

GRE

PROJECT ID:

4085-48-71

COUNTY:

MANITOWOC

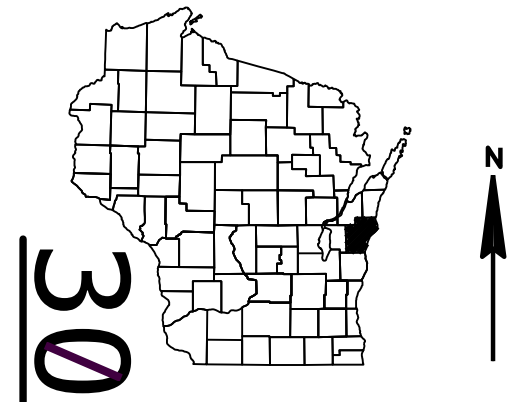
WITH:

Dec 14, 2021

ORDER OF SHEETS

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

TOTAL SHEETS = 190



DESIGN DESIGNATION 4085-48-00

A.A.D.T.	2022	=	7700
A.A.D.T.	2042	=	8600
D.H.V.		=	1242
D.D.		=	59/41
T.		=	5.0%
DESIGN SPEED		=	45, 55 MPH
ESALS		=	1,200,000

CONVENTIONAL SYMBOLS

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

PROFILE	
GRADE LINE	----
ORIGINAL GROUND	----
MARSH OR ROCK PROFILE (To be noted as such)	----
SPECIAL DITCH	----
GRADE ELEVATION	95.36
CULVERT (Profile View)	----
UTILITIES	
ELECTRIC	----
FIBER OPTIC	----
GAS	----
SANITARY SEWER	----
STORM SEWER	----
TELEPHONE	----
WATER	----
UTILITY PEDESTAL	----
POWER POLE	----
TELEPHONE POLE	----

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

HOWARD GROVE - KIEL

STH 32/57 SOUTH JUNCTION - STH 67

STH 32

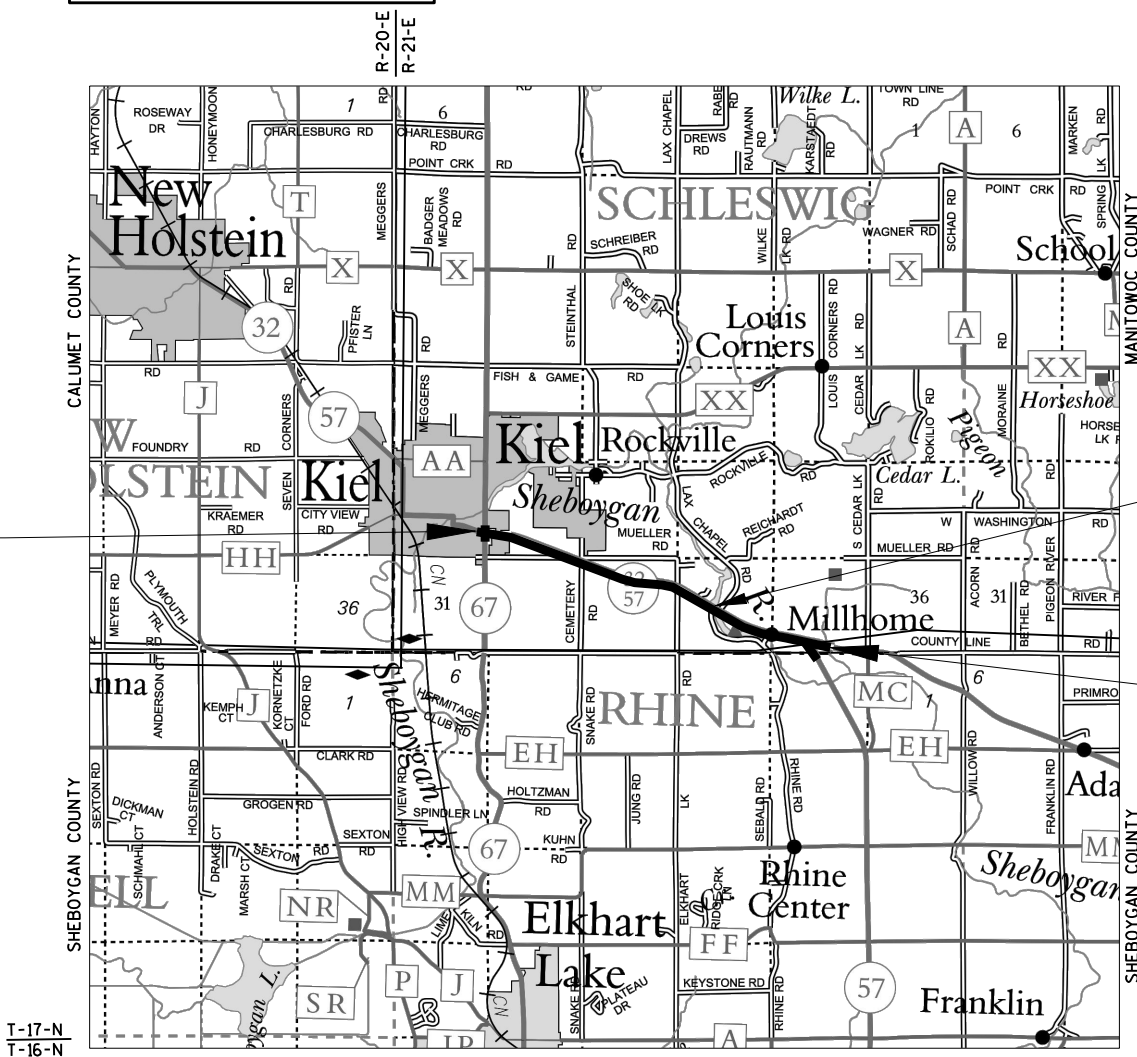
MANITOWOC COUNTY

STATE PROJECT NUMBER
4085-48-71

END PROJECT 4085-48-71
STA 872+77.97
Y= 234982.1949
X= 136889.5609

EXCEPTION TO NET C/L LENGTH
STA 731+26 - STA 732+07

BEGIN PROJECT 4085-48-71
STA 663+48.00
Y= 228,531.0641
X= 156,604.0792



T-17-N
T-16-N

LAYOUT
SCALE 0 2 MI

TOTAL NET LENGTH OF CENTERLINE = 3.953 MILES

VERTICAL POSITIONS SHOWN ARE NAVD88(2012) DATUM
HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, MANITOWOC COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4085-48-71	WISC 2022088	1

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
PREPARED BY	NE REGION
Surveyor	J. MATERNOSKI
Designer	B. HAEN
Project Manager	D. SEGERSTROM
Regional Examiner	
Regional Supervisor	
APPROVED FOR THE DEPARTMENT	
DATE: 10/5/21	Signature

E

2

GENERAL NOTES

THE CONTRACTOR SHALL CONTACT THE UTILITIES AND DIGGERS HOTLINE TO LOCATE AND FIELD VERIFY UTILITIES. THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.

THE LOCATIONS OF EROSION CONTROL ITEMS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

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

DISTURBED AREAS WITHIN THE RIGHT OF WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE SALVAGE TOPSOILED, FERTILIZED, AND SEEDED AS DIRECTED BY THE ENGINEER.

EROSION CONTROL MEASURES SHALL BE IN PLACE PRIOR TO ANY GRUBBING OR TOPSOIL STRIPPING OPERATIONS

THE CONTRACTOR'S PAVING OPERATIONS SHALL BE CONSISTENT WITH THE PLAN TYPICAL SECTIONS AND CONSTRUCTED TO PREVENT HMA LONGITUDINAL JOINTS FROM BEING LOCATED WITHIN A DRIVING, TURNING, PASSING OR PARKING LANE.

ORDER OF SECTION 2 DETAIL SHEETS

GENERAL NOTES
PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS
EROSION CONTROL
PAVEMENT MARKING
DETOUR

DNR LIAISON

MATT SCHAEVE
DNR NORTHEAST REGIONAL HEADQUARTERS
2984 SHAWANO AVE.
GREEN BAY, WI 54313
(920) 366-1544
matthew.schaeve@wisconsin.gov

MANITOWOC COUNTY HIGHWAY COMMISSIONER

MARC HOLSEN
MANITOWOC CO. HIGHWAY DEPT.
3500 STH 310
MANITOWOC, WI 54220
(920) 683-4353
marc.holsen@co.manitowoc.wi.us

NE REGION SURVEY COORDINATOR

CORMAC MCINNIS, RLS
944 VANDERPERREN WAY
GREEN BAY, WI 54304
(920)492-5638
cormac.mcinnis@dot.wi.gov

UTILITIES CONTACTS

CHARTER COMMUNICATIONS - COMMUNICATION LINE
NICK FRASE
1515 W. WASHINGTON STREET
WEST BEND, WI 53095
(920) 304-6797
NICK.FRASE@CHARTER.COM

FRONTIER COMMUNICATION OF WI LLC - COMMUNICATION LINE
RUSS RYAN
118 DIVISION STREET
PLYMOUTH, WI 53073
(920) 583-3275
RUSSELL.W.RYAN@FTR.COM

CITY OF KIEL - WATER
KRIS AUGUST
621 SIXTH STREET
KIEL, WI 53042
(920) 894-2909
KRIS.AUGUST@KIELWI.GOV

WE ENERGIES - ELECTRICITY
GREGORY BOERNER-UTILITRA
500 S. 116TH STREET
WEST ALLIS, WI 53227
(618) 409-5861

CITY OF KIEL - SEWER
KRIS AUGUST
621 SIXTH STREET
KIEL, WI 53042
(920) 894-2909
KRIS.AUGUST@KIELWI.GOV

CITY OF KIEL - ELECTRICITY
KRIS AUGUST
621 SIXTH STREET
KIEL, WI 53042
(920) 894-2909
KRIS.AUGUST@KIELWI.GOV

WISCONSIN PUBLIC SERVICE CORPORATION - GAS/PETROLEUM
NICK WILBERT
933 S WILDWOOD AVENUE
SHEBOYGAN, WI 53081
(920) 451-3733
NICOLAS.WILBERT@WISCONSINPUBLICSERVICE.COM

RUNOFF COEFFICIENT TABLE

	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE	O-2	2-6	6 & OVER	O-2	2-6	6 & OVER	O-2	2-6	6 & OVER	O-2	2-6	6 & OVER
ROW CROPS	0.08	0.16	0.22	0.12	0.20	0.27	0.15	0.24	0.33	0.19	0.28	0.38
	0.22	0.30	0.38	0.26	0.34	0.44	0.30	0.37	0.50	0.34	0.41	0.56
MEDIAN STRIP TURF	0.19	0.20	0.24	0.19	0.22	0.26	0.20	0.23	0.30	0.20	0.25	0.30
	0.24	0.26	0.30	0.25	0.28	0.33	0.26	0.30	0.37	0.27	0.32	0.40
SIDE STRIP TURF			0.25			0.27			0.28			0.30
			0.32			0.34			0.36			0.38
PAVEMENT:												
ASPHALT .70 - .95												
CONCRETE .80 - .95												
BRICK .70 - .80												
DRIVES, WALKS .75 - .85												
ROOFS .75 - .95												
GRAVEL ROADS, SHOULDERS .40 - .60												

PROJECT NO: 4085-48-71

HWY: STH 32

COUNTY: MANITOWOC

GENERAL NOTES

SHEET

E

FILE NAME : N:\PDS\VC3D\40854800\SHEETSPLAN\020101-GN.DWG

LAYOUT NAME - 020101-gn

PLOT DATE : 10/5/2021 12:15 PM

PLOT BY : MATERNOSKI, JORDAN D

PLOT NAME :

PLOT SCALE : 1 IN:10 FT

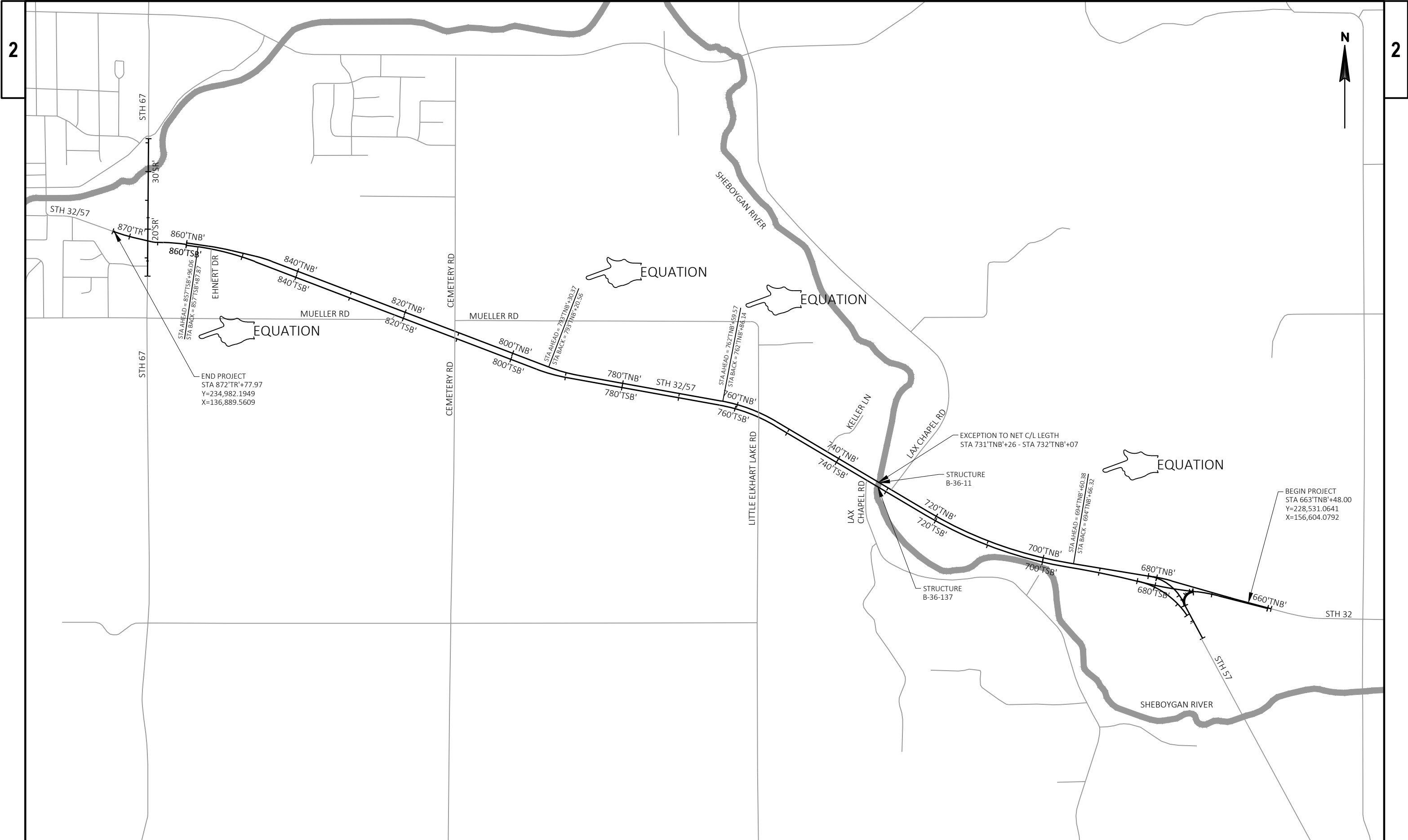
WISDOT/CADDs SHEET 42



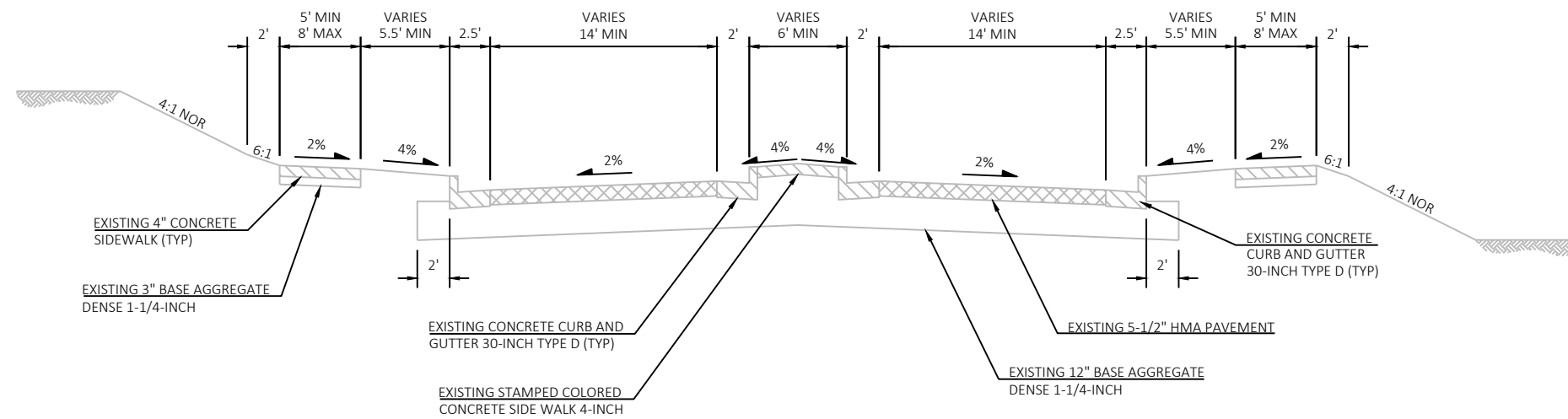
Dial 811 or (800)242-8511
www.DiggersHotline.com

LIST OF STANDARD ABBREVIATIONS

AEW	APRON END WALL
AGG	AGGREGATE
BAD	BASE AGGREGATE DENSE
BM	BENCH MARK
C&G	CURB AND GUTTER
C/L	CENTER OR CONSTRUCTION LINE
CMCP	CORRUGATED METAL CULVERT PIPE
CONC	CONCRETE
CP	CULVERT PIPE
CPRC	CULVERT PIPE REINFORCED CONCRETE
CSD	CONCRETE SURFACE DRAIN
CY	CUBIC YARD
D	DEGREE OF CURVE
Δ	DELTA
DISCH	DISCHARGE
EB	EAST BOUND
EL OR ELEV	ELEVATION
EAT	ENERGY ABSORBING TERMINAL
EXIST	EXISTING
FE	FIELD ENTRANCE
FT	FOOT
HMA	HOT MIX ASPHALT
INL	INLET
INV	INVERT
L	LENGTH OF CURVE
LHF	LEFT HAND FORWARD
LT	LEFT
LF	LINEAR FOOT
MIN	MINIMUM
MH	MANHOLE
M/L	MATCHLINE
NB	NORTHBOUND
NC	NORMAL CROWN
PAVT	PAVEMENT
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PE	PRIVATE ENTRANCE
PI	POINT OF INTERSECTION
PLE	PERMANENT LIMITED EASEMENT
PT	POINT OF TANGENT
R	RADIUS OF CURVE
R/L	REFERENCE LINE
R/W	RIGHT OF WAY
RC	REVERSE CROWN
RCAEW	REINFORCED CONCRETE APRON ENDWALL FOR CULVERT PIPE
REQ'D	REQUIRED
RHF	RIGHT HAND FORWARD
RO	RUN OFF LENGTH
RRSP	RAIL ROAD SPIKE
RT	RIGHT
RW OR R/W	RIGHT OF WAY
SALV	SALVAGED
SAPBC	SALVAGED ASPHALTIC PAVEMENT BASE COURSE
SB	SOUTHBOUND
SDD	STANDARD DETAIL DRAWING
SE	SUPER ELEVATION
SF	SQUARE FOOT
SSPRC	STORM SEWER PIPE REINFORCED CONCRETE
STA	STATION
SY	SQUARE YARD
T	TANGENT LENGTH
TEMP	TEMPORARY
TLE	TEMPORARY LIMITED EASEMENT
TYP	TYPICAL
VCL	VERTICAL CURVE LENGTH
VPC	POINT OF VERTICAL CURVE
VPI	POINT OF VERTICAL INTERSECTION
VPT	POINT OF VERTICAL TANGENT
WB	WESTBOUND
YD	YARD

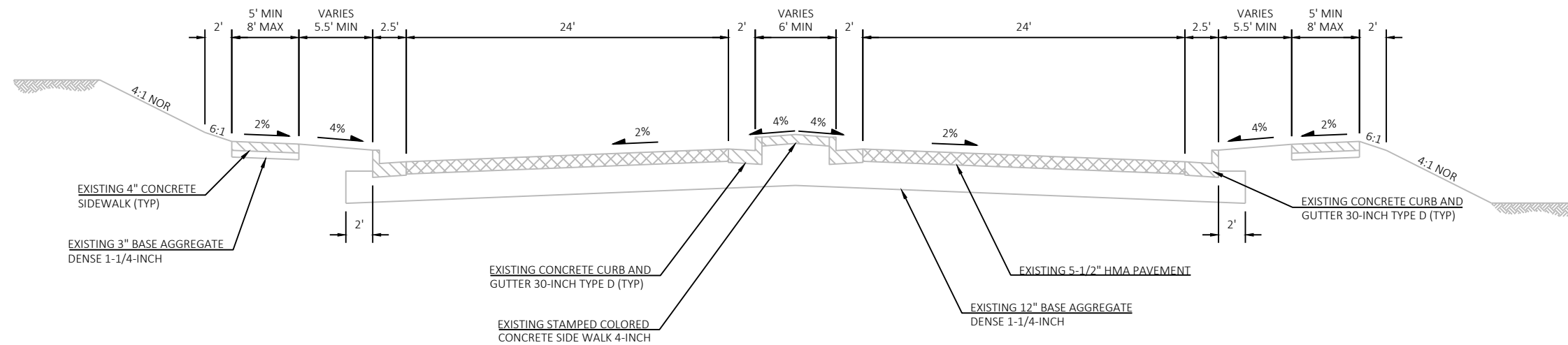


PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	PROJECT OVERVIEW	SHEET	E
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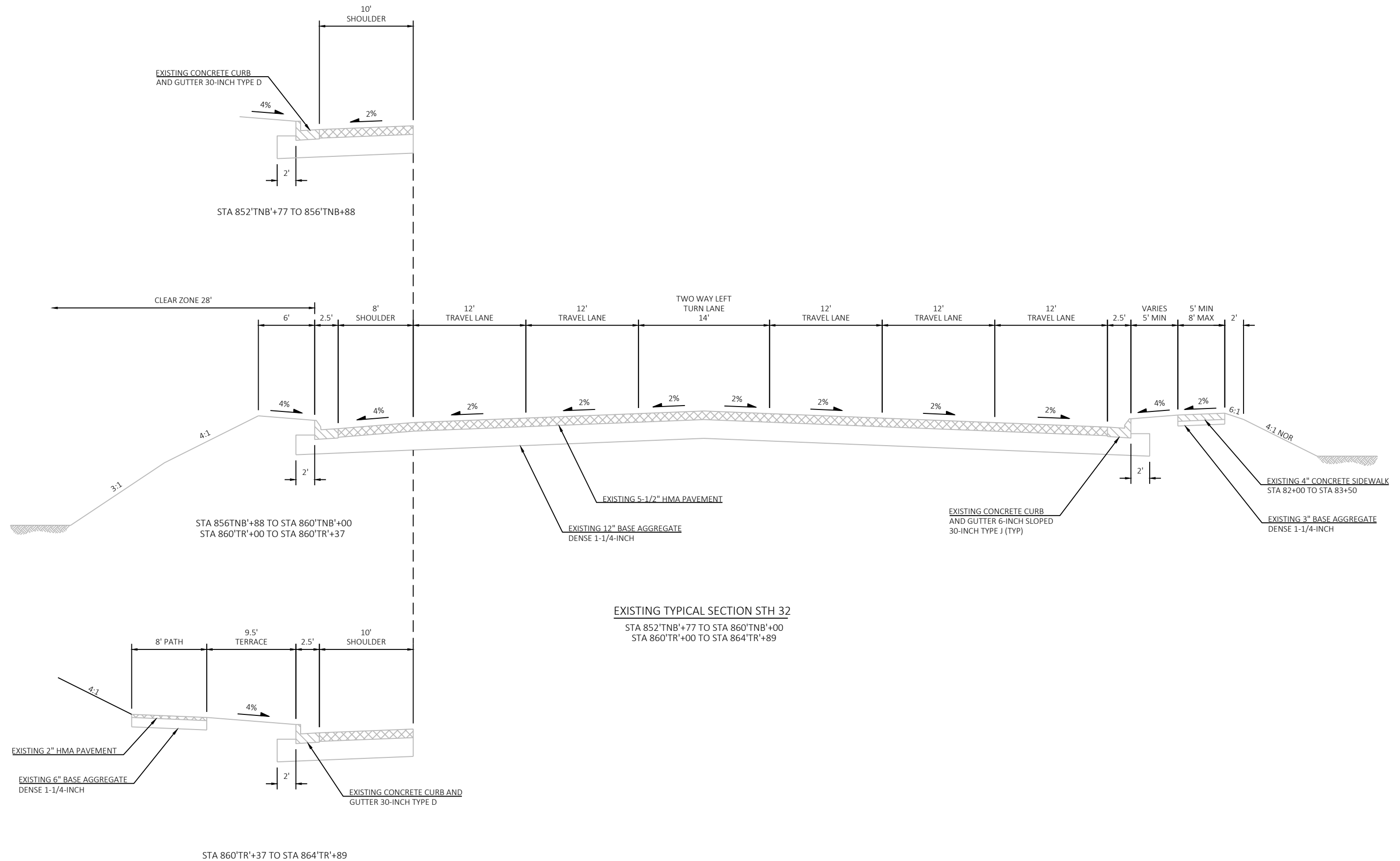
EXISTING TYPICAL SECTION STH 67 ROUNDABOUT APPROACHES

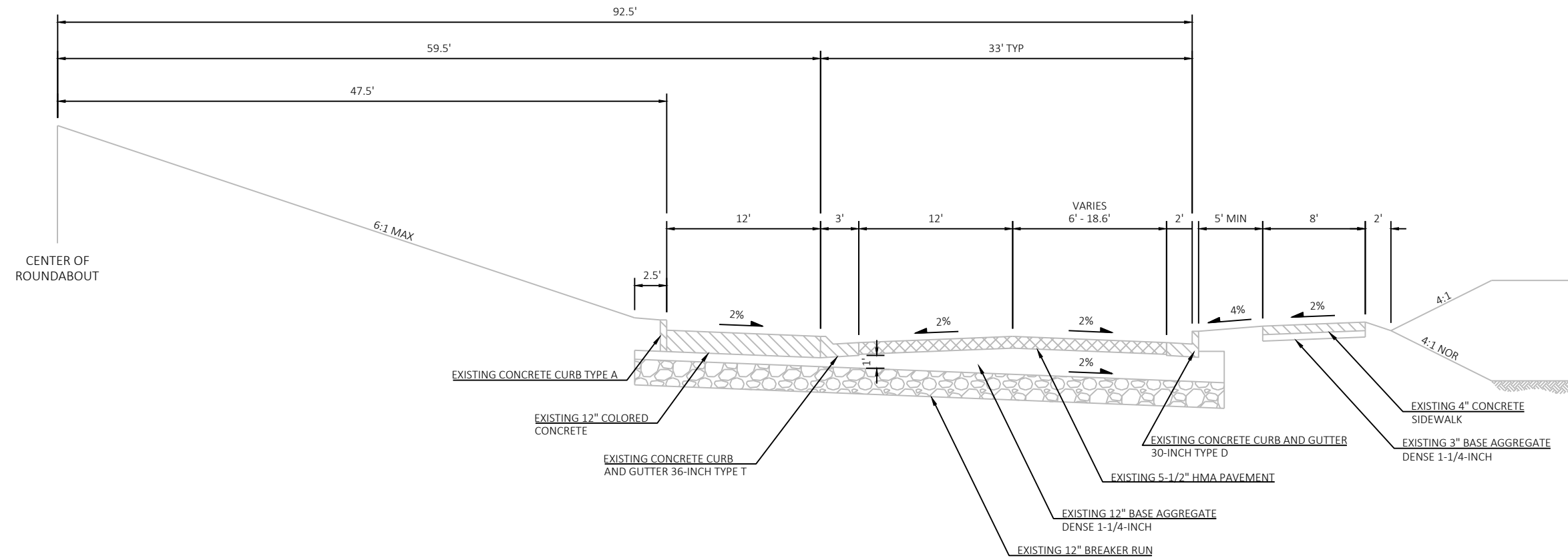
STA 15'SR'+82 TO STA 17'SR'+26
STA 18'SR'+93 TO STA 21'SR'+92



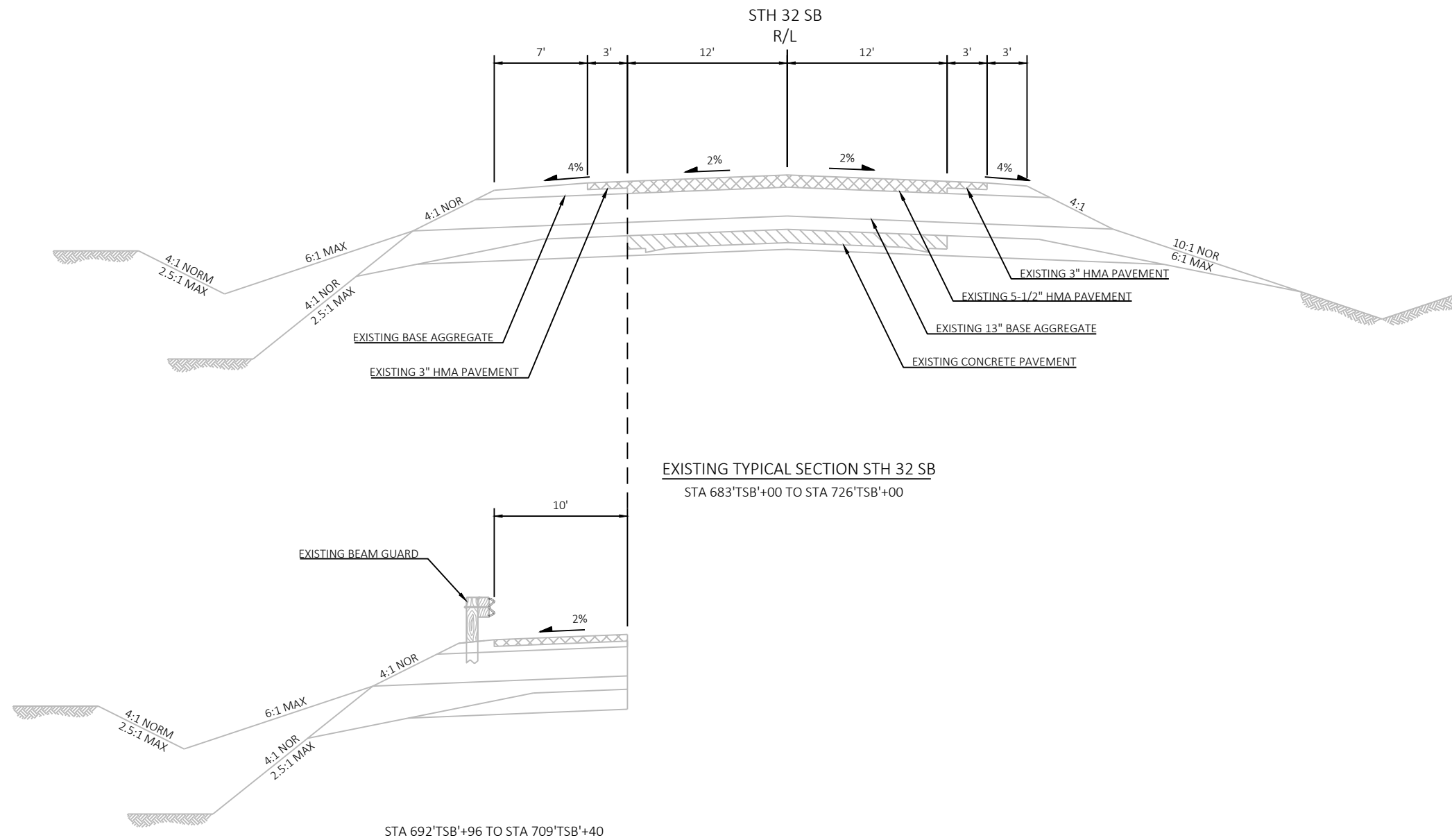
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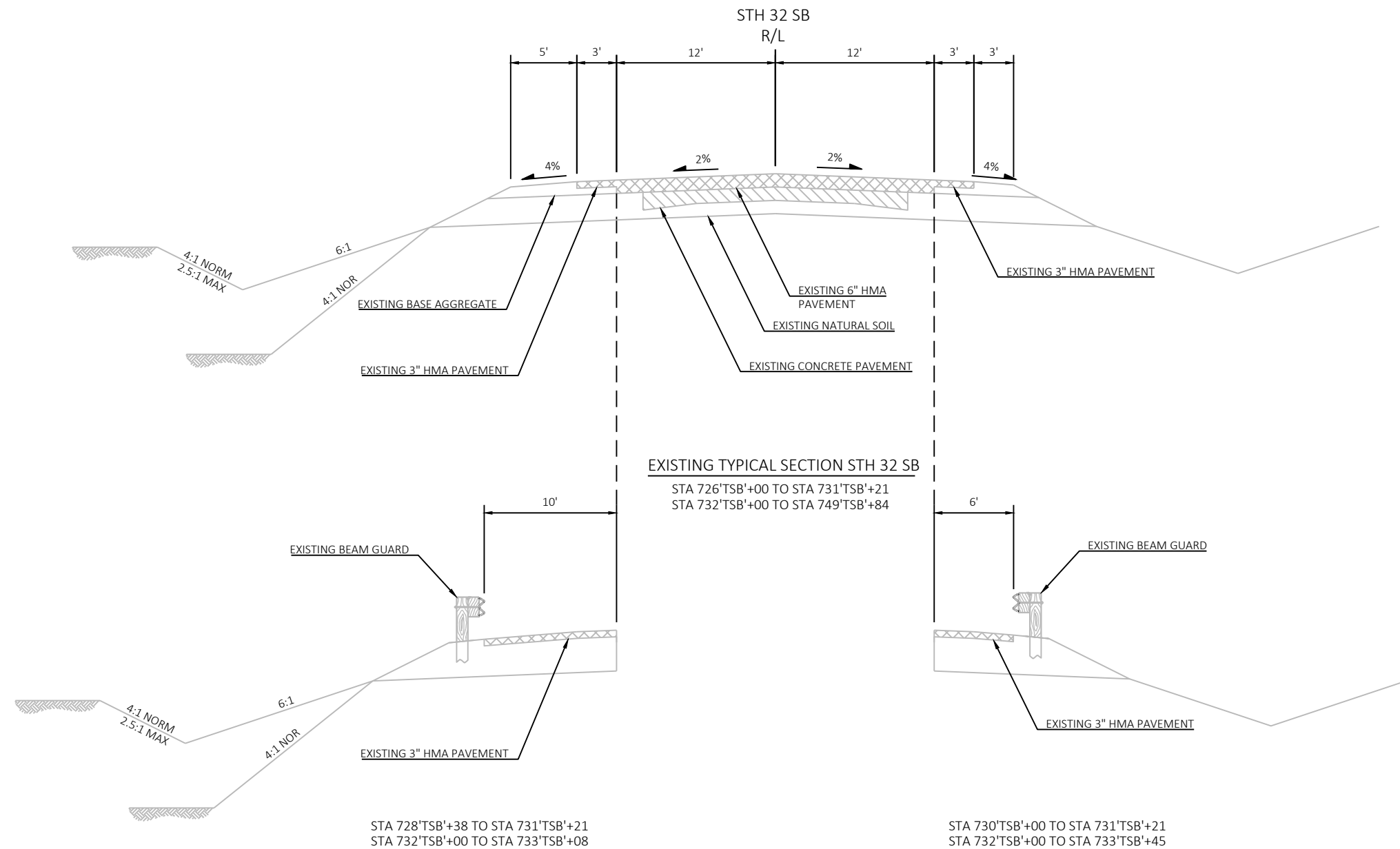
STA 864'TR'+89 TO STA 866'TR'+03
STA 867'TR'+60 TO STA 869'TR'+94

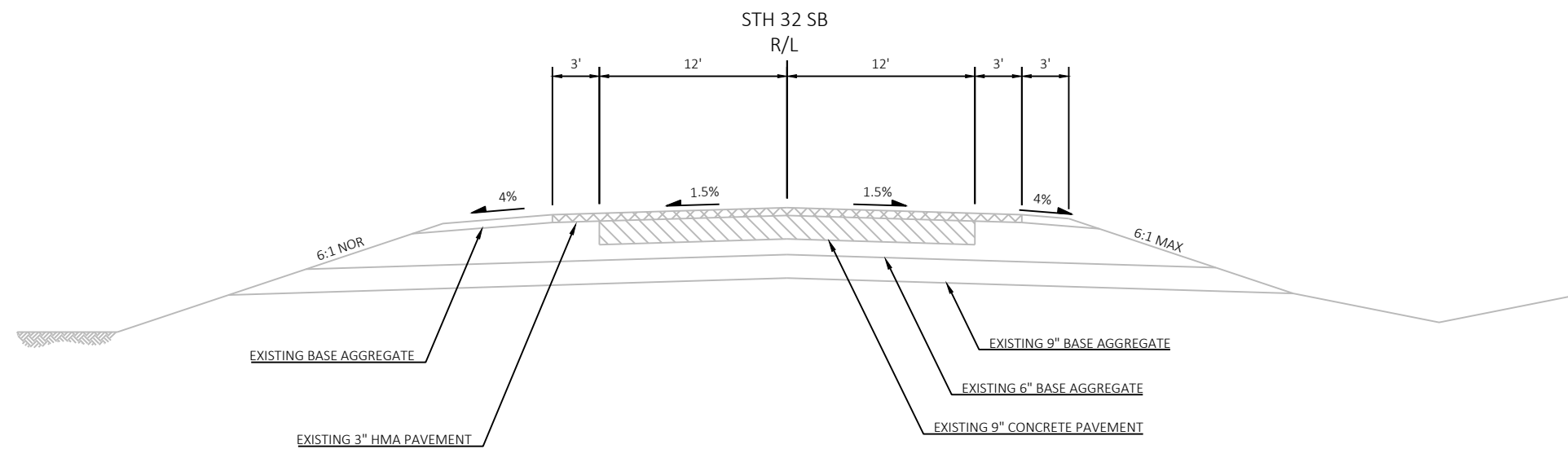




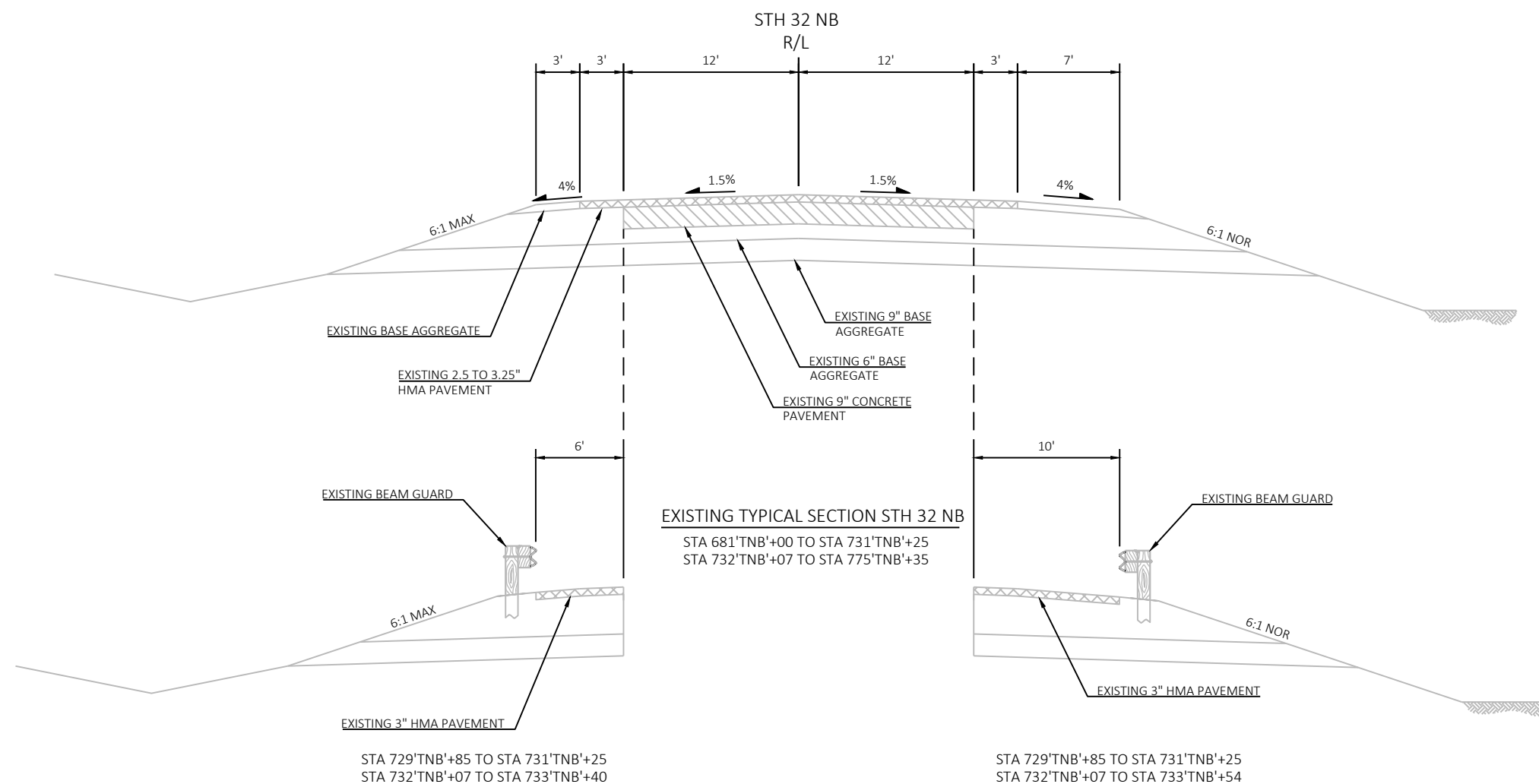
EXISTING TYPICAL SECTION STH 67 ROUNDABOUT



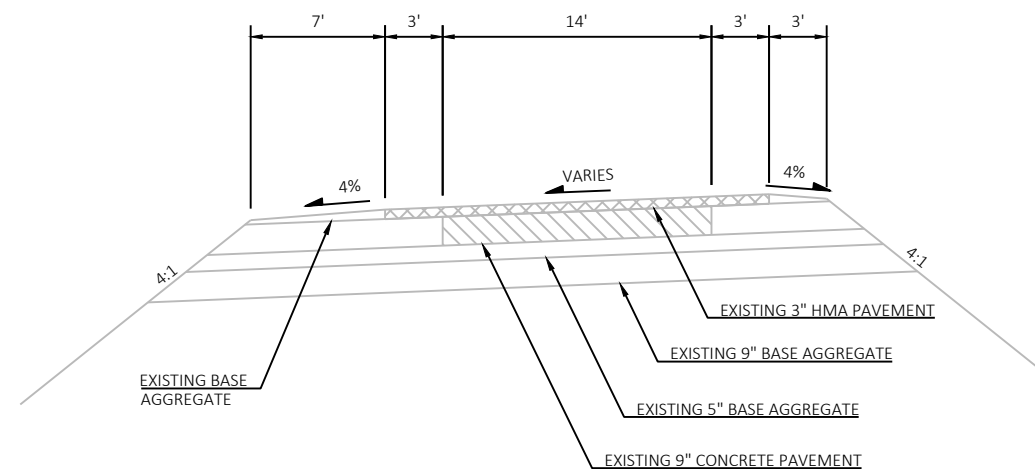
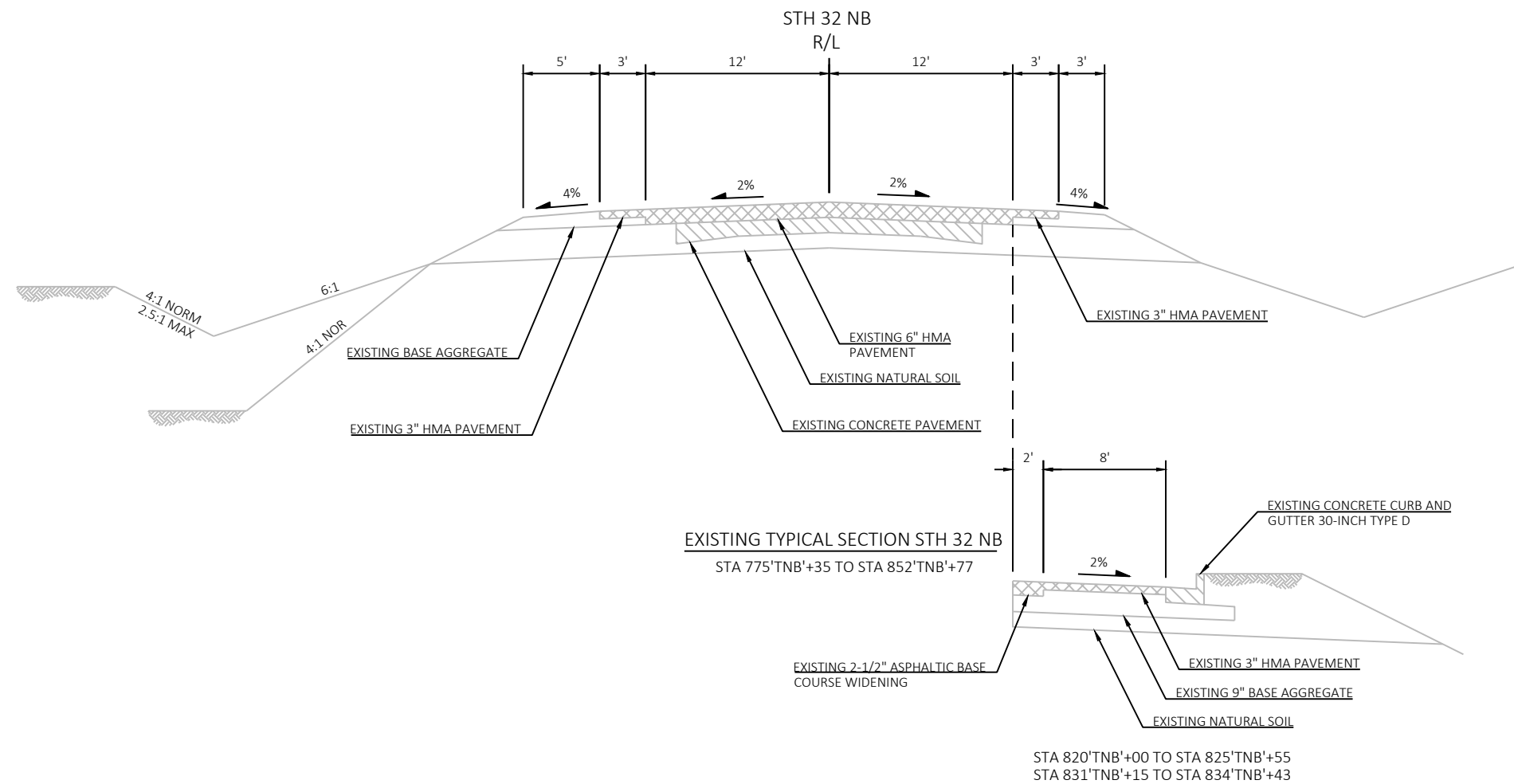




EXISTING TYPICAL SECTION STH 32 SB
STA 749'TSB'+84 TO STA 852'TSB'+72

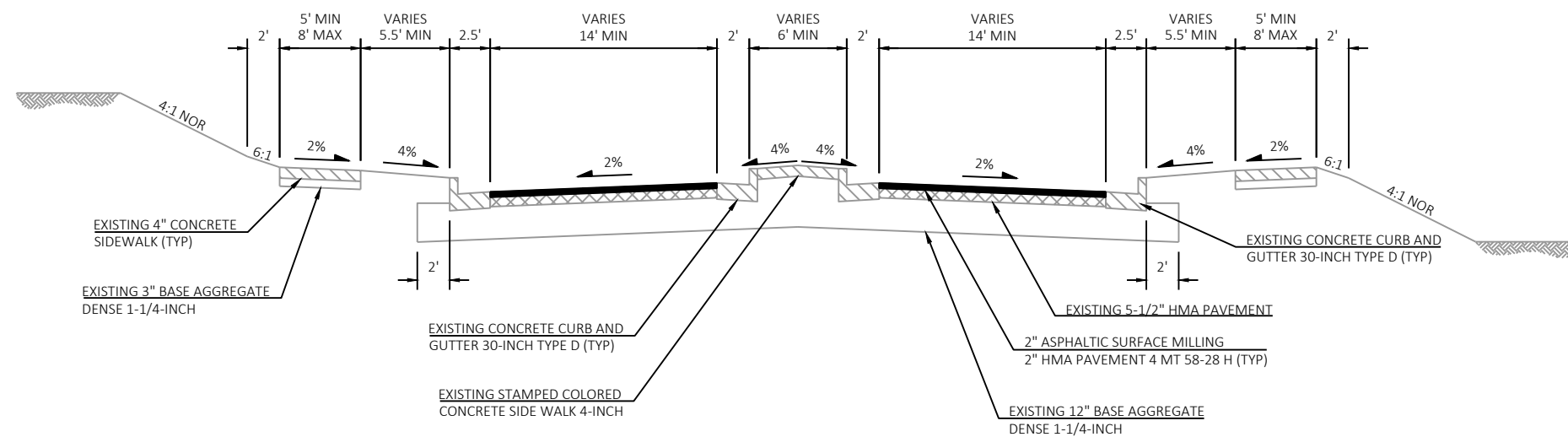


EXISTING TYPICAL SECTION STH 32 NB
STA 681'TNB'+00 TO STA 731'TNB'+25
STA 732'TNB'+07 TO STA 775'TNB'+35



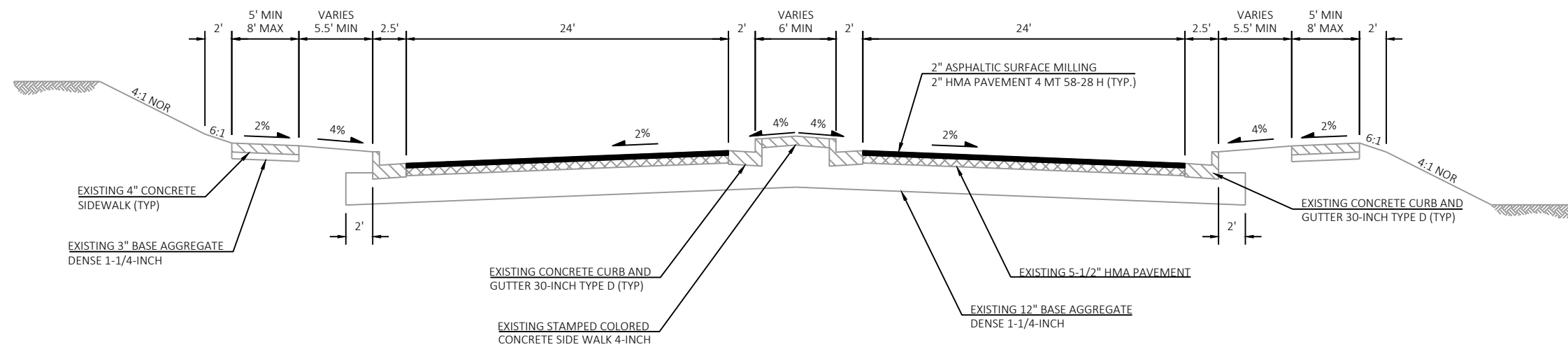
EXISTING TYPICAL SECTION CONNECTORS BETWEEN STH 32 & STH 57

STA 672'FSB'+50 TO STA 681'FSB'+00
STA 670'TNB'+00 TO STA 680'TNB'+00
STA 670'SNB'+00 TO STA 680'TSB'+00
STA 674'FNB'+02 TO STA 680'FNB'+00
STA 0'TSR'+00 TO STA 3'TSR'+11



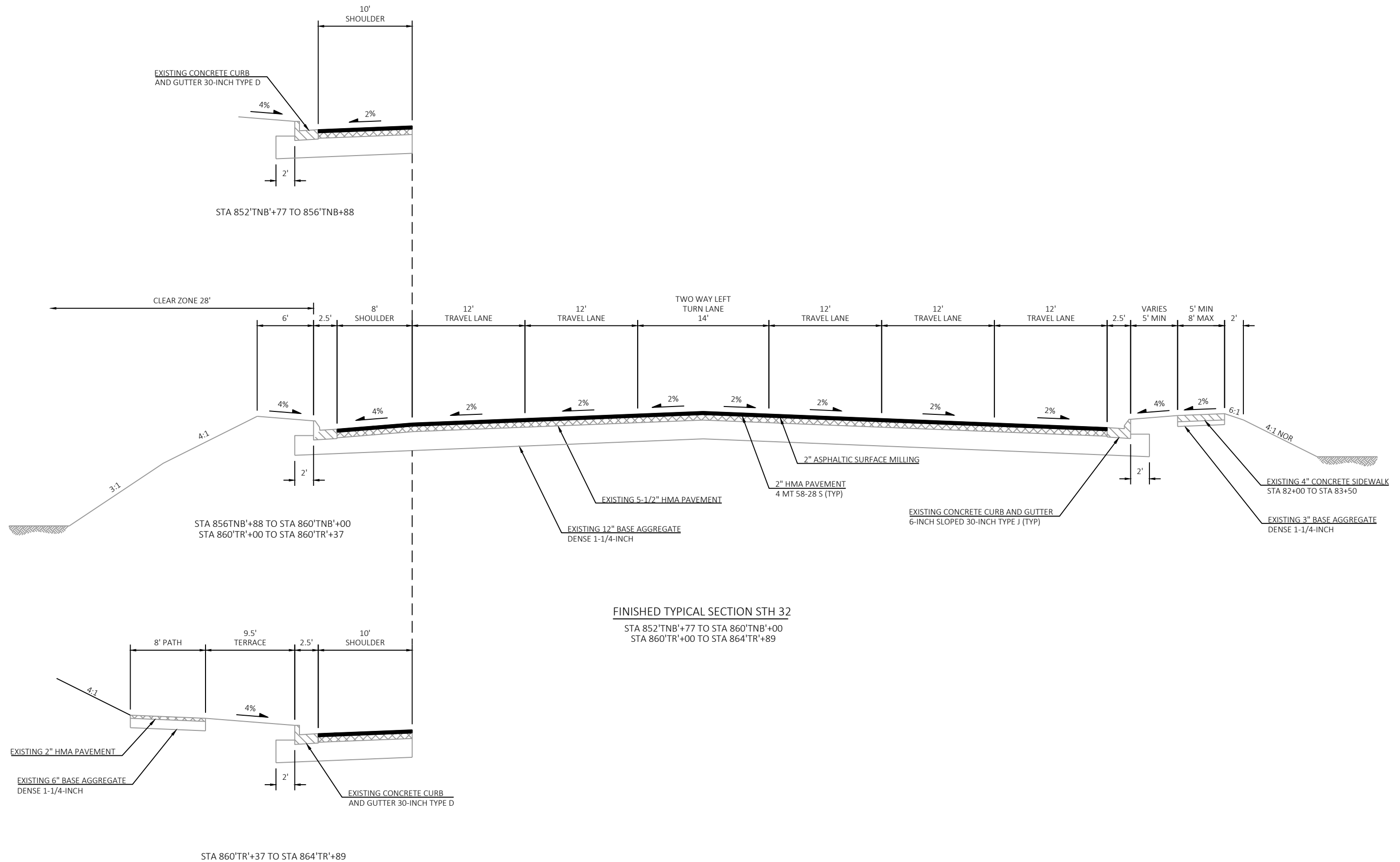
FINISHED TYPICAL SECTION STH 67 ROUNDABOUT APPROACHES

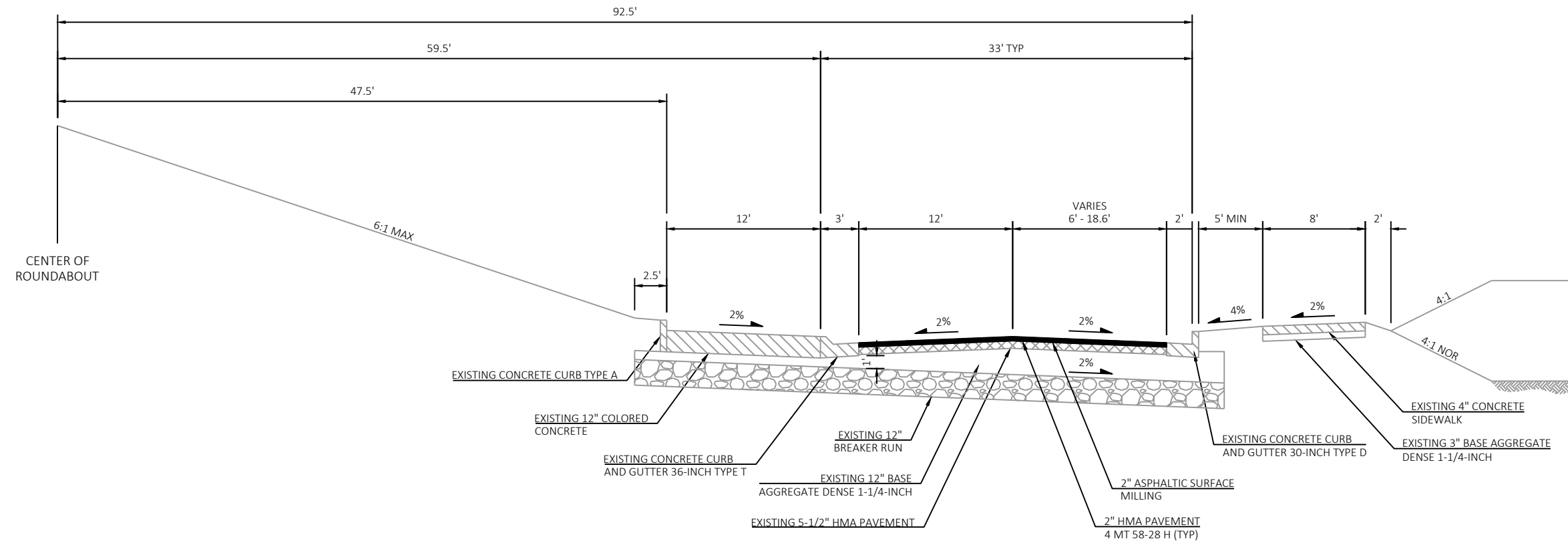
STA 15'SR'+82 TO STA 17'SR'+26
STA 18'SR'+93 TO STA 21'SR'+92



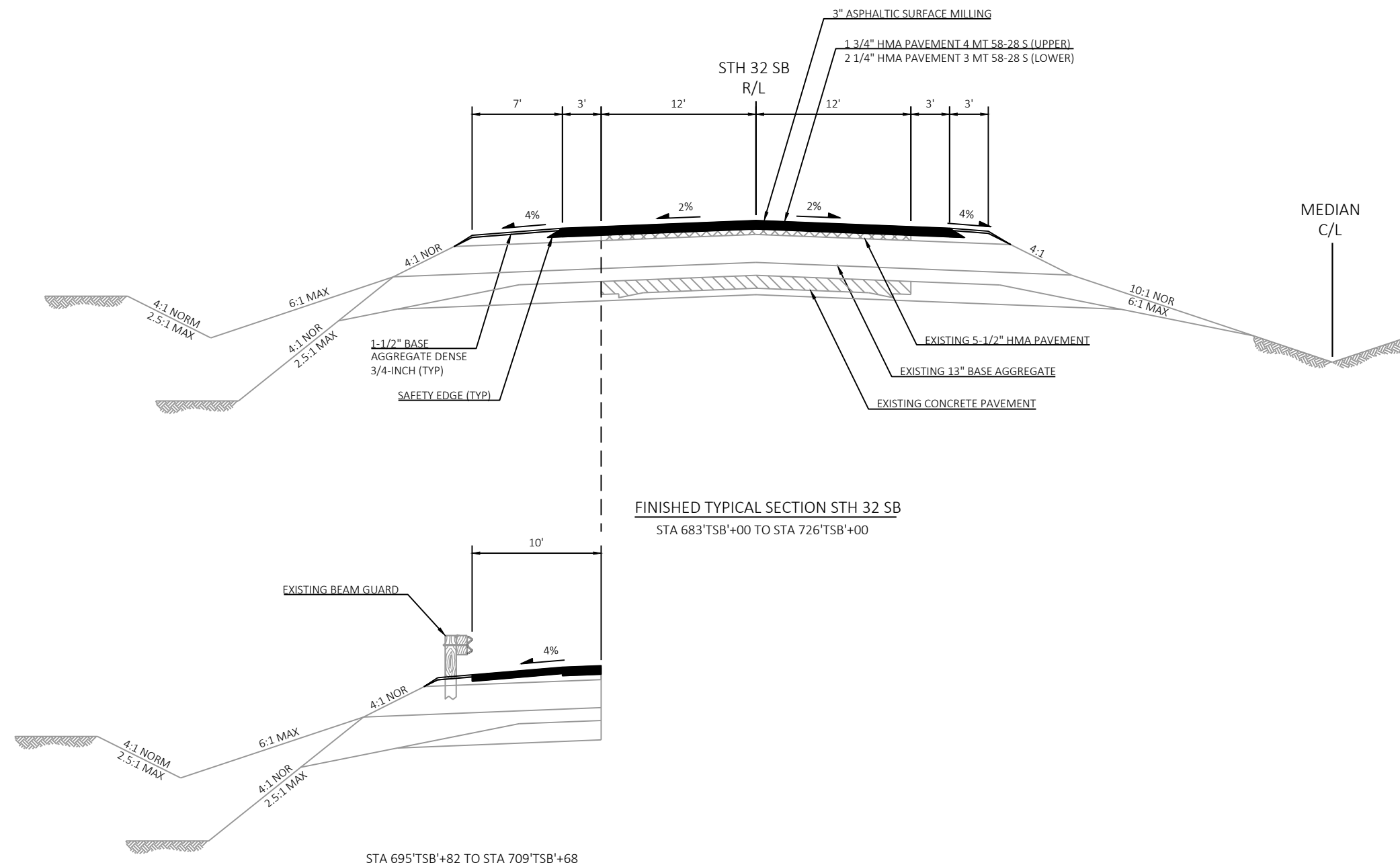
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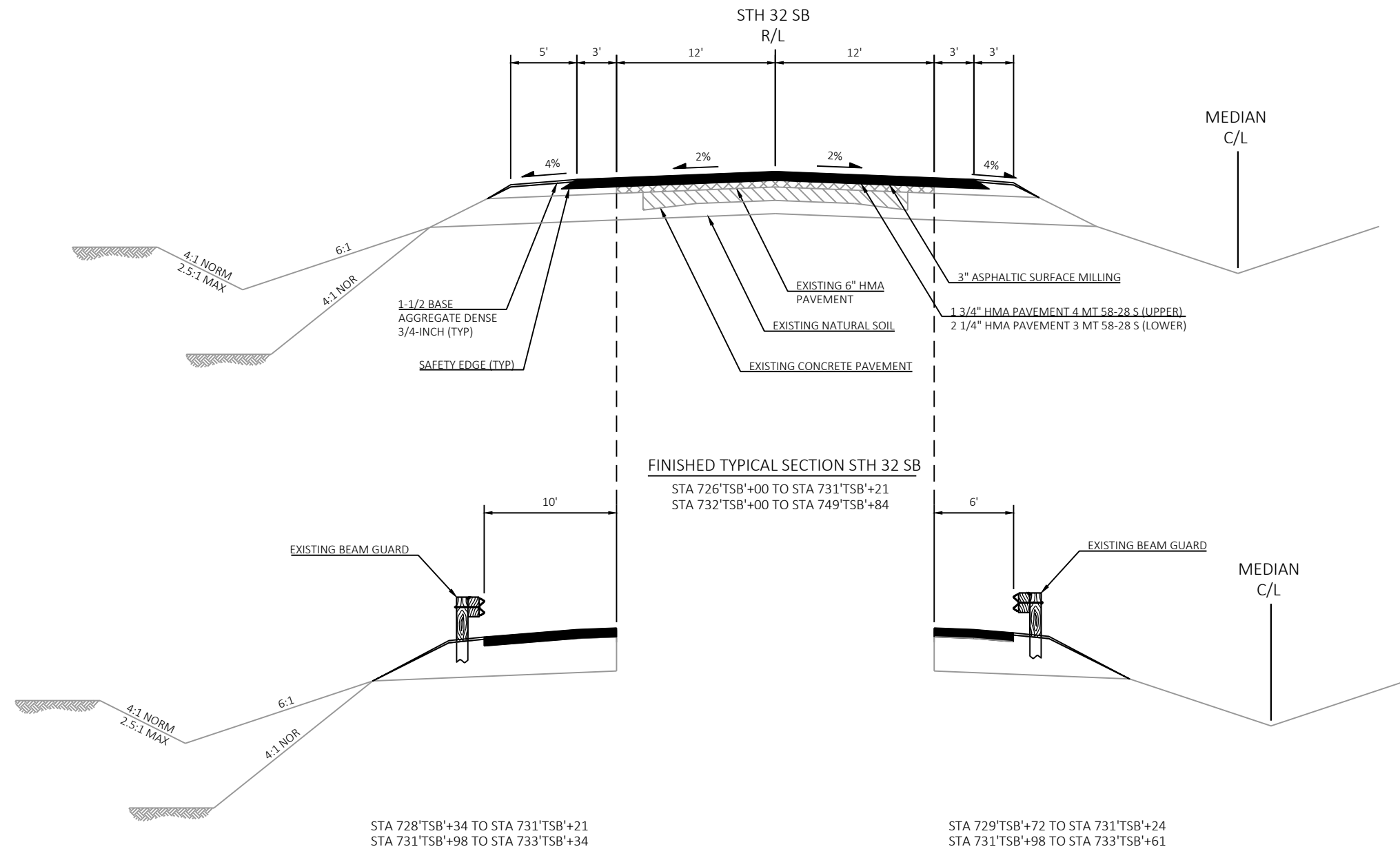
STA 864'TR'+89 TO STA 866'TR'+03
STA 867'TR'+60 TO STA 869'TR'+94

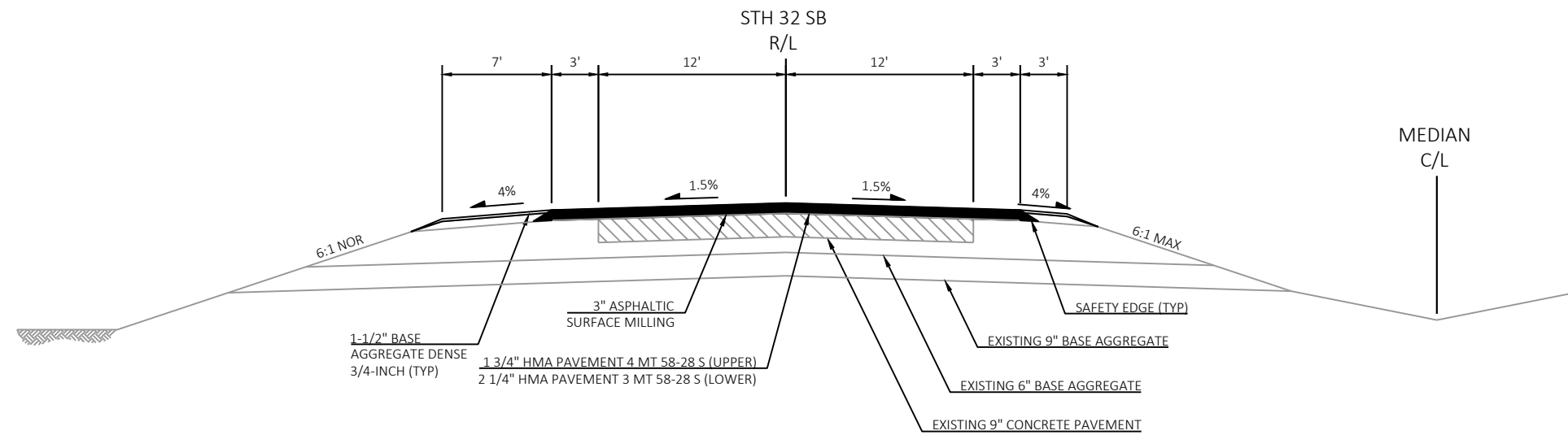




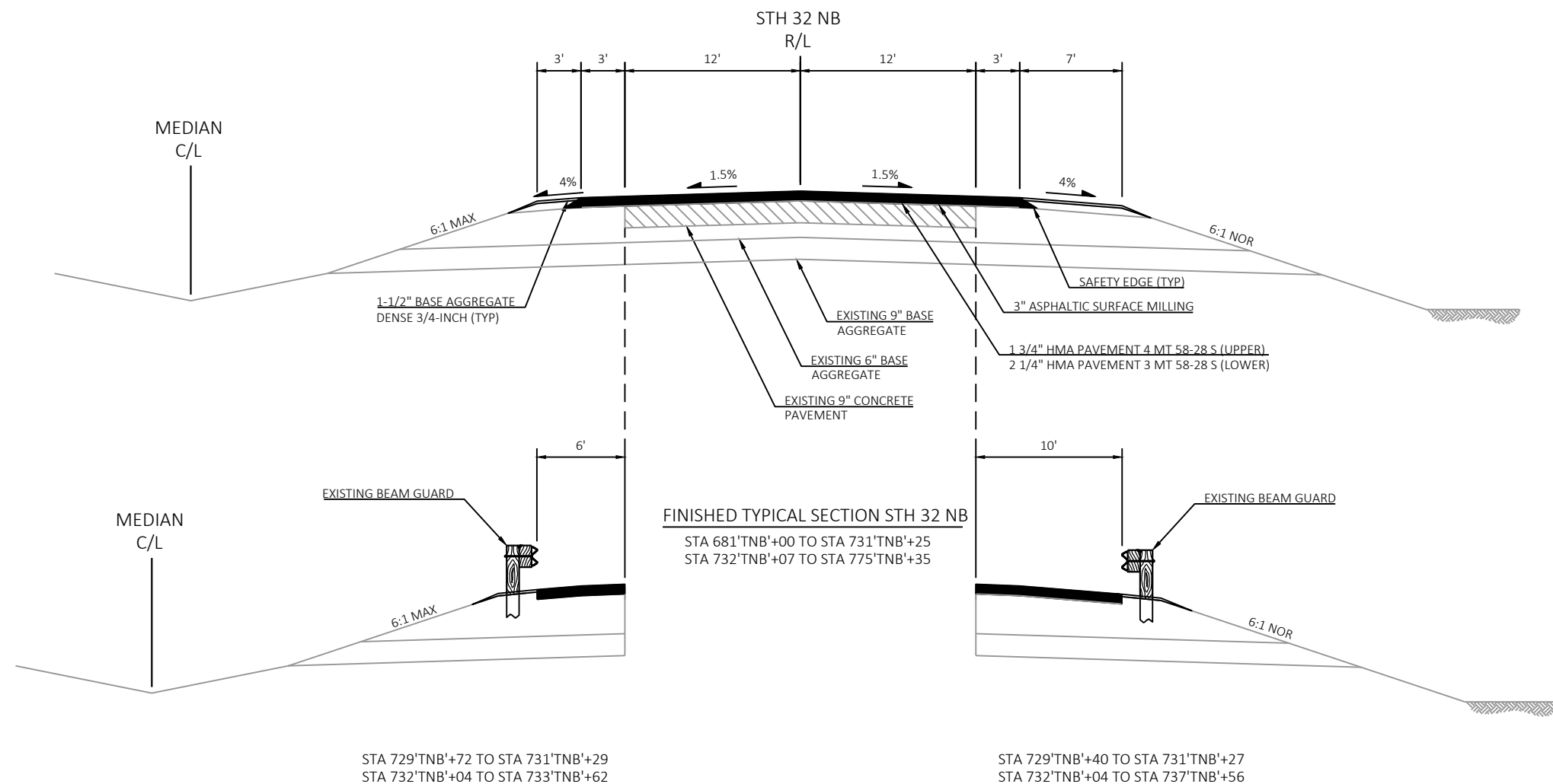
FINISHED TYPICAL SECTION STH 67 ROUNDABOUT

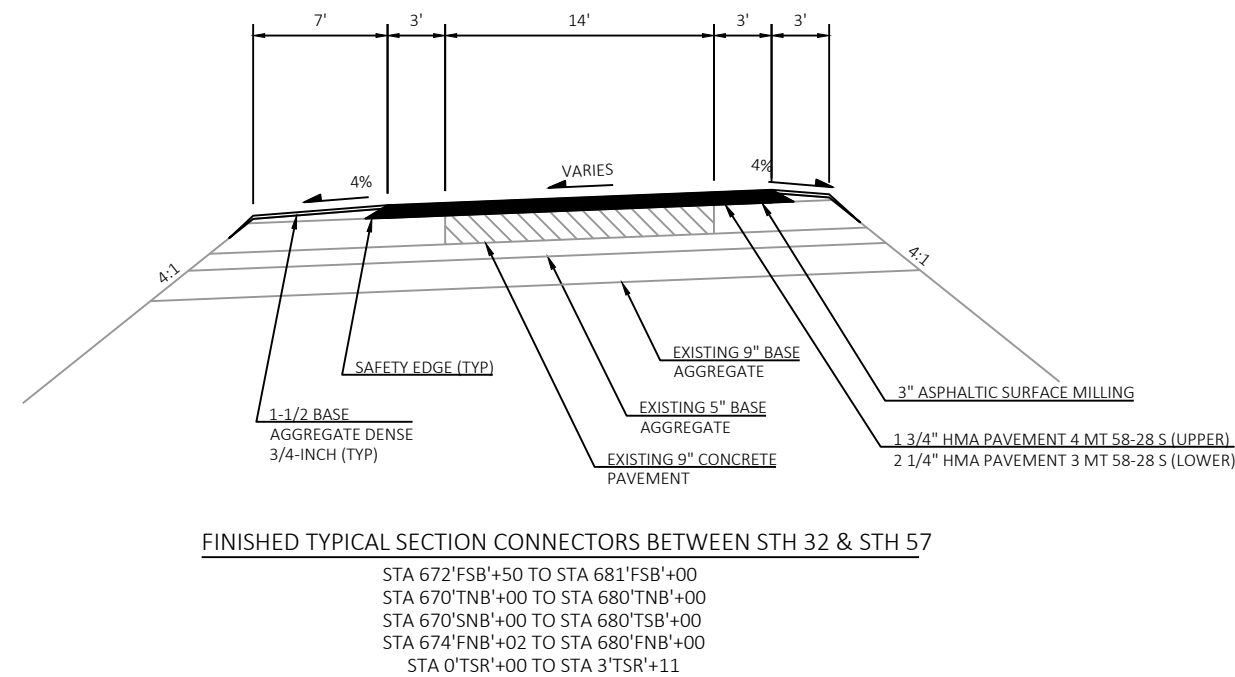
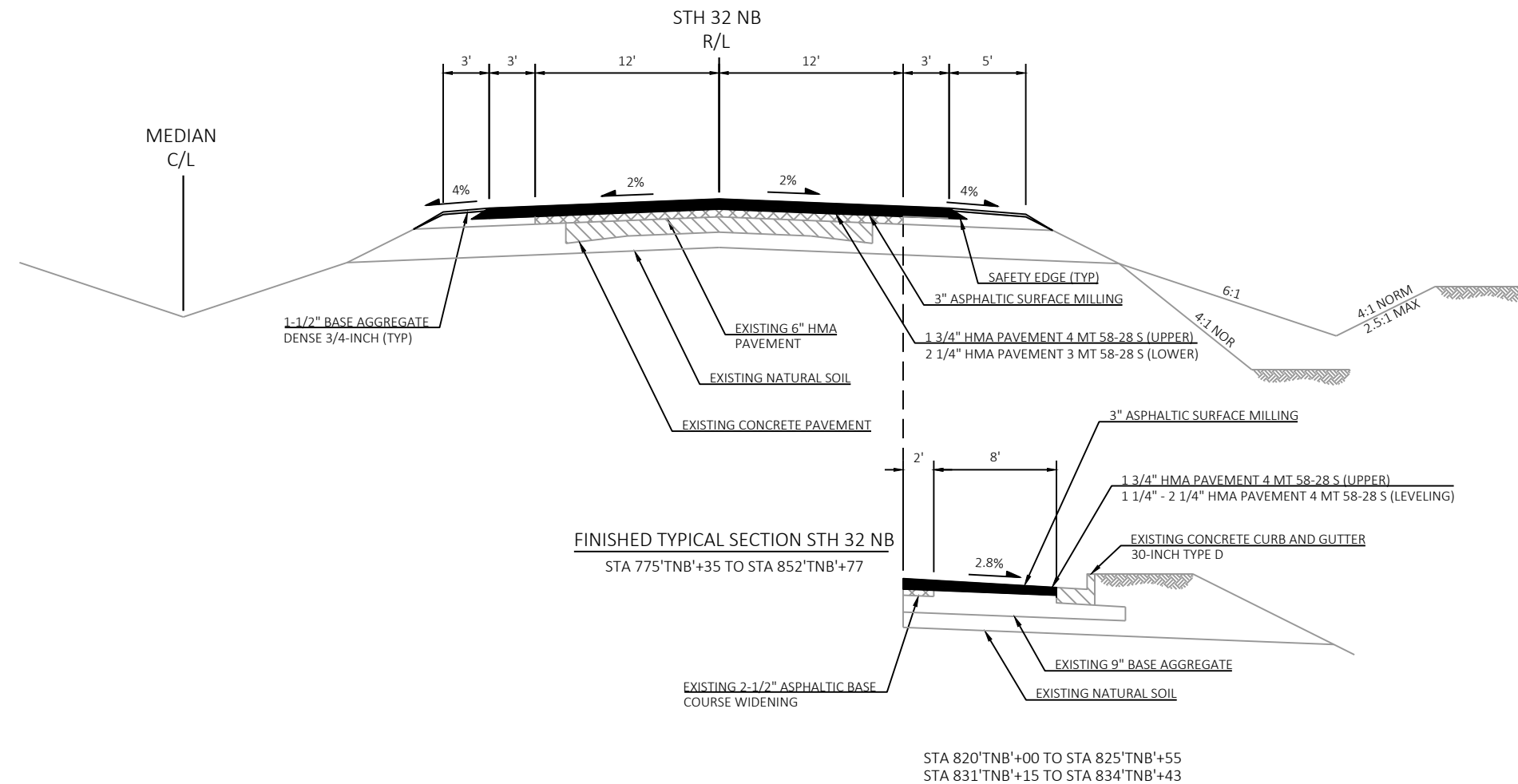


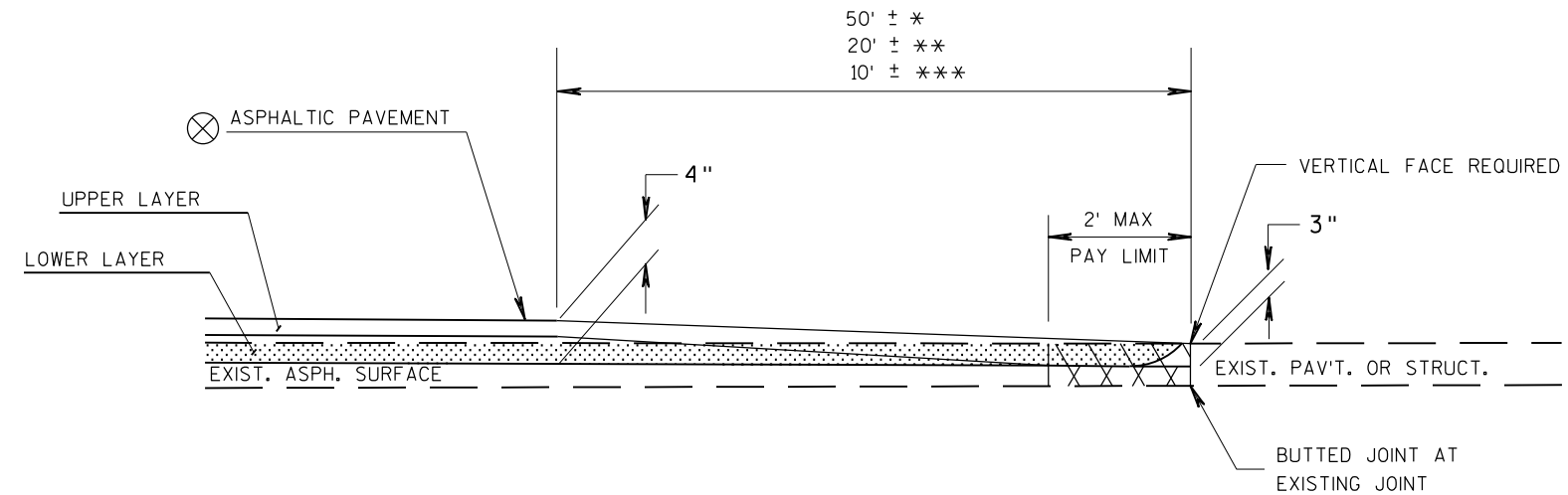




FINISHED TYPICAL SECTION STH 32 SB
STA 749'TSB'+84 TO STA 852'TSB'+72







⊗ SEE TYPICAL CROSS SECTION
FOR THICKNESS OF
INDIVIDUAL LAYERS



REMOVING ASPHALTIC SURFACE, MILLING



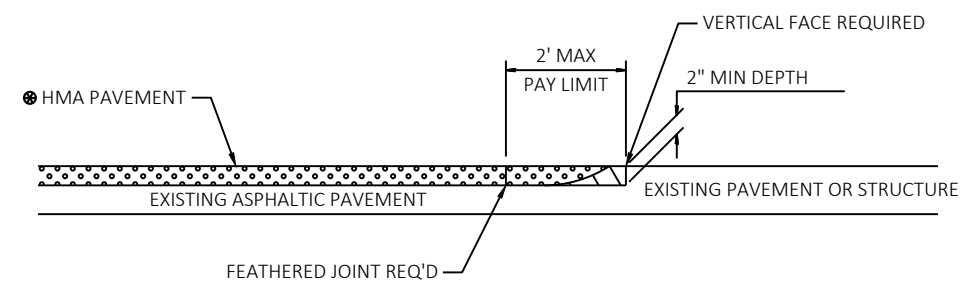
REMOVING ASPHALTIC SURFACE, BUTT JOINTS (FULL DEPTH REMOVAL OPTIONAL)



ASPHALTIC WEDGING (FULL DEPTH REMOVAL OPTION)

BUTT JOINT DETAIL FOR MILLED ASPHALTIC PAVEMENTS

* MAINLINE
** SIDEROADS
*** PRIVATE ENTRANCES



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

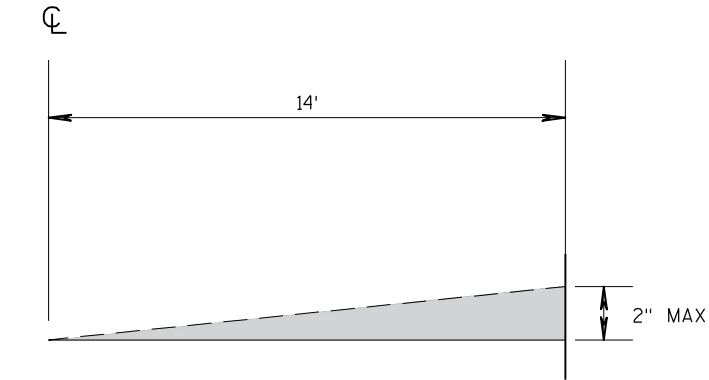
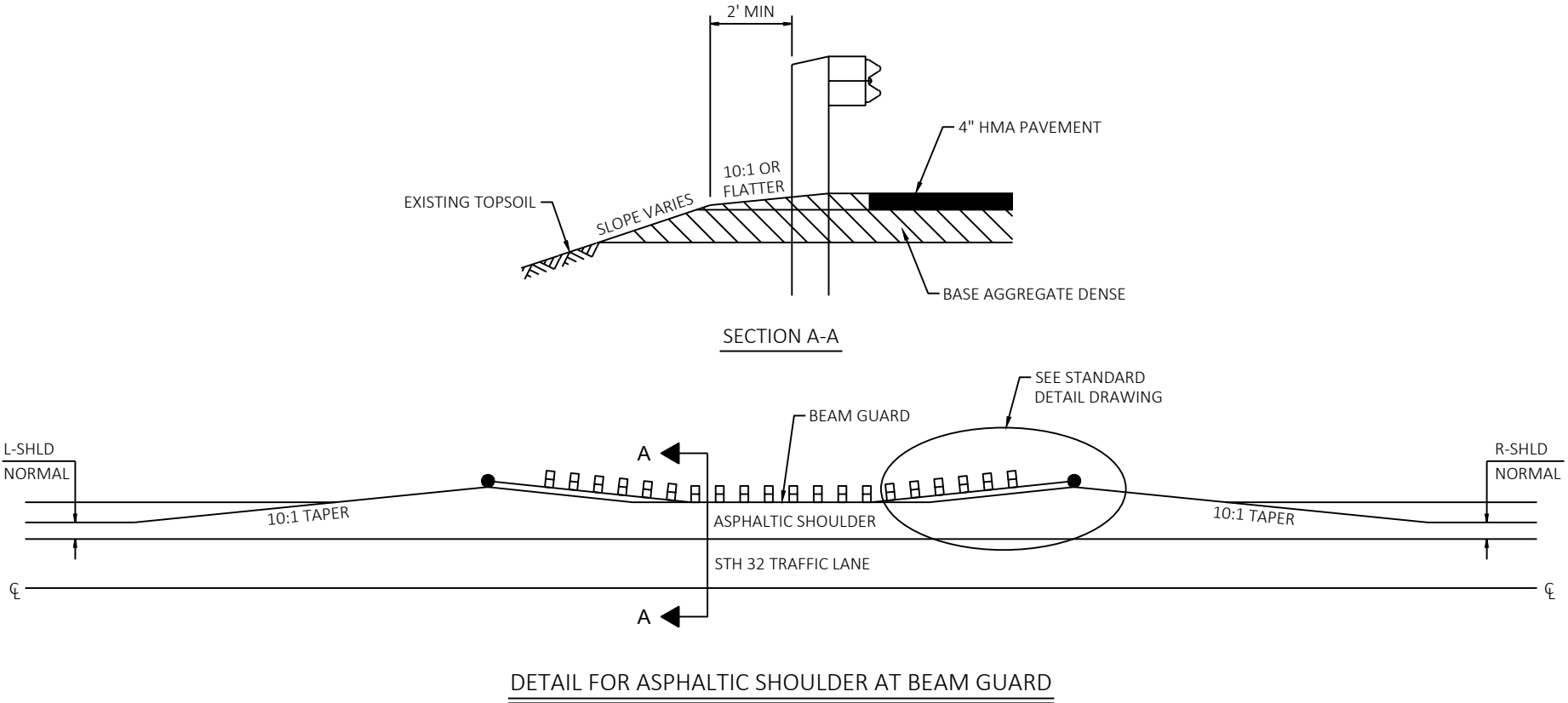


REMOVING ASPHALTIC SURFACE, MILLING

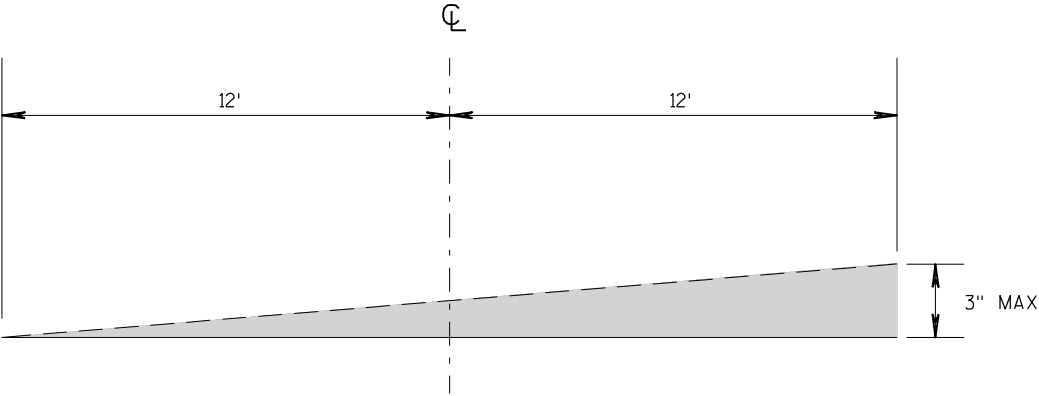


REMOVE ASPHALTIC SURFACE WEDGE AT BUTT JOINT TO CREATE VERTICAL EDGE

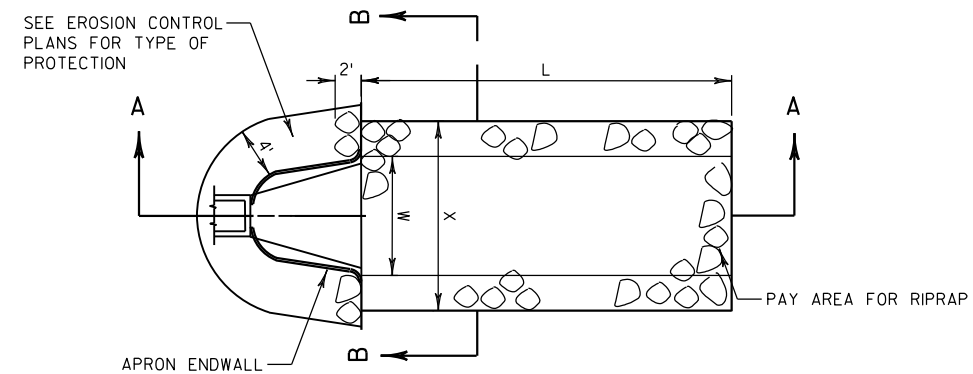
BUTT JOINT DETAIL FOR ASPHALTIC PAVEMENTS (NO PROFILE CHANGE)



CURVE PI	EXISTING SUPER	PLAN SUPER
STA 678'FNB'+04.78	5.3%	6.0%



CURVE PI	EXISTING SUPER	PLAN SUPER
STA 708'TNB'+73.42	2.0%	2.3%
STA 708'TSB'+87.33	2.0%	2.3%



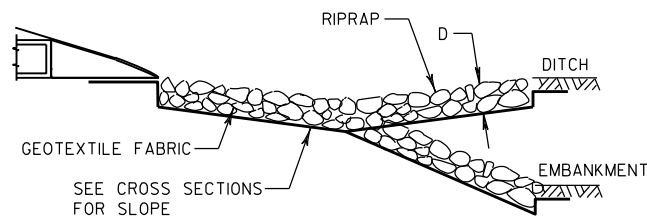
PLAN VIEW

$L = 3 \times W$ (NOR.) OR 10' MIN. OR
AS INDICATED IN THE PLANS OR AS
DIRECTED BY THE ENGINEER.

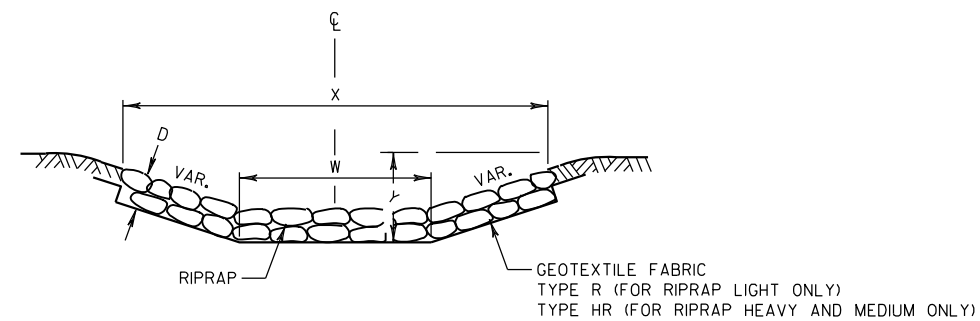
$D = 12''$ FOR RIPRAP LIGHT
18'' FOR RIPRAP MEDIUM
24'' FOR RIPRAP HEAVY

$X = W + (2 \times \text{PIPE DIAMETER})$

$Y = 0'$ FOR TYPICAL CULVERT
DISCHARGE INTO DITCH
12'' FOR CULVERT DISCHARGE
DOWN EMBANKMENT SLOPE



SECTION A-A

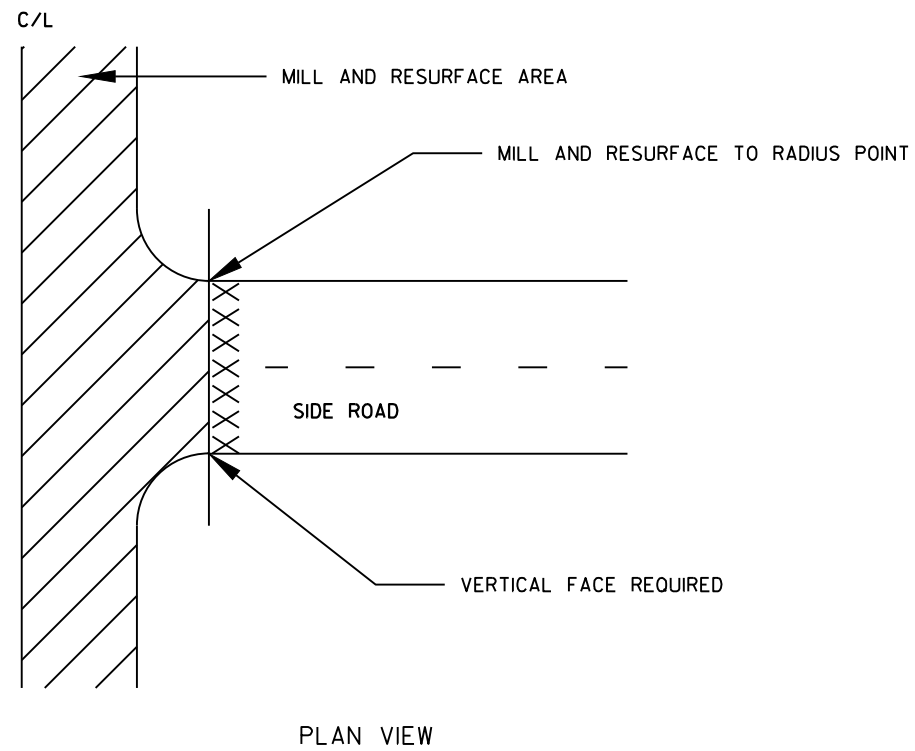


SECTION B-B

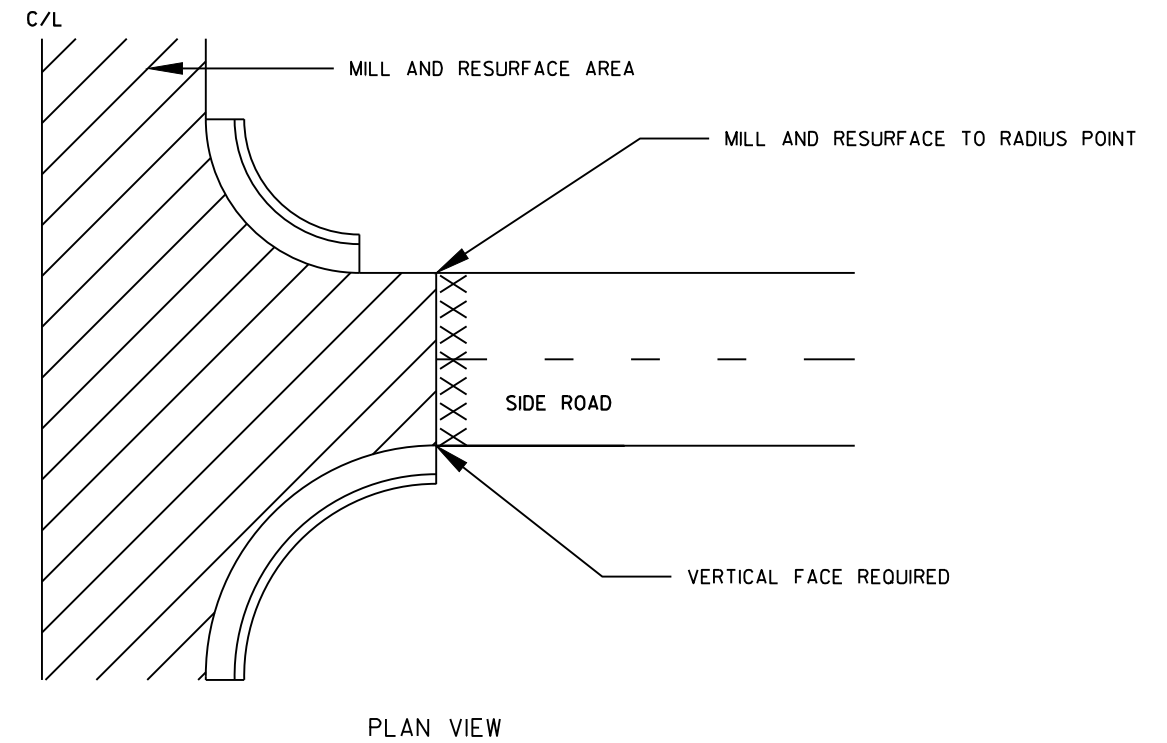
RIPRAP AND GEOTEXTILE FABRIC DETAIL
AT APRON ENDWALLS

SEE EROSION CONTROL PLAN FOR LOCATIONS

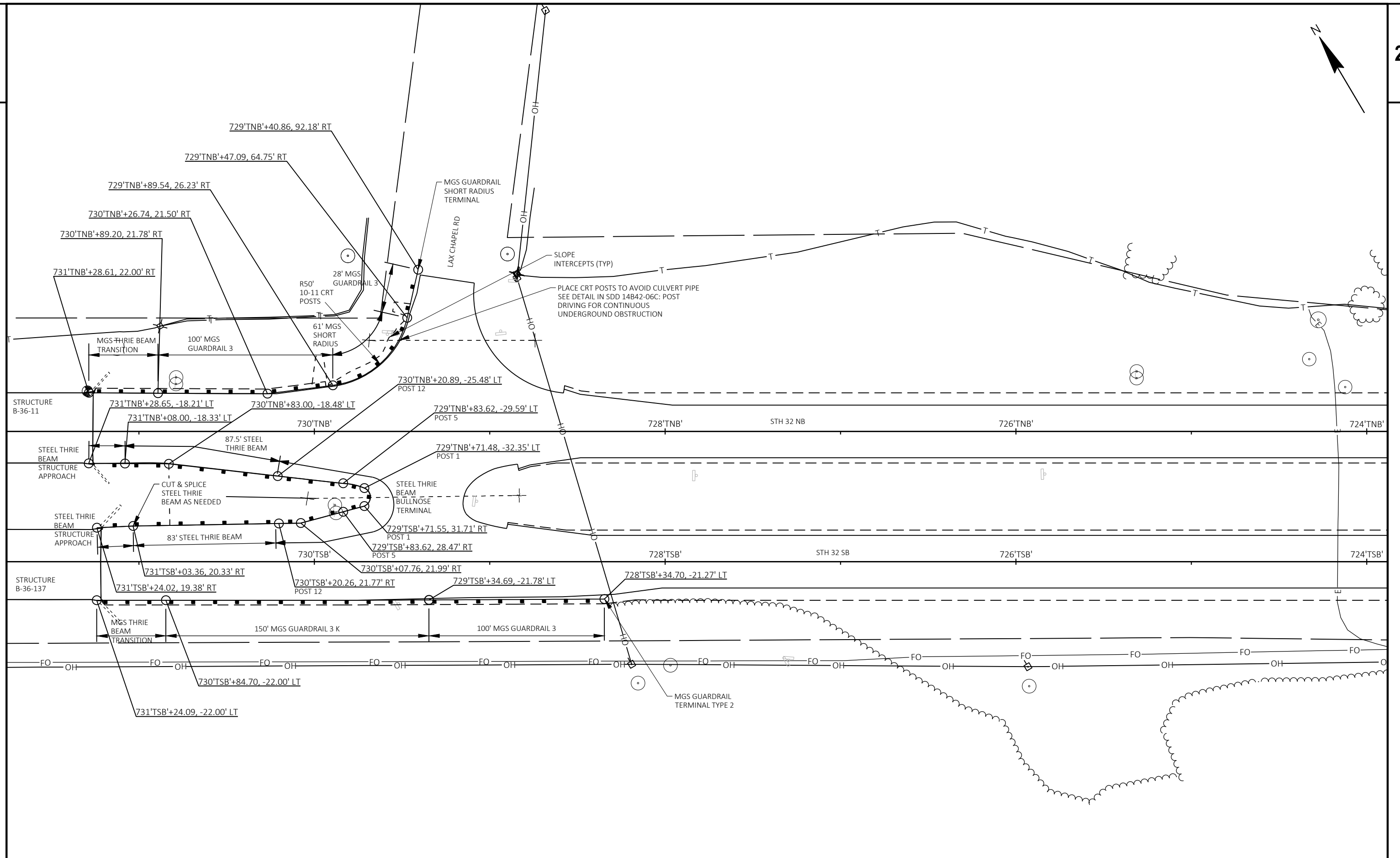
SIDE ROAD DETAIL - NO CURB & GUTTER
NOT TO SCALE



SIDE ROAD DETAIL - CURB & GUTTER
NOT TO SCALE







PROJECT NO: 4085-48-71

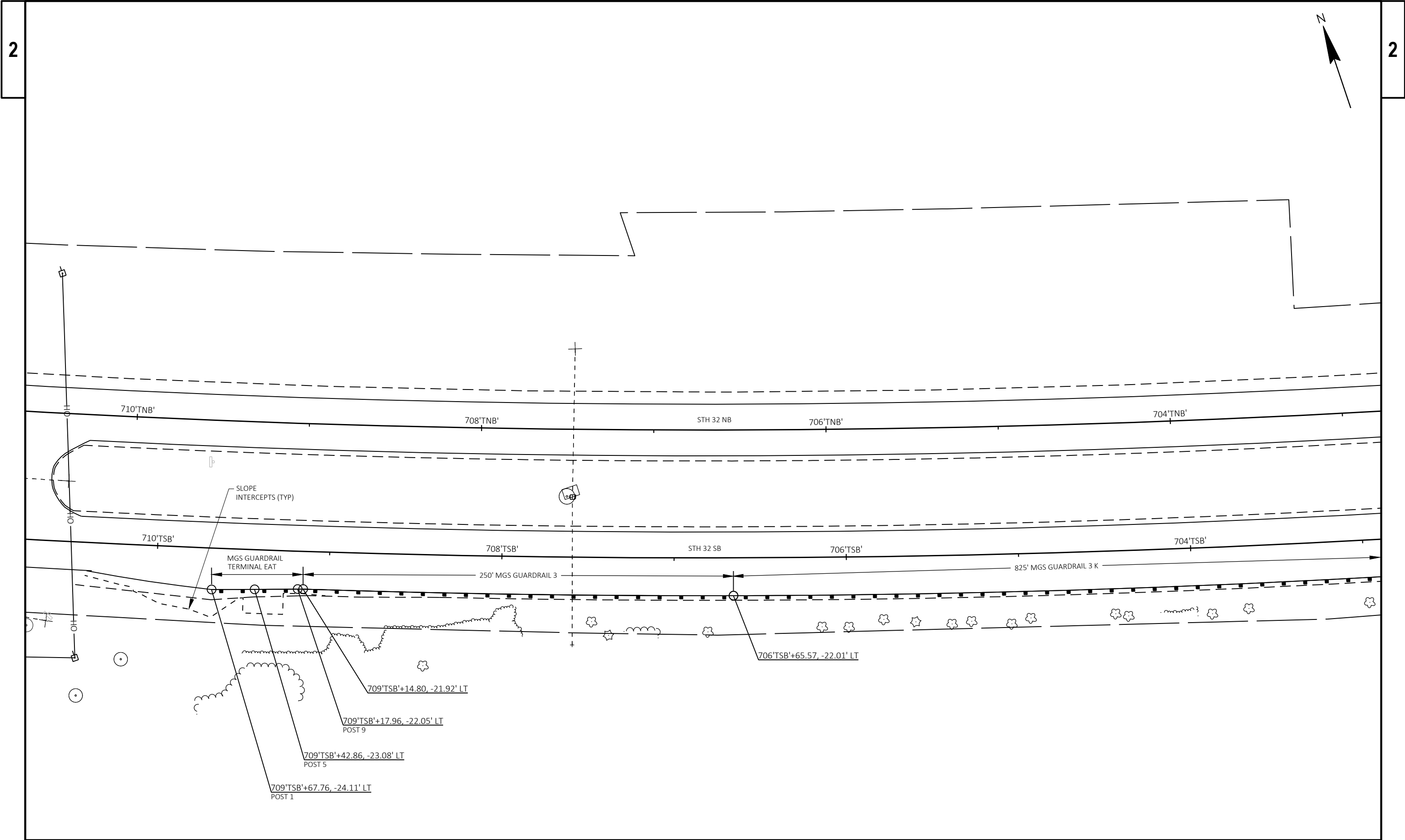
HWY: STH 32

COUNTY: MANITOWOC

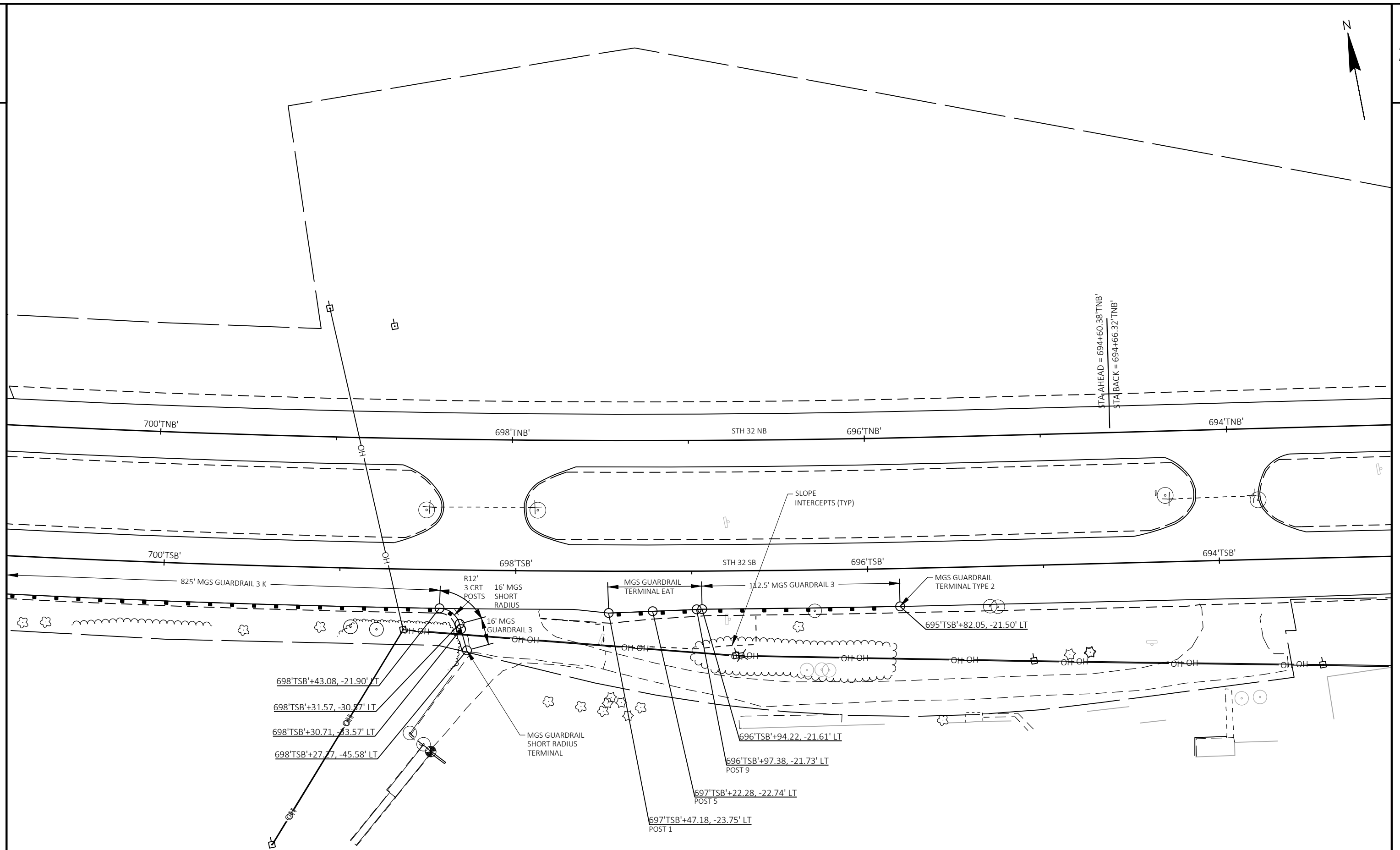
BEAMGUARD DETAILS

SHEET

E



PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	BEAMGUARD DETAILS	SHEET	E
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PROJECT NO: 4085-48-71

HWY: STH 32

COUNTY: MANITOWOC

BEAMGUARD DETAILS

SHEET

E

THE LOCATION OF EXISTING AND PROPOSED UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE. IN ADDITION, THERE MAY BE OTHER UTILITIES WITHIN THE PROJECT AREA WHICH ARE NOT SHOWN. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION.

NOTE

WISCONSIN DOT NE REGION ELECTRICAL UNIT SHALL APPROVE FINAL LOCATIONS FOR ALL CONCRETE BASES IN THE FIELD PRIOR TO CONSTRUCTION. CONTACT THEM 3 DAYS IN ADVANCE AT (920) 360-3107 OR 492-5654.

NE REGION ELECTRICAL UNIT WILL PROVIDE AND INSTALL THE FLASHING BEACON CONTROL CABINET AND ASSOCIATED CABLE/WIRE.



STH 32/57

STH 32/57

STH 32

STH 32

STH 32

STH 57

STH 57

LEGEND



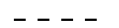
FLASHING BEACON CONTROL CABINET WITH METER BREAKER PEDESTAL



PULL BOX, 24" X 36"



PULL BOX, NON-CONDUCTIVE, 24" X 42"



NONMETALLIC CONDUIT 2", UNLESS OTHERWISE NOTED



10' STANDARD WITH 12" RED FLASHING BEACON & STOP SIGN ON BREAKAWAY PEDESTAL BASE



OVERHEAD UTILITY LINES



UNDERGROUND ELECTRIC

PROJECT NO: 4085-48-71

HWY: STH 32

COUNTY: MANITOWOC

CONSTRUCTION DETAIL - RED FLASHING BEACON REVISION

SHEET

E

FILE NAME : F:\d3_traffic\F-397.up.dgn

PLOT DATE : 13-MAR-2019 13:45

PLOT BY : dotc5s

PLOT NAME : F-397.up

PLOT SCALE : 40:1

WISDOT/CADDS SHEET 42

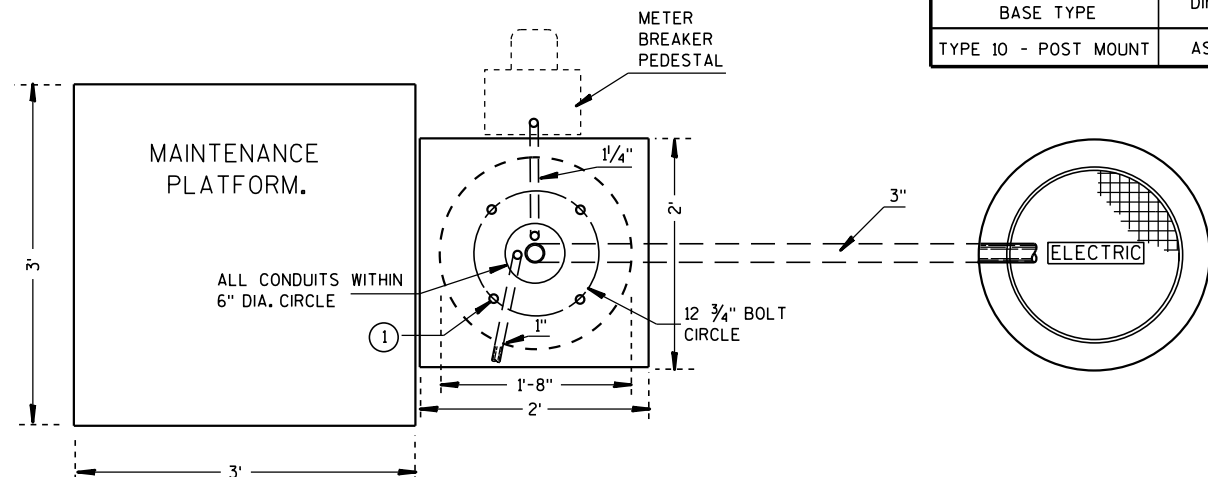
Updated 3-12-2019 (New Flasher Control Cabinet)

TRAFFIC CONTROL BEACON
STH 32 & STH 57
Town of Schleswig (Millhome)
Manitowoc County

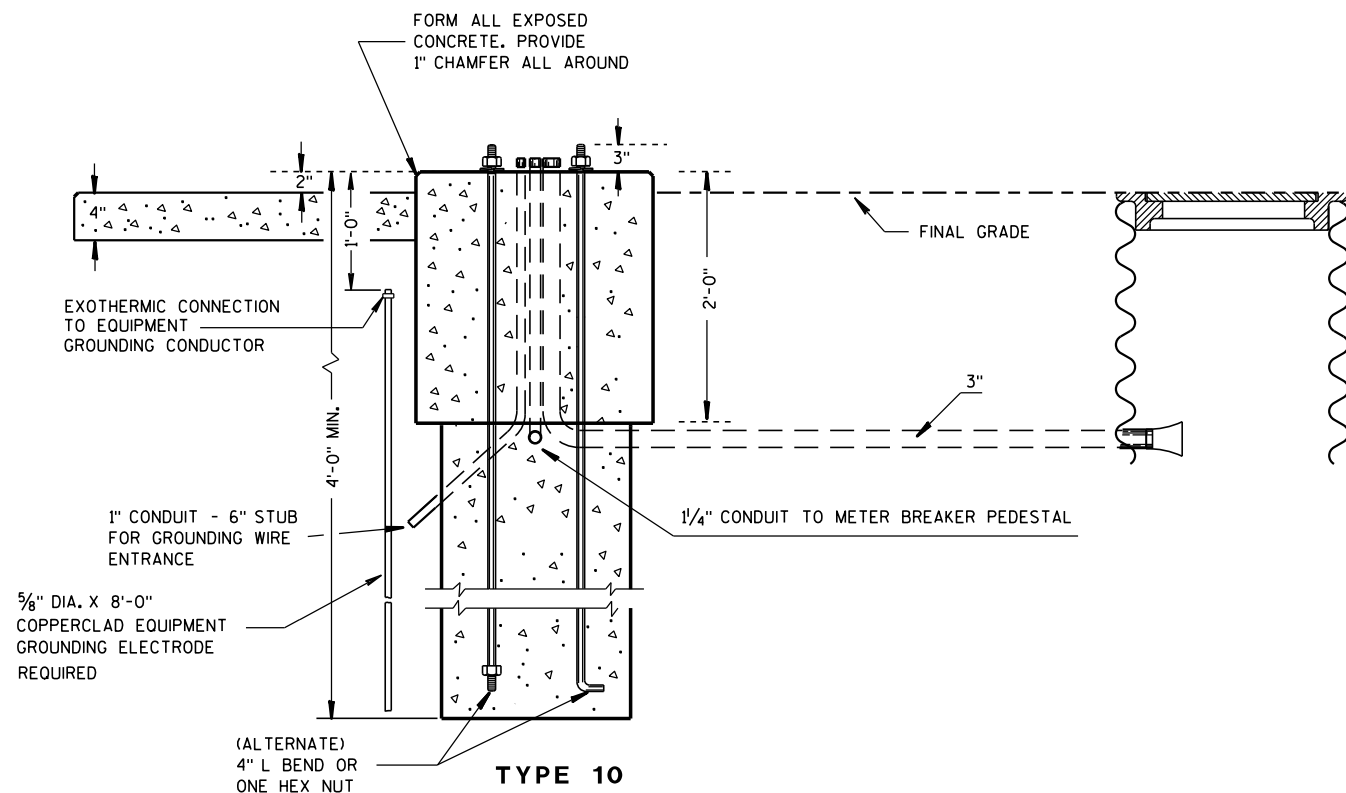
FLASHER NO. 36-0397

DRAFTED BY: CJS

PAGE 1 OF 1



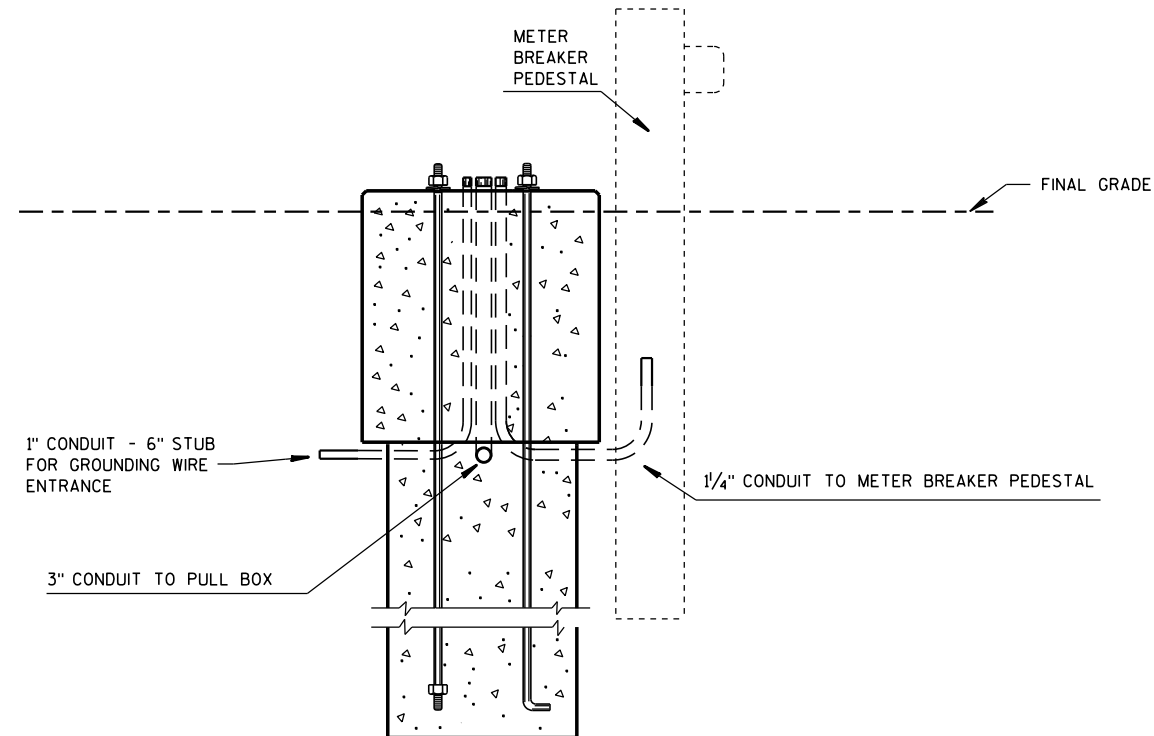
PLAN VIEW



ANY ANCHOR ROD PROJECTION SHORTER THAN 2 3/4" OR LONGER THAN 3 1/4" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

PROFILE VIEW

CONTROL CABINET BASE TYPE	DIMENSIONS	C.Y. CONCRETE (APPROX.)
TYPE 10 - POST MOUNT	AS SHOWN	0.75



FRONT VIEW

GENERAL NOTES

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

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

CONDUIT HEIGHT ABOVE THE CONCRETE BASE SHALL BE 1 INCH.

CONTROL CABINET BASE TOP SURFACES SHALL BE TROWEL FINISHED AND LEVEL.

WHEN A TYPE 10 CONTROL CABINET BASE IS USED TO POST MOUNT A CONTROL CABINET, A 36" SQUARE 4" THICK CONCRETE MAINTENANCE PLATFORM SHALL BE REQUIRED ON THE DOOR SIDE OF THE CABINET. THE TOP 1 INCH SHALL BE ABOVE FINISHED GRADE AND BE BROOM FINISHED AND LEVEL.

MAINTENANCE PLATFORMS ARE NOT REQUIRED WHEN THE SURROUNDING AREA IS PAVED.

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

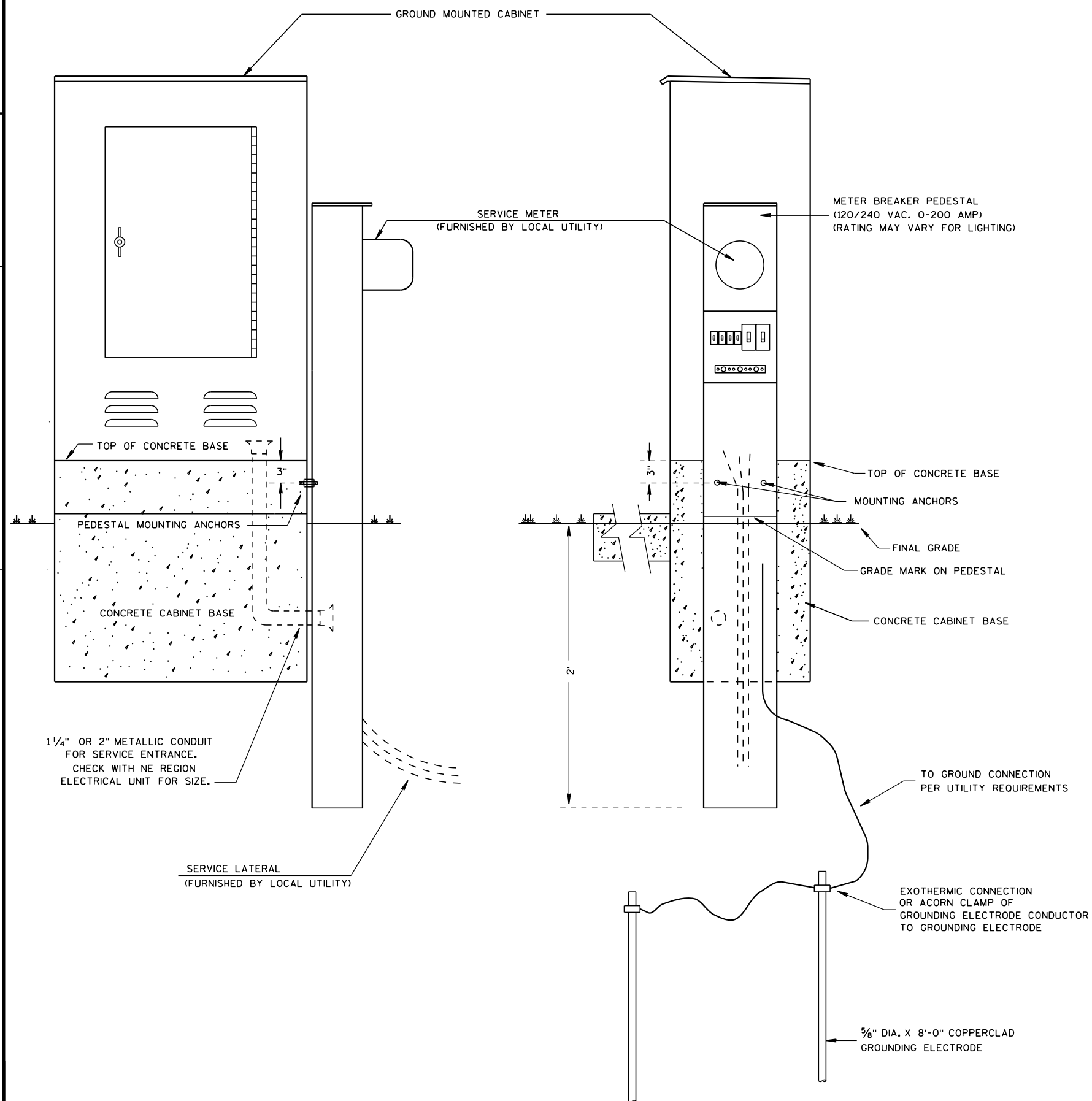
BELL ENDS SHALL BE INSTALLED ON ALL PVC CONDUIT EXPOSED AT THE TOP OF THE CONCRETE BASE BEFORE INSTALLATION OF CABLE OR WIRE.

WHEN ANCHOR RODS USING THE ALTERNATE L BEND ARE FURNISHED FOR THE TYPE 10 BASE, THE 4" L BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR ROD BAR LENGTH.

THE "L" BEND SHALL NOT BE THREADED.

STRAIGHT ANCHOR RODS SHALL BE THREADED 12" IN LENGTH ON EACH END OF THE ROD.

FOUR (4) ANCHOR RODS, 1" DIA. X 3'-6"
ANCHOR RODS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 654.2.1 AND 641.2.2 OF THE STANDARD SPECIFICATIONS AND IN ACCORDANCE WITH A-449, OR ASTM, A-687 (GRADE 105).



GENERAL NOTES

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

THE EXACT LOCATION OF THE METER BREAKER PEDESTAL SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

THE TYPE OF CONCRETE CABINET BASE TO BE INSTALLED SHALL BE AS CALLED FOR IN THE PLANS.

TO FACILITATE FLUSH MOUNTING OF THE METER BREAKER PEDESTAL AGAINST THE SIDE OF THE CABINET BASE (IF FLUSH MOUNTING POSSIBLE, CONFER WITH THE LOCAL UTILITY TO DETERMINE WHICH SIDE OF THE CONCRETE BASE THE ELECTRICAL SERVICE LATERAL WILL APPROACH, THEN FORM THAT INDICATED SIDE FOR FULL SIDE DEPTH.

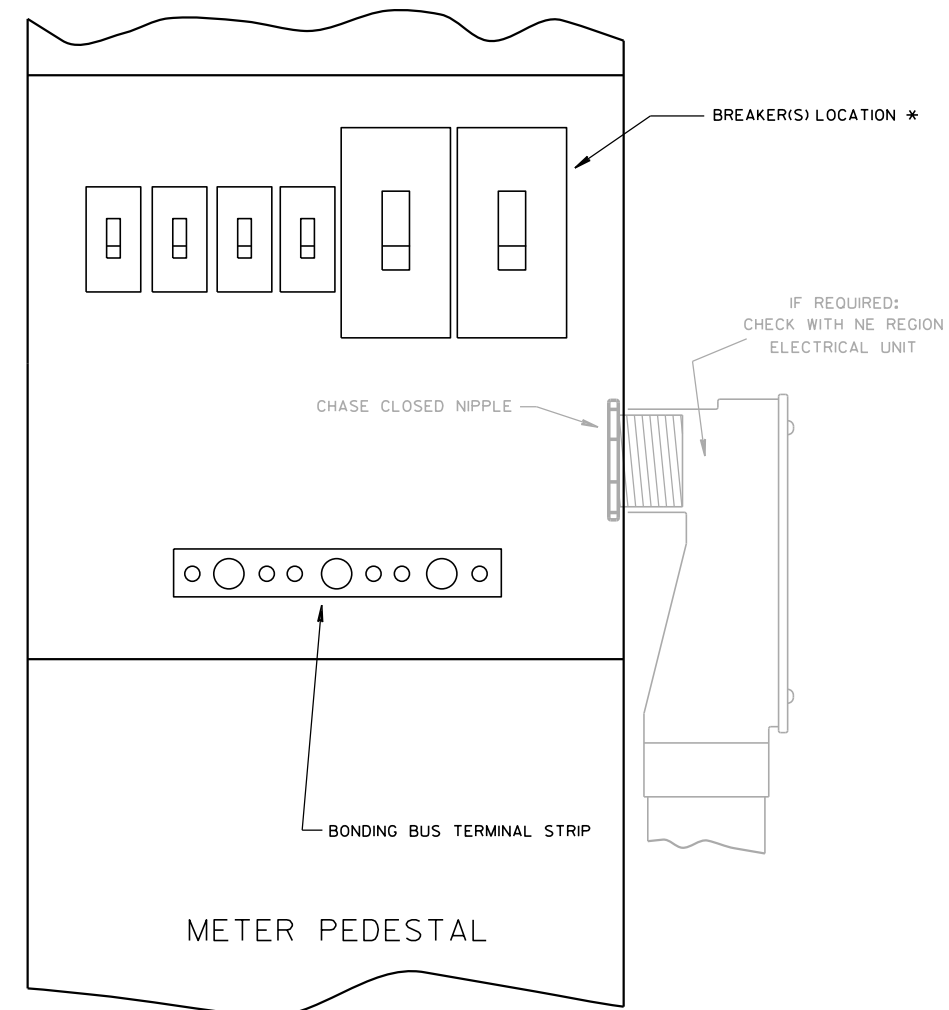
WHILE FLUSH MOUNTING IS THE MOST DESIRABLE MOUNTING CONFIGURATION UTILITY REQUIREMENTS MAY PRECLUDE THIS OPTION. CONTRACTOR MUST PROVIDE UTILITY APPROVED PEDESTAL AND INSTALL PER UTILITY AND MANUFACTURERS REQUIREMENTS.

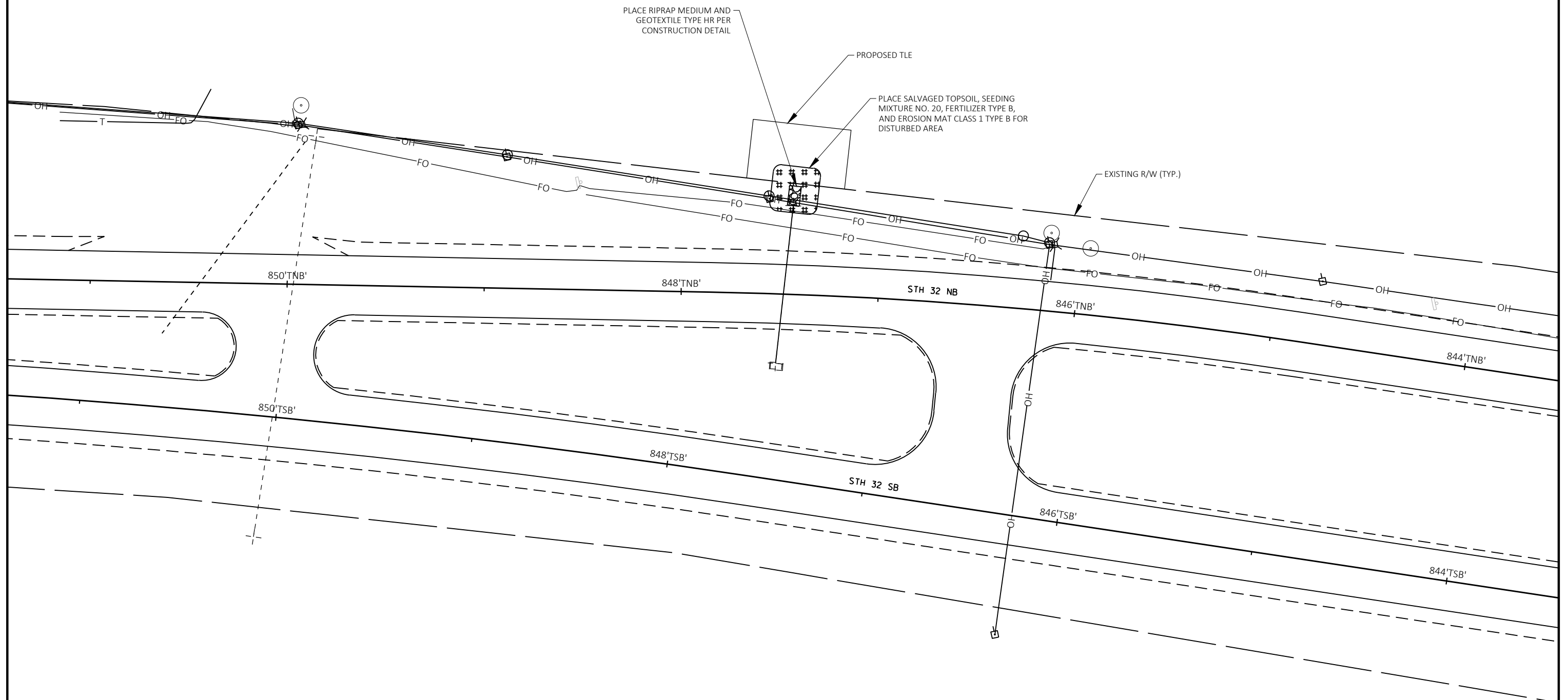
SERVICE CONDUCTOR ENTRANCES SHALL BE RIGID METALLIC CONDUIT OR SCHEDULE 80 PVC, NIPPLES AND/OR CONDULETS AS REQUIRED. CONDUIT LB SHALL BE OF METALLIC SERVICE ENTRANCE TYPE.

SERVICE CONDUCTOR ENTRANCES SHALL BE SIZED AND LOCATED AS REQUIRED BY THE LOCAL UTILITY AND IN ACCORDANCE WITH APPROPRIATE ARTICLES OF THE LATEST ACCEPTED NATIONAL ELECTRICAL CODE.

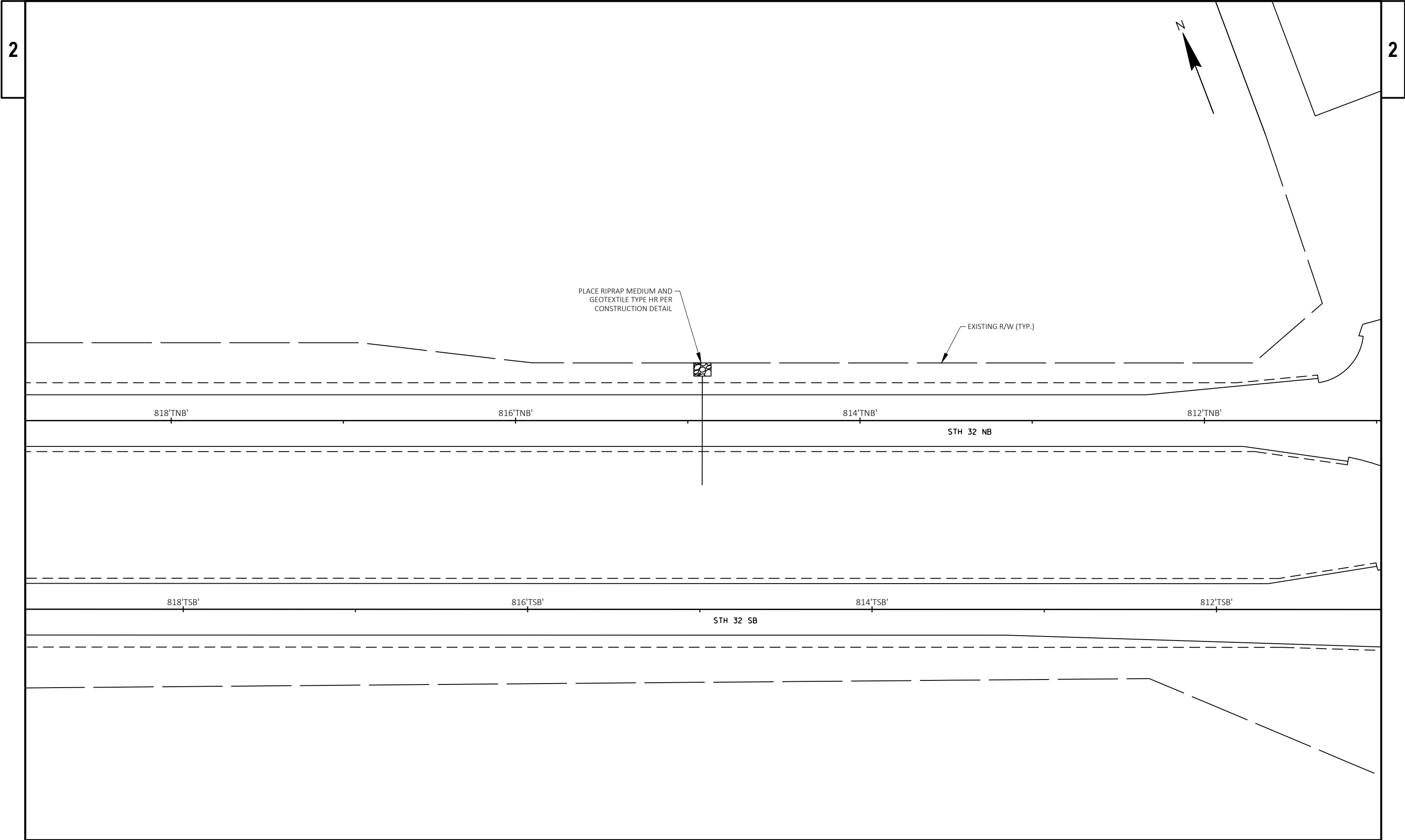
IF MORE THAN ONE GROUNDING ELECTRODE IS REQUIRED, THE DISTANCE APART SHALL BE 6 FEET OR PER NEC.

* SOME PEDESTAL LIGHTING PLANS SHOW MAIN LUGS ONLY.

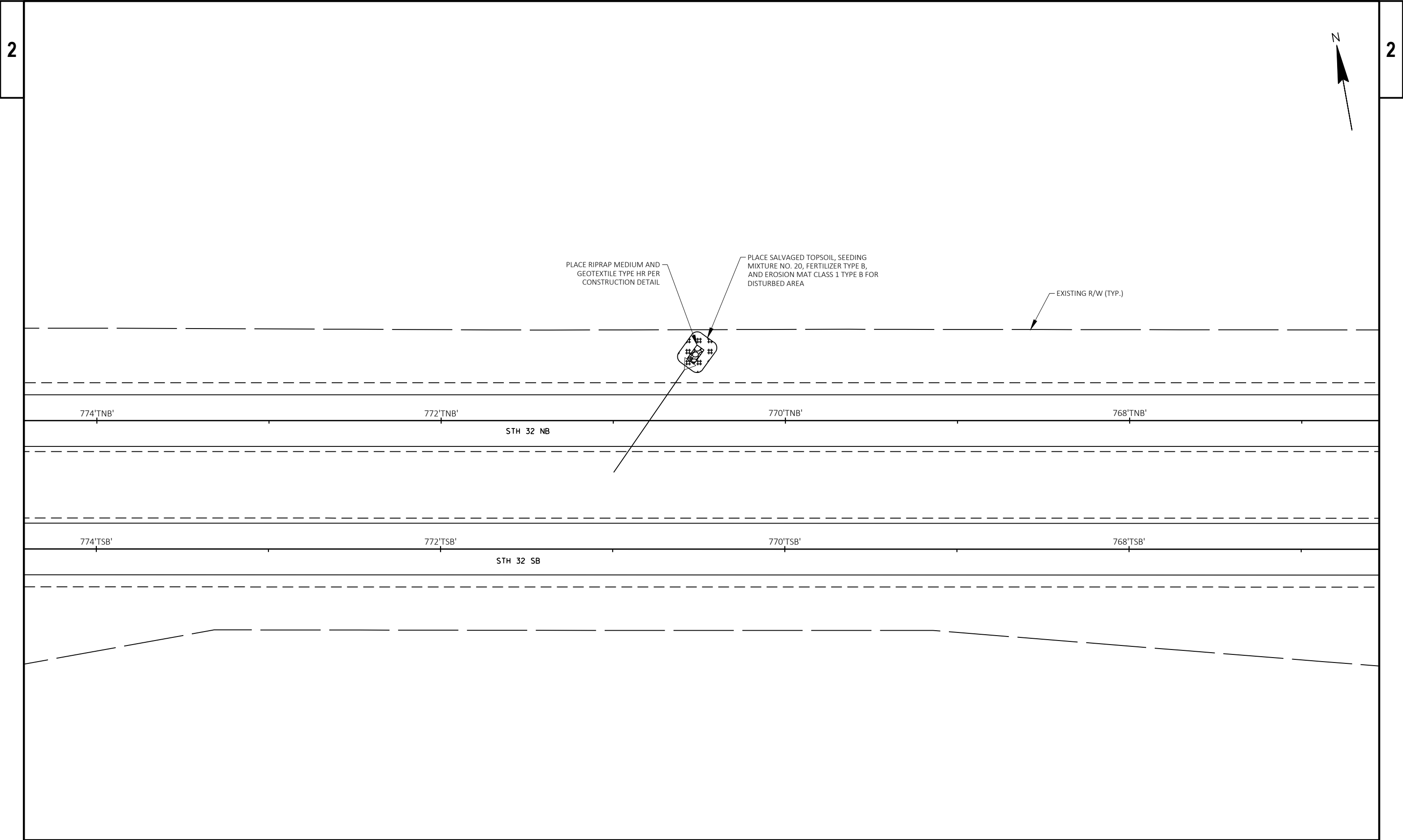


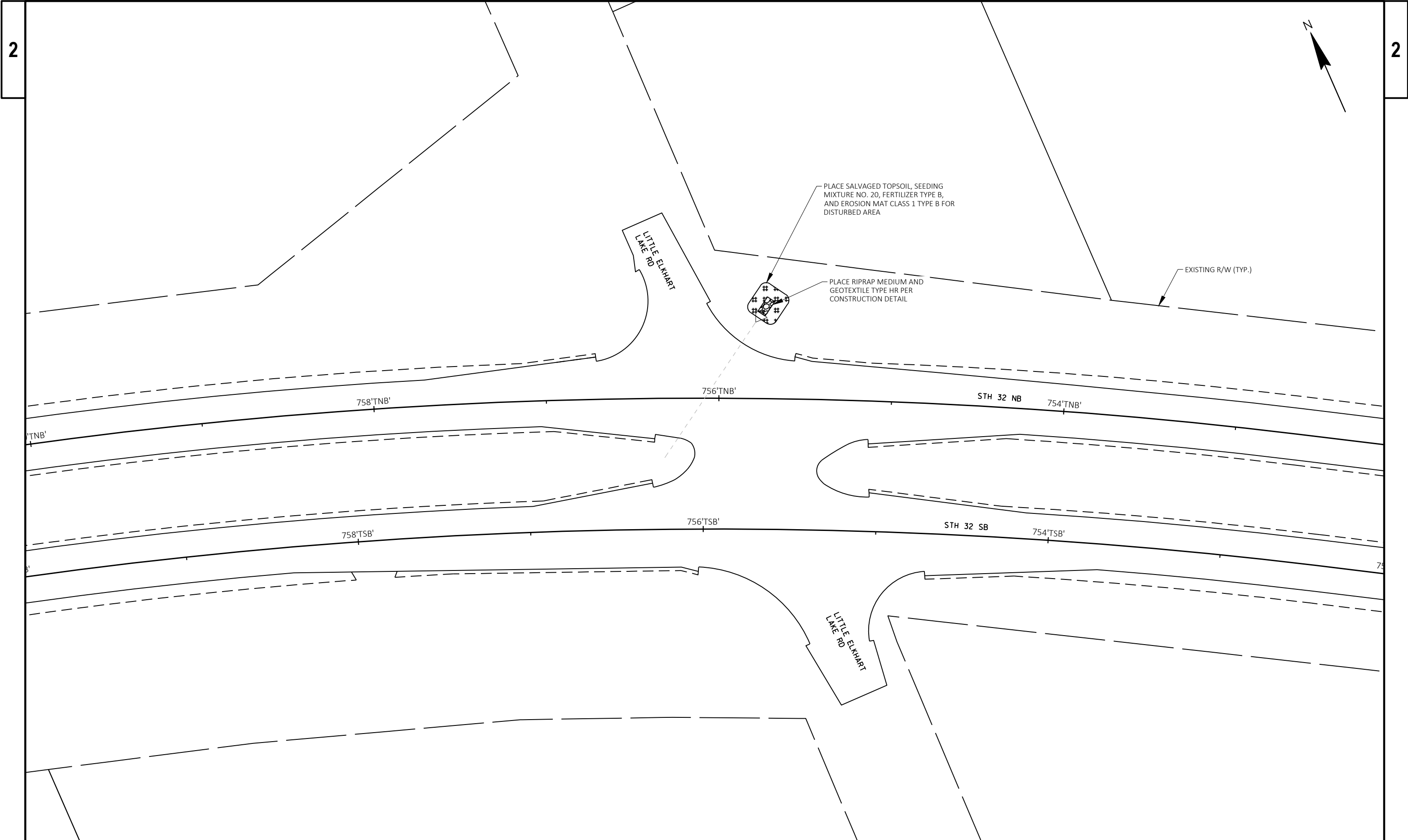


PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	EROSION CONTROL	SHEET	E
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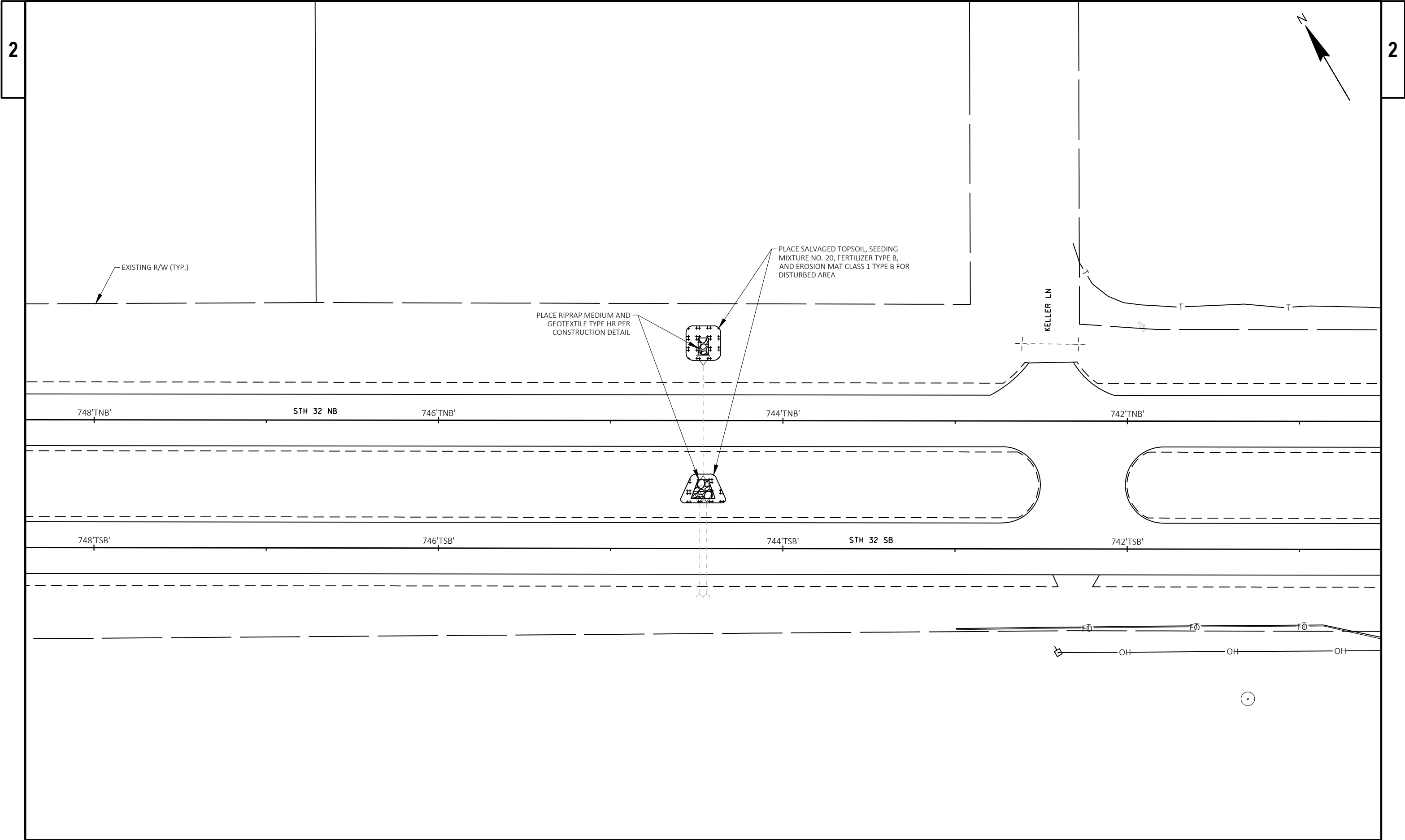


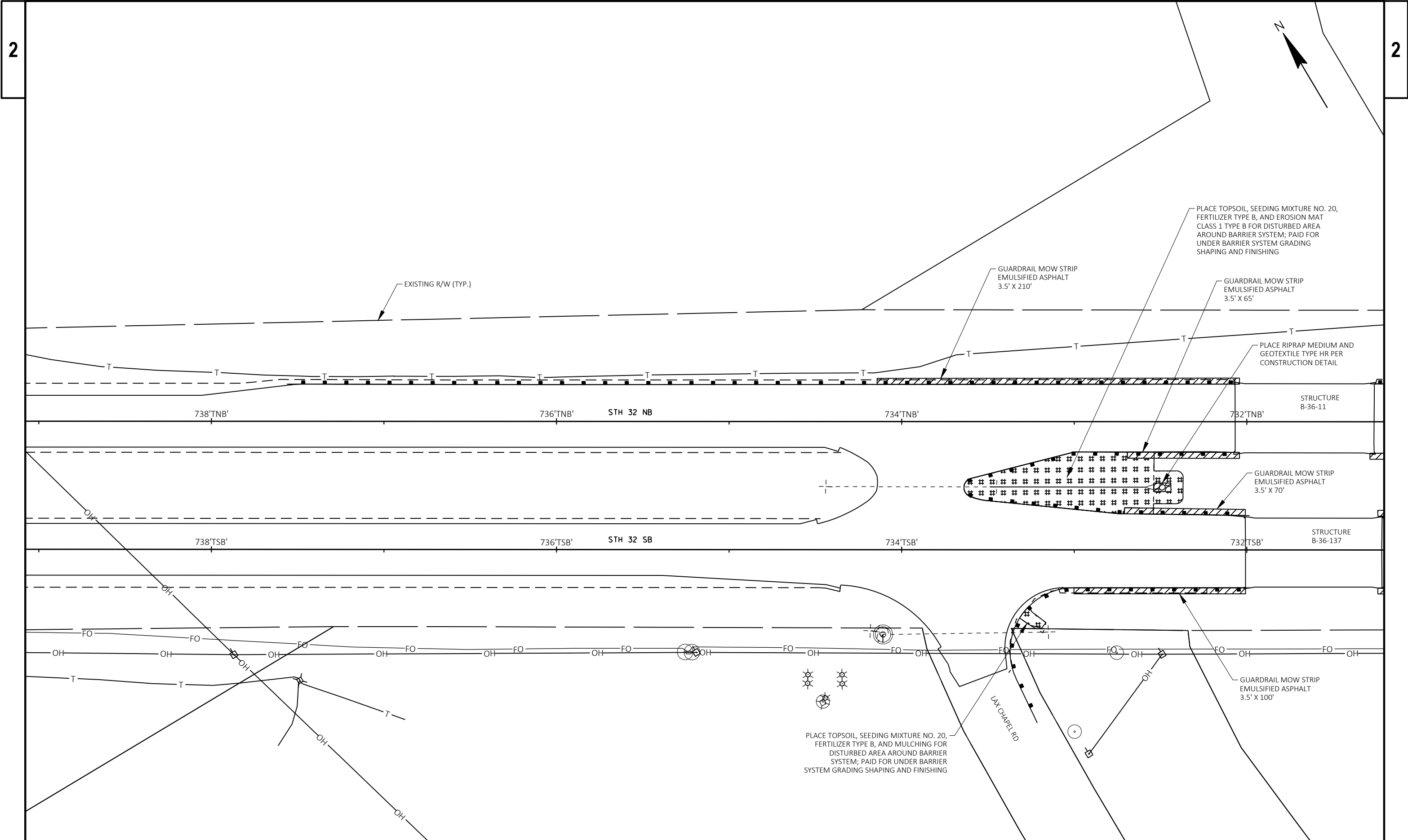
PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	EROSION CONTROL	SHEET	E
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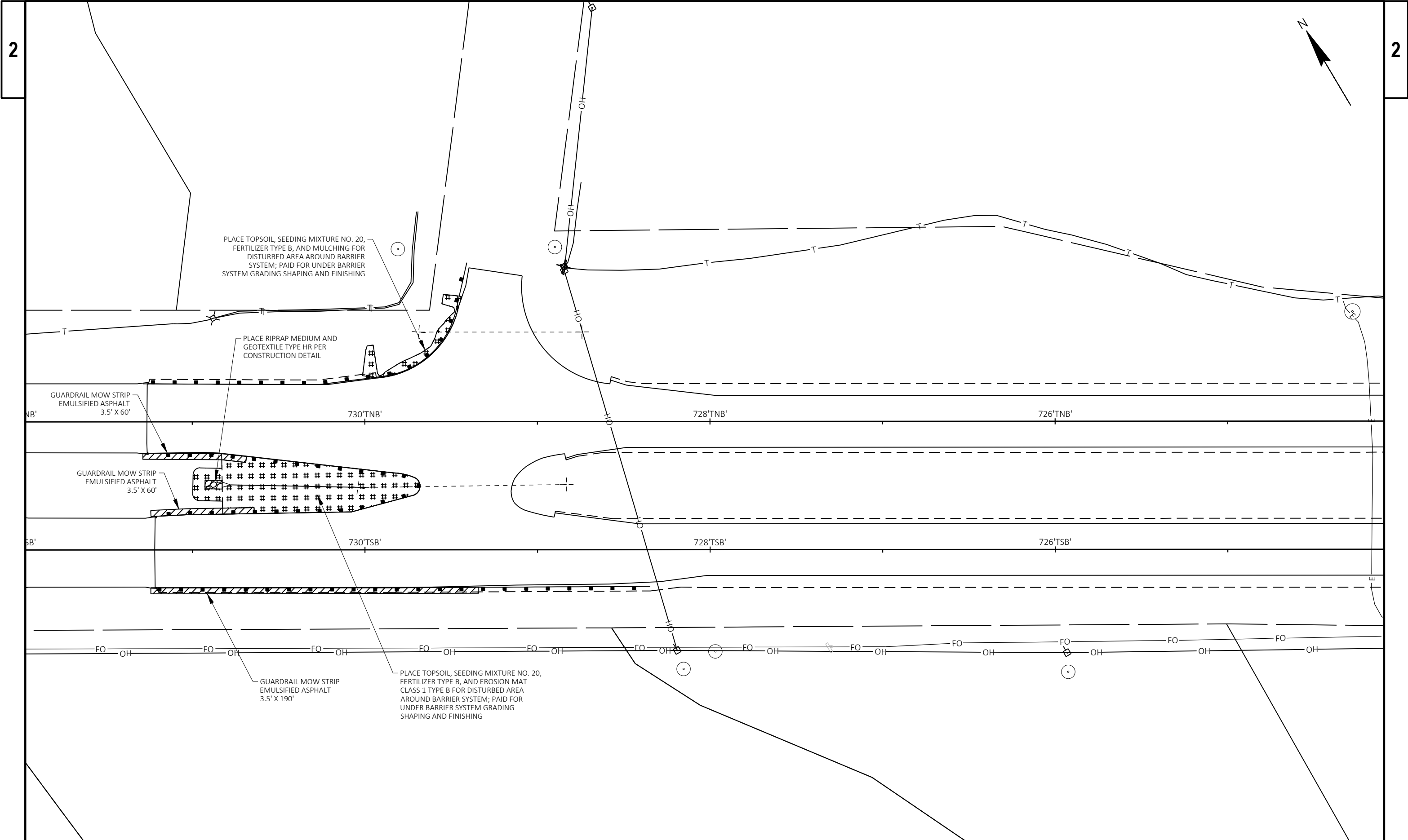


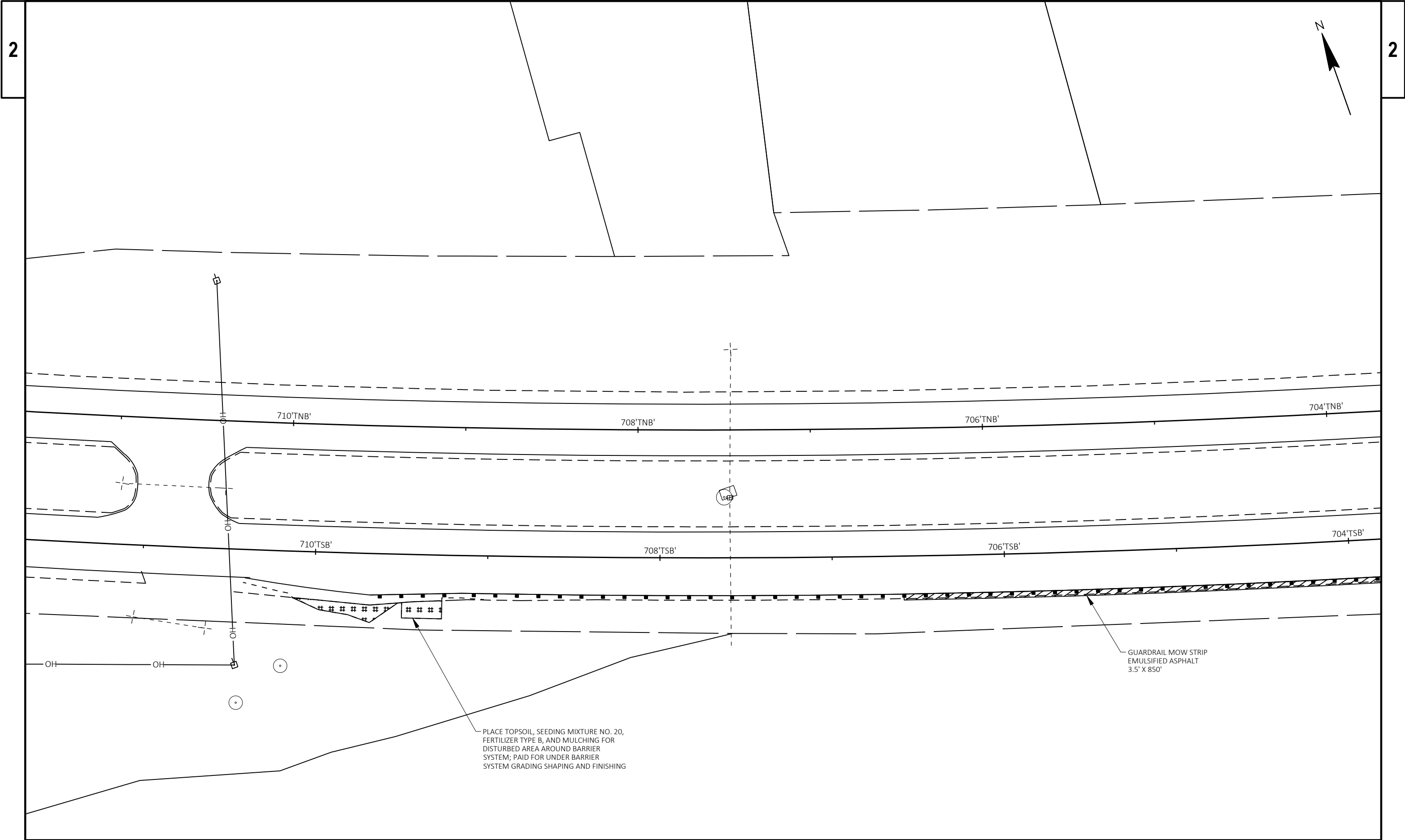


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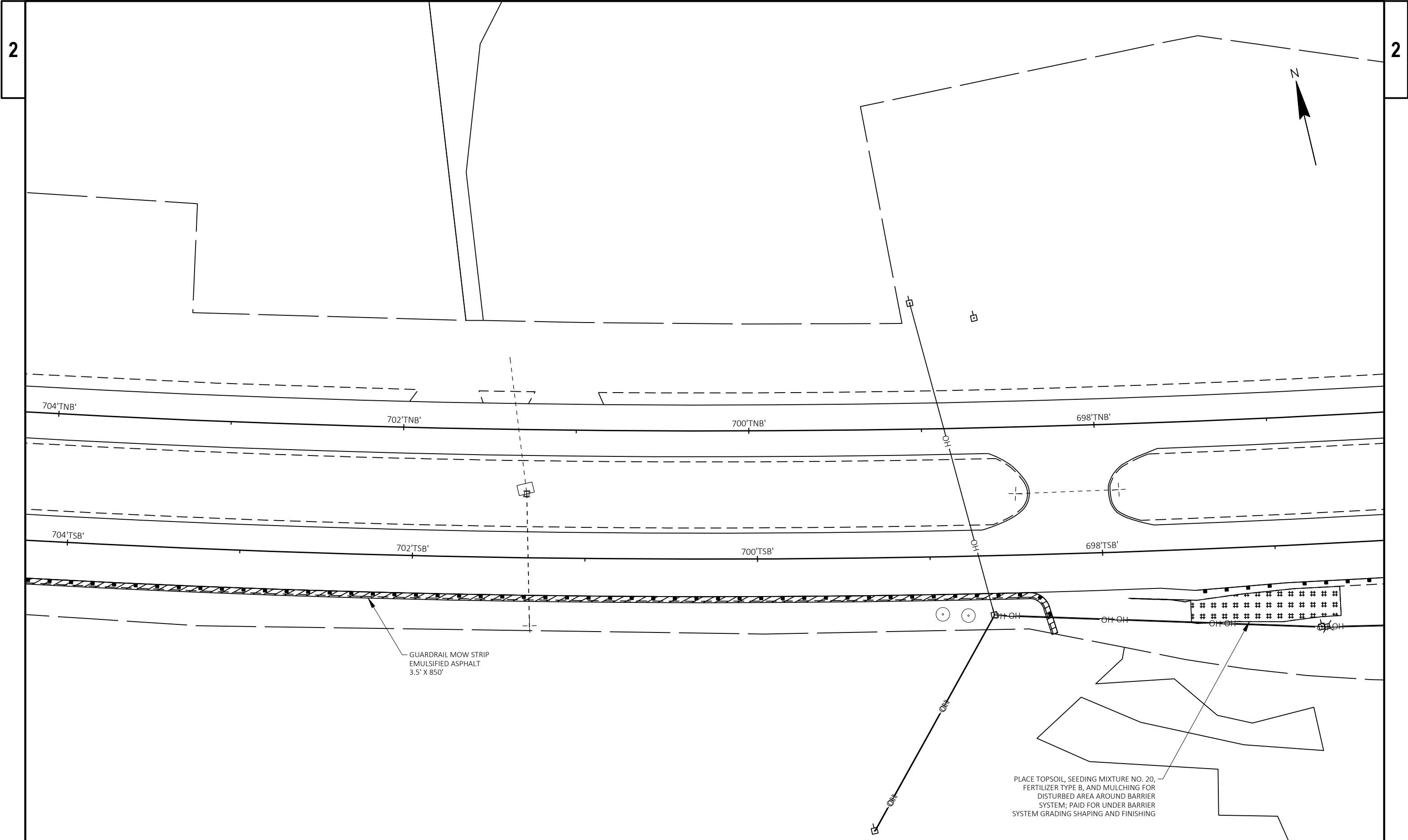


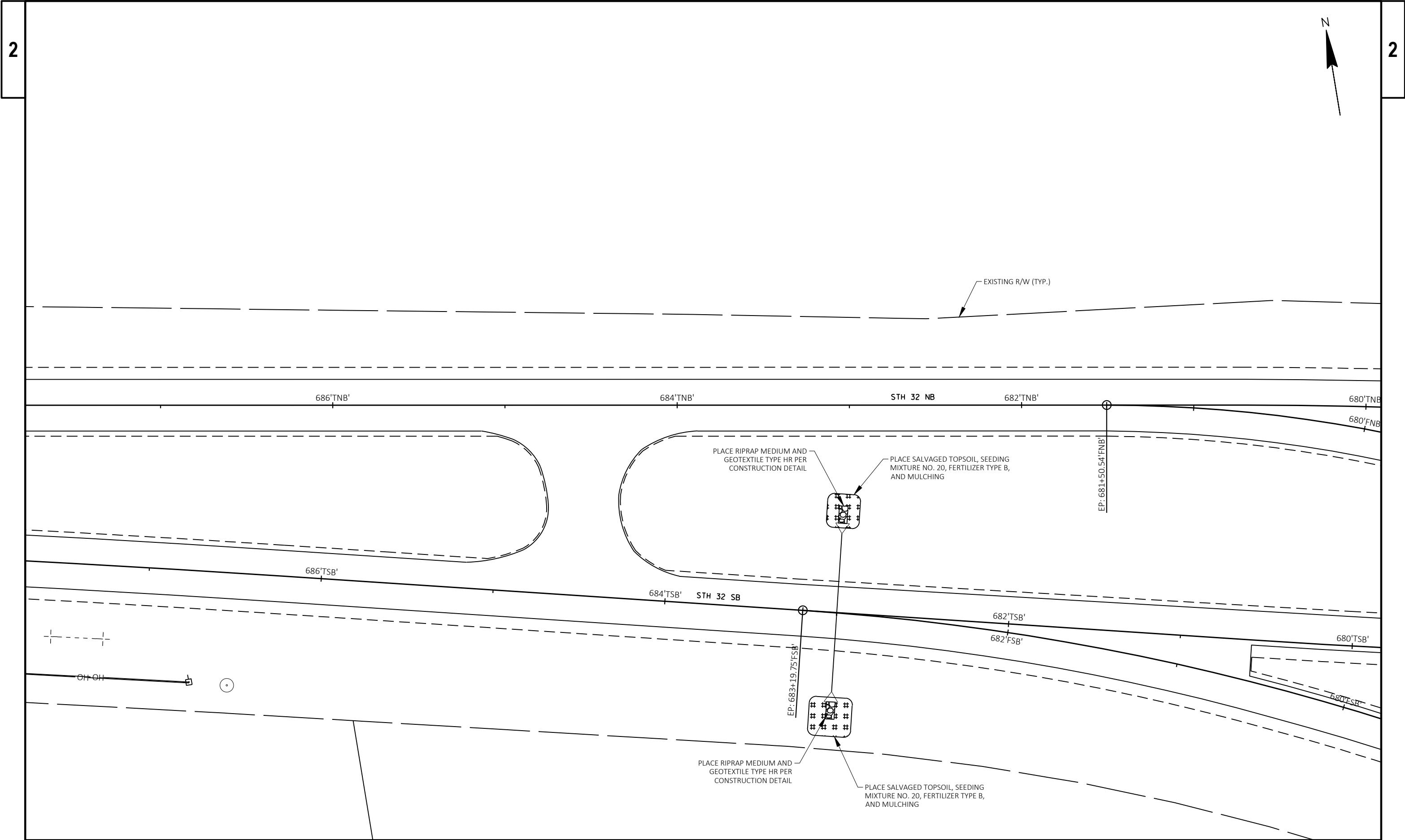


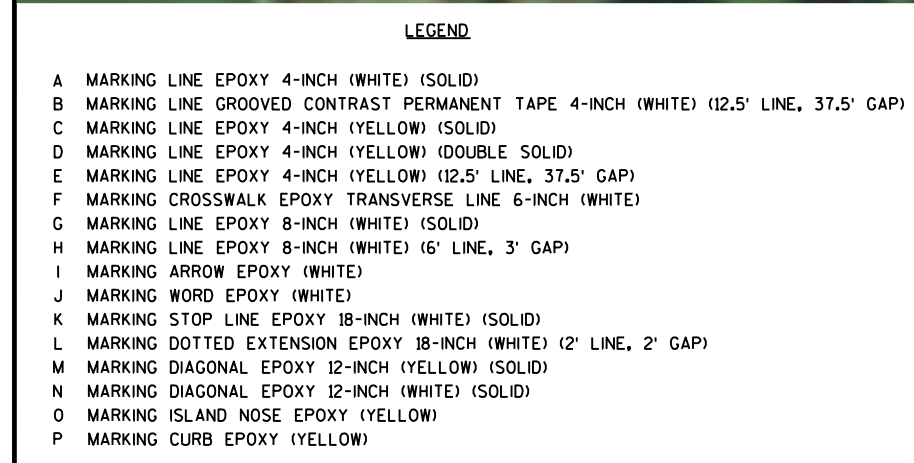


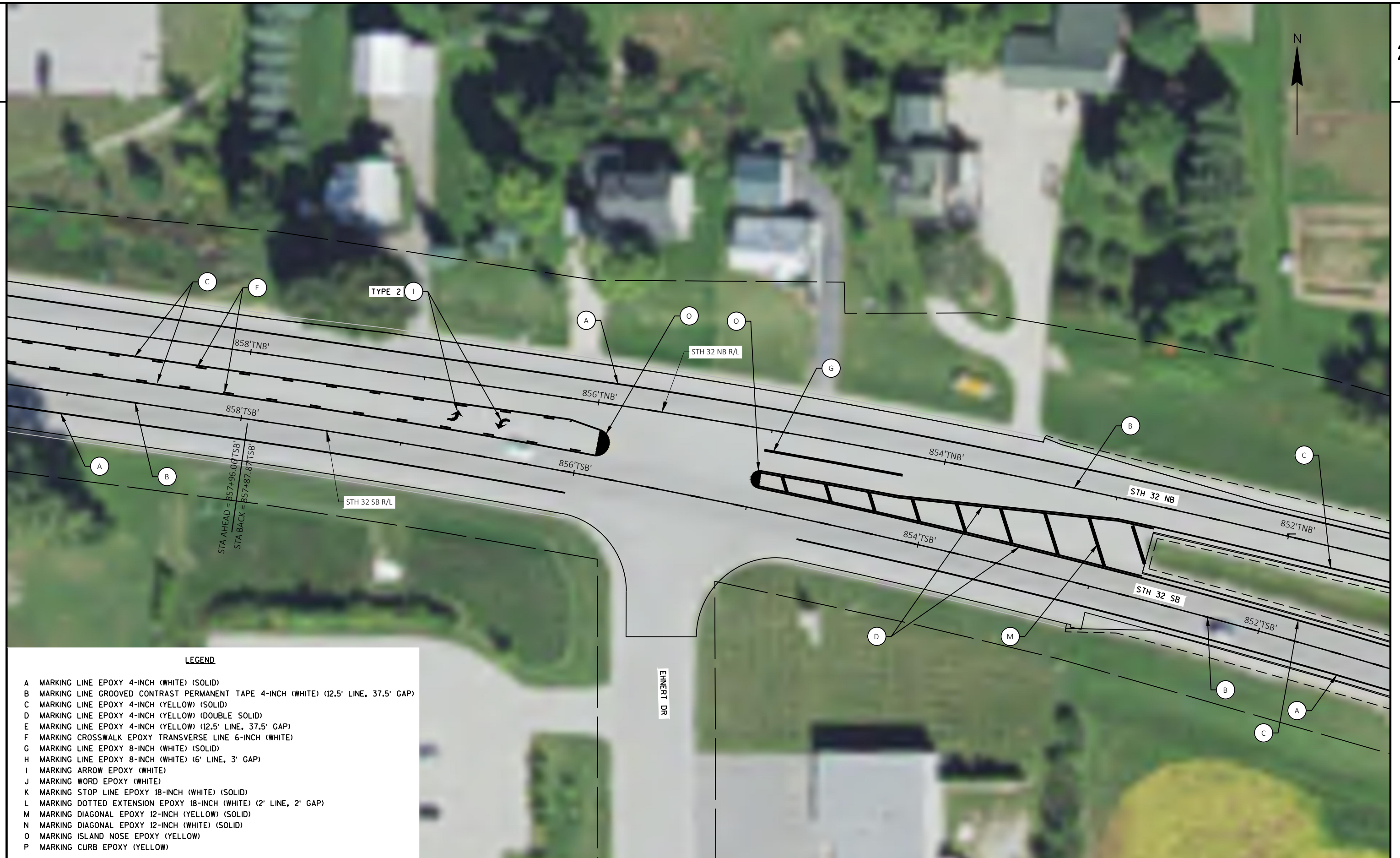


PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	EROSION CONTROL	SHEET	E
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PROJECT NO: 4085-48-71

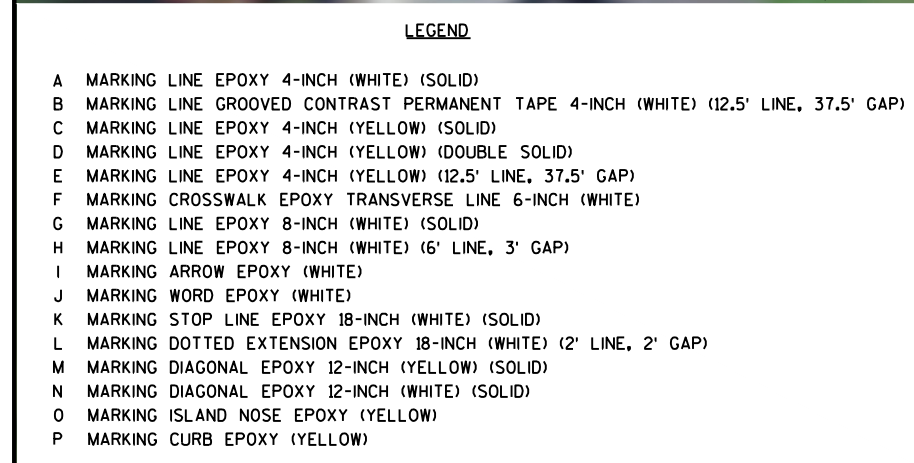
HWY: STH 32

COUNTY: MANITOWOC

PAVEMENT MARKING

SHEET

E



LEGEND

- A MARKING LINE EPOXY 4-INCH (WHITE) (SOLID)
- B MARKING LINE GROOVED CONTRAST PERMANENT TAPE 4-INCH (WHITE) (12.5' LINE, 37.5' GAP)
- C MARKING LINE EPOXY 4-INCH (YELLOW) (SOLID)
- D MARKING LINE EPOXY 4-INCH (YELLOW) (DOUBLE SOLID)
- E MARKING LINE EPOXY 4-INCH (YELLOW) (12.5' LINE, 37.5' GAP)
- F MARKING CROSSWALK EPOXY TRANSVERSE LINE 6-INCH (WHITE)
- G MARKING LINE EPOXY 8-INCH (WHITE) (SOLID)
- H MARKING LINE EPOXY 8-INCH (WHITE) (6' LINE, 3' GAP)
- I MARKING ARROW EPOXY (WHITE)
- J MARKING WORD EPOXY (WHITE)
- K MARKING STOP LINE EPOXY 18-INCH (WHITE) (SOLID)
- L MARKING DOTTED EXTENSION EPOXY 18-INCH (WHITE) (2' LINE, 2' GAP)
- M MARKING DIAGONAL EPOXY 12-INCH (YELLOW) (SOLID)
- N MARKING DIAGONAL EPOXY 12-INCH (WHITE) (SOLID)
- O MARKING ISLAND NOSE EPOXY (YELLOW)
- P MARKING CURB EPOXY (YELLOW)



PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	PAVEMENT MARKING	SHEET	E
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LEGEND

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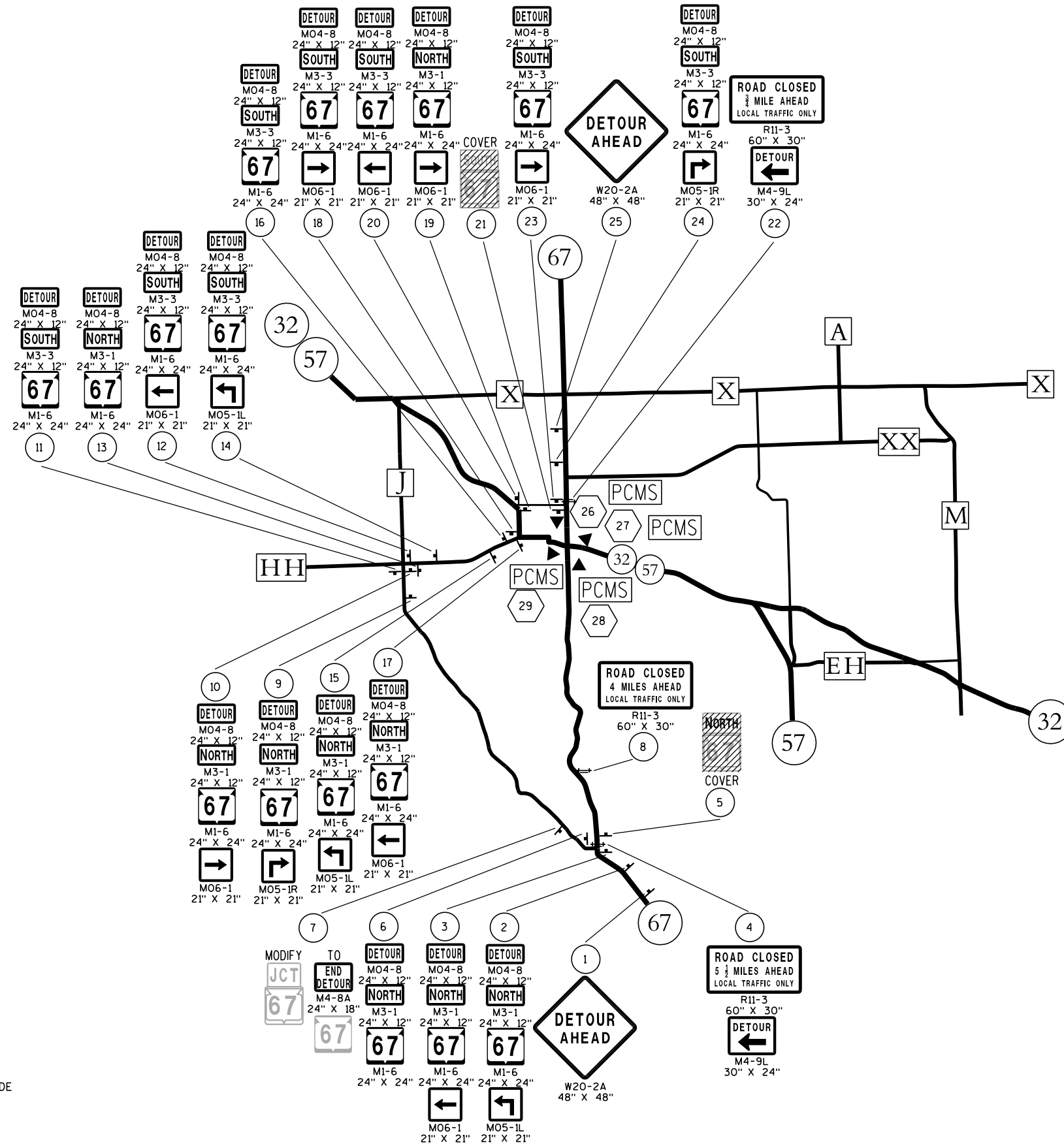


LEGEND

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PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	PAVEMENT MARKING	SHEET	E
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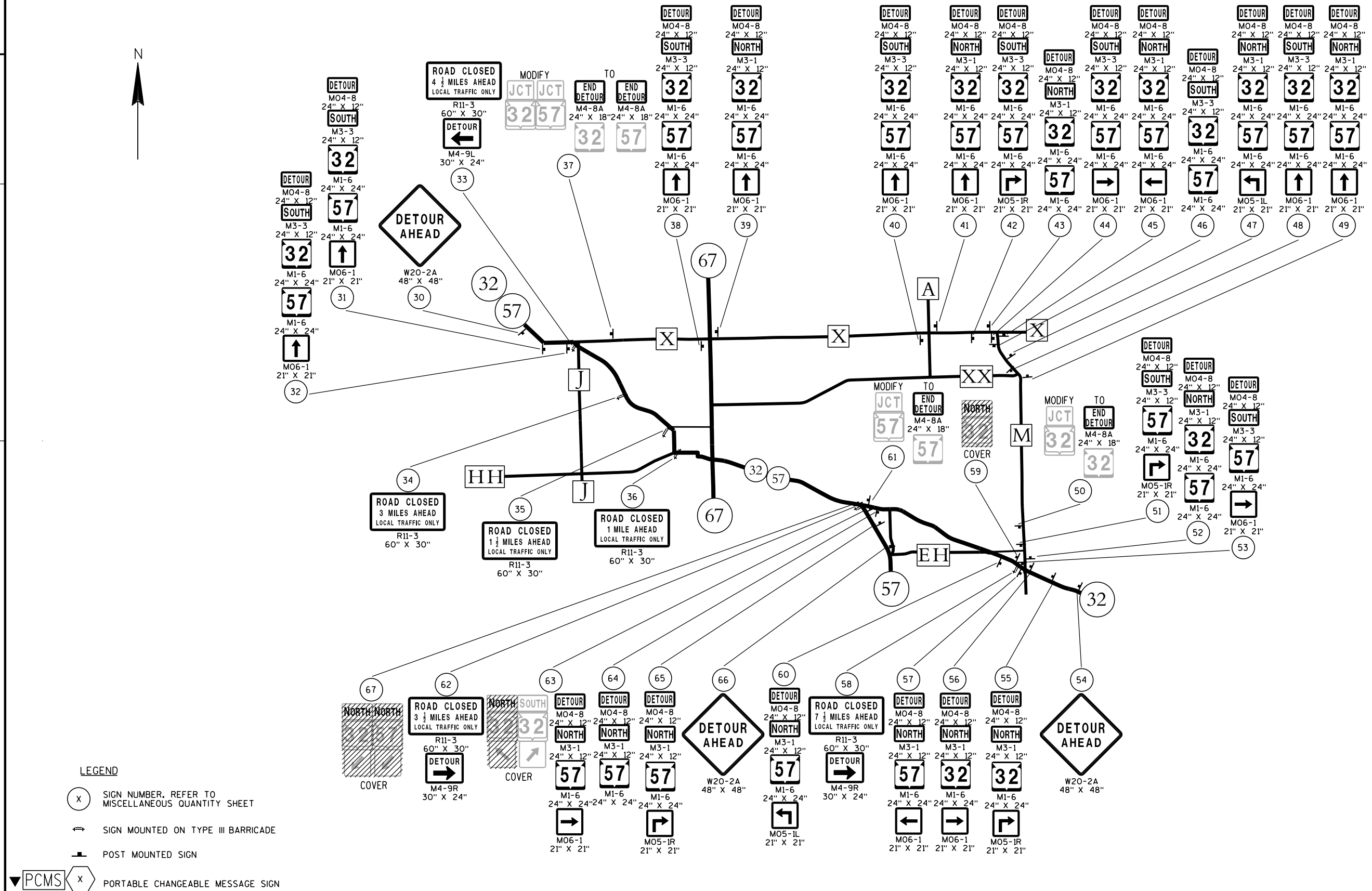


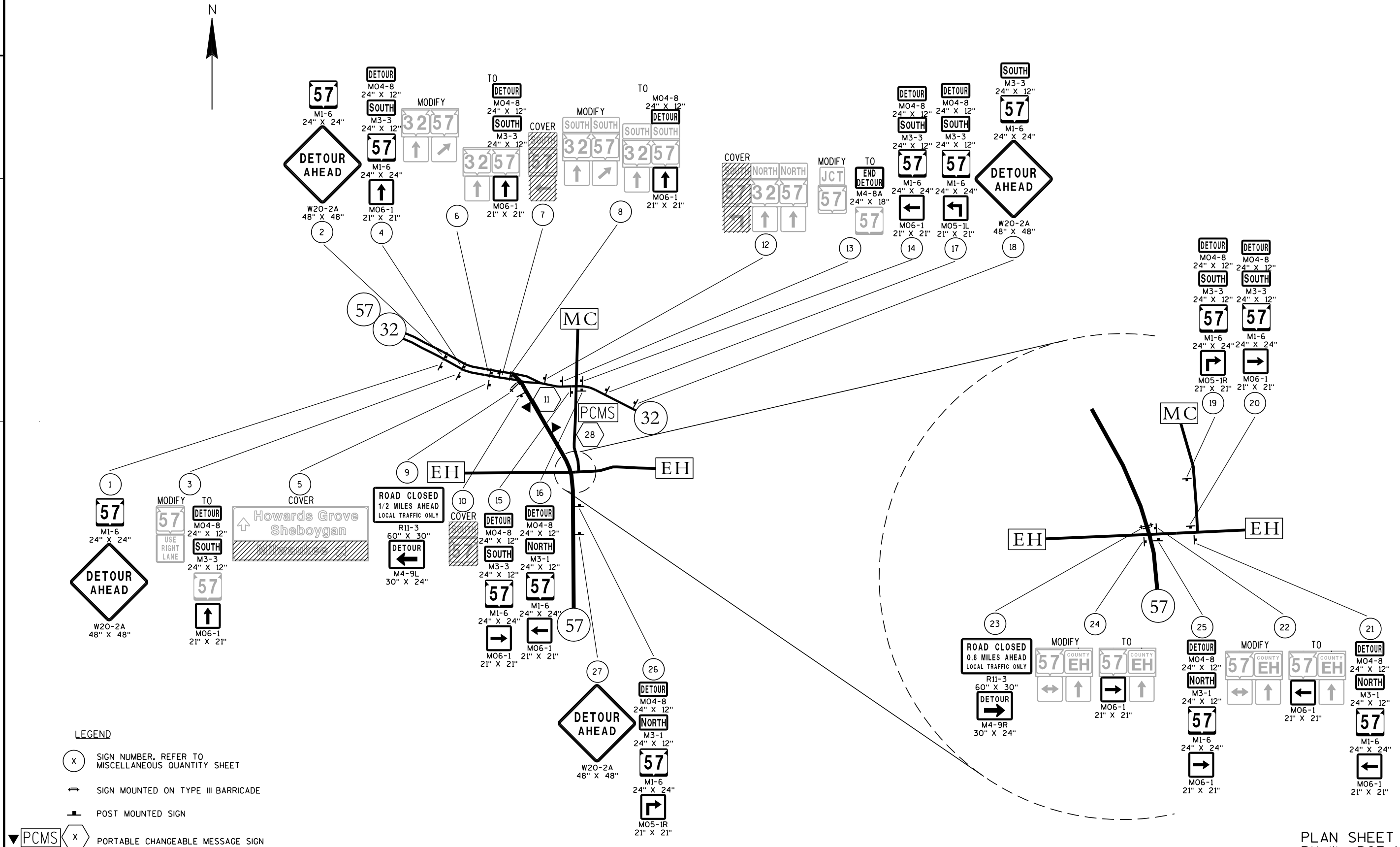


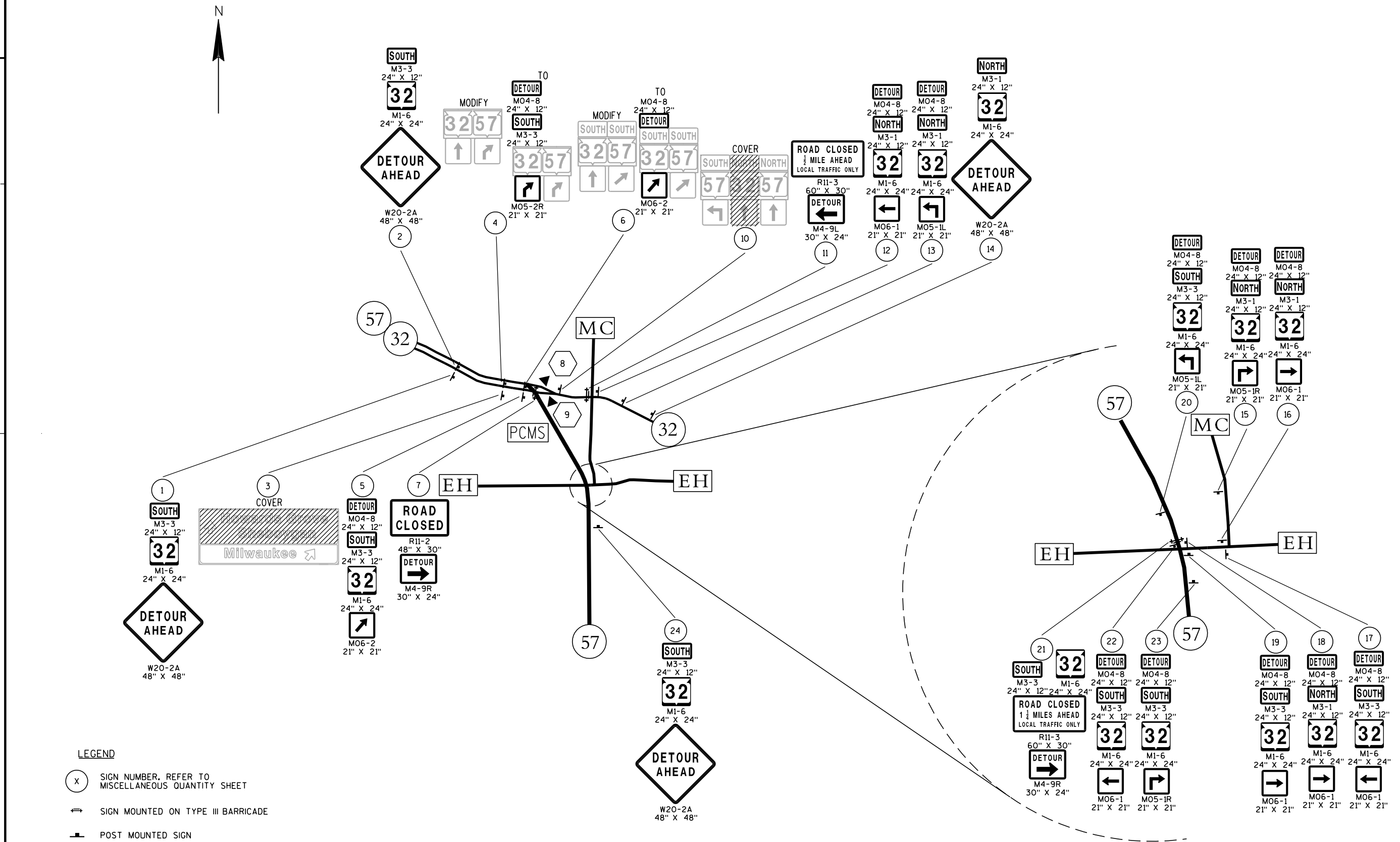
LEGEND

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

PLAN SHEET PRODUCED
BY WISDOT-NE REGION







Estimate Of Quantities

4085-48-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0120	Clearing	ID	16.000	16.000
0004	201.0220	Grubbing	ID	16.000	16.000
0006	204.0110	Removing Asphaltic Surface	SY	128.000	128.000
0008	204.0115	Removing Asphaltic Surface Butt Joints	SY	208.000	208.000
0010	204.0120	Removing Asphaltic Surface Milling	SY	161,318.000	161,318.000
0012	204.0150	Removing Curb & Gutter	LF	282.000	282.000
0014	204.0165	Removing Guardrail	LF	3,161.000	3,161.000
0016	204.0190	Removing Surface Drains	EACH	5.000	5.000
0018	204.9060.S	Removing (item description) 01. Apron Endwall	EACH	2.000	2.000
0020	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 4085-48-71	LS	1.000	1.000
0022	211.0400	Prepare Foundation for Asphaltic Shoulders	STA	728.000	728.000
0024	213.0100	Finishing Roadway (project) 01. 4085-48-71	EACH	1.000	1.000
0026	305.0110	Base Aggregate Dense 3/4-Inch	TON	4,825.000	4,825.000
0028	390.0303	Base Patching Concrete	SY	713.000	713.000
0030	416.0620	Drilled Dowel Bars	EACH	1,426.000	1,426.000
0032	455.0605	Tack Coat	GAL	15,700.000	15,700.000
0034	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	2.000	2.000
0036	460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH	2.000	2.000
0038	460.2005	Incentive Density PWL HMA Pavement	DOL	25,110.000	25,110.000
0040	460.2007	Incentive Density HMA Pavement Longitudinal Joints	DOL	18,180.000	18,180.000
0042	460.2010	Incentive Air Voids HMA Pavement	DOL	34,950.000	34,950.000
0044	460.6223	HMA Pavement 3 MT 58-28 S	TON	18,360.000	18,360.000
0046	460.6224	HMA Pavement 4 MT 58-28 S	TON	15,731.000	15,731.000
0048	460.6424	HMA Pavement 4 MT 58-28 H	TON	855.000	855.000
0050	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	50.000	50.000
0052	465.0400	Asphaltic Shoulder Rumble Strips	LF	64,567.000	64,567.000
0054	465.0450	Asphaltic Intersection Rumble Strips	SY	33.000	33.000
0056	520.1018	Apron Endwalls for Culvert Pipe 18-Inch	EACH	6.000	6.000
0058	520.1024	Apron Endwalls for Culvert Pipe 24-Inch	EACH	4.000	4.000
0060	520.9700.S	Culvert Pipe Liners (size) 01. 18-Inch	LF	92.000	92.000
0062	520.9700.S	Culvert Pipe Liners (size) 02. 24-Inch	LF	81.000	81.000
0064	520.9750.S	Cleaning Culvert Pipes for Liner Verification	EACH	2.000	2.000
0066	521.3118	Culvert Pipe Corrugated Steel 18-Inch	LF	174.000	174.000
0068	606.0200	Riprap Medium	CY	37.000	37.000
0070	614.0010	Barrier System Grading Shaping Finishing	EACH	6.000	6.000
0072	614.0200	Steel Thrie Beam Structure Approach	LF	84.000	84.000
0074	614.0220	Steel Thrie Beam Bullnose Terminal	EACH	2.000	2.000
0076	614.0230	Steel Thrie Beam	LF	351.000	351.000
0078	614.0397	Guardrail Mow Strip Emulsified Asphalt	SY	625.000	625.000
0080	614.2300	MGS Guardrail 3	LF	960.000	960.000
0082	614.2330	MGS Guardrail 3 K	LF	1,226.000	1,226.000
0084	614.2350	MGS Guardrail Short Radius	LF	114.000	114.000
0086	614.2500	MGS Thrie Beam Transition	LF	156.000	156.000
0088	614.2610	MGS Guardrail Terminal EAT	EACH	2.000	2.000
0090	614.2620	MGS Guardrail Terminal Type 2	EACH	3.000	3.000
0092	614.2630	MGS Guardrail Short Radius Terminal	EACH	3.000	3.000
0094	618.0100	Maintenance And Repair of Haul Roads (project) 01. 4085-48-71	EACH	1.000	1.000
0096	619.1000	Mobilization	EACH	1.000	1.000
0098	624.0100	Water	MGAL	24.000	24.000

4085-48-71

Line	Item	Item Description	Unit	Total	Qty
0100	625.0500	Salvaged Topsoil	SY	330.000	330.000
0102	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0104	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0106	628.2004	Erosion Mat Class I Type B	SY	330.000	330.000
0108	629.0210	Fertilizer Type B	CWT	0.210	0.210
0110	630.0120	Seeding Mixture No. 20	LB	8.900	8.900
0112	630.0500	Seed Water	MGAL	7.400	7.400
0114	633.5200	Markers Culvert End	EACH	35.000	35.000
0116	634.0614	Posts Wood 4x6-Inch X 14-FT	EACH	8.000	8.000
0118	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	2.000	2.000
0120	638.2102	Moving Signs Type II	EACH	11.000	11.000
0122	638.4000	Moving Small Sign Supports	EACH	2.000	2.000
0124	642.5001	Field Office Type B	EACH	1.000	1.000
0126	643.0300	Traffic Control Drums	DAY	22,500.000	22,500.000
0128	643.0420	Traffic Control Barricades Type III	DAY	2,117.000	2,117.000
0130	643.0705	Traffic Control Warning Lights Type A	DAY	4,234.000	4,234.000
0132	643.0715	Traffic Control Warning Lights Type C	DAY	1,400.000	1,400.000
0134	643.0800	Traffic Control Arrow Boards	DAY	200.000	200.000
0136	643.0900	Traffic Control Signs	DAY	6,152.000	6,152.000
0138	643.0920	Traffic Control Covering Signs Type II	EACH	11.000	11.000
0140	643.1050	Traffic Control Signs PCMS	DAY	112.000	112.000
0142	643.5000	Traffic Control	EACH	1.000	1.000
0144	645.0120	Geotextile Type HR	SY	129.000	129.000
0146	646.1020	Marking Line Epoxy 4-Inch	LF	69,428.000	69,428.000
0148	646.1555	Marking Line Grooved Contrast Permanent Tape 4-Inch	LF	9,123.000	9,123.000
0150	646.3020	Marking Line Epoxy 8-Inch	LF	80.000	80.000
0152	646.4520	Marking Line Same Day Epoxy 4-Inch	LF	16,940.000	16,940.000
0154	646.4620	Marking Line Same Day Epoxy 8-Inch	LF	2,255.000	2,255.000
0156	646.5020	Marking Arrow Epoxy	EACH	18.000	18.000
0158	646.5120	Marking Word Epoxy	EACH	4.000	4.000
0160	646.6120	Marking Stop Line Epoxy 18-Inch	LF	14.000	14.000
0162	646.6320	Marking Dotted Extension Epoxy 18-Inch	LF	197.000	197.000
0164	646.7120	Marking Diagonal Epoxy 12-Inch	LF	578.000	578.000
0166	646.7420	Marking Crosswalk Epoxy Transverse Line 6-Inch	LF	322.000	322.000
0168	646.8120	Marking Curb Epoxy	LF	40.000	40.000
0170	646.8220	Marking Island Nose Epoxy	EACH	6.000	6.000
0172	649.0105	Temporary Marking Line Paint 4-Inch	LF	66,546.000	66,546.000
0174	650.8000	Construction Staking Resurfacing Reference	LF	43,179.000	43,179.000
0176	650.9910	Construction Staking Supplemental Control (project) 01. 4085-48-71	LS	1.000	1.000
0178	652.0235	Conduit Rigid Nonmetallic Schedule 40 3-Inch	LF	10.000	10.000
0180	654.0220	Concrete Control Cabinet Bases Type 10	EACH	1.000	1.000
0182	656.0200	Electrical Service Meter Breaker Pedestal (location) 01. STH 32 at STH 57	LS	1.000	1.000
0184	690.0150	Sawing Asphalt	LF	913.000	913.000
0186	690.0250	Sawing Concrete	LF	2,171.000	2,171.000
0188	740.0440	Incentive IRI Ride	DOL	27,530.000	27,530.000
0190	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	2,000.000	2,000.000
0192	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	1,320.000	1,320.000

CLEARING & GRUBBING

CATEGORY	ROADWAY	STATION	OFFSET	201.0120	201.0220
				CLEARING	GRUBBING
				ID	ID
0010	STH 32 NB	847'TNB'+41	RT	4	4
0010	STH 32 NB	847'TNB'+45	RT	4	4
0010	STH 32 NB	847'TNB'+51	RT	4	4
0010	STH 32 NB	847'TNB'+53	RT	4	4
PROJECT TOTALS				16	16

REMOVING CURB & GUTTER

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	204.0150
						REMOVING CURB & GUTTER
						LF
0010	STH 32 NB	729'TNB'+42	-	729'TNB'+93	RT	70
0010	STH 32 NB	729'TNB'+59	-	729'TNB'+94	LT	75
0010	STH 32 NB	733'TNB'+45	-	733'TNB'+75	LT	69
0010	STH 32 SB	733'TSB'+10	-	733'TSB'+45	LT	68
PROJECT TOTALS						282

REMOVING GUARDRAIL

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	204.0165
						REMOVING GUARDRAIL
						LF
0010	STH 32 SB	692'TSB'+95	-	693'TSB'+72	LT	78
0010	STH 32 SB	694'TSB'+11	-	697'TSB'+51	LT	341
0010	STH 32 SB	698'TSB'+27	-	709'TSB'+43	LT	1,139
0010	STH 32 SB	728'TSB'+39	-	731'TSB'+21	LT	281
0010	STH 32 SB	730'TSB'+01	-	731'TSB'+20	RT	119
0010	STH 32 NB	729'TNB'+82	-	731'TNB'+25	LT	144
0010	STH 32 NB	729'TNB'+93	-	731'TNB'+25	RT	132
0010	STH 32 SB	732'TSB'+02	-	733'TSB'+08	LT	107
0010	STH 32 SB	732'TSB'+02	-	733'TSB'+45	RT	144
0010	STH 32 NB	732'TNB'+08	-	733'TNB'+39	LT	132
0010	STH 32 NB	732'TNB'+08	-	737'TNB'+52	RT	544
PROJECT TOTALS						3,161

REMOVING ASPHALTIC SURFACE BUTT JOINTS

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	204.0115	REMARKS
						REMOVING ASPHALTIC SURFACE BUTT JOINTS	
						SY	
0010	STH 32 NB	663'TNB'+48	-	663'TNB'+50	LT & RT	9	
0010	STH 57	669'FNB'+67	-	669'FNB'+69	LT & RT	13	
0010	STH 32 SB	689'TSB'+24	-	689'TSB'+48	LT	5	DRIVEWAY
0010	STH 32 SB	690'TSB'+26	-	690'TSB'+60	LT	8	DRIVEWAY
0010	STH 32 SB	692'TSB'+27	-	692'TSB'+66	LT	9	DRIVEWAY
0010	STH 32 SB	697'TSB'+68	-	698'TSB'+26	LT	13	DRIVEWAY
0010	STH 32 NB	700'TNB'+90	-	701'TNB'+20	RT	7	DRIVEWAY
0010	STH 32 NB	701'TNB'+60	-	701'TNB'+87	RT	6	DRIVEWAY
0010	STH 32 NB	729'TNB'+09	-	729'TNB'+38	RT	7	LAX CHAPEL RD
0010	STH 32 SB	731'TSB'+22	-	731'TSB'+22	LT & RT	9	STRUCTURE B-36-137
0010	STH 32 NB	731'TNB'+26	-	731'TNB'+26	LT & RT	9	STRUCTURE B-36-11
0010	STH 32 SB	732'TSB'+00	-	732'TSB'+00	LT & RT	9	STRUCTURE B-36-137
0010	STH 32 NB	732'TNB'+07	-	732'TNB'+07	LT & RT	9	STRUCTURE B-36-11
0010	STH 32 SB	733'TSB'+41	-	733'TSB'+66	LT	6	LAX CHAPEL RD
0010	STH 32 SB	742'TSB'+21	-	742'TSB'+37	LT	4	DRIVEWAY
0010	STH 32 SB	754'TSB'+91	-	755'TSB'+17	LT	6	LITTLE ELKHART LAKE RD
0010	STH 32 NB	756'TNB'+32	-	756'TNB'+54	RT	5	LITTLE ELKHART LAKE RD
0010	STH 32 SB	757'TSB'+82	-	757'TSB'+99	LT	4	DRIVEWAY
0010	STH 32 NB	779'TNB'+40	-	780'TNB'+09	RT	15	DRIVEWAY
0010	STH 32 SB	809'TSB'+91	-	810'TSB'+18	LT	6	CEMETERY RD
0010	STH 32 NB	810'TNB'+76	-	811'TNB'+07	RT	8	CEMETERY RD
0010	STH 32 SB	822'TSB'+12	-	822'TSB'+22	LT	5	MUELLER RD
0010	STH 32 SB	855'TSB'+12	-	855'TSB'+52	LT	9	EHNERT DRIVE
0010	STH 67	14'SR'+46	-	14'SR'+48	LT & RT	9	
0010	STH 67	21'SR'+98	-	22'SR'+00	LT & RT	9	
0010	STH 32	872'TR'+76	-	872'TR'+78	LT & RT	9	
PROJECT TOTALS						208	

REMOVING ASPHALTIC SURFACE

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	204.0110	204.0120	REMARKS
						REMOVING ASPHALTIC SURFACE SY	REMOVING ASPHALTIC SURFACE MILLING SY	
0010	STH 32 NB	663'TNB'+48	-	681'TNB'+50	LT & RT	-	4,668	3" MILL - CONNECTOR
0010	STH 32 NB	663'TNB'+48	-	852'TNB'+75	RT	-	138	2" MILL - DRIVEWAYS
0010	STH 32 SB	663'TSB'+48	-	852'TSB'+73	LT	-	233	2" MILL - DRIVEWAYS
0010	STH 32 SB	666'TSB'+69	-	683'TSB'+20	LT & RT	-	3,747	3" MILL - CONNECTOR
0010	STH 32 SB-57 SB	672'FSB'+45	-	683'FSB'+20	LT & RT	-	2,902	3" MILL - CONNECTOR
0010	STH 57 NB-32 NB	669'FNB'+67	-	681'FNB'+51	LT & RT	-	3,291	3" MILL - CONNECTOR
0010	STH 57 NB - 32 SB RT	0'TSR'+00	-	3'TSR'+11	LT & RT	-	724	3" MILL - CONNECTOR
0010	STH 32 NB	681'TNB'+51	-	731'TNB'+26	LT & RT	-	17,253	3" MILL - MAINLINE; 2" MILL - SIDE ROADS
0010	STH 32 SB	683'TSB'+20	-	731'TSB'+21	LT & RT	-	19,523	3" MILL - MAINLINE; 2" MILL - CROSSTOVERS & SIDE ROADS
0010	STH 32 SB	732'TSB'+01	-	852'TSB'+73	LT & RT	-	47,464	3" MILL - MAINLINE; 2" MILL - CROSSTOVERS & SIDE ROADS
0010	STH 32 NB	732'TNB'+07	-	852'TNB'+75	LT & RT	-	42,550	3" MILL - MAINLINE; 2" MILL - SIDE ROADS
0010	STH 32 NB	849'TNB'+68	-	851'TNB'+11	RT	128	-	DRIVEWAY
0010	STH 32 NB	852'TNB'+75	-	860'TNB'+00	LT & RT	-	7,408	2" MILL - MAINLINE
0010	STH 32	860'TR'+00	-	872'TR'+78	LT & RT	-	11,417	2" MILL - ROUNDABOUT
PROJECT TOTALS						128	161,318	

REMOVING SURFACE DRAINS

CATEGORY	ROADWAY	STATION	OFFSET	204.0190
				REMOVING SURFACE DRAINS EACH
0010	STH 32 NB	729'TNB'+46	RT	1
0010	STH 32 NB	729'TNB'+95	RT	1
0010	STH 32 SB	729'TSB'+99	RT	1
0010	STH 32 SB	733'TSB'+31	LT	1
0010	STH 32 SB	733'TSB'+40	RT	1
PROJECT TOTALS				5

REMOVING APRON ENDWALL

CATEGORY	ROADWAY	STATION	OFFSET	204.9060.S
				REMOVING APRON ENDWALL EACH
0010	STH 32 NB	730'TNB'+03	LT	1
0010	STH 32 NB	733'TNB'+45	LT	1
PROJECT TOTALS				2

PREPARE FOUNDATION FOR ASPHALTIC PAVING

CATEGORY	PROJECT	211.0100
		PREPARE FOUNDATION FOR ASPHALTIC PAVING (PROJECT) LS
0010	4085-48-71	1
PROJECT TOTALS		1

BASE AGGREGATE

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	305.0110	624.0100	REMARKS
						BASE AGGREGATE DENSE 3/4-INCH	WATER	
						TON	MGAL	
0010	STH 32 NB	663'TNB'+48	-	681'TNB'+50	LT & RT	225	1.1	LT & RT SHOULDER
0010	STH 32 SB	663'TSB'+48	-	683'TSB'+20	LT & RT	214	1.1	LT & RT SHOULDER
0010	STH 32 SB-57 SB	672'FSB'+45	-	683'FSB'+20	LT & RT	175	0.9	LT & RT SHOULDER
0010	STH 57 NB-32 NB	669'FNB'+67	-	681'FNB'+51	LT & RT	154	0.8	LT & RT SHOULDER
0010	STH 57 NB - 32 SB RT	0'TSR'+00	-	3'TSR'+11	LT & RT	42	0.2	LT & RT SHOULDER
0010	STH 32 NB	681'TNB'+51	-	731'TNB'+26	LT & RT	591	3.0	LT & RT SHOULDER
0010	STH 32 SB	683'TSB'+20	-	731'TSB'+21	LT & RT	454	2.3	LT & RT SHOULDER
0010	STH 32 NB	729'TNB'+41	-	729'TNB'+93	RT	15	0.1	LAX CHAPEL NW QUADRANT
0010	STH 32 NB	729'TNB'+60	-	730'TNB'+83	LT	44	0.2	MEDIAN
0010	STH 32 SB	732'TSB'+01	-	852'TSB'+73	LT & RT	1,449	7.2	LT & RT SHOULDER
0010	STH 32 NB	732'TNB'+73	-	733'TNB'+75	LT	47	0.2	MEDIAN
0010	STH 32 SB	733'TSB'+09	-	733'TSB'+46	LT	15	0.1	LAX CHAPEL SE QUADRANT
0010	STH 32 NB	849'TNB'+68	-	851'TNB'+11	RT	32	0.2	DRIVEWAY
0010	STH 32 NB	732'TNB'+07	-	852'TNB'+75	LT & RT	1,368	6.8	LT & RT SHOULDER
PROJECT TOTALS						4,825	24	

FINISHING ROADWAY

CATEGORY	PROJECT	213.0100
		FINISHING ROADWAY (PROJECT)
		EACH
0010	4085-48-71	1
PROJECT TOTALS		1

PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	211.0400
						PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS
						STA
0010	STH 32 NB	663'TNB'+48	-	852'TNB'+75	LT & RT	339
0010	STH 32 SB	663'TSB'+48	-	852'TSB'+73	LT & RT	343
0010	STH 32 SB-57 SB	672'FSB'+45	-	683'FSB'+20	LT & RT	22
0010	STH 57 NB-32 NB	669'FNB'+67	-	681'FNB'+51	LT & RT	19
0010	STH 57 NB - 32 SB RT	0'TSR'+00	-	3'TSR'+11	LT & RT	5
PROJECT TOTALS						728

ASPHALTIC SHOULDER RUMBLE STRIPS

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	465.0400
						ASPHALTIC SHOULDER RUMBLE STRIPS
						LF
0010	STH 32 NB	663'TNB'+48	-	852'TNB'+75	LT & RT	31,676
0010	STH 32 SB	677'TSB'+20	-	852'TSB'+73	LT & RT	28,928
0010	STH 32 SB-57 SB	672'FSB'+45	-	683'FSB'+20	LT & RT	2,138
0010	STH 57 NB-32 NB	669'FNB'+67	-	681'FNB'+51	LT & RT	1,825
PROJECT TOTALS						64,567

ASPHALTIC INTERSECTION RUMBLE STRIPS

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	465.0450
						ASPHALTIC INTERSECTION RUMBLE STRIPS
						SY
0010	STH 57 NB-32 NB	671'FNB'+05	-	671'FNB'+30	LT	33
PROJECT TOTALS						33

CONCRETE BASE PATCHING

CATEGORY	ROADWAY	STATION	OFFSET	390.0303	416.0620	690.0250	REMARKS
				BASE	DRILLED DOWEL BARS	SAWING CONCRETE	
				PATCHING CONCRETE			
				SY	EACH	LF	
0010	STH 32 NB	682'TNB'+64	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	687'TNB'+63	LT	8	16	30	6-FT X 12-FT
0010	STH 32 NB	704'TNB'+59	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	716'TNB'+03	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	721'TNB'+01	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	723'TNB'+30	LT	8	16	30	6-FT X 12-FT
0010	STH 32 NB	736'TNB'+32	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	749'TNB'+08	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	756'TNB'+68	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	761'TNB'+56	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	767'TNB'+31	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	774'TNB'+31	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	781'TNB'+14	RT	8	16	30	6-FT X 12-FT
0010	STH 32 NB	789'TNB'+12	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	794'TNB'+77	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	798'TNB'+32	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	802'TNB'+50	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 NB	843'TNB'+88	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	758'TSB'+76	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	766'TSB'+78	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	774'TSB'+84	RT	8	16	30	6-FT X 12-FT
0010	STH 32 SB	778'TSB'+84	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	781'TSB'+81	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	782'TSB'+81	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	792'TSB'+40	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	798'TSB'+44	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	801'TSB'+45	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	802'TSB'+44	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	804'TSB'+92	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	806'TSB'+46	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	807'TSB'+45	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	808'TSB'+45	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	808'TSB'+96	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	814'TSB'+33	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	817'TSB'+37	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	822'TSB'+39	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	824'TSB'+38	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	828'TSB'+87	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	829'TSB'+84	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	831'TSB'+84	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	840'TSB'+05	RT	8	16	30	6-FT X 12-FT
0010	STH 32 SB	842'TSB'+34	LT & RT	16	32	48	6-FT X 24-FT
0010	STH 32 SB	848'TSB'+48	LT & RT	16	32	48	6-FT X 24-FT
UNDISTRIBUTED				65	130	197	
PROJECT TOTALS				713	1,426	2,171	

HMA ITEMS													
						455.0605	460.0105.S	460.0110.S	460.6223	460.6224	460.6424	465.0120	
						TACK	HMA PWL TEST	HMA PWL	HMA	HMA	HMA	ASPHALTIC	
						COAT	STRIP	TEST STRIP	PAVEMENT	PAVEMENT	PAVEMENT	SURFACE	
							VOLUMETRICS	DENSITY	3 MT 58-28 S	4 MT 58-28 S	4 MT 58-28 H	DRIVEWAYS AND	
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	GAL	EACH	EACH	TON	TON	TON	TON	REMARKS
0010	STH 32 NB	663'TNB'+48	-	852'TNB'+75	LT	474	-	-	-	826	-	-	CROSSOVERS
0010	STH 32 NB	663'TNB'+48	-	681'TNB'+50	LT & RT	321	-	-	364	262	-	-	MAINLINE
0010	STH 32 NB	663'TNB'+48	-	681'TNB'+50	LT & RT	61	-	-	182	124	-	-	SHOULDERS
0010	STH 32 SB	663'TSB'+48	-	683'TSB'+20	LT & RT	363	-	-	411	296	-	-	MAINLINE
0010	STH 32 SB	663'TSB'+48	-	683'TSB'+20	LT & RT	70	-	-	204	141	-	-	SHOULDERS
0010	STH 32 SB-57 SB	672'FSB'+45	-	683'FSB'+20	LT & RT	226	-	-	257	185	-	-	MAINLINE
0010	STH 32 SB-57 SB	672'FSB'+45	-	683'FSB'+20	LT & RT	51	-	-	150	102	-	-	SHOULDERS
0010	STH 57 NB-32 NB	669'FNB'+67	-	681'FNB'+51	LT & RT	206	-	-	233	168	-	-	MAINLINE
0010	STH 57 NB-32 NB	669'FNB'+67	-	681'FNB'+51	LT & RT	79	-	-	225	157	-	-	SHOULDERS
0010	STH 57 NB - 32 SB RT	0'TSR'+00	-	3'TSR'+11	LT & RT	64	-	-	73	52	-	-	MAINLINE
0010	STH 57 NB - 32 SB RT	0'TSR'+00	-	3'TSR'+11	LT & RT	9	-	-	29	19	-	-	SHOULDERS
0010	STH 32 NB	681'TNB'+51	-	731'TNB'+26	LT & RT	1,592	-	-	1,804	1,300	-	-	MAINLINE
0010	STH 32 NB	681'TNB'+51	-	731'TNB'+26	LT & RT	178	-	-	534	361	-	-	SHOULDERS
0010	STH 32 NB	681'TNB'+51	-	731'TNB'+26	LT & RT	30	-	-	-	52	-	-	SIDE ROADS
0010	STH 32 SB	683'TSB'+20	-	731'TSB'+21	LT & RT	1,536	-	-	1,741	1,255	-	-	MAINLINE
0010	STH 32 SB	683'TSB'+20	-	731'TSB'+21	LT & RT	242	-	-	695	483	-	-	SHOULDERS
0010	STH 32 SB	689'TSB'+19	-	690'TSB'+62	LT	5	-	-	-	-	-	9	DRIVEWAYS
0010	STH 32 SB	692'TSB'+25	-	692'TSB'+80	LT	5	-	-	-	-	-	9	DRIVEWAY
0010	STH 32 SB	697'TSB'+61	-	698'TSB'+27	LT	5	-	-	-	-	-	8	DRIVEWAY
0010	STH 32 NB	700'TNB'+85	-	701'TNB'+92	RT	6	-	-	-	-	-	9	DRIVEWAYS
0010	STH 32 NB	729'TNB'+41	-	729'TNB'+93	RT	2	-	-	7	5	-	-	LAX CHAPEL NW QUADRANT
0010	STH 32 NB	729'TNB'+60	-	730'TNB'+83	LT	6	-	-	22	14	-	-	MEDIAN
0010	STH 32 SB	732'TSB'+01	-	852'TSB'+73	LT & RT	3,862	2	2	4,377	3,154	-	-	MAINLINE
0010	STH 32 SB	732'TSB'+01	-	852'TSB'+73	LT & RT	419	-	-	1,247	847	-	-	SHOULDERS
0010	STH 32 SB	732'TSB'+01	-	852'TSB'+73	LT & RT	143	-	-	-	250	-	-	SIDE ROADS
0010	STH 32 NB	732'TNB'+07	-	852'TNB'+75	LT & RT	3,863	-	-	4,378	3,155	-	-	MAINLINE
0010	STH 32 NB	732'TNB'+07	-	852'TNB'+75	LT & RT	474	-	-	1,397	954	-	-	SHOULDERS
0010	STH 32 NB	732'TNB'+07	-	852'TNB'+75	LT & RT	70	-	-	-	121	-	-	SIDE ROADS
0010	STH 32 NB	732'TNB'+73	-	733'TNB'+75	LT	7	-	-	23	15	-	-	MEDIAN
0010	STH 32 SB	733'TSB'+09	-	733'TSB'+46	LT	2	-	-	8	5	-	-	LAX CHAPEL SE QUADRANT
0010	STH 32 SB	742'TSB'+17	-	742'TSB'+42	LT	2	-	-	-	-	-	3	DRIVEWAY
0010	STH 32 SB	757'TSB'+80	-	758'TSB'+04	LT	2	-	-	-	-	-	3	DRIVEWAY
0010	STH 32 NB	779'TNB'+33	-	780'TNB'+17	RT	6	-	-	-	-	-	9	DRIVEWAY
0010	STH 32 NB	852'TNB'+75	-	860'TNB'+00	LT & RT	271	-	-	-	473	-	-	MAINLINE
0010	STH 32 NB	852'TNB'+75	-	860'TNB'+00	LT & RT	247	-	-	-	431	-	-	SHOULDERS, MEDIAN, SIDE ROAD
0010	STH 32	860'TR'+00	-	864'TR'+89	LT & RT	182	-	-	-	317	-	-	MAINLINE
0010	STH 32	860'TR'+00	-	864'TR'+89	LT & RT	118	-	-	-	206	-	-	SHOULDERS & MEDIAN
0010	STH 32	864'TR'+89	-	872'TR'+78	LT & RT	499	-	-	-	-	855	-	ROUNDAABOUT
PROJECT TOTALS						15,700	2	2	18,360	15,731	855	50	

CULVERT AND ENDWALL ITEMS											
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	520.1018	520.1024	520.9700.S	520.9700.S	520.9750.S	521.3118
						APRON	APRON	CULVERT PIPE	CULVERT PIPE	CLEANING CULVERT	CULVERT PIPE
						ENDWALLS FOR	ENDWALLS FOR				
						18-INCH	24-INCH	18-INCH	24-INCH	VERIFICATION	STEEL 18-INCH
						EACH	EACH	LF	LF	EACH	LF
0010	STH 32 SB	683'TSB'+00	-	683'TSB'+00	LT & RT	2	-	92	-	1	-
0010	STH 32 NB	729'TNB'+98	-	730'TNB'+80	LT	1	-	-	-	-	82
0010	STH 32 NB	732'TNB'+57	-	733'TNB'+49	LT	1	-	-	-	-	92
0010	STH 32 SB	744'TSB'+44	-	744'TSB'+44	RT	-	1	-	-	-	-
0010	STH 32 NB	744'TNB'+46	-	744'TNB'+46	LT & RT	-	2	-	-	-	-
0010	STH 32 SB	744'TSB'+49	-	744'TSB'+49	RT	-	1	-	-	-	-
0010	STH 32 NB	755'TNB'+94	-	755'TNB'+94	RT	1	-	-	-	-	-
0010	STH 32 NB	771'TNB'+50	-	771'TNB'+50	RT	1	-	-	-	-	-
0010	STH 32 NB	847'TNB'+48	-	847'TNB'+48	LT & RT	-	-	-	81	1	-
PROJECT TOTALS						6	4	92	81	2	174

RIPRAP MEDIUM AND GEOTEXTILE TYPE HR							606.0200	645.0120
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	RIPRAP	GEOTEXTILE	
						MEDIUM	TYPE HR	
						CY	SY	
0010	STH 32 NB	683'TNB'+01	-	683'TNB'+06	RT	3	12	
0010	STH 32 SB	682'TSB'+98	-	683'TSB'+03	LT	3	12	
0010	STH 32 NB	730'TNB'+83	-	730'TNB'+93	LT	3	12	
0010	STH 32 NB	732'TNB'+44	-	732'TNB'+54	LT	3	12	
0010	STH 32 NB	744'TNB'+40	-	744'TNB'+52	LT & RT	10	30	
0010	STH 32 NB	755'TNB'+69	-	755'TNB'+78	RT	3	12	
0010	STH 32 NB	770'TNB'+47	-	770'TNB'+57	RT	3	12	
0010	STH 32 NB	814'TNB'+87	-	814'TNB'+97	RT	5	14	
0010	STH 32 NB	847'TNB'+41	-	847'TNB'+48	RT	4	13	
PROJECT TOTALS						37	129	

<u>MOBILIZATIONS EROSION CONTROL</u>			
CATEGORY	LOCATION	628.1905	628.1910
		MOBILIZATIONS	MOBILIZATIONS
		EROSION	EMERGENCY
		<u>CONTROL</u>	<u>EROSION CONTROL</u>
		EACH	EACH
0010	4085-48-71	4	2
PROJECT TOTALS		4	2

BARRIER SYSTEM GRADING SHAPING AND FINISHING

						614.0010 BARRIER SYSTEM GRADING SHAPING AND FINISHING	*EXCAVATION COMMON	*BORROW	*TOPSOIL	*FERTILIZER TYPE B	*SEEDING MIXTURE NO. 20	*EROSION MAT CLASS 1 TYPE B	*MULCHING
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	EACH	CY	CY	SY	CWT	LB	SY	SY
0010	STH 32 SB	694'TSB'+20	-	697'TSB'+47	LT	1	10	5	144	4.5	3.9	-	144
0010	STH 32 SB	698'TSB'+27	-	709'TSB'+68	LT	1	2	11	73	2.3	2.0	-	73
0010	STH 32 NB	729'TNB'+70	-	731'TNB'+29	LT	1	2	237	355	11.2	9.6	355	-
0010	STH 32 NB	729'TNB'+93	-	731'TNB'+17	RT	1	8	1	53	1.7	1.4	-	53
0010	STH 32 SB	731'TSB'+98	-	733'TSB'+35	LT	1	1	1	29	0.9	0.8	-	29
0010	STH 32 NB	732'TNB'+04	-	733'TNB'+62	LT	1	2	221	344	10.8	9.3	344	-
PROJECT TOTALS						6	25	476	998	31.4	26.9	699	299

NOTES:
*ITEMS & QUANTITIES LISTED FOR BID INFORMATION ONLY

MGS GUARDRAIL SUMMARY

						614.0200	614.0220	614.0230	614.0397	614.2300	614.2330	614.2350	614.2500	614.2610	614.2620	614.2630
						STEEL THRIE BEAM STRUCTURE APPROACH	STEEL THRIE BEAM BULLNOSE TERMINAL	STEEL THRIE BEAM	GUARDRAIL MOW STRIP EMULSIFIED ASPHALT	MGS GUARDRAIL 3	MGS GUARDRAIL 3 K	MGS GUARDRAIL SHORT RADIUS	MGS THRIE BEAM TRANSITION	MGS GUARDRAIL TERMINAL EAT	MGS GUARDRAIL TERMINAL TYPE 2	MGS GUARDRAIL SHORT RADIUS TERMINAL
CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	LF	EACH	LF	SY	LF	LF	LF	LF	EACH	EACH	EACH
0010	STH 32 SB	695'TSB'+82	-	697'TSB'+47	LT	-	-	-	-	113	-	-	-	1	1	-
0010	STH 32 SB	698'TSB'+27	-	709'TSB'+68	LT	-	-	-	331	266	825	16	-	1	-	1
0010	STH 32 SB	728'TSB'+35	-	731'TSB'+24	LT	-	-	-	74	100	150	-	39	-	1	-
0010	STH 32 NB	729'TNB'+70	-	731'TNB'+29	LT	42	1	171	47	-	-	-	-	-	-	-
0010	STH 32 NB	729'TNB'+93	-	731'TNB'+17	RT	-	-	-	-	128	-	61	39	-	-	1
0010	STH 32 SB	731'TSB'+98	-	733'TSB'+35	LT	-	-	-	39	28	63	37	39	-	-	1
0010	STH 32 NB	732'TNB'+04	-	733'TNB'+62	LT	42	1	180	52	-	-	-	-	-	-	-
0010	STH 32 NB	732'TNB'+04	-	737'TNB'+56	RT	-	-	-	82	325	188	-	39	-	1	-
PROJECT TOTALS						84	2	351	625	960	1,226	114	156	2	3	3

MARKERS CULVERT END

CATEGORY	ROADWAY	STATION	OFFSET	633.5200
				MARKERS CULVERT END EACH
0010	STH 32 SB	673'TSB'+05	LT	1
0010	STH 32 SB	683'TSB'+00	LT & RT	2
0010	STH 32 NB	684'TNB'+30	LT	1
0010	STH 32 NB	684'TNB'+90	LT	1
0010	STH 32 NB	689'TNB'+25	LT	1
0010	STH 32 NB	689'TNB'+95	LT	1
0010	STH 32 NB	693'TNB'+75	LT	1
0010	STH 32 NB	694'TNB'+45	LT	1
0010	STH 32 NB	697'TNB'+80	LT	1
0010	STH 32 NB	730'TNB'+80	LT	1
0010	STH 32 NB	732'TNB'+50	LT	1
0010	STH 32 NB	744'TNB'+46	LT & RT	2
0010	STH 32 SB	763'TSB'+64	LT & RT	2
0010	STH 32 NB	772'TNB'+00	RT	1
0010	STH 32 NB	780'TNB'+21	LT	1
0010	STH 32 NB	792'TNB'+90	LT	1
0010	STH 32 NB	797'TNB'+00	RT	1
0010	STH 32 NB	810'TNB'+05	LT	1
0010	STH 32 NB	810'TNB'+95	LT	1
0010	STH 32 SB	815'TSB'+00	LT & RT	2
0010	STH 32 NB	821'TNB'+10	LT	1
0010	STH 32 NB	821'TNB'+85	LT	1
0010	STH 32 NB	828'TNB'+05	LT & RT	2
0010	STH 32 SB	828'TSB'+05	LT	1
0010	STH 32 NB	832'TNB'+74	LT	1
0010	STH 32 NB	833'TNB'+28	LT	1
0010	STH 32 NB	846'TNB'+15	LT	1
0010	STH 32 NB	846'TNB'+75	LT	1
0010	STH 32 NB	847'TNB'+48	LT & RT	2
PROJECT TOTALS				35

EROSION CONTROL SUMMARY

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	625.0500	628.2004	629.0210	630.0120	630.0500
						SALVAGED TOPSOIL SY	EROSION MAT CLASS I TYPE B SY	FERTILIZER TYPE B CWT	SEEDING MIXTURE NO. 20 LB	SEED WATER MGAL
0010	STH 32 NB	682'TNB'+95	-	683'TNB'+12	RT	26	26	0.02	0.7	0.6
0010	STH 32 SB	682'TSB'+90	-	683'TSB'+13	LT	56	56	0.04	1.5	1.3
0010	STH 32 NB	744'TNB'+37	-	744'TNB'+56	LT & RT	62	62	0.04	1.7	1.4
0010	STH 32 NB	755'TNB'+61	-	755'TNB'+84	RT	34	34	0.02	0.9	0.8
0010	STH 32 NB	770'TNB'+41	-	770'TNB'+62	RT	32	32	0.02	0.9	0.7
0010	STH 32 NB	847'TNB'+33	-	847'TNB'+55	RT	54	54	0.03	1.5	1.2
UNDISTRIBUTED						66	66	0.04	1.8	1.5
PROJECT TOTALS						330	330	0.21	8.9	7.4

SIGNING

CATEGORY	ROADWAY	STATION	OFFSET	634.0614	634.0616	638.2102	638.4000
				POSTS WOOD 4X6-INCH X 14-FT EACH	POSTS WOOD 4X6-INCH X 16-FT EACH	MOVING SIGNS TYPE II EACH	MOVING SMALL SIGN SUPPORTS EACH
0010	STH 32 NB	729'TNB'+55	RT	1	1	4	1
0010	STH 32 NB	729'TNB'+88	LT	2	-	2	-
0010	STH 32 SB	733'TSB'+35	LT	1	1	4	1
0010	STH 32 NB	733'TNB'+54	LT	2	-	1	-
UNDISTRIBUTED				2	2	-	-
PROJECT TOTALS				8	2	11	2

TRAFFIC CONTROL SUMMARY

		643.0300		643.0420		643.0705		643.0715		643.0800		643.0900		643.1050			
		TRAFFIC CONTROL		TRAFFIC CONTROL BARRICADES		TRAFFIC CONTROL WARNING		TRAFFIC CONTROL WARNING		TRAFFIC CONTROL ARROW		TRAFFIC CONROL		TRAFFIC CONROL			
		DURATION	DRUMS		TYPE III		LIGHTS TYPE A		LIGHTS TYPE C		BOARDS		SIGNS		SIGNS PCMS		
CATEGORY	LOCATION	DAYS	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	EACH	DAY	REMARKS
0010	STH 32 NB	99	-	-	-	-	-	-	-	-	-	-	10	990	2	28	ADVANCE WARNING
0010	STH 32 NB	50	225	11,250	16	800	32	1,600	14	700	2	100	21	1,050	-	-	LANE CLOSURE
0010	LAX CHAPEL RD	50	-	-	1	50	2	100	-	-	-	-	3	150	-	-	INTERSECTION LANE CLOSURE
0010	LITTLE ELKHART LAKE RD	50	-	-	1	50	2	100	-	-	-	-	3	150	-	-	INTERSECTION LANE CLOSURE
0010	CEMETERY RD	50	-	-	1	50	2	100	-	-	-	-	3	150	-	-	INTERSECTION LANE CLOSURE
0010	STH 32 SB	99	-	-	-	-	-	-	-	-	-	-	10	990	2	28	ADVANCE WARNING
0010	STH 32 SB	50	225	11,250	16	800	32	1,600	14	700	2	100	21	1,050	-	-	LANE CLOSURE
0010	LAX CHAPEL RD	50	-	-	1	50	2	100	-	-	-	-	3	150	-	-	INTERSECTION LANE CLOSURE
0010	LITTLE ELKART LAKE RD	50	-	-	1	50	2	100	-	-	-	-	3	150	-	-	INTERSECTION LANE CLOSURE
0010	CEMETERY RD	50	-	-	1	50	2	100	-	-	-	-	3	150	-	-	INTERSECTION LANE CLOSURE
0010	MUELLER RD	50	-	-	1	50	2	100	-	-	-	-	3	150	-	-	INTERSECTION LANE CLOSURE
0010	EHNERT DR	50	-	-	1	50	2	100	-	-	-	-	3	150	-	-	INTERSECTION LANE CLOSURE
0010	ROUNDAABOUT	3	-	-	16	48	32	96	-	-	-	-	4	12	-	-	ROUNDAABOUT CLOSURE
0010	CONNECTORS	2	-	-	16	32	32	64	-	-	-	-	4	8	-	-	CONNECTOR CLOSURES
SUBTOTAL			22,500		2,080		4,160		1,400		200		5,300		56		
PROJECT TOTALS			22,500		*2,117		*4,234		1,400		200		*6,152		*112		

* ADDITIONAL QUANTITY SHOWN ELSEWHERE

PAVEMENT MARKING SUMMARY

				646.1020		646.1555		646.3020		646.4520		646.4620		646.5020		646.5120		646.6120		646.6320		646.7120		646.7420		646.8120		646.8220	
				MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE	
				EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH		EPOXY 4-INCH	
CATEGORY	ROADWAY	STATION	TO STATION	WHITE	YELLOW	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
0010	STH 32 NB	663'TNB'+48	- 681'TNB'+50	-	-	-	-	-	-	1,804	2,041	260	-	-	-	-	-	-	-	-	-	214	-	-	-	-	-	-	-
0010	STH 32 SB	663'TSB'+48	- 683'TSB'+20	-	-	-	-	-	-	1,398	2,444	436	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0010	STH 32 SB-57 SB	672'FSB'+45	- 683'FSB'+20	-	-	-	-	-	-	1,226	1,206	324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0010	STH 57 NB-32 NB	668'FNB'+36	- 681'FNB'+51	-	-	-	-	-	-	762	1,436	341	-	-	-	-	-	-	-	-	-	130	-	-	-	-	-	-	-
0010	STH 57 NB - 32 SB RT	0'TSR'+00	- 3'TSR'+11	-	-	-	-	-	-	424	123	159	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0010	STH 32 NB	681'TNB'+50	- 852'TNB'+75	16,744	16,684	4,281	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0010	STH 32 SB	683'TSB'+20	- 852'TSB'+73	16,197	16,589	4,240	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0010	STH 32 NB	852'TNB'+75	- 860'TNB'+00	725	952	181	80	-	-	-	-	-	2	-	-	-	-	-	-	-	-	159	-	-	-	-	-	2	-
0010	STH 32 SB	852'TSB'+73	- 860'TSB'+00	585	952	181	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0010	STH 32 NB	860'TR'+00	- 872'TR'+78	-	-	240	-	-	-	1,395	2,681	735	16	4	-	-	-	-	-	-	-	197	75	322	40	4	4	4	4
PROJECT TOTALS				69,428		9,123		80		16,940		2,255		18		4		14		197		578		322		40		6	

TRAFFIC CONTROL DETOUR STH 32 & STH 67 ROUNDABOUT SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 3 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
	STH 67 RAB DETOUR											
1	STH 67, S. OF CTH J, PLACE 1/2 MILE S. OF CTH J INTERSECTION	W 20-2A	48"x48"	1	3	3						
2	STH 67, S. OF CTH J, PLACE 1/4 MILE S. OF CTH J INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 5-1L	21"x21"	1	3	3						
3	STH 67, AT CTH J INTERSECTION, PLACE ABOVE EXISTING J13-2 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 6-1	21"x21"	1	3	3						LEFT
4	STH 67, AT CTH J INTERSECTION, PLACE ON RIGHT SHOULDER	R 11-3	60"x30"	1	3	3	3	6				5 1/2 MILES AHEAD
	"	M 4-9L	30"x24"	1	3	3						
5	STH 67, N. OF CTH J, COVER EXISTING J4-1 SIGN AS SHOWN									1	1	COVER ENTIRE SIGN
6	CTH J, N. OF STH 67, PLACE 250' N. OF STH 67 INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
7	CTH J, N. OF STH 67, MODIFY EXISTING J1-1 SIGN AS SHOWN	M 4-8A	24"x18"	1	3	3						
8	STH 67, AT CTH MM INTERSECTION, PLACE ON RIGHT SHOULDER IN NE QUADRANT OF INTERSECTION	R 11-3	60"x30"	1	3	3	3	6				4 MILES AHEAD
9	CTH J, S. OF CTH HH, PLACE 750' S. OF CTH HH INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 5-1L	21"x21"	1	3	3						
10	CTH J, AT CTH HH, PLACE RIGHT OF EXISTING J13-2 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 6-1	21"x21"	1	3	3						RIGHT
11	CTH J, S. OF CTH HH, PLACE RIGHT OF EXISTING J4-1 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
12	CTH HH, AT CTH J INTERSECTION, PLACE RIGHT OF EXISTING J13-1 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 6-1	21"x21"	1	3	3						LEFT
13	CTH HH, E. OF CTH J, PLACE RIGHT OF EXISTING J4-1 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
14	CTH HH, E. OF CTH J, PLACE 750' E. OF CTH J INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 5-1L	21"x21"	1	3	3						
15	CTH HH, W. OF STH 32/57, PLACE 750' W. OF STH 32/57 INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 5-1L	21"x21"	1	3	3						

PAGE SUBTOTALS

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BY WisDOT - NE REGION

TRAFFIC CONTROL DETOUR SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 3 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
16	CTH HH, W. OF STH 32/57, PLACE RIGHT OF EXISTING J4-1 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
17	CTH HH, AT STH 32/57 INTERSECTION, PLACE 100' W. OF STH 32/57 INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 6-1	21"x21"	1	3	3						LEFT
18	STH 32/57, AT CTH HH INTERSECTION, PLACE RIGHT OF EXISTING J13-2 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 6-1	21"x21"	1	3	3						RIGHT
19	STH 32/57, AT CTH AA INTERSECTION, PLACE RIGHT OF EXISTING J13-1 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 6-1	21"x21"	1	3	3						RIGHT
20	CTH AA, AT STH 32/57 INTERSECTION, PLACE RIGHT OF EXISTING J13-2 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 6-1	21"x21"	1	3	3						LEFT
21	STH 67, S. OF CTH AA, COVER EXISTING J4-1 SIGN AS SHOWN									1	1	COVER ENTIRE SIGN
22	STH 67, AT CTH AA INTERSECTION, PLACE IN NW QUADRANT OF INTERSECTION ON RIGHT SHOULDER	R 11-3	60"x30"	1	3	3	3	6				3/4 MILE AHEAD
	"	M 4-9L	30"x24"	1	3	3						
23	STH 67, N. OF CTH AA, PLACE 150' N. OF CTH AA INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 6-1	21"x21"	1	3	3						RIGHT
24	STH 67, N. OF CTH AA, PLACE 1/4 MILE N. OF CTH AA INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						67
	"	MO 5-1R	21"x21"	1	3	3						
25	STH 67, N. OF CTH AA, PLACE 1/2 MILE N. OF CTH AA INTERSECTION	W 20-2A	48"x48"	1	3	3						
26	STH 67, N. OF STH 32/57, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1					7			PLACE IN ADVANCE OF CLOSURE
27	STH 32/57, E. OF STH 67, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1					7			PLACE IN ADVANCE OF CLOSURE
28	STH 67, S. OF STH 32/57, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1					7			PLACE IN ADVANCE OF CLOSURE
29	STH 32/57, W. OF STH 67, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS		1					7			PLACE IN ADVANCE OF CLOSURE
	STH 32-57 RAB DETOUR											
30	STH 32/57, N. OF CTH X, PLACE 3/4 MILE N. OF CTH X INTERSECTION	W 20-2A	48"x48"	1	3	3						
31	STH 32/57, N. OF CTH X, PLACE 1/4 MILE N. OF CTH X INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						AHEAD
32	STH 32/57, N. OF CTH X, PLACE 250' N. OF CTH X INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						AHEAD
33	STH 32/57, AT CTH X INTERSECTION, PLACE ON RIGHT SHOULDER IN SW QUADRANT OF INTERSECTION	R 11-3	60"x30"	1	3	3	3	6				4 1/2 MILES AHEAD
	"	M 4-9L	30"x24"	1	3	3						

PLAN SHEET PRODUCED

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BY WisDOT - NE REGION

PROJECT NUMBER: 4085-48-71

HWY: STH 32

COUNTY: MANITOWOC

MISCELLANEOUS QUANTITIES

SHEET

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TRAFFIC CONTROL DETOUR STH 32 & STH 67 ROUNDABOUT SIGN SUMMARY												
SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 3 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
34	STH 32/57, AT CTH T INTERSECTION, PLACE ON RIGHT SHOULDER	R 11-3	60"x30"	1	3	3	3	6				3 MILES AHEAD
35	STH 32/57, AT CTH AA INTERSECTION, PLACE ON RIGHT SHOULDER	R 11-3	60"x30"	1	3	3	3	6				1 1/2 MILES AHEAD
36	STH 32/57, AT CTH HH INTERSECTION, PLACE ON RIGHT SHOULDER	R 11-3	60"x30"	1	3	3	3	6				1 MILE AHEAD
37	CTH X, E. OF STH 32/57, MODIFY EXISTING J1-2 SIGN AS SHOWN	M 4-8A	24"x18"	1	3	3						
	"	M 4-8A	24"x18"	1	3	3						
38	CTH X, W. OF STH 67, PLACE 150' W. OF STH 67 INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						AHEAD
39	CTH X, E. OF STH 67, PLACE 150' E. OF STH 67 INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						AHEAD
40	CTH X, W. OF CTH A, PLACE 150' W. OF CTH A INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						AHEAD
41	CTH X, E. OF CTH A, PLACE 150' E. OF CTH A INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						AHEAD
42	CTH X, W. OF CTH M, PLACE 750' W. OF CTH M INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 5-1R	21"x21"	1	3	3						
43	CTH X, W. OF CTH M, PLACE 250' W. OF CTH M INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
44	CTH X, W. OF CTH M, PLACE RIGHT OF EXISTING J13-1 SIGN AT CTH M INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						RIGHT
45	CTH M, S. OF CTH X, PLACE RIGHT OF EXISTING J13-1 SIGN AT CTH X INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						LEFT
46	CTH M, S. OF CTH X, PLACE 150' S. OF CTH X INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
PAGE SUBTOTALS				48		144	9	18	0		0	
PLAN SHEET PRODUCED BY WisDOT - NE REGION												
PROJECT NUMBER: 4085-48-71		HWY: STH 32		COUNTY: MANITOWOC		MISCELLANEOUS QUANTITIES					SHEET	E

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TRAFFIC CONTROL DETOUR STH 32 & STH 67 ROUNDABOUT SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 3 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
47	CTH M, S. OF CTH X, PLACE 750' S. OF CTH X INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 5-1L	21"x21"	1	3	3						
48	CTH M, N. OF CTH XX, PLACE 150' N. OF CTH XX INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						AHEAD
49	CTH M, S. OF CTH XX, PLACE 150' S. OF CTH XX INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						AHEAD
50	CTH M, N. OF STH 32, MODIFY EXISTING J1-1 SIGN AS SHOWN	M 4-8A	24"x18"	1	3	3						
51	CTH M, N. OF STH 32, PLACE 750' N. OF STH 32 INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 5-1R	21"x21"	1	3	3						
52	CTH M, N. OF STH 32, PLACE 150' N. OF STH 32 INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	M 1-6	24"x24"	1	3	3						57
53	CTH M, AT STH 32, PLACE RIGHT OF EXISTING J13-1 SIGN AT STH 32 INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-3	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						RIGHT
54	STH 32, E. OF CTH M, PLACE 1/2 MILE E. OF CTH M INTERSECTION	W 20-2A	48"x48"	1	3	3						
55	STH 32, E. OF CTH M, PLACE 1/4 MILE E. OF CTH M INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	MO 5-1R	21"x21"	1	3	3						
56	STH 32, AT CTH M INTERSECTION, PLACE RIGHT OF EXISTING J13-1 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						32
	"	MO 6-1	21"x21"	1	3	3						RIGHT
57	STH 32, AT CTH M INTERSECTION, PLACE RIGHT OF EXISTING J13-1 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						LEFT
58	STH 32, AT CTH M INTERSECTION, PLACE ON RIGHT SHOULDER IN NW QUADRANT	R 11-3	60"x30"	1	3	3	3	6				7 1/2 MILES AHEAD
	"	M 4-9R	30"x24"	1	3	3						
59	STH 32, W. OF CTH M, COVER EXISTING J4-1 SIGN AS SHOWN									1	1	COVER ENTIRE SIGN
60	STH 32, W. OF CTH M, PLACE 750' W. OF CTH M INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 5-1L	21"x21"	1	3	3						
PAGE SUBTOTALS				47		141	3	6	0		1	

PLAN SHEET PRODUCED
BY WisDOT - NE REGION

TRAFFIC CONTROL DETOUR STH 32 & STH 67 ROUNDABOUT SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 3 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
61	STH 32, AT STH 57, MODIFY EXISTING J1-1 SIGN AS SHOWN	M 4-8A	24"x18"	1	3	3						
62	STH 57, AT STH 32, PLACE ON RIGHT SHOULDER LEADING UP TO RIGHT TURN ONTO STH 32	R 11-3	60"x30"	1	3	3	3	6				3 1/2 MILES AHEAD
	"	M 4-9R	30"x24"	1	3	3						
63	STH 57, S. OF STH 32, PLACE RIGHT OF EXISTING J2-2 SIGN									1	1	COVER "NORTH 32 TILT LEFT"
	"	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 6-1	21"x21"	1	3	3						RIGHT
64	STH 32, E. OF STH 57, PLACE RIGHT OF EXISTING J4-1 SIGN	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						57
65	STH 57, S. OF STH 32, PLACE 1/4 MILE S. OF STH 32 INTERSECTION	MO 4-8	24"x12"	1	3	3						
	"	M 3-1	24"x12"	1	3	3						
	"	M 1-6	24"x24"	1	3	3						57
	"	MO 5-1R	21"x21"	1	3	3						
66	STH 57, S. OF STH 32, PLACE 1/2 MILE S. OF STH 32 INTERSECTION	W 20-2A	48"x48"	2	3	6						
67	STH 57, AT STH 32, COVER EXISTING J3-2 SIGN AS SHOWN									1	1	COVER ENTIRE SIGN
PAGE SUBTOTALS				16		48	3	6	0		2	
RAB DETOUR TOTALS				200		588	27	54	28		5	

PLAN SHEET PRODUCED
BY WisDOT - NE REGION

TRAFFIC CONTROL DETOUR STH 32 & STH 57 CONNECTORS SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 2 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
1	STH 32/57, W. OF 32-57 SPLIT, PLACE 2000' PRIOR TO SPLIT (RIGHT SIDE)	M 1-6	24"x24"	1	2	2						57
	"	W 20-2A	48"x48"	1	2	2						
2	STH 32/57, W. OF 32-57 SPLIT, PLACE 2000' PRIOR TO SPLIT (MEDIAN)	M 1-6	24"x24"	1	2	2						57
	"	W 20-2A	48"x48"	1	2	2						
3	STH 32/57, W. OF 32-57 SPLIT, MODIFY EXISTING J12-1 AS SHOWN	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	MO 6-1	21"x21"	1	2	2						AHEAD
4	STH 32/57, W. OF 32-57 SPLIT, PLACE IN MEDIAN ACROSS FROM SIGN #3	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 6-1	21"x21"	1	2	2						AHEAD
5	STH 32/57, W. OF 32-57 SPLIT, COVER EXISTING D1-3 SIGN AS SHOWN			1						1	1	COVER "MILWAUKEE"
6	STH 32/57, W. OF 32-57 SPLIT, MODIFY EXISTING J13-2 AS SHOWN	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	MO 6-1	21"x21"	1	2	2						AHEAD
7	STH 32/57, W. OF 32-57 SPLIT, COVER EXISTING J3-1 SIGN AS SHOWN			1						1	1	COVER "SOUTH 57 LEFT"
8	STH 32/57, AT 32-57 SPLIT, MODIFY EXISTING J3-1 SIGN AS SHOWN	MO 4-8	24"x12"	1	2	2						
	"	MO 6-1	21"x21"	1	2	2						AHEAD
9	STH 32/57, AT 32-57 SPLIT, PLACE ON RIGHT SHOULDER AT THEORETICAL GORE MARKINGS	R 11-3	60"x30"	1	2	2	2	4				1/2 MILES AHEAD
	"	M 4-9L	30"x24"	1	2	2						
10	STH 57, S. OF 32-57 SPLIT, COVER EXISTING J4-1 SIGN AS SHOWN			1						1	1	COVER "SOUTH 57"
11	STH 57, S. OF 32-57 SPLIT, PLACE N. OF SHEBOYGAN RIVER BRIDGE ON RIGHT SHOULDER	PCMS		1					7			FIELD DETERMINED PLACEMENT
12	STH 32, E. OF 32-57 SPLIT, COVER EXISTING J3-3 SIGN AS SHOWN			1						1	1	COVER "SOUTH 57 LEFT TURN"
13	STH 32, W. OF CTH MC, MODIFY EXISTING J1-1 AS SHOWN	M 4-8A	24"x18"	1	2	2						
14	STH 32, AT CTH MC INTERSECTION, PLACE LEFT OF EXISTING J3-1 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 6-1	21"x21"	1	2	2						LEFT
15	STH 32, AT CTH MC INTERSECTION, PLACE LEFT OF EXISTING J3-1 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 6-1	21"x21"	1	2	2						RIGHT
16	CTH MC, AT STH 32 INTERSECTION, PLACE RIGHT OF EXISTING J13-1 AND R1-1 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 6-1	21"x21"	1	2	2						LEFT
17	STH 32, E. OF CTH MC, PLACE 750' E. OF CTH MC INTERSECTION	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 5-1L	21"x21"	1	2	2						
18	STH 32, E. OF CTH MC, PLACE 1500' E. OF CTH MC INTERSECTION	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	W 20-2A	48"x48"	1	2	2						

PAGE SUBTOTALS

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PLAN SHEET PRODUCED
BY WisDOT - NE REGION

TRAFFIC CONTROL DETOUR STH 32 & STH 57 CONNECTORS SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 2 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
19	CTH MC, N. OF CTH EH, PLACE 750' N. OF CTH EH INTERSECTION	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 5-1R	21"x21"	1	2	2						
20	CTH MC, AT CTH EH INTERSECTION, PLACE RIGHT OF EXISTING J13-1 AND R1-1 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 6-1	21"x21"	1	2	2						RIGHT
21	CTH EH, AT CTH MC INTERSECTION, PLACE NEXT TO EXISTING W1-7 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 6-1	21"x21"	1	2	2						LEFT
22	CTH EH, AT STH 57 INTERSECTION, MODIFY EXISTING J13-2 SIGN AS SHOWN	MO 6-1	21"x21"	1	2	2						LEFT
23	STH 57, AT CTH EH INTERSECTION, PLACE ON RIGHT SHOULDER JUST N. OF CTH EH	R 11-3	60"x30"	1	2	2	2	4				0.8 MILES AHEAD
	"	M 4-9R	30"x24"	1	2	2						
24	CTH EH, AT STH 57 INTERSECTION, MODIFY EXISTING J13-2 SIGN AS SHOWN	MO 6-1	21"x21"	1	2	2						RIGHT
25	STH 57, AT CTH EH INTERSECTION, PLACE RIGHT OF EXISTING J3-2 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 6-1	21"x21"	1	2	2						RIGHT
26	STH 57, S. OF CTH EH, PLACE 750' S. OF CTH EH INTERSECTION	MO 4-8	24"x12"	1	2	2						
	"	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						57
	"	MO 5-1R	21"x21"	1	2	2						
27	STH 57, S. OF CTH EH, PLACE 750' S. OF CTH EH INTERSECTION	W 20-2A	48"x48"	1	2	2						
28	STH 57, S. OF 32-57 SPLIT, PLACE S. OF SHEBOYGAN RIVER BRIDGE ON RIGHT SHOULDER	PCMS		1					7			FIELD DETERMINED PLACEMENT
PAGE SUBTOTALS				26		50	2	4	7		0	
STH 57 NB/SB DETOUR TOTALS				69		126	4	8	14		4	

TRAFFIC CONTROL DETOUR STH 32 & STH 57 CONNECTORS SIGN SUMMARY

PLAN SHEET PRODUCED
BY WisDOT - NE REGION

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TRAFFIC CONTROL DETOUR STH 32 & STH 57 CONNECTORS SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 2 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
1	STH 32/57, W. OF 32-57 SPLIT, PLACE 2000' PRIOR TO SPLIT (RIGHT SIDE)	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	W 20-2A	48"x48"	1	2	2						
2	STH 32/57, W. OF 32-57 SPLIT, PLACE 2000' PRIOR TO SPLIT (MEDIAN)	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	W 20-2A	48"x48"	1	2	2						
3	STH 32/57, W. OF 32-57 SPLIT, COVER EXISTING D1-3 SIGN AS SHOWN									1	1	COVER SIGN AS SHOWN
4	STH 32/57, W. OF 32-57 SPLIT, MODIFY EXISTING J13-2 AS SHOWN	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	MO 5-2R	21"x21"	1	2	2						
5	STH 32/57, W. OF 32-57 SPLIT, PLACE ON RIGHT SIDE ACROSS FROM SIGN #6	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 6-2	21"x21"	1	2	2						TILT RIGHT
6	STH 32/57, AT 32-57 SPLIT, MODIFY EXISTING J3-1 SIGN AS SHOWN	MO 4-8	24"x12"	1	2	2						
	"	MO 6-2	21"x21"	1	2	2						TILT RIGHT
7	STH 32/57, AT 32-57 SPLIT, PLACE ON RIGHT SHOULDER AT THEORETICAL GORE MARKINGS	R 11-2	48"x30"	1	2	2	2	4				
	"	M 4-9R	30"x24"	1	2	2						
8	STH 32 NB, AT STH 57, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS							7			PLACE IN ADVANCE OF CLOSURE
9	STH 32 SB, AT STH 57, PLACE ON RIGHT SHOULDER, FIELD DETERMINE LOCATION	PCMS							7			PLACE IN ADVANCE OF CLOSURE
10	STH 32, E. OF 32-57 SPLIT, COVER EXISTING J3-3 SIGN AS SHOWN									1	1	COVER SIGN AS SHOWN
11	STH 32, AT CTH MC, PLACE ON RIGHT SHOULDER IN NW QUADRANT OF INTERSECTION	R 11-3	60"x30"	1	2	2	2	4				1/2 MILE AHEAD
	"	M 4-9L	30"x24"	1	2	2						
12	STH 32, AT CTH MC INTERSECTION, PLACE LEFT OF EXISTING J3-1 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 6-1	21"x21"	1	2	2						LEFT
13	STH 32, E. OF CTH MC, PLACE 750' E. OF CTH MC INTERSECTION	MO 4-8	24"x12"	1	2	2						
	"	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 5-1L	21"x21"	1	2	2						
14	STH 32, E. OF CTH MC, PLACE 1500' E. OF CTH MC INTERSECTION	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	W 20-2A	48"x48"	1	2	2						
15	CTH MC, N. OF CTH EH, PLACE 750' N. OF CTH EH INTERSECTION	MO 4-8	24"x12"	1	2	2						
	"	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 5-1R	21"x21"	1	2	2						
16	CTH MC, AT CTH EH INTERSECTION, PLACE RIGHT OF EXISTING J13-1 AND R1-1 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 6-1	21"x21"	1	2	2						RIGHT
17	CTH EH, AT CTH MC INTERSECTION, PLACE NEXT TO EXISTING W1-7 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 6-1	21"x21"	1	2	2						LEFT

PAGE SUBTOTALS

42

84

4

8

14

2

PLAN SHEET PRODUCED
BY WisDOT - NE REGION

3

TRAFFIC CONTROL DETOUR STH 32 & STH 57 CONNECTORS SIGN SUMMARY

SIGN NO.	LOCATION	SIGN CODE	SIZE W X H	NUMBER IN SERVICE	APPROX. SERVICE PERIOD 2 DAYS	643.0900 SIGNS DAYS	643.0420 BARRICADES TYPE III DAYS	643.0705 WARNING LIGHTS TYPE A DAYS	643.1050 SIGNS PORTABLE CHANGEABLE MESSAGE DAYS	NO OF CYCLES	643.0920 COVERING SIGNS TYPE II EACH	REMARKS
18	CTH EH, AT STH 57, PLACE RIGHT OF EXISTING J13-2 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-1	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 6-1	21"x21"	1	2	2						RIGHT
19	STH 57, AT CTH EH INTERSECTION, PLACE RIGHT OF EXISTING J3-2 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 6-1	21"x21"	1	2	2						RIGHT
20	STH 57, N. OF CTH EH, PLACE 750' N. OF CTH EH INTERSECTION	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						
	"	MO 5-1L	21"x21"	1	2	2						
21	STH 57, AT CTH EH INTERSECTION, PLACE ON RIGHT SHOULDER ON NE QUADRANT OF INTERSECTION	M 3-3	24"x12"	1	2	2	2	4				
	"	M 1-6	24"x24"	1	2	2						
	"	R 11-3	60"x30"	1	2	2						1 1/4 MILES AHEAD
	"	M 4-9R	30"x24"	1	2	2						
22	STH 57, AT CTH EH INTERSECTION, PLACE RIGHT OF EXISTING J13-1 SIGN	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 6-1	21"x21"	1	2	2						LEFT
23	STH 57, S. OF CTH EH, PLACE 750' S. OF CTH EH INTERSECTION	MO 4-8	24"x12"	1	2	2						
	"	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	MO 5-1R	21"x21"	1	2	2						
24	STH 57, S. OF CTH EH, PLACE 1500' S. OF CTH EH INTERSECTION	M 3-3	24"x12"	1	2	2						
	"	M 1-6	24"x24"	1	2	2						32
	"	W 20-2A	48"x48"	1	2	2						
PAGE SUBTOTALS				27		54	2	4	0		0	
STH 32 NB/SB DETOUR TOTALS				69		138	6	12	14		2	

PLAN SHEET PRODUCED
BY WisDOT - NE REGION

TEMPORARY PAVEMENT MARKING SUMMARY

649.0105 TEMPORARY MARKING LINE PAINT 4-INCH						REMARKS
CATEGORY	ROADWAY	STATION	TO	STATION	LF	
0010	STH 32 NB	681'TNB'+50	-	852'TNB'+75	16,684	SINGLE EDGELINE ON LOWER LAYER OF HMA PAVEMENT
0010	STH 32 SB	683'TSB'+20	-	852'TSB'+73	16,589	SINGLE EDGELINE ON LOWER LAYER OF HMA PAVEMENT
0010	STH 32 NB	681'TNB'+50	-	852'TNB'+75	16,684	SINGLE EDGELINE ON UPPER LAYER OF HMA PAVEMENT
0010	STH 32 SB	683'TSB'+20	-	852'TSB'+73	16,589	SINGLE EDGELINE ON UPPER LAYER OF HMA PAVEMENT
PROJECT TOTALS					66,546	

CONSTRUCTION STAKING RESURFACING REFERENCE

650.8000 CONSTRUCTION STAKING RESURFACING REFERENCE					
CATEGORY	ROADWAY	STATION	TO	STATION	LF
0010	STH 32 NB	663'TNB'+48	-	852'TNB'+75	18,927
0010	STH 32 SB	663'TSB'+48	-	852'TSB'+73	18,925
0010	STH 57 NB-32 SB RT	0'TSR'+00	-	3'TSR'+11	311
0010	STH 57 NB-32 NB	669'FNB'+67	-	681'FNB'+51	1,184
0010	STH 32 SB-57 SB	672'FSB'+45	-	683'FSB'+20	1,075
0010	STH 32 NB	852'TNB'+75	-	860'TNB'+00	725
0010	STH 32	860'TR'+00	-	872'TR'+78	1,278
0010	STH 67	14'SR'+46	-	22'SR'+00	754
PROJECT TOTALS					43,179

CONSTRUCTION STAKING SUPPLEMENTAL CONTROL

650.9910 CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT)		
CATEGORY	LOCATION	LS
0010	4085-48-71	1
PROJECT TOTALS		1

CONDUIT

		652.0235 CONDUIT RIGID NONMETALLIC SCHEDULE 40 3-INCH		
CATEGORY	LOCATION	FROM	TO	LF
0010	STH 32 & STH 57 (F36-0397)	CB1	PB1	10
PROJECT TOTALS				10

BASES

		654.0220 CONCRETE CONTROL CABINET BASES TYPE 10		
CATEGORY	LOCATION	EACH	REMARKS	
0010	STH 32 & STH 57 (F36-0397)	1	SEE CONTROL CABINET BASE DETAIL, TYPE 10 NER	
PROJECT TOTALS		1		

TRAFFIC SIGNALS

		656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION)	
CATEGORY	LOCATION	LS	
0010	STH 32 & STH 57 (F36-0397)	1	
PROJECT TOTALS		1	

SAWING ASPHALT

CATEGORY	ROADWAY	STATION	TO	STATION	OFFSET	690.0150 SAWING ASPHALT	REMARKS
						LF	
0010	STH 32 NB	663'TNB'+48	-	663'TNB'+48	LT & RT	40	
0010	STH 57	669'FNB'+67	-	669'FNB'+67	LT & RT	57	
0010	STH 32 SB	689'TSB'+24	-	689'TSB'+48	LT	24	DRIVEWAY
0010	STH 32 SB	690'TSB'+26	-	690'TSB'+60	LT	34	DRIVEWAY
0010	STH 32 SB	692'TSB'+27	-	692'TSB'+66	LT	39	DRIVEWAY
0010	STH 32 SB	697'TSB'+68	-	698'TSB'+26	LT	58	DRIVEWAY
0010	STH 32 NB	700'TNB'+90	-	701'TNB'+20	RT	30	DRIVEWAY
0010	STH 32 NB	701'TNB'+60	-	701'TNB'+87	RT	27	DRIVEWAY
0010	STH 32 NB	729'TNB'+09	-	729'TNB'+38	RT	31	LAX CHAPEL RD
0010	STH 32 SB	733'TSB'+41	-	733'TSB'+66	LT	28	LAX CHAPEL RD
0010	STH 32 SB	742'TSB'+21	-	742'TSB'+37	LT	16	DRIVEWAY
0010	STH 32 SB	754'TSB'+91	-	755'TSB'+17	LT	29	LITTLE ELKHART LAKE RD
0010	STH 32 NB	756'TNB'+32	-	756'TNB'+54	RT	25	LITTLE ELKHART LAKE RD
0010	STH 32 SB	757'TSB'+82	-	757'TSB'+99	LT	17	DRIVEWAY
0010	STH 32 NB	779'TNB'+40	-	780'TNB'+09	RT	69	DRIVEWAY
0010	STH 32 SB	809'TSB'+91	-	810'TSB'+18	LT	29	CEMETERY RD
0010	STH 32 NB	810'TNB'+76	-	811'TNB'+07	RT	34	CEMETERY RD
0010	STH 32 SB	822'TSB'+12	-	822'TSB'+22	LT	22	MUELLER RD
0010	STH 32 NB	849'TNB'+68	-	851'TNB'+11	RT	143	DRIVEWAY
0010	STH 32 SB	855'TSB'+12	-	855'TSB'+52	LT	40	EHNERT DRIVE
0010	STH 67	14'SR'+46	-	14'SR'+48	LT & RT	41	
0010	STH 67	21'SR'+98	-	22'SR'+00	LT & RT	40	
0010	STH 32	872'TR'+76	-	872'TR'+78	LT & RT	40	
PROJECT TOTALS						913	

<p>ACCESS POINT ACCESS RIGHTS ACRES CHORD BEARING CHORD DISTANCE</p> <p>(B) DOCUMENT EAST BOUND GAS VALVE INLET LENGTH OF CURVE MANHOLE MONUMENT NORTH BOUND PAGE PERMANENT PERMANENT LIMITED EASEMENT PRIVATE DRIVEWAY PROPERTY LINE RADIUS REFERENCE LINE REMAINING RIGHT-OF-WAY SECTION STATION STATION FROM PIPE SECTION TEMPORARY LIMITED EASEMENT TIE POINT VOLUME ADJOINING LANDS WITH SAME OWNER PARALLEL TO LINE</p>	 AP AR AC CH CR DBC DOC EB OV L M MON NC PERM PLE Q PL RAD REM R/W SEC S IP STA TOL DBI VOL UTL LOT TIE MIN W/ING	<p>SECTION CORNER (MATHEMATICAL AS NOTED)</p> <p>SET R/W MONUMENT /CAP 1'-6" OUTSIDE DIA.=18" IRON PIPE 1.13 LBS./FT.)</p> <p>FOUND TYPE 2 MON. FOUND 3/4" REBAR</p> <p>SET P.K., NAIL.</p> <p>PROPOSED R/W BOUNDARY POINT</p> <p>CORPORATE LIMITS EXISTING R/W SECTION LINE QUARTER SECTION SIXTEENTH LINE PROPOSED OR NEW R/W LINE PROPOSED CSM, SUBDIVISION, OR PLAN OF SURVEY LINE PARCEL NUMBER</p> <p>UTILITY NUMBER</p> <p>SURVEY NUMBER</p> <p>PROPERTY LINE LOT, TIE AND OTHER MINING DASHED LINE</p> <p>EASEMENTS RESTRICTED By Previous Project/ Control</p> <p>EASEMENTS RESTRICTED (by Acquisition) NO ACCESS (By Statutory Authority)</p>
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WATER	W	
	G	
TELEPHONE	T	
OVERHEAD	OH	
TRANSMISSION LINES		
ELECTRIC	E	
CABLE TELEVISION	TV	
FIBER OPTIC	FO	
SANITARY SEWER	SAN	
STORM SEWER	SS	
	NON-	COMPENSABLE
POWER POLE		
TELEPHONE POLE		
TELEPHONE PEDESTAL		
ELECTRIC TOWER		

POINT	-	POINT	BEARING	DISTANCE
3	-	100	N00°06'30"E	1129.53'
100	-	18	N89°53'03"W	677.37'
18	-	101	N80°08'06"W	47.44'
101	-	104	N80°08'06"W	50.60'
104	-	103	N18°40'52"E	30.81'
103	-	102	S71°19'08"E	50.00'
102	-	101	S18°40'52"W	23.06'

RIGHT OF WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS AND ARE REFERENCED TO THE US PUBLIC LAND SURVEY OR OTHER SURVEYS OF PUBLIC RECORD.

RIGHT OF WAY MONUMENTS ARE TYPE 2 MONUMENTS (TYPICALLY 1" X 24" IRON PIPE) AND WILL BE PLACED PRIOR TO COMPLETION OF PROJECT.

AREAS SHOWN IN THE TOTAL ACRES COLUMN OF THE SCHEDULE OF LANDS & INTEREST TABLE MAY BE APPROXIMATE AND ARE DERIVED FROM TAX ROLLS OR OTHER AVAILABLE SOURCES AND MAY NOT INCLUDE LANDS OF THE OWNER WHICH ARE NOT CONTIGUOUS TO THE AREA TO BE ACQUIRED.

COORDINATES AS SHOWN ARE NOT INTENDED TO BE USED FOR RETRACEMENT PURPOSES AND MUST BE VERIFIED WITH THE COUNTY SURVEY DEPARTMENT.

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COUNTY COORDINATES, MANITOWOC COUNTY, MAD 83 (199D) IN US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

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

EXISTING RIGHT OF WAY WAS ACQUIRED FROM PROJECT(S): F02-4(16), 4085-06-21, SAP 3369, 4322-08-21-4.03

EXISTING ACCESS CONTROL WAS ACQUIRED UNDER PROJECT(S)/DOC. #:

RIGHT OF WAY REFERENCE LINE MAY NOT BE THE SAME AS THE CONSTRUCTION REFERENCE LINE.

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

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 TO PREVENT EROSION OF THE SOIL. ALL TLEs ON THIS PLAT EXPIRE AT THE COMPLETION OF THE CONSTRUCTION PROJECT FOR WHICH THIS INSTRUMENT IS GIVEN.

SCHEDULE OF LANDS & INTERESTS REQUIRED						
PARCEL NUMBER	OWNER	INTEREST REQUIRED	FEE RW ACRE(S) OR (S.F.) REQUIRED			T.L.E. AREA
			NEW	EXISTING	TOTAL	
1	MICHAEL S. BAUS & PAULETTE M. BAUS	TLE	-	-	-	0.031

R/W PROJECT NUMBER 4085-48-21	SHEET NUMBER	TOTAL SHEETS
FEDERAL PROJECT NUMBER -----	4.01	1
PLAT OF RIGHT OF WAY REQUIRED FOR HOWARDS GROVE - KIEL STH 32/57 SOUTH JUCTION - STH 67 STH 32 MANITOWOC COUNTY -----		

TAX ID#016-029-012-001.00

TOWN

SE 1/4 - SW 1/4

4 STONE "X"
Y=236113.578
X=140144.727

TLE "A" FOR SLOPING

STH 57/32

OF

R/W REFERENCE LINE				
COURSE TABLE				
TANGENT				
793+30.37	Y=232630.927	X=144439.871	N69°06'05"W	5155.49'
ARC				
844+85.86	PC 234469.980	139623.546		
	CC 232328.924	138806.010		
846+35.57	PI 234523.386	139483.680		
TAN 149.7147'				
DB N 69° 6' 4.59" W'				
DA N 76° 34' 35.02" W'				
LCHORD BEARING/DISTANCE			N72°50'20"W	298.79'
EXTERNAL DISTANCE 4.88'				
MIDDLE ORDINATE 4.874'				
RADIUS 2291.83'				
DEG 2° 30' 0"				
DELTA 7° 28' 30.43"				
LENGTH 299.00'				
847+84.86	PT Y=234558.142	X=139338.056		
TANGENT				
			N76°34'35"W	420.60'
852+05.47	Y=234655.785	X=138928.942		

3 P.K.NAIL
Y=233462.333
X=140139.715

SCHLESWIG

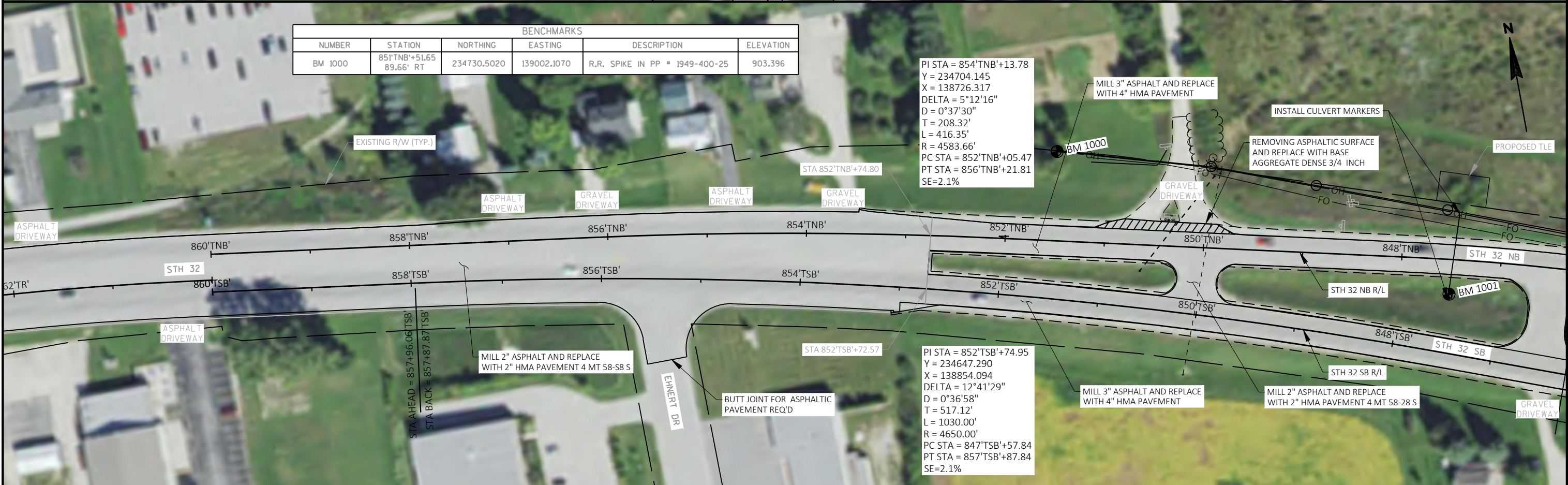
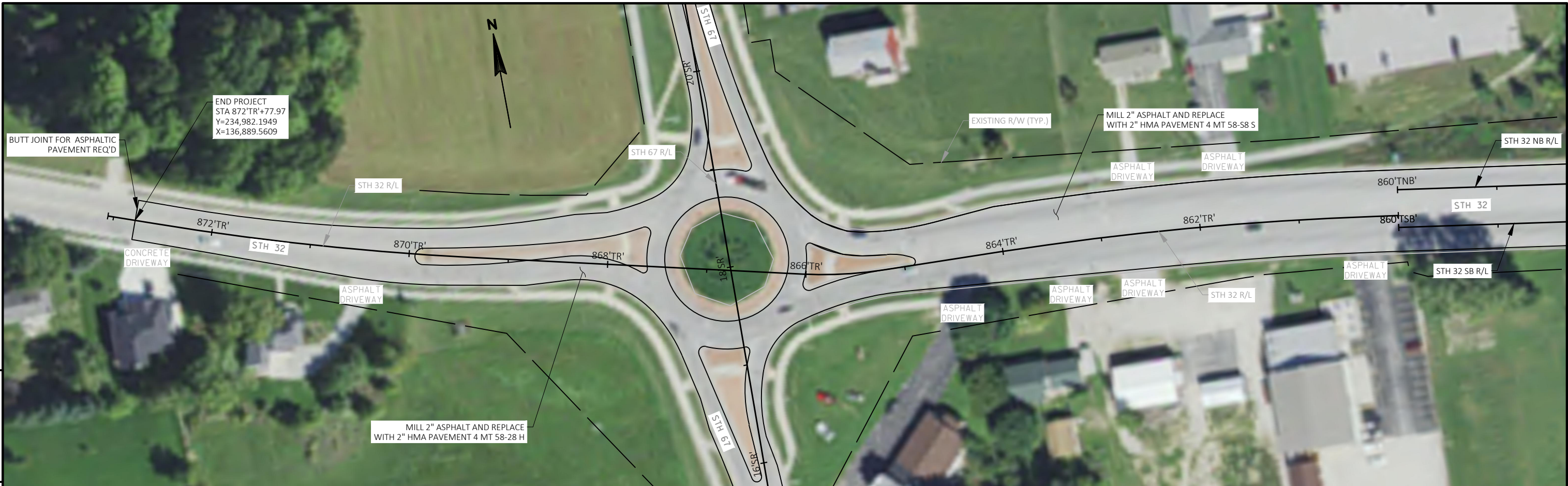
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

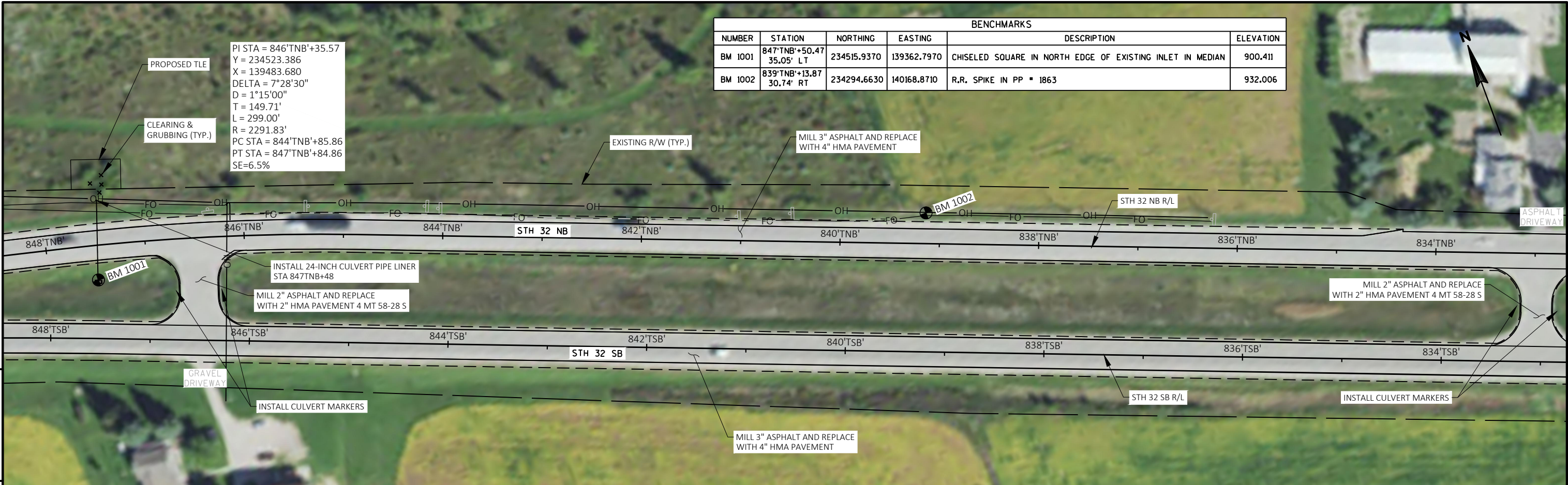
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DATE: 9/30/2019

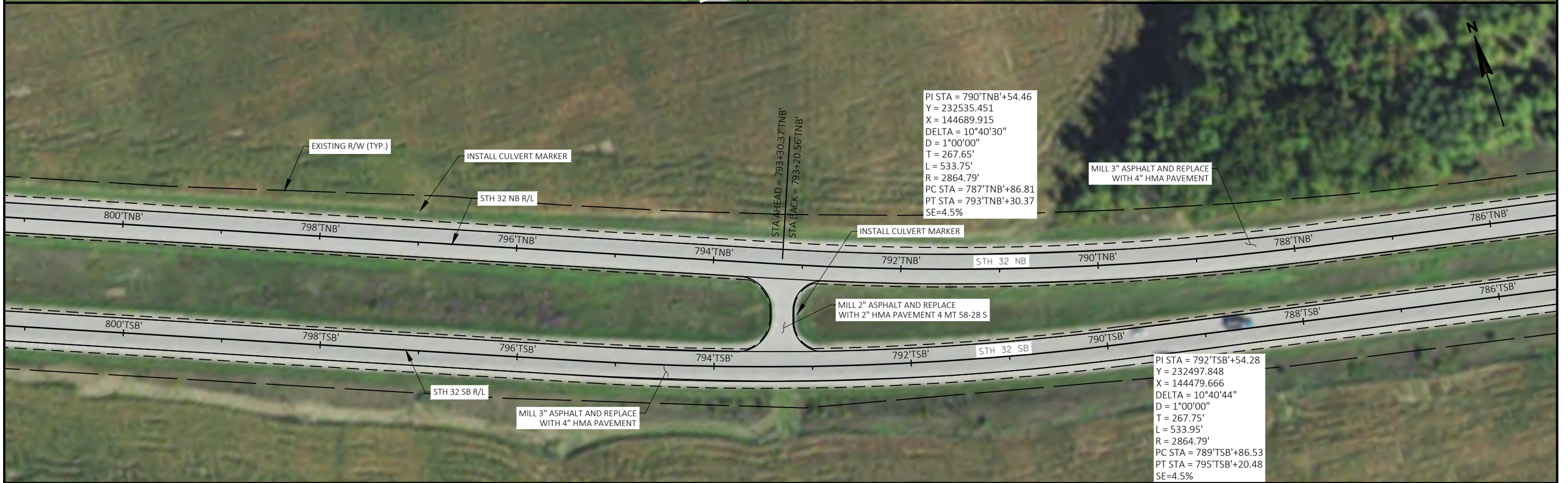
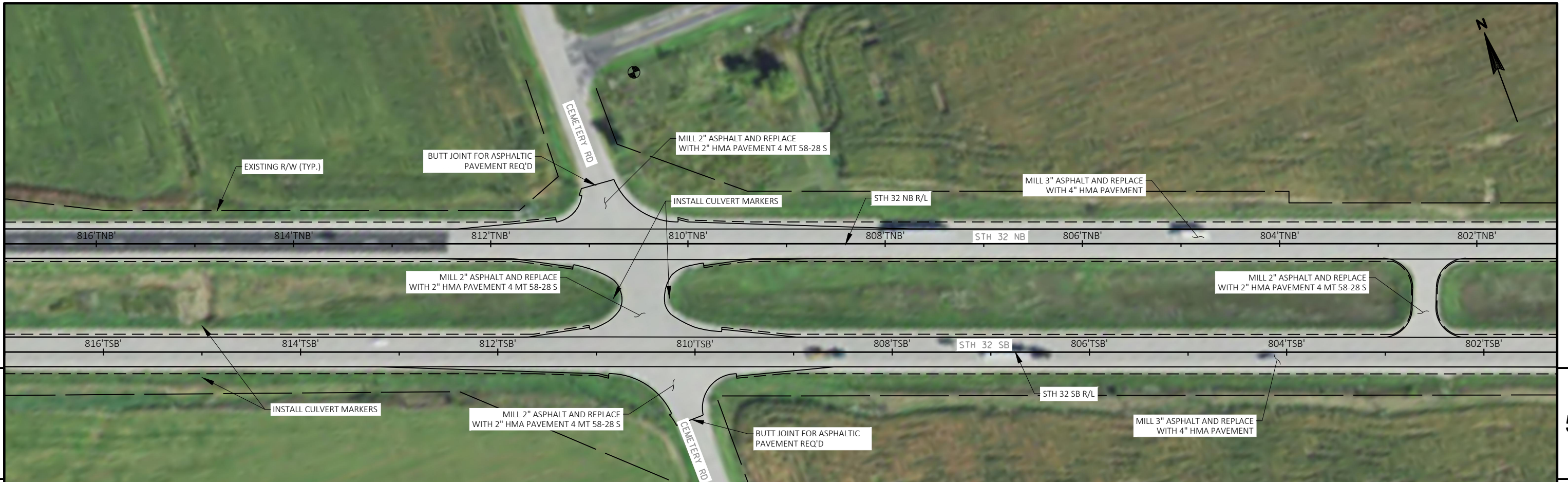
CURT VAN EREM

WISDOT/CADDS SHEET 100

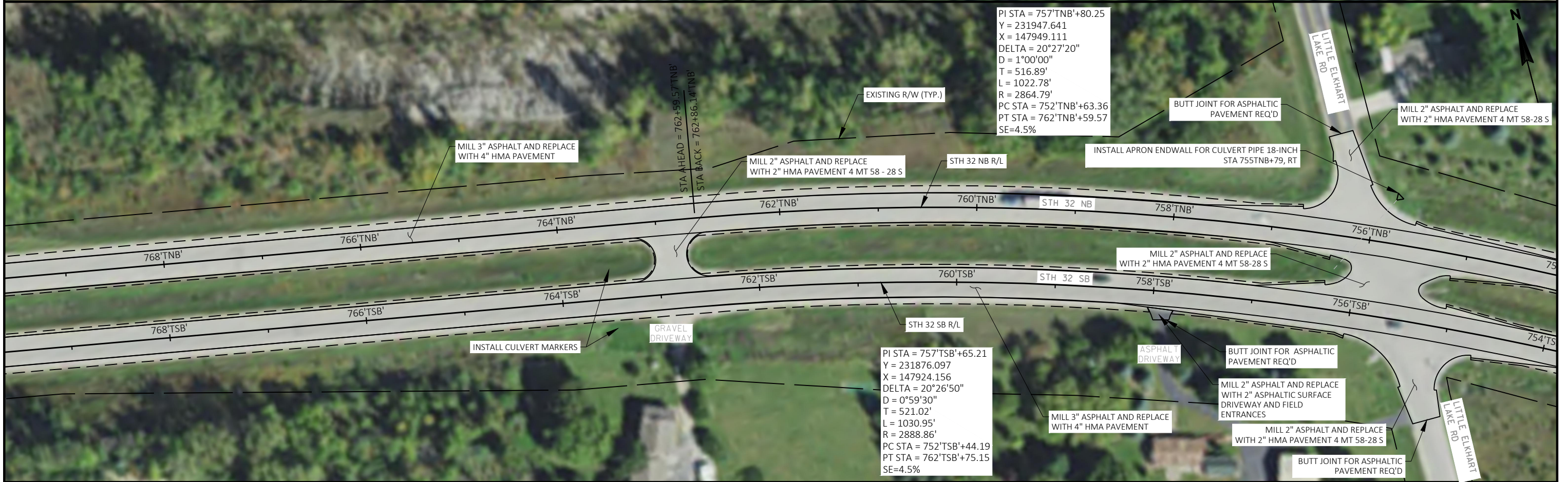
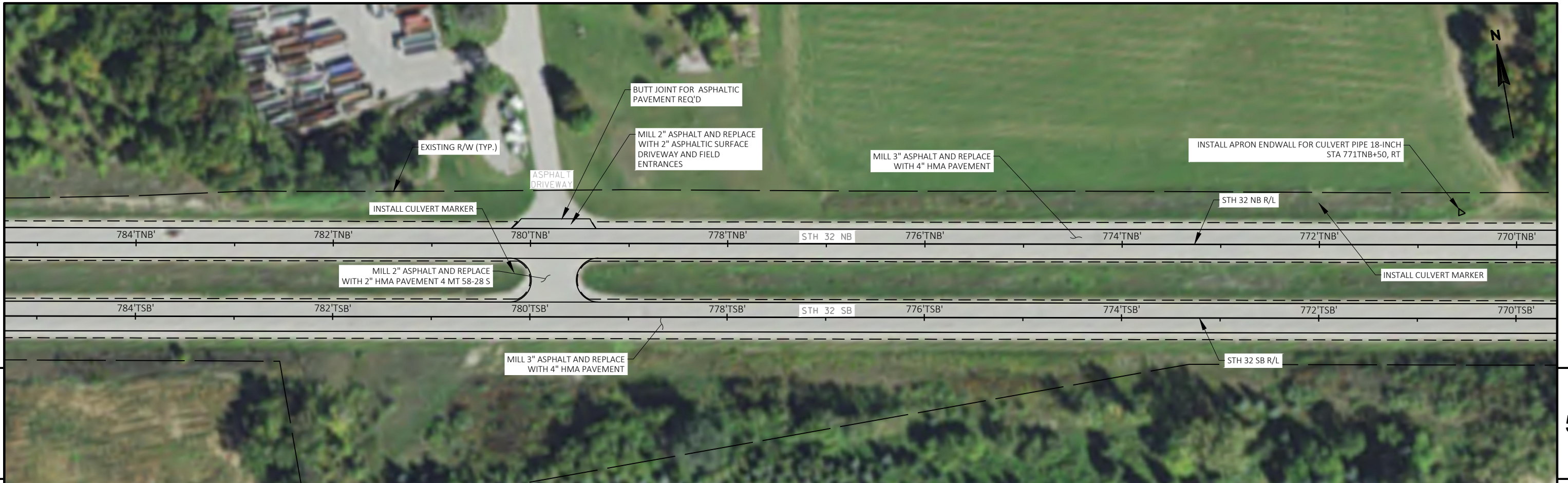




PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	PLAN	SHEET	E
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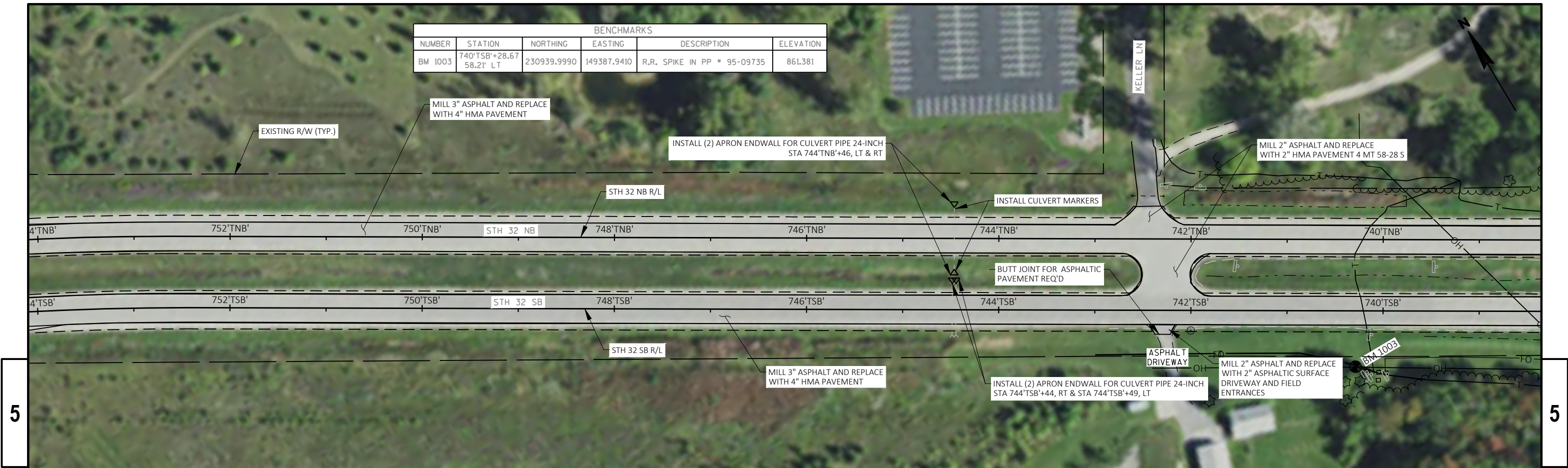


PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	PLAN	SHEET	E
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PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	PLAN	SHEET	E
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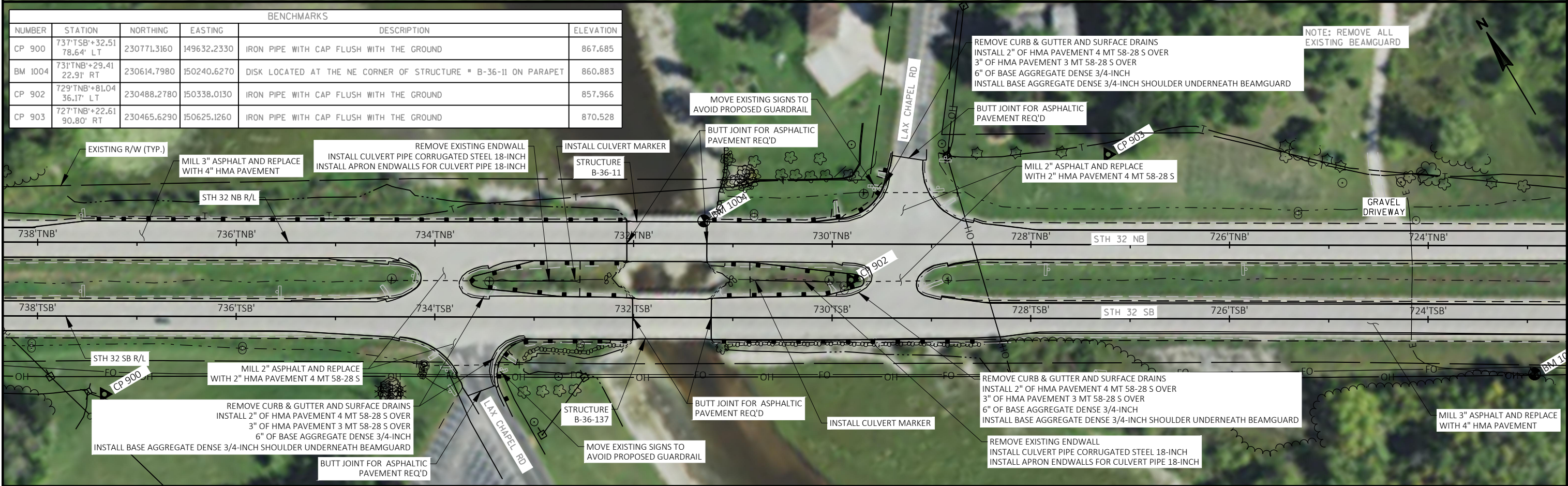
BENCHMARKS					
NUMBER	STATION	NORTHING	EASTING	DESCRIPTION	ELEVATION
BM 1003	740'TSB'+28.67 58.21' LT	230939.9990	149387.9410	R.R. SPIKE IN PP # 95-09735	861.381



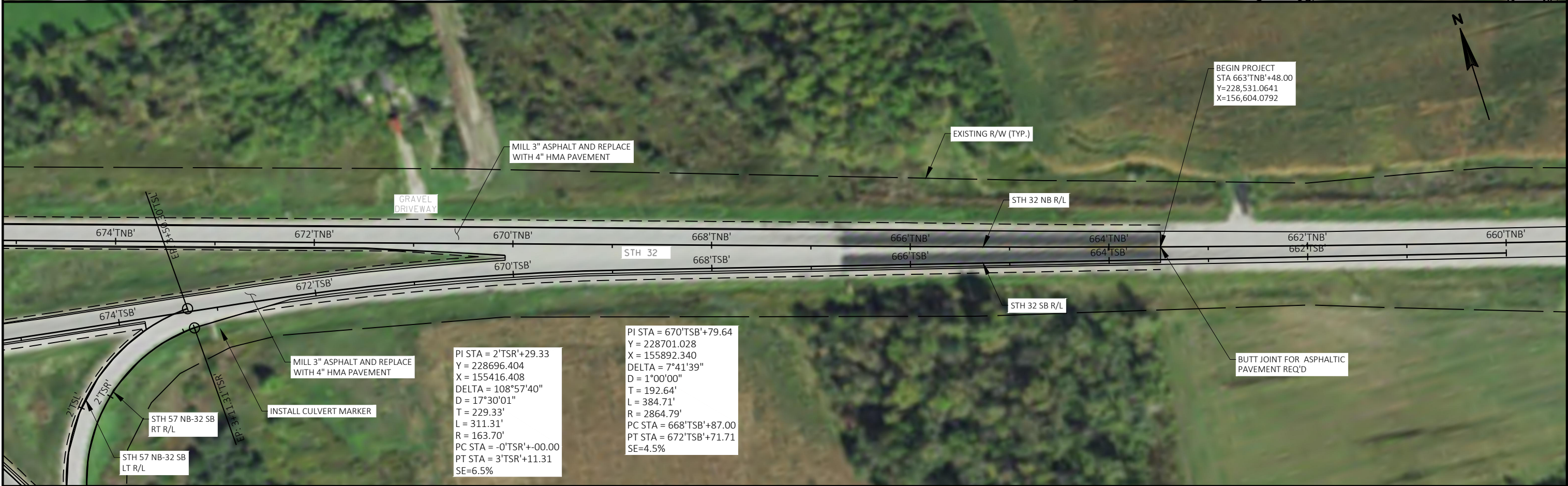
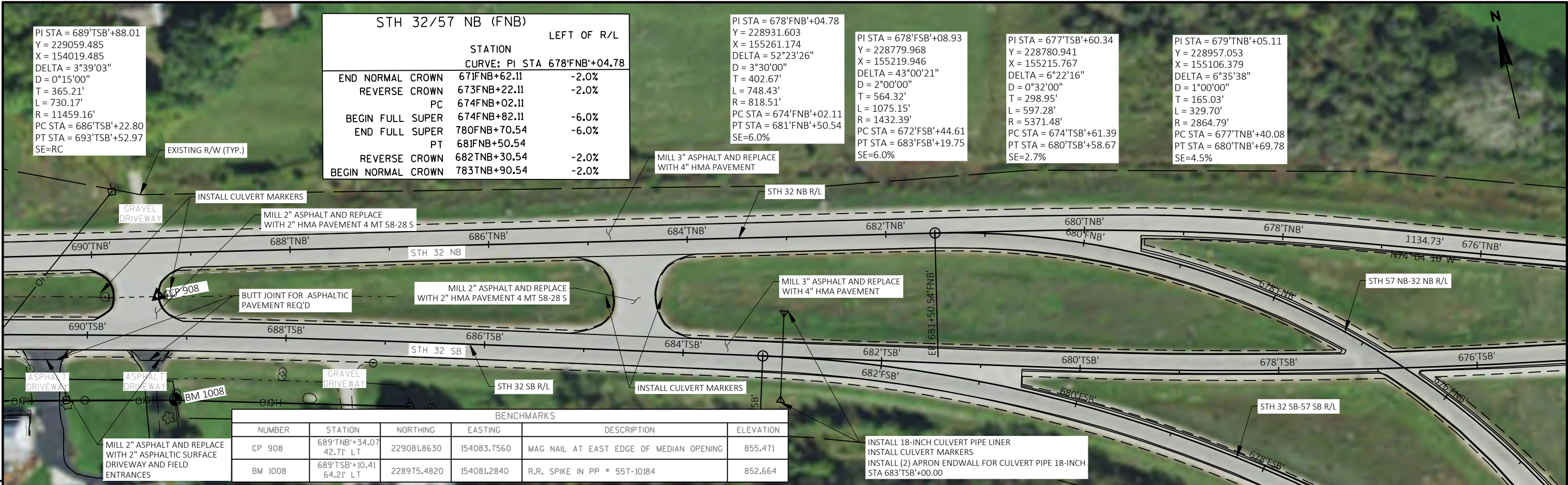
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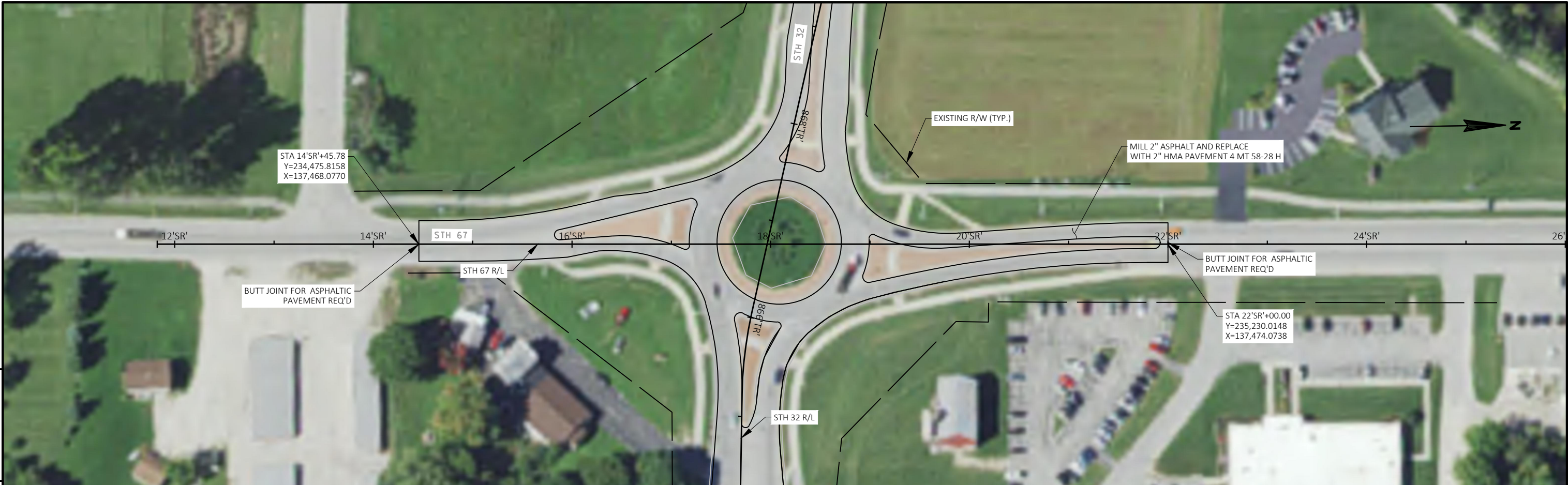
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BENCHMARKS					
NUMBER	STATION	NORTHING	EASTING	DESCRIPTION	ELEVATION
CP 900	737'TSB'+32.51 78.64' LT	230771.3160	149632.2330	IRON PIPE WITH CAP FLUSH WITH THE GROUND	867.685
BM 1004	731'TNB'+29.41 22.91' RT	230614.7980	150240.6270	DISK LOCATED AT THE NE CORNER OF STRUCTURE # B-36-11 ON PARAPET	860.883
CP 902	729'TNB'+81.04 36.17' LT	230488.2780	150338.0130	IRON PIPE WITH CAP FLUSH WITH THE GROUND	857.966
CP 903	727'TNB'+22.61 90.80' RT	230465.6290	150625.1260	IRON PIPE WITH CAP FLUSH WITH THE GROUND	870.528



PROJECT NO:	4085-48-71	HWY:	STH 32	COUNTY:	MANITOWOC	PLAN	SHEET	E
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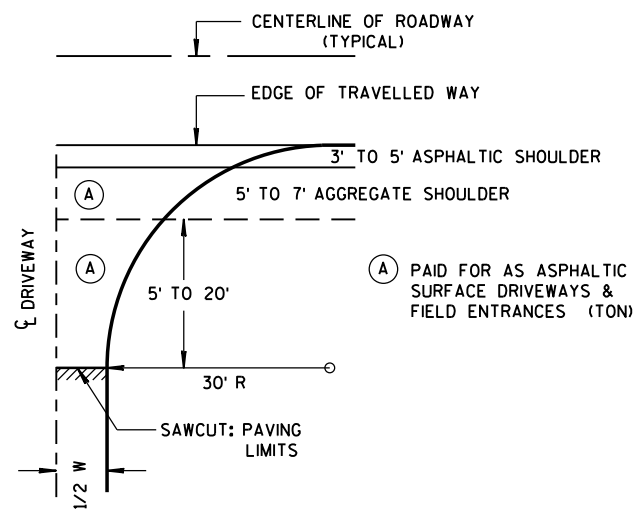
PROJECT NO:	4085-48-71	HWY:	STH 32	COUNTY:	MANITOWOC	PLAN		SHEET	E
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Standard Detail Drawing List

08D22-01	DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
09B02-10	CONDUIT
09C05-10	CONCRETE CONTROL CABINET BASES
09D01-05	CABINET SERVICE INSTALLATION (METER BREAKER PEDESTAL)
13A05-05A	SHOULDER RUMBLE STRIP, MILLING
13A05-05B	SHOULDER RUMBLE STRIP, MILLING
13A08-01	ASPHALTIC RUMBLE STRIPS AT INTERSECTION
13C14-07A	BASE PATCHING CONCRETE
13C14-07B	BASE PATCHING CONCRETE
13C14-07C	BASE PATCHING CONCRETE
13C19-03	HMA LONGITUDINAL JOINTS
14B20-11A	STEEL THRIE BEAM STRUCTURE APPROACH
14B20-11B	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS
14B20-11C	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO VERTICAL FACED PARAPETS
14B20-11D	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SLOPED END PARAPETS
14B20-11E	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPES "F" AND "W"
14B20-11F	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPE "M"
14B20-11G	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL
14B20-11H	STEEL THRIE BEAM STRUCTURE APPROACH, SINGLE SLOPE ATTACHMENT
14B26-04A	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-04B	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-04C	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-04D	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-04E	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-04F	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-04G	STEEL THRIE BEAM BULLNOSE TERMINAL
14B26-04H	STEEL THRIE BEAM BULLNOSE TERMINAL
14B28-04A	GUARDRAIL MOW STRIP
14B28-04B	GUARDRAIL MOW STRIP
14B29-01	SAFETY EDGE
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05K	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05L	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B53-01A	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01B	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01C	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01D	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01E	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01F	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01G	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01H	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01I	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C07-15B	PAVEMENT MARKING WORDS
15C07-15C	PAVEMENT MARKING ARROWS
15C07-15D	ROUNDBOUT ARROWS
15C08-20A	LONGITUDINAL MARKING (MAINLINE)

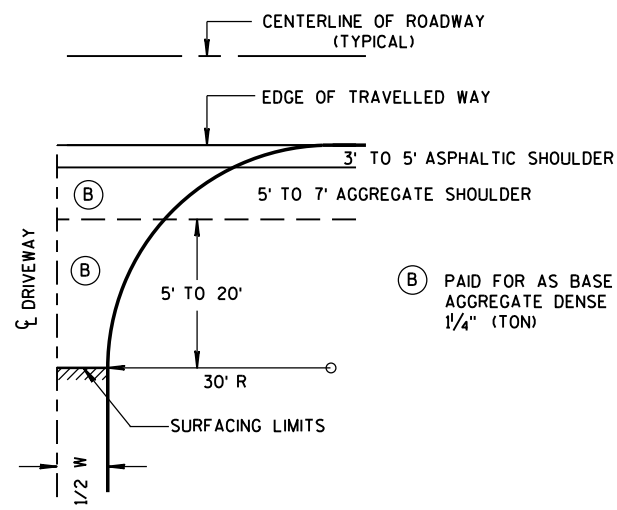
Standard Detail Drawing List

15C08-20B	PAVEMENT MARKING (TURN LANES)
15C08-20C	PAVEMENT MARKING (TURN LANES)
15C11-09B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-07	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C18-05	MEDIAN ISLAND MARKING
15C33-04	STOP LINE AND CROSSWALK PAVEMENT MARKING
15C35-04A	PAVEMENT MARKING (INTERSECTIONS)
15D12-09A	TRAFFIC CONTROL, LANE CLOSURE
15D21-07A	TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE
15D21-07B	TRAFFIC CONTROL, INTERSECTION WITHIN SINGLE LANE CLOSURE
15D27-03	TRAFFIC CONTROL, SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS
15D39-02	TRAFFIC CONTROL, DROP-OFF SIGNING
15D44-02	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES

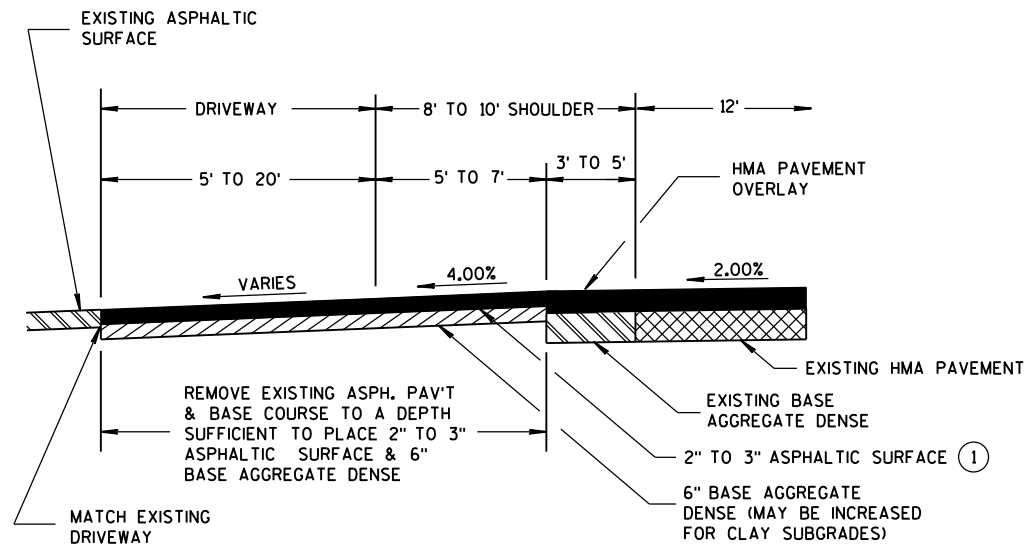


PLAN VIEW
HALF SECTION

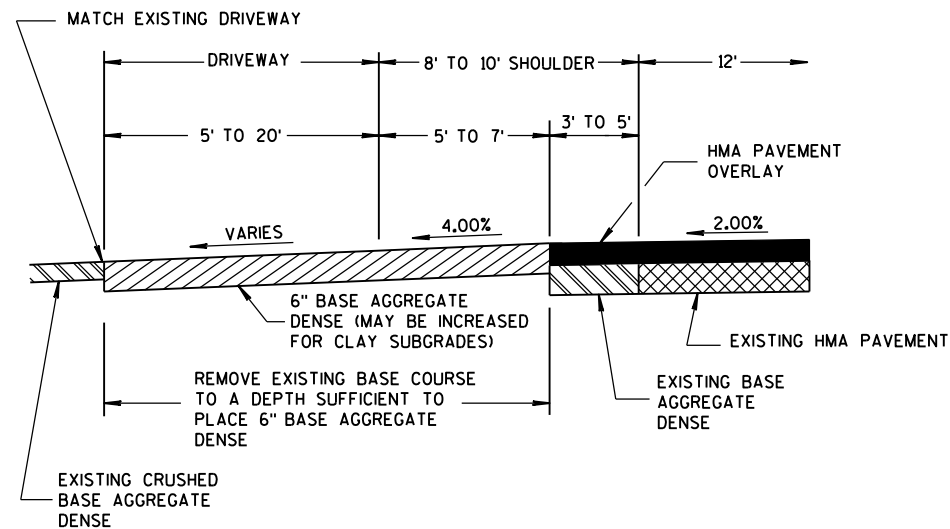
W MIN. = 16'
W MAX. = 24'



PLAN VIEW
HALF SECTION



PROFILE VIEW
RURAL ENTRANCE
WITH ASPHALTIC SURFACE
RESURFACING PROJECTS



PROFILE VIEW
RURAL ENTRANCE
WITH AGGREGATE SURFACE
6" BASE AGGREGATE DENSE
RESURFACING PROJECTS

GENERAL NOTES

- DESIGN WILL DETERMINE FINAL DRIVEWAY ASPHALTIC THICKNESS BASED ON TYPE OF USAGE AND LOADINGS.

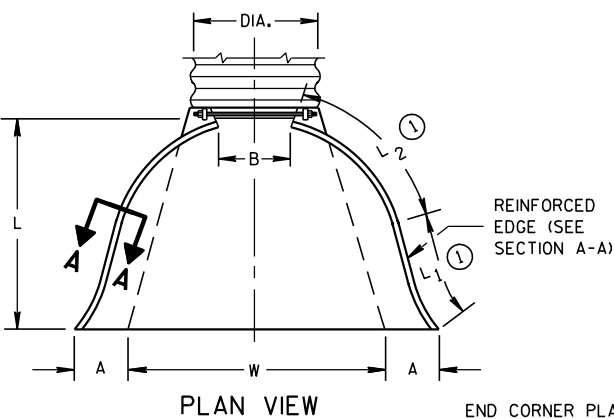
DRIVEWAYS WITHOUT
CURB & GUTTER
RESURFACING PROJECTS RURAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December, 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR

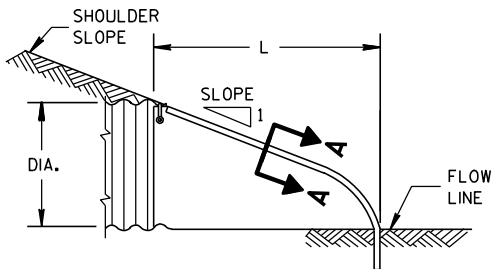
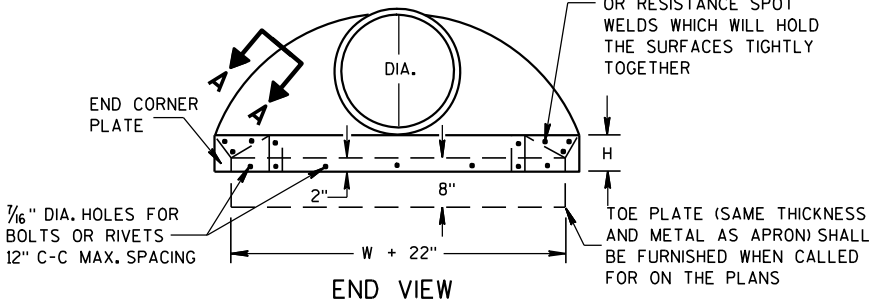
METAL APRON ENDWALLS												
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY	
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L ₁ ①	L ₂ ①	W (±2")			
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.	
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.	
18	.064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

* EXCEPT CENTER PANEL
SEE GENERAL NOTES



END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER

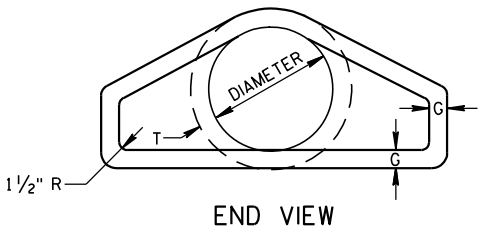
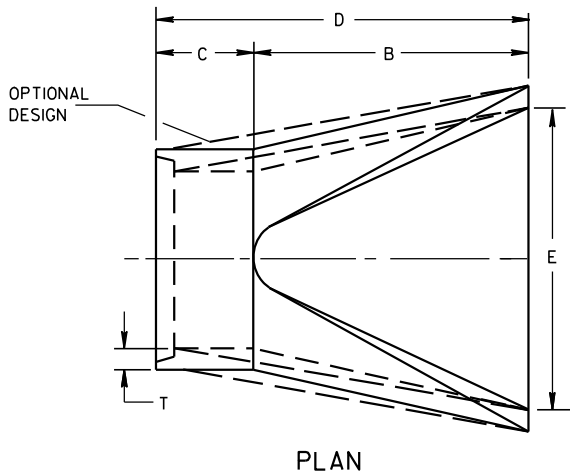
TOE PLATE (SAME THICKNESS AND METAL AS APRON) SHALL BE FURNISHED WHEN CALLED FOR ON THE PLANS



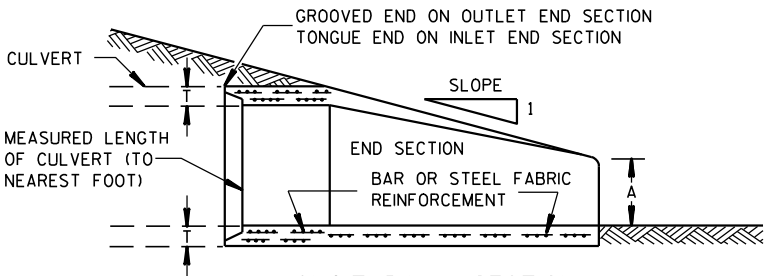
SIDE ELEVATION
METAL ENDWALLS

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

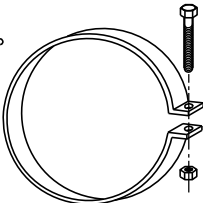
* MINIMUM
** MAXIMUM



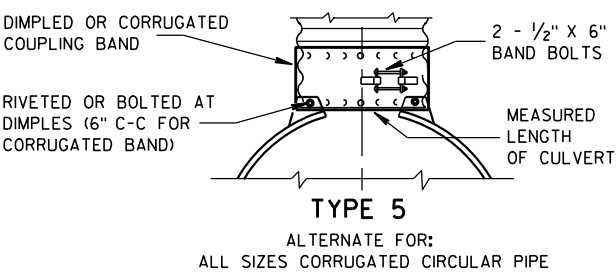
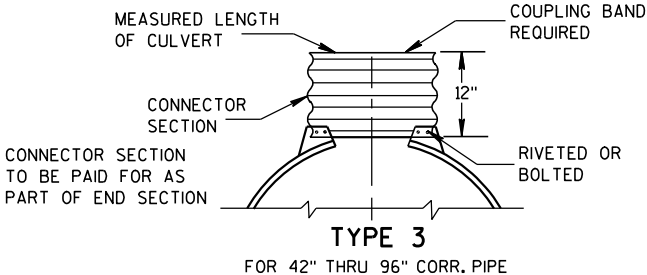
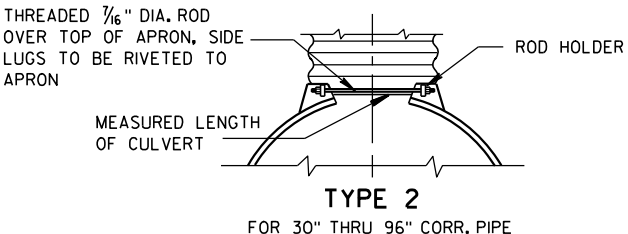
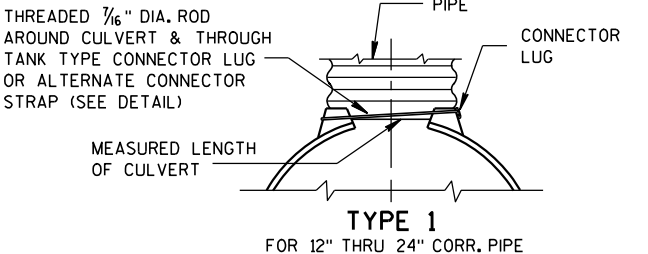
LONGITUDINAL SECTION
CONCRETE ENDWALLS



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



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



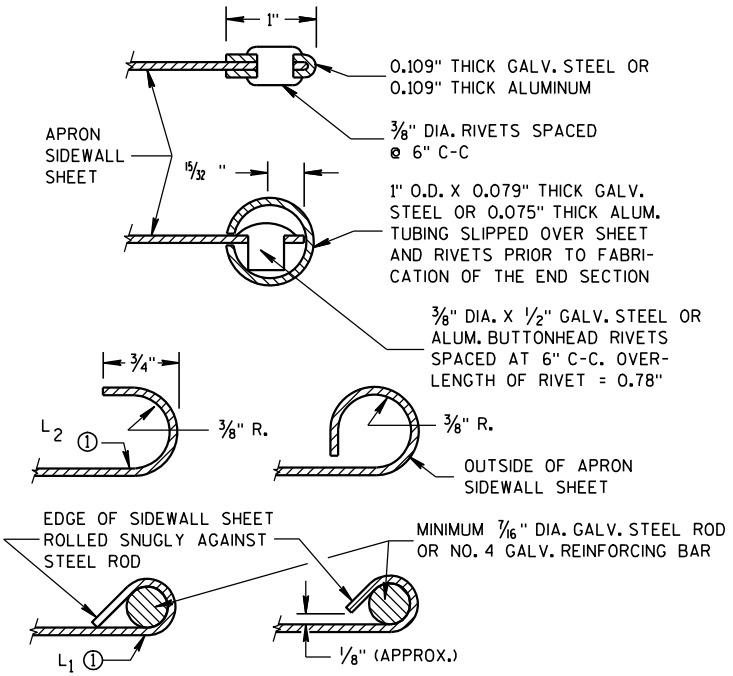
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

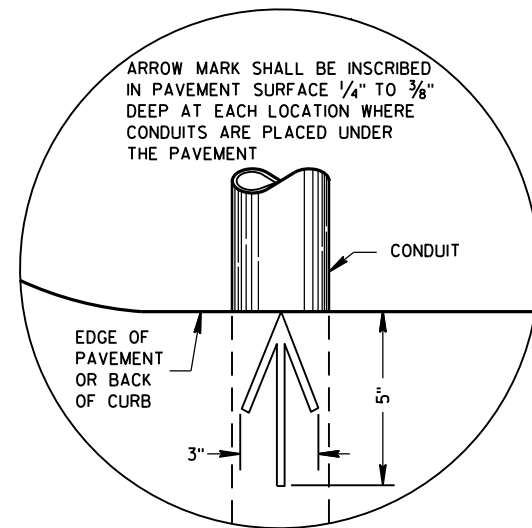
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

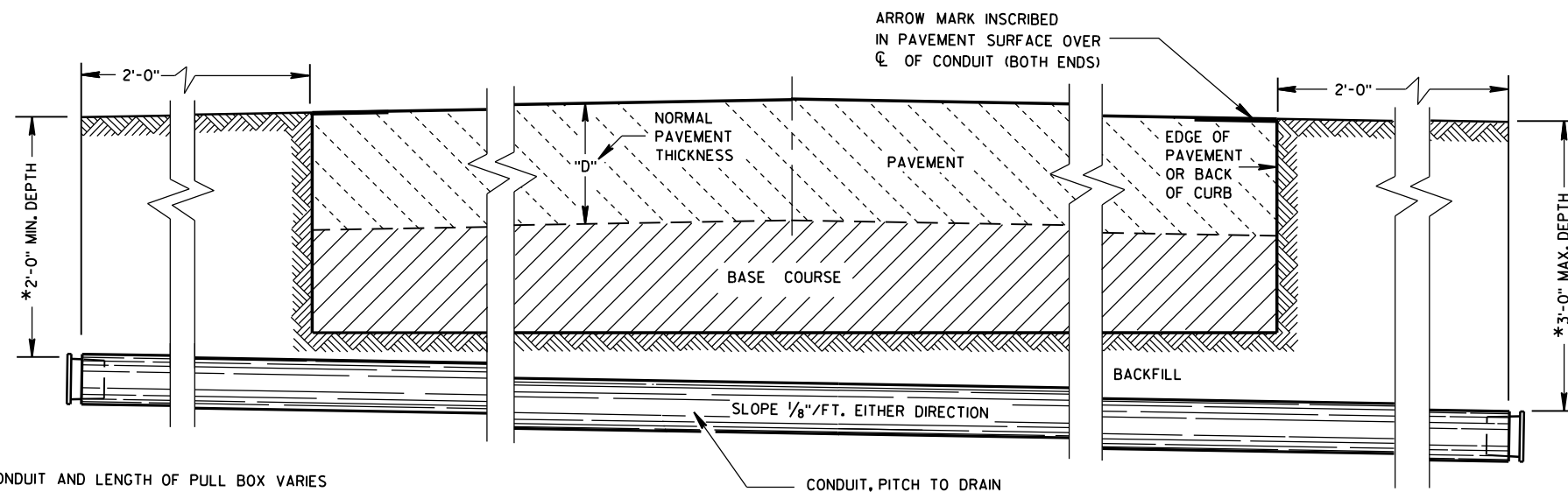
APRON ENDWALLS FOR
CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



PLAN VIEW
ARROW MARK



SIDE ELEVATION
DETAIL FOR CONDUIT UNDER PAVED HIGHWAYS

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

GENERAL NOTES

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

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

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

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

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

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

ALL METALLIC CONDUIT RACEWAY ENDS SHALL BE REAMED AND THREADED.

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

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

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

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

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

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

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

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

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

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

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

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

CONDUIT

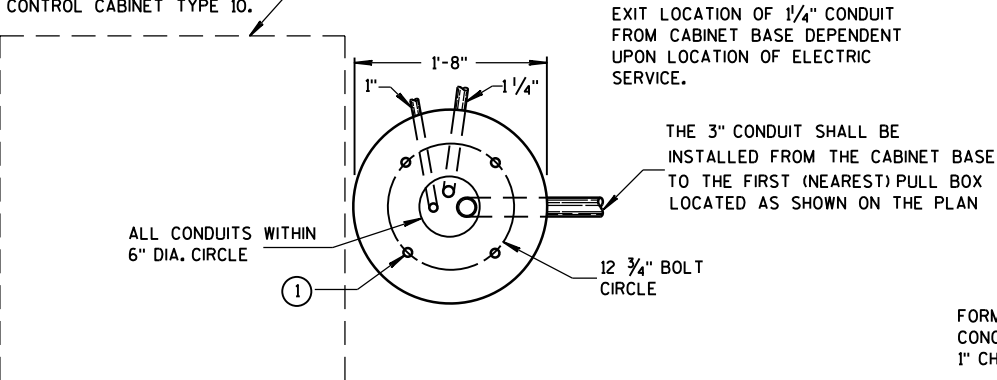
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March, 2017 /S/ Ahmet Demirbilek
DATE STATE ELECTRICAL ENGINEER
FHWA

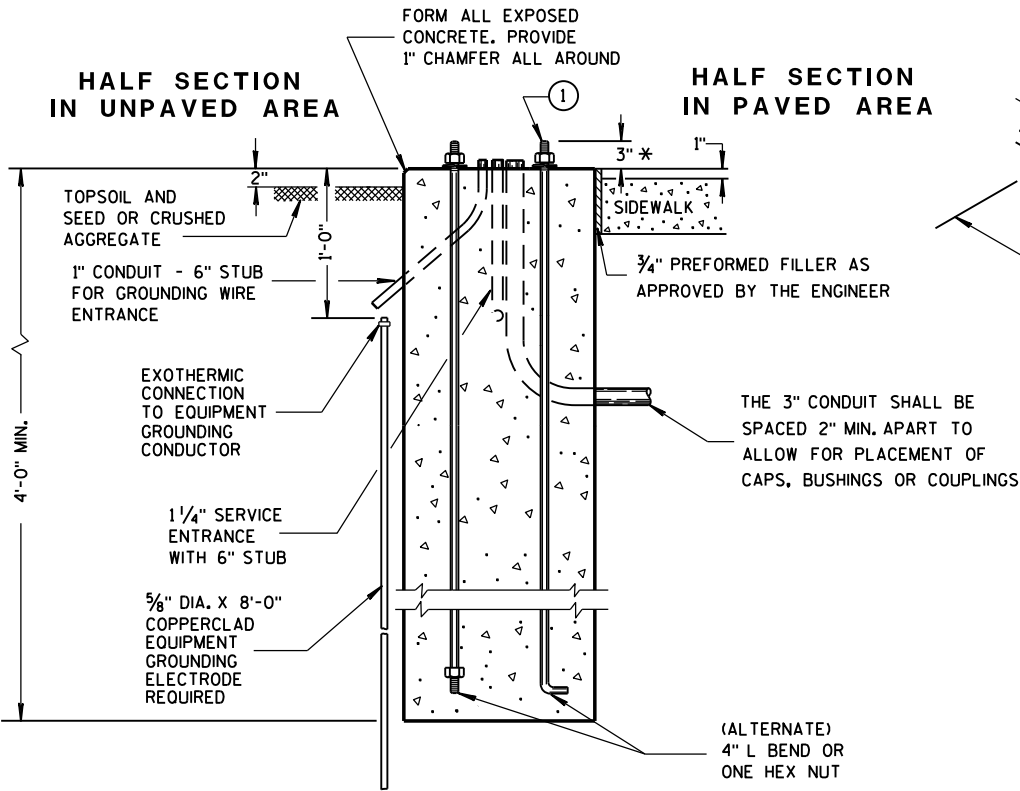
CONTROL CABINET BASE TYPE	DIMENSIONS				C.Y. CONCRETE (APPROX.)
	H	I	J	K	
TYPE 6 - 30" CABINET	34"	60"	10"	17"	.64
TYPE 7 - 38" CABINET	42"	60"	10"	21"	.93
TYPE 8 - 38" CABINET	42"	72"	12"	21"	1.29
TYPE 9 - VARIABLE	54"	72"	14"	27"	1.56
TYPE 10 - POST MOUNT	AS SHOWN				.65 *

* INCLUDES MAINTENANCE PLATFORM.

TYPICAL 3'-0" X 3'-0" X 4" THICK
MAINTENANCE PLATFORM.
LOCATION TO BE DETERMINED
IN THE FIELD. COST TO BE
INCLUDED UNDER CONCRETE
CONTROL CABINET TYPE 10.



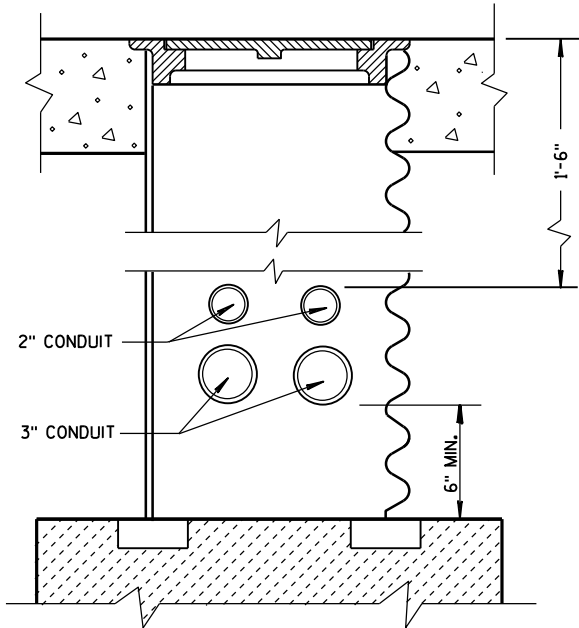
HALF SECTION IN UNPAVED AREA



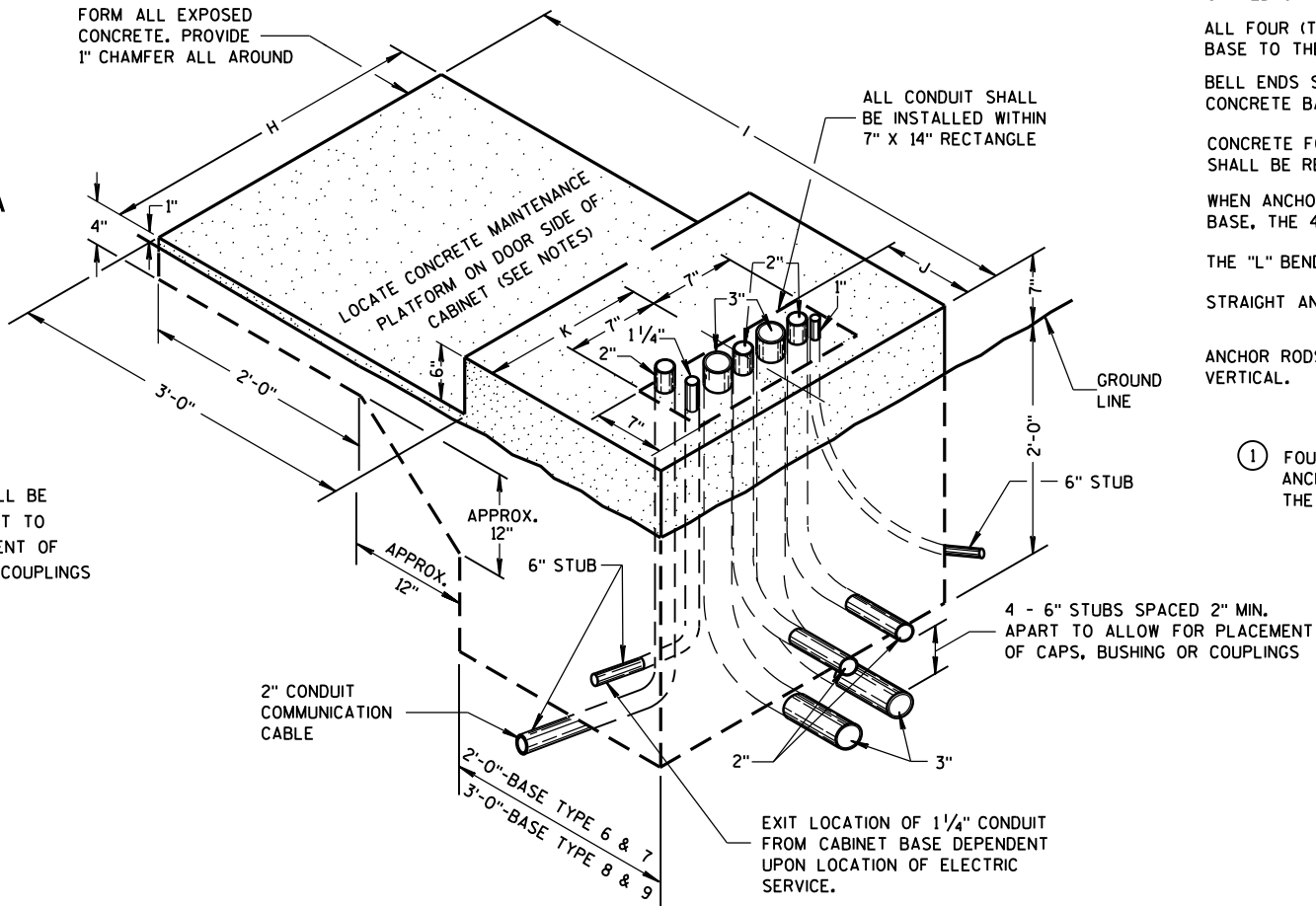
TYPE 10

* ANY ANCHOR ROD PROJECTION SHORTER THAN 2 3/4" OR LONGER THAN 3 1/4" SHALL REQUIRE THE BASE TO BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.

CONCRETE CONTROL CABINET BASES



CONDUIT LOCATIONS IN 24" X 36" PULL BOX (LEADING TO CONTROLLER CABINET BASE TYPE 6, 7, 8 AND 9)



TYPE 6,7,8 AND 9
(ISOMETRIC VIEW)

GENERAL NOTES

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

INSTALL FOUR 1/2 INCH MINIMUM DIAMETER X 4 INCH MINIMUM LENGTH APPROVED CONCRETE MASONRY ANCHORS WITH A PULLOUT STRENGTH OF 9,000 LBS. TO ANCHOR THE CABINET TO TYPE 6, 7, 8, AND 9 BASES. THE ANCHOR STUDS SHALL BE LOCATED AS DIRECTED BY THE ENGINEER TO PROPERLY ANCHOR THE CONTROL CABINET TO THE BASE.

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

CONDUIT HEIGHT ABOVE THE CONCRETE BASE SHALL BE 1 INCH.

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

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

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

CONTROL CABINET BASE TOP SURFACES SHALL BE TROWEL FINISHED SMOOTH AND LEVEL.

WHEN A TYPE 10 CONTROL CABINET BASE IS USED TO POST MOUNT A CONTROL CABINET, A 36" SQUARE 4" THICK CONCRETE MAINTENANCE PLATFORM SHALL BE REQUIRED ON THE DOOR SIDE OF THE CABINET. THE TOP 1 INCH SHALL BE ABOVE FINISHED GRADE AND BE BROOM FINISHED AND LEVEL.

MAINTENANCE PLATFORMS ARE NOT REQUIRED WHEN THE SURROUNDING AREA IS PAVED.

MINIMUM BENDING RADIUS OF CONDUIT = 6 X THE DIAMETER.

ALL METALLIC CONDUIT ENDS SHALL BE REAMED AND THREADED.

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

ALL FOUR (TWO INCH AND THREE INCH) CONDUIT SHALL BE INSTALLED FROM THE CABINET BASE TO THE FIRST (NEAREST) PULL BOX LOCATED AS SHOWN ON THE PLANS.

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

CONCRETE FORM DEPTH BELOW FINISHED GRADE SHALL BE 6" MAXIMUM. CONCRETE FORMS SHALL BE REMOVED AFTER CONCRETE HAS SET.

WHEN ANCHOR RODS USING THE ALTERNATE L BEND ARE FURNISHED FOR THE TYPE 10 BASE, THE 4" L BEND SHALL BE IN ADDITION TO THE SPECIFIED ANCHOR ROD BAR LENGTH.

THE "L" BEND SHALL NOT BE THREADED.

STRAIGHT ANCHOR RODS SHALL BE THREADED 12" IN LENGTH ON EACH END OF THE ROD.

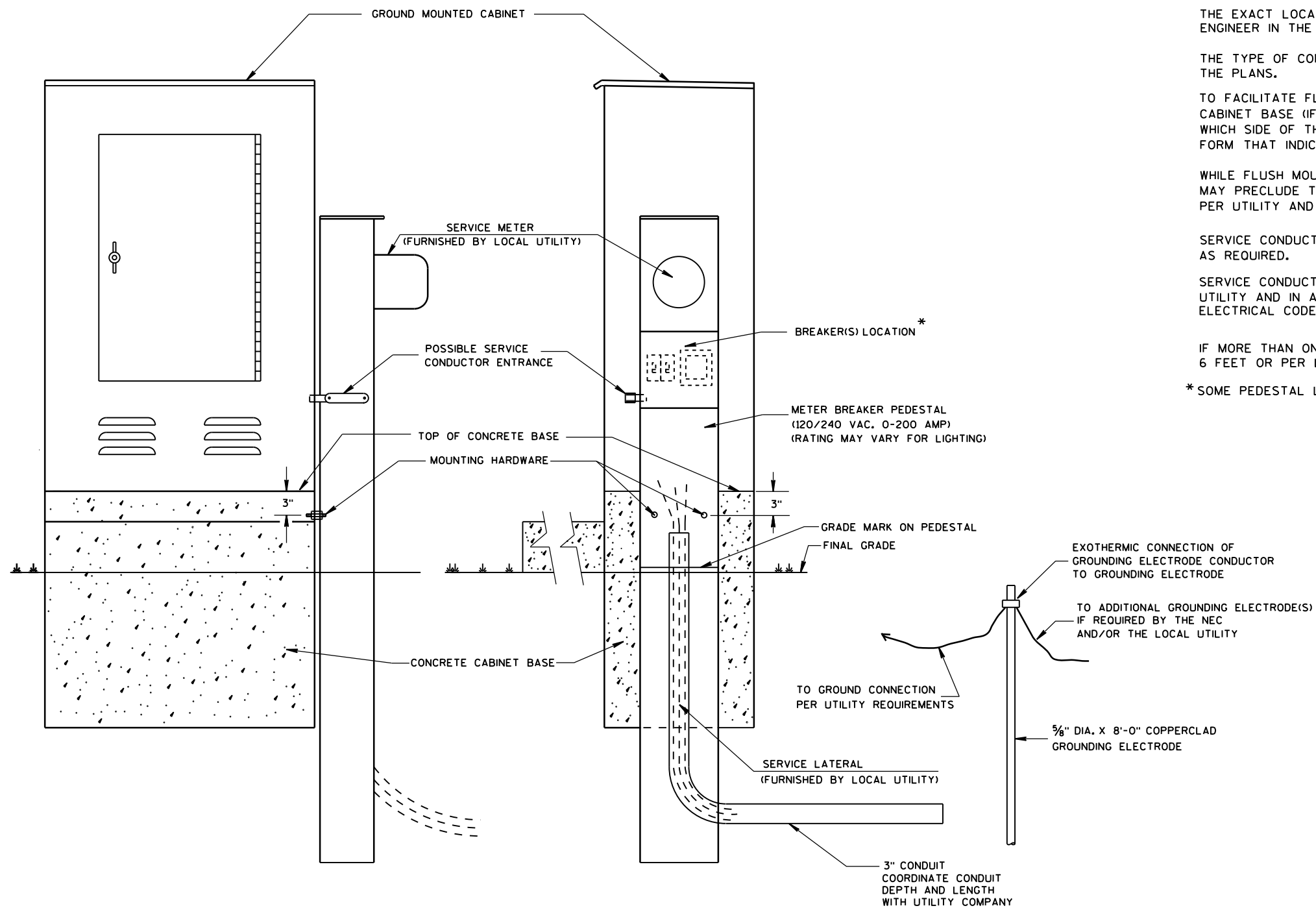
ANCHOR RODS SHALL BE INSTALLED WITH MISALIGNMENTS OF LESS THAN 1:40 FROM VERTICAL.

① FOUR (4) ANCHOR RODS, 1" DIA. X 3'-6". ANCHOR RODS SHALL BE MANUFACTURED IN ACCORDANCE WITH SECTION 654.2.1 OF THE STANDARD SPECIFICATIONS.

CONCRETE CONTROL CABINET BASES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TYPICAL CABINET SERVICE INSTALLATION

GENERAL NOTES

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

THE EXACT LOCATION OF THE METER BREAKER PEDESTAL SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

THE TYPE OF CONCRETE CABINET BASE TO BE INSTALLED SHALL BE AS CALLED FOR IN THE PLANS.

TO FACILITATE FLUSH MOUNTING OF THE METER BREAKER PEDESTAL AGAINST THE SIDE OF THE CABINET BASE (IF FLUSH MOUNTING POSSIBLE, CONFER WITH THE LOCAL UTILITY TO DETERMINE WHICH SIDE OF THE CONCRETE BASE THE ELECTRICAL SERVICE LATERAL WILL APPROACH, THEN FORM THAT INDICATED SIDE FOR FULL SIDE DEPTH.

WHILE FLUSH MOUNTING IS THE MOST DESIRABLE MOUNTING CONFIGURATION UTILITY REQUIREMENTS MAY PRECLUDE THIS OPTION. CONTRACTOR MUST PROVIDE UTILITY APPROVED PEDESTAL AND INSTALL PER UTILITY AND MANUFACTURERS REQUIREMENTS.

SERVICE CONDUCTOR ENTRANCES SHALL BE RIGID METALLIC CONDUIT, NIPPLES AND/OR CONDULETS AS REQUIRED.

SERVICE CONDUCTOR ENTRANCES SHALL BE SIZED AND LOCATED AS REQUIRED BY THE LOCAL UTILITY AND IN ACCORDANCE WITH APPROPRIATE ARTICLES OF THE LATEST ACCEPTED NATIONAL ELECTRICAL CODE.

IF MORE THAN ONE GROUNDING ELECTRODE IS REQUIRED, THE DISTANCE APART SHALL BE 6 FEET OR PER LOCAL UTILITY REGULATIONS.

* SOME PEDESTAL LIGHTING PLANS SHOW MAIN LUGS ONLY.

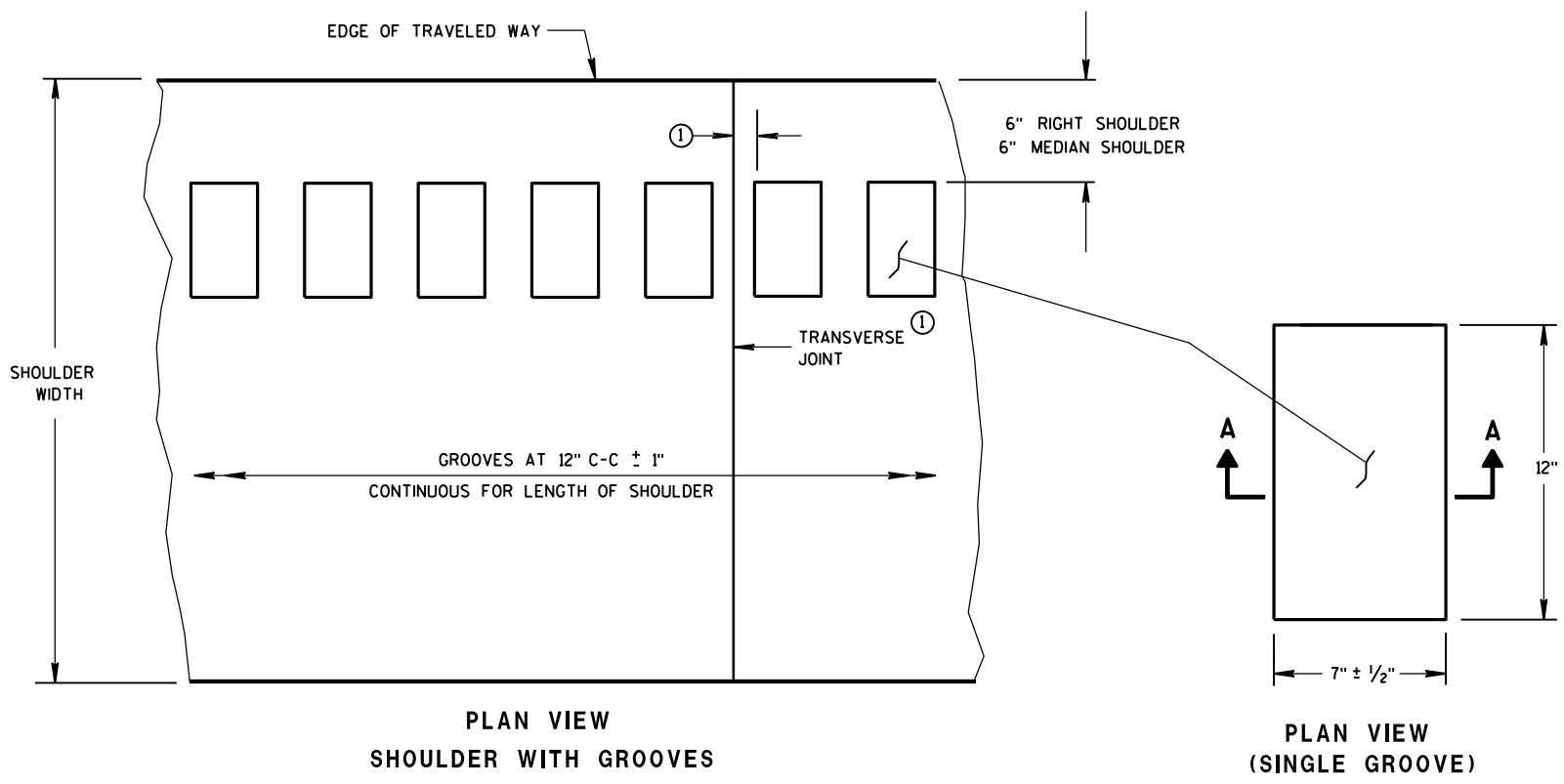
CABINET SERVICE INSTALLATION
(METER BREAKER PEDESTAL)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept. 2014
DATE

/S/ Ahmet Demirbilek
STATE ELECTRICAL ENGINEER

FHWA



6

6" RIGHT SHOULDER
6" MEDIAN SHOULDER

EDGE OF TRAVELED WAY

SHOULDER WIDTH

①

GROOVES AT 12" C-C \pm 1"

CONTINUOUS FOR LENGTH OF SHOULDER

TRANSVERSE JOINT ①

7" \pm 1/2"

12"

PLAN VIEW (SINGLE GROOVE)

6

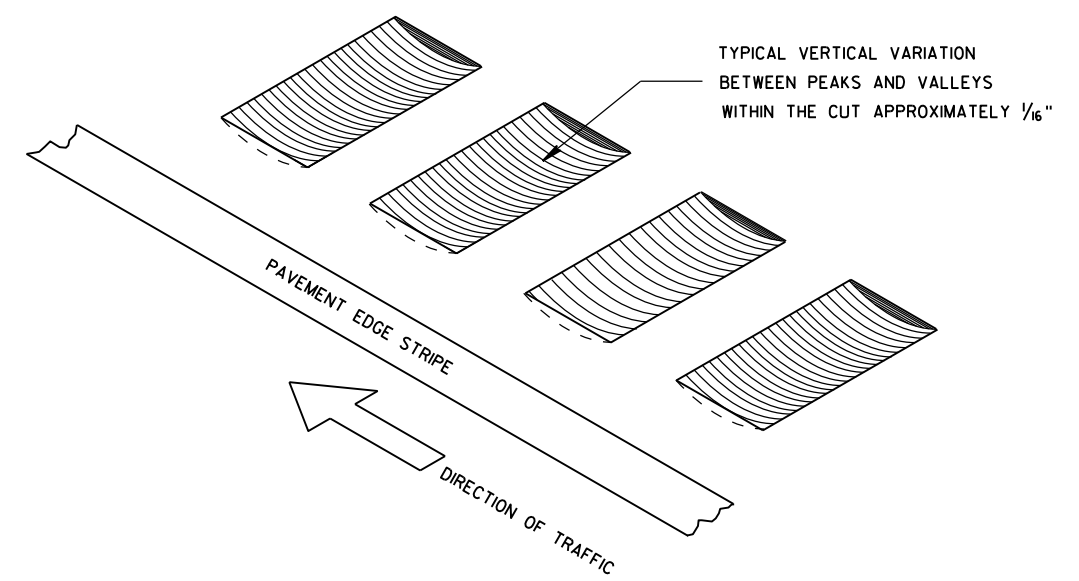
GENERAL NOTES

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

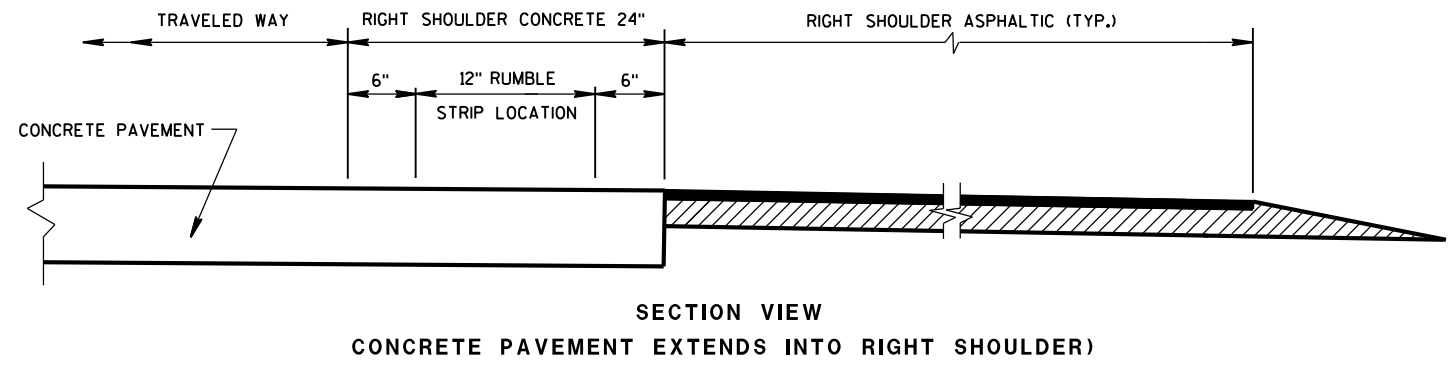
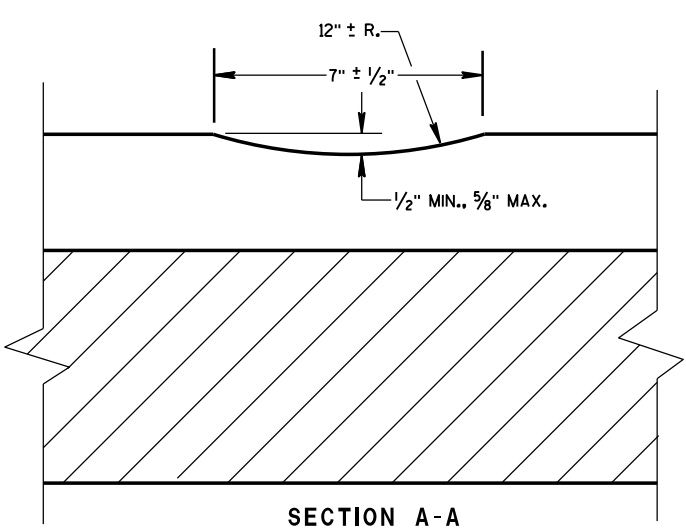
RUMBLE STRIPS ON EXPRESSWAYS

DO NOT INSTALL RUMBLE STRIPS ACROSS SIDE ROAD INTERSECTIONS, COMMERCIAL DRIVEWAYS, PRIVATE DRIVEWAYS OR ADJACENT TO RIGHT TURN LANES, LEFT TURN LANES, TURN LANE TAPERS, BRIDGE DECKS, BRIDGE APPROACHES, OR 100 FEET IN ADVANCE OF RAILROAD CROSSING. THE ATTACHED STANDARD DETAIL DRAWING SHOWS THE LOCATION OF THE RUMBLE STRIPS AT INTERCHANGE AREAS.

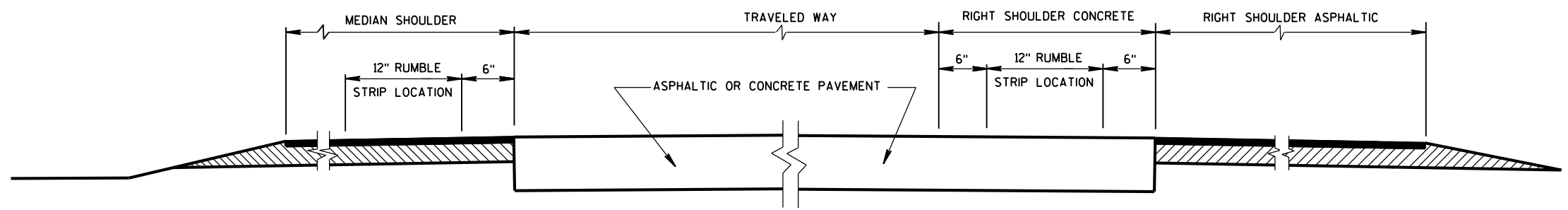
① CONCRETE PAVEMENT - RUMBLE STRIPS SHALL BE A MINIMUM OF 6" AWAY FROM TRANSVERSE JOINTS.



ISOMETRIC



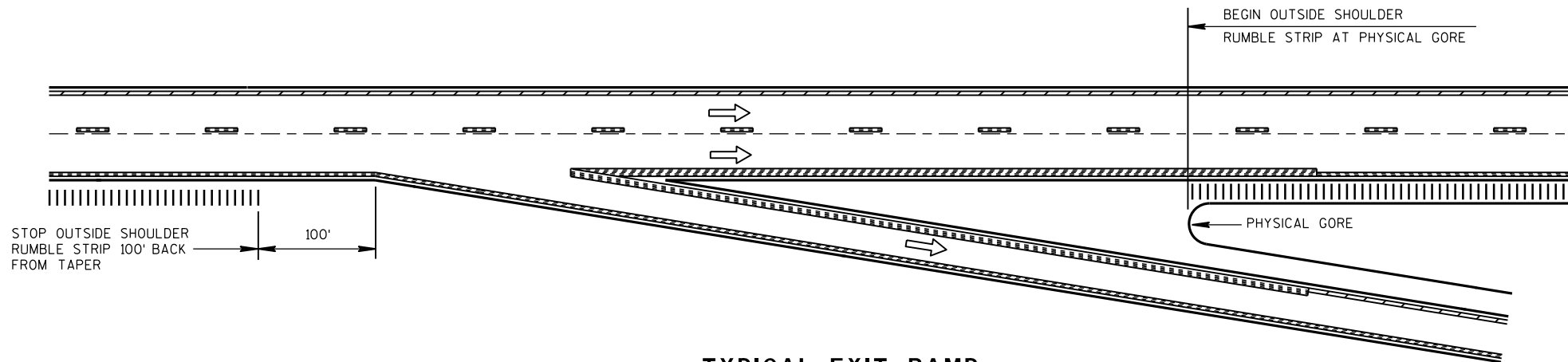
SECTION VIEW
CONCRETE PAVEMENT EXTENDS INTO RIGHT SHOULDER)



SECTION VIEW
TYPICAL LOCATIONS OF SHOULDER RUMBLE STRIPS
IN RURAL DIVIDED HIGHWAYS
(ONE ROADWAY IS SHOWN)

SHOULDER RUMBLE STRIP,
MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



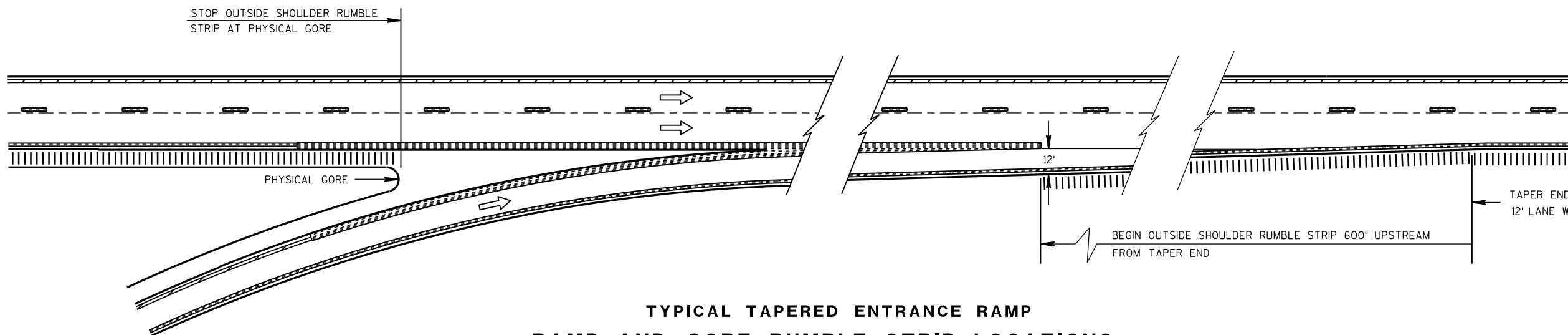
TYPICAL EXIT RAMP

NOTES:

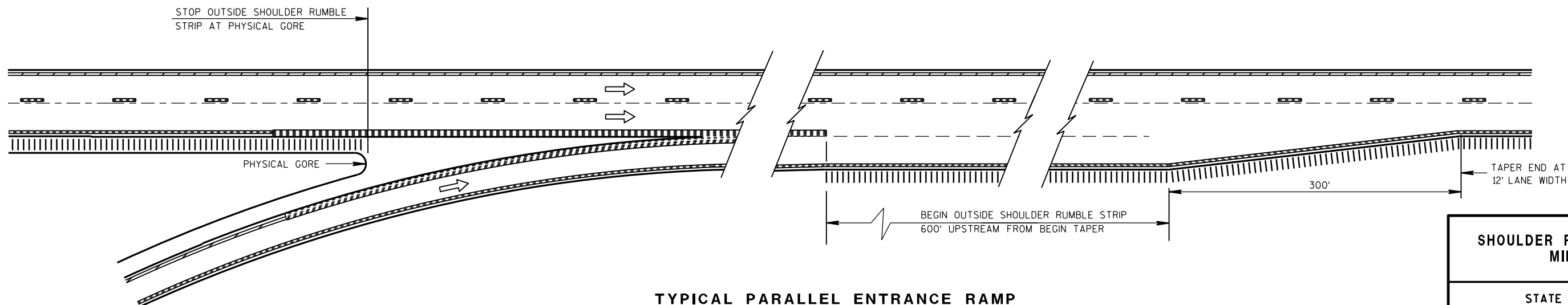
NO RUMBLE STRIP ON EXIT, DIRECTIONAL, OR ENTRANCE RAMPS, EXCEPT NEAR THE ENTRANCE TAPER END AND ALONG THE PARALLEL RAMP AREA AS SHOWN.

PAVEMENT MARKING DETAILS AND SPECIFICATIONS ARE PROVIDED ELSEWHERE IN THE CONTRACT.

NOTE:
ARROW SYMBOL (→)
SHOWS DIRECTION OF TRAVEL



**TYPICAL TAPERED ENTRANCE RAMP
RAMP AND GORE RUMBLE STRIP LOCATIONS**



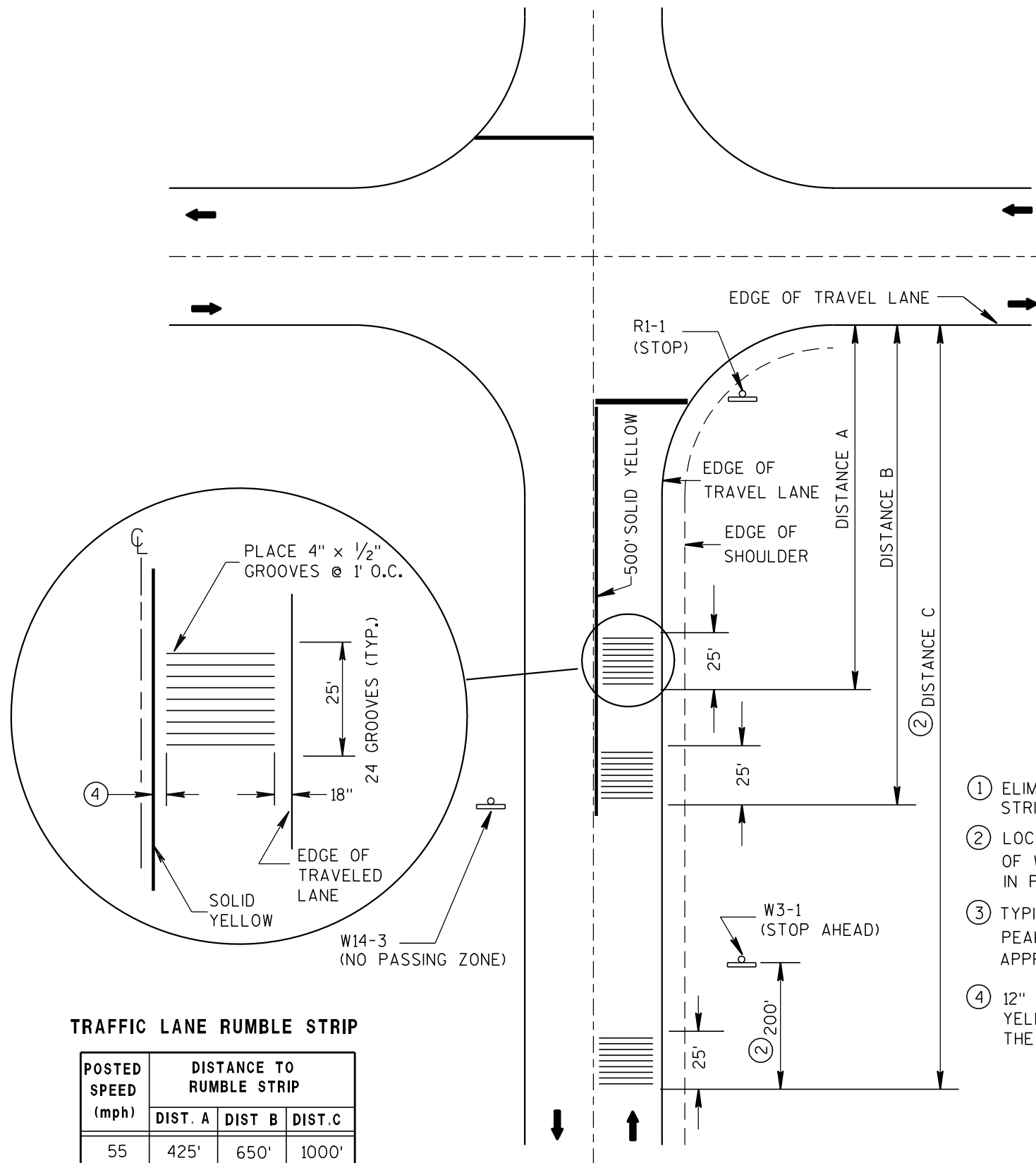
**TYPICAL PARALLEL ENTRANCE RAMP
RAMP AND GORE RUMBLE STRIP LOCATIONS**

**SHOULDER RUMBLE STRIP,
MILLING**

**STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION**

APPROVED
12/17/2012
DATE
FHWA

/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER



TRAFFIC LANE RUMBLE STRIP

POSTED SPEED (mph)	DISTANCE TO RUMBLE STRIP		
	DIST. A	DIST. B	DIST. C
55	425'	650'	1000'
50	325'	450'	800'
45	275'	400'	650'
40	225'	①	550'
35	175'	①	475'
≤ 30	125'	①	425'

ARROW SYMBOL (➡) SHOWS DIRECTION OF TRAVEL

PLAN VIEW
RUMBLE STRIP LOCATION

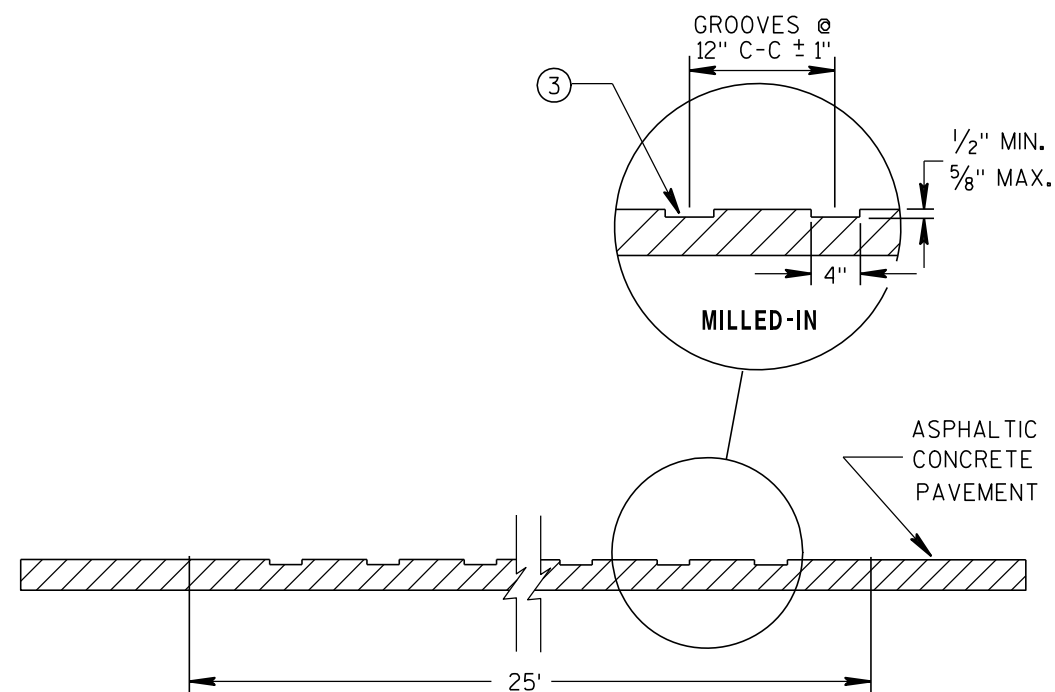
- ① ELIMINATE THE MIDDLE SET OF RUMBLE STRIPS.
- ② LOCATE RUMBLE STRIP 200' IN ADVANCE OF W3-1 SIGN AS SHOWN. IF W3-1 IS NOT IN PLACE, USE DISTANCE C.
- ③ TYPICAL VERTICAL VARIATION BETWEEN PEAKS AND VALLEYS WITHIN THE CUT APPROXIMATELY $\frac{1}{16}$ "
- ④ 12" CLEAR BETWEEN THE SOLID YELLOW LINE AND THE EDGE OF THE RUMBLE.

GENERAL NOTES

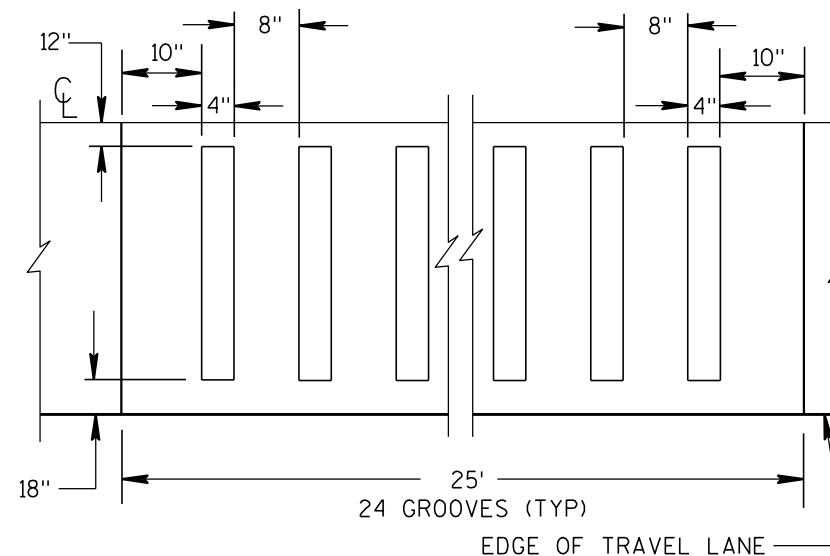
CONTRACTOR SHALL CONFIRM RUMBLE STRIP LOCATION WITH THE ENGINEER PRIOR TO INSTALLATION. THE ENGINEER MAY MODIFY THE RUMBLE STRIP LOCATION AS FIELD CONDITIONS DICTATE.

WHEN ASPHALTIC PAVEMENT IS NEW IN THE RUMBLE AREA THE CONTRACTOR SHALL ALLOW THE PAVEMENT TO CURE A MINIMUM OF 7 DAYS PRIOR TO RUMBLE INSTALLATION.

PAVEMENT MARKING AND SIGNING DETAILS AND SPECIFICATIONS ARE PROVIDED ELSEWHERE IN THE CONTRACT.



ELEVATION VIEW



PLAN VIEW
ASPHALTIC PAVEMENT
MILLED-IN

ASPHALTIC RUMBLE STRIPS
AT INTERSECTION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/17/2011

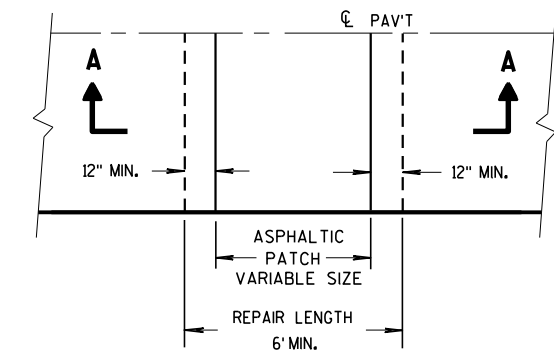
DATE

FHWA

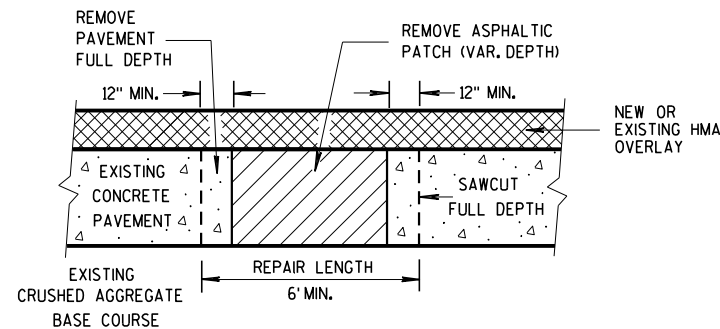
/S/ Jerry H. Zogg

ROADWAY STANDARDS DEVELOPMENT

ENGINEER

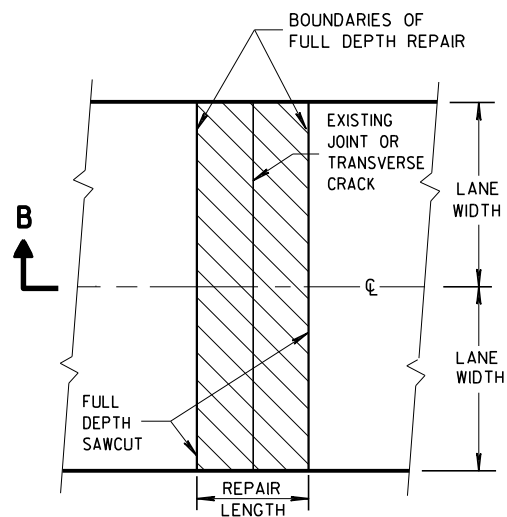


PLAN VIEW

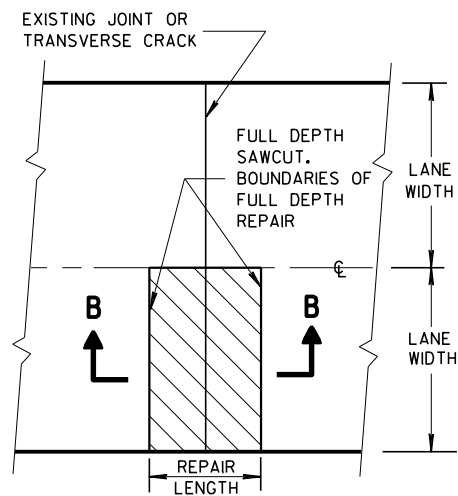


SECTION A-A

HMA PATCH REMOVAL



PLAN VIEW
(DOUBLE LANE REPAIR)



PLAN VIEW
(SINGLE LANE REPAIR)

FULL DEPTH CONCRETE PAVEMENT REMOVAL

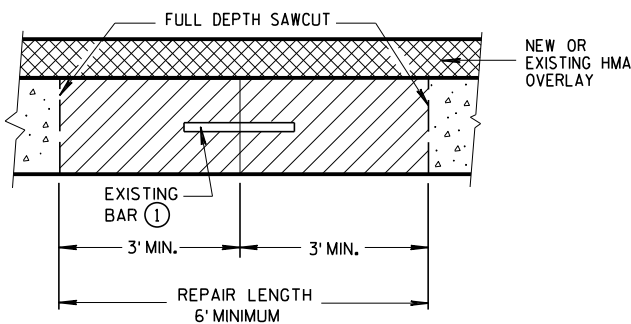
GENERAL NOTES

SAW CUT, DRILL, AND LIFT OUT EXISTING CONCRETE PAVEMENT WITHIN THE BOUNDARIES OF CONCRETE REPAIR AREAS. THE CONTRACTOR MAY MAKE ADDITIONAL SAW CUTS INSIDE THE REPAIR LIMITS TO REDUCE WEIGHT AND SIZE OF CONCRETE PIECES.

PROVIDE 6-FOOT MINIMUM DISTANCE FROM BOUNDARIES OF CONCRETE REPAIR AREAS TO ADJACENT TRANSVERSE JOINT OR CRACK.

THE LENGTH OF THE REPAIRS MAY VARY FROM THE DIMENSIONS SHOWN IF THE EXISTING CONCRETE PAVEMENT IS NONDOWELED AND THE PAVEMENT IS TO BE OVERLAID AFTER REPAIRING.

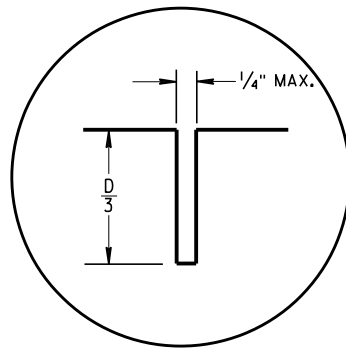
① DOWEL BARS MIGHT NOT EXIST.



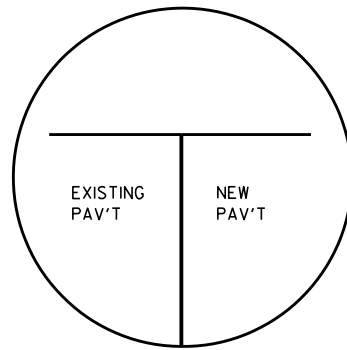
SECTION B-B
CONCRETE REMOVAL

BASE PATCHING CONCRETE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

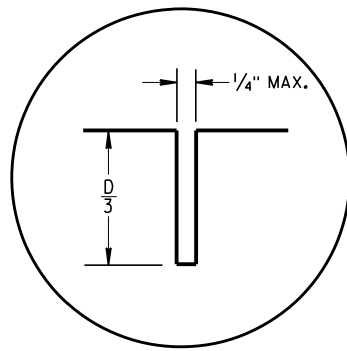


C1

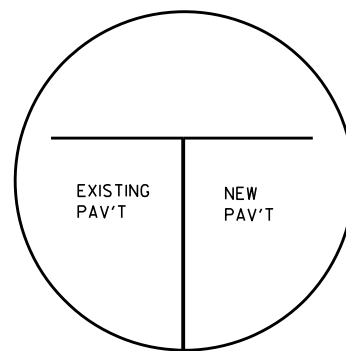


C2

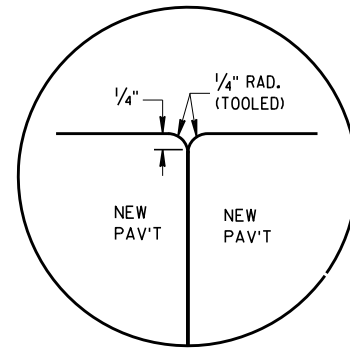
TRANSVERSE JOINTS



L1

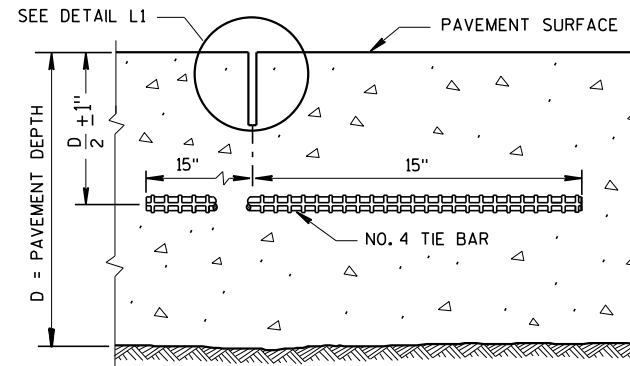


L2

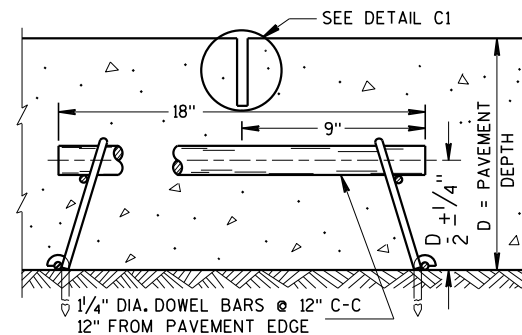


L3

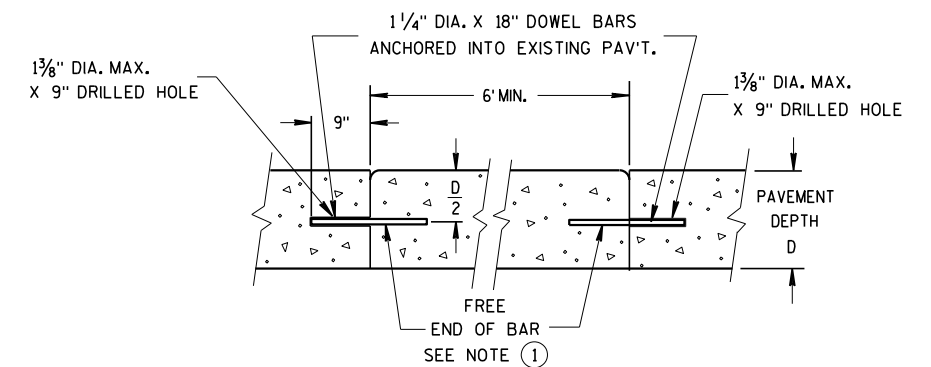
LONGITUDINAL JOINTS



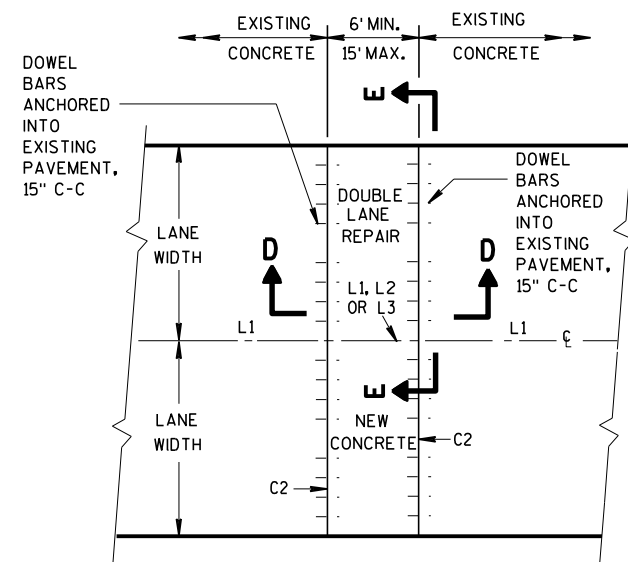
SECTION C-C
SAWED LONGITUDINAL JOINT



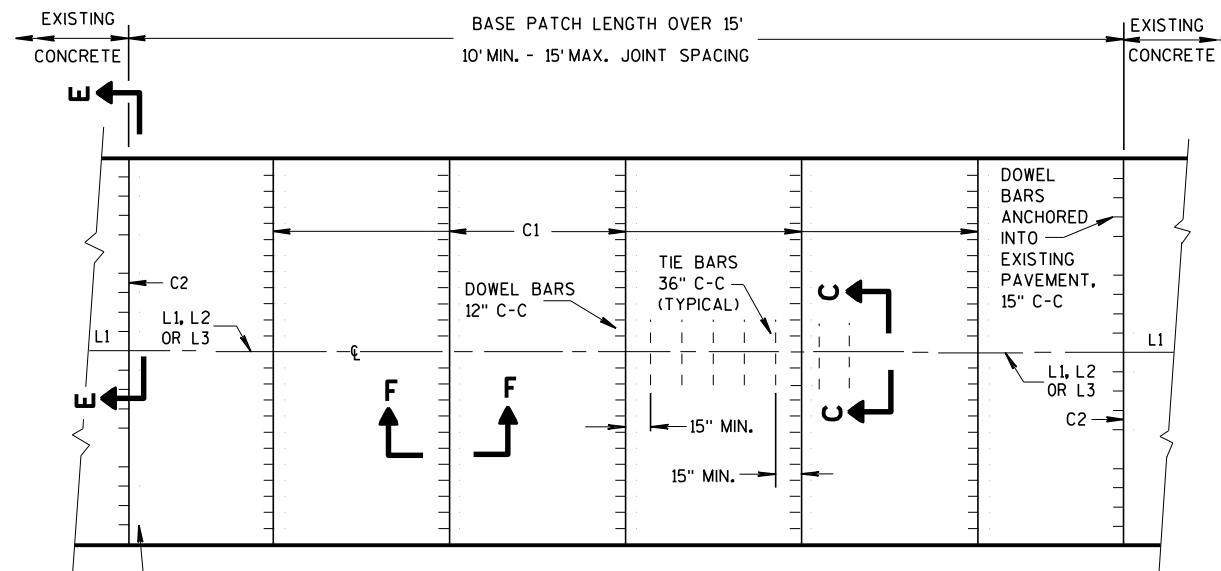
SECTION F-F
CONTRACTION JOINT



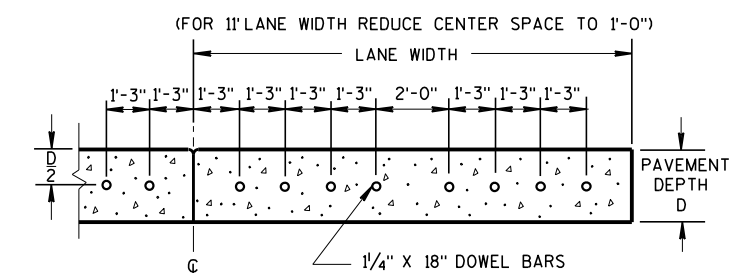
SECTION D-D



PLAN VIEW
MULTI-LANE CONCRETE BASE PATCH
15' MAXIMUM LENGTH



PLAN VIEW
MULTI-LANE CONCRETE BASE PATCH
GREATER THAN 15' IN LENGTH



SECTION E-E
SPACING OF DOWEL BARS
ANCHORED INTO EXISTING PAVEMENT

GENERAL NOTES

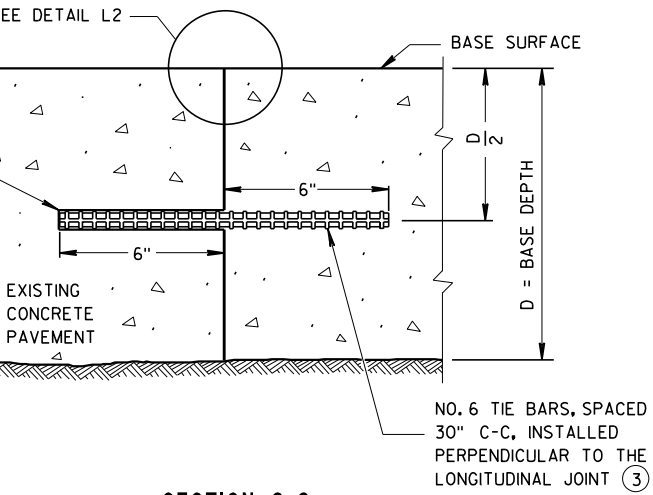
INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

CONCRETE BASE PATCHES OF EXISTING NONDOWELED CONCRETE PAVEMENTS DO NOT NEED TO BE DOWELED.

ANCHOR DOWEL BARS AND TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

PROVIDE A MINIMUM DISTANCE OF 15 INCHES FROM AN EXISTING TRANSVERSE JOINT OR THE EDGE OF REPLACEMENT TO THE CENTER OF THE TIE BAR NEAREST THAT JOINT OR EDGE.

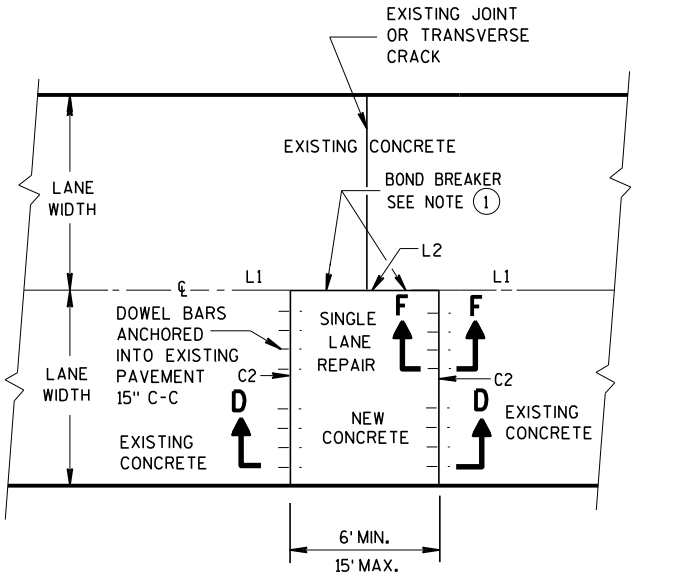
- APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.



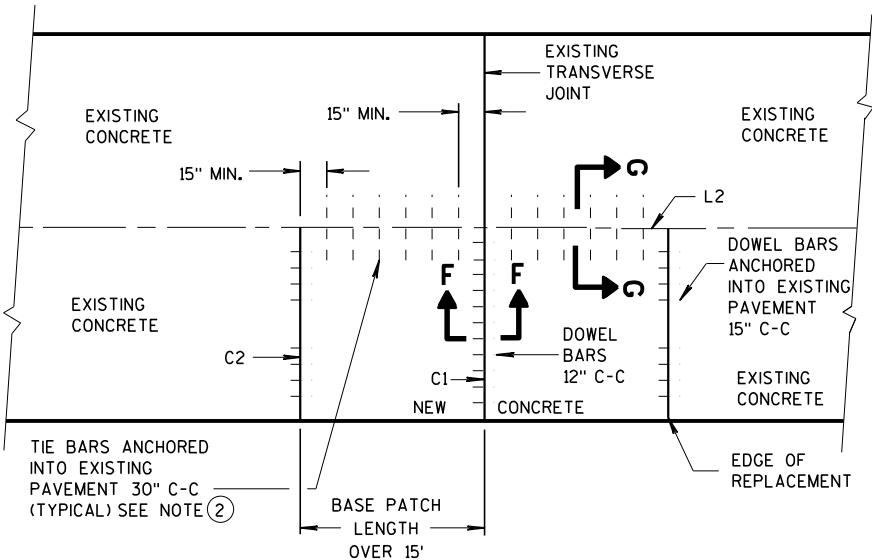
SECTION G-G
TIE BARS ANCHORED
INTO EXISTING PAVEMENT

GENERAL NOTES

- ① USE AN ENGINEER-APPROVED BOND BREAKER (E.G. RELEASE AGENT, CURING COMPOUND) FOR SINGLE LANE BASE PATCHES UP TO 15 FEET IN LENGTH.
- ② WITH THE APPROVAL OF THE ENGINEER, FOR SINGLE LANE PAVEMENT REPLACEMENTS LESS THAN 30 FEET IN LENGTH, DRILLED TIE BARS MAY BE INSTALLED ON 6:1 SKEW HORIZONTALLY, DIRECTION OF SKEW ALTERNATING WITH EACH SUCCESSIVE BAR. DRIVE SKEWED TIE BARS TO A DEPTH OF 6 INCHES IN A HOLE OF SUCH A DIAMETER AS TO PROVIDE A TIGHT DRIVEN FIT.
- ③ ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.



PLAN VIEW
SINGLE LANE CONCRETE BASE PATCH
15' MAXIMUM LENGTH

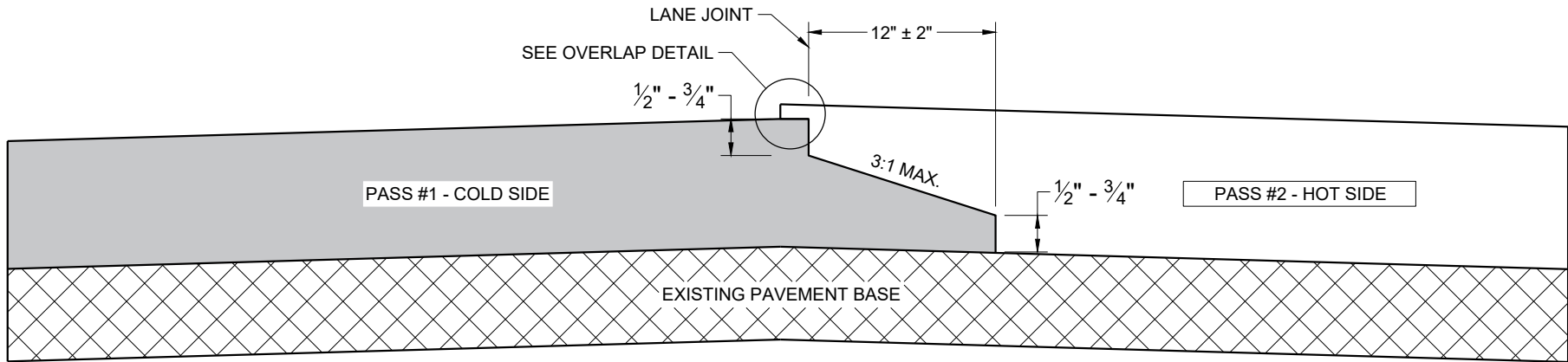


PLAN VIEW
SINGLE LANE CONCRETE BASE PATCH
GREATER THAN 15' IN LENGTH

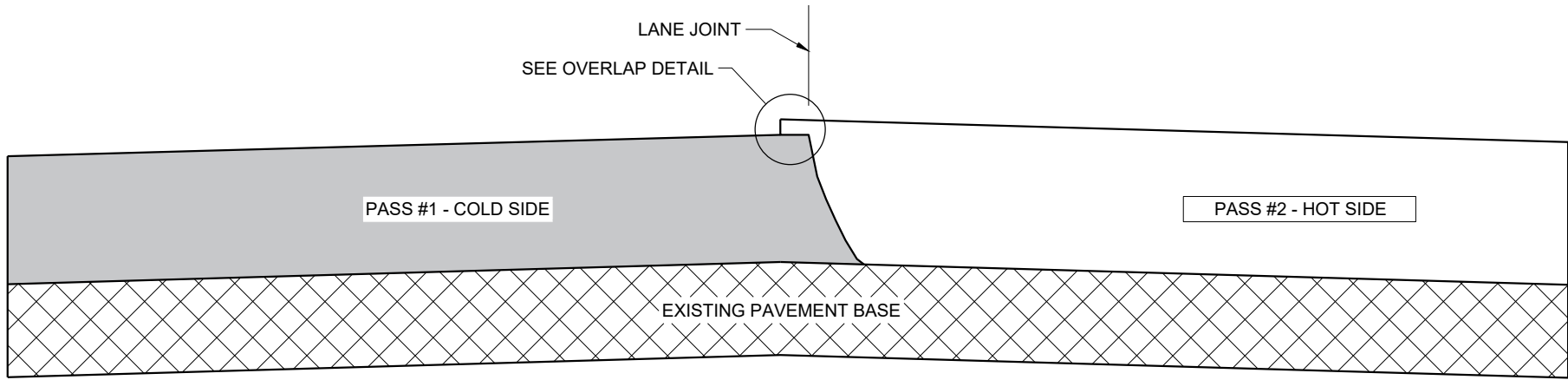
BASE PATCHING CONCRETE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

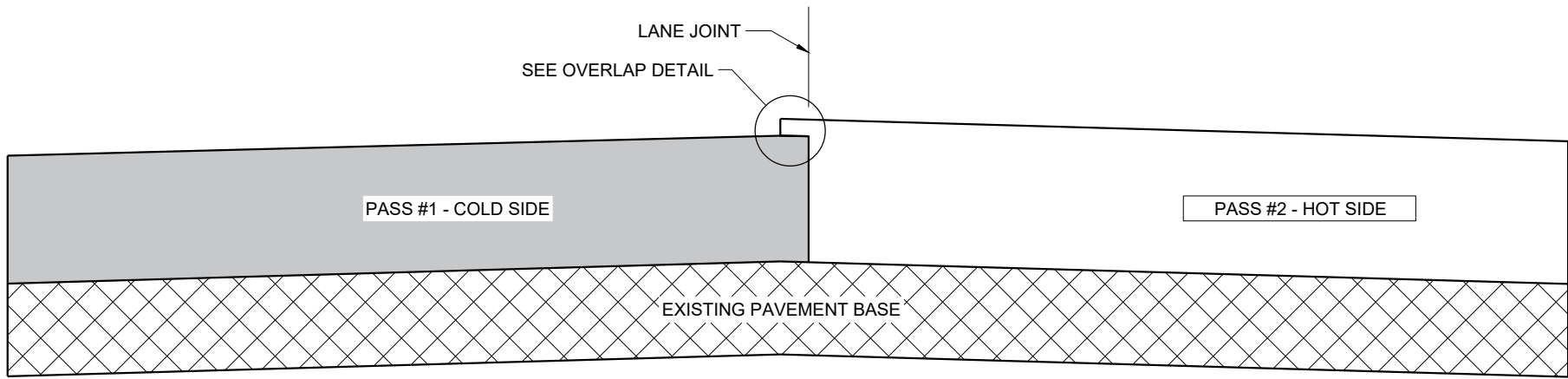
APPROVED
March 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR
FHWA



**TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT**



**TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT (MILLED)**

GENERAL NOTES

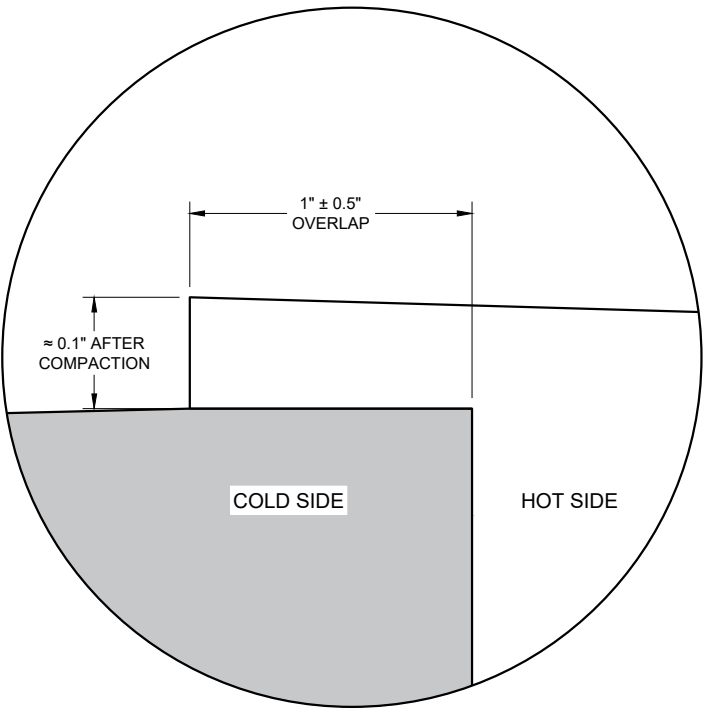
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

FOR ALL LONGITUDINAL JOINTS, ENSURE THE PAVER SCREED OVERLAPS THE PREVIOUSLY PLACED PAVEMENT BY 1" ± 0.5" AND THE HOT SIDE OF THE JOINT REMAINS HIGHER THAN THE COLD SIDE BY APPROXIMATELY 0.1" AFTER FINAL COMPACTION. (IT WILL BE FLUSH WHEN PAVING IN ECHELON.)

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

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

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

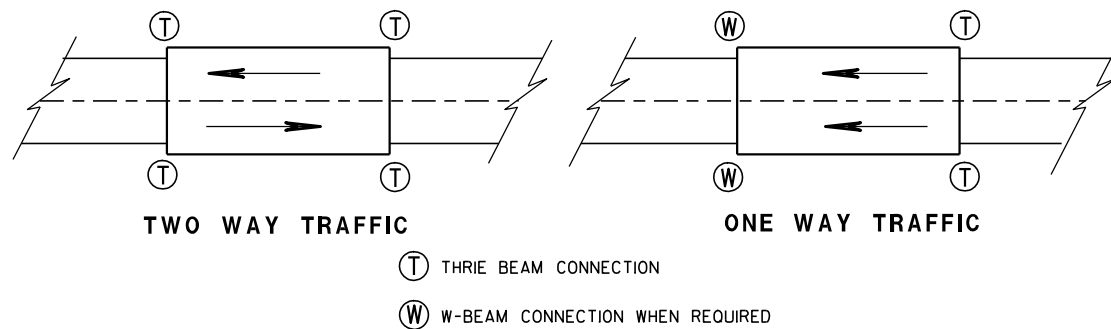
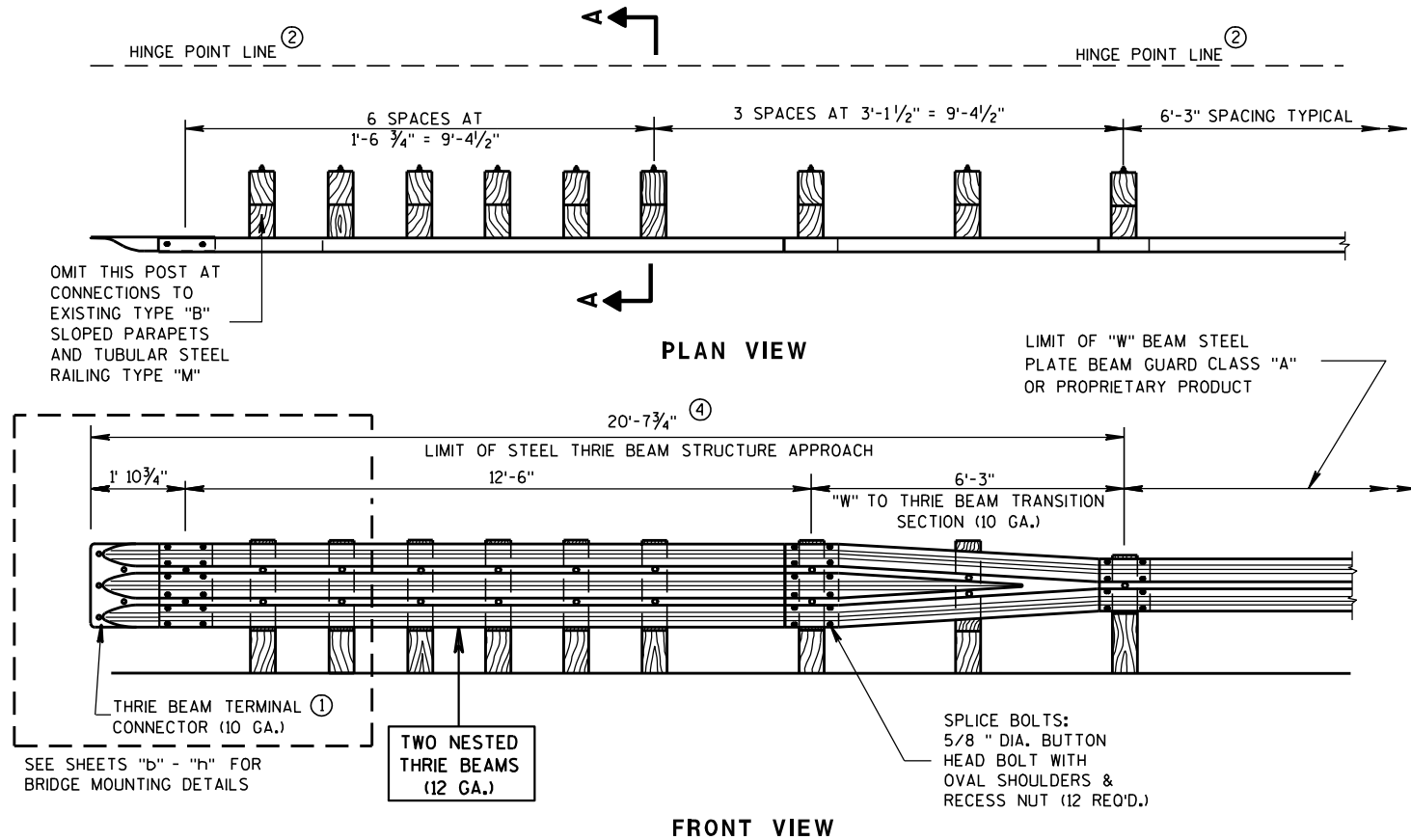


OVERLAP DETAIL (TYPICAL)

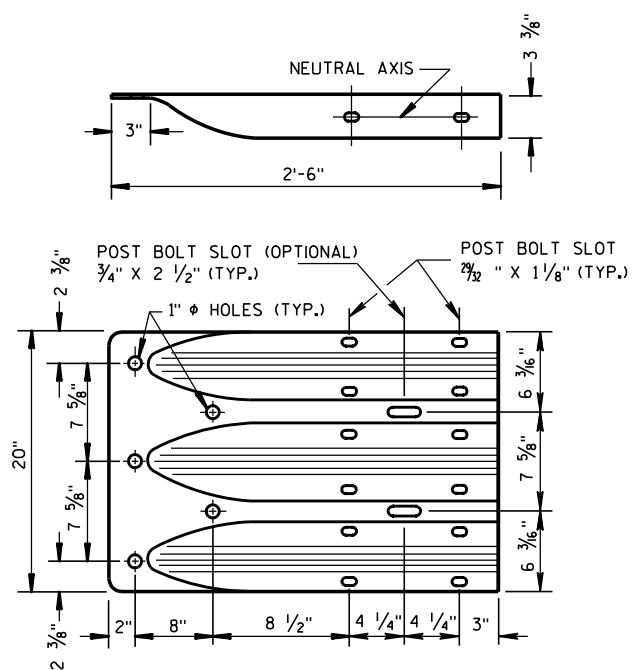
HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

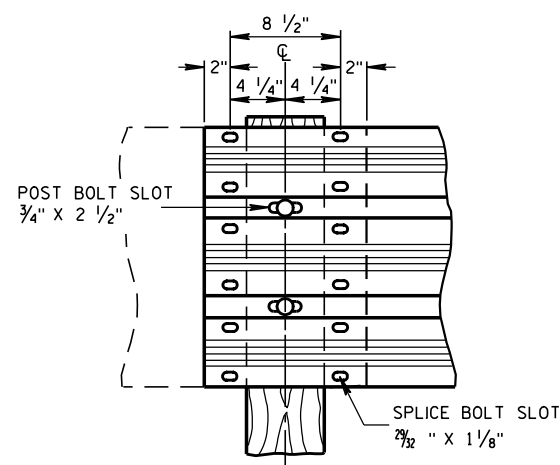
APPROVED
November 2020 /S/ Steven Hefel
DATE HMA PAVEMENT ENGINEER
FHWA



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



THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE

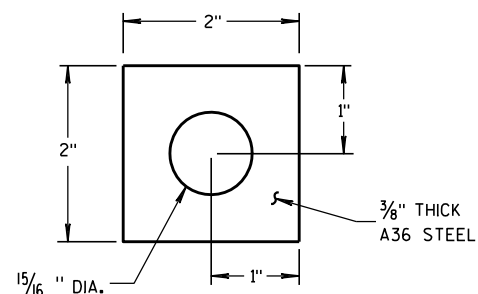
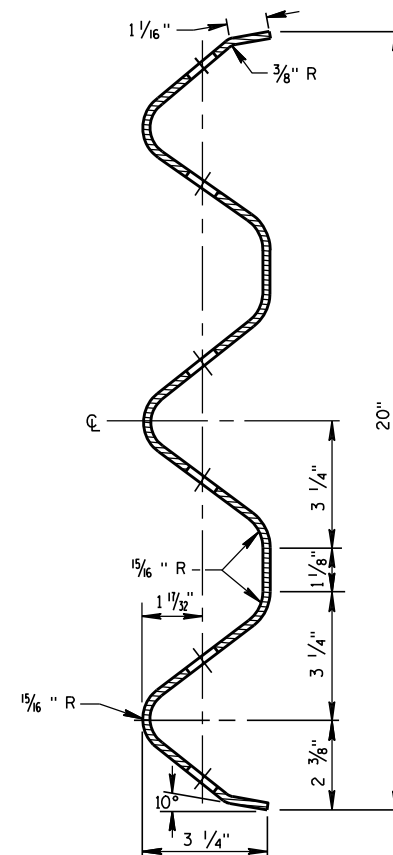


PLATE WASHER DETAIL



SECTION THRU THRIE BEAM RAIL ELEMENT

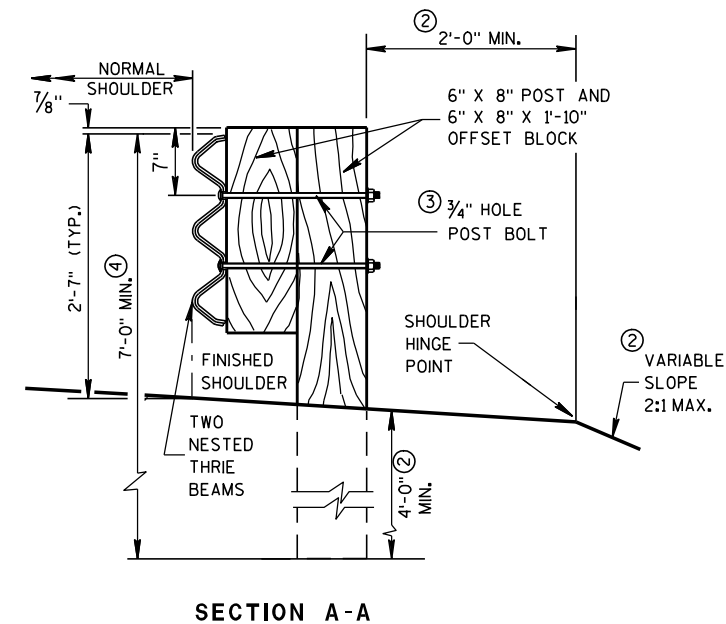
GENERAL NOTES

BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3".

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

- ① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.
- ② MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.
- ③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.
- ④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



STEEL THRIE BEAM STRUCTURE APPROACH

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012

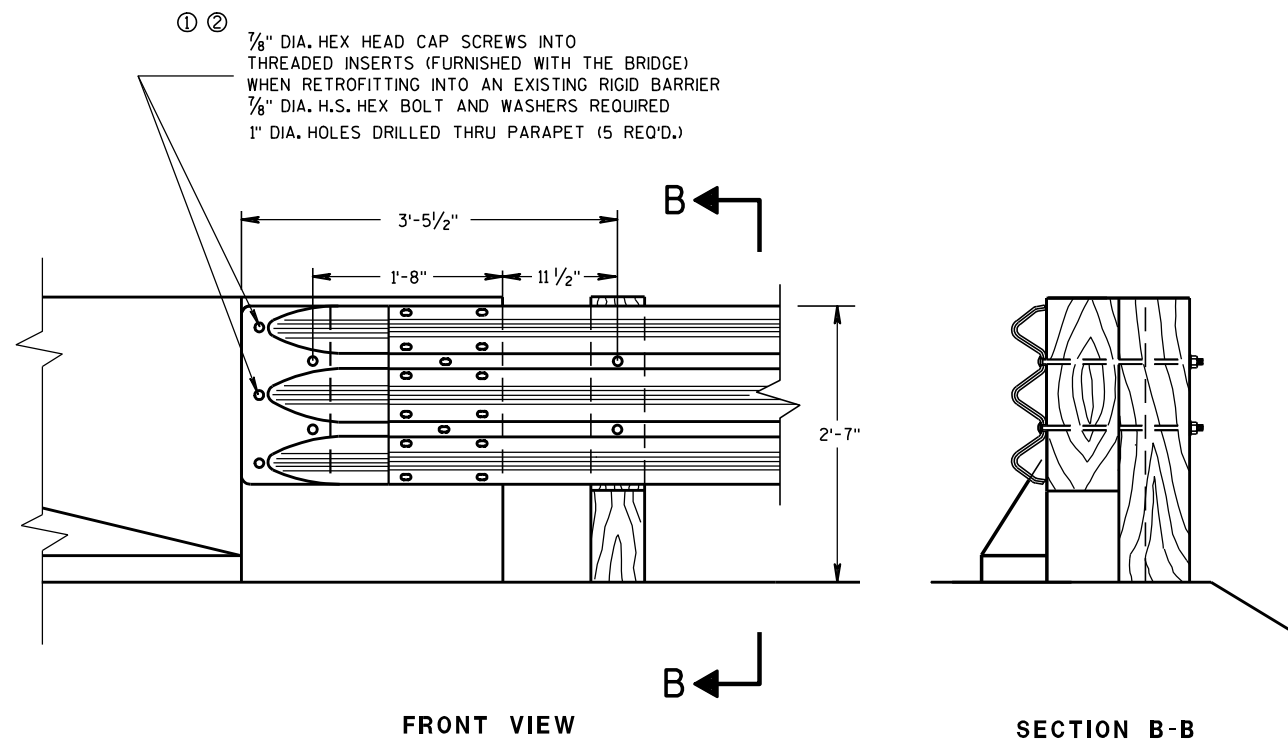
DATE

FHWA

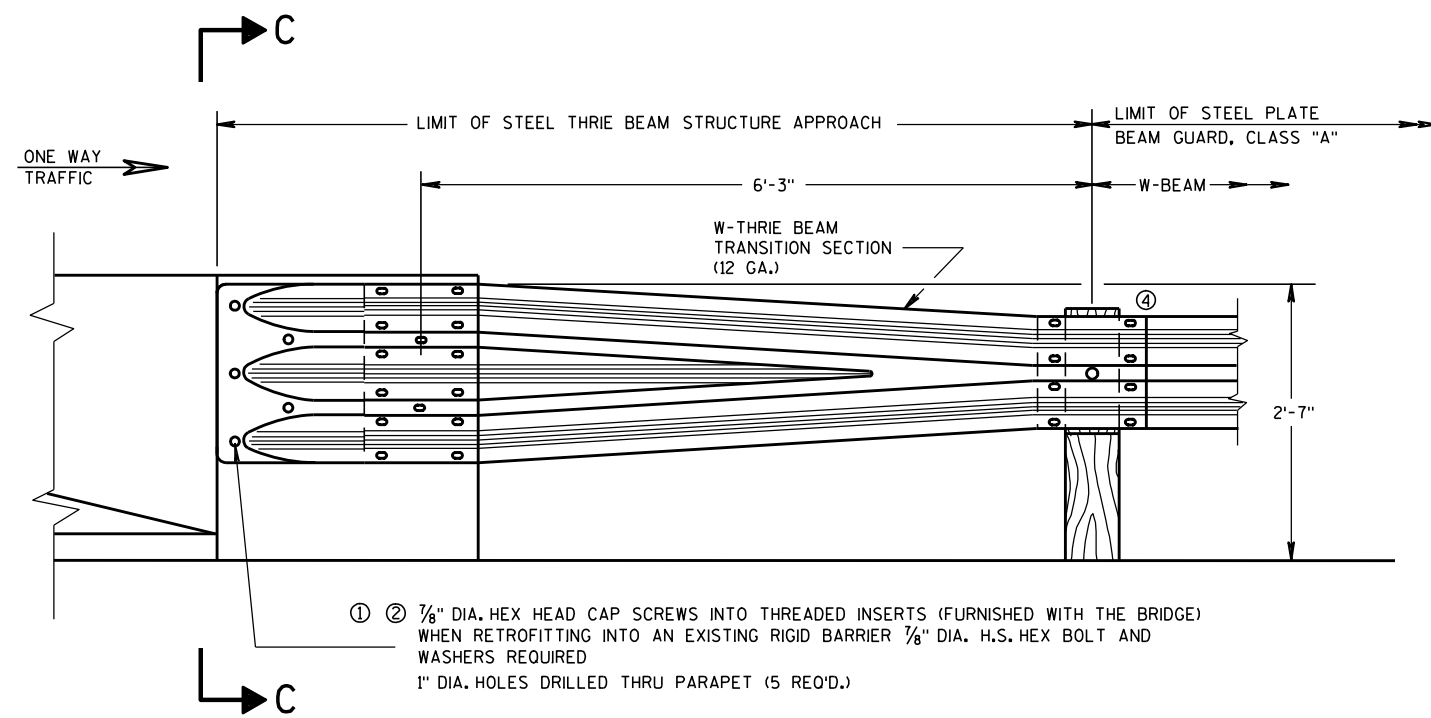
/s/ Jerry H. Zogg

ROADWAY STANDARDS DEVELOPMENT

ENGINEER



THRIE BEAM CONNECTION TO BRIDGE
PARAPET WITH SQUARE ENDS



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

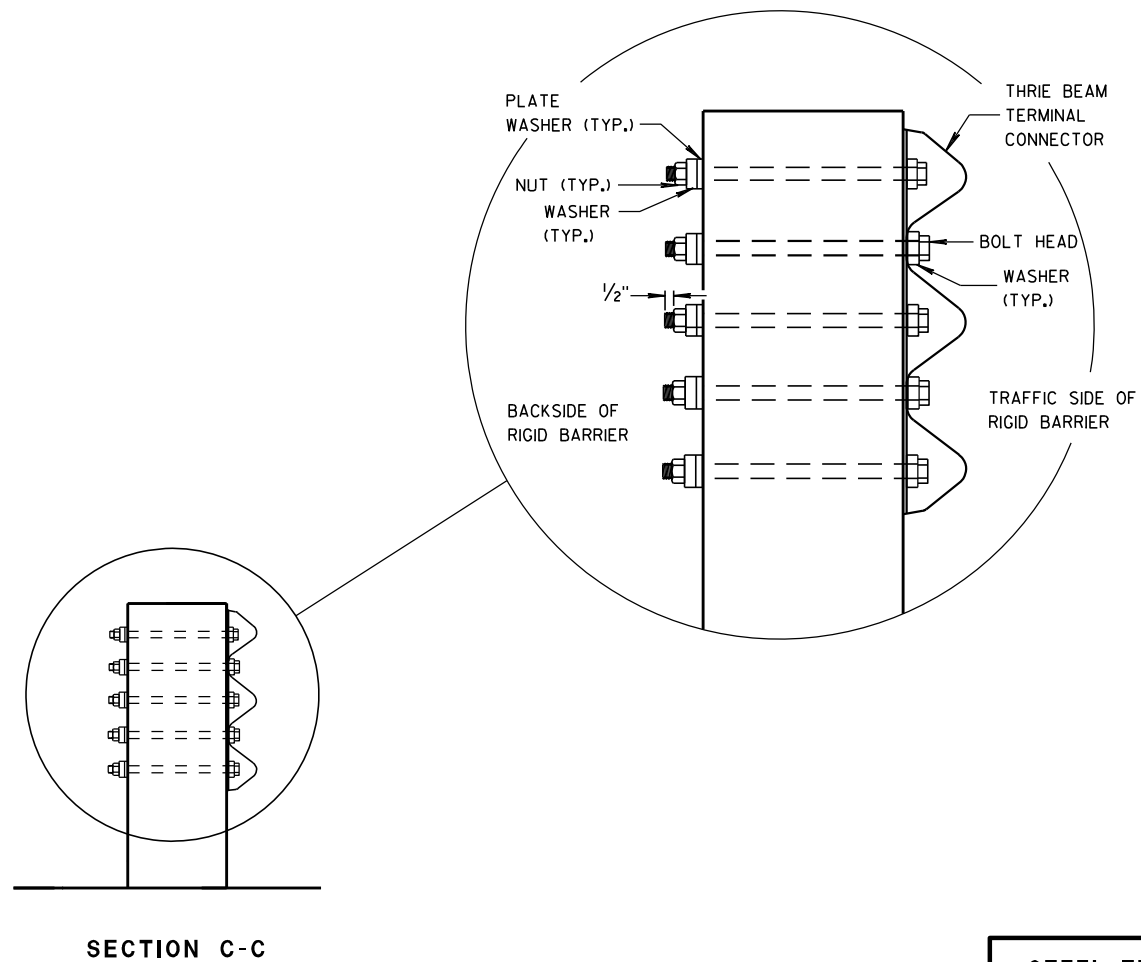
GENERAL NOTES

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

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② 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 TERMINAL CONNECTOR. 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.
- ③ 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".
- ④ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.



STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012
DATE

FHWA

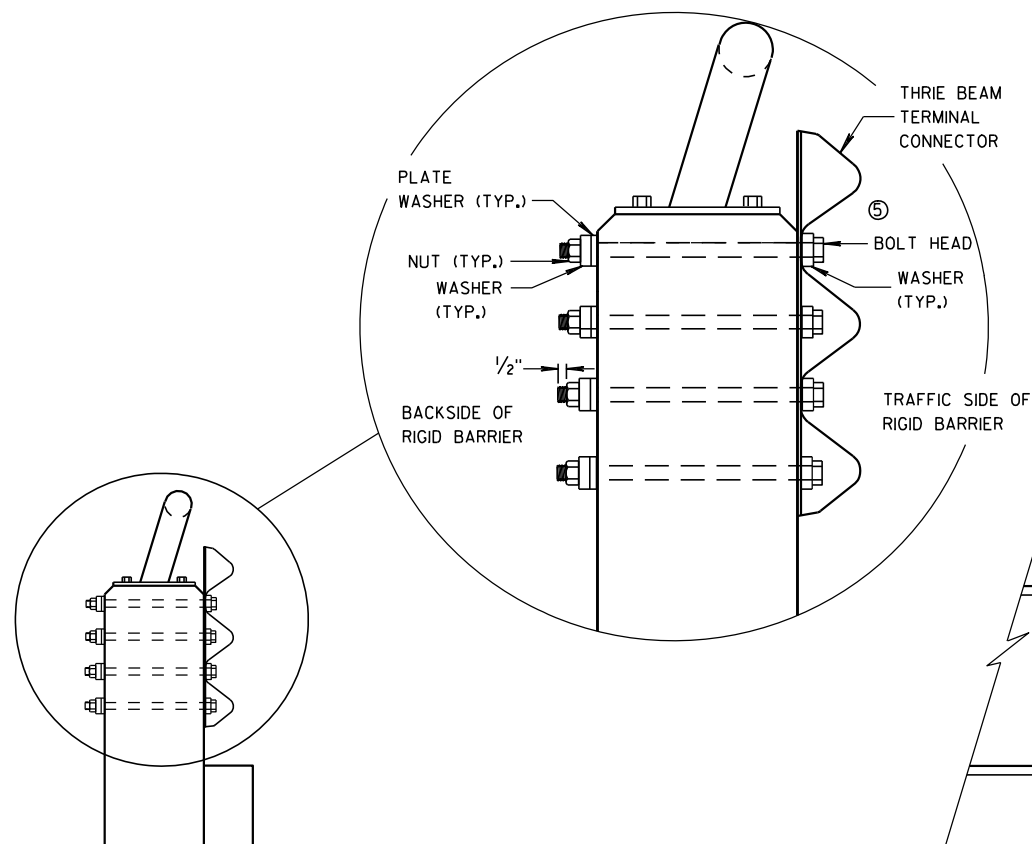
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

GENERAL NOTES

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

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
 - ② 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 TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X $\frac{5}{8}$ " THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
 - ③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 $\frac{1}{2}$ ".
 - ④ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.
 - ⑤ BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PARAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.
- DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

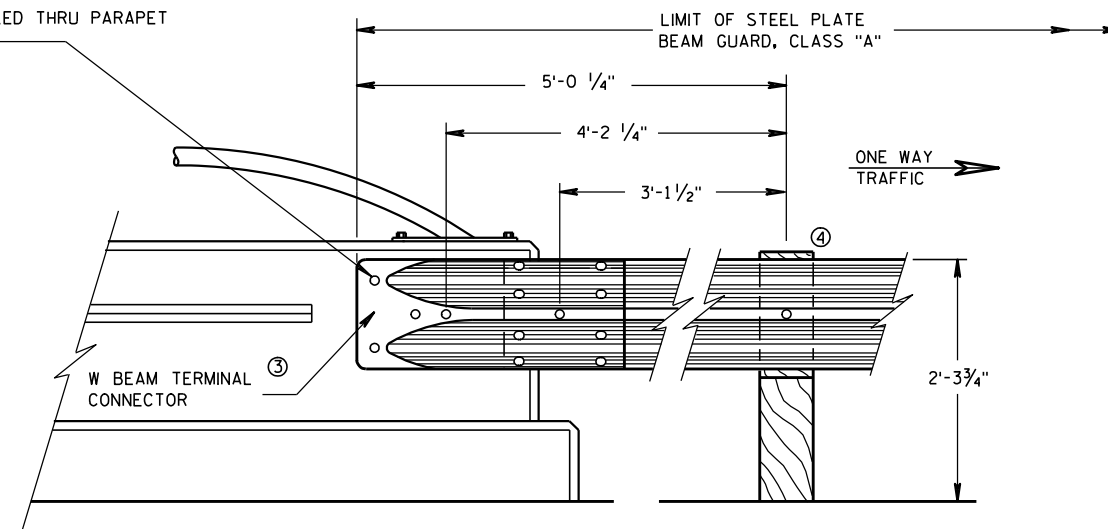


SECTION E-E

- ① ② $\frac{7}{8}$ " DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER $\frac{7}{8}$ " DIA. H.S. HEX BOLT AND WASHERS REQUIRED
- 1" DIA. HOLES DRILLED THRU PARAPET (4 REQ'D.)

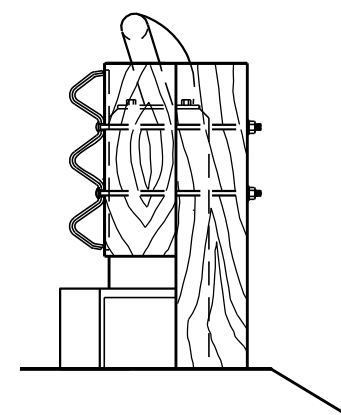
THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

- ① ② $\frac{7}{8}$ " DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER $\frac{7}{8}$ " DIA. H.S. HEX BOLT AND WASHERS REQUIRED
- 1" DIA. HOLES DRILLED THRU PARAPET (4 REQ'D.)



FRONT VIEW

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



SECTION D-D

FRONT VIEW

STEEL THRIE BEAM STRUCTURE
APPROACH, CONNECTION TO
VERTICAL FACED PARAPETS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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8/31/2012

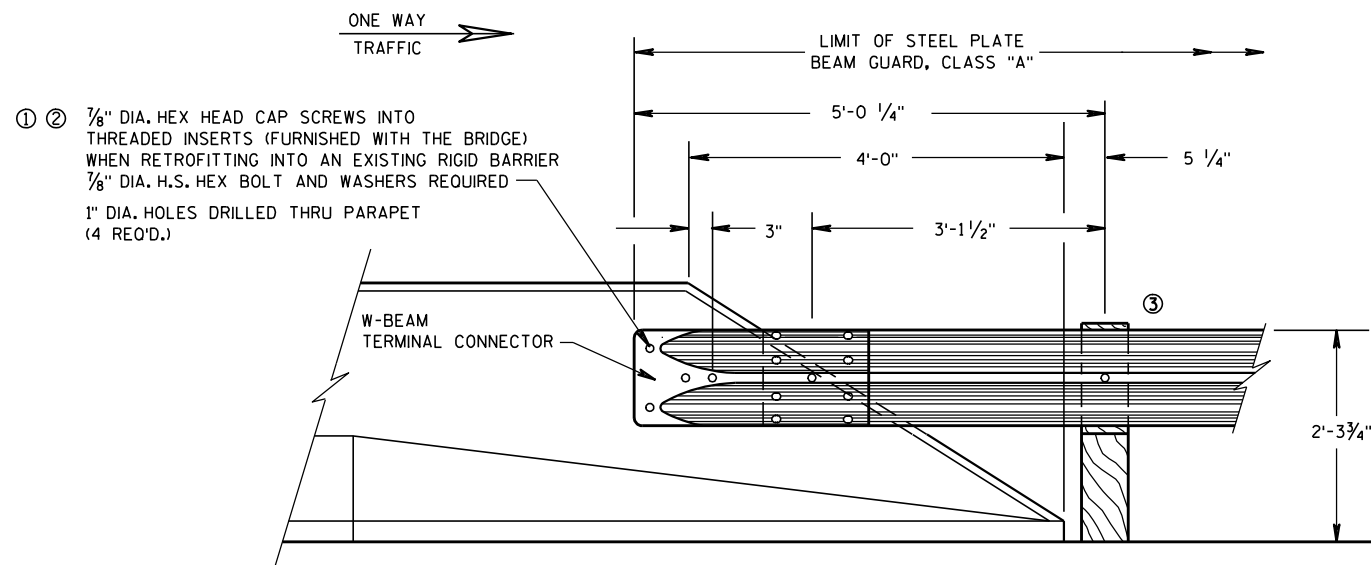
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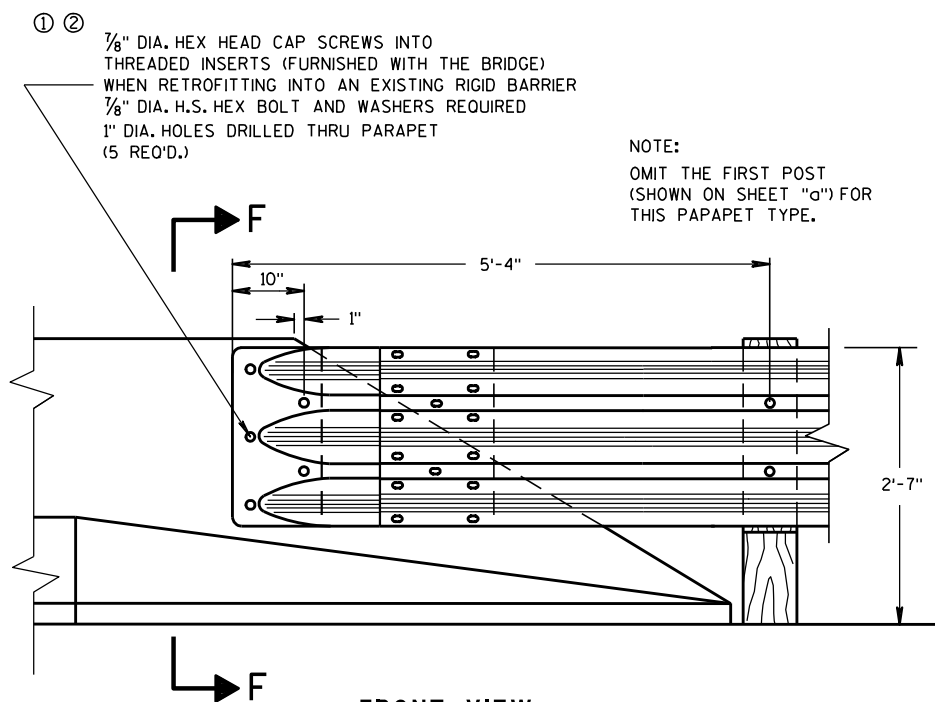
/S/ Jerry H. Zogg

ROADWAY STANDARDS DEVELOPMENT

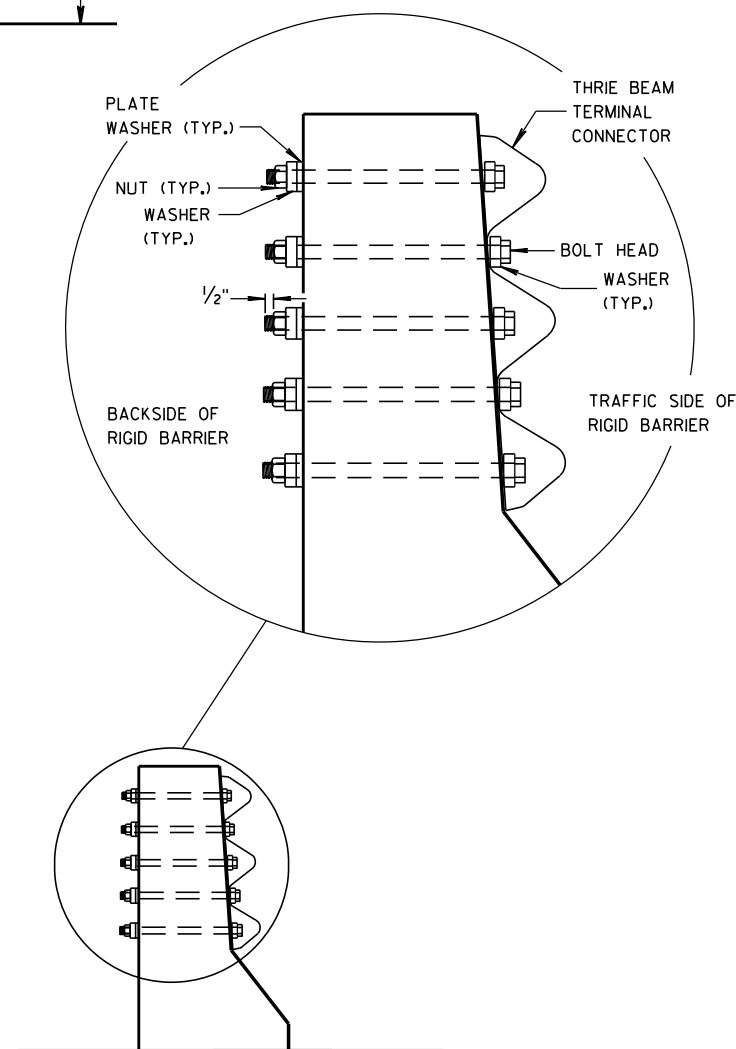
ENGINEER



FRONT VIEW
W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS
 (USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)



THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS



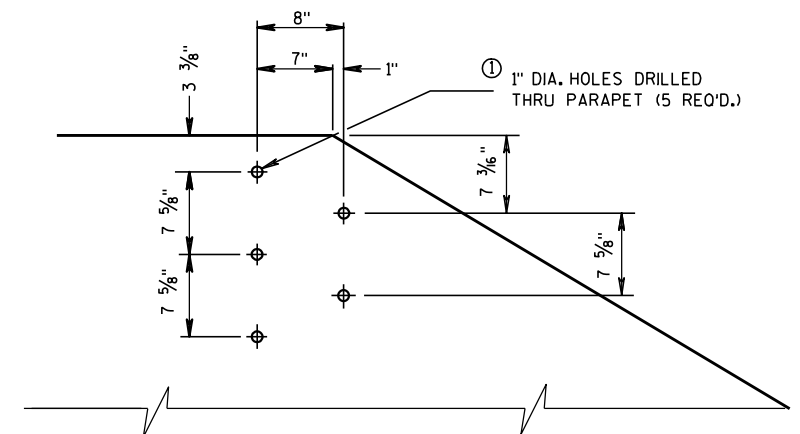
SECTION F-F

GENERAL NOTES

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

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

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- ③ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.



DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION

STEEL THRIE BEAM STRUCTURE
APPROACH CONNECTION TO
SLOPED END PARAPETS

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

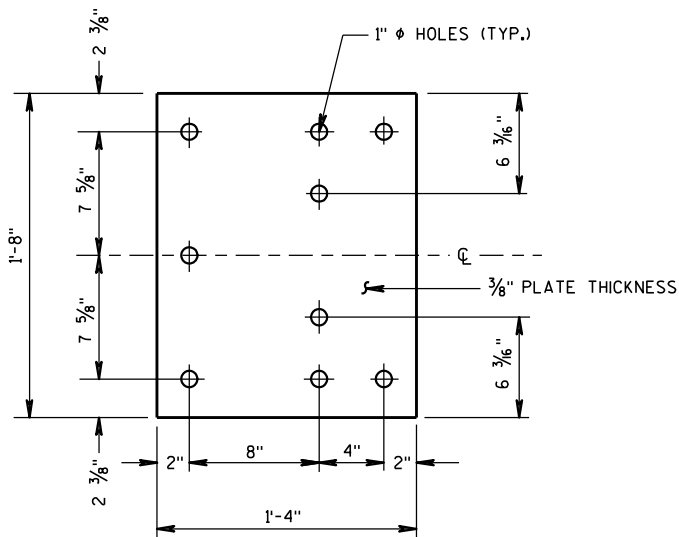
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8/31/2012

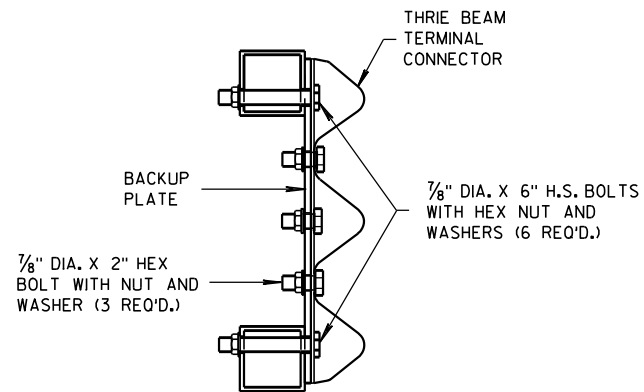
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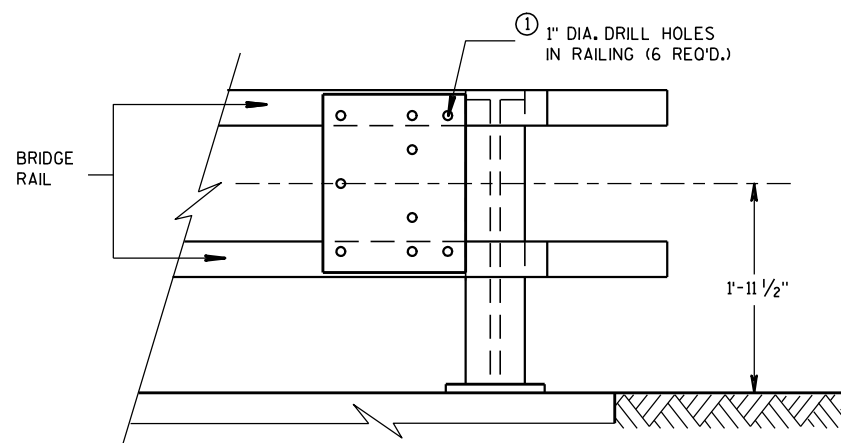
/S/ Jerry H. Zogg
 ROADWAY STANDARDS DEVELOPMENT
 ENGINEER



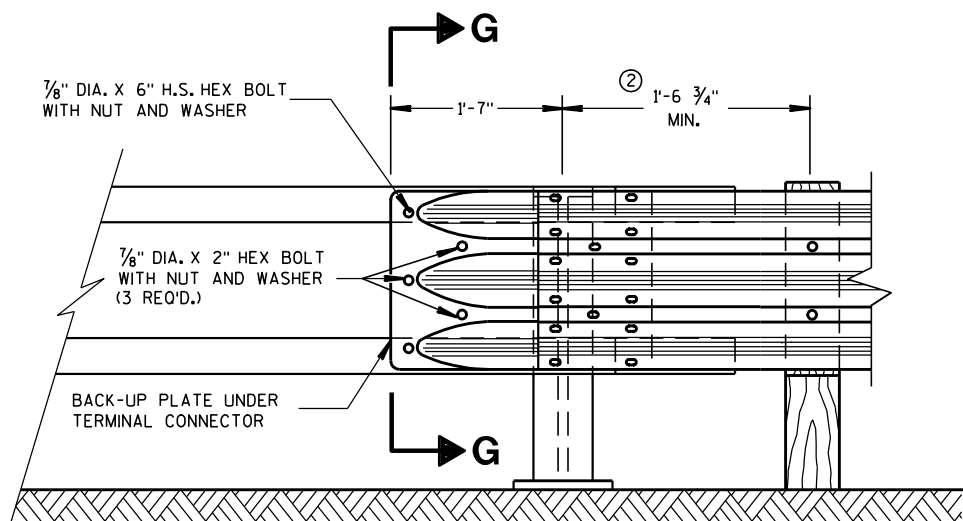
BACK-UP PLATE DETAIL



SECTION G-G

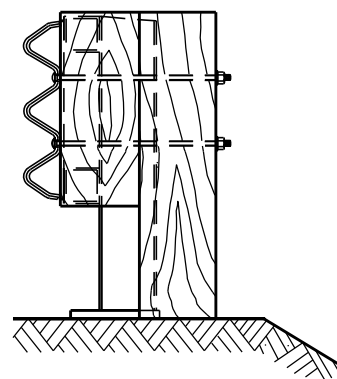


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

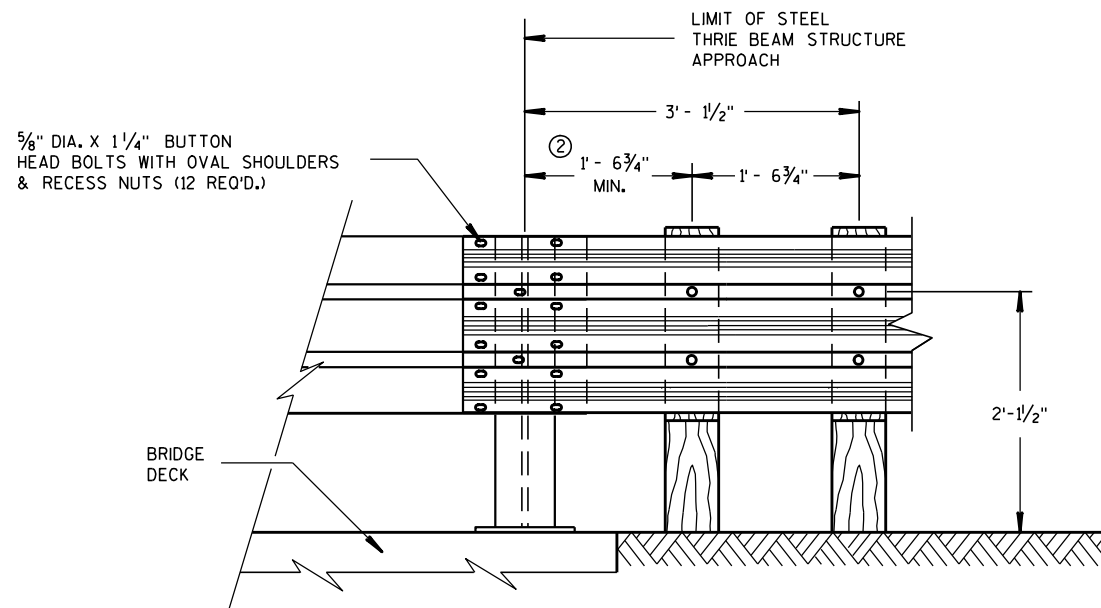


END VIEW

GENERAL NOTES

BOLTS, PLATES, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A 325 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A 153.

- ① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② VARY THIS DIMENSION DEPENDING ON ABUTMENT TYPE, WINGWALL DETAILS, AND ANGLE OF SKEW. PLACE THE FIRST WOOD POST OFF THE BRIDGE SHALL AS CLOSE AS FEASIBLE TO THE STEEL END POST.



FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPES "F" AND "W"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

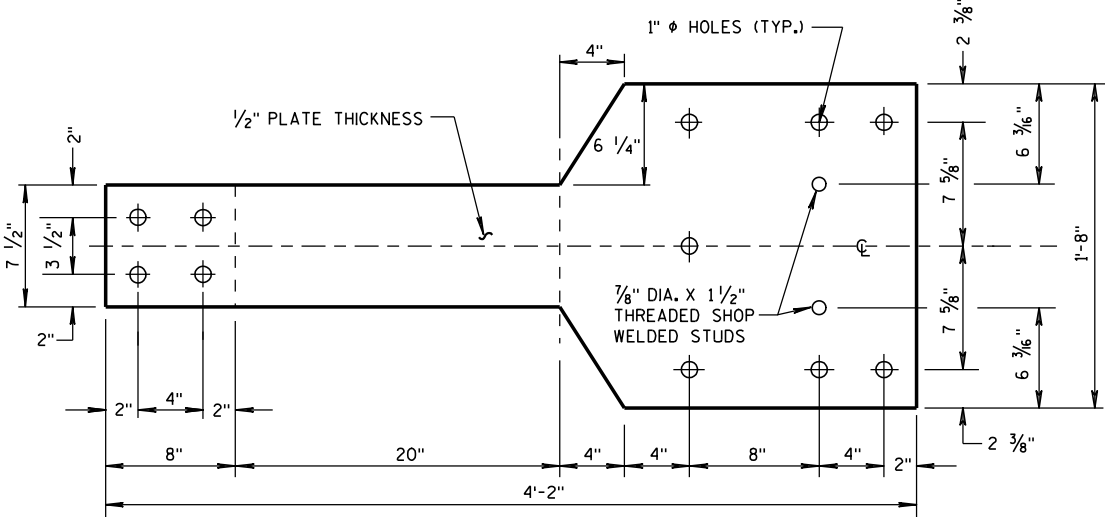
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FHWA

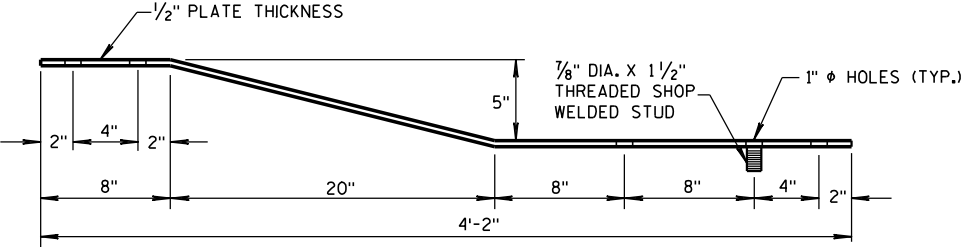
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

GENERAL NOTES

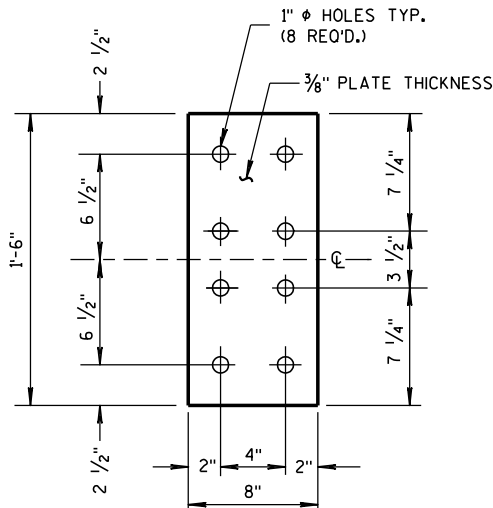
① VARY THIS DIMENSION DEPENDING ON ABUTMENT TYPE, WINGWALL DETAILS, AND ANGLE OF SKEW. PLACE THE FIRST WOOD POST OFF THE BRIDGE SHALL BE AS CLOSE AS FEASIBLE TO THE STEEL END POST.



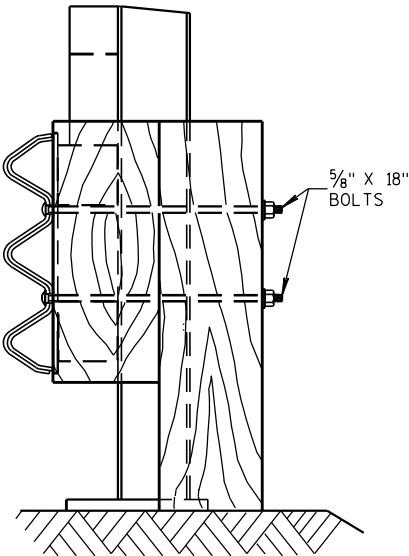
FRONT VIEW



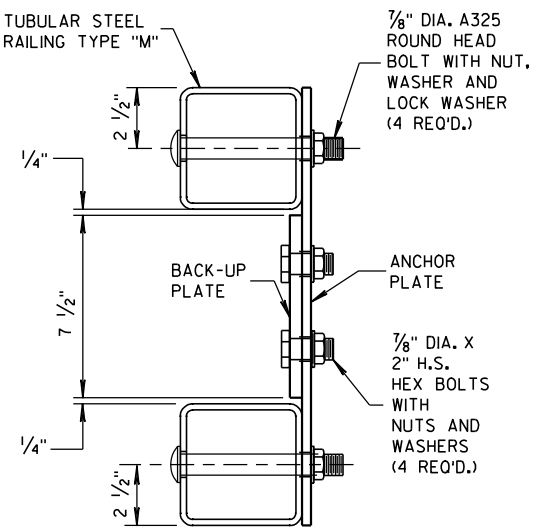
PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"



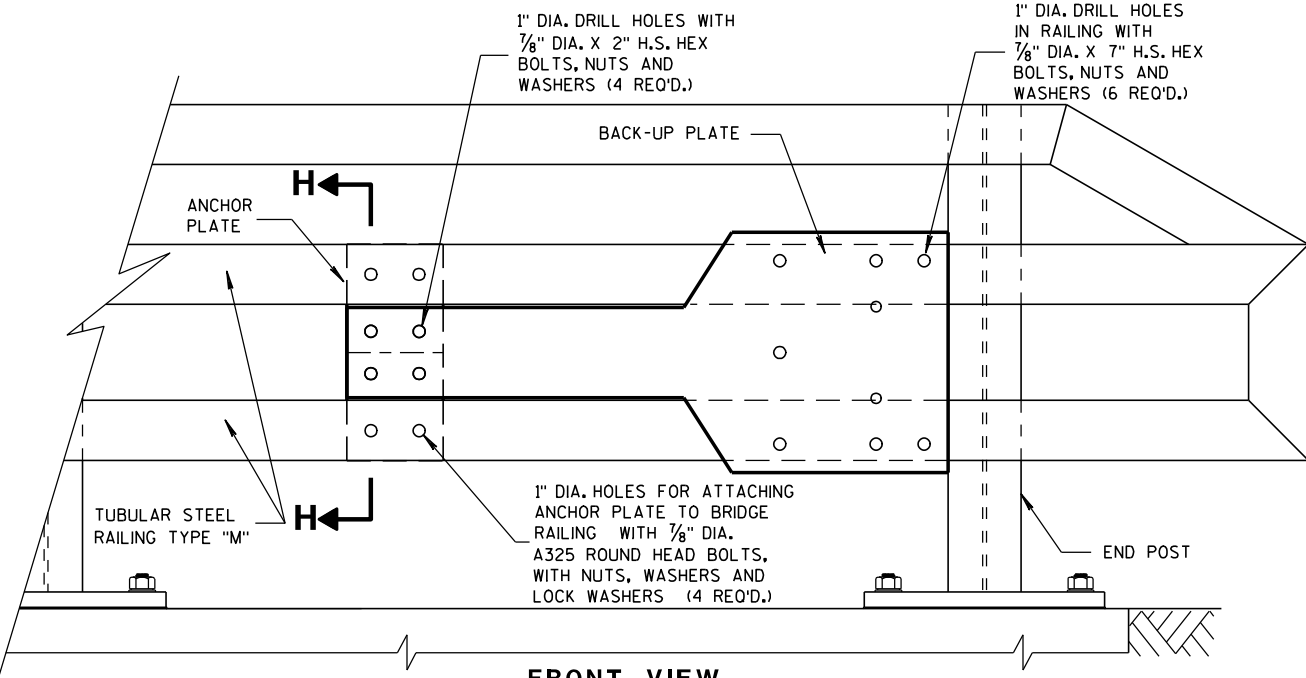
FRONT VIEW
ANCHOR PLATE DETAIL, TYPE "M"



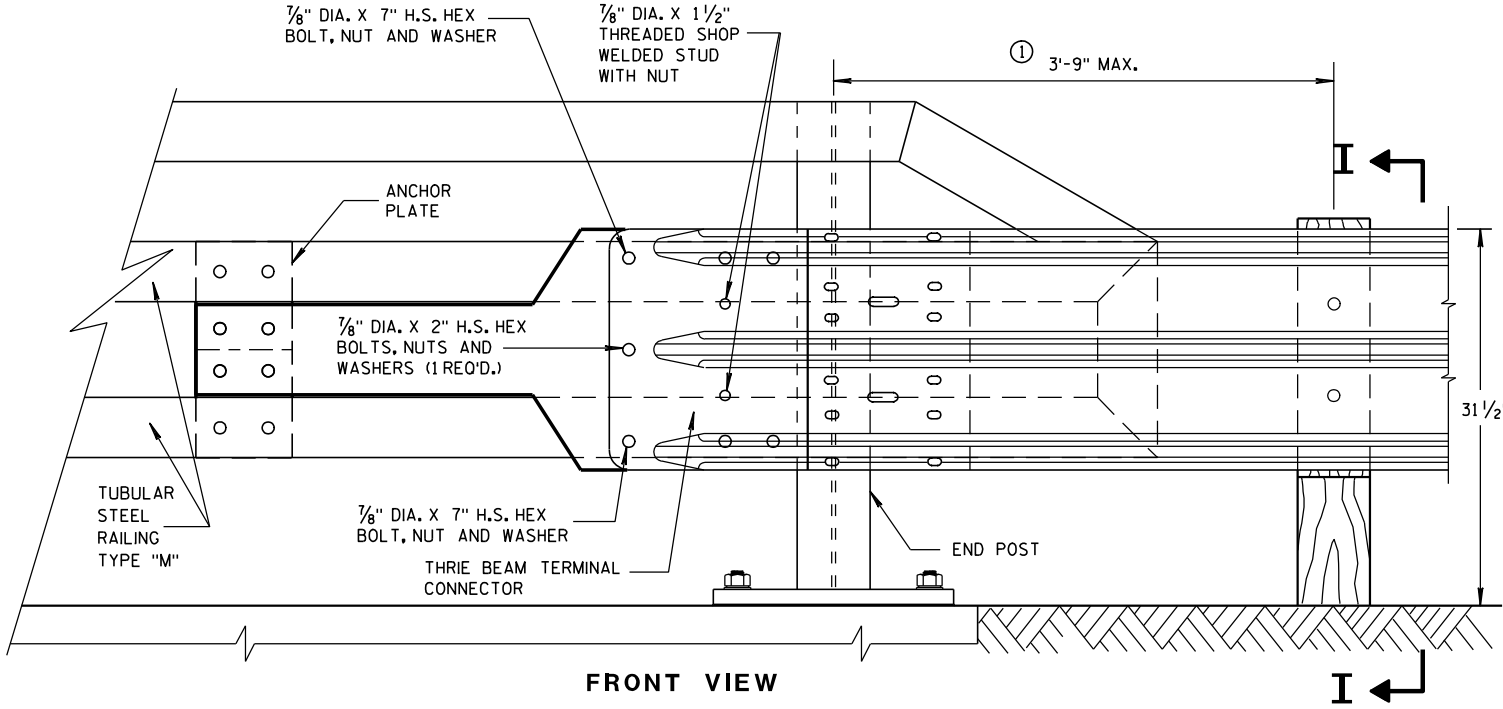
SECTION I-I



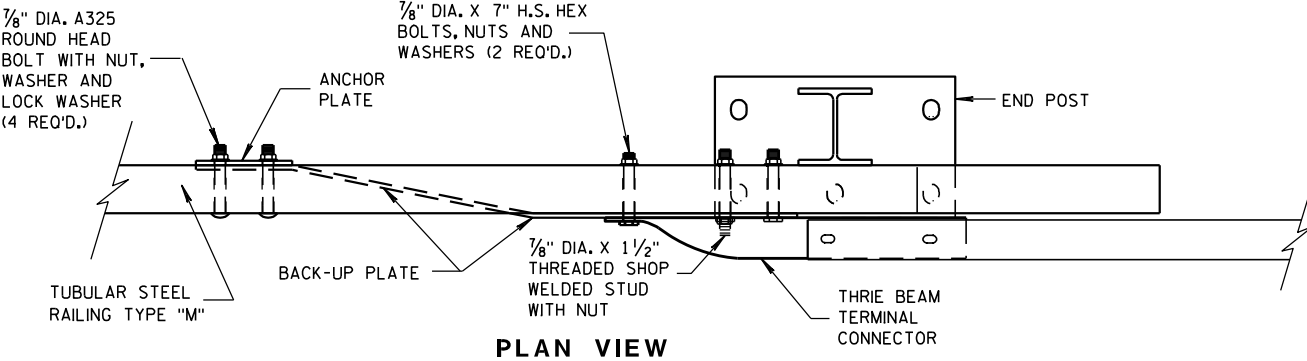
SECTION H-H



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



FRONT VIEW

















PLAN VIEW
THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

**STEEL THRIE BEAM STRUCTURE
APPROACH CONNECTION TO
BRIDGE RAILING TYPE "M"**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 DATE /S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA



CONNECTOR PLATE DIMENSION (PER ASSEMBLY)				
PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 3/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 1/2"	3/16"
S1	4		18 1/16" x 3 3/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 1/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 1/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 1/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 9/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 1/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 11/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 1/16"	1/4"

STEEL THRIE BEAM STRUCTURE APPROACH

COVER PLATE PANELS ARE $\frac{3}{16}$ " THICK.

ALL STIFFENERS ARE $\frac{1}{4}$ " THICK.

CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.

FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

ALL HOLE DIAMETERS SHALL BE 1".

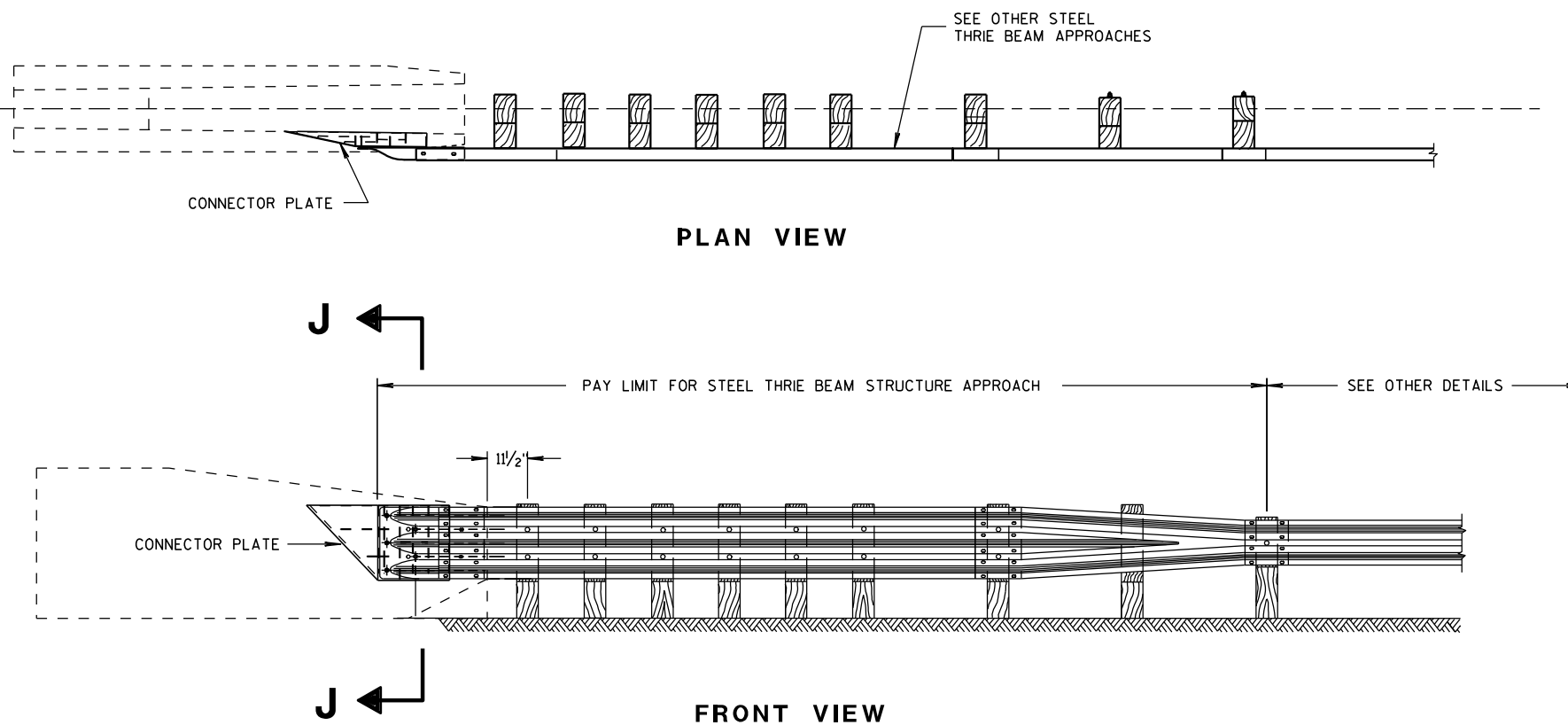
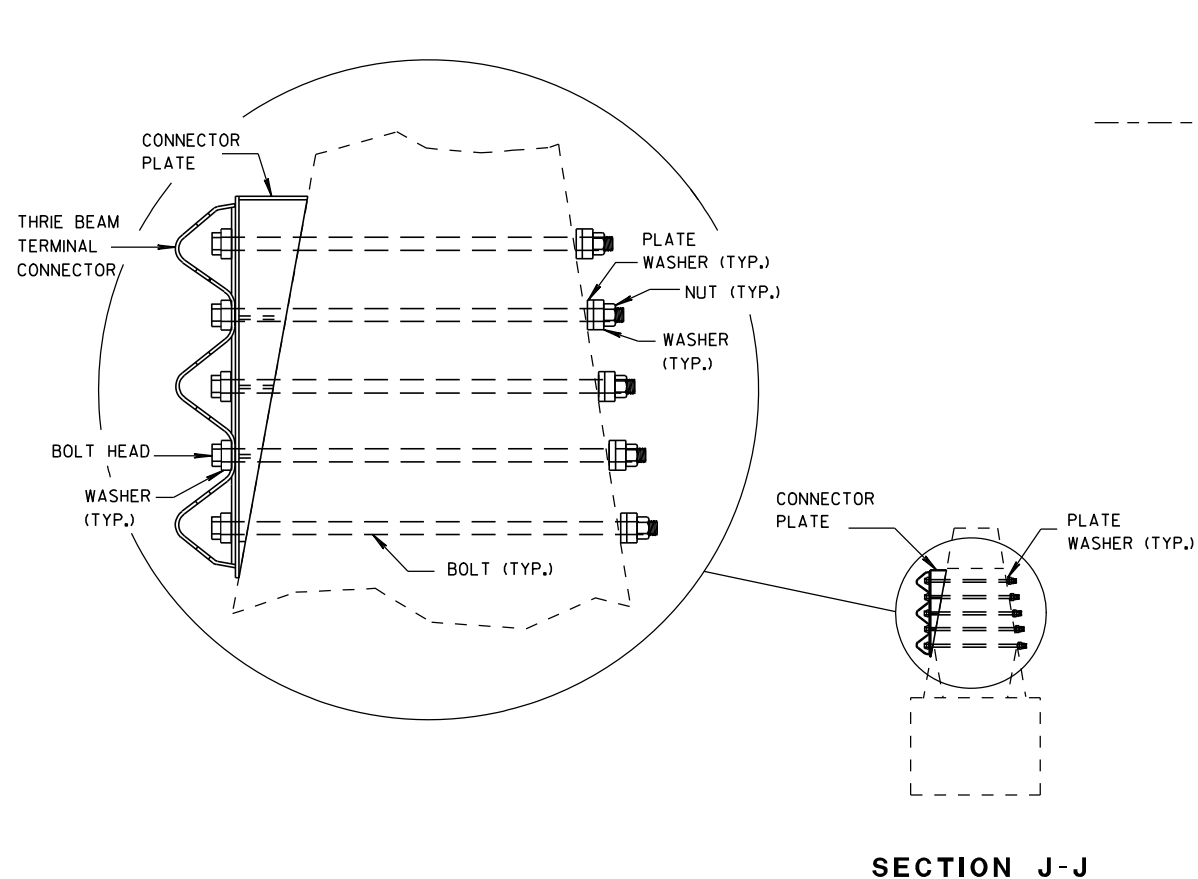
FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

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

STEEL THRIE BEAM
STRUCTURE APPROACH,
CONNECTOR PLATE DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 /S/ Jerry H. Zogg
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

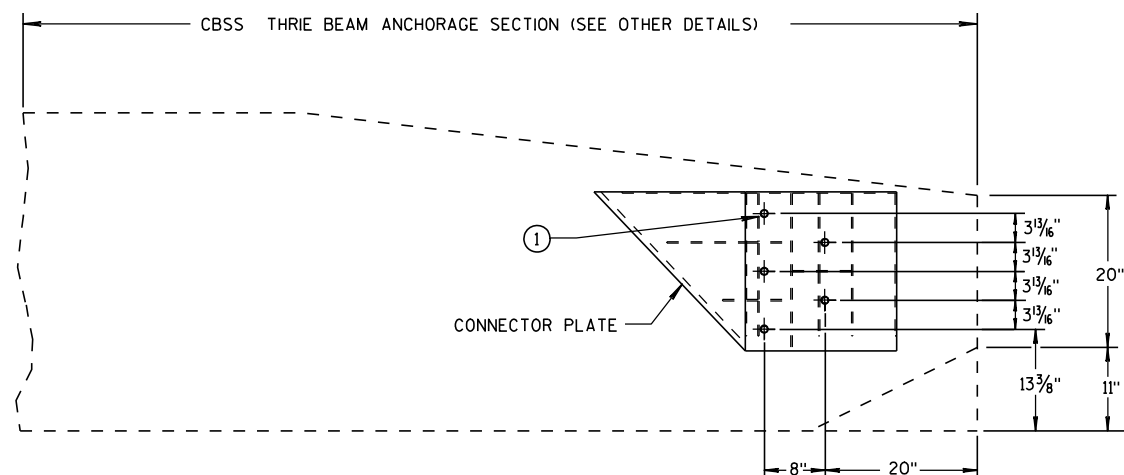


GENERAL NOTES

CONSTRUCT PER STANDARD SPECIFICATION 614.

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

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CONNECTOR PLATE LOCATION

STEEL THRIE BEAM STRUCTURE APPROACH

STEEL THRIE BEAM
STRUCTURE APPROACH,
SINGLE SLOPE ATTACHMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012

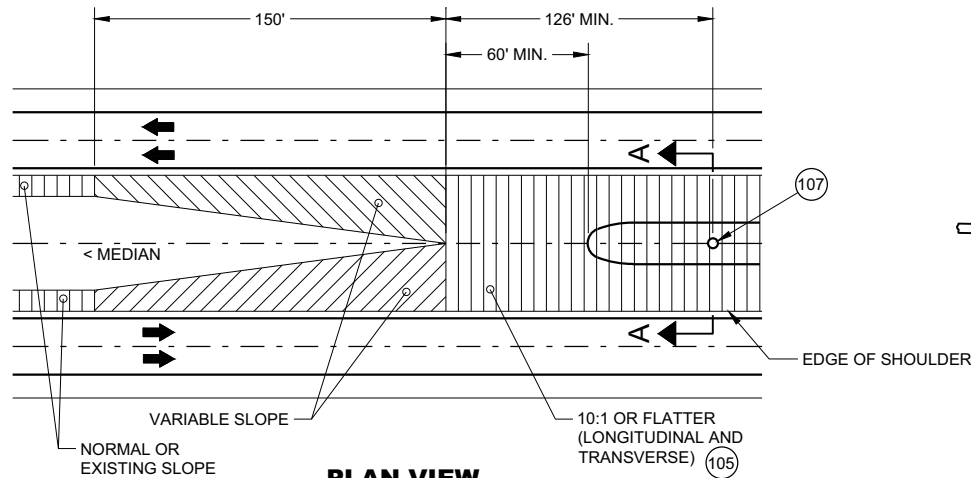
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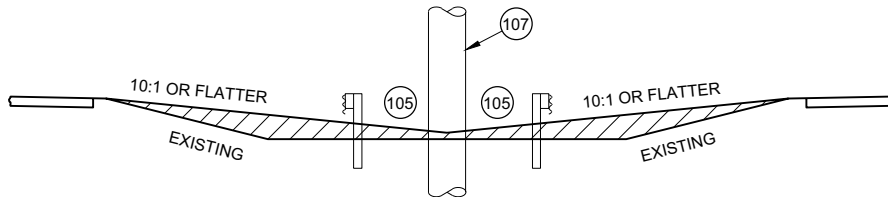
/S/ Jerry H. Zogg

ROADWAY STANDARDS DEVELOPMENT

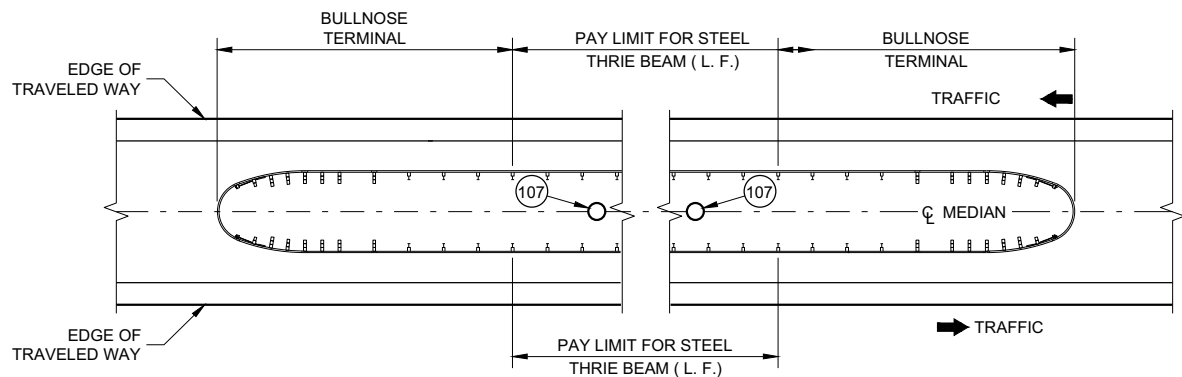
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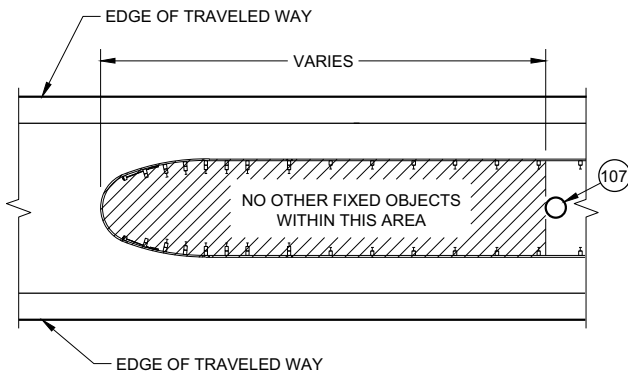
**PLAN VIEW
GRADING AT BULLNOSE**
(ALL INSTALLATIONS)



**SECTION A -A
MEDIAN GRADING**
(ALL INSTALLATIONS)



MEDIAN HAZARD PROTECTION PAY LIMITS



**HAZARD FREE AREA
INSIDE BULLNOSE**

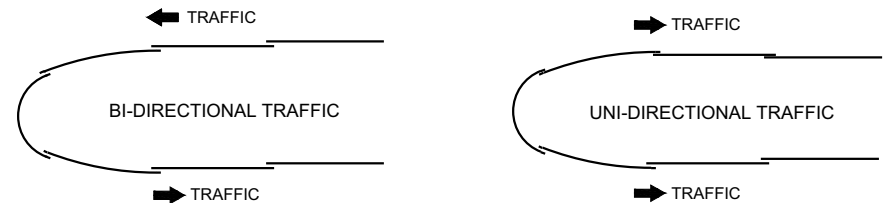
GENERAL NOTES

THRIE BEAM RAILS MAY NEED TO BE FIELD BENT TO FIT THE LOCATION.

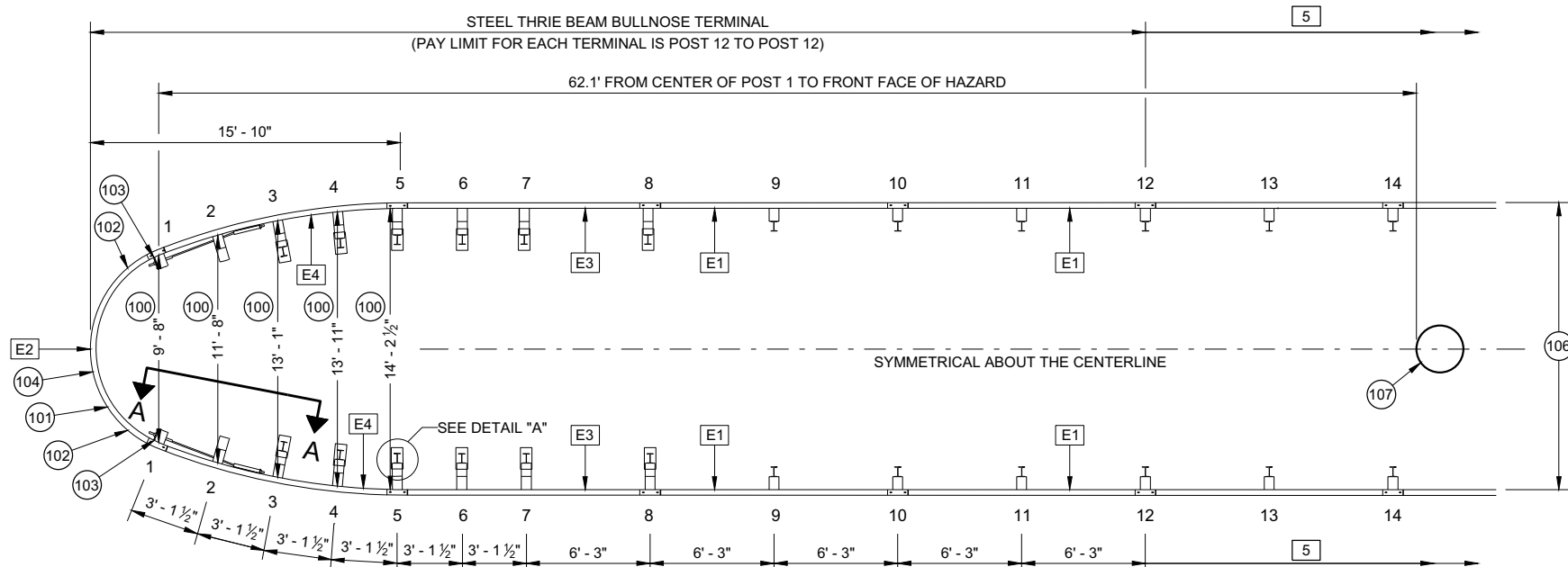
SEE STANDARD DETAIL DRAWINGS 14B26 SHEETS a-h.

IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2". MINIMUM DIAMETER OF THE ROCK REMOVAL IS 12" DIAMETER

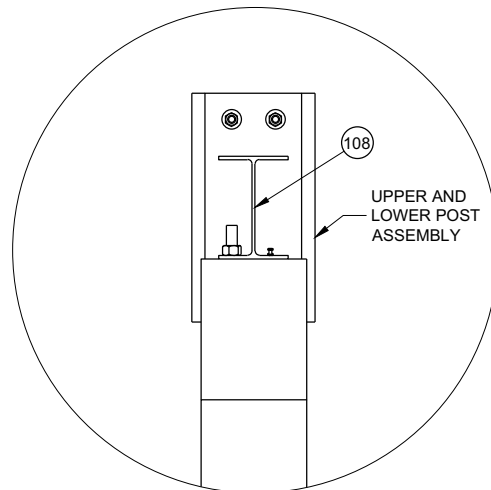
- [E1] UNBENT STANDARD THRIE BEAM RAIL B1 (POST 8 TO POST 10 AND POST 10 TO POST 12)
- [E2] SLOTTED THRIE BEAM RAIL E1 (POST 1 TO POST 1)
- [E3] SLOTTED THRIE BEAM RAIL B3 (POST 5 TO POST 8)
- [E4] SLOTTED THRIE BEAM RAIL E4 (POST 1 TO POST 5)
- [5] BEYOND POST 12: CONSTRUCT STEEL THRIE BEAM - USE UNBENT STANDARD THRIE BEAM RAIL NO. 5.
- (100) DIMENSIONS ARE FROM BACK OF RAIL TO BACK OF RAIL WHERE RAIL IS BOLTED TO POST OR BLOCK.
- (101) U-BOLT CABLE CLIPS (3 PER CABLE) SPACED OUT ON NOSE, TO HOLD CABLE TO BACKSIDE OF THE RAIL.
- (102) NOSE CABLE WITH SWAGGED END BUTTONS.
- (103) NOSE CABLE ANCHOR PLATE (BACKSIDE OF SPLICE).
- (104) THE SLACK IN THE NOSE CABLES SHALL BE EVENLY DISTRIBUTED BETWEEN THE CABLE CLIP FASTENERS AND POST NO. 1 ON EITHER SIDE OF THE NOSE.
- (105) MINIMUM WORKING WIDTH 4' - 2".
- (106) MAX. WIDTH OF SYSTEM IS 14' - 2 1/2" MEASURED FROM THE BACK OF RAIL TO BACK OF RAIL WHERE RAIL IS BOLTED TO A POST OR BLOCK.
- (107) FIXED OBJECT OR OTHER HAZARD.
- (108) PLAN IS TO PROVIDE STATION OFFSET TO CENTER OF POST 5 IN PLANS.



LAPPING DETAIL



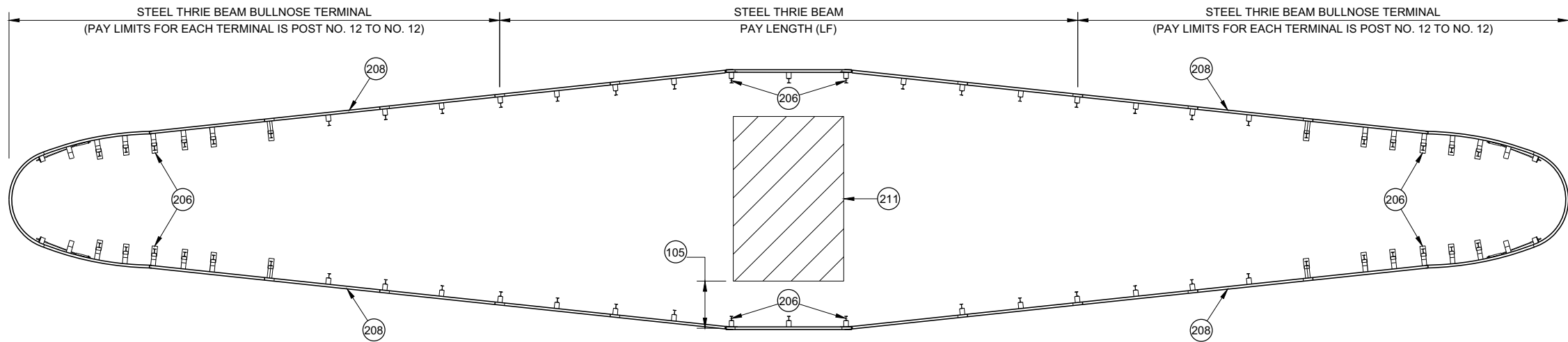
**PLAN VIEW
TYPICAL BULLNOSE LAYOUT**



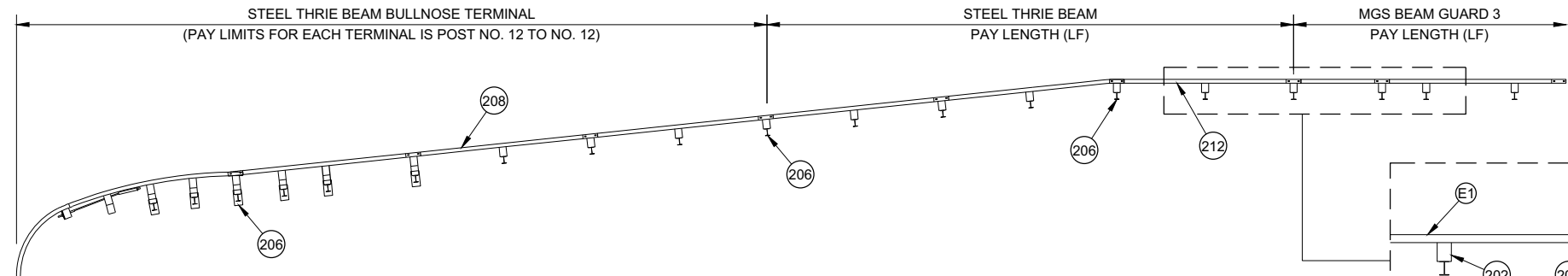
DETAIL "A"

**STEEL THRIE BEAM
BULLNOSE TERMINAL**

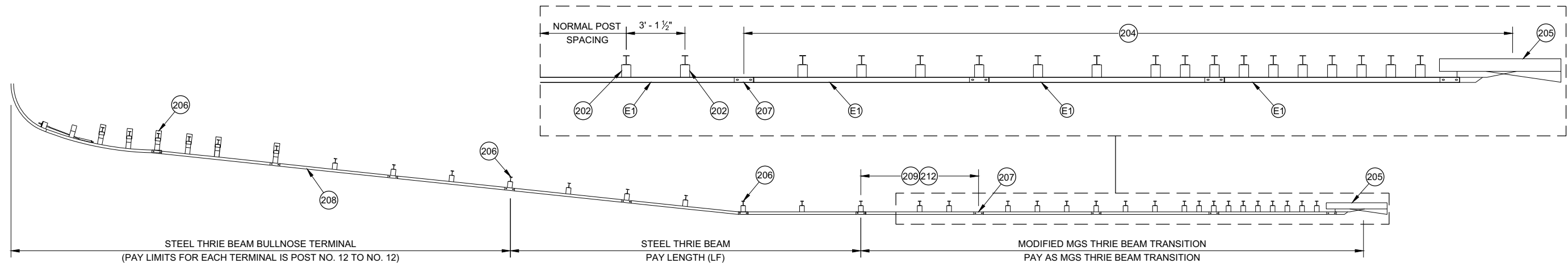
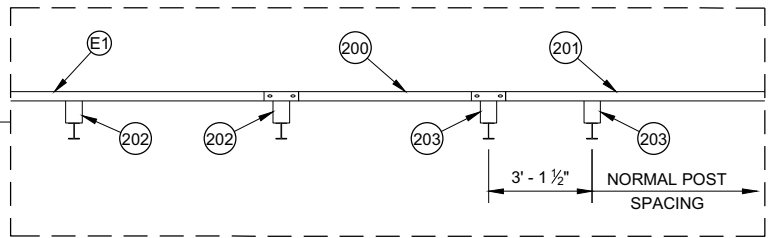
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



VARIABLE WIDTH BULLNOSE



**1/2 PLAN VIEW
VARIABLE WIDTH BULLNOSE
WITH CONNECTION TO MGS BEAM GUARD**



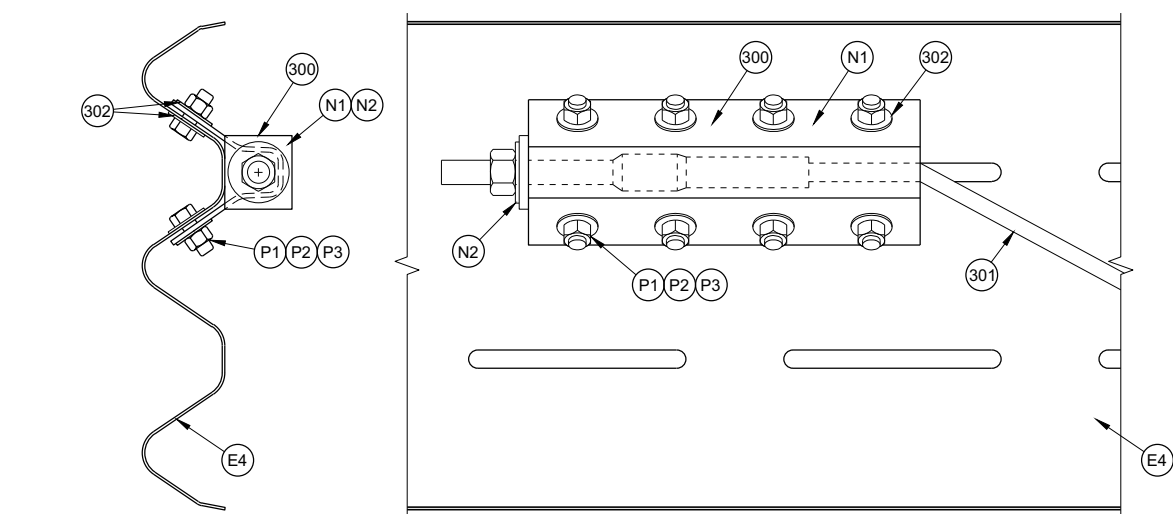
**1/2 PLAN VIEW
VARIABLE WIDTH BULLNOSE
WITH CONNECTION TO RIGID BARRIER**

GENERAL NOTES

- (200) 6' - 3" ASYMMETRICAL 10-GAUGE W-BEAM TO THRIE BEAM GUARD TRANSITION. SEE SDD 14B45 FOR MORE INFORMATION.
- (201) W-BEAM RAIL. SEE SDD 14B42 FOR MORE INFORMATION.
- (202) SEE POST NO. 9 AND ALL STEEL THRIE BEAM POST BEYOND DETAIL.
- (203) SEE SDD 14B42 FOR INSTALLATION INFORMATION.
- (204) SEE SDD 14B45 FOR INSTALLATION DETAILS. REPLACE ASYMMETRICAL W-BEAM TO THRIE BEAM TRANSITION AND W-BEAM RAIL WITH E1. PAY FOR MODIFIED THRIE BEAM TRANSITION.
- (205) CONCRETE BARRIER OR BRIDGE RAIL.
- (206) SEE PLAN FOR STATION AND OFFSET TO CENTER OF POST.
- (207) SEE PLAN FOR STATION AND OFFSET TO CENTER OF SPLICE.
- (208) SEE PLAN FOR FLARE RATE.
- (209) A MINIMUM OF 25 FT OF THRIE BEAM TANGENT BEFORE TRANSITIONING TO BEAM GUARD OR THRIE BEAM TRANSITION.
- (210) NOT ALL BULLNOSE HARDWARE SHOWN. SEE OTHER SHEETS IN 14B26.
- (211) WIDER HAZARD TO BE SHIELDED.
- (212) TRANSITION RAIL HEIGHT TO 31" OVER THE LENGTH OF A 12' - 6" BEAM SECTION.

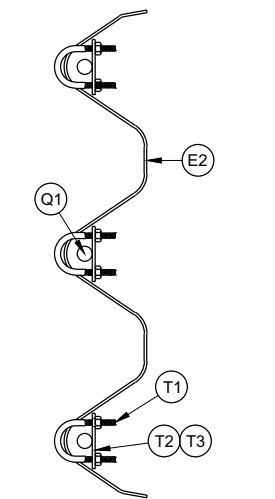
**STEEL THRIE BEAM
BULLNOSE TERMINAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

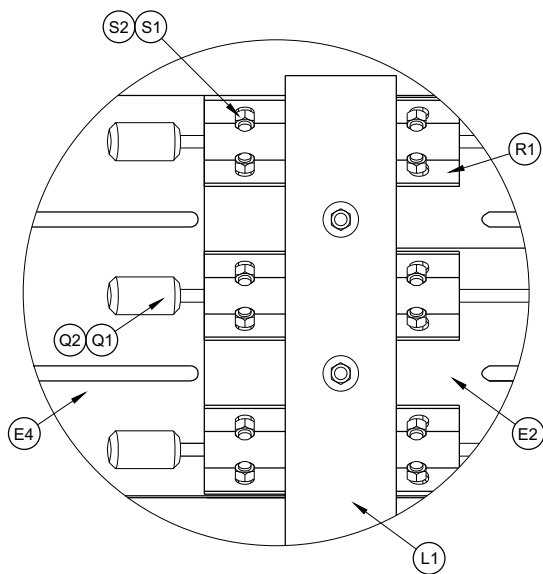


**PROFILE VIEW
CABLE ANCHOR
ASSEMBLY CONNECTION**

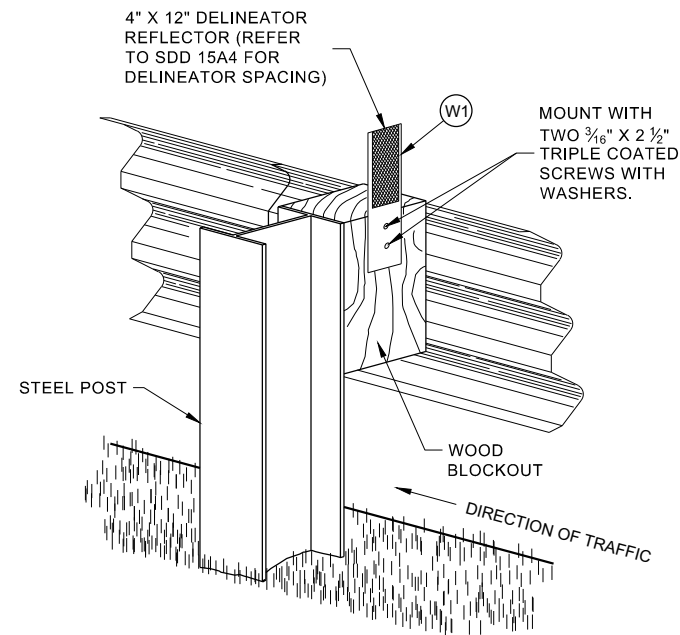
CABLE ANCHOR ASSEMBLY



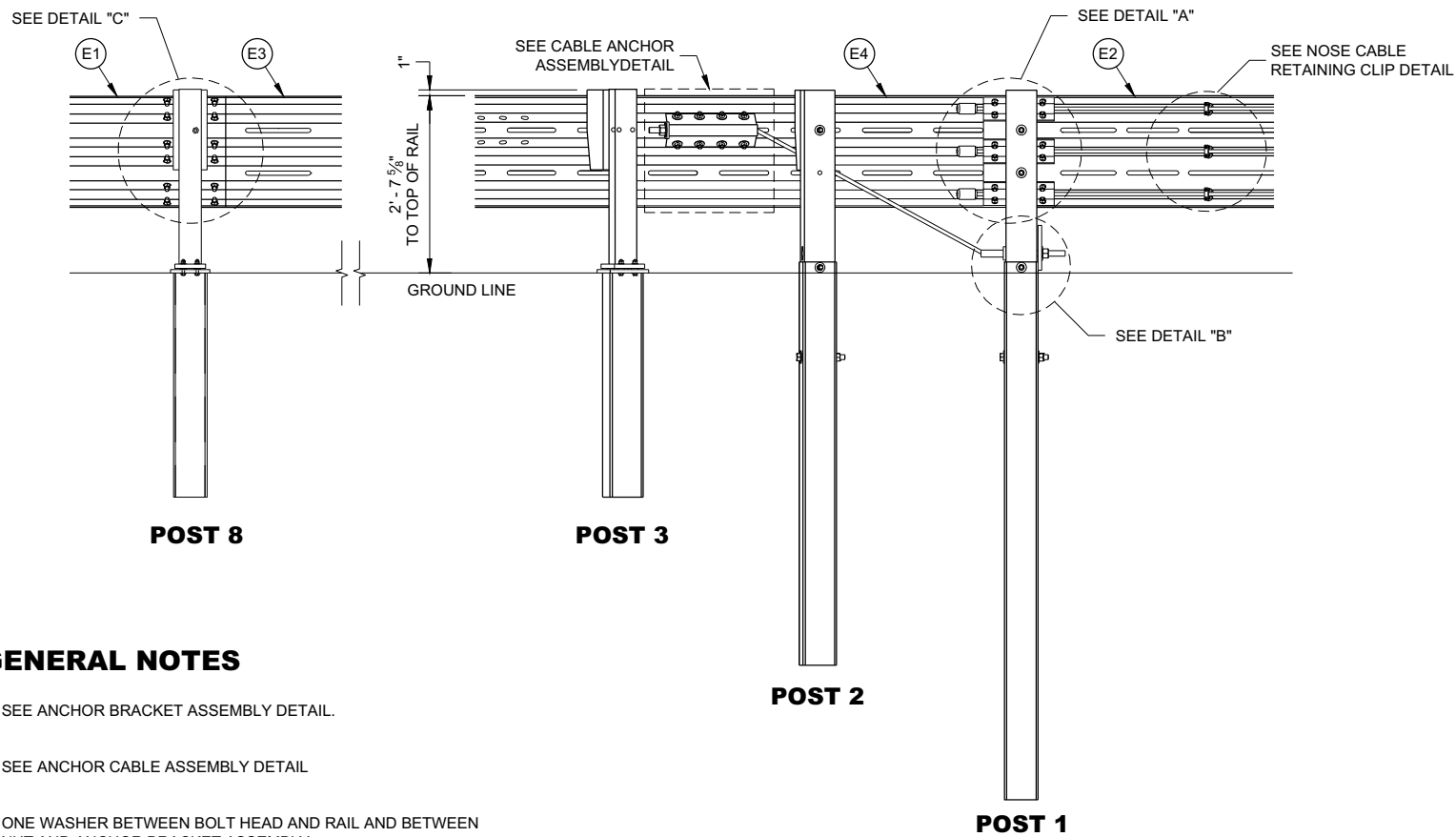
**NOSE CABLE
RETAINING CLIP**



DETAIL "A"



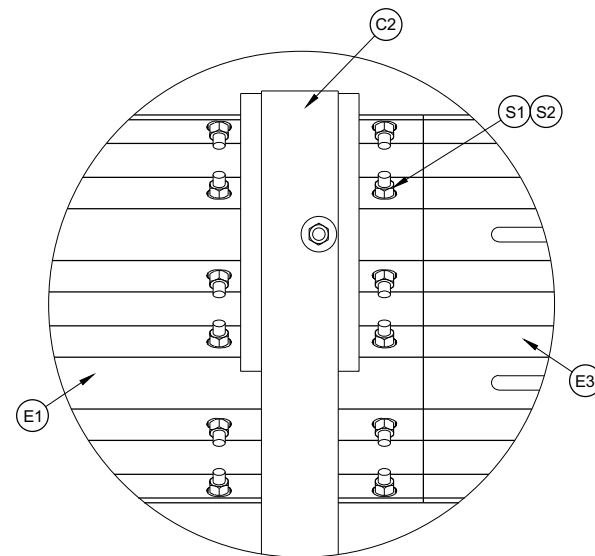
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**



CROSS SECTION A - A

GENERAL NOTES

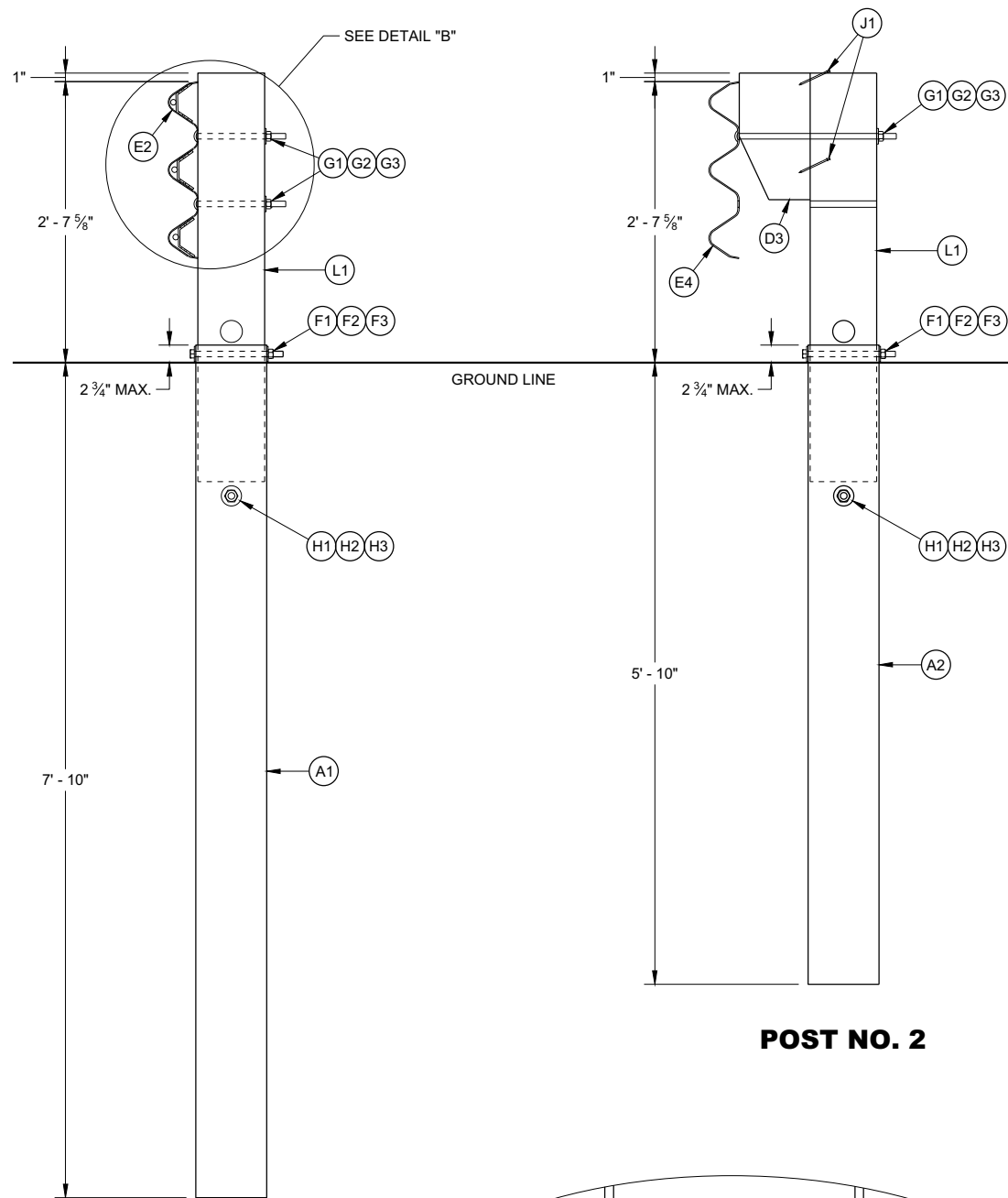
- (300) SEE ANCHOR BRACKET ASSEMBLY DETAIL.
- (301) SEE ANCHOR CABLE ASSEMBLY DETAIL.
- (302) ONE WASHER BETWEEN BOLT HEAD AND RAIL AND BETWEEN NUT AND ANCHOR BRACKET ASSEMBLY.
- (303) ONE WASHER BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.



**DETAIL "C"
THRIE BEAM SPLICE**

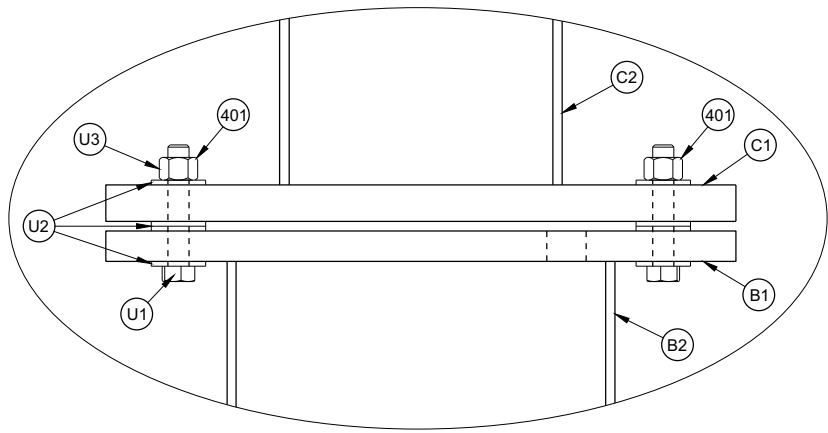
**STEEL THRIE BEAM
BULLNOSE TERMINAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

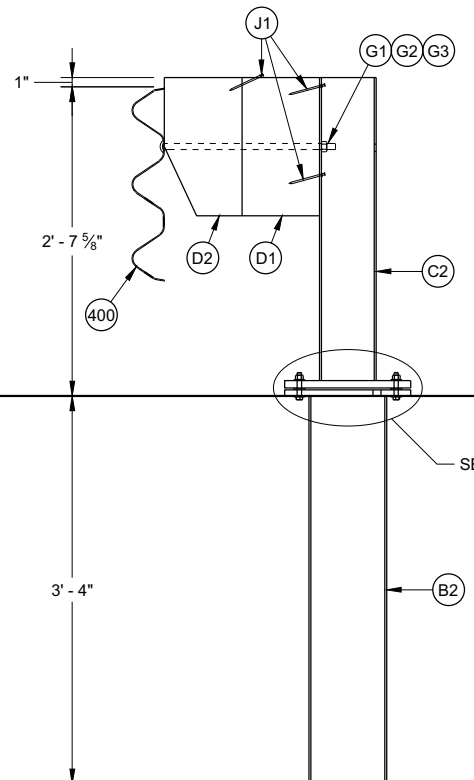


POST NO. 1

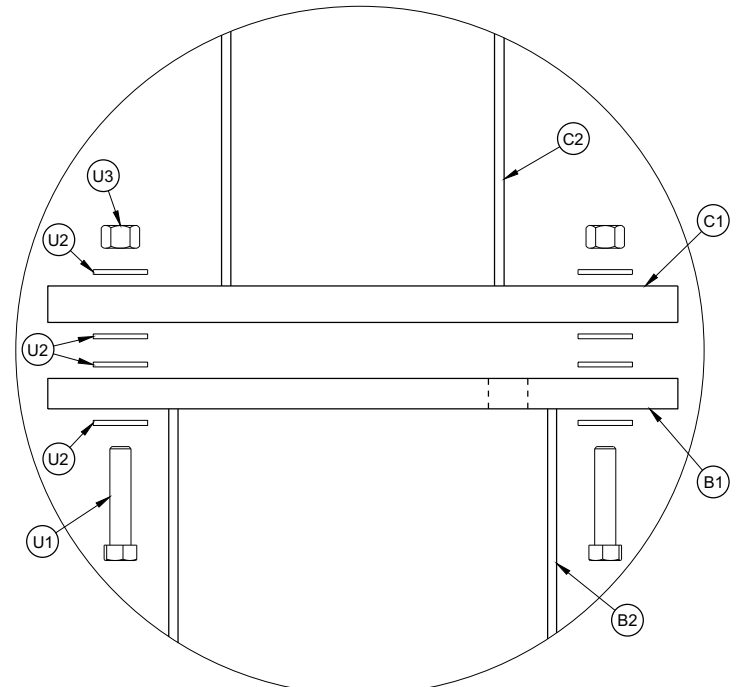
POST NO. 2



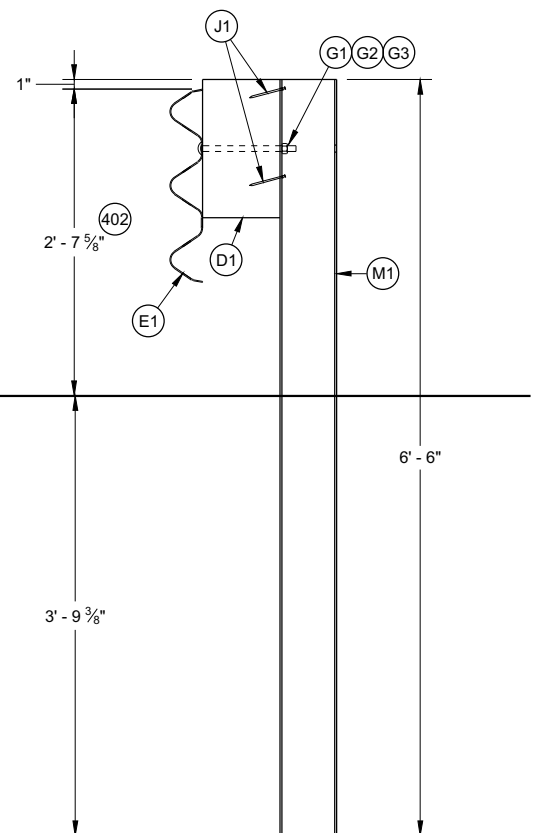
DETAIL "A"



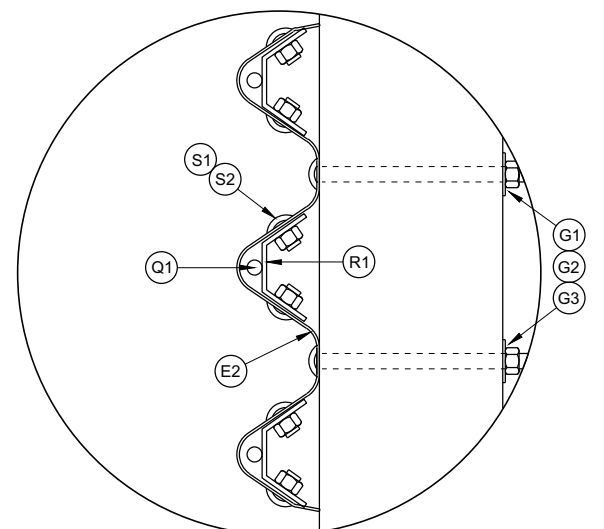
POST NOS. 3-8



EXPLODED VIEW
DETAIL "A"



POST NOS. 9 AND ALL STEEL
THRIE BEAM POSTS BEYOND



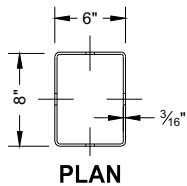
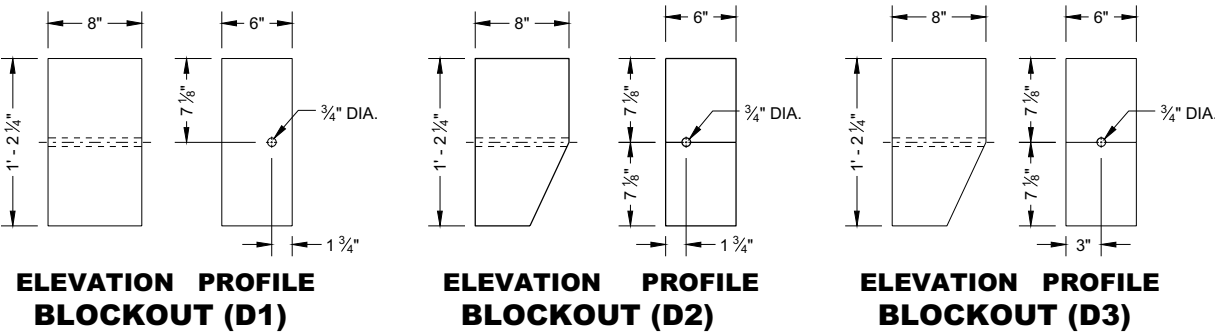
DETAIL "B"

GENERAL NOTES

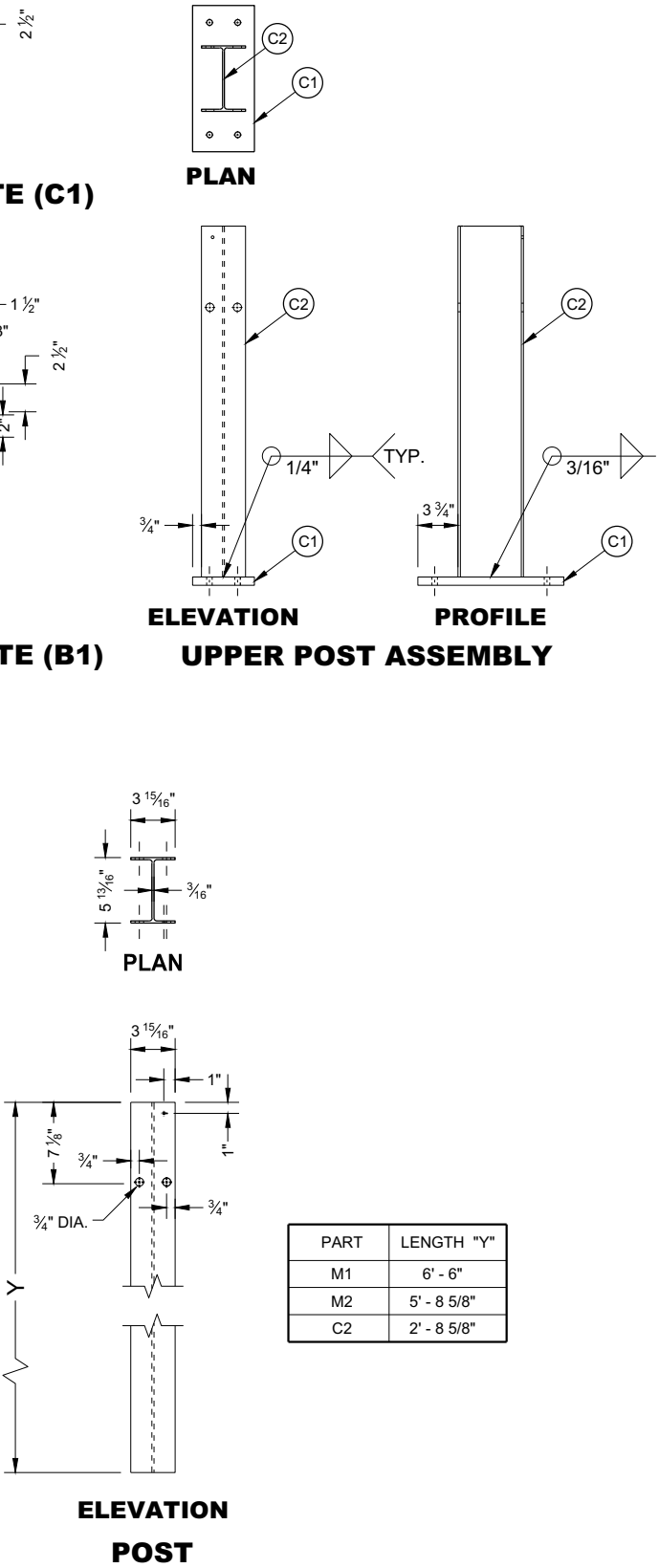
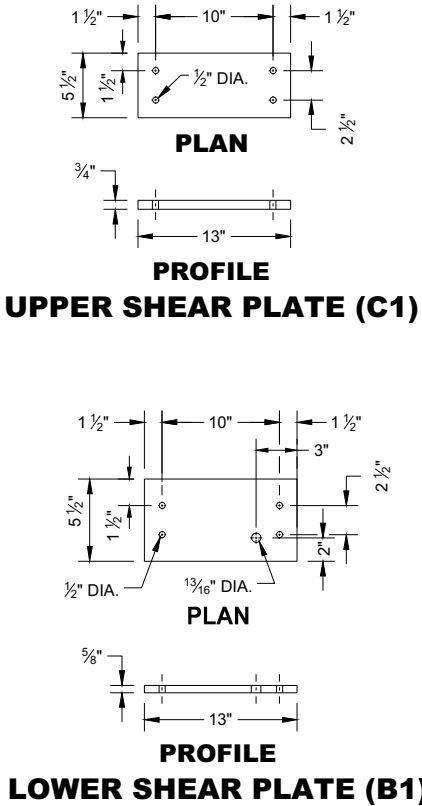
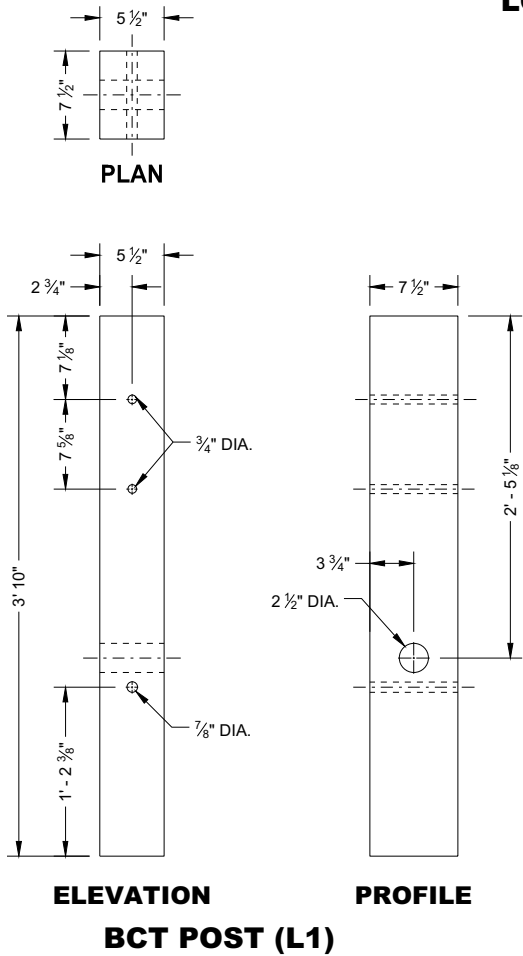
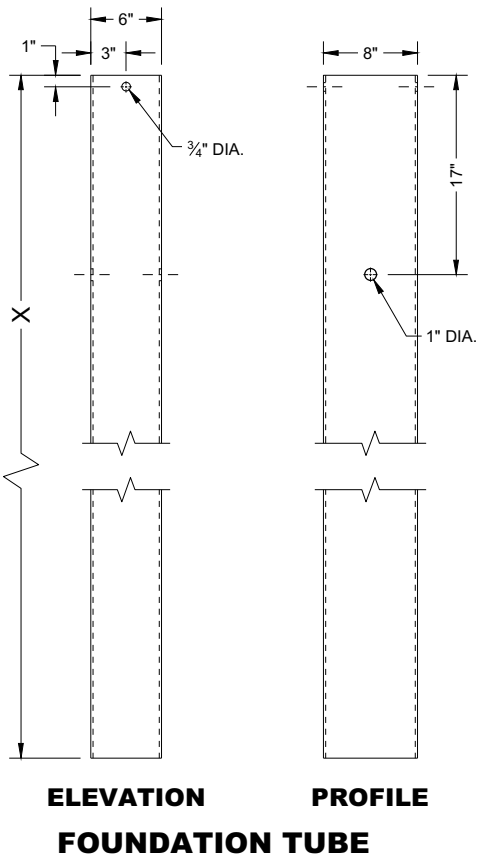
- 400 RAIL CAN BE E3 OR E4 DEPENDING ON POST LOCATION.
- 401 TORQUE BOLD BETWEEN 60-75 FT-LB
- 402 HEIGHT WILL VARY WITHIN HEIGHT TRANSITION TO OTHER HARDWARE. SEE NOTE 213, SHEET "b".

STEEL THRIE BEAM
BULLNOSE TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



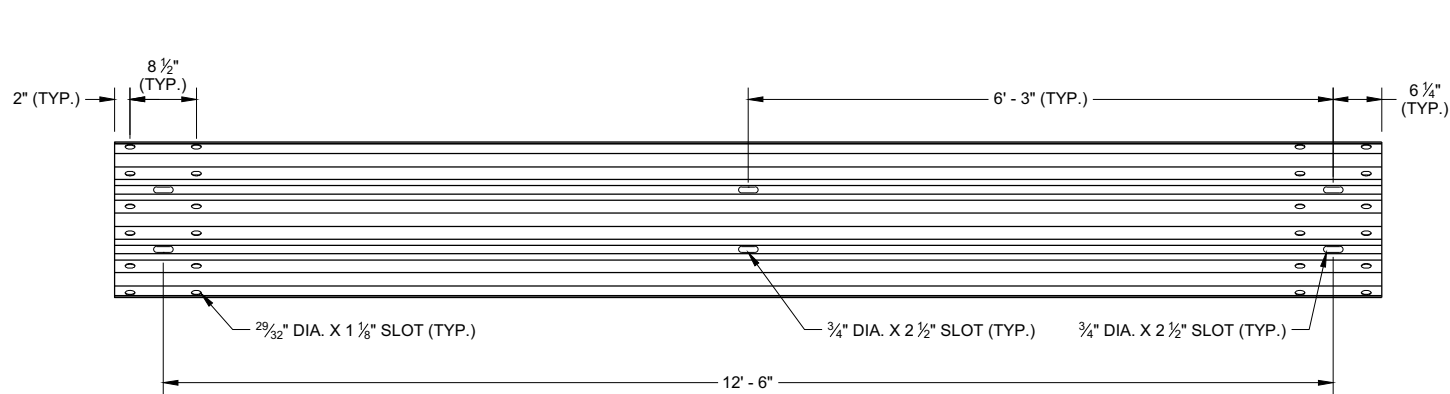
PART	LENGTH "X"
A1	8' - 0"
A2	6' - 0"
B2	3' - 6"



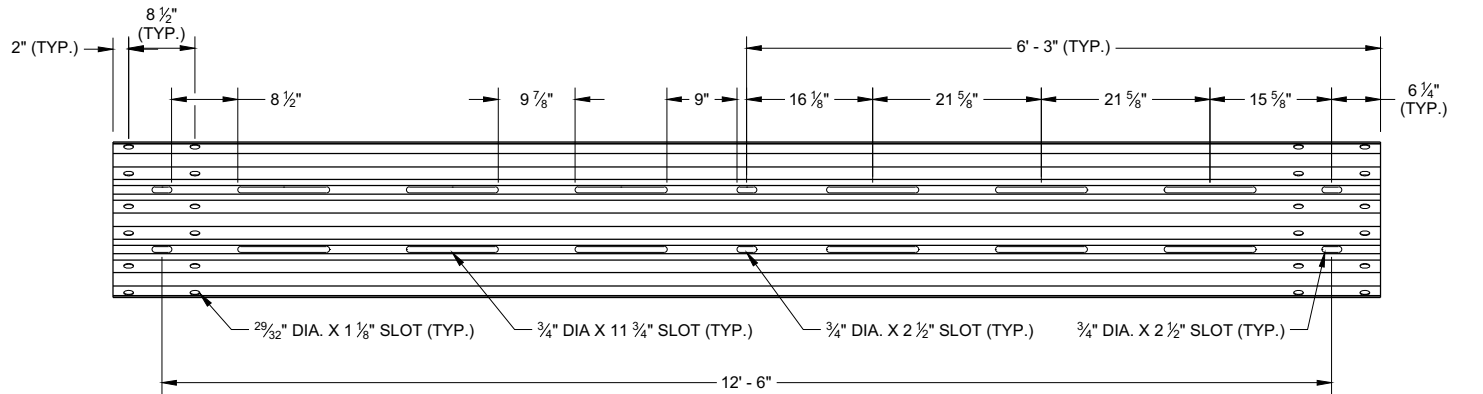
PART	LENGTH "Y"
M1	6' - 6"
M2	5' - 8 5/8"
C2	2' - 8 5/8"

**STEEL THRIE BEAM
BULLNOSE TERMINAL**

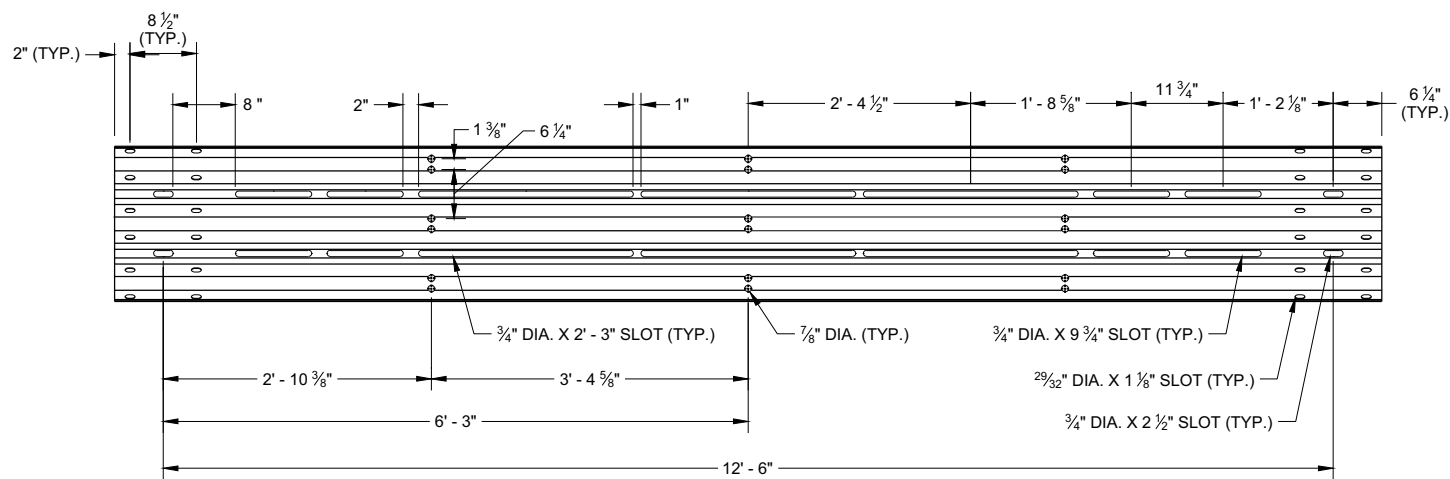
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



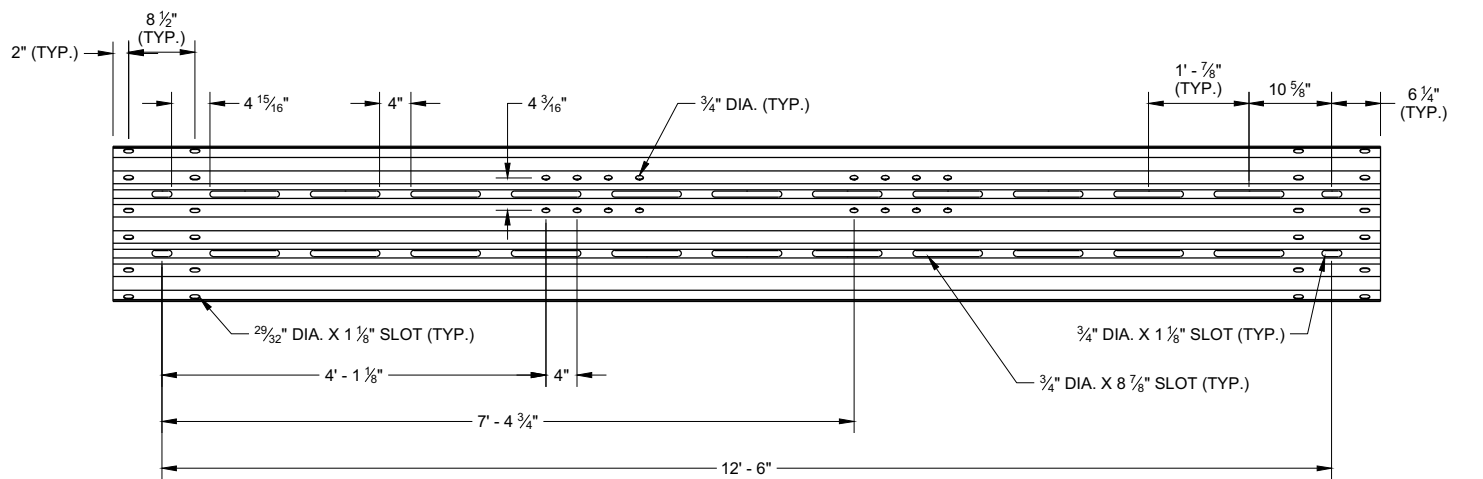
SLOTTED THRIE BEAM RAIL E1



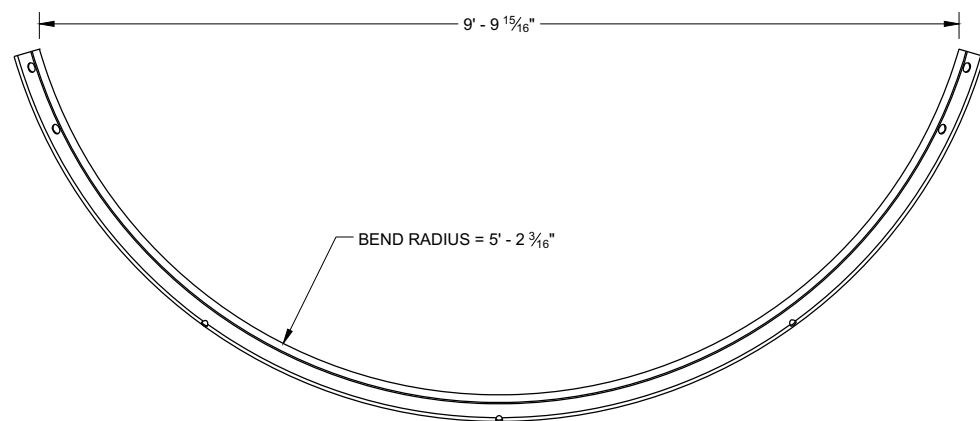
SLOTTED THRIE BEAM RAIL E3



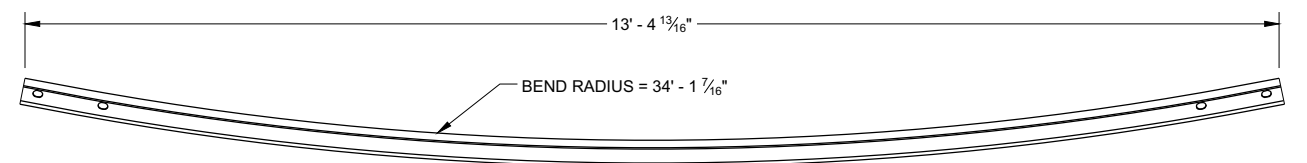
**ELEVATION VIEW NON - RADIUSED
SLOTTED THRIE BEAM RAIL E2**



**ELEVATION VIEW NON - RADIUSED
SLOTTED THRIE BEAM RAIL E4**



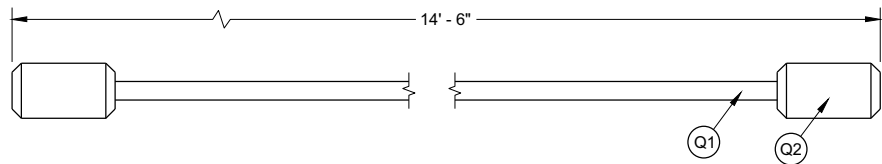
**PLAN VIEW
SLOTTED THRIE BEAM RAIL E2**



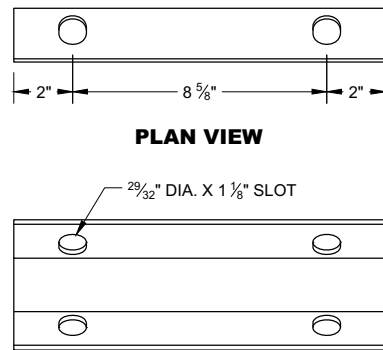
**PLAN VIEW
SLOTTED THRIE BEAM RAIL E4**

**STEEL THRIE BEAM
BULLNOSE TERMINAL**

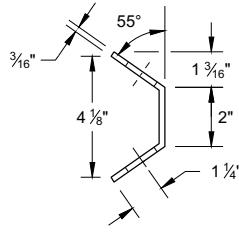
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



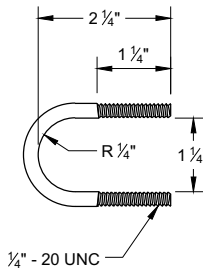
NOSE CABLE AND SWAGE BUTTON



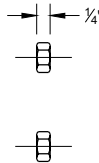
**ELEVATION VIEW
NOSE CABLE ANCHOR (R1)**



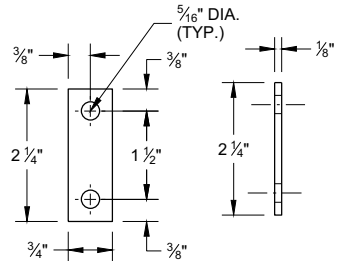
PROFILE VIEW



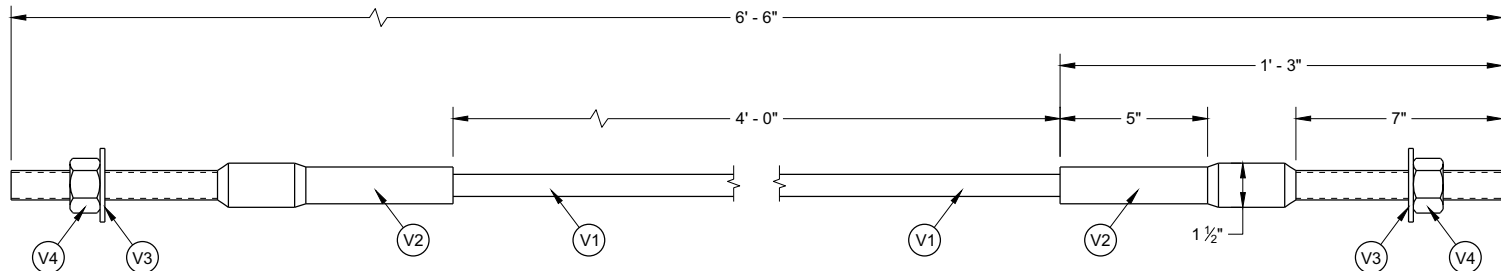
**U - BOLT
(T1)**



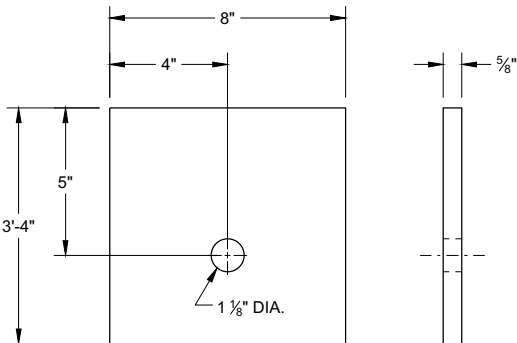
**U - BOLT
NUT (T3)**



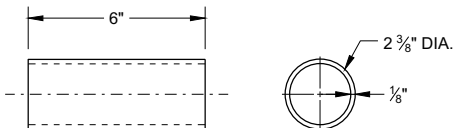
**ELEVATION VIEW PROFILE VIEW
U - BOLT
PLATE WASHER (T2)**



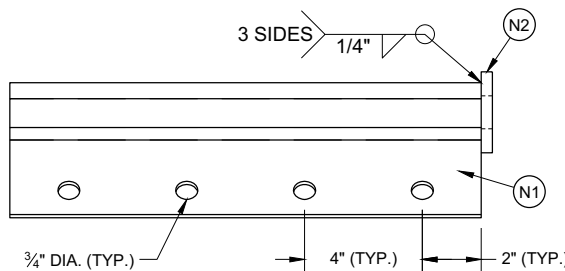
ANCHOR CABLE ASSEMBLY



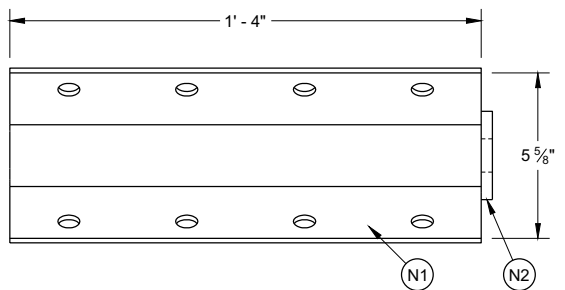
**ELEVATION VIEW PROFILE VIEW
BCT BEARING PLATE (A3)**



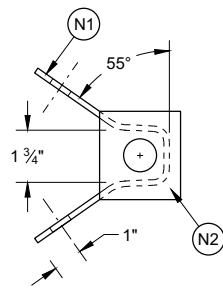
**ELEVATION VIEW PROFILE VIEW
BCT POST SLEEVE (L2)**



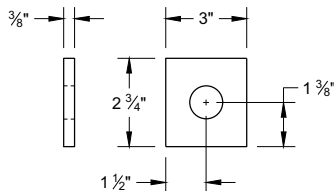
PLAN VIEW



**ELEVATION VIEW
ANCHOR BRACKET ASSEMBLY (N1)**



PROFILE VIEW



**ANCHOR BRACKET
END PLATE (N2)**

**STEEL THRIE BEAM
BULLNOSE TERMINAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS LIST

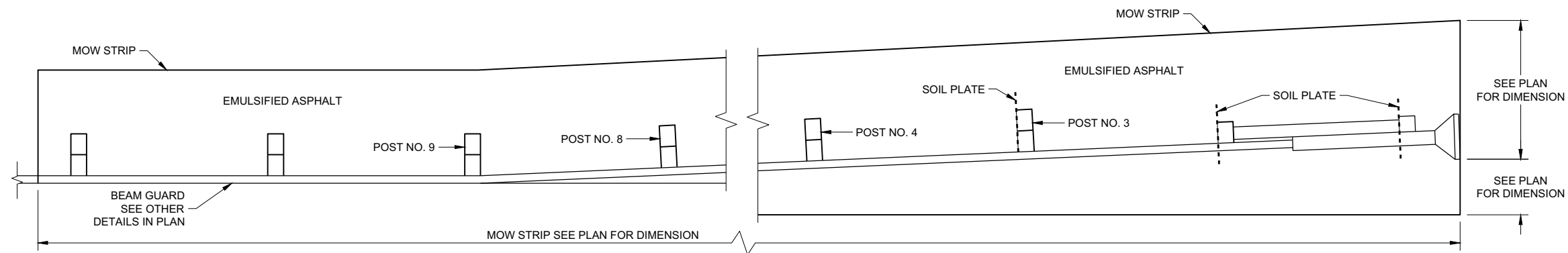
PART NUMBER	DESCRIPTION	MATERIAL SPECIFICATION
A1	LONG FOUNDATION TUBE	AASHTO M111/ASTM A123 ASTM A500 GRADE B OR ASTM A-501
A2	FOUNDATION TUBE	AASHTO M111/ASTM A123 ASTM A500 GRADE B OR ASTM A-501
A3	BEARING PLATE AT POST	AASHTO M111/ASTM A123 ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI
B1	LOWER SLIP POST ASSEMBLY - PLATE	AASHTO M111/ASTM A123 ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI
B2	LOWER SLIP POST ASSEMBLY - TUBE	AASHTO M111/ASTM A123 ASTM A500 GRADE B OR ASTM A-501
C1	UPPER SLIP POST ASSEMBLY - PLATE	AASHTO M111/ASTM A123 ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI
C2	UPPER SLIP POST ASSEMBLY - POST	AASHTO M111/ASTM A123 ASTM A6 W6X9 OR W6X8.5 ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI
D1	BLOCK FOR STEEL POST - WOOD	WISDOT SPEC. 614
D2	TAPERED BLOCK FOR STEEL POST - WOOD	WISDOT SPEC. 614
D3	TAPERED BLOCK FOR BCT POST - WOOD	WISDOT SPEC. 614
E1	THRIE BEAM RAIL	AASHTO M180 CLASS A TYPE 2 APPROVED PRODUCER
E2	THRIE BEAM RAIL - SHOP BENT AND PUNCHED	AASHTO M180 CLASS A TYPE 2 APPROVED PRODUCER. INDICATE RADIUS BEAM GUARD IS BENT TO ON THE BACKSIDE OF RAIL. FOLLOW AASHTO M180. MARK RADIUS.
E3	THRIE BEAM RAIL - PUNCHED	AASHTO M180 CLASS A TYPE 2 APPROVED PRODUCER
E4	THRIE BEAM RAIL - FOLLOW BENT AND PUNCHED	AASHTO M180 CLASS A TYPE 2 APPROVED PRODUCER. INDICATE RADIUS BEAM GUARD IS BENT TO ON THE BACKSIDE OF RAIL. FOLLOW AASHTO M180. MARK RADIUS.
F1	5/8" DIA. HEX HEAD GROUND STRUT AND YOKE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36
F2	5/8" DIA. GROUND STRUT AND YOKE BOLT - WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)
F3	GROUND STRUT AND YOKE BOLT - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5
G1	5/8 " DIA. POST BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER TYPICALLY USED WITH STEEL POSTS) OR ASTM F844 (UNHARDENED WASHER TYPICALLY USED WITH WOOD)
G2	POST BOLT - WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER TYPICALLY USED WITH STEEL POSTS) OR ASTM F844 (UNHARDENED WASHER TYPICALLY USED WITH WOOD)
G3	POST BOLT - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5
H1	7/8" DIA. SOIL TUBE BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 HEAVY HEX HEAD 7/8" ASTM A563DH OR SAE J995 GRADE 5
H2	SOIL TUBE BOLT - WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 7/8" ASTM F844 TYPE 1 (HARDEN WASHER ONLY)
H3	SOIL TUBE BOLT - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 HEAVY HEX HEAD 7/8" ASTM A563DH OR SAE J995 GRADE 5
J1	16D DOUBLE HEAD NAIL	ASTM A153 HOT DIPPED CLASS D DOUBLE HEAD ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEADED)
L1	BCT TIMBER POST	WISDOT SPEC. 614 S4S FINISH ON 4 SIDE
L2	BCT POST SLEEVE	AASHTO M111/ASTM A123 2 3/8" OD ASTM 53 GRADE B
M1	W6X8.5 OR W6X9 STEEL POST	AASHTO M111/ASTM A123 ASTM A6 W6X9 OR W6X8.5 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI
M2	W6X8.5 OR W6X9 STEEL POST	AASHTO M111/ASTM A123 ASTM A6 W6X9 OR W6X8.5 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI
N1	ANCHOR BRACKET	AASHTO M111/ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI
N2	ANCHOR BRACKET - BEARING PLATE	AASHTO M111/ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI

PART NUMBER	DESCRIPTION	MATERIAL SPECIFICATION
P1	5/8" DIA. ANCHOR BRACKET BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD 5/8" ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36
P2	ANCHOR BRACKET BOLT - WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)
P3	SOIL TUBE BOLT - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5
Q1	5/8" DIA. NOSE CABLE	6X19 AASTHO M30 / ASTM A741 XIPS INDEPENDENT WIRE CORE (IWRC) PR 6X25 XIPS, IWRC NOMINAL BREAKING STRENGTH OF 41.2 KIPS.
Q2	NOSE CABLE-SWAGE BUTTON	COLD TUFF BUTTON, S-409 SIZE NO. 12 STOCK NUMBER 1040395 OR ANY OTHER SIMILAR SIZED WAGED-GRIP-BUTTON FERRULES. ASTM A576 GRADE 1035 SWAGE FITTING ARE TO BE FIELD SWAGED PER MANUFACTURERS RECOMMENDATION. NOMINAL BREAKING STRENGTH OF 41.2 KIPS.
R1	NOSE CABLE ANCHOR BRACKET	AASHTO M111/ASTM A123 ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX. STRENGTH 50 KSI, OR ASTM A709 MAX. STRENGTH 50 KSI, OR ASTM A992 MAX. STRENGTH 50 KSI
S1	5/8" DIA. SPLICE BOLT - BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC AASHTO M180 HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36
S2	SPLICE - BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 AASHTO M180 RECESSED HEAVY HEX HEAD 5/8" ASTM A563DH OR SAE J995 GRADE 5
T1	1/4" DIA. NOSE CABLE - U BOLT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 UNC HEAVY HEX HEAD ASTM A307 GRADE B OR SAE J429 GRADE 2 OR ASTM F1554 GRADE 36
T2	U-BOLT - PLATE WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)
T3	U-BOLT NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5
U1	7/16" DIA. SLIP POST ASSEMBLY - BREAKAWAY BOLT	ASTM A153 OR B695 CLASS 55 OR F2329 UNC FULLY THREADED HEX HEAD TAP BOLT ASTM A449 OR SAE J429 GRADE 5
U2	7/16" DIA. SLIP POST ASSEMBLY - BREAKAWAY BOLT - WASHER	ASTM F436 TYPE I (HARDEN TYPICALLY USED WITH STEEL) GALV. AASHTO M111/ASTM A 123 OR GALV. HOT DIP. TO POST BOLT CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 55, F2329
U3	SLIP POST ASSEMBLY - BREAKAWAY BOLT - NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / STM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291/ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5
V1	U-BOLT - PLATE WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)
V2	ANCHOR CABLE-SWAGE FITTING	UNC ASTM A576 GRADE 1035 SWAGE FITTING ARE TO BE FACTORY SWAGED. MIN. BREAKING STRENGTH OF 42.7 KIPS. ASME B30.26 "FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING IN TO CONNECTION: NAME OF MANUFACTURE OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE FOR ALLOY EYEBOLTS."
V3	1" DIA. ANCHOR CABLE-WASHER	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1 / ASTM B695 CLASS 50 TYPE 1 F436 TYPE 1 (HARDEN WASHER ONLY)
V4	1" DIA. ANCHOR CABLE-NUT	HOT DIP AASHTO M232 CLASS / ASTM A153 CLASS C / ASTM F2329 C OR MECHANICAL GAL. TO AASHTO M298 CLASS 50 TYPE 1/ ASTM B695 CLASS 50 TYPE 1 UNC OVER TAP NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563 HEAVY HEX HEAD ASTM A563DH OR SAE J995 GRADE 5
W1	REFLECTOR	SEE SDD 15A4

STEEL THRIE BEAM
BULLNOSE TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
August 2020 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

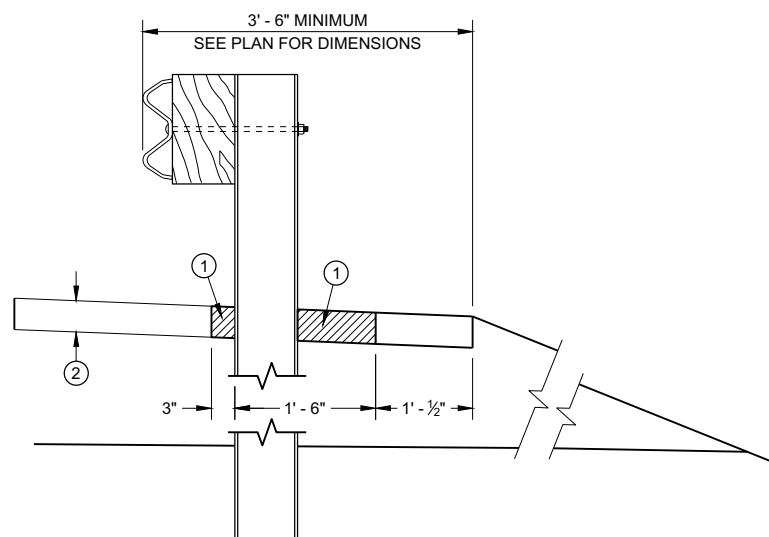


PLAN VIEW
MOW STRIP LAYOUT FOR ENERGY ABSORBING TERMINAL

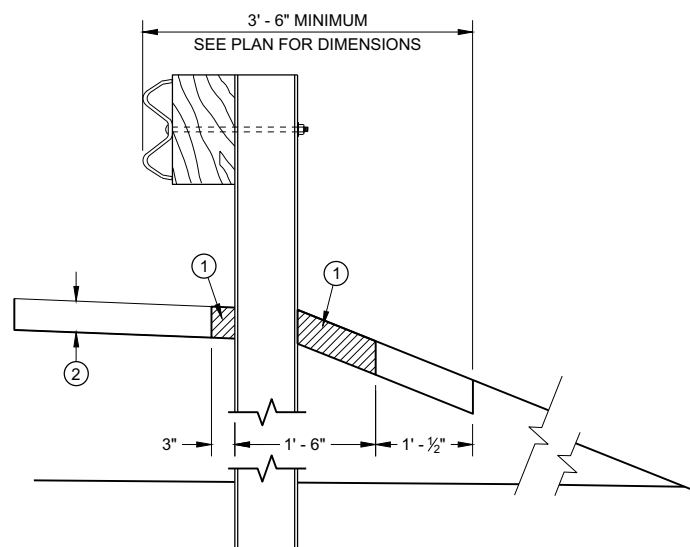
GENERAL NOTES

ONLY USE STEEL POSTS IN CONCRETE AND ASPHALT MOW STRIPS.

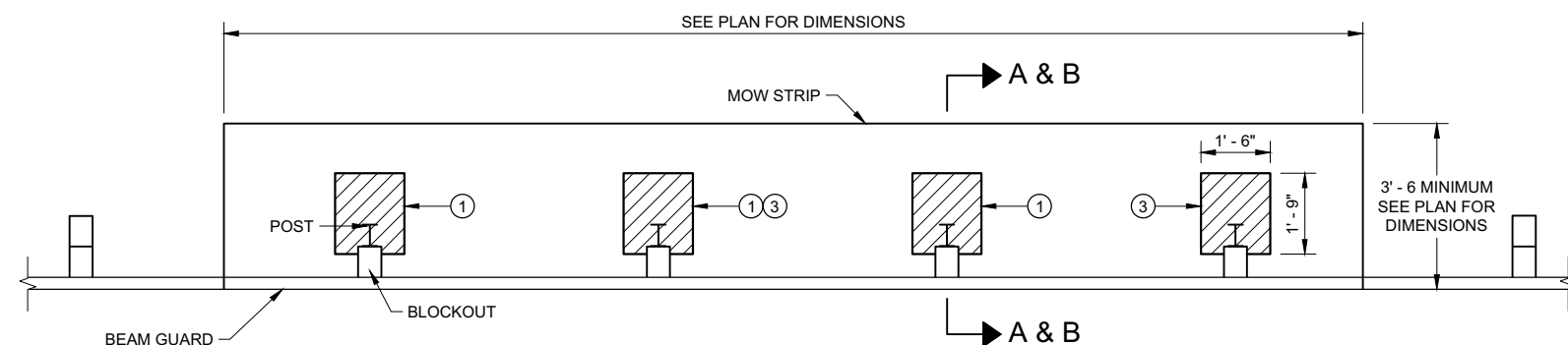
- ① CONTROLLED LOW-STRENGTH BACKFILL OR EMULSIFIED ASPHALT.
- ② DEPTH OF MOW STRIP:
ASPHALT - 4"
CONCRETE - 4"
EMULSIFIED ASPHALT - 1" OR LESS
- ③ FOR EMULSIFIED ASPHALT, MOW STRIP STRIP LEAVE OUTS NOT REQUIRED. (TYPICAL FOR ALL POSTS)



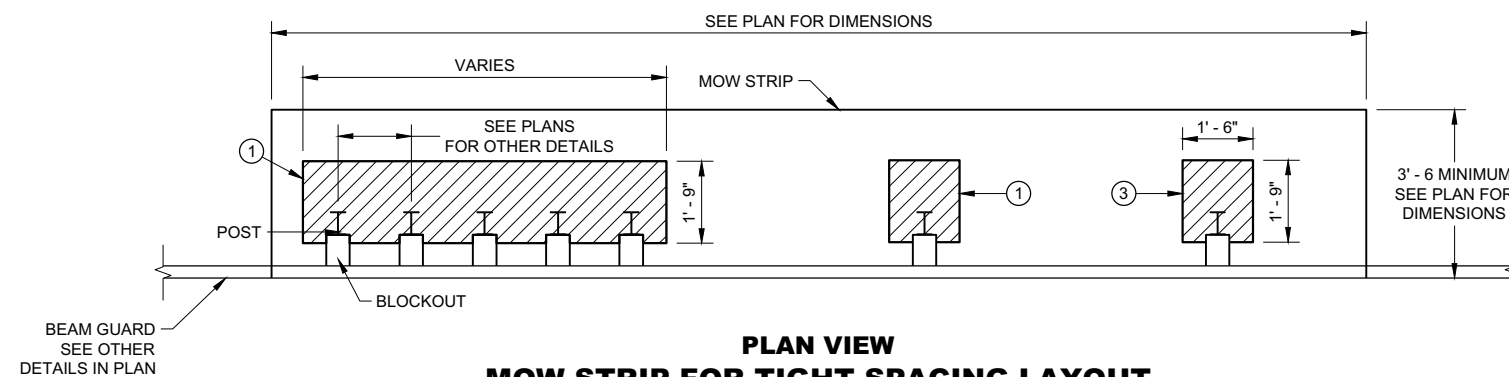
SECTION A - A



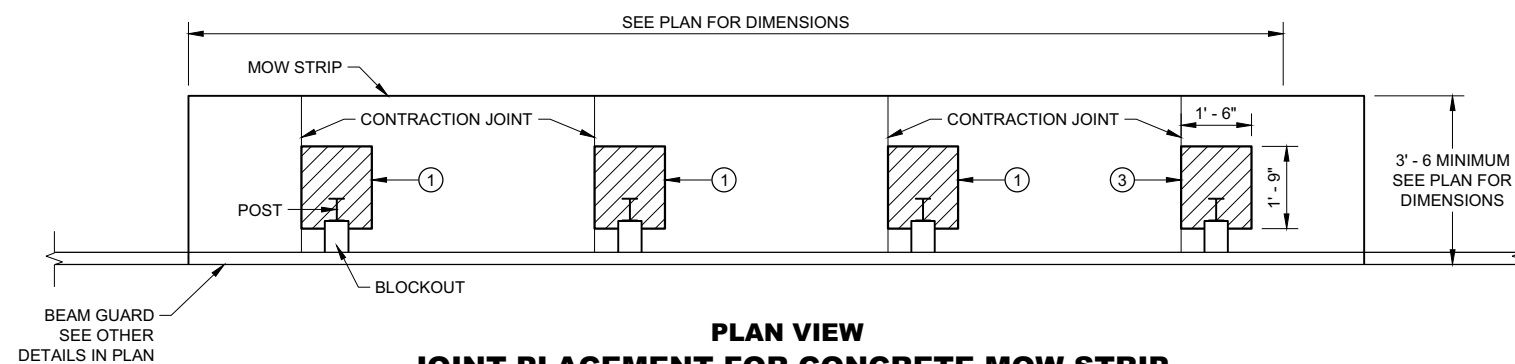
SECTION B - B



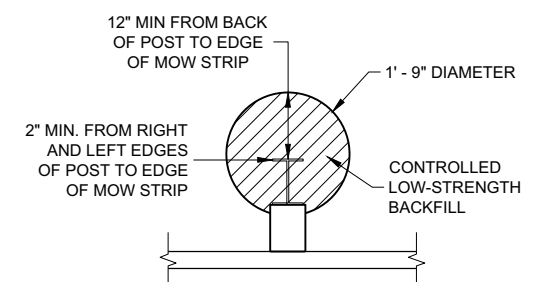
PLAN VIEW
MOW STRIP FOR TYPICAL BLOCKOUT LAYOUT



PLAN VIEW
MOW STRIP FOR TIGHT SPACING LAYOUT



PLAN VIEW
JOINT PLACEMENT FOR CONCRETE MOW STRIP



ALTERNATIVE HMA
MOW STRIP DESIGN

GUARDRAIL MOW STRIP

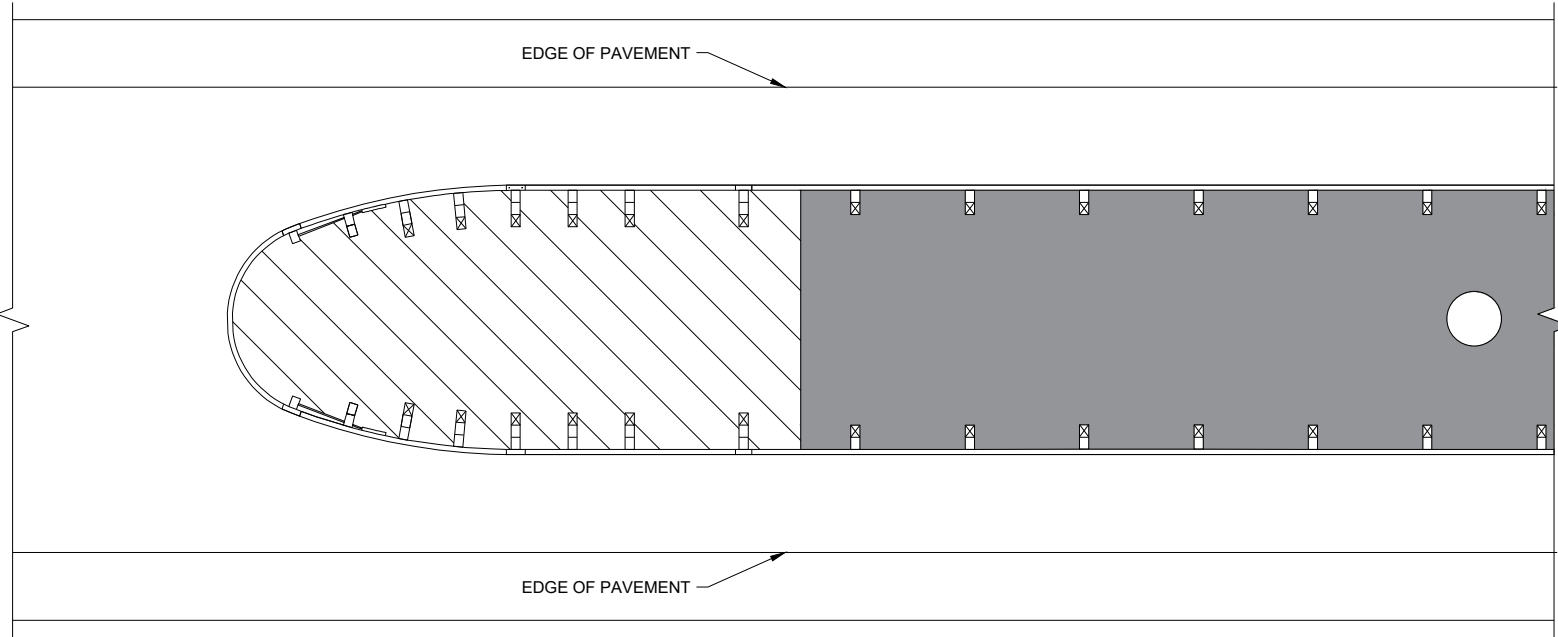
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

LEGEND

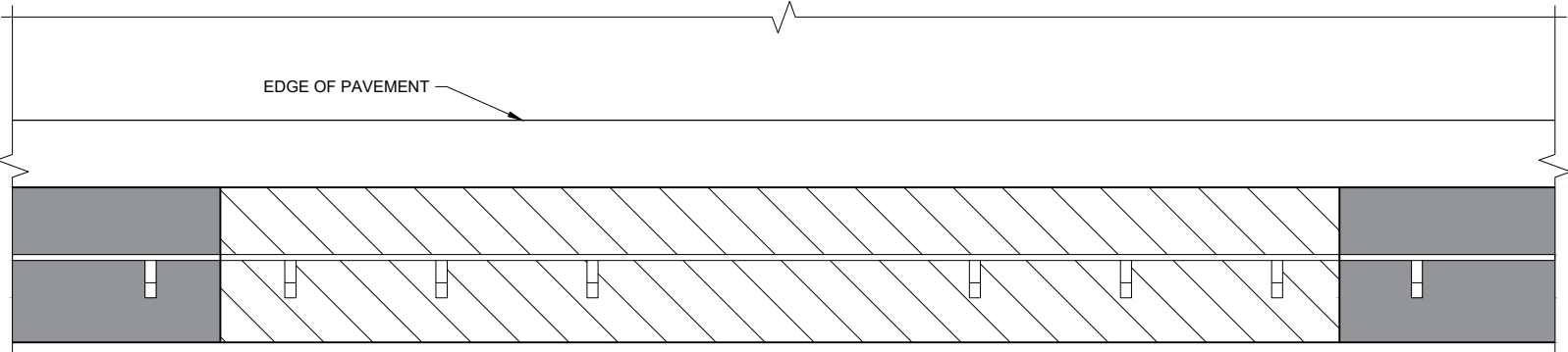
- CONCRETE, ASPHALT, OR EMULSIFIED ASPHALT MOW STRIP (SEE OTHER DETAILS)
- EMULSIFIED ASPHALT MOW STRIP (SEE OTHER DETAILS)

GENERAL NOTES

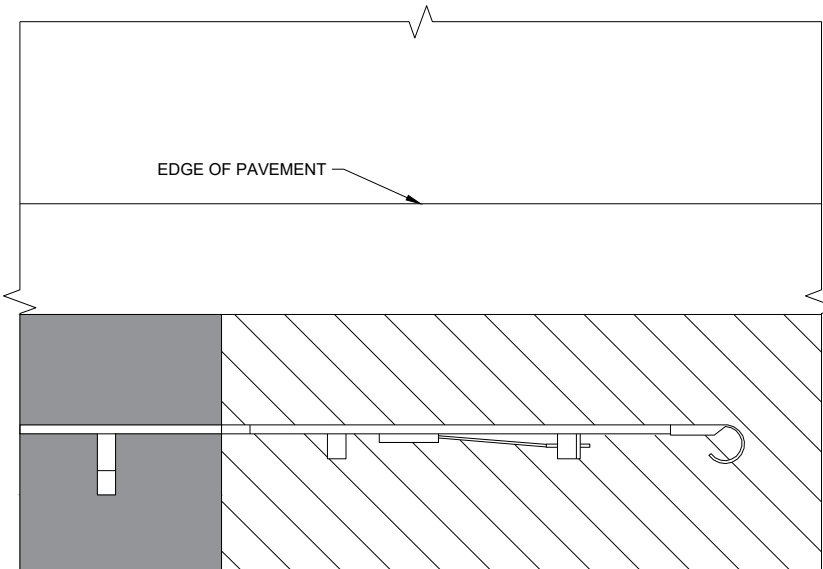
EXISTING THRIE BEAM BULLNOSES MAY HAVE WOOD POSTS. NEW THRIE BEAM BULLNOSE WILL HAVE STEEL POSTS.



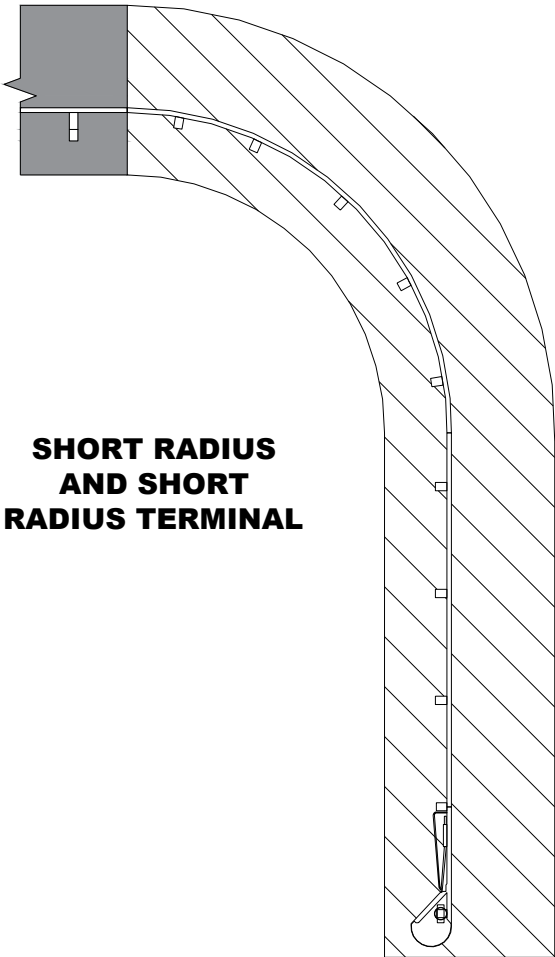
THRIE BEAM BULLNOSE



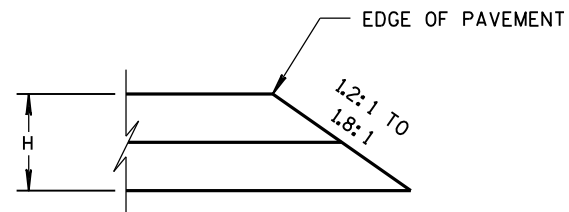
LONG - SPAN



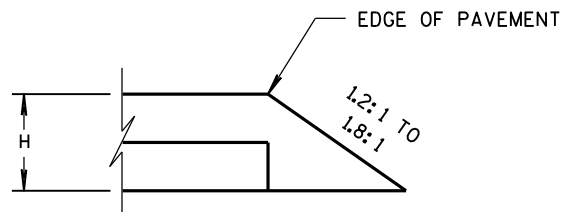
TYPE 2 TERMINAL



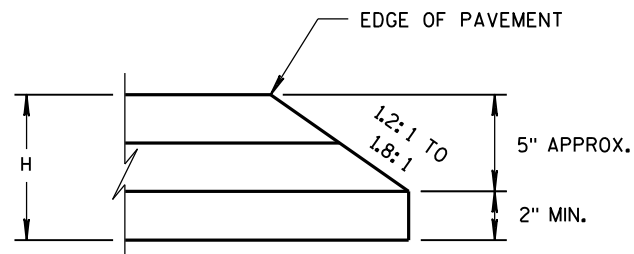
GUARDRAIL MOW STRIP	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED August 2020 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



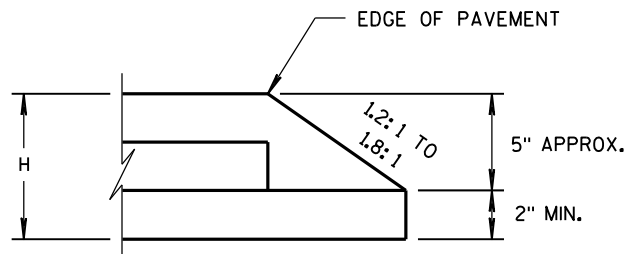
CONSTRUCTED WITH FINAL TWO LAYERS
FOR H 5" OR LESS



CONSTRUCTED WITH FINAL LAYER
FOR H 5" OR LESS

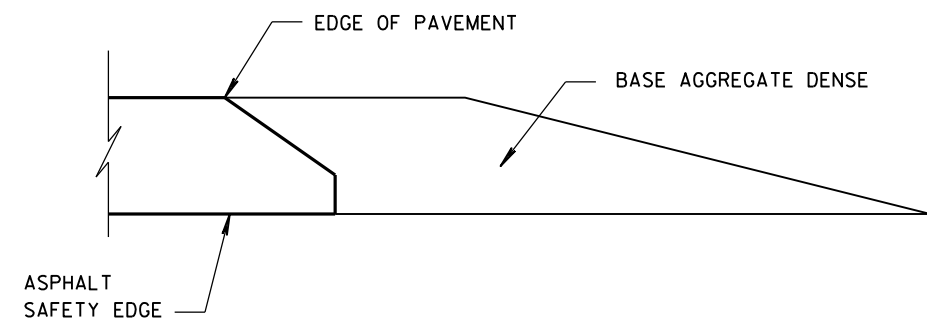


CONSTRUCTED WITH FINAL TWO LAYERS
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER
FOR H GREATER THAN 5"

HMA PAVEMENT AND HMA OVERLAYS



FINISHED SHOULDER AGGREGATE PLACEMENT

SAFETY EDGE_{SM}

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

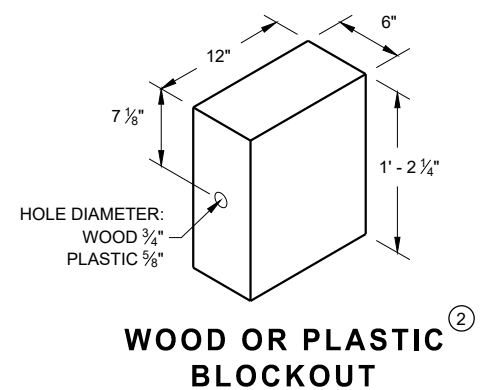
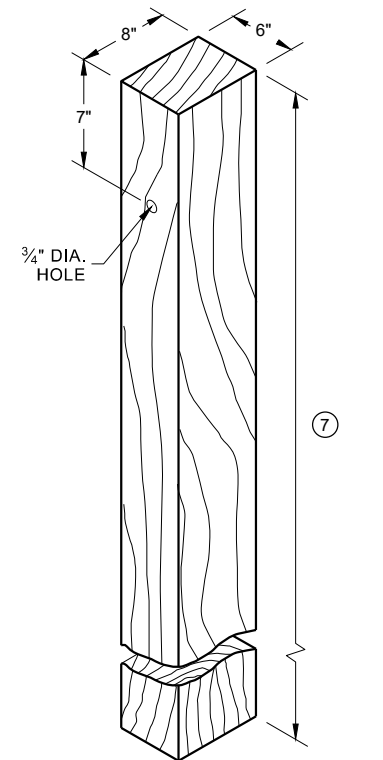
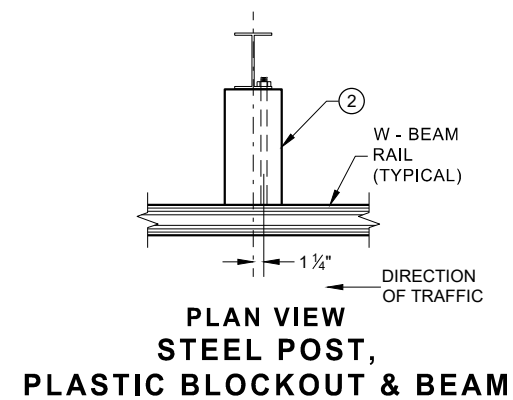
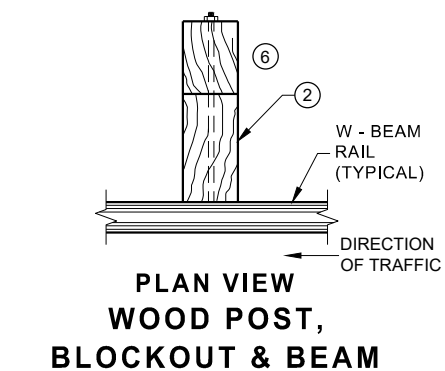
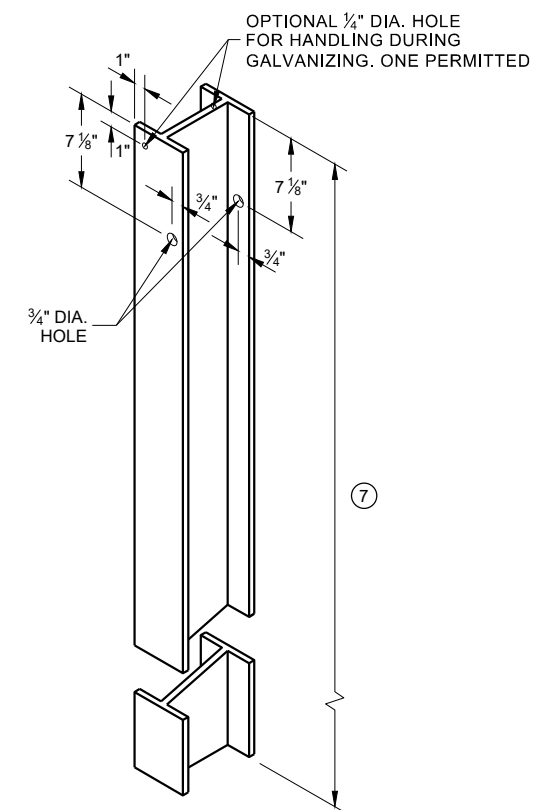
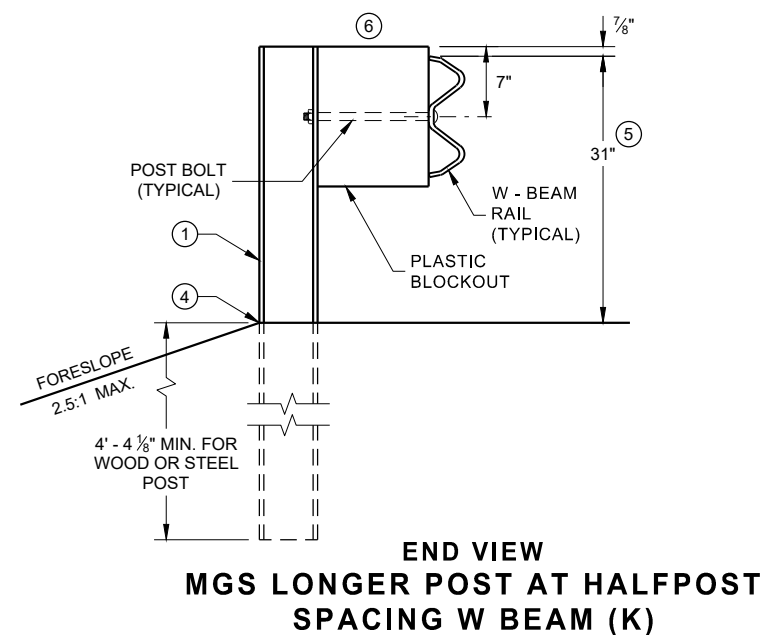
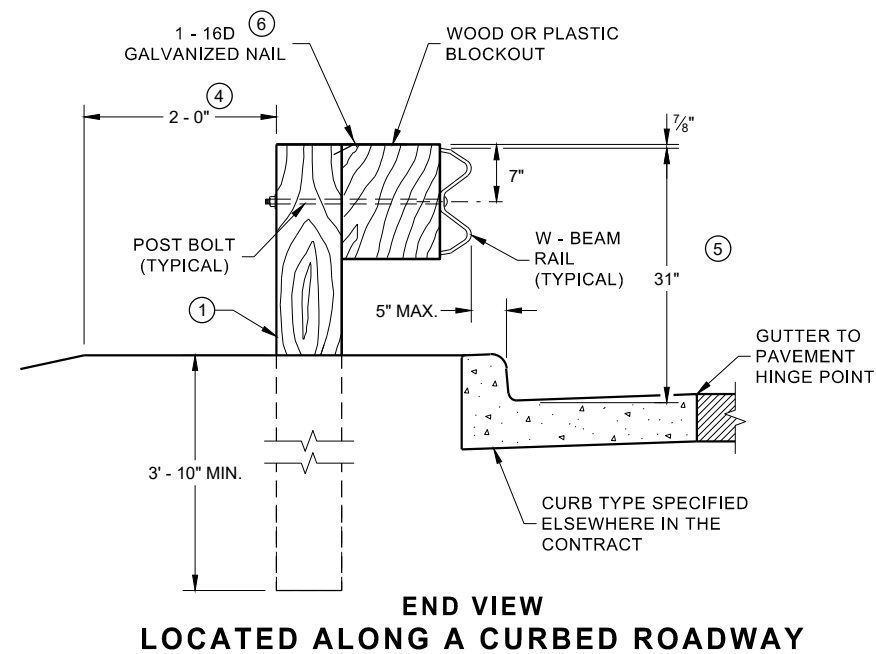
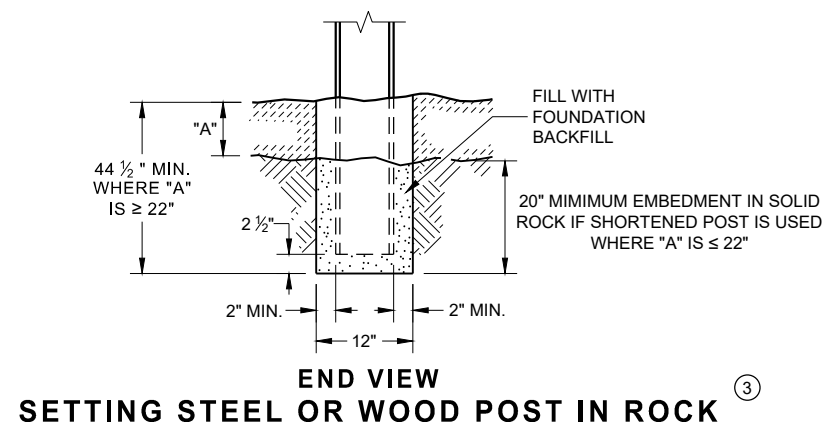
APPROVED

11/30/2012
DATE

FHWA

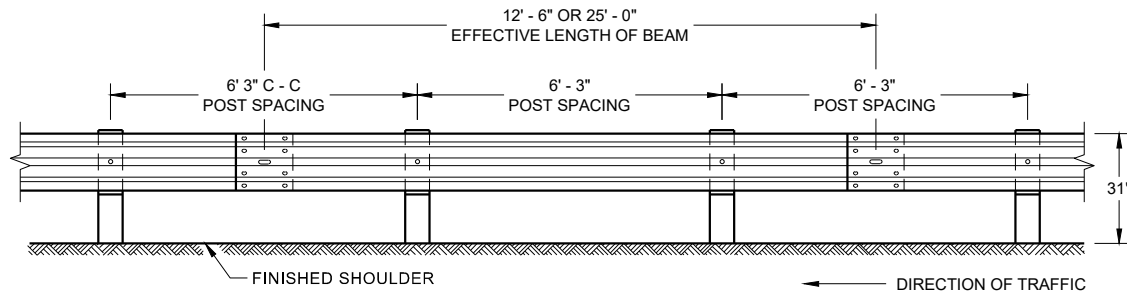
/s/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT
ENGINEER

- 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.
- 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.
- IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS $\pm 1"$. FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- 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.
- TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

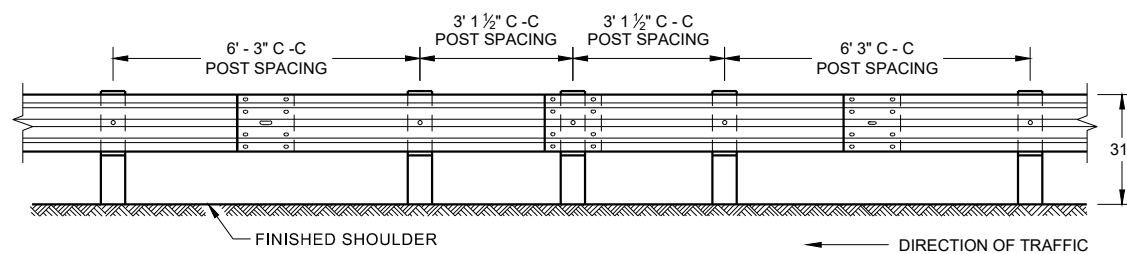


MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

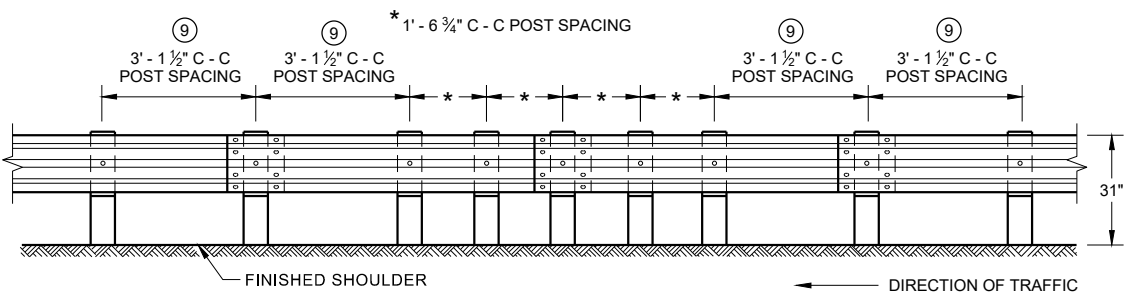
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



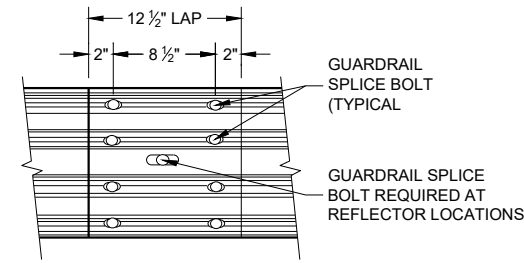
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



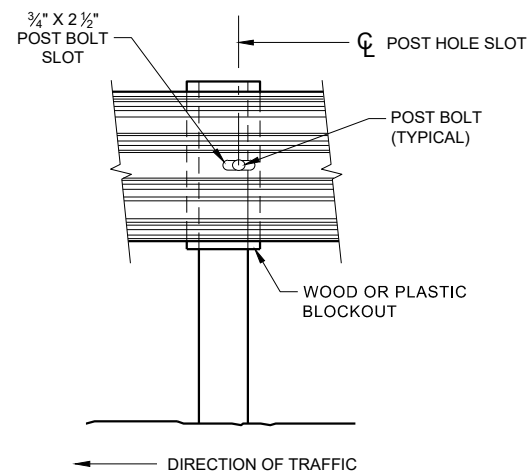
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



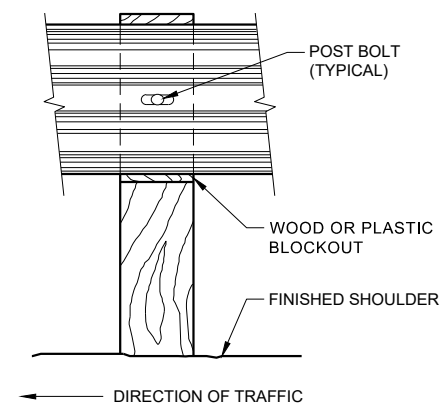
**FRONT VIEW
QUARTER POST SPACING (QS)**



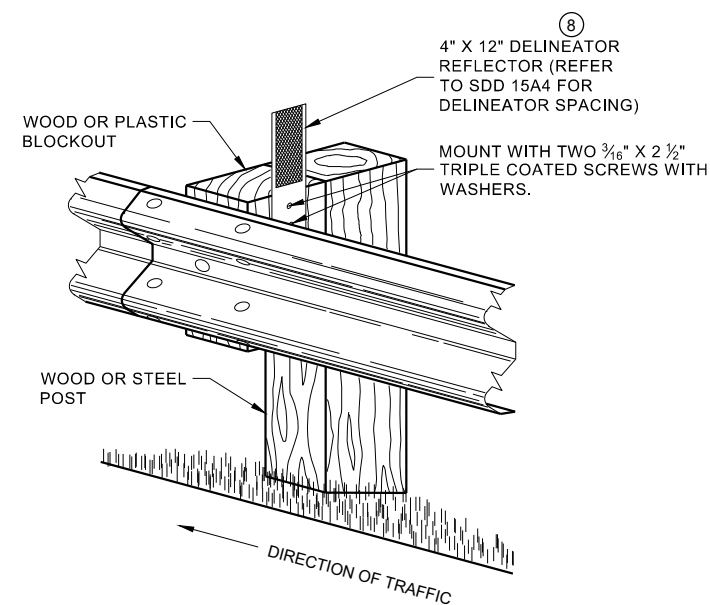
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



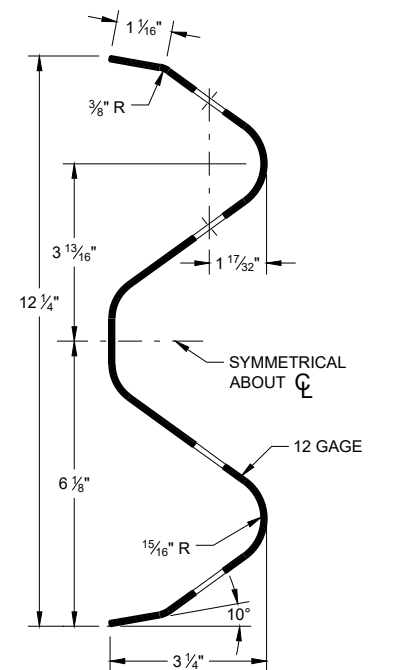
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

- 8 DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
- 9 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A 3/4" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/4" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

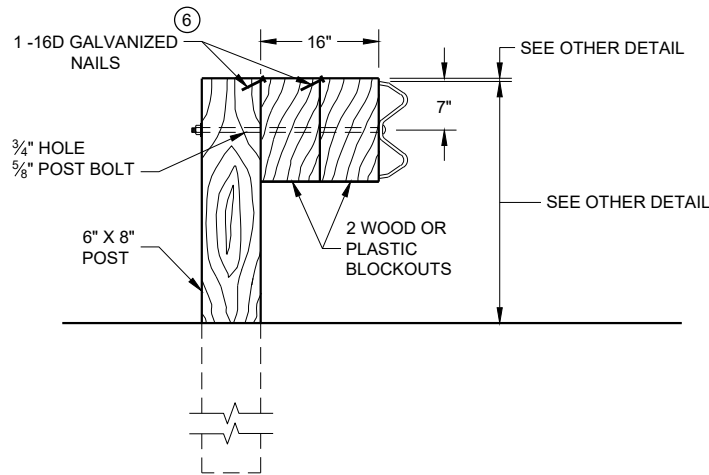
GUARD RAIL SPLICE BOLTS ARE A 3/4" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

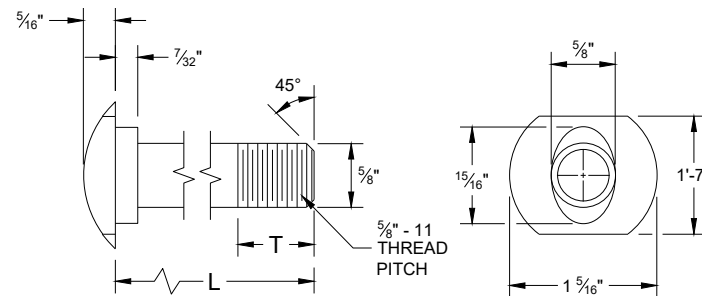
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

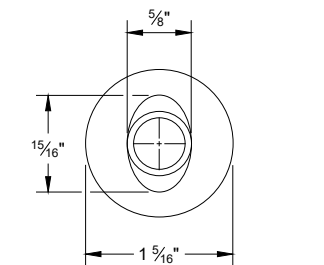
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.

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

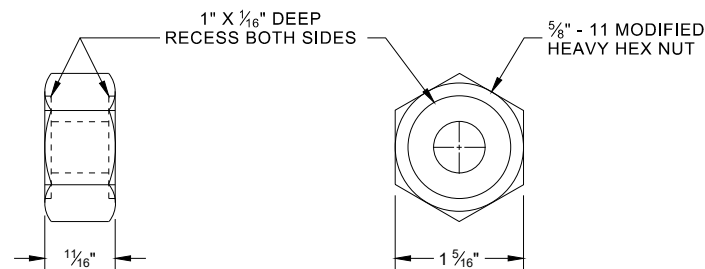


POST BOLT TABLE

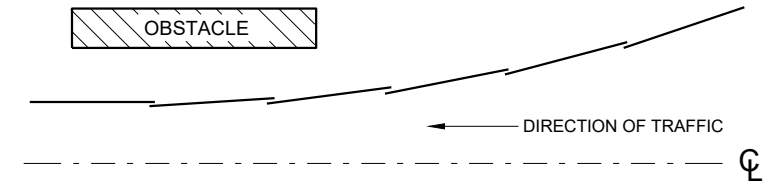
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



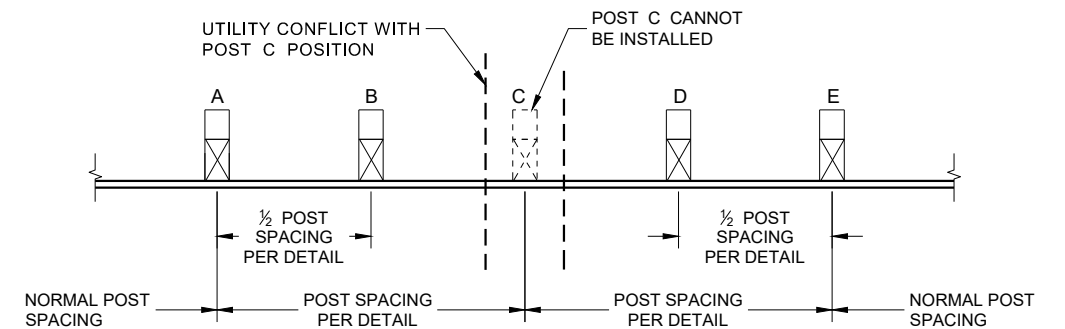
ALTERNATE BOLT HEAD



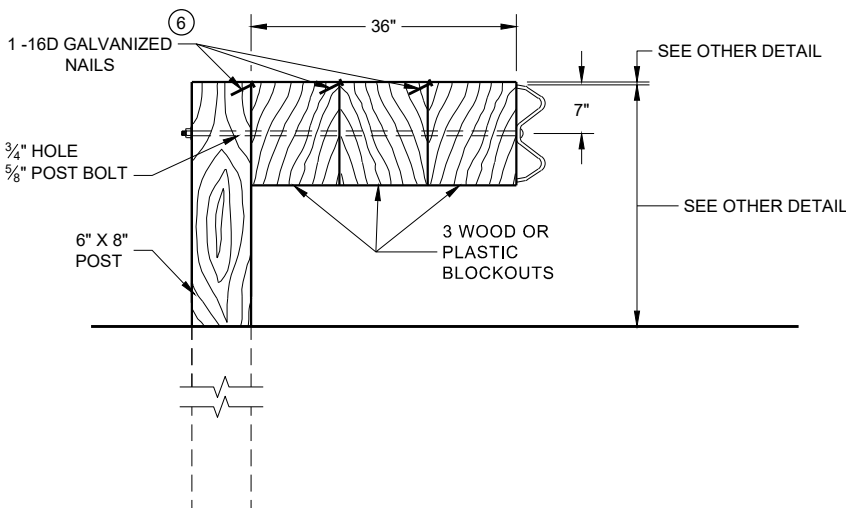
POST BOLT, SPLICE BOLT
AND RECESS NUT



PLAN VIEW
BEAM LAPPING DETAIL



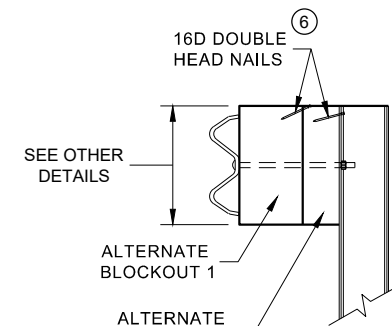
POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



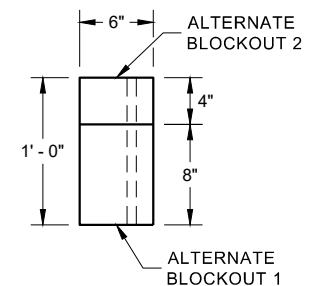
DETAIL FOR 36" BLOCKOUT DEPTH

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

- ⑥ WHEN USING STEEL POST AD 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.



SIDE VIEW

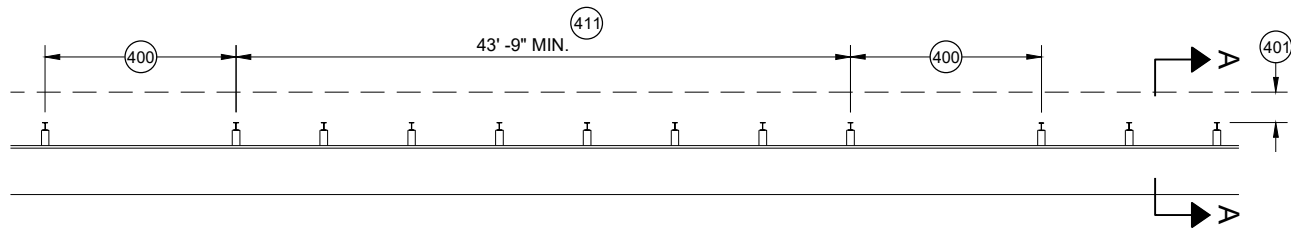


PLAN VIEW

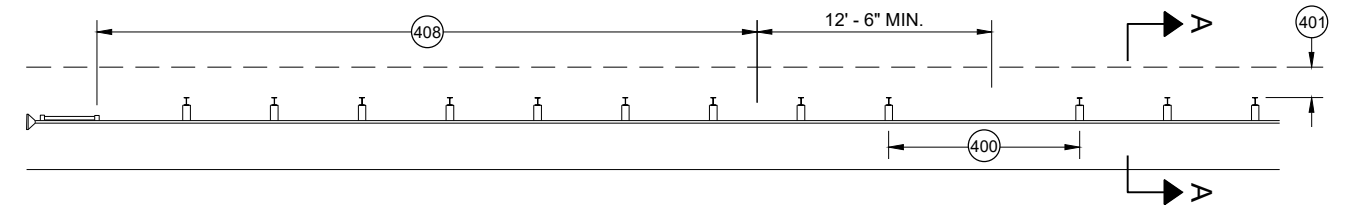
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

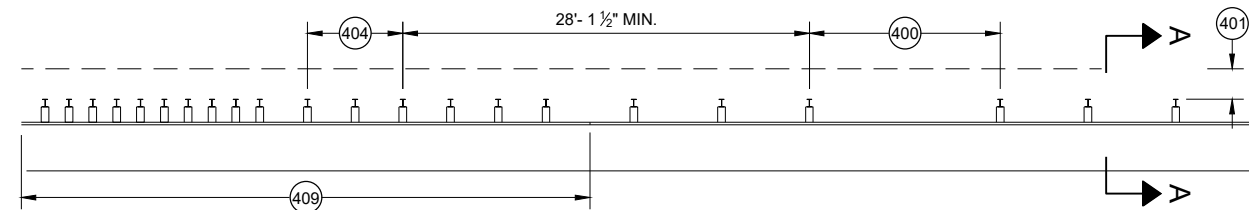
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



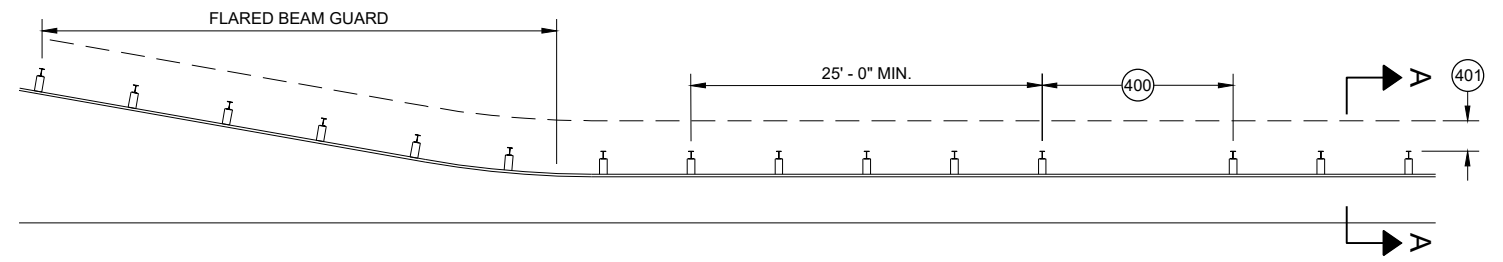
MISSING POST IN MGS GUARDRAIL



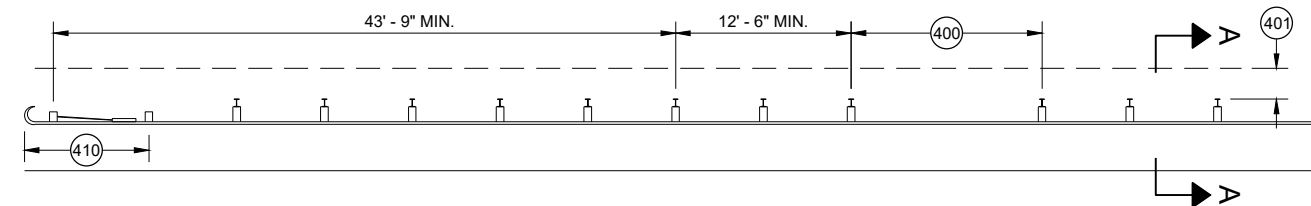
MISSING POST IN MGS GUARDRAIL NEAR EAT



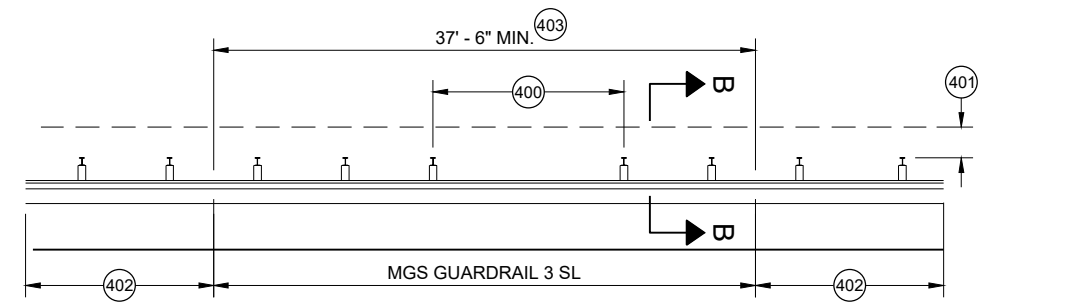
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

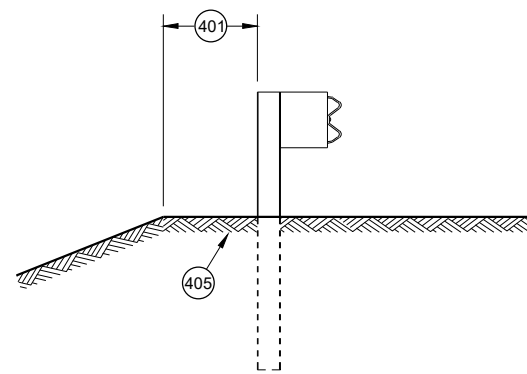


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

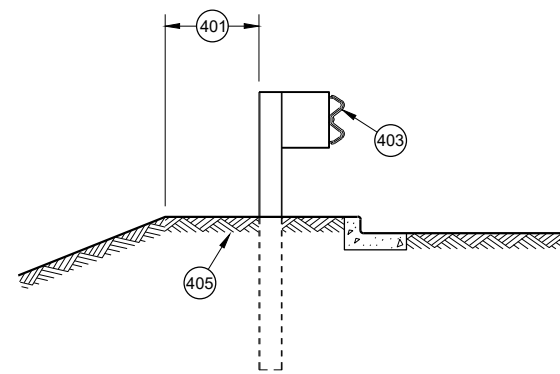


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

- (400) MAX SPAN 12' - 6"
- (401) 2' MIN.
- (402) MGS GUARDRAIL 3
- (403) NESTING BEAM GUARD
- (404) ASYMMETRIC TRANSITION
- (405) SOIL WELL DRAINED AND COMPACTED
- (406) SEE OTHER DRAWINGS IN THIS SDD
- (407) SEE OTHER DRAWINGS FOR MIN. SPACING BETWEEN SPANS
- (408) SEE SDD 14B44
- (409) SEE SDD 14B45
- (410) SEE SDD 14B47
- (411) MINIMUM DISTANCE BETWEEN MISSING POST SPANS.



SECTION A - A



SECTION B - B

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2021
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

FHWA

GENERAL NOTES

- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
 - (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
 - (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. SEE MANUFACTURER'S INFORMATION.
 - (D) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF - TAPPING SCREWS. ONE SCREW PER CORNER.
 - (E) HARDWARE MAY VARY BETWEEN MANUFACTURER. SEE MANUFACTURER'S DRAWING FOR INFORMATION.
- DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

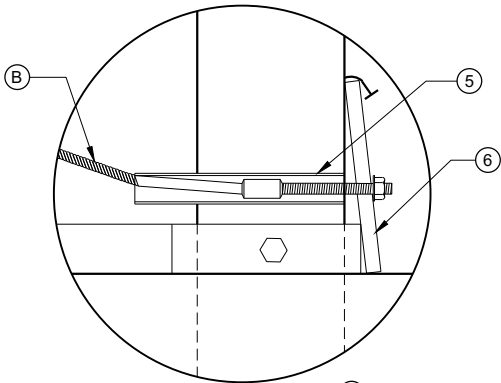
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

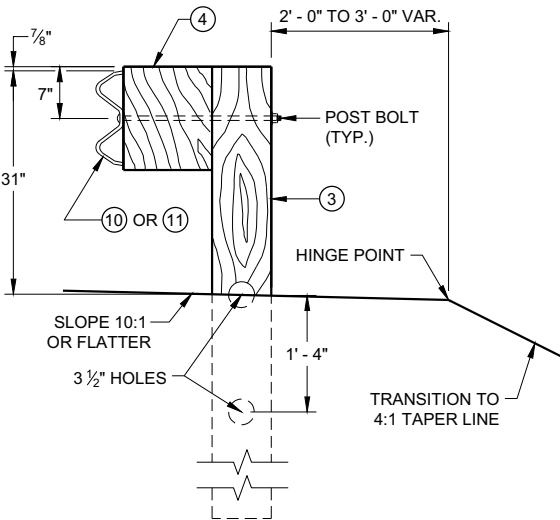
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

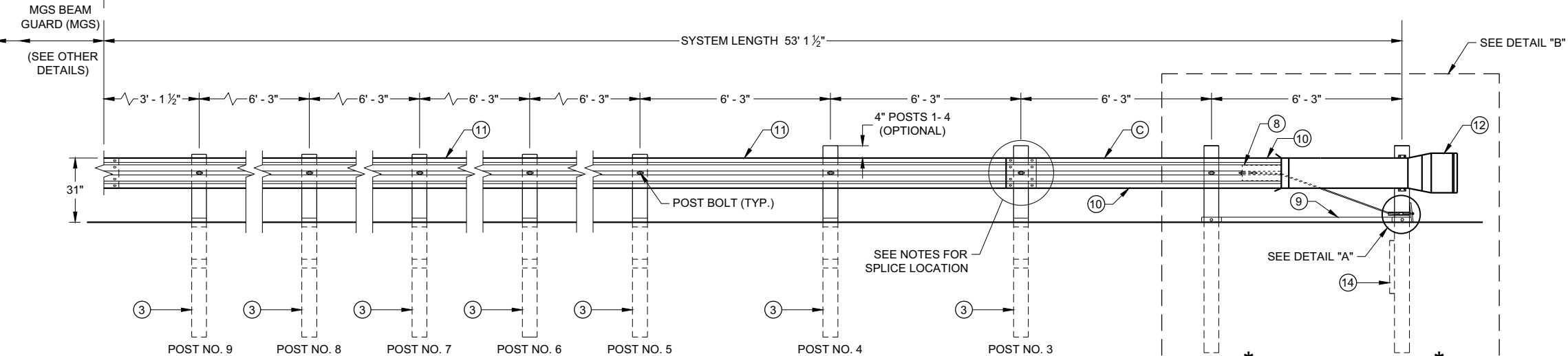
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



DETAIL "A"

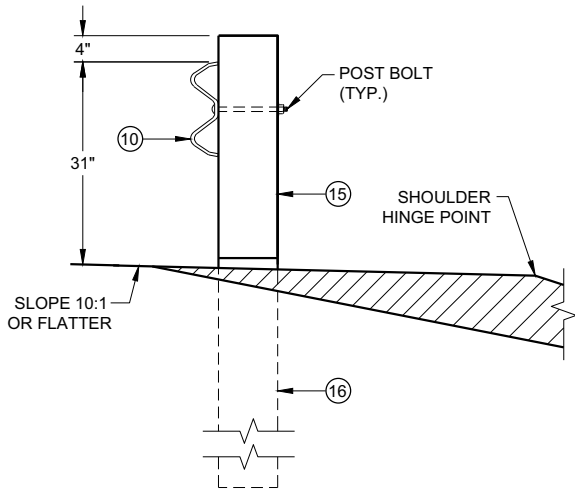


SECTION C - C
TYPICAL AT POST NOS. 3 - 9

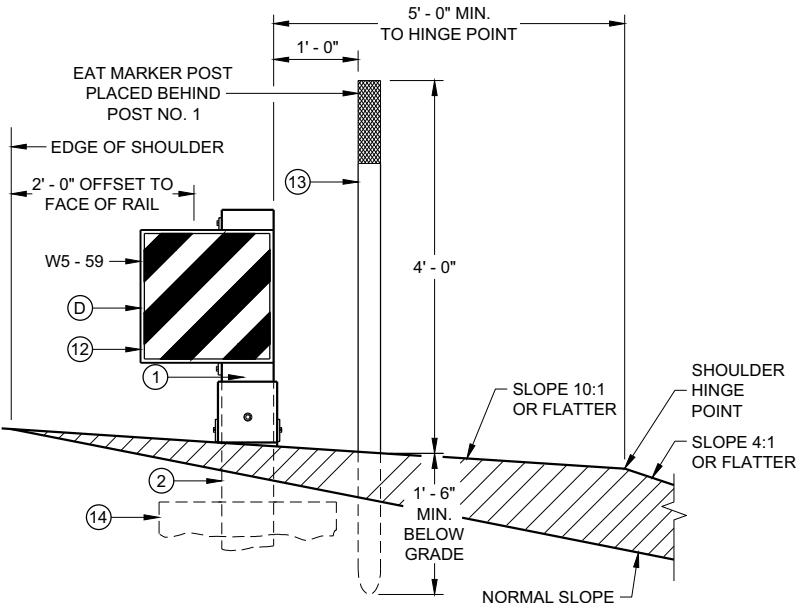


PLAN

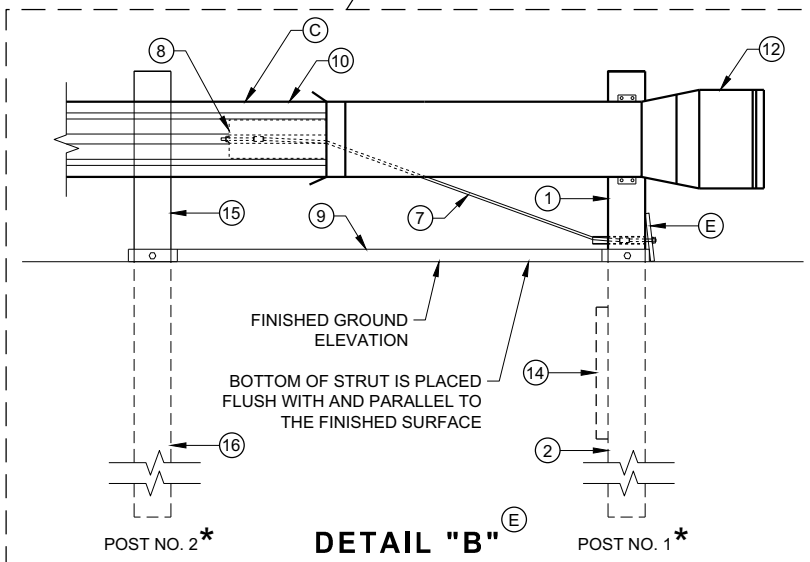
ELEVATION



SECTION B - B
TYPICAL AT POST NO. 2*



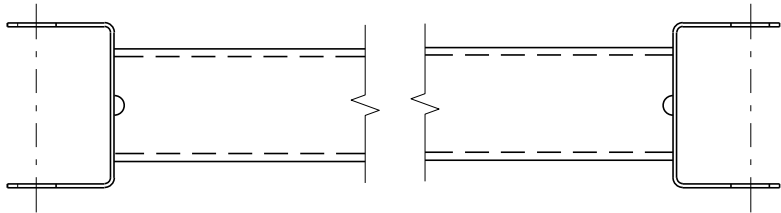
SECTION A - A
TYPICAL AT POST NO. 1*



DETAIL "B"

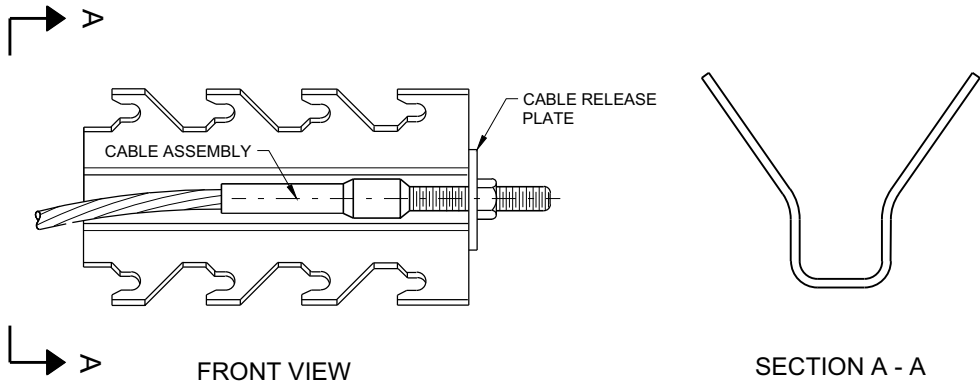
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

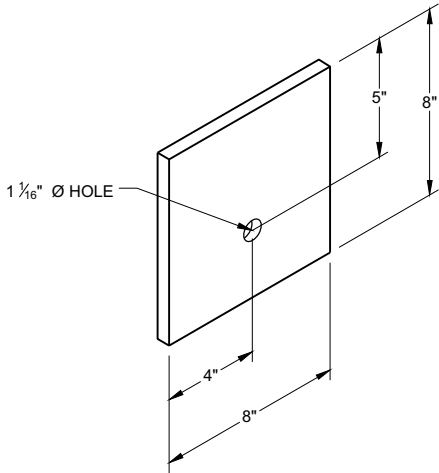


GENERIC GROUND STRUT ⁹ ^E

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



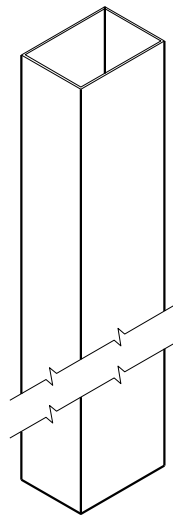
GENERIC ANCHOR CABLE BOX ⁹ ^E



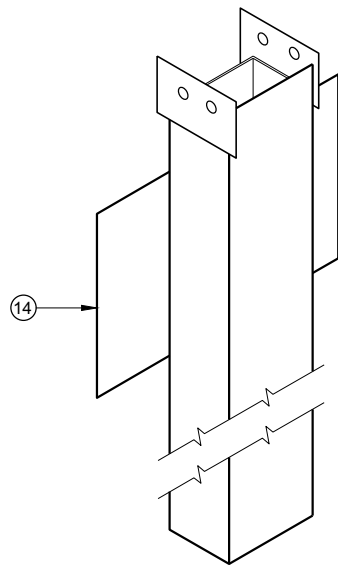
BEARING PLATE ⁶ ^E

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

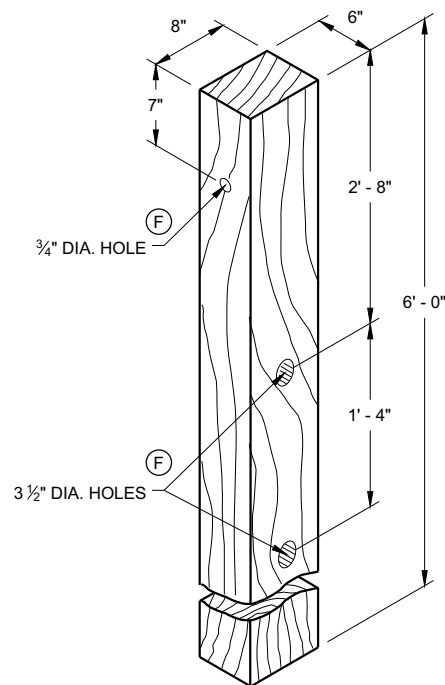
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



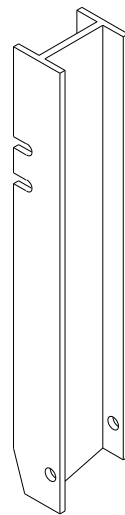
UPPER POST NO. 1 ⁽¹⁾ (E)



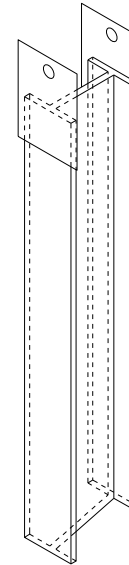
LOWER POST NO. 1 ⁽²⁾ (E)



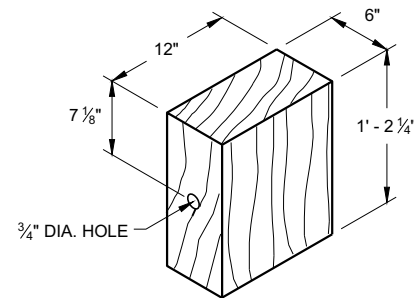
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



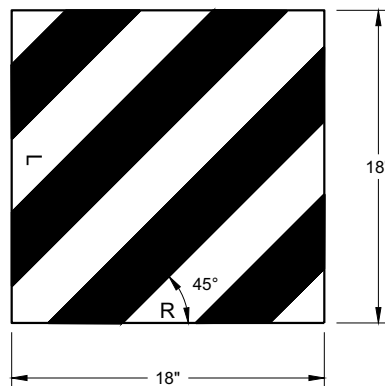
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



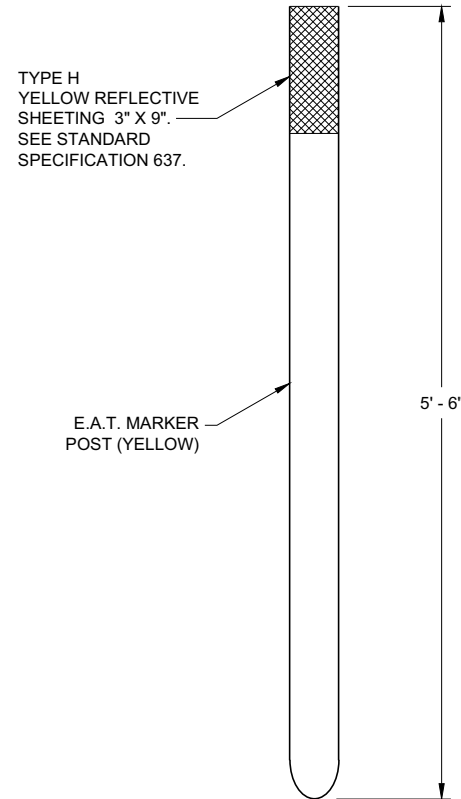
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



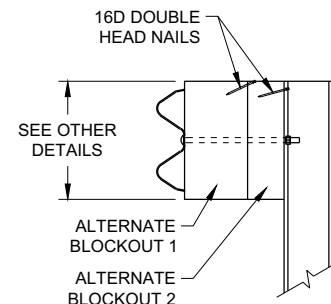
WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



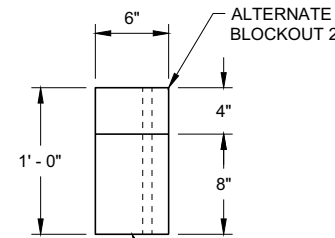
REFLECTIVE SHEETING DETAIL ^(E)



E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



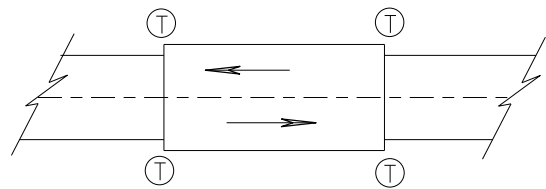
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

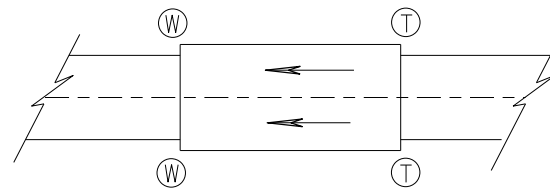
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

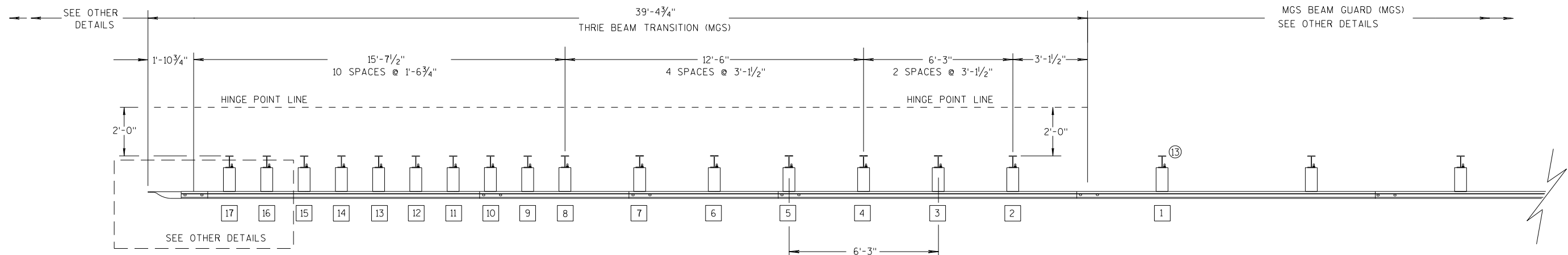
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

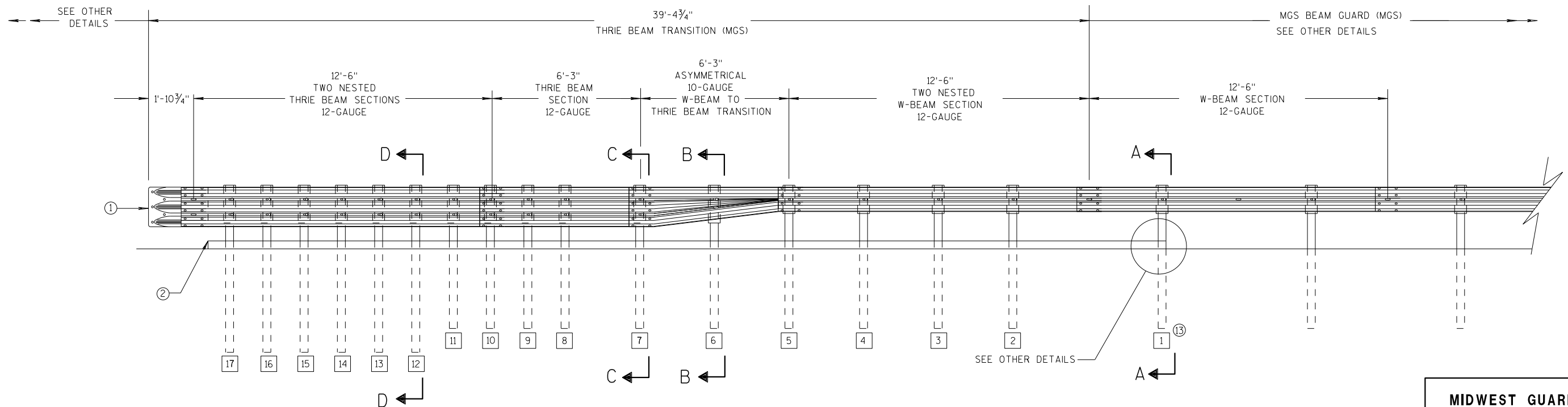
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

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



PLAN VIEW



ELEVATION VIEW

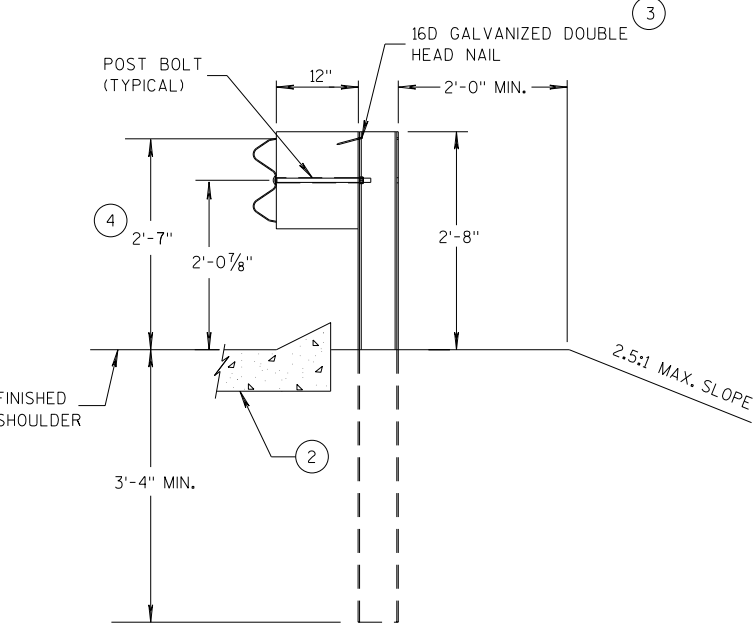
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

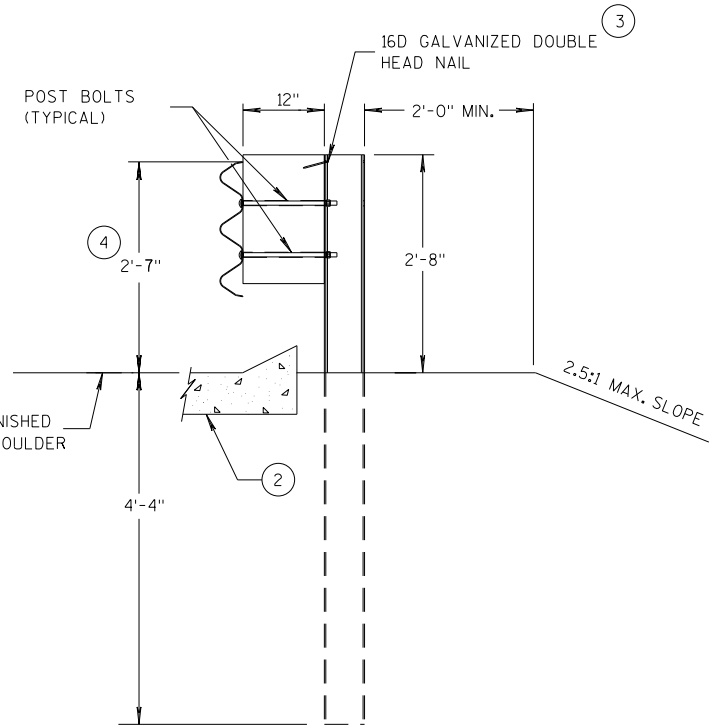
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

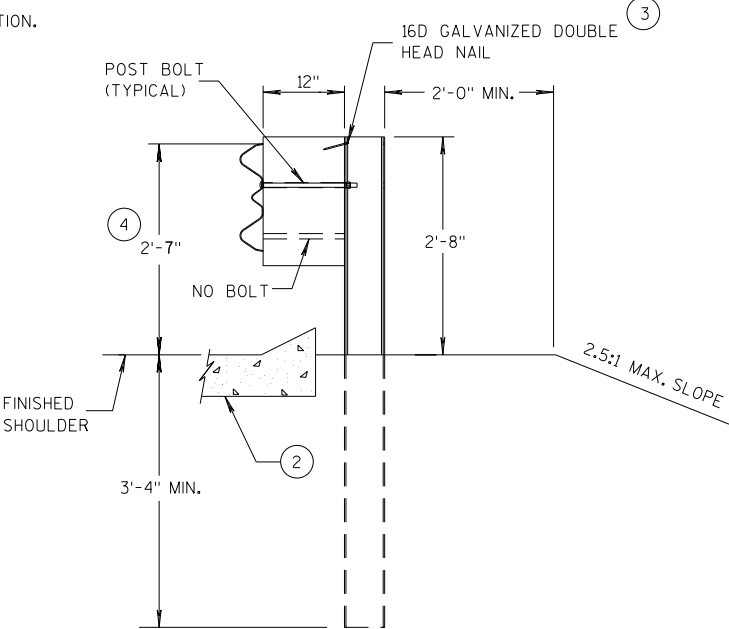
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



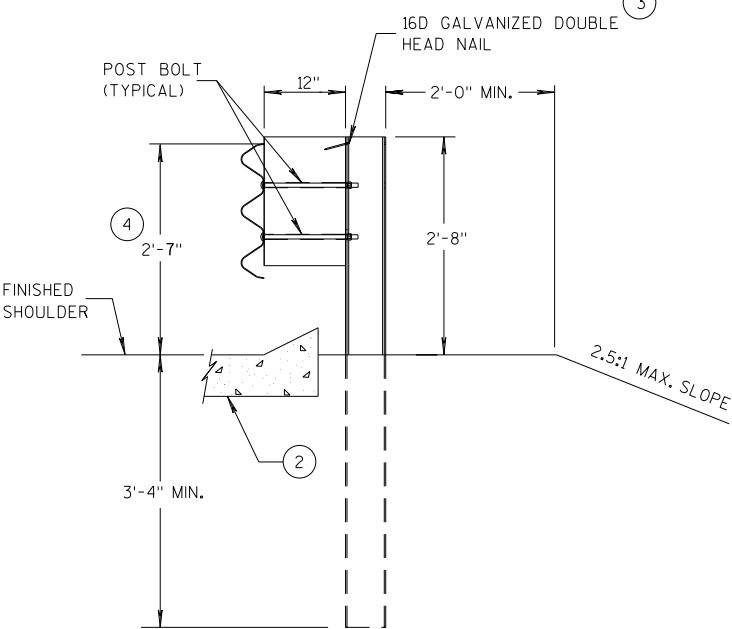
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

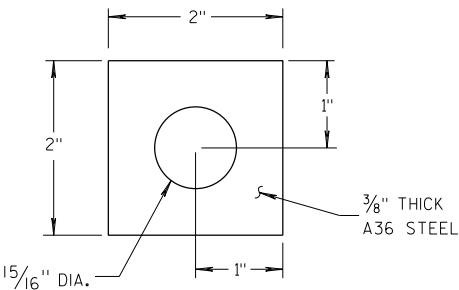
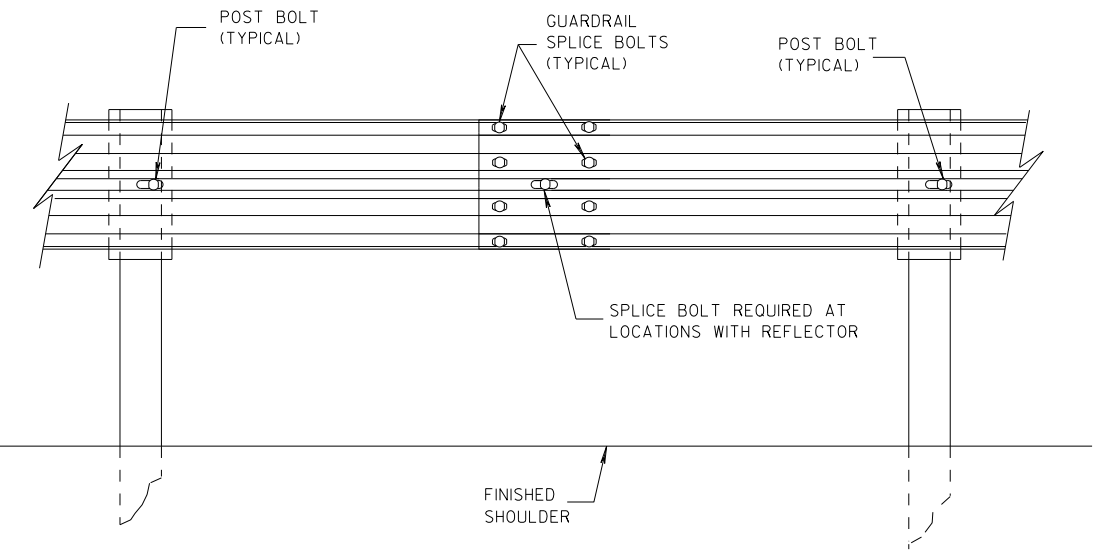
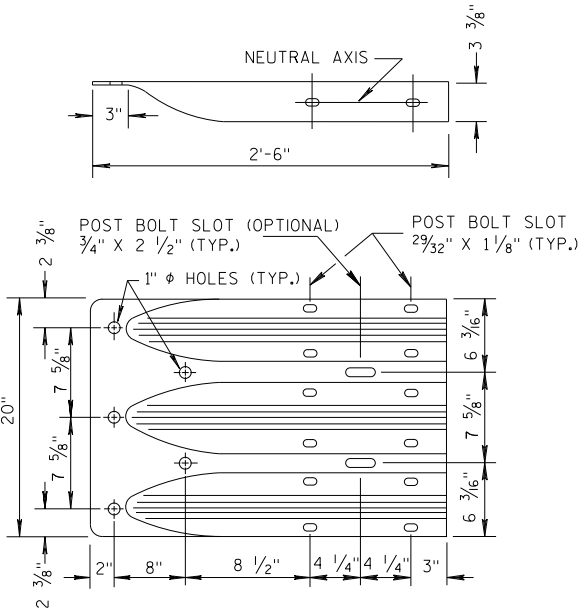


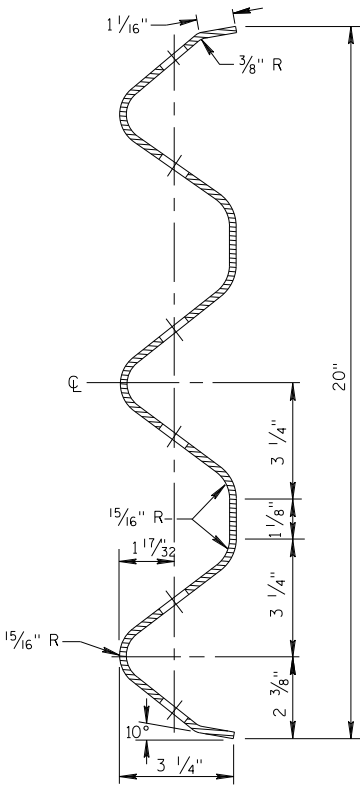
PLATE WASHER DETAIL



SPLICE DETAIL



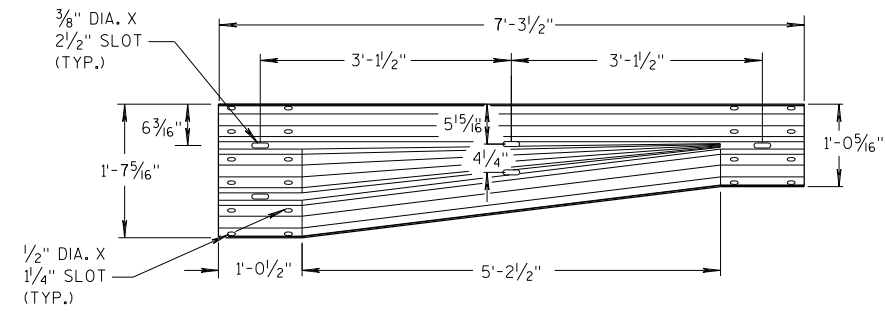
THRIE BEAM
TERMINAL CONNECTOR



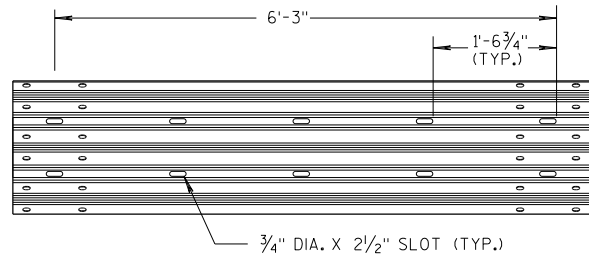
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

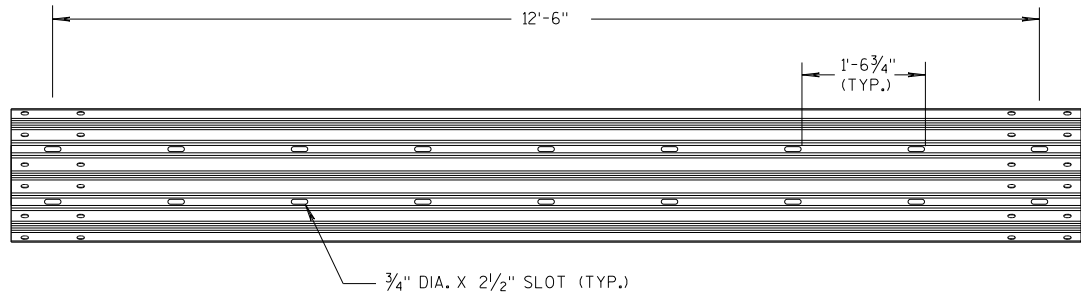
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



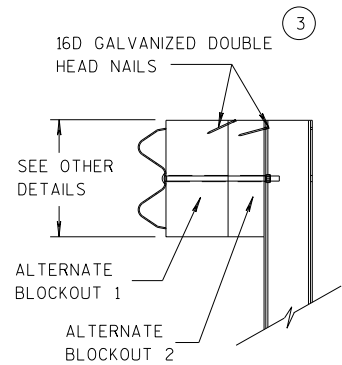
W-BEAM TO THRIE BEAM TRANSITION SECTION



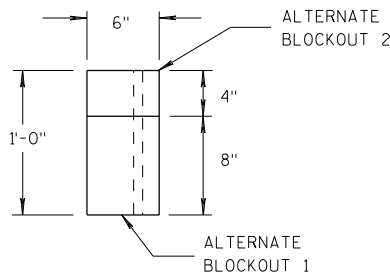
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

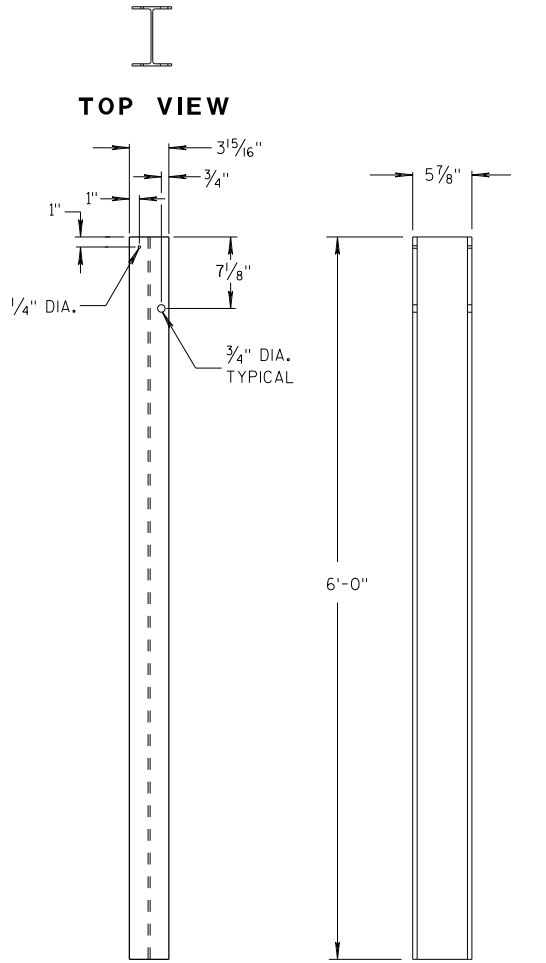


SIDE VIEW



TOP VIEW

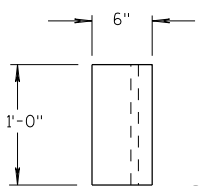
ALTERNATE WOOD BLOCKOUT DETAIL



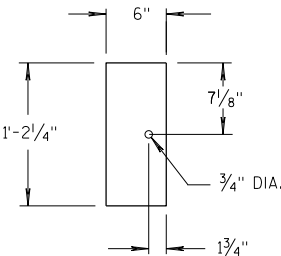
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

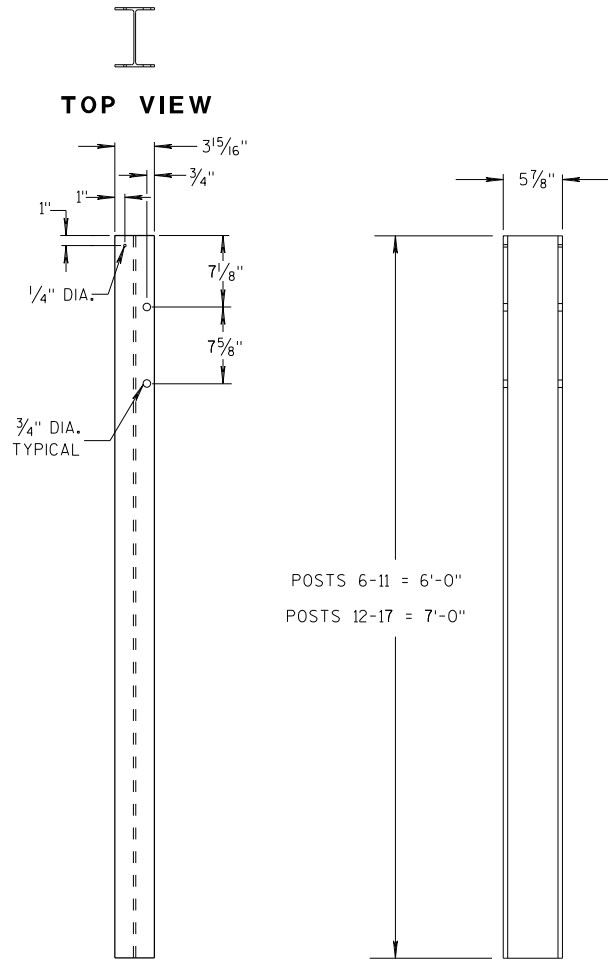


TOP VIEW



FRONT VIEW

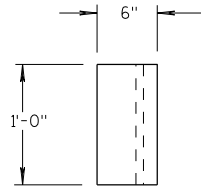
BLOCKOUT POSTS 1-5



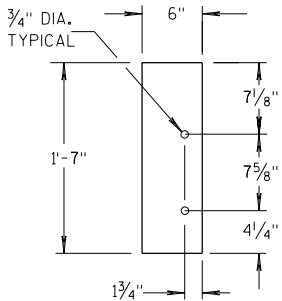
FRONT VIEW

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.

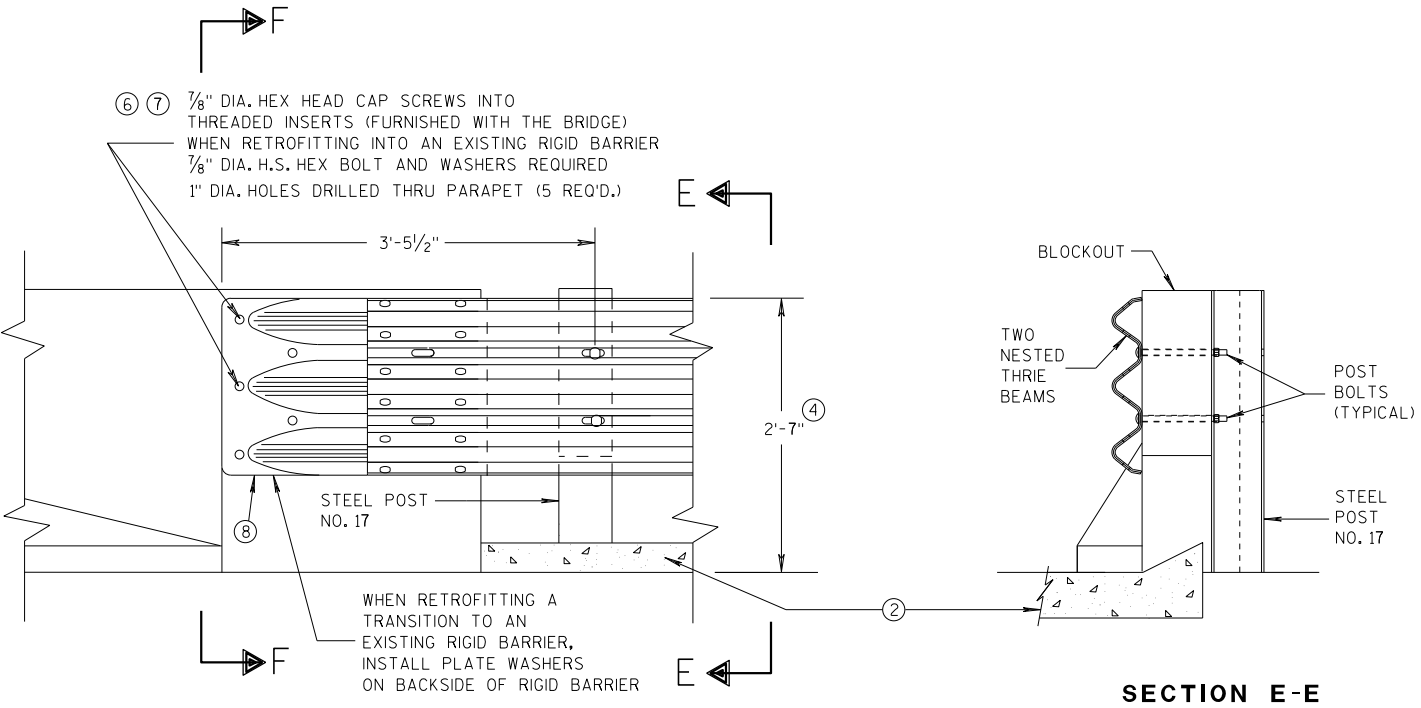
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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

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

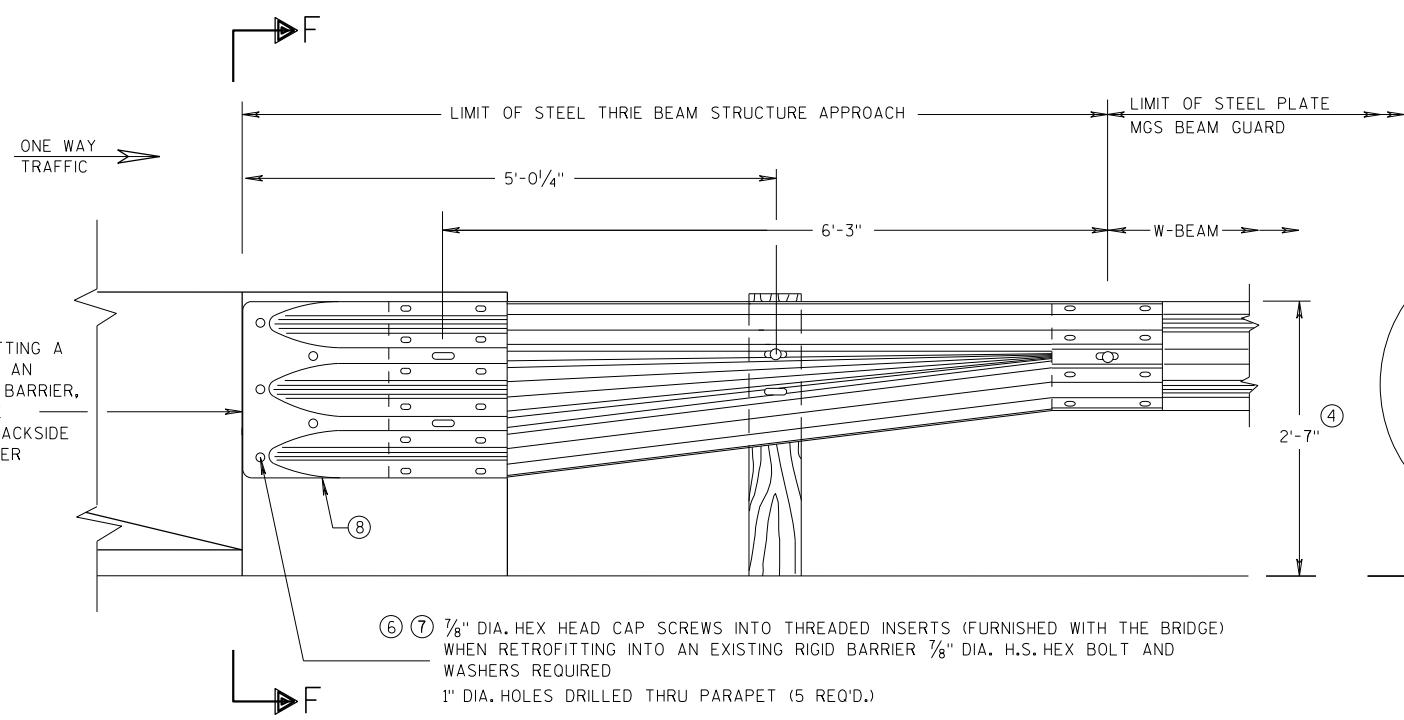
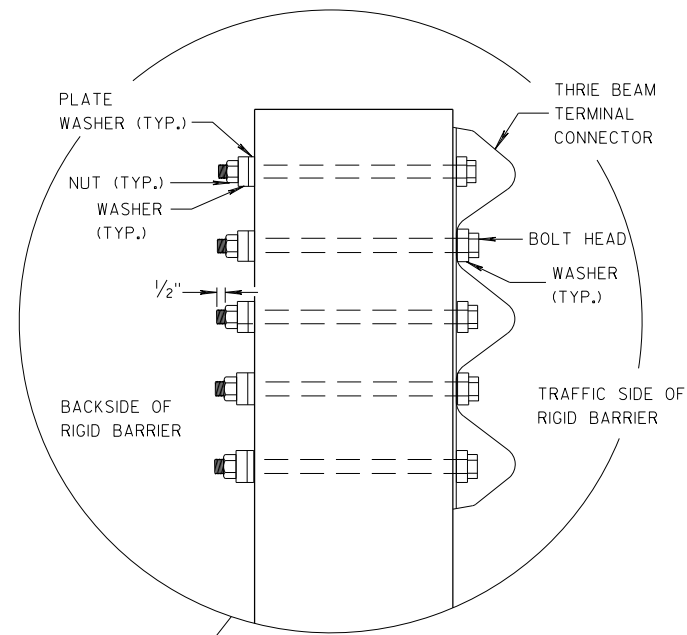
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

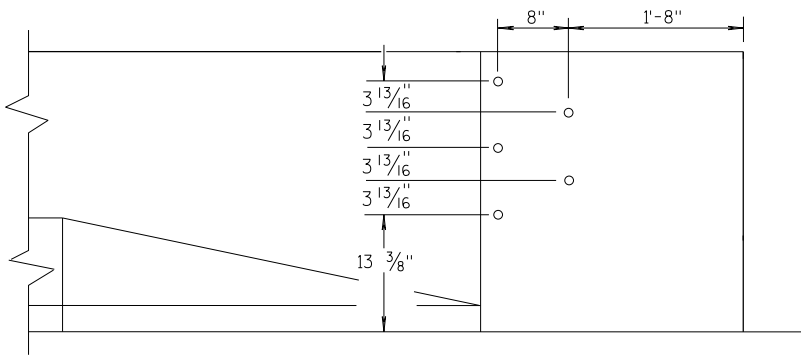


GENERAL NOTES

- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".



SECTION F-F

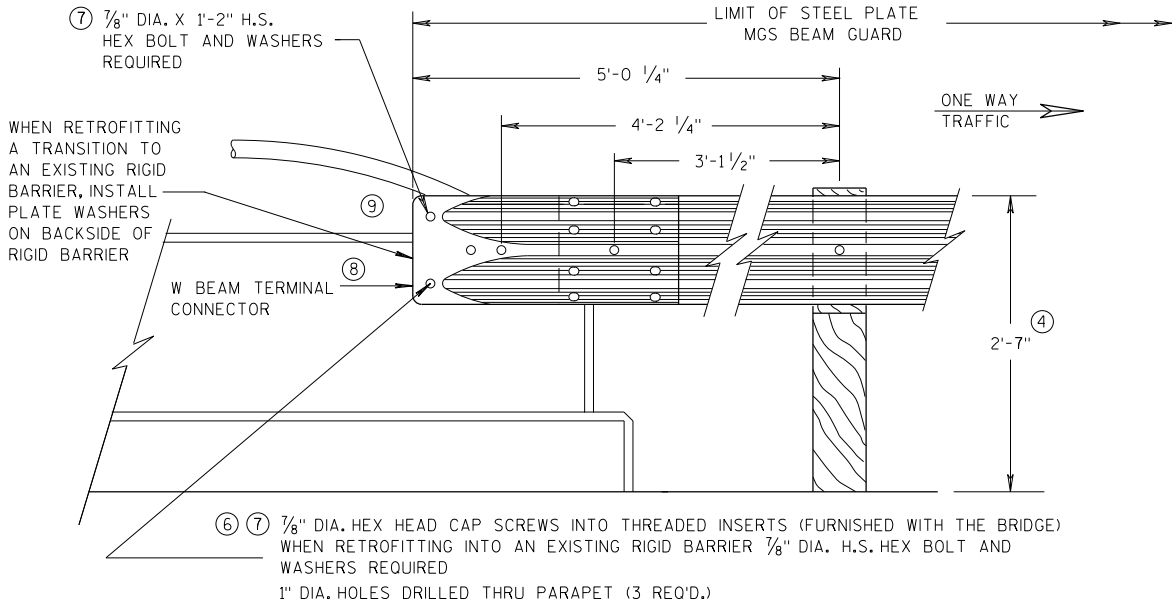


MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

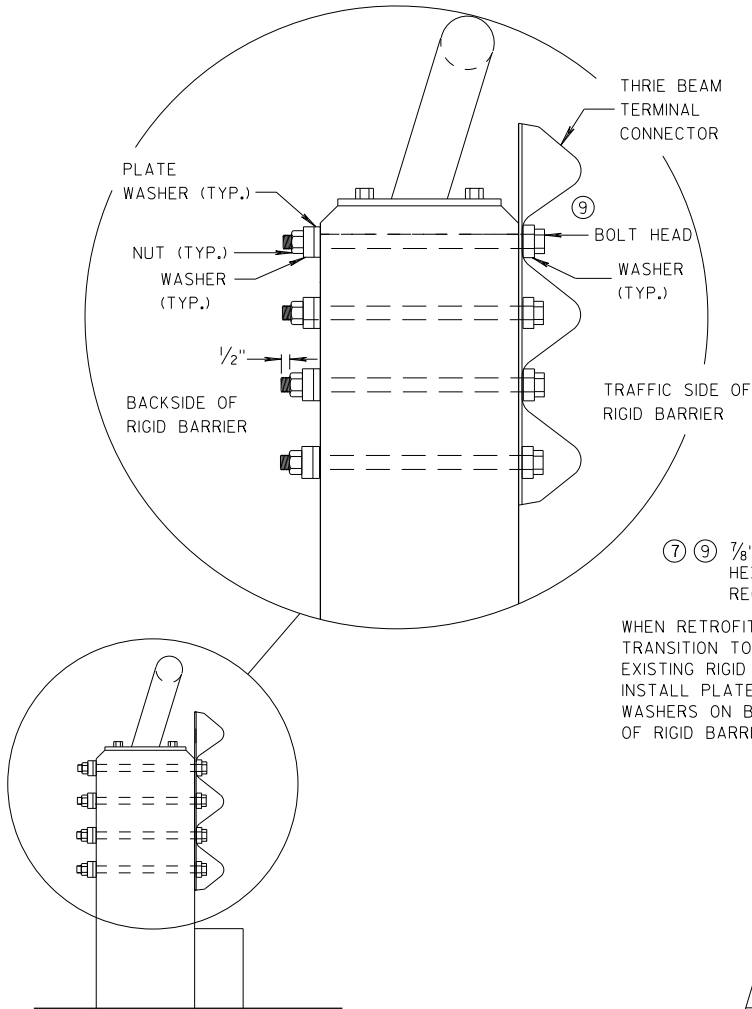
GENERAL NOTES

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

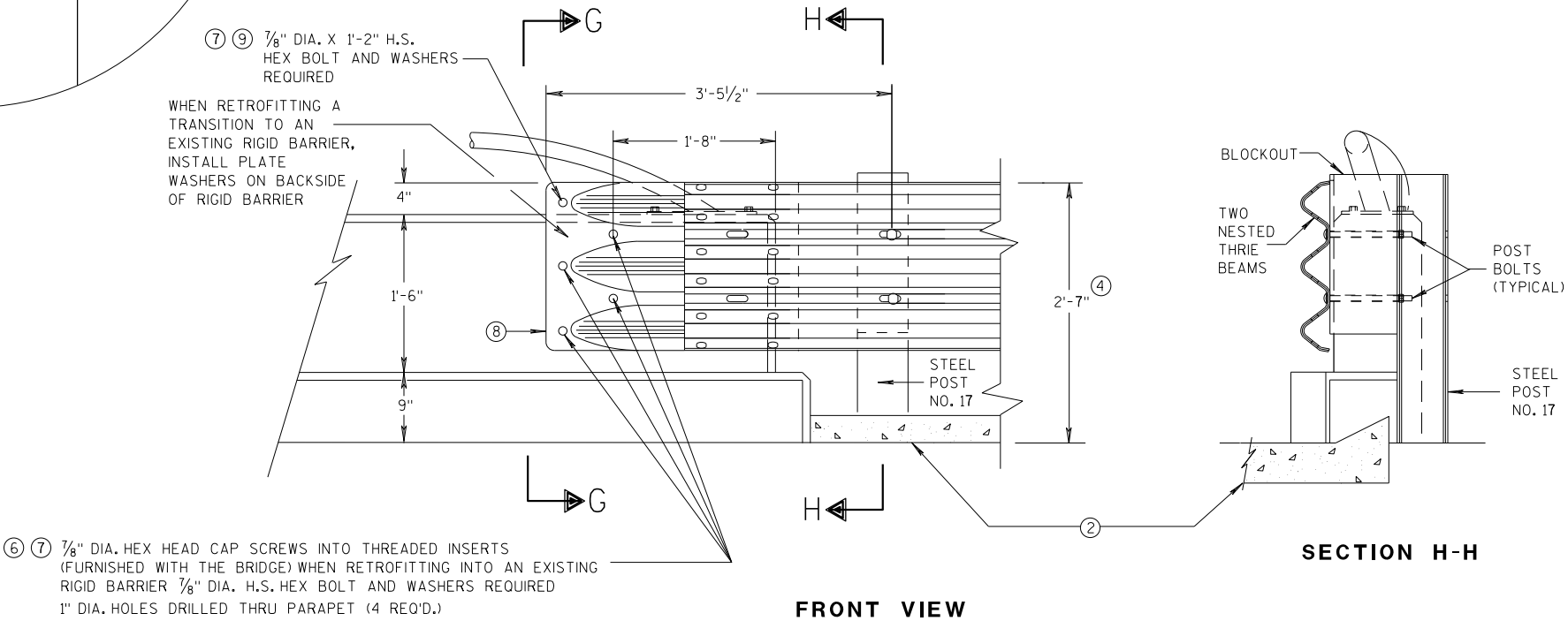
- ②
- OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④
- TOLERANCE FOR TOP OF BEAM IS ± 1".
- ⑥
- DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦
- BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.
- ⑧
- THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".
- ⑨
- BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.



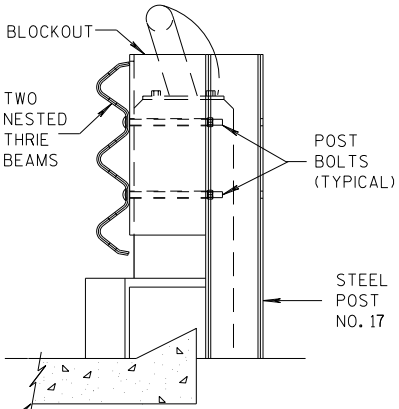
FRONT VIEW
W BEAM CONNECTION TO VERTICAL FACE PARAPET
(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)



SECTION G-G



FRONT VIEW



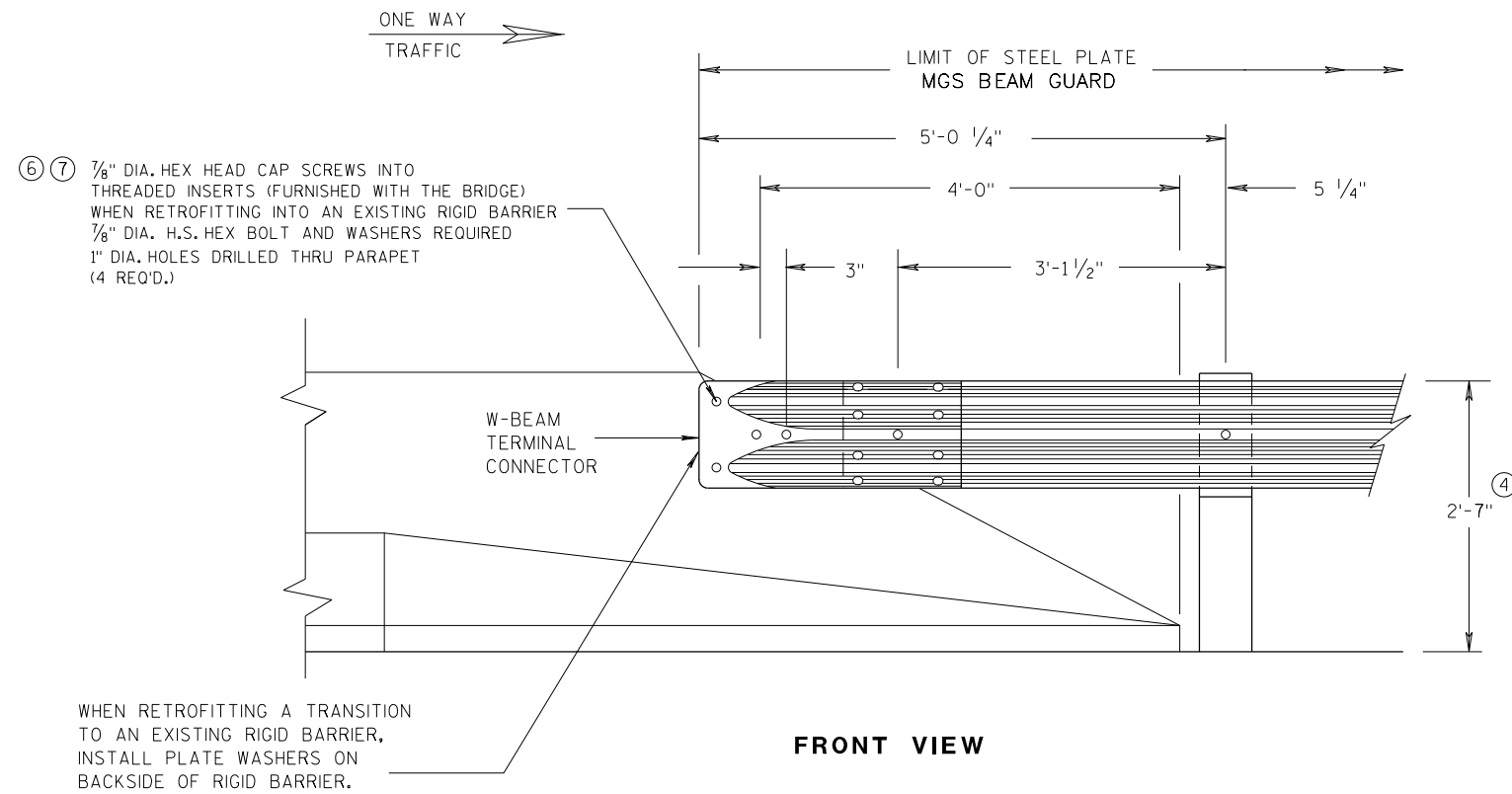
SECTION H-H

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

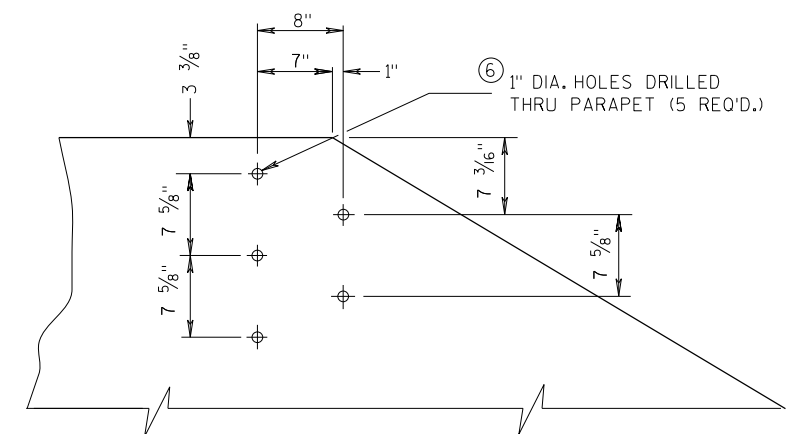
APPROVED
07/2018
DATE
FHWA
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR



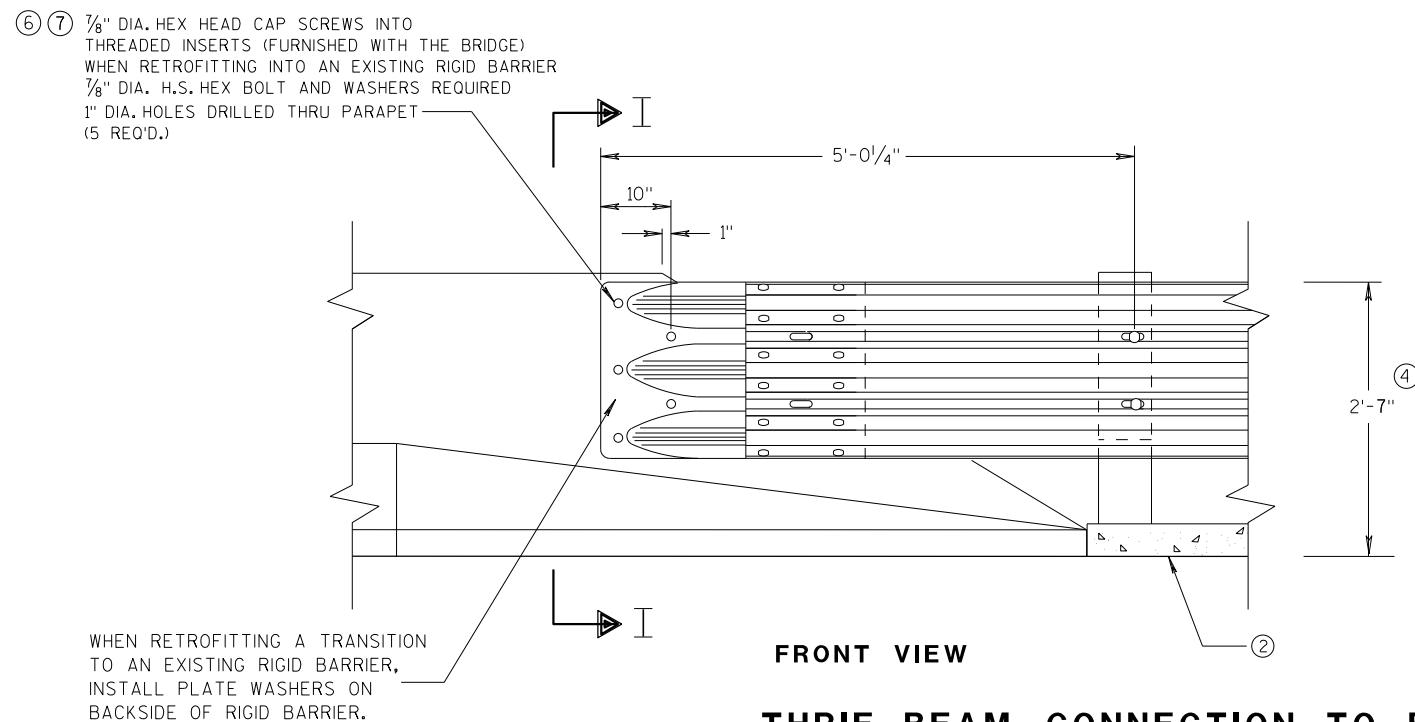
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)**

GENERAL NOTES

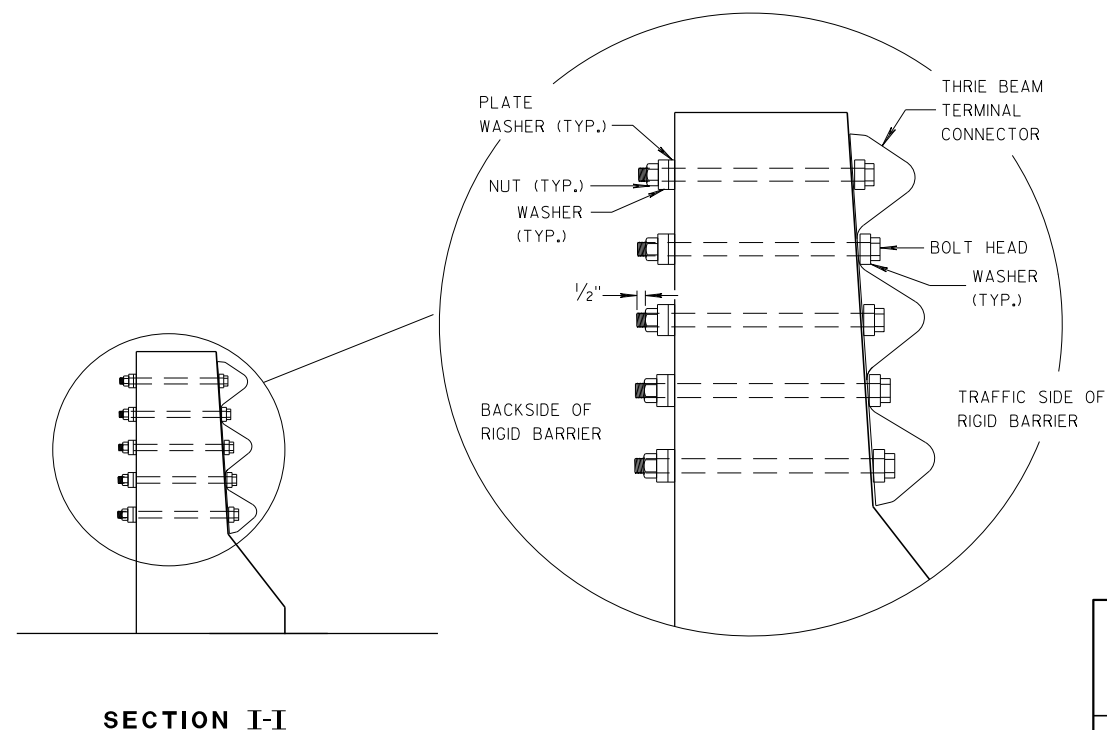
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



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



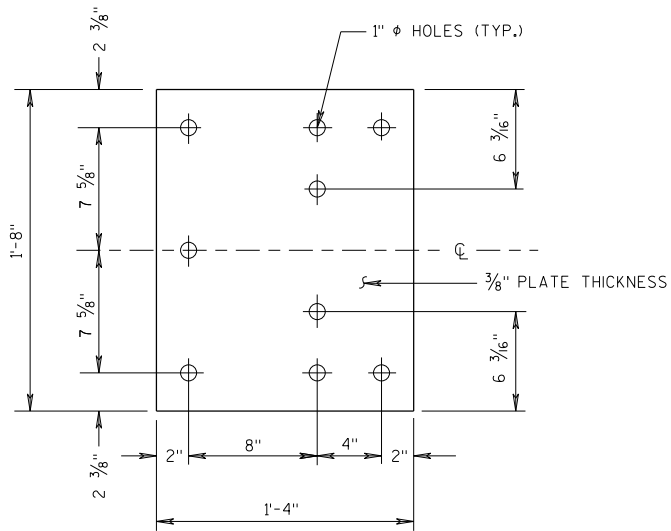
**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



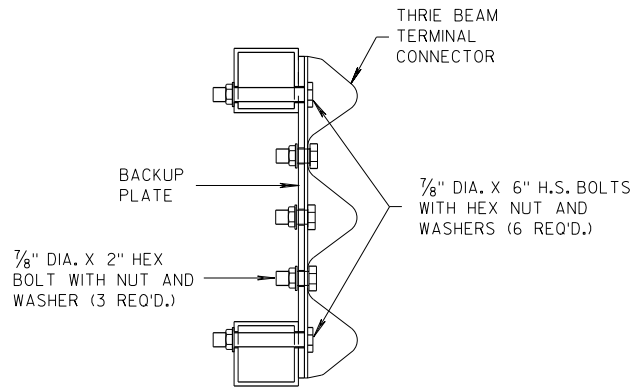
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

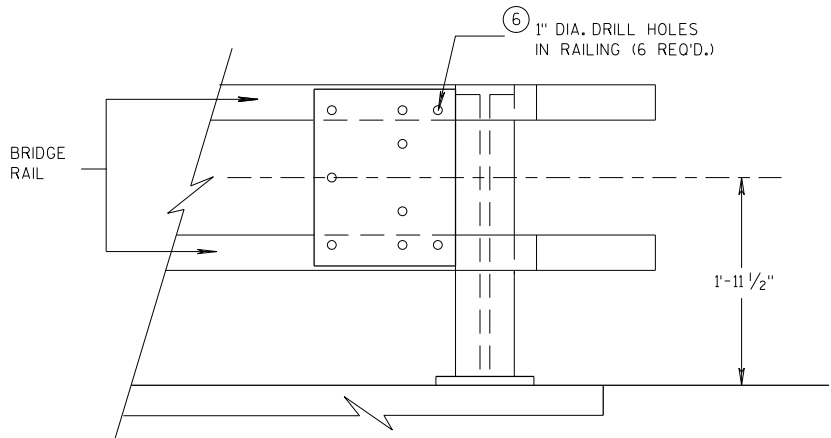
APPROVED
07/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



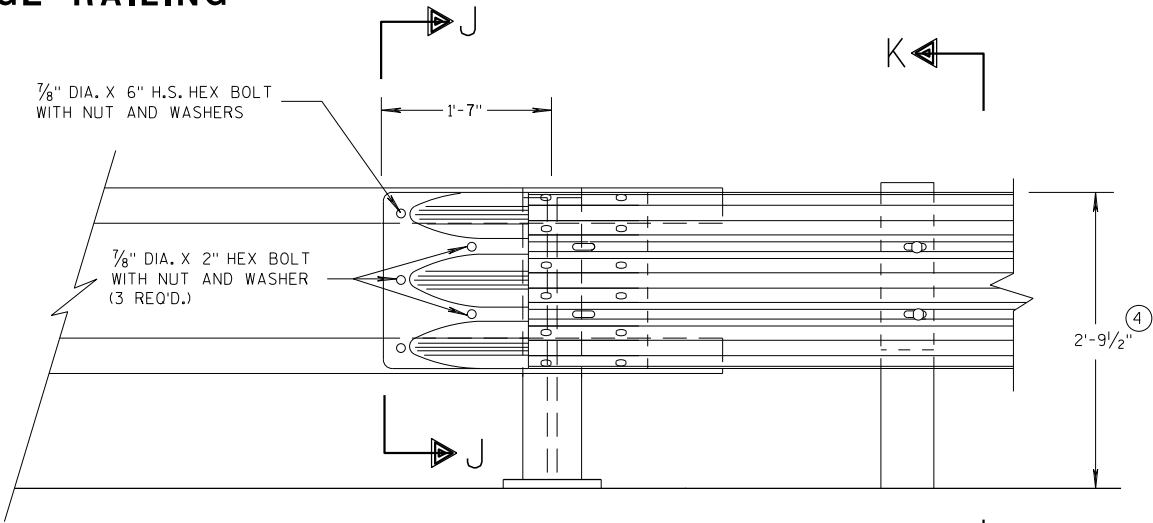
BACK-UP PLATE DETAIL



SECTION J-J

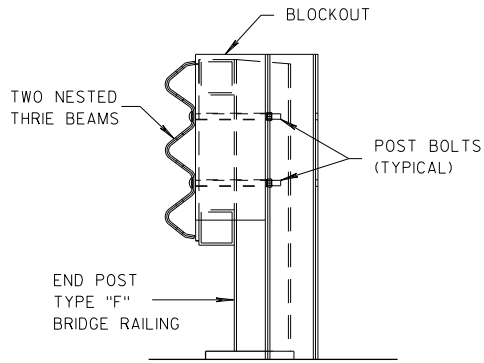


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

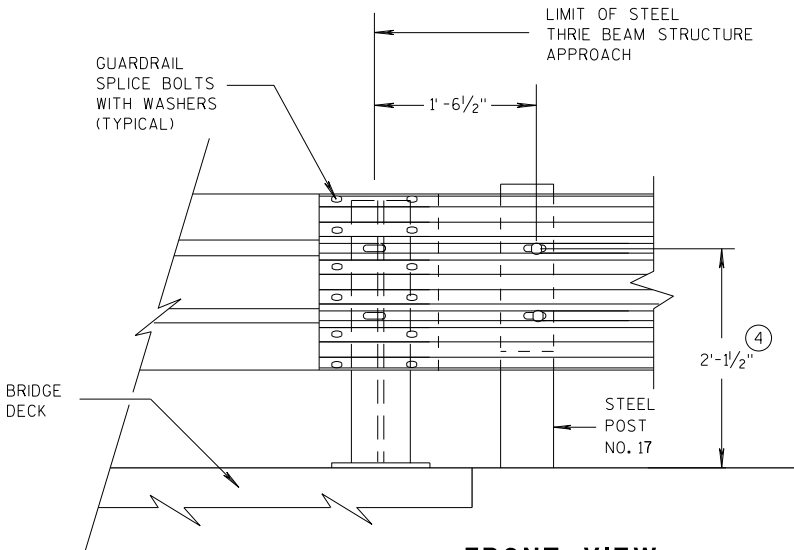
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

GENERAL NOTES

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



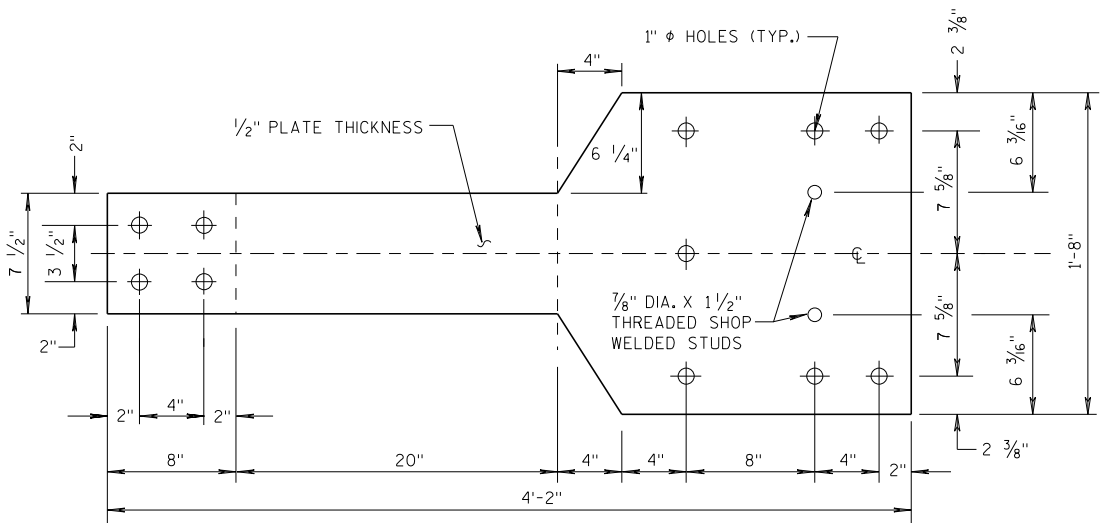
FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

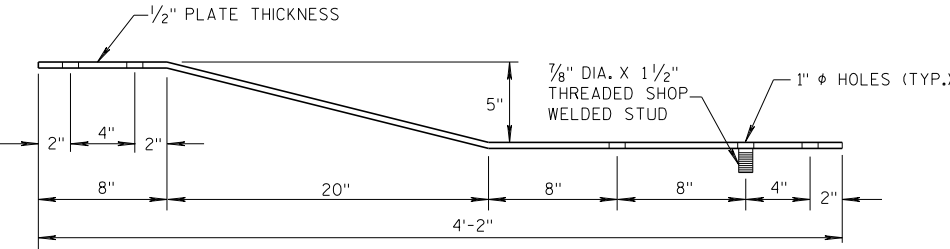
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

GENERAL NOTES

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

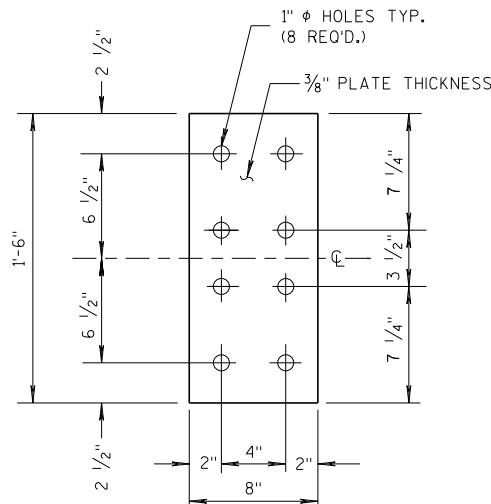


FRONT VIEW



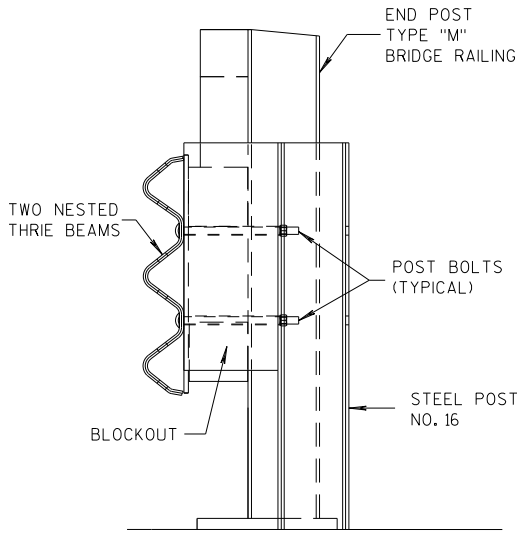
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

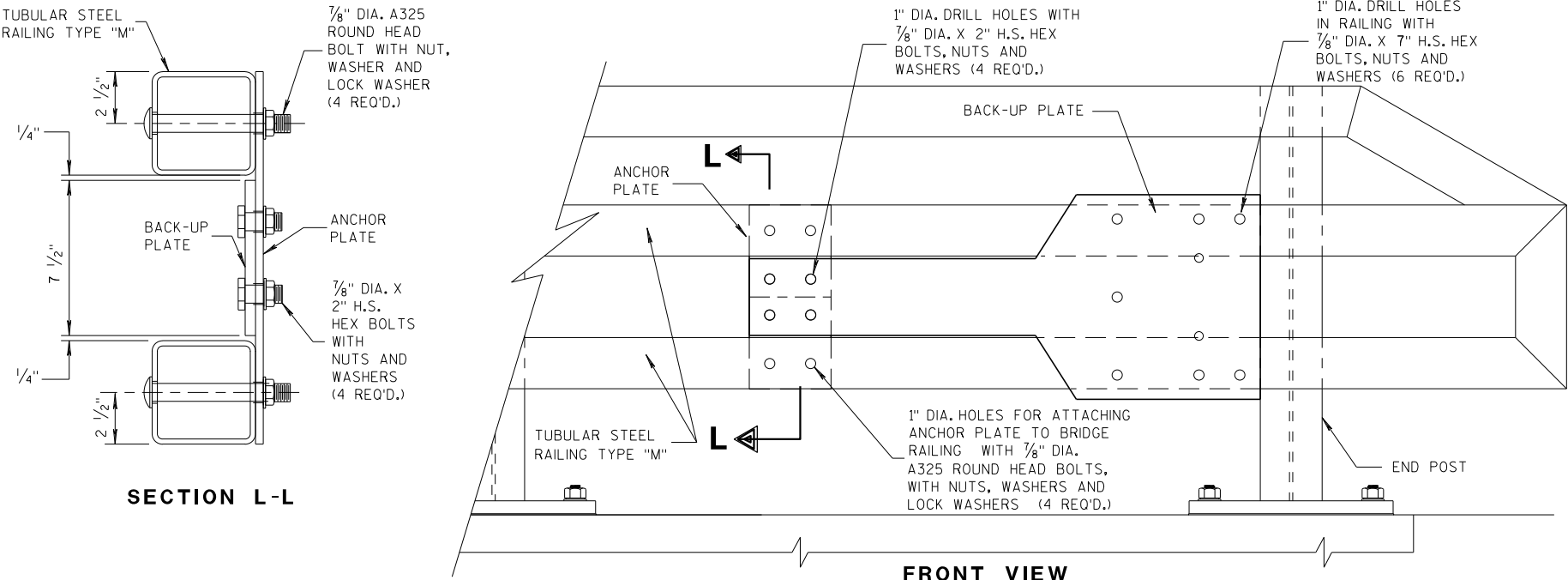


FRONT VIEW

ANCHOR PLATE DETAIL, TYPE "M"



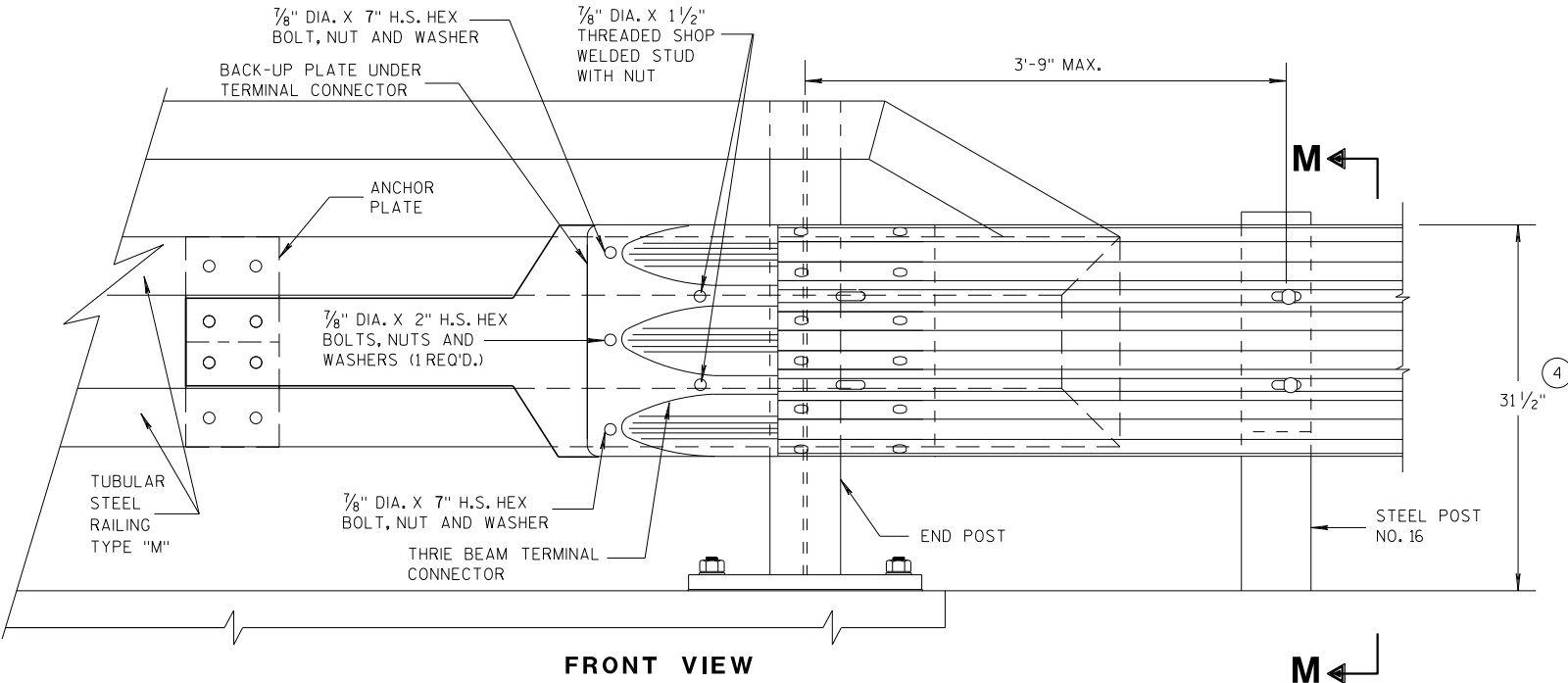
SECTION M-M



SECTION L-L

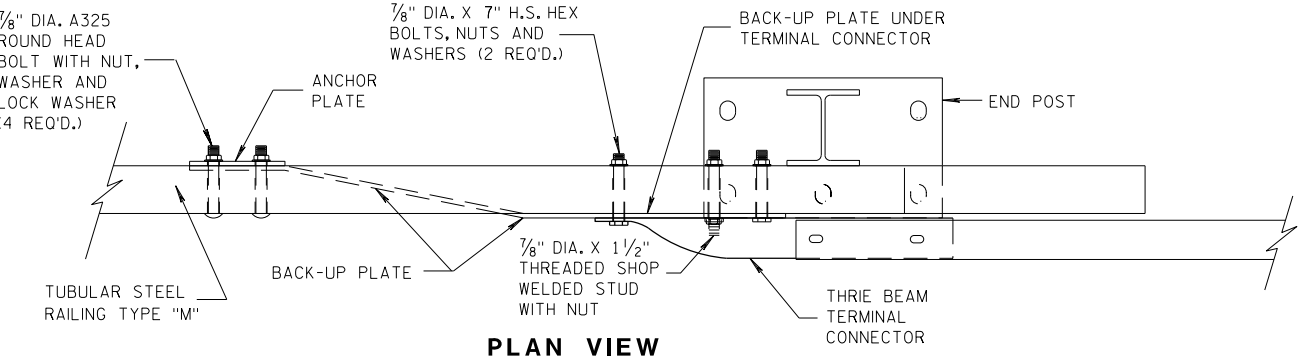
FRONT VIEW

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



FRONT VIEW

M



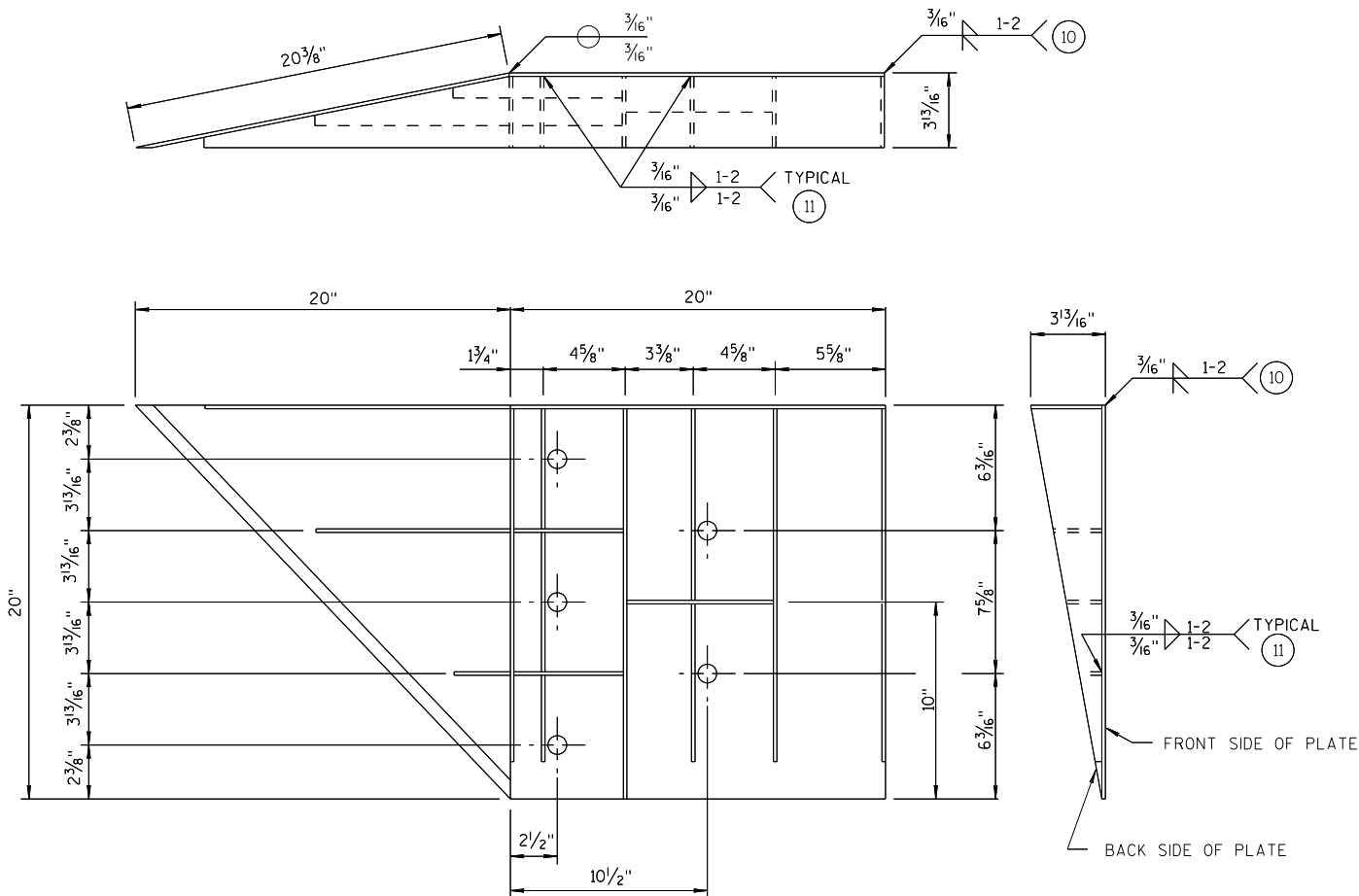
PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)				
PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 3/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 5/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 1/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 3/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 7/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 3/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 3/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 11/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 3/16"	1/4"

SINGLE SLOPE CONNECTION PLATE

GENERAL NOTES

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

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

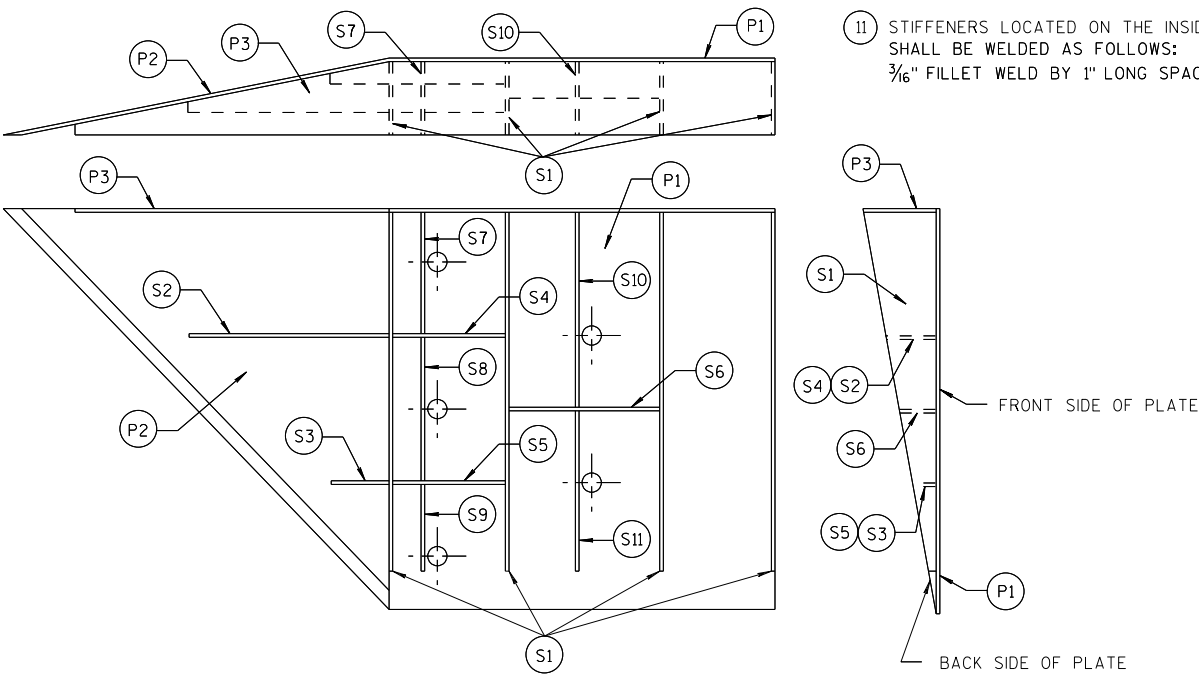


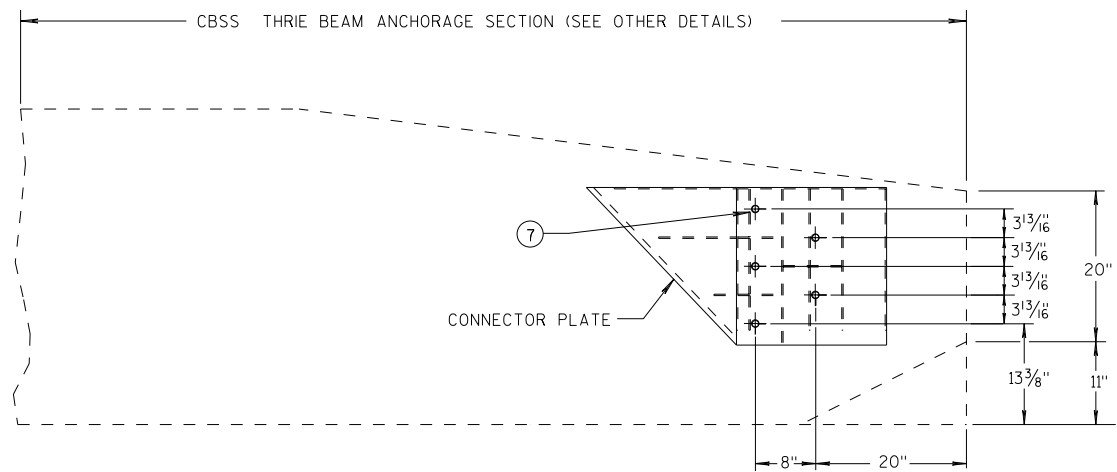
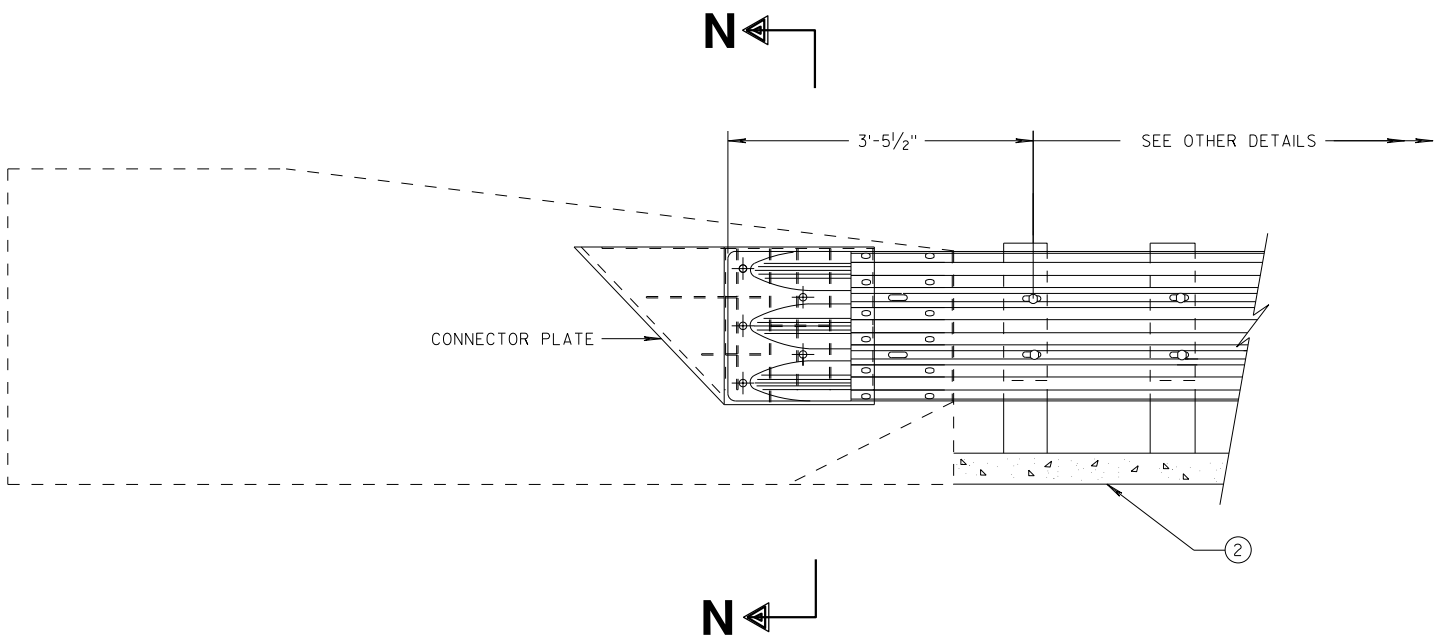
PLATE AND STIFFENER IDENTIFICATION
(VIEWED FROM BACK SIDE OF PLATE)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



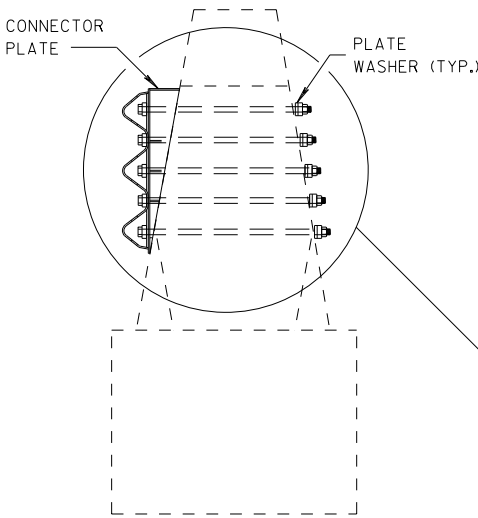
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

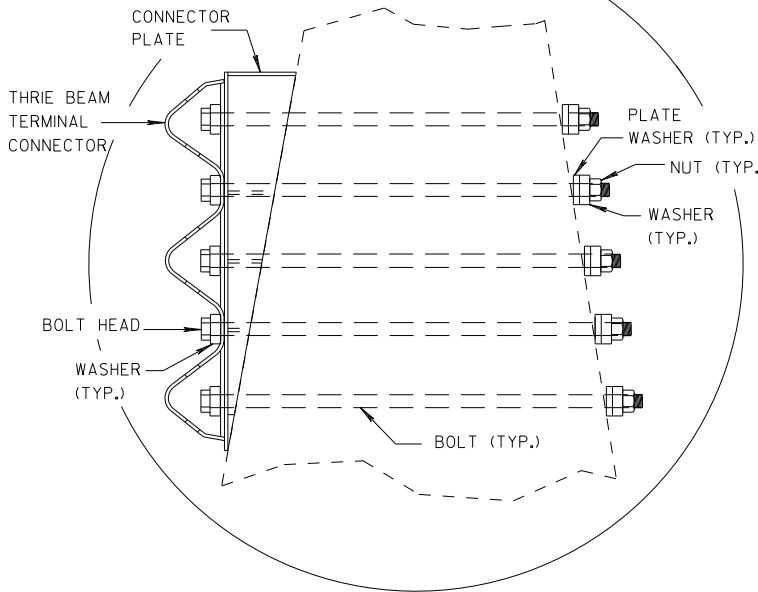
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTION PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/32" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.



SECTION N-N



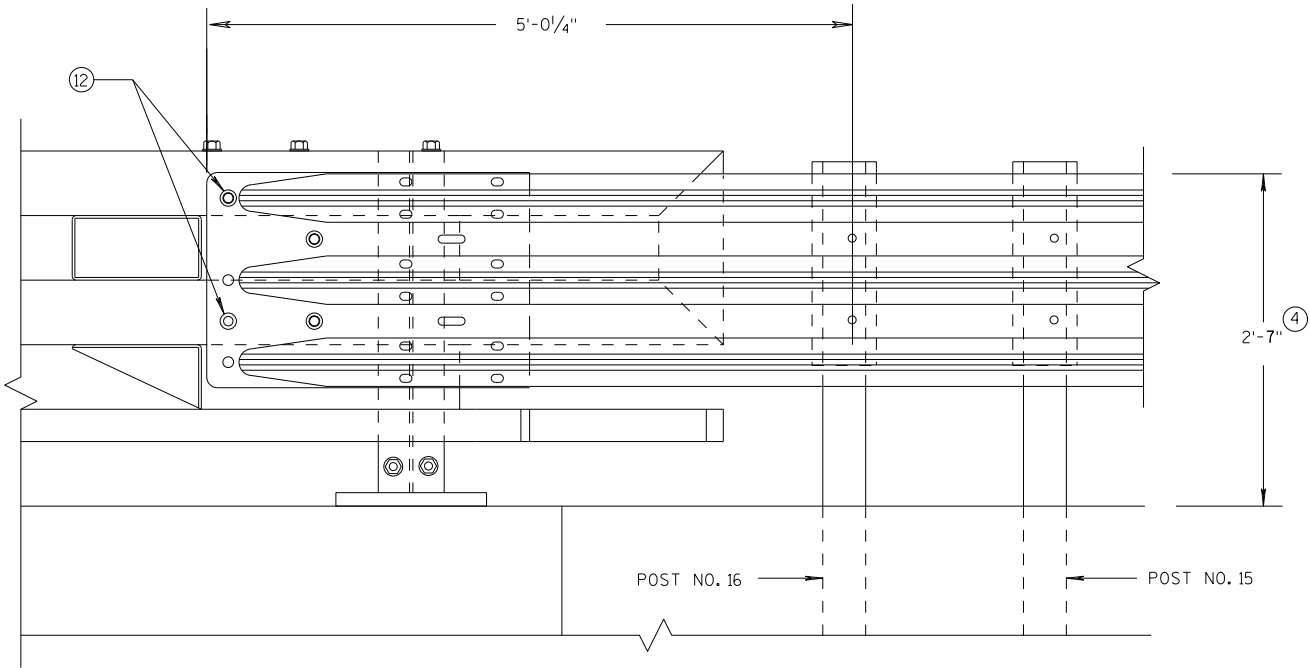
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

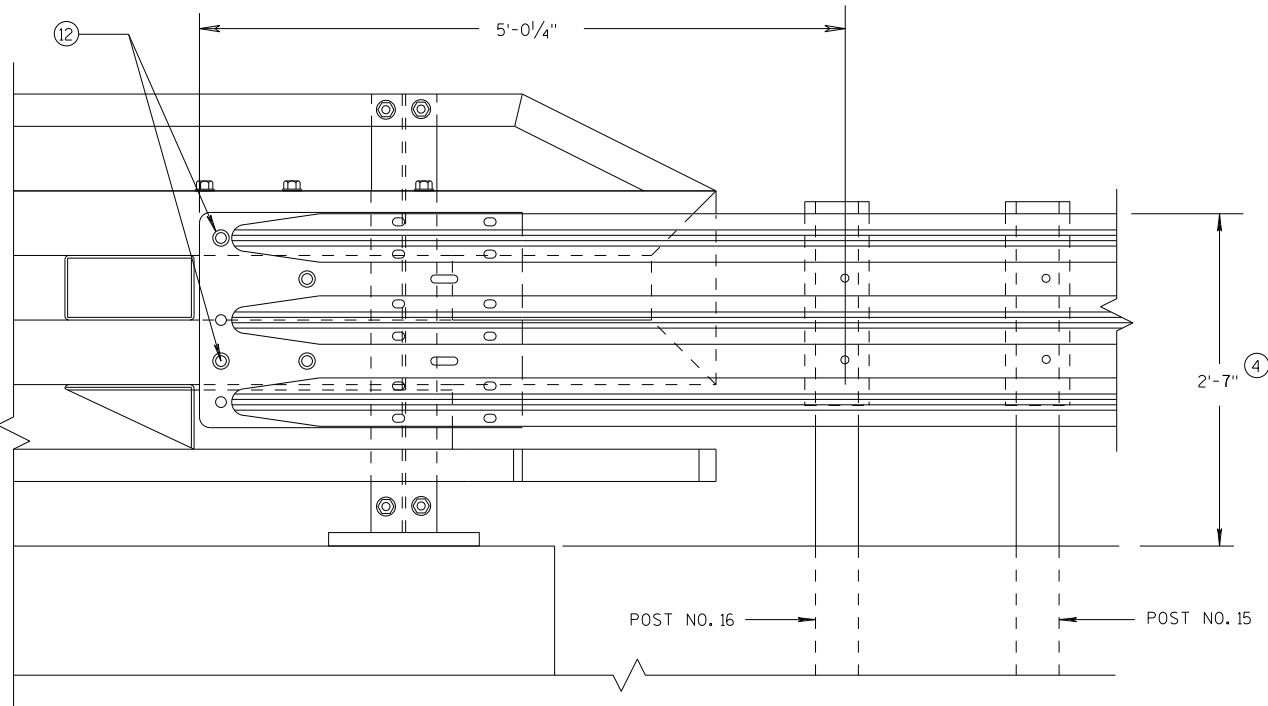
APPROVED
7/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA

GENERAL NOTES

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



ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT

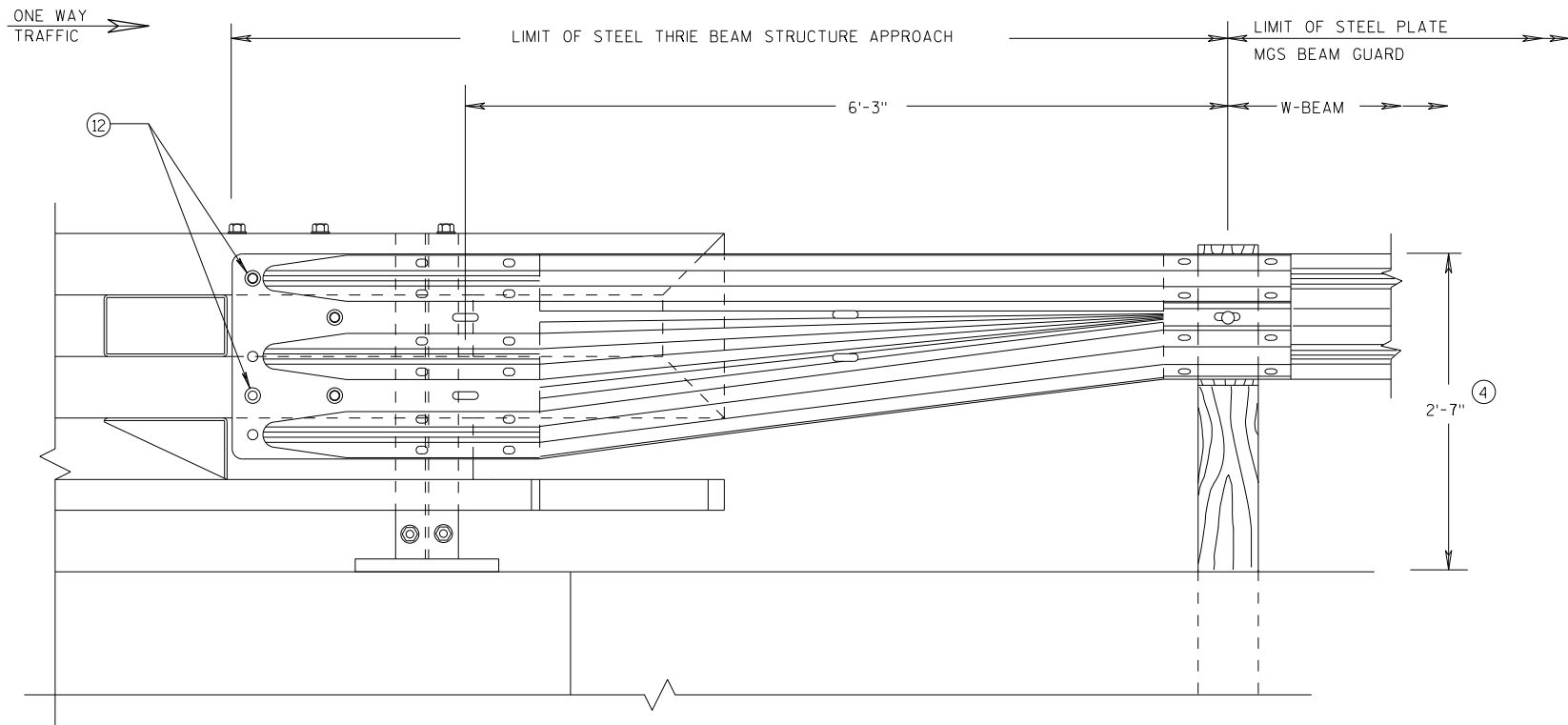


ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



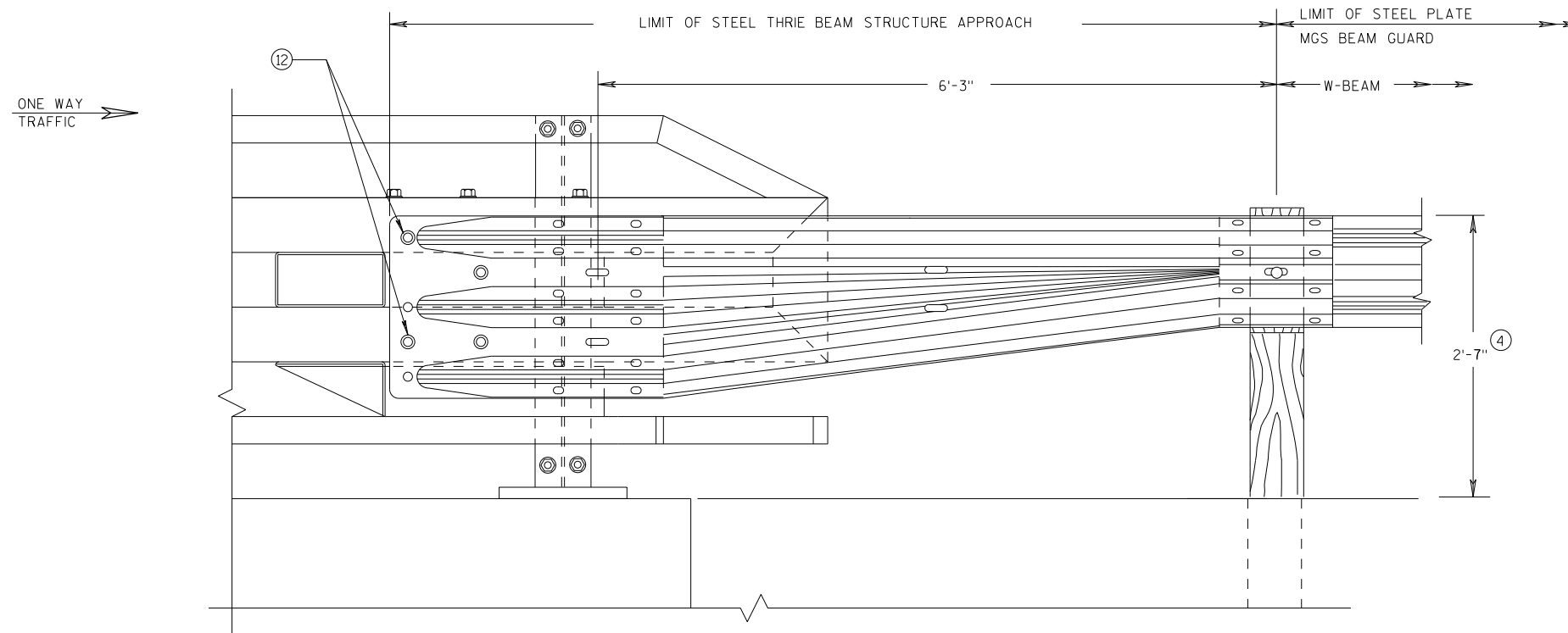
GENERAL NOTES

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

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

FRONT VIEW

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



FRONT VIEW

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

7/2018

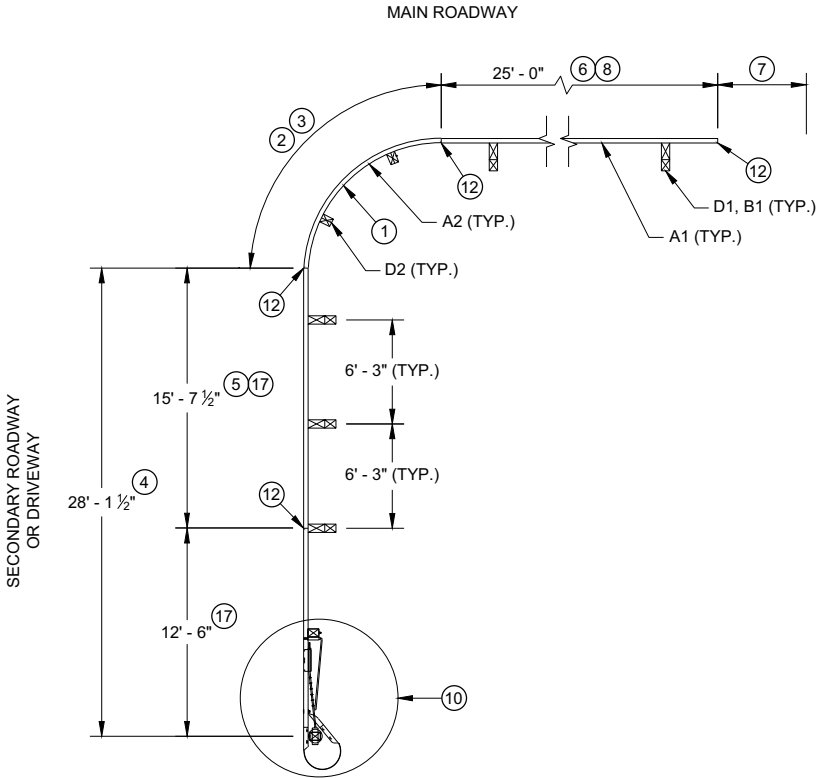
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FHWA

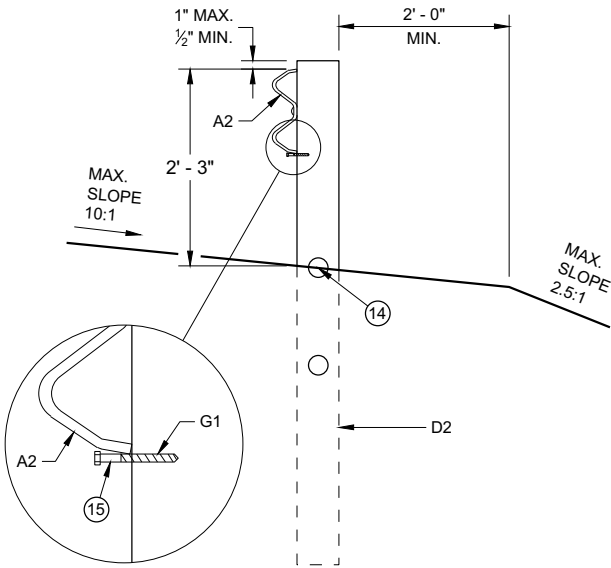
/S/ Rodney Taylor

ROADWAY STANDARDS DEVELOPMENT

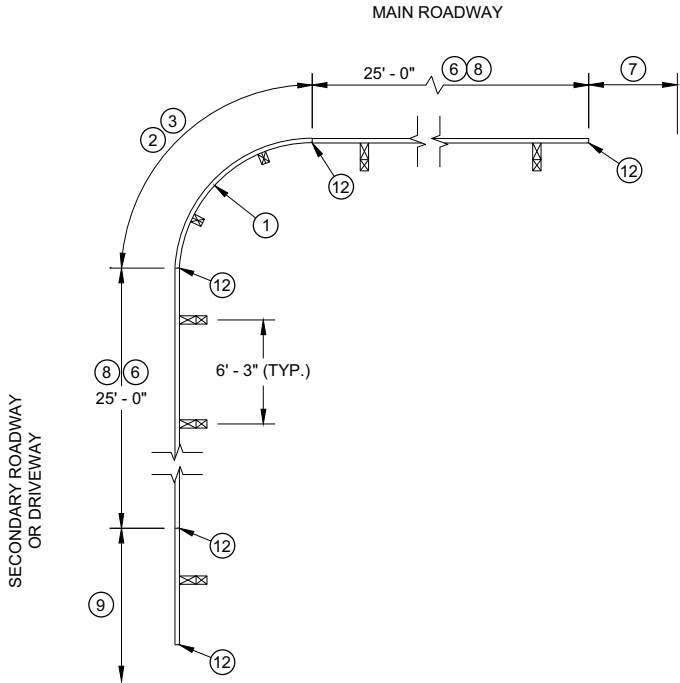
UNIT SUPERVISOR



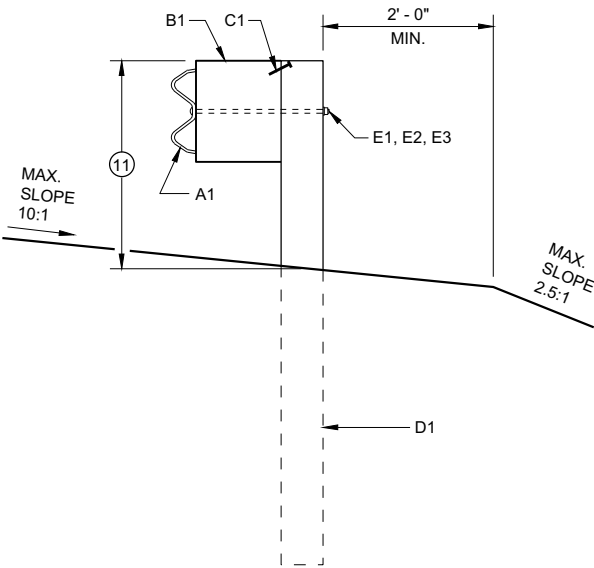
PLAN VIEW
SHORT RADIUS BEAM GUARD WITH
SHORT RADIUS TERMINAL ON
SECONDARY ROAD OR DRIVEWAY



CONTROLLED RELEASE
TERMINAL POST (CRT) IN RADIUS

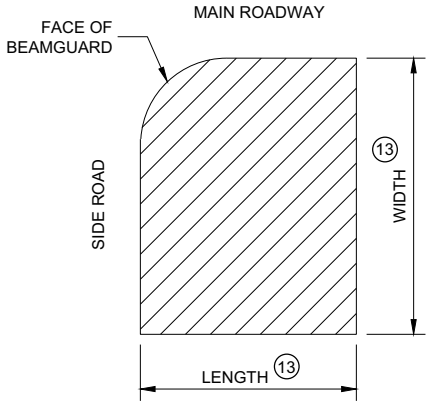


PLAN VIEW
SHORT RADIUS BEAM GUARD WITH
EAT, ADDITIONAL BEAM GUARD
OR
TRANSITION TO RIGID BARRIER ON
SECONDARY ROAD OR DRIVEWAY

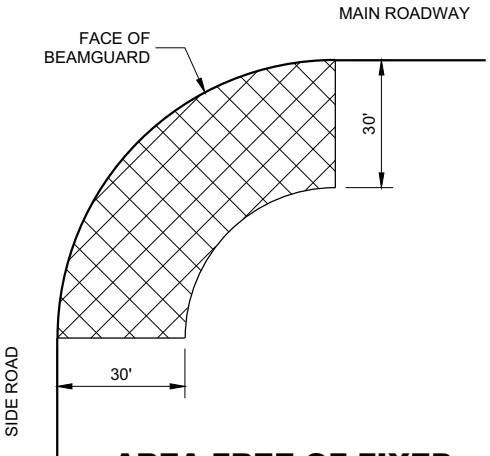


BEAM GUARD POSTS
IN HEIGHT TRANSITION

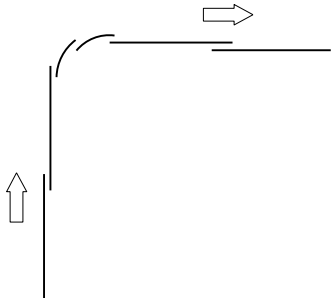
TABLE FOR RADIUS OF 32' AND LESS		
RADIUS (FT)	LENGTH (FT)	WIDTH (FT)
8	25	15
16	30	15
24	40	20
32	50	30



AREA FREE OF FIXED
OBJECTS FOR RADIUS
32' AND LESS



AREA FREE OF FIXED
OBJECTS FOR RADIUS
GREATER THAN 32'



LAP SPLICE DETAIL

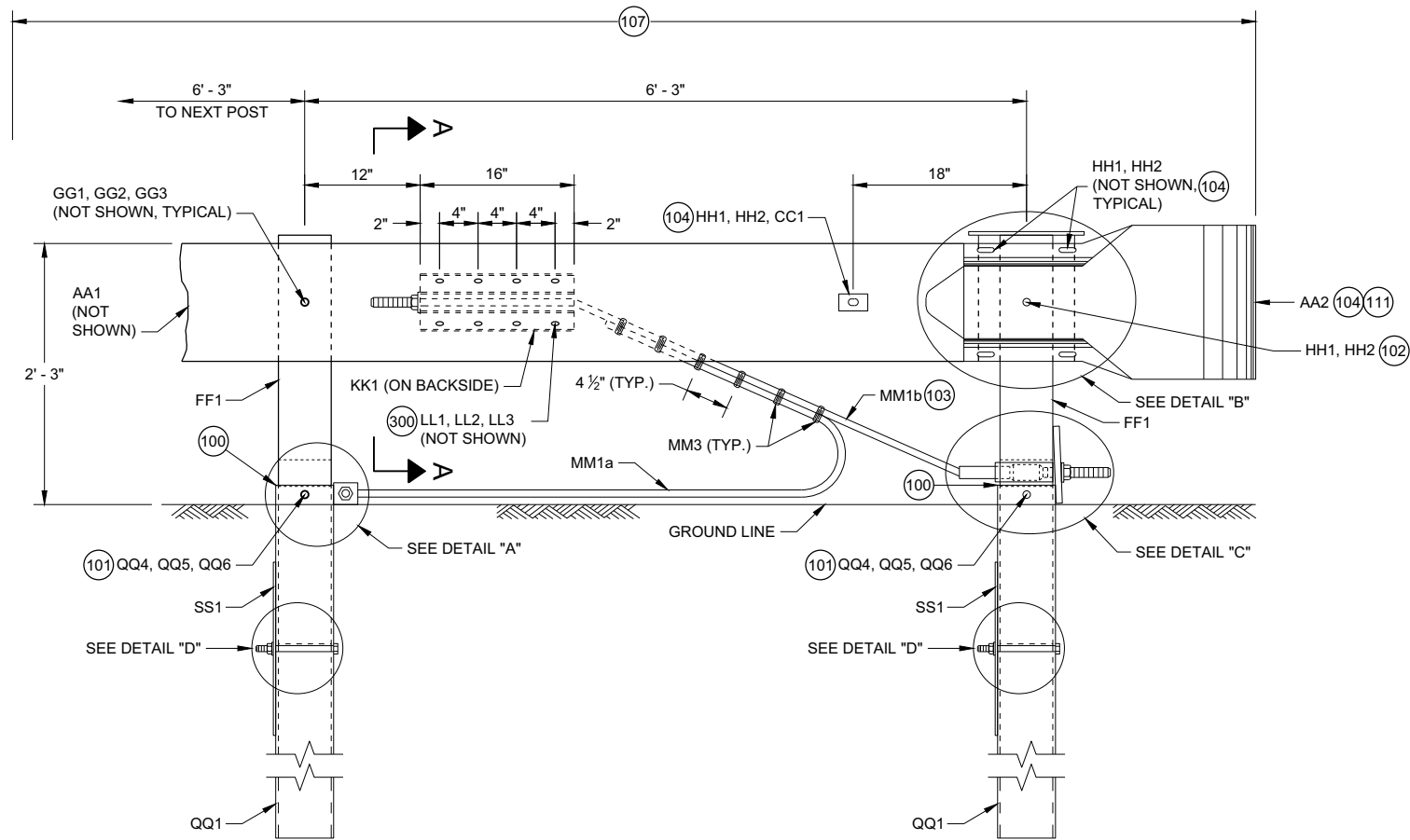
GENERAL NOTES

- SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.
- SEE SDD 14B42 FOR MORE INFORMATION ON BEAM GUARD INSTALLATION, PARTS, MATERIALS, AND INSTALLATION INFORMATION.
- GALVANIZE PARTS AFTER FABRICATION.
- WELDING TO FOLLOW CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI / AWS D1.1.
- UNLESS NOTED OTHERWISE, ALL PLATES ARE FLAT AND FREE OF WARP.
- UNLESS NOTED OTHERWISE, ALL EDGES ARE SMOOTH, STRAIGHT AND VERTICAL.
- ALL CUTS AND HOLES, EXCEPT IN BEAM GUARD RAIL ARE TO BE MACHINED OR MACHINE FLAME CUT.
- UNLESS NOTED OTHERWISE, CUT OR PROVIDE BOLTS THAT ARE ¼" TO ½" BEYOND THE NUT.
- DRAWINGS ARE NOT TO SCALE.

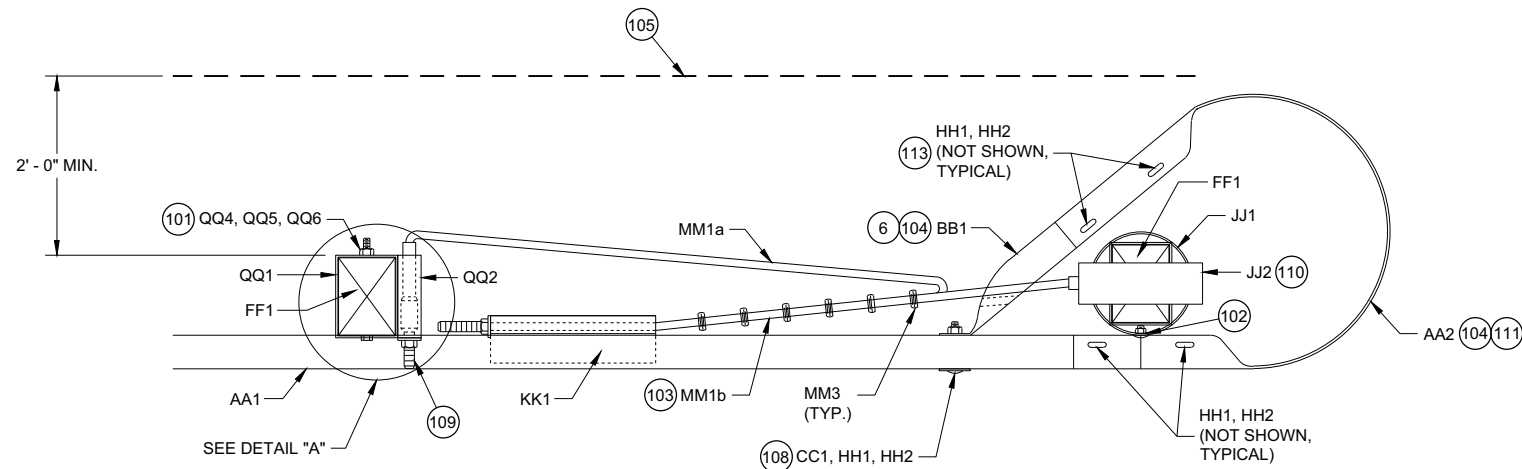
- ① RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.
- ② CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE USED IN THE RADIUS. CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE SPACED 6' - 3". SEE PLAN FOR NUMBER OF CONTROLLED RELEASE (CRT) POSTS.
- ③ WITHIN RADIUS BEAM GUARD RAILS ARE NOT BOLTED TO POSTS. BEAM GUARD RAIL IS RESTED ON TOP OF LAG SCREW.
- ④ MINIMUM LENGTH OF BEAM GUARD ALONG SIDE ROAD OR DRIVEWAY TO INSTALL SHORT RADIUS TERMINAL. BEAM GUARD IS PAID WITH BEAM GUARD ITEM.
- ⑤ ODD LENGTH OF BEAM GUARD REQUIRED TO INSTALL SHORT RADIUS TERMINAL.
- ⑥ MINIMUM AMOUNT OF BEAM GUARD TO BE INSTALLED PRIOR TO TRANSITION TO RIGID BARRIER. ADDITIONAL BEAM GUARD, OR EAT. BEAM GUARD PAID FOR WITH BEAM GUARD ITEM. SEE PLANS FOR MORE DETAIL.
- ⑦ BEAM GUARD, EAT, OR TRANSITION TO RIGID BARRIER. SEE PLAN.
- ⑧ TOP OF BEAM GUARD BY THE RADIUS IS 27". HEIGHT OF BEAM GUARD IS 31" BY TRANSITION TO RIGID BARRIER, ADDITIONAL BEAM GUARD OR EAT.
- ⑨ ADDITIONAL BEAM GUARD, EAT OR TRANSITION TO RIGID BARRIER. BEAM GUARD SHOWN. SEE PLAN FOR DETAILS.
- ⑩ SHORT RADIUS TERMINAL (SEE OTHER DETAILS).
- ⑪ HEIGHT VARIES. SEE NOTE ⑧ AND ⑧.
- ⑫ BEAM GUARD RAIL SPLICE LOCATION. SPLICE LOCATION REQUIRES PART F1 AND F2. SEE SDD 14B42 FOR DETAILS.
- ⑬ SEE TABLE FOR VALUES.
- ⑭ MAXIMUM HEIGHT FOR CENTER OF HOLE IS ¾" ABOVE FINISHED GROUND ±1".
- ⑮ DRILL POST 15/64" DIA. PILOT HOLE. DO NOT HAMMER LAG SCREW INTO POST.
- ⑯ SMALL SIGNS ON BREAKAWAY HARDWARE ARE ACCEPTABLE.
- ⑰ TOP OF RAIL HEIGHT IS 27" WHEN USING A SHORT RADIUS TERMINAL (CRT).

SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



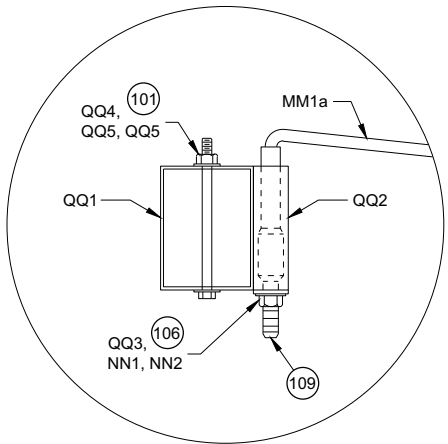
**PROFILE VIEW
SHORT RADIUS TERMINAL**



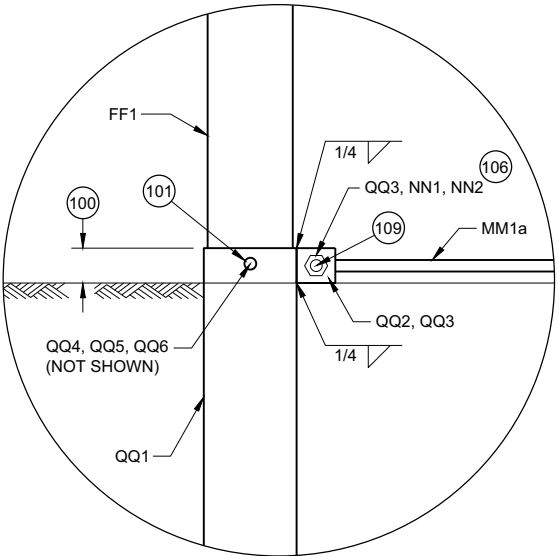
**TOP VIEW
SHORT RADIUS TERMINAL**

GENERAL NOTES

- (100) TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.
- (101) WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.
- (102) SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL "B".
- (103) CABLE IS TAUT.
- (104) ADJUST AA2 AND BB1 TO FIT.
- (105) BREAK POINT OF SHOULDER.
- (106) TACK WELD CABLE CONNECTOR TUBE PLATE TO CABLE CONNECTION TUBE. SEE DETAIL "A" PROFILE VIEW.
- (107) PAY LIMIT FOR BEAM GUARD.
- (108) SQUARE WASHER BETWEEN HEAD OF BOLT AND TRAFFIC FACE OF BEAM GUARD. ROUND WASHER REQUIRED BETWEEN NUT AND BB1.
- (109) CUT OR PROVIDE THREADED STUD THAT IS FLUSH WITH FACE OF BEAM GUARD RAIL KK1 (PLUS OR MINUS 1/2" TOLERANCE). DEBURR AFTER CUTTING.
- (110) SEE STEEL PIPE ASSEMBLY DETAILS.
- (111) ATTACH UU2 WITH UU3. SHOP APPLY UU1 TO UU2.
- (112) FOUR (4) HH1 AND HH2 REQUIRED TO ATTACH AA1 TO AA2.
- (113) FOUR (4) HH1 AND HH2 REQUIRED TO ATTACH AA2 TO BB1.



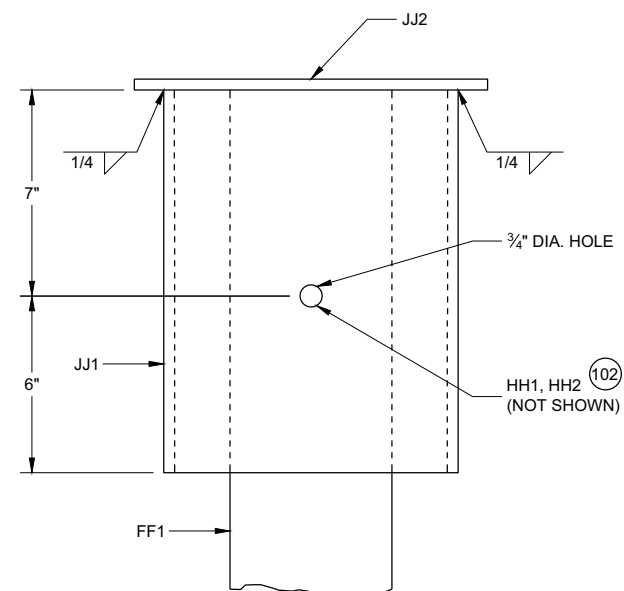
**TOP VIEW
DETAIL "A"
(WOOD BREAKAWAY AND BEAM
GUARD RAIL POSTS NOT SHOWN)**



**PROFILE VIEW
DETAIL "A"**

**SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)**

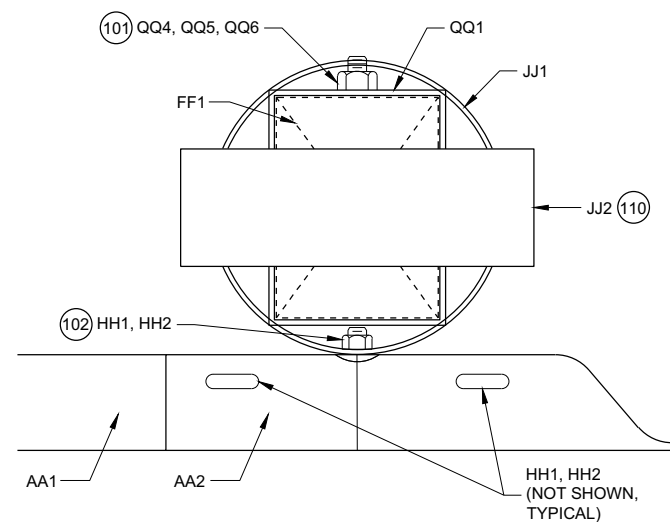
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



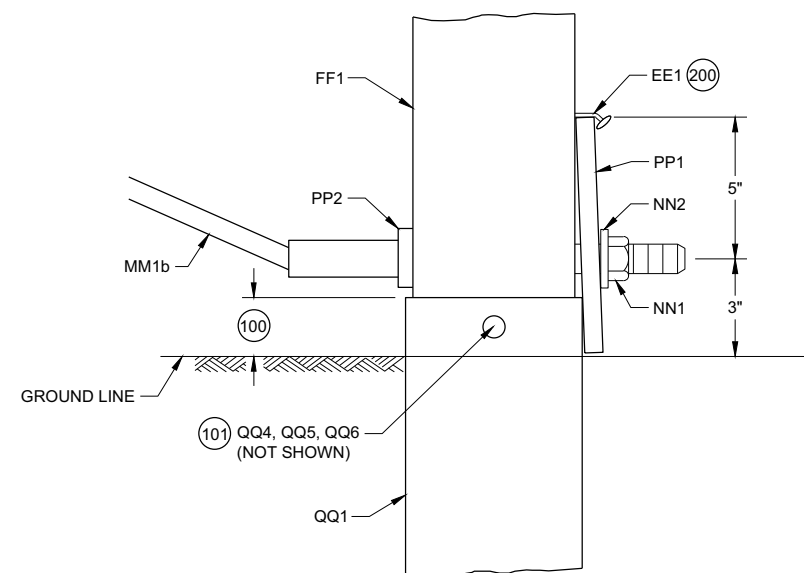
PROFILE VIEW

DETAIL "B"

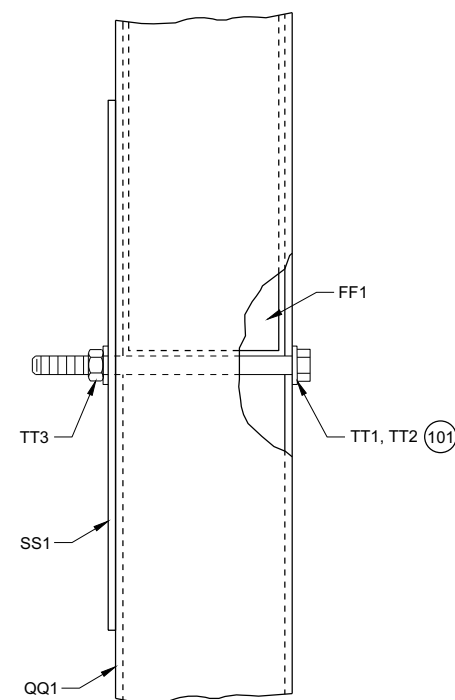
STEEL PIPE ASSEMBLY
(BEAM GUARD AND W BEAM
END SECTION NOT SHOWN)



PLAN VIEW
DETAIL "B"
STEEL PIPE ASSEMBLY



PROFILE VIEW
DETAIL "C"



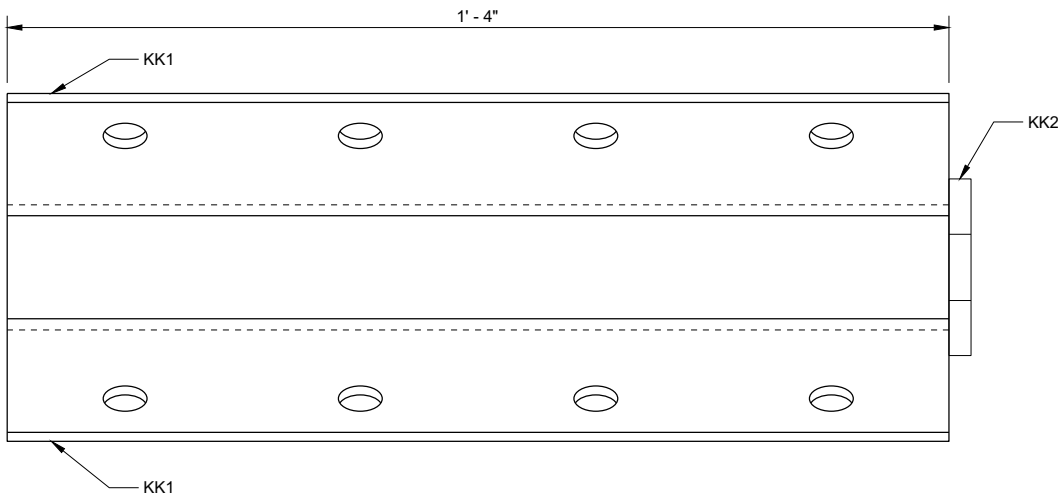
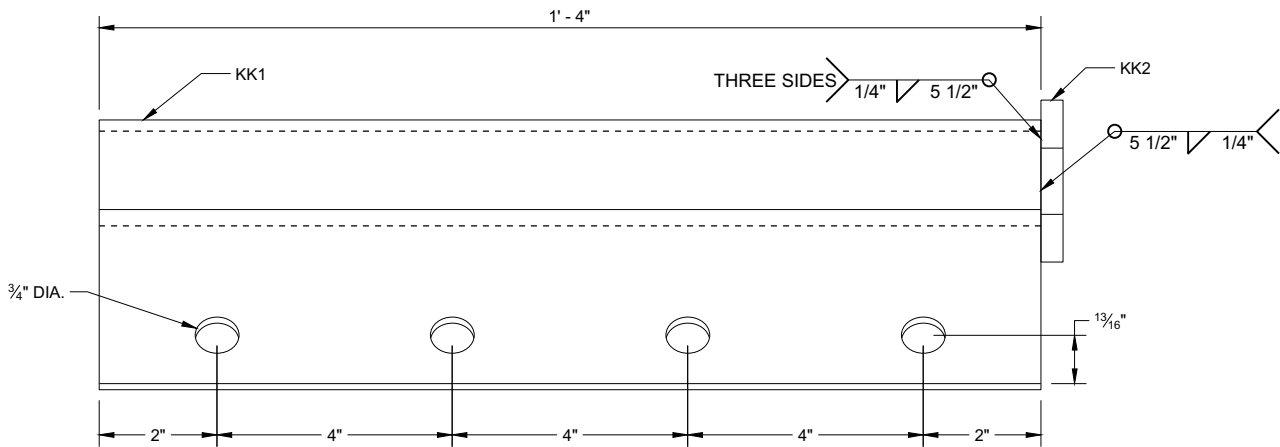
**PROFILE VIEW
DETAIL "D"**

GENERAL NOTES

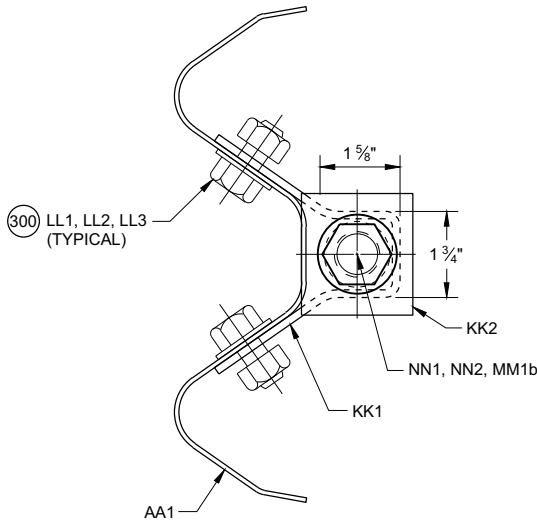
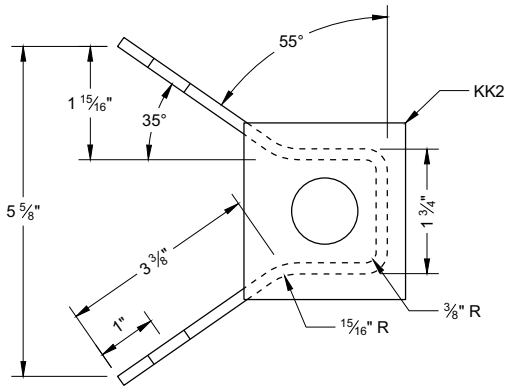
(200) TWO (2) NAILS SPACED 4 INCHES CENTER TO CENTER.

**SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



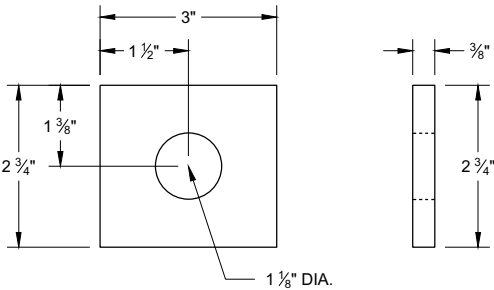
ANCHOR BRACKET (KK1, KK2)



SECTION A - A

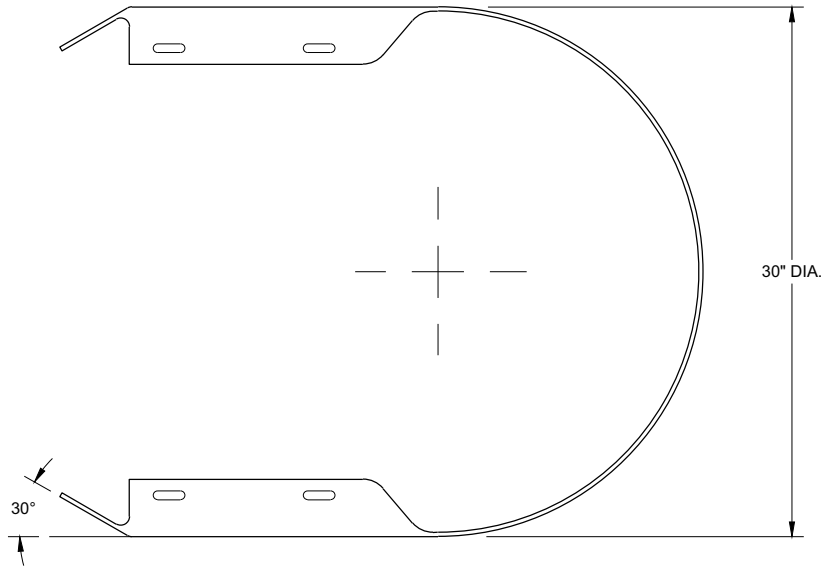
300 WASHERS REQUIRED BETWEEN BOLT HEAD AND BEAM GUARD RAIL AND BETWEEN NUT AND ANCHOR BRACKET. EIGHT (8) LL1 AND LL3 REQUIRED. SIXTEEN (16) LL2 REQUIRED.

ANCHOR BRACKET BEARING PLATE (KK2)

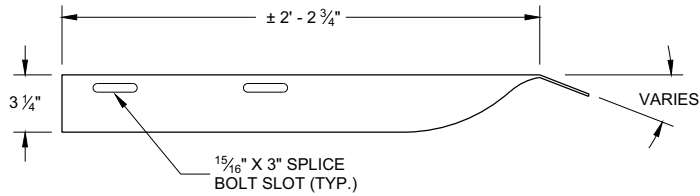


SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)

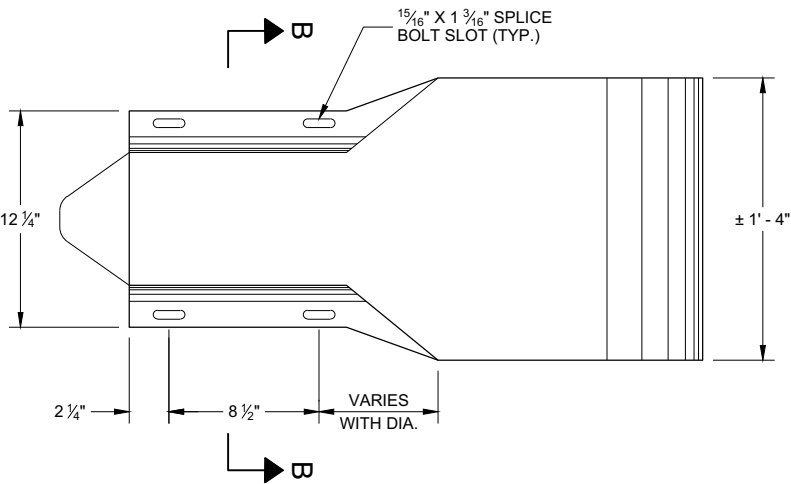
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



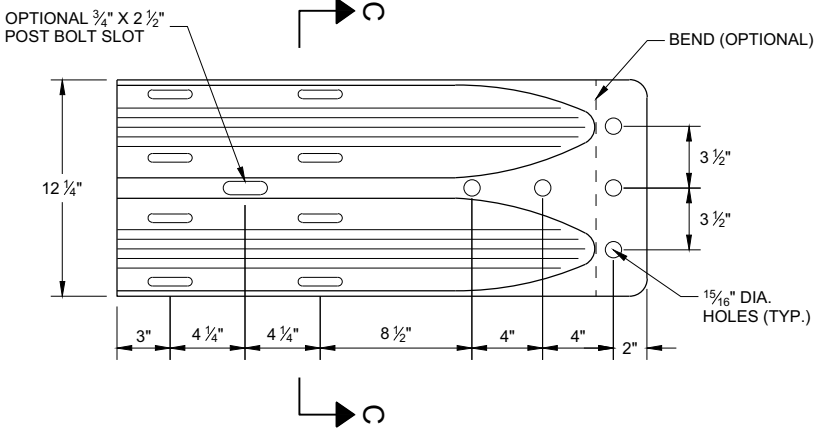
TOP VIEW



TOP VIEW



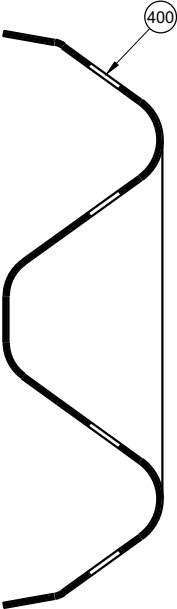
PROFILE VIEW
W BEAM
END SECTION BUFFER (AA2)



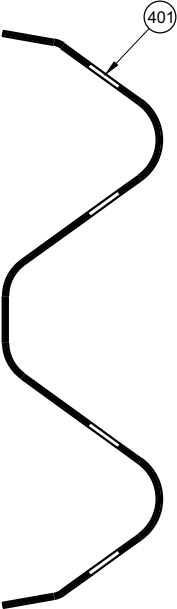
PROFILE VIEW
W BEAM
TERMINAL CONNECTOR (BB1)

GENERAL NOTES

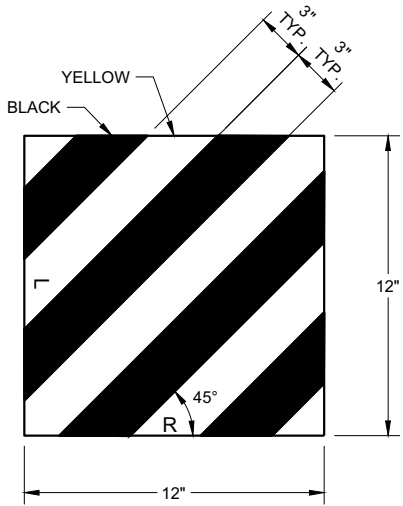
- (400) CROSS SECTION OF PART IS TO FIT OVER AA1 .
- (401) CROSS SECTION OF PART IS TO FIT OVER OR UNDER AA1 .



SECTION B -B



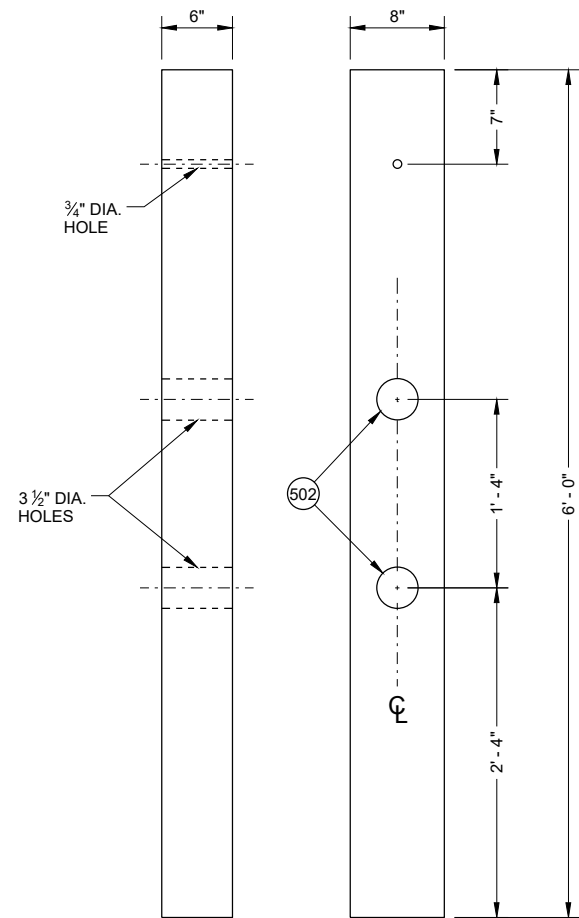
SECTION C -C



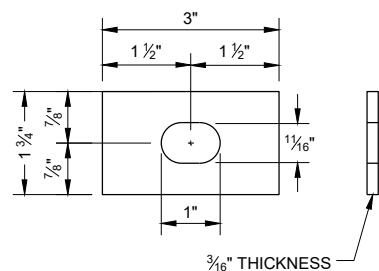
REFLECTIVE SHEETING (UU1, UU2)

SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)

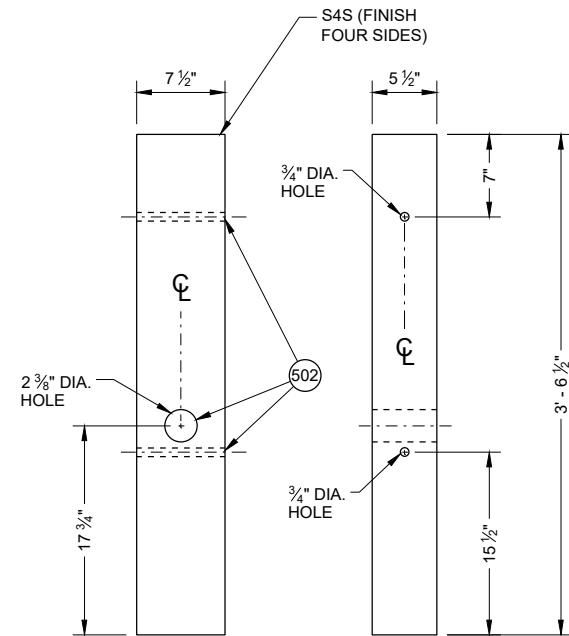
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



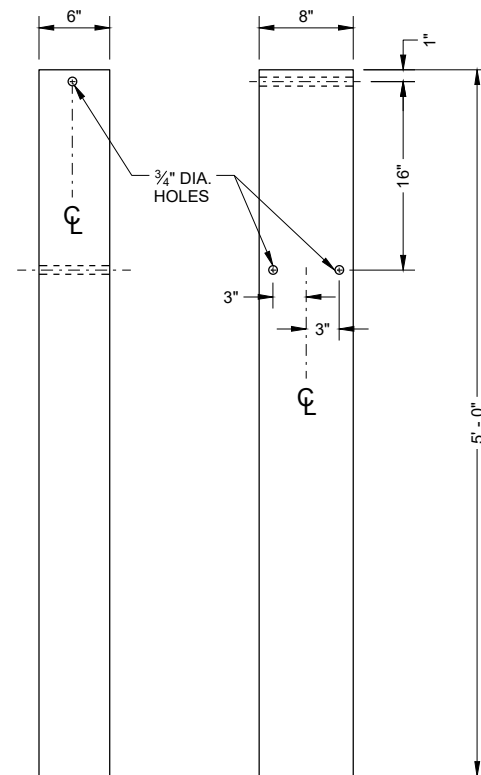
FRONT VIEW SIDE VIEW
CONTROLLED RELEASE POST (CRT) (DD2)



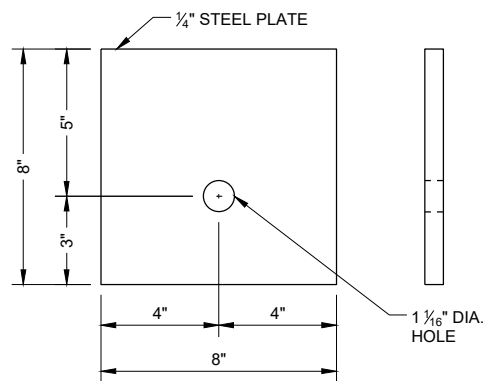
RECTANGULAR PLATE WASHER (CC1)



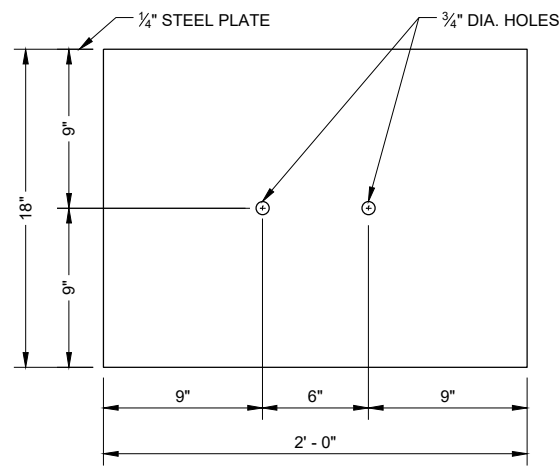
FRONT VIEW SIDE VIEW
WOOD BREAKAWAY POST (FF1)



FRONT VIEW SIDE VIEW
FOUNDATION TUBE (QQ1) (500)



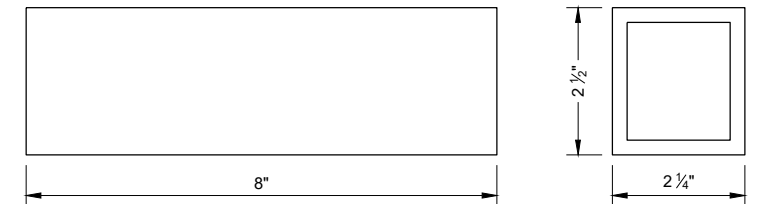
BEARING PLATE (PP1)



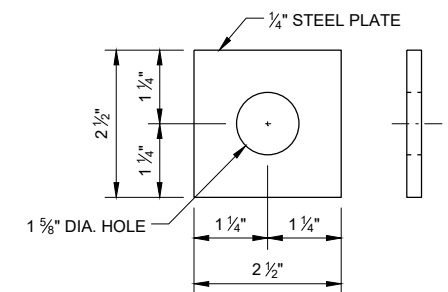
SOIL PLATE (SS1)

GENERAL NOTES

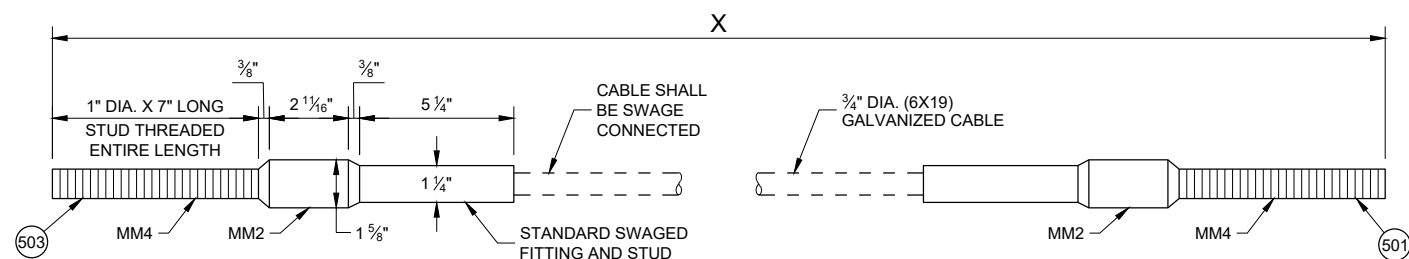
- (500) SEE DETAIL "D" FOR LOCATION AND ATTACHMENT OF SS1.
- (501) FOR MM1a THREADED STUD ONLY REQUIRED ON ONE END. SWAGED FITTING REQUIRED.
- (502) LOCATE HOLES ON THE CENTERLINE OF THE SIDE OF THE POST.
- (503) MM1a MAY HAVE ONE THREADED STUD 4 INCHES LONG. SEE NOTE (109).



FOUNDATION TUBE - ANCHOR CABLE TUBE (QQ2)



ANCHOR CABLE TUBE END PLATE (QQ3)



CABLE ASSEMBLY (MM1a, MM1b)

"X" LENGTH

MM1b	9' - 0"
MM1b	6' - 8"

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	BEAM GUARD RAIL	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
A2	BEAM GUARD RAIL - SHOP BENT	INDICATE ON BACK OF RAIL THE RADIUS THAT RAIL WAS BENT TO. SHOP BEND RADIUS IS TO THE NEAREST FOOT. FOLLOW AASHTO M180 ON HOW TO MARK RADIUS INFORMATION.	
		AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
B1	BLOCK - WOOD	WISDOT SPEC. 614	SEE SDD 14B42
C1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEAD)	
D1	POST-STRONG POST-WOOD	WISDOT SPEC. 614	SEE SDD 14B42
D2	POST-CRT-WOOD	WISDOT SPEC. 614	
E1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
E2	POST BOLT - WASHER	ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	5/8" DIA.
		GALV. AASHTO M111 / ASTM A 123 OR GALV. HOT DIP. TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
E3	POST BOLT - NUT	AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
F1	SPlice BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		ASTM A307 GRADE A OR SAE J429 GRADE 2	
		UNC	
		AASHTO M180	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
F2	SPlice BOLT - NUT	ASTM A563 GRADE A	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
G1	LAG SCREW	ASTM A308 GRADE A ASTM A153 CLASS D	1/2" DIA. 6" LONG
H1	DELINEATOR - BEAM GUARD		SEE SDD 14B42 FOR MORE INFORMATION
H2	DELINEATION - SHEETING	YELLOW OR WHITE	
		WISDOT SPEC 637 TYPE SH	
		APPROVED PRODUCT LIST	
J1	FOUNDATION BACKFILL	STANDARD SPEC. 614	
AA1	BEAM GUARD RAIL - PUNCHED	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
AA2	BEAM GUARD RAIL - END SECTION BUFFER	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
BB1	BEAM GUARD RAIL - TERMINAL CONNECTOR MODIFIED	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
CC1	SHORT RADIUS - SQUARE WASHER	AASHTO M180	
		GALV. AASHTO M111 / ASTM A123	
EE1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEADED)	
FF1	POST - BCT - WOOD	S4S FINISH ON 4 SIDES	
		WISDOT SPEC. 614	
GG1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	3/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
GG2	POST BOLT - WASHER	ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	3/8" DIA.
		GALV. AASHTO M111 / ASTM A 123 OR GALV. HOT DIP. TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329	

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
GG3	POST BOLT - NUT	ASTM A563 GRADE A	$\frac{3}{8}$ " DIA. SEE 14B42 FOR GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
HH1	SPLICE BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	$\frac{3}{8}$ " DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		ASTM A307 GRADE A OR SAE J429 GRADE 2	
		UNC	
		AASHTO M180 HEAD GEOMETRY	
HH2	SPLICE BOLT - NUT	ASTM A563 GRADE A	$\frac{3}{8}$ " DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
JJ1	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	10" O.D.
JJ2	TOP PLATE	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS $\frac{3}{8}$ " X 4" X 1' - 0"
		GALV. AASHTO M111 / ASTM A123	
KK1	ANCHOR BRACKET	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
KK2	ANCHOR BRACKET - BEARING PLATE	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
LL1	ANCHOR BRACKET - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	$\frac{3}{8}$ " DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
LL2	ANCHOR BRACKET - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	$\frac{3}{8}$ " DIA.
		GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
LL3	ANCHOR BRACKET - NUT	ASTM A563 GRADE A	$\frac{5}{8}$ " DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
MM1a	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIc CLASS C ZINC COATED	
MM1b	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIc CLASS C ZINC COATED	
MM2	ANCHOR CABLE - SWAGE FITTING	ASTM A576 GRADE 1035	
		SWAGE FITTINGS ARE TO BE FACTORY SWEDGED. WITH A BREAKING STRENGTH 40,000 LBS.	
		GALV. AASHTO M111 / ASTM A123	
		ASME B30.26 FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING INTO CONNECTION: NAME OF MANUFACTURER OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE.	
MM3	WIRE ROPE CABLE CLAMPS	FF-C-450D TYPE 1 CLASS 1	$\frac{3}{4}$ "
		ASTM A153 HOT DIP CLASS D	
MM4	ANCHOR CABLE - SWAGE FITTING - STUD	ASTM F3125 GRADE A325 TYPE 1 OR SAE GRADE 5 OR ASTM A449 TYPE 1 HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
NN1	ANCHOR CABLE - NUT	ASTM A563 GRADE A	1" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
NN2	ANCHOR CABLE - NUT - WASHER	UNC	1" DIA.
		ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	
		GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	

SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
PP1	BEARING PLATE AT POST	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
PP2	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	2" DIA. x 6" LONG
QQ1	FOUNDATION TUBE	ASTM A500 GRADE B	8" X 6" X $\frac{3}{16}$ "
		GALV. AASHTO M111 / ASTM A123	
QQ2	SHORT RADIUS - FOUNDATION TUBE - ANCHOR CABLE - TUBE	ASTM A500 GRADE B	DIMENSIONS 2 $\frac{1}{2}$ " X 2 $\frac{1}{4}$ " X $\frac{1}{4}$ " X 8"
		GALV. AASHTO M111 / ASTM A123	
QQ3	SHORT RADIUS - SOIL TUBE - ANCHOR CABLE - TUBE - END PLATE	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS 2 $\frac{1}{2}$ " X 2 $\frac{1}{2}$ " X $\frac{1}{4}$ "
		GALV. AASHTO M111 / ASTM A123	
QQ4	GROUND STRUT AND YOKE - BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	$\frac{5}{8}$ DIA.
		ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	
		UNC	
QQ5	GROUND PLATE AND YOKE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	$\frac{5}{8}$ DIA.
		GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
QQ6	GROUND STRUT AND YOKE - NUT	HEAVY HEX	$\frac{5}{8}$ DIA.
		UNC	
		ASTM A563 GRADE A	
		OVER TAPPED NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	

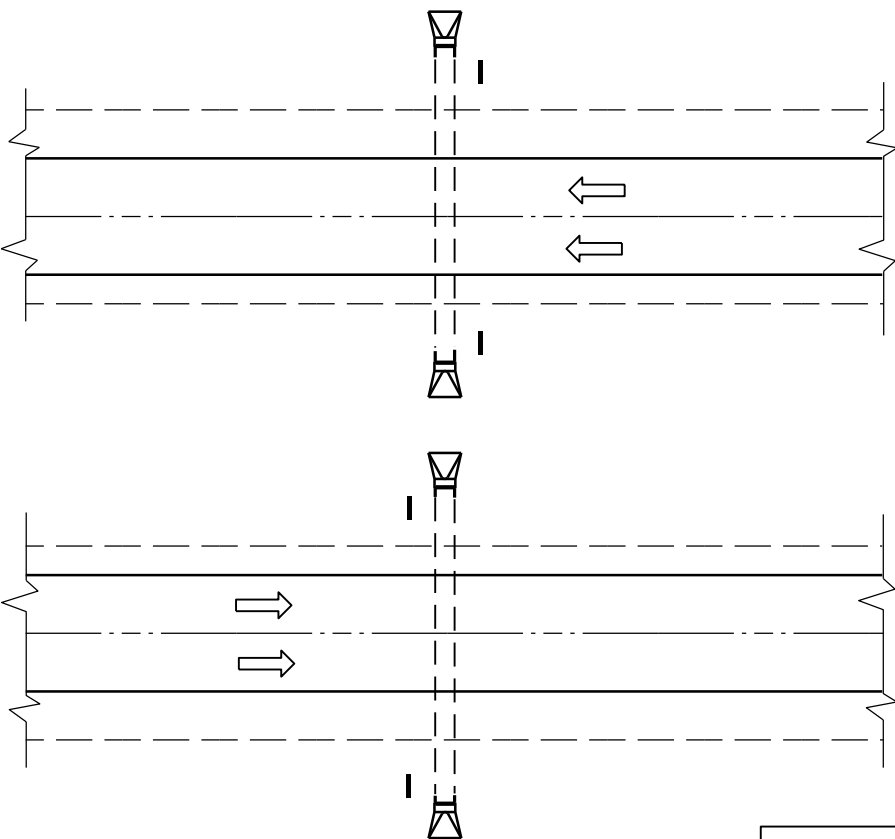
PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
SS1	SOIL PLATE	ASTM A36 MIN. STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / A123	
TT1	SOIL PLATE - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	$\frac{5}{8}$ DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
		UNC	
TT2	SOIL PLATE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	$\frac{5}{8}$ DIA.
		GALV. AASHTO M111 / ASTM A123 OR GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
TT3	SOIL PLATE - NUT	GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	$\frac{5}{8}$ DIA.
UU1	OBJECT MARKER - SHEETING	MUTCD / WISDOT OBJECT MARKER TYPE 3	PATTERN AND COLOR FOR SHEETING. SHEETING TYPE FOR MARKER.
		WISDOT SPEC 637 TYPE F	
		APPROVED PRODUCT LIST	
UU2	OBJECT MARKER - ALUMINUM PLATE	WISDOT SPEC 637 ALUMINUM PLATE	MATERIAL AND THICKNESS OF MATERIALS
UU3	OBJECT MARKER - SCREWS	STAINLESS SELF-TAPPING SCREWS	
VV1	FOUNDATION BACKFILL	WISDOT SPEC 614	

SHORT RADIUS BEAM
GUARD (MGS) SHORT
RADIUS TERMINAL (MGS)

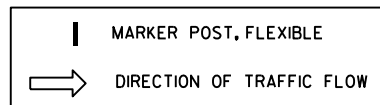
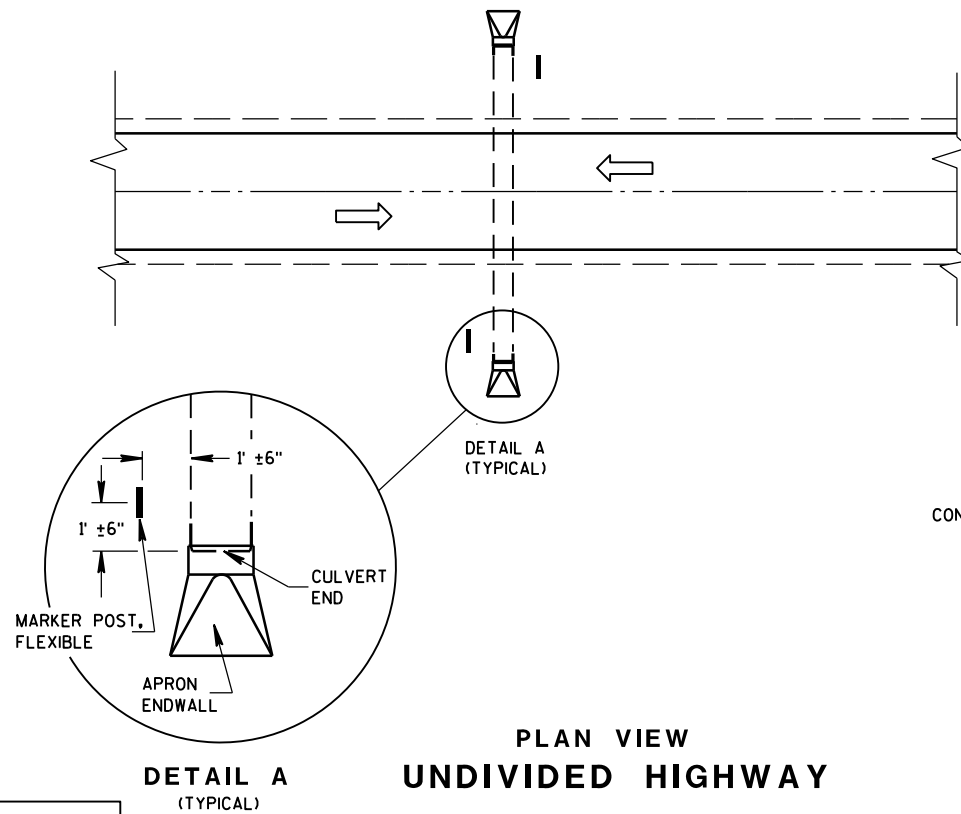
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
ENGINEER
FHWA

PLAN VIEW
DIVIDED HIGHWAY



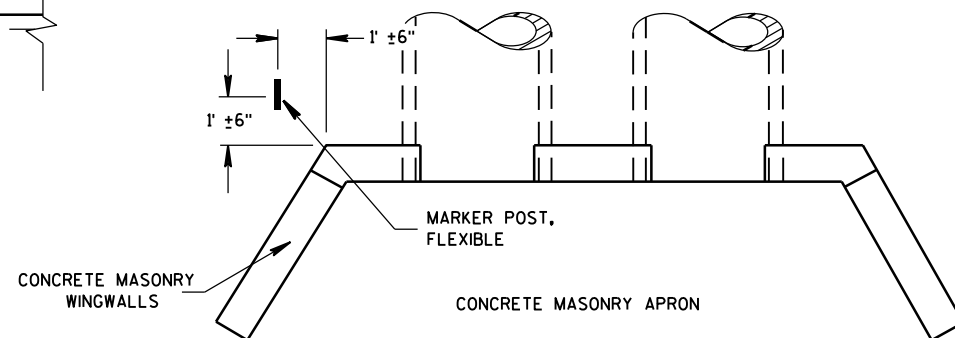
PLAN VIEW
UNDIVIDED HIGHWAY



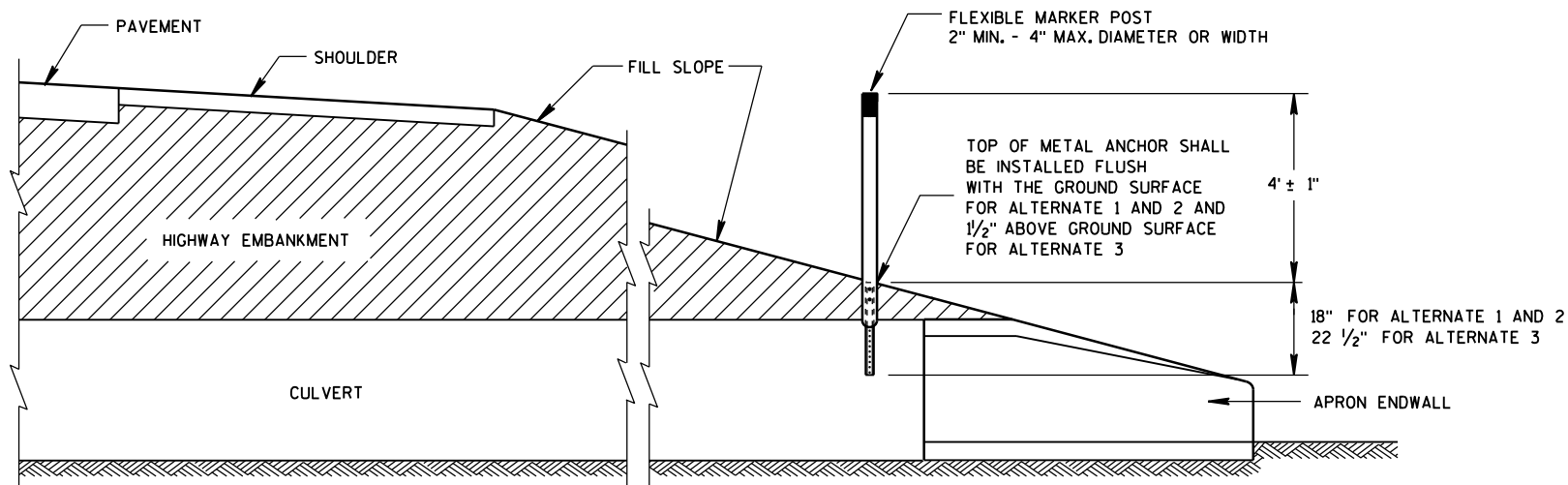
FLEXIBLE MARKER POST LOCATION

GENERAL NOTES

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



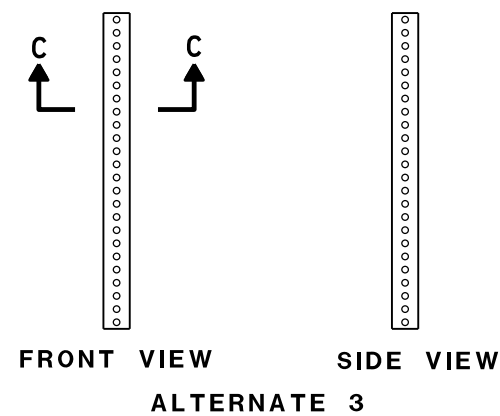
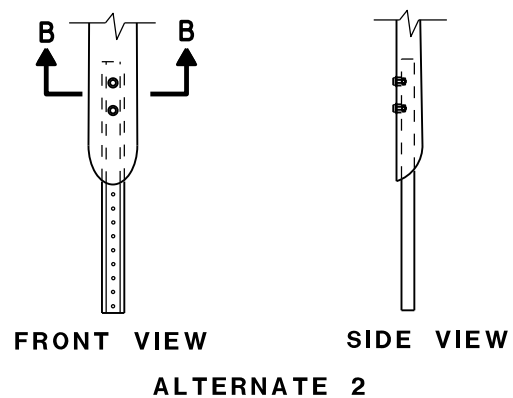
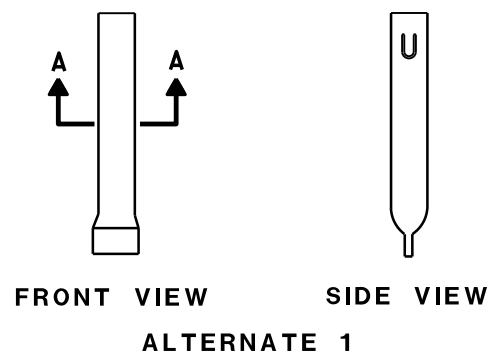
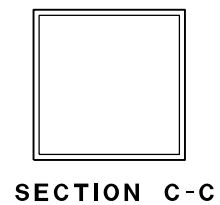
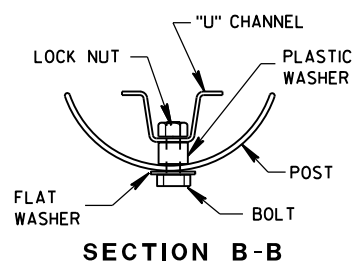
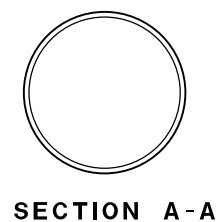
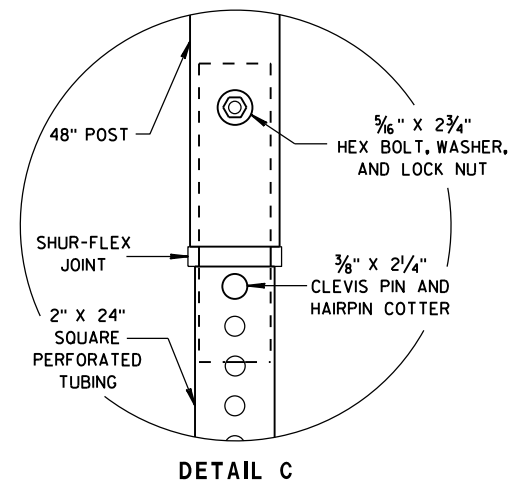
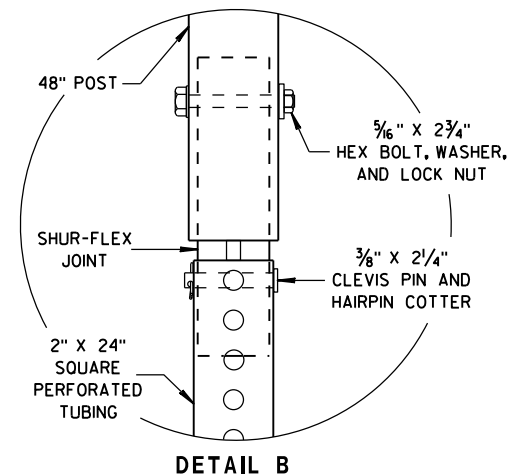
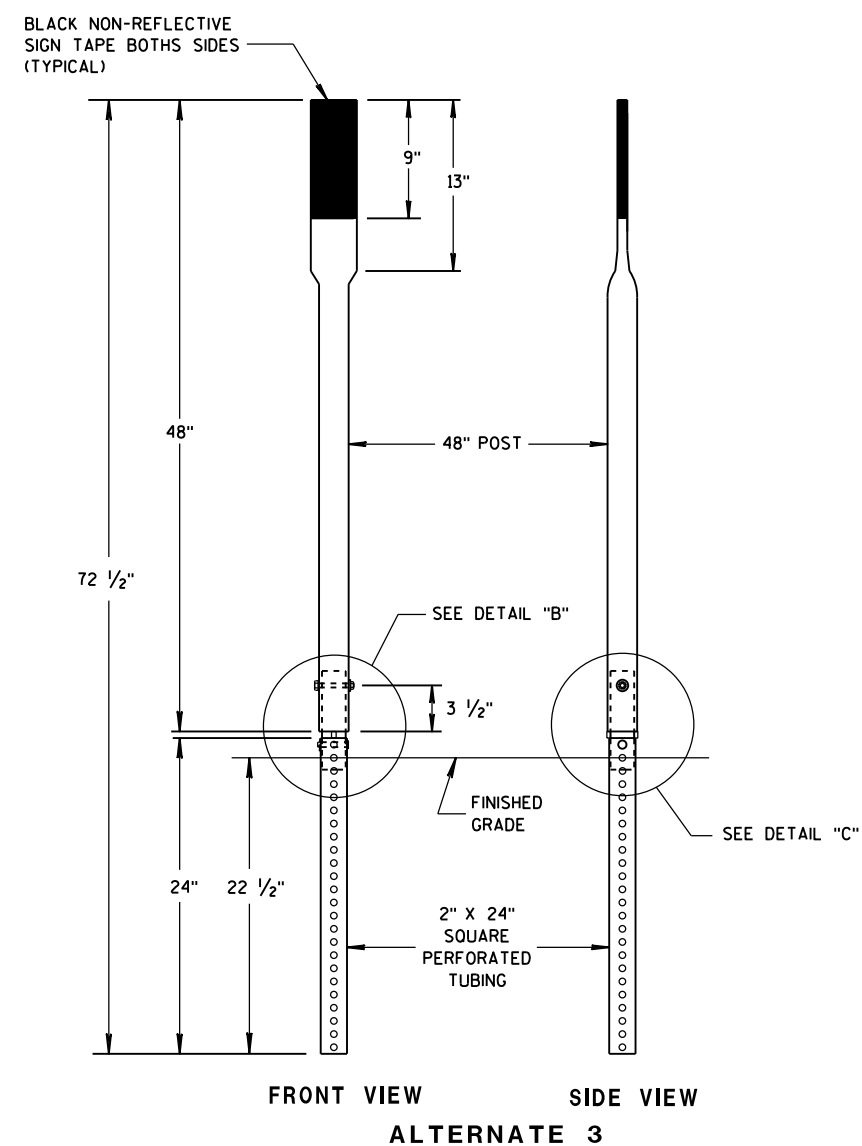
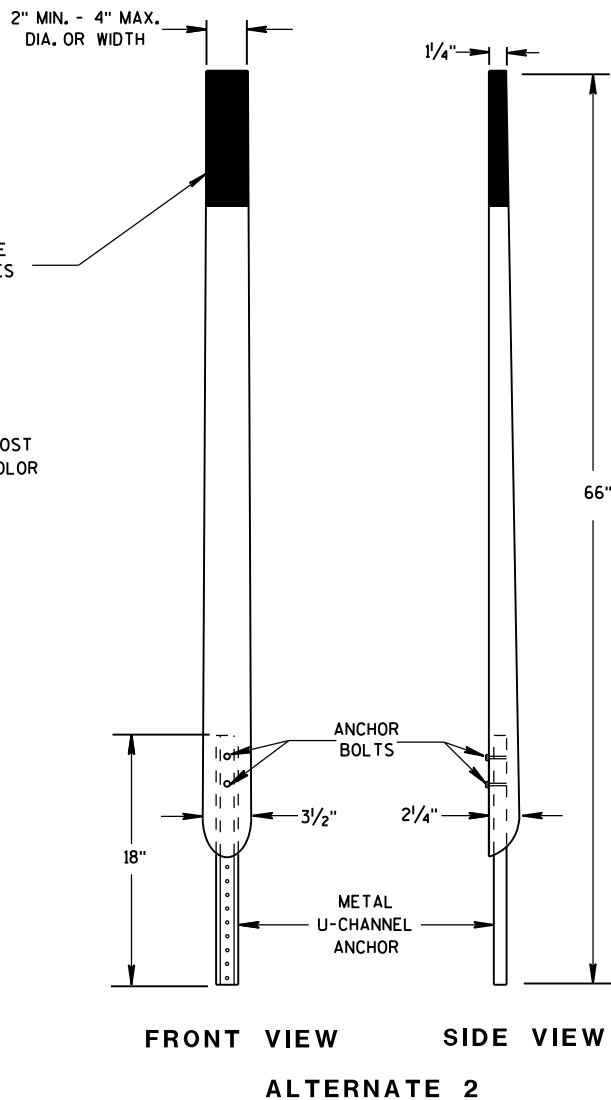
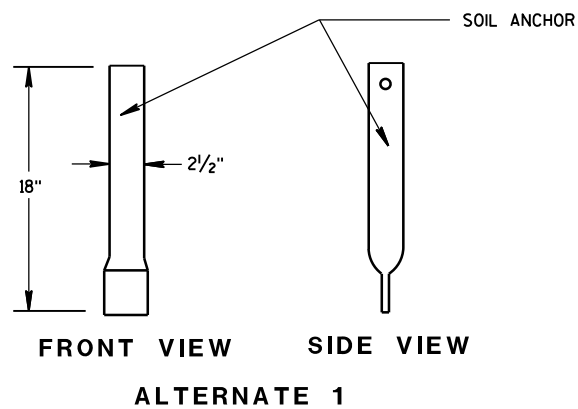
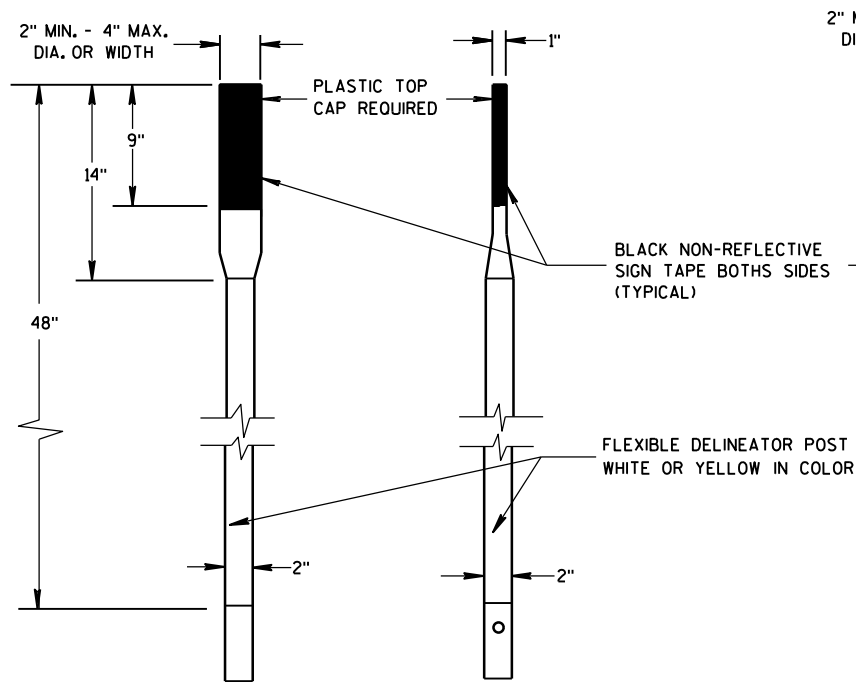
PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH



CROSS SECTION
FLEXIBLE MARKER POST

FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

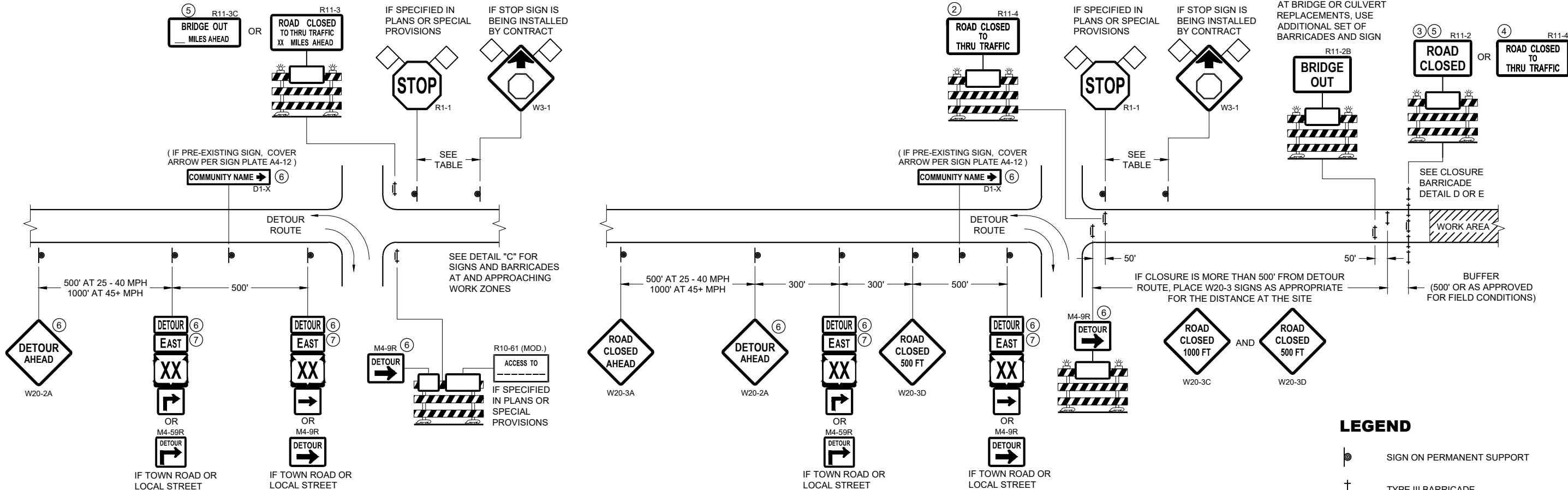


FLEXIBLE MARKER POST FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/1/2012
DATE
FHWA

/S/ Travis Feltes
STATE TRAFFIC ENGINEER OF DESIGN



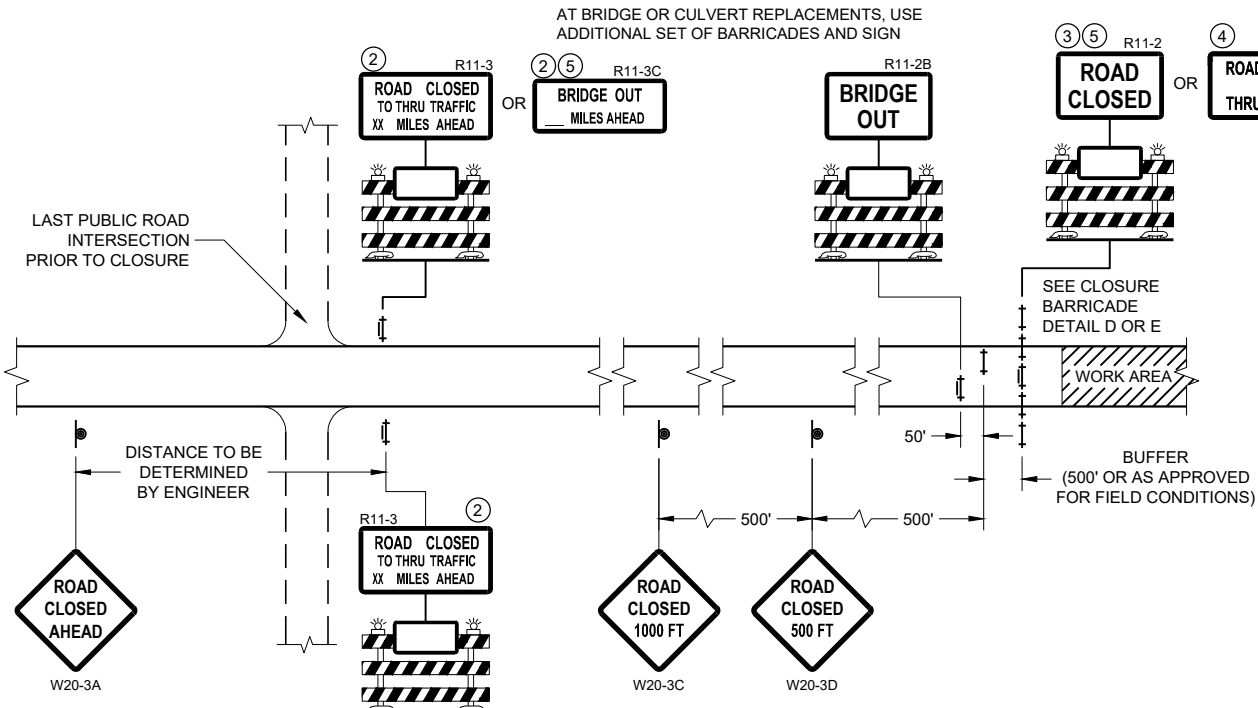
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR
WORK ZONE GREATER THAN OR EQUAL TO 1/2 MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR
WORK ZONE LESS THAN 1/2 MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

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

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

- DETOUR M4 - 8
- EAST M3 - X
- XX M1 - 4 OR XX M1 - 6 OR COUNTY M1 - 5A
- M05 - 1 OR M06 - 1



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

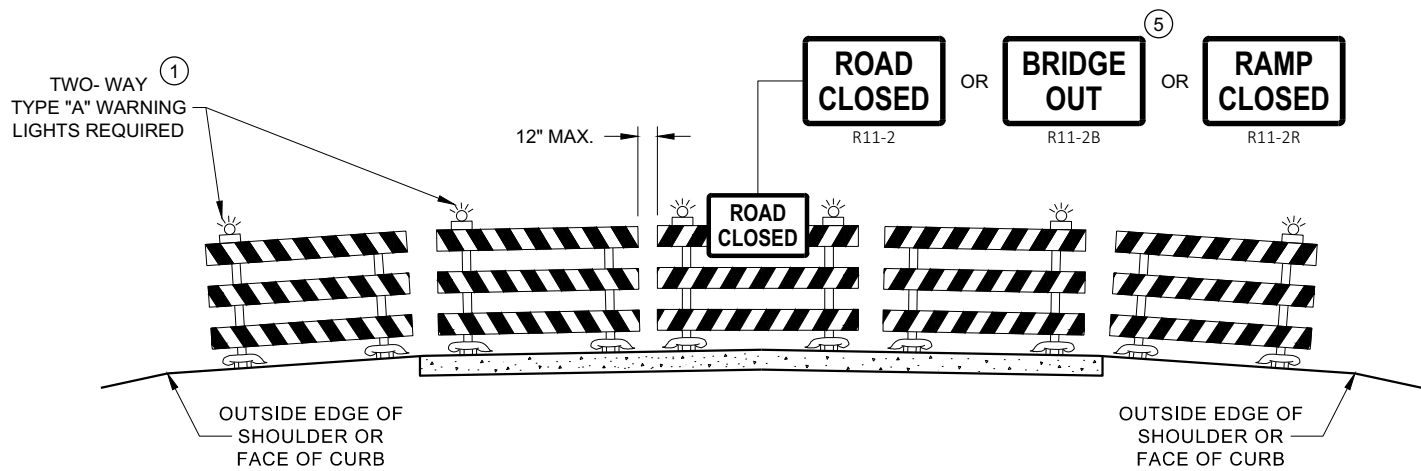
SEE SDD 15C2-SHEET "b"
FOR GENERAL NOTES
AND FOOTNOTES ① THROUGH ⑦

**BARRICADES AND SIGNS
FOR MAINLINE CLOSURES**

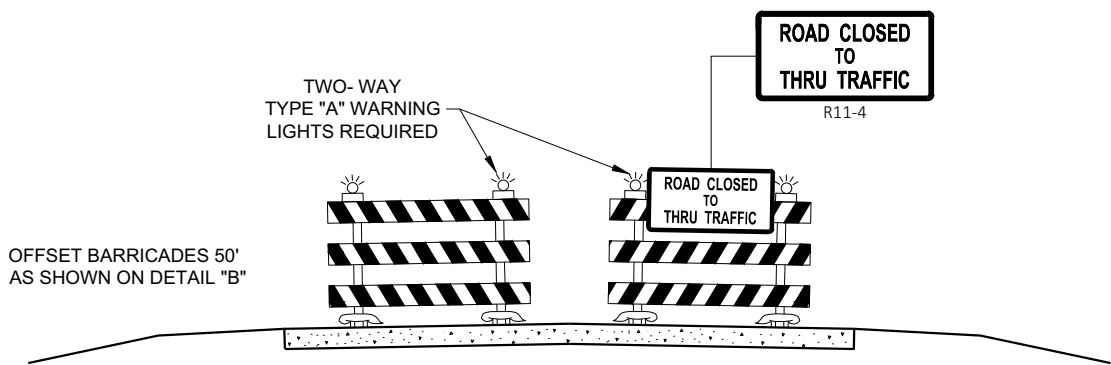
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

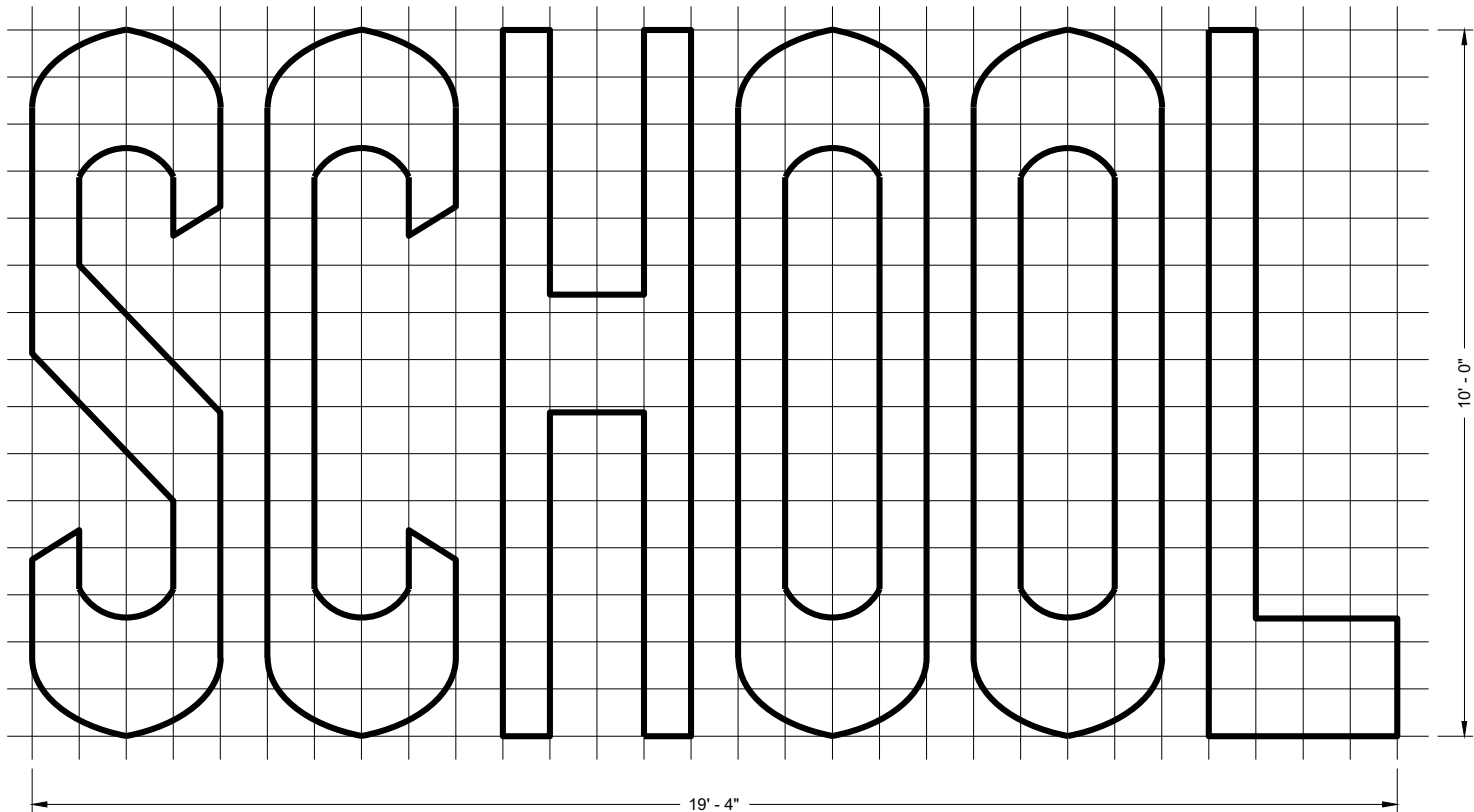
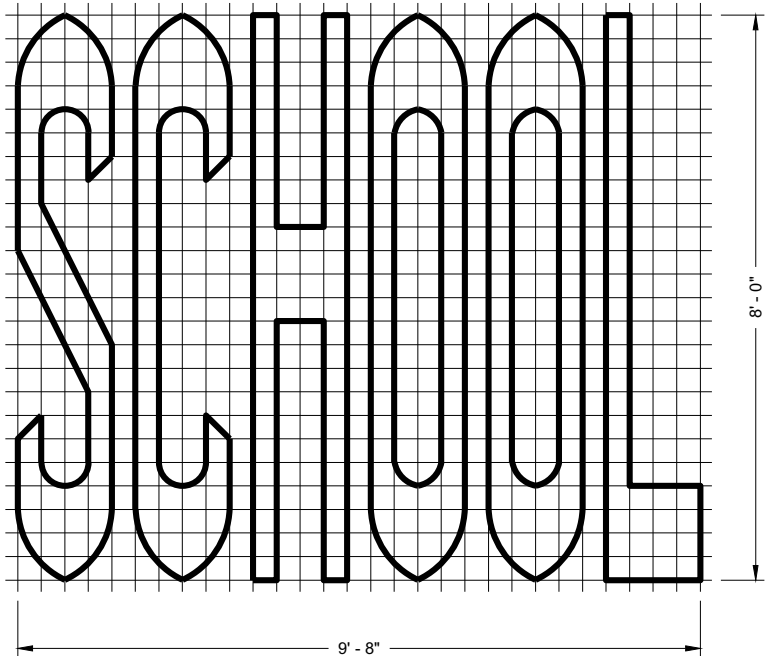
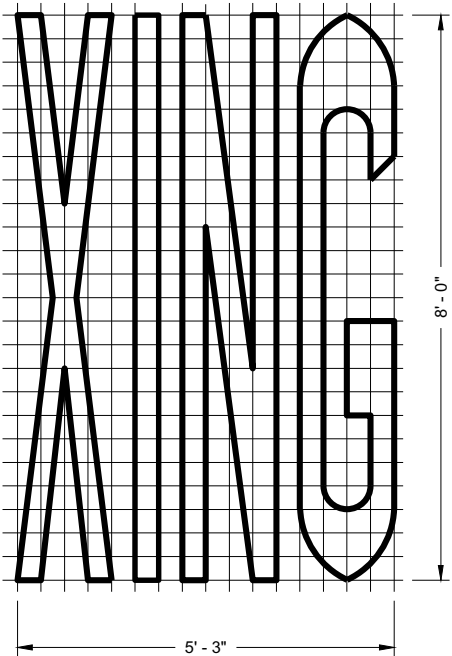
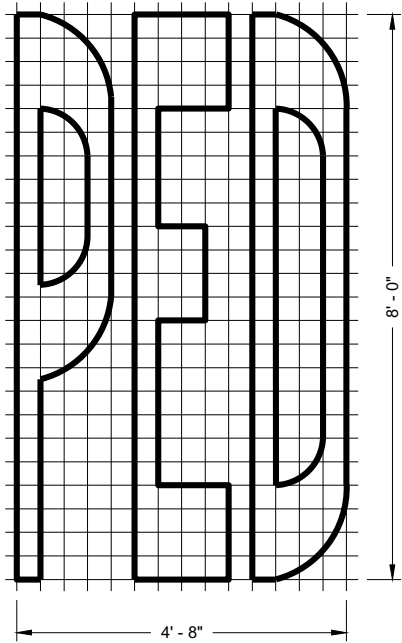
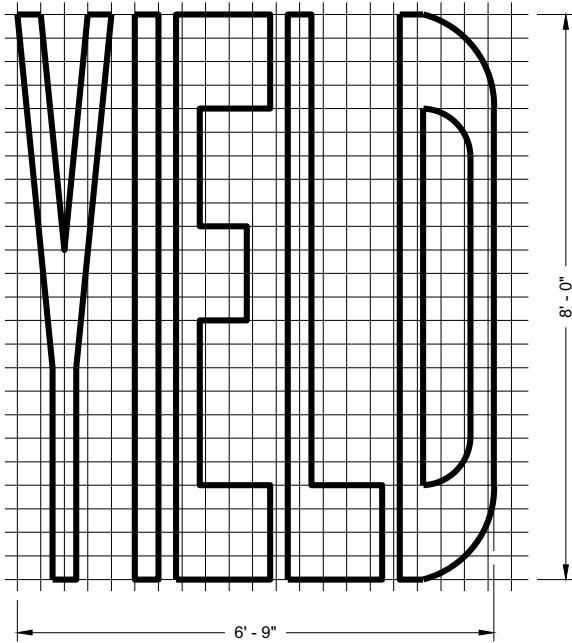
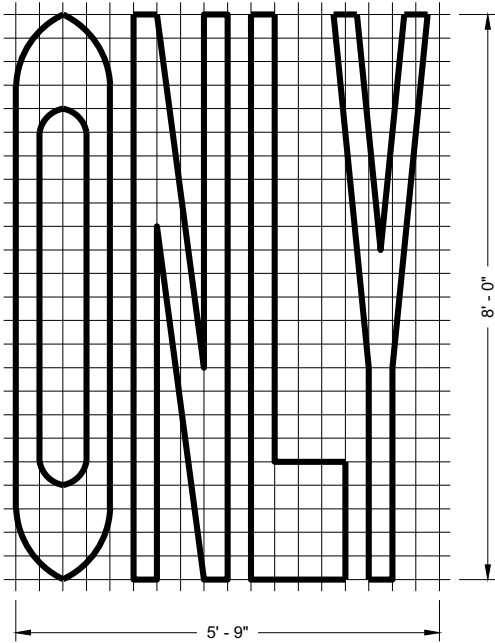
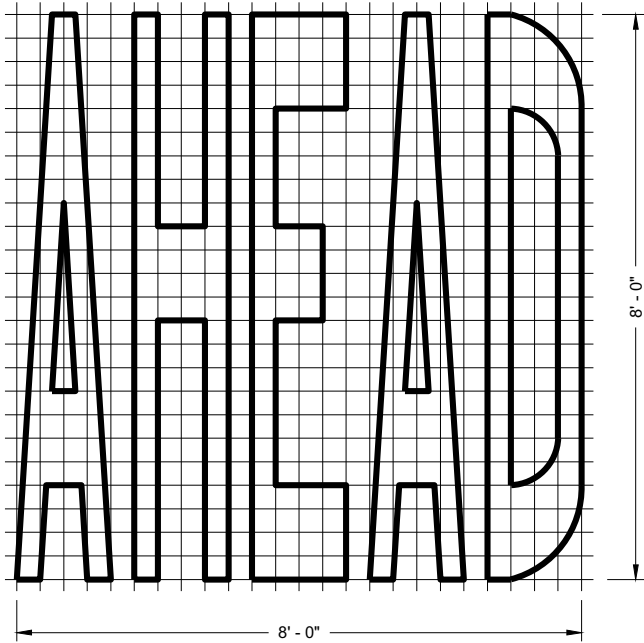
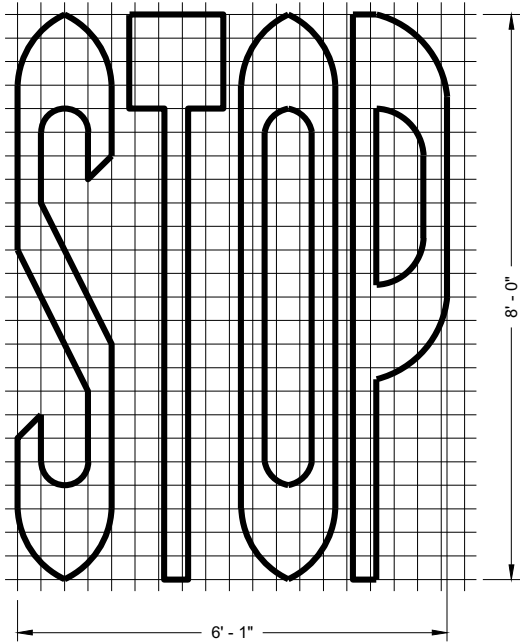
- ① TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING).
- ② THESE SIGNS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

BARRICADES AND SIGNS
FOR
VARIOUS CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



SINGLE LANE

TWO - LANE

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.

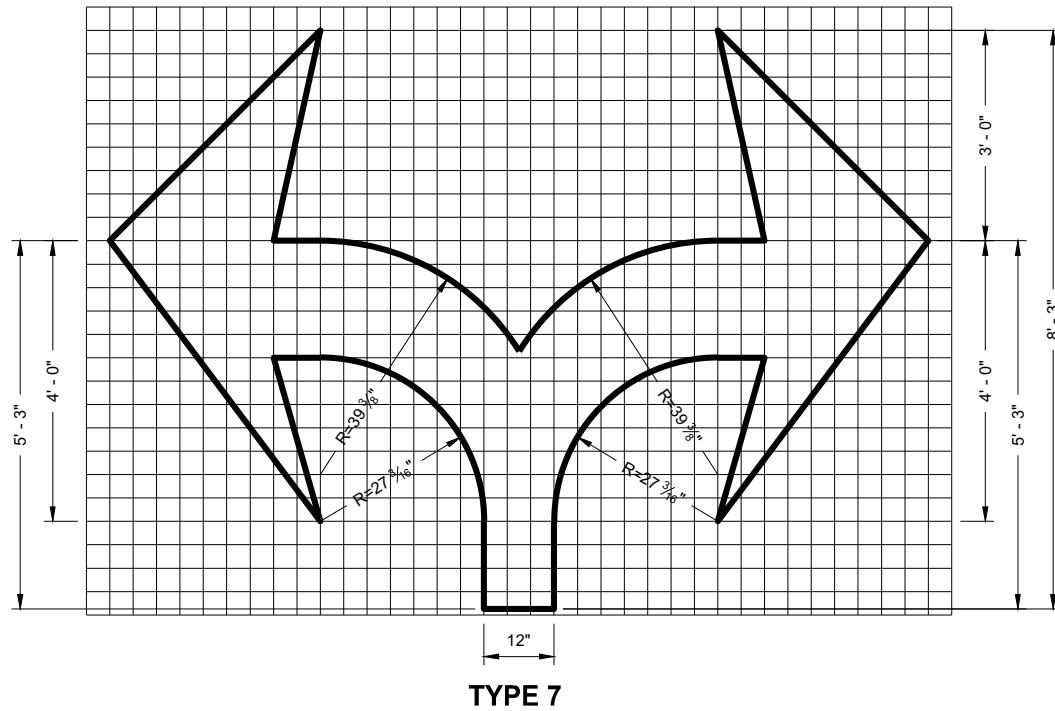
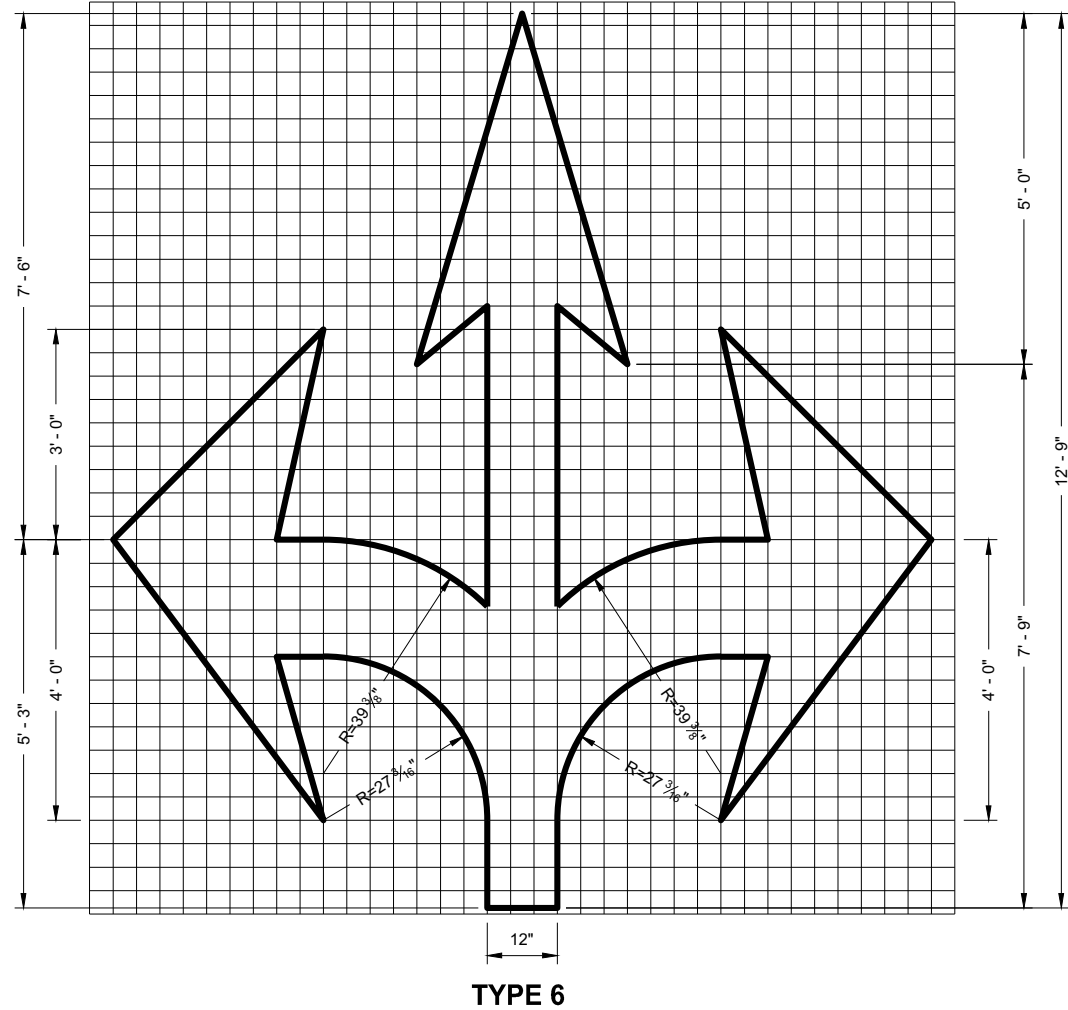
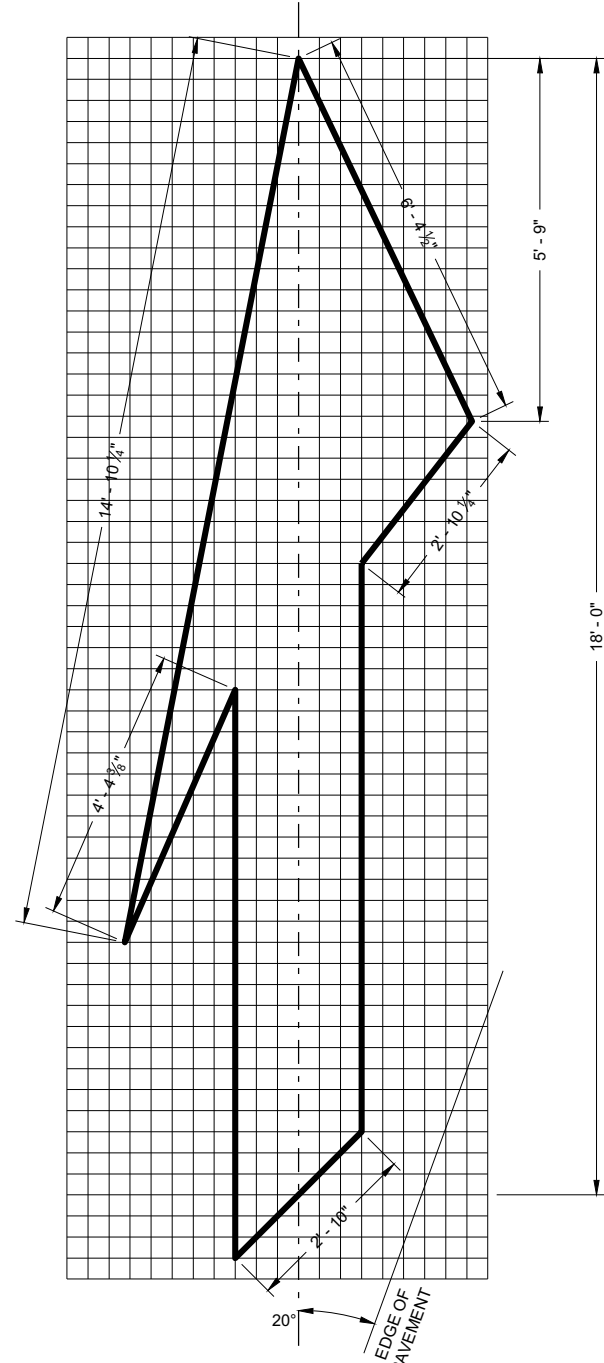
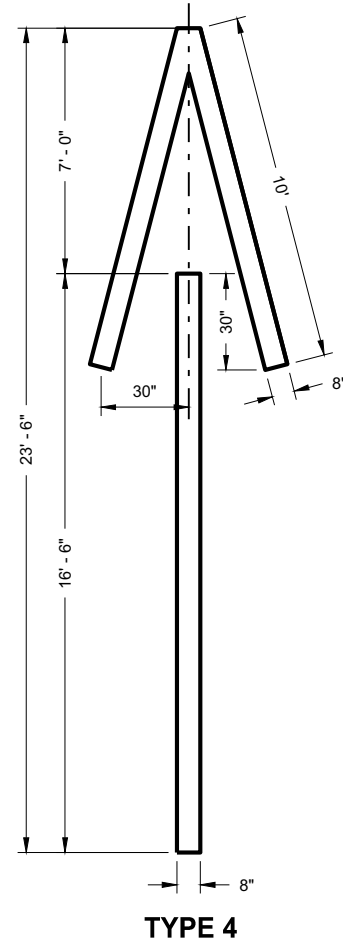
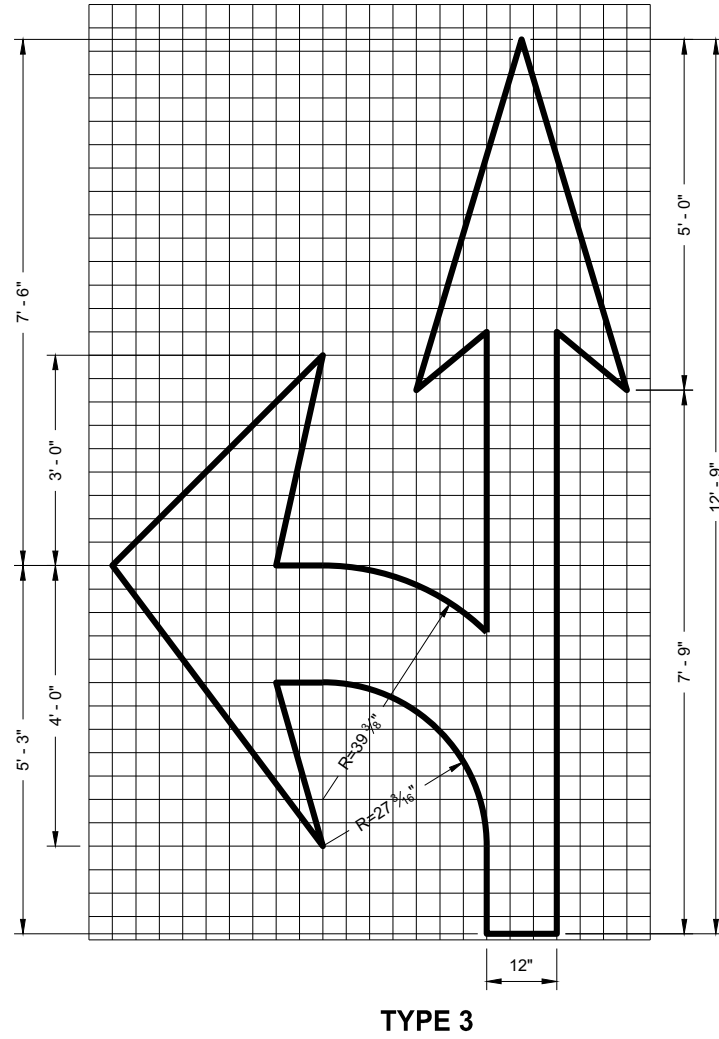
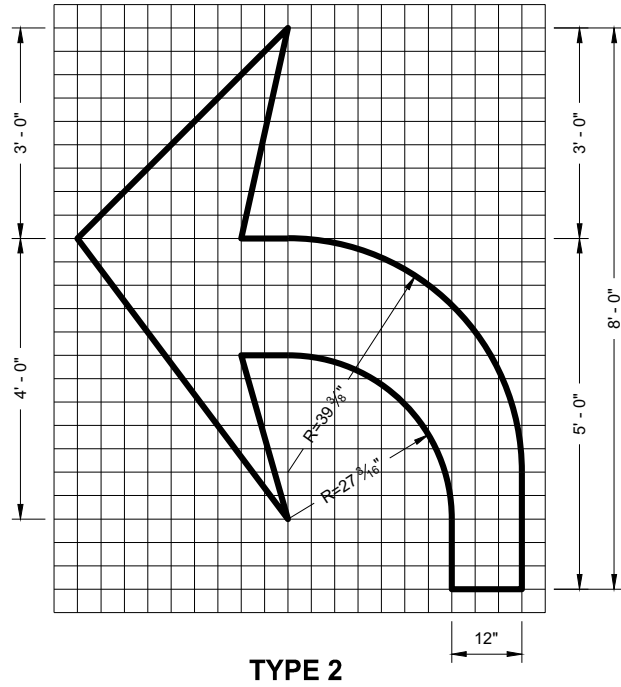
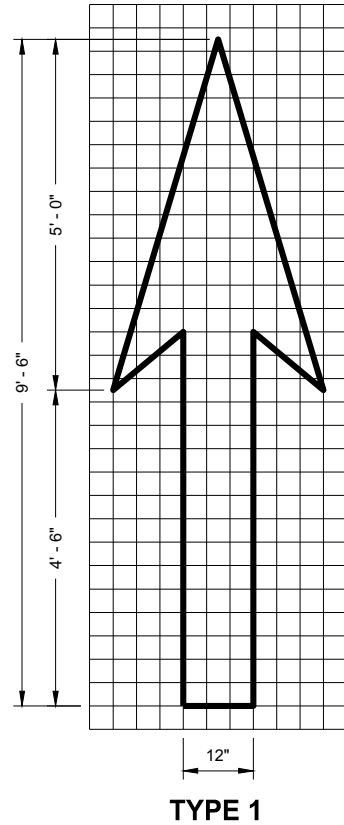
PAVEMENT MARKING WORDS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019
DATE

/S/ Matthew Rauch
STATE SIGNING AND MARKING
ENGINEER

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.

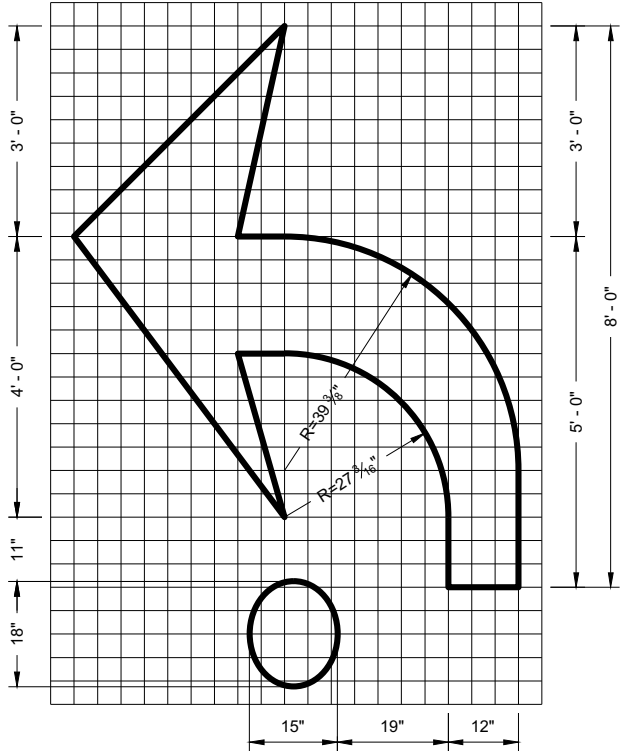
PAVEMENT MARKING ARROWS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

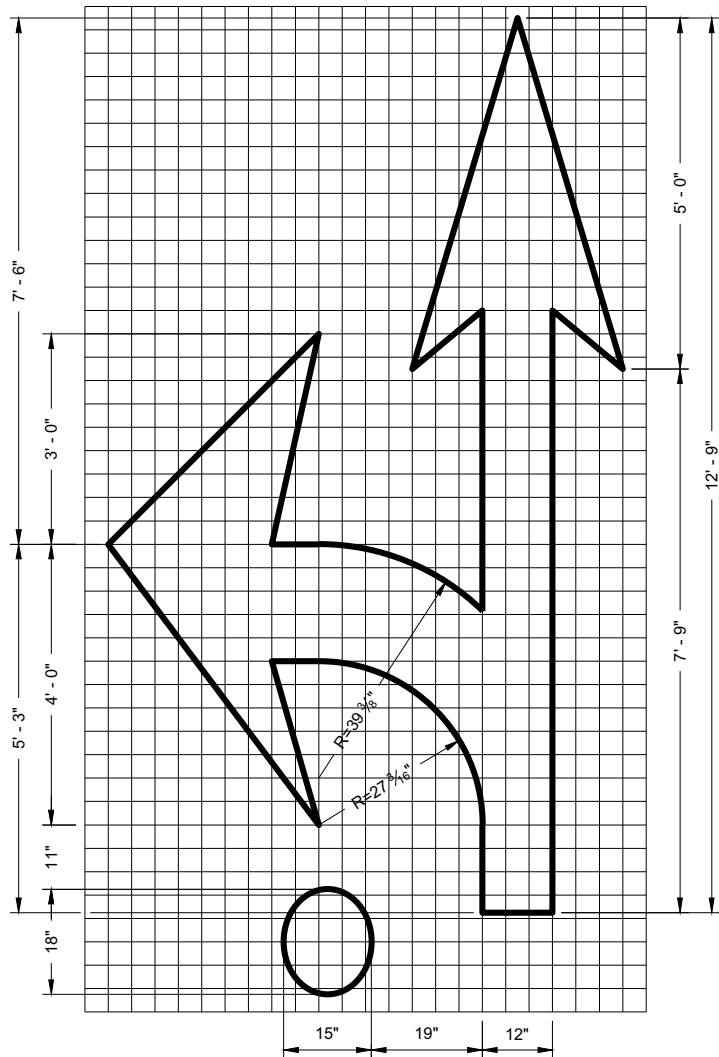
APPROVED
November 2019
DATE
/S/ Matthew Rauch
STATE SIGNING AND MARKING
ENGINEER
FHWA

GENERAL NOTES

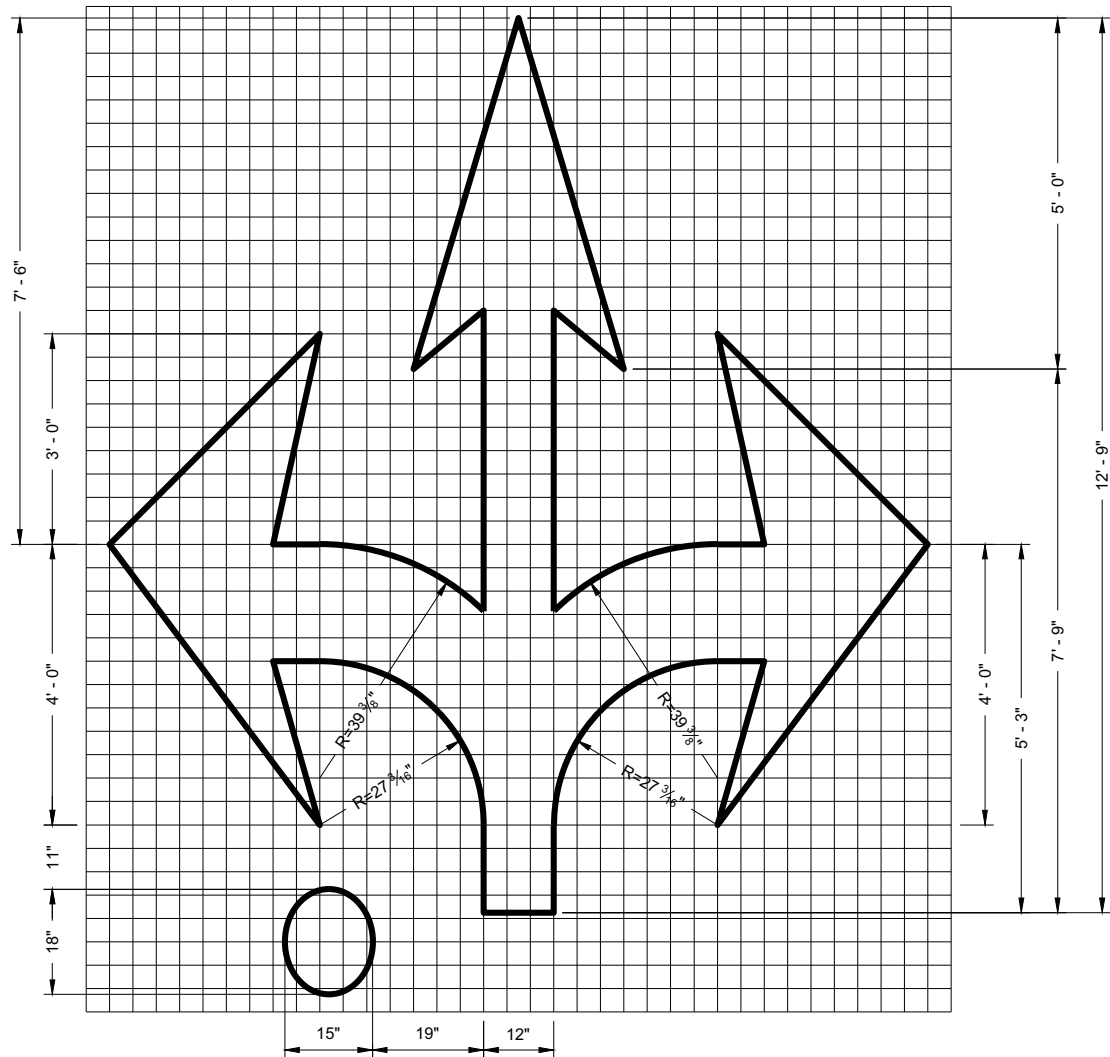
DETAILS OF INSTALLATION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.



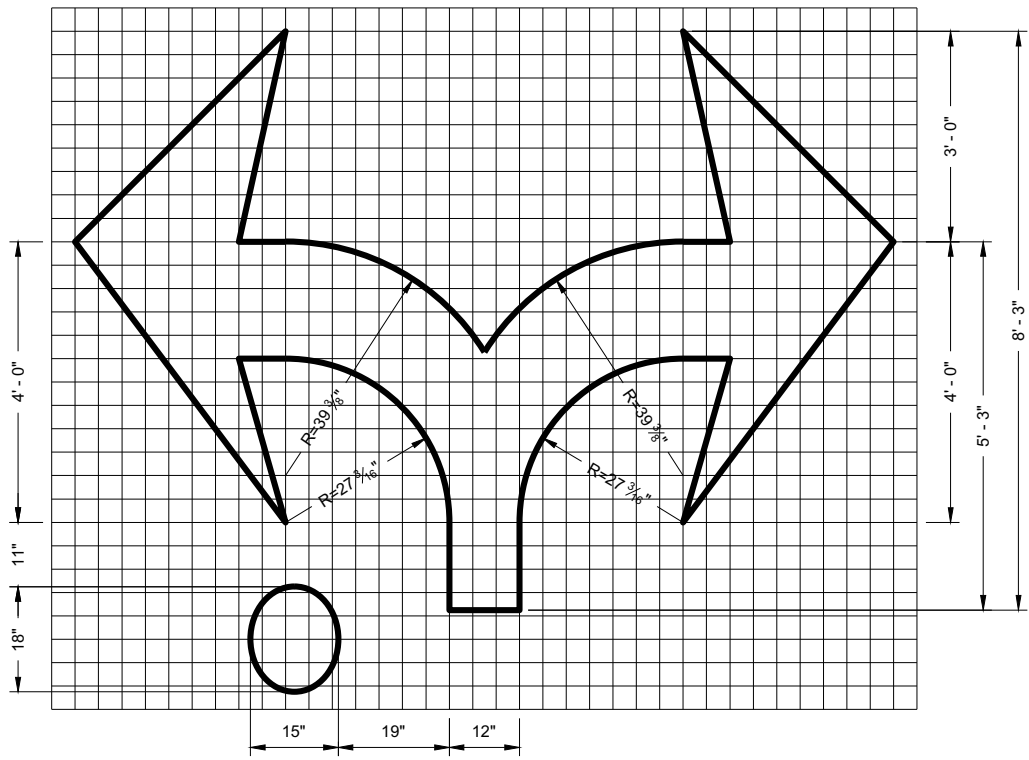
TYPE 2R



TYPE 3R



TYPE 6R



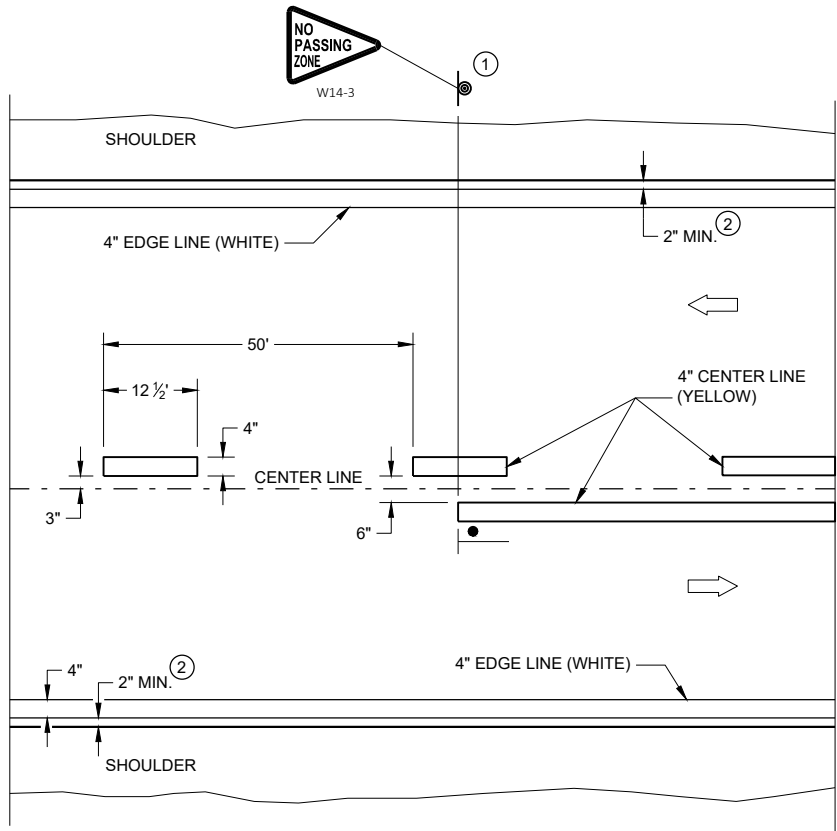
TYPE 7R

ROUNABOUT
MARKING ARROWS

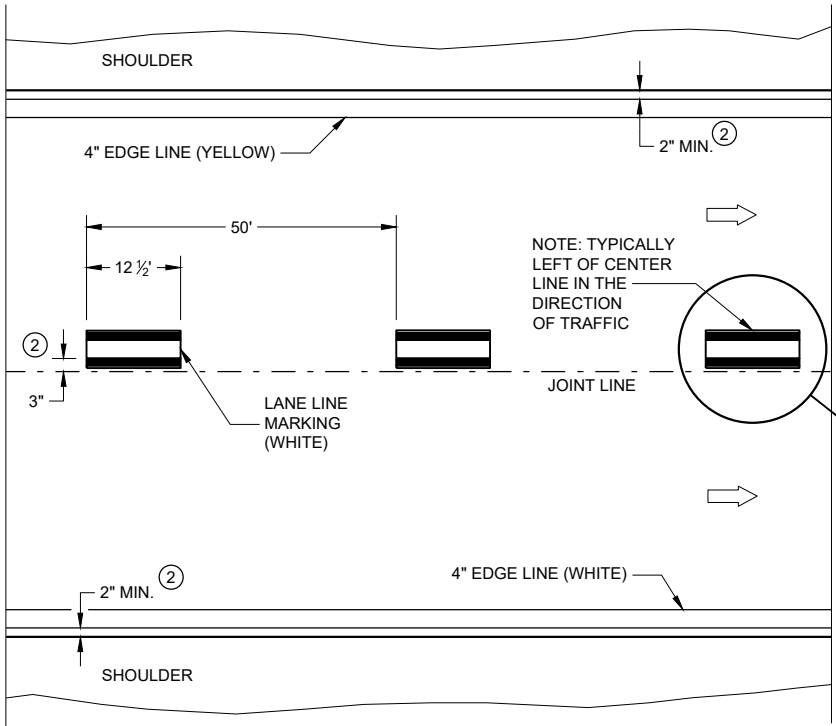
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019
DATE /S/ Matthew Rauch
STATE SIGNING AND MARKING
ENGINEER

FHWA

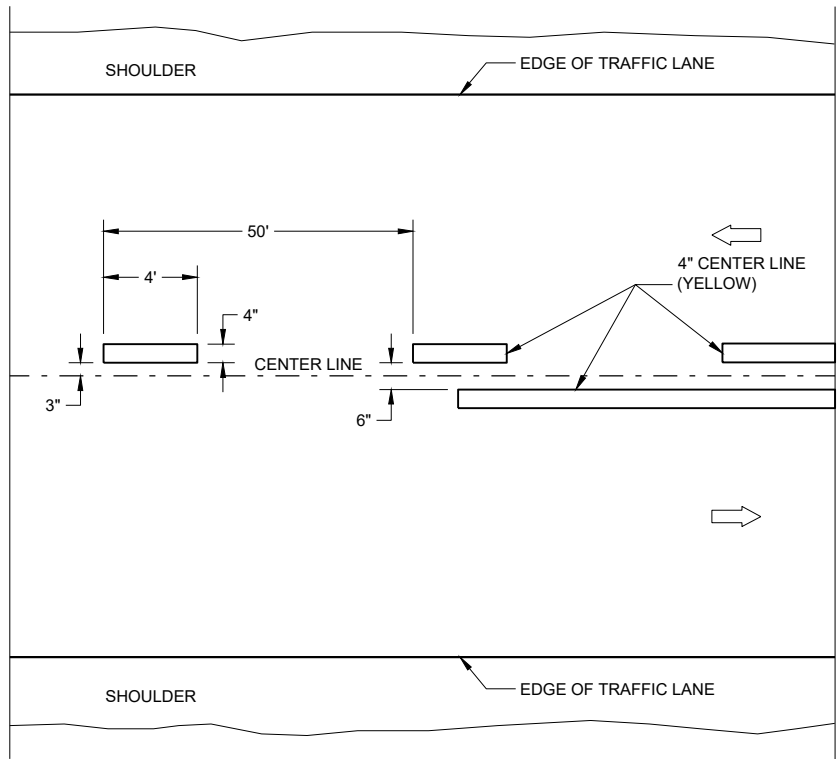


TWO WAY TRAFFIC

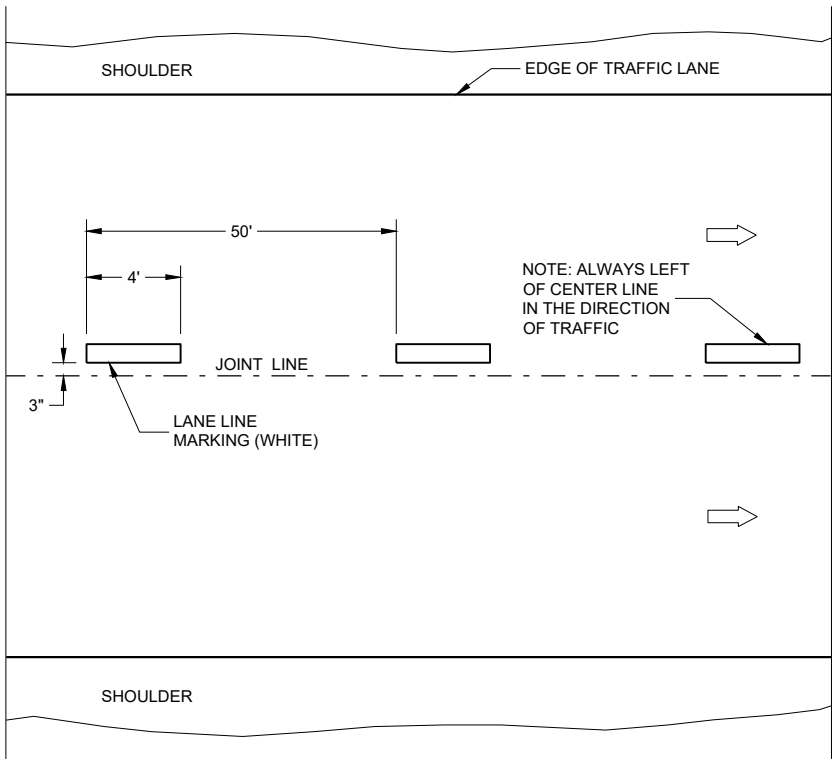


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

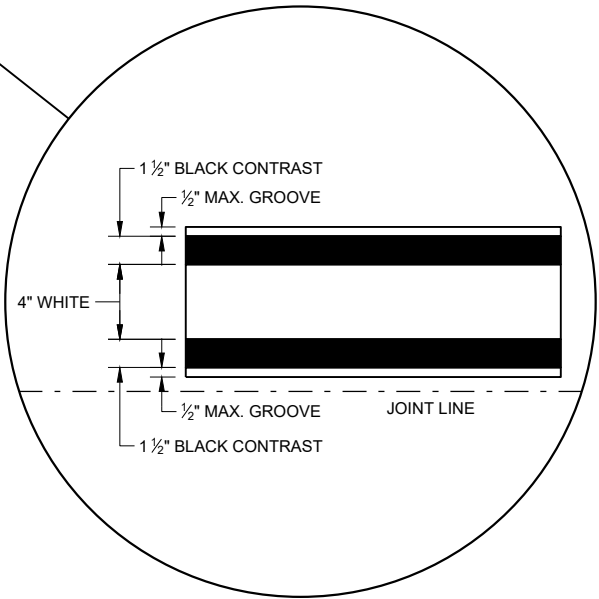
GENERAL NOTES

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

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

LEGEND

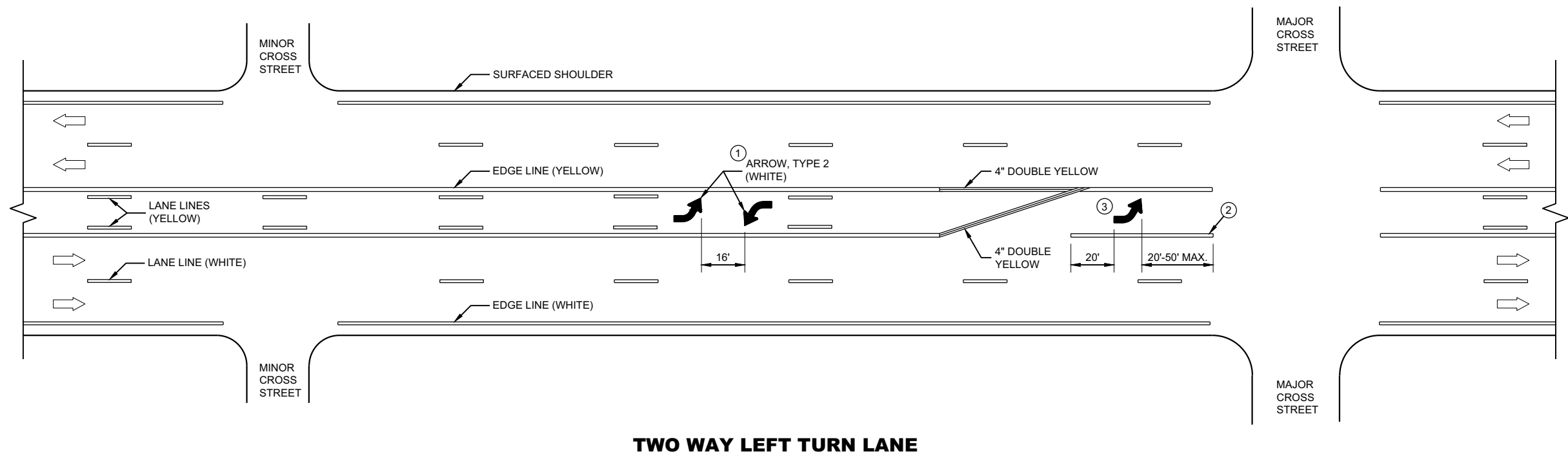
- "T" MARKING
- SIGN ON PERMANENT SUPPORT
- DIRECTION OF TRAFFIC



LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



GENERAL NOTES

- ① A SET OF ARROWS IS REQUIRED EVERY 400 FEET OR NEAR INTERSECTIONS OR DRIVEWAYS WITH TURNING TRAFFIC.
- ② 8" WHITE
- ③ TURN BAY LENGTH OF LESS THAN 48' DOES NOT REQUIRE PAVEMENT ARROWS OR TEXT.

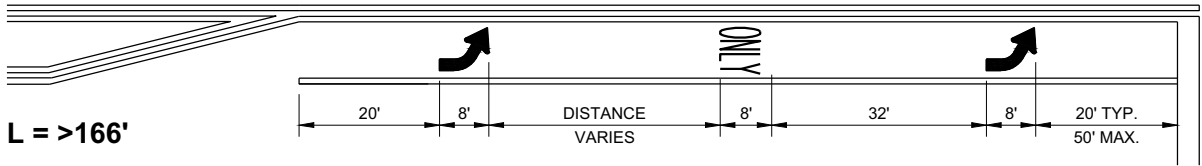
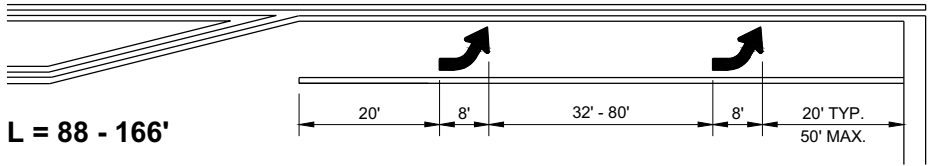
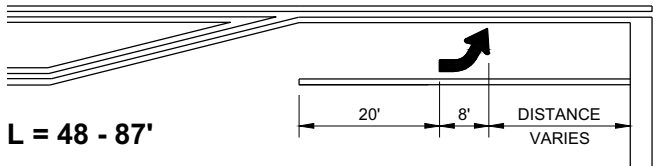
➡ DIRECTION OF TRAFFIC

**PAVEMENT MARKING
(TURN LANES)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

TURN LANE OPTIONS

LENGTH OF TURN BAY (L) OF 0 - 47' DOES NOT REQUIRE PAVEMENT MARKING ARROWS OR WORDS



*(SEE TURN LANE OPTIONS FOR PLACEMENT OF PAVEMENT MARKING ARROWS AND WORDS)

GENERAL NOTES

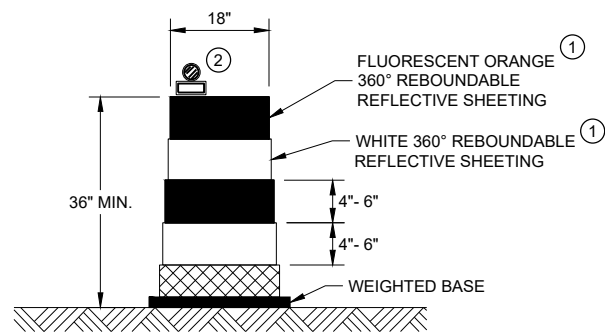
- ① 8" WHITE
- ② QUANTITY AND LOCATION OF TYPE 3 ARROWS ARE THE SAME AS THE TYPE II ARROWS IN THE ADJACENT TURN LANE. FOR TURN LANES WITH A PHYSICAL SEPARATION IN THE SAME DIRECTION OF TRAVEL, THE ARROWS AND "ONLY" MARKING MAY BE ELIMINATED.

➡ DIRECTION OF TRAFFIC

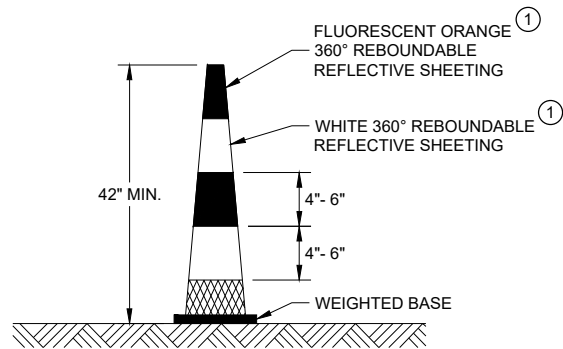
L = LENGTH OF TURN BAY

PAVEMENT MARKING (TURN LANES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

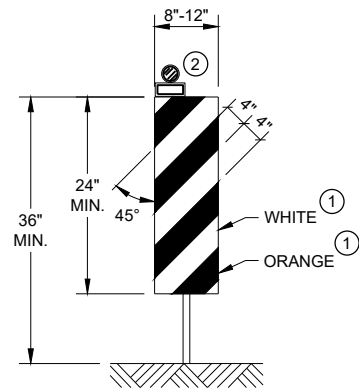


DRUM



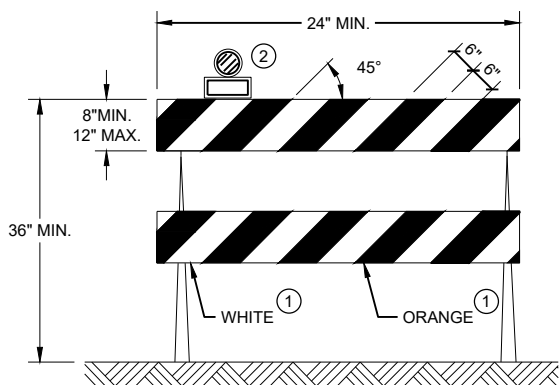
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



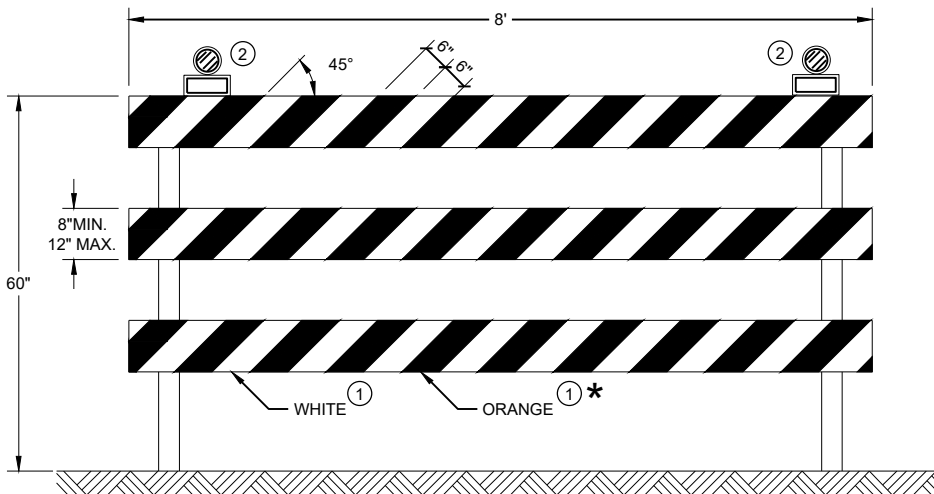
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

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.






CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2021 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

LEGEND

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

GENERAL NOTES

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

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

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

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

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

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

FLAGGING

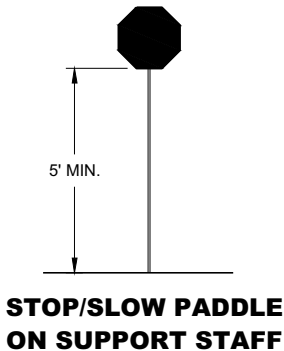
FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

- ① FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

TEMPORARY PORTABLE RUMBLE STRIPS

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

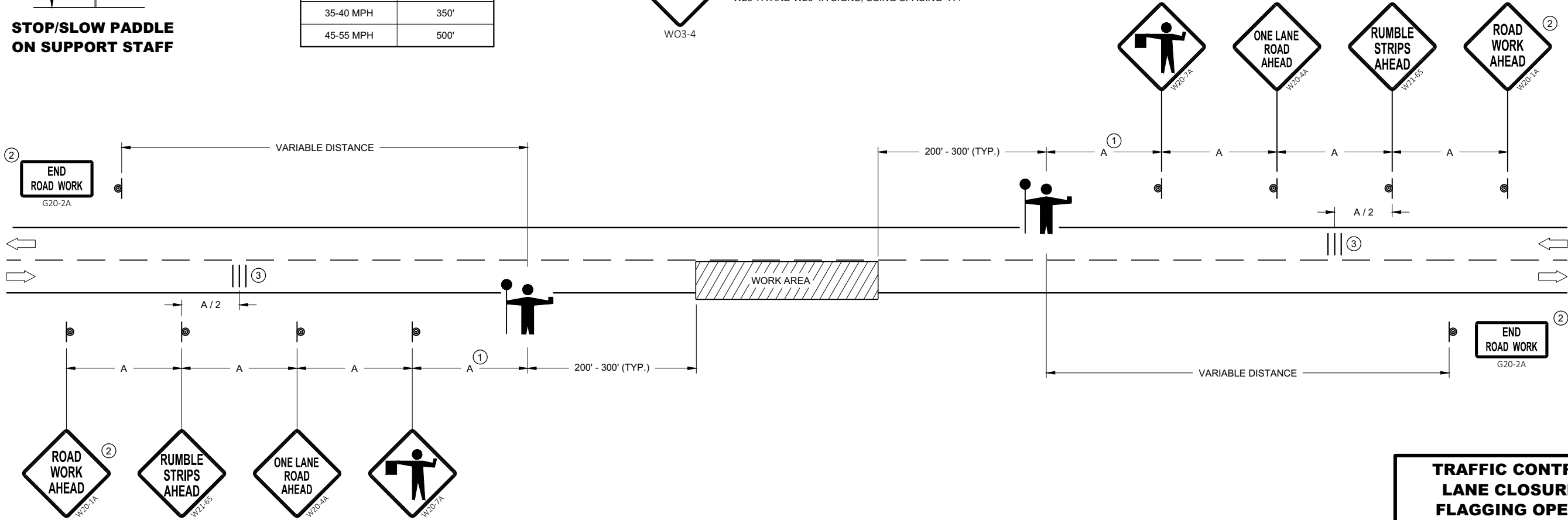


SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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

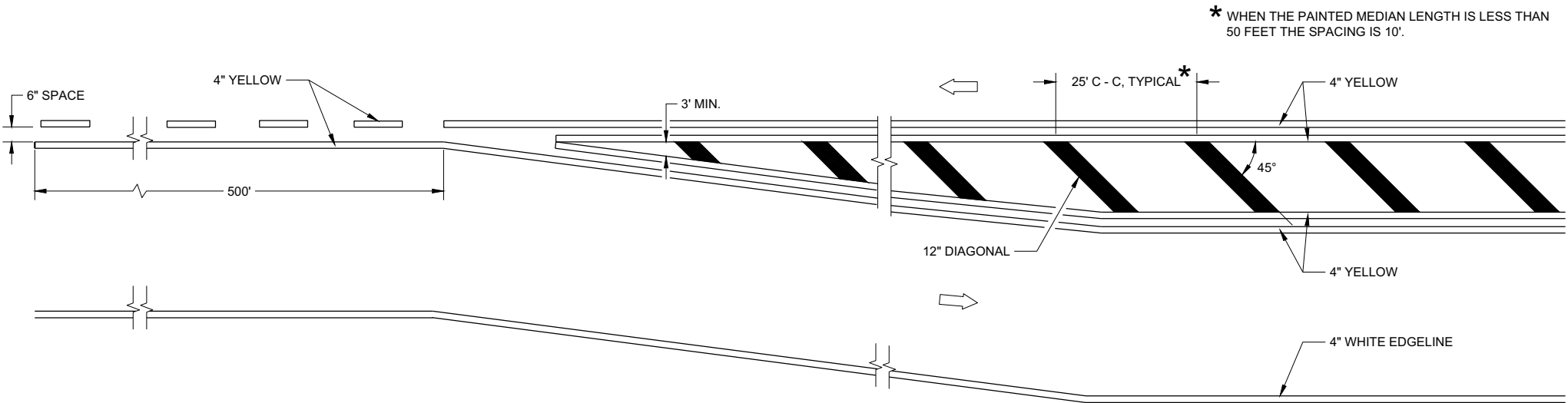


USE OF W03-4 SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING "A".

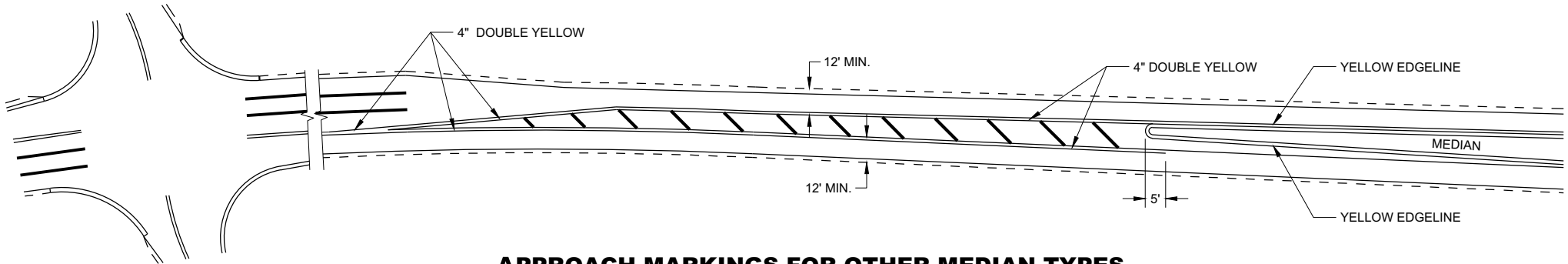


TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

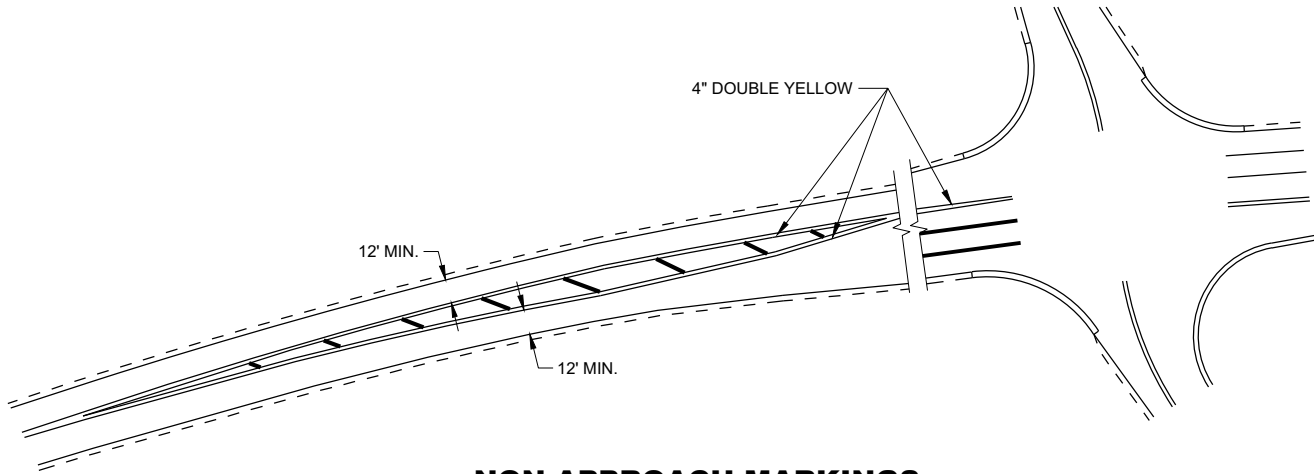
TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2019 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	



MEDIAN ISLAND DETAIL



APPROACH MARKINGS FOR OTHER MEDIAN TYPES



NON-APPROACH MARKINGS

GENERAL NOTES

DIAGONALS ARE OPTIONAL WHEN PAINED ISLAND IS LESS THAN 6 FEET AT WIDEST POINT.

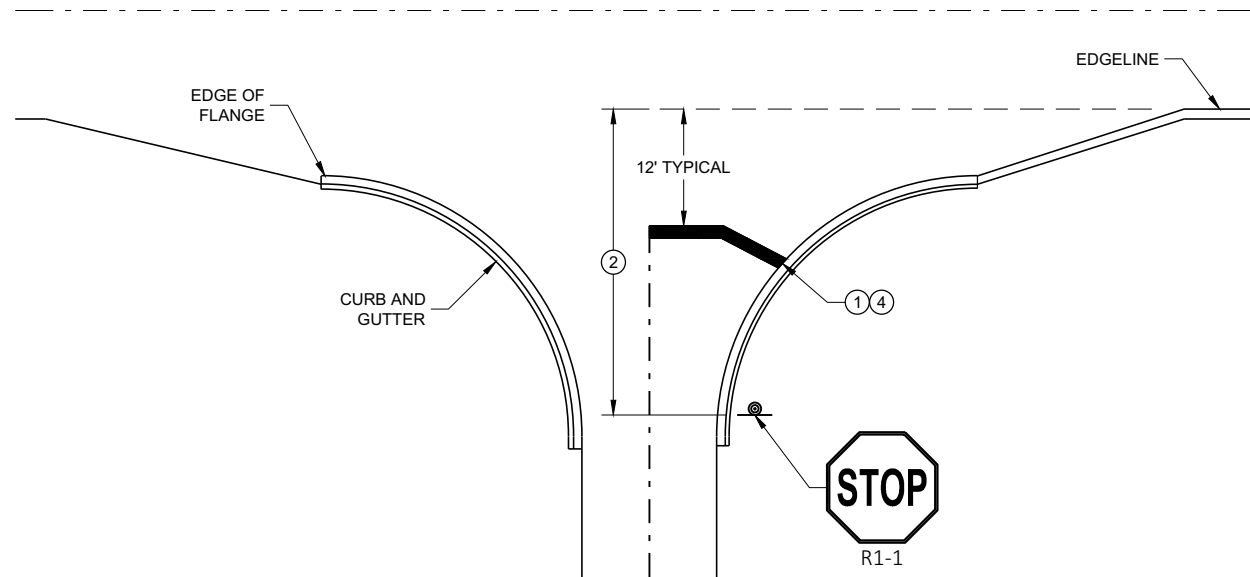
DIRECTION OF TRAVEL

MEDIAN ISLAND
PAVEMENT MARKINGS

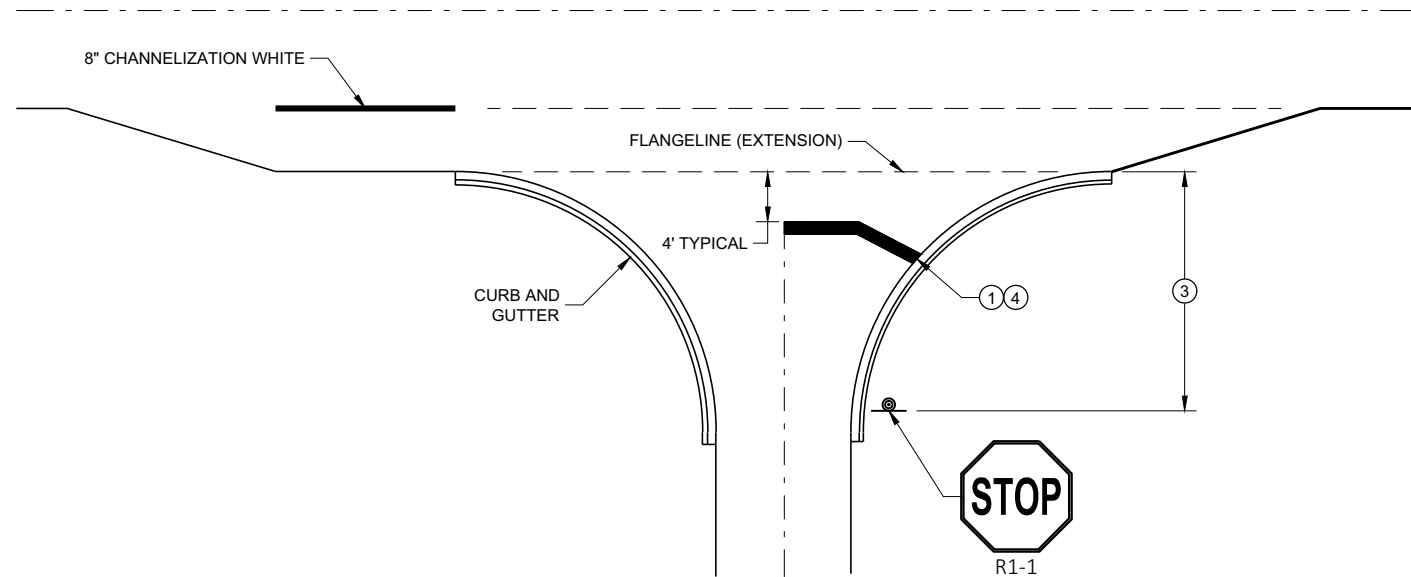
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2021
DATE
/S/ Matthew R. Rauch
STATE SIGNING AND MARKING
ENGINEER

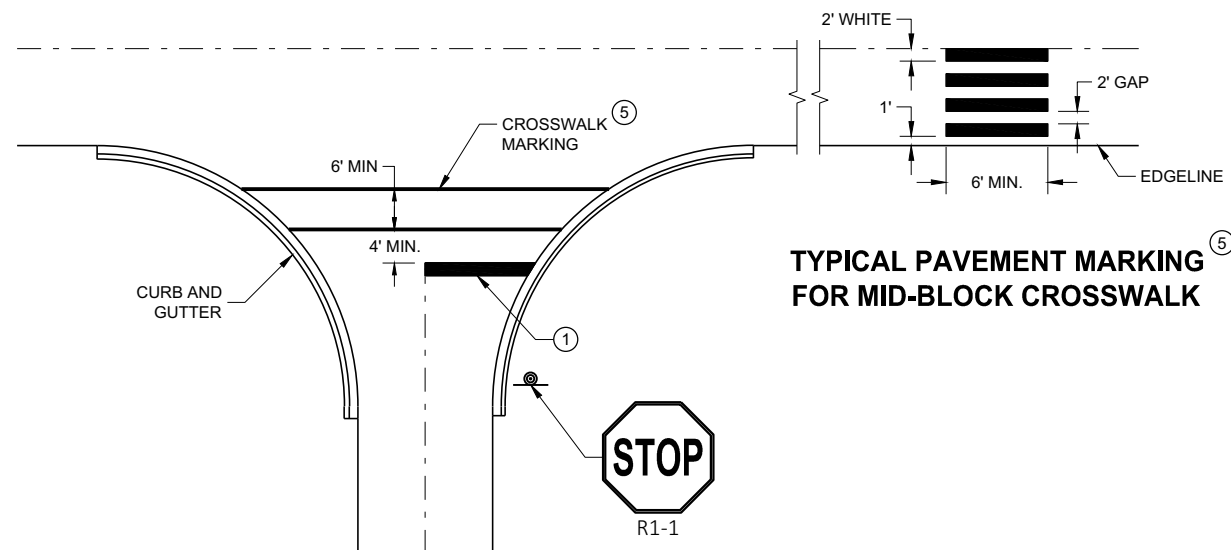
FHWA



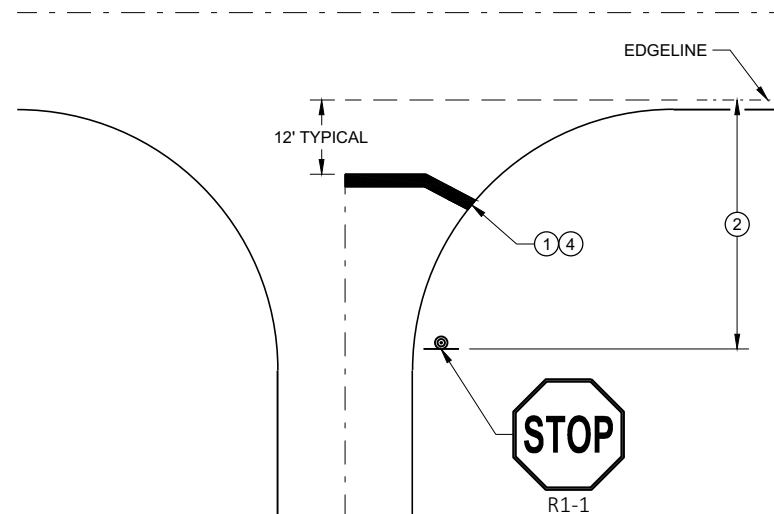
TYPICAL STOP LINE PAVEMENT MARKING
WITH CURB AND GUTTER



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

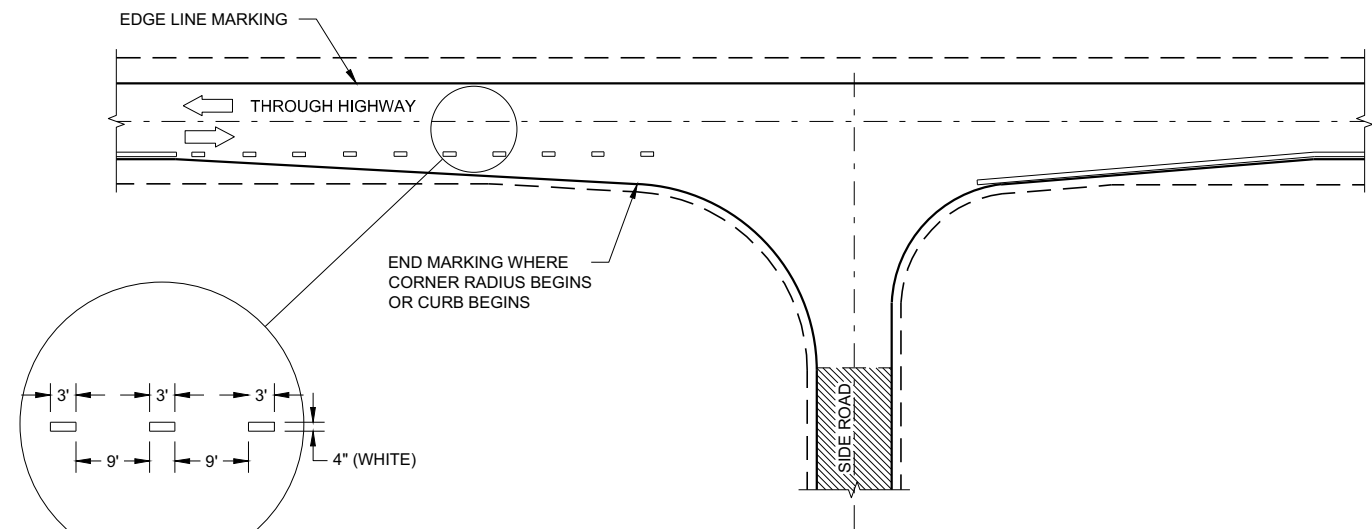
STOP SIGN SHALL BE PLACED A MINIMUM OF 6 FEET TO A MAXIMUM OF 50 FEET FROM THE EDGE LINE LOCATION.

- ① 18-INCH STOP LINES MAY BE DELETED OR ADDED BY THE REGION MARKING ENGINEER BASED ON VISIBILITY AND SIGHT LINES.
- ② NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 40 FEET FROM THE EDGE LINE.
- ③ NO STOP LINE IS REQUIRED IF STOP SIGN IS LESS THAN OR EQUAL TO 30 FEET FROM THE FLANGELINE EXTENSION.
- ④ MOVE CLOSER TO THE EDGE OF TRAVEL LINE AS NEEDED FOR VISIBILITY AND SIGHT LINES (NO CLOSER THAN 4 FEET).
- ⑤ LADDER BAR CROSSWALKS SHOULD ONLY BE USED FOR MID BLOCK CROSSINGS. USE 2 - 6" TRANSVERSE LINES INSTEAD.

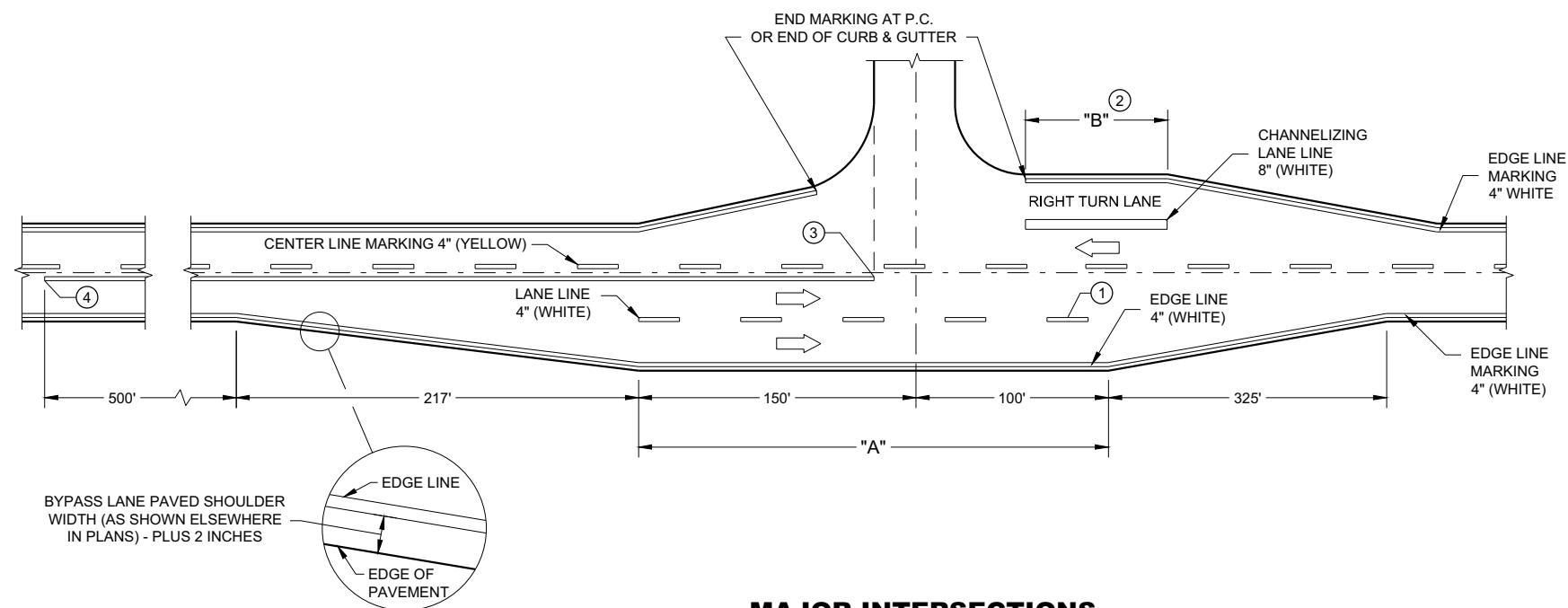
STOP LINE AND CROSSWALK PAVEMENT MARKING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019 /S/ Matthew Rauch
DATE STATE SIGNING AND MARKING
ENGINEER
FHWA



MINOR INTERSECTION



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

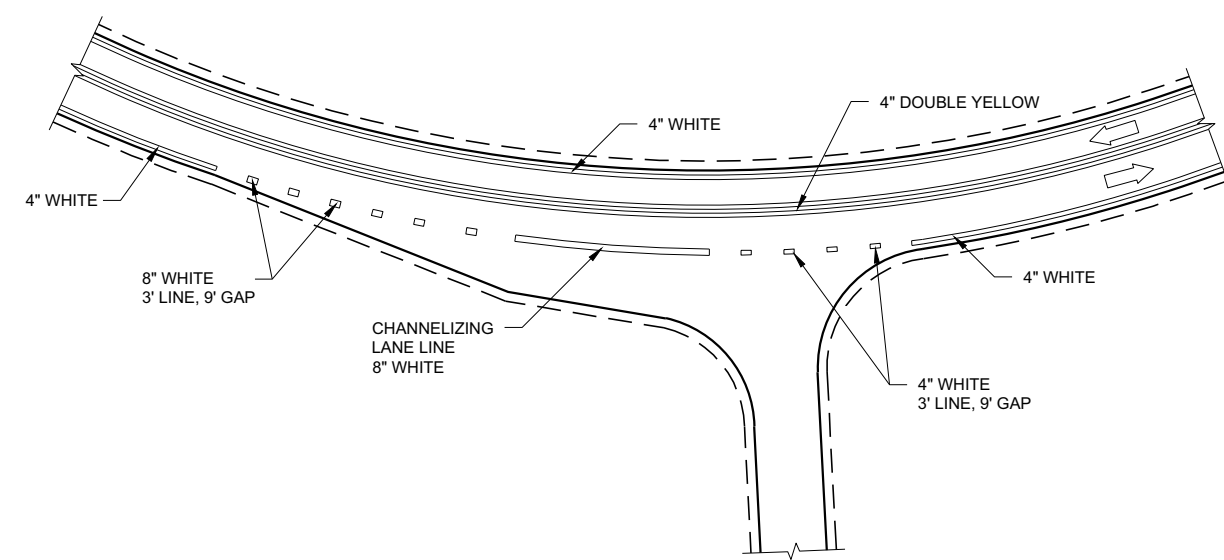
GENERAL NOTES

OMIT EDGE LINES THROUGH INTERSECTIONS. CONTINUE EDGE LINES THROUGH DRIVEWAYS.

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

LEGEND

➡ DIRECTION OF TRAVEL



INTERSECTION ON OUTSIDE OF CURVE

PAVEMENT MARKING
(INTERSECTIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

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

THE SPACING BETWEEN SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS.

THIS LANE CLOSURE IS TYPICAL FOR CLOSING RIGHT LANE - REVERSE FOR CLOSING LEFT LANE.

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

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

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

FOR A LANE CLOSURE THAT IS IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, THE ADVANCED WARNING SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS.

REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE DEVICE SPACING MAY BE DECREASED TO 50 FEET.

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

ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS

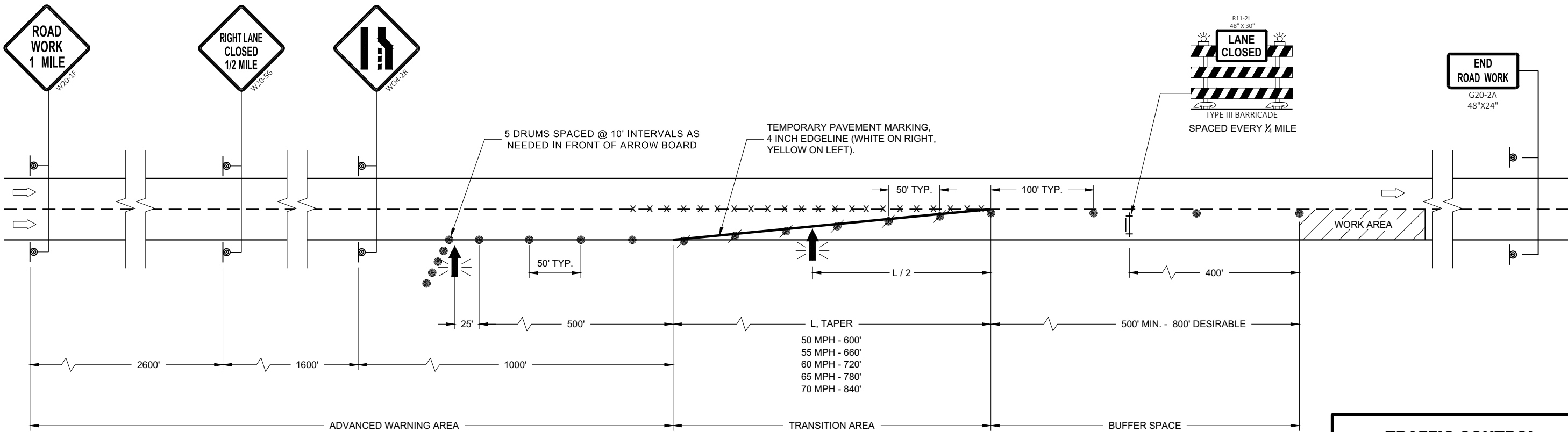
NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP OR INTERSECTION. THE LANE CLOSURE MUST TAKE PLACE FAR ENOUGH IN ADVANCE OF AN EXIT OR ENTRANCE RAMP TO STILL ALLOW FOR ADEQUATE BUFFER SPACE. THE MINIMUM LENGTH OF THE BUFFER SPACE BEFORE AN EXIT RAMP SHOULD BE ONE HALF THE LENGTH OF THE TRANSITION AREA. THE ENTRANCE RAMP SHOULD BE FOLLOWED BY THE ORIGINAL BUFFER SPACE LENGTH OF 800 FEET DESIRABLE PRIOR TO ANOTHER TRAFFIC CONTROL CHANGE SUCH AS A CROSSOVER MANEUVER.

CONSIDER ROADWAY GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS.

LEGEND

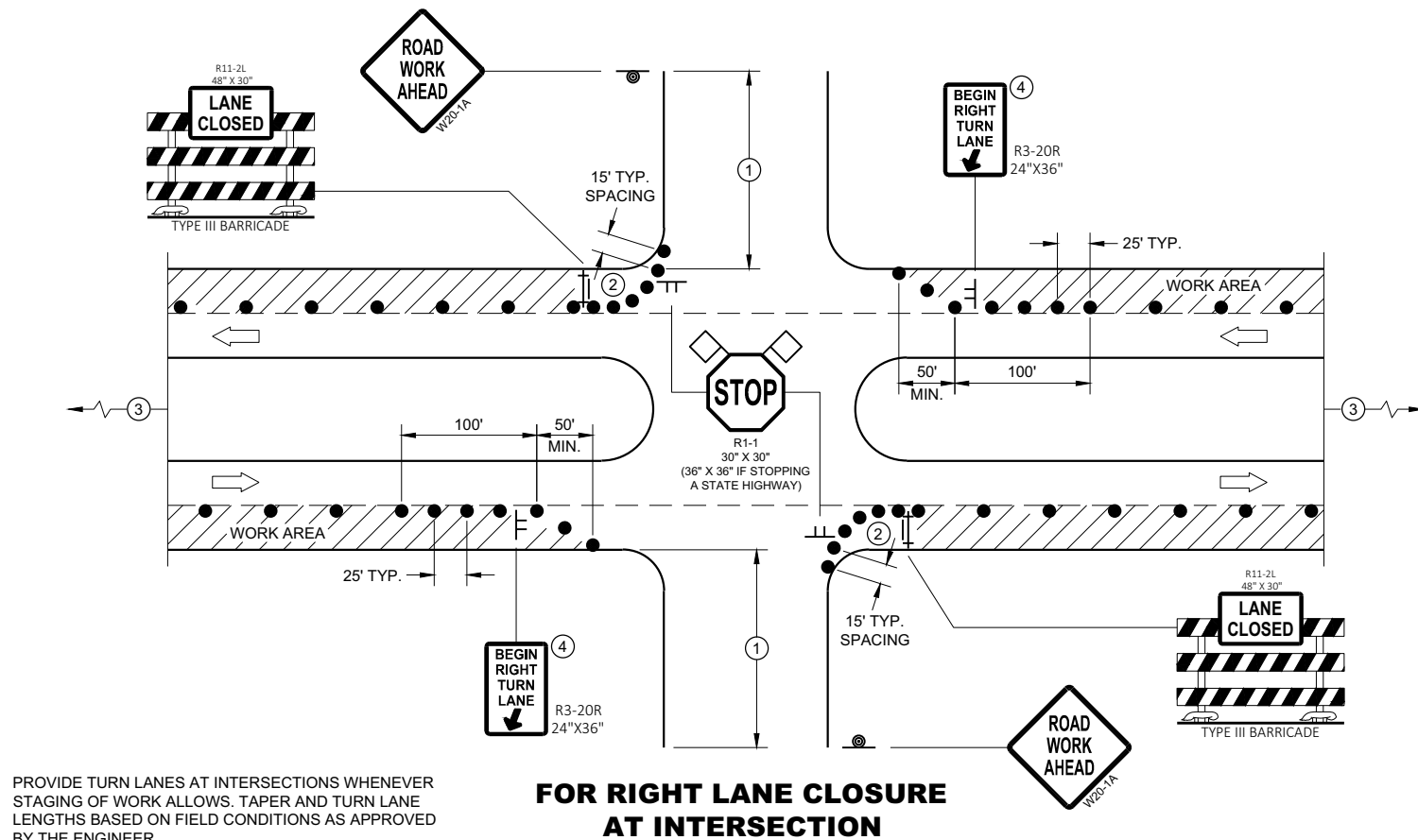
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- REMOVING PAVEMENT MARKINGS
- DIRECTION OF TRAFFIC
- WORK AREA
- FLASHING ARROW BOARD

6



6

TRAFFIC CONTROL LANE CLOSURE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED August 2020 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

**GENERAL NOTES**

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" MAY BE USED IF APPROVED BY THE DISTRICT TRAFFIC UNIT.

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

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER. NO WARNING LIGHTS SHALL BE WORKING ON COVERED OR "DOWNED" SIGNS.

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

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

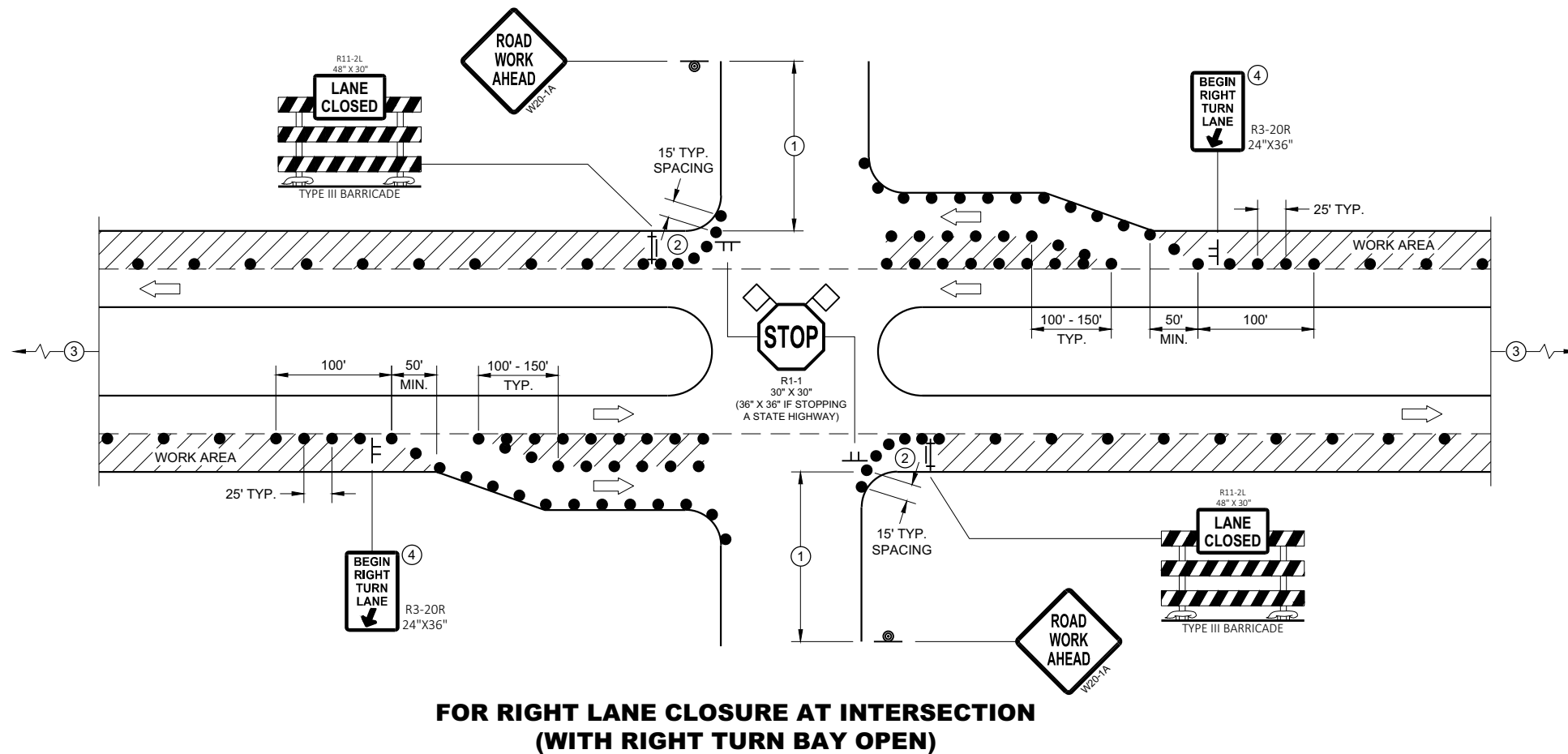
SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

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

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

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

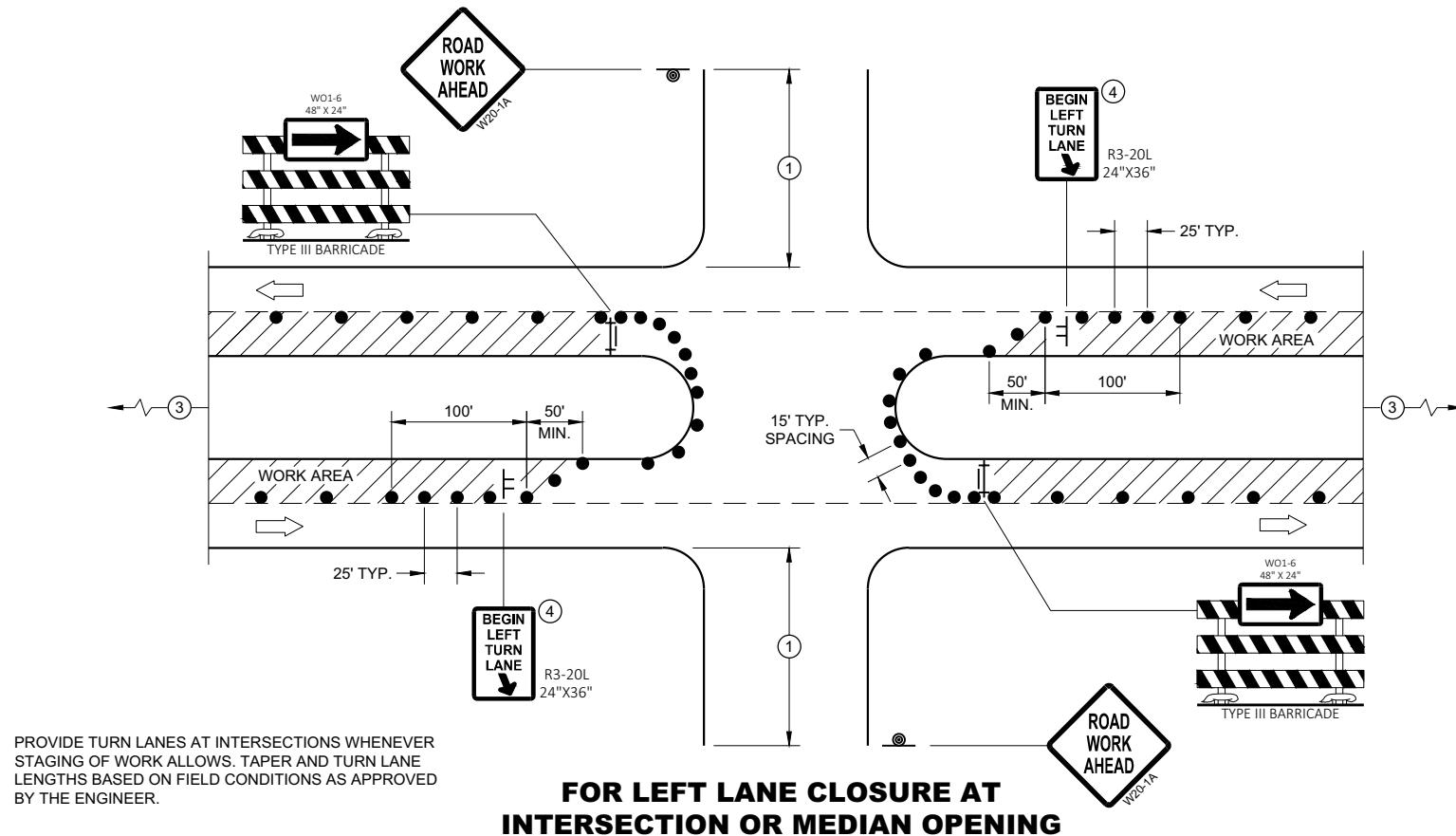
- ① 500' TYPICAL OR AT LAST INTERSECTION, WHICHEVER IS CLOSER.
350' IF 35 - 40 MPH.
200' IF 25 - 30 MPH.
- ② ALSO USE BARRICADE AND 15 FOOT TYPICAL DRUM SPACING AT COMMERCIAL DRIVEWAYS
- ③ SEE SEPARATE LANE CLOSURE DETAIL FOR ADDITIONAL TRAFFIC CONTROL.
- ④ MINIMUM MOUNTING HEIGHT OF 5 FEET FROM EDGE OF PAVEMENT (AT EDGE LINE LOCATION) TO BOTTOM OF SIGN.

**LEGEND**

- SIGN ON TEMPORARY SUPPORT
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- ◇ ◇ FLAGS, 16" X 16" MIN., ORANGE
- ▨ WORK AREA

**TRAFFIC CONTROL,
INTERSECTION WITHIN SINGLE
RIGHT LANE CLOSURE**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

**GENERAL NOTES**

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS IN URBAN AREAS, 36" X 36" MAY BE USED IF APPROVED BY THE DISTRICT TRAFFIC UNIT.

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

ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER. NO WARNING LIGHTS SHALL BE WORKING ON COVERED OR "DOWNED" SIGNS.

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

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

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

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

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

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

- ① 500' TYPICAL OR AT LAST INTERSECTION, WHICHEVER IS CLOSER.
350' IF 35 - 40 MPH.
200' IF 25 - 30 MPH.
- ② ALSO USE BARRICADE AND 15 FOOT TYPICAL DRUM SPACING AT COMMERCIAL DRIVEWAYS
- ③ SEE SEPARATE LANE CLOSURE DETAIL FOR ADDITIONAL TRAFFIC CONTROL.
- ④ MINIMUM MOUNTING HEIGHT OF 5 FEET FROM EDGE OF PAVEMENT (AT EDGE LINE LOCATION) TO BOTTOM OF SIGN.

LEGEND

- SIGN ON TEMPORARY SUPPORT
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE III BARRICADE WITH ATTACHED SIGN
- DIRECTION OF TRAFFIC
- FLAGS, 16" X 16" MIN., ORANGE
- WORK AREA

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

**TRAFFIC CONTROL,
INTERSECTION WITHIN SINGLE
LEFT LANE CLOSURE**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

LEGEND

- TRAFFIC CONTROL DRUM
- ⦿ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ⚡➡ FLASHING ARROW BOARD
- ▨ WORK AREA

GENERAL NOTES

THIS DETAIL IS TYPICAL FOR CLOSING THE RIGHT SHOULDER. FOR CLOSING THE LEFT SHOULDER, REVERSE THE TRAFFIC CONTROL.

THIS DETAIL MAY BE USED FOR DIVIDED ROADWAYS WITH ANY NUMBER OF TRAVEL LANES.

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.

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

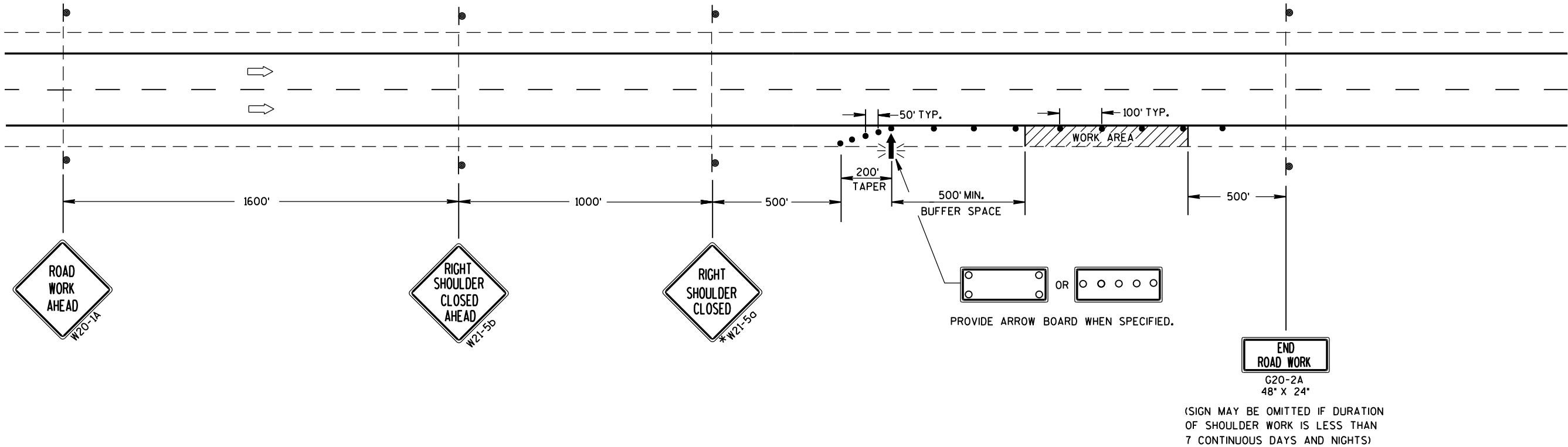
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

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

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

*FOR SHORT DURATION SHOULDER WORK OF LESS THAN ONE HOUR, THE W21-5a SIGN MAY BE OMITTED.



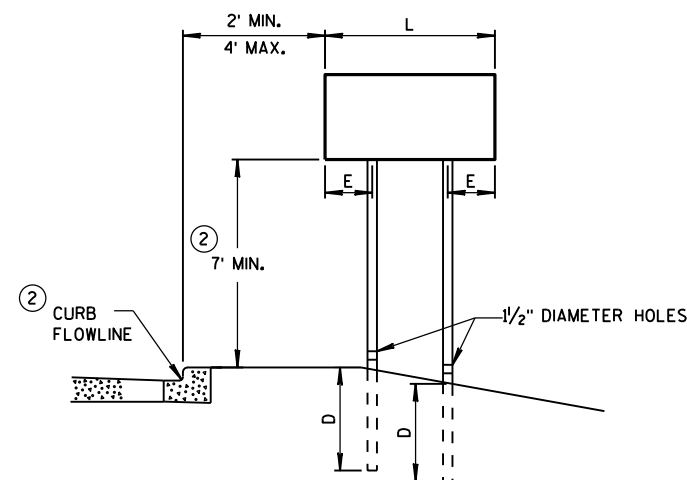
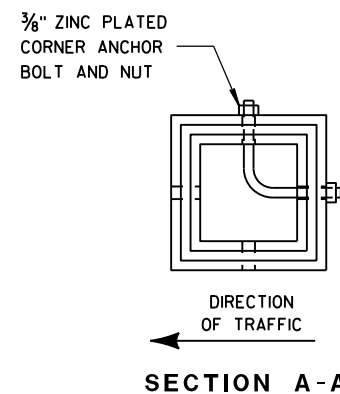
TRAFFIC CONTROL SHOULDER CLOSURE ON DIVIDED ROADWAY, SPEEDS GREATER THAN 40 MPH	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2016 DATE	/S/ Peter Amakobe Atepe STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA	



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

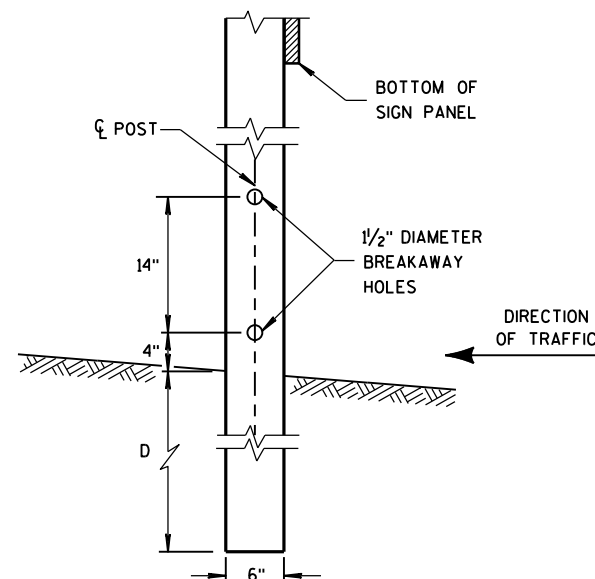


URBAN AREA

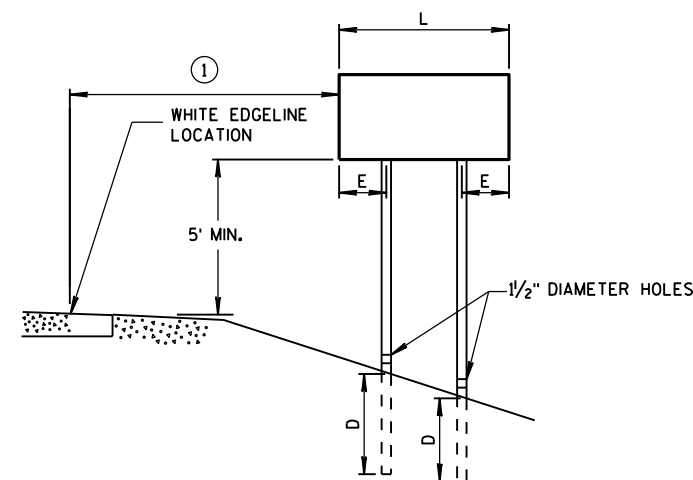
POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST
EMBEDMENT DEPTH

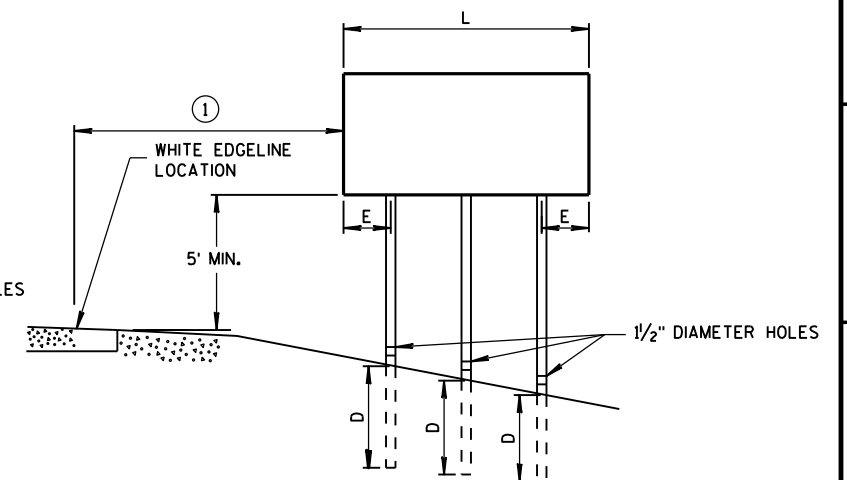
AREA OF SIGN INSTALLATION (SQ. FT.)	D (MIN)
20 OR LESS	4'
GREATER THAN 20	5'



4" x 6" WOOD POST MODIFICATION



RURAL AREA



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.

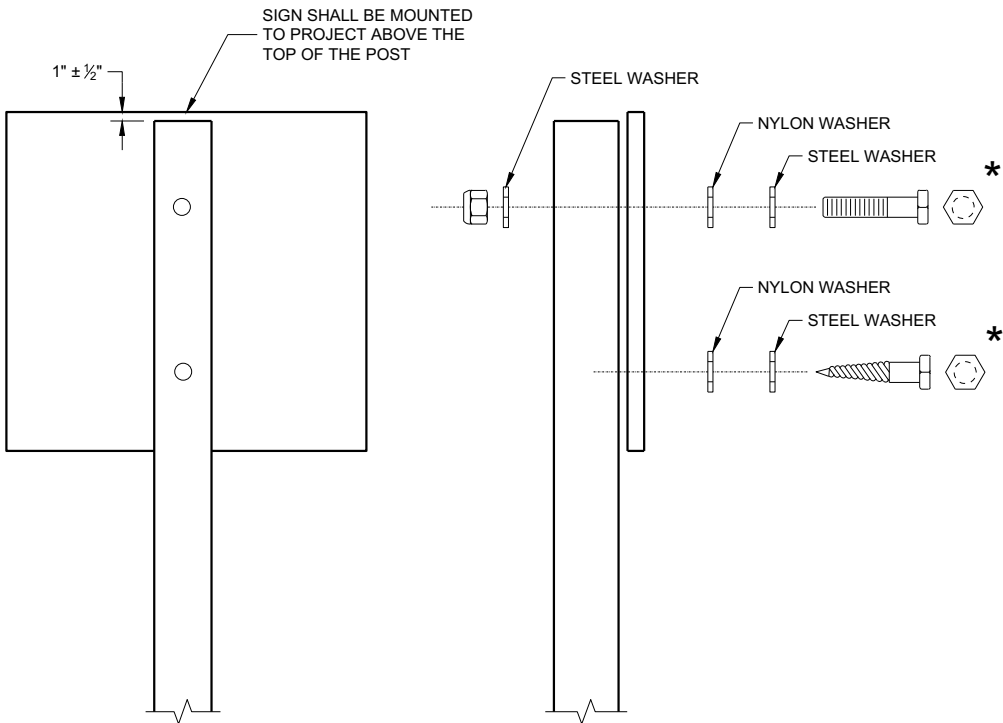
4" X 6" WOOD POST

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

SEE NOTE (3)

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



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

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

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

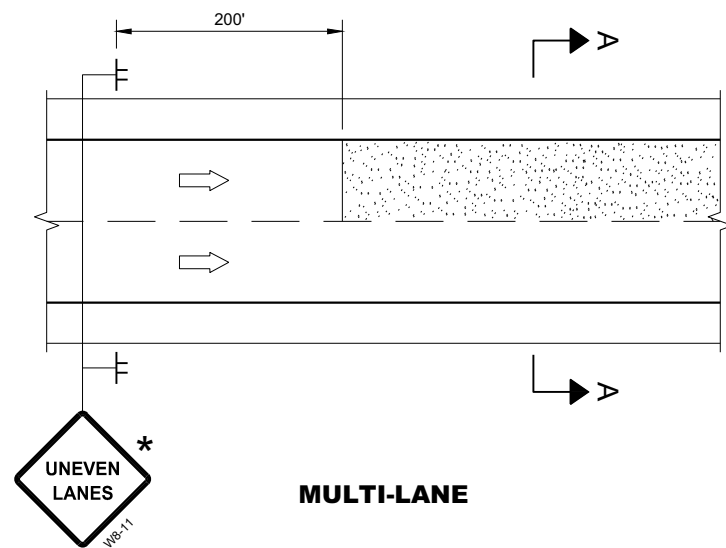
WOOD POST (4" x 6")
LAG SCREWS - ¾" x 3"
MACHINE BOLTS - ⅝" x 6 ½" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")
MACHINE BOLTS - ¾" x 3 ¼" LENGTH W/NUTS
RIVETS - ⅝" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM
BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH,
GRIP RANGE 0.042 - 0.375 INCH

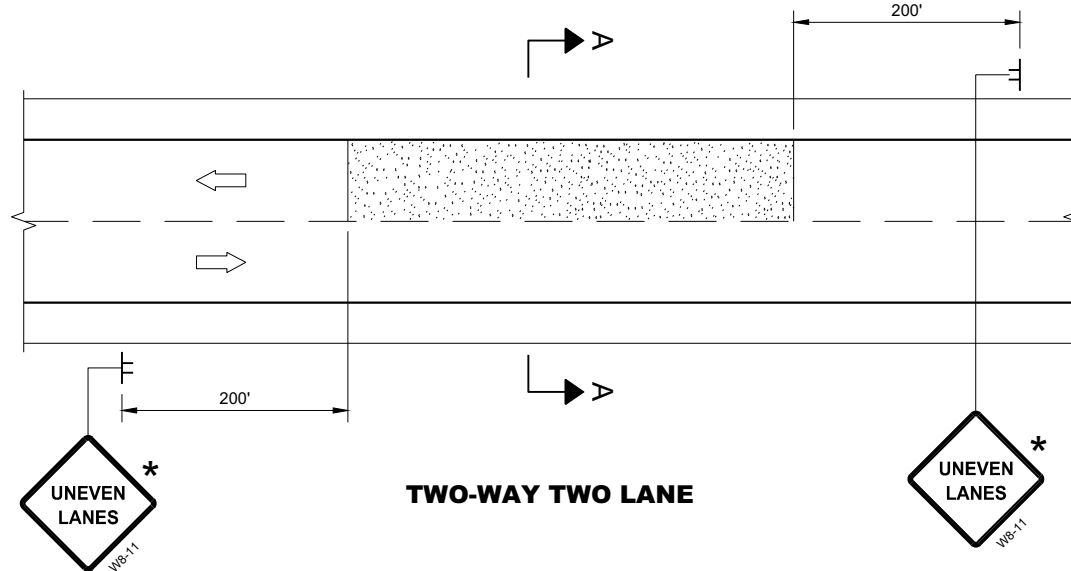
WASHERS (ALL POSTS) -
1 ¼" O.D. x ⅜" I.D. x ⅛" STEEL
1 ¼" O.D. x ⅜" I.D. x 0.080 NYLON

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

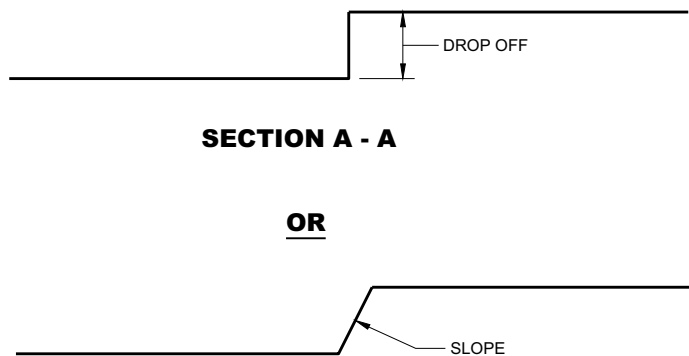
ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	



MULTI-LANE



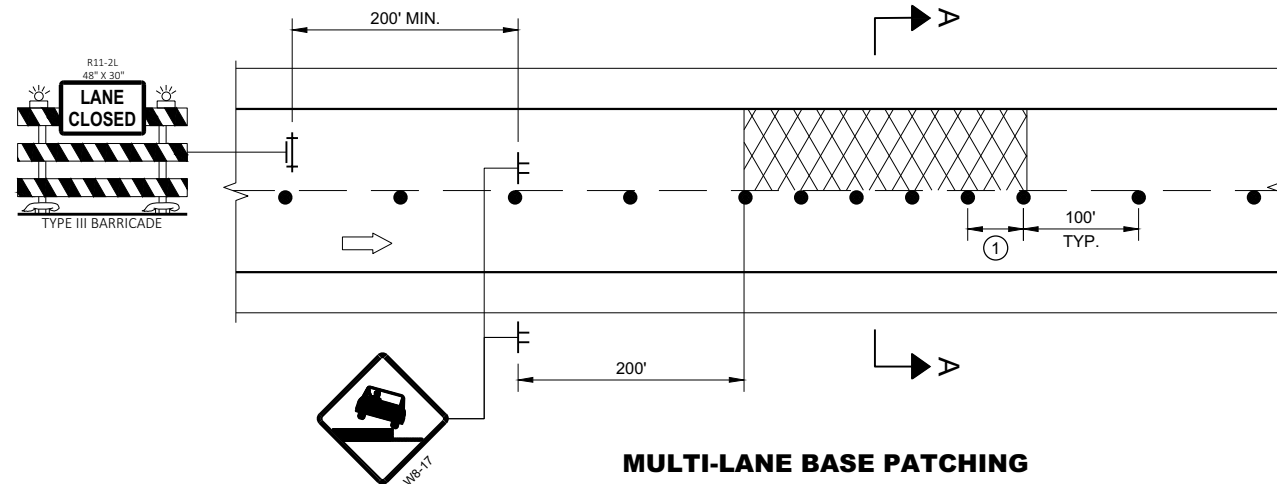
TWO-WAY TWO LANE



SECTION A - A

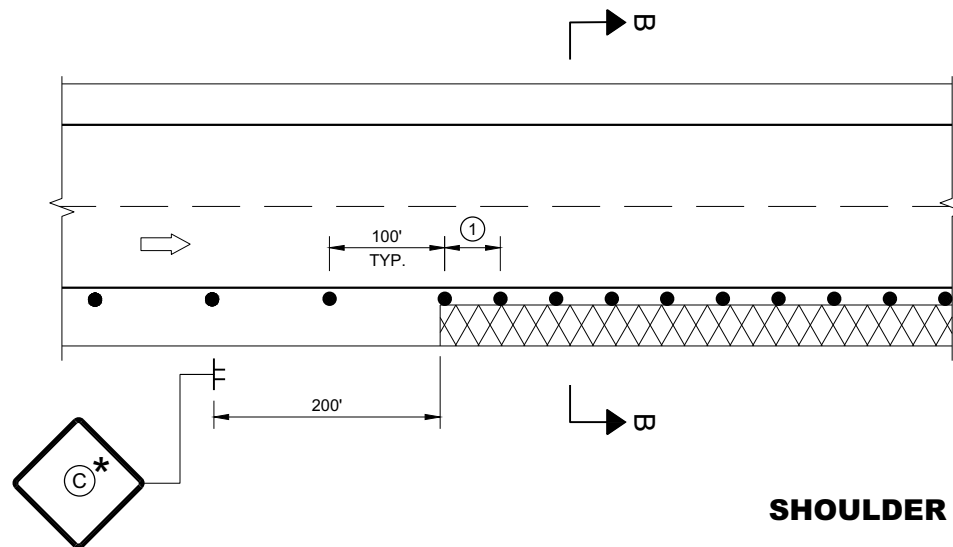
OR

SECTION A - A

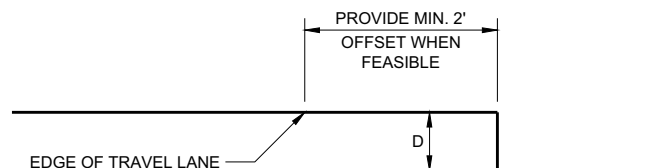


MULTI-LANE BASE PATCHING



ADJACENT LANE DROP-OFFS



SHOULDER DROP-OFFS



SECTION B - B

D	SIGN C
< 2" WITH A SLOPE STEEPER THAN 3:1	 WO8-9
2" < 6" WITH A SLOPE STEEPER THAN 3:1	 WB-9A PROVIDE A 3:1 OR FLATTER SLOPE OF MATERIAL ADJACENT TO THE PAVEMENT

**TRAFFIC CONTROL,
DROP-OFF SIGNING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA

GENERAL NOTES

FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.

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



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

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

* IF THE DROP-OFF IS CONTINUOUS ALONG THE PROJECT, PLACE ADDITIONAL SIGNS EVERY 1 MILE AND AFTER EVERY ENTRANCE RAMP.

① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

LEGEND

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

GENERAL NOTES

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

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

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

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



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

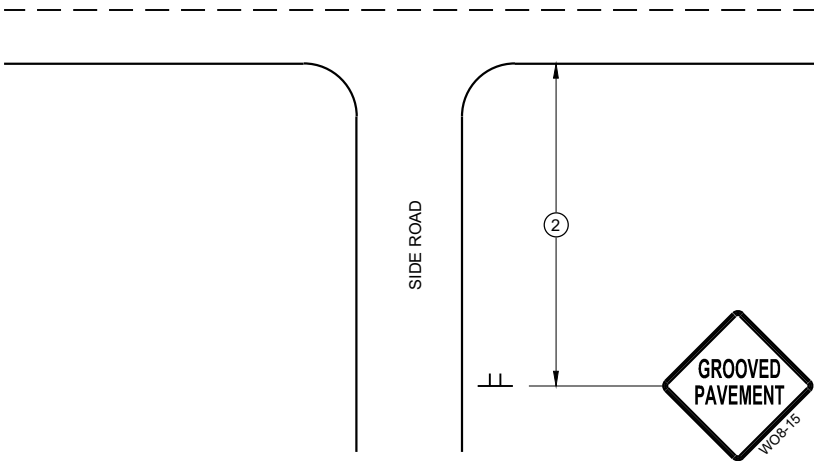
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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

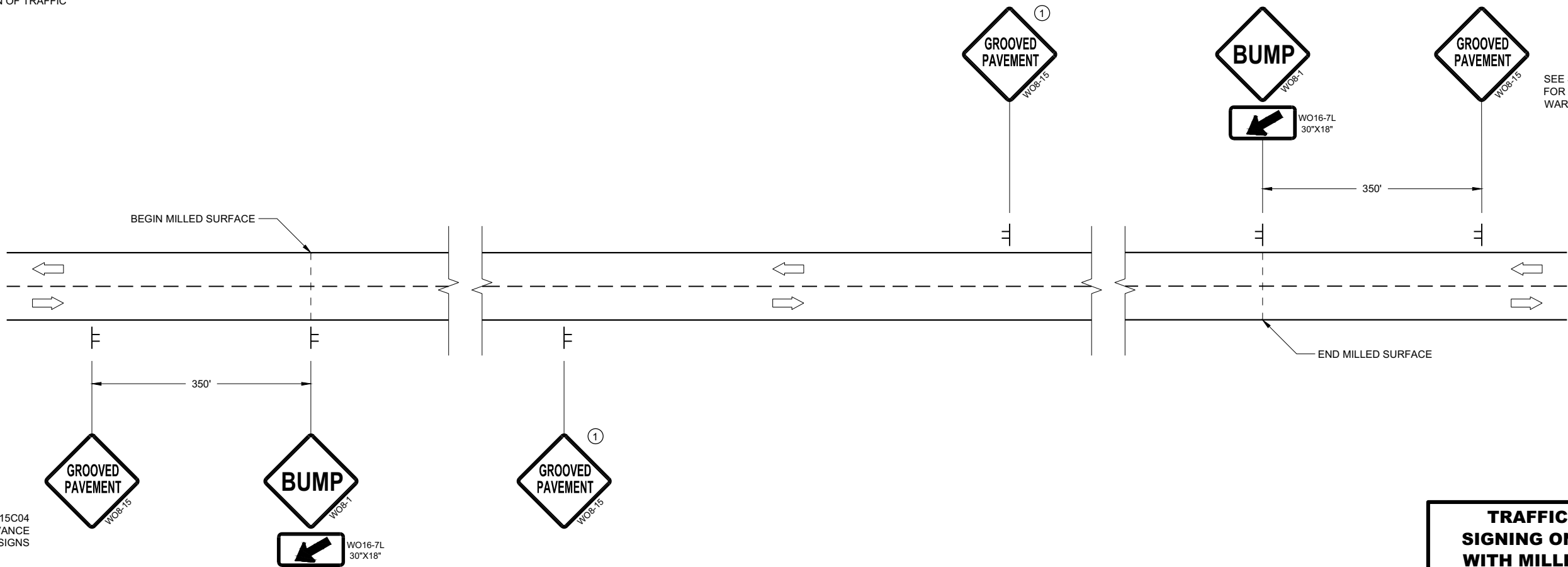
- ① PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH
SIGN DETAIL



DETAIL FOR SIGNING ON MILLED SURFACES

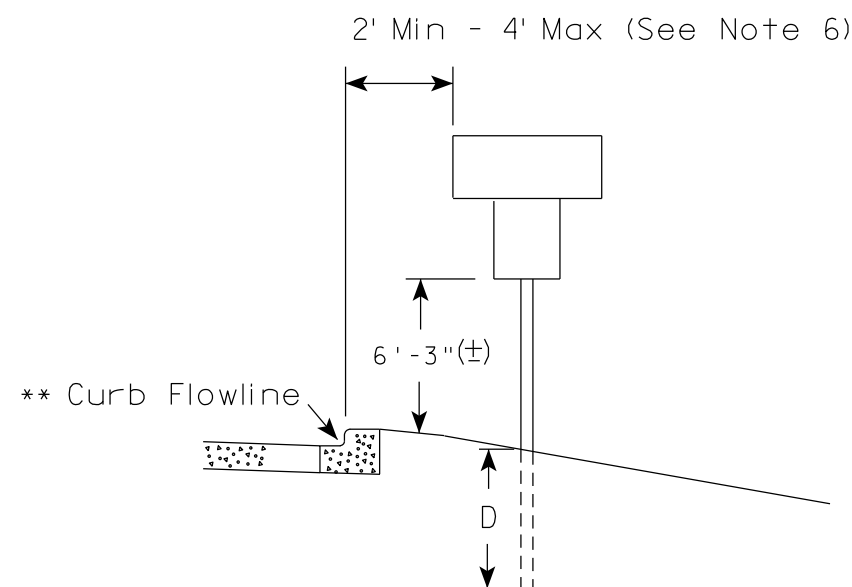
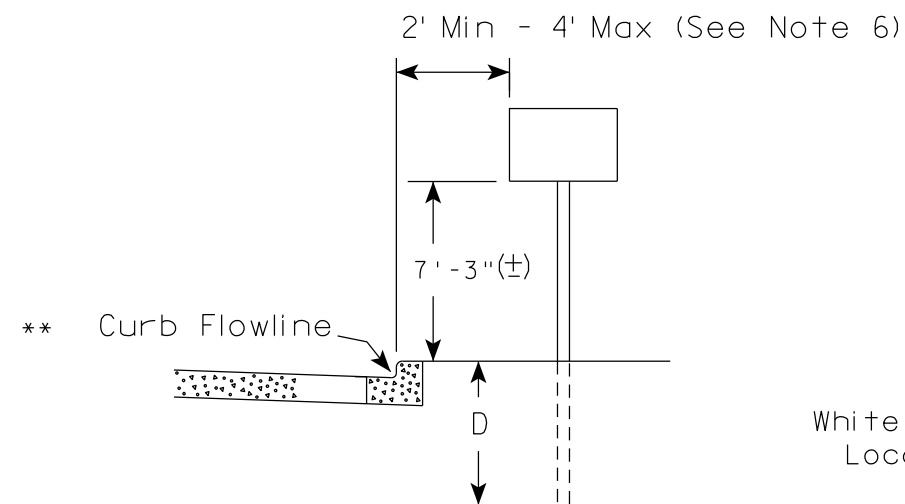
TRAFFIC CONTROL,
SIGNING ON ROADWAYS
WITH MILLED SURFACES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

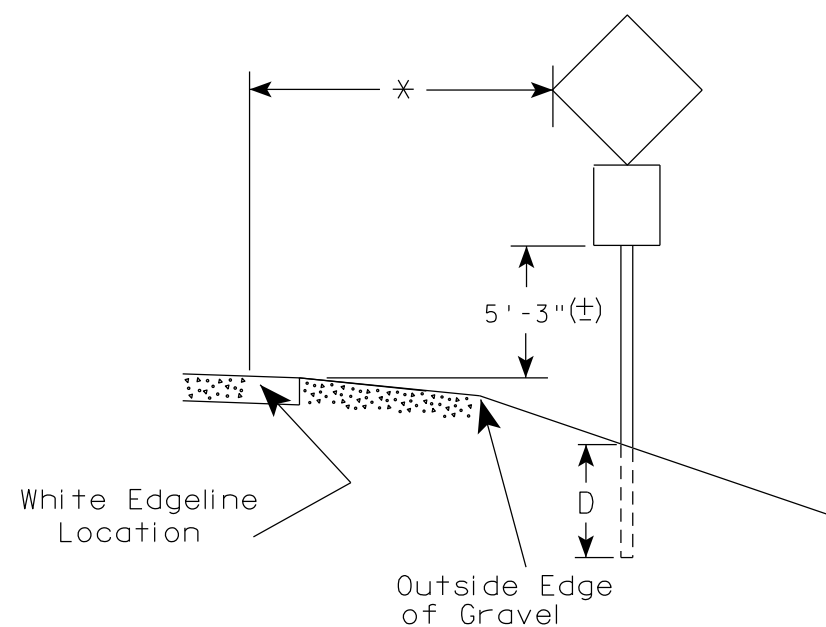
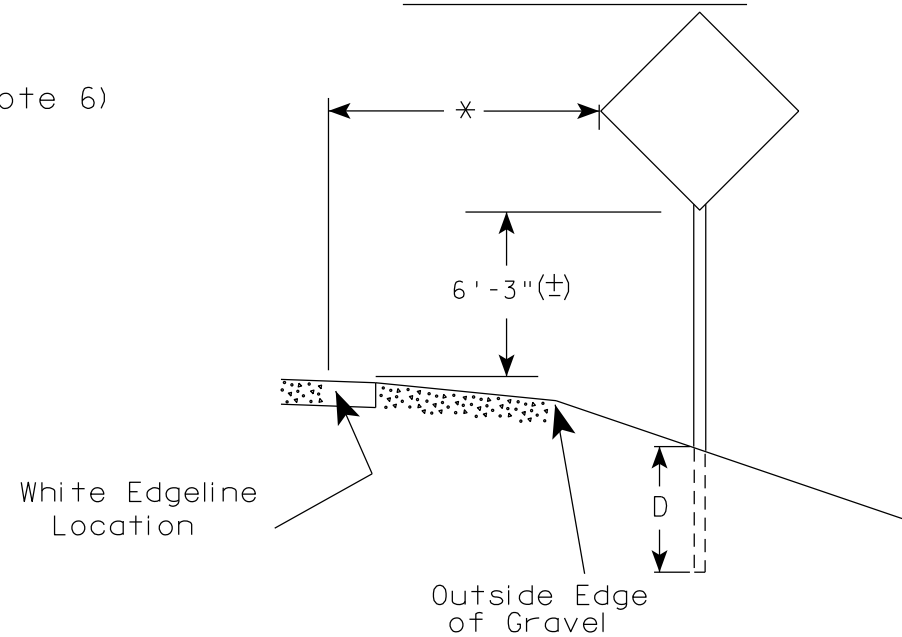
FHWA

URBAN AREA



✱✱ 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.

RURAL AREA (See Note 2)



✱ 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.

POST EMBEDMENT DEPTH

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

GENERAL NOTES

- Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
- If signs are mounted on or behind barrier wall, see A4-10 sign plate.
The Double Arrow sign (W12-1D) 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" (±).
- For expressways and freeways, mounting height is 7'- 3" (±) or 6'-3" (±) depending upon existence of a sub-sign.
- Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±).
- Offset distance shall be consistent with existing signs or consistent throughout length of project.
- The (±) tolerance for mounting height is 3 inches.
- Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the Engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/13/2020 PLATE NO. A4-3.22

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



ELEVATION VIEW

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

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST
BOX-OUTS
A4-3B

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

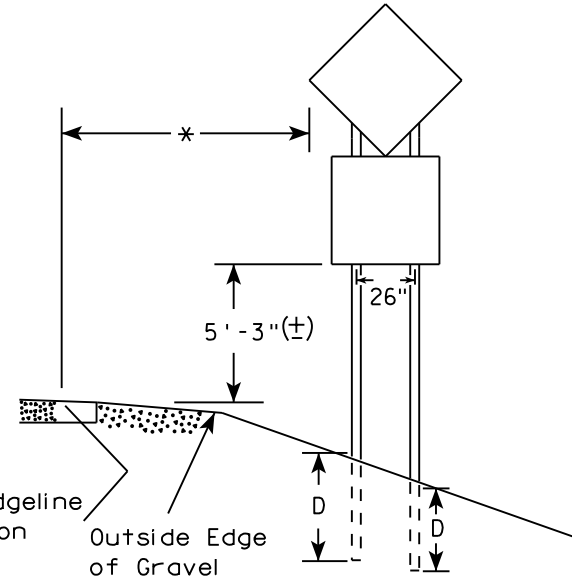
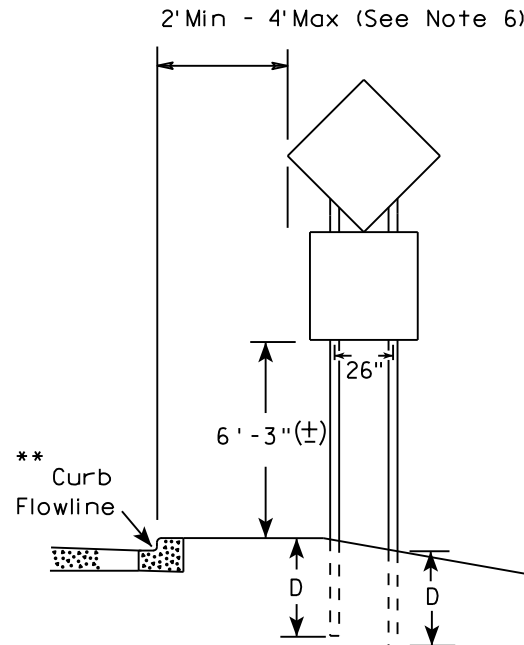
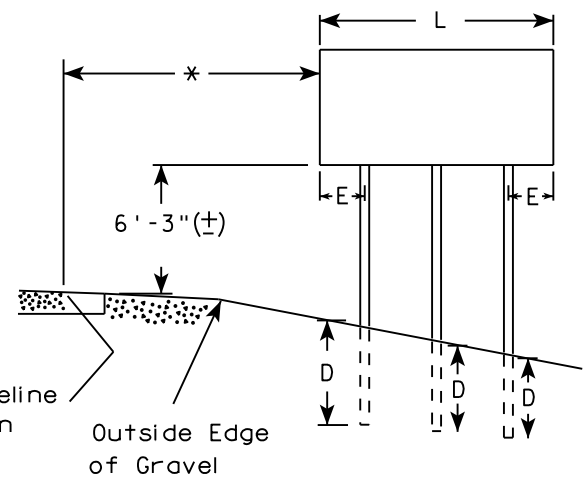
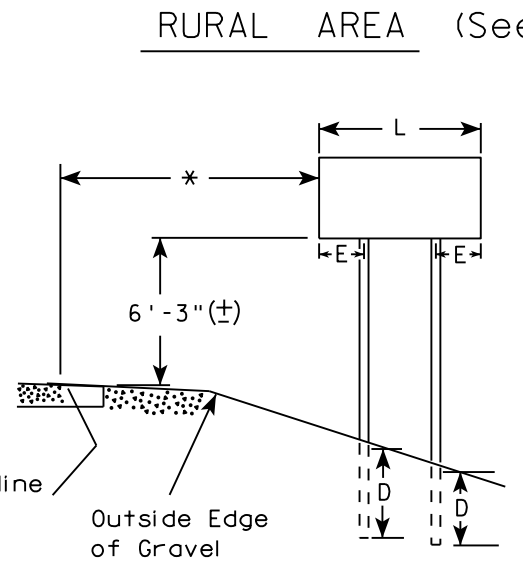
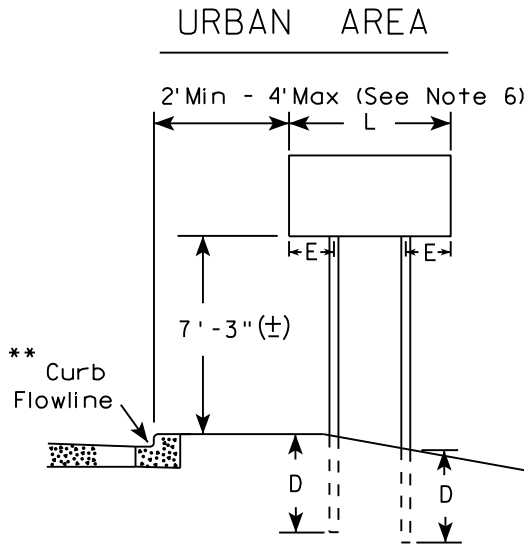
PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E



48" DIAMOND WARNING SIGN

48" DIAMOND WARNING SIGN

SIGN SHAPE OTHER THAN DIAMOND (TWO POSTS REQUIRED)	
L	E
Greater than 48" Less than 60"	12"
60" to 108"	L/5

SIGN SHAPE OTHER THAN DIAMOND (THREE POSTS REQUIRED)	
L	E
Greater than 108" to 144"	12"

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

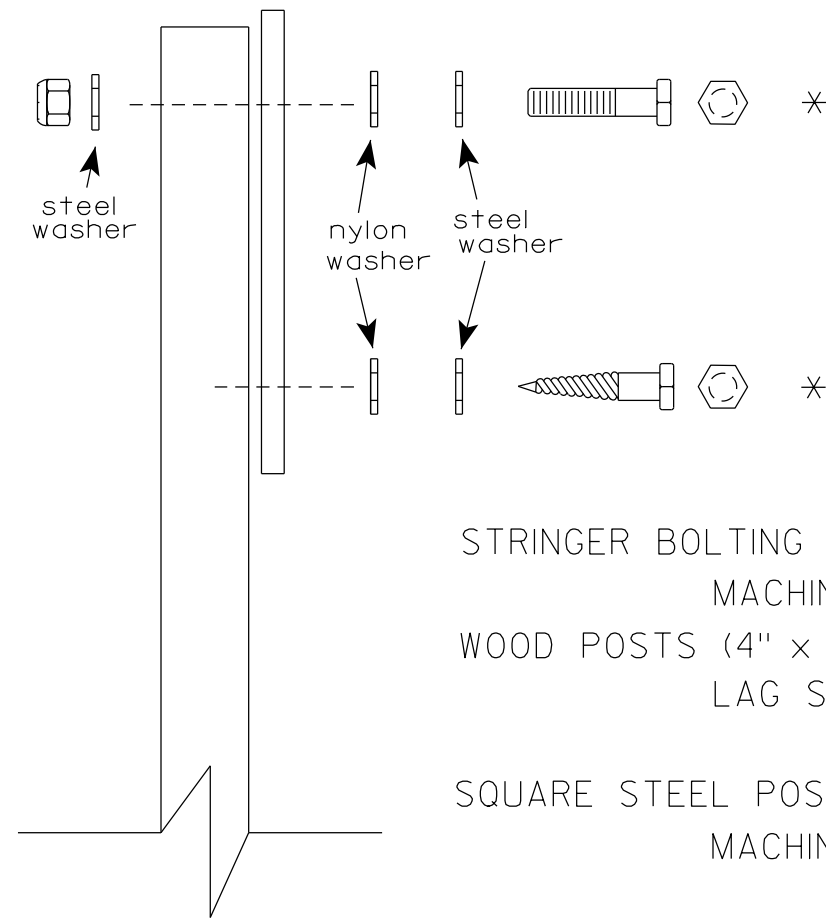
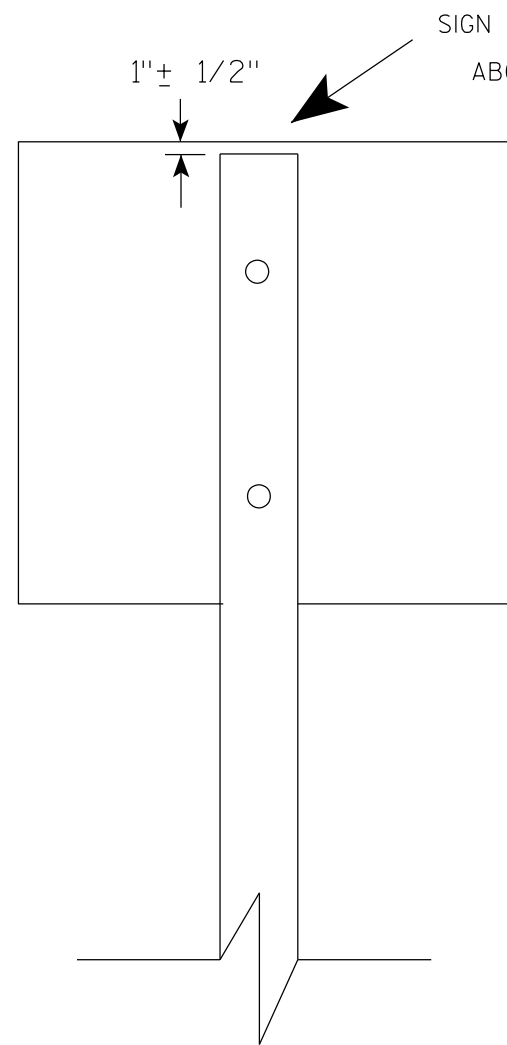
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-4.15

- 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. J-Assemblies are considered to be one sign for mounting height.
 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.



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

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

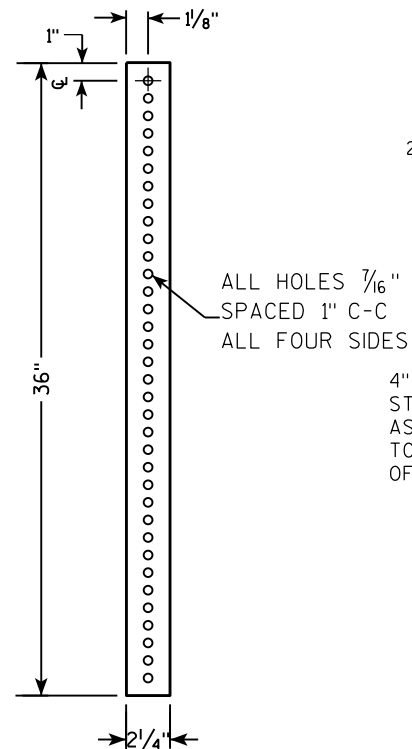
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

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

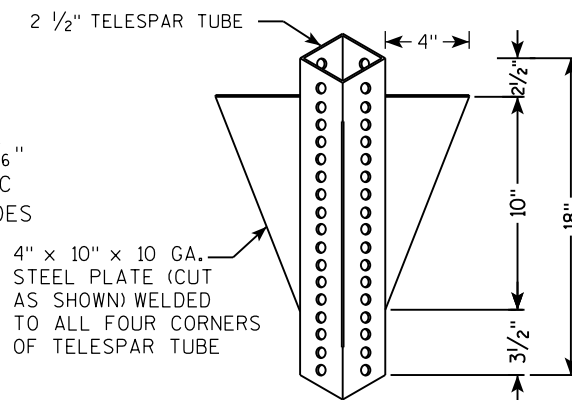
* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

ATTACHMENT OF SIGNS TO POSTS	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 4/1/2020	PLATE NO. A4-8.9

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



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



LENGTH SHOWN ON MISC. QTY'S
 18" DIA SCHEDULE 40 PVC BOX-OUT
 TELESCOPE PIECES FLUSH AT TOP
 36"
 18"
 13"
 2 1/2"
 2 1/4" SQUARE X 36"
 2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)
 3/8" ZINC PLATED ANCHOR BOLT AND NUT
 2 1/2" GRAVEL OR DIRT
 3/8" ZINC PLATED CORNER ANCHOR BOLT AND NUT
 ALL HOLES 7/16" SPACED 1" C-C ALL FOUR SIDES
 2" STEEL TUBULAR SQUARE UPPER SECTION
 SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL
 SIGN

LENGTH SHOWN ON MISC. QTY'S

TELESCOPE PIECES FLUSH AT TOP

2" STEEL TUBULAR SQUARE UPPER SECTION

ALL HOLES $\frac{7}{16}$ " SPACED 1" C-C ALL FOUR SIDES

$\frac{3}{8}$ " ZINC PLATED CORNER ANCHOR BOLT AND NUT

1"

$\frac{3}{8}$ " ZINC PLATED ANCHOR BOLT AND NUT

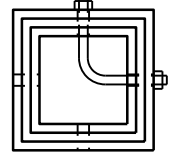
2 1/2" SQUARE X 18" (SOIL STABILIZING SLEEVE)

2 1/4" SQUARE X 36"

SEE SIGN PLATE A4-8 FOR BOLT WASHER, & NUT MATERIAL

SIGN

3/8" ZINC PLATED CORNER
ANCHOR BOLT AND NUT



DIRECTION
OF TRAFFIC

SECTION A-A

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

TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch

for State Traffic Engineer

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

PROJECT NO:

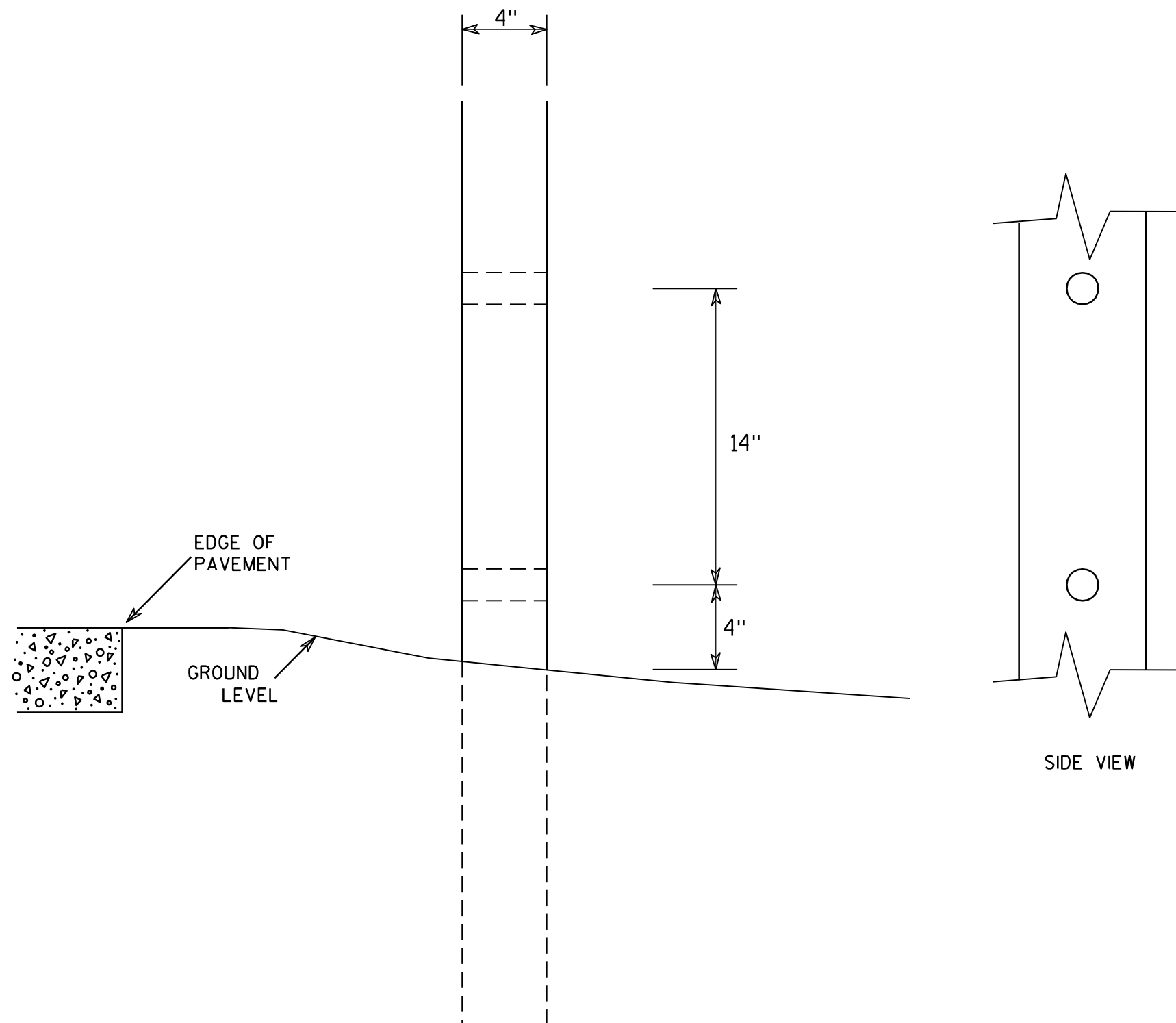
HWY:

COUNTY:

SHEET NO:

11

7



GENERAL NOTES

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

7

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

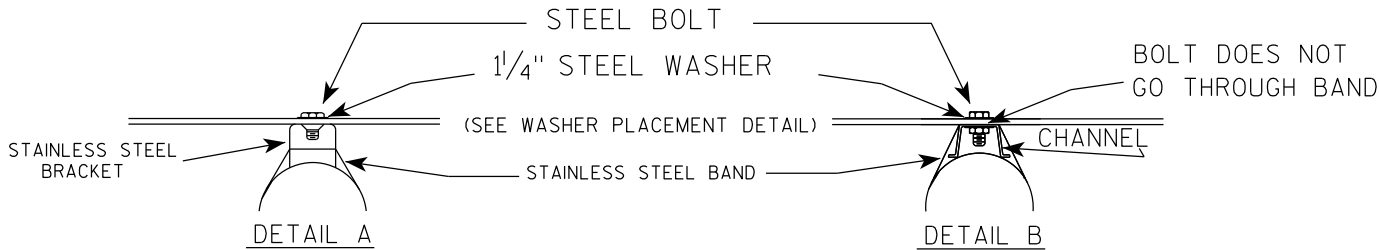
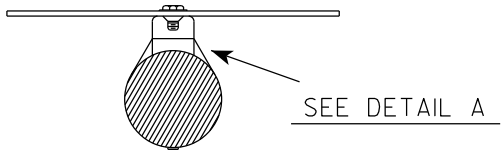
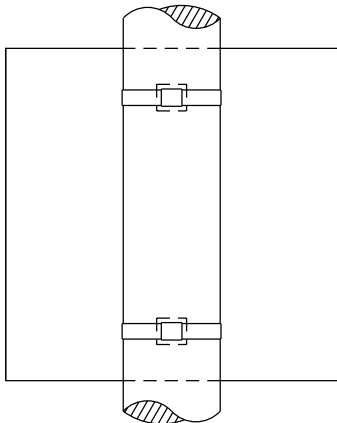
COUNTY:

SHEET NO:

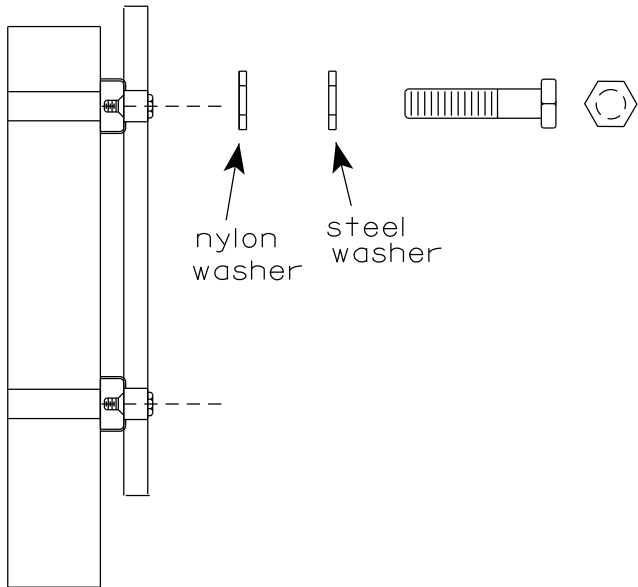
E

BANDING

SINGLE SIGN



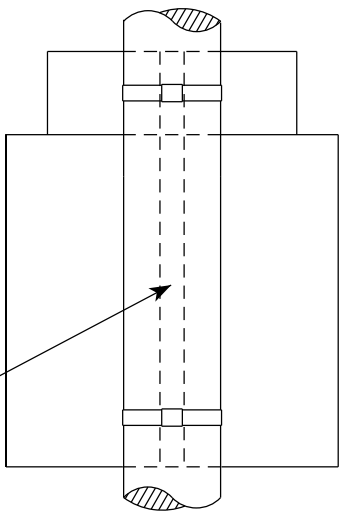
WASHER PLACEMENT



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

CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET

"J" ASSEMBLY



SEE DETAIL B

GENERAL NOTES

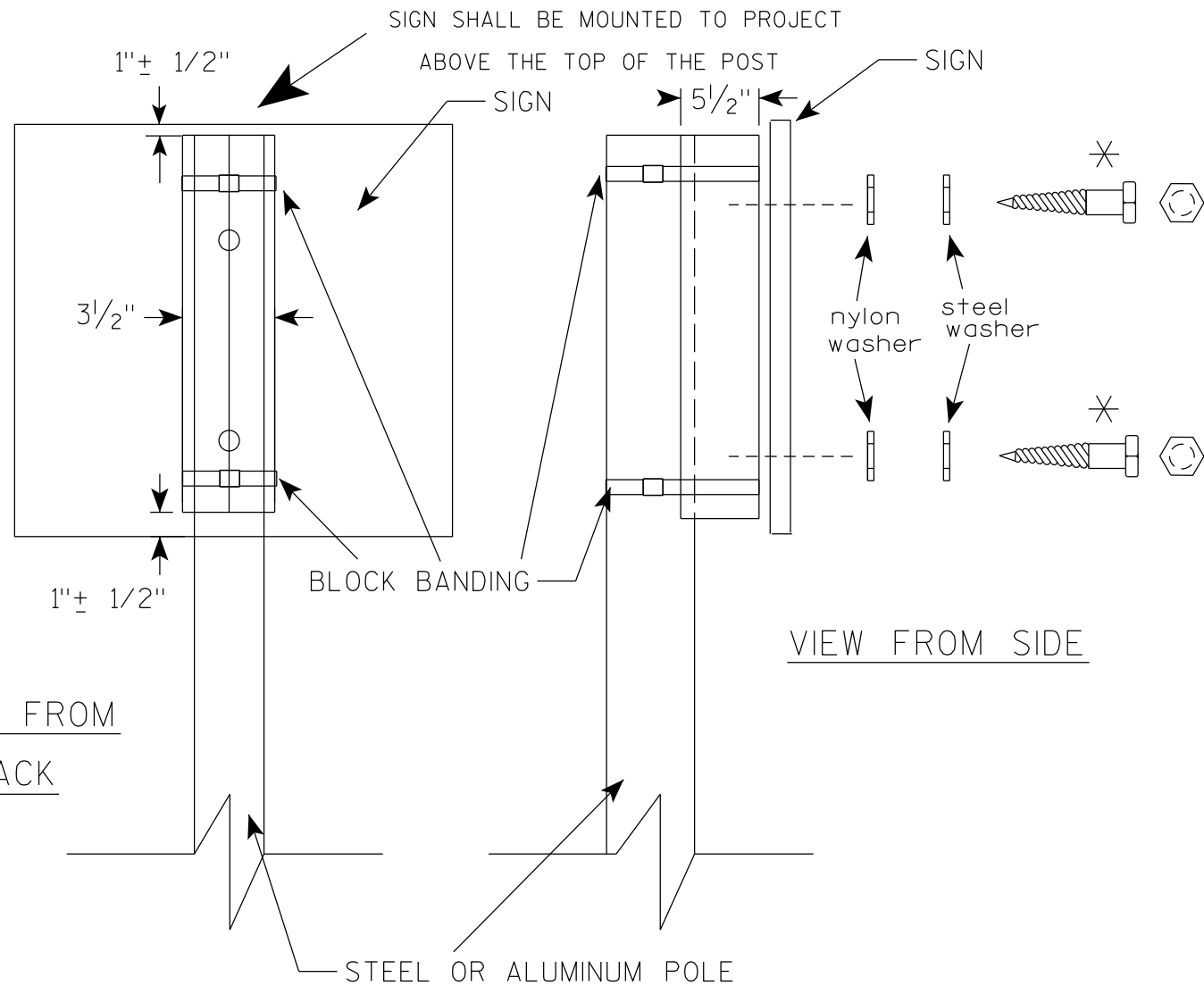
1. Any sign over 3 feet in width shall use the V-Block banding method. See A5-10 standard plate.
2. Signs 3 feet or greater in height shall have three bracket bands installed. Signs less than 3 feet in height shall have two bracket bands installed.
3. Banding and assembly bracket shall be stainless steel. All bands shall be 3/4" in width and 0.025" thickness.
4. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
 - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D
 - b. Electro-galvanized in accordance with ASTM designation: B 633, Type III, SC 3

STANDARD SIGN
SIGN BANDING DETAILS

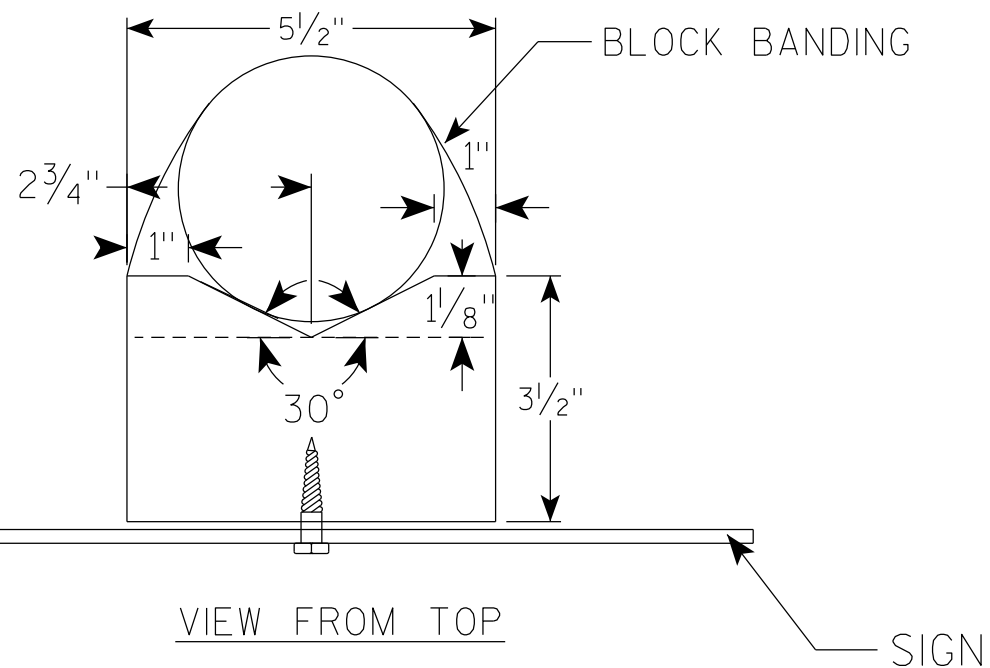
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer
DATE 6/10/19 PLATE NO. A5-9.4

VIEW FROM
BACK



VIEW FROM SIDE



GENERAL NOTES

1. WOOD 4"X6" POST MATERIAL SHALL CONFORM TO 507.2.2 OF THE WisDOT STANDARD SPECIFICATIONS
2. BLOCK BANDING AND CLIPS SHALL BE STAINLESS STEEL, $\frac{3}{4}$ " WIDTH AND 0.025" THICKNESS
3. SIGNS 3' OR GREATER IN HEIGHT SHALL UTILIZE 3 BLOCK BANDS. SIGNS UNDER 3' IN HEIGHT SHALL UTILIZE 2 BLOCK BANDS
4. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA, BUT NORMALLY THERE ARE TWO. FOR SIGNS GREATER THAN 9 S.F. 3 FASTENERS SHALL BE USED.
5. ALL SIGN MOUNTING BOLTS AND WASHERS SHALL BE EITHER:
 - a. Hot dip or mechanically galvanized in accordance with ASTM Designation: A 153, Class D
 - b. Electro-galvanized in accordance with ASTM Designation : B 633, TYPE III, SC 3
6. ALL BOLTS SHALL HAVE HEXAGONAL HEADS.
7. STEEL WASHERS SHALL BE $1\frac{1}{4}$ " O.D. X $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ "
8. NYLON WASHERS SHALL BE $1\frac{1}{4}$ " O.D. X $\frac{3}{8}$ " I.D. X .080 FOR TYPE H OR TYPE F FACE SIGN

✱ LAG BOLTS SHALL BE $\frac{3}{8}$ " X $2\frac{1}{2}$ "

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

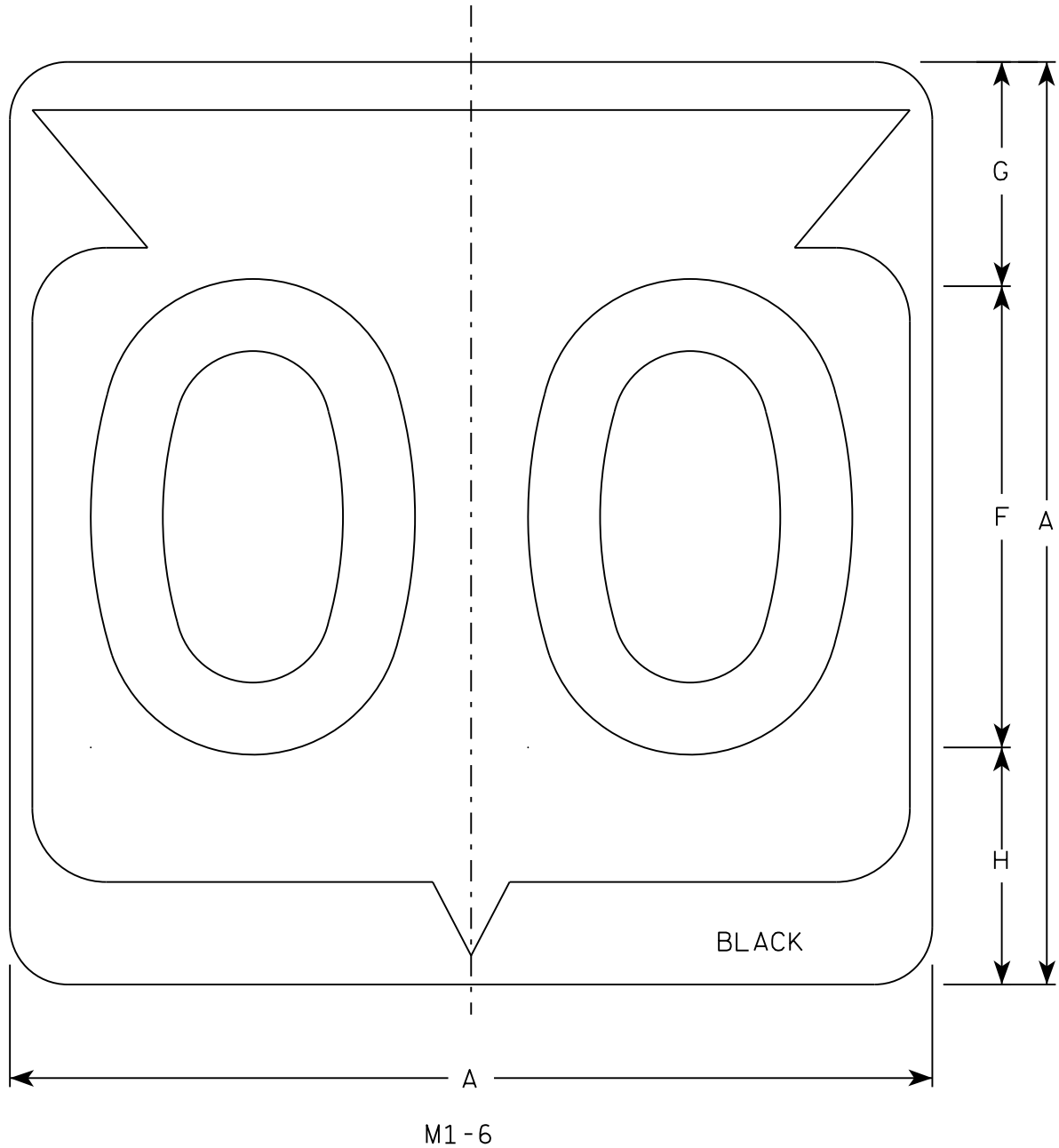
DATE 6/10/19 PLATE NO. A5-10.2

PROJECT NO:

SHEET NO:

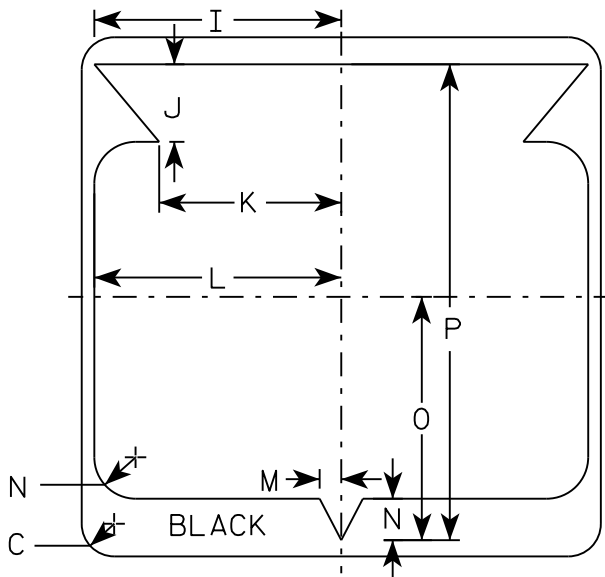
E

7



NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
Background - White
Message - Black
- 3. Message Series - D except 3 number signs 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																											
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0
3	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
4	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0
5	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33											9.0

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

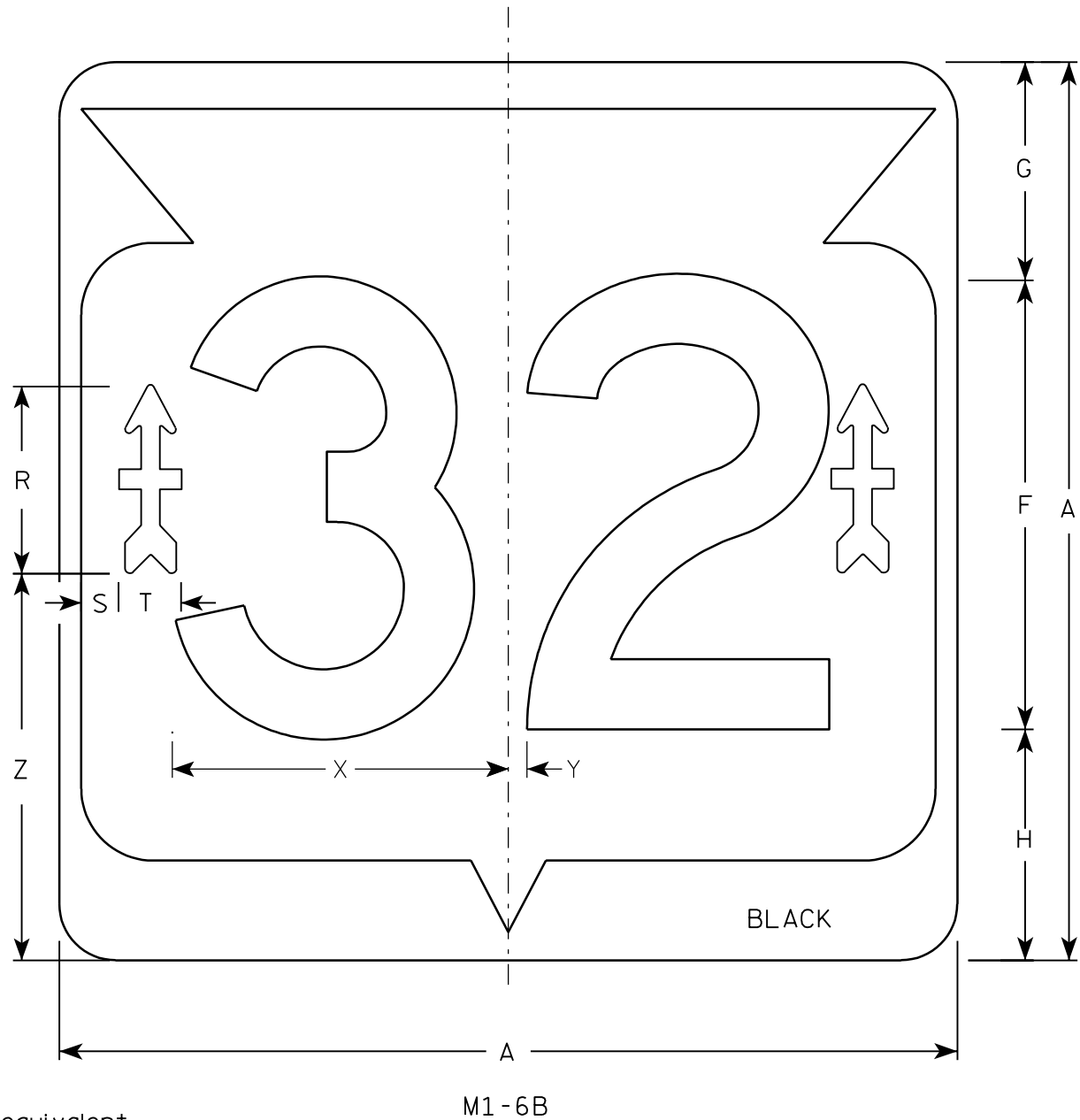
E

STATE ROUTE MARKER
M1-6 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 3/16/18 PLATE NO. M1-6.10

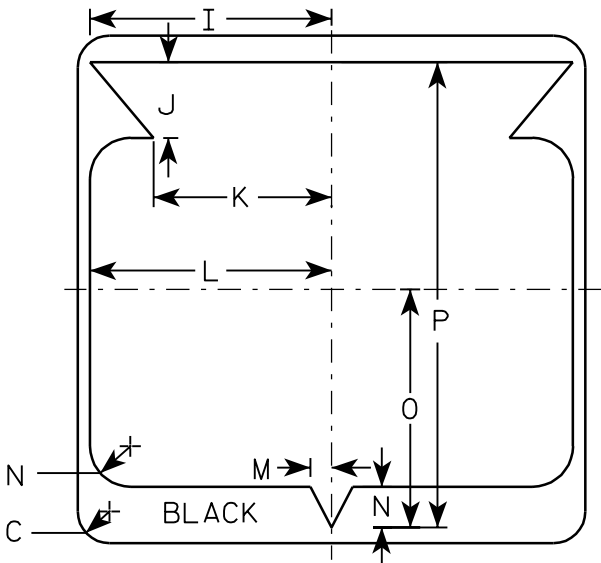


SIZE	
1	
2	600 mm X 600 mm
3	900 mm X 900 mm
4	900 mm X 900 mm
5	900 mm X 900 mm

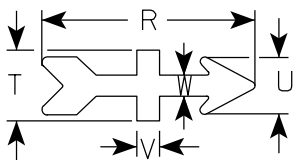
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m ²
1																												
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8		5 1/8	3/4	1 7/8	1 1/2	5/8	5/8	9	1/2	10 1/2	4.0	.36
3	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33		7 1/2	1 1/2	2 1/2	2	7/8	3/4	13 1/2	3/4	15 1/2	9.0	.81
4	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33		7 1/2	1 1/2	2 1/2	2	7/8	3/4	13 1/2	3/4	15 1/2	9.0	.81
5	36		2 1/4			18	8 3/4	9 1/4	15 3/8	5 3/8	12 5/8	17 1/8	1 1/2	2 7/8	16 7/8	33		7 1/2	1 1/2	2 1/2	2	7/8	3/4	13 1/2	3/4	15 1/2	9.0	.81

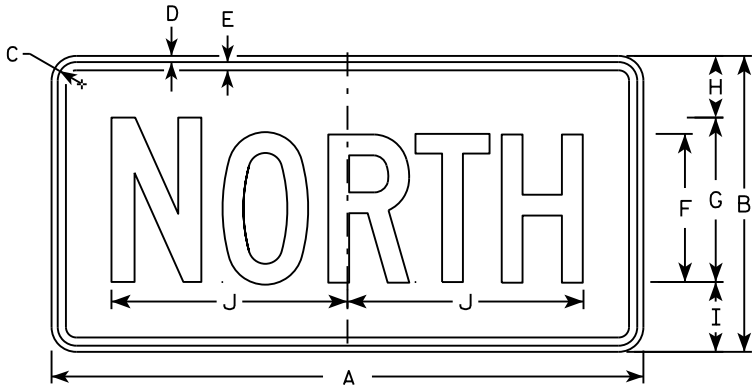
NOTES

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



32nd DIVISION ARROW
ACTUAL SIZE

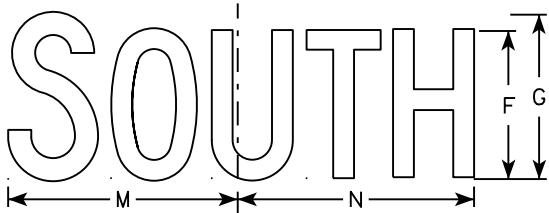




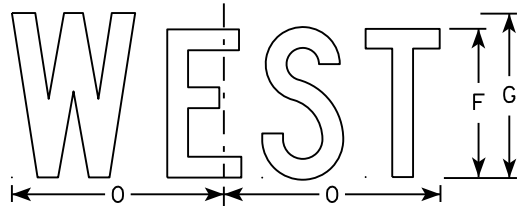
M3-1
MM3-1
MP3-1



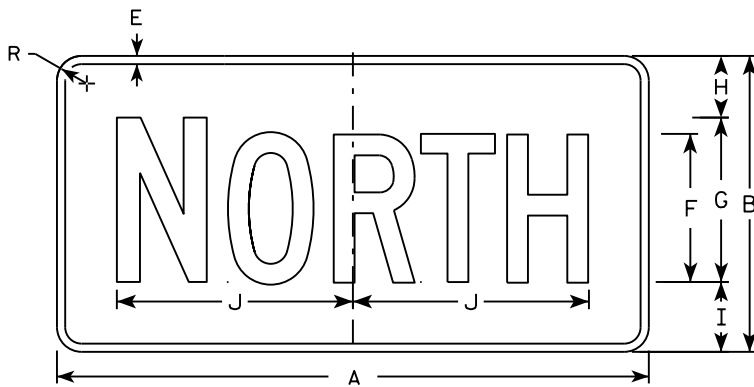
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MM3-2
MP3-2



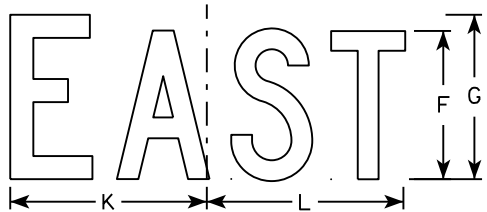
M3-3
MM3-3
MP3-3



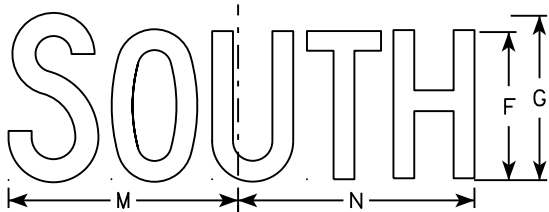
M3-4
MM3-4
MP3-4



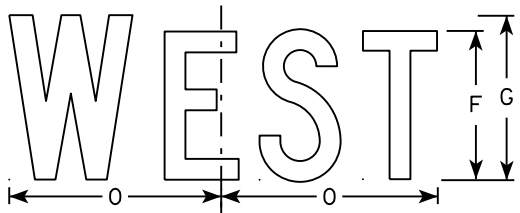
MB3-1
MK3-1
MN3-1



MB3-2
MK3-2
MN3-2



MB3-3
MK3-3
MN3-3



MB3-4
MK3-4
MN3-4

NOTES

1. All Signs Type II - Type H
2. Color:
Background - See note 5
Message - See note 5
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M3-1 thru M3-4 Background - White
Message - Black
MB3-1 thru MB3-4 Background - Blue
Message - White
MK3-1 thru MK3-4 Background - Green
Message - White
MM3-1 thru MM3-4 Background - White
Message - Green
MN3-1 thru MN3-4 Background - Brown
Message - White
MP3-1 thru MP3-4 Background - White
Message - Blue
6. Note the first letter of each direction is larger than the remainder of the message.

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

STANDARD SIGNS
M3-1 thru M3-4
SERIES

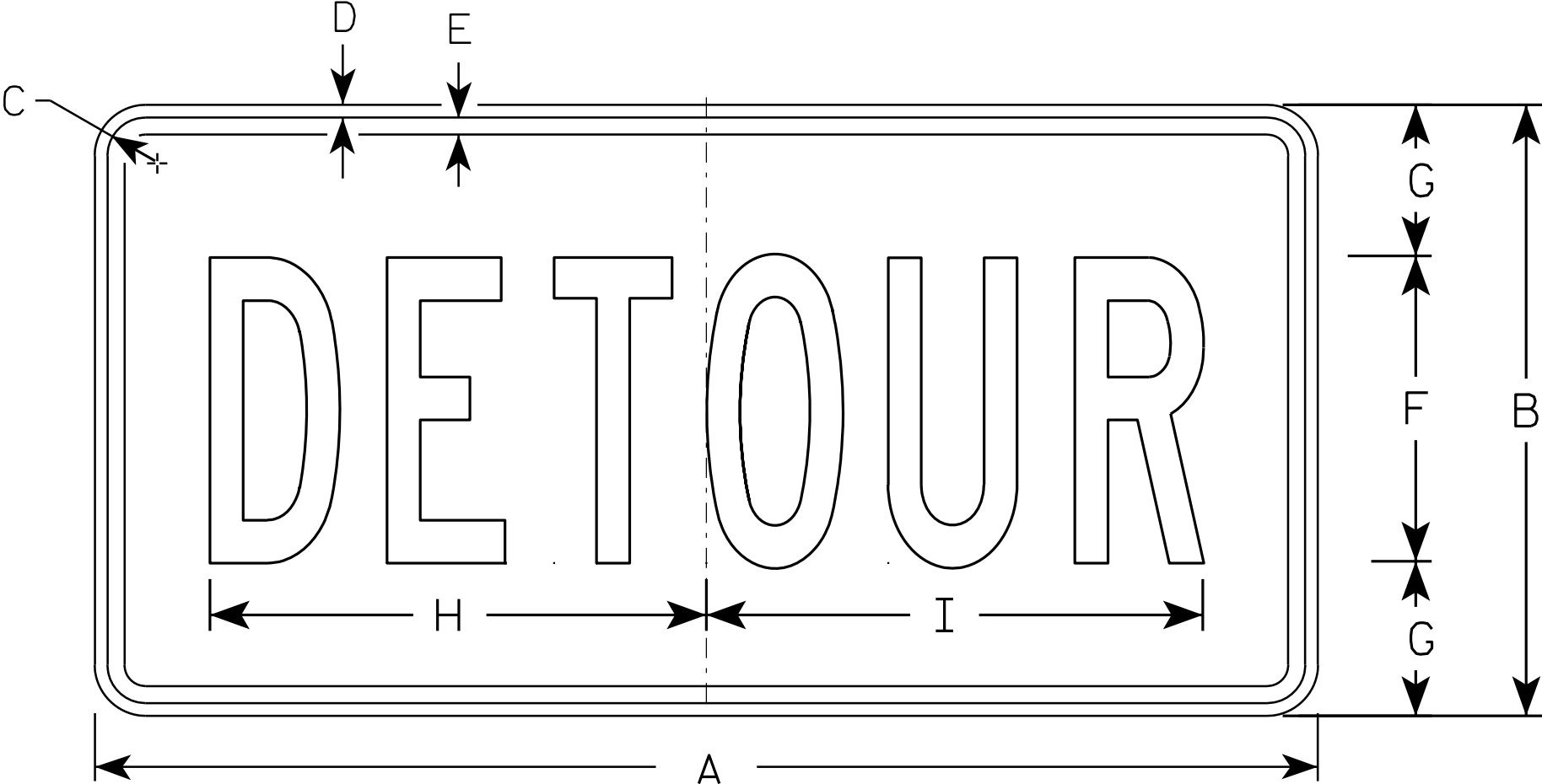
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

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

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 - 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.



M4 - 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																											
2	24	12	1 1/8	3/8	3/8	6	3	10	10 1/4																		2.0
3	36	18	1 1/8	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5
4																											
5																											

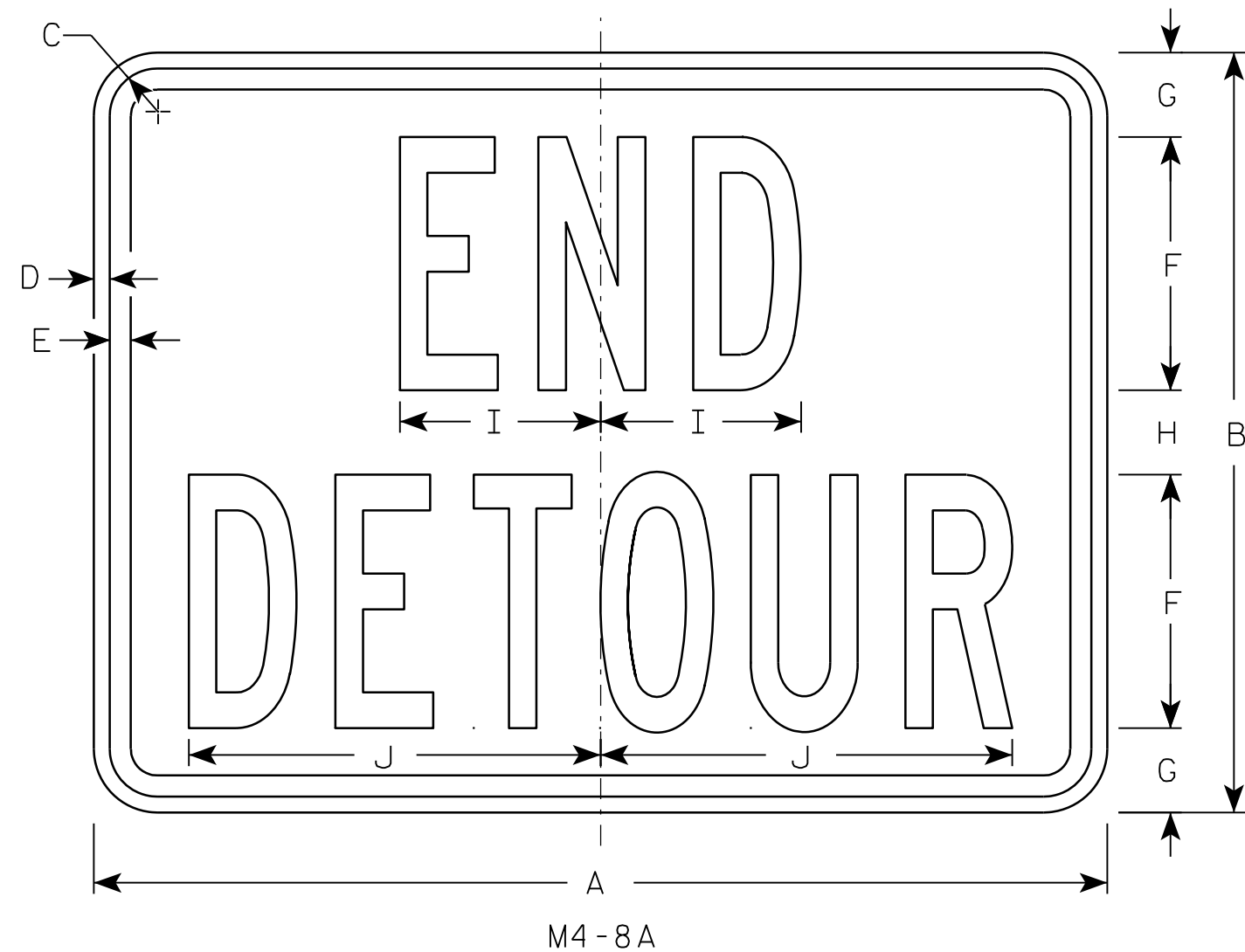
STANDARD SIGN
M4 - 8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 11/10/10 PLATE NO. M4-8.2

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 - Orange
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.

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																											
2	24	18	1 1/8	3/8	1/2	6	2	2	4 3/4	9 3/4																	3.0
3	30	24	1 1/8	3/8	1/2	8	2 1/2	3	6 3/4	13																	5.0
4																											
5																											

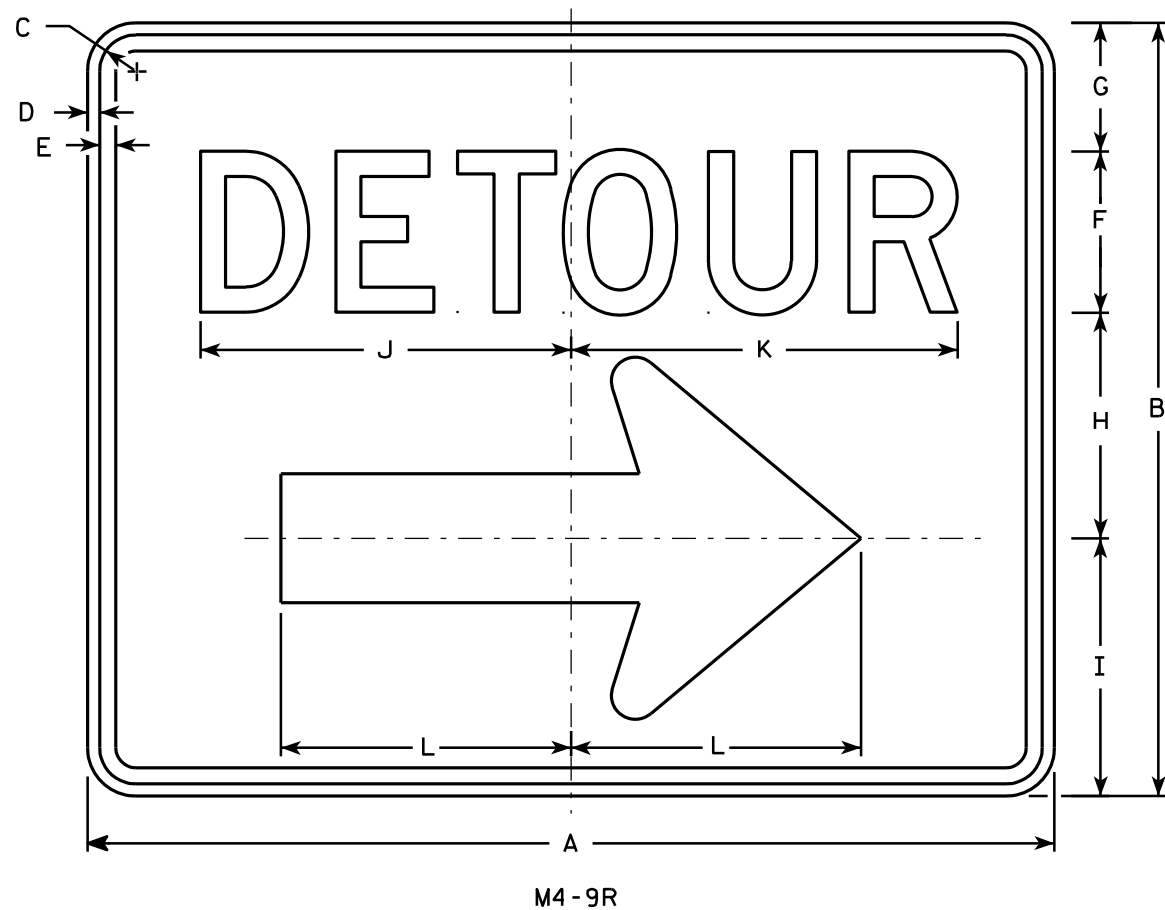
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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STANDARD SIGN
M4-8A

WISCONSIN DEPT OF TRANSPORTATION

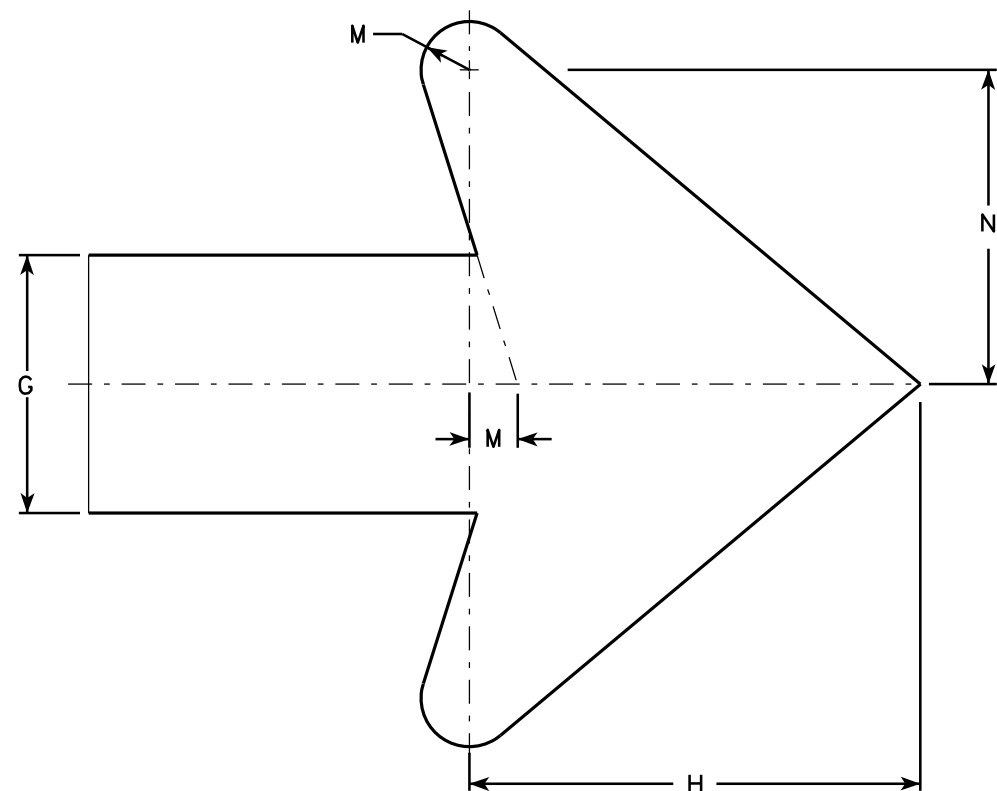
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/9/11 PLATE NO. M4-8A.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 - Orange
Message - Black
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M4-9L is the same as M4-9R except the arrow is reversed.

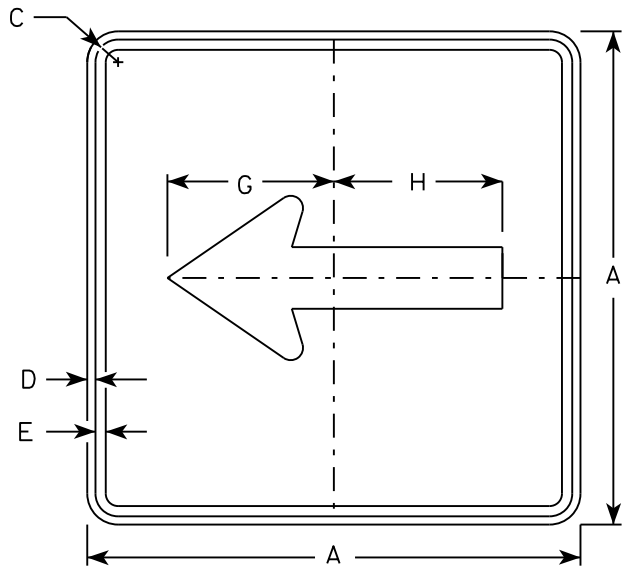


Arrow Detail

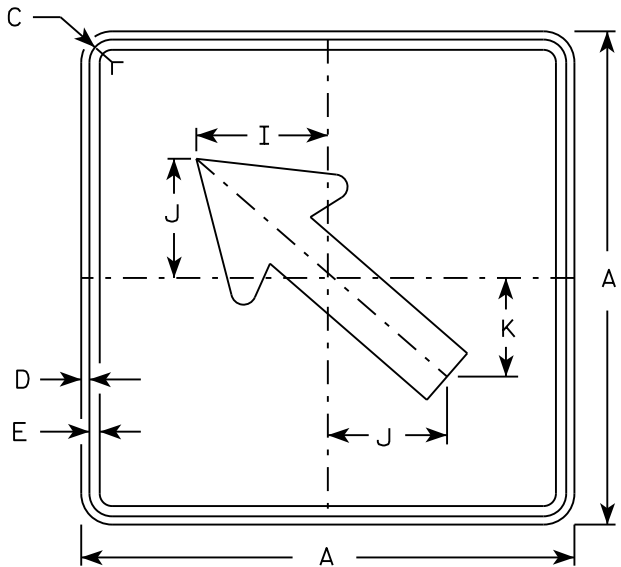
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	30	24	1 1/8	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
3	30	24	1 1/8	3/8	1/2	5	4	7	8	11 1/2	12	9	3/4	4 7/8													5.00
4	48	36	1 3/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0
5	48	36	1 3/8	1/2	5/8	8	6	10 1/2	11 5/8	20 5/8	20 1/2	13 1/4	1 1/8	6 7/8													12.0

STANDARD SIGN	
M4-9 R & L	
WISCONSIN DEPT OF TRANSPORTATION	
APPROVED	<i>Matthew R. Rauch</i> For State Traffic Engineer
DATE 3/9/11	PLATE NO. M4-9R.4

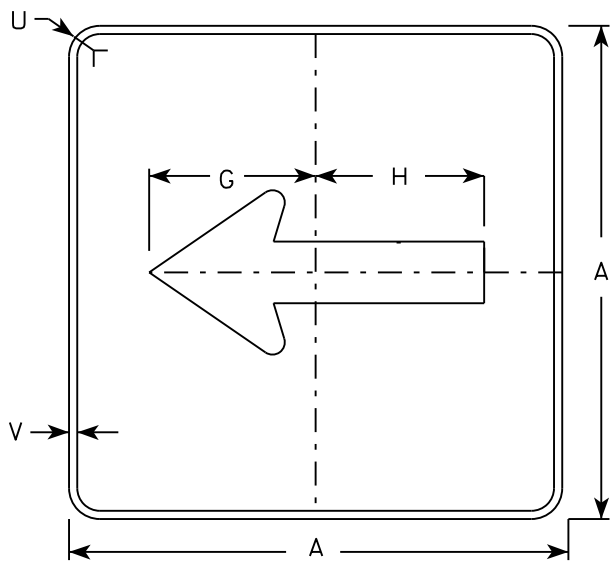
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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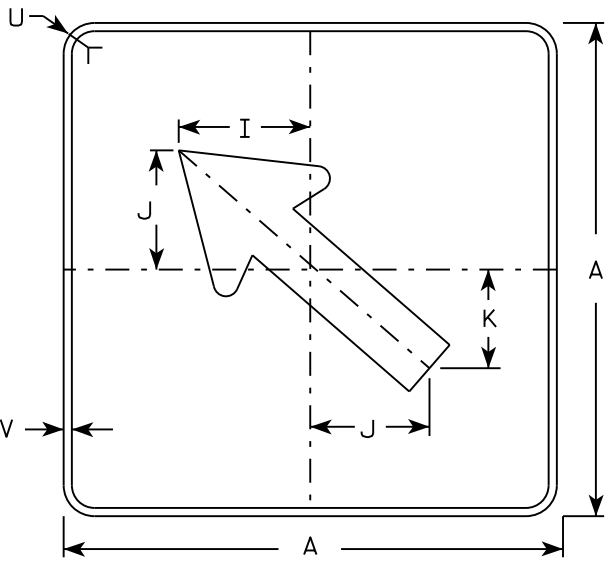
M6 - 1
MM6 - 1
M06 - 1
MP6 - 1



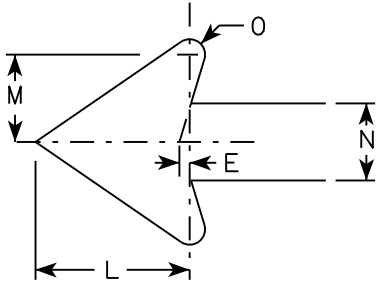
M6 - 2
MM6 - 2
M06 - 2
MP6 - 2



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



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



NOTES

- Signs are Type II - Type H except as Shown
- Color:
Background - See note 4
Message - See note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- M6-1 and M6-2 Background - White
Message - Black
MB6-1 and MB6-2 Background - Blue
Message - White
MK6-1 and MK6-2 Background - Green
Message - White
MM6-1 and MM6-2 Background - White
Message - Green
MN6-1 and MN6-2 Background - Brown
Message - White
M06-1 and M06-2 Background - Orange - Type F Reflective
Message - Black
MP6-1 and MP6-2 Background - White
Message - Blue
MR6-1 and MR6-2 Background - Brown
Message - Yellow

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	21		1 1/8	3/8	3/8		7 1/2	7 1/8	5 5/8	5	4 1/4	5 1/4	3	2 5/8	1/2						1 1/2	1/2					3.06
3	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
4	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25
5	30		1 3/8	1/2	5/8		10 3/4	10 1/4	8	7 1/4	6	7 1/2	4 1/4	3 3/4	3/4						1 7/8	1/2					6.25

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

STANDARD SIGN
M6 - 1 & M6 - 2
SERIES

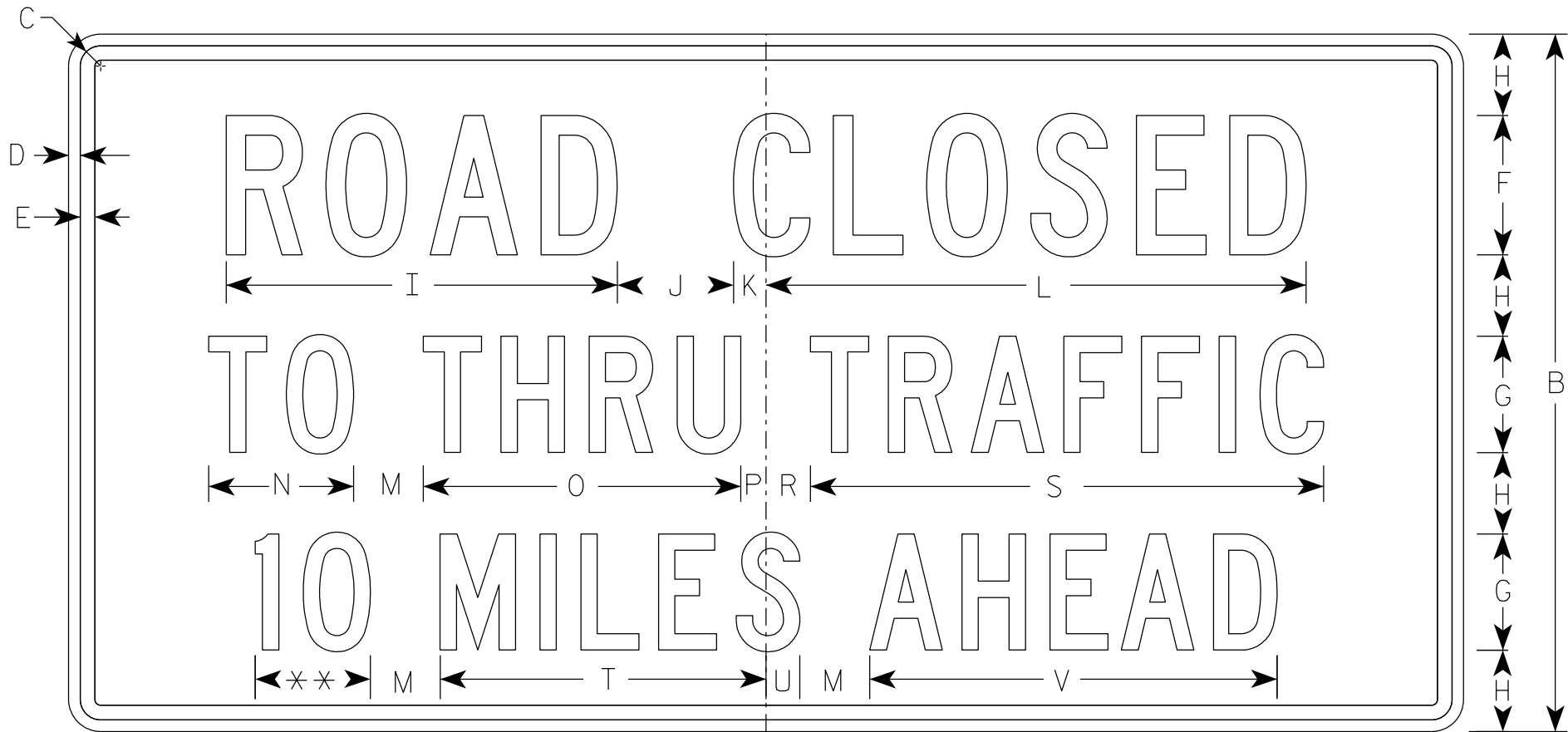
WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

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

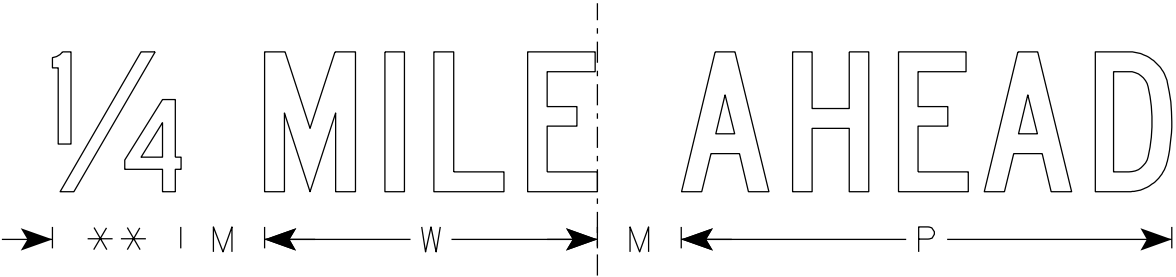
NOTES

- 1. Sign is Type II - Type H Reflective
- 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

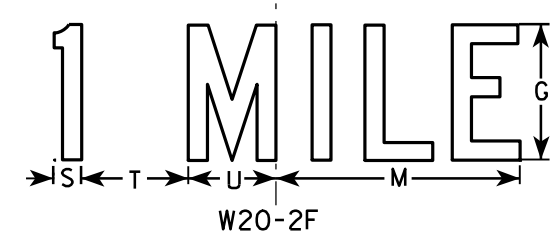
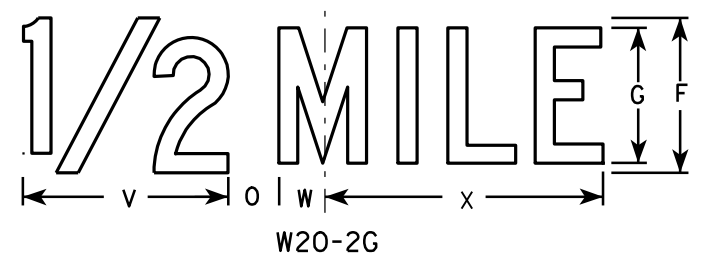
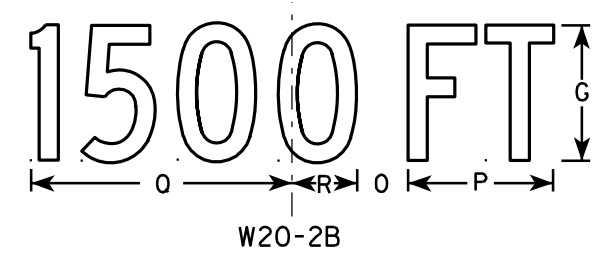
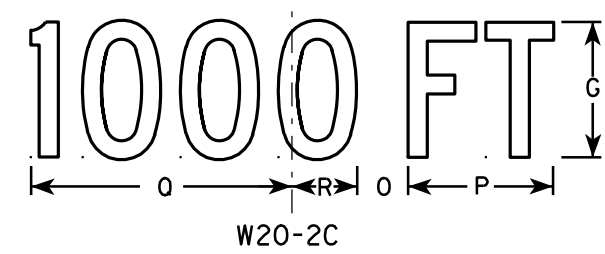
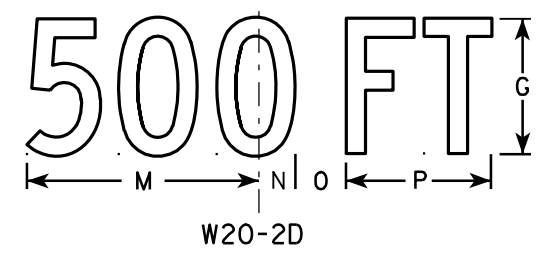
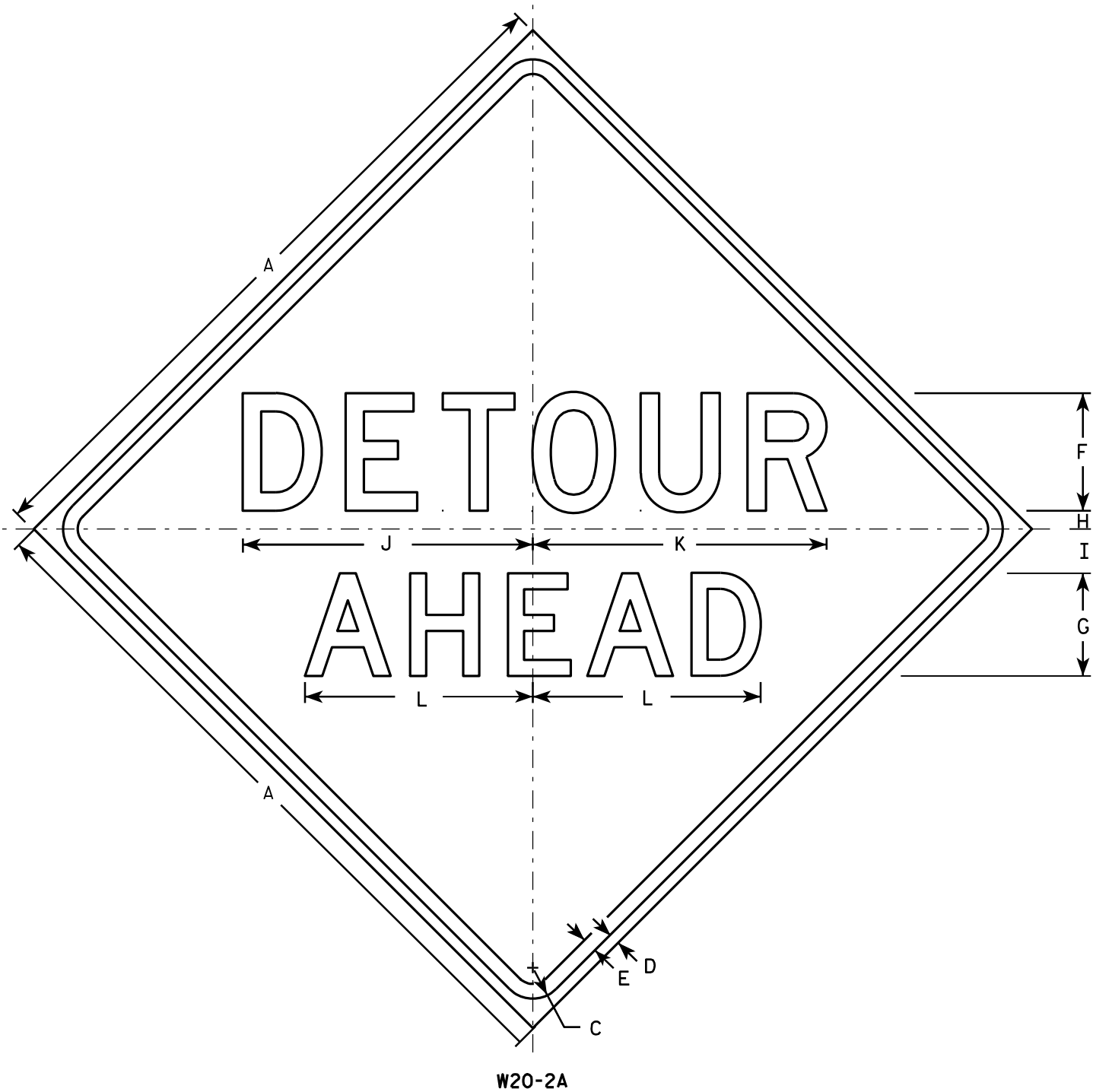


SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36	18	1 1/4	3/8	3/8	4	3	2	11 1/4	3	1 1/8	15 3/8	2	3 3/4	8 1/4	5/8		1 3/8	13 1/4	8 3/8	7/8	10 1/2	7 1/8				4.5
2S	60	30	1 3/8	1/2	5/8	6	5	3 1/2	16 7/8	5	1 3/8	23 1/4	3	6 1/4	13 5/8	1 1/8		1 7/8	22 1/8	14	1 1/2	17 1/2	11 7/8				12.5
2M	60	30	1 3/8	1/2	5/8	6	5	3 1/2	16 7/8	5	1 3/8	23 1/4	3	6 1/4	13 5/8	1 1/8		1 7/8	22 1/8	14	1 1/2	17 1/2	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 6/14/2021 PLATE NO. R11-3.9



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. Line 1 is Series D.
Line 2 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	6	5	1	2 1/4	14 3/4	15	11 5/8	9	1 3/8	1 7/8	5 5/8	10 1/8	2 1/2	1 1/8	4 1/2	3 1/2	8	1 3/4	10 3/4			9.0
2S	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
2M	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
3	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
4	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
5	48		2 1/4	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0

STANDARD SIGN
W20-2A,B,C,D,F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 3/18/11 PLATE NO. W20-2.6

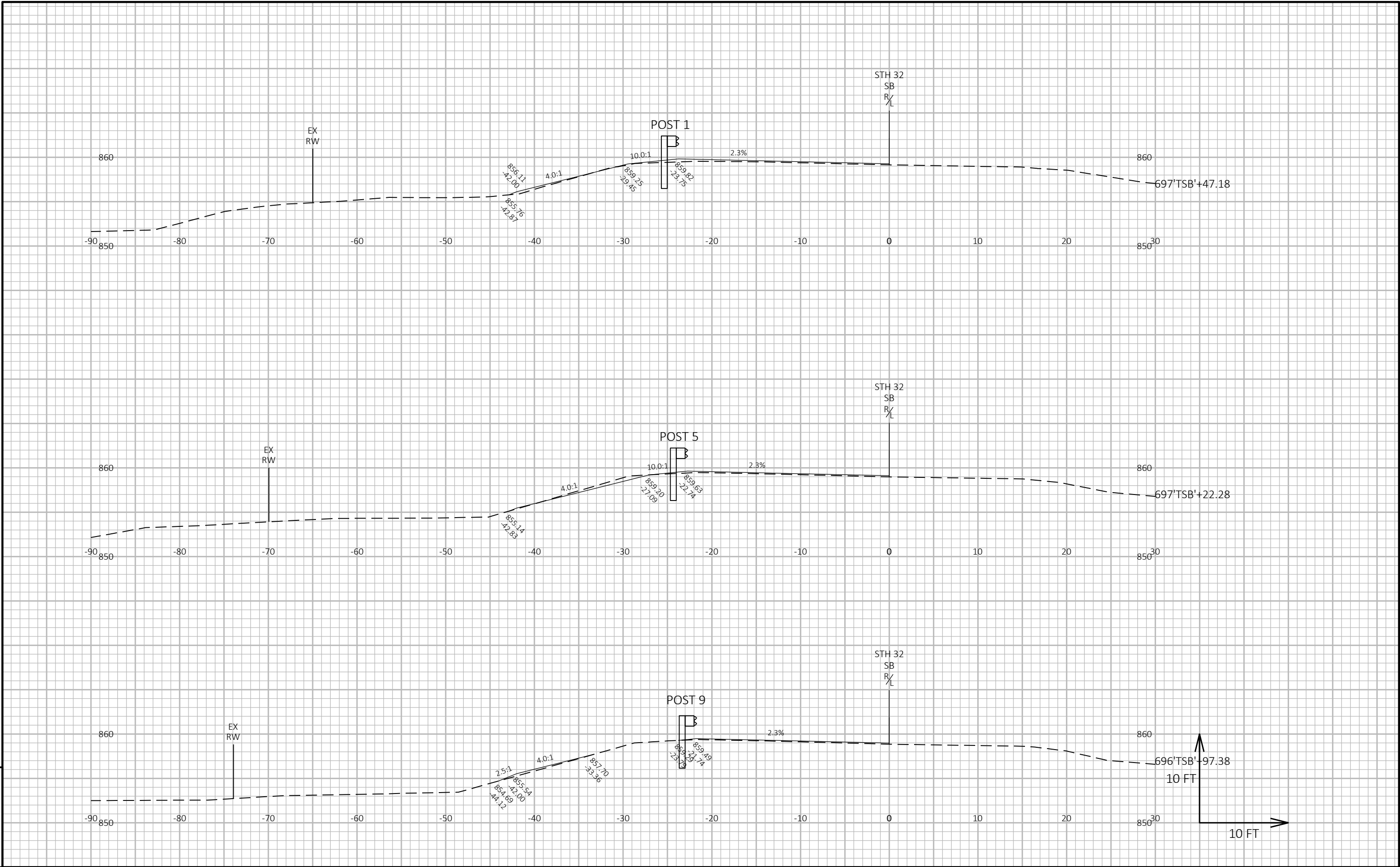
PROJECT NO:

HWY:

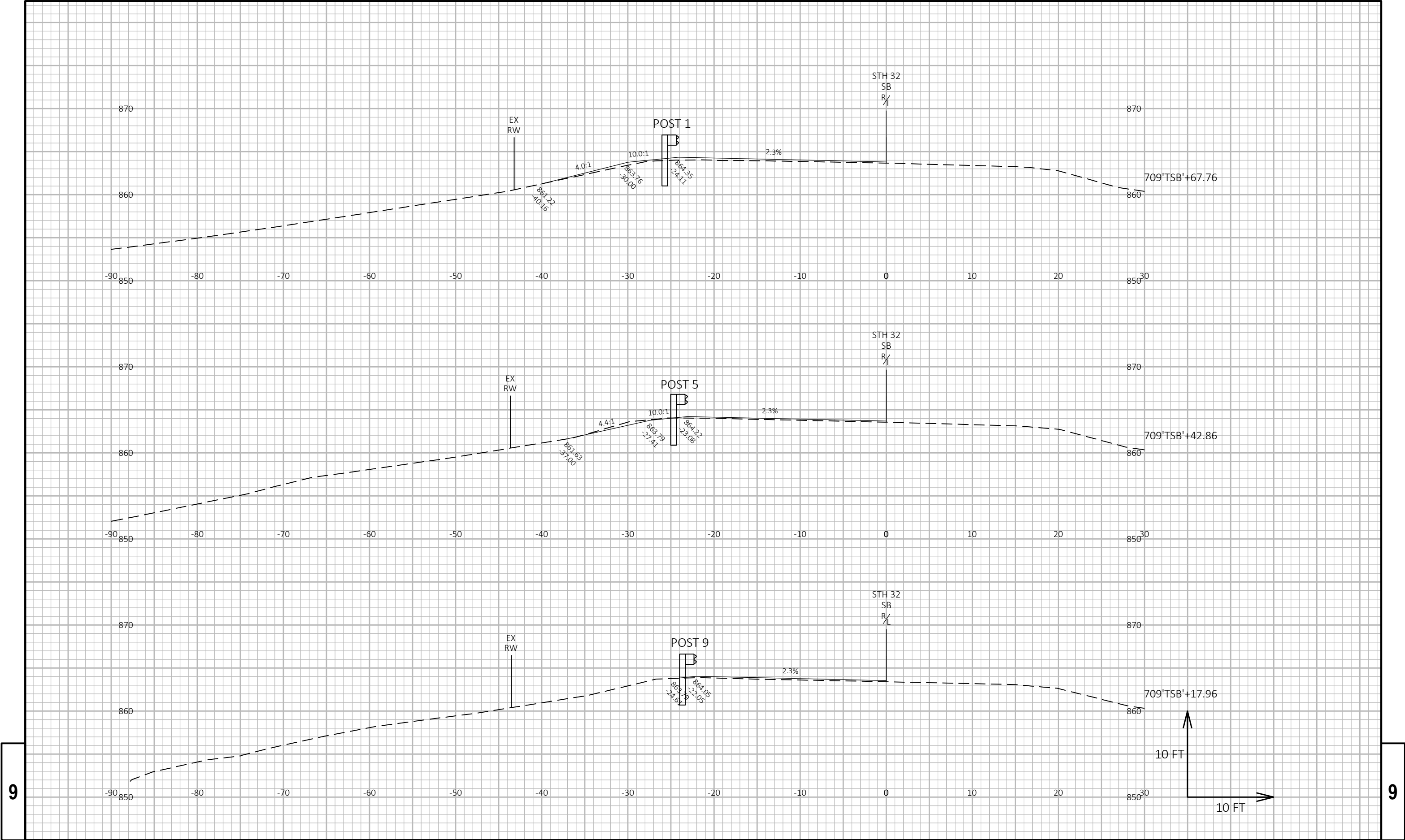
COUNTY:

SHEET NO:

E



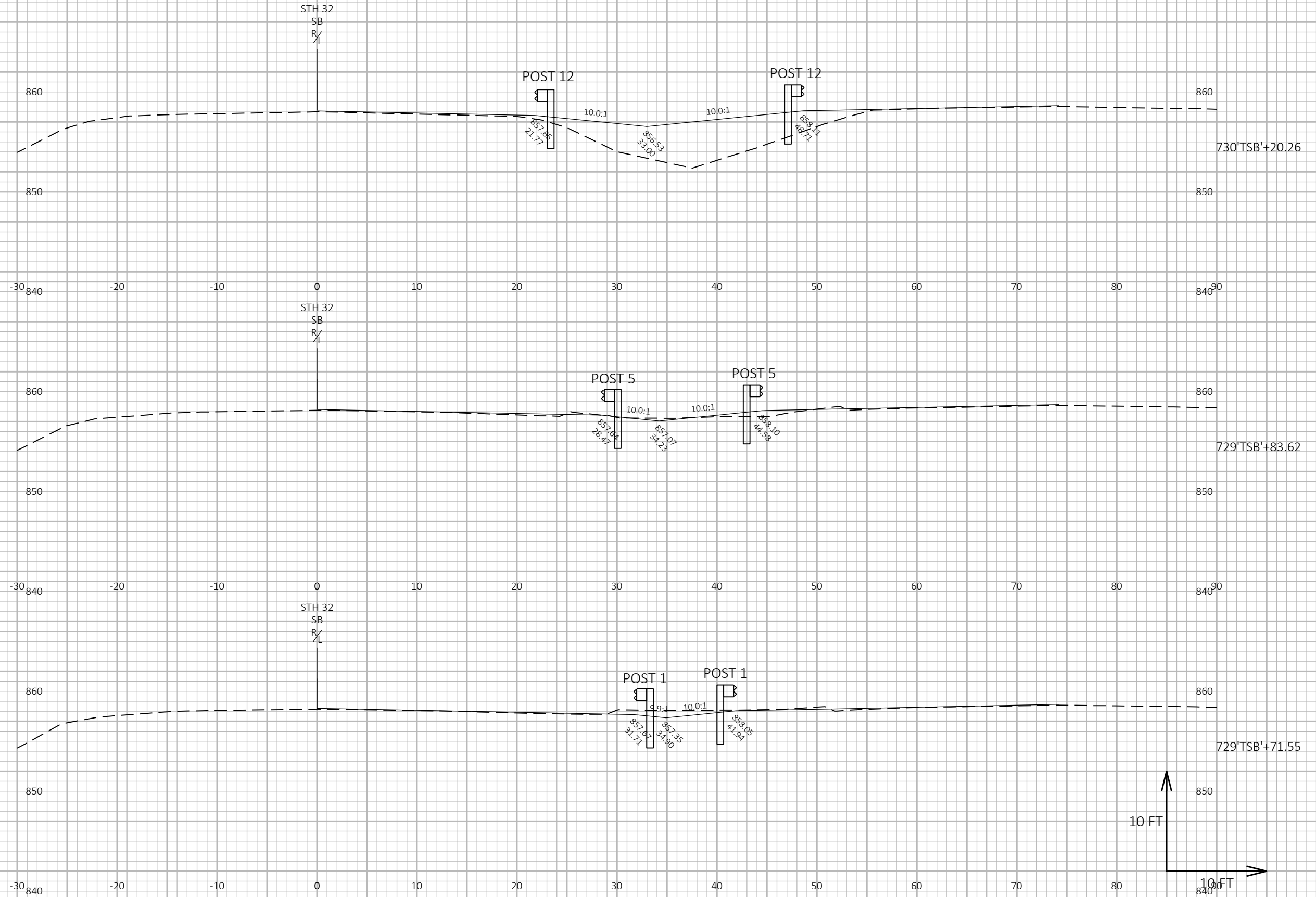
PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	CROSS SECTIONS: STH 32	SHEET E
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9

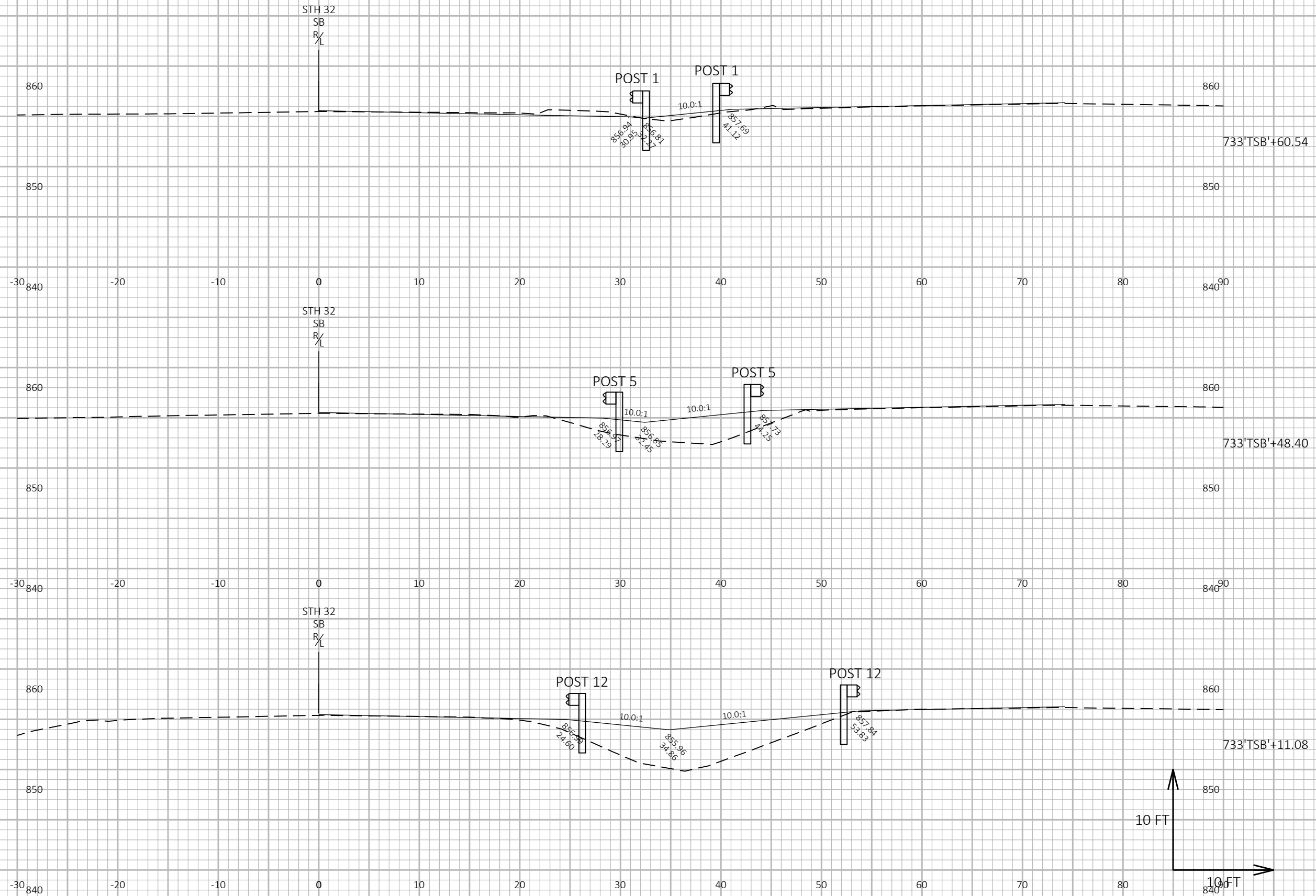
9

PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	CROSS SECTIONS: STH 32	SHEET E
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9

9



9

9

PROJECT NO: 4085-48-71	HWY: STH 32	COUNTY: MANITOWOC	CROSS SECTIONS: STH 32	SHEET E
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Notes



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