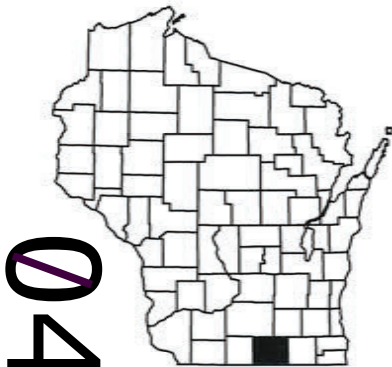


ORDER OF SHEETS

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 = 128



04

DESIGN DESIGNATION

A.A.D.T.	2020	=	480
A.A.D.T.	2040	=	520
D.H.V.		=	108
D.D.		=	50/50
T.		=	5.5%
DESIGN SPEED		=	30 MPH
ESALS		=	30,000

CONVENTIONAL SYMBOLS

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



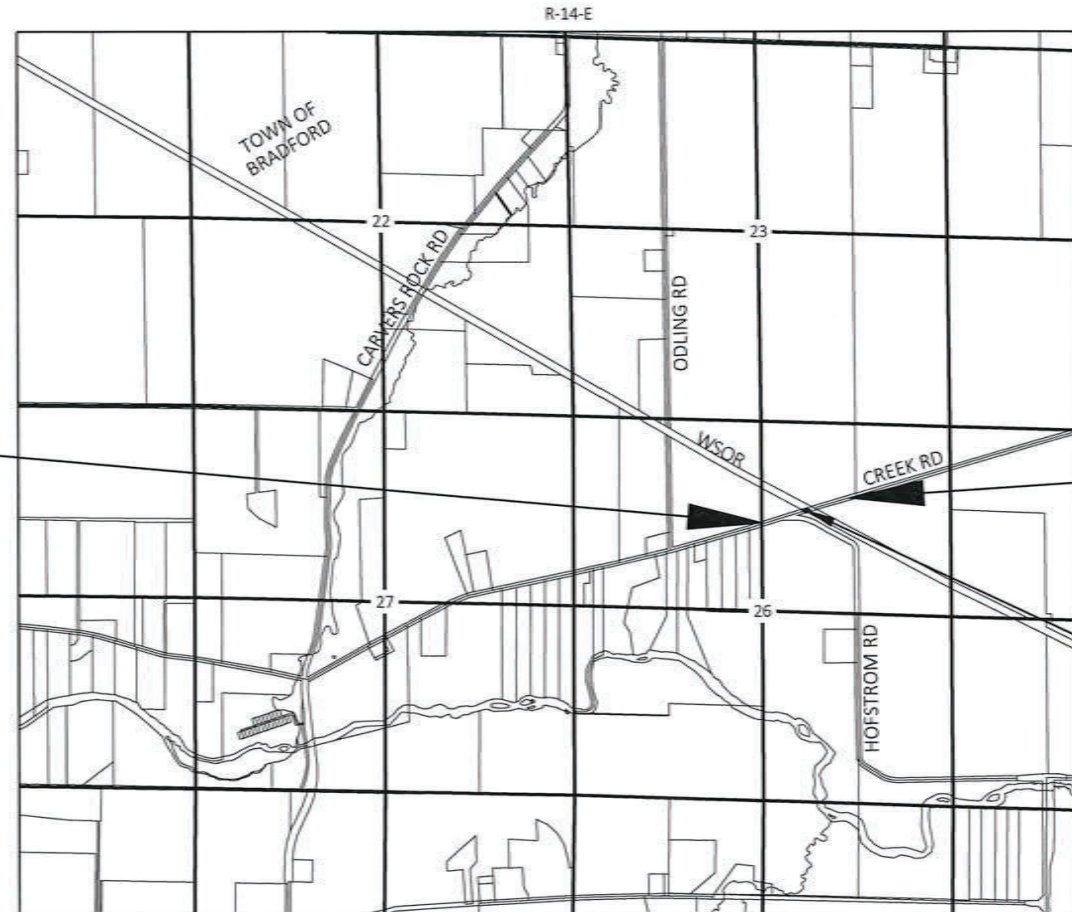
PROFILE	
GRADE LINE	
ORIGINAL GROUND	
MARSH OR ROCK PROFILE (To be noted as such)	
SPECIAL DITCH	
GRADE ELEVATION	
CULVERT (Profile View)	
UTILITIES	
ELECTRIC	
FIBER OPTIC	
GAS	
SANITARY SEWER	
STORM SEWER	
TELEPHONE	
WATER	
UTILITY PEDESTAL	
POWER POLE	
TELEPHONE POLE	

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

CREEK ROAD, T OF BRADFORD
(WSOR BRIDGE & APPROACHES B-53-0177)
TOWN ROAD
ROCK COUNTY

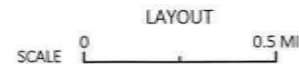
STATE PROJECT NUMBER
3614-00-75



BEGIN PROJECT
STA 12+50.00
Y=241153.25
X=551680.10

END PROJECT
STA 25+50.00
Y=241518.42
X=552927.59

STRUCTURE B-53-0177
STA 20+39.33



TOTAL NET LENGTH OF CENTERLINE = 0.246 MI

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

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

STATE PROJECT		FEDERAL PROJECT	
3614-00-75		PROJECT	CONTRACT

ACCEPTED FOR
ROCK COUNTY
Date: 11-4-19
Director of Public Works

ORIGINAL PLANS PREPARED BY
JEWELL
associates engineers, inc.
Engineers, Architects, Surveyors
WISCONSIN PROFESSIONAL ENGINEER
ELLERY A. SCHAFER
E-41742-6
SPRING GREEN, WI
DATE: 10-17-19
(Professional Engineer Signature)

ORIGINAL PLANS PREPARED BY
Batterman
engineers surveyors planners
WISCONSIN PROFESSIONAL ENGINEER
RYAN D. RUDZINSKI
E-43310
ELKHORN WIS.
DATE: 10-16-19
(Professional Engineer Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PREPARED BY:
Surveyor: BATTERMAN
Designer: BATTERMAN/JEWELL
Project Manager: ZACHARY PEARSON, P.E.
Regional Examiner: SW REGION
Regional Supervisor: OSCAR I. WINGER, P.E.
APPROVED FOR THE DEPARTMENT
DATE: 11-05-19
(Signature)

GENERAL NOTES

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO THE NAVD OF 83 (2011).

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 CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES WITH A CALL TO DIGGERS HOTLINE, UTILITIES AND LOCAL GOVERNMENT BEFORE THE START OF CONSTRUCTION WORK.

EXCAVATION BELOW SUBGRADE (EBS) IS NOT USED TO BALANCE YARDAGE AND IS NOT SHOWN ON THE CROSS SECTIONS, BUT IS MEASURED AND PAID FOR AS EXCAVATION COMMON. THE LOCATION OF EBS SHALL BE DETERMINED BY THE ENGINEER.

SELECT CRUSHED MATERIAL SHALL BE USED IN ALL EBS AREAS.

THE EXACT LOCATIONS OF ALL DRIVEWAY ENTRANCES ARE TO BE DETERMINED IN THE FIELD BY THE ENGINEER.

THE EROSION CONTROL FEATURES ARE SHOWN ON THE PLAN AND ARE AT SUGGESTED LOCATIONS. EXACT LOCATIONS TO BE DETERMINED BY THE ENGINEER. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL SUCH A TIME AS THE ENGINEER DETERMINES THE MEASURE IS NO LONGER NECESSARY.

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY SHALL BE RESTORED AS DIRECTED BY THE ENGINEER.

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

THE CONTRACTOR IS TO WORK WITH UTMOST CARE AND PROTECT ALL SURVEY MARKERS. REMOVAL OF ANY SURVEY MARKER IS TO BE WITH THE APPROVAL OF THE ENGINEER.

DETAILS OF CONSTRUCTION NOT SHOWN ON THE PLAN SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

RESTORATION OF EXPOSED SLOPE AND DITCHES SHALL TAKE PLACE NOT MORE THAN 7 DAYS AFTER FINISHED GRADING IS COMPLETE.

THE CONTRACTORS PAVING OPERATIONS SHALL BE CONSISTENT WITH THE PLAN TYPICAL SECTIONS AND CONSTRUCTED TO PREVENT HMA LONGITUDINAL JOINT FROM BEING LOCATED WITHIN A DRIVING OR TURNING LANE.

HMA PAVEMENT WEIGHT CALCULATIONS ARE BASED ON 110 LB/SY/INCH.

THE CONTRACTOR SHALL COORDINATE ALL UTILITY ADJUSTMENTS WITH THE APPROPRIATE UTILITY.

THE CONTRACTOR SHALL MAINTAIN ACCESS TO ALL PROPERTY OWNERS ALONG THE PROJECT AT ALL TIMES.

ORDER OF DETAIL SHEETS
GENERAL NOTES
PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS
PLAN DETAILS
CONTOUR MAP
EROSION CONTROL
PERMANENT SIGNING
ALIGNMENT & CONTROL POINT TIES

UTILITIES

ROCK ENERGY COOPERATIVE (ELECTRIC)
 ATTN: TONY HAFFELDER
 2815 KENNEDY ROAD, P.O. BOX 126
 JANESVILLE, WI 53547
 TELEPHONE: (608) 752-4550
 EMAIL: TONYH@ROCK.COOP

ANR TRANSCANADA (GAS PIPELINE)
 ATTN: DICK MELLOM
 10255 WASHINGTON AVE. SOUTH
 MARSHFIELD, WI 53545
 TELEPHONE: (331) 256-0815
 EMAIL: DICK_MELLOM@TRANSCANADA.COM

**DENOTES UTILITIES THAT ARE NOT DIGGERS HOTLINE MEMBERS

HMA PAVEMENT SHALL BE CONSTRUCTED WITH THE FOLLOWING LAYERS AND GRADATIONS:

TYPE	THICKNESS	LAYERS	MAX. NO. SIZE GRADATION
4 LT 58-28 S	2.00"	LOWER LAYER	12.5 MM
4 LT 58-28 S	2.00"	UPPER LAYER	12.5 MM

ABBREVIATIONS

AC	ACRES	IP	IRON PIPE
AEW	APRON ENDWALL	JCT	JUNCTION
ASPH	ASPHALT	LHF	LEFT HAND FORWARD
AVG	AVERAGE	L	LENGTH
ADT	AVERAGE DAILY TRAFFIC	LS	LUMP SUM
BAD	BASE AGGREGATE DENSE	LT	LEFT
BM	BENCHMARK	MH	MANHOLE
CL	CENTERLINE OR CLASS	NC	NORMAL CROWN
CC	CENTER TO CENTER	N	NORTH
CE	COMMERCIAL ENTRANCE	PT	POINT
CONC	CONCRETE	PC	POINT OF CURVATURE
CMP	CORRUGATED METAL PIPE	PI	POINT OF INTERSECTION
CPRC	CULVERT PIPE CORRUGATED STEEL	PT	POINT OF TANGENCY
CSCP	CORRUGATED STEEL CULVERT PIPE	PL	PROPERTY LINE
CSM	CERTIFIED SURVEY MAP	PE	PRIVATE ENTRANCE
CTH	COUNTY TRUNK HIGHWAYS	R/RAD	RADIUS
CULV	CULVERT	RCP	REINFORCED CONCRETE PIPE
CP	CULVERT PIPE	REQ'D	REQUIRED
C&G	CURB & GUTTER	RT	RIGHT
D	DEGREE OF CURVATURE	R/W	RIGHT-OF-WAY
DHV	DESIGN HOURLY VOLUME	RHF	RIGHT HAND FORWARD
DIA	DIAMETER	SALV	SALVAGED
DWY	DRIVEWAY	SAN	SANITARY SEWER
E	EAST	SHLDR	SHOULDER
ELEV	ELEVATION	SDD	STANDARD DETAIL DRAWINGS
EW	ENDWALL	STA	STATION
ENT	ENTRANCE	STM	STORM SEWER
ESALS	EQUIVALENT SINGLE AXLE LOADS	SE	SUPERELEVATION
EX	EXISTING	SS	STORM SEWER
EXC	EXCAVATION	SSPRC	STORM SEWER PIPE REINFORCED CONCRETE
EBS	EXCAVATION BELOW SUBGRADE	TAN	TANGENT
EXIST	EXISTING	TLE	TEMPORARY LIMITED EASEMENT
FF	FACE TO FACE	T	TRUCKS
FERT	FERTILIZER	TYP	TYPICAL
FE	FEILD ENTRANCE	VERT	VERTICAL
FG	FINISHED GRADE	VC	VERTICAL CURVE
FT	FOOT	VOL	VOLUME
GV	GAS VALVE	VV	WATER VALVE
IE	INVERT ELEVATION	W	WELL
INL	INLET	X	EAST GRID COORDINATE
INV	INVERT	Y	NORTH GRID COORDINATE

DNR LIAISON

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
 ATTN: SHELLEY WARWICK
 3911 FISH HATCHERY ROAD
 FITCHBURG, WI 53711
 TELEPHONE: (608) 444-2835
 EMAIL: SHELLEY.WARWICK@WISCONSIN.GOV

DESIGN CONTACT

R.H. BATTERMAN
 ATTN: RYAN RUDZINSKI, P.E.
 2857 BARTELLS DRIVE
 BELOIT, WI 53511
 TELEPHONE: (608) 365-4464
 EMAIL: RRUDZINSKI@RHBATTERMAN.COM

ROCK COUNTY

DIRECTOR OF PUBLIC WORKS
 DUANE M. JORGENSEN, P.E.
 3715 N. NEWVILLE ROAD
 JANESVILLE, WI 53545
 TELEPHONE: (608) 757-5450
 EMAIL: JORGEND@CO.ROCK.WI.US

DESIGN CONTACT

JEWELL ASSOCIATES ENGINEER, INC.
 ATTN: ELLERY SCHAFFER, P.E.
 560 SUNRISE DRIVE
 SPRING GREEN, WI 53588
 TELEPHONE: (608) 588-7484
 EMAIL: ELLERY.SCHAFFER@JEWELLASSOC.COM

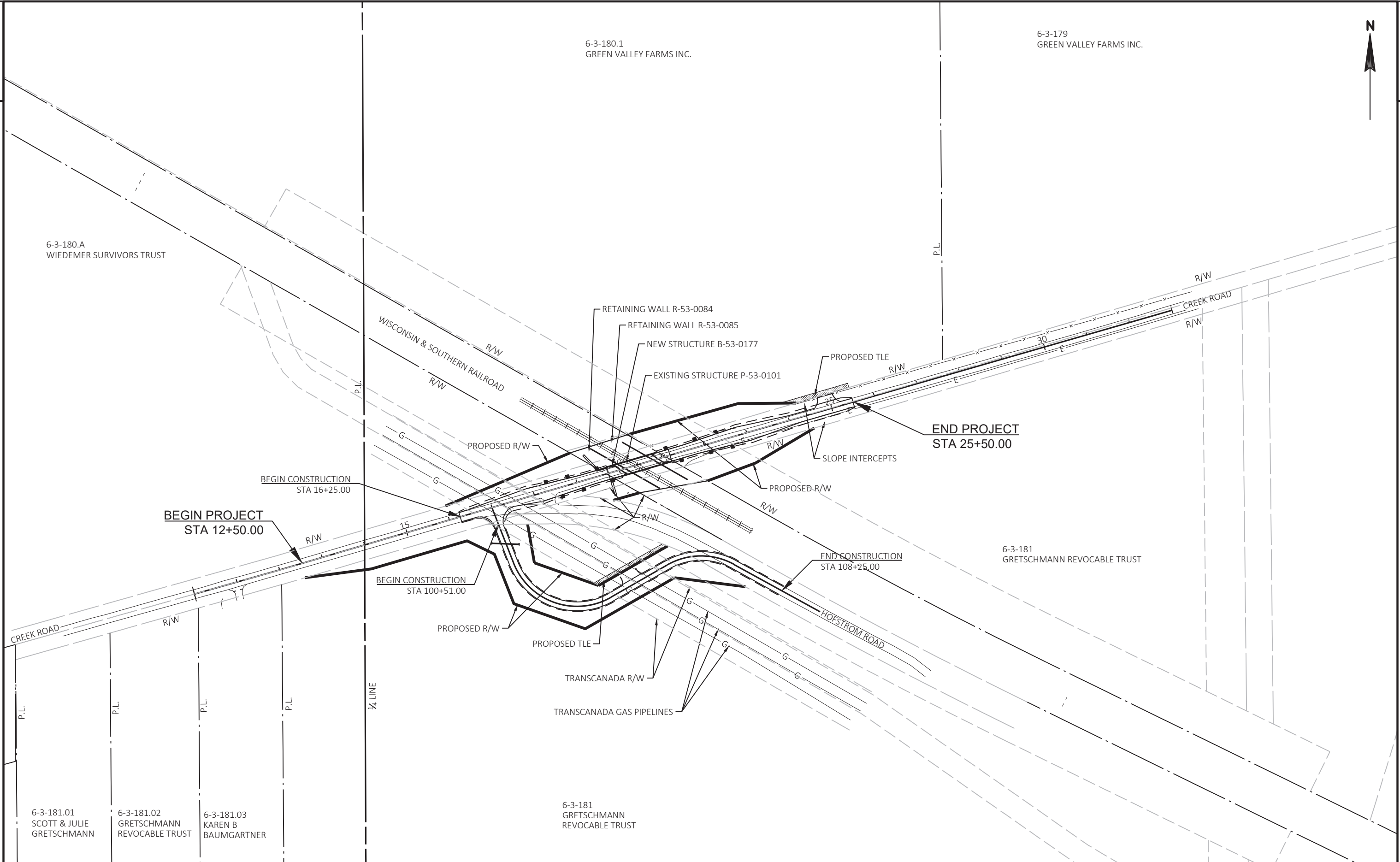
TOWN OF BRADFORD

CHAIR
 SHARON DOUGLAS
 3622 S. CARVERS ROCK ROAD
 AVALON, WI 53505
 TELEPHONE: (608) 290-5340

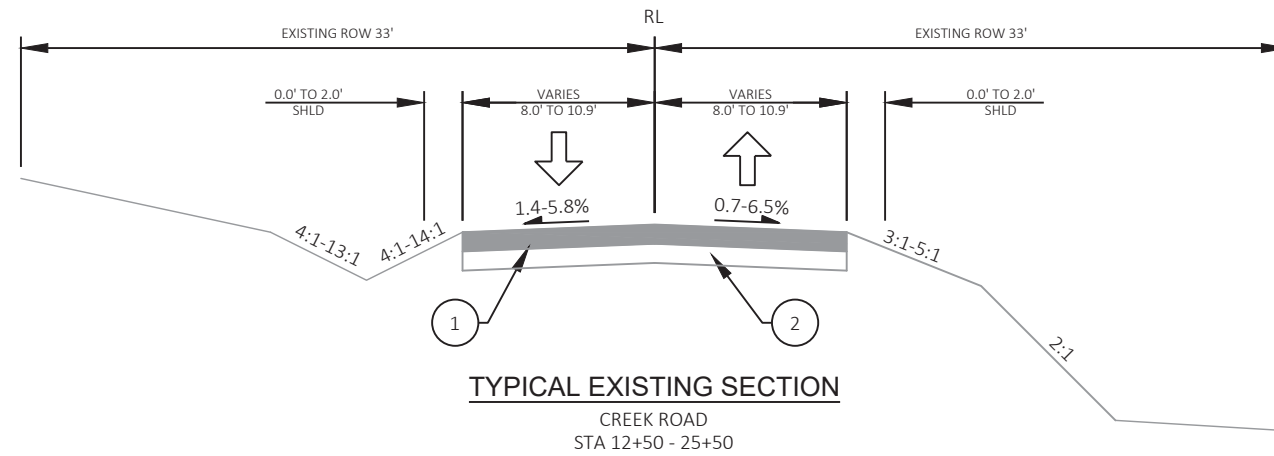


Dial 811 or (800) 242-8511

www.DiggersHotline.com

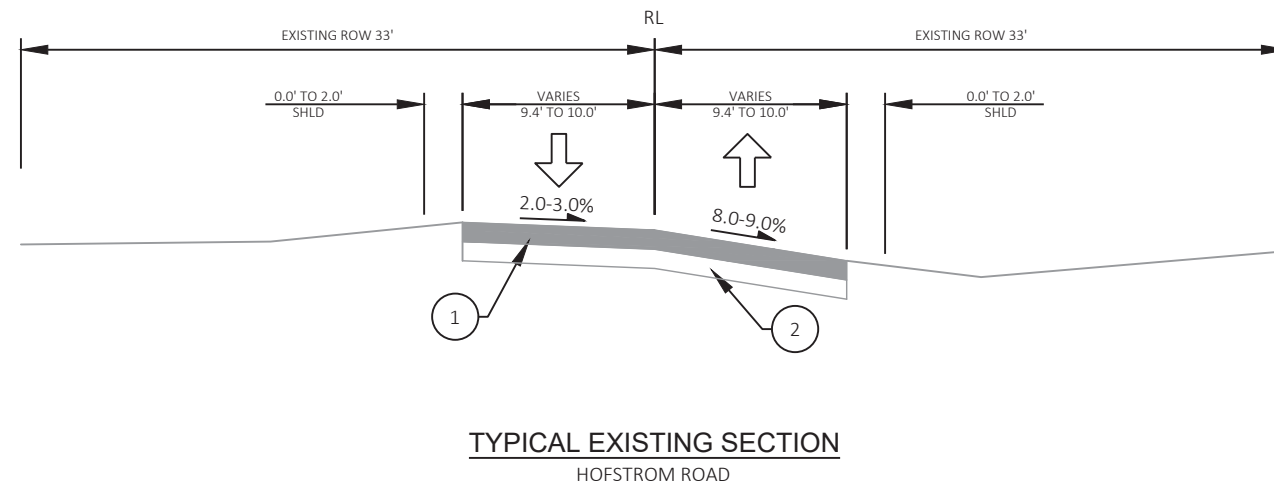


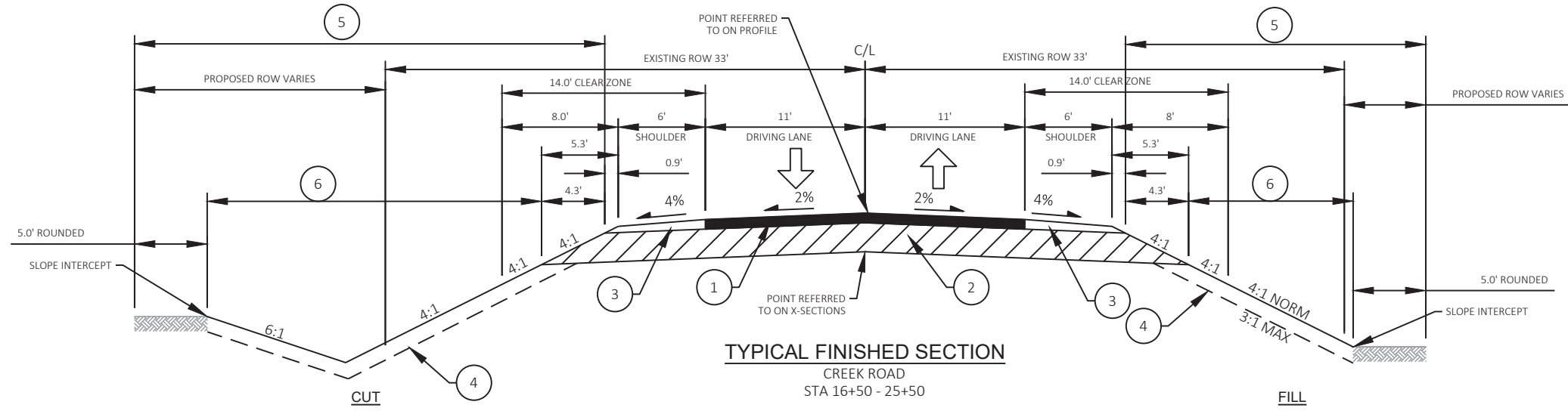
PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	PROJECT OVERVIEW	SHEET	E
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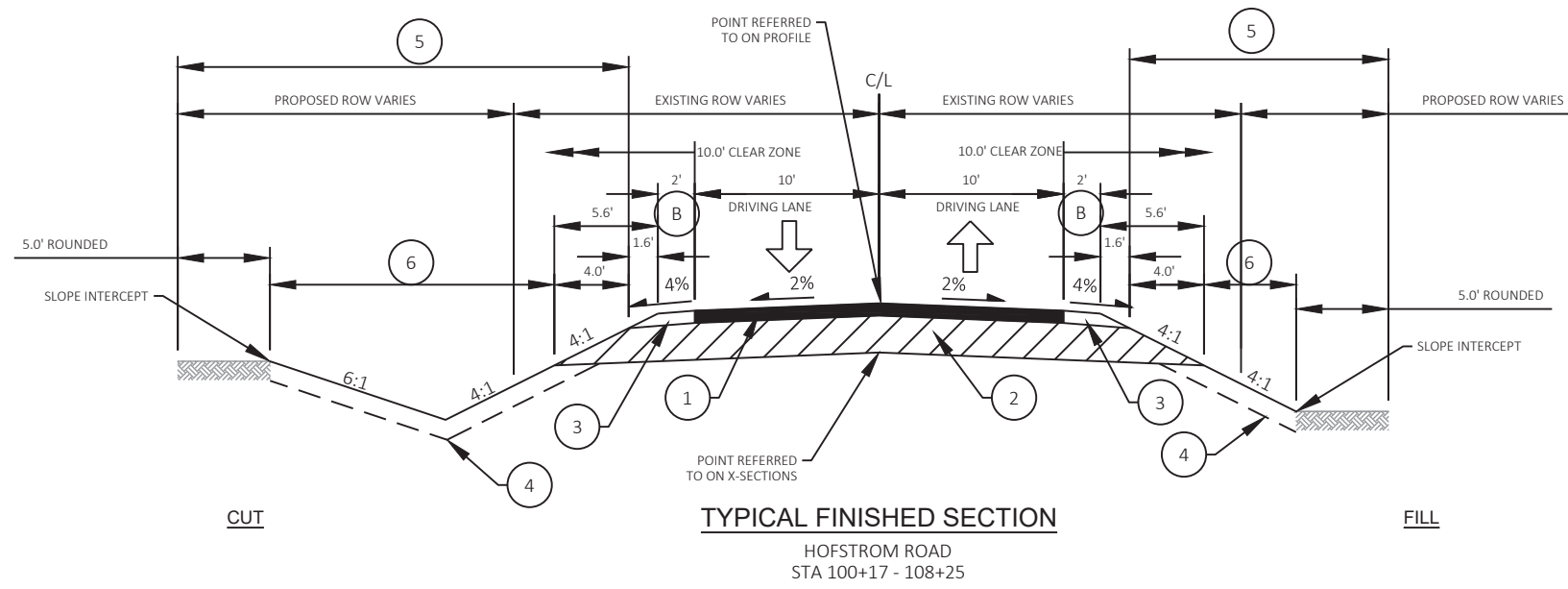
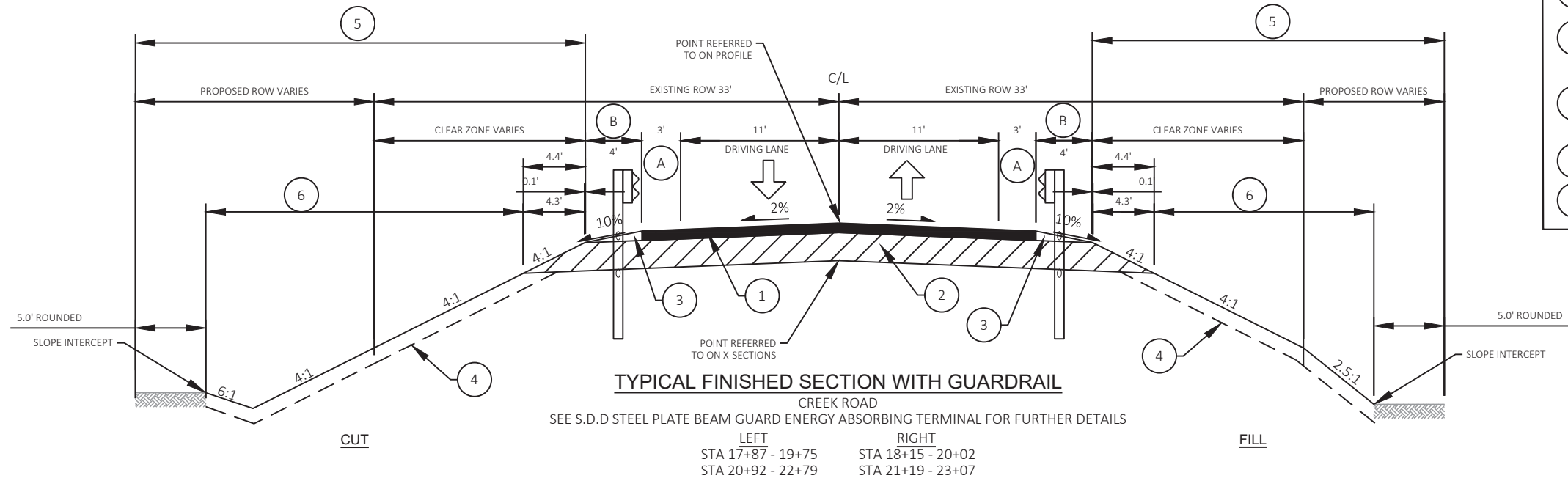
LEGEND

- 1 4.0-INCH TO 5.5-INCH EXISTING ASPHALT PAVEMENT
- 2 3.5-INCH TO 5.0-INCH EXISTING BASE AGGREGATE





- LEGEND**
- 1 4-INCH HMA PAVEMENT 4 LT 58-28 S
 - 2 12-INCH BASE AGGREGATE DENSE 1 1/4-INCH
 - 3 4-INCH BASE AGGREGATE DENSE 3/4-INCH
 - 4 SALVAGED TOPSOIL
 - 5 LIMITS OF SEEDING MIX. NO. 20, SEEDING TEMPORARY, AND FERTILIZER TYPE B (AS DIRECTED BY ENGINEER)
 - 6 LIMITS OF SALVAGED TOPSOIL (AS DIRECTED BY ENGINEER)
 - A PAVED SHOULDER
 - B AGGREGATE SHOULDER

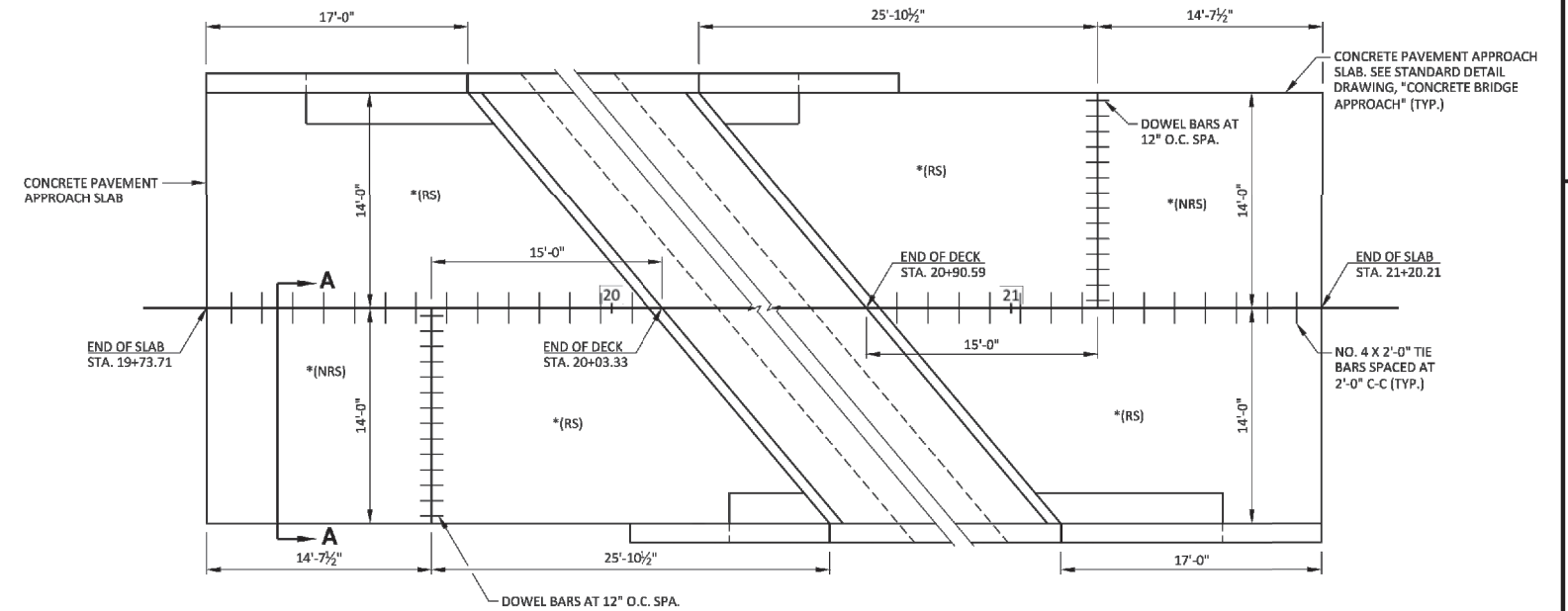
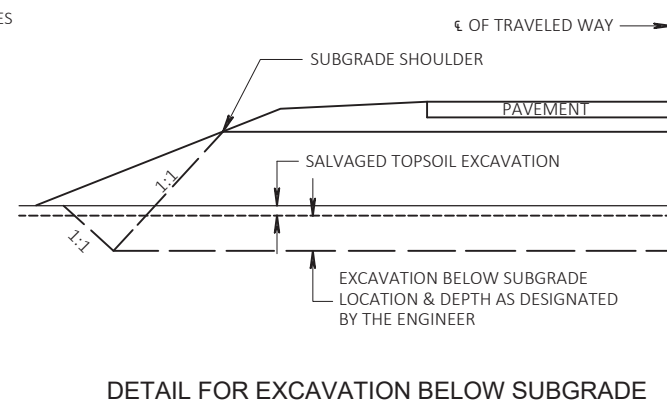


HOFSTROM ROAD SUPERELEVATION TABLE			
STATION	DESCRIPTION	LEFT SLOPE	RIGHT SLOPE
CURVE #1			
100+17.00	MATCH CREEK RD	3.10%	-3.10%
100+25.00	END FULL SUPER	3.10%	-3.10%
100+46.56	REVERSE CROWN	2.00%	-2.00%
100+85.75	LEVEL CROWN	0.00%	0.00%
101+22.25	REVERSE CROWN	-2.00%	2.00%
101+58.75	BEGIN FULL SUPER	-4.00%	4.00%
103+74.65	END FULL SUPER	-4.00%	4.00%
104+23.43	REVERSE CROWN	-2.00%	2.00%
104+72.27	LEVEL CROWN	0.00%	0.00%
CURVE #2			
104+72.27	LEVEL CROWN	0.00%	0.00%
105+20.98	REVERSE CROWN	2.00%	-2.00%
105+69.76	BEGIN FULL SUPER	4.00%	-4.00%
106+78.50	END FULL SUPER	4.00%	-4.00%
107+15.00	REVERSE CROWN	2.00%	-2.00%
107+51.50	LEVEL CROWN	0.00%	-2.00%
107+88.00	BEGIN NORMAL CROWN	-2.00%	-2.00%
108+25.50	BEGIN NORMAL SHOULDER	-2.00%	-2.00%

RUNOFF COEFFICIENT TABLE

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

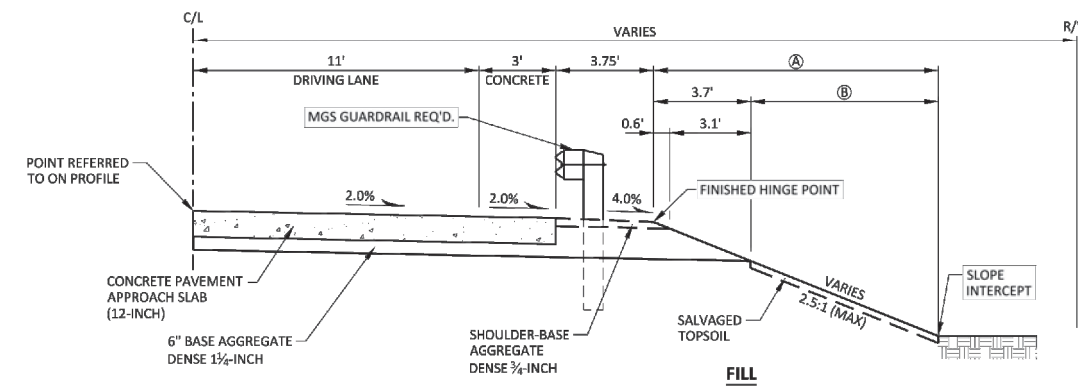
TOTAL PROJECT AREA = 5.98 ACRES
 TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 5.76 ACRES



LEGEND

- * (RS) = REINFORCED CONCRETE SLAB
- * (NRS) = NON-REINFORCED CONCRETE SLAB

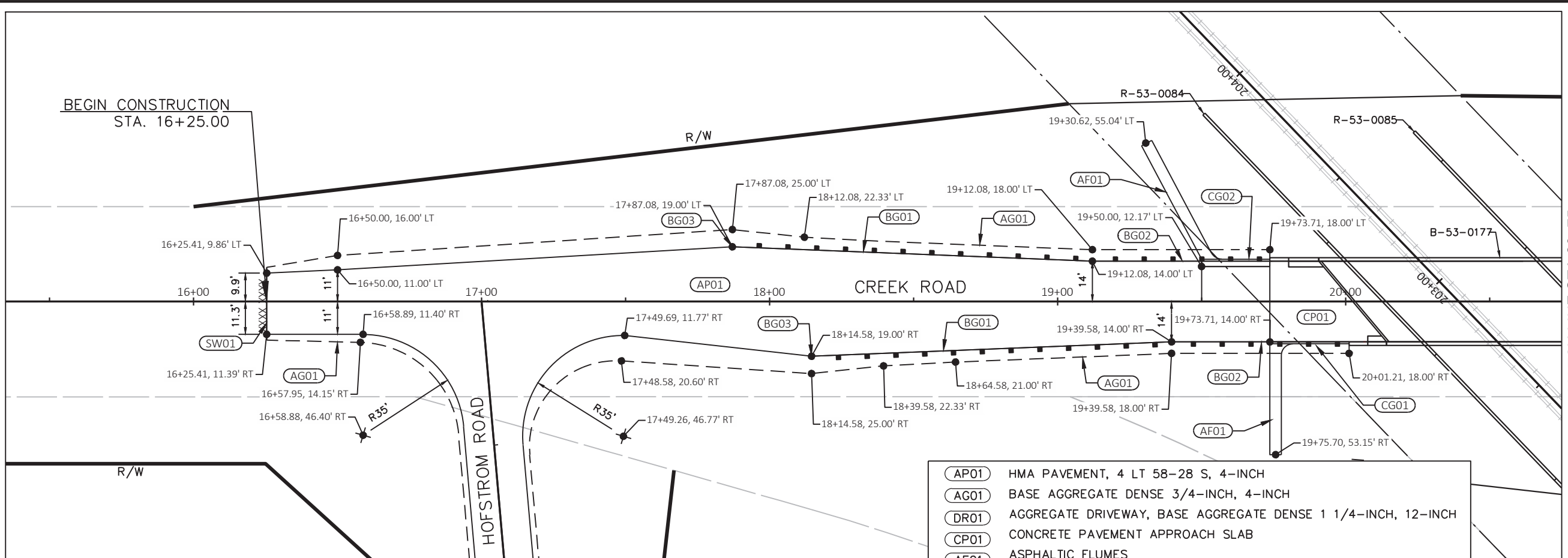
STRUCTURE APPROACH DETAILS



SECTION A-A

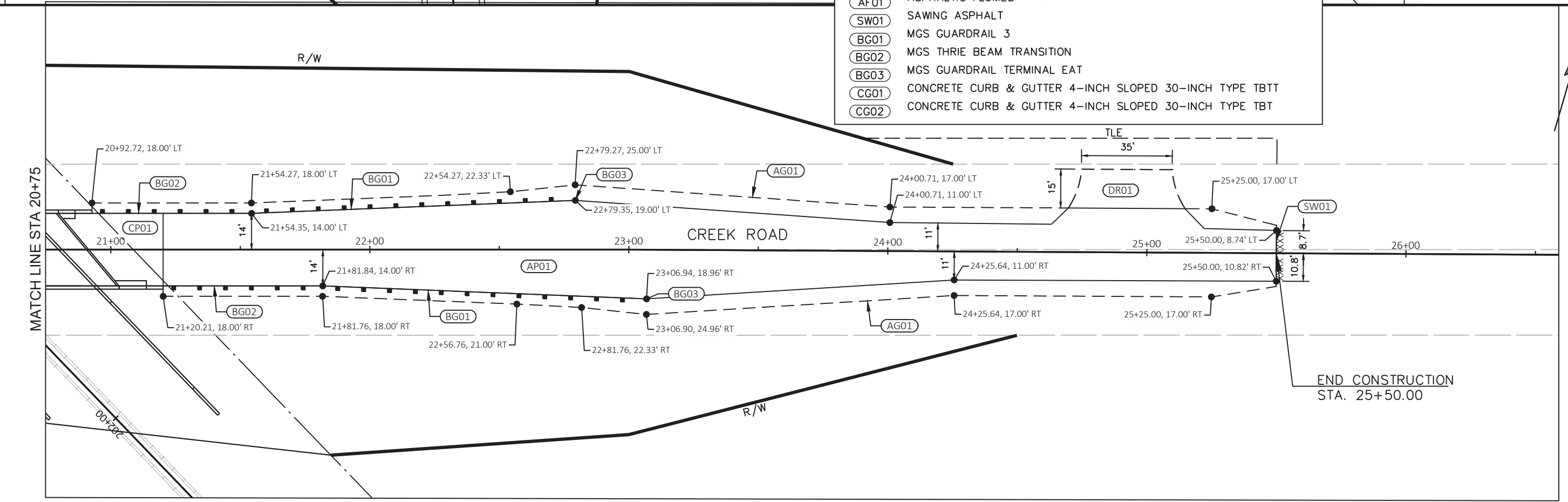
- Ⓐ LIMITS OF SEEDING MIXTURE NO. 20, SEEDING TEMPORARY, EROSION MAT, AND FERTILIZER TYPE B (AS DIRECTED BY ENGINEER)
- Ⓑ LIMITS OF SALVAGED TOPSOIL (AS DIRECTED BY ENGINEER)

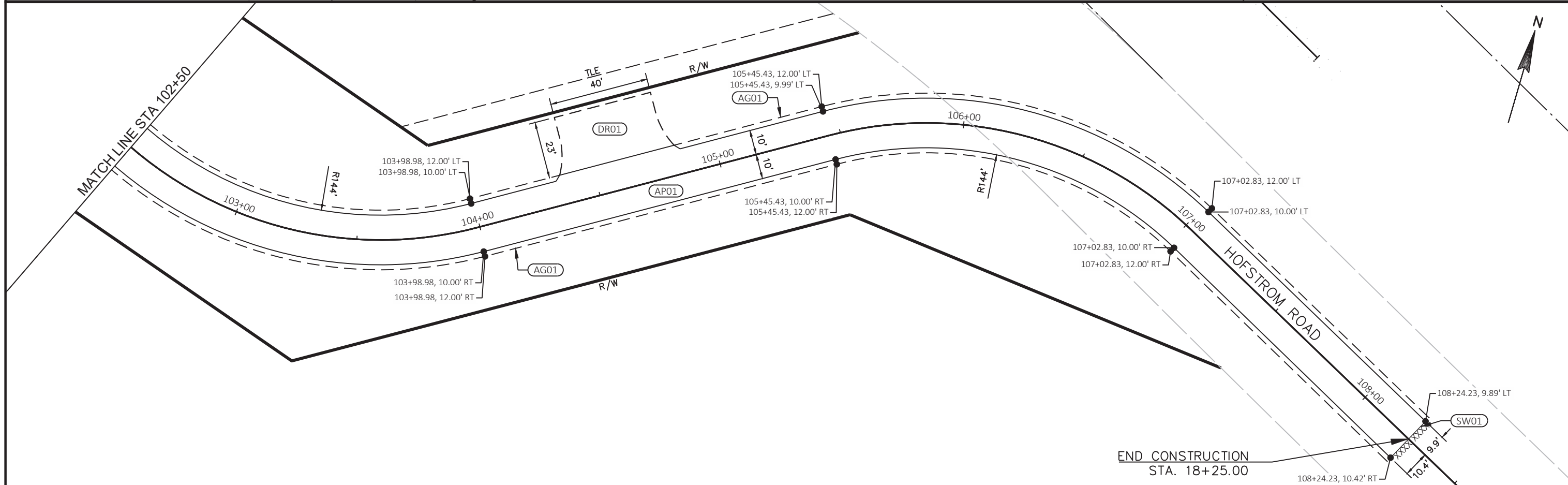
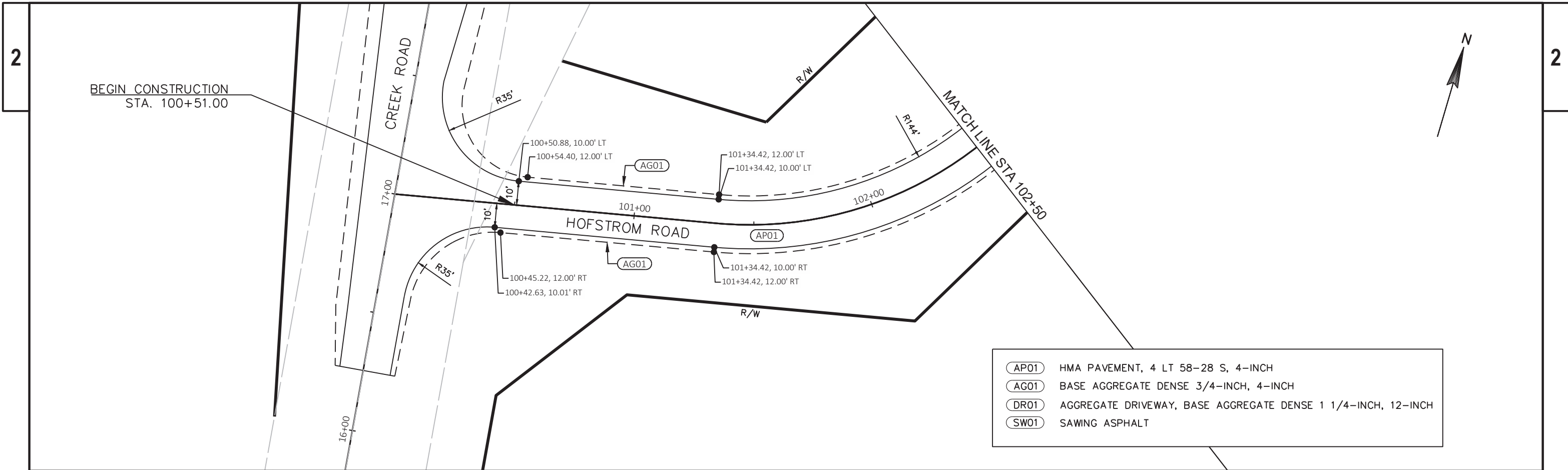
BEGIN CONSTRUCTION
STA. 16+25.00



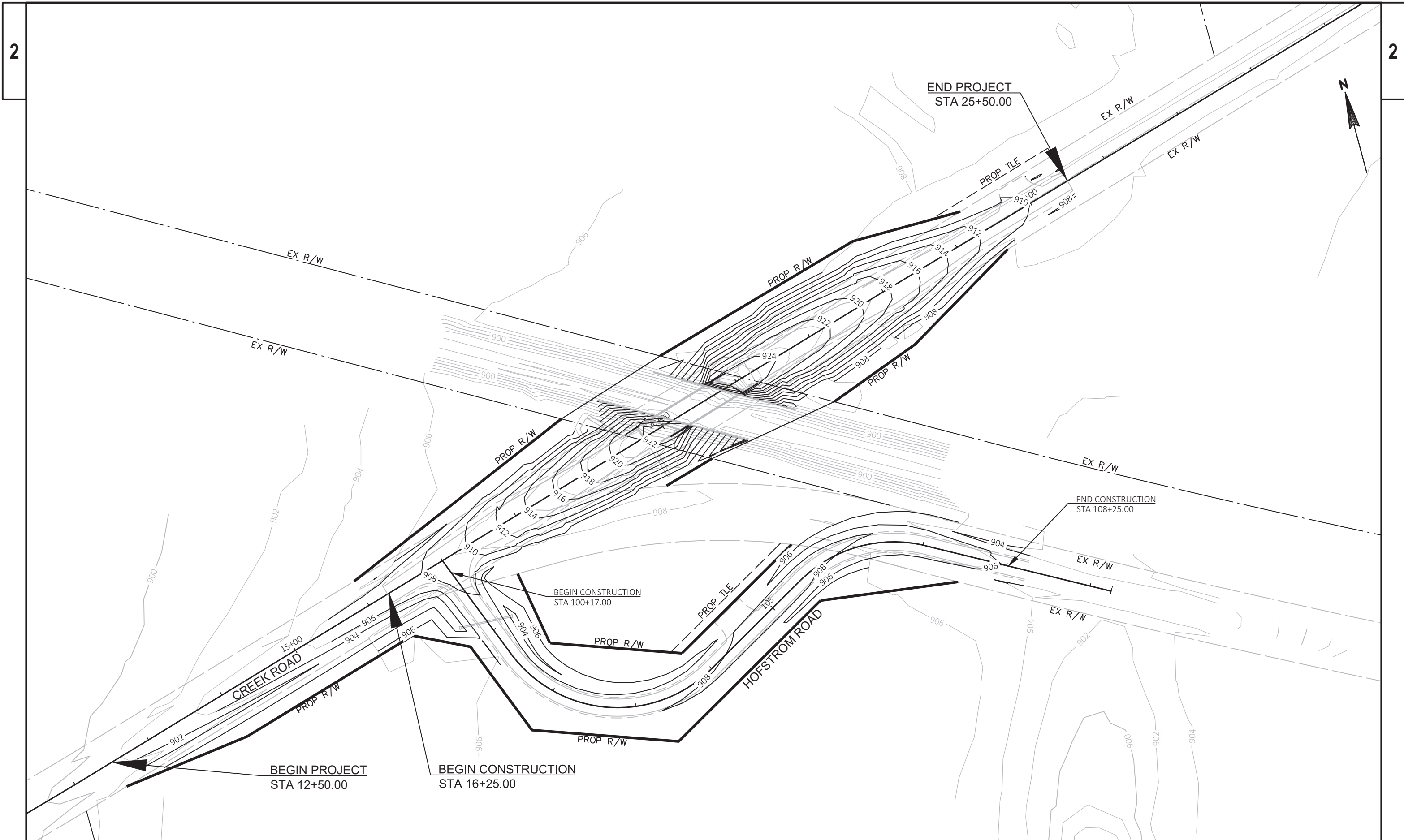
- AP01 HMA PAVEMENT, 4 LT 58-28 S, 4-INCH
- AG01 BASE AGGREGATE DENSE 3/4-INCH, 4-INCH
- DR01 AGGREGATE DRIVEWAY, BASE AGGREGATE DENSE 1 1/4-INCH, 12-INCH
- CP01 CONCRETE PAVEMENT APPROACH SLAB
- AF01 ASPHALTIC FLUMES
- SW01 SAWING ASPHALT
- BG01 MGS GUARDRAIL 3
- BG02 MGS THRIE BEAM TRANSITION
- BG03 MGS GUARDRAIL TERMINAL EAT
- CG01 CONCRETE CURB & GUTTER 4-INCH SLOPED 30-INCH TYPE TBTT
- CG02 CONCRETE CURB & GUTTER 4-INCH SLOPED 30-INCH TYPE TBT

MATCH LINE STA 20+75












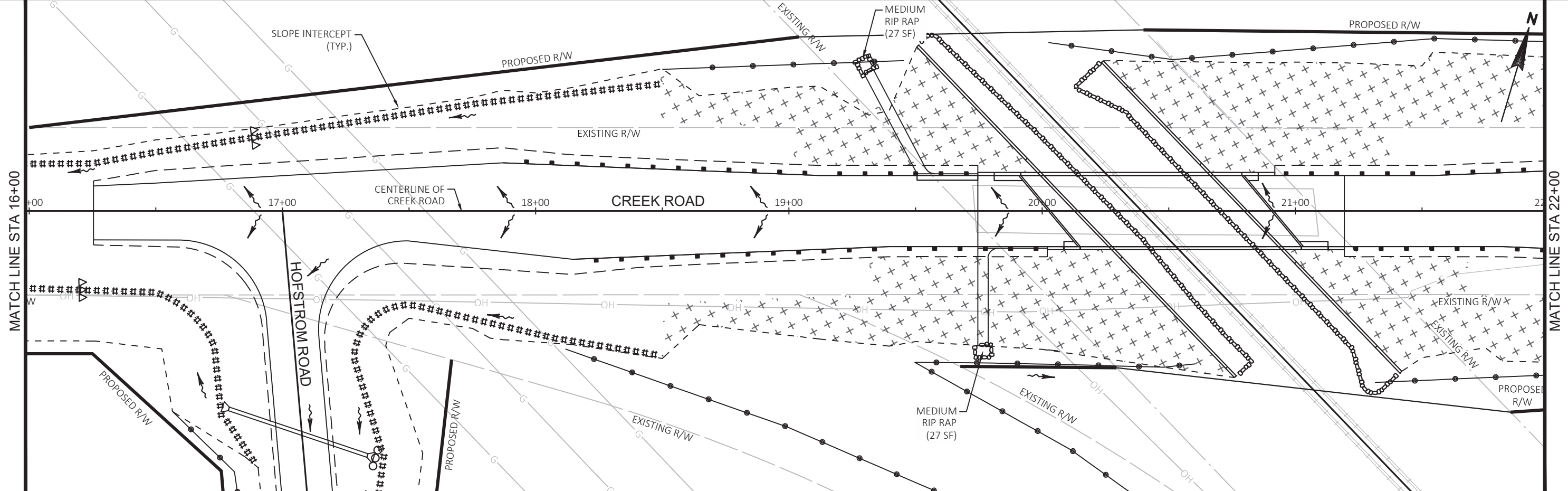
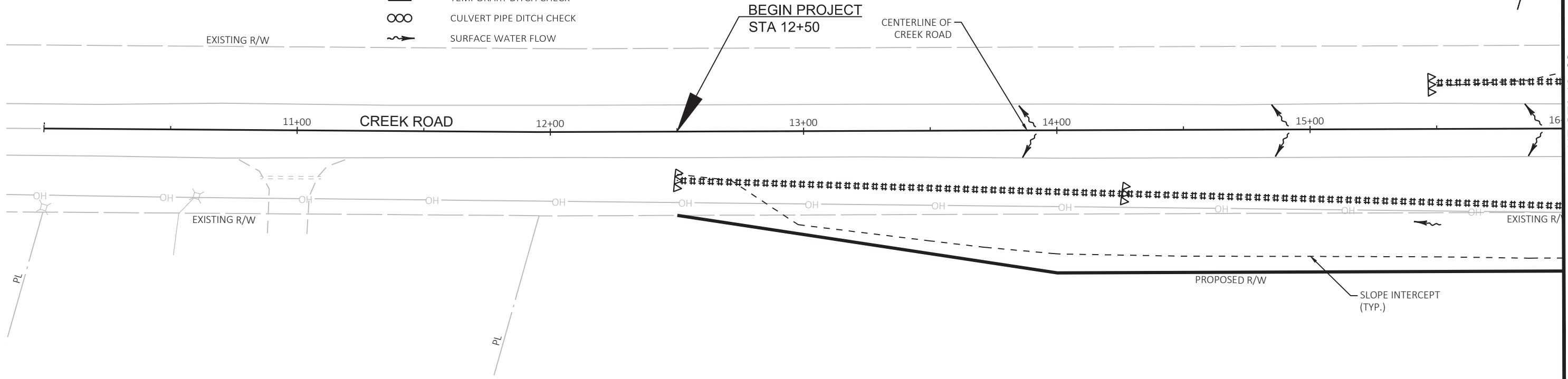
PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	PLAN DETAILS: HOFSTROM ROAD	SHEET	E
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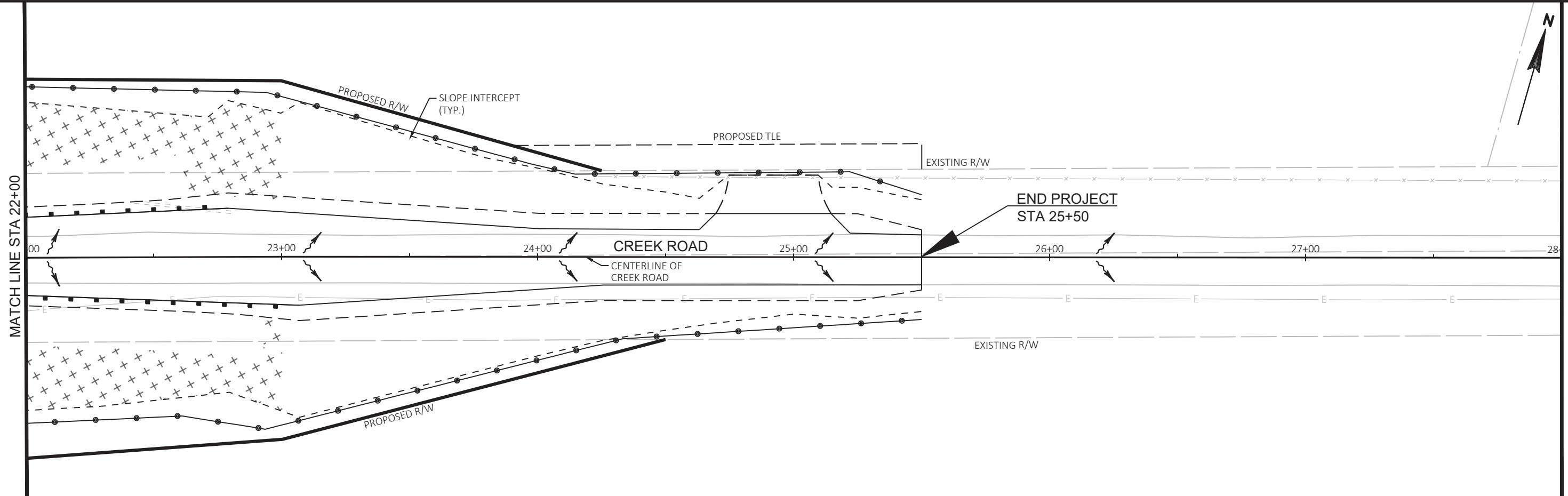
PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	CONTOUR MAP	SHEET	E
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LEGEND

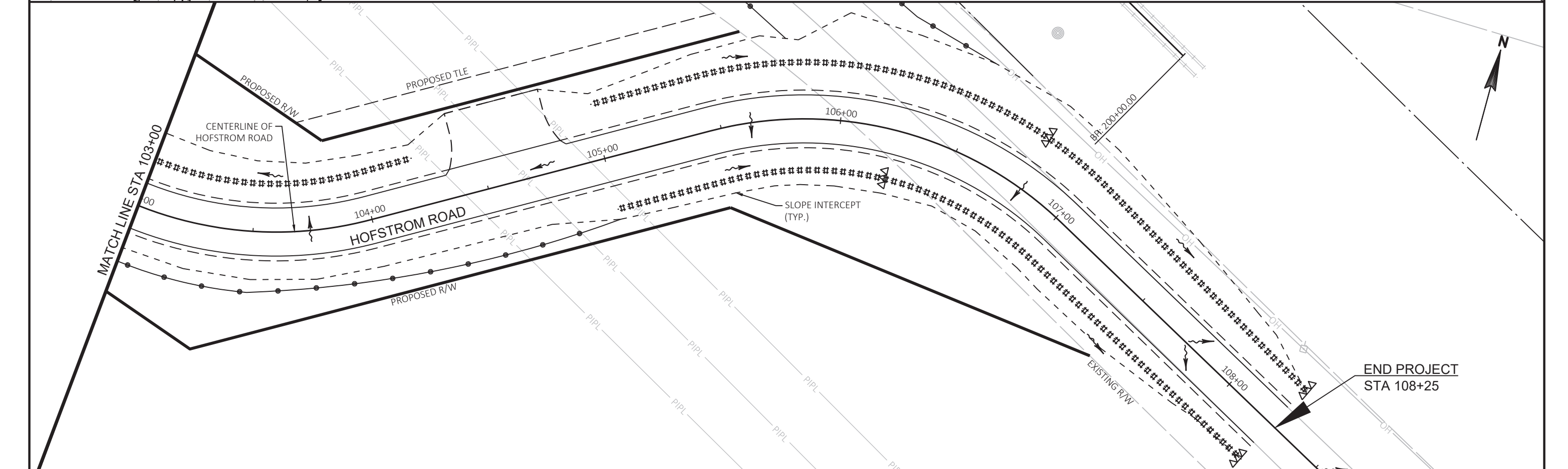
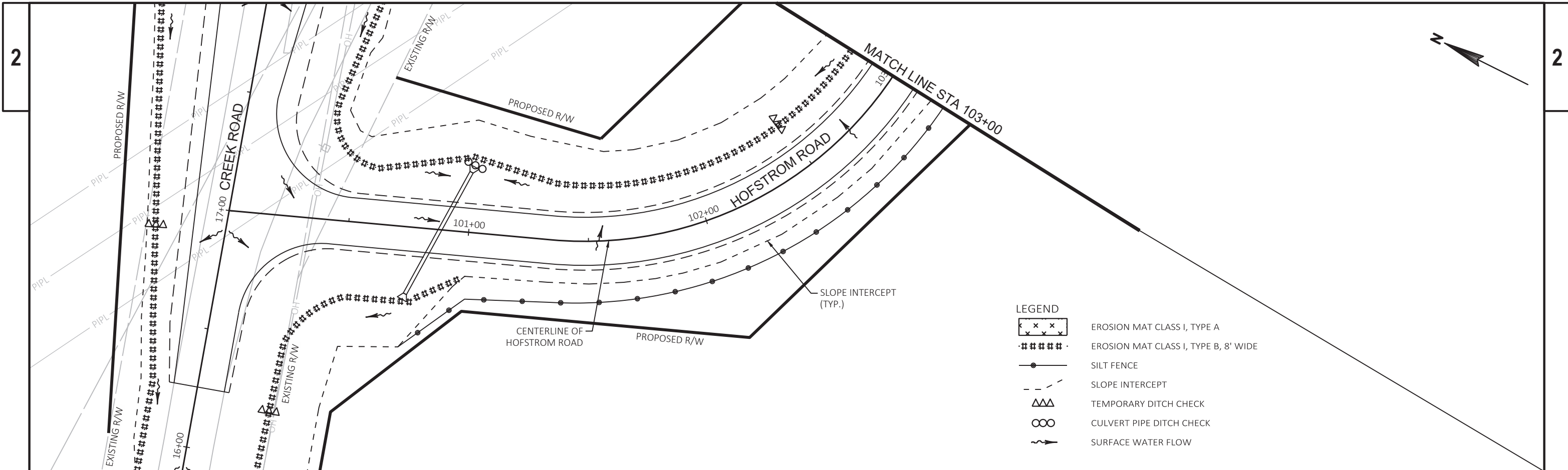
-  EROSION MAT CLASS I, TYPE A
-  EROSION MAT CLASS I, TYPE B, 8' WIDE
-  SILT FENCE
-  SLOPE INTERCEPT
-  TEMPORARY DITCH CHECK
-  CULVERT PIPE DITCH CHECK
-  SURFACE WATER FLOW



PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	EROSION CONTROL - CREEK ROAD	SHEET	E
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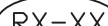



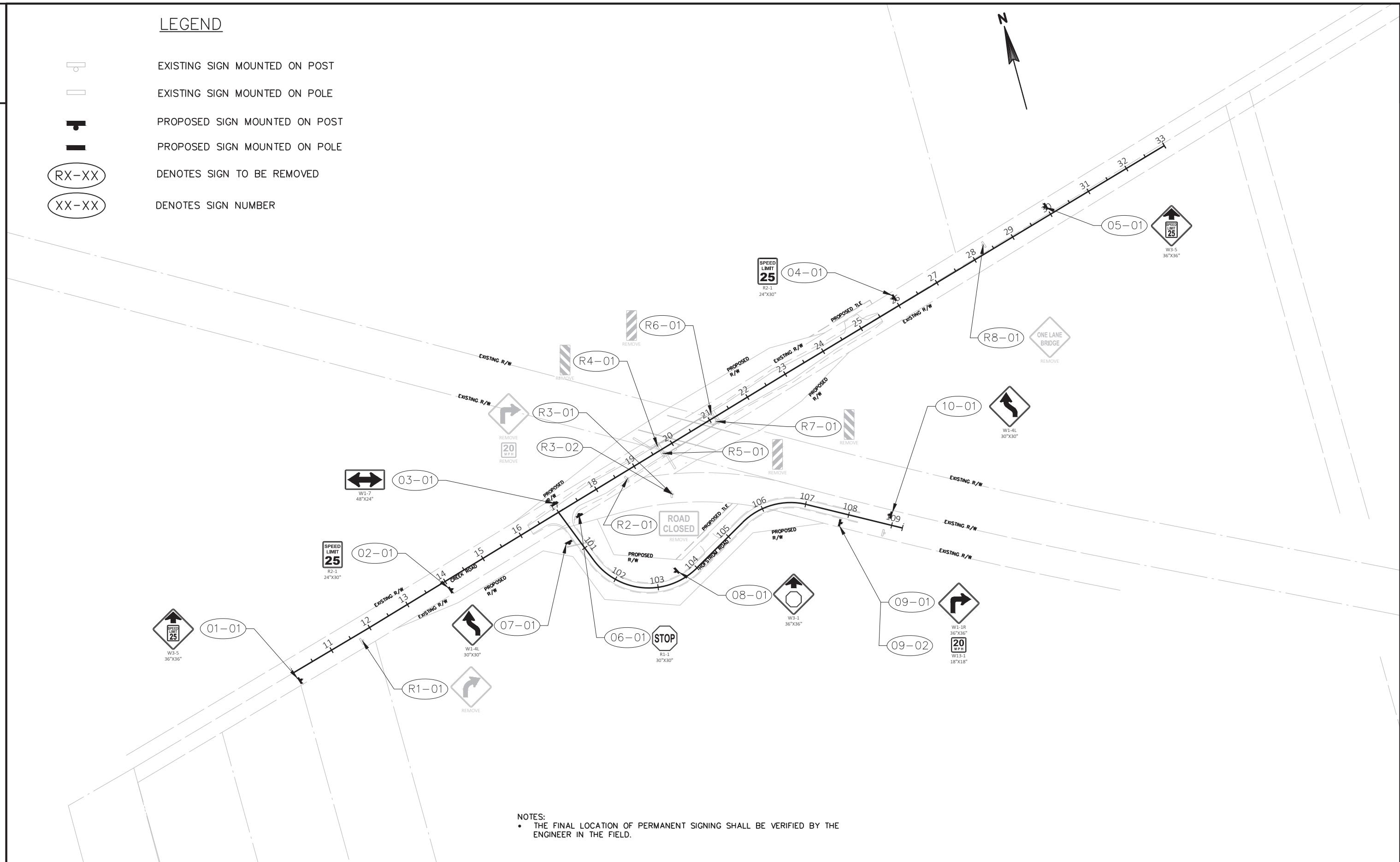
- LEGEND
- EROSION MAT CLASS I, TYPE A
 - EROSION MAT CLASS I, TYPE B, 8' WIDE
 - SILT FENCE
 - SLOPE INTERCEPT
 - TEMPORARY DITCH CHECK
 - CULVERT PIPE DITCH CHECK
 - SURFACE WATER FLOW



PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	EROSION CONTROL - HOFSTROM ROAD	SHEET	E
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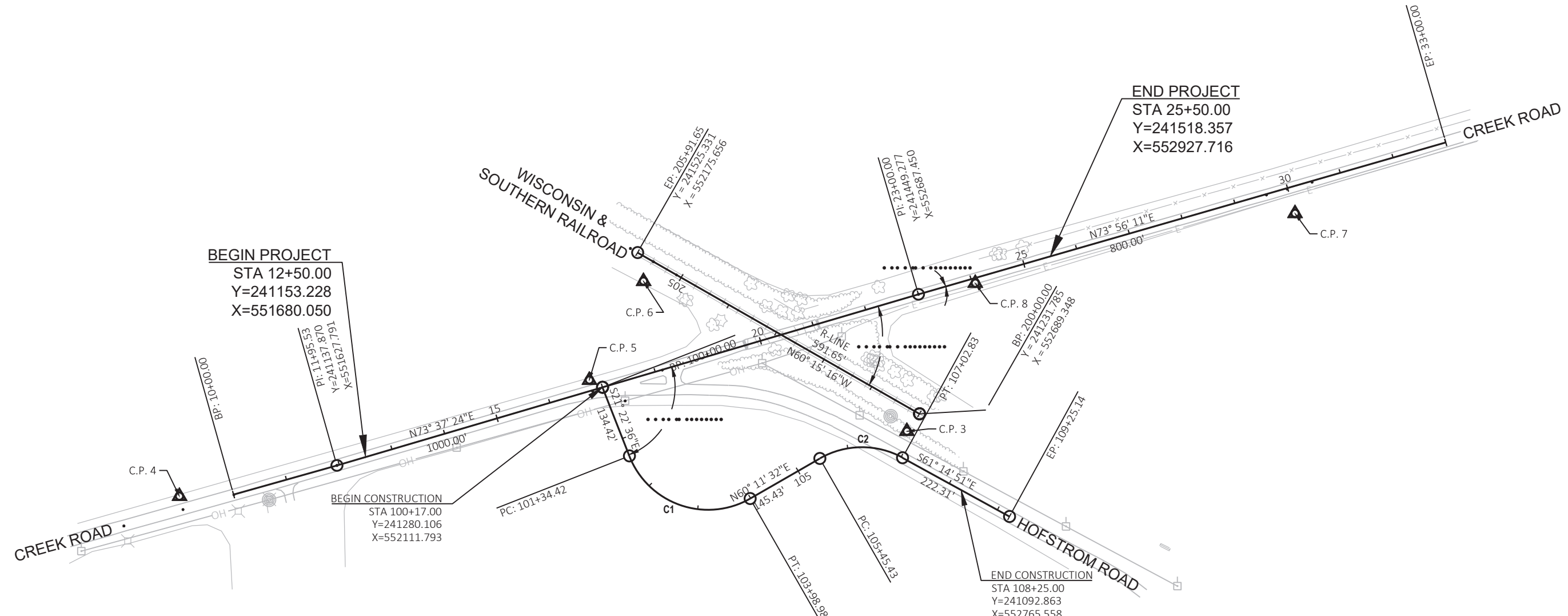
LEGEND

-  EXISTING SIGN MOUNTED ON POST
-  EXISTING SIGN MOUNTED ON POLE
-  PROPOSED SIGN MOUNTED ON POST
-  PROPOSED SIGN MOUNTED ON POLE
-  DENOTES SIGN TO BE REMOVED
-  DENOTES SIGN NUMBER



NOTES:
 • THE FINAL LOCATION OF PERMANENT SIGNING SHALL BE VERIFIED BY THE ENGINEER IN THE FIELD.

PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	PERMANENT SIGNING	SHEET	E
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BEGIN PROJECT
 STA 12+50.00
 Y=241153.228
 X=551680.050

END PROJECT
 STA 25+50.00
 Y=241518.357
 X=552927.716

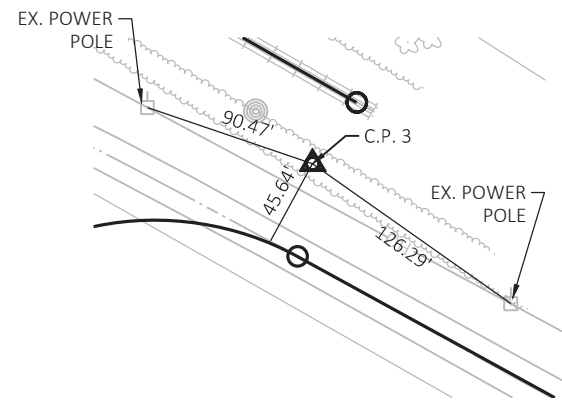
BEGIN CONSTRUCTION
 STA 100+17.00
 Y=241280.106
 X=552111.793

END CONSTRUCTION
 STA 108+25.00
 Y=241092.863
 X=552765.558

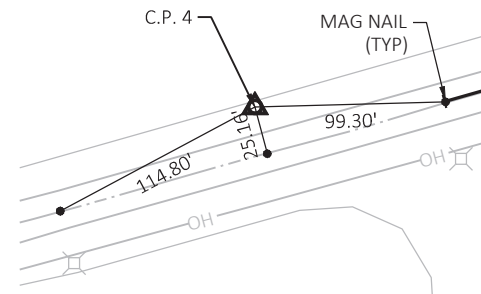
C1
 PI STA = 103+12.92
 Y = 240988.709
 X = 552225.853
 DELTA = 98°25'52"
 D = 37°12'18"
 T = 178.51'
 L = 264.56'
 R = 154.00'
 PC STA = 101+34.42
 Y = 241154.937
 X = 552160.787
 PT STA = 103+98.98
 Y = 241077.444
 X = 552380.745
 BK = S21°22'36.1"E
 AH = N60°11'31.8"E

C2
 PI STA = 106+31.78
 Y = 241193.168
 X = 552582.745
 DELTA = 58°33'37"
 D = 37°12'18"
 T = 86.35'
 L = 157.40'
 R = 154.00'
 PC STA = 105+45.43
 Y = 241150.244
 X = 552507.819
 PT STA = 107+02.83
 Y = 241151.631
 X = 552658.449
 BK = N60°11'31.8"E
 AH = S61°14'51.2"E

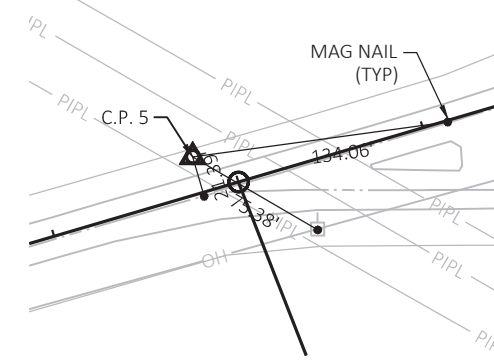
CONTROL POINT TABLE				
POINT NUMBER	Y	X	ELEVATION	DESCRIPTION
CP 3	241199.957	552666.407	906.74	CP REBSET
CP 4	241081.826	551340.855	897.12	CP REBSET
CP 5	241293.218	552087.932	906.61	CP REBSET
CP 6	241473.185	552186.541	907.13	CP REBSET
CP 7	241596.644	553373.683	906.22	CP REBSET
CP 8	241469.627	552790.979	909.18	CP MAG



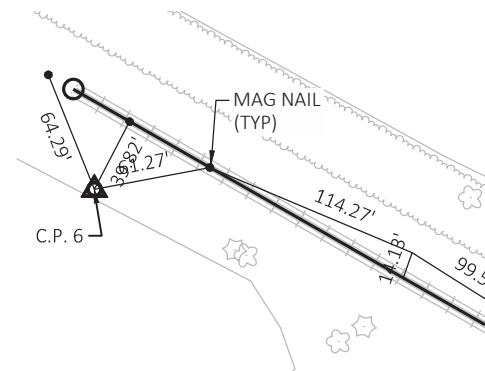
CONTROL POINT #3
 STA. 106+90.34, 46.86 LT



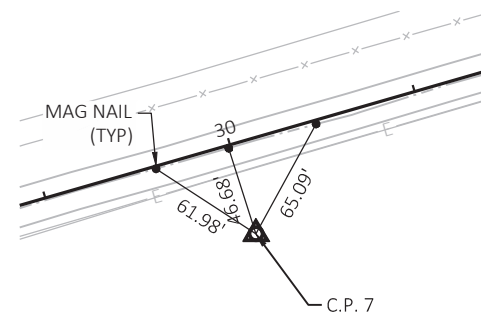
CONTROL POINT #4
 STA. 9+04.16, 24.04' LT



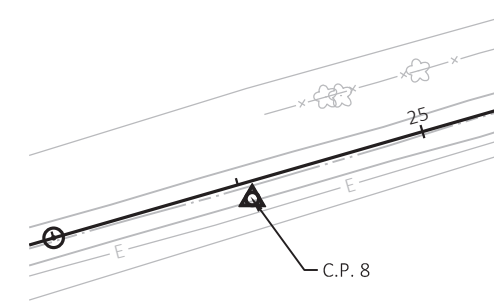
CONTROL POINT #5
 STA. 16+80.80, 19.31 LT



CONTROL POINT #6
 STA. 205+56.33, 39.87' LT



CONTROL POINT #7
 STA. 30+00.22, 48.27' RT



CONTROL POINT #8
 STA. 24+05.12, 9.09' RT

Estimate Of Quantities

3614-00-75

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	5.000	5.000
0004	201.0205	Grubbing	STA	5.000	5.000
0006	203.0100	Removing Small Pipe Culverts	EACH	1.000	1.000
0008	203.0200	Removing Old Structure (station) 01. Sta. 20+41	LS	1.000	1.000
0010	203.0225.S	Debris Containment (structure) 01. P-53-101	LS	1.000	1.000
0012	204.0170	Removing Fence	LF	326.000	326.000
0014	205.0100	Excavation Common	CY	2,864.000	2,864.000
0016	206.1000	Excavation for Structures Bridges (structure) 01. B-53-177	LS	1.000	1.000
0018	208.0100	Borrow	CY	14,729.000	14,729.000
0020	210.1500	Backfill Structure Type A	TON	430.000	430.000
0022	213.0100	Finishing Roadway (project) 01. 3614-00-75	EACH	1.000	1.000
0024	214.0100	Obliterating Old Road	STA	3.000	3.000
0026	305.0110	Base Aggregate Dense 3/4-Inch	TON	450.000	450.000
0028	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	5,200.000	5,200.000
0030	312.0110	Select Crushed Material	TON	1,600.000	1,600.000
0032	415.0410	Concrete Pavement Approach Slab	SY	186.000	186.000
0034	455.0605	Tack Coat	GAL	230.000	230.000
0036	460.2000	Incentive Density HMA Pavement	DOL	610.000	610.000
0038	460.5224	HMA Pavement 4 LT 58-28 S	TON	950.000	950.000
0040	465.0315	Asphaltic Flumes	SY	40.000	40.000
0042	502.0100	Concrete Masonry Bridges	CY	227.000	227.000
0044	502.3200	Protective Surface Treatment	SY	270.000	270.000
0046	502.3210	Pigmented Surface Sealer	SY	120.000	120.000
0048	503.0137	Prestressed Girder Type I 36W-Inch	LF	340.000	340.000
0050	505.0400	Bar Steel Reinforcement HS Structures	LB	5,110.000	5,110.000
0052	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	25,780.000	25,780.000
0054	506.2605	Bearing Pads Elastomeric Non-Laminated	EACH	8.000	8.000
0056	506.4000	Steel Diaphragms (structure) 01. B-53-177	EACH	6.000	6.000
0058	513.2001	Railing Pipe	LF	86.000	86.000
0060	516.0500	Rubberized Membrane Waterproofing	SY	14.000	14.000
0062	521.1018	Apron Endwalls for Culvert Pipe Steel 18-Inch	EACH	2.000	2.000
0064	521.3118	Culvert Pipe Corrugated Steel 18-Inch	LF	58.000	58.000
0066	550.0500	Pile Points	EACH	16.000	16.000
0068	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	840.000	840.000
0070	601.0584	Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type TBT	LF	25.000	25.000
0072	601.0586	Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type TBTT	LF	27.000	27.000
0074	604.0400	Slope Paving Concrete	SY	50.000	50.000

Estimate Of Quantities

3614-00-75

Line	Item	Item Description	Unit	Total	Qty
0076	604.0600	Slope Paving Select Crushed Material	SY	380.000	380.000
0078	606.0200	Riprap Medium	CY	4.000	4.000
0080	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	390.000	390.000
0082	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	4.000	4.000
0084	614.2300	MGS Guardrail 3	LF	600.000	600.000
0086	614.2500	MGS Thrie Beam Transition	LF	160.000	160.000
0088	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0090	616.0204	Fence Chain Link 4-FT	LF	263.000	263.000
0092	618.0100	Maintenance And Repair of Haul Roads (project) 01. 3614-00-75	EACH	1.000	1.000
0094	619.1000	Mobilization	EACH	1.000	1.000
0096	624.0100	Water	MGAL	110.000	110.000
0098	625.0500	Salvaged Topsoil	SY	11,100.000	11,100.000
0100	627.0200	Mulching	SY	17,000.000	17,000.000
0102	628.1504	Silt Fence	LF	2,500.000	2,500.000
0104	628.1520	Silt Fence Maintenance	LF	2,500.000	2,500.000
0106	628.1905	Mobilizations Erosion Control	EACH	5.000	5.000
0108	628.1910	Mobilizations Emergency Erosion Control	EACH	5.000	5.000
0110	628.2002	Erosion Mat Class I Type A	SY	1,900.000	1,900.000
0112	628.2004	Erosion Mat Class I Type B	SY	2,800.000	2,800.000
0114	628.7504	Temporary Ditch Checks	LF	500.000	500.000
0116	628.7555	Culvert Pipe Checks	EACH	3.000	3.000
0118	628.7560	Tracking Pads	EACH	2.000	2.000
0120	629.0210	Fertilizer Type B	CWT	7.000	7.000
0122	630.0120	Seeding Mixture No. 20	LB	300.000	300.000
0124	630.0200	Seeding Temporary	LB	300.000	300.000
0126	630.0300	Seeding Borrow Pit	LB	100.000	100.000
0128	630.0500	Seed Water	MGAL	240.000	240.000
0130	633.5200	Markers Culvert End	EACH	2.000	2.000
0132	634.0414	Posts Wood 4x4-Inch X 14-FT	EACH	4.000	4.000
0134	634.0416	Posts Wood 4x4-Inch X 16-FT	EACH	5.000	5.000
0136	634.0418	Posts Wood 4x4-Inch X 18-FT	EACH	1.000	1.000
0138	637.2210	Signs Type II Reflective H	SF	15.180	15.180
0140	637.2230	Signs Type II Reflective F	SF	58.750	58.750
0142	638.2602	Removing Signs Type II	EACH	8.000	8.000
0144	638.3000	Removing Small Sign Supports	EACH	8.000	8.000
0146	642.5201	Field Office Type C	EACH	1.000	1.000
0148	643.0420	Traffic Control Barricades Type III	DAY	3,600.000	3,600.000
0150	643.0705	Traffic Control Warning Lights Type A	DAY	5,100.000	5,100.000
0152	643.0900	Traffic Control Signs	DAY	2,800.000	2,800.000

Estimate Of Quantities

3614-00-75

Line	Item	Item Description	Unit	Total	Qty
0154	643.5000	Traffic Control	EACH	1.000	1.000
0156	645.0130	Geotextile Type R	SY	8.000	8.000
0158	650.4500	Construction Staking Subgrade	LF	1,637.000	1,637.000
0160	650.5000	Construction Staking Base	LF	1,637.000	1,637.000
0162	650.6000	Construction Staking Pipe Culverts	EACH	1.000	1.000
0164	650.6500	Construction Staking Structure Layout (structure) 01. B-53.0177	LS	1.000	1.000
0166	650.6500	Construction Staking Structure Layout (structure) 02. R-53-0084	LS	1.000	1.000
0168	650.6500	Construction Staking Structure Layout (structure) 03. R-53-0085	LS	1.000	1.000
0170	650.9910	Construction Staking Supplemental Control (project) 01. 3614-00-75	LS	1.000	1.000
0172	650.9920	Construction Staking Slope Stakes	LF	1,987.000	1,987.000
0174	690.0150	Sawing Asphalt	LF	80.000	80.000
0176	715.0502	Incentive Strength Concrete Structures	DOL	1,362.000	1,362.000
0178	801.0117	Railroad Flagging Reimbursement	DOL	45,000.000	45,000.000
0180	SPV.0165	Special 01. Wall Concrete Panel Mechanically Stabilized Earth R-53-84	SF	2,750.000	2,750.000
0182	SPV.0165	Special 02. Wall Concrete Panel Mechanically Stabilized Earth R-53-85	SF	2,810.000	2,810.000

CLEARING AND GRUBBING

		201.0105	201.0205
		CLEARING	GRUBBING
STATION	LOCATION	STA	STA
CATEGORY 0010	19+00 - 22+00	LT/RT	5
TOTAL CATEGORY 0010		5	5

REMOVING ITEMS

		203.0100	204.0170	214.0100	638.2602	638.3000
		REMOVING SMALL PIPE CULVERTS	REMOVING FENCE	OBLITERATING OLD ROAD	REMOVING SIGNS TYPE II	REMOVING SMALL SIGN SUPPORTS
		LF	LF	STA	EA	EA
CATEGORY 0010	22+50	LT	1	-	-	-
	20+51 - 22+38	LT	-	199	-	-
	24+23 - 25+50	LT	-	127	-	-
	11+72	RT	-	-	1	1
	18+74	RT	-	-	1	1
	19+71	LT	-	-	1	1
	19+73	RT	-	-	1	1
	21+09	LT	-	-	1	1
	21+10	RT	-	-	1	1
	28+32	LT	-	-	1	1
	104+80	LT	-	-	1	1
	100+70 - 105+98			3		
TOTAL CATEGORY 0010			1	326	3	8

BASE AGGREGATE ITEMS

		305.0110	305.0120	312.0110	624.0100
		BASE AGGREGATE DFNS+ 3/4-INCH	BASE AGGREGATE DFNS+ 1 1/4-INCH	SELECT CRUSHED MATERIAL	WATER
STATION	LOCATION	TON	TON	TON	MGAL
CATEGORY 0010	16+25 - 16+95	RT	6	-	-
	16+25 - 17+00	LT/RT	-	-	-
	16+25 - 19+63	LT	63	-	-
	16+25 - 19+91	LT/RT	-	1331	-
	16+25 - 20+02	LT/RT	-	-	23
	17+14 - 19+91	RT	56	-	-
	19+65 - 19+75	LT	1	-	-
	19+93 - 20+02	RT	1	-	-
	20+92 - 25+50	LT	91	-	-
	21+19 - 25+50	LT	77	-	-
	20+91 - 25+50	LT/RT	-	1544	26
	24+75 - 25+50	LT/RT	-	-	-
	100+51 - 108+25	LT	62	-	-
	100+51 - 108+25	RT	41	-	-
	100+51 - 108+25	LT/RT	-	1892	50
	100+51 - 106+50	LT/RT	-	-	-
	106+50 - 108+25	LT/RT	-	-	-
SUBTOTAL		398	4767	0	99
	UNDISTRIBUTED	52	433	1600	11
TOTAL CATEGORY 0010		450	5200	1600	110

CONCRETE PAVEMENT ITEMS

		415.0410	
		CONCRETE PAVEMENT APPROACH SLAB	
STATION	LOCATION	SY	
CATEGORY 0010	19+75 - 20+14	LT/RT	93
	20+79 - 21+19	LT/RT	93
SUBTOTAL		186	
	UNDISTRIBUTED	-	
TOTAL CATEGORY 0010		186	

CONCRETE CURB & GUTTER

		601.0584	601.0586
		4-INCH SLOPED 30 INCH TYPE TBT	4-INCH SLOPED 30 INCH TYPE TBTT
STATION	LOCATION	LF	LF
CATEGORY 0010	19+50 - 19+75	LT/RT	25
	19+75 - 20+02	LT/RT	-
TOTAL CATEGORY 0010		25	27

CULVERT ENDWALL SUMMARY

STATION	LOCATION	MINIMUM PIPE STEEL THICKNESS INCH	521.3118	521.1018	633.5200
			CULVERT PIPE CORRUGATED STEEL 18-INCH LF	APRON ENDWALLS FOR CULVERT PIPE STEEL 18-INCH EA	MARKERS CULVERT END EA
CATEGORY 0010					
100+76	RT	-	-	1	1
100+76 - 100+99	LT/RT	0.064	58	1	-
100+99	LT	-	-	-	1
TOTAL CATEGORY 0010			58	2	2

EROSION CONTROL ITEMS

STATION	LOCATION	606.0200	627.0200	628.1504	628.1520	628.1905	628.1910	628.2002	628.2004	628.7504	628.7555	628.7560	645.0130
		RIPRAP MEDIUM CY	MULCHING SY	SILT FENCE LF	SILT FENCE MAINTENANCE LF	MOBILIZATIONS EROSION CONTROL EA	MOBILIZATIONS EMERGENCY EROSION CONTROL EA	EROSION MAT CLASS I TYPE A SY	EROSION MAT CLASS I TYPE B SY	TEMPORARY DITCH CHECKS LF	CULVERT PIPE CHECKS EA	TRACKING PADS EA	GEOTEXTILE TYPE R SY
CATEGORY 0010													
12+50	LT/RT	-	-	-	-	-	-	-	-	-	-	1	-
12+50	RT	-	-	-	-	-	-	-	-	48	-	-	-
12+50 - 20+02	LT/RT	-	2168	207	207	-	-	-	-	-	-	-	-
14+25	RT	-	-	-	-	-	-	-	-	54	-	-	-
15+50	LT	-	-	-	-	-	-	-	-	14	-	-	-
16+25	RT	-	-	-	-	-	-	-	-	68	-	-	-
16+90	LT	-	-	-	-	-	-	-	-	16	-	-	-
18+50 - 20+02	LT/RT	-	-	-	-	-	-	767	920	-	-	-	-
19+33	LT	1.5	-	-	-	-	-	-	-	-	-	-	3
19+92	RT	1.5	-	-	-	-	-	-	-	-	-	-	3
20+91 - 25+50	LT/RT	-	1368	1083	1083	-	-	-	-	-	-	-	-
20+91 - 23+00	LT/RT	-	-	-	-	-	-	-	1713	-	-	-	-
25+50	LT/RT	-	-	-	-	-	-	-	-	-	-	1	-
100+51 - 108+25	LT/RT	-	2200	1043	1043	-	-	924	-	-	-	-	-
100+99	LT	-	-	-	-	-	-	-	-	-	3	-	-
102+50	LT	-	-	-	-	-	-	-	-	43	-	-	-
106+25	RT	-	-	-	-	-	-	-	-	42	-	-	-
106+75	LT	-	-	-	-	-	-	-	-	64	-	-	-
108+25	LT	-	-	-	-	-	-	-	-	24	-	-	-
108+25	RT	-	-	-	-	-	-	-	-	24	-	-	-
ENTIRE PROJECT	LT/RT	-	-	-	-	5	5	-	-	-	-	-	-
SUBTOTAL		3	5736	2333	2333	5	5	1691	2633	397	3	2	6
UNDISTRIBUTED		1	11264	167	167	-	-	209	167	103	-	-	2
TOTAL CATEGORY 0010		4	17000	2500	2500	5	5	1900	2800	500	3	2	8

LANDSCAPING ITEMS

LOCATION	625.0500	629.0210	630.0120	630.0200	630.0300	630.0500
	SALVAGED TOPSOIL SY	FERTILIZER TYPE B CWT	SEEDING MIXTURE NO. 20 LB	SEEDING TEMPORARY LB	SEEDING BORROW PIT LB	SEED WATER MGAL
CATEGORY 0010						
12+50 - 20+02	LT/RT	3855	2	104	104	83
20+91 - 25+50	LT/RT	3081	2	83	83	66
100+51 - 108+25	LT/RT	3124	2	84	84	67
ENTIRE PROJECT		-	-	-	-	-
SUBTOTAL		10060	6	271	271	216
UNDISTRIBUTED/BORROW PIT		1040	1	29	29	24
TOTAL CATEGORY 0010		11100	7	300	300	240

BEAM GUARD

STATION	LOCATION	614.2300	614.2500	614.2610
		MGS GUARDRAIL 3 LF	MGS THRIE BEAM TRANSITION LF	MGS GUARDRAIL TERMINAL EAT EA
CATEGORY 0010				
17+87 - 19+35	LT	150	-	-
17+87	LT	-	-	1
18+15 - 19+62	RT	150	-	-
18+35	RT	-	-	1
19+35 - 19+75	LT	-	40	-
19+62 - 20+02	RT	-	40	-
20+92 - 21+32	LT	-	40	-
21+19 - 21+59	RT	-	40	-
21+32 - 22+79	LT	150	-	-
21+59 - 23+07	RT	150	-	-
22+79	LT	-	-	1
23+07	RT	-	-	1
TOTAL CATEGORY 0010		600	160	4

3

3

PERMANENT SIGNING

SIGN NO.	STATION	SIGN CODE	SIGN SIZE INxIN	POSTS WOOD 4x4-INCH			637.2210 SIGNS TYPE II REFLECTIVE H	637.2230 SIGNS TYPE II REFLECTIVE F	MOUNTED ON SAME POST AS	MESSAGE
				634.0414 x 14-FT EA	634.0416 x 16-FT EA	634.0418 x 18-FT EA				
CATEGORY 0010										
01-01	10+00	W3-5	36"x36"	-	1	-	-	-	-	SPEED REDUCTION 25 MPH
02-01	14+00	R2-1	24"x30"	1	-	-	5	-	-	SPEED LIMIT 25 MPH
03-01	17+00	W1-7	48"x24"	1	-	-	-	-	-	TWO-DIRECTION ARROW
04-01	26+00	R2-1	24"x30"	1	-	-	5	-	-	SPEED LIMIT 25 MPH
05-01	30+00	W3-5	36"x36"	-	1	-	-	-	-	SPEED REDUCTION 25 MPH
06-01	100+30	R1-1	30"x30"	1	-	-	5.18	-	-	STOP SIGN
07-01	100+75	W1-4L	30"x30"	-	1	-	-	6.25	-	ROAD CURVES AHEAD
08-01	103+50	W3-1	36"x36"	-	1	-	-	9	-	STOP AHEAD
09-01	107+90	W1-1R	36"x36"	-	-	1	-	9	-	ROAD TURNS RIGHT
09-02	107+90	W13-1	18"x18"	-	-	-	-	2.25	09-01	20 MPH
10-01	109+00	W1-4L	30"x30"	-	1	-	-	6.25	-	ROAD CURVES AHEAD
TOTAL CATEGORY 0010				4	5	1	15.18	58.75		

TRAFFIC CONTROL ITEMS

STATION	TRAFFIC CONTROL ITEMS		
	643.0420 TRAFFIC CONTROL BARRICADES TYPE III	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A	643.0900 TRAFFIC CONTROL SIGNS
	DAYS	DAYS	DAYS
CATEGORY 0010			
CREEK ROAD	2160	3120	1680
HOFSTROM ROAD	1080	1560	840
SUBTOTAL			
	3240	4680	2520
UNDISTRIBUTED			
	360	420	280
TOTAL CATEGORY 0010			
	3600	5100	2800

SAWING PAVEMENT

CATEGORY 0010	SAWING ASPHALT		
	STATION	LOCATION	LF
	16+75	LI/RT	21
	25+50	LI/RT	20
	108+25	LI/RT	20
SUBTOTAL			61
UNDISTRIBUTED			19
TOTAL CATEGORY 0010			80

CONSTRUCTION STAKING

STATION	LOCATION	CONSTRUCTION STAKING						
		650.4500 CONSTRUCTION STAKING SUBGRADE	650.5000 CONSTRUCTION STAKING BASE	650.6000 CONSTRUCTION STAKING PIPE CULVERTS	650.6500 CONSTRUCTION STAKING STRUCTURE LAYOUT (B-53-0177)	650.6500 CONSTRUCTION STAKING STRUCTURE LAYOUT (R-53-0084)	650.6500 CONSTRUCTION STAKING STRUCTURE LAYOUT (R-53-0085)	650.9920 CONSTRUCTION STAKING SLOPE STAKES
		LF	LF	FA	IS	IS	IS	IF
CATEGORY 0010								
12+50	20+03	LT/RT	-	-	-	-	-	753
16+75	20+03	LI/RT	378	378	-	-	-	-
20+91	25+50	LI/RT	459	459	-	-	-	459
100+25	108+25	LI/RI	800	800	1	-	-	775
CATEGORY 0020								
19+50	20+30	LT/RT	-	-	-	1	-	-
	20+13	LT/RT	-	-	-	-	1	-
	20+80	LT/RT	-	-	-	-	1	-
TOTAL CATEGORY 0010			1637	1637	1			1987
TOTAL CATEGORY 0020			-	-	-	1	1	-

ASPHALT PAVEMENT ITEMS

CATEGORY 0010	STATION	LOCATION	THICKNESS INCHES	TACK COAT GAL	455.0605	460.5224 HMA PAVEMENT 4 LI 58 28 S TON	465.0315 ASPHALTIC FLUMES SY
	21+19 - 25+50	LT/RT	4	60	267	19	
	100+51 - 108+25	LT/RT	4	87	388	-	
SUBTOTAL				203	906	40	
UNDISTRIBUTED				27	44	-	
TOTAL CATEGORY 0010				230	950	40	

EARTHWORK SUMMARY

Division	From/To Station	Location	205.0100 Common Excavation (1)		Salvaged/Unusable Pavement Material (4)	Available Material (5)	Reduced EBS in Fill (6)	Expanded EBS Backfill (7)	Unexpanded Fill	Expanded Fill (8)	Mass Ordinate +/- (9)	Waste	208.0100 Borrow	Comment:
			Cut (2)	EBS Excavation (3)										
Division 1														
Creek Road	12+50/25+50		1,075	100	435	641	80	130	13,048	16,210	-15,569	0	14,729	
Division 1 Subtotal			1,075	100	435	641	80	130	13,048	16,210	-15,569	0	14,729	SEE NOTE 11
Division 2														
Hofstrom Road	101+50/108+25		852	837	55	797	670	1,088	635	-43	840	840	0	
Division 2 Subtotal			852	837	55	797	670	1,088	635	-43	840	840	0	SEE NOTE 10
Grand Total			1,927	937	490	1,438	750	1,218	13,683	16,167	-14,729	840	14,729	
Total Common Exc			2,864											

Notes:

- (1) Common Excavation is the sum of the Cut and EBS Excavation columns. Item number 205.0100
- (2) Salvaged/Unusable Pavement Material is included in Cut.
- (3) EBS Excavation to be backfilled with Select Crushed Material. Note: this is designers choice, can be backfilled with Borrow, or Cut as well.
- (4) Salvaged/Unusable Pavement Material
- (5) Available Material = Cut - Salvaged/Unusable Pavement Material
- (6) Reduced EBS in Fill - Excavated EBS material is usable in Fills outside the 1:1 slope. EBS in Fill Reduction factor = 0.8 . EBS quantity not factored into fill quantity.
- (7) Expanded EBS Backfill - This is to be filled with Select Crushed Material. EBS Backfill Factor = 1.3. Item number 208.1100
- (8) Expanded Fill Factor = 1.25
- Expanded Fill = (Unexpanded Fill - Reduced EBS) * Fill Factor**
- (9) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.
- (10) No Borrow Needed
- (11) Use 840 CY of material from Division 2. Borrow Excavation item number 208.0100

CONVENTIONAL SYMBOLS

SECTION LINE		PARCEL NUMBER		UTILITY NUMBER	
QUARTER LINE		SECTION CORNER		R/W MONUMENT	
SIXTEENTH LINE		NOTATION FOR COMBUSTIBLE FLUIDS		NON-MONUMENTED R/W POINT	
NEW REFERENCE LINE		NOTATION FOR HIGH VOLTAGE TRANSMISSION LINES		FOUND IRON PIN	
NEW R/W LINE		CAUTION		VALVE (GAS, WATER, ETC.)	
EXISTING R/W LINE		CAUTION		SIGN	
PROPERTY LINE		CAUTION		OFF-PREMISE SIGN	
LOT, TIE, AND OTHER MINOR LINES					
SLOPE INTERCEPT					
CORPORATE LIMITS					
UNDERGROUND FACILITY (COMMUNICATIONS, ELECTRIC, ETC.)					
FEE ACQUISITION AREA (HATCHING VARIES BY OWNER)					

TEMP. LIMITED EASEMENT AREA		ACCESS CONTROLLED BY ACQUISITION	
EASEMENT AREA (HIGHWAY, PERMANENT LIMITED, OR RESTRICTED DEVELOPMENT)		NO ACCESS (BY STATUTORY AUTHORITY)	
TRANSMISSION STRUCTURES		ACCESS RESTRICTED (BY PREVIOUS PROJECT OR CONTROL)	
BUILDING		NO ACCESS (NEW HIGHWAY)	
BUILDING (TO BE REMOVED)		NATIONAL GEODETIC SURVEY MONUMENT	
BRIDGE		SIXTEENTH CORNER MONUMENT	
		PARALLEL OFFSETS	

CONVENTIONAL UTILITY SYMBOLS

WATER	
GAS	
TELEPHONE	
OVERHEAD TRANSMISSION LINES	
ELECTRIC	
CABLE TELEVISION	
FIBER OPTIC	
SANITARY SEWER	
STORM SEWER	
ELECTRIC TOWER	

CURVE DATA ABBREVIATIONS

LONG CHORD	LCH
LONG CHORD BEARING	LCB
RADIUS	R
DEGREE OF CURVE	D
CENTRAL ANGLE	Δ/DELTA
LENGTH OF CURVE	L
TANGENT	T
DIRECTION AHEAD	DA
DIRECTION BACK	DB

POWER POLE		NON-COMPENSABLE		COMPENSABLE	
TELEPHONE POLE					
TELEPHONE PEDESTAL					

CONVENTIONAL ABBREVIATIONS

ACCESS RIGHTS	AR	OUTLOT	OL
ACRES	AC	PAGE	P
AHEAD	AH	POINT OF TANGENCY	PT
ALUMINUM	ALUM	PROPERTY LINE	PL
AND OTHERS	ET AL	RECORDED AS (100')	(100')
BACK	BK	REEL / IMAGE	R/I
BLOCK	BLK	REFERENCE LINE	R/L
CENTERLINE	C/L	PERMANENT LIMITED EASEMENT	PLE
CERTIFIED SURVEY MAP	CSM	POINT OF BEGINNING	POB
CONCRETE	CONC	POINT OF CURVATURE	PC
COUNTY	CO	POINT OF COMPOUND CURVE	PCC
COUNTY TRUNK HIGHWAY	CTH	POINT OF INTERSECTION	PI
DISTANCE	DIST	REMAINING	REM
CORNER	COR	RESTRICTIVE DEVELOPMENT EASEMENT	RDE
DOCUMENT NUMBER	DOC	RIGHT	RT
EASEMENT	EASE	RIGHT OF WAY	R/W
EXISTING	EX	SECTION	SEC
GAS VALVE	GV	SEPTIC VENT	SEPV
GRID NORTH	GN	SQUARE FEET	SF
HIGHWAY EASEMENT	HE	STATE TRUNK HIGHWAY	STH
IDENTIFICATION	ID	STATION	STA
LAND CONTRACT	LC	TELEPHONE PEDESTAL	TP
LEFT	LT	TEMPORARY LIMITED EASEMENT	TLE
MONUMENT	MON	TRANSPORTATION PROJECT PLAT	TPP
NATIONAL GEODETIC SURVEY	NGS	UNITED STATES HIGHWAY	USH
NUMBER	NO	VOLUME	V

NOTES:

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN COORDINATE REFERENCE SYSTEM COORDINATES (WISCRS), ROCK COUNTY, NAD83 (2011) IN US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

RIGHT-OF-WAY MONUMENTS ARE TYPE 2 MONUMENTS (TYPICALLY 3/4" x 24" REBAR) AND ARE PLACED PRIOR TO OR AT THE TIME OF LAND TITLE TRANSFER.

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



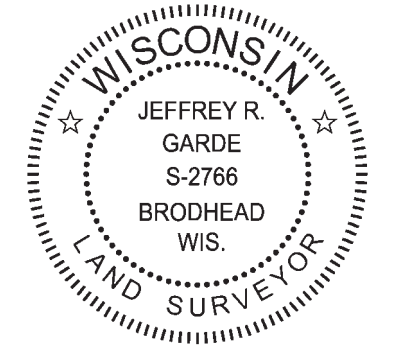
TOTAL NET LENGTH OF CREEK ROAD CENTERLINE = 1300 LF
 TOTAL NET LENGTH OF HOFSTROM ROAD CENTERLINE = 750 LF

R/W PROJECT NUMBER 3614-00-05	SHEET NUMBER 1	TOTAL SHEETS 6
CONSTRUCTION PROJECT NUMBER 3614-00-75		
PLAT OF RIGHT OF WAY REQUIRED FOR CREEK ROAD, TOWN OF BRADFORD WSOR BRIDGE P-53-0101		
TOWN ROAD	ROCK COUNTY	

ACCEPTED FOR
 TOWN OF BRADFORD
 Date 7/16/19 Jason Savage
 CHAIRPERSON

ACCEPTED FOR
 ROCK COUNTY
 Date 7/16/19
 PUBLIC WORKS DIRECTOR

ORIGINAL PLAT PREPARED BY
Batterman
 engineers surveyors planners
 R.H. BATTERMAN & CO., INC. P 608.365.4464
 2857 BARTELLS DRIVE TF 877.457.2235
 BELOIT, WI 53511 F 608.365.1850



THIS SURVEY IS PREPARED AT THE REQUEST OF THE TOWN OF BRADFORD. THE FIELD SURVEY WAS PERFORMED IN DECEMBER 2017. THIS SURVEY IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

(SIGNATURE) Jeffrey R. Garde
 DATE 7/16/2019
 (PRINTED NAME) Jeffrey R. Garde
 (REGISTRATION NUMBER) S-2766

REVISION DATE
 10-21-2019

SCHEDULE OF LANDS & INTERESTS REQUIRED

AREAS SHOWN IN THE TOTAL AREA COLUMN 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.

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


PARCEL NUMBER	SHEET NUMBER	OWNER(S)	INTEREST REQUIRED	R/W ACRES REQUIRED			TLE (AC)	PERMIT (AC)
				NEW	EXISTING	TOTAL		
1	4.04 - 4.05	WIEDEMER SURVIVORS TRUST	FEE	0.14	0.53	0.67	---	---
2	4.04 - 4.06	DUANE & BARBARA GRETSCHMANN REVOCABLE TRUST	FEE, TLE	1.58	1.66	3.24	0.04	---
3	4.0500	WISCONSIN DEPARTMENT OF TRANSPORTATION	PERMIT	---	---	---	---	0.24
4	4.05	GREEN VALLEY FARMS, INC.	FEE, TLE	0.26	0.35	0.61	0.03	---

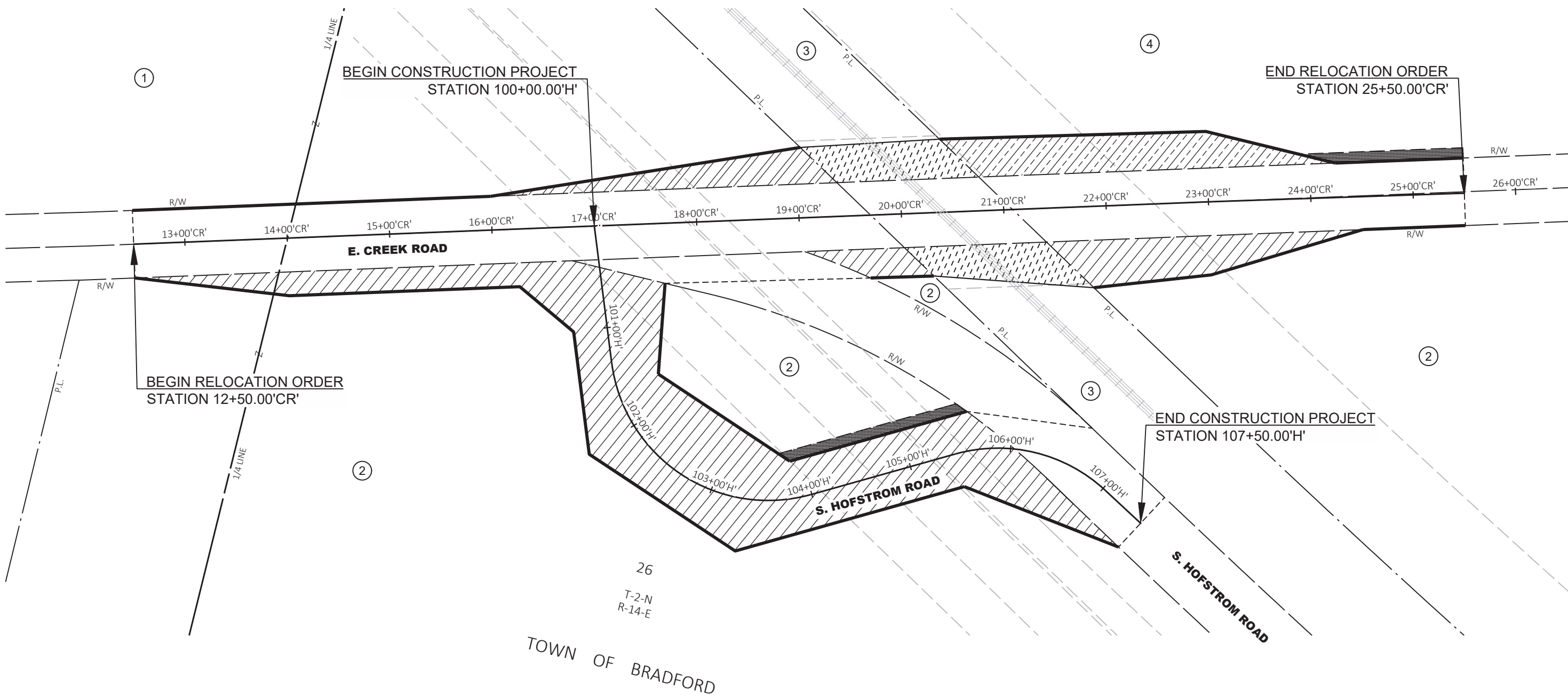
UTILITY INTERESTS REQUIRED

UTILITY NUMBER	SHEET NUMBER	OWNER(S)	INTEREST REQUIRED
6 ^U	4.04 - 4.06	ANR TRANSCANADA	RELEASE OF RIGHTS
7	4.04 - 4.06	WISCONSIN DEPARTMENT OF TRANSPORTATION	RELEASE OF RIGHTS
8	4.05	WISCONSIN POWER & LIGHT	RELEASE OF RIGHTS
9 ^U	4.05	ROCK ENERGY COOPERATIVE	RELEASE OF RIGHTS

4

4

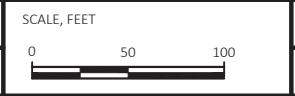
REVISION DATE	10-21-2019	DATE	07-16-2019	SCALE, FEET	HWY: TOWN ROAD	STATE R/W PROJECT NUMBER	3614-00-05	PLAT SHEET	4.02
GRID FACTOR					COUNTY: ROCK	CONSTRUCTION PROJECT NUMBER	3614-00-75	PS&E SHEET	



26
T-2-N
R-14-E
TOWN OF BRADFORD

REVISION DATE	10-21-2019(NC)		

DATE	07-16-2019
GRID FACTOR	



HWY:	TOWN ROAD
COUNTY:	ROCK

STATE R/W PROJECT NUMBER	3614-00-05
CONSTRUCTION PROJECT NUMBER	3614-00-75

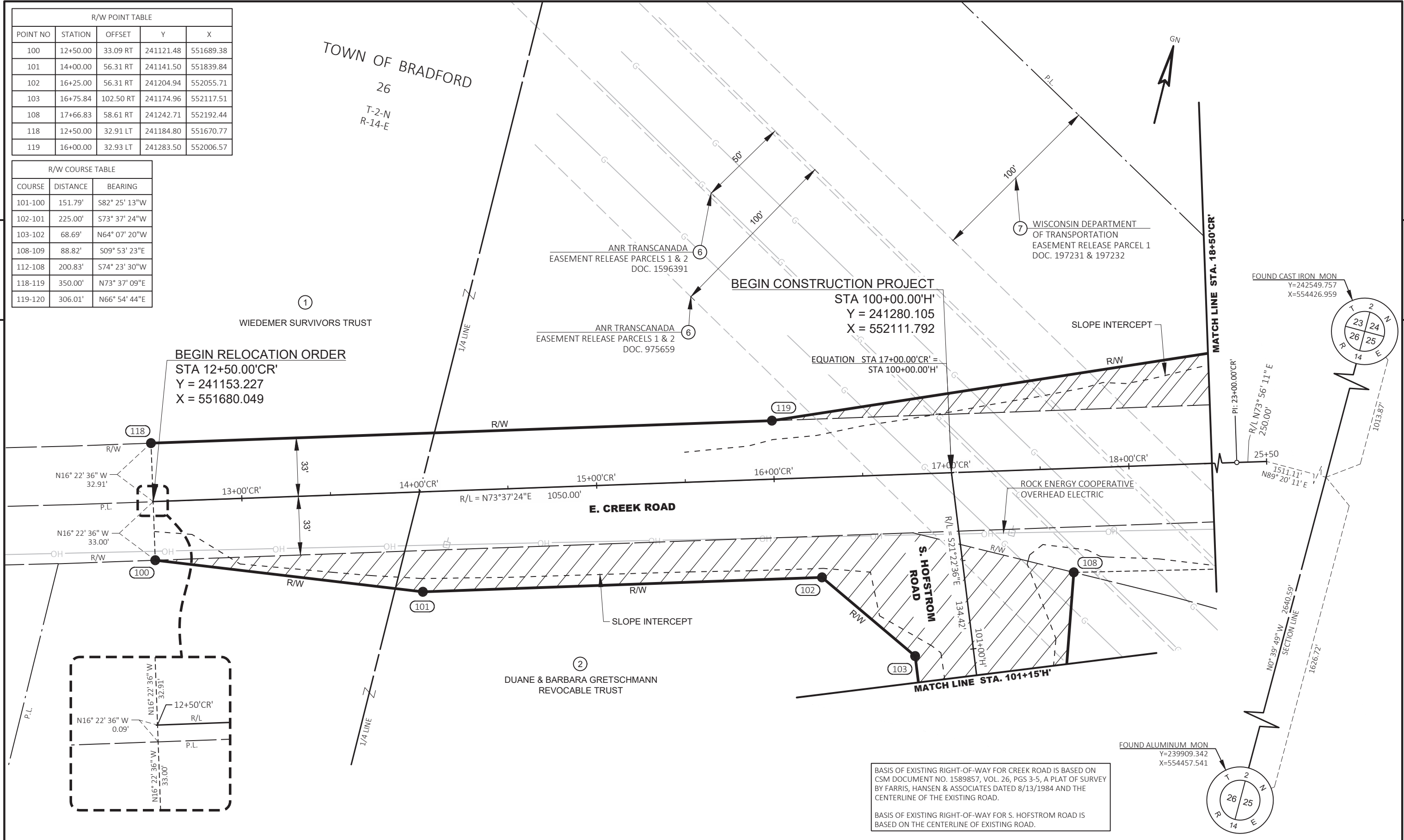
PLAT SHEET	4.03
PS&E SHEET	

R/W POINT TABLE				
POINT NO	STATION	OFFSET	Y	X
100	12+50.00	33.09 RT	241121.48	551689.38
101	14+00.00	56.31 RT	241141.50	551839.84
102	16+25.00	56.31 RT	241204.94	552055.71
103	16+75.84	102.50 RT	241174.96	552117.51
108	17+66.83	58.61 RT	241242.71	552192.44
118	12+50.00	32.91 LT	241184.80	551670.77
119	16+00.00	32.93 LT	241283.50	552006.57

R/W COURSE TABLE		
COURSE	DISTANCE	BEARING
101-100	151.79'	S82° 25' 13"W
102-101	225.00'	S73° 37' 24"W
103-102	68.69'	N64° 07' 20"W
108-109	88.82'	S09° 53' 23"E
112-108	200.83'	S74° 23' 30"W
118-119	350.00'	N73° 37' 09"E
119-120	306.01'	N66° 54' 44"E

4

4



BASIS OF EXISTING RIGHT-OF-WAY FOR CREEK ROAD IS BASED ON CSM DOCUMENT NO. 1589857, VOL. 26, PGS 3-5, A PLAT OF SURVEY BY FARRIS, HANSEN & ASSOCIATES DATED 8/13/1984 AND THE CENTERLINE OF THE EXISTING ROAD.

BASIS OF EXISTING RIGHT-OF-WAY FOR S. HOFSTROM ROAD IS BASED ON THE CENTERLINE OF EXISTING ROAD.

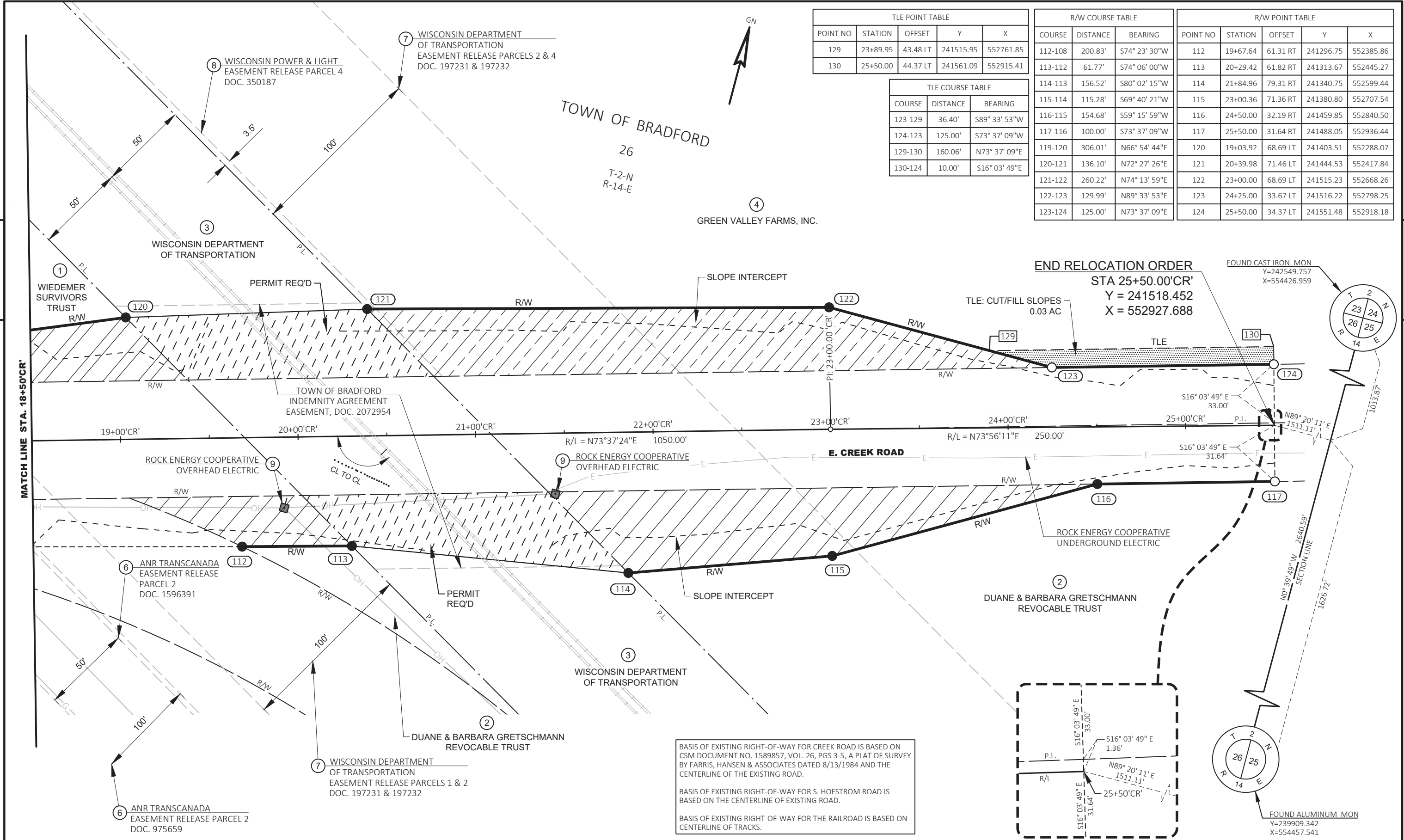
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		GRID FACTOR				COUNTY: ROCK	CONSTRUCTION PROJECT NUMBER	3614-00-75	PS&E SHEET	

TLE POINT TABLE				
POINT NO	STATION	OFFSET	Y	X
129	23+89.95	43.48 LT	241515.95	552761.85
130	25+50.00	44.37 LT	241561.09	552915.41

R/W COURSE TABLE		
COURSE	DISTANCE	BEARING
112-108	200.83'	S74° 23' 30"W
113-112	61.77'	S74° 06' 00"W
114-113	156.52'	S80° 02' 15"W
115-114	115.28'	S69° 40' 21"W
116-115	154.68'	S59° 15' 59"W
117-116	100.00'	S73° 37' 09"W
119-120	306.01'	N66° 54' 44"E
120-121	136.10'	N72° 27' 26"E
121-122	260.22'	N74° 13' 59"E
122-123	129.99'	N89° 33' 53"E
123-124	125.00'	N73° 37' 09"E

R/W POINT TABLE				
POINT NO	STATION	OFFSET	Y	X
112	19+67.64	61.31 RT	241296.75	552385.86
113	20+29.42	61.82 RT	241313.67	552445.27
114	21+84.96	79.31 RT	241340.75	552599.44
115	23+00.36	71.36 RT	241380.80	552707.54
116	24+50.00	32.19 RT	241459.85	552840.50
117	25+50.00	31.64 RT	241488.05	552936.44
120	19+03.92	68.69 LT	241403.51	552288.07
121	20+39.98	71.46 LT	241444.53	552417.84
122	23+00.00	68.69 LT	241515.23	552668.26
123	24+25.00	33.67 LT	241516.22	552798.25
124	25+50.00	34.37 LT	241551.48	552918.18

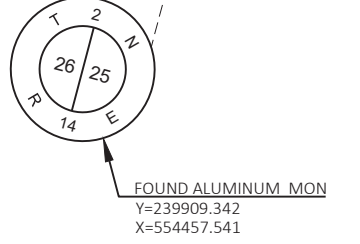
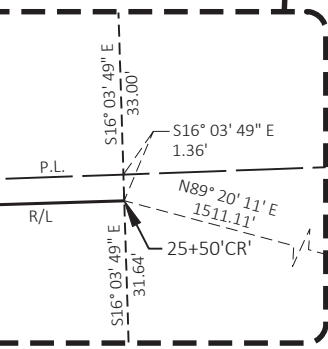
TLE COURSE TABLE		
COURSE	DISTANCE	BEARING
123-129	36.40'	S89° 33' 53"W
124-123	125.00'	S73° 37' 09"W
129-130	160.06'	N73° 37' 09"E
130-124	10.00'	S16° 03' 49"E



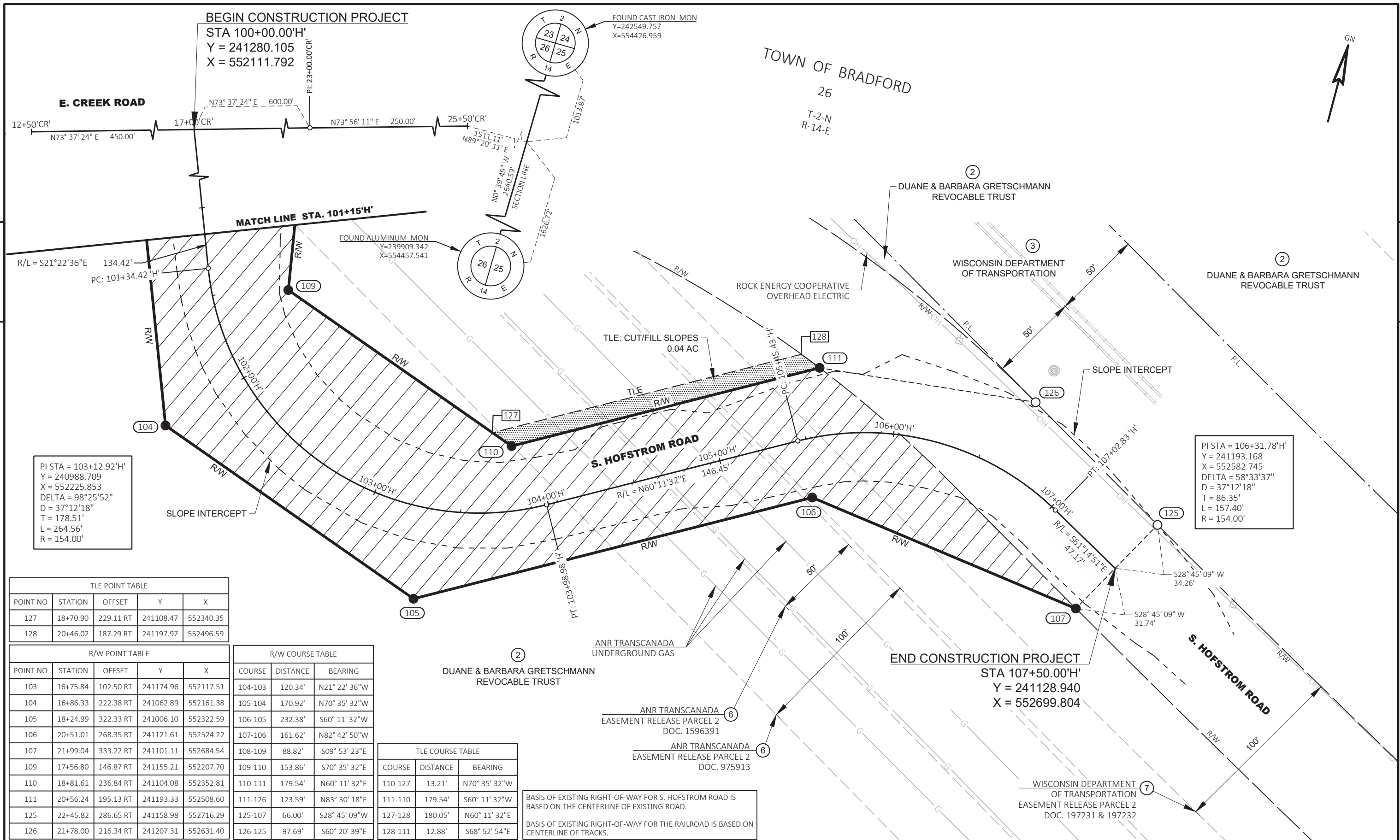
BASIS OF EXISTING RIGHT-OF-WAY FOR CREEK ROAD IS BASED ON CSM DOCUMENT NO. 1589857, VOL. 26, PGS 3-5, A PLAT OF SURVEY BY FARRIS, HANSEN & ASSOCIATES DATED 8/13/1984 AND THE CENTERLINE OF THE EXISTING ROAD.

BASIS OF EXISTING RIGHT-OF-WAY FOR S. HOFSTROM ROAD IS BASED ON THE CENTERLINE OF EXISTING ROAD.

BASIS OF EXISTING RIGHT-OF-WAY FOR THE RAILROAD IS BASED ON CENTERLINE OF TRACKS.



REVISION DATE	10-21-2019	DATE	07-16-2019	SCALE, FEET	0 25 50	HWY:	TOWN ROAD	STATE R/W PROJECT NUMBER	3614-00-05	PLAT SHEET	4.05
		GRID FACTOR				COUNTY:	ROCK	CONSTRUCTION PROJECT NUMBER	3614-00-75	PS&E SHEET	



PI STA = 103+12.92'H
 Y = 240988.709
 X = 552225.853
 DELTA = 98°25'52"
 D = 37°12'18"
 T = 178.51'
 L = 264.56'
 R = 154.00'

PI STA = 106+31.78'H
 Y = 241193.168
 X = 552582.745
 DELTA = 58°33'37"
 D = 37°12'18"
 T = 86.35'
 L = 157.40'
 R = 154.00'

TLE POINT TABLE				
POINT NO	STATION	OFFSET	Y	X
127	18+70.90	229.11 RT	241108.47	552340.35
128	20+46.02	187.29 RT	241197.97	552496.59

R/W POINT TABLE				
POINT NO	STATION	OFFSET	Y	X
103	16+75.84	102.50 RT	241174.96	552117.51
104	16+86.33	222.38 RT	241062.89	552161.38
105	18+24.99	322.33 RT	241006.10	552322.59
106	20+51.01	268.35 RT	241121.61	552524.22
107	21+99.04	333.22 RT	241101.11	552684.54
109	17+56.80	146.87 RT	241155.21	552207.70
110	18+81.61	236.84 RT	241104.08	552352.81
111	20+56.24	195.13 RT	241193.33	552508.60
125	22+45.82	286.65 RT	241158.98	552716.29
126	21+78.00	216.34 RT	241207.31	552631.40

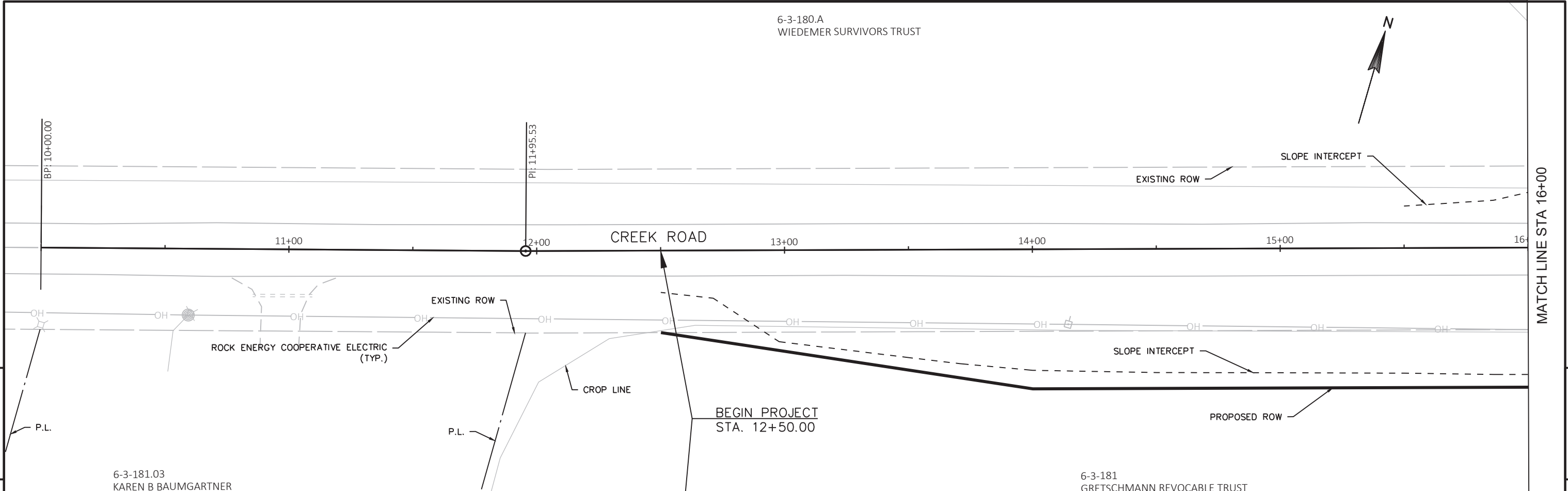
R/W COURSE TABLE		
COURSE	DISTANCE	BEARING
104-103	120.34'	N21° 22' 36"W
105-104	170.92'	N70° 35' 32"W
106-105	232.38'	S60° 11' 32"W
107-106	161.62'	N82° 42' 50"W
108-109	88.82'	S09° 53' 23"E
109-110	153.86'	S70° 35' 32"E
110-111	179.54'	N60° 11' 32"E
111-126	123.59'	N83° 30' 18"E
125-107	66.00'	S28° 45' 09"W
126-125	97.69'	S60° 20' 39"E

TLE COURSE TABLE		
COURSE	DISTANCE	BEARING
110-127	13.21'	N70° 35' 32"W
111-110	179.54'	S60° 11' 32"W
127-128	180.05'	N60° 11' 32"E
128-111	12.88'	S68° 52' 54"E

BASIS OF EXISTING RIGHT-OF-WAY FOR S. HOFSTROM ROAD IS BASED ON THE CENTERLINE OF EXISTING ROAD.
 BASIS OF EXISTING RIGHT-OF-WAY FOR THE RAILROAD IS BASED ON CENTERLINE OF TRACKS.

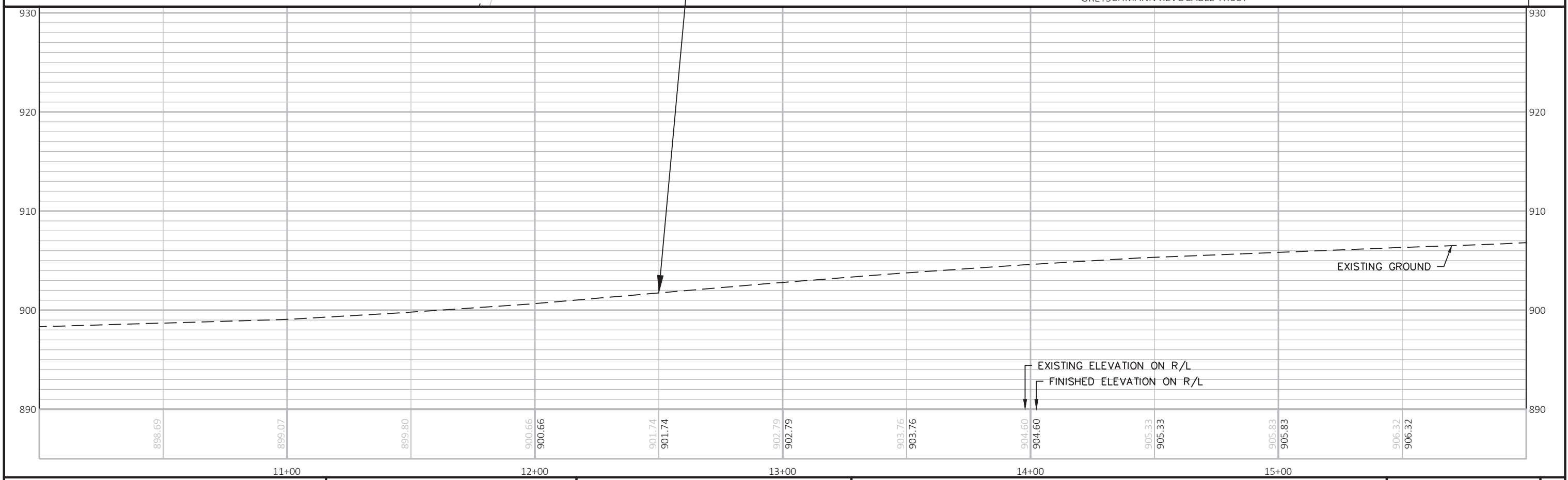
REVISION DATE	10-21-2019	DATE	07-16-2019	SCALE, FEET	0 25 50	HWY: TOWN ROAD	STATE R/W PROJECT NUMBER	3614-00-05	PLAT SHEET	4.06
		GRID FACTOR				COUNTY: ROCK	CONSTRUCTION PROJECT NUMBER	3614-00-75	PS&E SHEET	

6-3-180.A
WIEDEMER SURVIVORS TRUST

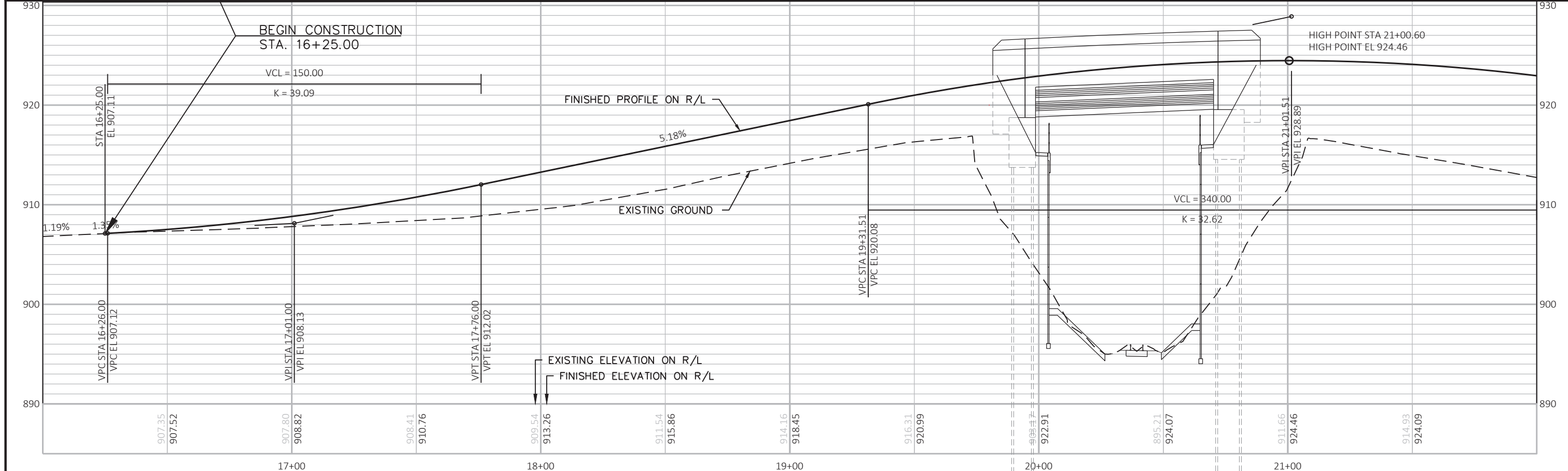
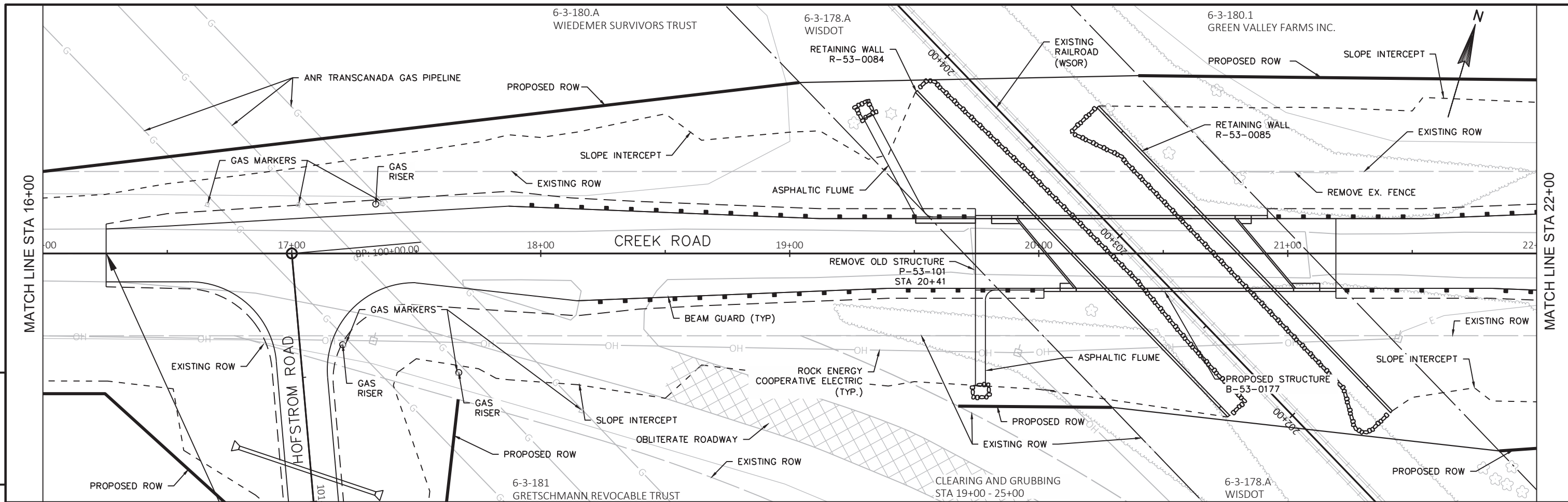


6-3-181.03
KAREN B BAUMGARTNER

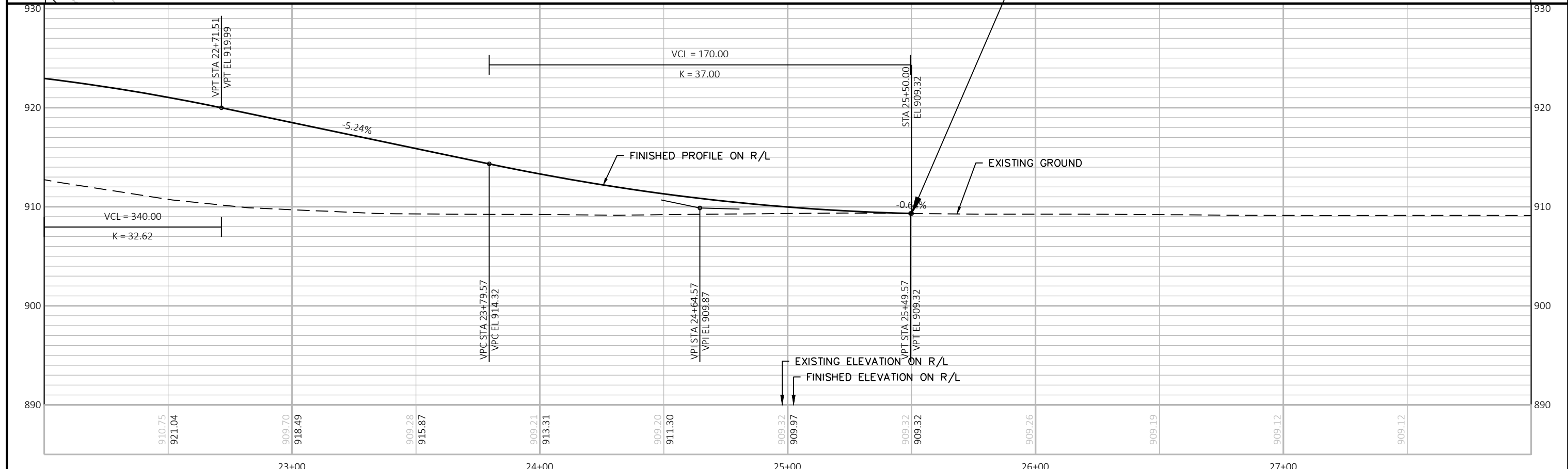
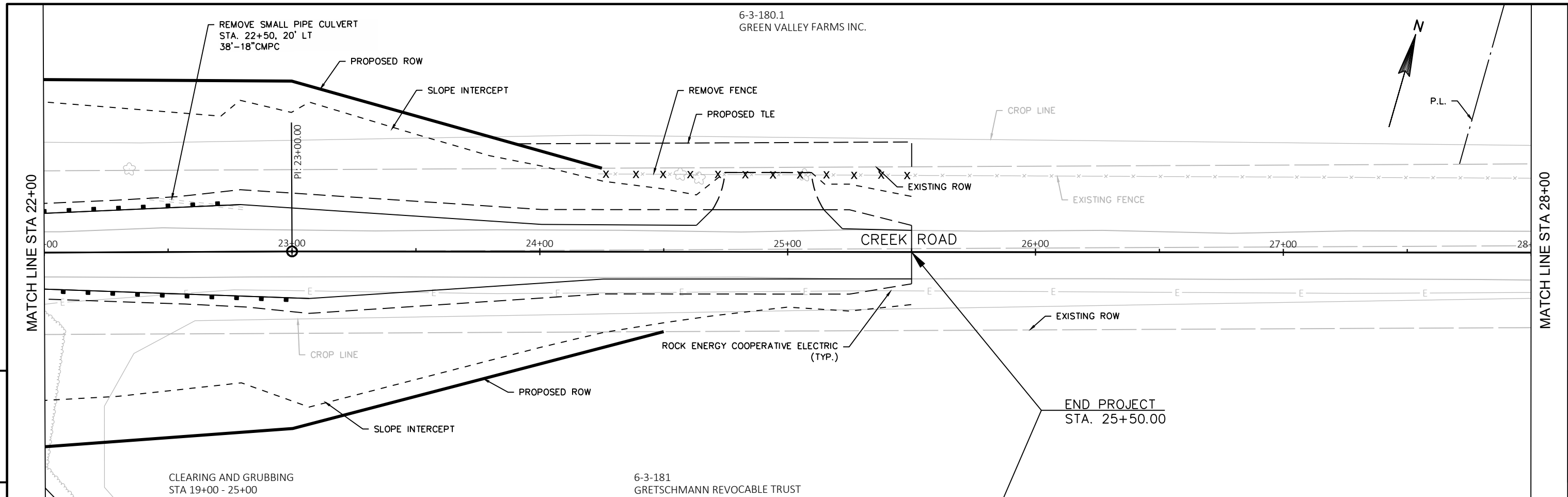
6-3-181
GRETSCHMANN REVOCABLE TRUST



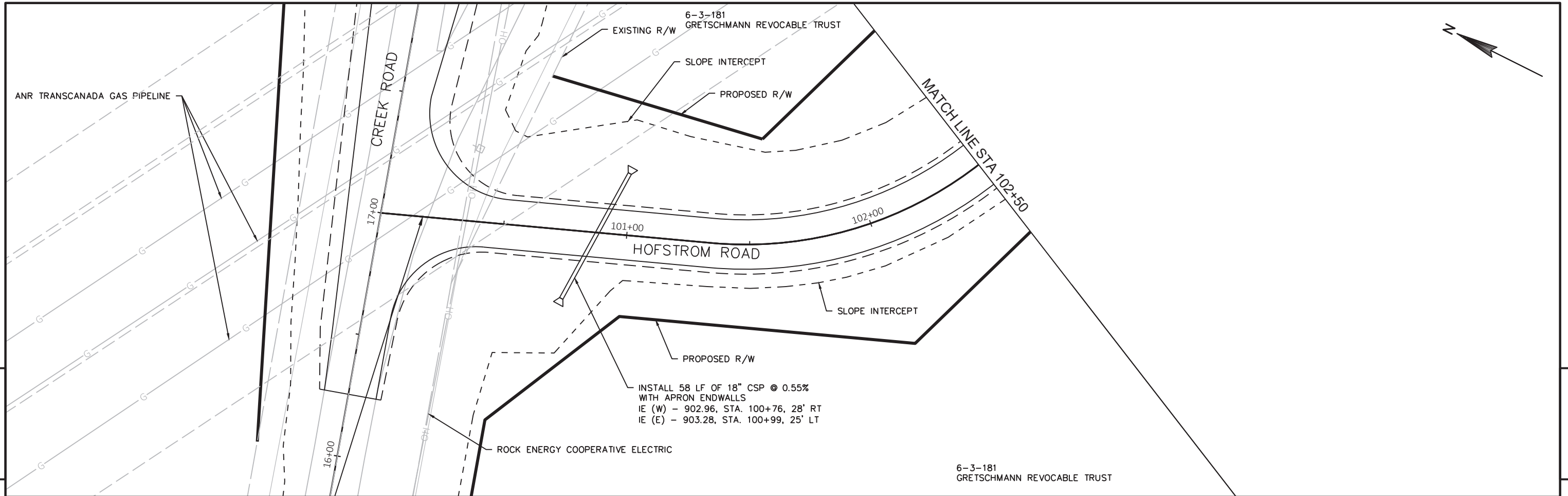
PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	PLAN AND PROFILE: CREEK ROAD	SHEET	E
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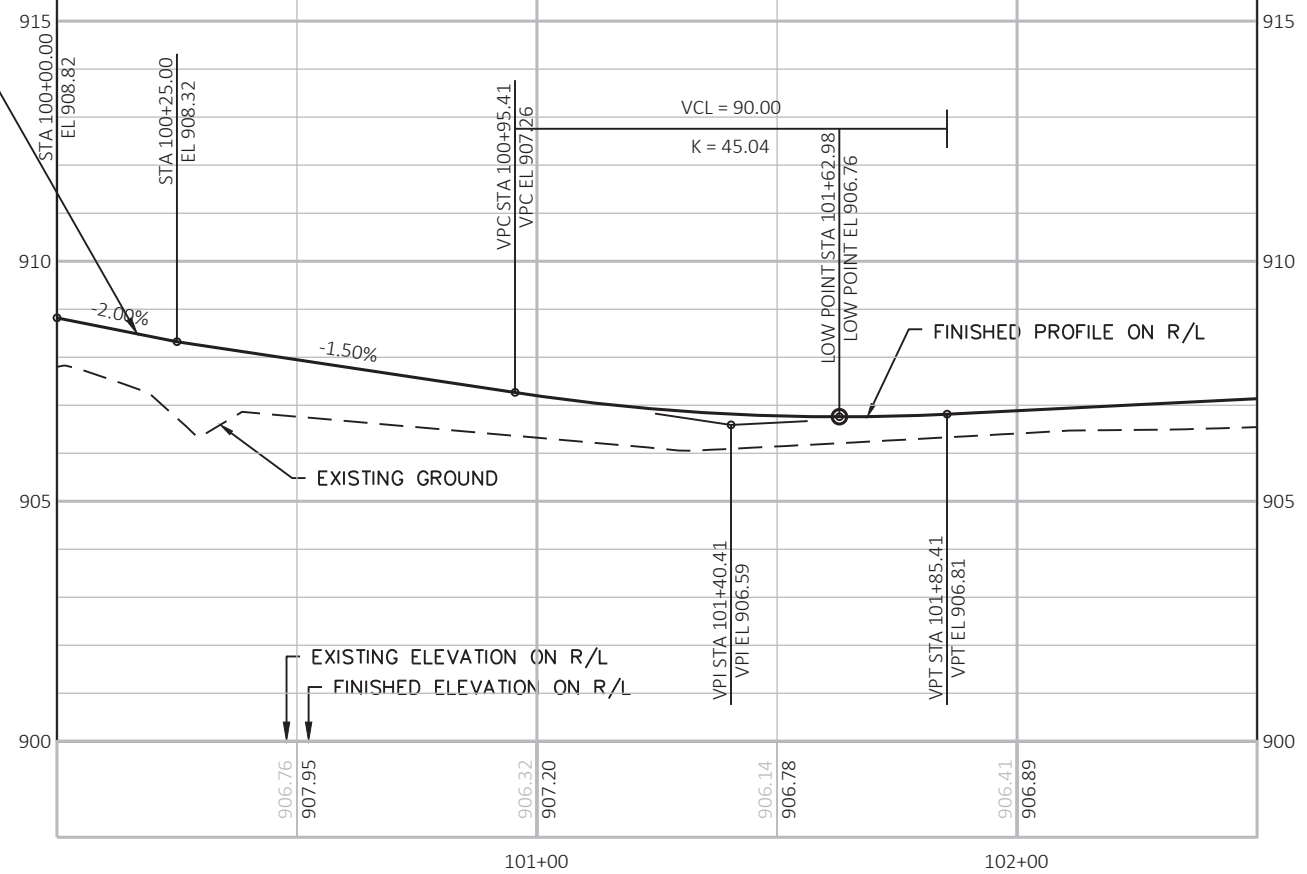
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PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	PLAN AND PROFILE: CREEK ROAD	SHEET	E
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BEGIN CONSTRUCTION
 STA 100+17.00



PROJECT NO: 3614-00-75

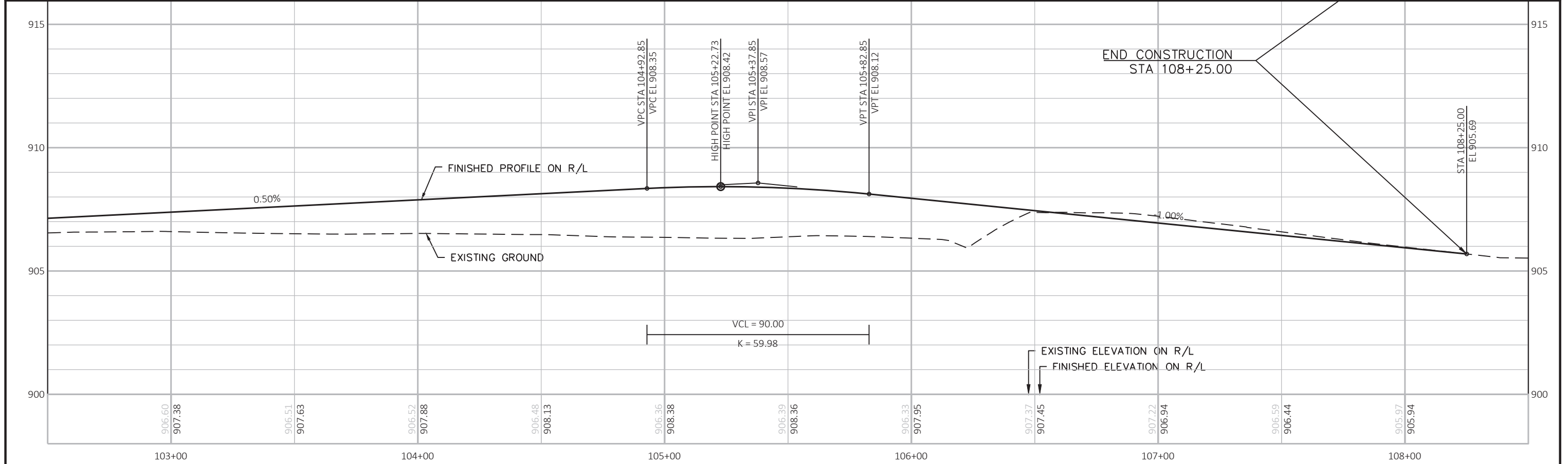
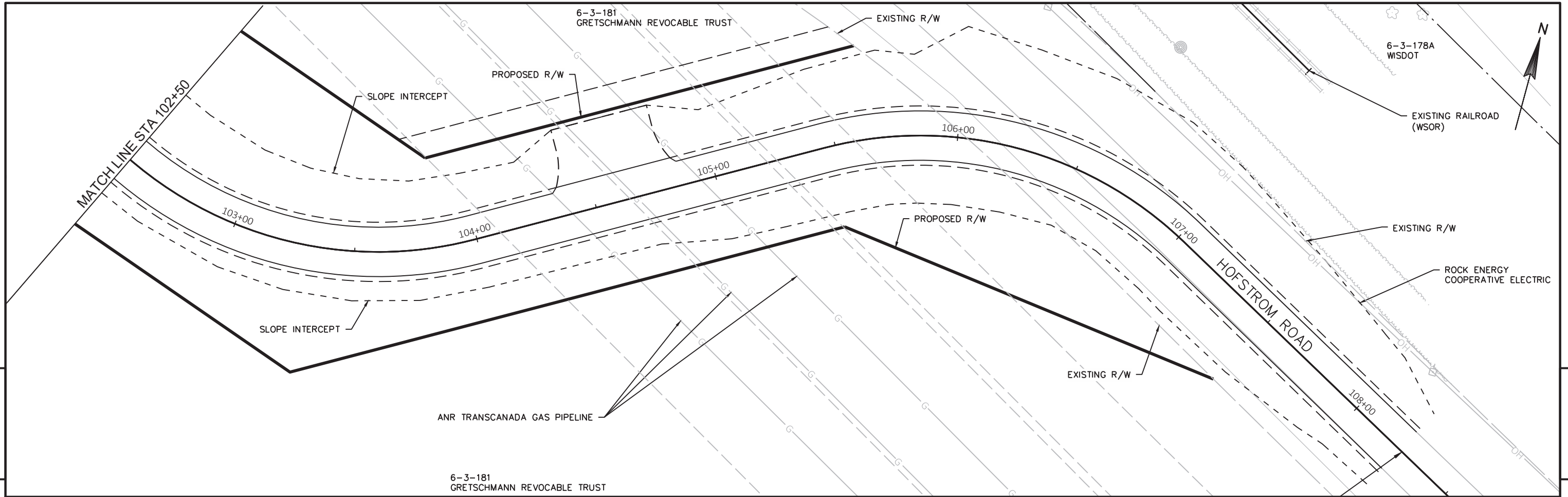
HWY: TOWN ROAD

COUNTY: ROCK

PLAN AND PROFILE: HOFSTROM ROAD

SHEET

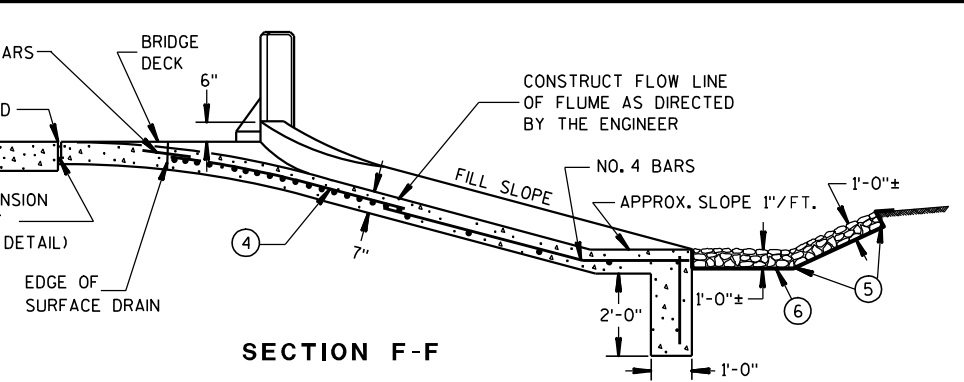
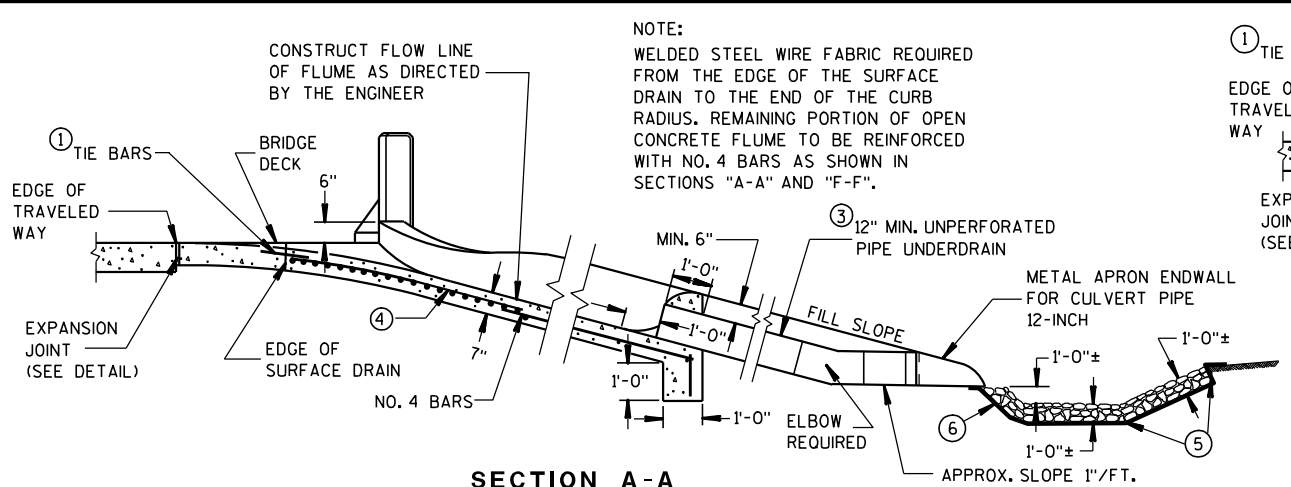
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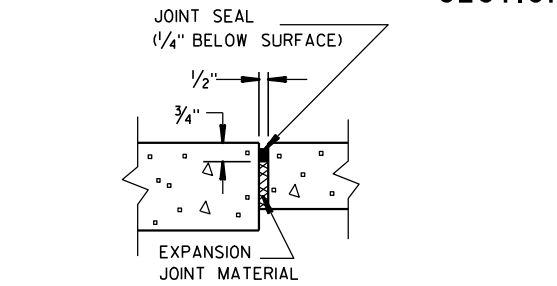
PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	PLAN AND PROFILE: HOFSTROM ROAD	SHEET	E
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Standard Detail Drawing List

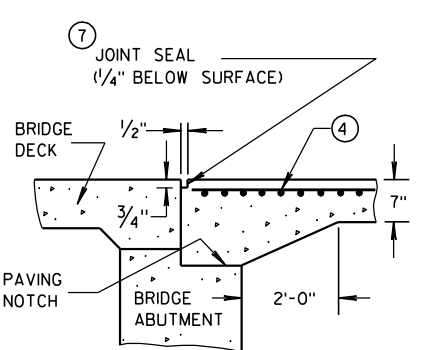
08D02-06	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08D21-01	DRIVEWAYS WITHOUT CURB & GUTTER
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E14-01	TRACKING PAD
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
12A03-10	NAME PLATE (STRUCTURES)
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
13B02-09B	STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB
13C01-19	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C19-01	HMA LONGITUDINAL JOINTS
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM 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)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15B03-15A	FENCE CHAIN LINK
15B03-15B	FENCE CHAIN LINK
15C02-07A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-07B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C03-05	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



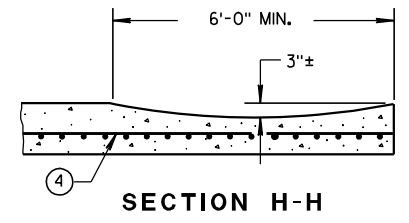
- GENERAL NOTES**
 DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.
 ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.
- NO. 4 X 2'-0" TIE BARS SPACED AT 3'-0" CENTERS TO BE USED ONLY WHEN ADJACENT TO P.C. CONCRETE.
 - NO. 4 X 2'-0" TIE BARS SPACED AT 12" CENTERS TO BE PLACED BY BRIDGE CONTRACTOR, OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
 - PIPE UNDERDRAIN MAY BE ANY OF THE MATERIALS LISTED IN SECTION 612.2 OF THE STANDARD SPECIFICATIONS EXCEPT DRAIN TILE.
 - MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.
 - LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.
 - GEOTEXTILE FABRIC, TYPE "R"
 - HOT POURED SEALANT UNLESS OTHERWISE SPECIFIED.
 - THIS DIMENSION MAY VARY DEPENDING ON THE SPACING OF POSTS FOR THE STEEL PLATE BEAM GUARD. THE TYPICAL LOCATION FOR THE SURFACE DRAIN IS WHERE THE POST SPACING WIDENS TO 3'-1/2".



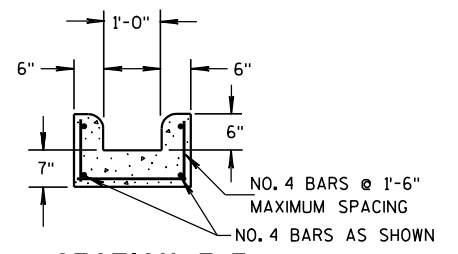
EXPANSION JOINT DETAIL



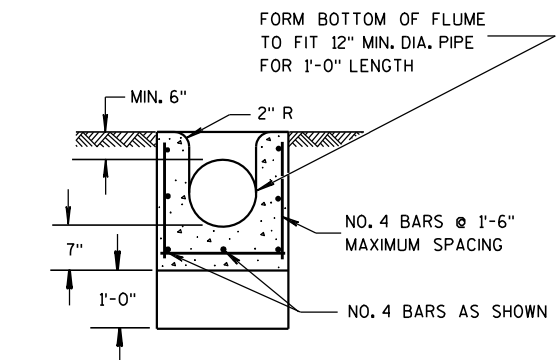
SECTION D-D



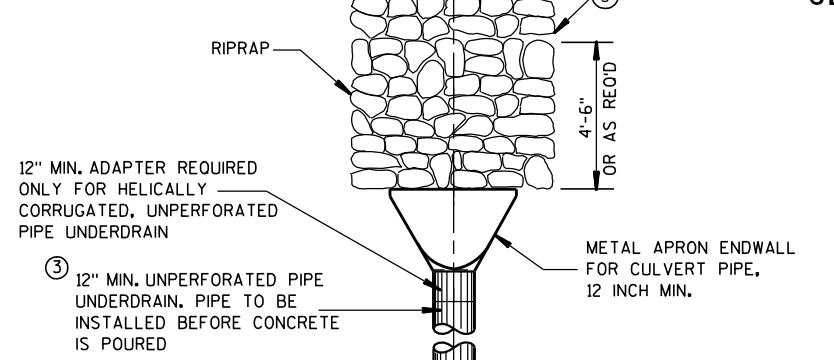
SECTION H-H



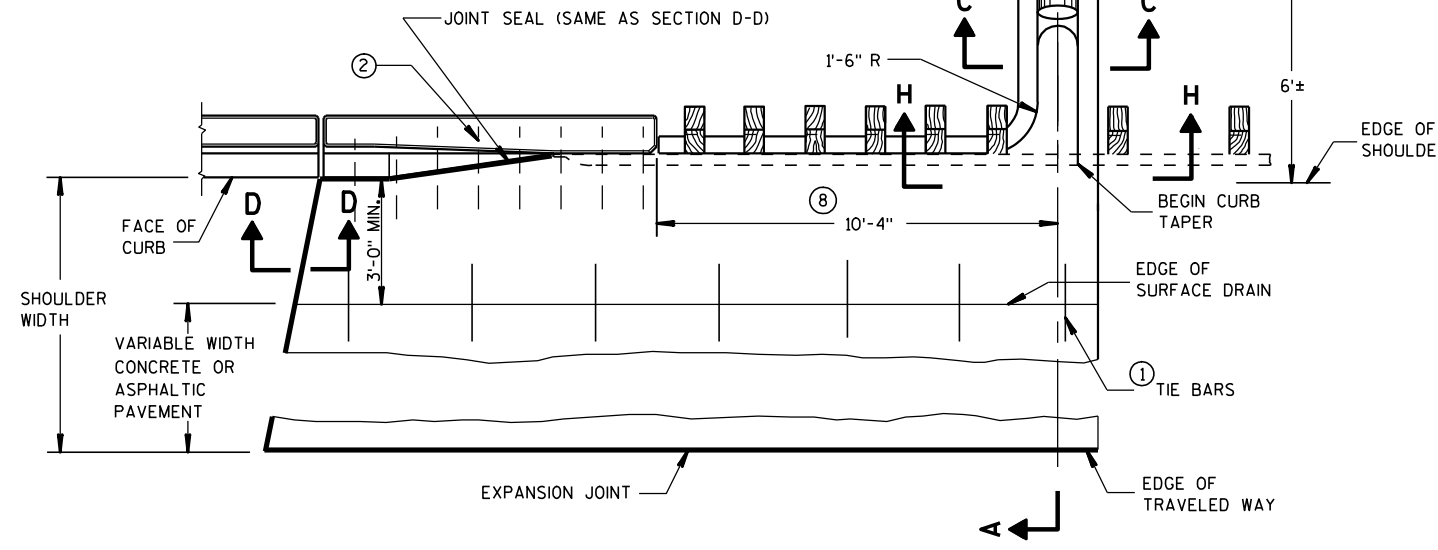
SECTION E-E



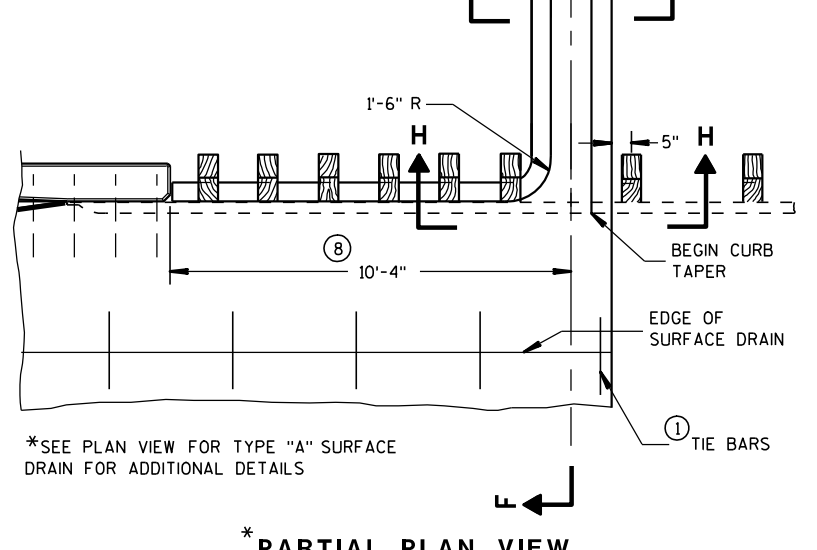
SECTION C-C



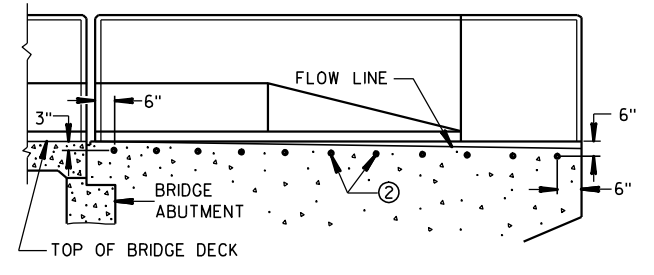
SECTION C-C



PLAN VIEW SURFACE DRAIN WITH PIPE TYPE "A"

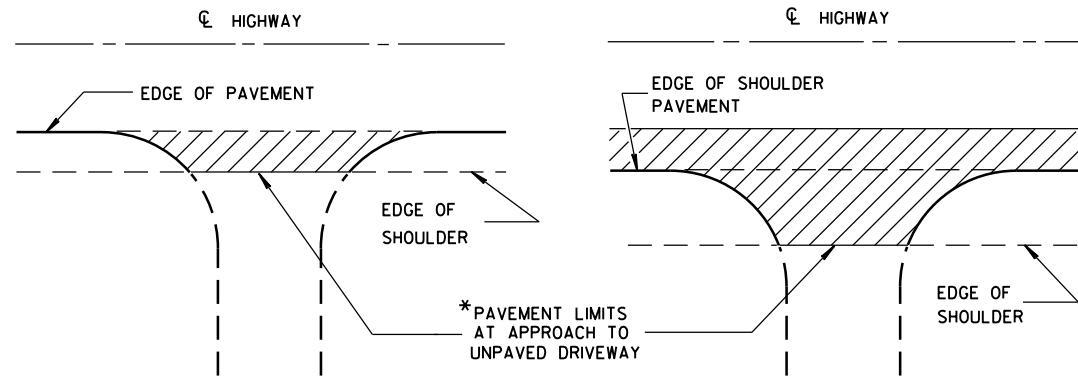


***PARTIAL PLAN VIEW SURFACE DRAIN WITHOUT PIPE TYPE "B"**



LOCATION OF TIE BARS IN WINGWALL

CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 9/4/08 DATE	/s/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

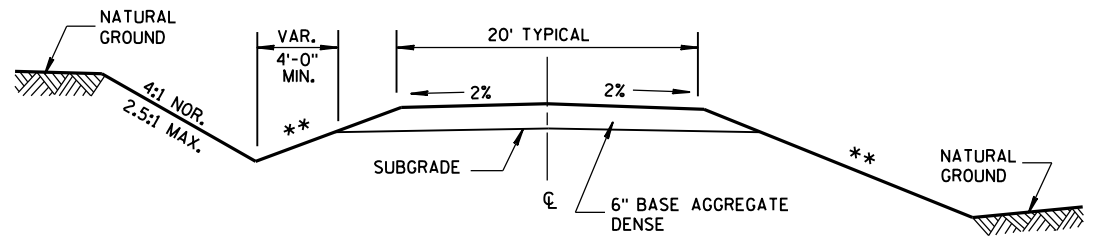


*WHERE DRIVEWAY IS PAVED, APPROACH PAVEMENT SHOULD BE EXTENDED TO MATCH DRIVEWAY PAVEMENT.

PLAN VIEW
(UNPAVED SHOULDER ON HIGHWAY)

PLAN VIEW
(PAVED SHOULDER ON HIGHWAY)

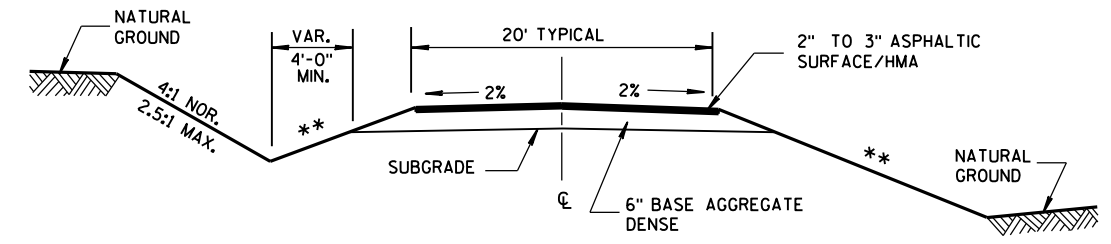
RURAL DRIVEWAY INTERSECTION DETAIL
(NO CURB & GUTTER OR SIDEWALK)



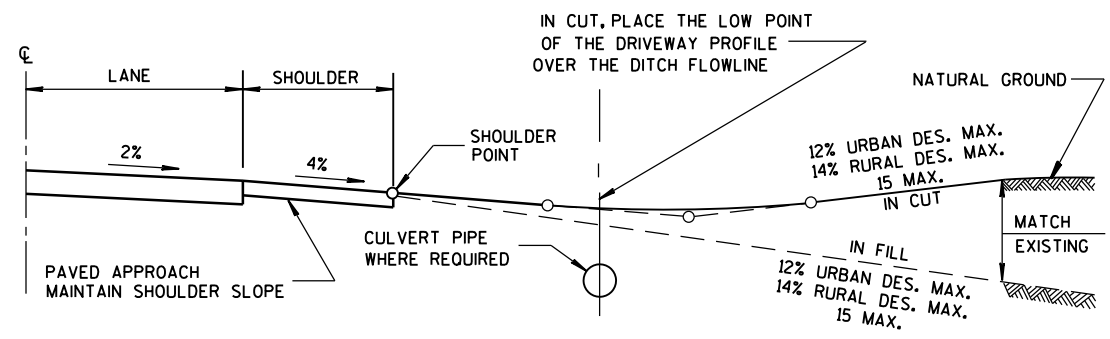
TYPICAL CROSS SECTION FOR PRIVATE DRIVE OR FIELD ENTRANCE
AGGREGATE SURFACE

** SLOPE CAN VARY WITH SPEED. SEE 11-45-2.6.2.

POSTED SPEED MPH	MAX. SLOPE
<35	4:1
≥35 TO <60	6:1
≥60	10:1



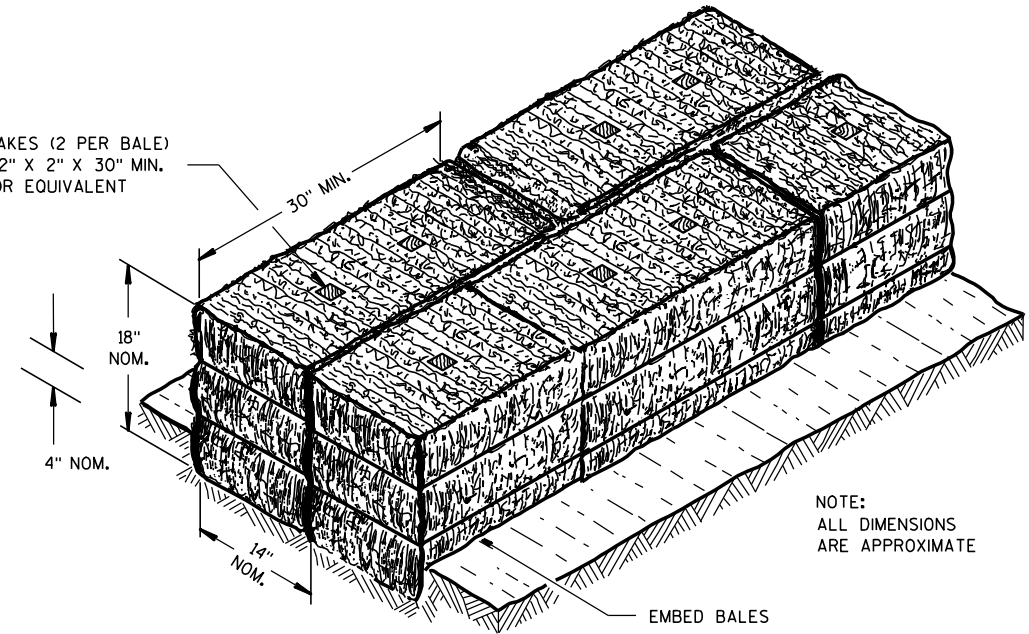
TYPICAL CROSS SECTION FOR PRIVATE DRIVE OR FIELD ENTRANCE
ASPHALTIC SURFACE



TYPICAL DRIVEWAY PROFILES

DRIVEWAYS WITHOUT CURB & GUTTER	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED December, 2016	/S/ Rodney Taylor
DATE	ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	

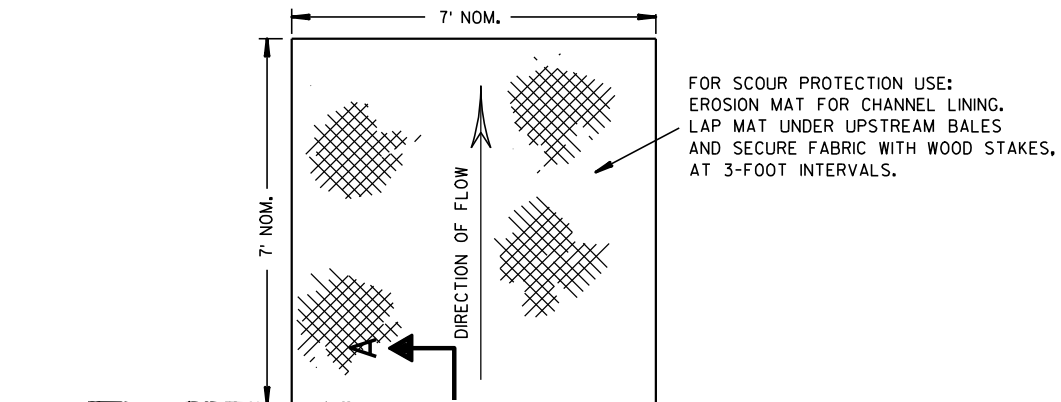
WOOD STAKES (2 PER BALE)
NOMINAL 2" X 2" X 30" MIN.
LENGTH OR EQUIVALENT



NOTE:
ALL DIMENSIONS
ARE APPROXIMATE

EMBED BALES

SECTION A-A

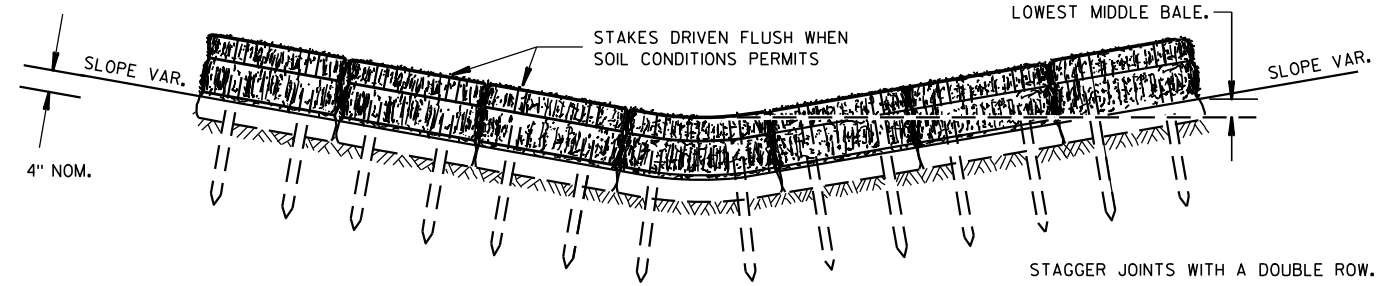


FOR SCOUR PROTECTION USE:
EROSION MAT FOR CHANNEL LINING.
LAP MAT UNDER UPSTREAM BALES
AND SECURE FABRIC WITH WOOD STAKES,
AT 3-FOOT INTERVALS.

PLAN VIEW

STAGGER JOINTS BETWEEN ADJACENT
ROWS OF BALES.

BOTTOM ELEVATION OF END BALE SHALL
BE EQUAL TO OR GREATER THAN TOP OF
LOWEST MIDDLE BALE.



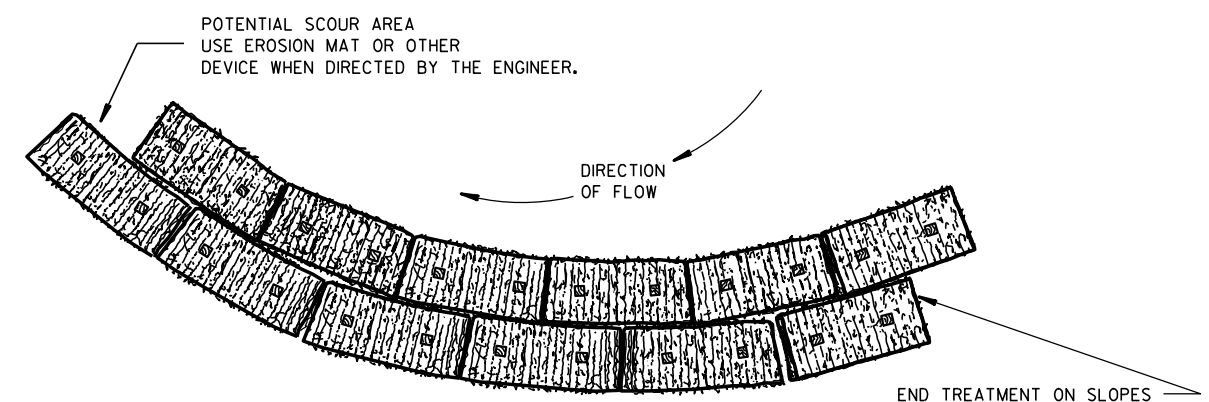
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

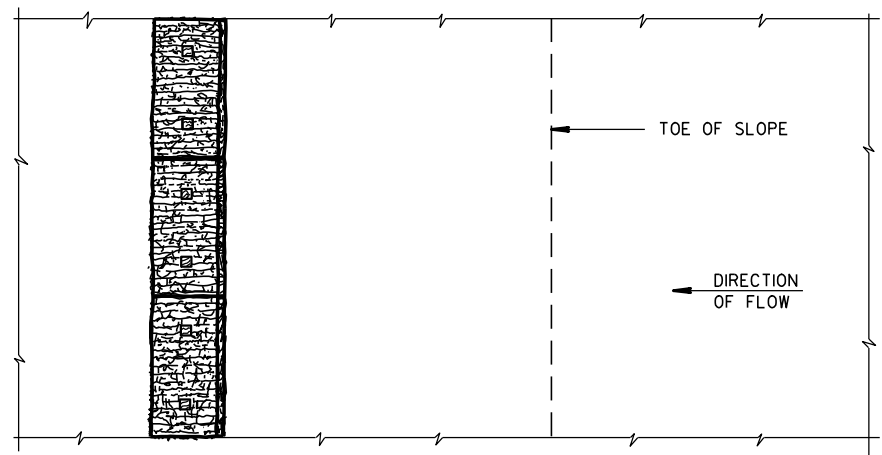
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

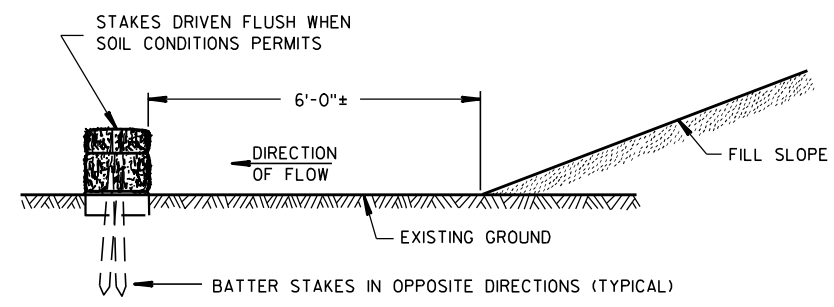


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

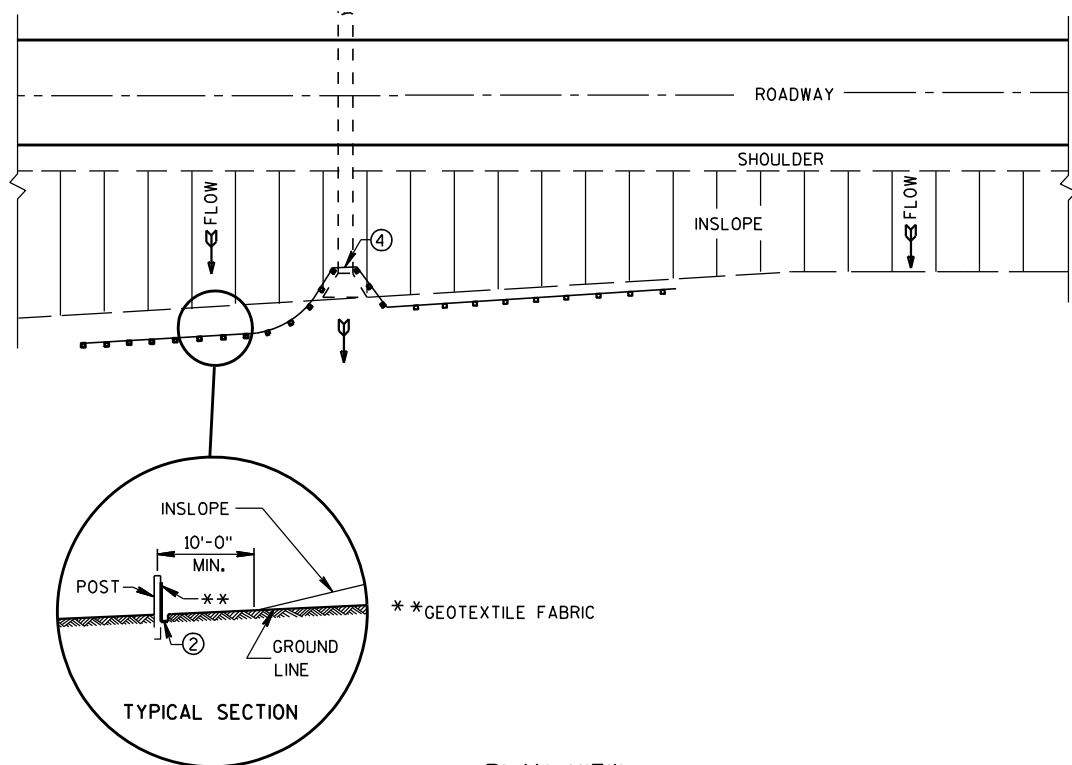
WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

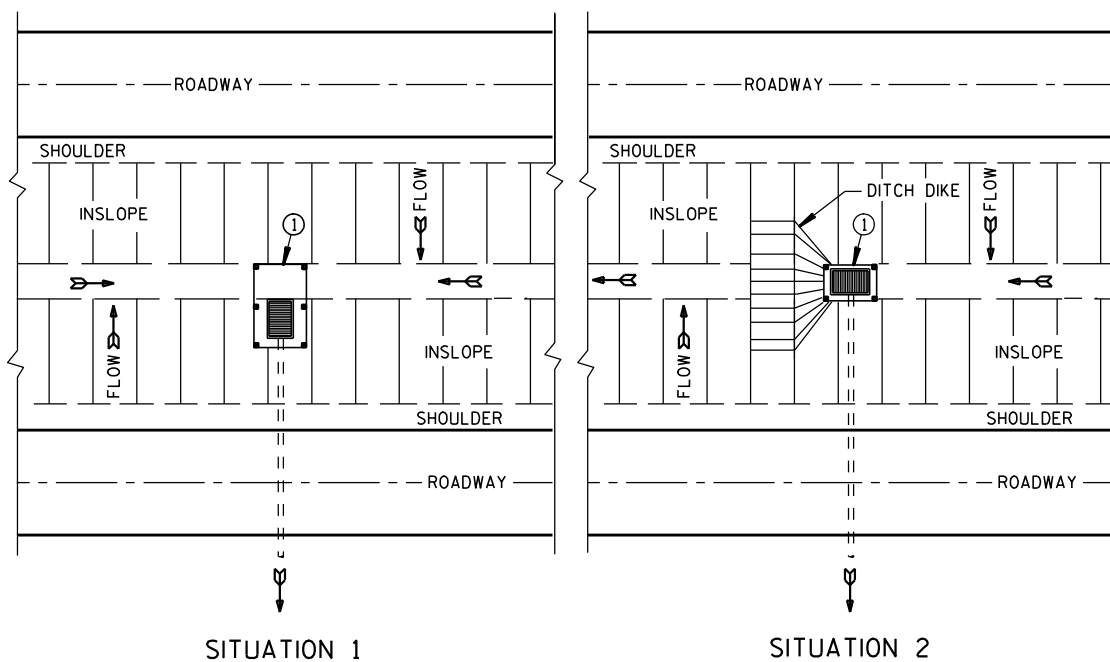
TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE

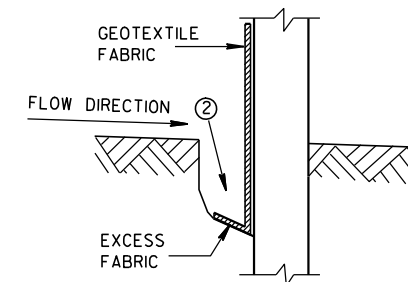


SITUATION 1 SITUATION 2
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

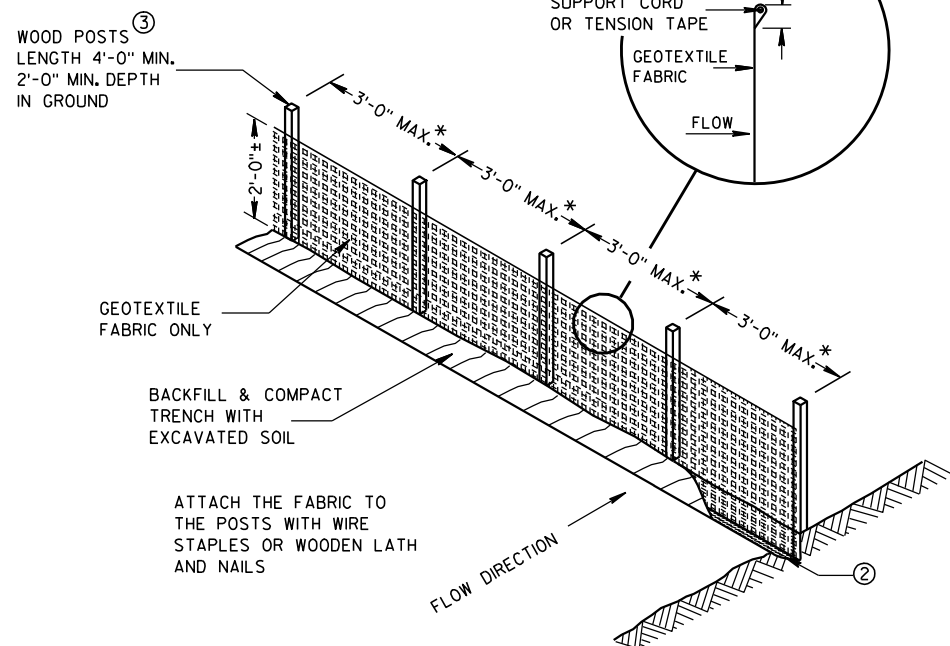
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

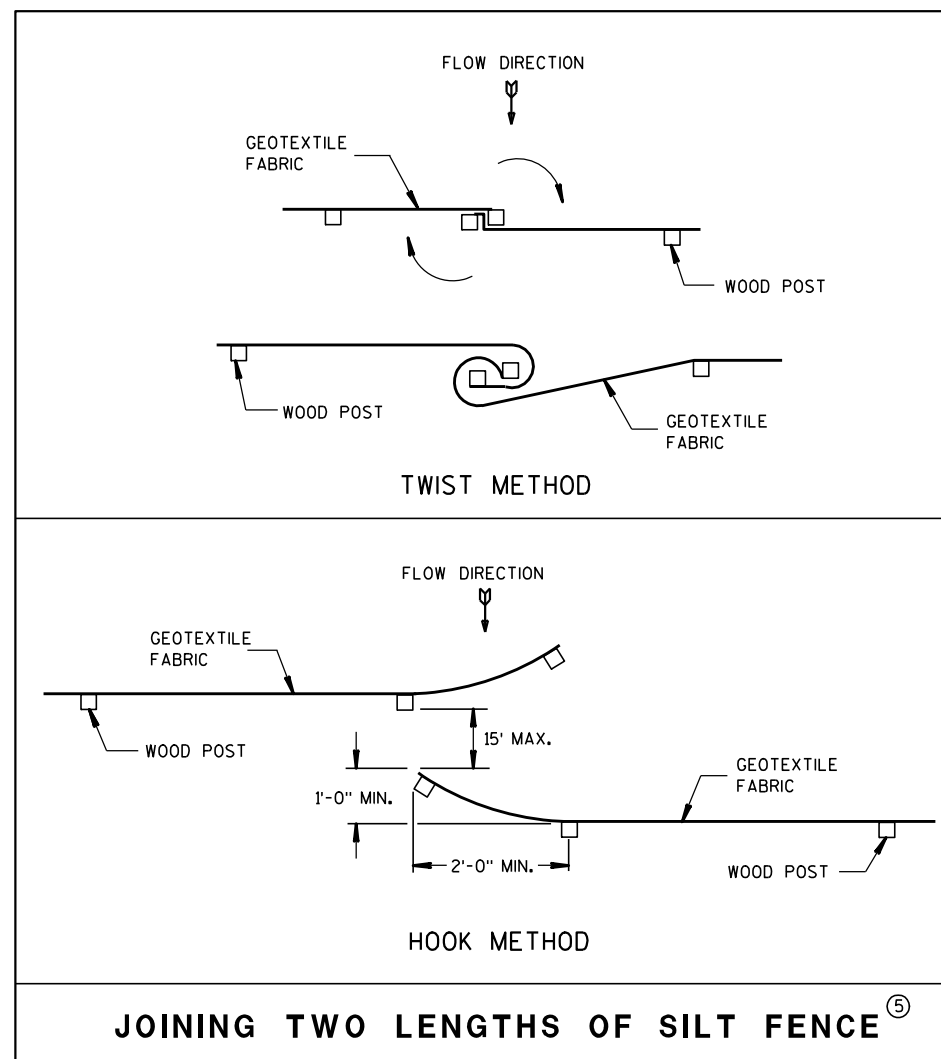


TRENCH DETAIL

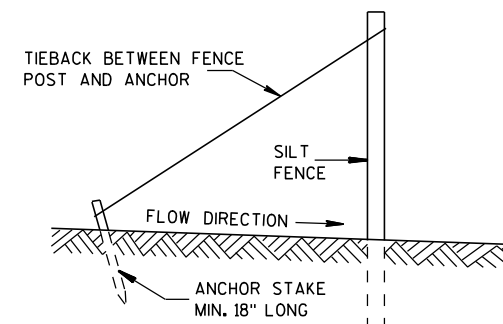
NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS



SILT FENCE



JOINING TWO LENGTHS OF SILT FENCE ⑤



SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

GENERAL NOTES

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

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

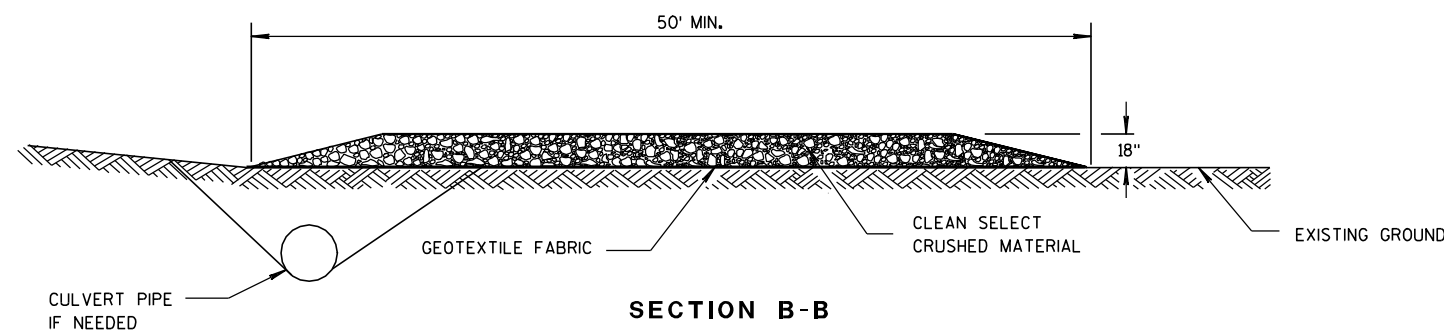
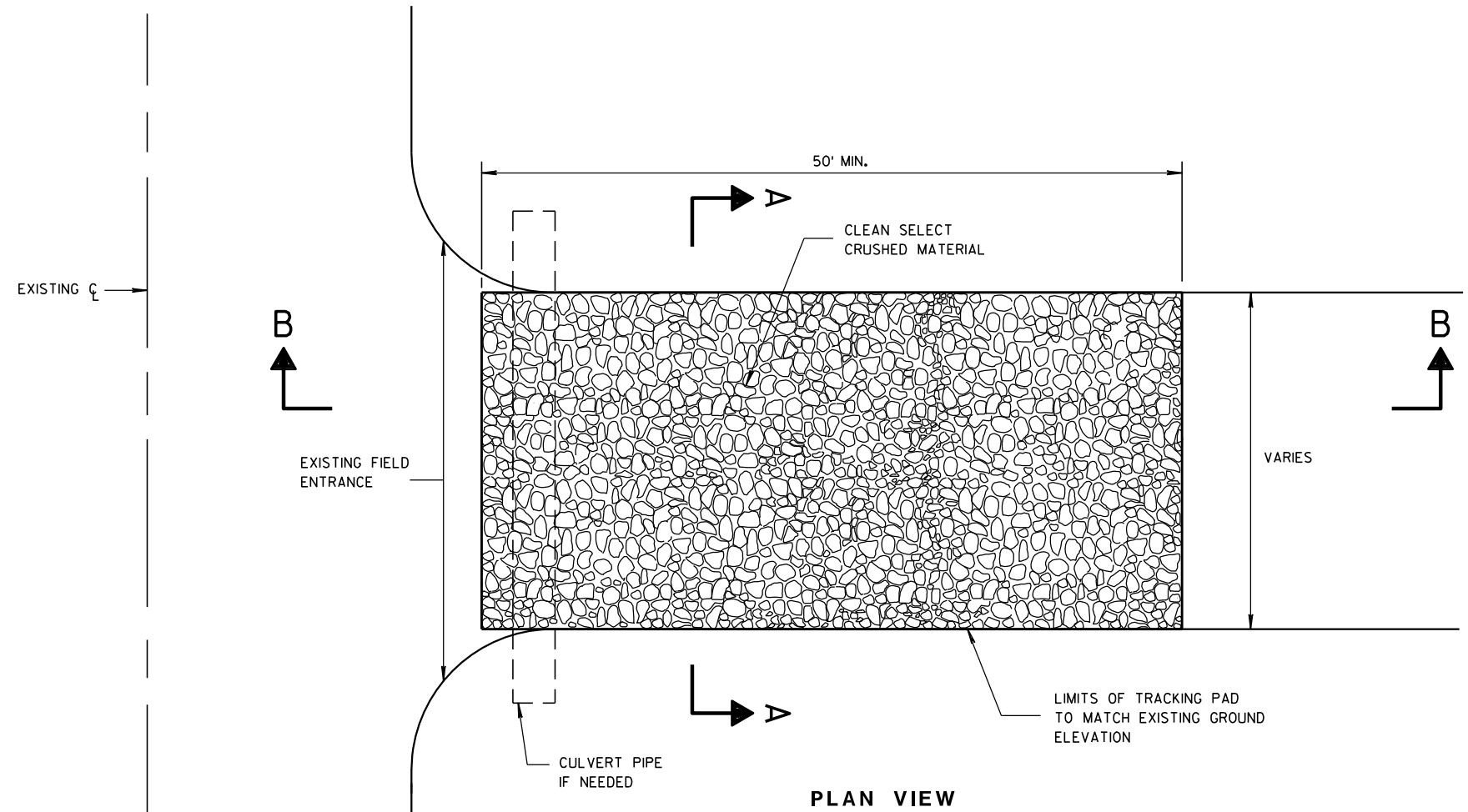
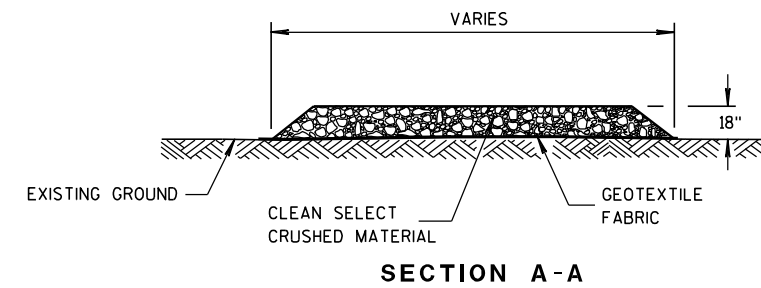
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

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

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

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

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

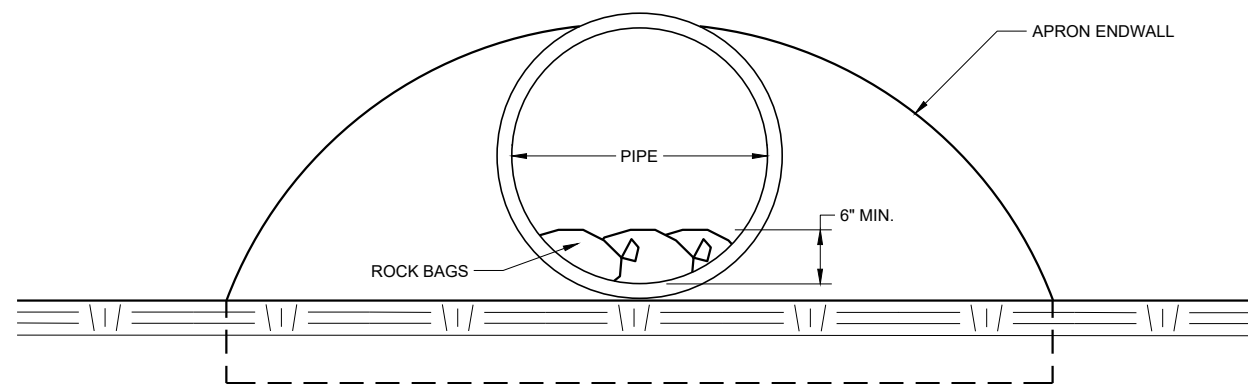


TRACKING PAD

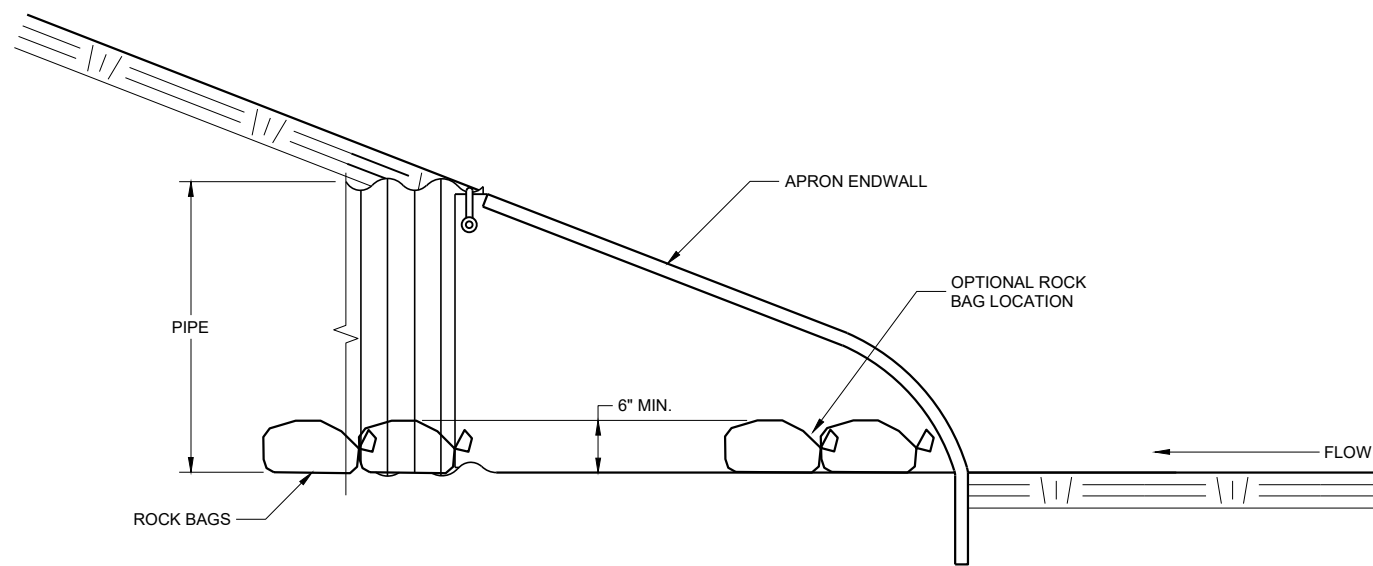
TRACKING PAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
3/24/2011 DATE /S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA



END VIEW



SIDE VIEW

CULVERT PIPE CHECK
 (INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

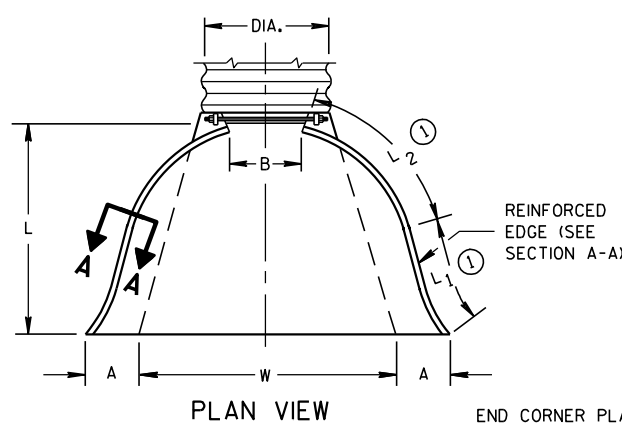
FHWA

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

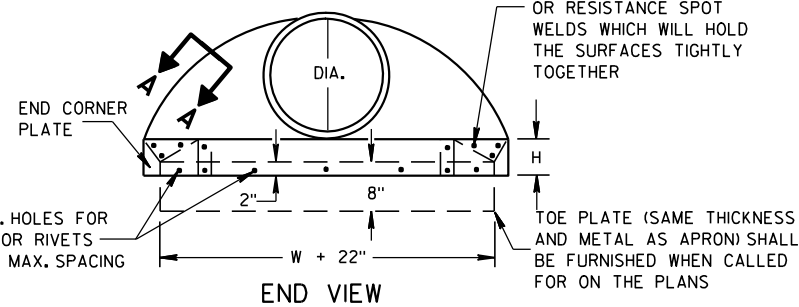
* EXCEPT CENTER PANEL SEE GENERAL NOTES

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

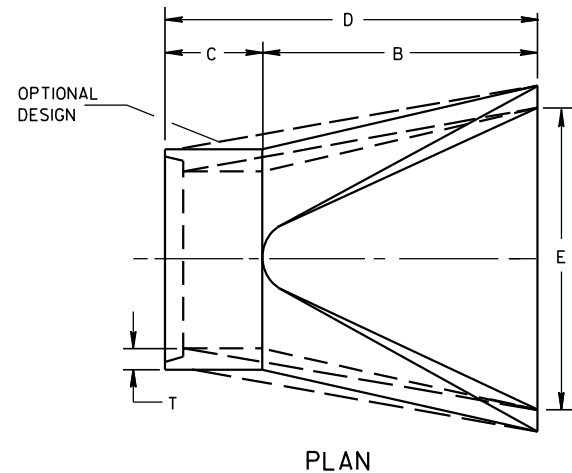
* MINIMUM
** MAXIMUM



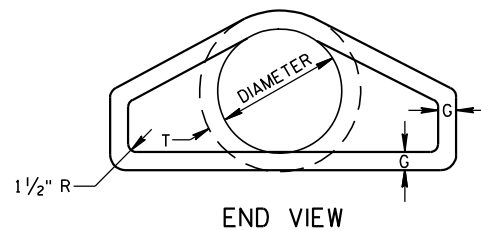
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



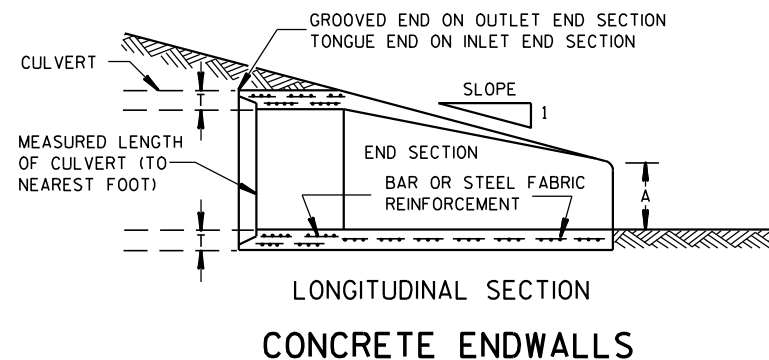
SIDE ELEVATION
METAL ENDWALLS



PLAN

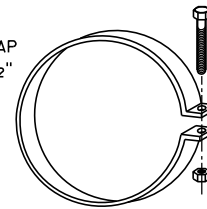


END VIEW

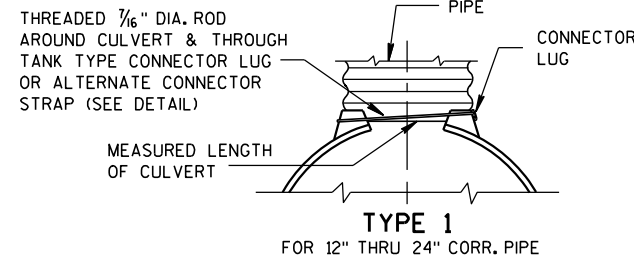


LONGITUDINAL SECTION
CONCRETE ENDWALLS

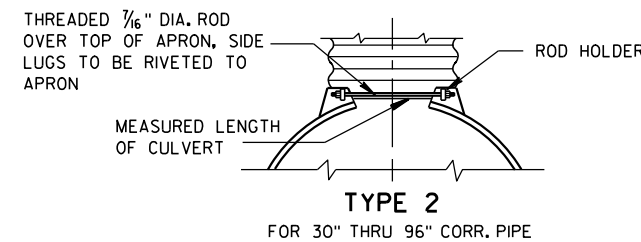
1" WIDE, 12 GA. (0.109" THICK) GALVANIZED STRAP WITH STANDARD 6" X 1/2" BAND BOLT AND NUT



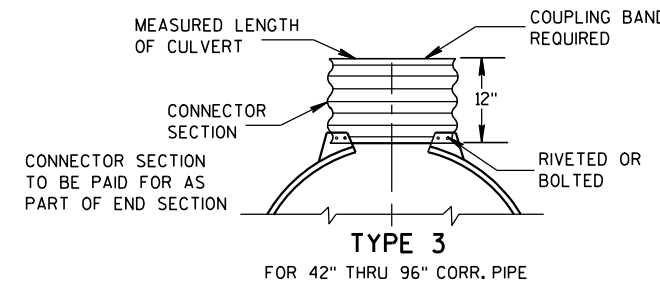
ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



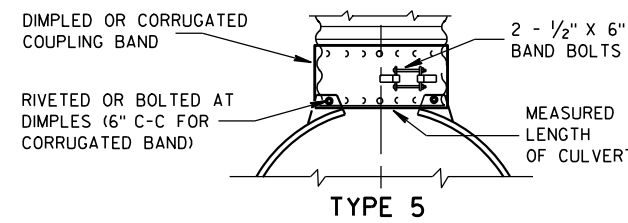
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

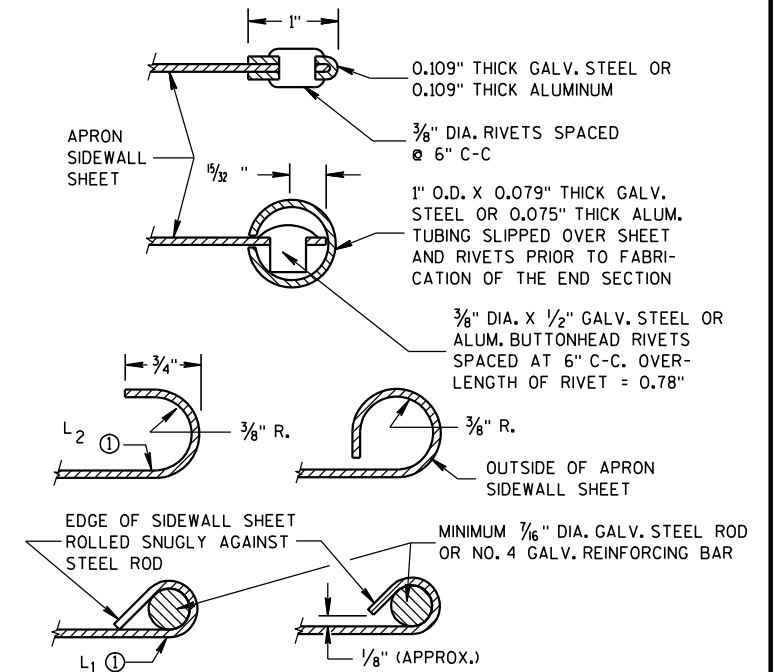
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

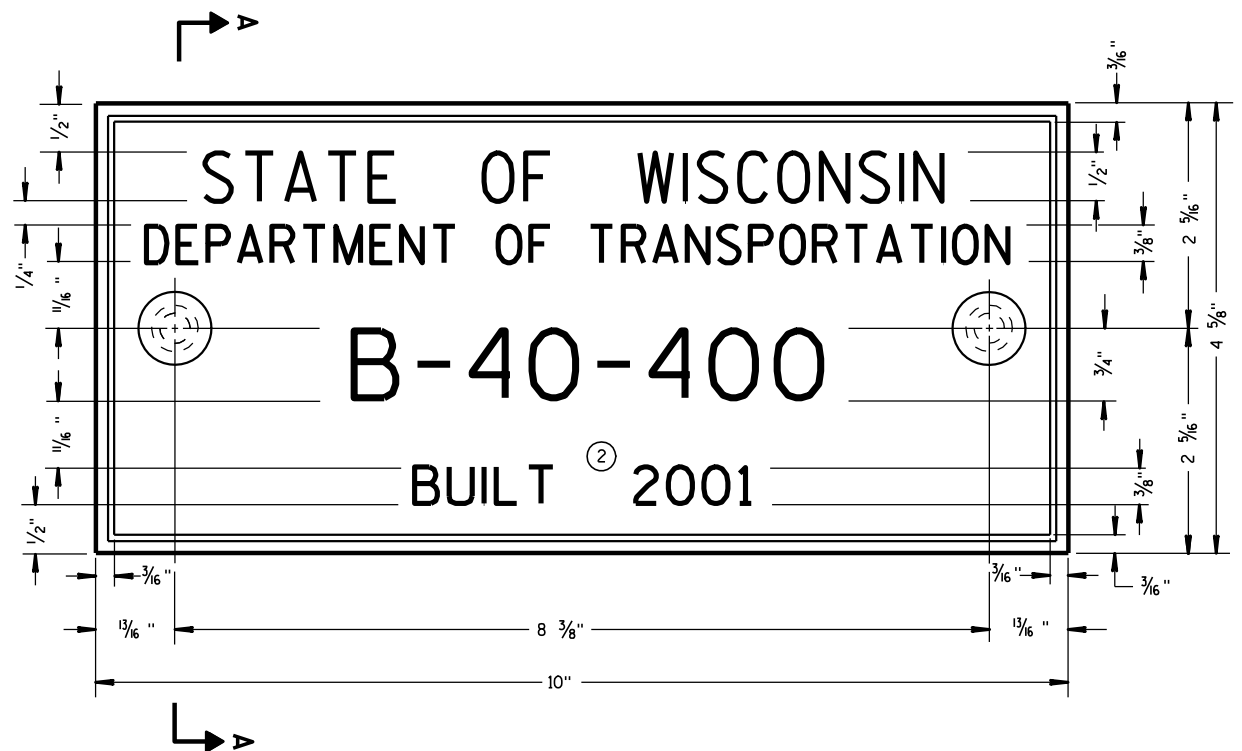
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

APRON ENDWALLS FOR
CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



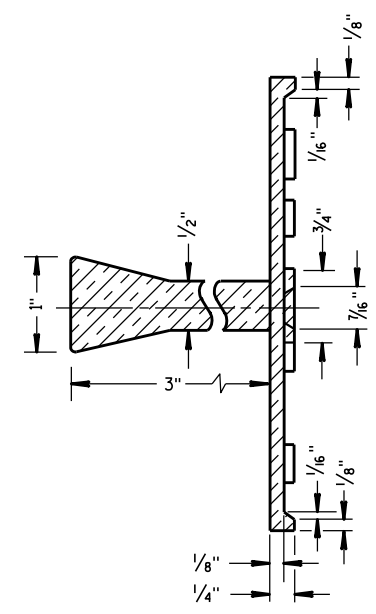
TYPICAL NAME PLATE
(BRIDGES, CULVERTS, AND RETAINING WALLS)

GENERAL NOTES

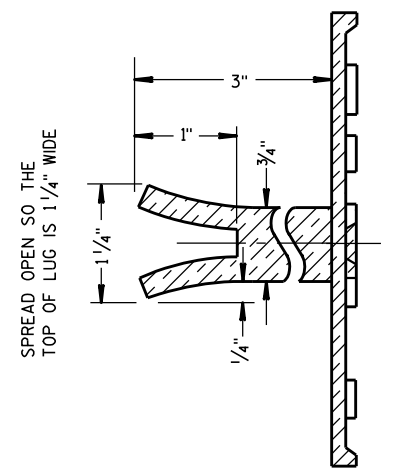
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

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



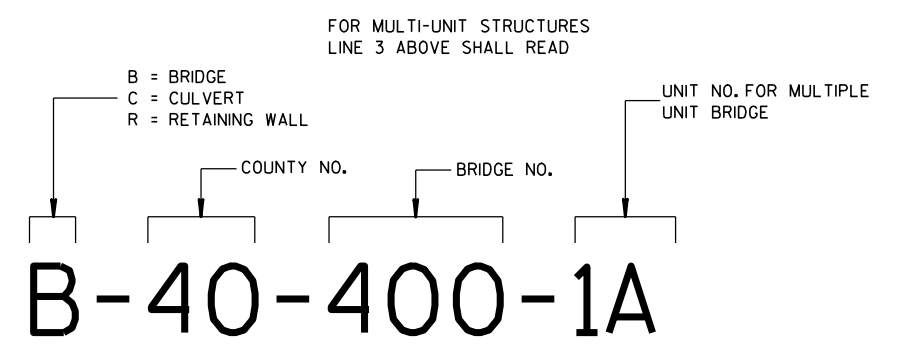
SECTION A-A



ALTERNATE LUG

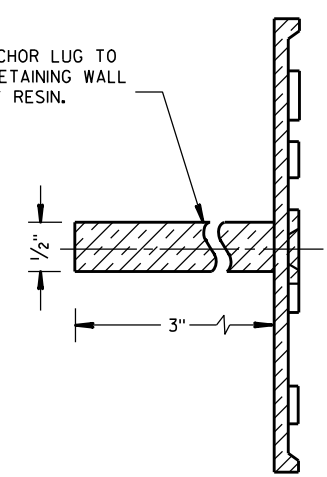
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**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

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

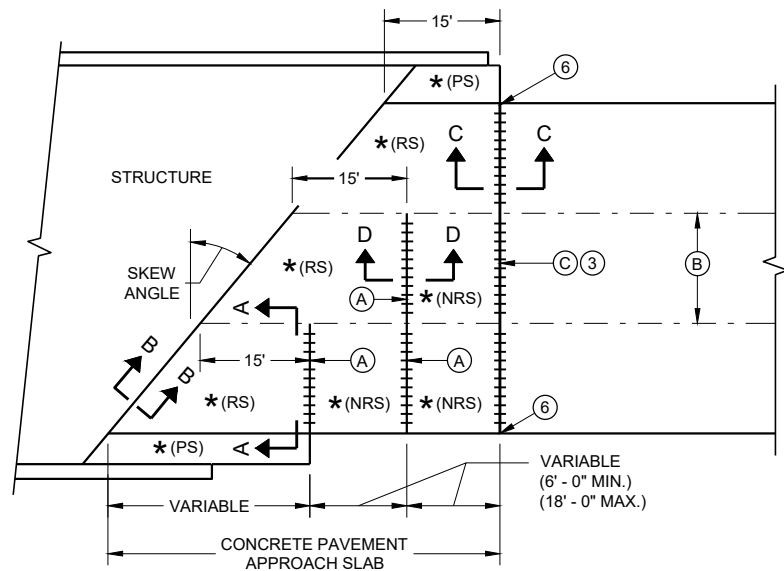


ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

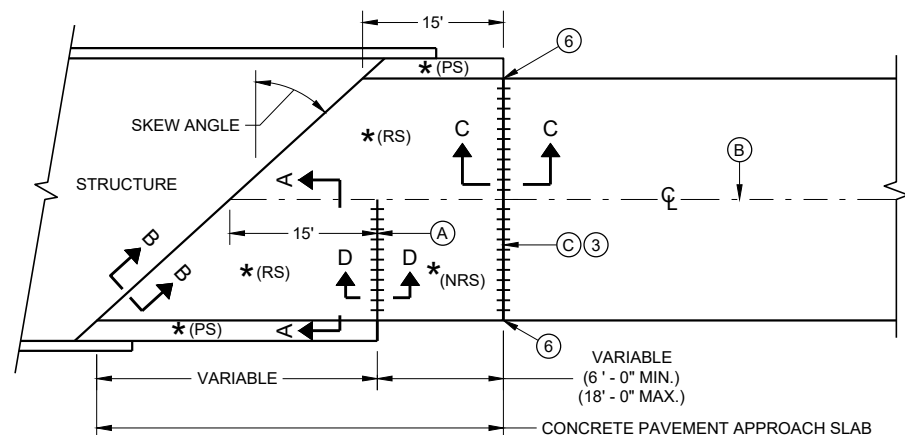
S.D.D. 12 A 3-10

S.D.D. 12 A 3-10

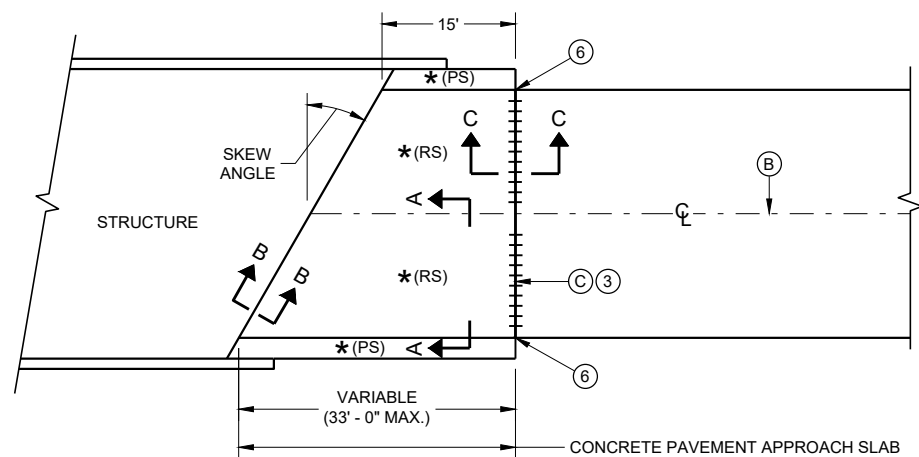
NAME PLATE (STRUCTURES)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED DATE 3/26/10	/S/ Scot Becker CHIEF STRUCTURAL DEVELOPMENT ENGINEER
FHWA	



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

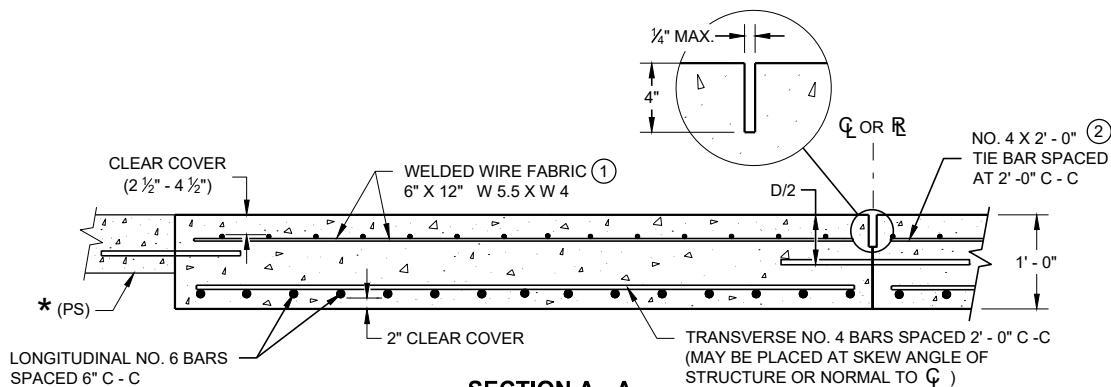


**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**

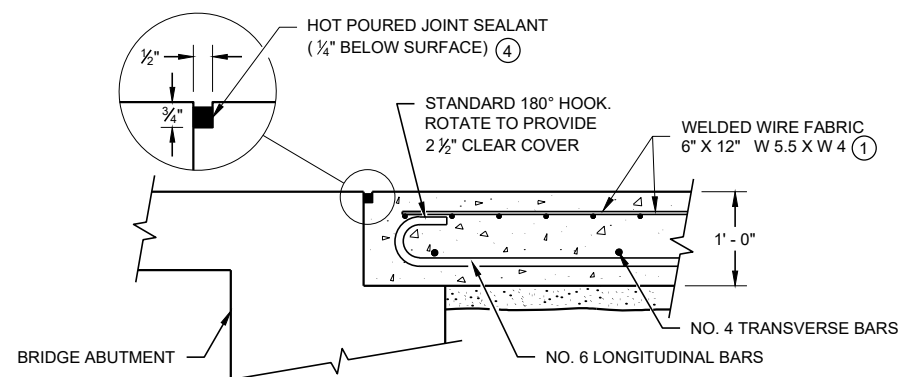


**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')**
APPROACH SLAB AND ADJACENT PAVEMENT

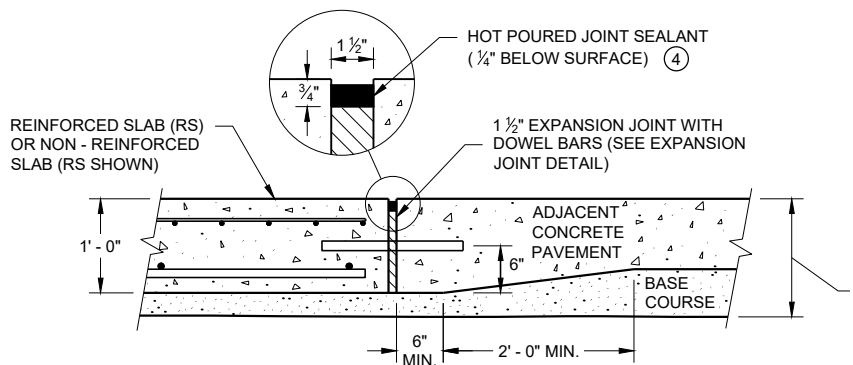
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) = NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



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



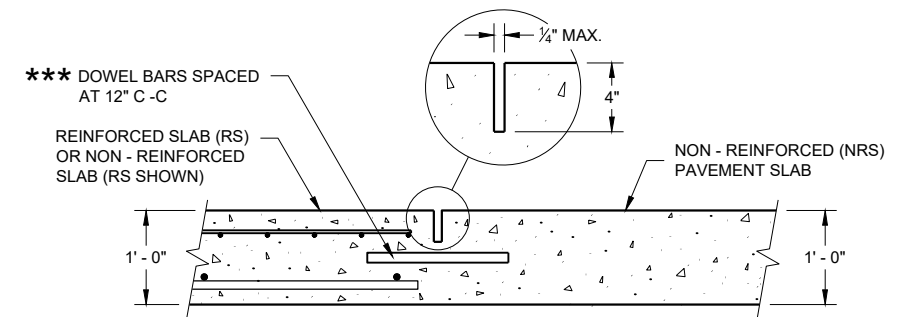
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

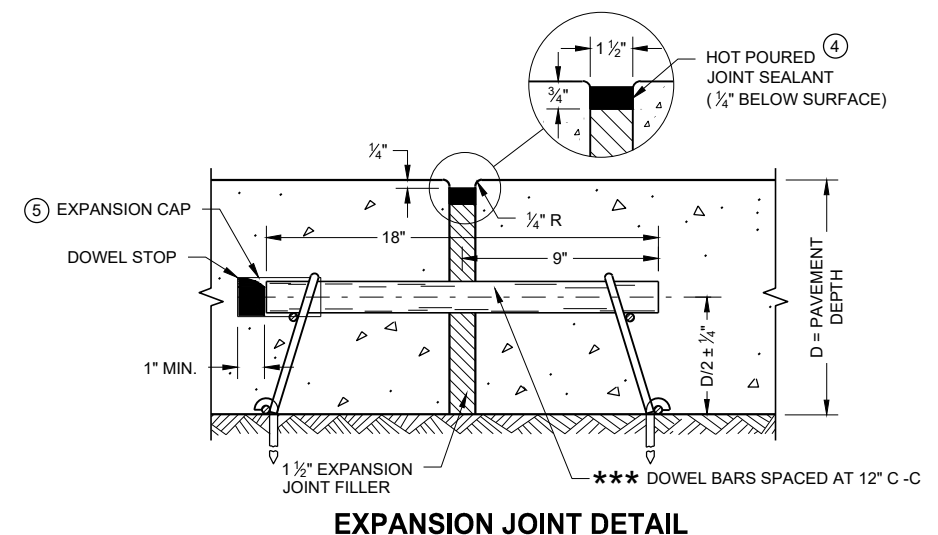
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

- ① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2' - 0" C - C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.
- ② THE CONTRACTOR MAY OMIT THE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.
- ③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- ④ USE A JOINT SEALANT MEETING THE REQUIREMENTS OF ASTM D6690.
- ⑤ PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.
- ⑥ EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
- (A) STANDARD CONTRACTION JOINT NORMAL TO \overline{C} OR \overline{R} .
- (B) STANDARD LONGITUDINAL JOINT WITH TIE BARS.
- (C) 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO \overline{C} OR \overline{R} .



**SECTION D - D
CONTRACTION JOINT**



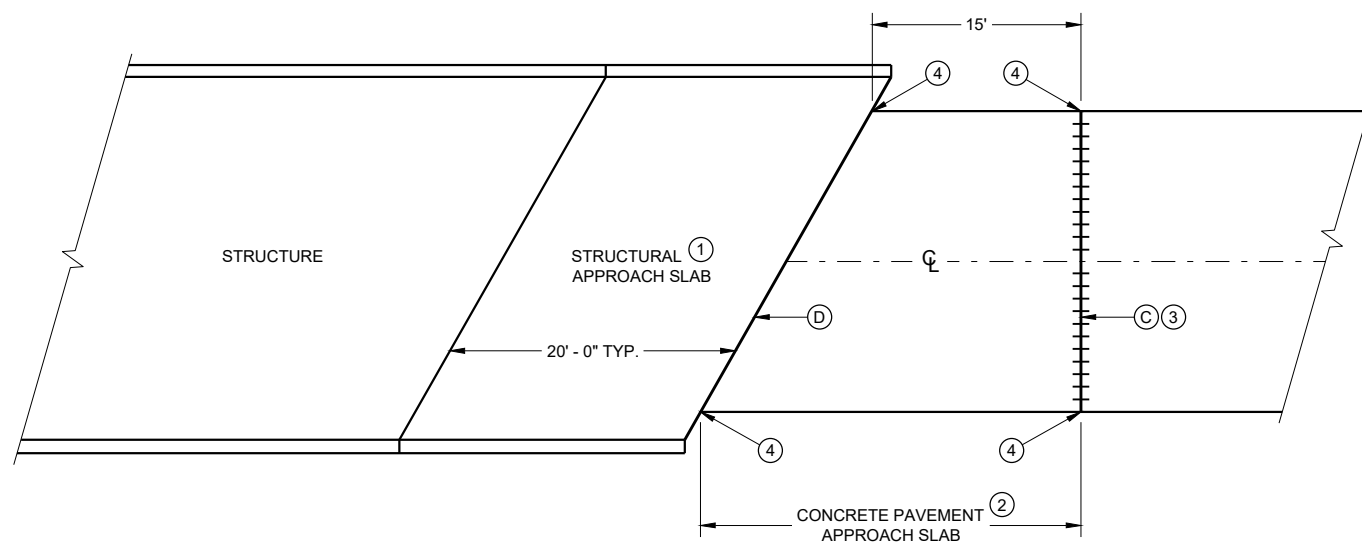
EXPANSION JOINT DETAIL

**CONCRETE PAVEMENT
APPROACH SLAB**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp P.E.
DATE DATE PAVEMENT SUPERVISOR

FHWA

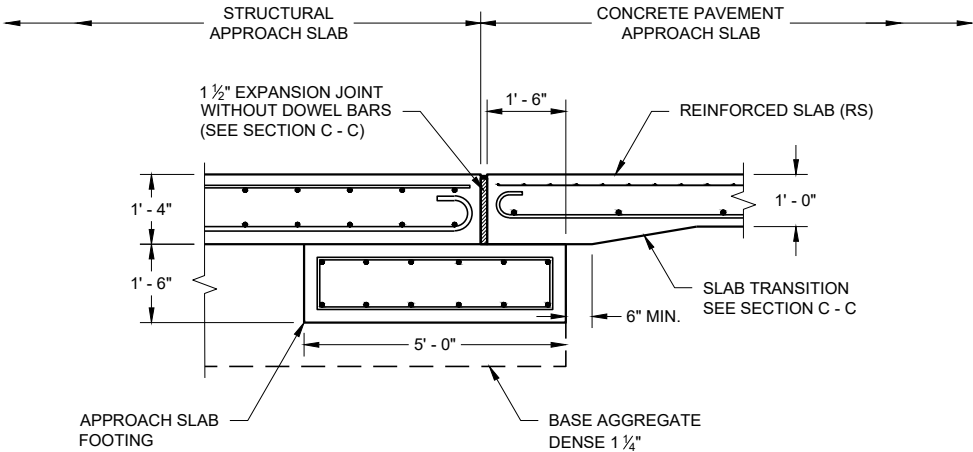


GENERAL NOTES

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

- ① SEE BRIDGE PLAN.
- ② CONFORM TO SDD 13B02 SHEET A FOR CONCRETE PAVEMENT APPROACH SLAB DETAILS
- ③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.
- ④ EXTEND EXPANSION JOINT THROUGH ANY ADJACENT TIED CONCRETE.
- Ⓒ 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO CL OR RL .
- Ⓓ 1½" EXPANSION JOINT (NO DOWELS)

BRIDGE APPROACHES



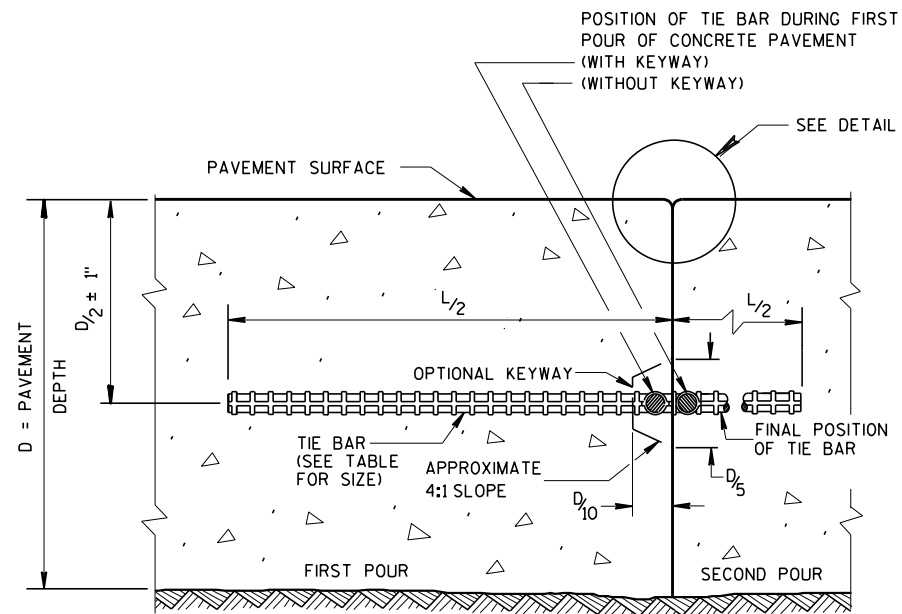
**SECTION E - E
FOOTING DETAIL
STRUCTURAL APPROACH SLAB TO CONCRETE BRIDGE APPROACH**

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

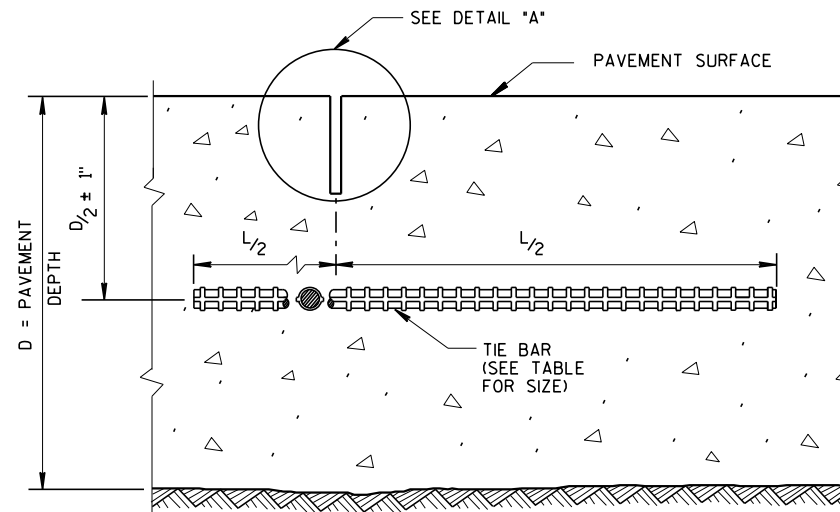
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp P.E.
DATE PAVEMENT SUPERVISOR

FHWA



CONSTRUCTION JOINT



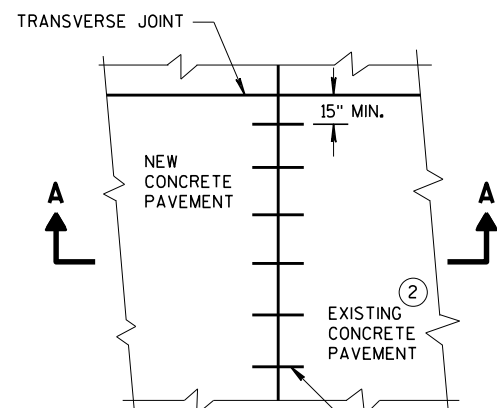
SAWED JOINT

GENERAL NOTES

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

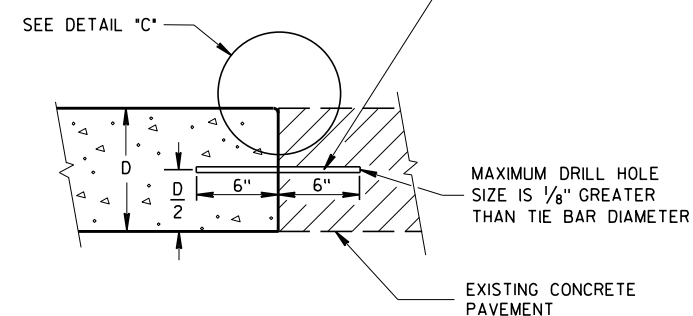
CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

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

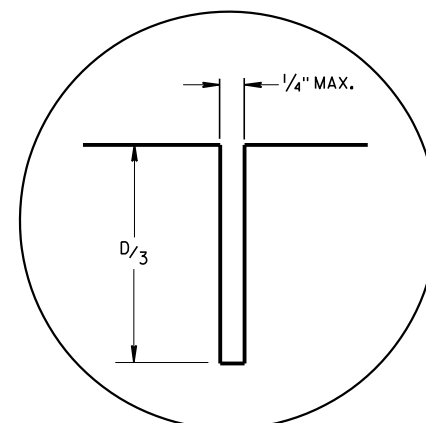


PLAN VIEW

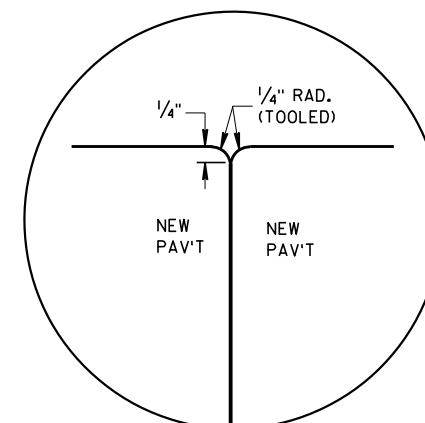
NO. 6 TIE BARS SPACED 30" C-C, INSTALLED PERPENDICULAR TO THE LONGITUDINAL JOINT. ①



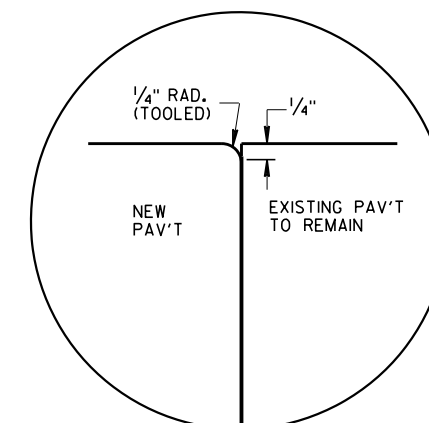
**SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT
TIE BARS ANCHORED
INTO EXISTING PAVEMENT**



DETAIL "A"



DETAIL "B"



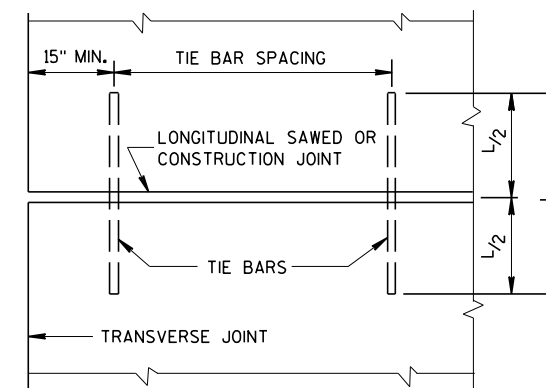
DETAIL "C"

TIE BAR TABLE

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

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

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



**PLAN VIEW
SHOWING LOCATION OF TIE BARS**

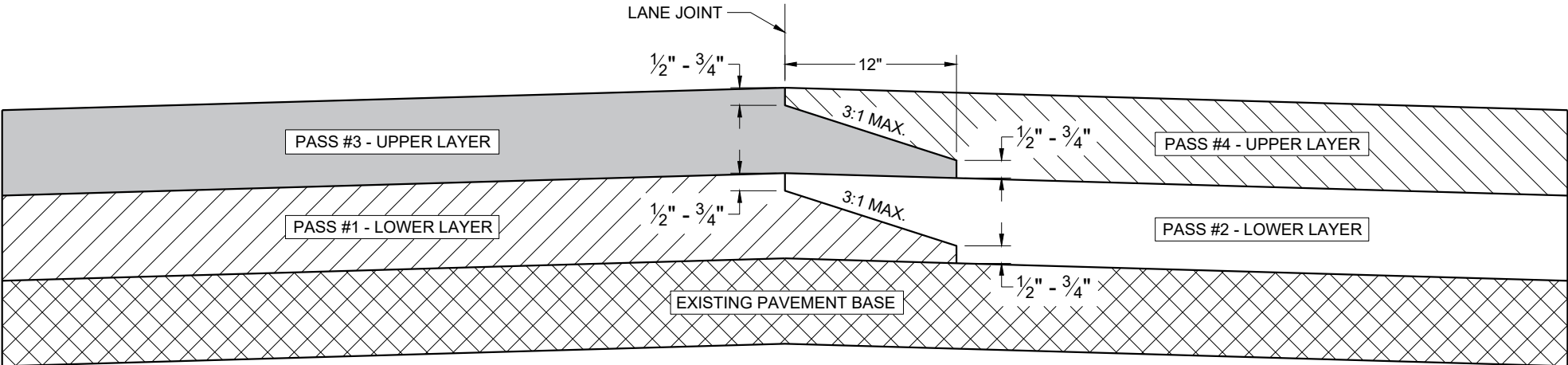
**CONCRETE PAVEMENT
LONGITUDINAL JOINTS AND TIES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

GENERAL NOTES

CONFORM TO STANDARD SPECIFICATION 450.3.2.8



**TYPICAL PAVEMENT CROSS SECTION
OF NOTCHED WEDGE LONGITUDINAL JOINTS**

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SDD 13C19 - 01

SDD 13C19 - 01

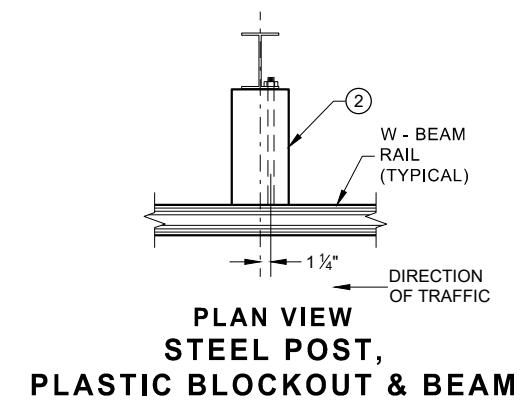
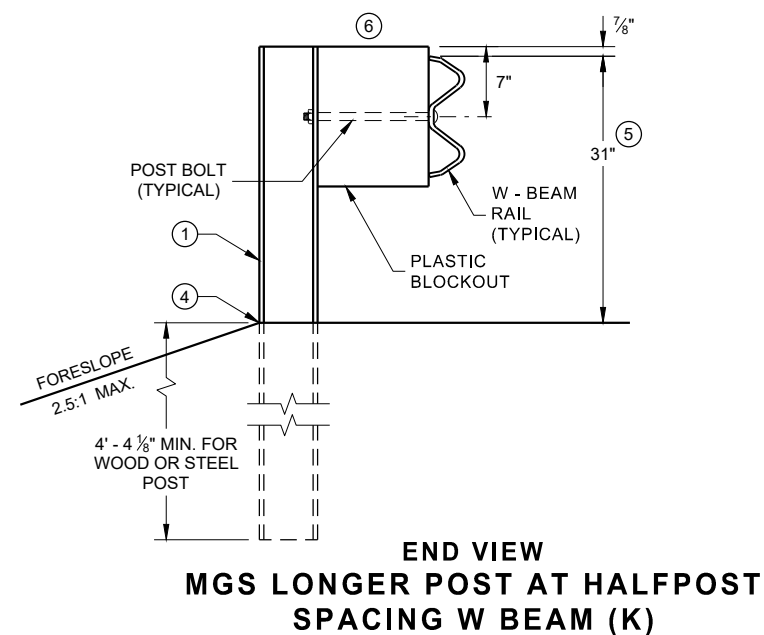
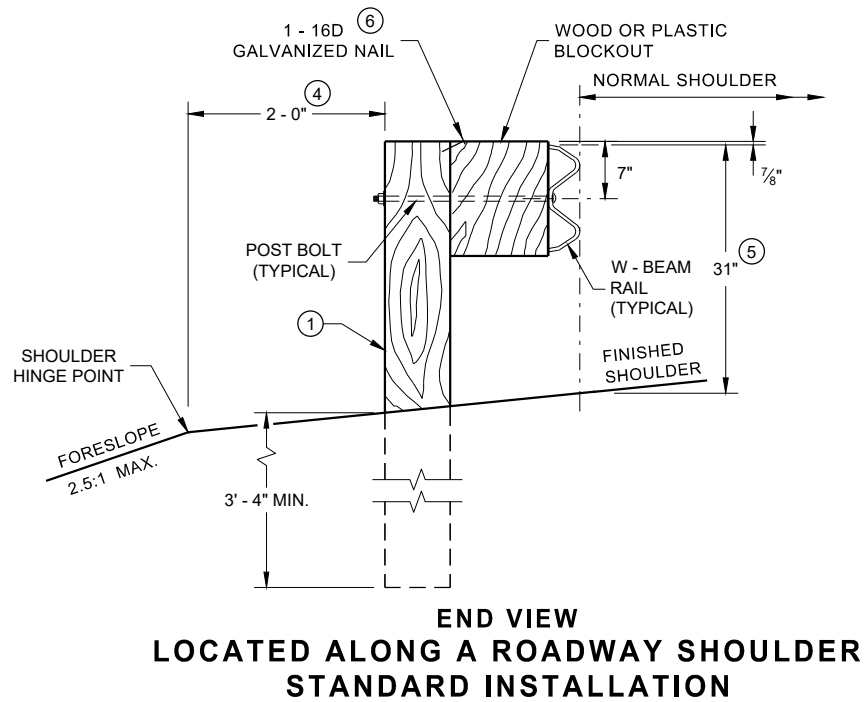
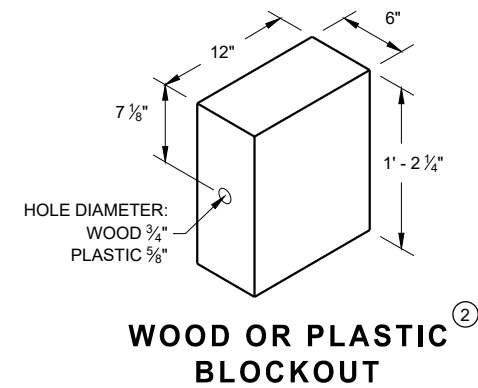
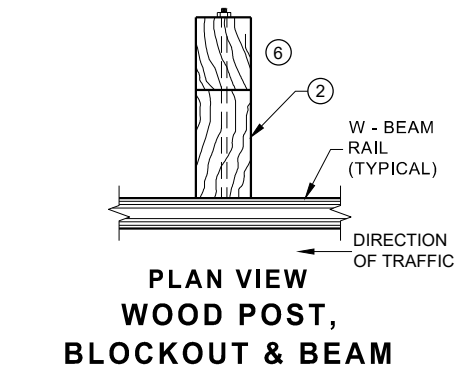
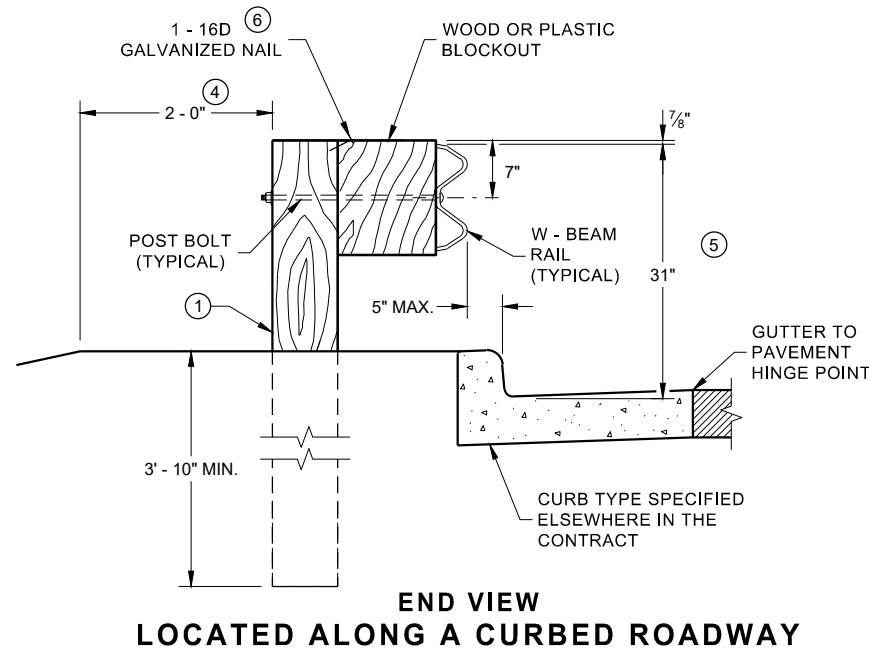
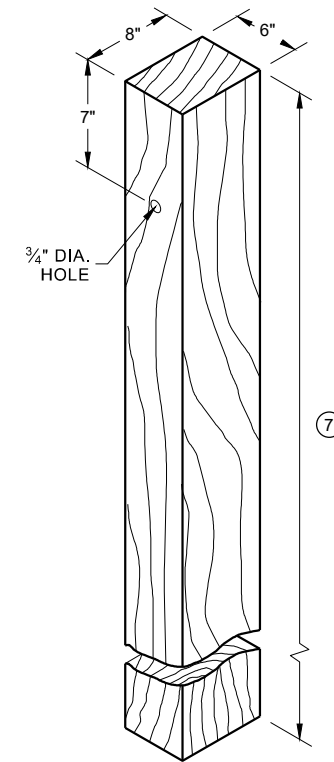
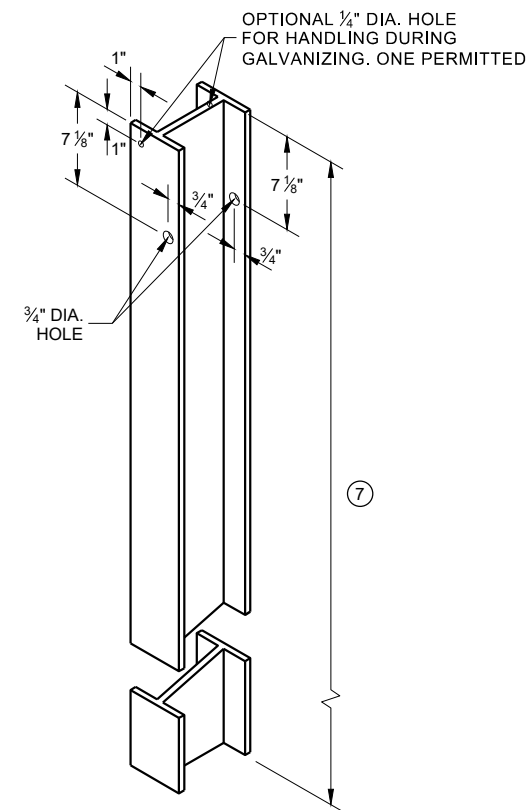
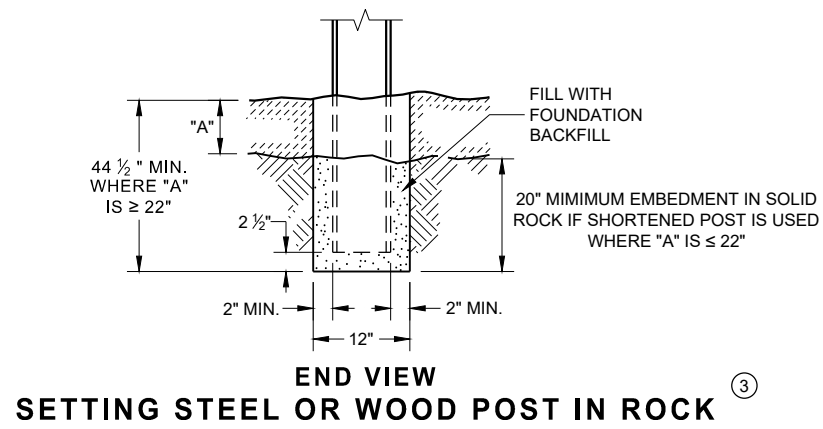
HMA LONGITUDINAL JOINTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019 /S/ Steven Hefel
DATE HMA PAVEMENT ENGINEER

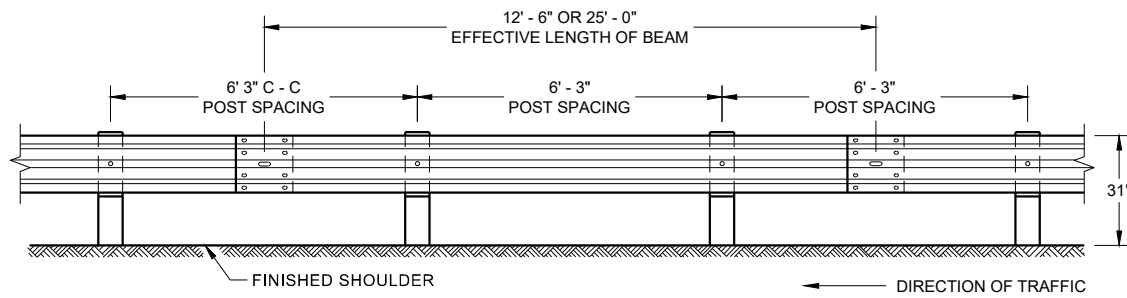
FHWA

- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.
- ③ IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AND INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.
- ④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).
- ⑤ FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 3/4" TO 32".
- ⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ⑦ TOTAL POST LENGTH FOR TYPE K IS 7' - 0". TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".

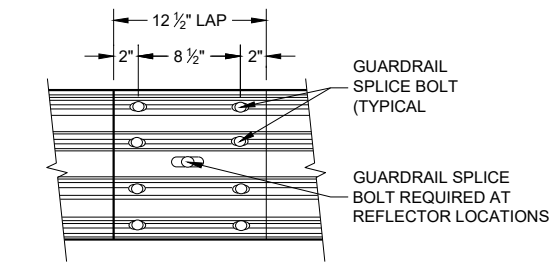


**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



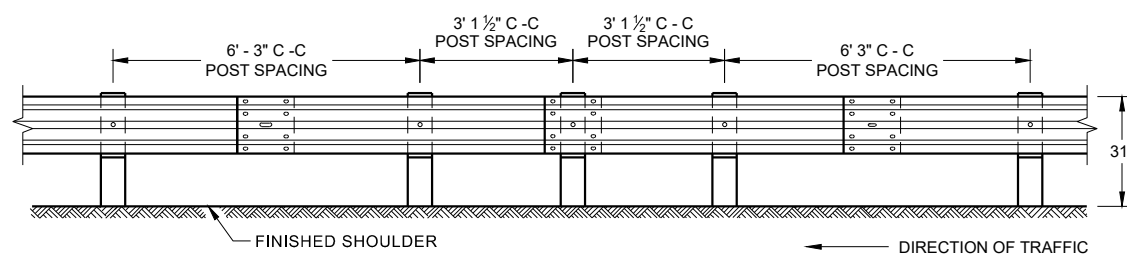
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



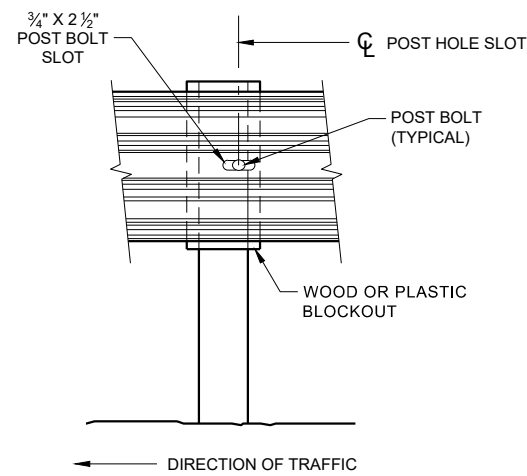
**FRONT VIEW
MID-SPAN BEAM SPLICE**

GENERAL NOTES

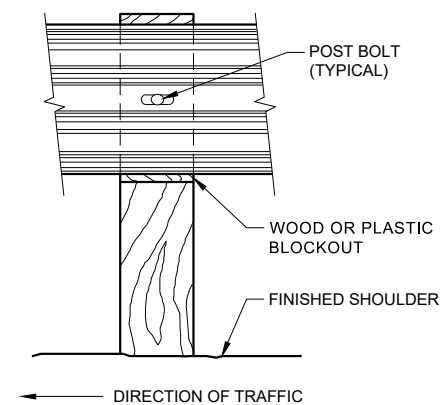
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
 - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8"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



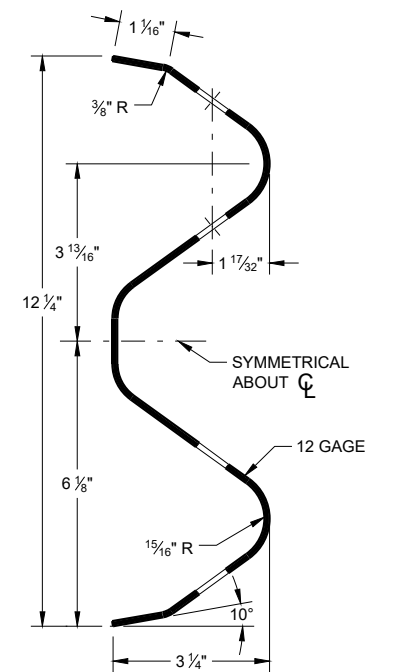
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



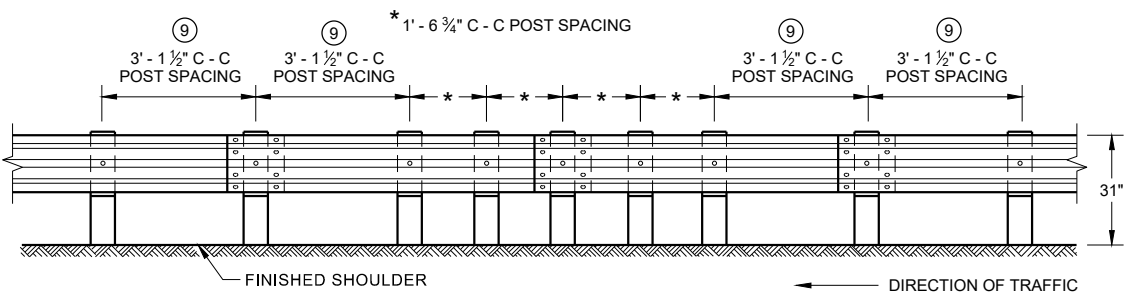
FRONT VIEW AT STEEL POST



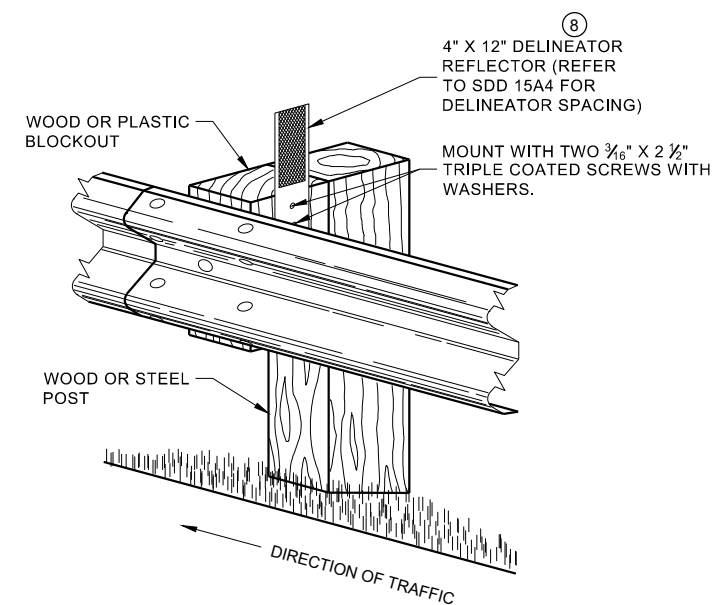
FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



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



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

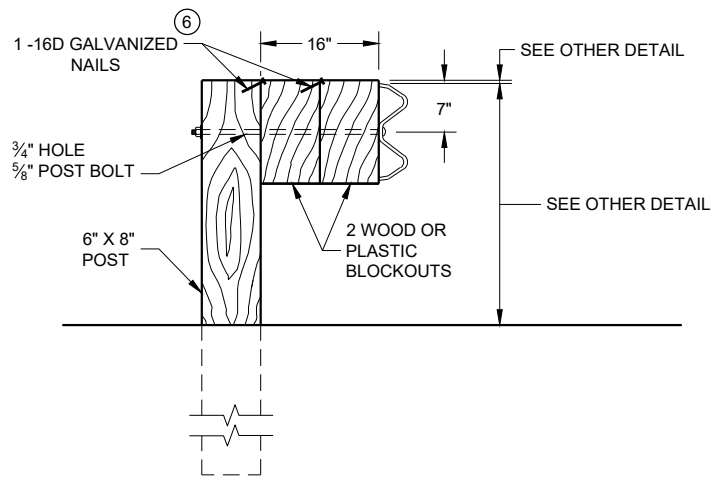
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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SDD 14B42 - 06b

SDD 14B42 - 06b

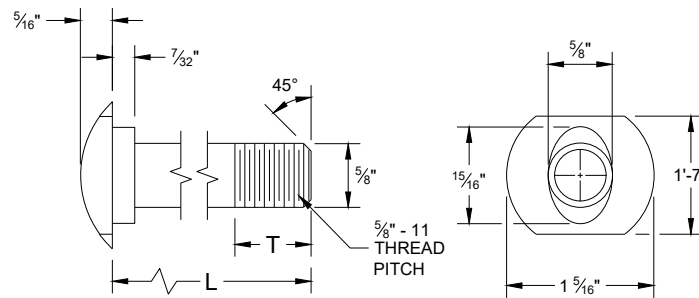


DETAIL FOR 16" BLOCKOUT DEPTH

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

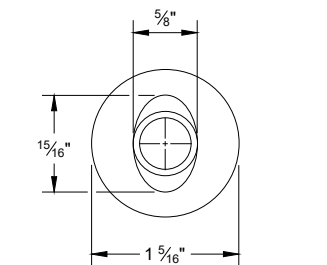
NOTE:

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

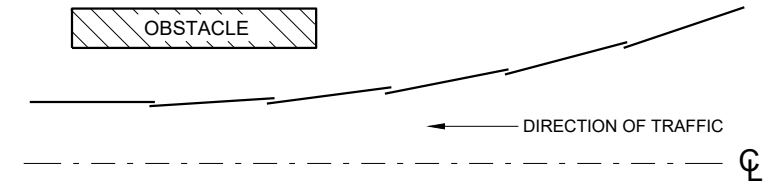


POST BOLT TABLE

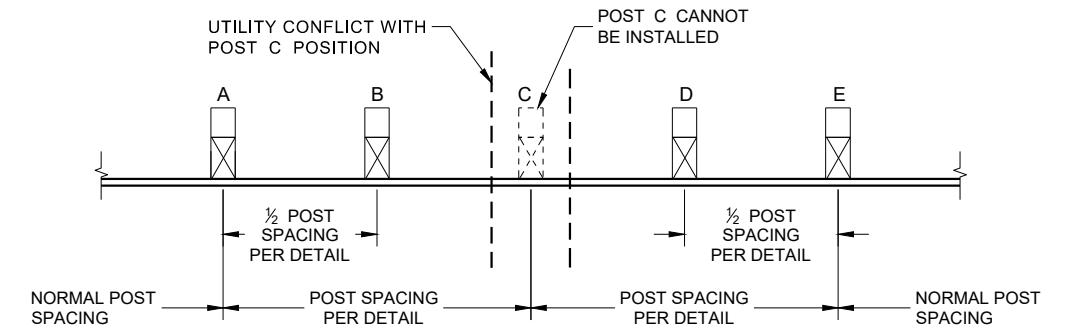
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



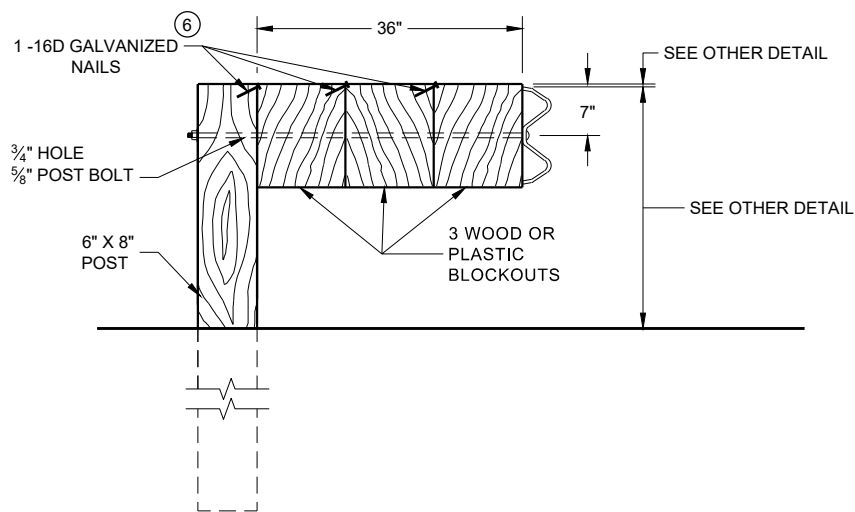
ALTERNATE BOLT HEAD



**PLAN VIEW
BEAM LAPPING DETAIL**

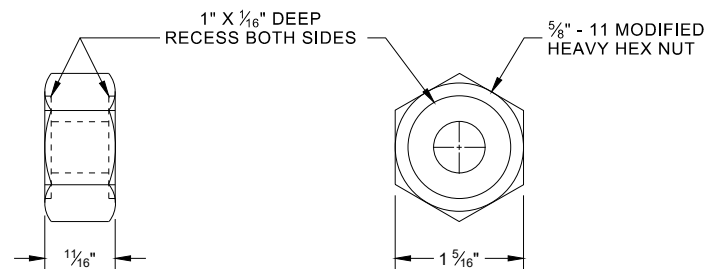


**POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION**

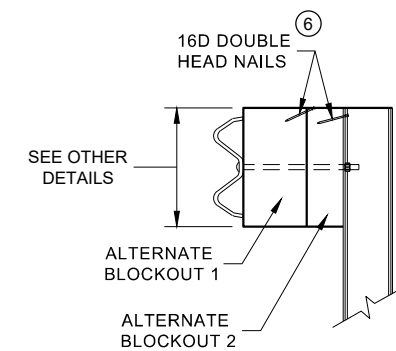


DETAIL FOR 36" BLOCKOUT DEPTH

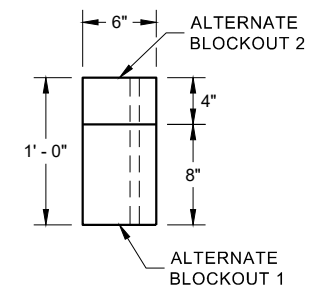
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT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



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



SIDE VIEW



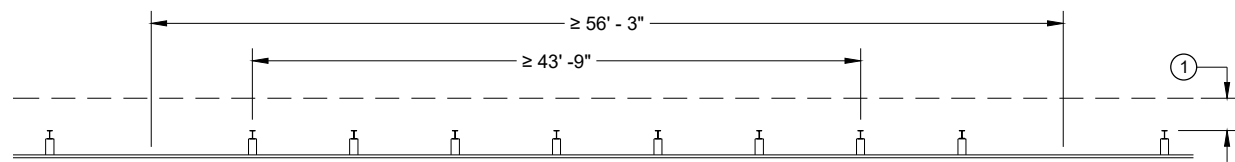
PLAN VIEW

**ALTERNATE WOOD
BLOCKOUT DETAIL**

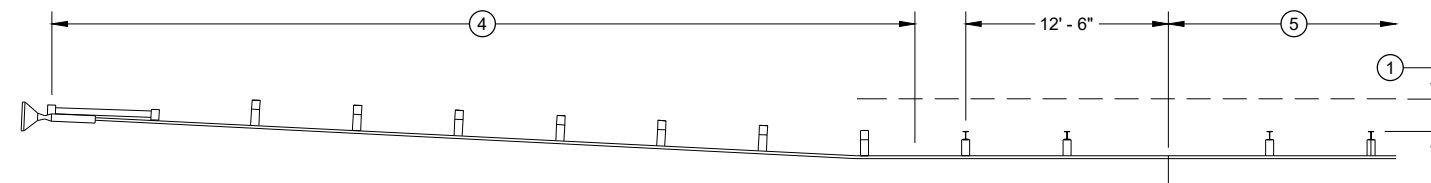
6 WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

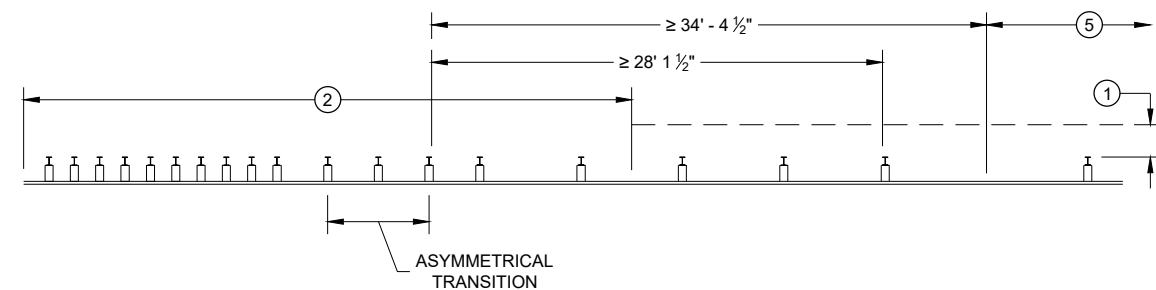
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



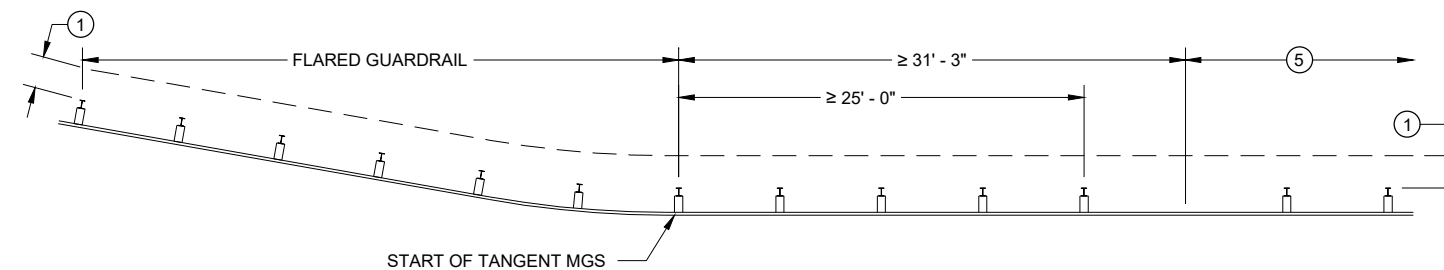
MISSING POST IN NORMAL BEAM GUARD RUN



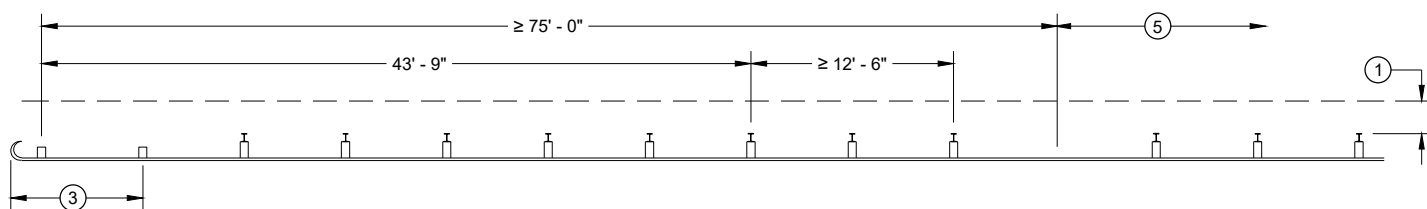
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



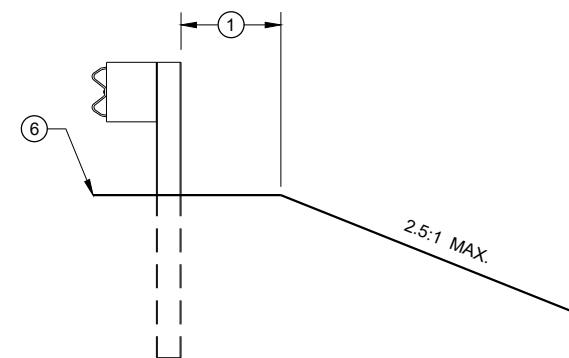
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



MISSING POST IN NORMAL BEAM GUARD RUN NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN NEAR TYPE 2 TERMINAL



CROSS SECTION VIEW

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

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

GENERAL NOTES

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

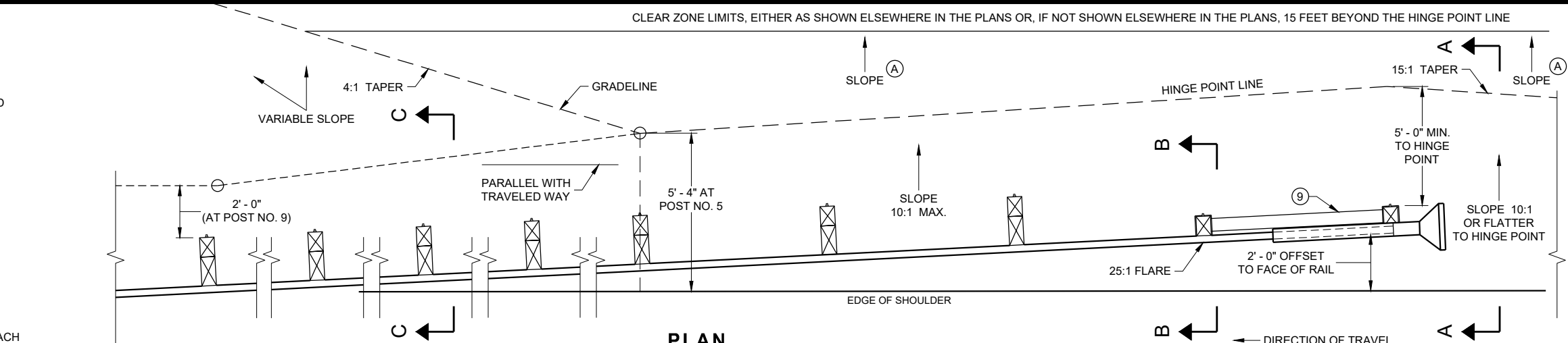
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

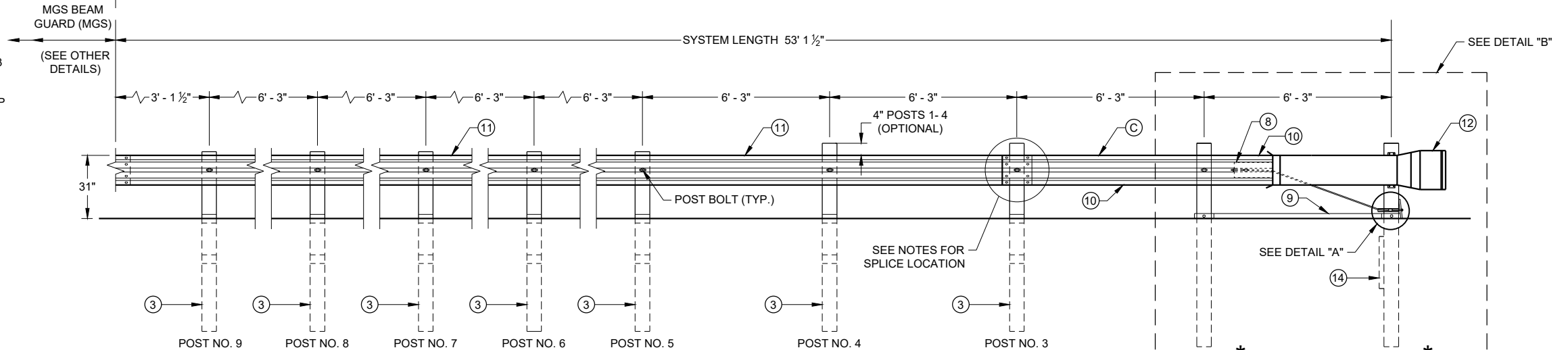
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

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

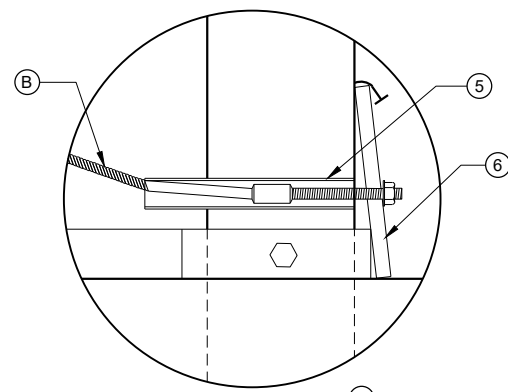
THE CENTER OF THE UPPER 3 1/2" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.



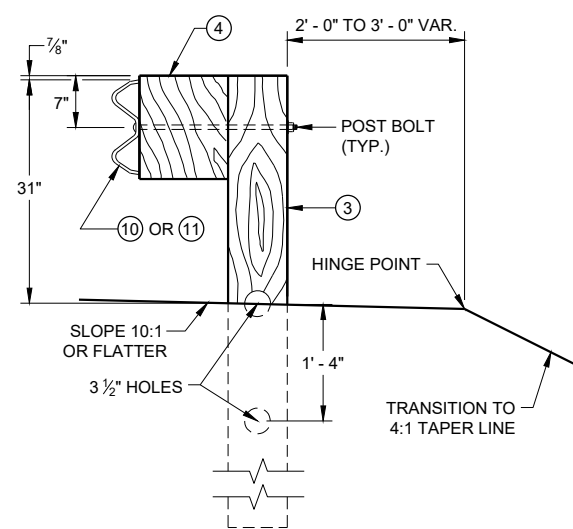
PLAN



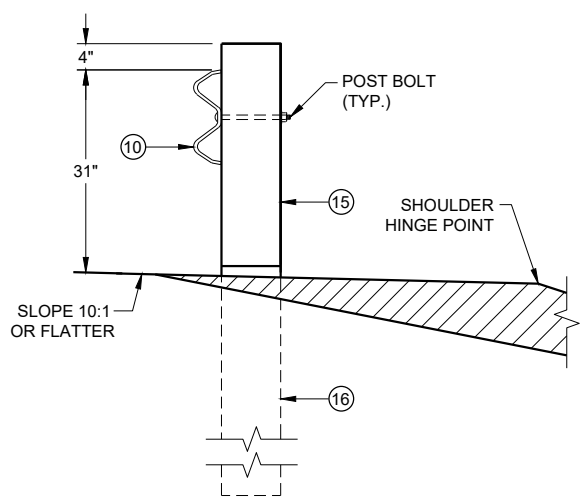
ELEVATION



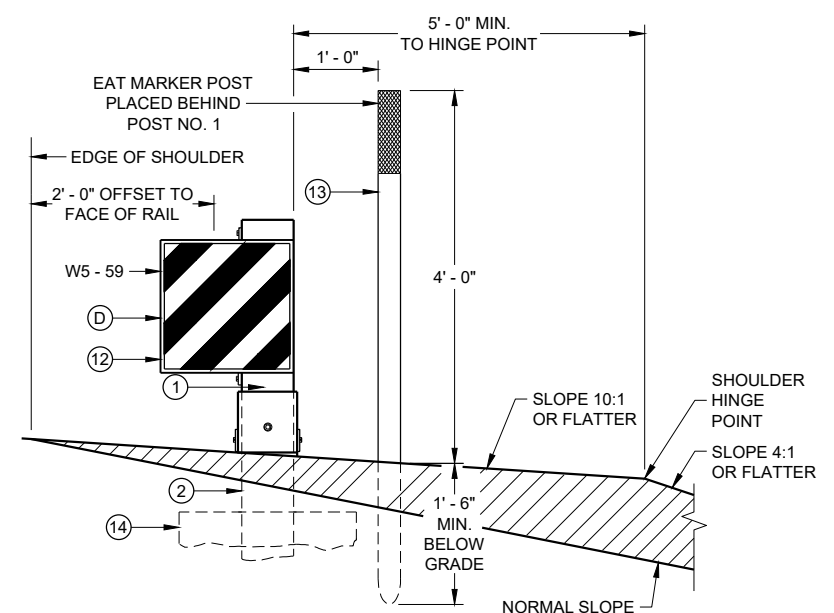
DETAIL "A"



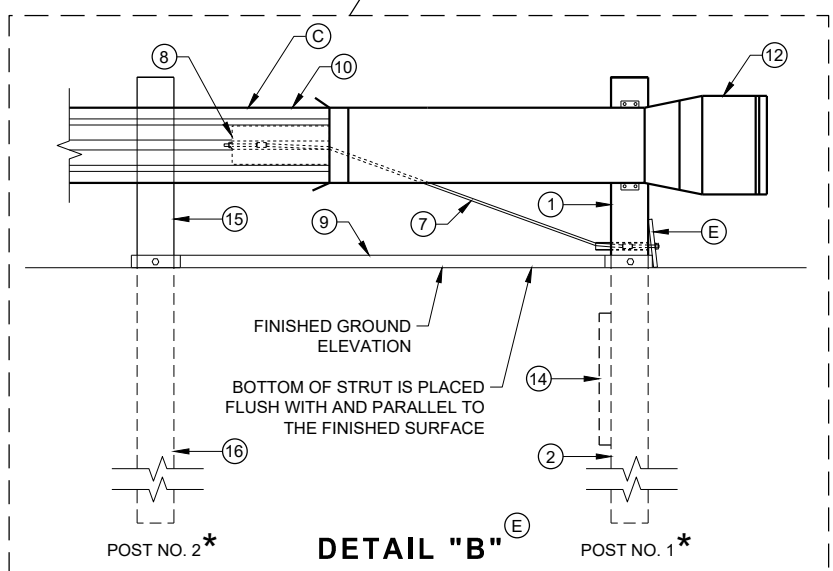
**SECTION C - C
TYPICAL AT POST NOS. 3 - 9**



**SECTION B - B
TYPICAL AT POST NO. 2***



**SECTION A - A
TYPICAL AT POST NO. 1***



DETAIL "B"

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

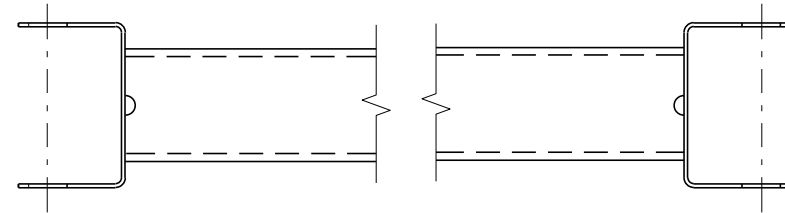
6

SDD 14B44 - 04a

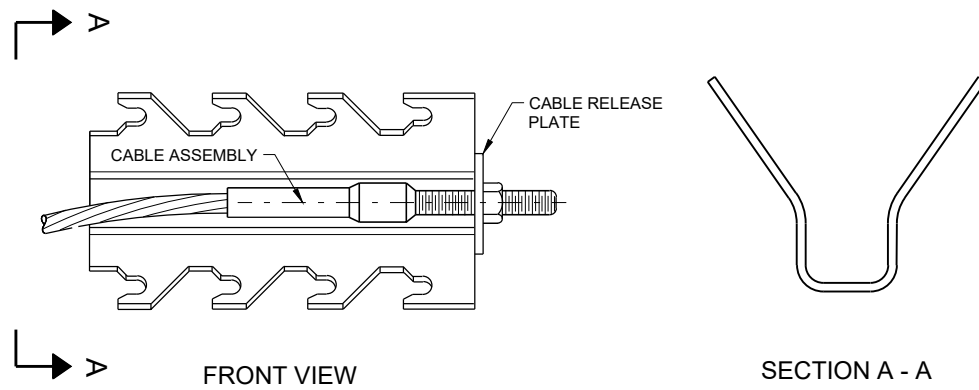
SDD 14B44 - 04a

BILL OF MATERIALS

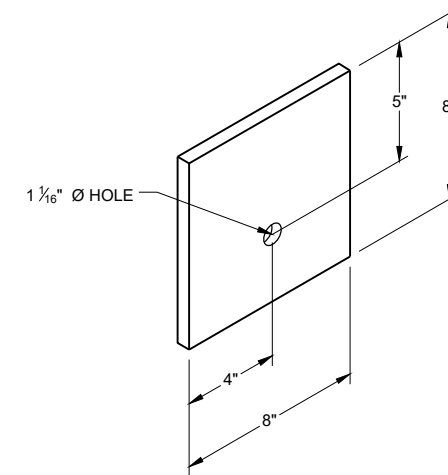
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL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



GENERIC GROUND STRUT ⑨ ⑤



GENERIC ANCHOR CABLE BOX ⑨ ⑤



BEARING PLATE ⑥ ⑤

6

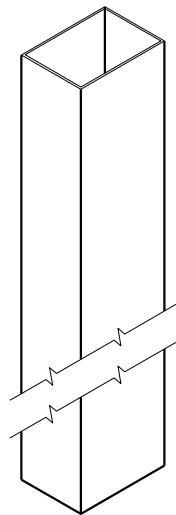
6

SDD 14B44 - 04b

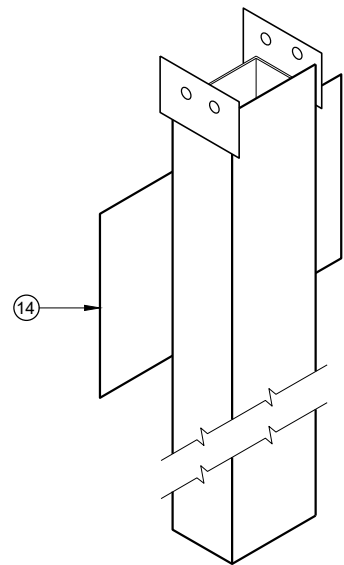
SDD 14B44 - 04b

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

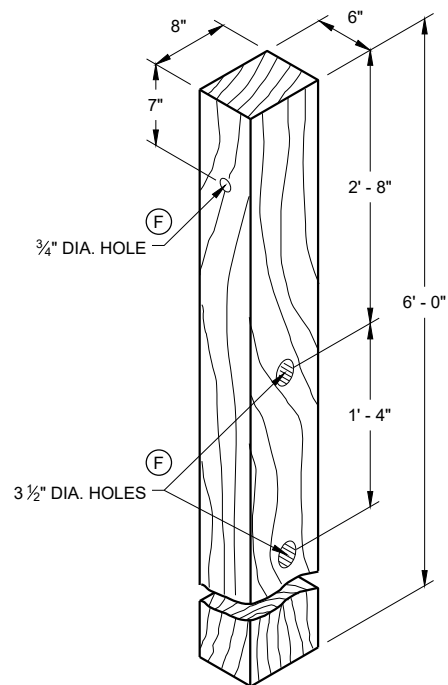
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



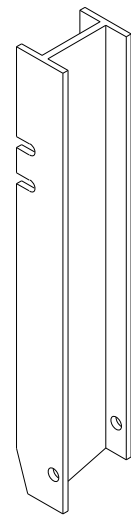
UPPER POST NO. 1 ⁽¹⁾ (E)



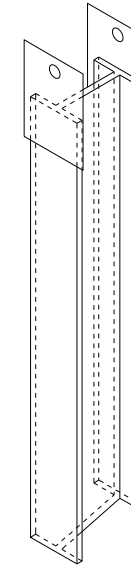
LOWER POST NO. 1 ⁽²⁾ (E)



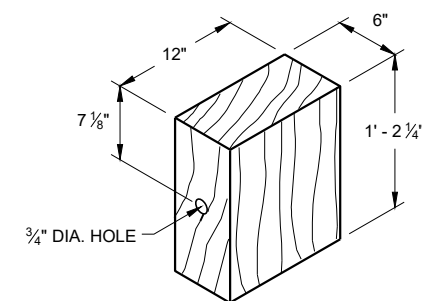
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



UPPER POST NO. 2 ⁽¹⁵⁾ (E)

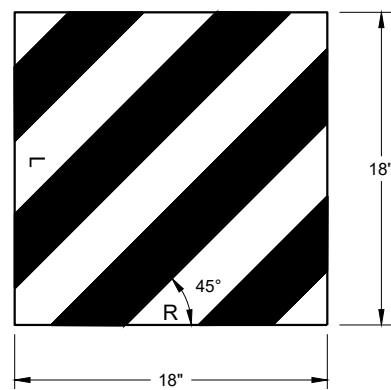


LOWER POST NO. 2 ⁽¹⁶⁾ (E)

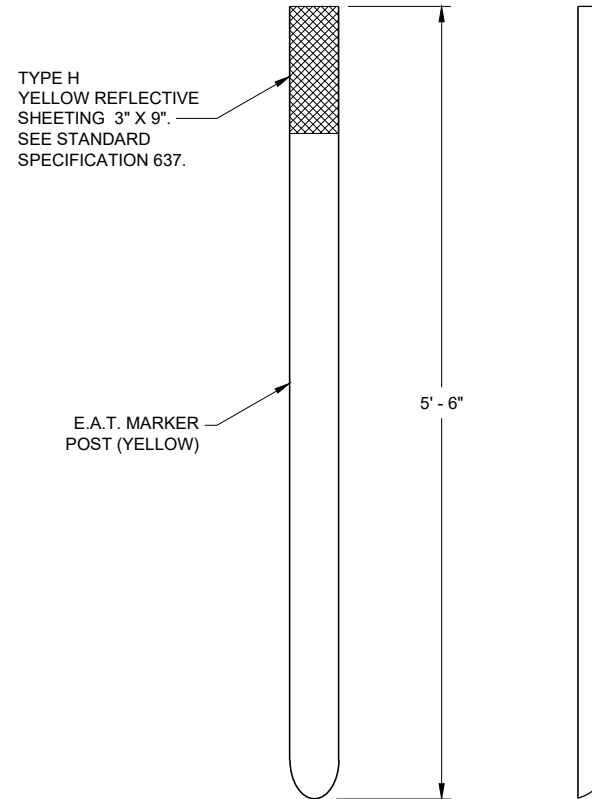


WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

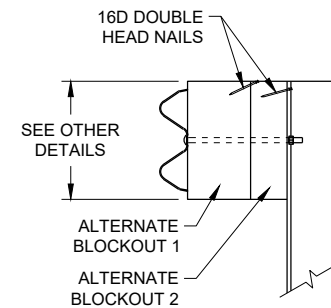
6



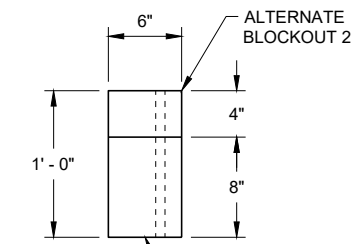
W5 - 59
REFLECTIVE SHEETING DETAIL ^(E)



E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



TOP VIEW

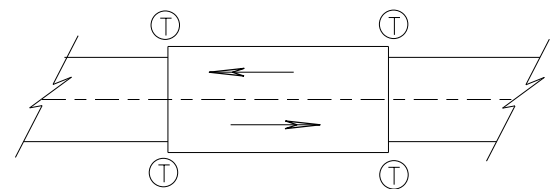
ALTERNATE WOOD BLOCKOUT DETAIL

6

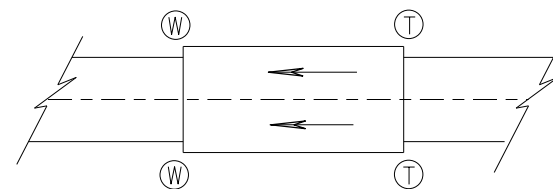
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

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

TRANSITION USES STEEL POSTS ONLY.

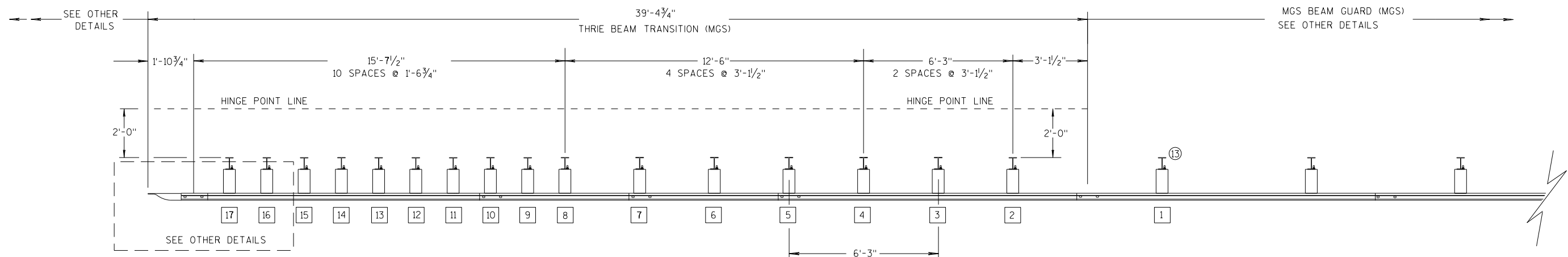
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

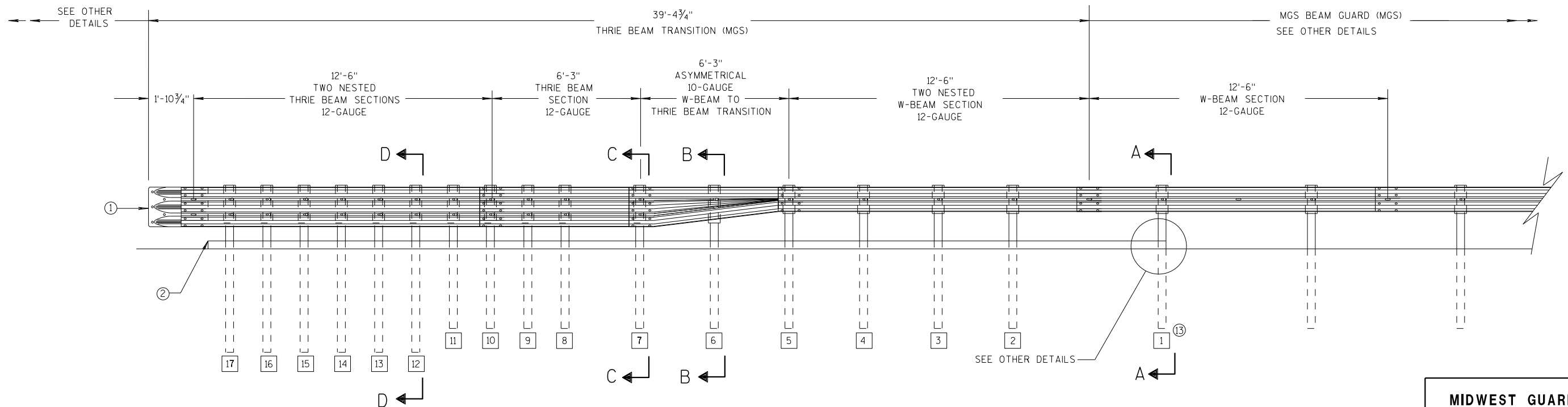
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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

⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD14B42



PLAN VIEW



ELEVATION VIEW

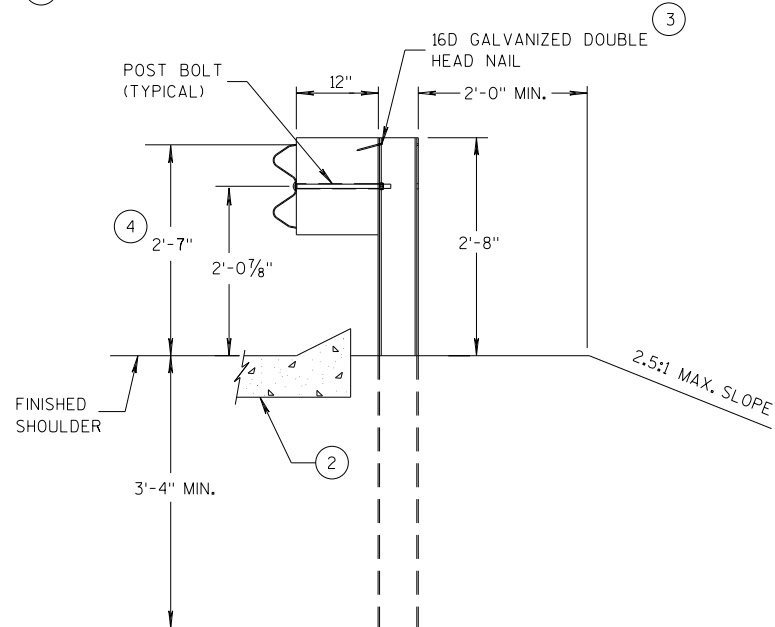
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

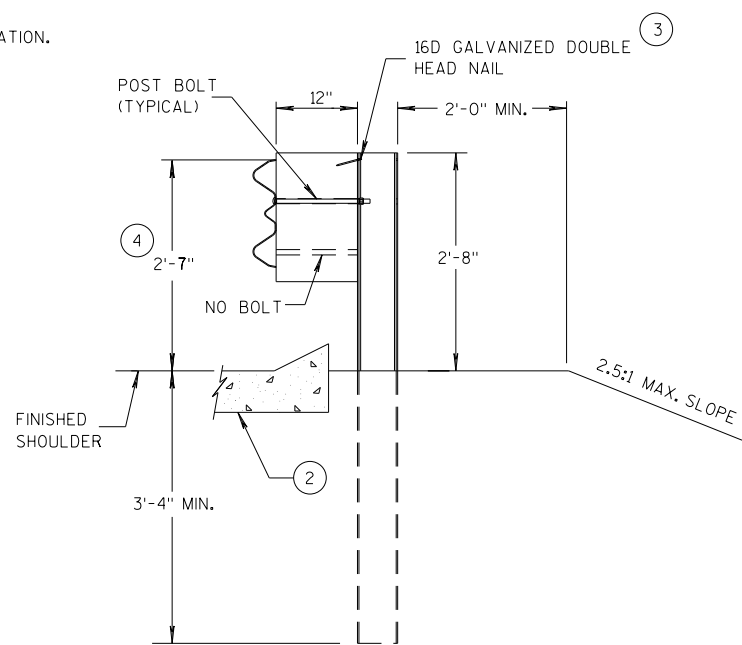
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

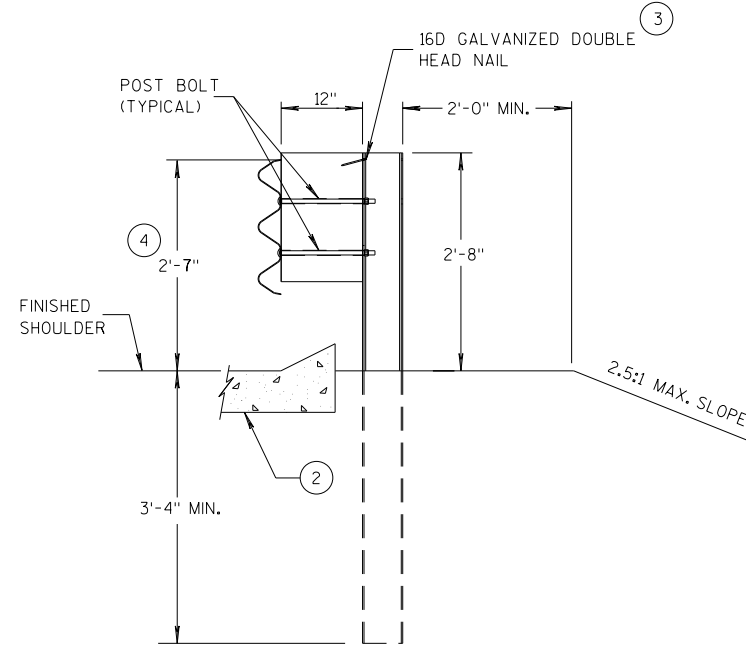
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



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



**SECTION B-B
POST 6**



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

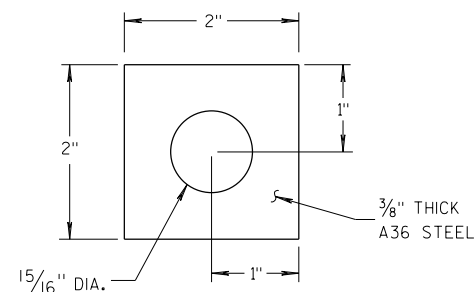
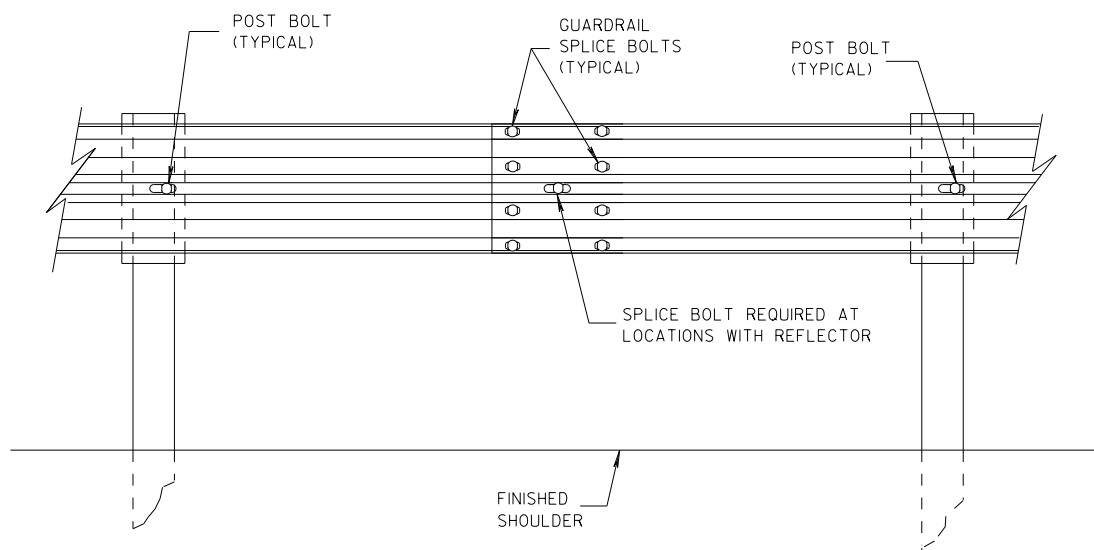
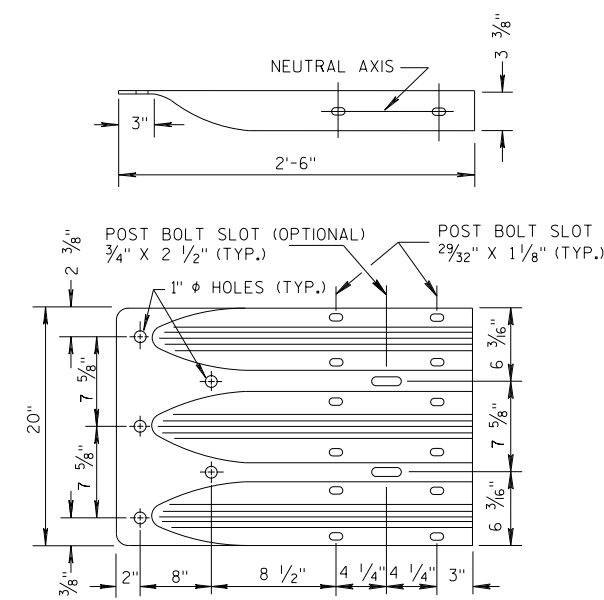


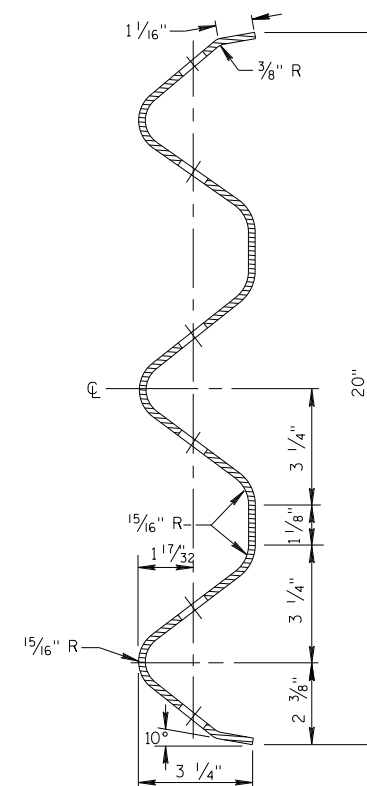
PLATE WASHER DETAIL



SPLICE DETAIL



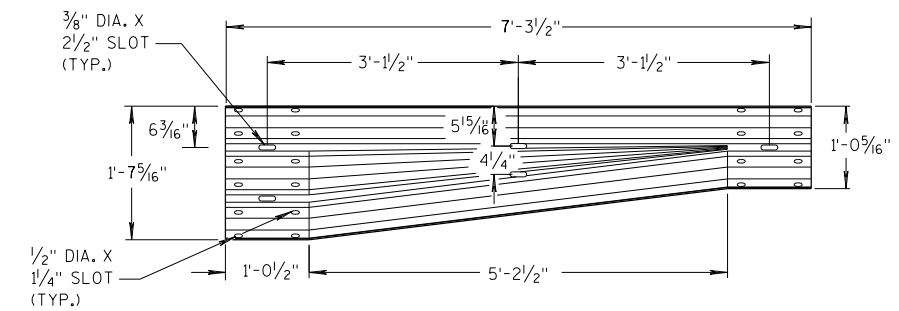
**THRIE BEAM
TERMINAL CONNECTOR**



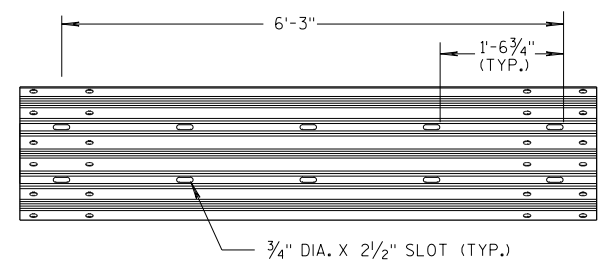
**SECTION THRU THRIE
BEAM RAIL ELEMENT**

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

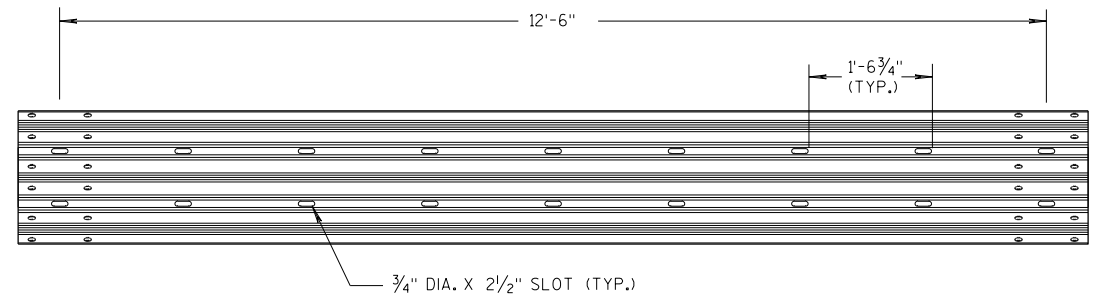
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



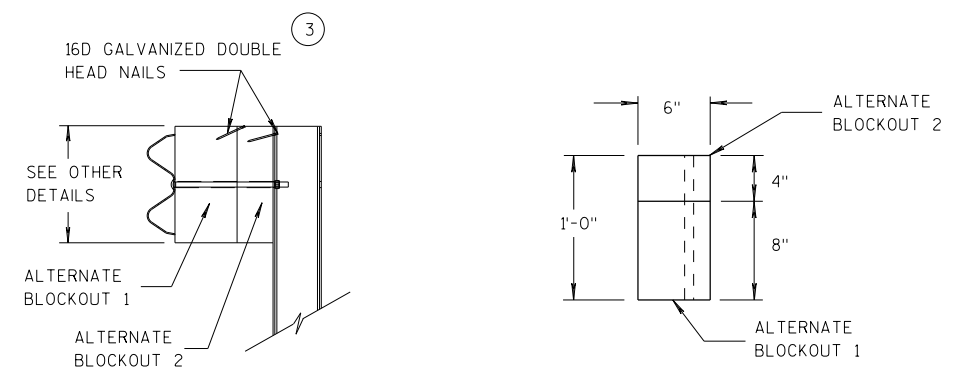
W-BEAM TO THRIE BEAM TRANSITION SECTION



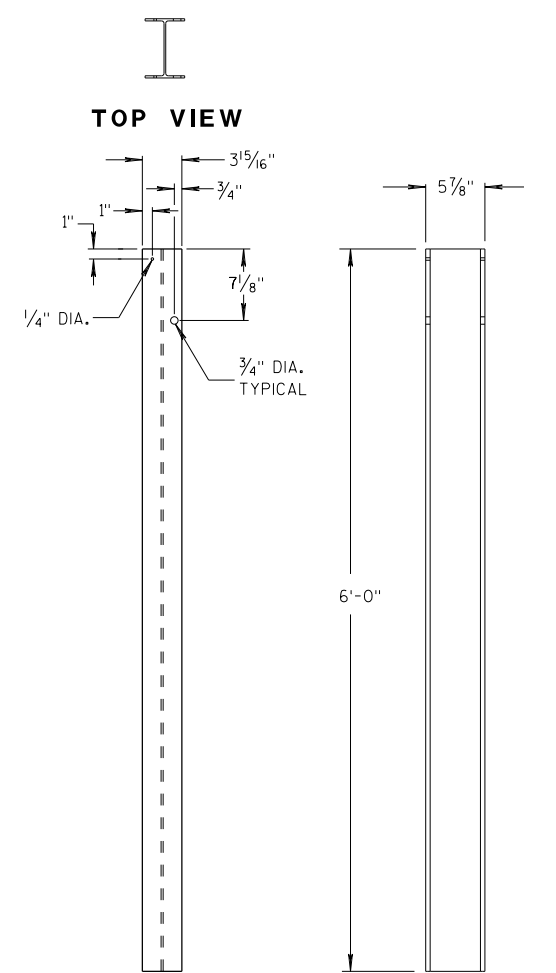
6'-3\"/>



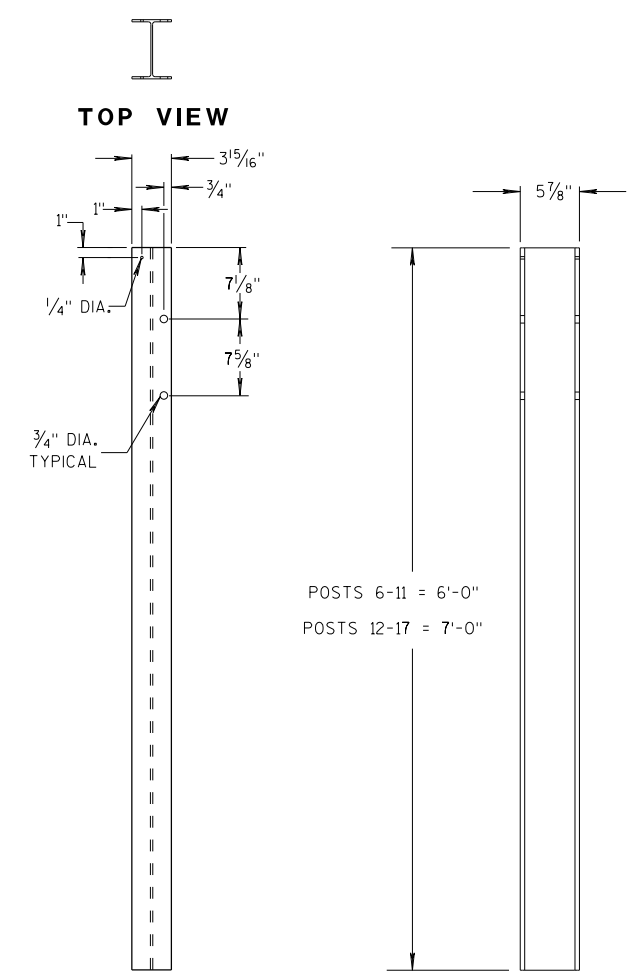
12'-6\"/>



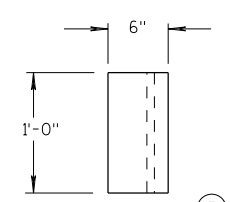
ALTERNATE WOOD BLOCKOUT DETAIL



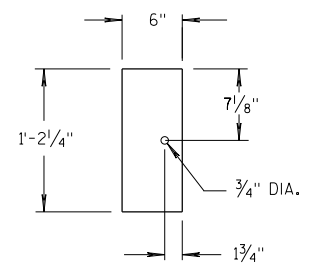
STEEL POSTS 1-5



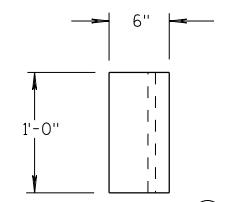
STEEL POSTS 6-17



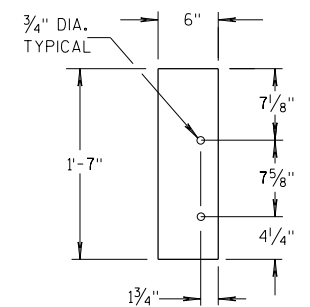
BLOCKOUT POSTS 1-5 TOP VIEW



BLOCKOUT POSTS 1-5 FRONT VIEW



BLOCKOUT POSTS 6-17 TOP VIEW



BLOCKOUT POSTS 6-17 FRONT VIEW

GENERAL NOTES

- STEEL POSTS ARE W6X9 OR W6X8.5.
- BOLT HOLES FOR POST ARE ON FRONT AND OF SIDE OF POST.
- (3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- (5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.
- (13) STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

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

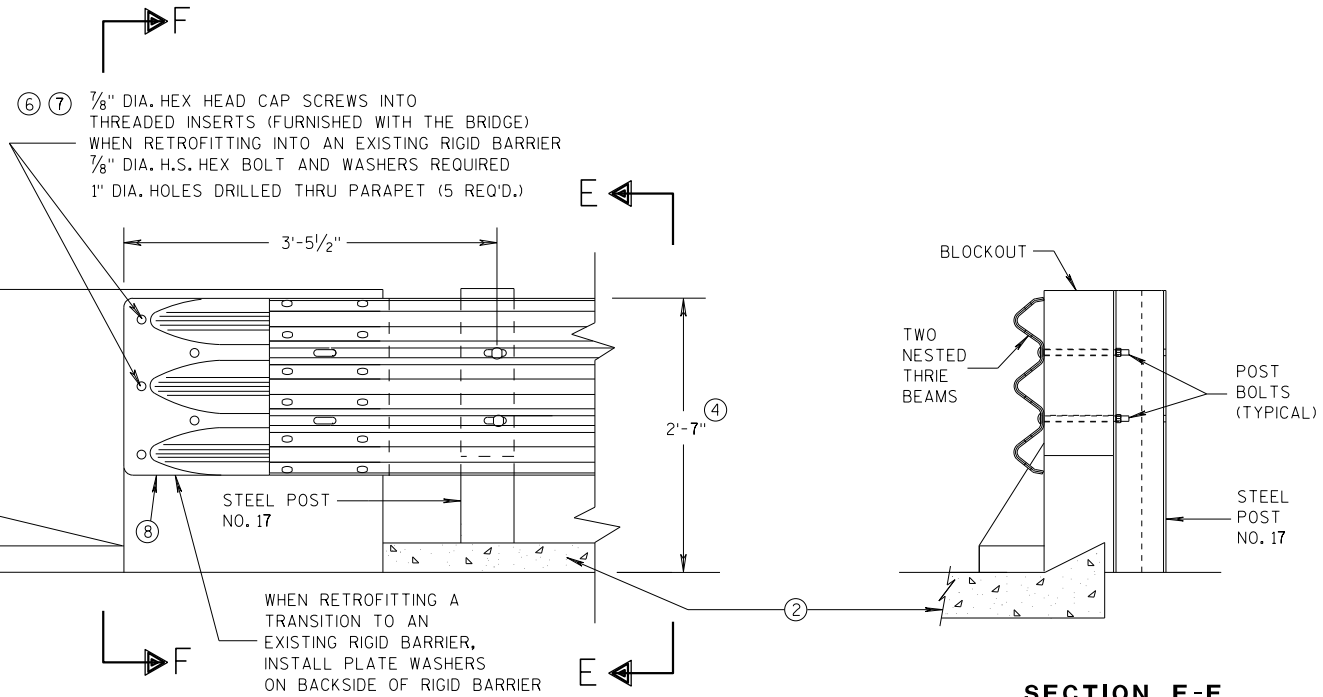
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

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

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



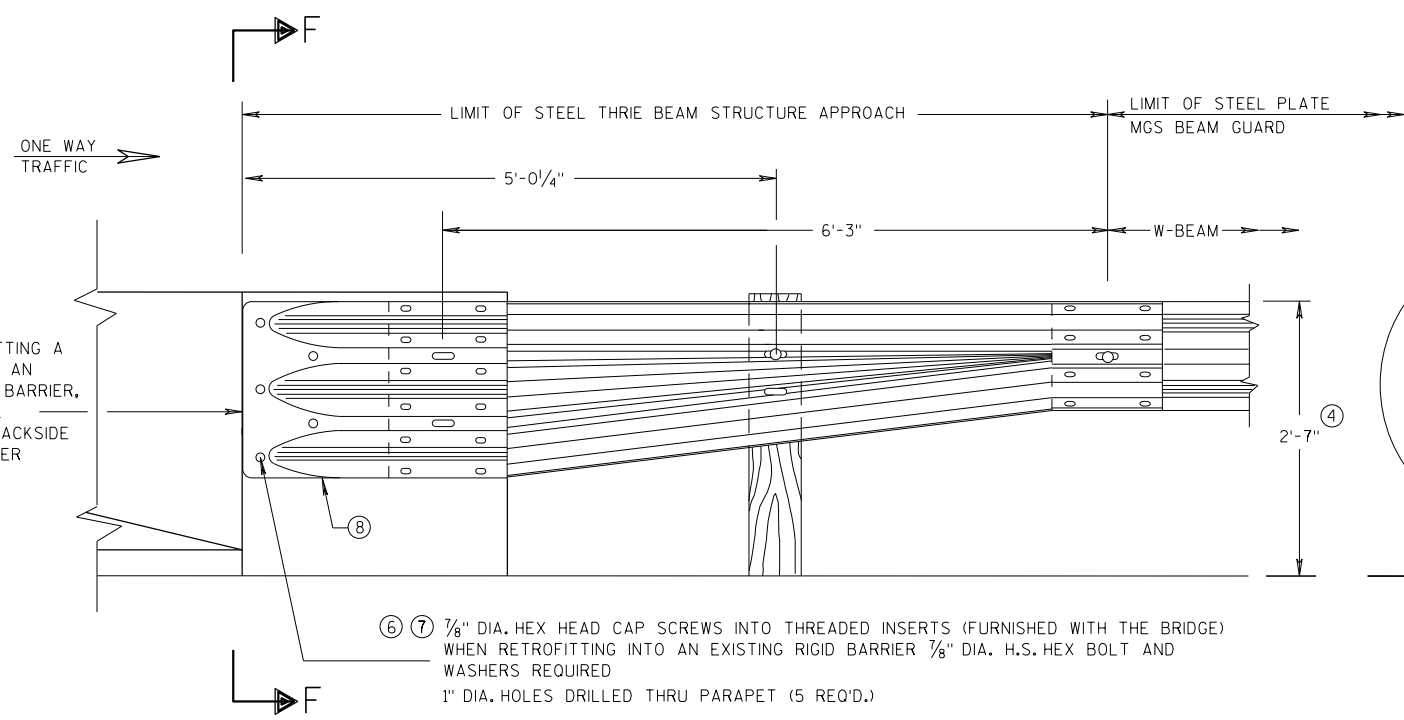
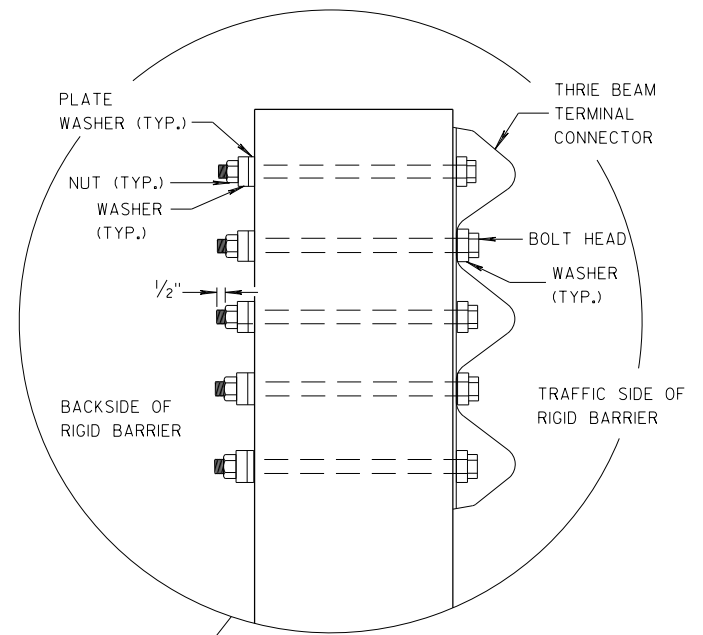
FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

SECTION E-E

GENERAL NOTES

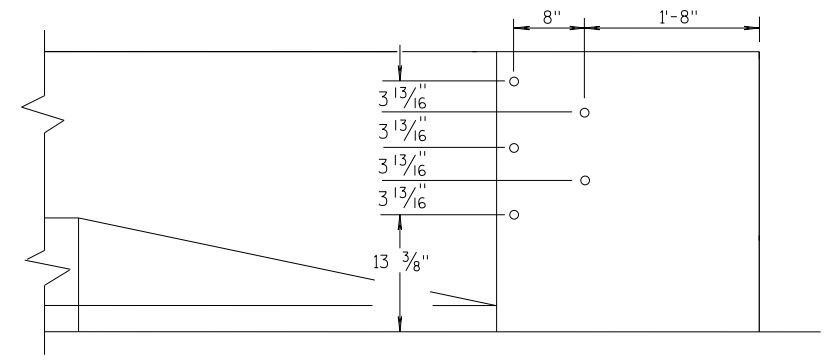
- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- (2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
 - (4) TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
 - (6) DRILLING BOLT HOLES THROUGH THE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



FRONT VIEW

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

SECTION F-F



DRILL HOLE LOCATION

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

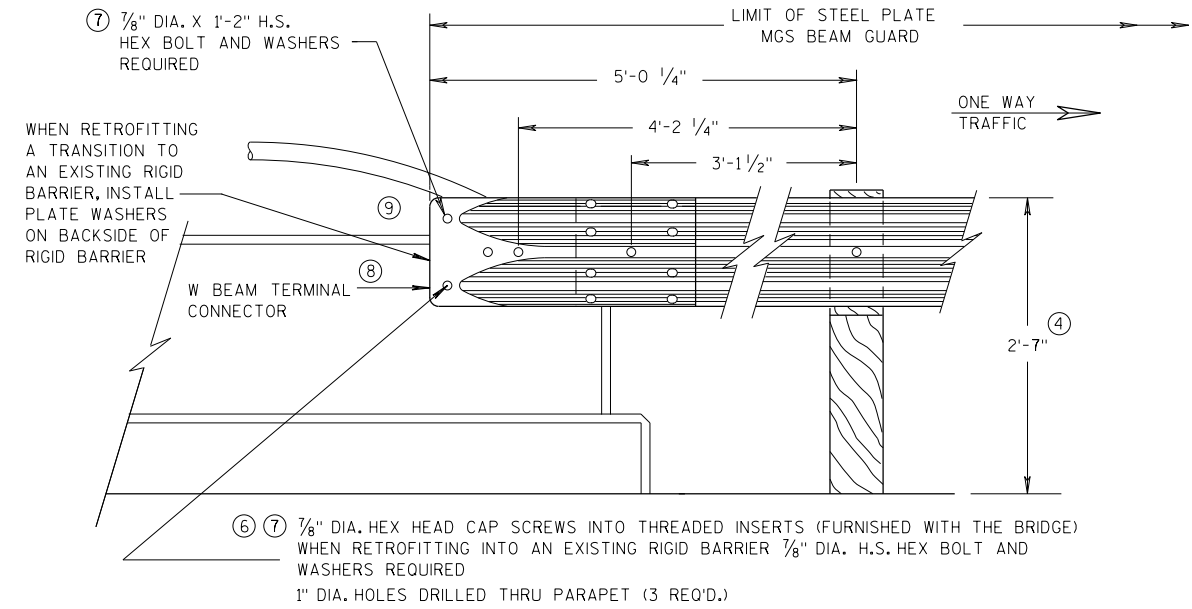
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

GENERAL NOTES

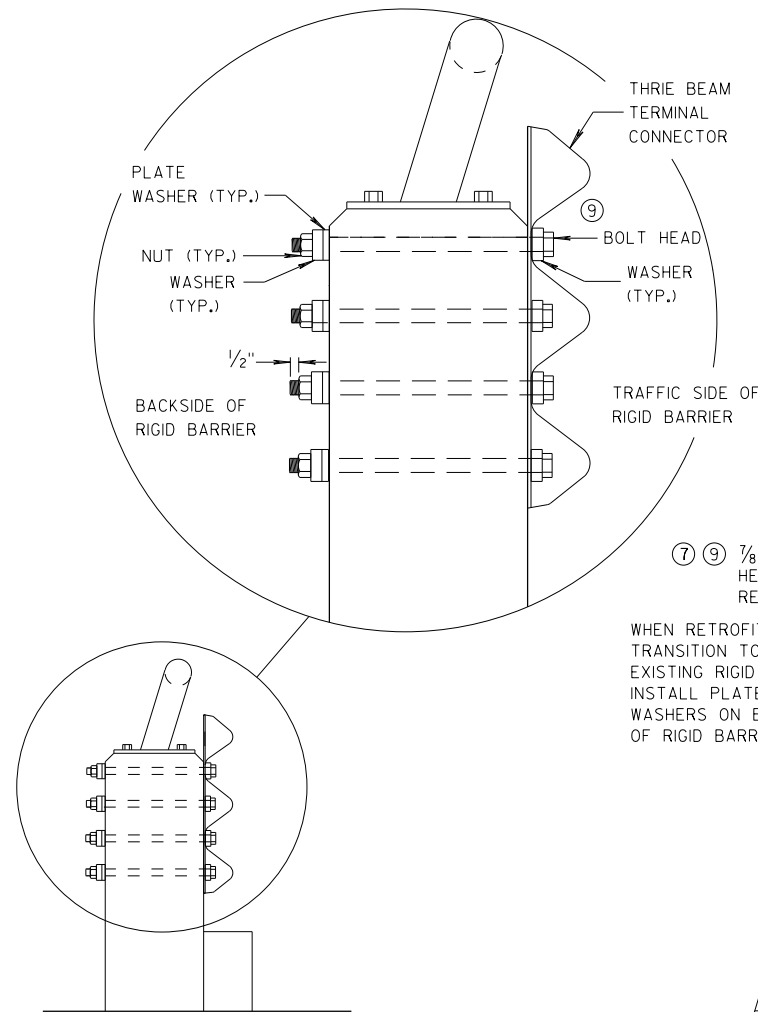
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

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

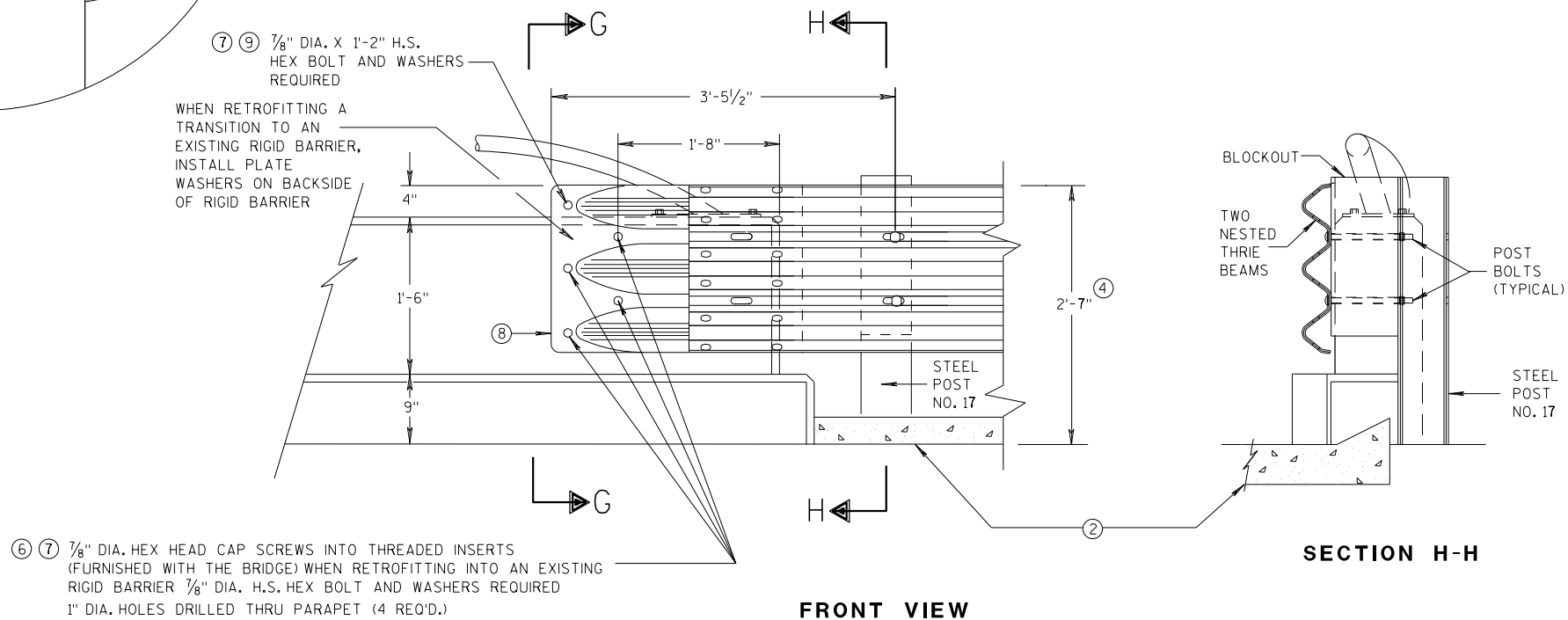


FRONT VIEW

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

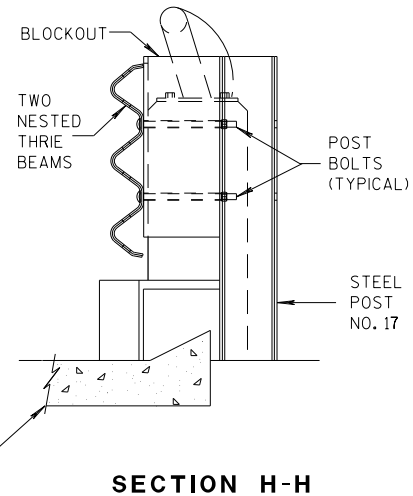


SECTION G-G



FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



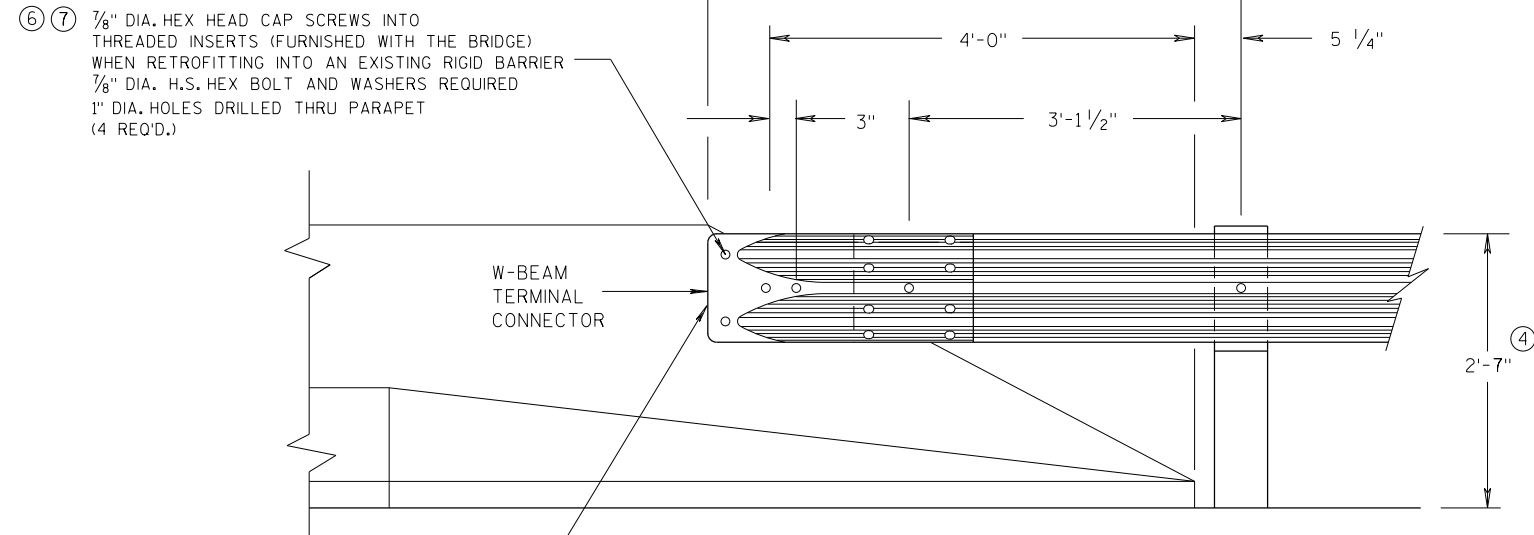
SECTION H-H

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

ONE WAY
TRAFFIC



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

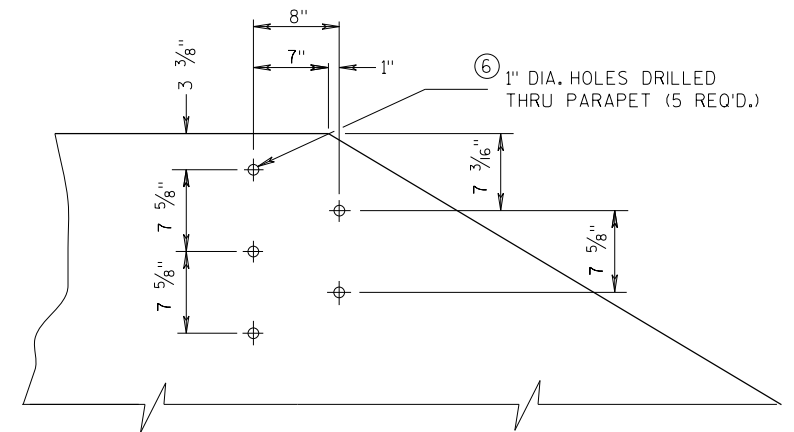
FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

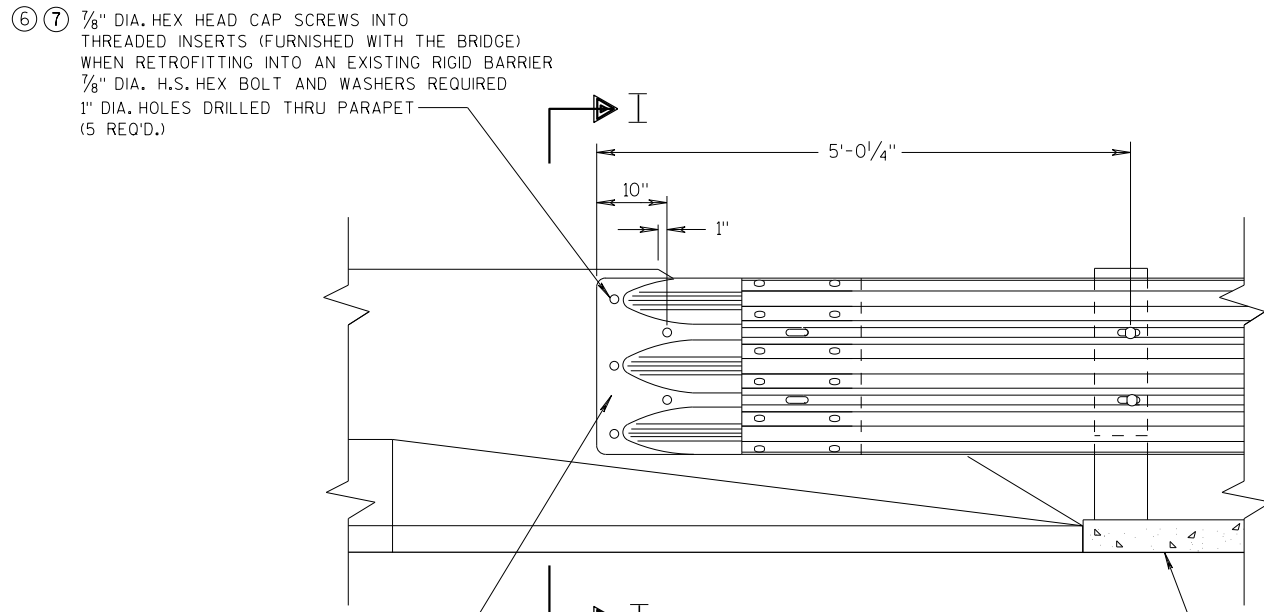
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

GENERAL NOTES

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



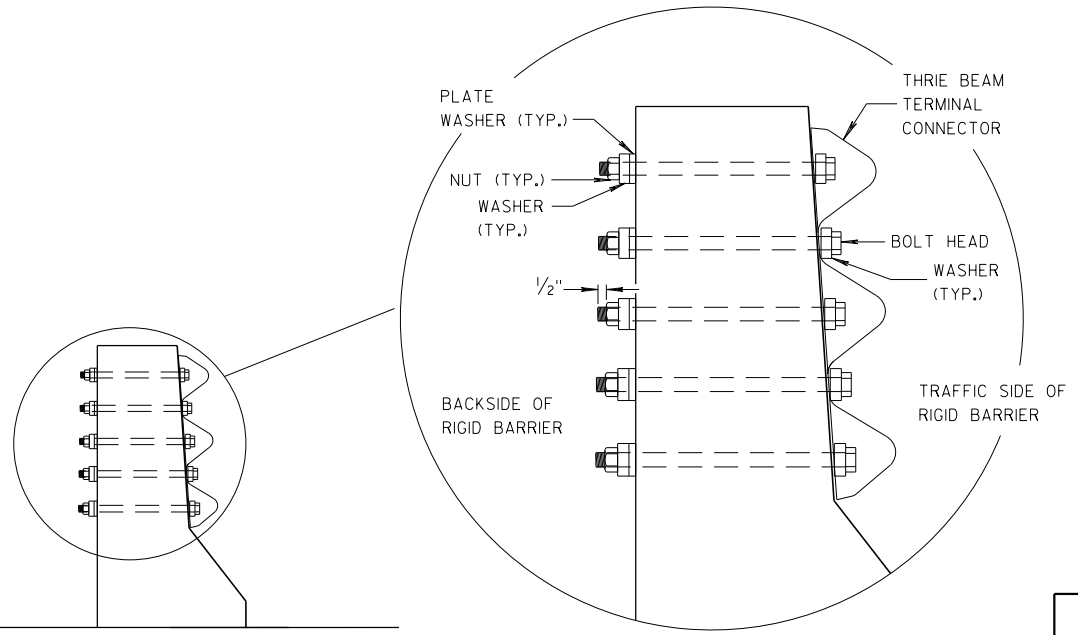
DRILL HOLE LOCATION AND PATTERN FOR THRIE BEAM CONNECTION



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

FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS

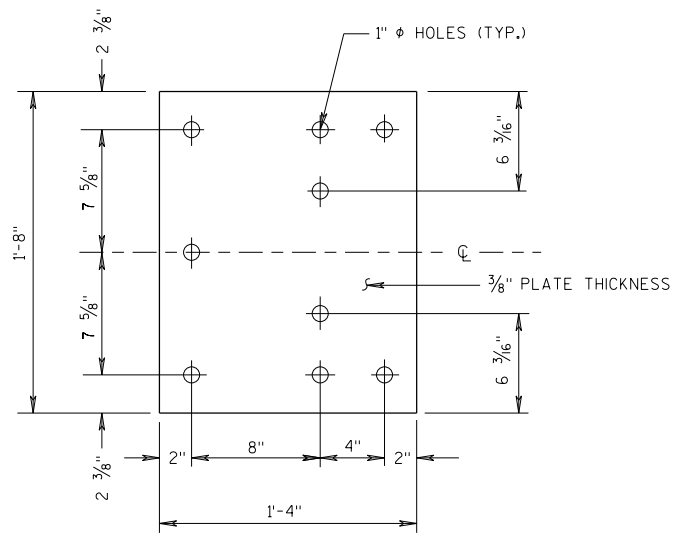


SECTION I-I

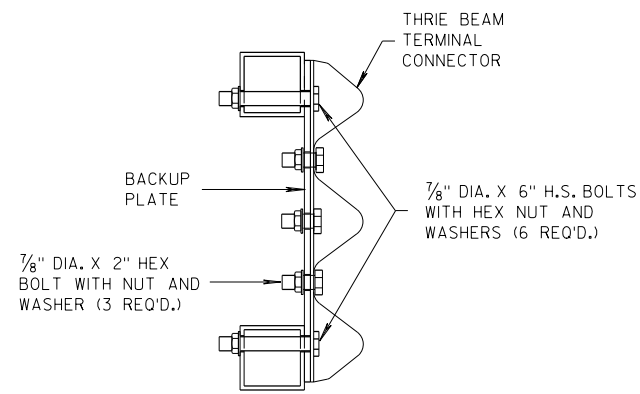
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

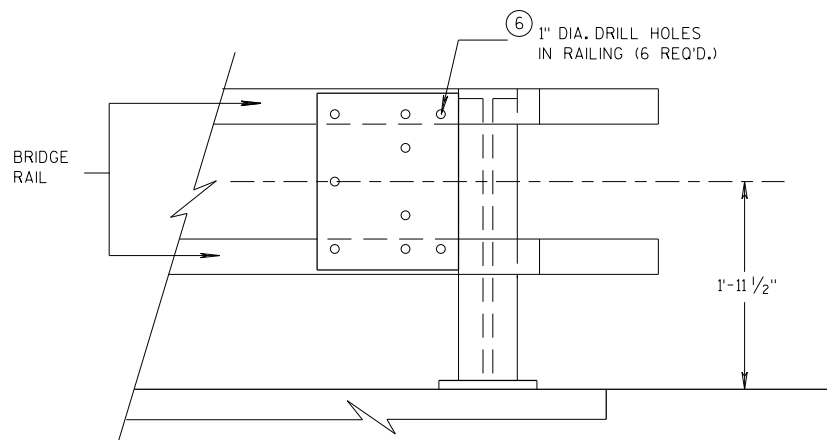
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA



BACK-UP PLATE DETAIL



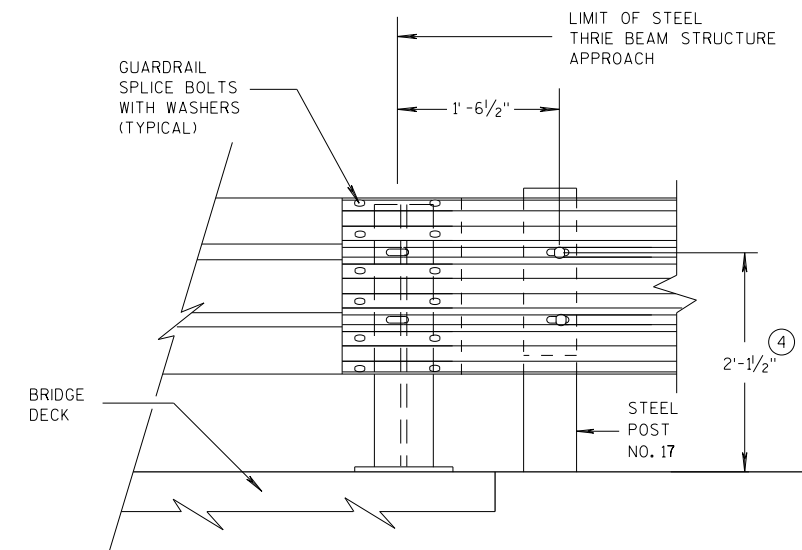
SECTION J-J



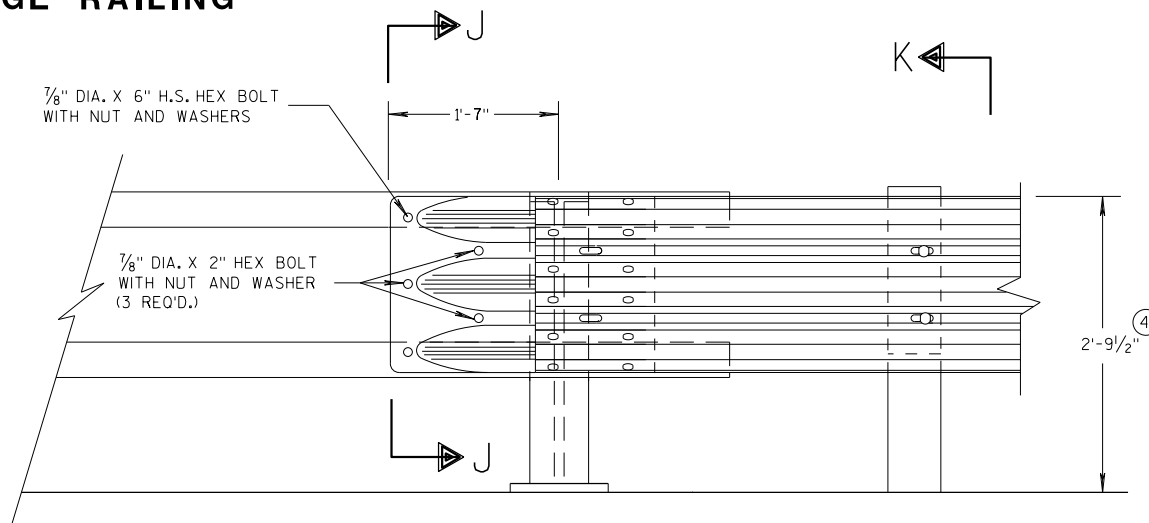
BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

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

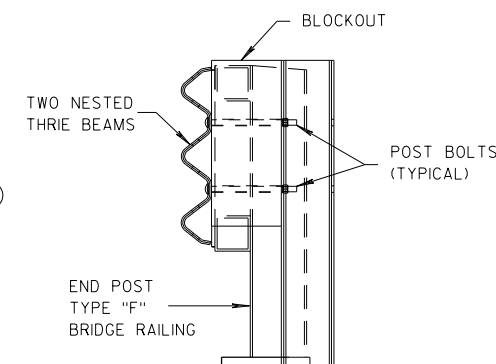


**FRONT VIEW
THRIE BEAM CONNECTION TO
STEEL RAILING TYPE "W"**



FRONT VIEW

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



SECTION K-K

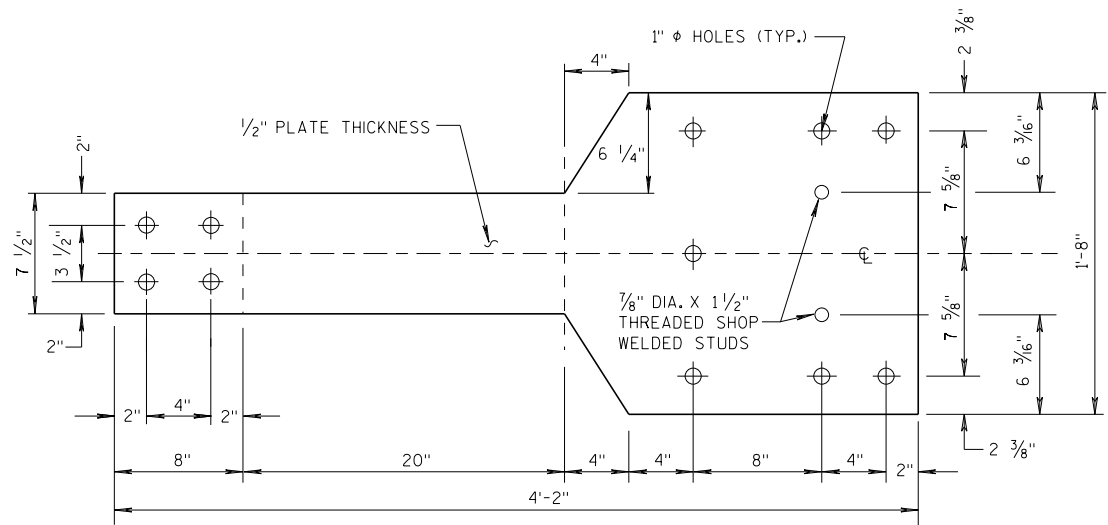
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

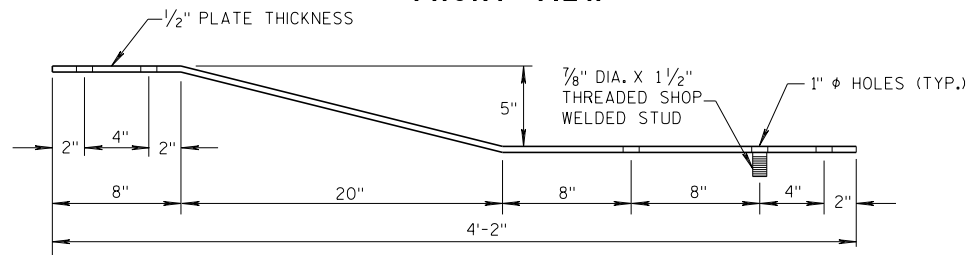
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GENERAL NOTES

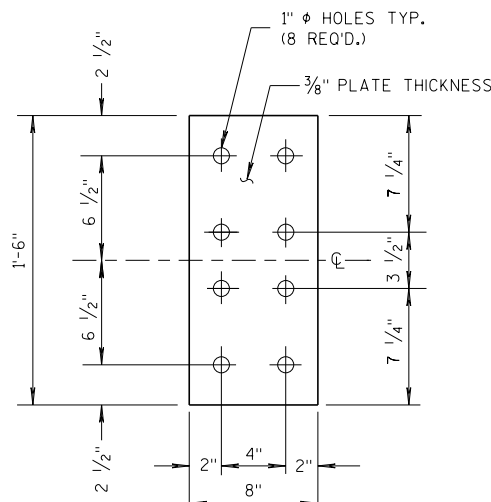
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



FRONT VIEW

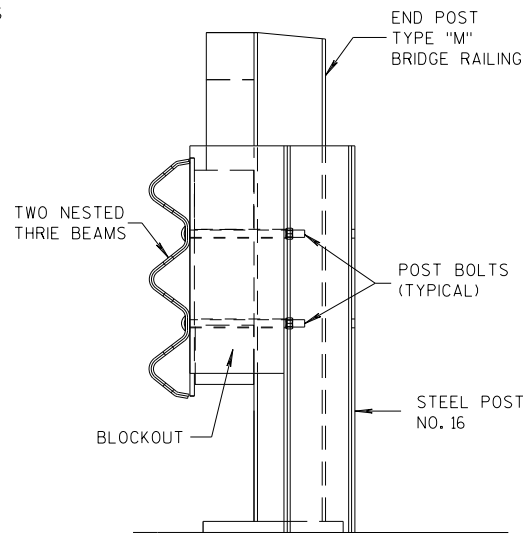


**PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"**

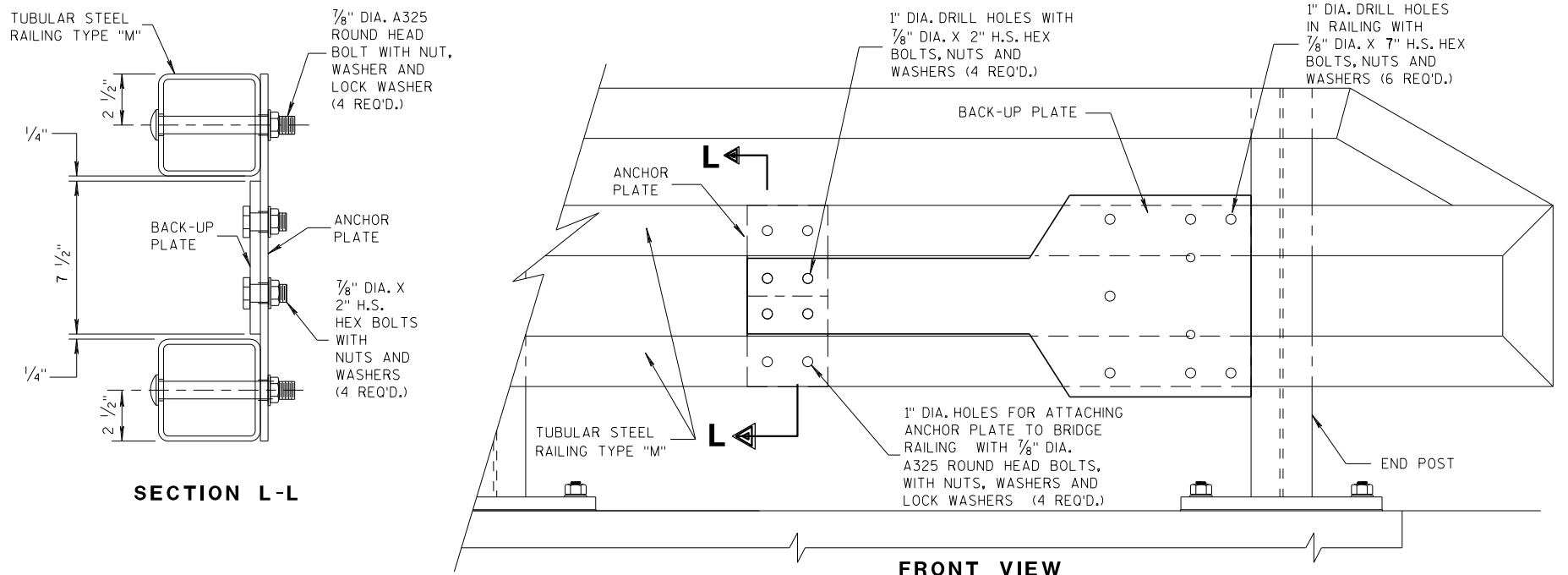


FRONT VIEW

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



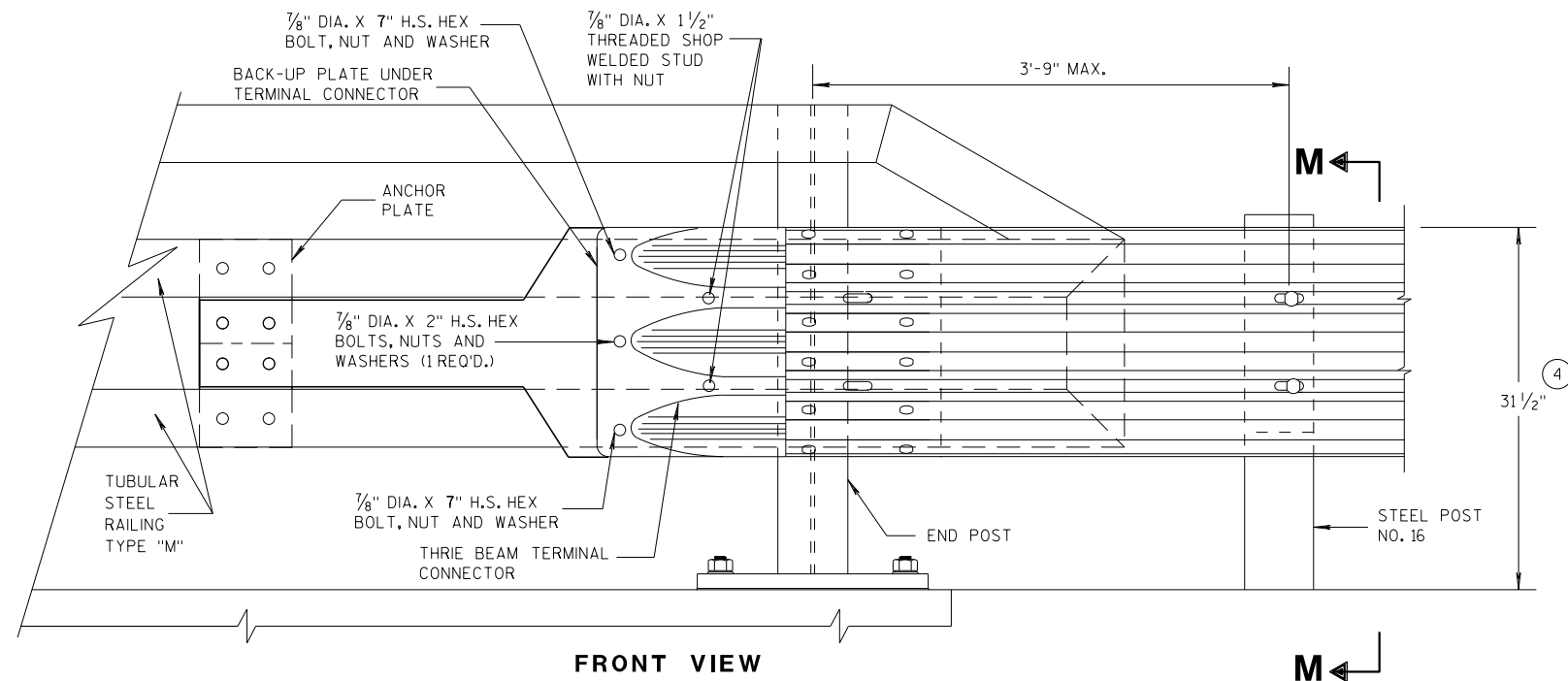
SECTION M-M



SECTION L-L

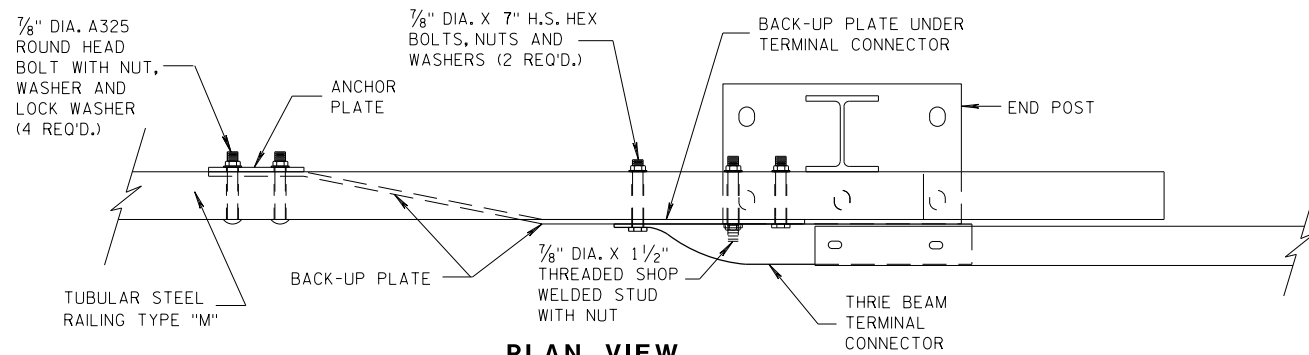
FRONT VIEW

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



FRONT VIEW

M



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

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

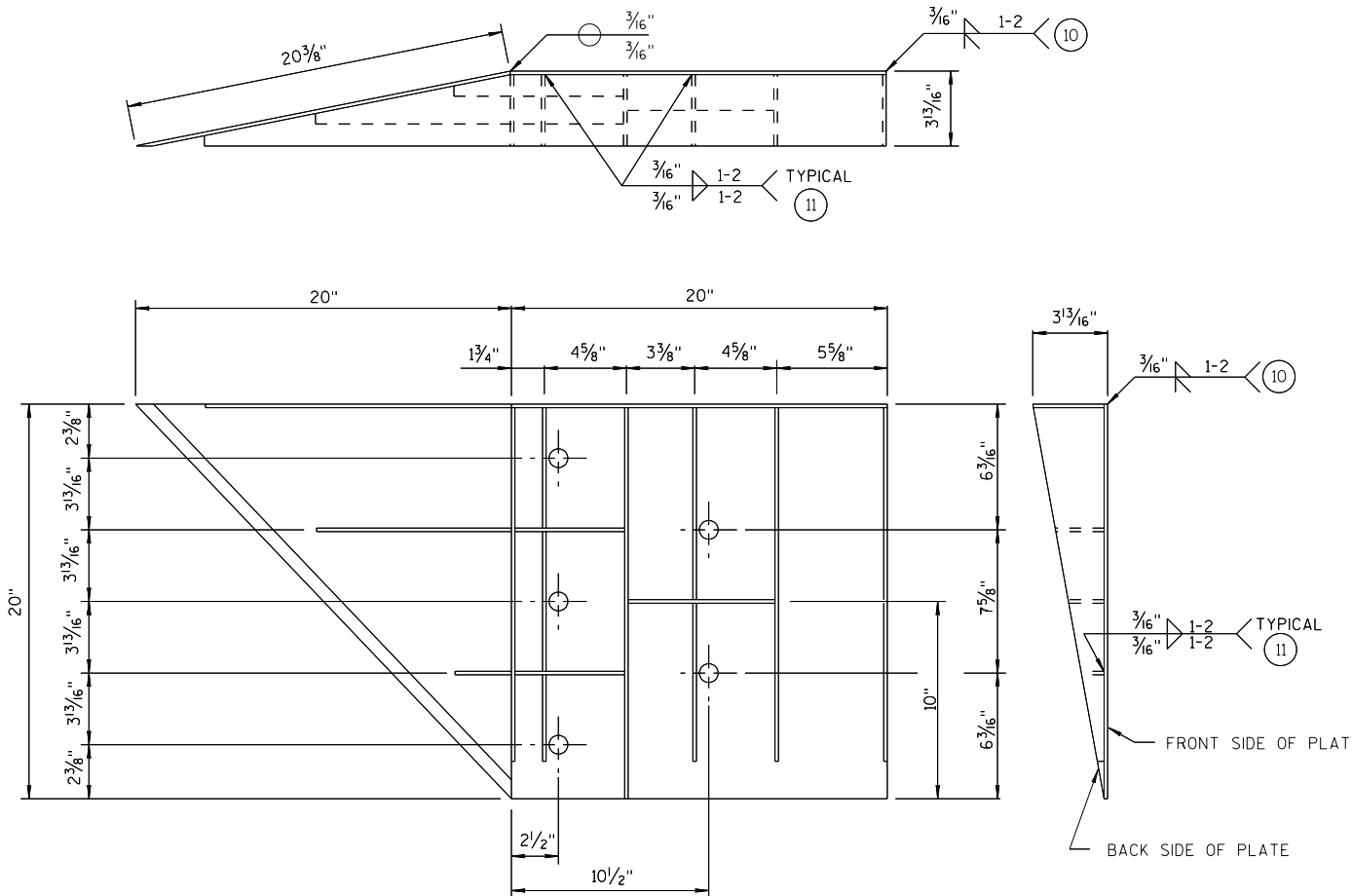
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

GENERAL NOTES

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

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



WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

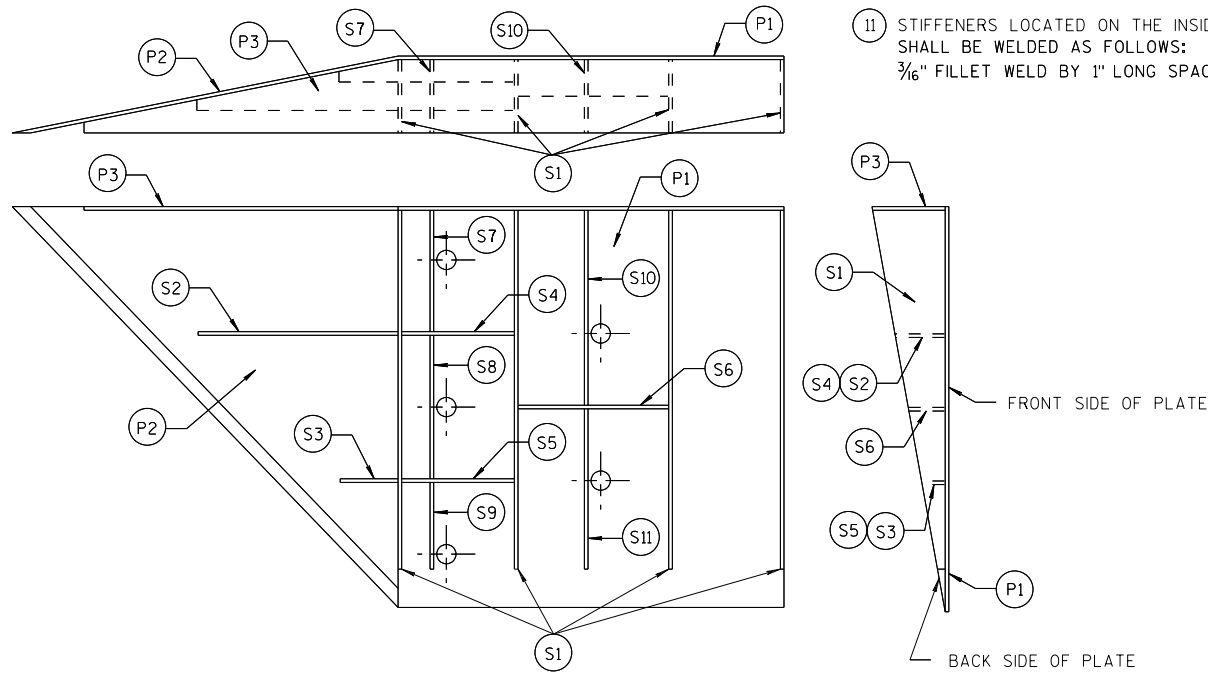


PLATE AND STIFFENER IDENTIFICATION
(VIEWED FROM BACK SIDE OF PLATE)

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

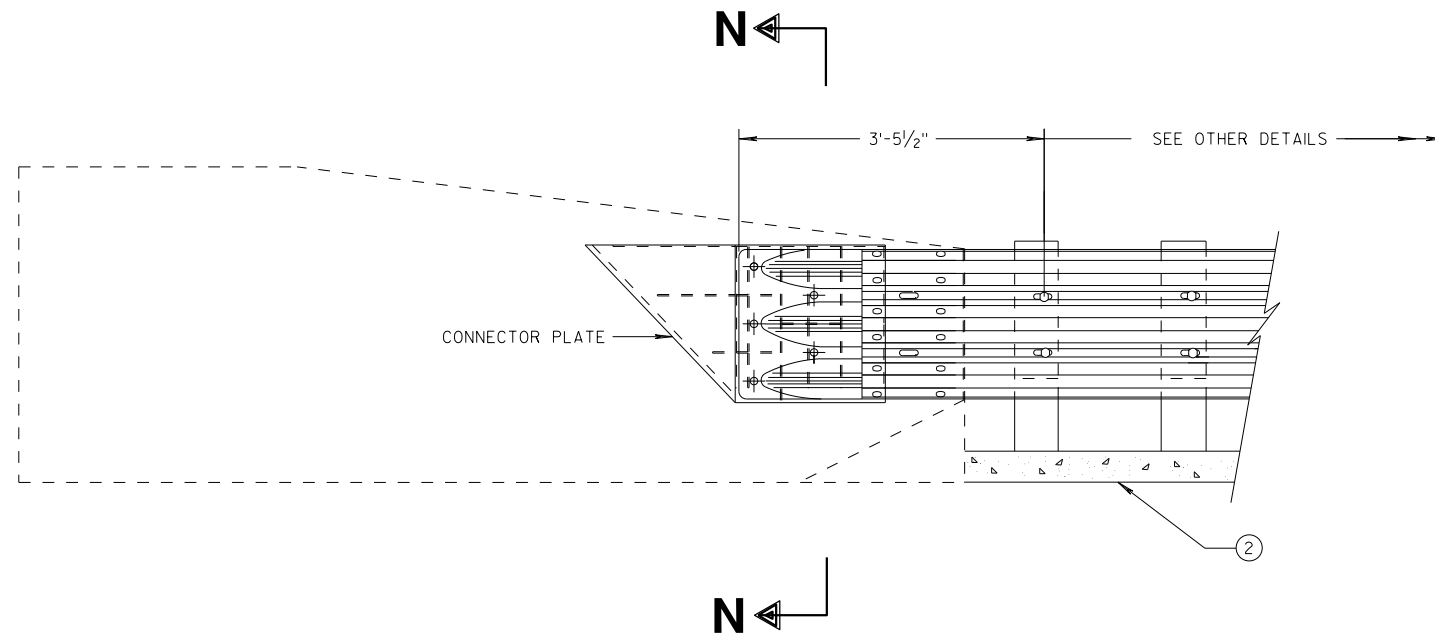
**MIDWEST GUARDRAIL SYSTEM
THREE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

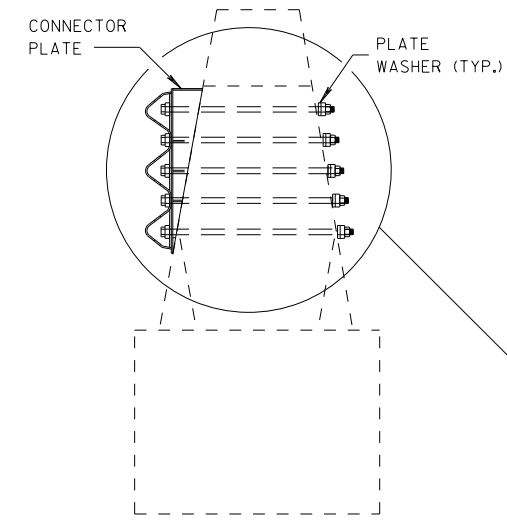
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FHWA UNIT SUPERVISOR

GENERAL NOTES

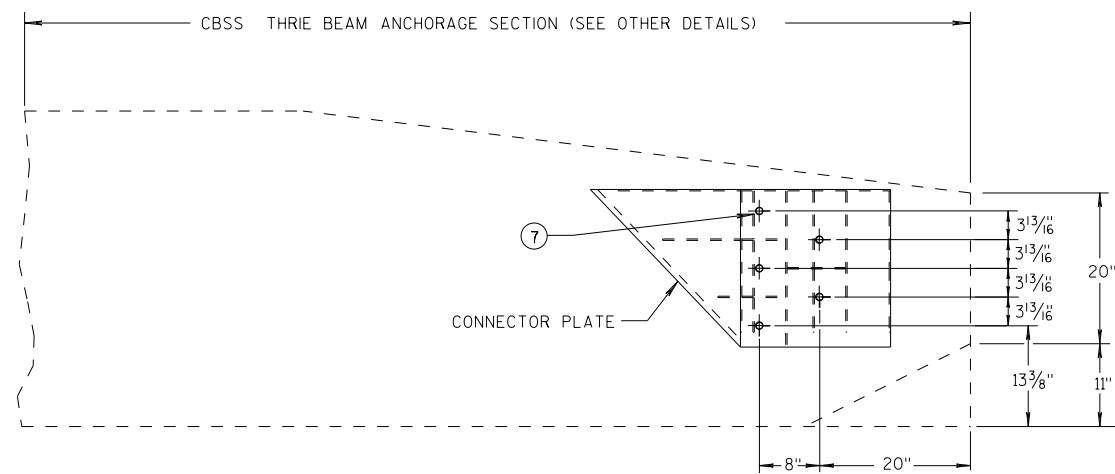
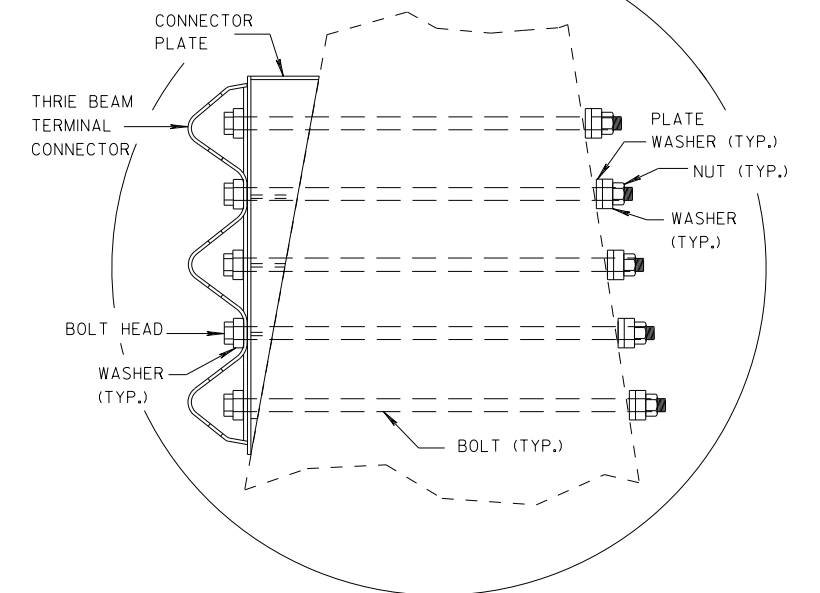
- CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO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



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



SECTION N-N

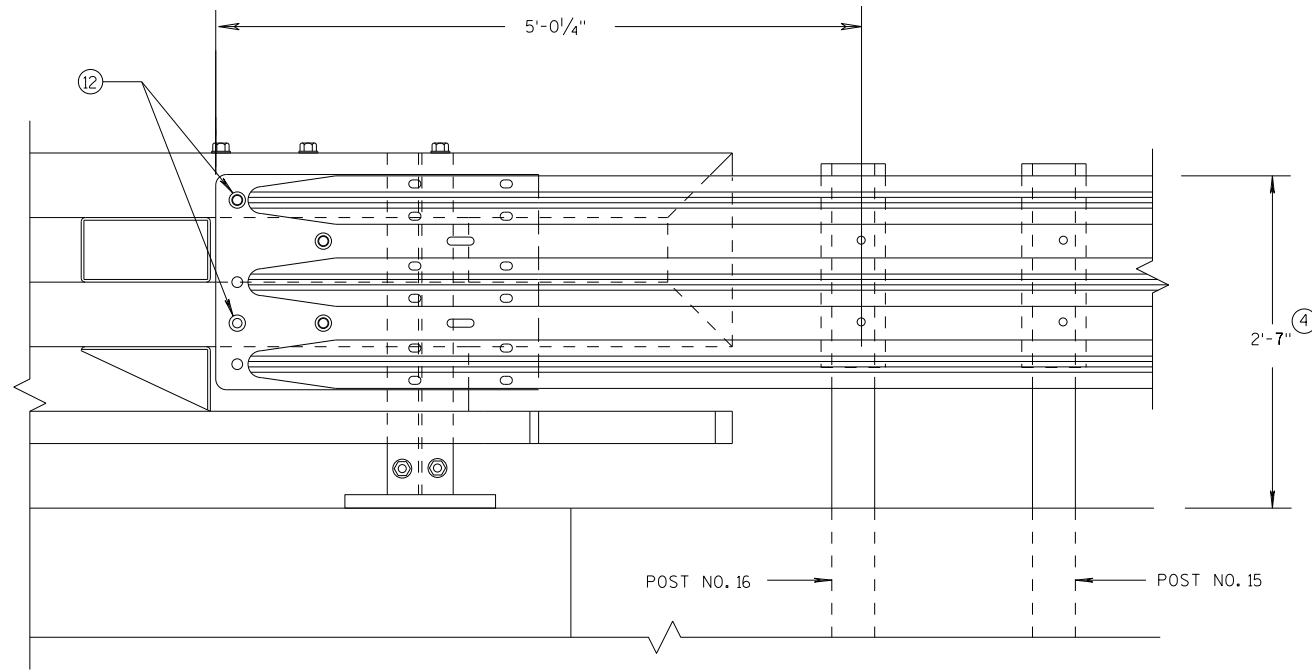


SINGLE SLOPE CONNECTION PLATE PLACEMENT

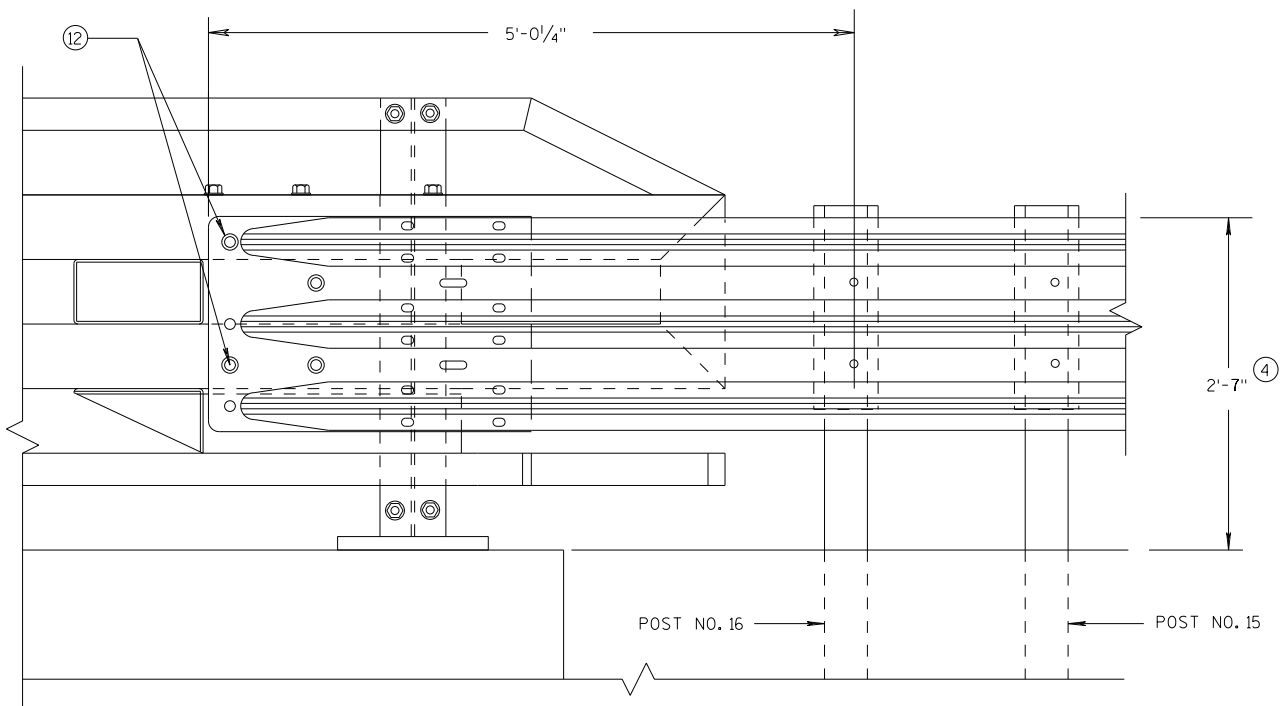
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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



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

GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS ± 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 1/2-INCH BEYOND NUT.

6

6

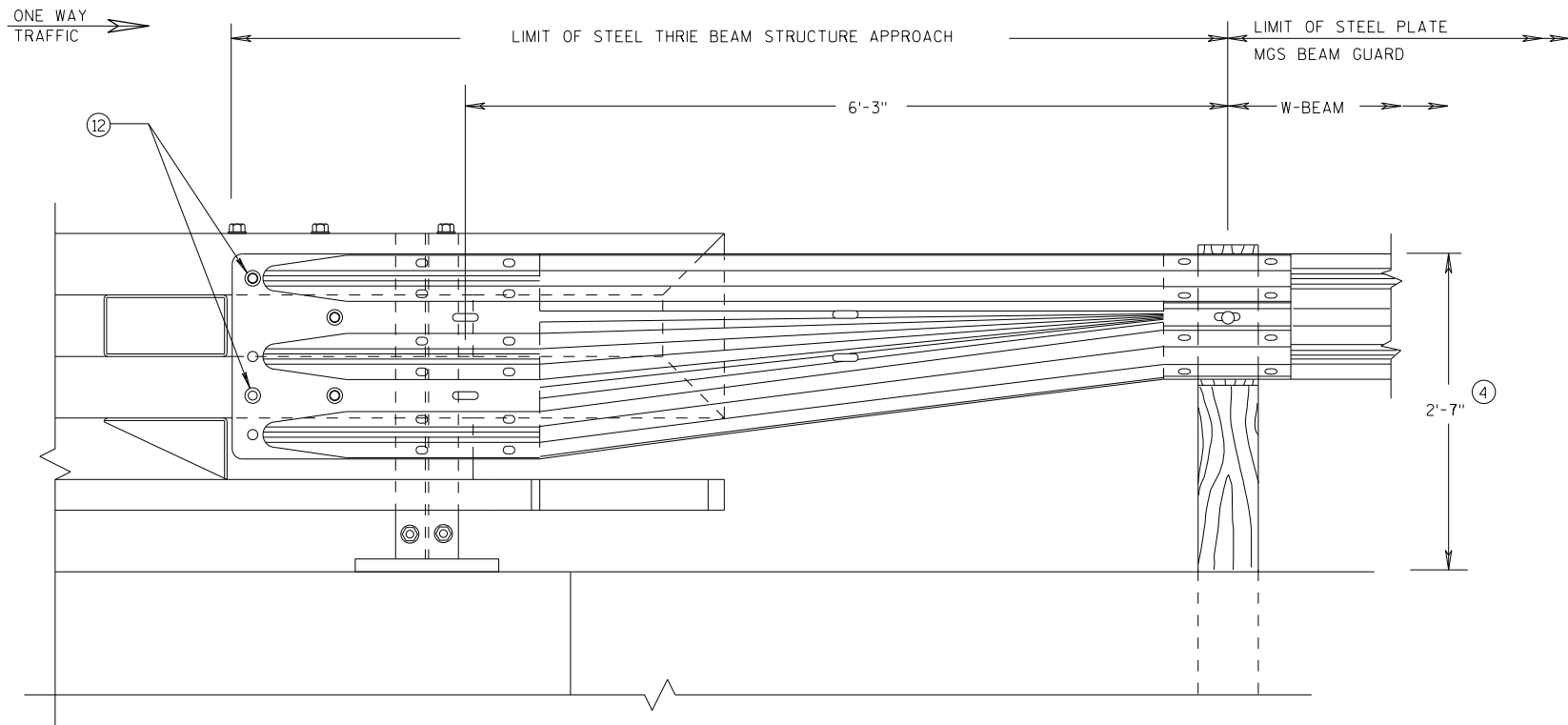
S.D.D. 14 B 45-5K

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

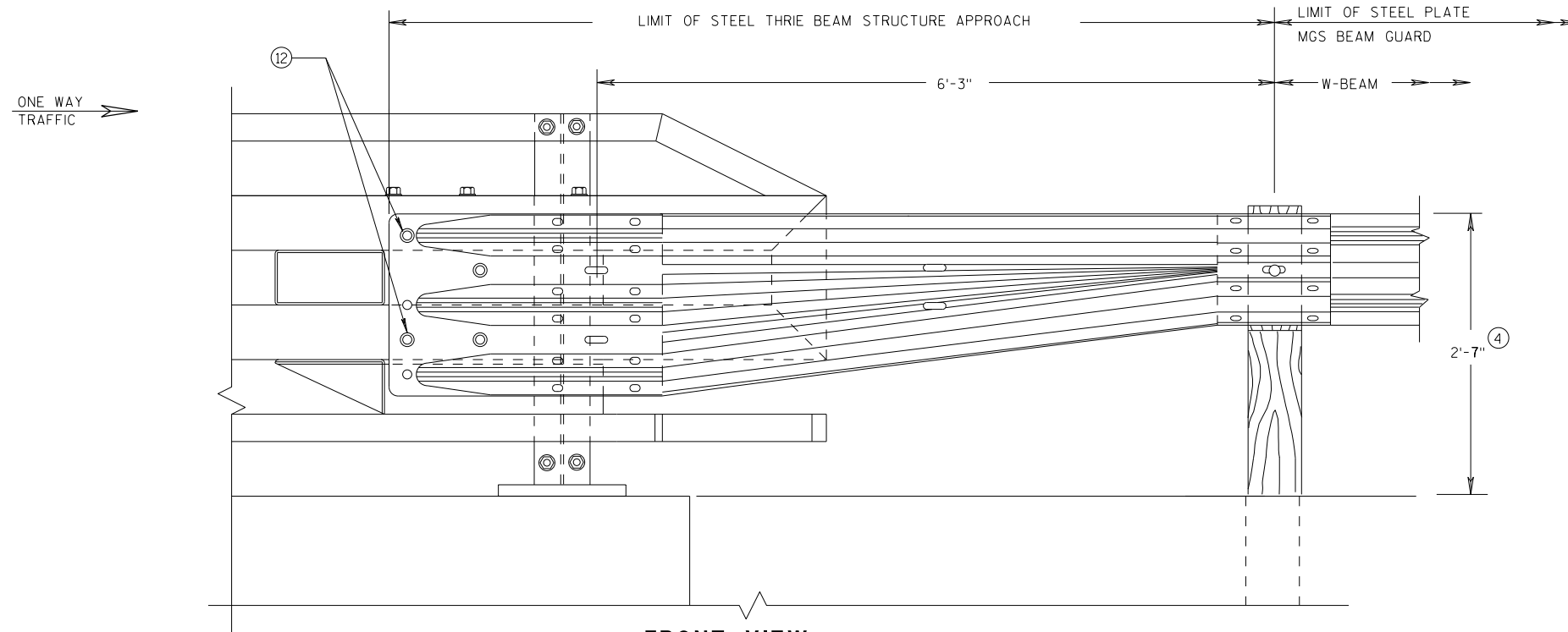
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DATE 7/2018 /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA



GENERAL NOTES

- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
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FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY3"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

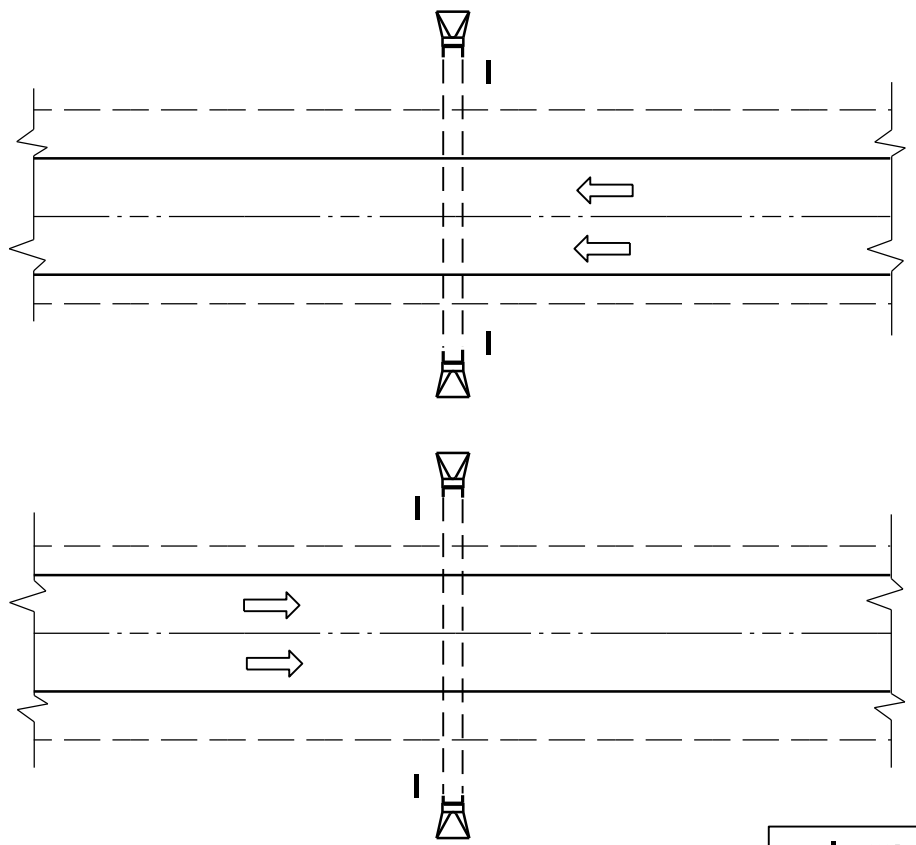


FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY4"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

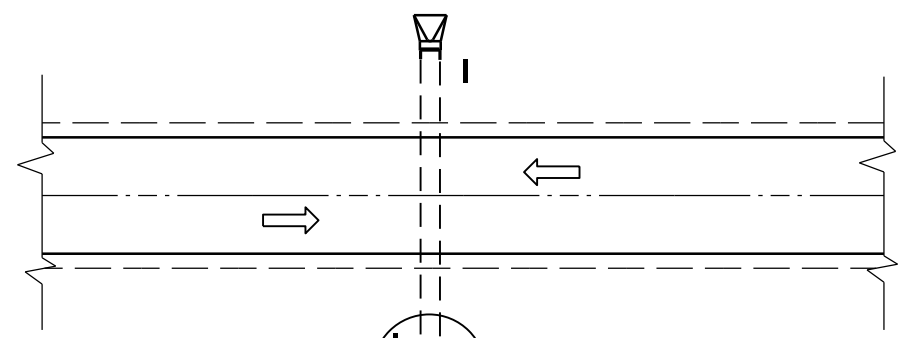
MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

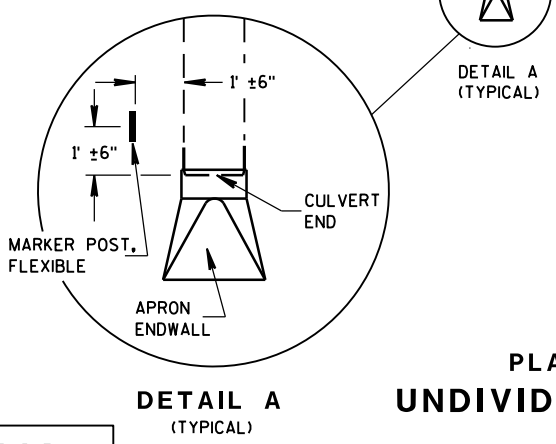
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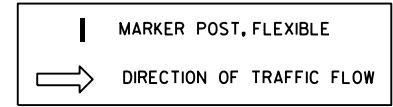
PLAN VIEW
DIVIDED HIGHWAY



PLAN VIEW
UNDIVIDED HIGHWAY

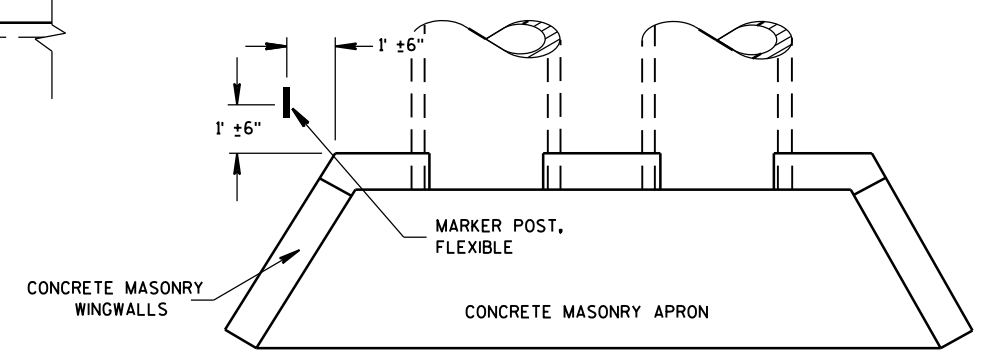


DETAIL A
(TYPICAL)



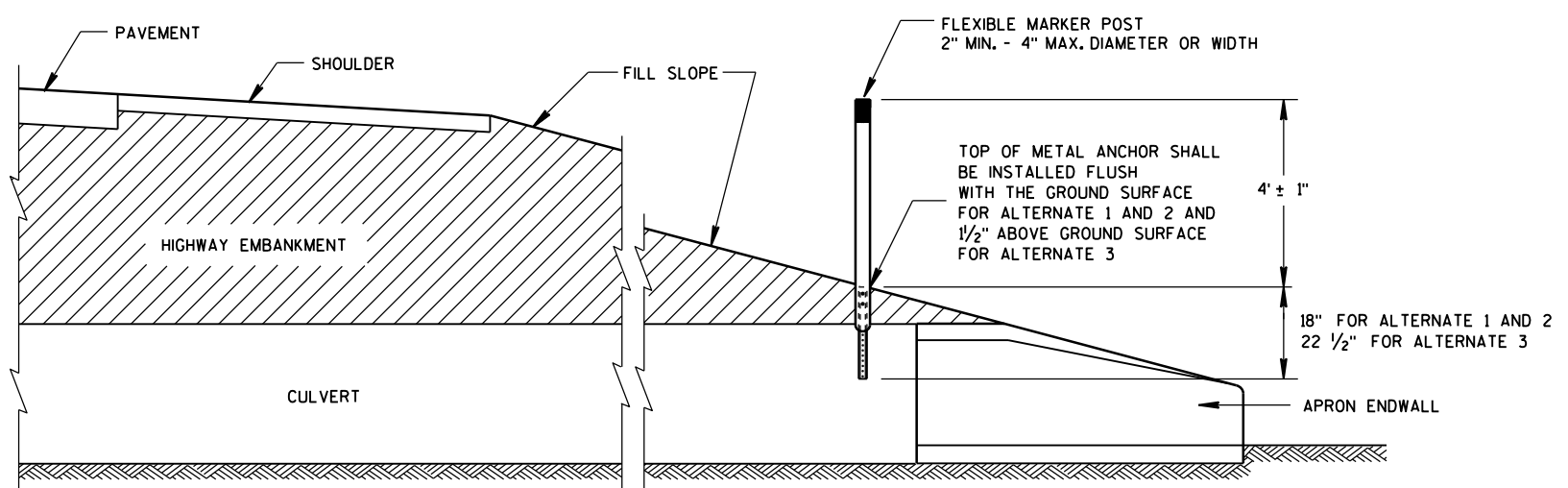
GENERAL NOTES

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



PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH

FLEXIBLE MARKER POST LOCATION



CROSS SECTION
FLEXIBLE MARKER POST

**FLEXIBLE MARKER POST
FOR CULVERT END**

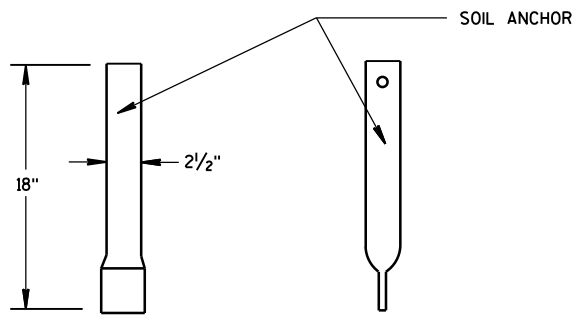
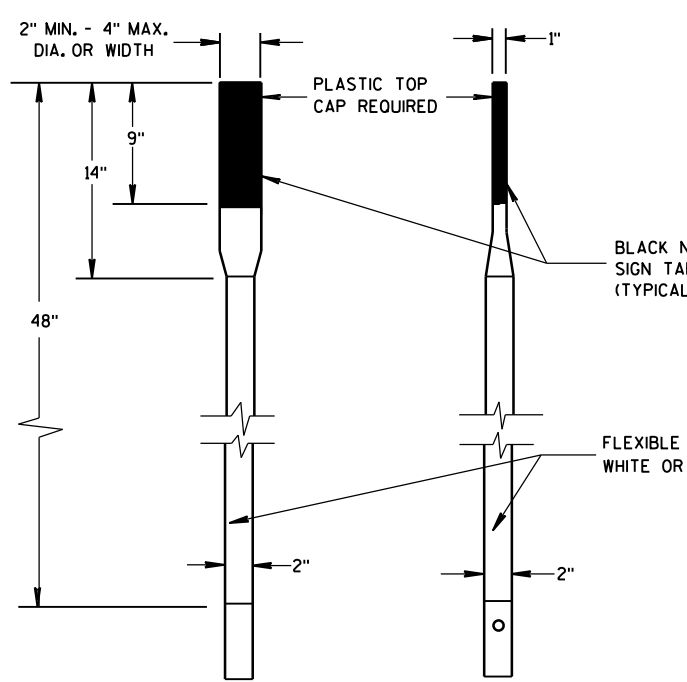
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

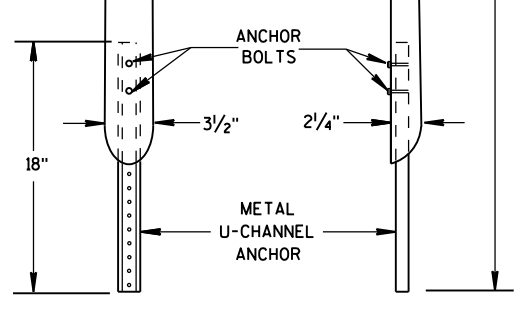
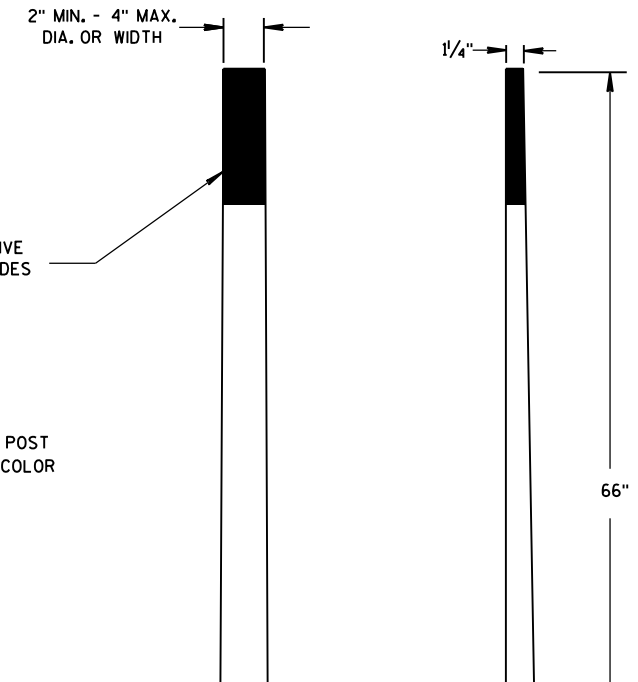
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S.D.D. 15 A 3-2a

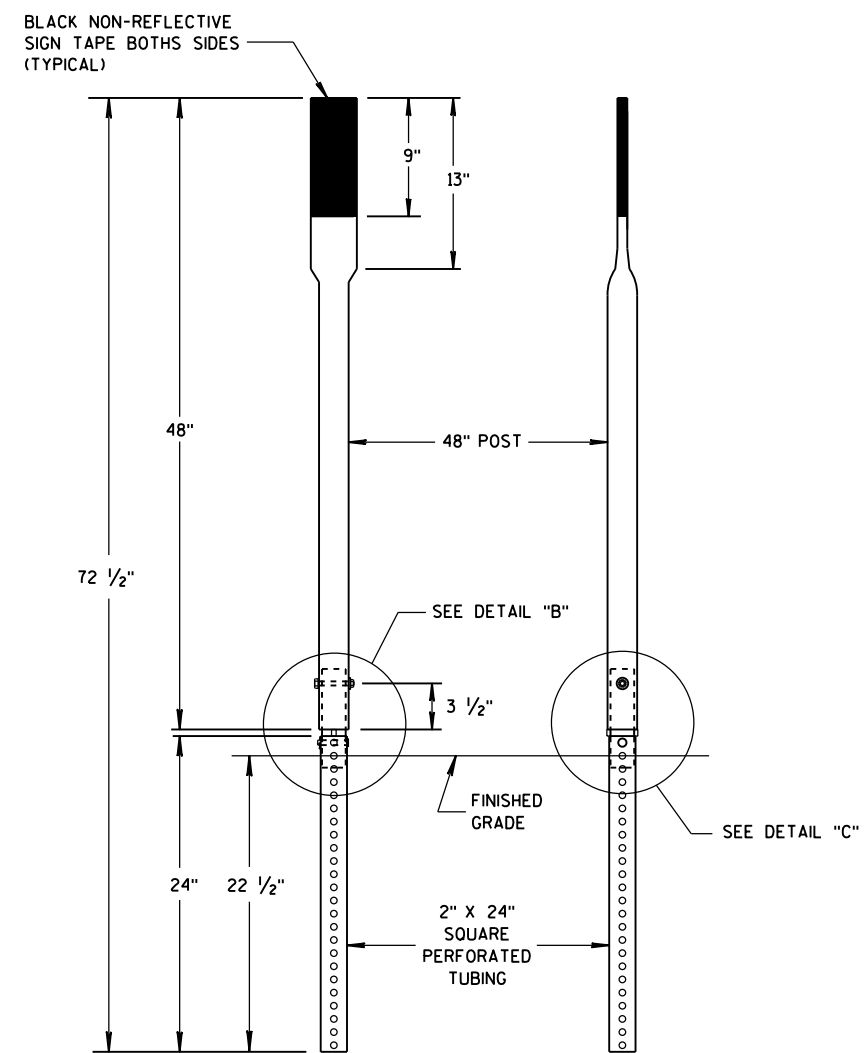
S.D.D. 15 A 3-2a



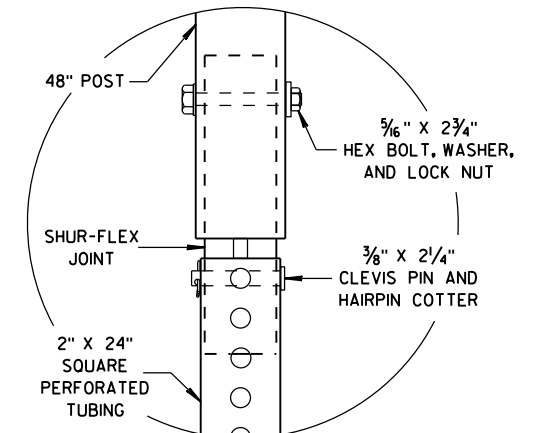
FRONT VIEW SIDE VIEW
ALTERNATE 1



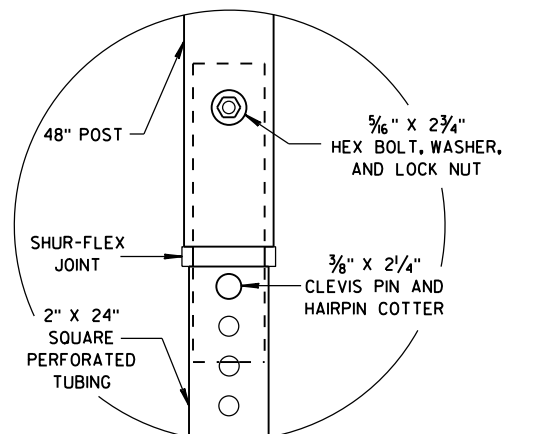
FRONT VIEW SIDE VIEW
ALTERNATE 2



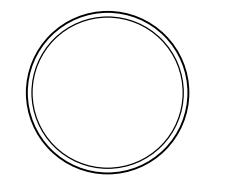
FRONT VIEW SIDE VIEW
ALTERNATE 3



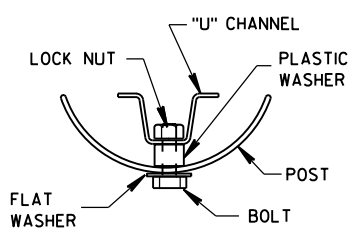
DETAIL B



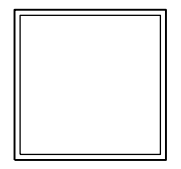
DETAIL C



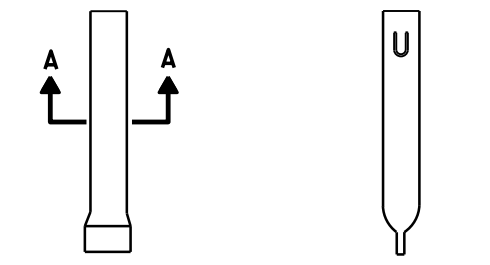
SECTION A-A



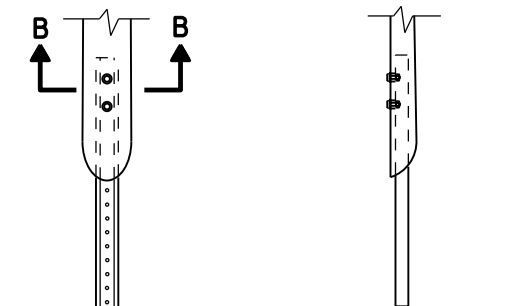
SECTION B-B



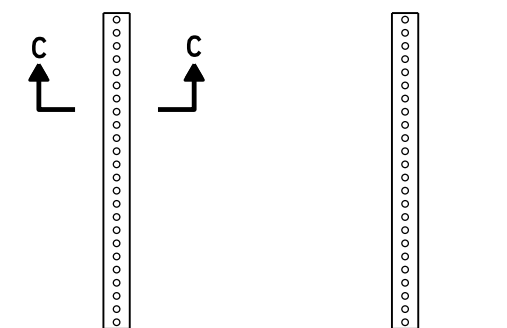
SECTION C-C



FRONT VIEW SIDE VIEW
ALTERNATE 1



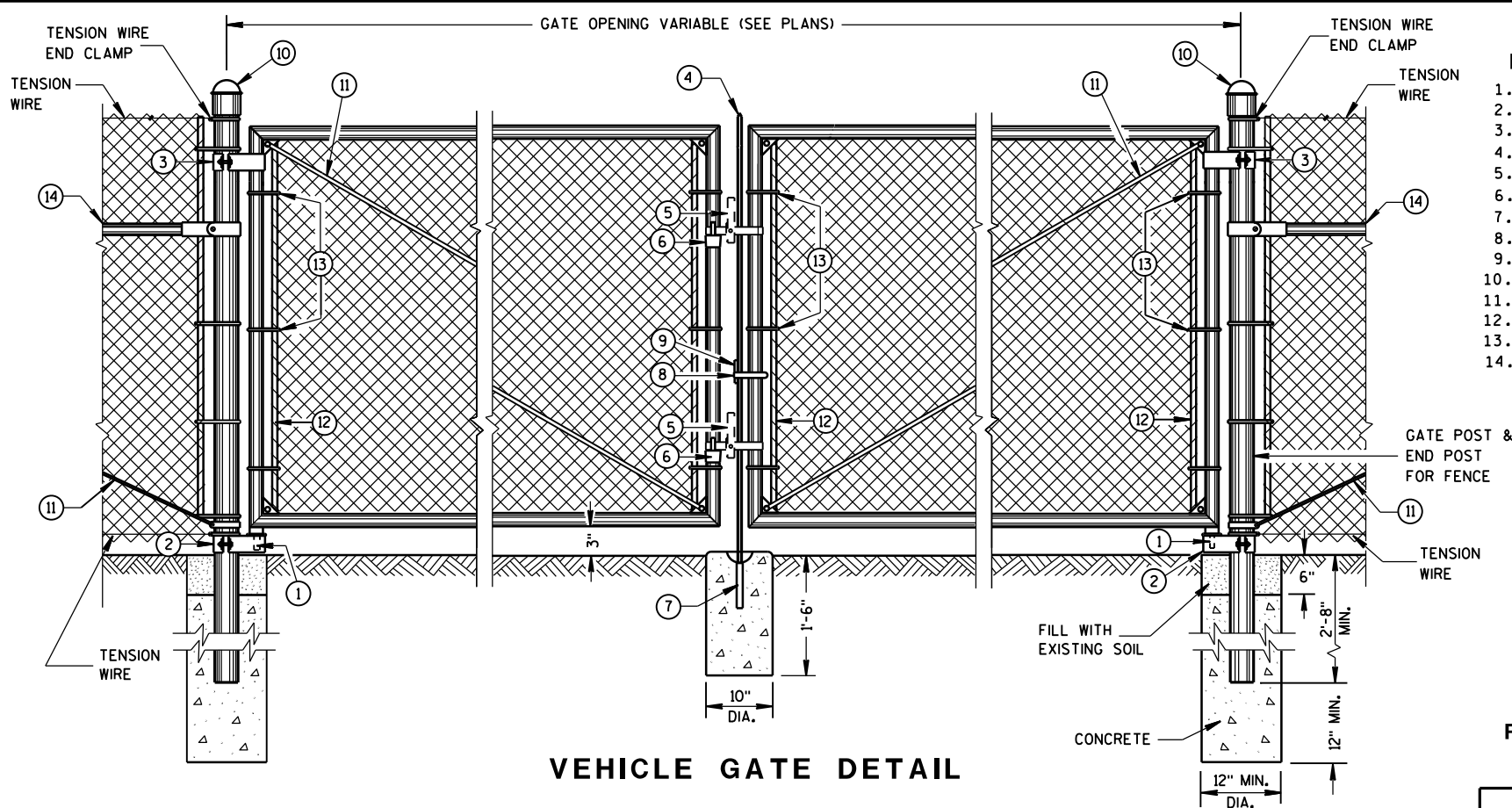
FRONT VIEW SIDE VIEW
ALTERNATE 2



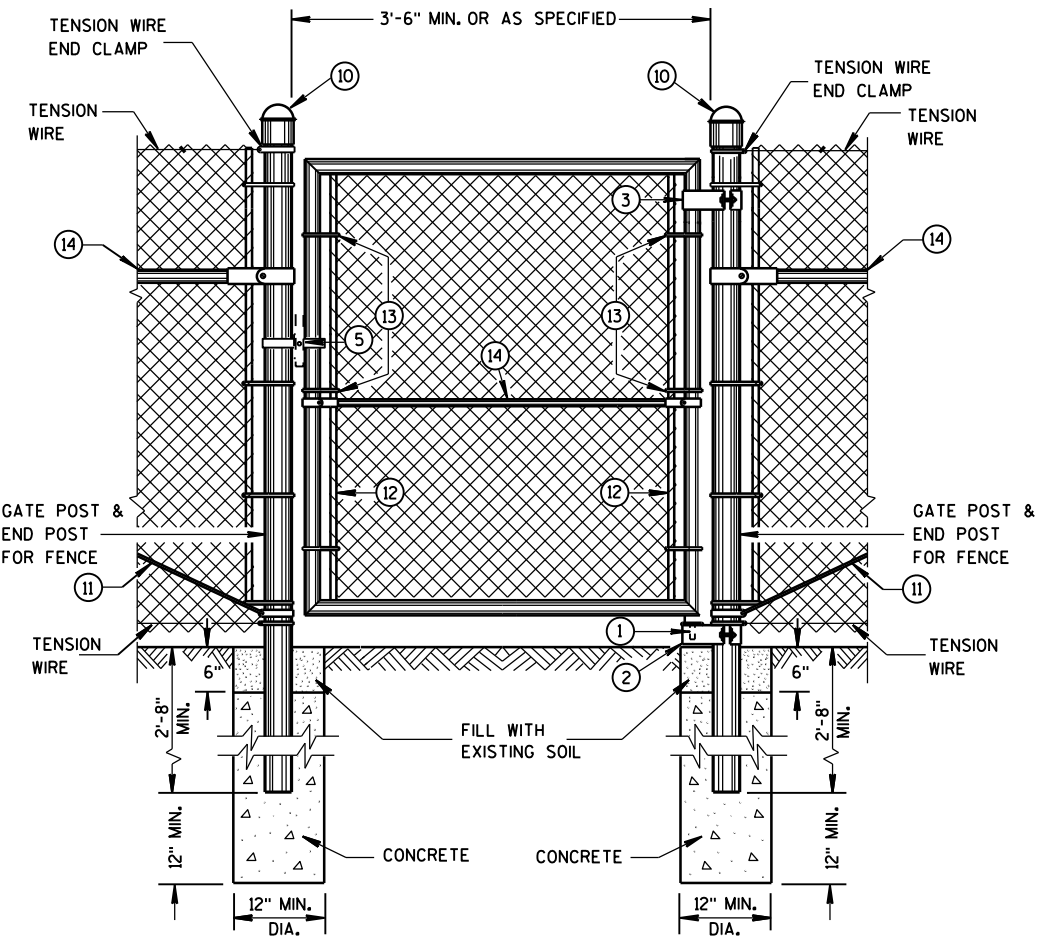
FRONT VIEW SIDE VIEW
ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS

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



VEHICLE GATE DETAIL



PEDESTRIAN GATE DETAIL

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

GENERAL NOTES

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

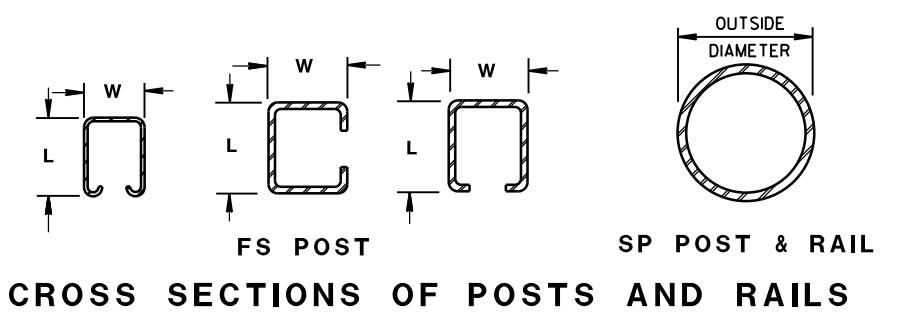
USE FENCE FABRIC KNUCKLED AT BOTH SELVAGES.

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

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

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

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



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

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

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

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

REQUIRED FENCE POST SIZES

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

REQUIRED POST SIZE FOR GATES

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

BRACE RAIL TYPES

USE	TYPE
BRACE RAIL	SP1 OR FS1

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

FENCE CHAIN LINK

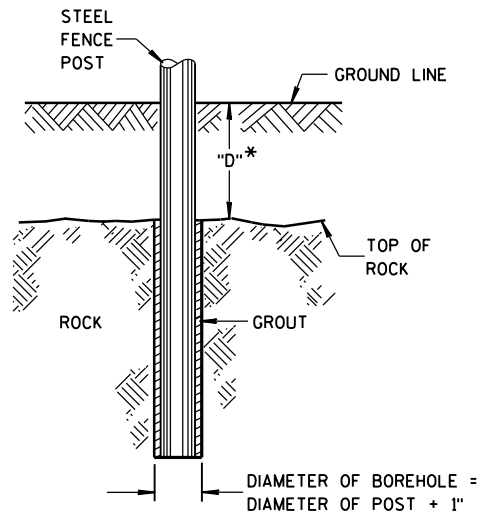
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

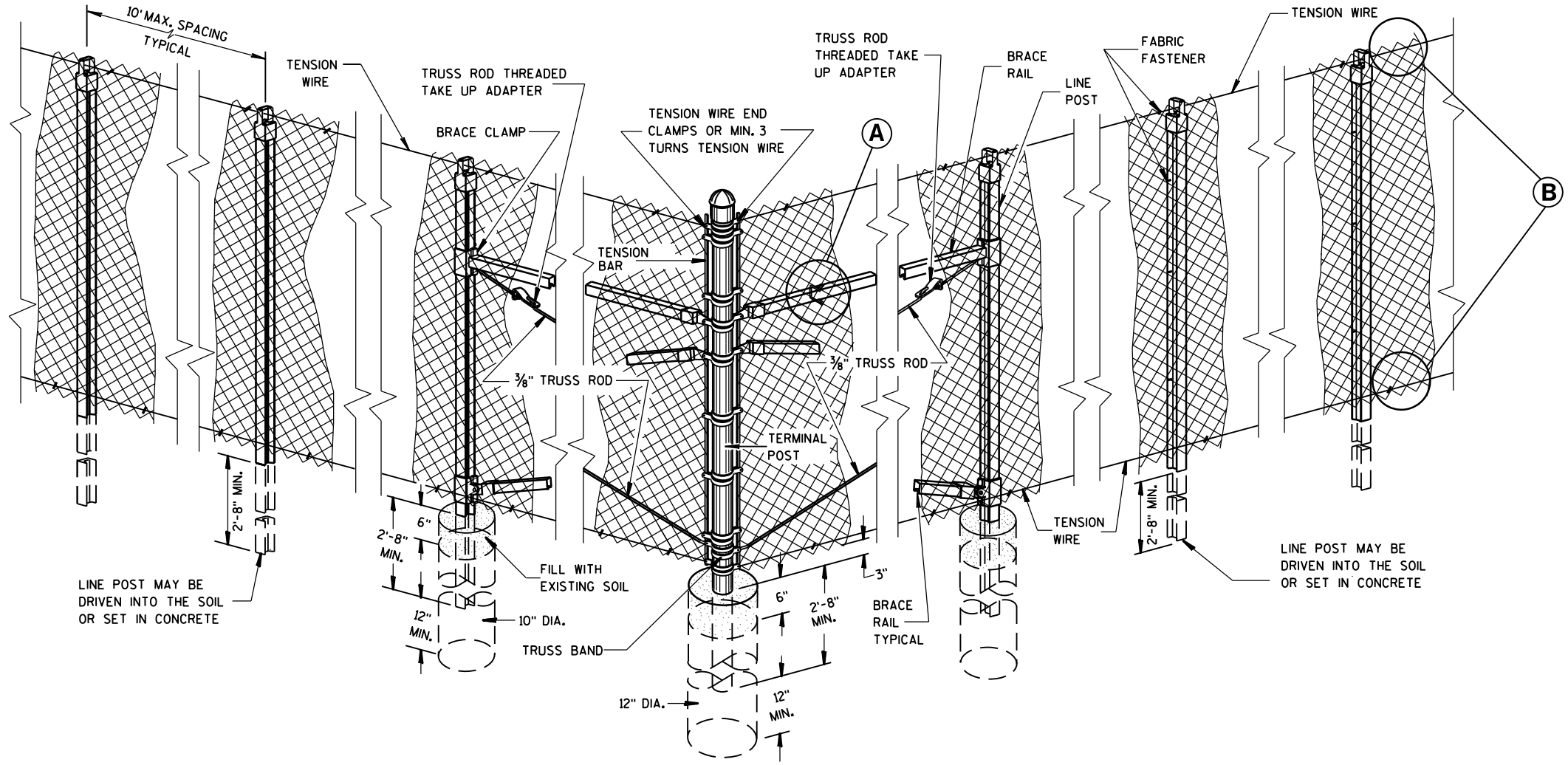
S.D.D. 15 B 3-15a

S.D.D. 15 B 3-15a

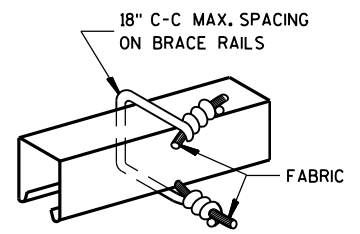


* IF "D" IS LESS THAN 2'-6",
DRILL ROCK AND INSTALL GROUT

**ROCK INSTALLATION
OF LINE POST**

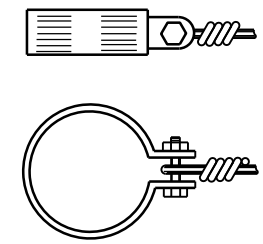


**END, CORNER, ANGLE
INTERSECTION & INTERMEDIATE
BRACED POSTS**

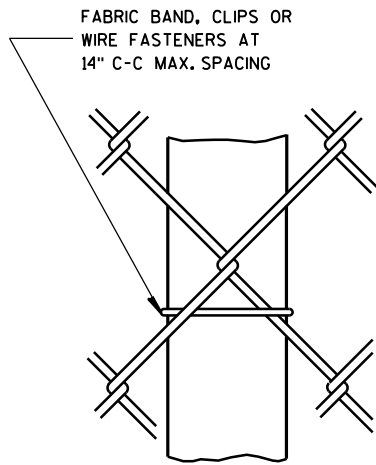


**BRACE RAIL
FABRIC FASTENER**

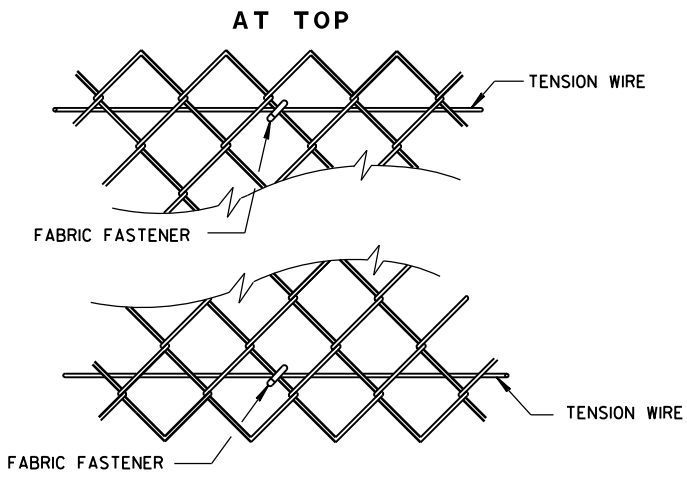
(A)



TENSION WIRE END CLAMP

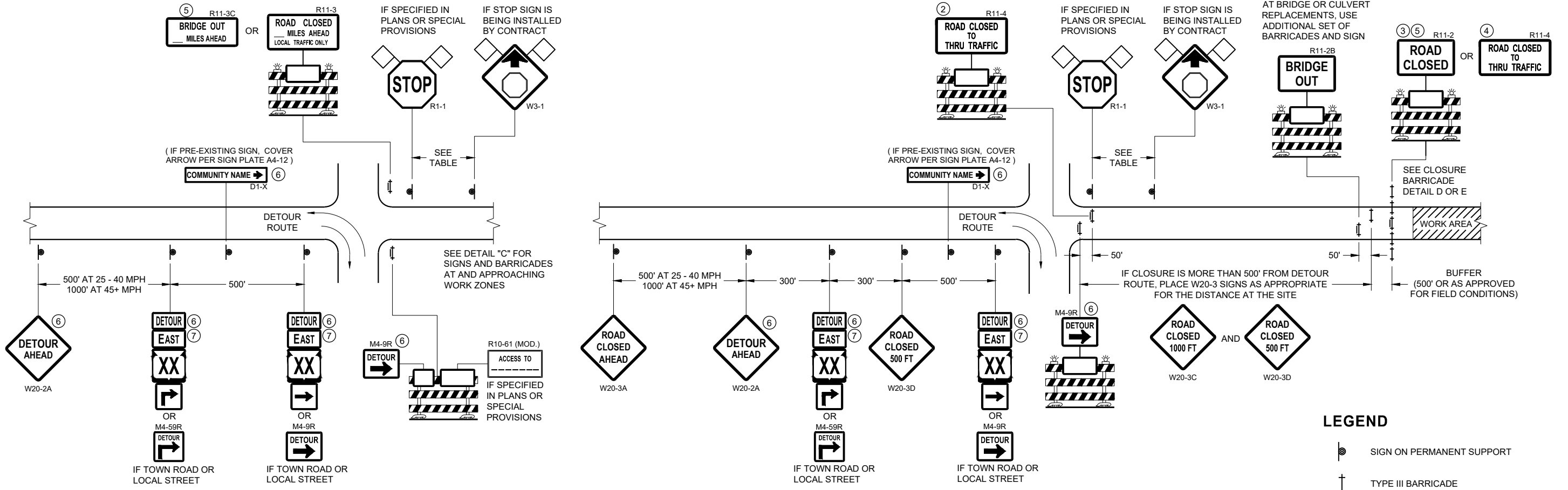


**LINE POST
FABRIC FASTENER**



(B)

FENCE CHAIN LINK	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED DATE FHWA	/s/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER

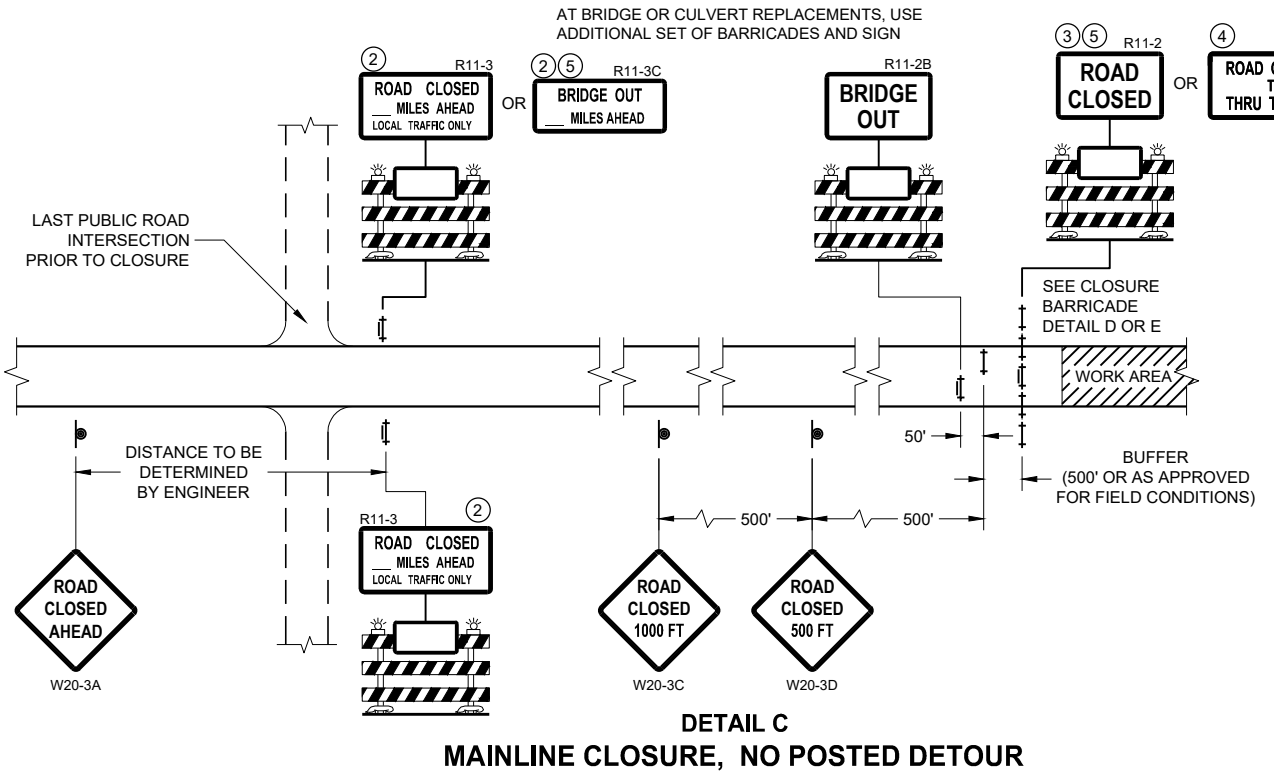


DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR
 WORK ZONE GREATER THAN OR EQUAL TO 1/2 MILE FROM
 DETOUR ROUTE (1000 FEET IF URBAN)

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

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

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



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

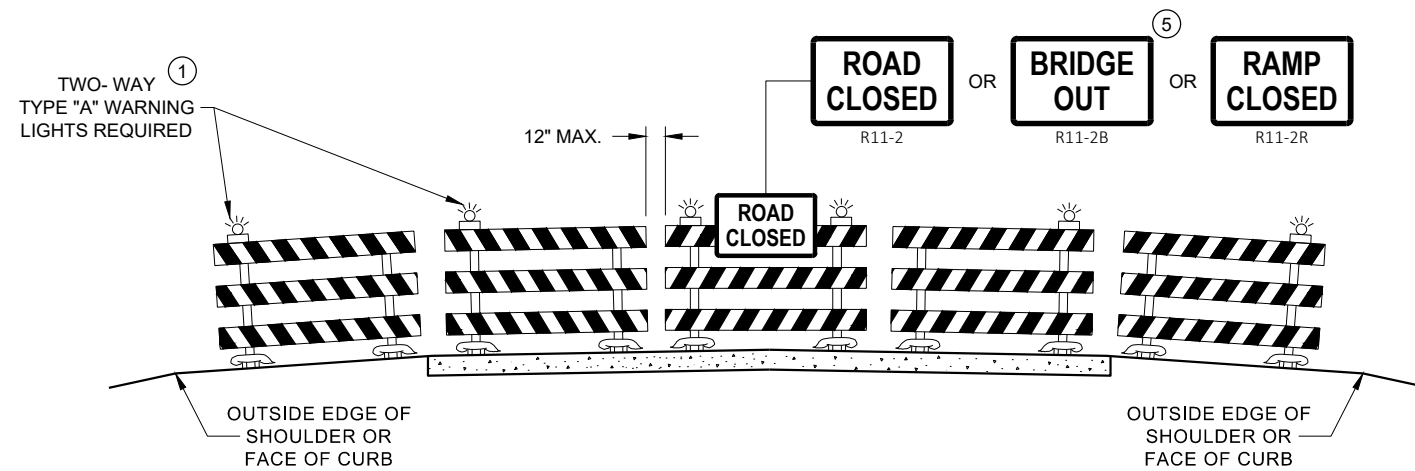
SEE SDD 15C2-SHEET "b"
 FOR GENERAL NOTES
 AND FOOTNOTES ① THROUGH ⑦

**BARRICADES AND SIGNS
 FOR MAINLINE CLOSURES**

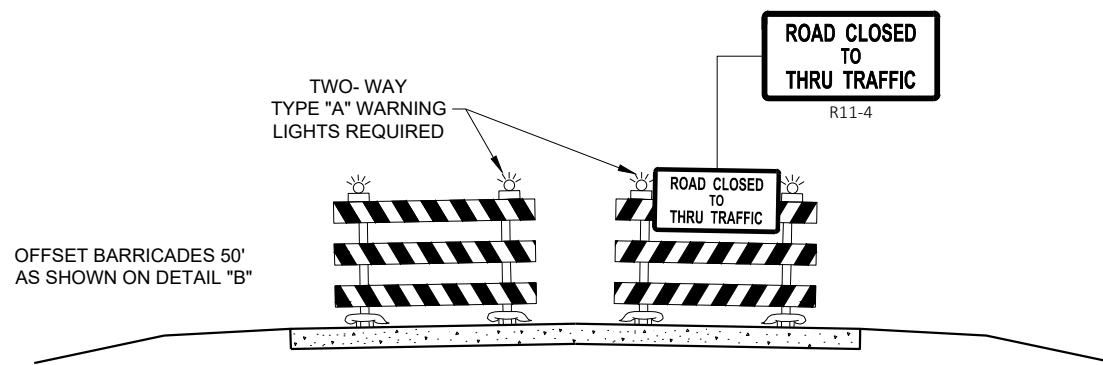
STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

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

FHWA



DETAIL D
ROAD CLOSURE BARRICADE DETAIL
APPROACH VIEW



DETAIL E
LANE CLOSURE BARRICADE DETAIL
APPROACH VIEW

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

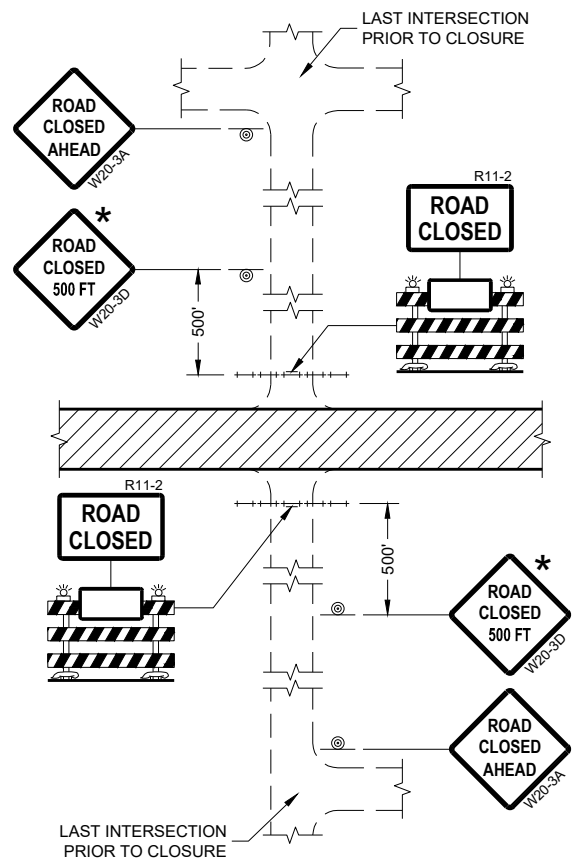
- ① TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING).
- ② THESE SIGNS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

**BARRICADES AND SIGNS
FOR
VARIOUS CLOSURES**

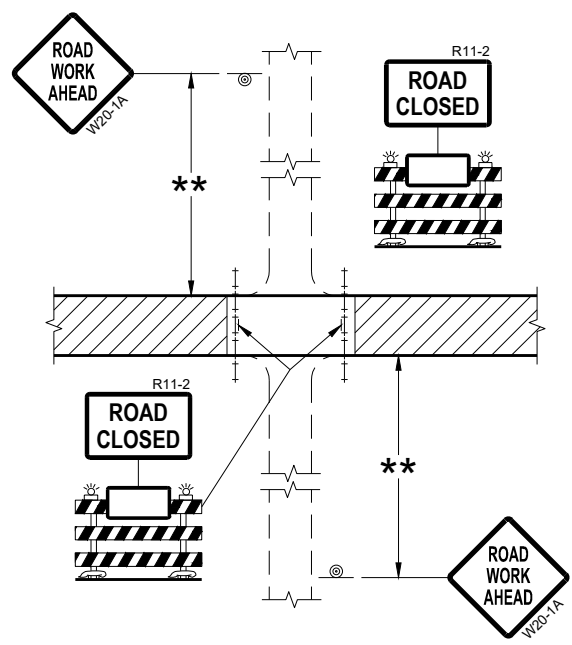
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

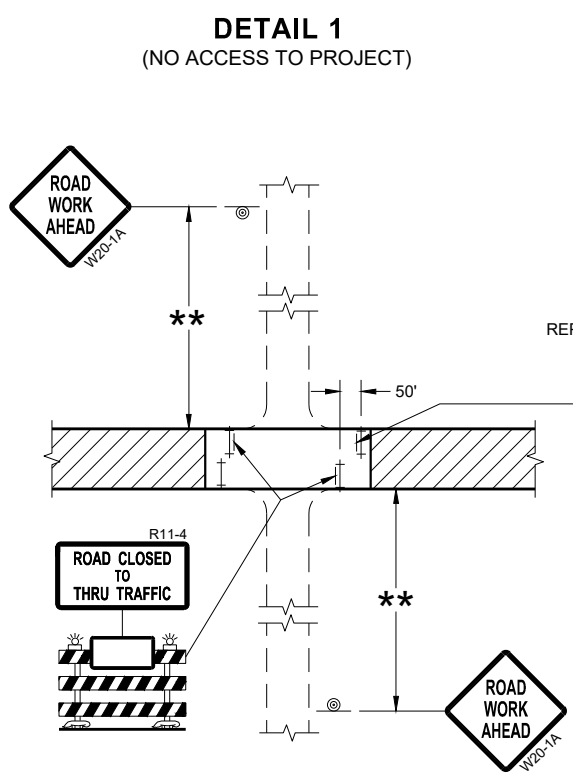
FHWA



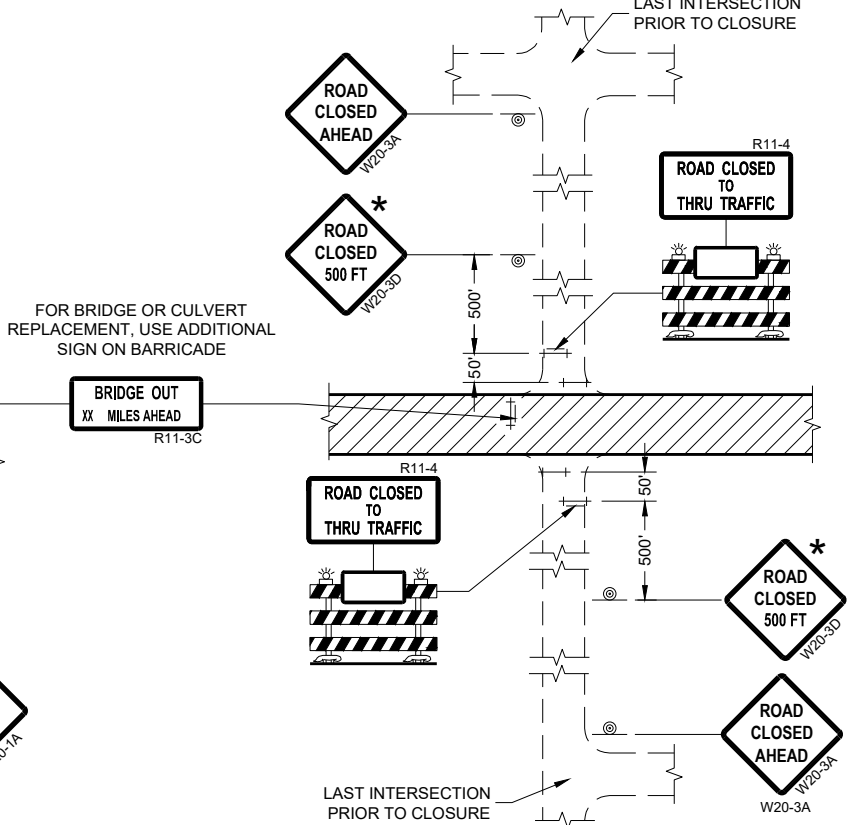
DETAIL 1
(NO ACCESS TO PROJECT)



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



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



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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

LEGEND

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

BARRICADES AND SIGNS FOR SIDEROAD CLOSURES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED July 2018 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

GENERAL NOTES

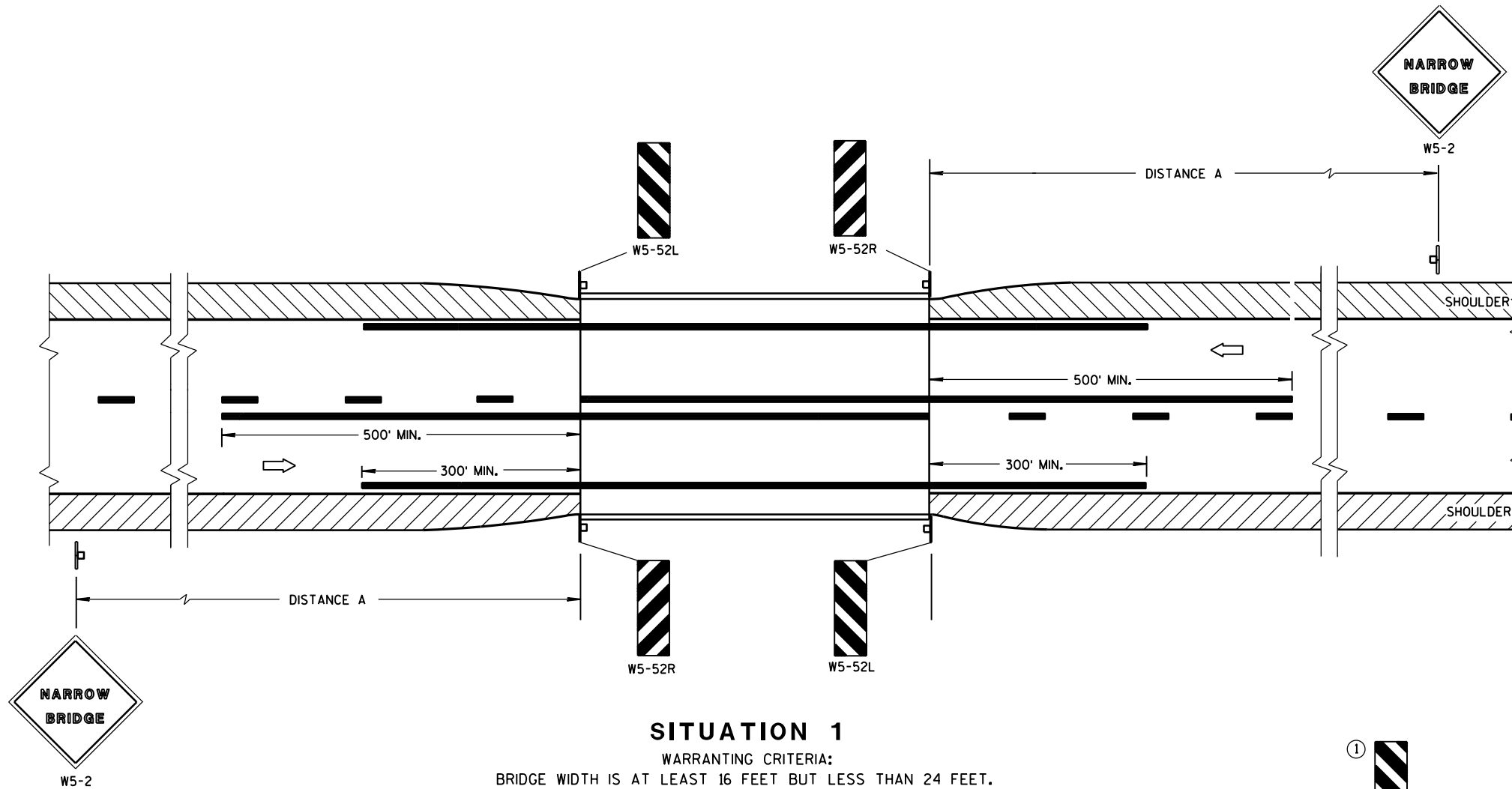
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

LOCATE W5-52 SIGN POST(S) BEHIND GUARDRAIL WHEN PRESENT.

PLACE THE EDGE OF THE W5-52 SIGN IN LINE WITH FACE OF CURB OR PARAPET.

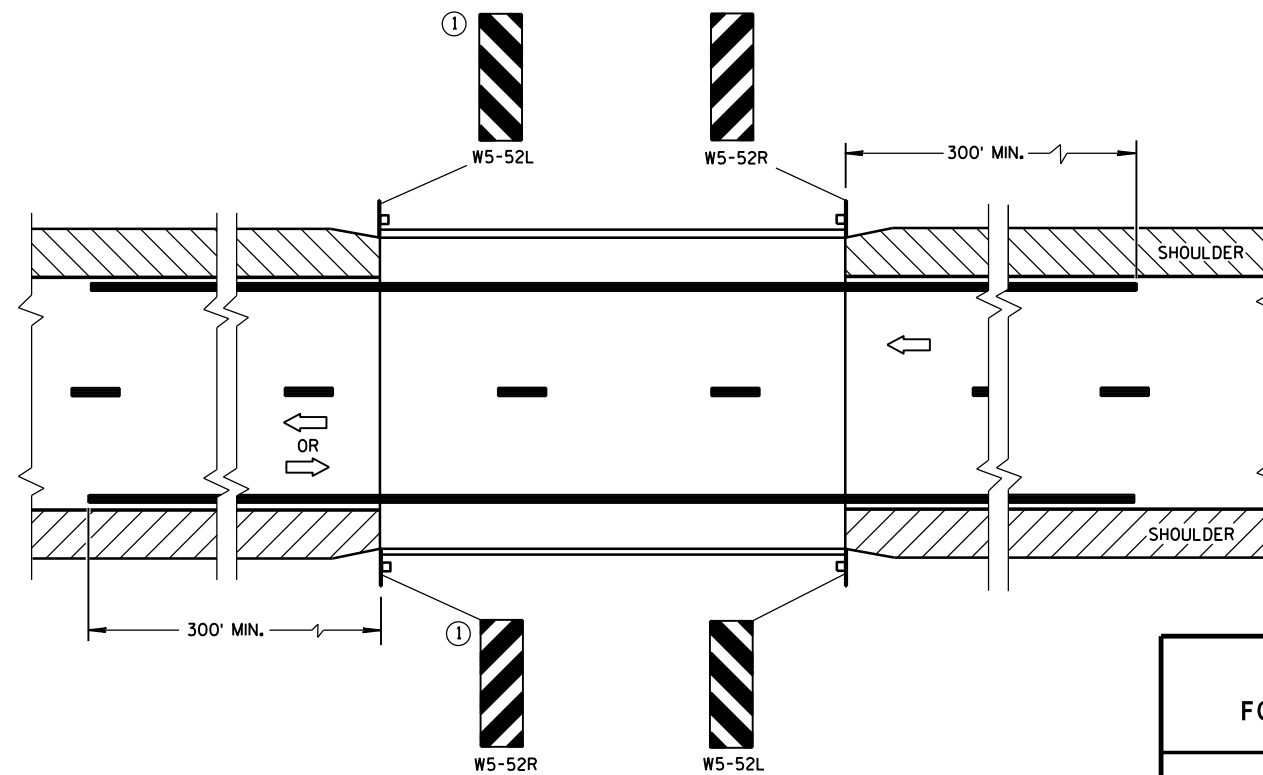
① OMIT ON ONE-WAY TRAVELLED WAYS.

➡ DIRECTION OF TRAFFIC



SITUATION 1

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



SITUATION 2

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

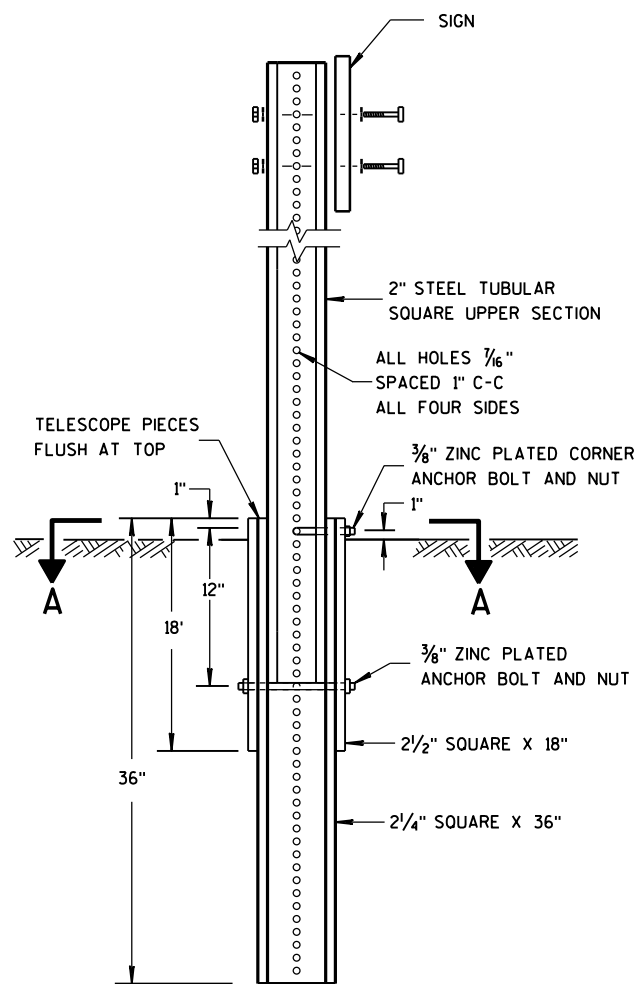
DISTANCE TABLE

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

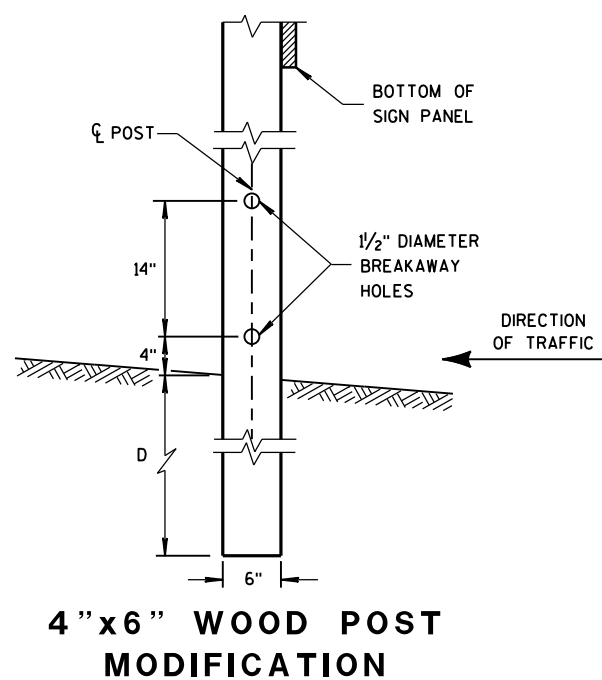
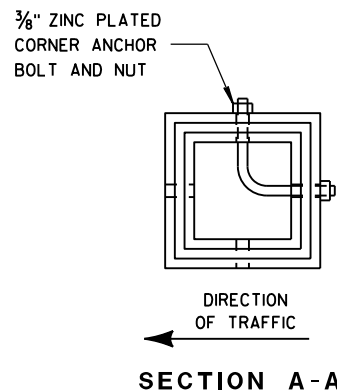
SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA



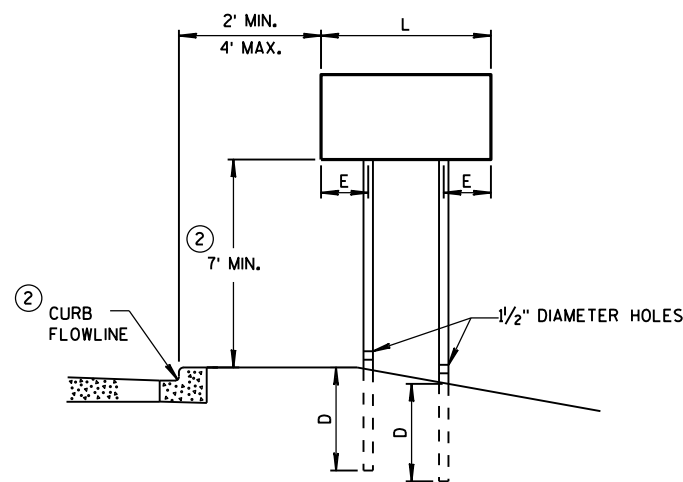
DETAIL OF TUBULAR STEEL SIGN POST



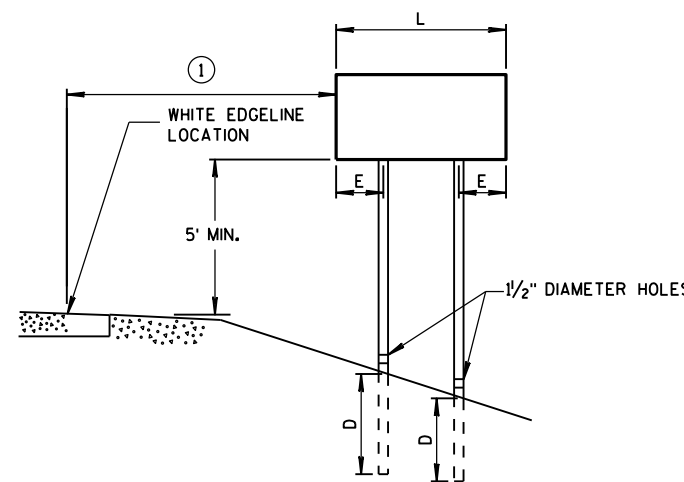
4" X 6" WOOD POST MODIFICATION

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.



URBAN AREA



RURAL AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

TUBULAR STEEL POSTS

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

SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).
 SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED ON TUBULAR STEEL POSTS.

WOOD POST EMBEDMENT DEPTH

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

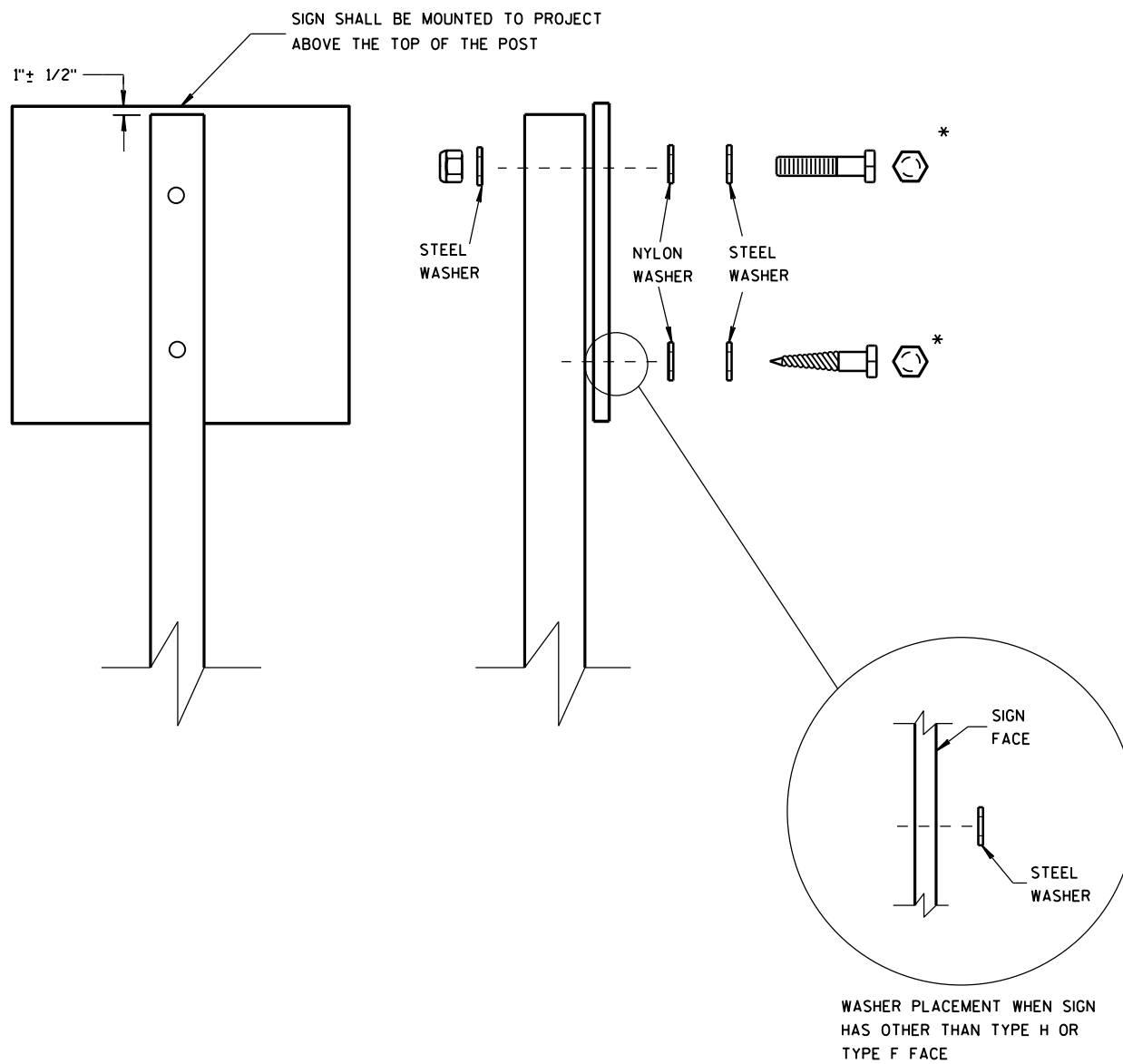
4" X 6" WOOD POST

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 POSTS (4" x 4" or 4" x 6")

LAG SCREWS - 3/8" X 3"

MACHINE BOLTS - 5/16" X 6-1/2" OR 7" LENGTH W/ NUTS

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" LENGTH W/ NUTS

RIVETS - 5/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -

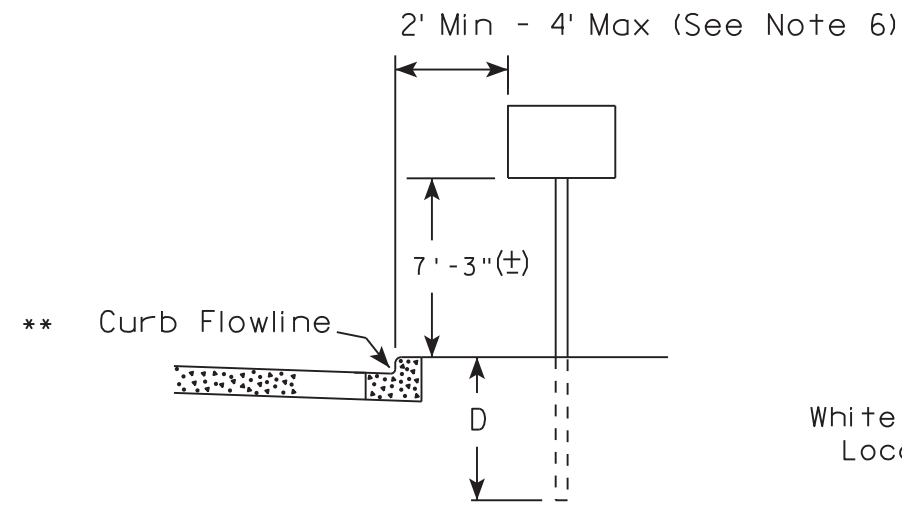
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL

1-1/4" O.D. X 3/8" I.D. X .080 NYLON FOR ALL TYPE H SIGNS

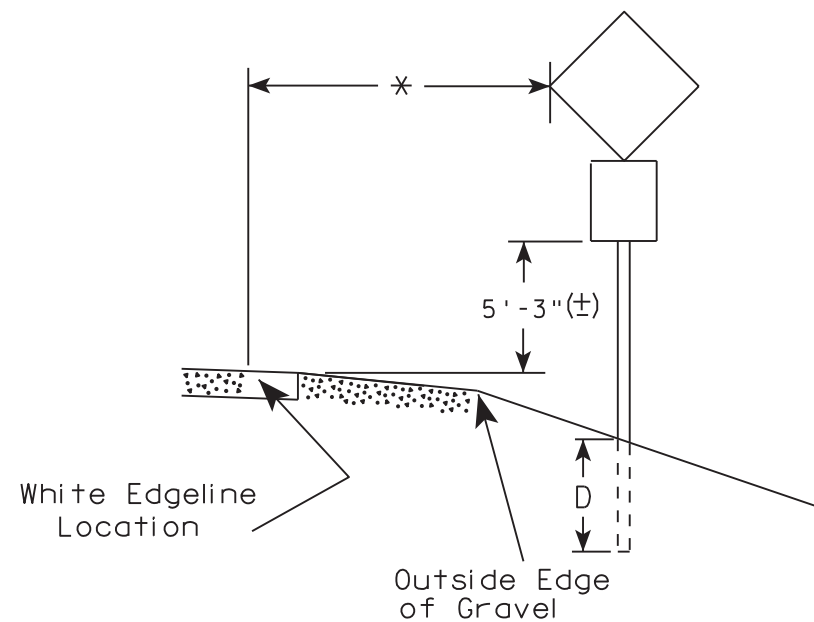
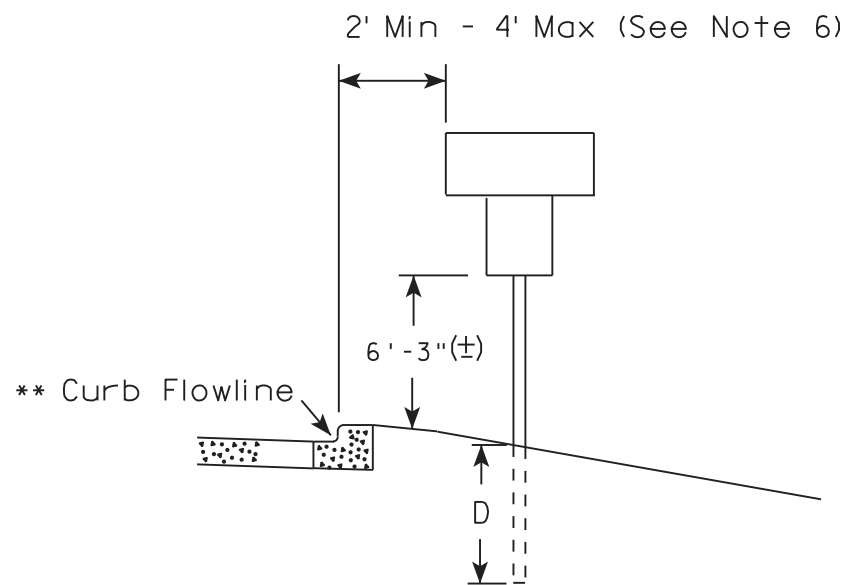
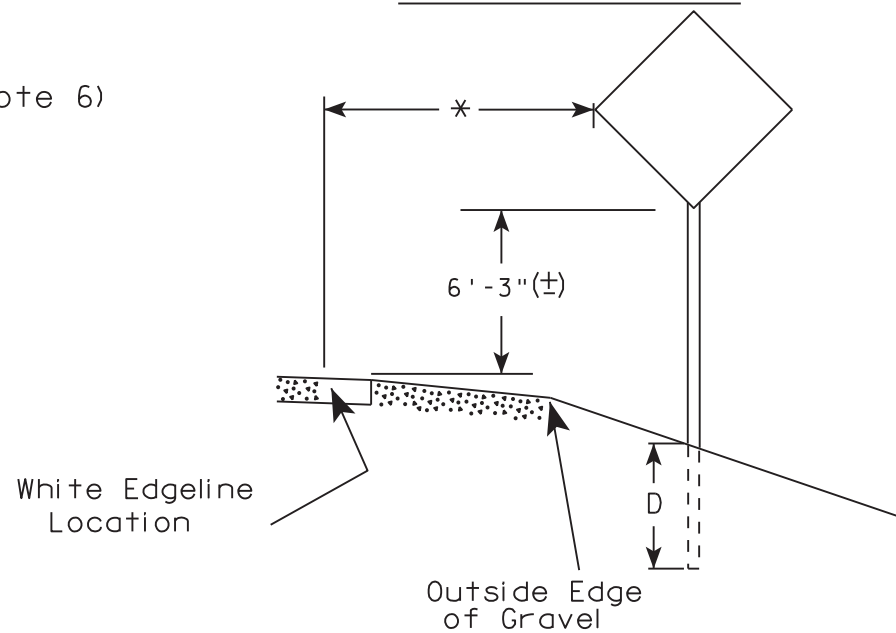
* TWO DIFFERENT FASTENING SYSTEMS ARE SHOWN FOR ILLUSTRATION PURPOSES. ON ANY INDIVIDUAL SIGN, EITHER ONE OR THE OTHER SYSTEM SHALL BE USED. ACTUAL NUMBER OF FASTENERS PER SIGN VARIES WITH THE SIGN AREA. FOR A SINGLE POST INSTALLATION, ALL SIGNS GREATER THAN 9 SQ. FT. REQUIRE THE USE OF 3 FASTENERS.

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

URBAN AREA



RURAL AREA (See Note 2)



GENERAL NOTES

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

POST EMBEDMENT DEPTH

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

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

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

TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

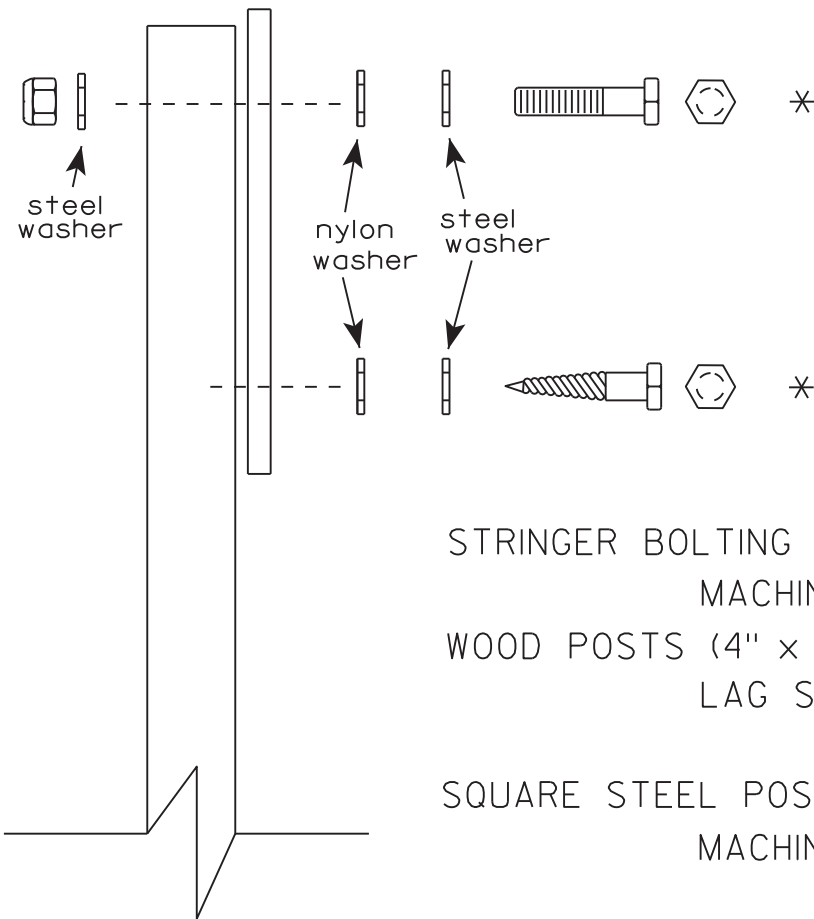
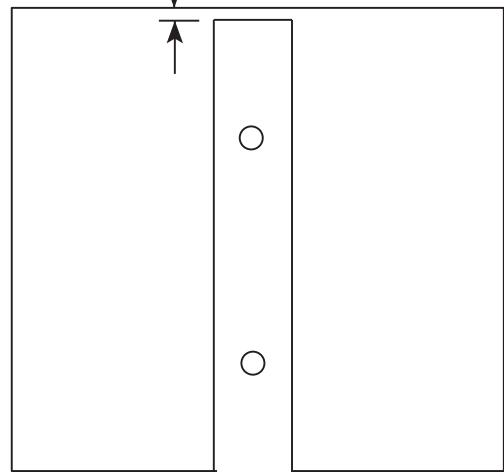
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-3.21

1"± 1/2"

SIGN SHALL BE MOUNTED TO PROJECT ABOVE THE TOP OF THE POST



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

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

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

STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)

MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts

WOOD POSTS (4" x 4" or 4" x 6")

LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
3/8" X 4" (STRINGERS ON BACK OF SIGN)

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)

RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -

1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL

1-1/4" O.D. X 3/8" I.D. X .080 NYLON

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

ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*

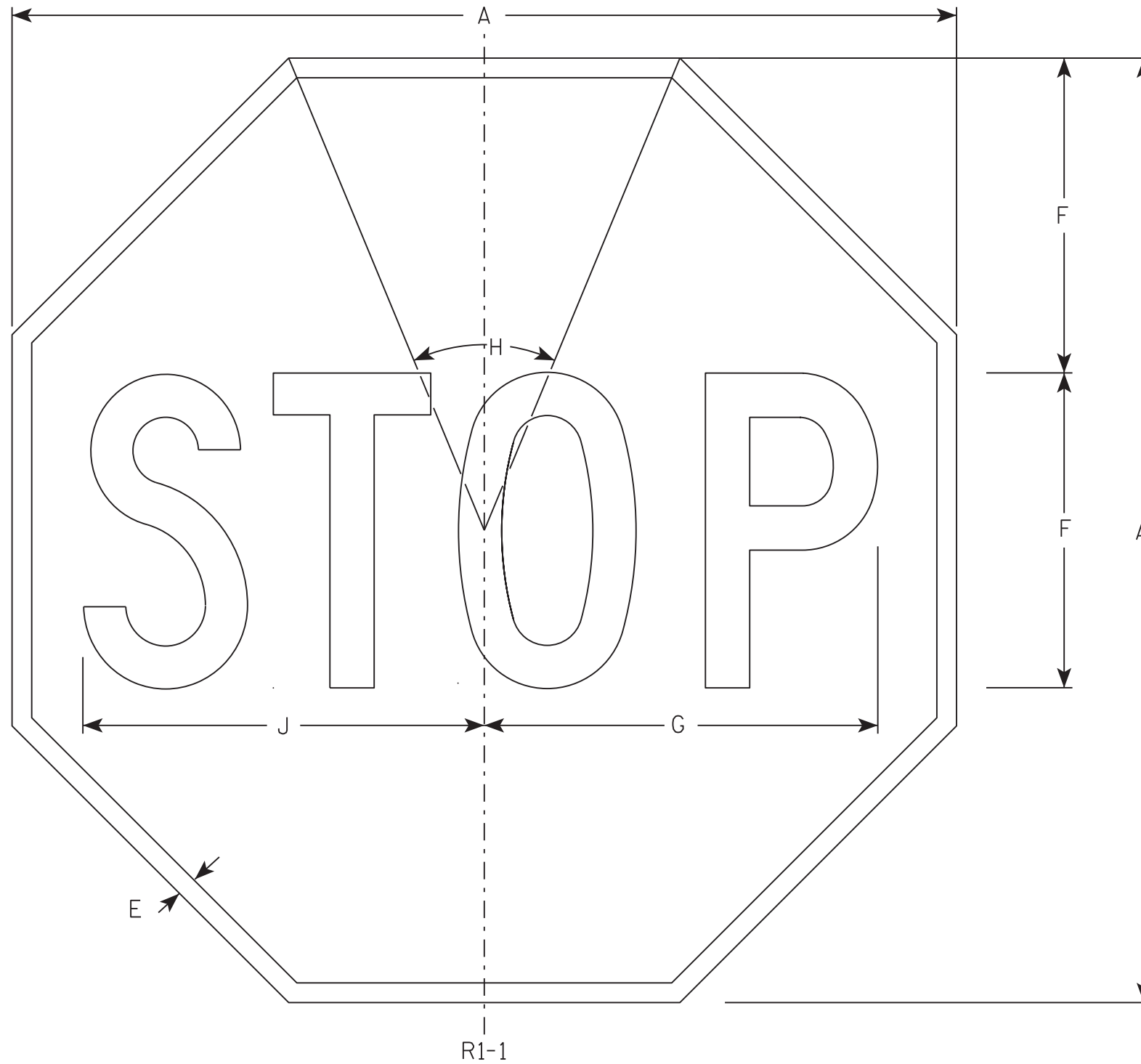
For State Traffic Engineer

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

7

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Red
Message - White
3. Message Series - C



R1-1

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2S	30				5/8	10	12 1/2	45°		12 3/4																	5.18
2M	36				3/4	12	15	45°		15 3/8																	7.46
3	36				3/4	12	15	45°		15 3/8																	7.46
4	48				1	16	20	45°		20 1/2																	13.25
5	48				1	16	20	45°		20 1/2																	13.25
6	18				3/8	6	7 3/4	45°		7 3/4																	1.86
7	12				1/4	4	5	45°		5 1/8																	0.78

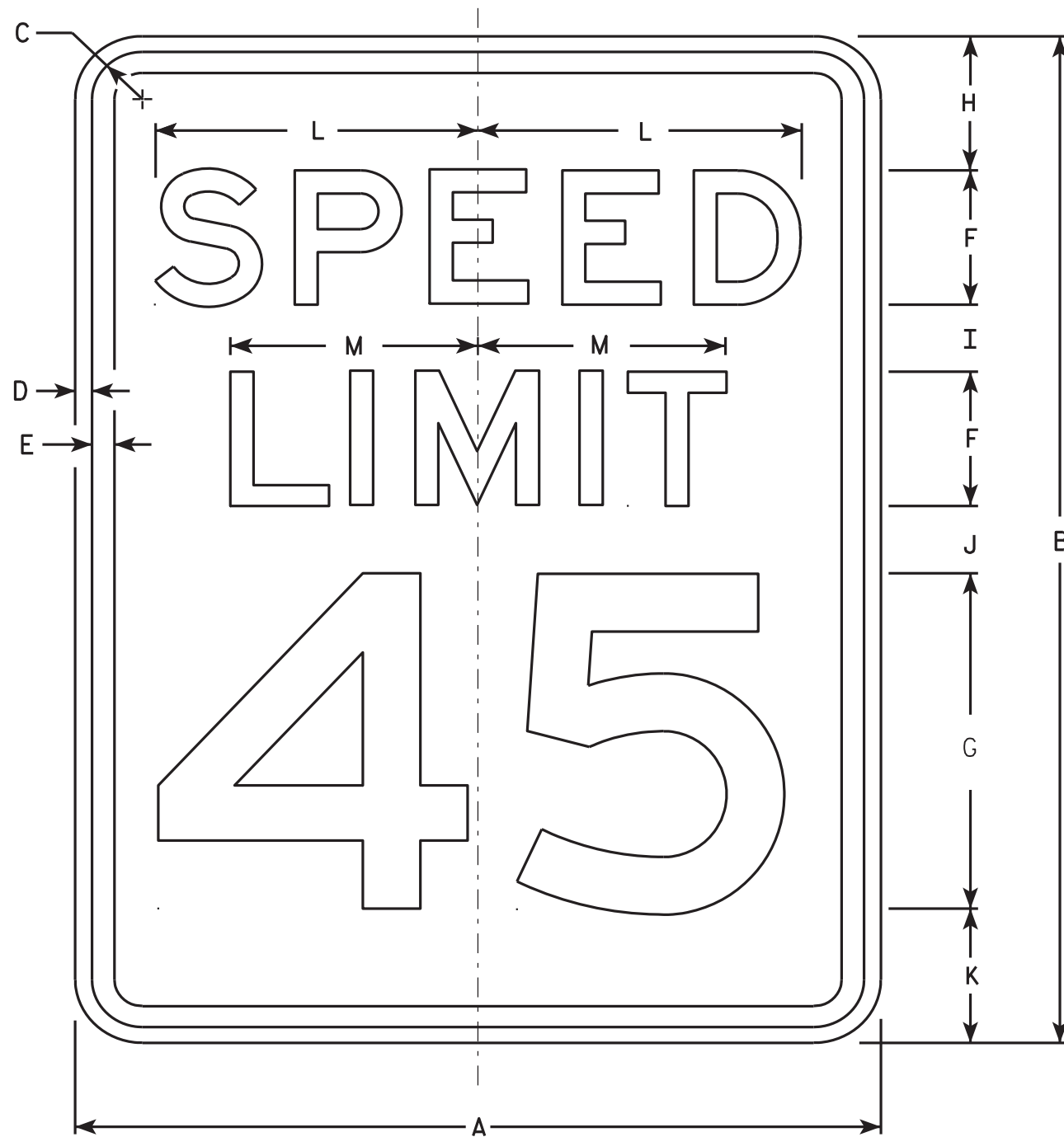
STANDARD SIGN
R1-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: **E**



R2-1

NOTES

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

7

7

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

STANDARD SIGN
R2-1

WISCONSIN DEPT OF TRANSPORTATION

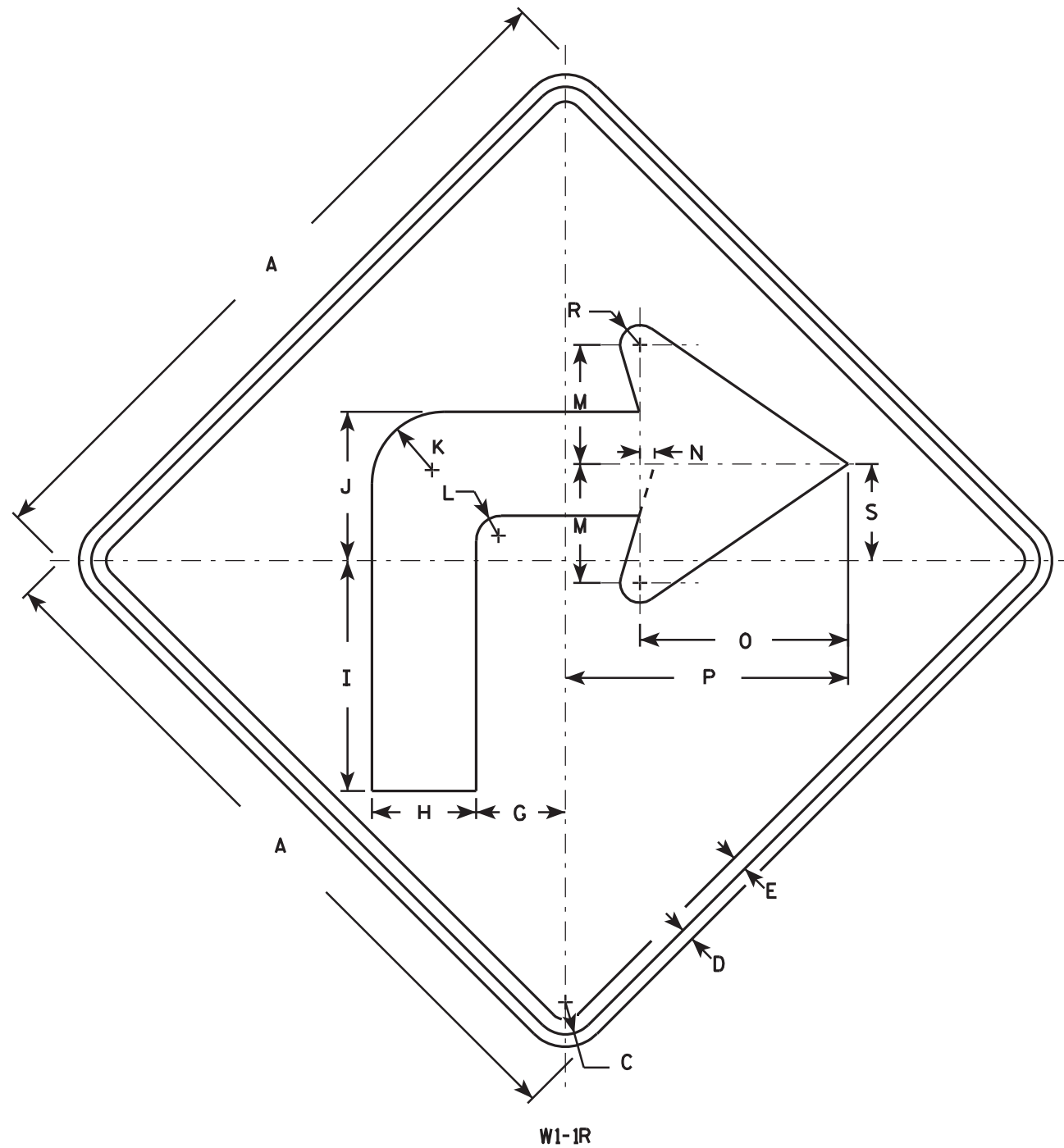
APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 5/26/10 PLATE NO. R2-1.13

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: _____ E

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. W1-1L is the same as W1-1R except the arrow is reversed along the vertical centerline.



7

7

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

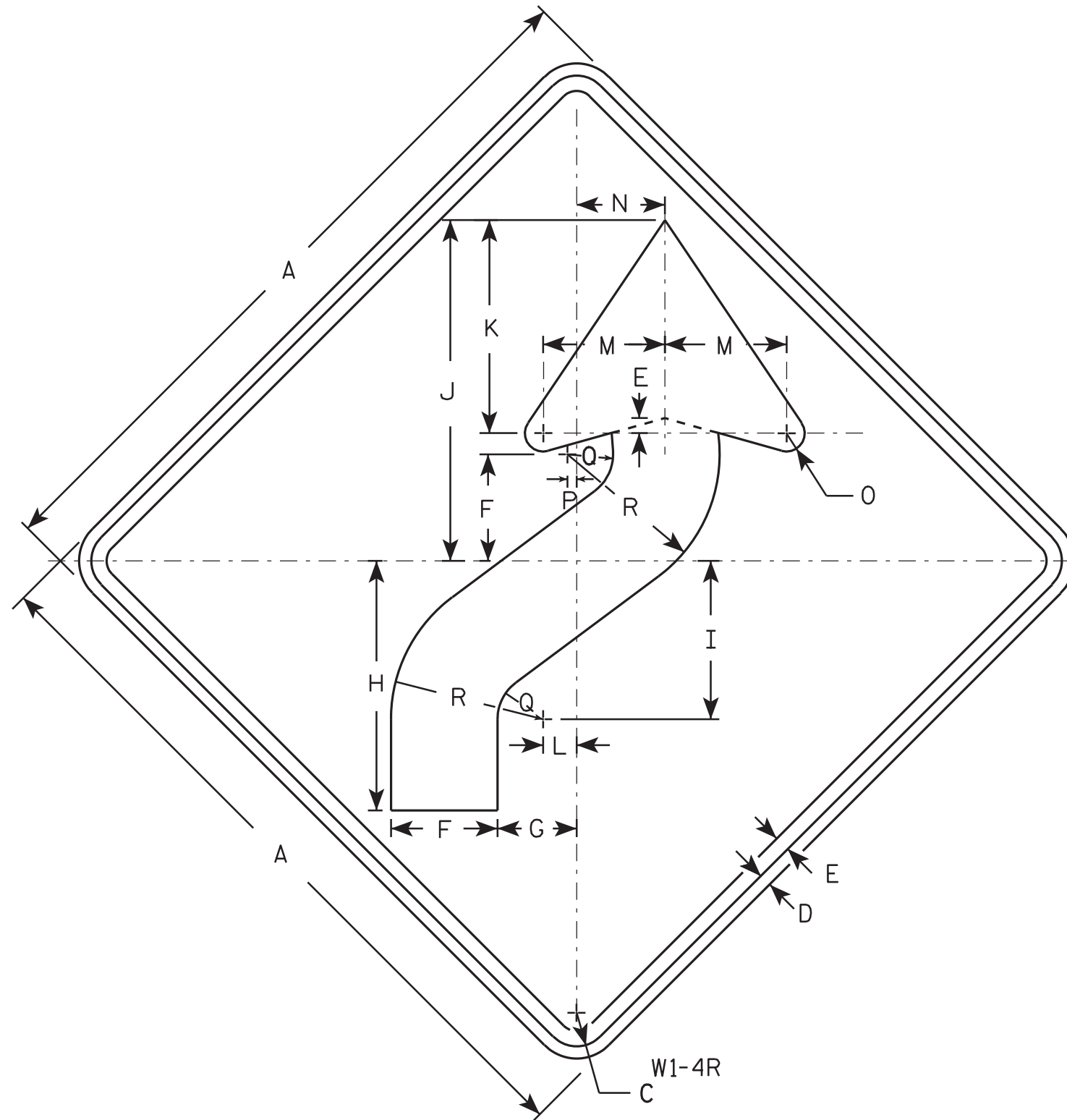
STANDARD SIGN
W1-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/15/12 PLATE NO. W1-1.11

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: _____ E



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
4. W1-4L is the same as W1-4R except the arrow is reversed along the vertical centerline.

7

7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24		1 1/8	3/8	1/2	3 1/2	2 5/8	8 1/4	5 1/4	11 1/4	7	1 1/8	4	3	5/8	1/4	1 1/2	5									4.0
2S	30		1 3/8	1/2	5/8	4 3/8	3 1/4	10 1/4	6 1/2	14	8 3/4	1 3/8	5	3 5/8	3/4	3/8	1 7/8	6 1/4									6.25
2M	36		1 5/8	5/8	3/4	5 1/4	4	12 3/8	7 7/8	16 7/8	10 1/2	1 5/8	6	4 1/2	1	1/2	2 1/4	7 1/2									9.0
3	36		1 5/8	5/8	3/4	5 1/4	4	12 3/8	7 7/8	16 7/8	10 1/2	1 5/8	6	4 1/2	1	1/2	2 1/4	7 1/2									9.0
4	36		1 5/8	5/8	3/4	5 1/4	4	12 3/8	7 7/8	16 7/8	10 1/2	1 5/8	6	4 1/2	1	1/2	2 1/4	7 1/2									9.0
5	48		2 1/4	3/4	1	7	5 1/4	16 1/2	10 1/2	22 1/2	14	2 1/4	8	6	1 1/4	5/8	3	10									16.0

STANDARD SIGN
W1 - 4

WISCONSIN DEPT OF TRANSPORTATION

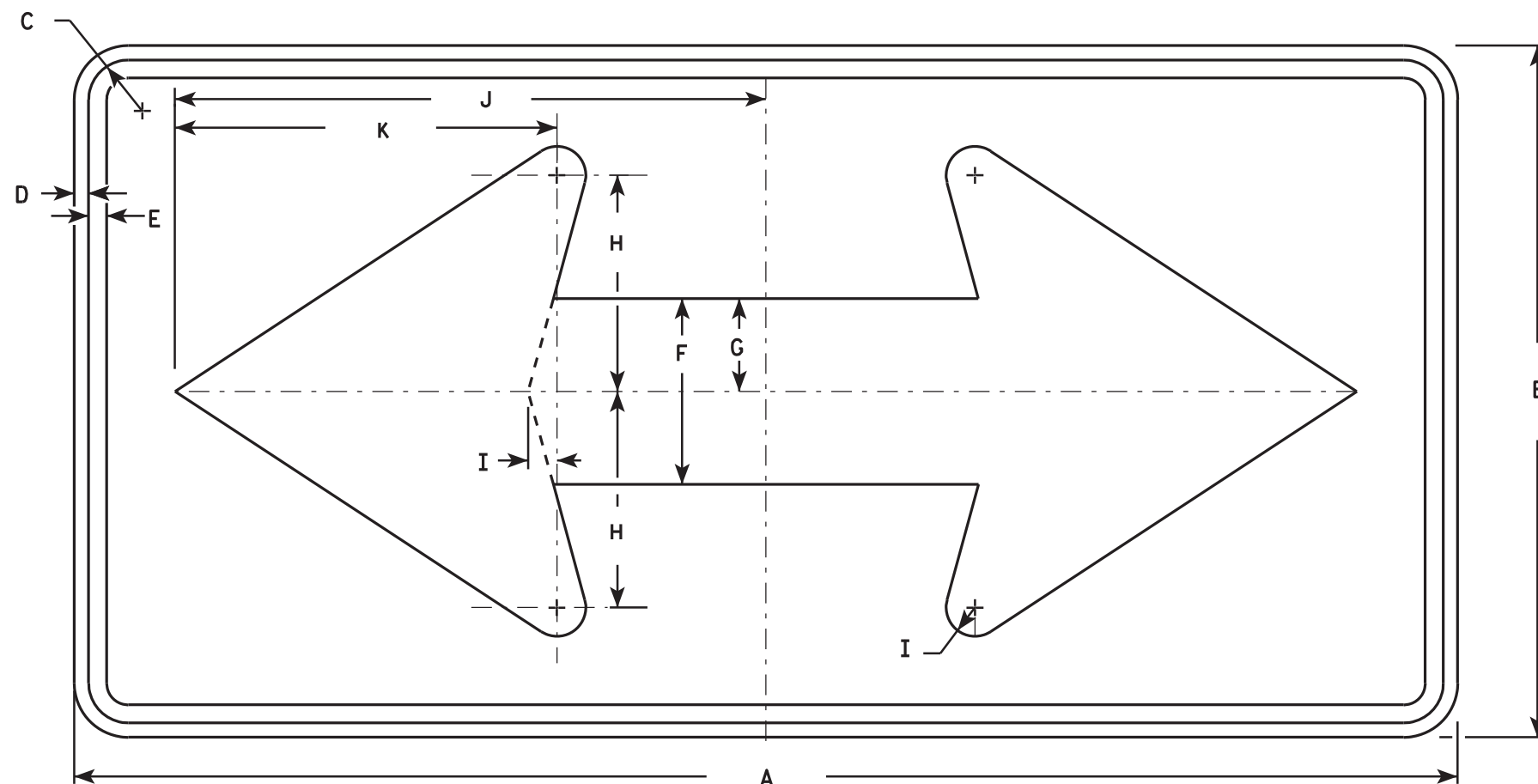
APPROVED *Matthew R. Raub*
for State Traffic Engineer

DATE 5/17/12 PLATE NO. W1-4.11

PROJECT NO: _____ HWY: _____ COUNTY: _____ SHEET NO: _____ E

NOTES

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

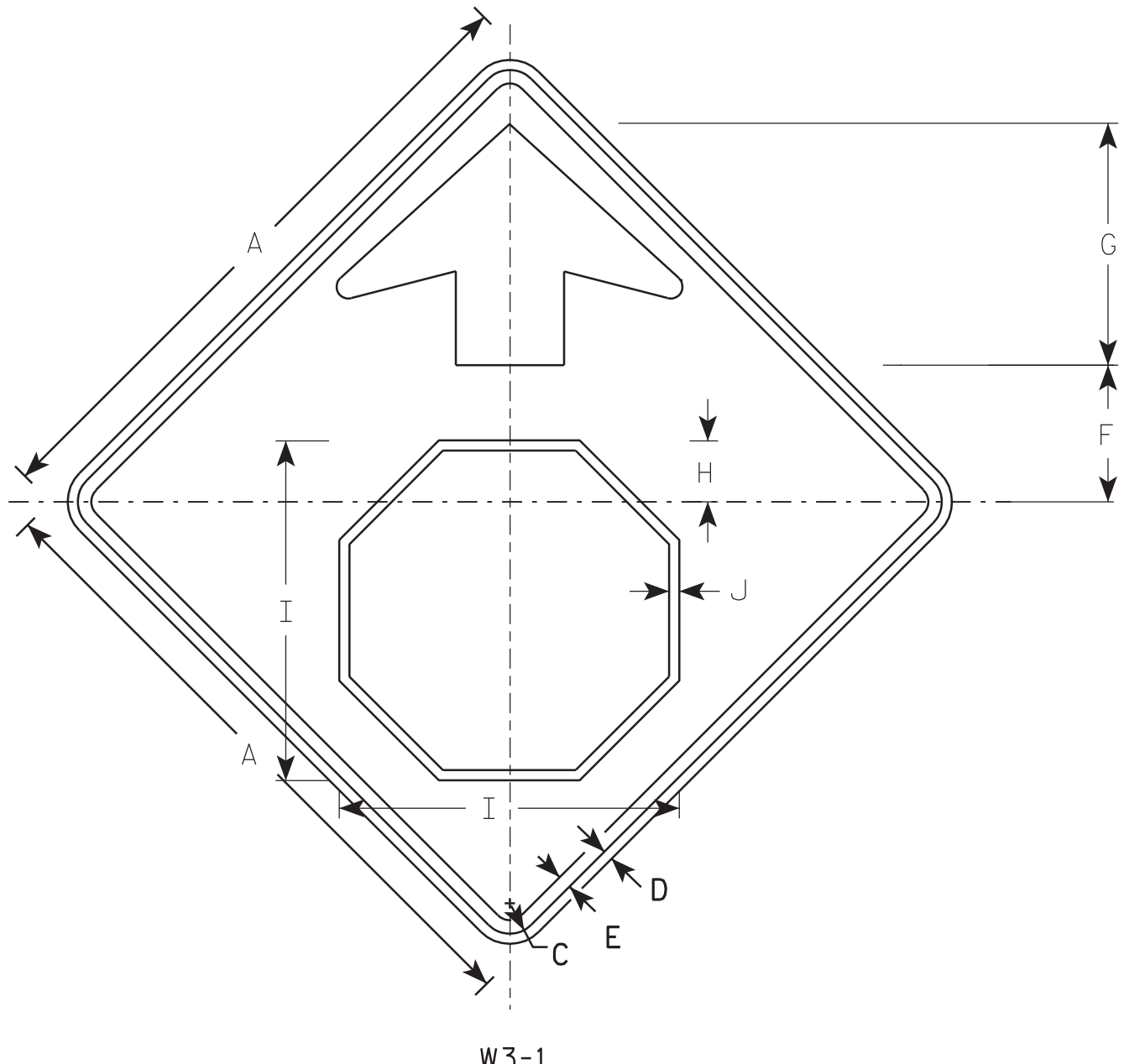


W1-7

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	36	18	1 1/8	3/8	1/2	5	2 1/2	5 3/4	3/4	15 5/8	10 1/8																4.5
2S	48	24	1 3/8	1/2	5/8	6 1/2	3 1/4	7 1/2	1	20 1/2	13 1/4																8.0
2M	48	24	1 3/8	1/2	5/8	6 1/2	3 1/4	7 1/2	1	20 1/2	13 1/4																8.0
3	60	30	1 3/8	1/2	5/8	8	4	9 1/4	1 1/4	25 3/8	16 1/4																12.5
4	60	30	1 3/8	1/2	5/8	8	4	9 1/4	1 1/4	25 3/8	16 1/4																12.5
5	96	48	2 1/4	3/4	1	13	6 1/2	15	2	41	26 1/2																32.0

STANDARD SIGN	
W1-7	
<small>WISCONSIN DEPT OF TRANSPORTATION</small>	
APPROVED	<i>Matthew R. Rauch</i> <small>For State Traffic Engineer</small>
DATE 6/7/10	PLATE NO. W1-7.7

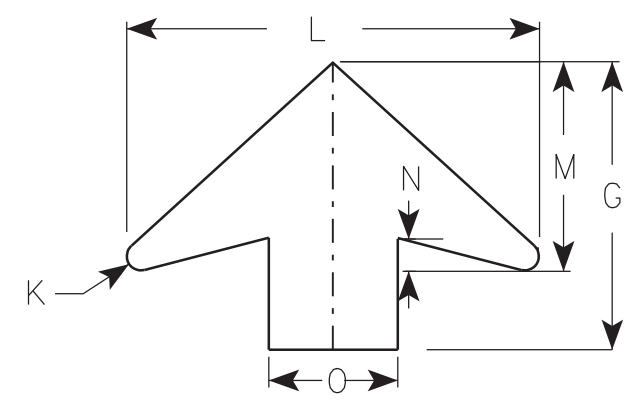
PROJECT NO:	HWY:	COUNTY:	SHEET NO:	E
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W3-1

NOTES

1. All Signs Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
 Background - YELLOW
 Arrow & Border - BLACK
 Stop Symbol - WHITE BORDER ON RED BACKGROUND



ARROW DETAIL

7

7

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	30		1 3/8	1/2	5/8	6 1/4	11 1/4	2 7/8	15 3/4	1/2	1/2	16	8	1 1/4	5												6.25
2S	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
2M	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
3	36		1 5/8	5/8	3/4	7 1/2	13 1/2	3 1/2	19	5/8	5/8	19 1/4	9 3/4	1 5/8	6												9.0
4	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0
5	48		2 1/4	3/4	1	10	17 7/8	4 1/2	25 1/8	3/4	7/8	25 5/8	13	2	8												16.0

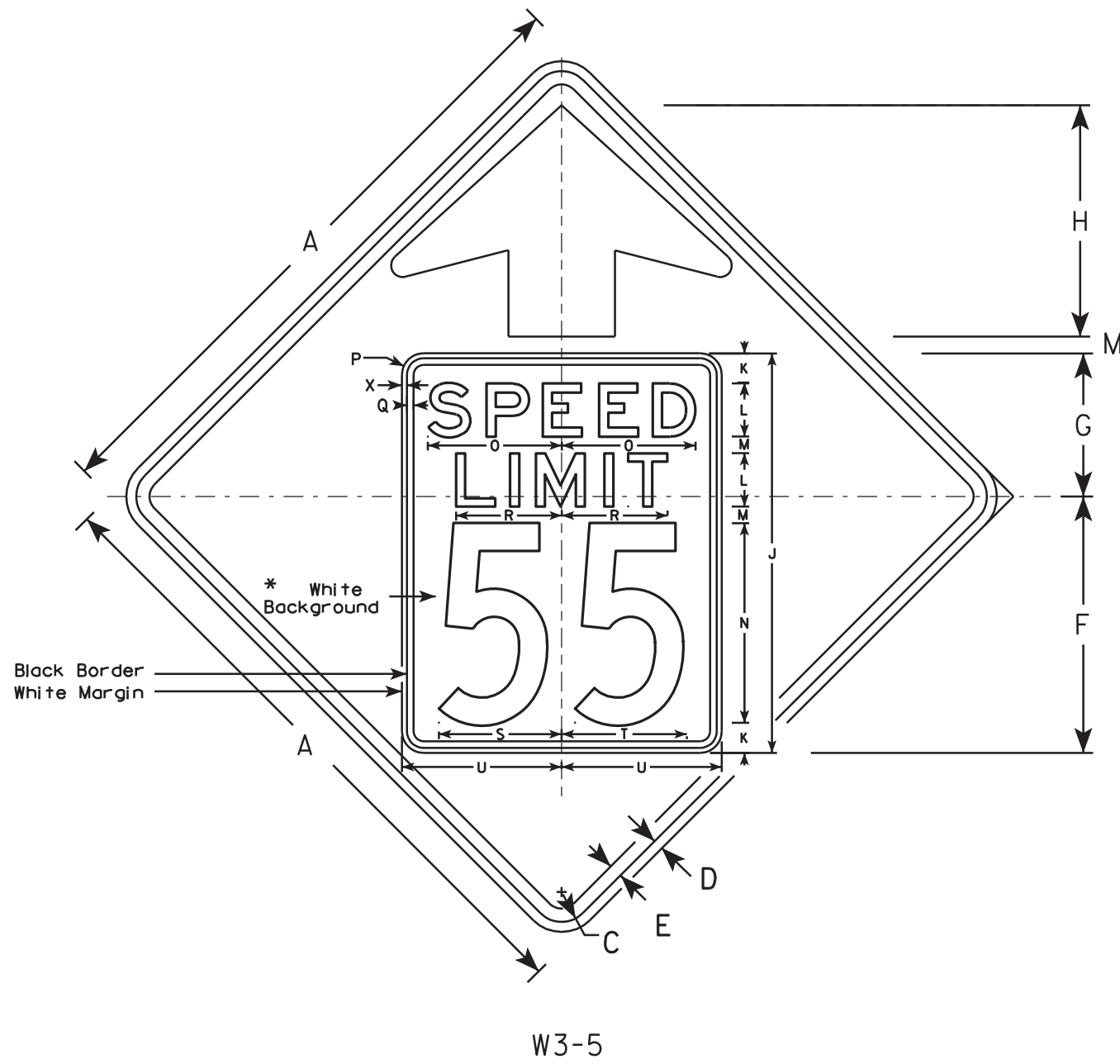
STANDARD SIGN
W3-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 6/7/10 PLATE NO. W3-1.12

PROJECT NO: _____ SHEET NO: _____ E

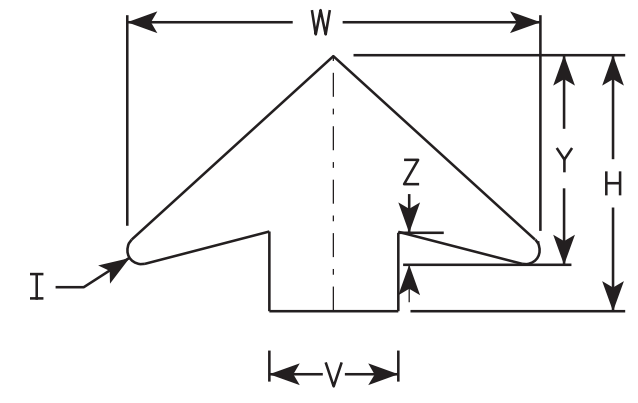


W3-5

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color: *
Background - YELLOW*
Message - BLACK
3. Message Series - C for numbers Series E for wording
4. Substitute appropriate numerals and optically adjust spacing to achieve proper balance

*Speed Limit Sign shall have a White Background



ARROW DETAIL

7

7

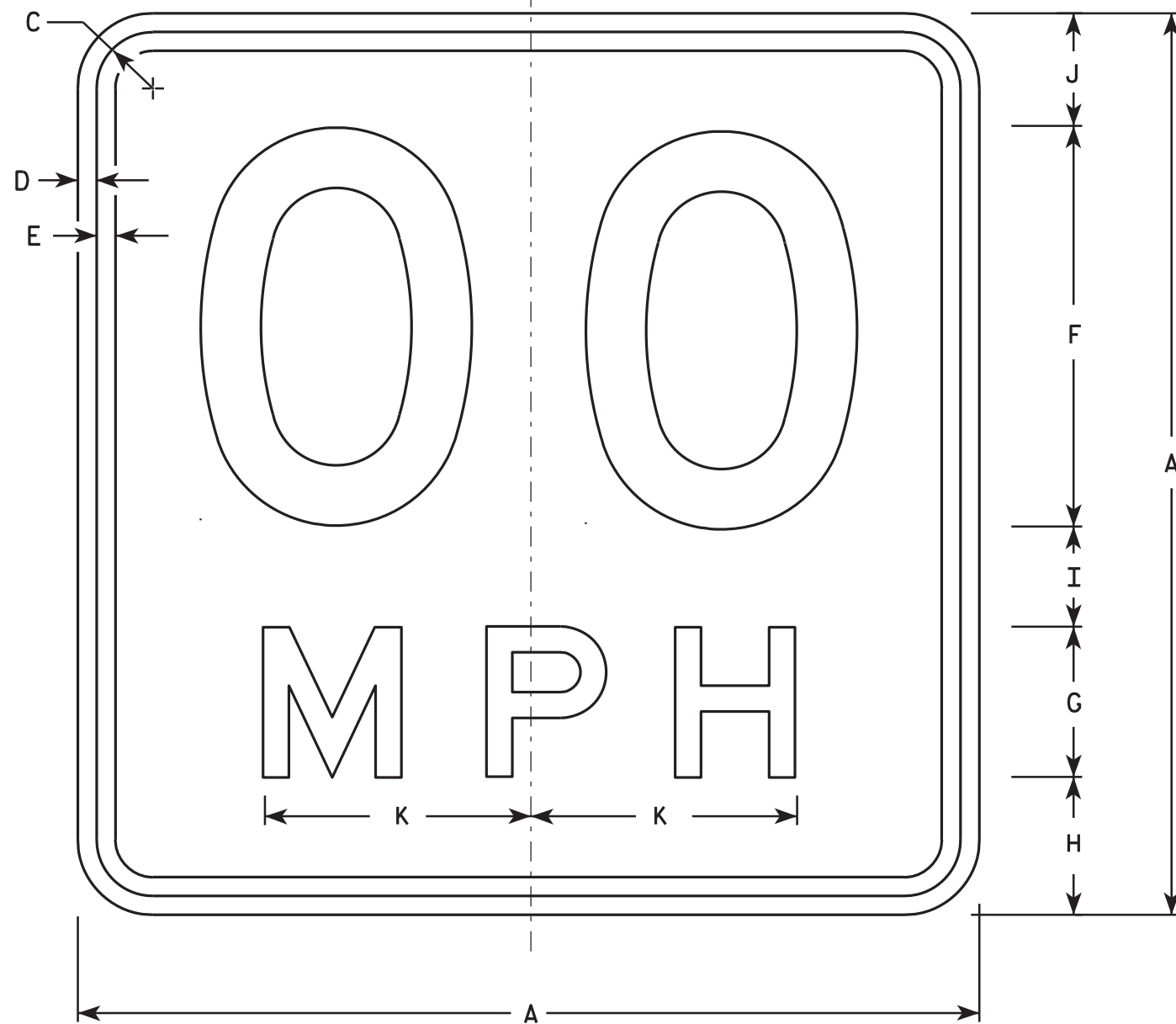
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	O	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	36		1 5/8	5/8	3/4	14 1/2	9 1/2	11 1/2	5/8	24	2	3	1	12	7 1/8	1 1/2	3/8	5 3/4	7 1/4	7 1/8	9	6	19 1/4	3/8	9 3/4	1 5/8	9.0
2M	36		1 5/8	5/8	3/4	14 1/2	9 1/2	11 1/2	5/8	24	2	3	1	12	7 1/8	1 1/2	3/8	5 3/4	7 1/4	7 1/8	9	6	19 1/4	3/8	9 3/4	1 5/8	9.0
3	36		1 5/8	5/8	3/4	14 1/2	9 1/2	11 1/2	5/8	24	2	3	1	12	7 1/8	1 1/2	3/8	5 3/4	7 1/4	7 1/8	9	6	19 1/4	3/8	9 3/4	1 5/8	9.0
4	48		2 1/4	3/4	1	19 1/4	10 3/4	17 3/8	7/8	30	2 1/4	4	1 1/4	15	10	1 5/8	1/2	8	9 1/4	9 3/8	12	8	25 5/8	3/8	13	2	16.0
5	48		2 1/4	3/4	1	19 1/4	10 3/4	17 3/8	7/8	30	2 1/4	4	1 1/4	15	10	1 5/8	1/2	8	9 1/4	9 3/8	12	8	25 5/8	3/8	13	2	16.0

STANDARD SIGN
W3-5

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/29/12 PLATE NO. W3-5.5



NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
Background - Yellow
Message - Black
3. Message Series - See Note 6
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals and optically space about centerline to achieve proper balance.
6. Line 1 is Series D
Line 2 is Series E

W13-1

* For 30" x 30" Warning Signs, use 18" x 18" W13-1 signs.
For 36" x 36" Warning Signs, use 24" x 24" W13-1 signs.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	18		1 1/8	3/8	3/8	8	3	2 3/4	2	2 1/4	5 3/8																2.25
* 2S	18		1 1/8	3/8	3/8	8	3	2 3/4	2	2 1/4	5 3/8																2.25
* 2M	18		1 1/8	3/8	3/8	8	3	2 3/4	2	2 1/4	5 3/8																2.25
3	24		1 1/8	3/8	1/2	10	4	4	2 3/4	3 1/4	6 5/8																4.00
4	36		1 5/8	5/8	3/4	16	6	5 1/2	4	4 1/2	10 5/8																9.00
5	36		1 5/8	5/8	3/4	16	6	5 1/2	4	4 1/2	10 5/8																9.00

STANDARD SIGN

W13-1

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 5/31/12 PLATE NO. W13-1.16

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

DESIGN DATA

LIVE LOAD:

DESIGN LOADING	HL-93
INVENTORY RATING FACTOR	RF=1.10
OPERATING RATING FACTOR	RF=1.94
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV)	250 KIPS

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

MATERIAL PROPERTIES:

CONCRETE MASONRY, SUPERSTRUCTURE	f'c = 4,000 P.S.I.
ALL OTHER	f'c = 3,500 P.S.I.
HIGH-STRENGTH BAR STEEL REINFORCEMENT, GRADE 60	fy = 60,000 P.S.I.
36-INCH PRESTRESSED GIRDER CONCRETE MASONRY	f'c = 8,000 P.S.I.
STRANDS 0.6 INCH DIA. WITH ULTIMATE TENSILE STRENGTH	fy = 270,000 P.S.I.

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON PILING STEEL HP 10-INCH X 42 LB DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 180 TONS** PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATE 50 FT PILE LENGTHS AT WEST ABUTMENT AND 55 FT PILE LENGTHS AT EAST ABUTMENT. PILE POINTS REQUIRED AT ALL LOCATIONS.

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

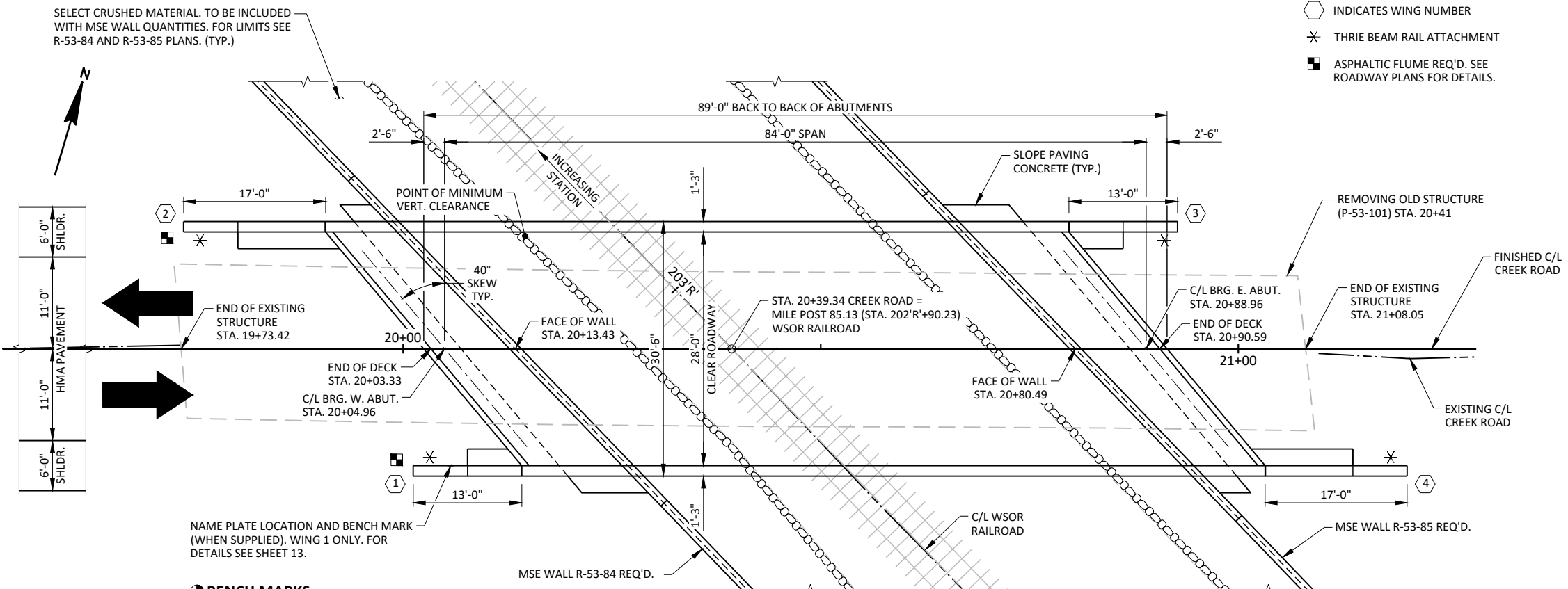
TRAFFIC DATA

A.D.T. (2020)	480
A.D.T. (2040)	520
DESIGN SPEED	50 M.P.H.

LIST OF DRAWINGS

GENERAL PLAN	1.
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SUBSURFACE EXPLORATION	3.
WEST ABUTMENT	4.
WEST ABUTMENT DETAILS	5.
EAST ABUTMENT	6.
EAST ABUTMENT DETAILS	7.
GIRDER LAYOUT	8.
36W-INCH PRESTRESSED GIRDER DETAILS	9.
STEEL DIAPHRAGM	10.
SUPERSTRUCTURE	11.
SUPERSTRUCTURE DETAILS	12.
SINGLE SLOPE PARAPET 42SS	13.

- INDICATES WING NUMBER
- * THRIE BEAM RAIL ATTACHMENT
- ASPHALTIC FLUME REQ'D. SEE ROADWAY PLANS FOR DETAILS.

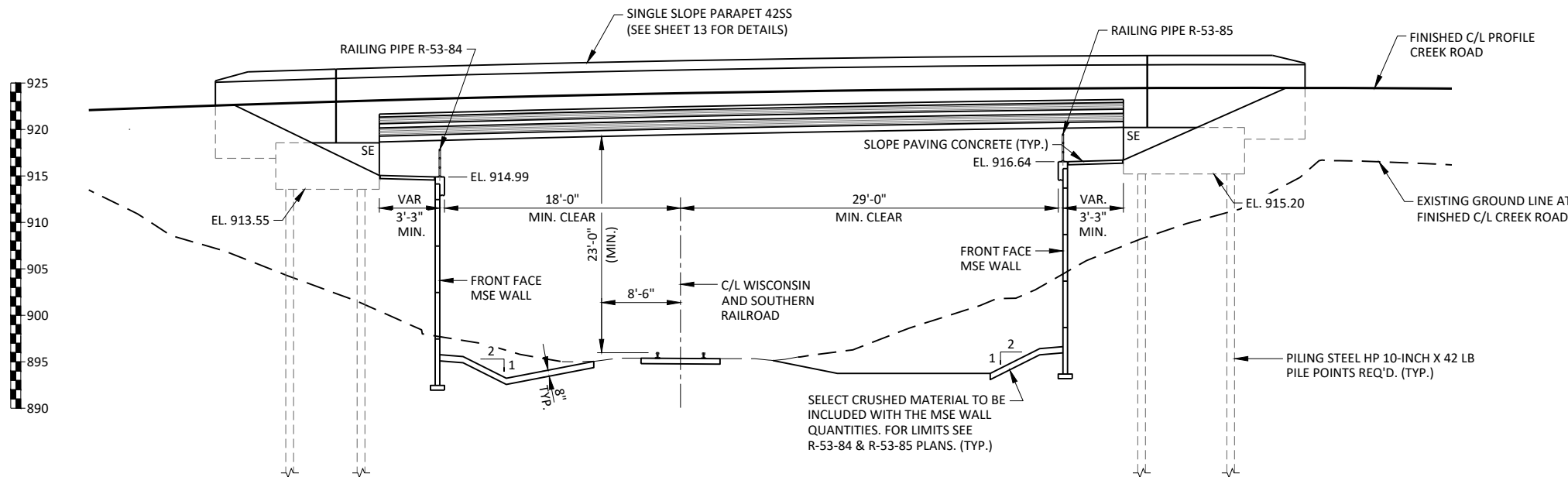


PLAN B-53-177

(SINGLE-SPAN 36W-INCH PRESTRESSED GIRDER STRUCTURE)

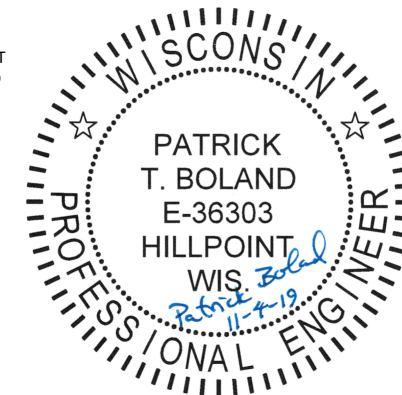
BENCH MARKS

NO.	STA.	DESCRIPTION	ELEV.
4	8+08	3/4" IRON REBAR SET, 24.0' LT	897.12
5	16+81	3/4" IRON REBAR SET, 19.3' LT	906.61
101	19+92	STAR SPIKE IN PPOL, 39.8' RT	910.78
7	30+00	3/4" IRON REBAR SET, 48.3' RT	906.22



ELEVATION

(NORMAL TO WISCONSIN AND SOUTHERN RAILROAD)



DESIGN CONSULTANT
PATRICK BOLAND, PE
(608) 588-7484

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

NO.	DATE	REVISION	BY

JEWELL
associates engineers, inc.
Engineers - Architects - Surveyors

560 SUNRISE DRIVE
SPRING GREEN, WI 53588
OFFICE: (608) 588-7484
www.jewellassoc.com

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED *William C. Dreher* SDR **11/05/19**
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-53-177

CREEK ROAD OVER WSOR RAILROAD

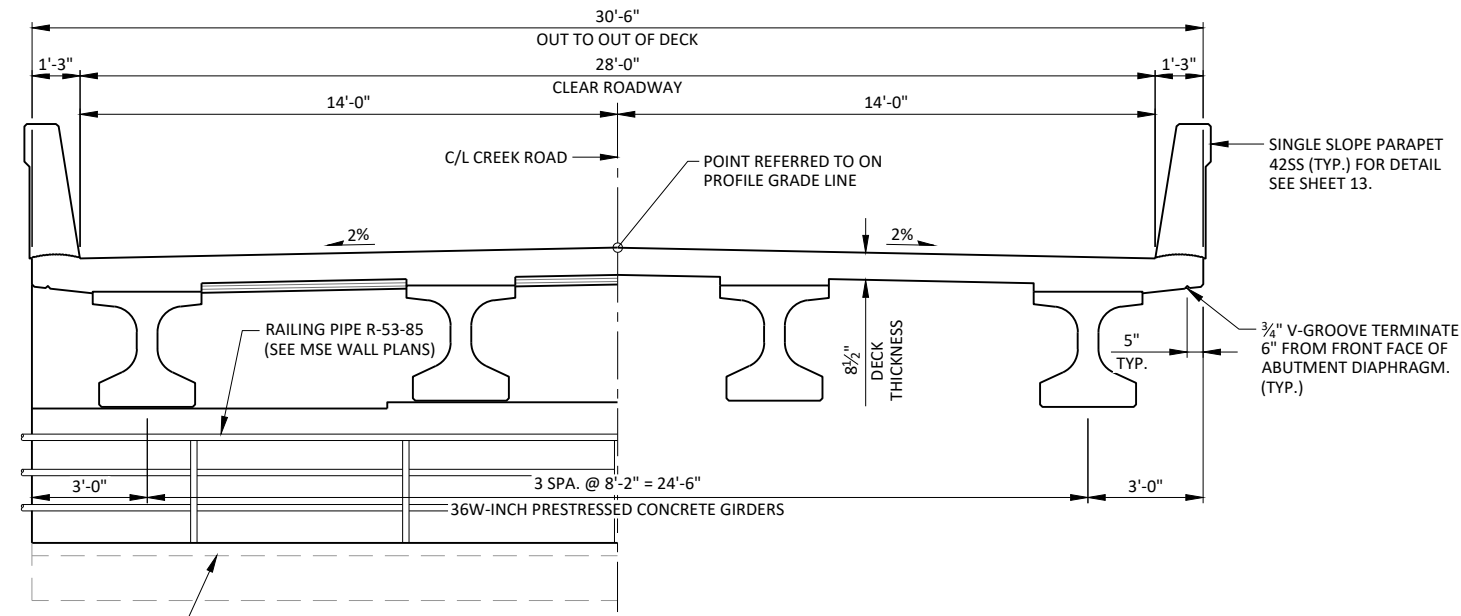
COUNTY: **ROCK** TOWN/CITY/VILLAGE: **BRADFORD**

DESIGN SPEC: **AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS**

DESIGNED BY: **PTB** DESIGN CK'D: **RBH** DRAWN BY: **PTB** PLANS CK'D: **RBH**

GENERAL PLAN

SHEET 1 OF 13



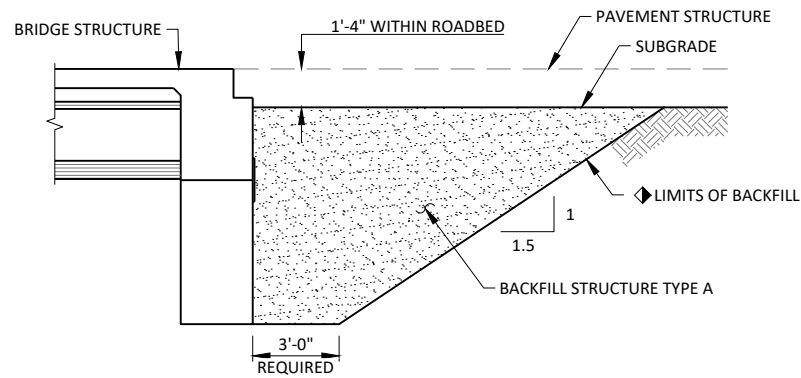
4" CONCRETE REQ'D. PAID FOR AS SLOPE PAVING CONCRETE.

AT ABUTMENT

IN SPAN

PROPOSED CROSS-SECTION THROUGH ROADWAY

LOOKING EAST



BACKFILL STRUCTURE TYPE A PAY LIMITS. BACKFILL BEYOND PAY LIMITS SHALL BE INCIDENTAL TO THE BID ITEM "EXCAVATION FOR STRUCTURES B-53-177". LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

BACKFILL STRUCTURE DETAIL

(TYPICAL AT BOTH ABUTMENTS)

TOTAL ESTIMATED QUANTITIES

ITEM NUMBER	ITEM DESCRIPTION	UNIT	W. ABUT.	SUPER.	E. ABUT.	TOTALS
203.0200	REMOVING OLD STRUCTURE STA. 20+41	LS	--	--	--	1
203.0225.S	DEBRIS CONTAINMENT P-53-101	LS	--	--	--	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-53-177	LS	--	--	--	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	221	--	209	430
502.0100	CONCRETE MASONRY BRIDGES	CY	48	132	47	227
502.3200	PROTECTIVE SURFACE TREATMENT	SY	--	270	--	270
502.3210	PIGMENTED SURFACE SEALER	SY	16	88	16	120
503.0137	PRESTRESSED GIRDER TYPE I 36W-INCH	LF	--	340	--	340
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2,680	--	2,430	5,110
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,580	22,570	1,630	25,780
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	--	8	--	8
506.4000	STEEL DIAPHRAGMS B-53-177	EACH	--	6	--	6
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	7	--	7	14
550.0500	PILE POINTS	EACH	8	--	8	16
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	400	--	440	840
604.0400	SLOPE PAVING CONCRETE	SY	25	--	25	50
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	2	--	2	4
NON-BID ITEMS						
	FILLER	SIZE	--	--	--	1/2" & 3/4"
	EXPANDED POLYSTYRENE	SIZE	--	--	--	1"
	NAME PLATE					

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

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

JOINT FILLER SHALL CONFORM TO A.A.S.H.T.O. DESIGNATION MI53, TYPE I, II OR III OR A.A.S.H.T.O. DESIGNATION M213.

THE HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE PRESTRESSED GIRDER DETAILS SHEET, WHICH IS THE MAXIMUM HAUNCH QUANTITY FOR WHICH THE CONTRACTOR WILL BE PAID.

THE SLOPE OF FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH 4" CONCRETE TO BE PAID AS "SLOPE PAVING CONCRETE" TO THE EXTENT SHOWN ON SHEET 1 AND IN THE ABUTMENT DETAILS, OR AS DIRECTED BY THE ENGINEER IN THE FIELD.

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

APPLY PROTECTIVE SURFACE TREATMENT TO THE ENTIRE TOP OF THE DECK. APPLY PIGMENTED SURFACE SEALER TO THE INSIDE, TOP, AND END FACES OF PARAPETS (CONCRETE MATERIAL ONLY), INCLUDING PARAPETS ON ABUTMENT WINGS.

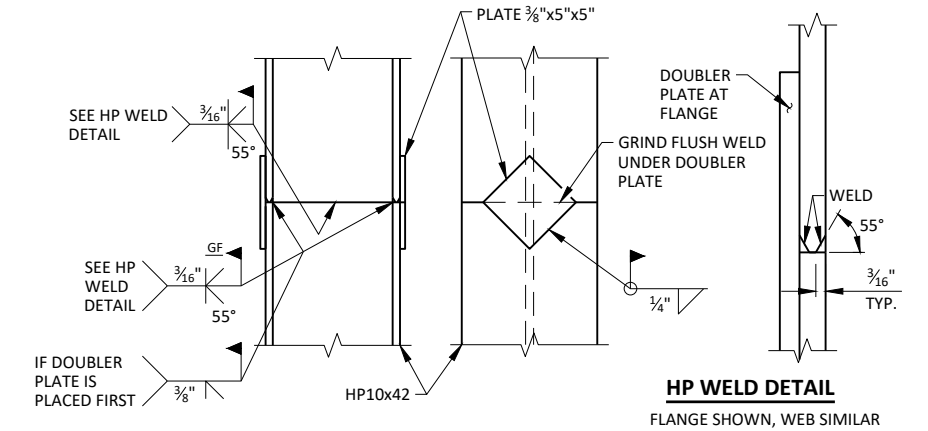
THE EXISTING STRUCTURE (P-53-101) IS A NINE SPAN TIMBER DECK GIRDER STRUCTURE WITH A TIMBER DECK. THE STRUCTURE IS 20.0' WIDE BY 134.6' LONG AND SHALL BE REMOVED.

ALL STATIONS AND ELEVATIONS SHOWN ARE IN FEET.

THE EXISTING GROUNDLINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

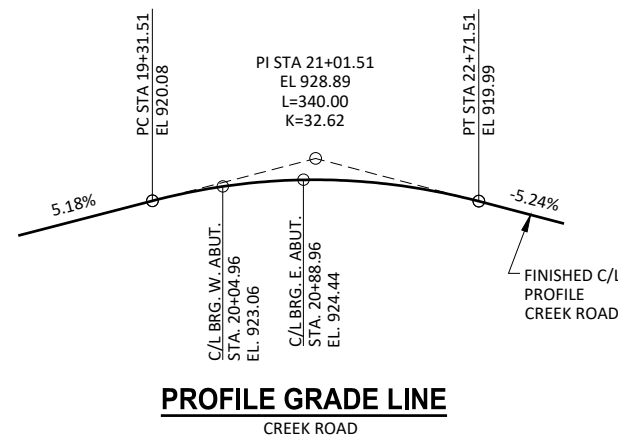
COORDINATE THE CONSTRUCTION OF BRIDGE B-53-177 WITH THE CONSTRUCTION OF RETAINING WALLS R-53-84 AND R-53-85.

THE FIRST DIGIT OF A BAR MARK SIGNIFIES THE BAR SIZE.



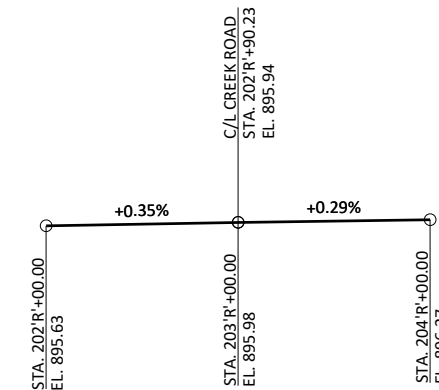
PILE SPLICE DETAIL

STEEL "HP" PILE MATERIAL SHALL BE ASTM A 572 GRADE 50.



PROFILE GRADE LINE

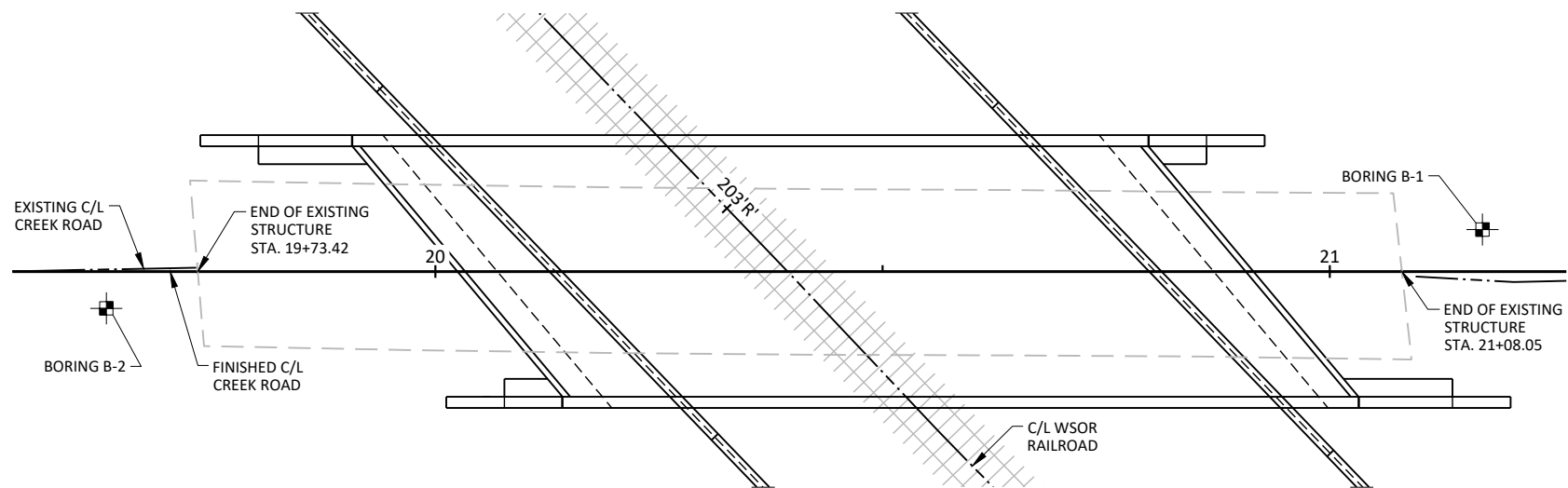
CREEK ROAD



PROFILE GRADE LINE

WSOR RAILROAD (LOOKING SOUTHWEST)

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
CROSS SECTION AND QUANTITIES			SHEET 2 OF 13



PLAN B-53-177

SOIL BORINGS

BORING NUMBER	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B-1	01/09/19	241,402.2	552,510.6
B-2	01/14/19	241,350.4	552,365.5

BORINGS & REPORT COMPLETED BY: NUMMELIN TESTING SERVICES, INC. 5620 WOODLAND DRIVE WAUNAKEE, WI 53597

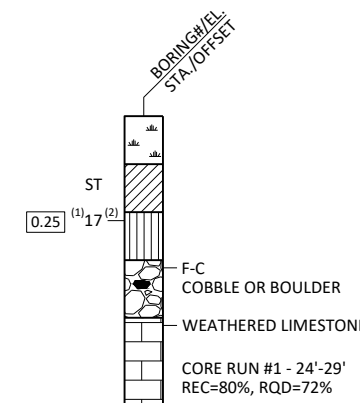
STATE PROJECT NUMBER

3614-00-75

MATERIAL SYMBOLS

Asphalt	Topsoil	Peat
Concrete	Fill	Gravel
Sand	Clay	Silt
Boulders or Cobbles	Limestone	Bedrock (unknown)
Shale	Sandstone	Igneous/meta

LEGEND OF BORING



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)
 (2) UNLESS OTHERWISE SPECIFIED, THE SPT 'N' VALUE IS BASED ON AASHTO T-206 STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

GROUND WATER ELEVATIONS

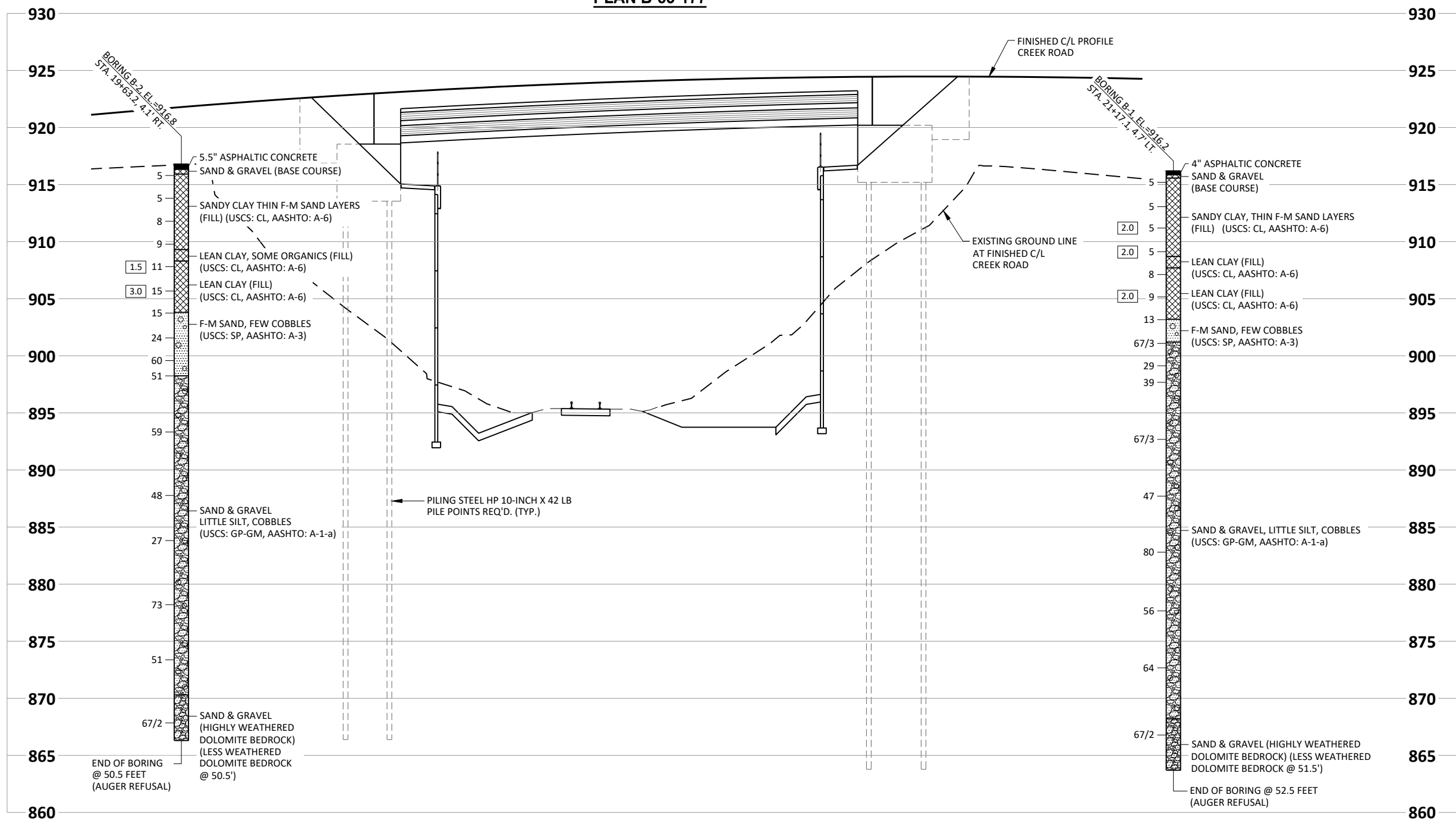
- AT TIME OF DRILLING
- END OF DRILLING
- AFTER DRILLING

ABBREVIATIONS

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

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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



8

8

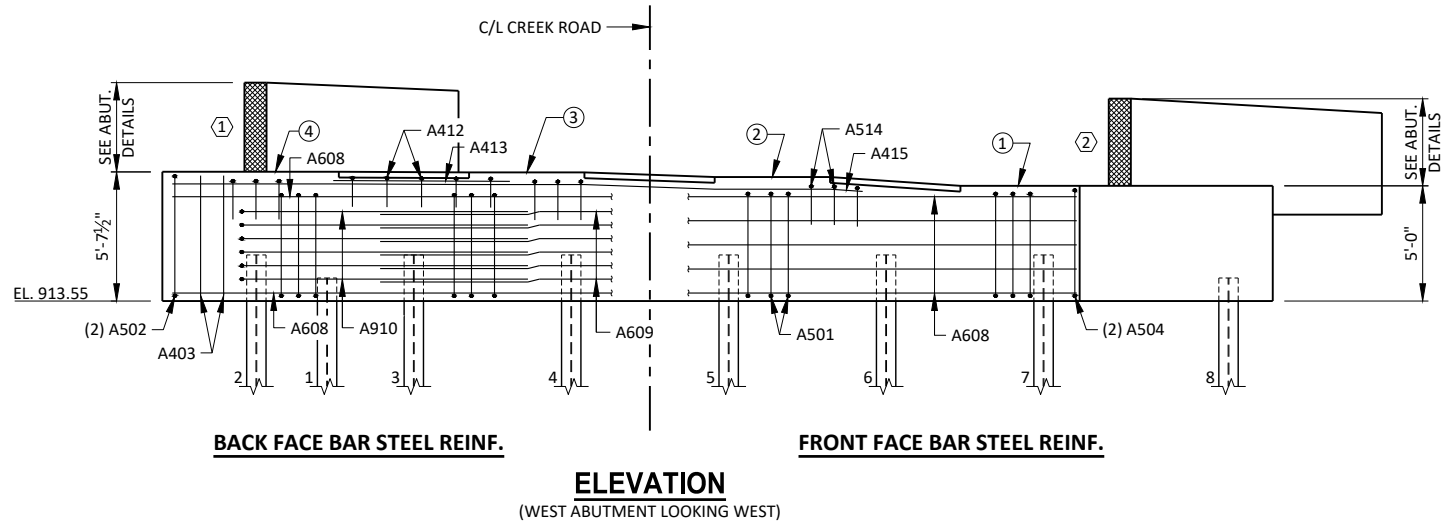
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY: PTB		PLANS CK'D: RBH	
SUBSURFACE EXPLORATION		SHEET 3 OF 13	

LEGEND

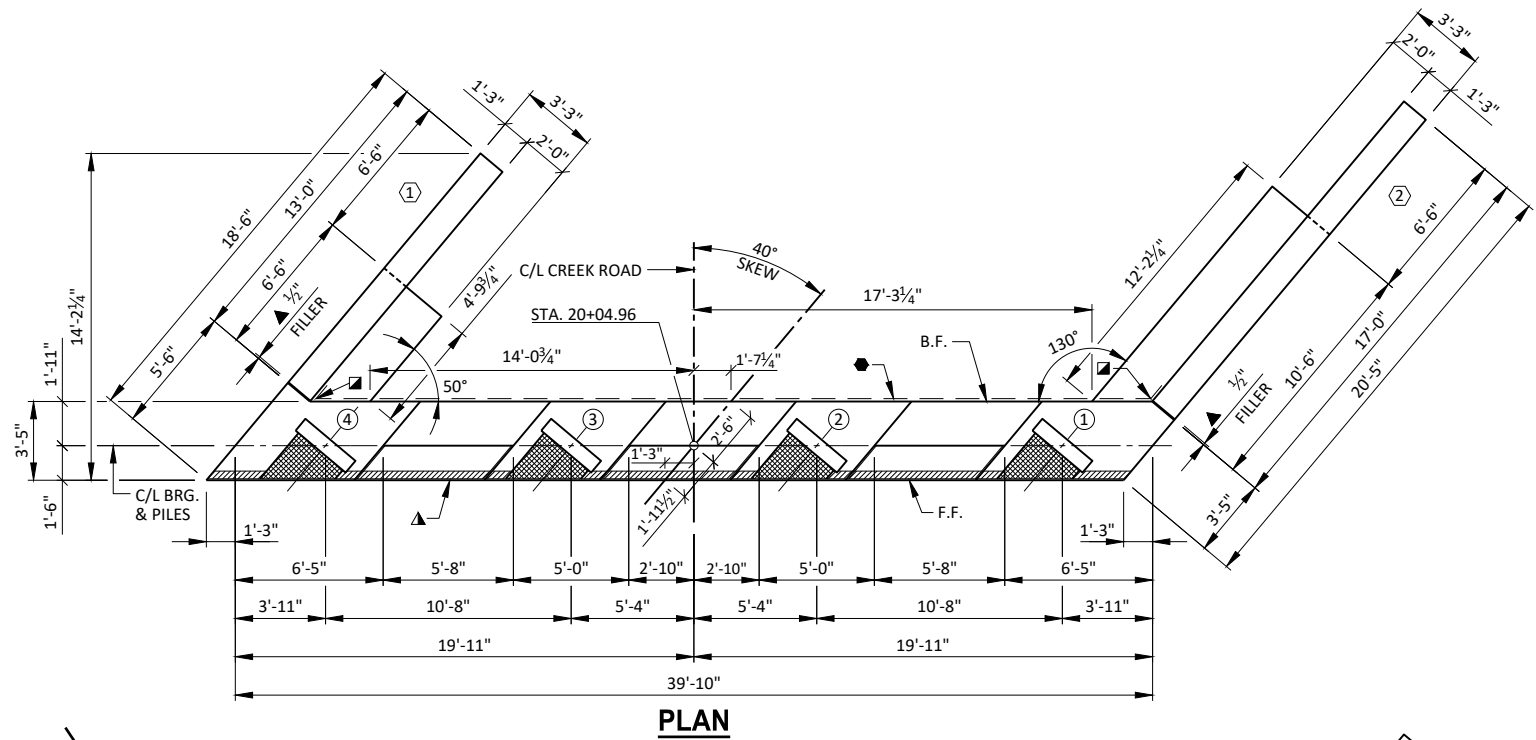
- ◆ 18" RUBBERIZED MEMBRANE WATERPROFING (HORIZONTAL)
- VERTICAL 18" RUBBERIZED MEMBRANE WATERPROFING. AT WINGWALLS EXTEND FROM 9" BELOW BRIDGE SEAT TO BOTTOM OF PAVING NOTCH.
- ▲ 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON- STAINING GRAY, NON-BITUMINUOS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE)
- ▲ 4"x½" PREFORMED FILLER, EXTEND FULL LENGTH OF ABUTMENTS BETWEEN EDGES OF DECK.
- ☆ ¾" CORK FILLER ON VERTICAL GIRDER SEAT FACES THAT RUN PARALLEL WITH GIRDER.
- ½"x8"x2'-10" NON-LAMINATED ELASTOMERIC BEARING PAD.
- PILE SPACING MEASURED AT BASE OF ABUTMENT BODY.
- ▽ STEEL TROWEL ENTIRE TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS AND SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".
- SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER AND EXPANDED POLYSTYRENE WITH NON- STAINING GRAY, NON-BITUMINUOS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE)
- INDICATES GIRDER LINE.
- ◇ INDICATES WING NUMBER.

NOTES

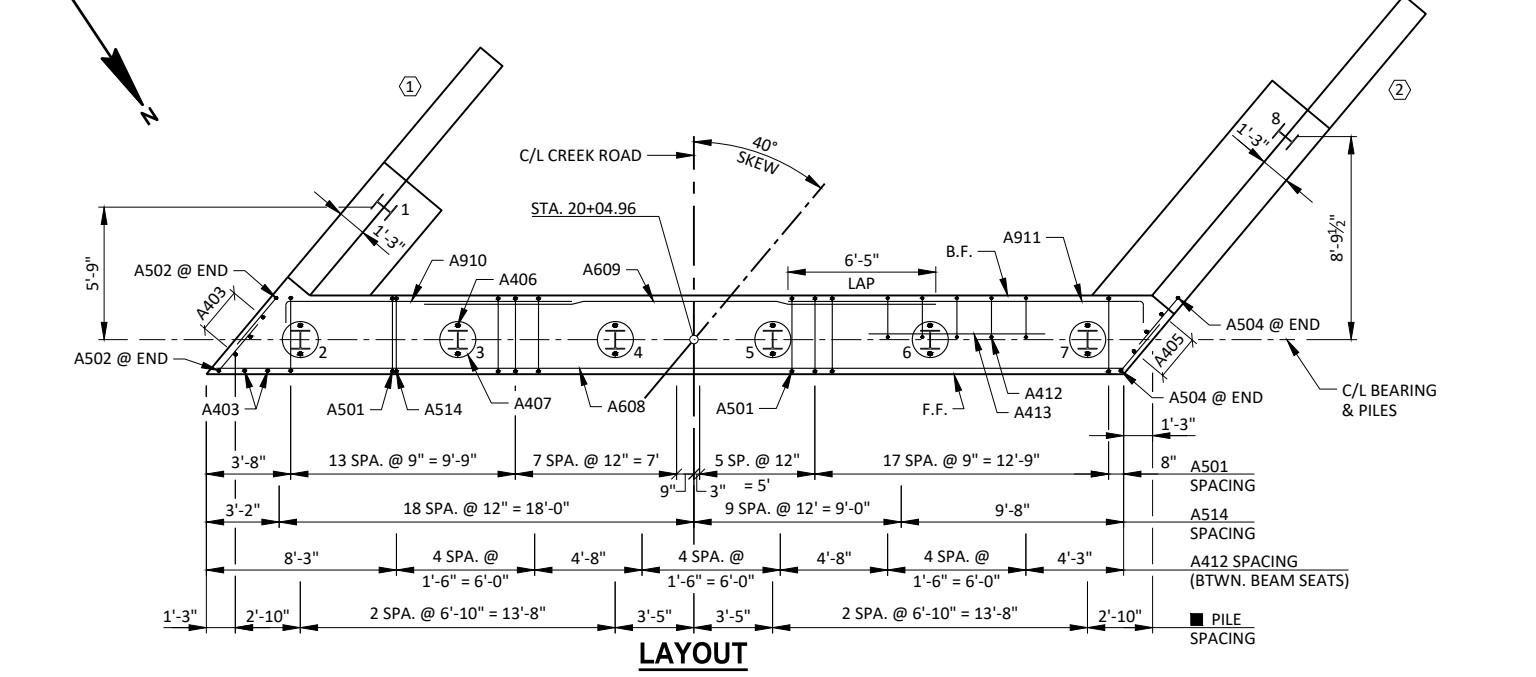
- SOME BARS HAVE BEEN OMITTED FOR CLARITY. SEE SHEET 5 FOR BILL OF BARS.
- SPACE REINFORCEMENT TO MISS PILING.
- F.F. - FRONT FACE
- B.F. - BACK FACE



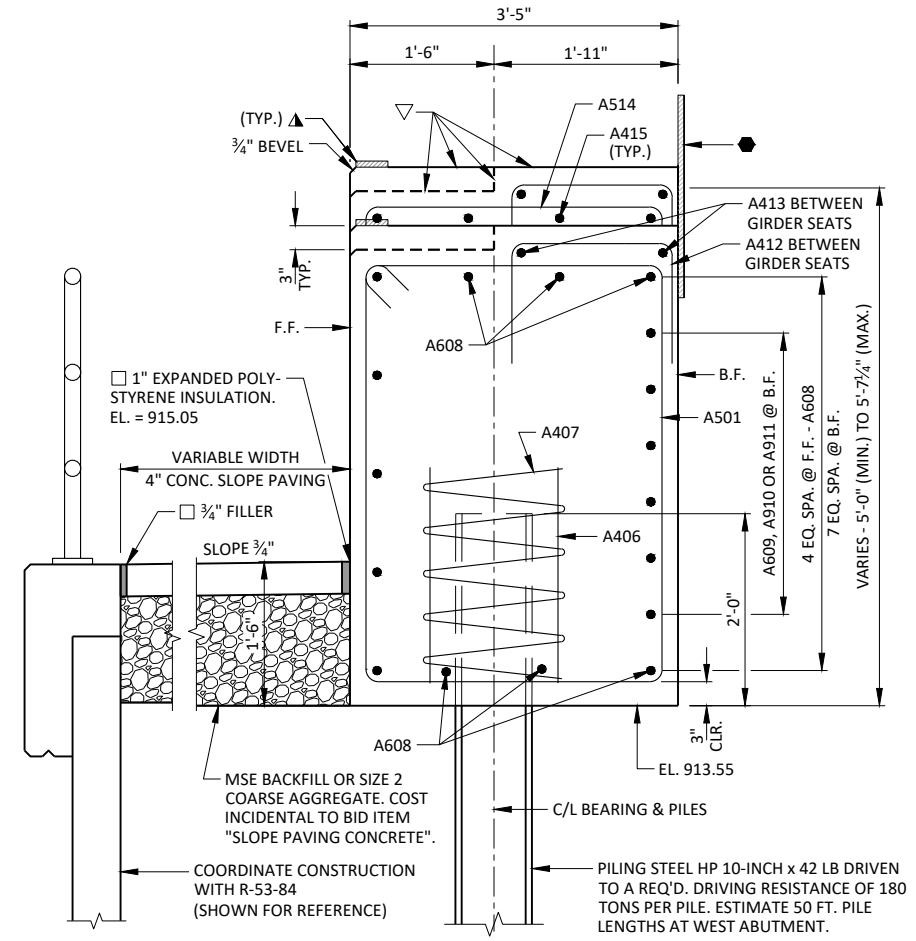
ELEVATION
(WEST ABUTMENT LOOKING WEST)



PLAN



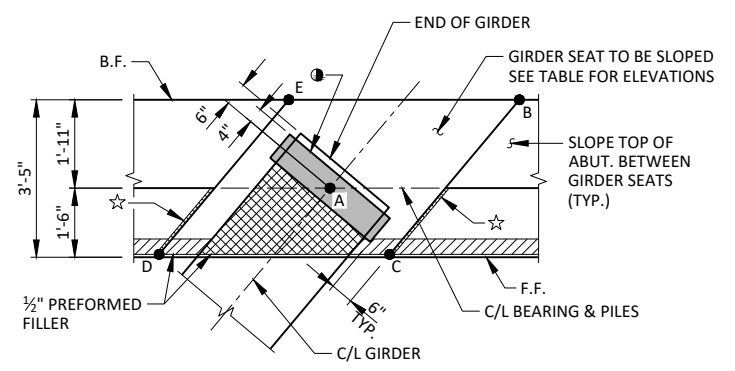
LAYOUT



TYPICAL SECTION THROUGH ABUTMENT BODY

GIRDER SEAT ELEVATIONS

GIRDER NUMBER	POINT ON GIRDER SEAT				
	A	B	C	D	E
①	918.55	918.44	918.56	918.65	918.53
②	918.93	918.83	918.94	919.02	918.91
③	919.13	919.04	919.14	919.21	919.11
④	919.16	919.07	919.17	919.23	919.14



GIRDER SEAT DETAIL

INTERIOR GIRDER SHOWN.
EXTERIOR GIRDERS SIMILAR.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
WEST ABUTMENT			SHEET 4 OF 13

1,580 LB (COATED)
2,680 LB (UNCOATED)

NOTES

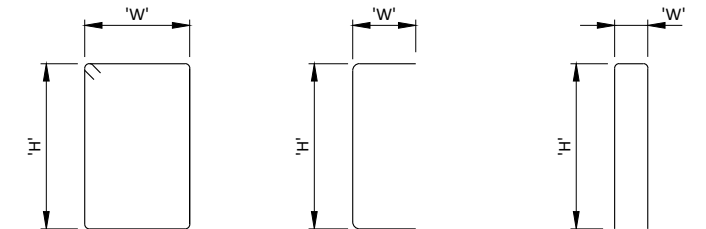
SOME BARS HAVE BEEN OMITTED FOR CLARITY. SEE THIS SHEET FOR BILL OF BARS.

BILL OF BARS
WEST ABUTMENT

BAR MARK	NO. REQ'D.	LENGTH	BENT	COAT	LOCATION
A501	44	15-4	X		BODY - VERT. - STIRRUP
A502	2	9-11	X		BODY - VERT. - STIRRUP AT S. END
A403	5	5-2			BODY - VERT. - AT S. END
A504	2	9-4	X		BODY - VERT. - STIRRUP AT N. END
A405	3	4-7			BODY - VERT. - AT N. END
A406	12	3-9			BODY - VERT. - 2 PER PILE
A407	6	28-3	X		BODY - VERT. - SPIRAL - 1 PER PILE
A608	11	39-4			BODY - HORIZ.
A609	6	22-2			BODY - HORIZ. - B.F. - AT CENTER
A910	6	13-0	X		BODY - HORIZ. - B.F. - AT N. END
A911	6	16-0	X		BODY - HORIZ. - B.F. - AT S. END
A412	15	4-5	X		BODY - VERT. - TOP BETWEEN SEATS
A413	6	7-8			BODY - HORIZ. - TOP BETWEEN SEATS
A514	28	6-2	X		BODY - VERT. - TOP
A415	4	27-6			BODY - HORIZ. - TOP
A516	5	16-8	X	X	WING 1 - VERT. - STIRRUP
A517	6	11-4		X	WING 1 - HORIZ. - F.F.
A718	7	8-10	X		WING 1 - HORIZ. - B.F.
A719	2	9-2		X	WING 1 - HORIZ. - TOP
A520	9	11-2	X	X	WING 1 - VERT. - TOP
A521	8	12-2	X	X	WING 1 - VERT. - TOP
A422	5	7-9		X	WING 1 - HORIZ. - BOTTOM
A423	8	12-7	X		WING 1 - HORIZ. - F.F. & B.F.
A624	2	12-7	X		WING 1 - HORIZ. - TOP
A525	11	15-6	X	X	WING 2 - VERT. - STIRRUP
A526	6	13-7	X		WING 2 - HORIZ. - F.F.
A727	7	14-7	X		WING 2 - HORIZ. - B.F.
A728	2	14-4	X		WING 2 - HORIZ. - TOP
A529	9	10-6	X	X	WING 2 - VERT. - TOP
A530	14	12-2	X	X	WING 2 - VERT. - TOP
A431	5	7-9	X		WING 2 - HORIZ. - BOTTOM
A432	7	16-7	X		WING 2 - HORIZ. - F.F. & B.F.
A633	2	16-7	X		WING 2 - HORIZ. - TOP

NOTES: THE FIRST DIGIT OF A BAR MARK SIGNIFIES THE BAR SIZE.

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.



MARK	'W'	'H'
A501	3-1	4-4
A516	2-11	5-2
A525	2-11	4-7

A501, A516, A525

MARK	'W'	'H'
A502	2-6	5-2
A504	2-6	4-7

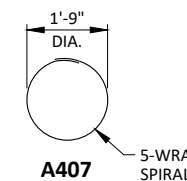
A502, A504

MARK	'W'	'H'
A412	1-7	1-6
A514	3-1	1-8
A520	0-11	5-3
A521	0-11	5-9
A529	0-11	4-11
A530	0-11	5-9

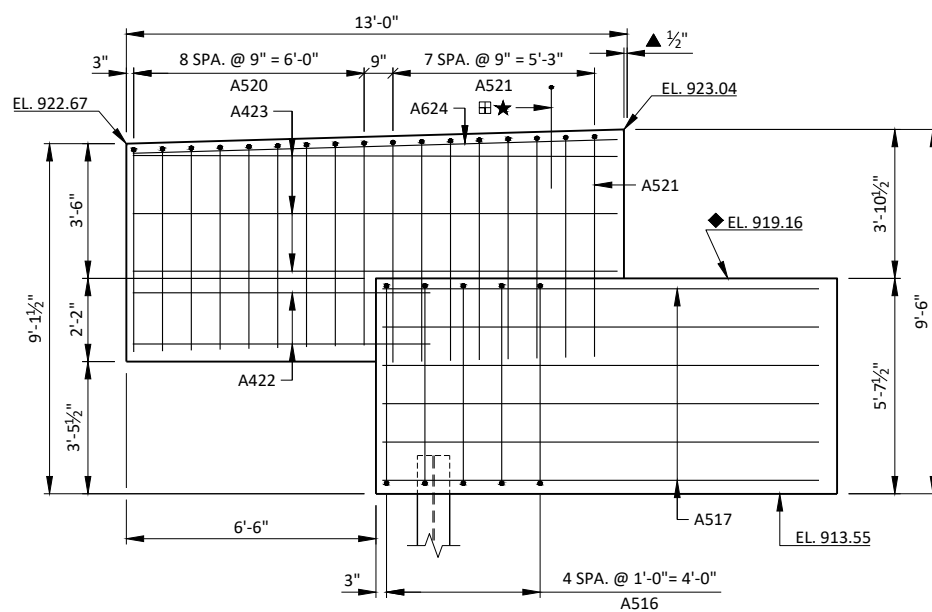
A412, A514, A520, A521, A529, A530

STD. 90° HOOK

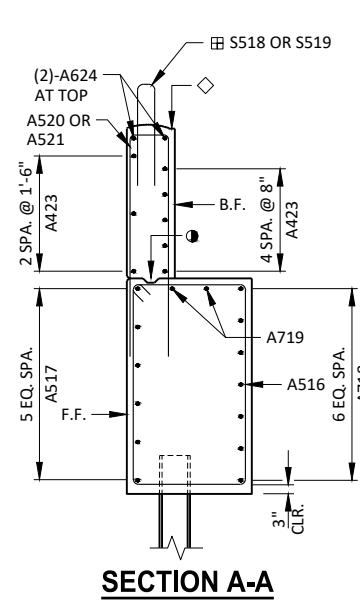
A910, A911



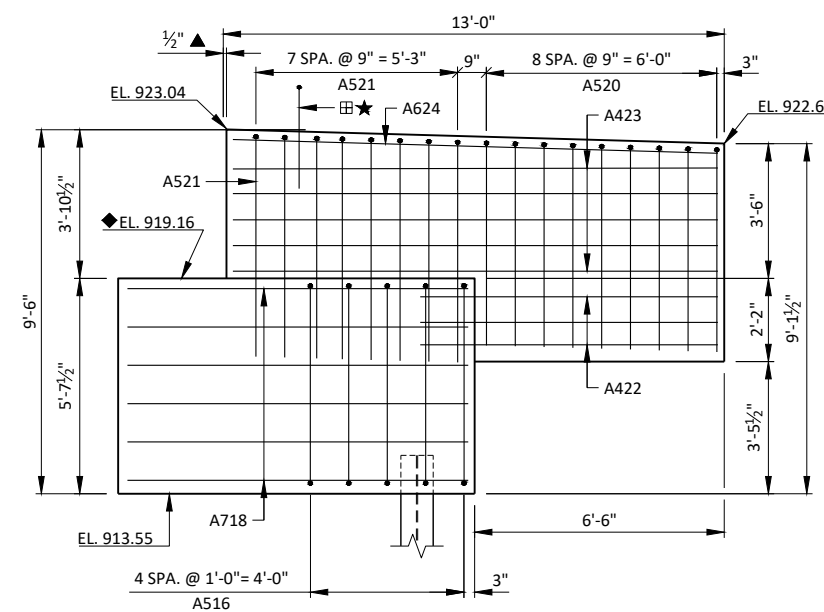
A407 - 5-WRAP SPIRAL



F.F. ELEVATION - WING 1



SECTION A-A



B.F. ELEVATION - WING 1

LEGEND

OPTIONAL CONSTRUCTION JOINT. FORM KEYWAY WITH A BEVELED 2X6. PLACE 18\" RUBBERIZED MEMBRANE WATERPROOFING AT BACK FACE AND 3/4\" \"U\" GROOVE AT FRONT FACE IF USED.

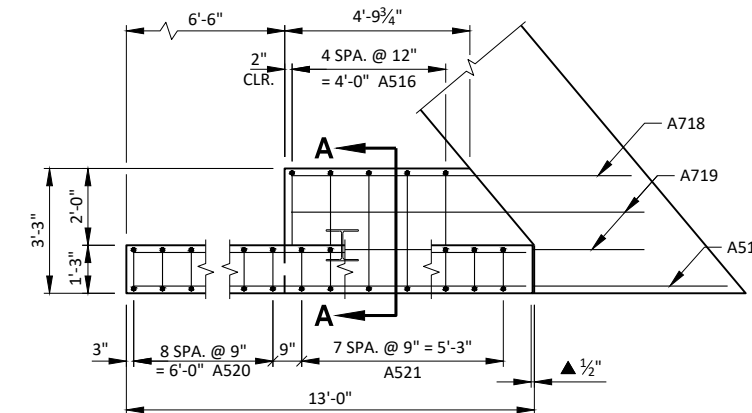
1/2\" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER (1\" DEEP & HOLD 1/8\" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3\" BELOW GUTTER LINE AT INSIDE FACE.

◇ STRIKE OFF AS SHOWN AND LEAVE ROUGH. FINISH SURFACE NOT COVERED BY PARAPET SAME AS ROADWAY.

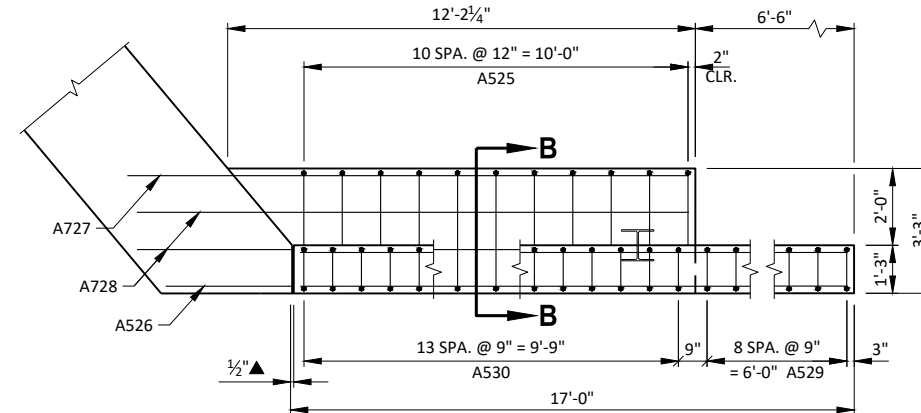
◆ GIRDER SEAT. SEE SHEET 4 FOR ELEVATIONS.

⊞ S518 AND S519 BARS TO BE TIED TO WING STEEL BEFORE WING IS POURED.

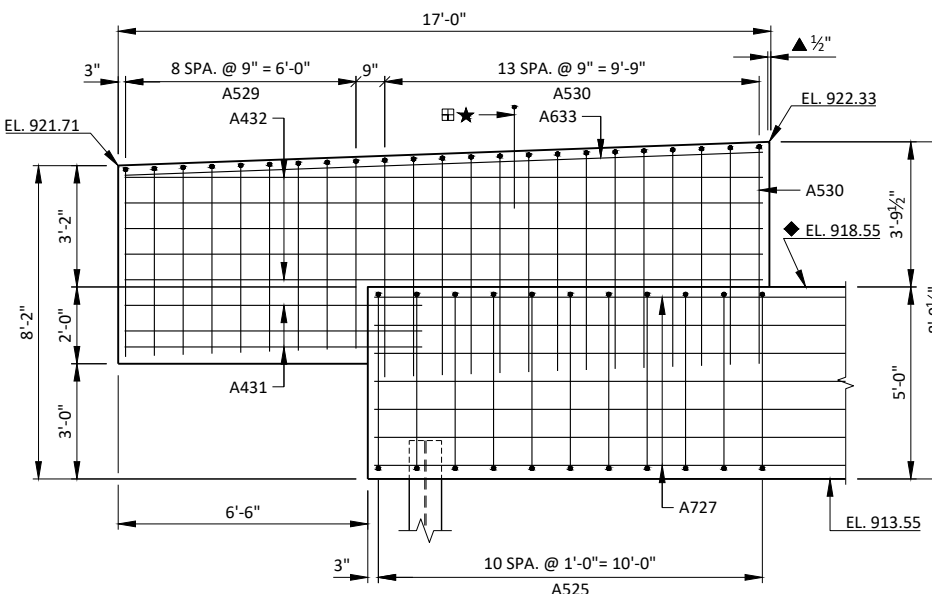
★ S520 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. USE CARE TO PLACE S520 BARS CORRECTLY ALONG TRANSITION OF PARAPET.



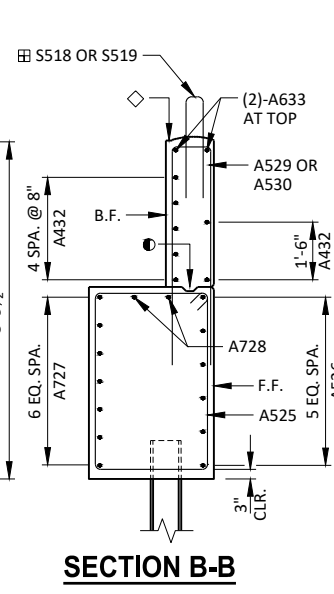
PLAN VIEW - WING 1



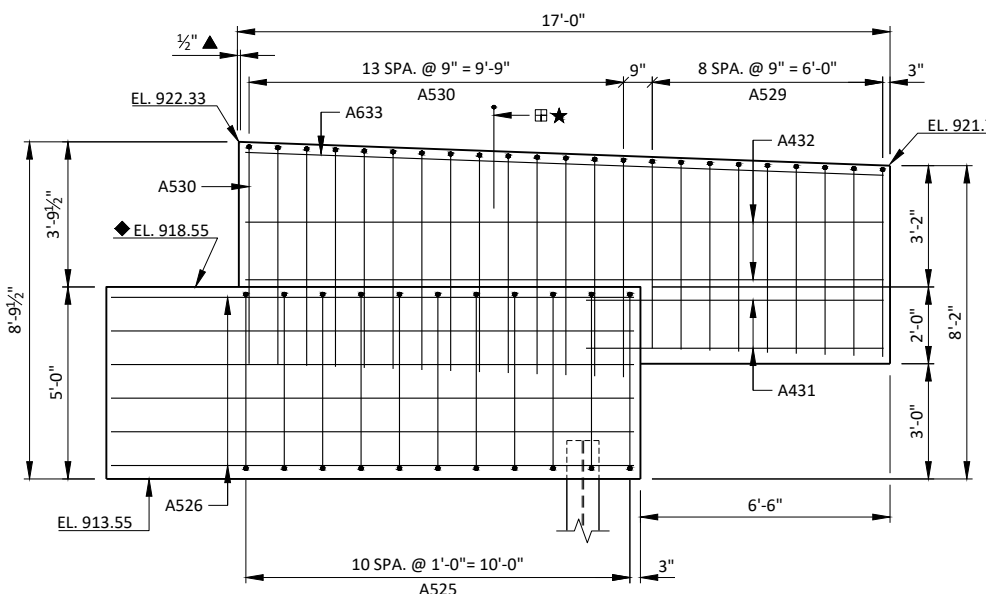
PLAN VIEW - WING 2



B.F. ELEVATION - WING 2



SECTION B-B



F.F. ELEVATION - WING 2

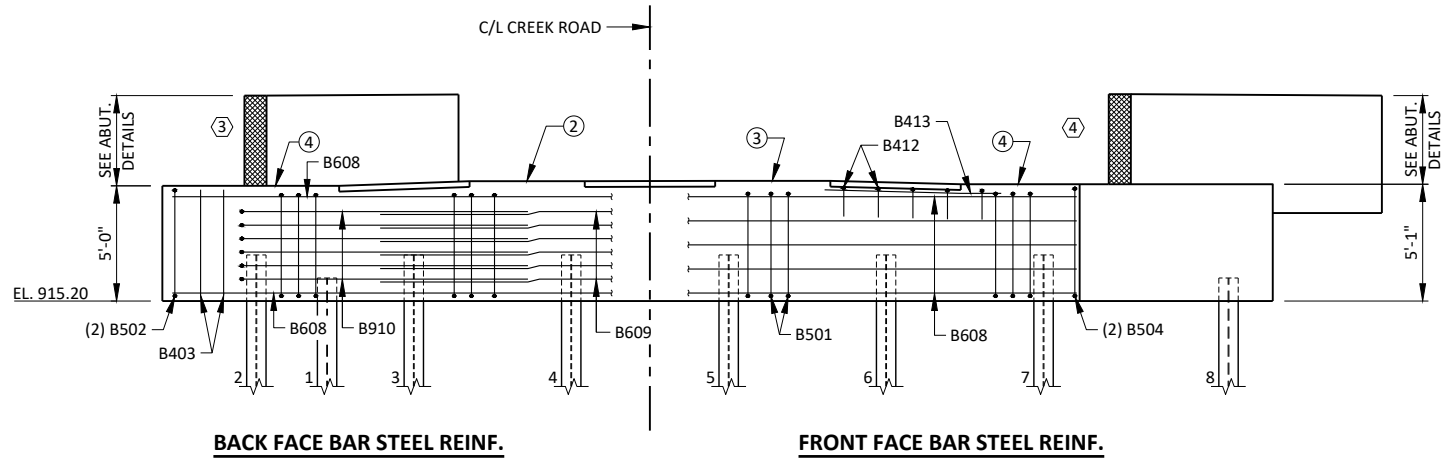
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
WEST ABUTMENT DETAILS			SHEET 5 OF 13

LEGEND

- ◆ 18" RUBBERIZED MEMBRANE WATERPROFING (HORIZONTAL)
- VERTICAL 18" RUBBERIZED MEMBRANE WATERPROFING. AT WINGWALLS EXTEND FROM 9" BELOW BRIDGE SEAT TO BOTTOM OF PAVING NOTCH.
- ▲ 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON- STAINING GRAY, NON-BITUMINUOS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE)
- ▲ 4"x½" PREFORMED FILLER, EXTEND FULL LENGTH OF ABUTMENTS BETWEEN EDGES OF DECK.
- ☆ ¾" CORK FILLER ON VERTICAL GIRDER SEAT FACES THAT RUN PARALLEL WITH GIRDER.
- ½"x8"x2'-10" NON-LAMINATED ELASTOMERIC BEARING PAD.
- PILE SPACING MEASURED AT BASE OF ABUTMENT BODY.
- ▽ STEEL TROWEL ENTIRE TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS AND SUPERSTRUCTURE. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".
- SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER AND EXPANDED POLYSTYRENE WITH NON- STAINING GRAY, NON-BITUMINUOS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE)
- INDICATES GIRDER LINE.
- ◇ INDICATES WING NUMBER.

NOTES

- SOME BARS HAVE BEEN OMITTED FOR CLARITY. SEE SHEET 7 FOR BILL OF BARS.
- SPACE REINFORCEMENT TO MISS PILING.
- F.F. - FRONT FACE
- B.F. - BACK FACE

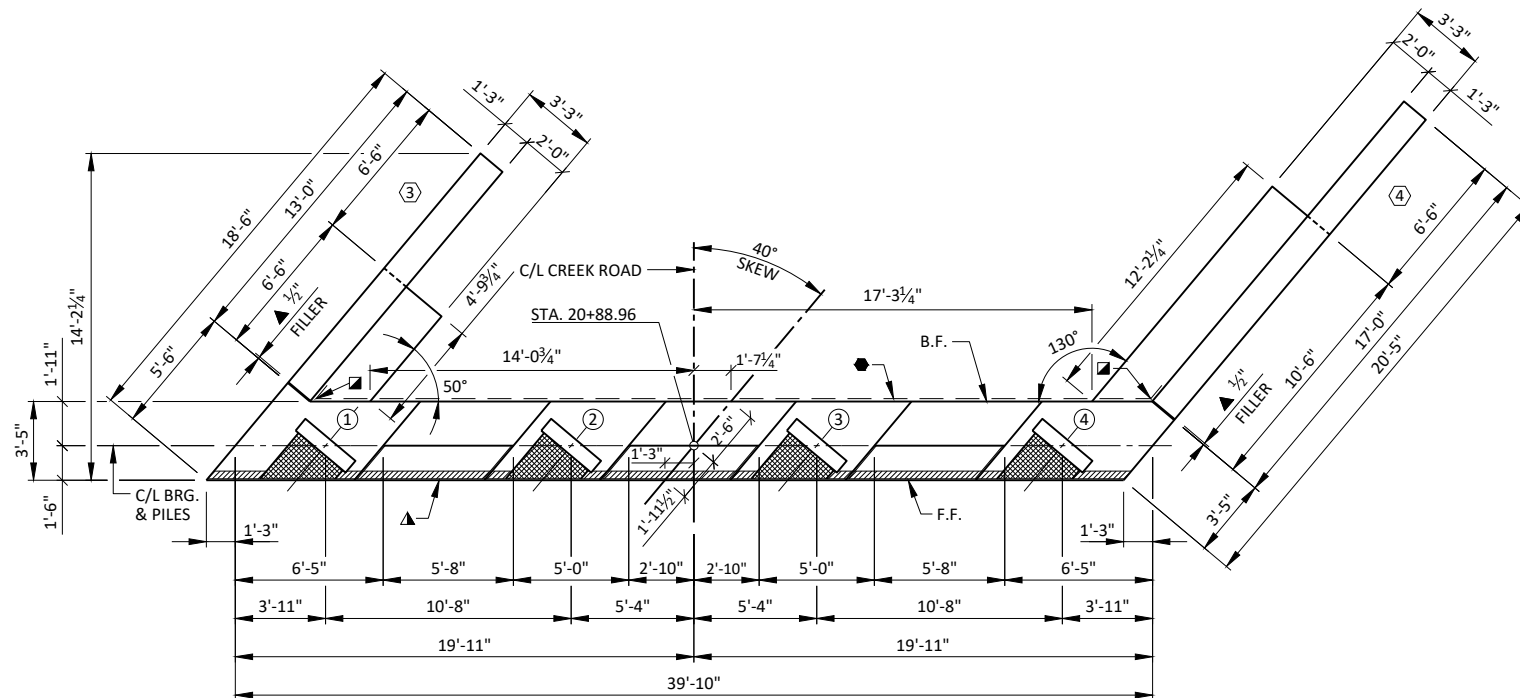


BACK FACE BAR STEEL REINF.

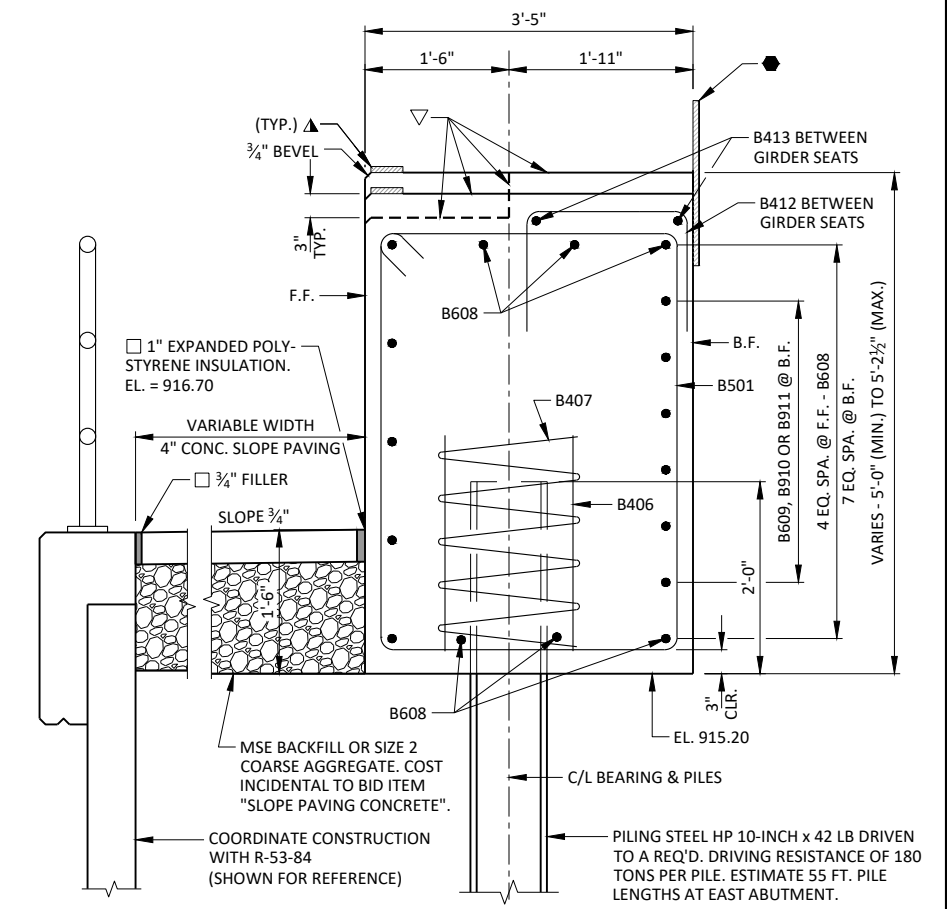
FRONT FACE BAR STEEL REINF.

ELEVATION

(EAST ABUTMENT LOOKING EAST)



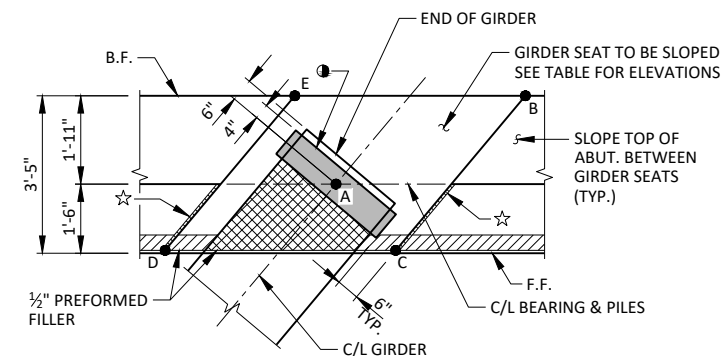
PLAN



TYPICAL SECTION THROUGH ABUTMENT BODY

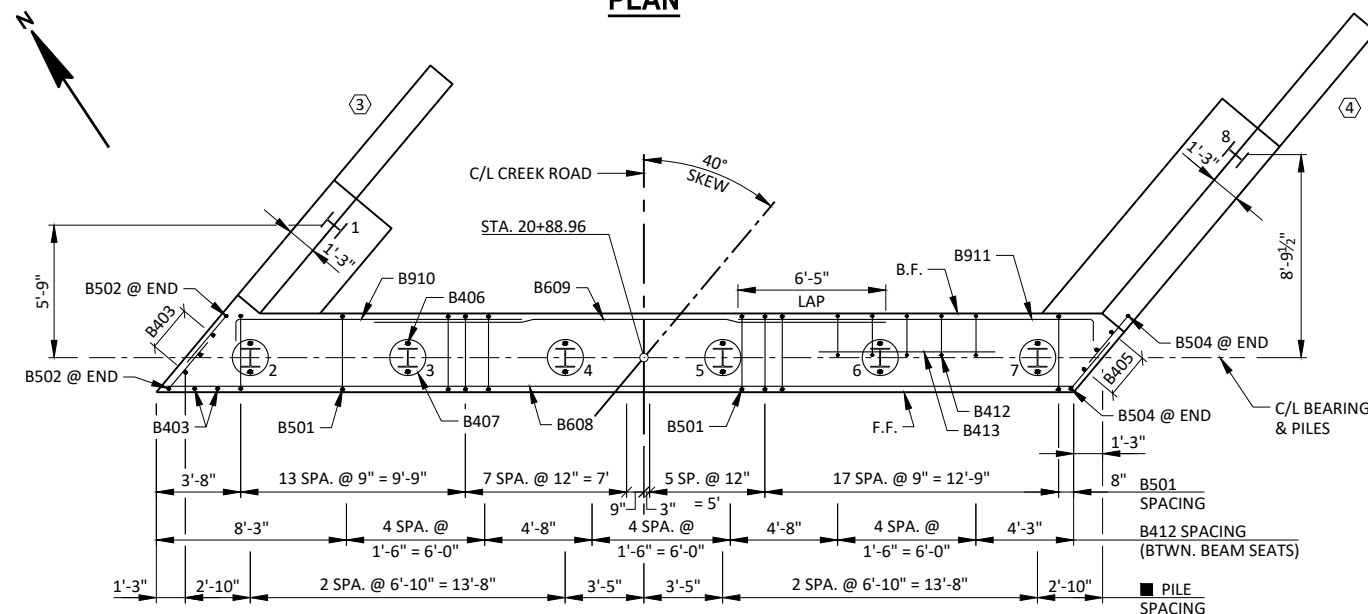
GIRDER SEAT ELEVATIONS

GIRDER NUMBER	POINT ON GIRDER SEAT				
	A	B	C	D	E
①	920.20	920.25	920.20	920.16	920.21
②	920.40	920.44	920.40	920.37	920.41
③	920.42	920.45	920.42	920.39	920.43
④	920.27	920.29	920.27	920.25	920.28



GIRDER SEAT DETAIL

INTERIOR GIRDER SHOWN. EXTERIOR GIRDERS SIMILAR.



LAYOUT

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
EAST ABUTMENT			SHEET 6 OF 13

NOTES

SOME BARS HAVE BEEN OMITTED FOR CLARITY. SEE THIS SHEET FOR BILL OF BARS.

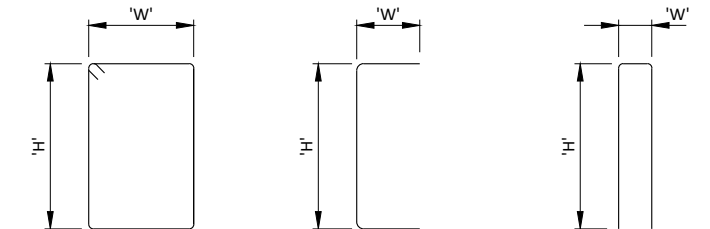
**BILL OF BARS
EAST ABUTMENT**

**1,630 LB (COATED)
2,430 LB (UNCOATED)**

BAR MARK	NO. REQ'D.	LENGTH	BENT	COAT	LOCATION
B501	44	15-4	X		BODY - VERT. - STIRRUP
B502	2	9-4	X		BODY - VERT. - STIRRUP AT N. END
B403	5	4-7			BODY - VERT. - AT N. END
B504	2	9-4	X		BODY - VERT. - STIRRUP AT S. END
B405	3	4-7			BODY - VERT. - AT S. END
B406	12	3-9			BODY - VERT. - 2 PER PILE
B407	6	28-3	X		BODY - VERT. - SPIRAL - 1 PER PILE
B608	11	39-4			BODY - HORIZ.
B609	6	22-2			BODY - HORIZ. - B.F. - AT CENTER
B910	6	13-0	X		BODY - HORIZ. - B.F. - AT S. END
B911	6	16-0	X		BODY - HORIZ. - B.F. - AT N. END
B412	15	4-5	X		BODY - VERT. - TOP BETWEEN SEATS
B413	6	7-8			BODY - HORIZ. - TOP BETWEEN SEATS
B514	5	16-8	X	X	WING 3 - VERT. - STIRRUP
B515	6	11-4	X	X	WING 3 - HORIZ. - F.F.
B716	7	8-10	X		WING 3 - HORIZ. - B.F.
B717	2	9-2	X		WING 3 - HORIZ. - TOP
B518	9	11-2	X	X	WING 3 - VERT. - TOP
B519	8	12-4	X	X	WING 3 - VERT. - TOP
B420	5	7-9	X		WING 3 - HORIZ. - BOTTOM
B421	8	12-7	X	X	WING 3 - HORIZ. - F.F. & B.F.
B622	2	12-7	X	X	WING 3 - HORIZ. - TOP
B523	11	15-6	X	X	WING 4 - VERT. - STIRRUP
B524	6	13-7	X	X	WING 4 - HORIZ. - F.F.
B725	7	14-7	X	X	WING 4 - HORIZ. - B.F.
B726	2	14-4	X	X	WING 4 - HORIZ. - TOP
B527	9	10-8	X	X	WING 4 - VERT. - TOP
B528	14	12-2	X	X	WING 4 - VERT. - TOP
B429	4	7-9	X	X	WING 4 - HORIZ. - BOTTOM
B430	8	16-7	X	X	WING 4 - HORIZ. - F.F. & B.F.
B631	2	16-7	X	X	WING 4 - HORIZ. - TOP

NOTES: THE FIRST DIGIT OF A BAR MARK SIGNIFIES THE BAR SIZE.

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.



MARK	'W'	'H'
B501	3-1	4-4
B514	2-11	4-7
B523	2-11	4-7

B501, B514, B523

MARK	'W'	'H'
B502	2-6	4-7
B504	2-6	4-7

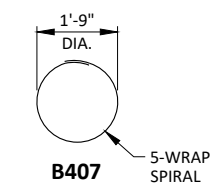
B502, B504

MARK	'W'	'H'
B412	1-7	1-6
B518	0-11	5-3
B519	0-11	5-10
B527	0-11	5-0
B528	0-11	5-9

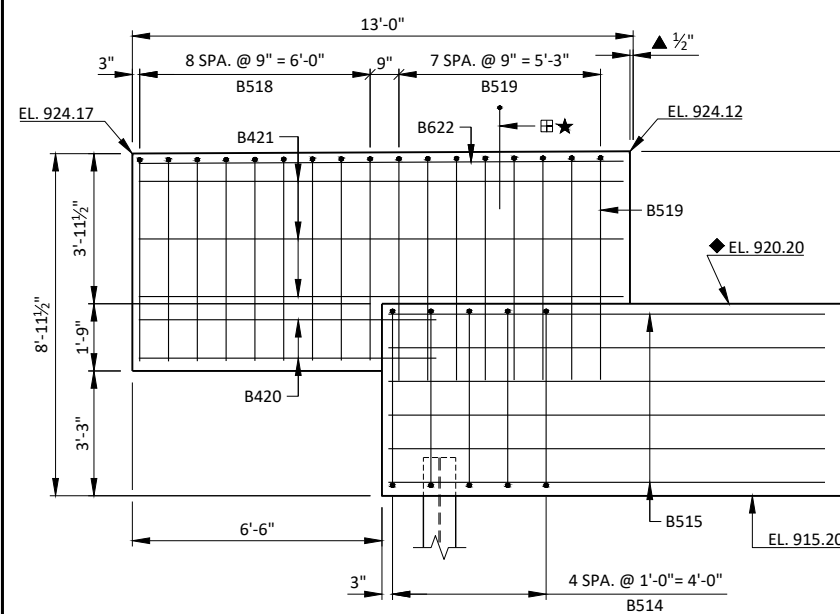
B412, B518, B519, B527, B528

STD. 90° HOOK

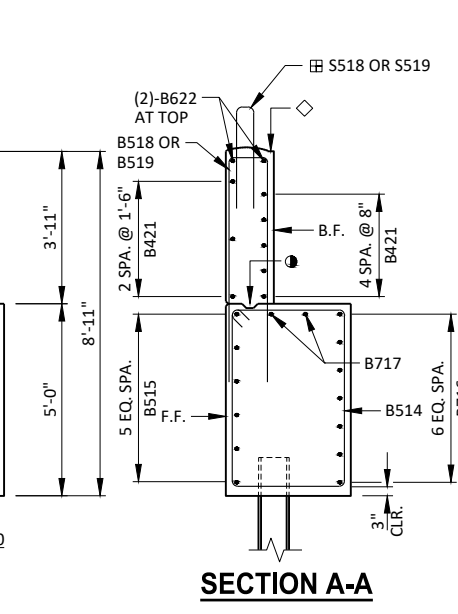
B910, B911



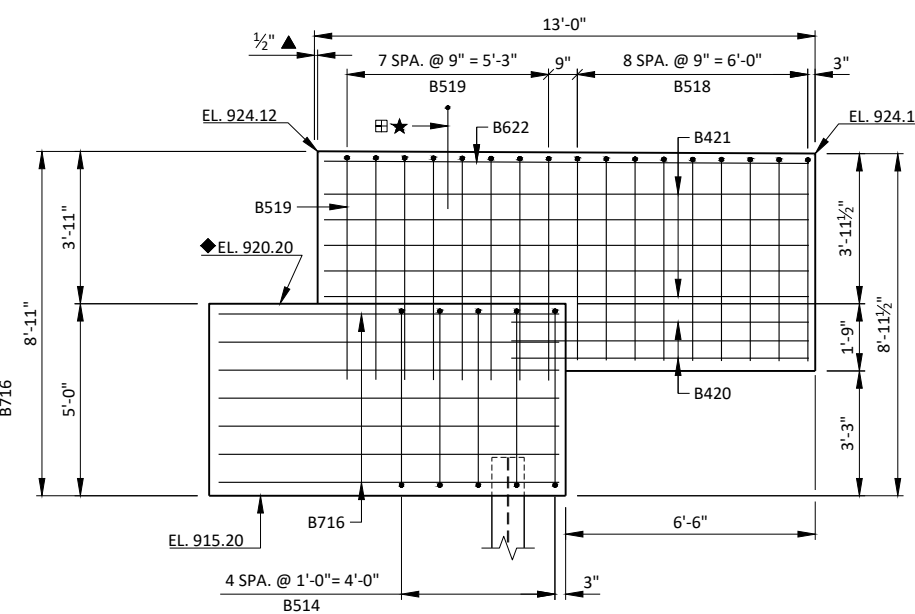
B407



F.F. ELEVATION - WING 3



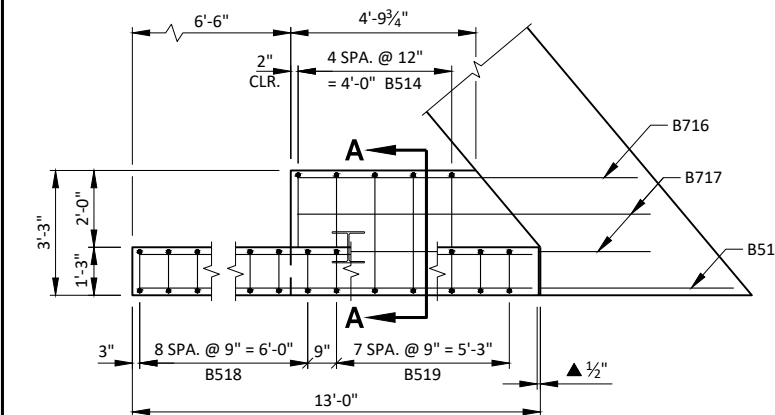
SECTION A-A



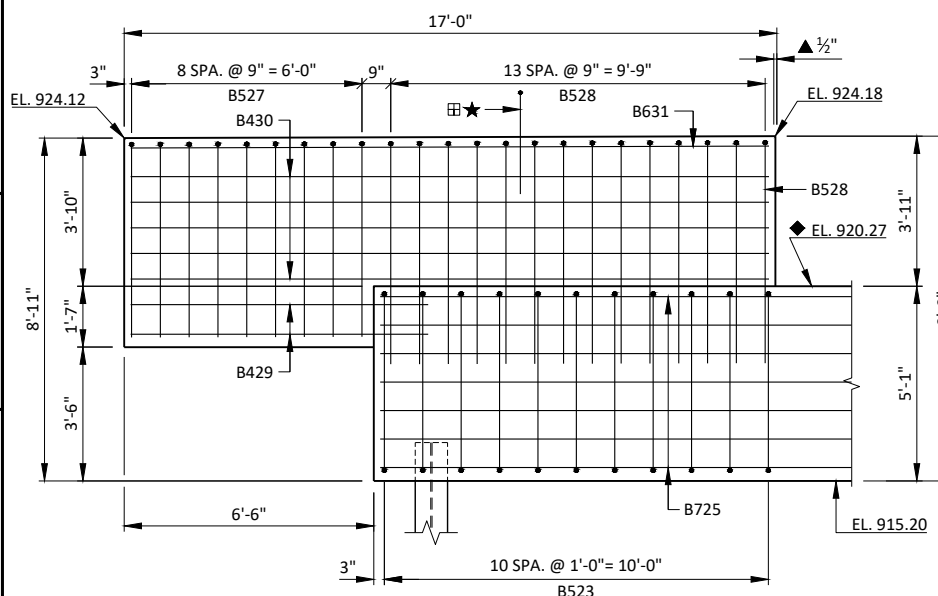
B.F. ELEVATION - WING 3

LEGEND

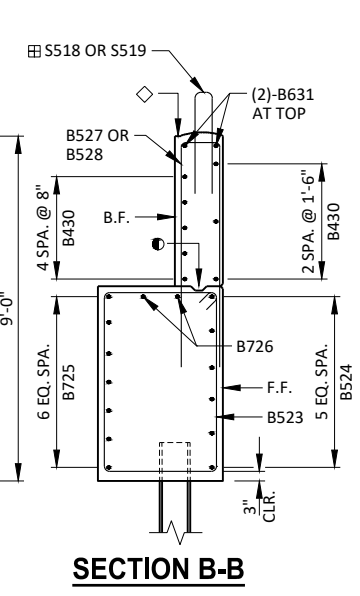
- ◆ OPTIONAL CONSTRUCTION JOINT. FORM KEYWAY WITH A BEVELED 2X6. PLACE 18" RUBBERIZED MEMBRANE WATERPROOFING AT BACK FACE AND 3/4" "V" GROOVE AT FRONT FACE IF USED.
- ▲ 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- ◇ STRIKE OFF AS SHOWN AND LEAVE ROUGH. FINISH SURFACE NOT COVERED BY PARAPET SAME AS ROADWAY.
- ◆ GIRDER SEAT. SEE SHEET 6 FOR ELEVATIONS.
- ⊞ S518 AND S519 BARS TO BE TIED TO WING STEEL BEFORE WING IS POURED.
- ★ S520 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. USE CARE TO PLACE S520 BARS CORRECTLY ALONG TRANSITION OF PARAPET.



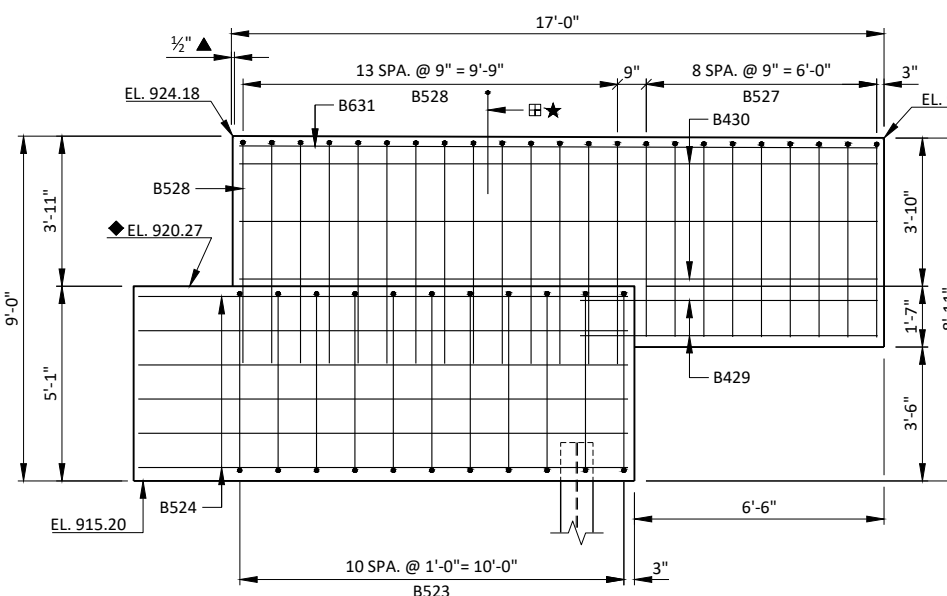
PLAN VIEW - WING 3



B.F. ELEVATION - WING 4



SECTION B-B

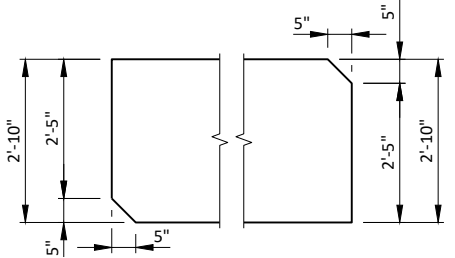


F.F. ELEVATION - WING 4

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
EAST ABUTMENT DETAILS			SHEET 7 OF 13

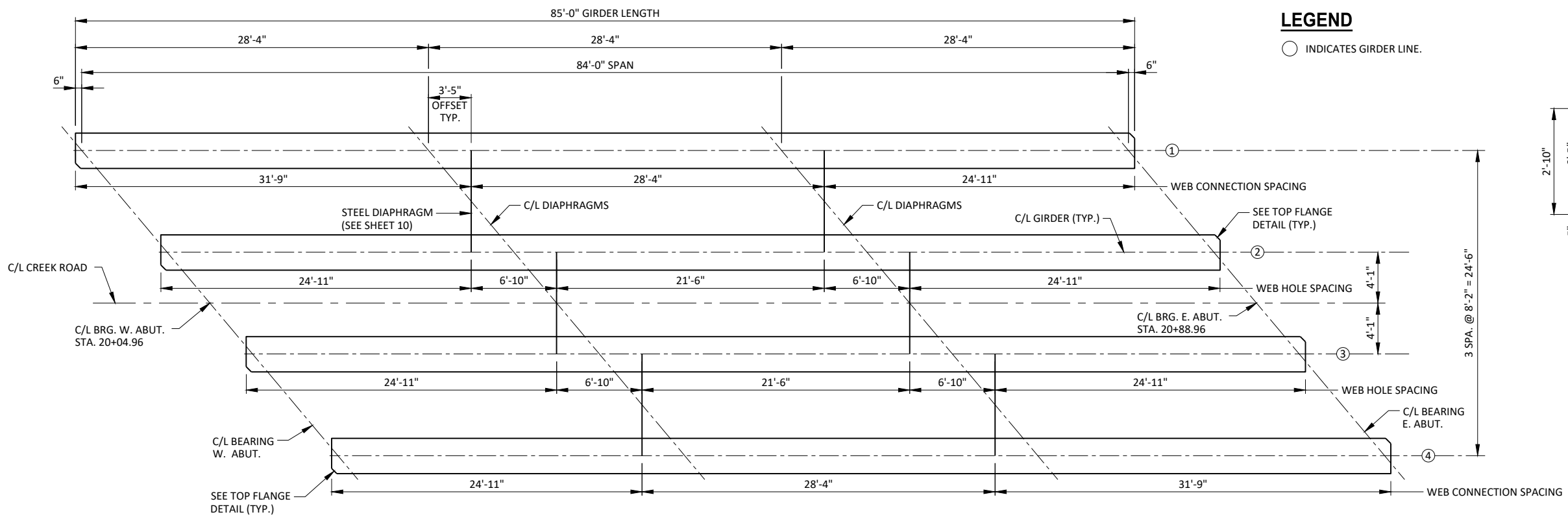
LEGEND

○ INDICATES GIRDER LINE.



WEST END **EAST END**
TOP FLANGE DETAIL

FORM OUT CORNER OF TOP FLANGE AS SHOWN TO MEET CLEARANCE REQUIREMENTS

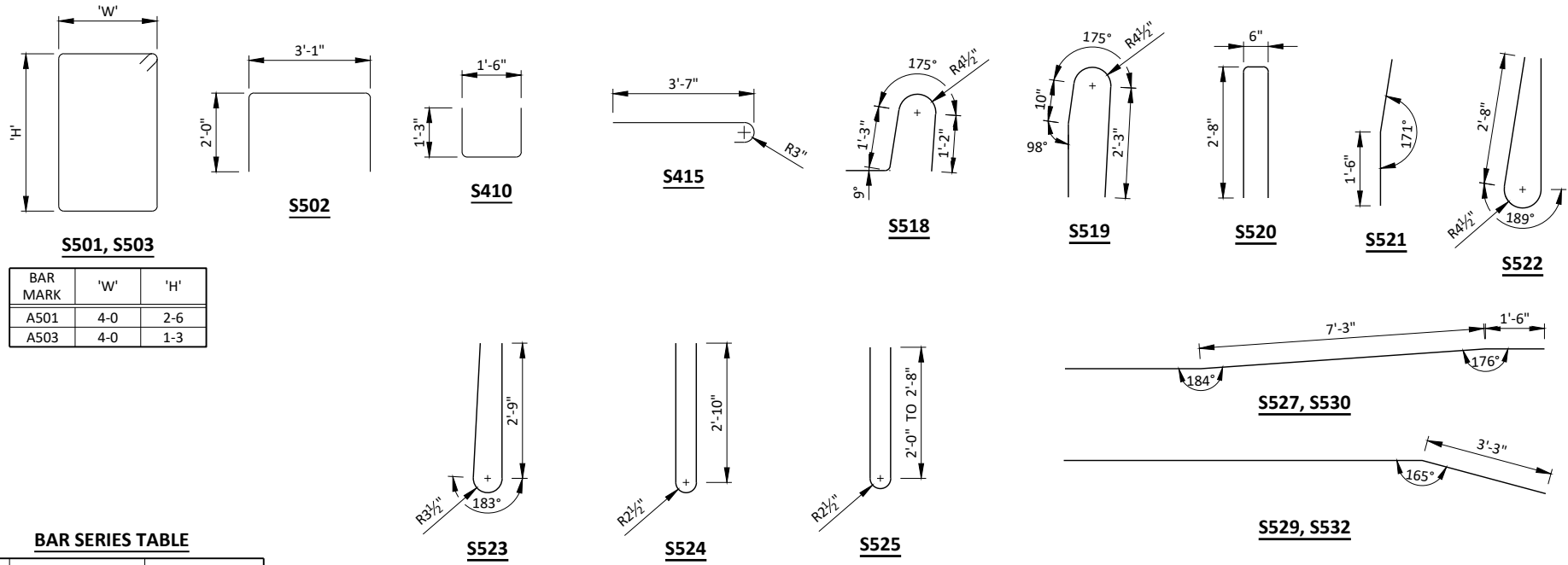


GIRDER LAYOUT

BILL OF BARS SUPERSTRUCTURE

22,570 LB (COATED)

BAR MARK	NO. REQ'D.	LENGTH	BENT	COAT	BAR SERIES	LOCATION
S501	60	13-6	X	X		ABUT. DIAPHRAGM - VERT. STIRRUP
S502	60	6-10	X	X		ABUT. DIAPHRAGM - VERT. - TOP
S503	16	11-0	X	X		ABUT. DIAPHRAGM - VERT. STIRRUP AT GIRDER
S604	8	1-8		X		ABUT. DIAPHRAGM - HORIZ. - FRONT - ENDS
S605	8	2-9		X		ABUT. DIAPHRAGM - HORIZ. - FRONT - ENDS
S606	12	6-6		X		ABUT. DIAPHRAGM - HORIZ. - FRONT
S607	24	5-7		X		ABUT. DIAPHRAGM - HORIZ. - FRONT
S608	12	39-4		X		ABUT. DIAPHRAGM - HORIZ. - BACK
S409	12	5-2		X		ABUT. DIAPHRAGM - HORIZ. - BOT.
S410	30	3-9	X	X		ABUT. DIAPHRAGM - VERT. - BOT.
S511	16	6-0		X		ABUT. DIAPHRAGM - GIRDER WEB
S512	179	30-2		X		DECK - TOP & BOT. - TRANSVERSE
S513	62	15-9		X	*	DECK - TOP - TRANSVERSE AT ENDS
S514	64	15-9		X	*	DECK - BOT. - TRANSVERSE AT ENDS
S415	240	4-2	X	X		DECK - TOP - TRANSVERSE AT EDGES
S416	158	44-3		X		DECK - TOP & BOT. - LONGITUDINAL
S417	8	45-4		X		DECK - TOP & BOT. - LONGITUDINAL AT EDGES
S518	262	4-5	X	X		PARAPET - VERT.
S519	40	5-10	X	X		PARAPET - VERT.
S520	68	5-7	X	X		PARAPET - VERT.
S521	48	3-0	X	X		PARAPET - VERT.
S522	302	6-8	X	X		PARAPET - VERT.
S523	24	6-6	X	X		PARAPET - VERT.
S524	20	6-5	X	X		PARAPET - VERT.
S525	24	5-5	X	X	*	PARAPET - VERT.
S526	32	45-10		X		PARAPET - HORIZ.
S527	2	12-2	X	X		PARAPET 1 & 3 - HORIZ.
S528	10	12-4	X	X		PARAPET 1 & 3 - HORIZ.
S529	4	12-4	X	X		PARAPET 1 & 3 - HORIZ.
S530	2	16-2	X	X		PARAPET 2 & 4 - HORIZ.
S531	10	16-4	X	X		PARAPET 2 & 4 - HORIZ.
S532	4	16-4	X	X		PARAPET 2 & 4 - HORIZ.



BAR MARK	'W'	'H'
A501	4-0	2-6
A503	4-0	1-3

BAR SERIES TABLE

BAR MARK	NO. REQ'D.	LENGTH
S513	2 SERIES OF 31	28-5 TO 3-1
S514	2 SERIES OF 32	28-10 TO 2-8
S525	4 SERIES OF 6	6-1 TO 4-9

BUNDLE AND TAG EACH SERIES SEPARATELY

NOTES: THE FIRST DIGIT OF A BAR MARK SIGNIFIES THE BAR SIZE.
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.
* LENGTH SHOWN IS AN AVERAGE LENGTH ONLY. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

NO.	DATE	REVISION	BY

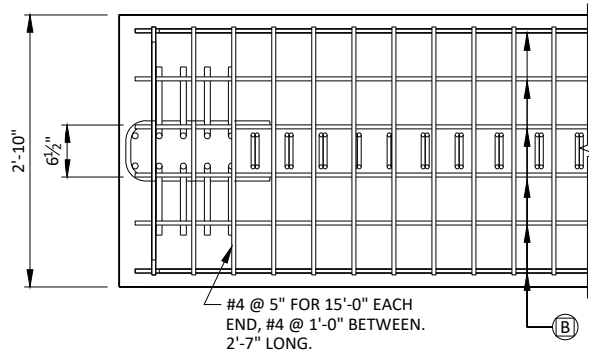
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-53-177

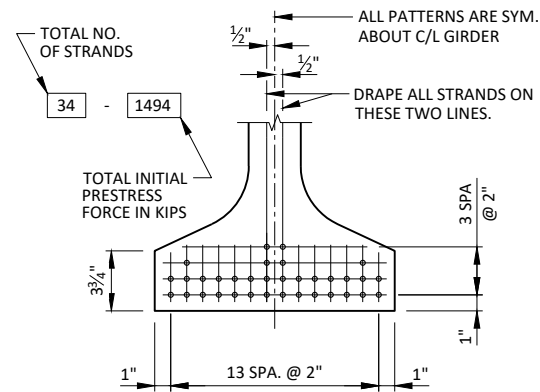
DRAWN BY: PTB PLANS CK'D: RBH

GIRDER LAYOUT

SHEET 8 OF 13



TOP FLANGE



TYP. STRAND PATTERN

THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN

SPAN	CAMBER (IN.)
1	3.7"

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

GIRDER NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.3 OF STANDARD SPECIFICATION FOR GUIDANCE.

PRESTRESSING STRANDS SHALL BE 0.60" DIA. 7-WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER.

TOP FLANGE TO BE FORMED OUT TO MEET CLEARANCE REQUIREMENTS. SEE DETAILS ON SHEET 8 FOR LOCATIONS AND DIMENSIONS.

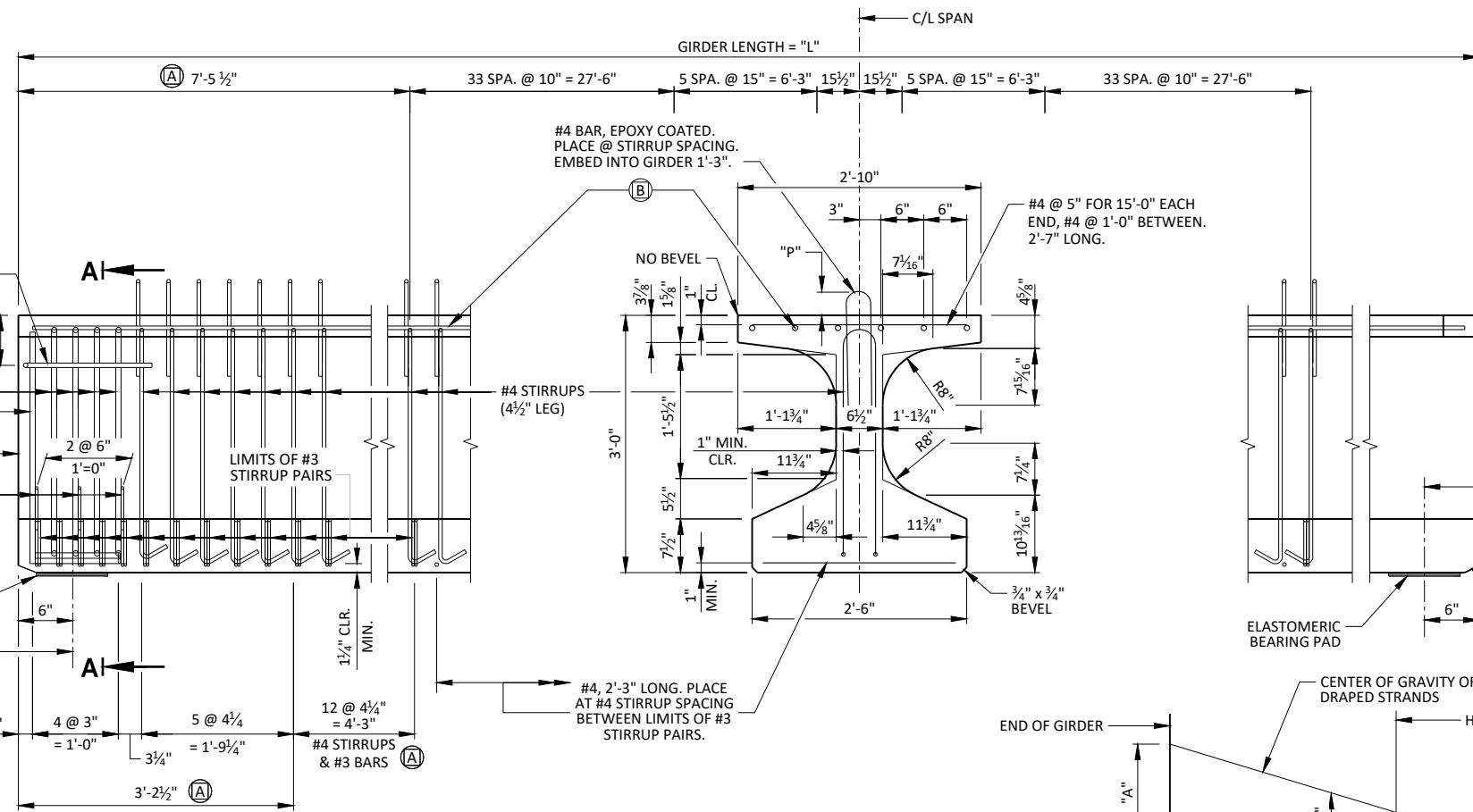
FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE "STEEL DIAPHRAGM" SHEET. SEE SHEET 8 FOR LOCATIONS ALONG THE GIRDERS.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

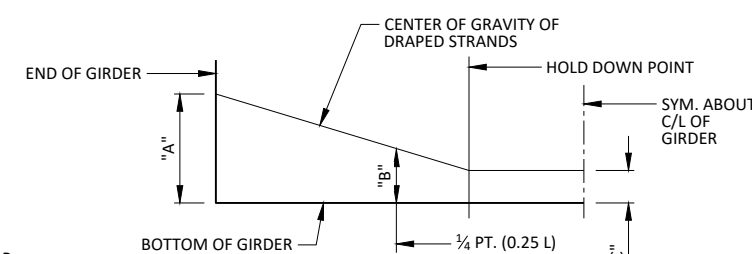
AN EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES MAINTENANCE SECTION. IF USED, WWF SUBSTITUTION DETAILS SHALL BE SUBMITTED ELECTRONICALLY TO THE WISDOT FABRICATION LIBRARY AND ACCEPTED PRIOR TO SHOP DRAWING SUBMITTAL.

DATA SHOWN IN DEFLECTION DATA IS THEORETICAL AND MAY VARY WITH CONCRETE STRENGTH, VARIABLE PRESTRESS CONDITIONS AND PRESTRESS LOSSES.

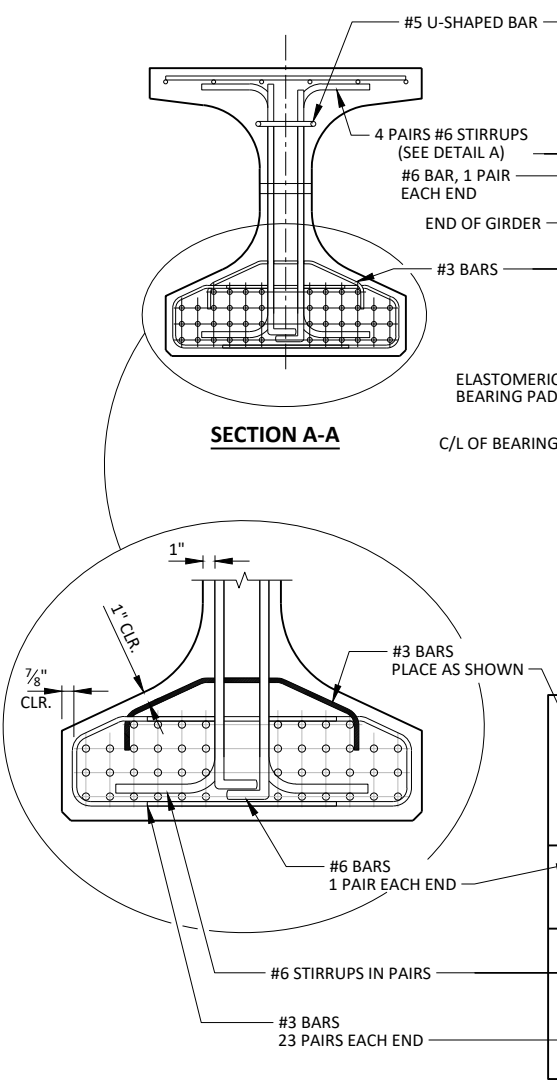
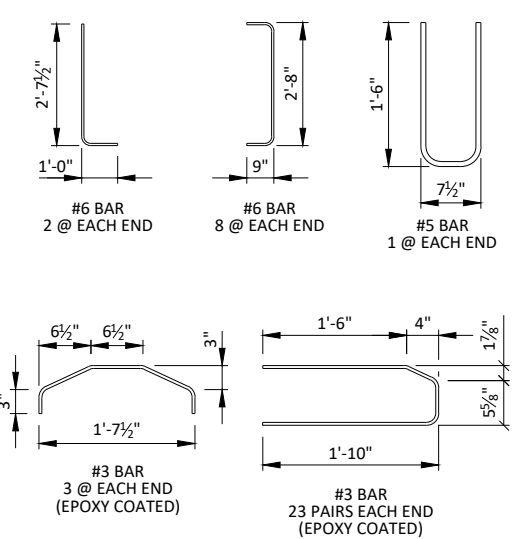


SIDE VIEW & TYP. SECTION IN SPAN

- (A) DETAIL TYP. AT EACH END
- (B) 6 #4 BARS, FULL LENGTH, MAY BE SPLICED, USE 36" MIN. LAP



DRAPED STRAND PROFILE



SECTION A-A

BOTTOM FLANGE DETAIL A

GIRDER LENGTH "L"	QUANT.	DEAD LOAD DEF. (IN.)									CONC. STRGTH. f'c (KSI)	STIRRUP PROJECTION "P"			DIA. OF STRAND (IN.)	DRAPED PATTERN (INCHES)					UNDRAPED PATTERN		GIRDER NO.	
		1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10		1ST 1/3	MID 1/3	END 1/3		TOTAL NO. OF STRANDS	f'ci (KSI) *	TOTAL NO. OF STRANDS	f'ci (KSI) *					
		"A"	"B" MIN.	"B" MAX.	"C"																			
85'-0"	4	0.6	1.1	1.5	1.7	1.8	1.7	1.5	1.1	0.6	8.0	7"	7"	7"	0.6	34	6.8	31	11 1/2	14 1/2	5	--	--	1-4

* MINIMUM CYLINDER STRENGTH OF CONCRETE @ TIME OF TRANSFER OF PRESTRESS FORCE.

NOTE: SEE SHEET 11 FOR DEAD LOAD DEFLECTION DIAGRAM.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
36W-INCH PRESTRESSED GIRDER DETAILS		SHEET 9 OF 13	

NOTES

ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-53-177", EACH.

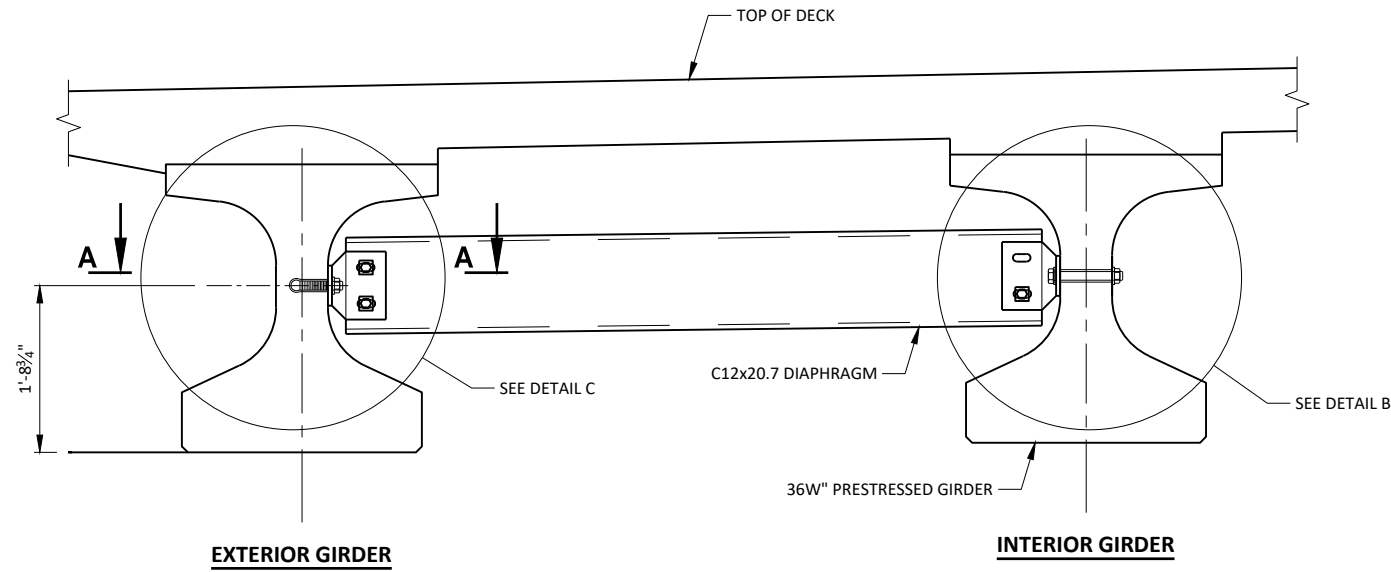
EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

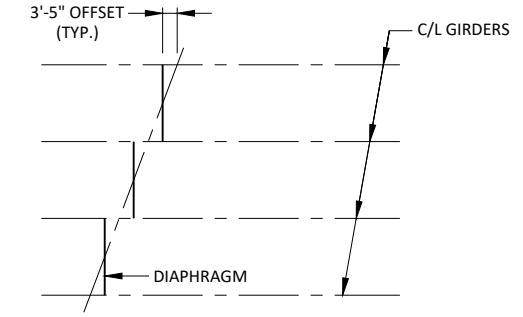
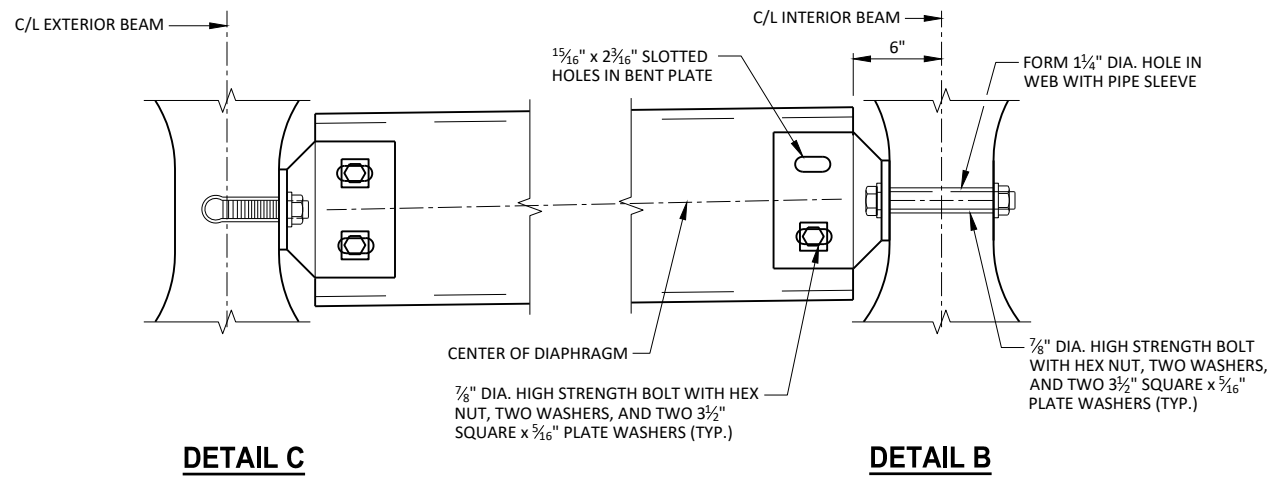
ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS ¼ TURN UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

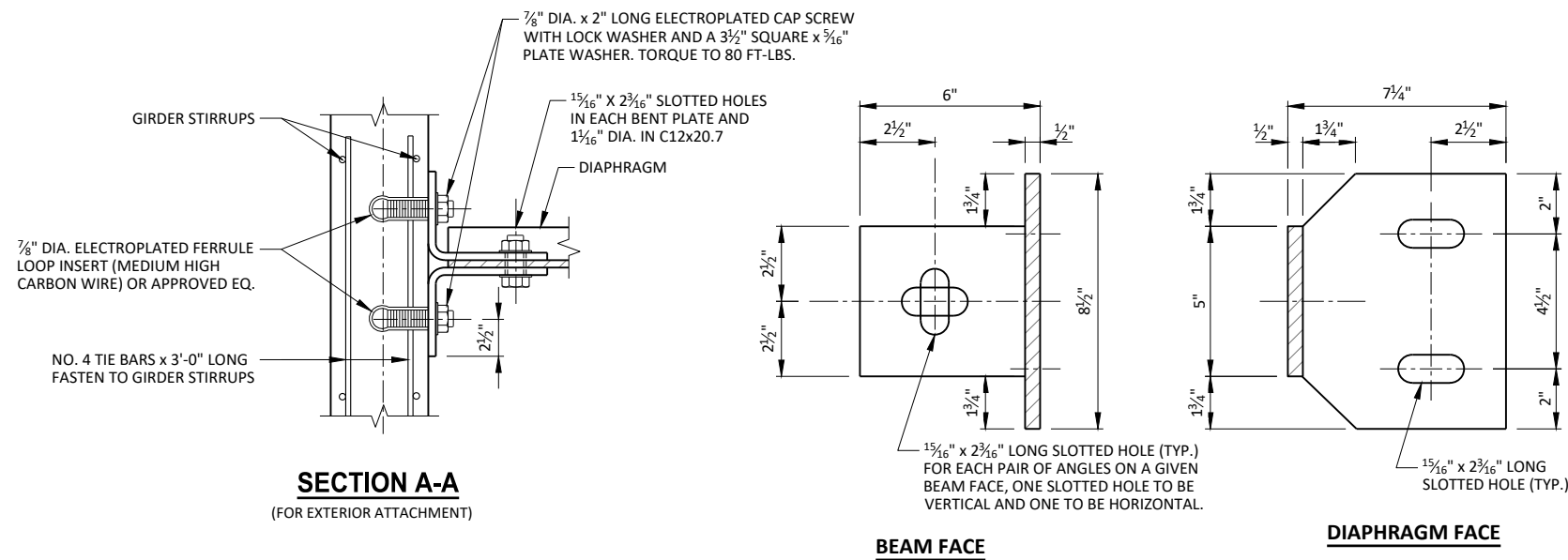
PLACE DIAPHRAGMS AT ½ AND ¾ POINTS OF GIRDER. SEE SHEET 8 FOR CONNECTION LOCATIONS ALONG EACH GIRDER.



PART TRANSVERSE SECTION AT DIAPHRAGM



PLAN FOR SKEW ANGLES > 10°



8

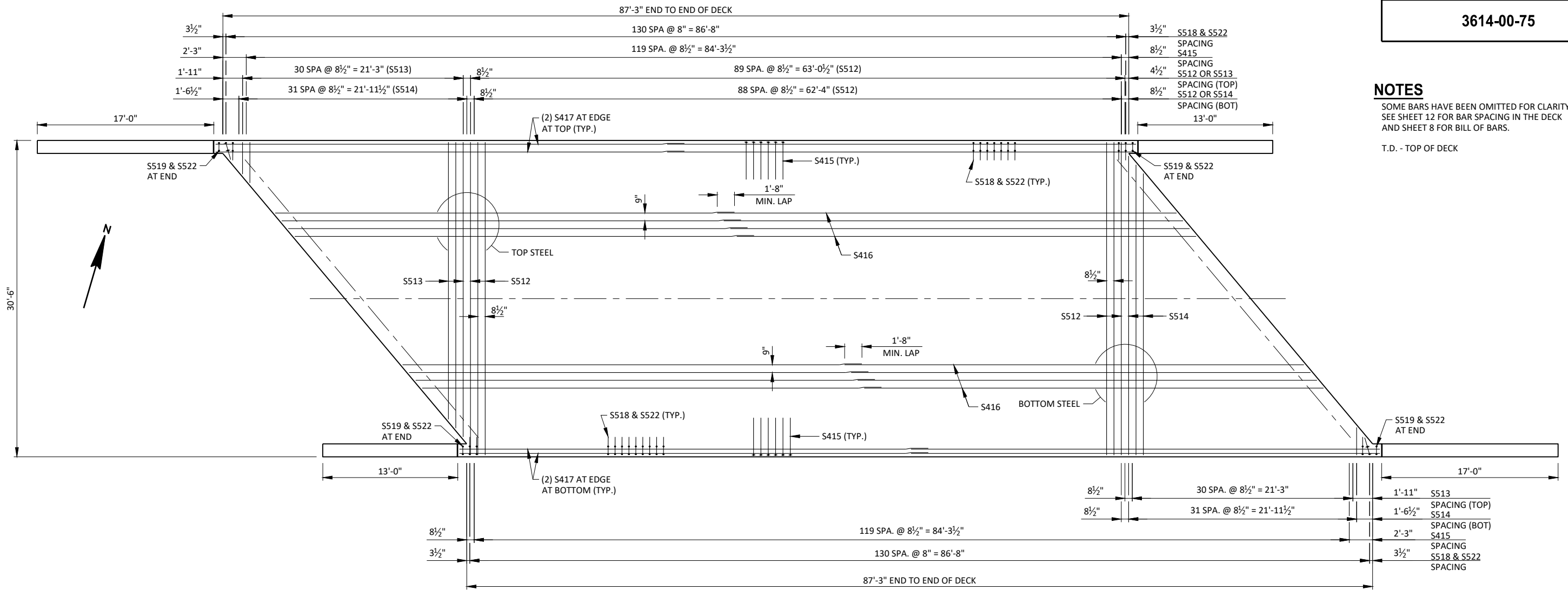
8

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
STEEL DIAPHRAGM			SHEET 10 OF 13

NOTES

SOME BARS HAVE BEEN OMITTED FOR CLARITY. SEE SHEET 12 FOR BAR SPACING IN THE DECK AND SHEET 8 FOR BILL OF BARS.

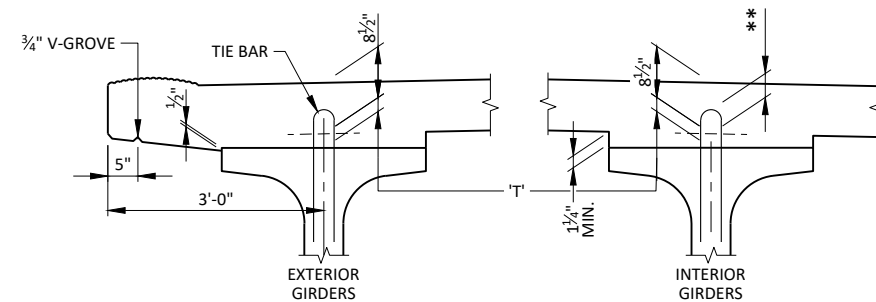
T.D. - TOP OF DECK



PLAN

ELEVATIONS AT TOP OF DECK

GIRDER LINE		C/L BRG. W. ABUT.	0.10 PT.	0.20 PT.	0.30 PT.	0.40 PT.	0.50 PT.	0.60 PT.	0.70 PT.	0.80 PT.	0.90 PT.	C/L BRG. E. ABUT.
N. EDGE	T.D.	922.38	922.65	922.90	923.12	923.33	923.51	923.67	923.81	923.92	924.02	924.09
①	T.D.	922.50	922.76	923.00	923.22	923.42	923.59	923.75	923.88	923.99	924.08	924.14
②	T.D.	922.88	923.12	923.34	923.55	923.72	923.88	924.02	924.13	924.23	924.30	924.35
C/L	T.D.	923.06	923.30	923.51	923.70	923.87	924.02	924.15	924.25	924.34	924.40	924.44
③	T.D.	923.08	923.31	923.51	923.69	923.85	923.99	924.11	924.21	924.28	924.34	924.37
④	T.D.	923.10	923.31	923.50	923.66	923.81	923.93	924.03	924.11	924.17	924.20	924.22
S. EDGE	T.D.	923.13	923.33	923.51	923.67	923.81	923.93	924.02	924.09	924.14	924.17	924.18



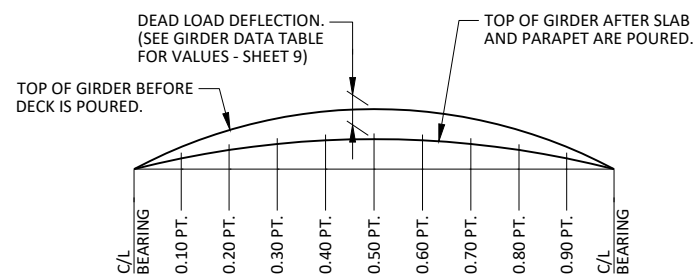
SLAB HAUNCH DETAIL

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

TO DETERMINE 'T'. ELEVATION OF TOP OF GIRDERS AT THE C/L OF SUBSTRUCTURE UNITS AND AT THE 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

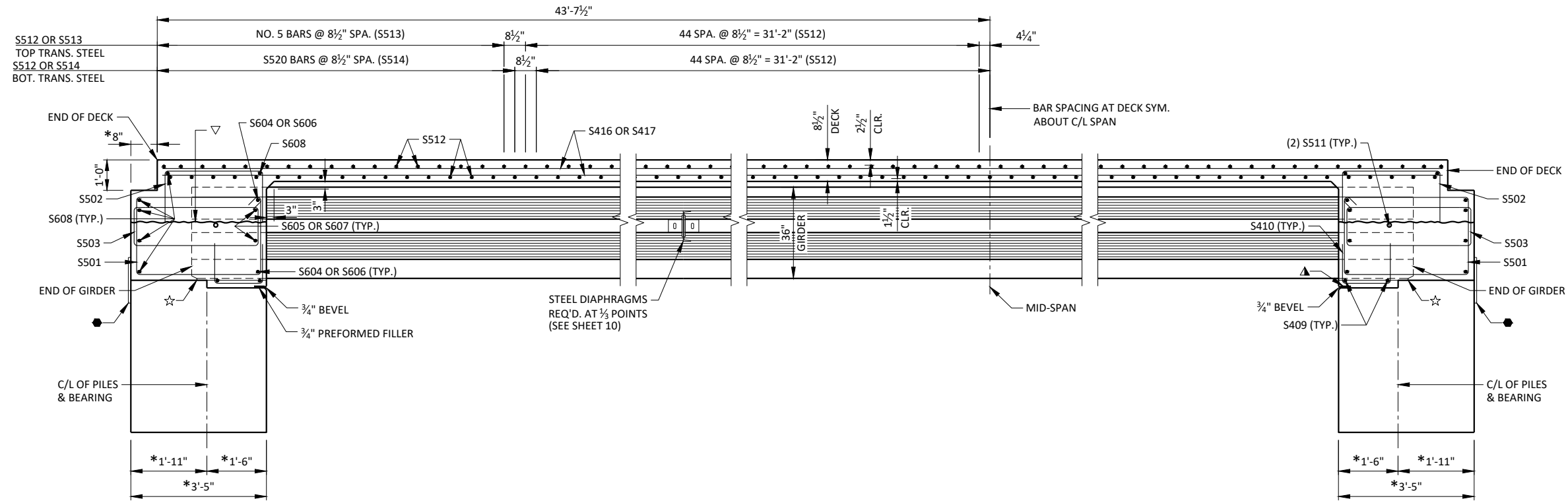
- TOP OF DECK ELEV. AT FINAL GRADE
- TOP OF GIRDER ELEVATION
- + DEAD LOAD DEFLECTION
- DECK THICKNESS
- = HAUNCH HEIGHT 'T'

NOTE: AN AVERAGE HAUNCH HEIGHT ('T') OF 2 1/2" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".

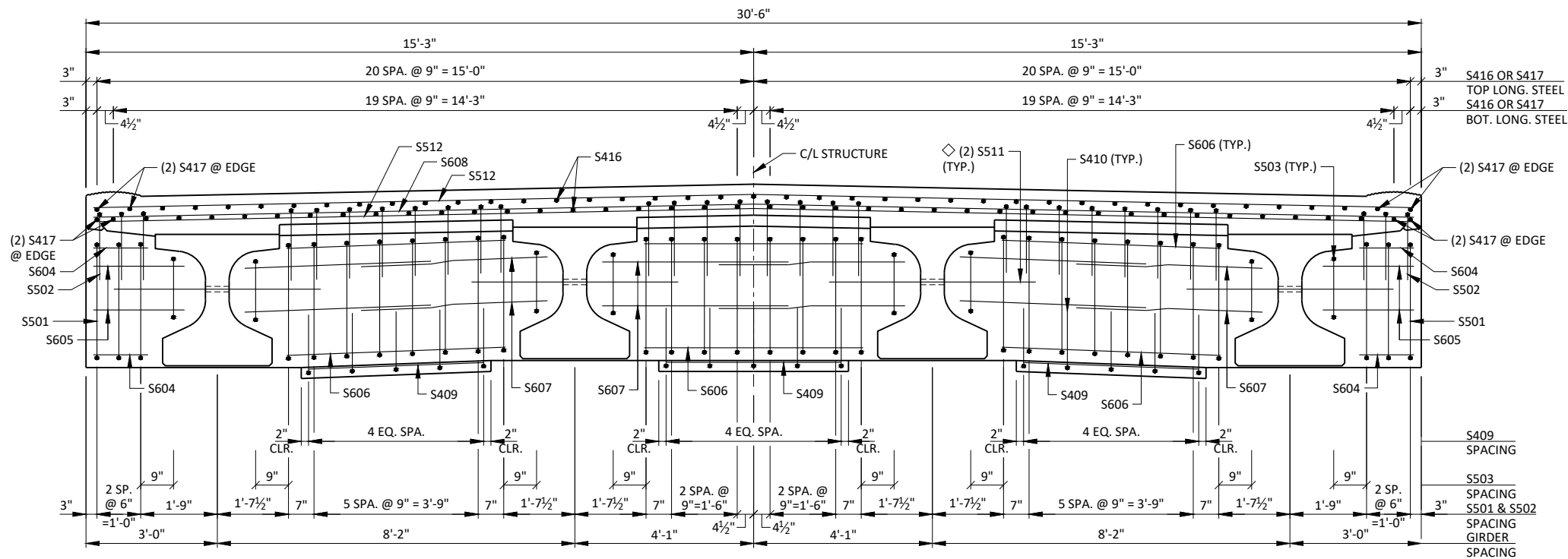


DEAD LOAD DEFLECTION DIAGRAM

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
SUPERSTRUCTURE			SHEET 11 OF 13



PARTIAL LONGITUDINAL SECTION



CROSS SECTION THROUGH ROADWAY
BAR SPACING IN DIAPHRAGM SYM. ABOUT C/L STRUCTURE

NOTES

SOME BARS HAVE BEEN OMITTED FOR CLARITY. SEE SHEET 8 FOR BILL OF BARS.

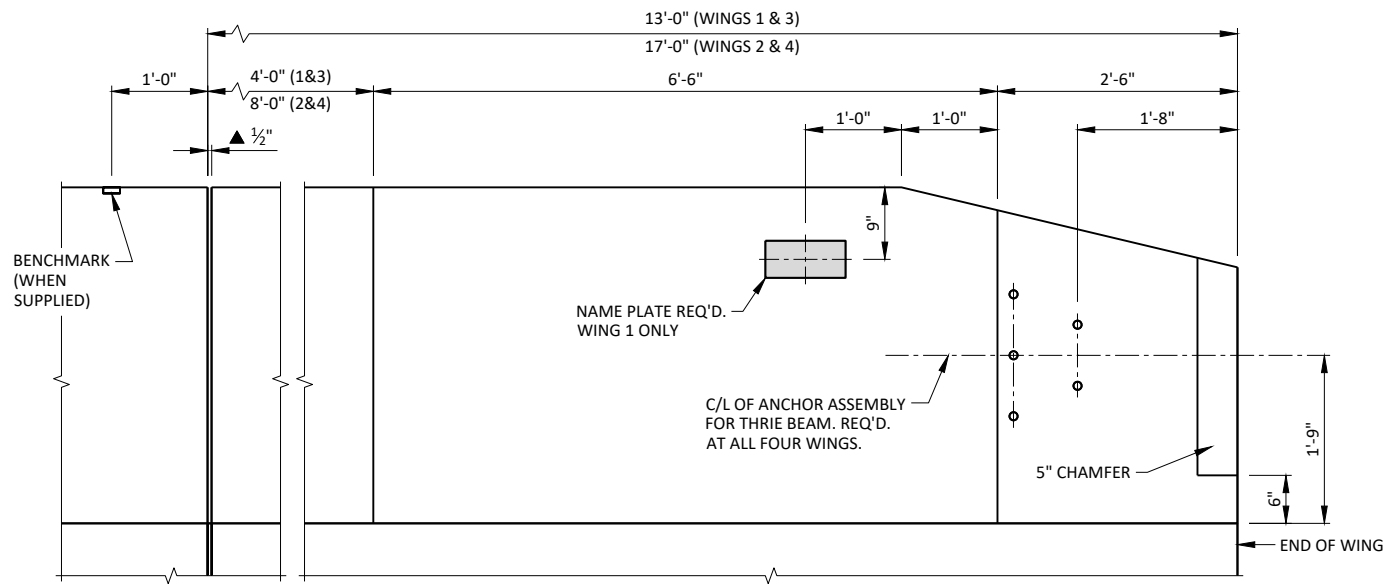
LEGEND

- 18" RUBBERIZED MEMBRANE WATERPROOFING (HORIZONTAL)
- ☆ 1/2" NON-LAMINATED ELASTOMERIC BEARING PAD AND 1/2" PREFORMED FILLER.
- ▲ 4"x3/2" PREFORMED FILLER, EXTEND FULL LENGTH OF ABUTMENTS.
- ◇ (1) 1 1/2" DIAMETER HOLE IN WEB FOR (2) S511 HORIZONTAL BARS. BARS TO BE PLACED SYMMETRICAL ABOUT C/L OF GIRDERS.
- ▽ OPTIONAL CONSTRUCTION JOINT. IF USED, DECK POUR MUST BE WITHIN 2 WEEKS FROM THE TIME OF THE DIAPHRAGM POUR.
- * DIMENSION IS TAKEN NORMAL TO C/L OF SUBSTRUCTURE.

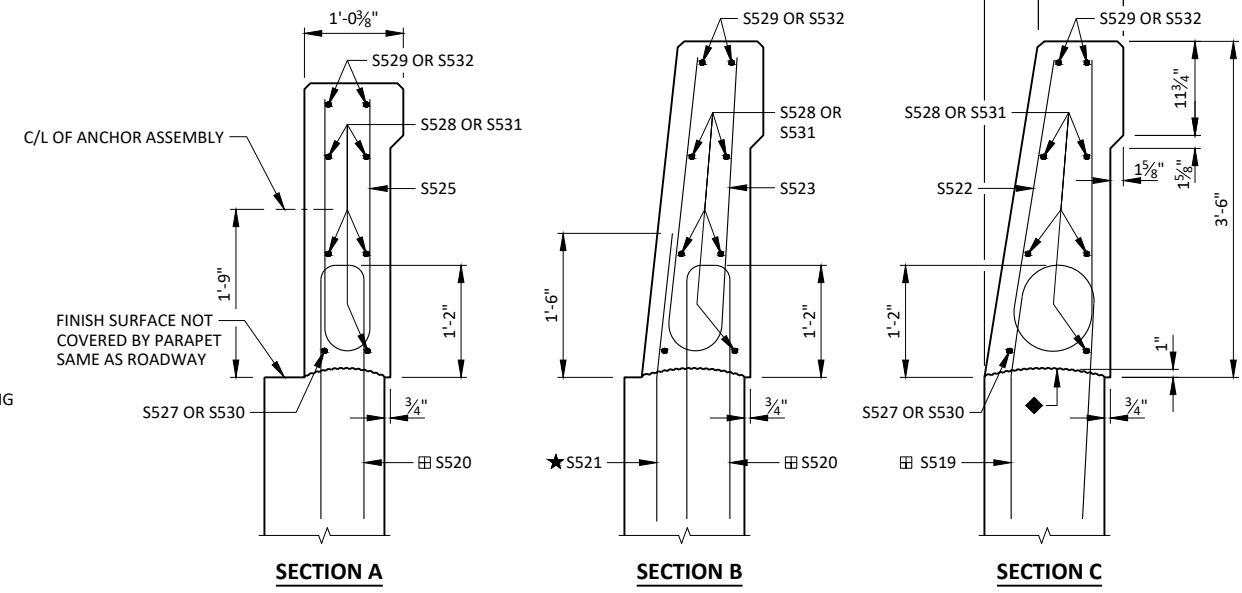
8

8

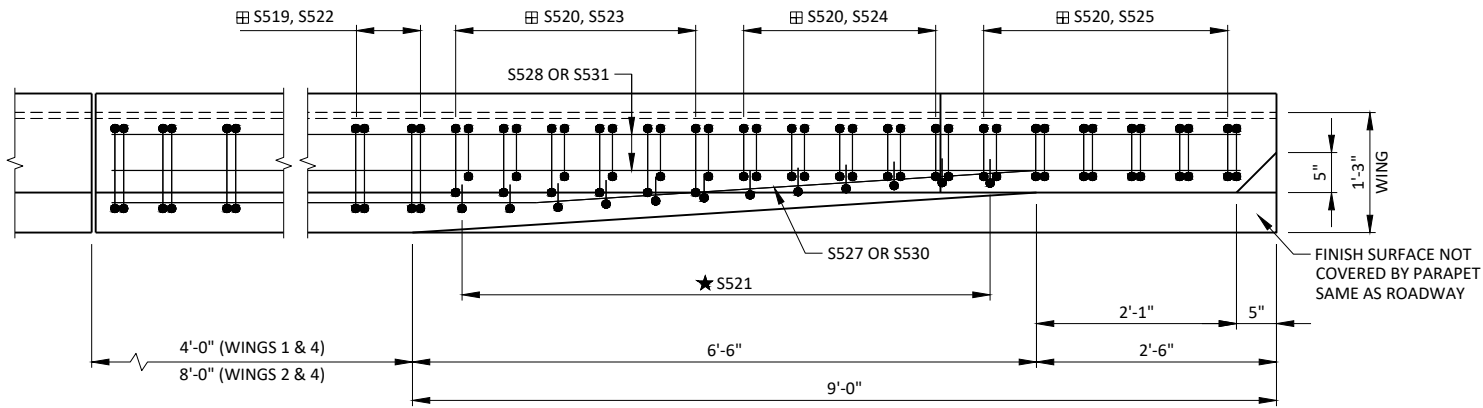
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
SUPERSTRUCTURE DETAILS			SHEET 12 OF 13



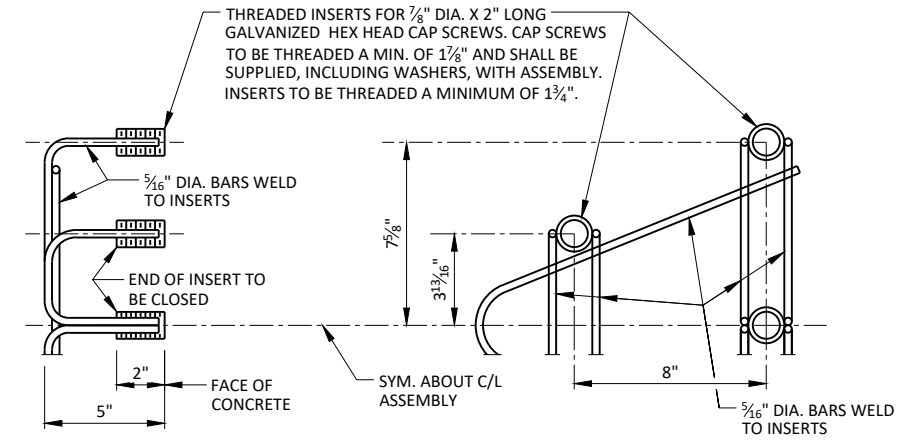
INSIDE ELEVATION



SECTION A SECTION B SECTION C



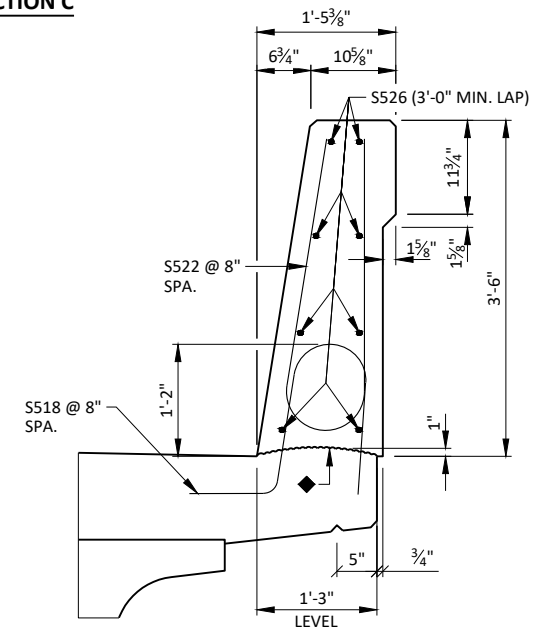
PLAN



DETAIL OF ANCHOR ASSEMBLY

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

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



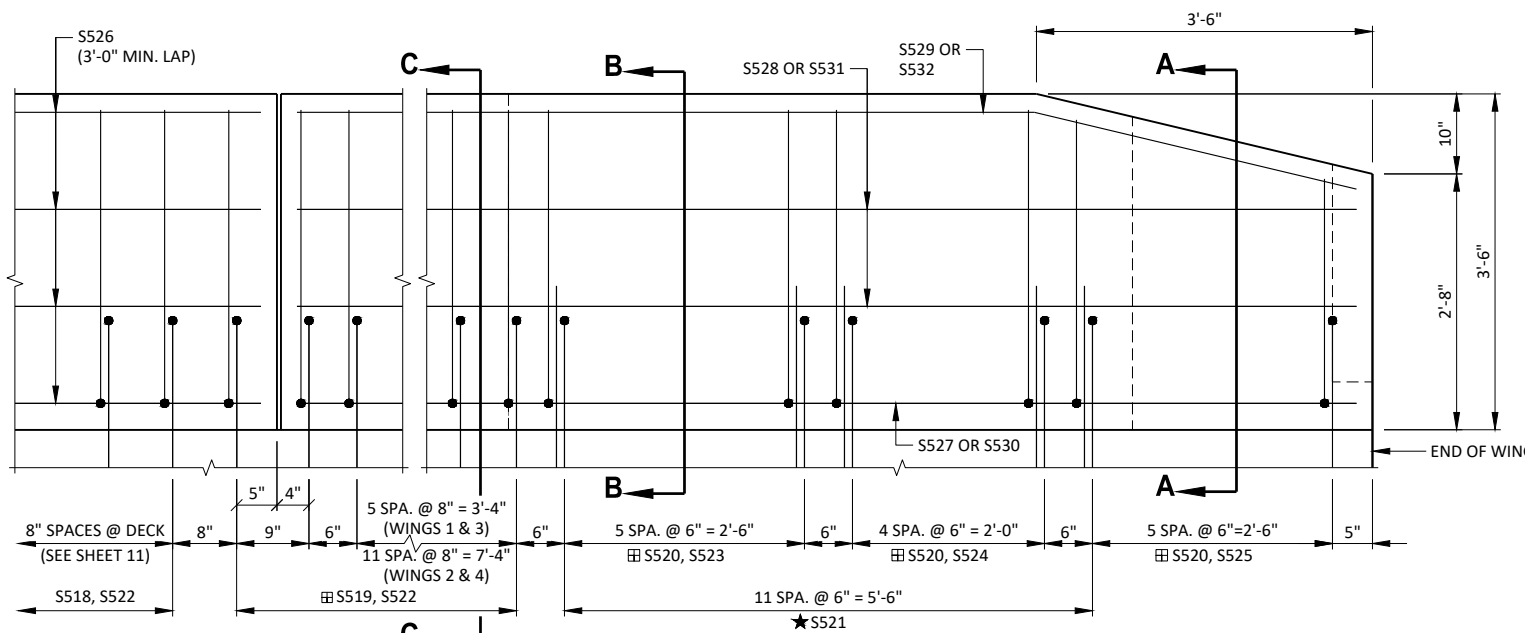
SECTION THROUGH PARAPET ON BRIDGE

NOTES

SOME BARS HAVE BEEN OMITTED FOR CLARITY. SEE SHEET 8 FOR BILL OF BARS.

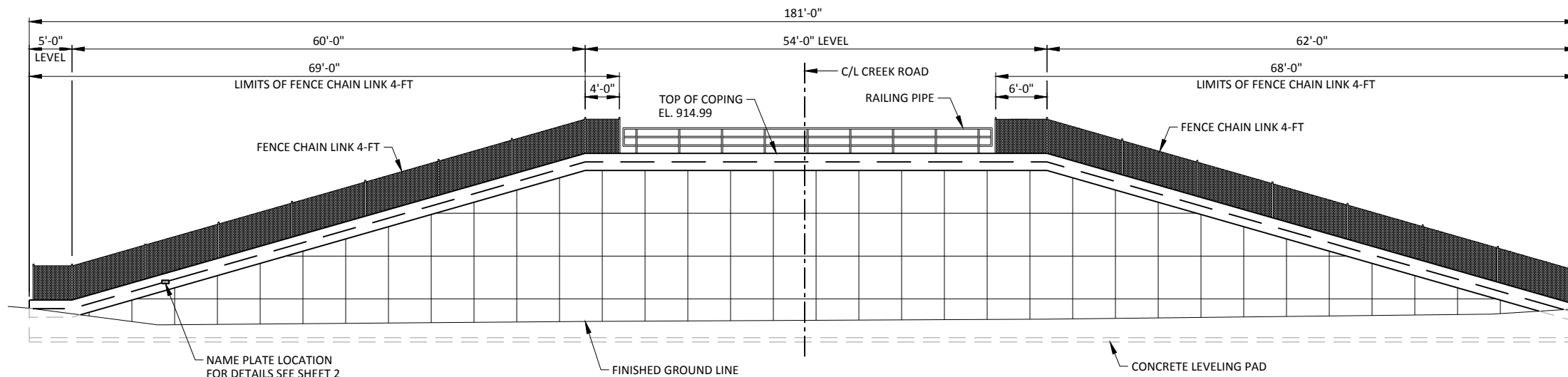
LEGEND

- ◆ CONSTRUCTION JOINT. STRIKE OFF AS SHOWN.
- ▲ 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE).
- ★ S521 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE INITIAL SET HAS TAKEN PLACE. USE CARE TO PLACE S521 BARS CORRECTLY ALONG TRANSITION OF PARAPET.
- ⊞ S519 AND S520 BARS TO BE TIED TO WING STEEL BEFORE WING IS POURED.

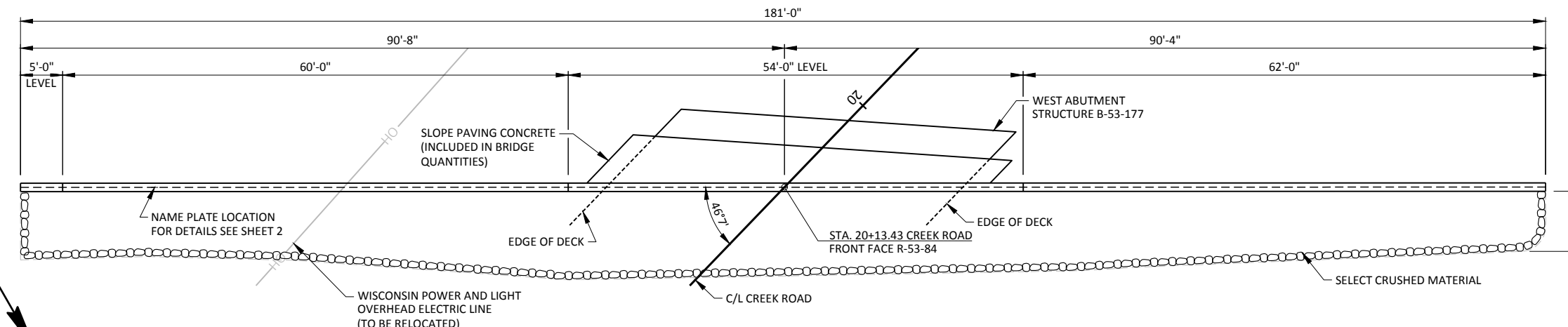


STEEL LAYOUT

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-53-177			
DRAWN BY		PTB	PLANS CK'D. RBH
SINGLE SLOPE PARAPET 42SS			SHEET 13 OF 13



WALL ELEVATION R-53-84
(LOOKING SOUTHWEST AT FRONT FACE OF WALL)



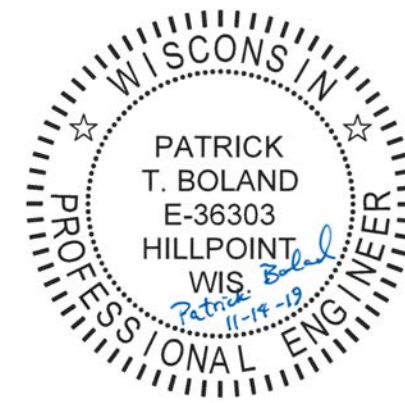
PLAN R-53-84

BENCH MARKS

NO.	STA.	DESCRIPTION	ELEV.
4	8+08	3/4" IRON REBAR SET, 24.0' LT	897.12
5	16+81	3/4" IRON REBAR SET, 19.3' LT	906.61
101	19+92	STAR SPIKE IN PPOL, 39.8' RT	910.78
7	30+00	3/4" IRON REBAR SET, 48.3' RT	906.22

TOTAL ESTIMATED QUANTITIES

ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTALS
513.2001	RAILING PIPE	LF	43
604.0600	SLOPE PAVING SELECT CRUSHED MATERIAL	SY	200
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	200
616.0204	FENCE CHAIN LINK 4-FT	LF	137
SPV.0165.01	WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-84	SF	2,750
NON-BID ITEMS			
	NAME PLATE		
	PREFORMED JOINT FILLER	SIZE	3/4"
	EXPANDED POLYSTYRENE	SIZE	1"



DESIGN CONSULTANT
PATRICK BOLAND, PE
(608) 588-7484

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

DESIGN DATA

THE CONTRACTOR SHALL PROVIDE COMPLETE DESIGN, PLANS, DETAILS, SPECIFICATIONS, AND SHOP DRAWINGS FOR THE RETAINING WALLS IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE RETAINING WALL MANUFACTURER SHALL PROVIDE TECHNICAL ASSISTANCE TO THE CONTRACTOR DURING CONSTRUCTION. THE COST OF FURNISHING THESE ITEMS SHALL BE INCLUDED IN THE BID ITEM "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-84".

PLANS, ELEVATIONS, AND DETAILS SHOWN ON THESE DRAWINGS ARE INTENDED TO INDICATE WALL LOCATIONS, LENGTHS, HEIGHTS, AND DETAILS COMMON TO THE WALL SYSTEM SELECTED. THE CONTRACTOR SHALL VERIFY THAT THE WALL SYSTEM SELECTED WILL CONFORM TO THE REQUIRED ALIGNMENTS AND DETAILS.

THE RETAINING WALL SHALL BE DESIGNED USING THE ELEVATIONS GIVEN ON SHEET 2.

THE MAXIMUM VALUE OF THE ANGLE OF INTERNAL FRICTION OF THE WALL BACKFILL MATERIAL IN THE REINFORCED ZONE SHALL BE ASSUMED TO THE 30° WITHOUT CERTIFIED TEST VALUES.

DESIGN THE RETAINING WALL FOR HORIZONTAL FINISHED GRADE BEHIND THE WALL AND A LIVE LOAD SURCHARGE OF 240 PSF.

DESIGN OF WALL IN FRONT OF ABUTMENT TO RESIST FORCE FROM ALL HORIZONTAL EARTH PRESSURE ACTING ON THE BACK OF THE ABUTMENTS BELOW THE BEAM SEATS.

EITHER 5'x5' OR 5'x10' RECTANGULAR STANDARD PANELS MAY BE USED FOR THIS PROJECT.

DITCH GRADING AT THE TOE OF SLOPE ALONG THE RAIL LINE AS SHOWN ON THE R-LINE CROSS SECTION SHEETS IS INCIDENTAL TO THE BID ITEM "SLOPE PAVING SELECT CRUSHED MATERIAL".

ALLOWABLE WALL SYSTEMS

M.S.E. CONCRETE PANEL WALL

DESIGN DATA

LIVE LOAD:

LIVE LOAD SURCHARGE 240 P.S.F. (TRAFFIC)

MATERIAL PROPERTIES:

CONCRETE MASONRY $f'_c = 3,500$ P.S.I.
 PRECAST CONCRETE WALL PANEL $f'_c = 4,000$ P.S.I.
 HIGH-STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 $f_y = 60,000$ P.S.I.
 STRUCTURAL STEEL CARBON (ASTM A709 GRADE 36) $f_y = 36,000$ P.S.I.

LIST OF DRAWINGS

- GENERAL PLAN _____ 1.
- WALL DETAILS _____ 2.
- RAILING PIPE DETAILS _____ 3.
- FENCE CHAIN LINK DETAILS _____ 4.
- SUBSURFACE EXPLORATION _____ 5.

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

BAR STEEL REINFORCEMENT SHALL HAVE 2" CLEAR COVER UNLESS OTHERWISE SHOWN OR NOTED.

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

ALL STATIONS AND ELEVATIONS ARE IN FEET, ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

ALL DIMENSIONS ARE ALONG THE FRONT FACE OF PRECAST CONCRETE WALL PANEL, UNLESS OTHERWISE SHOWN.

ALL BAR STEEL REINFORCEMENT LOCATED IN CAST-IN-PLACE CONCRETE IS TO BE EPOXY COATED.

THESE PLANS ARE FOR A MECHANICALLY STABILIZED EARTH CONCRETE PANEL WALL.

FILLER SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M153 TYPES I, II, OR III, OR M123.

THE COST OF FURNISHING AND PLACING THE LEVELING PAD UNDER THE MSE PRECAST WALL PANELS IS INCLUDED IN THE BID ITEM "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-84".

THE PLAN QUANTITY FOR THE ITEM "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-84" IS BASED ON THE THEORETICAL PAY LIMITS MEASURED FROM THE TOP OF CONCRETE LEVELING PAD TO THE TOP OF WALL AS SHOWN ON THE PLANS. WORK ABOVE OR BELOW THE THEORETICAL PAY LIMITS IS INCIDENTAL TO THE COST OF THE WORK.

NO.	DATE	REVISION	BY

JEWELL 560 SUNRISE DRIVE
 SPRING GREEN, WI 53588
 OFFICE: (608) 588-7484
 www.jewellassoc.com

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

ACCEPTED *William C. Dreher* SR 11/15/19
 CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE R-53-84

RETAINING WALL AT WSOR RAILROAD

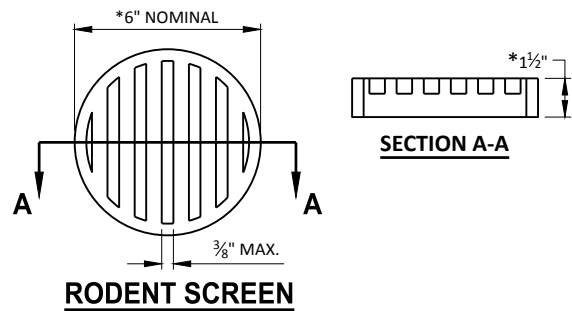
COUNTY: ROCK TOWN/CITY/VILLAGE: BRADFORD

DESIGN SPEC: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY: PTB DESIGN CK'D: RBH DRAWN BY: PTB PLANS CK'D: RBH

GENERAL PLAN

SHEET 1 OF 5



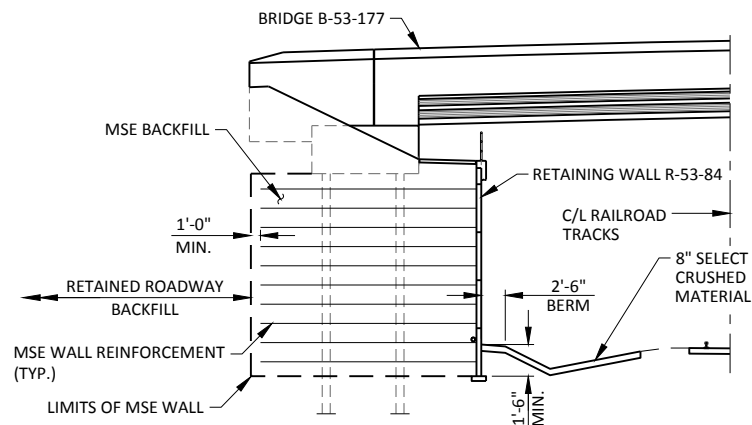
RODENT SCREEN

NOTES:
* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING.

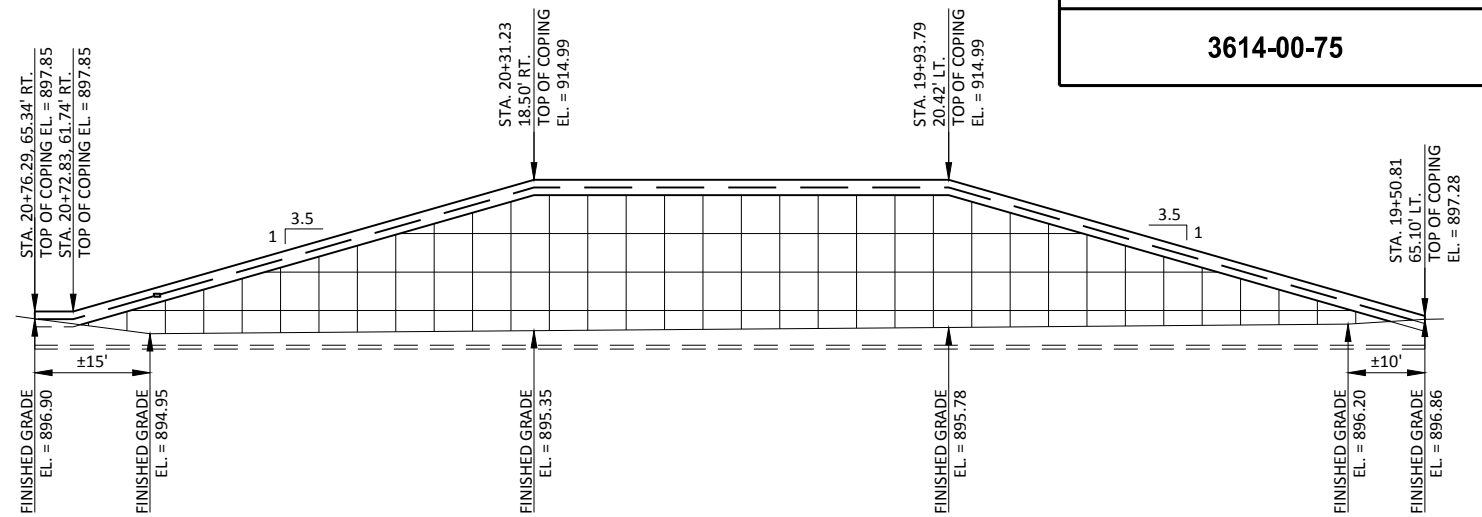
ORIENT SHIELD SO SLOTS ARE VERTICAL.

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

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



TYPICAL SECTION THROUGH MSE RETAINING WALL



ELEVATION R-53-84

(LOOKING SOUTHWEST AT FRONT FACE OF WALL)

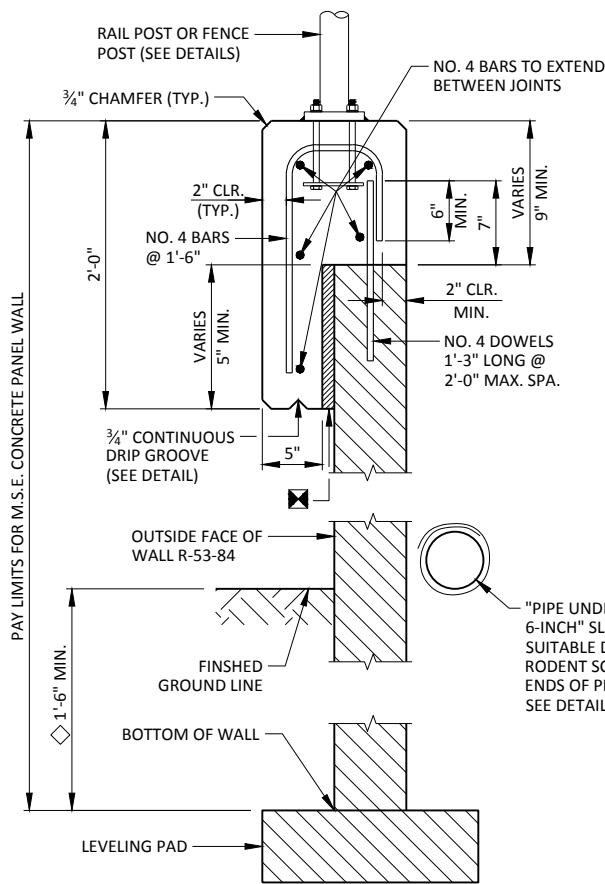
SAFETY FACTORS FOR MSE WALLS

STRUCTURE	WALL HEIGHT (FT)	EXPOSED WALL HEIGHT (FT)	SLIDING (CDR ≥ 1.0)	OVERTURN (CDR ≥ 1.0)	GLOBAL STABILITY (CDR ≥ 1.0)	BEARING CAPACITY (CDR ≥ 1.0)	FACTORED BEARING RESISTANCE (PSF)	MIN. LENGTH OF REINF. (FT)
R-53-84	22.5	21	1.0	1.7	1.0	2.6	17,200	17
	16.5	15	1.0	2.1	1.0	3.0	14,900	14
	11.5	10	1.0	2.6	1.0	3.7	13,200	12

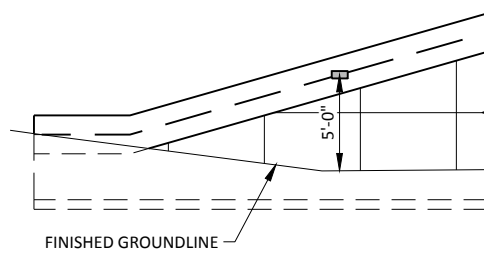
ALL SAFETY FACTORS ARE CALCULATED FOR THE WALL HEIGHTS AND REINFORCEMENT LENGTHS SHOWN IN THE TABLE. SEE GEOTECHNICAL REPORT FOR FURTHER INFORMATION. FINAL DESIGN FOR INTERNAL AND EXTERNAL STABILITY IS THE RESPONSIBILITY OF THE WALL DESIGNER AND MAY BE DIFFERENT FROM THE VALUES IN THE TABLE.

SOIL REINFORCEMENT MUST EXTEND A MINIMUM OF 3.0' BEYOND THE FAILURE PLANE FOR INTERNAL STABILITY AS DEFINED BY AASHTO SPECIFICATIONS.

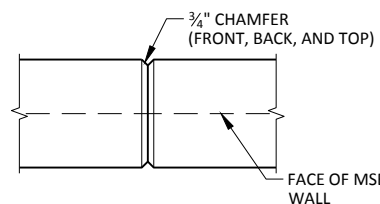
ALL SAFETY FACTORS ARE BASED ON ANALYSIS OF BORING B-2 AS SHOWN ON THE SUBSURFACE EXPLORATION SHEET.



CAST-IN-PLACE CONCRETE COPING DETAIL

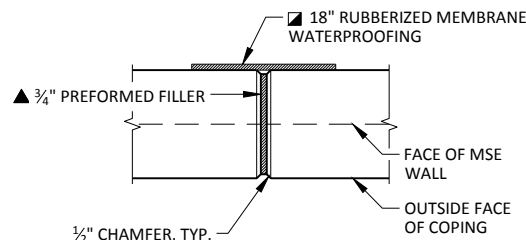


NAME PLATE DETAIL
PLACE IN CENTER OF COPING



COPING CONTRACTION JOINT

DO NOT RUN BAR STEEL THROUGH JOINT.
MAX. SPACING OF JOINT = 12'



COPING EXPANSION JOINT

DO NOT RUN BAR STEEL THROUGH JOINT.
MAX. SPACING OF JOINT = 50'

ASSUMED SOIL PARAMETERS OF FILL MATERIALS

SOIL DESCRIPTION	SOIL UNIT WEIGHT (PCF)	COHESION (PSF)	FRICTION ANGLE (DEGREES)
SAND/GRAVEL, COMPACTED (ON-SITE)	135	0	36
CLAY, COMPACTED (ON-SITE)	115	> 1,000	26
SAND, FREE-DRAINING, COMPACTED (IMPORTED)	110	0	30

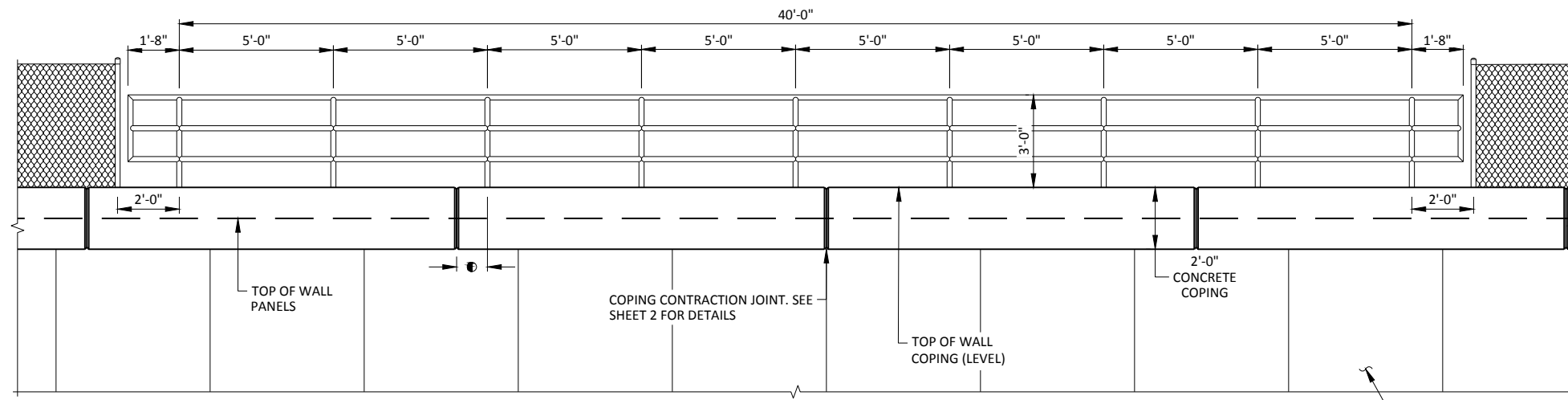
SOIL PARAMETERS

SOIL DESCRIPTION	BOTTOM ELEVATION (FT)	SOIL UNIT WEIGHT (PCF)	COHESION (PSF)	FRICTION ANGLE (DEGREES)
EX. FILL: VERY STIFF SANDY CLAY	903.8	120	2,000	0
DENSE SAND AND GRAVEL	898.3	130	0	36
VERY DENSE SAND AND GRAVEL	870.3	140	500	39
HIGHLY WEATHERED DOLOMITE BEDROCK	866.3	150	0	43
LESS WEATHERED DOLOMITE BEDROCK	865.8	160	HIGH	0

LEGEND

- 1" EXPANDED POLYSTYRENE
- ▲ WALL COPING CONCRETE, REINFORCEMENT BARS AND LEVELING PAD ARE TO BE INCLUDED IN THE BID ITEM: "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-84".
- VERTICAL 18" RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM TOP OF COPING TO 6" BELOW TOP OF PANELS. TO BE INCLUDED IN THE BID ITEM: "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-84".
- ▲ 3/4" PREFORMED FILLER. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE)
- ◇ FIELD EMBEDMENT SHALL MEET OR EXCEED THE MINIMUM EMBEDMENT OF 1'-6". FIELD EMBEDMENT IN EXCESS OF THE MINIMUM EMBEDMENT AS SHOWN IN THE ELEVATION VIEW SHALL NOT BE INCLUDED IN THE PAY LIMITS.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE R-53-84			
DRAWN BY: PTB		PLANS CK'D: RBH	
WALL DETAILS			
SHEET 2 OF 5			



PARTIAL ELEVATION OF WALL COPING & RAILING

(LOOKING SOUTH AT FRONT OF WALL)

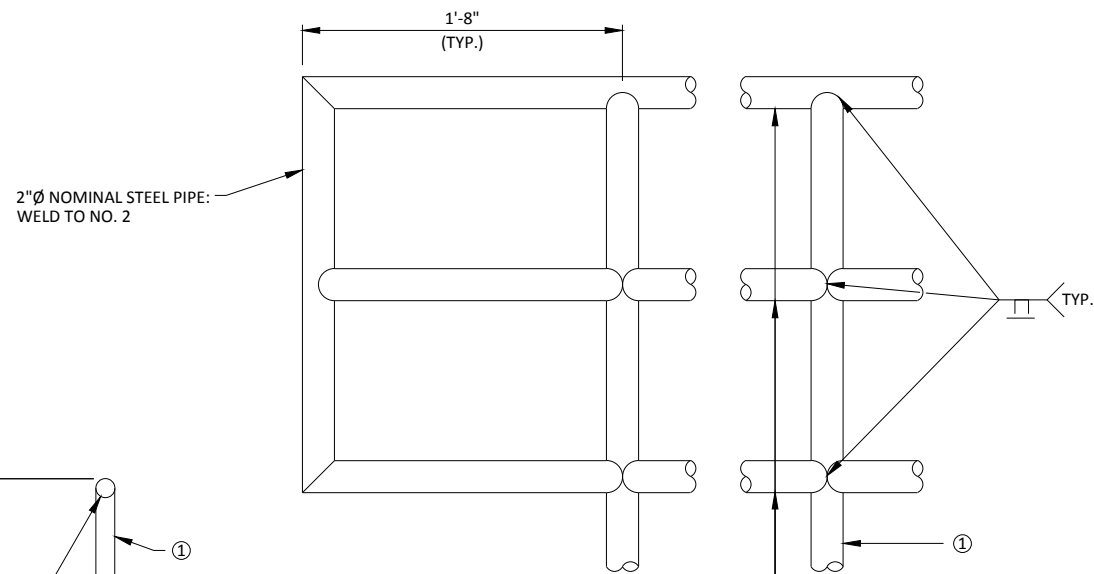
9" MIN. DISTANCE REQUIRED BETWEEN THE C/L OF COPING JOINTS AND THE C/L OF RAIL POSTS

LEGEND

- ① 2"Ø NOMINAL STEEL PIPE FOR POSTS: CUT BOTTOM OF POST TO MATCH TOP OF CONCRETE. POSTS ARE TO BE SET VERTICAL.
- ② 2"Ø NOMINAL STEEL PIPE FOR RAILS: WELD TO NO. 1
- ③ PLATE 3/4" X 5" X 8", WITH 5/8"Ø HOLE FOR ANCHOR BOLTS NO. 6. WELD TO NO. 1
- ④ 1/2"Ø X 6 7/8" LONG HEX BOLTS (GALVANIZED) WITH NUT AND WASHER. 2 REQ'D PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 5. CHAMFER TOP OF BOLTS BEFORE THREADING. ADHESIVE ANCHORS 1/2-INCH MAY BE SUBSTITUTED FOR 1/2"Ø CAST-IN-PLACE ANCHOR BOLTS. ANCHOR PLATE NOT REQ'D WHEN ADHESIVE ANCHORS ARE USED. ☆SEE NOTE.
- ☆ ADHESIVE ANCHORS 1/2-INCH: 6" MIN. EMBEDMENT INTO CONCRETE AND MINIMUM PULLOUT CAPACITY OF 10 KIPS, ANCHOR, WASHER AND NUT SHALL BE GALVANIZED.
- ⑤ 1/4" X 2" X 8" FLAT BAR, WITH 5/8"Ø HOLES FOR ANCHOR BOLTS NO. 4.
- ⑥ 1 1/2"Ø PIPE SLEEVE X 1'-10" LONG FOR NO. 2. PROVIDE 1/2"Ø SURFACE WELDS ON ALL SIDES AS SHOWN. GRIND WELDS TO FIT FREE INTO I.D. OF NO. 2. PROVIDE 3/8"Ø X 1/2" WELDING STUDS ON TOP AND BOTTOM SURFACES AT CENTERLINE.

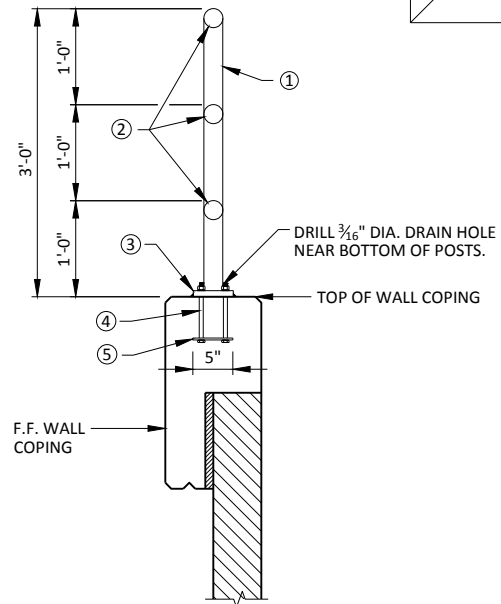
GENERAL NOTES

- BID ITEM SHALL BE "RAILING PIPE" WHICH INCLUDES ALL ITEMS SHOWN.
- RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.
- FIELD ERECTION JOINTS MUST BE PLACED IN BETWEEN RAIL POSTS WHERE THERE IS ALSO A CONCRETE COPING EXPANSION JOINT IN BETWEEN RAIL POSTS.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
- ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS AND STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY S.S.P.C. SPECIFICATIONS.
- DRILL DRAIN HOLES PRIOR TO GALVANIZING.
- ALL MATERIALS USED IN FABRICATION SHALL BE MADE FROM MATERIALS CONFORMING TO A.S.T.M. DESIGNATION A709 GRADE 36 UNLESS NOTED OTHERWISE.
- STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D FOR ALIGNMENT.
- ALL RAILS AND POSTS ARE STANDARD WEIGHT PIPE, SCHEDULE 40.
- PLACE ALL NUTS ON OUTSIDE OF POSTS.
- ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING.
- CAULK AROUND PERIMETER OF BASE PLATES AND FILL PORTION OF SLOTTED HOLES AROUND ANCHOR BOLTS IN POST SHIMS AND BASE PLATES WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER.

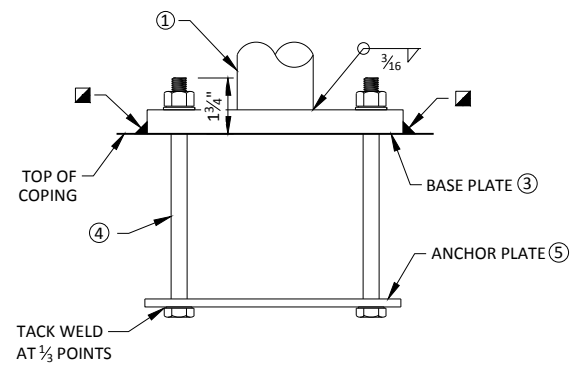


FIELD ERECTION JOINT DETAIL

*MIN. 5/8" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.

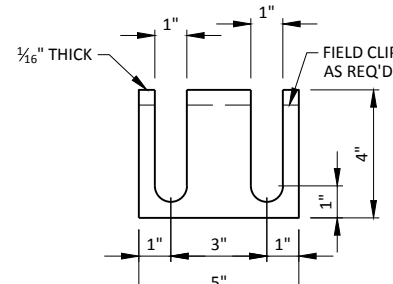


SECTION THROUGH RAILING



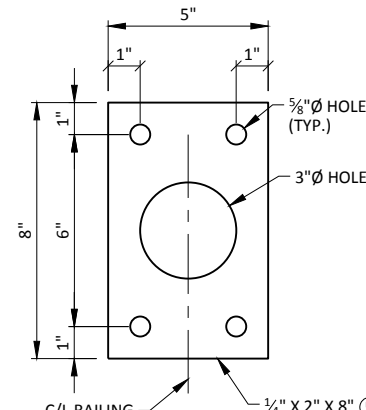
POST ATTACHMENT

UNIT SHALL BE GALV. AFTER FABRICATION

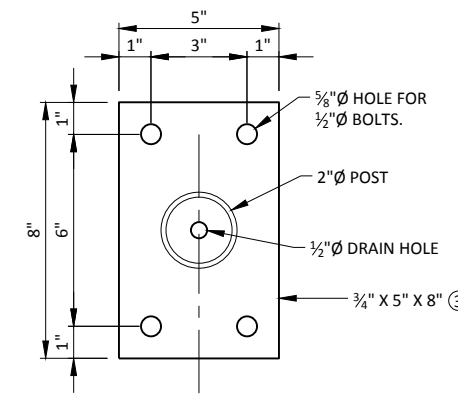


POST SHIM DETAILS

SHIMS REQUIRED ONLY WHEN POSTS ARE WELDED TO BASE PLATES. PROVIDE 4 SHIMS PER POST.



ANCHOR PLATE

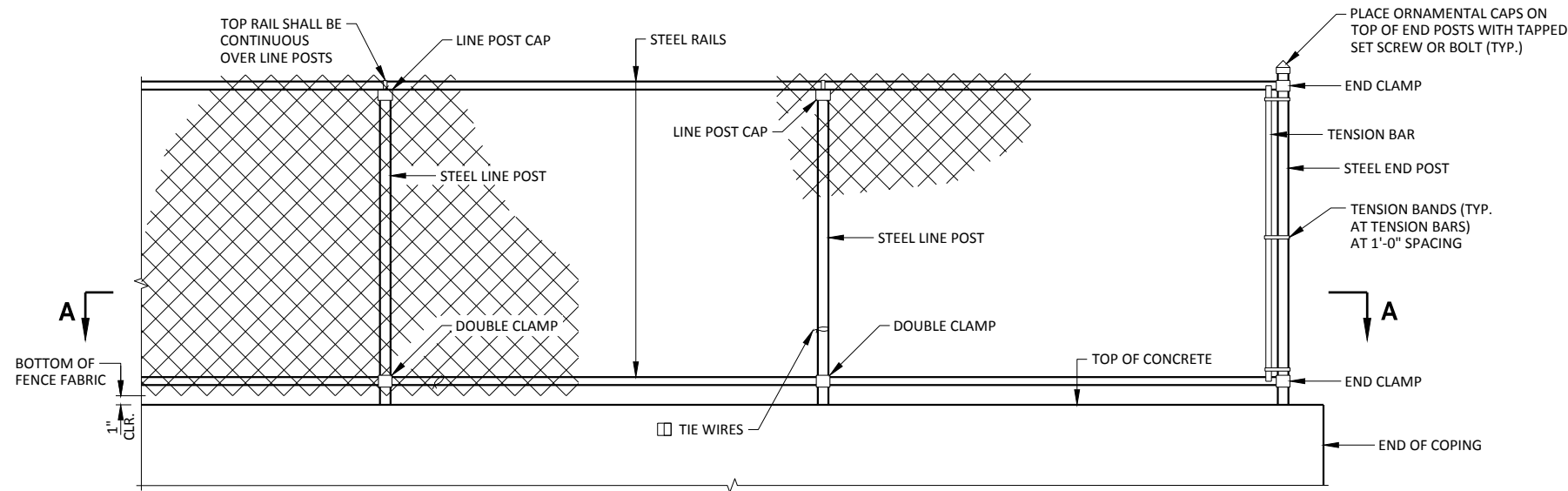


BASE PLATE

8

8

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE R-53-84			
DRAWN BY		PTB	PLANS CK'D. RBH
PIPE RAILING DETAILS			SHEET 3 OF 5



FENCE MEMBER SIZE & WEIGHT

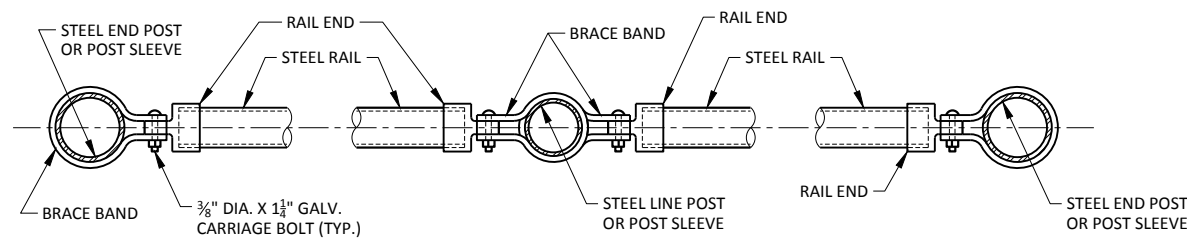
STEEL FENCE MEMBER	OUTSIDE DIAMETER (INCHES)	WEIGHT (LB/FT)
RAIL	1.660	2.27
END POST	2.875	5.80
LINE POST	2.375	3.65
POST SLEEVE	4.000	9.12

GENERAL NOTES

- POSTS ARE TO BE SET VERTICAL.
- ALL FENCE COMPONENTS SHALL BE GALVANIZED STEEL, EXCEPT THE FENCE FABRIC WHICH MAY BE ALUMINUM-COATED STEEL OR GALVANIZED STEEL.
- FABRIC SHALL CONFORM TO ASTM A491 OR A392, CLASS 2. STEEL RAILS, POSTS AND POST SLEEVES SHALL CONFORM TO ASTM F1083, STANDARD WEIGHT PIPE (SCHEDULE 40). FITTINGS SHALL CONFORM TO ASTM F626.
- THE BID ITEM SHALL BE "FENCE CHAIN LINK 4-FT."
- COMPLETE ANY REQUIRED WELDING OF COMPONENTS BEFORE GALVANIZING.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
- BASE PLATES, ANCHOR PLATES AND SHIMS SHALL BE ASTM A709, GRADE 36.
- ALL POST SPACINGS ARE MEASURED HORIZONTALLY ALONG THE C/L OF THE POST.
- MINIMUM LENGTH OF TOP RAIL BETWEEN SPLICES SHALL BE 20'-0". LOCATE SPLICES NEAR 3/4 POINT OF POST SPACING.

LEGEND

- CAULK AROUND PERIMETER OF BASE PLATE AND FILL PORTION OF SLOTTED HOLE AROUND ANCHOR BOLT IN SHIM WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.
- ALTERNATE TO DOUBLE CLAMP: USE LINE RAIL CLAMP (BOULEVARD) OR 180° BRACE BAND, WHICH MAY BE USED WHEN THE POSTS ARE EITHER BOLTED TO THE POST SLEEVES OR DIRECTLY WELDED TO THE BASE PLATE.
- 1/2" DIA. X 67/8" LONG GALVANIZED HEX BOLT WITH NUT & WASHER. ☆
- ALTERNATIVE ANCHORAGE: CONCRETE ADHESIVE ANCHORS 1/2-inch. EMBED 7" IN CONCRETE. ADHESIVE ANCHORS SHALL CONFORM TO SECTION 502.2.12 OF THE STANDARD SPECIFICATIONS.
- ATTACH FABRIC TO RAILS, AND TO POSTS WITHOUT TENSION BANDS, WITH TIE WIRES (ROUND, 9-GAGE) SPACED AT 1'-0".

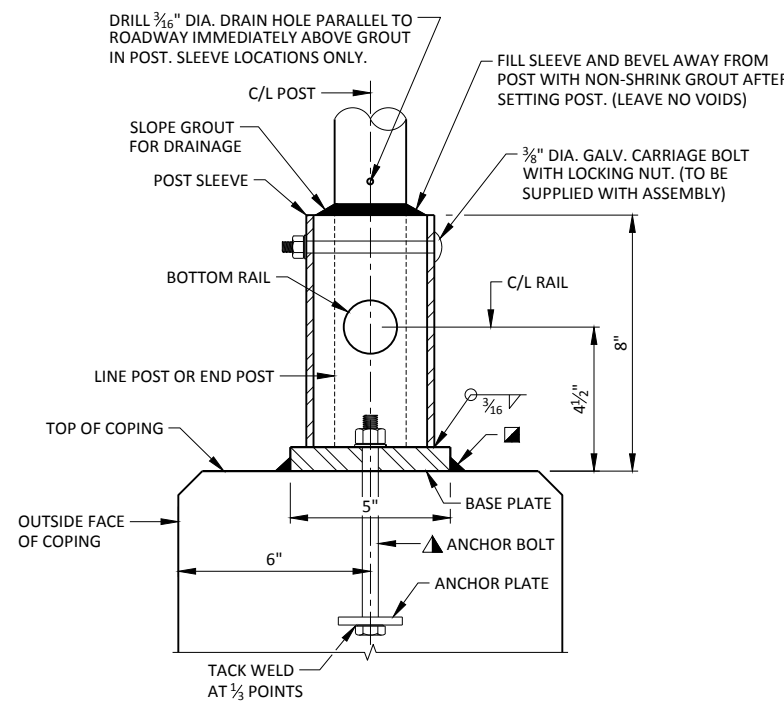


END CLAMP

***DOUBLE CLAMP**

SECTION A-A

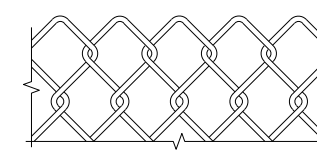
NOTE: PLACE ALL BOLT HEADS ON SIDE OF FENCE ADJACENT TO PEDESTRIANS



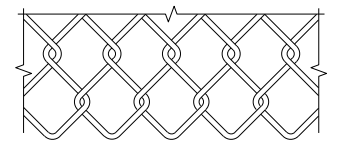
DETAIL 'A'

UNIT SHALL BE GALVANIZED AFTER FABRICATION

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



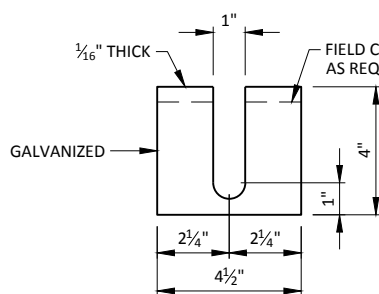
TOP DETAIL



BOTTOM DETAIL

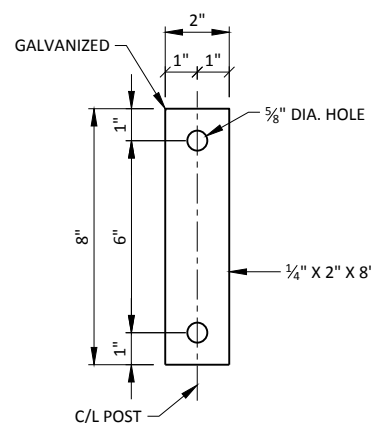
FENCE FABRIC

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



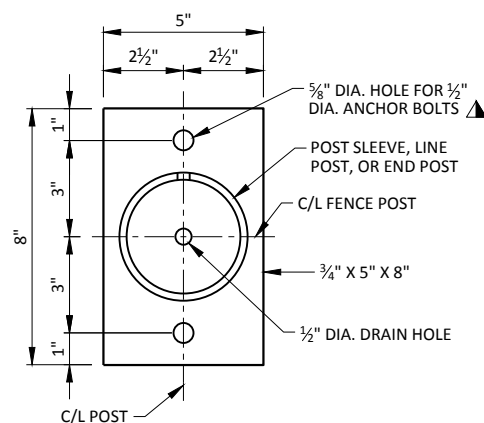
POST SHIM DETAILS

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



ANCHOR PLATE

NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED



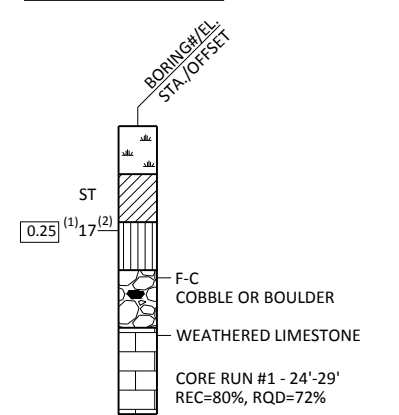
BASE PLATE

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE R-53-85			
DRAWN BY		PTB	PLANS CK'D. RBH
CHAIN LINK FENCE DETAILS			SHEET 4 OF 5

MATERIAL SYMBOLS

	Asphalt		Topsoil		Peat
	Concrete		Fill		Gravel
	Sand		Clay		Silt
	Boulders or Cobbles		Limestone		Bedrock (unknown)
	Shale		Sandstone		Igneous/meta

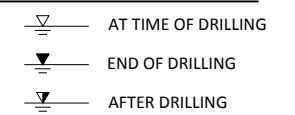
LEGEND OF BORING



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

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

GROUND WATER ELEVATIONS



ABBREVIATIONS

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

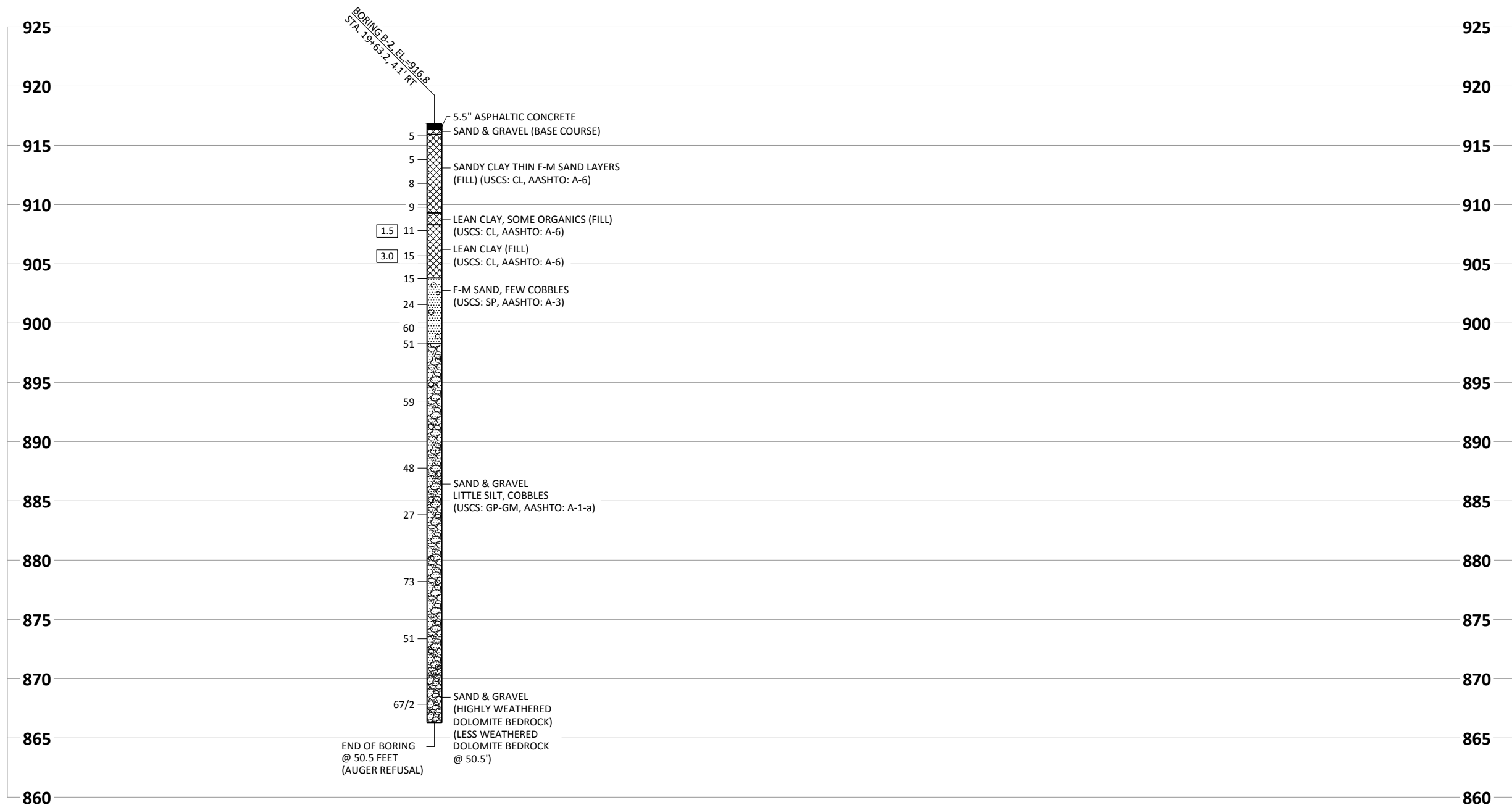
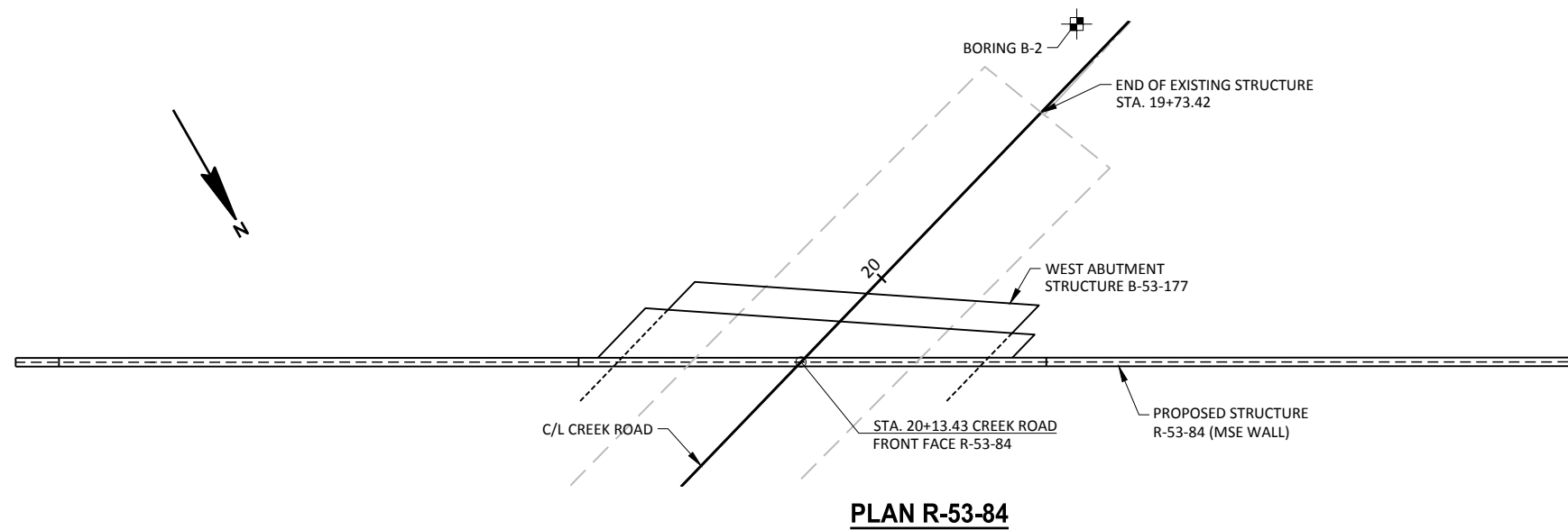
SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

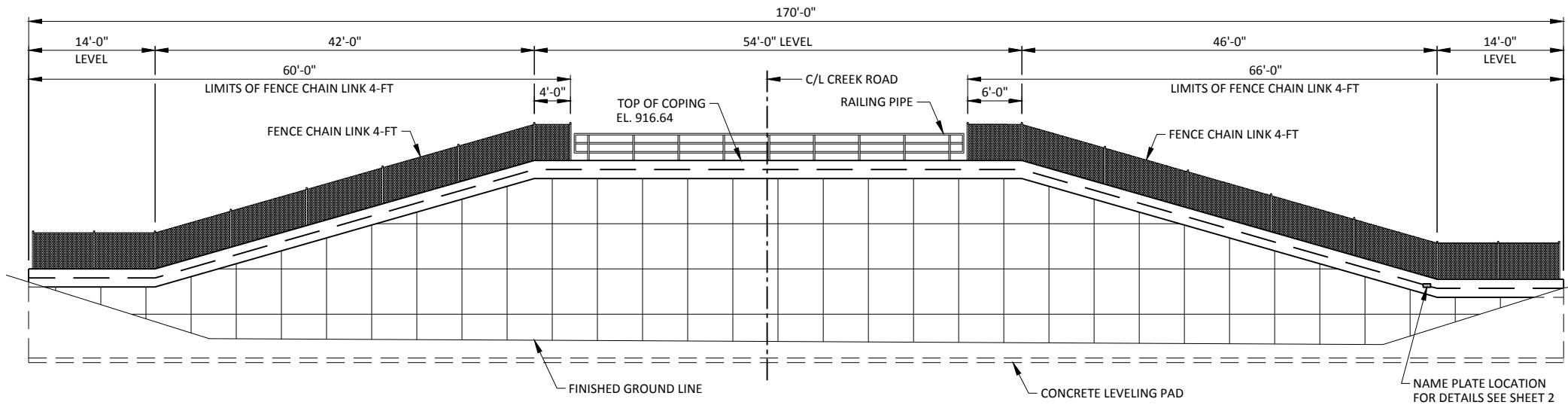
SOIL BORINGS

BORING NUMBER	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B-1	01/09/19	241,402.2	552,510.6
B-2	01/14/19	241,350.4	552,365.5

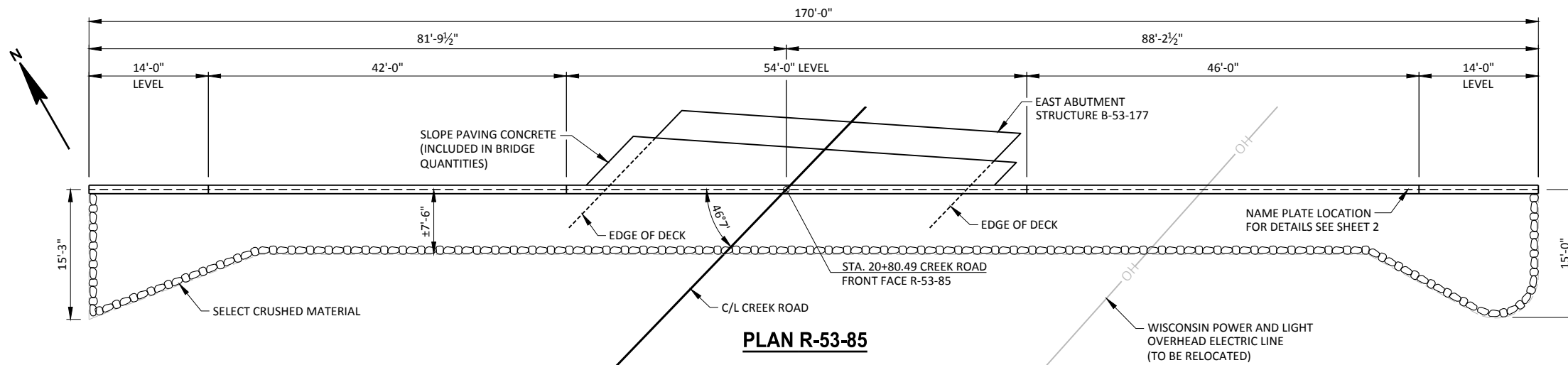
BORINGS & REPORT COMPLETED BY: NUMMELIN TESTING SERVICES, INC. 5620 WOODLAND DRIVE WAUNAKEE, WI 53597



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE R-53-84			
DRAWN BY		PTB	PLANS CK'D. RBH
SUBSURFACE EXPLORATION			SHEET 5 OF 5



WALL ELEVATION R-53-85
(LOOKING NORTHEAST AT FRONT FACE OF WALL)



PLAN R-53-85

BENCH MARKS

NO.	STA.	DESCRIPTION	ELEV.
4	8+08	3/4" IRON REBAR SET, 24.0' LT	897.12
5	16+81	3/4" IRON REBAR SET, 19.3' LT	906.61
101	19+92	STAR SPIKE IN PPOL, 39.8' RT	910.78
7	30+00	3/4" IRON REBAR SET, 48.3' RT	906.22

TOTAL ESTIMATED QUANTITIES

ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTALS
513.2001	RAILING PIPE	LF	43
604.0600	SLOPE PAVING SELECT CRUSHED MATERIAL	SY	180
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	190
616.0204	FENCE CHAIN LINK 4-FT	LF	126
SPV.0165.02	WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-85	SF	2,810
NON-BID ITEMS			
	NAME PLATE		
	PREFORMED JOINT FILLER	SIZE	3/4"
	EXPANDED POLYSTYRENE	SIZE	1"

GENERAL NOTES

- DRAWINGS SHALL NOT BE SCALED.
- BAR STEEL REINFORCEMENT SHALL HAVE 2" CLEAR COVER UNLESS OTHERWISE SHOWN OR NOTED.
- BEVEL EXPOSED EDGES OF CONCRETE 3/4", UNLESS NOTED OTHERWISE.
- ALL STATIONS AND ELEVATIONS ARE IN FEET, ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
- ALL DIMENSIONS ARE ALONG THE FRONT FACE OF PRECAST CONCRETE WALL PANEL, UNLESS OTHERWISE SHOWN.
- ALL BAR STEEL REINFORCEMENT LOCATED IN CAST-IN-PLACE CONCRETE IS TO BE EPOXY COATED.
- THESE PLANS ARE FOR A MECHANICALLY STABILIZED EARTH CONCRETE PANEL WALL.
- FILLER SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M153 TYPES I, II, OR III, OR M123.
- THE COST OF FURNISHING AND PLACING THE LEVELING PAD UNDER THE MSE PRECAST WALL PANELS IS INCLUDED IN THE BID ITEM "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-85".
- THE PLAN QUANTITY FOR THE ITEM "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-85" IS BASED ON THE THEORETICAL PAY LIMITS MEASURED FROM THE TOP OF CONCRETE LEVELING PAD TO THE TOP OF WALL AS SHOWN ON THE PLANS. WORK ABOVE OR BELOW THE THEORETICAL PAY LIMITS IS INCIDENTAL TO THE COST OF THE WORK.

DESIGN DATA

THE CONTRACTOR SHALL PROVIDE COMPLETE DESIGN, PLANS, DETAILS, SPECIFICATIONS, AND SHOP DRAWINGS FOR THE RETAINING WALLS IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE RETAINING WALL MANUFACTURER SHALL PROVIDE TECHNICAL ASSISTANCE TO THE CONTRACTOR DURING CONSTRUCTION. THE COST OF FURNISHING THESE ITEMS SHALL BE INCLUDED IN THE BID ITEM "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-85".

PLANS, ELEVATIONS, AND DETAILS SHOWN ON THESE DRAWINGS ARE INTENDED TO INDICATE WALL LOCATIONS, LENGTHS, HEIGHTS, AND DETAILS COMMON TO THE WALL SYSTEM SELECTED. THE CONTRACTOR SHALL VERIFY THAT THE WALL SYSTEM SELECTED WILL CONFORM TO THE REQUIRED ALIGNMENTS AND DETAILS.

THE RETAINING WALL SHALL BE DESIGNED USING THE ELEVATIONS GIVEN ON SHEET 2.

THE MAXIMUM VALUE OF THE ANGLE OF INTERNAL FRICTION OF THE WALL BACKFILL MATERIAL IN THE REINFORCED ZONE SHALL BE ASSUMED TO THE 30° WITHOUT CERTIFIED TEST VALUES.

DESIGN THE RETAINING WALL FOR HORIZONTAL FINISHED GRADE BEHIND THE WALL AND A LIVE LOAD SURCHARGE OF 240 PSF.

DESIGN OF WALL IN FRONT OF ABUTMENT TO RESIST FORCE FROM ALL HORIZONTAL EARTH PRESSURE ACTING ON THE BACK OF THE ABUTMENTS BELOW THE BEAM SEATS.

EITHER 5'x5' OR 5'x10' RECTANGULAR STANDARD PANELS MAY BE USED FOR THIS PROJECT.

DITCH GRADING AT THE TOE OF SLOPE ALONG THE RAIL LINE AS SHOWN ON THE R-LINE CROSS SECTION SHEETS IS INCIDENTAL TO THE BID ITEM "SLOPE PAVING SELECT CRUSHED MATERIAL".

ALLOWABLE WALL SYSTEMS

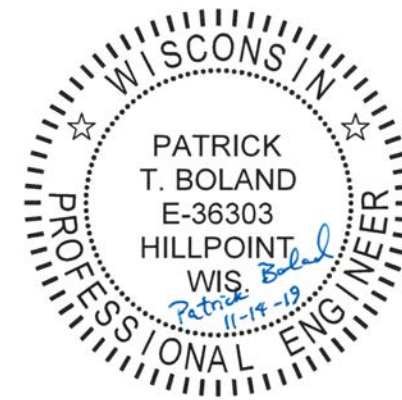
M.S.E. CONCRETE PANEL WALL

DESIGN DATA

- LIVE LOAD:**
LIVE LOAD SURCHARGE _____ 240 P.S.F. (TRAFFIC)
- MATERIAL PROPERTIES:**
 CONCRETE MASONRY _____ f_c = 3,500 P.S.I.
 PRECAST CONCRETE WALL PANEL _____ f_c = 4,000 P.S.I.
 HIGH-STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 _____ f_y = 60,000 P.S.I.
 STRUCTURAL STEEL CARBON (ASTM A709 GRADE 36) _____ f_y = 36,000 P.S.I.

LIST OF DRAWINGS

- GENERAL PLAN _____ 1.
- WALL DETAILS _____ 2.
- RAILING PIPE DETAILS _____ 3.
- FENCE CHAIN LINK DETAILS _____ 4.
- SUBSURFACE EXPLORATION _____ 5.



DESIGN CONSULTANT
PATRICK BOLAND, PE
(608) 588-7484

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

NO.	DATE	REVISION	BY

JEWELL
associates engineers, inc.
Engineers - Architects - Surveyors

560 SUNRISE DRIVE
SPRING GREEN, WI 53588
OFFICE: (608) 588-7484
www.jewellassoc.com

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED *William C. Dreher* SR. 11/15/19
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE R-53-85

RETAINING WALL AT WSOR RAILROAD

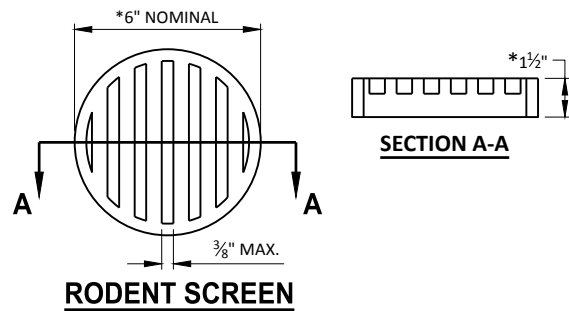
COUNTY: ROCK TOWN/CITY/VILLAGE: BRADFORD

DESIGN SPEC: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY: PTB DESIGN CK'D: RBH DRAWN BY: PTB PLANS CK'D: RBH

GENERAL PLAN

SHEET 1 OF 5



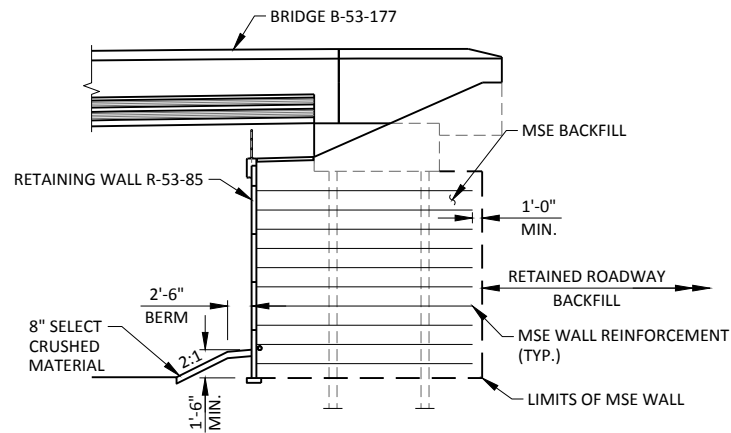
RODENT SCREEN

NOTES:
 * DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING.

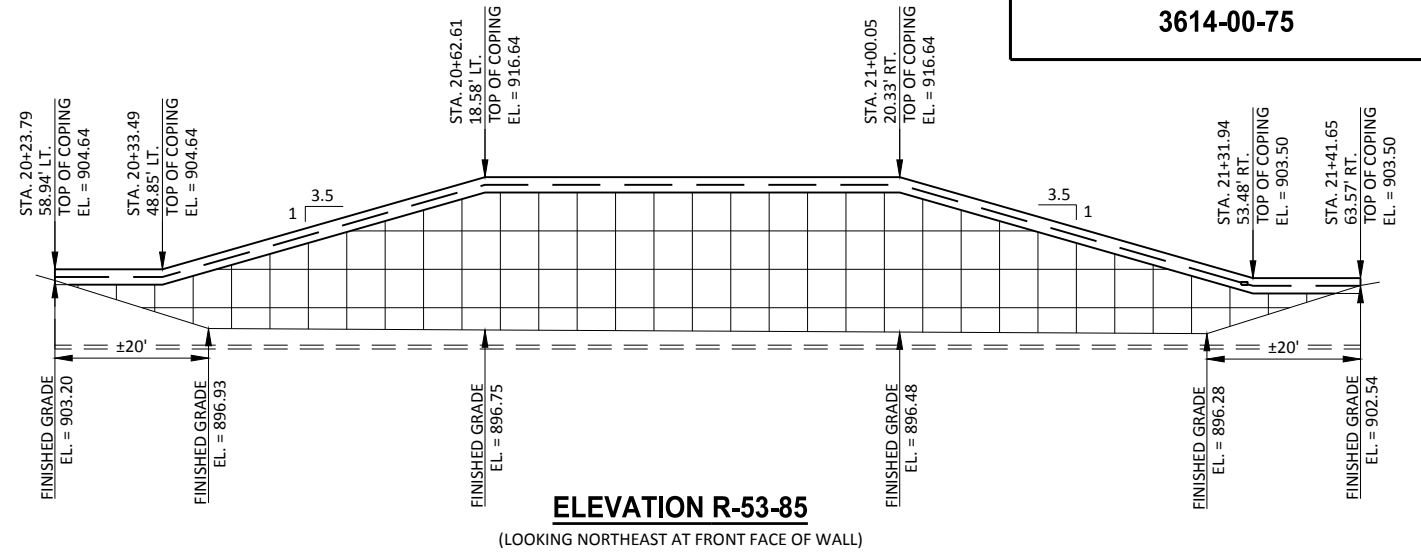
ORIENT SHIELD SO SLOTS ARE VERTICAL.

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

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



TYPICAL SECTION THROUGH MSE RETAINING WALL



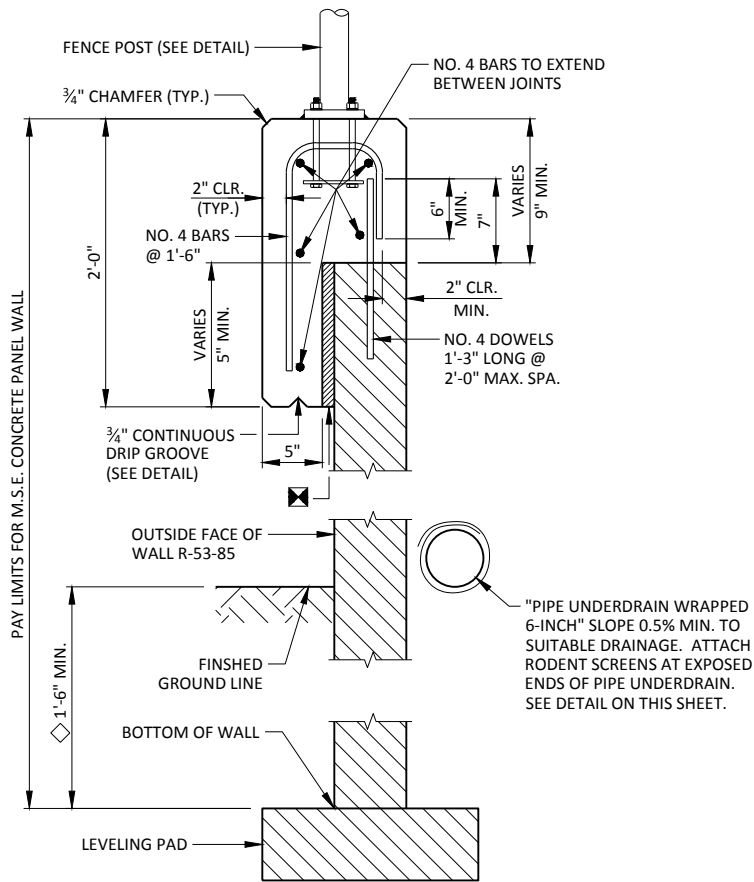
ELEVATION R-53-85

(LOOKING NORTHEAST AT FRONT FACE OF WALL)

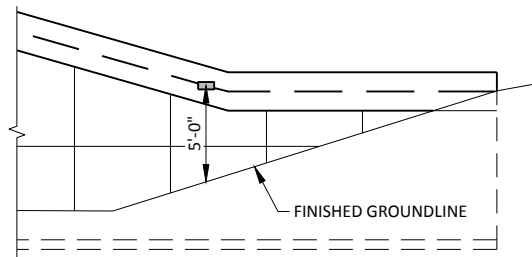
SAFETY FACTORS FOR MSE WALLS

STRUCTURE	WALL HEIGHT (FT)	EXPOSED WALL HEIGHT (FT)	SLIDING (CDR ≥ 1.0)	OVERTURN (CDR ≥ 1.0)	GLOBAL STABILITY (CDR ≥ 1.0)	BEARING CAPACITY (CDR ≥ 1.0)	FACTORED BEARING RESISTANCE (PSF)	MIN. LENGTH OF REINF. (FT)
R-53-85	22.5	21	1.0	1.7	1.0	2.6	17,200	17
	16.5	15	1.0	2.1	1.0	3.0	14,900	14
	11.5	10	1.0	2.6	1.0	3.7	13,200	12

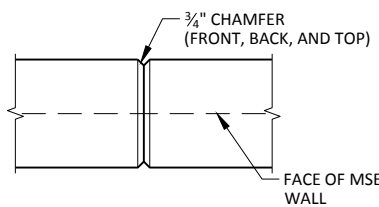
ALL SAFETY FACTORS ARE CALCULATED FOR THE WALL HEIGHTS AND REINFORCEMENT LENGTHS SHOWN IN THE TABLE. SEE GEOTECHNICAL REPORT FOR FURTHER INFORMATION. FINAL DESIGN FOR INTERNAL AND EXTERNAL STABILITY IS THE RESPONSIBILITY OF THE WALL DESIGNER AND MAY BE DIFFERENT FROM THE VALUES IN THE TABLE.
 SOIL REINFORCEMENT MUST EXTEND A MINIMUM OF 3.0' BEYOND THE FAILURE PLANE FOR INTERNAL STABILITY AS DEFINED BY AASHTO SPECIFICATIONS.



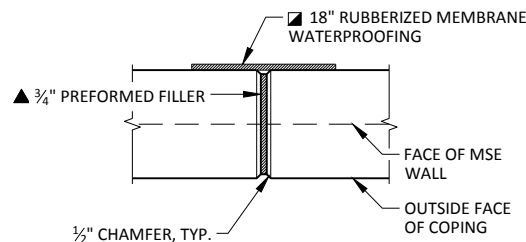
CAST-IN-PLACE CONCRETE COPING DETAIL



NAME PLATE DETAIL
PLACE IN CENTER OF COPING



COPING CONTRACTION JOINT
DO NOT RUN BAR STEEL THROUGH JOINT. MAX. SPACING OF JOINT = 12'



COPING EXPANSION JOINT
DO NOT RUN BAR STEEL THROUGH JOINT. MAX. SPACING OF JOINT = 50'

ASSUMED SOIL PARAMETERS OF FILL MATERIALS

SOIL DESCRIPTION	SOIL UNIT WEIGHT (PCF)	COHESION (PSF)	FRICTION ANGLE (DEGREES)
SAND/GRAVEL, COMPACTED (ON-SITE)	135	0	36
CLAY, COMPACTED (ON-SITE)	115	> 1,000	26
SAND, FREE-DRAINING, COMPACTED (IMPORTED)	110	0	30

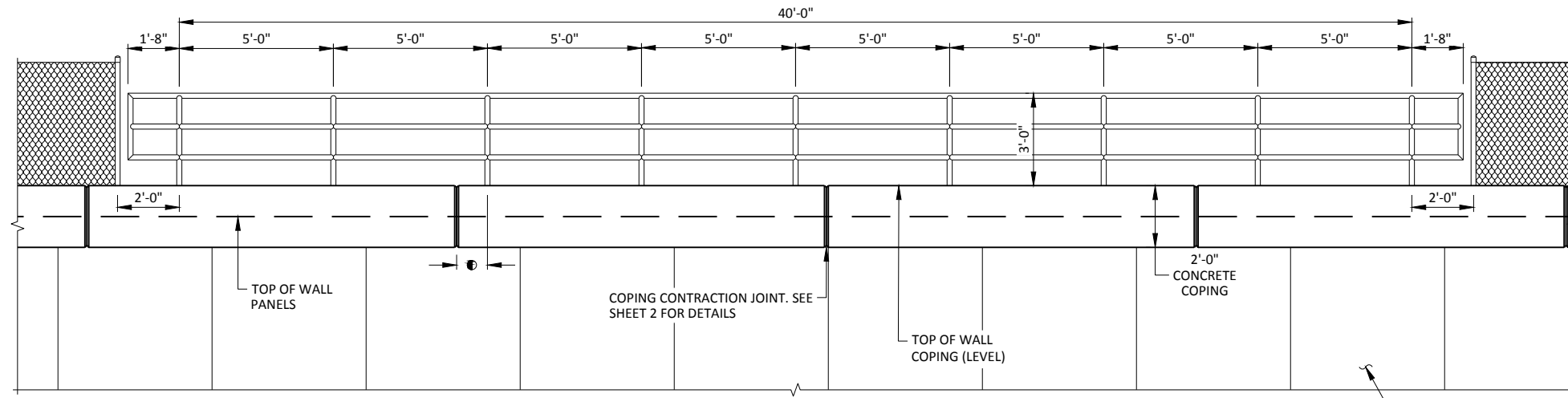
SOIL PARAMETERS

SOIL DESCRIPTION	BOTTOM ELEVATION (FT)	SOIL UNIT WEIGHT (PCF)	COHESION (PSF)	FRICTION ANGLE (DEGREES)
EX. FILL: VERY STIFF SANDY CLAY	903.2	120	2,000	0
DENSE SAND AND GRAVEL	892.7	130	0	39
VERY DENSE SAND AND GRAVEL	868.2	140	0	41
HIGHLY WEATHERED DOLOMITE BEDROCK	863.7	150	0	43
LESS WEATHERED DOLOMITE BEDROCK	863.2	160	HIGH	0

LEGEND

- 1" EXPANDED POLYSTYRENE
- ▲ WALL COPING CONCRETE, REINFORCEMENT BARS AND LEVELING PAD ARE TO BE INCLUDED IN THE BID ITEM: "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-85".
- VERTICAL 18" RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM TOP OF COPING TO 6" BELOW TOP OF PANELS. TO BE INCLUDED IN THE BID ITEM: "WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH R-53-85".
- ▲ 3/4" PREFORMED FILLER. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE)
- ◇ FIELD EMBEDMENT SHALL MEET OR EXCEED THE MINIMUM EMBEDMENT OF 1'-6". FIELD EMBEDMENT IN EXCESS OF THE MINIMUM EMBEDMENT AS SHOWN IN THE ELEVATION VIEW SHALL NOT BE INCLUDED IN THE PAY LIMITS.

NO.	DATE	REVISION	BY
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STRUCTURE R-53-85			
DRAWN BY		PTB	PLANS CK'D. RBH
WALL DETAILS			SHEET 2 OF 5



PARTIAL ELEVATION OF WALL COPING & RAILING

(LOOKING SOUTH AT FRONT OF WALL)

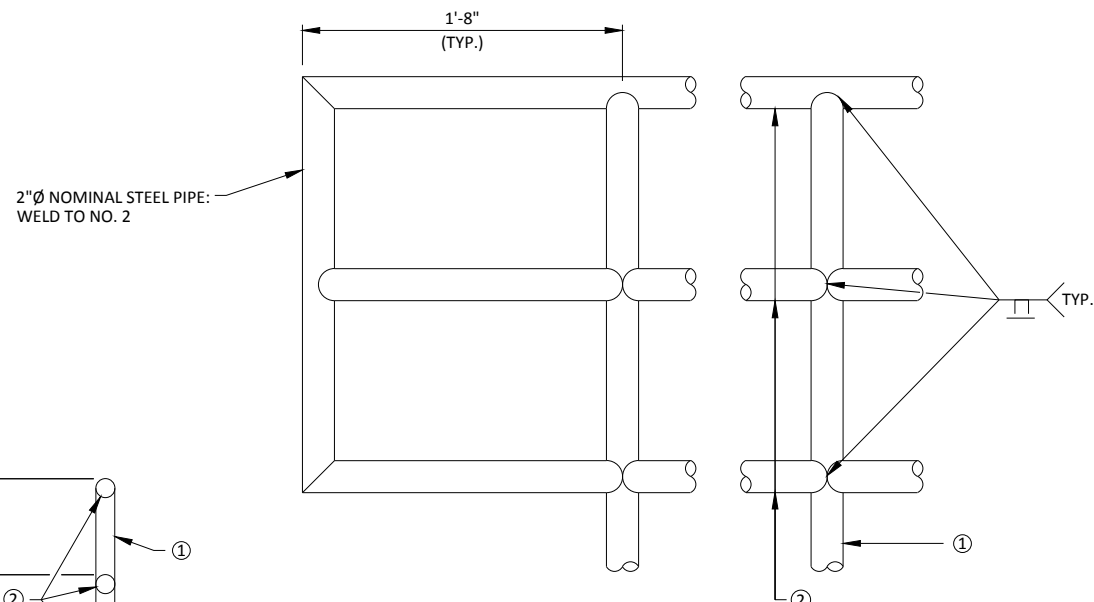
9" MIN. DISTANCE REQUIRED BETWEEN THE C/L OF COPING JOINTS AND THE C/L OF RAIL POSTS

LEGEND

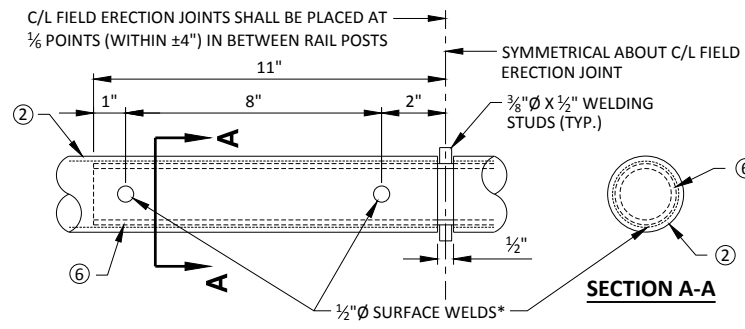
- ① 2" NOMINAL STEEL PIPE FOR POSTS: CUT BOTTOM OF POST TO MATCH TOP OF CONCRETE. POSTS ARE TO BE SET VERTICAL.
- ② 2" NOMINAL STEEL PIPE FOR RAILS: WELD TO NO. 1
- ③ PLATE 3/4" X 5" X 8", WITH 5/8" HOLE FOR ANCHOR BOLTS NO. 6. WELD TO NO. 1
- ④ 1/2" X 6 7/8" LONG HEX BOLTS (GALVANIZED) WITH NUT AND WASHER. 2 REQ'D PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 5. CHAMFER TOP OF BOLTS BEFORE THREADING. ADHESIVE ANCHORS 1/2-INCH MAY BE SUBSTITUTED FOR 1/2" CAST-IN-PLACE ANCHOR BOLTS. ANCHOR PLATE NOT REQ'D WHEN ADHESIVE ANCHORS ARE USED. ☆SEE NOTE.
- ☆ ADHESIVE ANCHORS 1/2-INCH: 6" MIN. EMBEDMENT INTO CONCRETE AND MINIMUM PULLOUT CAPACITY OF 10 KIPS, ANCHOR, WASHER AND NUT SHALL BE GALVANIZED.
- ⑤ 1/4" X 2" X 8" FLAT BAR, WITH 5/8" HOLES FOR ANCHOR BOLTS NO. 4.
- ⑥ 1 1/2" PIPE SLEEVE X 1'-10" LONG FOR NO. 2. PROVIDE 1/2" SURFACE WELDS ON ALL SIDES AS SHOWN. GRIND WELDS TO FIT FREE INTO I.D. OF NO. 2. PROVIDE 3/8" X 1/2" WELDING STUDS ON TOP AND BOTTOM SURFACES AT CENTERLINE.

GENERAL NOTES

- BID ITEM SHALL BE "RAILING PIPE" WHICH INCLUDES ALL ITEMS SHOWN.
- RAILING SHALL BE FABRICATED IN LENGTHS THAT INCLUDE 3 OR 4 POSTS.
- FIELD ERECTION JOINTS MUST BE PLACED IN BETWEEN RAIL POSTS WHERE THERE IS ALSO A CONCRETE COPING EXPANSION JOINT IN BETWEEN RAIL POSTS.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
- ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS AND STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY S.S.P.C. SPECIFICATIONS.
- DRILL DRAIN HOLES PRIOR TO GALVANIZING.
- ALL MATERIALS USED IN FABRICATION SHALL BE MADE FROM MATERIALS CONFORMING TO A.S.T.M. DESIGNATION A709 GRADE 36 UNLESS NOTED OTHERWISE.
- STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D FOR ALIGNMENT.
- ALL RAILS AND POSTS ARE STANDARD WEIGHT PIPE, SCHEDULE 40.
- PLACE ALL NUTS ON OUTSIDE OF POSTS.
- ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING.
- CAULK AROUND PERIMETER OF BASE PLATES AND FILL PORTION OF SLOTTED HOLES AROUND ANCHOR BOLTS IN POST SHIMS AND BASE PLATES WITH NON-STAINING, GRAY, NON-BITUMINOUS JOINT SEALER.

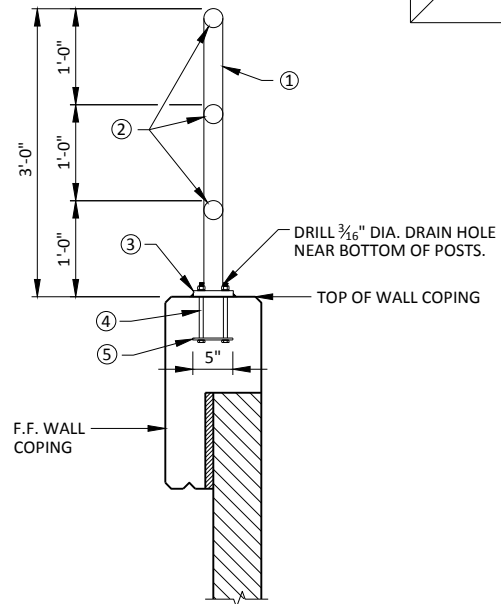


PART OF ELEVATION OF RAILING

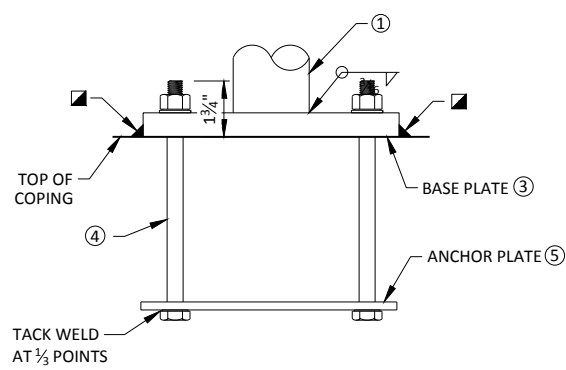


FIELD ERECTION JOINT DETAIL

*MIN. 5/8" FLAT SURFACE DIA. PUNCHINGS OR STUDS MAY BE USED AS AN ALTERNATE.

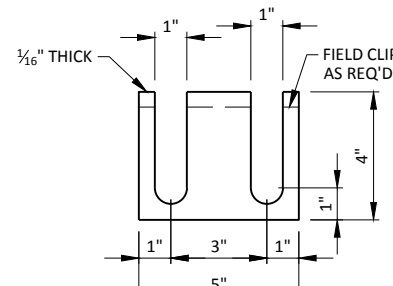


SECTION THROUGH RAILING



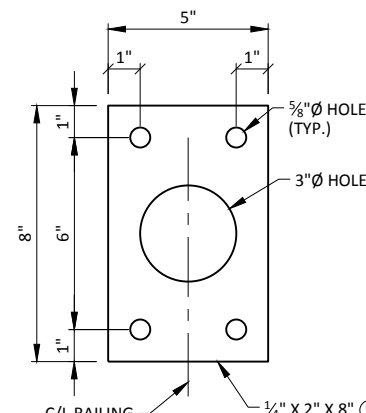
POST ATTACHMENT

UNIT SHALL BE GALV. AFTER FABRICATION

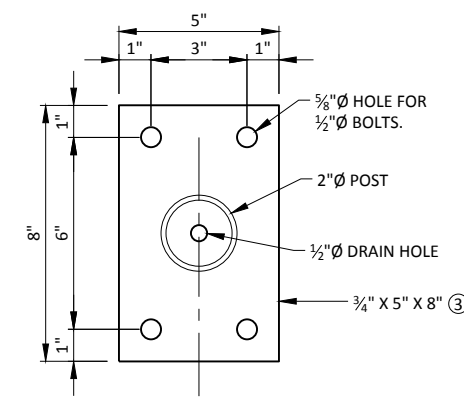


POST SHIM DETAILS

SHIMS REQUIRED ONLY WHEN POSTS ARE WELDED TO BASE PLATES. PROVIDE 4 SHIMS PER POST.



ANCHOR PLATE

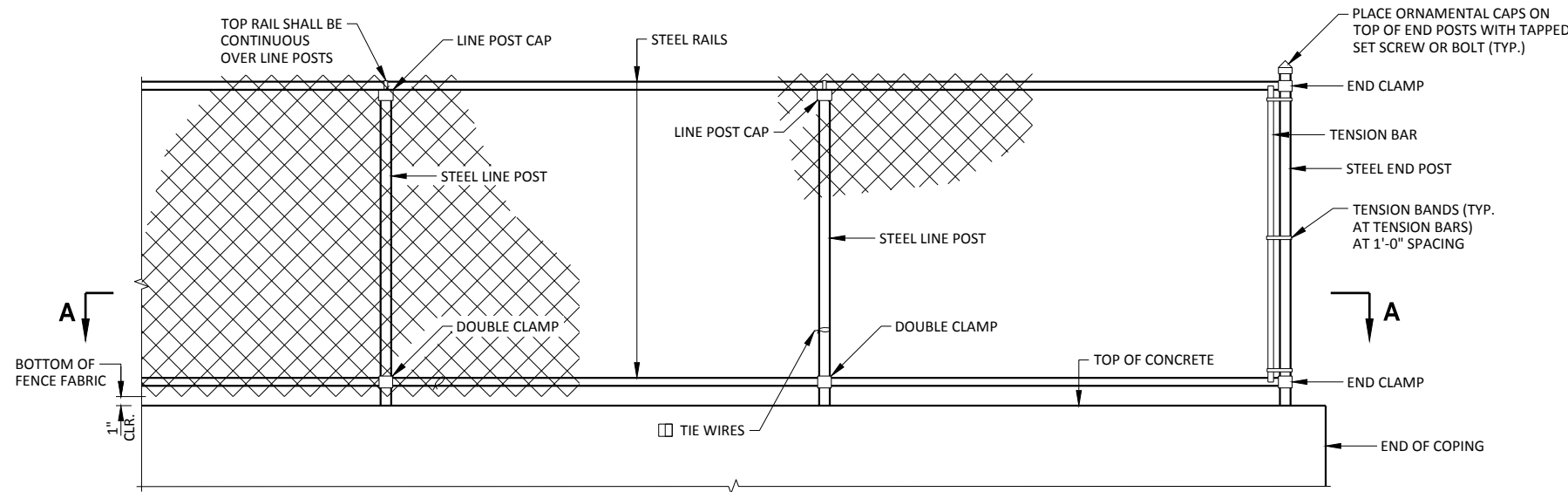


BASE PLATE

8

8

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE R-53-85			
DRAWN BY		PTB	PLANS CK'D. RBH
PIPE RAILING DETAILS			SHEET 3 OF 5



FENCE PART ELEVATION
VIEWING FABRIC SIDE

FENCE MEMBER SIZE & WEIGHT

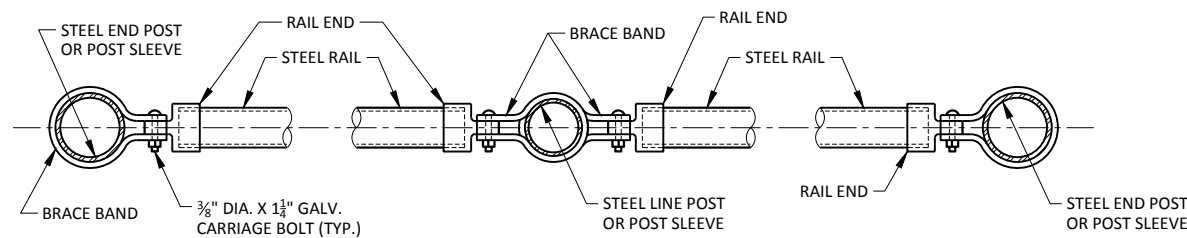
STEEL FENCE MEMBER	OUTSIDE DIAMETER (INCHES)	WEIGHT (LB/FT)
RAIL	1.660	2.27
END POST	2.875	5.80
LINE POST	2.375	3.65
POST SLEEVE	4.000	9.12

GENERAL NOTES

- POSTS ARE TO BE SET VERTICAL.
- ALL FENCE COMPONENTS SHALL BE GALVANIZED STEEL, EXCEPT THE FENCE FABRIC WHICH MAY BE ALUMINUM-COATED STEEL OR GALVANIZED STEEL.
- FABRIC SHALL CONFORM TO ASTM A491 OR A392, CLASS 2. STEEL RAILS, POSTS AND POST SLEEVES SHALL CONFORM TO ASTM F1083, STANDARD WEIGHT PIPE (SCHEDULE 40). FITTINGS SHALL CONFORM TO ASTM F626.
- THE BID ITEM SHALL BE "FENCE CHAIN LINK 4-FT."
- COMPLETE ANY REQUIRED WELDING OF COMPONENTS BEFORE GALVANIZING.
- POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
- BASE PLATES, ANCHOR PLATES AND SHIMS SHALL BE ASTM A709, GRADE 36.
- ALL POST SPACINGS ARE MEASURED HORIZONTALLY ALONG THE C/L OF THE POST.
- MINIMUM LENGTH OF TOP RAIL BETWEEN SPLICES SHALL BE 20'-0". LOCATE SPLICES NEAR 3/4 POINT OF POST SPACING.

LEGEND

- CAULK AROUND PERIMETER OF BASE PLATE AND FILL PORTION OF SLOTTED HOLE AROUND ANCHOR BOLT IN SHIM WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER.
- ALTERNATE TO DOUBLE CLAMP: USE LINE RAIL CLAMP (BOULEVARD) OR 180° BRACE BAND, WHICH MAY BE USED WHEN THE POSTS ARE EITHER BOLTED TO THE POST SLEEVES OR DIRECTLY WELDED TO THE BASE PLATE.
- 1/2" DIA. X 67/8" LONG GALVANIZED HEX BOLT WITH NUT & WASHER. ☆
- ALTERNATIVE ANCHORAGE: CONCRETE ADHESIVE ANCHORS 1/2-inch. EMBED 7" IN CONCRETE. ADHESIVE ANCHORS SHALL CONFORM TO SECTION 502.2.12 OF THE STANDARD SPECIFICATIONS.
- ATTACH FABRIC TO RAILS, AND TO POSTS WITHOUT TENSION BANDS, WITH TIE WIRES (ROUND, 9-GAGE) SPACED AT 1'-0".

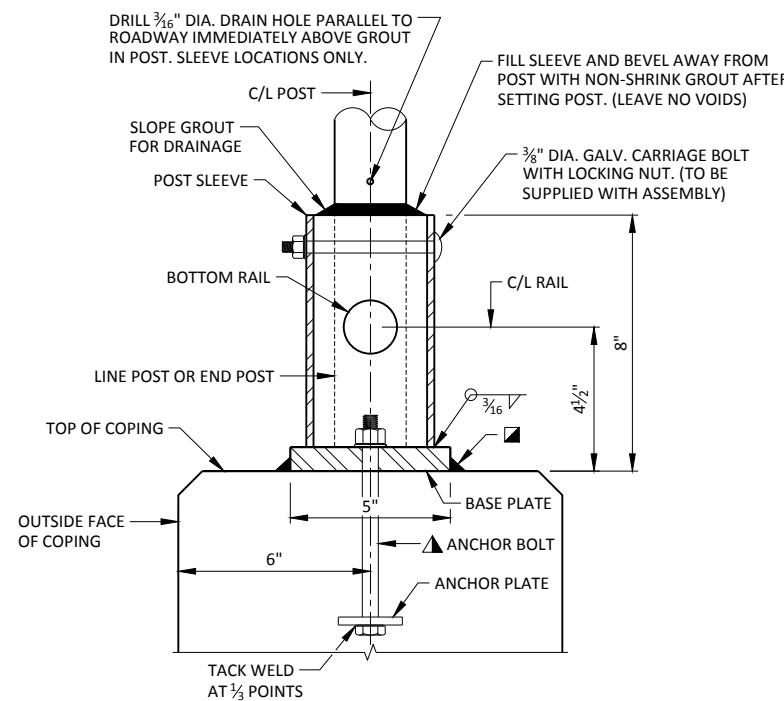


END CLAMP

***DOUBLE CLAMP**

SECTION A-A

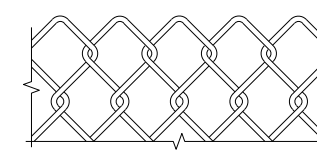
NOTE: PLACE ALL BOLT HEADS ON SIDE OF FENCE ADJACENT TO PEDESTRIANS



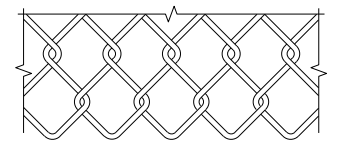
DETAIL 'A'

UNIT SHALL BE GALVANIZED AFTER FABRICATION

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



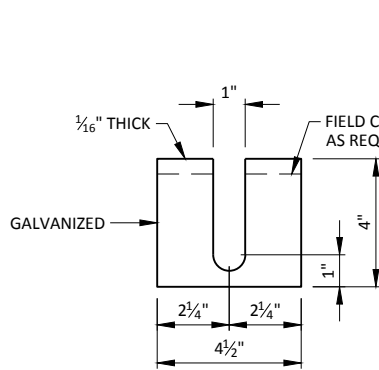
TOP DETAIL



BOTTOM DETAIL

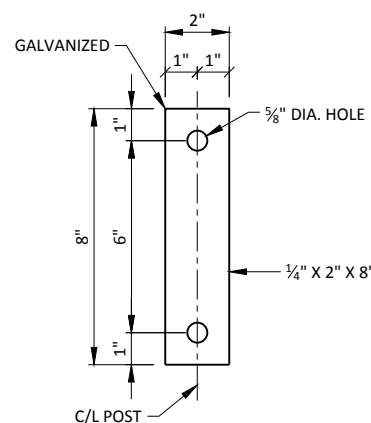
FENCE FABRIC

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



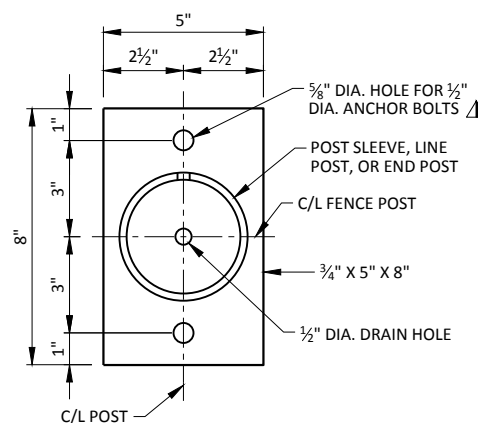
POST SHIM DETAILS

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



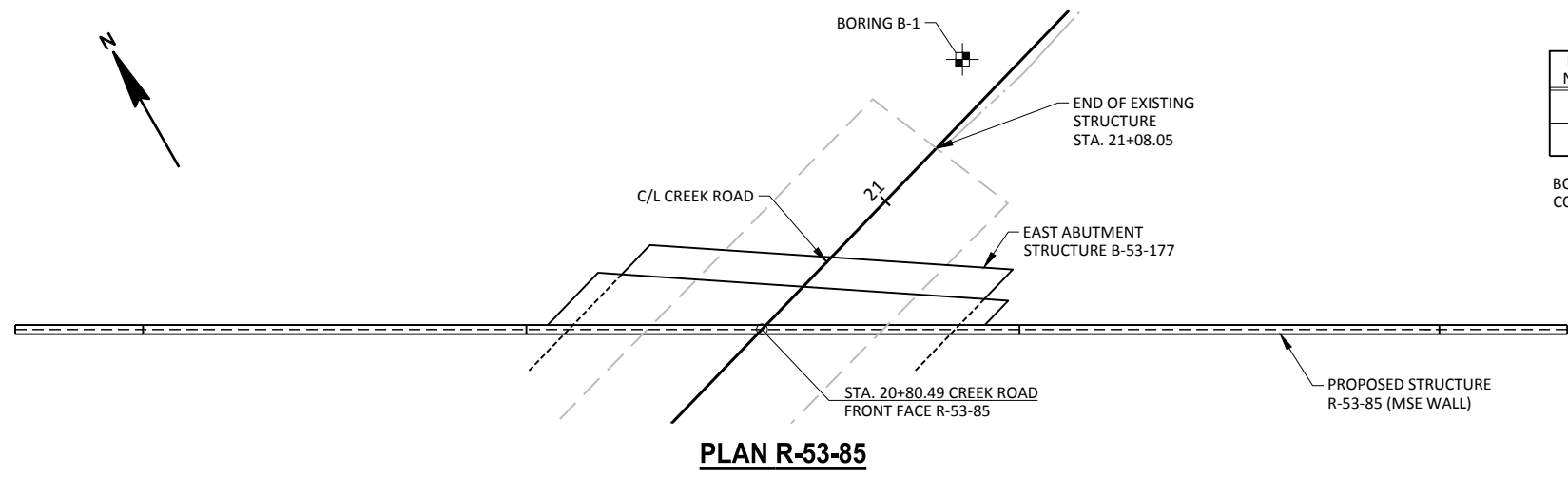
ANCHOR PLATE

NOTE: ANCHOR PLATE NOT REQUIRED WHEN ADHESIVE ANCHORS ARE USED



BASE PLATE

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE R-53-85			
DRAWN BY		PTB	PLANS CK'D. RBH
CHAIN LINK FENCE DETAILS			SHEET 4 OF 5



SOIL BORINGS

BORING NUMBER	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B-1	01/09/19	241,402.2	552,510.6
B-2	01/14/19	241,350.4	552,365.5

BORINGS & REPORT COMPLETED BY: NUMMELIN TESTING SERVICES, INC.
5620 WOODLAND DRIVE
WAUNAKEE, WI 53597

STATE PROJECT NUMBER
3614-00-75

MATERIAL SYMBOLS

Asphalt	Topsoil	Peat
Concrete	Fill	Gravel
Sand	Clay	Silt
Boulders or Cobbles	Limestone	Bedrock (unknown)
Shale	Sandstone	Igneous/meta

LEGEND OF BORING

(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

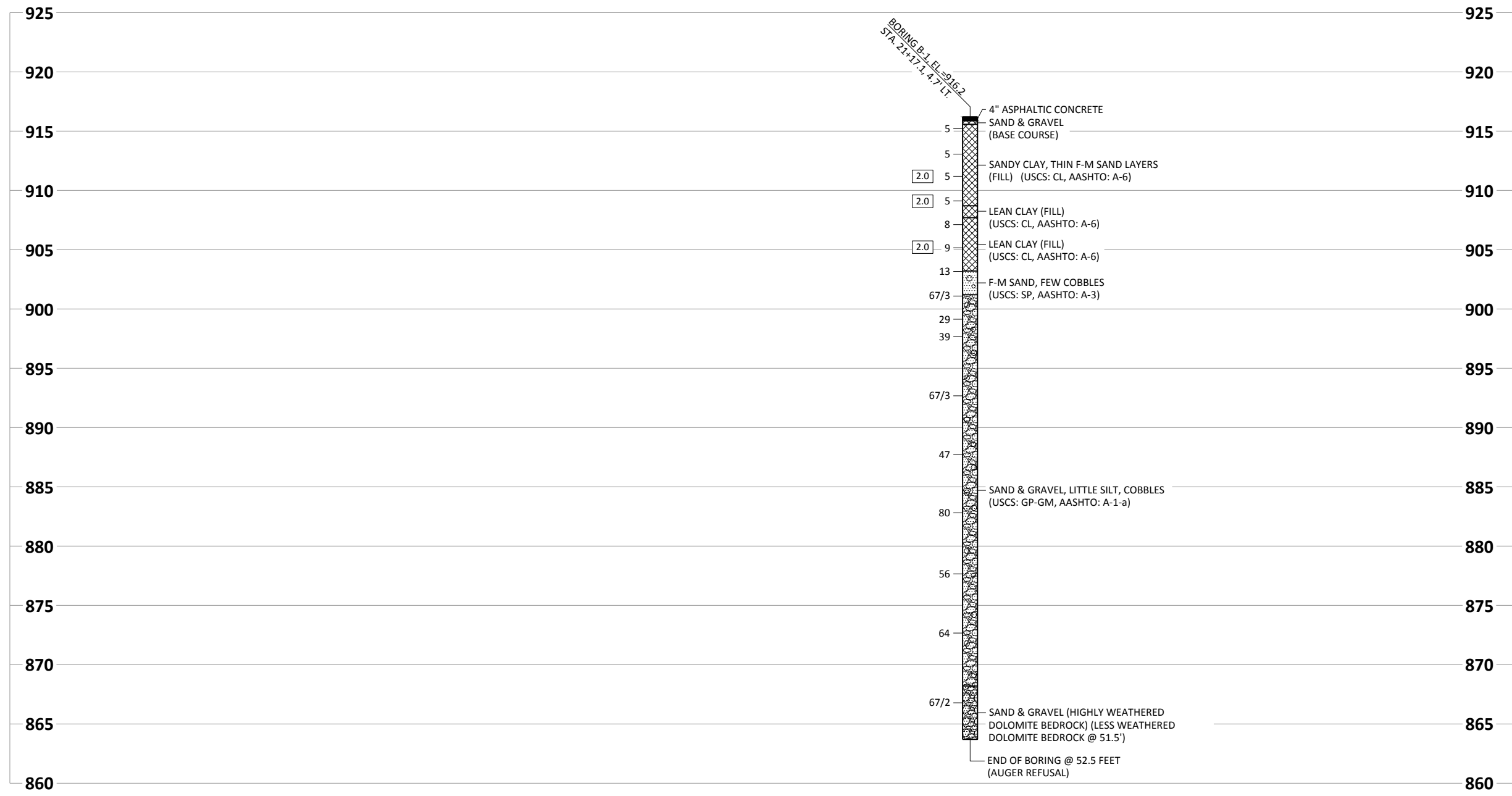
(2) UNLESS OTHERWISE SPECIFIED, THE SPT 'N' VALUE IS BASED ON AASHTO T-206 STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

GROUND WATER ELEVATIONS

▽ AT TIME OF DRILLING
▼ END OF DRILLING
▽ AFTER DRILLING

ABBREVIATIONS

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



SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE R-53-85			
DRAWN BY: PTB		PLANS CK'D: RBH	
SUBSURFACE EXPLORATION			SHEET 5 OF 5

Division 1 - Creek Road

STATION	Real Station	Distance	AREA (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		
			Cut	Salvaged/Unusable Pavement Material	Fill	Cut	Salvaged/Unusable Pavement Material	Fill	Cut 1.00	Expanded Fill 1.25	Mass Ordinate
12+50	1250.00	0.00	0.00	9.63	0.00	0	0	0	0	0	0
13+00	1300.00	50.00	17.62	9.63	0.00	16	18	0	16	0	-2
13+50	1350.00	50.00	37.49	9.63	0.00	51	18	0	67	0	32
14+00	1400.00	50.00	56.69	9.63	0.00	87	18	0	155	0	101
14+50	1450.00	50.00	59.35	9.63	0.00	107	18	0	262	0	191
15+00	1500.00	50.00	59.45	9.63	0.00	110	18	0	372	0	283
15+50	1550.00	50.00	59.22	9.63	0.00	110	18	0	482	0	375
16+00	1600.00	50.00	64.93	9.63	0.00	115	18	0	597	0	472
16+25	1625.00	25.00	77.85	9.63	0.00	66	9	0	663	0	529
16+50	1650.00	25.00	100.49	9.63	0.03	83	9	0	745	0	603
17+00	1700.00	50.00	12.71	12.83	71.64	105	21	66	850	83	604
17+49.69	1749.69	49.69	5.16	17.42	76.61	16	28	136	867	254	422
17+50	1750.00	0.31	5.07	17.42	77.43	0	0	1	867	255	421
17+87.08	1787.08	37.08	9.65	18.79	178.91	10	25	176	877	475	186
18+00	1800.00	12.92	8.62	18.79	204.12	4	9	92	881	589	67
18+12.08	1812.08	12.08	7.74	18.79	236.34	4	8	99	885	712	-61
18+14.58	1814.58	2.49	8.58	21.54	244.63	1	2	22	886	740	-90
18+37.08	1837.08	22.51	7.12	29.33	296.52	7	21	226	892	1,022	-387
18+39.58	1839.58	2.49	7.27	29.79	301.96	1	3	28	893	1,057	-423
18+50	1850.00	10.42	12.73	18.33	315.61	4	9	119	897	1,206	-578
18+64.58	1864.58	14.58	0.00	9.17	355.53	3	7	181	900	1,432	-808
19+00	1900.00	35.42	0.00	8.71	418.91	0	12	508	900	2,067	-1,455
19+12.08	1912.08	12.08	0.01	8.71	412.76	0	4	186	900	2,300	-1,691
19+39.58	1939.58	27.49	0.00	8.25	411.37	0	9	420	900	2,824	-2,224
19+50	1950.00	10.42	0.00	7.79	465.40	0	3	169	900	3,036	-2,439
20+00	2000.00	50.00	0.00	7.79	729.54	0	14	1,106	900	4,419	-3,837
20+50	2050.00	50.00	59.06	0.00	88.43	55	7	757	955	5,366	-4,736
21+00	2100.00	50.00	0.00	5.67	654.71	55	5	688	1,010	6,226	-5,546
21+50	2150.00	50.00	0.00	5.67	884.21	0	10	1,425	1,010	8,007	-7,338
21+54.35	2154.35	4.35	0.00	5.67	887.94	0	1	143	1,010	8,185	-7,517
21+81.84	2181.84	27.49	0.00	6.00	951.08	0	6	936	1,010	9,355	-8,694
22+00	2200.00	18.16	0.00	6.00	977.19	0	4	648	1,010	10,166	-9,508
22+29.27	2229.27	29.27	0.00	6.33	918.84	0	7	1,028	1,010	11,451	-10,799
22+50	2250.00	20.73	0.00	6.67	839.03	0	5	675	1,010	12,294	-11,648
22+54.27	2254.27	4.27	0.00	6.67	821.42	0	1	131	1,010	12,458	-11,813
22+56.76	2256.76	2.49	0.00	6.67	811.54	0	1	75	1,010	12,552	-11,908
22+79.35	2279.35	22.59	0.00	6.33	746.75	0	5	652	1,010	13,367	-12,728
22+81.76	2281.76	2.41	0.00	6.33	743.44	0	1	67	1,010	13,450	-12,812
23+00	2300.00	18.24	0.26	6.33	657.72	0	4	473	1,010	14,042	-13,408
23+06.94	2306.94	6.94	0.39	6.33	622.28	0	2	165	1,010	14,248	-13,615
23+50	2350.00	43.06	0.00	6.33	416.40	0	10	828	1,010	15,283	-14,660
24+00	2400.00	50.00	0.00	6.33	187.04	0	12	559	1,010	15,981	-15,370
24+00.71	2400.71	0.71	0.00	6.33	184.45	0	0	5	1,010	15,988	-15,377
24+25.64	2425.64	24.93	0.00	6.33	107.00	0	6	135	1,010	16,156	-15,551
24+50	2450.00	24.36	0.00	6.33	51.60	0	6	72	1,010	16,245	-15,646
25+00	2500.00	50.00	20.69	6.33	2.55	19	12	50	1,029	16,308	-15,701
25+25	2525.00	25.00	39.36	6.67	0.48	28	6	1	1,057	16,310	-15,681
25+50	2550.00	25.00	0.00	6.67	0.00	18	6	0	1,075	16,310	-15,669
						1,075	435	13,048			

9

9

PROJECT NO: 3614-00-75

HWY: TOWN ROAD

COUNTY: ROCK

EARTHWORK

SHEET

E

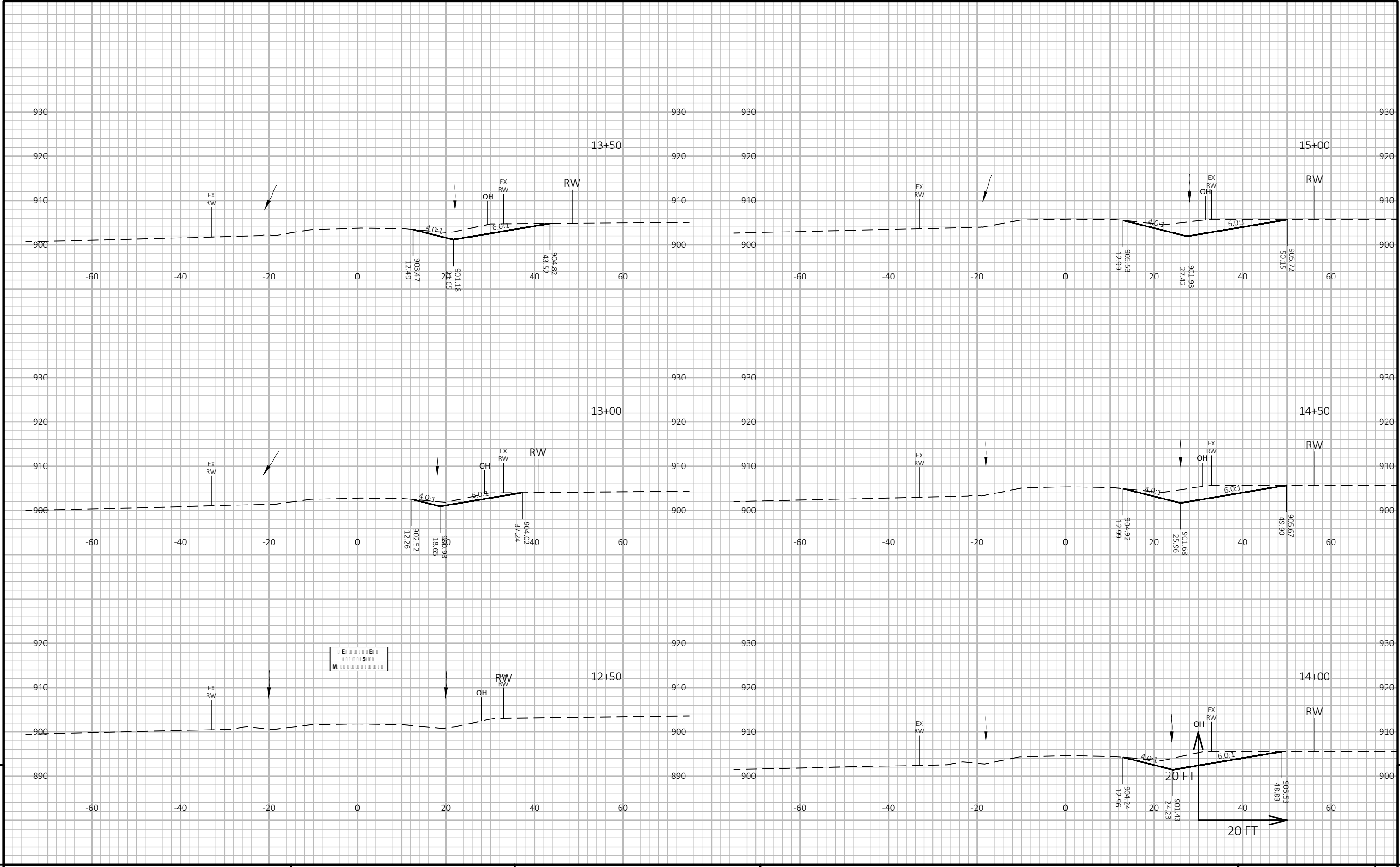
Division 2 - Hofstrom Road

STATION	Real Station	Distance	AREA (SF)			Incremental Vol (CY) (Unadjusted)			Cumulative Vol (CY)		
			Cut	Salvaged/Unusable Pavement Material	Fill	Cut	Salvaged/Unusable Pavement Material	Fill	Cut 1.00	Expanded Fill 1.25	Mass Ordinate
100+50	10050.00	0.00	73.02	0.00	31.49	0	0	0	0	0	0
101+00	10100.00	50.00	49.93	0.00	19.49	114	0	47	114	59	55
101+34.42	10134.42	34.42	39.60	0.00	4.95	57	0	16	171	78	92
101+50	10150.00	15.58	31.11	0.00	12.19	20	0	5	191	85	107
102+00	10200.00	50.00	28.56	0.00	9.00	55	0	20	247	109	137
102+50	10250.00	50.00	24.88	0.00	10.83	49	0	18	296	132	164
102+66.7	10266.70	16.70	33.36	0.00	5.91	18	0	5	314	139	175
103+00	10300.00	33.30	24.39	0.00	7.76	36	0	8	350	149	201
103+50	10350.00	50.00	10.29	0.00	29.20	32	0	34	382	192	190
103+98.98	10398.98	48.98	6.54	0.00	37.20	15	0	60	397	267	130
104+00	10400.00	1.02	6.43	0.00	37.37	0	0	1	397	269	128
104+50	10450.00	50.00	0.01	0.00	38.58	6	0	70	403	357	46
105+00	10500.00	50.00	2.29	0.00	66.71	2	0	97	405	479	-73
105+45.43	10545.43	45.43	10.16	0.00	61.41	10	0	108	416	613	-198
105+50	10550.00	4.57	10.94	0.00	60.36	2	0	10	418	626	-209
106+00	10600.00	50.00	39.73	0.00	48.32	47	0	101	465	752	-288
106+24.13	10624.13	24.13	51.13	0.00	4.08	41	0	23	505	781	-276
106+50	10650.00	25.87	50.89	5.96	3.56	49	3	4	554	786	-235
107+00	10700.00	50.00	56.86	9.17	1.82	100	14	5	654	792	-155
107+02.83	10702.83	2.83	56.67	9.17	1.47	6	1	0	660	792	-150
107+50	10750.00	47.17	50.26	9.17	0.00	93	16	1	753	794	-75
108+00	10800.00	50.00	37.77	9.17	0.00	82	17	0	835	794	-10
108+25	10825.00	25.00	0.00	0.00	0.00	17	4	0	852	794	3
						852	55	635			

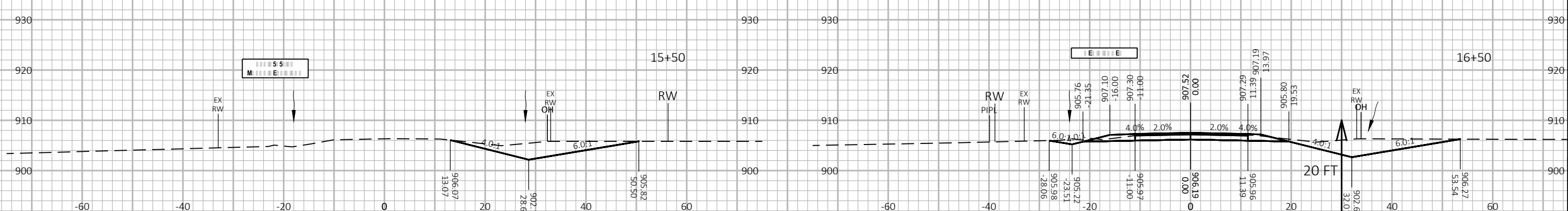
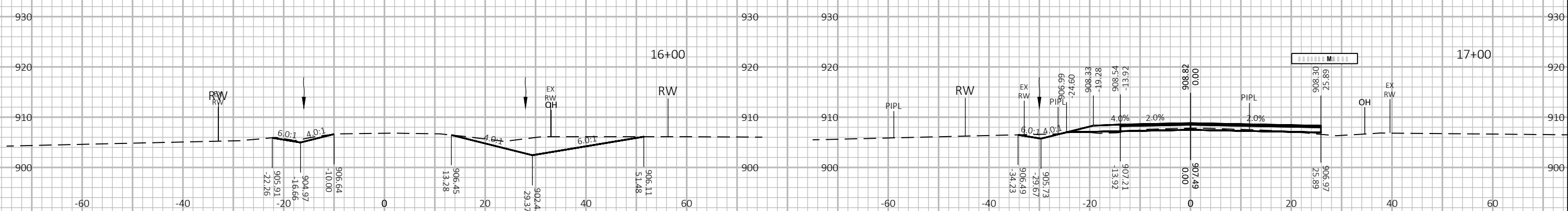
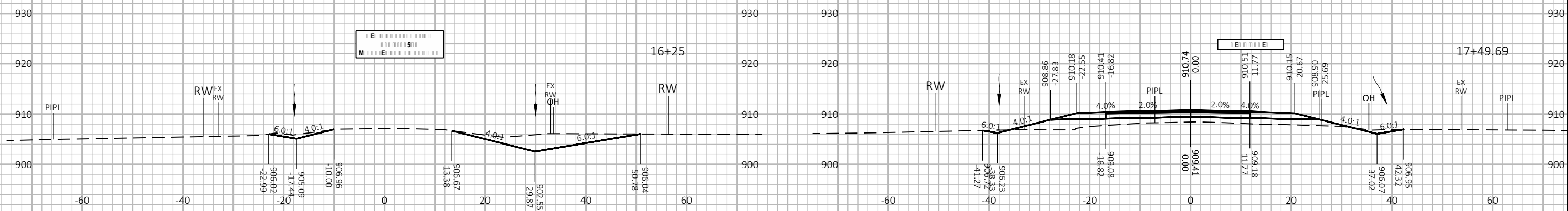
Notes:	
1 - Cut	Cut includes Salvaged/Unusable Pavement material
2 - Salvaged/Unusable Pavement Material	This does not show up in cross sections
3 - Fill	Does not include Unusable Pavement Exc volume
4 - Mass Ordinate	[Cut - Salvaged Pavt - (Fill * Fill Factor)]

9

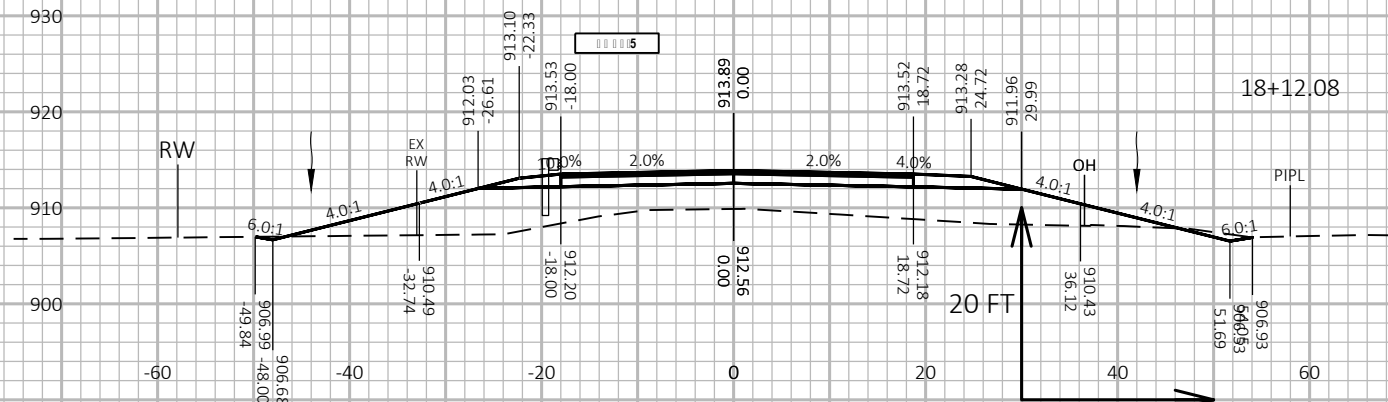
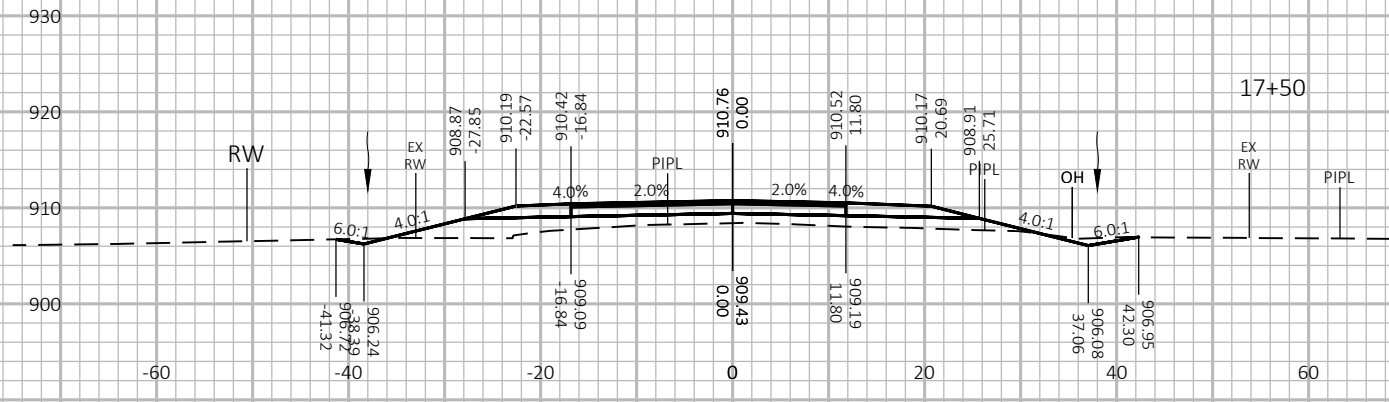
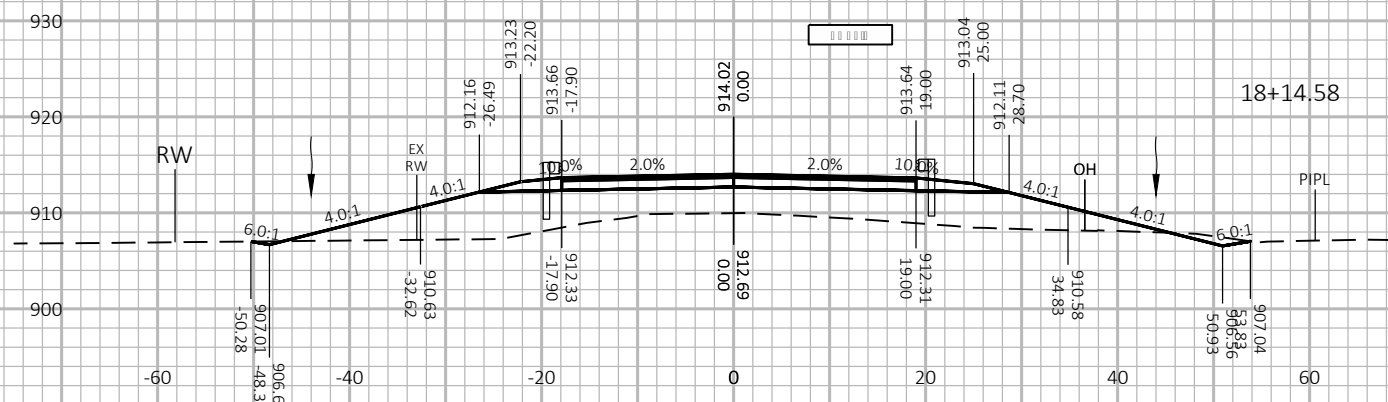
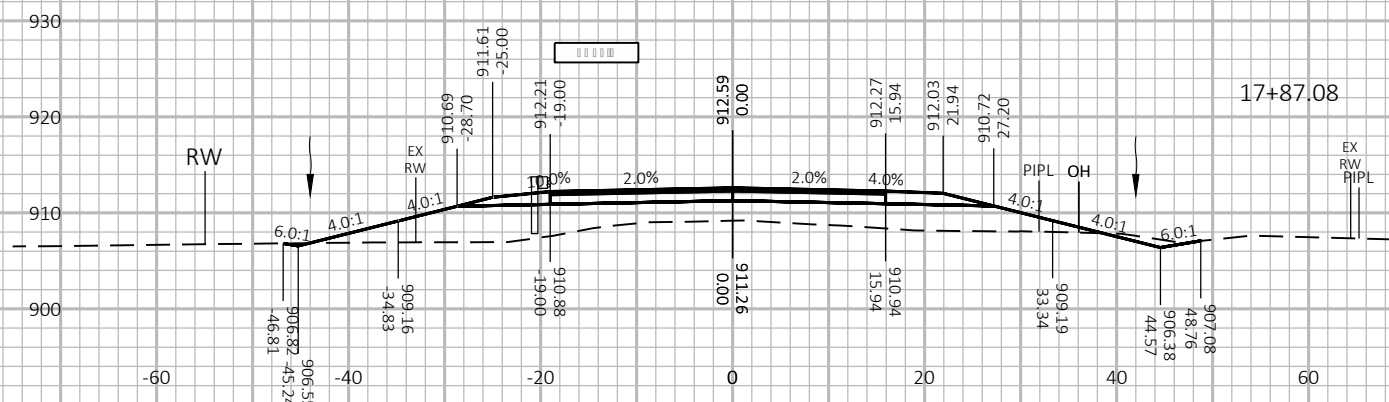
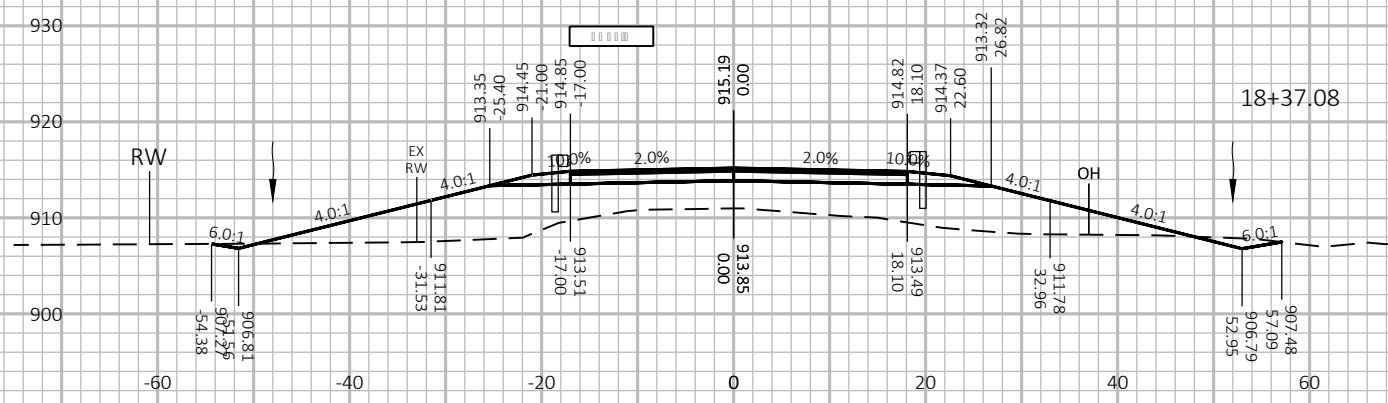
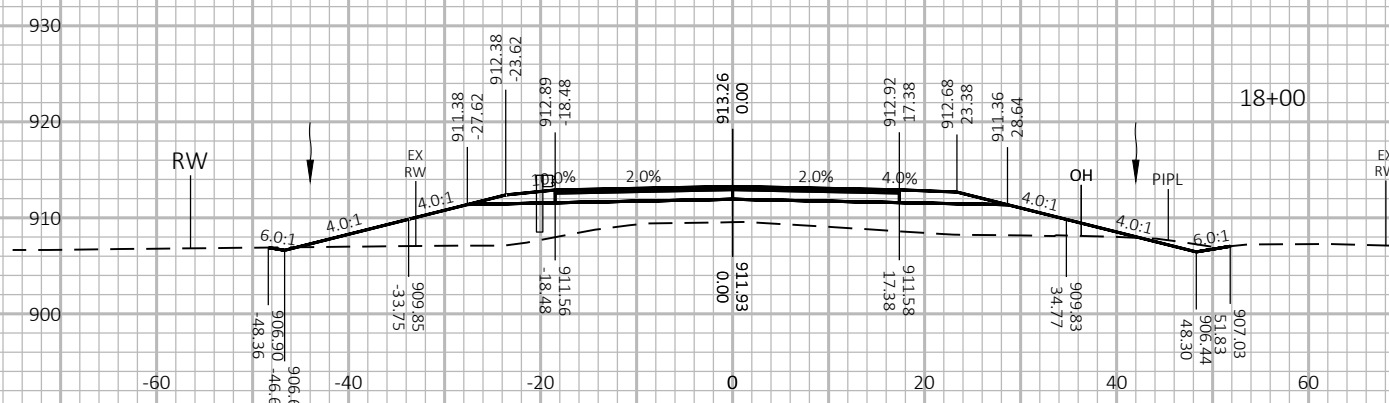
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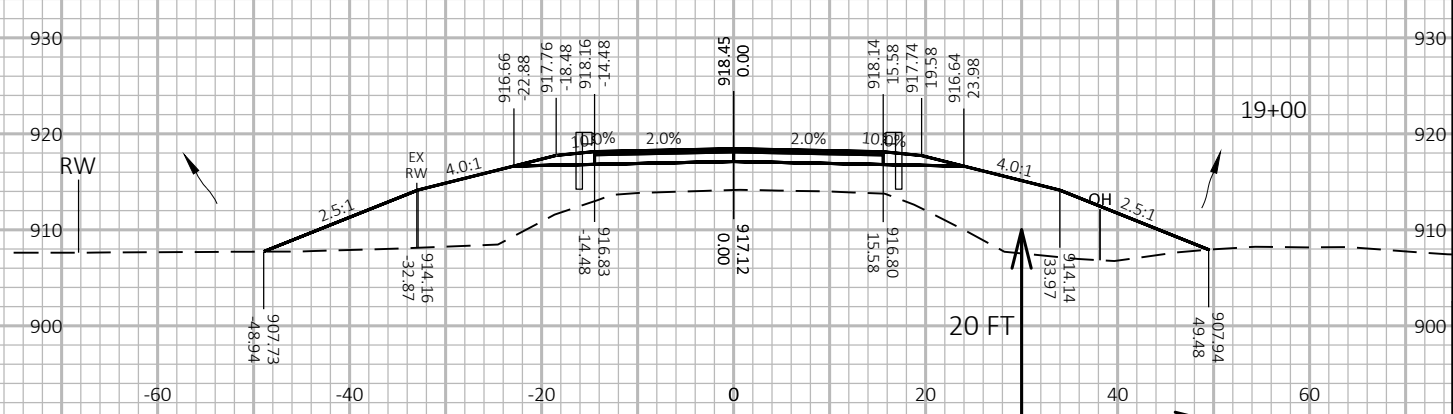
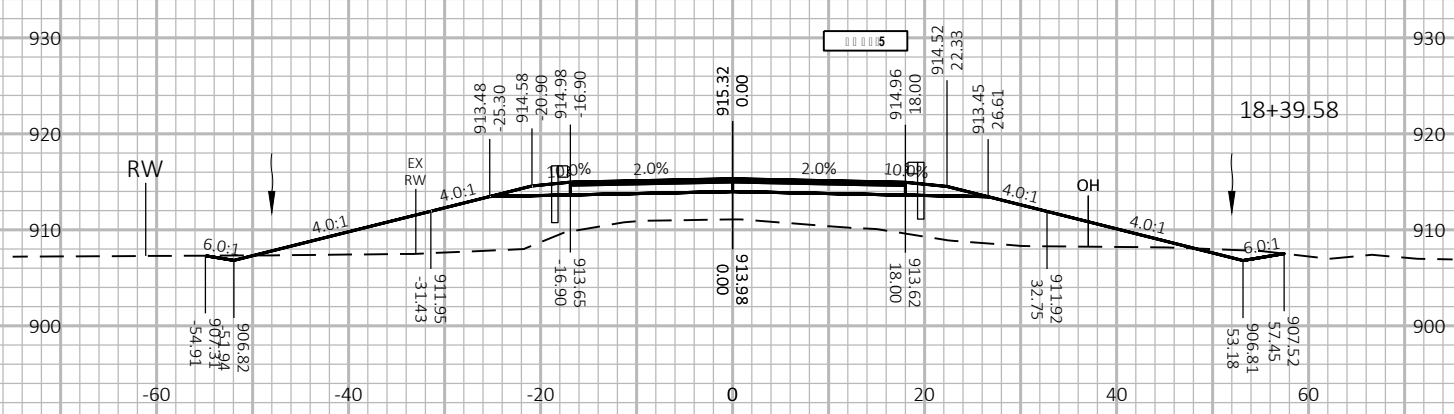
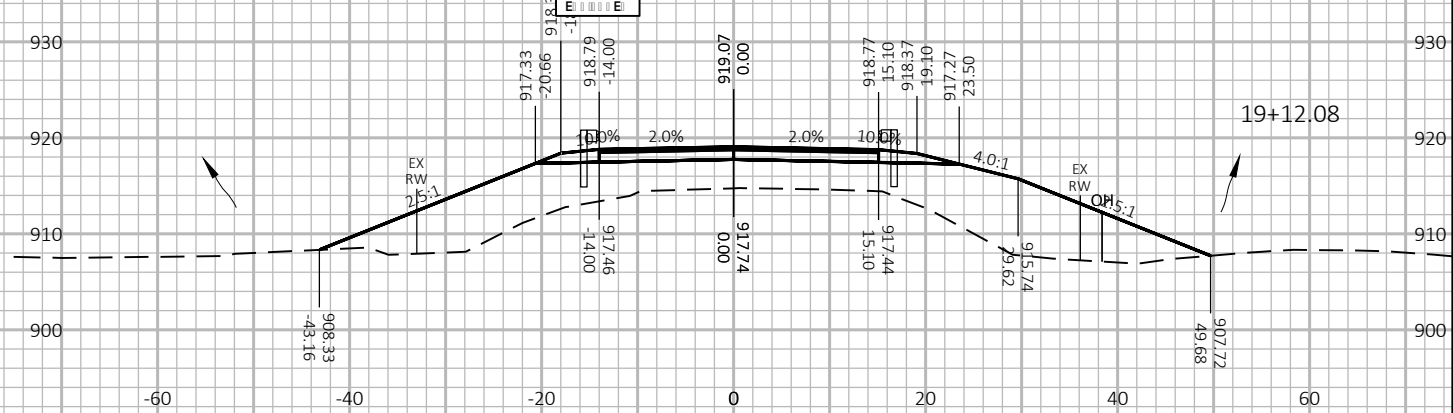
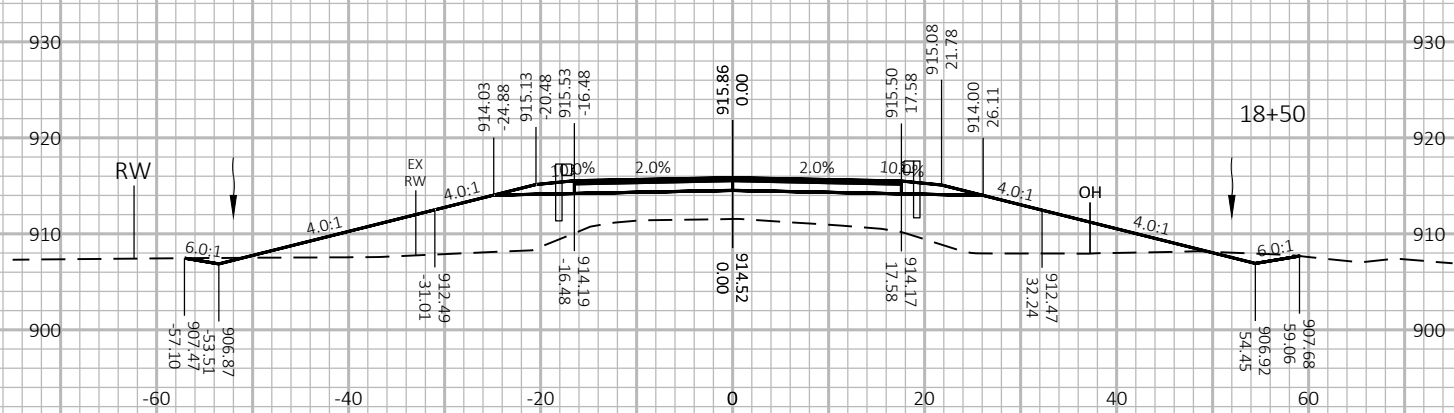
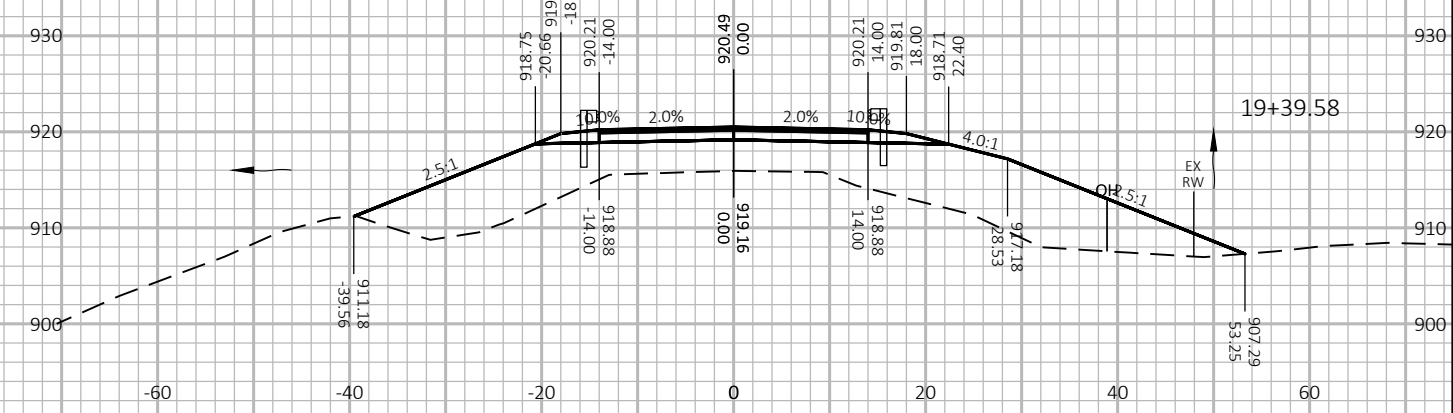
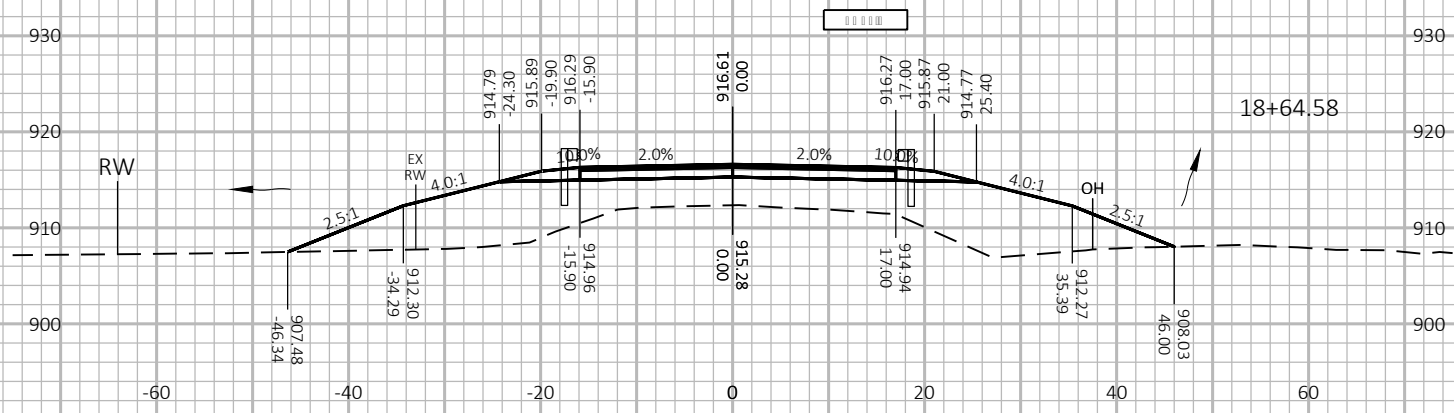
PROJECT NO: 3614-00-75 HWY: TOWN ROAD COUNTY: ROCK CROSS SECTIONS: CREEK ROAD SHEET E



PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	CROSS SECTIONS: CREEK ROAD	SHEET E
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PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	CROSS SECTIONS: CREEK ROAD	SHEET	E
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PROJECT NO: 3614-00-75

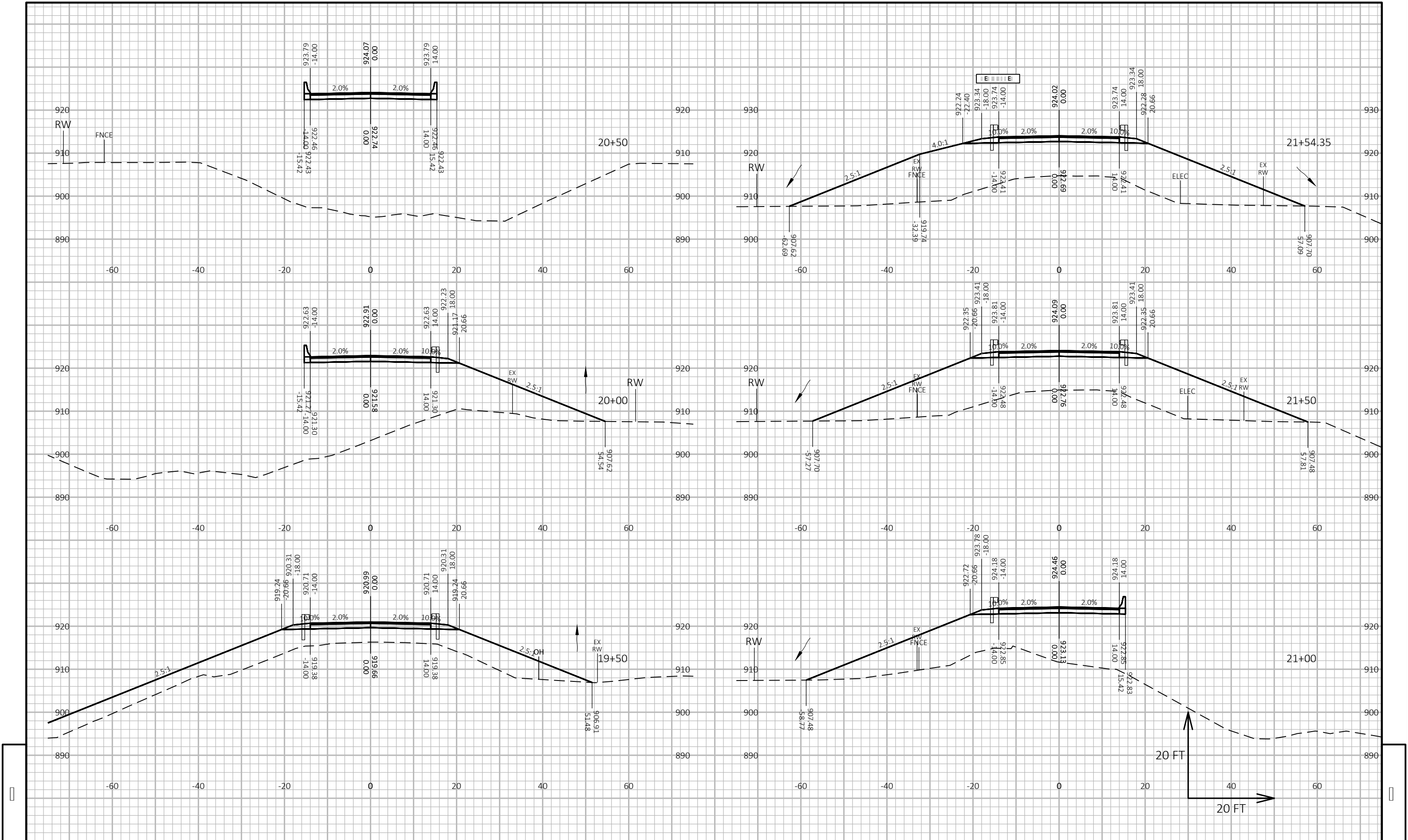
HWY: TOWN ROAD

COUNTY: ROCK

CROSS SECTIONS: CREEK ROAD

SHEET

E



PROJECT NO: 3614-00-75

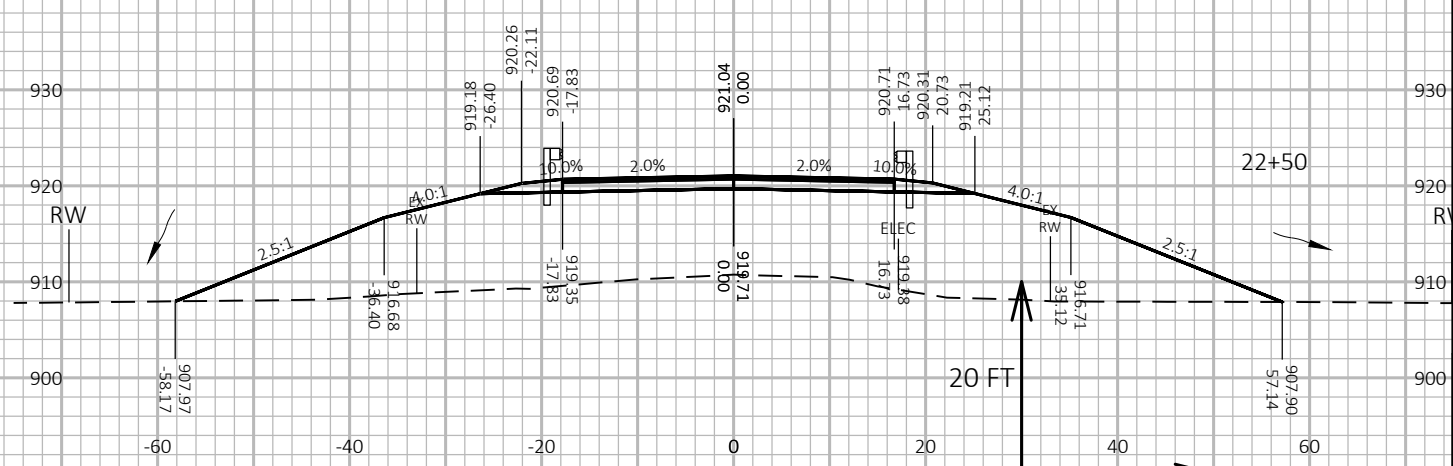
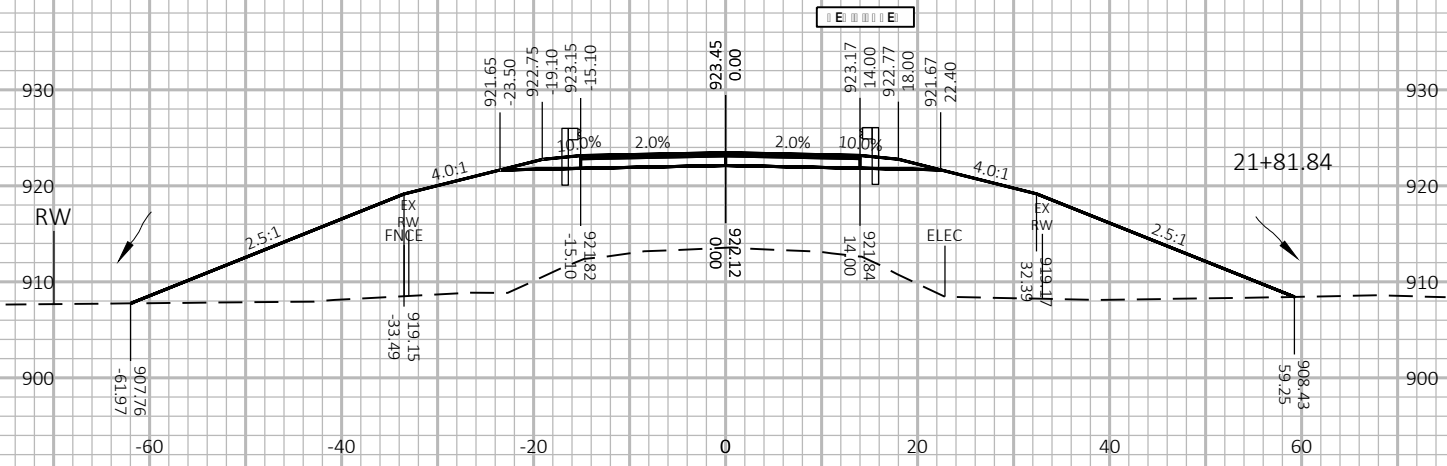
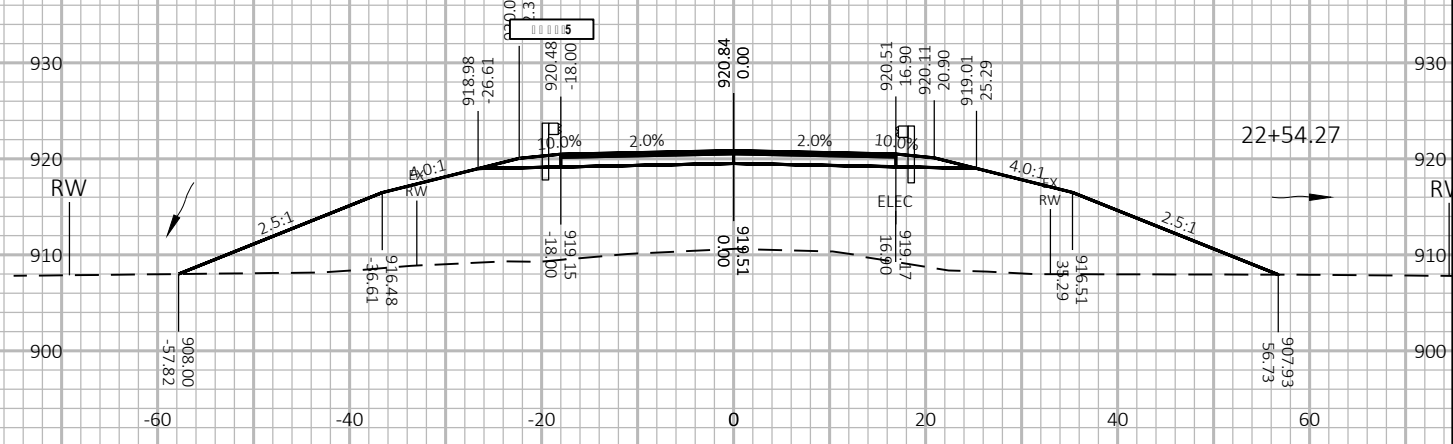
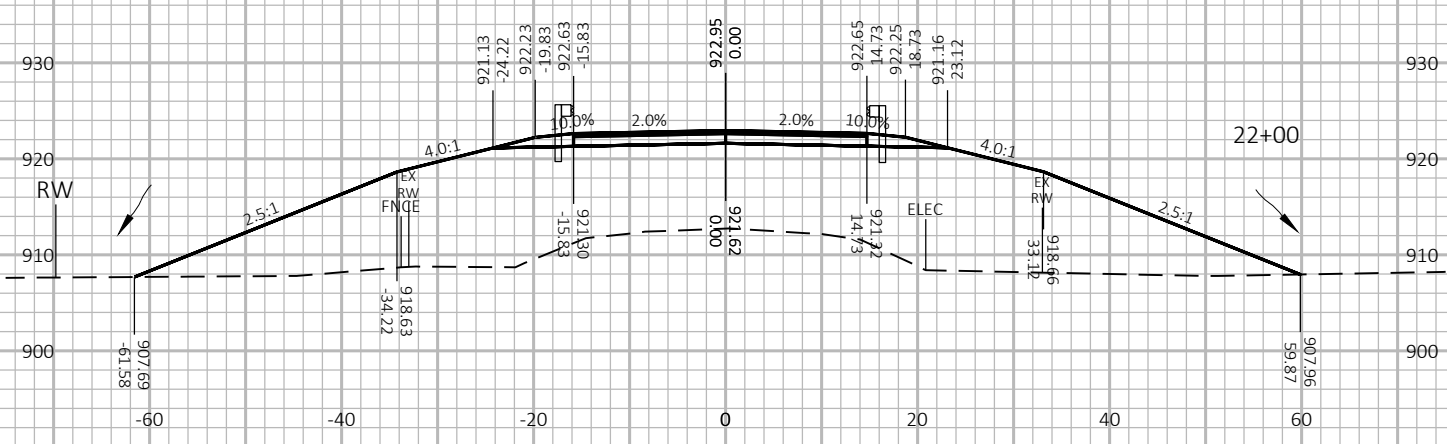
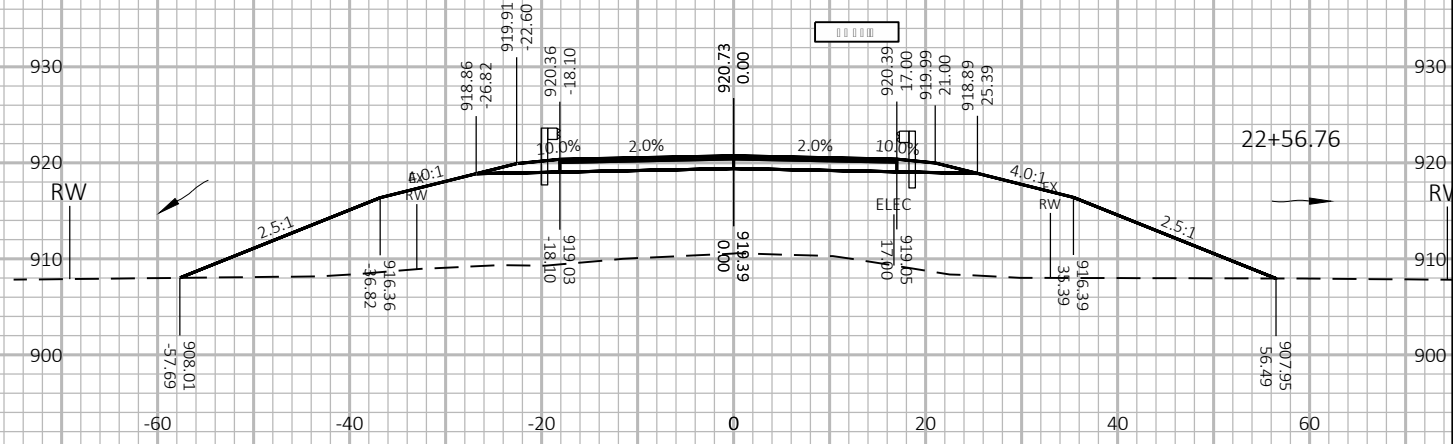
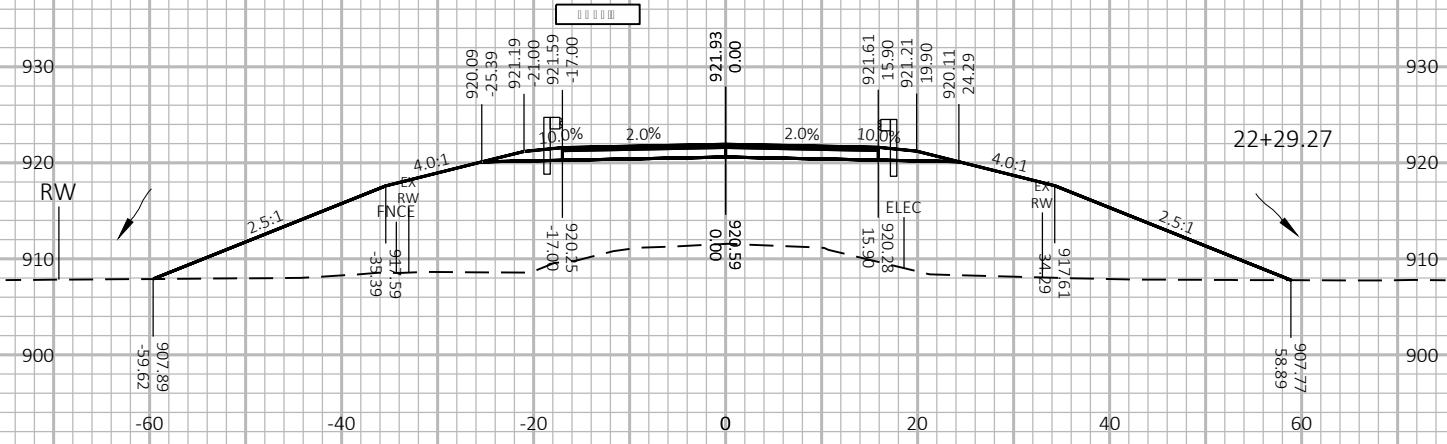
HWY: TOWN ROAD

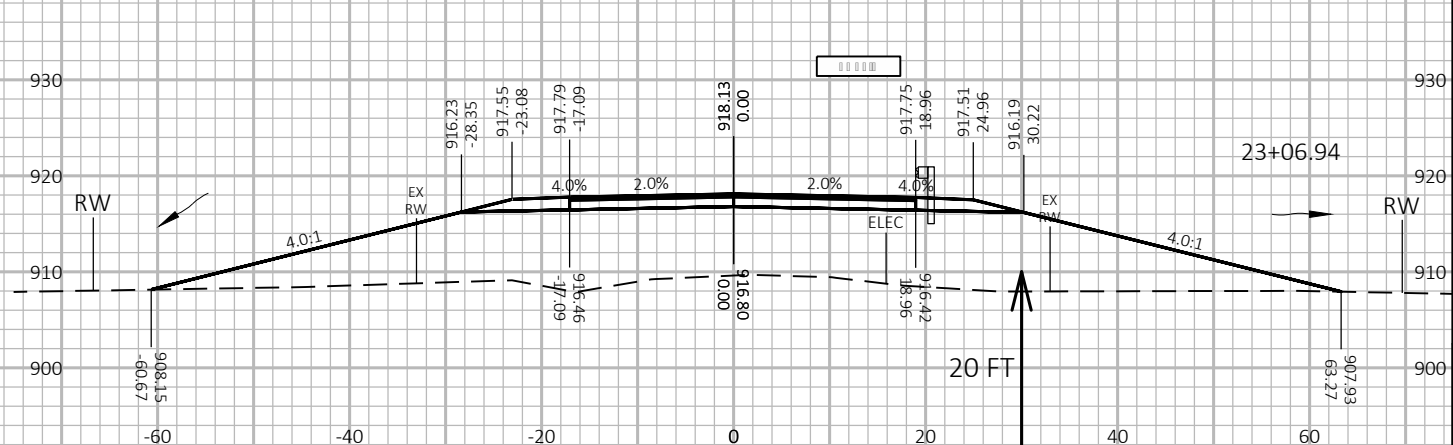
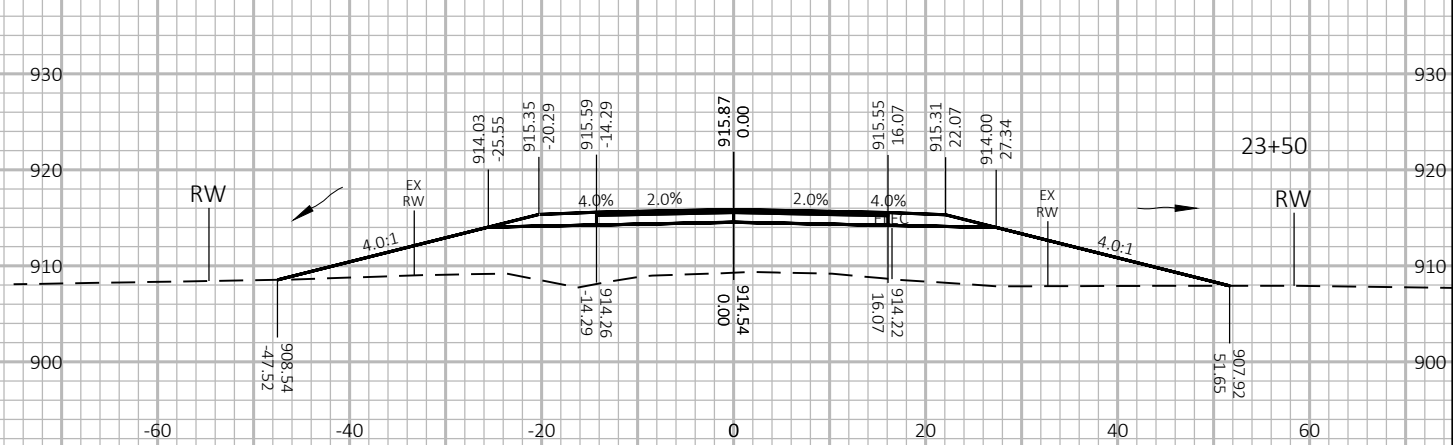
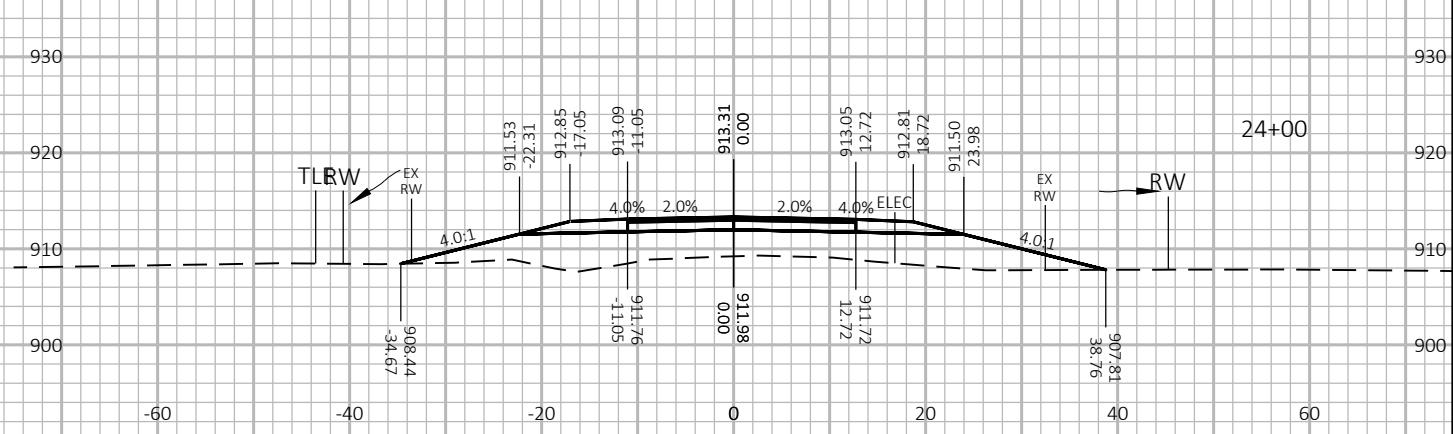
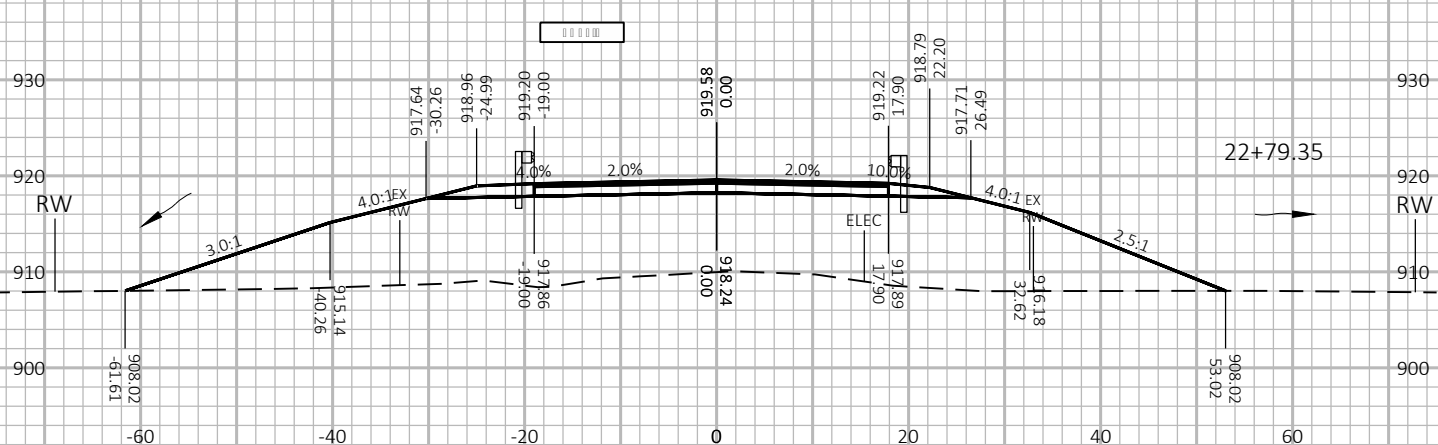
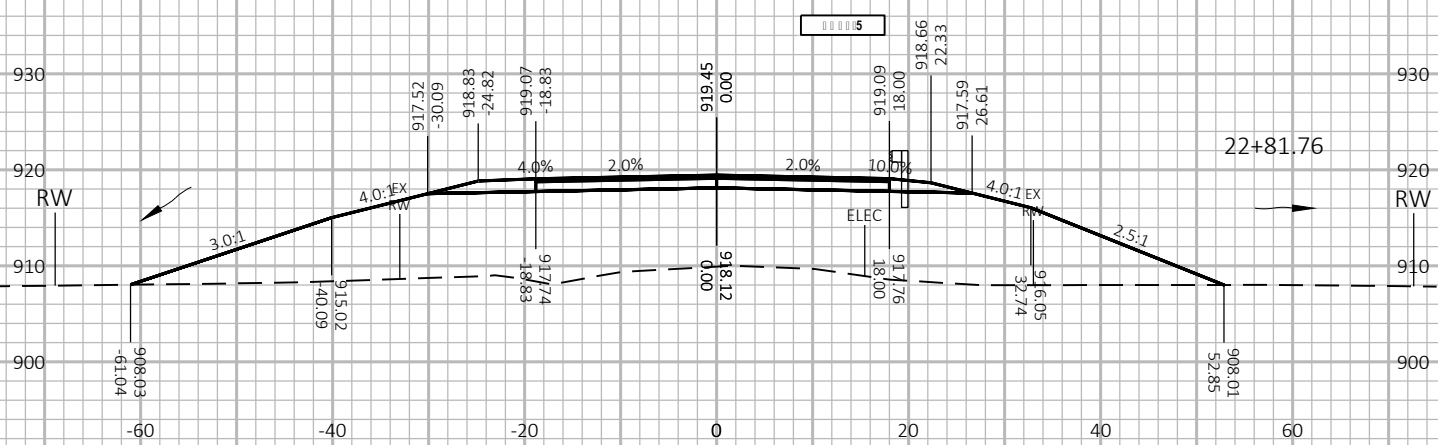
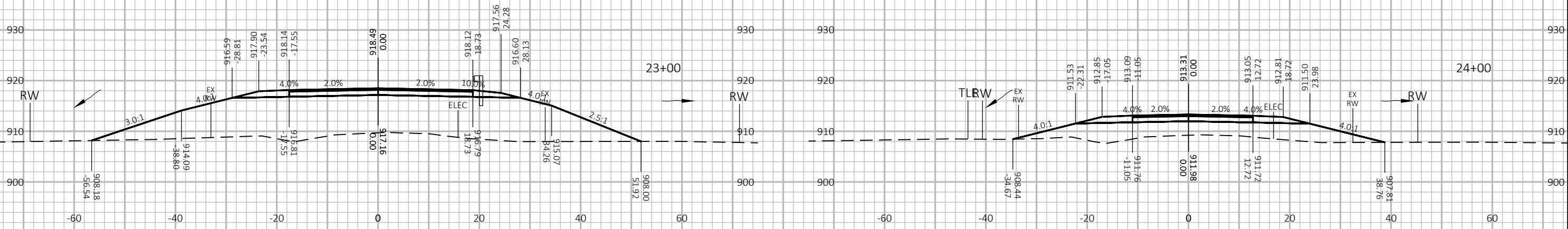
COUNTY: ROCK

CROSS SECTIONS: CREEK ROAD

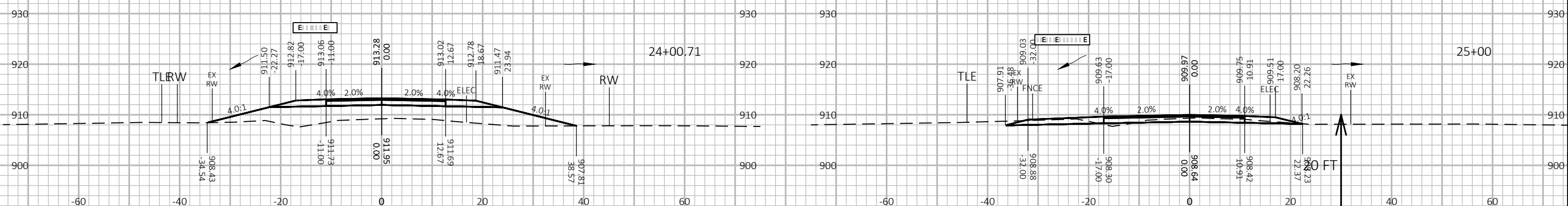
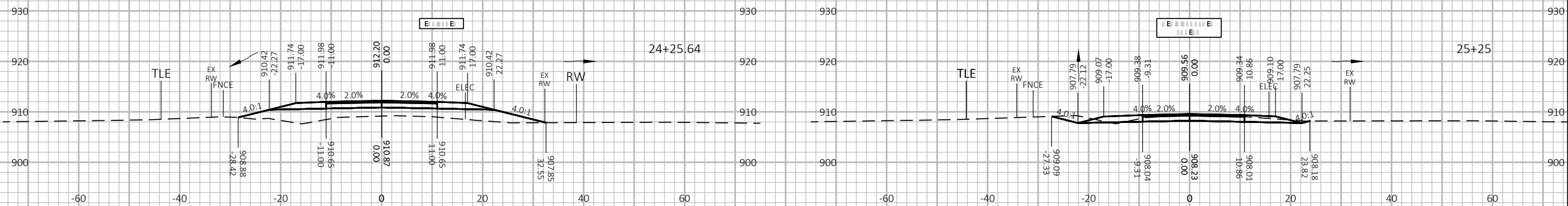
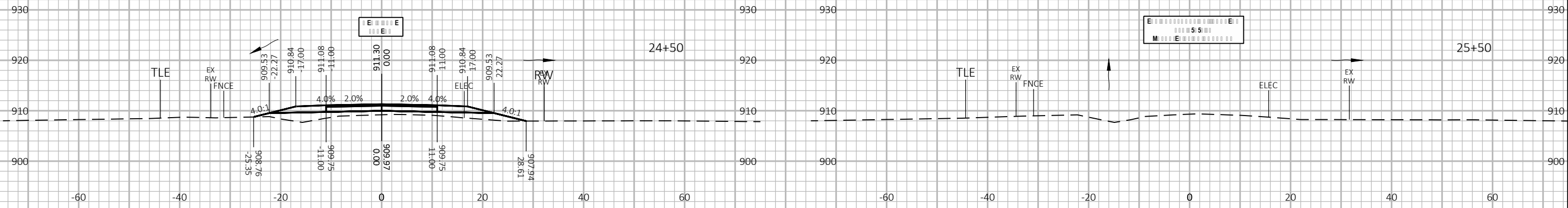
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E

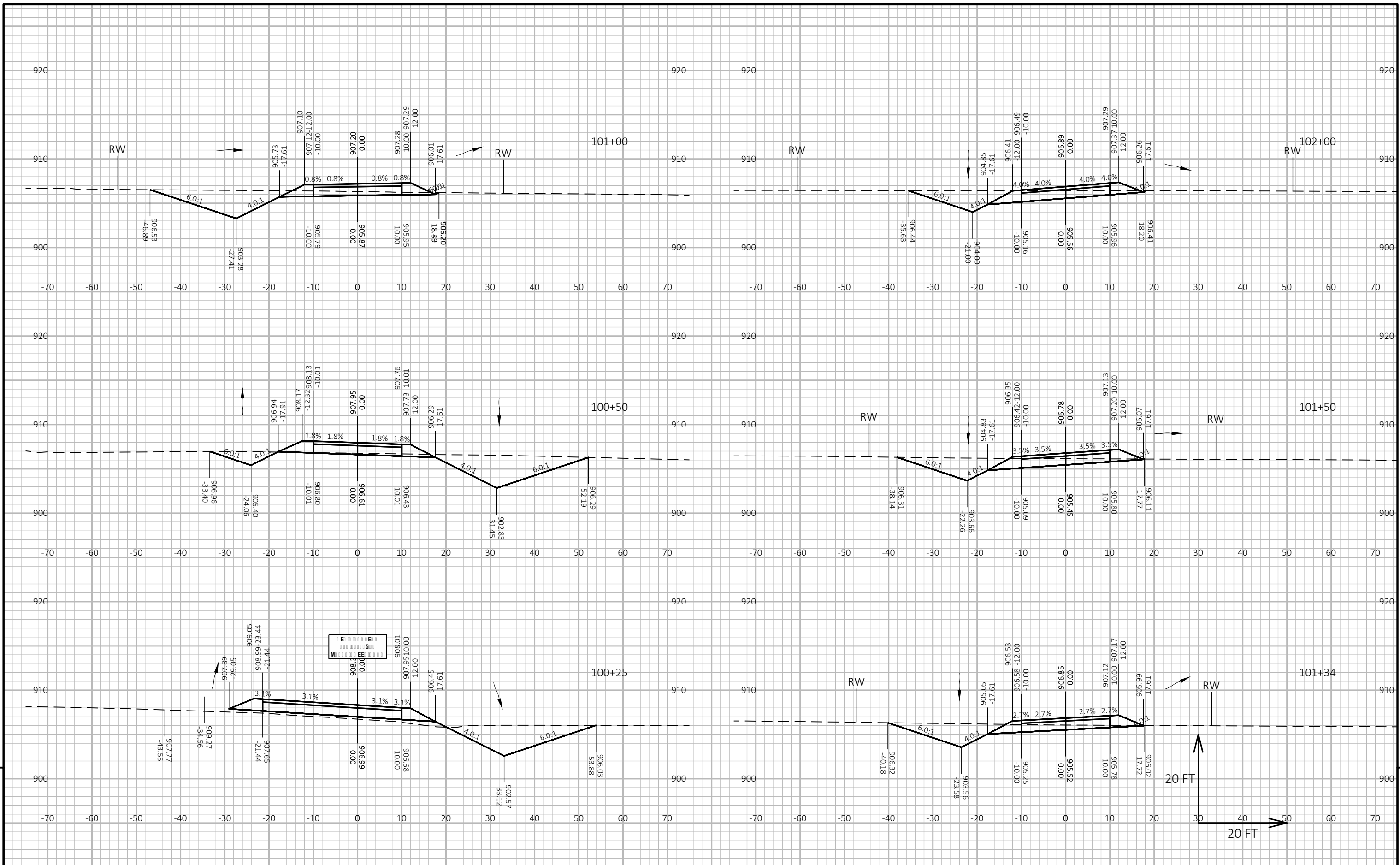




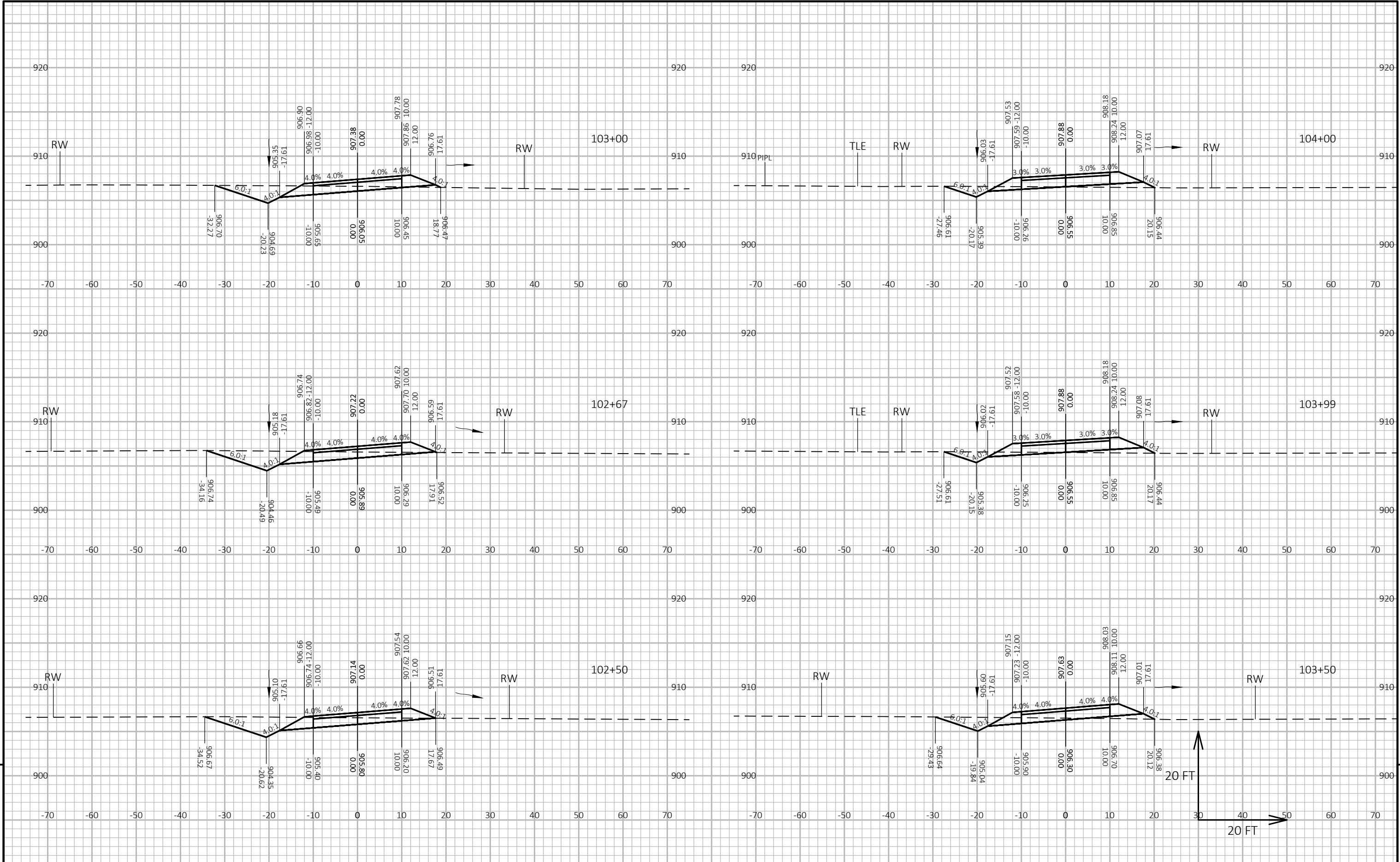
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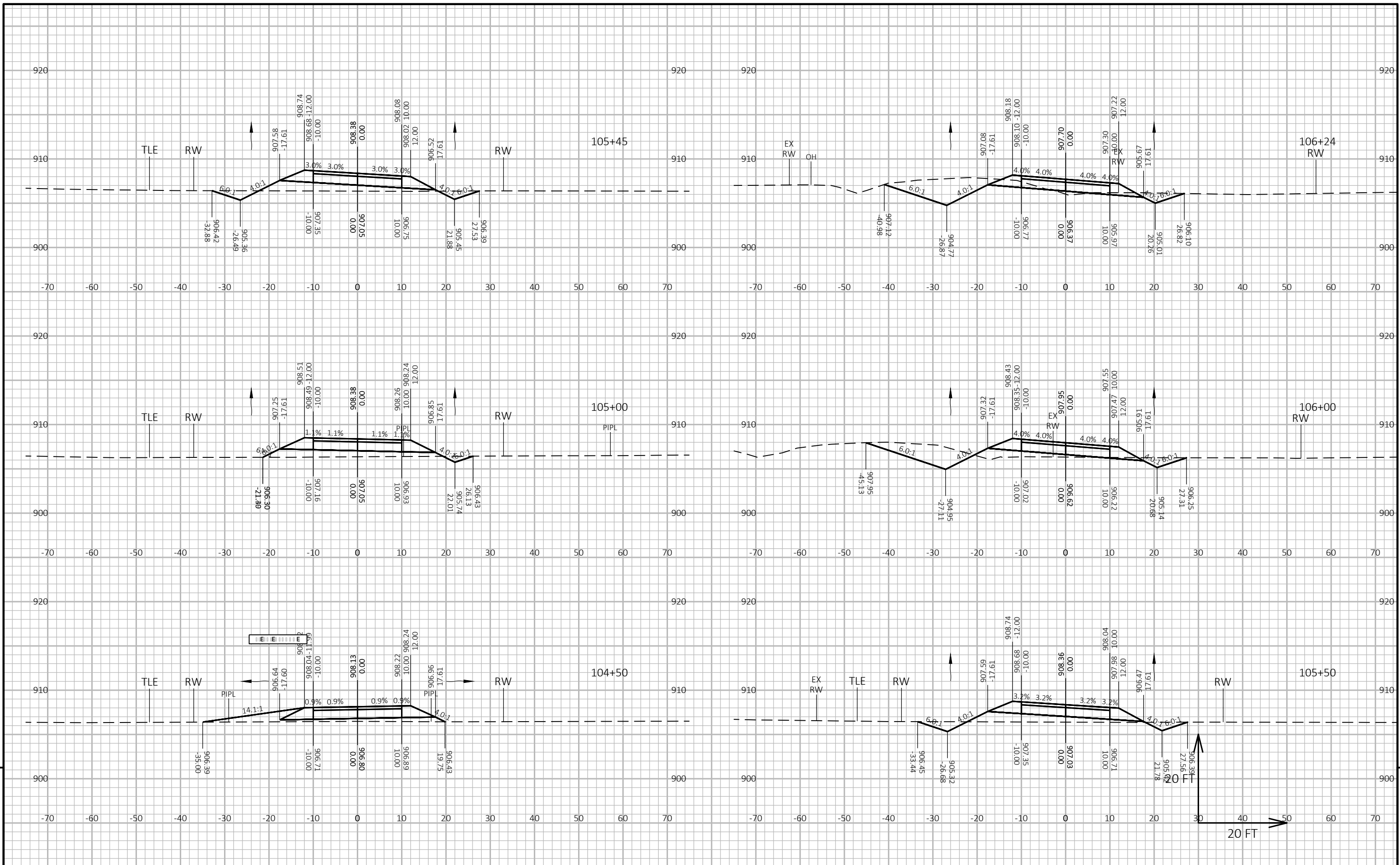
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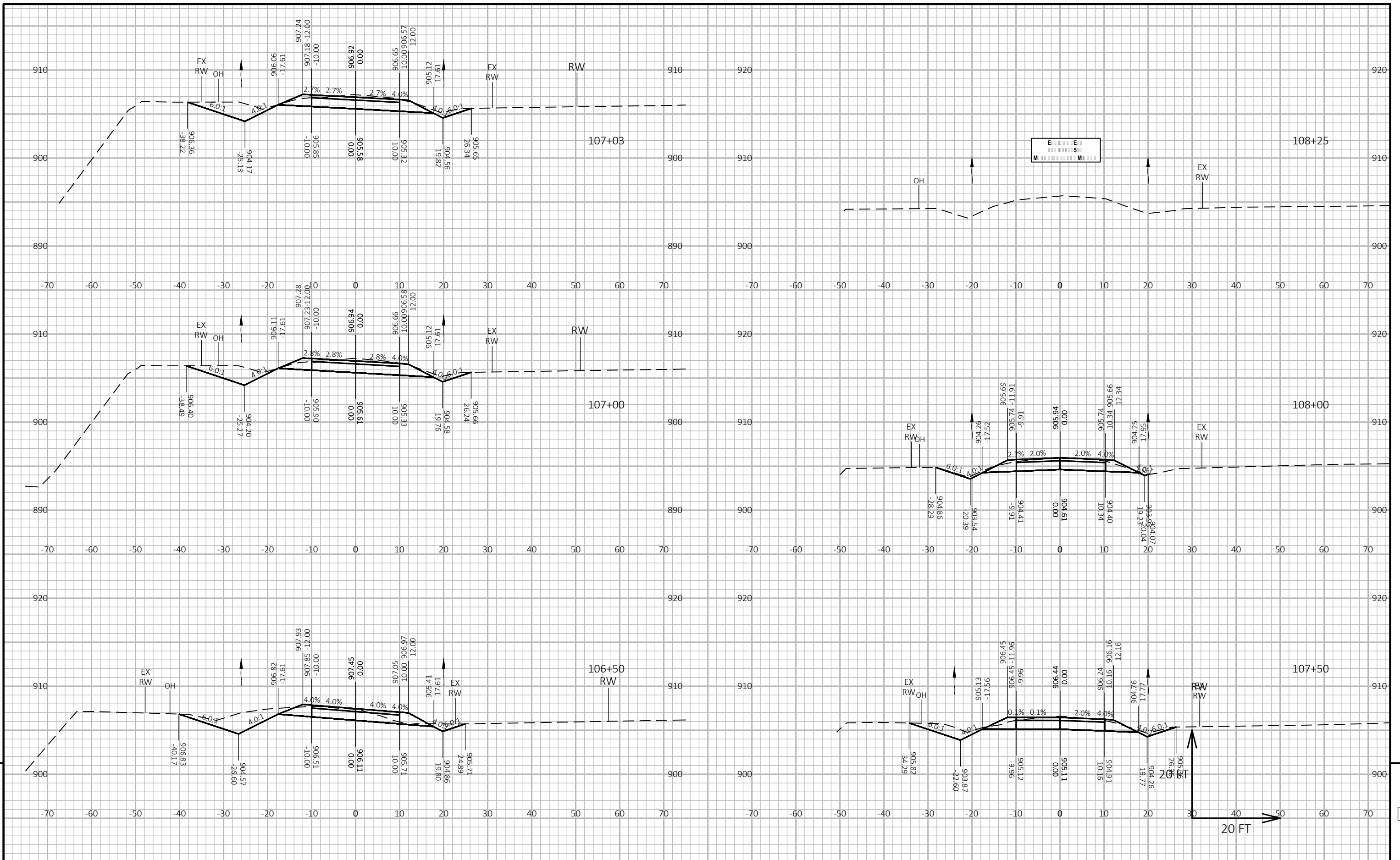
PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	CROSS SECTIONS: HOFSTROM ROAD	SHEET E
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PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	CROSS SECTIONS: HOFSTROM ROAD	SHEET E
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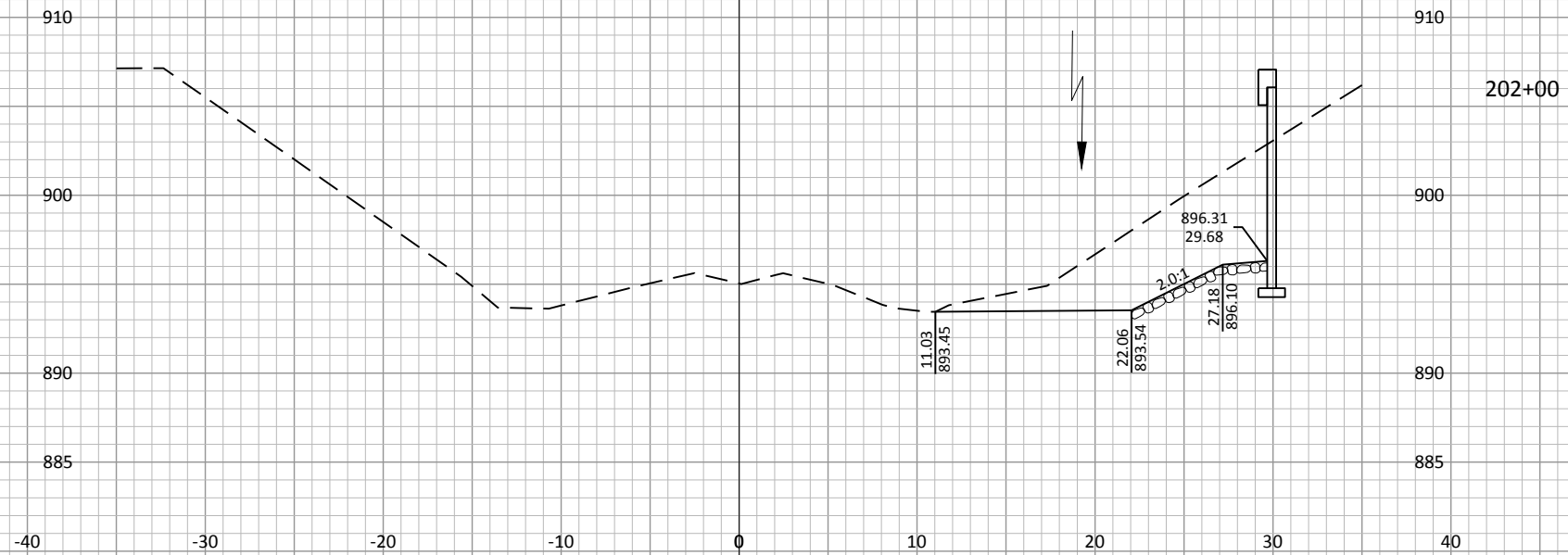


PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	CROSS SECTIONS: HOFSTROM ROAD	SHEET E
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PROJECT NO: 3614-00-75	HWY: TOWN ROAD	COUNTY: ROCK	CROSS SECTIONS: HOFSTROM ROAD	SHEET E
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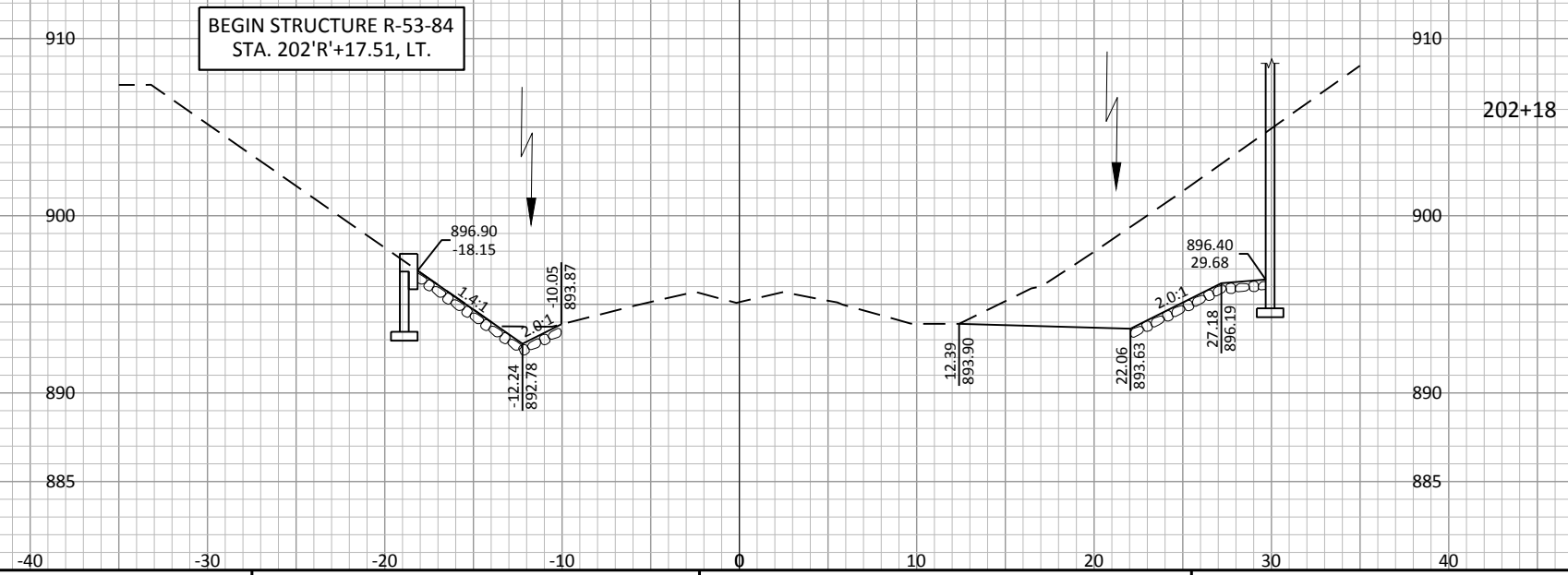
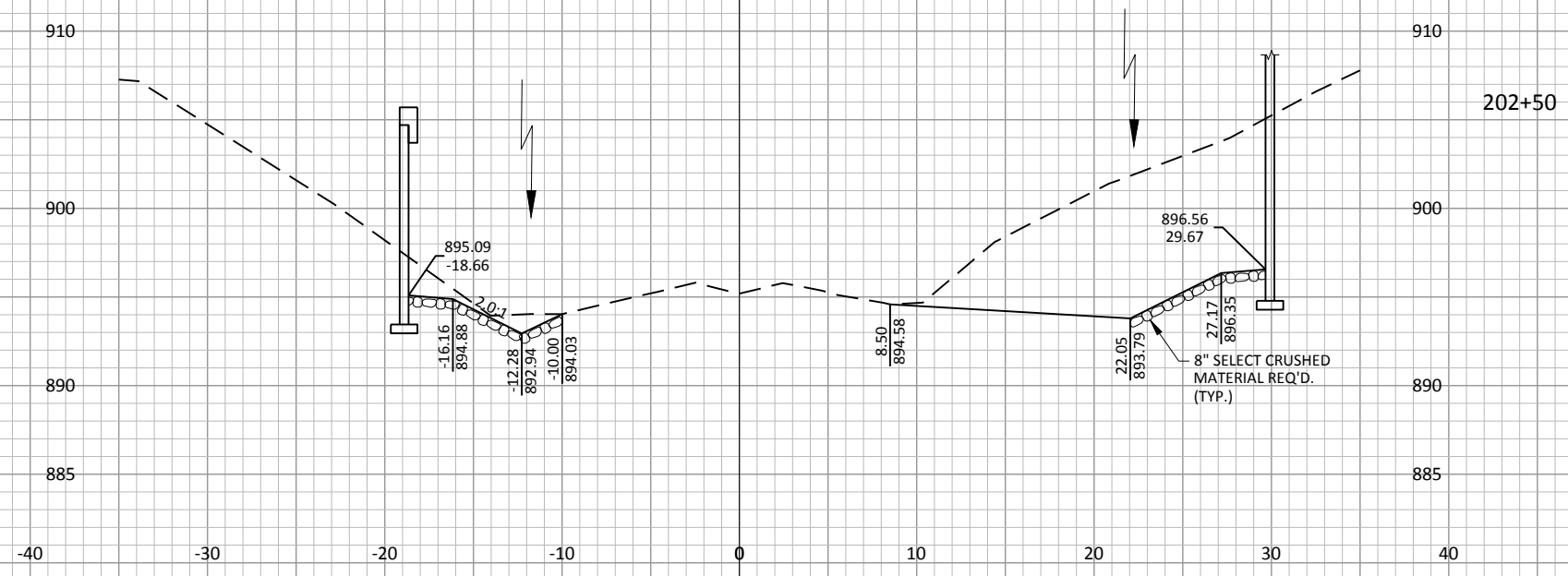
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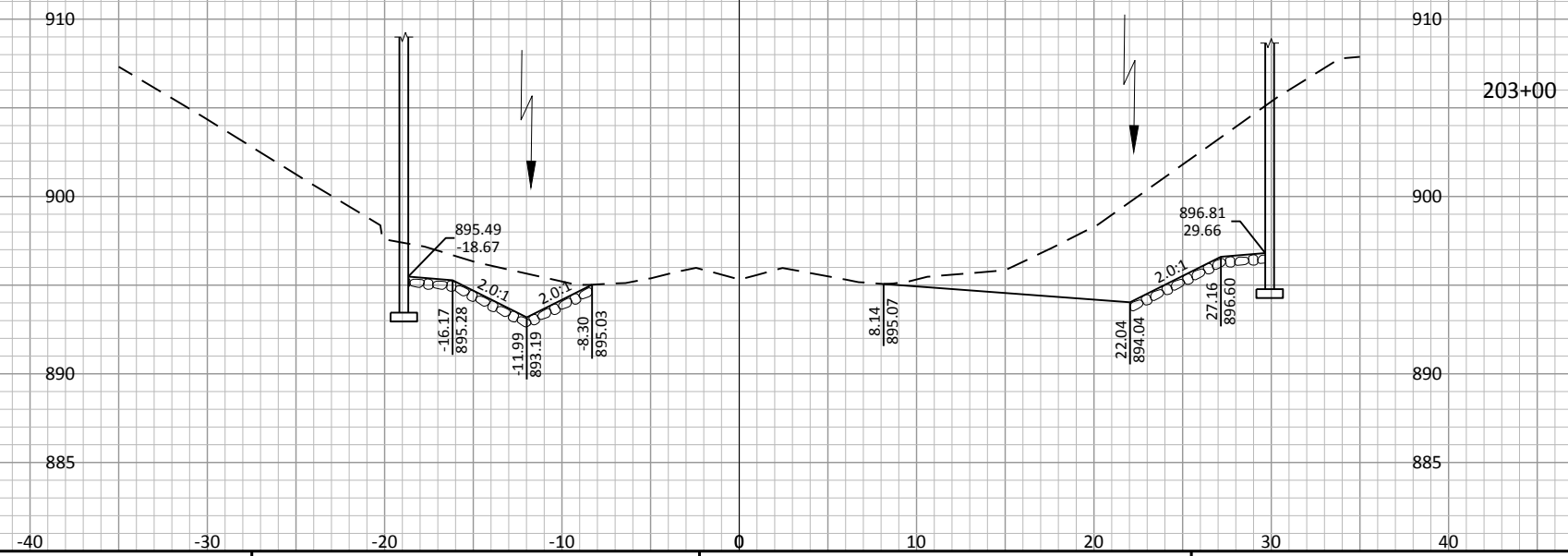
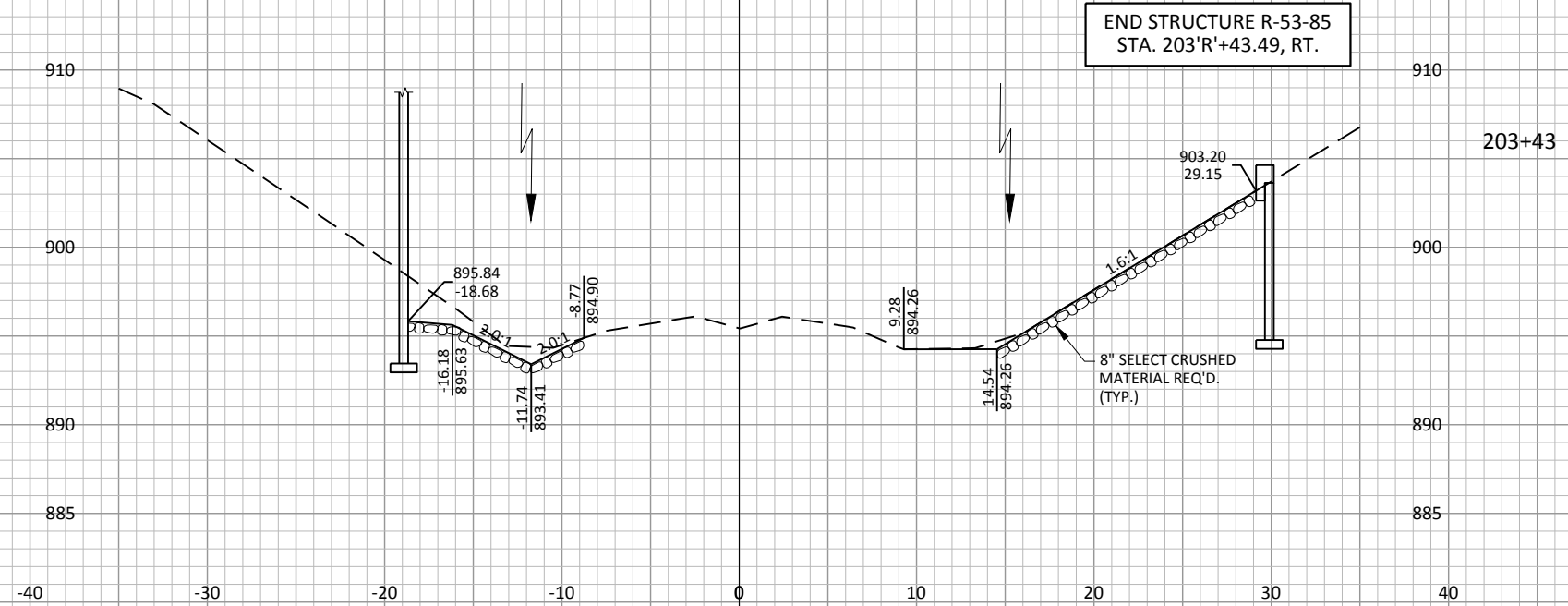
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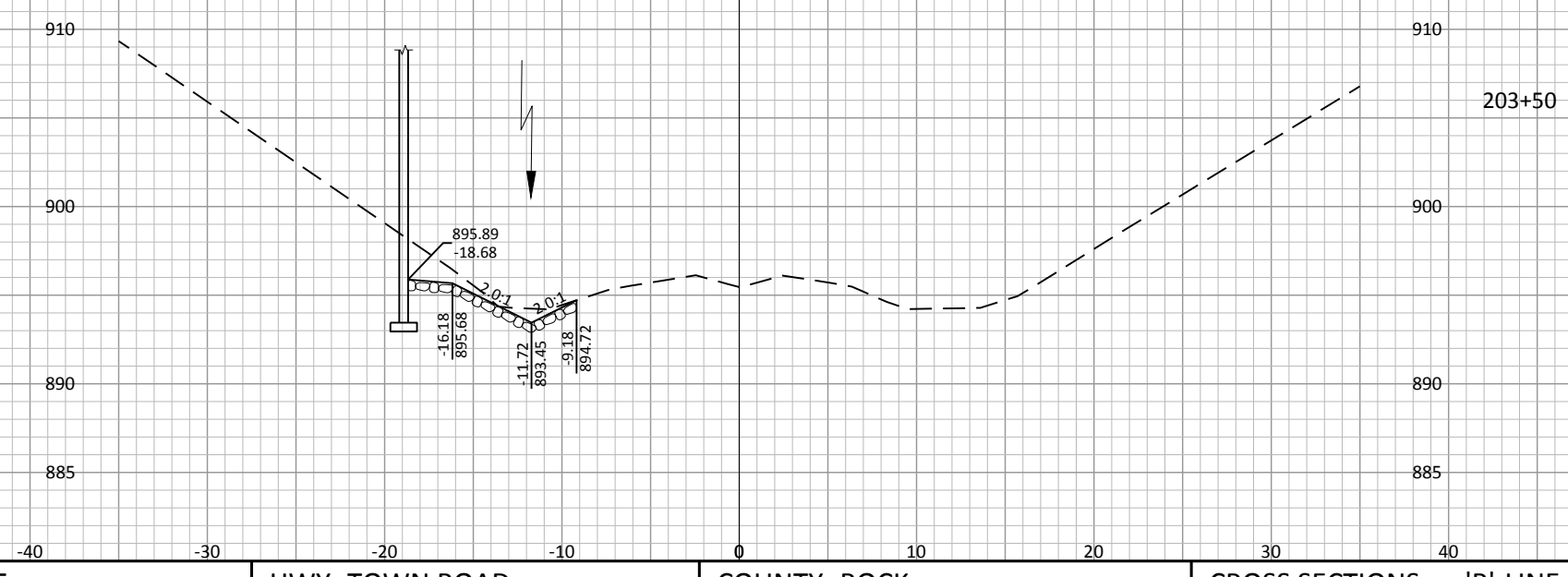
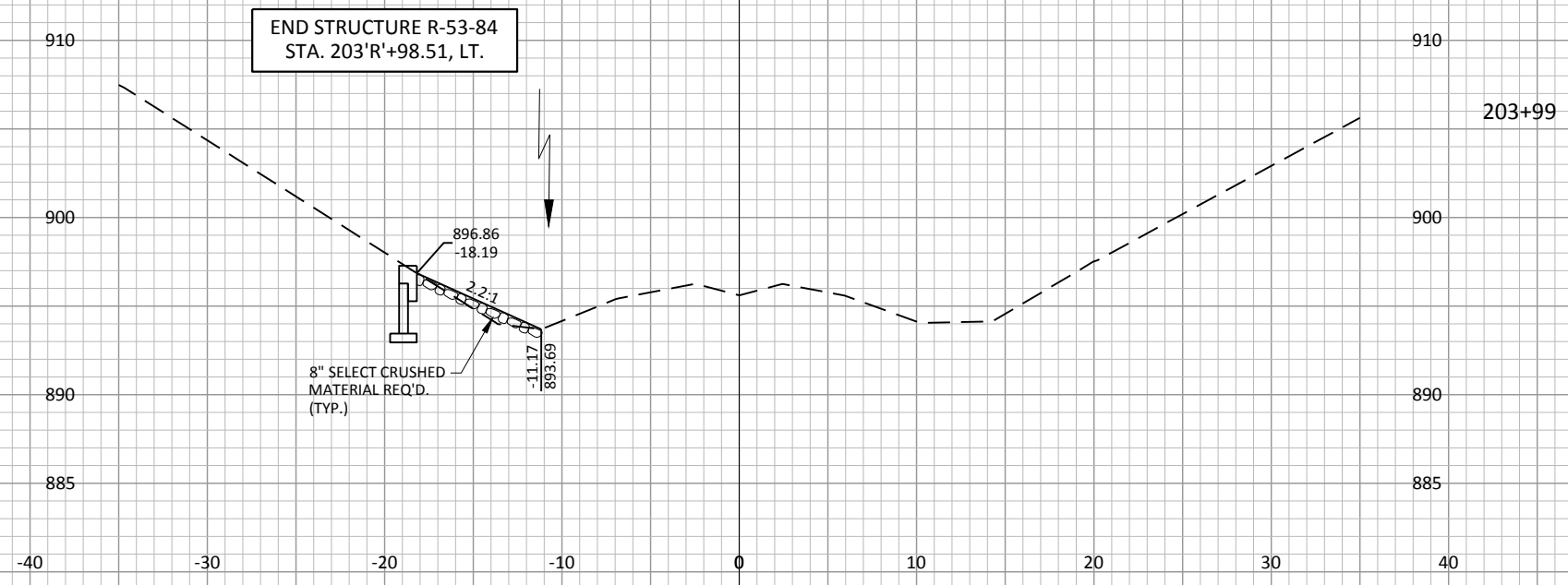
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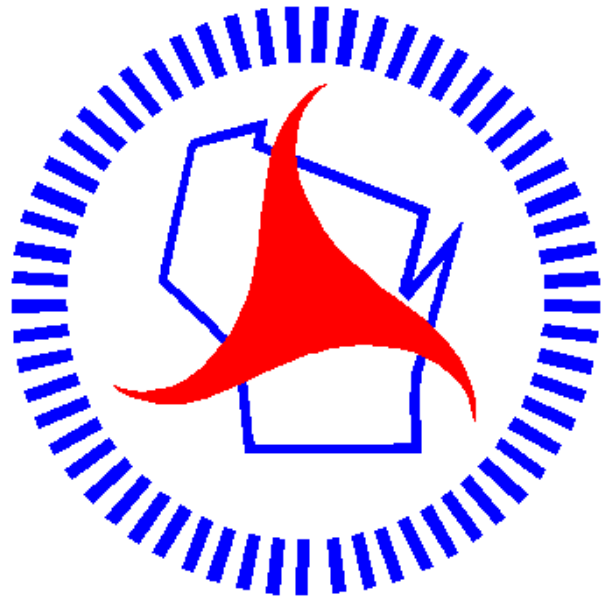
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Notes



Wisconsin Department of Transportation

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