

GRE

PROJECT ID:

4310-06-71

COUNTY:

MANITOWOC

WITH: N/A

NOVEMBER 2018

ORDER OF SHEETS

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

TOTAL SHEETS = 172



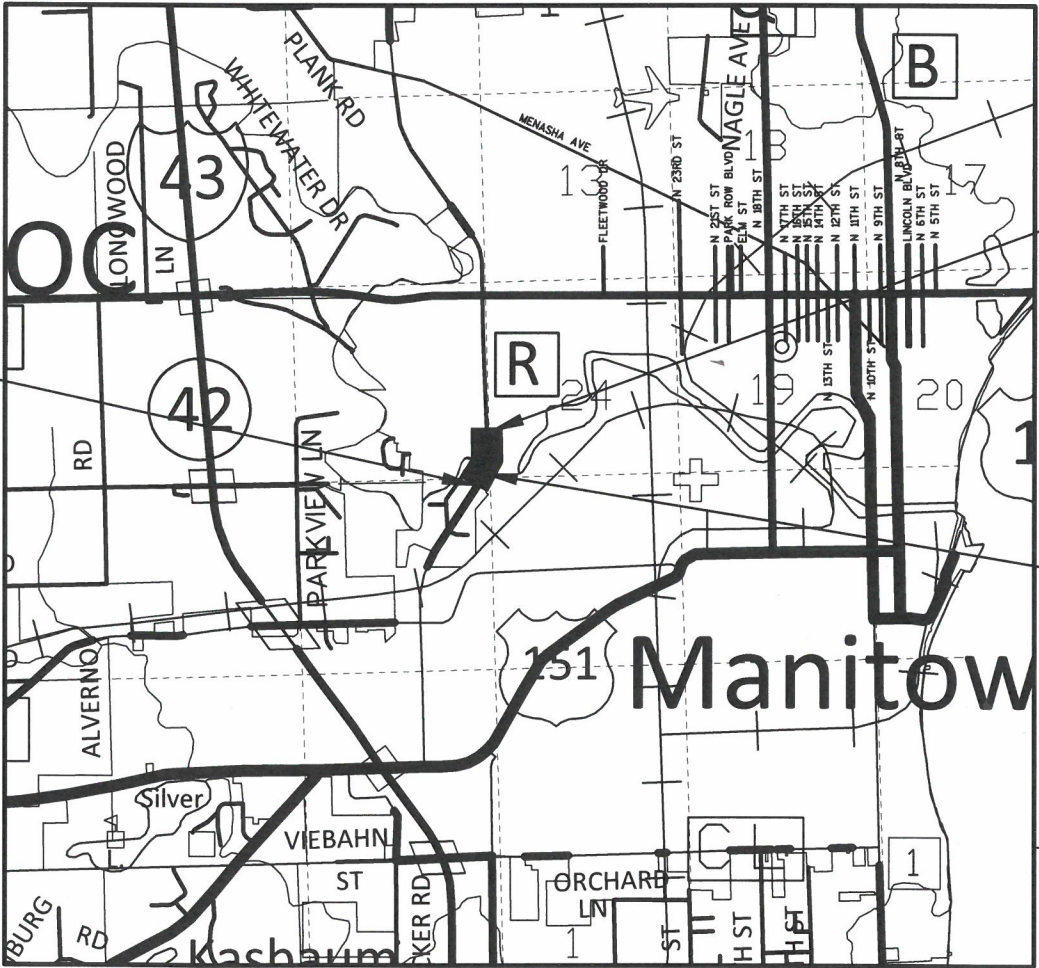
PROJECT LOCATION

STATE PROJECT NUMBER

4310-06-71

R 23 E

R 24 E



END PROJECT
STA. 64+40.00

STRUCTURE B-36-0226

DESIGN DESIGNATION

A.A.D.T.	2019	=	11,500
A.A.D.T.	2039	=	14,100
D.H.V.	(2039)	=	1,607
D.D.		=	50/50
T.		=	5.5%
DESIGN SPEED		=	40 MPH
ESALS		=	2,600,000

BEGIN PROJECT
STA. 55+01.75
Y=301933.160
X=222162.804

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	
OVERHEAD UTILITY	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

ROCK	
LABEL	
95.36	
E	
OH	
FO	
G	
SAN	
SS	
T	
W	
Ø	

LAYOUT

SCALE 0 1 MILE

TOTAL NET LENGTH OF CENTERLINE = 0.178 MI. (URBAN)

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, MANITOWOC COUNTY, NAD83 (2012), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

STATE PROJECT

4310-06-71

FEDERAL PROJECT

PROJECT

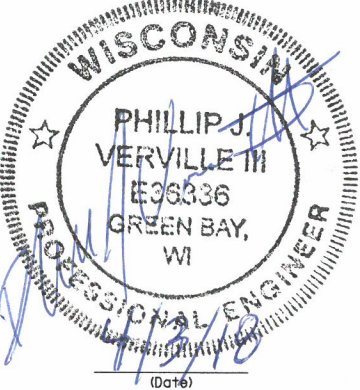
CONTRACT

ACCEPTED FOR
MANITOWOC COUNTY

4/9/2018
DATE
COUNTY HIGHWAY COMMISSIONER

ORIGINAL PLANS PREPARED BY

AYRES
ASSOCIATES



STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY
Surveyor
Designer
Management Consultant

APPROVED FOR THE DEPARTMENT
DATE: 4/10/18
Management Consultant Signature

GENERAL NOTES

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

THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY LOCAL MUNICIPAL UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.

FILL, AS SHOWN ON THE PLAN SHEETS, PERTAINS TO EMBANKMENT CONSTRUCTED FROM EXCAVATION COMMON. THE FACTOR USED FOR EXPANDING THE FILLS TO COMPUTE THE VOLUME OF MATERIAL REQUIRED IS 1.3.

EXCAVATION BELOW SUBGRADE (EBS) WILL BE MEASURED AND PAID FOR AS EXCAVATION COMMON. THE LOCATION FOR EBS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD.

SAW CUT LOCATIONS SHOWN ON THE PLAN ARE SUBJECT TO ADJUSTMENT BY THE ENGINEER IN THE FIELD. THE LINE OF SUCH SAW CUTS WILL BE NEATLY DELINEATED THROUGH THE ASPHALT AND/OR CONCRETE STREETS, DRIVEWAYS AND/OR PARKING LOTS AT THE MATCH LINE AS SHOWN ON THE PLAN DETAILS OR AS DIRECTED BY THE ENGINEER WITHOUT ANY DAMAGE TO THE REMAINING PORTION OF THE EXISTING

PRIOR TO ORDERING DRAINAGE PIPES AND STRUCTURES, VERIFY RELATED DRAINAGE INFORMATION IN THE PLAN AND PROVIDE DOCUMENTATION TO THE ENGINEER.

INLET AND DISCHARGE ELEVATIONS FOR DRAINAGE STRUCTURES SHOWN ON THE PLAN MAY BE ADJUSTED BY THE ENGINEER TO FIT FIELD CONDITIONS.

TEMPORARY STORAGE OF ANY EXCAVATED MATERIAL WILL NOT BE PERMITTED IN WETLANDS, FLOODWAY OR FLOODPLAIN OF ANY WETLANDS.

EROSION CONTROL MEASURES WILL BE PLACED AS SHOWN ON THE EROSION CONTROL PLAN. THE EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER. REMOVAL OF ITEMS ARE INCIDENTAL TO THE RESPECTIVE EROSION CONTROL BID ITEM COSTS.

NO TREES OR SHRUBS SHALL BE REMOVED WITHOUT APPROVAL BY THE ENGINEER.

RESHAPING AND SEEDING OF ANY PREVIOUSLY GRASSED AREAS WHICH ARE DISTURBED BY OPERATIONS OUTSIDE OF THE ENGINEER DETERMINED CONSTRUCTION LIMITS ARE INCIDENTAL TO THE CONTRACT.

CURB AND GUTTER ELEVATIONS ARE ALONG THE FLANGE LINE UNLESS OTHERWISE NOTED.

RADIUS POINTS, UNLESS OTHERWISE NOTED, ARE TO FACE OF CURB.

CURVE DATA IS BASED ON ARC DEFINITION.

BEARINGS SHOWN ON THIS PLAN ARE TRUE BEARINGS.

PROPERTY LINES SHOWN ARE APPROXIMATE.

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

STANDARD ABBREVIATIONS

ADT	AVERAGE DAILY TRAFFIC	NC	NORMAL CROWN
AC	ASPHALT CEMENT	PT	POINT OF TANGENCY
AGG	AGGREGATE	PC	POINT OF CURVATURE
ASPH	ASPHALT	PI	POINT OF INTERSECTION
BM	BENCH MARK	PE	PRIVATE ENTRANCE
C/L	CENTERLINE	R	RADIUS
CONC	CONCRETE	REM	REMOVE
CMP	CORRUGATED METAL PIPE	R/L OR RL	REFERENCE LINE
CR.	CREEK	RCCP	REINFORCED CONCRETE CULVERT PIPE
D	DEGREE OF CURVE	RCPSS	REINFORCED CONCRETE PIPE STORM SEWER
DHV	DESIGN HOUR VOLUME	R.O.	RUNOUT
ESALS	EQUIVALENT SINGLE AXIS LOADS	R/W	RIGHT-OF-WAY
EXIST	EXISTING	STA	STATION
FE	FIELD ENTRANCE	SE	SUPER ELEVATION
HYD	HYDRANT	SS	STORM SEWER
IP	IRON PIPE OR PIN	T	TANGENT
L	LENGTH OF CURVE	TEL	TELEPHONE
LC	LONG CHORD OF CURVE	TLE	TEMPORARY LIMITED EASEMENT
LR	LENGTH OF RUNOFF	T	TRUCKS
MH	MANHOLE	VC	VERTICAL CURVE
		W	WELL

* COMCAST CABLE
PO BOX 429
MANITOWOC, WI 54221
ATTN: MR. DAVID HOWARTH
E-MAIL: david.howarth@cable.comcast.com

* MANITOWOC PUBLIC UTILITIES - WATER
1303 S. 8TH STREET
PO BOX 1090
MANITOWOC, WI 54221-1090
ATTN: MR. ROB MICHAELSON
EMAIL: rmichaelson@mpu.org

* CITY OF MANITOWOC-SANITARY SEWER
900 QUAY STREET
MANITOWOC, WI 54220-4553
ATTN: MR. GREG MINIKEL
E-MAIL: gminikel@manitowoc.org

* MANITOWOC PUBLIC UTILITIES-ELECTRIC
1303 S. 8TH STREET
MANITOWOC, WI 54220-4543
ATTN: MR. STEVE BACALZO
E-MAIL: sbacalzo@mpu.org

* MANITOWOC PUBLIC UTILITIES-COMMUNICATIONS TELEPHONE 920-686-4310
1303 S. 8TH STREET
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ATTN: MR. STEVE BACALZO
E-MAIL: sbacalzo@mpu.org

TELEPHONE 920-482-5563

TELEPHONE 920-686-4354

TELEPHONE 920-686-6910

TELEPHONE 920-686-4310

TELEPHONE 920-686-4310

*WISCONSIN PUBLIC SERVICE-ELECTRIC
800 COLUMBUS STREET
TWO RIVERS, WI 54241
ATTN: MR. CURT BRADLEY
E-MAIL: cmbradley@wisconsinpublicservice.com

*WISCONSIN PUBLIC SERVICE-GAS
800 COLUMBUS STREET
TWO RIVERS, WI 54241
ATTN: MR. DON CONNOR
E-MAIL: djonner@wisconsinpublicservice.com

* AT&T WISCONSIN
205 SOUTH JEFFERSON STREET
GREEN BAY, WI 54301
ATTN: MR. JOE KASSAB
E-MAIL: jk572k@att.com

* WINDSTREAM KDL, INC.
8531 CTH FF
WISCONSIN RAPIDS, WI 54494
ATTN: MR. DENNIS RUESS
E-MAIL: dennis.ruess@windstream.com

*CITY OF MANITOWOC-SIGNALS
900 QUAY STREET
MANITOWOC, WI 54220-4553
ATTN: MR. MARK DEZEEUW
E-MAIL: mdezeeuw@manitowoc.org

TELEPHONE 920-639-5856

TELEPHONE 920-749-3216
CELL 920-323-4836

TELEPHONE 920-433-4200
CELL 920-202-4002

TELEPHONE 608-512-5587

TELEPHONE 920-686-6550
CELL 920-374-0034



Dial 811 or (800)242-8511

www.DiggersHotline.com

*-MEMBER OF DIGGERS HOTLINE

DEPARTMENT OF NATURAL RESOURCES

WDNR

TELEPHONE 920-366-1544

2984 SHAWANO AVE
GREEN BAY, WISCONSIN 54313
ATTENTION: MATTHEW SCHAEVE
E-MAIL: MATTHEW.SCHAEVE@WISCONSIN.GOV

RUNOFF COEFFICIENT TABLE

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

TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 1.3 ACRES
SOIL GROUP C

PROJECT NO: 4310-06-71

HWY: CTH R

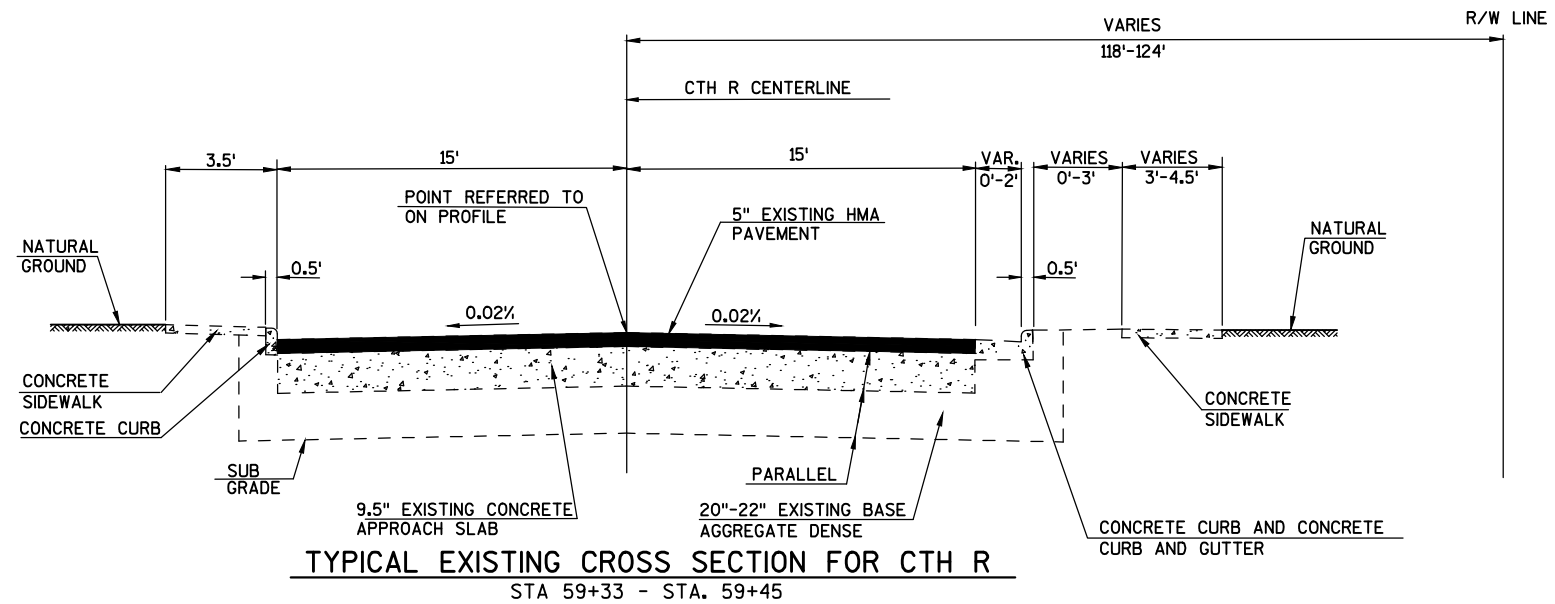
COUNTY: MANITOWOC

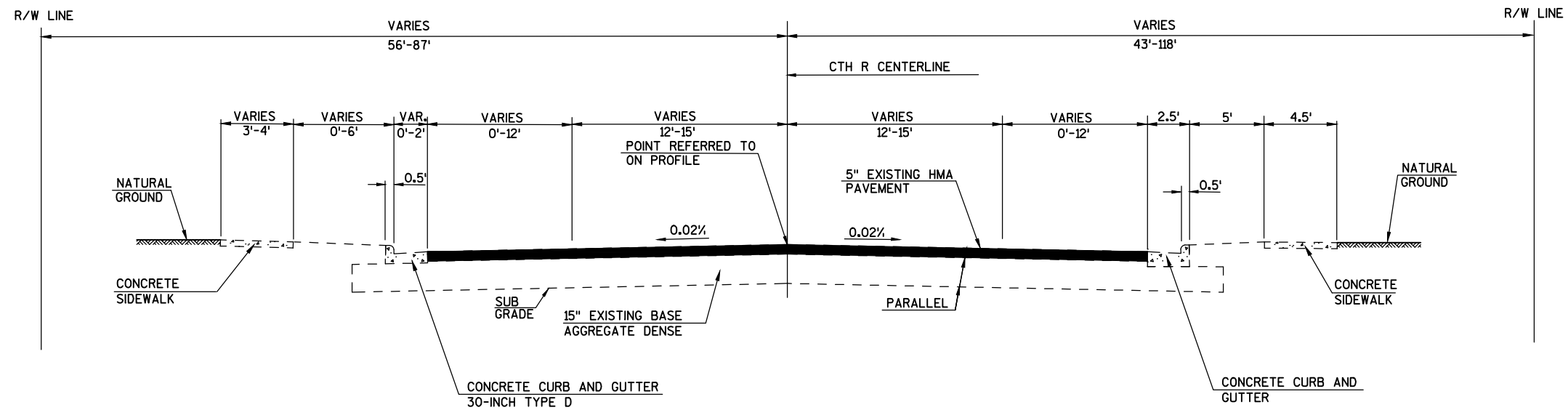
GENERAL NOTES

SHEET

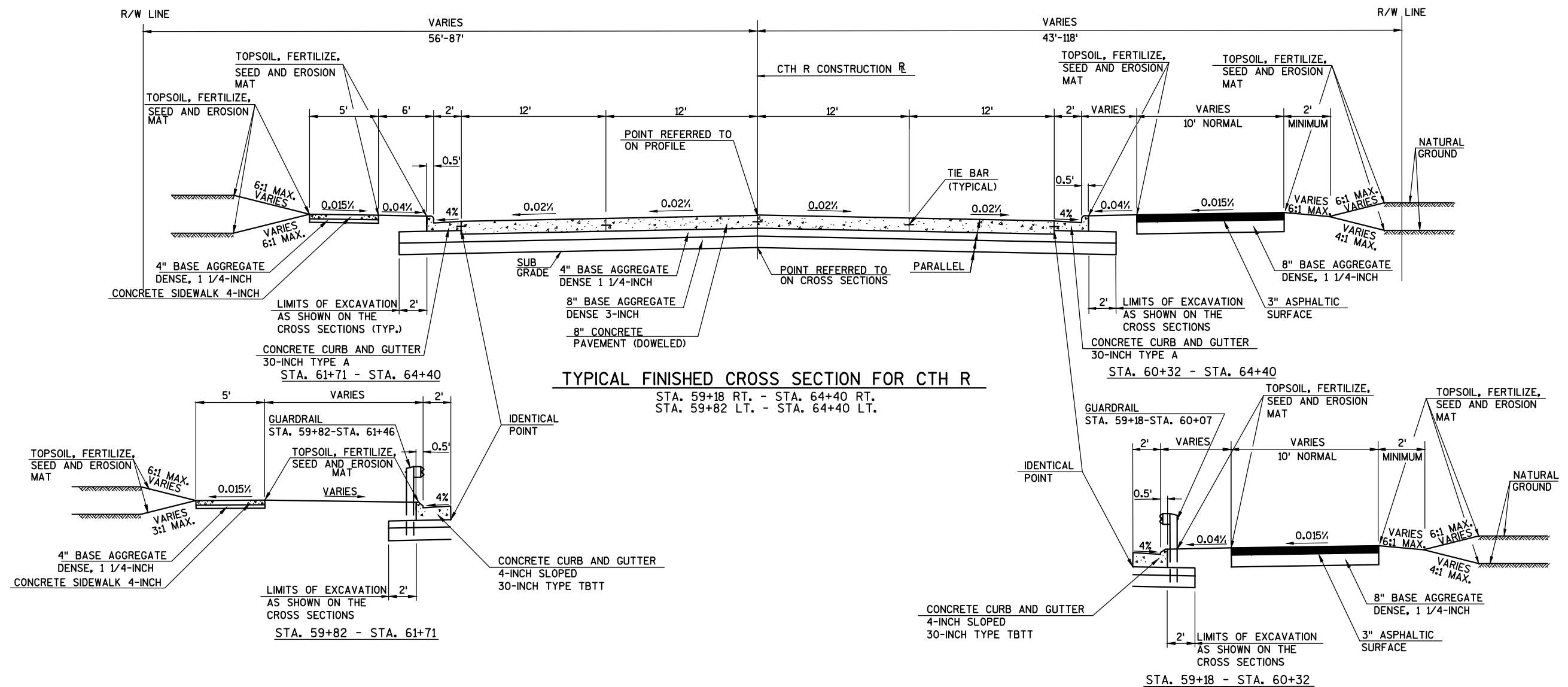
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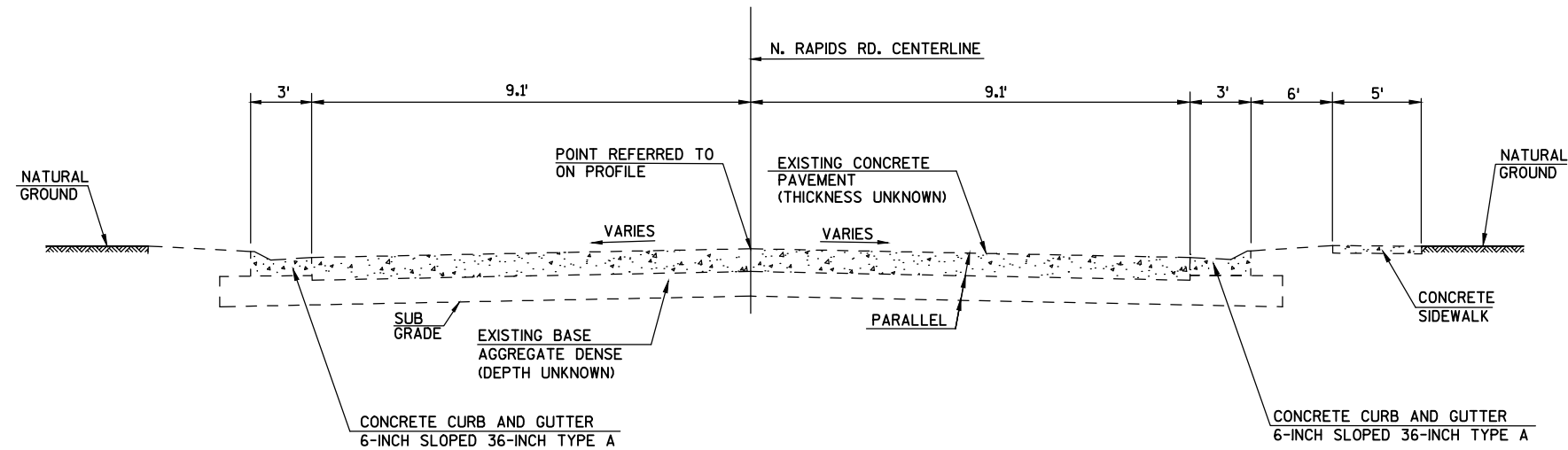
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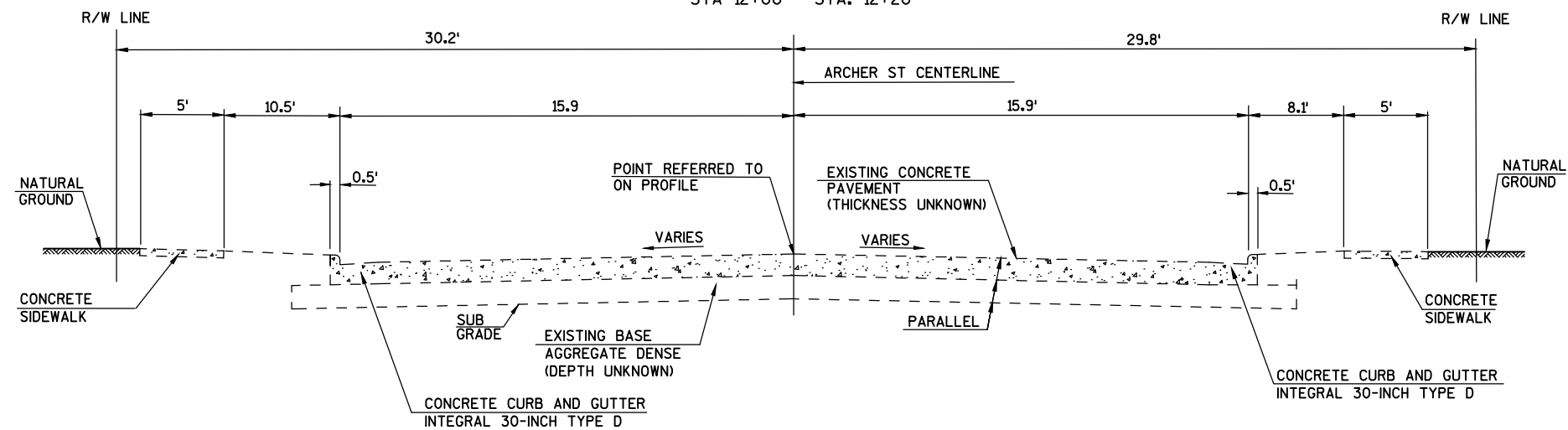
TYPICAL EXISTING CROSS SECTION FOR CTH R
STA 59+45 - STA. 64+40





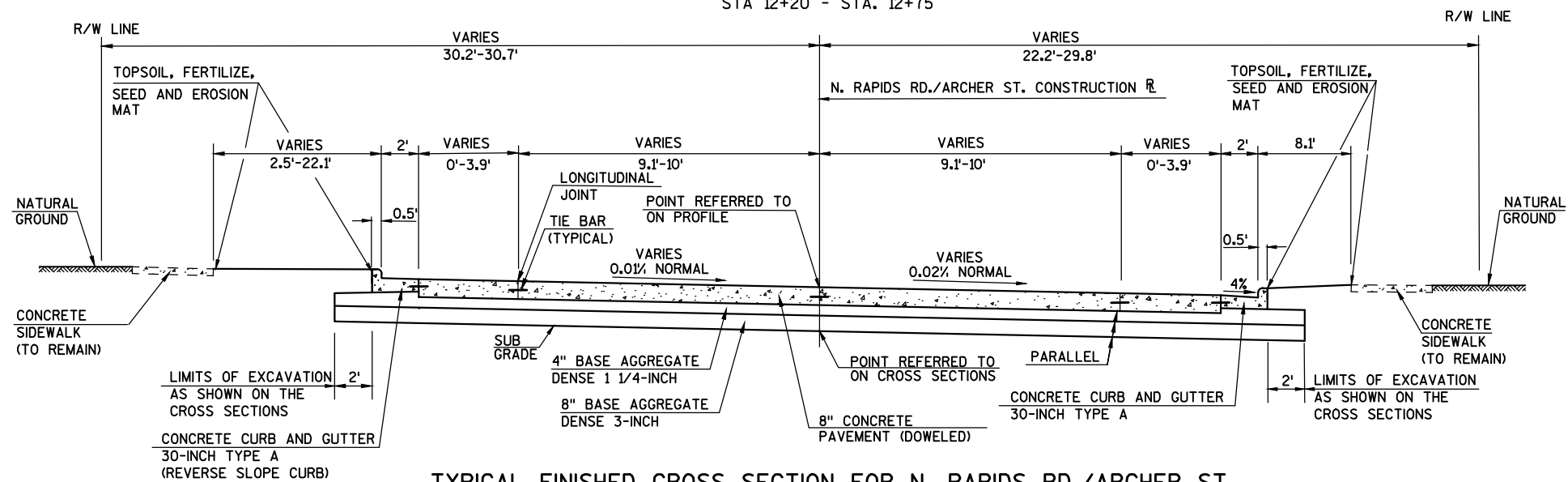
TYPICAL EXISTING CROSS SECTION FOR N. RAPIDS RD.

STA 12+00 - STA. 12+20



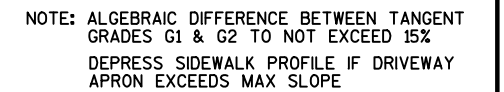
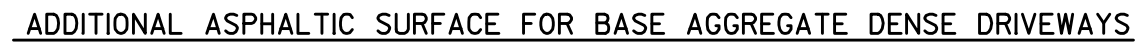
TYPICAL EXISTING CROSS SECTION FOR ARCHER STREET

STA 12+20 - STA. 12+75

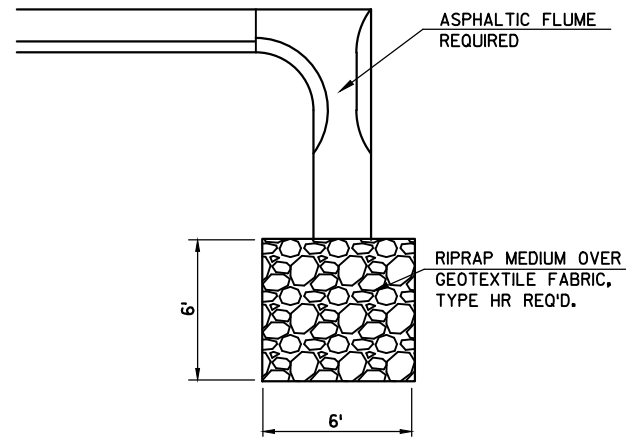


TYPICAL FINISHED CROSS SECTION FOR N. RAPIDS RD./ARCHER ST.

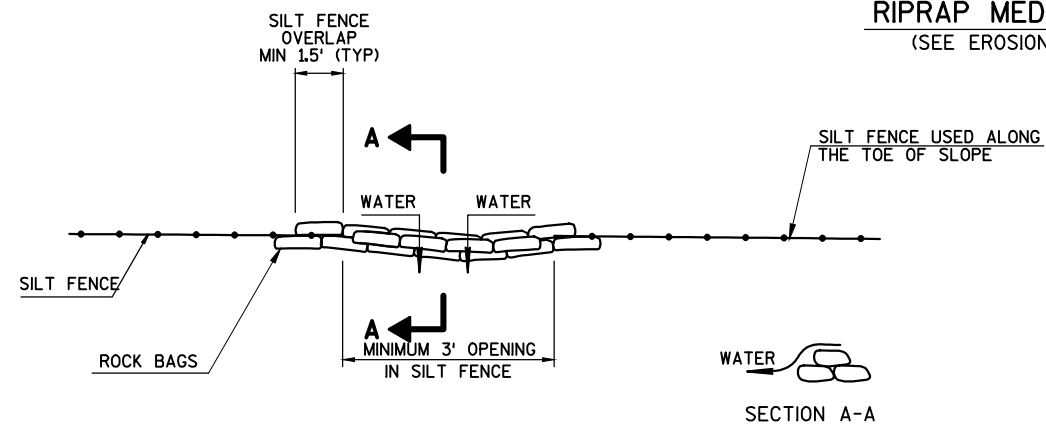
STA. 12+00 - STA. 12+75



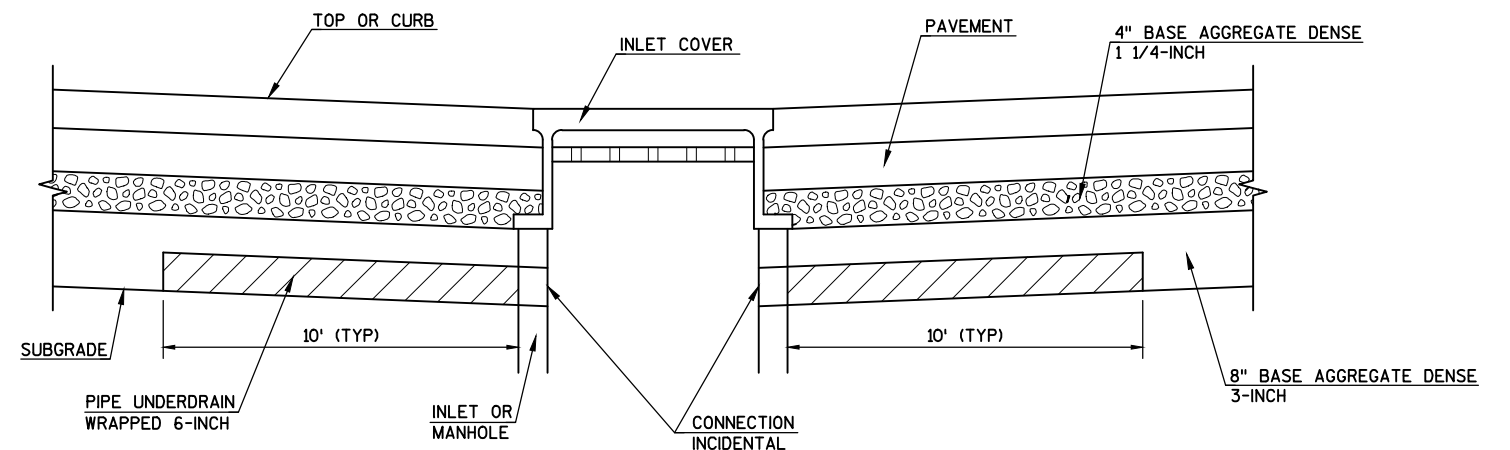
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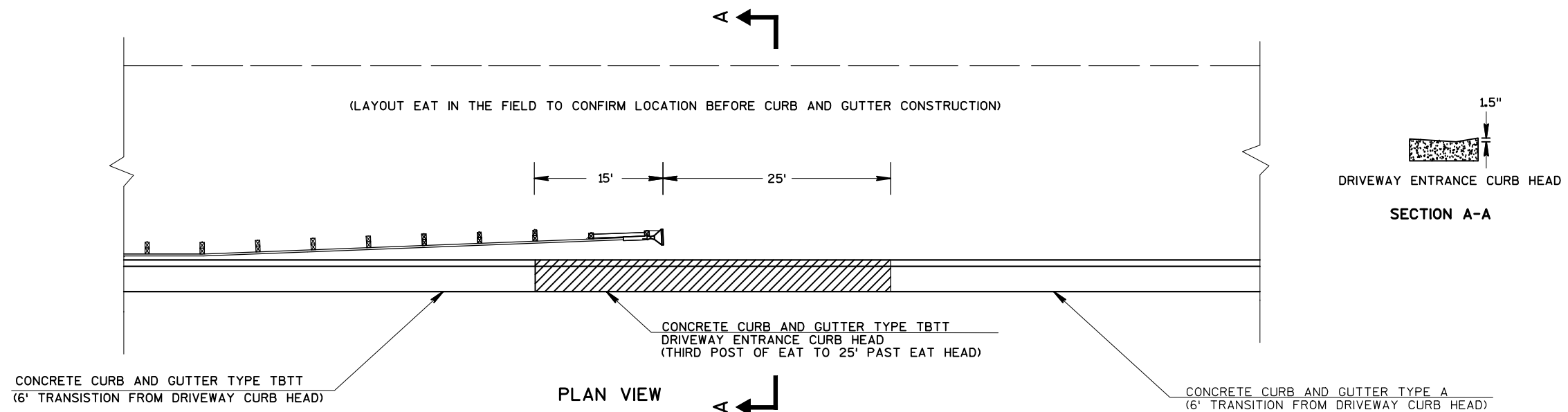
RIPRAP MEDIUM AT ASPHALTIC FLUME
(SEE EROSION CONTROL PLAN FOR LOCATION)



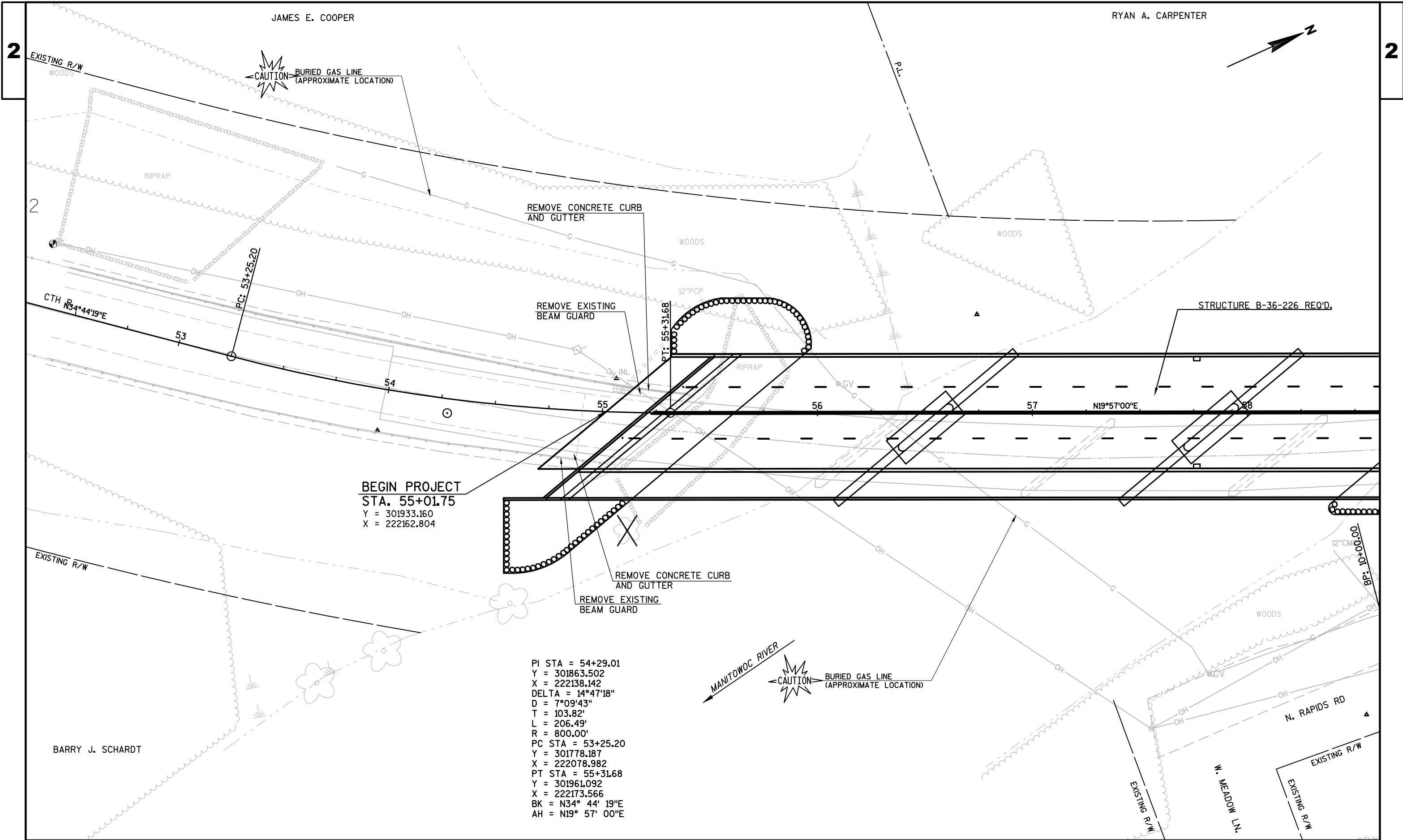
TOP VIEW
ROCK BAGS USED FOR SILT FENCE RELIEF DETAIL
PAID AS ROCK BAGS



PIPE UNDERDRAIN DETAIL
(SEE MISCELLANEOUS QUANTITIES FOR LOCATIONS)



CURB AT MGS TERMINAL END



PROJECT NQ4310-06-71

HWY: CTH R

COUNTY: MANITOWOC

PLAN DETAIL

SHEET

8

E

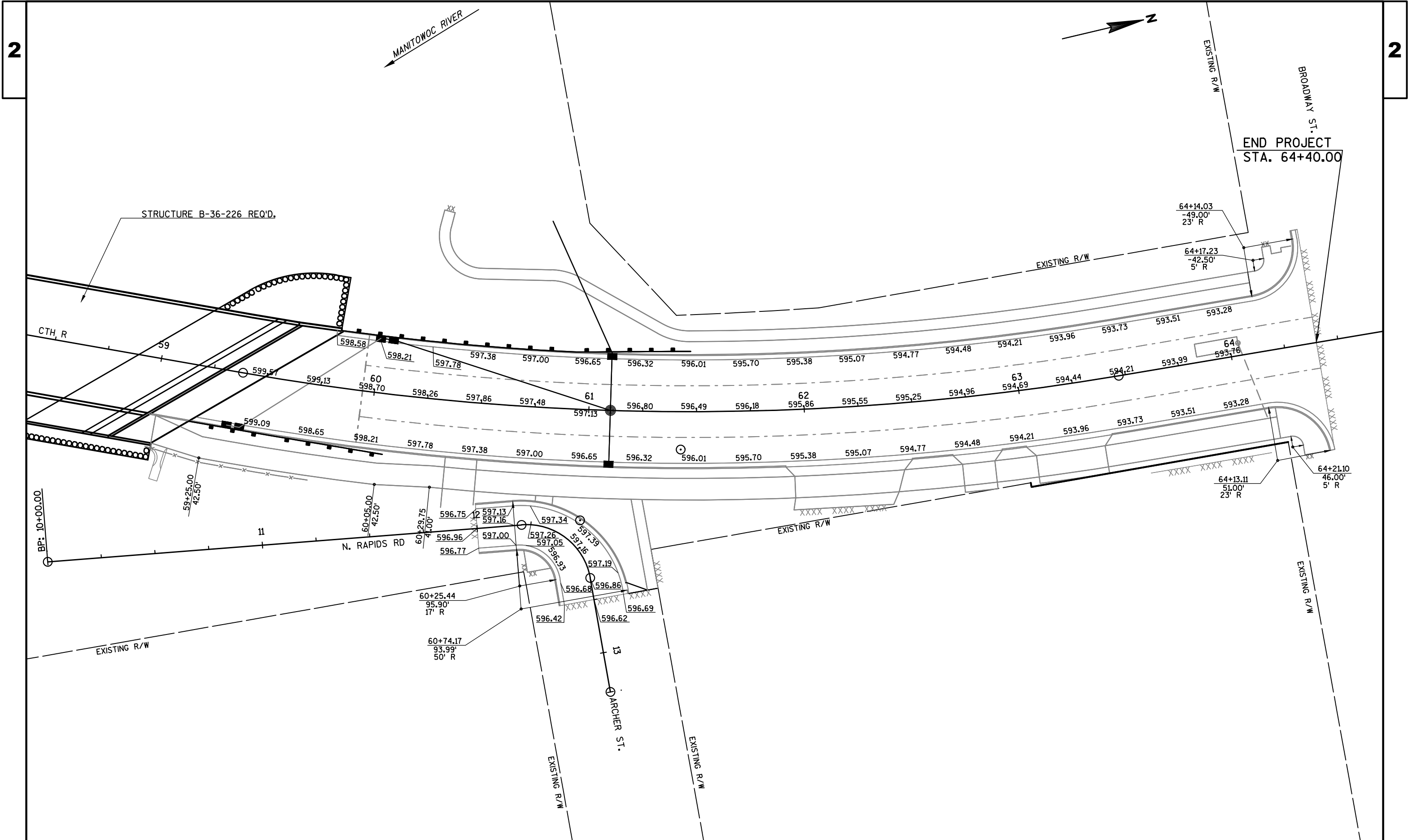
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CTH R
CURVE NOTES
PI STA = 61+44.63
Y = 302537.257
X = 222382.704
DELTA = 19°30'17"
D = 4°46'29"
T = 206.25'
L = 408.50'
R = 1200.00'
PC STA = 59+38.88
Y = 302343.386
X = 222312.332
PT STA = 63+46.89
Y = 302743.498
X = 222384.308
BK = N19°57'00"E
AH = N00°26'44"E



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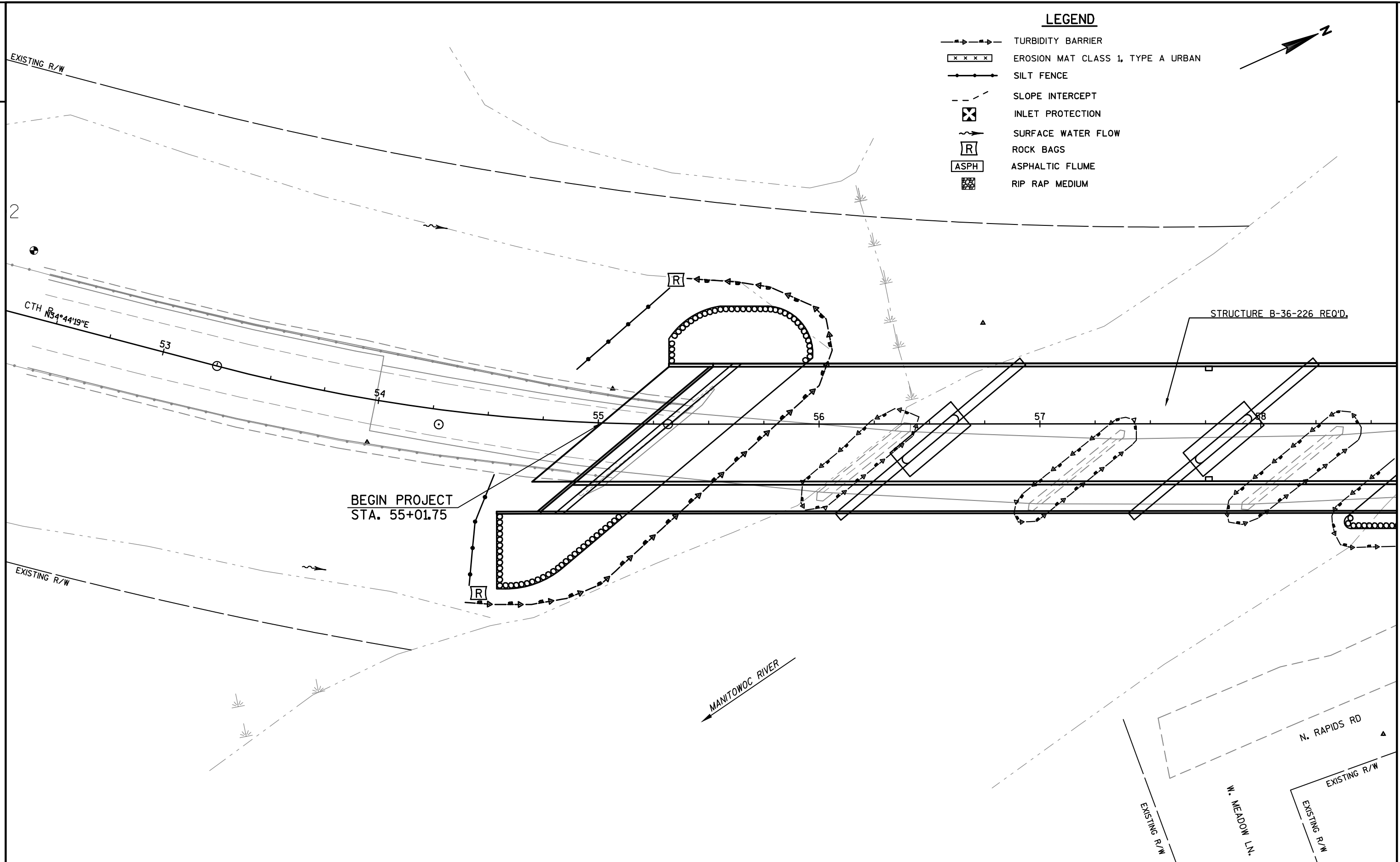
WISDOT/CADDS SHEET 42



PROJECT NO: 4310-06-71	HWY: CTH R	COUNTY: MANITOWOC	PAVEMENT GRADES AND OFFSETS	SHEET 10	E
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2

2



PROJECT NQ4310-06-71	HWY:CTH R	COUNTY:MANITOWOC	EROSION CONTROL	SHEET 11	E
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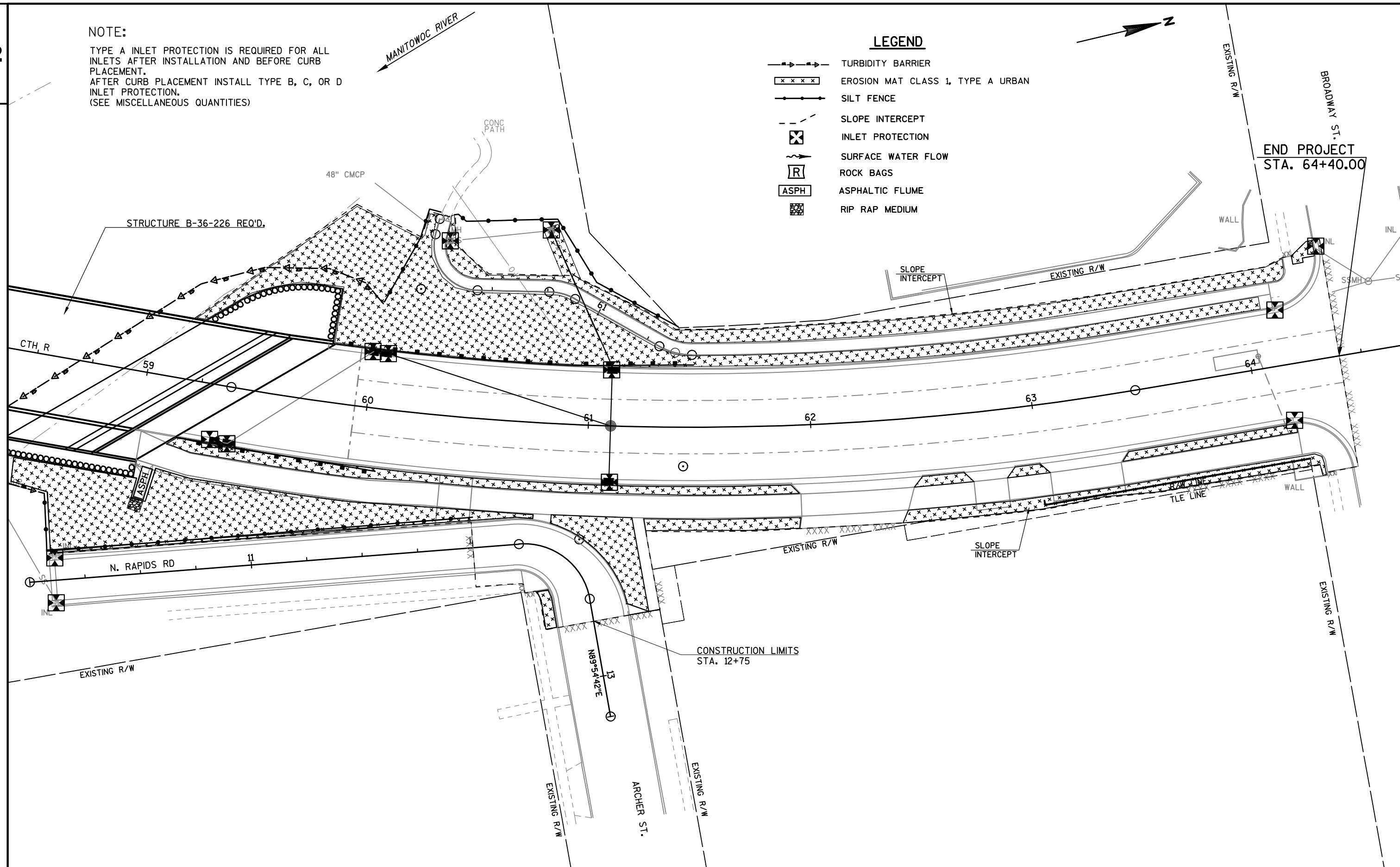
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NOTE:

TYPE A INLET PROTECTION IS REQUIRED FOR ALL
INLETS AFTER INSTALLATION AND BEFORE CURB
PLACEMENT.
AFTER CURB PLACEMENT INSTALL TYPE B, C, OR D
INLET PROTECTION.
(SEE MISCELLANEOUS QUANTITIES)

LEGEND

- | | |
|---|-----------------------------------|
|  | TURBIDITY BARRIER |
|  | EROSION MAT CLASS 1, TYPE A URBAN |
|  | SILT FENCE |
|  | SLOPE INTERCEPT |
|  | INLET PROTECTION |
|  | SURFACE WATER FLOW |
|  | ROCK BAGS |
|  | ASPHALTIC FLUME |
|  | RIP RAP MEDIUM |



PROJECT NO: 4310-06-71

HWY: CTH R

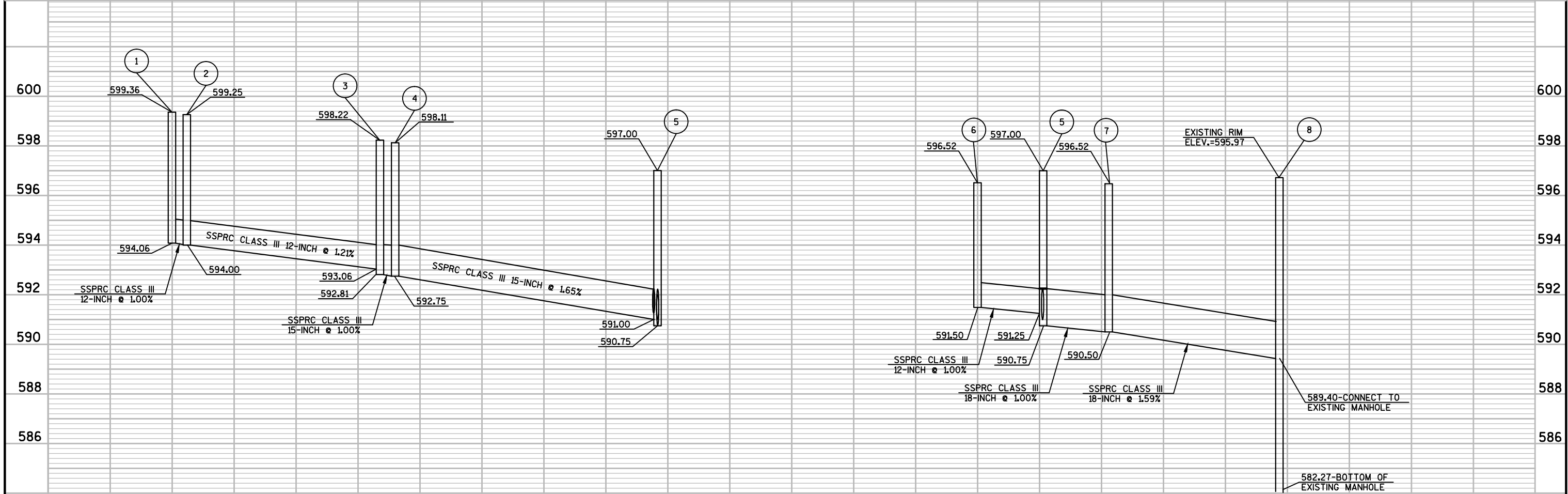
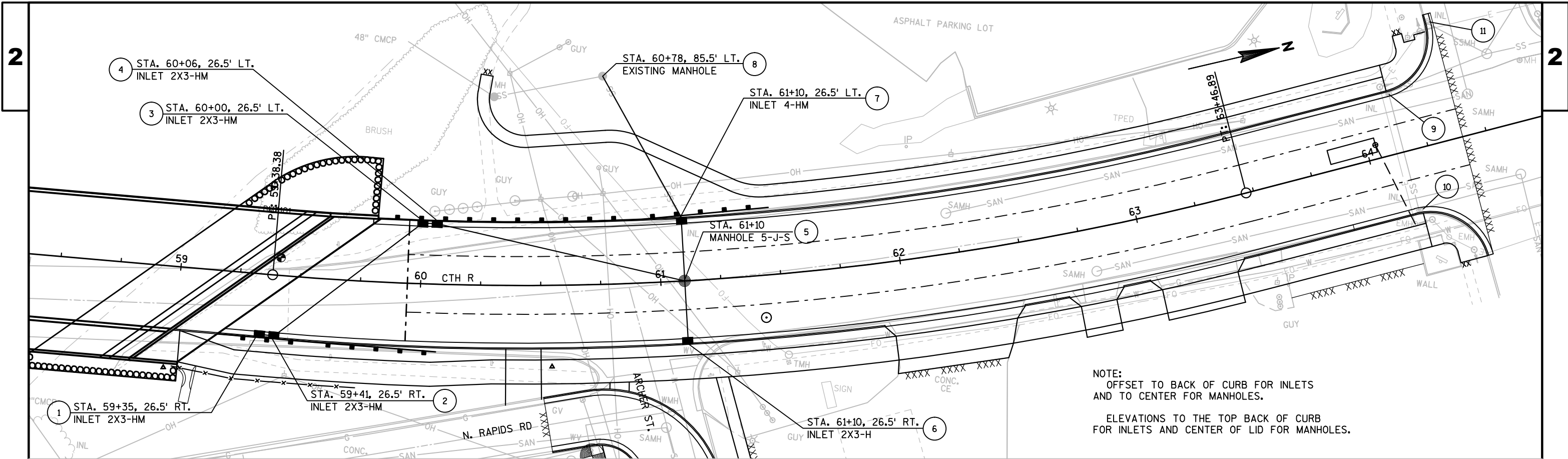
COUNTY: MANITOWOC

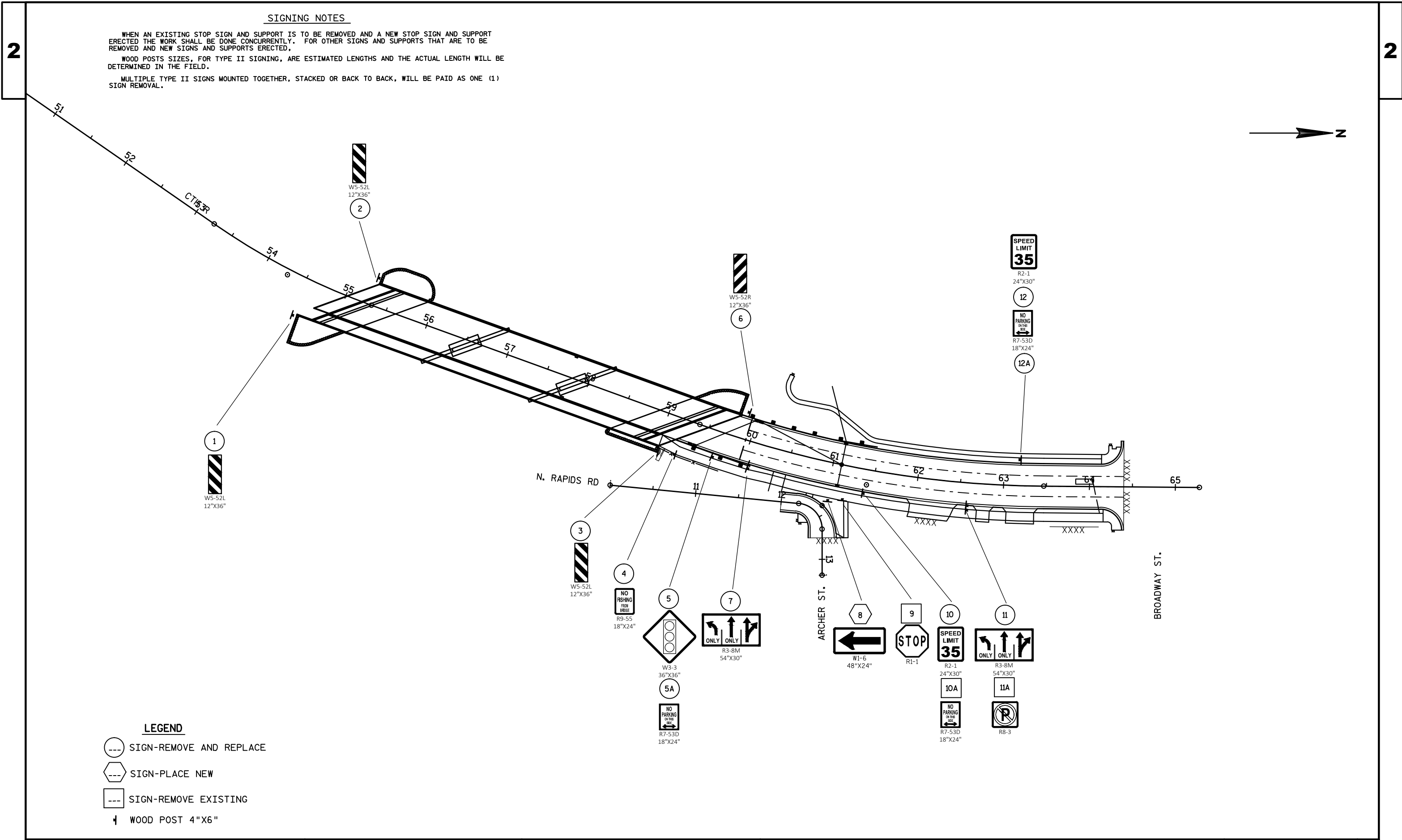
EROSION CONTROL

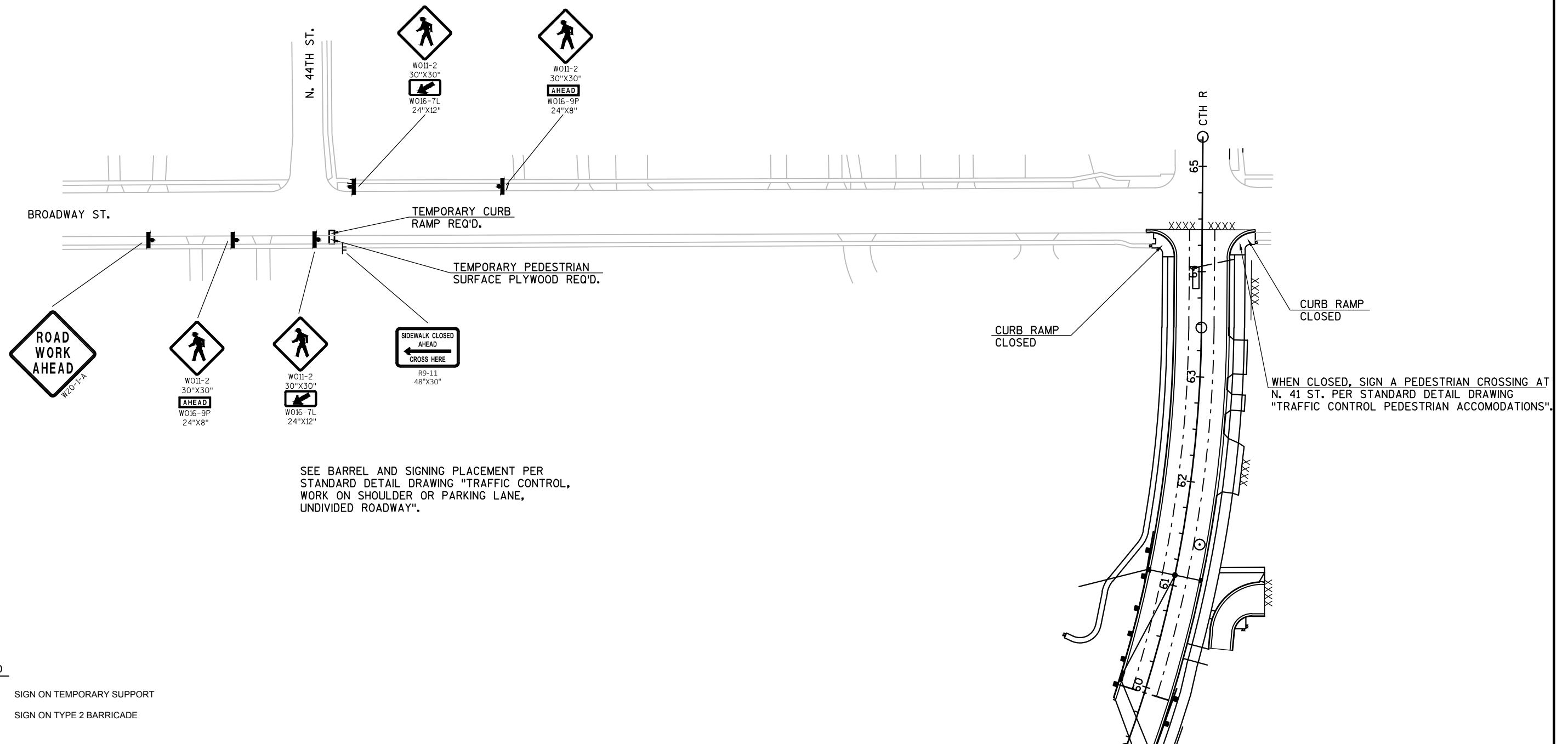
SHEET

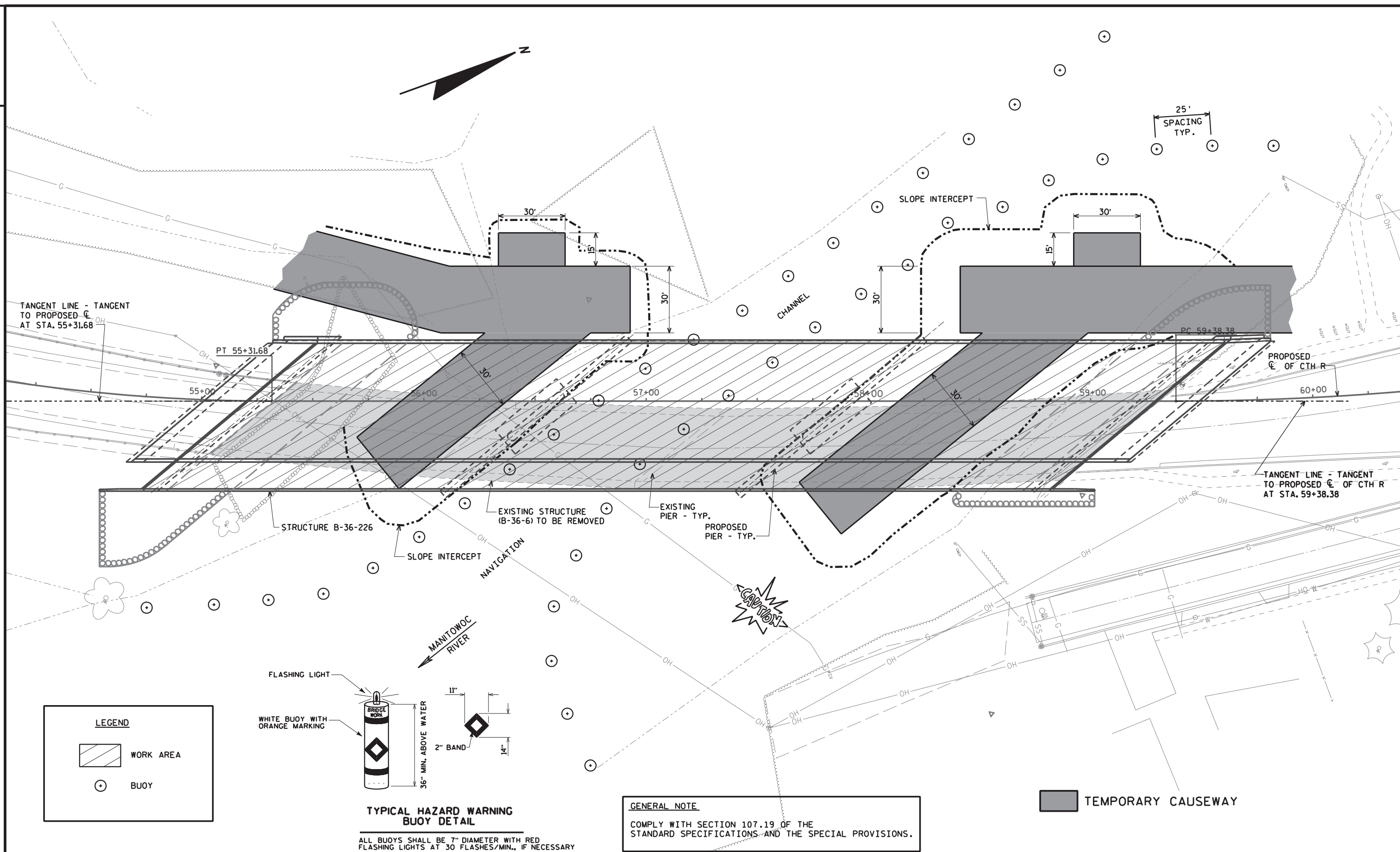
— 12

E

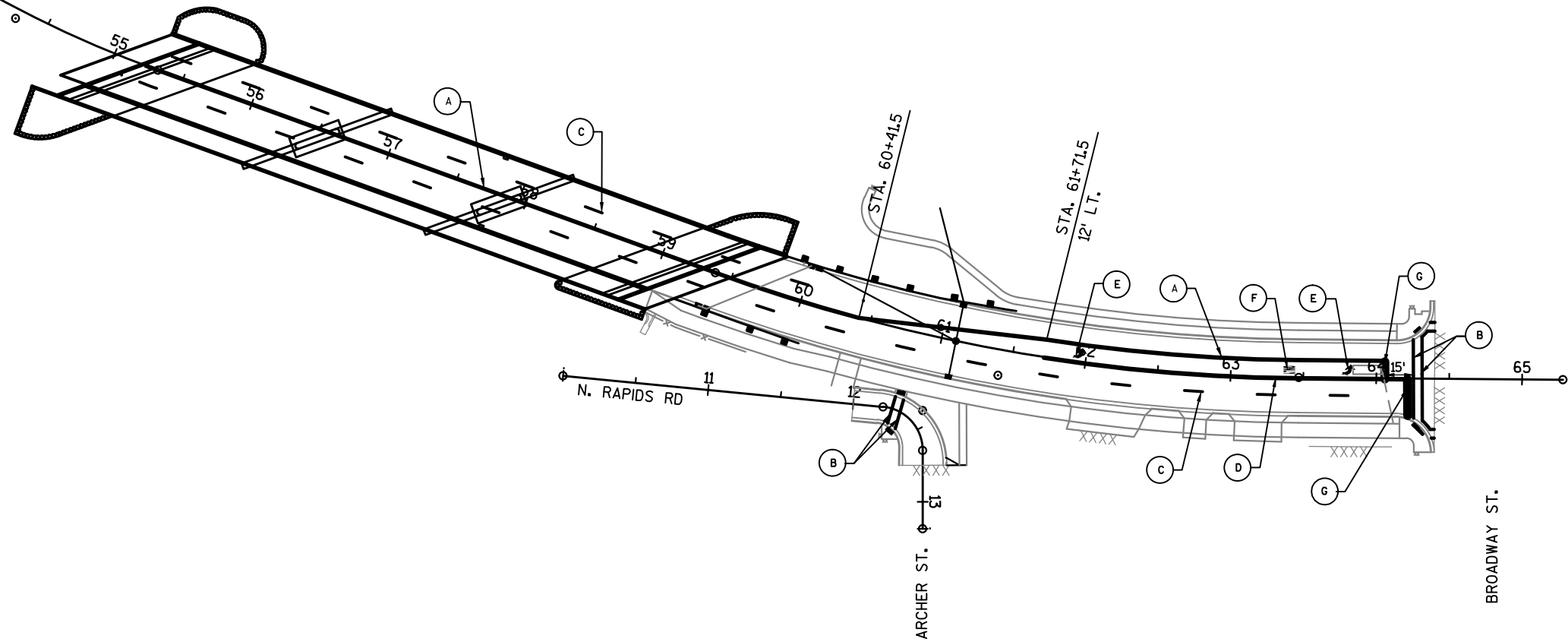








- LEGEND**
- (A) MARKING LINE EPOXY 4-INCH (DOUBLE YELLOW)
 - (B) MARKING CROSSWALK EPOXY TRANSVERSE LINE 18-INCH (WHITE)
 - (C) MARKING LINE EPOXY 4-INCH (WHITE) 12.5' LINE 37.5' GAP
 - (D) MARKING LINE EPOXY 8-INCH (WHITE)
 - (E) MARKING ARROW EPOXY (WHITE) TYPE
 - (F) MARKING WORD EPOXY (WHITE)
 - (G) MARKING STOP LINE EPOXY 18-INCH (WHITE)



Estimate Of Quantities

4310-06-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	4.000	4.000
0004	201.0205	Grubbing	STA	4.000	4.000
0006	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. 57+16	LS	1.000	1.000
0008	204.0100	Removing Pavement	SY	820.000	820.000
0010	204.0150	Removing Curb & Gutter	LF	985.000	985.000
0012	204.0155	Removing Concrete Sidewalk	SY	585.000	585.000
0014	204.0165	Removing Guardrail	LF	60.000	60.000
0016	204.0220	Removing Inlets	EACH	3.000	3.000
0018	204.0245	Removing Storm Sewer (size) 01. 12-Inch	LF	123.000	123.000
0020	205.0100	Excavation Common	CY	2,300.000	2,300.000
0022	206.1000	Excavation for Structures Bridges (structure) 01. B-36-226	LS	1.000	1.000
0024	206.5000	Cofferdams (structure) 01. B-36-226	LS	1.000	1.000
0026	210.1500	Backfill Structure Type A	TON	1,550.000	1,550.000
0028	213.0100	Finishing Roadway (project) 01. 4310-06-71	EACH	1.000	1.000
0030	305.0110	Base Aggregate Dense 3/4-Inch	TON	10.000	10.000
0032	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,675.000	1,675.000
0034	305.0130	Base Aggregate Dense 3-Inch	TON	1,715.000	1,715.000
0036	415.0080	Concrete Pavement 8-Inch	SY	2,410.000	2,410.000
0038	415.0410	Concrete Pavement Approach Slab	SY	242.000	242.000
0040	415.1080	Concrete Pavement HES 8-Inch	SY	175.000	175.000
0042	415.4100	Concrete Pavement Joint Filling	SY	3,340.000	3,340.000
0044	415.5110.S	Concrete Pavement Joint Layout	LS	1.000	1.000
0046	416.0180	Concrete Driveway 8-Inch	SY	200.000	200.000
0048	416.0610	Drilled Tie Bars	EACH	12.000	12.000
0050	416.0620	Drilled Dowel Bars	EACH	145.000	145.000
0052	465.0105	Asphaltic Surface	TON	85.000	85.000
0054	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	10.000	10.000
0056	465.0315	Asphaltic Flumes	SY	5.000	5.000
0058	502.0100	Concrete Masonry Bridges	CY	2,685.000	2,685.000
0060	502.1100	Concrete Masonry Seal	CY	608.000	608.000
0062	502.3100	Expansion Device (structure) 01. B-36-226	LS	1.000	1.000
0064	502.3200	Protective Surface Treatment	SY	3,185.000	3,185.000
0066	502.3210	Pigmented Surface Sealer	SY	700.000	700.000
0068	503.0155	Prestressed Girder Type I 54W-Inch	LF	4,375.000	4,375.000
0070	505.0400	Bar Steel Reinforcement HS Structures	LB	160,090.000	160,090.000
0072	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	277,120.000	277,120.000
0074	505.0800.S	Bar Steel Reinforcement HS Stainless Structures	LB	1,860.000	1,860.000
0076	506.2605	Bearing Pads Elastomeric Non-Laminated	EACH	44.000	44.000

Estimate Of Quantities

4310-06-71

Line	Item	Item Description	Unit	Total	Qty
0078	506.2610	Bearing Pads Elastomeric Laminated	EACH	22.000	22.000
0080	506.4000	Steel Diaphragms (structure) 01. B-36-226	EACH	60.000	60.000
0082	516.0500	Rubberized Membrane Waterproofing	SY	50.000	50.000
0084	550.2104	Piling CIP Concrete 10 3/4 X 0.25-Inch	LF	12,550.000	12,550.000
0086	601.0409	Concrete Curb & Gutter 30-Inch Type A	LF	725.000	725.000
0088	601.0586	Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type TBTT	LF	303.000	303.000
0090	602.0405	Concrete Sidewalk 4-Inch	SF	2,000.000	2,000.000
0092	602.0415	Concrete Sidewalk 6-Inch	SF	665.000	665.000
0094	602.0515	Curb Ramp Detectable Warning Field Natural Patina	SF	50.000	50.000
0096	606.0200	Riprap Medium	CY	2.000	2.000
0098	606.0300	Riprap Heavy	CY	1,270.000	1,270.000
0100	608.0312	Storm Sewer Pipe Reinforced Concrete Class III 12-Inch	LF	110.000	110.000
0102	608.0315	Storm Sewer Pipe Reinforced Concrete Class III 15-Inch	LF	112.000	112.000
0104	608.0318	Storm Sewer Pipe Reinforced Concrete Class III 18-Inch	LF	95.000	95.000
0106	611.0535	Manhole Covers Type J-Special	EACH	1.000	1.000
0108	611.0624	Inlet Covers Type H	EACH	1.000	1.000
0110	611.0627	Inlet Covers Type HM	EACH	5.000	5.000
0112	611.1004	Catch Basins 4-FT Diameter	EACH	1.000	1.000
0114	611.1230	Catch Basins 2x3-FT	EACH	5.000	5.000
0116	611.2005	Manholes 5-FT Diameter	EACH	1.000	1.000
0118	611.8110	Adjusting Manhole Covers	EACH	3.000	3.000
0120	611.8115	Adjusting Inlet Covers	EACH	3.000	3.000
0122	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	360.000	360.000
0124	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	4.000	4.000
0126	614.2300	MGS Guardrail 3	LF	75.000	75.000
0128	614.2500	MGS Thrie Beam Transition	LF	79.000	79.000
0130	614.2610	MGS Guardrail Terminal EAT	EACH	2.000	2.000
0132	616.0206	Fence Chain Link 6-FT	LF	75.000	75.000
0134	619.1000	Mobilization	EACH	1.000	1.000
0136	623.0200	Dust Control Surface Treatment	SY	10,000.000	10,000.000
0138	624.0100	Water	MGAL	40.000	40.000
0140	625.0100	Topsoil	SY	2,525.000	2,525.000
0142	627.0200	Mulching	SY	350.000	350.000
0144	628.1504	Silt Fence	LF	875.000	875.000
0146	628.1520	Silt Fence Maintenance	LF	1,750.000	1,750.000
0148	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0150	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000

Estimate Of Quantities

4310-06-71

Line	Item	Item Description	Unit	Total	Qty
0152	628.2006	Erosion Mat Urban Class I Type A	SY	2,300.000	2,300.000
0154	628.6005	Turbidity Barriers	SY	1,160.000	1,160.000
0156	628.7005	Inlet Protection Type A	EACH	13.000	13.000
0158	628.7010	Inlet Protection Type B	EACH	2.000	2.000
0160	628.7015	Inlet Protection Type C	EACH	8.000	8.000
0162	628.7020	Inlet Protection Type D	EACH	3.000	3.000
0164	628.7560	Tracking Pads	EACH	2.000	2.000
0166	628.7570	Rock Bags	EACH	40.000	40.000
0168	629.0210	Fertilizer Type B	CWT	2.000	2.000
0170	630.0120	Seeding Mixture No. 20	LB	10.000	10.000
0172	630.0140	Seeding Mixture No. 40	LB	40.000	40.000
0174	630.0200	Seeding Temporary	LB	20.000	20.000
0176	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0178	634.0614	Posts Wood 4x6-Inch X 14-FT	EACH	9.000	9.000
0180	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	1.000	1.000
0182	637.2210	Signs Type II Reflective H	SF	53.500	53.500
0184	637.2230	Signs Type II Reflective F	SF	18.000	18.000
0186	638.2602	Removing Signs Type II	EACH	12.000	12.000
0188	638.3000	Removing Small Sign Supports	EACH	14.000	14.000
0190	642.5001	Field Office Type B	EACH	1.000	1.000
0192	643.0300	Traffic Control Drums	DAY	1,035.000	1,035.000
0194	643.0410	Traffic Control Barricades Type II	DAY	147.000	147.000
0196	643.0420	Traffic Control Barricades Type III	DAY	7,550.000	7,550.000
0198	643.0705	Traffic Control Warning Lights Type A	DAY	11,476.000	11,476.000
0200	643.0900	Traffic Control Signs	DAY	3,247.000	3,247.000
0202	643.1050	Traffic Control Signs PCMS	DAY	28.000	28.000
0204	643.5000	Traffic Control	EACH	1.000	1.000
0206	644.1420.S	Temporary Pedestrian Surface Plywood	SF	35.000	35.000
0208	644.1601.S	Temporary Curb Ramp	EACH	1.000	1.000
0210	645.0111	Geotextile Type DF Schedule A	SY	190.000	190.000
0212	645.0120	Geotextile Type HR	SY	1,749.000	1,749.000
0214	646.1020	Marking Line Epoxy 4-Inch	LF	2,300.000	2,300.000
0216	646.3020	Marking Line Epoxy 8-Inch	LF	250.000	250.000
0218	646.5020	Marking Arrow Epoxy	EACH	2.000	2.000
0220	646.5120	Marking Word Epoxy	EACH	1.000	1.000
0222	646.6120	Marking Stop Line Epoxy 18-Inch	LF	36.000	36.000
0224	650.4000	Construction Staking Storm Sewer	EACH	7.000	7.000
0226	650.4500	Construction Staking Subgrade	LF	597.000	597.000
0228	650.5500	Construction Staking Curb Gutter and Curb & Gutter	LF	1,155.000	1,155.000
0230	650.6500	Construction Staking Structure Layout (structure) 01. B-	LS	1.000	1.000

Estimate Of Quantities

4310-06-71					
Line	Item	Item Description	Unit	Total	Qty
		36-226			
0232	650.7000	Construction Staking Concrete Pavement	LF	520.000	520.000
0234	650.9000	Construction Staking Curb Ramps	EACH	4.000	4.000
0236	650.9910	Construction Staking Supplemental Control (project) 01. 4310-06-71	LS	1.000	1.000
0238	650.9920	Construction Staking Slope Stakes	LF	597.000	597.000
0240	652.0125	Conduit Rigid Metallic 2-Inch	LF	50.000	50.000
0242	652.0225	Conduit Rigid Nonmetallic Schedule 40 2-Inch	LF	895.000	895.000
0244	652.0800	Conduit Loop Detector	LF	92.000	92.000
0246	653.0105	Pull Boxes Steel 12x24-Inch	EACH	1.000	1.000
0248	653.0220	Junction Boxes 18x6x6-Inch	EACH	4.000	4.000
0250	653.0900	Adjusting Pull Boxes	EACH	1.000	1.000
0252	655.0800	Loop Detector Wire	LF	104.000	104.000
0254	690.0150	Sawing Asphalt	LF	60.000	60.000
0256	690.0250	Sawing Concrete	LF	255.000	255.000
0258	715.0415	Incentive Strength Concrete Pavement	DOL	776.000	776.000
0260	715.0502	Incentive Strength Concrete Structures	DOL	16,110.000	16,110.000
0262	715.0710	Optimized Aggregate Gradation Incentive	DOL	2,061.000	2,061.000
0264	SPV.0060	Special 01. Utility Line Openings	EACH	5.000	5.000
0266	SPV.0060	Special 02. Adjusting Water Valve Box	EACH	2.000	2.000
0268	SPV.0090	Special 01. Fence Chain Link Polymer-Coated 2-FT	LF	895.000	895.000
0270	SPV.0090	Special 02. Concrete Curb & Gutter HES 30-Inch Type A	LF	150.000	150.000
0272	SPV.0090	Special 03. Marking Crosswalk Epoxy Transverse Line 18-Inch	LF	180.000	180.000

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CLEARING AND GRUBBING

STATION	TO	STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
55+00	-	57+00	CTH R	2	2
58+00	-	60+00	CTH R	2	2
TOTALS				4	4

REMOVING PAVEMENT

STATION	TO	STATION	LOCATION	204.0100 SY	REMARKS
54+90	-	55+33	CTH R	140	
59+33	-	59+45	CTH R	115	
64+15	-	64+40	CTH R	60	
12+00	-	12+75	ARCHER ST	291	
62+20				125	ENTRANCE APRON & SIDEWALK
62+75				19	ENTRANCE APRON & SIDEWALK
63+20				36	ENTRANCE APRON & SIDEWALK
12+65				34	ENTRANCE APRON & SIDEWALK
TOTAL				820	

REMOVING CONCRETE SIDEWALK

STATION	TO	STATION	LOCATION	204.0155 SY
54+90	-	55+33	CTH R	10
58+90	-	64+40	CTH R	565
12+00	-	12+75	ARCHER ST	10
TOTAL				585

REMOVING GUARDRAIL

STATION	TO	STATION	LOCATION	204.0165 LF
54+90	-	55+33	CTH R	60
TOTAL				60

REMOVING INLETS

STATION	LOCATION	204.0220 QUANTITY EA
55+06	CTH R, LT	1
55+11	CTH R, LT	1
61+10	CTH R, LT	1
TOTALS		3

REMOVING STORM SEWER

STATION	TO	STATION	LOCATION	204.0245.01 12-INCH LF
55+11	-	55+47	CTH R, LT	55
60+79	-	61+10	CTH R, LT	68
TOTALS				123

REMOVING CURB AND GUTTER

STATION	TO	STATION	LOCATION	204.0150 LF
54+90	-	55+33	CTH R	45
59+45	-	64+15	CTH R	940
TOTAL				985

EARTHWORK SUMMARY

Division	From/To Station	Location	Common Excavation (1)		Unexpanded Fill	Expanded Fill (13) Factor 1.30	Mass Ordinate +/- (14)	Waste	Comment:
			Cut (1)	EBS Excavation (3)					
1	55+02 to 64+40 12+00 to 12+75	CTH R	2,040	0	188	244	1,795	1,795	
		ARCHER ST	160	0	0	0	160	160	
		UNDISTRIBUTED	-	100	0	0	100	100	
Division 1 Total			2,200	100	188	244	2,055	2,055	
			Total Common Exc	2,300					

- 1) Common Excavation includes existing asphalt and concrete. Item number 205.0100
- 3) EBS Excavation to be backfilled with Base Aggregate Dense 3-Inch
- 13) Expanded Fill Factor = 1.33, Expanded Fill = Unexpanded Fill * Fill Factor
- 14) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

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BASE AGGREGATE DENSE AND WATER

STATION	TO	STATION	LOCATION	305.0110	305.0120 *	305.0130	624.0100
				3/4-INCH TON	1 1/4-INCH TON	3-INCH TON	WATER MGAL
59+18	-	59+94.5	CTH R	-	1,159	1,403	25
12+00.0	-	12+75	ARCHER ST	-	66	112	3
DRIVEWAYS				10	25	-	-
UNDISTRIBUTED				-	25	-	-
UNDISTRIBUTED				-	-	200	2
ENTIRE PROJECT				-	-	-	10
TOTALS				10	1,275	1,715	40

CONCRETE SIDEWALK AND DRIVEWAY

STATION	TO	STATION	LOCATION	416.0180	602.0405	602.0415	602.0515
				DRIVEWAY 8-INCH SY	SIDEWALK 4-INCH SF	SIDEWALK 6-INCH SF	CURB RAMP DETECTABLE WARNING FIELD NATURAL PATINA SF
59+18	-	59+94.5	CTH R	200	2,000	565	30
12+00.0	-	12+75	ARCHER ST	-	-	100	20
TOTALS				200	2,000	665	50

NOTES: USE SIDEWALK 6-INCH FOR ALL CURB RAMPS

ASPHALTIC FLUMES

STATION	LOCATION	465.0315 SY
59+07	CTH R, RT	5
TOTAL		5

CONCRETE CURB AND GUTTER

STATION	TO	STATION	LOCATION	601.0409	601.0586	SPV.0090.02
				30-INCH TYPE A LF	30-INCH TYPE TBTT LF	HES 30-INCH TYPE A LF
59+18	-	64+40	CTH R	725	303	-
12+00	-	12+75	ARCHER	-	-	150
TOTALS				725	303	150

CONCRETE PAVEMENT

STATION	TO	STATION	LOCATION	415.0080	415.1080	415.0410	415.4100	416.0610	416.0620
				8-INCH SY	HES 8-INCH SY	APPROACH SLAB SY	JOINT FILLING SY	DRILLED TIE BARS EACH	DRILLED DOWEL BARS EACH
59+18	-	59+94.5	CTH R	-	-	242	284	-	-
59+94.5	-	64+40	CTH R	2,410	-	-	2,816	4	103
12+00.0	-	12+75	ARCHER ST	-	175	-	240	8	42
TOTALS				2,410	175	242	3,340	12	145

ASPHALTIC PAVEMENT

STATION	TO	STATION	LOCATION	465.0105	465.0120
				ASPHALTIC SURFACE TON	ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES TON
59+02	-	66+40	CTH R	85	10
TOTALS				85	10

RIPRAP & GEOTEXTILE FABRIC

STATION	LOCATION	606.0200	645.0120 *
		RIPRAP MEDIUM CY	GEOTEXTILE FABRIC TYPE HR SY
59+07	CTH R, RT	2	4
TOTAL		2	4

* QUANTIES SHOWN ELSEWHERE IN STRUCTURE QUANTITIES

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

STEEL PLATE BEAM GUARD & MGS GUARDRAIL

STATION	TO	STATION	LOCATION	614.2300 MGS GUARDRAIL 3 LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH	REMARKS
59+15.8	-	59+53.3	CTH R, RT	-	39.5		MGS THRIE BEAM TRANSITION
59+53.3	-	60+06.4	CTH R, RT	-	-	1	MGS EAT
59+79.7	-	60+17.2	CTH R, LT	-	39.5		MGS THRIE BEAM TRANSITION
60+17.2	-	60+92.2	CTH R, LT	75	-	-	MGS GUARDRAIL
60+92.2	-	61+45.3	CTH R, LT	-	-	1	MGS EAT
TOTALS				75	79	2	

STORM SEWER STRUCTURES AND COVERS

STR. NO.	611.0535 MANHOLE COVERS TYPE J- SPECIAL EACH	611.0624 INLET COVERS TYPE H EACH	611.0627 INLET COVERS TYPE HM EACH	611.1004 CATCH BASINS 4-FT DIA EACH	611.1230 CATCH BASINS 2X3-FT EACH	611.2005 MANHOLES 5-FT DIA EACH	611.8115 ADJUSTING INLETS EACH
1	-	-	1	-	1	-	-
2	-	-	1	-	1	-	-
3	-	-	1	-	1	-	-
4	-	-	1	-	1	-	-
5	1	-	-	-	-	1	-
6	-	1	-	-	1	-	-
7	-	-	1	1	-	-	-
8	-	-	-	-	-	-	-
9	-	-	-	-	-	-	1
10	-	-	-	-	-	-	1
11	-	-	-	-	-	-	1
TOTALS:		1	1	5	1	5	3

PIPE UNDERDRAIN

STATION	LOCATION	612.0406 * WRAPPED 6-INCH LF
64+15	CTH R, LT & RT	40
TOTALS		40

* QUANTIES SHOWN ELSEWHERE IN STRUCTURE QUANTTTIES

STORM SEWER PIPE REINFORCED CONCRETE CLASS III

PIPES					
FROM	TO	LOCATION	608.0312 12-INCH LF	608.0315 15-INCH LF	608.0318 18-INCH LF
7	8	CTH R	-	-	69
7	5	CTH R	-	-	26
6	5	CTH R	26	-	-
4	5	CTH R	-	106	-
3	4	CTH R	-	6	-
2	3	CTH R	78	-	-
1	2	CTH R	6	-	-
TOTALS			110	112	95

ADJUSTING MANHOLE COVER

CATEGORY	STATION	LOCATION	611.8110 EACH	COMMENT
0030	62+22	CTH R, LT	1	SANITARY
0030	62+80	CTH R, RT	1	SANITARY
0030	12+48	ARCHER ST, LT	1	SANITARY
TOTAL			3	

FENCE CHAIN LINK

STATION	TO	STATION	LOCATION	616.0206 6-FT LF
59+02	-	59+77	CTH R	75
TOTALS				75

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

TOPSOIL, FERTILIZER, SEED AND MULCH

STATION	TO	STATION	LOCATION	625.0100	627.0200	629.0210	630.0120	630.0140	630.0200
				TOPSOIL	MULCHING	FERTILIZER,	SEEDING MIXTURE	SEEDING MIXTURE	SEEDING
				SY	SY	TYPE B	NO. 20	NO. 40	TEMPORARY
						CWT	LB	LB	LB
59+18	-	64+40	CTH R	1,880	-	1.2	-	34	-
598+25	-	599+45	ARCHER	94	-	0.1	-	2	-
CAUSEWAY BANK AREAS				225	225	0.1	6	-	-
UNDISTRIBUTED				326	125	0.7	4	4	20
				2,525	350	2	10	40	20

DUST CONTROL SURFACE TREATMENT

LOCATION	623.0200 S.Y.
UNDISTRIBUTED	10,000
TOTAL	10,000

SILT FENCE

STATION	TO	STATION	LOCATION	628.1504 QUANTITY LF	628.1520 MAINTENANCE LF
54+40	-	55+25	CTH R	305	610
59+18	-	64+40	CTH R	420	840
UNDISTRIBUTED				150	300
TOTALS				875	1,750

EROSION MAT

STATION	TO	STATION	LOCATION	628.2006 URBAN CLASS I TYPE A SY
59+18	-	64+40	CTH R	1880
12+00	-	12+75	ARCHER	94
UNDISTRIBUTED				326
TOTAL				2,300

TURBIDITY BARRIERS

STATION	LOCATION	628.6005 SY	REMARKS
SOUTH ABUTMENT	CTH R	183	ABUTMENT CONSTRUCTION
EXISTING PIERS	CTH R	705	PIER REMOVAL
NORTH ABUTMENT	CTH R	272	ABUTMENT CONSTRUCTION
TOTAL		1,160	

INLET PROTECTION

STRUCTURE NO.	STATION	LOCATION	628.7005 TYPE A EACH	628.7010 TYPE B EACH	628.7015 TYPE C EACH	628.7020 TYPE D EACH
1	-	CTH R	1	-	1	-
2	-	CTH R	1	-	1	-
3	-	CTH R	1	-	1	-
4	-	CTH R	1	-	1	-
5	-	CTH R	1	-	1	-
6	-	CTH R	1	-	1	-
7	-	CTH R	1	-	1	-
8	-	CTH R	1	-	1	-
9	-	CTH R	1	-	-	1
10	-	CTH R	1	-	-	1
11	-	CTH R	1	-	-	1
	60+30	CTH R, LT	1	1	-	-
	60+79	CTH R, LT	1	1	-	-
TOTALS			13	2	8	3

TRACKING PADS

LOCATION	628.7560 EACH
UNDISTRIBUTED	2
TOTAL	2

ROCK BAGS

STATION	LOCATION	628.7570 EACH	COMMENTS
54+50	CTH R, LT	6	SILT FENCE BREAK
55+25	CTH R, RT	6	SILT FENCE BREAK
UNDISTRIBUTED		28	
TOTAL		40	

TEMPORARY PEDESTRIAN SURFACE AND CURB RAMP

LOCATION	644.1420.S PLYWOOD SF	644.1601.S CURB RAMP EACH
BROADWAY ST AT 44TH ST	35	1
TOTALS	35	1

EROSION CONTROL

LOCATION	628.1905 MOBILIZATIONS EACH	628.1520 MOBILIZATIONS EMERGENCY EACH
CTH R	5	3
	5	3

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

TRAFFIC CONTROL SUMMARY																	
LOCATION	APPROX. SERVICE DAYS	643.0300 DRUMS		643.0410 BARRICADES TYPE II		643.0420 BARRICADES TYPE III		643.0705 WARNING LIGHTS TYPE A		643.0900 SIGNS		643.1050 SIGNS PMCS		SPV.0045.01 WATERWAY BUOYS		COMMENTS	
		NO. IN		NO. IN		NO. IN		NO. IN		NO. IN		NO. IN		NO. IN			
		SERVICE	DAYS	SERVICE	DAYS	SERVICE	DAYS	SERVICE	DAYS	SERVICE	DAYS	SERVICE	DAYS	SERVICE	DAYS		
CTH R AT BROADWAY ST	7	-	-	-	-	-	-	-	-	-	-	2	14	-	-	BEFORE CLOSURE OF ROADWAY	
CTH R AT MILL ST	7	-	-	-	-	-	-	-	-	-	-	2	14	-	-	BEFORE CLOSURE OF ROADWAY	
CTH R AT WALDO BLVD	151	-	-	-	-	1	151	2	302	1	151	-	-	-	-	ROAD CLOSED 0.8 MILE AHEAD LOCAL TRAFFIC ONLY	
CTH R AT BROADWAY ST	151	-	-	-	-	5	755	6	906	4	604	-	-	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL A & D	
SOUTH PROJECT LIMITS	151	-	-	-	-	5	755	6	906	4	604	-	-	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL A & D	
CTH R AT MILL ST	151	-	-	-	-	2	302	4	604	1	151	-	-	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL E	
CTH R AT CUSTER ST	151	-	-	-	-	1	151	2	302	1	151	-	-	-	-	ROAD CLOSED 1 MILE AHEAD LOCAL TRAFFIC ONLY	
ARCHER ST AT CTH LP	151	-	-	-	-	5	755	6	906	4	604	-	-	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL A & D	
ARCHER ST AT 41ST ST	151	-	-	-	-	2	302	4	604	1	151	-	-	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL E	
DRIVEWAYS ON CTH R	151	-	-	-	-	15	2265	18	2718	3	453	-	-	-	-	SDD "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" - DETAIL D	
BROADWAY ST AT CTH R (SOUTH SIDE)	21	20	420	-	-	-	-	-	-	2	42	-	-	-	-	SDD "TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY"	
SIDEWALK CROSSING BROADWAY AT 44TH ST	21	15	315	1	21	-	-	-	-	10	210	-	-	-	-	SDD "TRAFFIC CONTROL, PEDESTRIAN ACCOMADATION" (CLOSED SIDEWALK CROSSING)	
SIDEWALK CLOSURE BROADWAY AT CTH R (WEST SIDE)	21	-	-	2	42	-	-	-	-	2	42	-	-	-	-	SDD "TRAFFIC CONTROL, PEDESTRIAN ACCOMADATION" (SIDEWALK CLOSED)	
SIDEWALK CLOSURE BROADWAY AT CTH R (EAST SIDE)	21	-	-	2	42	-	-	-	-	2	42	-	-	-	-	SDD "TRAFFIC CONTROL, PEDESTRIAN ACCOMADATION" (SIDEWALK CLOSED)	
SIDEWALK CROSSING BROADWAY AT 41ST ST	21	-	-	1	21	-	-	-	-	1	21	-	-	-	-	SDD "TRAFFIC CONTROL, PEDESTRIAN ACCOMADATION" (CLOSED SIDEWALK CROSSING)	
MILL STREET AT PEDESTRIAN BRIDGE	21	-	-	1	21	-	-	-	-	1	21	-	-	-	-	SDD "TRAFFIC CONTROL, PEDESTRIAN ACCOMADATION" (SIDEWALK CLOSED)	
ARCHER ST TO BROADWAY ST (EAST SIDE)	151	-	-	-	-	14	2114	28	4228	-	-	-	-	-	-	CLOSE ALL ENTRANCES WITH TYPE III BARRICADES.	
ARCHER ST TO BROADWAY ST (EAST SIDE)	30	10	300	-	-	-	-	-	-	-	-	-	-	-	-	BARRELS ALONG PARKING LOT CONSTRUCTION LIMIT	
MANITOWOC RIVER	110	-	-	-	-	-	-	-	-	-	-	-	-	40	4,400		
TOTALS			1035		147		7550		11476		3247		28		4400		

NOTE: COORDINATE BARRICADES & SIGNS WITH COUNTY PROJECT

MARKING										
STATION	TO	STATION	LOCATION	646.1020		646.3020	646.5020	646.5120	646.6120	SPV.0090.03
				EPOXY	EPOXY	EPOXY	ARROWS	WORDS	STOP LINE	EPOXY
				4-INCH	4-INCH	8-INCH	EPOXY	EPOXY	EPOXY	TRANSVERSE LINE
				YELLOW	WHITE	WHITE			18-INCH	18-INCH
				LF	LF	LF	EACH	EACH	LF	LF
55+01.75	-	64+40	CTH R	1,876	424	250	2	1	36	140
12+00	-	12+75	ARCHER	-	-	-	-	-	-	40
TOTALS				2,300		250	2	1	36	180

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

CONSTRUCTION STAKING

CATEGORY	STATION	TO	STATION	LOCATION	650.4000	650.4500	650.6500	650.7000	650.9000	650.9910	650.9920
					STORM SEWER	SUBGRADE	STRUCTURE LAYOUT	CONCRETE PAVEMENT	CURB RAMPS	SUPPLEMENTAL CONTROL	SLOPE STAKES
					EACH	LF	LF	LF	EACH	LS	LF
0010	59+18	-	64+40	CTH R	7	522	-	445	2	1	522
0010	12+00	-	12+75	ARCHER ST	-	75	-	75	2	-	75
SUBTOTAL					7	597	0	520	4	1	597
0020	55+01.75	-	59+18	CTH R	-	-	1	-	-	-	-
SUBTOTAL					0	0	1	0	0	0	0
TOTALS					7	597	1	520	4	1	597

TRAFFIC DETECTOR LOOPS

STATION	LOCATION	LOOP SIZE (FT X FT)	NUMBER OF TURNS	652.0800 CONDUIT LOOP DETECTOR LF	653.0105 PULL BOXES STEEL 12x24 INCH EACH	653.0900 ADJUSTING PULLBOXES EACH	655.0800 LOOP DETECTOR WIRE LF	REMARKS
64+00	CTH R	6' X 20'	2	92	1	-	104	SDD 9F9: LOOP DETECTOR PLACED IN CRUSHED A GGREGATE BASE (NEW CONCRETE PAVEMENT)
64+24	CTH R, RT	-	-	-	-	1	-	
TOTALS				92	1	1	104	

SAWING PAVEMENT

STATION	LOCATION	690.0150 SAWING ASPHALT LF	690.0250 SAWING CONCRETE LF	REMARKS
64+40	CTH R	-	111	SIDEWALK PE
12+00	ARCHER ST	-	23	
12+75	ARCHER ST	-	47	
60+26	CTH R, LT	-	5	
62+75	CTH R, RT	-	46	
63+75	CTH R, RT	60	-	PARKING LOT
64+25	CTH R, LT	-	4	SIDEWALK
64+28	CTH R, RT	-	4	SIDEWALK
12+65	ARCHER ST	-	15	PE
TOTALS		60	255	

UTILITY LINE OPENINGS

STATION	LOCATION	SPV.0060.01 EACH
UNDISTRIBUTED	CTH R	5
TOTAL		5

ADJUSTING WATER VALVE BOXES

CATEGORY	STATION	LOCATION	SPV.0060.02 EACH
0030	61+15	CTH R, RT	1
0030	12+43	ARCHER ST, LT	1
TOTAL			2

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

ERECTION & REMOVAL OF PERMANENT SIGNING, TYPE II

SIGN NO.	LOCATION	SIGN CODE	W X H	637.2210 SIGNS TYPE II REFLECTIVE TYPE H S.F.	637.2230 SIGNS TYPE II REFLECTIVE TYPE F S.F.	634.0612 POSTS WOOD 4x6x12 EACH	634.0614 POSTS WOOD 4x6x14 EACH	634.0616 POSTS WOOD 4x6x16 EACH	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH	REMARKS
1	SOUTH ABUTMENT	W5-52R	12" X 36"	3.00	---	1	---	---	1	1	
2	"	W5-52L	12" X 36"	3.00	---	1	---	---	1	1	
3	NORTH ABUTMENT	W5-52L	12" X 36"	3.00	---	1	---	---	1	1	
4	N. OF NORTH ABUTMENT	R9-55	18" X 24"	3.00	---	---	---	---	1	1	
5	"	W3-3	36" X 36"	---	9.00	---	---	1	1	1	
5A	"	R7-53D	18" X 24"	3.00	---	---	---	---	1	1	MOUNT BELOW SIGN #5
6	NORTH ABUTMENT	W5-52R	12" X 36"	3.00	---	1	---	---	1	1	
7	N. OF NORTH ABUTMENT	R3-8M	54" X 30"	11.25	---	---	2	---	1	2	
8	ARCHER STREET	W1-6	48" X 24"	---	9.00	---	1	---	---	---	
9	ARCHER STREET	R1-1		---	---	---	1	---	1	1	
10	N. OF ARCHER STREET	R2-1	24" X 30"	5.00	---	---	1	---	1	1	35 MPH
10A	"	R7-53D		---	---	---	---	---	---	---	REMOVE WITH #10
11	"	R3-8M	54" X 30"	11.25	---	---	2	---	1	2	
11A	"	R8-3		---	---	---	---	---	---	---	REMOVE WITH #11
12	S. OF BROADWAY STREET	R2-1	24" X 30"	5.00	---	---	1	---	1	1	35 MPH
12A	"	R7-53D	18" X 24"	3.00	---	---	1	---	---	---	
TOTALS				53.50	18.00	4	9	1	12	14	

ALL ITEMS ARE CATEGORY 0010 UNLESS OTHERWISE STATED

BEGIN RELOCATION
ORDER PROJECT 4310-06-00
STA. 61+25
Y = 302,523.041
X = 222,362.138
LOCATED 2172.47' SOUTH AND 8.66'
EAST OF THE WEST QUARTER CORNER
OF SECTION 24, T 19 N, R 23 E.

PI STA = 61+44.63
Y = 302,537.257
X = 222,382.704
DELTA = 19°30'17" LT
D = 4°46'29"
T = 206.25'
L = 408.50'
R = 1,200.00'
PC STA = 59+38.38
PT STA = 63+46.89
BK = S19°57'00"W

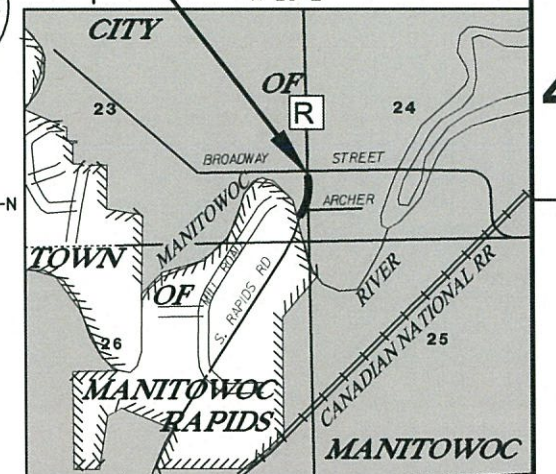
SCHEDULE OF LANDS AND INTERESTS REQUIRED

PARCEL NO.	OWNERSHIP	INTEREST REQUIRED	R/W SQFT			
			NEW	EXISTING	TOTAL	TLE
1	SDK PETROLEUM, LLC.	FEE & TLE	112	---	112	977
2	JAMES BIALEK JR.	FEE & TLE	130	---	130	325

OWNER'S NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY AND ARE SUBJECT TO CHANGE PRIOR TO THE TRANSFER OF LAND INTERESTS TO THE COUNTY.

R/W PROJECT NUMBER 4310-06-00	SHEET NUMBER 4.01	TOTAL SHEETS 1
FEDERAL PROJECT NUMBER		
PLAT OF RIGHT-OF-WAY REQUIRED FOR T MANITOWOC RAPIDS, CTH R MANITOWOC RIVER BRIDGE & APPROACHES		
CTH R MANITOWOC COUNTY		
CONSTRUCTION PROJECT NUMBER 4310-06-71		

2" ALUMINUM CAPPED
MONUMENT
Y=304,695.509
X=222,353.474
LAYOUT SCALE 2,000FT
PROJECT LOCATION
NET CENTERLINE LENGTH 0.062 MI
R-23-E



END RELOCATION ORDER
PROJECT 4310-06-00
STA 64+50
Y = 302,846.621
X = 222,385.110
LOCATED 1848.89' SOUTH AND
31.64' EAST OF THE WEST
QUARTER CORNER OF SECTION 24,
T 19 N, R 23 E.

APPROVED
FOR
MANITOWOC COUNTY

12/12/17
DATE
(Signature)

PLAT PREPARED BY

AYRES ASSOCIATES

THE SURVEY IS PREPARED AT THE REQUEST OF
MANITOWOC COUNTY. THE TOPOGRAPHY AND
UTILITY SURVEY WAS PERFORMED IN MARCH 2016.
THIS SURVEY IS ACCURATE TO THE BEST OF MY
KNOWLEDGE AND BELIEF.



James Cappear
REGISTRATION NUMBER S-3044
12/08/2017
DATE

29

CTH R
4310-06-71

CONVENTIONAL SYMBOLS

FOUND IRON PIPE/PIN
R/W MONUMENT
R/W STANDARD
SIGN
SECTION CORNER MONUMENT
SECTION CORNER SYMBOL
FEE (HATCH VARIES)

SECTION LINE
QUARTER LINE
SIXTEENTH LINE
NEW REFERENCE LINE
NEW R/W LINE
EXISTING R/W LINE
PROPERTY LINE
LOT & TIE
CORPORATE LIMITS
TEMPORARY LIMITED EASEMENT
FENCE
SLOPE INTERCEPTS
PERMANENT LIMITED EASEMENT
NO ACCESS
(BY STATUTORY AUTHORITY)
NO ACCESS
(BY PREVIOUS ACQUISITION/CONTROL)
ACCESS CONTROL BY ACQUISITION
ACCESS RESTRICTED
(BY PREVIOUS PROJECT/CONTROL)

CONVENTIONAL ABBREVIATIONS

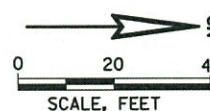
ACCESS POINT/
DRIVEWAY CONNECTION
ACCESS RIGHTS
ACRES
AND OTHERS
CENTERLINE
CERTIFIED SURVEY MAP
CORNER
DOCUMENT
EASEMENT
FIELD ENTRANCE
LAND CONTRACT
MONUMENT
PAGE
PERMANENT LIMITED EASEMENT
PROPERTY LINE
RECORDED AS

CONVENTIONAL UTILITY SYMBOLS

WATER
GAS
TELEPHONE
OVERHEAD
TRANSMISSION LINES
ELECTRIC
CABLE TELEVISION
FIBER OPTIC

R/W POINT STATION & OFFSET TABLE

POINT	STATION	OFFSET	Y	X
100	63+00.09	43.14'	302,694.703	222,426.122
101	63+00.18	45.14'	302,694.711	222,428.122
102	64+19.43	43.35'	302,815.702	222,428.221



NOTES:

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

ALL NEW RIGHT-OF-WAY MONUMENTS WILL BE TYPE 2 (TYPICALLY 3/4" X 24" CAPPED IRON BARS), UNLESS OTHERWISE NOTED, AND WILL BE PLACED PRIOR TO THE COMPLETION OF THE PROJECT.

RIGHT-OF-WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY SYSTEM OR OTHER "SURVEYS OF PUBLIC RECORD."

DIMENSIONING FOR THE NEW RIGHT-OF-WAY IS MEASURED ALONG AND PERPENDICULAR TO THE NEW REFERENCE LINES.

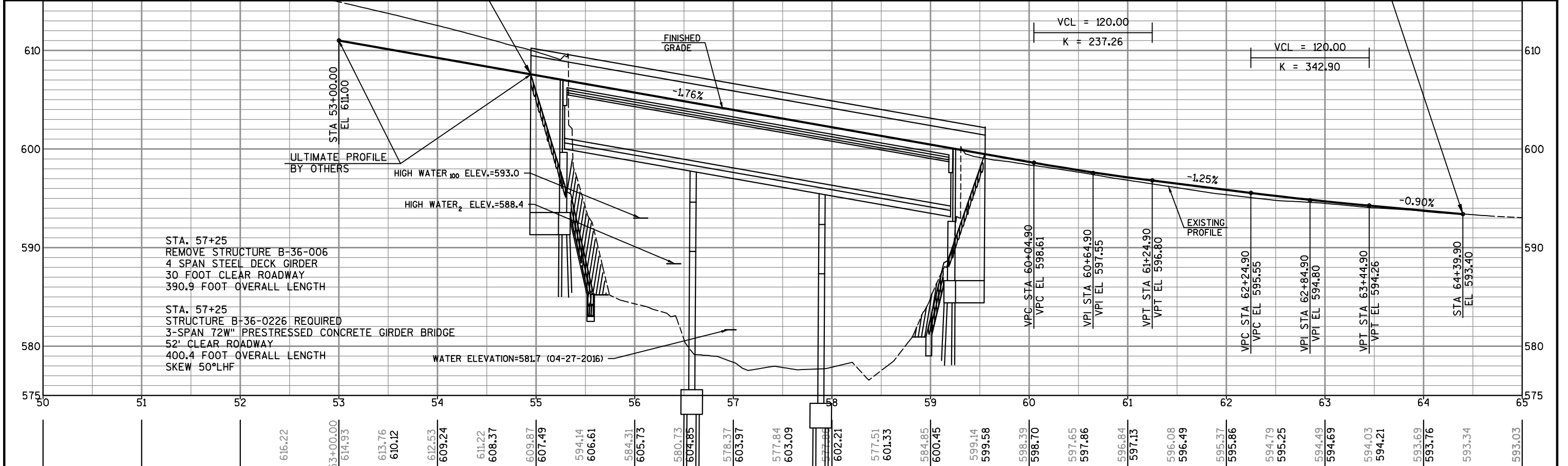
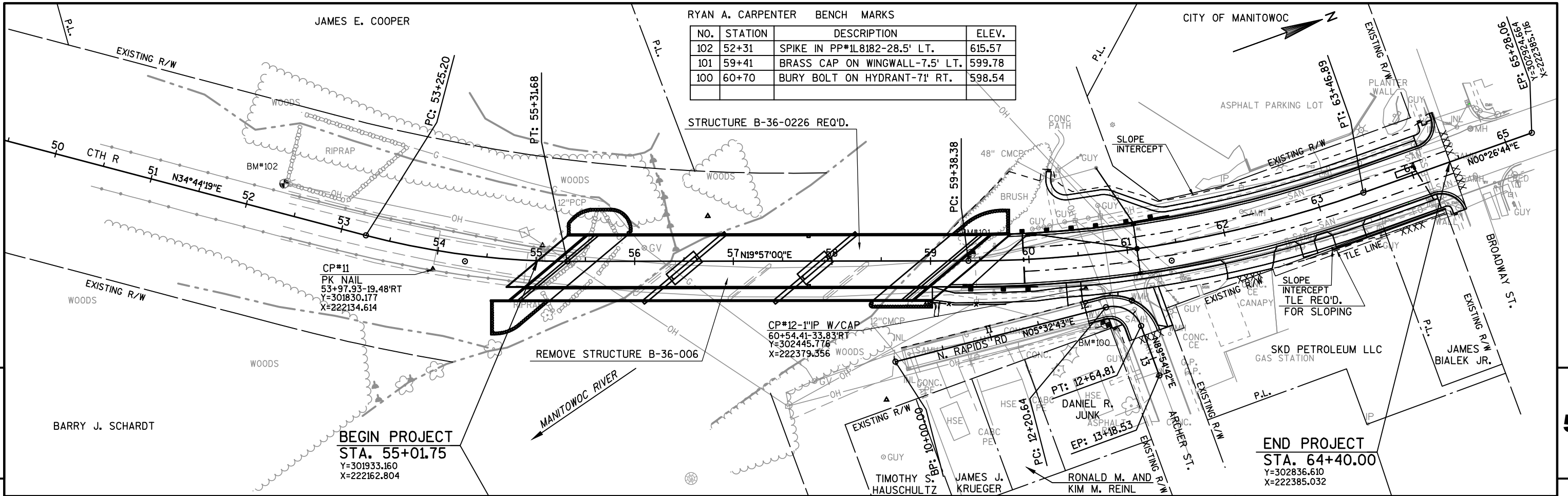
PROPERTY LINES SHOWN ON THIS PLAT ARE DRAWN FROM DATA DERIVED FROM MAPS AND DOCUMENTS OF PUBLIC RECORD AND/OR EXISTING OCCUPANCY LINES. THIS PLAT MAY NOT BE A TRUE REPRESENTATION OF EXISTING PROPERTY LINES, EXCLUDING RIGHT-OF-WAY, AND SHOULD NOT BE USED AS A SUBSTITUTE FOR AN ACCURATE FIELD SURVEY.

EXISTING HIGHWAY RIGHT-OF-WAY SHOWN HEREIN IS BASED ON THE FOLLOWING POINT OF REFERENCE:
EXISTING HIGHWAY RIGHT-OF-WAY FOR CTH R SHOWN HEREIN IS BASED ON THE ORIGINAL PLAT OF MANITOWOC RAPIDS, PREVIOUS PROJECT F035-2(6) AND DOCUMENT #1033012 AND CSM VOLUME 27, PAGE 17.
EXISTING HIGHWAY RIGHT-OF-WAY FOR ARCHER STREET SHOWN HEREIN IS BASED ON THE ORIGINAL PLAT OF MANITOWOC RAPIDS.
EXISTING HIGHWAY RIGHT-OF-WAY FOR BROADWAY STREET SHOWN HEREIN IS BASED ON THE ORIGINAL PLAT OF MANITOWOC RAPIDS AND CSM VOLUME 27, PAGE 17.

EXISTING ACCESS CONTROL FOR CTH R SHOWN HEREIN IS FROM PREVIOUS ACCESS PROJECT CA 035-2(1)

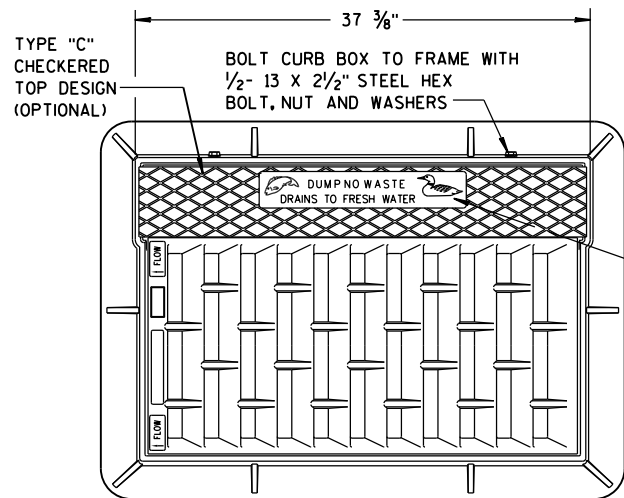
A **TEMPORARY LIMITED EASEMENT (TLE)** IS A RIGHT FOR CONSTRUCTION PURPOSES, AS DEFINED HEREIN, INCLUDING THE RIGHT TO OPERATE NECESSARY EQUIPMENT THEREON AND THE RIGHT OF INGRESS AND EGRESS, AS LONG AS REQUIRED FOR SUCH PUBLIC PURPOSE, INCLUDING THE RIGHT TO PRESERVE, PROTECT, REMOVE, OR PLANT THEREON ANY VEGETATION THAT THE HIGHWAY AUTHORITIES MAY DEEM NECESSARY OR DESIRABLE. ALL TLES EXPIRE AT THE COMPLETION OF THE CONSTRUCTION PROJECT FOR WHICH THIS INSTRUMENT IS GIVEN.

REVISION DATE



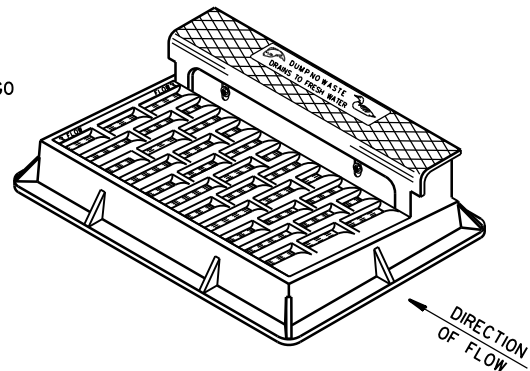
Standard Detail Drawing List

08A05-19A	INLET COVERS TYPE A, H, A-S, H-S & Z
08A05-19C	INLET COVERS TYPE F, HM, HM-S, S, T, V, HM-GJ, & HM-GJ-S
08A05-19D	INLET COVER TYPE BW, MANHOLE COVERS, TYPE K, J, J-S, L & M
08A08-02	CATCH BASINS 3-FT, 4-FT, 5-FT AND 6-FT DIAMETER
08A09-02	CATCH BASINS 2X3-FT AND 2.5X3-FT
08B09-02	MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER
08C07-02	INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT
08D01-20A	CONCRETE CURB & GUTTER
08D01-20B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D05-19A	CURB RAMPS TYPES 1 AND 1-A
08D05-19B	CURB RAMPS TYPES 2 AND 3
08D05-19C	CURB RAMPS TYPES 4A AND 4A1
08D05-19D	CURB RAMPS TYPE 4B AND 4B1
08D05-19E	CURB RAMPS TYPES 5, 6, 7A, 7B & 8
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08E11-02	TURBIDITY BARRIER
08E14-01	TRACKING PAD
09B04-11	PULL BOX
12A03-10	NAME PLATE (STRUCTURES)
13B02-08A	CONCRETE PAVEMENT APPROACH SLAB
13B02-08B	STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB
13C01-19	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C04-17	URBAN NON-DOWELED CONCRETE PAVEMENT
13C13-09	URBAN DOWELED CONCRETE PAVEMENT
13C18-06A	CONCRETE PAVEMENT JOINTING
13C18-06B	CONCRETE PAVEMENT STEEL REINFORCEMENT
13C18-06C	CONCRETE PAVEMENT JOINT TYPES
13C18-06D	CONCRETE PAVEMENT JOINTING AT UTILITY FIXTURES
14B42-05A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-03A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-04A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15B03-15A	FENCE CHAIN LINK
15B03-15B	FENCE CHAIN LINK
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C07-14A	PAVEMENT MARKING SYMBOLS
15C07-14B	PAVEMENT MARKING WORDS
15C07-14C	PAVEMENT MARKING ARROWS
15C08-18A	LONGITUDINAL MARKING (MAINLINE)
15C08-18B	PAVEMENT MARKING (TURN LANES)
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C33-03	STOP LINE AND CROSSWALK PAVEMENT MARKING
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D30-03A	TRAFFIC CONTROL, PEDESTRIAN ACCOMMODATION
15D30-03B	TRAFFIC CONTROL, TEMPORARY ADA COMPLIANT PEDESTRIAN ACCOMMODATION
15D30-03C	TRAFFIC CONTROL, PEDESTRIAN ACCOMMODATION
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS

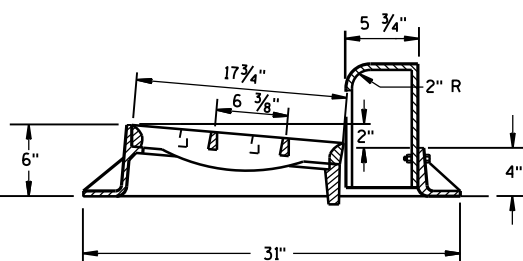
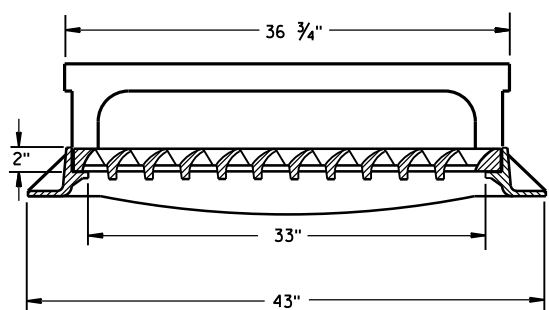
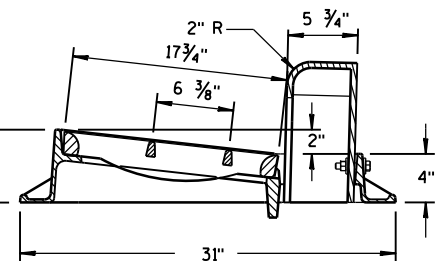
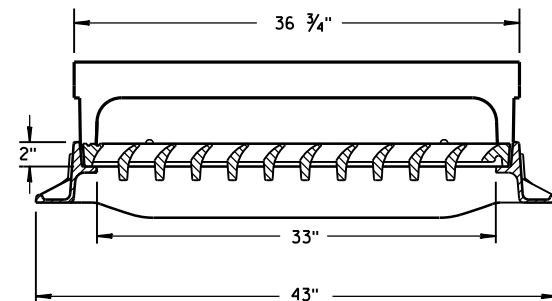
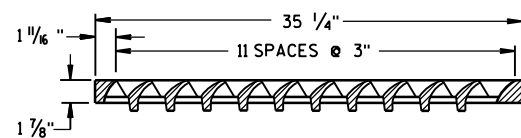


SEE LOGO
DETAIL

NOTE:
GRATE IS REVERSIBLE.

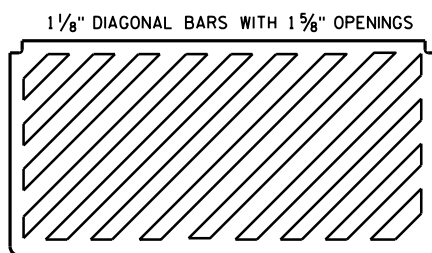


NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"



TYPE "H"

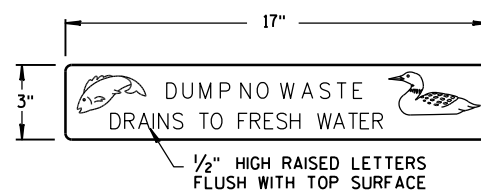
NOTE: EITHER CASTING IS ACCEPTABLE



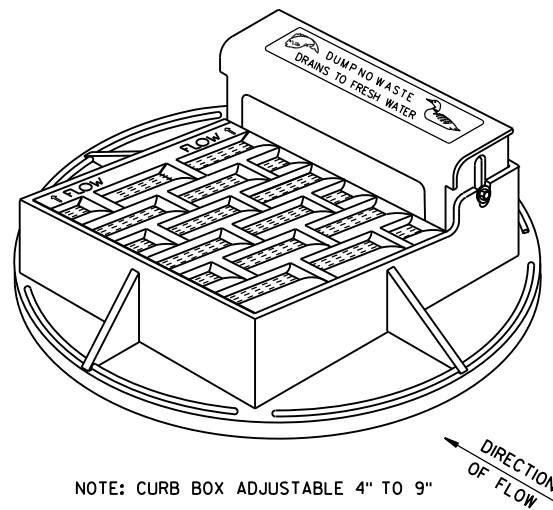
**SPECIAL GRATE FOR
TYPE "H" COVER**

(MEASURES 35 1/4" X 17 3/4" X 2")

(NOTED AS TYPE H-S ON DRAINAGE TABLE)

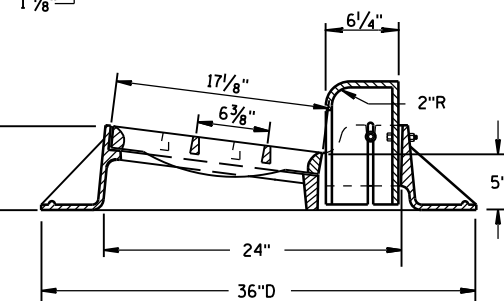
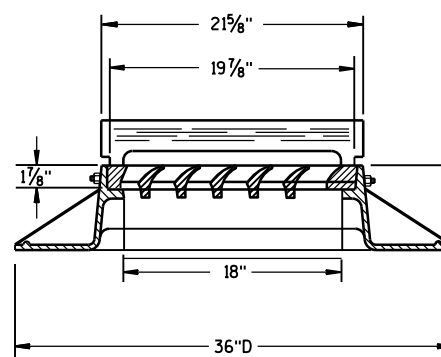
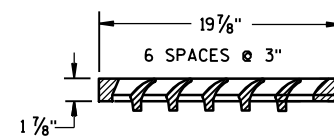
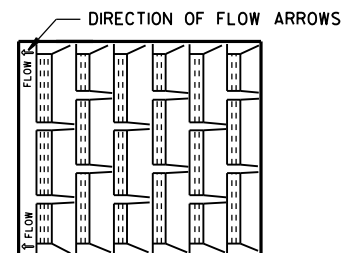


LOGO DETAIL

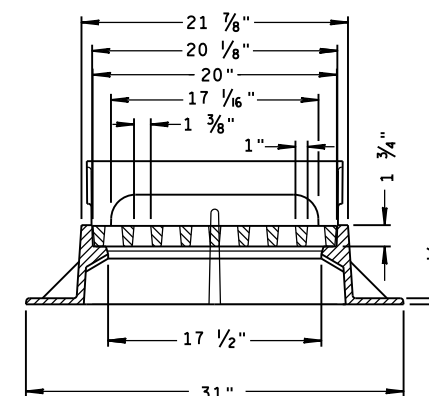
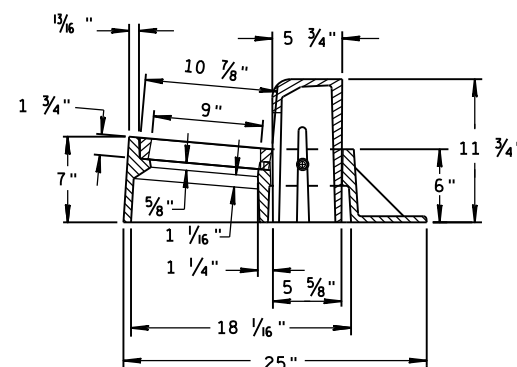


NOTE: CURB BOX ADJUSTABLE 4" TO 9"

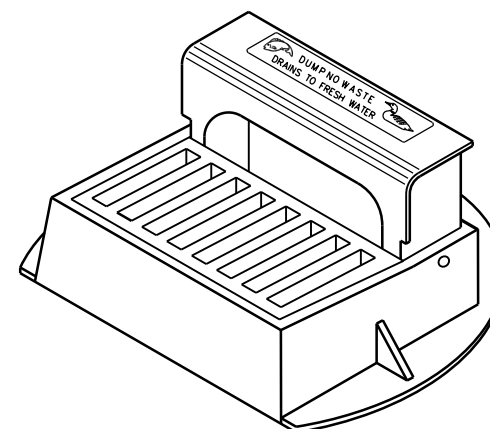
NOTE:
GRATE IS REVERSIBLE.



TYPE "A"



TYPE "Z"



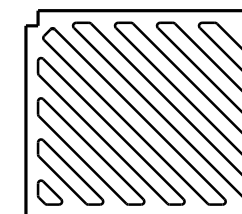
GENERAL NOTES

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.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

1" DIAGONAL BARS
WITH 1 1/2" OPENINGS



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

(MEASURES 19 3/4" X 17" X 1 1/8")

(NOTED AS TYPE A-S ON DRAINAGE TABLE)

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

**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**

APPROVED

11-27-13

DATE

FHWA

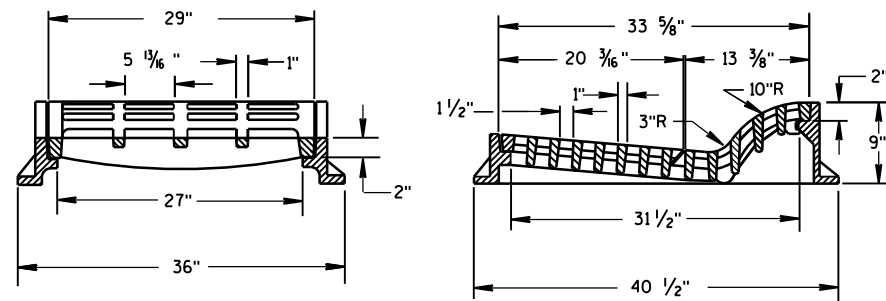
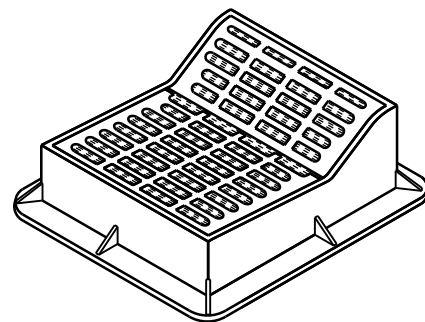
/S/ Jerry H. Zogg

ROADWAY STANDARDS

ENGINEER

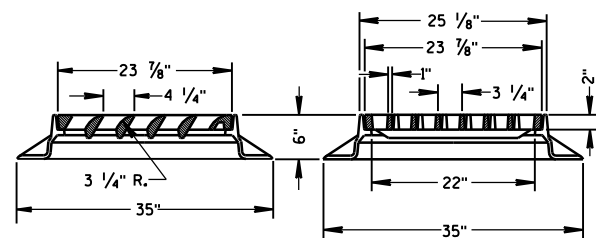
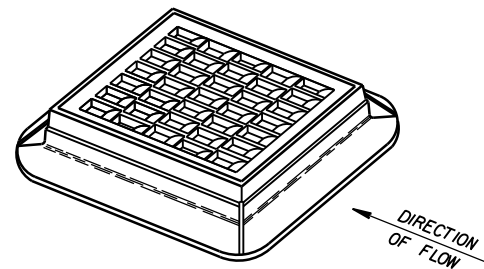
32

ENT

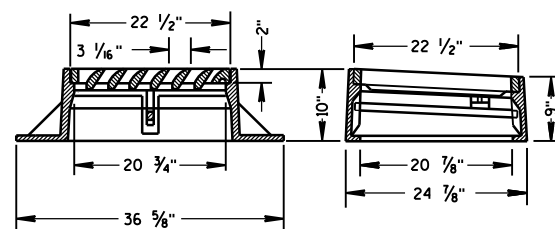
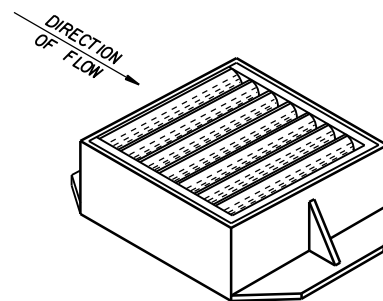


TYPE "F"

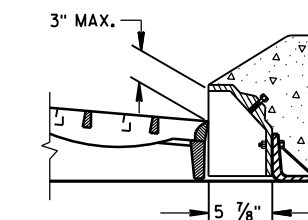
USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.



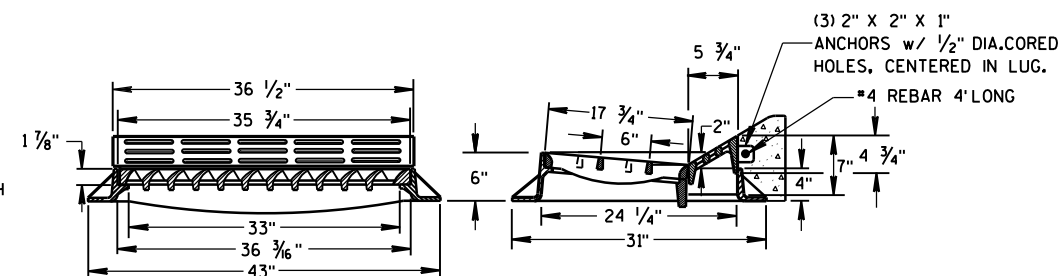
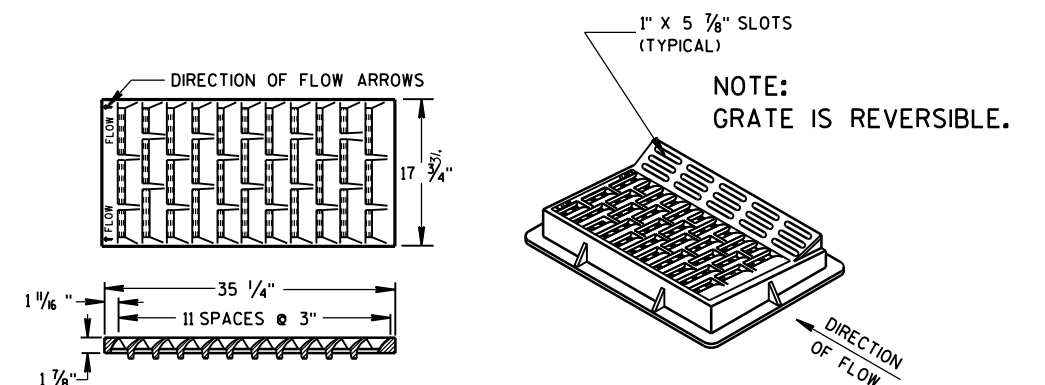
TYPE "S"



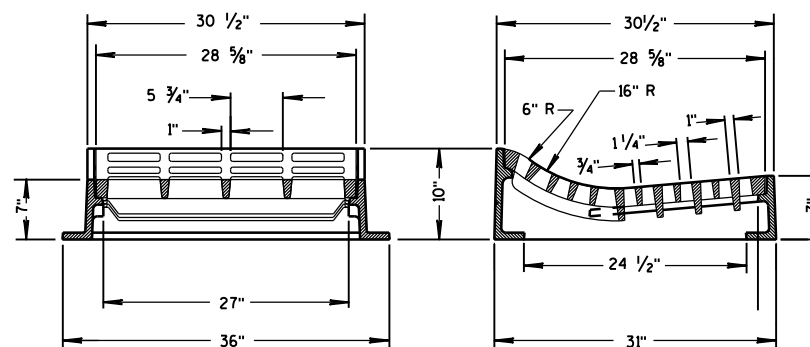
TYPE "V"

ALTERNATIVE CURB BOX
FOR TYPE "HM" COVERUSE WITH TYPES G & J CONCRETE CURB & GUTTER, 30 INCH
NOTED AS TYPE HM-GJ ON DRAINAGE TABLENOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM-GJ" COVER
NOTED AS TYPE HM-GJ-S ON DRAINAGE TABLE

GENERAL NOTES

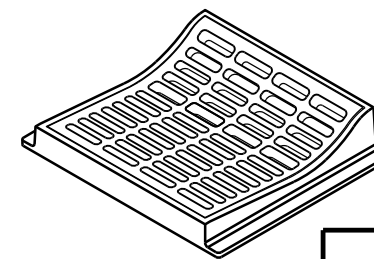
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING
SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND
THE APPLICABLE SPECIAL PROVISIONS.DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR INLET COVERS SHALL BE SUBMITTED
TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION
FOR EQUIVALENT CAPACITY AND STRENGTH.

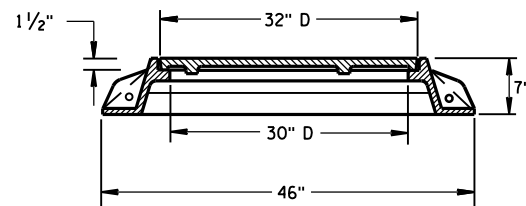
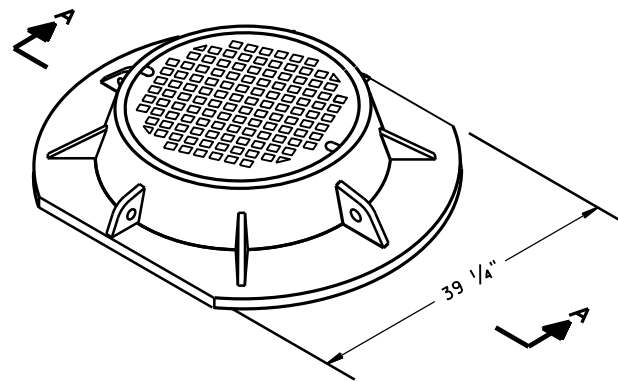
TYPE "HM"

USE WITH TYPES A & D CONCRETE
CURB & GUTTER, 36 INCH.NOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM" COVER
NOTED AS TYPE HM-S ON DRAINAGE TABLE

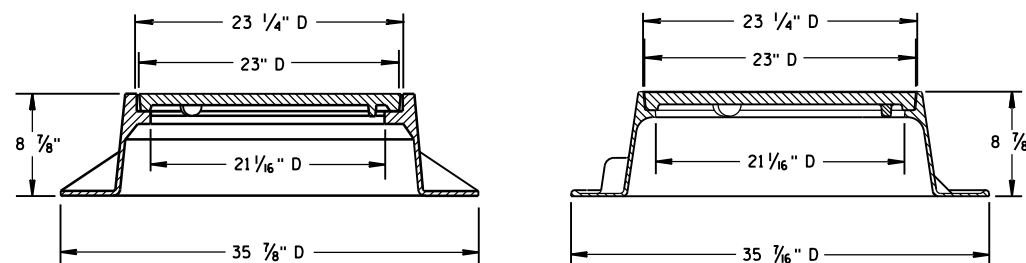
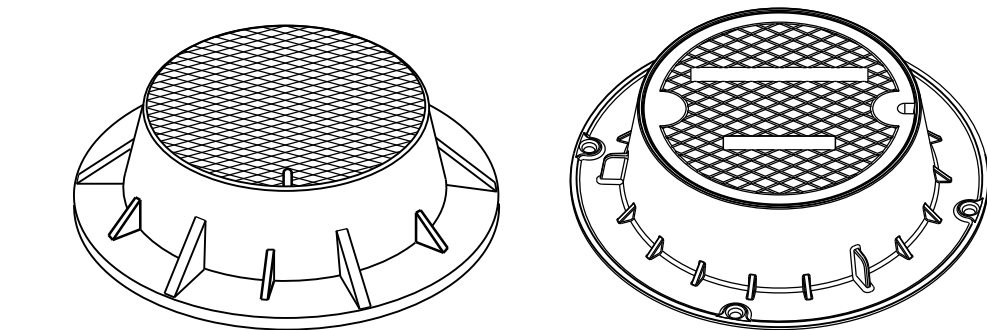
TYPE "T"

USE WITH TYPES R & T CONCRETE CURB & GUTTER, 36 INCH.

INLET COVERS
TYPE F, HM, HM-S, S, T, V,
HM-GJ, & HM-GJ-SSTATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATIONAPPROVED
11/27/2013
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER
FHWA

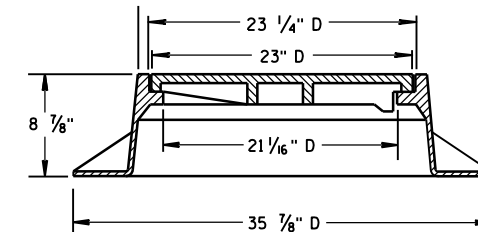
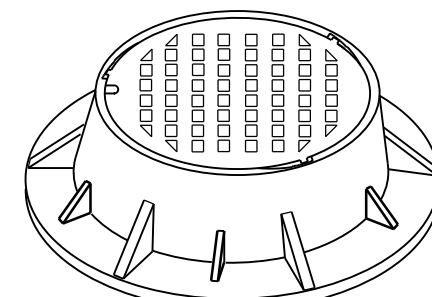
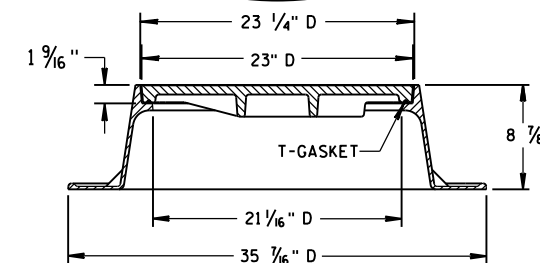
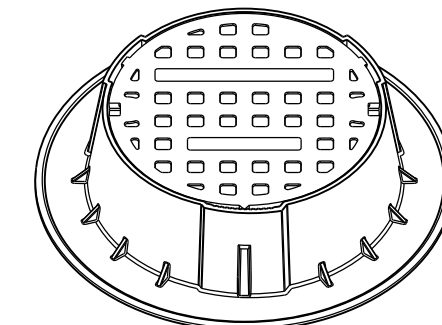


SECTION A-A
TYPE "K"



TYPE "J"

NOTE: EITHER CASTING IS ACCEPTABLE

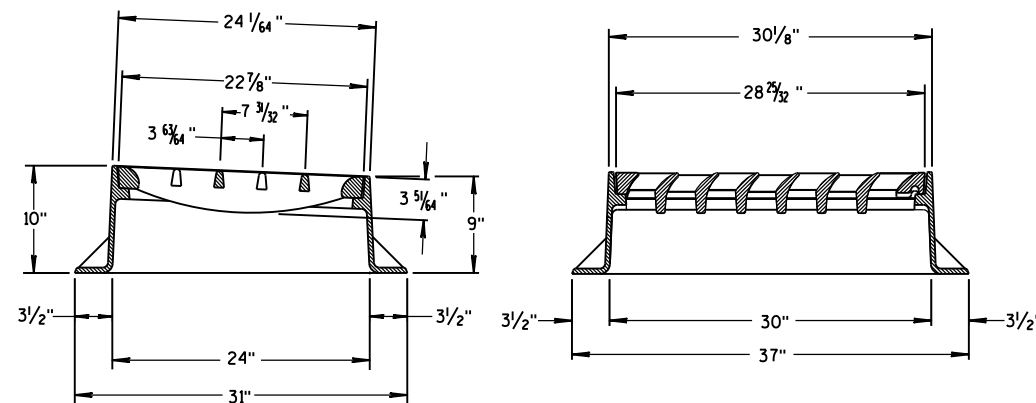
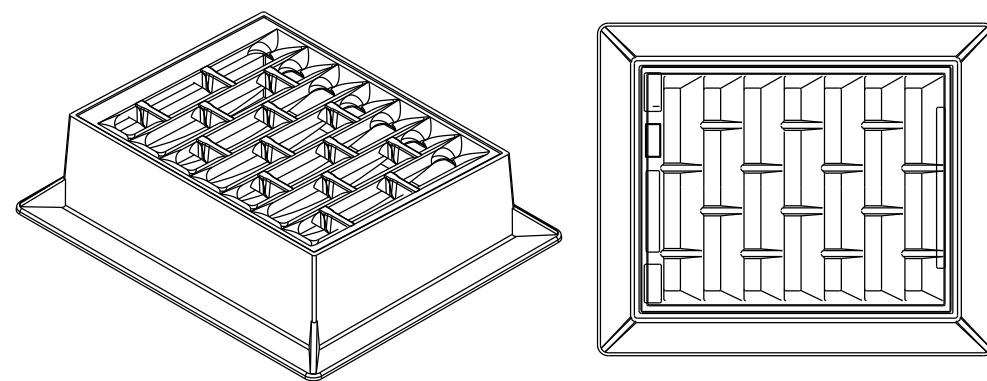


TYPE "J" SPECIAL

TYPE "B" NON-ROCKING SELF-SEAL LID

(NOTED AS TYPE J-S ON THE DRAINAGE TABLE)

NOTE: EITHER CASTING IS ACCEPTABLE



INLET COVER TYPE "BW"

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.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR MANHOLE COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

INLET COVER TYPE BW
MANHOLE COVERS, TYPE K,
J, J-S, L & M

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/27/2013

DATE

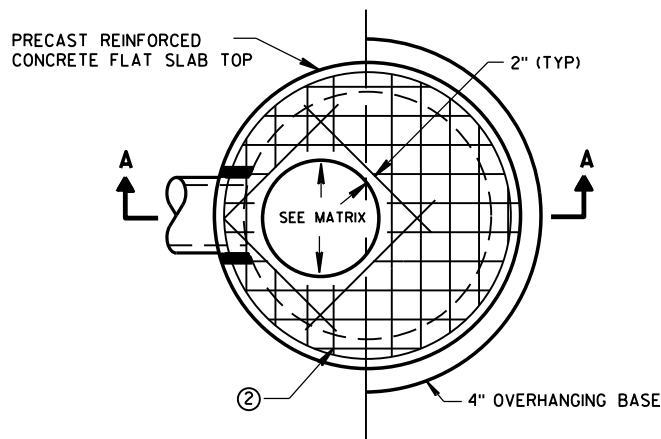
FHWA

/S/ Jerry H. Zogg

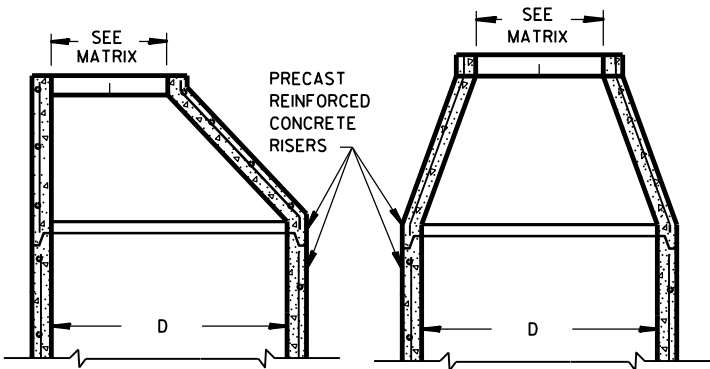
ROADWAY STANDARDS 34

ENGINEER

VT

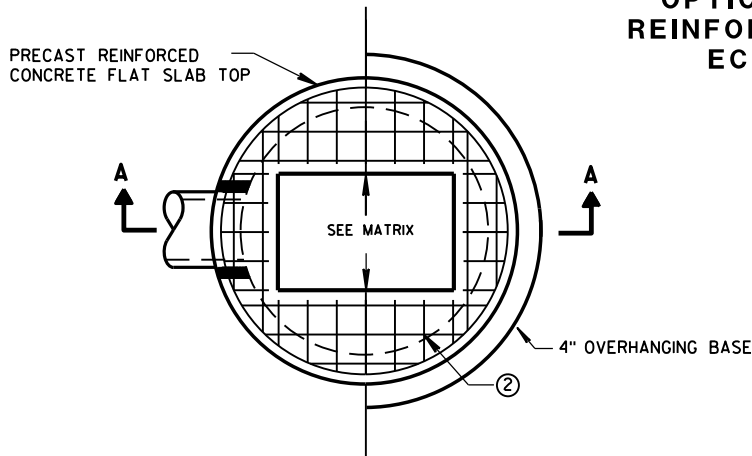


PLAN VIEW CIRCULAR OPENING

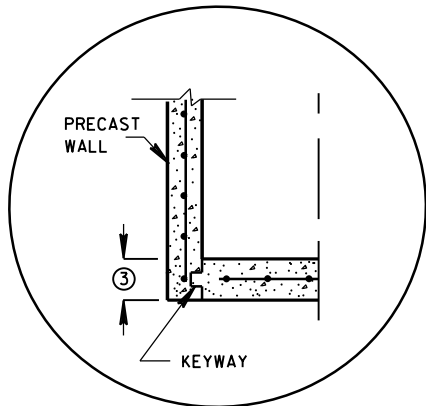


OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

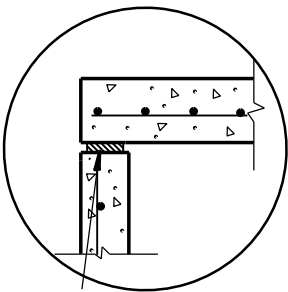
OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP



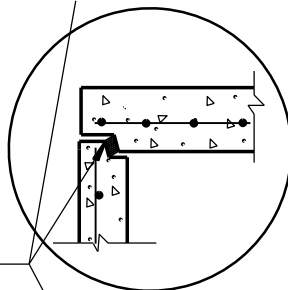
PLAN VIEW RECTANGULAR OPENING



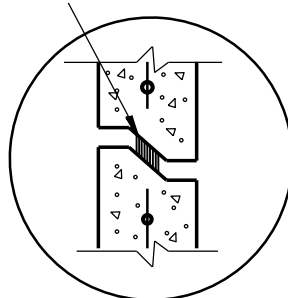
PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION



TOP WITH PLAIN END JOINT

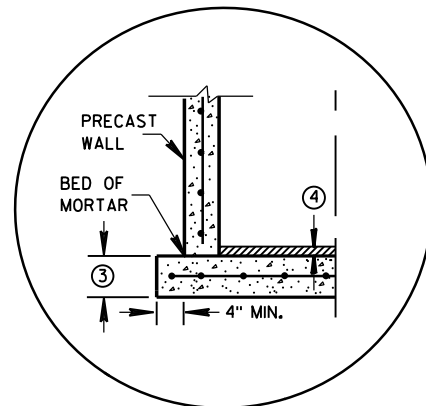


TOP WITH TONGUE AND GROOVE JOINT

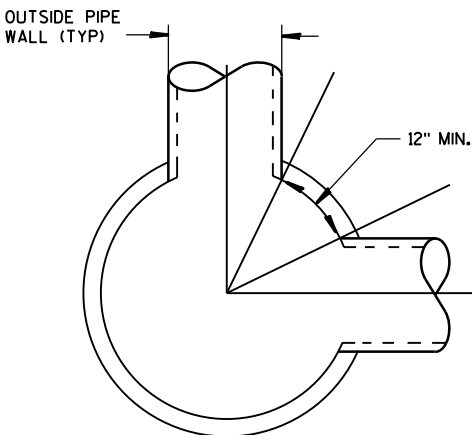


RISER WITH TONGUE AND GROOVE JOINT

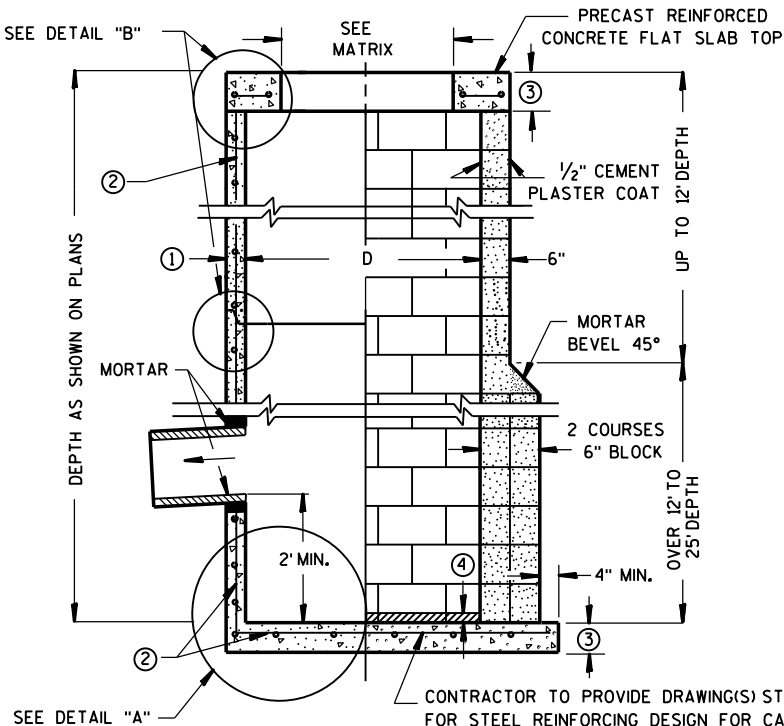
DETAIL "B"



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION



DETAIL "C"



SECTION A-A

PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

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

GENERAL NOTES

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

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

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

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

PRECAST REINFORCED CONCRETE CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED CONCRETE FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES.

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

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

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

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

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

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M199.

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

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

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

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

- MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT AND 7 INCHES FOR 6-FT DIAMETER PRECAST CATCH BASINS.
- FOR PRECAST CATCH BASINS PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.
- PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".
- 1" CONCRETE KEY POURED AFTER INSTALLATION. 2" SUMP MEASURED FROM TOP OF KEY.

CATCH BASIN COVER OPENING MATRIX

CATCH BASIN SIZE	INLET COVER TYPE OPENING SIZE (FT)	ALL A'S	ALL B'S	BW	C	F	ALL H'S	S	T	V	WM	Z
3-FT	2X2	X	X					X		X		
	2 DIA.				X							X
4-FT- 6-FT	2X2	X	X					X		X		
	2X2.5			X				X	X	X	X	
	2 DIA.				X							X
	2X3						X					
	2.5X3					X						

PIPE MATRIX

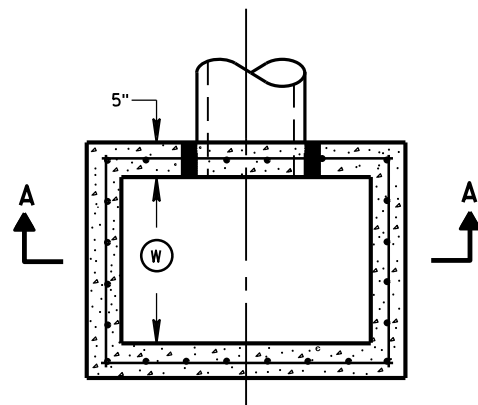
CATCH BASIN SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18
5-FT	36	24
6-FT	42	30

CATCH BASINS 3-FT, 4-FT, 5-FT AND 6-FT DIAMETER

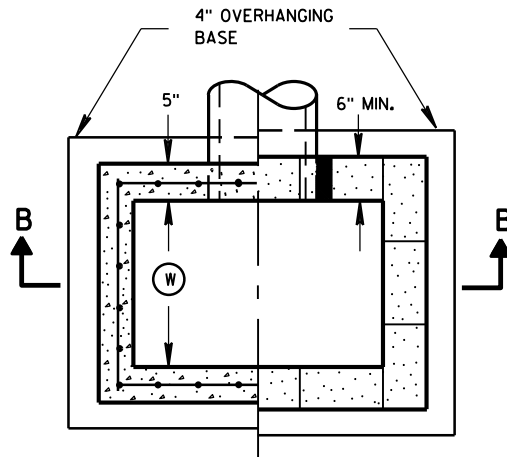
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS
UNIT SUPERVISOR
ENT

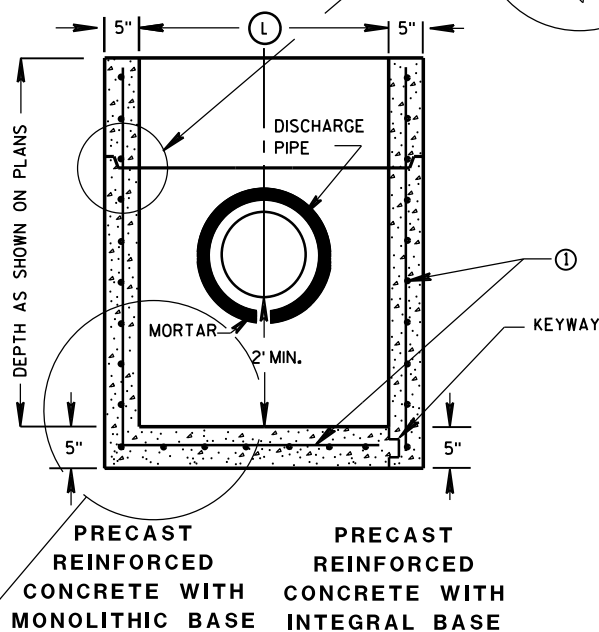
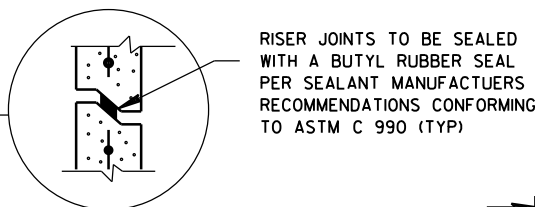
CATCH BASINS 3-FT, 4-FT, 5-FT AND 6-FT DIAMETER



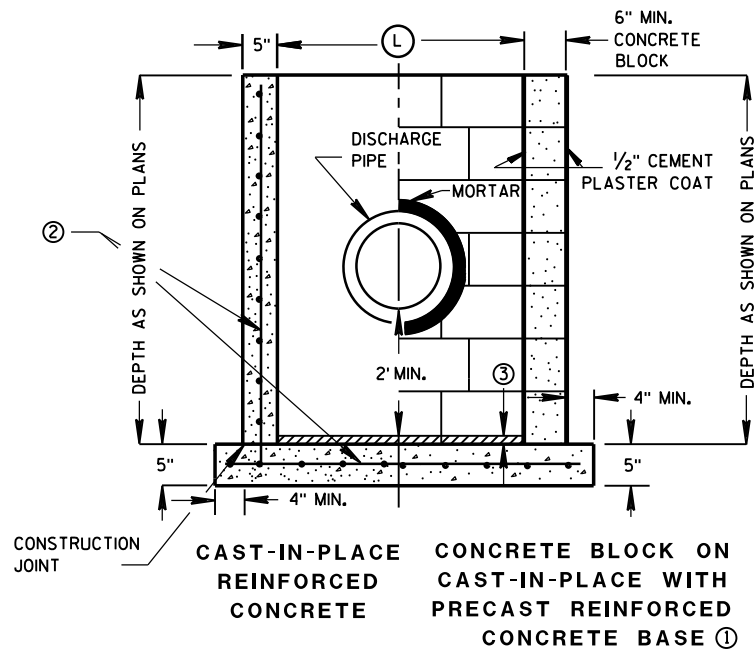
PLAN VIEW



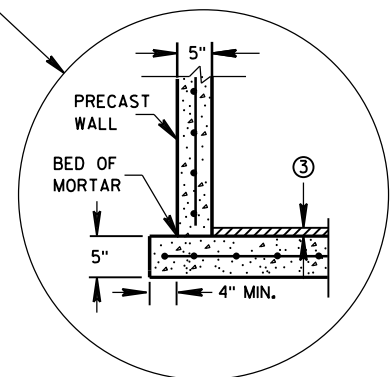
PLAN VIEW



SECTION A-A



SECTION B-B



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

CATCH BASINS 2X3-FT AND 2.5X3-FT

GENERAL NOTES

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

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST CATCH BASIN UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

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

ALL PRECAST CATCH BASIN UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

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

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

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

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

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3" CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

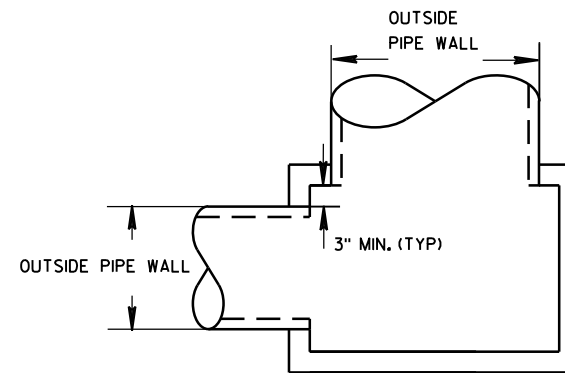
- ① FOR PRECAST CATCH BASINS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.
- ② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.
- ③ 1" CONCRETE KEY POURED AFTER INSTALLATION. 2" SUMP MEASURED FROM TOP OF KEY.

CATCH BASIN COVER MATRIX

CATCH BASIN SIZE	WIDTH ① (FT)	LENGTH ② (FT)	F	ALL H'S
2X3-FT	2	3		X
2.5X3-FT	2.5	3	X	

PIPE MATRIX

CATCH BASIN SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	WIDTH (IN)	LENGTH (IN)
2X3-FT	12	24
2.5X3-FT	18	24

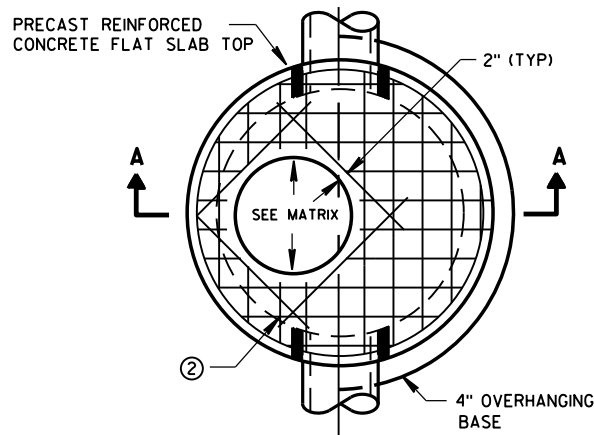


DETAIL "A"

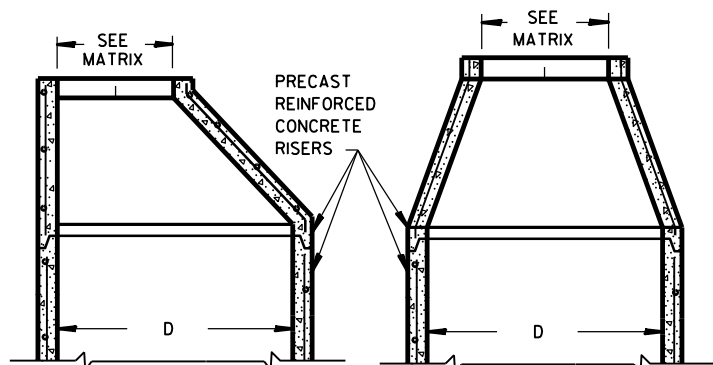
CATCH BASINS 2X3-FT AND 2.5X3-FT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
FHWA

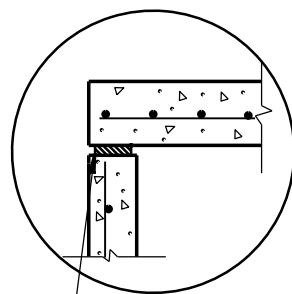


PLAN VIEW CIRCULAR OPENING

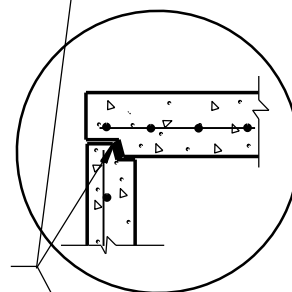


OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

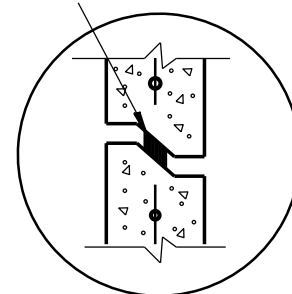
OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP



TOP WITH PLAIN END JOINT



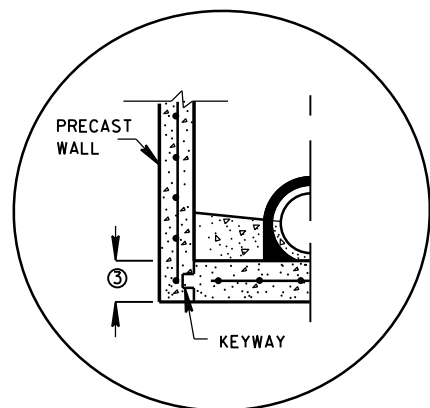
TOP WITH TONGUE AND GROOVE JOINT



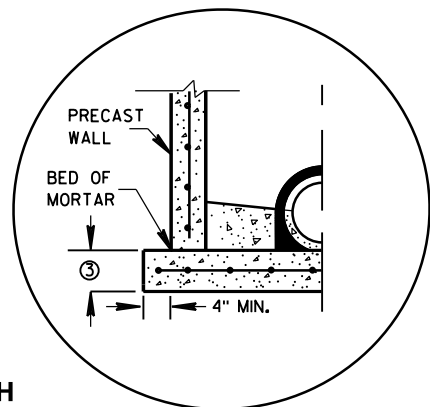
RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"

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

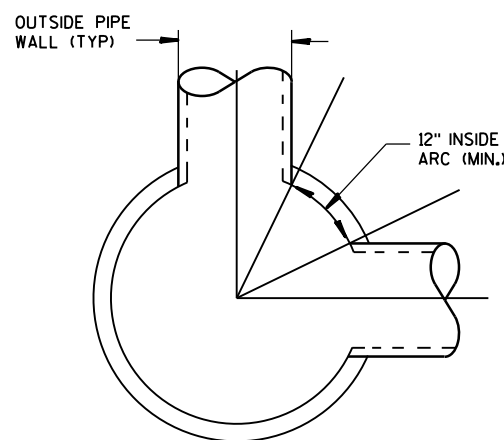


PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION

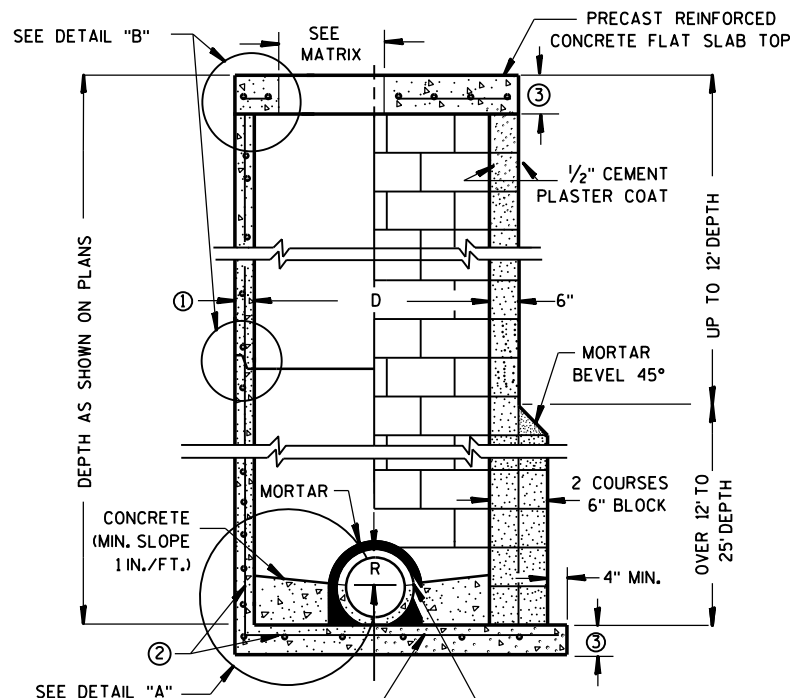


SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"



DETAIL "C"



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

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

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

GENERAL NOTES

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

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

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

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

PRECAST REINFORCED CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES.

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

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

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

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

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

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

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

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

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

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

- ① MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT, 7 INCHES FOR 6-FT, 8 INCHES FOR 7-FT AND 9 INCHES FOR 8-FT DIAMETER PRECAST MANHOLES.
- ② FOR PRECAST MANHOLES PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.
- ③ PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".

MANHOLE COVER OPENING MATRIX

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

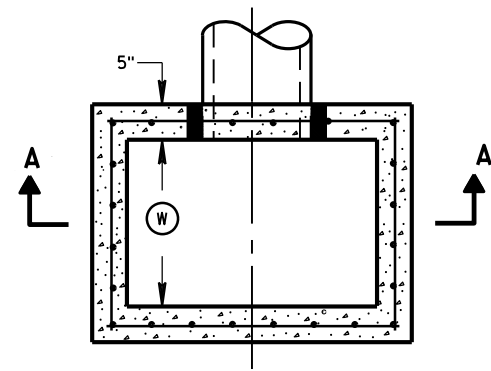
PIPE MATRIX

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

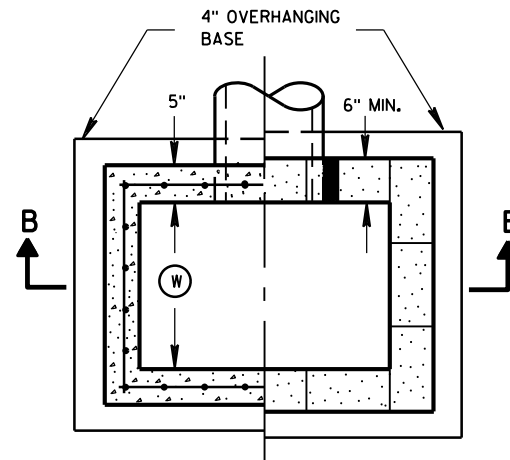
MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

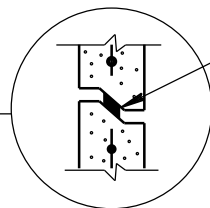
APPROVED
Sept., 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERV 37



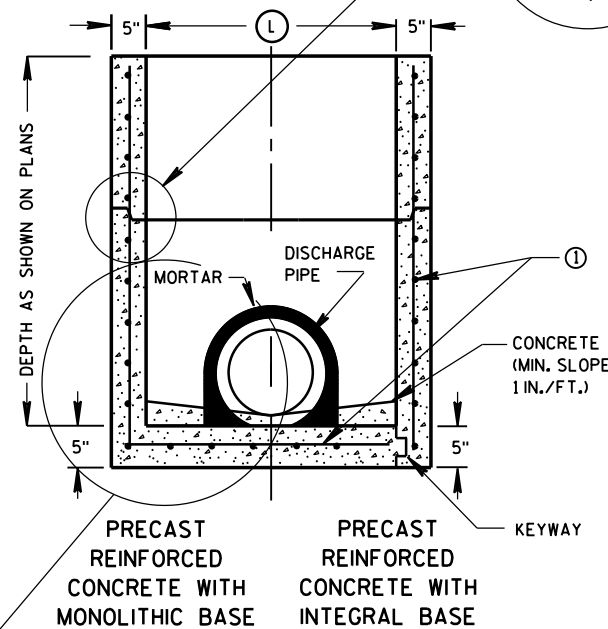
PLAN VIEW



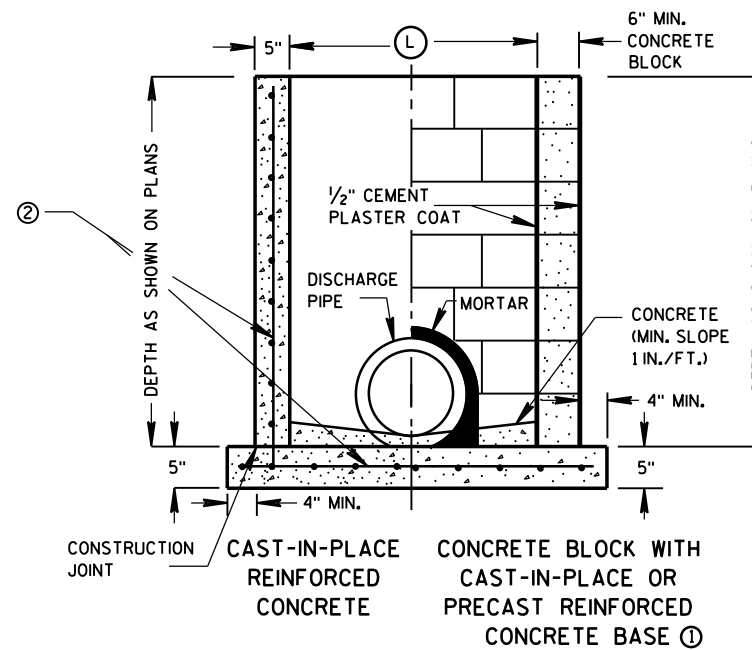
PLAN VIEW



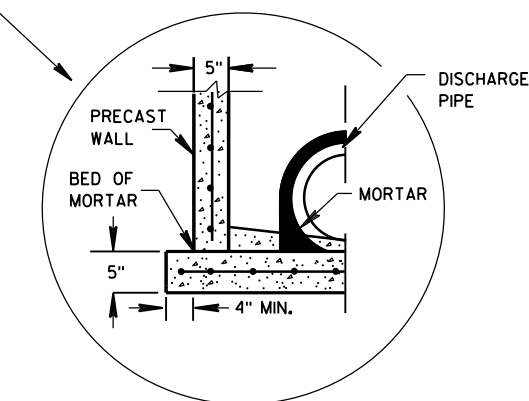
RISER JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 (TYP)



SECTION A-A



SECTION B-B



SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

GENERAL NOTES

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

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

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

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

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

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

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

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

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3 INCH CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

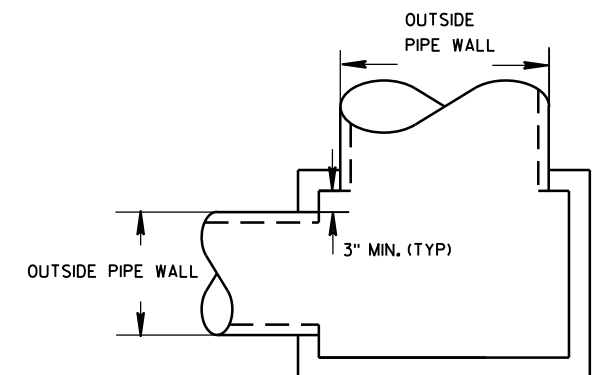
- FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.
- CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

INLET COVER MATRIX

INLET SIZE	INLET COVER TYPE	ALL A'S	ALL B'S	BW	F	ALL H'S	S	T	V	WM
	WIDTH (1) (FT)	LENGTH (2) (FT)								
2X2-FT	2	2	X	X			X		X	
2X2.5-FT	2	2.5			X		X	X	X	X
2X3-FT	2	3				X				
2.5X3-FT	2.5	3			X					

PIPE MATRIX

INLET SIZE	MAXIMUM INSIDE PIPE DIAMETER	
	WIDTH (IN)	LENGTH (IN)
2X2-FT	12	12
2X2.5-FT	12	18
2X3-FT	12	24
2.5X3-FT	18	24

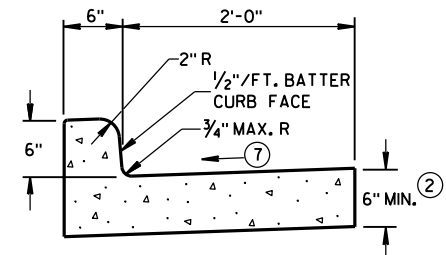


DETAIL "A"

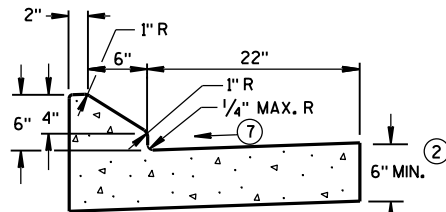
INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

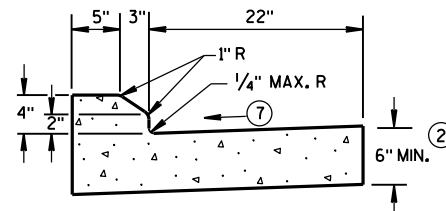
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Sept., 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS D 38 IT
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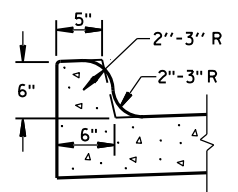
TYPES A^① & D



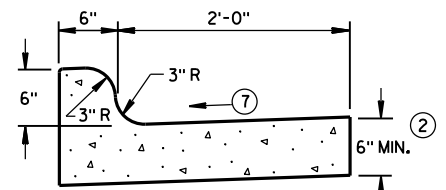
6" SLOPED CURB TYPES G^① & J



4" SLOPED CURB TYPES G^① & J

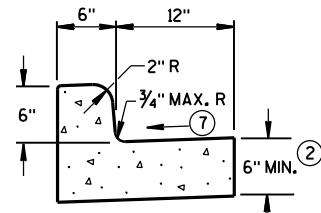


TYPES K^① & L
(OPTIONAL CURB SHAPE)



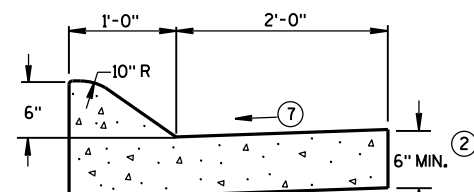
TYPES K^① & L

CONCRETE CURB & GUTTER 30"

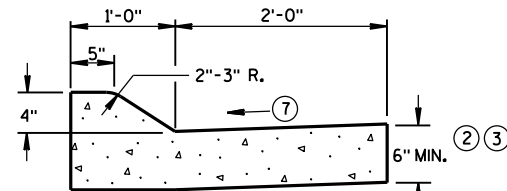


TYPES A^① & D

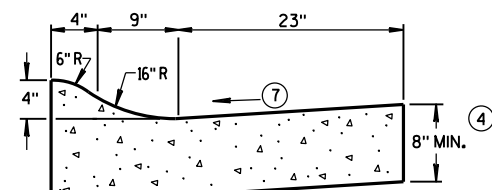
CONCRETE CURB & GUTTER 18"



6" SLOPED CURB TYPES A^① & D

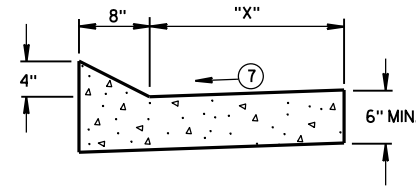


4" SLOPED CURB TYPES A^① & D



4" SLOPED CURB TYPES R^① & T^⑤

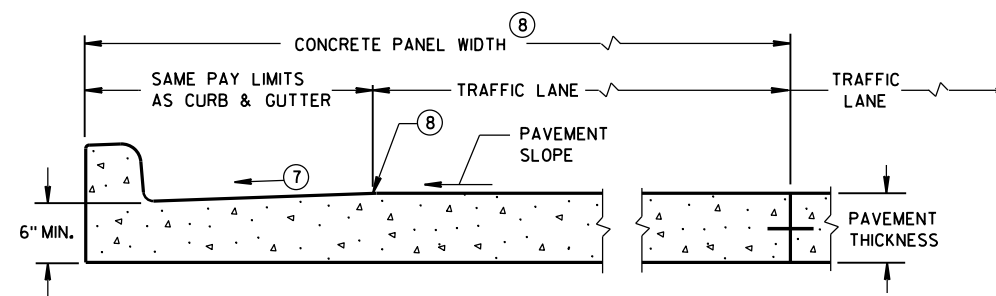
CONCRETE CURB & GUTTER 36"



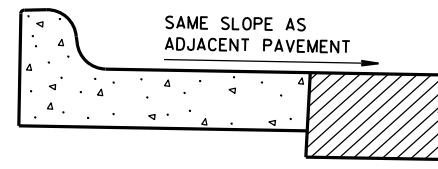
TYPES TBT & TBTT^①

CONCRETE CURB & GUTTER

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



PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB & GUTTER



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

GENERAL NOTES

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

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

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

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

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

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTER 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.

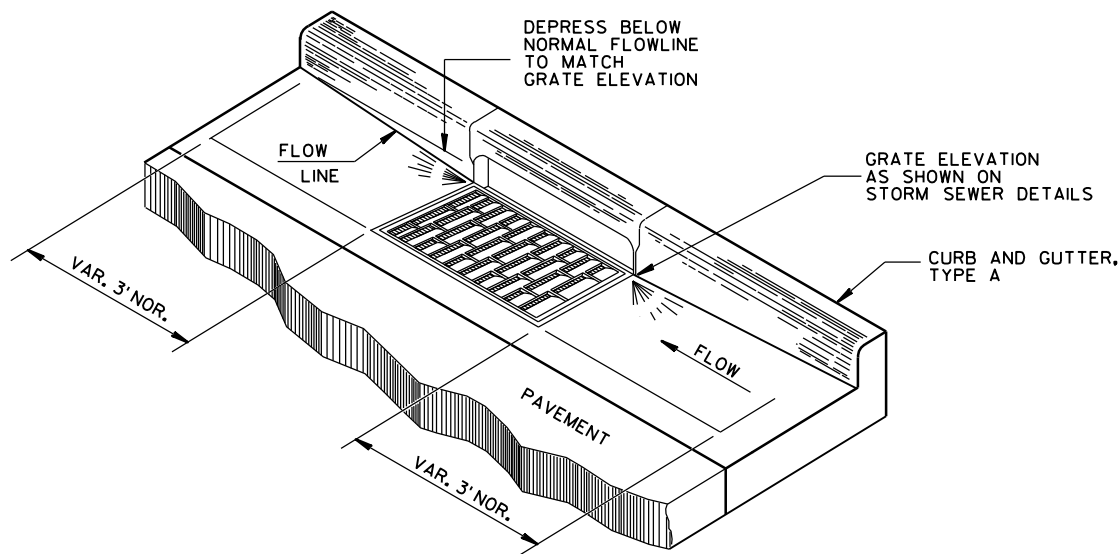
PAVEMENT THICKNESS
AND MAXIMUM CONCRETE
PANEL WIDTH TABLE

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

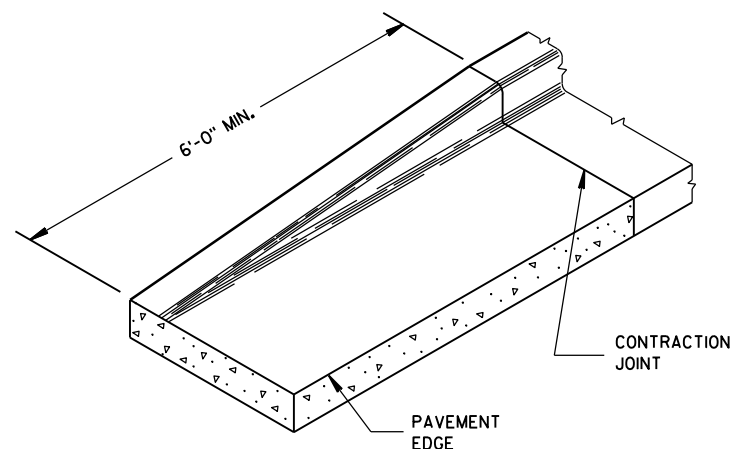
* BIKE LANE IS NOT SHOWN.

CONCRETE CURB & GUTTER

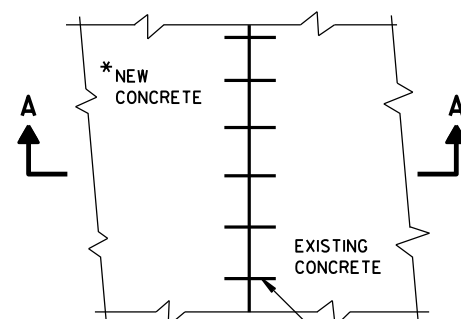
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



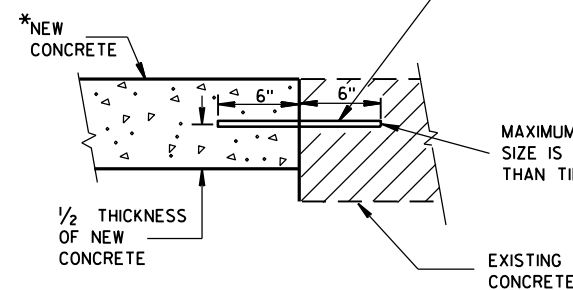
DETAIL OF CURB AND GUTTER AT INLETS
(TYPE H INLET COVER SHOWN)



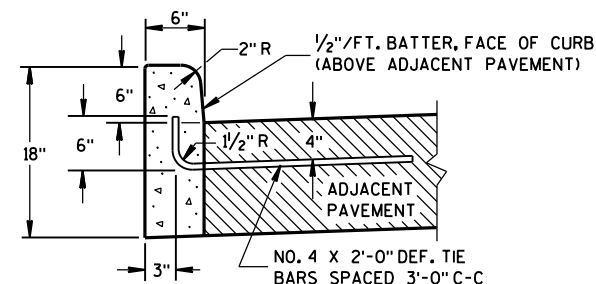
END SECTION CURB & GUTTER



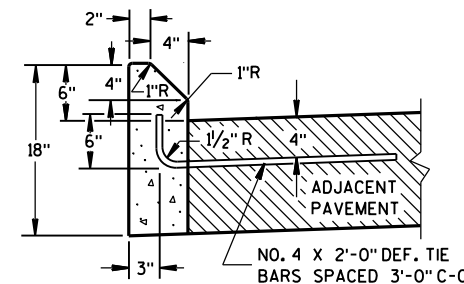
PLAN VIEW



SECTION A-A
TIE BARS DRILLED
INTO EXISTING PAVEMENT



TYPES A^① & D

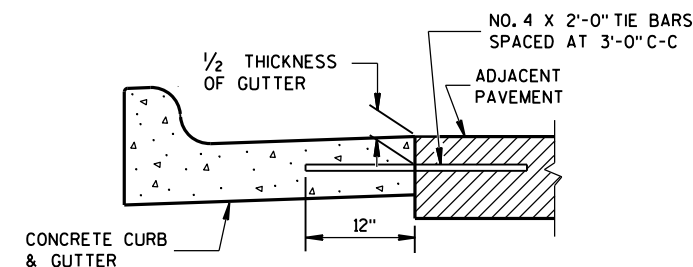


TYPES G^① & J

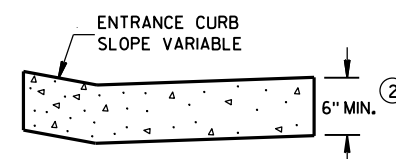
GENERAL NOTES

- DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.
- PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.
- 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 GUTTER 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 REFER TO SDD 8D18 AND SDD 8D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.

CONCRETE CURB

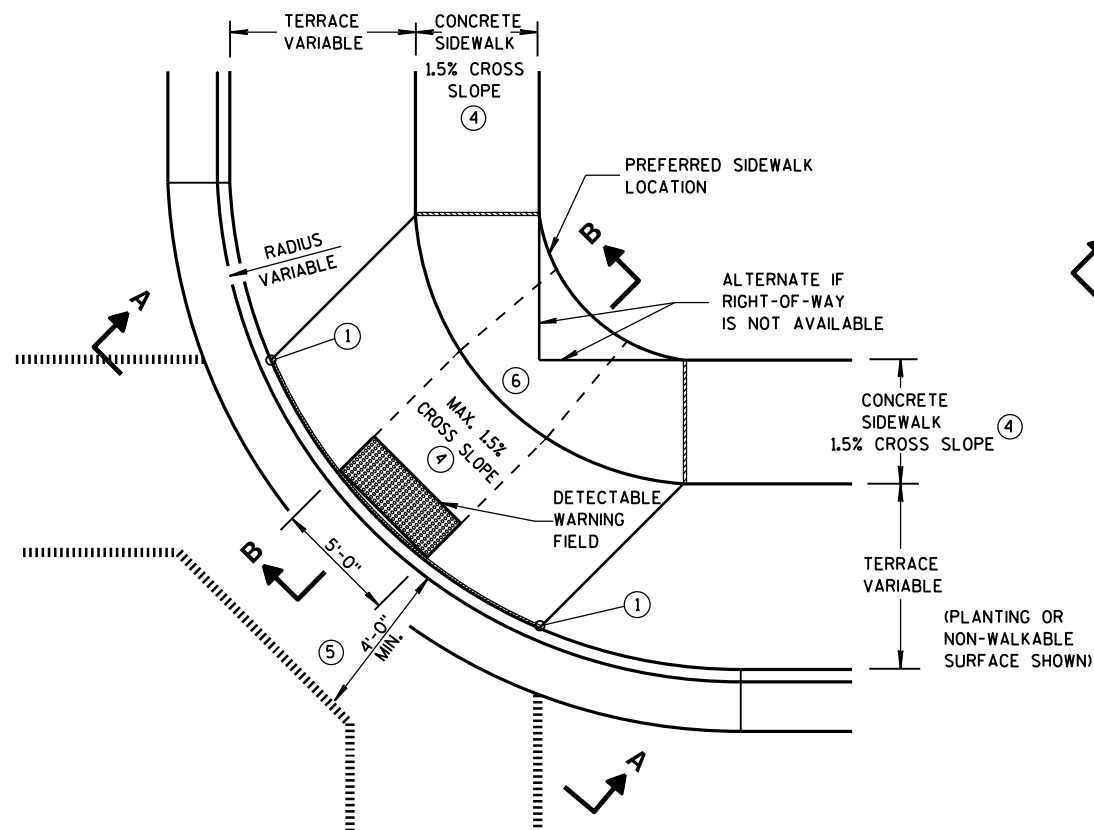


TYPICAL TIE BAR LOCATION^①

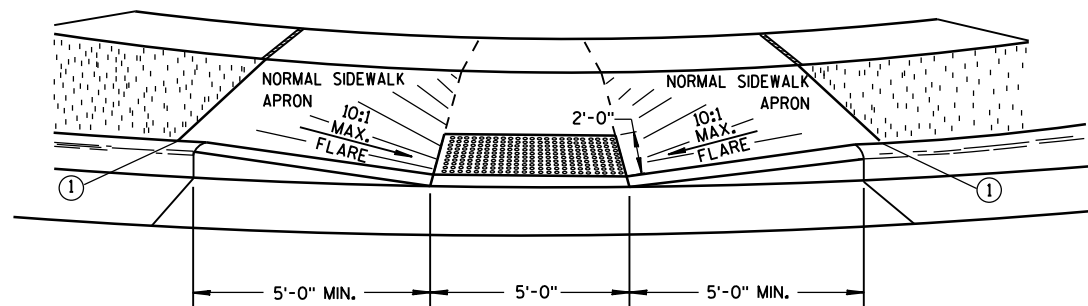


DRIVEWAY ENTRANCE CURB^⑨
(WHEN DIRECTED BY THE ENGINEER)

CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED June, 2017 DATE	/S/ Rodney Taylor ROADWAY STANDARDS 40 UNIT SUPERVISOR	ENT	
FHWA			

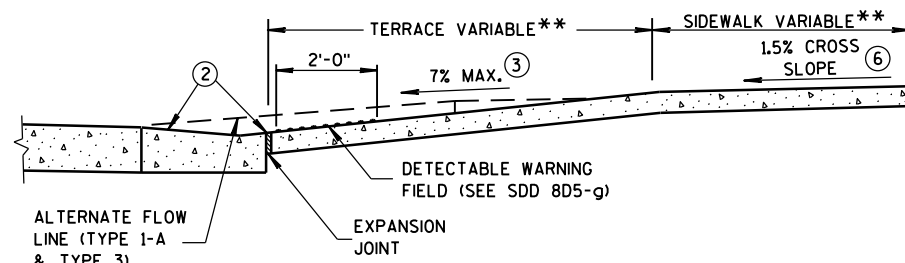


**PLAN VIEW
TYPE 1 RAMP**
(CENTER OF CORNER RADIUS)

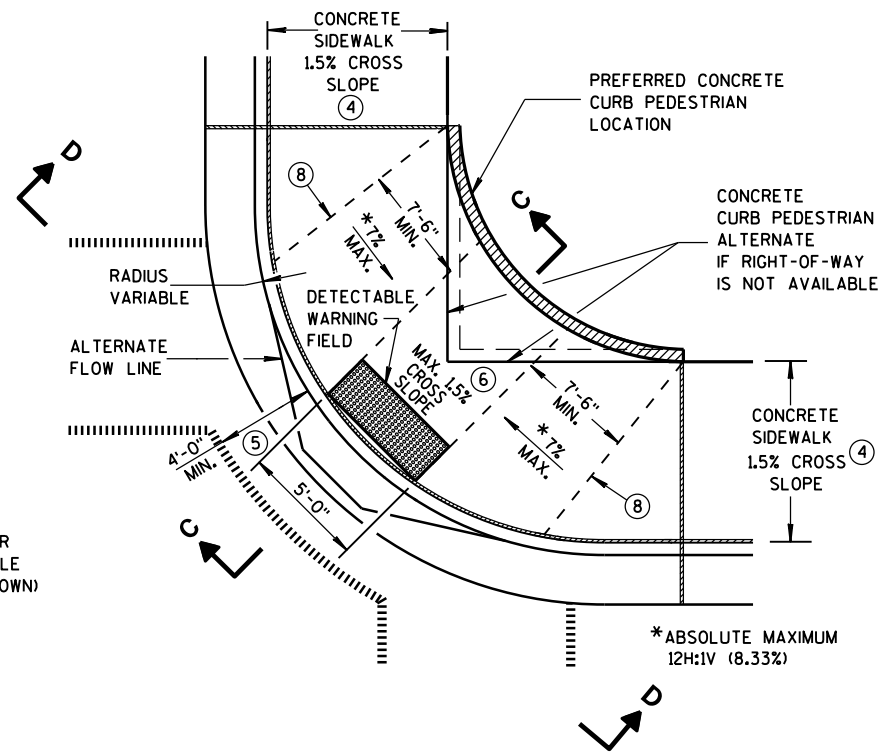


VIEW A-A

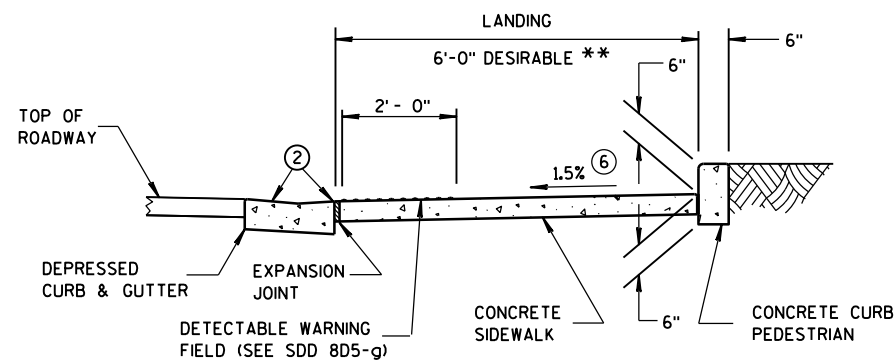
** WIDTH SHOWN ELSEWHERE
IN THE PLANS



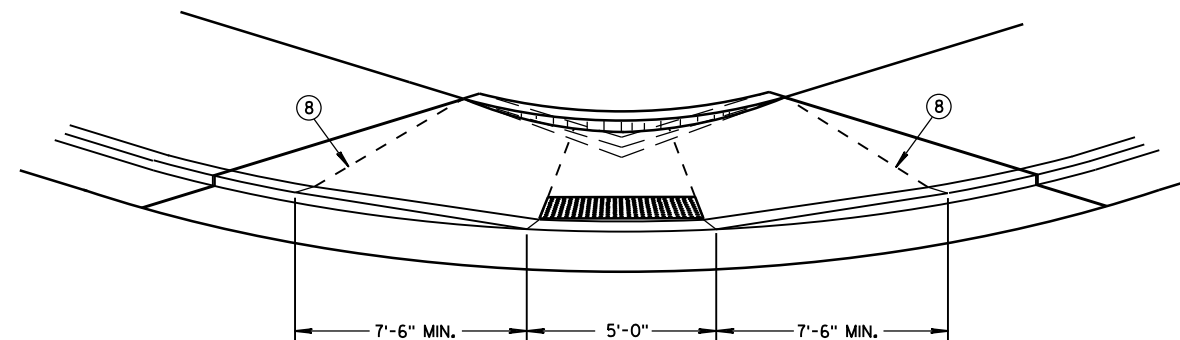
SECTION B-B



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



SECTION C-C



VIEW D-D

GENERAL NOTES

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

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

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

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

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

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

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

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

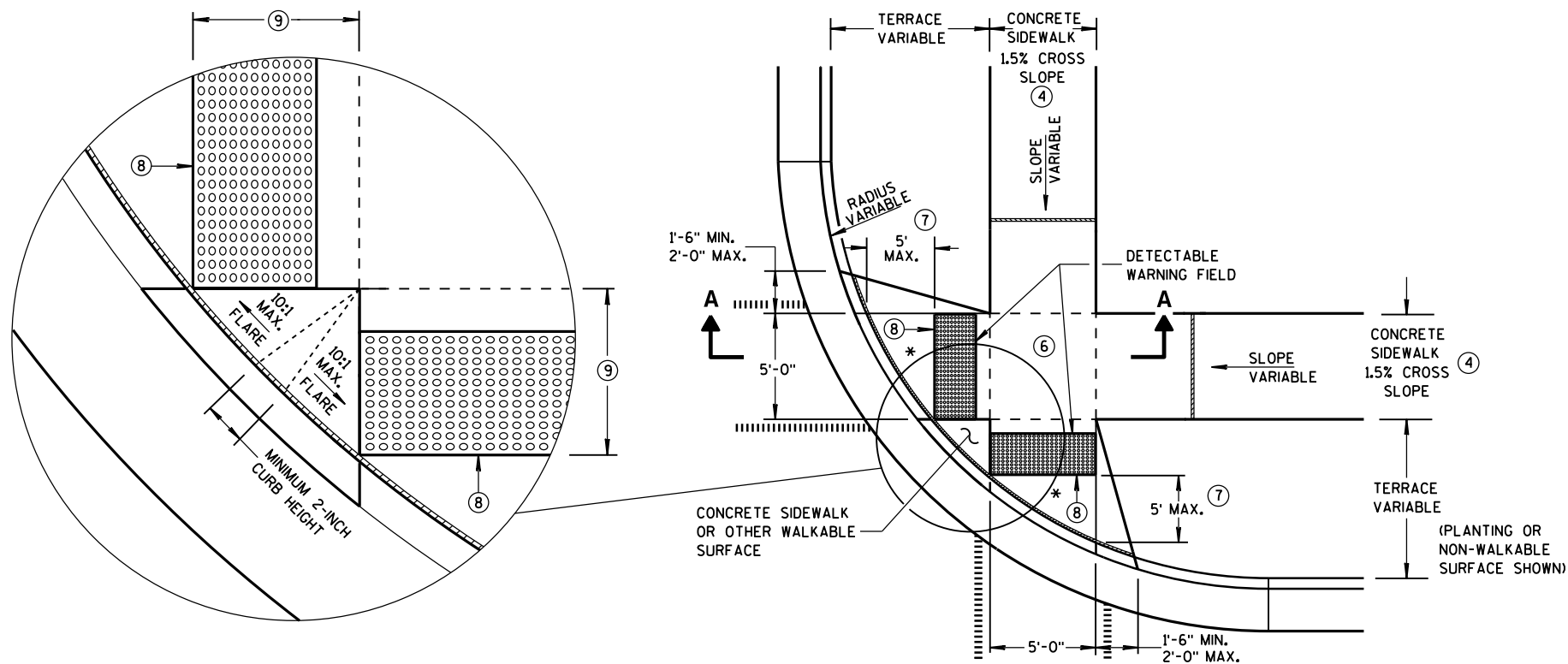
- ① THIS POINT IS AN EXTENSION OF OUTSIDE EDGE OF APPROACHING SIDEWALK WHERE IT MEETS THE BACK OF CONCRETE CURB. POINT LOCATION MAY BE ADJUSTED TO ALIGN WITH BEGINNING OF FULL-HEIGHT CURB IF THIS DISTANCE IS SHORT.
- ② GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5% AND NOT TO EXCEED 7%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.
- ③ ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ④ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- ⑤ PROVIDE A LEVEL LANDING IN THE STREET AND GUTTER AREA. (2% MAXIMUM SLOPE IN ANY DIRECTION). WHEN THE GUTTER SLOPE EXCEEDS 2%, CONSTRUCT THE LEVEL LANDING IN THE STREET AREA.
- ⑥ PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET.
- ⑧ PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.

LEGEND

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

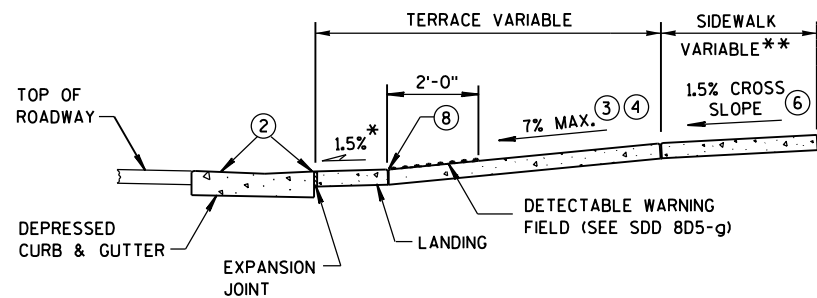
**CURB RAMPS
TYPES 1 AND 1-A**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



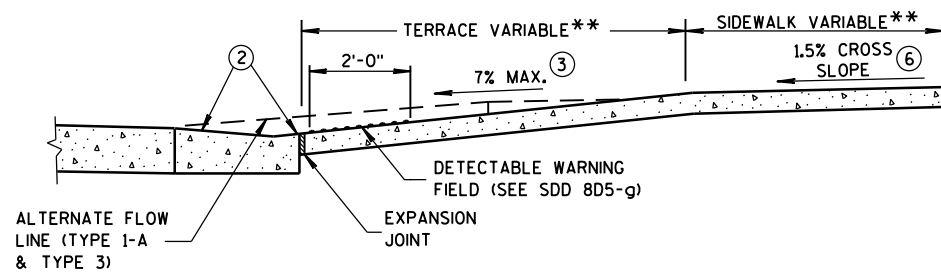
**PLAN VIEW
TYPE 2 RAMP**
(ON LINE WITH SIDEWALK)

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



SECTION A-A

** WIDTH SHOWN ELSEWHERE
IN THE PLANS



SECTION B-B

GENERAL NOTES

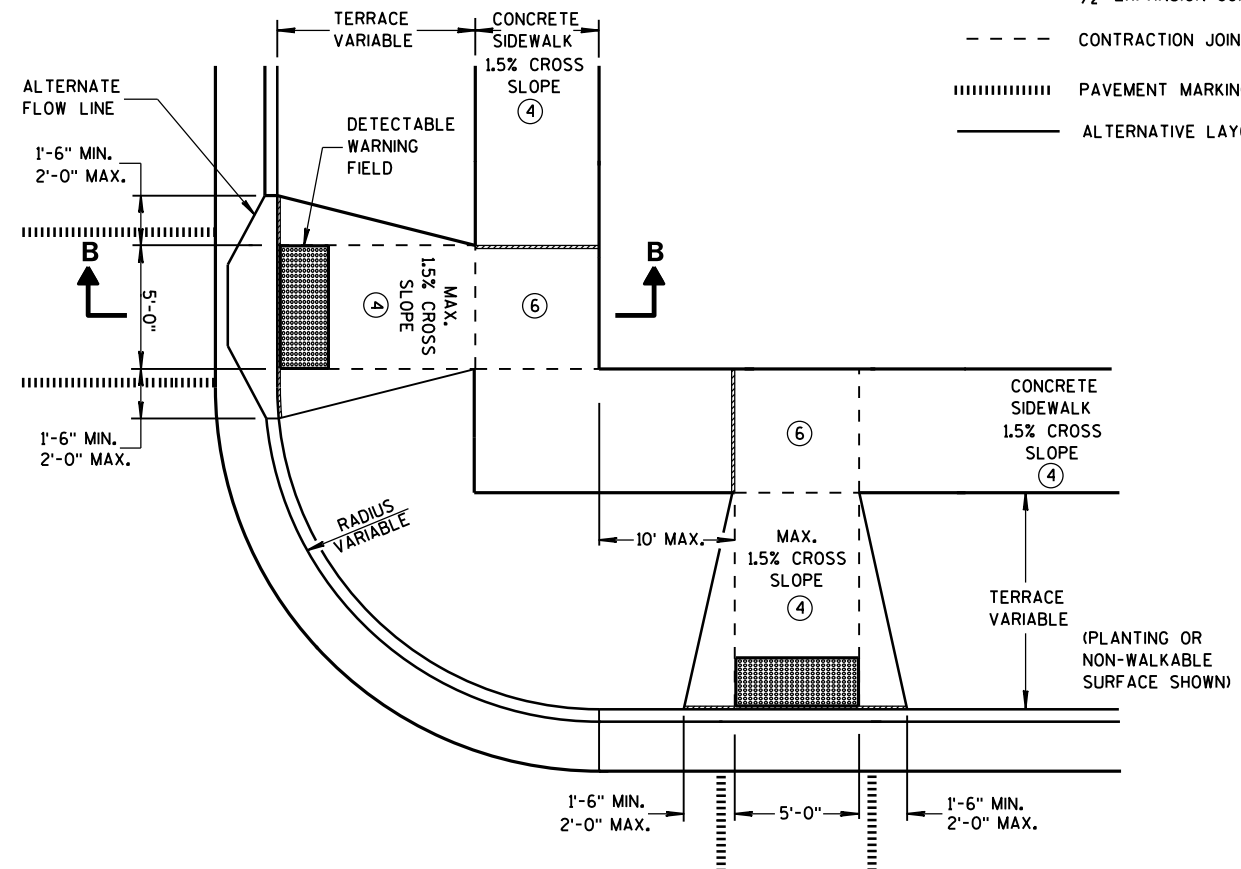
AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.

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

- ② GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5% AND NOT TO EXCEED 7%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.
- ③ ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ④ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- ⑥ PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET.
- ⑦ WHEN THIS GRADE BREAK DISTANCE EXCEEDS 5 FEET, USE RADIAL DETECTABLE WARNING FIELD PER SDD 8D5-f.
- ⑧ PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.
- ⑨ WHEN THIS DISTANCE IS LESS THAN 6'-0", IT MAY BE DIFFICULT TO ACHIEVE A 7% SLOPE OR FLATTER ALONG THE RAMP. REDUCE CURB HEIGHT IN TRIANGLE AREA TO ACHIEVE 7% SLOPE OR FLATTER ON RAMP. CONSTRUCT 2-INCH MINIMUM CURB HEIGHT BETWEEN 10:1 FLARES.

LEGEND

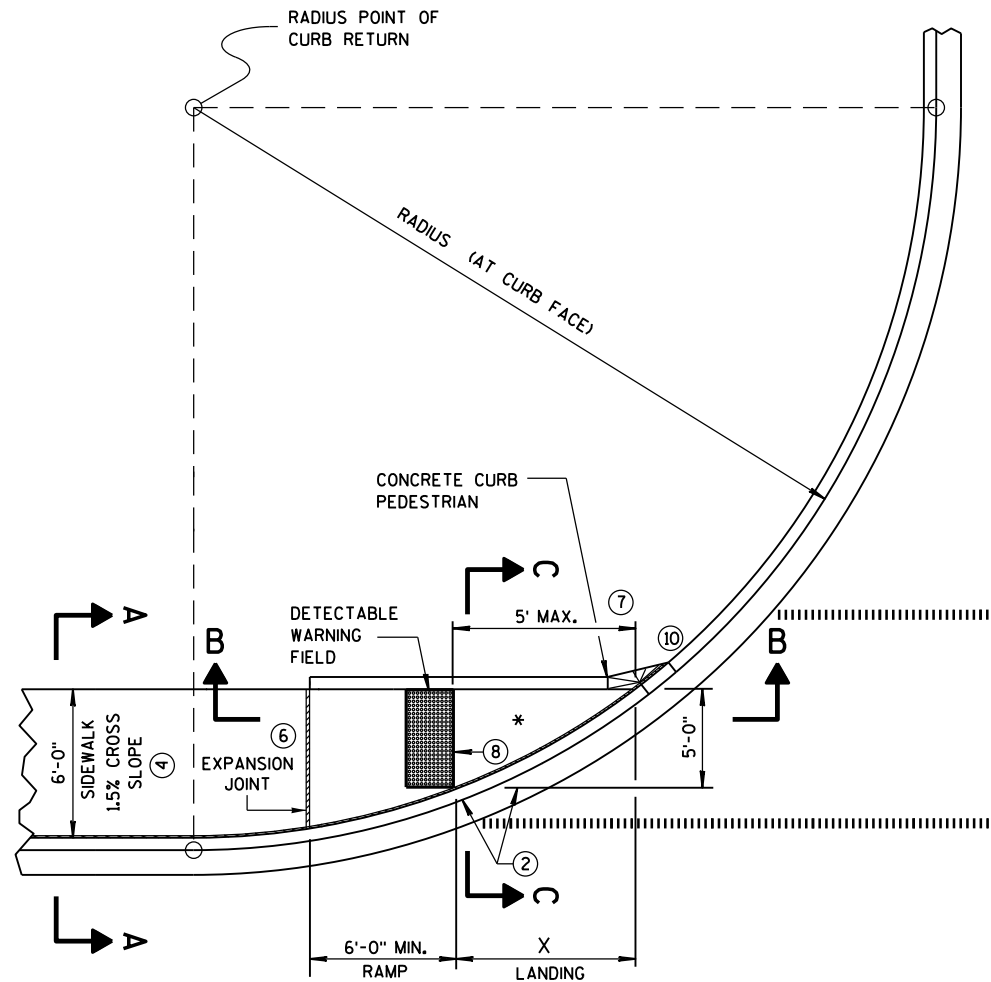
- 1/2" EXPANSION JOINT-SIDEWALK
- - - - CONTRACTION JOINT FIELD LOCATED
- ||||| PAVEMENT MARKING CROSSWALK (WHITE)
- ALTERNATIVE LAYOUT



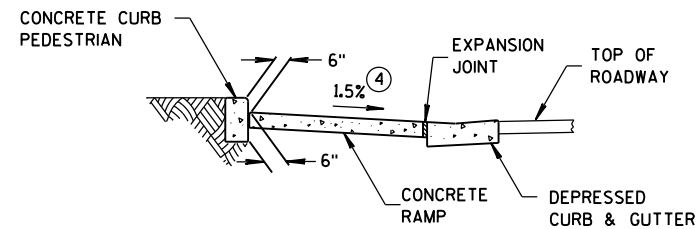
**PLAN VIEW
TYPE 3 RAMP**
(OUTSIDE OF CROSSWALK AREA)

**CURB RAMPS
TYPES 2 AND 3**

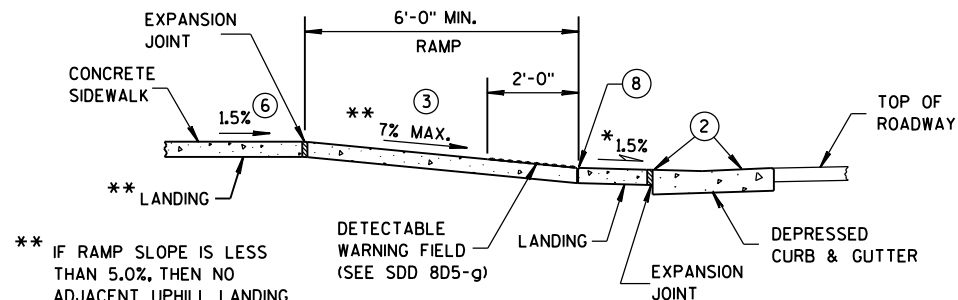
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



CURB RAMP TYPE 4A
PLAN VIEW



SECTION C-C FOR TYPE 4A

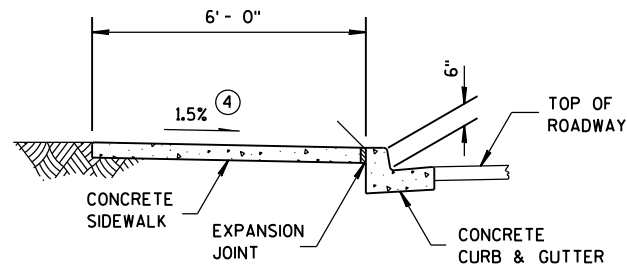


SECTION B-B FOR TYPE 4A

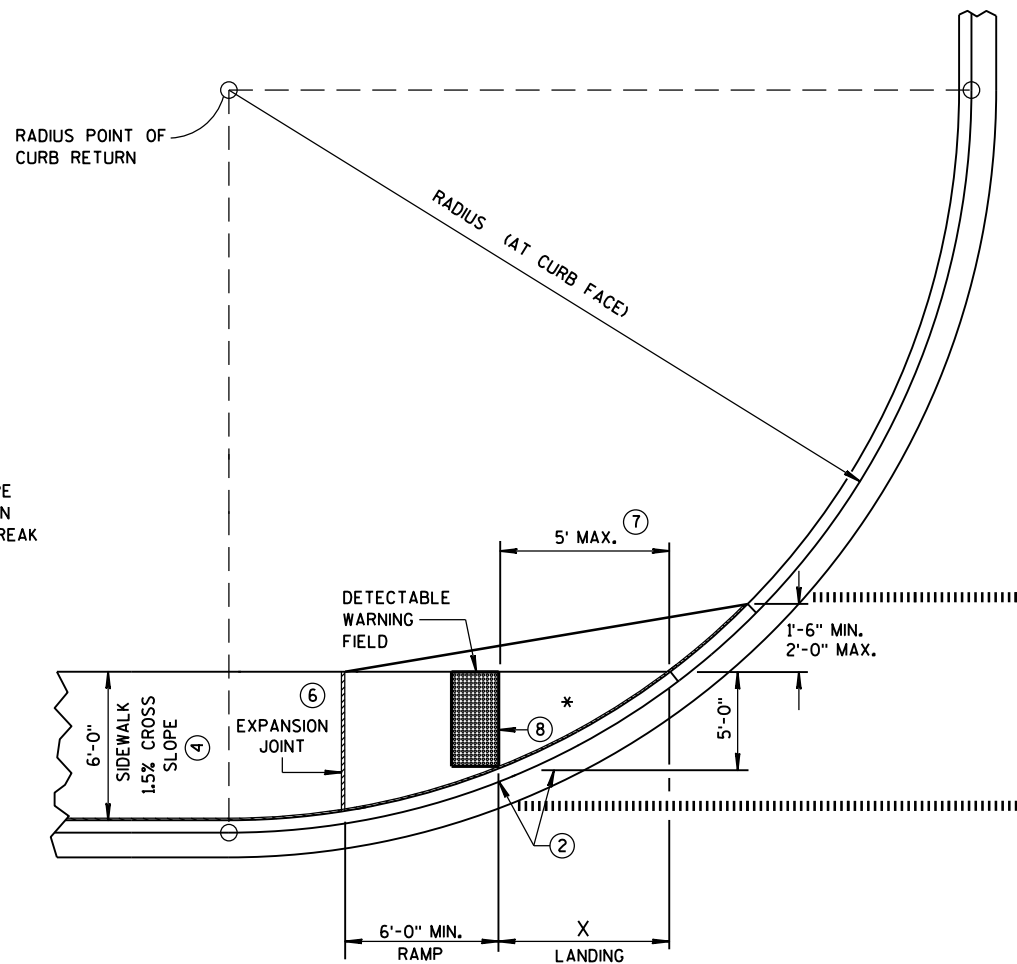
** IF RAMP SLOPE IS LESS THAN 5.0%, THEN NO ADJACENT UPHILL LANDING IS REQUIRED

RADIUS (AT CURB FACE)	X
10 FEET	4'-7"
15 FEET	6'-5½"

INTERMEDIATE RADII CAN BE INTERPOLATED



SECTION A-A FOR TYPE 4A



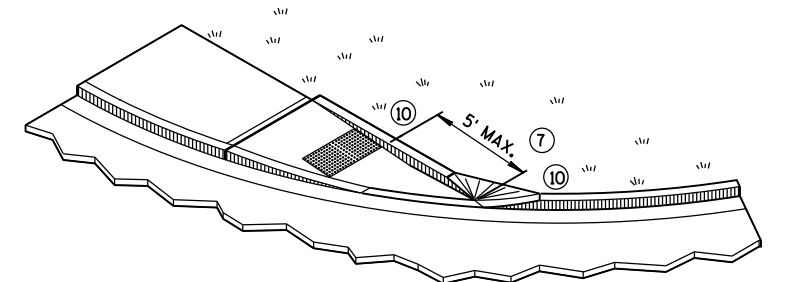
CURB RAMP TYPE 4A1
PLAN VIEW

GENERAL NOTES

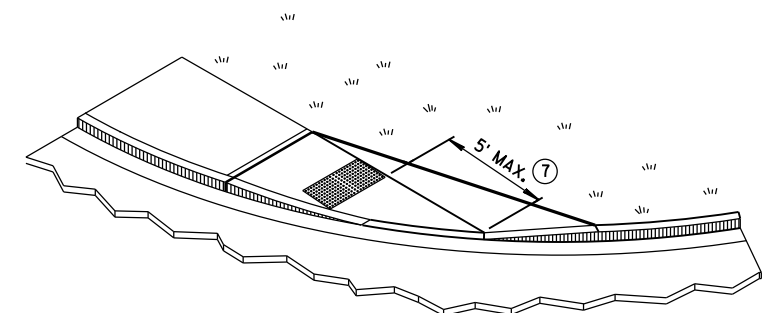
AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.

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

- GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5% AND NOT TO EXCEED 7%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.
- ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET.
- WHEN THIS GRADE BREAK DISTANCE EXCEEDS 5 FEET, USE RADIAL DETECTABLE WARNING FIELD PER SDD 8D5-f.
- PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.
- INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS). DO NOT MARK TRANSITION NOSE.



ISOMETRIC VIEW FOR TYPE 4A



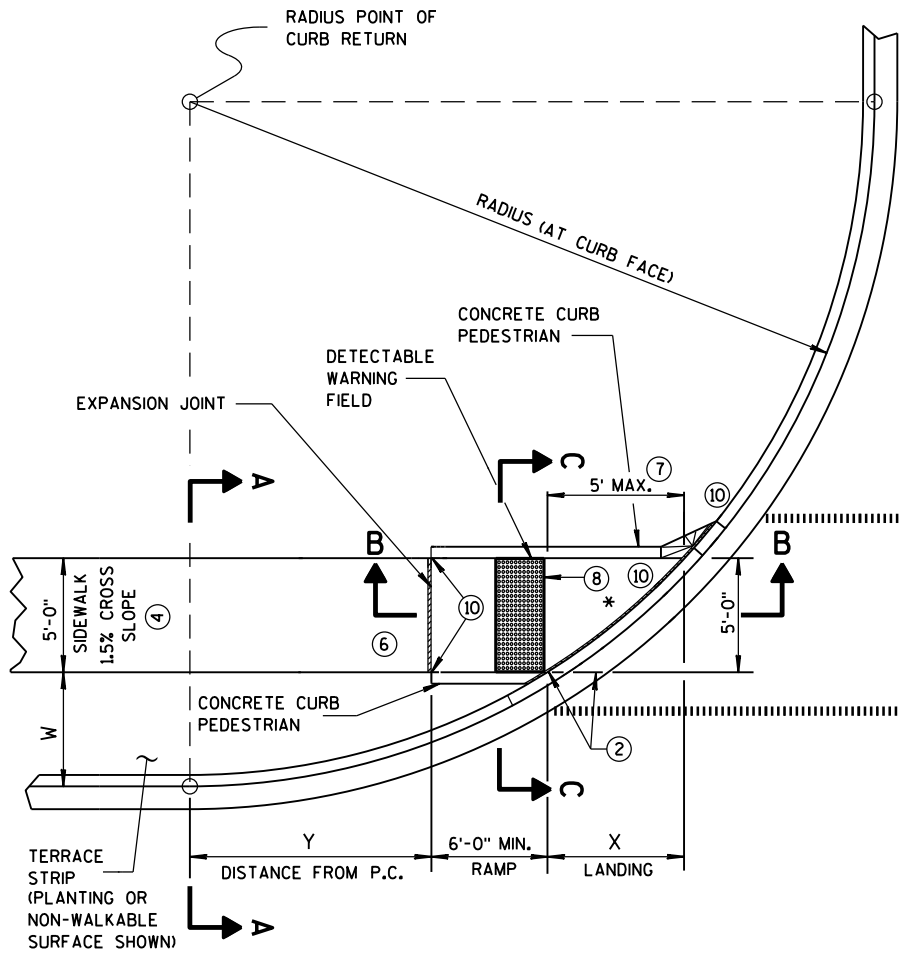
ISOMETRIC VIEW FOR TYPE 4A1

LEGEND

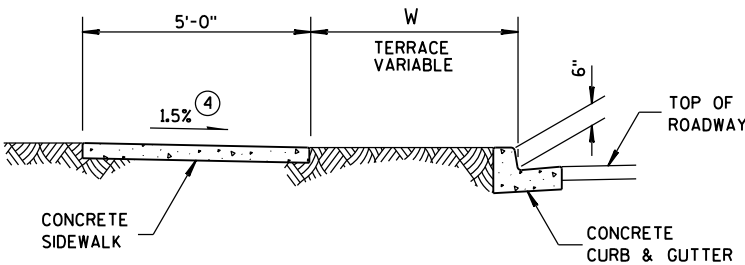
- 1/2" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)

CURB RAMPS
TYPES 4A AND 4A1

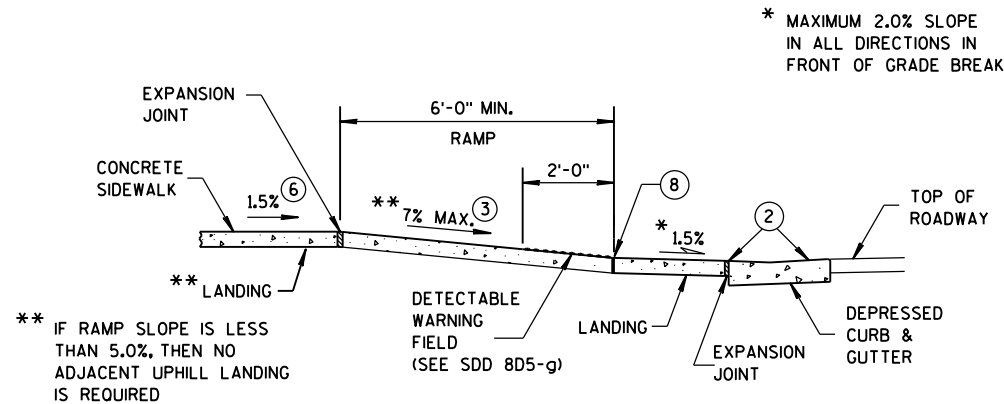
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



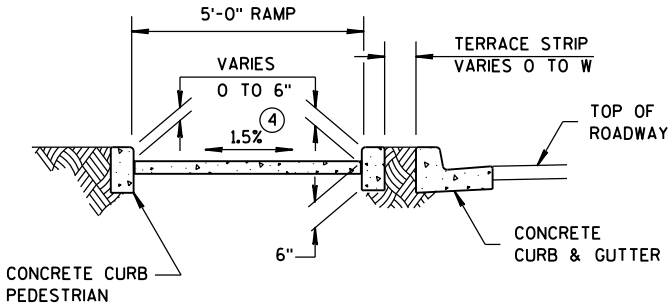
**CURB RAMP TYPE 4B
PLAN VIEW**



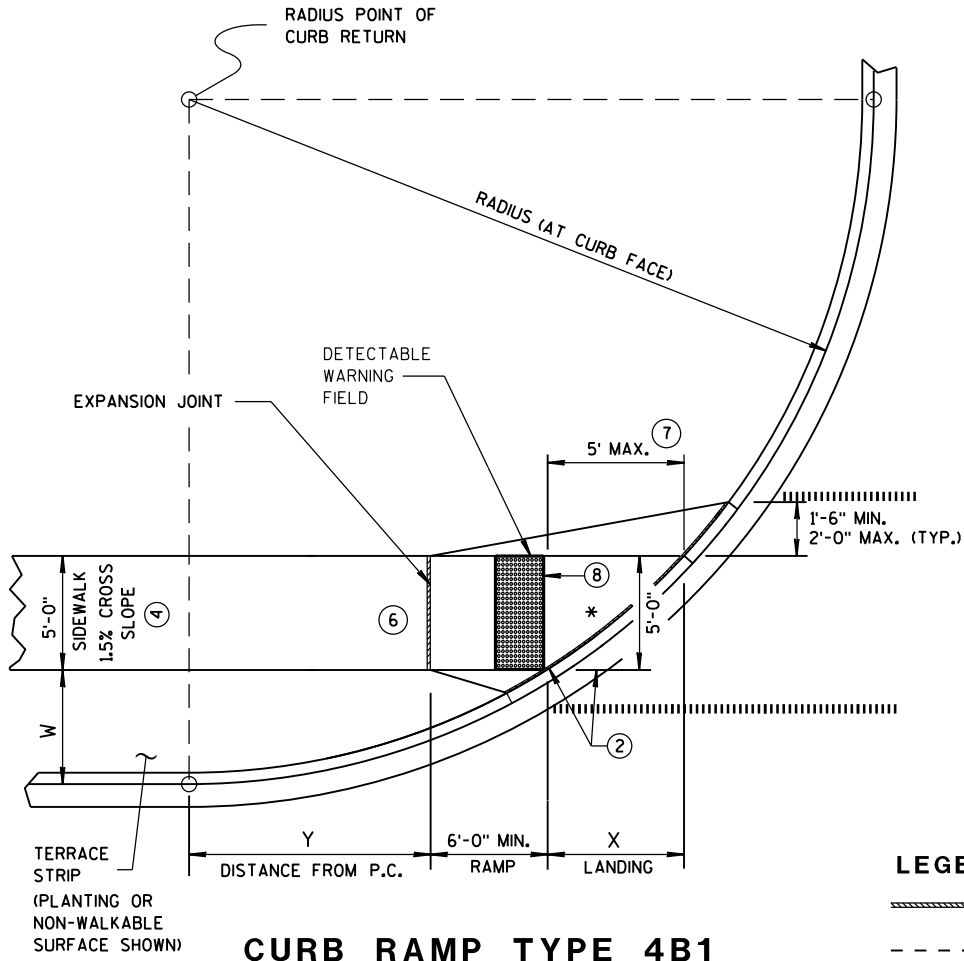
SECTION A-A FOR TYPE 4B



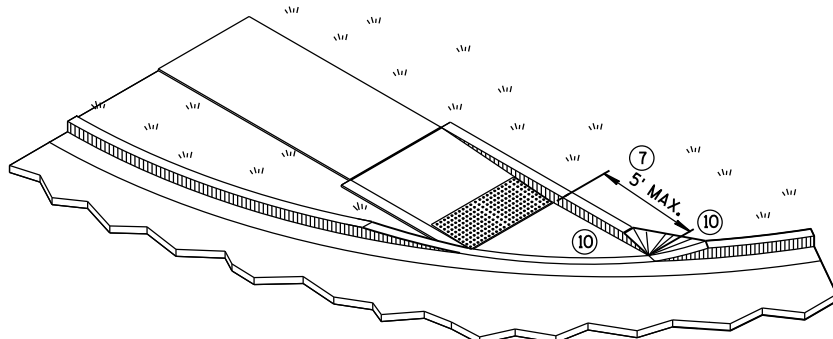
SECTION B-B FOR TYPE 4B



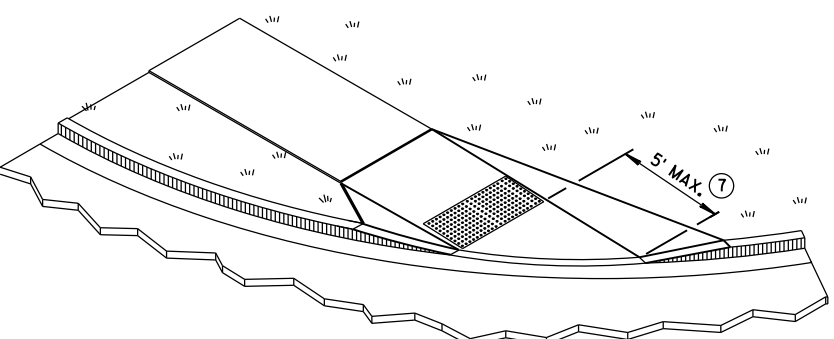
SECTION C-C FOR TYPE 4B



**CURB RAMP TYPE 4B1
PLAN VIEW**



ISOMETRIC VIEW FOR TYPE 4B



ISOMETRIC VIEW FOR TYPE 4B1

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

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

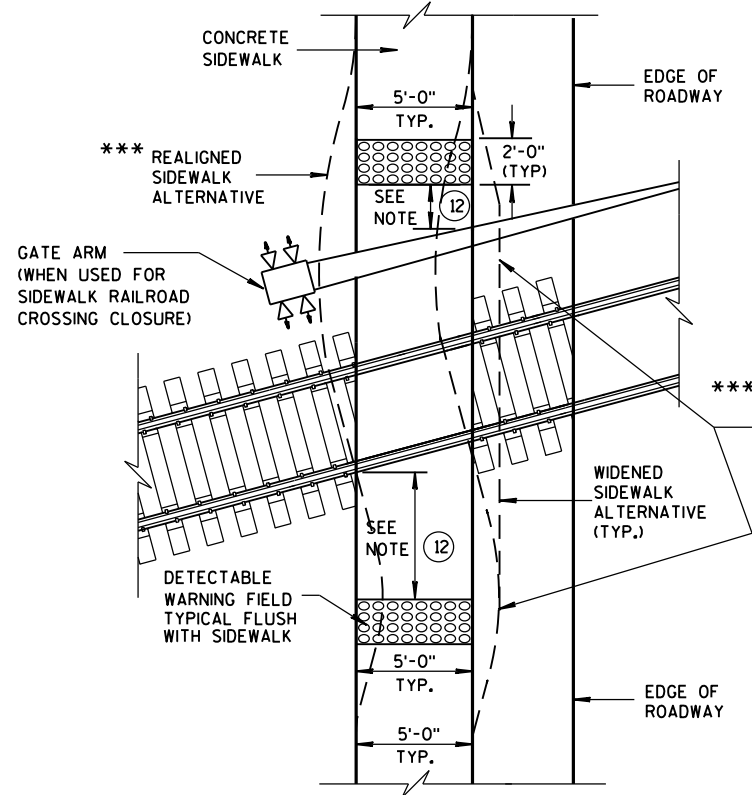
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

RADIUS (AT CURB FACE)	W = 3' - 0"		W = 4' - 0"		W = 5' - 0"		W = 6' - 0"		W = 7' - 0"		W = 8' - 0"		W = 9' - 0"		W = 10' - 0"	
	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
10 FEET	2'-10 1/4"	0'-5"	2'-1"	1'-4 1/2"	1'-5"	2'-1"	0'-10"	2'-7 1/2"	0'-3 1/4"	3'-0 1/4"						
15 FEET	4'-6 3/4"	2'-1 3/4"	3'-9"	3'-5 1/4"	3'-1 1/4"	4'-6"	2'-6 3/4"	5'-4 1/2"	2'-1"	6'-1"	1'-8"	6'-8 1/2"	1'-3 1/4"	7'-2 1/2"	0'-10 3/4"	7'-7 1/4"
20 FEET	5'-9 3/4"	3'-6 1/2"	4'-11 1/2"	5'-1 3/4"	4'-3 1/4"	6'-5 1/2"	3'-8 3/4"	7'-7"	3'-3"	8'-6 1/2"	2'-10"	9'-4 1/2"	2'-5 1/2"	10'-1 1/4"	2'-1 1/4"	10'-9"
30 FEET			6'-9 1/4"	7'-11 1/4"	6'-0 1/4"	9'-8"	5'-5"	11'-1 3/4"	4'-10 3/4"	12'-5 3/4"	4'-5 1/2"	13'-7 3/4"	4'-0 3/4"	14'-8 1/2"	3'-8 1/2"	15'-8 1/4"
40 FEET									6'-1 3/4"	15'-8 1/2"	5'-8"	17'-2"	5'-3"	18'-5 3/4"	4'-10 3/4"	19'-8 1/4"
50 FEET															5'-10 1/4"	23'-2"

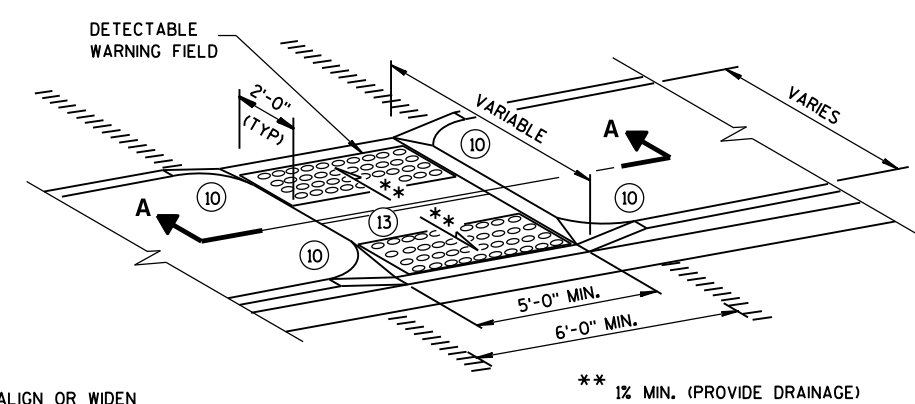
INTERMEDIATE RADII CAN BE INTERPOLATED
 DIMENSION "Y" IS CALCULATED BASED ON 6'-0" RAMP LENGTH
 DIMENSION "X" IS CALCULATED BASED ON 5'-0" SIDEWALK WIDTH

GENERAL NOTES

- AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.
- DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.
- GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5% AND NOT TO EXCEED 7%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.
- ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET.
- WHEN THIS GRADE BREAK DISTANCE EXCEEDS 5 FEET, USE RADIAL DETECTABLE WARNING FIELD PER SDD 8D5-f.
- PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.
- INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS). DO NOT MARK TRANSITION NOSE.



TYPE 8
DETECTABLE WARNINGS
AT RAILROAD CROSSING



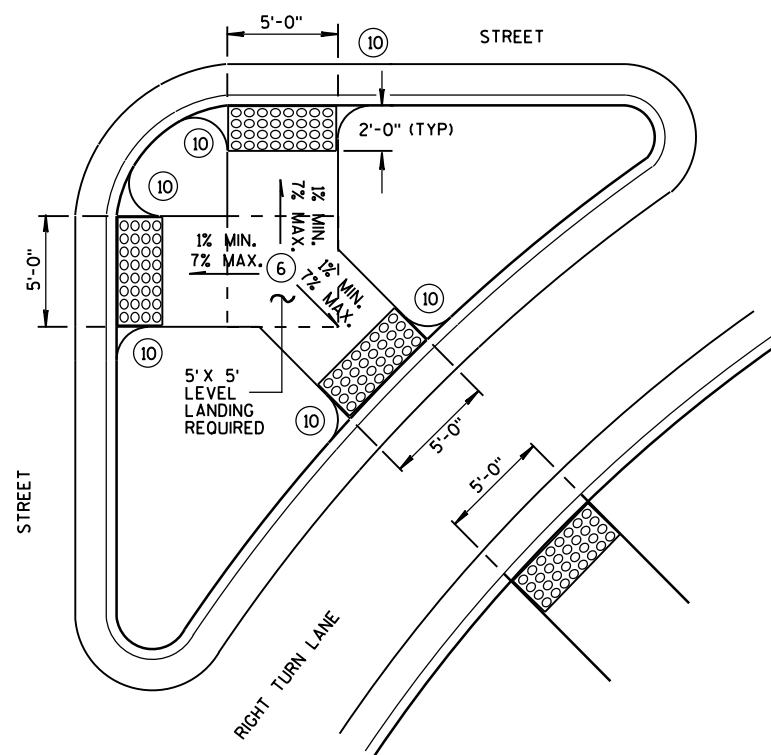
MEDIAN ISLAND
NON-ELEVATED PEDESTRIAN CROSSING
TYPE 5

*** DETAILS TO BE DETERMINED BY DESIGNER

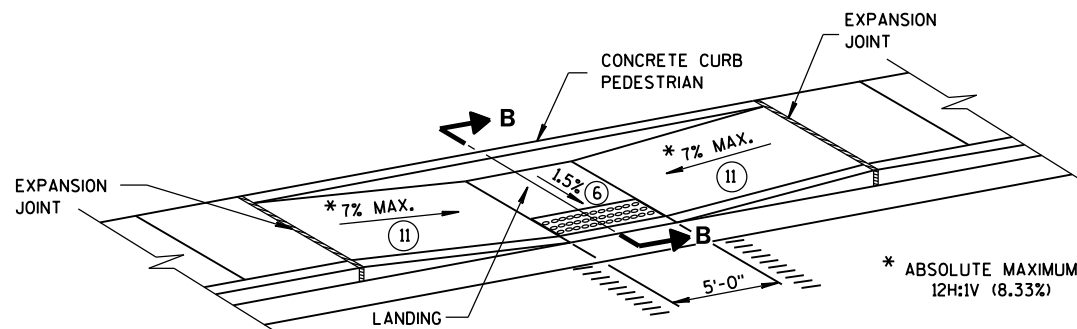
GENERAL NOTES

- AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.
- SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
- DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.
- ② GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5% AND NOT TO EXCEED 7%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.
- ③ ABSOLUTE MAXIMUM 12H:1V (8.33%) CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE AND NOT TO EXCEED 11% GRADE CHANGE.
- ④ ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- ⑥ PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET.
- ⑩ INSTALL TRANSITION NOSE. (INCIDENTAL TO OTHER PAY ITEMS). DO NOT MARK TRANSITION NOSE.
- ⑪ SLOPE SIDEWALK TOWARD LANDING AS SHOWN WHERE THERE IS NO TERRACE OR WHERE THE TERRACE WIDTH IS LESS THAN 6 FEET WIDE.
- ⑫ THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO A RAILROAD CROSSING SHALL BE 15 FEET ± 0.1' FROM THE FACE OF THE GATE ARM IF THE GATE ARM EXTENDS ACROSS THE SIDEWALK. WHERE THERE IS NO PEDESTRIAN GATE, THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO THE RAILROAD CROSSING SHALL BE 15 FEET FROM THE NEAREST RAIL.
- ⑬ DO NOT INSTALL DETECTABLE WARNING FIELDS AT THE EDGES OF STREET-LEVEL PEDESTRIAN REFUGE ISLANDS IF A MINIMUM 2-FOOT CONCRETE SURFACE WITHOUT DETECTABLE WARNINGS (MEASURED IN THE DIRECTION OF PEDESTRIAN TRAVEL) CANNOT BE ACHIEVED.

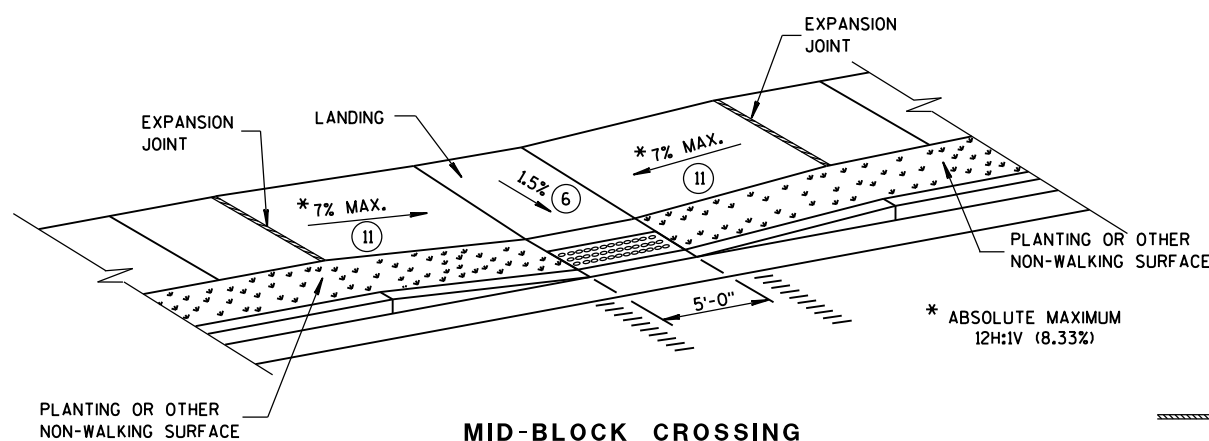
REFER TO GENERAL NOTES ② AND ③ FOR ALL ISLAND CURB RAMPS



TYPE 6
DETECTABLE WARNING AT ISLANDS

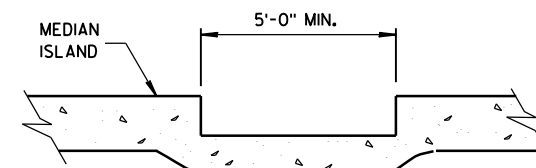


MID-BLOCK CROSSING
TYPE 7A

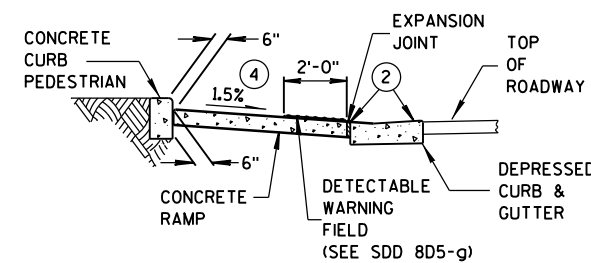


MID-BLOCK CROSSING
TYPE 7B

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



SECTION A-A



SECTION B-B

LEGEND

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



- ① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
- ② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- ③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1 1/8" X 1 1/8" OF OAK OR HICKORY.
- ④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
- ⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.

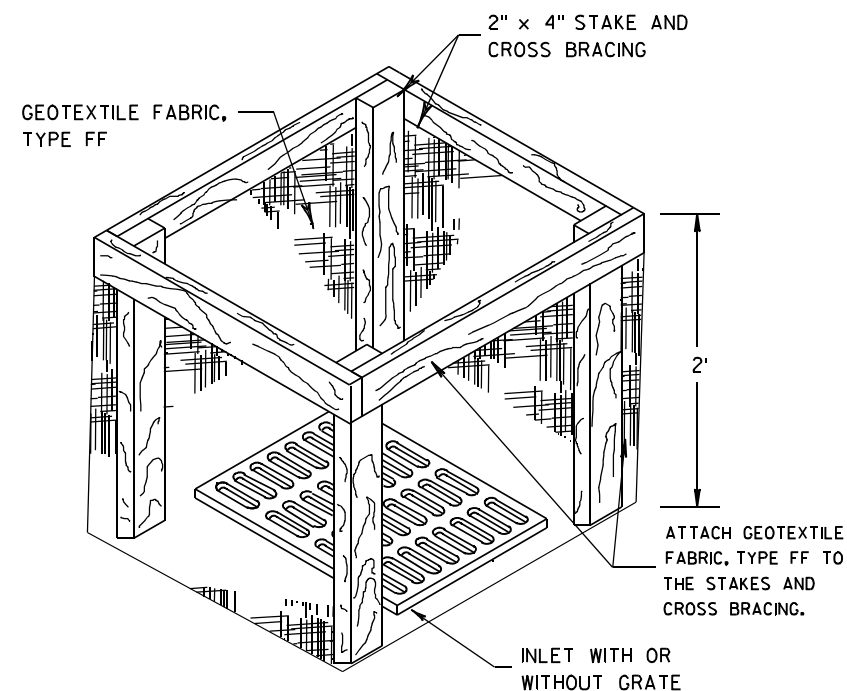
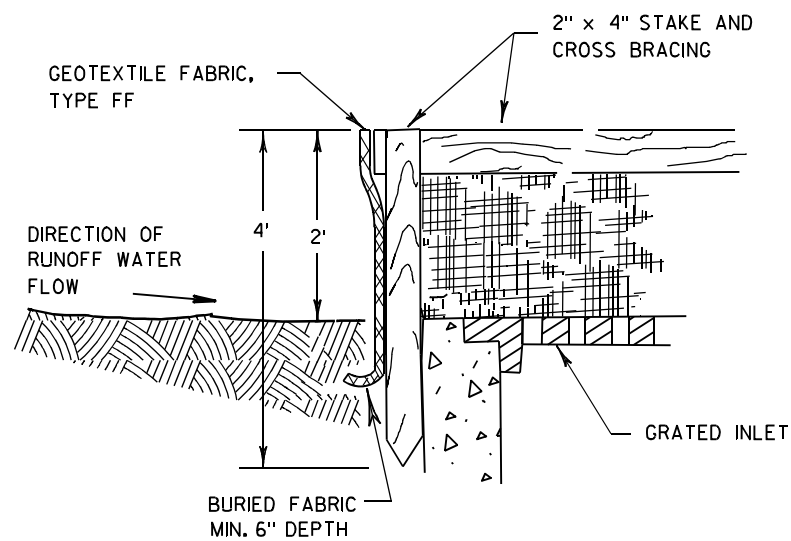


SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-29-05
DATE /S/ Beth Cannata
CHIEF ROADWAY DEVELOPMENT **46** INCHES

FHWA



INLET PROTECTION, TYPE A

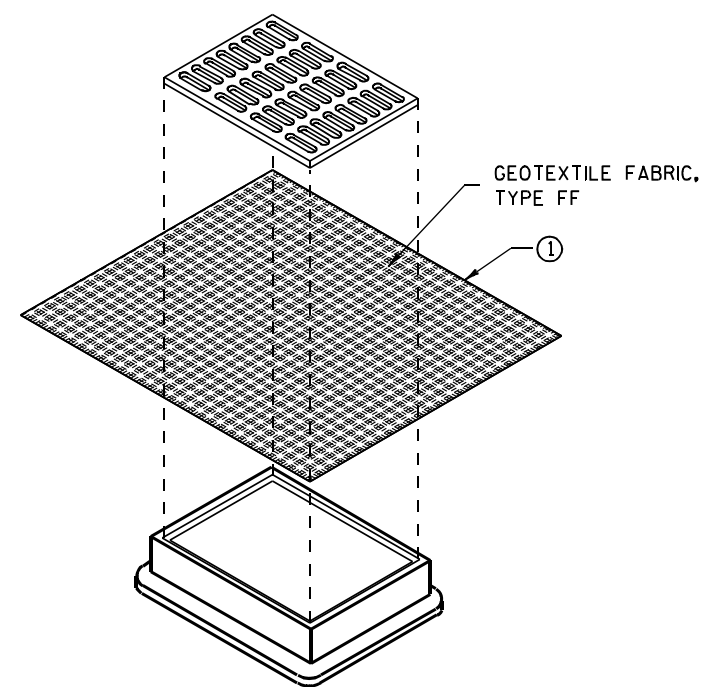
GENERAL NOTES

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

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

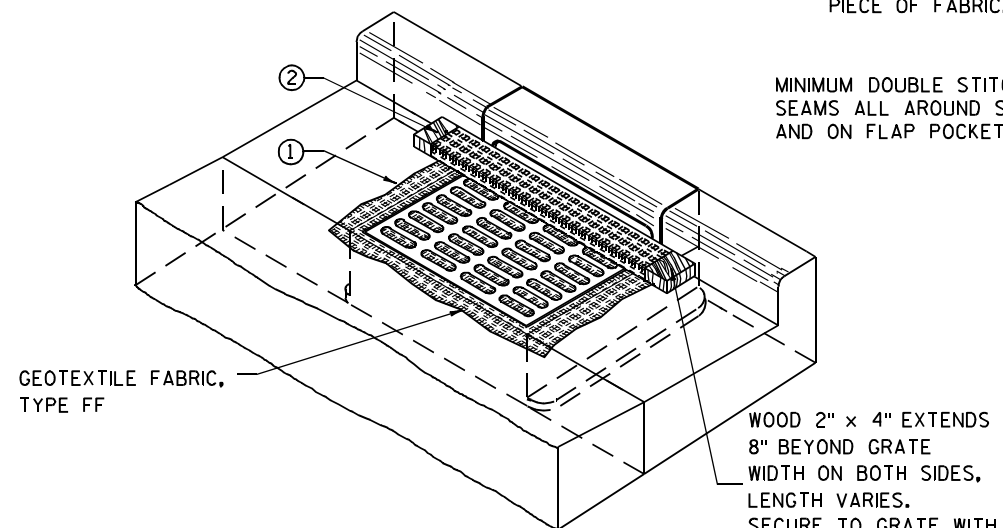
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

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



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

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



INLET PROTECTION, TYPE C (WITH CURB BOX)

INSTALLATION NOTES

TYPE B & C

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

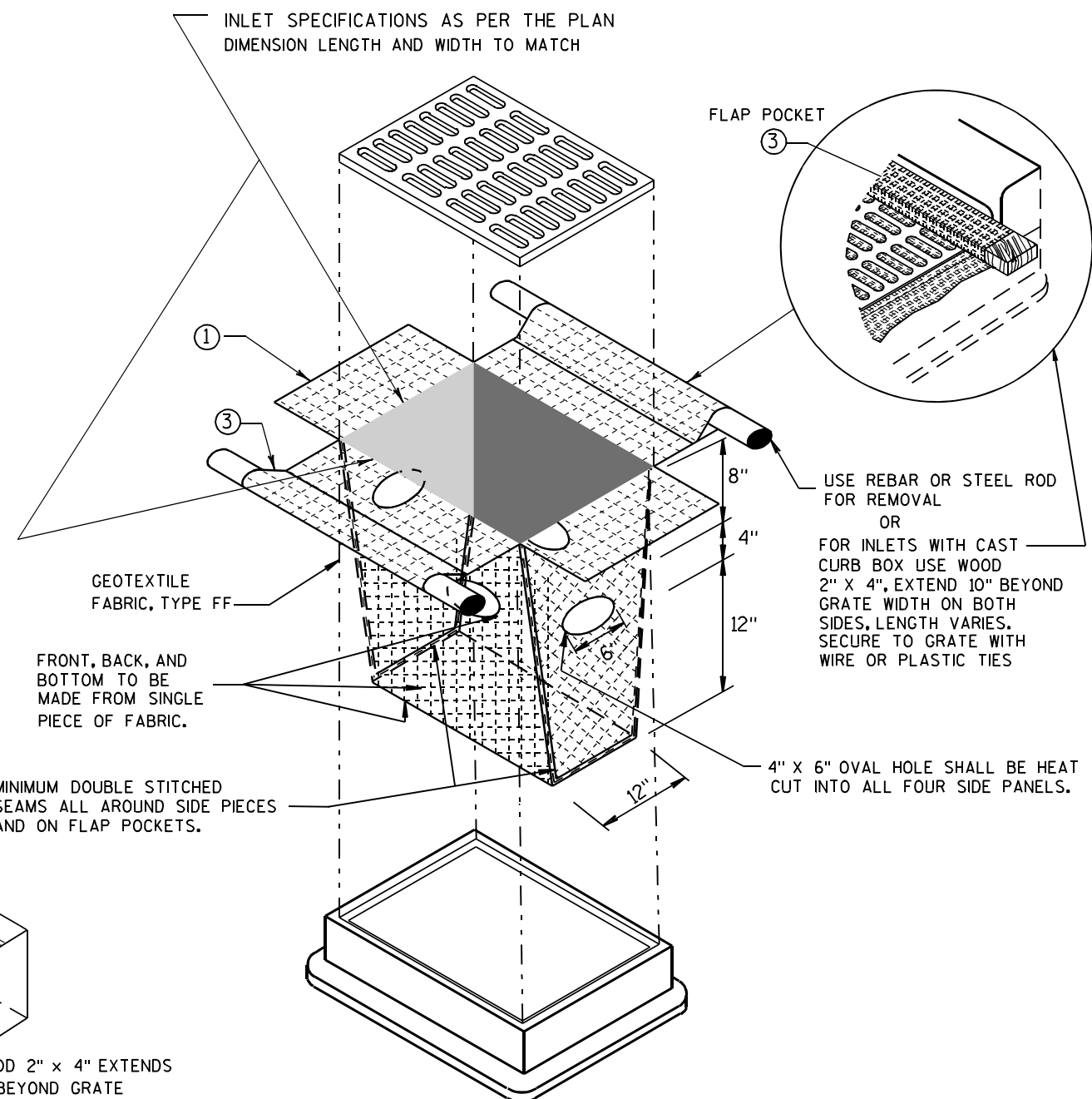
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

TYPE D

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

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

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



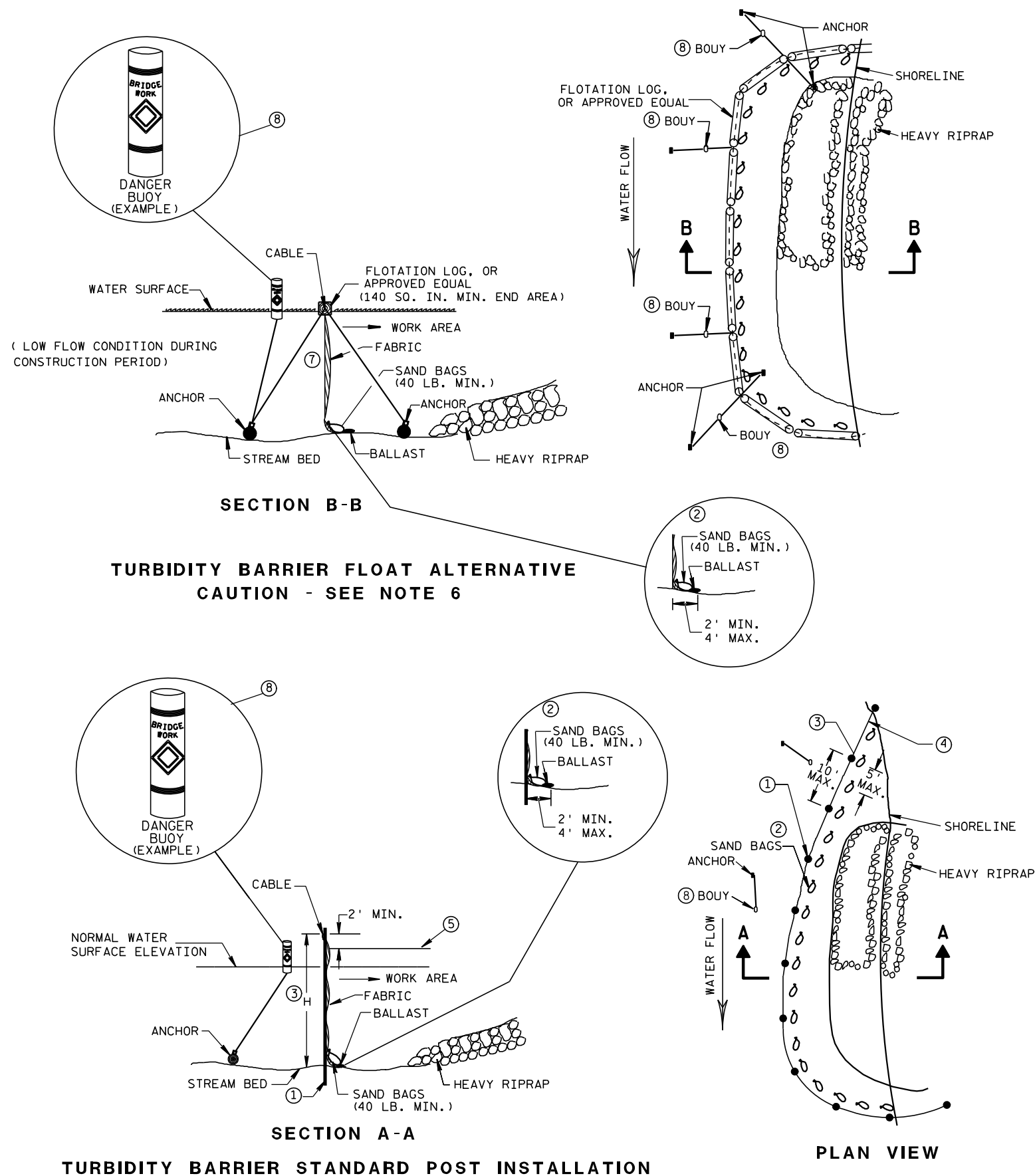
INLET PROTECTION, TYPE D

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/16/02 /S/ Beth Connolly
DATE 47
FHWA CHIEF ROADWAY DEVELOPMENT ENGINEER

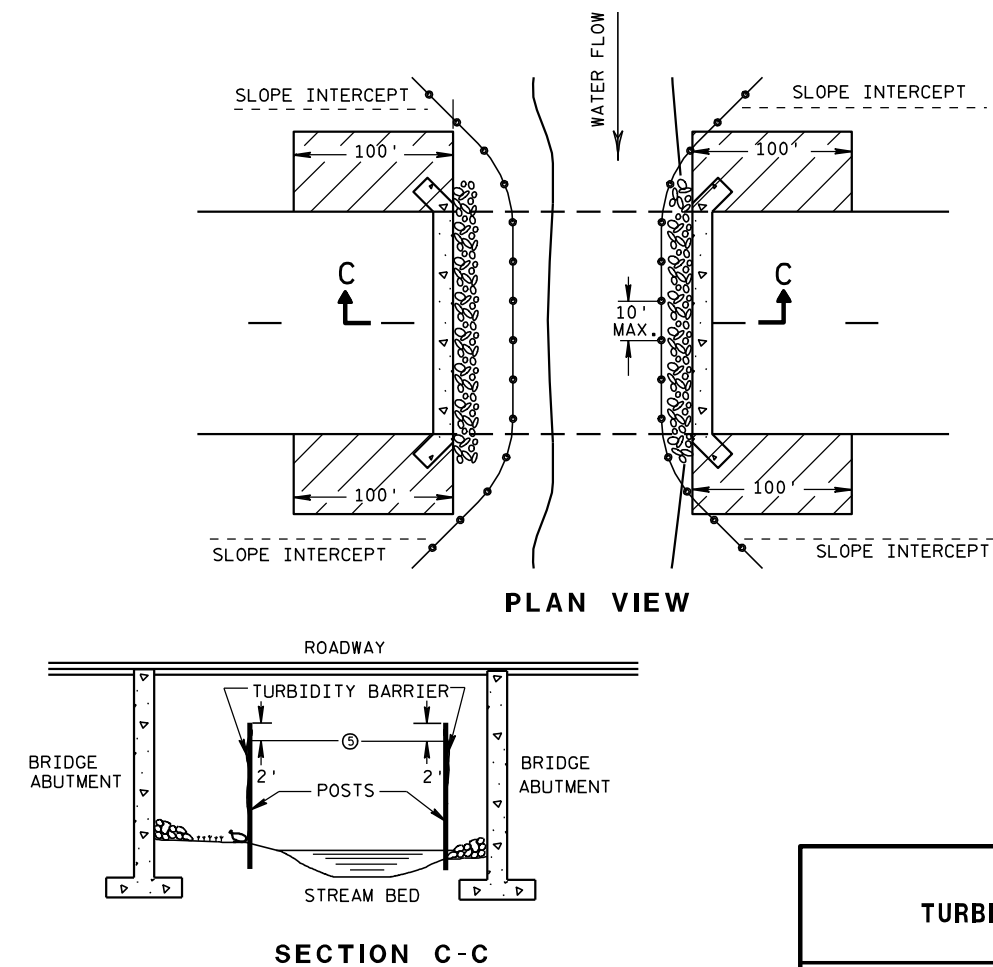


GENERAL NOTES

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.

TURBIDITY BARRIER MAY BE REMOVED AT THE ENGINEERS DISCRETION, WHEN PERMANENT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

- ① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.
- ② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.
- ③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.
- ④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.
- ⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WHICHEVER IS GREATER.
- ⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.
- ⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.
- ⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

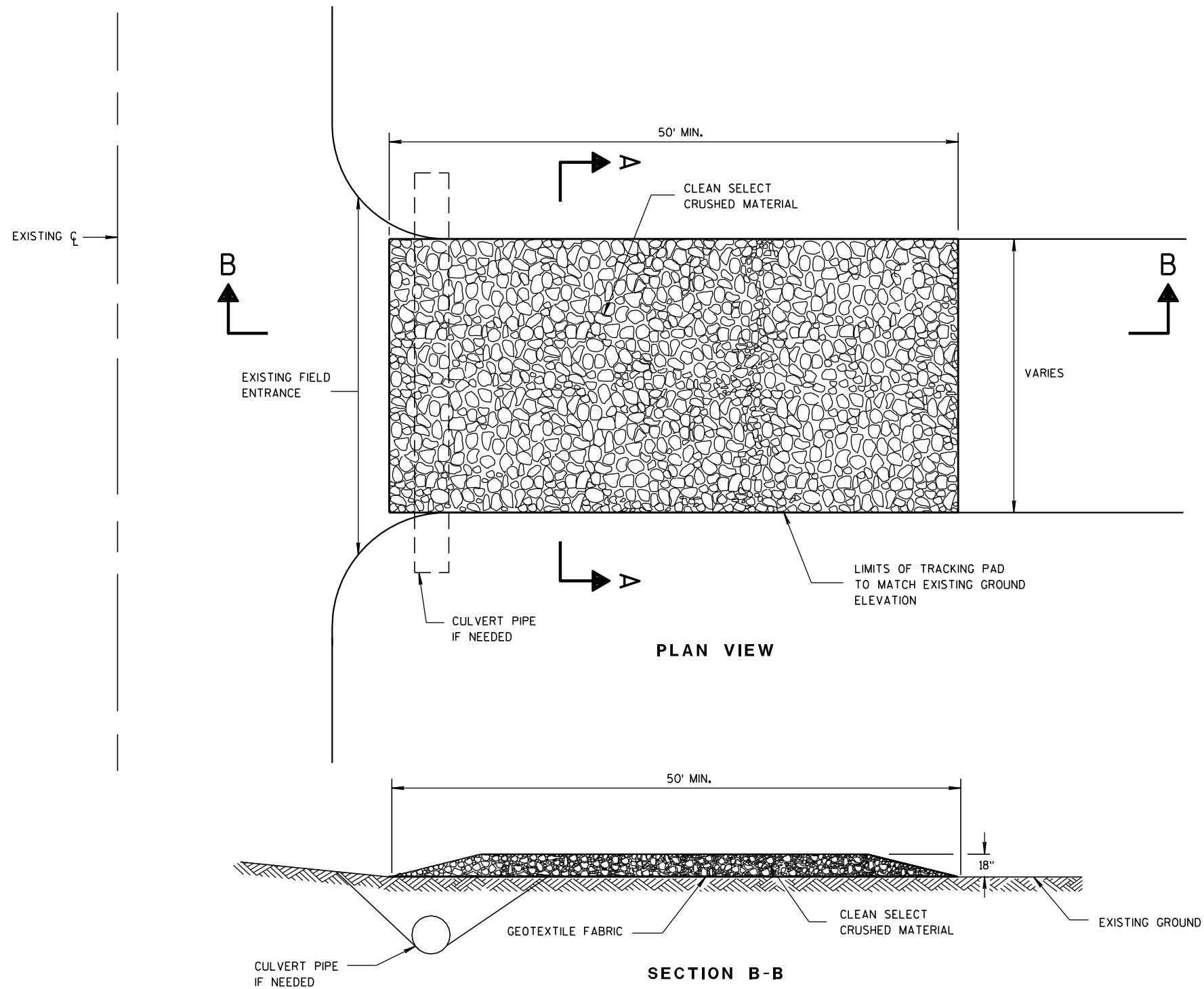
STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

APPROVED

6/04/02
 DATE

/S/ Beth Conn
 CHIEF ROADWAY DEVELOPER

FHWA



TRACKING PAD

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.

TRACKING PAD SHALL BE INSPECTED DAILY. DEFICIENT AREAS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

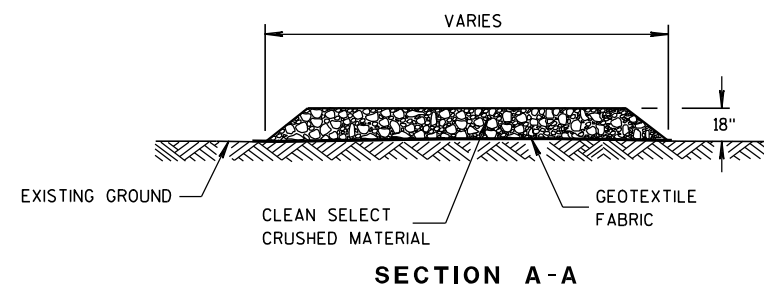
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT.

SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. FLOWS SHALL BE DIVERTED AWAY, AROUND OR CONVEYED UNDER THE TRACKING PAD.

CULVERT PIPE OR OTHER BMP USED TO DIVERT WATER AWAY, AROUND OR UNDER THE TRACKING PAD SHALL BE DESIGNED TO CONVEY THE 2 YEAR - 24 HOUR EVENT.

THE COST OF ADDITIONAL BMP TO DIVERT WATER ARE INCIDENTAL TO THE TRACKING PAD BID ITEM.



SECTION A-A

TRACKING PAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

3/24/2011

DATE

FHWA

/S/ Jerry H. Zogg

ROADWAY STANDARDS 49

ENGINEER

ENT

TABLE OF NOMINAL DIMENSIONS AND WEIGHTS

DIMENSION IN INCHES		CORRUGATED STEEL PIPE								
PIPE DIAMETER (INSIDE)	A	12	12	12	18	18	18	24	24	24
PIPE LENGTH **	B	24	30	36	24	30	36	36	42	48
WALL THICKNESS	C	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.064
COVER	D	10 1/4	10 1/4	10 1/4	16 1/4	16 1/4	16 1/4	22 1/4	22 1/4	22 1/4
FRAME	E	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2	26 1/2	26 1/2	26 1/2
FRAME	F	8 1/2	8 1/2	8 1/2	14 1/2	14 1/2	14 1/2	20 1/2	20 1/2	20 1/2
FRAME	G	11 1/2	11 1/2	11 1/2	17 1/2	17 1/2	17 1/2	23 1/2	23 1/2	23 1/2
WEIGHT IN POUNDS *										
FRAME AND COVER		60	60	60	110	110	110	155	155	155

* THE ACTUAL WEIGHT OF THE MANHOLE FRAME AND COVER MAY VARY WITHIN 5 PERCENT PLUS OR MINUS OF THE WEIGHTS SHOWN.

** NORMALLY USED LENGTHS. THE PROJECT ENGINEER SHALL DETERMINE IF PIPE LENGTHS, OTHER THAN THOSE SPECIFIED, SHALL BE USED, TO A MAXIMUM OF 48" (CONTINUOUS LENGTH, NON-SPLICED). THE ADDITIONAL LENGTH SHALL BE INCIDENTAL TO THE PULL BOX BID PRICE.

GENERAL NOTES

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

ALL FRAMES AND COVERS SHALL BE HEAVY DUTY TYPE, SUITABLE FOR VEHICULAR TRAFFIC LOADS.

PULL BOXES LOCATED IN THE ROADWAYS SHALL HAVE LOCKING COVERS.

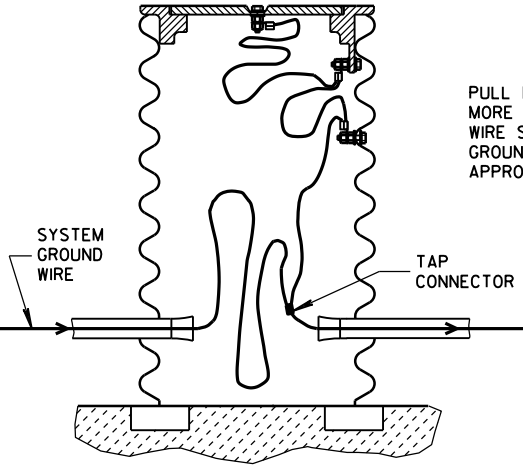
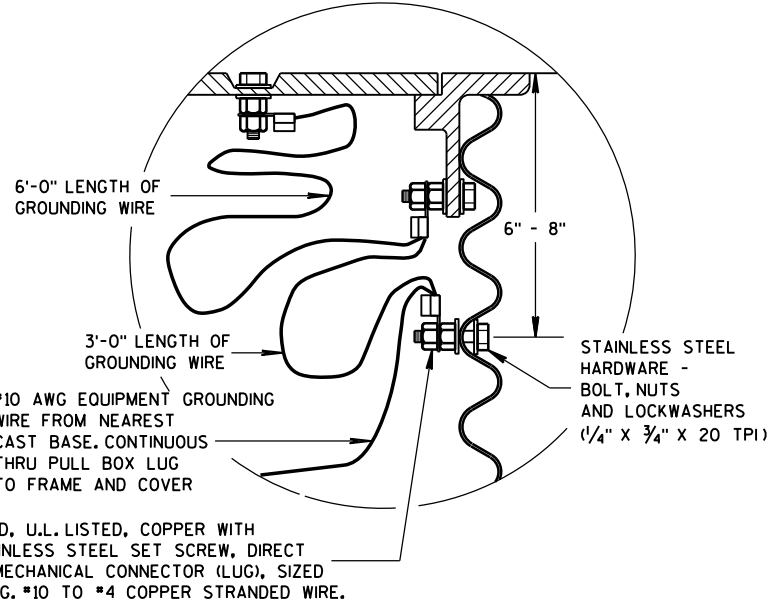
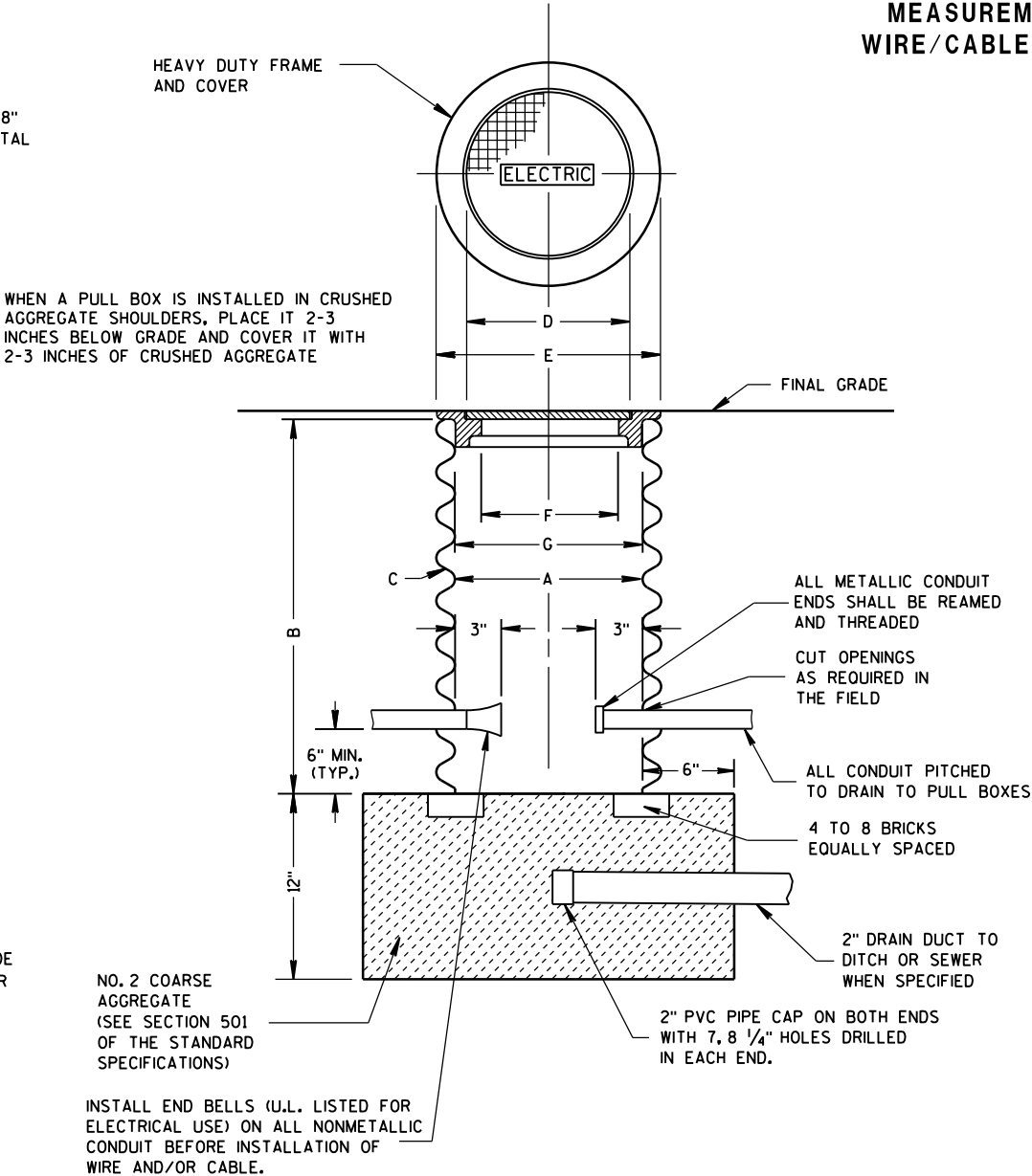
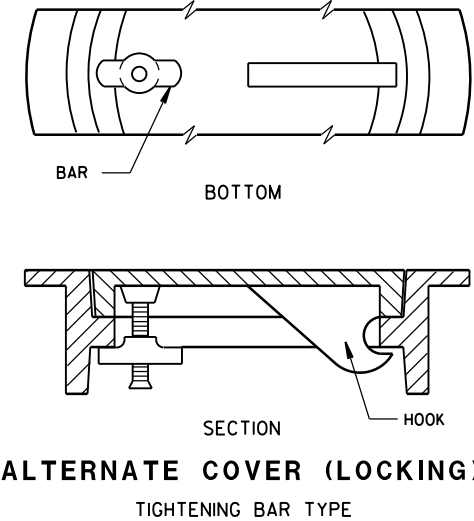
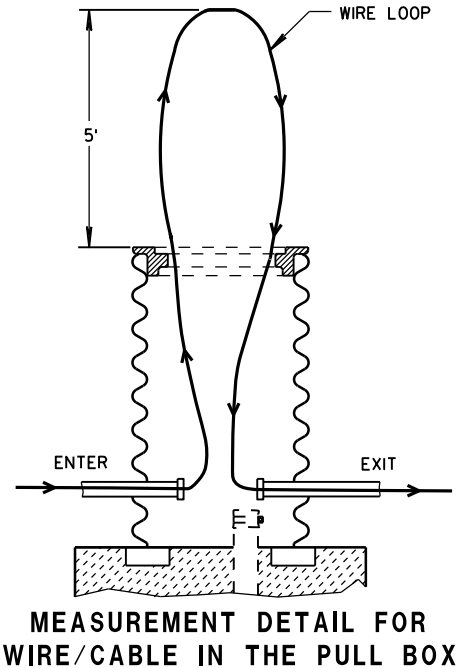
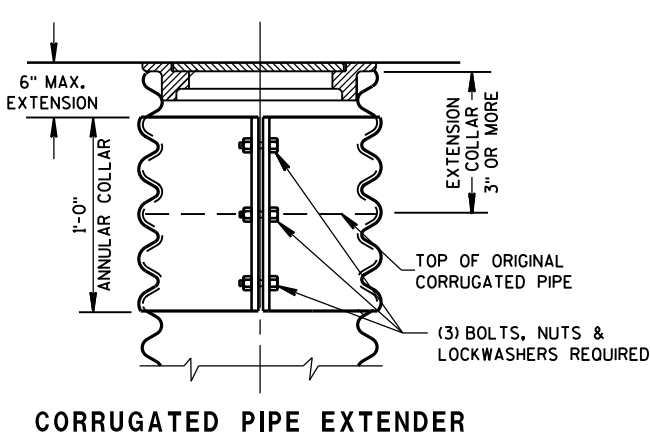
ENTRANCE HOLES INTO PULL BOXES SHALL BE CUT WITH A CIRCULAR HOLE SAW OR HYDRAULIC CONDUIT PUNCH. HOLE SIZE SHALL BE THE OUTSIDE DIAMETER OF THE CONDUIT THAT IS TO FIT IN THE OPENING PLUS NO MORE THAN 1/4".

THE CONTRACTOR SHALL NOT INSTALL WIRE IN ANY PULL BOX UNTIL ITS INSTALLATION HAS BEEN INSPECTED AND ACCEPTED BY THE ENGINEER.

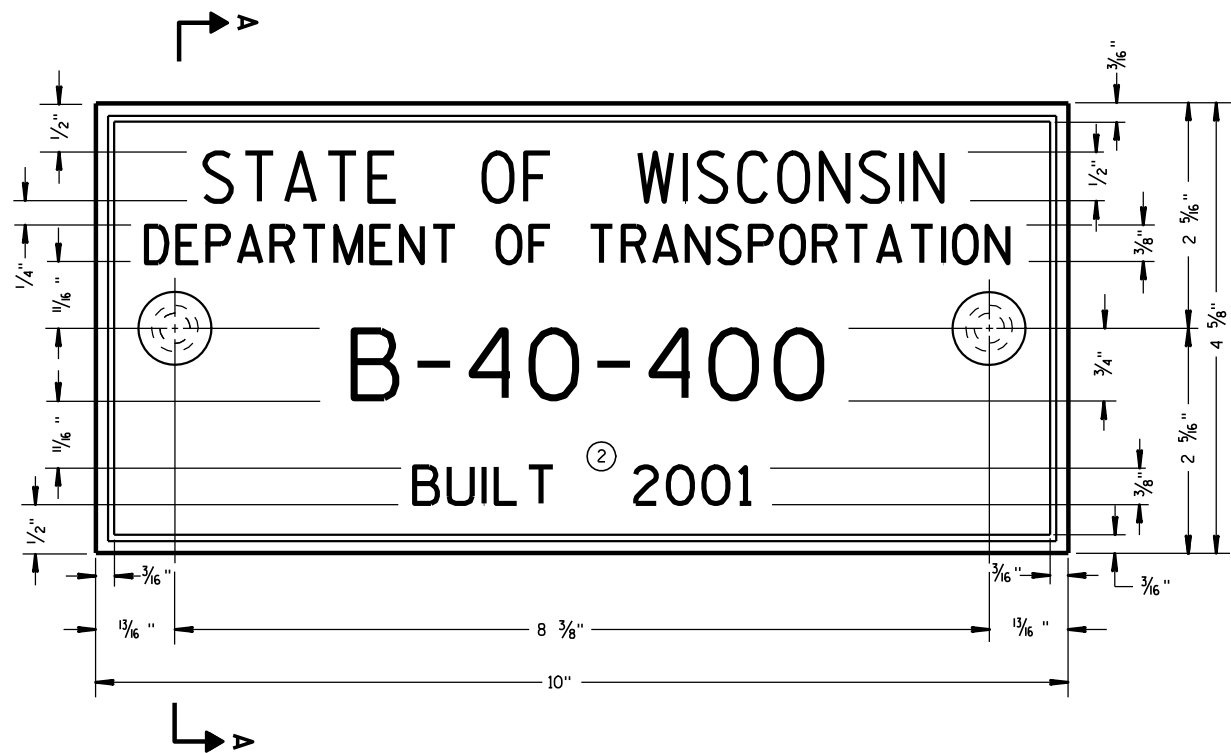
GROUNDING LUGS (MECHANICAL CONNECTORS) SHALL BE U.L. LISTED AND APPROVED FOR USE WITH COPPER WIRE.

ALL METALLIC CONDUIT IN WHICH WIRE AND/OR CABLE IS TO BE INSTALLED, SHALL BE BUSHED BEFORE INSTALLATION OF THE WIRE AND/OR CABLE.

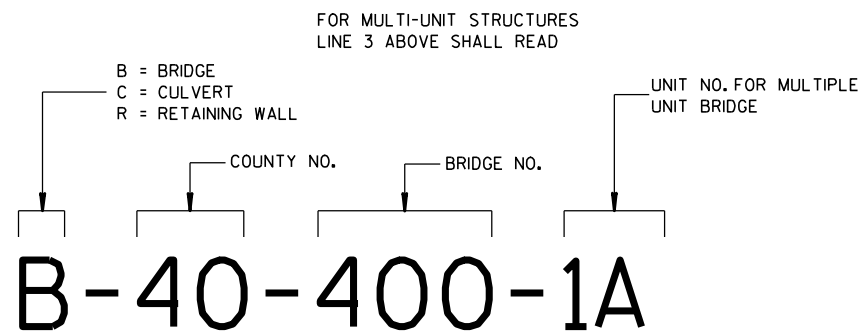
WHEN PULL BOXES ARE INSTALLED FOR FUTURE USE, DO NOT INSTALL THE EQUIPMENT GROUNDING LUG. THE EQUIPMENT GROUNDING LUG, THE EQUIPMENT GROUNDING ELECTRODE AND THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE REQUIRED AND INSTALLED UNDER A FUTURE WIRING CONTRACT.



PULL BOX	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED Sept. 2014 DATE	/S/ Ahmet Demirelek STATE ELECTRICAL 50
FHWA	



TYPICAL NAME PLATE
(BRIDGES, CULVERTS, AND RETAINING WALLS)



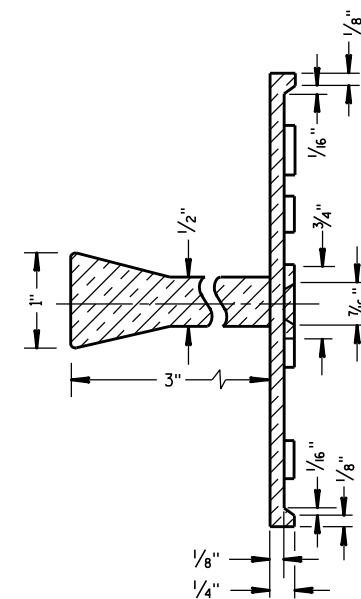
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

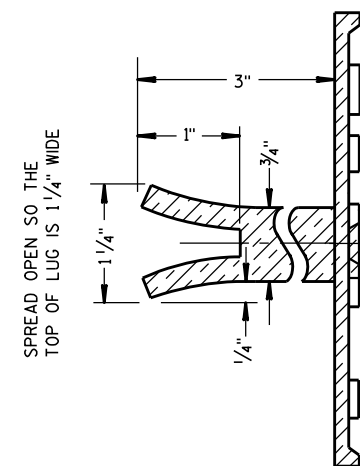
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

- 1 EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 2 REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.

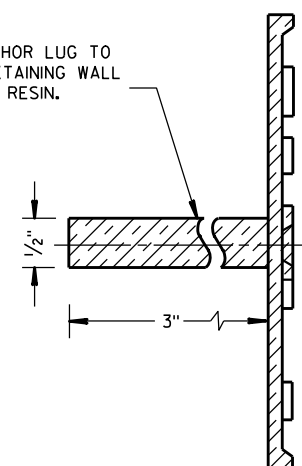


SECTION A-A



ALTERNATE LUG

- 1 ADHERE ANCHOR LUG TO PRECAST RETAINING WALL WITH EPOXY RESIN.

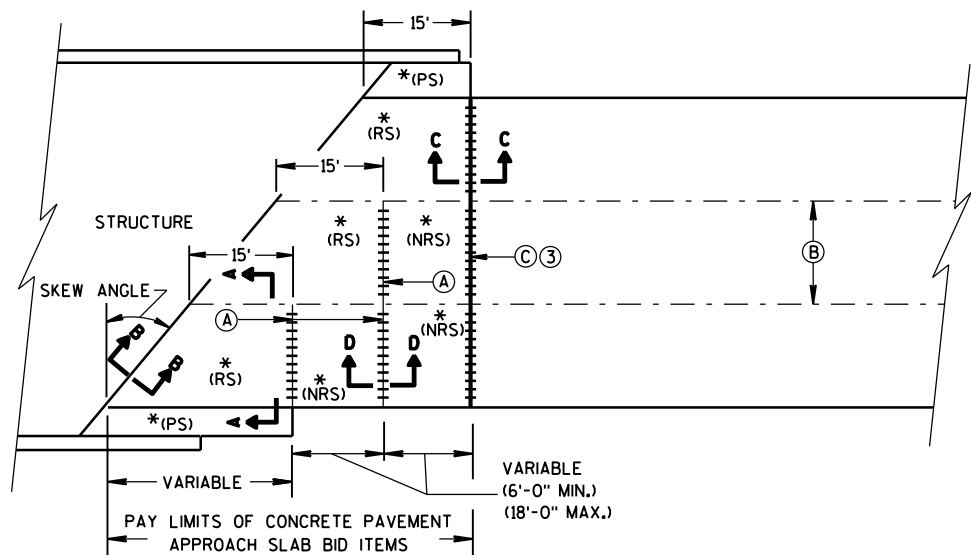


ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

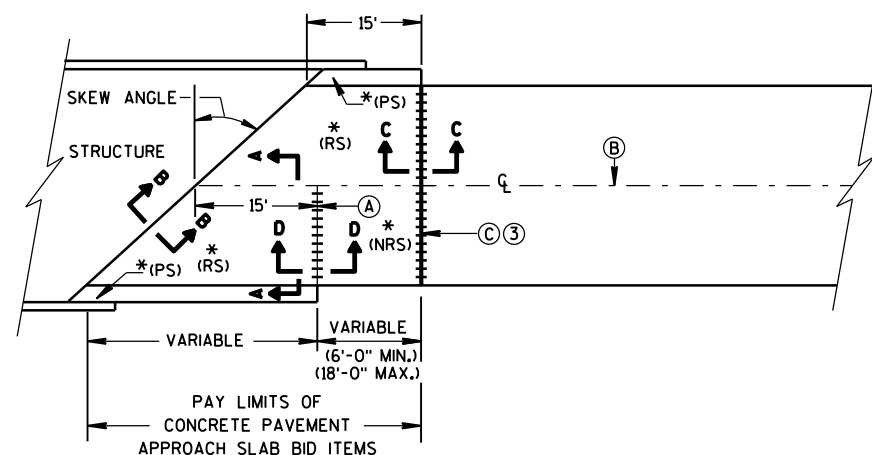
**NAME PLATE
(STRUCTURES)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

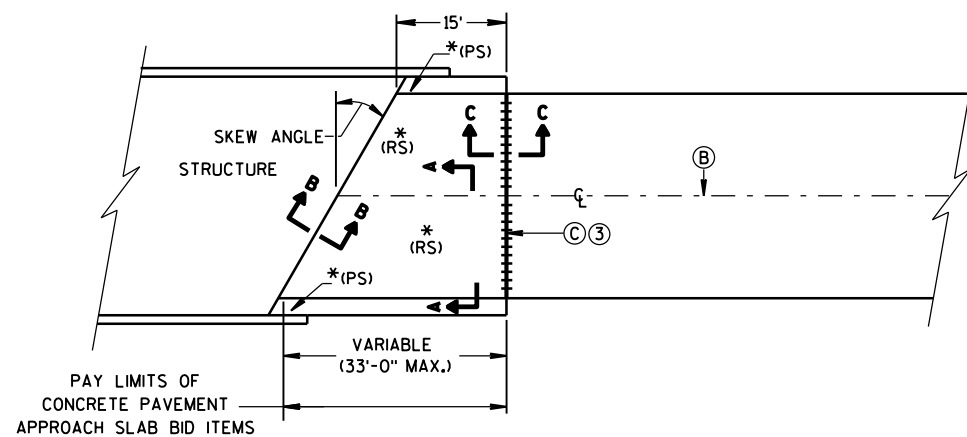
APPROVED
DATE 3/26/10
CHIEF STRUCTURAL DEVELOPER 51
JEER



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



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

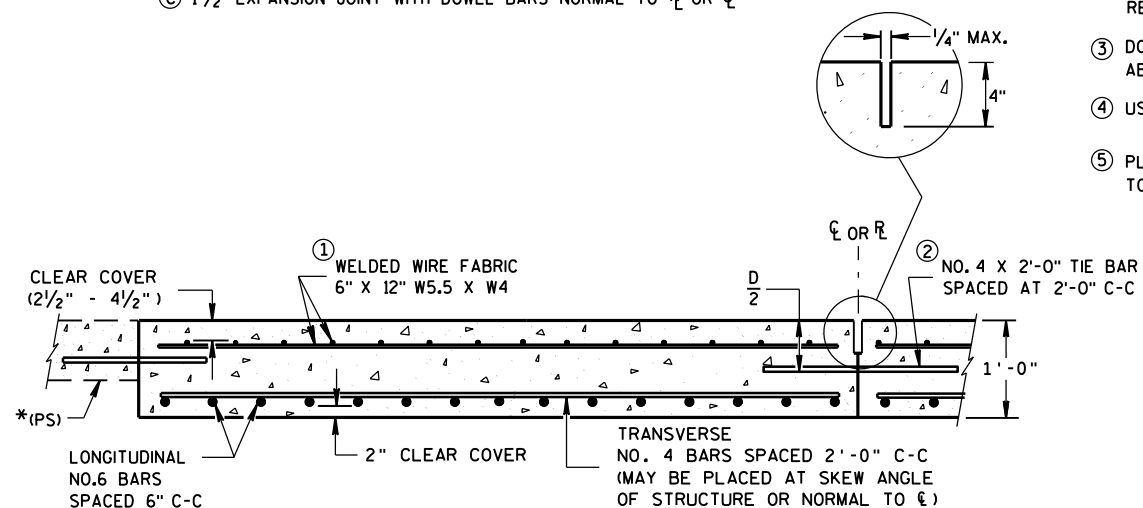


**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')
APPROACH SLAB AND ADJACENT PAVEMENT**

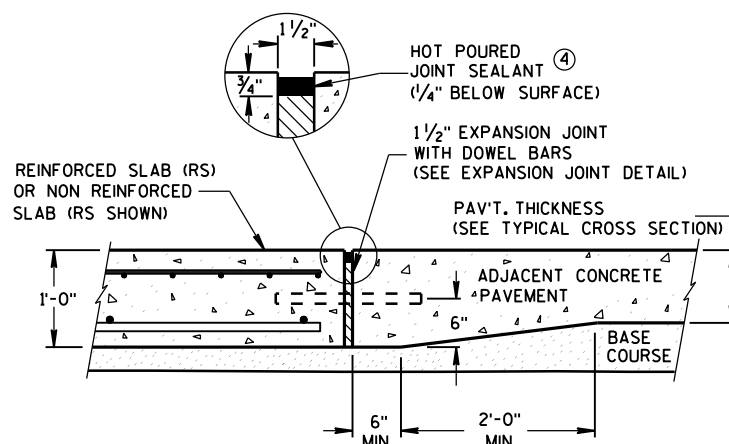
* (RS) = REINFORCED CONCRETE SLAB
* (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
(SEE DETAILS ELSEWHERE IN THE PLAN)
* (NRS) = NON-REINFORCED CONCRETE SLAB

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

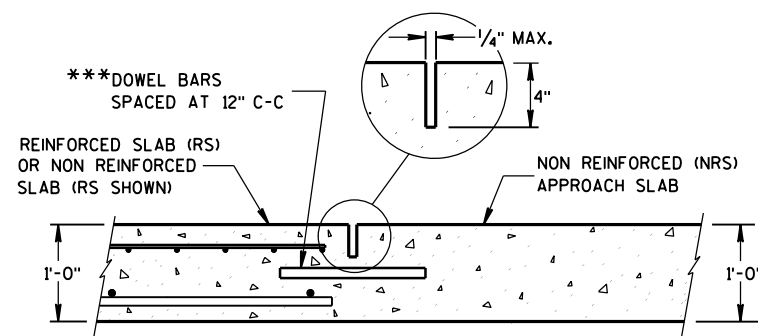
- (A) STANDARD CONTRACTION JOINT NORMAL TO $\bar{L}$ OR $\bar{L}$
(B) STANDARD LONGITUDINAL JOINT WITH TIE BARS.
(C) 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO $\bar{L}$ OR $\bar{L}$



**SECTION A-A
REINFORCEMENT POSITIONING DETAIL**



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



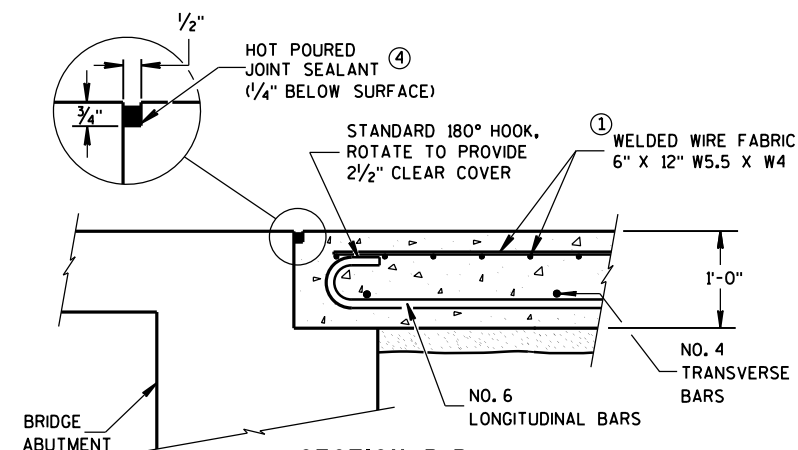
**SECTION D-D
CONTRACTION JOINT**

GENERAL NOTES

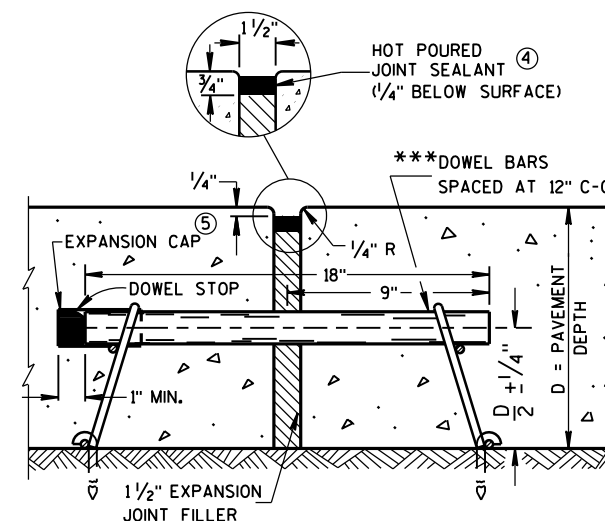
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

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



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

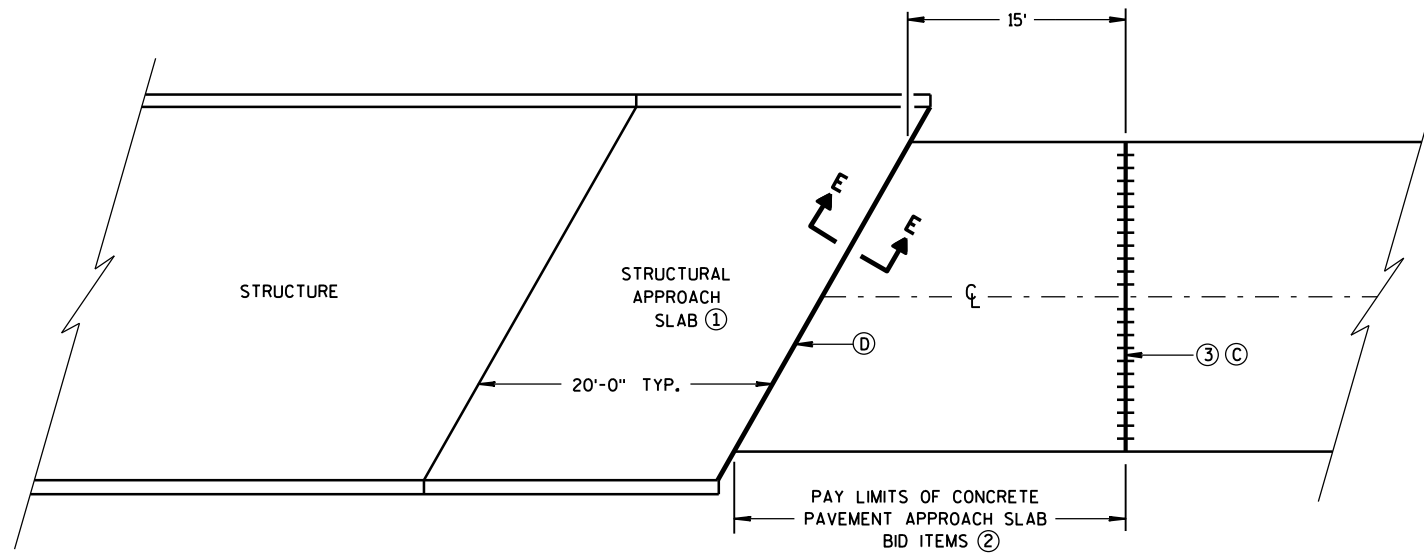


EXPANSION JOINT DETAIL

**CONCRETE PAVEMENT
APPROACH SLAB**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 /S/ Peter Kemp, P.E.
DATE
PAVEMENT SUPER 52
FHWA

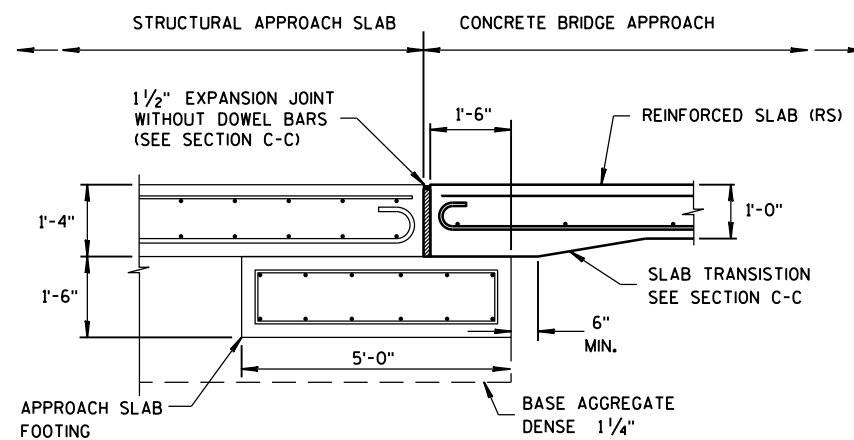
**BRIDGE APPROACHES****GENERAL NOTES**

ALL PROJECTS THAT INVOLVE A STRUCTURAL APPROACH SLAB WILL ALSO HAVE A CONCRETE PAVEMENT APPROACH SLAB.

- ① SEE BRIDGE PLAN.
- ② CONFORM TO SHEET 13 B 2(A) FOR CONCRETE PAVEMENT APPROACH SLAB DETAILS.
- ③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.

③ 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO R_L OR C_L

④ 1½" EXPANSION JOINT (NO DOWELS)

**SECTION E-E****FOOTING DETAIL**

STRUCTURAL APPROACH SLAB TO CONCRETE BRIDGE APPROACH

**STRUCTURAL APPROACH SLAB
AND CONCRETE PAVEMENT
APPROACH SLAB**

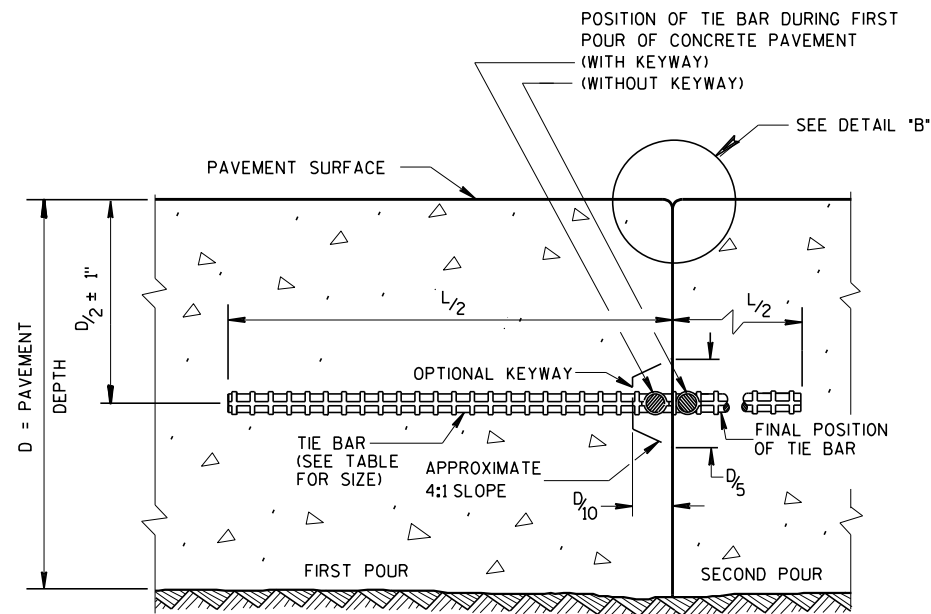
**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**

APPROVED

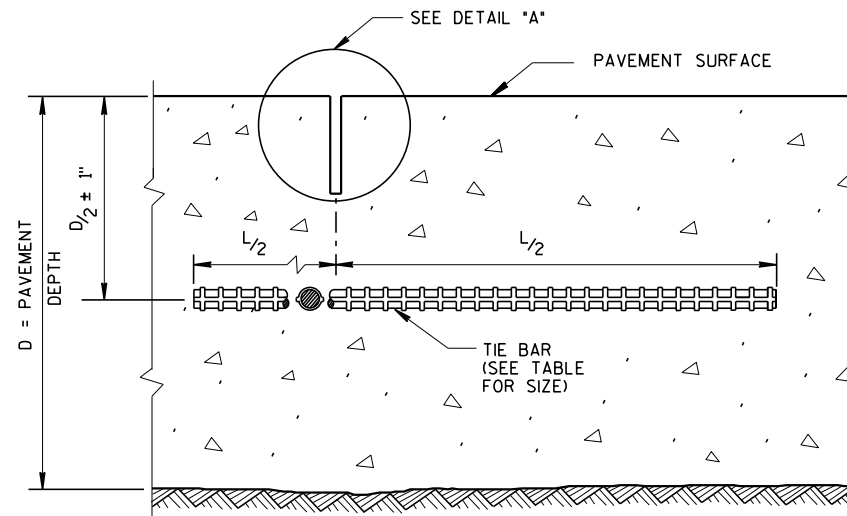
June, 2015
DATE

FHWA

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



CONSTRUCTION JOINT



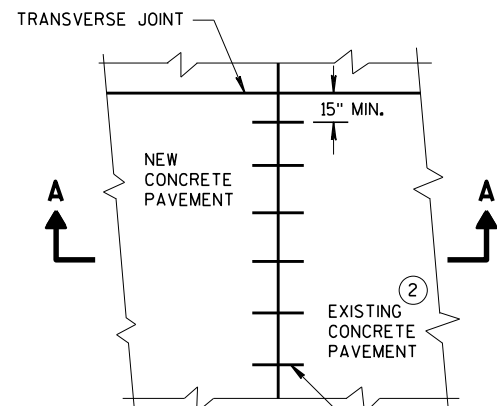
SAWED JOINT

GENERAL NOTES

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

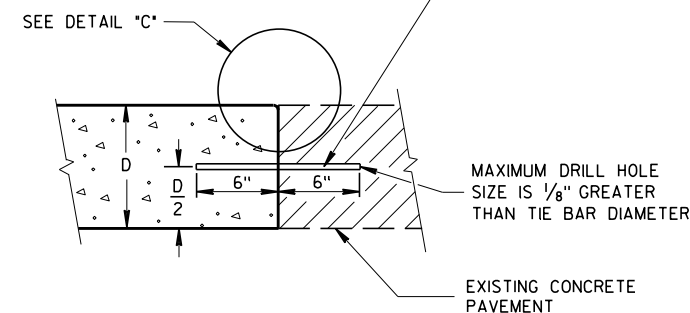
CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

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

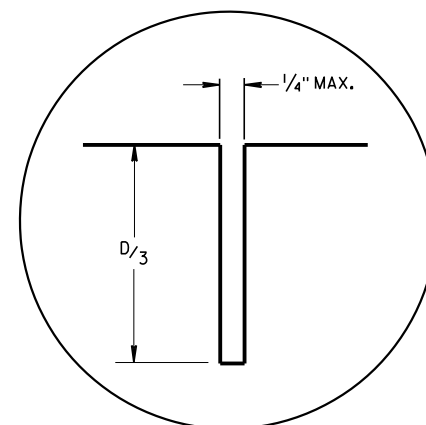


PLAN VIEW

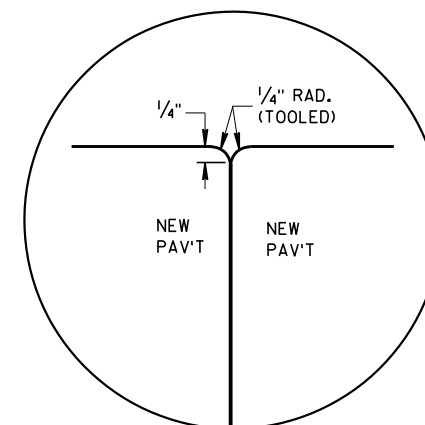
NO. 6 TIE BARS SPACED 30" C-C, INSTALLED PERPENDICULAR TO THE LONGITUDINAL JOINT. ①



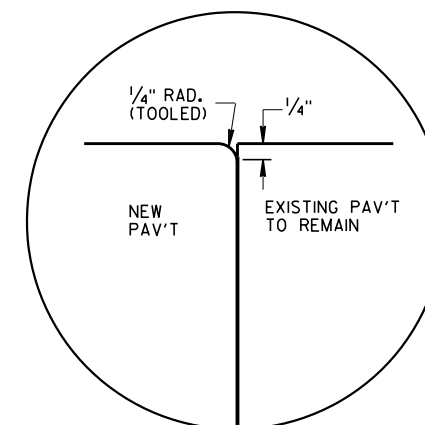
SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT
TIE BARS ANCHORED
INTO EXISTING PAVEMENT



DETAIL "A"



DETAIL "B"



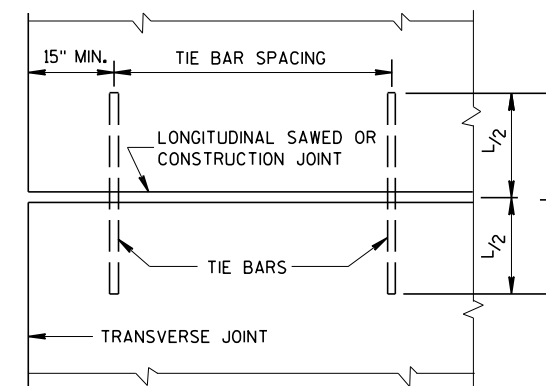
DETAIL "C"

TIE BAR TABLE

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

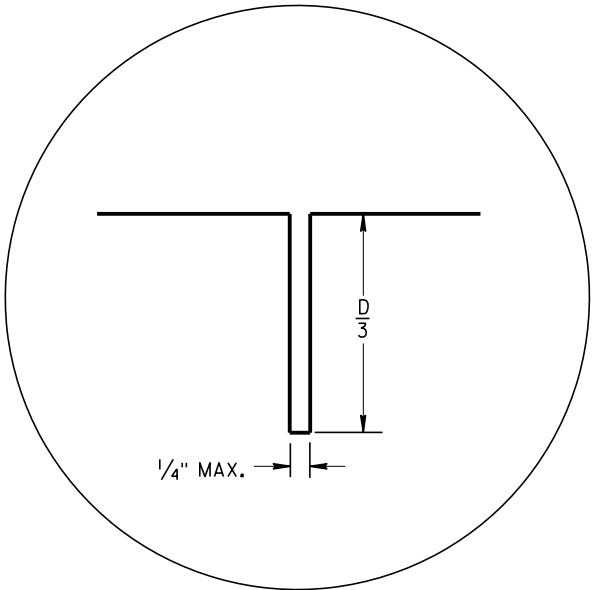
* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

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



PLAN VIEW
SHOWING LOCATION OF TIE BARS

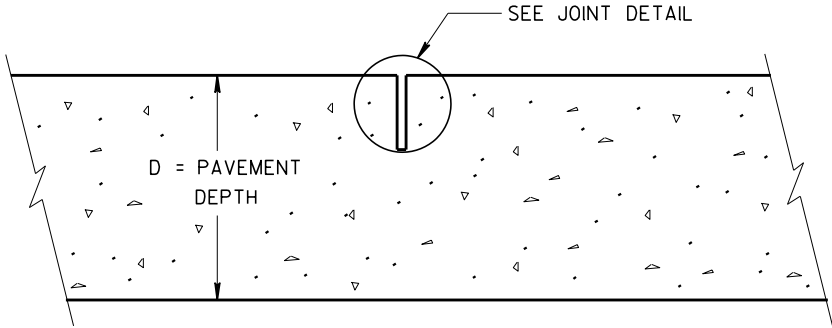
CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED March 2018 DATE	/S/ Peter Kern PAVEMENT SUPE 54
FHWA	



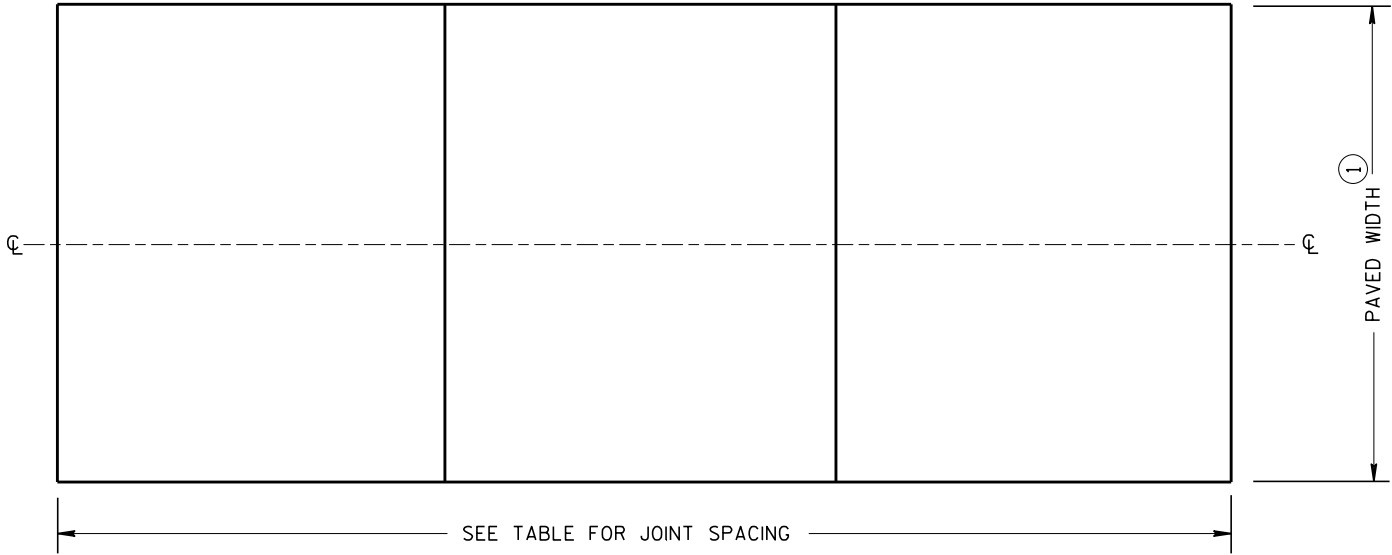
JOINT DETAIL

PAVEMENT DEPTH AND JOINT SPACING TABLE

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



CONTRACTION JOINT

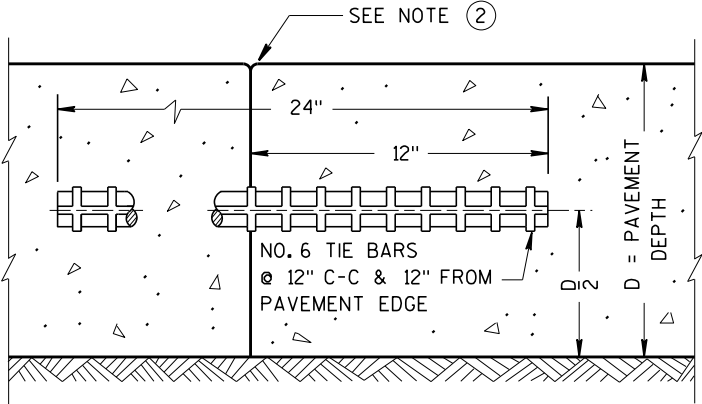


CONTRACTION JOINT LOCATIONS

GENERAL NOTES

CONTRACTION JOINTS
CONSTRUCT TRANSVERSE CONTRACTION JOINTS NORMAL TO THE CENTERLINE.
LOCATE AND ORIENT CONTRACTION JOINTS THROUGH INTERSECTIONS AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

- CONSTRUCTION JOINTS
LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO THE CONTRACTION JOINTS.
FORM OR SAW CONSTRUCTION JOINTS.
THE CONTRACTOR MAY INSERT TIE BARS THROUGH THE HEADER BOARD AFTER THE CONCRETE HAS BEEN PLACED.
- ① REFER TO TYPICAL CROSS SECTIONS FOR PAVED WIDTH AND LOCATION OF LONGITUDINAL JOINTS.
 - ② PROVIDE A SMOOTH VERTICAL FACE FOR THE ENTIRE DEPTH OF THE PAVEMENT WHEN FORMING CONSTRUCTION JOINTS. PROVIDE A 1/4-INCH RADIUS AT FORMED JOINTS.

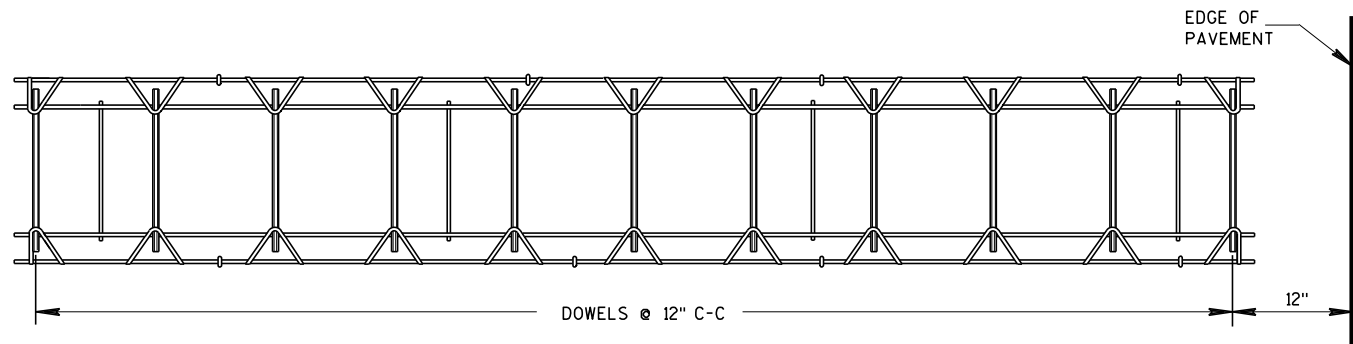


TIED TRANSVERSE CONSTRUCTION JOINT

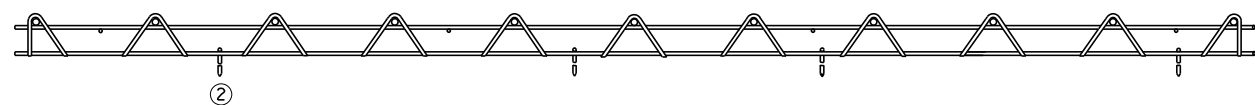
URBAN
NON-DOWELED CONCRETE
PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

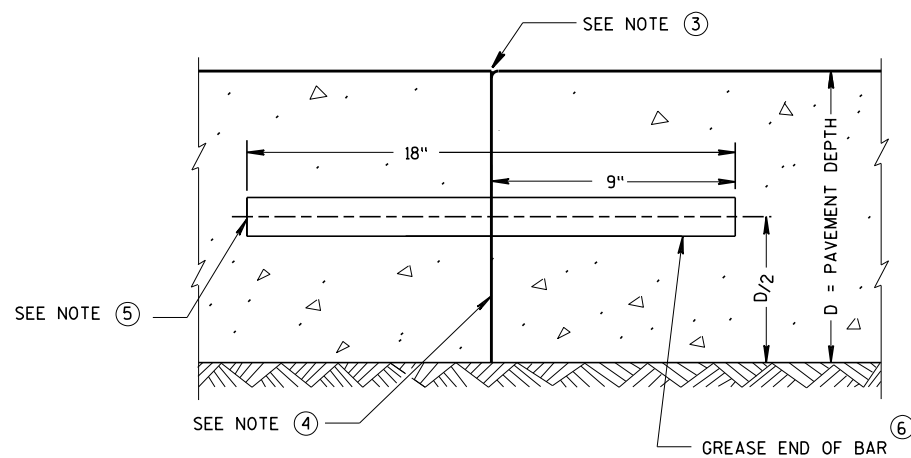
APPROVED
March 2018 /S/ Peter Kern
DATE PAVEMENT SUPERVISOR
FHWA



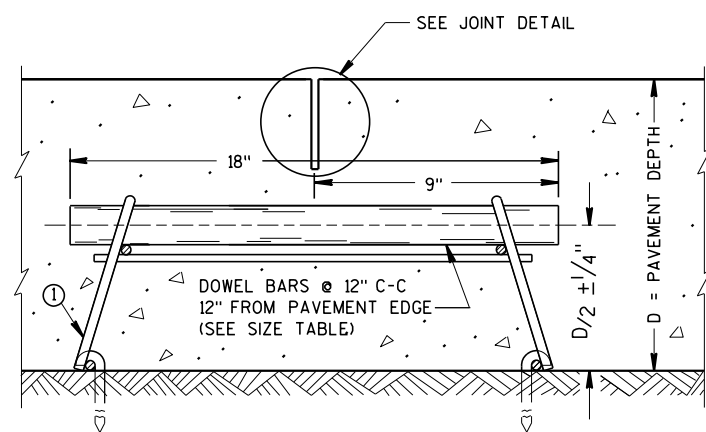
PLAN VIEW



SIDE VIEW
CONTRACTION JOINT DOWEL ASSEMBLY ①



TRANSVERSE CONSTRUCTION JOINT



DOWELED CONTRACTION JOINT

PAVEMENT DEPTH, DOWEL BAR SIZE
AND JOINT SPACING TABLE

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

GENERAL NOTES

CONTRACTION JOINTS

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

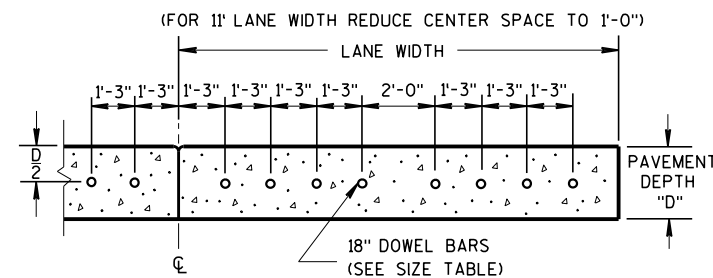
INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

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

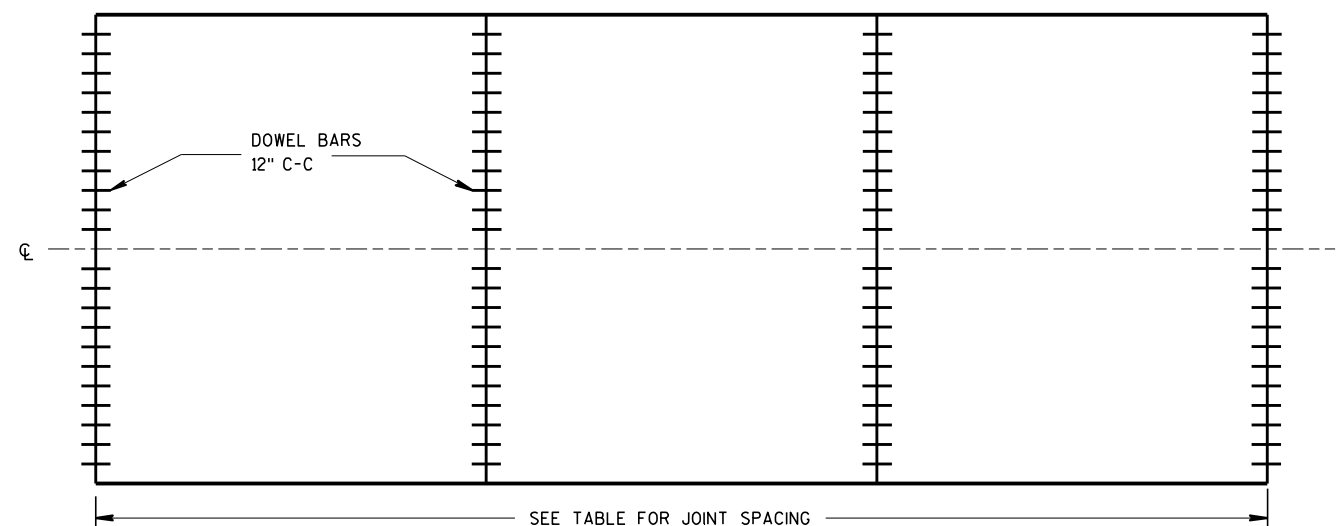
CONSTRUCTION JOINTS

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

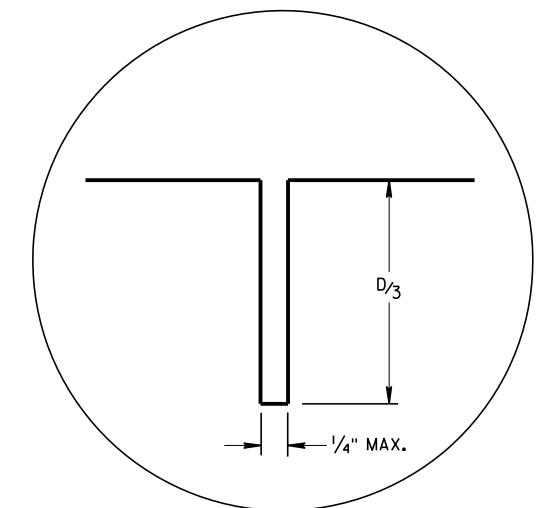
- ① OBTAIN THE ENGINEER'S APPROVAL FOR THE USE OF ALTERNATIVE DESIGNS OF THE DOWEL ASSEMBLY. USE MECHANICAL DOWEL BAR INSERTERS OR DOWEL ASSEMBLIES WHEN CONSTRUCTING CONTRACTION JOINTS.
- ② SECURE BASKETS WITH ANCHORS TO HOLD DOWEL BARS IN THE CORRECT POSITION AND ALIGNMENT. TYPE, LOCATION, NUMBER AND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



DRILLED DOWEL BAR CONSTRUCTION JOINT ⑦



CONTRACTION JOINT LOCATIONS

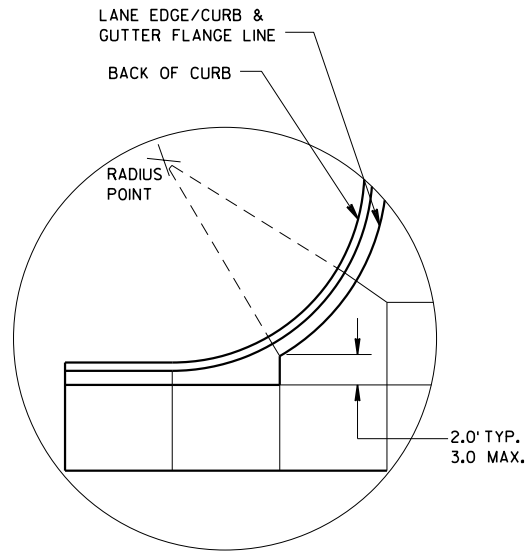


JOINT DETAIL

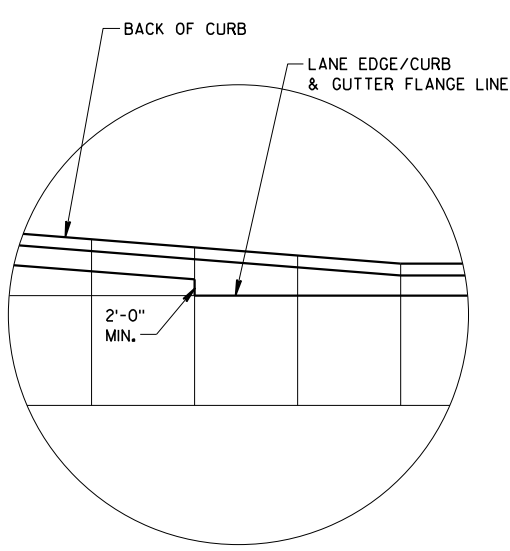
URBAN DOWELED
CONCRETE PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

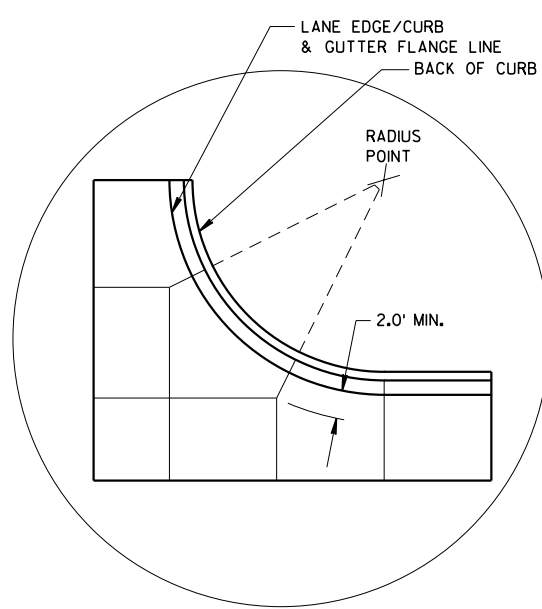
APPROVED
March 2018 /S/ Peter Kern P.E.
DATE PAVEMENT SUP 56
FHWA



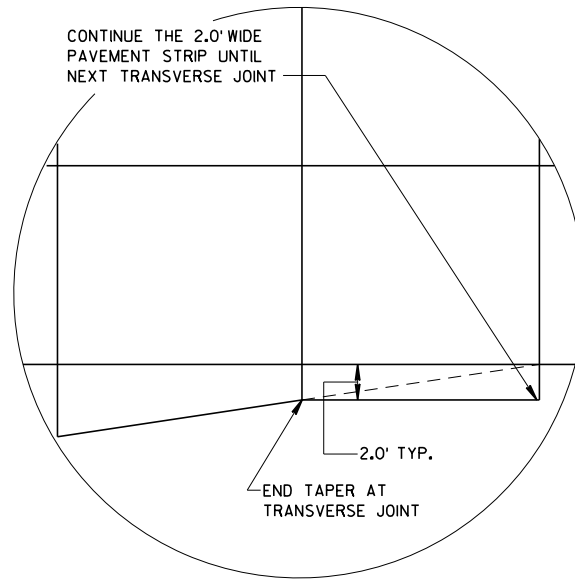
DETAIL "A"



DETAIL "B"



DETAIL "C"



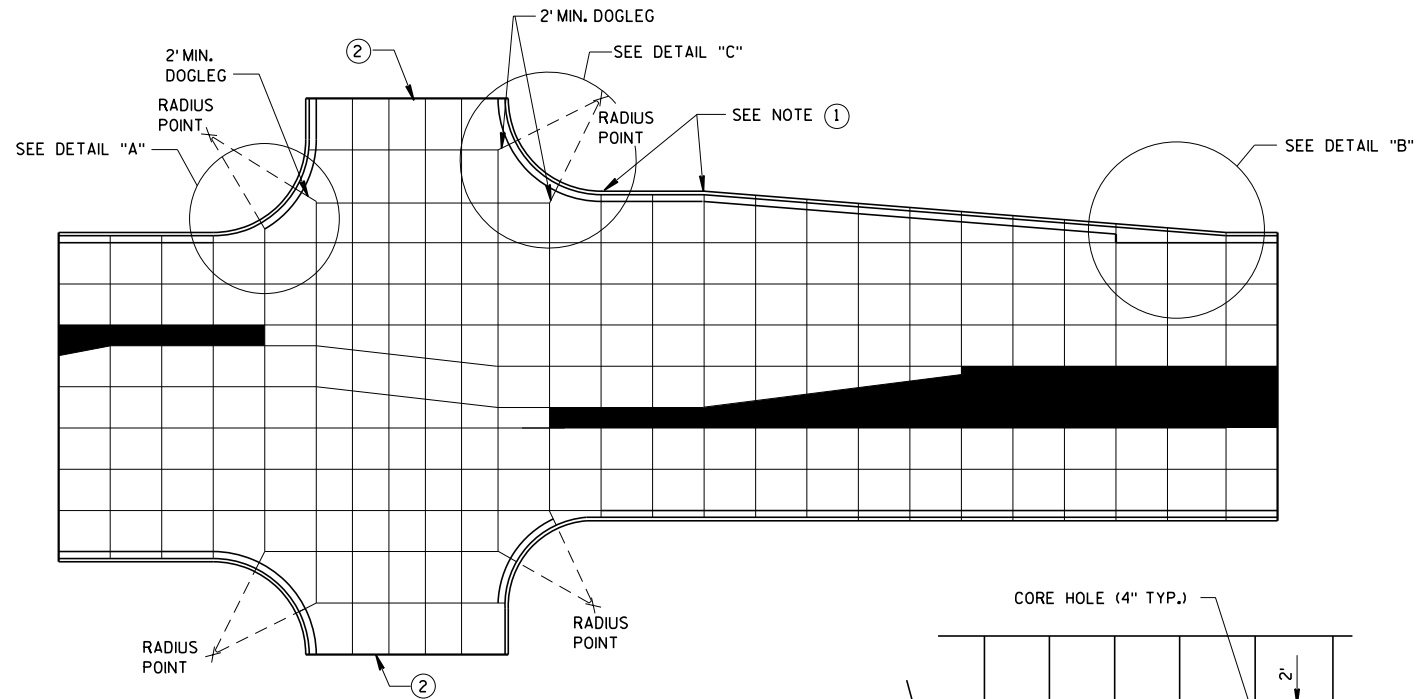
DETAIL "D"

GENERAL NOTES

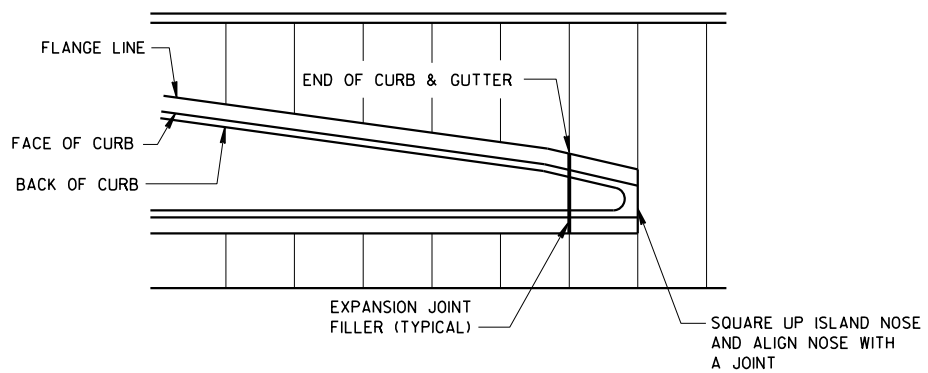
- THE PRIMARY ROADWAY CONTROLS THE TRANSVERSE JOINT PATTERN.
- ALIGN NEW JOINTS WITH EXISTING JOINTS OR CRACKS.
- CONSTRUCT TRANSVERSE JOINTS PERPENDICULAR TO THE ROADWAY.
- ADJUST TRANSVERSE JOINTS TO ALIGN WITH UTILITY FIXTURES (E.G. MANHOLES AND INLETS) IN THE PAVEMENT STRUCTURE WHEN POSSIBLE. WATER VALVES DO NOT REQUIRE JOINT ADJUSTMENT.
- AVOID SLABS LESS THAN 2 FEET WIDE OR GREATER THAN 15 FEET WIDE.
- SEE TABLE FOR TRANSVERSE JOINT SPACING. JOINT SPACING SPECIFIED IS MAXIMUM AND ACTUAL SPACING CAN BE ADJUSTED TO ACCOMMODATE INTERSECTIONS.
- AVOID ANGLES LESS THAN 60° BY DOGLEGGING JOINTS THROUGH CURVE RADIUS POINTS. USE 90° ANGLES WHEN POSSIBLE.
- CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.
1. PROVIDE TRANSVERSE JOINTS AT ALL PAVEMENT WIDTH CHANGES.
 2. CONSTRUCT DOWELED EXPANSION JOINT ON THE SIDE ROAD OF AN INTERSECTION IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH. ALIGN EXPANSION JOINT WITH EDGE OF RADIUS.
 3. THE ENGINEER MAY APPROVE SLIGHT VARIATIONS FROM THESE JOINTING DETAILS.

PAVEMENT DEPTH AND JOINT SPACING TABLE

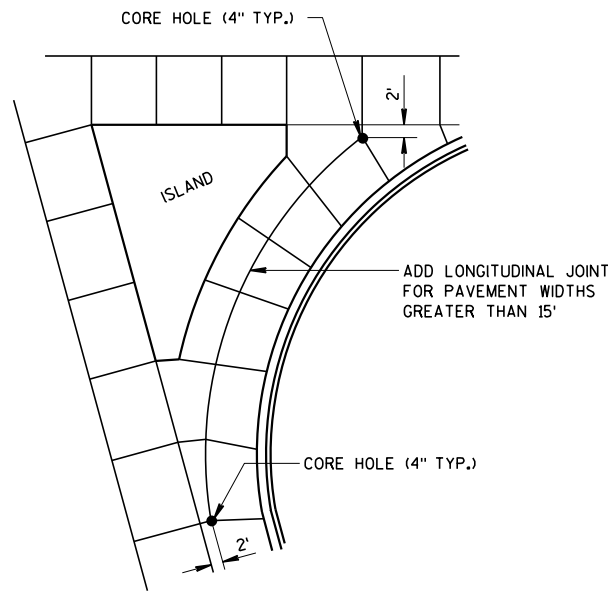
PAVEMENT DEPTH (D)	CONTRACTION JOINT SPACING
6", 6 1/2"	12'
7", 7 1/2"	14'
8" & ABOVE	15'



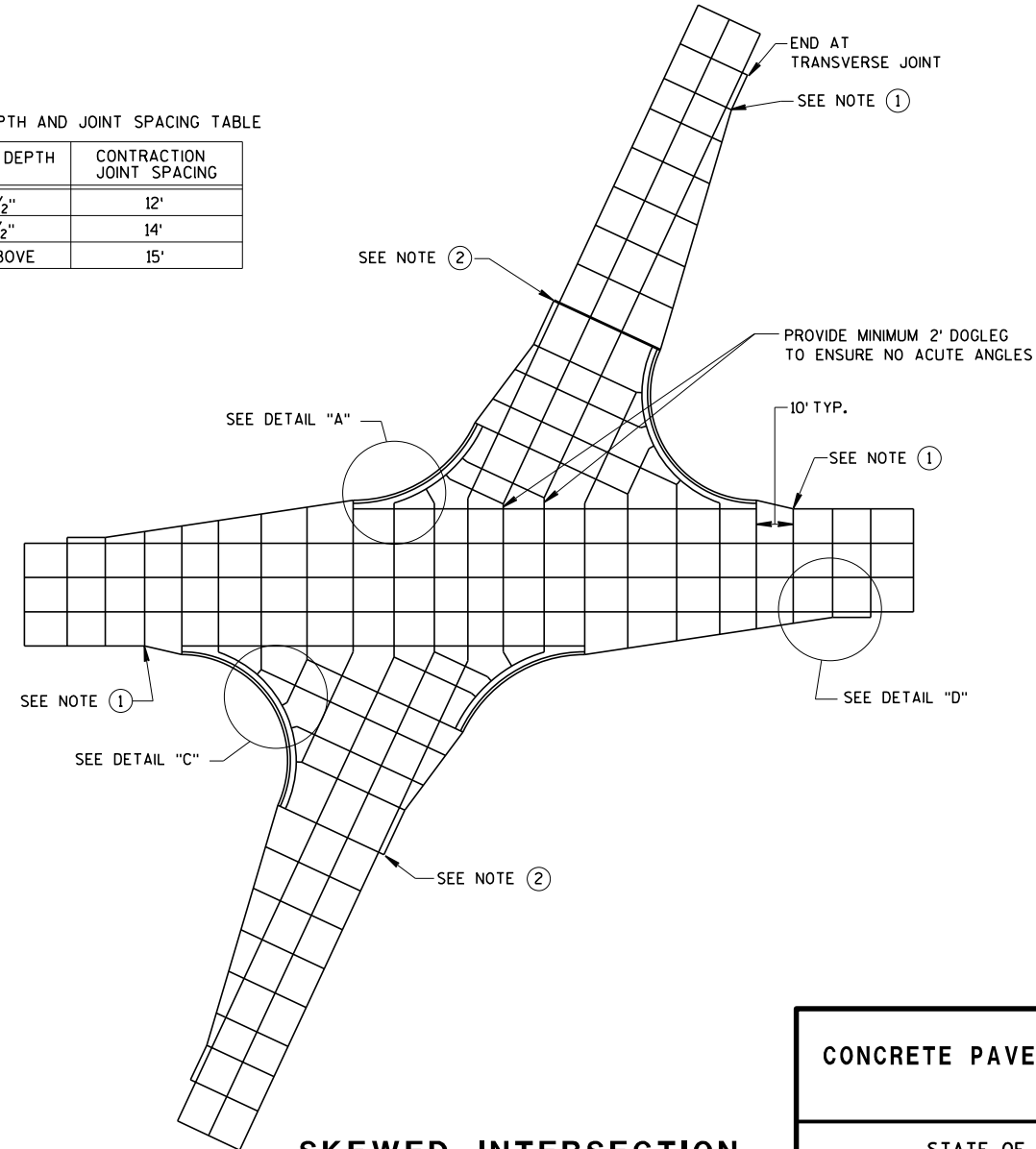
STANDARD INTERSECTION



APPROACH TO MEDIAN



LARGE RIGHT TURN



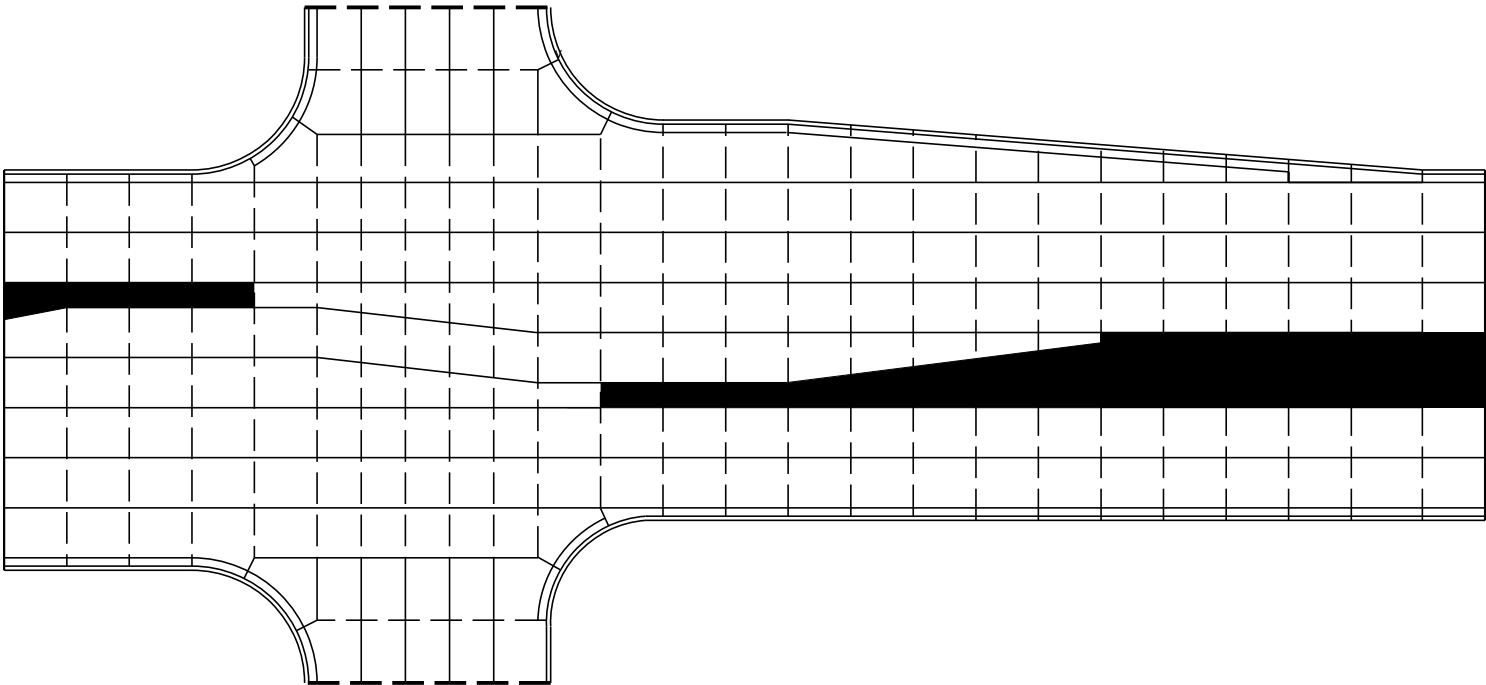
SKEWED INTERSECTION

CONCRETE PAVEMENT JOINTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

LEGEND

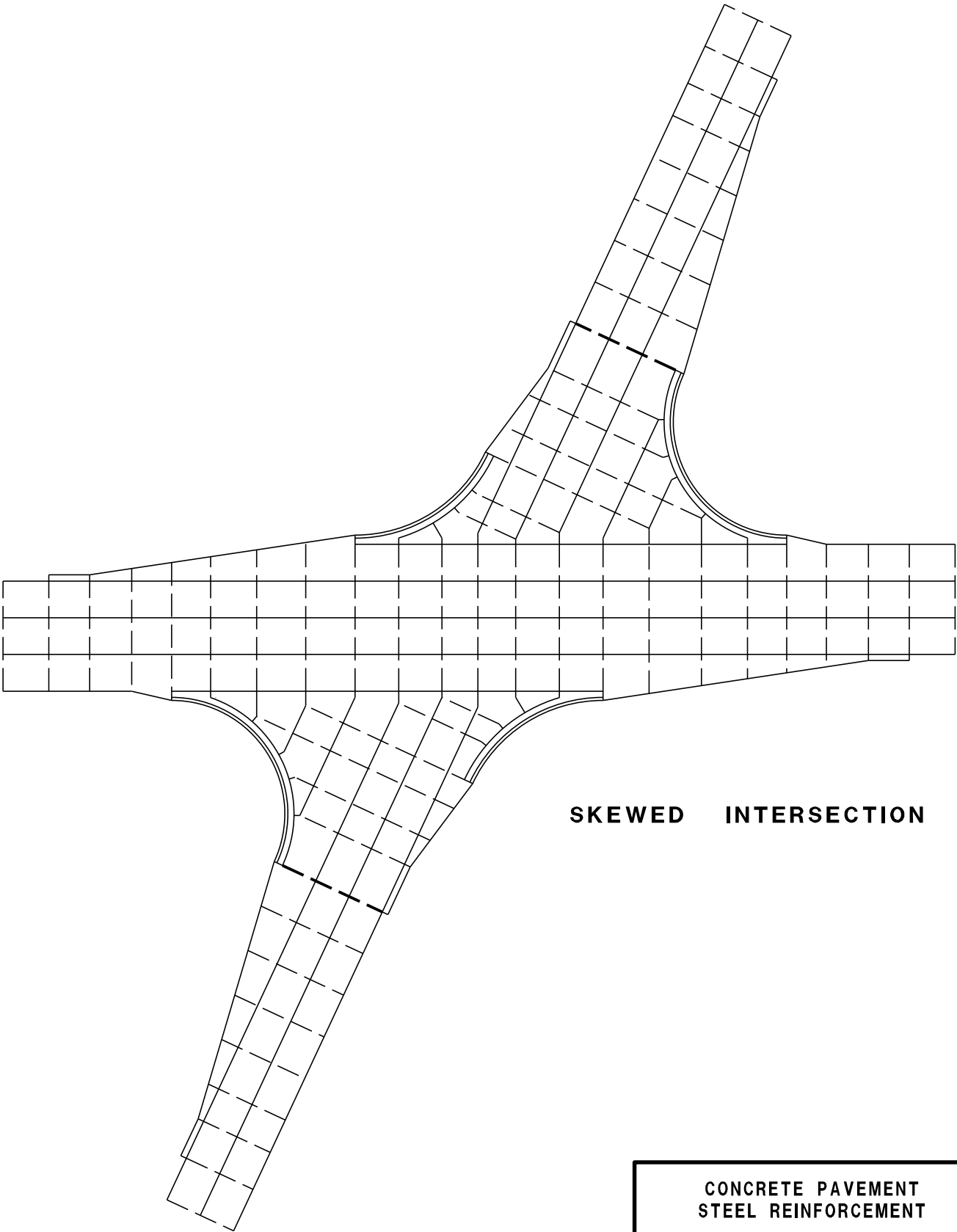
- POTENTIAL DOWELED EXPANSION JOINT
- DOWELED JOINT
- TIED JOINT



STANDARD INTERSECTION

GENERAL NOTES

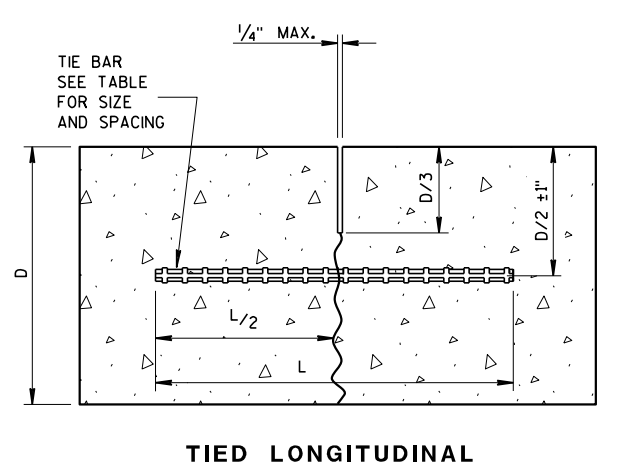
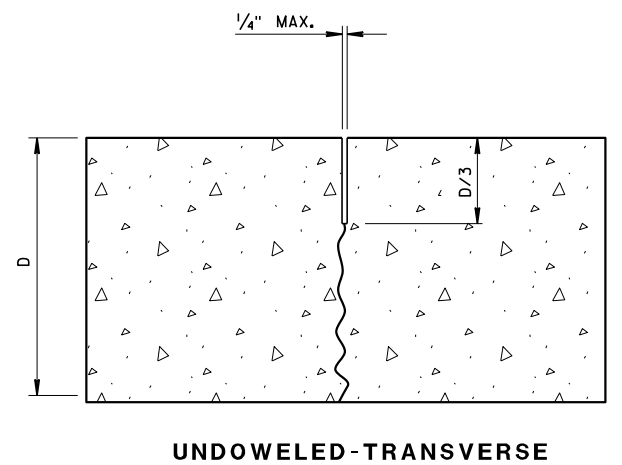
USE AN EXPANSION JOINT FILLER MEETING THE REQUIREMENTS OF STANDARD SPECIFICATION 415.



SKEWED INTERSECTION

CONCRETE PAVEMENT
STEEL REINFORCEMENT

STATE OF WISCONSIN⁵⁸
DEPARTMENT OF TRANSPORTATION



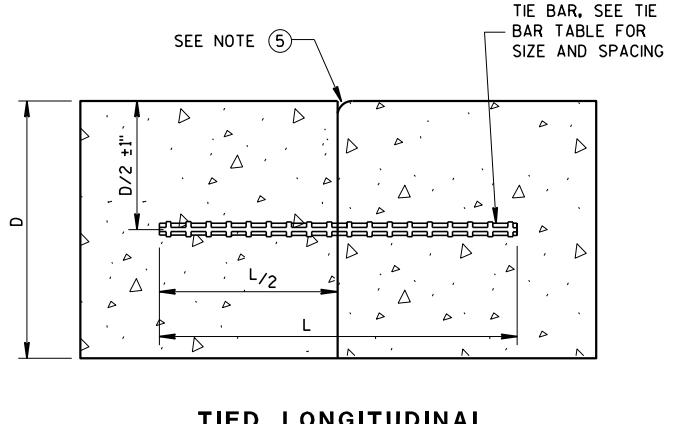
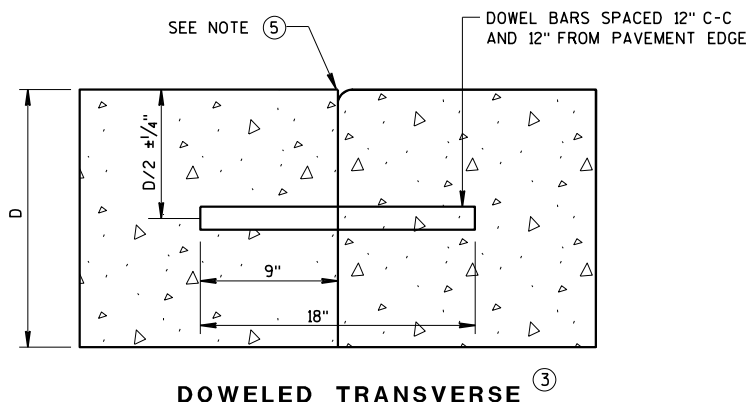
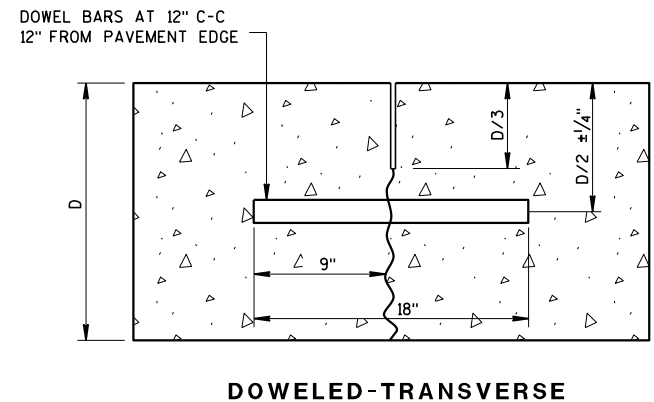
TIE BAR TABLE			
PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	NO. 5	36"	36"
	NO. 4 *	30"	24" **

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

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

GENERAL NOTES

- ① USE DOWELED EXPANSION JOINTS ON SIDE ROADS AT INTERSECTIONS (TO ISOLATE THE SIDE ROAD FROM THE THROUGH STREET) IF THE SIDE ROAD IS CONCRETE PAVEMENT AND GREATER THAN 300 FEET IN LENGTH.
- ② SPACE CONTRACTION JOINTS IN ACCORDANCE WITH 13C4, 13C11 OR 13C13.
- ③ LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.
- ④ CONSTRUCTION JOINTS CAN BE FORMED OR SAWED.
- ⑤ IF JOINT IS FORMED, PROVIDE A 1/4-INCH RADIUS.
- ⑥ ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

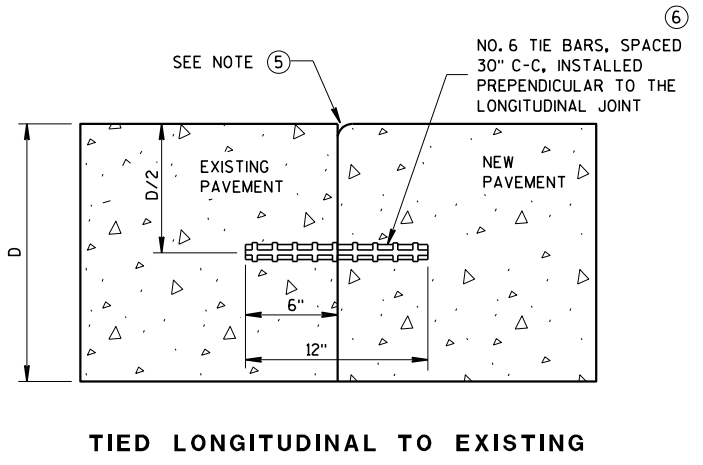
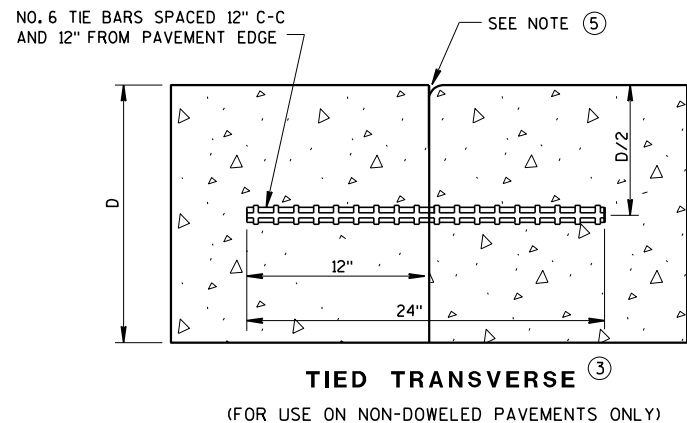


CONTRACTION JOINTS

SEE NOTE ②

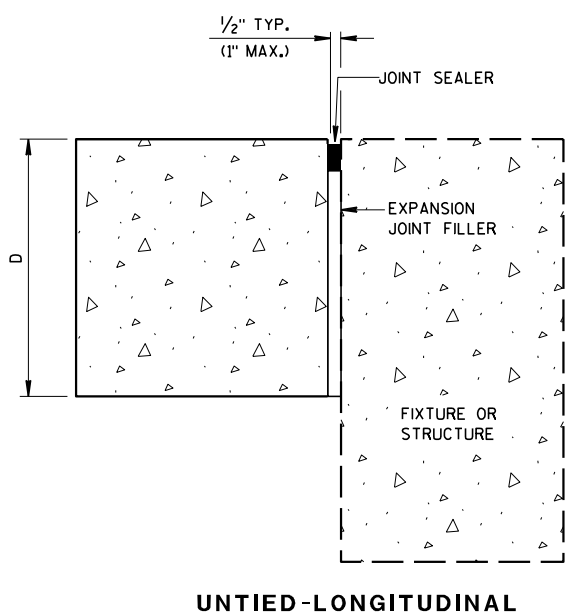
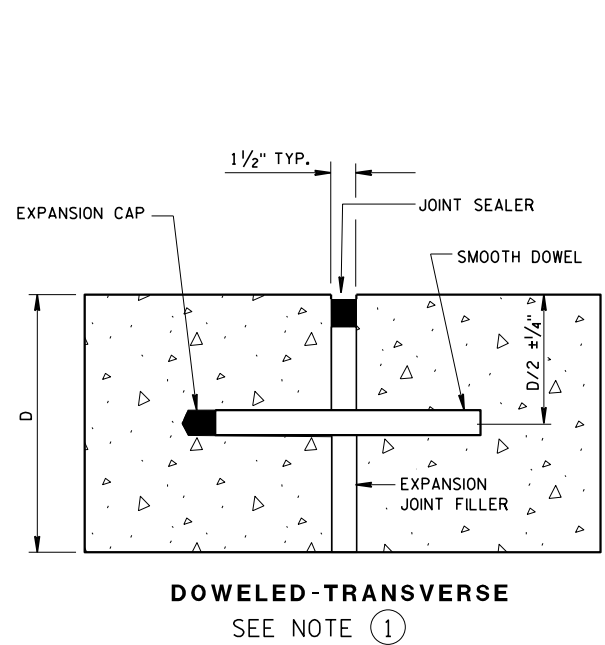
DOWELED TRANSVERSE ③

TIED LONGITUDINAL



CONSTRUCTION JOINTS

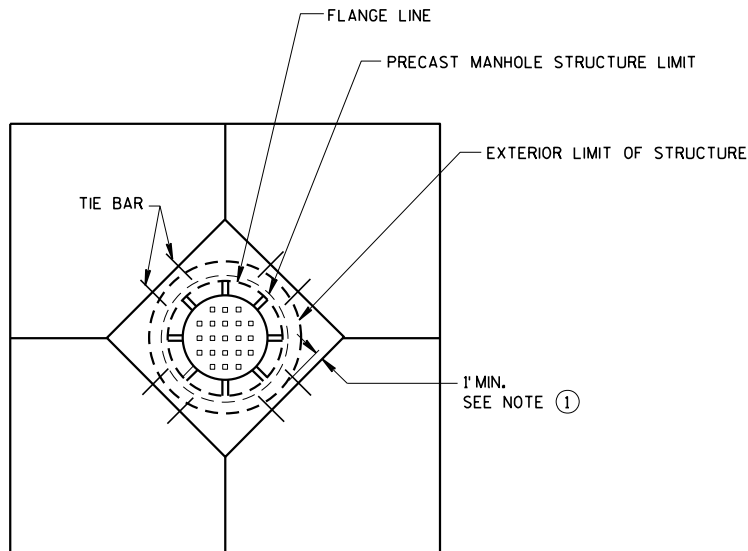
SEE NOTE ④



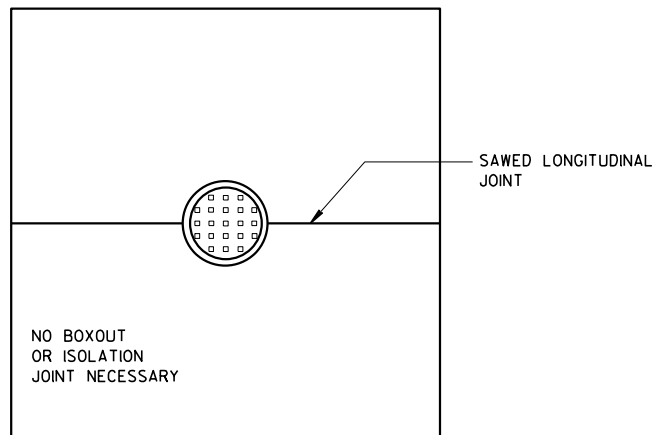
EXPANSION JOINTS

CONCRETE PAVEMENT
JOINT TYPES

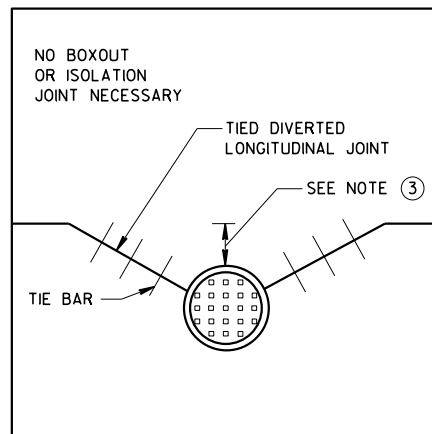
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



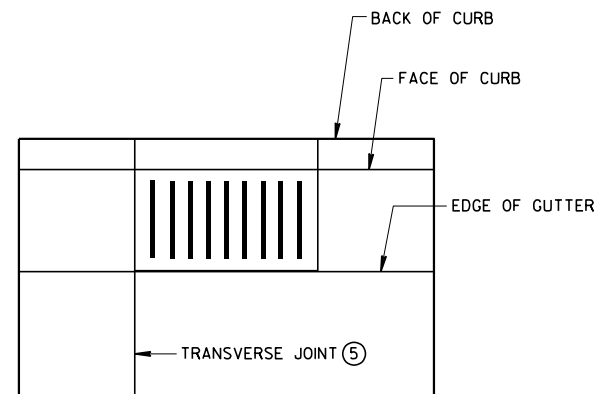
**DIAGONAL MANHOLE BOXOUT
FOR CONSTRUCTION JOINTS**



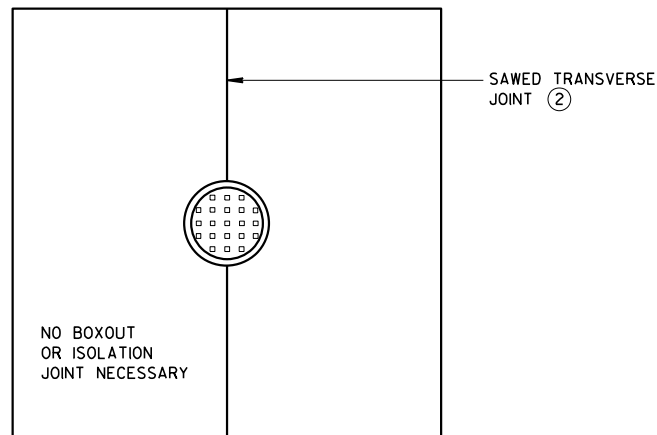
**MANHOLE WITH
LONGITUDINAL JOINT**



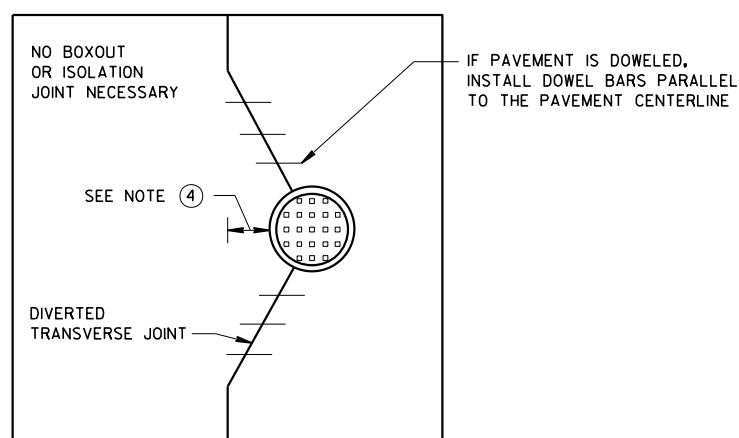
**MANHOLE WITH DIVERTED
LONGITUDINAL CONTRACTION JOINT**



**INLET WITH
TRANSVERSE JOINT**



**MANHOLE WITH
TRANSVERSE JOINT**



**MANHOLE WITH DIVERTED
TRANSVERSE CONTRACTION JOINT**

GENERAL NOTES

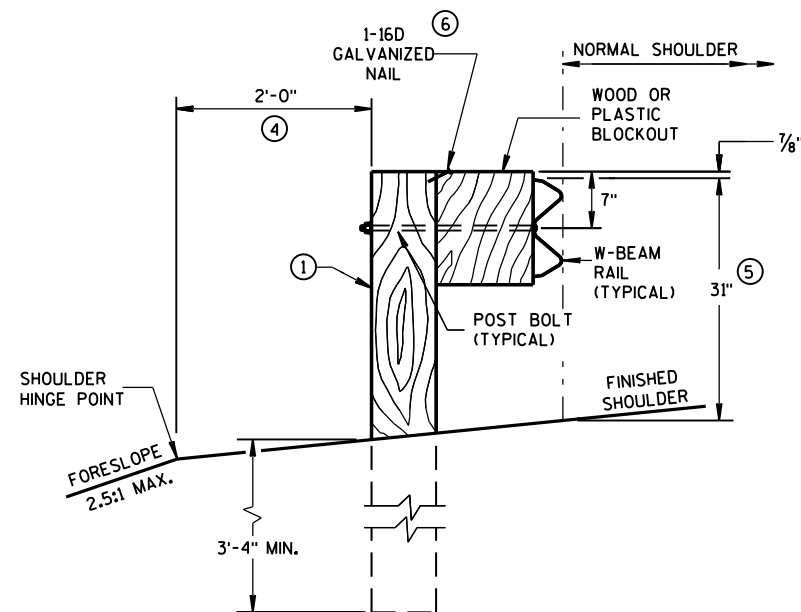
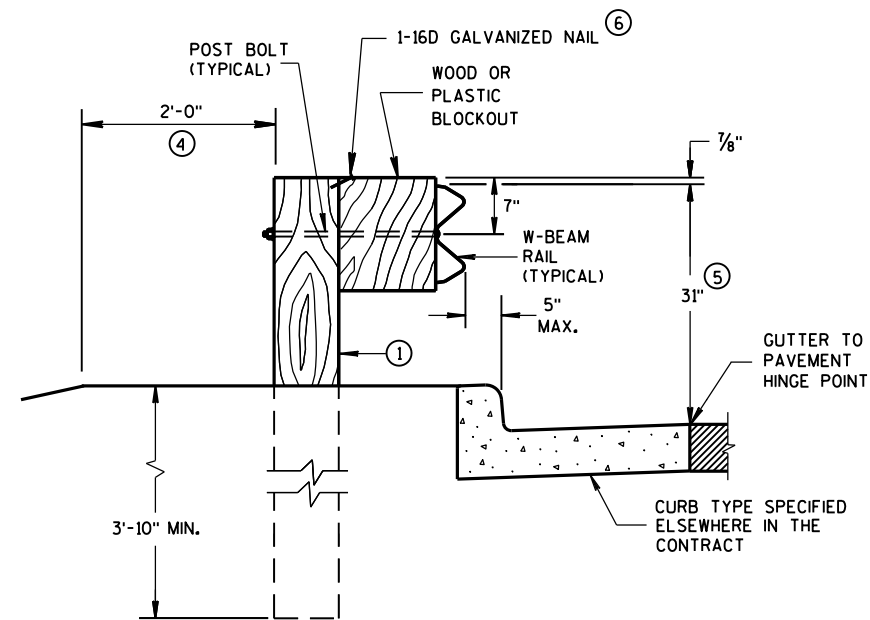
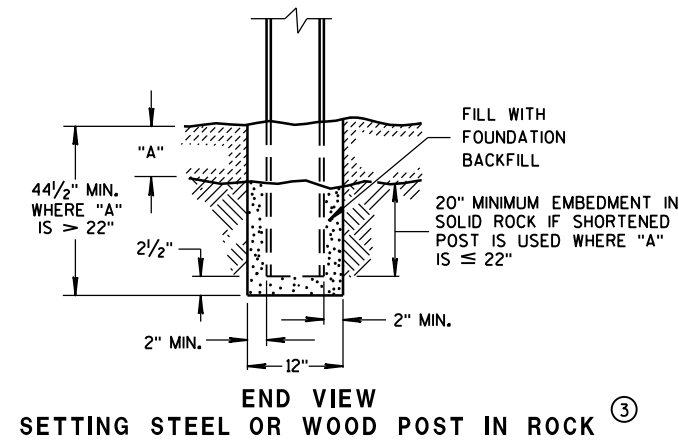
- ① USE BOXOUTS WHEN UTILITY STRUCTURE IS IN THE PATH OF CONSTRUCTION JOINTS. PROVIDE A 1-FOOT MINIMUM CLEARANCE BETWEEN THE EXTERIOR LIMIT OF THE STRUCTURE TO THE DIAMOND BOXOUT.
- ② ADJUST TRANSVERSE JOINT TO INTERSECT MANHOLE IF POSSIBLE.
- ③ IF DISTANCE BETWEEN THE LONGITUDINAL JOINT AND THE EDGE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

**CONCRETE PAVEMENT
JOINTING AT UTILITY FIXTURES**

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DEPARTMENT OF TRANSPORTATION

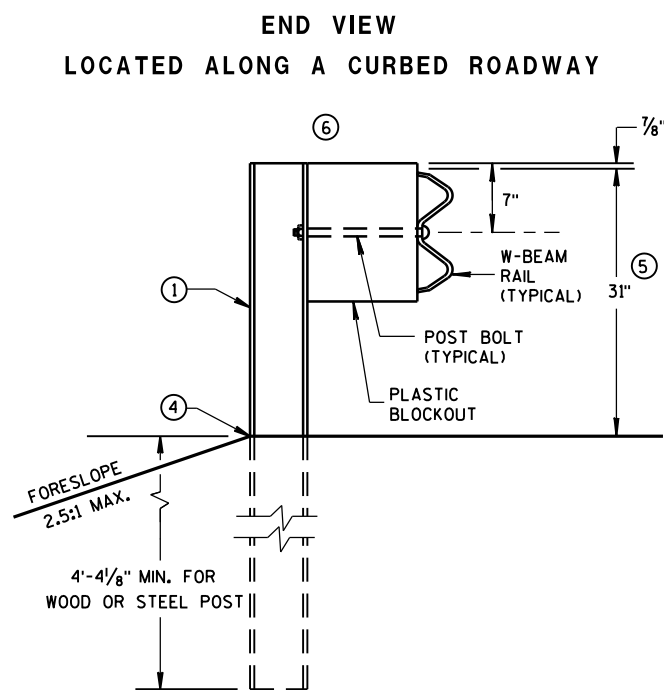
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March 2018 /S/ Peter K...
DATE PAVEMENT SUP...
FHWA

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

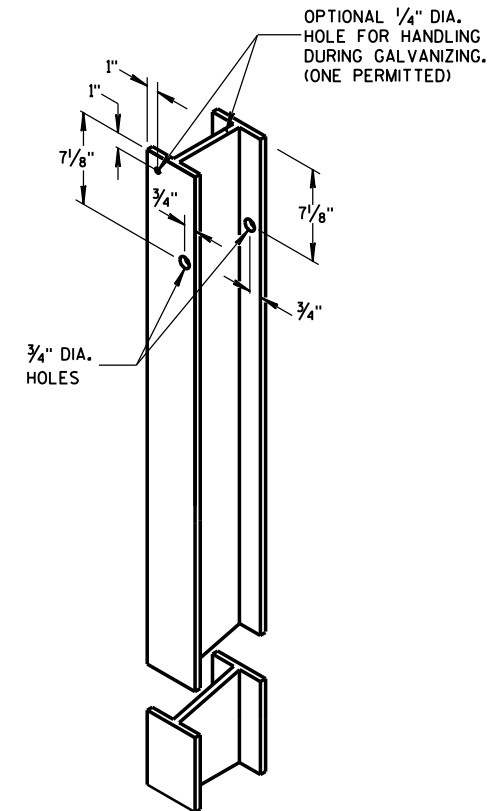


END VIEW

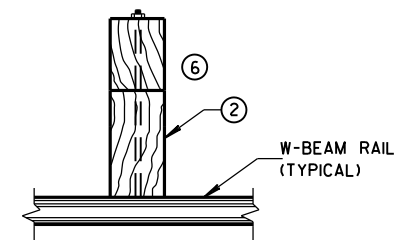
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



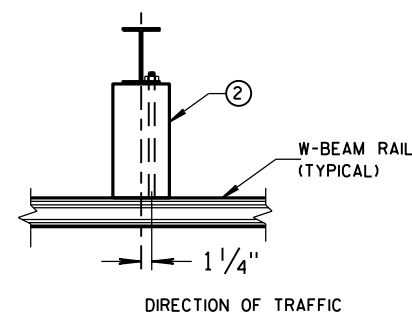
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



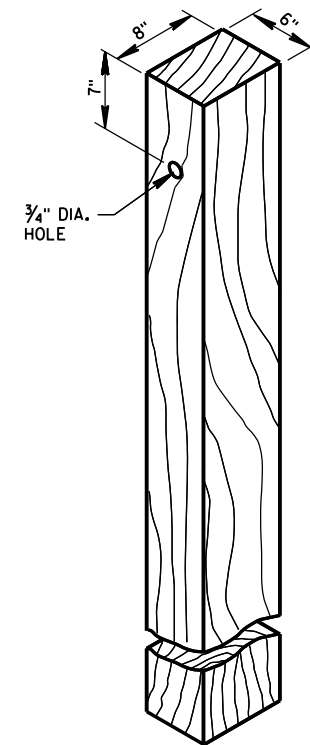
**STEEL POST &
HOLE PUNCHING DETAIL
(w6X9)^①**



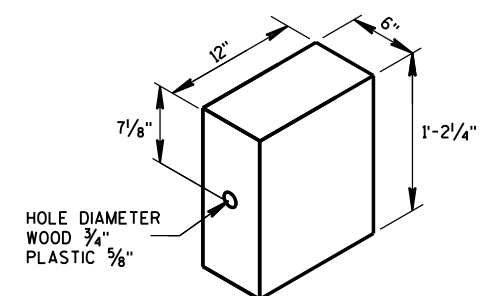
PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



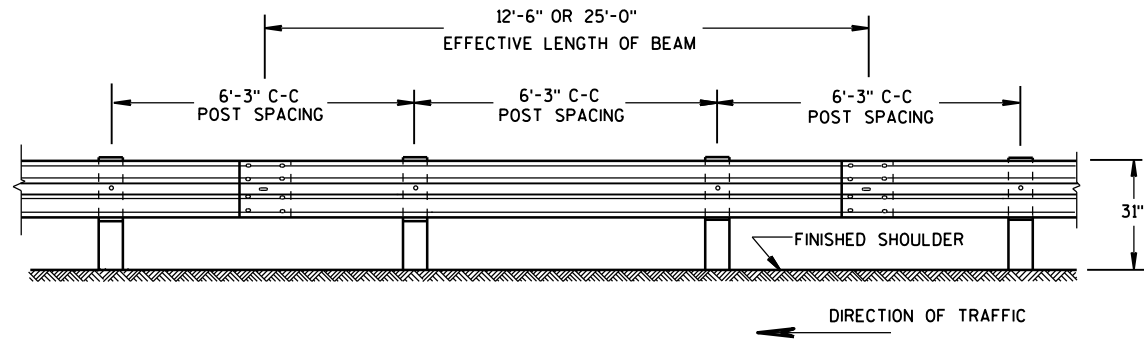
PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM



WOOD POST
(6" X 8") NOMINAL ^①

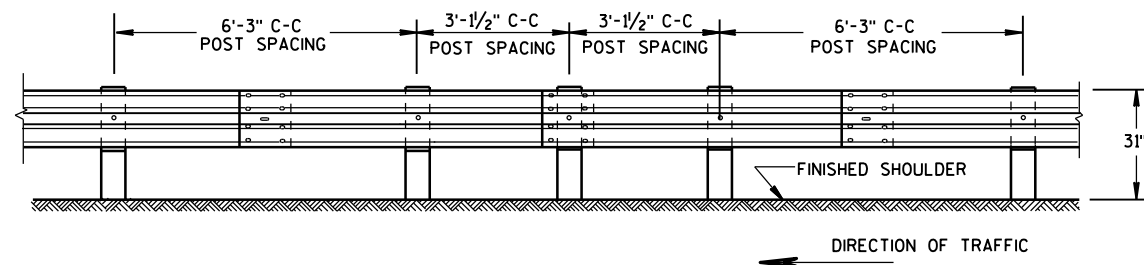


**WOOD OR
PLASTIC BLOCKOUT** ⁽²⁾



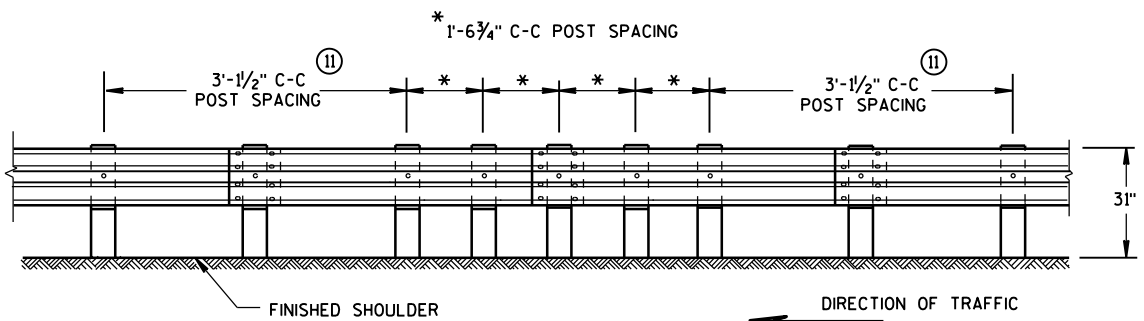
FRONT VIEW

POST SPACING STANDARD INSTALLATION



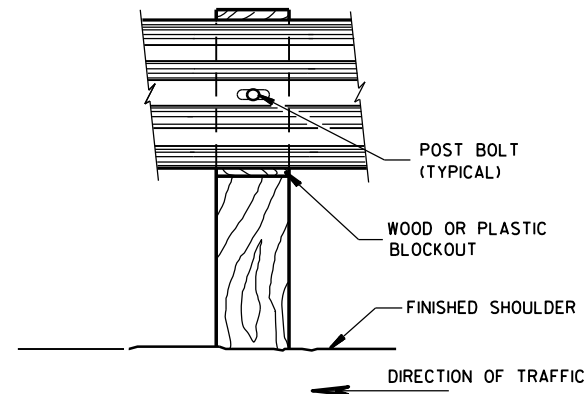
FRONT VIEW

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

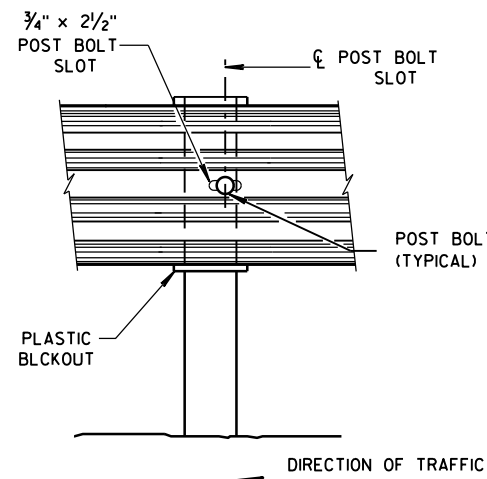


FRONT VIEW

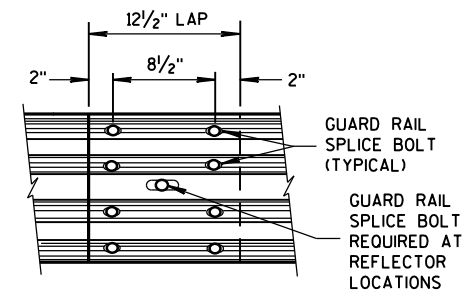
QUARTER POST SPACING (QS)



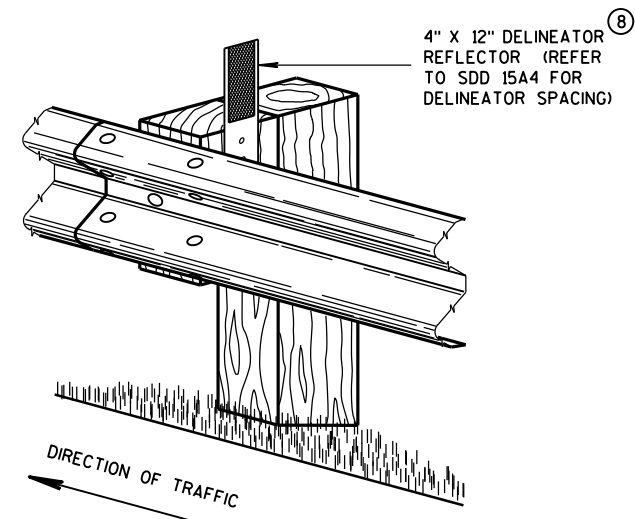
FRONT VIEW AT WOOD POST



FRONT VIEW AT STEEL POST



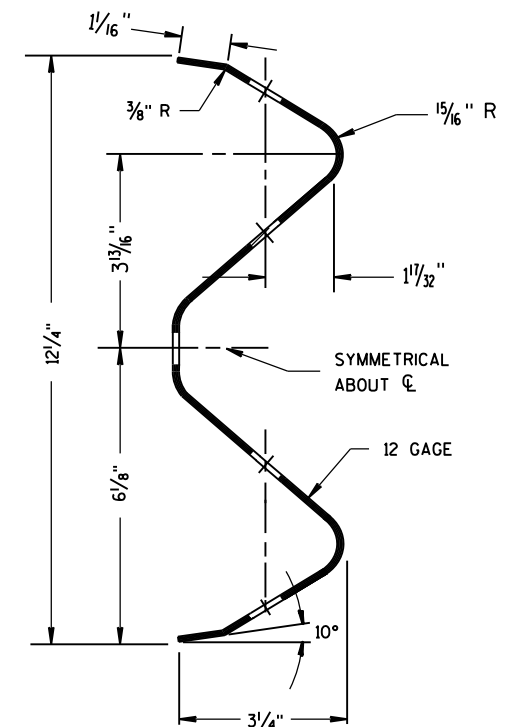
FRONT VIEW
MID-SPAN BEAM SPLICE



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

GENERAL NOTES

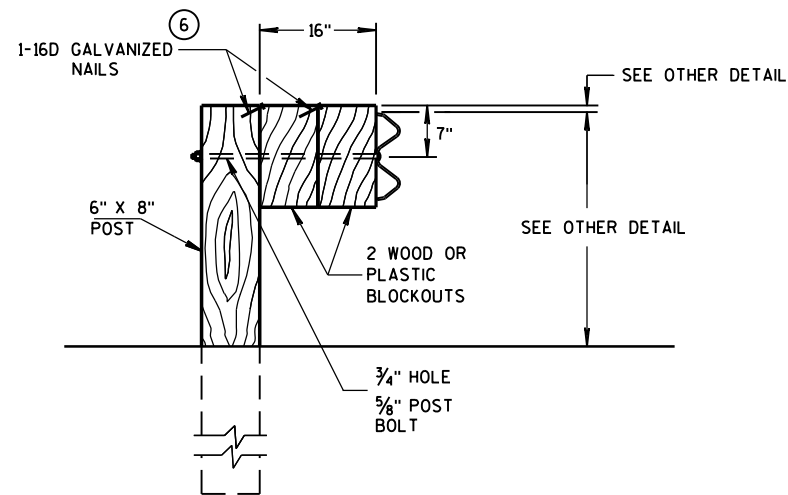
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
 - ⑪ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.
- GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

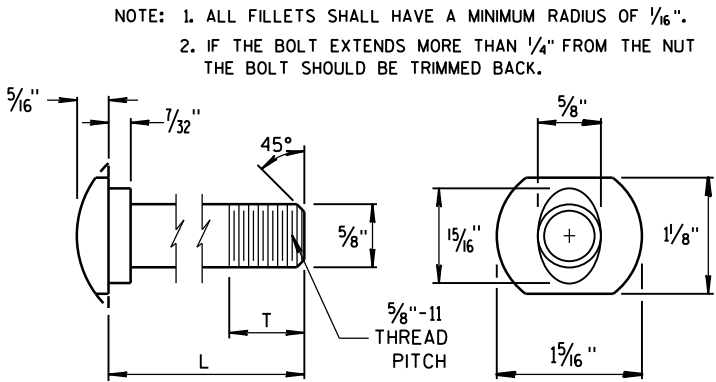
MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

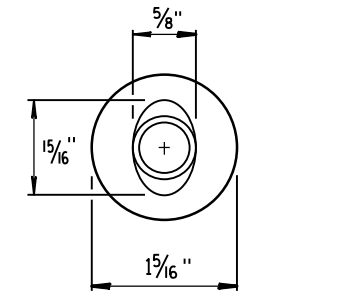


DETAIL FOR 16" BLOCKOUT DEPTH

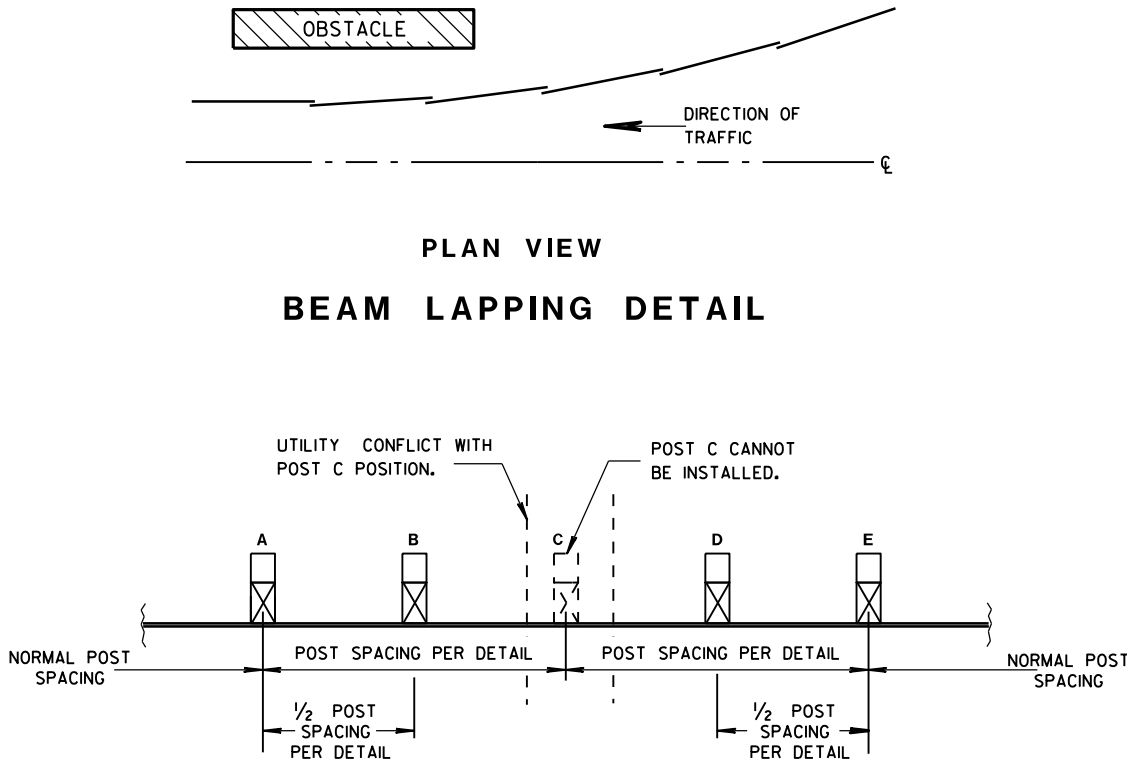
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



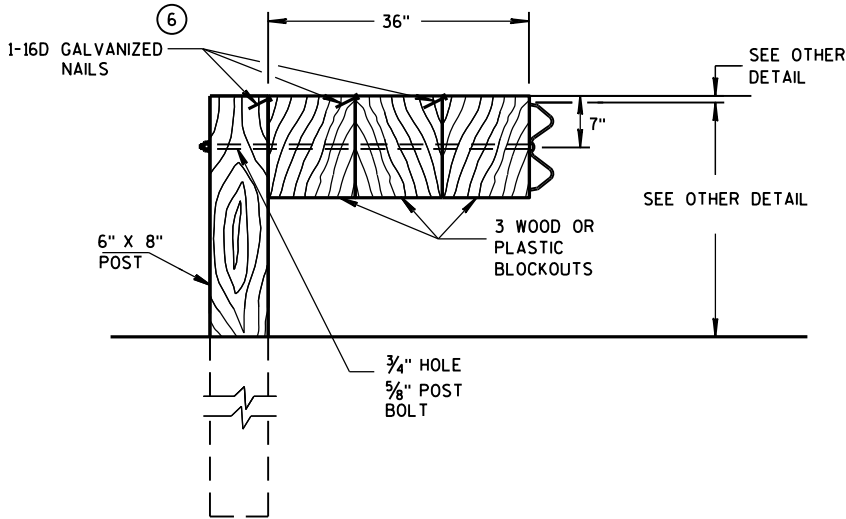
POST BOLT TABLE



ALTERNATE BOLT HEAD



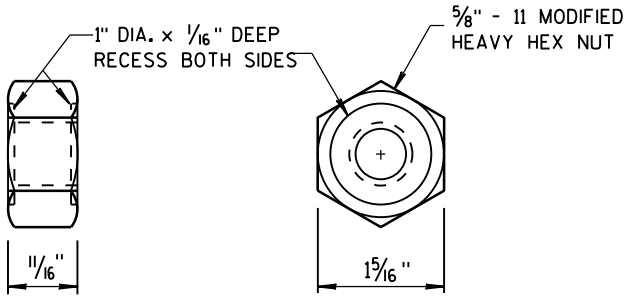
POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



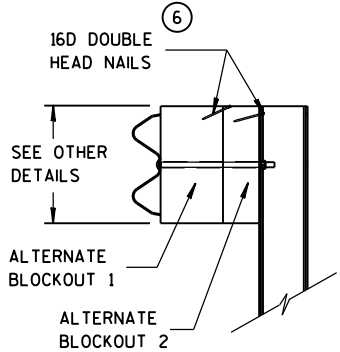
DETAIL FOR 36" BLOCKOUT DEPTH

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

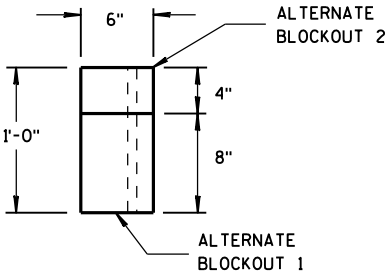
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.



POST BOLT, SPLICE BOLT AND RECESS NUT



SIDE VIEW

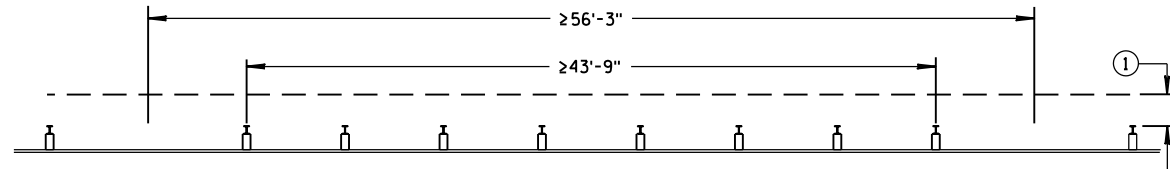


TOP VIEW

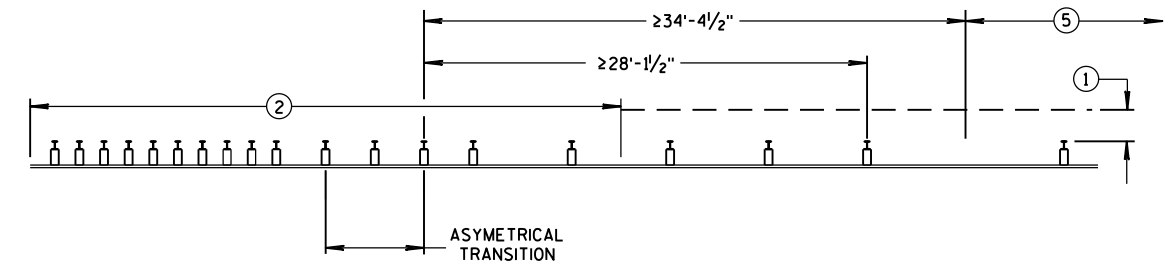
ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

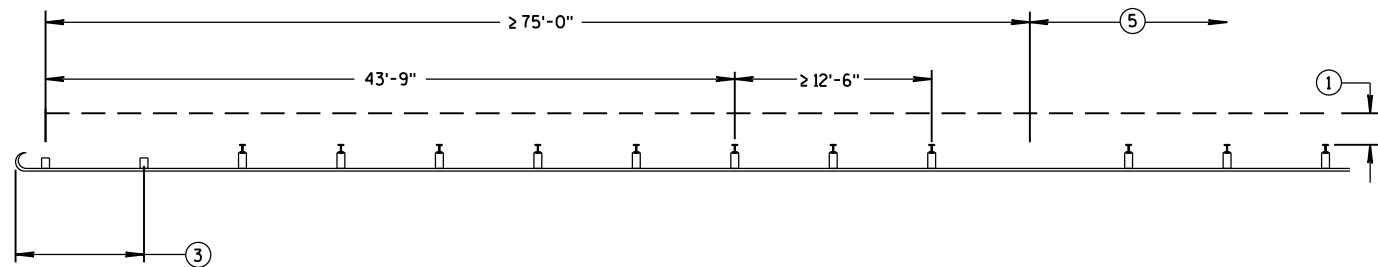
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



MISSING POST IN NORMAL BEAM GUARD RUN

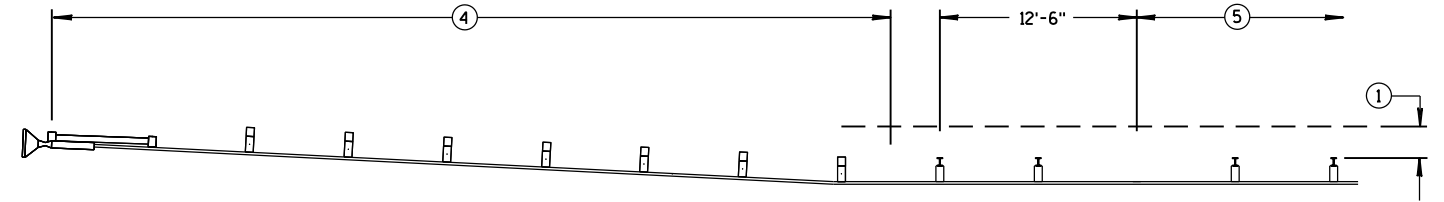


MISSING POST NEAR APPROACH THRIE BEAM TRANSITION

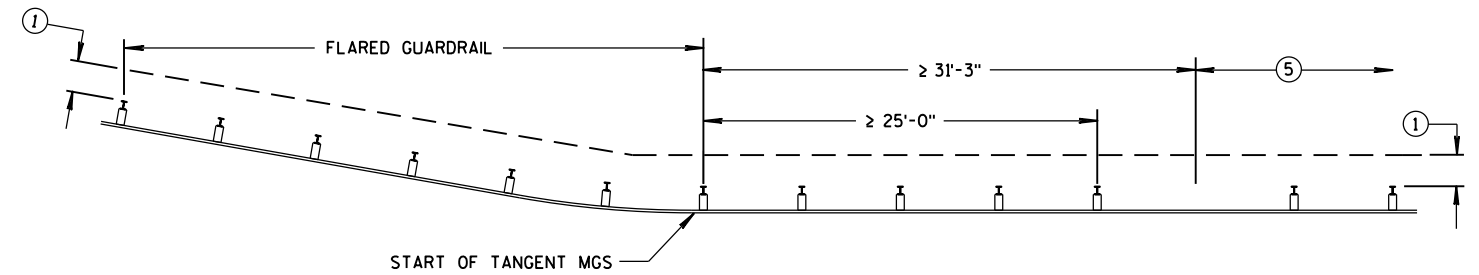


MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL

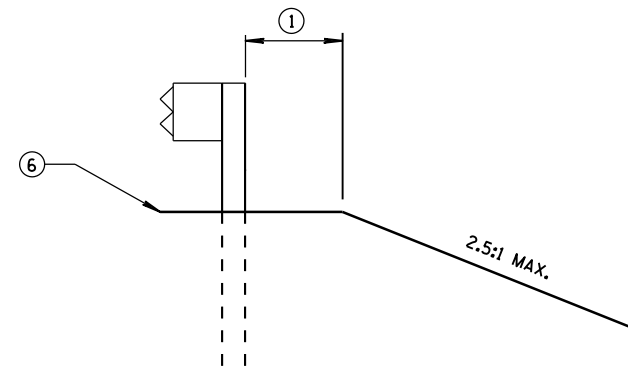
- ① MINIMUM OF 2 FEET OF GRADING BEHIND POST.
- ② SEE SDD 14B45 FOR MORE DETAILS.
- ③ SEE SDD 14B47 FOR MORE DETAILS.
- ④ SEE SDD 14B44 FOR MORE DETAILS.
- ⑤ SEE MISSING POST IN NORMAL BEAM GUARD RUN FOR DISTANCE TO NEXT MISSING POST AND AREA FOR WELL DRAINED, COMPACTED SOILS.
- ⑥ SEE PLAN FOR SHOULDER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



MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



CROSS SECTION VIEW

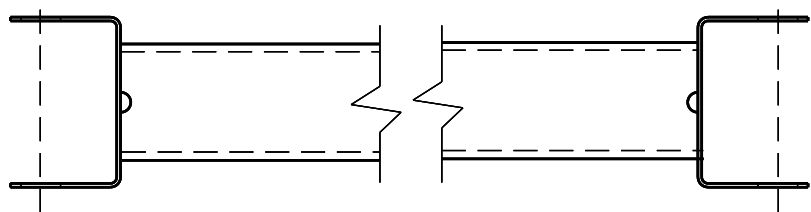
MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED	DATE	DATE	DATE
June 2017	June 2017	June 2017	June 2017
FHWA	RDWY	STDS	UNIT
	64		
	SUPERVISOR		

6

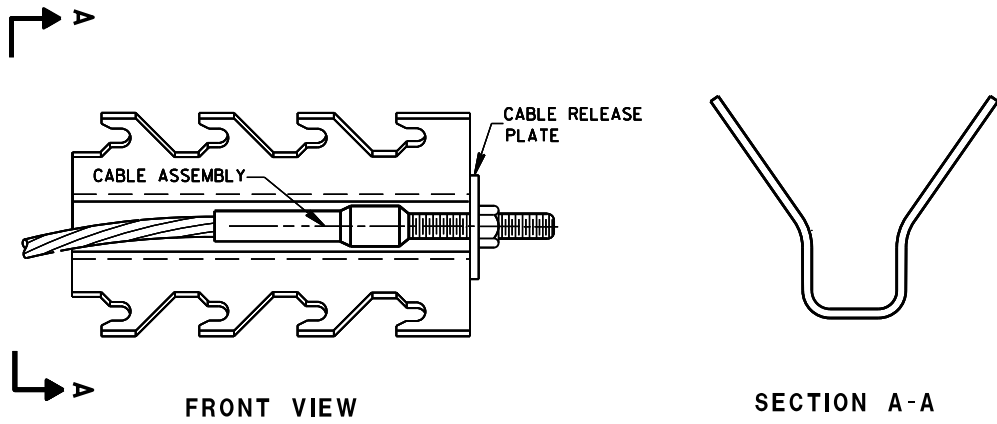
- S.D.D. 14 B 44-3a**

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

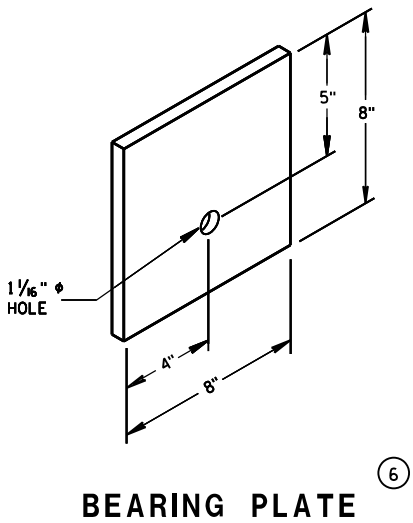


GENERIC GROUND STRUT (9) (H)

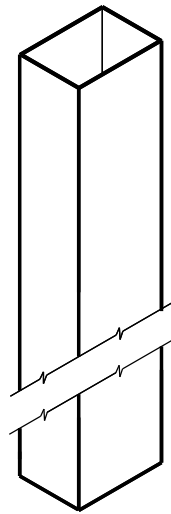


GENERIC ANCHOR CABLE BOX (8) (H)

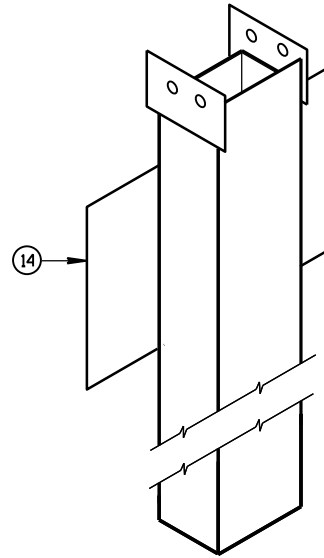
BILL OF MATERIALS	
PART NO.	DESCRIPTION
MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.	
(1)	UPPER POST NO.1 6" X 6" TUBE
(2)	LOWER POST NO.1
(3)	WOOD CRT
(4)	WOOD BLOCKOUT
(5)	PIPE SLEEVE
(6)	BEARING PLATE
(7)	BCT CABLE ASSEMBLY
(8)	ANCHOR CABLE BOX
(9)	GROUND 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



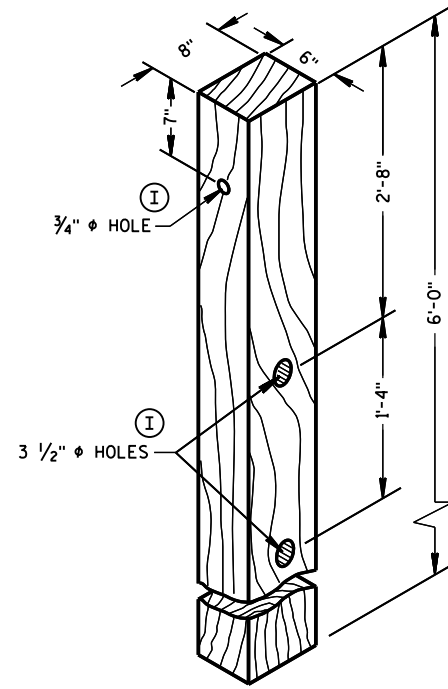
BEARING PLATE (6)



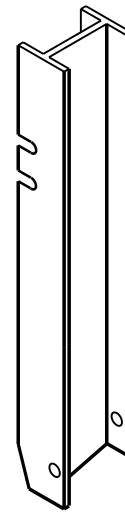
UPPER POST NO. 1⁽¹⁾



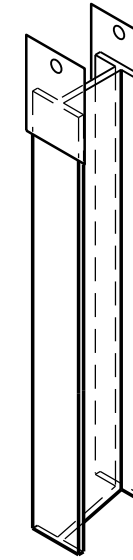
LOWER POST NO. 1⁽²⁾



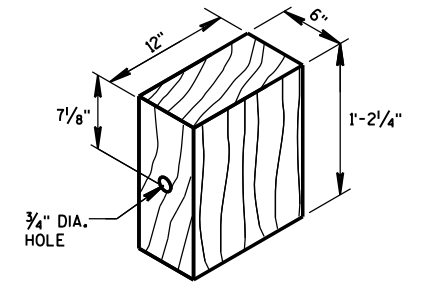
POSTS NUMBER 3-9
WOOD CRT POST⁽³⁾



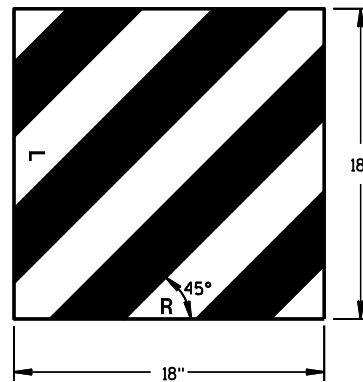
UPPER POST NO. 2⁽¹⁵⁾



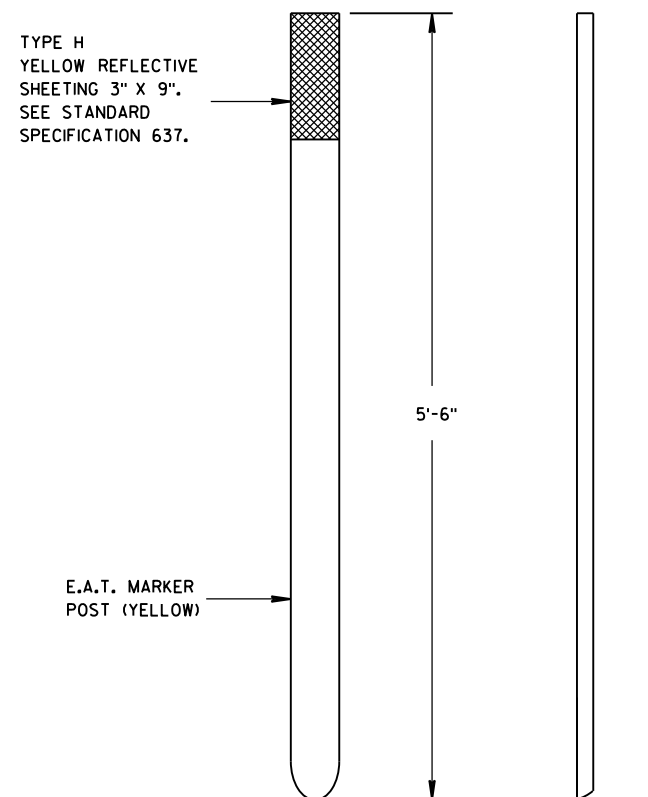
LOWER POST NO. 2⁽¹⁶⁾



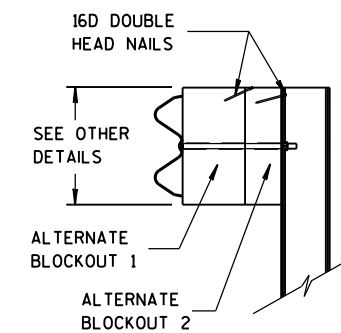
WOOD BLOCKOUT⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



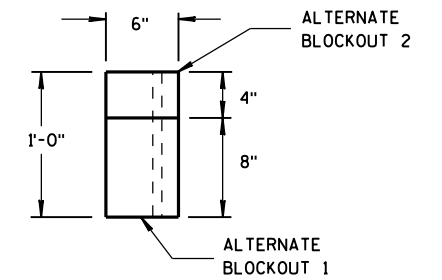
REFLECTIVE SHEETING DETAIL^(H)



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



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017

DATE

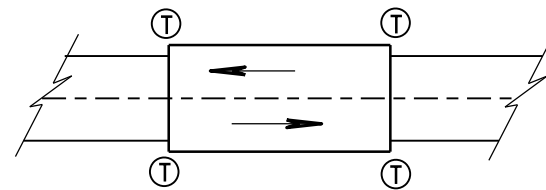
FHWA

/S/ Rodney Taylor

ROADWAY STANDARDS 67

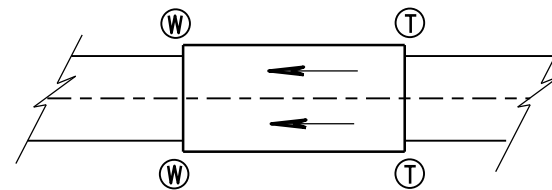
UNIT SUPERVISOR

S.D.D. 14 B 44-3C



TWO WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION



ONE WAY TRAFFIC

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

GENERAL NOTES

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

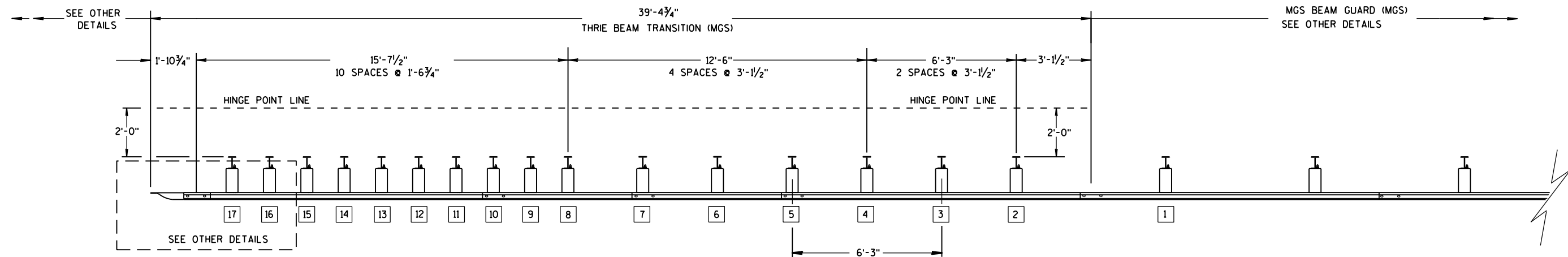
TRANSITION USES STEEL POSTS ONLY.

SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

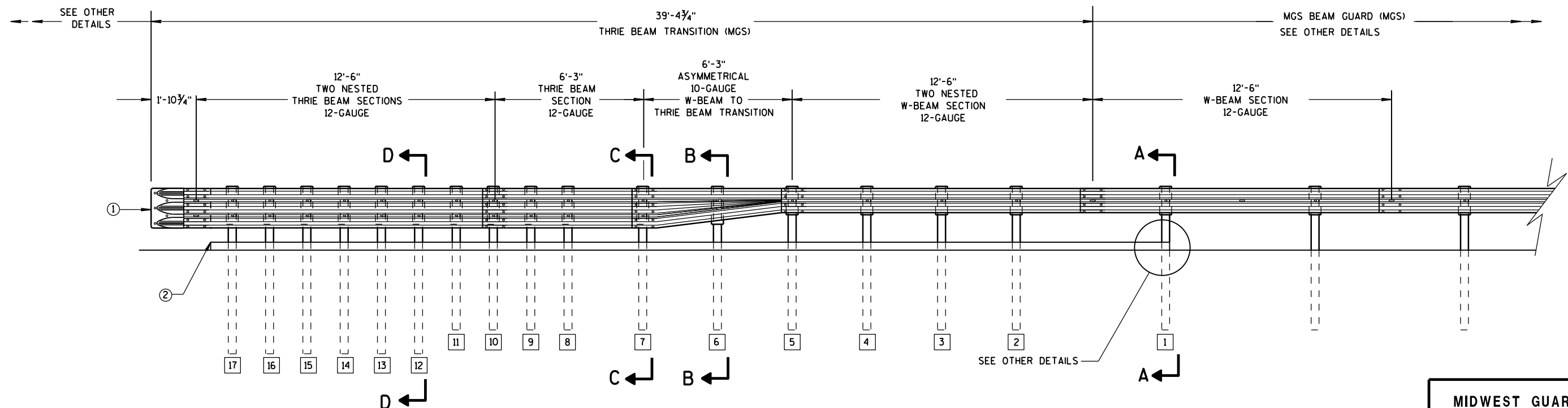
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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

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



PLAN VIEW



ELEVATION VIEW

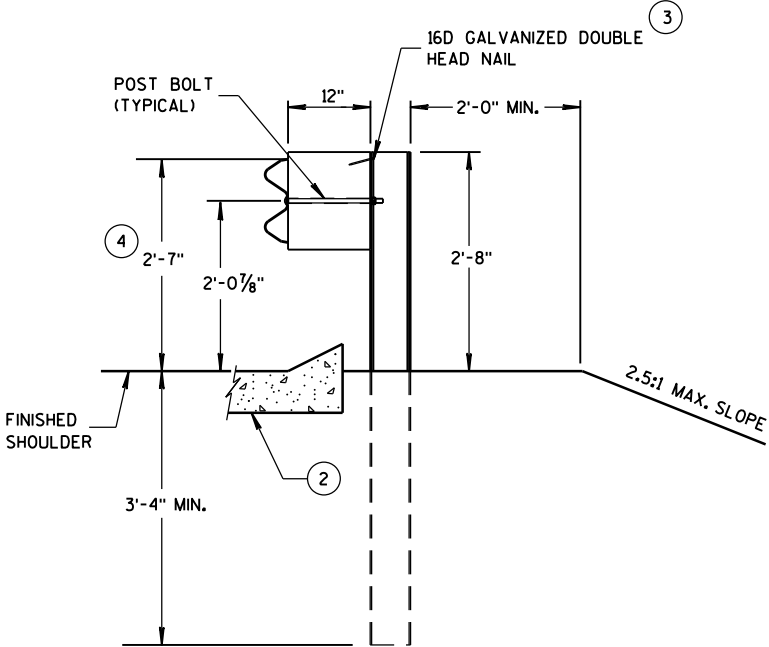
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

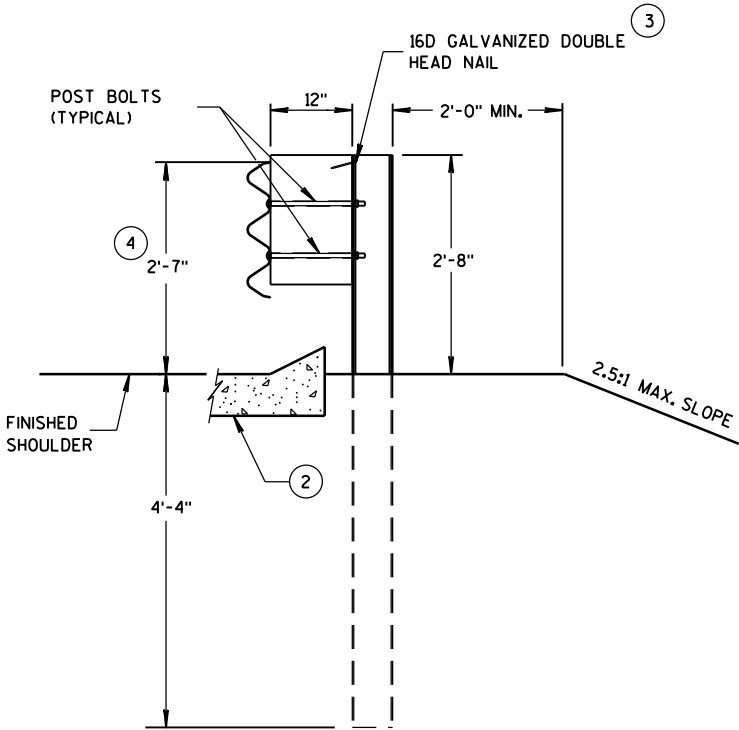
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 68

GENERAL NOTES

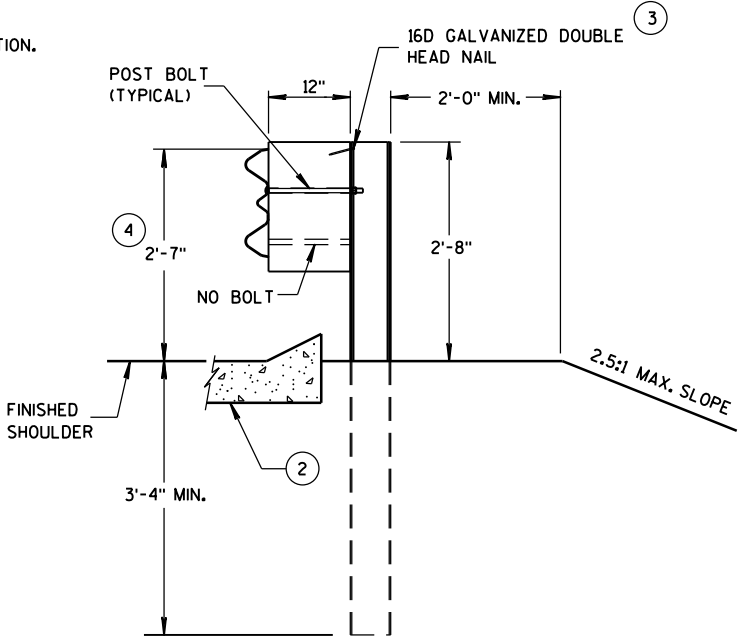
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



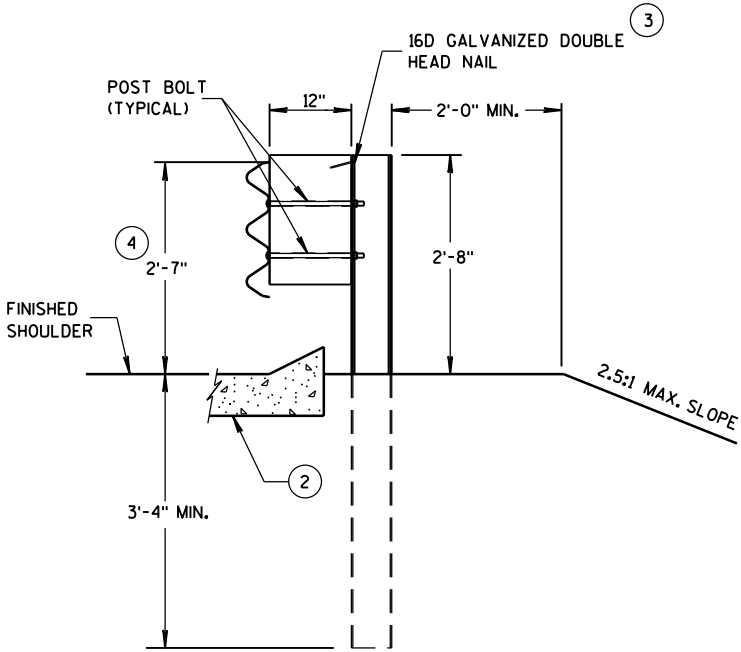
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

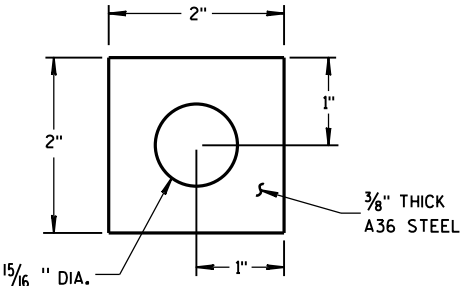
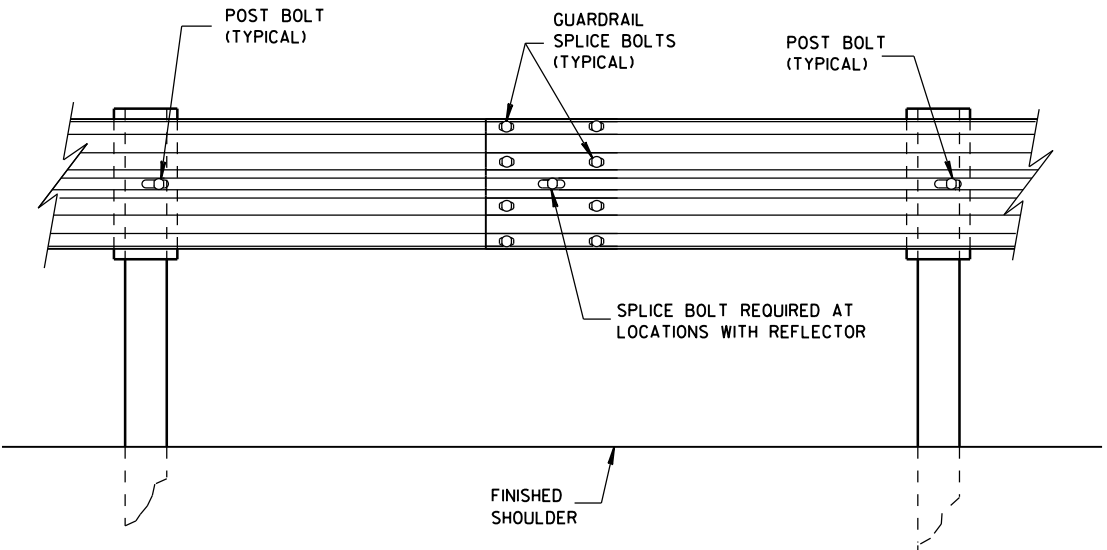
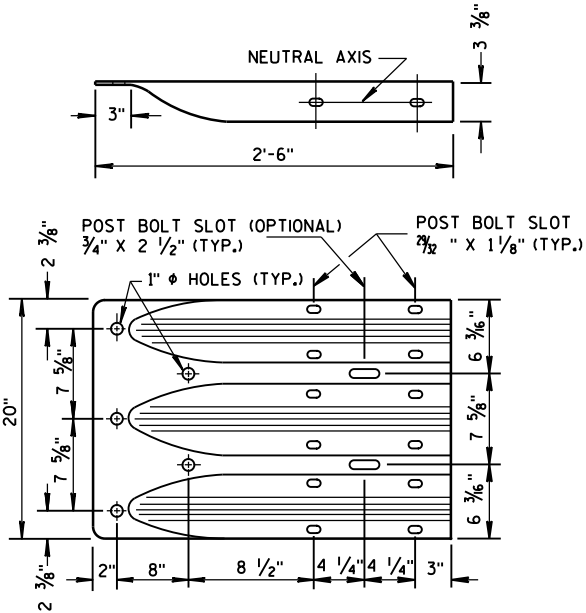


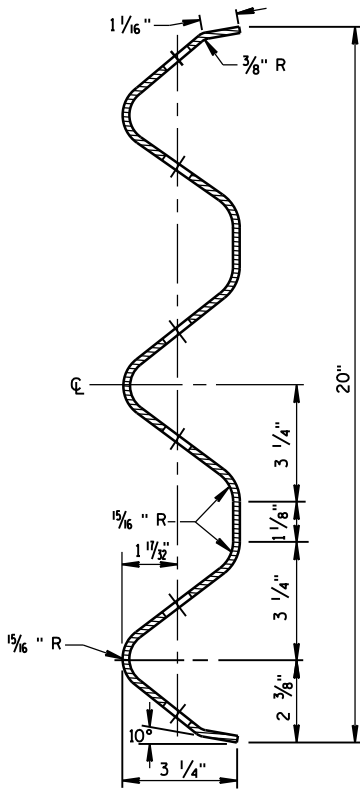
PLATE WASHER DETAIL



SPlice DETAIL



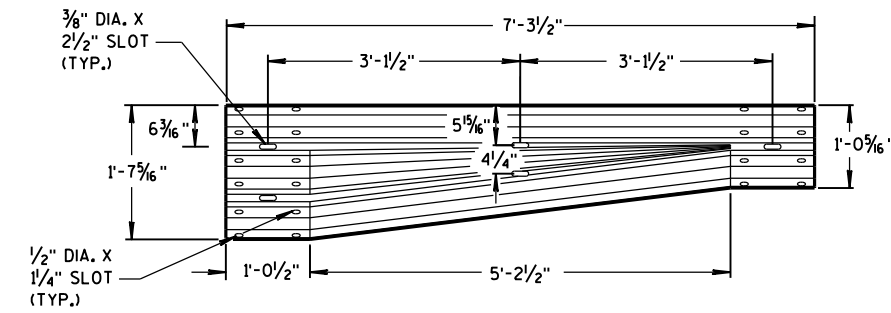
THRIE BEAM
TERMINAL CONNECTOR



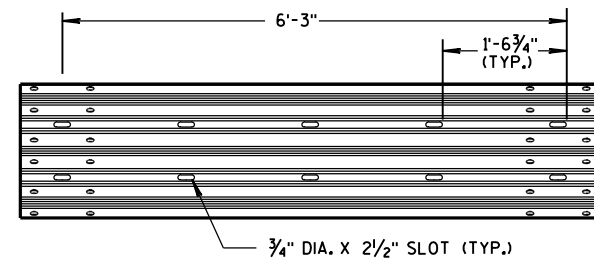
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

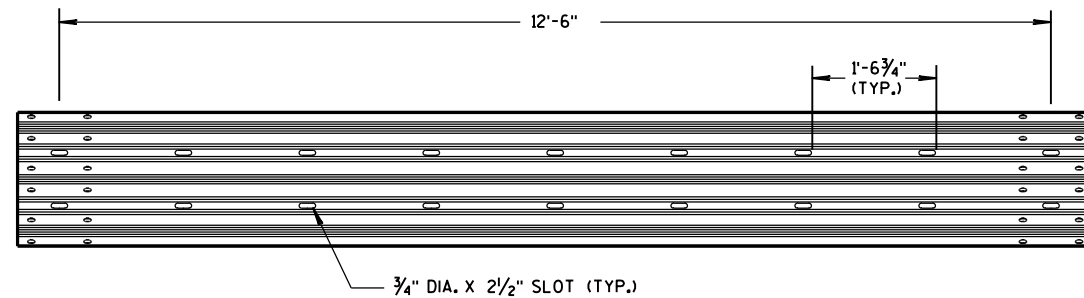
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



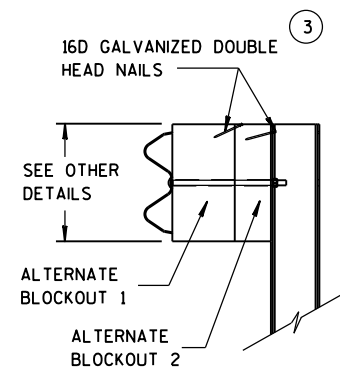
W-BEAM TO THRIE BEAM TRANSITION SECTION



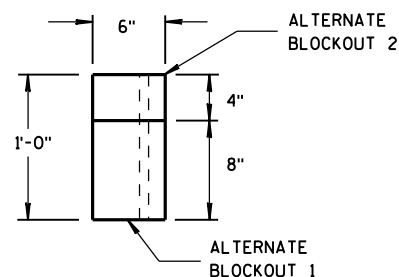
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

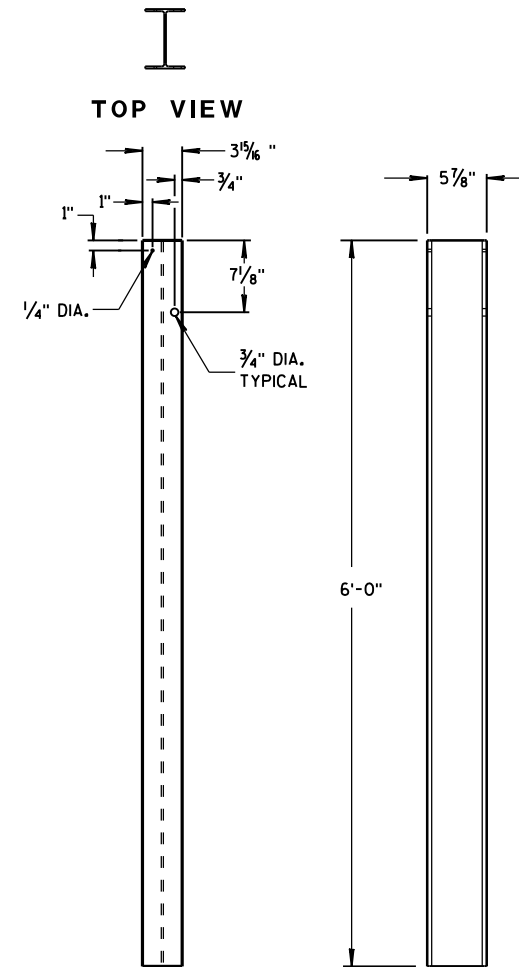


SIDE VIEW



TOP VIEW

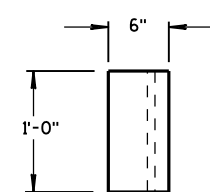
ALTERNATE WOOD BLOCKOUT DETAIL



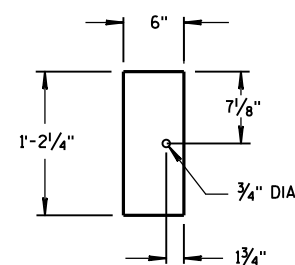
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

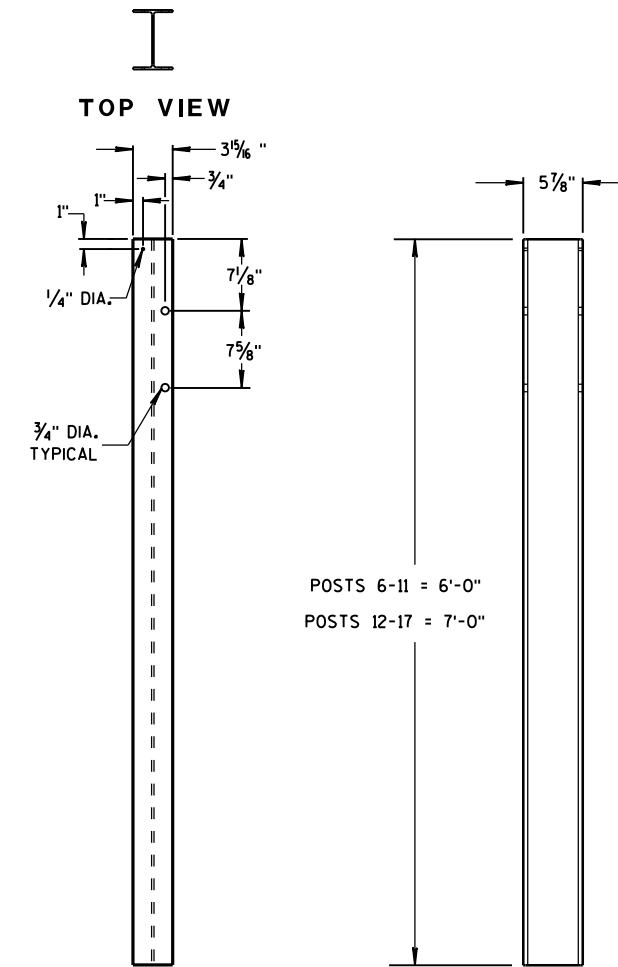


TOP VIEW



FRONT VIEW

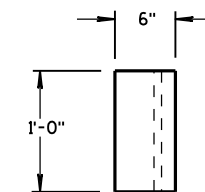
BLOCKOUT
POSTS 1-5



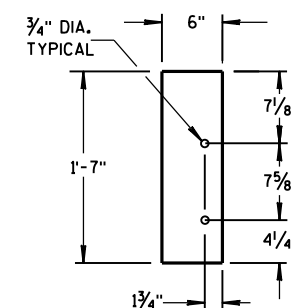
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT
POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

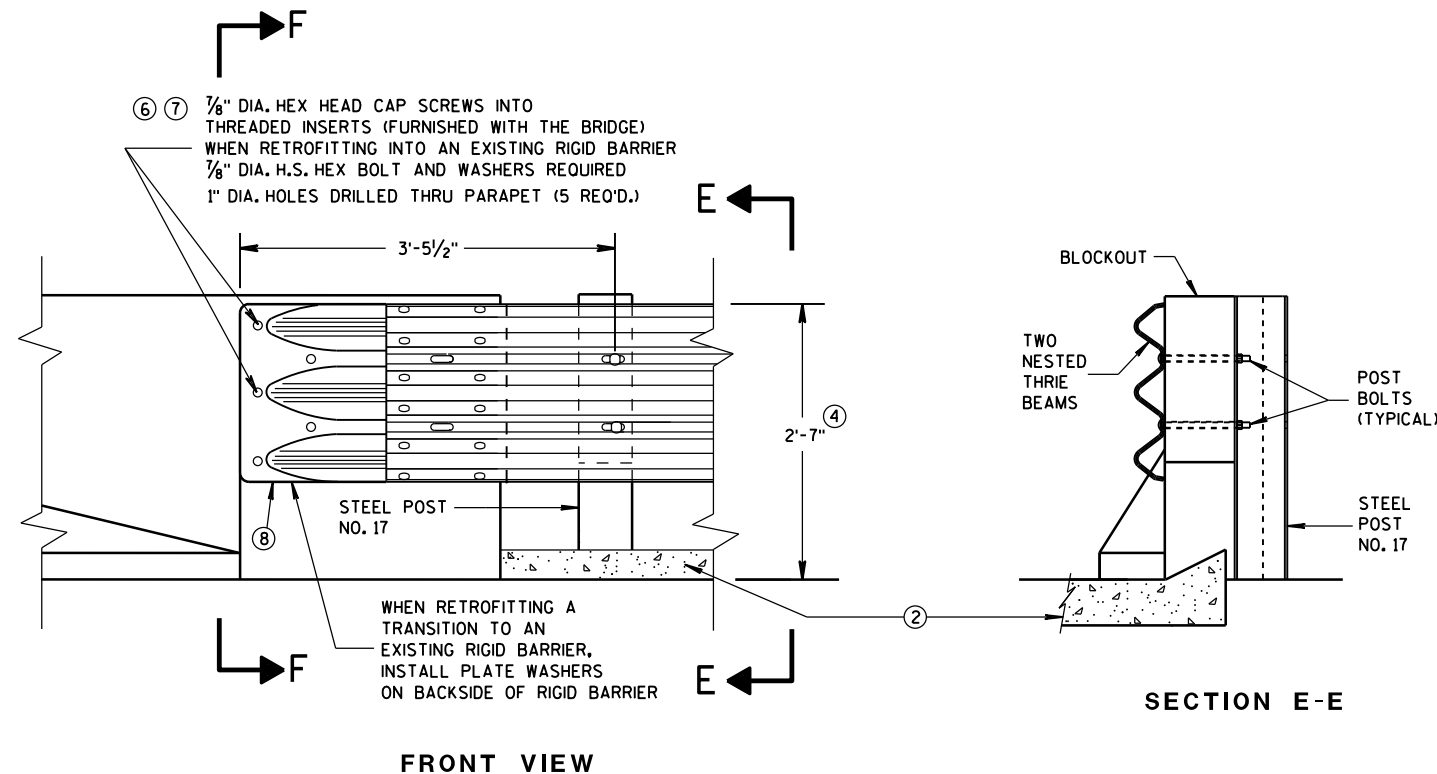
BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.

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

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

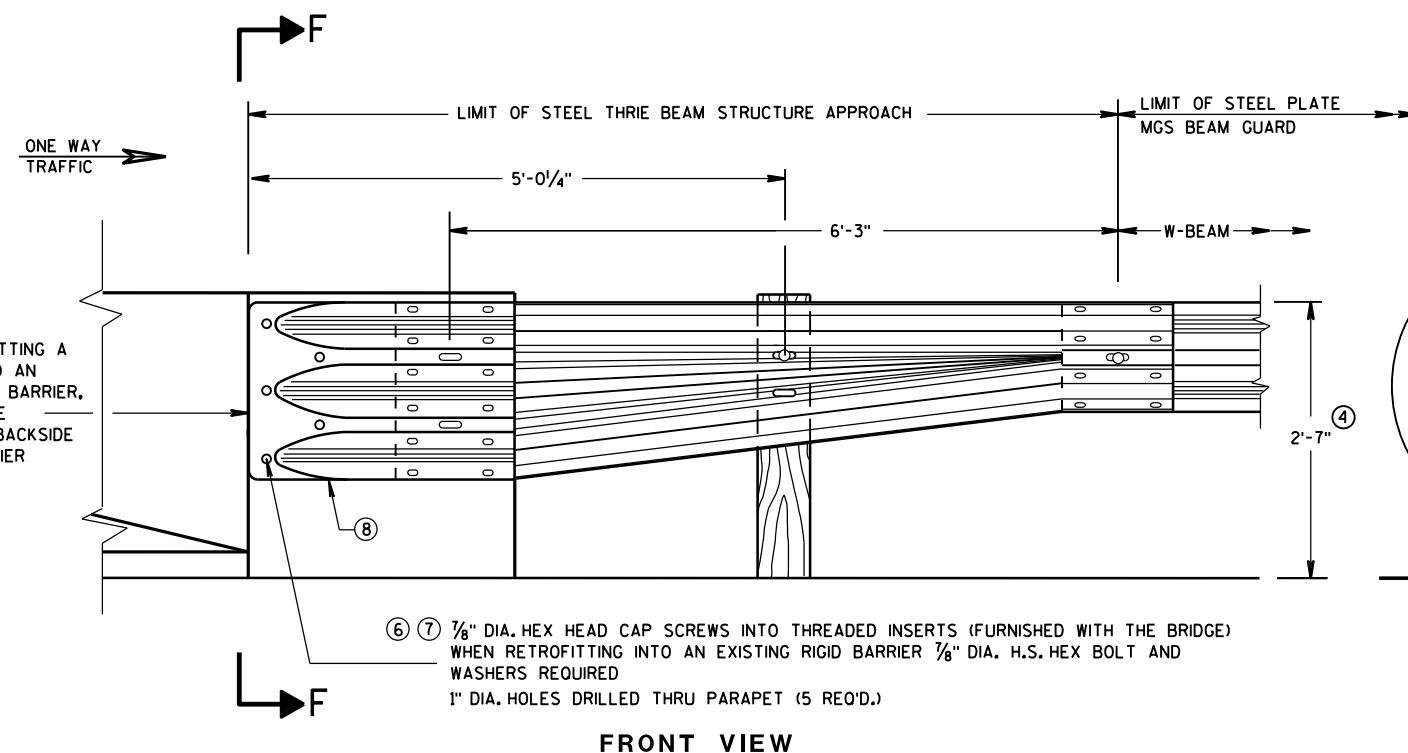
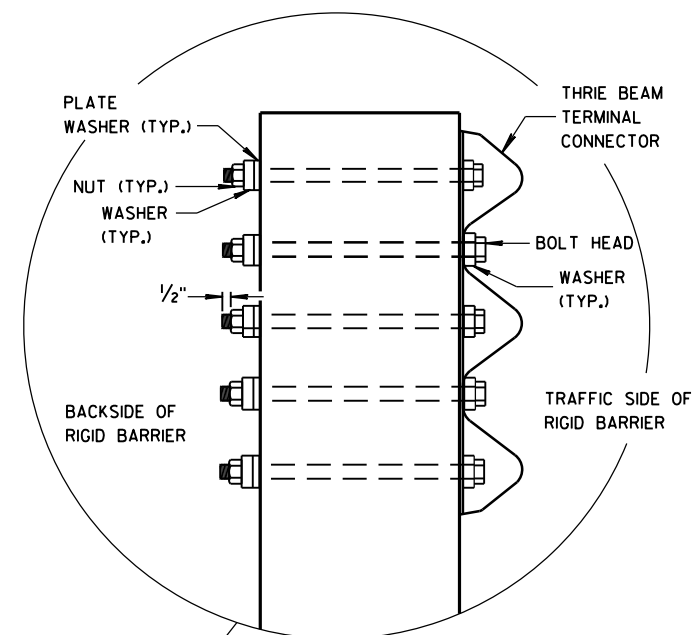
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



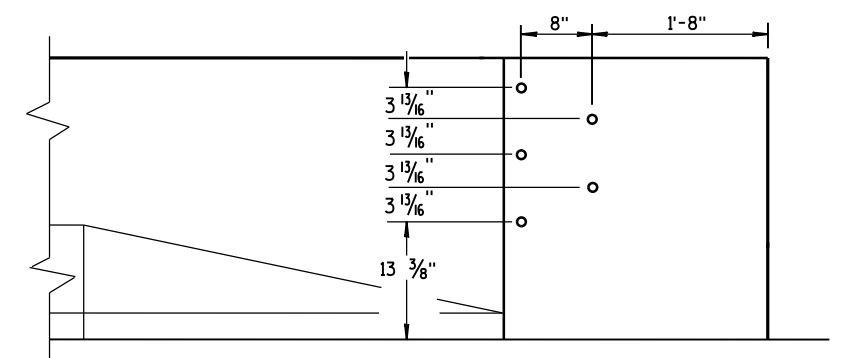
GENERAL NOTES

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

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



SECTION F-F



DRILL HOLE LOCATION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June, 2015

DATE

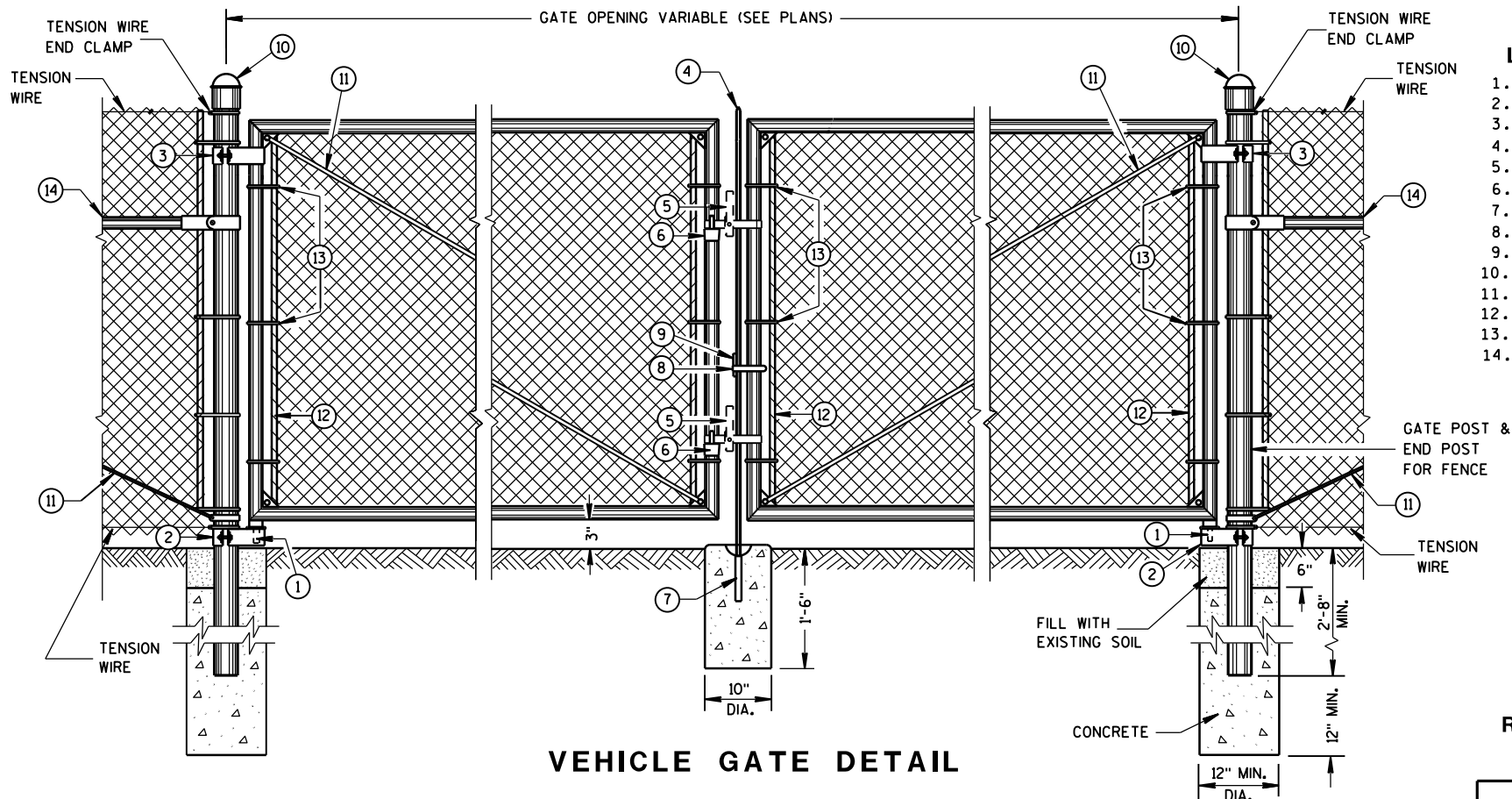
FHWA

/S/ Jerry H. Zogg

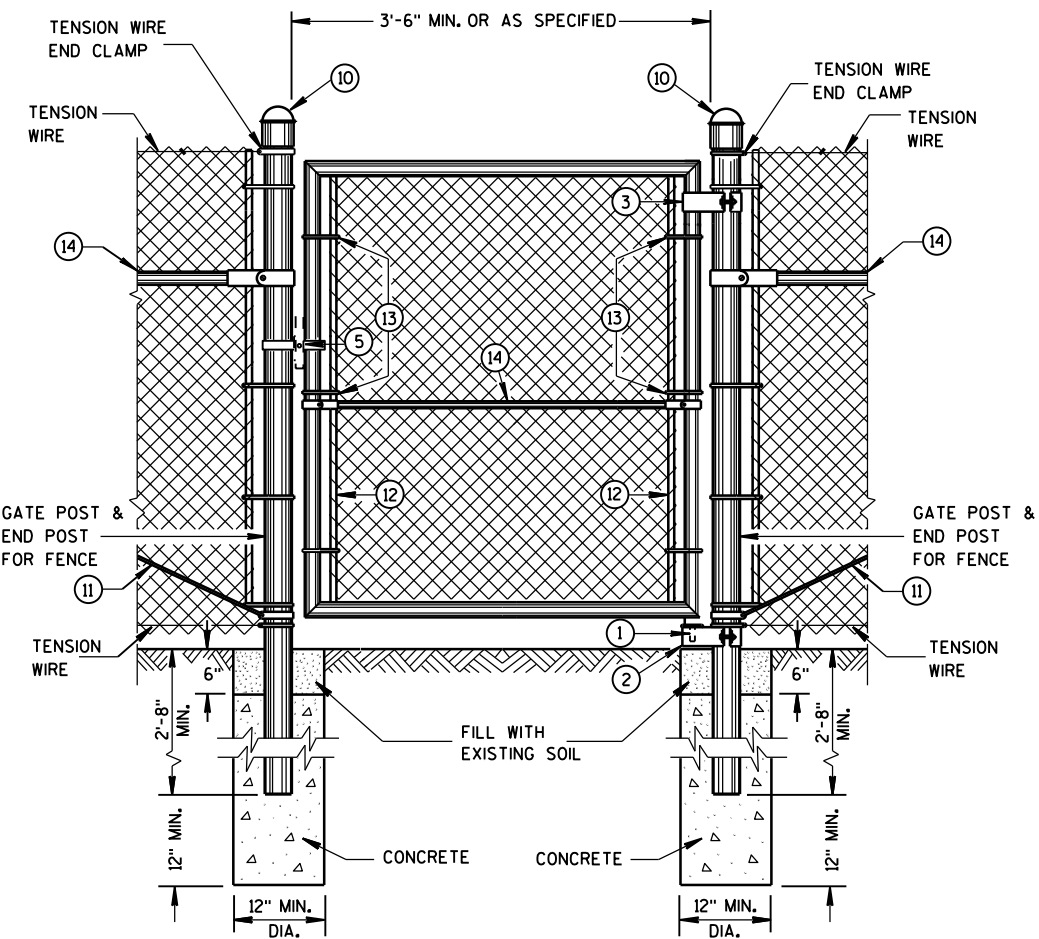
ROADWAY STANDARDS 071

ENGINEER

NT



VEHICLE GATE DETAIL



PEDESTRIAN GATE DETAIL

REQUIRED FENCE POST SIZES

USE	FABRIC HEIGHTS FEET	POST TYPE
TERMINAL POSTS **	LESS THAN OR EQUAL TO 6 FT.	SP3
	GREATER THAN OR EQUAL TO 6 FT.	SP4
LINE POSTS	LESS THAN OR EQUAL TO 6 FT.	SP2
	LESS THAN OR EQUAL TO 8 FT.	SP3
	GREATER THAN OR EQUAL TO 8 FT.	SP4
	LESS THAN OR EQUAL TO 8 FT.	FS2 OR FS2+
	GREATER THAN OR EQUAL TO 8 FT.	FS3

BRACE RAIL TYPES

USE	TYPE
BRACE RAIL	SP1 OR FS1

** INCLUDES END, CORNER, ANGLE, INTERSECTION AND INTERMEDIATE BRACED POSTS

LEGEND

1. STRAIGHT PLUG
 2. BOTTOM HINGE
 3. TOP HINGE
 4. PLUNGER ROD
 5. FULCRUM LATCH
 6. FORK CATCH *
 7. PLUNGER ROD CATCH
 8. LOCK KEEPER GUIDE
 9. LOCK KEEPER
 10. DOME TOPS
 11. TRUSS RODS
 12. TENSION BAR
 13. TENSION BANDS
 14. BRACE RAIL
- *NOT REQUIRED ON SINGLE SWING PEDESTRIAN GATE

GENERAL NOTES

FENCE POSTS INSTALLED ON CONCRETE WALLS SHALL BE ANCHORED INTO EMBEDDED METAL SLEEVES OR CORED HOLE BY FILLING THE ANNULAR SPACE WITH PEA GRAVEL FOLLOWED BY AN EPOXY RESIN ADHESIVE. THE EPOXY RESIN ADHESIVE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 235, CLASS A, B OR C.

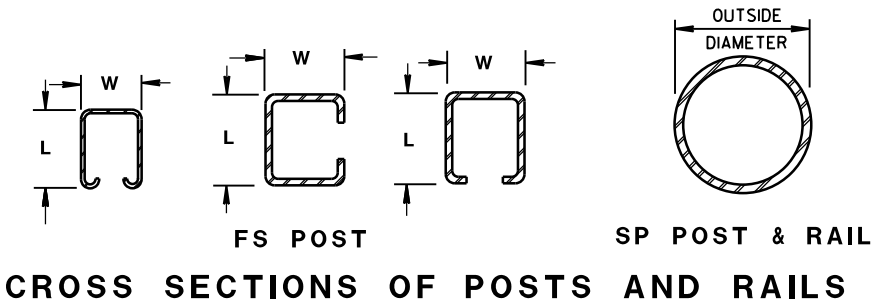
USE FENCE FABRIC KNUCKLED AT BOTH SELVAGES.

FOR LEAF GATES GREATER THAN 8 FEET WIDE, INSTALL INTERIOR VERTICAL BRACE RAIL AT 8 FOOT INTERVALS.

FOR FABRIC HEIGHTS GREATER THAN 8 FEET, INSTALL INTERIOR HORIZONTAL BRACE RAILS TO LEAF GATE.

MAXIMUM SAG FOR OUTER GATE MEMBER SHALL NOT EXCEED THE GREATER OF 1% OF THE LEAF GATE WIDTH OR 2 INCHES.

USE TYPE 2, CLASS 3, MARCELLED/CRIMPED, TENSION WIRE PER ASTM A 817.



ROLLED-FORMED STEEL FENCE POST
(2.0 OZ./SQ. FT. COATING)

POST TYPE	LENGTH (L) INCH	WIDTH (W) INCH	WEIGHT LBS/FT
FS1	1.625	1.25	1.35
FS2+	1.875	1.625	1.850
FS2	1.875	1.625	2.400
FS3	2.250	1.700	2.780

REQUIRED POST SIZE FOR GATES

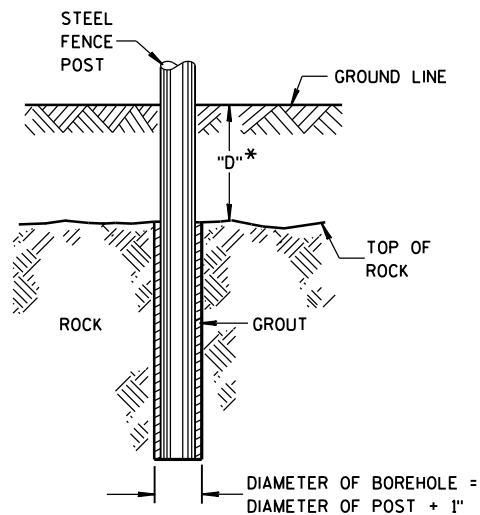
USE	LEAF WIDTHS FEET	POST TYPE
GATES	LESS THAN OR EQUAL TO 6 FT.	SP4
	LESS THAN OR EQUAL TO 13 FT.	SP5
	LESS THAN OR EQUAL TO 18 FT.	SP6
	LESS THAN OR EQUAL TO 23 FT.	SP7

ROUND STEEL FENCE POST
(1.8 OZ./SQ. FT. COATING)

POST TYPE	OUTSIDE DIMENSION INCH	WALL THICKNESS INCH	WEIGHT LBS/FT
SP1	1.660	0.140	2.270
SP2	1.900	0.145	2.720
SP3	2.375	0.154	3.650
SP4	2.875	0.203	5.800
SP5	4.000	0.226	9.120
SP6	6.625	0.280	18.990
SP7	8.625	0.322	28.580

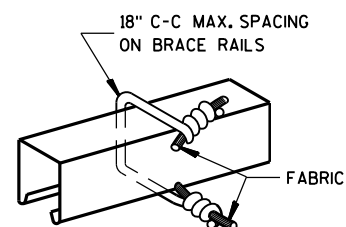
FENCE CHAIN LINK

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



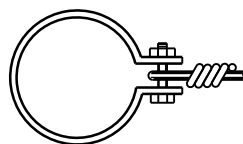
* IF "D" IS LESS THAN 2'-6",
DRILL ROCK AND INSTALL GROUT

ROCK INSTALLATION OF LINE POST

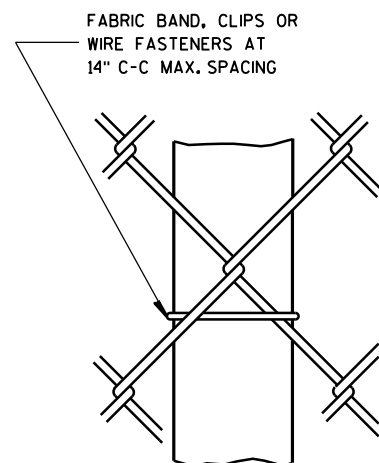


BRACE RAIL FABRIC FASTENER

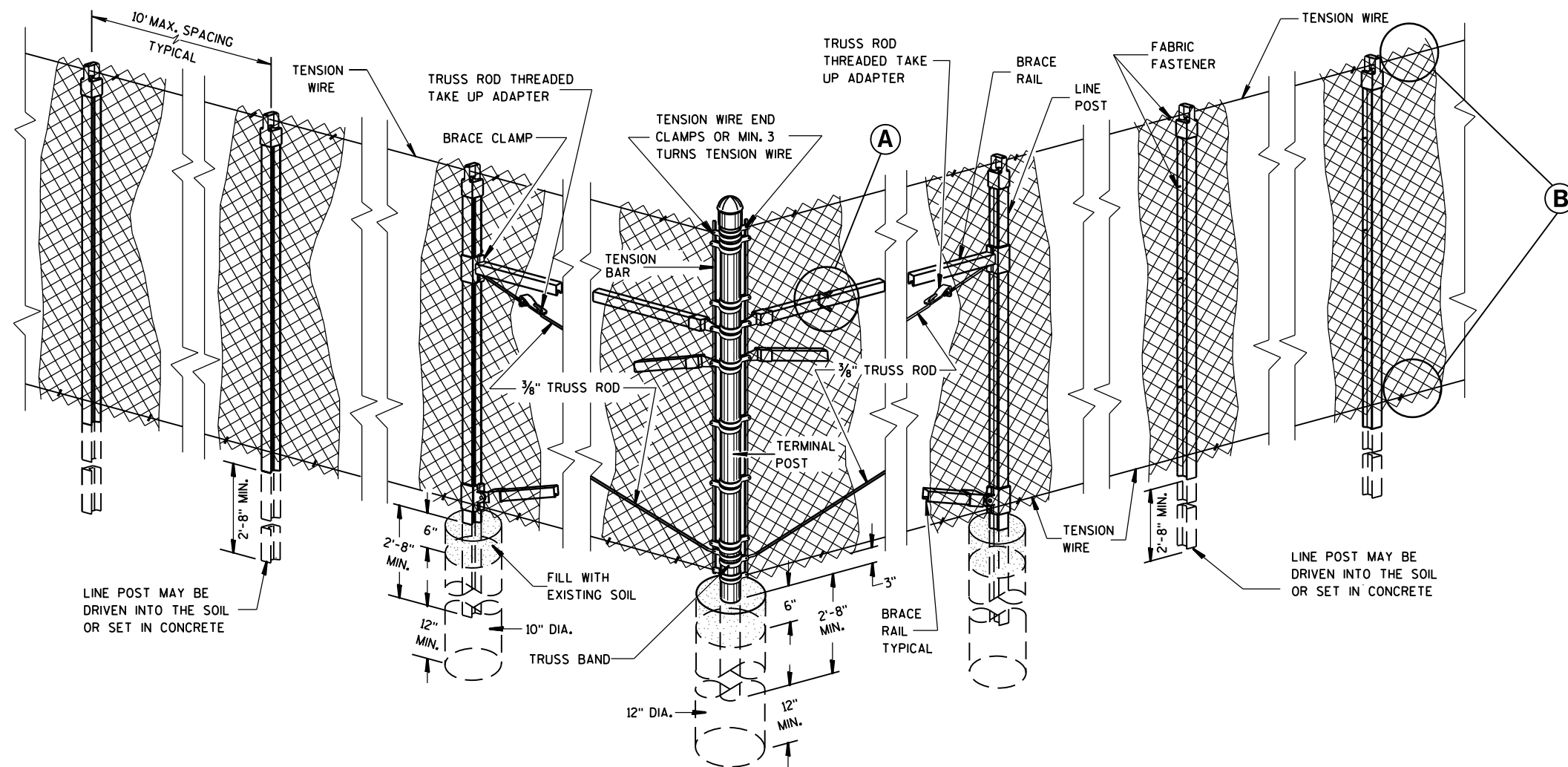
(A)



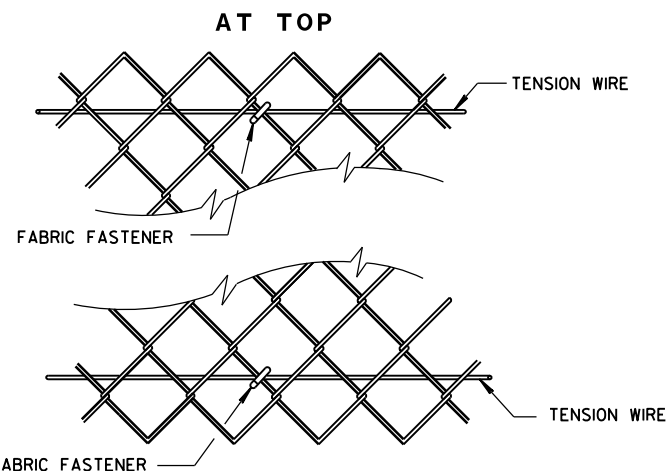
TENSION WIRE END CLAMP



LINE POST FABRIC FASTENER



END, CORNER, ANGLE INTERSECTION & INTERMEDIATE BRACED POSTS

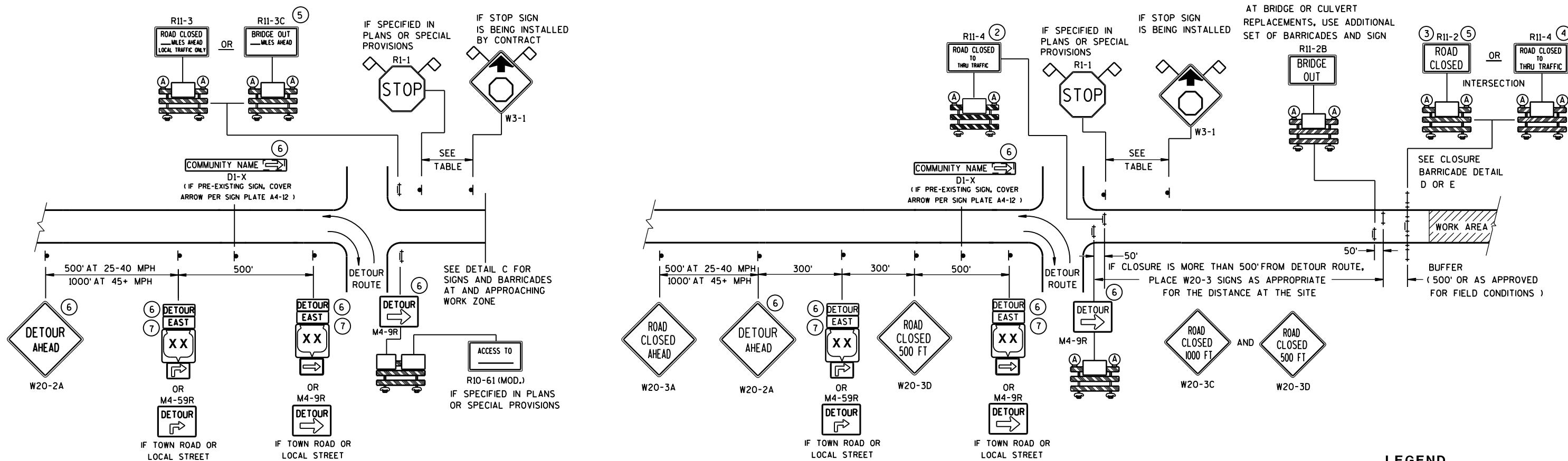


(B)

FENCE CHAIN LINK

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
FEB. 2015 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS 073 ENT
FHWA ENGINEER



DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN 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
- (A) TYPE "A" WARNING LIGHT (FLASHING)

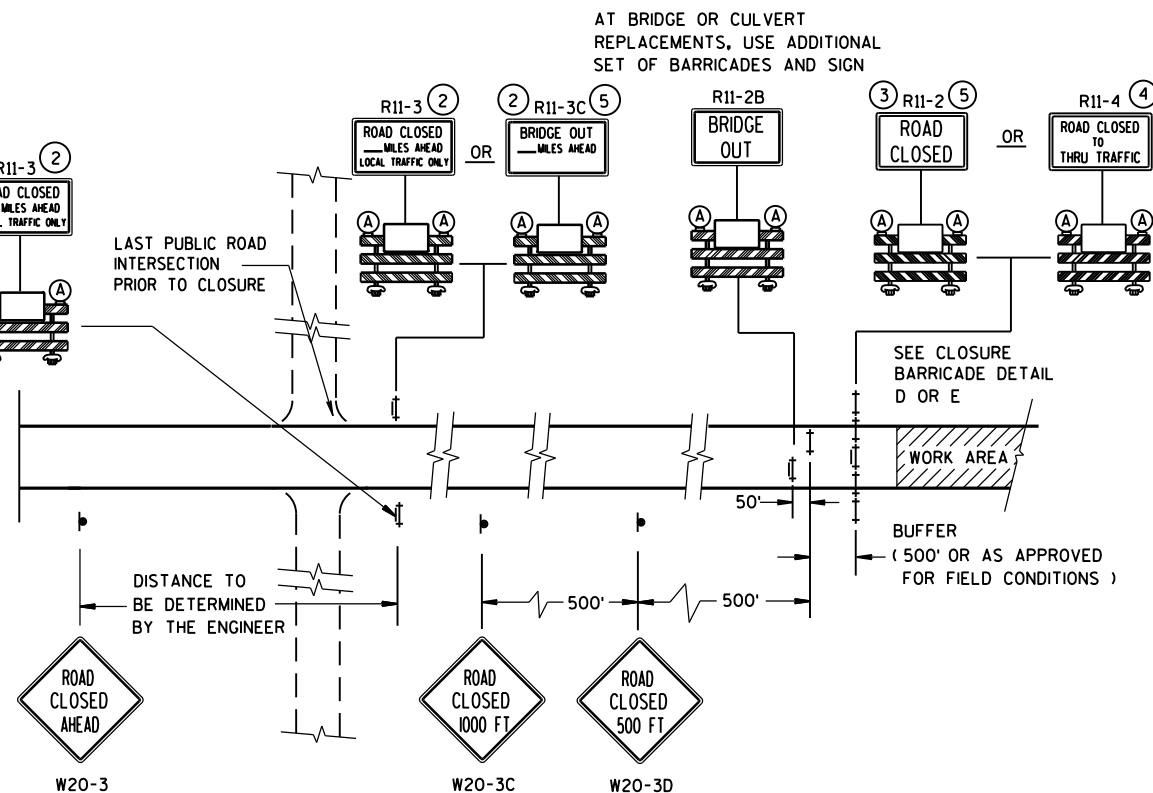
WORK AREA

DETOUR EAST M4-8
M3-X
XX OR COUNTY XX OR XX
M1-4 M1-5A M1-6

M05-1 OR M06-1

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



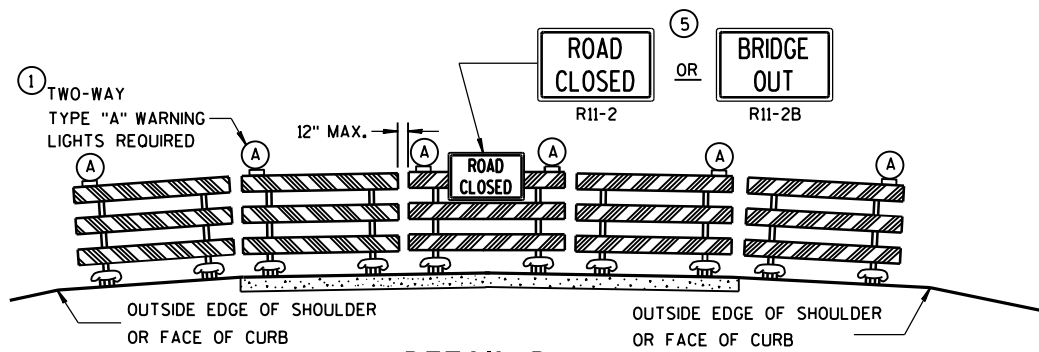
DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

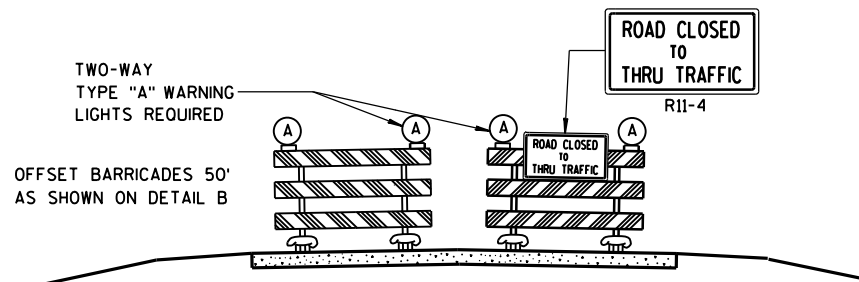
**BARRICADES AND SIGNS
FOR
MAINLINE CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 /S/ Peter Amokobe Atepe
DATE STATEWIDE WORK ZONE SAFETY 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 BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE 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:

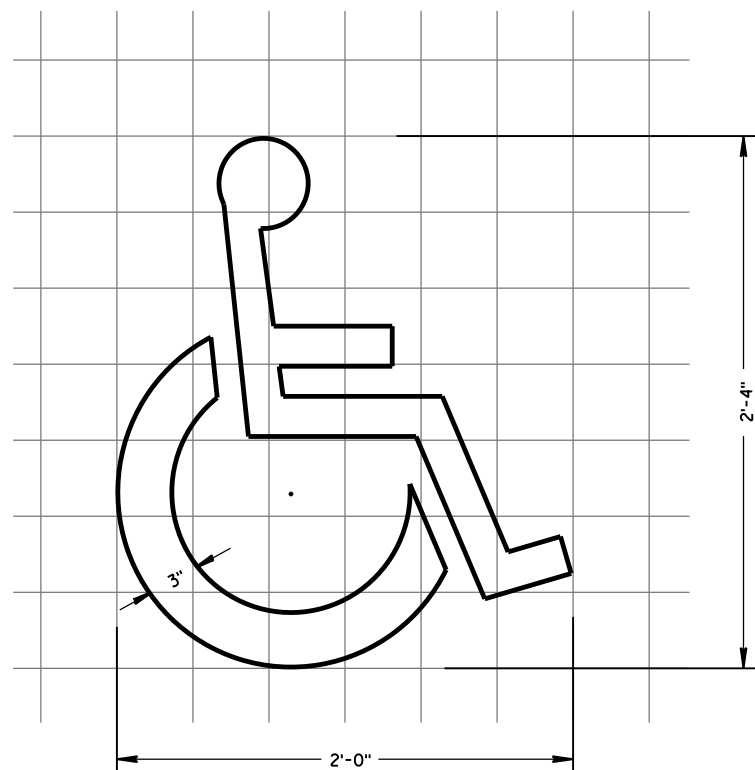
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 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 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 LANE 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.

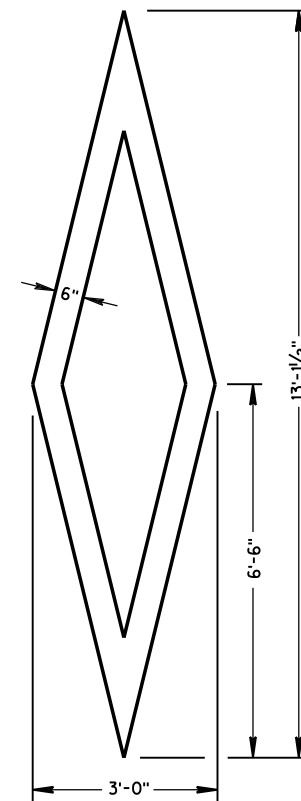
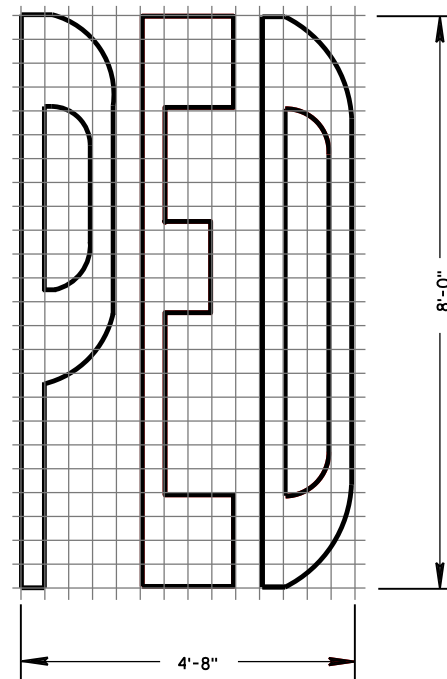
**BARRICADES AND SIGNS
FOR
MAINLINE CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



HANDICAP SYMBOL

PREFERENTIAL
LANE SYMBOL**GENERAL NOTES**

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

PAVEMENT MARKING SYMBOLS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

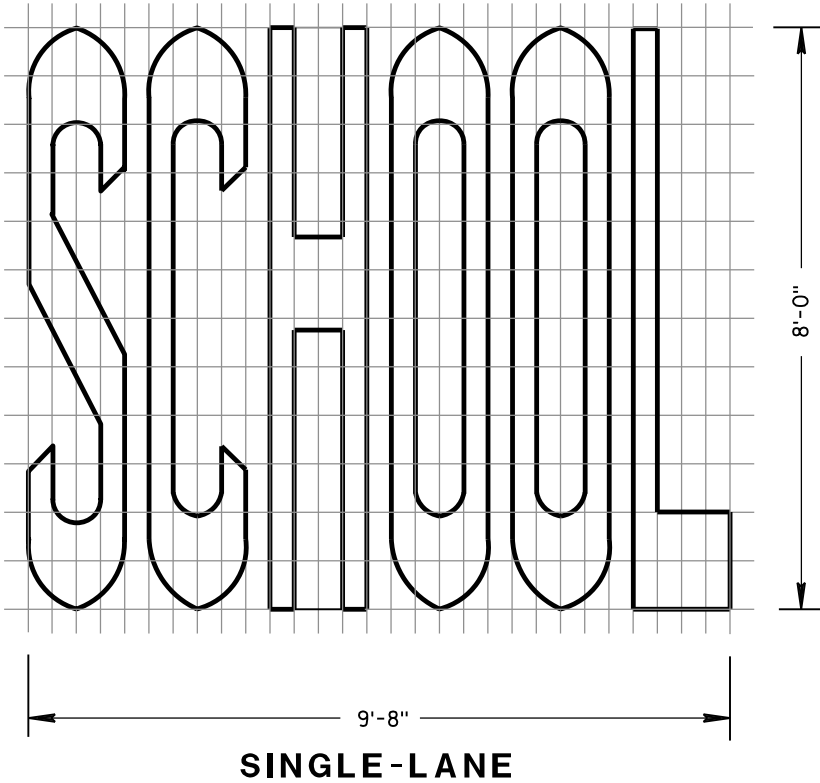
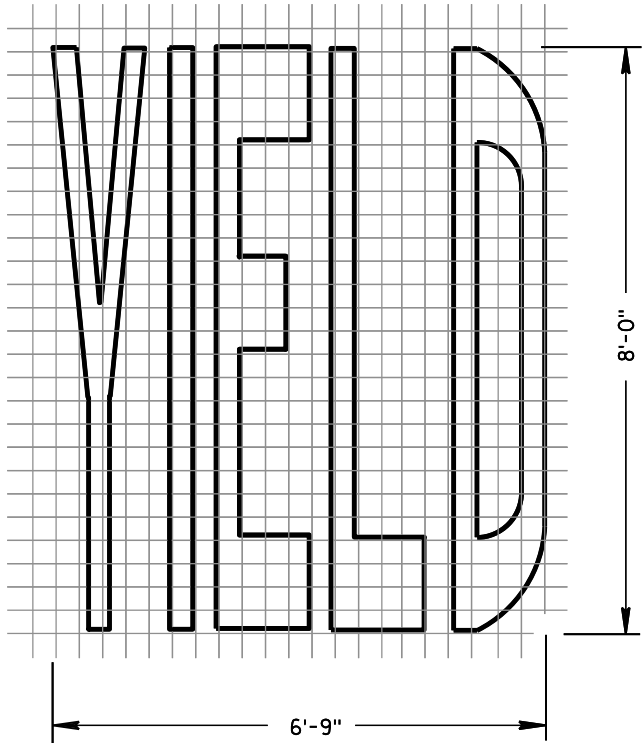
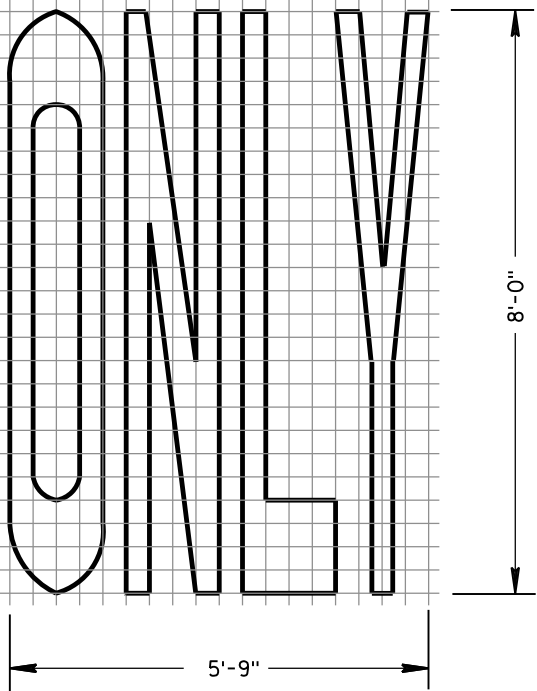
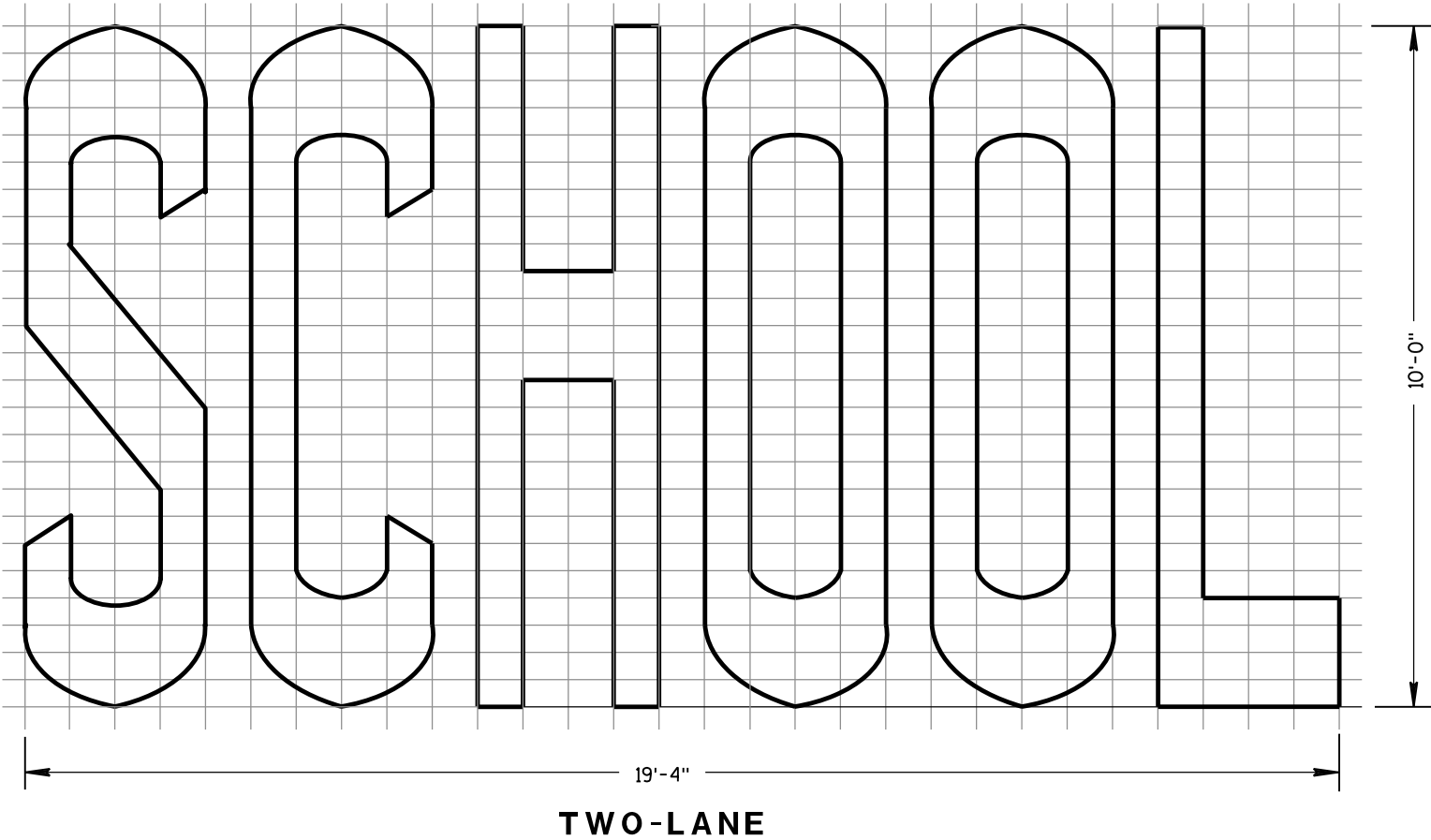
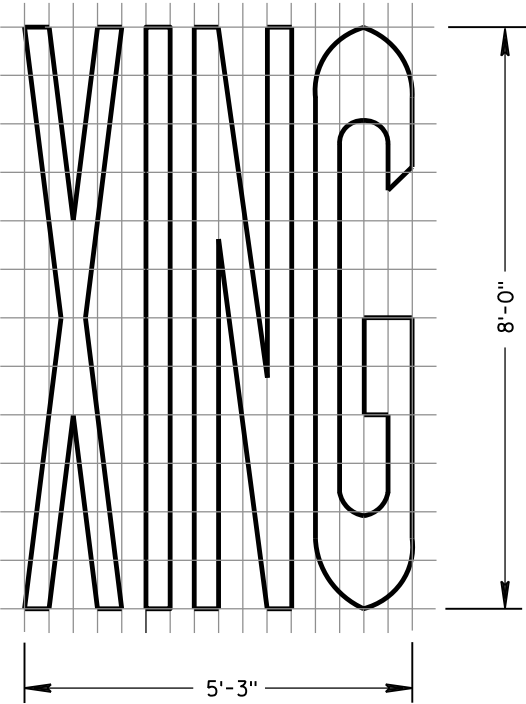
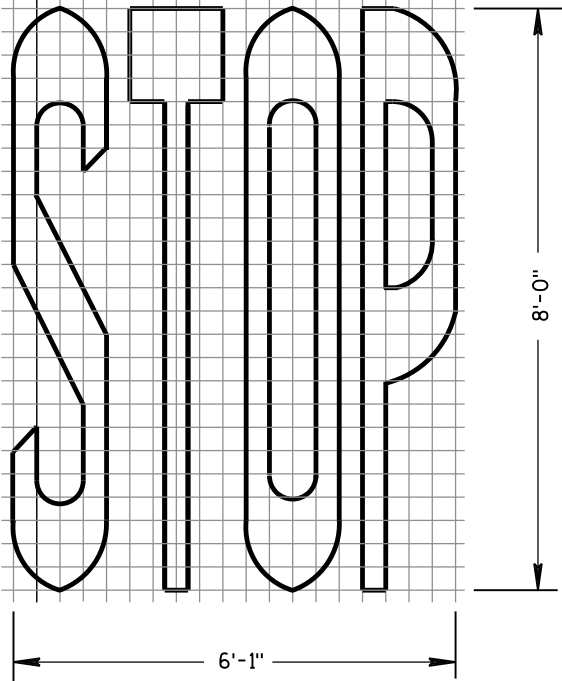
APPROVED

June 2017 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARK 76 EER

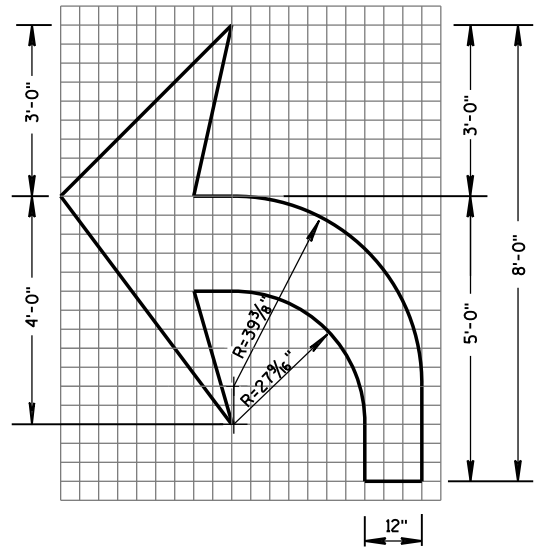
FHWA

GENERAL NOTES

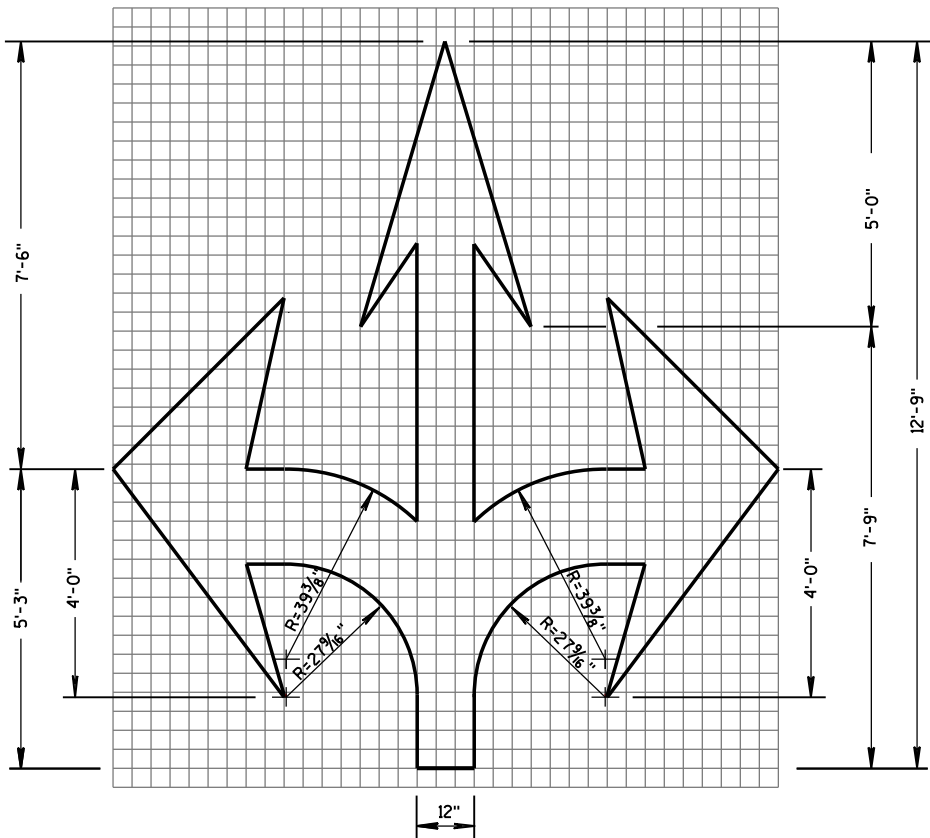
DETAILS OF INSTALLATION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.



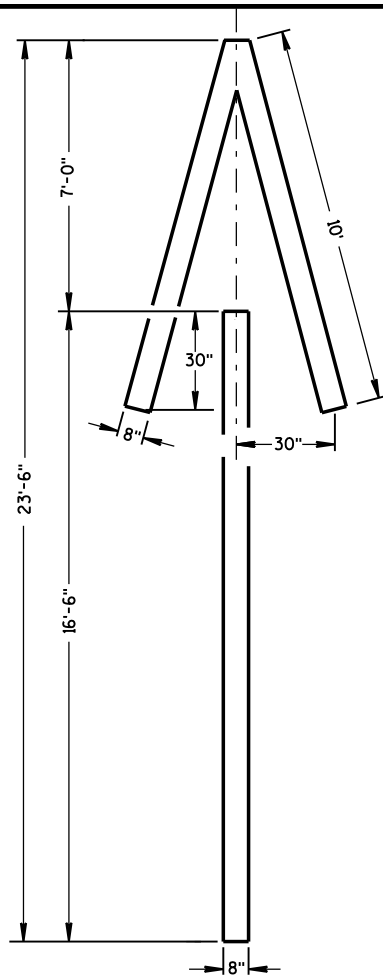
PAVEMENT MARKING WORDS			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED			
June 2017	/S/ Matthew R. Rauch		
DATE	STATE SIGNING AND MARK	77	EER
FHWA			



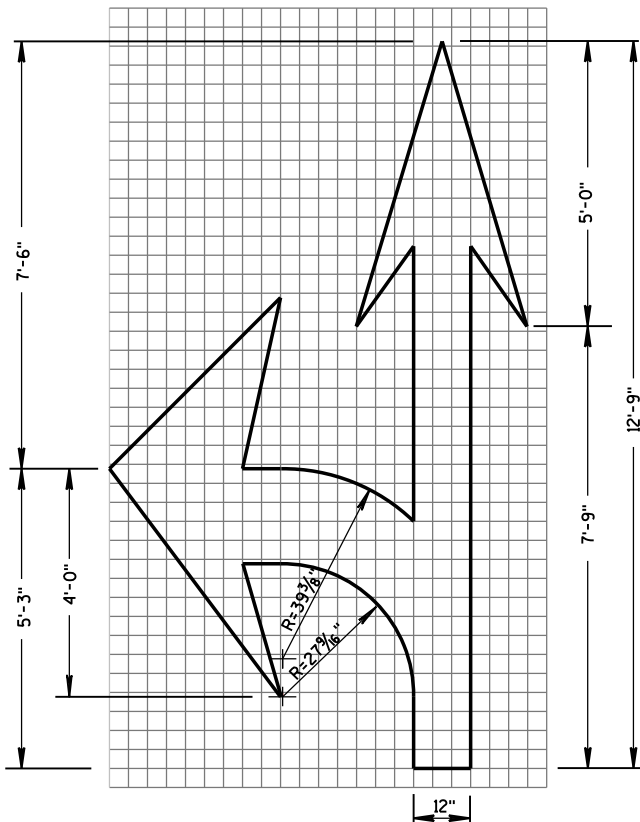
TYPE 2



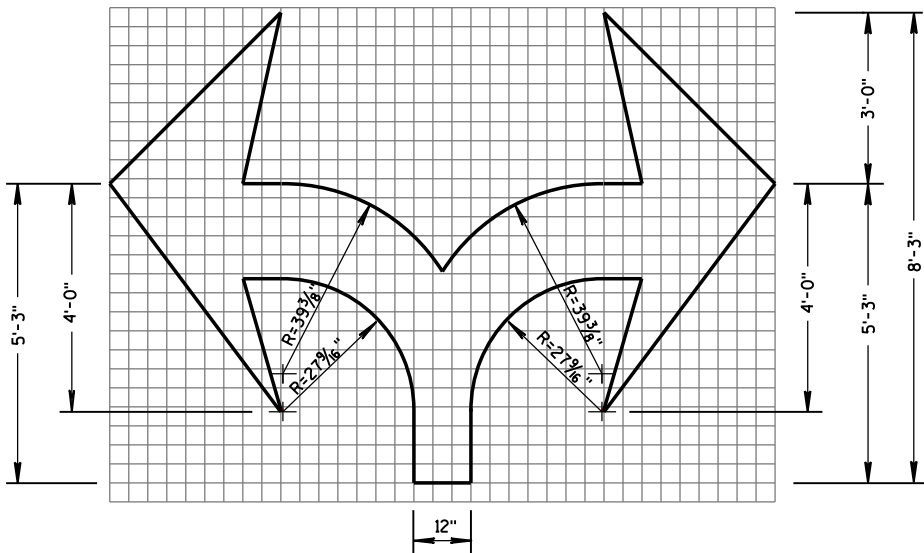
TYPE 6



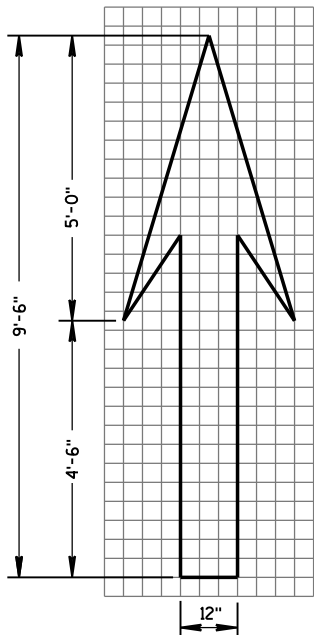
TYPE 4



TYPE 3



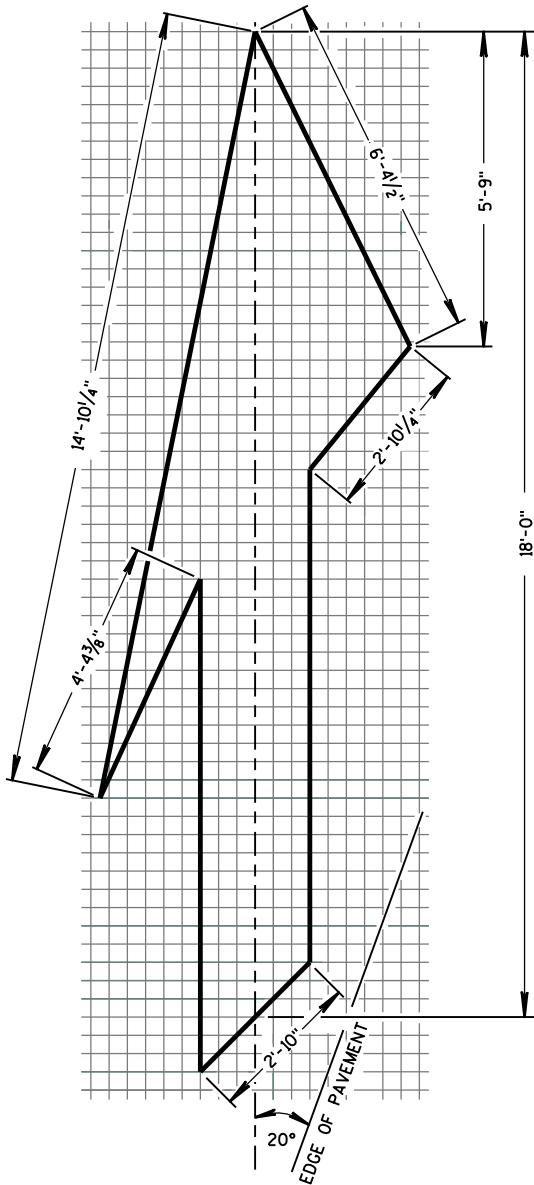
TYPE 7



TYPE 1

GENERAL NOTES

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

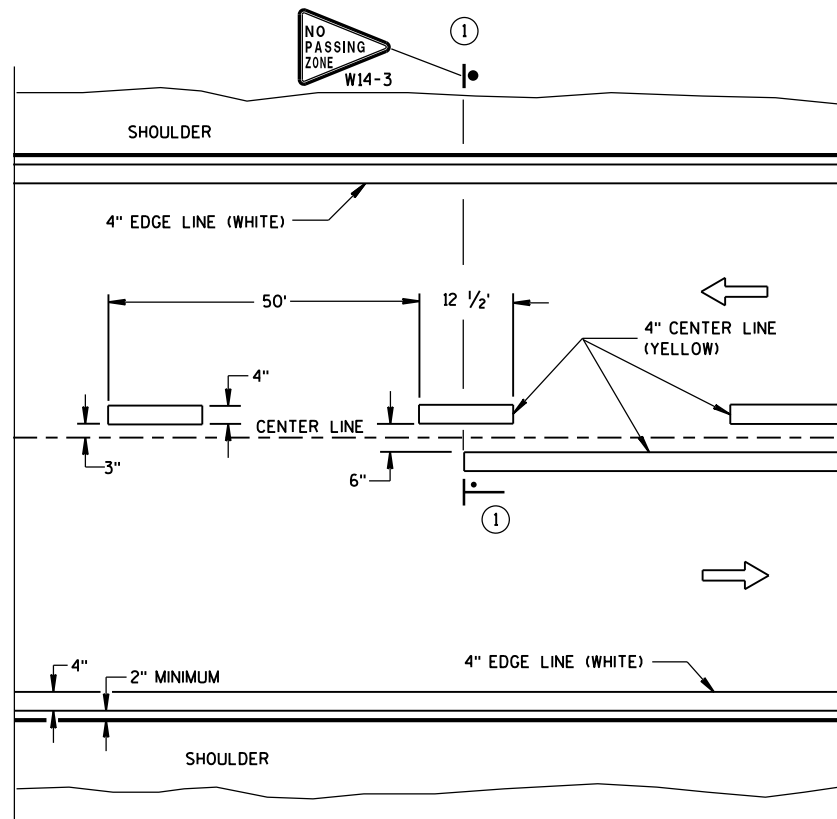


TYPE 5 LANE DROP ARROW

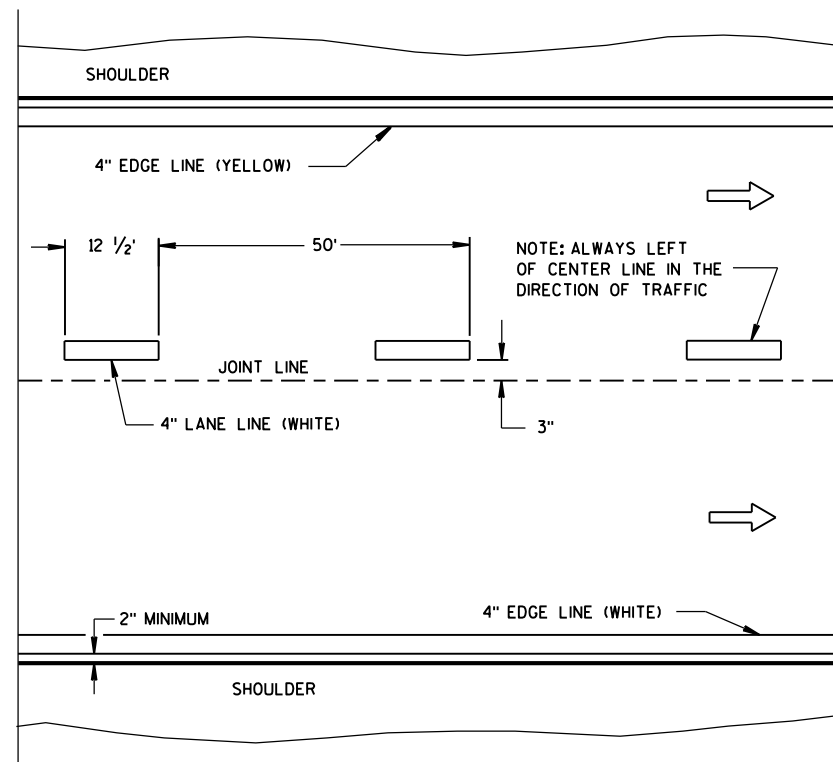
PAVEMENT MARKING ARROWS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MAR 78
FHWA

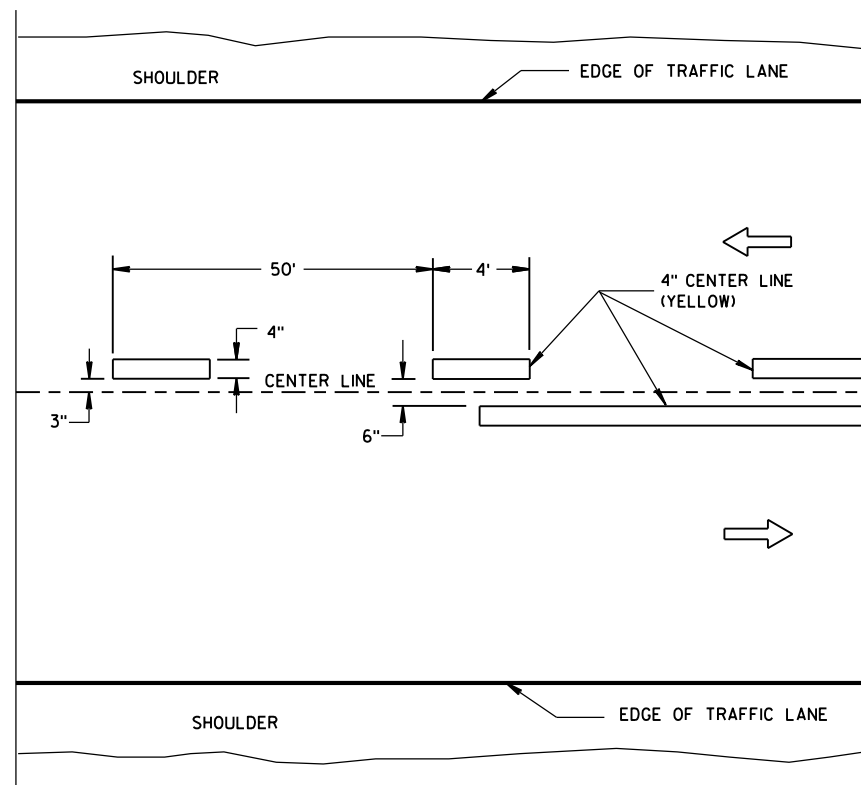


TWO WAY TRAFFIC

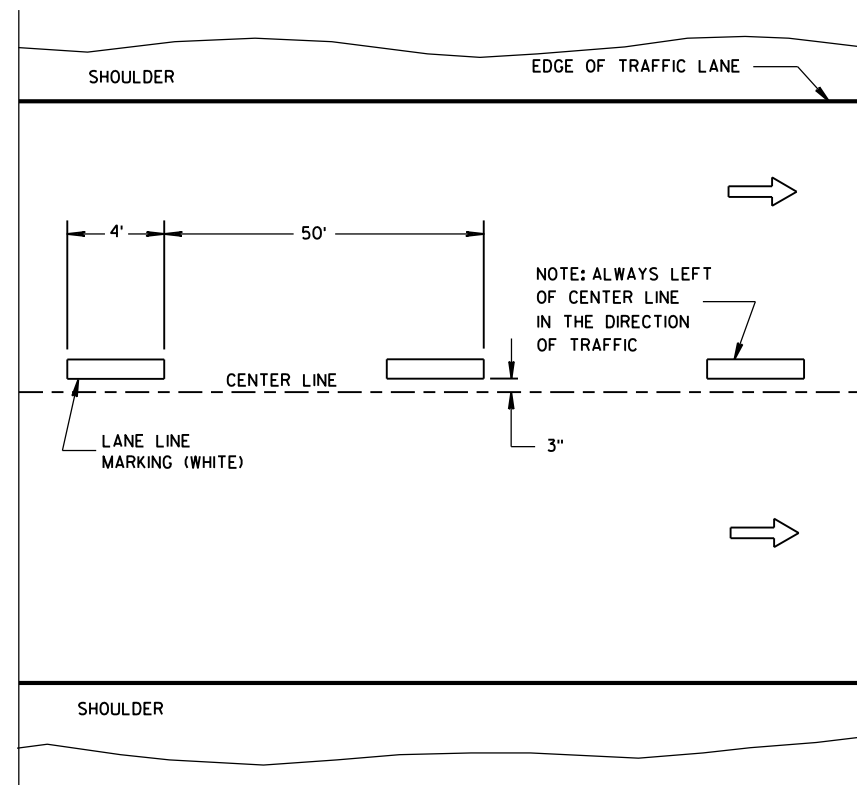


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

GENERAL NOTES

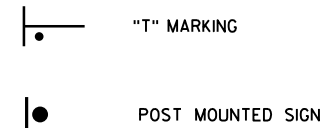
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

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

NOTE

ARROW SYMBOL () SHOWS DIRECTION OF TRAVEL

LEGEND

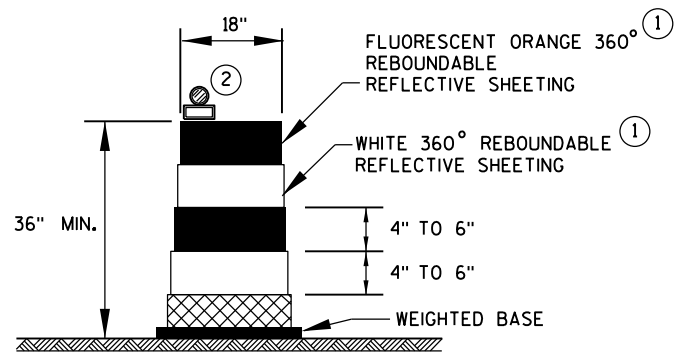


LONGITUDINAL MARKING (MAINLINE)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED <u>June 2017</u> DATE	<u>/s/ Matthew R. Rauch</u> STATE SIGNING AND MAF <u>79</u> INCHER

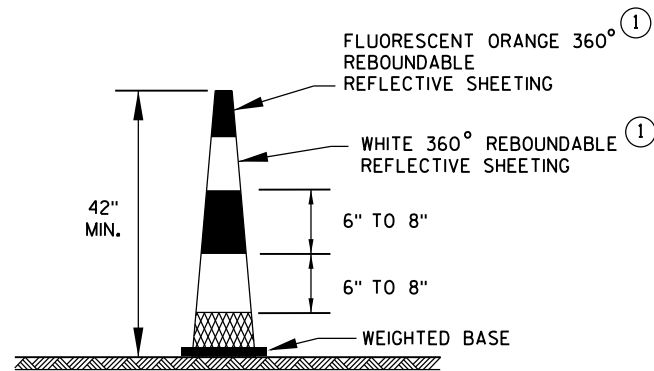


TWO WAY LEFT TURN LANE

- STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION⁸⁰



DRUM

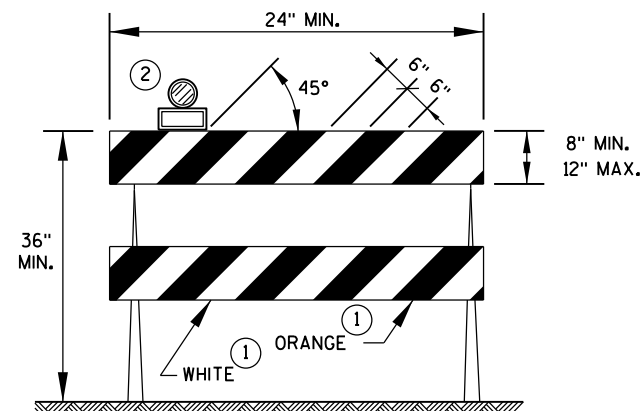


42" CONE

DO NOT USE IN TAPERS
1/2 SPACING OF DRUMS

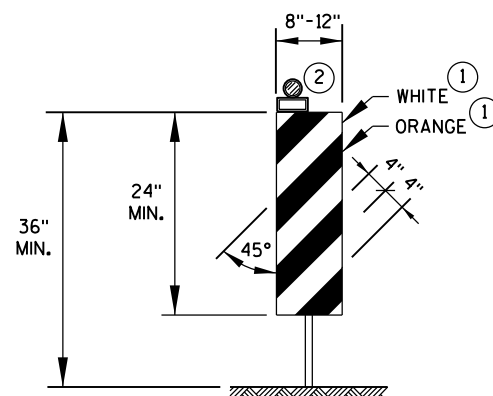
GENERAL NOTES

- 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.



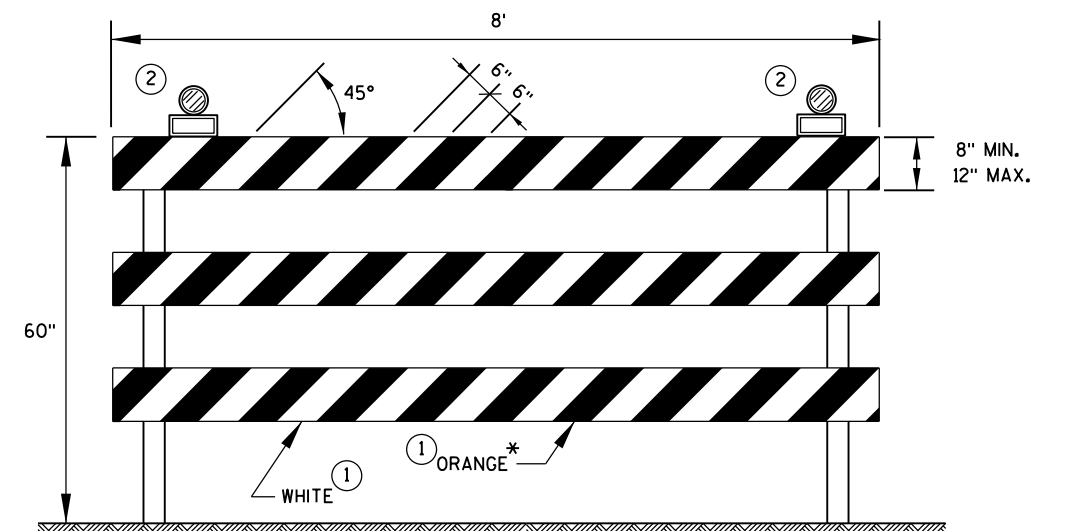
TYPE 2 BARRICADE

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



VERTICAL PANEL

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



TYPE 3 BARRICADE

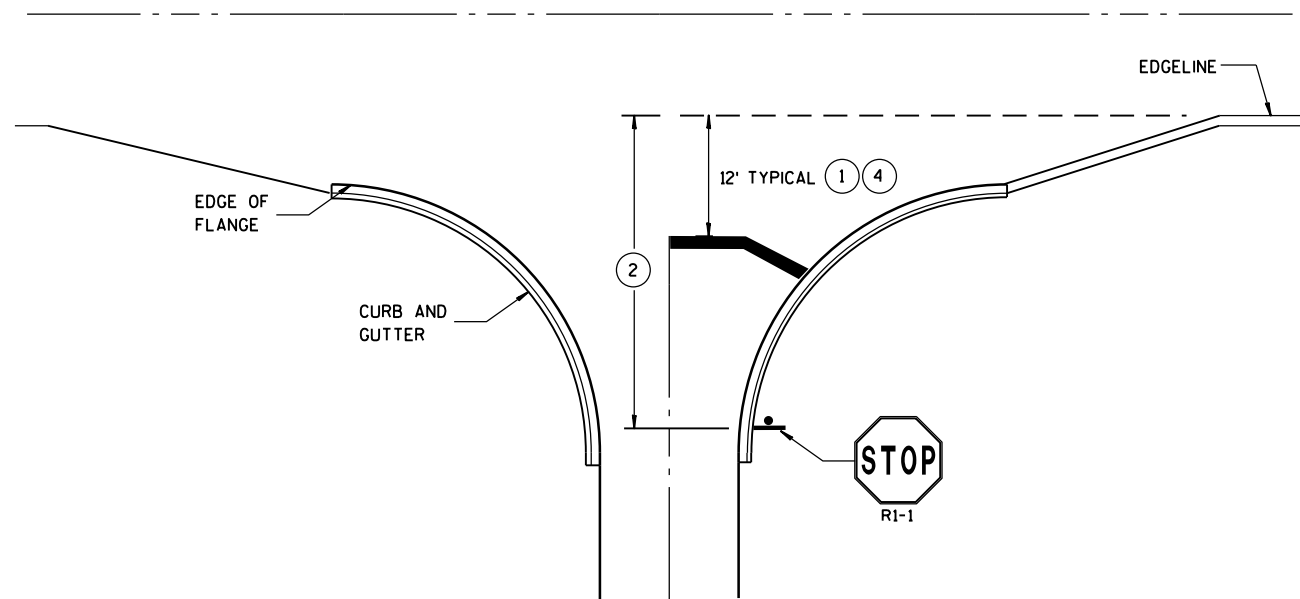
IF SIGN MOUNTED, DO NOT COVER MORE THAN 50% OF THE TOP TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.

* IF USED FOR A PERMANENT APPLICATION, USE RED SHEETING.

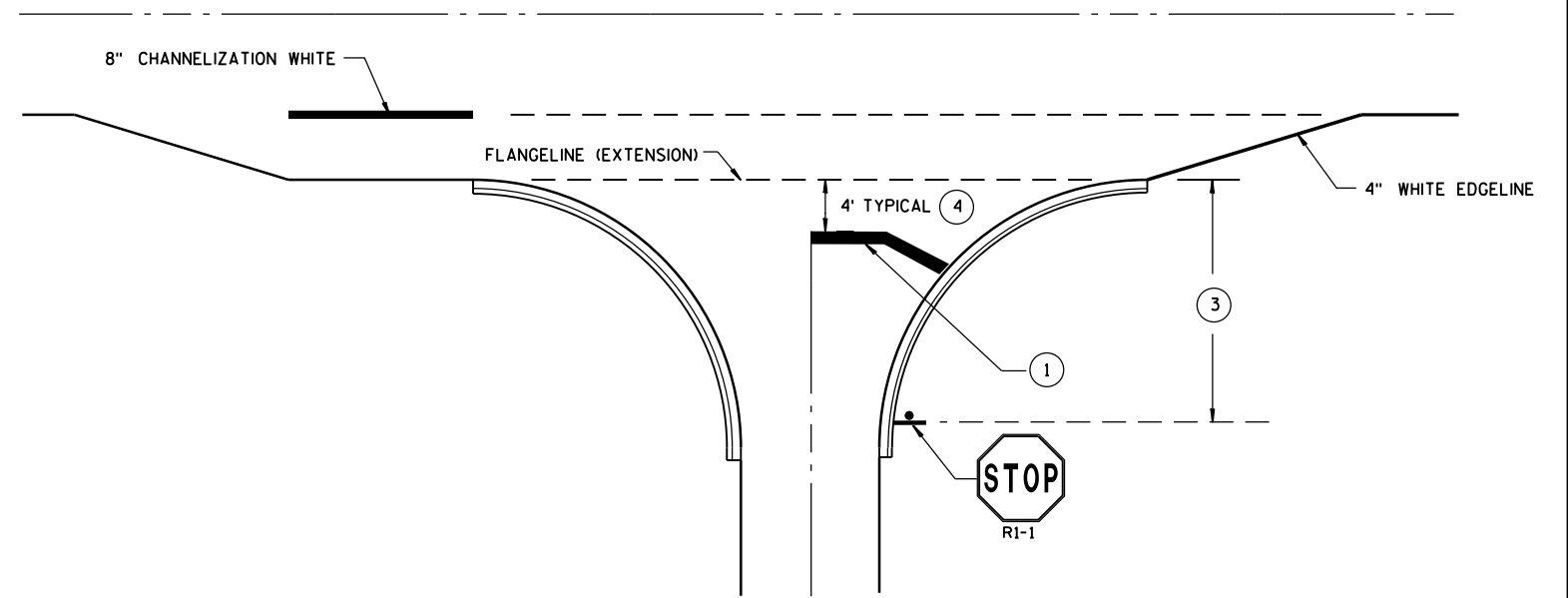
CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

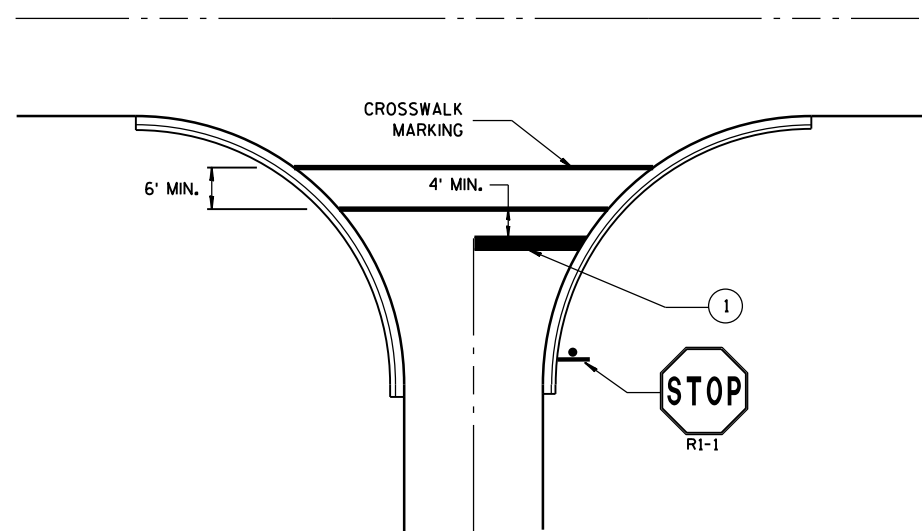
APPROVED
June 2017 /S/ Andrew Heidtke
DATE WORK ZONE ENG 81
FHWA



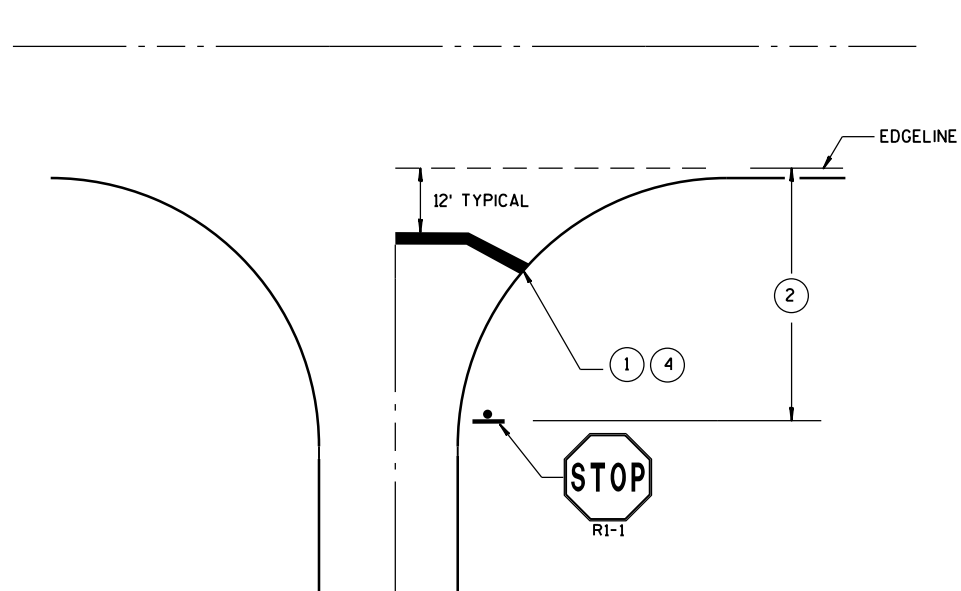
**TYPICAL STOP LINE PAVEMENT MARKING
WITH CURB AND GUTTER**



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



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



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

GENERAL NOTES

STOP SIGN SHALL BE PLACED A MINIMUM OF 6 FEET TO A MAXIMUM OF 50 FEET FROM THE EDGE LINE LOCATION.

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

**STOP LINE AND CROSSWALK
PAVEMENT MARKING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

DATE Sept., 2017 /S/ Matthew R. Rauch
STATE SIGNING AND MAR 82 J.E.R.

FHWA

GENERAL NOTES

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

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

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

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

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

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

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

TABLE A

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

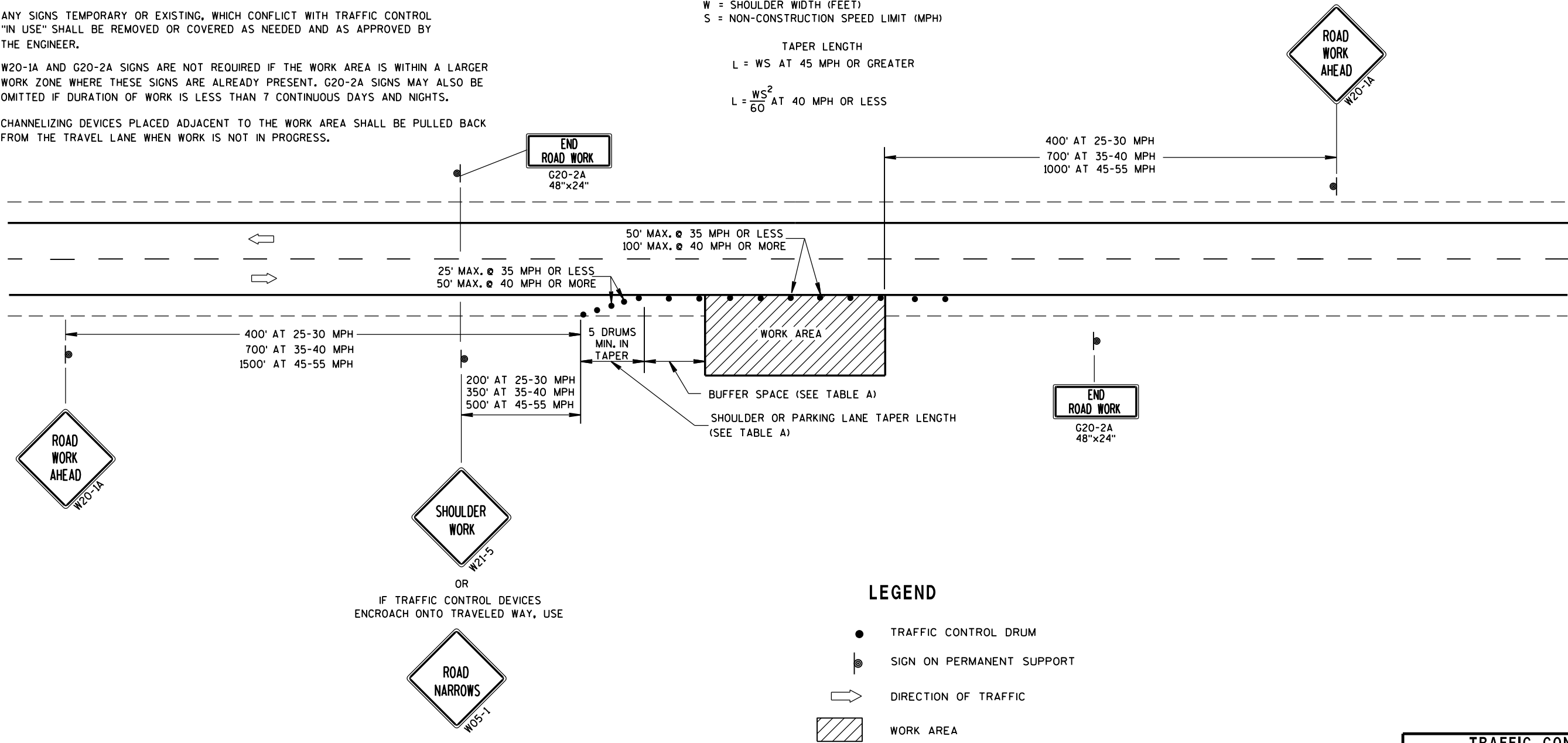
W = SHOULDER WIDTH (FEET)
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH

L = WS AT 45 MPH OR GREATER

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

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



LEGEND

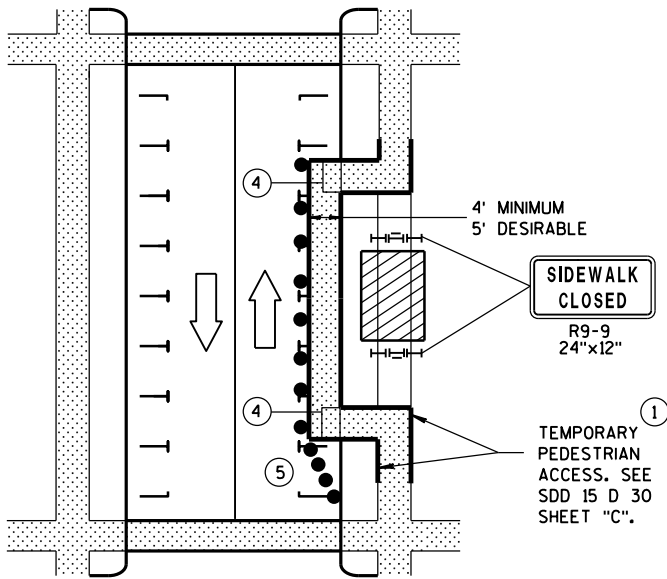
- TRAFFIC CONTROL DRUM
- ⦿ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ▨ WORK AREA

TRAFFIC CONTROL,
WORK ON SHOULDER OR
PARKING LANE,
UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

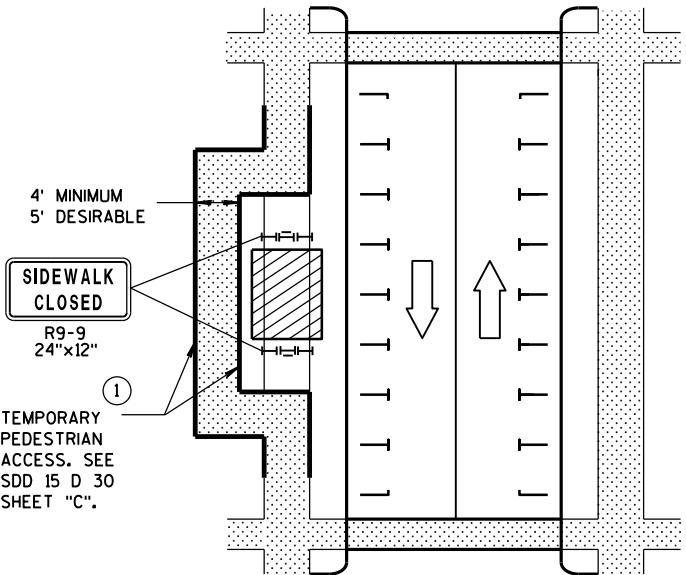
APPROVED
July 14, 2015 /S/ Peter Amakobe Atepe
DATE STATEWIDE WORK ZONE SAFETY ENGINEER
FHWA

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

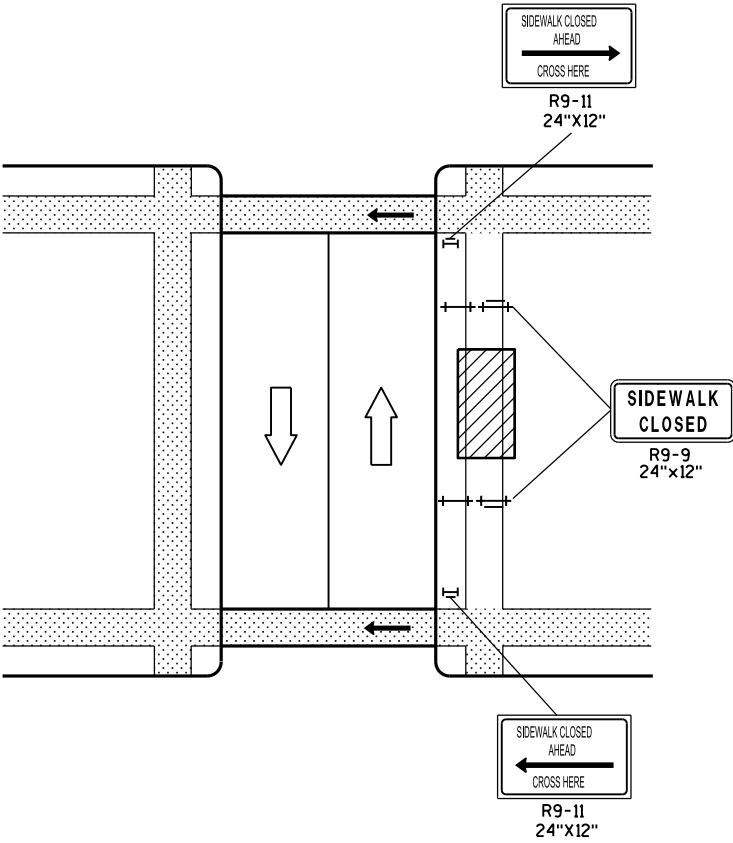


MID-BLOCK SIDEWALK CLOSURE IN PARKING LANE

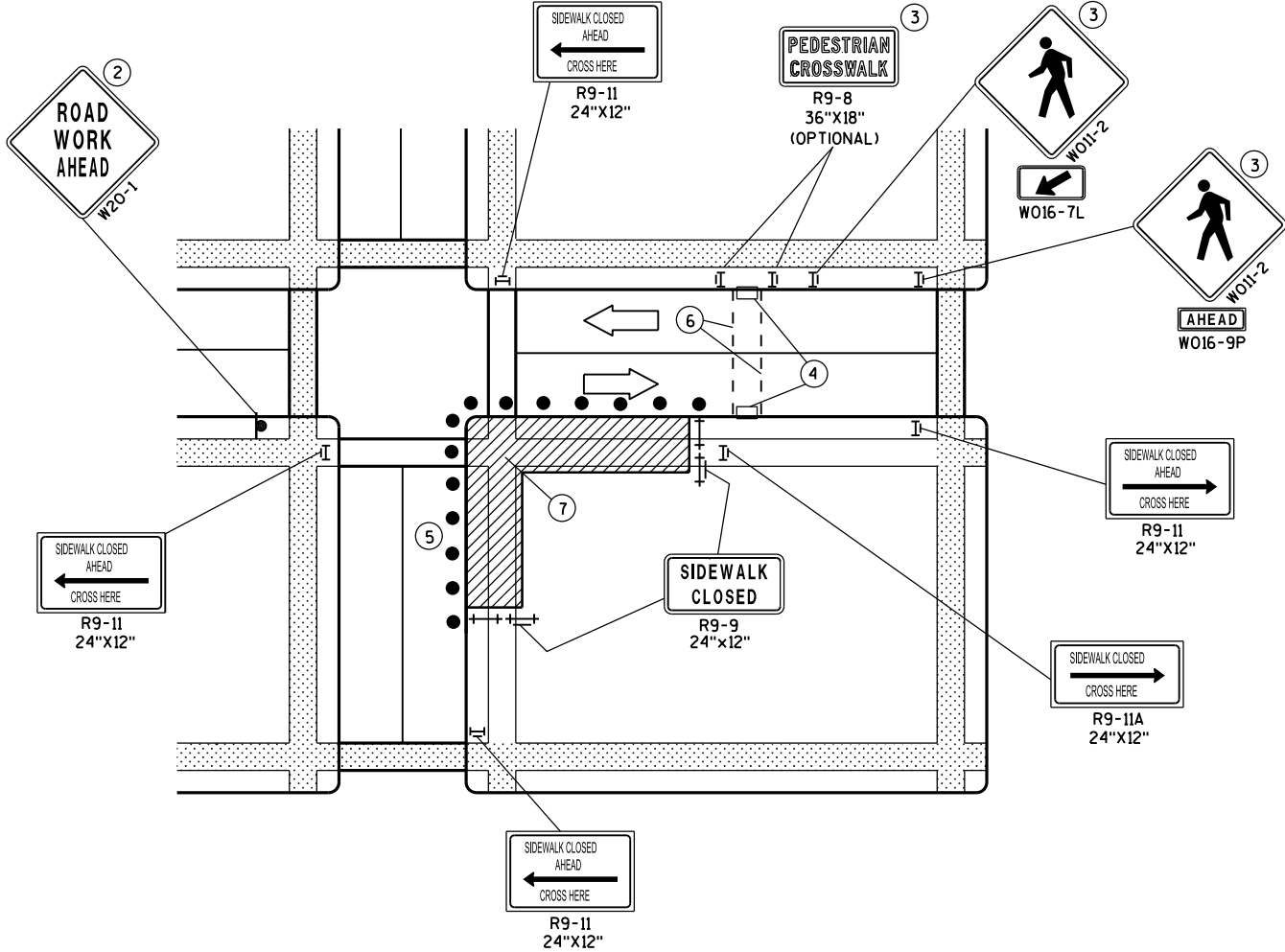
NOTE: LAYOUT SAME AS ABOVE.



SIDEWALK DIVERSION



MID-BLOCK SIDEWALK CLOSURE



CORNER SIDEWALK CLOSURE WITH TEMPORARY CROSSWALK

GENERAL NOTES

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

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

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

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

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

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

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

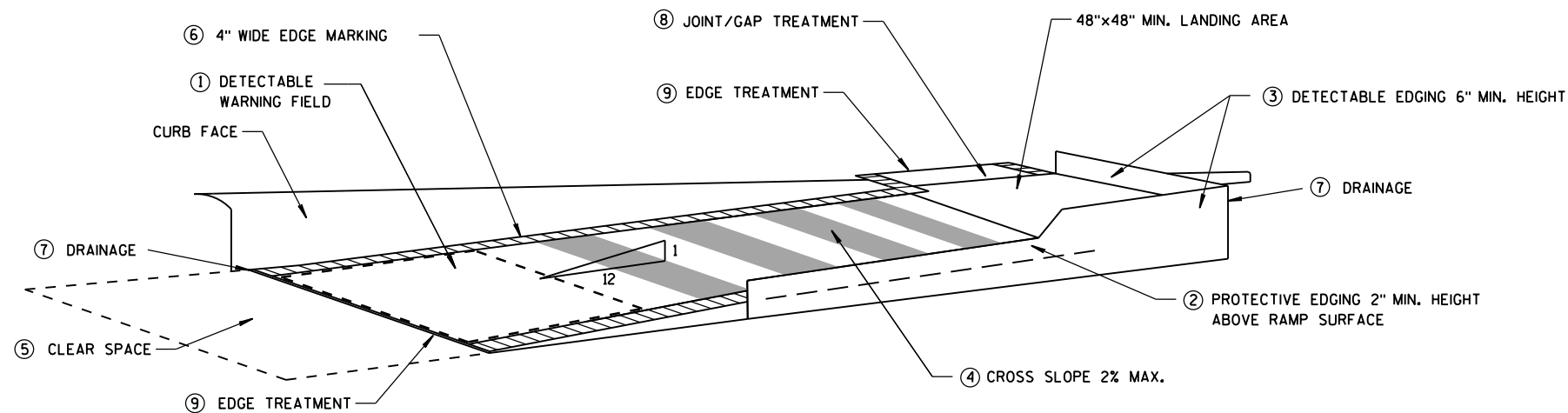
- 1 IF SIDEWALK CLOSURE AFFECTS AN ACCESSIBLE AND DETECTABLE FACILITY, MAINTAIN ACCESSIBILITY AND DETECTABILITY ALONG THE ALTERNATE PEDESTRIAN ROUTE.
- 2 "ROAD WORK AHEAD" SIGNS ARE NOT REQUIRED IF THE SIDEWALK CLOSURE OCCURS WITHIN A LARGER WORK ZONE WHERE ADVANCE WARNING SIGNS ARE ALREADY PRESENT,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

LEGEND

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

TRAFFIC CONTROL, PEDESTRIAN ACCOMMODATION

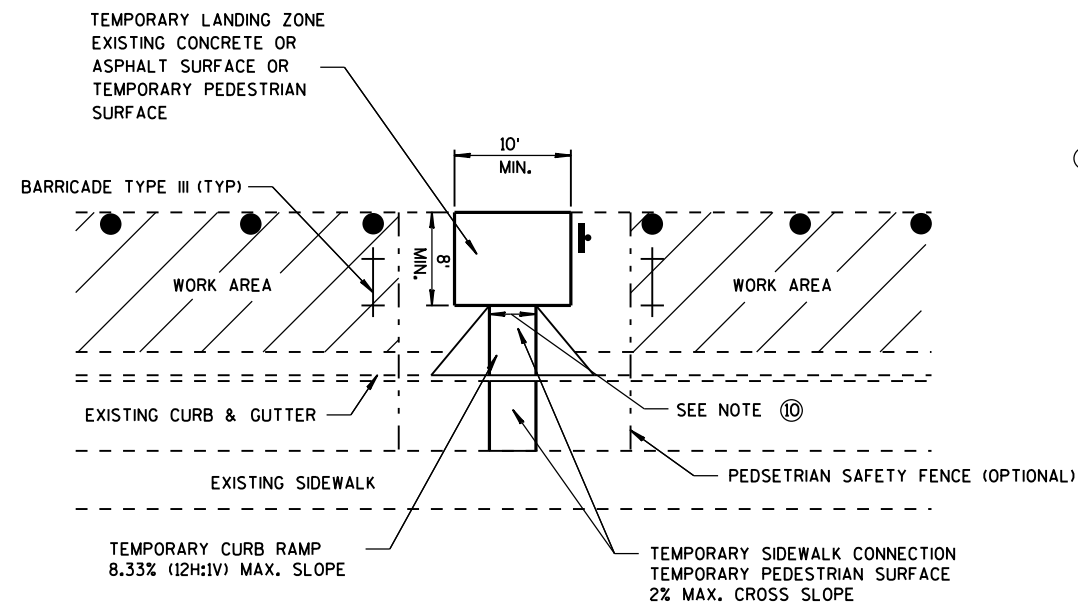
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION



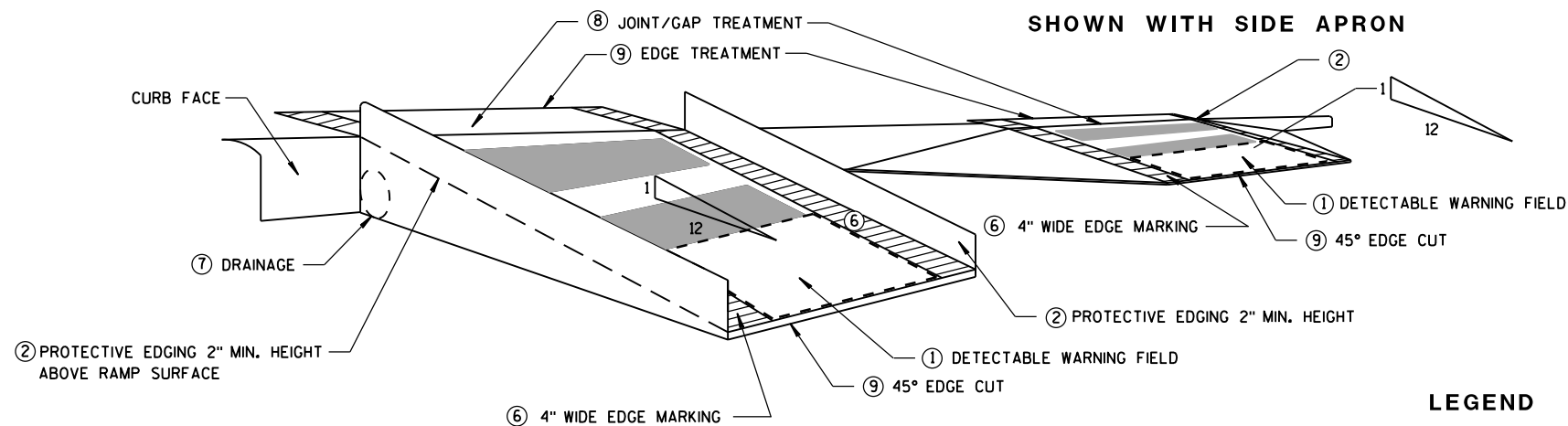
TEMPORARY CURB RAMP
PARALLEL TO CURB

GENERAL NOTES

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



TEMPORARY BUS STOP PAD



SHOWN WITH PROTECTIVE EDGE

TEMPORARY CURB RAMP
PERPENDICULAR TO CURB

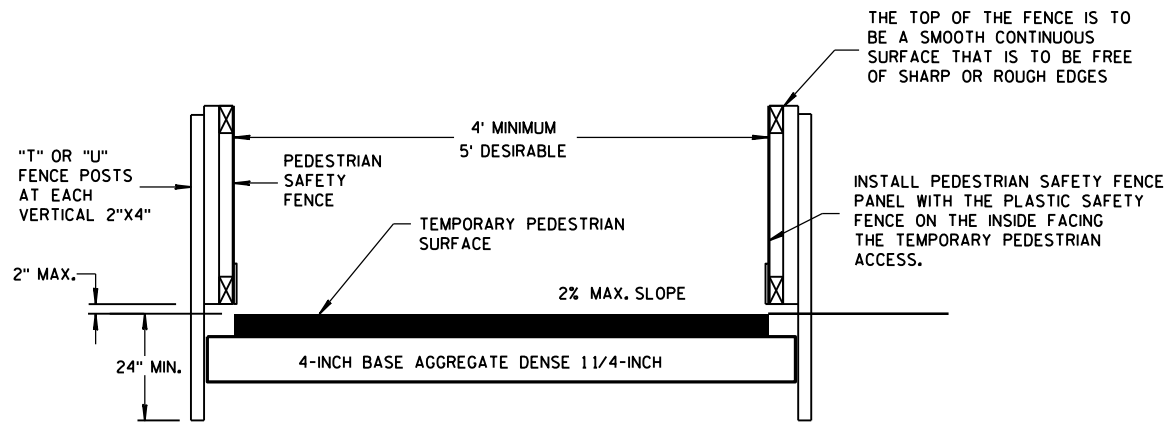
LEGEND

- WORK AREA (diagonal hatching)
- TYPE III BARRICADE (vertical line with cross-ticks)
- TRAFFIC CONTROL DRUM (solid black circle)

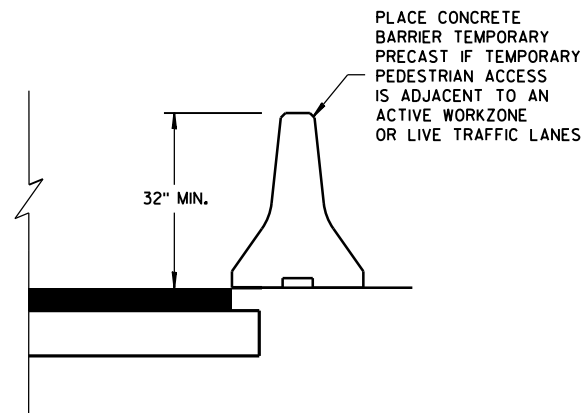
TRAFFIC CONTROL,
TEMPORARY ADA COMPLIANT
PEDESTRIAN ACCOMMODATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2016 /S/ Peter Amakobe Atepe
DATE STATEWIDE WORK ZONE SAFETY ENGINEER
FHWA

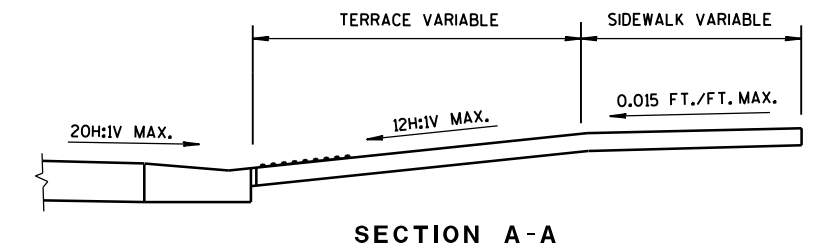


TEMPORARY PEDESTRIAN ACCESS

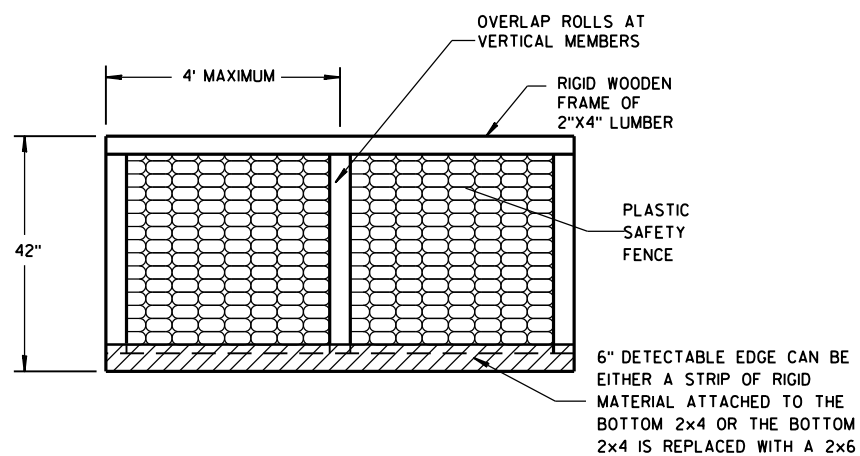


GENERAL NOTES

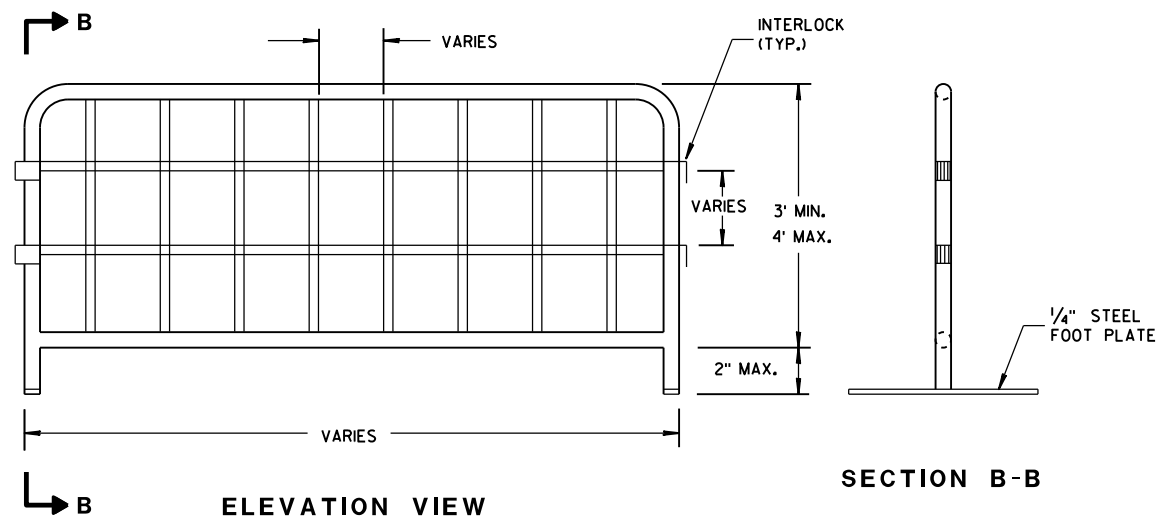
- ① INTERCHANGEABLE WITH THE PEDESTRIAN SAFETY FENCE.



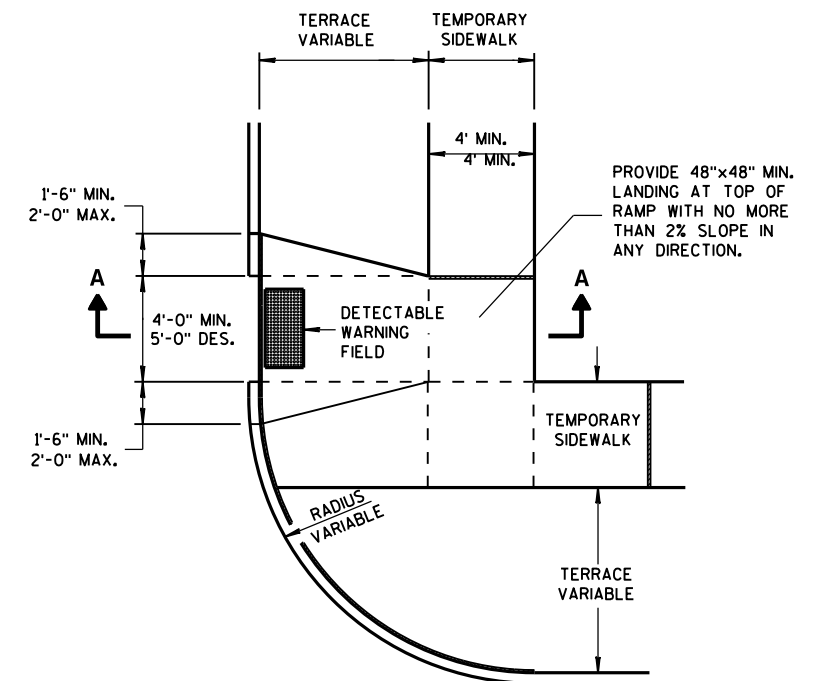
SECTION A-A



PEDESTRIAN SAFETY FENCE



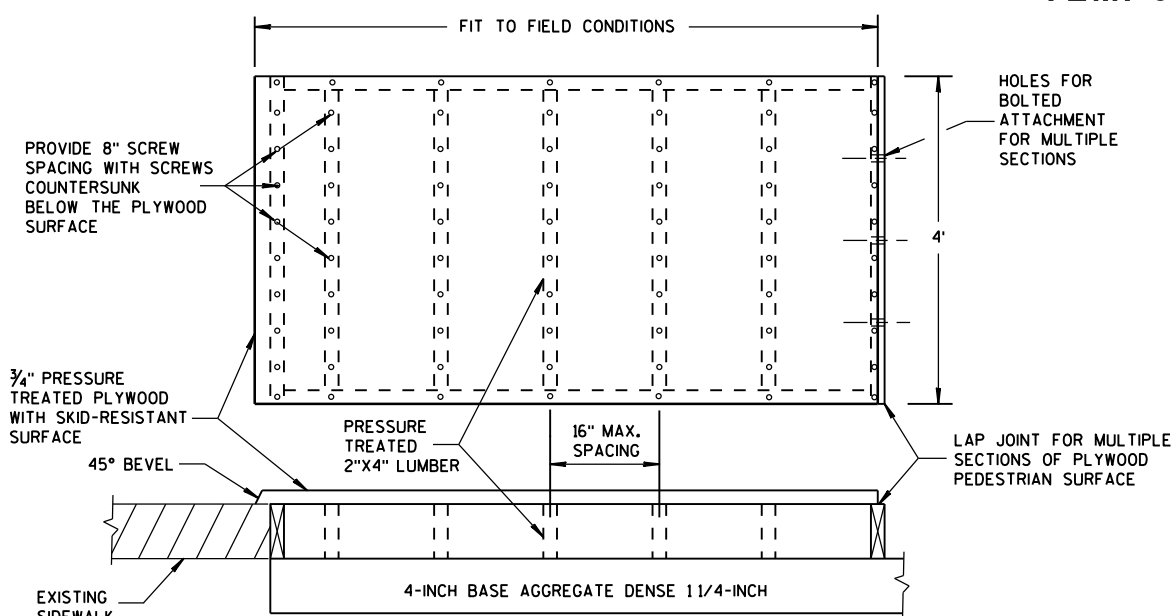
TEMPORARY PEDESTRIAN STEEL BARRICADE



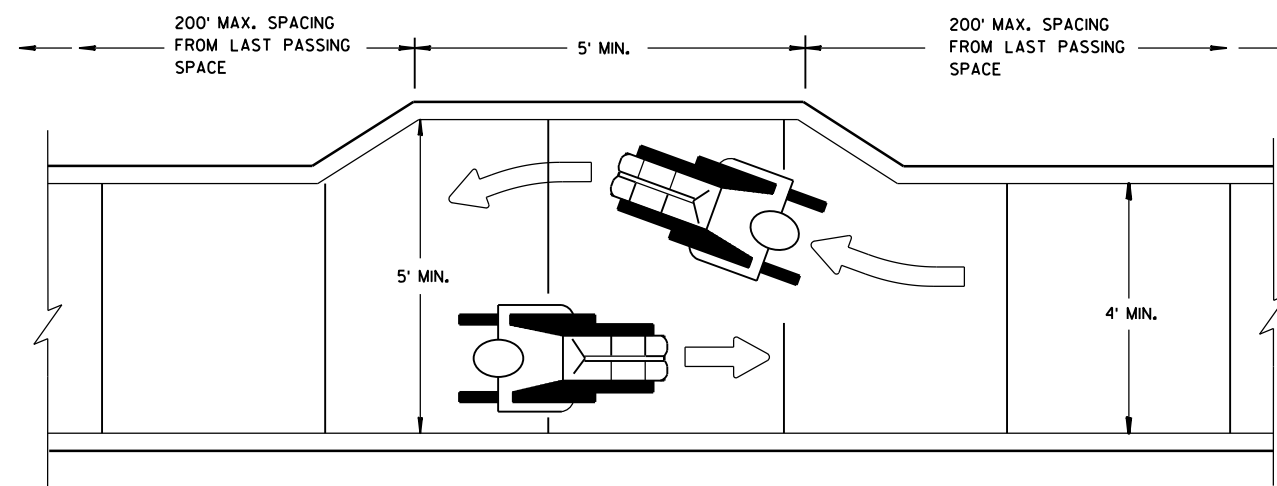
PLAN VIEW

TEMPORARY TYPE 3 RAMP

(OUTSIDE OF CROSSWALK AREA)

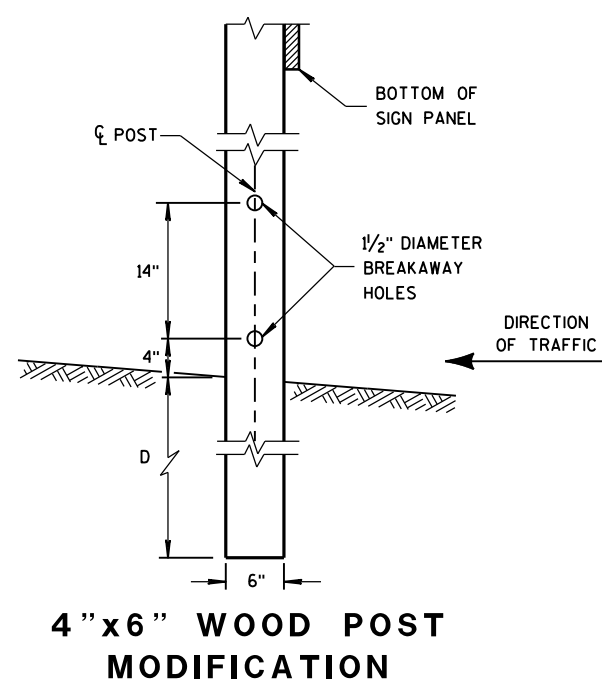
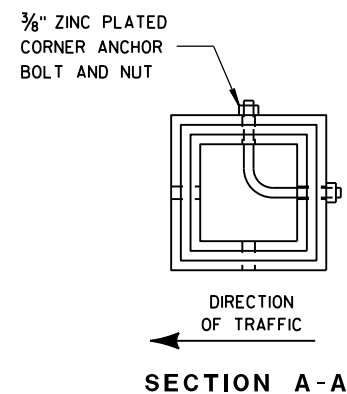
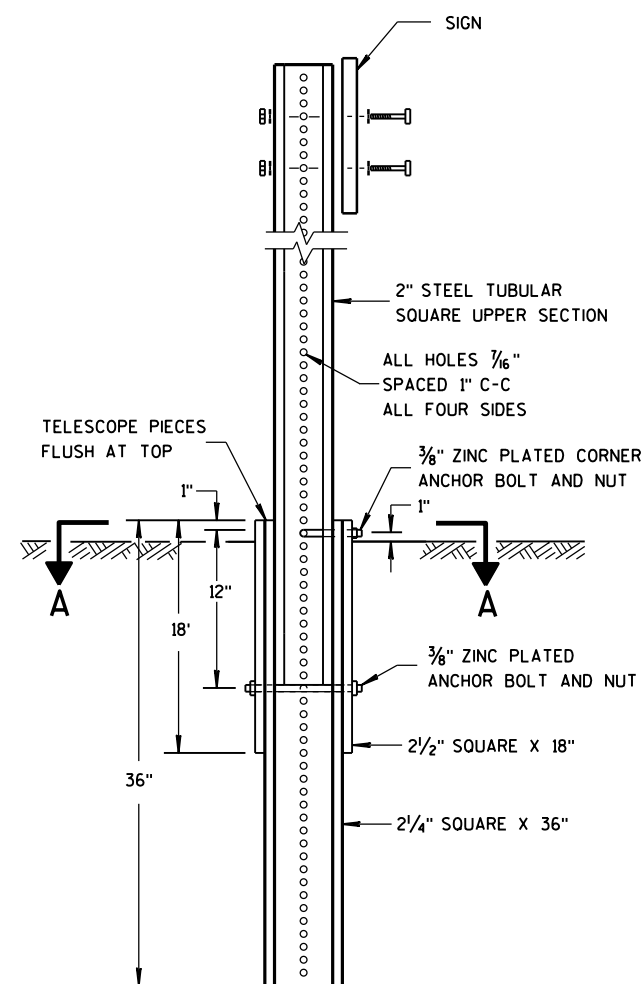


TEMPORARY PEDESTRIAN SURFACE PLYWOOD



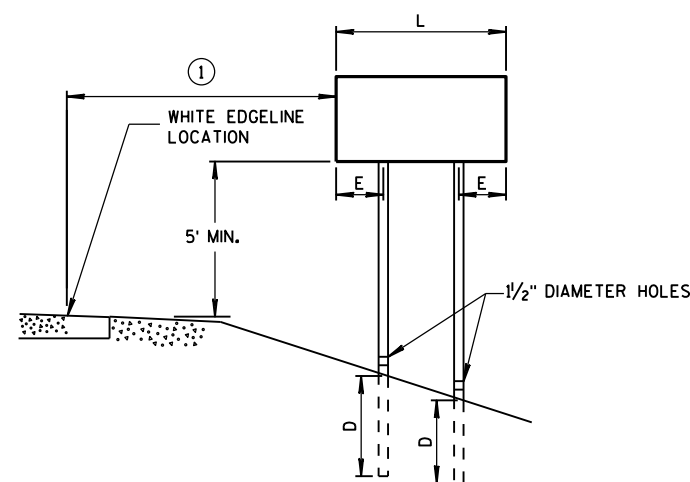
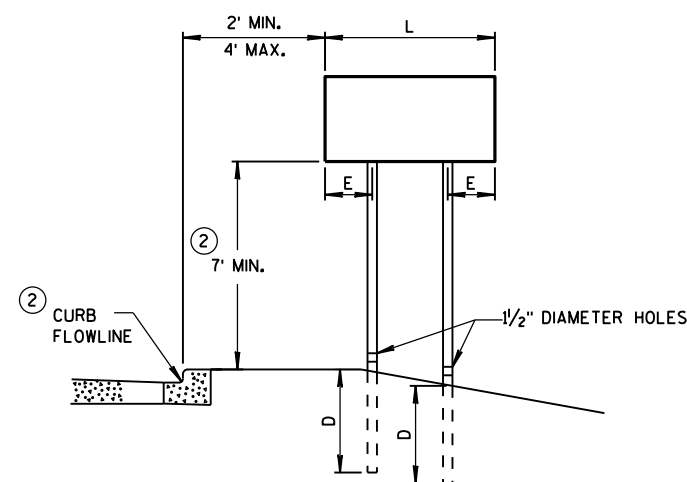
NARROW SIDEWALK PASSING DETAIL

TRAFFIC CONTROL, PEDESTRIAN ACCOMMODATION	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2016 DATE	/S/ Peter Amakobe Atepe STATEWIDE WORK ZON 86 SAFETY ENGINE IC
FHWA	



- ## 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.



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.

URBAN AREA RURAL AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

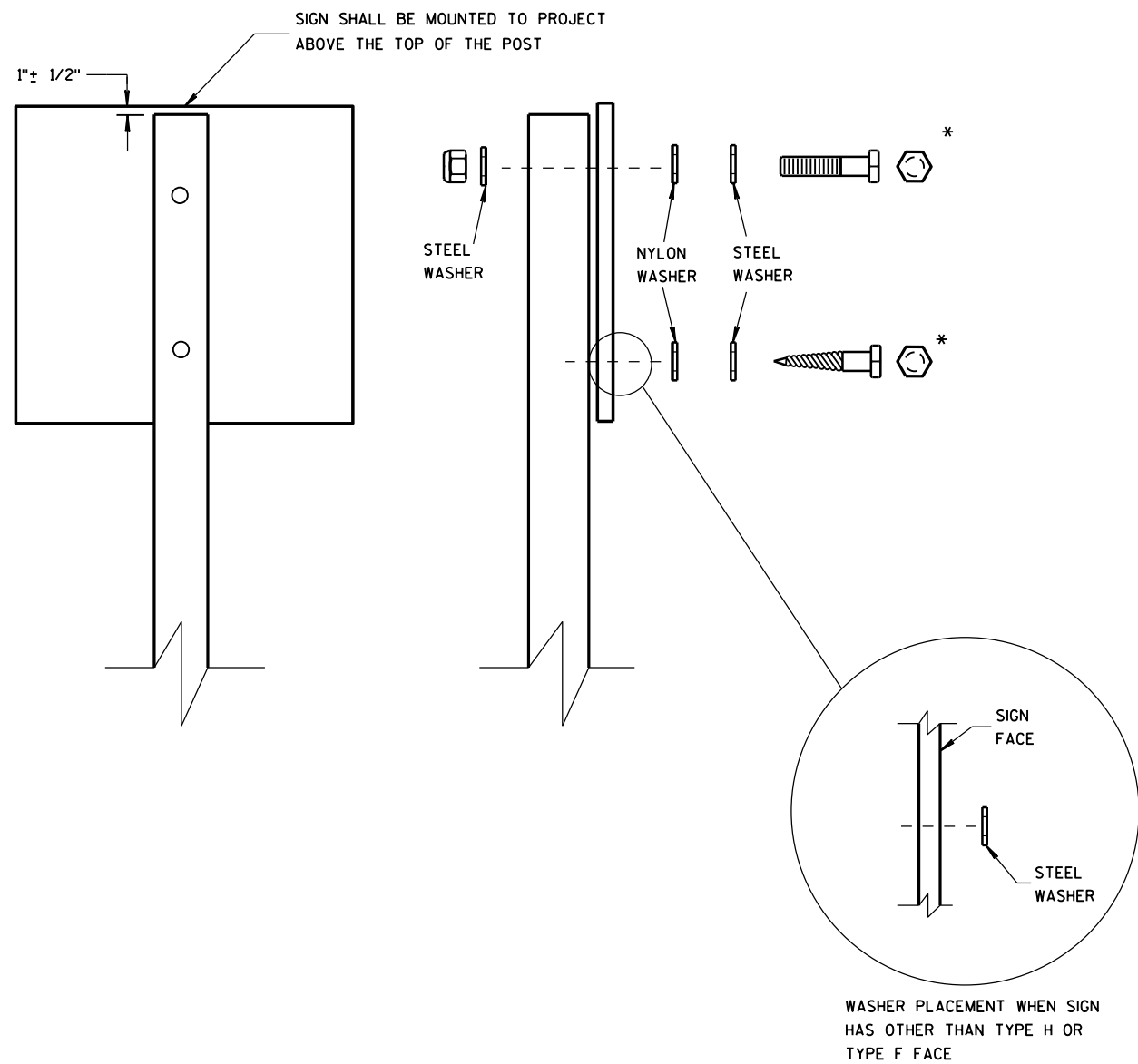
WOOD POST EMBEDMENT DEPTH	
AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'

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)

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION⁸⁷



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

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

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

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

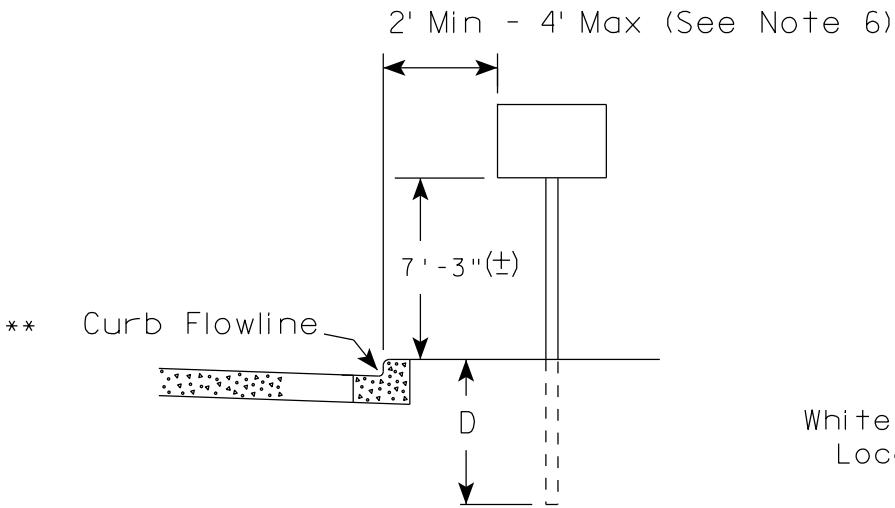
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" x 3-1/4" LENGTH W/ NUTS
 - RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

- WASHERS (ALL POSTS) -
- 1-1/4" O.D. x 3/8" I.D. x 1/16" STEEL
 - 1-1/4" O.D. x 3/8" I.D. x .080 NYLON FOR ALL TYPE H SIGNS

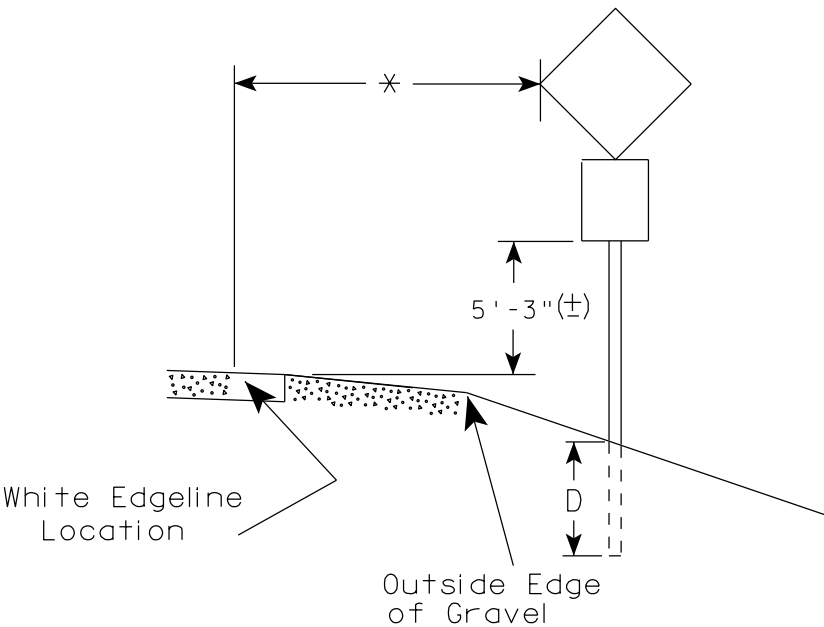
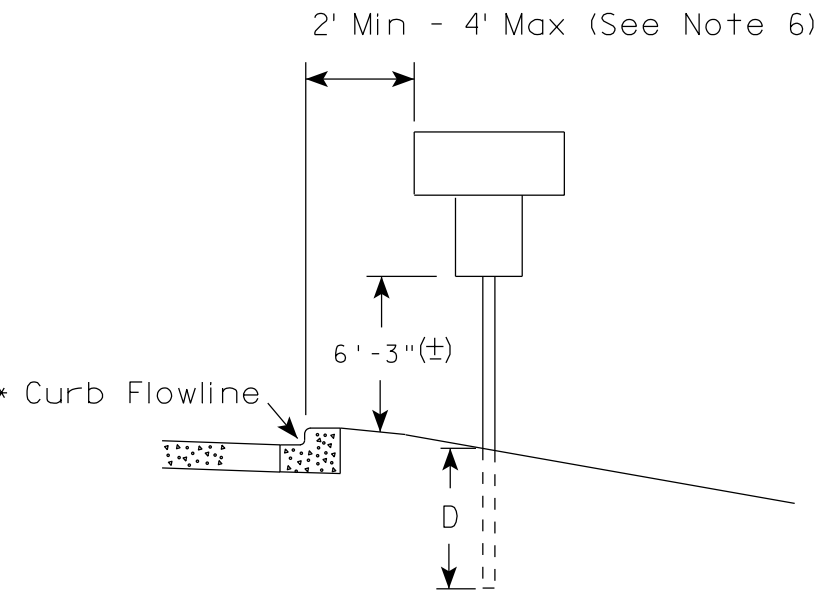
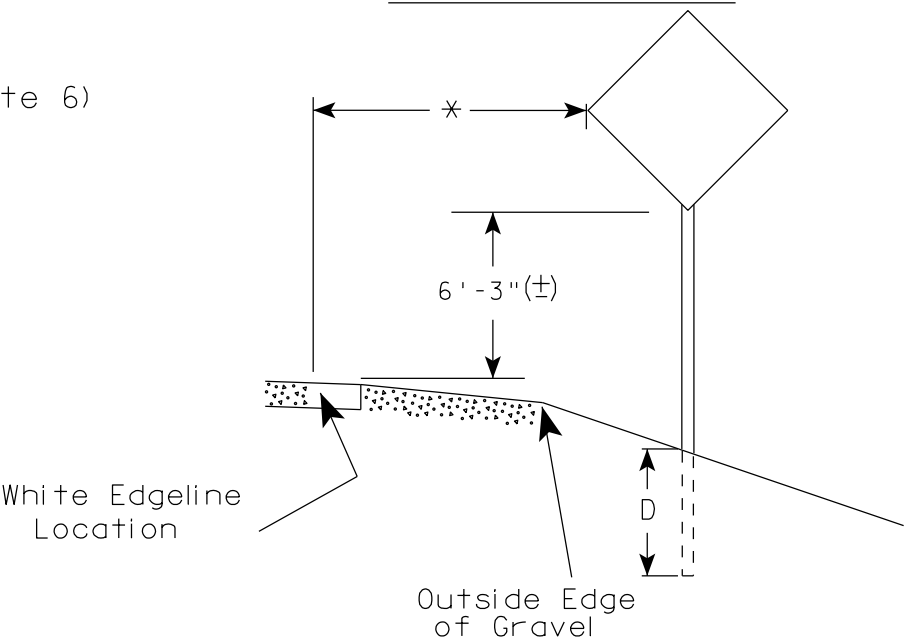
* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENC 88
FHWA	

URBAN AREA



RURAL AREA (See Note 2)



GENERAL NOTES

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

POST EMBEDMENT DEPTH

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

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

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

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

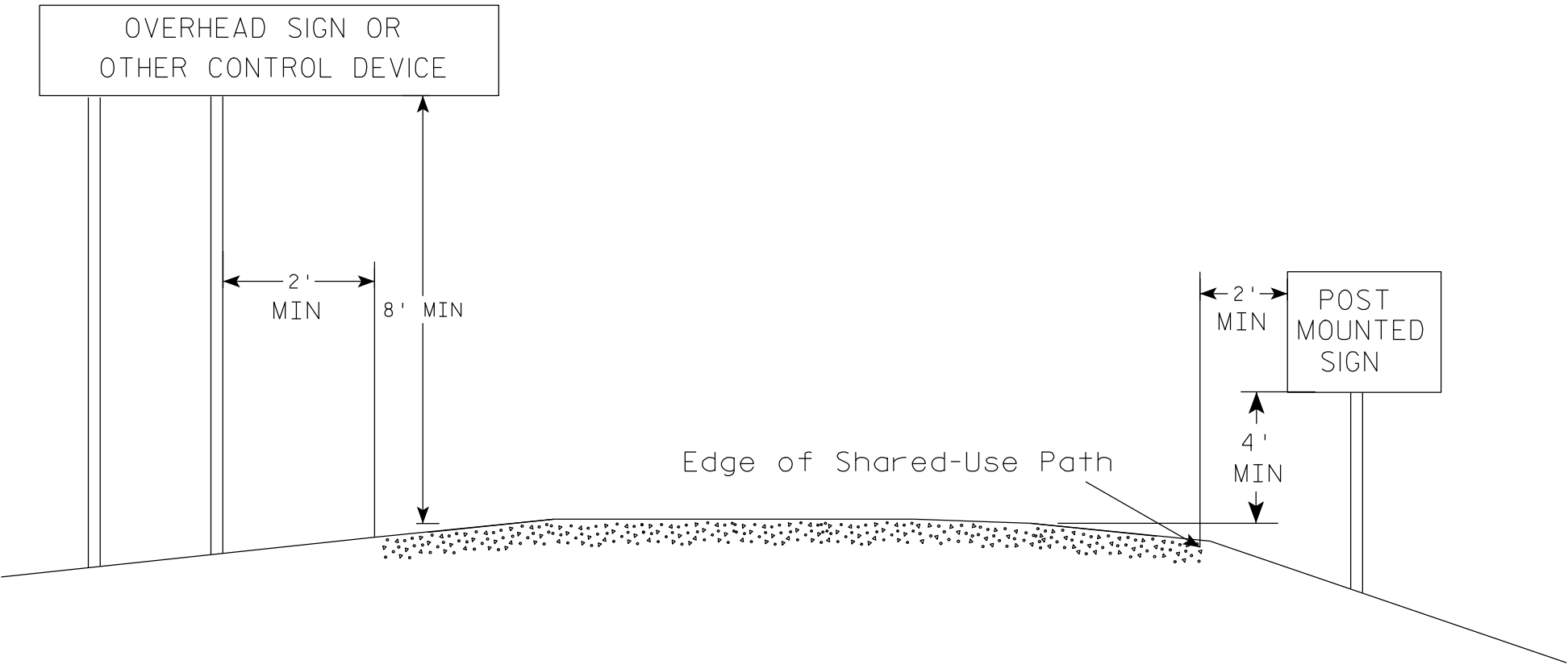
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

GENERAL NOTES

- 1. Signs wider than 4 feet or larger than 20 sq. ft. shall be mounted on multiple posts. Refer to plate A4-4.
- 2. Offset distance shall be consistent with existing signs or consistent throughout length of project.



POST EMBEDMENT DEPTH

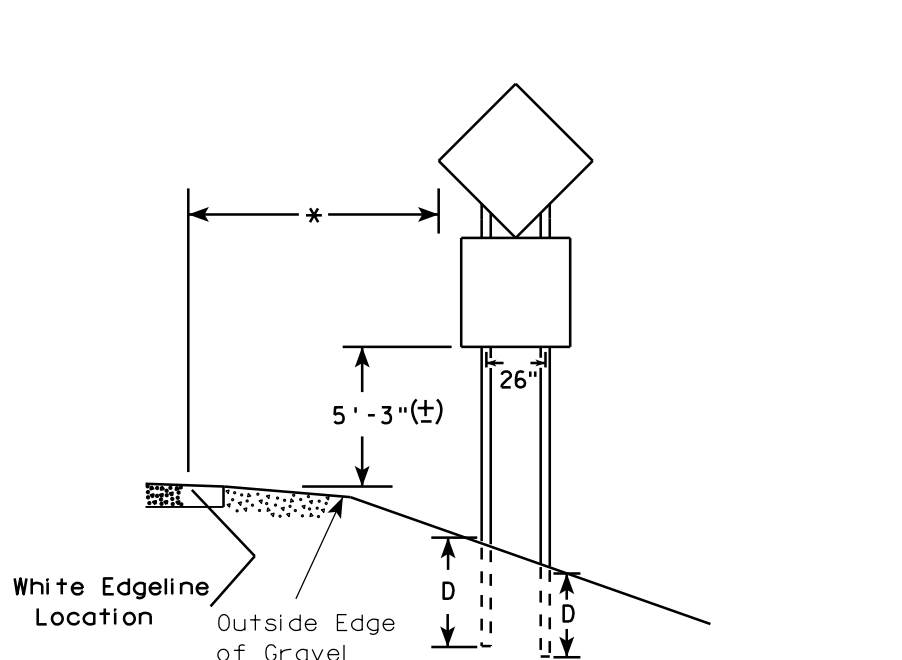
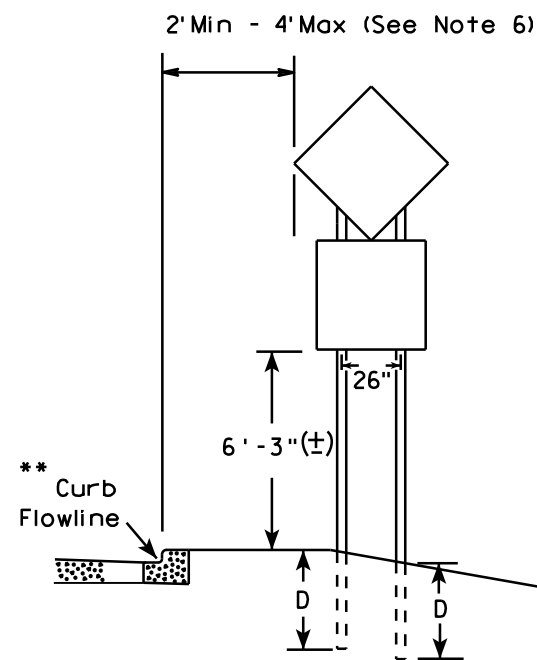
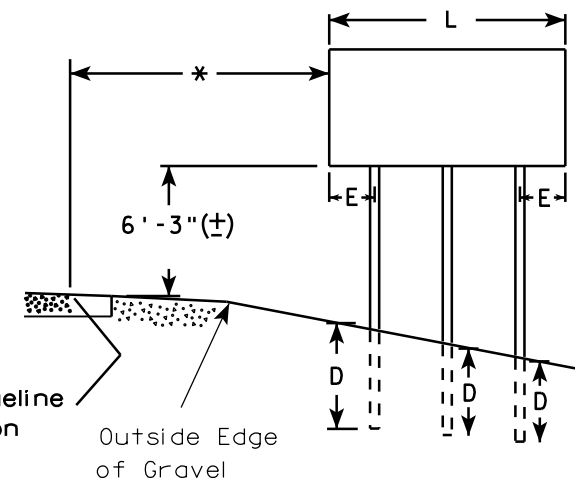
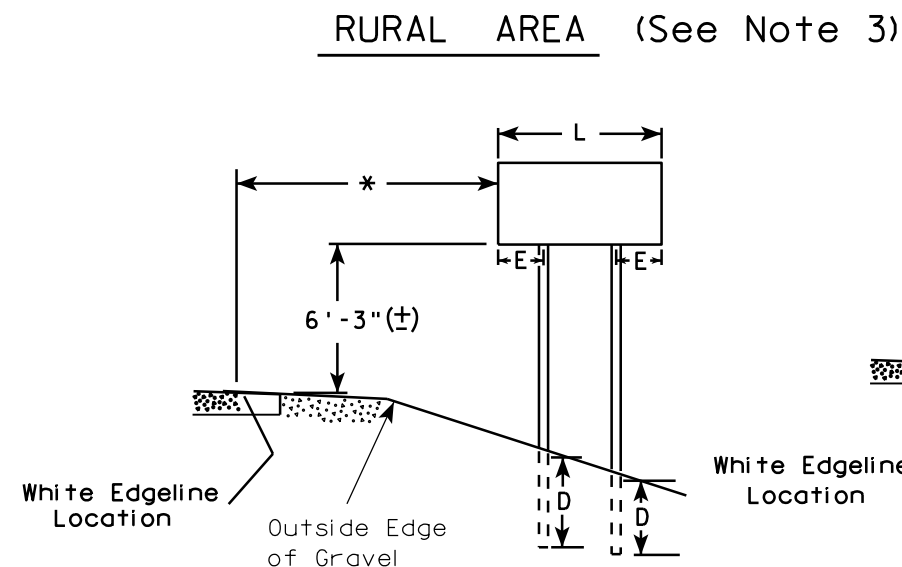
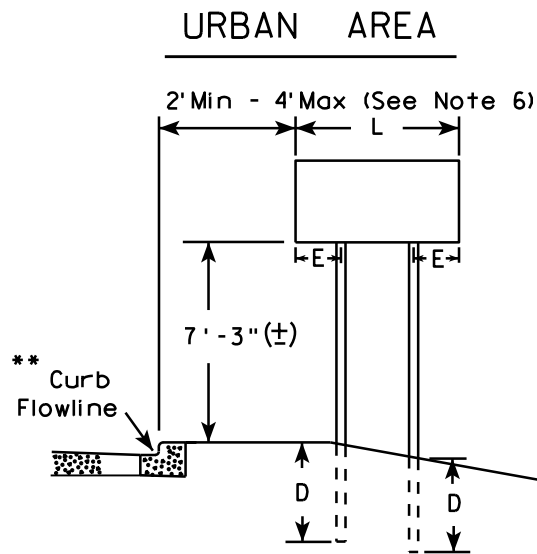
Area of Sign Installation (Sq. Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON MULTI USE PATHS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/5/2012 PLATE NO. A4-3S.1



48" DIAMOND WARNING SIGN

48" DIAMOND WARNING SIGN

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

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

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

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

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

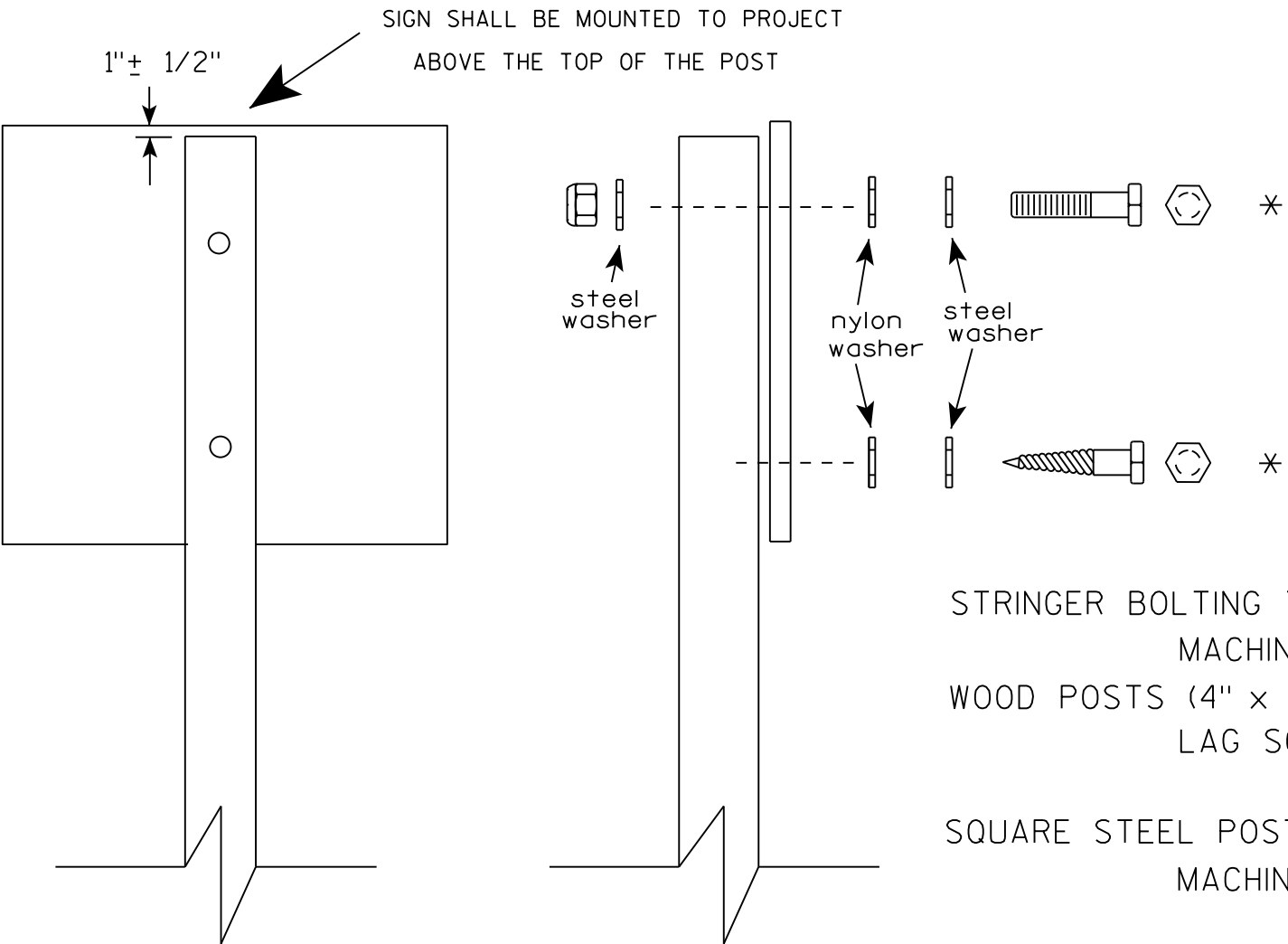
SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 120" less than 168"	12"

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 7/23/15	PLATE NO. ^{AA-A} 14 -91



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

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

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

- STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)
- MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
 - 3/8" X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 - 3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
- O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH
- WASHERS (ALL POSTS) -
- 1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
 - 1-1/4" O.D. X 3/8" I.D. X .080 NYLON

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

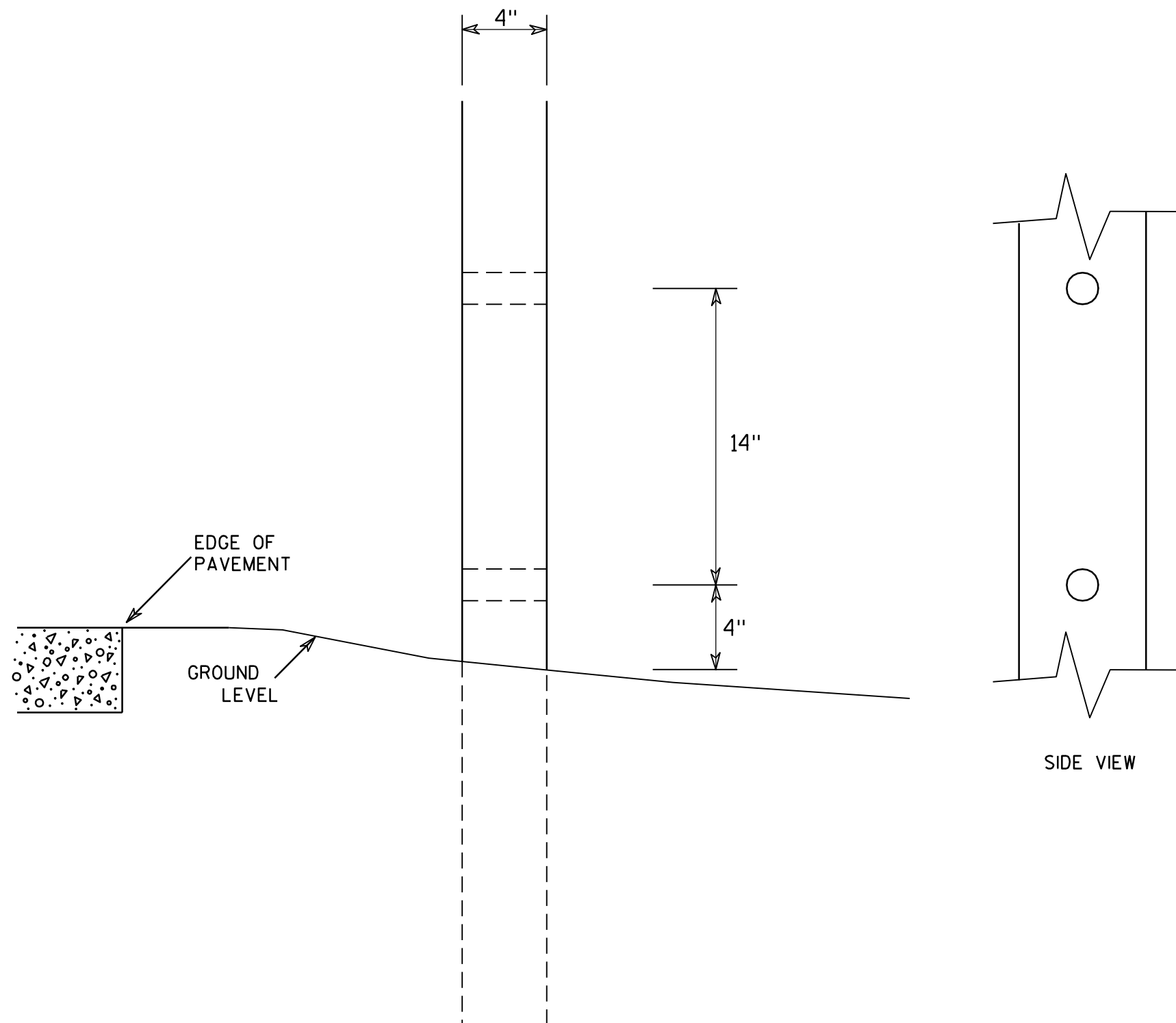
ATTACHMENT OF SIGNS
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 8/11/16 PLATE NO. A4-8.8
92

7



GENERAL NOTES

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

7

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

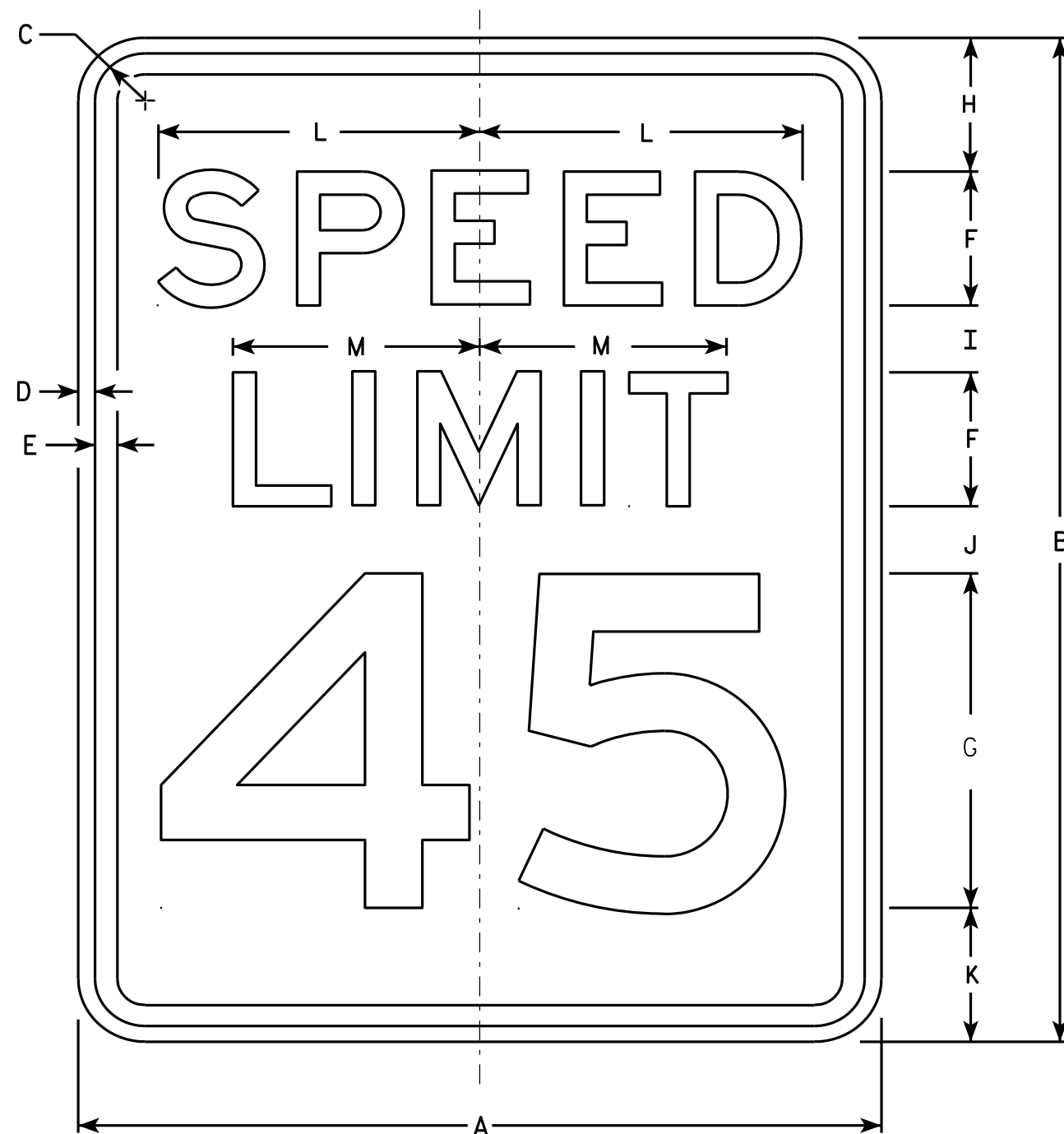
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 93

E



R2-1

NOTES

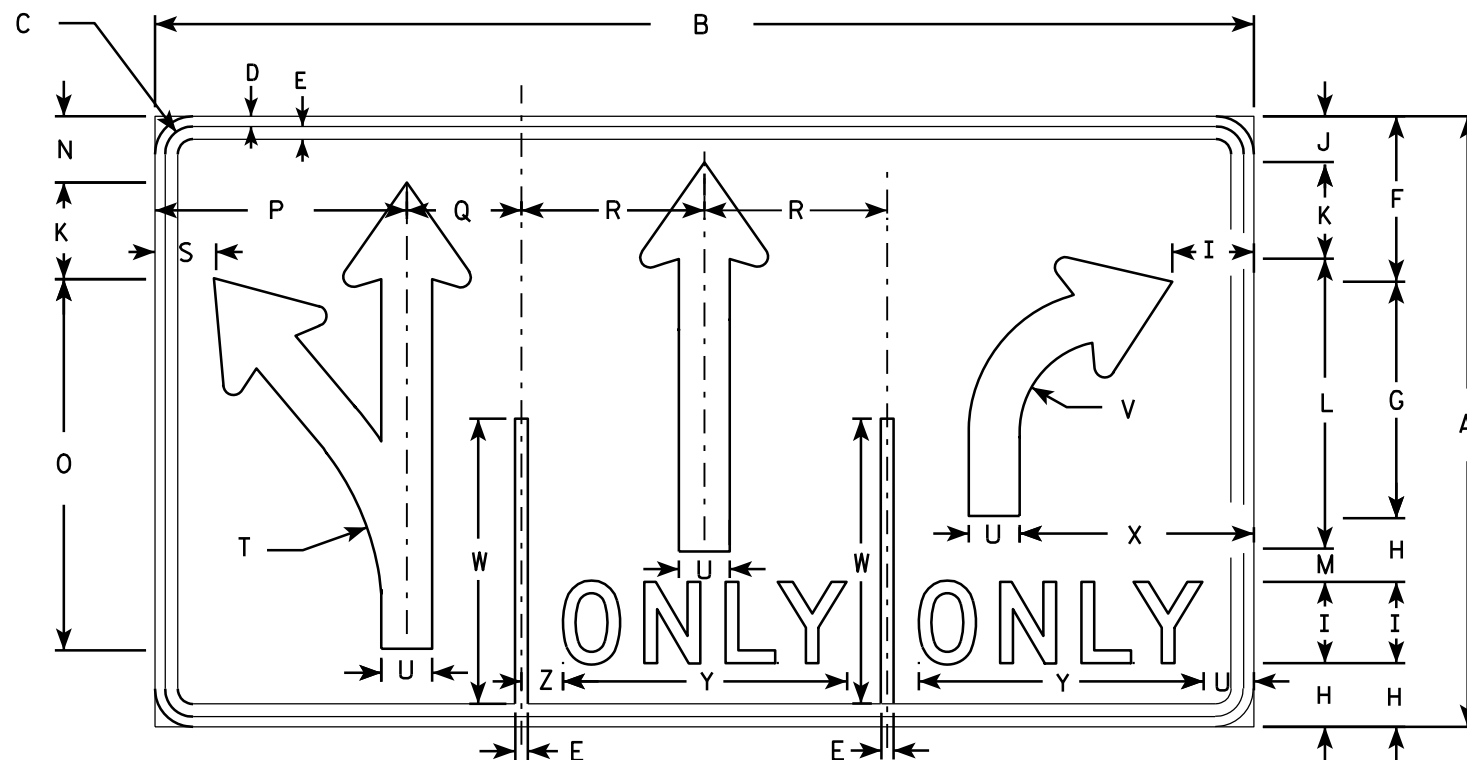
1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Black
3. Message Series - E
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	18	24	1 1/8	3/8	1/2	3	8	3	2	2	3	7 1/4	5 1/2														3.0
2S	24	30	1 1/8	3/8	1/2	4	10	3	2 1/4	3 3/8	3 3/8	9 5/8	7 3/8														5.0
2M	30	36	1 3/8	1/2	5/8	5	12	5	2 1/2	2 1/2	4	12	9 1/4														7.5
3	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
4	36	48	1 3/8	1/2	5/8	6	14	6	5	5	6	14 3/8	11														12.0
5	48	60	2 1/4	3/4	1	8	20	6	4 1/2	6 3/4	6 3/4	19 1/4	14 5/8														20.0

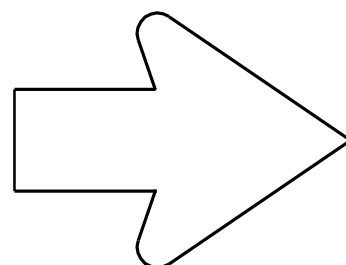
STANDARD SIGN
R2-1

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

PROJECT NO: HWY: COUNTY: SHEET NO: 94 E



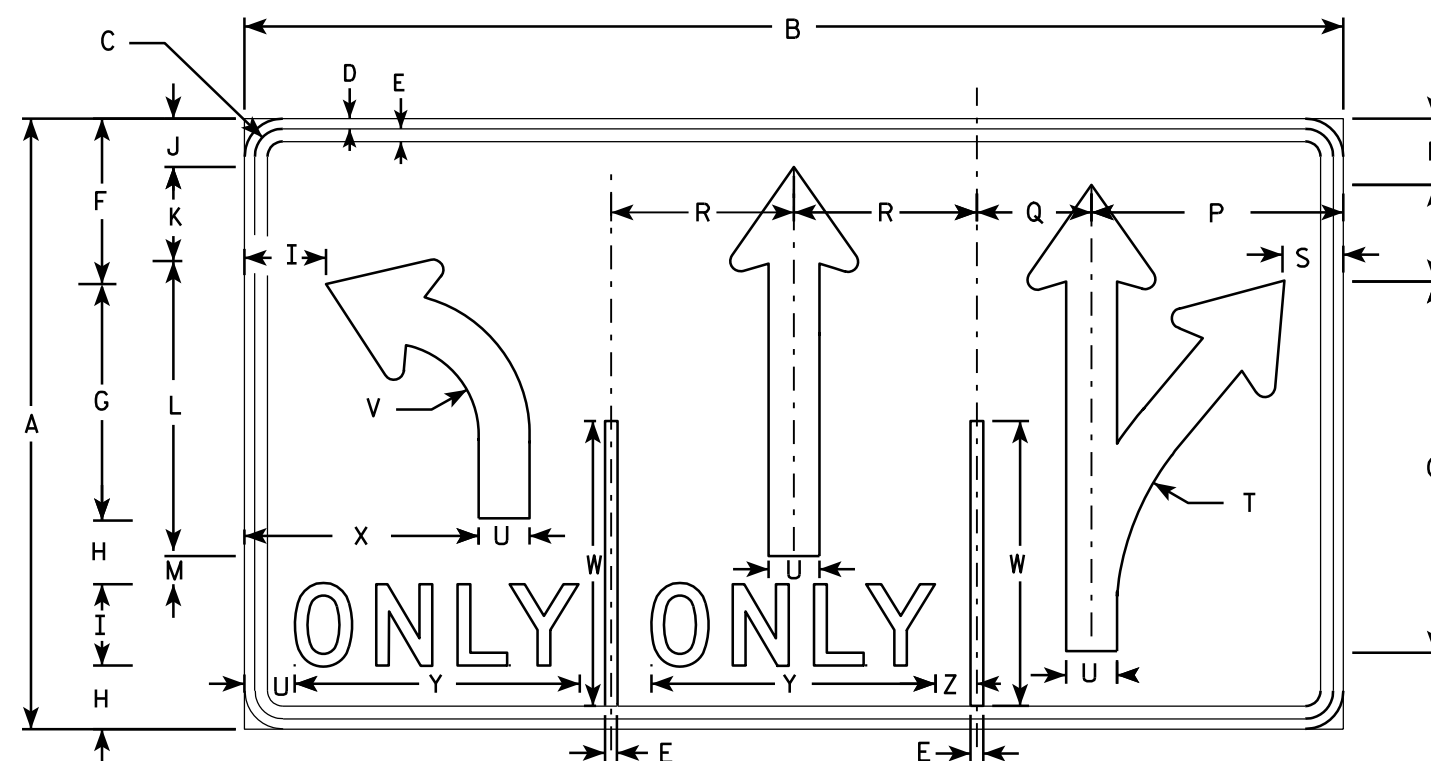
R3-8L



SEE R3-8 FOR ARROW DETAIL

NOTES

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



R3-8M

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	30	54	1 3⁄8	1⁄2	5⁄8	8 1⁄8	11 5⁄8	3 1⁄8	4	2 1⁄4	4 3⁄4	14 1⁄4	1 5⁄8	3 1⁄4	18 1⁄4	12 3⁄8	5 5⁄8	9	3	13 1⁄4	2 1⁄2	4 1⁄2	14	11 1⁄2	14	2	11.25
2M	30	54	1 3⁄8	1⁄2	5⁄8	8 1⁄8	11 5⁄8	3 1⁄8	4	2 1⁄4	4 3⁄4	14 1⁄4	1 5⁄8	3 1⁄4	18 1⁄4	12 3⁄8	5 5⁄8	9	3	13 1⁄4	2 1⁄2	4 1⁄2	14	11 1⁄2	14	2	11.25
3																											
4	48	84	2 1⁄4	3⁄4	1	13 1⁄4	18 1⁄2	5 1⁄8	6	3 1⁄2	7	29 1⁄8	2 7⁄8	5 1⁄4	29 1⁄8	18 5⁄8	8 3⁄4	14	4 3⁄8	21 7⁄8	3 3⁄4	7 1⁄4	22 3⁄8	17 1⁄4	20 5⁄8	3 1⁄4	28.0
5	48	84	2 1⁄4	3⁄4	1	13 1⁄4	18 1⁄2	5 1⁄8	6	3 1⁄2	7	29 1⁄8	2 7⁄8	5 1⁄4	29 1⁄8	18 5⁄8	8 3⁄4	14	4 3⁄8	21 7⁄8	3 3⁄4	7 1⁄4	22 3⁄8	17 1⁄4	20 5⁄8	3 1⁄4	28.0

STANDARD SIGN R3-8L & R3-8M

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/21/2011 PLATE NO. R3-8L.2

PROJECT NO:

SHEET NO: 95

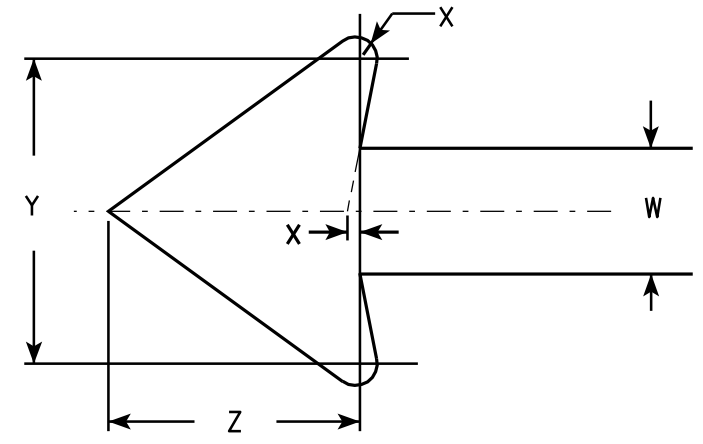
E



R7-53

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - White
Message - Red
3. Message Series - See Note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Lines 1, 3 and 4 are series C, line 2 is series B.
6. R7-53D (double arrow)
R7-53L (left arrow)
R7-53R (right arrow)



ARROW DETAIL

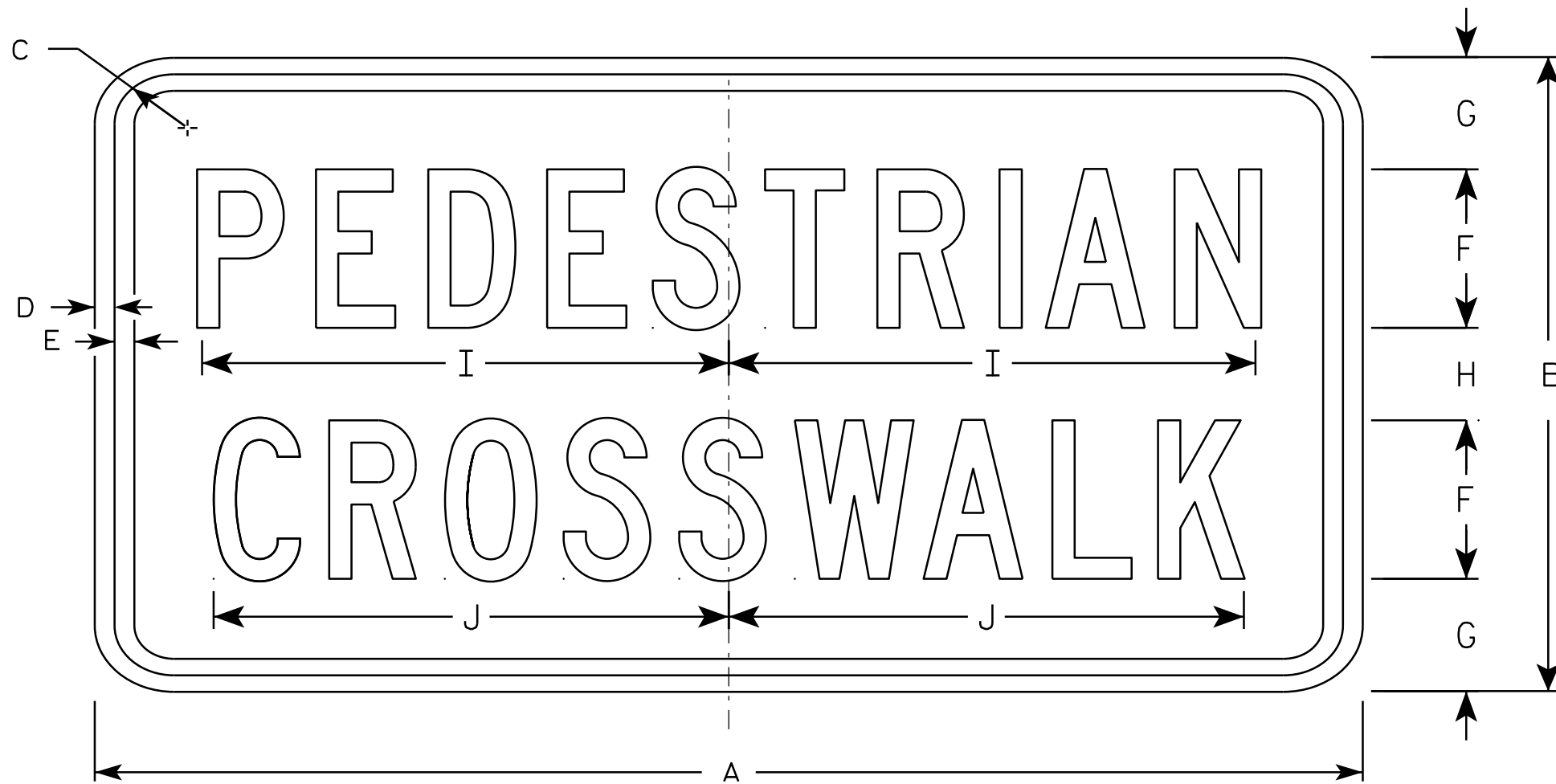
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	12	18	1 1/8	3/8	3/8	3	1 7/8	2	7/8	5/8	1 1/2	2 1/2	2	2	4 7/8	4 7/8	2 5/8	1 3/4	1/4	4 1/2	2 3/8	3 7/8	3/4	1/8	1 3/4	1 1/2	1.5
2S	18	24	1 1/8	3/8	1/2	4	2 1/2	2 1/2	1 1/4	1	2	3 1/4	2 3/4	2 5/8	7 1/8	7	3 3/8	1 1/2	5/8	5 3/8	3	5 7/8	1 1/8	1/4	2 5/8	2 1/4	3.0
2M	24	30	1 1/8	3/8	1/2	5	3	3	2	1 1/4	2 1/2	4	3 1/4	3 3/8	9 1/4	9 1/4	4	2	5/8	6 5/8	3 5/8	7 3/4	1 1/2	1/4	3 1/2	3	5.0
3	24	30	1 1/8	3/8	1/2	5	3	3	2	1 1/4	2 1/2	4	3 1/4	3 3/8	9 1/4	9 1/4	4	2	5/8	6 5/8	3 5/8	7 3/4	1 1/2	1/4	3 1/2	3	5.0
4																											
5																											

STANDARD SIGN R7-53	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 3/31/2011	PLATE NO. R7-53.6

PROJECT NO:	HWY:	COUNTY:	SHEET NO: 96	E
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NOTES

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



R9-8

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	12	1 ¾	½	½	3	2 ⅛	1 ¾	10	9 ¾																	2.0
2M	24	12	1 ¾	½	½	3	2 ⅛	1 ¾	10	9 ¾																	2.0
3	30	18	1 ¾	½	½	4	3 ½	3	13	13																	3.75
4																											
5																											

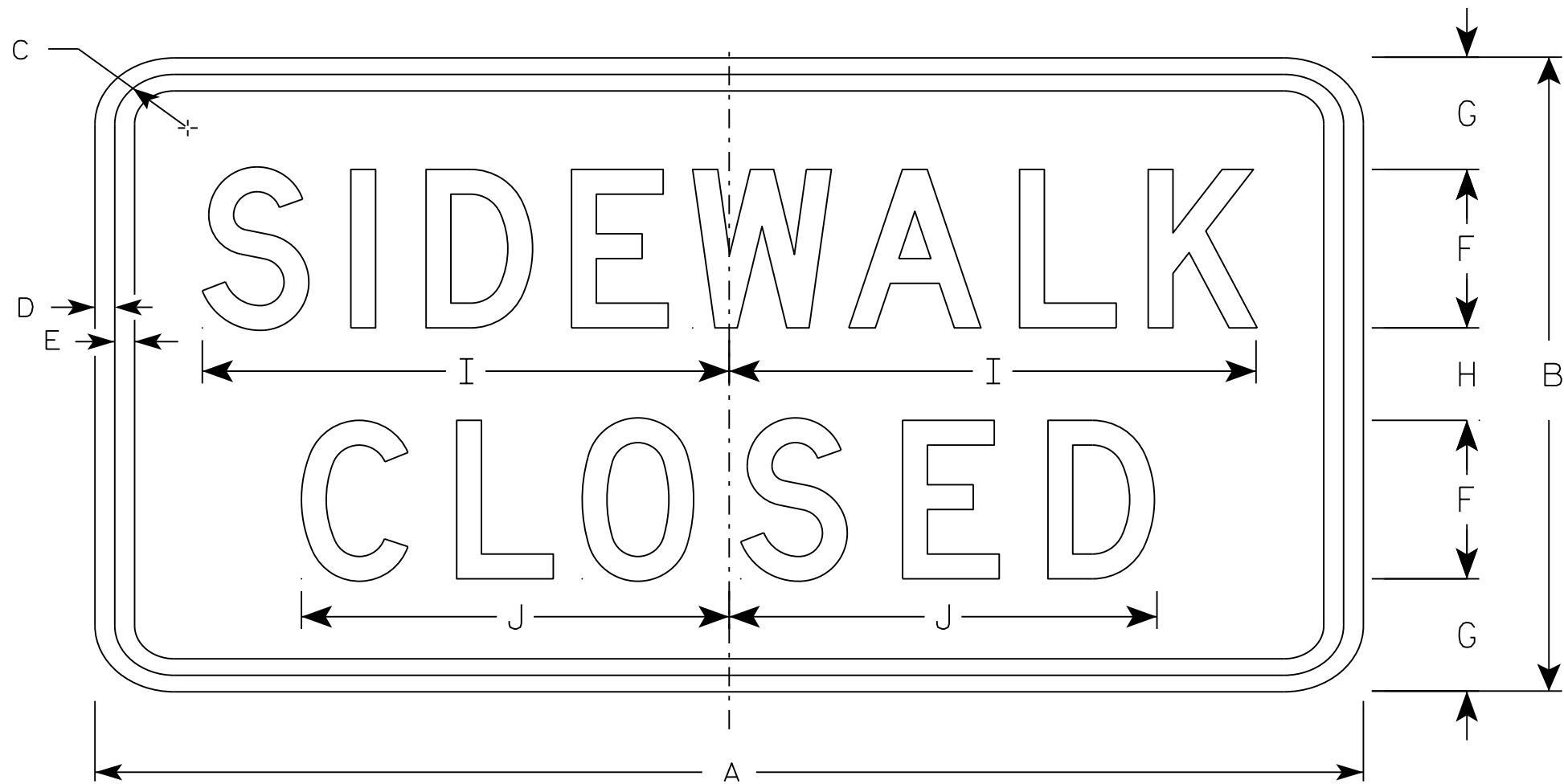
STANDARD SIGN
R9-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/17/16 PLATE 97 R9-8.1

PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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R9-9

NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	12	1 3/4	1/2	1/2	3	2 1/8	1 3/4	10	8 1/8																	2.0
2M	24	12	1 3/4	1/2	1/2	3	2 1/8	1 3/4	10	8 1/8																	2.0
3	30	18	1 3/4	1/2	1/2	4	3 1/2	3	12 1/2	10 1/4																	3.75
4																											
5																											

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

STANDARD SIGN
R9-9

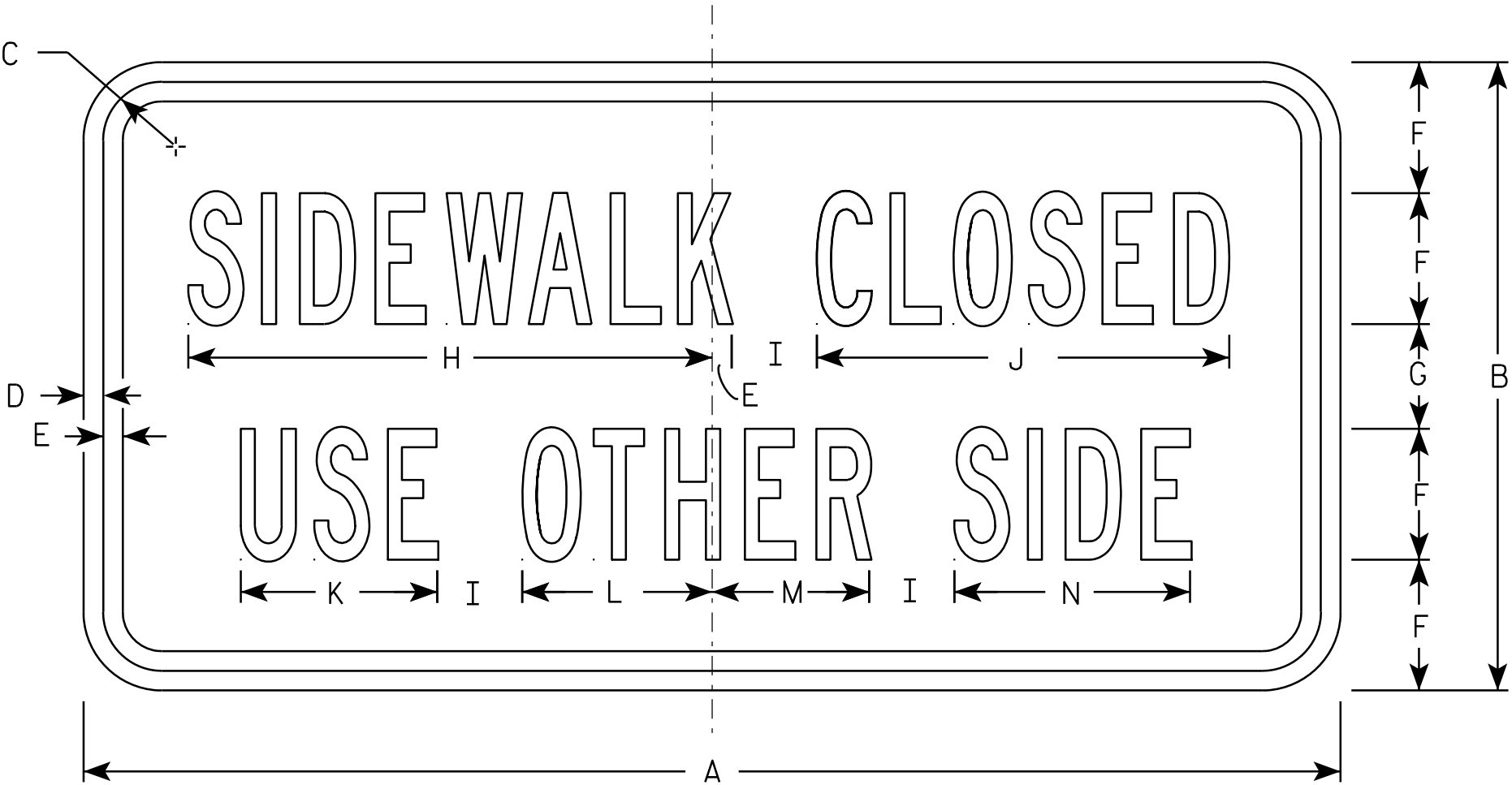
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/11/16 PLATE 98 R9-9.6

NOTES

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



R9-10

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24	12	1 1/8	3/8	3/8	2 1/2	2	10	1 5/8	7 7/8	3 3/4	3 5/8	3	4 1/2													2.0
2S	48	24	2 3/4	3/4	3/4	5	4	20	3 1/4	15 3/4	7 1/2	7 1/4	6	9													8.0
2M	48	24	2 3/4	3/4	3/4	5	4	20	3 1/4	15 3/4	7 1/2	7 1/4	6	9													8.0
3																											
4																											
5																											

STANDARD SIGN
R9-10

WISCONSIN DEPT OF TRANSPORTATION

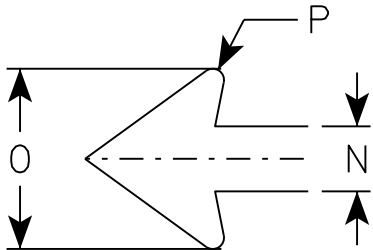
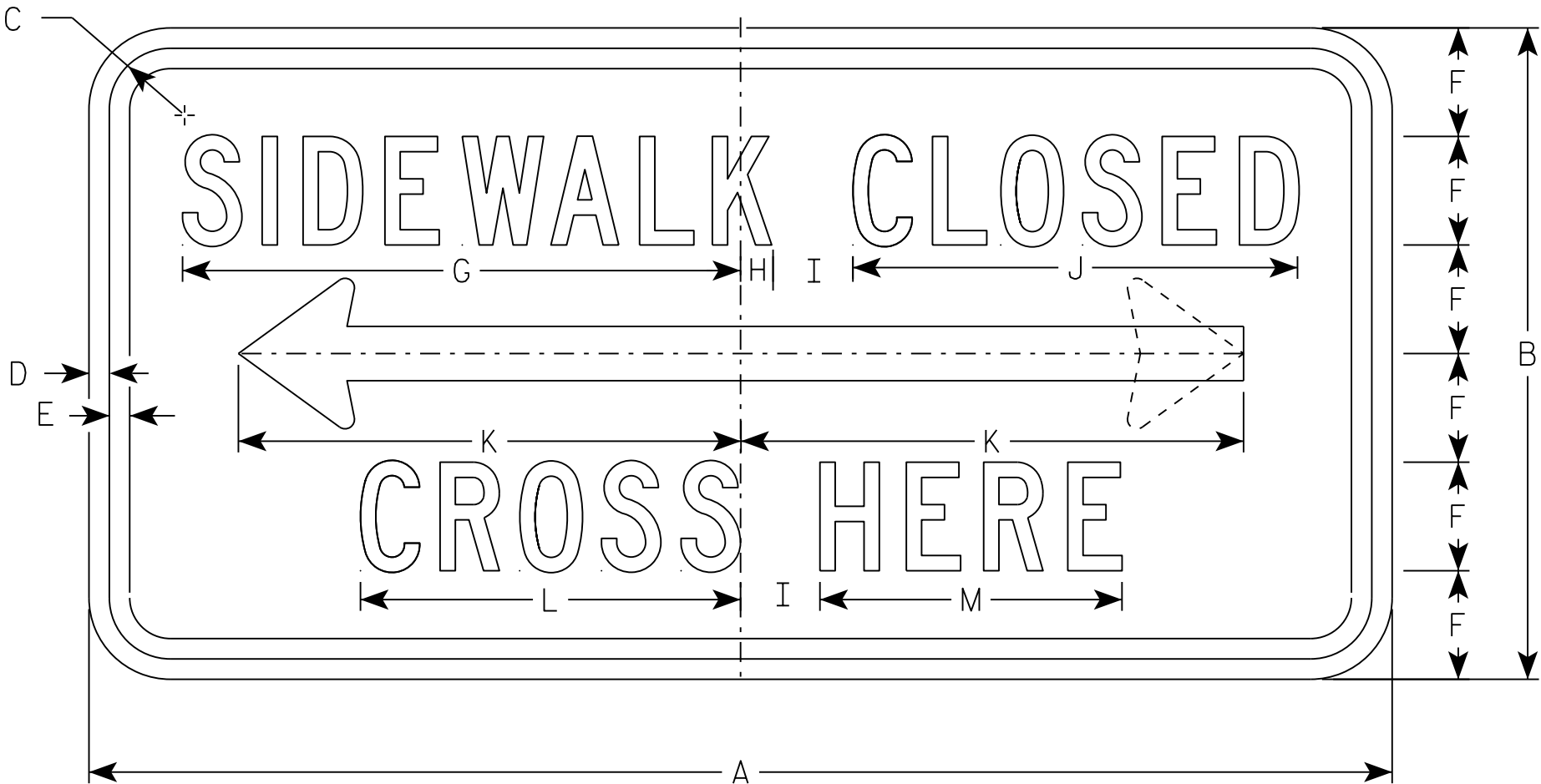
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/16/2012 PLATE NO. R9-10.5

PROJECT NO: HWY: COUNTY: SHEET NO: 99 E

NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
Background - White
Message - Black
- 3. Message Series - C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. Use Size 2 for Sidewalks. Use Size 3 for paths and Trails.



R9-11A

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	12	1 1/8	3/8	3/8	2	10 1/4	5/8	1 1/2	8 1/4	9 1/4	7	5 5/8	1	2 3/4	1/8											2.0
2M	24	12	1 1/8	3/8	3/8	2	10 1/4	5/8	1 1/2	8 1/4	9 1/4	7	5 5/8	1	2 3/4	1/8											2.0
3	30	15	1 1/8	3/8	1/2	2	13	3/4	2	10 1/4	12 3/8	8 7/8	6 7/8	1 1/4	3 5/8	1/4											3.125
4																											
5																											

PROJECT NO:

HWY:

COUNTY:

SHEET NO: 100

E

STANDARD SIGN
R9-11A

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 11/29/16 PLATE NO. R9-11A.3



R9-55

NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	18	24	1 1/8	3/8	1/2	4	3	2 1/2	1 7/8	2 1/8	1 1/4	2 1/4	3 3/4	7 1/4	7 1/2	5 1/2											3.0
2M	18	24	1 1/8	3/8	1/2	4	3	2 1/2	1 7/8	2 1/8	1 1/4	2 1/4	3 3/4	7 1/4	7 1/2	5 1/2											3.0
3																											
4																											
5																											

STANDARD SIGN R9-55

WISCONSIN DEPT OF TRANSPORTATION

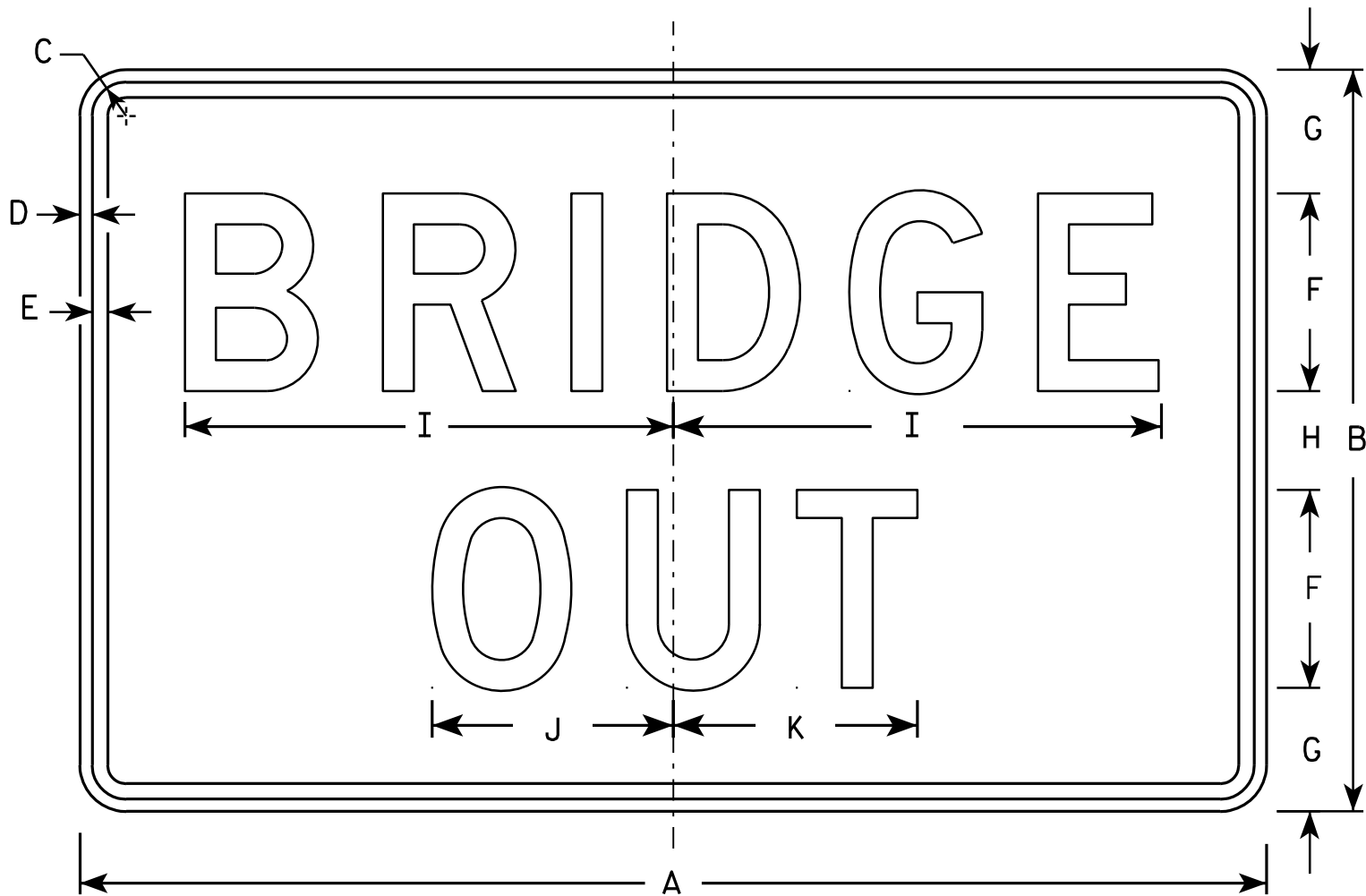
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 4/4/2011 PLATE NO. R9-55.6

PROJECT NO: HWY: COUNTY: SHEET NO: 101 E

NOTES

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



R11-2B

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
2M	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
3	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
4	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0
5	48	30	1 3/8	1/2	5/8	8	5	4	19 3/4	9 3/4	9 7/8																10.0

STANDARD SIGN

R11-2B

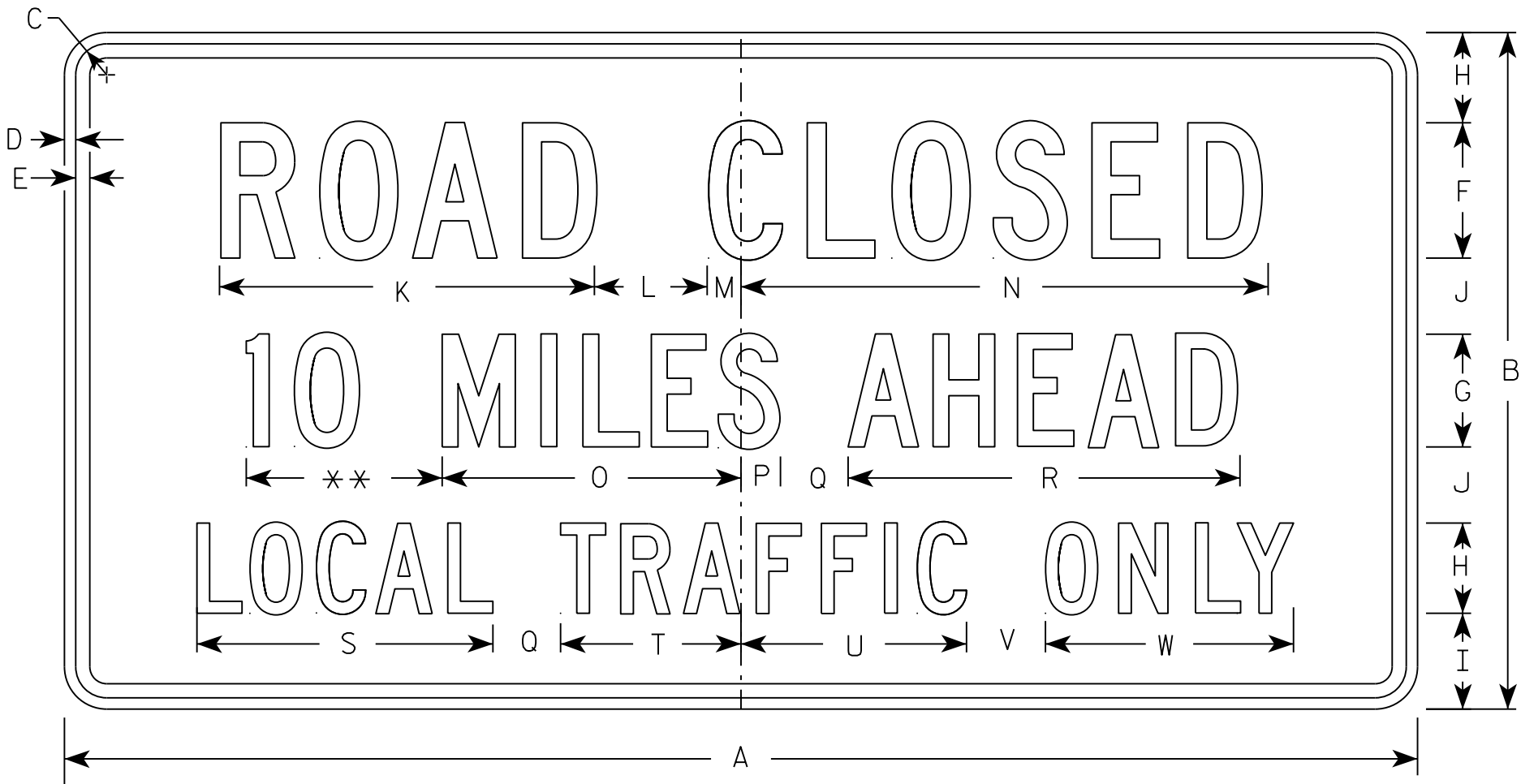
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-2B.2

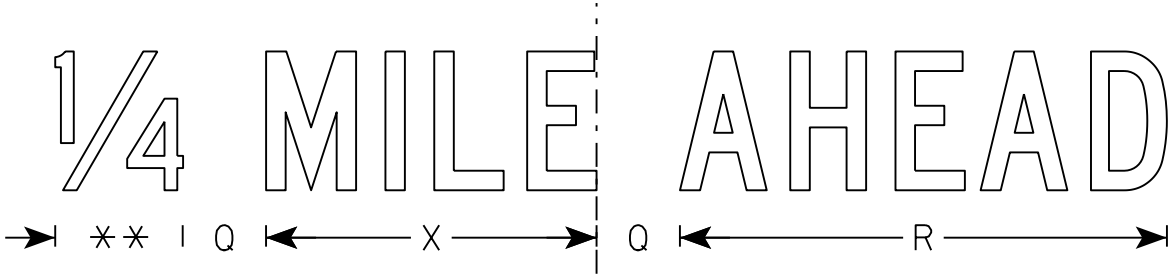
NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
 - Background - White
 - Message - Black
- 3. Message Series - C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. Substitute appropriate numerals to nearest quarter mile and optically adjust spacing to achieve proper balance.



R11-3

** See Note 5



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 3⁄8	1⁄2	5⁄8	4	3	2 1⁄2	2	2	11 1⁄8	3	1 1⁄8	15 1⁄4	8	1 1⁄2	2	10 3⁄4	8 3⁄8	4 3⁄4	6 1⁄2	2	6 3⁄4	7 1⁄8			4.5
2S	60	30	1 3⁄8	1⁄2	5⁄8	6	5	4	4 1⁄4	3 3⁄8	16 5⁄8	5	1 1⁄2	23	13 1⁄4	1 3⁄4	3	17 3⁄8	13 1⁄8	8	10	3 1⁄2	11	11 7⁄8			12.5
2M	60	30	1 3⁄8	1⁄2	5⁄8	6	5	4	4 1⁄4	3 3⁄8	16 5⁄8	5	1 1⁄2	23	13 1⁄4	1 3⁄4	3	17 3⁄8	13 1⁄8	8	10	3 1⁄2	11	11 7⁄8			12.5
3																											
4																											
5																											

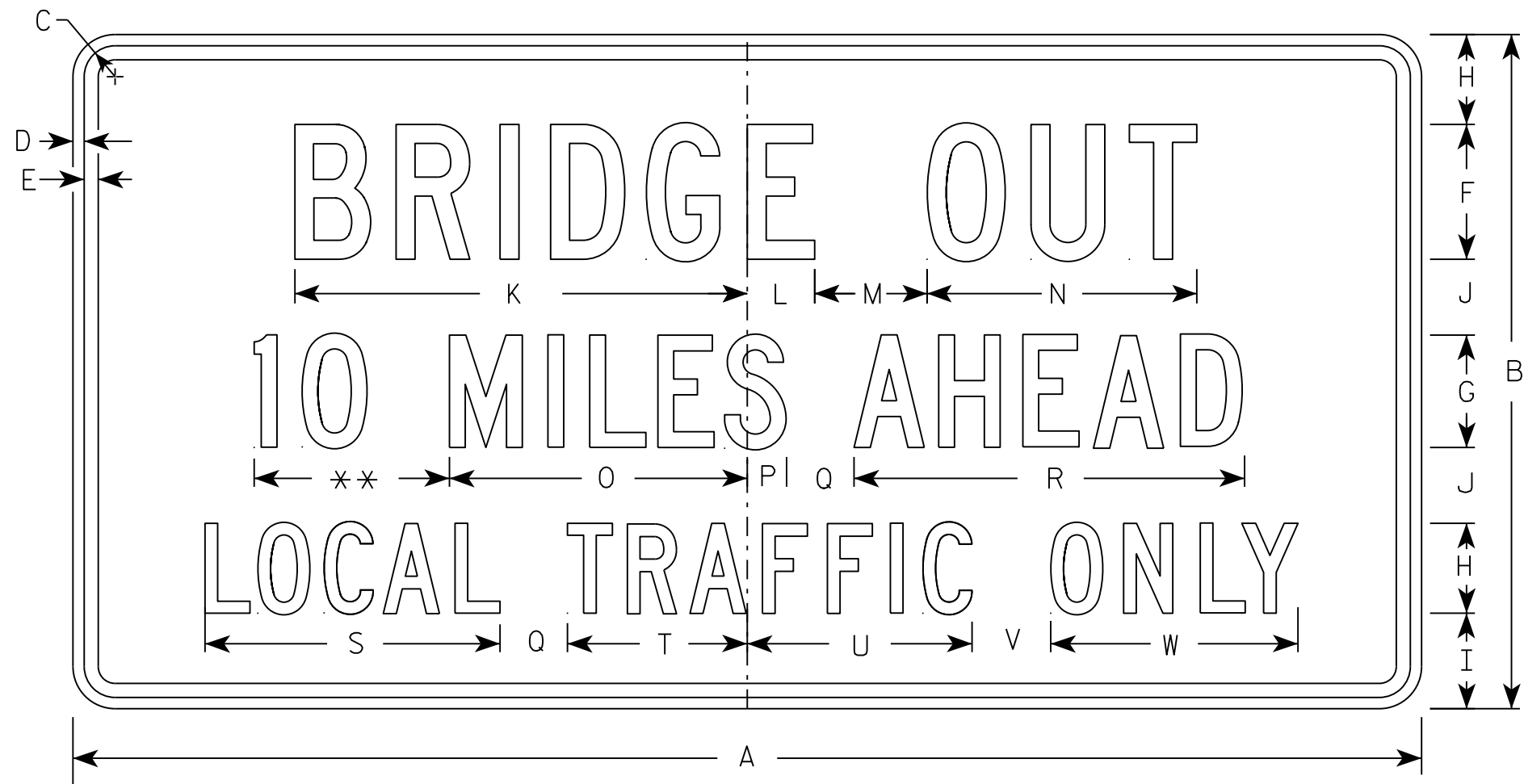
STANDARD SIGN
R11-3

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 3/15/17 PLATE NO. R11-3.8

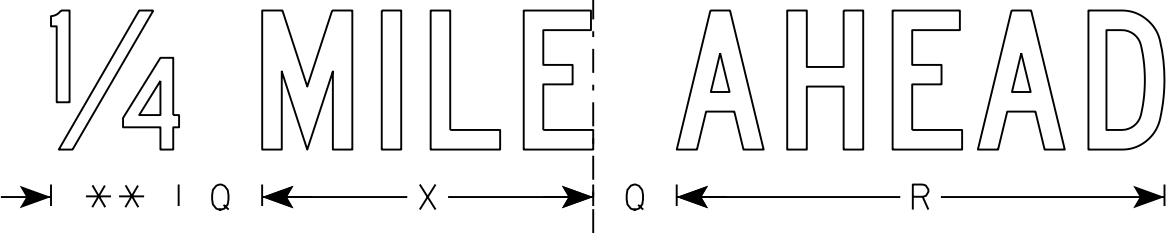
NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
 - Background - White
 - Message - Black
- 3. Message Series - C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. Substitute appropriate numerals to nearest quarter mile and optically adjust spacing to achieve proper balance.



** See Note 5

R11-3B



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 3⁄8	1⁄2	5⁄8	4	3	2 1⁄2	2	2	13 1⁄4	2 1⁄4	3	8	8	1 1⁄2	2	10 3⁄4	8 3⁄8	4 3⁄4	6 1⁄2	2	6 3⁄4	7 1⁄8			4.5
2S	60	30	1 3⁄8	1⁄2	5⁄8	6	5	4	4 1⁄4	3 3⁄8	20 1⁄8	3	5	12	13 1⁄4	1 3⁄4	3	17 3⁄8	13 1⁄8	8	10	3 1⁄2	11	11 7⁄8			12.5
2M	60	30	1 3⁄8	1⁄2	5⁄8	6	5	4	4 1⁄4	3 3⁄8	20 1⁄8	3	5	12	13 1⁄4	1 3⁄4	3	17 3⁄8	13 1⁄8	8	10	3 1⁄2	11	11 7⁄8			12.5
3																											
4																											
5																											

STANDARD SIGN
R11-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
For State Traffic Engineer

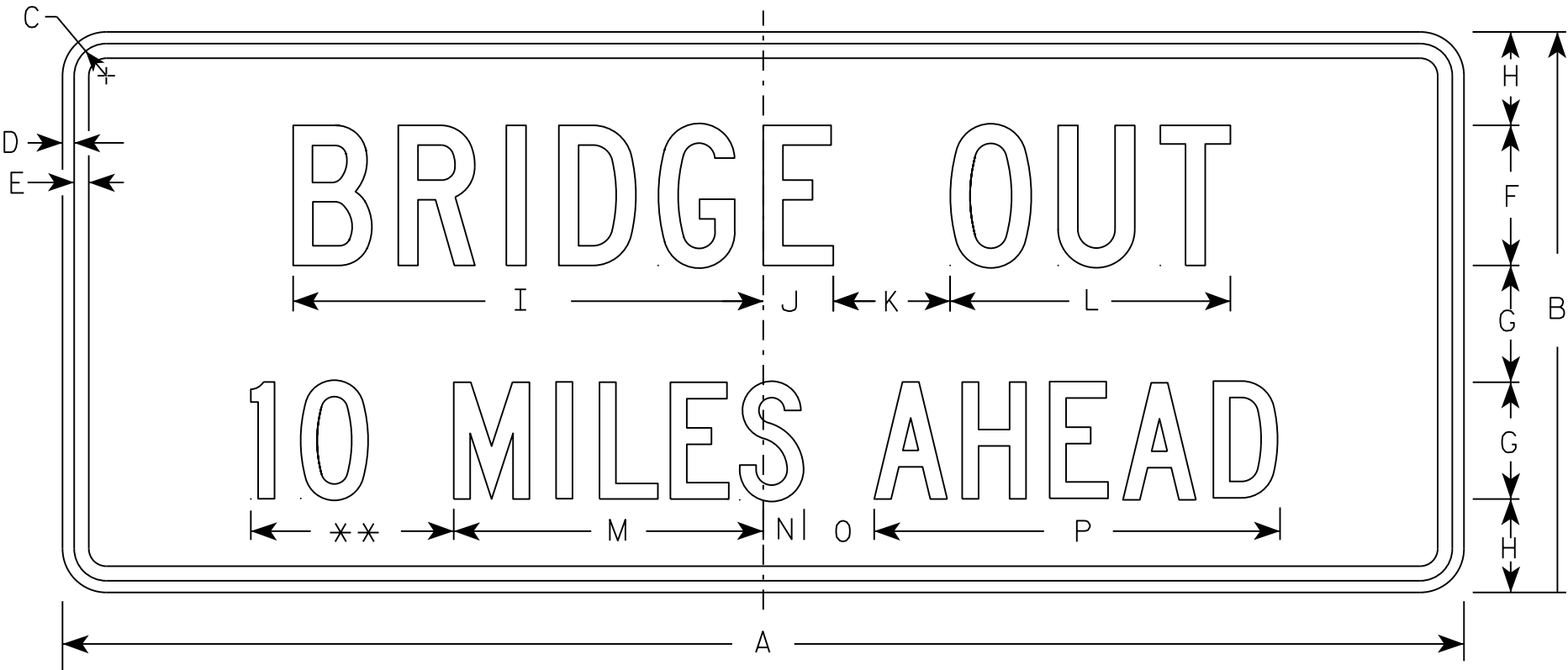
DATE 3/21/17
PLATE NO. R11-3B.3

NOTES

1. Sign is Type II - Type H Reflective
2. Color:

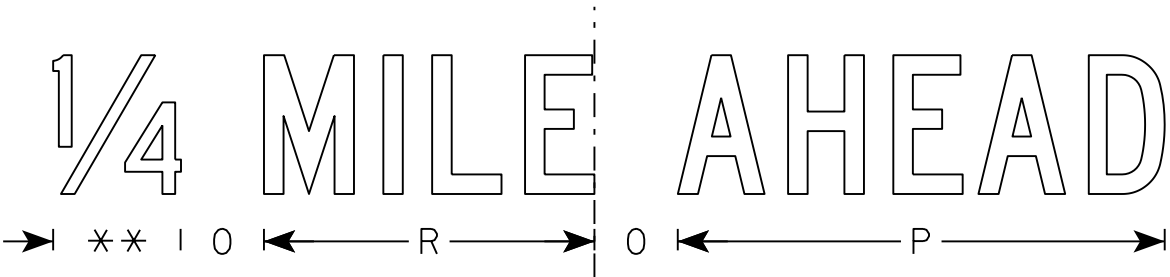
Background - White

Message - Black
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals to nearest quarter mile and optically adjust spacing to achieve proper balance.



R11-3C

** See Note 5



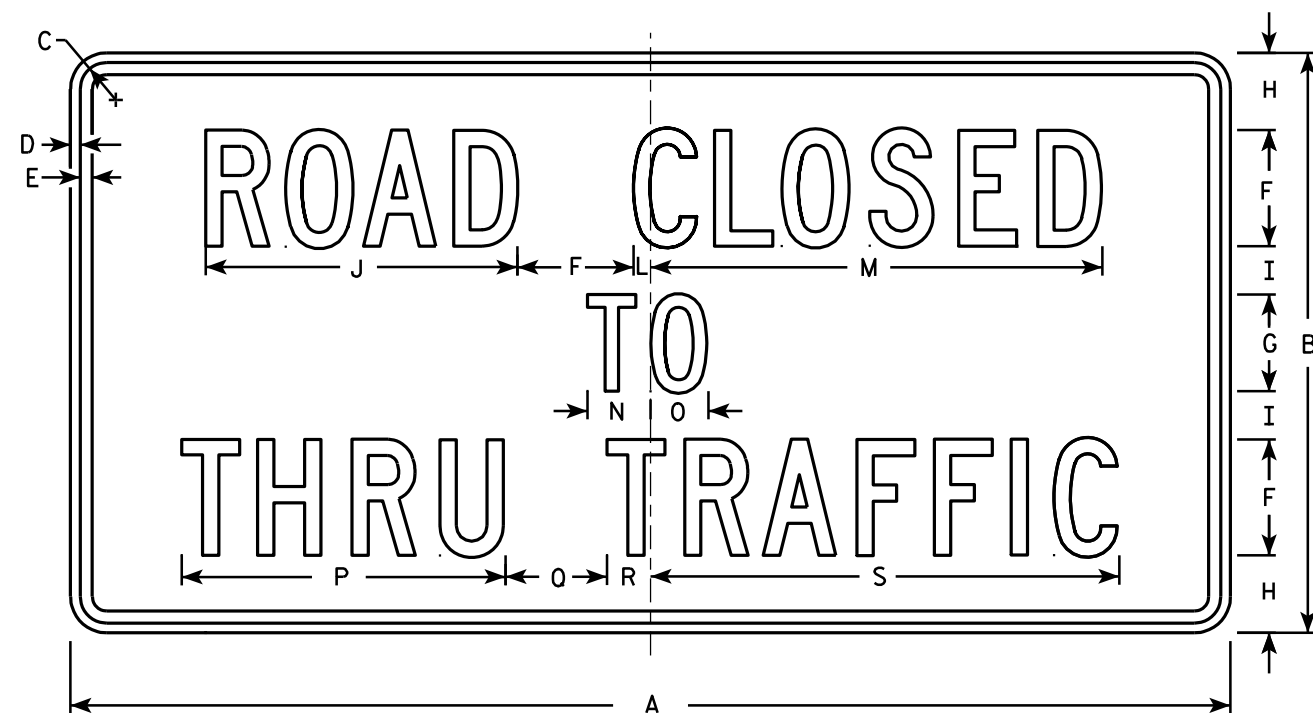
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	15	1 3/8	1/2	5/8	4	3	2 1/2	13 1/4	2 1/4	3	8	8	1 1/2	2	10 3/4		7 1/8									3.75
2S	60	24	1 3/8	1/2	5/8	6	5	4	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8		11 7/8									10.0
2M	60	24	1 3/8	1/2	5/8	6	5	4	20 1/8	3	5	12	13 1/4	1 3/4	3	17 3/8		11 7/8									10.0
3																											
4																											
5																											

STANDARD SIGN
R11-3C

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 7/28/16 PLATE NO. R11-3C.3



R11-4

NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	60	30	1 3⁄8	½	5⁄8	6	5	4	2 ½	16 ⅛		7⁄8	23 3⁄8	3 ¼	3	16 ¾	5 ¼	2 ¼	24 ¼								12.5
2M	60	30	1 3⁄8	½	5⁄8	6	5	4	2 ½	16 ⅛		7⁄8	23 3⁄8	3 ¼	3	16 ¾	5 ¼	2 ¼	24 ¼								12.5
3																											
4																											
5																											

STANDARD SIGN
R11 - 4

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-4.3

PROJECT NO:

HWY:

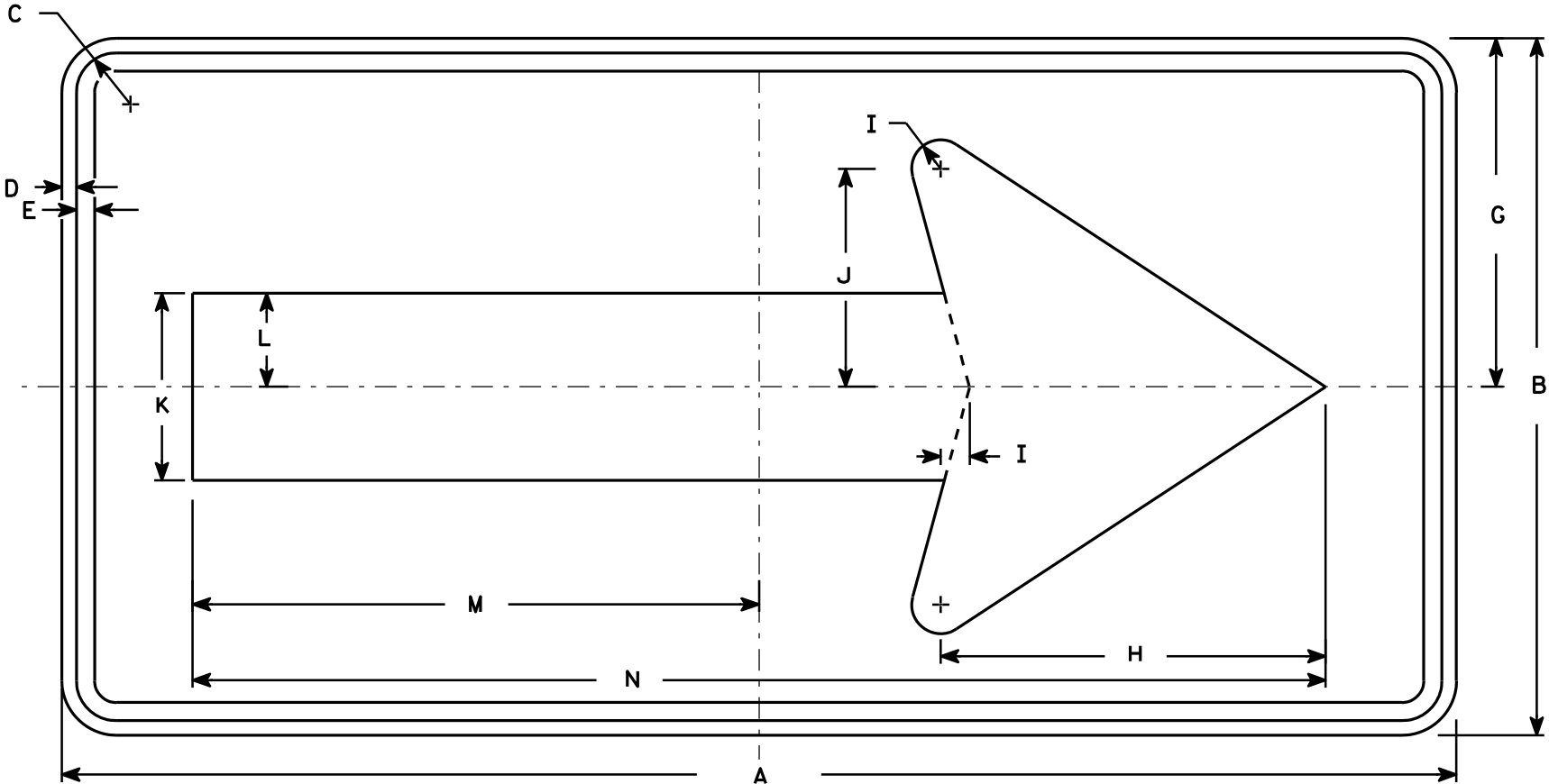
COUNTY:

SHEET NO: 106

E

NOTES

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



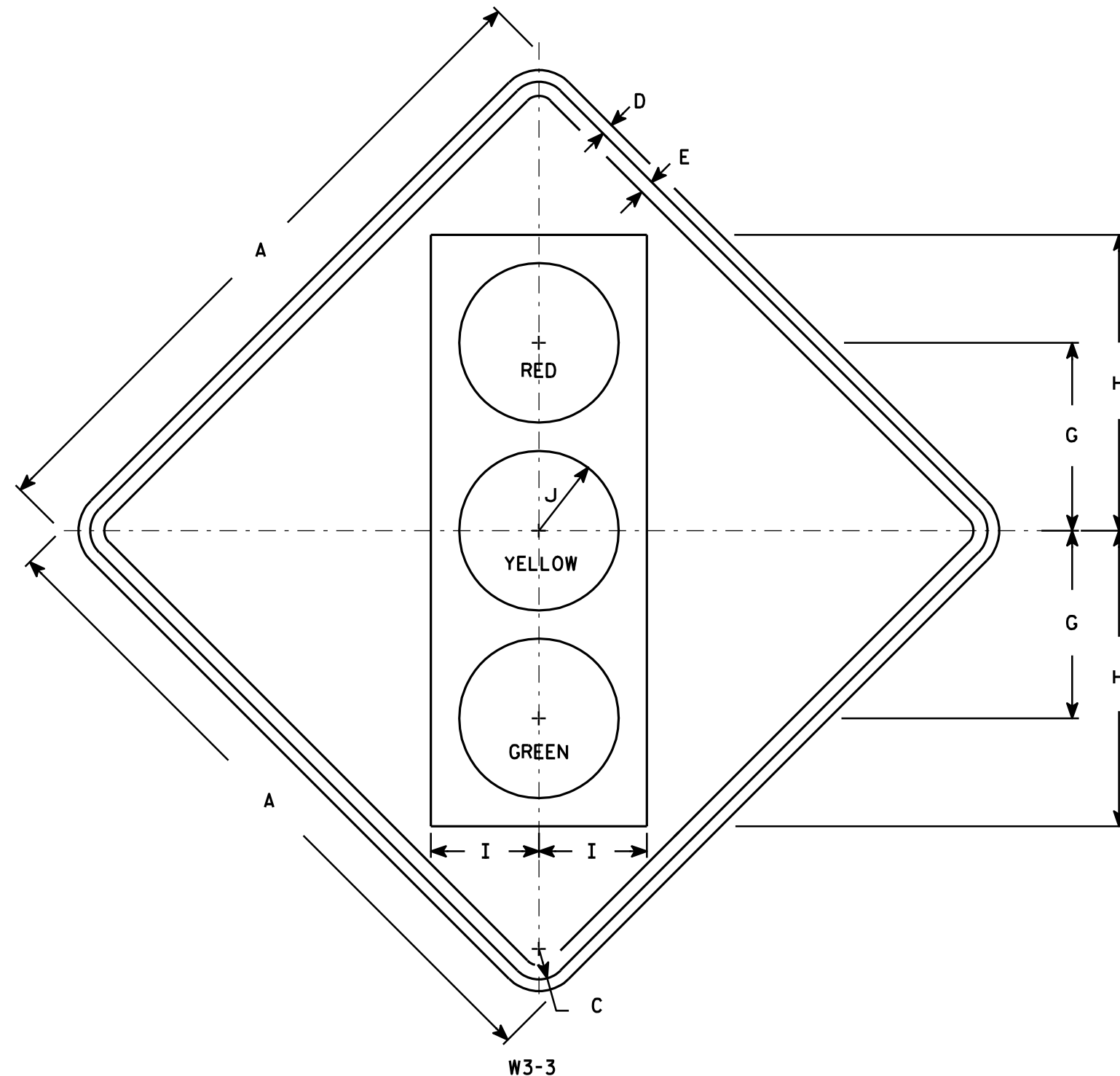
W1-6

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 1/8	3/8	3/8		9	10	3/4	5 5/8	4 3/4	2 3/8	14 5/8	29 1/4													4.5
2S	48	24	1 3/8	1/2	5/8		12	13 1/4	1	7 1/2	6 1/2	3 1/4	19 1/2	39													8.0
2M	48	24	1 3/8	1/2	5/8		12	13 1/4	1	7 1/2	6 1/2	3 1/4	19 1/2	39													8.0
3	60	30	1 3/8	1/2	5/8		15	16 1/4	1 1/4	9 1/4	8	4	24 3/8	48 3/4													12.5
4	60	30	1 3/8	1/2	5/8		15	16 1/4	1 1/4	9 1/4	8	4	24 3/8	48 3/4													12.5
5	96	48	2 1/4	3/4	1		24	26 1/2	2	15	13	6 1/2	39	78													32.0

STANDARD SIGN
W1-6

WISCONSIN DEPT OF TRANSPORTATION

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



NOTES

- Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
- Color:
Background - Yellow
Message - See Note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- Symbol and border are non-reflective black.
Top circle - Type H Reflectorized Red
Center circle - Same as background
Bottom circle - Type H Reflectorized Green

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30		1 3/8	1/2	5/8		8 3/4	13 3/4	5	3 3/4																	6.25
2S	36		1 5/8	5/8	3/4		10	15 3/4	5 3/4	4 1/4																	9.0
2M	36		1 5/8	5/8	3/4		10	15 3/4	5 3/4	4 1/4																	9.0
3	36		1 5/8	5/8	3/4		10	15 3/4	5 3/4	4 1/4																	9.0
4	48		2 1/4	3/4	1		12 1/2	20	7 1/2	5																	16.0
5	48		2 1/4	3/4	1		12 1/2	20	7 1/2	5																	16.0

STANDARD SIGN W3-3

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
for State Traffic Engineer

DATE 6/7/10

PLATE NO. W3-3.11

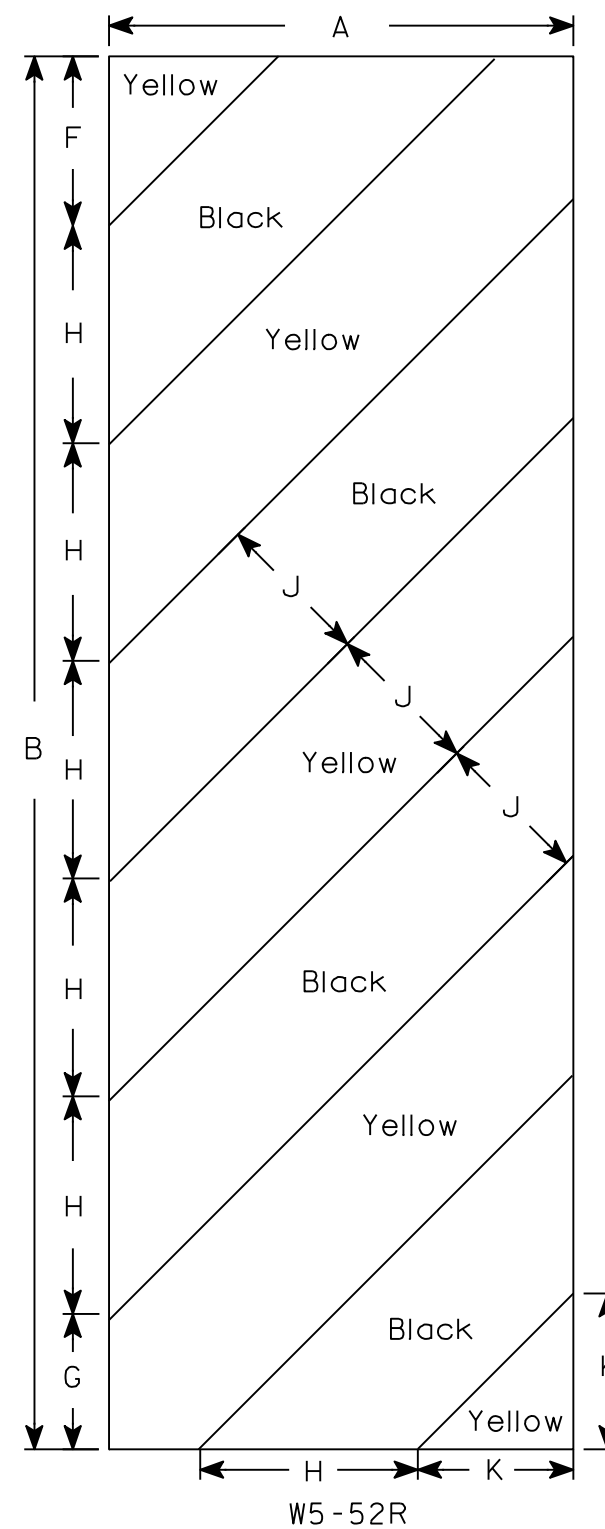
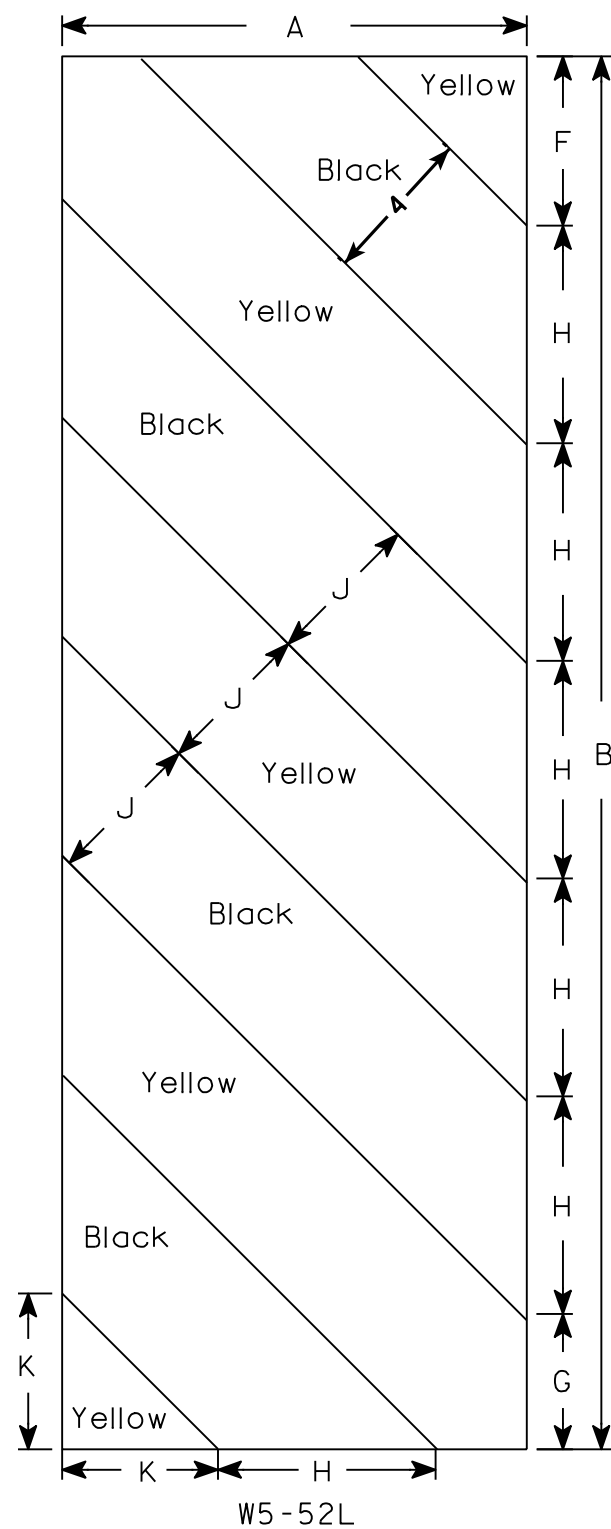
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 108

E



NOTES

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

[illegible]

STANDARD SIGN
W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer
DATE 5/29/12 PLATE NO. W5-52.9

PROJECT NO:

HWY:

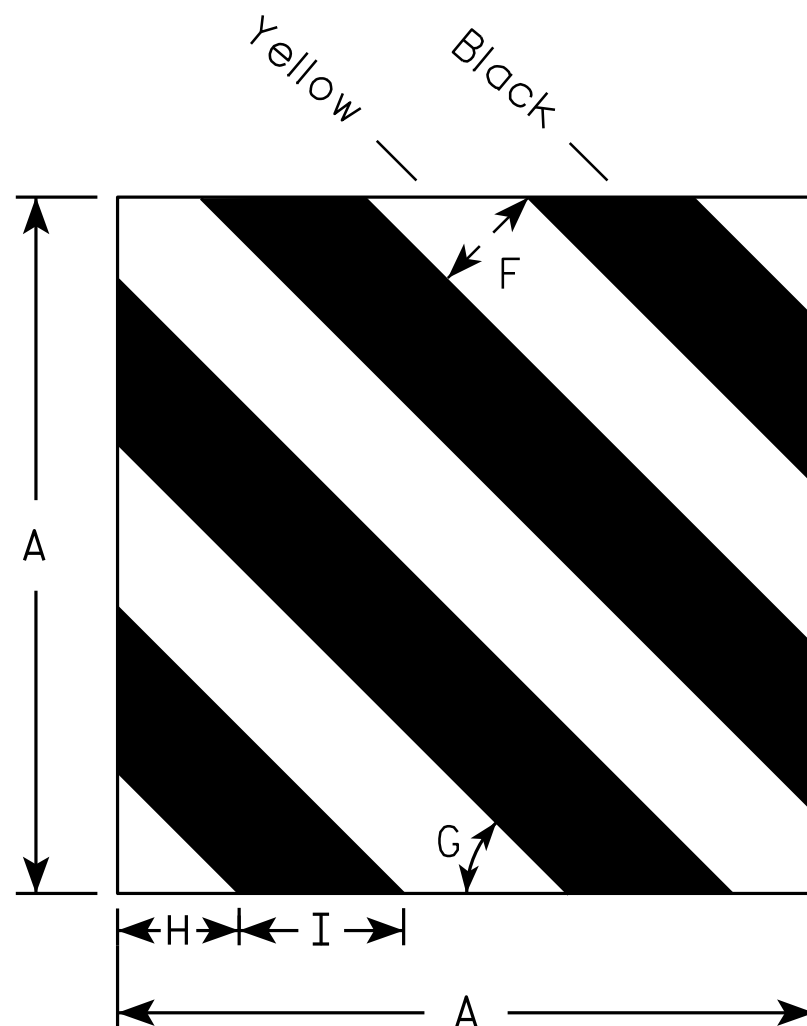
COUNTY:

SHEET NO: 109

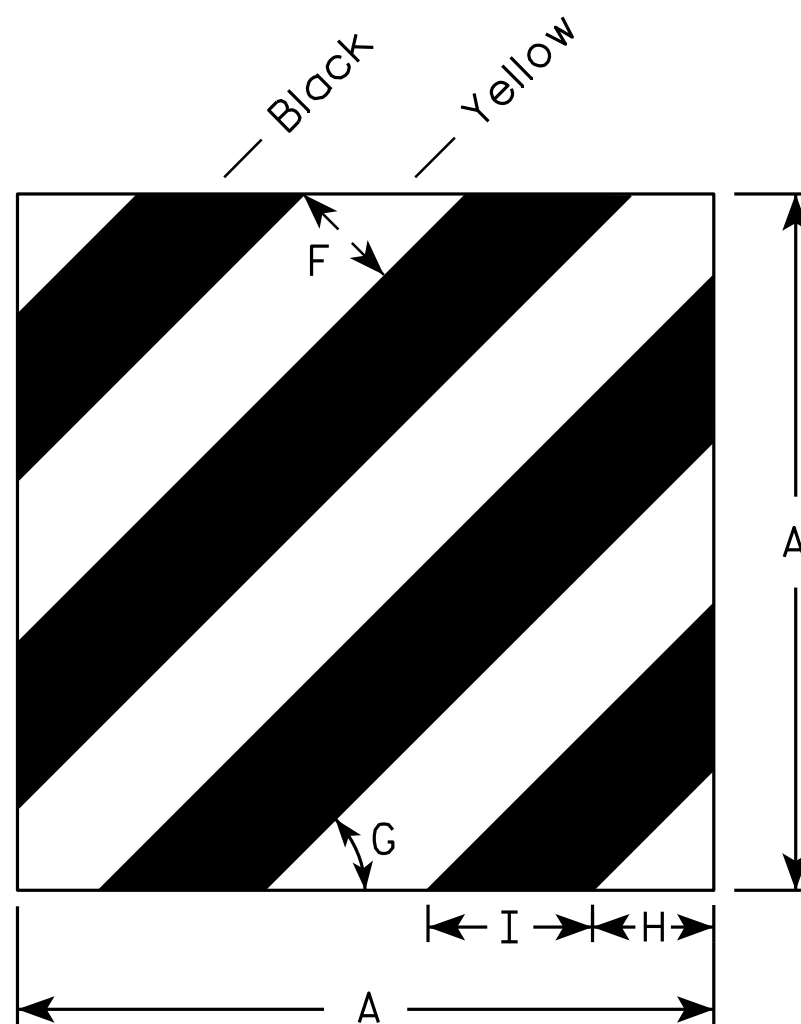
E

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Base material is to be .040 sheet aluminum.



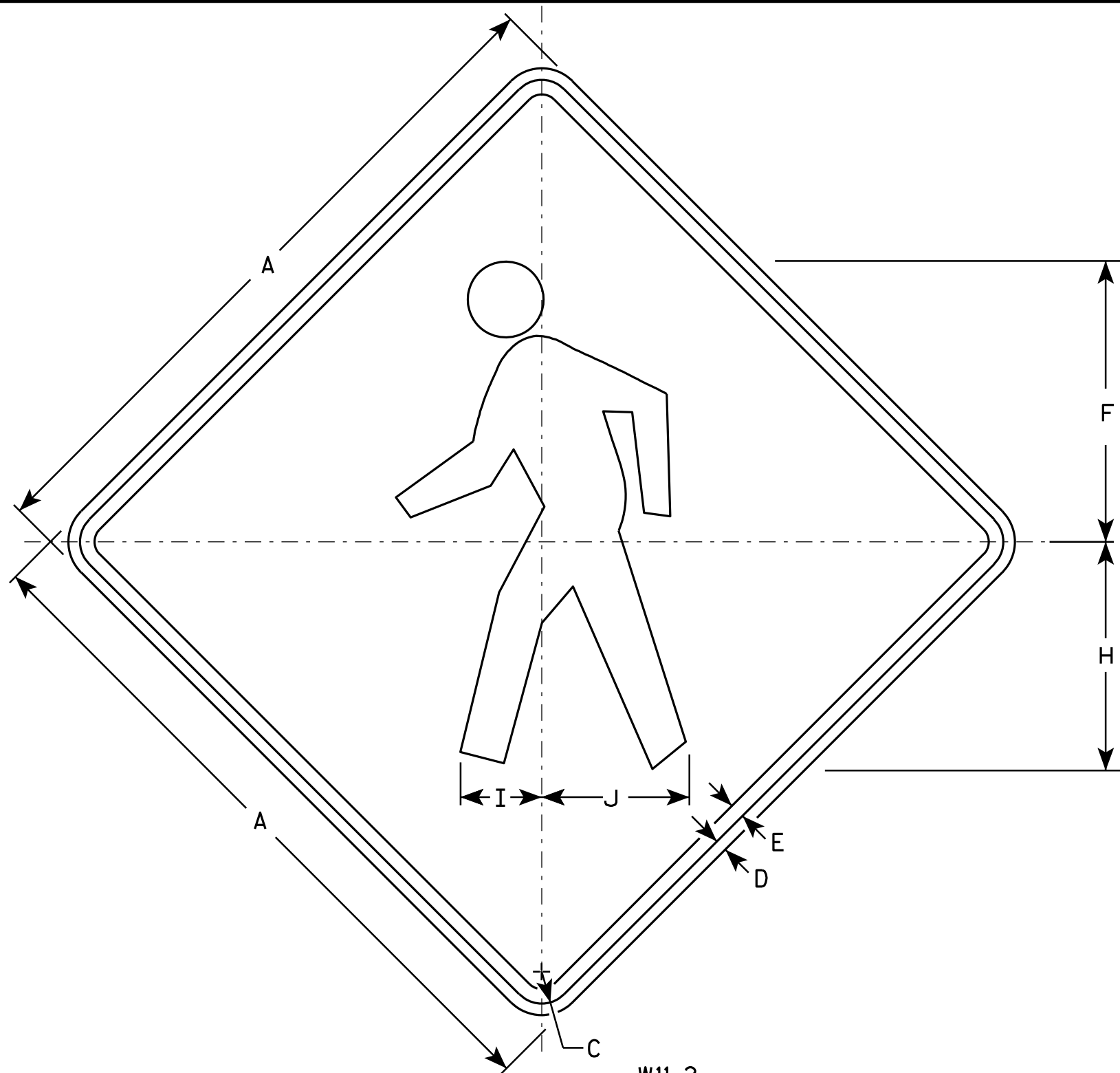
W5-59L



W5-59R

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	12					3	45°	3 1/8	4 1/4																		1.00
2S	18					3	45°	3 1/8	4 1/4																		2.25
2M	18					3	45°	3 1/8	4 1/4																		2.25
3																											
4																											
5																											

STANDARD SIGN W5-59L & W5-59R	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 5/31/12	PLATE NO. W5-59.5



W11-2

NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24		1 1/8	3/8	1/2	9 3/4		7 7/8	2 7/8	5 1/8																	4.0
2S	30		1 3/8	1/2	5/8	12 1/8		9 7/8	3 1/2	6 3/8																	6.25
2M	36		1 5/8	5/8	3/4	14 1/2		11 7/8	4 1/4	7 5/8																	9.0
3	36		1 5/8	5/8	3/4	14 1/2		11 7/8	4 1/4	7 5/8																	9.0
4	48		2 1/4	3/4	1	19 3/8		15 3/4	5 5/8	10 1/4																	16.0
5																											

STANDARD SIGN W11-2

WISCONSIN DEPT OF TRANSPORTATION

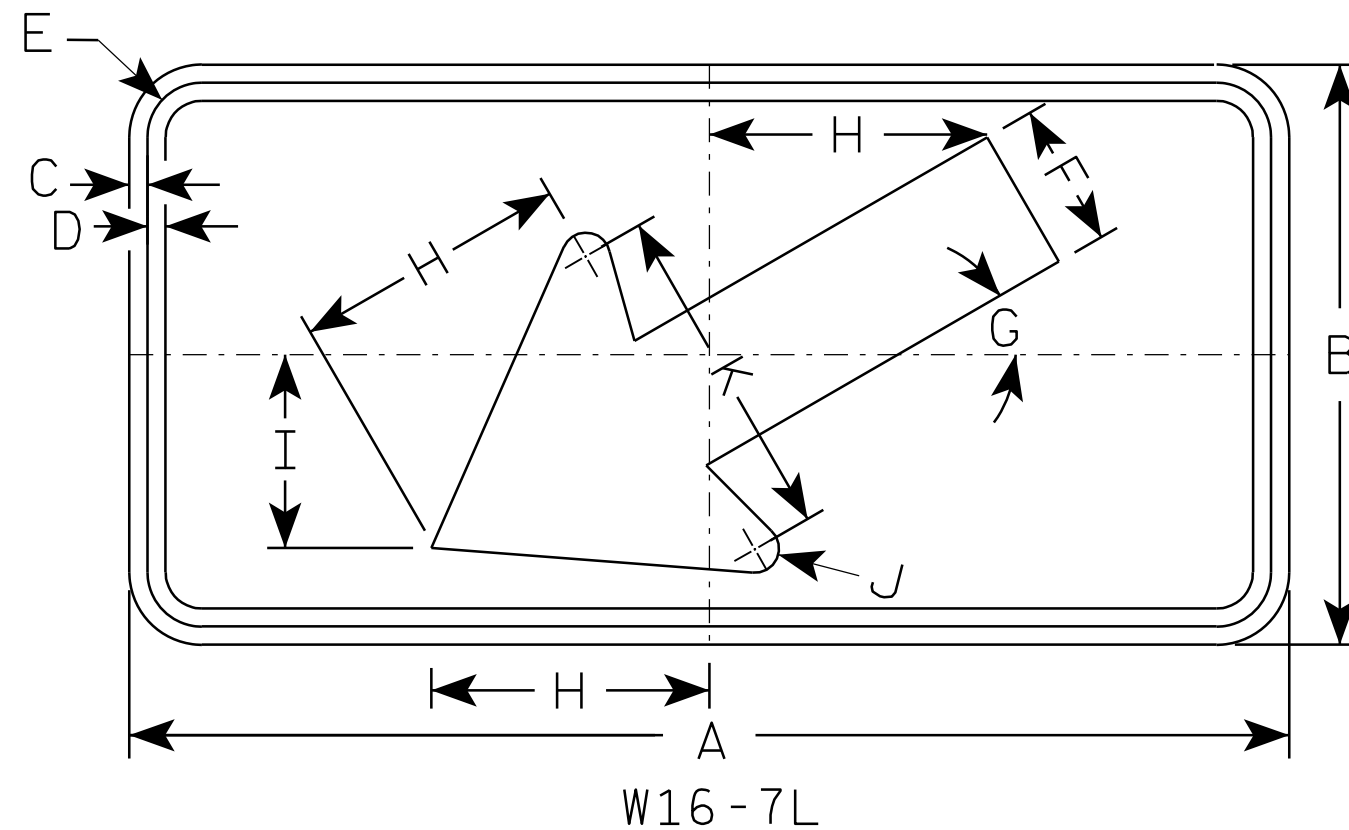
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 6/7/10 PLATE NO. W11-2.7

PROJECT NO: HWY: COUNTY: SHEET NO: 111 E

NOTES

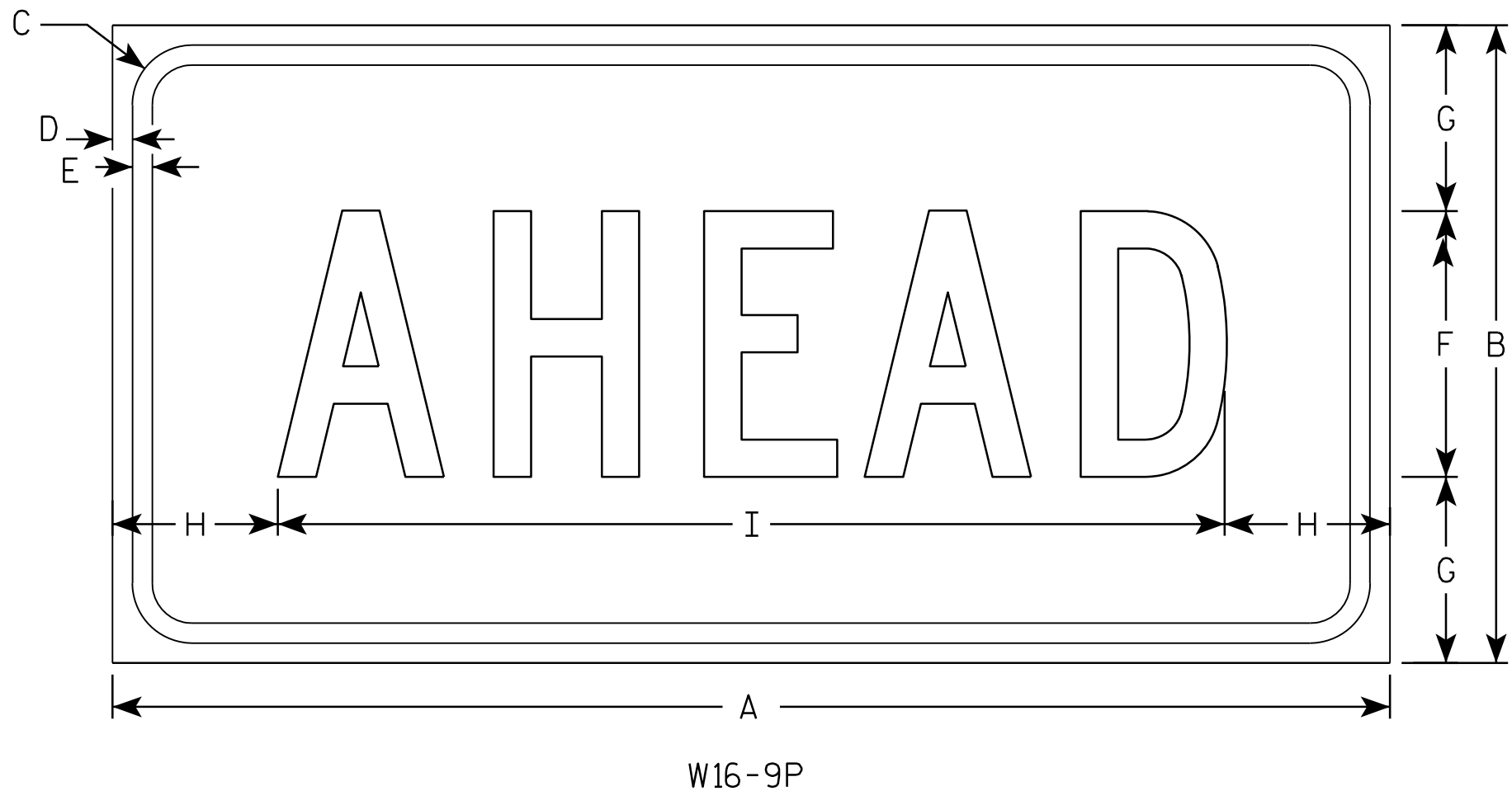
1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. W16-7R is the same as W16-L except the arrow is reversed along the vertical centerline.



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	12	3/8	3/8	1 1/8	3	30°	5 3/4	4	1/2	7																2.0
2M	30	18	3/8	1/2	1 1/8	4 1/2	30°	8 1/2	6	5/8	10 1/4																3.75
3	30	18	3/8	1/2	1 1/8	4 1/2	30°	8 1/2	6	5/8	10 1/4																3.75
4																											8
5																											8

STANDARD SIGN	
W16-7	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> for State Traffic Engineer
DATE 11/02/10	PLATE NO. W16-7.5

7



NOTES

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

7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	24	12	1 1/8	3/8	3/8	5	3 1/2	3 1/8	17 3/4																		2.0
2M	30	18	1 1/8	3/8	1/2	7	5 1/2	2 3/4	24 1/2																		3.75
3	30	18	1 1/8	3/8	1/2	7	3 1/2	2 3/4	24 1/2																		3.75
4	48	24	1 3/8	1/2	5/8	10	7	6 1/8	35 3/4																		8.0
5																											

STANDARD SIGN

W16-9P

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/28/10 PLATE NO. W16-9P.6

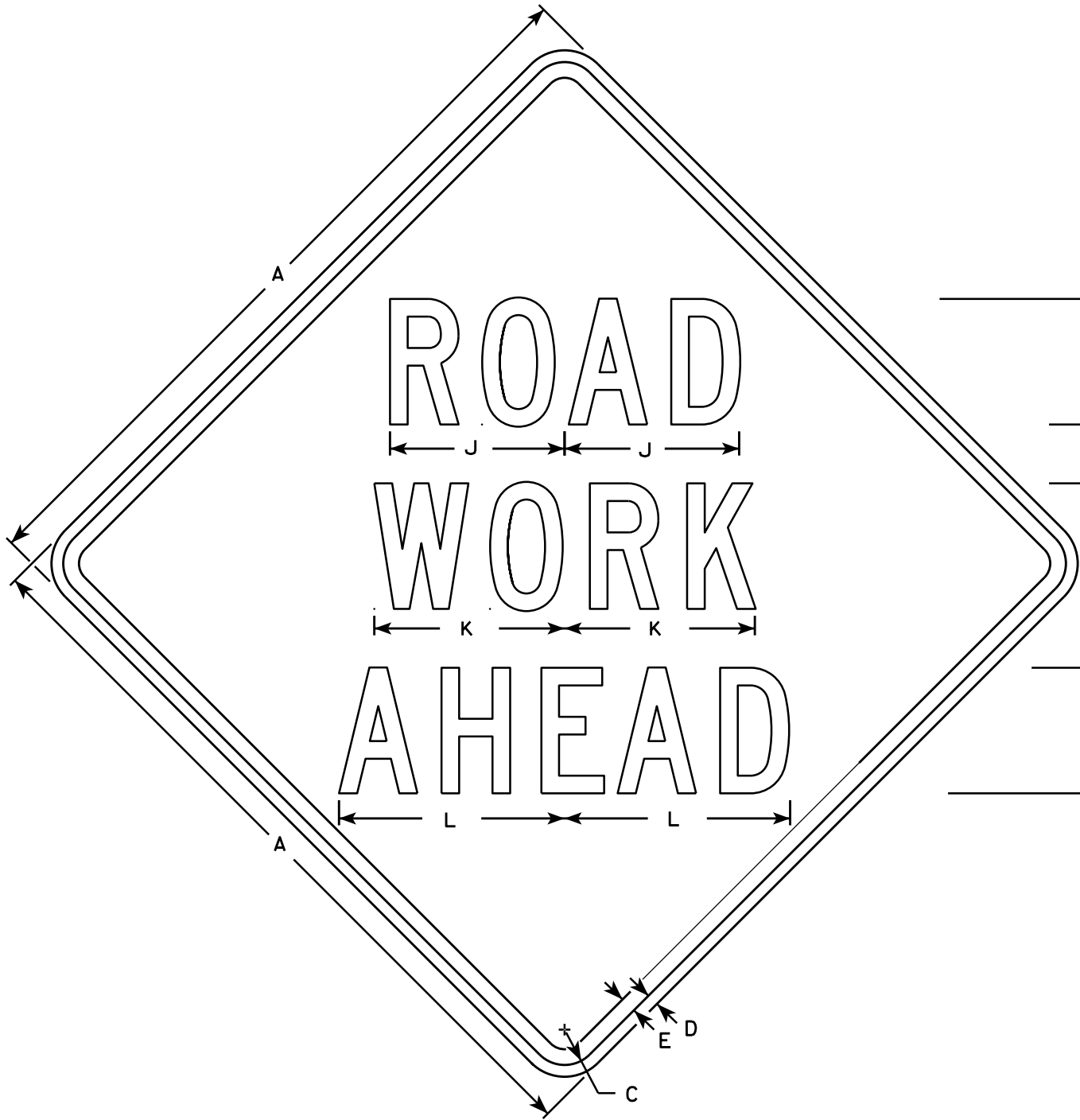
PROJECT NO:

HWY:

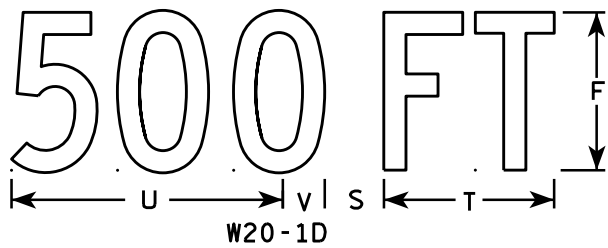
COUNTY:

SHEET NO: 113

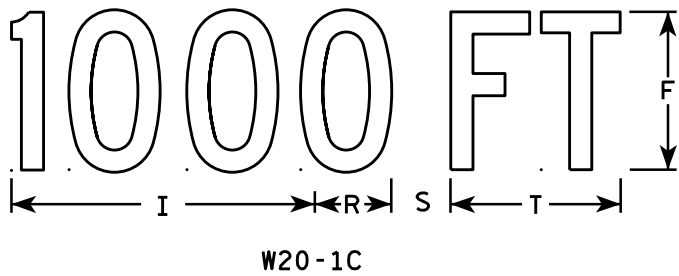
E



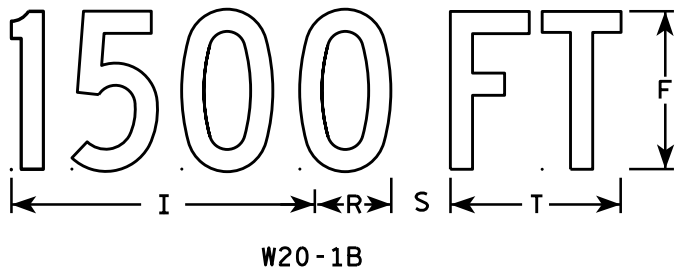
W20-1A



W20-1D



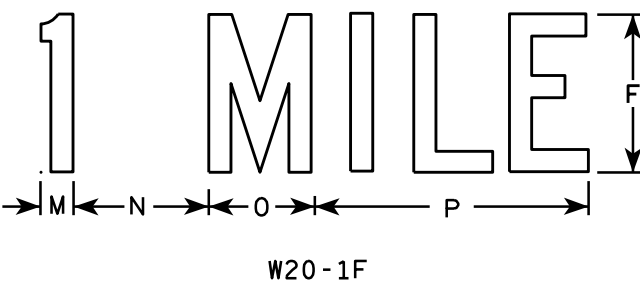
W20-1C



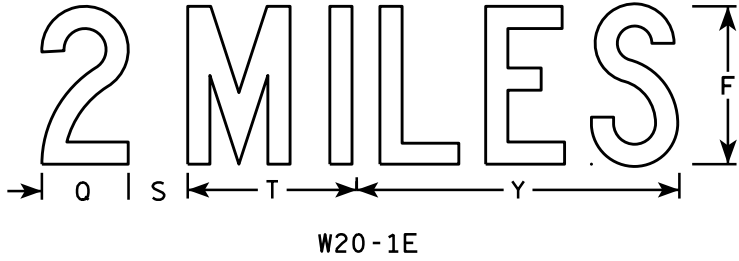
W20-1B



W20-1G



W20-1F



W20-1E

NOTES

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

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

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

WISCONSIN DEPT OF TRANSPORTATION

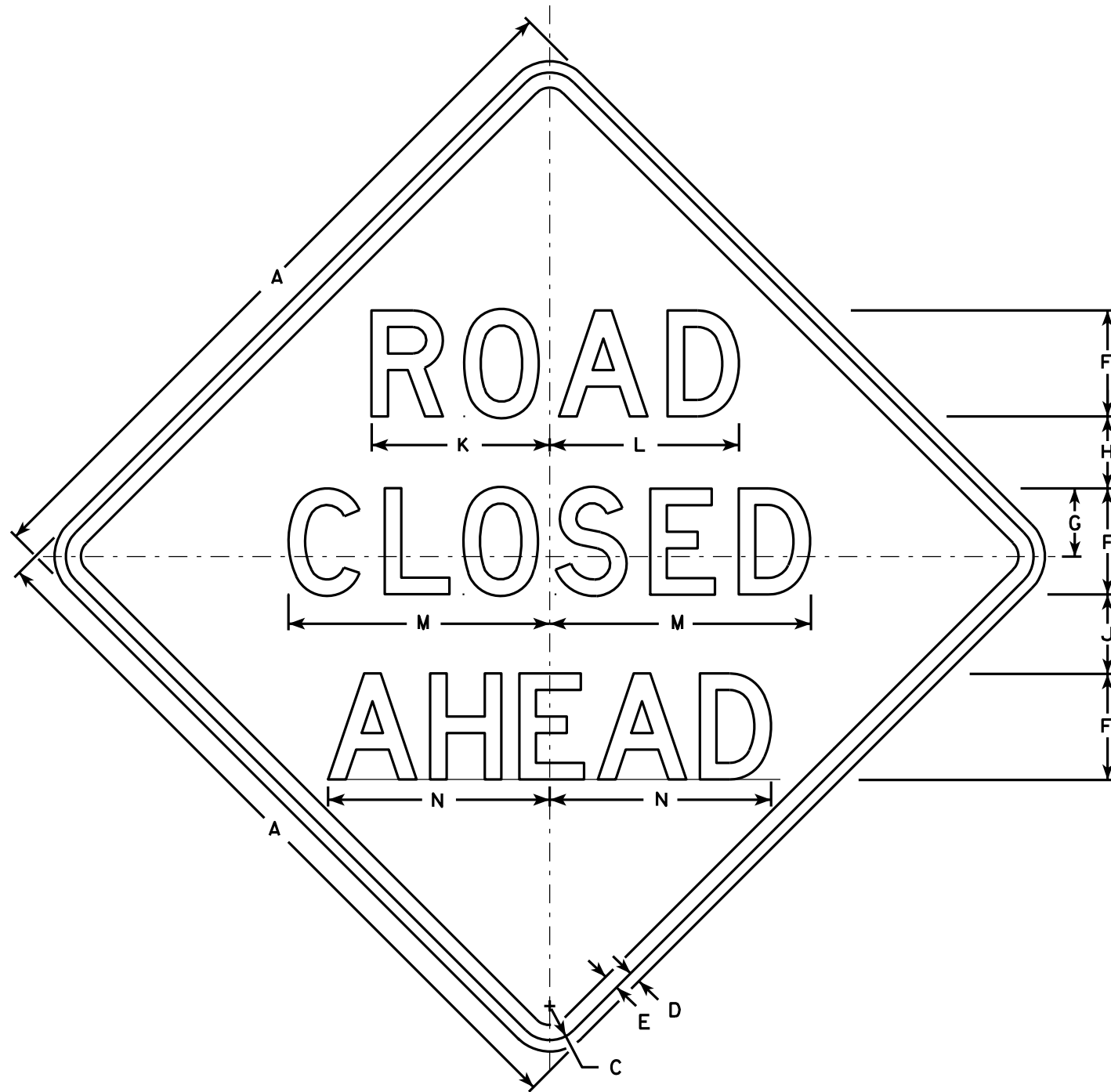
APPROVED

State Traffic Engineer

DATE 5/07/15

PLATE NO. W20-1.10

114



W20-3A

500 FT

W20-3D

1000 FT

W20-3C

1500 FT

W20-3B

1/2 MILE

W20-3G

1 MILE

W20-3F

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Orange
Message - Black
3. Message Series - see note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Lines 1 and 2 are Series D.
Line 3 is Series D for AHEAD and Series C for all other distances.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		1 5/8	5/8	3/4	5	3 3/8	3 1/2	1 1/8	4	8 3/8	8 7/8	12 1/2	11	9	6	10 1/8	2 1/2	1 7/8	5 5/8	8	1 3/8	4 1/2	3 1/2	10 3/4	1 3/4	9.0
2S	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
2M	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
3	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
4	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0
5	48		2 1/4	3/4	1	7	4 1/2	4 3/4	1 1/2	5 1/4	11 3/4	12 1/2	17 1/4	14 5/8	12	8	13 1/2	3 3/8	2 5/8	7 1/2	10 5/8	1 7/8	6	4 5/8	14 3/8	2 3/8	16.0

STANDARD SIGN
W20-3A, B, C, D, F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 3/18/11 PLATE NO. W20-3.7

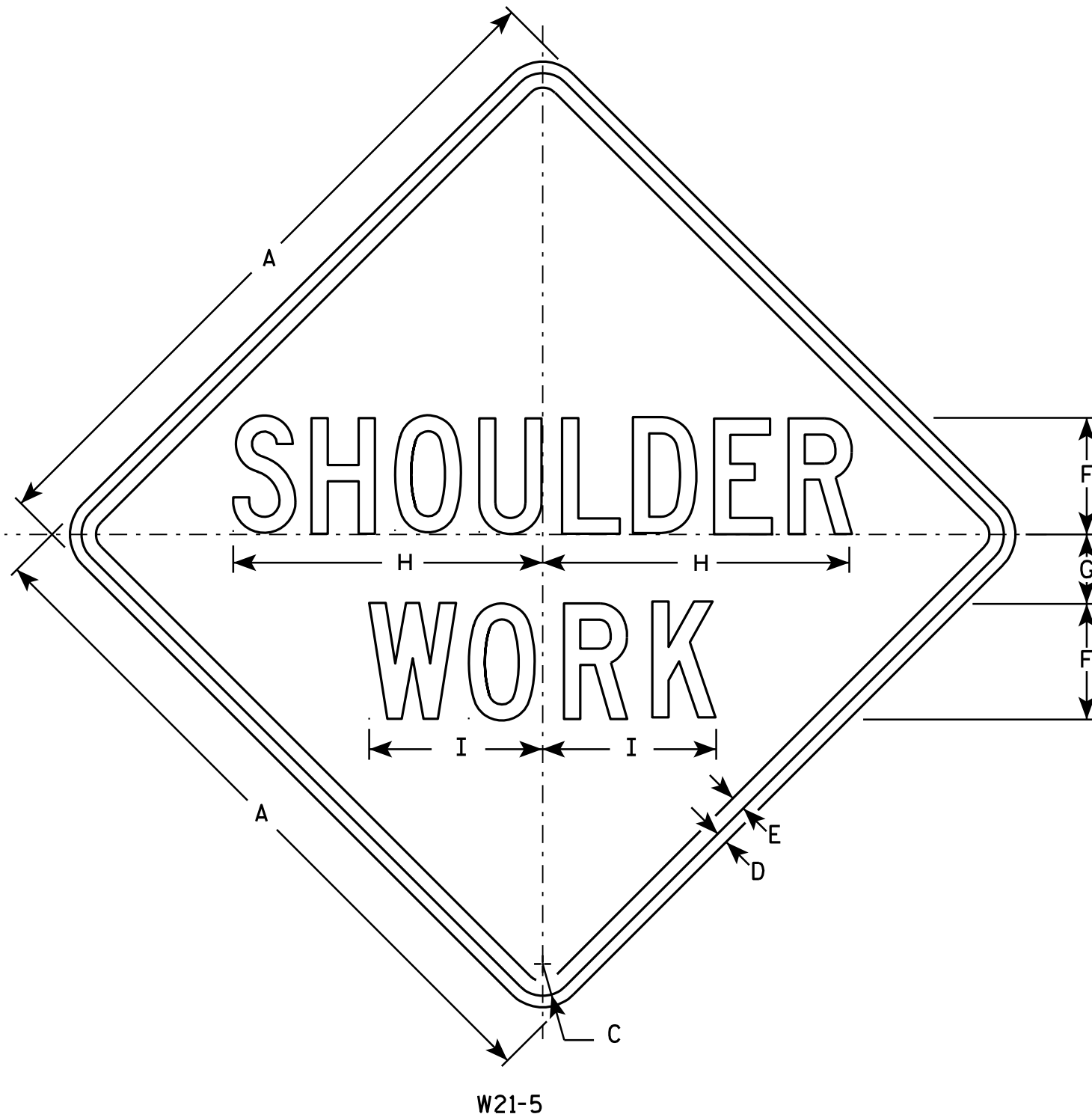
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 115

E



NOTES

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

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24		1 1/8	3/8	1/2	4	2 1/2	10 3/4	6																		4.0
2S	30		1 3/8	1/2	5/8	5	3	13 3/8	7 1/2																		6.25
2M	30		1 3/8	1/2	5/8	5	3	13 3/8	7 1/2																		6.25
3	36		1 5/8	5/8	3/4	6	3 1/2	16	9																		9.0
4	48		2 1/4	3/4	1	8	5	21 3/8	11 1/4																		16.0
5	48		2 1/4	3/4	1	8	5	21 3/8	11 1/4																		16.0

STANDARD SIGN W21-5

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 3/21/11 PLATE NO. W21-5.5

PROJECT NO: HWY: COUNTY: SHEET NO: 116 E

\$PRNAME\$
U:\45-0419.00 - Manitowoc Co. CTH R over Manitowoc River\BRIDGE\450419 gp.dgn

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

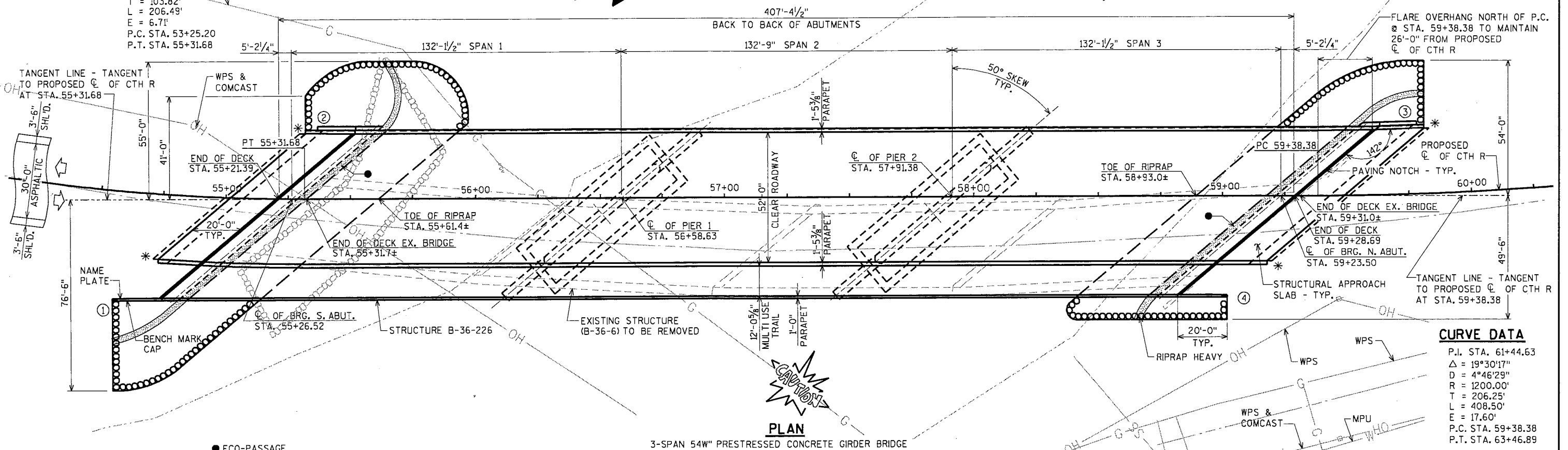
8

CURVE DATA

P.I. STA. 54+29.01
 $\Delta = 14^\circ 47' 18''$
 $D = 7^\circ 9' 43''$
 $R = 800.00'$
 $T = 103.82'$
 $L = 206.49'$
 $E = 6.71'$
P.C. STA. 53+25.20
P.T. STA. 55+31.68

* ANCHOR ASSEMBLY FOR THRIE BEAM TYPE GUARDRAIL.

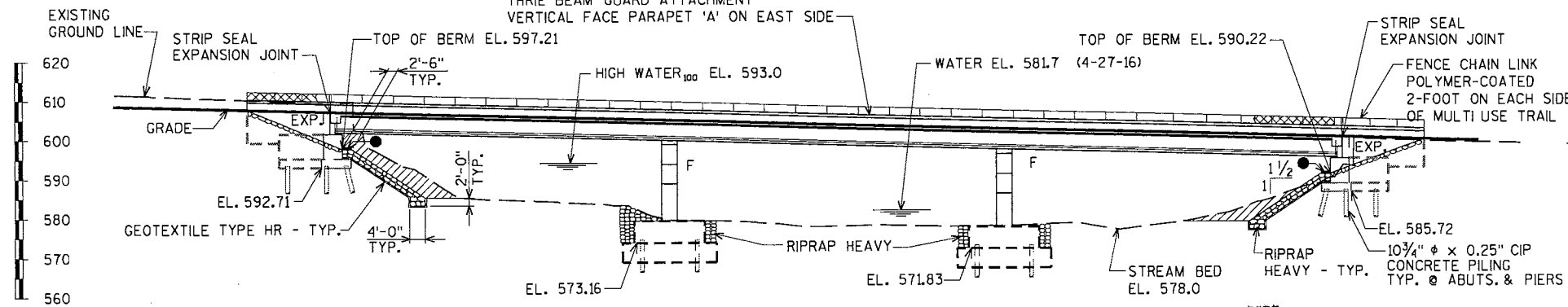
○ DENOTES WING NUMBER.



● ECO-PASSAGE
SEE DETAIL ON SHEET 3

COST OF EXCAVATION OR FILL IN THE HATCHED AREAS SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR "EXCAVATION FOR STRUCTURES BRIDGES B-36-226".

SINGLE SLOPE PARAPET TYPE 32SS ON WEST SIDE AND BETWEEN MULTIUSE TRAIL WITH THRIE BEAM GUARD ATTACHMENT
VERTICAL FACE PARAPET 'A' ON EAST SIDE

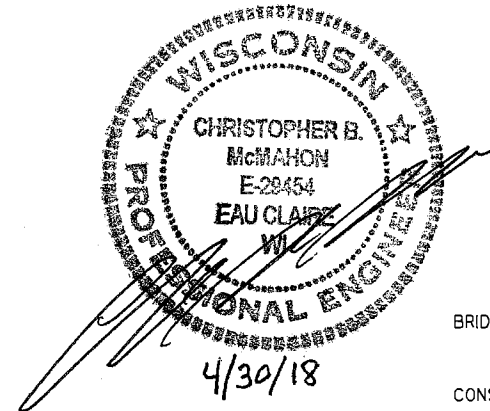


ELEVATION

(NORMAL TO C OF RIVER)

LIST OF DRAWINGS

1. GENERAL PLAN
2. TYPICAL SECTION
3. QUANTITIES, NOTES, DESIGN DATA, & PROFILE GRADE LINE
4. SUBSURFACE EXPLORATION
5. SOUTH ABUTMENT
6. SOUTH ABUTMENT FOOTING LAYOUT
7. SOUTH ABUTMENT WING 1 DETAILS
8. SOUTH ABUTMENT WING 2 DETAILS
9. SOUTH ABUTMENT DETAILS AND BILL OF BARS
10. NORTH ABUTMENT
11. NORTH ABUTMENT FOOTING LAYOUT
12. NORTH ABUTMENT WING 3 DETAILS
13. NORTH ABUTMENT WING 4 DETAILS
14. NORTH ABUTMENT DETAILS AND BILL OF BARS
15. ALTERNATE CONSTRUCTION JOINT
16. PIER 1
17. PIER 1 DETAILS
18. PIER 1 DETAILS AND BILL OF BARS
19. PIER 2
20. PIER 2 DETAILS
21. PIER 2 DETAILS AND BILL OF BARS
22. ABUTMENT BEARING DETAILS
23. 54W" PRESTRESSED GIRDER DETAILS
24. 54W" PRESTRESSED GIRDER DETAILS
25. STEEL INTER. DIAPHRAGM DETAILS
26. SUPERSTRUCTURE GIRDER LAYOUT
27. TOP OF DECK ELEVATIONS
28. SUPERSTRUCTURE
29. TRANSVERSE DECK STEEL LAYOUT
30. LONGITUDINAL DECK STEEL LAYOUT
31. SUPERSTRUCTURE DETAILS
32. DIAPHRAGM ELEVATION DETAILS
33. DIAPHRAGM PLAN DETAILS
34. SUPERSTRUCTURE CONDUIT DETAILS
35. SUPERSTRUCTURE BILL OF BARS
36. EXPANSION DEVICE
37. EXPANSION DEVICE AT SOUTH ABUTMENT
38. EXPANSION DEVICE AT NORTH ABUTMENT
39. EXPANSION DEVICE DETAILS
40. SOUTH STRUCTURAL APPROACH SLAB
41. NORTH STRUCTURAL APPROACH SLAB
42. STRUCTURAL APPROACH SLAB DETAILS
43. SINGLE SLOPE PARAPET 32SS WINGS 2 & 3
44. INT. SINGLE SLOPE PARAPET 32SS
45. VERTICAL FACE PARAPET "A" WINGS 1 & 4
46. FENCING DETAILS



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

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

STATE PROJECT NUMBER

4310-06-71

CURVE DATA

P.I. STA. 61+44.63
 $\Delta = 19^\circ 30' 17''$
 $D = 4^\circ 46' 29''$
 $R = 1200.00'$
 $T = 206.25'$
 $L = 408.50'$
 $E = 17.60'$
P.C. STA. 59+38.38
P.T. STA. 63+46.89

FOR FOR TYPICAL SECTION,
SEE SHEET 2. FOR DESIGN
DATA, AND GENERAL
NOTES, SEE SHEET 3.

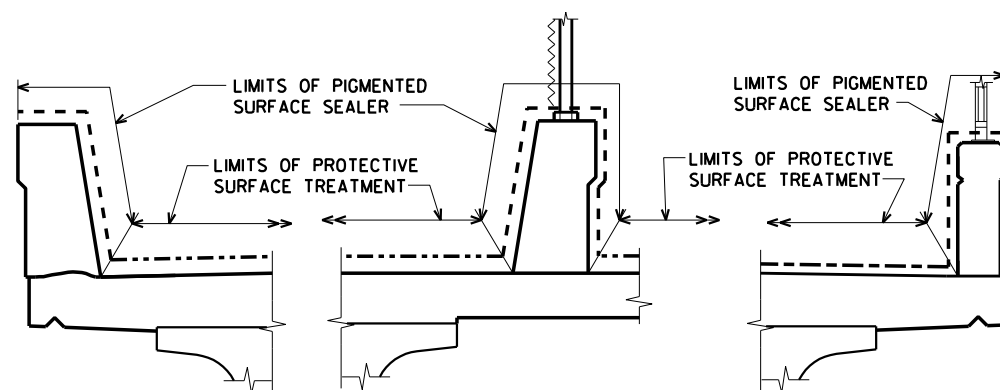
NO.	DATE	REVISION	BY
ORIGINAL PLANS PREPARED BY AYRES ASSOCIATES 3433 Oakwood Hills Parkway Eau Claire, WI 54701 www.AyresAssociates.com			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION ACCEPTED <i>William C. Dreher</i> SDR 8/21/18 CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-36-226			
CTH R OVER THE MANITOWOC RIVER			
COUNTY	MANITOWOC	TOWN/CITY/VILLAGE	MANITOWOC
DESIGN SPEC.	AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS		
DESIGNED BY	AEB	CKD.	JLB
DRAWN BY	CLS	PLANS CKD.	CBM
GENERAL PLAN			SHEET 117 OF 46

8

\$PRNAME\$
U:\45-0419.00 - Manitowoc Co. CTH R over Manitowoc River\BRIDGE\450419 ty an.dgn

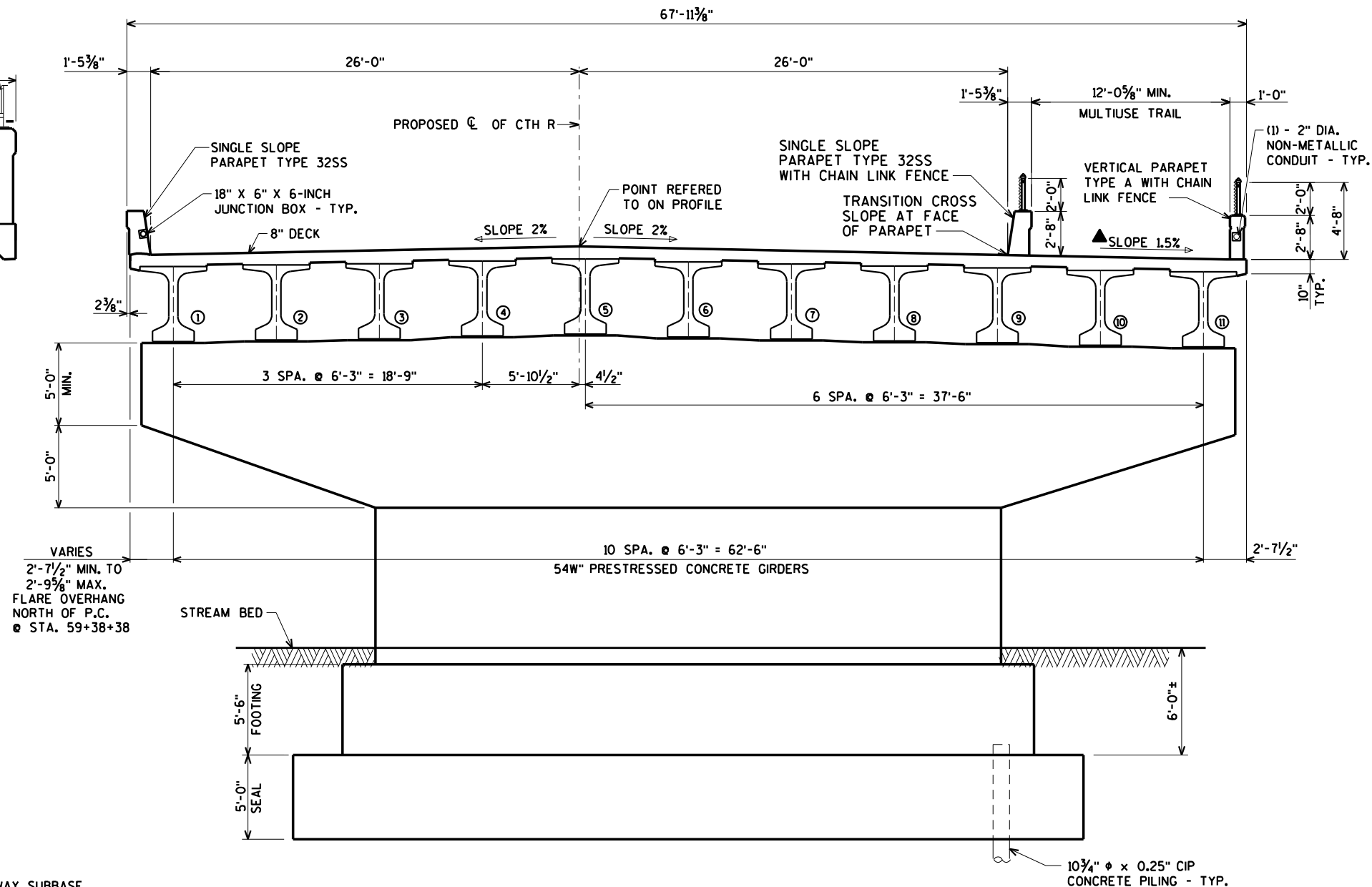
STATE PROJECT NUMBER

4310-06-71

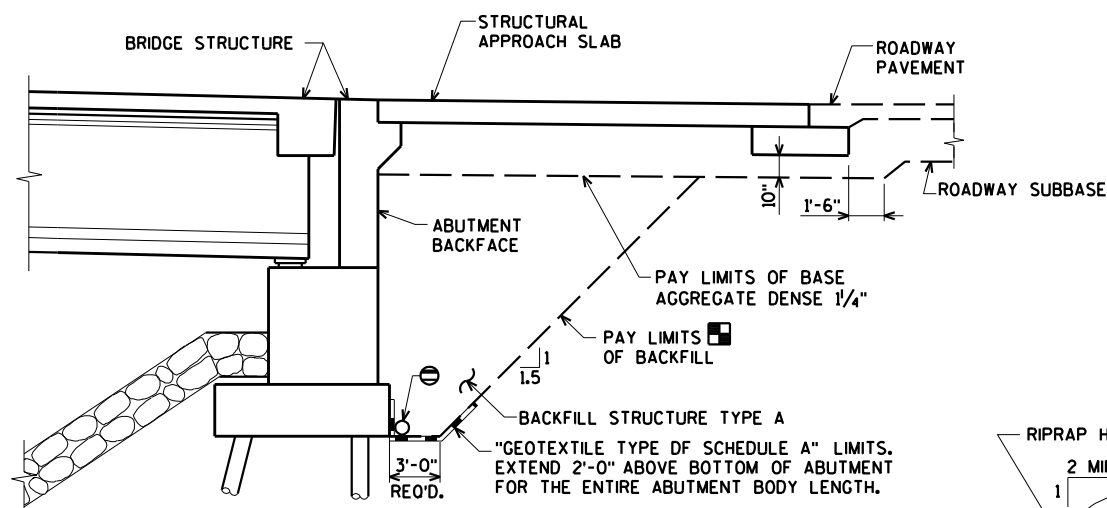


PROTECTIVE SURFACE TREATMENT AND PIGMENTED SURFACE SEALER DETAILS

▲ ± 0.5% CONSTRUCTION TOLERANCE IN MULTIUSE TRAIL CROSS SLOPE. THE MULTIUSE TRAIL CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.



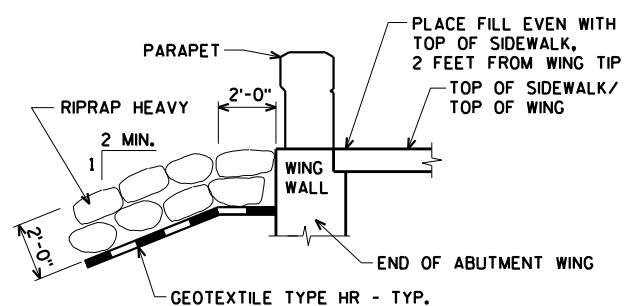
TYPICAL SECTION THRU BRIDGE
(LOOKING NORTH)



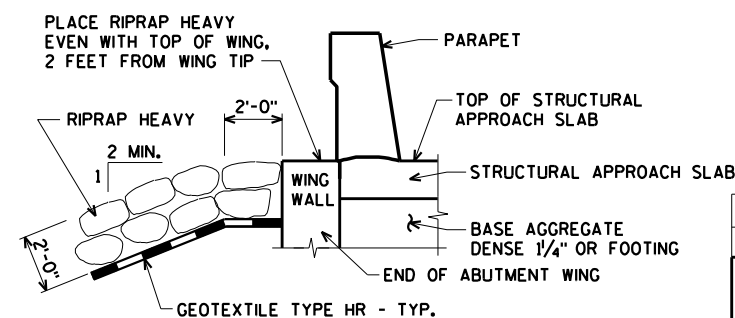
BACKFILL STRUCTURE LIMITS

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

⊖ PIPE UNDERDRAIN WRAPPED 6-INCH, SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 9.



TYPICAL FILL SECTION AT WING TIPS 1 & 4



TYPICAL FILL SECTION AT WING TIPS 2 & 3

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 B-36-226			
DRAWN BY CLS		PLANS CK'D. CBM	
TYPICAL SECTION			SHEET 2 OF 46 118

\$PRFNAME\$
U:\45-0419.00 - Manitowoc Co.CTH R over Manitowoc River-BRIDGE#450419 ty qn.dgn

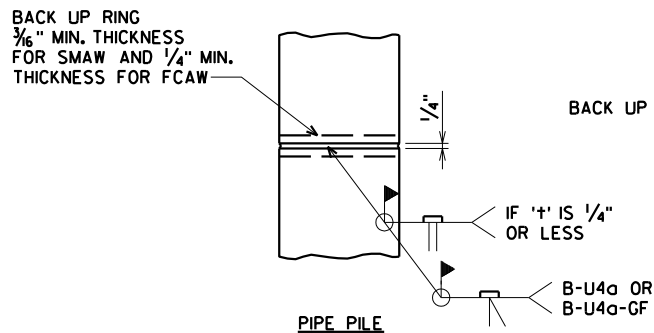
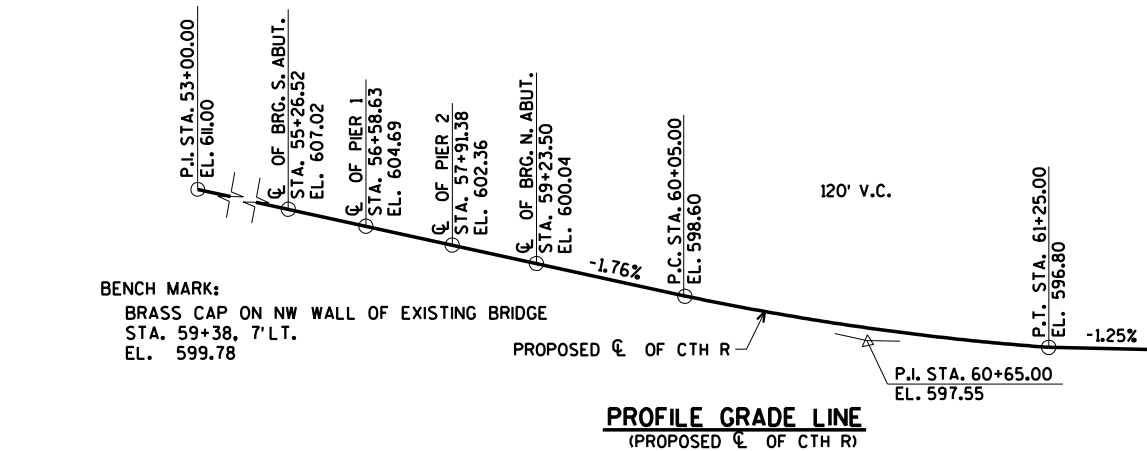
8

TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	S. STR. APR. SLAB	S. ABUT.	PIER 1	PIER 2	N. ABUT.	N. STR. APR. SLAB	SUPER.	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 57+16	LS	-----	-----	-----	-----	-----	-----	-----	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-36-226	LS	-----	-----	-----	-----	-----	-----	-----	1
206.5000	COFFERDAMS B-36-226	LS	-----	-----	-----	-----	-----	-----	-----	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	-----	775	-----	-----	775	-----	-----	1,550
305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	200	-----	-----	-----	-----	200	-----	400
502.0100	CONCRETE MASONRY BRIDGES	CY	79	246	465	457	241	82	1,115	2,685
502.1100	CONCRETE MASONRY SEAL	CY	-----	-----	304	304	-----	-----	-----	608
502.3100	EXPANSION DEVICE B-36-226	LS	-----	-----	-----	-----	-----	-----	-----	1
502.3200	PROTECTIVE SURFACE TREATMENT	SY	120	-----	-----	-----	-----	120	2,945	3,185
502.3210	PIGMENTED SURFACE SEALER	SY	25	10	-----	-----	10	25	630	700
503.0155	PRESTRESSED GIRDER TYPE I 54W-INCH	LF	-----	-----	-----	-----	-----	-----	4,375	4,375
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	-----	9,030	71,720	70,260	9,080	-----	-----	160,090
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	15,060	7,750	260	260	7,500	15,490	230,800	277,120
505.0800.S	BAR STEEL REINFORCEMENT HS STAINLESS STRUCTURES	LB	920	-----	-----	-----	-----	940	-----	1,860
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	-----	-----	22	22	-----	-----	-----	44
506.2610	BEARING PADS ELASTOMERIC LAMINATED	EACH	-----	11	-----	-----	11	-----	-----	22
506.4000	STEEL DIAPHRAGMS B-36-226	EACH	-----	-----	-----	-----	-----	-----	60	60
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	-----	25	-----	-----	25	-----	-----	50
550.2104	PILING CIP CONCRETE 10 3/4 X 0.25-INCH	LF	-----	3,220	3,400	3,400	2,530	-----	-----	12,550
606.0300	RIPRAP HEAVY	CY	-----	585	135	135	415	-----	-----	1,270
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	-----	160	-----	-----	160	-----	-----	320
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	2	-----	-----	-----	-----	2	-----	4
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	-----	95	-----	-----	95	-----	-----	190
645.0120	GEOTEXTILE TYPE HR	SY	-----	1,015	-----	-----	730	-----	-----	1,745
652.0125	CONDUIT RIGID METALLIC 2-INCH	LF	5	-----	-----	-----	-----	5	40	50
652.0225	CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH	LF	30	30	-----	-----	30	30	775	895
653.0220	JUNCTION BOXES 18 X 6 X 6-INCH	EACH	-----	-----	-----	-----	-----	-----	4	4
SPV.0090.01	FENCE CHAIN LINK POLYMER-COATED 2-FT	LF	20	20	-----	-----	20	20	815	895
NON-BID ITEMS										
FILLER		SIZE	-----	-----	-----	-----	-----	-----	-----	1/2" & 3/4"

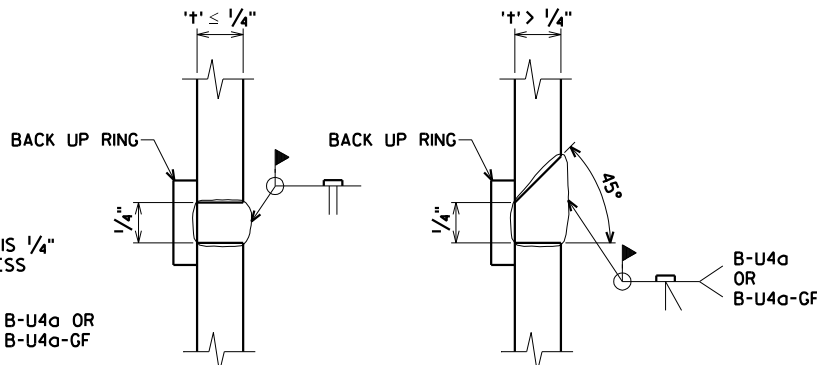
GENERAL NOTES

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 SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY TO THE EXTENT SHOWN ON THE GENERAL PLAN SHEET AND IN THE ABUTMENT DETAILS.
ELASTOMERIC BEARING PADS NEED NOT BE INDIVIDUALLY MOLDED PROVIDED THE CUT EDGES ARE SMOOTH AND TRUE.
THE EXISTING GROUNDLINE SHALL BE THE UPPER LIMIT FOR EXCAVATION FOR STRUCTURES.
THE EXISTING STRUCTURE, B-36-6, TO BE REMOVED, IS A FOUR SPAN STEEL DECK GIRDER BRIDGE, 394.5 FT. LONG WITH A 28.5 FT. CLEAR ROADWAY WIDTH.
PROTECTIVE SURFACE TREATMENT AND PIGMENTED SURFACE SEALER ARE TO BE APPLIED AS SHOWN IN THE DETAILS ON SHEET 2.
AT BACKFACE OF ABUTMENTS ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH BACKFILL STRUCTURE TYPE A.
EXCAVATION BELOW THE ABUTMENT AND ABUTMENT BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE BOTTOM OF ABUTMENT.
BEVEL EXPOSED EDGES OF CONCRETE 3/4" UNLESS NOTED OTHERWISE.
THE HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE 54W" PRESTRESSED GIRDER DETAILS SHEET.



PILE SPICE DETAIL

CAST-IN-PLACE PILE SHELL MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION.



CIP PILE WELD DETAIL

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING FACTOR: 1.11
OPERATING RATING FACTOR: 2.37
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 #/S.F.

MATERIAL PROPERTIES:

CONCRETE MASONRY: SUPERSTRUCTURE f'c = 4,000 p.s.i.
ALL OTHER f'c = 3,500 p.s.i.
HIGH STRENGTH BAR STEEL REINFORCEMENT (GRADE 60) fy = 60,000 p.s.i.

54W" PRESTRESSED GIRDER

CONCRETE MASONRY f'c = 8,000 p.s.i.
STRANDS - 0.6" DIA. WITH ULTIMATE TENSILE STRENGTH OF = 270,000 p.s.i.

HYDRAULIC DATA:

100 YEAR FREQUENCY

Q100 = 14,000 c.f.s.
VEL. = 5.9 f.p.s.
HW100 = EL. 593.0
WATERWAY AREA = 2,380 sq. ft.
DRAINAGE AREA = 548 sq. mi.
ROADWAY OVERTOPPING = N/A
SCOUR CRITICAL CODE = 5
DATUM = NAVD88 (2012)

2 YEAR FREQUENCY

Q2 = 4,800 c.f.s.
VEL. = 3.6 f.p.s.
HW2 = EL. 588.4

FOUNDATION DATA:

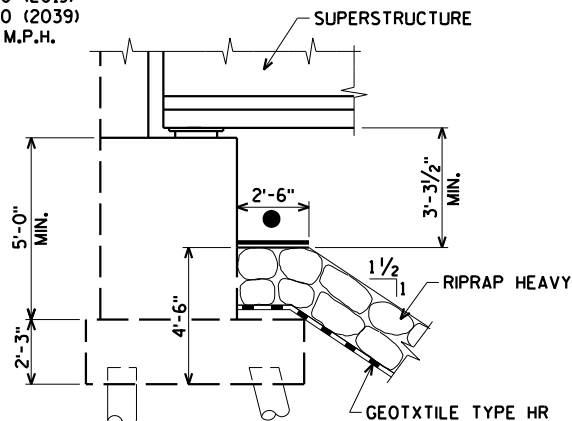
ABUTMENTS TO BE SUPPORTED ON 10 3/4" x 0.25" CIP CONCRETE PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 130 TONS * PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED LENGTH 70'-0" AT SOUTH ABUTMENT. ESTIMATED LENGTH 55'-0" AT NORTH ABUTMENT.

PIERS TO BE SUPPORTED ON 10 3/4" x 0.25" CIP CONCRETE PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 120 TONS * PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED LENGTH 50'-0".

*THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5 USING MODIFIED GATES TO DETERMINE DRIVEN PILE CAPACITY.

TRAFFIC DATA:

A.A.D.T. = 11,500 (2019)
A.A.D.T. = 14,100 (2039)
R.D.S. = 35 M.P.H.



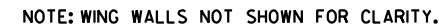
ECO-PASSAGE DETAIL

FILL VOIDS IN RIPRAP HEAVY WITH TRAFFIC BOND LIMESTONE SCREENINGS 3/8-INCH TO FULLY FILL ALL VOIDS AND LEAVE, ON AVERAGE, TWO INCHES ABOVE THE LOWEST ROCK POINTS WHERE THEY ABUT EACH OTHER. PROVIDE LEVEL SURFACE OF THE ECO PASSAGE. TRAFFIC BOND LIMESTONE TO BE INCIDENTAL IN THE BID ITEM "RIPRAP HEAVY".

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
QUANTITIES, NOTES, DESIGN DATA, & PROFILE GRADE LINE			SHEET 3 OF 46 119

8

BORINGS COMPLETED BY: RIVER VALLEY TESTING CORP.
REPORT COMPLETED BY: RIVER VALLEY TESTING CORP.
ALL COORDINATES REFERENCED TO WCCS MANITOWOC COUNTY



3 |

4310-06-71

	ASPHALT		TOPSOIL		PEAT
	CONCRETE		FILL		GRAVEL
	SAND		CLAY		SILT
	BOULDERS OR COBBLES		LIMESTONE		BEDROCK (UNKNOWN)
	SHALE		SANDSTONE		IGNEOUS/ META

[illegible]

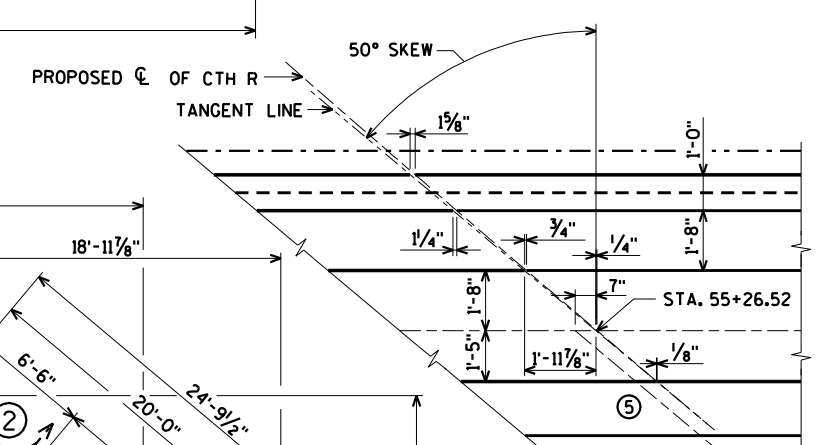
(2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

 AT TIME OF DRILLING
 END OF DRILLING
 AFTER DRILLING

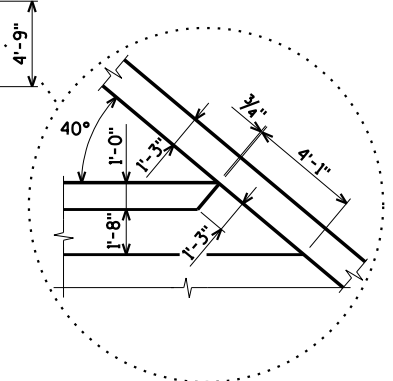
F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT SIMILAR SUBSURFACE CONDITIONS BELOW, BETWEEN, OR BEYOND THESE BORINGS. VARIATIONS IN SOIL CONDITIONS SHOULD BE EXPECTED AND FLUCTUATIONS IN GROUNDWATER LEVELS MAY OCCUR.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CJM	PLANS CK'D. CBM
SUBSURFACE EXPLORATION		SHEET 4 OF 46	
		120	



DETAIL OF TOP OF
ABUTMENT AT
CENTERLINE



ORIGINAL PLANS PREPARED BY

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ASSOCIATES

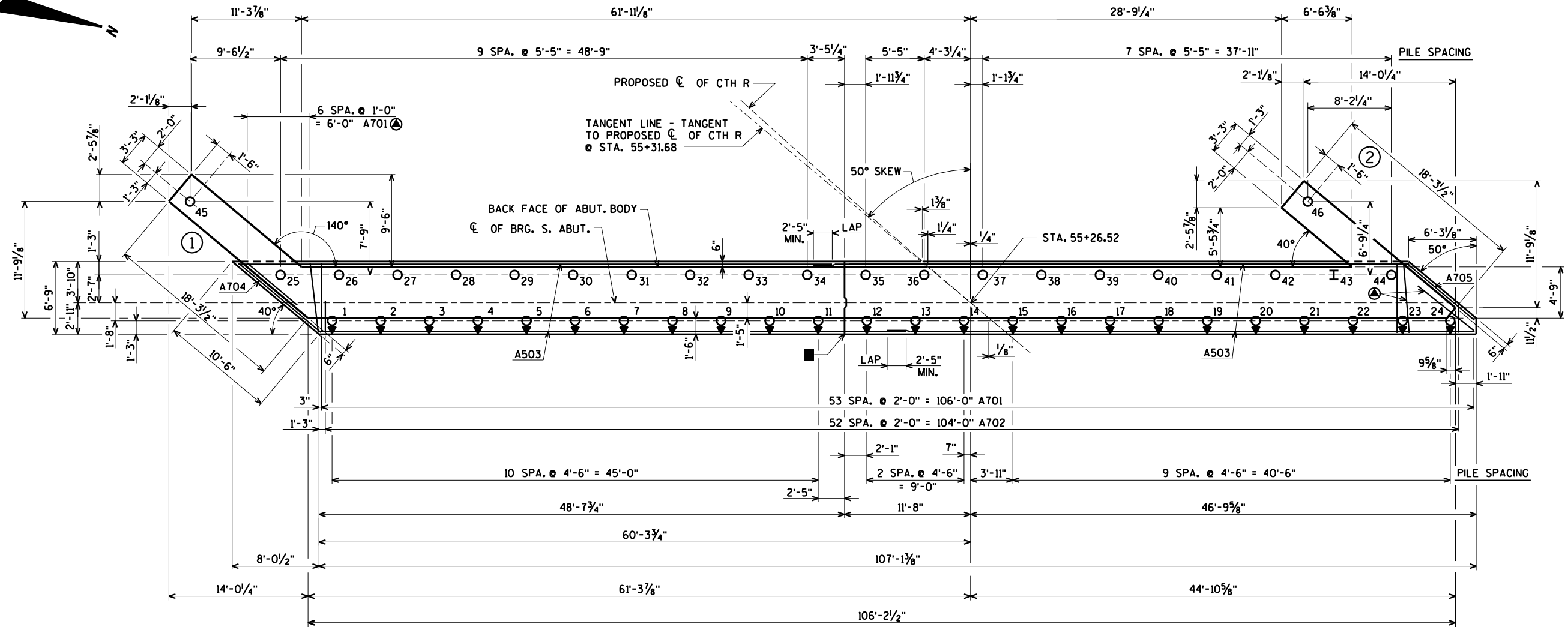
3433 Oakwood Hills Parkway
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www.AyresAssociates.com

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SOUTH ABUTMENT		SHEET 5 OF 46 121	

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STATE PROJECT NUMBER

4310-06-71



FOOTING LAYOUT

■ VERT. CONST. JT. - OPTIONAL IN FOOTING.

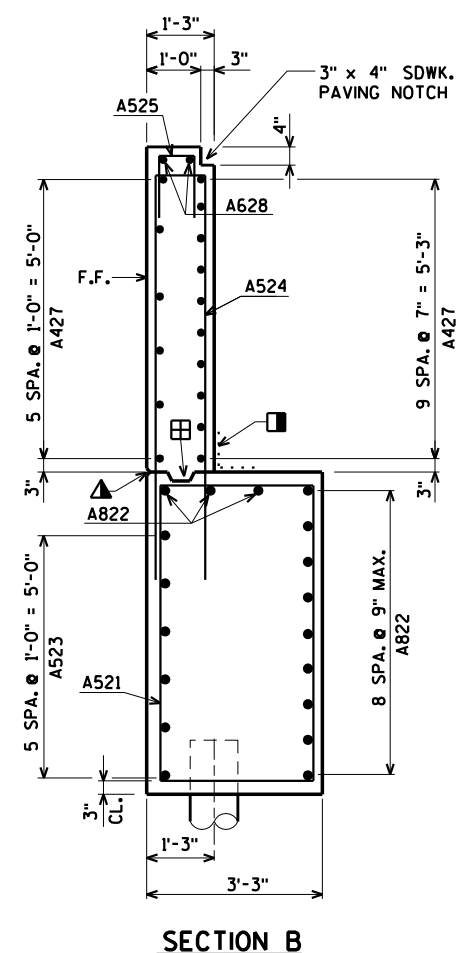
⊙ TURN A701 BARS AS NECESSARY TO FIT IN FOOTING CORNER.

⊕ DENOTES BATTERED PILES. BATTER 3" PER FOOT IN DIRECTION SHOWN.

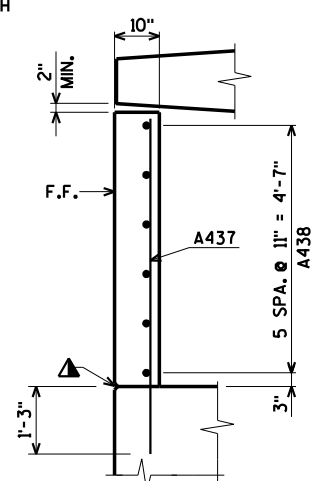
FOR PILE SPLICE DETAIL SEE SHEET 3

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3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SOUTH ABUTMENT FOOTING LAYOUT		SHEET 6 OF 46 122	



SECTION B



SECTION C

SECTION D

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

FOR PILE SPLICE DETAIL SEE SHEET 3

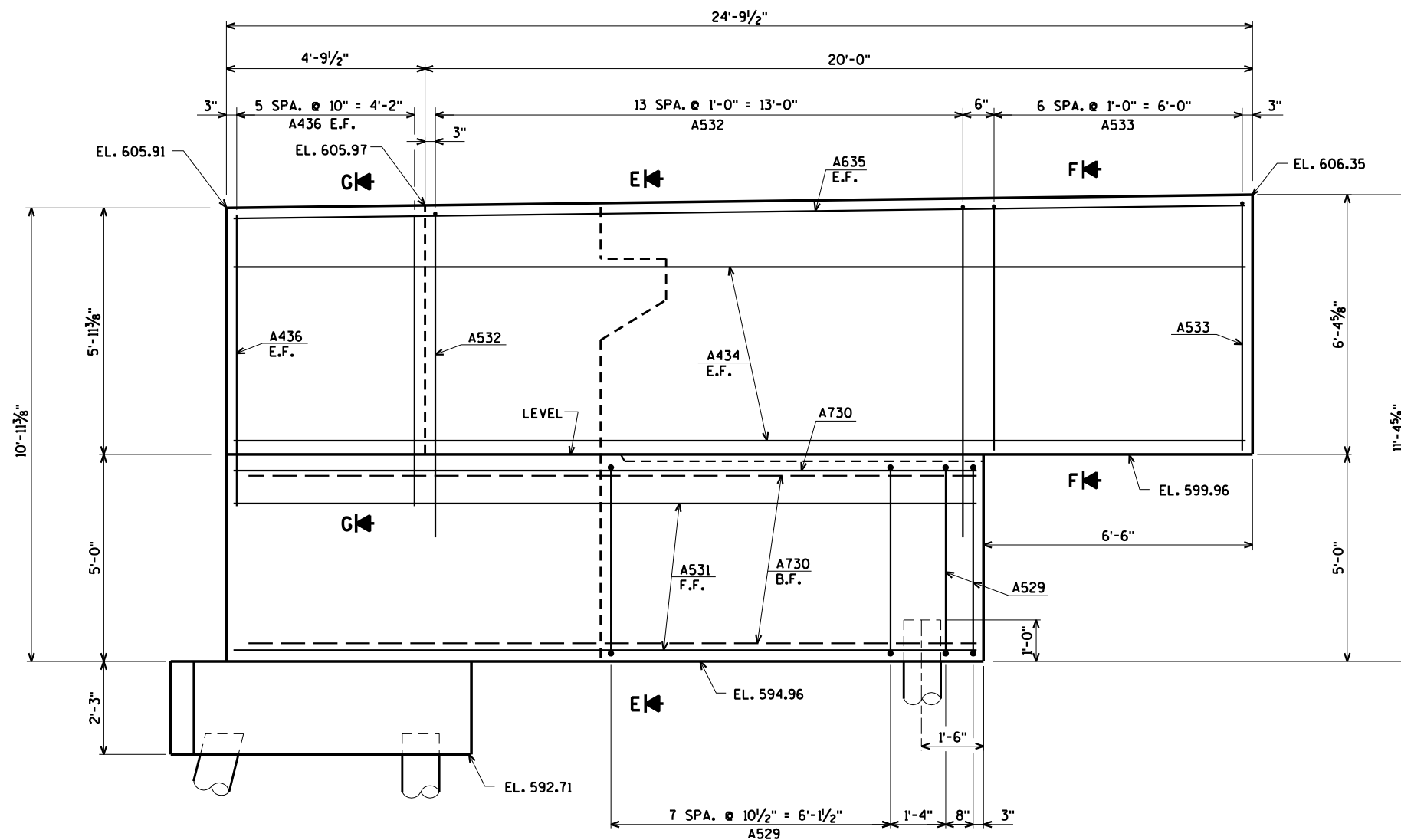


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SOUTH ABUTMENT WING 1 DETAILS		SHEET 7 OF 46 123	

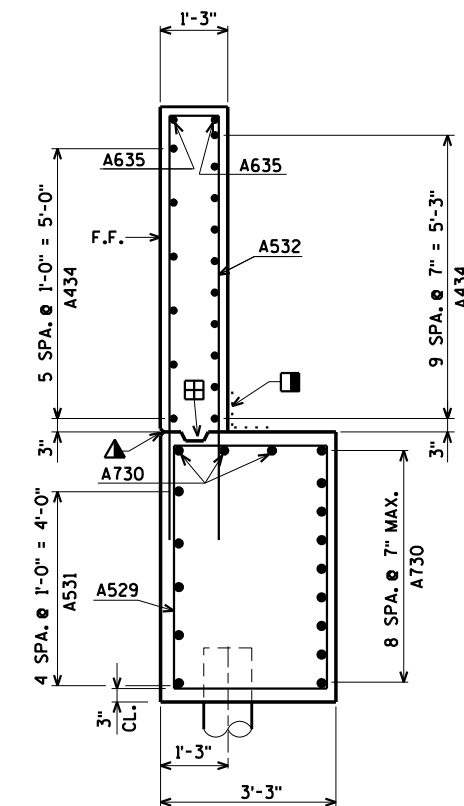
\$PRNAME\$
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STATE PROJECT NUMBER

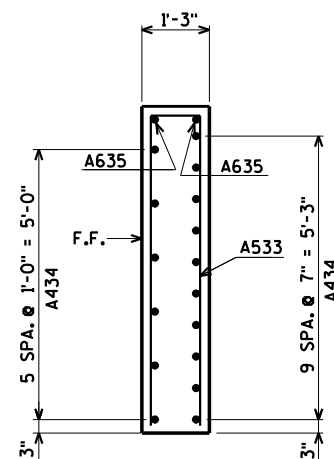
4310-06-71



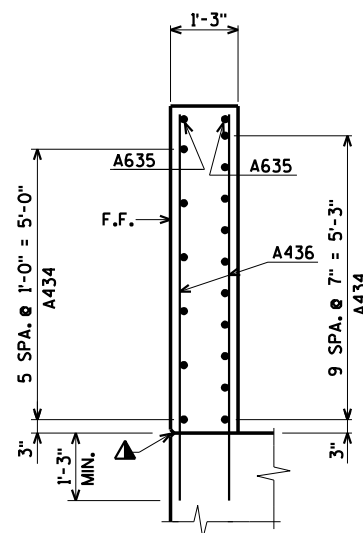
ELEVATION WING 2



SECTION E



SECTION F



SECTION G

- ▲ 3/4" "V" GROOVE ON F.F. OF WINGWALL.
- 18" RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACK FACE OF ABUTMENT ABOVE FOOTING.
- ▣ OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".

F.F. DENOTES FRONT FACE

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

FOR PILE SPLICE DETAIL SEE SHEET 3

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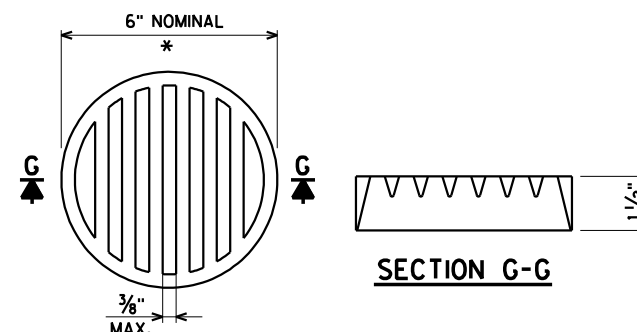
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SOUTH ABUTMENT WING 2 DETAILS		SHEET 8 OF 46 124	

BILL OF BARS

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.



FOR LOCATION OF SECTIONS 'A' & 'H'
SEE SHEET 5.



SECTION G-G

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

RODENT SHIELD DETAIL

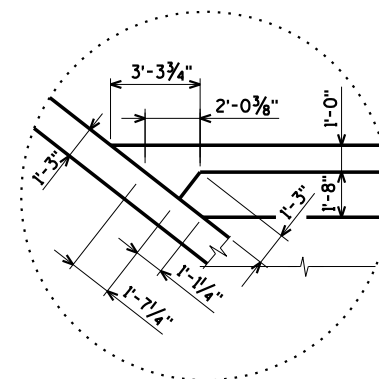
FOR PILE SPlice DETAIL SEE SHEET 3

ORIGINAL PLANS PREPARED BY

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ASSOCIATES

3433 Oakwood Hills Parkway
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBI
SOUTH ABUTMENT DETAILS AND BILL OF BARS		SHEET 9 OF 125	



CORNER AT WING 3 DETAIL



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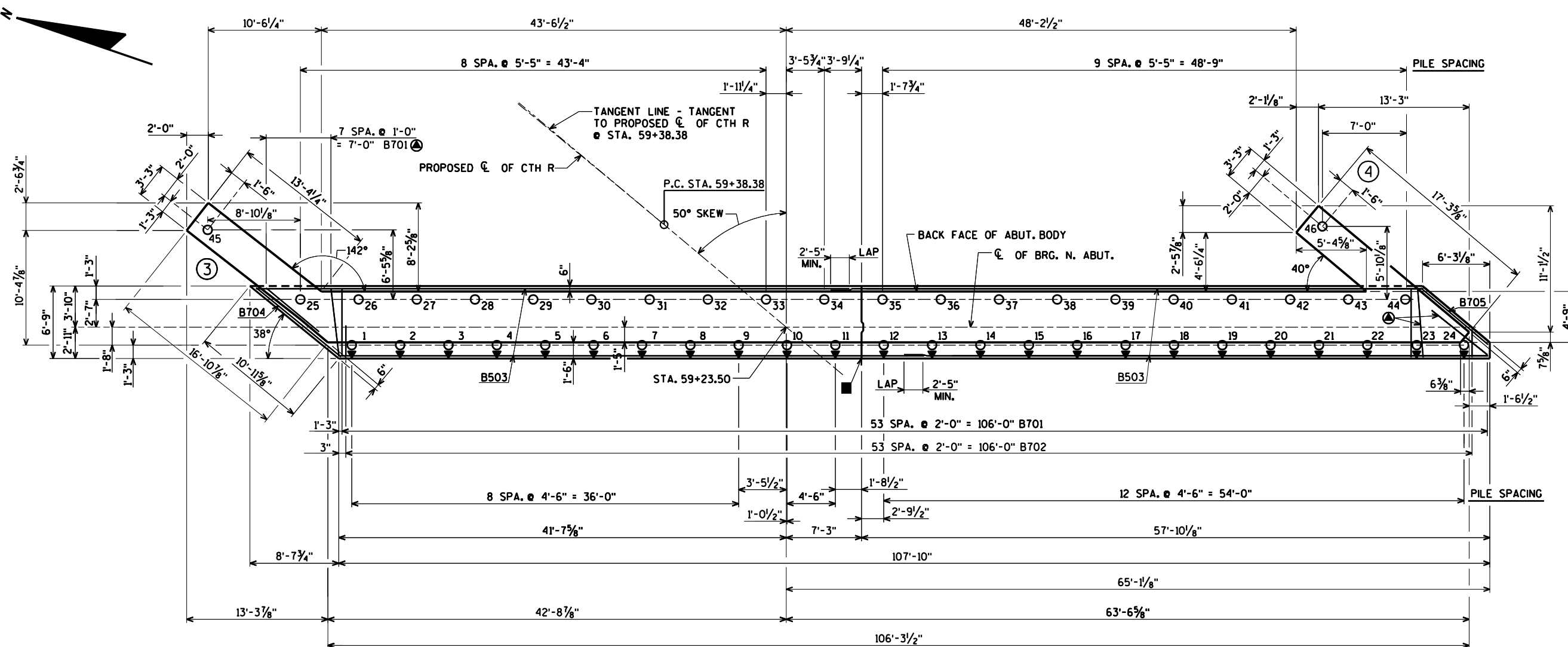
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
		DRAWN BY	CLB
		PLANS CK'D.	CBM
NORTH ABUTMENT		SHEET 10 OF 4 126	

\$PRNAME\$
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STATE PROJECT NUMBER

4310-06-71



FOOTING LAYOUT

■ VERT. CONST. JT. - OPTIONAL IN FOOTING.

⊙ TURN B701 BARS AS NECESSARY
TO FIT IN FOOTING CORNER.

⊕ DENOTES BATTERED PILES.
BATTER 3" PER FOOT IN
DIRECTION SHOWN.

FOR PILE SPLICE DETAIL SEE SHEET 3

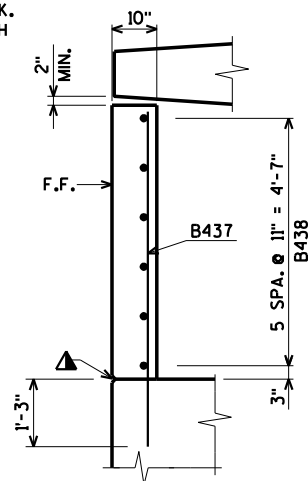
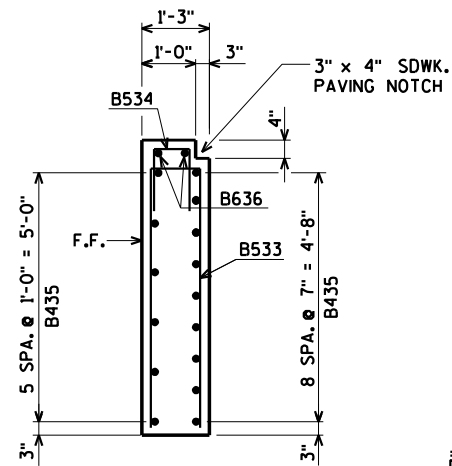
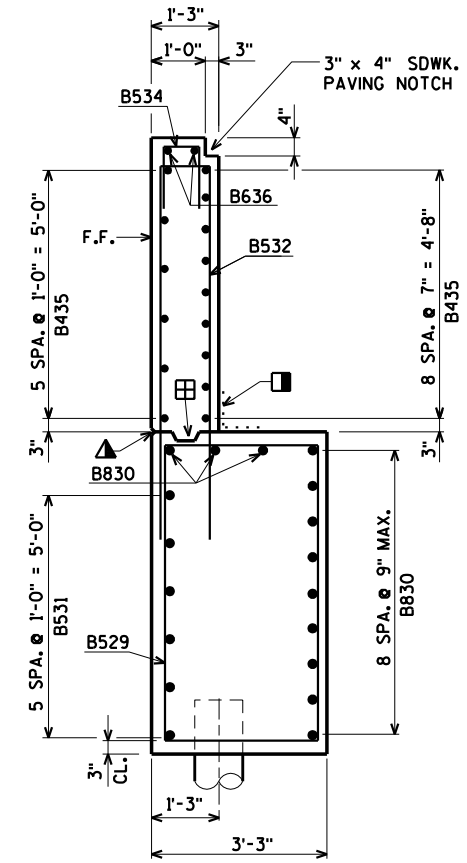
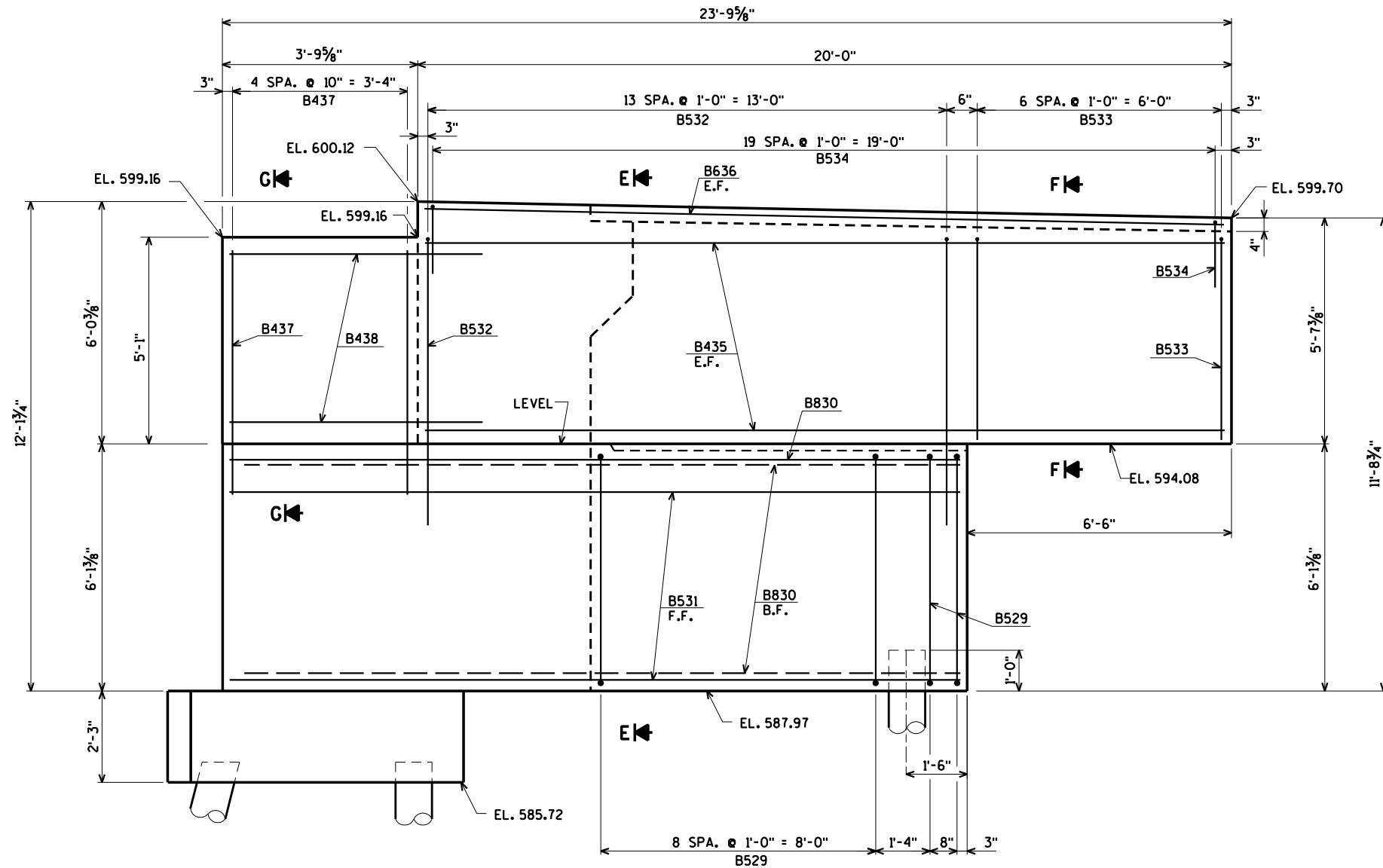
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Eau Claire, WI 54701
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
NORTH ABUTMENT FOOTING LAYOUT		SHEET 11 OF 46 127	

\$PRNAME\$
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STATE PROJECT NUMBER

4310-06-71



- ▲ 3/4" "V" GROOVE ON F.F. OF WINGWALL.
- 18" RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACK FACE OF ABUTMENT ABOVE FOOTING.
- ▣ OPT. KEYED CONST. JOINT - FORMED BY A BEVELED 2" x 6".

F.F. DENOTES FRONT FACE

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

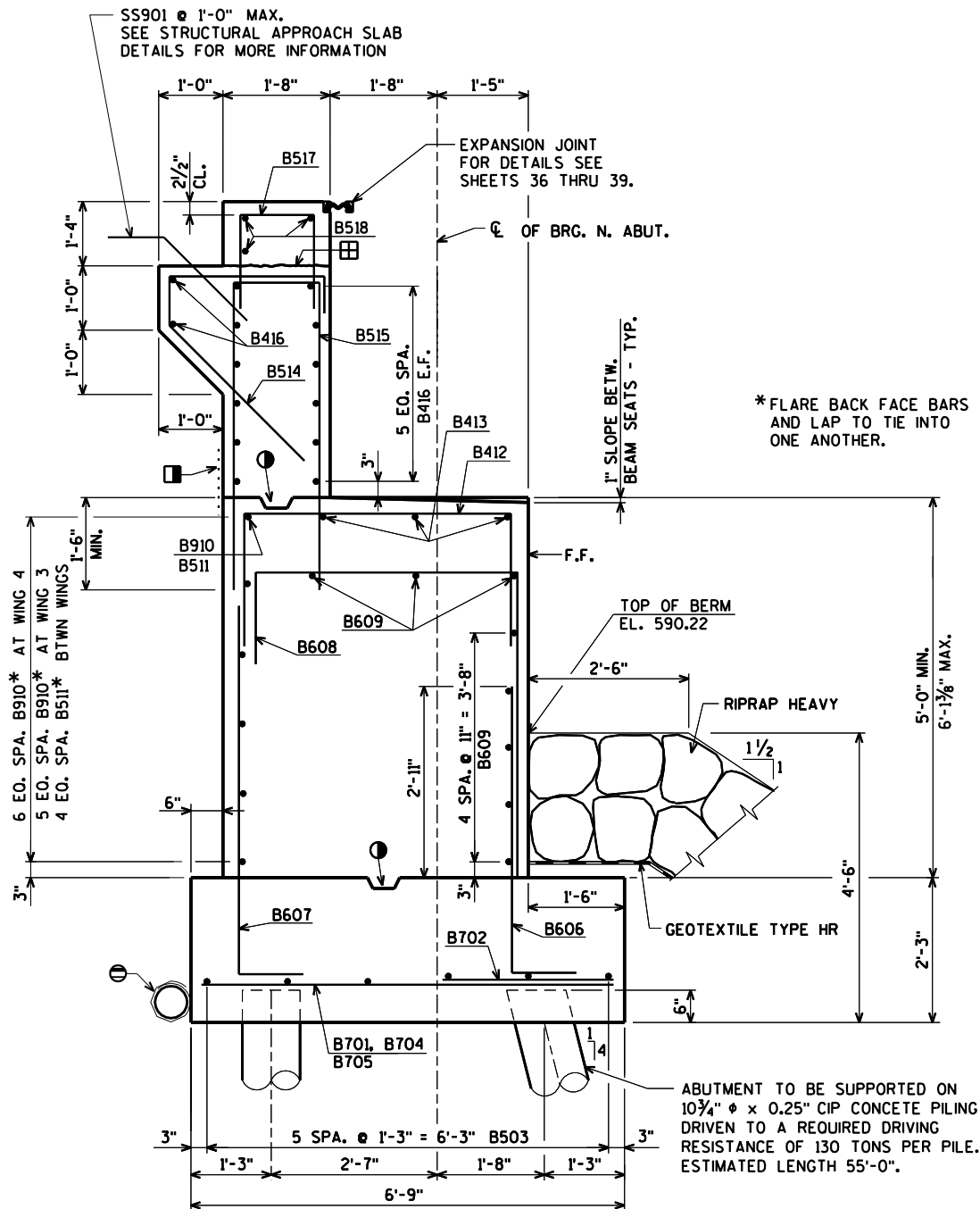
FOR PILE SPLICE DETAIL SEE SHEET 3

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NO.	DATE	REVISION	BY
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STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
NORTH ABUTMENT WING 4 DETAILS			SHEET 13 OF 46 129

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U:\45-0419.00 - Manitowoc Co. CTH R over Manitowoc River\BRIDGE\450419 na.dgn

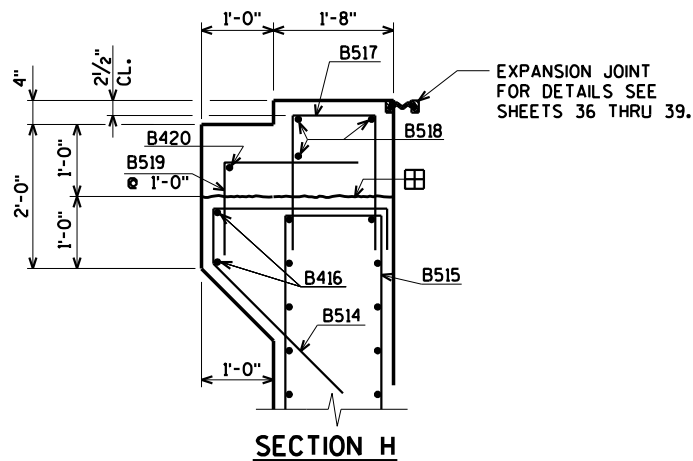
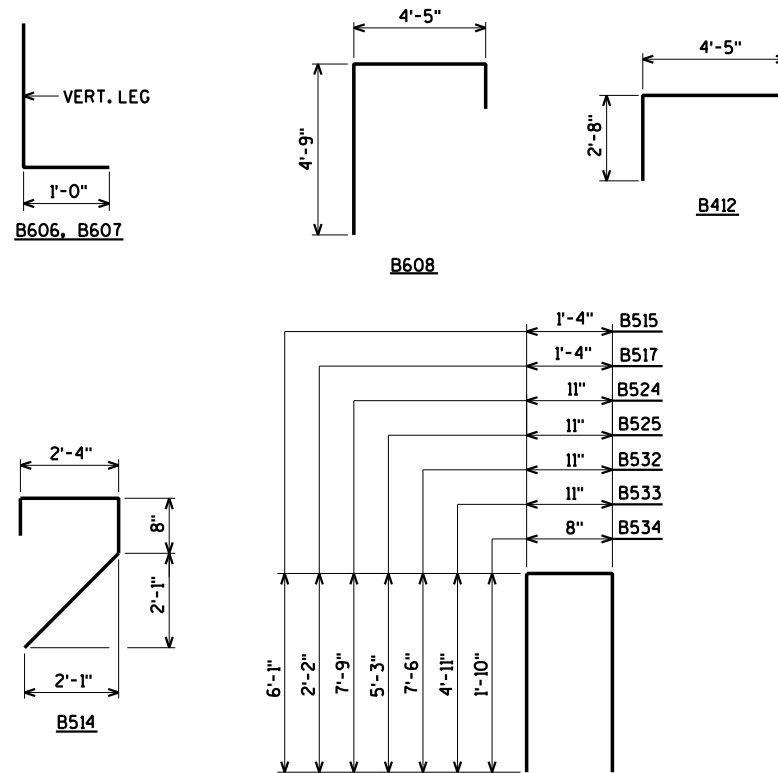
8



**TYPICAL SECTION THRU BODY
SECTION A**

EXCAVATE OR FILL TO
BOTTOM OF ABUTMENT
BEFORE DRIVING PILES.

FOR LOCATION OF SECTIONS 'A' & 'H'
SEE SHEET 10.



BILL OF BARS

SEE SHEETS 43 THRU 45 FOR
PARAPET REINFORCEMENT

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED BAR SERIES	9,080# UNCOATED 7,090# COATED
						LOCATION
B701		62	6-5			FOOTING
B702		54	2-10			FOOTING
B503		12	56-1			FOOTING
B704		1	10-5			FOOTING @ WING 3
B705		1	7-8			FOOTING @ WING 4
B606		106	5-6	X		FOOTING DOWELS F.F.
B607		106	7-3	X		FOOTING DOWELS B.F.
B608		106	10-5	X		BODY VERT.
B609		16	54-7			BODY HORIZ.
B910		13	20-0			BODY HORIZ. B.F. @ WINGS 3 & 4
B511		10	36-9			BODY HORIZ. B.F.
B412		119	9-7	X		BODY VERT. TOP
B413		6	45-4			BODY HORIZ. TOP
B514	X	103	6-6	X		BACKWALL VERT.
B515	X	106	13-4	X		BACKWALL VERT.
B416	X	42	37-6			BACKWALL HORIZ. E.F.
B517	X	106	5-5	X		PAVING BLOCK VERT.
B518	X	45	8-0			PAVING BLOCK HORIZ.
B519	X	19	3-3	X		BACKWALL @ SDWK. PAVING NOTCH VERT.
B420	X	1	18-3			BACKWALL @ SDWK. PAVING NOTCH HORIZ.
B521	X	14	15-8	X		WING 3 VERT.
B722	X	12	16-5			WING 3 HORIZ. B.F. & TOP
B523	X	5	16-5			WING 3 HORIZ. F.F.
B524	X	14	16-2	X		WING 3 VERT.
B525	X	7	11-2	X		WING 3 VERT.
B426	X	15	22-11			WING 3 HORIZ. E.F.
B627	X	2	22-11			WING 3 HORIZ. E.F.
B428	X	8	7-0			WING 3 VERT. E.F.
B529	X	11	17-10	X		WING 4 VERT.
B830	X	12	13-11			WING 4 HORIZ. B.F. & TOP
B531	X	6	16-11			WING 4 HORIZ. F.F.
B532	X	14	15-8	X		WING 4 VERT.
B533	X	7	10-6	X		WING 4 VERT.
B534	X	20	4-2	X		WING 4 VERT. TOP
B435	X	15	19-8			WING 4 HORIZ. E.F.
B636	X	2	19-8			WING 4 HORIZ. E.F.
B437	X	5	6-2			WING 4 SIDEWALL VERT.
B438	X	6	4-10			WING 4 SIDEWALL HORIZ.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.

PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5%
MIN. TO SUITABLE DRAINAGE. ATTACH RODENT
SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED
ON SHEET 9. RODENT SHIELD TO BE INCLUDED
IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".

18" RUBBERIZED MEMBRANE WATERPROOFING
SEAL ALL HORIZONTAL AND VERTICAL JOINTS
ON BACK FACE OF ABUTMENT ABOVE FOOTING.

KEYED CONST. JOINT - FORMED
BY A BEVELED 2" x 6"

CONST. JOINT - POUR CONCRETE ABOVE
THIS JOINT AFTER SUPERSTRUCTURE IS IN
PLACE. STRIKE OFF AND LEAVE ROUGH.

F.F. DENOTES FRONT FACE

B.F. DENOTES BACK FACE

E.F. DENOTES EACH FACE

FOR PILE SPLICE DETAIL SEE SHEET 3

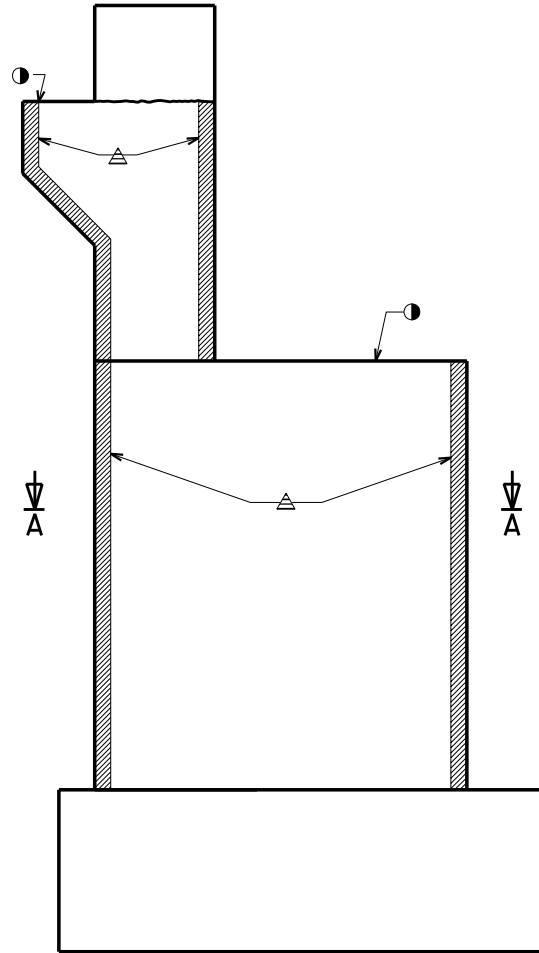
ORIGINAL PLANS PREPARED BY
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
NORTH ABUTMENT DETAILS AND BILL OF BARS			SHEET 14 OF 46 130

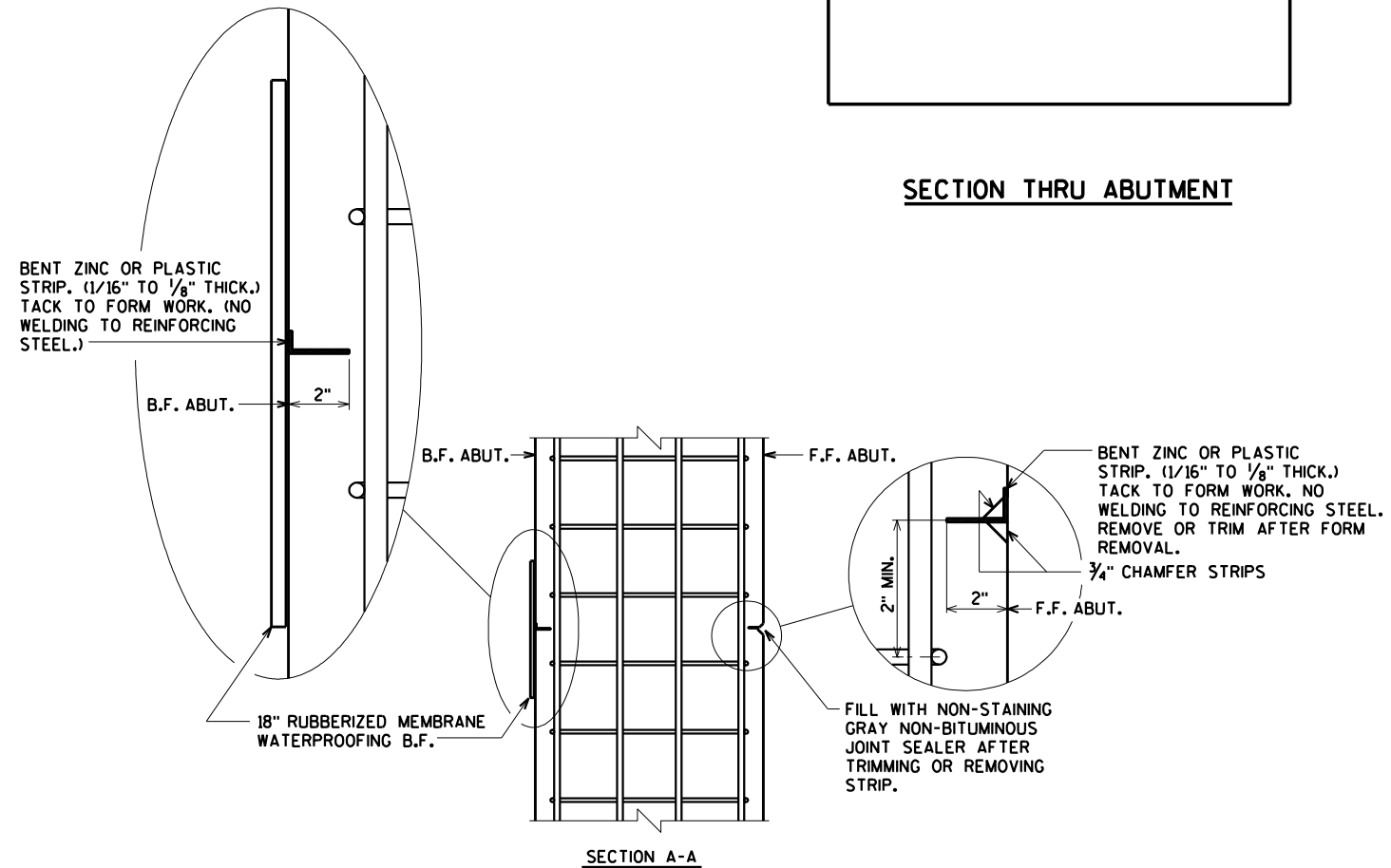
\$PRNAME\$ U:\45-0419.00 - Manitowoc Co. CTH R over Manitowoc River\BRIDGE\450419.dgn

STATE PROJECT NUMBER

4310-06-71



SECTION THRU ABUTMENT



SECTION A-A

ALTERNATE CONSTRUCTION JOINT AT ABUTMENT

NOTES

PARTIAL ZINC OR PLASTIC BULKHEAD MAY BE USED AS ALTERNATE CONSTRUCTION JOINT, WITH THE PERMISSION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

VERTICAL CONSTRUCTION JOINT KEYWAY IS NOT REQUIRED WHEN USING ALTERNATE CONSTRUCTION JOINT.

CARE IS TO BE USED IN CASTING CONCRETE AROUND BULKHEAD TO PREVENT DISLOCATION OR MISALIGNMENT OF THE BULKHEAD.

SAW CUTTING JOINT IS NOT ALLOWED.

● USE A JOINT TOOL TO CONSTRUCT A CONTRACTION JOINT APPROXIMATELY 1/2" DEEP.

△ BENT ZINC OR PLASTIC STRIP.

F.F. DENOTES FRONT FACE

B.F. DENOTES BACK FACE

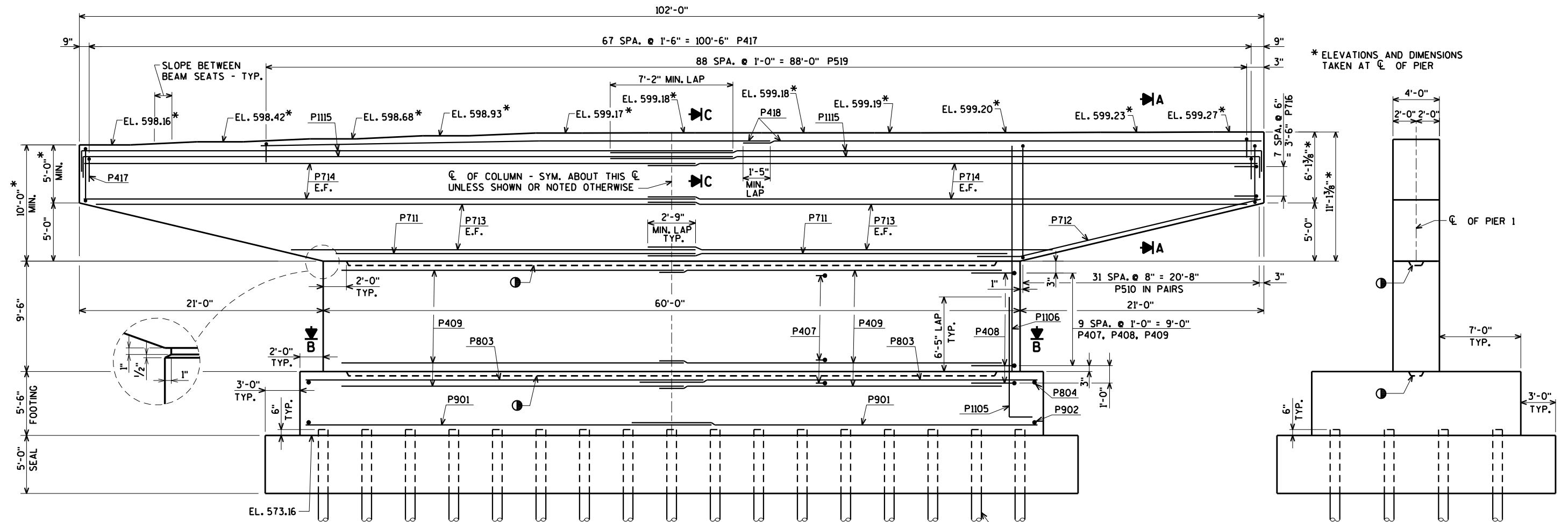
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY CLS		PLANS CK'D. CBM	
ALTERNATE CONSTRUCTION JOINT		SHEET 15 OF 46 131	

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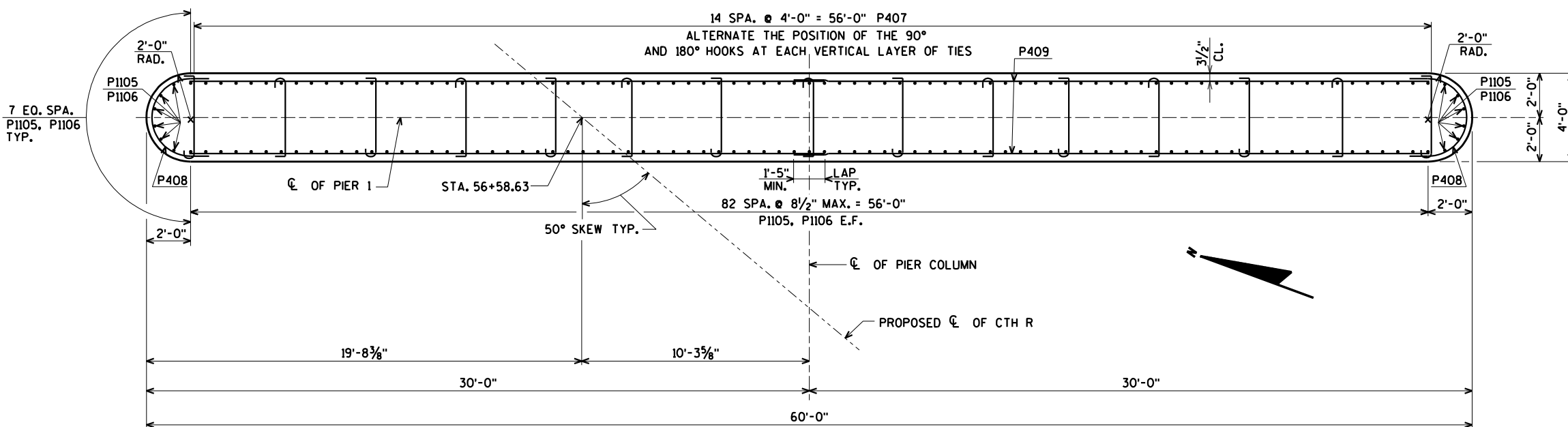
STATE PROJECT NUMBER

4310-06-71



ELEVATION
(LOOKING NORTH)

PIER TO BE SUPPORTED ON
10 3/4" ϕ $\times$ 0.25" CIP CONCRETE
PILING DRIVEN TO A REQUIRED DRIVING
RESISTANCE OF 120 TONS PER PILE.
ESTIMATED LENGTH 50'-0".



SECTION B

FOR SECTIONS A & C
SEE SHEET 18

KEYED CONST. JOINT FORMED BY
A SURFACED BEVELED KEYWAY
4" DEEP $\times$ 1'-0" WIDE $\times$ 56'-0" LONG

FOR PILE SPLICE DETAIL SEE SHEET 3

E.F. DENOTES EACH FACE.

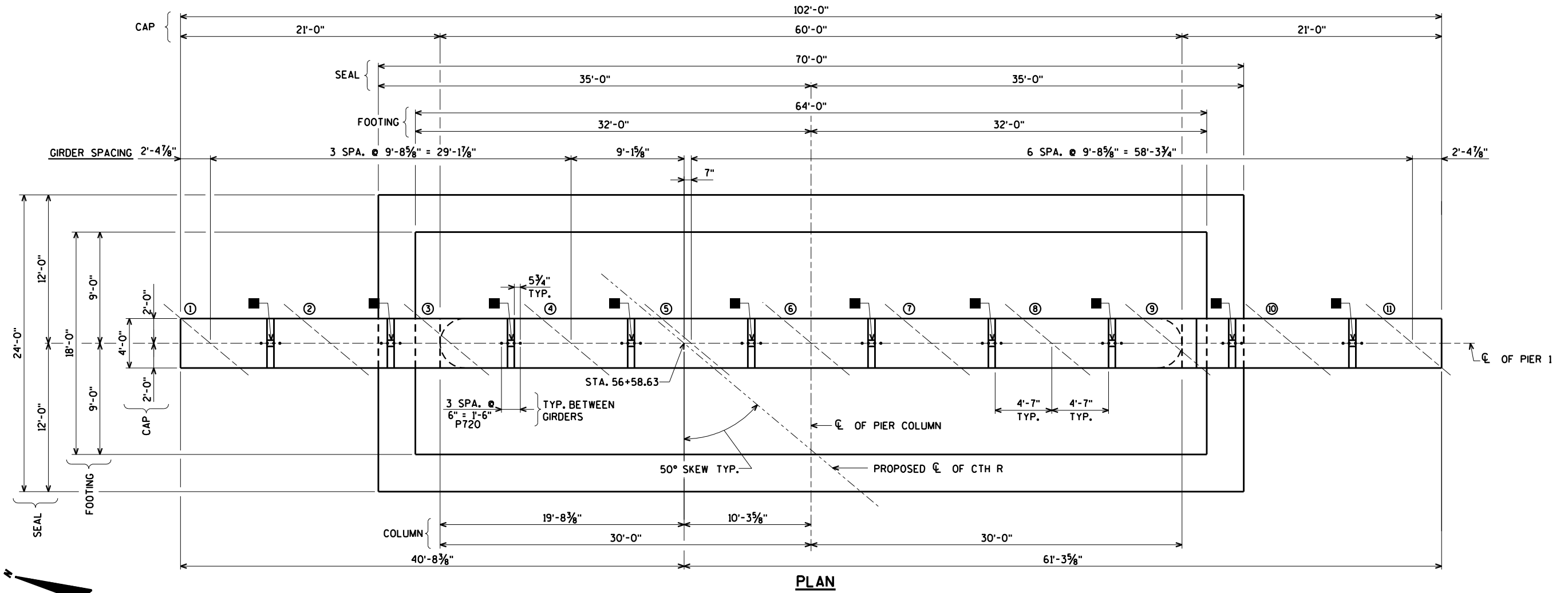
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
PIER 1		SHEET 16 OF 46 132	

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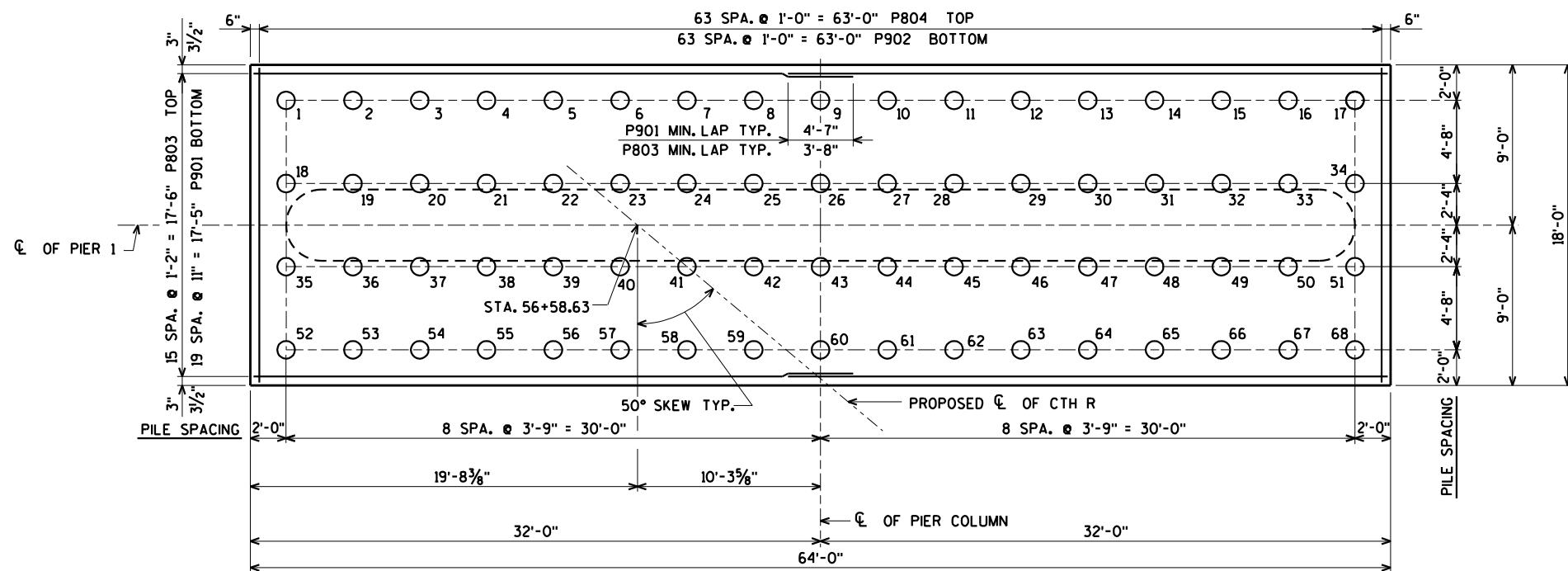
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STATE PROJECT NUMBER

4310-06-71



PLAN



FOOTING PLAN & PILE LAYOUT

KEYED CONST. JOINT - FORMED BY A SURFACED BEVELED 2" x 6"
FOR PILE SPICE DETAIL SEE SHEET 3

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
PIER 1 DETAILS		SHEET 17 OF 46 133	

ORIGINAL PLANS PREPARED BY
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BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	260" COATED 71,720" UNCOATED
							LOCATION
P901		40	34-2				FOOTING BOT.
P902		64	17-8				FOOTING BOT.
P803		32	33-8				FOOTING TOP
P804		64	17-8				FOOTING TOP
P1105		178	12-11	X			FOOTING DOWELS
P1106		178	18-3				COLUMN VERT.
P407		165	4-3	X			COLUMN & FOOTING TIES
P408		22	8-3	X			COLUMN & FOOTING HORIZ.
P409		44	28-9				COLUMN & FOOTING HORIZ.
P510		128	19-8	X		⊗	CAP STIRRUPS VERT.
P711		14	31-4				CAP BOTTOM
P712		14	24-2	X			CAP BOTTOM
P713		36	42-8			⊗	CAP HORIZ.
P714		32	52-2				CAP HORIZ.
P1115		48	56-1	X			CAP TOP HORIZ.
P716		16	8-9	X			CAP ENDS
P417		68	5-4	X			CAP TOP VERT.
P418		8	44-10				CAP TOP HORIZ.
P519		89	6-4	X			CAP TOP VERT.
P720	X	40	3-2				CAP TOP VERT.

VERT. LEG

2'-0"

P1105

4 1/2"

3'-5"

STD. 180° HOOK

P407

1'-8 1/2" RAD.

1'-5"

P408

VARIES 4'-7" MIN. TO 9'-5" MAX. IN INCREMENTS OF 1/8" ±

5 1/2"

2'-6"

P510

5'-0"

20'-10"

P712

54'-5"

P1115

3'-7"

3'-7"

3'-7"

2'-9"

1'-0"

1'-6"

P711

P411

P511

BAR MARK	NO REQ'D.	LENGTH
P510	4 SERIES OF 32	14'-10" TO 24'-6"
P713	4 SERIES OF 9	34'-3" TO 51'-1"

3 ROWS
7 EQ. SPA.
P1115

1'-7"

P720
P418

8 - P1115
8 - P1115
8 - P1115

P519

P417

P714 E.F.

P713 E.F.

CL. OF PIER 1

P510

2 1/2" CL.

6 EQ. SPA.
P711, P712

2'-0" 2'-0"

4'-0"

2 1/2" CL.

SECTION A

P720 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE.

WIRE BARS TOGETHER
@ 2'-0" CENTERS

P1115

5"

BUNDLING DETAIL

4'-0"

2'-0" 2'-0"

1'-7"

P519

P720
P418

8 - P1115
8 - P1115
8 - P1115

P417

P714

P1106

P1106

CL. OF PIER 1

SECTION C

Diagram illustrating the elevation view of a girder and bearing, showing various offsets and dimensions:

- ELEVATION SHOWN ON ELEVATION VIEW (SEE SHEET 16)**
- CL OF PIER** (Center Line of Pier)
- CL OF GIRDER** (Center Line of Girder)
- CL OF BEARING** (Center Line of Bearing)
- Offsets and dimensions:
 - $-0.04' **$
 - $-0.08' **$
 - $** + 0.08'$
 - $+0.04' **$

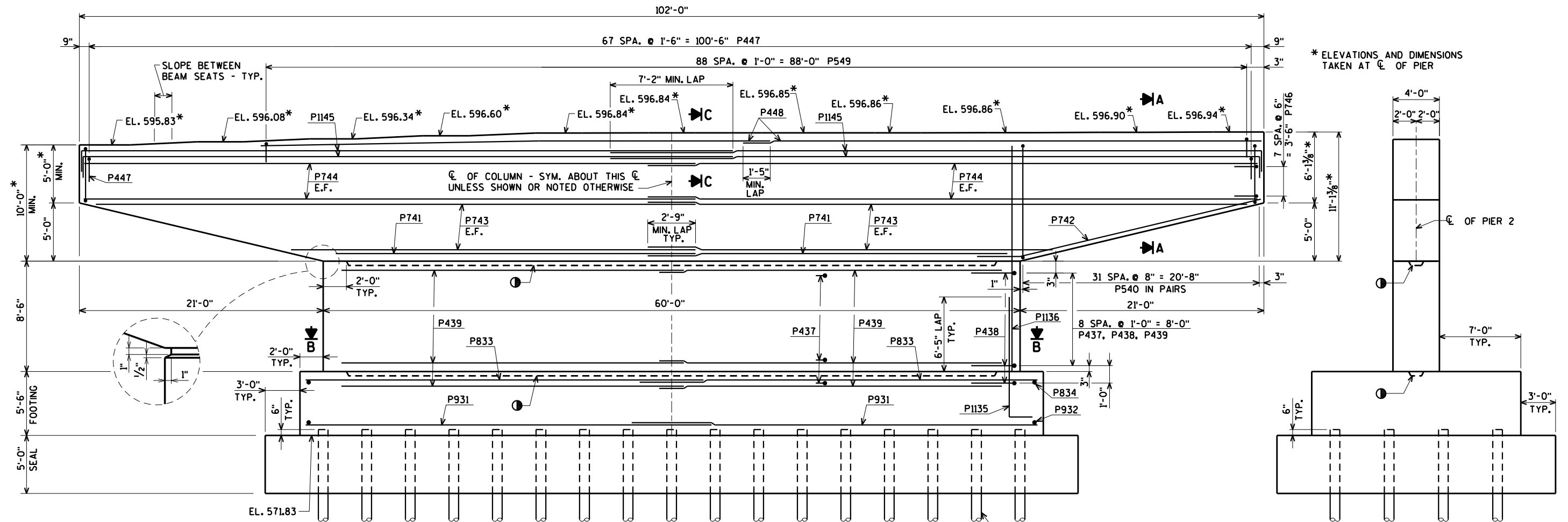
E.F. DENOTES EACH FACE.

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STRUCTURE B-36-226			
		DRAWN BY	CLS
		PLANS CK'D.	CBM
PIER 1 DETAILS AND BILL OF BARS		SHEET 18 OF 46 134	

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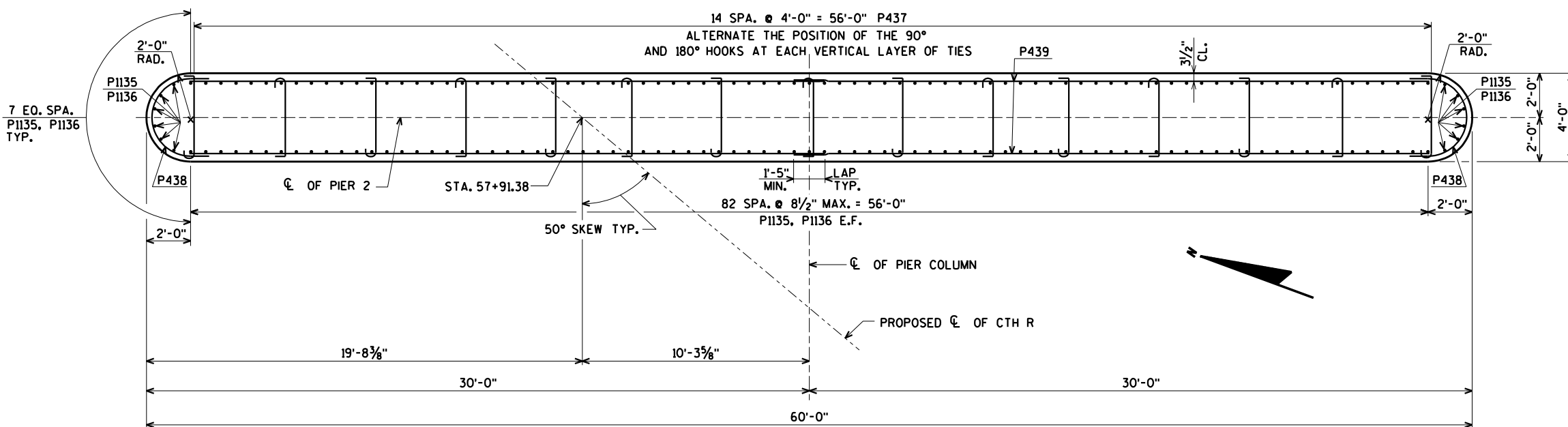
4310-06-71



ELEVATION
(LOOKING NORTH)

PIER TO BE SUPPORTED ON
10 3/4" ϕ $\times$ 0.25" CIP CONCRETE
PILING DRIVEN TO A REQUIRED DRIVING
RESISTANCE OF 120 TONS PER PILE.
ESTIMATED LENGTH 50'-0".

END VIEW



SECTION B

FOR SECTIONS A & C
SEE SHEET 21

KEYED CONST. JOINT FORMED BY
A SURFACED BEVELED KEYWAY
4" DEEP $\times$ 1'-0" WIDE $\times$ 56'-0" LONG

FOR PILE SPLICE DETAIL SEE SHEET 3

E.F. DENOTES EACH FACE.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
PIER 2		SHEET 19 OF 46 135	

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8

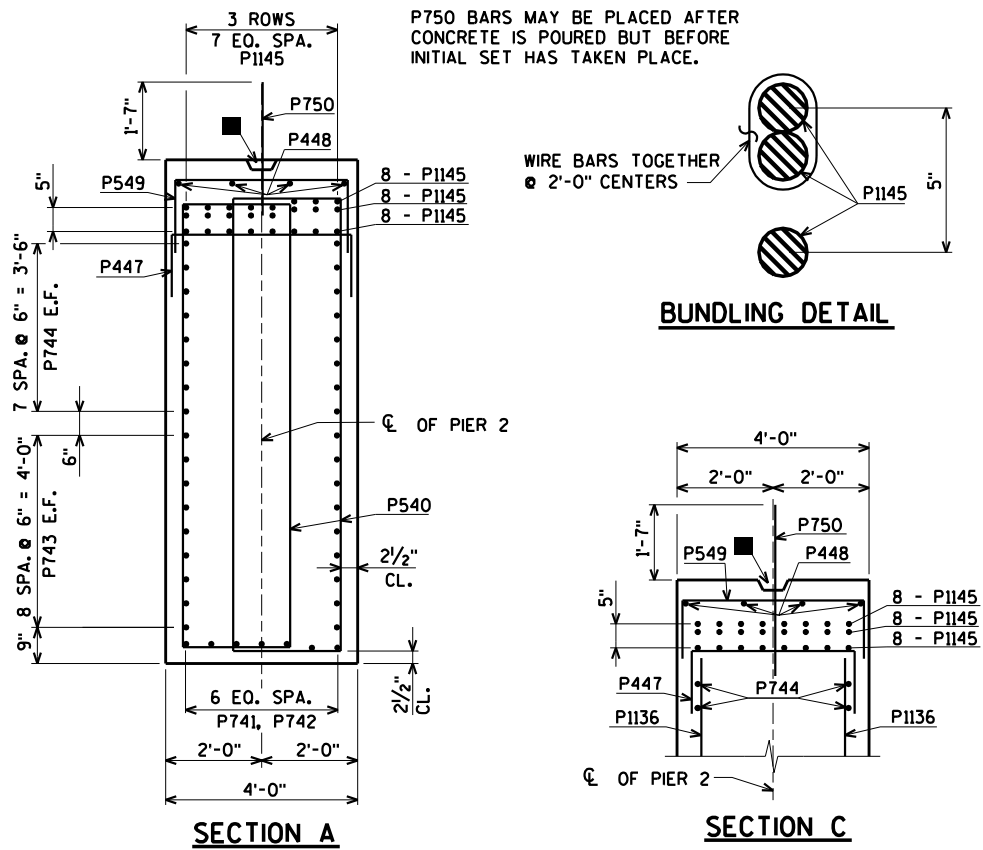
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
PIER 2 DETAILS		SHEET 20 OF 4 136	

BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	260# COATED 70,260# UNCOATED
							LOCATION
P931		40	34-2				FOOTING BOT.
P932		64	17-8				FOOTING BOT.
P833		32	33-8				FOOTING TOP
P834		64	17-8				FOOTING TOP
P1135		178	12-11	X			FOOTING DOWELS
P1136		178	17-3				COLUMN VERT.
P437		150	4-3	X			COLUMN & FOOTING TIES
P438		20	8-3	X			COLUMN & FOOTING HORIZ.
P439		20	28-9				COLUMN & FOOTING HORIZ.
P540		128	19-8	X	⊗		CAP STIRRUPS VERT.
P741		14	31-4				CAP BOTTOM
P742		14	24-2	X			CAP BOTTOM
P743		36	42-8		⊗		CAP HORIZ.
P744		32	52-2				CAP HORIZ.
P1145		48	56-1	X			CAP TOP HORIZ.
P746		16	8-9	X			CAP ENDS
P447		68	5-4	X			CAP TOP VERT.
P448		8	44-10				CAP TOP HORIZ.
P549		89	6-4	X			CAP TOP VERT.
P750	X	40	3-2				CAP TOP VERT.

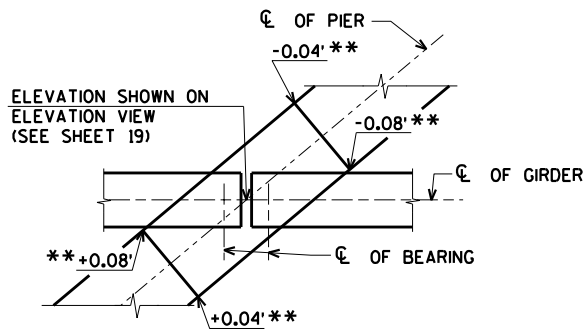
⊗ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

BAR MARK	NO REQ'D.	LENGTH
P540	4 SERIES OF 32	14'-10" TO 24'-6"
P743	4 SERIES OF 9	34'-3" TO 51'-1"

BUNDLE AND TAG EACH SERIES SEPARATELY.



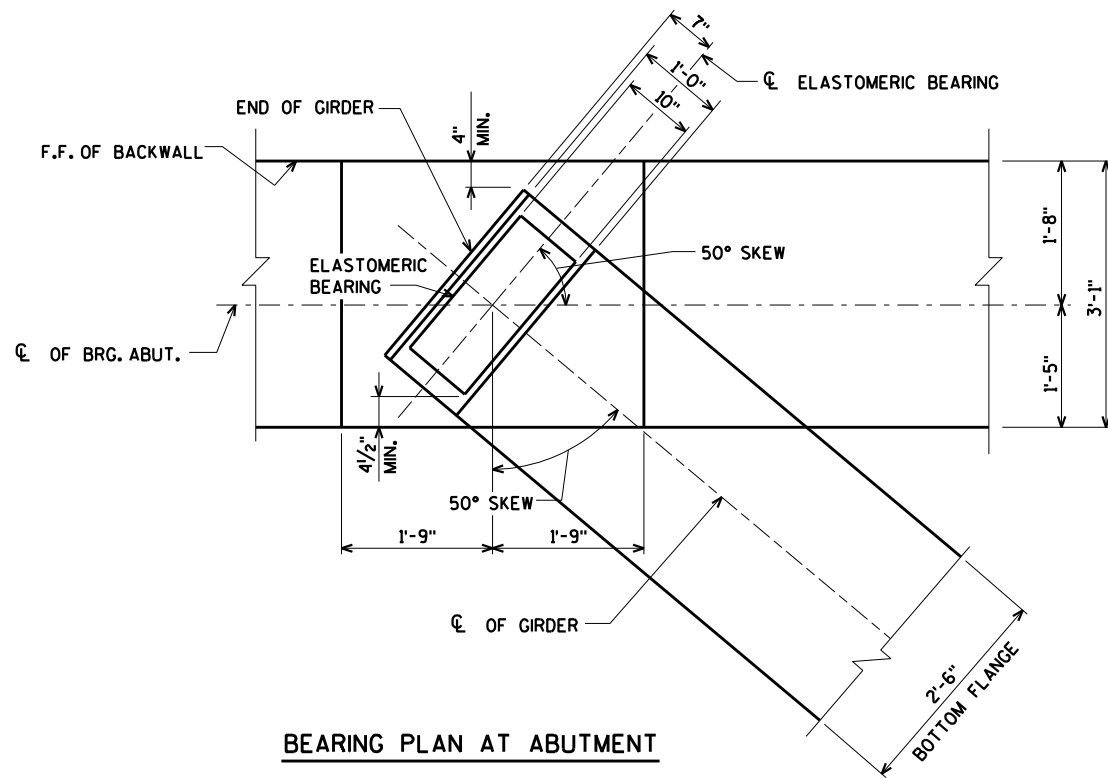
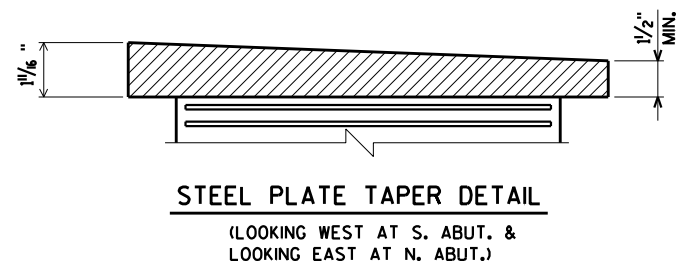
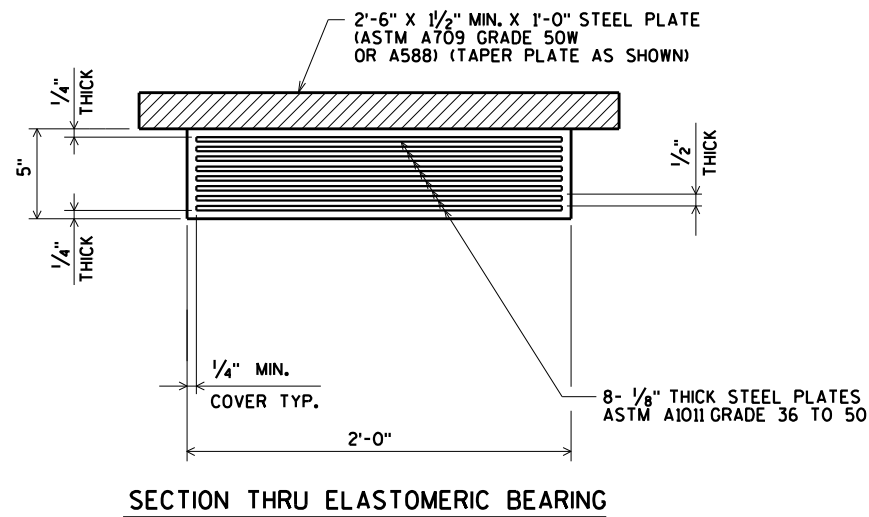
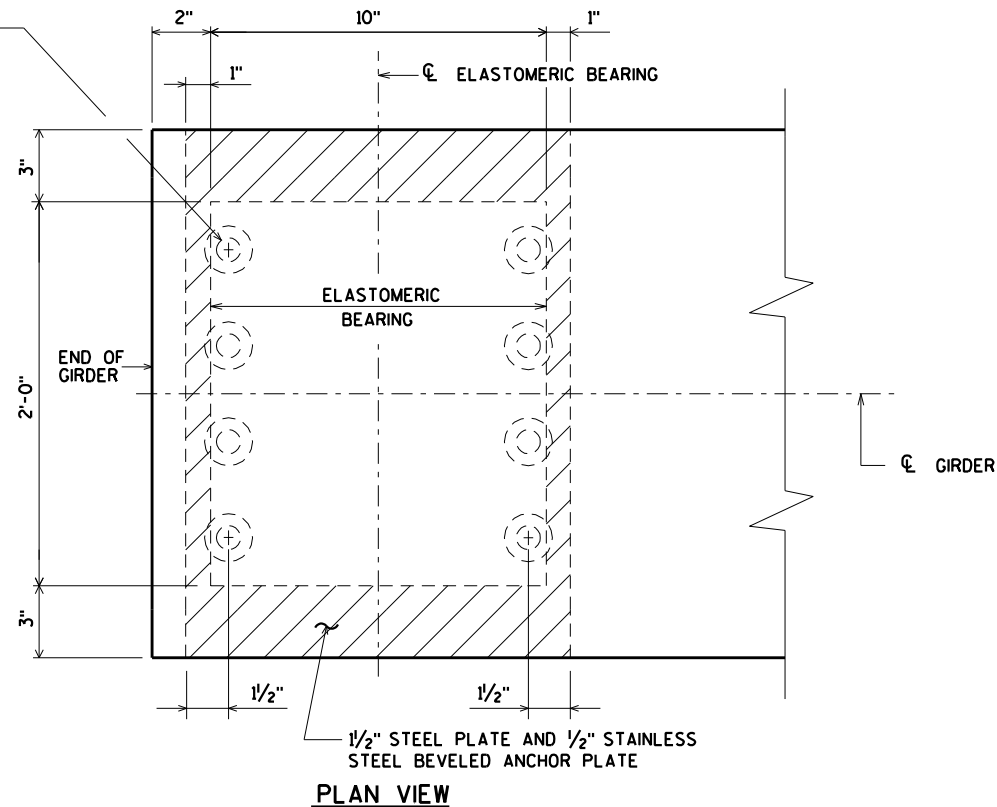
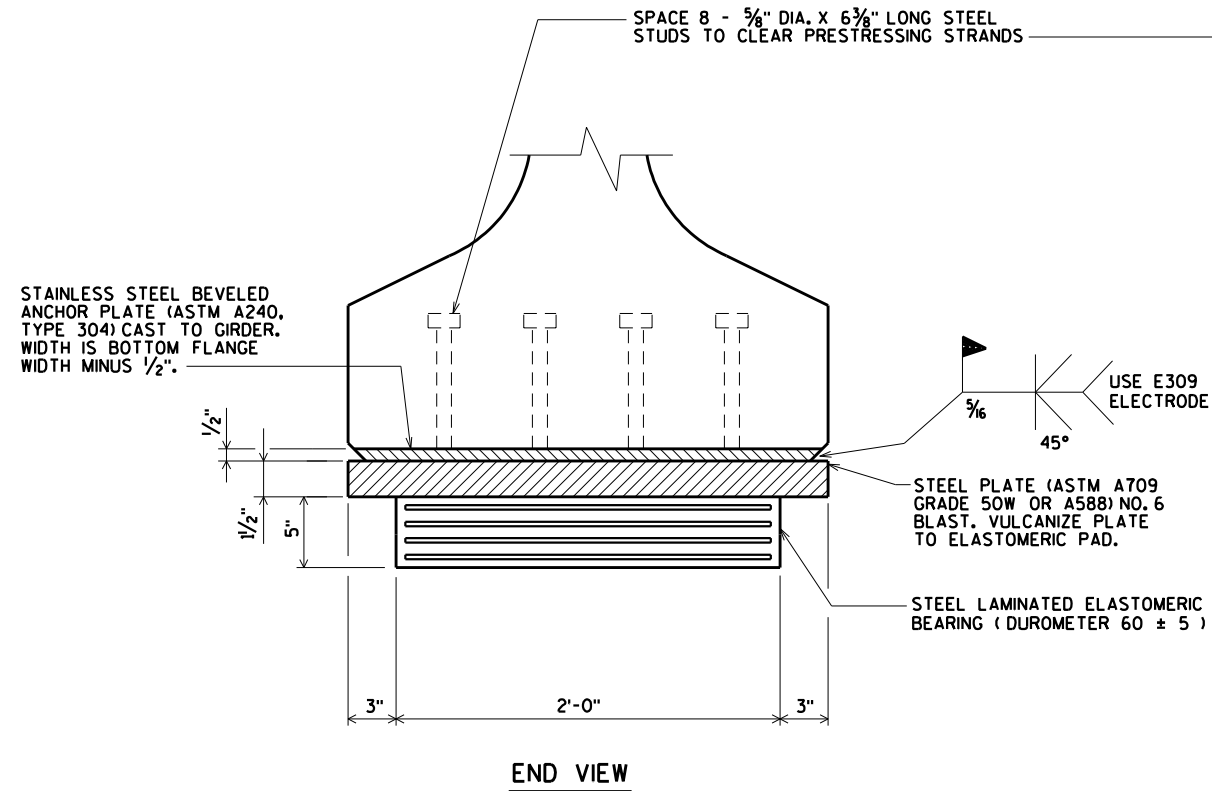
FOR LOCATIONS OF SECTIONS A & C SEE SHEET 19



**** CORRECTIONS TO ELEVATIONS SHOWN
ON SHEET 19 AT C OF PIER**

E.F. DENOTES EACH FACE.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
PIER 2 DETAILS AND BILL OF BARS		SHEET 21 OF 46 137	



NOTES

BEARINGS SHALL NOT BE PLACED AT A TEMPERATURE GREATER THAN 85° F.

ALL MATERIAL USED FOR BEARINGS SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "BEARING PADS ELASTOMERIC LAMINATED", EACH.

ALL STRUCTURAL STEEL BEARING PLATES SHALL BE FLAT ROLLED WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL.

ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS.

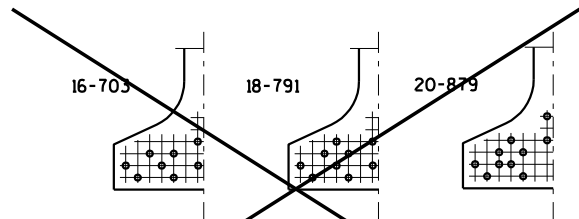
F.F. DENOTES FRONT FACE

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
ABUTMENT BEARING DETAILS			SHEET 22 OF 46 138

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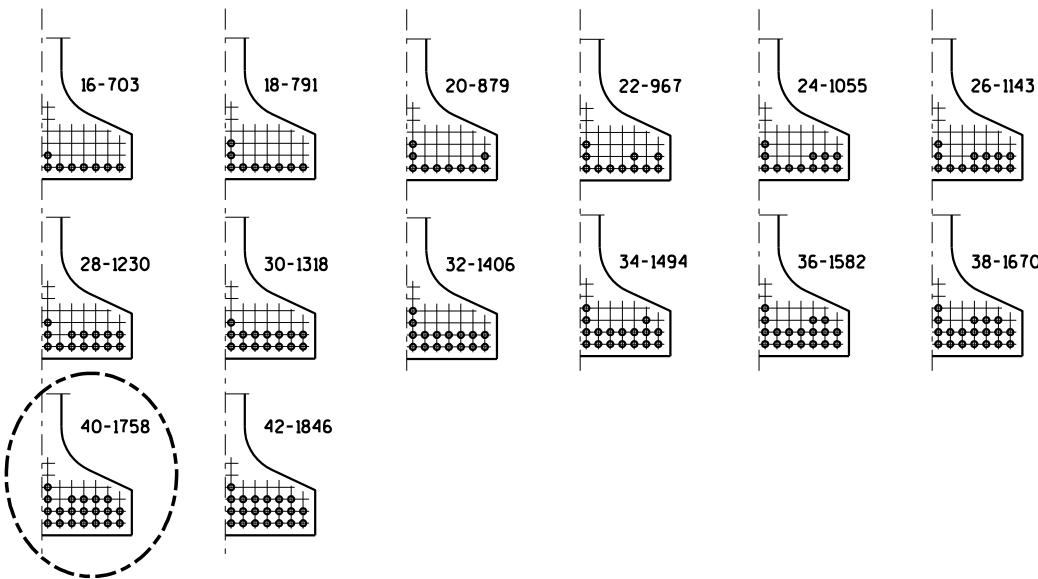
FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE
"STEEL INT. DIAPHRAGM DETAILS" SHEET.





STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY
TO AVOID DRAPING OF STRANDS

0.6" ϕ STRANDS

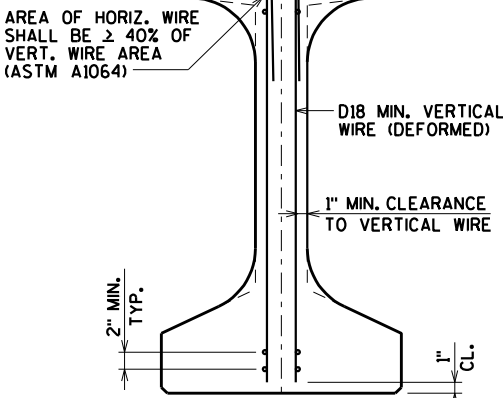


ARRANGEMENT AT ϕ SPAN - FOR GIRDERS WITH DRAPED STRANDS

0.6" ϕ STRANDS

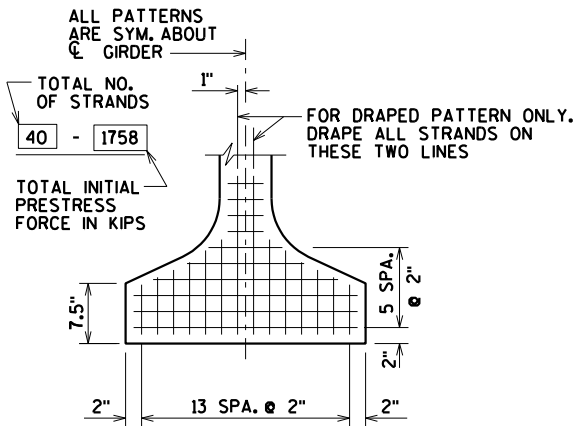
*4 BAR, EPOXY COATED. PLACE
STIRRUP SPACING REQUIRED
FOR NON WWF STIRRUPS.
EMBED INTO GIRDER 1'-3".

HORIZ. WIRES SHALL
BE LOCATED IN TOP
AND BOT. FLANGES
AND NOT IN THE WEB.

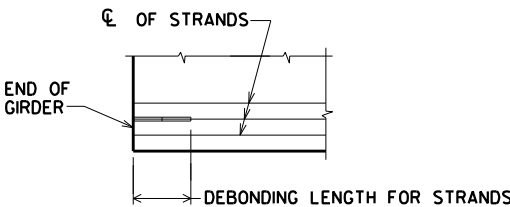


SECTION THRU GIRDER

SHOWING WELDED WIRE FABRIC (WWF) STIRRUPS
ASTM A1064 (FY = 70 KSI)



TYP. STRAND PATTERN

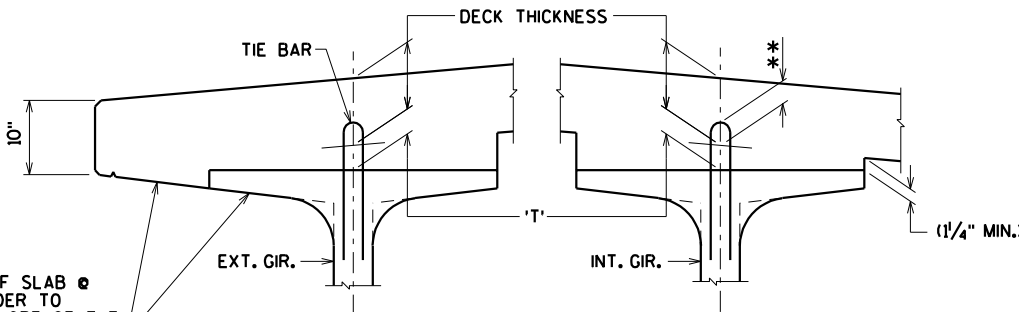


BOND BREAKER DETAIL

SHOWING LENGTHS OF DEBONDING
FROM END OF GIRDER.

SYM.	HEIGHT	NO. OF STRANDS	DEBOND LENGTH
$\square$	2" & 4"	4	4'
Δ	2" & 4"	4	2'

DEBONDING DETAIL



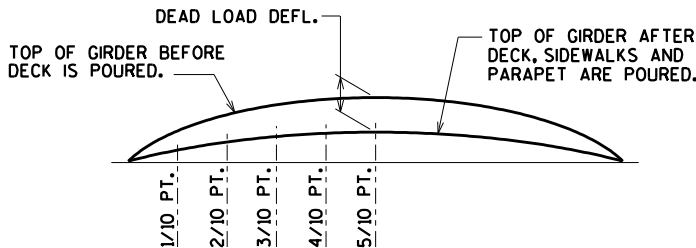
DECK HAUNCH DETAIL

IF 1/4" MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR, THE PLAN DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN 1/2" OR, ** IF 3" MINIMUM DECK EMBEDMENT OF TIE BAR CANNOT BE OBTAINED.

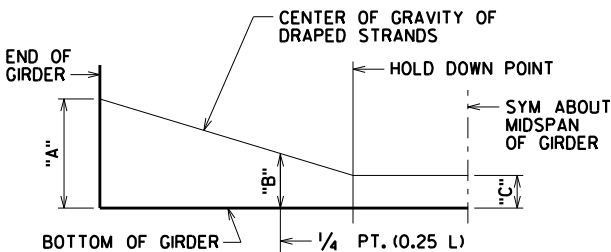
TO DETERMINE 'T', ELEV. OF TOP OF GIR'S. AT ϕ OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

- TOP OF DECK ELEV. AT FINAL GRADE
- TOP OF GIRDER ELEVATION
- + DEAD LOAD DEFLECTION
- DECK THICKNESS
- = HAUNCH HEIGHT 'T'

NOTE: AN AVERAGE HAUNCH ('T') OF 3" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".



DEAD LOAD DEFLECTION DIAGRAM



DRAPED STRAND PROFILE

* THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN MULTIPLIED BY A FACTOR OF 1.4 TO ACCOUNT FOR CAMBER GROWTH FROM THE TIME OF STRAND RELEASE TO JOBSITE PLACEMENT.

SPAN	CAMBER (IN.) *
1-3	4.3

THESE VALUES ARE NOT TO BE USED IN DETERMINING 'T'.
USE ACTUAL GIRDER SHOTS.
THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.

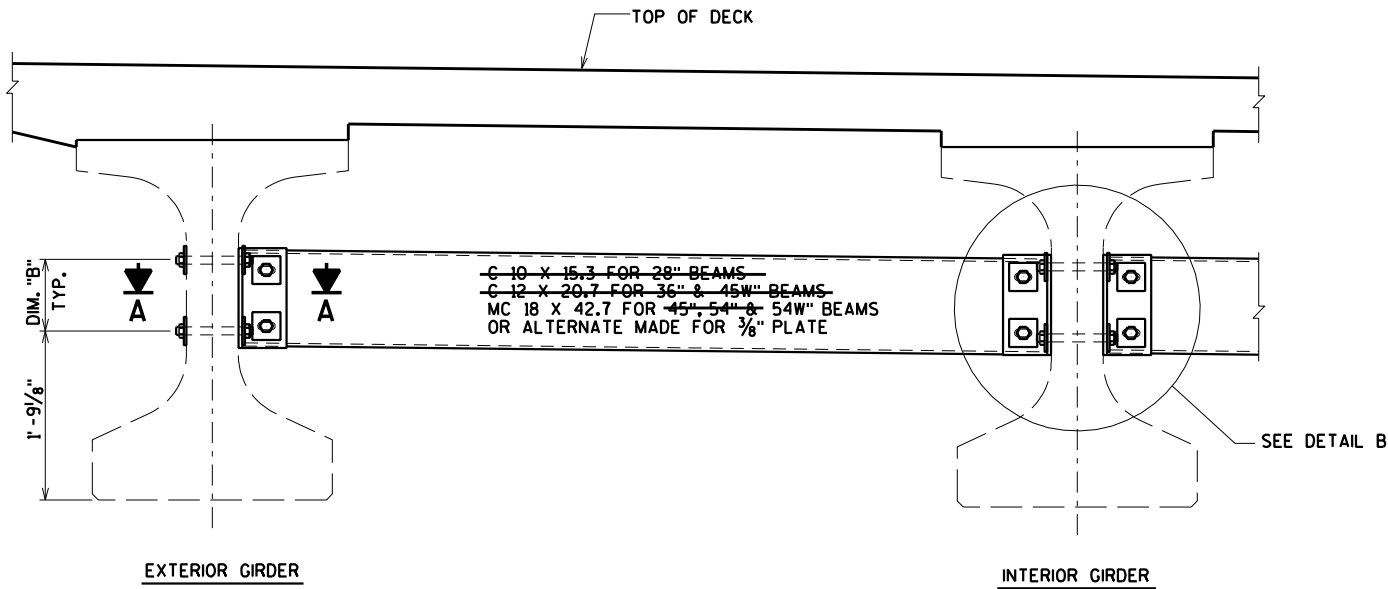
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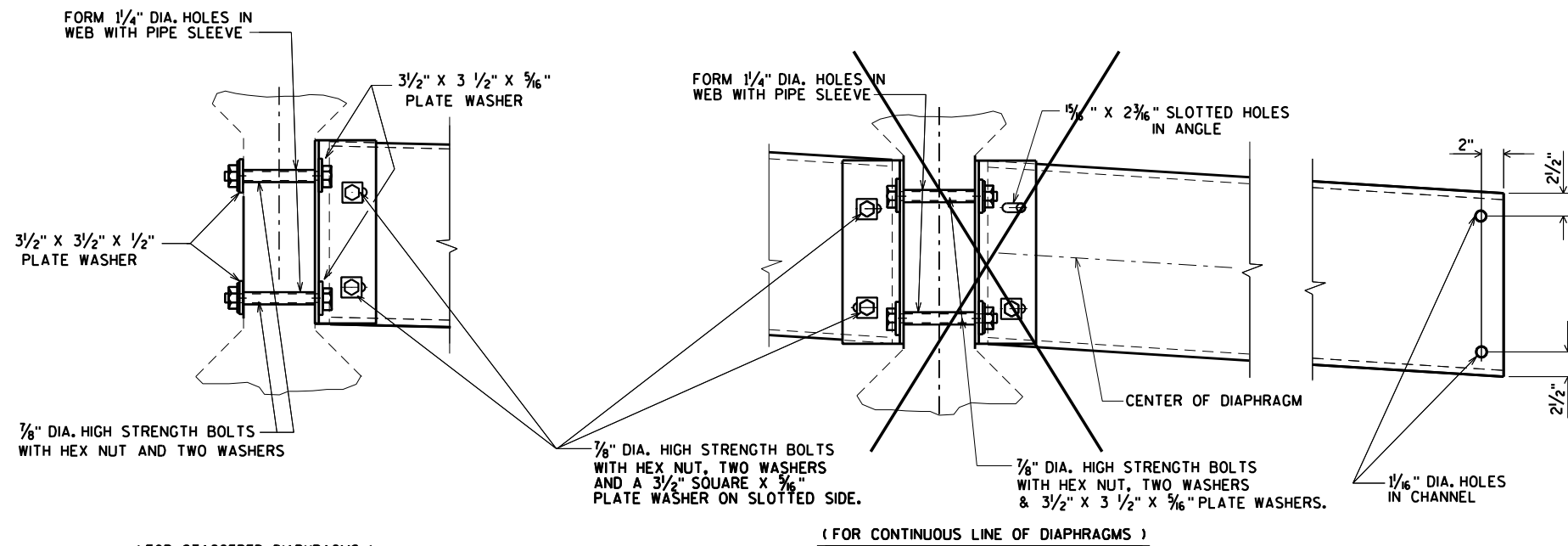
4310-06-71

TABLE

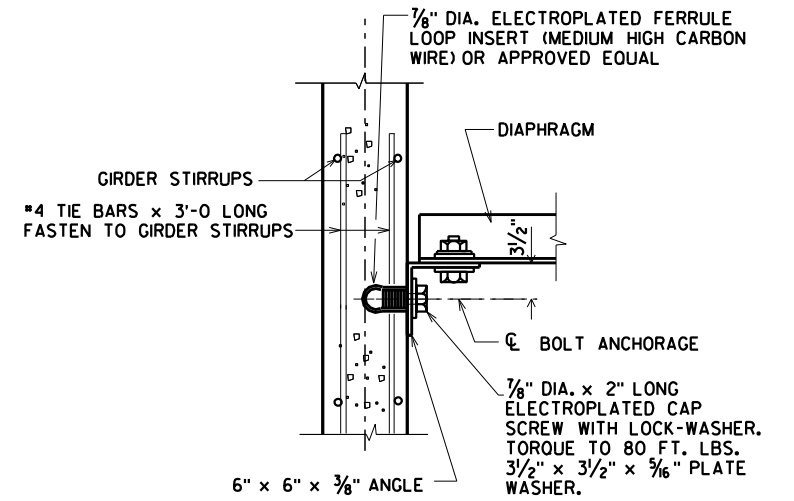
GIRDER HEIGHT	DIM. "A"	DIM. "B"	DIM. "L"	* DIM. "X"
54W"	1'-9 1/8"	1'-5 7/8"	1'-9 1/2"	4 1/4"



PART TRANSVERSE SECTION AT DIAPHRAGM



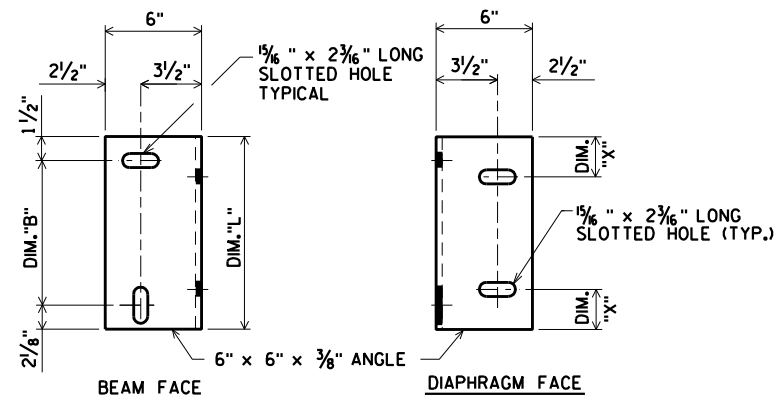
DETAIL B



SECT. A-A
(FOR EXTERIOR ATTACHMENT)

SECTION THRU ALTERNATE DIAPHRAGM

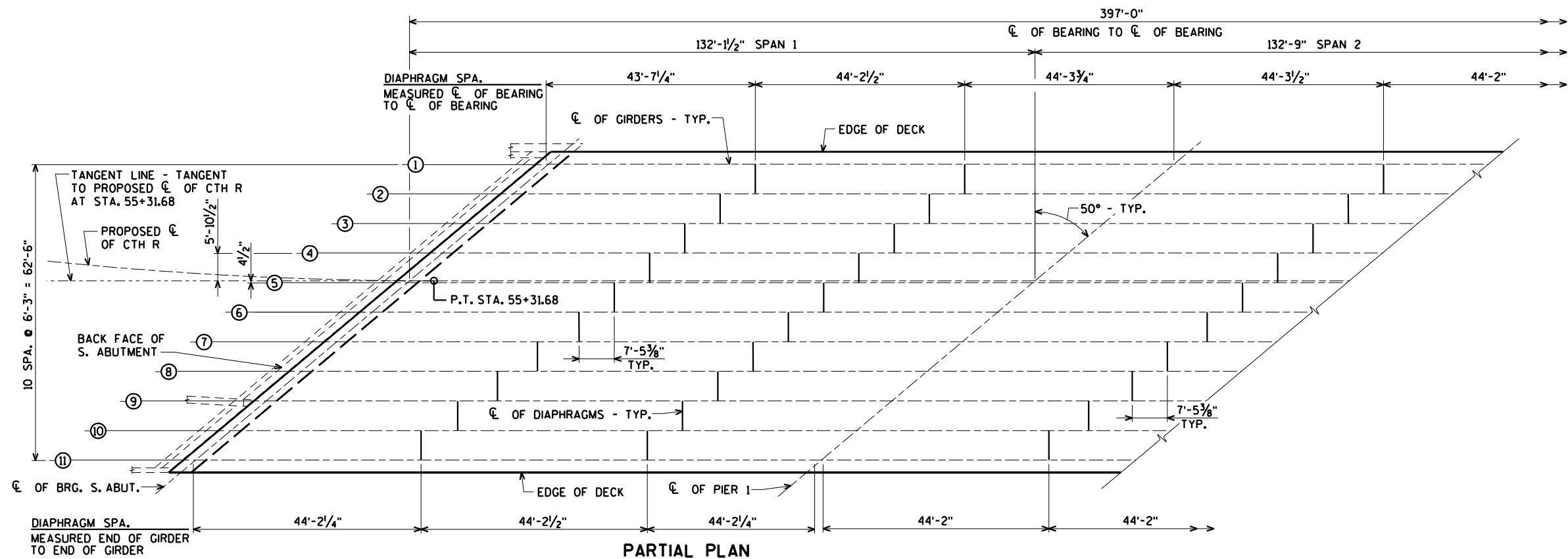
*DIM. "X" = 2 1/2" FOR ALTERNATE PLATE DIAPHRAGM



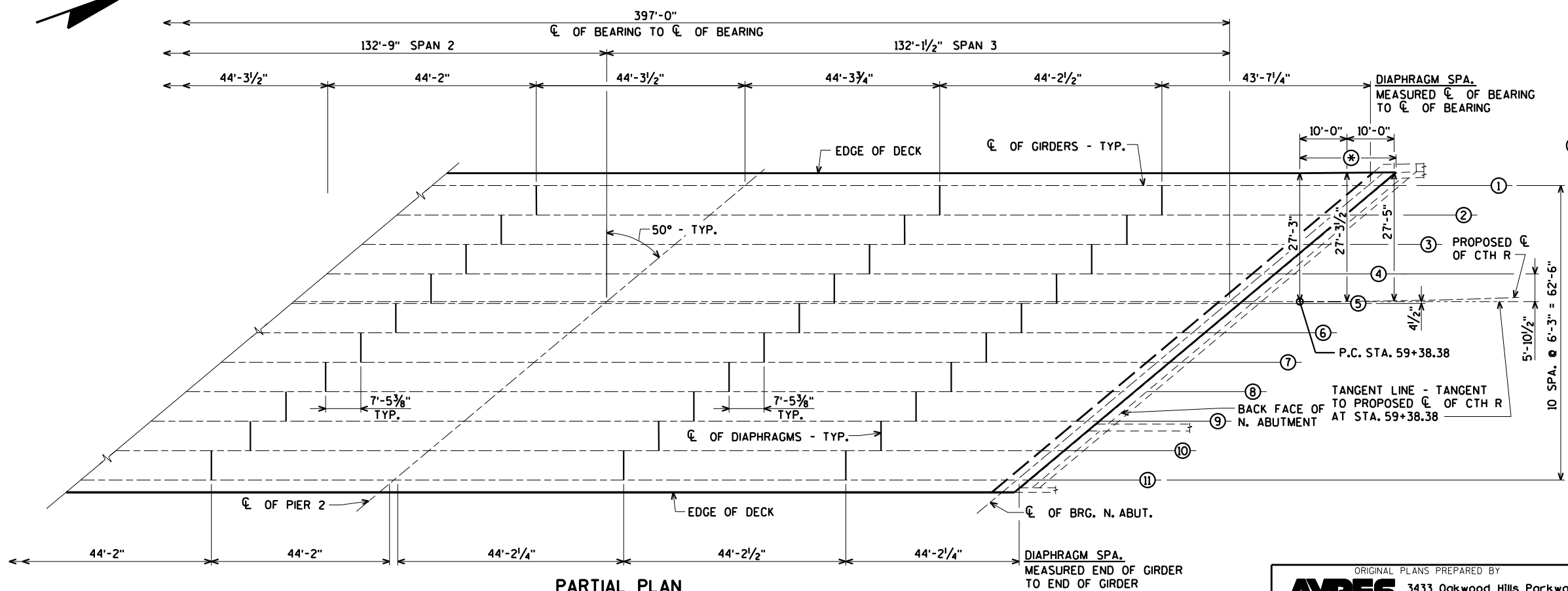
DIAPHRAGM SUPPORT

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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
STEEL INTER. DIAPHRAGM DETAILS		SHEET 25 OF 46 141	



PARTIAL PLAN



PARTIAL PLAN

(*) FLARE OVERHANG NORTH OF P.C.
 @ STA. 59+38.38 TO MAINTAIN
 26'-0" FROM PROPOSED CL OF CTH R

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SUPERSTRUCTURE GIRDER LAYOUT			SHEET 26 OF 46 142

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8

TOP OF DECK ELEVATIONS

SPAN 1											
	℄ OF BRG. SOUTH ABUT.	0.1 PT.	0.2 PT.	0.3 PT.	0.4 PT.	0.5 PT.	0.6 PT.	0.7 PT.	0.8 PT.	0.9 PT.	℄ OF PIER 1
WEST EDGE OF DECK	605.93	605.70	605.46	605.23	605.00	604.77	604.53	604.30	604.07	603.83	603.60
FACE OF WEST PARAPET	605.95	605.73	605.49	605.26	605.03	604.79	604.56	604.33	604.10	603.86	603.63
GIRDER 1	606.01	605.78	605.54	605.31	605.08	604.85	604.61	604.38	604.15	603.92	603.68
GIRDER 2	606.26	606.03	605.80	605.57	605.33	605.10	604.87	604.64	604.40	604.17	603.94
GIRDER 3	606.52	606.29	606.06	605.82	605.59	605.36	605.13	604.89	604.66	604.43	604.20
GIRDER 4	606.78	606.54	606.31	606.08	605.85	605.61	605.38	605.15	604.92	604.68	604.45
PROPOSED ℄ OF CTH R	607.02	606.79	606.55	606.32	606.09	605.86	605.62	605.39	605.16	604.93	604.69
GIRDER 5	607.02	606.78	606.55	606.32	606.09	605.85	605.62	605.39	605.16	604.93	604.69
GIRDER 6	607.02	606.79	606.56	606.33	606.09	605.86	605.63	605.40	605.16	604.93	604.70
GIRDER 7	607.02	606.79	606.56	606.33	606.10	605.87	605.63	605.40	605.17	604.94	604.70
GIRDER 8	607.04	606.81	606.57	606.34	606.11	605.87	605.64	605.41	605.18	604.94	604.71
GIRDER 9	607.04	606.81	606.57	606.34	606.11	605.88	605.65	605.41	605.18	604.95	604.72
FACE OF INT. PARAPET	607.04	606.81	606.57	606.34	606.11	605.88	605.64	605.41	605.18	604.94	604.72
GIRDER 10	607.08	606.84	606.61	606.38	606.14	605.91	605.68	605.45	605.21	604.98	604.75
GIRDER 11	607.11	606.88	606.65	606.41	606.18	605.95	605.72	605.49	605.25	605.02	604.79
FACE OF EAST PARAPET	607.12	606.89	606.66	606.42	606.19	605.96	605.73	605.50	605.26	605.03	604.80
EAST EDGE OF DECK	607.14	606.91	606.68	606.44	606.21	605.98	605.75	605.52	605.28	605.05	604.82
SPAN 2											
	℄ OF PIER 1	0.1 PT.	0.2 PT.	0.3 PT.	0.4 PT.	0.5 PT.	0.6 PT.	0.7 PT.	0.8 PT.	0.9 PT.	℄ OF PIER 2
WEST EDGE OF DECK	603.60	603.37	603.13	602.90	602.67	602.44	602.20	601.97	601.74	601.50	601.27
FACE OF WEST PARAPET	603.63	603.40	603.16	602.93	602.70	602.47	602.23	602.00	601.77	601.53	601.30
GIRDER 1	603.68	603.45	603.22	602.98	602.75	602.52	602.28	602.05	601.82	601.58	601.35
GIRDER 2	603.94	603.71	603.47	603.24	603.01	602.77	602.54	602.31	602.07	601.84	601.60
GIRDER 3	604.20	603.96	603.73	603.50	603.26	603.03	602.79	602.56	602.33	602.09	601.86
GIRDER 4	604.45	604.22	603.98	603.75	603.52	603.28	603.05	602.82	602.58	602.35	602.12
PROPOSED ℄ OF CTH R	604.69	604.46	604.23	604.00	603.76	603.53	603.30	603.07	602.83	602.60	602.36
GIRDER 5	604.69	604.46	604.23	603.99	603.76	603.53	603.29	603.06	602.82	602.59	602.36
GIRDER 6	604.70	604.47	604.23	604.00	603.76	603.53	603.30	603.06	602.83	602.60	602.36
GIRDER 7	604.70	604.47	604.24	604.00	603.77	603.54	603.30	603.07	602.84	602.60	602.37
GIRDER 8	604.71	604.48	604.24	604.01	603.78	603.54	603.31	603.08	602.84	602.61	602.38
GIRDER 9	604.72	604.48	604.25	604.02	603.78	603.55	603.32	603.08	602.85	602.62	602.42
FACE OF INT. PARAPET	604.72	604.49	604.25	604.02	603.79	603.56	603.32	603.09	602.86	602.62	602.39
GIRDER 10	604.75	604.52	604.28	604.05	603.82	603.59	603.35	603.12	602.89	602.65	602.42
GIRDER 11	604.79	604.56	604.32	604.09	603.86	603.63	603.39	603.16	602.93	602.69	602.46
FACE OF EAST PARAPET	604.80	604.57	604.33	604.10	603.87	603.64	603.40	603.17	602.94	602.70	602.47
EAST EDGE OF DECK	604.82	604.59	604.35	604.12	603.89	603.66	603.42	603.19	602.96	602.72	602.49
SPAN 3											
	℄ OF PIER 2	0.1 PT.	0.2 PT.	0.3 PT.	0.4 PT.	0.5 PT.	0.6 PT.	0.7 PT.	0.8 PT.	0.9 PT.	℄ OF BRG. NORTH ABUT.
WEST EDGE OF DECK	601.27	601.04	600.80	600.57	600.34	600.11	599.87	599.64	599.41	599.17	598.94
FACE OF WEST PARAPET	601.30	601.07	600.84	600.60	600.37	600.14	599.91	599.68	599.44	599.21	598.98
GIRDER 1	601.35	601.12	600.88	600.65	600.42	600.19	599.95	599.72	599.49	599.25	599.02
GIRDER 2	601.60	601.37	601.14	600.91	600.67	600.44	600.21	599.98	599.74	599.51	599.28
GIRDER 3	601.86	601.63	601.40	601.16	600.93	600.70	600.46	600.23	600.00	599.77	599.53
GIRDER 4	602.12	601.88	601.65	601.42	601.19	600.95	600.72	600.49	600.26	600.02	599.79
PROPOSED ℄ OF CTH R	602.36	602.14	601.90	601.67	601.44	601.21	600.97	600.74	600.51	600.28	600.04
GIRDER 5	602.36	602.13	601.89	601.66	601.43	601.20	600.96	600.73	600.50	600.27	600.03
GIRDER 6	602.36	602.13	601.90	601.67	601.43	601.20	600.97	600.74	600.50	600.27	600.04
GIRDER 7	602.37	602.14	601.90	601.67	601.44	601.21	600.98	600.74	600.51	600.28	600.05
GIRDER 8	602.38	602.14	601.91	601.68	601.45	601.21	600.98	600.75	600.52	600.28	600.05
GIRDER 9	602.38	602.15	601.92	601.68	601.45	601.22	600.99	600.76	600.52	600.29	600.06
FACE OF INT. PARAPET	602.39	602.16	601.92	601.69	601.46	601.23	600.99	600.76	600.53	600.29	600.06
GIRDER 10	602.42	602.19	601.96	601.72	601.49	601.26	601.03	600.80	600.56	600.33	600.10
GIRDER 11	602.46	602.23	601.99	601.76	601.53	601.30	601.06	600.83	600.60	600.36	600.13
FACE OF EAST PARAPET	602.47	602.24	602.00	601.77	601.54	601.31	601.07	600.84	600.61	600.37	600.14
EAST EDGE OF DECK	602.49	602.26	602.02	601.79	601.56	601.33	601.09	600.86	600.63	600.39	600.16

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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
		DRAWN BY	PLANS CK'D.
		CJM	CBM
TOP OF DECK ELEVATIONS			SHEET 27 OF 46 143

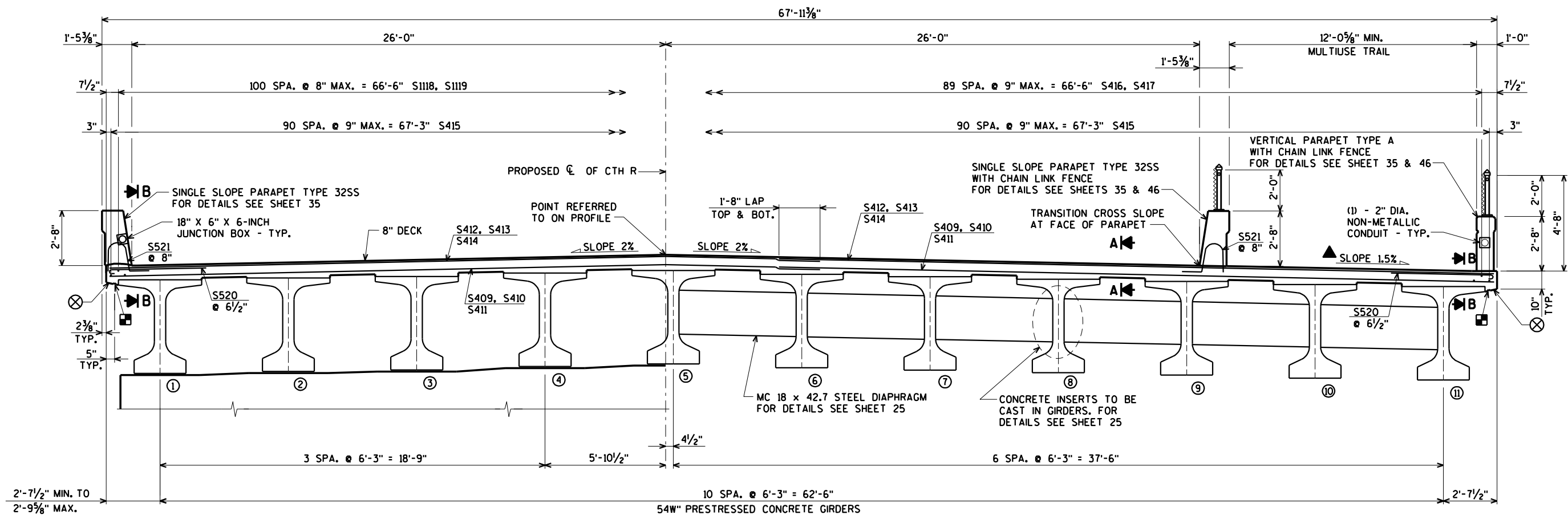
ORIGINAL PLANS PREPARED BY

AYRES

ASSOCIATES

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Eau Claire, WI 54701
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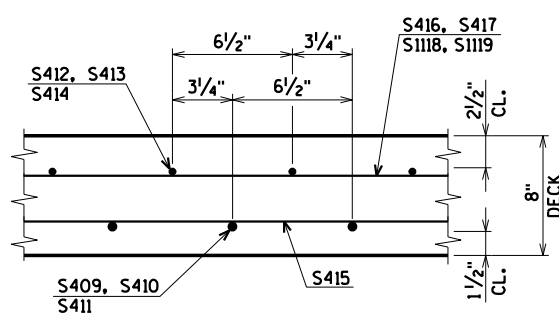


TYPICAL CROSS SECTION THRU DECK
(LOOKING NORTH)

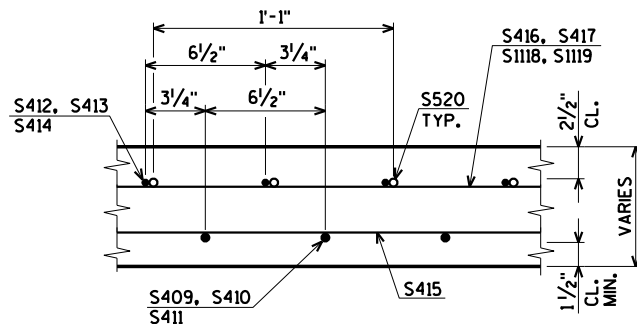
¾" V-GROOVE
TERMINATE 2'-0" FROM FRONT
FACE OF ABUTMENTS - TYP.

± 0.5% CONSTRUCTION TOLERANCE IN MULTIUSE TRAIL
CROSS SLOPE. THE MULTIUSE TRAIL CROSS SLOPE
SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL
FROM THE ENGINEER.

⊗ SLOPE BOTTOM OF SLAB AT EXTERIOR
GIRDER TO MATCH THE SLOPE OF THE
BOTTOM OF THE TOP FLANGE - TYP.



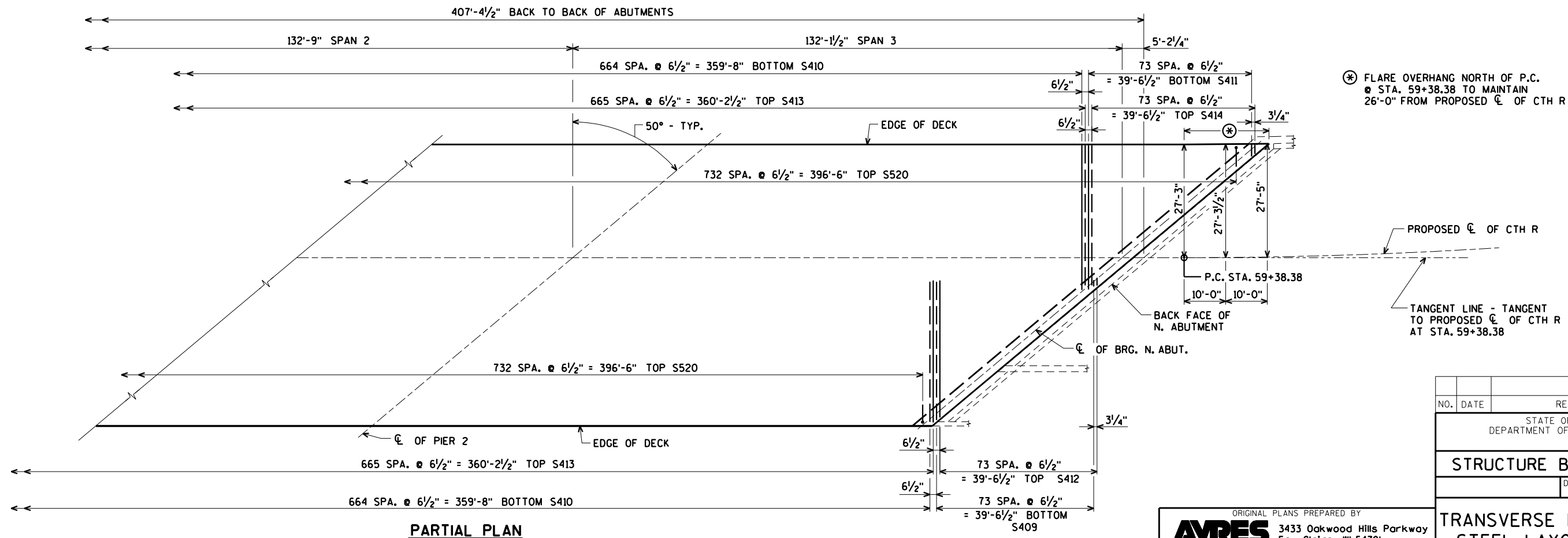
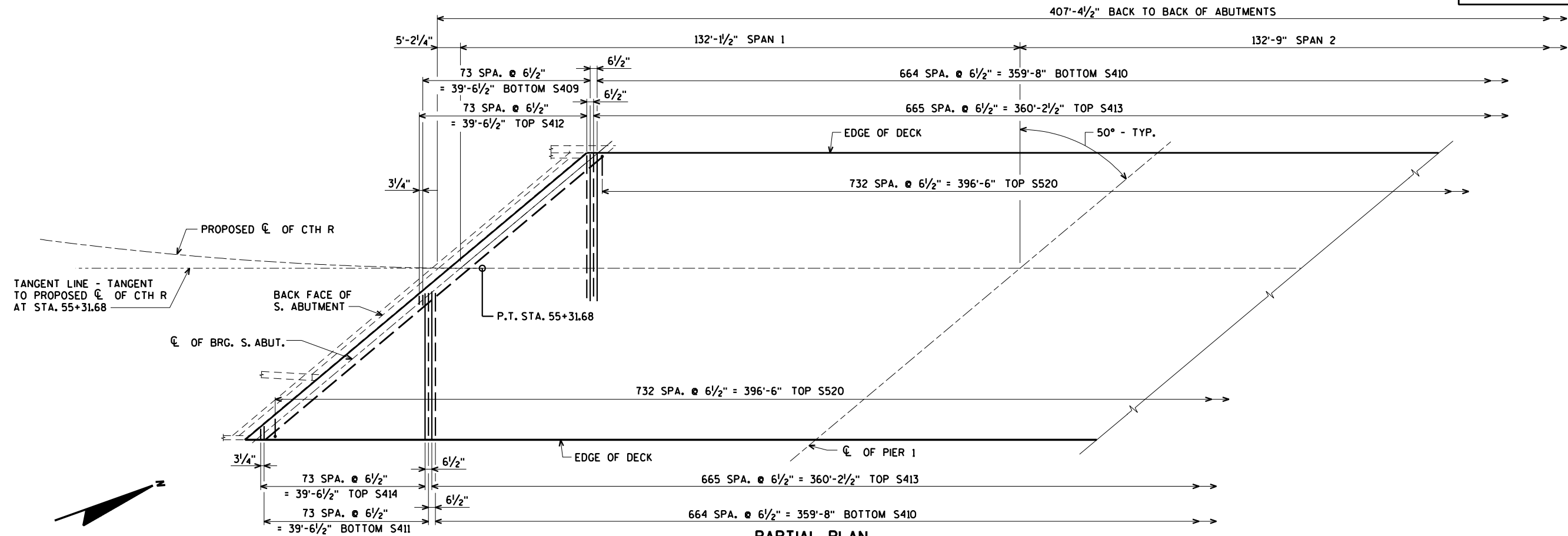
SECTION A



SECTION B

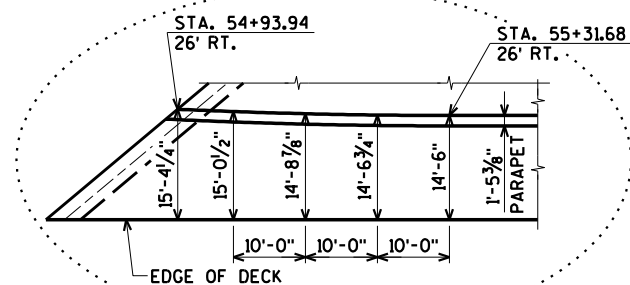
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SUPERSTRUCTURE			SHEET 28 OF 46 144

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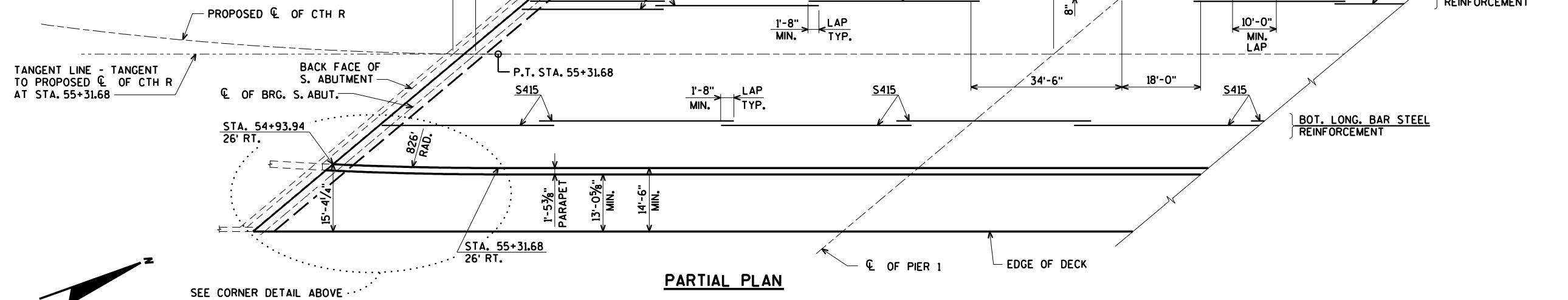


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
TRANSVERSE DECK STEEL LAYOUT			SHEET 29 OF 46 145

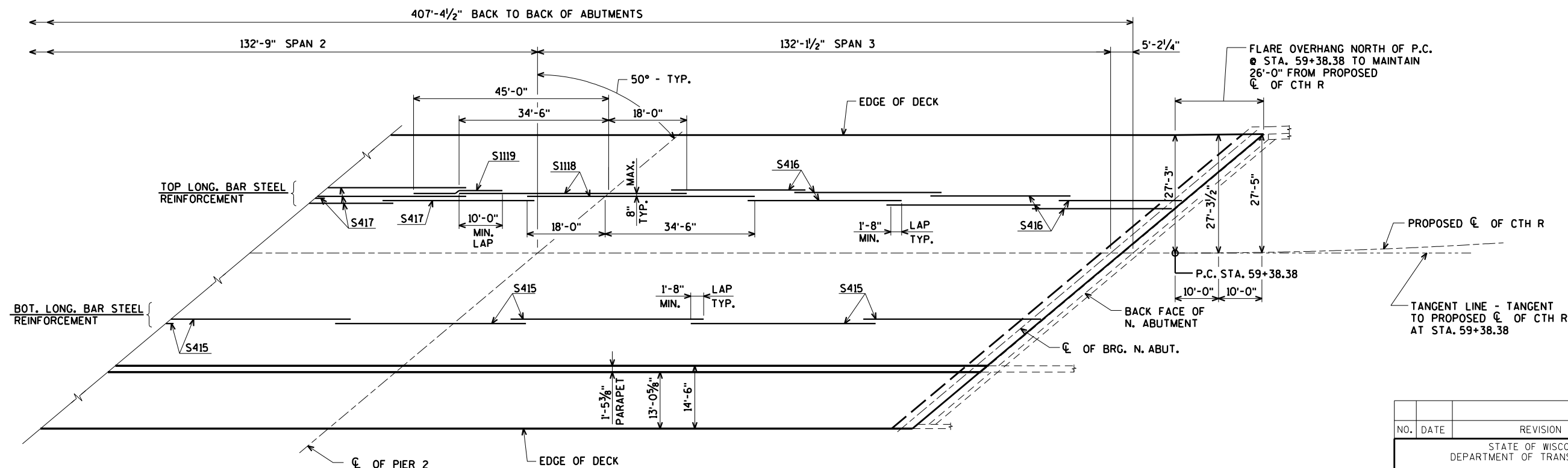
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CORNER DETAIL



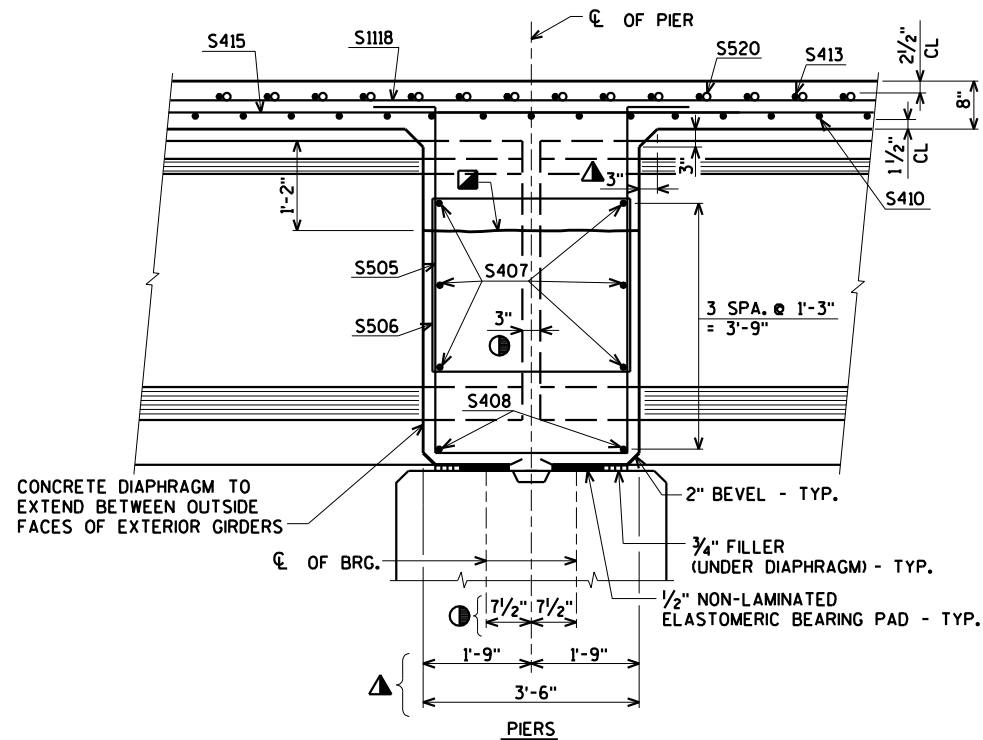
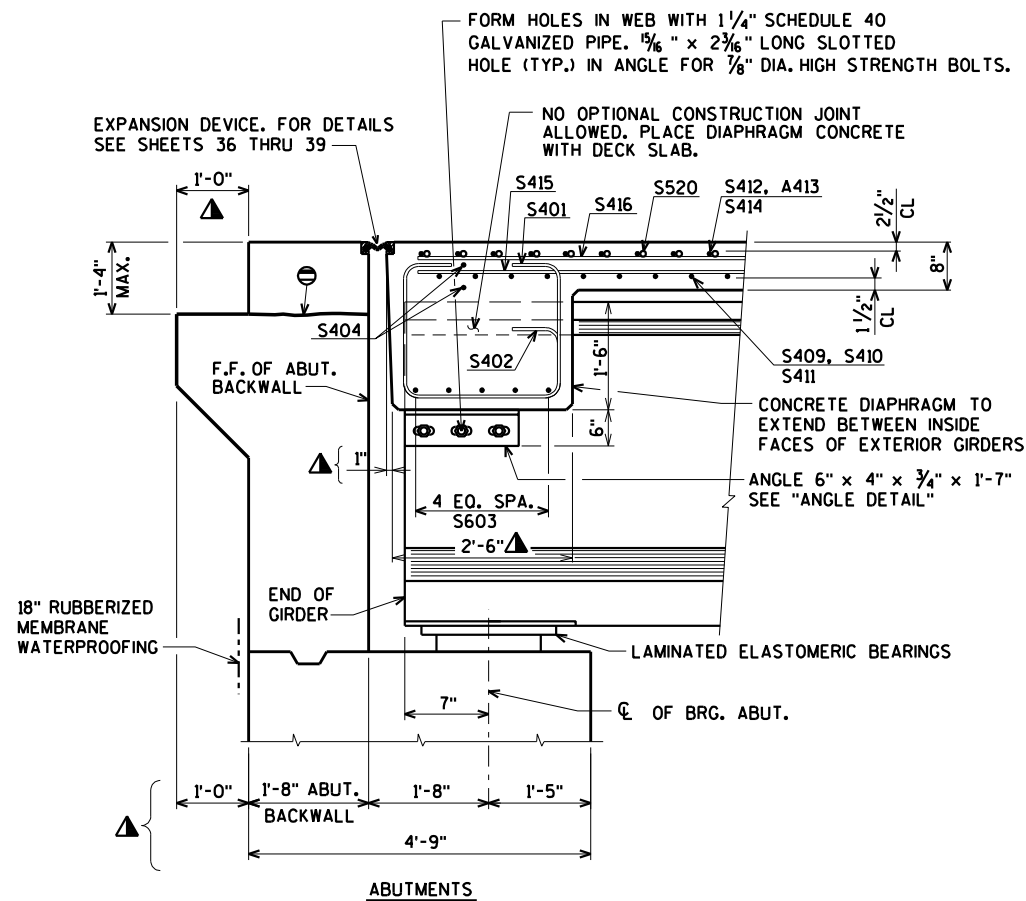
PARTIAL PLAN



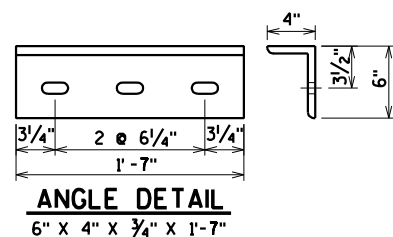
PARTIAL PLAN

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY	CLS	PLANS CK'D.	CBM
LONGITUDINAL DECK STEEL LAYOUT			SHEET 30 OF 46 146

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PART LONGITUDINAL SECTION



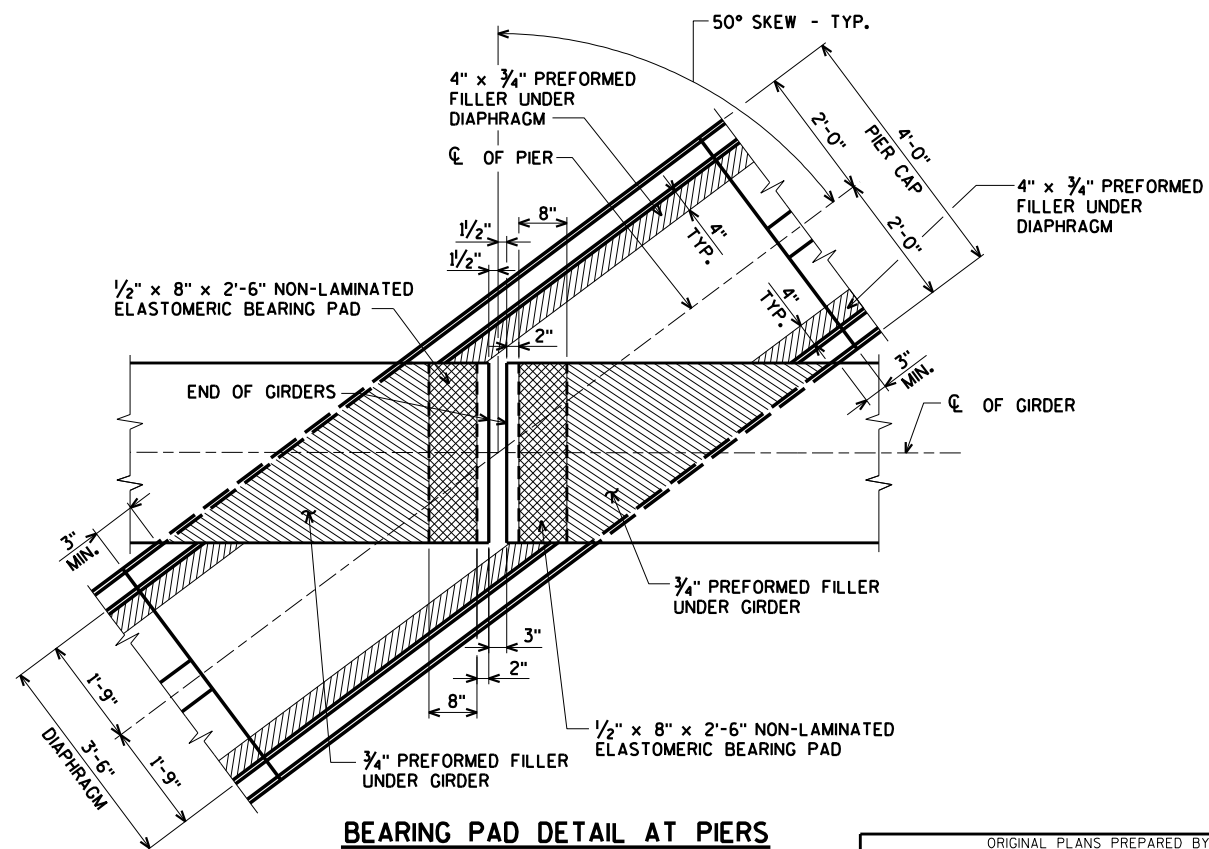
PROVIDE 3/2" x 3/2" x 5/16" PLATE WASHERS AT ALL LOCATIONS EXCEPT AT EXTERIOR FACES OF EXTERIOR GIRDERS WHERE 3/2" x 3/2" x 1/2" PLATE WASHERS SHALL BE PROVIDED.

DIAPHRAGM SUPPORT ANGLES SHALL BE ASTM A709 GRADE 36.

ALL DIAPHRAGM SUPPORT HARDWARE INCLUDING BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AFTER FACRICATION.

STEEL DIAPHRAGM SUPPORT ANGLE TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS 1/4 TURN. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OF ASTM A449.

ALL DIAPHRAM SUPPORT HARDWARE SHALL BE INCLUDED IN "CONCRETE MASONRY BRIDGES".



⊖ CONST. JOINT - STRIKE OFF AND LEAVE ROUGH.

▲ DIMENSIONS MEASURED NORMAL TO CL OF SUBSTRUCTURE UNIT.

● DIMENSIONS MEASURED ALONG CL OF GIRDER.

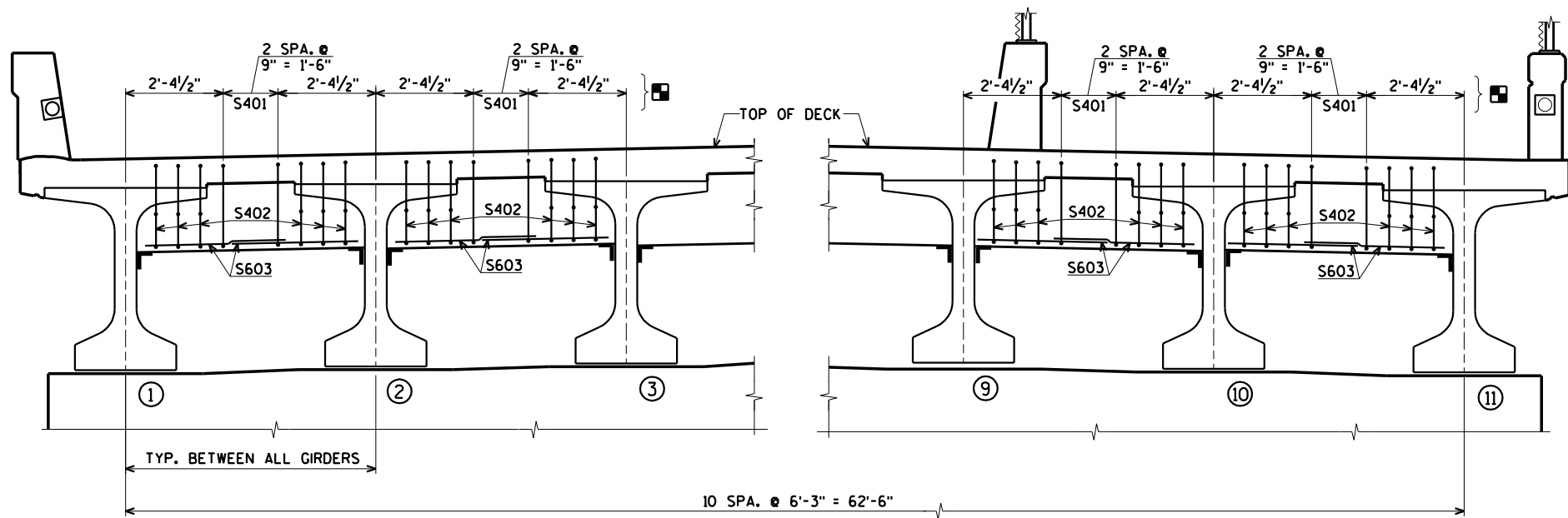
☑ OPTIONAL CONSTRUCTION JOINT 1'-2" BELOW TOP OF GIRDER. IF USED, DECK POUR MUST BE WITHIN 2 WEEKS FROM THE TIME OF THE DIAPHRAGM POUR.

F.F. DENOTES FRONT FACE.

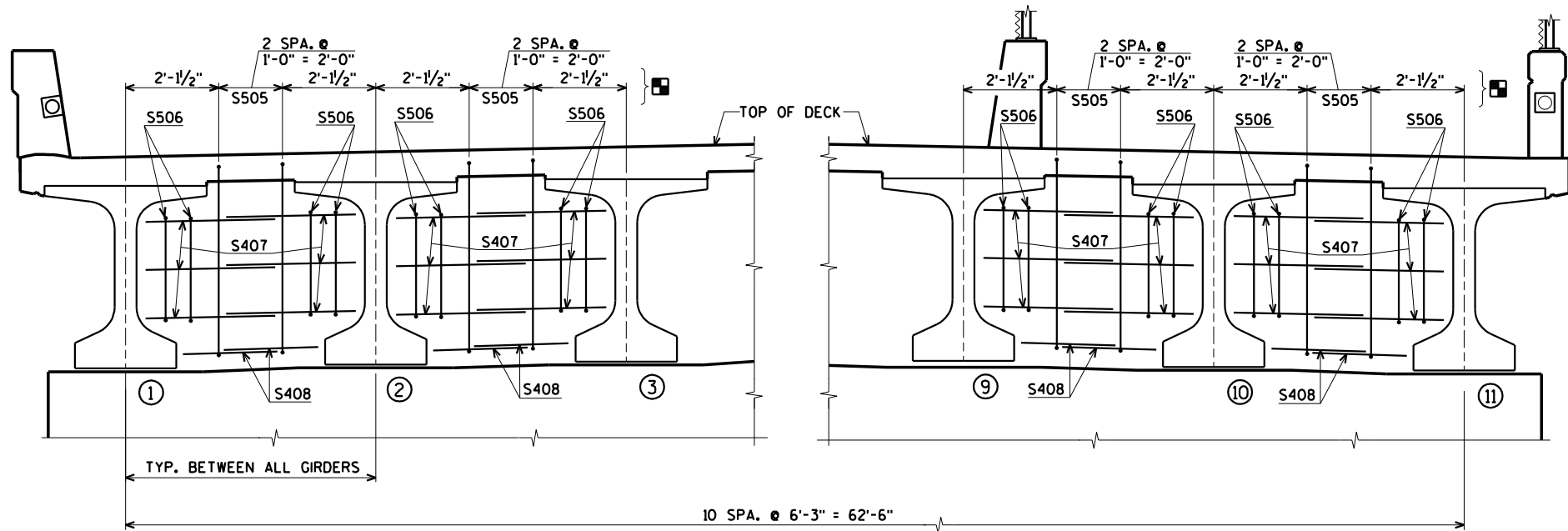
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SUPERSTRUCTURE DETAILS		SHEET 31 OF 46 147	

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PENTABLE:BReou.shd.utit.tbi



TRANSVERSE SECTION AT ABUTMENT DIAPHRAGM
(LOOKING NORTH)



TRANSVERSE SECTION AT PIER DIAPHRAGM
(LOOKING NORTH)

■ DIMENSIONS MEASURED NORMAL TO GIRDERS

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STRUCTURE B-36-226			
DRAWN BY	CLS	PLANS CK'D.	CBM
DIAPHRAGM ELEVATION DETAILS			SHEET 32 OF 46 148

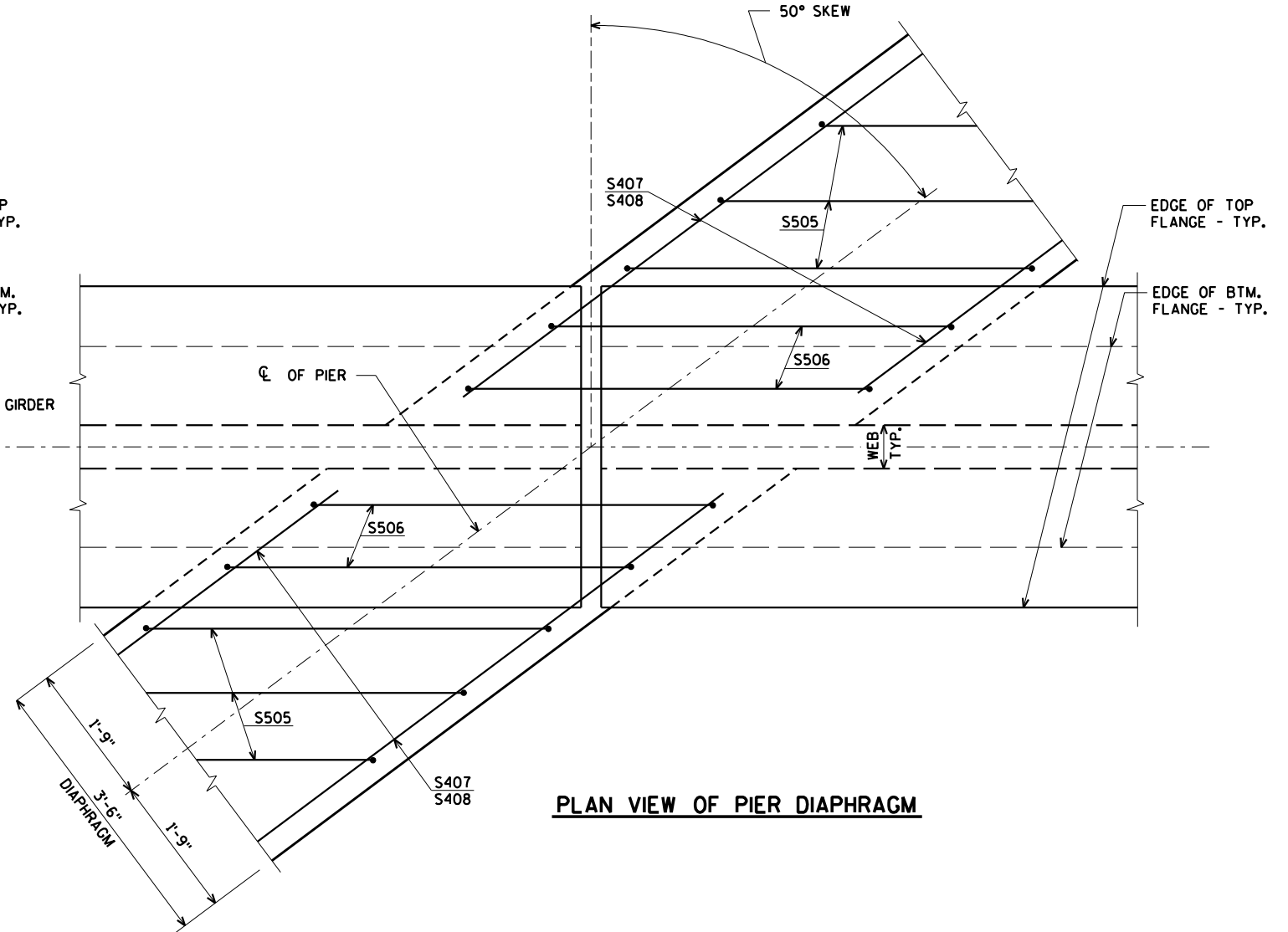
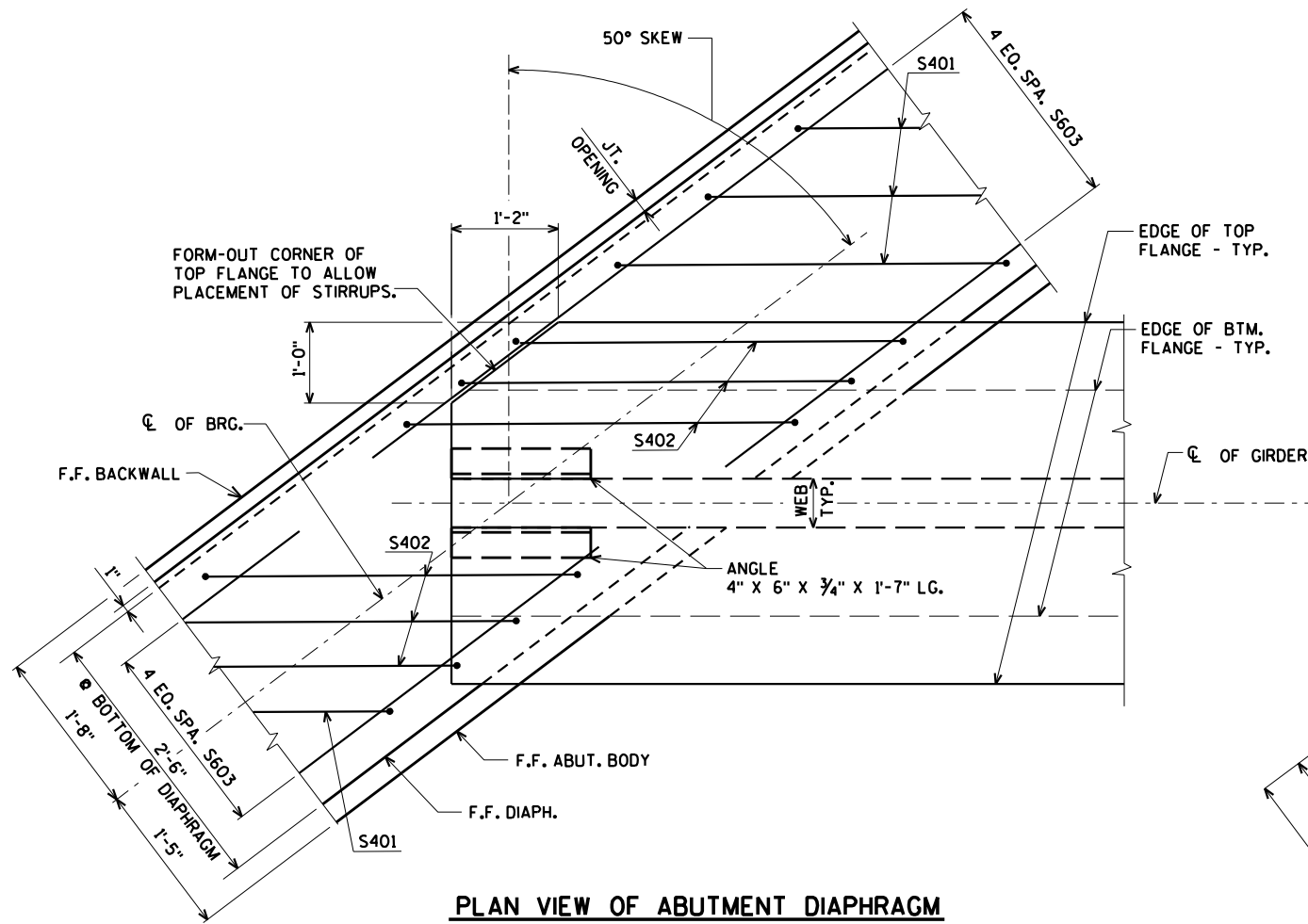
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U:\45-0419.00 - Manitowoc Co. CTH R over Manitowoc River\BRIDGE\450419 sup.dgn

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F.F. DENOTES FRONT FACE

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STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
DIAPHRAGM PLAN DETAILS			SHEET 33 OF 46 149

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LEGEND

- POSITION MOVABLE END OF CONDUIT INSIDE EXPANSION FITTING, SUCH THAT IT WILL HAVE THE SAME ALLOWANCE FOR MOVEMENT (EXPANSION/CONTRACTION) AS THE EXPANSION DEVICE SET IN PLACE IN THE DECK BELOW IT. TAKE CARE TO INSTALL EXPANSION FITTING AND CONDUIT EXACTLY PARALLEL TO BRIDGE MOVEMENT.

- ≠ NONMETALLIC CONDUIT TO METALLIC CONDUIT ADAPTOR FITTING (UL OR NRTL LISTED FOR ELECTRICAL USE SHALL BE USED)

- USE 2" DIA. RIGID METALLIC (RMC) CONDUIT AT FITTINGS. PROVIDE RMC FOR 3'-0" MIN. ON EACH SIDE OF JOINT OPENINGS UNLESS NOTED OTHERWISE.

- ◀ SPONGE RUBBER WRAP TO BE AASHTO M153, TYPE 1 OR EQUIVALENT - 1/4" MINIMUM THICKNESS. PROVIDE WRAP FOR THE ENTIRE LENGTH OF THE FITTING OR AS SHOWN. SPONGE RUBBER WRAP INCIDENTAL TO "CONDUIT RIGID METALLIC 2-INCH"

- * EXPANSION FITTING REQUIREMENTS (IF USED):
 - 8" TOTAL CONDUIT MOVEMENT WITH BONDING JUMPER

- ** DEFLECTION/EXPANSION FITTING REQUIREMENTS (IF USED):
 - UP TO 3/4" CONDUIT CONTRACTION OR EXPANSION AND UP TO 30 DEGREES OF ANGULAR MISALIGNMENT IN ANY DIRECTION WITH BONDING JUMPER

PVC = POLYVINYL CHLORIDE (RIGID NONMETALLIC) CONDUIT

RMC = RIGID METALLIC CONDUIT

NOTES

- ◊ 2'-0" MIN. CONDUIT COVER UNDER ROADWAYS. 1'-6" OTHERWISE. CONDUIT COVER SHOULD NOT EXCEED 3'-0".

CONDUIT SHALL BE EMBEDDED 2" CLEAR.

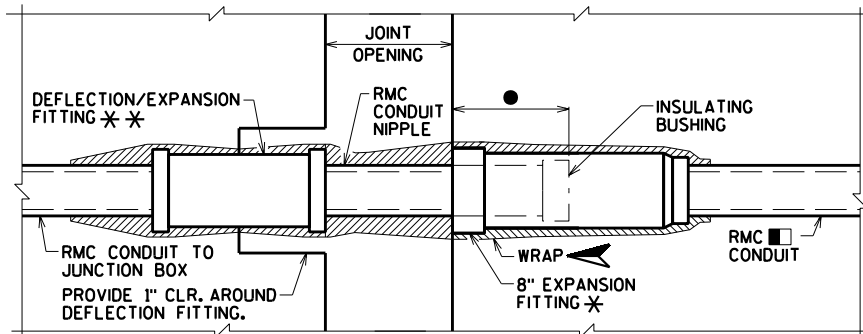
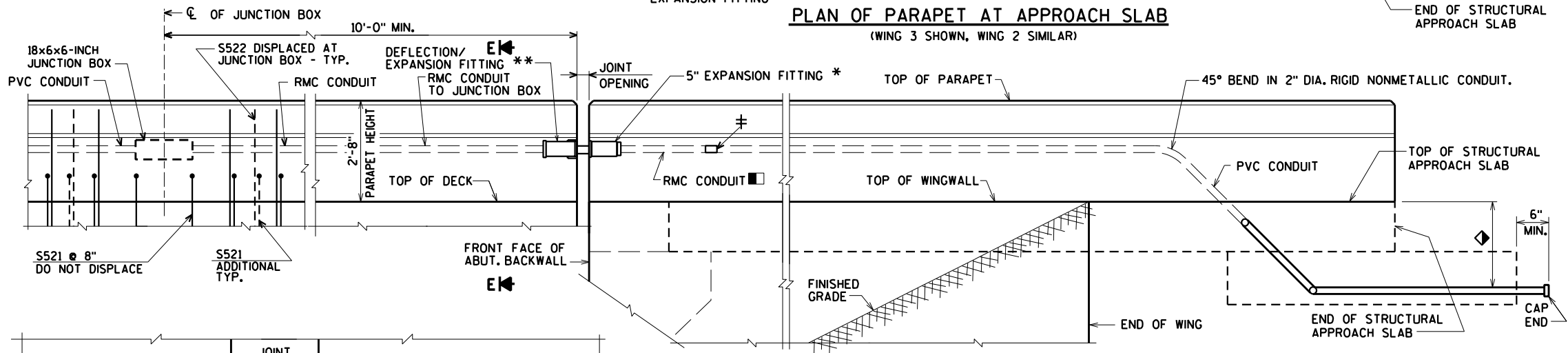
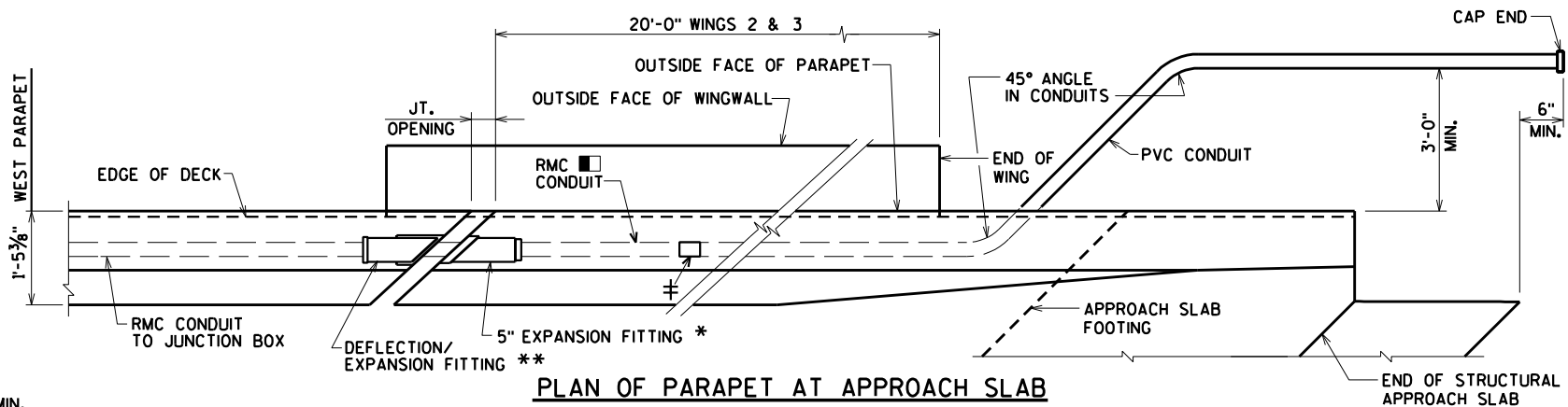
USE 2" DIA. RIGID NONMETALLIC CONDUIT (PVC) UNLESS NOTED OTHERWISE.

CONDUIT FITTINGS, CONDUIT BENDS, AND ADAPTER FITTINGS INCIDENTAL TO CONDUIT WORK.

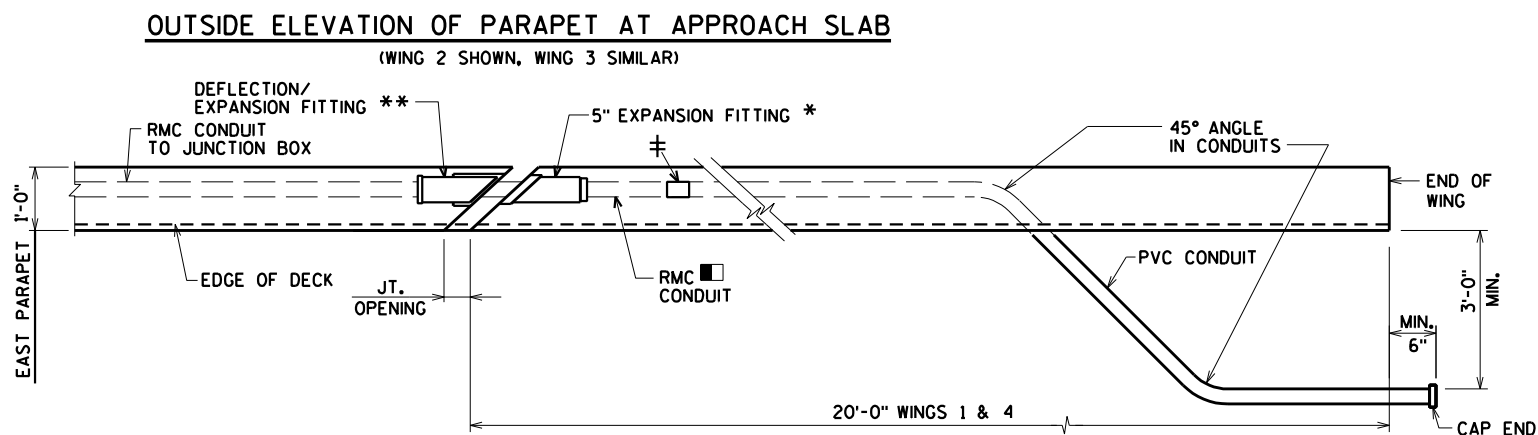
CONDUIT BENDS SHALL CONFORM TO THE NATIONAL ELECTRIC CODE.

PROVIDE JUNCTION BOXES FROM THE APPROVED PRODUCTS LIST.

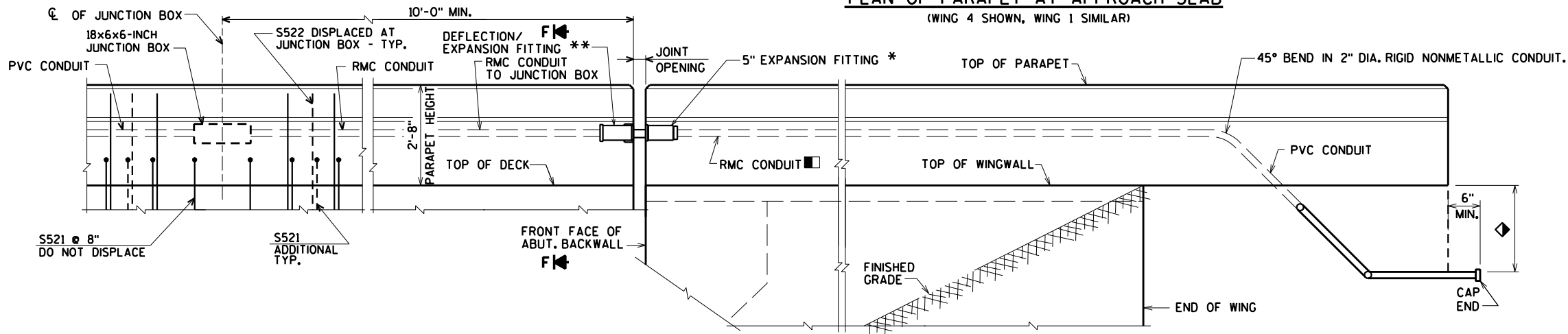
FOR SECTIONS E & F
SEE DETAILS ON SHEET 35

**DEFLECTION/EXPANSION FITTING**

THIS DETAIL ACCOMMODATES A MAXIMUM OF 8" TOTAL MOVEMENT AND UP TO 30 DEGREES OF ANGULAR MISALIGNMENT IN ANY DIRECTION. BOND JUMPER NOT SHOWN FOR CLARITY

**PLAN OF PARAPET AT APPROACH SLAB**

(WING 4 SHOWN, WING 1 SIMILAR)

**OUTSIDE ELEVATION OF PARAPET**

(WING 4 SHOWN, WING 1 SIMILAR)

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STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SUPERSTRUCTURE CONDUIT DETAILS		SHEET 34 OF 46 150	

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STATE PROJECT NUMBER

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BILL OF BARS

BAR. NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	230,800* COATED
							LOCATION
S401	X	60	8-0	X			DIAPH. @ ABUT. VERT.
S402	X	120	6-11	X			DIAPH. @ ABUT. VERT.
S603	X	200	5-9				DIAPH. @ ABUT. HORIZ.
S404	X	40	8-3				DIAPH. @ ABUT. HORIZ.
S505	X	60	15-9	X			DIAPH. @ PIERS VERT.
S506	X	80	15-10	X			DIAPH. @ PIERS VERT.
S407	X	240	5-0				DIAPH. @ PIERS HORIZ.
S408	X	80	3-6				DIAPH. @ PIERS HORIZ.
S409	X	148	17-10		⊗		SLAB TRANS. BOTTOM
S410	X	1330	34-6				SLAB TRANS. BOTTOM
S411	X	148	17-4		⊗		SLAB TRANS. BOTTOM
S412	X	148	17-5		⊗		SLAB TRANS. TOP
S413	X	1332	34-6				SLAB TRANS. TOP
S414	X	148	17-7		⊗		SLAB TRANS. TOP
S415	X	910	41-8				SLAB LONG. BOT.
S416	X	720	35-0				SLAB LONG. TOP SPANS 1 & 3
S417	X	270	34-6				SLAB LONG. TOP SPAN 2
S1118	X	202	52-6				SLAB LONG. TOP @ PIERS
S1119	X	202	20-6				SLAB LONG. TOP @ PIERS
S520	X	1466	4-6	X			SLAB TRANS. TOP @ PARAPET
S521	X	1208	4-5	X			WEST & INT. PARAPETS VERT.
S522	X	1204	5-0	X			WEST & INT. PARAPETS VERT.
S523	X	120	42-3				WEST & INT. PARAPETS HORIZ.
S524	X	482	6-9	X			EAST PARAPET VERT.
S425	X	80	42-3				EAST PARAPET HORIZ.

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.

BAR SERIES TABLE

BAR MARK	NO REQ'D.	LENGTH
S409	2 SERIES OF 74	1'-3" TO 34'-5"
S411	2 SERIES OF 74	9" TO 33'-11"
S412	2 SERIES OF 74	10" TO 34'-0"
S414	2 SERIES OF 74	1'-0" TO 34'-2"

BUNDLE AND TAG EACH SERIES SEPARATELY.

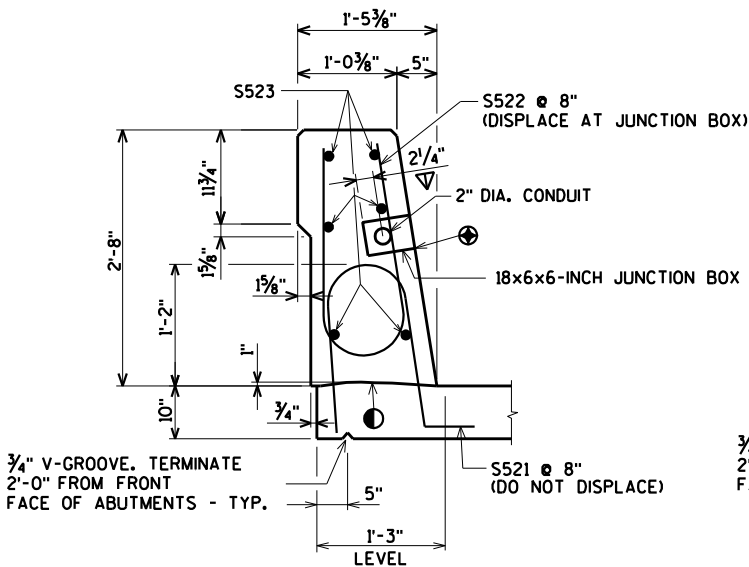
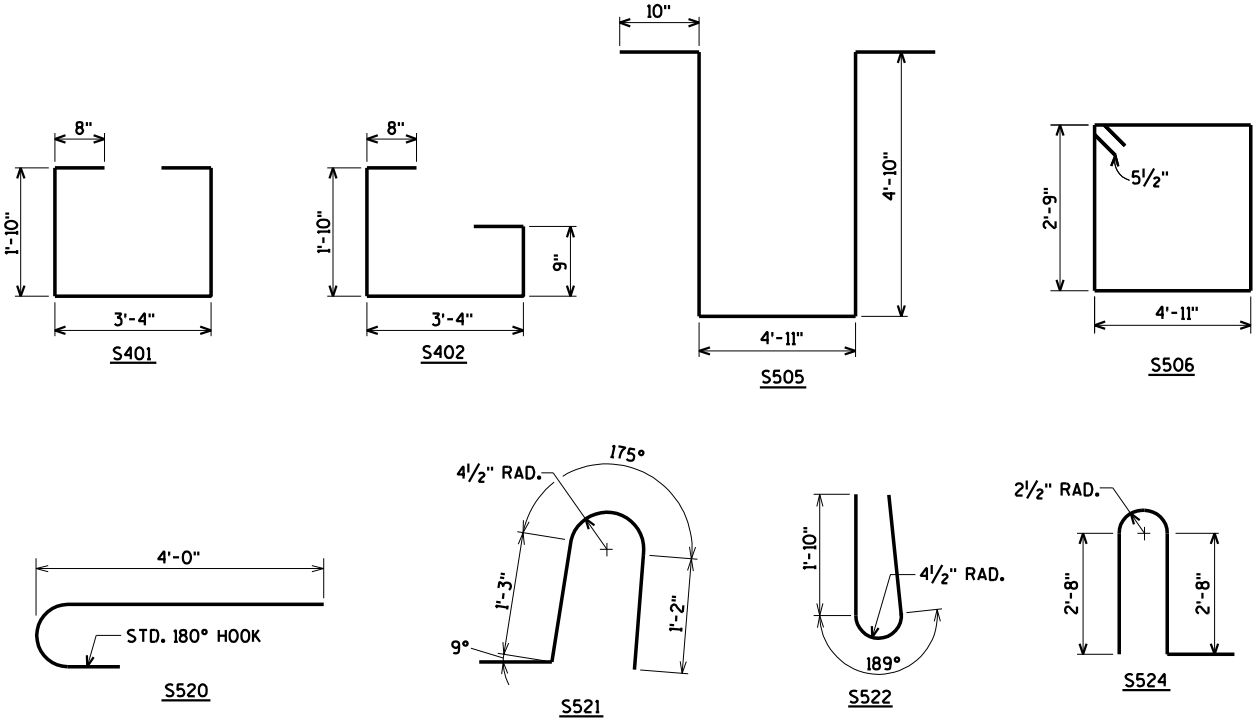
FOR LOCATIONS OF SECTIONS
E & F, SEE SHEET 34.

▽ LOCATION OF CONDUIT IS MEASURED FROM
OUTSIDE EDGE OF JUNCTION BOX.

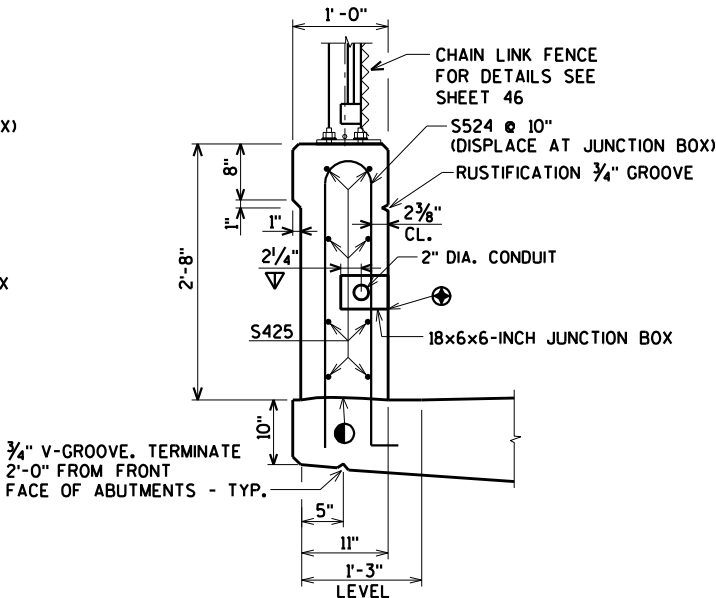
● CONST. JOINT - STRIKE OFF AS SHOWN.

⊗ CUT OUT 1"± OF GASKET AT BOTTOM OF
JUNCTION BOX COVER TO ALLOW FOR DRAINAGE

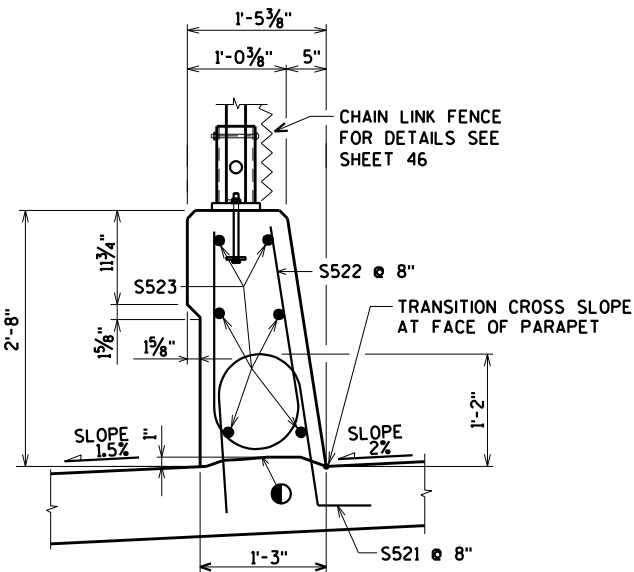
NO.	DATE	REVISION	BY
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STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SUPERSTRUCTURE BILL OF BARS			SHEET 35 OF 46 151



SECTION THRU WEST PARAPET ON BRIDGE
(SECTION E)



SECTION THRU EAST PARAPET ON BRIDGE
(SECTION F)



SECTION THRU INT. PARAPET ON BRIDGE

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3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

LEGEND

- ▲ ① NEOPRENE STRIP SEAL (5 - INCH) & STEEL EXTRUSIONS. SET JOINT OPENING AT 1 3/4" . JOINT OPENING GIVEN NORMAL TO JOINT.
- ② STUDS 5/8" DIA. X 6 3/4" LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS & BEND AS SHOWN AFTER WELDING.
- ②A 1/2" THICK ANCHOR PLATE WITH 5/8" DIA. ROD (OR ALTERNATE STRIP SEAL ANCHOR). WELD ROD TO ANCHOR PLATE, WELD ANCHOR PLATE TO NO. 1 AT 1'-6" CENTERS BETWEEN GIRDERS.
- ③ 3/4" DIA. THREADED ROD WITH 2 NUTS AND PLATE WASHERS. GROUT THREADED ROD INTO FIELD DRILLED HOLES ON C/L OF GIRDER AND ABUTMENT BACKWALL AS SHOWN.
- ④ 3/4" DIA. THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.
- ⑤ FABRICATE SUPPORT FROM 3" X 1/2" BAR AS SHOWN OR EQUIVALENT, ONE PER GIRDER PER SIDE. FIELD OR SHOP WELD TO NO. 1. IF FIELD WELDED, COVER WELDED AREAS WITH EPOXY-COATING MATERIAL. PROVIDE 1 1/2" DIA. HOLE FOR NO. 3 & 1" DIA. HOLE FOR NO. 4.
- ⑥ GALVANIZED PLATE 3/8" X 10" X 3'-0" LONG WITH HOLES FOR #7.
- ⑦ 3/4" DIA. X 1 1/2" STAINLESS STEEL SOCKET FLAT HEAD SCREWS WITH ANTI-SEIZE LUBRICANT. PLACE IN COUNTERSUNK HOLES. RECESS 1/6" BELOW PLATE SURFACE.
- ⑧ 3/4" DIA. X 4" GALV. HEX HEAD BOLT. BEND 45°.
- ⑨ 3/4" DIA. X 2 1/4" GALV. THREADED COUPLING.
- ⑩ MULTIUSE TRAIL COVER PLATE 3/8" X 3'-0" X LIMITS SHOWN WITH HOLES FOR NO. 7. GALVANIZE PLATE AFTER SLIP RESISTANT SURFACE IS APPLIED.
- ⑪ 1" X 5" SLOTTED COUNTERSUNK HOLE FOR NO. 7. PLACE SLOT PARALLEL TO DIRECTION OF MOVEMENT.

NOTES

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

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

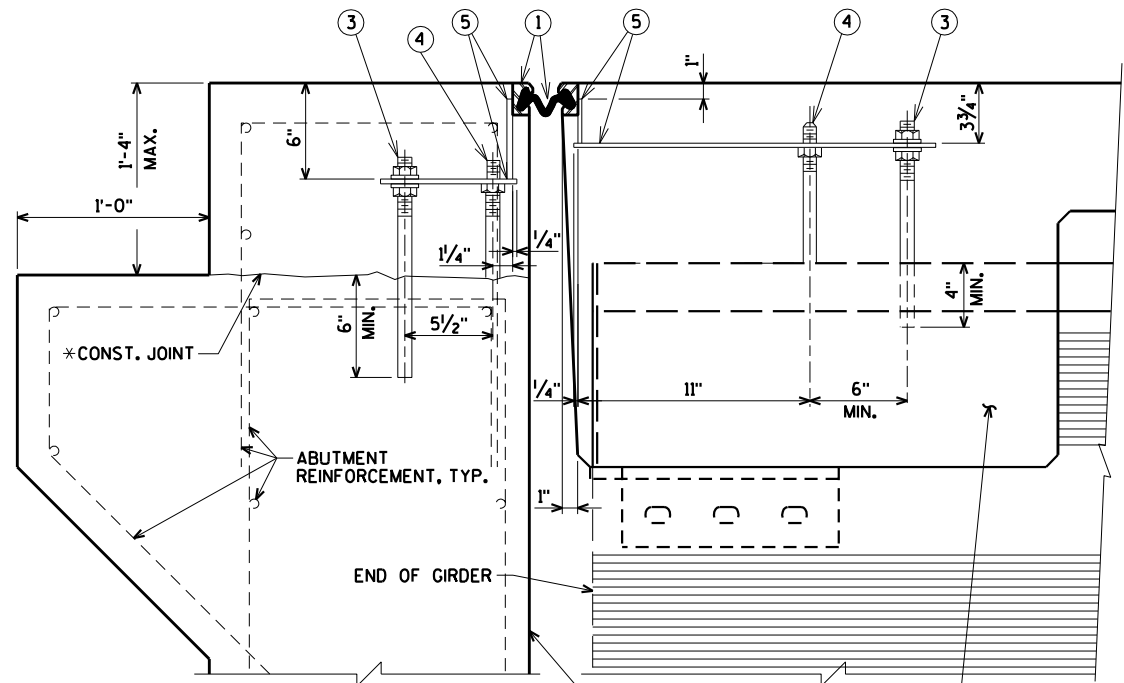
FABRICATOR SHALL PROVIDE MEANS OF KEEPING GALVANIZED EXTRUSIONS CLEAN & SMOOTH DURING SHIPMENT AND PRIOR TO APPLYING LUBRICANT ADHESIVE FOR NEOPRENE GLAND INSTALLATION.

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

STRIP SEAL EXPANSION JOINT ASSEMBLY, INCLUDING ANCHOR STUDS & HARDWARE WILL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "EXPANSION DEVICE B-36-226".

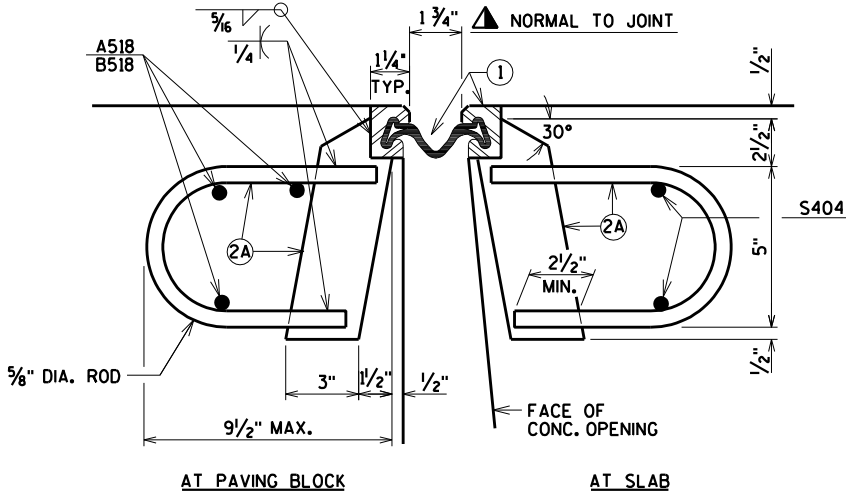
ANCHOR SYSTEM NO. 8 & NO. 9 SHALL CONFORM TO ASTM A307 & SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C & D.

⊗ BLOCK OUT CONCRETE 2" EACH SIDE OF JOINT OPENING



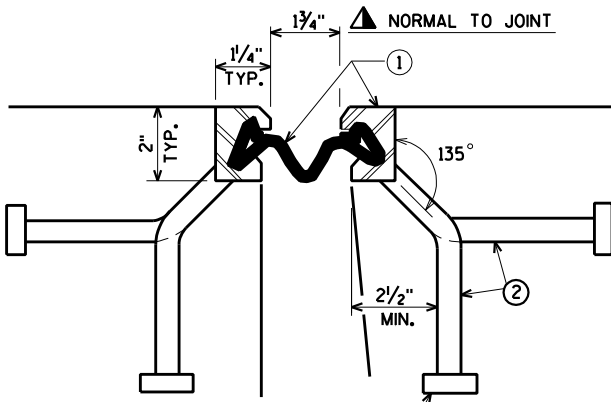
* POUR CONCRETE ABOVE THIS JOINT AFTER SUPERSTRUCTURE IS IN PLACE. STRIKE OFF AND LEAVE ROUGH.

SECTION THRU JOINT
(NORMAL TO C/L ABUTMENT)



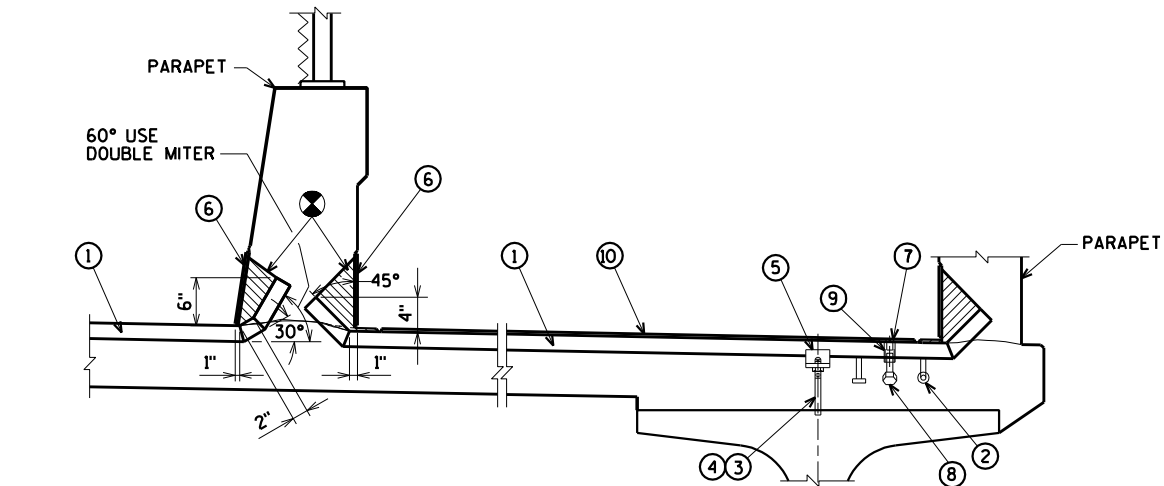
SECTION THRU JOINT

ROADWAY TRAFFIC AREA BETWEEN EXTERIOR GIRDERS.
SYM. ABOUT C/L OF JOINT UNLESS OTHERWISE SHOWN OR NOTED.

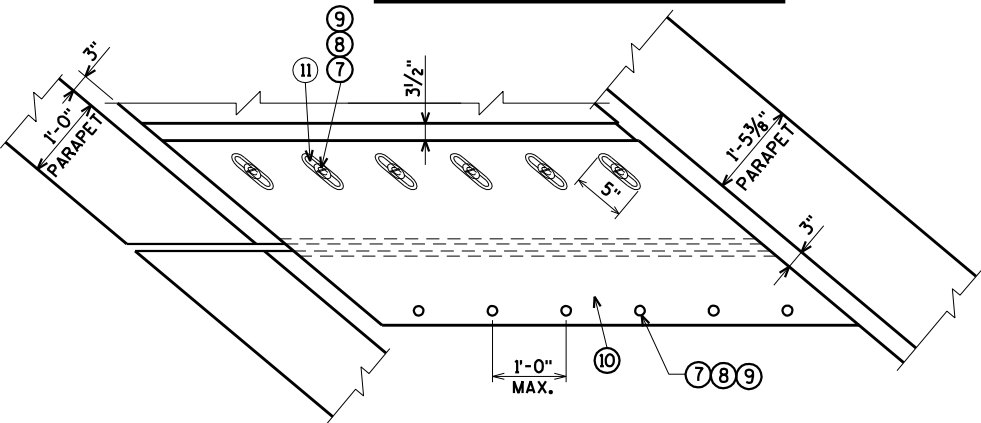


SECTION THRU JOINT

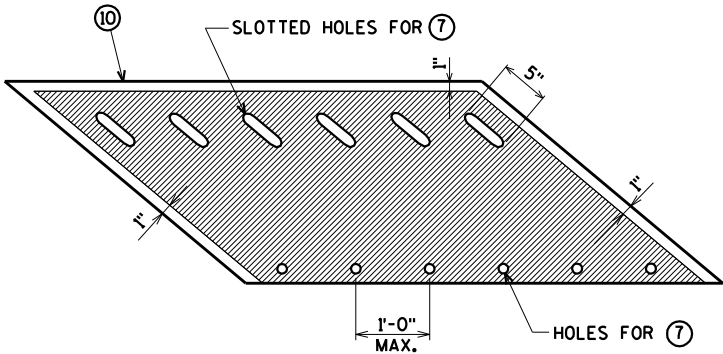
EXTERIOR GIRDER TO EDGE OF SLAB



SECTION AT MULTI USE TRAIL



PLAN OF SIDEWALK COVER PLATE
OVER MULTIUSE TRAIL



PLAN OF SIDEWALK COVER PLATE
WITH SLIP-RESISTANT SURFACE

PLACE SLIP-RESISTANT SURFACE ON TOP WALKING SURFACE IN SHADED AREA ONLY.

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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
EXPANSION DEVICE			SHEET 36 OF 46 152



SOME BARS AND SIDEWALK PLATE NOT
SHOWN FOR CLARITY. FOR SIDEWALK PLATE
DETAILS SEE SHEET 36.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
		DRAWN BY	CLS
		PLANS CK'D.	CBM
EXPANSION DEVICE AT SOUTH ABUTMENT		SHEET 37 OF 4 153	



SOME BARS AND SIDEWALK PLATE NOT
SHOWN FOR CLARITY. FOR SIDEWALK PLATE
DETAILS SEE SHEET 36.

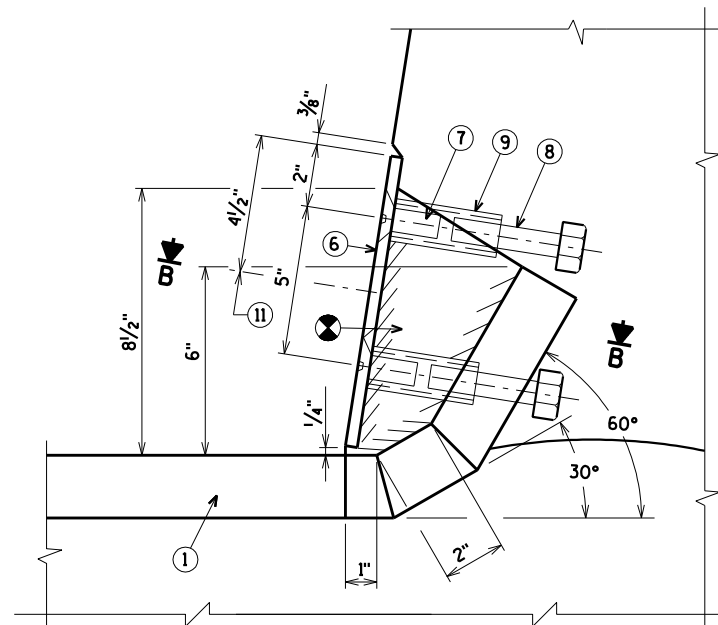


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
		DRAWN BY	CLS
		PLANS CK'D.	CBM
EXPANSION DEVICE AT NORTH ABUTMENT		SHEET 38 OF 4 154	

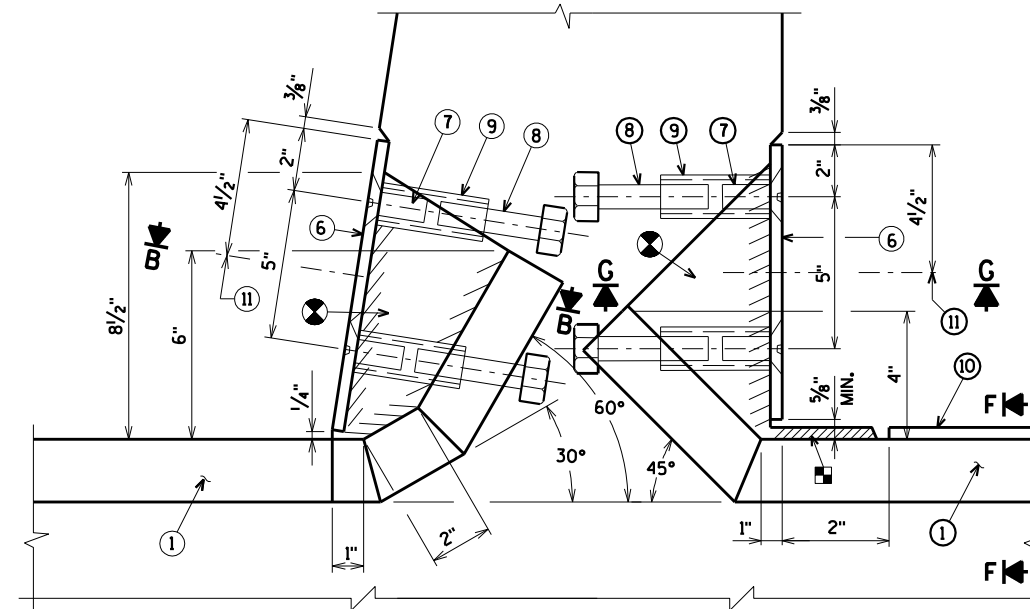
\$PRNAME\$
U:\45-0419.00 - Manitowoc Co. CTH R over Manitowoc River\BRIDGE\450419 exp jt.dgn

STATE PROJECT NUMBER

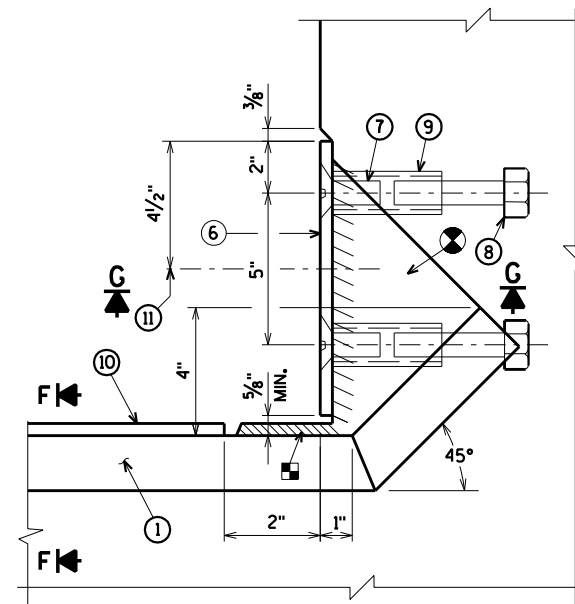
4310-06-71



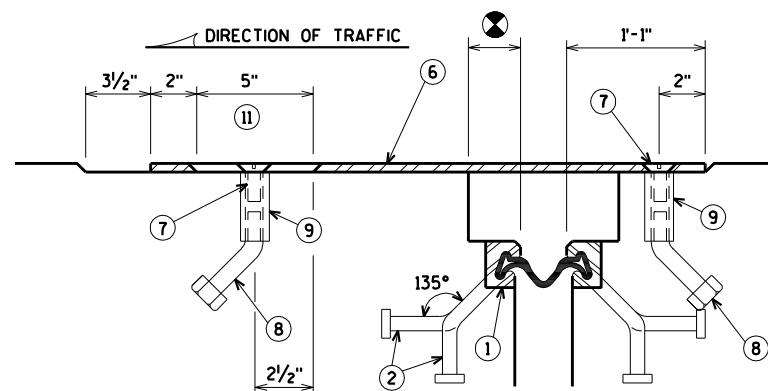
SECTION J



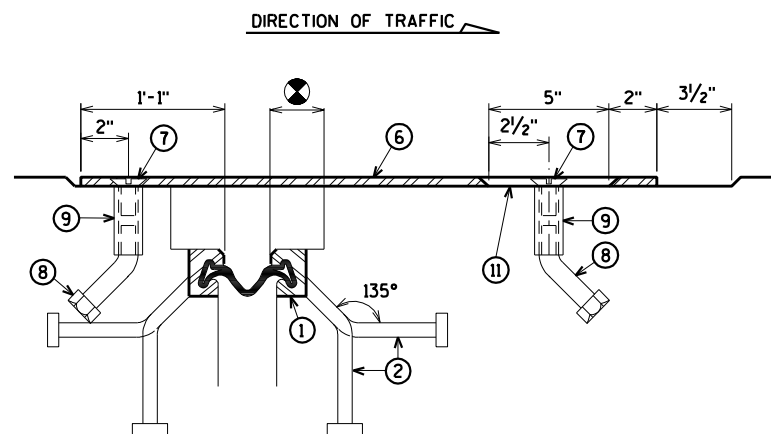
SECTION K



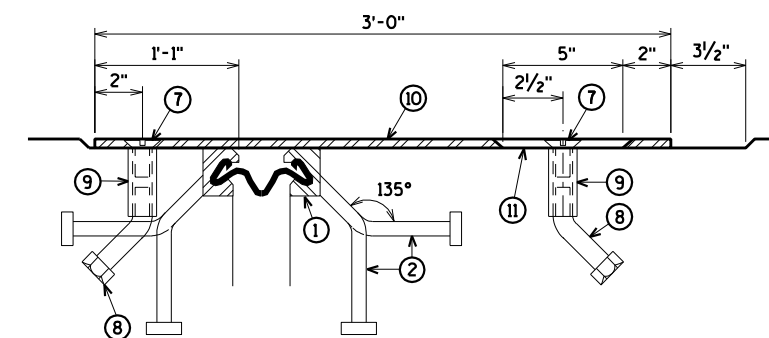
SECTION E



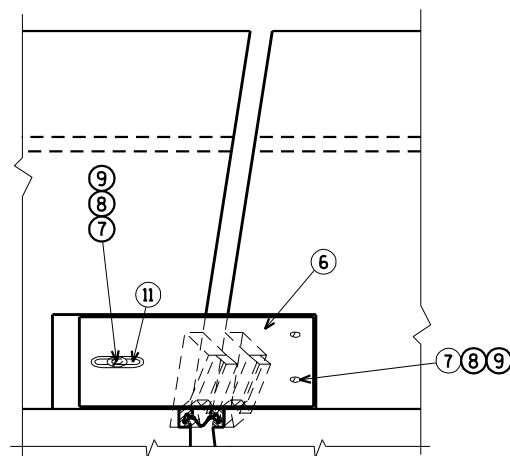
SECTION B



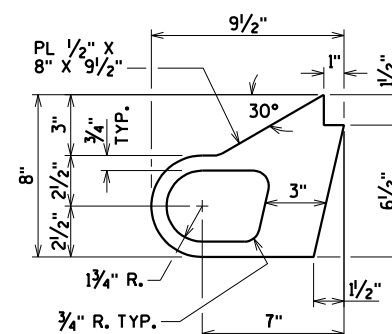
SECTION G



SECTION F



VIEW OF PARAPET PLATE
FROM ROADWAY



ALTERNATE STRIP SEAL ANCHOR

⊗ BLOCK OUT CONCRETE 2" EACH SIDE
OF JOINT OPENING

■ BLOCK OUT CONCRETE ABOVE EXTRUSIONS.

FOR LOCATION OF SECTIONS E, J, AND K
SEE SHEETS 37 & 38

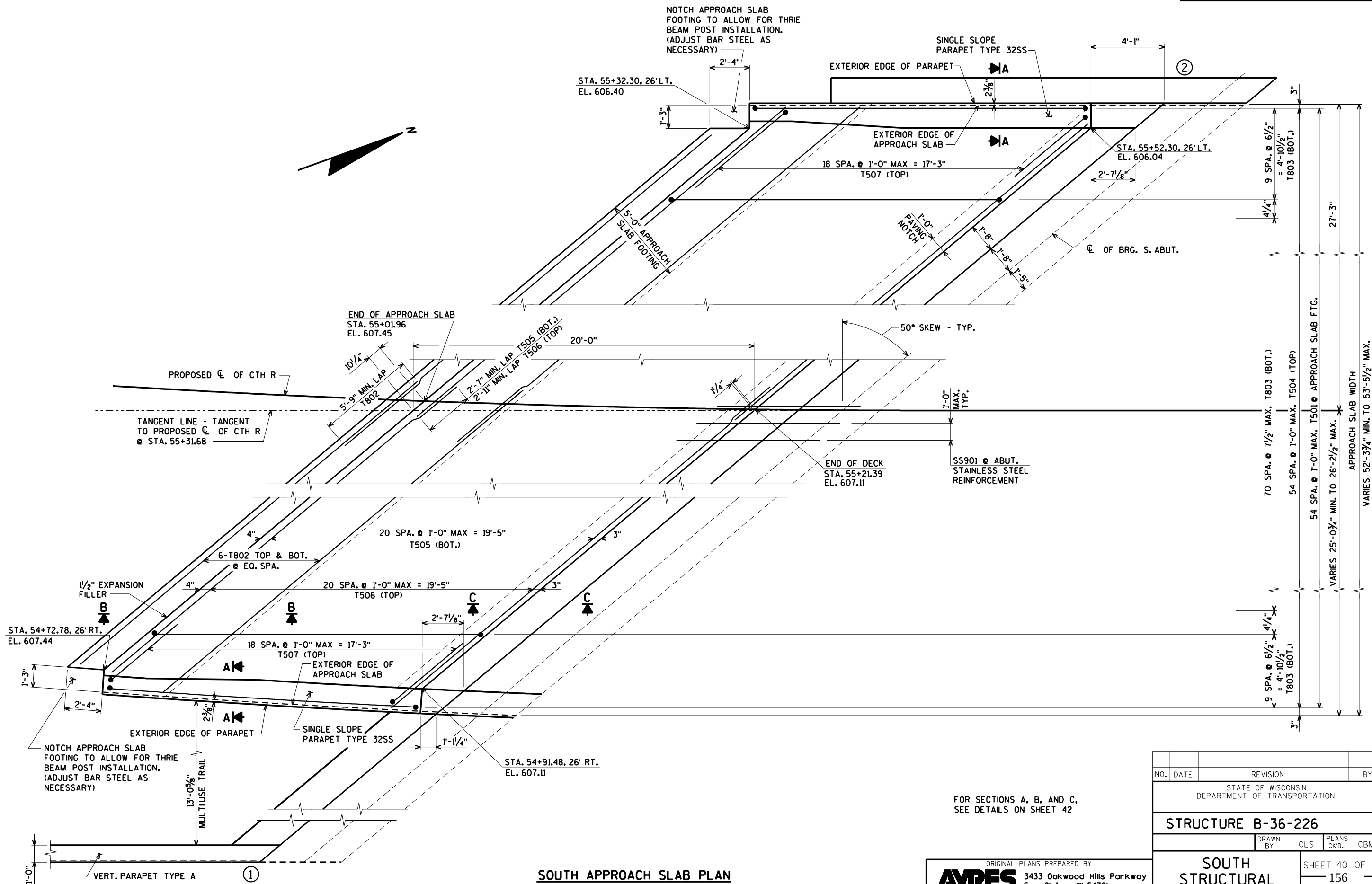
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
EXPANSION DEVICE DETAILS		SHEET 39 OF 46 155	

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STATE PROJECT NUMBER

4310-06-71



SOUTH APPROACH SLAB PLAN

FOR SECTIONS A, B, AND C,
SEE DETAILS ON SHEET 42

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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
SOUTH STRUCTURAL APPROACH SLAB			SHEET 40 OF 46 156

END OF DECK
STA. 59+28.69
EL. 599.95

20'-0"

PROPOSED $\mathbb{Q}$ OF CTH R

TANGENT LINE - TANGENT
TO PROPOSED $\odot$ OF CTH R
@ STA. 59+38.38

END OF APPROACH SLAB
STA. 59+48.75
EL. 599.59

20 SPA. @ 1'-0" MAX = 19'-5"
T505 (BOT.) ▼

SPA. @ 1'-0" MAX = 19'-5"
T506 (TOP)

18 SPA. @ 1'-0" MAX = 17'-3"
T507 (TOP)

E
PE 32SS

NOTCH APPROACH SLAB
FOOTING TO ALLOW FOR THREE
BEAM POST INSTALLATION.
(ADJUST BAR STEEL AS NECESSARY)-

FOR SECTIONS A, B, AND C,
SEE DETAILS ON SHEET 42

NORTH APPROACH SLAB PLAN

ORIGINAL PLANS PREPARED BY

AYRES
ASSOCIATES

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Eau Claire, WI 54701
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
	DRAWN BY	CLS	PLANS CK'D. CBM
NORTH STRUCTURAL APPROACH SLAB		SHEET 41 OF 46 157	

BAR NO.	COATED BAR	NO. REQ'D. S. APPR. SLAB	NO. REQ'D. N. APPR. SLAB	LENGTH	BENT BAR	BUNDLED	BAR SERIES	920# STAINLESS STEEL @ S. APPROACH SLAB
								940# STAINLESS STEEL @ N. APPROACH SLAB
								LOCATION
SS901		54	55	5-0	X			CONC. ABUT. BACKWALL TO APPROACH SLAB

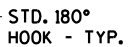
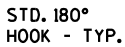
BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	13,940 [#] COATED
							LOCATION
T501	X	55	17-4	X			APPROACH SLAB FTG. - STIRRUP
T802	X	24	43-4				APPROACH SLAB FTG. - TRANS.
T803	X	91	21-4	X			APPROACH SLAB - LONG. - BOT.
T504	X	55	19-6				APPROACH SLAB - LONG. - TOP
T505	X	42	42-8				APPROACH SLAB - TRANS. - BOT.
T506	X	42	42-0				APPROACH SLAB - TRANS. - TOP
T507	X	38	4-1	X			APPROACH SLAB - TRANS. - TOP

BAR NO.	COATED BAR	NO. REQ'D.	LENGTH	BENT BAR	BUNDLED	BAR SERIES	14,350 [■] COATED
							LOCATION
T501	X	56	17-4	X			APPROACH SLAB FTG. - STIRRUP
T802	X	24	45-8				APPROACH SLAB FTG. - TRANS.
T803	X	92	21-4	X			APPROACH SLAB - LONG. - BOT.
T504	X	56	19-6				APPROACH SLAB - LONG. - TOP
T505	X	42	44-1				APPROACH SLAB - TRANS. - BOT.
T506	X	42	44-3				APPROACH SLAB - TRANS. - TOP
T507	X	38	4-1	X			APPROACH SLAB - TRANS. - TOP

POLYETHYLENE SHEETS ARE INCLUDED WITH
"CONCRETE MASONRY BRIDGES".



MEASURED NORMAL TO ABUTMENT

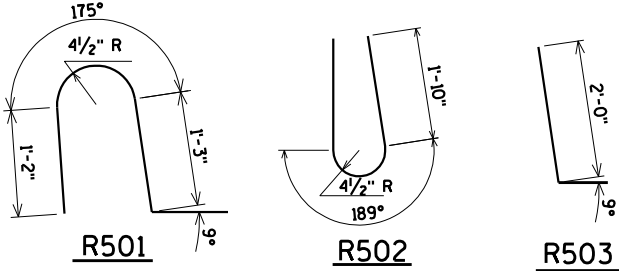


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
STRUCTURAL APPROACH SLAB DETAILS		SHEET 42 OF 46 158	

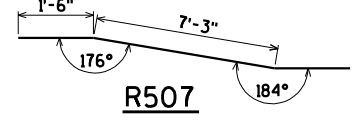
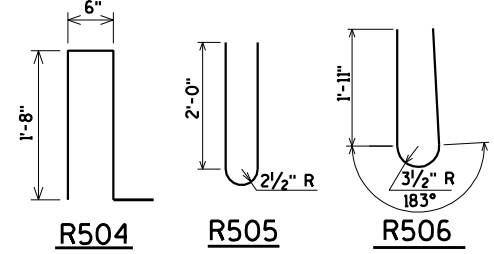
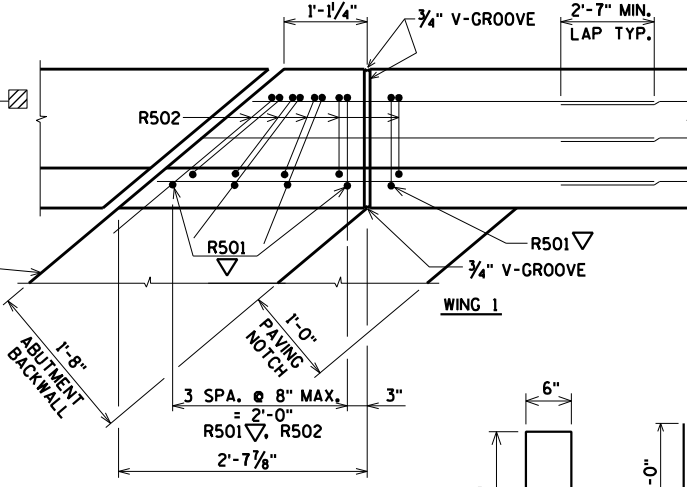
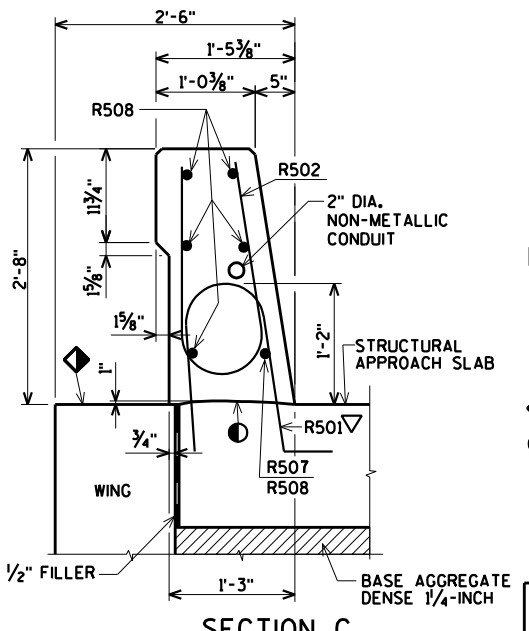
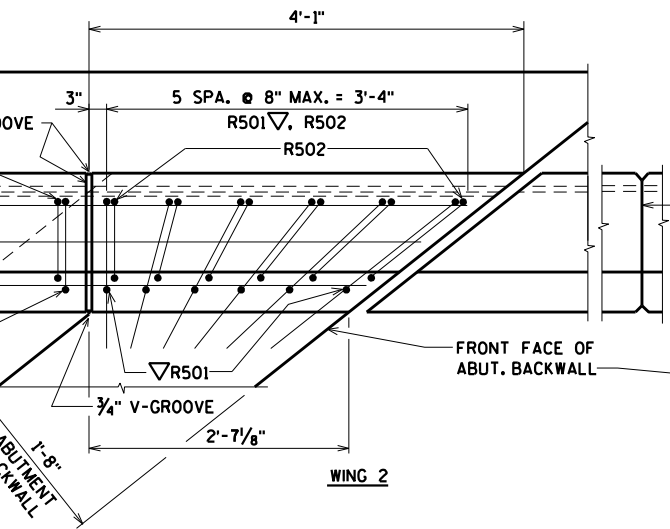
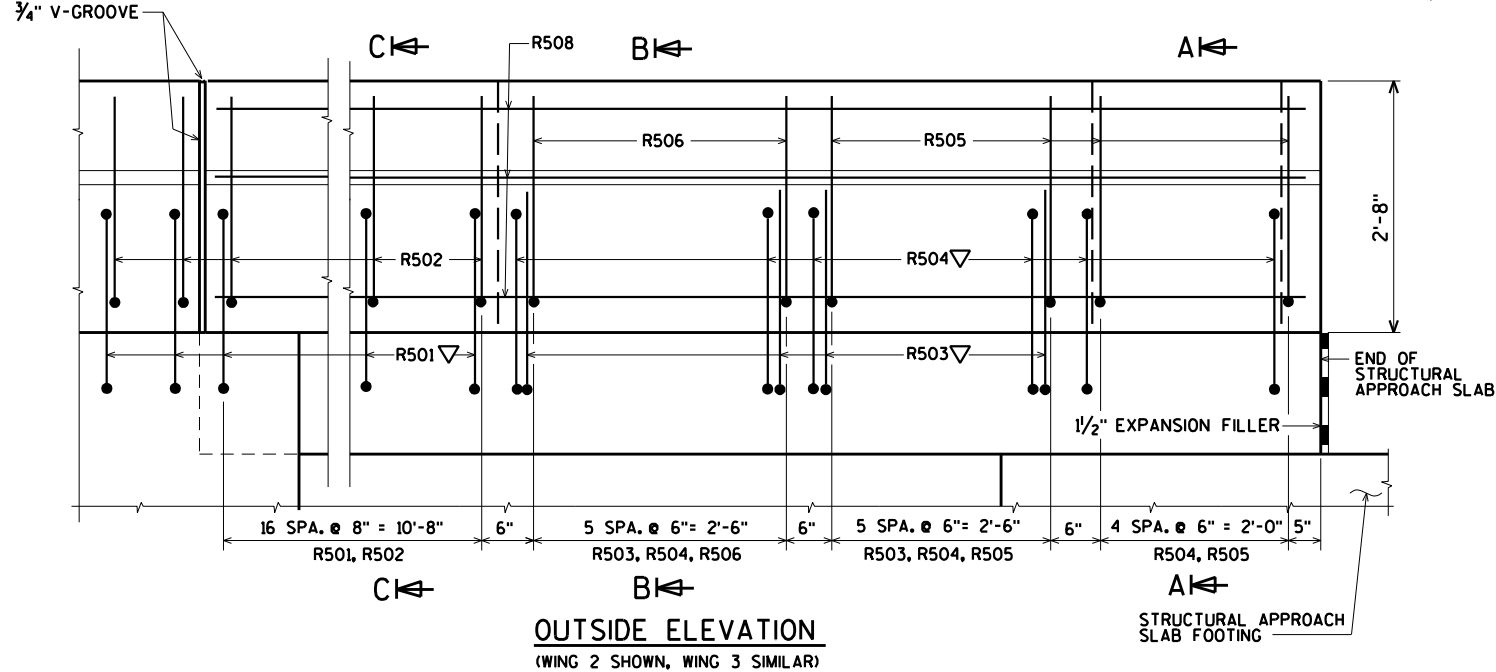
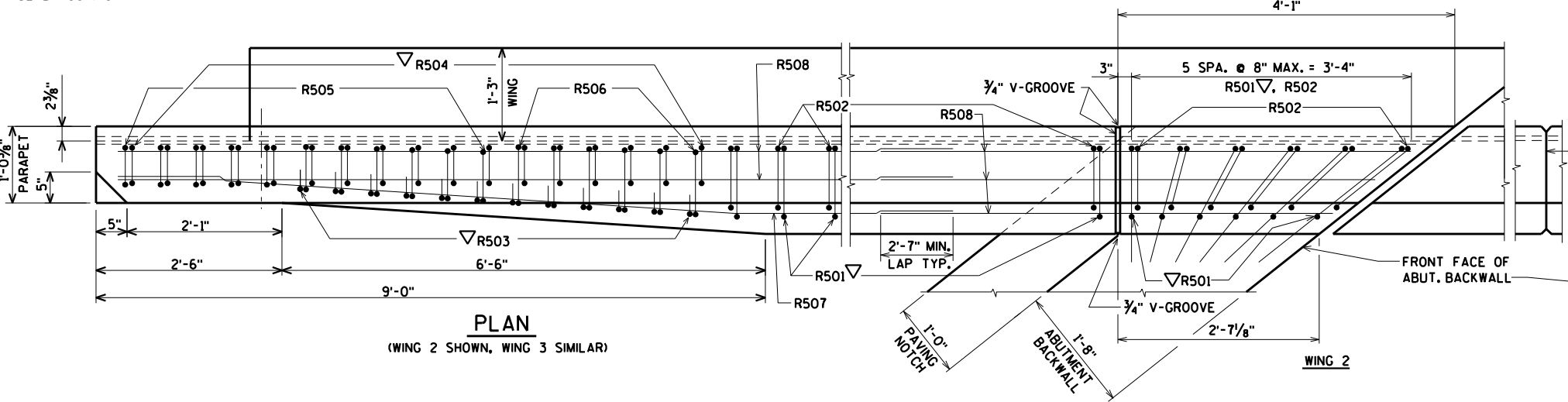
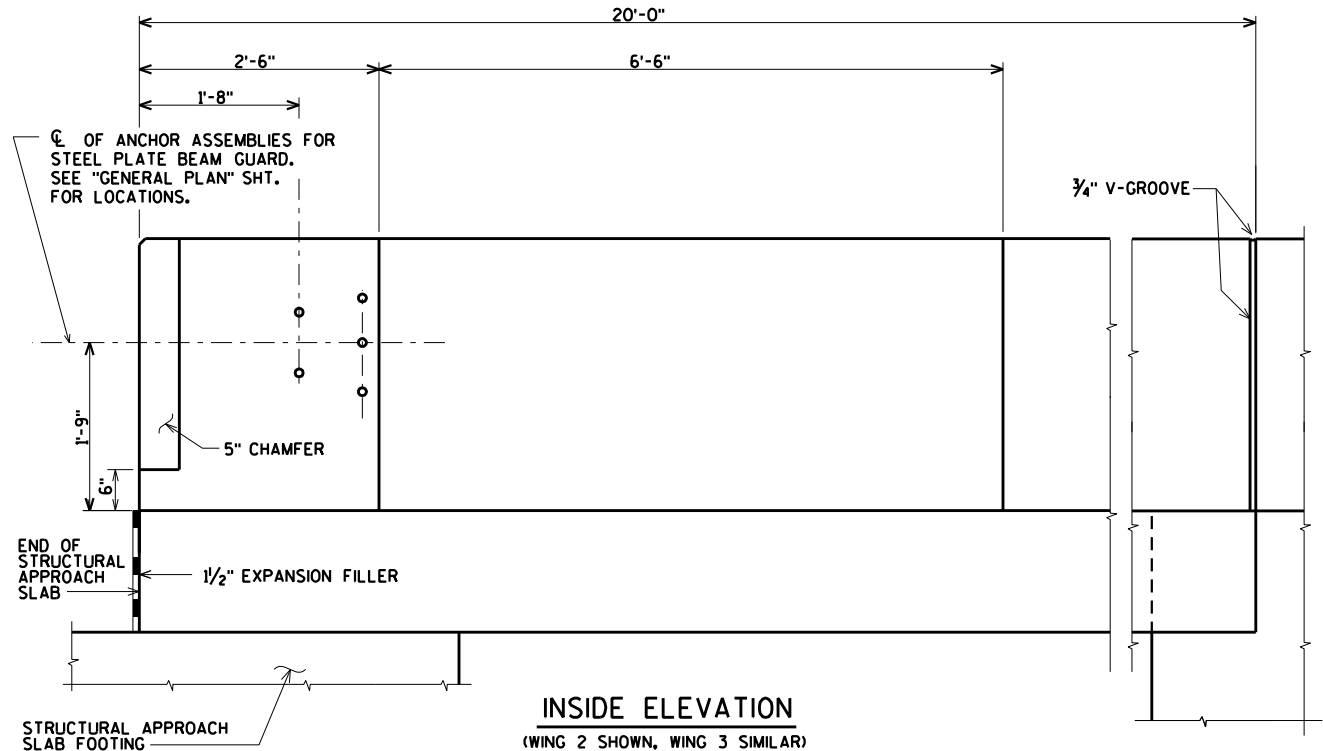
BILL OF BARS

BAR NO.	COATED BAR	SOUTH APPROACH SLAB (WING 2)	NORTH APPROACH SLAB (WING 3)	LENGTH	BENT BAR	BUNDLED BAR SERIES	580# COATED SOUTH APPROACH SLAB 560# COATED NORTH APPROACH SLAB
							LOCATION
R501	X	23	21	4-5	X		PARAPET VERT.
R502	X	23	21	5-0	X		PARAPET VERT.
R503	X	12	12	2-9	X		PARAPET VERT.
R504	X	17	17	4-4	X		PARAPET VERT.
R505	X	11	11	4-9	X		PARAPET VERT.
R506	X	6	6	4-10	X		PARAPET VERT.
R507	X	1	1	12-11	X		PARAPET HORIZ.
R508	X	11	11	12-11			PARAPET HORIZ.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.



SPRNFAMES
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- FOR DETAIL OF ANCHOR ASSEMBLY SEE SHEET 45
- OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT. LAP LONGIT. BARS A MIN. OF 1'-9". MIN. JOINT SPACING OF 80'-0". DEFINE CONST. JOINT WITH A 3/4" V - GROOVE. (SEE SHEET 35 FOR SECTION THRU PARAPET ON BRIDGE).
 - SLOPE AWAY FROM PARAPET FOR DRAINAGE
 - CONST. JOINT - STRIKE OFF AS SHOWN.
 - R501, R503, AND R504 BARS TO BE TIED TO STRUCTURAL APPROACH SLAB STEEL AND ABUTMENT STEEL BEFORE STRUCTURAL APPROACH SLAB IS POURED.

ORIGINAL PLANS PREPARED BY
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY CLS		PLANS CK'D. CBM	
SINGLE SLOPE PARAPET 32SS WINGS 2 AND 3		SHEET 43 OF 46 159	

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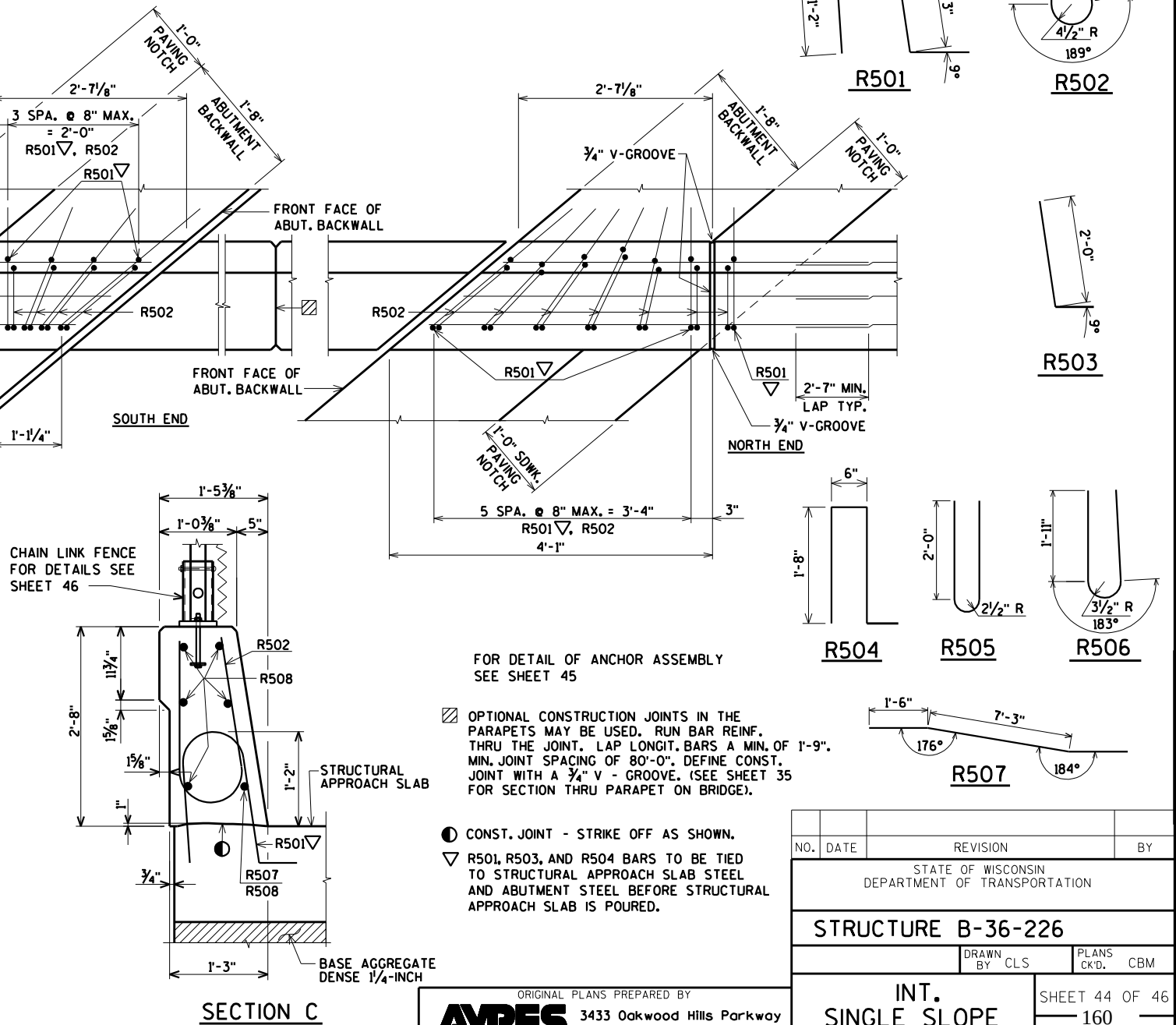
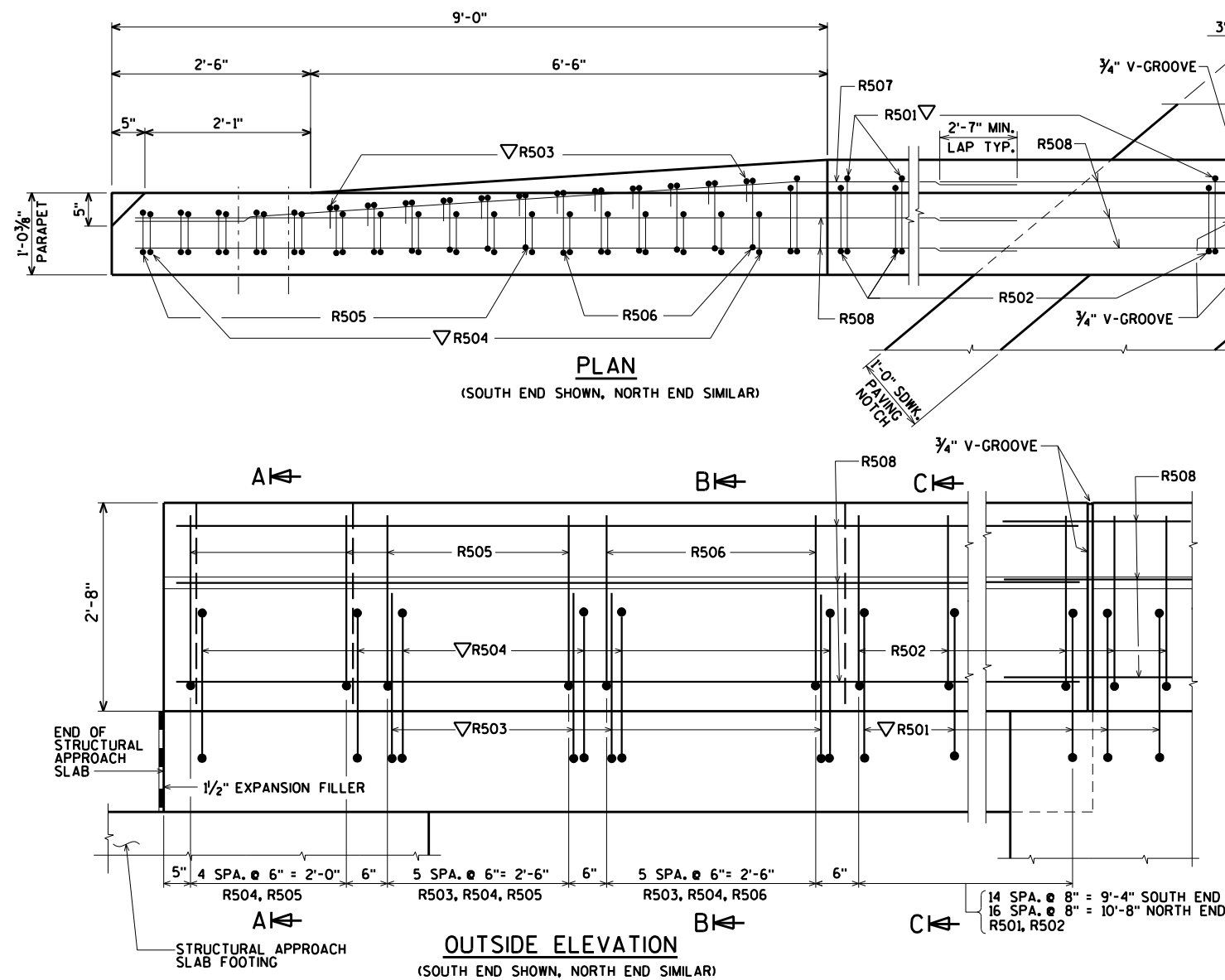
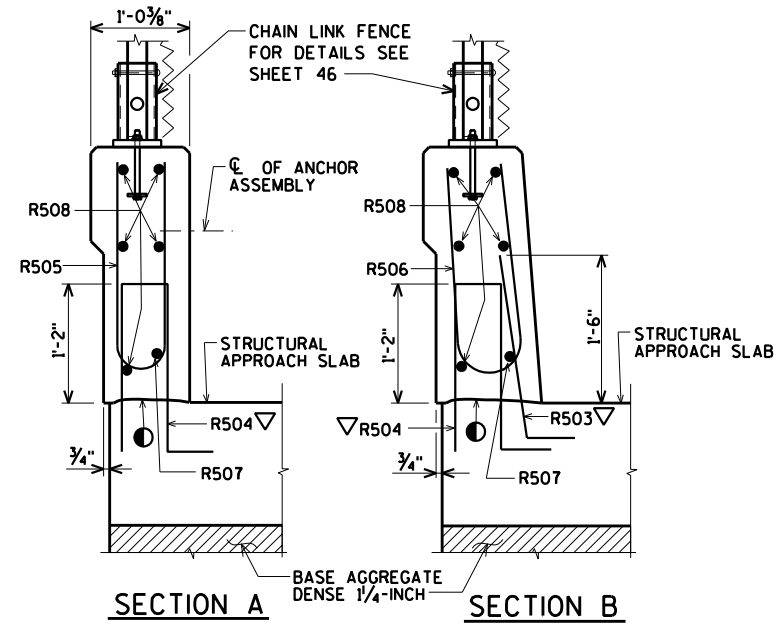
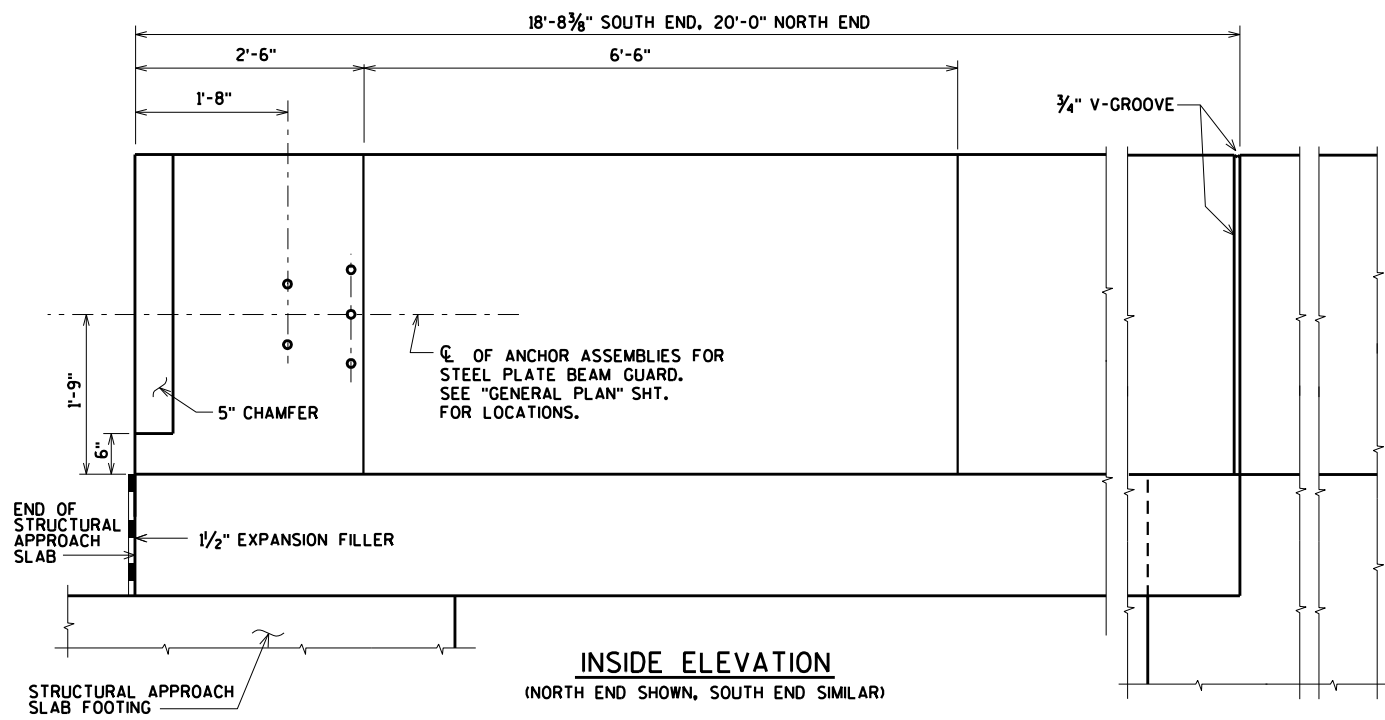
STATE PROJECT NUMBER

4310-06-71

BILL OF BARS

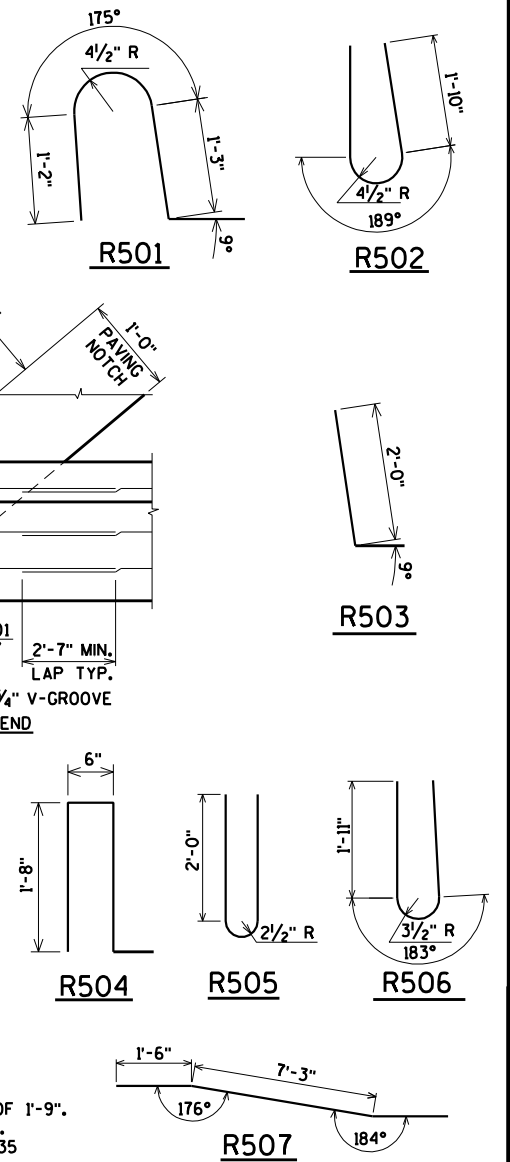
BAR NO.	COATED BAR	SOUTH APPROACH SLAB (SOUTH END)	NORTH APPROACH SLAB (NORTH END)	LENGTH	BENT BAR	BUNDLED BAR SERIES	LOCATION
R501	X	19	23	4-5	X		PARAPET VERT.
R502	X	19	23	5-0	X		PARAPET VERT.
R503	X	12	12	2-9	X		PARAPET VERT.
R504	X	17	17	4-4	X		PARAPET VERT.
R505	X	11	11	4-9	X		PARAPET VERT.
R506	X	6	6	4-10	X		PARAPET VERT.
R507	X	1	1	12-11	X		PARAPET HORIZ.
R508	X	11	11	12-11			PARAPET HORIZ.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS.



FOR DETAIL OF ANCHOR ASSEMBLY SEE SHEET 45

- OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT, LAP LONGIT. BARS A MIN. OF 1'-9". MIN. JOINT SPACING OF 80'-0". DEFINE CONST. JOINT WITH A 3/4" V - GROOVE. (SEE SHEET 35 FOR SECTION THRU PARAPET ON BRIDGE).
- CONST. JOINT - STRIKE OFF AS SHOWN.
- R501, R503, AND R504 BARS TO BE TIED TO STRUCTURAL APPROACH SLAB STEEL AND ABUTMENT STEEL BEFORE STRUCTURAL APPROACH SLAB IS POURED.

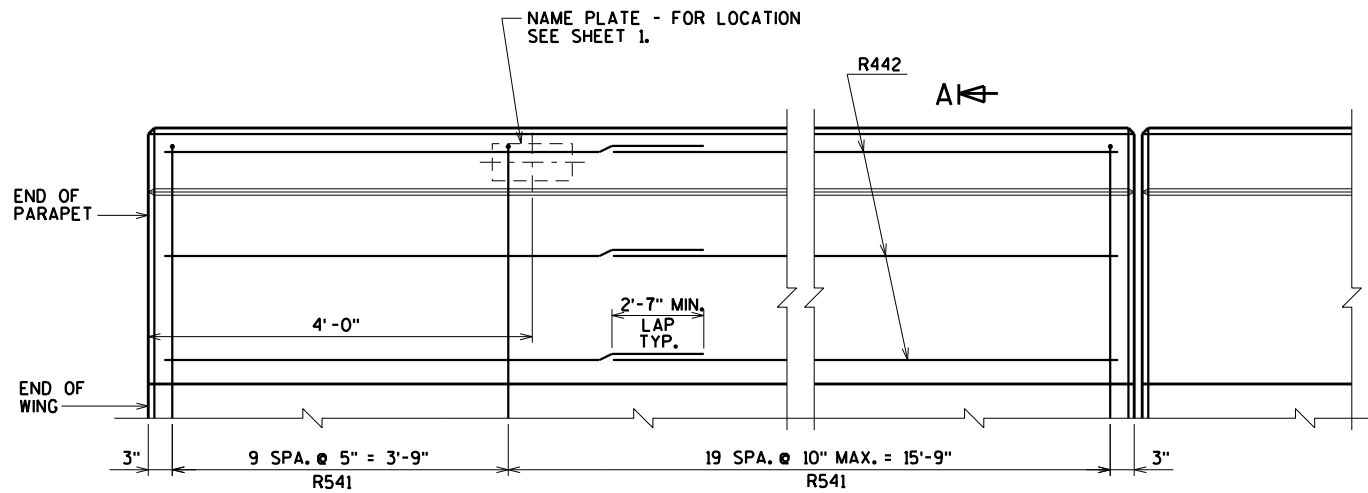


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY CLS		PLANS CK'D. CBM	
INT. SINGLE SLOPE PARAPET 32SS		SHEET 44 OF 46 160	

\$PRNAME\$
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STATE PROJECT NUMBER

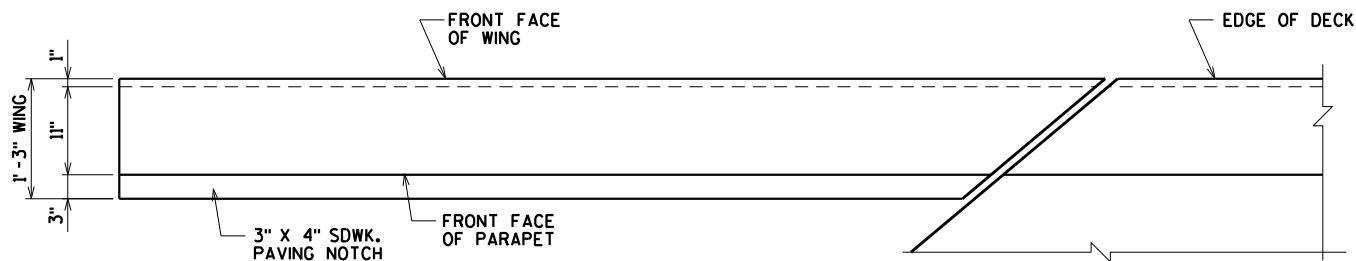
4310-06-71



BACK FACE AT ABUTMENTS A-A

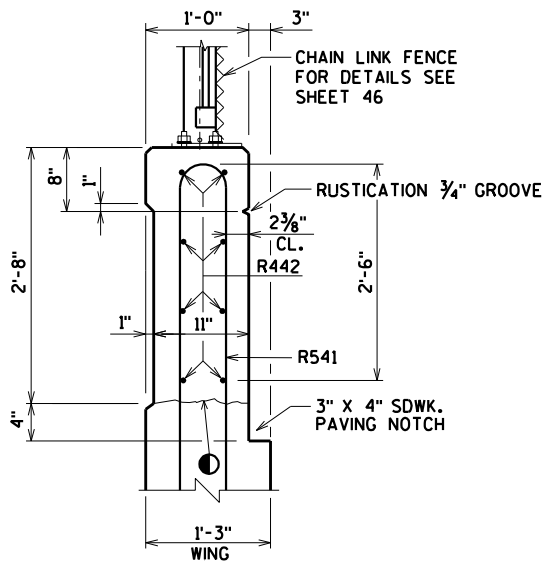
ELEVATION OF PARAPET

(WING 1 SHOWN, WING 4 SIMILAR)

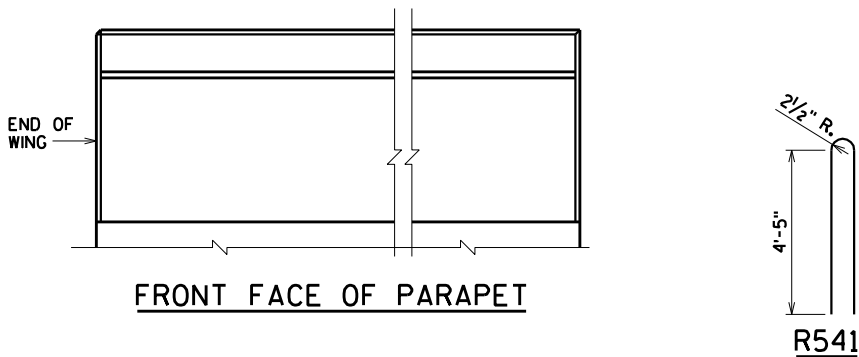


PLAN OF PARAPET

(WING 4 SHOWN, WING 1 SIMILAR)



SECTION A-A



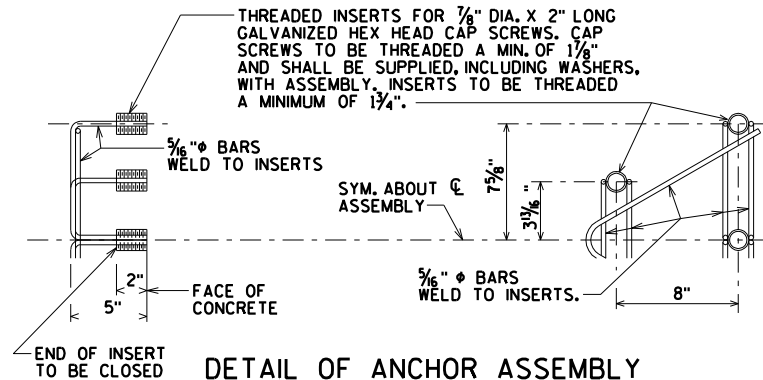
FRONT FACE OF PARAPET

BILL OF BARS

410# COATED SOUTH ABUTMENT
410# COATED NORTH ABUTMENT

BAR MARK	COAT	SOUTH ABUT.	NORTH ABUT.	LENGTH	BENT	BAR SERIES	LOCATION
R541	X	29	29	9-6	X		PARAPET VERT.
R442	X	16	16	11-6			PARAPET HORIZ.

BENDING DIMENSIONS ARE OUT TO OUT OF BARS



DETAIL OF ANCHOR ASSEMBLY

NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 CLASS C.

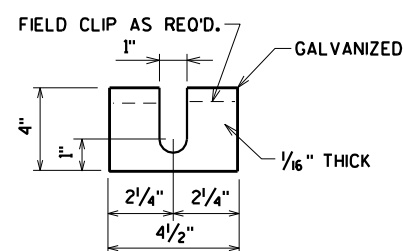
ASSEMBLY SHALL BE BID ITEM "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.

1 CONST. JOINT - STRIKE OFF AS SHOWN.

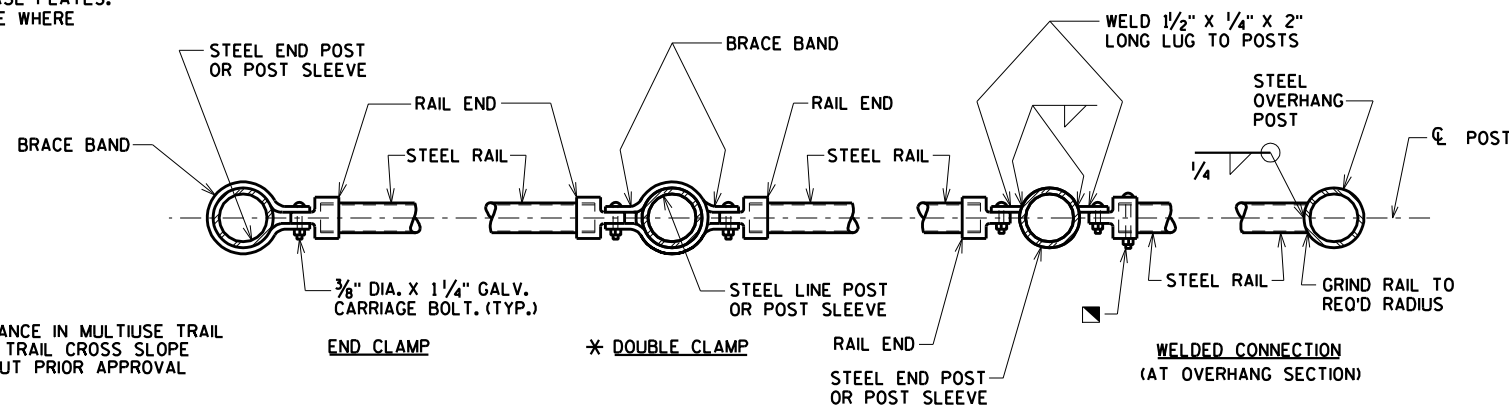
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3433 Oakwood Hills Parkway
Eau Claire, WI 54701
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
VERTICAL FACE PARAPET "A" WINGS 1 & 4		SHEET 45 OF 46 161	

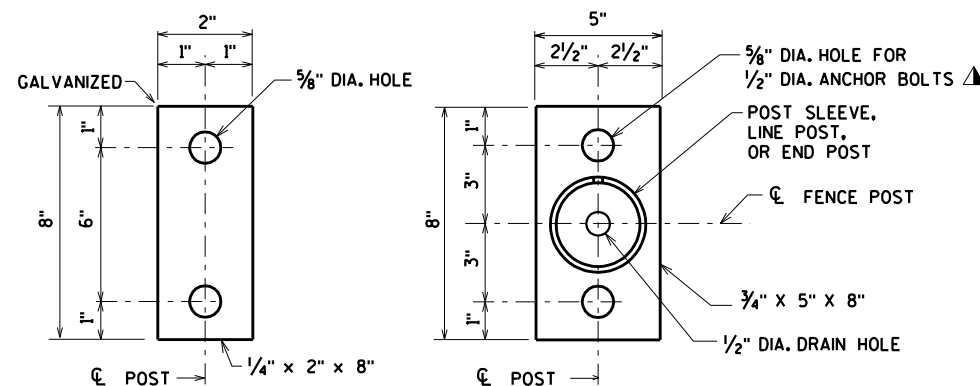
STEEL FENCE MEMBER	OUTSIDE DIAMETER (INCHES)	WEIGHT (LB/FT)
RAILS	1.660	2.27
END POST	2.875	5.80
OVERHANG POST	2.875	5.80
LINE POST	2.375	3.65
POST SLEEVE	4.000	9.12



SHIMS REQUIRED ONLY WHEN END POSTS AND
LINE POSTS ARE WELDED TO BASE PLATES.
PROVIDE 4 SHIMS PER POST, USE WHERE
REQUIRED FOR ALIGNMENT.



NOTE: PLACE ALL BOLT HEADS ON SIDE OF
FENCE ADJACENT TO PEDESTRIANS



☆NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED.

3/8" DIA. GALV. CARRIAGE BOLT WITH LOCKING NUT. (TO BE SUPPLIED WITH ASSEMBLY)

FILL SLEEVE AND BEVEL AWAY FROM POST WITH NON-SHRINK GROUT AFTER SETTING POST. (LEAVE NO VOIDS)

DRILL 3/16" DIA. DRAIN HOLE PARALLEL TO ROADWAY IMMEDIATELY ABOVE GROUT IN POST. SLEEVE LOCATIONS ONLY.

CL POST

SLOPE GROUT FOR DRAINAGE

POST SLEEVE

LINE POST, OR END POST

TOP OF PARAPET

5"

4 1/2"

8"

CL RAIL

BOTTOM RAIL

3/16"

BASE PLATE

ANCHOR PLATE

ANCHOR BOLT

TACK WELD
1/3 POINTS

UNIT SHALL BE GALVANIZED AFTER FABRICATION

NOTE: IN LIEU OF USING THE POST SLEEVE, THE FENCE POST MAY BE WELDED TO THE BASE PLATE.

AVRES
ASSOCIATES

3433 Oakwood Hills Parkway
Eau Claire, WI 54701
www.AyresAssociates.com

POSTS ARE TO BE SET VERTICAL.

ALL FENCE COMPONENTS SHALL BE GALVANIZED STEEL WITH A COLORED POLYMER-COATING ON THE OUTSIDE.

FABRIC SHALL CONFORM TO ASTM F668, CLASS 2B.
STEEL RAILS, POSTS AND POST SLEEVES SHALL CONFORM
TO ASTM F1083, STANDARD WEIGHT PIPE (SCHEDULE 40).
FITTINGS SHALL CONFORM TO ASTM F626. SEE THE
"BRIDGE SPECIAL PROVISIONS" FOR ADDITIONAL DETAILS.

THE COLOR OF POLYMER-COATING FOR THIS STRUCTURE SHALL BE BLACK IN ACCORDANCE WITH ASTM F934.

THE BID ITEM SHALL BE "FENCE CHAIN LINK POLYMER-
COATED 2-FT. B-36-226". LF.

COMPLETE ANY REQUIRED WELDING OF COMPONENTS
BEFORE GALVANIZING.

POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.

BASE PLATES, ANCHOR PLATES AND SHIMS SHALL BE
ASTM A709, GRADE 36.

ALL POST SPACINGS ARE MEASURED HORIZONTALLY ALONG
THE C/L OF THE POST.

■ CAULK AROUND PERIMETER OF BASE PLATE AND FILL PORTION OF SLOTTED HOLE AROUND ANCHOR BOLT IN SHIM WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.

* ALTERNATE TO DOUBLE CLAMP: USE LINE RAIL CLAMP (BOULEVARD) OR 180° BRACE BAND, WHICH MAY BE USED WHEN THE POSTS ARE EITHER BOLTED TO THE POST SLEEVES OR DIRECTLY WELDED TO THE BASE PLATE.

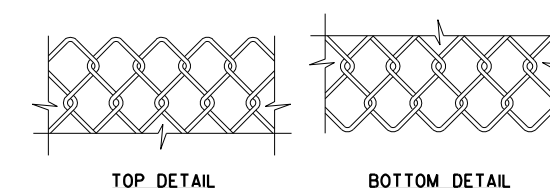
▲ 1/2" DIA. X 6 7/8" LONG GALVANIZED HEX BOLT WITH NUT & WASHER. ☆

☆ ALTERNATIVE ANCHORAGE: CONCRETE ADHESIVE ANCHORS
1/2-INCH. EMBED 7" IN CONCRETE. ADHESIVE ANCHORS
SHALL CONFORM TO SECTION 502.2.12 OF THE
STANDARD SPECIFICATIONS.

■ ATTACH FABRIC TO RAILS, AND TO POSTS WITHOUT TENSION BANDS, WITH TIE WIRES (ROUND, 9-GAGE) SPACED AT 1'-0".

■ BOLT RAIL TO RAIL END TO SECURE OVERHANG SECTION.
ALTERNATE IS TO WELD RAIL DIRECTLY TO END POST.

MINIMUM LENGTH OF TOP RAIL BETWEEN SPLICES SHALL BE 20'-0". LOCATE SPLICES NEAR 1/4 POINT OF POST SPACING.



FENCE FABRIC WOVEN OF 9-GAGE WIRE IN 2" DIAMOND PATTERN MESH WITH BOTH THE TOP AND BOTTOM SELVAGES KNUCKLED.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-36-226			
DRAWN BY		CLS	PLANS CK'D. CBM
FENCING DETAILS		SHEET 46 OF 46 162	

EARTHWORK - CTH R

STATION	AREA (SF)		Incremental Vol (CY) (Unadjusted)		Cumulative Vol (CY)		Mass Ordinate
	Cut	Fill	Cut	Fill	Cut	Expanded Fill	
			Note 1	Note 3	Note 1		Note 8
59+50.00	107.6	107.9	0	0	0	0	0
59+75.00	242.4	14.6	162	57	162	74	88
60+00.00	189.0	11.9	200	12	362	90	272
60+25.00	128.5	15.4	147	13	509	106	403
60+50.00	120.7	17.1	115	15	624	126	498
60+75.00	102.4	15.1	103	15	727	145	582
61+00.00	103.3	8.9	95	11	823	159	663
61+25.00	105.0	4.4	96	6	919	167	752
61+50.00	100.7	4.5	95	4	1,014	173	841
61+75.00	88.7	5.1	88	4	1,102	179	923
62+00.00	88.5	9.9	82	7	1,184	188	996
62+25.00	87.3	8.6	81	9	1,265	199	1,067
62+50.00	78.5	9.2	77	8	1,342	209	1,133
62+75.00	92.9	7.2	79	8	1,421	219	1,202
63+00.00	87.4	7.8	83	7	1,505	228	1,277
63+25.00	95.4	4.0	85	5	1,590	235	1,354
63+50.00	90.7	3.3	86	3	1,676	240	1,436
63+75.00	94.4	1.1	86	2	1,761	242	1,519
64+00.00	98.2	1.3	89	1	1,851	244	1,607
64+12.95	157.8	0.0	190	1	2,040	245	1,795

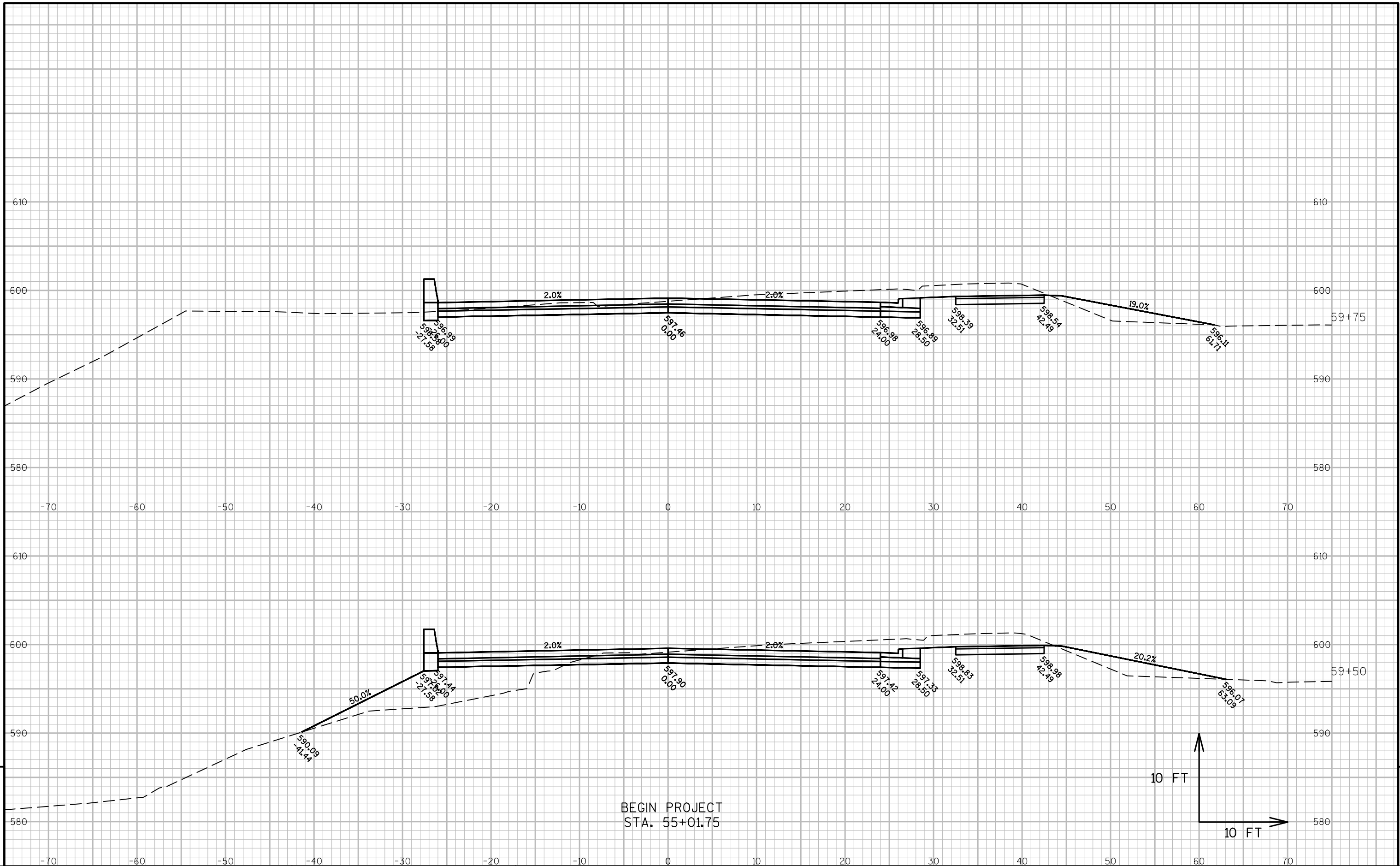
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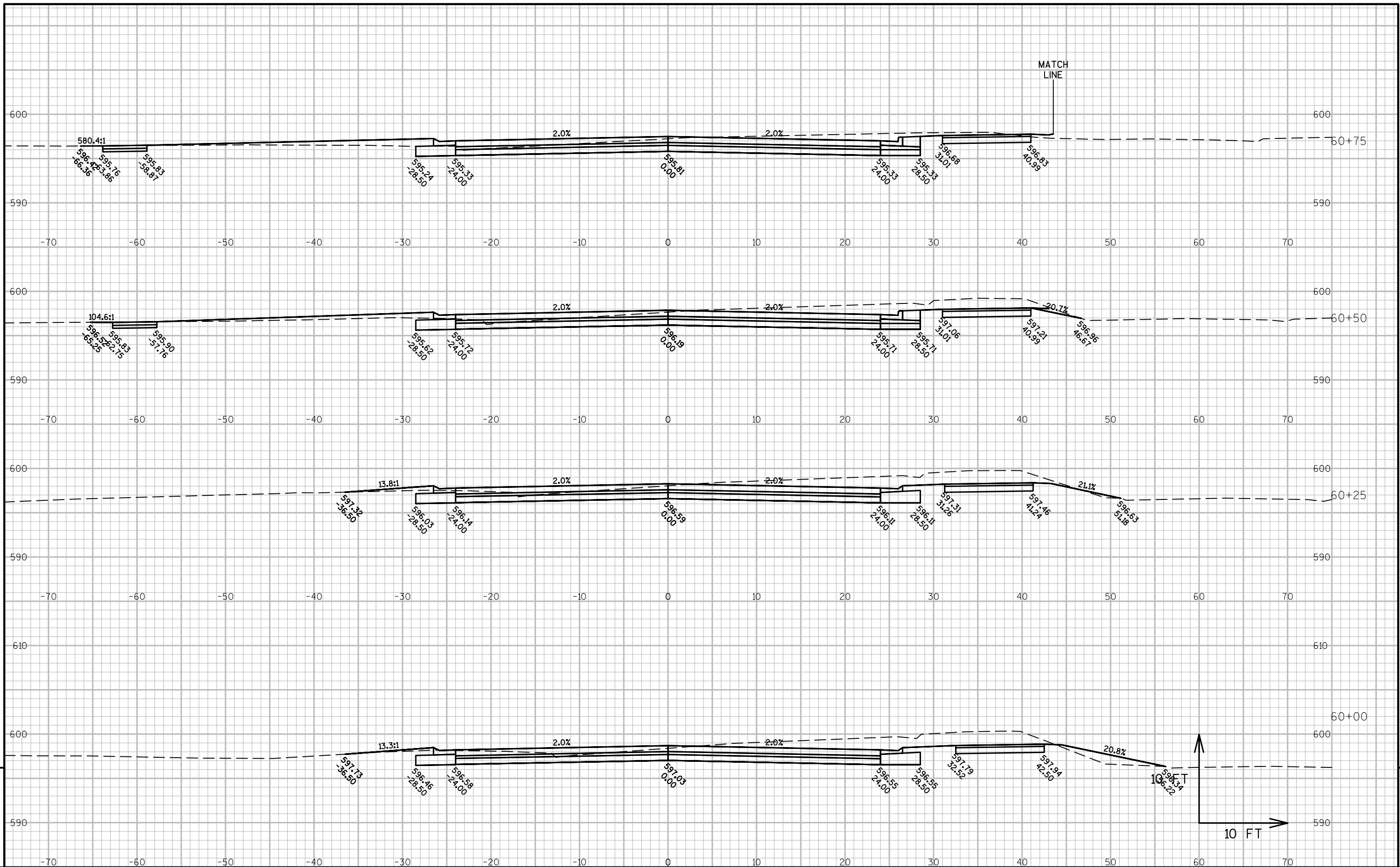
EARTHWORK - ARCHER STREET

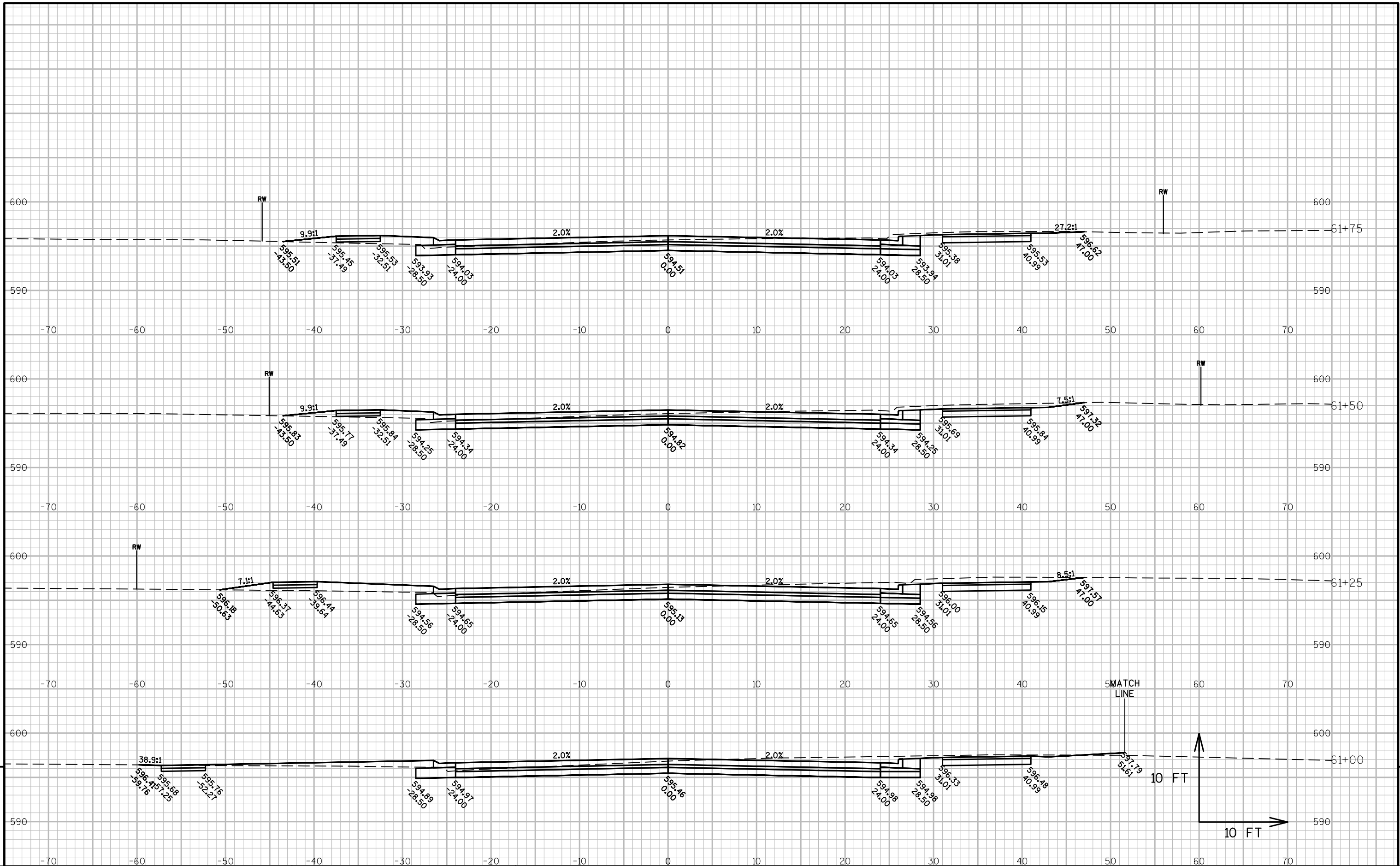
STATION	AREA (SF)		Incremental Vol (CY) (Unadjusted)		Cumulative Vol (CY)		Mass Ordinate
	Cut	Fill	Cut	Fill	Cut 1.00 Note 1	Expanded Fill 1.3	
Note 1	Note 3	Note 1	Note 8				
12+00.00	55.4	0.0	0	0	0	0	0
12+25.00	52.8	0.0	50	0	50	0	50
12+50.00	59.9	0.0	52	0	102	0	102
12+75.00	64.9	0.0	58	0	160	0	160

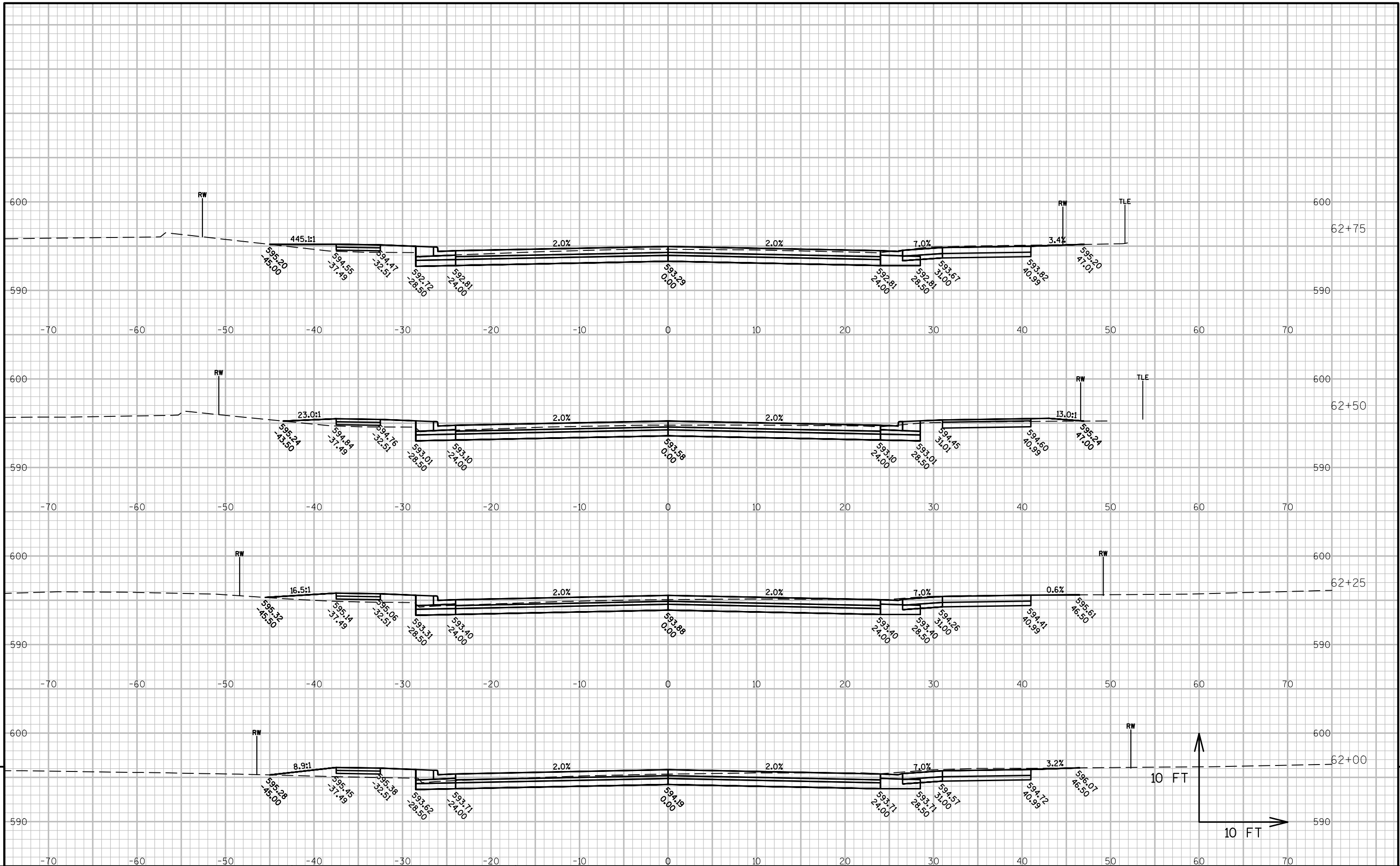
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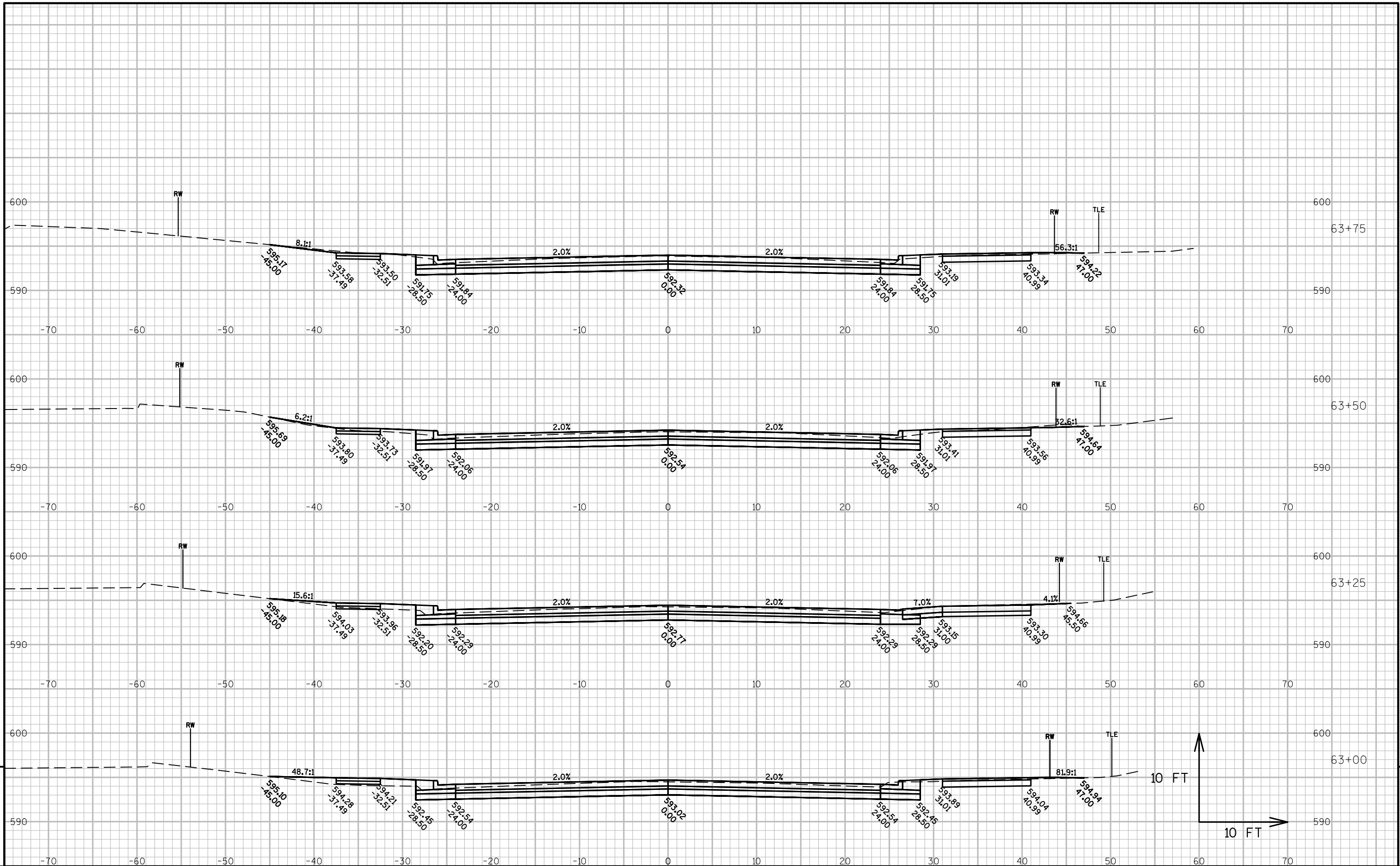
Notes:	
1 - Cut	Cut includes existing asphalt and base material
3 - Fill	Unadjusted Fill
8 - Mass Ordinate	Cut - Unusable Pavement - (Fill * Fill Factor)

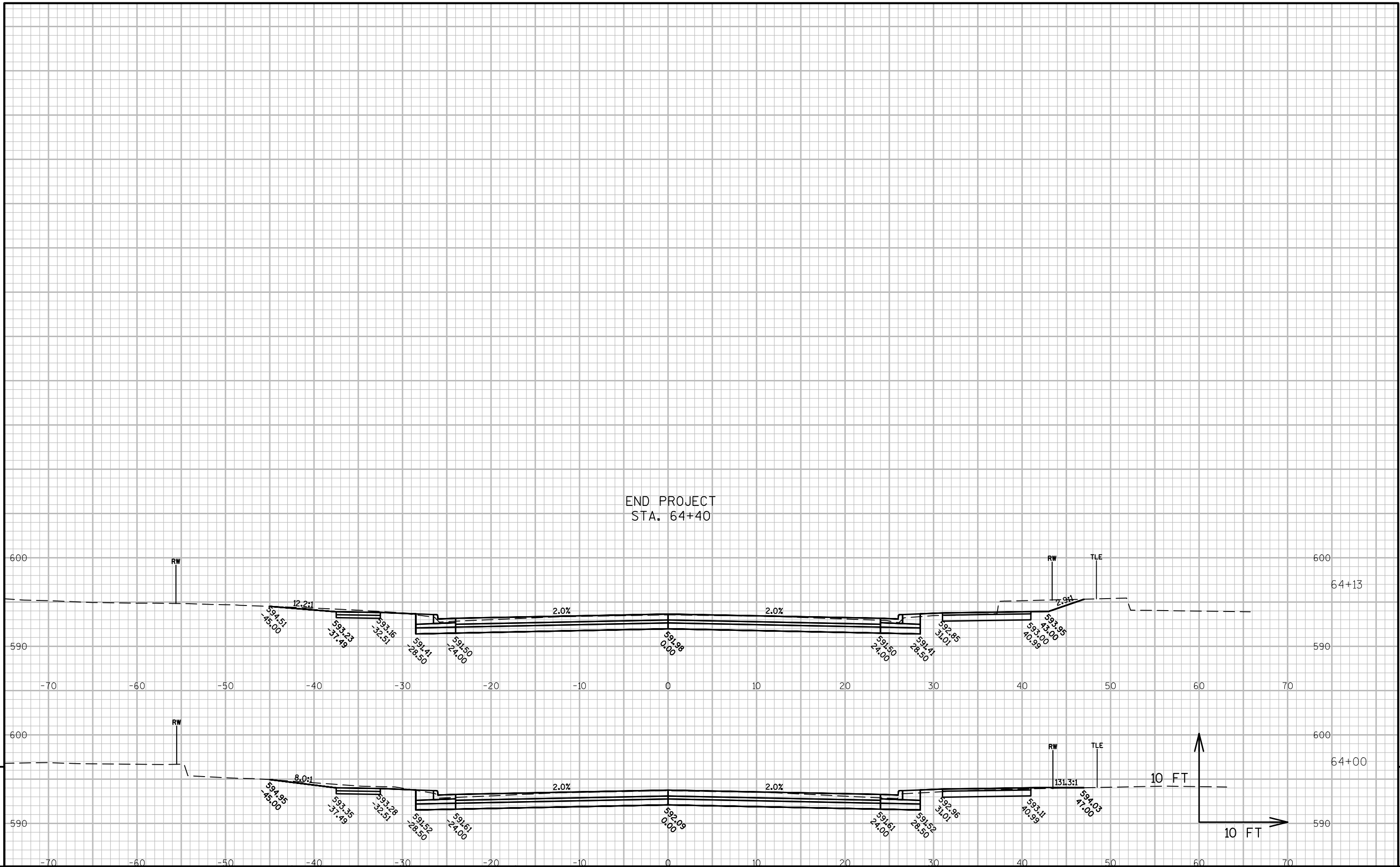


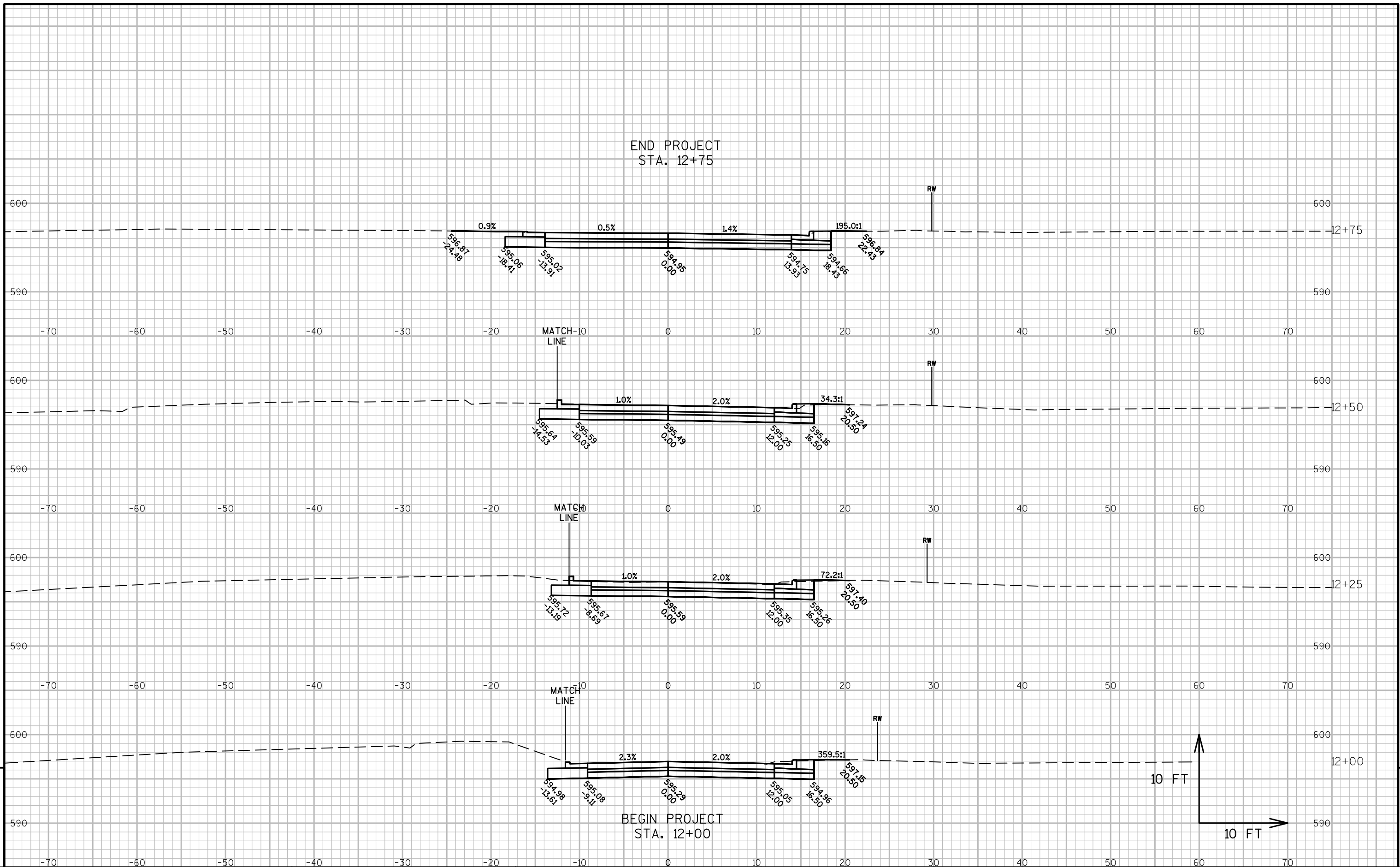




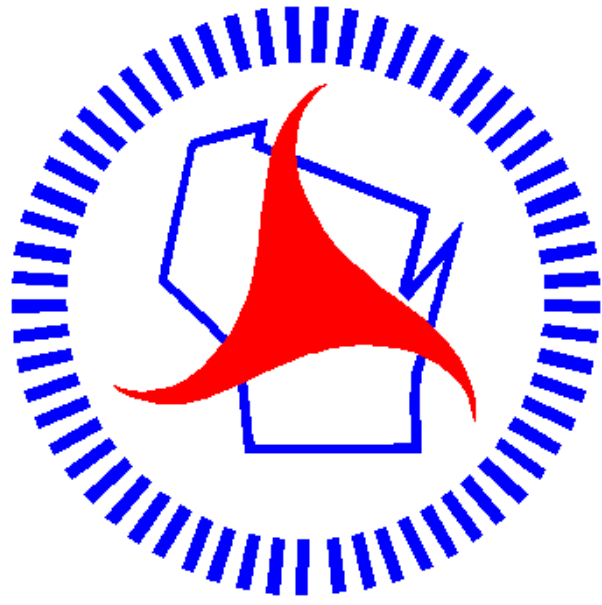








Notes



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