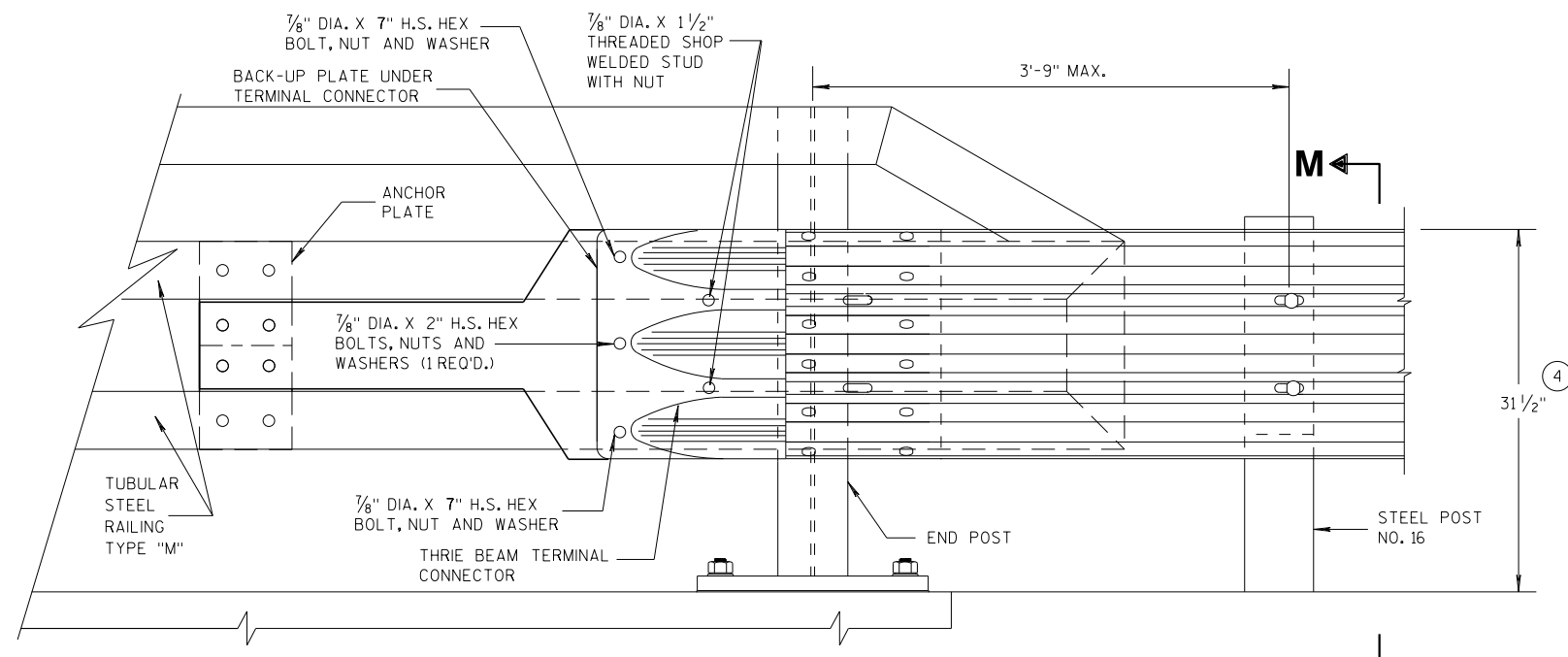


SECTION L-L

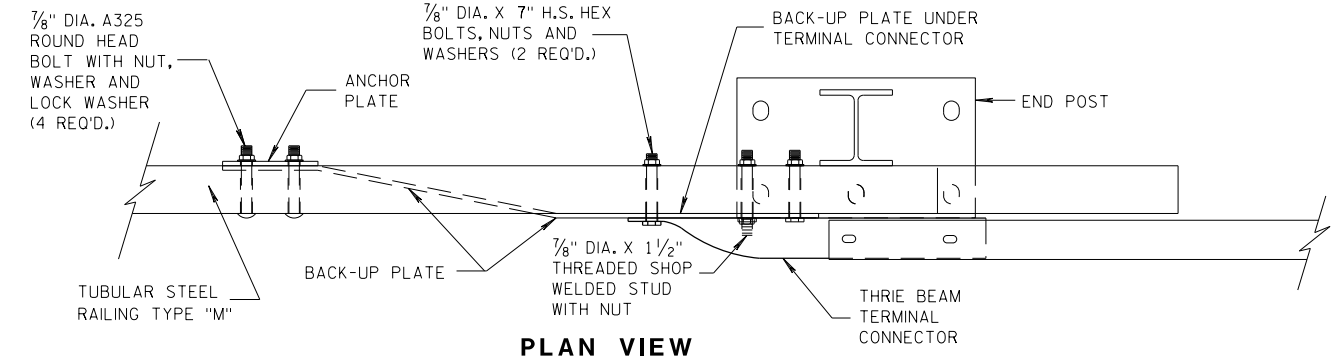


FRONT VIEW

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



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

6

6

S.D.D. 14 B 45-5h

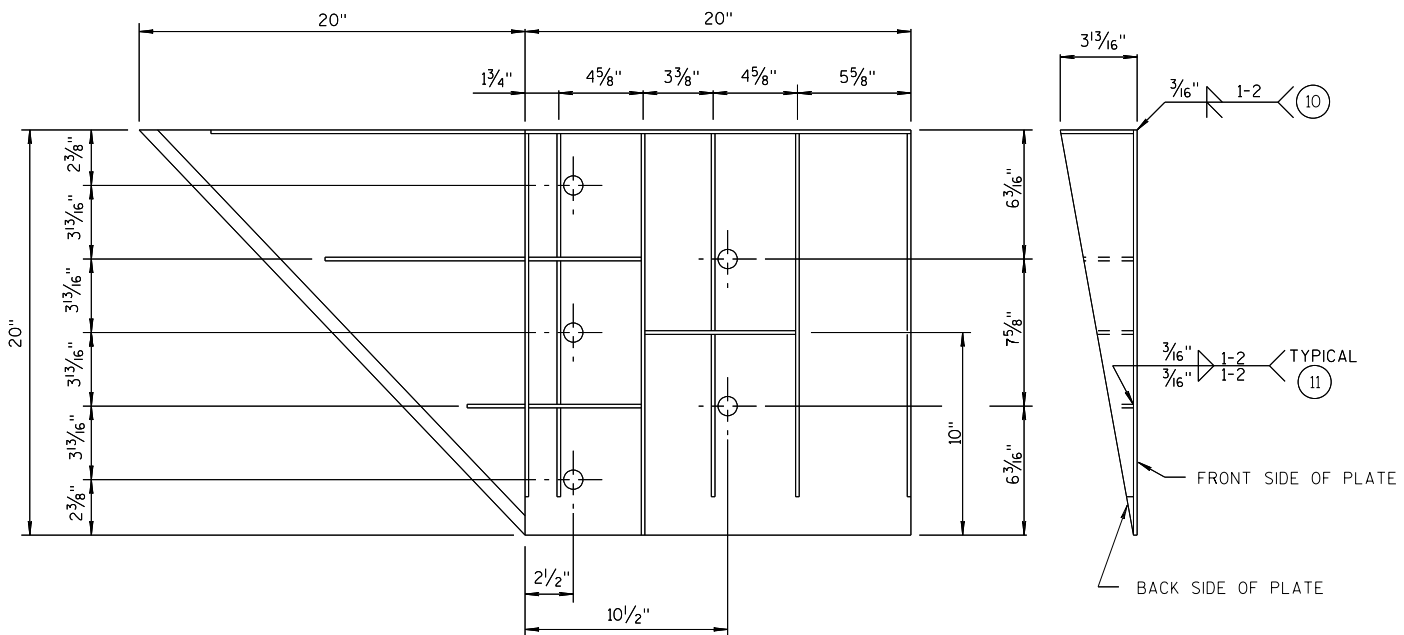
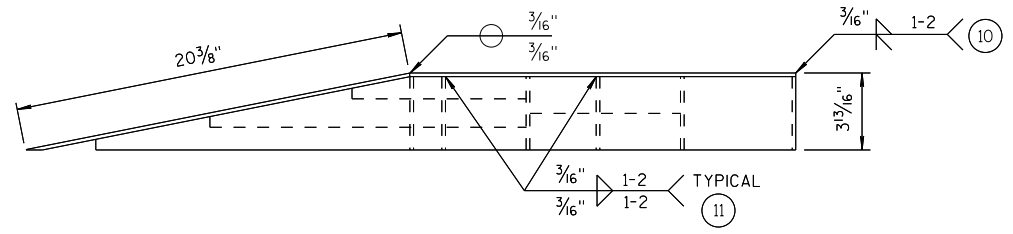
S.D.D. 14 B 45-5h

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/s/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

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".



WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

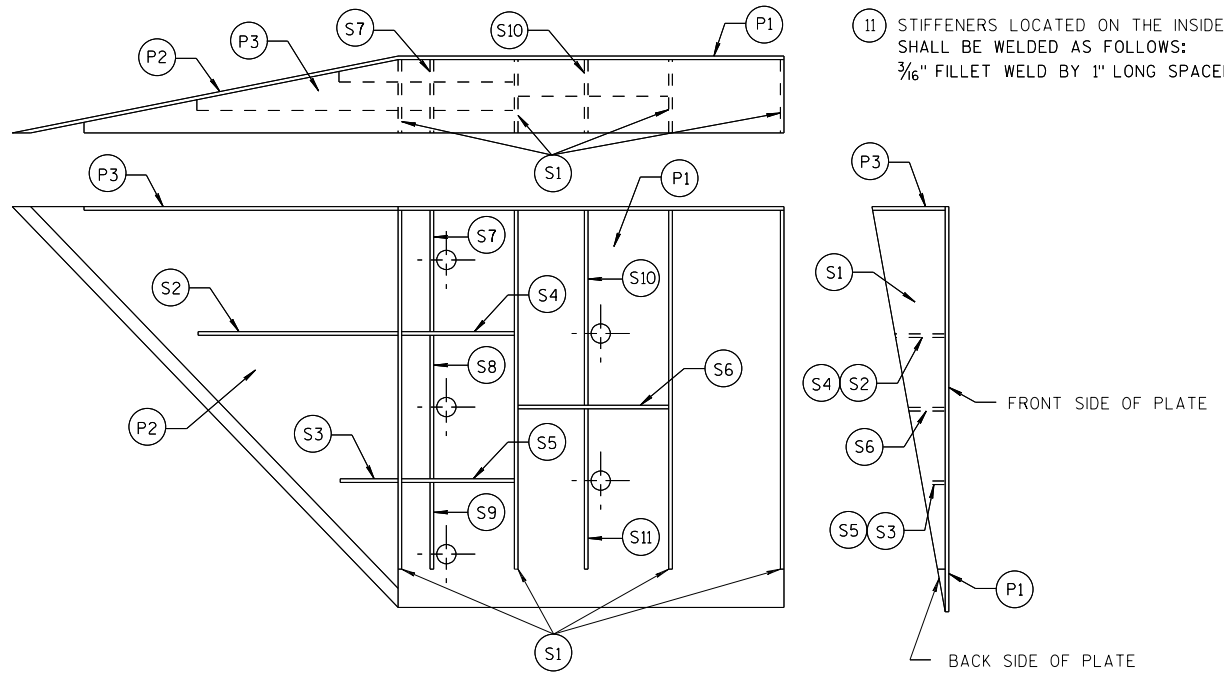


PLATE AND STIFFENER IDENTIFICATION
(VIEWED FROM BACK SIDE OF PLATE)

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 3/16"	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 3/8" 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 3/16" 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 3/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 3/8" x 9 1 1/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 3/16"	1/4"

SINGLE SLOPE CONNECTION PLATE

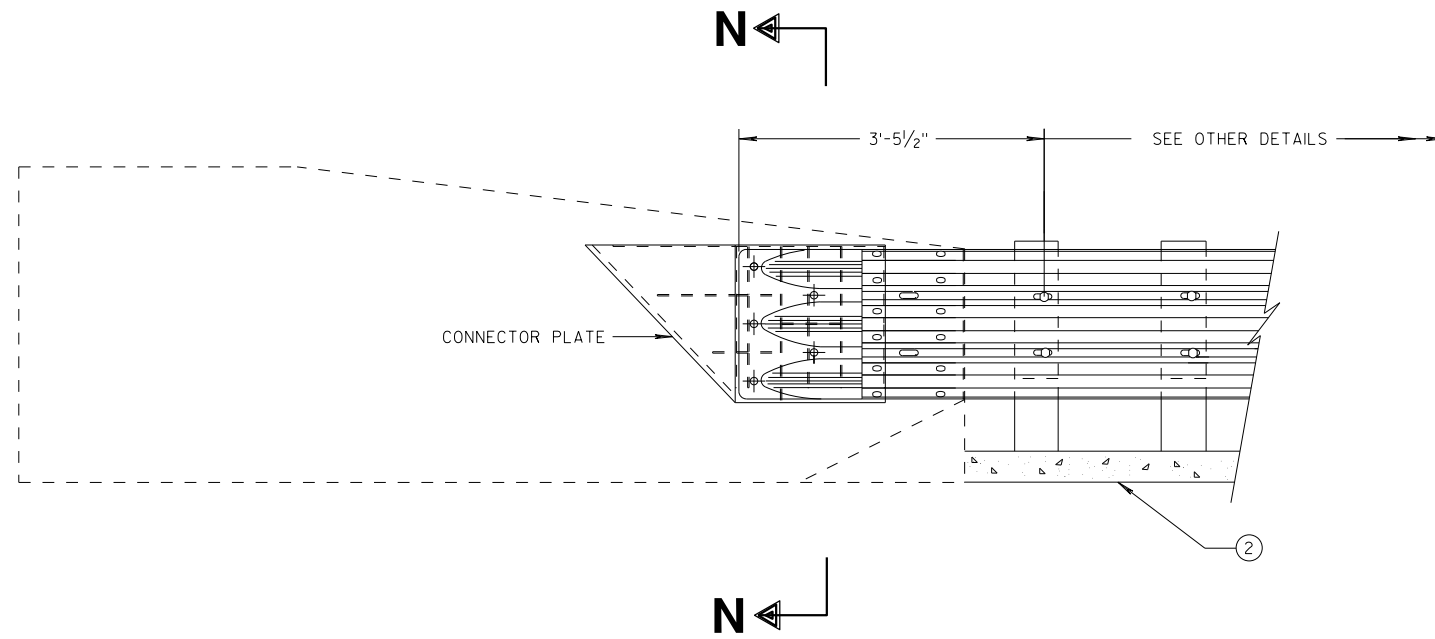
**MIDWEST GUARDRAIL SYSTEM
THREE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

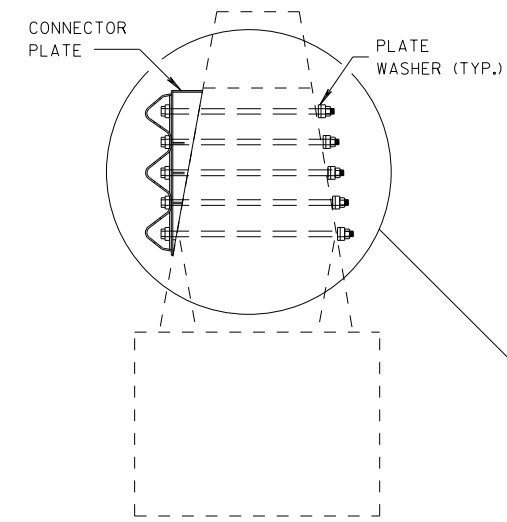
APPROVED
7/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR

GENERAL NOTES

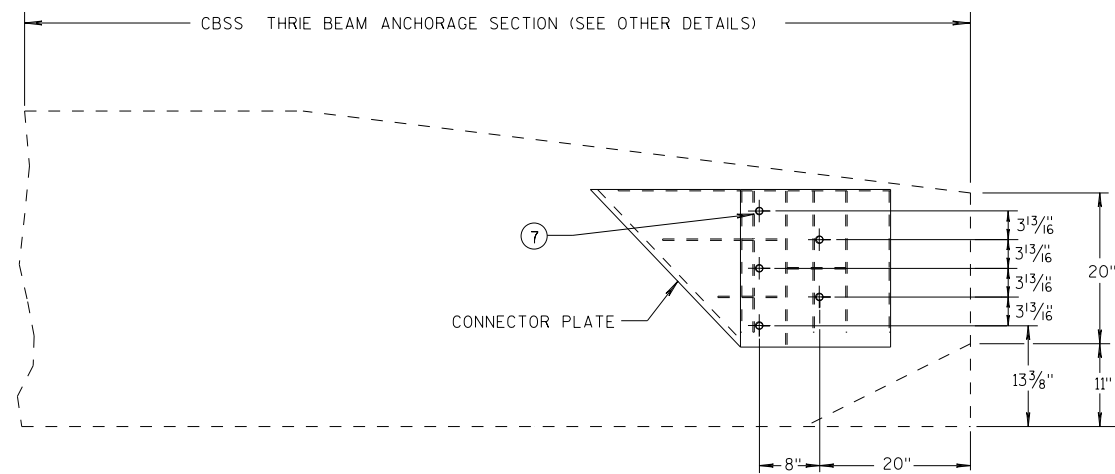
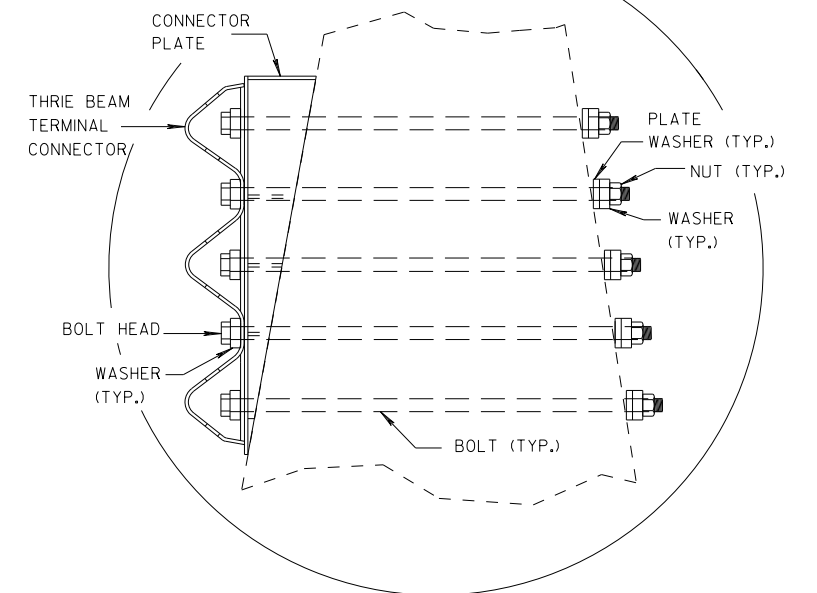
- CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO 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 CONNECTION PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



SECTION N-N

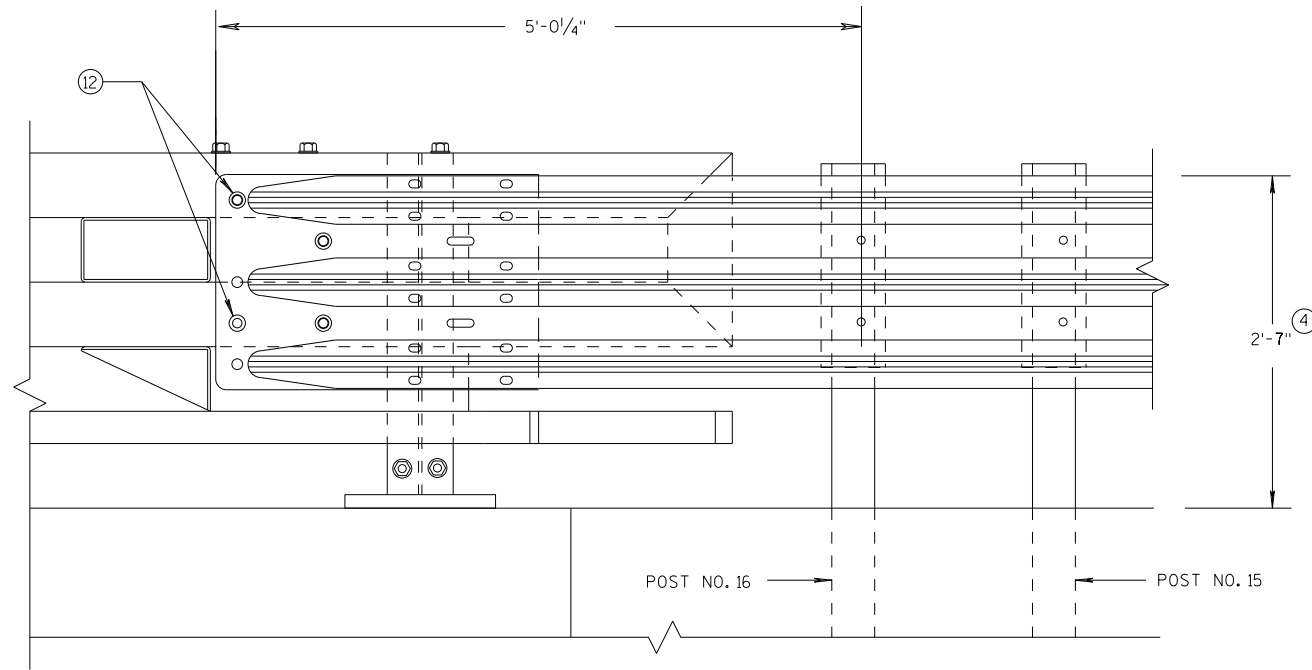


SINGLE SLOPE CONNECTION PLATE PLACEMENT

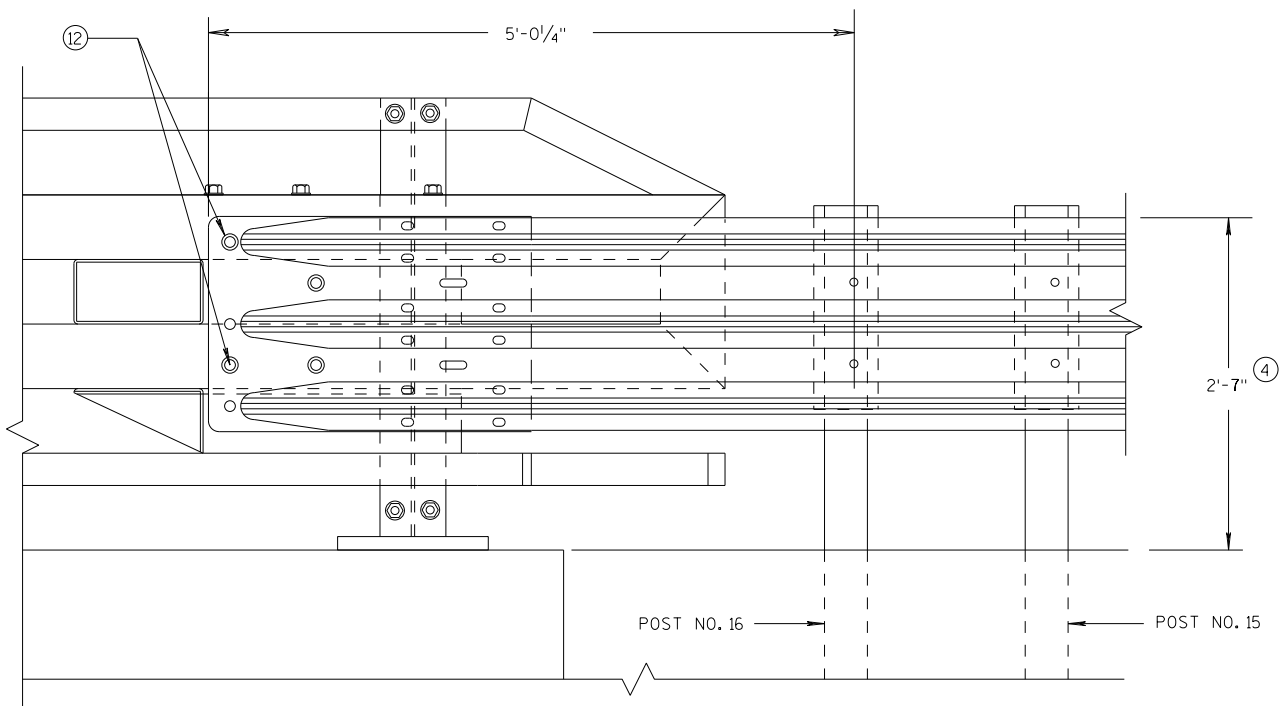
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 7/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



**ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT**



**ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT**

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.

6

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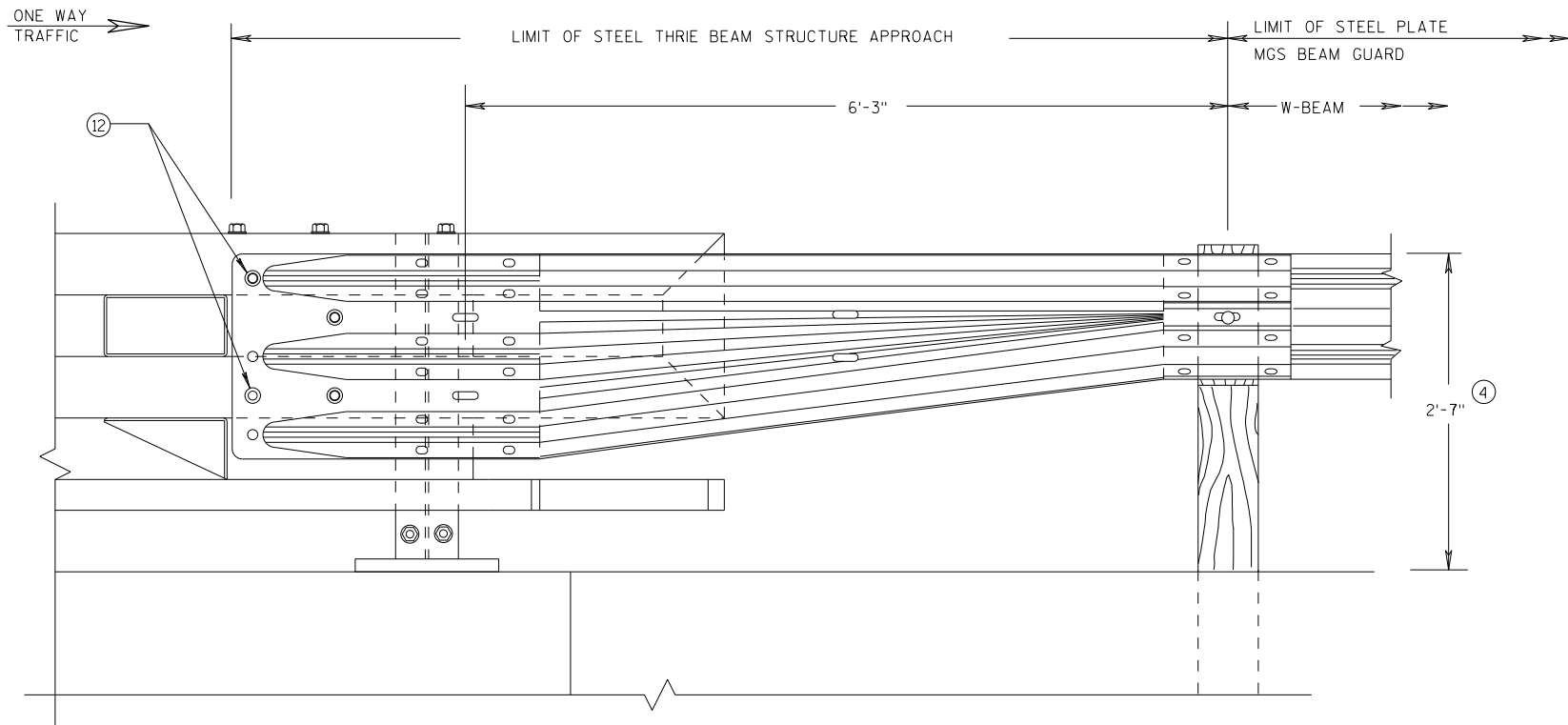
S.D.D. 14 B 45-5K

S.D.D. 14 B 45-5K

**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

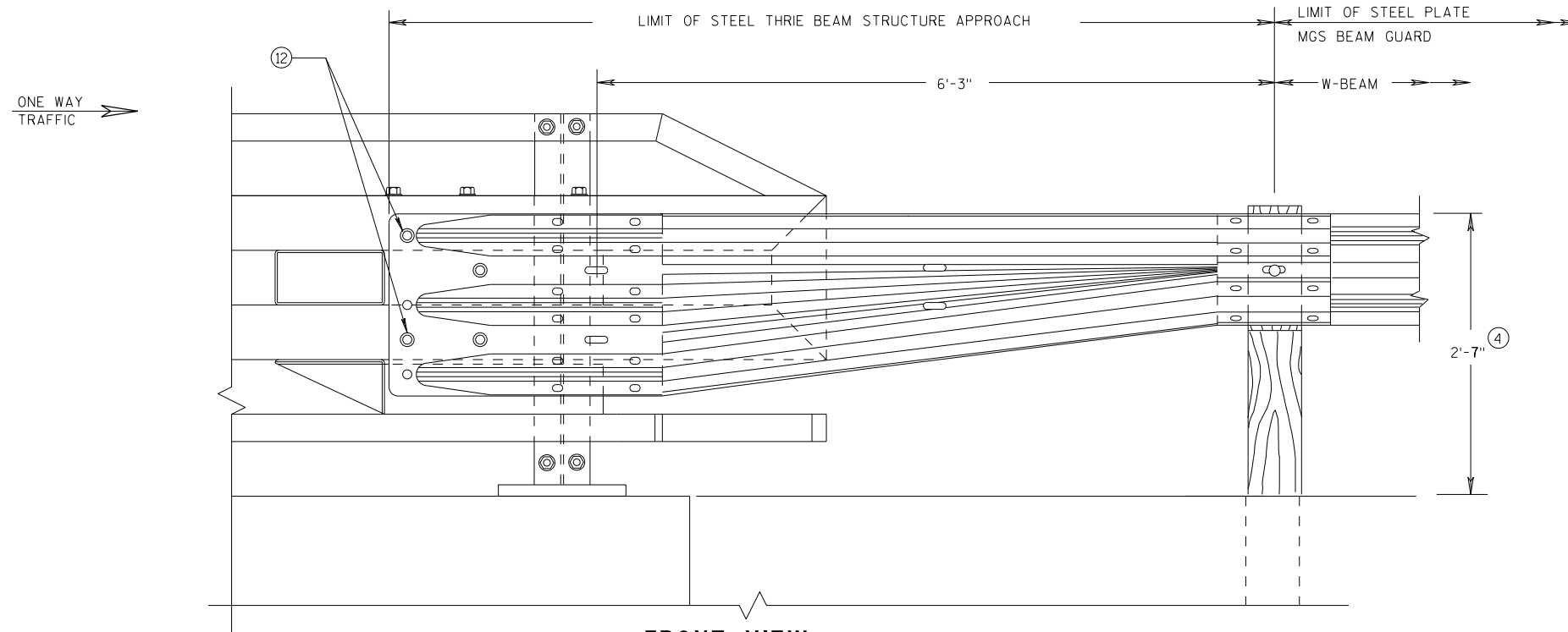
APPROVED
DATE 7/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



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.

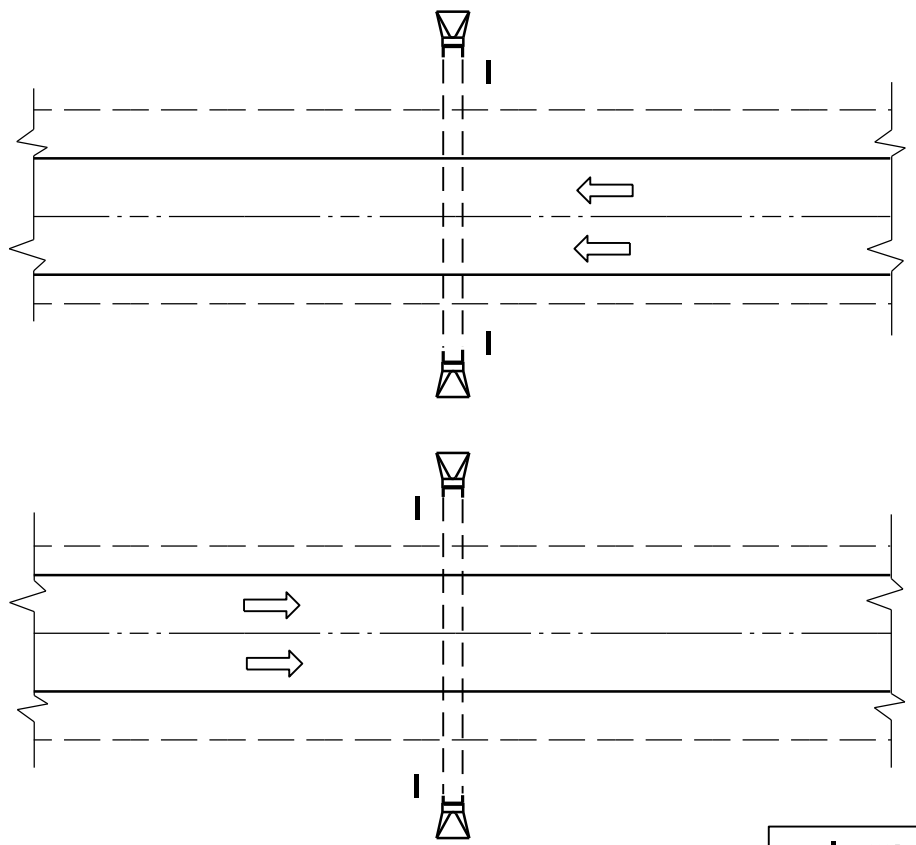


FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY4"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

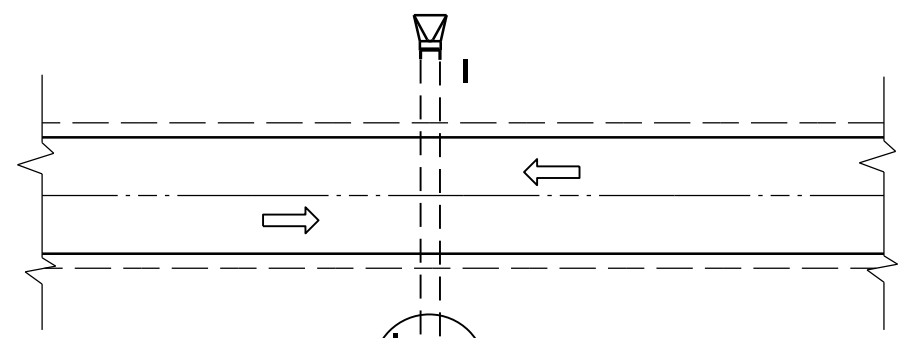
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

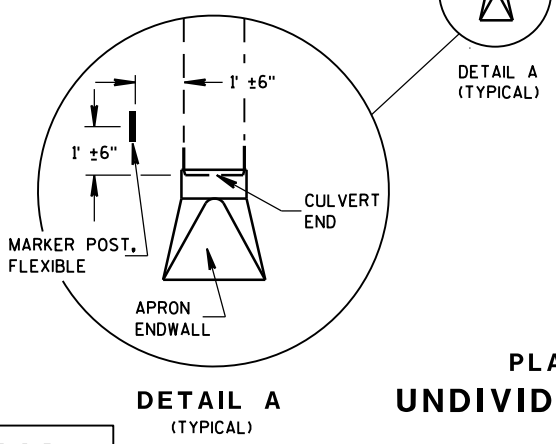
APPROVED
 DATE 7/2018 /S/ Rodney Taylor
 ROADWAY STANDARDS DEVELOPMENT
 UNIT SUPERVISOR
 FHWA



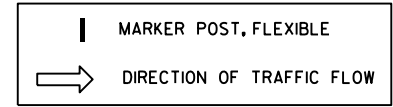
PLAN VIEW
DIVIDED HIGHWAY



PLAN VIEW
UNDIVIDED HIGHWAY

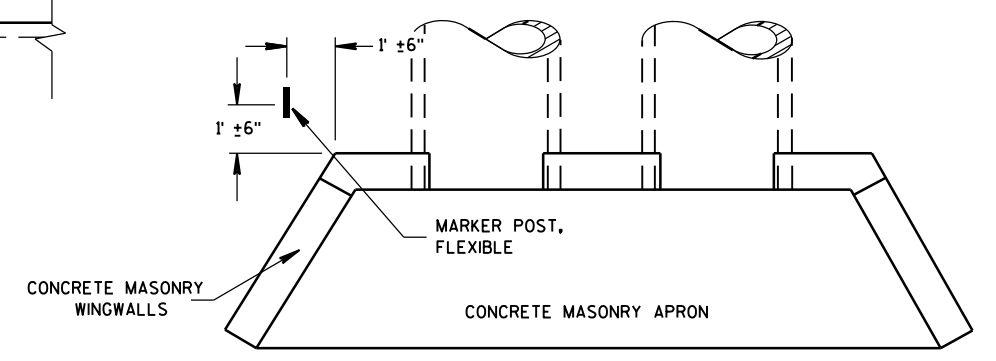


DETAIL A
(TYPICAL)



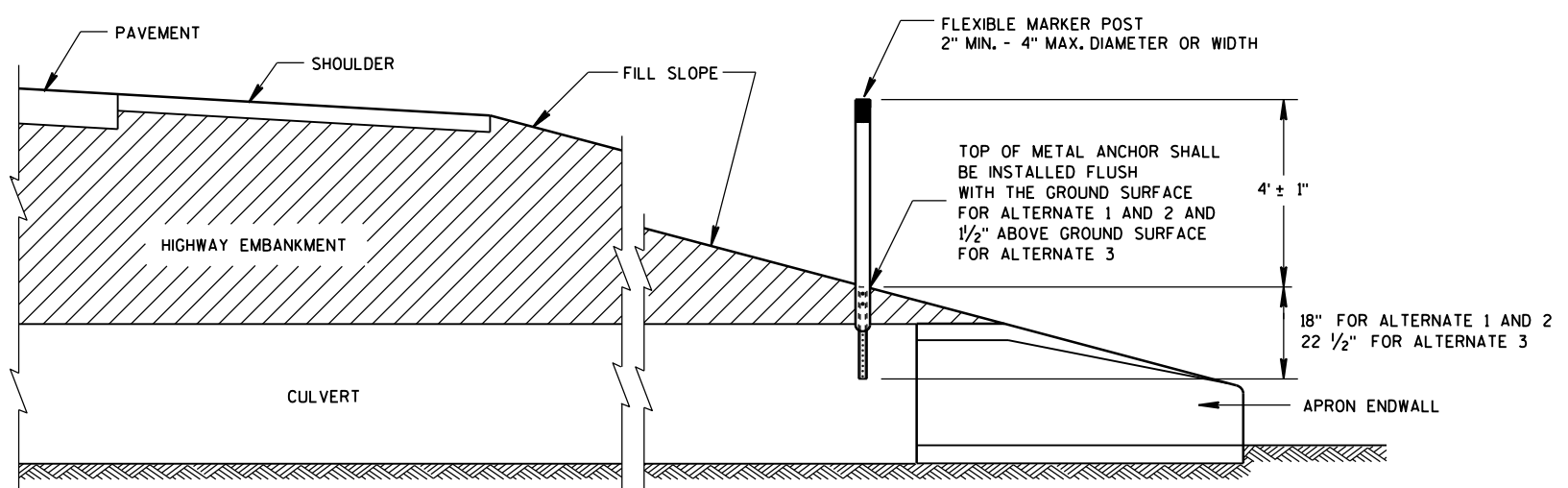
GENERAL NOTES

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

FLEXIBLE MARKER POST LOCATION



CROSS SECTION
FLEXIBLE MARKER POST

**FLEXIBLE MARKER POST
FOR CULVERT END**

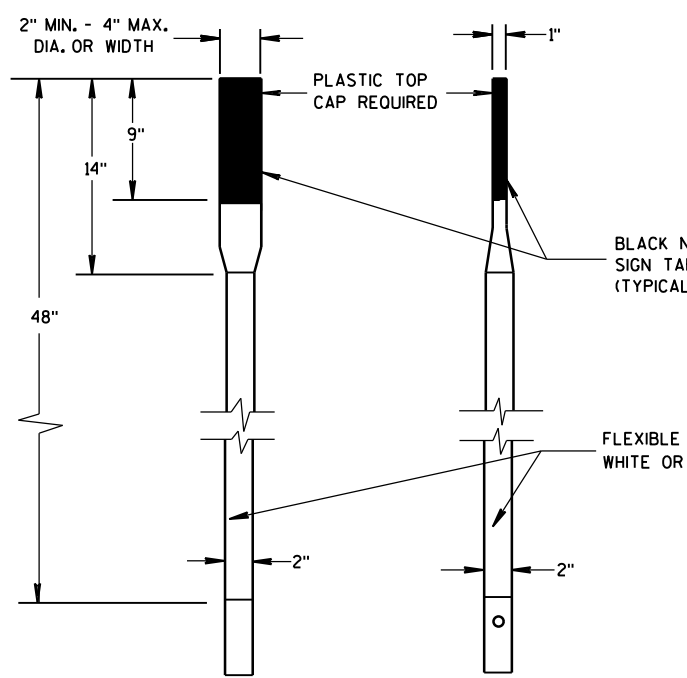
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

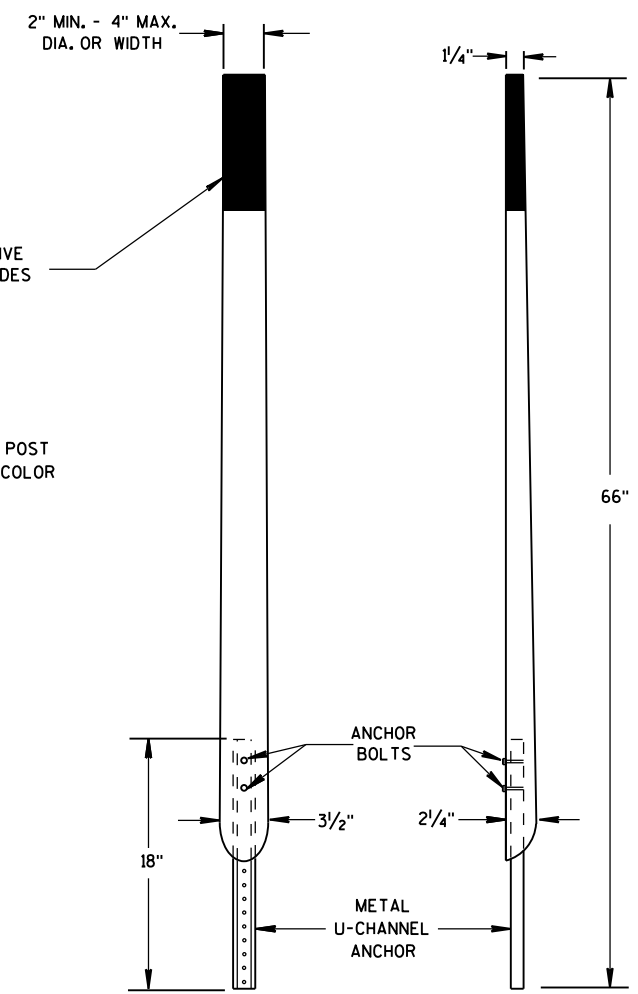
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S.D.D. 15 A 3-2a

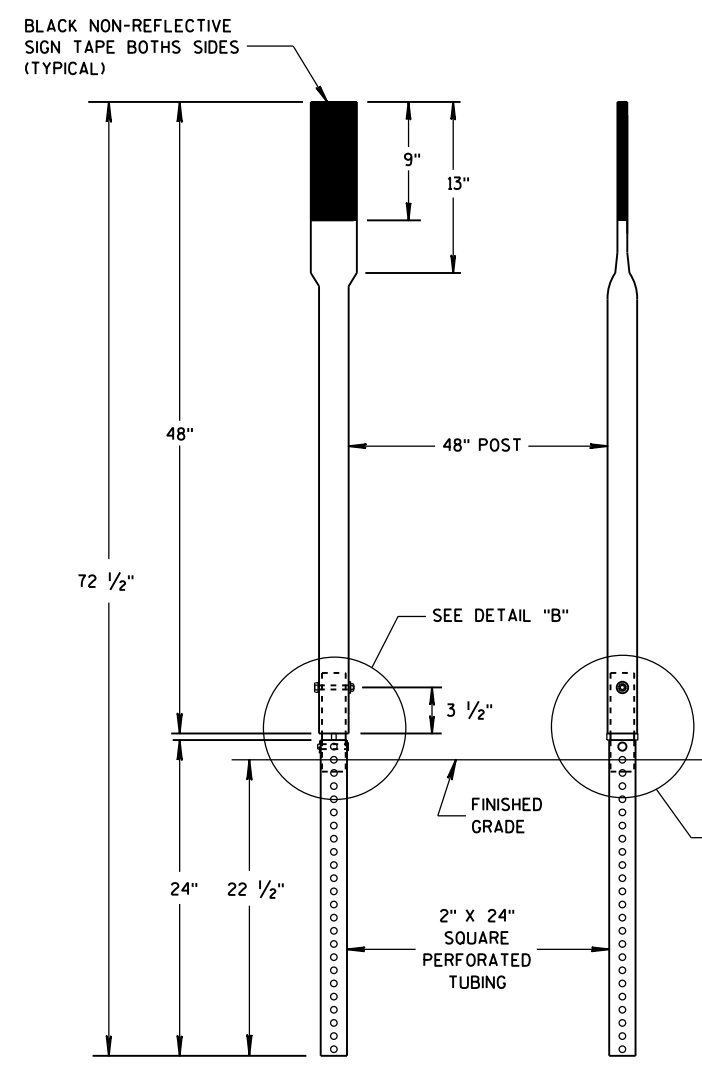
S.D.D. 15 A 3-2a



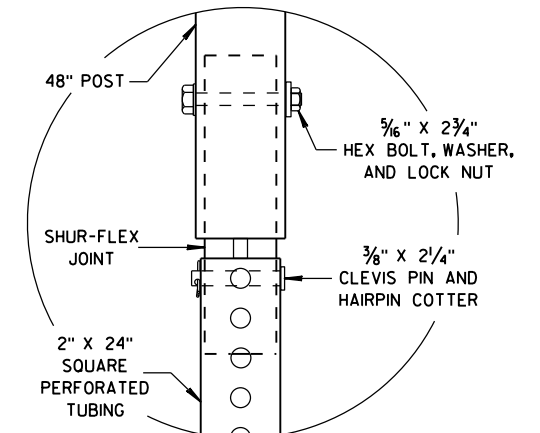
FRONT VIEW SIDE VIEW
ALTERNATE 1



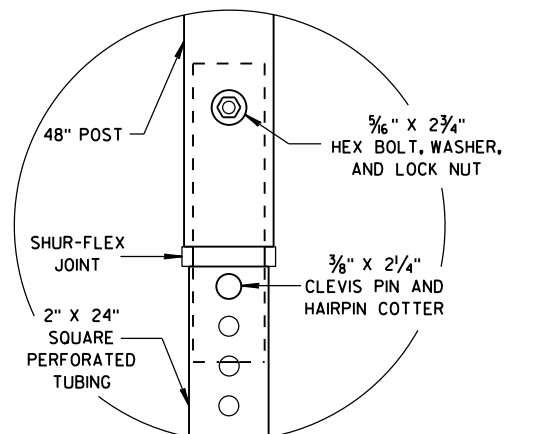
FRONT VIEW SIDE VIEW
ALTERNATE 2



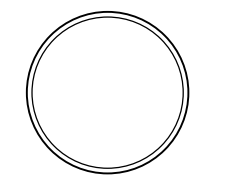
FRONT VIEW SIDE VIEW
ALTERNATE 3



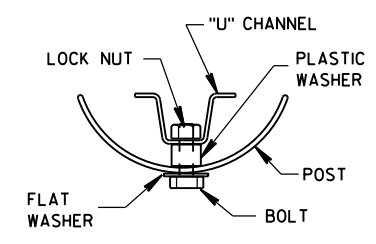
DETAIL B



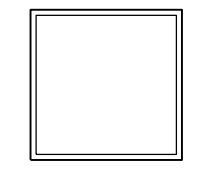
DETAIL C



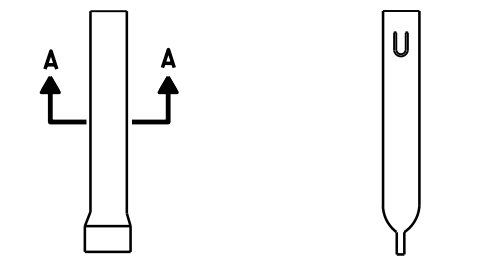
SECTION A-A



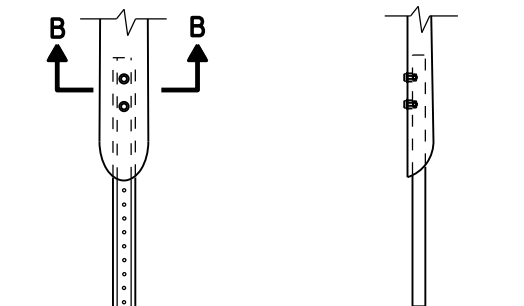
SECTION B-B



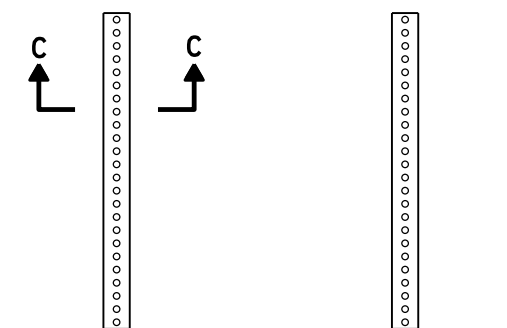
SECTION C-C



FRONT VIEW SIDE VIEW
ALTERNATE 1



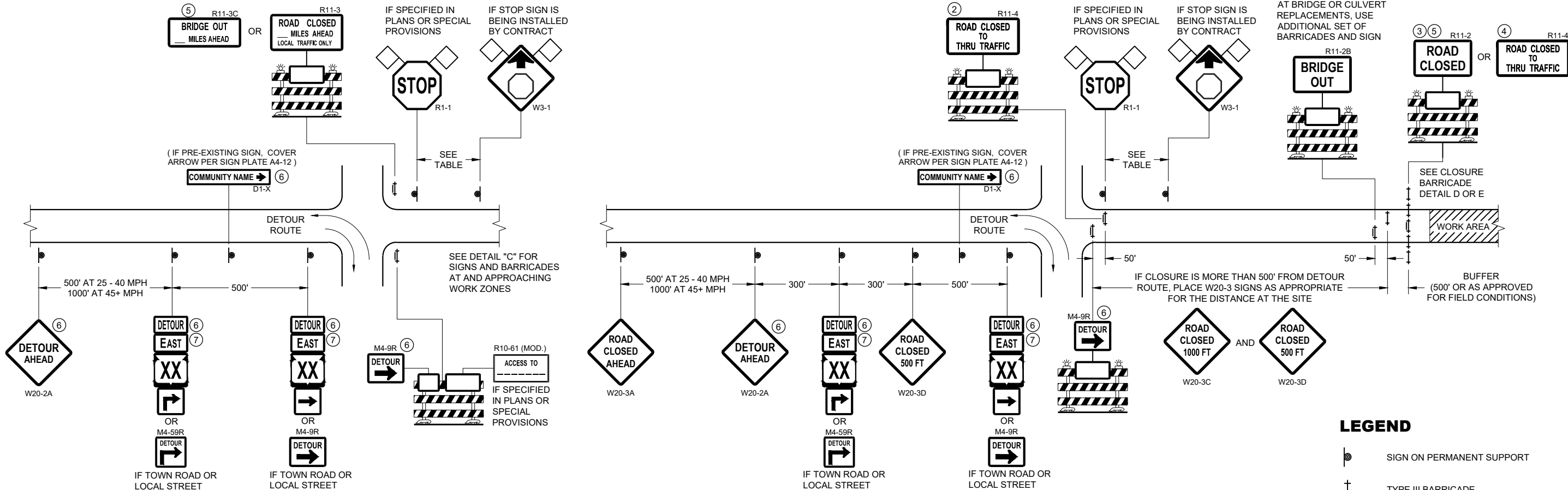
FRONT VIEW SIDE VIEW
ALTERNATE 2



FRONT VIEW SIDE VIEW
ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS

FLEXIBLE MARKER POST FOR CULVERT END	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 10/1/2012 DATE	/S/ Travis Feltes STATE TRAFFIC ENGINEER OF DESIGN
FHWA	



**DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR**

WORK ZONE GREATER THAN OR EQUAL TO 1/2 MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

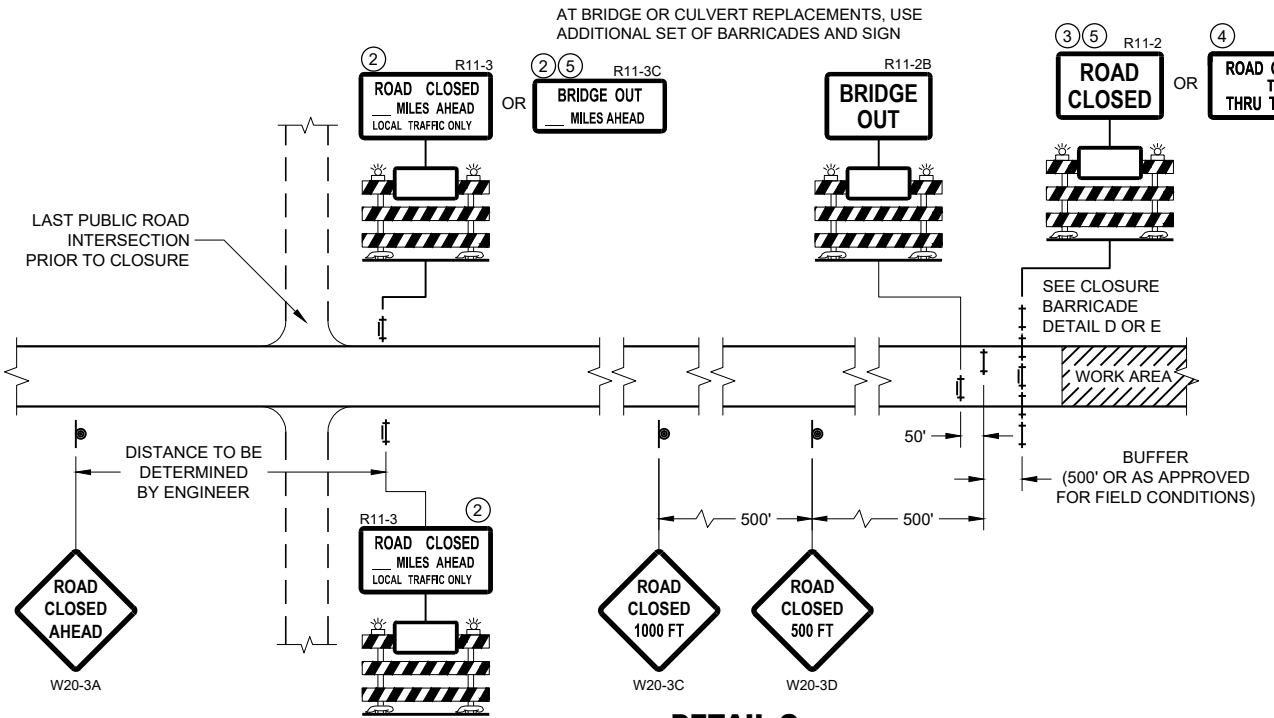
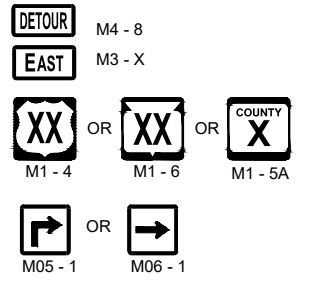
**DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR**

WORK ZONE LESS THAN 1/2 MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- FLAGS, 16" X 16" MIN. (ORANGE)

SPEED LIMIT (MPH)	"STOP AHEAD" ADVANCE WARNING DISTANCE (FT)
25	200
30	200
35	350
40	350
45	500
50	550
55	750



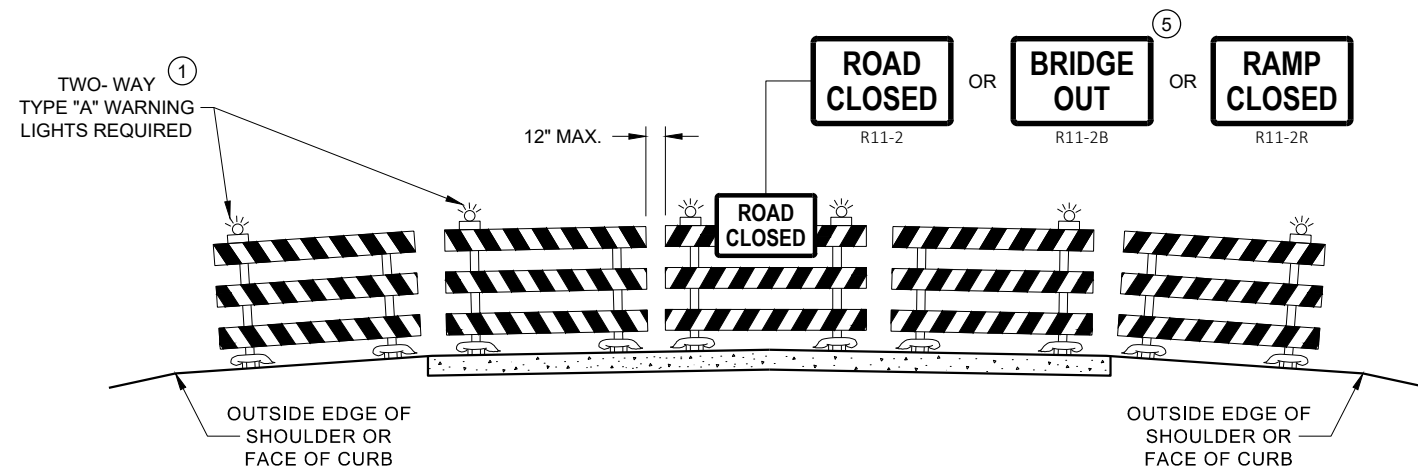
**DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR**

SEE SDD 15C2-SHEET "b"
FOR GENERAL NOTES
AND FOOTNOTES ① THROUGH ⑦

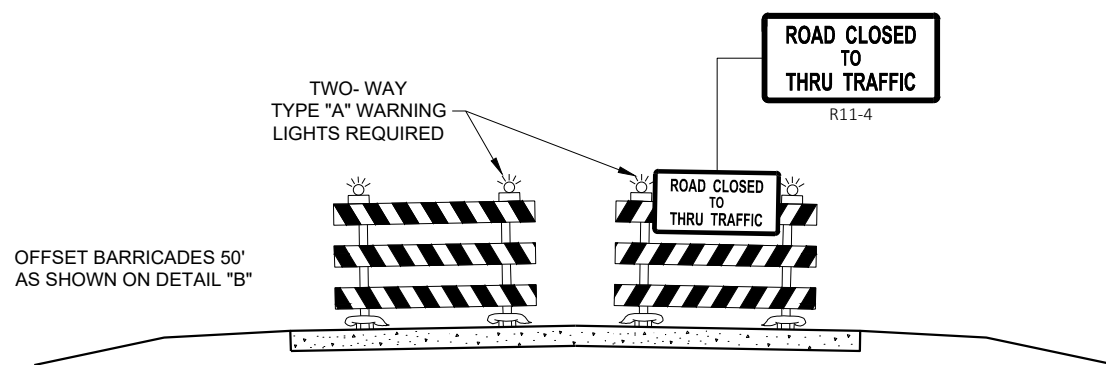
**BARRICADES AND SIGNS
FOR MAINLINE CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE DATE WORK ZONE ENGINEER
FHWA



**DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW**



**DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW**

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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.

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

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

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

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL "D" FOR FULL ROAD CLOSURES.

TYPE "A" LOW - INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE R11 - 2, R11 - 3, M4 - 9, R11 - 4, AND R10 - 61 SIGNS PLACED ON THE BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE RAIL OR BOTTOM RAILS.

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:

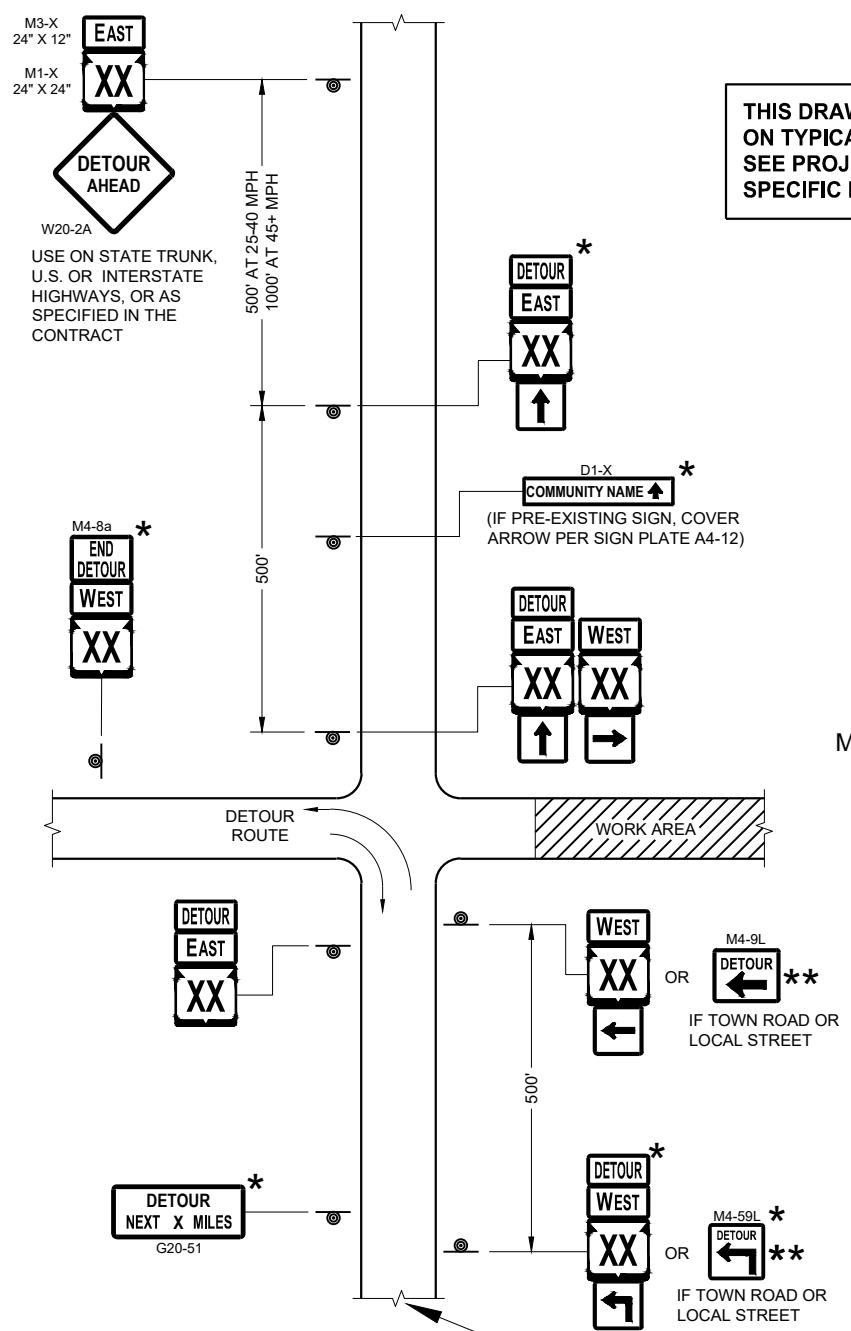
- R11 - 2 SHALL BE 48" X 30"
- R11 - 3 SHALL, R11 - 4 AND R10 - 61 SHALL BE 60" X 30"
- M4 - 9 SHALL BE 30" X 24"
- M3 - X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4 - 8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
- MO5 - 1 AND MO6 - 1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- D1 - X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1 - 1 SHALL BE 36" X 36"

- ① TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING).
- ② THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT AN INTERSECTION.
- ③ FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "D".
- ④ FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL "E".
- ⑤ FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11 - 2 AND R11 - 3 SIGNS.
- ⑥ INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.
- ⑦ "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

**BARRICADES AND SIGNS
FOR
VARIOUS CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER



THIS DRAWING PROVIDES GENERAL GUIDANCE ON TYPICAL DETOUR SIGN LAYOUT AND SPACING. SEE PROJECT DETOUR SIGNING SHEETS FOR SPECIFIC DETAILS FOR EACH PROJECT.

LEGEND

- SIGN ON PERMANENT SUPPORT
- WORK AREA
- M4 - 8
- M3 - X
- M1 - 4
- M1 - 6
- M1 - 5A
- M05 - 1
- M06 - 1
- M06 - 1

GENERAL NOTES

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

IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. MODIFY EXISTING SIGNS WHERE POSSIBLE.

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

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.

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

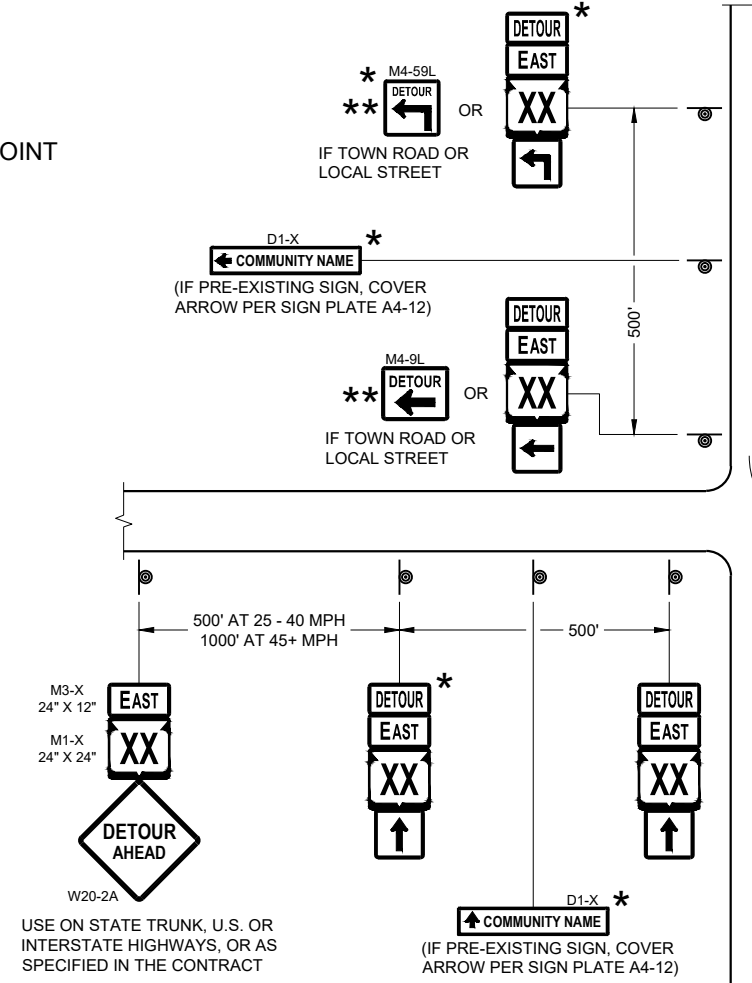
"MO" SIGNS ARE THE SAME AS "M" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

SIGN SIZES SHALL BE AS FOLLOWS:

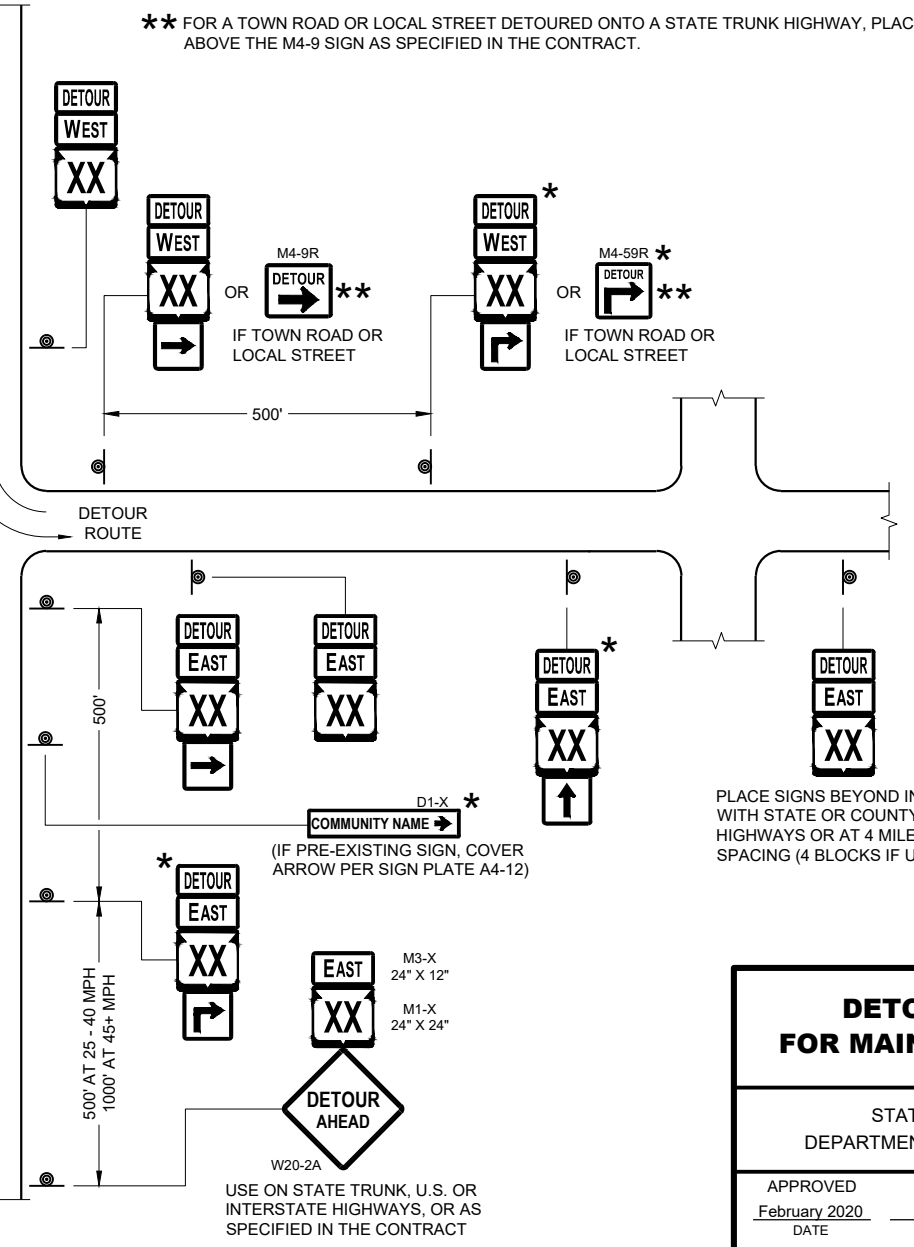
- M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1-4, M1-5A AND M1-6 SHALL BE 24" X 24" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M05-1 AND M06-1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-9 AND M4-59 SHALL BE 30" X 24"
- M4-8a SHALL BE 24" X 18"
- G20-51 SHALL BE 60" X 24"
- W20-2A SHALL BE 48" X 48"
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

- * OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.
- ** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.

MATCH POINT



**DETAIL F
DETOUR SIGNING**

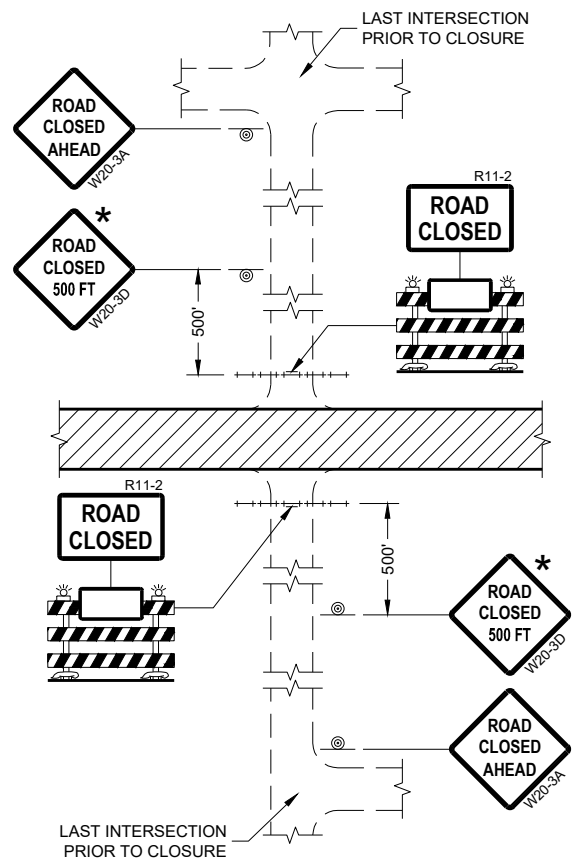


**DETOUR SIGNING
FOR MAINLINE CLOSURES**

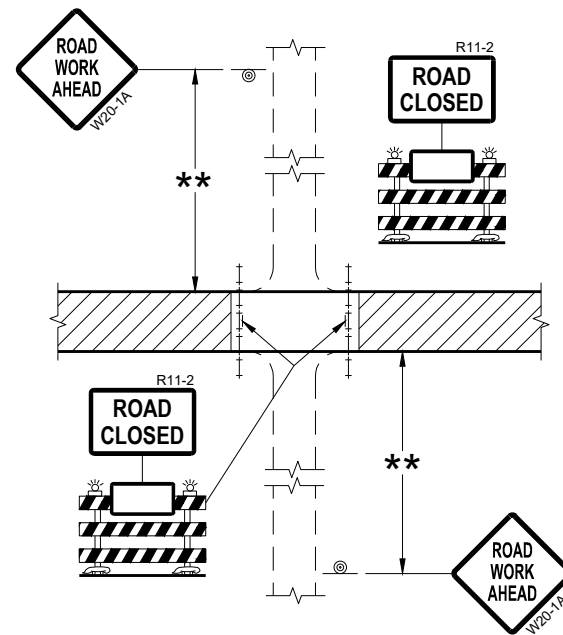
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

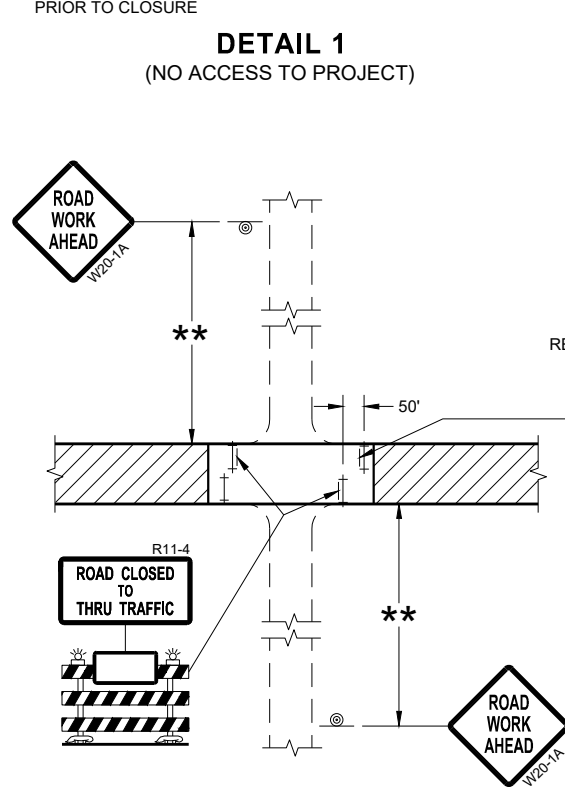
FHWA



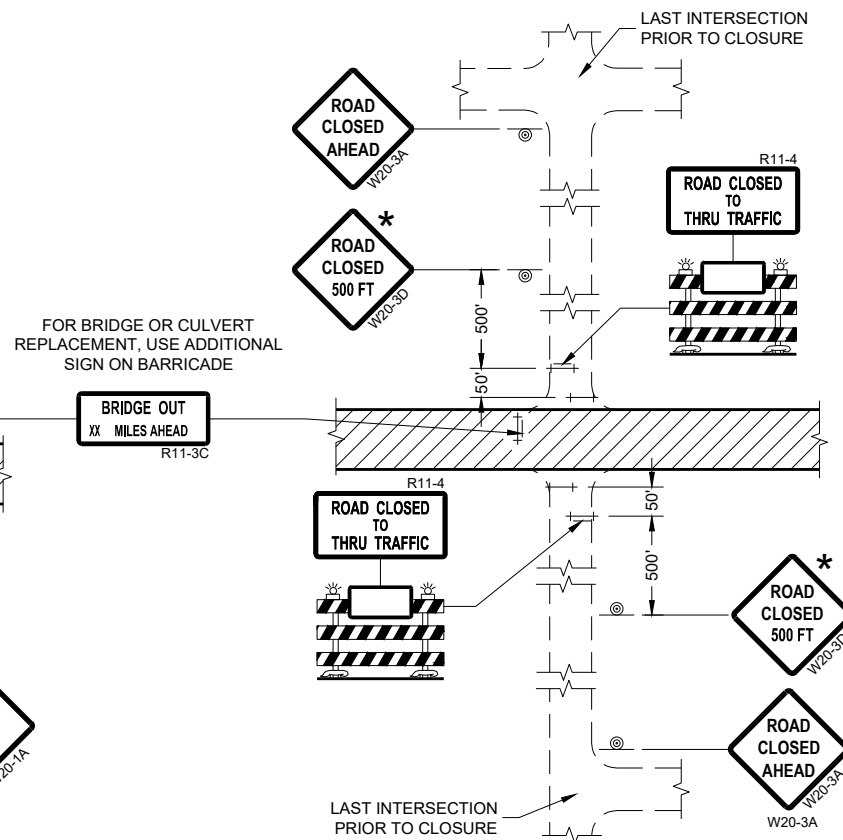
DETAIL 1
(NO ACCESS TO PROJECT)



DETAIL 2
(PUBLIC CROSS-TRAFFIC MAINTAINED.
NO ACCESS TO PROJECT)



DETAIL 3
(PUBLIC CROSS-TRAFFIC MAINTAINED.
CONTRACTOR, LOCAL BUSINESS AND
RESIDENT ACCESS TO PROJECT)



DETAIL 4
(CONTRACTOR, LOCAL BUSINESS AND
RESIDENT ACCESS TO PROJECT)

GENERAL NOTES

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

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.

THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE (500 FEET DESIRABLE) TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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 REESTABLISHED.

BARRICADES THAT MUST BE MOVED FOR A WORK OPERATION SHALL BE IMMEDIATELY REESTABLISHED UPON COMPLETION OF THE OPERATION OR FOR CONTINUING OPERATIONS, AT THE END OF EACH WORKING DAY.

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

ALL TYPE III BARRICADES SHALL HAVE RAILS REFLECTORIZED ON BOTH FACES. STRIPES SHALL BE PROPERLY SLOPED DOWN TOWARD THE TRAFFIC SIDE OR AS SHOWN IN THE ROAD CLOSURE BARRICADE DETAIL "D" FOR FULL ROAD CLOSURES.

TYPE "A" LOW-INTENSITY FLASHING WARNING LIGHTS SHALL BE VISIBLE ON BOTH SIDES OF THE BARRICADE.

THE R11-2, R11-3, AND R11-4 SIGNS PLACED ON BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE OR BOTTOM RAILS.

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
R11-2 SHALL BE 48" X 30".
R11-4 AND R11-3 SHALL BE 60" X 30".

- * OMIT THE "ROAD CLOSED 500 FT." SIGN IF THE LAST INTERSECTION IS 500 FEET OR LESS FROM THE WORK ZONE.
- ** 500' MAX. OR AT LAST INTERSECTION, WHICHEVER IS CLOSEST.

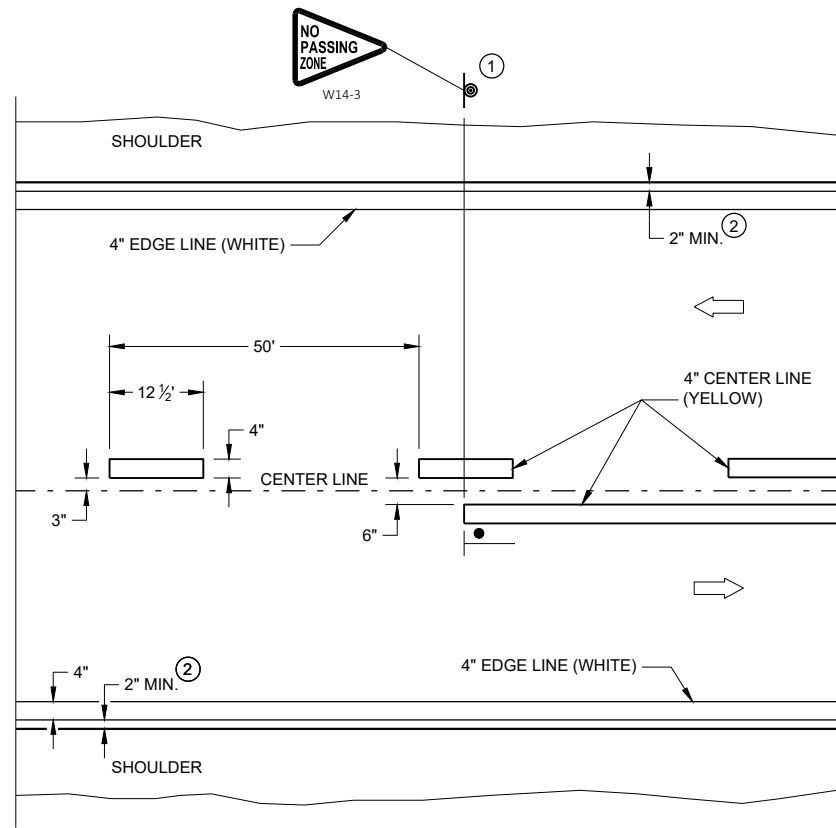
LEGEND

- ⊙ SIGN ON PERMANENT SUPPORT
- ⊥ TYPE III BARRICADE
- ⊥ TYPE III BARRICADE WITH ATTACHED SIGN
- ⚡ TYPE "A" WARNING LIGHT (FLASHING)
- ▨ WORK AREA

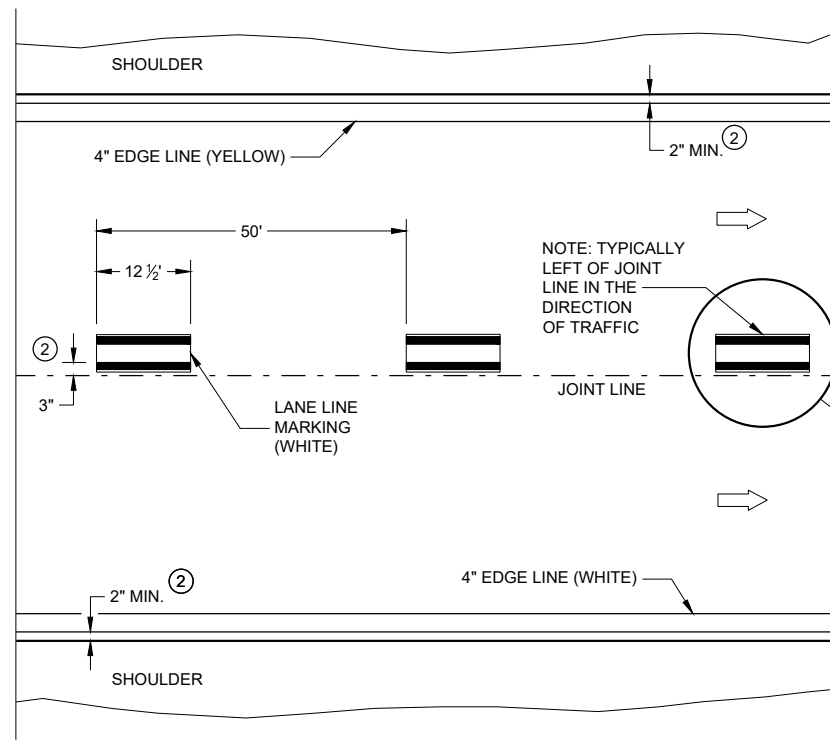
**BARRICADES AND SIGNS
FOR
SIDEROAD CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

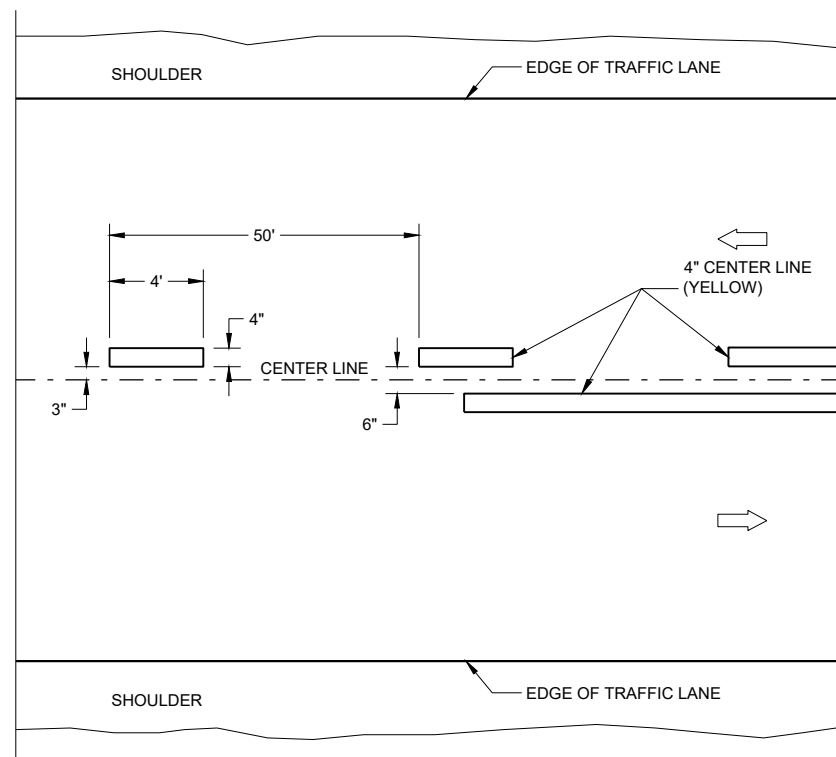


TWO WAY TRAFFIC

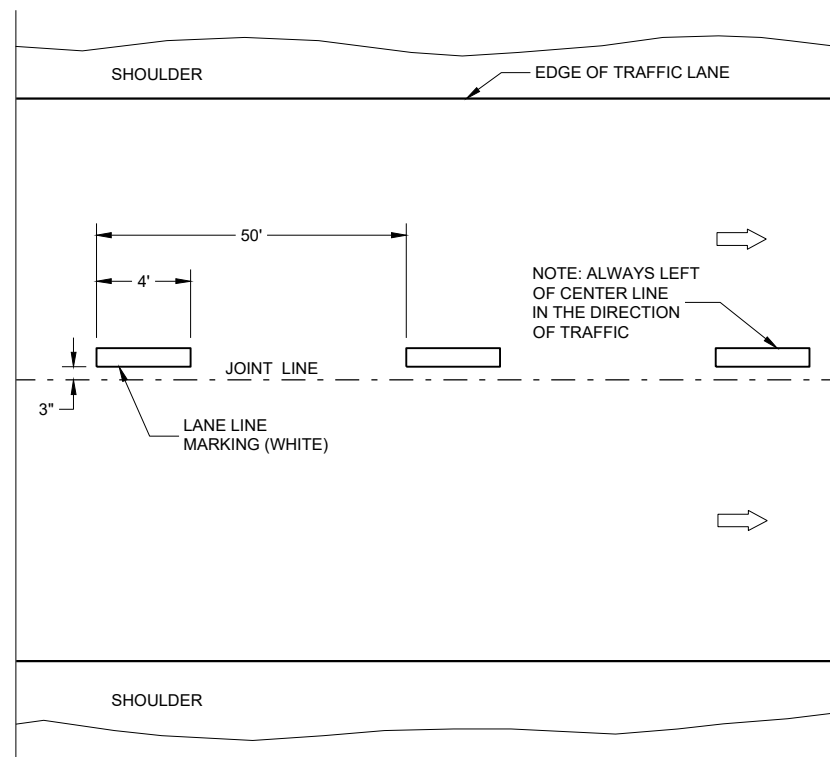


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

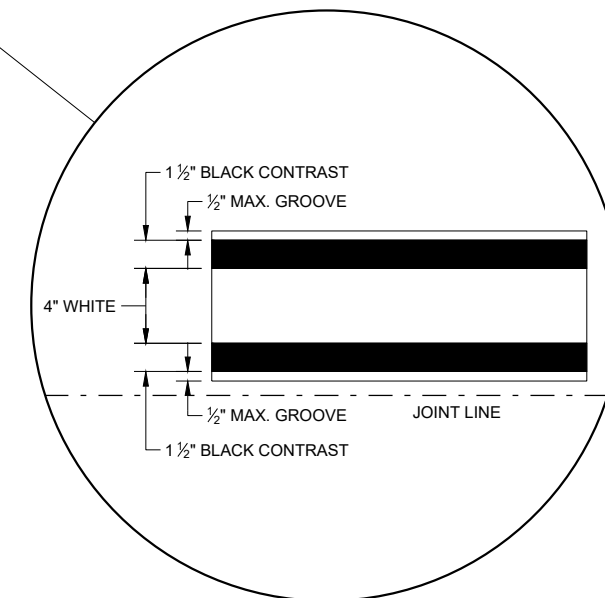
GENERAL NOTES

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

- ① LOCATE THE NO PASSING ZONE W14-3 SIGN WITH 50 FEET OF THE "T" MARKING
- ② MEASURE FROM EDGE OF MARKING TO JOINT LINE. THIS DOES NOT INCLUDE SPACE NEEDED FOR GROOVING OPERATIONS.

LEGEND

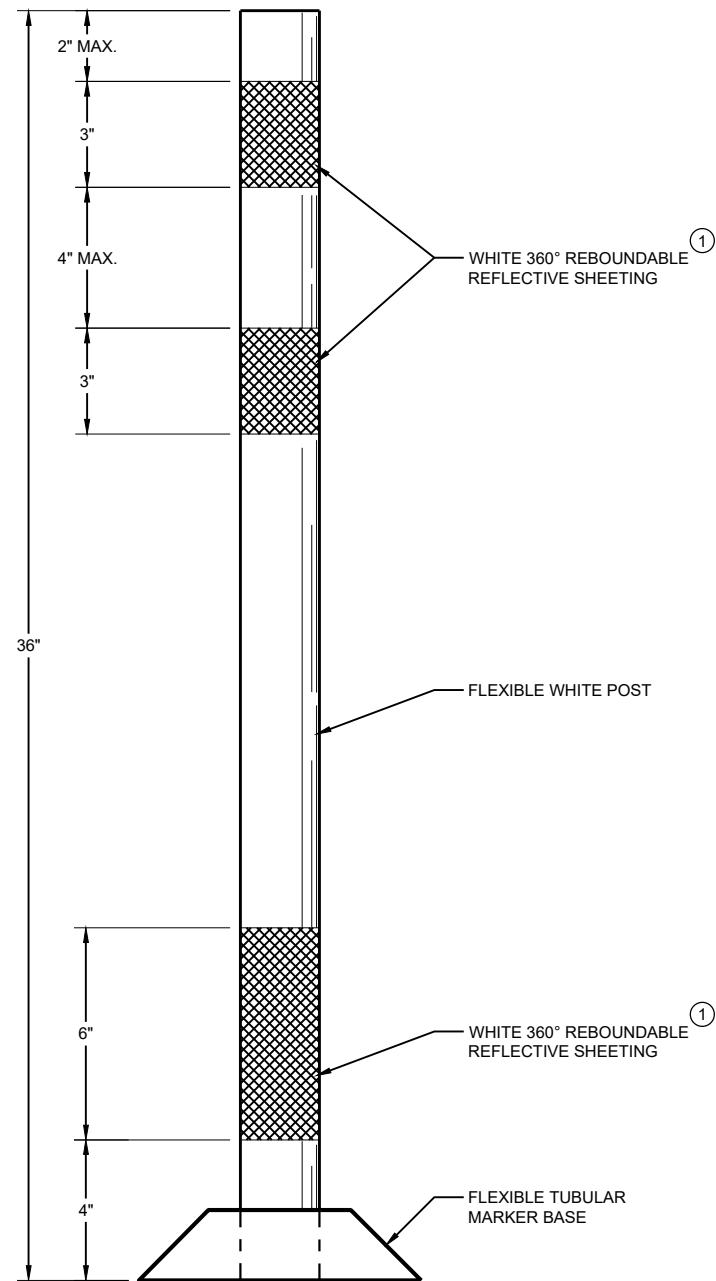
- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC



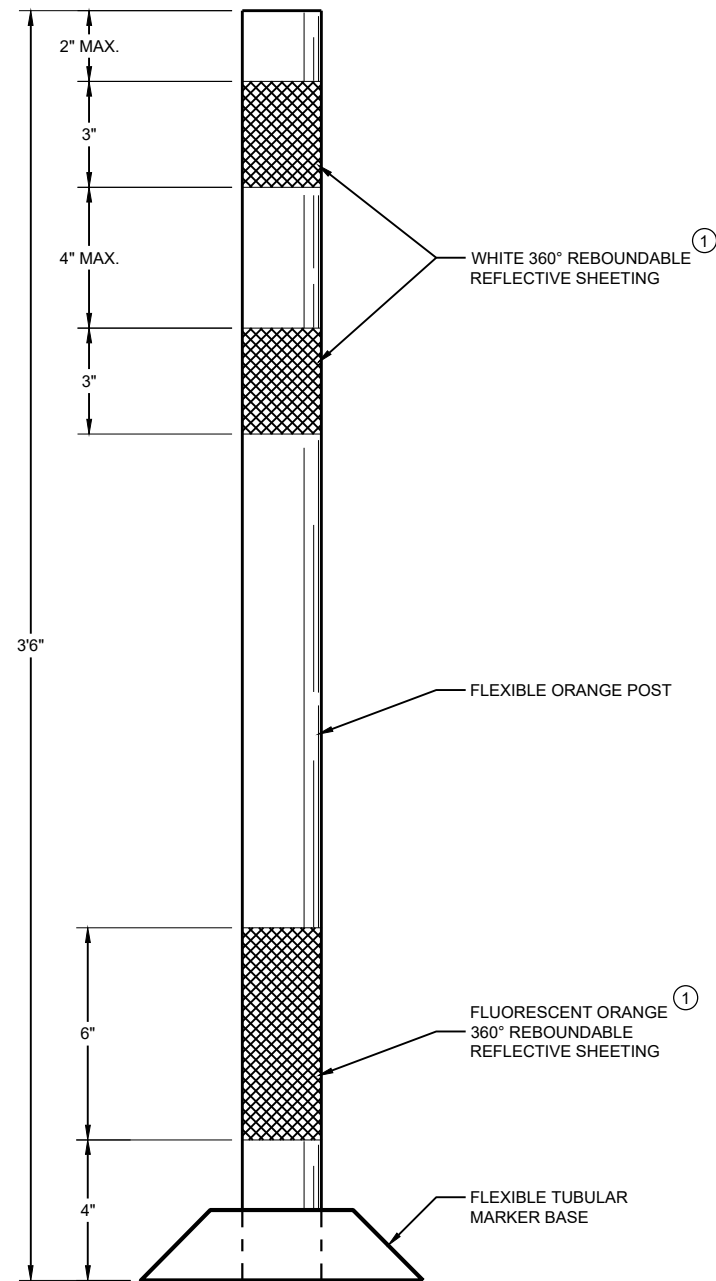
**LONGITUDINAL MARKING
(MAINLINE)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Matthew Rauch
DATE STATEWIDE SIGNING AND MARKING
ENGINEER



**FLEXIBLE TUBULAR
MARKER POST
PERMANENT CROSSOVER**



**FLEXIBLE TUBULAR
MARKER POST
WORK ZONE**

GENERAL NOTES

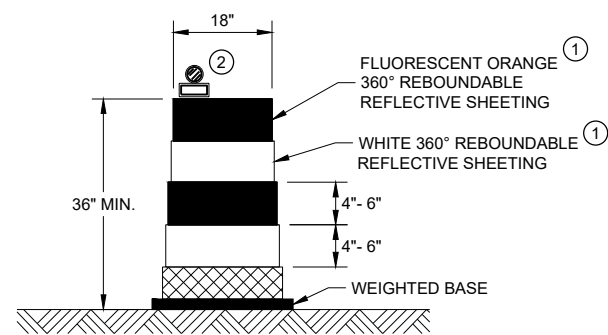
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

SURFACE MOUNTED BASES SHALL BE FURNISHED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS TO BE COMPATIBLE WITH FLEXIBLE TUBULAR MARKER POSTS TO A SIZE AND SHAPE THAT WILL PROVIDE A STABLE POST FOUNDATION WHEN SECURED TO THE PAVEMENT.

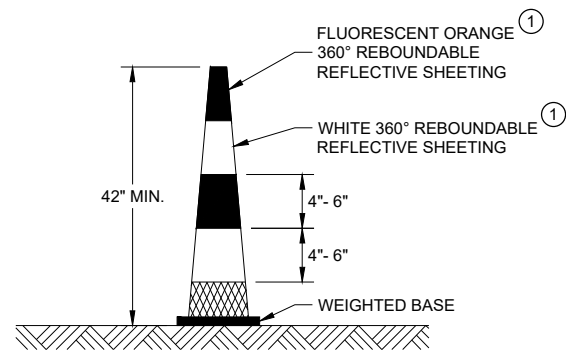
THE ASPHALTIC ADHESIVE OR BUTYL PAD FURNISHED SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, UNLESS DIRECTED BY THE ENGINEER TO USE BOLTS.

① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.

CHANNELIZING DEVICES FLEXIBLE TUBULAR MARKER POST	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
<small>FHWA</small>	

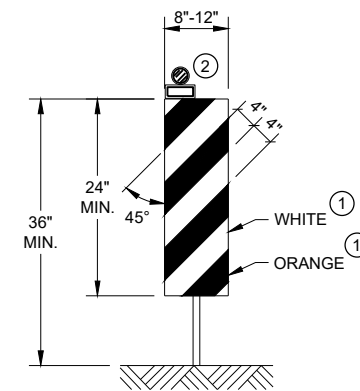


DRUM



42" CONE

DO NOT USE IN TAPERS
 1/2 SPACING OF DRUMS

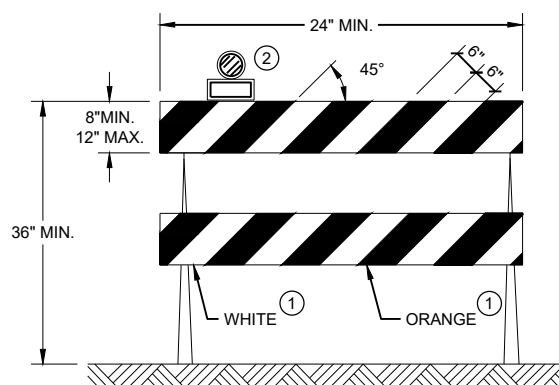


VERTICAL PANEL

THE STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.

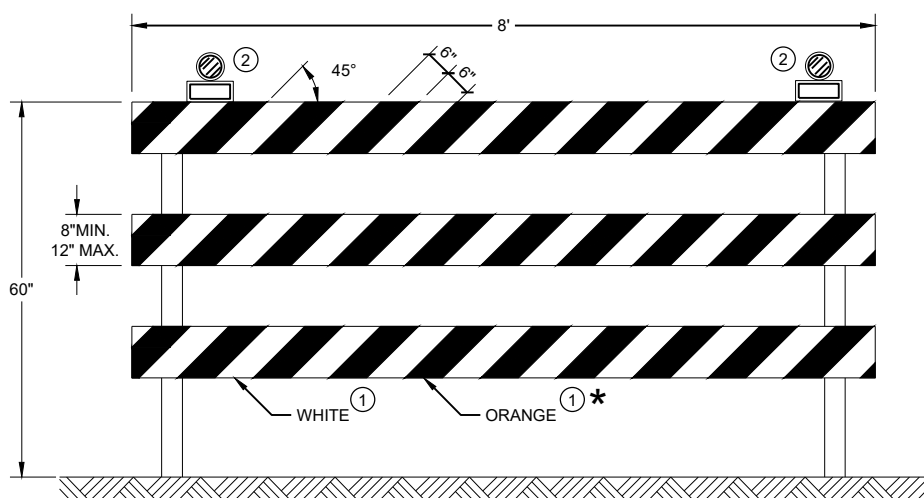
GENERAL NOTES

- ① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.
- ② LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.



TYPE II BARRICADE

FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES MAY BE USED. ALL STRIPES SHALL SLOPE DOWNWARD TO THE TRAFFIC SIDE FOR CHANNELIZATION.








TYPE III BARRICADE

IF SIGN MOUNTED, DO NOT COVER MORE THAN 50% OF THE TOP TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
<small>FHWA</small>	

LEGEND

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

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.

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

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

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS, DEVICES, AND 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.

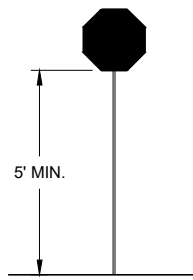
WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

FLAGGING

- 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 PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.
- ① FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' 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.
- WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

TEMPORARY PORTABLE RUMBLE STRIPS

- UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.
- ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FOR THE APPROVED PRODUCTS LIST.
- INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.
- PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.
- DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.



STOP/SLOW PADDLE ON SUPPORT STAFF

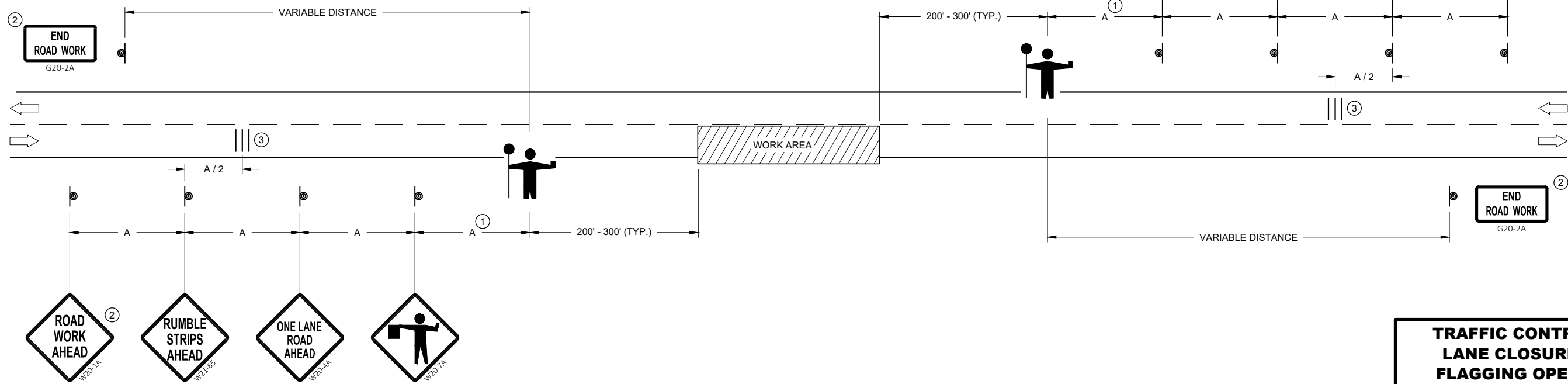
SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

SPEED LIMIT	SPACING "A"
25-30 MPH	200'
35-40 MPH	350'
45-55 MPH	500'



W03-4

USE OF W03-4 SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING "A".



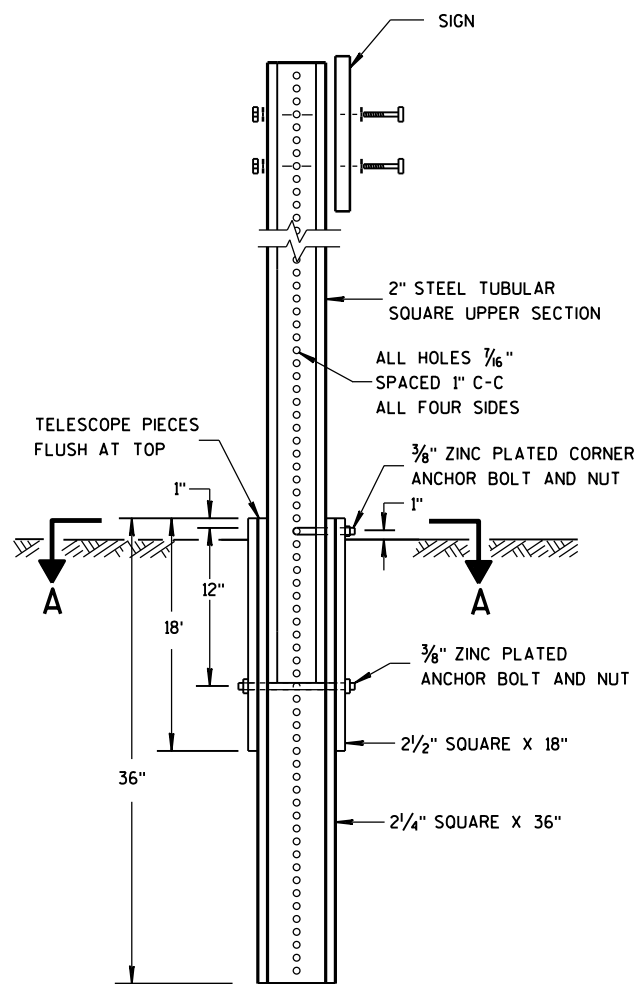
TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE May 2019 /S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA



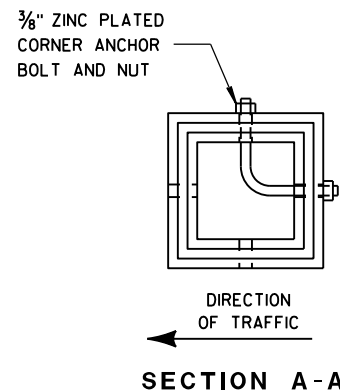
DETAIL OF TUBULAR STEEL SIGN POST

TUBULAR STEEL POSTS

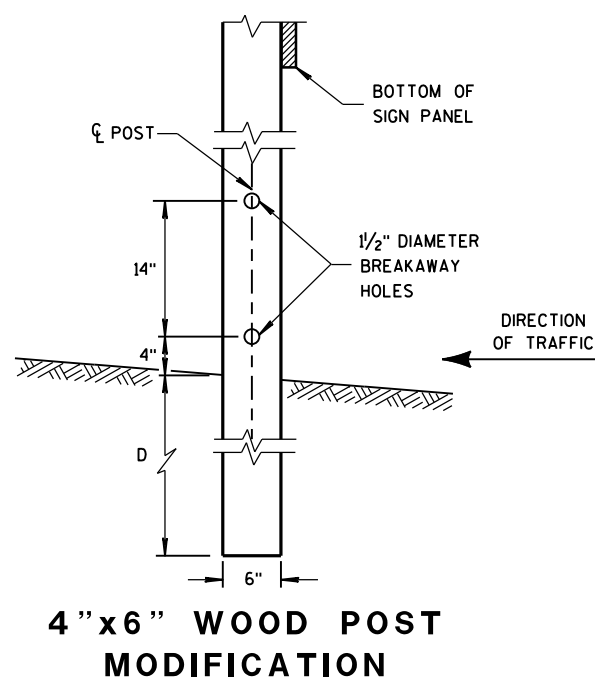
AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).

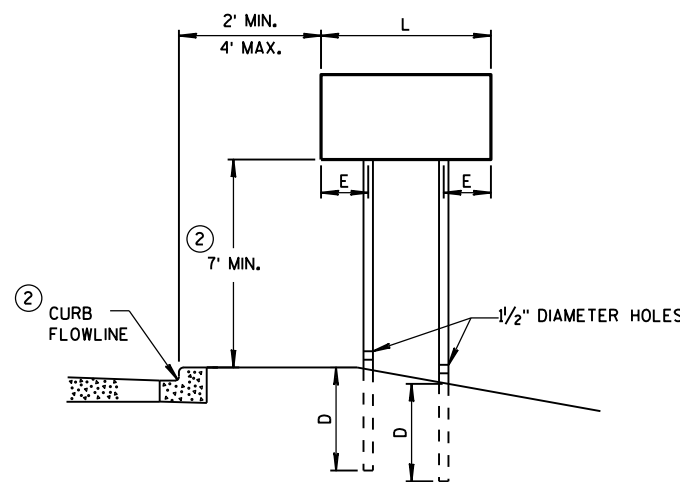
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED ON TUBULAR STEEL POSTS.



SECTION A-A



4" X 6" WOOD POST MODIFICATION

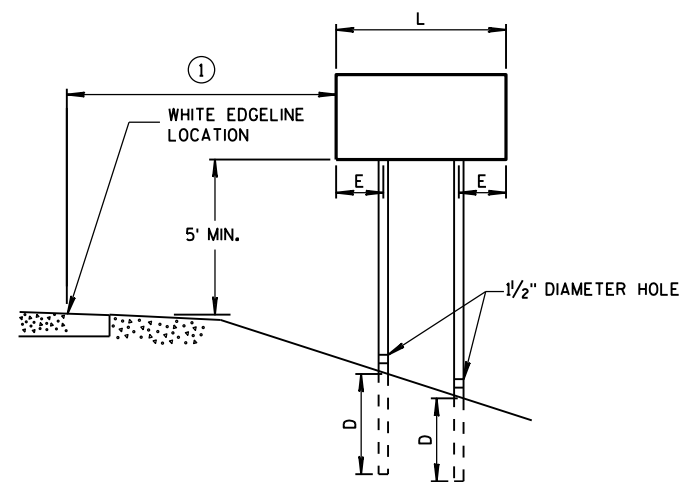


URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST EMBEDMENT DEPTH

AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'



RURAL AREA

4" X 6" WOOD POST

POST SPACING REQUIREMENTS		NUMBER OF WOOD POSTS REQUIRED
L	E	
48" OR LESS AND LESS THAN 20 SQ. FT.	-	1
LESS THAN 60"	12"	2
60" TO 120"	L/5	2
GREATER THAN 120" LESS THAN 168"	12"	3
168" AND GREATER	12"	4

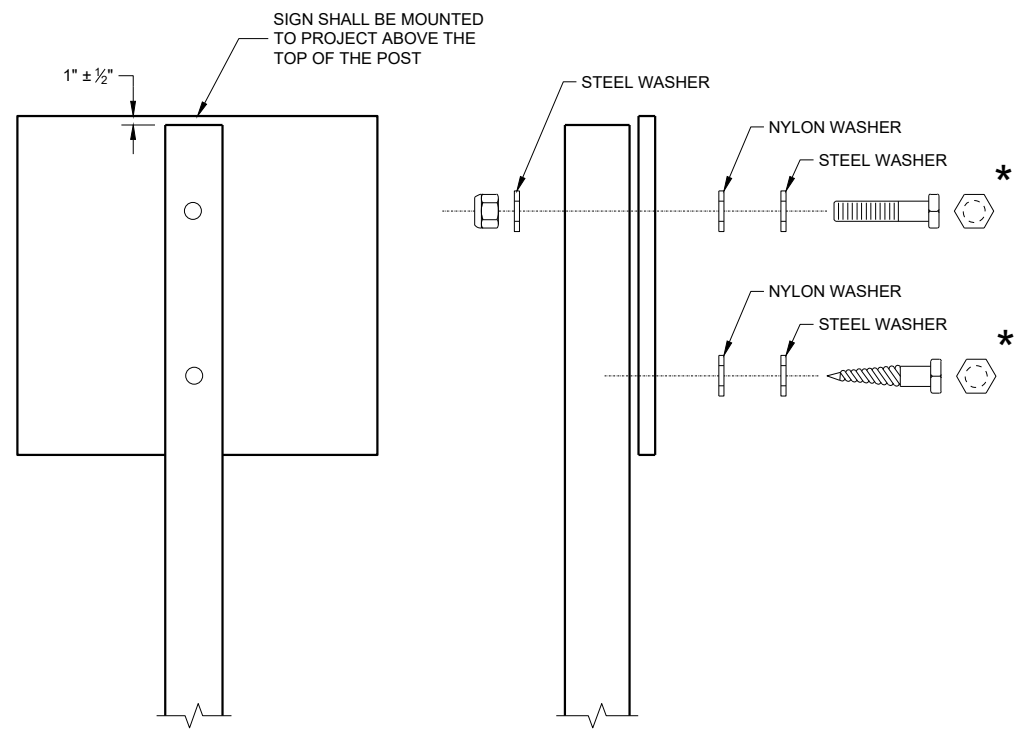
SEE NOTE ③

GENERAL NOTES

- ① 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.
- ② 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. IF NO SIDEWALK AND NO PARKING, VERTICAL CLEARANCE MAY BE REDUCED TO 5 FOOT MINIMUM. OFFSET OF SIGNS IS MEASURED FROM THE CURB FLOWLINE.
- ③ FOR SIGNS REQUIRING 4 POSTS, SPACE INTERMEDIATE POSTS EVENLY.

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



NUTS, BOLTS AND LAGS USED FOR MOUNTING SIGNS SHALL HAVE HEXAGONAL HEADS AND SHALL BE EITHER:

- A. HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: A 153, CLASS D, OR SC 3
- B. ELECTRO-GALVANIZED IN ACCORDANCE WITH ASTM DESIGNATION: B 633, TYPE III, SC 3

THREADS ON BOLTS AND NUTS SHALL BE MANUFACTURED WITH SUFFICIENT ALLOWANCE FOR THE CADMIUM PLATE OR GALVANIZED COATING TO PERMIT THE NUTS TO RUN FREELY ON THE BOLTS.

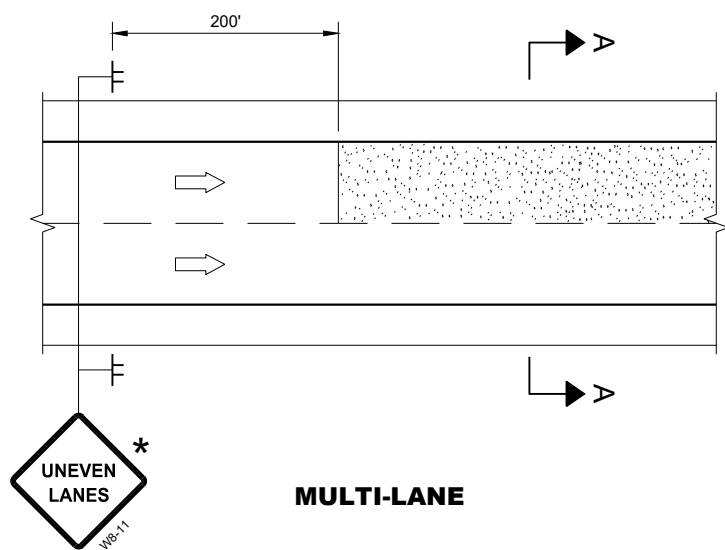
WOOD POST (4" x 6")
 LAG SCREWS - 3/8" x 3"
 MACHINE BOLTS - 5/16" x 6 1/2" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")
 MACHINE BOLTS - 3/8" x 3 1/4" LENGTH W/NUTS
 RIVETS - 3/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM
 BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH,
 GRIP RANGE 0.042 - 0.375 INCH

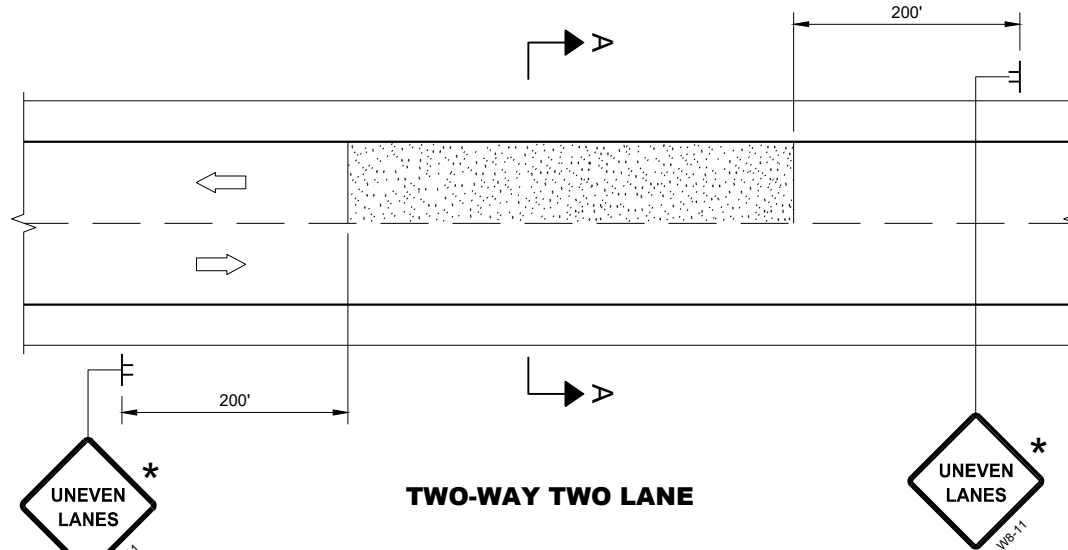
WASHERS (ALL POSTS) -
 1 1/4" O.D. x 3/8" I.D. x 1/16" STEEL
 1 1/4" O.D. x 3/8" I.D. x 0.080 NYLON

* 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. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

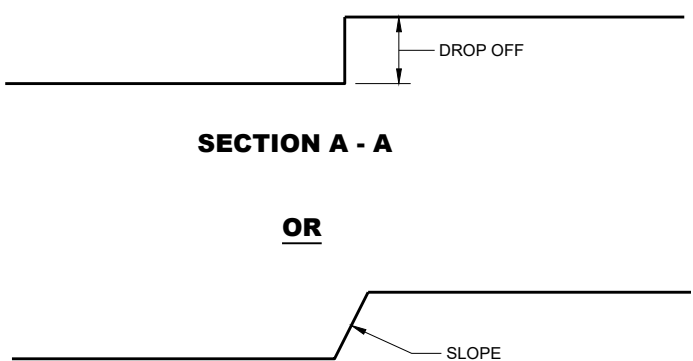
ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
<small>FHWA</small>	



MULTI-LANE



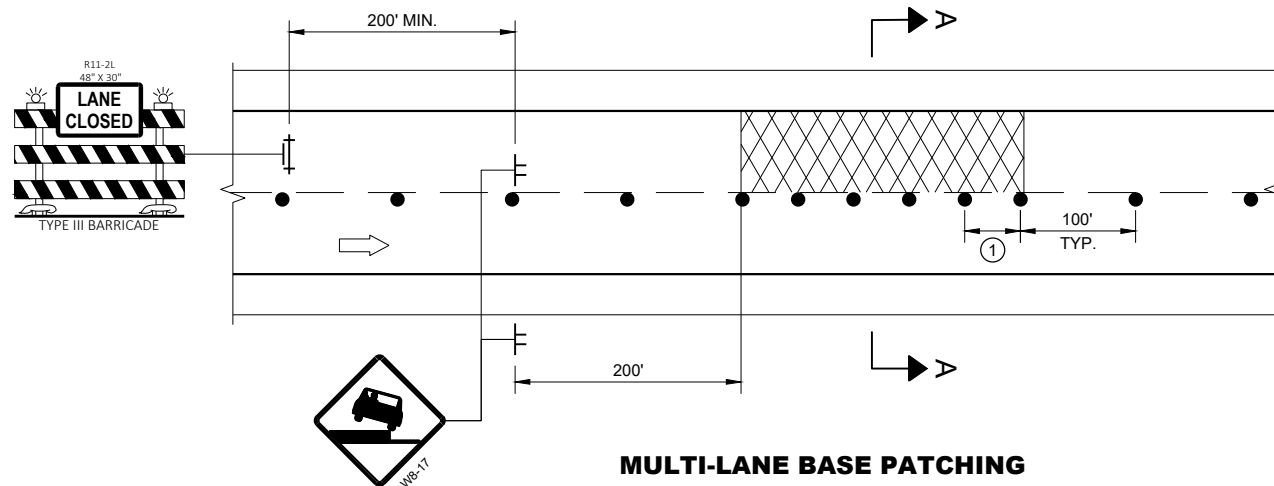
TWO-WAY TWO LANE



SECTION A - A

OR

SECTION A - A



MULTI-LANE BASE PATCHING

ADJACENT LANE DROP-OFFS

GENERAL NOTES

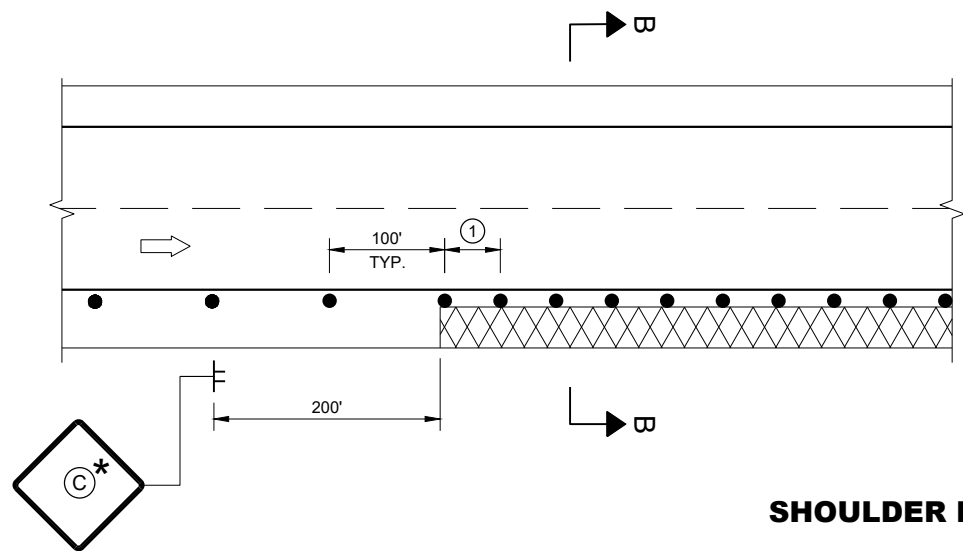
- FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.
- "WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.
- WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.
- * IF THE DROP-OFF IS CONTINUOUS ALONG THE PROJECT, PLACE ADDITIONAL SIGNS EVERY 1 MILE AND AFTER EVERY ENTRANCE RAMP.
- ① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

LEGEND

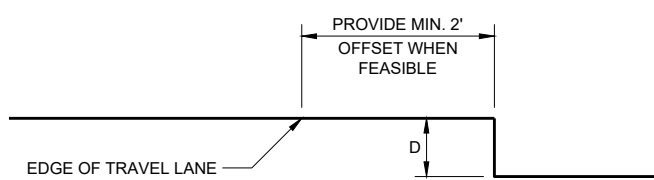
- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- WORK AREA WITH DROP-OFF
- MILLED SURFACE

6

6



SHOULDER DROP-OFFS



SECTION B - B

D	SIGN (C)
< 2" WITH A SLOPE STEEPER THAN 3:1	LOW SHOULDER WO8-9
2" < 6" WITH A SLOPE STEEPER THAN 3:1	SHOULDER DROP-OFF W8-9A PROVIDE A 3:1 OR FLATTER SLOPE OF MATERIAL ADJACENT TO THE PAVEMENT

SDD 15D39 - 02

SDD 15D39 - 02

**TRAFFIC CONTROL,
DROP-OFF SIGNING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Andrew Heidtke
DATE DATE WORK ZONE ENGINEER

FHWA

GENERAL NOTES

DRAWING NOT TO SCALE. ALL SIGNS AND POSTS ON THIS SHEET SHALL BE PAID FOR WITH 'TRAFFIC CONTROL SIGNS' BID ITEM. ALL SIDE ROADS WHICH ARE UNDER CONSTRUCTION OF CURB AND GUTTER AND/OR GRADING SHALL BE ADEQUATELY SIGNED.

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD). SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE WISDOT STANDARD SIGN PLATES.

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

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



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

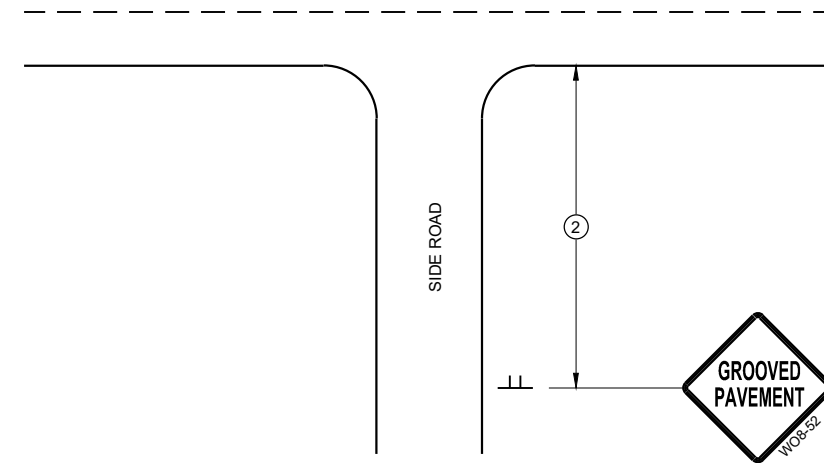
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

SEE 15C34 FOR ADDITIONAL TRAFFIC CONTROL SIGNING WHEN CENTERLINE PAVEMENT MAKINGS ARE MISSING. 'DO NOT PASS' SIGNS MUST BE INSTALLED ON THE SAME DAY AS MILLING OPERATIONS.

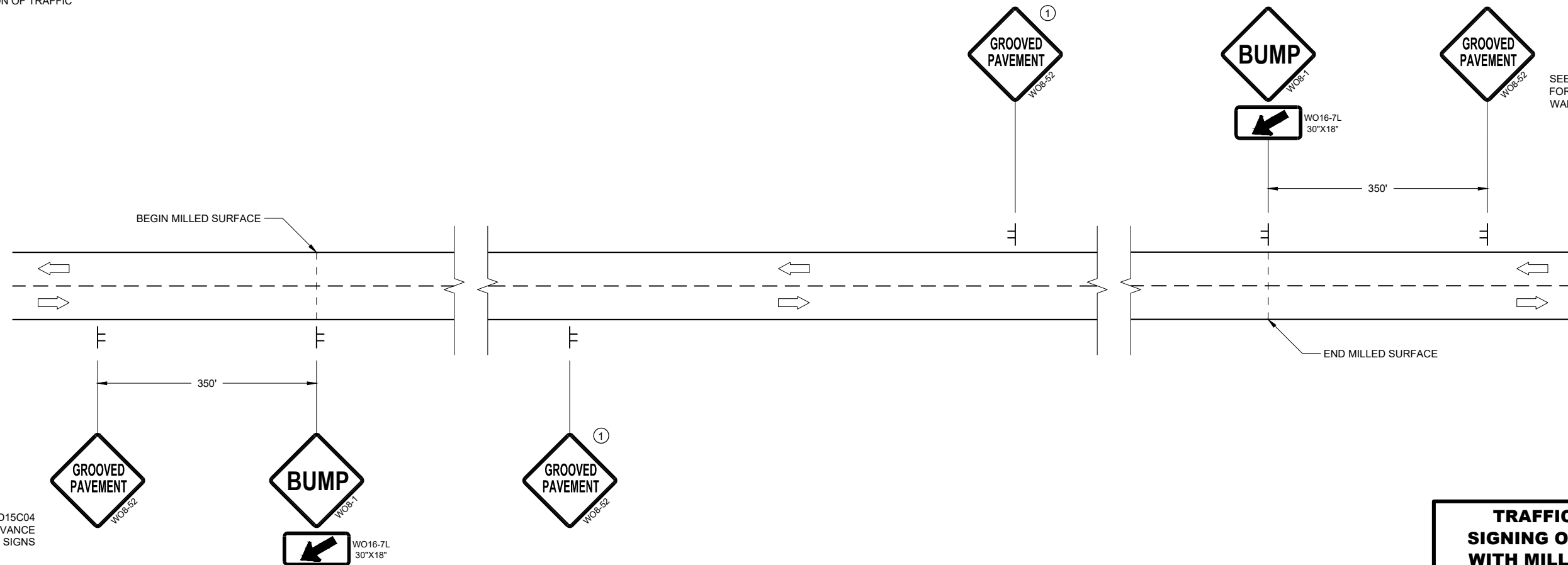
- ① PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH SIGN DETAIL



SEE SDD15C04 FOR ADVANCE WARNING SIGNS

SEE SDD15C04 FOR ADVANCE WARNING SIGNS

DETAIL FOR SIGNING ON MILLED SURFACES

TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

GENERAL NOTES

DRAWING NOT TO SCALE. ALL SIGNS AND POSTS ON THIS SHEET SHALL BE PAID FOR WITH 'TRAFFIC CONTROL SIGNS' BID ITEM. ALL SIDE ROADS WHICH ARE UNDER CONSTRUCTION OF CURB AND GUTTER AND/OR GRADING SHALL BE ADEQUATELY SIGNED.

ALL SIGNS AND DEVICES SHALL BE IN CONFORMANCE WITH THE WISCONSIN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (WMUTCD). SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE WISDOT STANDARD SIGN PLATES.

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

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

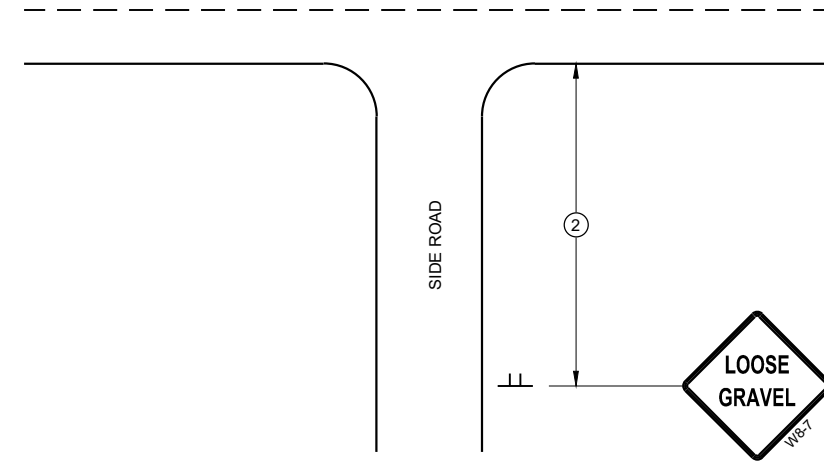
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

SEE 15C34 FOR ADDITIONAL TRAFFIC CONTROL SIGNING WHEN CENTERLINE PAVEMENT MAKINGS ARE MISSING. 'DO NOT PASS' SIGNS MUST BE INSTALLED ON THE SAME DAY AS MILLING OPERATIONS.

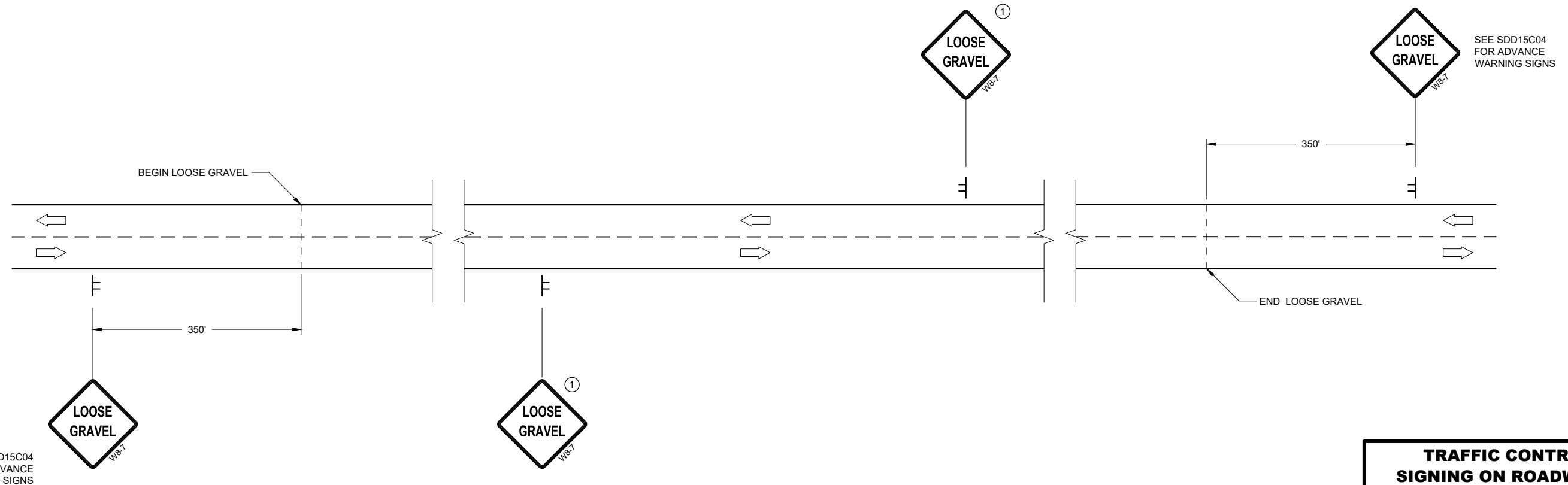
- ① PLACE SIGNS 350' IN ADVANCE OF CHIP SEALED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

LEGEND

- ⊥ SIGN ON TEMPORARY SUPPORT
- ➡ DIRECTION OF TRAFFIC

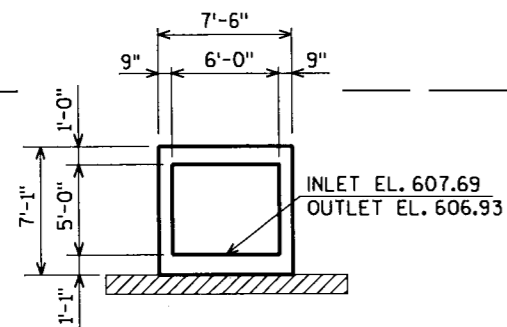
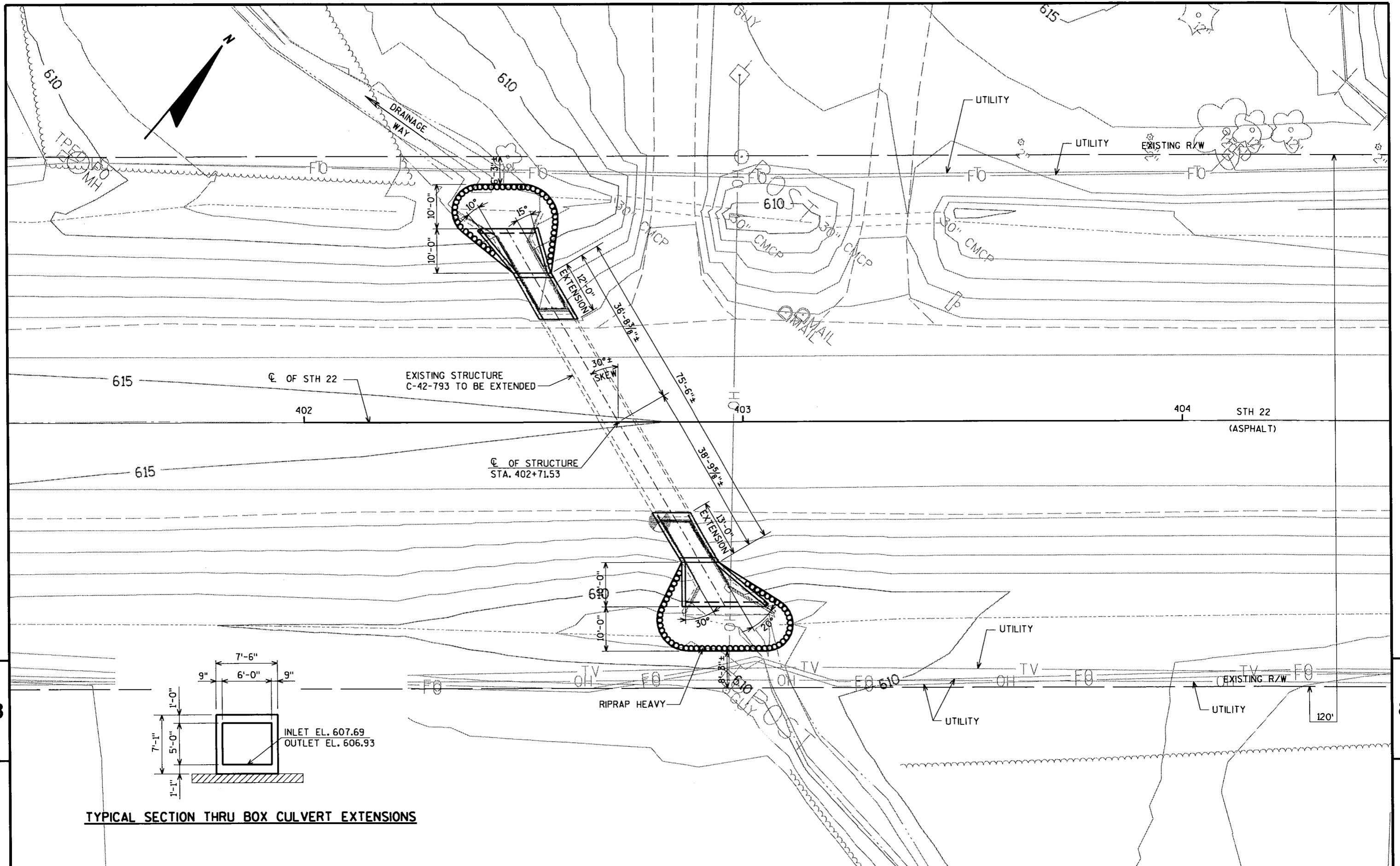


TYPICAL SIDE ROAD APPROACH SIGN DETAIL



DETAIL FOR SIGNING ON CHIP SEALED SURFACES

TRAFFIC CONTROL SIGNING ON ROADWAYS WITH LOOSE GRAVEL	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED February 2020 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	



TYPICAL SECTION THRU BOX CULVERT EXTENSIONS

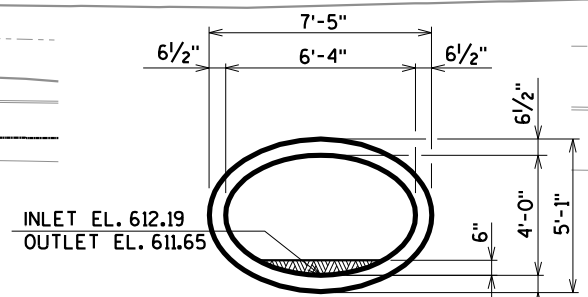
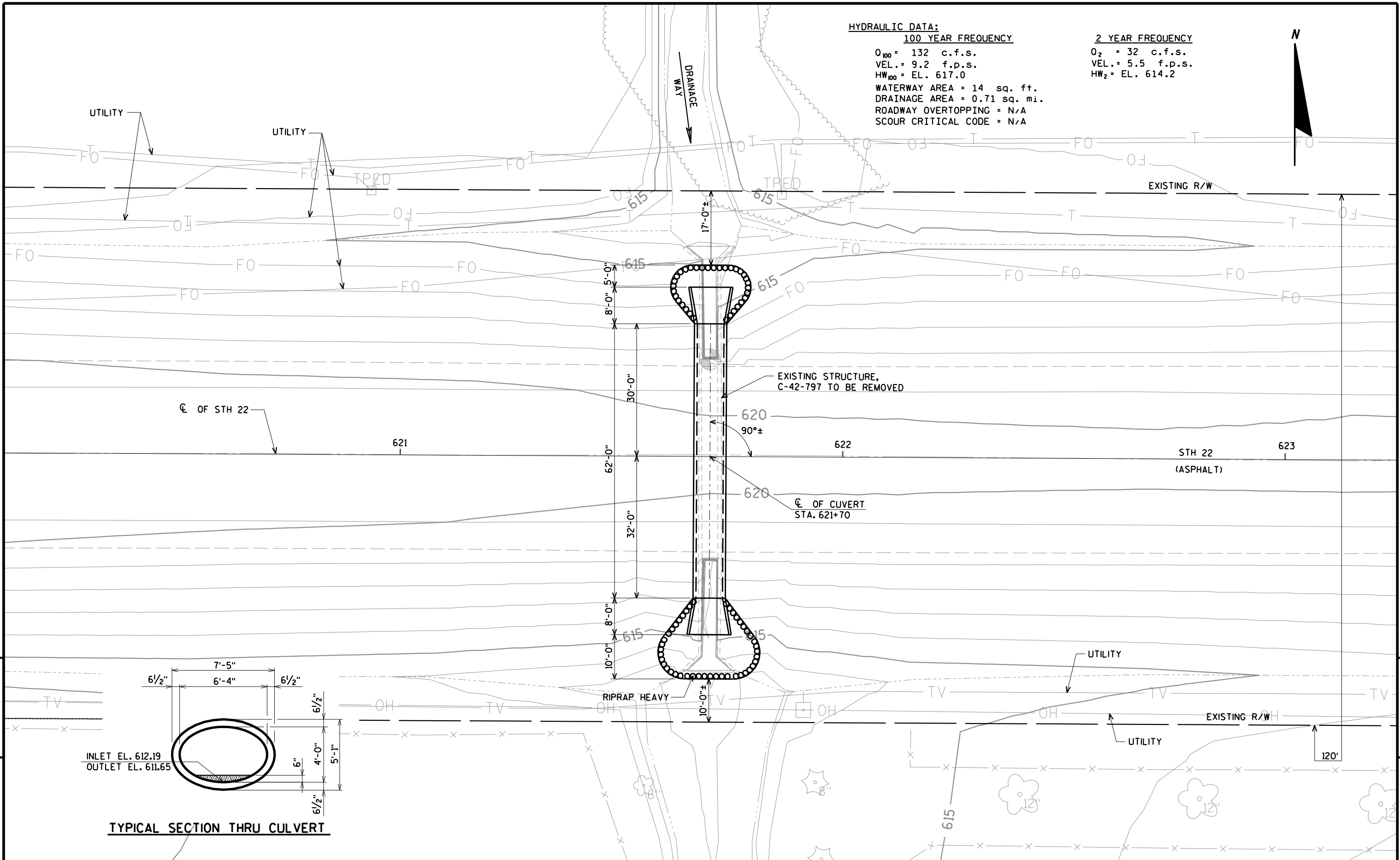
HYDRAULIC DATA:

100 YEAR FREQUENCY

Q_{100} = 132 c.f.s.
VEL. = 9.2 f.p.s.
 HW_{100} = EL. 617.0
WATERWAY AREA = 14 sq. ft.
DRAINAGE AREA = 0.71 sq. mi.
ROADWAY OVERTOPPING = N/A
SCOUR CRITICAL CODE = N/A

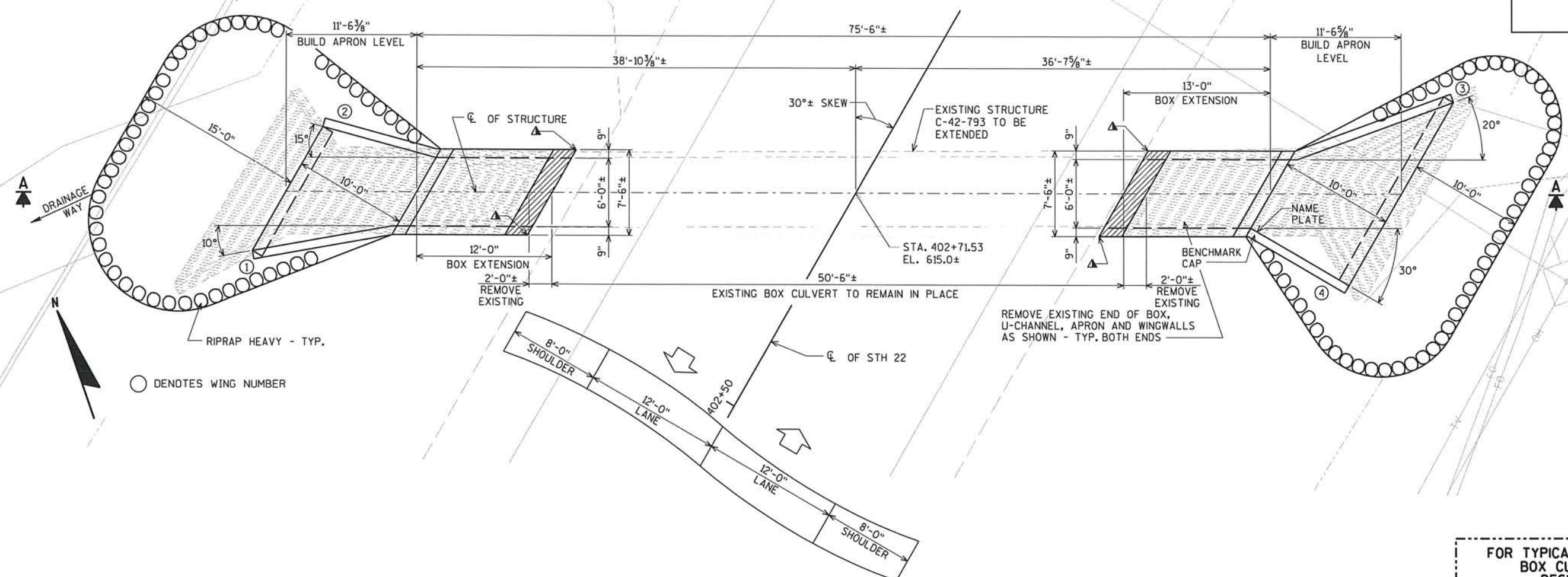
2 YEAR FREQUENCY

Q_2 = 32 c.f.s.
VEL. = 5.5 f.p.s.
 HW_2 = EL. 614.2



TYPICAL SECTION THRU CULVERT

\$PRJNAME\$ U:\42-1078.00 - Oconto Co. STH 22 Culverts\Structures\421078 C-42-793 gp.dgn

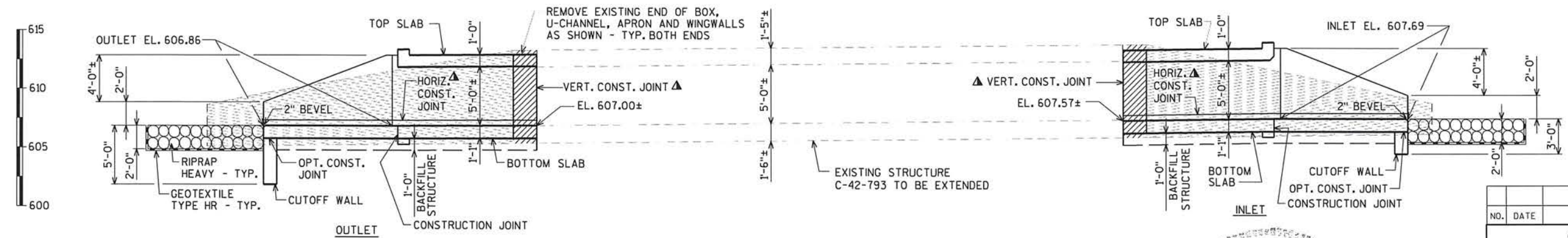


PLAN

SINGLE-CELL CONCRETE BOX CULVERT EXTENSION

FOR TYPICAL SECTION THRU BOX CULVERT AND DESIGN DATA SEE SHEET 2

DATE: DATE: DATE:
CHECKED BY: BACK CHECKED BY: CORRECTED BY:



SECTION A

▲ 18" RUBBERIZED MEMBRANE WATERPROOFING UP WALLS & ACROSS TOP SLAB AT VERTICAL CONSTRUCTION JOINTS AND ALONG HORIZONTAL CONSTRUCTION JOINTS

LIST OF DRAWINGS

1. GENERAL PLAN
2. DESIGN DATA, QUANTITIES AND NOTES
3. APRON PLAN
4. WINGS 1 & 2 DETAILS
5. WINGS 3 & 4 DETAILS
6. BOX DETAILS
7. SLAB STEEL LAYOUTS
8. WALL STEEL LAYOUTS
9. BILL OF BARS AND DETAILS



BRIDGE OFFICE CONTACT:
WILLIAM DREHER
(608)-266-8489

CONSULTANT CONTACT:
CHRIS MCMAHON
(715)-834-3161

NO.	DATE	REVISION	BY
ORIGINAL PLANS PREPARED BY AYRES ASSOCIATES 3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED <i>William C. Dreher</i> SDR CHIEF STRUCTURES DESIGN ENGINEER		08/07/19 DATE	
STRUCTURE C-42-793			
STH 22 OVER DRAINAGE WAY			
COUNTY	OCONTO	TOWN/CITY/VILLAGE	OCONTO
DESIGN SPEC. REHABILITATION N/A			
DESIGNED BY	JLB	DESIGN CK'D.	JWZ
DRAWN BY		JLB/CLS	PLANS CK'D.
GENERAL PLAN		SHEET 1 OF 9	

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.
 BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS SHOWN OR NOTED OTHERWISE.
 THE FIRST DIGIT OF A THREE DIGIT BAR NO. AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR NO. SIGNIFIES THE BAR SIZE. JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF A.A.S.H.T.O. DESIGNATION M 153, TYPE I, II OR III OR A.A.S.H.T.O. DESIGNATION M 213.
 THE ALTERNATE CUTOFF WALL MAY BE USED IN LIEU OF THE CAST-IN-PLACE CONCRETE CUTOFF WALLS. PAYMENT SHALL BE BASED ON THE CONCRETE CUTOFF WALLS.
 THE CONCRETE IN THE CUTOFF WALL MAY BE PLACED UNDERWATER IF THE EXCAVATION CANNOT BE DEWATERED.
 THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES CULVERTS C-42-793" SHALL BE THE EXISTING GROUNDLINE.
 THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE B" REQUIRED ON THE BOX CULVERT SIDES AND BEHIND APRON WINGS FOR 3 FEET. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.
 THE EXISTING STRUCTURE C-42-793, IS A SINGLE-CELL 6'-0" x 5'-0" CONCRETE BOX CULVERT WITH A BARREL LENGTH OF 54'-6"±.
 REMOVING OLD STRUCTURE STATION 402+71.53, INCLUDES REMOVING PORTIONS OF THE EXISTING ENDS OF THE EXISTING BARREL ALONG WITH THE U-CHANNEL, OUTLET AND INLET WINGS AND APRONS.
 DIMENSIONS SHOWN ARE BASED ON FIELD MEASUREMENTS. THE CONTRACTOR SHALL ADJUST THE DIMENSIONS OF THE BOX CELL OPENINGS TO MATCH THE EXISTING CULVERT.
 ALL CONCRETE REMOVAL SHALL BE DEFINED BY A 1" DEEP SAW CUT UNLESS SHOWN OR NOTED OTHERWISE.
 FILLET THE FORMS WITH 3/4 INCH TRIANGULAR MOLDING CHAMFER STRIPS AT ALL EXPOSED, SHARP CORNERS AND AT THE EDGES OF THE CONCRETE, UNLESS SPECIFIED OTHERWISE.
 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 THE ORIGINAL CONSTRUCTION YEAR (1960).
 UTILIZE EXISTING BAR STEEL REINFORCEMENT WHERE SHOWN AND EXTEND 24 BAR DIAMETERS INTO NEW WORK, UNLESS SPECIFIED OTHERWISE.

TOTAL ESTIMATED QUANTITIES

ITEM NUMBER	BID ITEMS	AMOUNT
203.0500.S	REMOVING OLD STRUCTURE OVER WATERWAY STATION 402+71	1 LS
206.2000	EXCAVATION FOR STRUCTURES CULVERTS C-42-793	1 LS
210.2500	BACKFILL STRUCTURE TYPE B	400 TONS
502.4205	ADHESIVE ANCHORS NO.5 BAR	52 EACH
504.0100	CONCRETE MASONRY CULVERTS	40 CY
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	3,240 LB
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	830 LB
509.1500	CONCRETE SURFACE REPAIR	50 SF
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	28 SY
606.0300	RIPRAP HEAVY	60 CY
645.0120	GEOTEXTILE TYPE HR	125 SY
	NON-BID ITEMS	
	FILLER	3/4 SIZE

⊗ UNDISTRIBUTED IN EXISTING BARREL TO REMAIN AS DIRECTED BY ENGINEER IN THE FIELD

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
 INVENTORY RATING FACTOR: 1.05
 OPERATING RATING FACTOR : 1.35
 WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 255 KIPS

EARTH LOAD: 2.0 FEET

MATERIAL PROPERTIES:

CONCRETE MASONRY $f'_c = 3,500$ p.s.i.
 HIGH STRENGTH BAR STEEL REINFORCEMENT (GRADE 60) $f_y = 60,000$ p.s.i.

HYDRAULIC DATA:

100 YEAR FREQUENCY

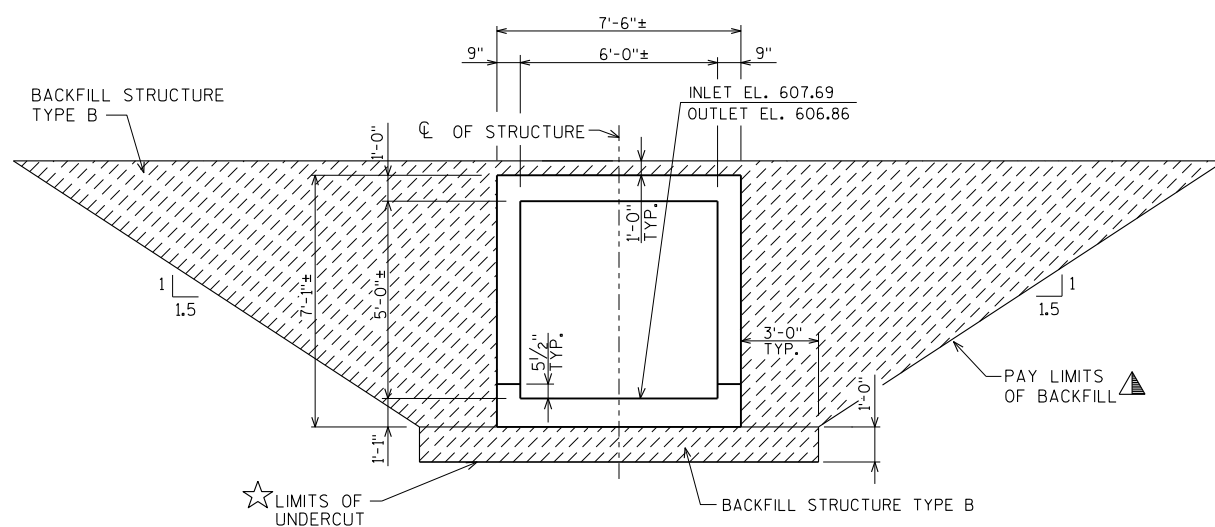
$Q_{100} = 160$ c.f.s.
 $VEL. = 11.7$ f.p.s.
 $HW_{100} = EL. 612.5$
 WATERWAY AREA = 13.7 sq. ft.
 DRAINAGE AREA = 1.8 sq. mi.
 ROADWAY OVERTOPPING = N/A
 SCOUR CRITICAL CODE = N/A

2 YEAR FREQUENCY

$Q_2 = 40$ c.f.s.
 $VEL. = 2.7$ f.p.s.
 $HW_2 = EL. 610.6$

TRAFFIC DATA:

A.A.D.T. = 4,200 (2020)
 A.A.D.T. = 5,000 (2040)
 R.D.S. = 60 M.P.H.



TYPICAL SECTION THRU BOX CULVERT EXTENSIONS

NOTE: MATCH EXISTING CULVERT OPENING

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

☆ UNDERCUT 1'-0". EXCAVATION FOR UNDERCUT TO BE INCLUDED IN EXCAVATION FOR STRUCTURES BACKFILL WITH "BACKFILL STRUCTURE TYPE B"

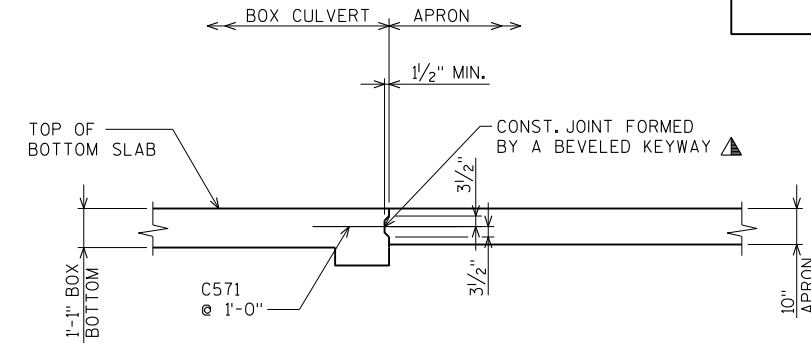
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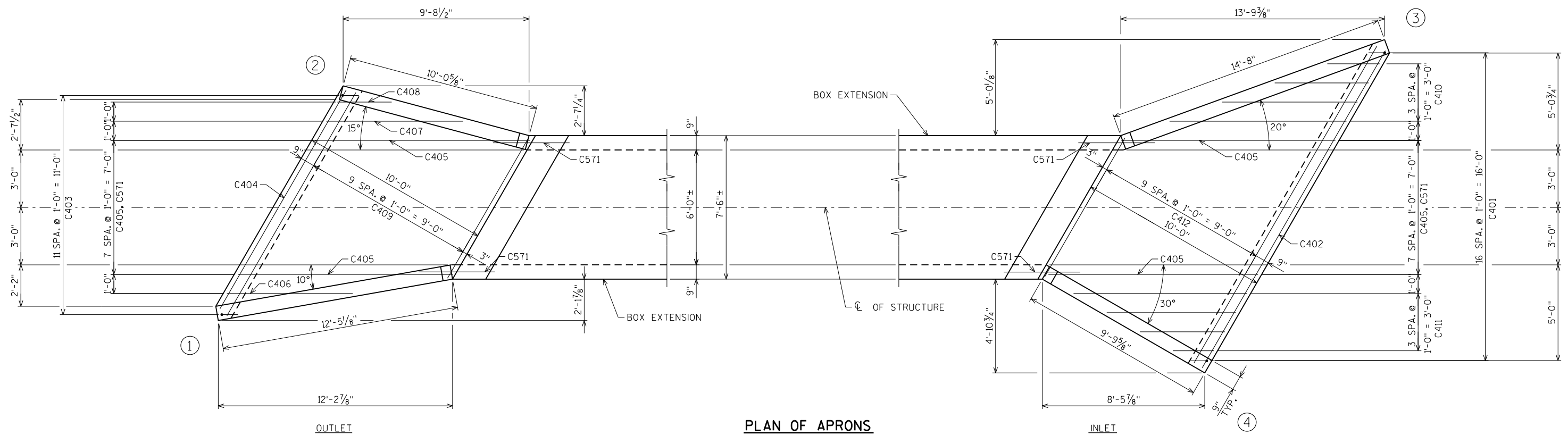
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE C-42-793			
DRAWN BY JLB/CLS		PLANS CK'D. CBM	
DESIGN DATA, QUANTITIES AND NOTES			SHEET 2 OF 9

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
 3433 Oakwood Hills Parkway
 Eau Claire, WI 54701
 www.AyresAssociates.com

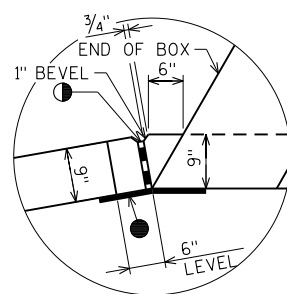


APRON CONNECTION DETAIL

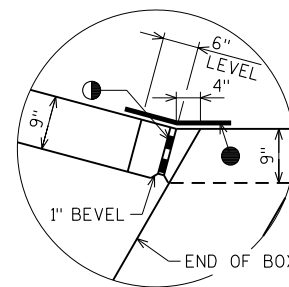
▲ IN LIEU OF CONSTRUCTION JOINTS IN THE BOTTOM SLAB, THE CONTRACTOR MAY USE 2" DEEP SAW CUTS WITHIN 12 HOURS AFTER POURING. C571 BARS AT 1'-0" SPACING REQUIRED.



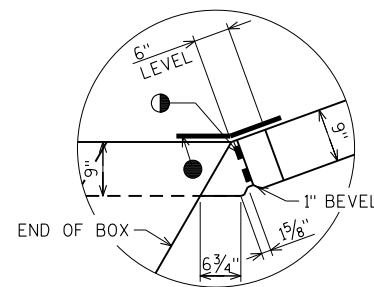
PLAN OF APRONS



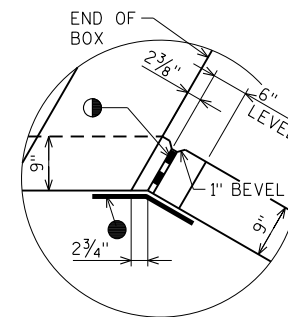
WING 1



WING 2



WING 3



WING 4

CORNER DETAILS

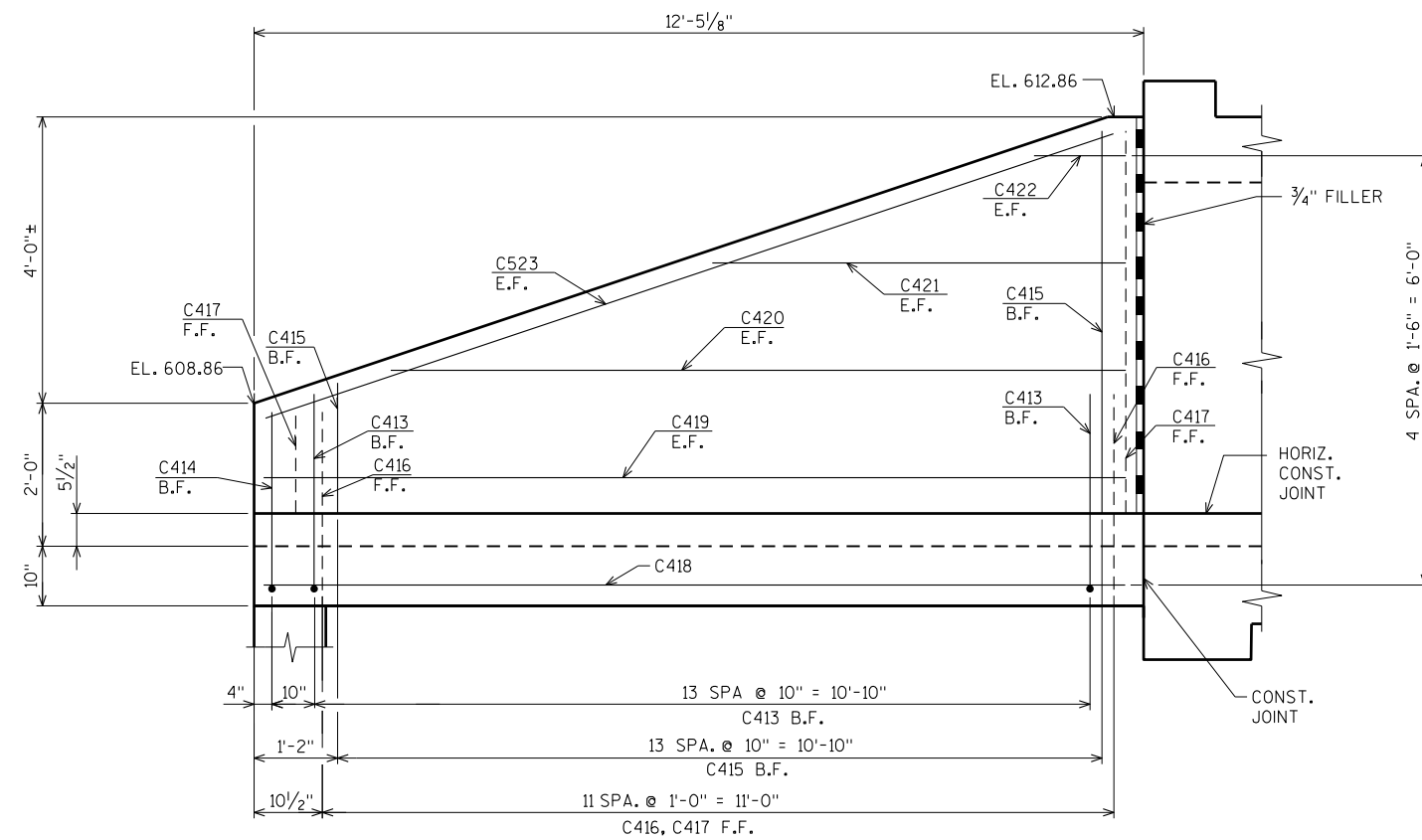
- 18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING.
- 3/4" FILLER TO EXTEND FROM HORIZ. CONST. JOINT TO TOP OF WING.

NOTE:

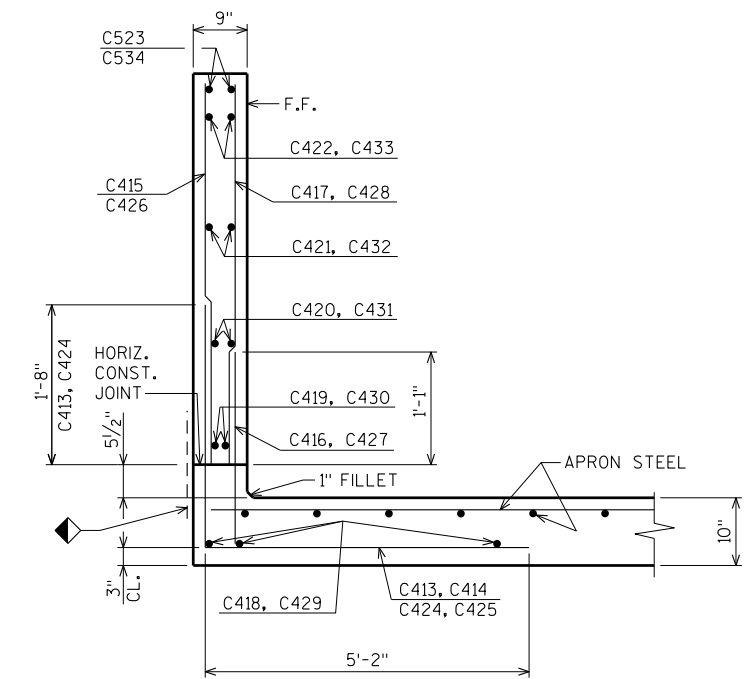
DO NOT RUN ANY BAR STEEL REINF. THRU JOINT FILLER.

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
 3433 Oakwood Hills Parkway
 Eau Claire, WI 54701
 www.AyresAssociates.com

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE C-42-793			
DRAWN BY JLB		PLANS CK'D. CBM	
APRON PLAN			SHEET 3 OF 9

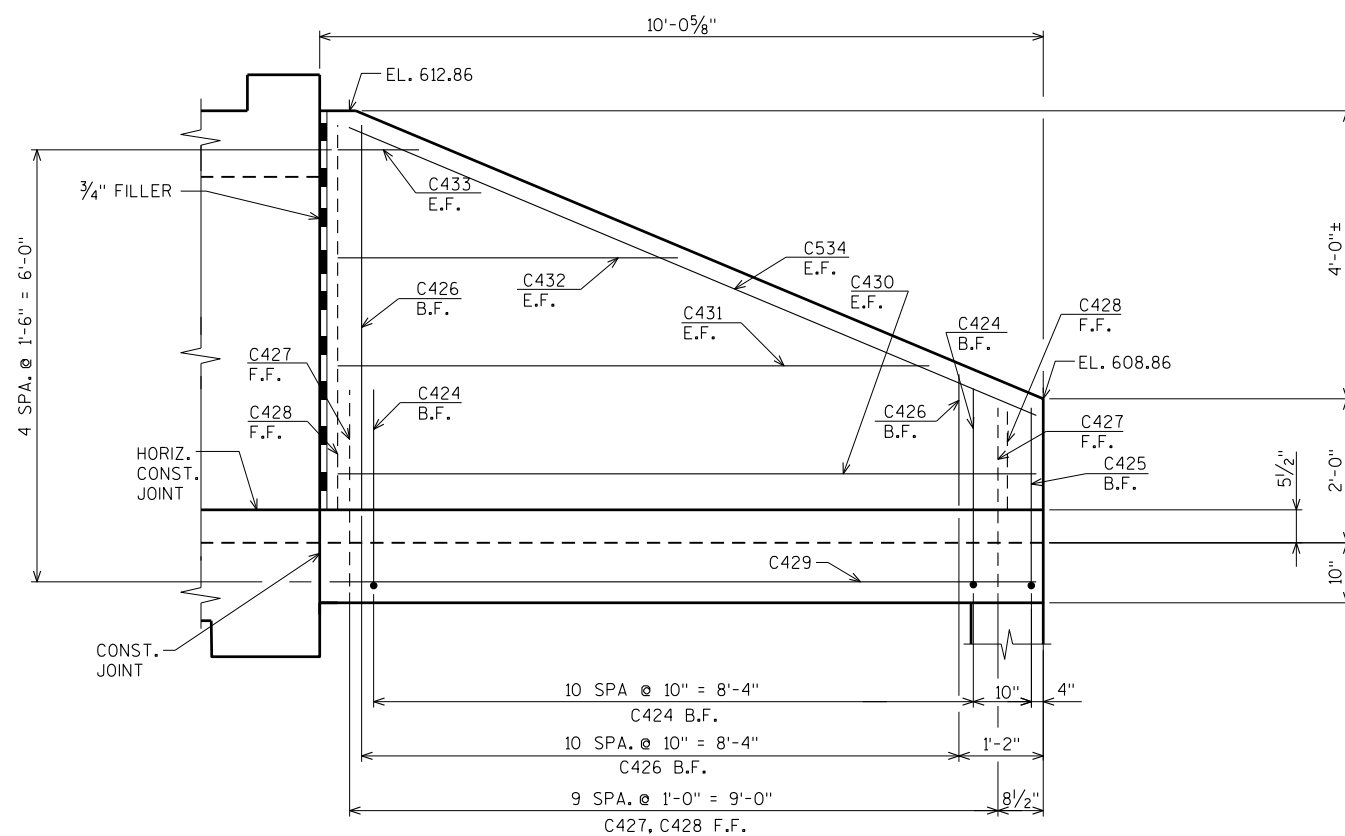


ELEVATION - WING 1



TYP. SECTION THRU WINGS 1 & 2

18" MIN. WIDTH RUBBERIZED MEMBRANE WATERPROOFING ALONG HORIZ. CONSTR. JT. IN WING



ELEVATION - WING 2

E.F. DENOTES EACH FACE
F.F. DENOTES FRONT FACE
B.F. DENOTES BACK FACE

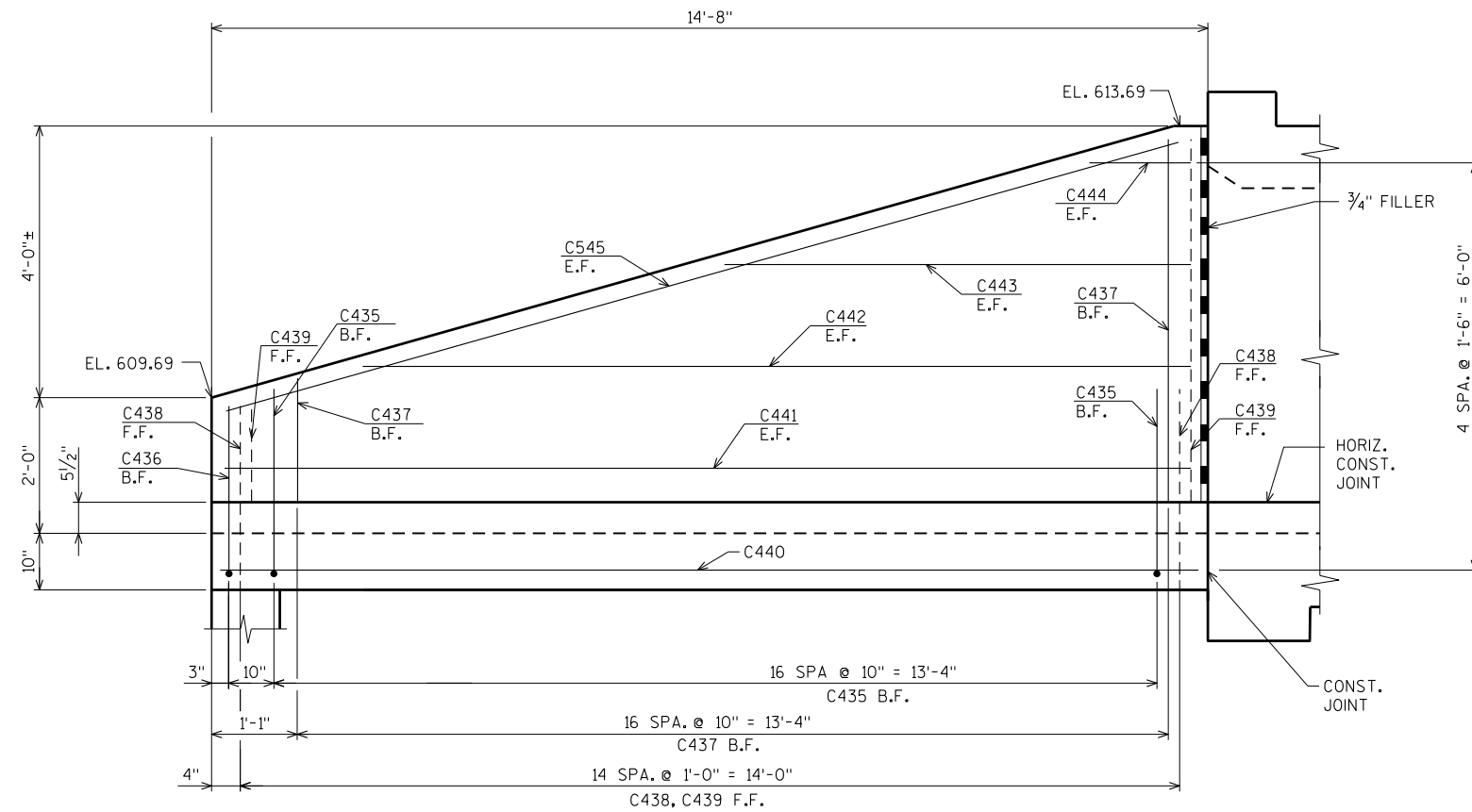
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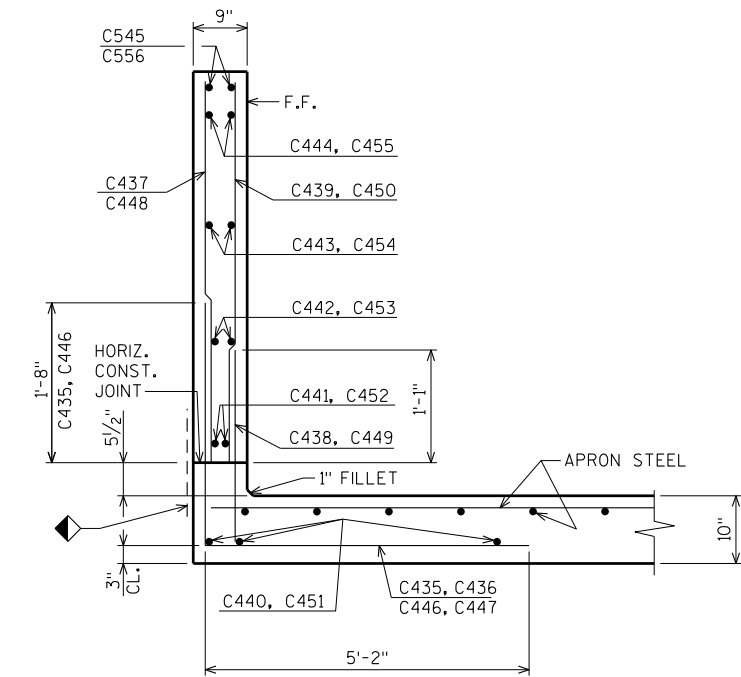
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE C-42-793			
DRAWN BY JLB		PLANS CK'D. CBM	
WINGS 1 & 2 DETAILS			SHEET 4 OF 9

ORIGINAL PLANS PREPARED BY
AYRES ASSOCIATES
3433 Oakwood Hills Parkway
Eau Claire, WI 54701
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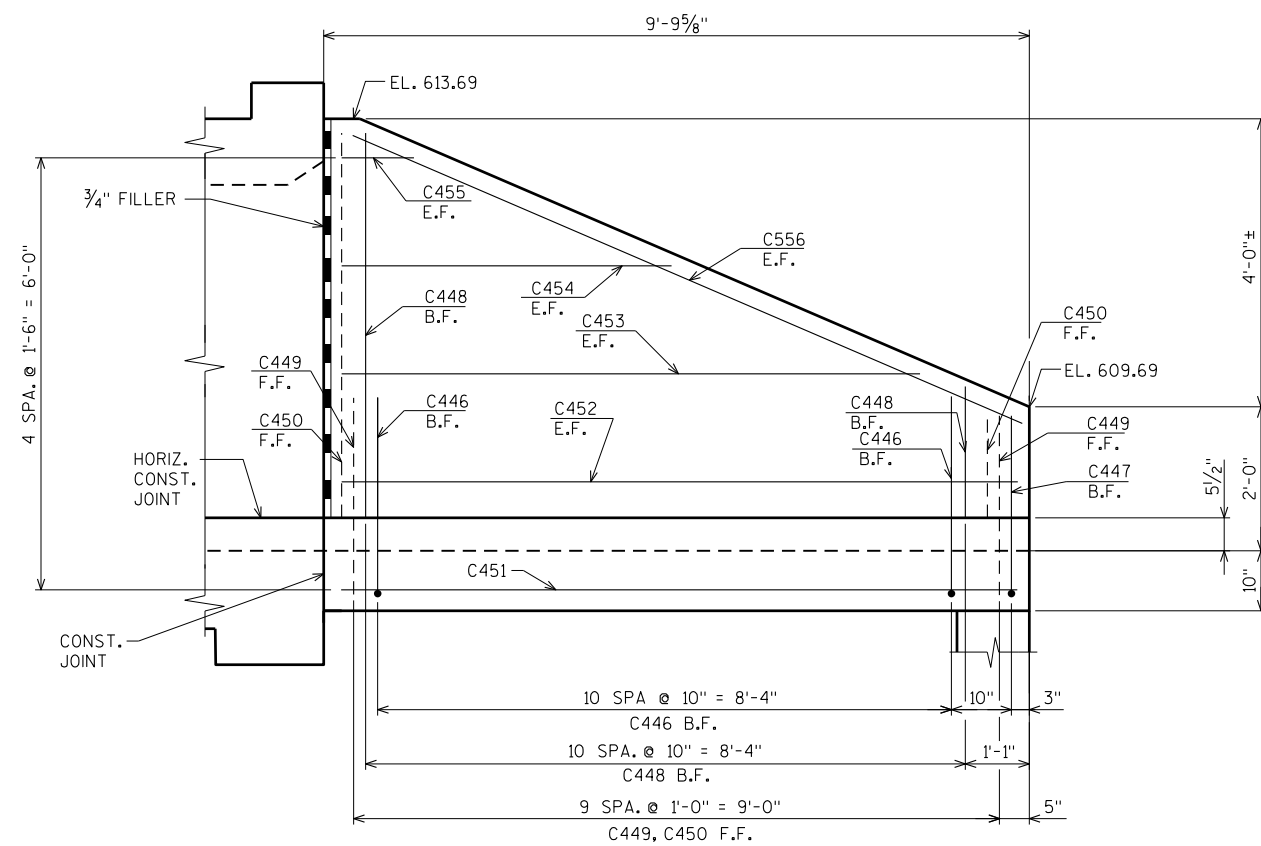


ELEVATION - WING 3



TYP. SECTION THRU WINGS 3 & 4

18" MIN. WIDTH RUBBERIZED MEMBRANE WATERPROOFING ALONG HORIZ. CONSTR. JT. IN WING



ELEVATION - WING 4

E.F. DENOTES EACH FACE
 F.F. DENOTES FRONT FACE
 B.F. DENOTES BACK FACE

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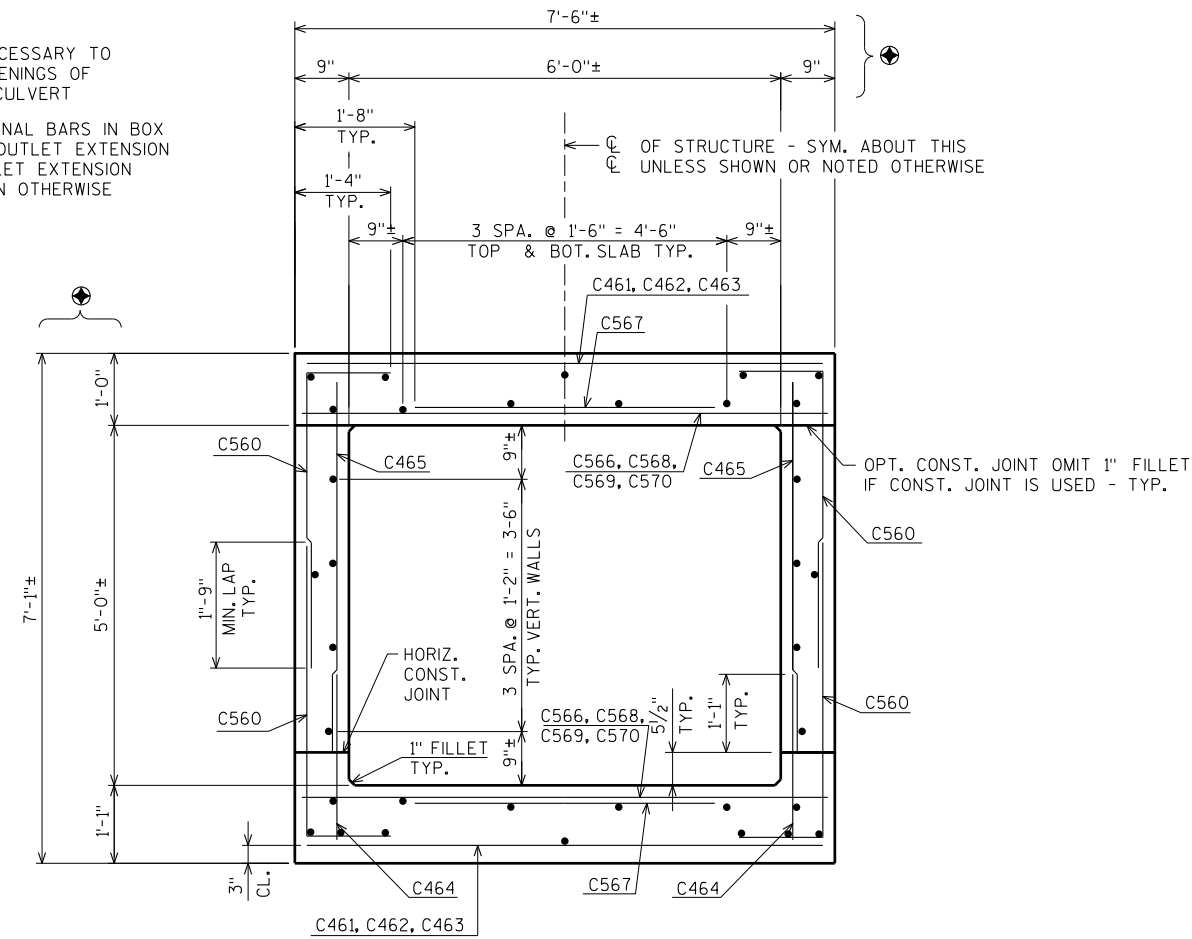
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE C-42-793			
DRAWN BY JLB		PLANS CK'D. CBM	
WINGS 3 & 4 DETAILS			SHEET 5 OF 9

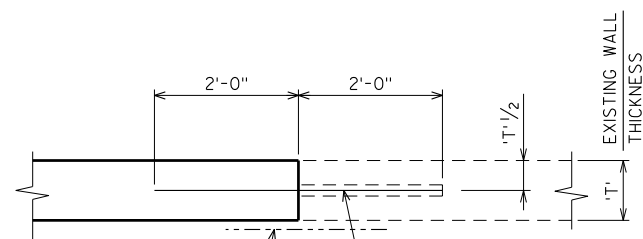
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⊕ ADJUST AS NECESSARY TO MATCH THE OPENINGS OF THE EXISTING CULVERT

ALL LONGITUDINAL BARS IN BOX ARE C458 IN OUTLET EXTENSION & C459 IN INLET EXTENSION UNLESS SHOWN OTHERWISE



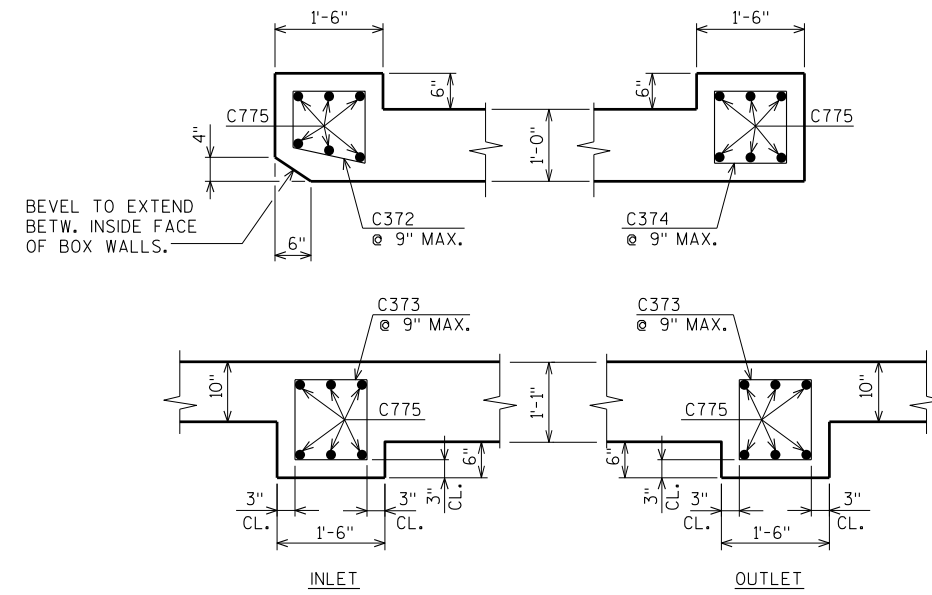
TYPICAL SECTION THRU BOX



18" RUBBERIZED MEMBRANE WATERPROOFING TO EXTEND UP WALLS AND ACROSS TOP OF SLAB AT VERTICAL CONSTRUCTION JOINT.

ADHESIVE ANCHORS NO. 5 BAR (C557) SPACED AT 1'-0".

VERT. CONST. JOINT
(ALL WALLS & SLABS)



HEADER DETAILS

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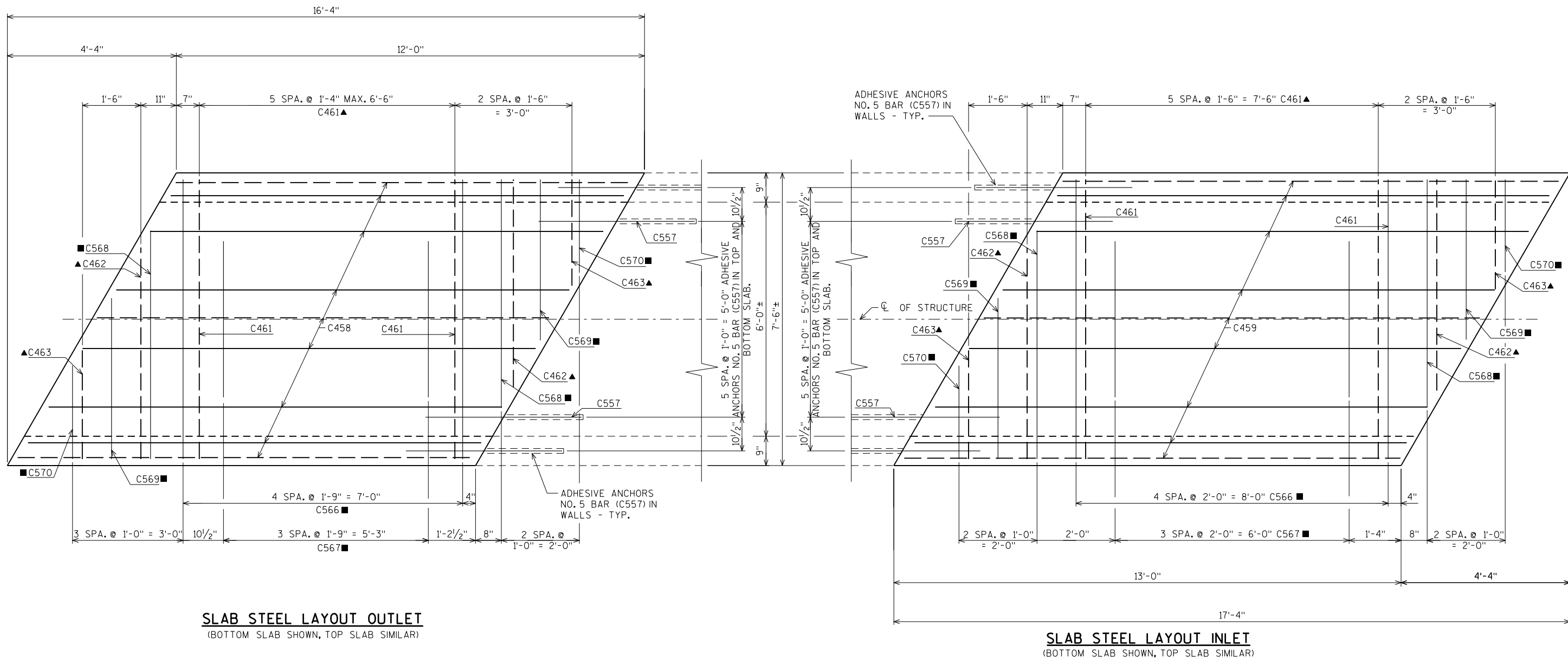
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE C-42-793			
DRAWN BY JLB		PLANS CK'D. CBM	
BOX DETAILS			SHEET 6 OF 9

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SLAB STEEL LAYOUT OUTLET
(BOTTOM SLAB SHOWN, TOP SLAB SIMILAR)

SLAB STEEL LAYOUT INLET
(BOTTOM SLAB SHOWN, TOP SLAB SIMILAR)

- ▲ BOTTOM OF BOTTOM SLAB, TOP OF TOP SLAB
- TOP OF BOTTOM SLAB, BOTTOM OF TOP SLAB

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE C-42-793			
DRAWN BY JLB		PLANS CK'D. CBM	
SLAB STEEL LAYOUTS			SHEET 7 OF 9

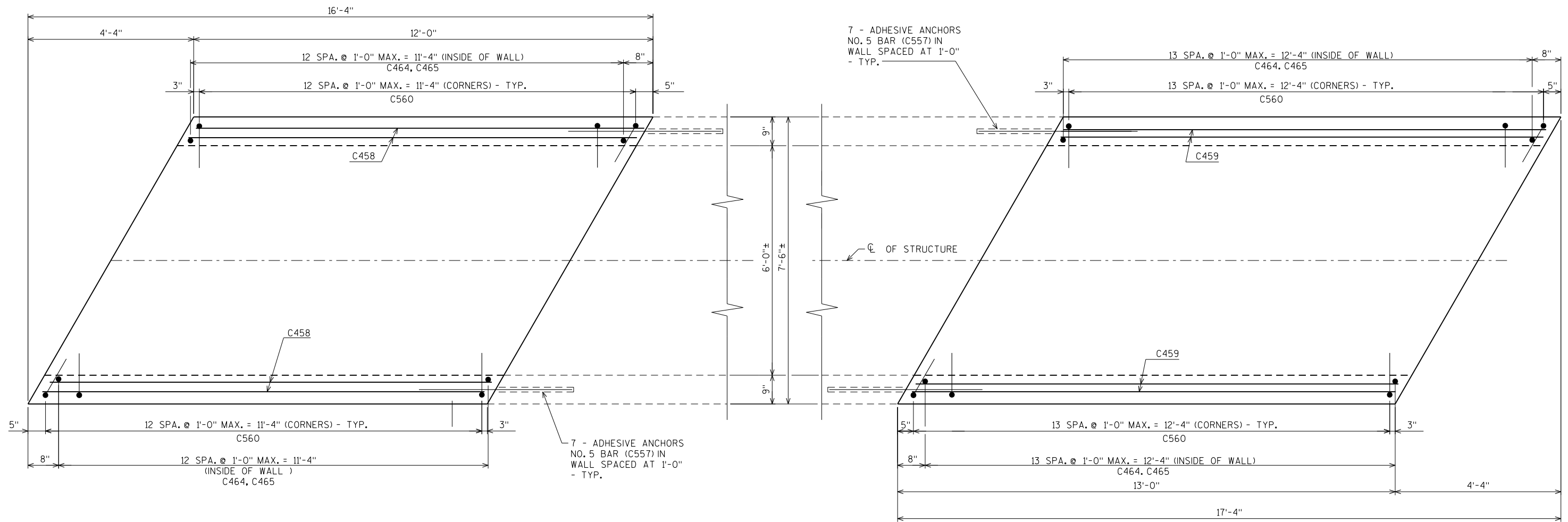
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WALL STEEL LAYOUT OUTLET

WALL STEEL LAYOUT INLET

8

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STRUCTURE C-42-793			
DRAWN BY JLB		PLANS CK'D. CBM	
WALL STEEL LAYOUTS			SHEET 8 OF 9

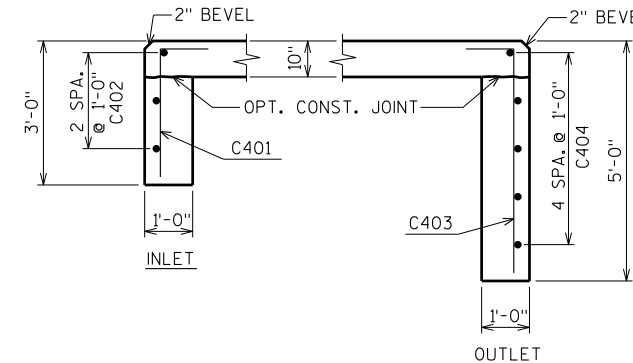
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BILL OF BARS

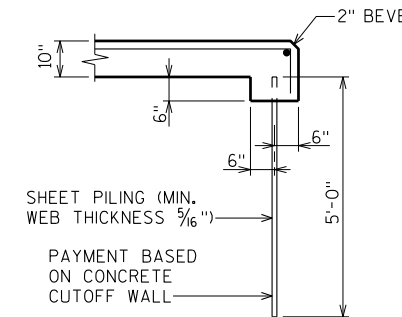
BAR NO.	COATED BAR NO. REQ'D.	LENGTH	BENT BAR BUNDLED	BAR SERIES	830# COATED 3,240# UNCOATED
					LOCATION
C401	17	3-7	X		CUTOFF WALL INLET
C402	3	19-1			CUTOFF WALL INLET
C403	12	5-7	X		CUTOFF WALL OUTLET
C404	5	12-11			CUTOFF WALL OUTLET
C405	16	11-1			APRON INLET & OUTLET
C406	1	6-6			APRON OUTLET WING 1
C407	1	6-10			APRON OUTLET WING 2
C408	1	2-6			APRON OUTLET WING 2
C409	10	10-9		⊗	APRON OUTLET
C410	4	5-10		⊗	APRON INLET WING 3
C411	4	5-6		⊗	APRON INLET WING 4
C412	10	13-11		⊗	APRON INLET
C413	X 14	7-8	X		WING 1 VERT. B.F.
C414	X 1	7-7	X		WING 1 VERT. B.F.
C415	X 14	3-5		⊗	WING 1 VERT. B.F.
C416	X 12	2-2			WING 1 VERT. F.F.
C417	X 12	3-4		⊗	WING 1 VERT. F.F.
C418	3	11-11			WING 1 HORIZ. APRON
C419	X 2	12-1			WING 1 HORIZ. E.F.
C420	X 2	10-3			WING 1 HORIZ. E.F.
C421	X 2	5-10			WING 1 HORIZ. E.F.
C422	X 2	1-4			WING 1 HORIZ. E.F.
C523	X 2	12-7			WING 1 DIAG. E.F.
C424	X 11	7-8	X		WING 2 VERT. B.F.
C425	X 1	7-7	X		WING 2 VERT. B.F.
C426	X 11	3-5		⊗	WING 2 VERT. B.F.
C427	X 10	2-2			WING 2 VERT. F.F.
C428	X 10	3-4		⊗	WING 2 VERT. F.F.
C429	3	9-5			WING 2 HORIZ. APRON
C430	X 2	9-8			WING 2 HORIZ. E.F.
C431	X 2	8-3			WING 2 HORIZ. E.F.
C432	X 2	4-8			WING 2 HORIZ. E.F.
C433	X 2	1-1			WING 2 HORIZ. E.F.
C534	X 2	10-4			WING 2 DIAG. E.F.
C435	X 17	7-8	X		WING 3 VERT. B.F.
C436	X 1	7-6	X		WING 3 VERT. B.F.
C437	X 17	3-4		⊗	WING 3 VERT. B.F.
C438	X 15	2-2			WING 3 VERT. F.F.
C439	X 15	3-3		⊗	WING 3 VERT. F.F.
C440	3	14-2			WING 3 HORIZ. APRON
C441	X 2	14-4			WING 3 HORIZ. E.F.
C442	X 2	12-1			WING 3 HORIZ. E.F.
C443	X 2	6-10			WING 3 HORIZ. E.F.
C444	X 2	1-6			WING 3 HORIZ. E.F.
C545	X 2	14-9			WING 3 DIAG. E.F.
C446	X 11	7-8	X		WING 4 VERT. B.F.
C447	X 1	7-7	X		WING 4 VERT. B.F.
C448	X 11	3-5		⊗	WING 4 VERT. B.F.
C449	X 10	2-2			WING 4 VERT. F.F.
C450	X 10	3-3		⊗	WING 4 VERT. F.F.
C451	3	9-3			WING 4 HORIZ. APRON
C452	X 2	9-5			WING 4 HORIZ. E.F.
C453	X 2	8-1			WING 4 HORIZ. E.F.
C454	X 2	4-7			WING 4 HORIZ. E.F.
C455	X 2	1-1			WING 4 HORIZ. E.F.
C556	X 2	10-2			WING 4 DIAG. E.F.
C557	52	4-0			BOX JOINT @ EXIST. BOX
C458	34	11-7			BOX LONG. OUTLET EXTENSION
C459	34	12-7			BOX LONG. INLET EXTENSION
C560	108	5-3	X		BOX CORNERS
C461	24	7-2			BOX SLAB TRANS.
C462	8	5-5			BOX SLAB TRANS.
C463	8	2-10			BOX SLAB TRANS.
C464	54	2-5			BOX DOWELS WALLS
C465	54	5-4			BOX WALLS VERT.
C566	20	7-2			BOX SLAB TRANS.
C567	16	4-2			BOX SLAB TRANS.
C568	8	5-10			BOX SLAB TRANS.
C569	8	4-1			BOX SLAB TRANS.
C570	8	2-4			BOX SLAB TRANS.
C571	16	4-0			APRON INLET & OUTLET @ CONST. JT.
C372	10	5-0	X		BOX HEADER INLET TOP
C373	20	4-10	X		BOX HEADER INLET & OUTLET BOTTOM
C374	10	5-4	X		BOX HEADER OUTLET TOP
C775	24	8-3			BOX HEAD. INLET & OUTLET TOP & BOT.

STATE PROJECT NUMBER

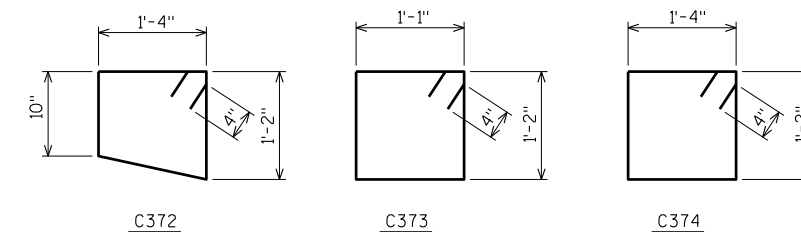
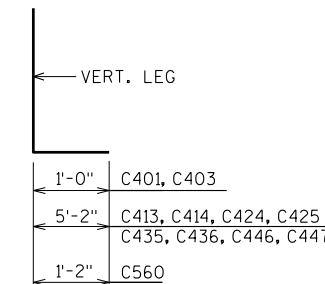
9180-31-60



SECTION THRU CUTOFF WALL



SECTION THRU ALTERNATE CUTOFF WALL



BAR SERIES TABLE

BAR NO.	NO REQ'D.	LENGTH
C409	1 SERIES OF 10	8'-4" TO 13'-2"
C410	1 SERIES OF 4	2'-7" TO 9'-1"
C411	1 SERIES OF 4	2'-0" TO 9'-0"
C412	1 SERIES OF 10	8'-7" TO 19'-3"
C415	1 SERIES OF 14	1'-7" TO 5'-3"
C417	1 SERIES OF 12	1'-6" TO 5'-2"
C428	1 SERIES OF 10	1'-6" TO 5'-2"
C426	1 SERIES OF 11	1'-8" TO 5'-2"
C437	1 SERIES OF 17	1'-6" TO 5'-2"
C439	1 SERIES OF 15	1'-3" TO 5'-3"
C448	1 SERIES OF 11	1'-8" TO 5'-2"
C450	1 SERIES OF 10	1'-4" TO 5'-2"

BUNDLE AND TAG EACH SERIES SEPARATELY.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

⊗ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

● ADHESIVE ANCHORS NO. 5 BAR

E.F. DENOTES EACH FACE

F.F. DENOTES FRONT FACE

B.F. DENOTES BACK FACE

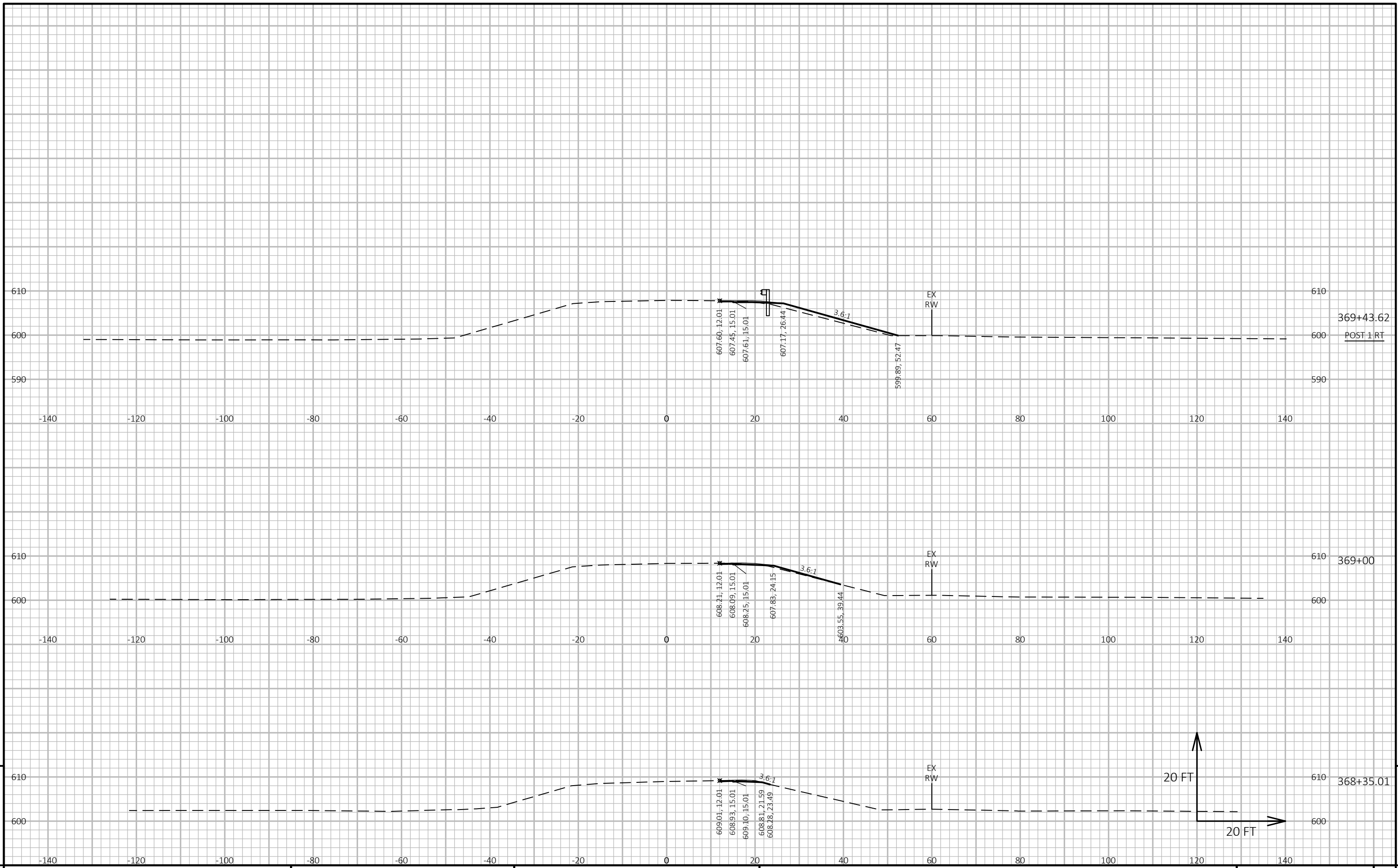
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STRUCTURE C-42-793			
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BILL OF BARS AND DETAILS			SHEET 9 OF 9

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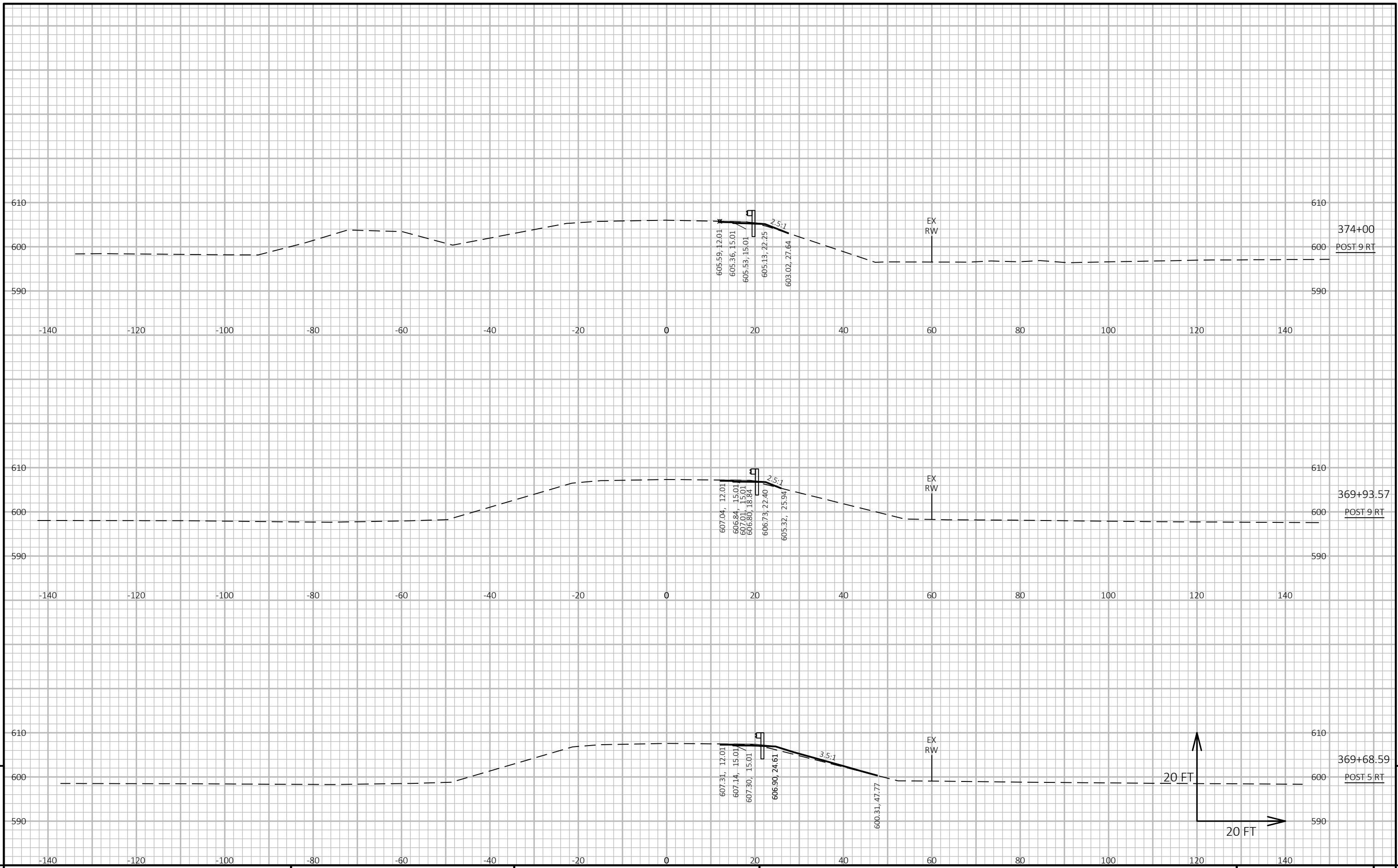
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PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	CROSS SECTIONS: STH 22	SHEET
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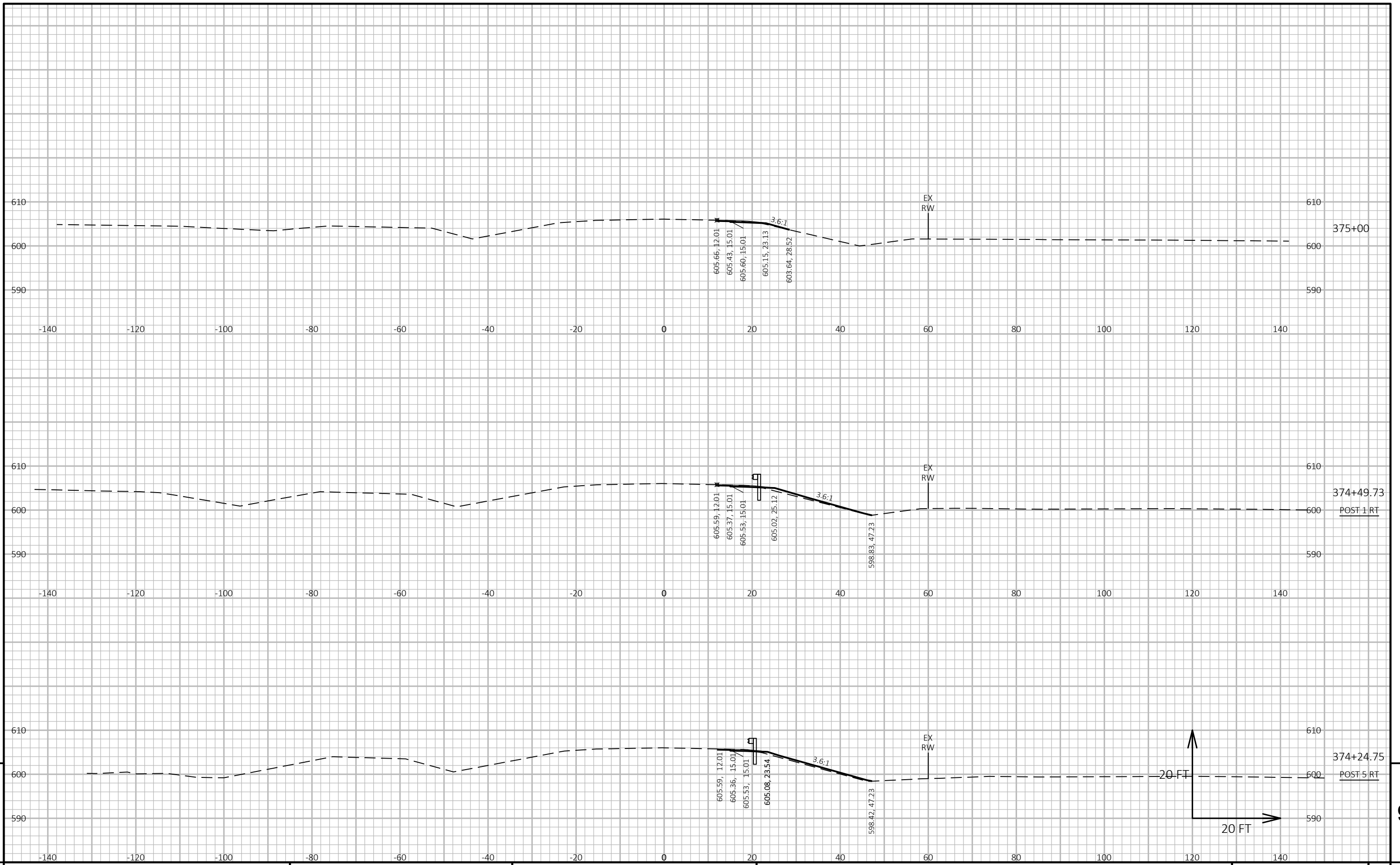
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LAYOUT NAME - Section Sheet - (2)



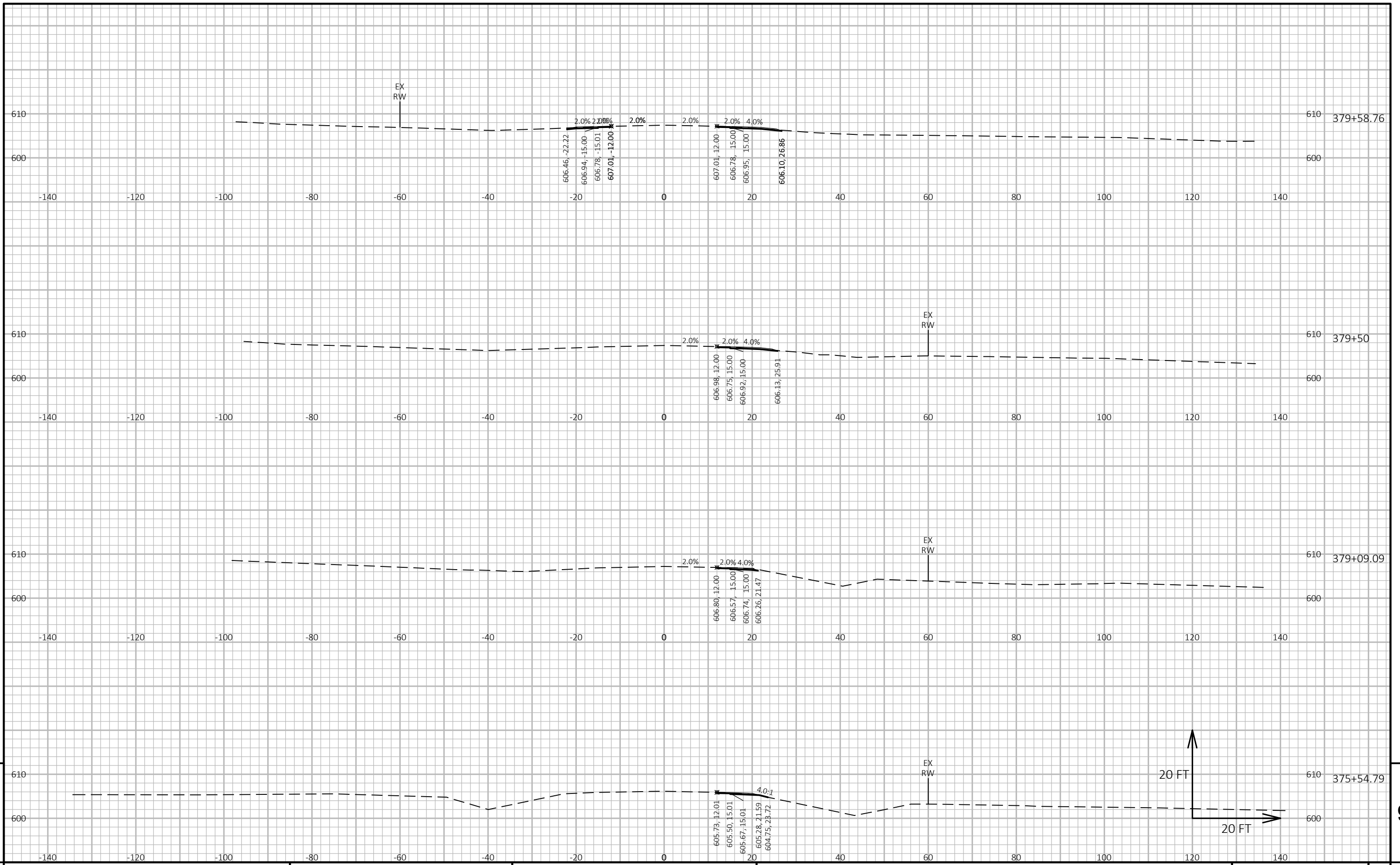
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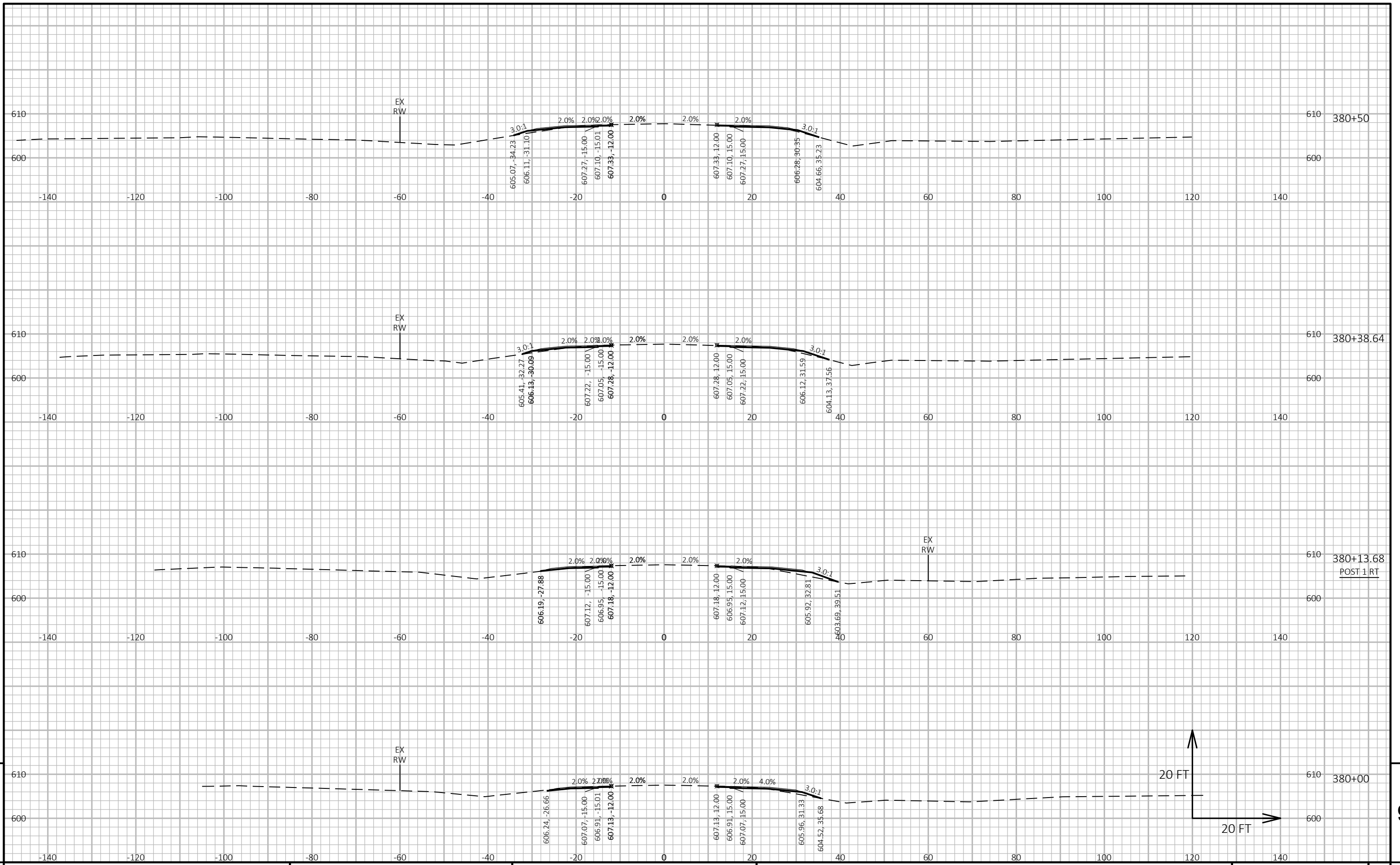
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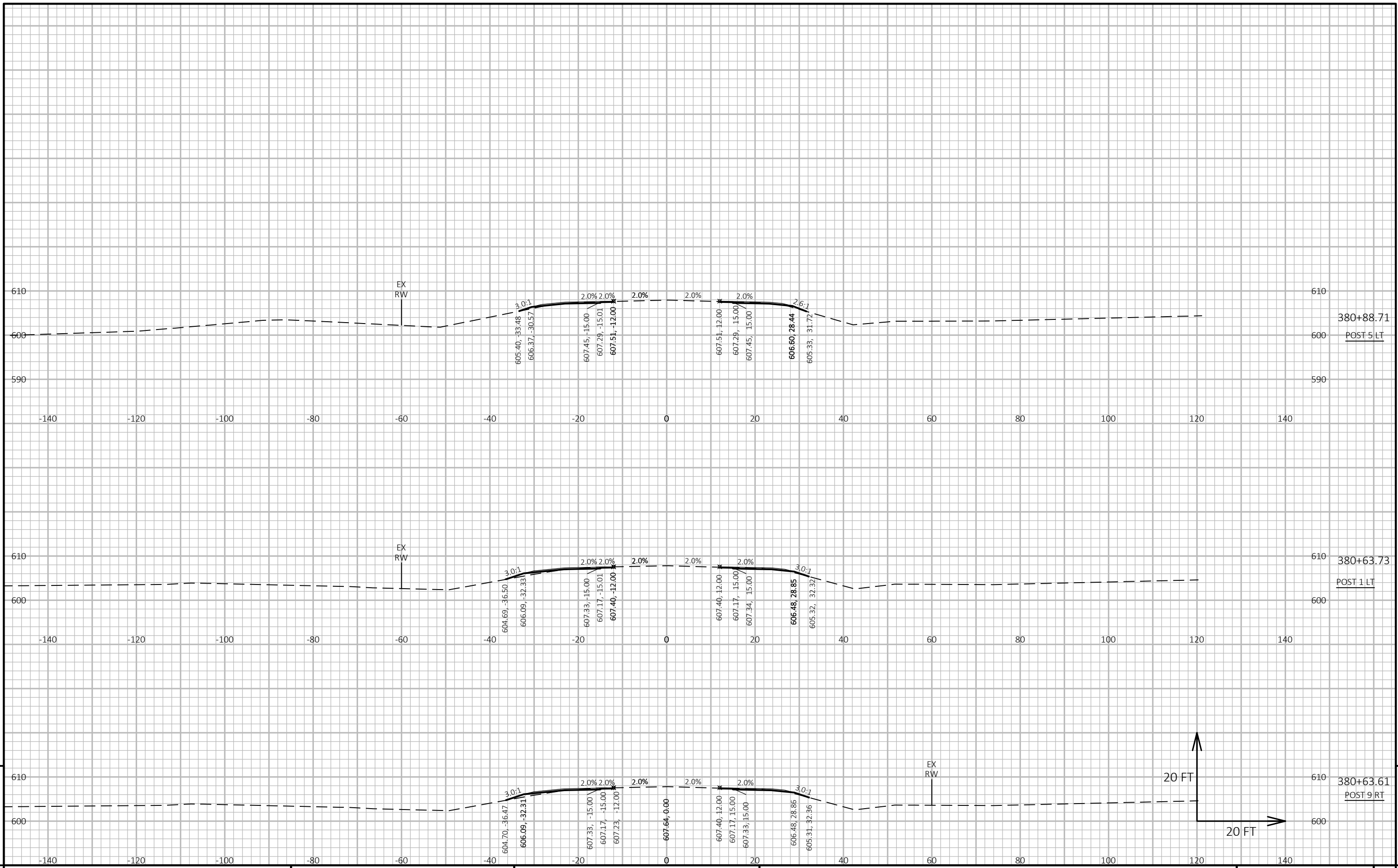
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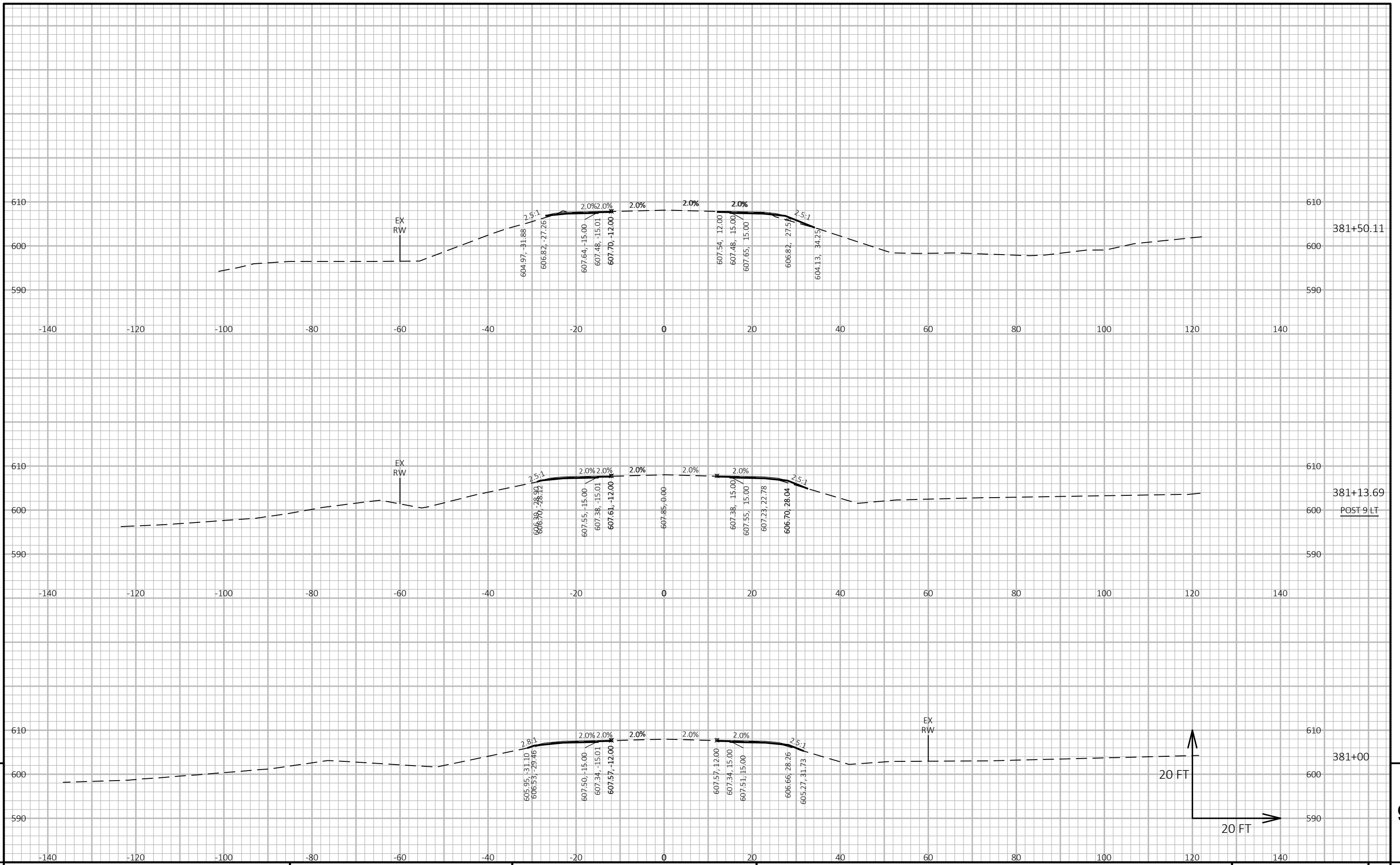
HWY: STH 22

COUNTY: OCONTO

CROSS SECTIONS: STH 22

SHEET

E

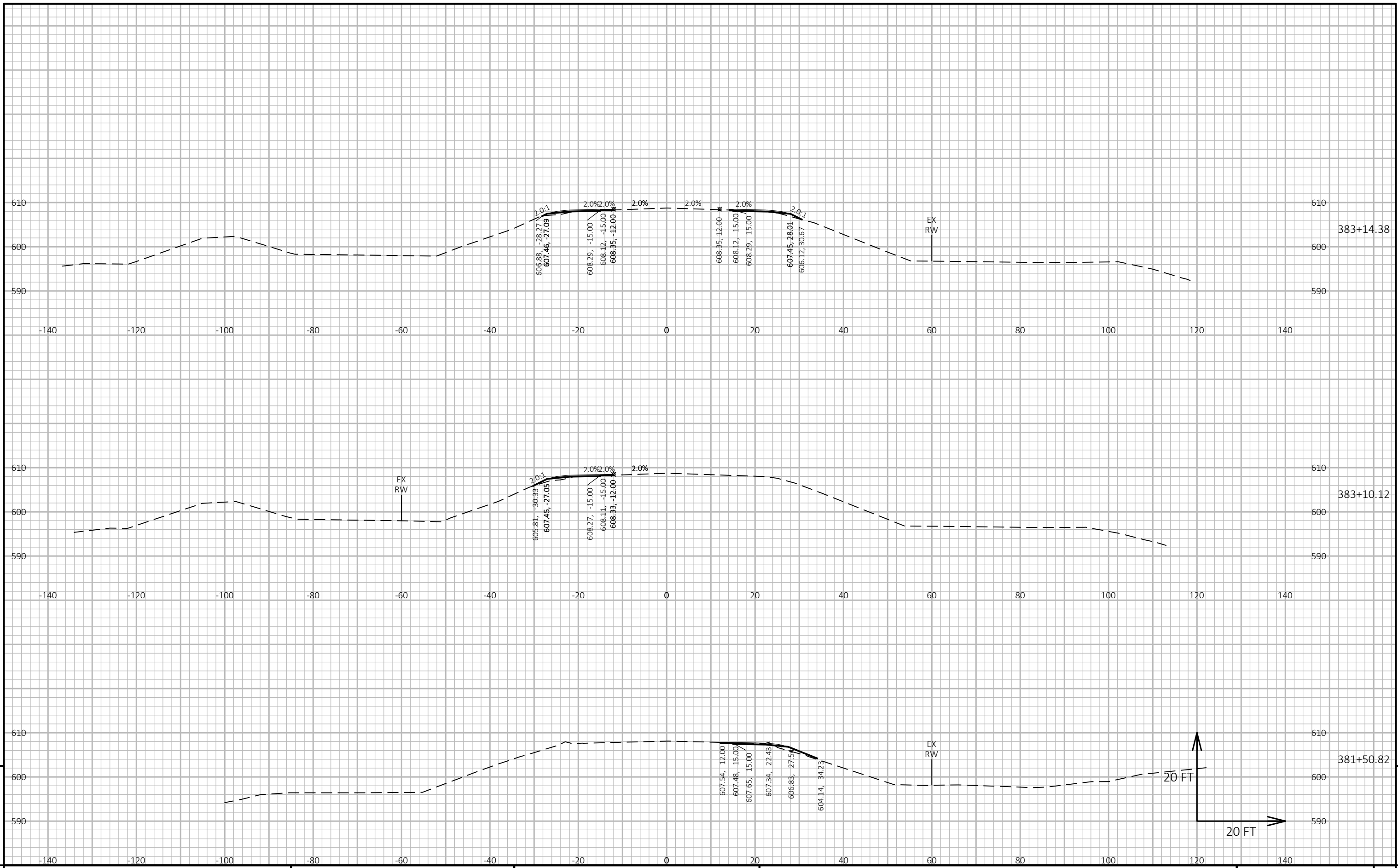


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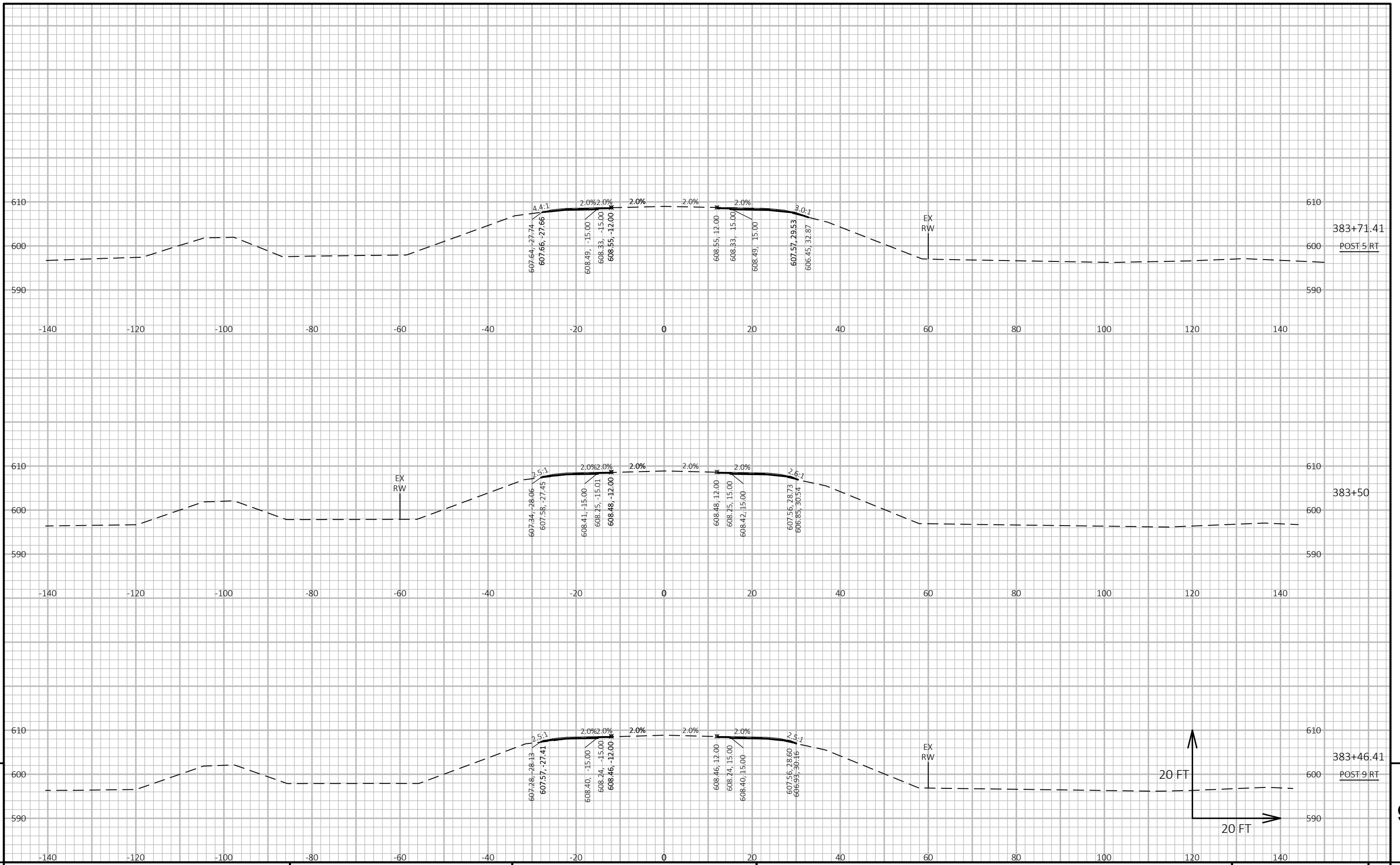
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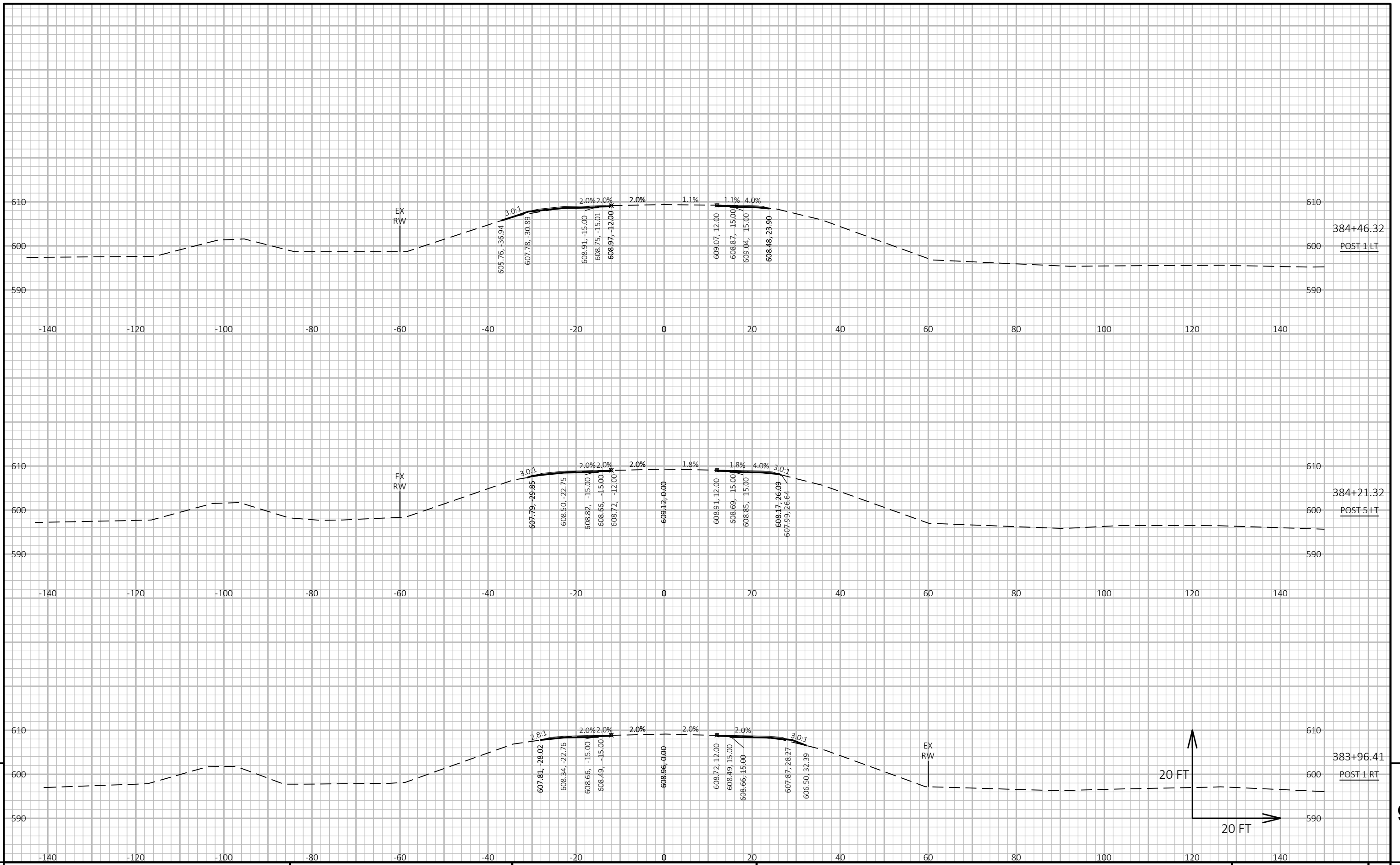
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COUNTY: OCONTO

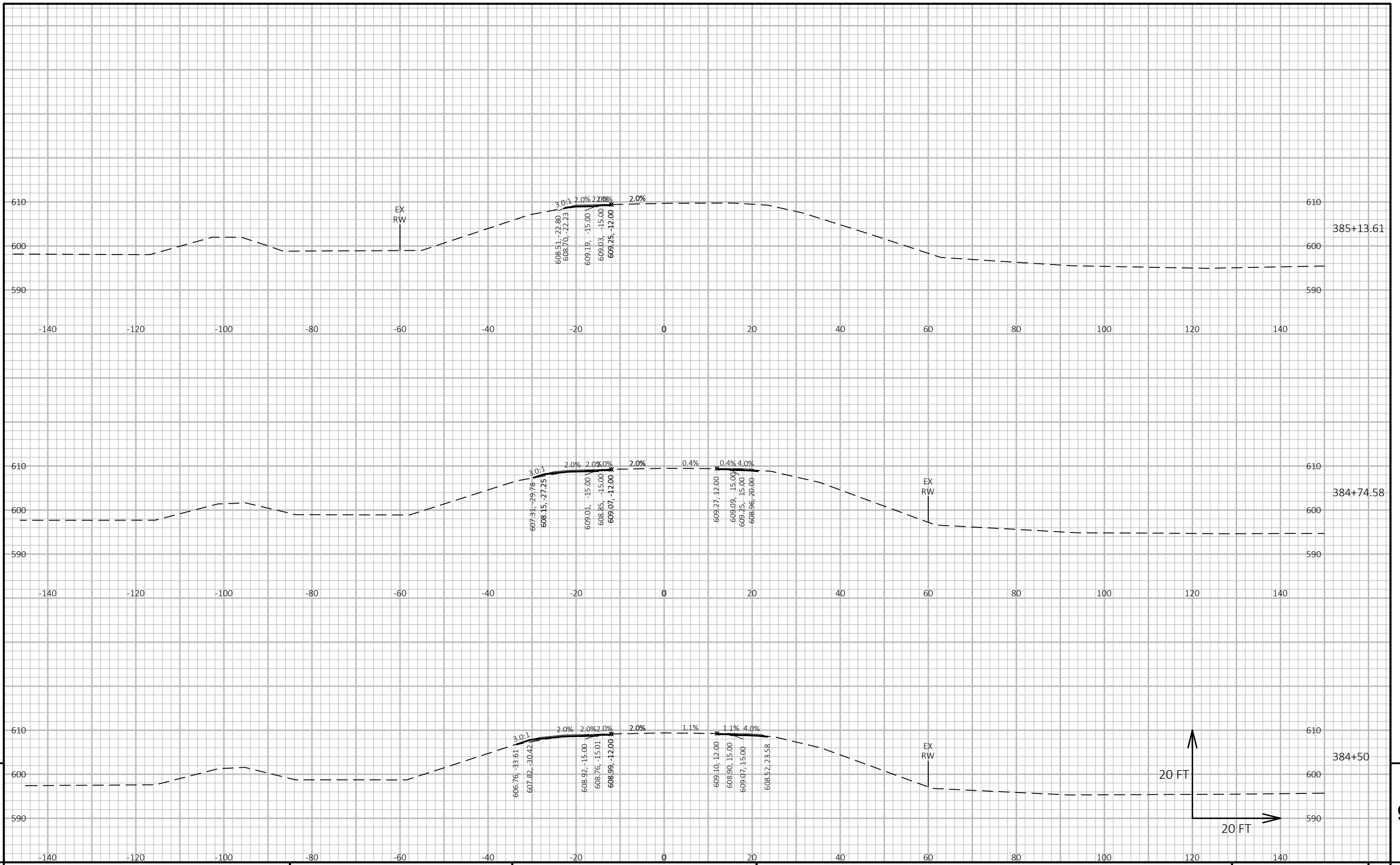
CROSS SECTIONS: STH 22

SHEET

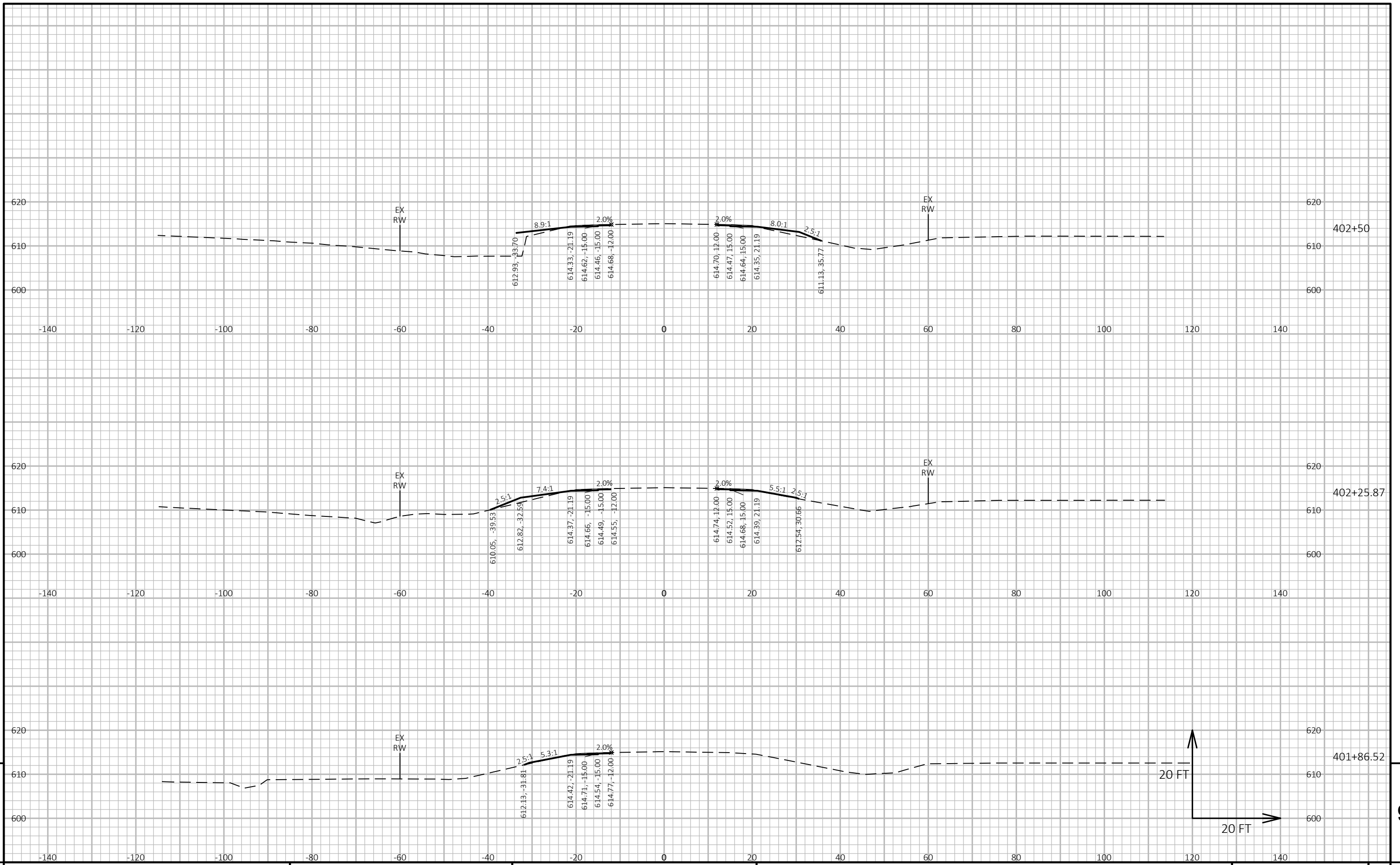
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PROJECT NO: 9180-31-60 HWY: STH 22 COUNTY: OCONTO CROSS SECTIONS: STH 22 SHEET E



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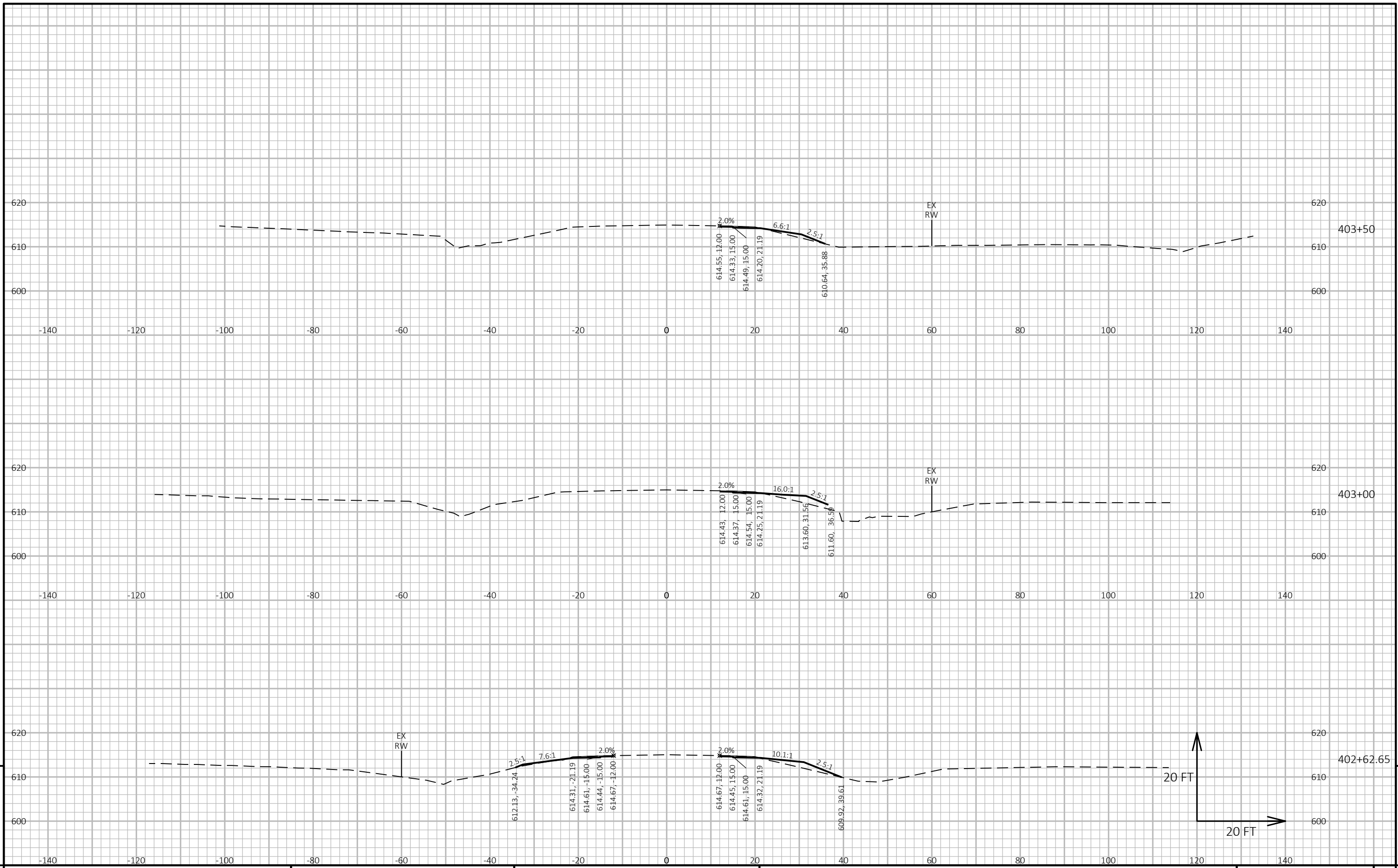
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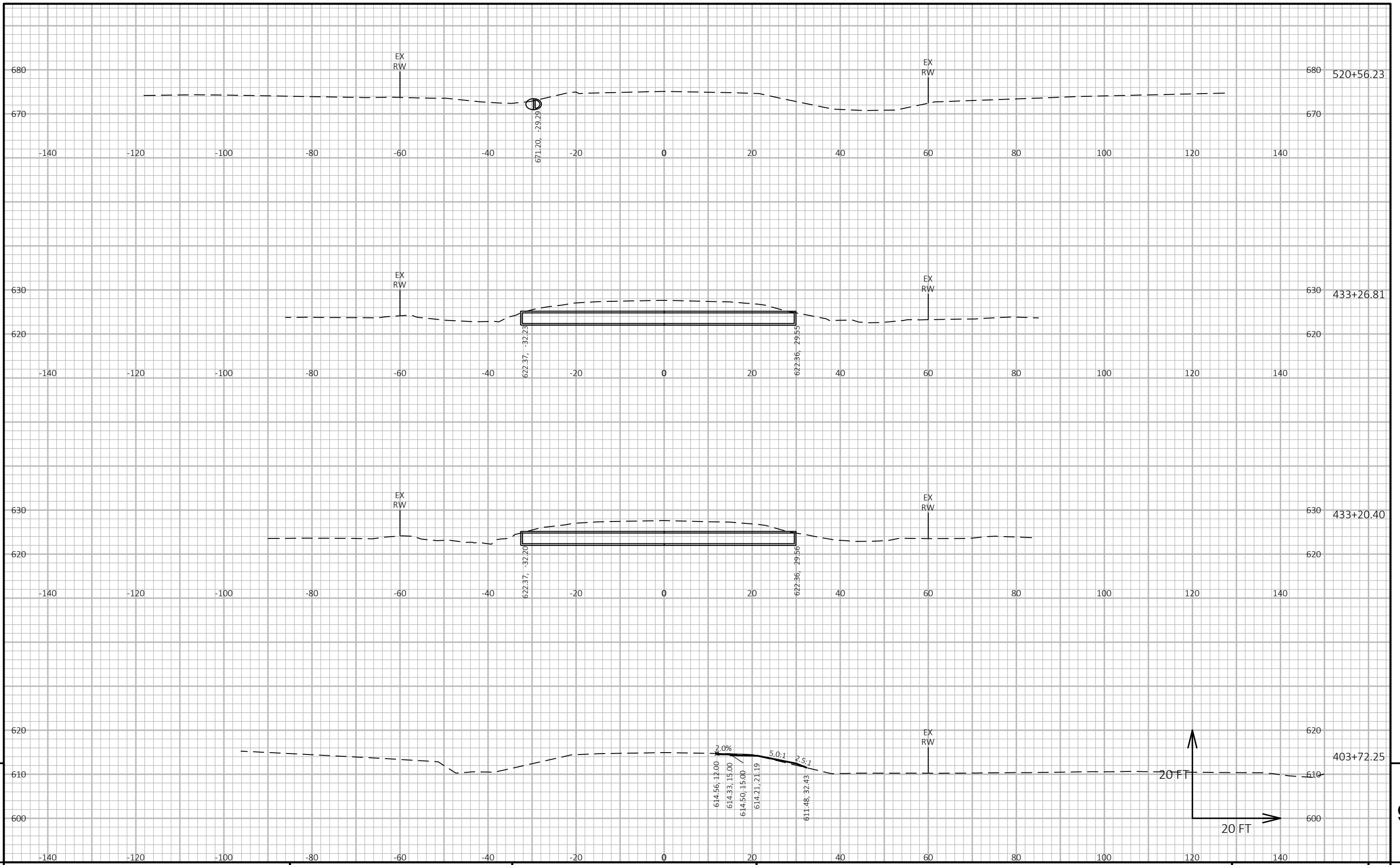
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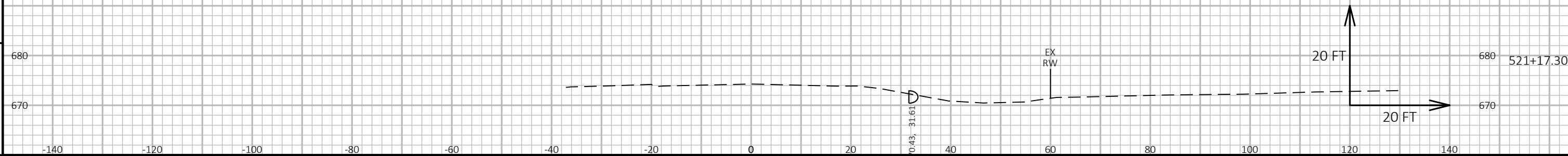
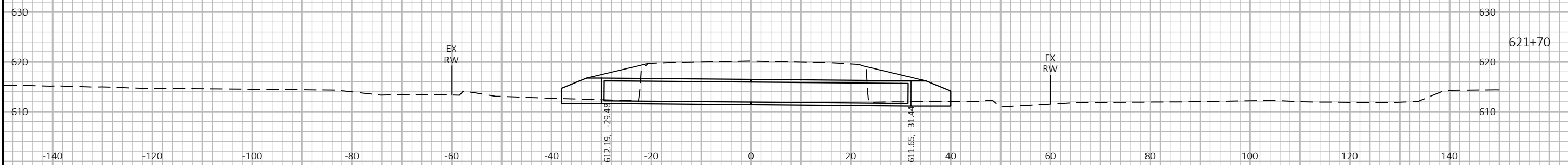
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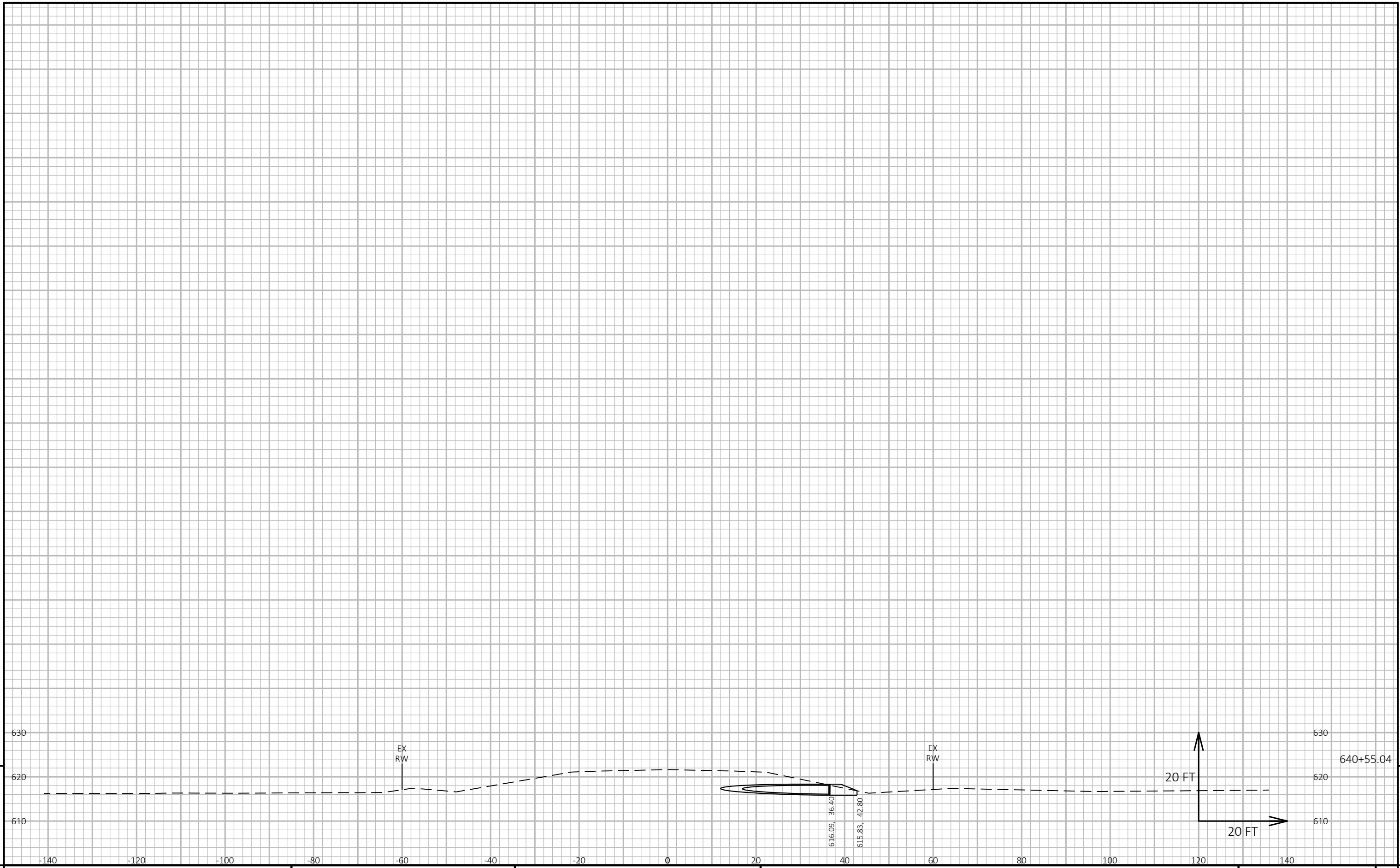
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PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	CROSS SECTIONS: STH 22	SHEET E
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PROJECT NO: 9180-31-60	HWY: STH 22	COUNTY: OCONTO	CROSS SECTIONS: STH 22	SHEET	E
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FILE NAME : N:\PDS\C3D\91803130\SHEETSPLAN\090201-XS.DWG PLOT DATE : 2/12/2020 1:14 PM PLOT BY : LORENZ, KELSEY ANN PLOT NAME : PLOT SCALE : 1 IN:20 FT HORZ. / 1 IN:20 FT VERT. WISDOT/CADD SHEET 49

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