

SUP

PROJECT ID:

WITH:

8760-00-72

COUNTY:

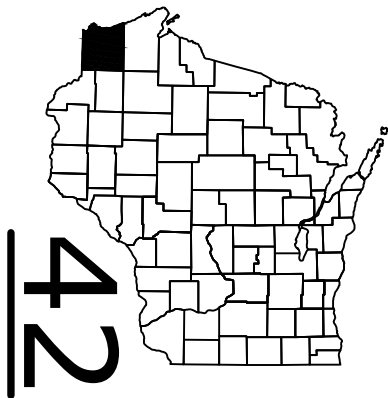
DOUGLAS

FEBRUARY 2026

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 = 164



DESIGN DESIGNATION

A.A.D.T.	2016	=	3,120
A.A.D.T.	2026	=	3,500
D.H.V.		=	403
D.D.		=	60/40
T.		=	7.9%
DESIGN SPEED		=	55 MPH
ESALS		=	480,000

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

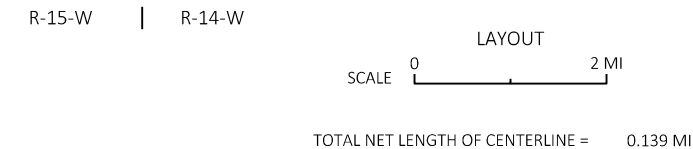
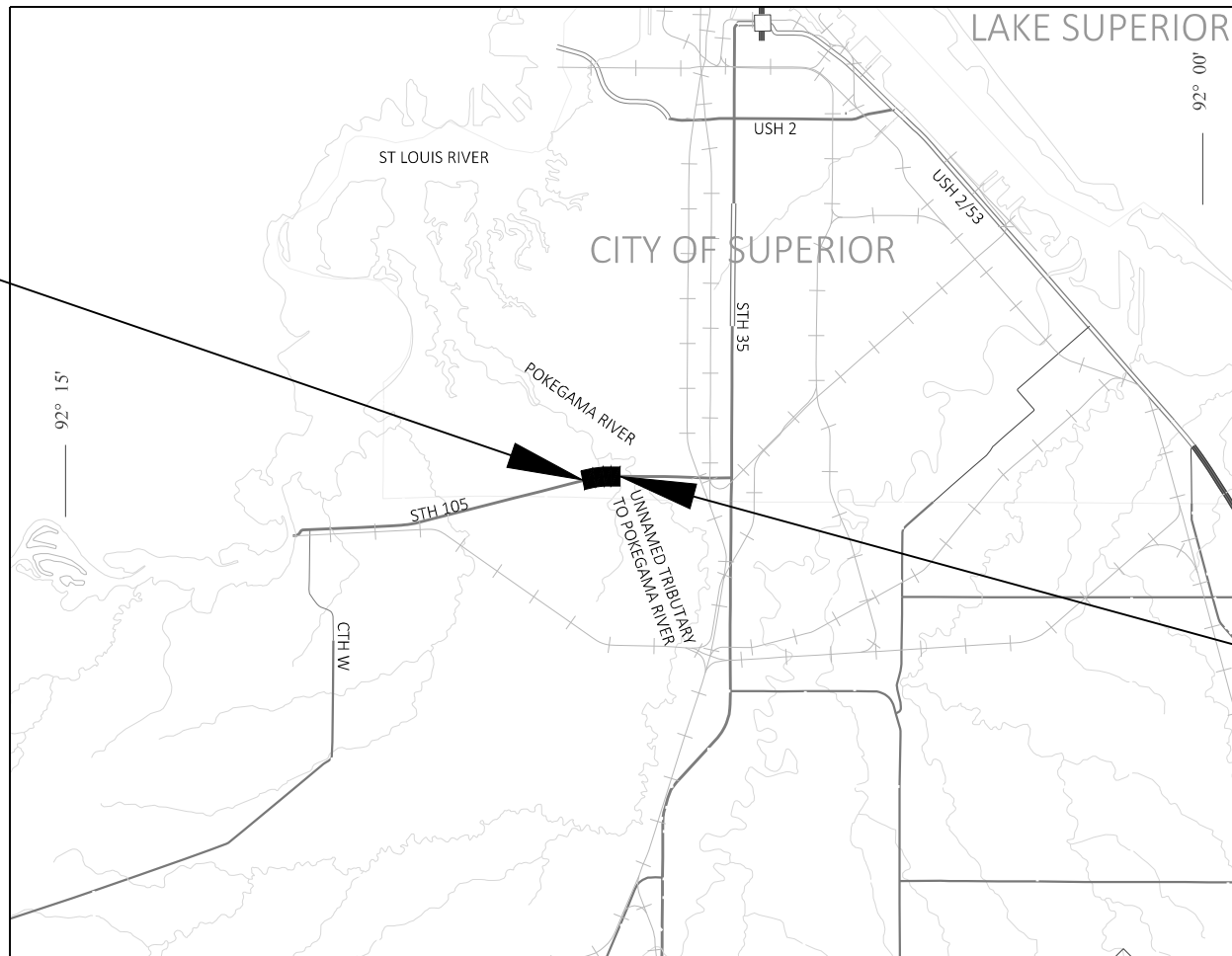
OLIVER - SUPERIOR

UNNAMED TRIB TO THE POKEGAMA RIVER

STH 105

DOUGLAS

STATE PROJECT NUMBER
8760-00-72



HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COORDINATE REFERENCE SYSTEM (WISCRS), DOUGLAS COUNTY NAD83 (2011), IN U.S. SURVEY FEET. POSITIONS SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES ARE THE SAME AS GROUND DISTANCES. ELEVATIONS ARE REFERENCED TO NAVD 88 (2012). GPS DERIVED ELEVATIONS ARE BASED ON GEOID 12A.

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
8760-00-72	WISC 2026196	1

T-49-N

T-48-N

END PROJECT 8760-00-72
STA 189+75

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY	WISDOT SURVEYOR
Designer	CAITLIN BUKOVITZ
Project Manager	STEPHANIE KING
Regional Examiner	WISDOT EXAMINER
Regional Supervisor	MATTHEW VAN NATTA

APPROVED FOR THE DEPARTMENT

DATE: _____

(Signature)

E

UTILITIES CONTACTS

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ELECTRICITY
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RAILROAD CONTACTS

SEE SPECIAL PROVISIONS

GENERAL NOTES

ACCESS TO ALL RESIDENCES, BUSINESSES, TRAILS, AND CEMETERY SHALL BE MAINTAINED DURING CONSTRUCTION.

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

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

WHEN THE QUANTITY OF BASE AGGREGATE DENSE OR HMA PAVEMENT IS MEASURED FOR PAYMENT BY THE TON OR CUBIC YARD THE DEPTH OR THE THICKNESS OF THE COURSE SHOWN ON THE PLAN IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

PAVEMENT QUANTITIES ARE BASED ON 112 LBS/SY COMPACTED 1" THICK.

LIMIT STAGING/STOCKPILING TO PAVED, GRAVEL OR MOWED AREAS. SOILS IN THE PROJECT LIMITS ARE KNOWN TO BE UNSTABLE.

SHRINKAGE OF EARTHWORK IS VARIABLE. THE AVERAGE FACTOR USED IS 1.35%.

PRIOR TO THE PLACEMENT OF GUARDRAIL, THE BASE AGGREGATE SHOULDERS SHALL BE CONSTRUCTED, SHAPED, AND COMPACTED UNLESS DIRECTED OTHERWISE BY THE ENGINEER.

THE EXACT LOCATION OF THE EROSION CONTROL DEVICES SHALL BE DETERMINED IN THE FIELD.

EMERALD ASH BORER - ASH TREES MAY BE PRESENT. REFER TO DATCP WEBSITE:
HTTP://DATCPSERVICES.WISCONSIN.GOV/EAB/ARTICLE.JSP?TOPICID=20

STANDARD ABBREVIATIONS

AGG	AGGREGATE	R/W	RIGHT-OF-WAY
BM	BENCH MARK	SAN	SANITARY SEWER
CE	COMMERCIAL ENTRANCE	SS	STORM SEWER
CL OR C/L	CENTER LINE	SSPRC	STORM SEWER PIPE REINFORCED CONCRETE
CWT	HUNDREDWEIGHT	SE	SUPERELEVATION RATE
E	ELECTRIC	VAR	VARIABLE
FO	FIBER OPTIC	T	TELEPHONE
G	GAS	TV	TELEVISION
OH	OVERHEAD	TYP	TYPICAL
PE	PRIVATE ENTRANCE	VAR	VARIABLE
PIPL	PIPELINE		

ORDER OF TYPICAL SECTION AND DETAIL SHEETS

GENERAL NOTES
PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS
EROSION CONTROL DETAILS
TRAFFIC CONTROL
DETOURS
ALIGNMENT



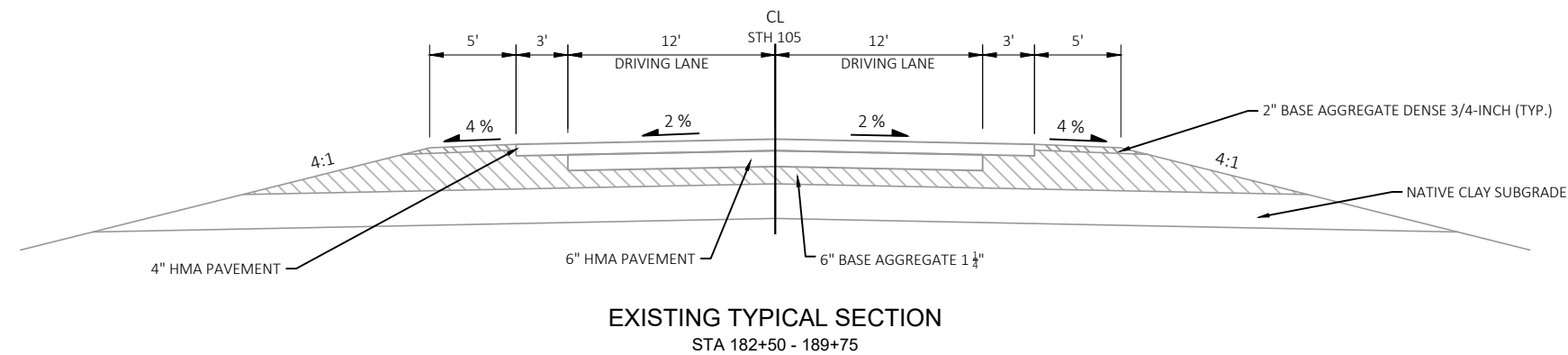
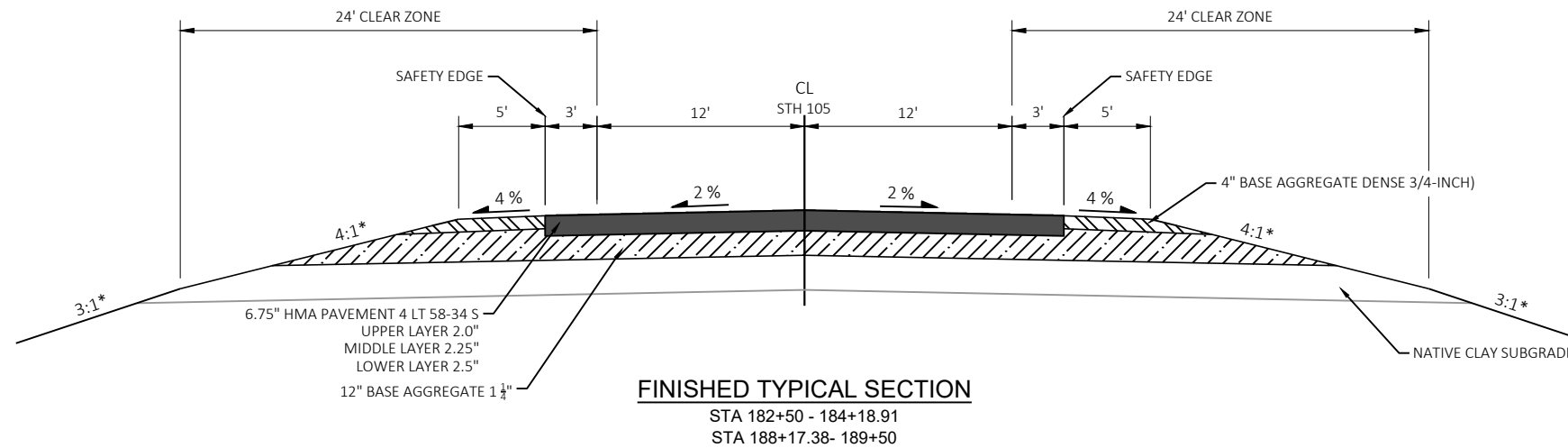
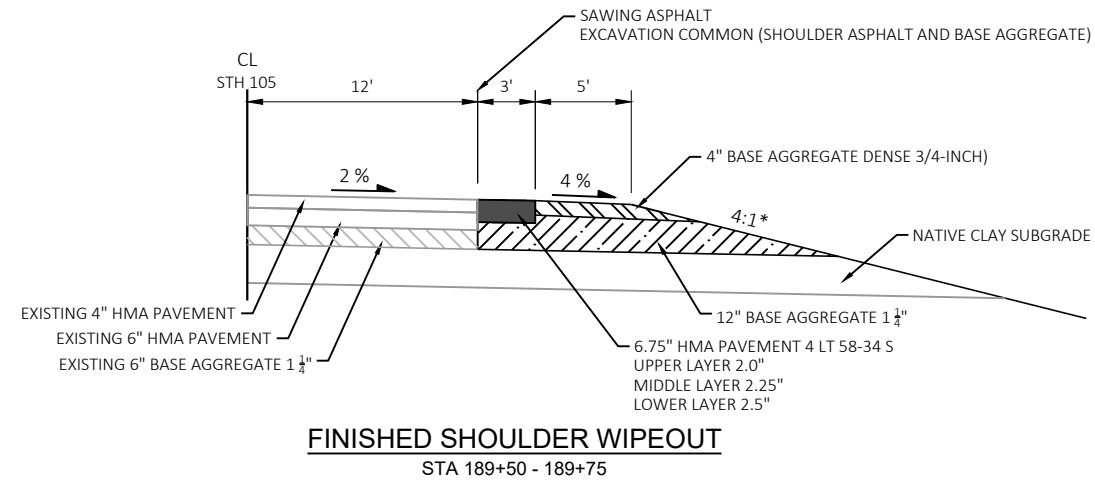
Dial 811 or (800)242-8511

www.DiggersHotline.com

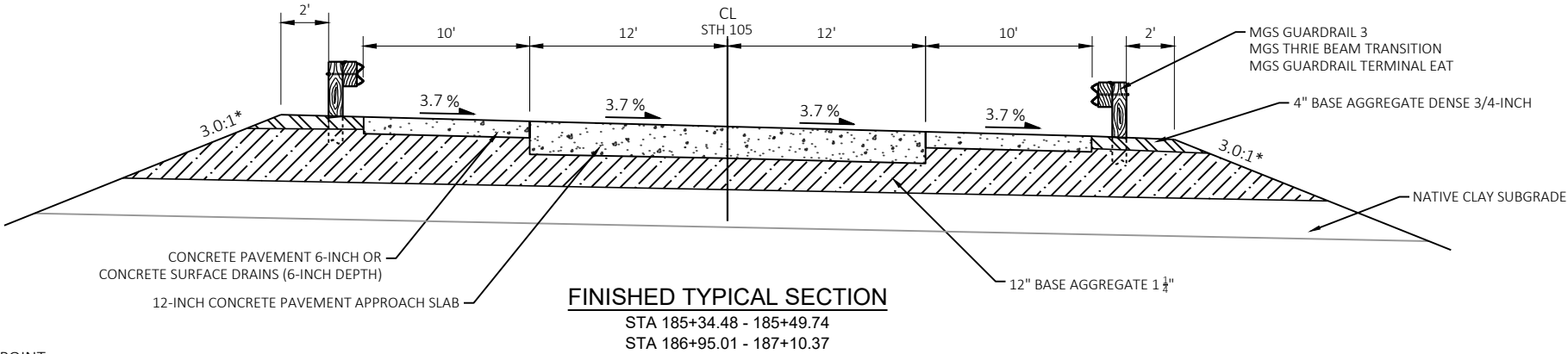
CONTROL POINTS					
NO.	STATION	ELEV.	NORTHING	EASTING	DESCRIPTION
CP 107	156+15.56	676.875	284,821.282	136,934.126	
CP 108	176+72.38	667.516	285,375.988	138,915.335	
CP 109	194+79.49	622.337	285,539.574	140,720.035	
CP 110	212+68.10	662.759	285,529.446	142,508.645	
CP-8142	187+43.79	641.827	285,495.234	139,976.130	CAPPED REBAR
CP-8143	185+05.80	648.630	285,534.213	139,736.503	CAPPED REBAR



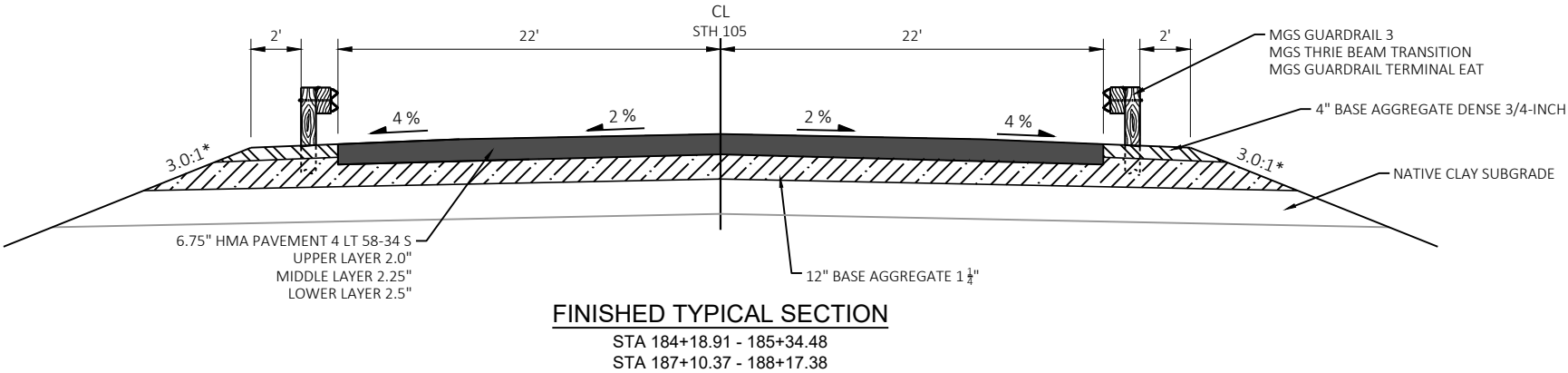
*RESTORE DISTURBED AREAS OUTSIDE OF SUBGRADE SHOULDER POINT
SALVAGED TOPSOIL
SEEDING MIXTURE NO. 10
FERTILIZAR TYPE B
EROSION MAT URBAN CLASS I TYPE B
MULCHING
SEED WATER

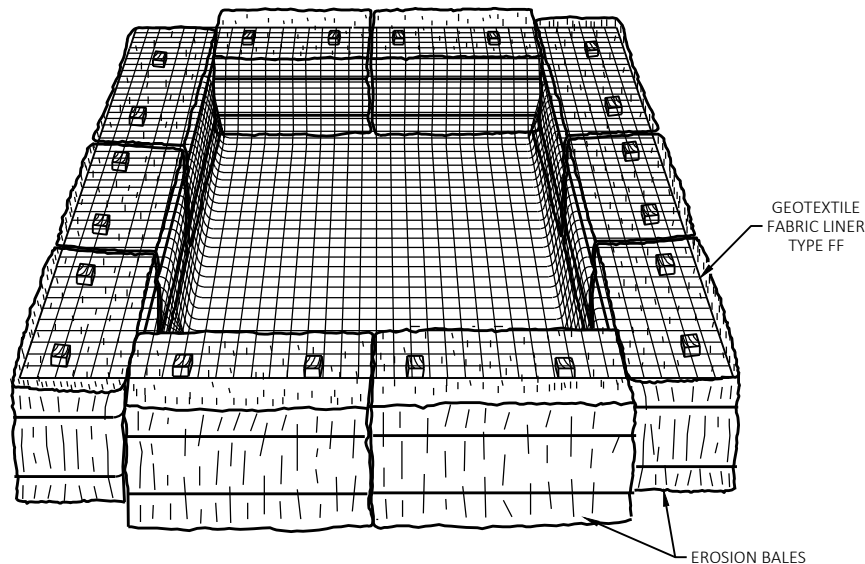


SUPERELEVATION CURVE	START STATION	END STATION	LEFT OUTSIDE SHOULDER	RATE OF CHANGE(LOS)	LEFT OUTSIDE LANE	RATE OF CHANGE(LO)	RIGHT OUTSIDE LANE	RATE OF CHANGE(RO)	RIGHT OUTSIDE SHOULDER
END NORMAL SHOULDER	178+46.62'		-4.00%	0	-2.00%	0	-2.00%	0	-4.00%
END NORMAL CROWN	178+46.62'		-2.00%		-2.00%		-2.00%		-4.00%
LEVEL CROWN	178+97.43'		0.00%	0.039	0.00%	0.039	-2.00%	0	-4.00%
RUNOFF	178+97.43'	179+91.43'							
LEVEL CROWN	178+97.43'		0.00%	0.039	0.00%	0.039	-2.00%	0	-4.00%
REVERSE CROWN	179+48.24'		2.00%	0.039	2.00%	0.039	-2.00%	0	-4.00%
BEGIN CURVE	179+60.10'								
BEGIN FULL SUPER	179+91.43'		3.00%	0.023	3.00%	0.023	-3.00%	-0.023	-4.00%
MANUAL STATION	182+90.00'		3.00%	0	3.00%	0	-3.00%	0	-4.00%
MANUAL STATION(2)	183+50.00'		3.70%	0.012	3.70%	0.012	-3.70%	-0.012	-4.00%
TRANSITION OUT REGION	187+68.77'	189+05.46'							
RUNOFF	187+68.77'	188+54.65'							
END FULL SUPER	187+68.77'		3.70%	0	3.70%	0	-3.70%	0	-4.00%
END CURVE	187+91.98'								
REVERSE CROWN	188+03.84'		2.00%	-0.039	2.00%	-0.039	-2.00%	0.039	-4.00%
LEVEL CROWN	188+54.65'		0.00%	-0.039	0.00%	-0.039	-2.00%	0	-4.00%
RUNOUT	188+54.65'	189+05.46'							
LEVEL CROWN	188+54.65'		0.00%	-0.039	0.00%	-0.039	-2.00%	0	-4.00%
BEGIN NORMAL CROWN	189+05.46'		-2.00%	-0.039	-2.00%	-0.039	-2.00%	0	-4.00%
BEGIN NORMAL SHOULDER	189+05.46'		-4.00%		-2.00%		-2.00%		-4.00%



*RESTORE DISTURBED AREAS OUTSIDE OF SUBGRADE SHOULDER POINT
SALVAGED TOPSOIL
SEEDING MIXTURE NO. 10
FERTILIZAR TYPE B
EROSION MAT URBAN CLASS I TYPE B
MULCHING
SEED WATER





TEMPORARY SETTLING BASIN
(SIZE TO BE DETERMINED IN FIELD AS INDICATED BELOW:)

STORAGE VOLUME (CF) = 16 X GPM (PUMP RATE)
EXAMPLE:
CONTRACTOR INDICATES PUMP CAPABLE OF 50 GPM
HEIGHT OF BALES = 1.5 FT
SOLUTION:
SV (CF) = 16 X 50
SV = 800 CF
 $\frac{800 \text{ CF}}{1.5 \text{ FT}} = 533 \text{ SF}$
USE A 20 FT X 27 FT BASIN

RUNOFF COEFFICIENT TABLE

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

TOTAL PROJECT AREA = 2.55 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 2.55 ACRES

DETAIL USED IN PROJECT 8760-00-71

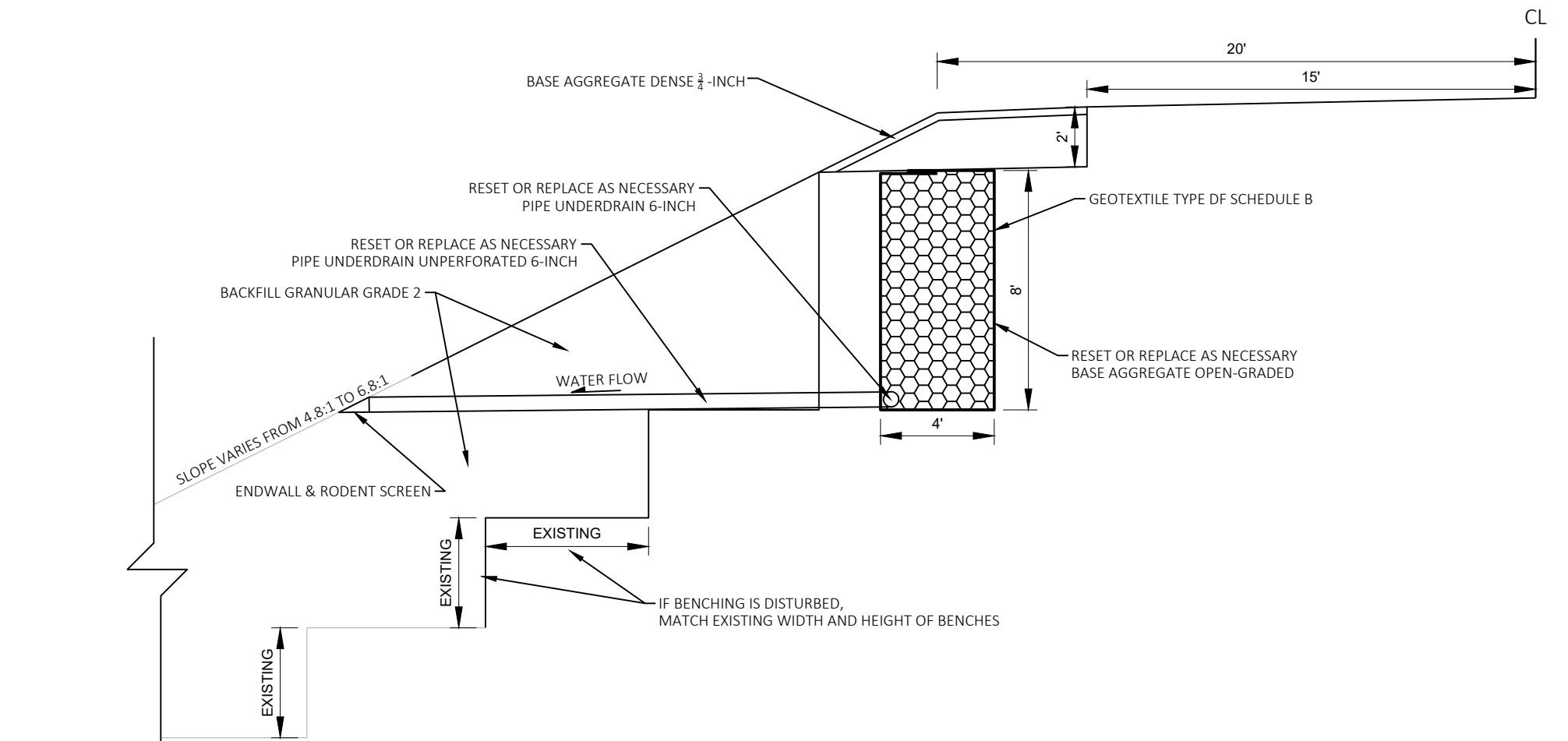
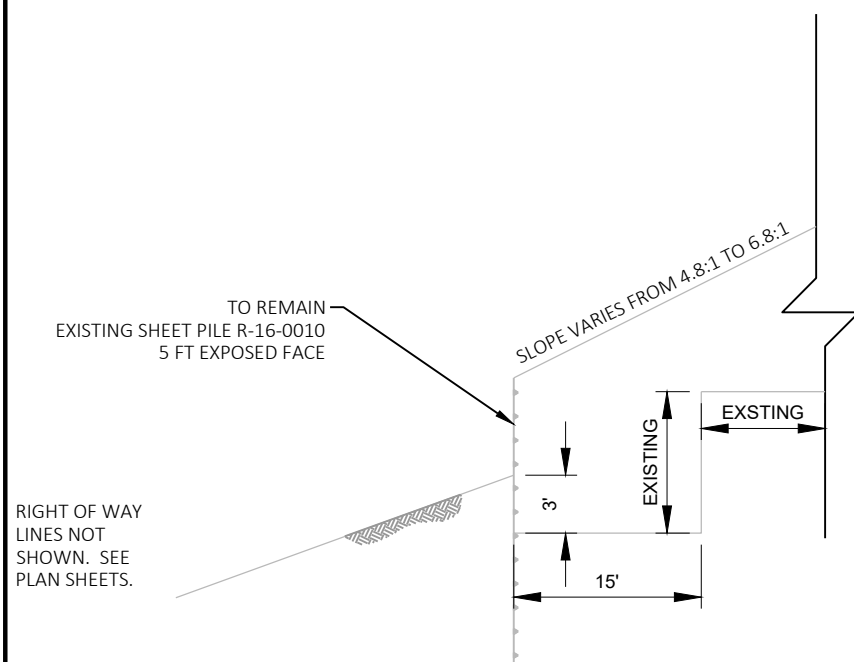
THIS DETAIL SHALL BE USED FOR ANY REPAIRS/RESTORATION REQUIRED
IF NEW CONSTRUCTION DISTURBS BENCHING AND TRENCHING
ADDITIONAL BACKFILL TO BE PAID FOR UNDER SELECT BORROW;
REPAIRS TO THE PIPE UNDERDRAIN SYSTEM IS INCIDENTAL

NOT TO SCALE

EXISTING 6-INCH PERFORATED UNDERDRAIN
IN THE TRENCH AND 6-INCH UNPERFORATED
UNDERDRAIN FOR OUTLET PIPE

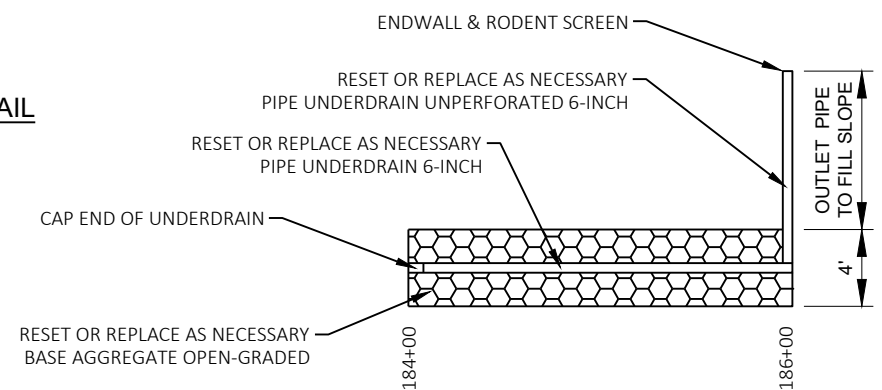
BENCHING EXISTS FROM THE SHEET PILE UP
TO THE ROADWAY.

EXISTING RIPRAP SURROUNDING THE
EXISTING SHEET PILE WALL SHALL NOT BE
MOVED UNLESS NECESSARY TO INSTALL
ROCK WEIRS. EXISTING RIPRAP IN THE
STREAMBED CAN BE MOVED TO
ACCOMMODATE NEW ROCK WEIR DESIGN.



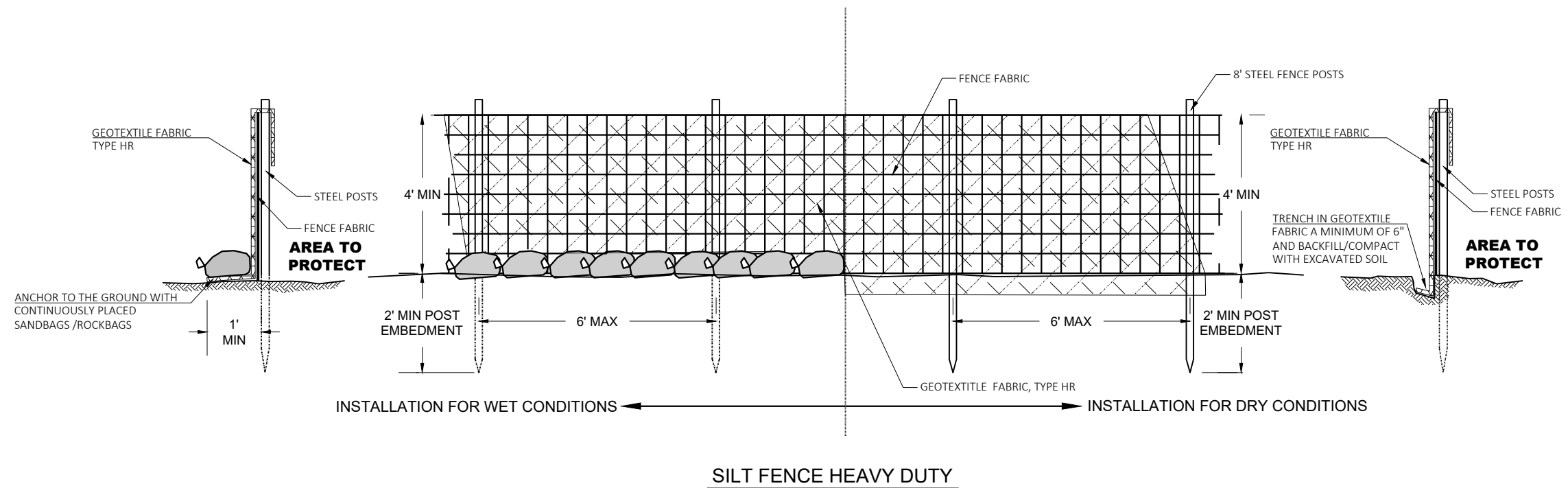
EXISTING POKEGAMA TRIBUTARY BENCHING AND DRAINAGE TRENCH DETAIL

PROPOSED STA AS NECESSARY
EXISTING STA 184+00 - 186+00 LT



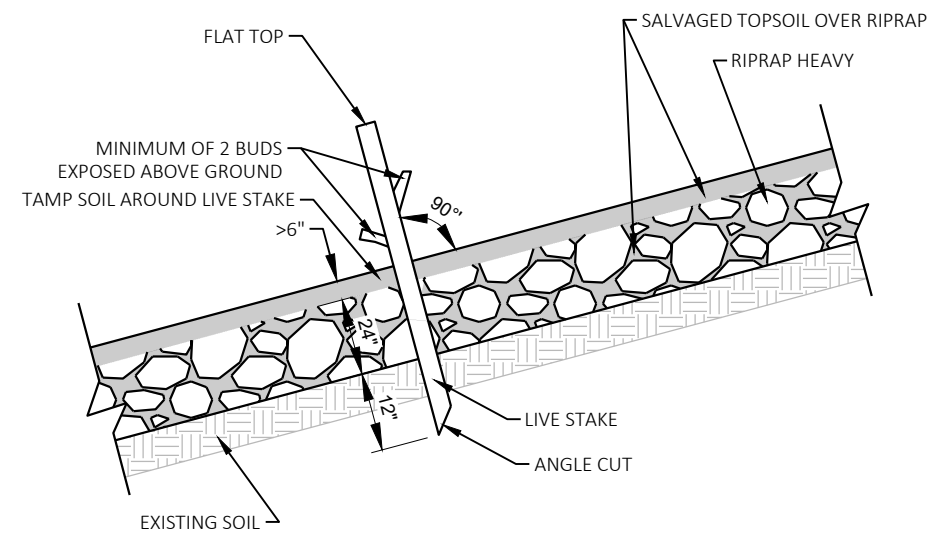
EXISTING POKEGAMA TRIBUTARY PIPE UNDERDRAIN PLAN VIEW

PROPOSED STA AS NECESSARY
EXISTING STA 184+00 - 186+00 LT

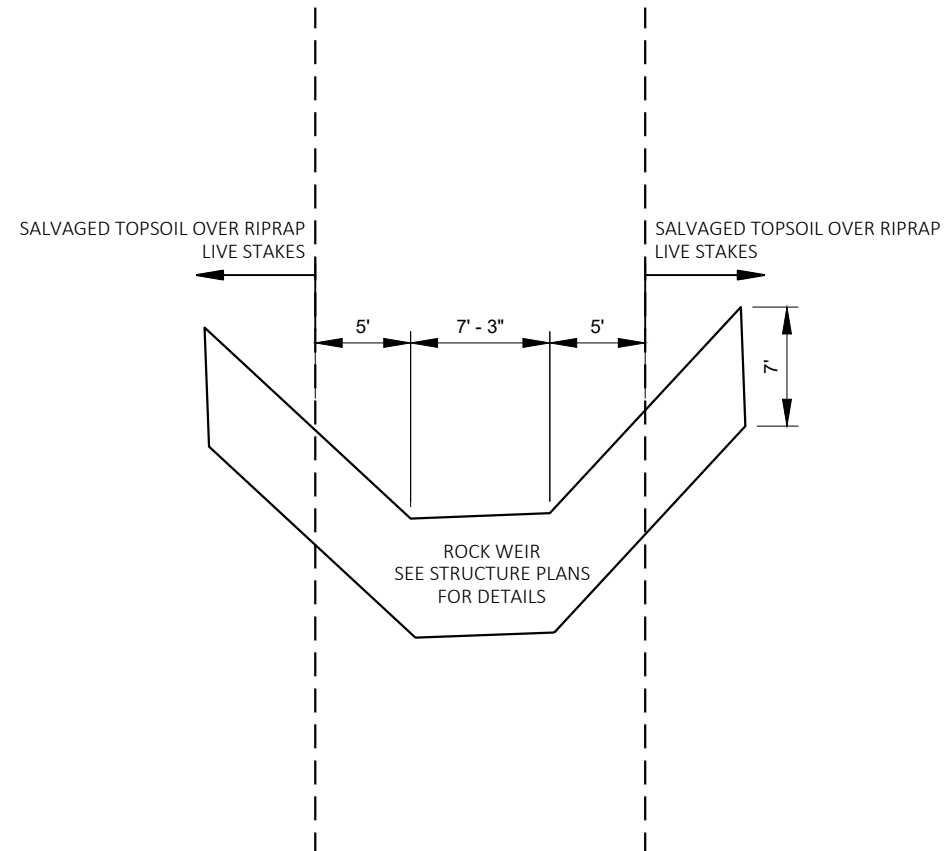


GENERAL NOTES:

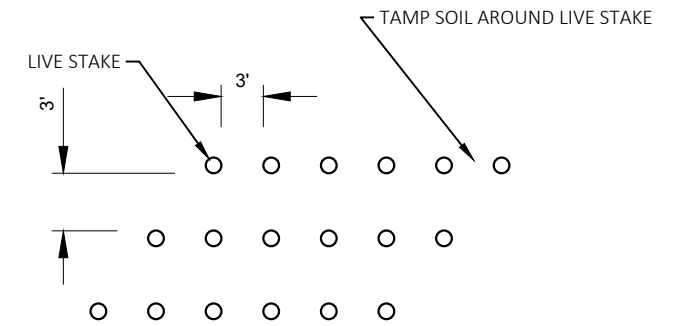
1. ATTACH FENCE FABRIC TO POSTS A MINIMUM OF 3 TIES PER POST (TOP, MIDDLE, BOTTOM)
2. ATTACH GEOTEXTILE FABRIC TO FENCE FABRIC AND/OR POSTS AT A MAXIMUM SPACING OF EVERY 2 FEET ALONG THE TOP AND ADDITIONALLY AS NECESSARY TO PREVENT DISPLACEMENT BY WIND AND WAVE ACTIONS.



PROFILE

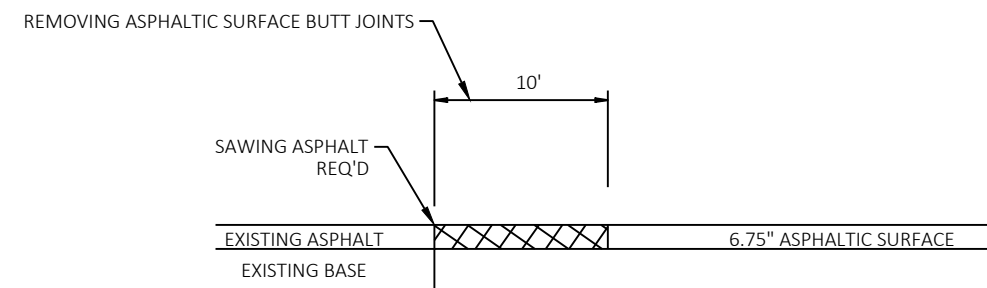


LIVE STAKE DETAILS

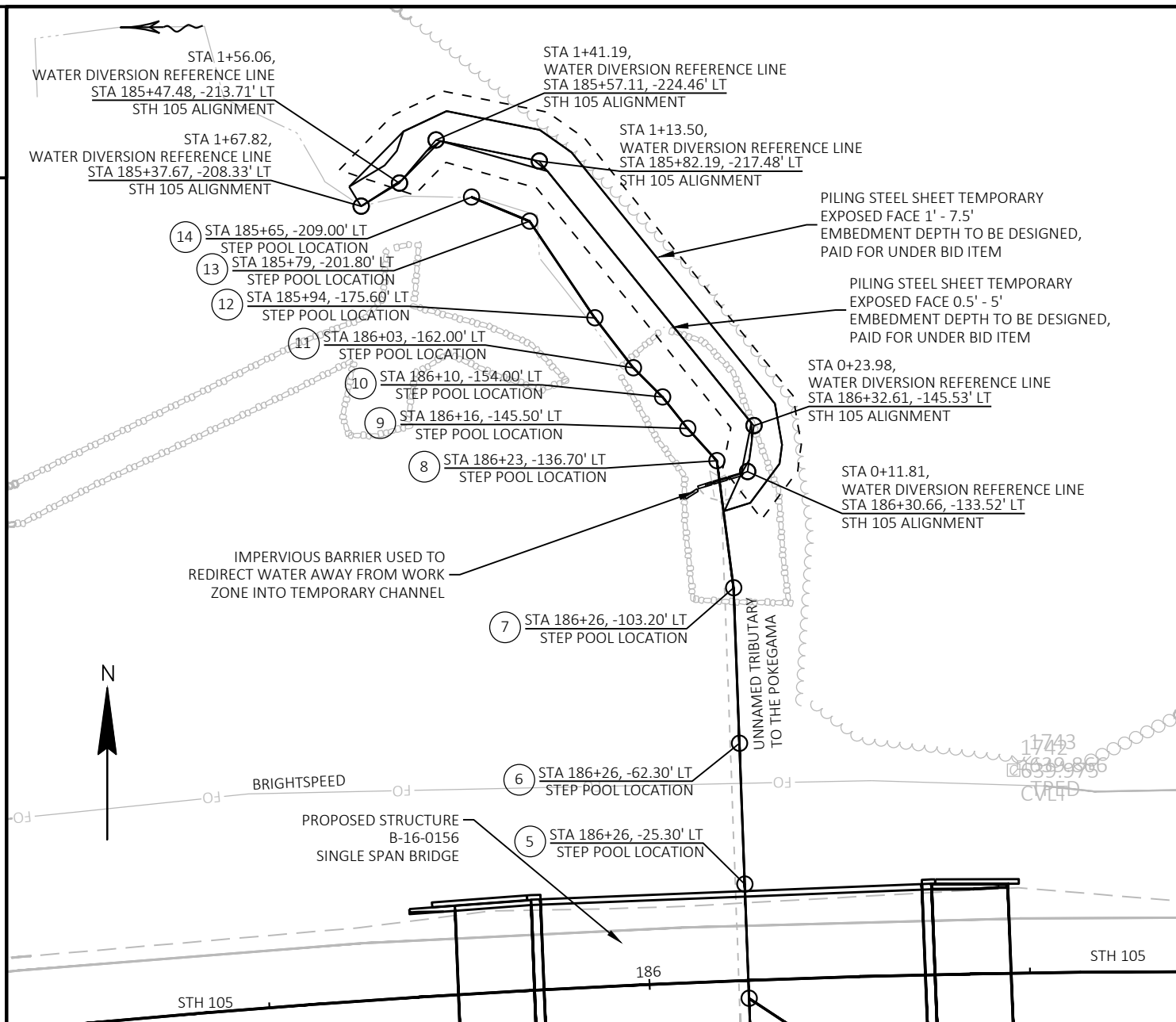


NOTE: ROWS NEED TO BE STAGGERED. DISTANCE BETWEEN STAKES MAY VARY SLIGHTLY TO PLACE LIVE STAKES WITHIN VOIDS IN THE RIPRAP.

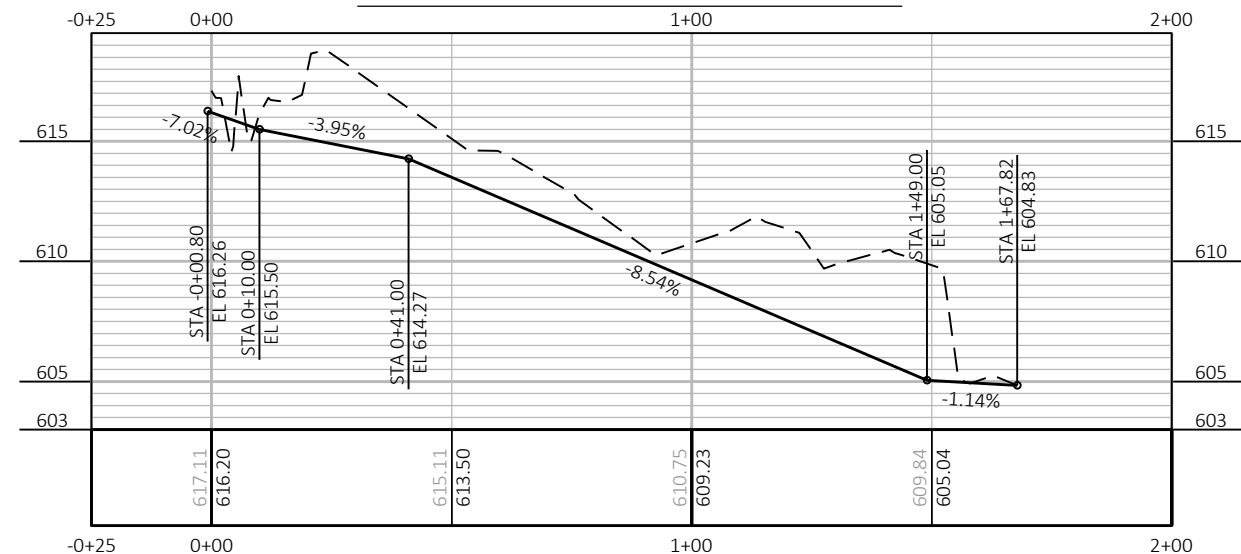
PLAN



MAINLINE BUTT JOINTS

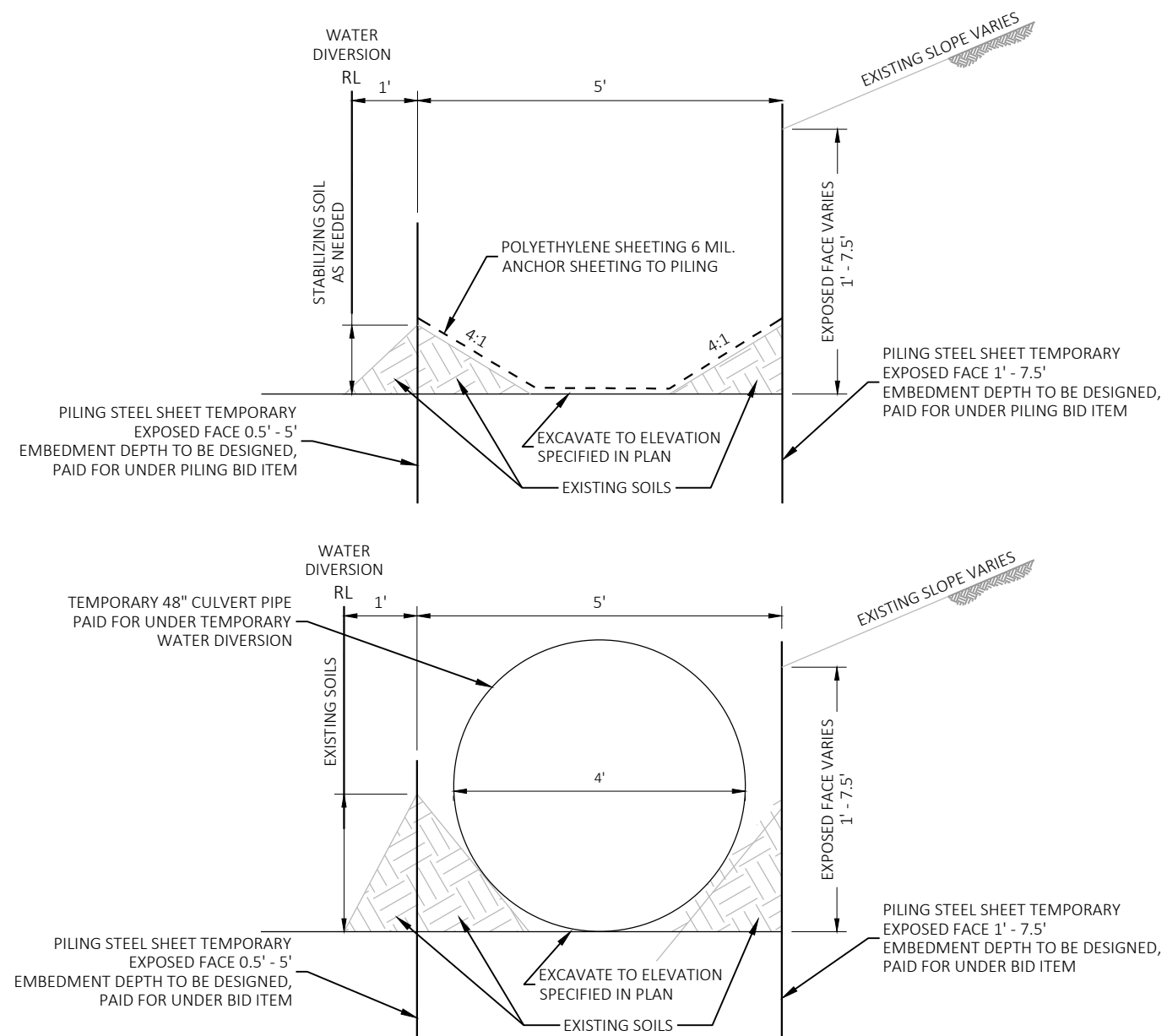


WATER DIVERSION REFERENCE LINE PROFILE



TEMPORARY CHANNEL DETAIL

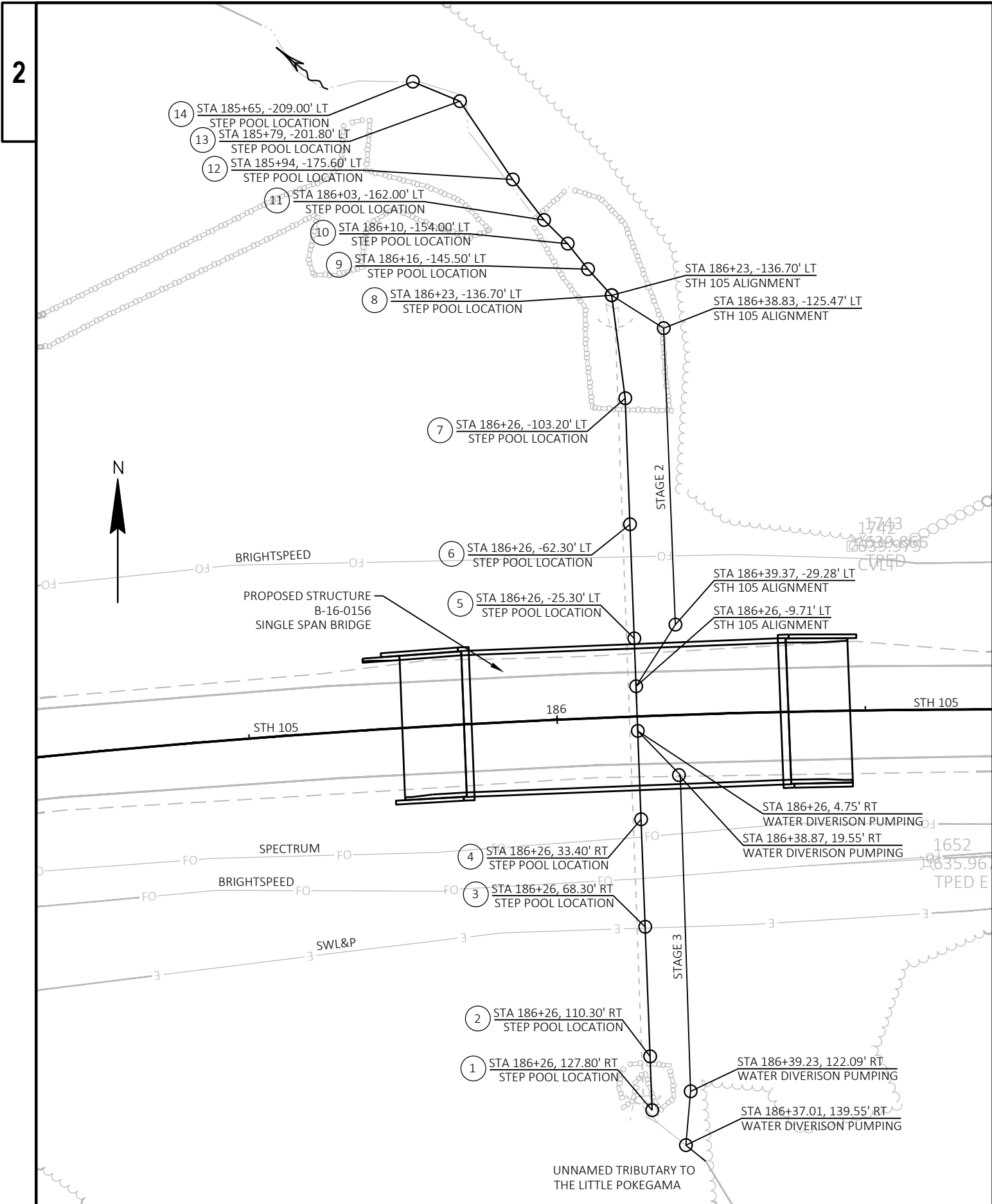
CHANNEL OR PIPE



STAGING NOTES:

1. ROCK WEIRS 8-14 SHALL BE CONSTRUCTED UNDER TEMPORARY WATER DIVERSION CHANNEL (PROJECT STAGE 1).
2. ROCK WEIRS SHALL BE CONSTRUCTED ACCORDING TO DETAILS IN STRUCTURE PLAN.
3. UTILIZE APPROPRIATE METHODS TO DIVERT WATER FROM EXISTING STREAM BED INTO TEMPORARY WATER DIVERSION CHANNEL.
4. TEMPORARY WATER DIVERSION CHANNEL SHALL HAVE PILING STEEL SHEET TEMPORARY ON EACH SIDE OF CHANNEL TO STABILIZE EXISTING SOILS.
5. WHEN WATER IS RETURNED TO THE NORMAL FLOW CHANNEL, RESTORE TEMPORARY WATER DIVERSION CHANNEL TO ORIGINAL GROUND CONTOURS WITH NATIVE SOILS.
6. EXISTING SOILS EXHIBIT INSTABILITY. SEVERAL SLIDES ARE IN THE AREA OF PROJECT. CARE SHOULD BE TAKEN TO REDUCE IMPACT TO SLOPES.

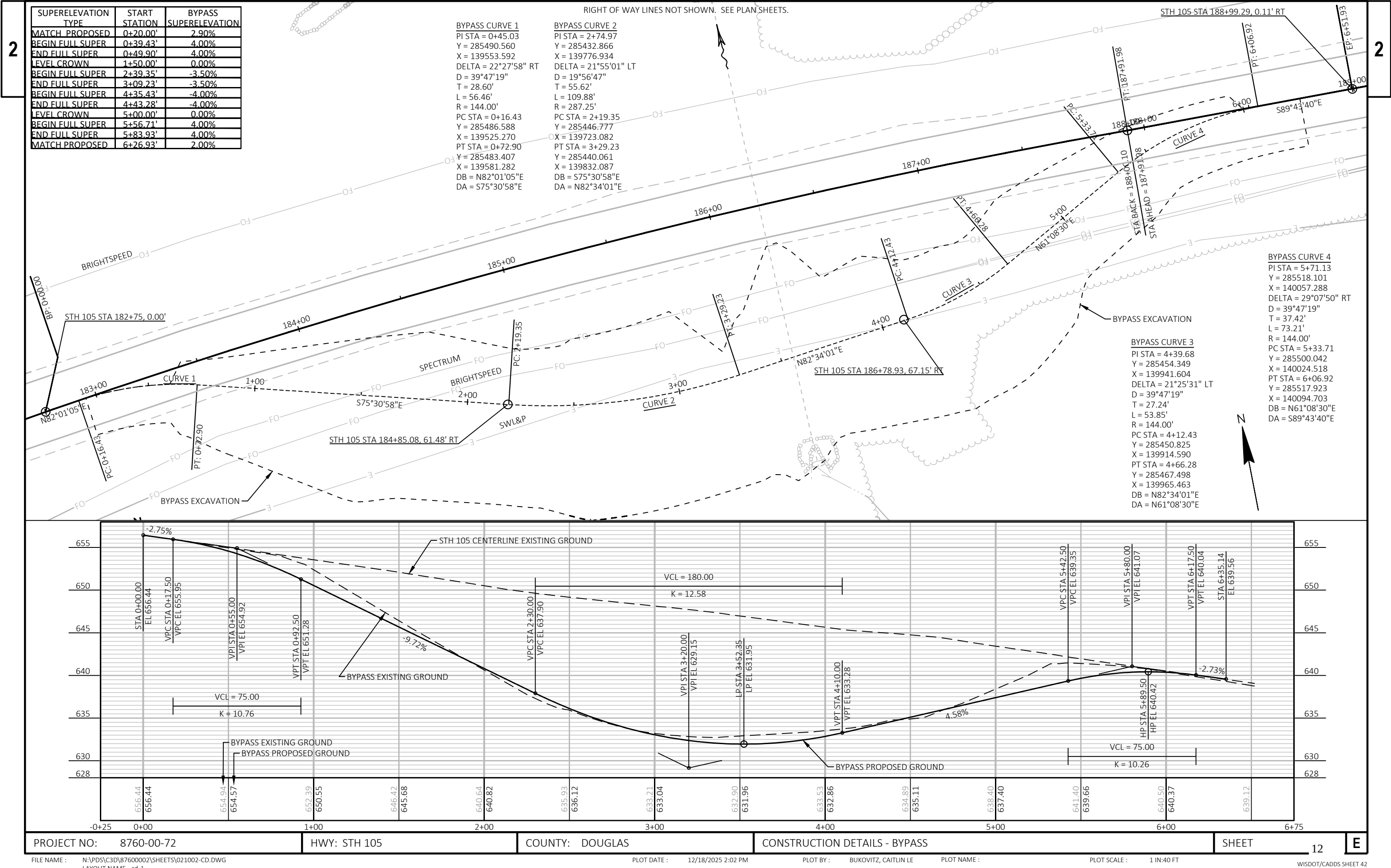
SEE STRUCTURE PLANS FOR ROCK WEIR DETAILS.



STAGING NOTES:

1. ROCK WEIRS 5-7 SHALL BE CONSTRUCTED UNDER TEMPORARY WATER DIVERSION PUMPING (PROJECT STAGE 2).
2. ROCK WEIRS 1-4 SHALL BE CONSTRUCTED UNDER TEMPORARY WATER DIVERSION PUMPING (PROJECT STAGE 3).
3. EXISTING SOILS EXHIBIT INSTABILITY. SEVERAL SLIDES ARE IN THE AREA OF PROJECT. CARE SHOULD BE TAKEN TO REDUCE IMPACT TO SLOPES.
4. PUMPING SHALL BE LIMITED TO THE LENGTH OF TIME REQUIRED TO INSTALL THE ROCK WEIRS WITHIN THE PUMPING SEGMENT OR 7 CONSECUTIVE CALENDAR DAYS, WHICHEVER IS SHORTER.

SEE STRUCTURE PLANS FOR ROCK WEIR DETAILS.



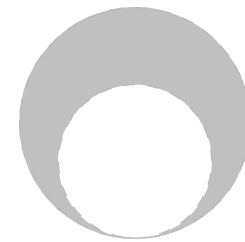
SUPERELEVATION TYPE	START STATION	BYPASS SUPERELEVATION
MATCH PROPOSED	0+20.00'	2.90%
BEGIN FULL SUPER	0+39.43'	4.00%
END FULL SUPER	0+49.90'	4.00%
LEVEL CROWN	1+50.00'	0.00%
BEGIN FULL SUPER	2+39.35'	-3.50%
END FULL SUPER	3+09.23'	-3.50%
BEGIN FULL SUPER	4+35.43'	-4.00%
END FULL SUPER	4+43.28'	-4.00%
LEVEL CROWN	5+00.00'	0.00%
BEGIN FULL SUPER	5+56.71'	4.00%
END FULL SUPER	5+83.93'	4.00%
MATCH PROPOSED	6+26.93'	2.00%

BYPASS CURVE 1
PI STA = 0+45.03
Y = 285490.560
X = 139553.592
DELTA = 22°27'58" RT
D = 39°47'19"
T = 28.60'
L = 56.46'
R = 144.00'
PC STA = 0+16.43
Y = 285486.588
X = 139525.270
PT STA = 0+72.90
Y = 285483.407
X = 139581.282
DB = N82°01'05"E
DA = S75°30'58"E

BYPASS CURVE 2
PI STA = 2+74.97
Y = 285432.866
X = 139776.934
DELTA = 21°55'01" LT
D = 19°56'47"
T = 55.62'
L = 109.88'
R = 287.25'
PC STA = 2+19.35
Y = 285446.777
X = 139723.082
PT STA = 3+29.23
Y = 285440.061
X = 139832.087
DB = S75°30'58"E
DA = N82°34'01"E

BYPASS CURVE 4
PI STA = 5+71.13
Y = 285518.101
X = 140057.288
DELTA = 29°07'50" RT
D = 39°47'19"
T = 37.42'
L = 73.21'
R = 144.00'
PC STA = 5+33.71
Y = 285500.042
X = 140024.518
PT STA = 6+06.92
Y = 285517.923
X = 140094.703
DB = N61°08'30"E
DA = S89°43'40"E

BYPASS CURVE 3
PI STA = 4+39.68
Y = 285454.349
X = 139941.604
DELTA = 21°25'31" LT
D = 39°47'19"
T = 27.24'
L = 53.85'
R = 144.00'
PC STA = 4+12.43
Y = 285450.825
X = 139914.590
PT STA = 4+66.28
Y = 285467.498
X = 139965.463
DB = N82°34'01"E
DA = N61°08'30"E



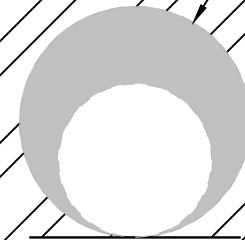
WATER FLOW THROUGH EXISTING 72" CULVERT WITH 48" LINER AND THEN DIVERTED IN TEMPORARY WATER DIVERSION CHANNEL

STAGE 1:

BYPASS CONSTRUCTION, TEMPORARY WATER DIVERSION CHANNEL, ROCK WEIRS (8-14), AND RIPRAP HEAVY

CONSTRUCTION NOTES:
RIPRAP HEAVY SHALL BE PLACED ON ABUTMENT SLOPES PRIOR TO THE REMOVAL OF CULVERT PIPE TO REDUCE SOIL DISCHARGE. CONSTRUCTION OF ROCK WEIRS (SEE STRUCTURE PLANS) SHALL BE DONE UNDER WATER DIVERSION AFTER CULVERT REMOVAL. ADDITIONS AND/OR MOVEMENT OF RIPRAP WILL BE REQUIRED FOR FINAL SLOPE PROTECTION.

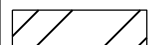
STAGE 2A: WATER FLOW THROUGH EXISTING 72" CULVERT WITH 48" LINER UNTIL REMOVING STRUCTURE (PARTIAL)
STAGE 2B: WATER FLOW DIVERTED IN TEMPORARY WATER DIVERSION PUMPING FROM THE END OF REMAINING EXISTING CULVERT TO ROCK WEIR 8 WHILE CONSTRUCTING ROCK WEIRS 5-7 AND GRADING STREAMBED



STAGE 2A:

EXCAVATION COMMON, EXCAVATION FOR STRUCTURES BRIDGES, AND REMOVING STRUCTURE (PARTIAL)

LEGEND

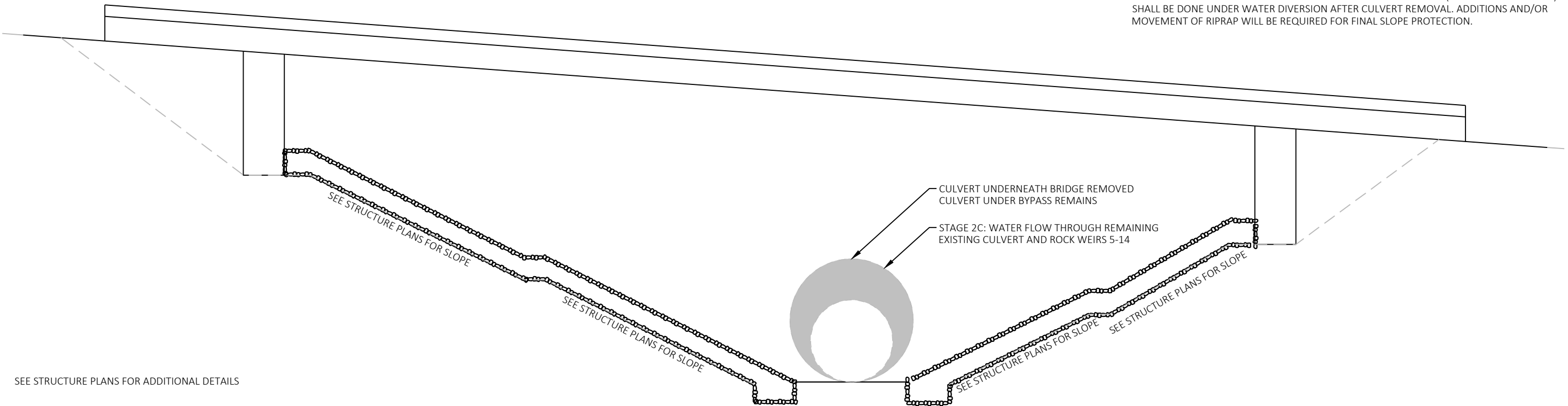


EXCAVATION AREAS: EXCAVATION COMMON AND EXCAVATION FOR STRUCTURES BRIDGES



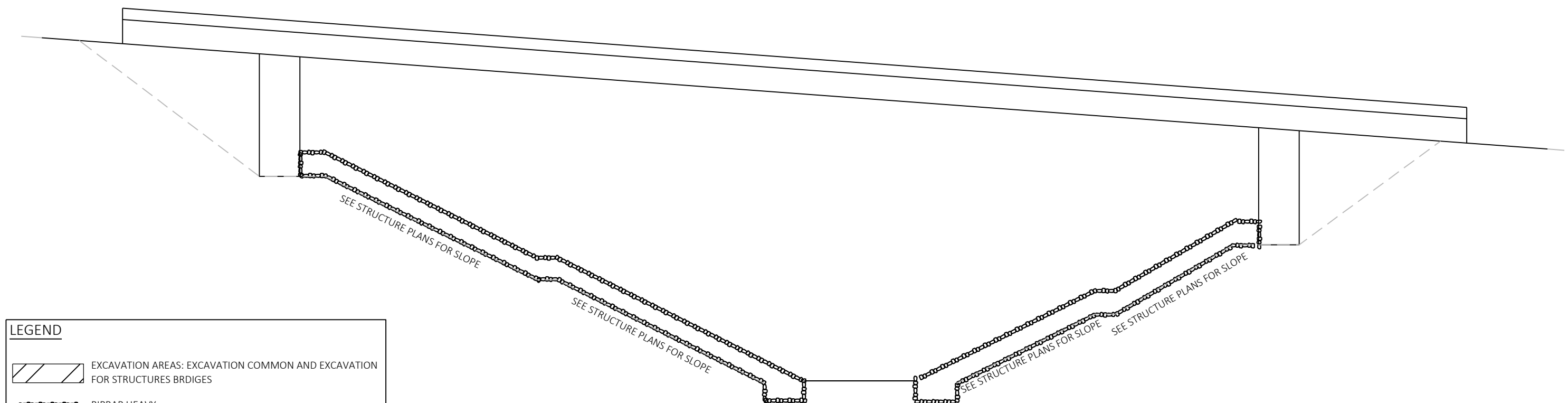
RIPRAP HEAVY

CONSTRUCTION NOTES:
RIPRAP HEAVY SHALL BE PLACED ON ABUTMENT SLOPES PRIOR TO THE REMOVAL OF CULVERT
PIPE TO REDUCE SOIL DISCHARGE. CONSTRUCTION OF ROCK WEIRS (SEE STRUCTURE PLANS)
SHALL BE DONE UNDER WATER DIVERSION AFTER CULVERT REMOVAL. ADDITIONS AND/OR
MOVEMENT OF RIPRAP WILL BE REQUIRED FOR FINAL SLOPE PROTECTION.



SEE STRUCTURE PLANS FOR ADDITIONAL DETAILS

STAGE 2B - 2C:
ROCK WEIRS (5-7), TEMPORARY WATER DIVERSION PUMPING. RIPRAP HEAVY, CONSTRUCT BRIDGE B-16-0156, AND GUARDRAIL (NORTH SIDE OF STH 105)



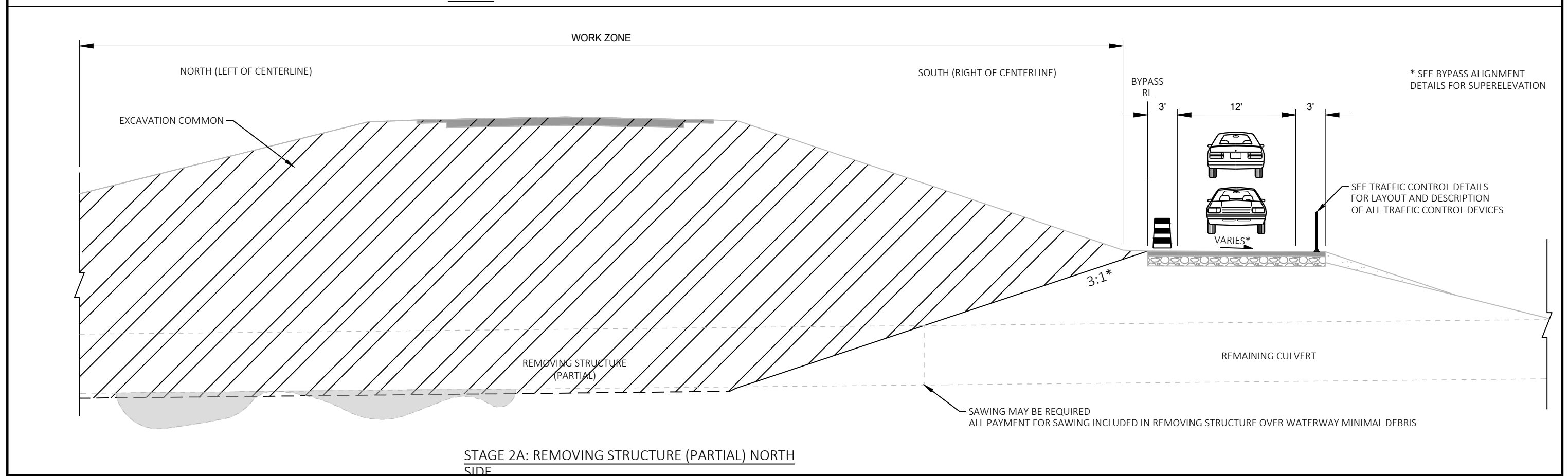
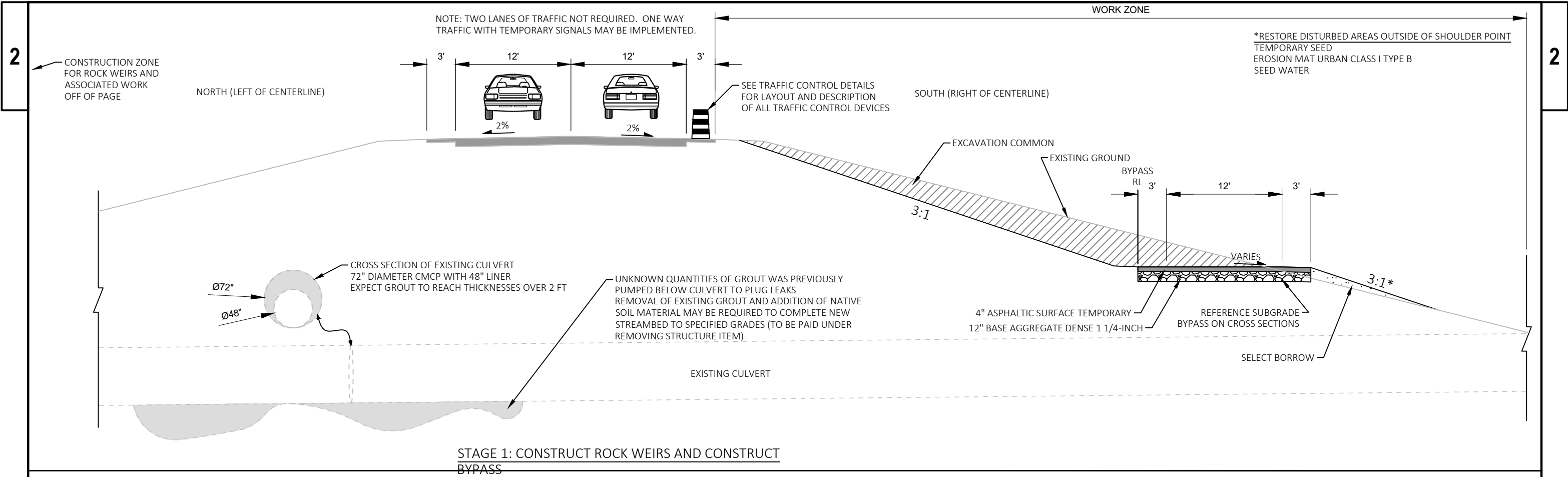
LEGEND

EXCAVATION AREAS: EXCAVATION COMMON AND EXCAVATION FOR STRUCTURES BRDIGES

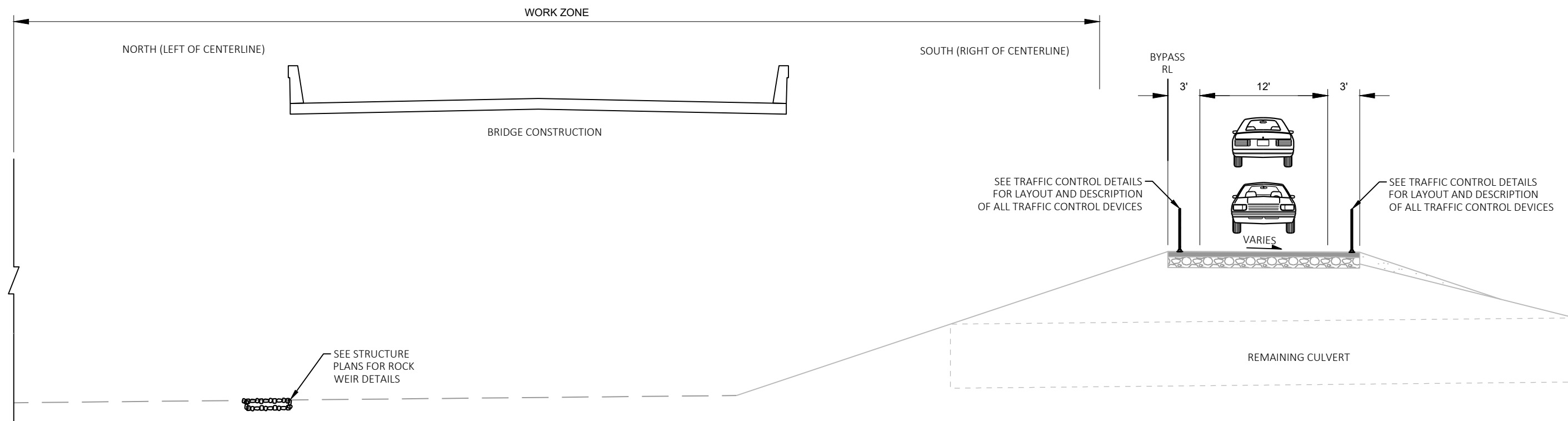
RIPRAP HEAVY

STAGE 3:

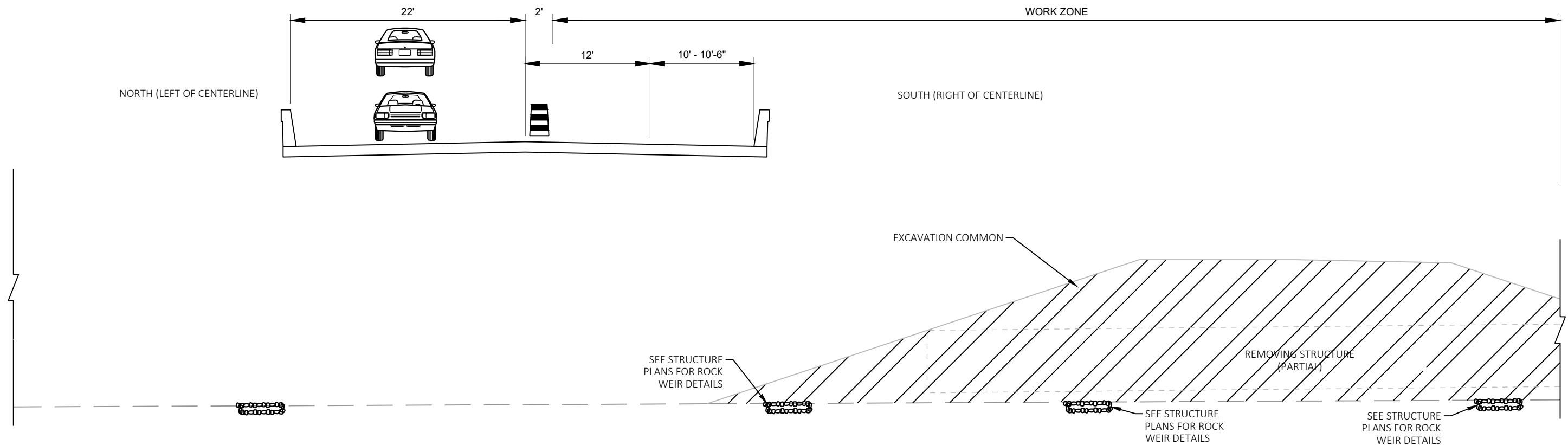
REMOVING BYPASS, REMOVING STRUCTURE (PARTIAL), CONSTRUCT ROCK WEIRS (1-4), TEMPORARY WATER DIVERSION PUMPING, AND GUARDRAIL (SOUTH SIDE STH 105)



2



STAGE 2B AND 2C: CONSTRUCT ROCK WEIRS, RIPRAP HEAVY, BRIDGE B-16-0156, AND GUARDRAIL (NORTH SIDE OF STH 105)



STAGE 3: REMOVE BYPASS, REMOVING STRUCTURE (PARTIAL), CONSTRUCT ROCK WEIRS AND GUARDRAIL (SOUTH SIDE STH 105)

PROJECT NO: 8760-00-72

HWY: STH 105

COUNTY: DOUGLAS

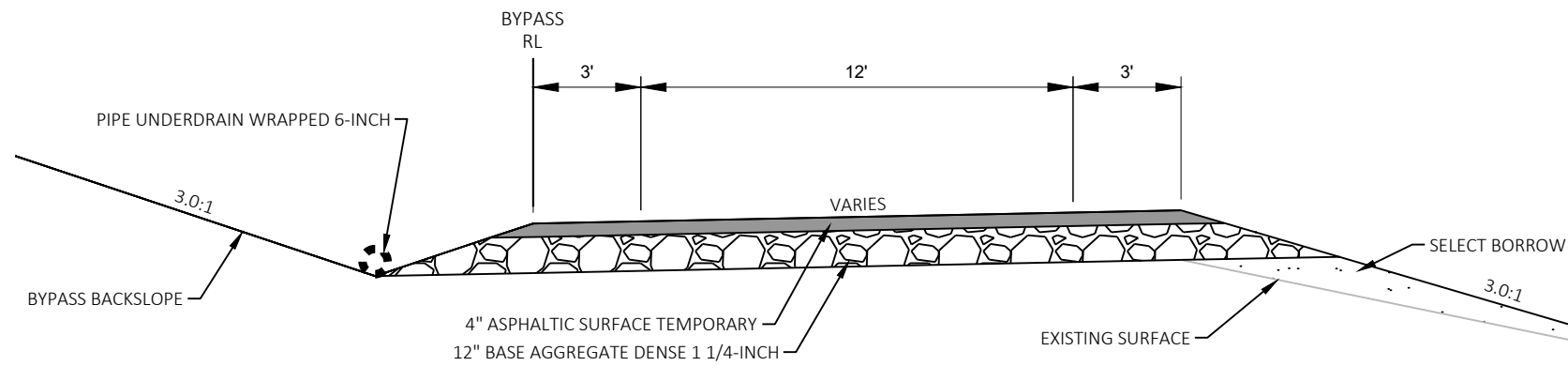
CONSTRUCTION DETAILS - STAGING

SHEET

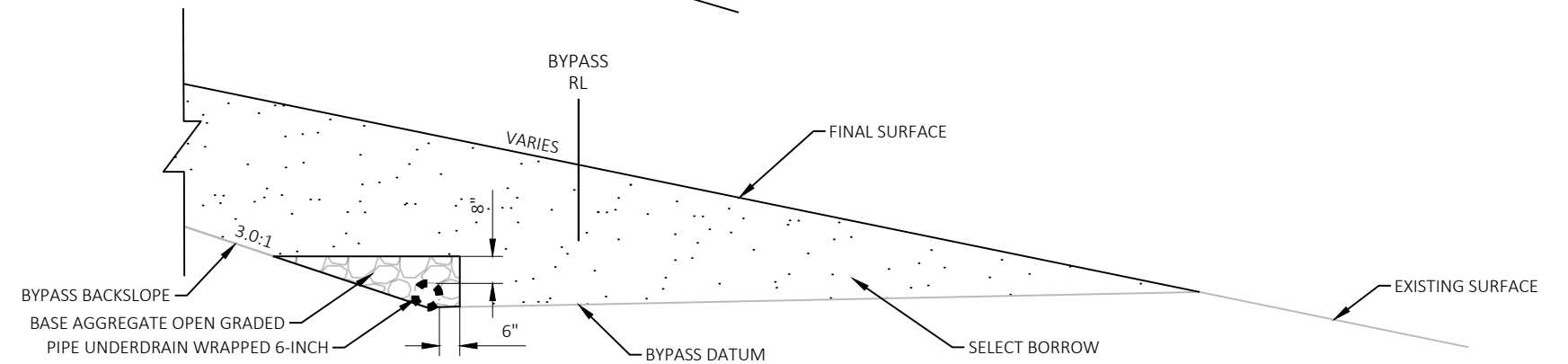
16

E

2



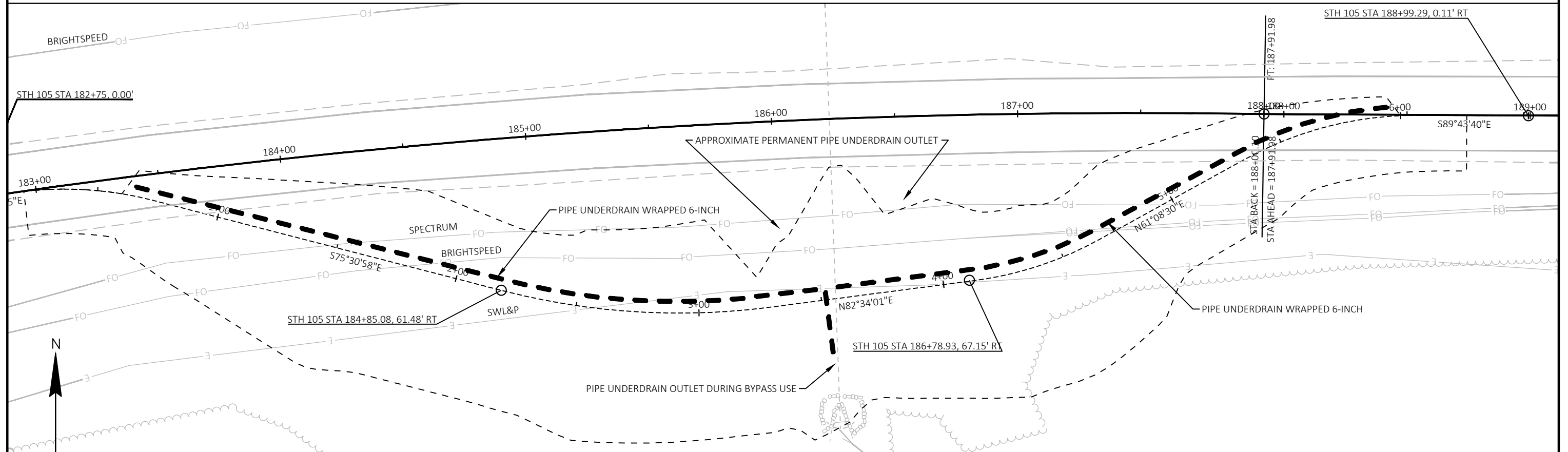
BYPASS TYPICAL SECTION WITH PIPE UNDERDRAIN



BYPASS REMOVAL TYPICAL SECTION WITH PIPE UNDERDRAIN

- CONSTRUCTION NOTES:
1. PLACE PIPE UNDERDRAIN WRAPPED 6-INCH AT EDGE OF BYPASS BASE AGGREGATE WHEN BYPASS DITCH LINE IS EXCAVATED.
 2. OUTLET PIPE UNDERDRAIN AT BYPASS ALIGNMENT LOW POINT STATION 3+52 DURING BYPASS USE.
 3. AFTER RIPRAP HEAVY IS INSTALLED ON ABUTMENT SLOPE, MOVE PIPE UNDERDRAIN OUTLET TO BRIDGE ABUTMENT SLOPE.
 4. PIPE UNDERDRAIN TO BE LEFT IN PLACE AND COVERED WHEN BYPASS IS REMOVED.

2 |



PROJECT NO:	8760-00-72
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HWY: STH 105

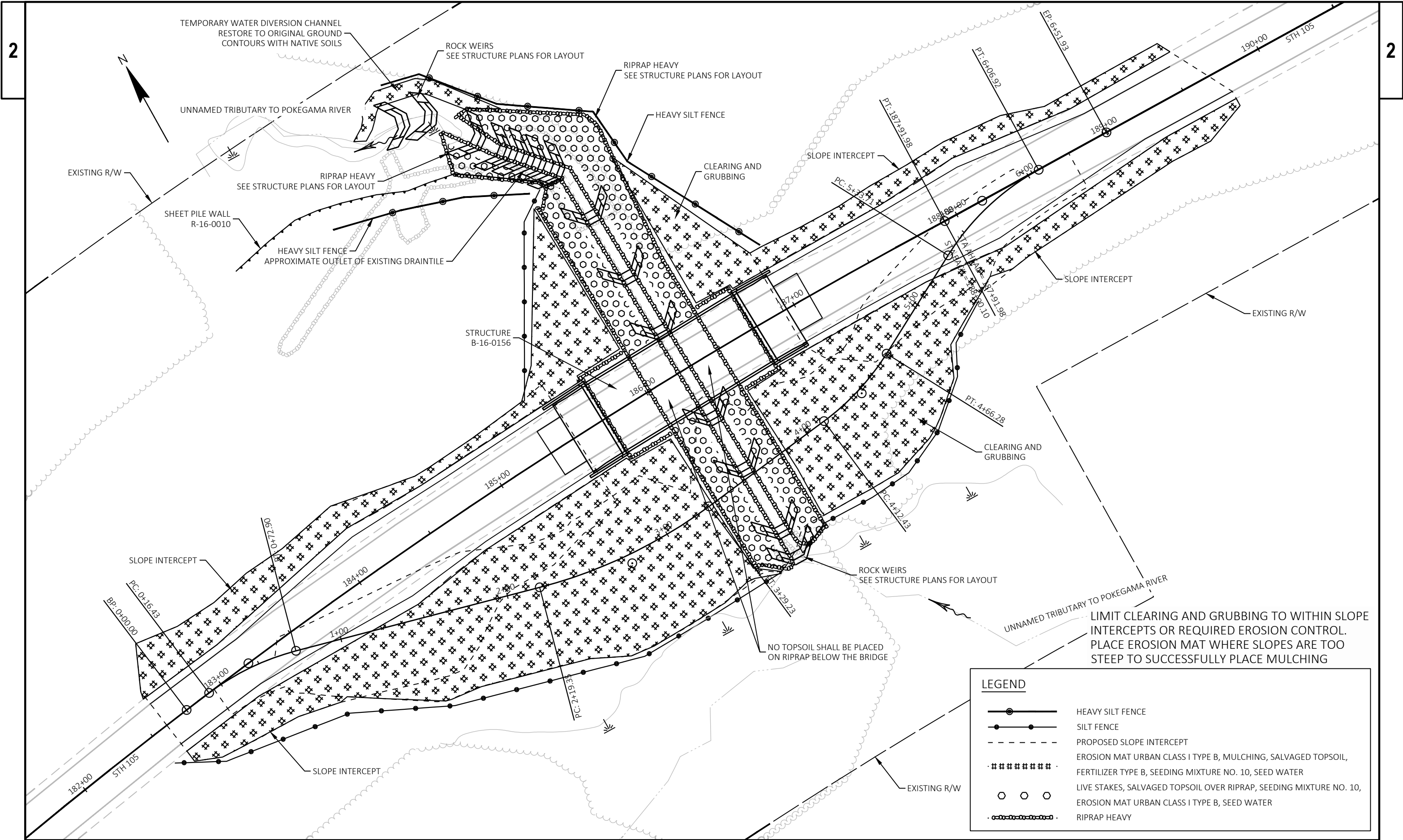
COUNTY: DOUGLAS

CONSTRUCTION DETAILS - BYPASS UNDERDRAIN

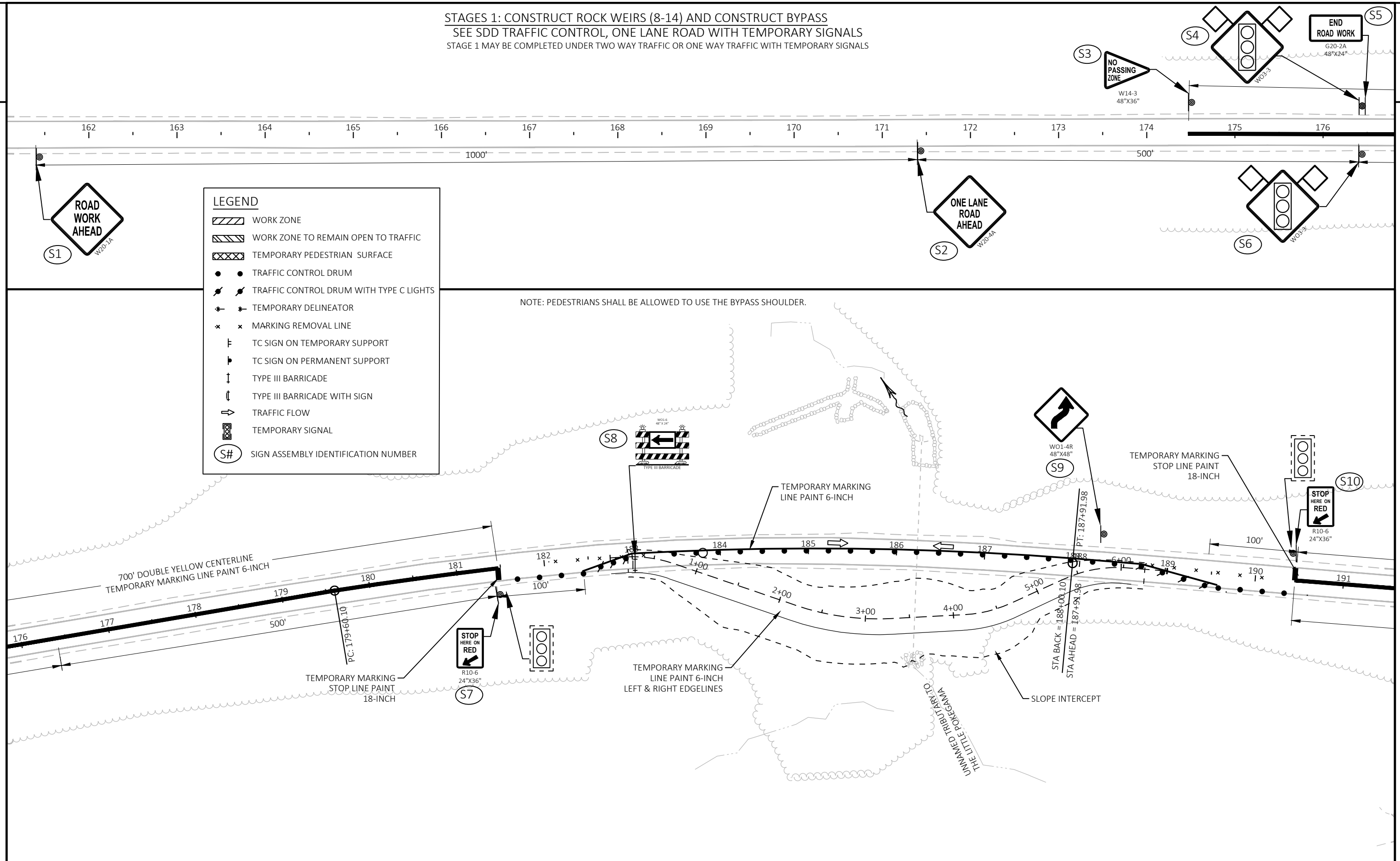
SHEET

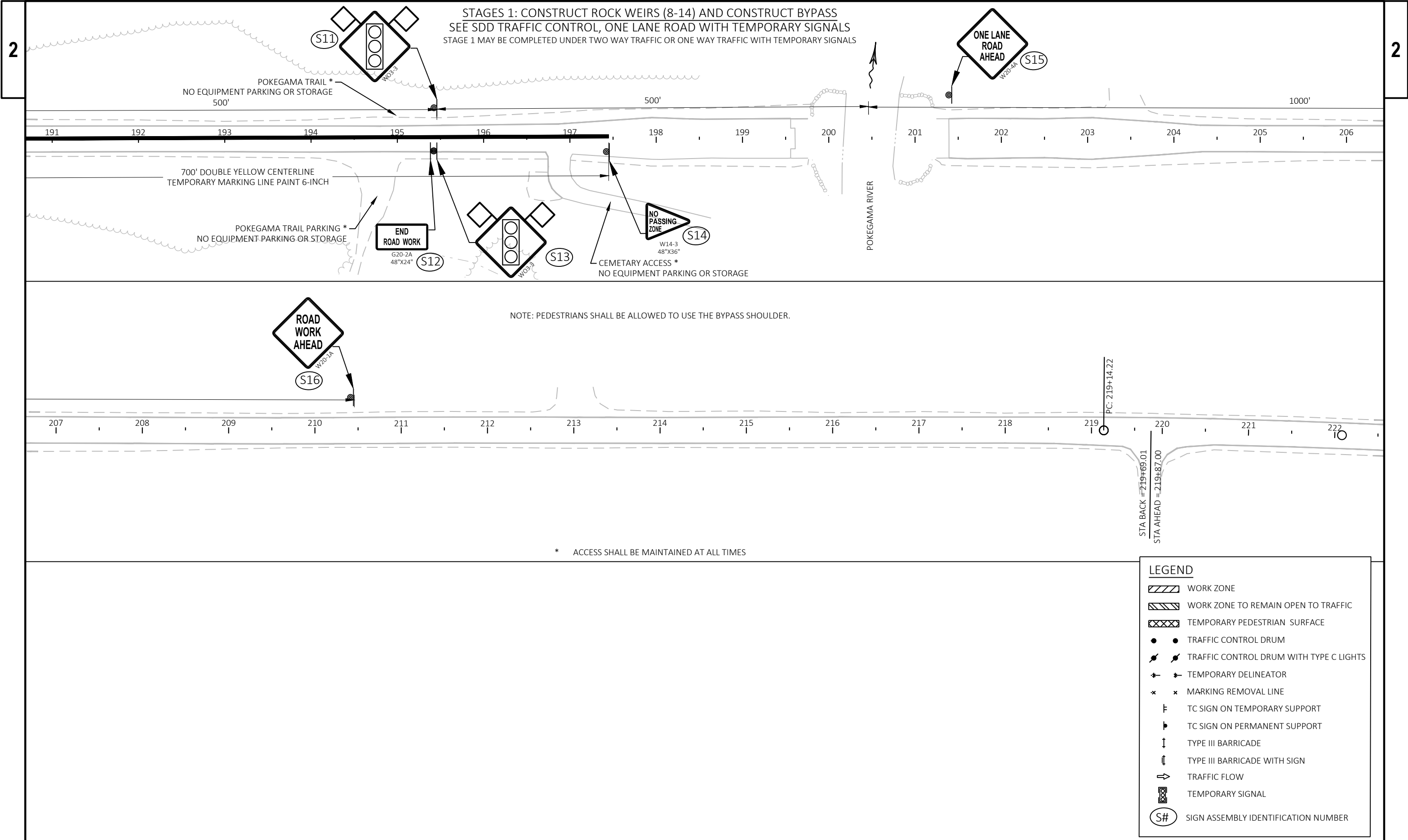
7

3



STAGES 1: CONSTRUCT ROCK WEIRS (8-14) AND CONSTRUCT BYPASS
SEE SDD TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS
STAGE 1 MAY BE COMPLETED UNDER TWO WAY TRAFFIC OR ONE WAY TRAFFIC WITH TEMPORARY SIGNALS



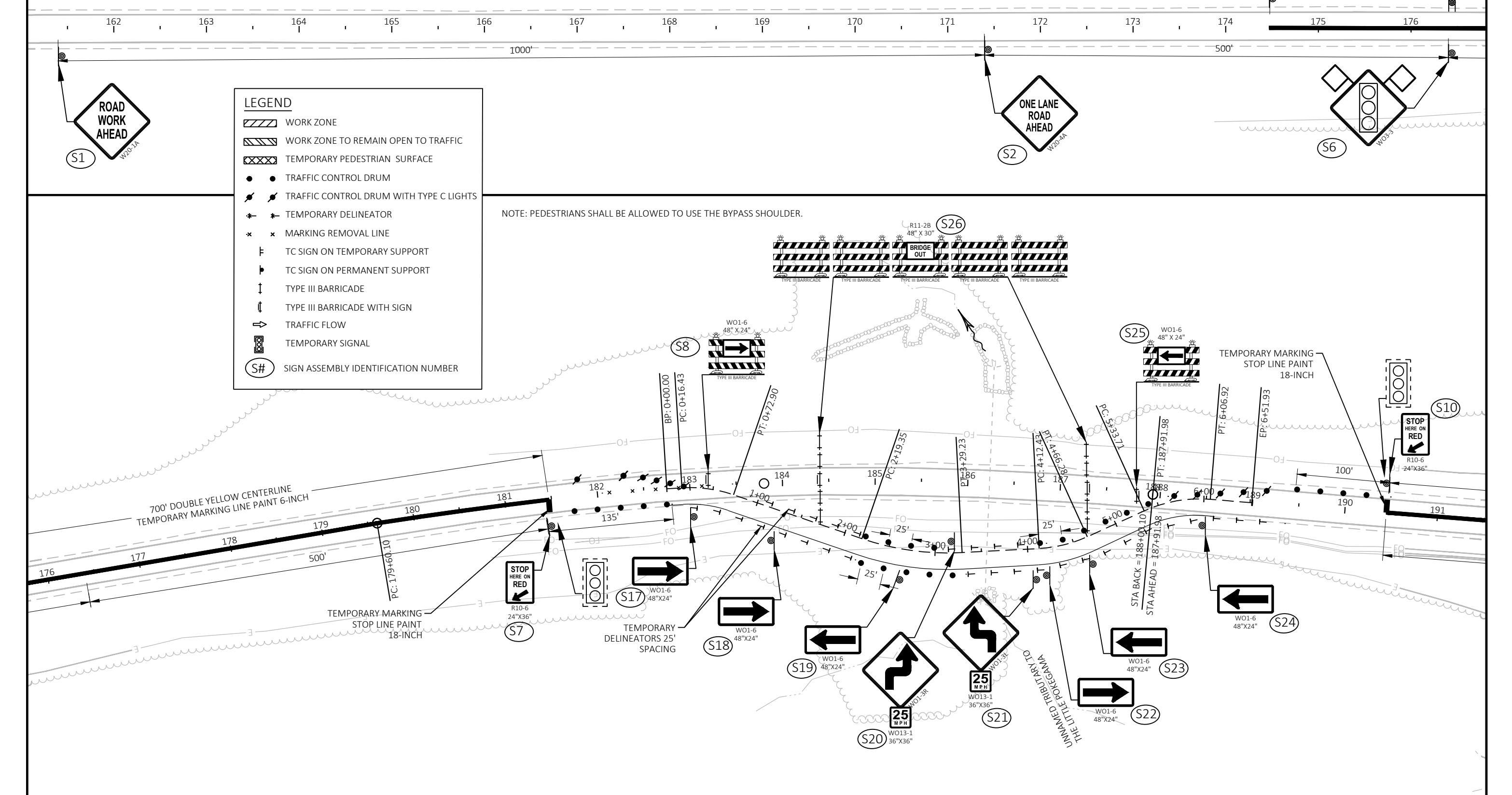


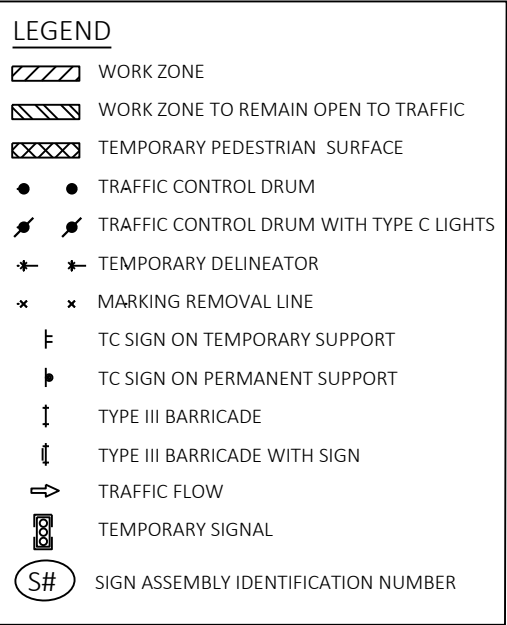
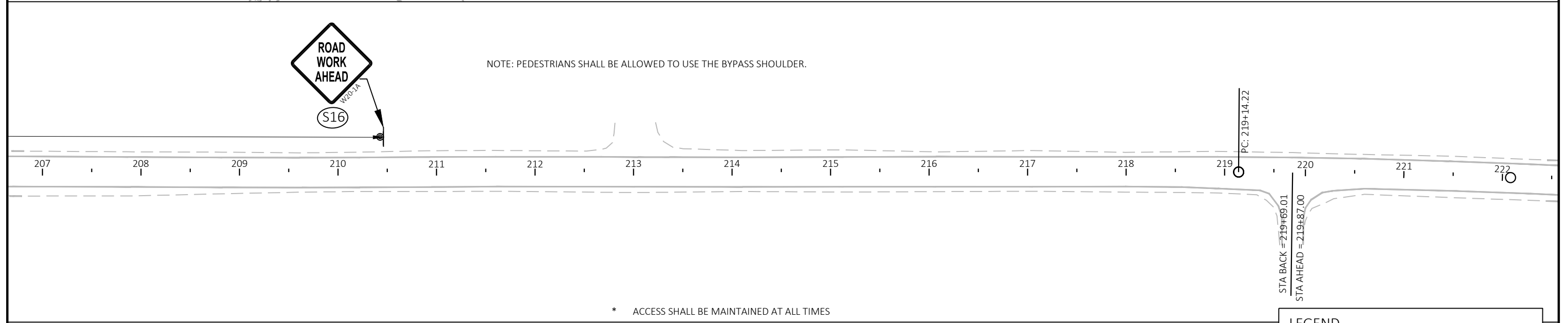
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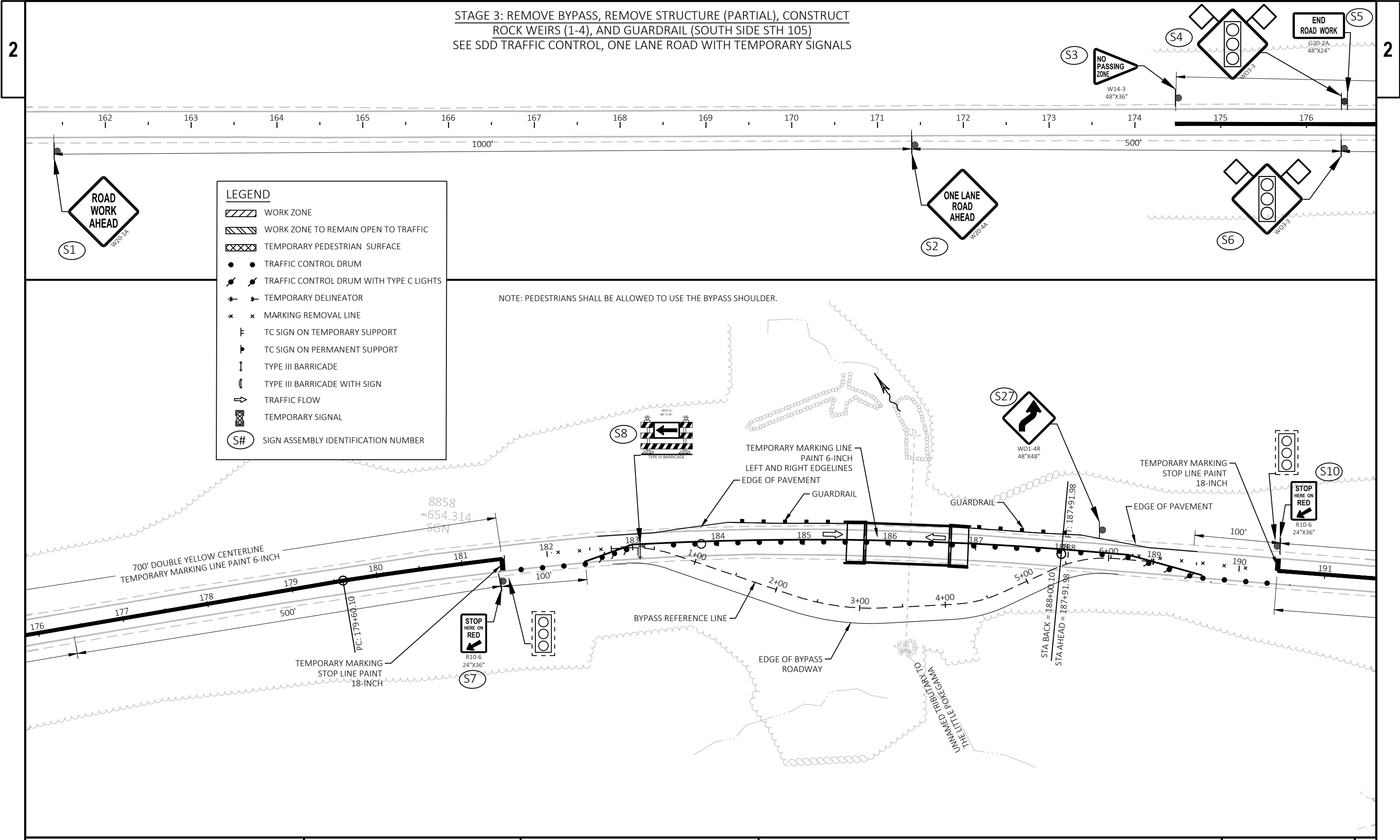
STAGE 2: REMOVING STRUCTURE (PARTIAL), EXCAVATION COMMON, EXCAVATION FOR STRUCTURES
BRIDGES, CONSTRUCT ROCK WEIRS (5-7), RIPRAP HEAVY, BRIDGE B-16-0156, AND GUARDRAIL (NORTH SIDE
OF STH 105)

SEE SDD TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS, AND SDD TRAFFIC CONTROL,

2

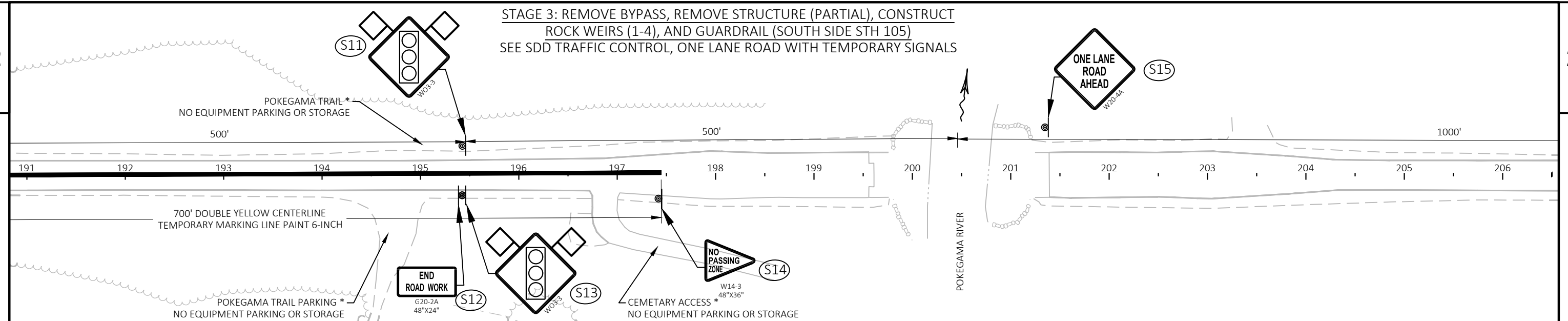




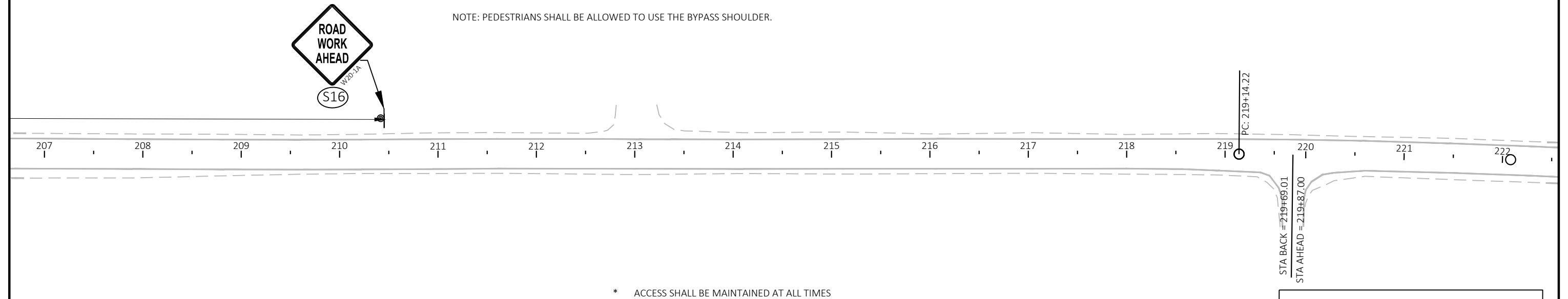


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2



NOTE: PEDESTRIANS SHALL BE ALLOWED TO USE THE BYPASS SHOULDER.



LEGEND

	WORK ZONE
	WORK ZONE TO REMAIN OPEN TO TRAFFIC
	TEMPORARY PEDESTRIAN SURFACE
 	TRAFFIC CONTROL DRUM
 	TRAFFIC CONTROL DRUM WITH TYPE C LIGHTS
 	TEMPORARY DELINEATOR
 	MARKING REMOVAL LINE
	TC SIGN ON TEMPORARY SUPPORT
	TC SIGN ON PERMANENT SUPPORT
	TYPE III BARRICADE
	TYPE III BARRICADE WITH SIGN
	TRAFFIC FLOW
	TEMPORARY SIGNAL
	SIGN ASSEMBLY IDENTIFICATION NUMBER

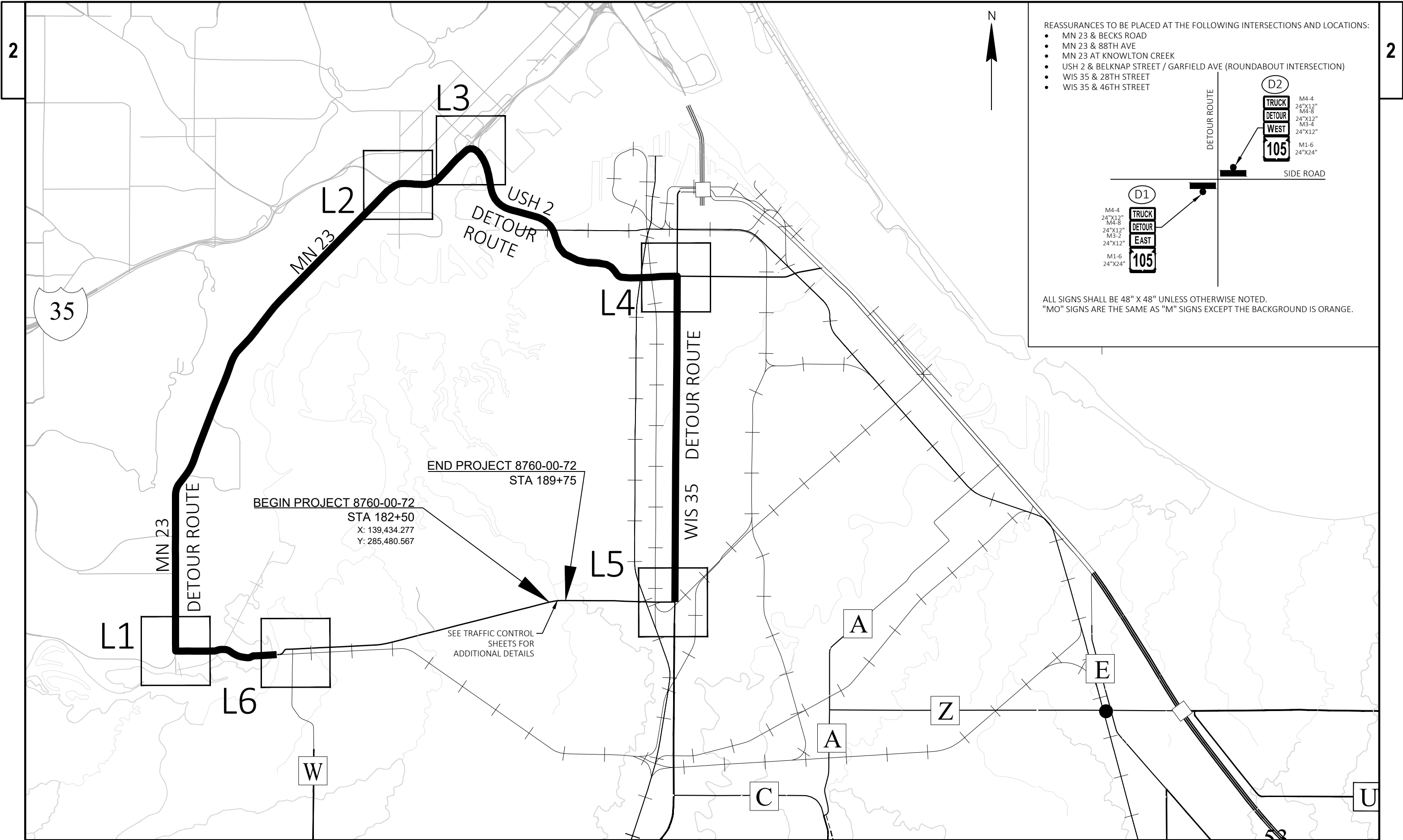
Project ID:	8760-00-02	
Project Description:	STH 105	
County:	Douglas	
Structure #:		
ADT:	3200	
DHV:	320	
Minimum Width:	14	Feet
Stopline to Stopline Distance:	900	Feet
Speed	25	MPH
Speed	37	FPS
Minimum Red-Red Time:	25	Seconds
Red-Red Time:	20	Seconds
Assumed Cycle Length:	95	Seconds
Calculated Minimum Green Per Side:	13	Seconds
Assumed Minimum Green Per Side:	20	Seconds

Notes:
Time can be added as needed to phases
4 Seconds for Yellow Phase Times

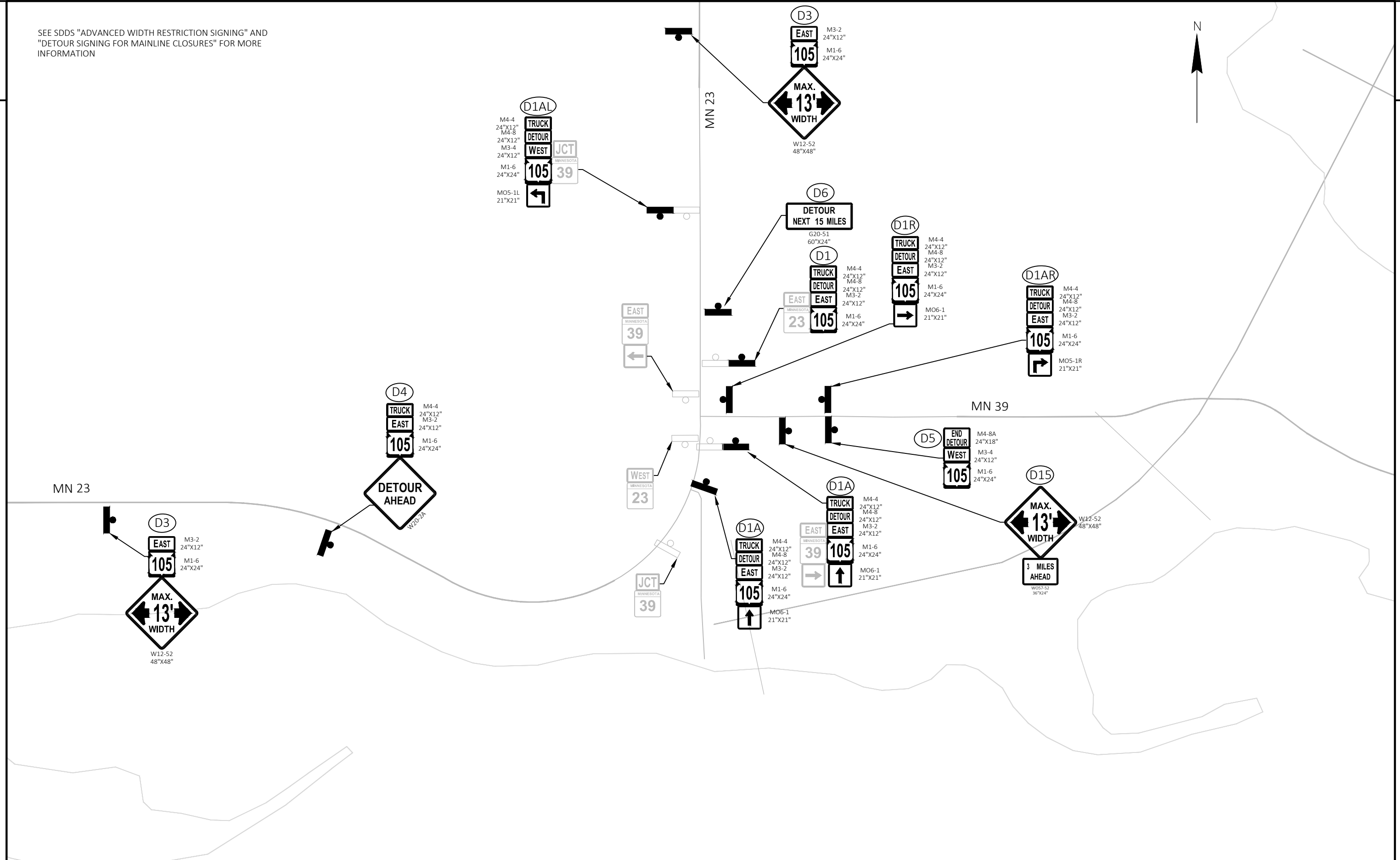
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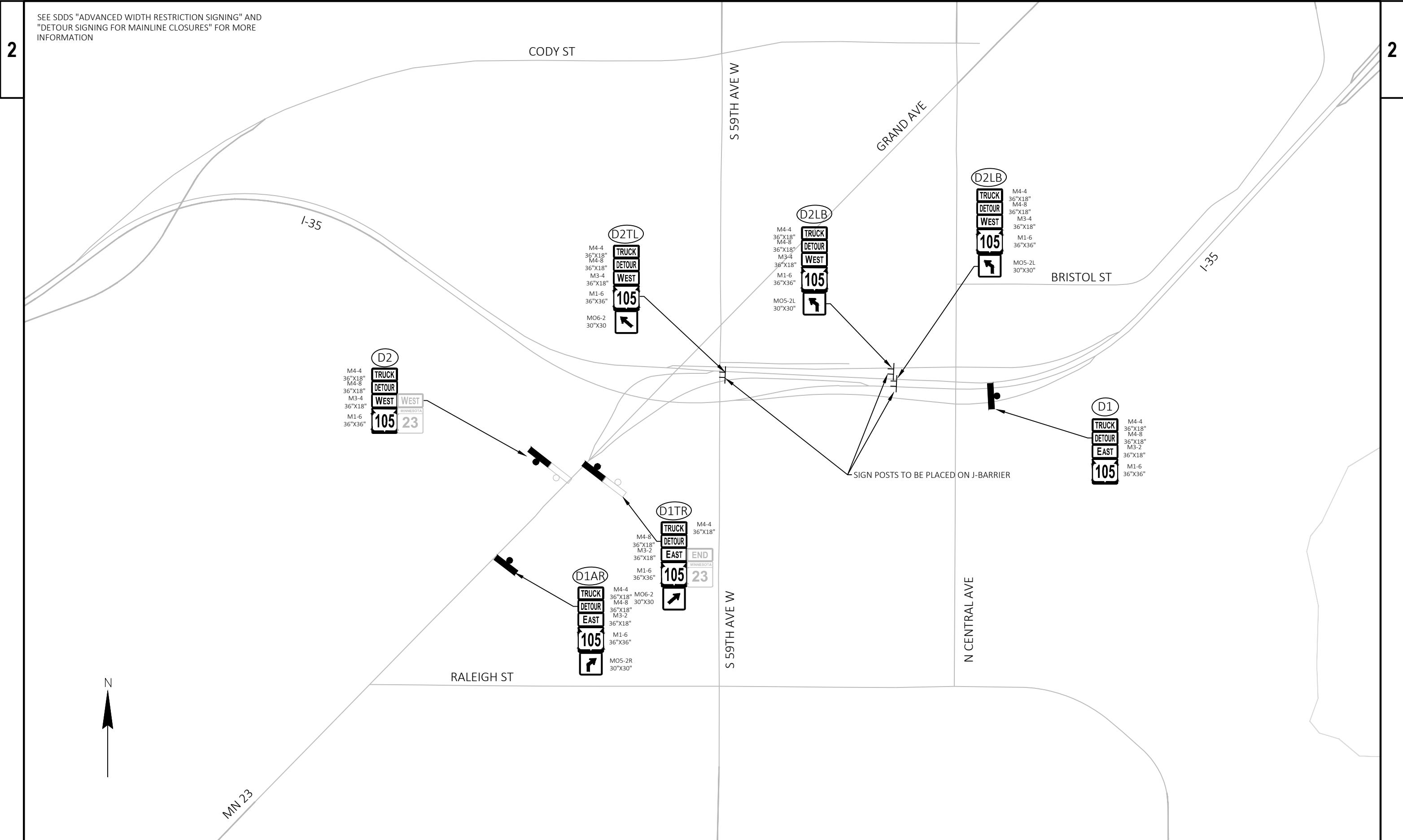
			Phase 1 Direction	Phase 2 Direction
Interval	Phase Time (Seconds)	Cumulative Time (Seconds)	N or E	S or W
1	20	20	Green	Red
2	4	24	Yellow	Red
3	20	44	Red	Red
4	20	64	Red	Green
5	4	68	Red	Yellow
6	20	88	Red	Red

Is computed cycle less than assumed cycle?	YES
--	-----

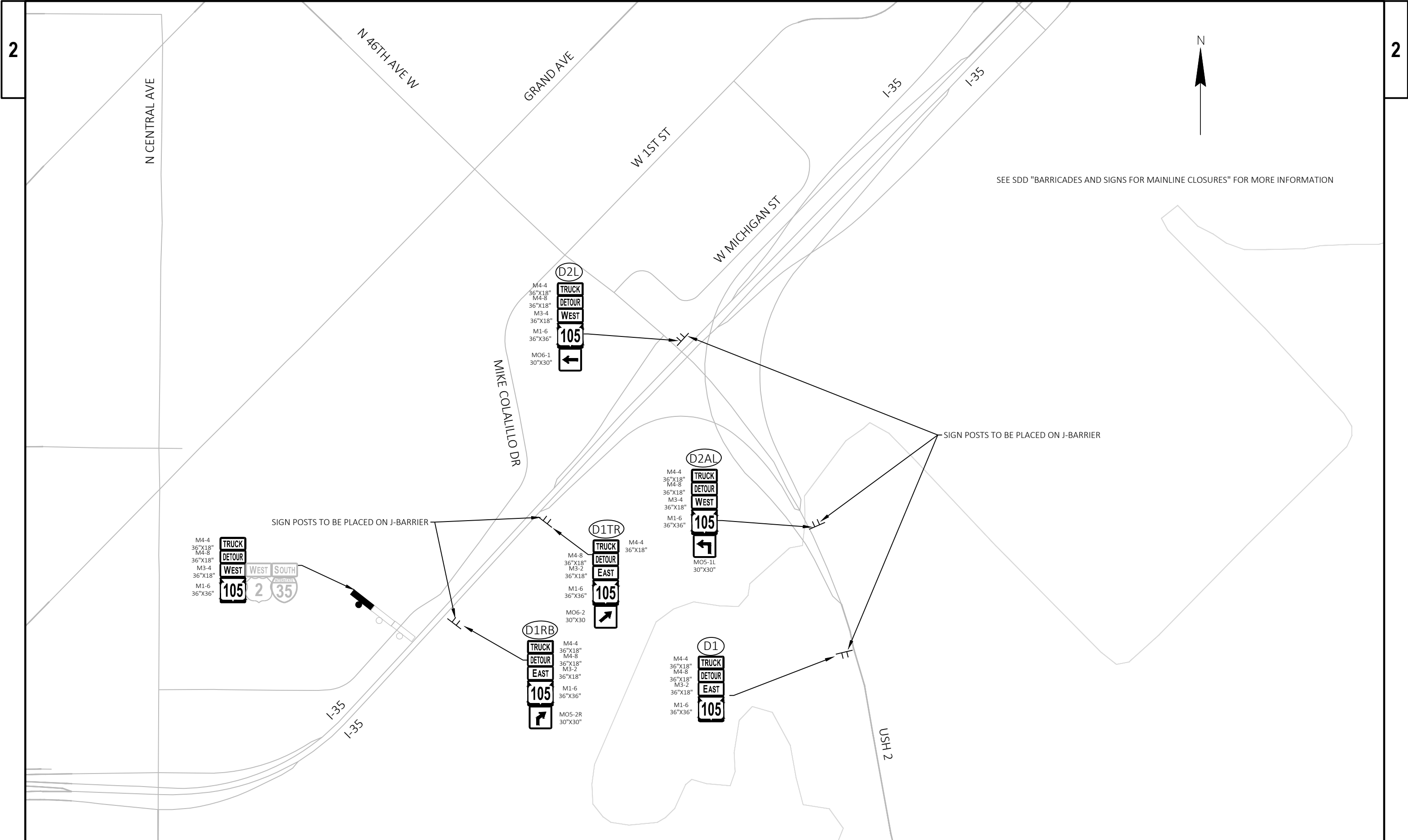


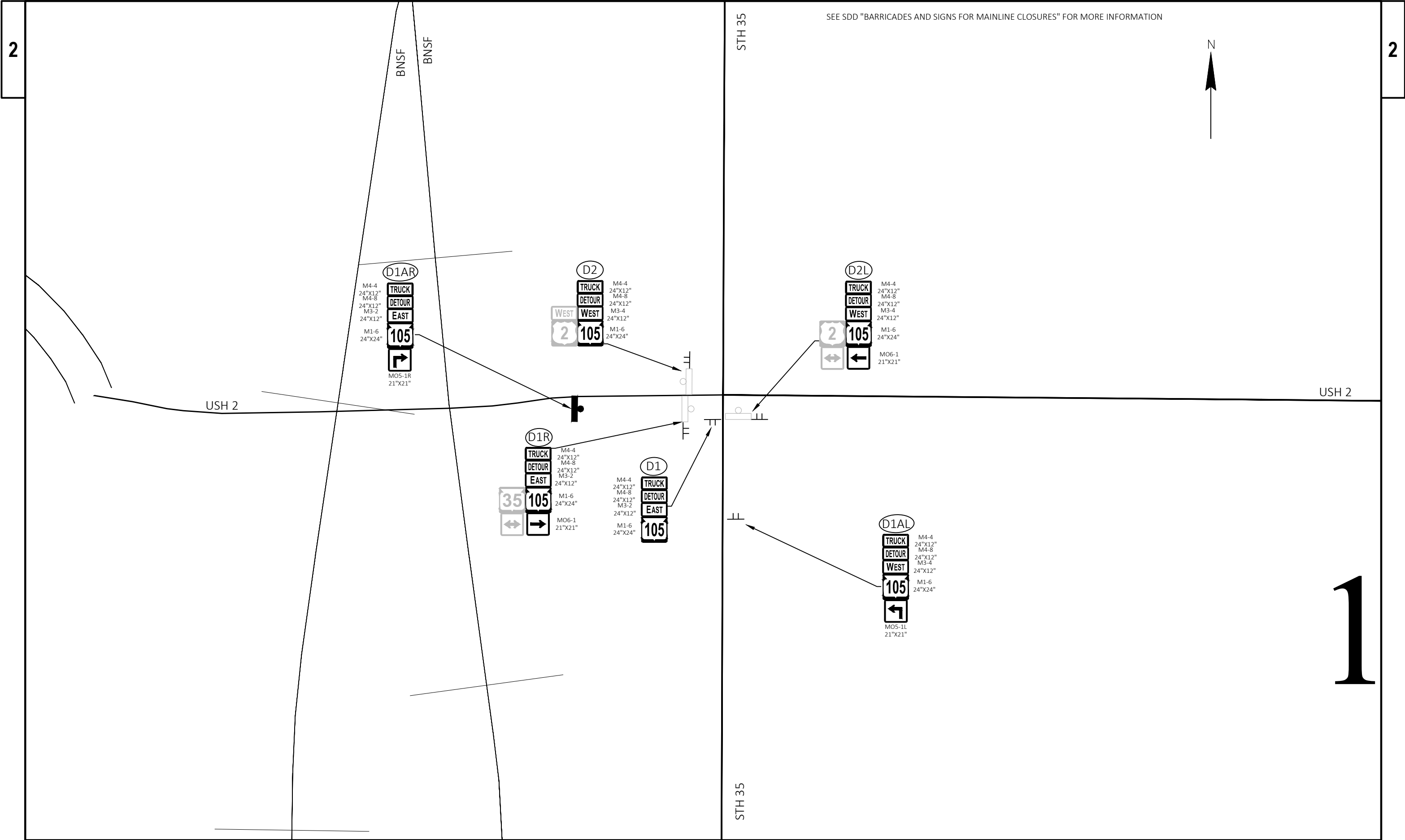
SEE SDDS "ADVANCED WIDTH RESTRICTION SIGNING" AND "DETOUR SIGNING FOR MAINLINE CLOSURES" FOR MORE INFORMATION

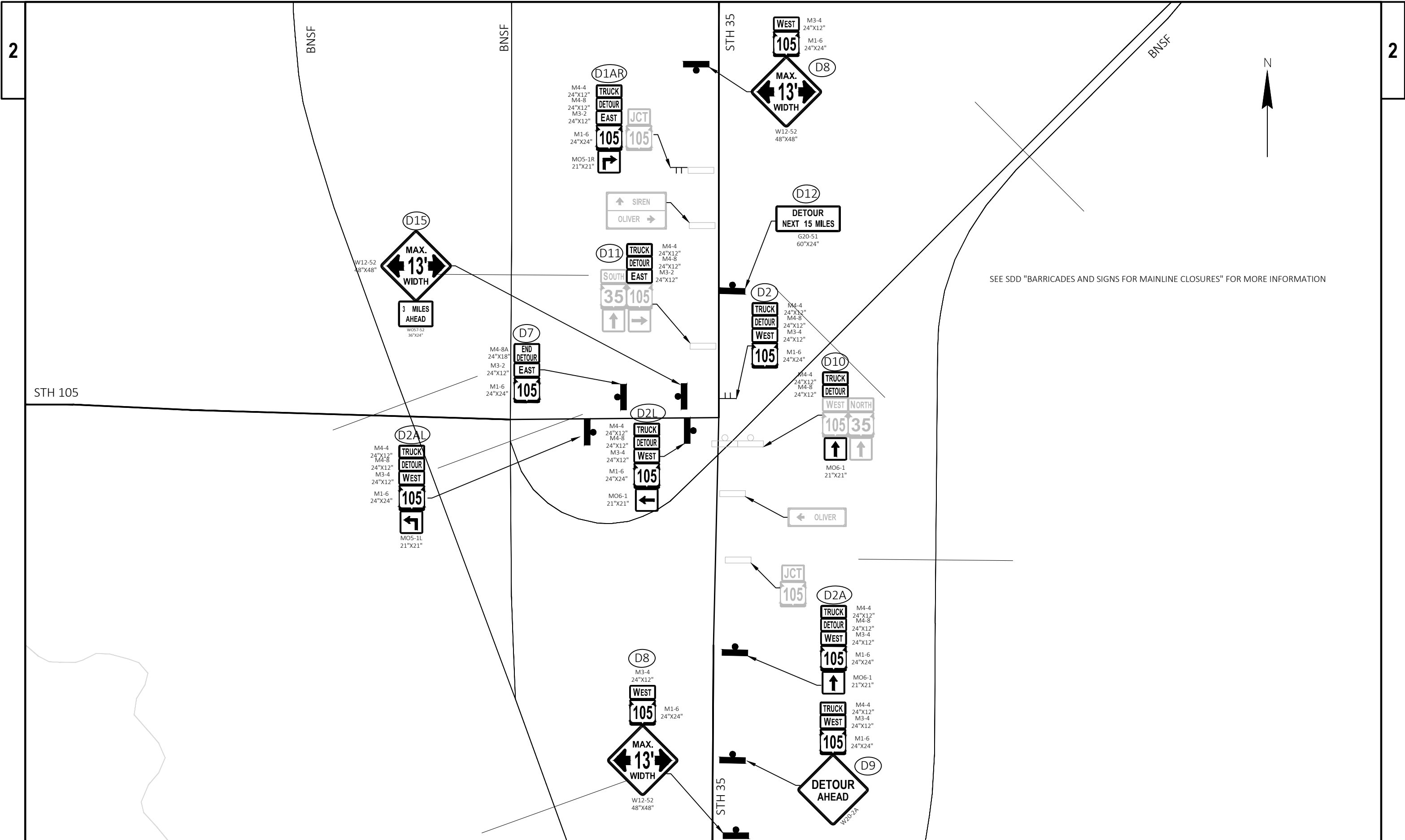




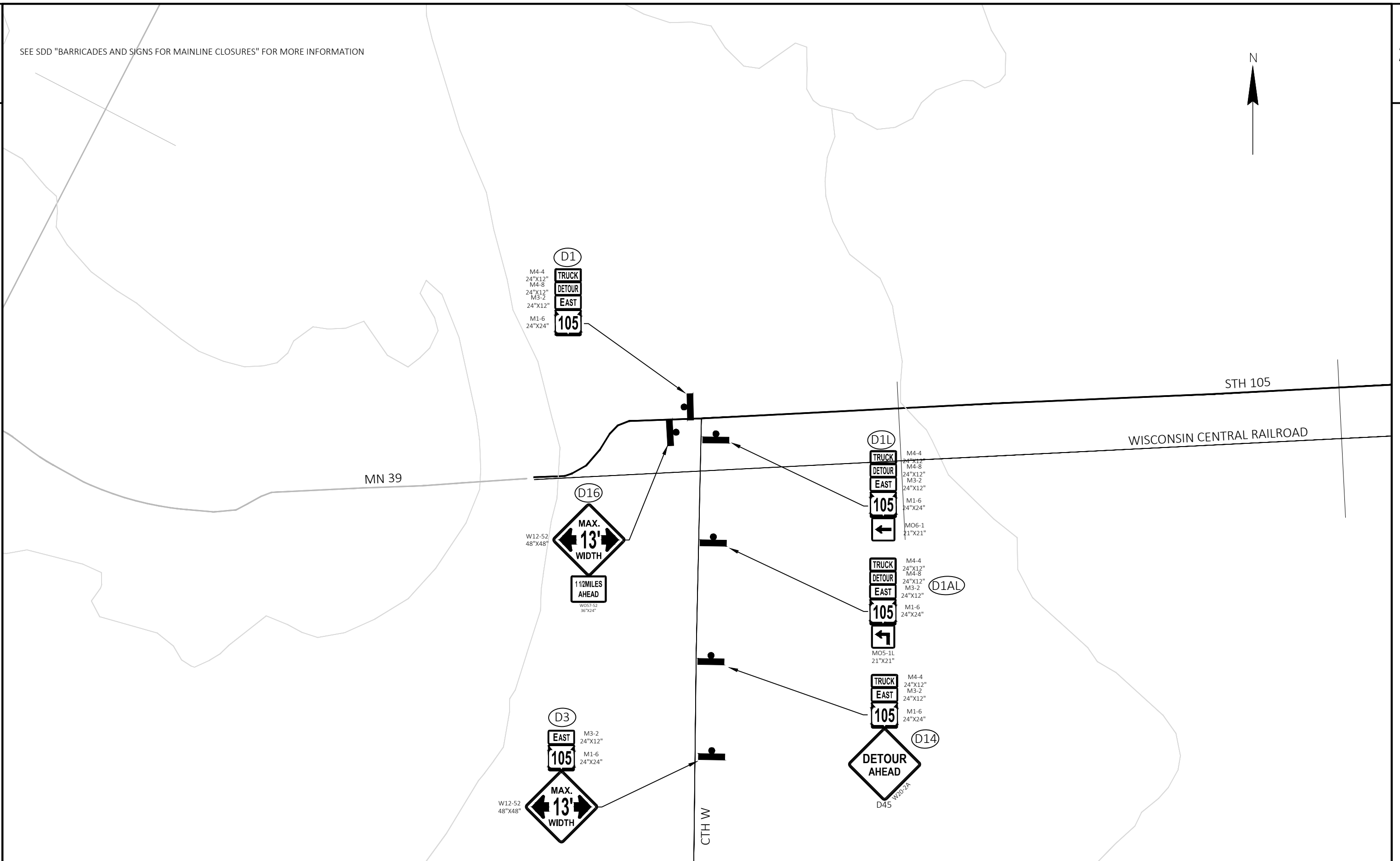
SEE SDDS "ADVANCED WIDTH RESTRICTION SIGNING" AND
"DETOUR SIGNING FOR MAINLINE CLOSURES" FOR MORE
INFORMATION

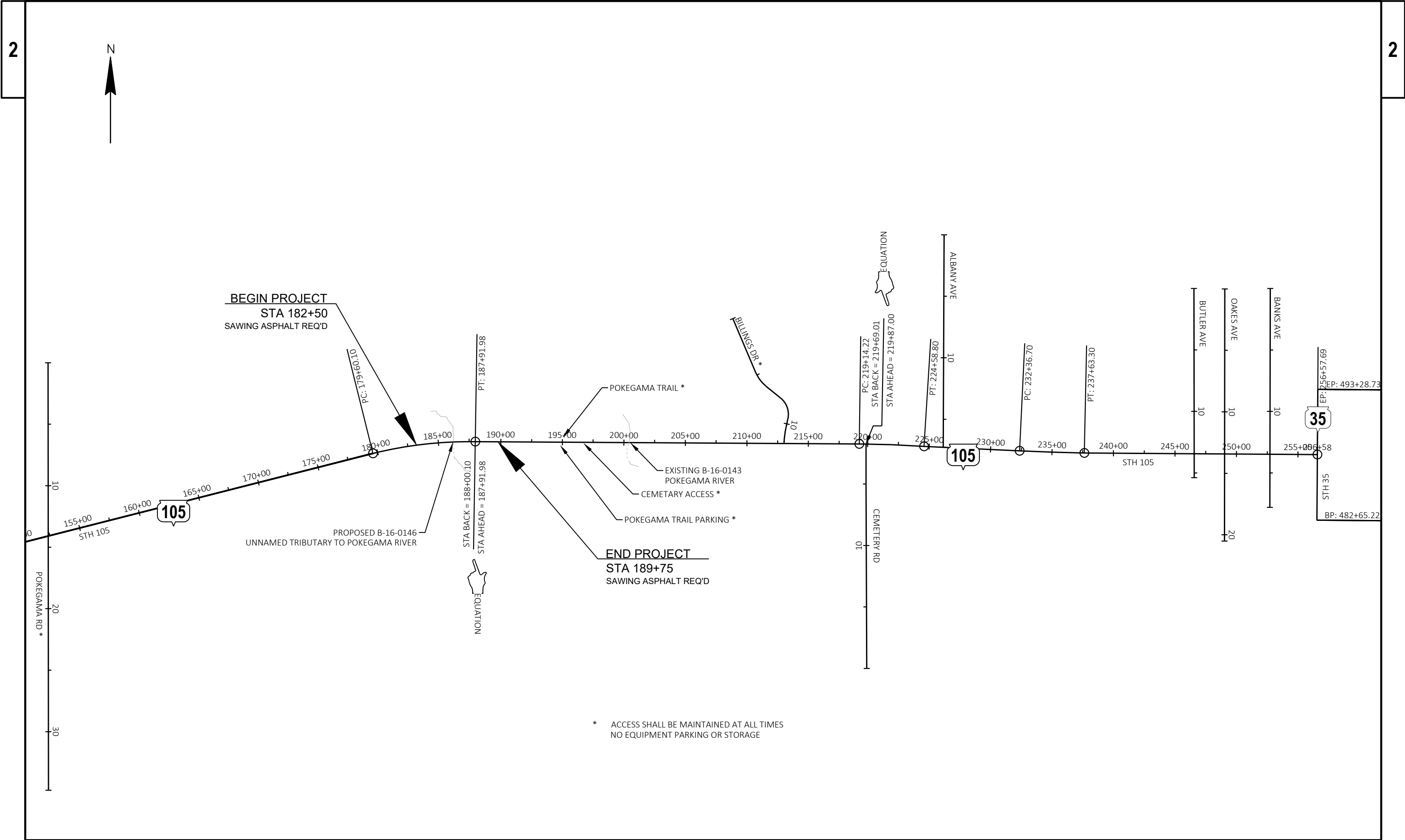






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Estimate Of Quantities

8760-00-72					
Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	2.000	2.000
0004	201.0205	Grubbing	STA	2.000	2.000
0006	203.0220	Removing Structure (structure) 01. Concrete Encased Metal Corrugated Pipe	EACH	1.000	1.000
0008	204.0110	Removing Asphaltic Surface	SY	1,220.000	1,220.000
0010	204.0115	Removing Asphaltic Surface Butt Joints	SY	60.000	60.000
0012	205.0100	Excavation Common	CY	18,420.000	18,420.000
0014	206.1001	Excavation for Structures Bridges (structure) 01. B-16-0156	EACH	1.000	1.000
0016	208.1100	Select Borrow	CY	2,220.000	2,220.000
0018	210.1500	Backfill Structure Type A	TON	726.000	726.000
0020	211.0101	Prepare Foundation for Asphaltic Paving (project) 01. 8760-00-72	EACH	1.000	1.000
0022	213.0100	Finishing Roadway (project) 01. 8760-00-72	EACH	1.000	1.000
0024	305.0110	Base Aggregate Dense 3/4-Inch	TON	910.000	910.000
0026	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	4,860.000	4,860.000
0028	310.0110	Base Aggregate Open-Graded	TON	115.000	115.000
0030	415.0060	Concrete Pavement 6-Inch	SY	35.000	35.000
0032	415.0410	Concrete Pavement Approach Slab	SY	83.000	83.000
0034	455.0605	Tack Coat	GAL	352.000	352.000
0036	460.2000	Incentive Density HMA Pavement	DOL	570.000	570.000
0038	460.5244	HMA Pavement 4 LT 58-34 S	TON	883.000	883.000
0040	465.0125	Asphaltic Surface Temporary	TON	300.000	300.000
0042	502.0100	Concrete Masonry Bridges	CY	582.000	582.000
0044	502.3200	Protective Surface Treatment	SY	743.000	743.000
0046	502.3210	Pigmented Surface Sealer	SY	147.000	147.000
0048	503.0172	Prestressed Girder Type I 72W-Inch	LF	519.000	519.000
0050	505.0400	Bar Steel Reinforcement HS Structures	LB	14,880.000	14,880.000
0052	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	76,540.000	76,540.000
0054	505.0800.S	Bar Steel Reinforcement HS Stainless Structures	LB	1,640.000	1,640.000
0056	506.2605	Bearing Pads Elastomeric Non-Laminated	EACH	10.000	10.000
0058	506.4000	Steel Diaphragms (structure) B-16-0156	EACH	8.000	8.000
0060	512.1000	Piling Steel Sheet Temporary	SF	1,350.000	1,350.000
0062	516.0500	Rubberized Membrane Waterproofing	SY	29.000	29.000
0064	521.1012	Apron Endwalls for Culvert Pipe Steel 12-Inch	EACH	2.000	2.000
0066	530.0112	Culvert Pipe Corrugated Polyethylene 12-Inch	LF	28.000	28.000
0068	550.2128	Piling CIP Concrete 12 3/4 X 0.50-Inch	LF	1,560.000	1,560.000
0070	601.0584	Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type TBT	LF	75.000	75.000
0072	601.0586	Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type TBTT	LF	31.000	31.000
0074	602.3010	Concrete Surface Drains	CY	5.000	5.000
0076	606.0200	Riprap Medium	CY	10.000	10.000
0078	606.0300	Riprap Heavy	CY	1,328.000	1,328.000
0080	611.0654	Inlet Covers Type V	EACH	2.000	2.000
0082	611.3220	Inlets 2x2-FT	EACH	2.000	2.000
0084	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	770.000	770.000
0086	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	4.000	4.000
0088	614.2300	MGS Guardrail 3	LF	150.000	150.000
0090	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0092	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0094	618.0100	Maintenance and Repair of Haul Roads (project) 01. 8760-00-72	EACH	1.000	1.000
0096	619.1000	Mobilization	EACH	1.000	1.000
0098	624.0100	Water	MGAL	90.000	90.000

Estimate Of Quantities

8760-00-72

Line	Item	Item Description	Unit	Total	Qty
0100	625.0500	Salvaged Topsoil	SY	5,360.000	5,360.000
0102	627.0200	Mulching	SY	4,820.000	4,820.000
0104	628.1504	Silt Fence	LF	575.000	575.000
0106	628.1520	Silt Fence Maintenance	LF	575.000	575.000
0108	628.1530.S	Silt Fence Heavy Duty	LF	340.000	340.000
0110	628.1535.S	Silt Fence Heavy Duty Maintenance	LF	340.000	340.000
0112	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0114	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0116	628.2008	Erosion Mat Urban Class I Type B	SY	4,340.000	4,340.000
0118	629.0210	Fertilizer Type B	CWT	4.000	4.000
0120	630.0110	Seeding Mixture No. 10	LB	162.000	162.000
0122	630.0200	Seeding Temporary	LB	248.000	248.000
0124	630.0500	Seed Water	MGAL	28.000	28.000
0126	633.1100	Delineators Temporary	EACH	46.000	46.000
0128	642.5001	Field Office Type B	EACH	1.000	1.000
0130	643.0300	Traffic Control Drums	DAY	2,638.000	2,638.000
0132	643.0420	Traffic Control Barricades Type III	DAY	3,270.000	3,270.000
0134	643.0705	Traffic Control Warning Lights Type A	DAY	3,922.000	3,922.000
0136	643.0715	Traffic Control Warning Lights Type C	DAY	2,638.000	2,638.000
0138	643.0900	Traffic Control Signs	DAY	40,014.000	40,014.000
0140	643.3165	Temporary Marking Line Paint 6-Inch	LF	4,040.000	4,040.000
0142	643.3805	Temporary Marking Stop Line Paint 18-Inch	LF	36.000	36.000
0144	643.5000	Traffic Control	EACH	1.000	1.000
0146	645.0111	Geotextile Type DF Schedule A	SY	82.000	82.000
0148	645.0120	Geotextile Type HR	SY	2,368.000	2,368.000
0150	646.2020	Marking Line Epoxy 6-Inch	LF	1,700.000	1,700.000
0152	646.2040	Marking Line Grooved Wet Ref Epoxy 6-Inch	LF	1,700.000	1,700.000
0154	646.9002	Marking Removal Line 6-Inch	LF	315.000	315.000
0156	650.4500	Construction Staking Subgrade	LF	1,154.000	1,154.000
0158	650.5000	Construction Staking Base	LF	1,154.000	1,154.000
0160	650.5500	Construction Staking Curb Gutter and Curb & Gutter	LF	106.000	106.000
0162	650.6501	Construction Staking Structure Layout (structure) 01. B-16-0156	EACH	1.000	1.000
0164	650.9911	Construction Staking Supplemental Control (project) 01. 8760-00-72	EACH	1.000	1.000
0166	650.9920	Construction Staking Slope Stakes	LF	1,154.000	1,154.000
0168	661.0101	Temporary Traffic Signals for Bridges (structure) 01. B-16-0156	EACH	1.000	1.000
0170	690.0150	Sawing Asphalt	LF	85.000	85.000
0172	715.0502	Incentive Strength Concrete Structures	DOL	3,492.000	3,492.000
0174	715.0720	Incentive Compressive Strength Concrete Pavement	DOL	500.000	500.000
0176	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	800.000	800.000
0178	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	600.000	600.000
0180	SPV.0060	Special 01. Temporary Water Diversion Channel	EACH	1.000	1.000
0182	SPV.0060	Special 02. Temporary Water Diversion Pumping	EACH	2.000	2.000
0184	SPV.0060	Special 03. Rock Weir	EACH	14.000	14.000
0186	SPV.0060	Special 04. Live Stakes	EACH	950.000	950.000
0188	SPV.0180	Special 01. Salvaged Topsoil Over Riprap	SY	1,340.000	1,340.000
0190	SPV.0195	Special 01. Select Crushed Material for Travel Corridor	TON	46.000	46.000

8760-00-72

3

TREES						
STATION	TO	STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA	REMARKS
18700	-	18900	STH 105	2	2	LEFT & RIGHT
TOTAL 0010				2	2	
NOTE: CLEARING AND GRUBBING LIMITED TO AREAS SHOWN IN PLANS						

EXCAVATION					
205.0100					
STATION	TO	STATION	LOCATION	EXCAVATION COMMON CY	REMARKS
18250	-	18975	STAGE 2A	12,230	EXCAVATION FOR BRIDGE
18250	-	18975	STAGE 2B	770	INSTALL NORTH BEAMGUARD
0+20	-	6+25	STAGE 3A	2,860	REMOVE BYPASS
18250	-	18975	STABE 3B	1,290	INSTALL SOUTH BEAMGUARD
TOTAL 0010				17,150	

3

REMOVING ASPHALT						
STATION	TO	STATION	LOCATION	204.0110 REMOVING ASPHALTIC SURFACE SY	204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS SY	690.0150 SAWING ASPHALT LF
182+00	-	189+50	STH 105		30	30
189+50	-	189+50	STH 105			27
189+50	-	189+75	STH 105	10		25
189+75	-	189+75	STH 105		30	3
0+20	-	6+25	Bypass	1,210		
TOTAL 0010				1,220	60	85

BYPASS QUANTITIES										
				205.0100	208.1100	305.0120	310.0110	455.0605	465.0125	612.0406
				EXCAVATION COMMON	SELECT BORROW	BASE AGGREGATE DENSE 1 1/4-INCH	BASE AGGREGATE OPEN-GRADED	TACK COAT	ASPHALTIC SURFACE TEMPORARY	PIPE UNDERDRAIN WRAPPED 6-INCH
STATION	TO	STATION	LOCATION	CY	CY	TON	TON	GAL	TON	LF
0+20	-	6+25	BYPASS	1,270	1,490	1,060	115	73	300	560
TOTAL 0010				1,270	1,490	1,060	115	73	300	560

AGGREGATE							
				208.1100	305.0110	305.0120	624.0100
				SELECT BORROW	BASE AGGREGATE DENSE 3/4-INCH	BASE AGGREGATE DENSE 1 1/4-INCH	WATER
STATION	TO	STATION	LOCATION	CY	TON	TON	MGAL
182+50	-	189+75	STH 105	730			
182+50	-	185+50	STH 105		480	1,870	40
186+91	-	189+50	STH 105		410	1,610	40
189+50	-	189+75	STH 105 RT		20	50	10
TOTAL 0010				730	910	3,530	90

HMA					
				455.0605	460.5244
				TACK COAT	HMA PAVEMENT 4 LT 58-34 S
STATION	TO	STATION	LOCATION	GAL	TON
182+50	-	185+35	STH 105	148	470
187+11	-	189+50	STH 105	130	410
189+50	-	189+75	STH 105 RT	1	3
TOTAL 0010				279	883
BID ITEM IN MULTIPLE TABLES.					

3

DIVERSIONS						
			SPV.0060.01		SPV.0060.02	
			SPECIAL (01. TEMPORARY WATER DIVERSION CHANNEL)	SPECIAL (02. TEMPORARY WATER DIVERSION PUMPING)		
STATION	TO	STATION	LOCATION	EACH	EACH	REMARKS
186+00	-	186+45	STH 105	1	2	UNNAMED TRIBUTARY
TOTAL 0010				1	2	

SHORING					
			512.1000 PILING STEEL SHEET TEMPORARY		
STATION	TO	STATION	LOCATION	SF	REMARKS
TEMPORARY WATER DIVERSION CHANNEL				1,350	NORTH OF BRIDGE
TOTAL 0010				1,350	

3

EROSION CONTROL									
			628.1504	628.1520	628.1530.S	628.1535.S	628.1905	628.1910	
			SILT FENCE	SILT FENCE MAINTENANCE	SILT FENCE HEAVY DUTY	SILT FENCE HEAVY DUTY MAINTENANCE	MOBILIZATIONS EROSION CONTROL	MOBILIZATIONS EMERGENCY EROSION CONTROL	
STATION	TO	STATION	LOCATION	LF	LF	LF	LF	EACH	EACH
PROJECT								3	3
185+00	-	186+25	STH 105 LT			120	120		
185+00	-	186+25	STH 105 RT	380	380				
186+25	-	188+00	STH 105 LT			220	220		
186+25	-	188+00	STH 105 RT	195	195				
TOTAL 0010				575	575	340	340	3	3

VEGETATED RIPRAP						
			SPV.0060.04		SPV.0180.01	
			SPECIAL (04. LIVE STAKES)	SPECIAL (01. SALVAGED TOPSOIL OVER RIPRAP)		
STATION	TO	STATION	LOCATION	EACH	SY	REMARKS
185+73	-	186+22	SLOPES TO TRIBUTARY	410	610	WEST OF TRIBUTARY
185+90	-	186+72	SLOPES TO TRIBUTARY	540	730	EAST OF TRIBUTARY
TOTAL 0010				950	1,340	

RESTORATION												
			625.0500	627.0200	628.2008	629.0210	630.0110	630.0200	630.0500			
			SALVAGED TOPSOIL	MULCHING	EROSION MAT URBAN CLASS I TYPE B	FERTILIZER TYPE B	SEEDING MIXTURE NO. 10	SEEDING TEMPORARY	SEED WATER			
STATION	TO	STATION	LOCATION	SY	SY	SY	CWT	LB	LB	MGAL		
20	-	625	LT & RT			3,190			86	9	TEMPORARY SOIL COVERING DURING CONSTRUCTION LOCATED ON SALVAGED TOPSOIL OVER RIPRAP	
18570	-	18655	LT			610	0.30	16	16	2		
18200	-	18575	LT	800	720	80	0.60	22	22	3		
18200	-	18575	RT	2,270	2,040	230	1.60	61	61	7		
18675	-	18950	LT	580	520	60	0.30	16	16	2		
18675	-	19050	RT	1,370	1,230	140	0.90	37	37	4	FOR TEMPORARY WATER DIVERSION CHANNEL	
TEMPORARY WATER DIVERSION CHANNEL				340	310	30	0.30	10	10	1		
TOTAL 0010				5,360	4,820	4,340	4	162	248	28		

PROJECT ITEMS											
				211.0101.01	213.0100.01	618.0100.01	619.1000	642.5001	643.5000	661.0101.01	
				PREPARE FOUNDATION FOR ASPHALTIC PAVING (PROJECT) (01. 8760-00-72)	FINISHING ROADWAY (PROJECT) (01. 8760-00-72)	MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) (01. 8760-00-72)	MOBILIZATION	FIELD OFFICE TYPE B	TRAFFIC CONTROL	TEMPORARY TRAFFIC SIGNALS FOR BRIDGES (STRUCTURE) (01. B-16-0156)	
STATION	TO	STATION	LOCATION	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
182+00	-	190+50		1	1	1	1	1	1	1	
TOTAL 0010				1	1	1	1	1	1	1	

BRIDGE APPROACHES															
				415.0060	415.0410	521.1012	530.0112	601.0584	601.0586	602.3010	606.0200	611.0654	611.3220	645.0120	
				CONCRETE PAVEMENT 6-INCH	CONCRETE PAVEMENT APPROACH SLAB	APRON ENDWALLS FOR CULVERT PIPE STEEL 12-INCH	CULVERT PIPE CORRUGATED POLYETHYLENE 12-INCH	CONCRETE CURB & GUTTER 4-INCH SLOPED 30-INCH TYPE TBT	CONCRETE CURB & GUTTER 4-INCH SLOPED 30-INCH TYPE TBTT	CONCRETE SURFACE DRAINS	RIPRAP MEDIUM	INLET COVERS TYPE V	INLETS 2X2-FT	GEOTEXTILE TYPE HR	
STATION	TO	STATION	LOCATION	SY	SY	EACH	LF	LF	LF	CY	CY	EACH	EACH	SY	
185+35	-	185+50	STH 105	35	42										
186+91	-	187+06	STH 105		41			75	31	5					
187+37	-	187+37	LT			1	13				5	1	1	10	
187+39	-	187+39	RT			1	15				5	1	1	10	
TOTAL 0010				35	83	2	28	75	31	5	10	2	2	20	

GUARDRAIL						
				614.2300	614.2500	614.2610
				MGS GUARDRAIL 3	MGS THRIE BEAM TRANSITION	MGS GUARDRAIL TERMINAL EAT
STATION	TO	STATION	LOCATION	LF	LF	EACH
184+19	-	185+51	STH 105 RT	37.5	39.4	1
184+22	-	185+52	STH 105 LT	37.5	39.4	1
186+93	-	188+17	STH 105 RT	37.5	39.4	1
186+92	-	188+15	STH 105 LT	37.5	39.4	1
TOTAL 0010				150	157.6	4

 BID ITEM IN MULTIPLE TABLES.

3

TRAFFIC CONTROL SIGNS					
643.0900 TRAFFIC CONTROL SIGNS					
LAYOUT	ASSEMBLY	SIGN CODE	DESCRIPTION	DAY	REMARKS
OVERVIEW	D1	M4-4	D1 ASSEMBLY TRUCK	148	INTERSECTION OF MN 23 AND BECKS ROAD REASSURANCES
		M4-8	DETOUR	148	
		M3-2	EAST	148	
		M1-6	HIGHWAY 105	148	
OVERVIEW	D2	M4-4	D2 ASSEMBLY TRUCK	148	INTERSECTION OF MN 23 AND BECKS ROAD REASSURANCES
		M4-8	DETOUR	148	
		M3-4	WEST	148	
		M1-6	HIGHWAY 105	148	
OVERVIEW	D1		D1 ASSEMBLY REASSURANCES	592	INTERSECTION OF 88TH AVE AND MN 23
OVERVIEW	D2		D2 ASSEMBLY REASSURANCES	592	INTERSECTION OF 88TH AVE AND MN 23
OVERVIEW	D1		D1 ASSEMBLY REASSURANCES	592	MN 23 AT KNOWLTON CREEK
OVERVIEW	D2		D2 ASSEMBLY REASSURANCES	592	MN 23 AT KNOWLTON CREEK
OVERVIEW	D1		D1 ASSEMBLY REASSURANCES	592	USH 2 AND BELKNAP STREET/GARFIELD AVE (ROUNDAABOUT INTERSECTION)
OVERVIEW	D2		D2 ASSEMBLY REASSURANCES	592	USH 2 AND BELKNAP STREET/GARFIELD AVE (ROUNDAABOUT INTERSECTION)
OVERVIEW	D1		D1 ASSEMBLY REASSURANCES	592	WIS 35 AND 28TH STREET INTERSECTION
OVERVIEW	D2		D2 ASSEMBLY REASSURANCES	592	WIS 35 AND 28TH STREET INTERSECTION
L1	D3	M3-2	EAST	148	SOUTH SIDE OF MN 23, EASTBOUND
L1	D4	M1-6	HIGHWAY 105	148	MAX WIDTH 13 FEET SOUTH SIDE OF MN 23, EASTBOUND
		W12-52	DETOUR MAX. WIDTH	148	
		M4-4	TRUCK	148	
L1	D1A	M3-2	EAST	148	EAST OF MN 23, SOUTH OF MN 39 AND 23 INTERSECTION
		M1-6	HIGHWAY 105	148	
		W20-2A	DETOUR AHEAD	148	
L1	D1A	MO6-1	D1 ASSEMBLY AHEAD ARROW	592	EAST SIDE OF MN 23, SOUTH OF MN 39 AND 23 INTERSECTION
L1	D1A		D1 ASSEMBLY	592	
L1	D5	MO6-1	AHEAD ARROW	148	SOUTH SIDE OF MN 39 EASTBOUND
		M4-8A	END OF DETOUR	148	
		M3-4	WEST	148	
L1	D1AR	M1-6	HIGHWAY 105	148	NORTH SIDE OF MN 39, WESTBOUND TURN RIGHT (NORTH) TO BE ON DETOUR
			D1 ASSEMBLY	592	
		MO5-1R	ADVANCE RIGHT TURN	148	
L1	D1R		D1 ASSEMBLY	592	NORTH SIDE OF MN 39, INTERSECTION OF MN 39 AND 23 DETOUR TO RIGHT
		MO6-1	RIGHT ARROW	148	
			D1 ASSEMBLY	592	
L1	D1		D1 ASSEMBLY	592	EAST SIDE OF 23 WHEN HEADING NORTHBOUND ON 23
L1	D6	G20-51	DETOUR NEXT 15 MILES	148	EAST SIDE OF MN 23 NORTHBOUND
L1	D1AL		D2 ASSEMBLY	592	WEST SIDE OF MN 23 SOUTHBOUND
L1	D7	M5-1L	ADVANCE LEFT TURN AHEAD	148	WEST SIDE OF MN 23 SOUTHBOUND
		M3-2	EAST	148	
		M1-6	HIGHWAY 105	148	
L1	D15	W12-52	DETOUR MAX. WIDTH	148	SOUTH SIDE OF MN 39 EASTBOUND
		W12-52	DETOUR MAX. WIDTH	148	
		WO57-52	2.9 MILES AHEAD	148	
L2	D1AR		D1 ASSEMBLY	592	EAST SIDE OF MN 23, NORTHBOUND
L2	D1TR	MO5-2R	ADVANCE RIGHT ARROW BENT	148	BEFORE OFF RAMP TO 35 EASTBOUND
			D1 ASSEMBLY	592	
		MO6-2	TILT RIGHT ARROW	148	
L2	D2		D2 ASSEMBLY	592	WEST SIDE OF MN 23, SOUTHWEST BOUND
L2	D2TL		D2 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
L2	D2LB	MO6-2	TILT LEFT ARROW	148	PLACED NEAR LEFT EXIT ON I-35 SOUTHBOUND LEFT J-BARRIER
			D2 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
		MO5-2L	ADVANCE ARROW LEFT BENT	148	PLACED ON I-35 SOUTHBOUND RIGHT J-BARRIER
L2	D2LB		D2 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
L2	D1	MO5-2L	ADVANCE ARROW LEFT BENT	148	PLACED ON I-35 SOUTHBOUND LEFT J-BARRIER
		M4-4	D1	592	I-35 EAST OF ON RAMP FROM MN-23
		M4-4	D2 ASSEMBLY	592	NORTH SIDE OF I-35 WESTBOUND
L3	D2		D2 ASSEMBLY	592	NORTH SIDE OF I-35 WESTBOUND
L3	D1RB		D1 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
L3	D1RB		D1 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
		MO5-2R	ADVANCE RIGHT ARROW BENT	148	SOUTH SIDE OF 1-35 NORTHBOUND, PLACED IN ADVANCE BEFORE EXIT
DETOUR SUBTOTAL				18,796	

TRAFFIC CONTROL SIGNS					
643.0900 TRAFFIC CONTROL SIGNS					
LAYOUT	ASSEMBLY	SIGN CODE	DESCRIPTION	DAY	REMARKS
L1	D6	G20-51	DETOUR NEXT 15 MILES	148	EAST SIDE OF MN 23 NORTHBOUND
L1	D1AL		D2 ASSEMBLY	592	WEST SIDE OF MN 23 SOUTHBOUND
L1	D7	M5-1L	ADVANCE LEFT TURN AHEAD	148	WEST SIDE OF MN 23 SOUTHBOUND
		M3-2	EAST	148	
		M1-6	HIGHWAY 105	148	
L1	D15	W12-52	DETOUR MAX. WIDTH	148	SOUTH SIDE OF MN 39 EASTBOUND
		W12-52	DETOUR MAX. WIDTH	148	
		WO57-52	2.9 MILES AHEAD	148	
L2	D1AR		D1 ASSEMBLY	592	EAST SIDE OF MN 23, NORTHBOUND
L2	D1TR	MO5-2R	ADVANCE RIGHT ARROW BENT	148	BEFORE OFF RAMP TO 35 EASTBOUND
			D1 ASSEMBLY	592	
		MO6-2	TILT RIGHT ARROW	148	
L2	D2		D2 ASSEMBLY	592	WEST SIDE OF MN 23, SOUTHWEST BOUND
L2	D2TL		D2 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
L2	D2LB	MO6-2	TILT LEFT ARROW	148	PLACED NEAR LEFT EXIT ON I-35 SOUTHBOUND LEFT J-BARRIER
			D2 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
		MO5-2L	ADVANCE ARROW LEFT BENT	148	PLACED ON I-35 SOUTHBOUND RIGHT J-BARRIER
L2	D2LB		D2 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
L2	D1	MO5-2L	ADVANCE ARROW LEFT BENT	148	PLACED ON I-35 SOUTHBOUND LEFT J-BARRIER
L3	D2	M4-4	D1	592	I-35 EAST OF ON RAMP FROM MN-23
L3	D2	M4-4	D2 ASSEMBLY	592	NORTH SIDE OF I-35 WESTBOUND
L3	D1RB		D1 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
		MO5-2R	ADVANCE RIGHT ARROW BENT	148	SOUTH SIDE OF 1-35 NORTHBOUND, PLACED IN ADVANCE BEFORE EXIT
		DETOUR SUBTOTAL			
L3	D1TR		D1 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
		MO6-2	TILT RIGHT ARROW	148	SOUTH SIDE OF I-35 NORTHBOUND, PLACED AT BEGINNING OF OFFRAMP
			D2 ASSEMBLY	592	POSTS PLACED ON J-BARRIER
L3	D2L	MO6-1	LEFT ARROW	148	NORTHBOUND USH 2, AT TURN LANE FOR ONRAMP FOR I-35 SOUTHBOUND
L3	D2AL		D2 ASSEMBLY	592	(POSTS PLACED ON J-BARRIER) NORTHBOUND ON USH 2
L3	D1	MO5-1L	ADVANCE LEFT TURN ARROW	148	EAST SIDE OF USH 2 BEFORE ONRANP TO GO N ON I-35
			D1 ASSEMBLY	0	(POSTS PLACED ON J-BARRIER) SOUTHBOUND ON USH 2
			D1 ASSEMBLY	592	SOUTHSIDE OF USH 2, EASTBOUND
L4	D1AR	MO5-1R	ADVANCE RIGHT TURN ARROW	148	
L4	D2		D2 ASSEMBLY	592	NORTH SIDE OF USH 2, WESTBOUND
L4	D2L		D2 ASSEMBLY	592	STH 35/USH 2 ITNERSECTION, NORTHBOUND ON STH 35
L4	D1R	MO6-1	LEFT ARROW	148	USH 2/STH 35 INTERSECTION, EASTBOUND ON USH 2
			D1 ASSEMBLY	0	
		MO6-1	RIGHT ARROW	148	
L4	D1		D1 ASSEMBLY	0	STH 35/USH 2 INSTERSECTION, SOUTHBOUND ON STH 35
L4	D1AL		D2 ASSEMBLY	592	SOUTH OF USH 2 STH 35 INTERSECTION, NORTHBOUND ON STH 35
L5	D2AL	MO5-1L	ADVANCE ARROW LEFT TURN	148	WEST OF STH 105/ STH 35 INTERSECTION, EASTBOUND ON STH 105
			D2 ASSEMBLY	592	
		MO5-1L	ADVANCE ARROW LEFT TURN	148	
L5	D7	M4-8A	END OF DETOUR	148	WEST OF STH 105/STH 35 INTERSECTION, WESTBOUND ON STH 105
		M3-2	EAST	148	
		M1-6	HIGHWAY 105	148	
L5	D2L		D2 ASSEMBLY	592	INTERSECTION OF STH 105/STH 35, EASTBOUND ON STH 105
		MO6-1	ARROW LEFT	148	
		M3-4	WEST	148	
L5	D8	M1-6	HIGHWAY 105	148	EAST SIDE OF STH 35, FOR NORTHBOUND LANE
		W12-52	MAX. WIDTH	148	
L5	D9	M4-4	TRUCK	148	EAST SIDE OF STH 35, NORTHBOUND
		M3-4	WEST	148	
		M1-6	HIGHWAY 105	148	
L5	D2A	W20-2A	DETOUR AHEAD	148	EAST SIDE OF STH 35, NORTHBOUND
			D2 ASSEMBLY	592	
		MO6-1	ARROW AHEAD	148	
DETOUR SUBTOTAL				8,880	

 BID ITEM IN MULTIPLE TABLES.

PROJECT NO: 8760-00-72

HWY: STH 105

COUNTY: DOUGLAS

MISCELLANEOUS QUANTITIES

SHEET

40

E

3

3

TRAFFIC CONTROL SIGNS					
643.0900 TRAFFIC CONTROL SIGNS					
LAYOUT	ASSEMBLY	SIGN CODE	DESCRIPTION	DAY	REMARKS
L5	D2L		D2 ASSEMBLY	592	INTERSECTION OF STH 105/STH 35, EASTBOUND ON STH 105
L5	D8	MO6-1	ARROW LEFT	148	EAST SIDE OF STH 35, FOR NORTHBOUND LANE
		M3-4	WEST	148	
		M1-6	HIGHWAY 105	148	
		W12-52	MAX. WIDTH	148	
L5	D9	M4-4	TRUCK	148	EAST SIDE OF STH 35, NORTHBOUND
		M3-4	WEST	148	
		M1-6	HIGHWAY 105	148	
		W20-2A	DETOUR AHEAD	148	
L5	D2A		D2 ASSEMBLY	592	EAST SIDE OF STH 35, NORTHBOUND
		MO6-1	ARROW AHEAD	148	
DETOUR SUBTOTAL				8,880	
L5	D10	M4-4	TRUCK	148	EAST SIDE OF STH 35, NORTHBOUND
		M4-8	DETOUR	148	
		MO6-1	ARROW AHEAD	148	
L5	D2		D2 ASSEMBLY	592	EAST SIDE OF STH 35, NORTHBOUND
L5	D11	M4-4	TRUCK	148	WEST SIDE OF STH 35, SOUTHBOUND
		M4-8	DETOUR	148	
		M3-2	EAST	148	
L5	D12	G20-51	DETOUR NEXT 15 MILES	148	EAST SIDE OF STH 35, NORTHBOUND
L5	D1AR		D1 ASSEMBLY	592	WEST SIDE OF STH 35, SOUTHBOUND
		M5-1R	ADVANCE RIGHT TURN ARROW	148	
L5	D8	M3-4	WEST	148	WEST SIDE OF STH 35, SOUTHBOUND
		M1-6	HIGHWAY 105	148	
		W12-52	MAX. WIDTH	148	
L5	D15	W12-52	DETOUR MAX. WIDTH	148	WEST OF STH 105/STH 35 INTERSECTION, WESTBOUND ON STH 105
		WO57-52	1.5 MILES AHEAD	148	
L6	D1	M4-4	D1 ASSEMBLY	592	NORTH SIDE OF STH 105, WESTBOUND
L6	D16	W12-52	DETOUR MAX. WIDTH	148	SOUTH SIDE OF STH 105, EASTBOUND
		WO57-52	2.9 MILES AHEAD	148	
L6	D1L		D1 ASSEMBLY	592	INTERSECTION OF CTHW/MN 39, NORTHBOUND
		MO6-1	ARROW LEFT	148	
L6	D1AL		D1 ASSEMBLY	592	EAST SIDE OF CTH W, NORTHBOUND
L6	D14	MO5-1L	ADVANCE ARROW LEFT TURN	148	EAST SIDE OF CTH W, NORTHBOUND
		M4-4	TRUCK	148	
		M3-2	EAST	148	
L6	D3	M1-6	HIGHWAY 105	148	EAST SIDE OF CTH W, NORTHBOUND
		W20-2A	DETOUR AHEAD	148	
		M3-2	EAST	148	
		M1-6	HIGHWAY 105	148	
L6		W12-52	DETOUR MAX. WIDTH	148	MAX WIDTH 13 FEET
DETOUR SIGNAGE TOTAL				34,188	

TRAFFIC CONTROL SIGNS				
643.0900 TRAFFIC CONTROL SIGNS				
LAYOUT	ASSEMBLY	SIGN CODE	DESCRIPTION	DAY
	S1	W20-1A	ROAD WORK AHEAD	148
	S2	W20-4A	ONE LANE ROAD AHEAD	148
	S3	W14-3	NO PASSING ZONE	148
	S4	WO3-3	SIGNAL AHEAD	148
	S5	G20-2A	END ROAD WORK	148
	S6	WO3-3	SIGNAL AHEAD	148
	S7	R10-6	STOP HERE ON RED	148
	S8	WO1-6	NIGHT ARROW SINGLE (RIGHT)	148
	S9	W1-4R	RIGHT REVERSE CURVE	31
	S10	R10-6	STOP HERE ON RED	148
	S11	WO3-3	SIGNAL AHEAD	148
	S12	G20-2A	END ROAD WORK	148
	S13	WO3-3	SIGNAL AHEAD	148
	S14	W14-3	NO PASSING ZONE	148
	S15	W20-4A	ONE LANE ROAD AHEAD	148
	S16	W20-1A	ROAD WORK AHEAD	148
	S17	WO1-6	NIGHT ARROW SINGLE (RIGHT)	93
	S18	WO1-6	NIGHT ARROW SINGLE (RIGHT)	93
	S19	WO1-6	NIGHT ARROW SINGLE (LEFT)	93
	S20	WO1-4R	RIGHT REVERSE CURVE	93
		W13-1	ADVISORY SPEED PLATE	93
	S21	WO1-4L	LEFT REVERSE CURV	93
		W13-1	ADVISORY SPEED PLATE	93
	S22	WO1-6	NIGHT ARROW SINGLE (RIGHT)	93
	S23	WO1-6	NIGHT ARROW SINGLE (LEFT)	93
	S24	WO1-6	NIGHT ARROW SINGLE (LEFT)	93
	S25	WO1-6	NIGHT ARROW SINGLE (LEFT)	93
	S26	R11-2B	BRIDGE OUT	48
	S27	W1-4R	RIGHT REVERSE CURVE	24
			TRAFFIC CONTROL SIGNAGE	3,346

 BID ITEM IN MULTIPLE TABLES.

TRAFFIC CONTROL													
643.1100643.0300643.0420643.0705643.0715643.0900643.3165643.3805646.9002													
STATION	TO	STATION	LOCATION	DELINEATORS TEMPORARY EACH	TRAFFIC CONTROL DRUMS DAY	TRAFFIC CONTROL BARRICADES TYPE III DAY	TRAFFIC CONTROL WARNING LIGHTS TYPE A DAY	TRAFFIC CONTROL WARNING LIGHTS TYPE C DAY	TRAFFIC CONTROL SIGNS DAY	TEMPORARY MARKING LINE PAINT 6-INCH LF	TEMPORARY MARKING STOP LINE PAINT 18-INCH LF	MARKING REMOVAL LINE 6-INCH LF	REMARKS
182+50	-	189+75	STH 105	22	1,194	1,480	1,776	1,194	496		12	315	STAGE 1
182+50	-	189+75	STH 106	12	1,194	1,480	1,776	1,194	496		12		STAGE 2
182+50	-	189+75	STH 107	12	250	310	370	250	1,488		12		STAGE 3
0+00	-	6+20	Bypass							1,240			BYPASS LT & RT WHITE
174+50	-	181+50	STH 105							1,400			MAINLINE DOUBLE YELLOW CENTERLINE NO PASSING ZONE
191+50	-	198+50	STH 105							1,400			MAINLINE DOUBLE YELLOW CENTERLINE NO PASSING ZONE
	-												
TOTAL 0010				46	2,638	3,270	3,922	2,638	2,480	4,040	36	315	

PROJECT NO: 8760-00-72

HWY: STH 105

COUNTY: DOUGLAS

MISCELLANEOUS QUANTITIES

SHEET

				STAKING					
				650.4500	650.5000	650.5500	650.6501.01	650.9911.01	650.9920
				CONSTRUCTION STAKING SUBGRADE	CONSTRUCTION STAKING BASE	CONSTRUCTION STAKING CURB GUTTER AND CURB & GUTTER	CONSTRUCTION STAKING STRUCTURE LAYOUT (STRUCTURE) (01. B-16-0156)	CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) (01. 8760-00-72)	CONSTRUCTION STAKING SLOPE STAKES
STATION	TO	STATION	LOCATION	LF	LF	LF	EACH	EACH	LF
182+50	-	185+35	STH 105	285	285	#REF!			285
187+11	-	189+75	STH 105	264	264	106			264
0+20	-	6+25	BYPASS	605	605				605
182+00	-	189+00	STH 105				1	1	
TOTAL 0010				1,154	1,154	#REF!	1	1	1,154

				MARKING	
				646.2020	646.2040
				MARKING LINE EPOXY	MARKING LINE
				6-INCH	GROOVED WET REF
				LF	EPOXY 6-INCH
STATION	TO	STATION	LOCATION	LF	LF
182+00	-	190+50	STH 105	1,700	1,700
TOTAL 0010				1,700	1,700

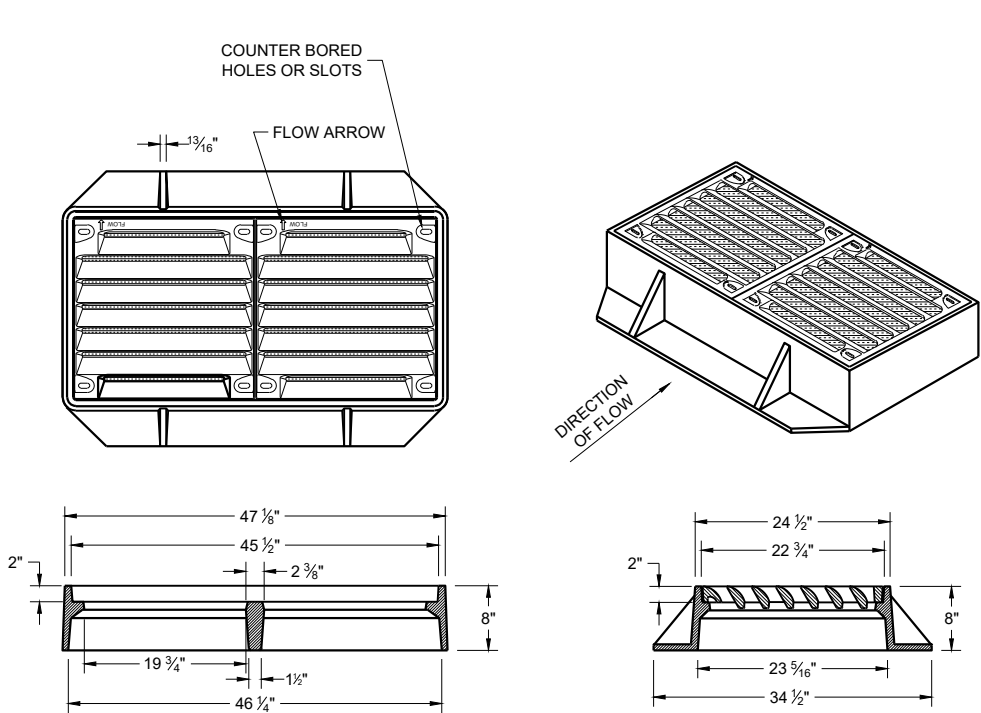
Standard Detail Drawing List

08A05-22D	INLET COVERS TYPE V, V-B, & VV-B
08C07-03	INLETS 2X2-FT, 2X2.5-FT, 2X3-FT, 2.5X3-FT & 2X3.5-FT
08D01-24A	CONCRETE CURB & GUTTER
08D01-24B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D03-09A	CONCRETE SURFACE DRAINS DROP INLET TYPE AT STRUCTURES
08D03-09B	CONCRETE SURFACE DRAINS DROP INLET TYPE AT STRUCTURES
08E09-06	SILT FENCE
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
09G02-05A	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-05B	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-05C	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
12A03-10	NAME PLATE (STRUCTURES)
13A03-07	CONCRETE PAVEMENT SHOULDERS
13B02-09A	CONCRETE PAVEMENT APPROACH SLAB
13B02-09B	STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB
13C01-19	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05K	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05L	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-09A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-09B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-09C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C02-09F	ADVANCED WIDTH RESTRICTION SIGNING
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-24A	PERMANENT LONGITUDINAL PAVEMENT MARKINGS
15C11-10A	CHANNELIZING DEVICES FLEXIBLE TUBULAR MARKER POST
15C11-10B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D31-05	TRAFFIC CONTROL, TEMPORARY BYPASS ROADWAY
15D33-09	TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS

GENERAL NOTES

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

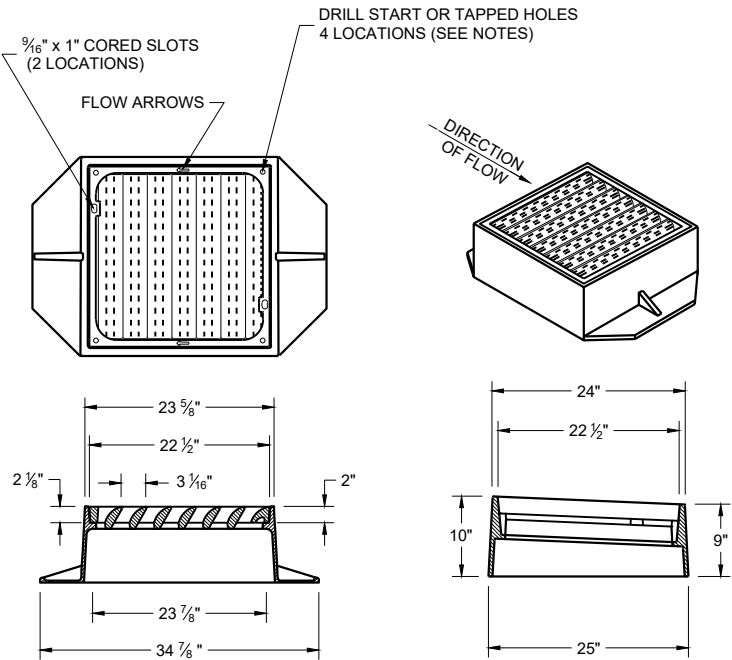
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.



TYPE "VV-B"

NOTES: ALL HARDWARE TO BE SUPPLIED BY CASTING MANUFACTURER
ALL DRILLING AND TAPPING GRATES AND FRAMES BY
CASTING MANUFACTURER

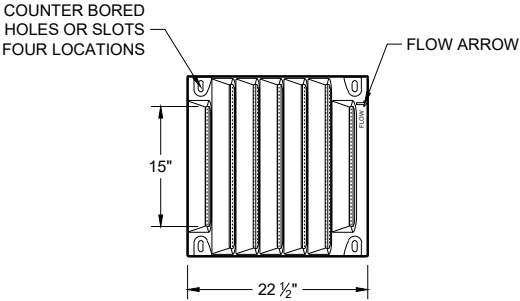
TYPE V
FRAME - CAST GRAY IRON ASTM A48 CLASS 35B
3/8" DIA. X 1/16" DRILL START IN 8 LOCATIONS
GRATE - CAST GRAY IRON ASTM A-48, CLASS 35B



TYPE "V"

NOTES: ALL HARDWARE TO BE SUPPLIED BY CASTING MANUFACTURER ALL DRILLING
AND TAPPING GRATES AND FRAMES BY CASTING MANUFACTURER

TYPE V
FRAME - CAST GRAY IRON ASTM A48 CLASS 40A
3/8" DIA. X 1/16" DRILL START IN 4 LOCATIONS
GRATE - CAST GRAY IRON ASTM A-48, CLASS 35B



BOLT DOWN GRATE FOR
TYPE "V" AND "VV-B" COVER

NOTES: ALL HARDWARE TO BE SUPPLIED BY CASTING MANUFACTURER
NOTED AS TYPE "V-B" OR "VV-B" (FOR DOUBLE GRATE) ON
DRAINAGE TABLE

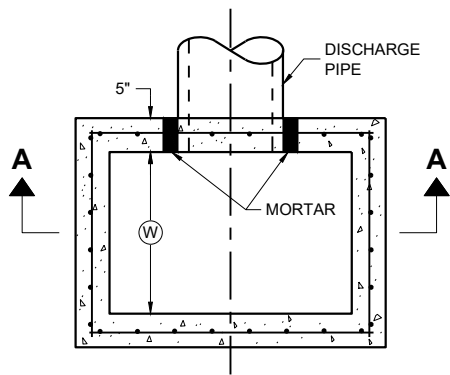
TAP 1/2" -13 HOLES IN FOUR LOCATIONS PER GRATE IN FRAME TO
BOLT GRATE(S).
FRAME - CAST GRAY IRON ASTM A48 CLASS 40A

GRATE - CAST DUCTILE IRON ASTM A536, 55+KSI YIELD
BOLTS - 1/2" -13 STAINLESS STEEL BOLTS WITH WASHERS
TORQUE BOLTS TO MANUFACTURER SPECIFICATION DO NOT
OVERTIGHTEN.

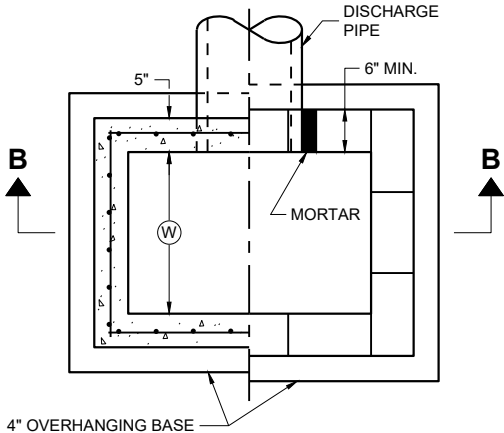
INLET COVERS
TYPES V, V-B, AND VV-B

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

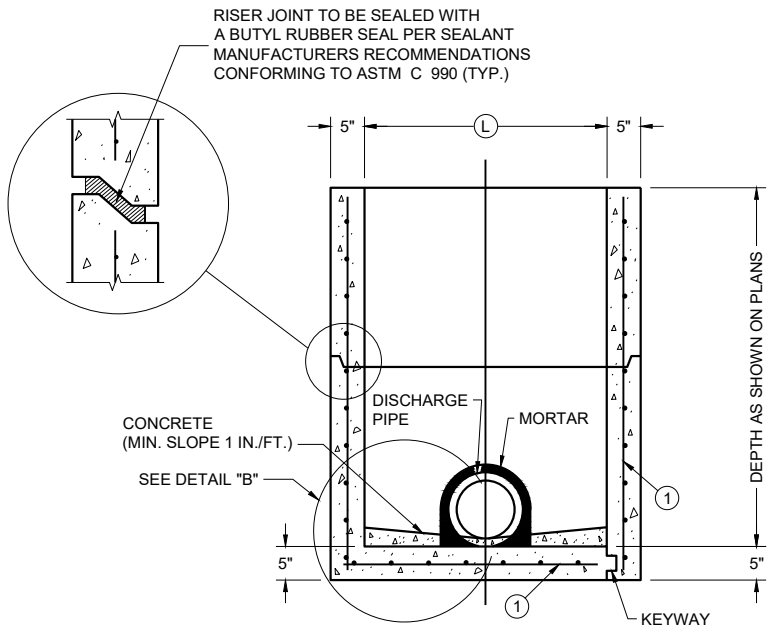
APPROVED
February 2025 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR



PLAN VIEW



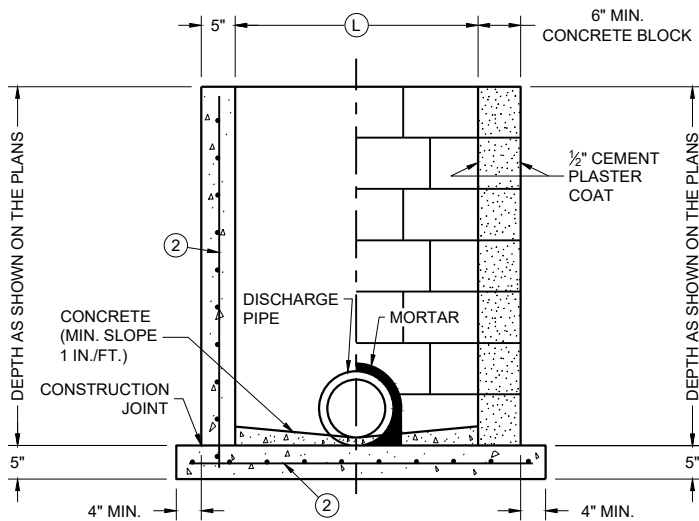
PLAN VIEW



PRECAST REINFORCED
CONCRETE WITH
MONOLITHIC BASE

PRECAST REINFORCED
CONCRETE WITH
INTEGRAL BASE

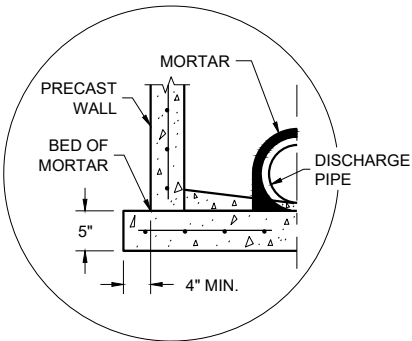
SECTION A - A



CAST IN PLACE
REINFORCED
CONCRETE

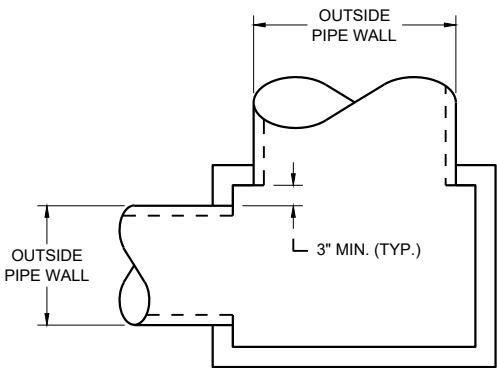
CONCRETE BLOCK WITH
CAST IN PLACE OR
PRECAST REINFORCED
CONCRETE BASE ①

SECTION B - B



SEPARATE PRECAST REINFORCED
CONCRETE BASE OPTION

DETAIL "B"



DETAIL "A"

INLETS 2 X 2-FT, 2 X 2.5-FT, 2 X 3-FT, 2.5 X 3-FT AND 2X3.5-FT

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

- ① FOR PRECAST INLETS AND REINFORCED CONCRETE BASES PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913
- ② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

CATCH BASIN COVER MATRIX

INLET SIZE	WIDTH (W) (FT.)	LENGTH (L) (FT.)	INLET COVER TYPE									
			ALL A'S	ALL B'S	BW	F	ALL H'S	S	T	V	WM	V V-B
2 X 2-FT	2	2	X	X				X				
2 X 2.5-FT	2	2.5			X			X	X	X	X	
2 X 3-FT	2	3					X					
2.5 X 3-FT	2.5	3				X						
2 X 3.5-FT	2	3.5										X

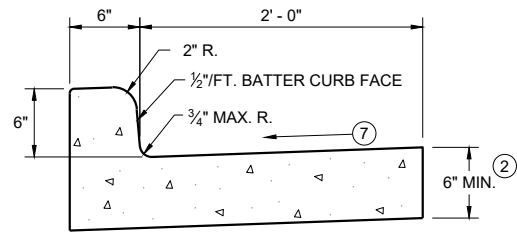
PIPE MATRIX

CATCH BASIN SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES	
	WIDTH (IN)	LENGTH (IN)
2 X 2-FT	12	12
2 X 2.5-FT	12	18
2 X 3-FT	12	24
2.5 X 3-FT	18	24
2 X 3.5-FT	12	30

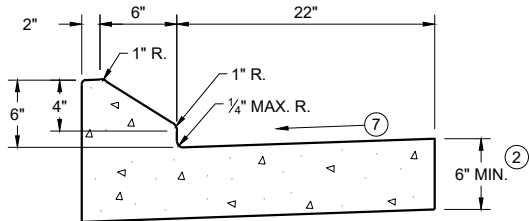
INLETS 2 X 2-FT, 2 X 2.5-FT,
2 X 3-FT, 2.5 X 3-FT
AND 2 X 3.5-FT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

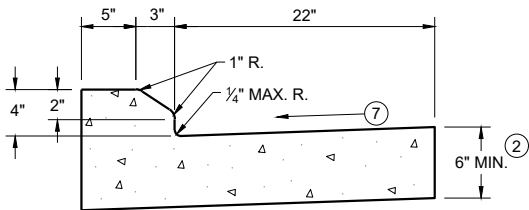
APPROVED
December 2023 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT
FHWA UNIT SUPERVISOR



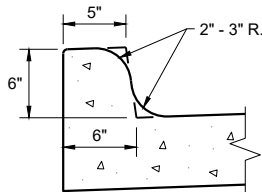
TYPES A^① & D



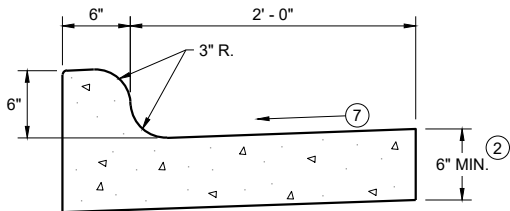
6" SLOPED CURB TYPES G^① & J



4" SLOPED CURB TYPES G^① & J

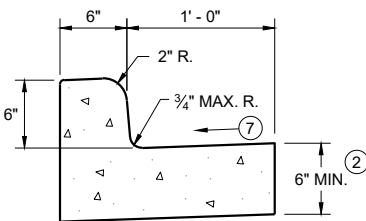


TYPES K^① & L
(OPTIONAL CURB SHAPE)



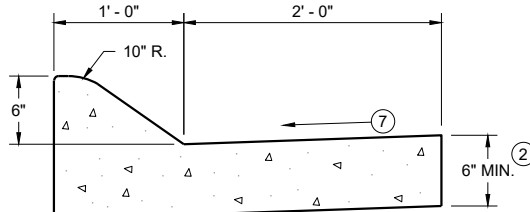
TYPES K^① & L

CONCRETE CURB AND GUTTER 30"

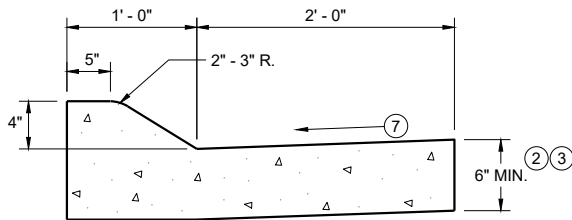


TYPES A^① & D

CONCRETE CURB AND GUTTER 18"

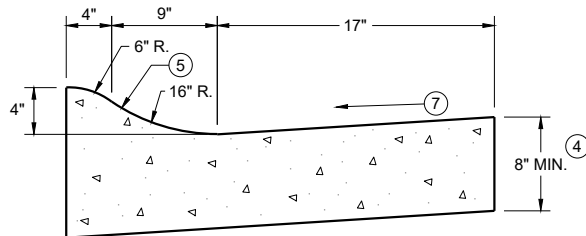


6" SLOPED CURB TYPES A^① & D



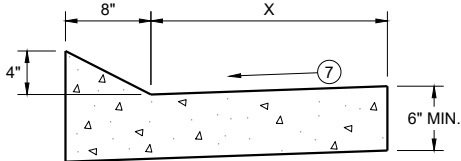
4" SLOPED CURB TYPES A^① & D

CONCRETE CURB AND GUTTER 36"



4" SLOPED CURB TYPES R^① & T
CONCRETE CURB AND GUTTER 30"

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

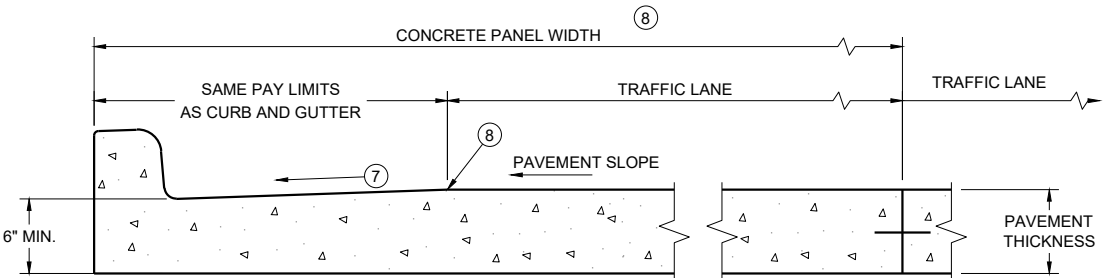


TYPES TBT & TBTT^①

CONCRETE CURB AND GUTTER

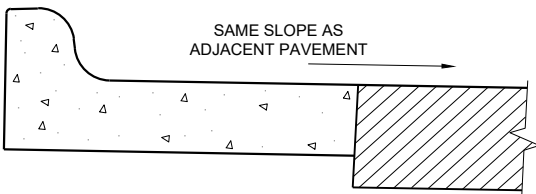
PAVEMENT THICKNESS
AND MAXIMUM CONCRETE
PANEL WIDTH TABLE

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

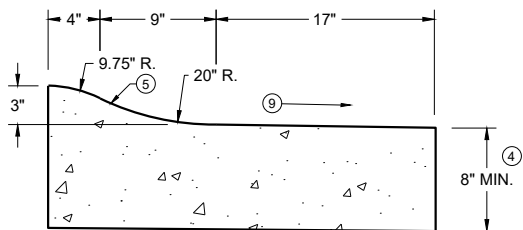


PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB AND GUTTER

* BIKE LANE IS NOT SHOWN



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



3" SLOPED CURB TYPES R^① & T

CONCRETE CURB AND GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

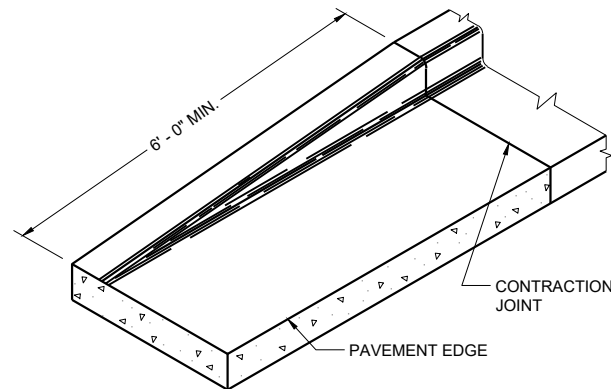
DETAILS OF CONSTRUCTION AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

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

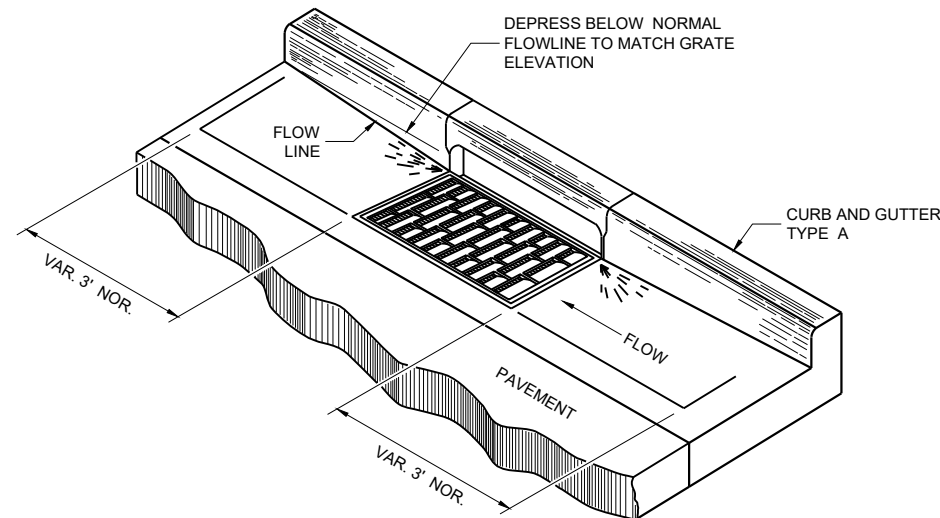
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

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

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- ④ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑤ UNLESS OTHERWISE NOTED, FOR STAKING PURPOSES THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑥ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.
- ⑦ USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
- ⑧ INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.
- ⑨ SLOPE TO BE REVERSE SLOPE MATCHING THE SLOPE OF THE PAVEMENT AND THE CIRCULATORY ROADWAY

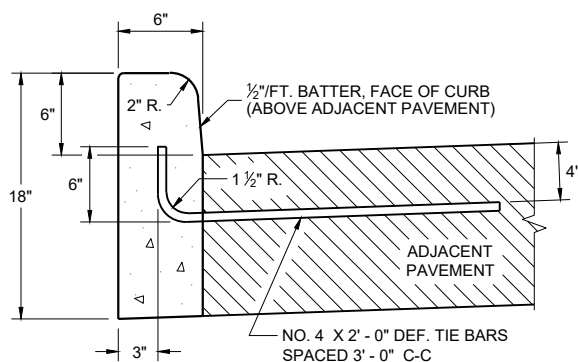


END SECTION CURB AND GUTTER

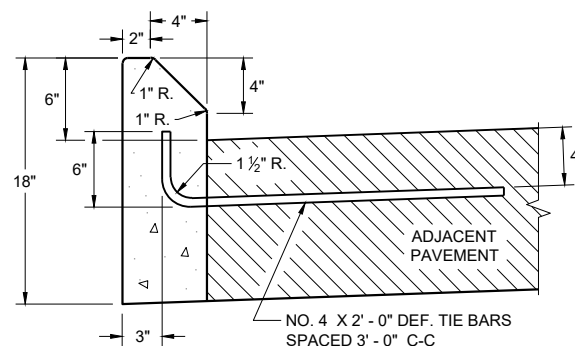


DETAIL OF CURB AND GUTTER AT INLETS

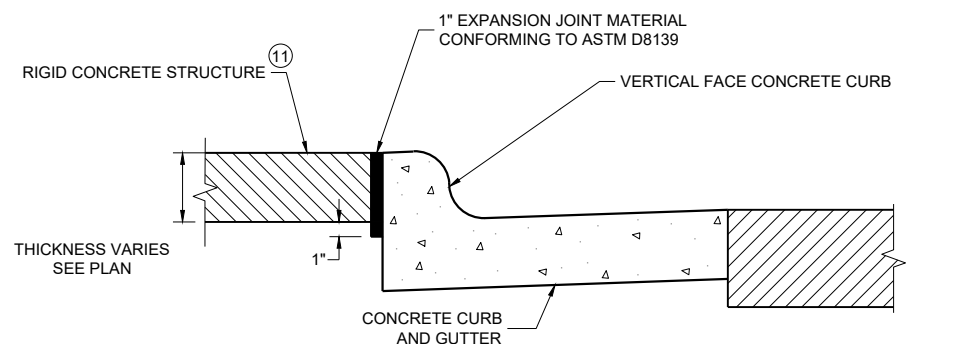
(TYPICAL H INLET COVER SHOWN)



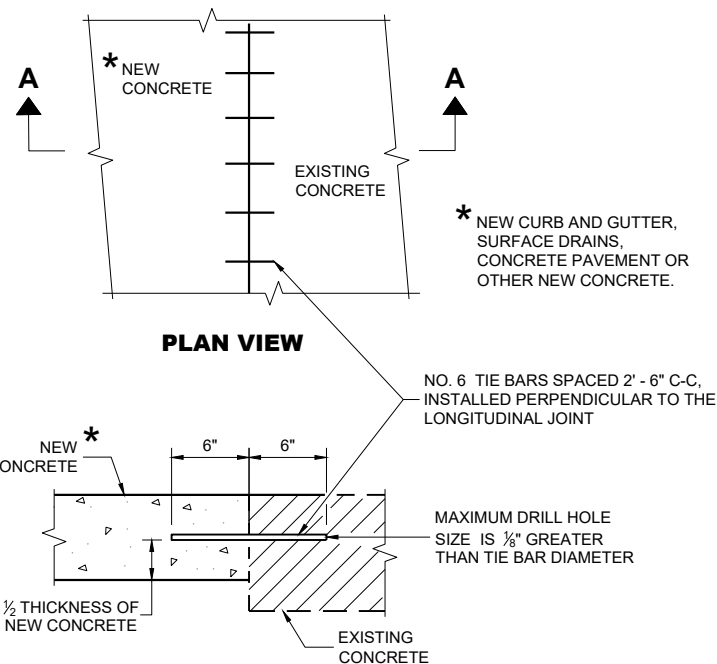
TYPES A^① & D



**TYPES G^① & J
CONCRETE CURB**



EXPANSION JOINT DETAIL FOR VERTICAL CURB ABUTTING A RIGID STRUCTURE^⑪



**SECTION A - A
TIE BARS DRILLED INTO EXISTING PAVEMENT**

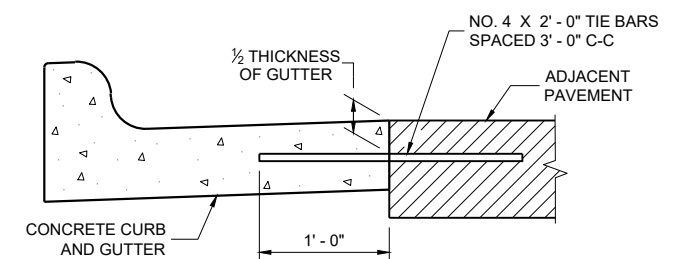
GENERAL NOTES

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

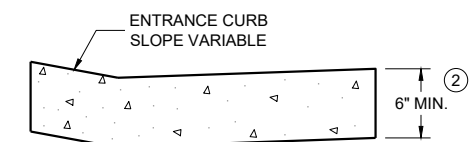
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑩ REFER TO SDD 08D18 AND 08D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.
- ⑪ PLACE 1" THICK EXPANSION JOINT MATERIAL BETWEEN VERTICAL FACE CURB TYPES EXTENDING FROM THE TOP OF CURB TO 1 INCH BELOW THE ADJOINING CONCRETE SURFACE. RIGID CONCRETE STRUCTURES INCLUDE RAISED CONCRETE MEDIANS, CONCRETE SAFETY ISLANDS, SPLITTER ISLANDS, OR LOCATIONS IDENTIFIED ON THE PLANS.



TYPICAL TIE BAR LOCATION^①



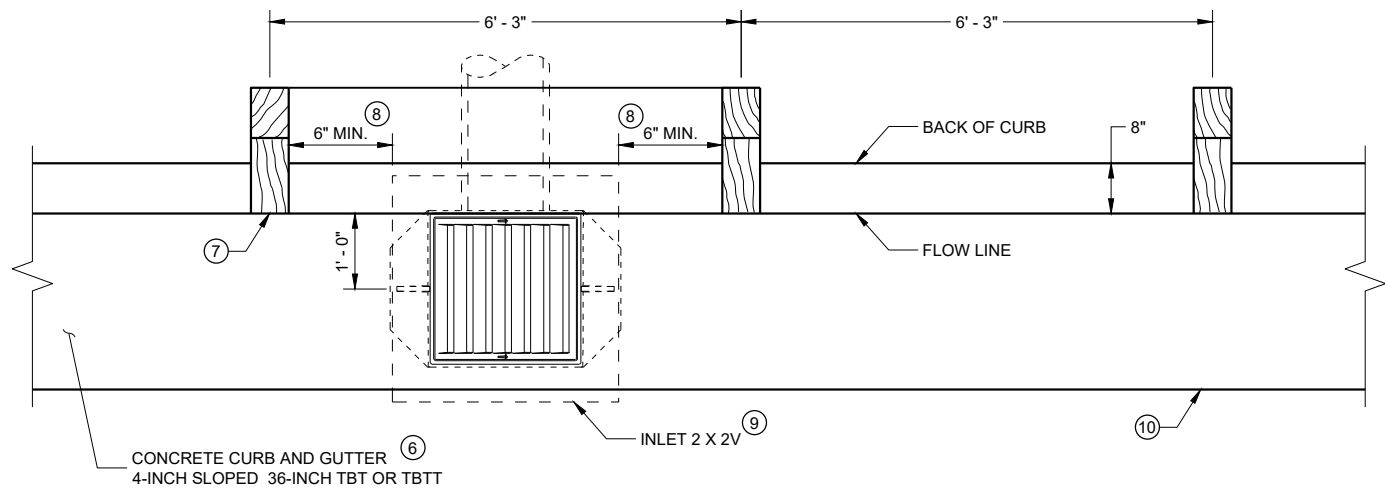
**DRIVEWAY ENTRANCE CURB^⑩
(WHEN DIRECTED BY THE ENGINEER)**

**CONCRETE CURB, TIES
AND CURB AND GUTTER
APPLICATIONS**

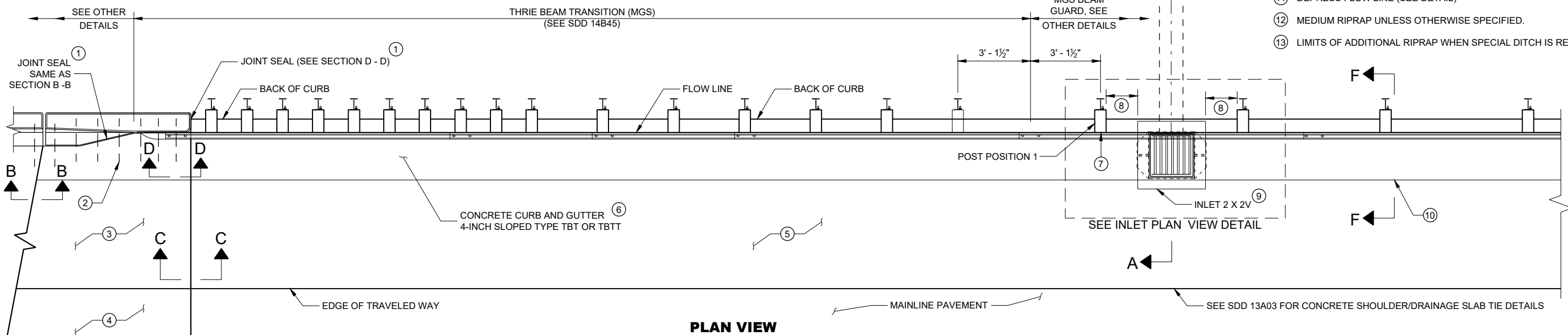
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2025 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

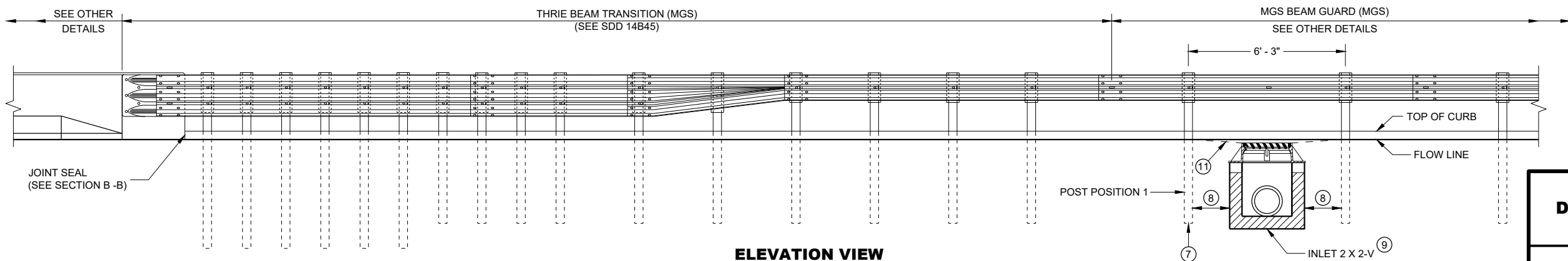
FHWA



INLET PLAN VIEW
(NOTE: RAIL NOT SHOWN FOR CLARITY)



PLAN VIEW



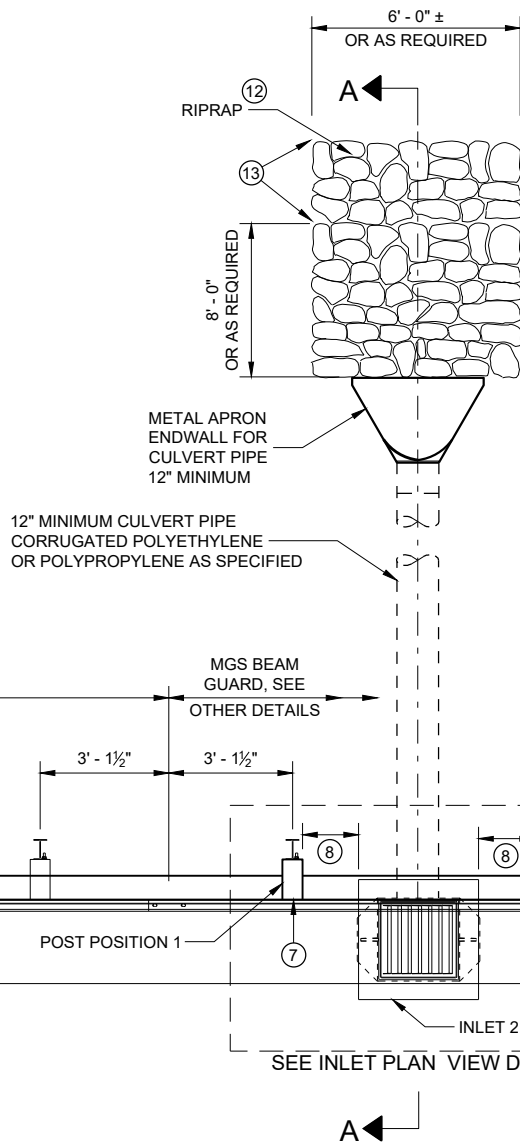
ELEVATION VIEW

GENERAL NOTES

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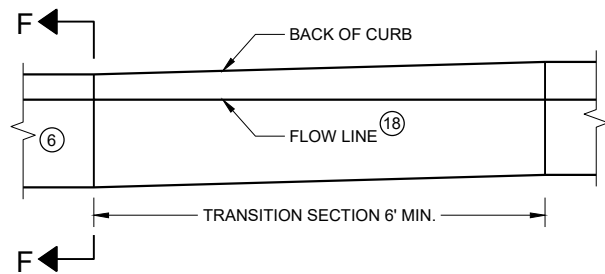
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- 1 USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- 2 NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- 3 PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- 4 CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02.
- 5 PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- 6 CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBT. USE TYPE TBT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- 7 PLACE DRAINAGE STRUCTURE BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- 8 CENTER DRAINAGE STRUCTURE BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE WALL OF DRAINAGE STRUCTURE TO POSTS.
- 9 SEE SDD 08A05 AND 08C07 FOR DETAILS. SEE ROADWAY PLANS FOR LOCATION.
- 10 START CURB AND GUTTER TRANSITION OR END SECTION.
- 11 DEPRESS FLOW LINE (SEE DETAIL)
- 12 MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- 13 LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.

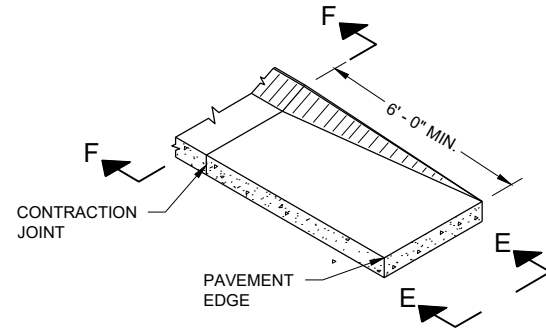


**CONCRETE SURFACE
DRAINS DROP INLET TYPE
AT STRUCTURES**

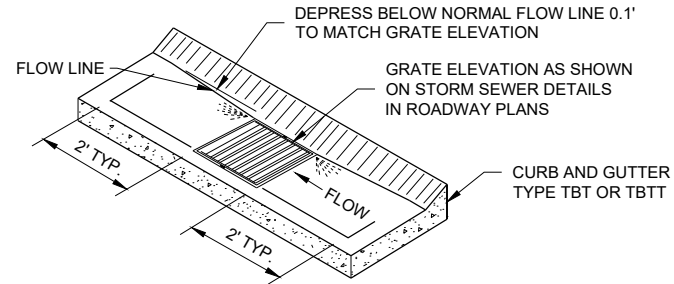
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 49



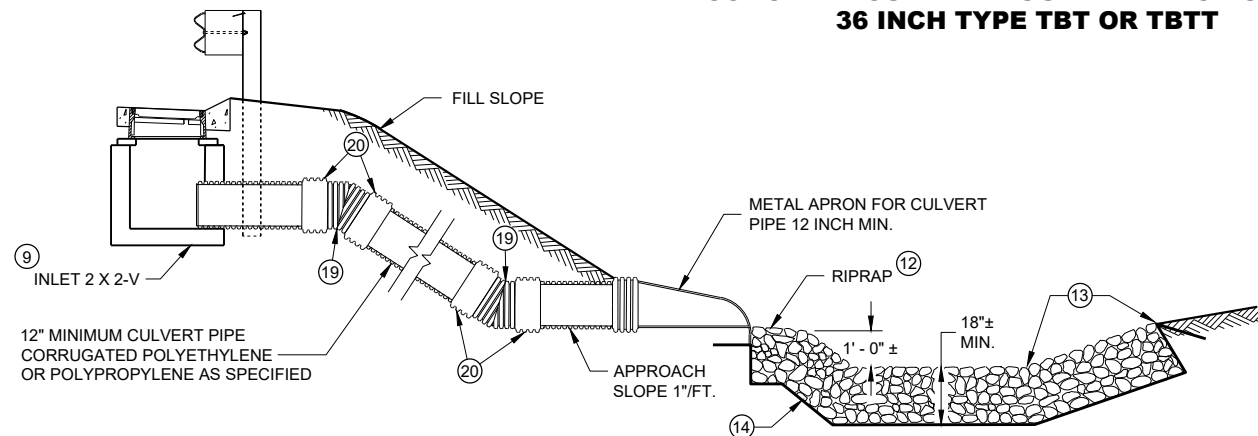
**CURB AND GUTTER TRANSITION SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBT**



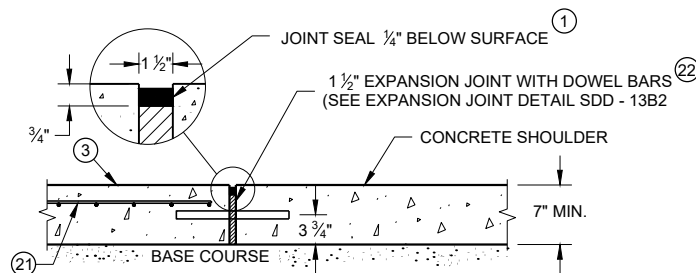
**CURB AND GUTTER END SECTION
CONCRETE CURB AND GUTTER 4-INCH SLOPED
36 INCH TYPE TBT OR TBT**



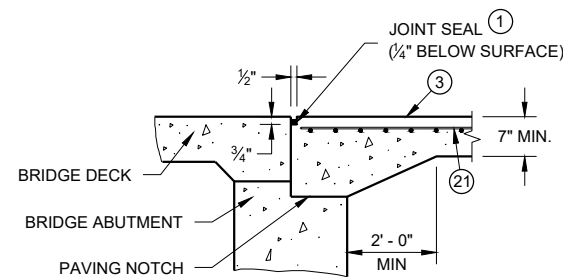
**CURB AND GUTTER FLOW LINE DEPRESSION
AT INLETS CONCRETE CURB AND GUTTER
4-INCH SLOPED 36 INCH TYPE TBT OR TBT**



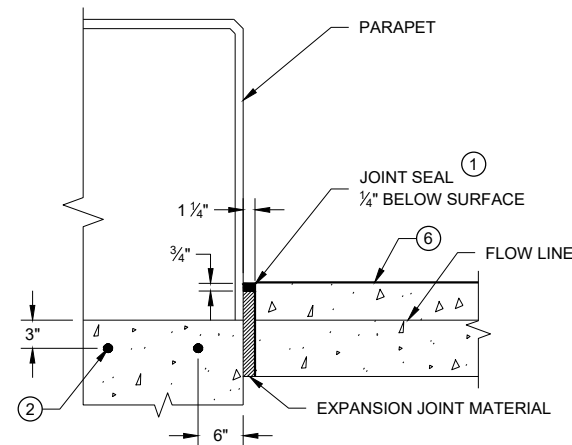
SECTION A - A



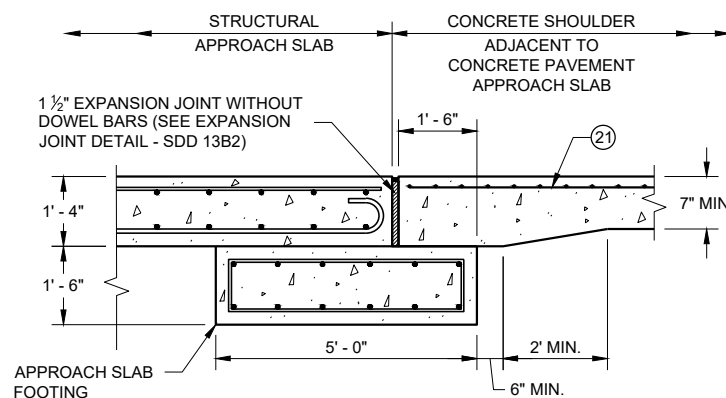
**SECTION C - C
JOINT DETAIL FOR BRIDGE APPROACH
WITH CONCRETE SHOULDERS**



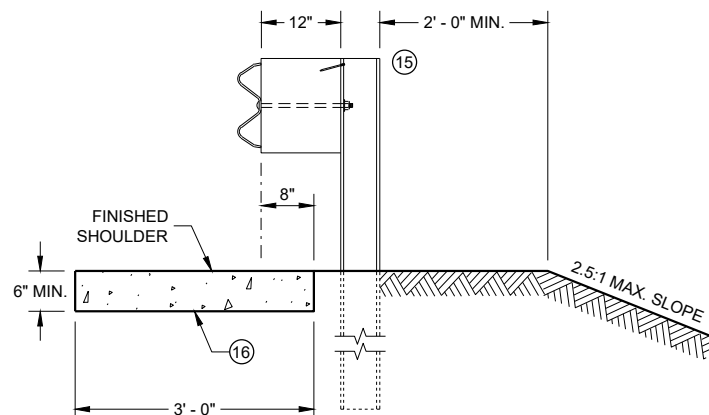
SECTION B-B



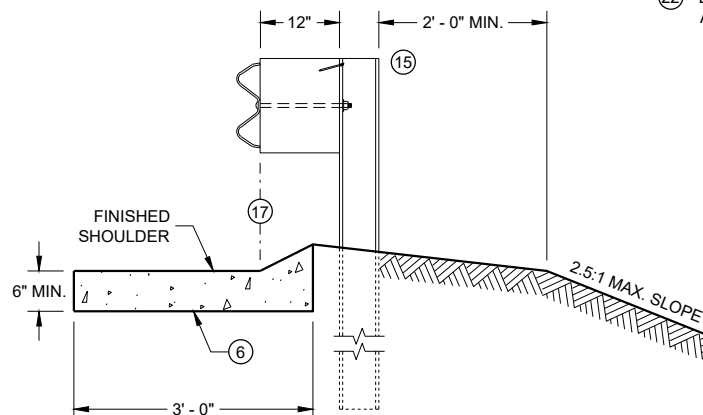
SECTION D - D



**SECTION C - C
JOINT DETAIL FOR BRIDGE WITH STRUCTURAL
APPROACH SLAB AND CONCRETE APPROACH SLAB**



SECTION E - E



SECTION F - F

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.

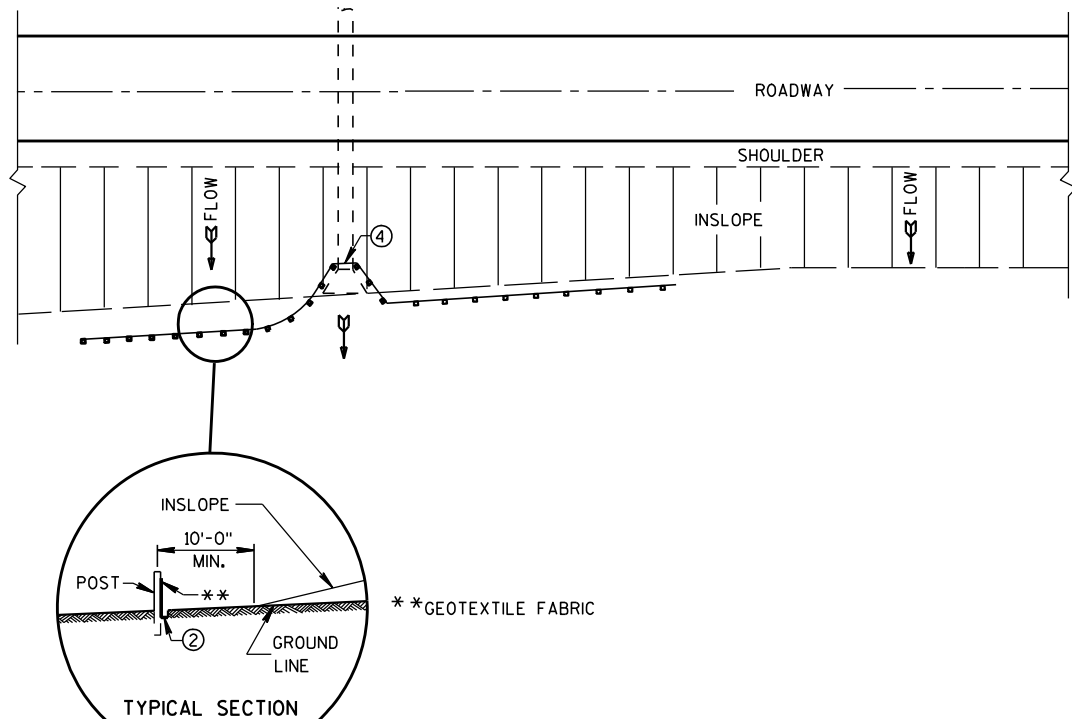
ALL STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

- ① USE A JOINT SEALANT CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- ② NO. 4 X 2' - 0" TIE BARS SPACED AT 12" C-C TO BE PLACED BY BRIDGE CONTRACTOR OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.
- ③ PAVED CONCRETE SHOULDER (SDD 13A03) OR CONCRETE DRAINAGE SLAB.
- ④ CONCRETE PAVEMENT APPROACH SLAB (SHOWN) OR STRUCTURE APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB. SEE SDD 13B02 AND STRUCTURE PLANS.
- ⑤ PAVED CONCRETE SHOULDER (SDD 13A03) OR ASPHALT SHOULDER.
- ⑥ CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE TBT OR TBT. USE TYPE TBT CURB WITH NO. 4 X 2' - 0" TIE BARS SPACED AT 3' - 0" C-C ONLY WHEN ADJACENT TO CONCRETE PAVEMENTS.
- ⑦ PLACE DRAINAGE STRUCTURE BEFORE MSG THRIE BEAM TRANSITION POST 1 (SEE SDD 14B45)
- ⑧ CENTER DRAINAGE STRUCTURE BETWEEN POSTS. 6-INCH MINIMUM SEPARATION FROM OUTSIDE WALL OF DRAINAGE STRUCTURE TO POSTS.
- ⑨ SEE SDD 08A05 AND 08C07 FOR DETAILS. SEE ROADWAY PLANS FOR LOCATION.
- ⑩ START CURB AND GUTTER TRANSITION OR END SECTION.
- ⑪ DEPRESS FLOW LINE (SEE DETAIL)
- ⑫ MEDIUM RIPRAP UNLESS OTHERWISE SPECIFIED.
- ⑬ LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.
- ⑭ GEOTEXTILE TYPE HR.
- ⑮ MSG THRIE BEAM TRANSITION POST 1. SEE SDD 14B45 FOR ADDITIONAL CONSTRUCTION DETAILS AND ACCEPTABLE MATERIALS.
- ⑯ MAINTAIN WIDTH, THICKNESS AND CROSS SLOPE OF ADJACENT TYPE TBT OR TBT CURB. SEE NOTE 6 FOR TIE BAR SPACING.
- ⑰ ALIGN FACE OF POST BLOCK WITH FLOW LINE.
- ⑱ MAINTAIN FLOW LINE AT EDGE OF PAVEMENT/FACE OF BEAM GUARD AS APPLICABLE.
- ⑲ MANUFACTURER SUPPLIED BEND.
- ⑳ MANUFACTURER SUPPLIED EXTERNAL MECHANICAL COUPLING OR A MANUFACTURER RECOMMENDED COUPLING WITH A MASTIC IMPREGNATED GEOTEXTILE WRAP AND MECHANICAL FASTENING BANDS.
- ㉑ MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C - C.
- ㉒ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING HMA PAVEMENTS.

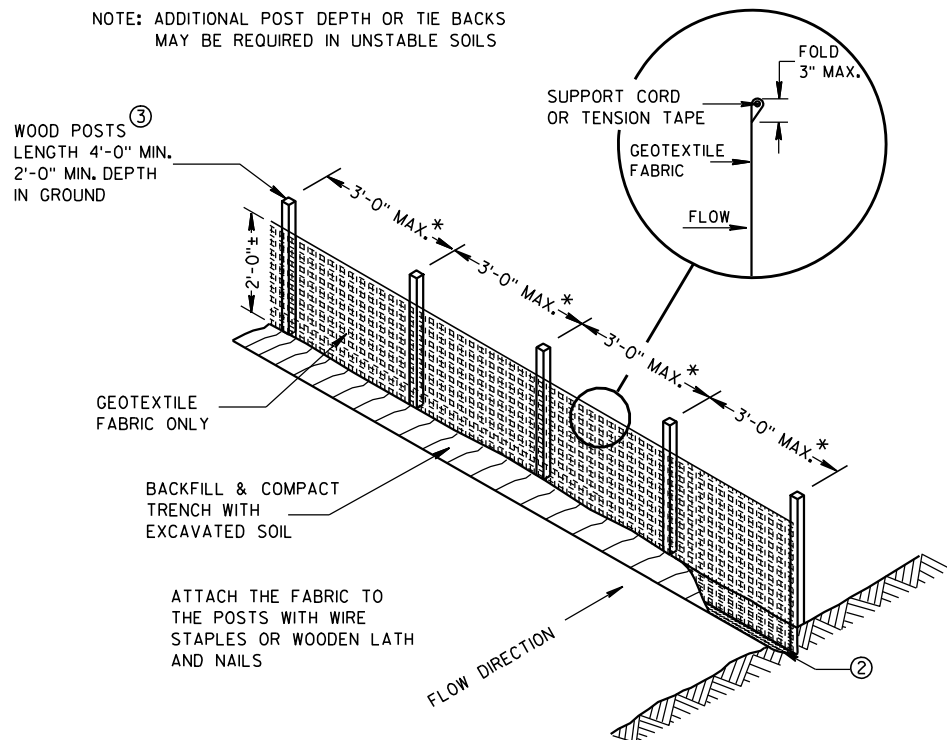
CONCRETE SURFACE DRAINS DROP INLET TYPE AT STRUCTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER 50
FHWA

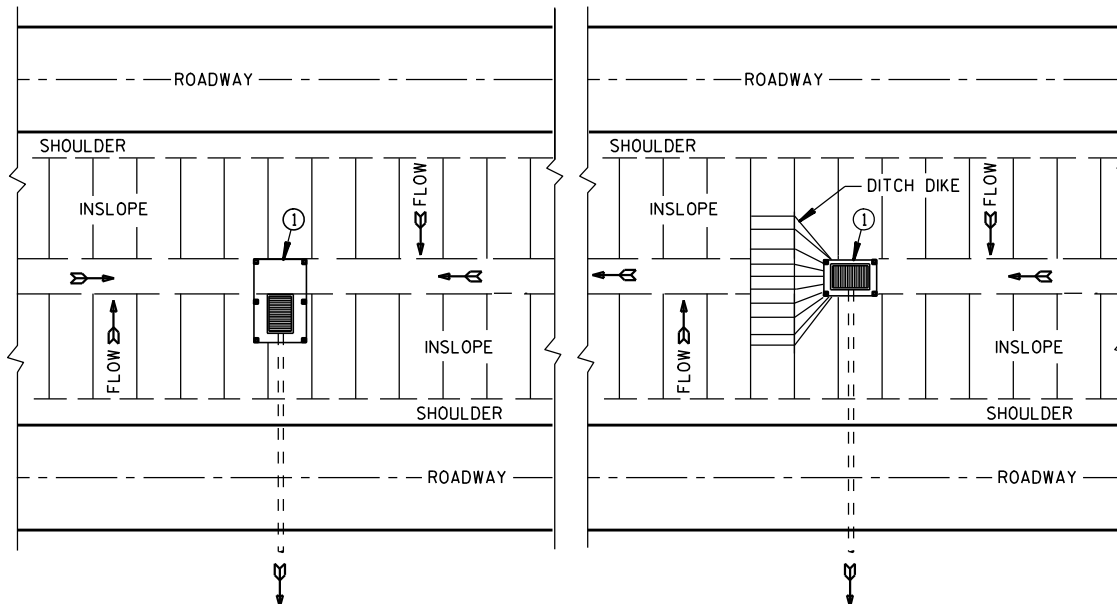


PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE

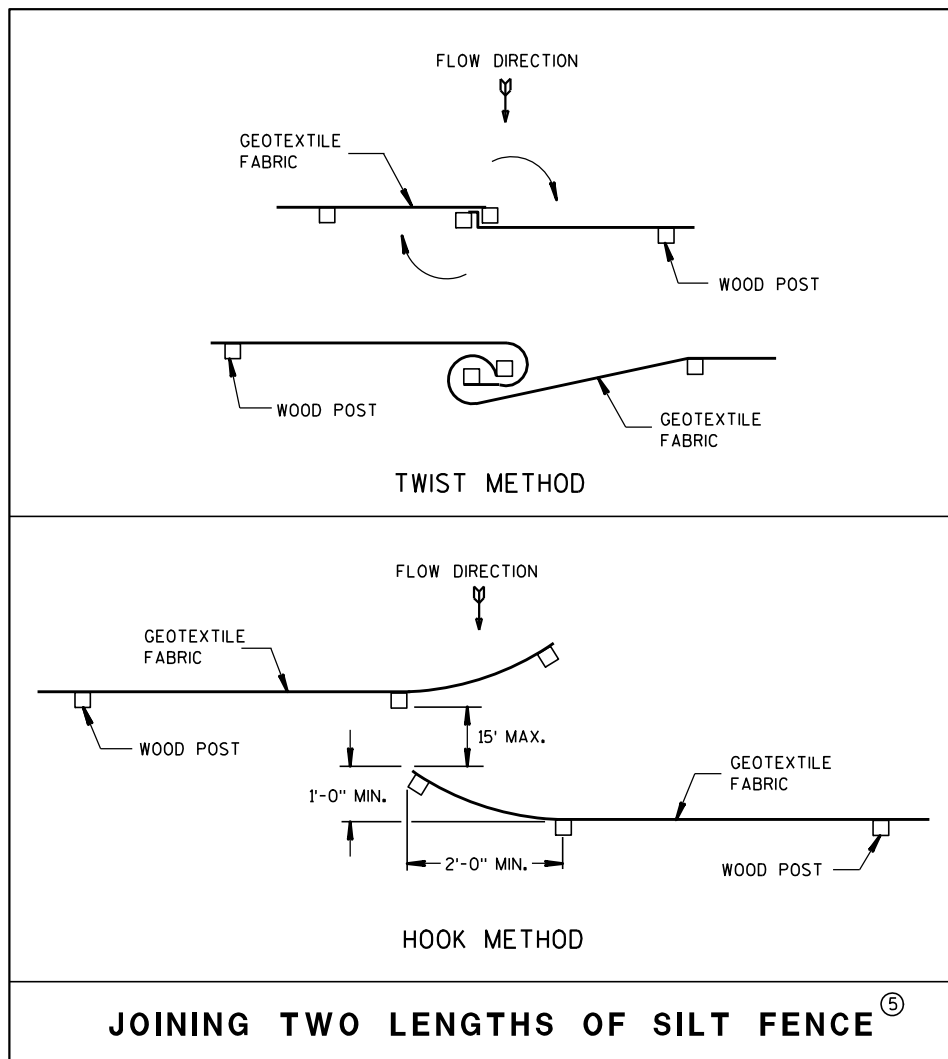


SILT FENCE

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



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

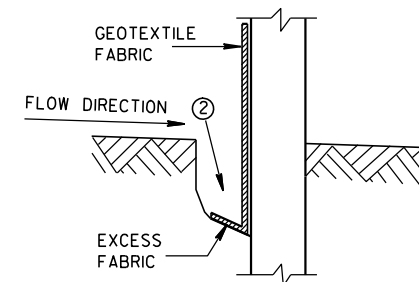


JOINING TWO LENGTHS OF SILT FENCE (5)

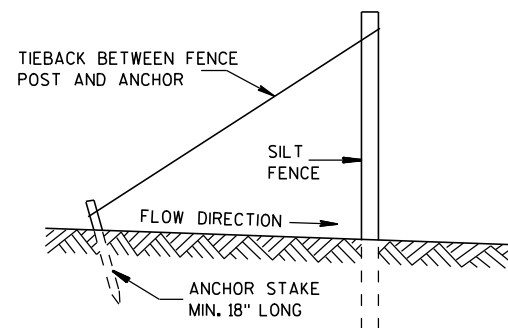
GENERAL NOTES

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

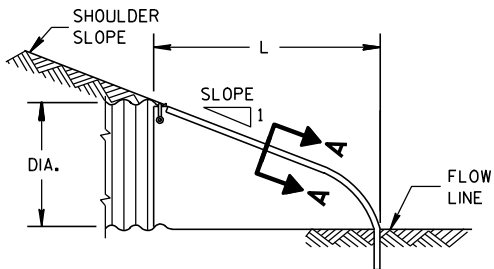
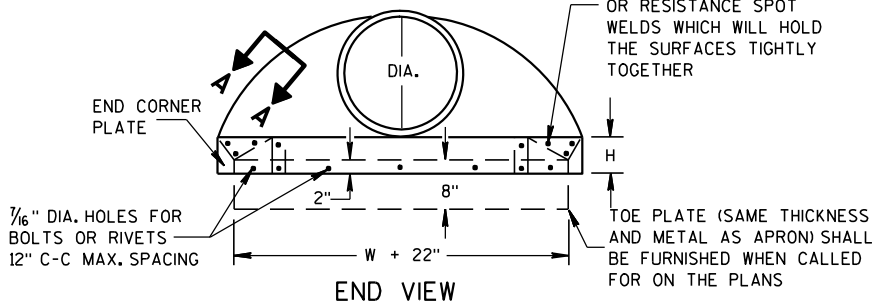
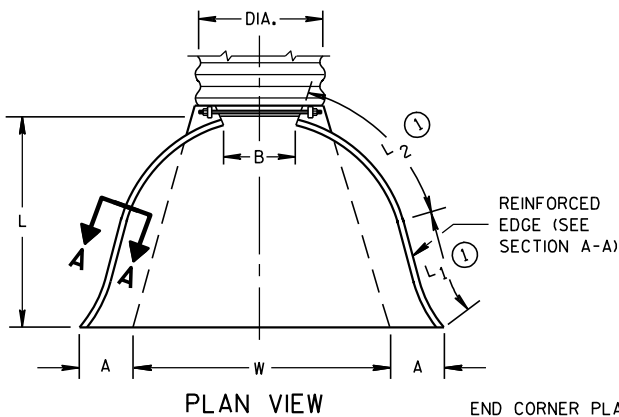


SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4-29-05 DATE	/S/ Beth Conn CHIEF ROADWAY DEVELOPER 51 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")	L ₁ ①	L ₂ ①	W (±2")			
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.	
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.	
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.	
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1 Pc.	
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.	
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1 Pc.	
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2 Pc.	
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1	2 Pc.	
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1	3 Pc.	
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1	3 Pc.	
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1	3 Pc.	
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1	3 Pc.	
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1	3 Pc.	
78	.109x	.105x	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.	
84	.109x	.105x	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.	
90	.109x	.105x	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.	
96	.109x	.105x	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.	

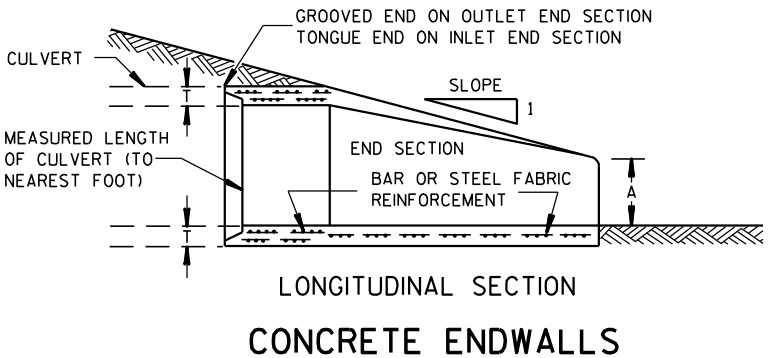
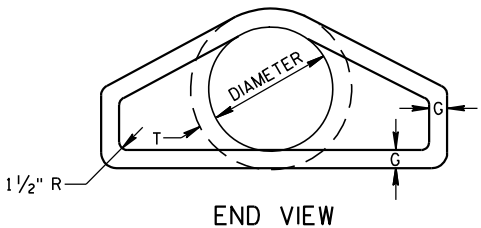
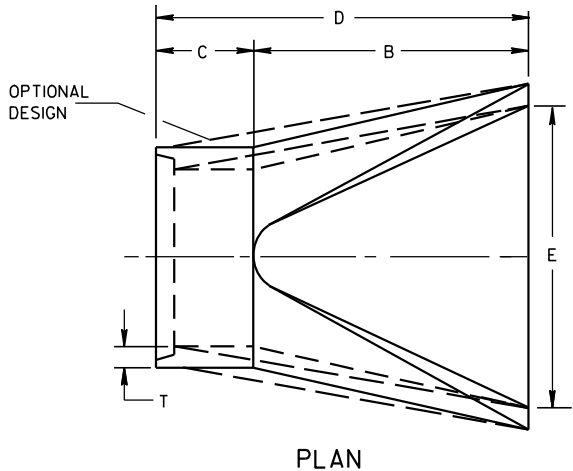
* EXCEPT CENTER PANEL
SEE GENERAL NOTES



SIDE ELEVATION
METAL ENDWALLS

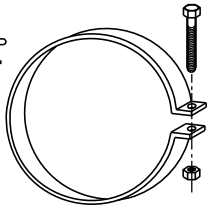
REINFORCED CONCRETE APRON ENDWALLS									
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE	
	T	A	B	C	D	E	G		
12	2	4	24	48 ⁷ / ₈	72 ⁷ / ₈	24	2	3 to 1	
15	2 ¹ / ₄	6	27	46	73	30	2 ¹ / ₄	3 to 1	
18	2 ¹ / ₂	9	27	46	73	36	2 ¹ / ₂	3 to 1	
21	2 ³ / ₄	9	36	37 ¹ / ₂	73 ¹ / ₂	42	2 ³ / ₄	3 to 1	
24	3	9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

*MINIMUM
**MAXIMUM

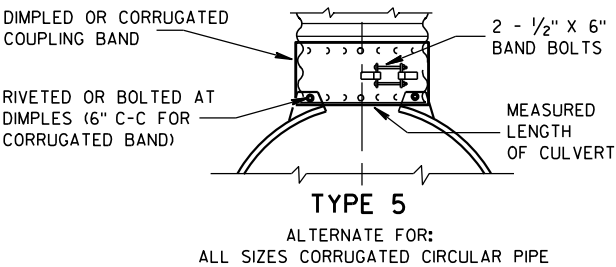
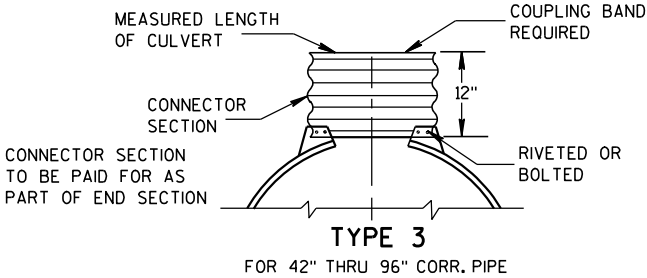
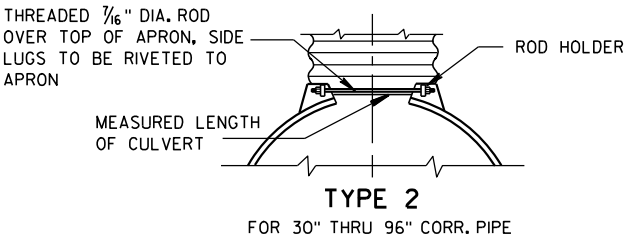
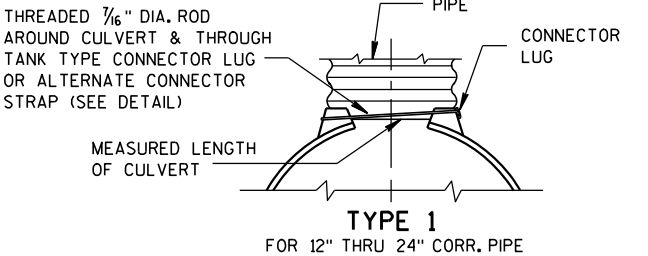


LONGITUDINAL SECTION
CONCRETE ENDWALLS

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



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



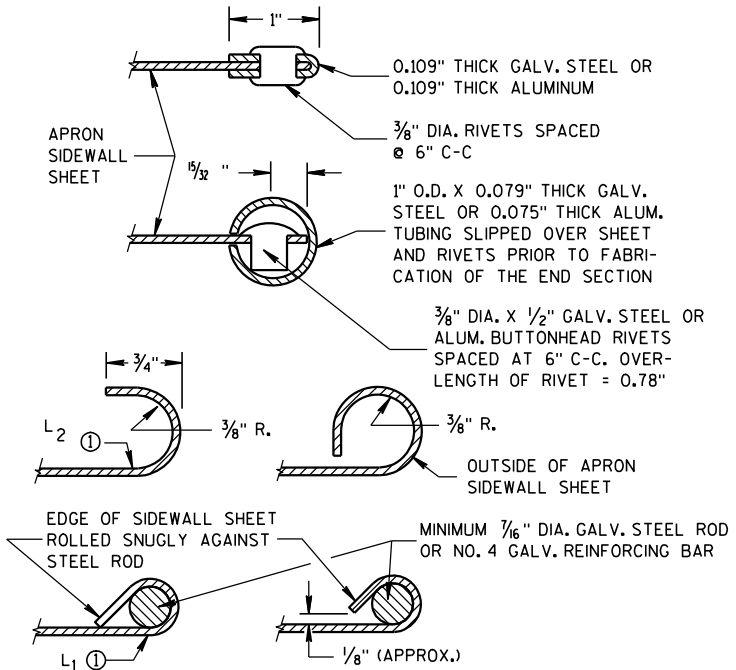
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

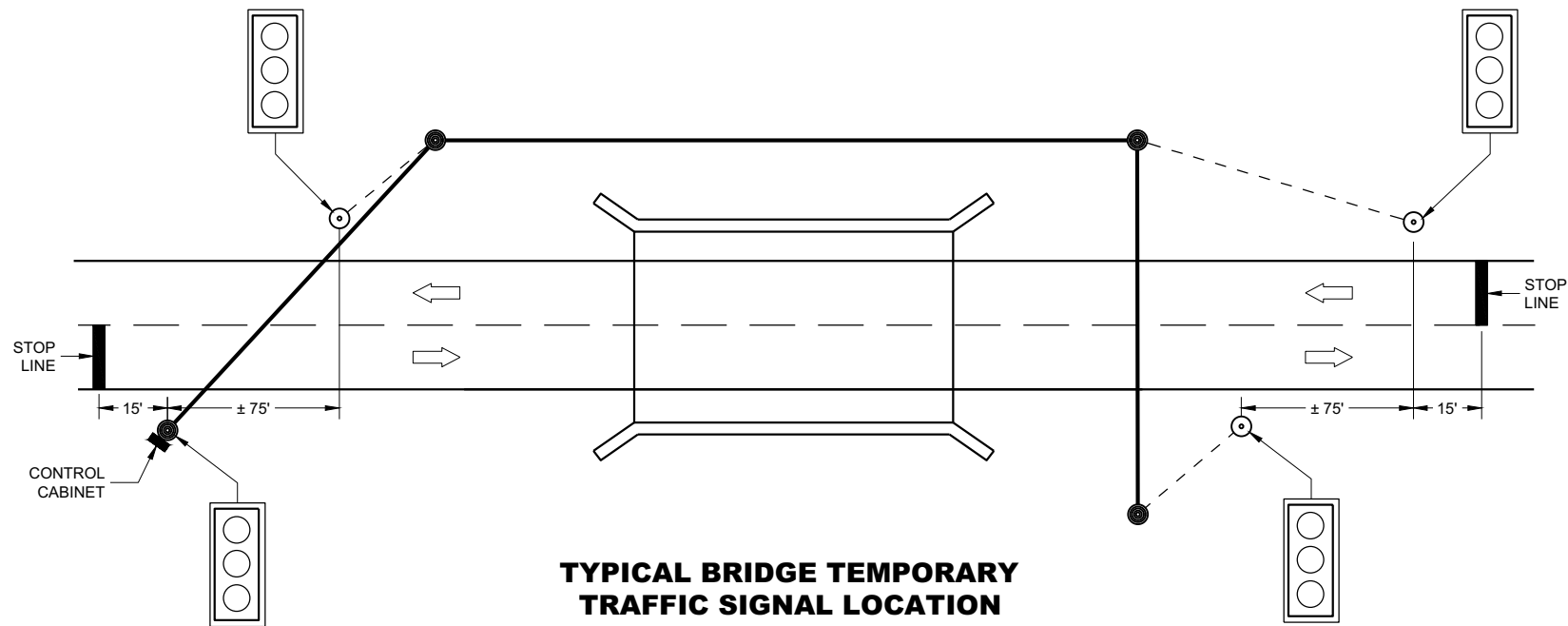
ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT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

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

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

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

APRON ENDWALLS FOR CULVERT PIPE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 11/30/94 DATE	/S/ Rory L. Rhinehart CHIEF ROADWAY DEVELOP 52 NEER
FHWA	



TYPICAL BRIDGE TEMPORARY TRAFFIC SIGNAL LOCATION

LEGEND

- WOOD POLE (NON-BREAKAWAY)
- WOOD POST (BREAKAWAY)
- SIGNAL CABLE
- SIGNAL CABLE W/MESSENGER
- DIRECTION OF TRAFFIC
- LED TRAFFIC SIGNAL WITH BACKPLATE

GENERAL NOTES

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

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

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

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

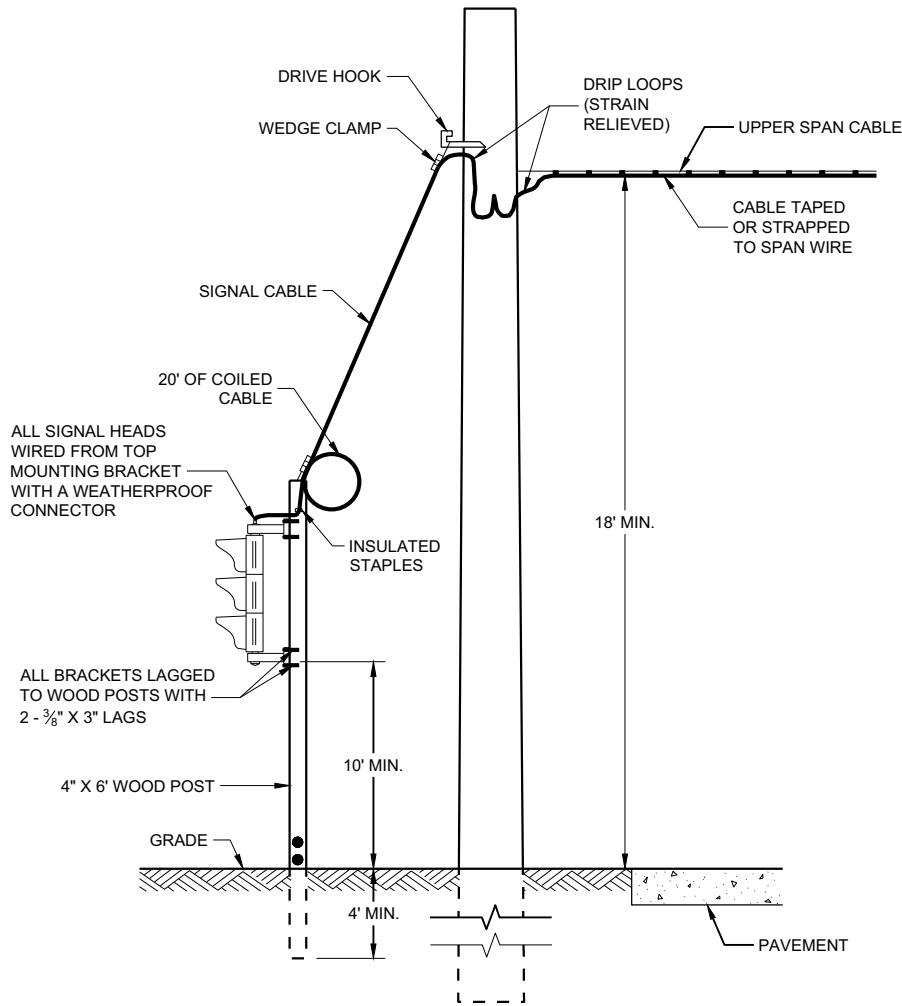
WOOD POSTS (BREAKAWAY) SHALL BE NO CLOSER THAN 2 FEET OUTSIDE OF SHOULDER.

VERTICAL CLEARANCE ETC. PER NEC.

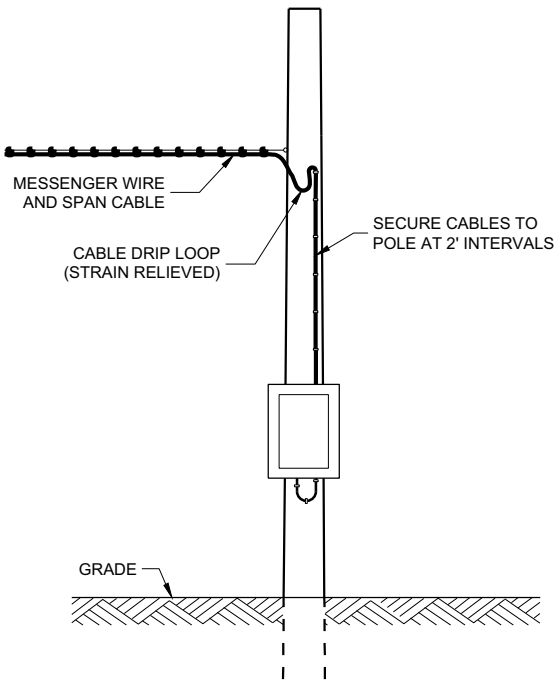
TRAFFIC SIGNAL FACES SHALL BE TYPICALLY PLACED 12 FEET FROM EDGE OF PAVEMENT.

EACH TRAFFIC SIGNAL SHALL HAVE A BACKPLATE.

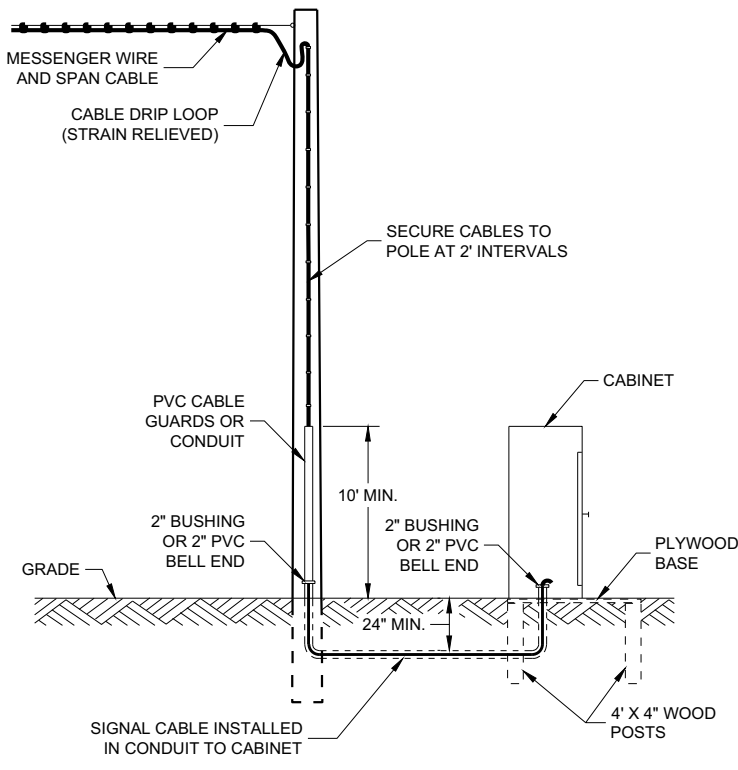
SIGNING, PAVEMENT MARKING AND LANE CONTROL REQUIREMENTS SHALL CONFORM TO STANDARD DETAIL DRAWING 15D33.



TYPICAL DROP TO TRAFFIC SIGNAL FACE



POLE MOUNT CABINET INSTALLATION



GROUND MOUNT CABINET INSTALLATION

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

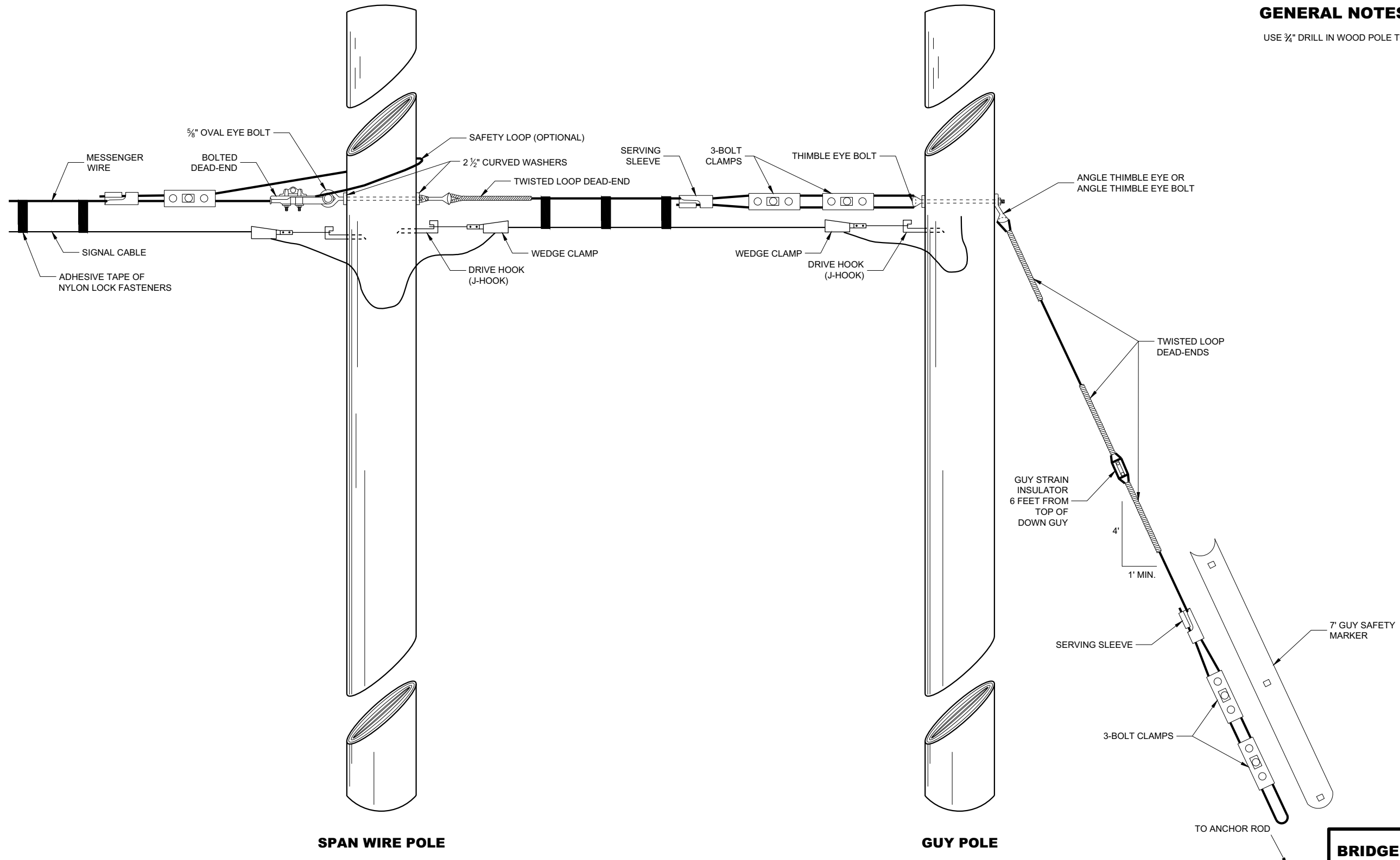
OFFSET DISTANCES FOR TEMPORARY NON-BREAKAWAY POLES	
SPEED LIMIT	OFFSET DISTANCE*
GREATER THAN 45 MPH	18 FT
45 MPH OR LESS	12 FT
45 MPH OR LESS W/CURBS	2 FT

* NOTE: OFFSET MEASURED FROM OUTER EDGE OF OUTSIDE THRU LANE.

BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Ahmet Demirbilek
DATE ROADWAY STANDARDS DEVE 53
ENGINEER
FHWA

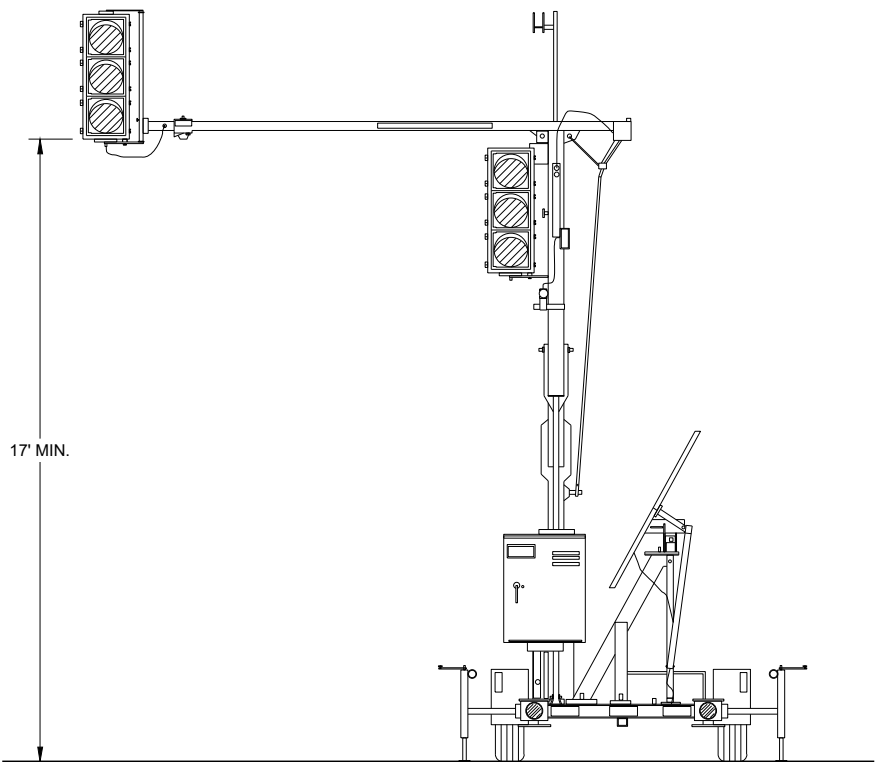


GENERAL NOTES

USE 3/4" DRILL IN WOOD POLE TO PROVIDE FOR 5/8" BOLTS.

TYPICAL DEAD-ENDINGS OR GUYING

BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2015 DATE	/S/ Ahmet Demerbilek ROADWAY STANDARDS DEVELOPMENT ENGINEER 54
FHWA	

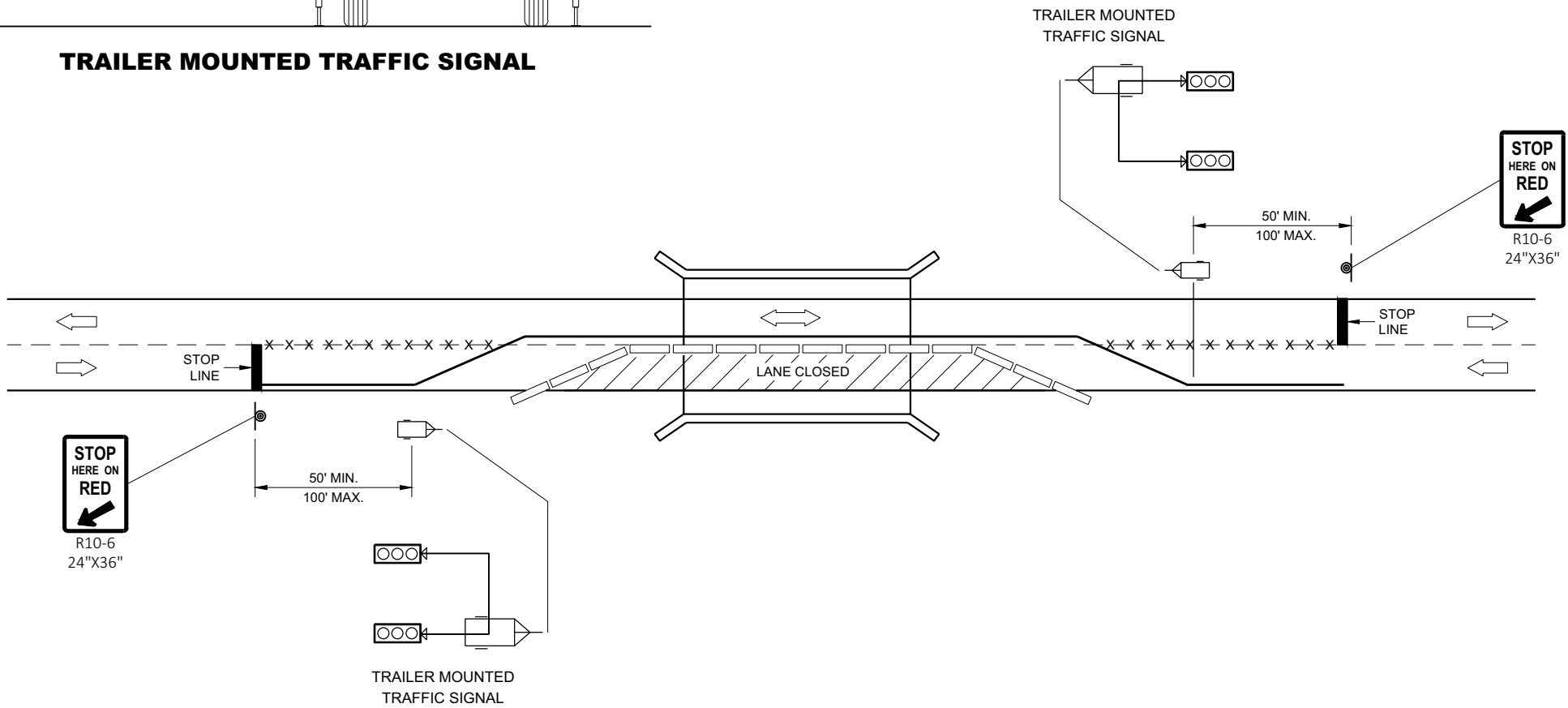


TRAILER MOUNTED TRAFFIC SIGNAL

GENERAL NOTES

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

SIGNING, PAVEMENT MARKING AND LANE CONTROL REQUIREMENTS SHALL CONFORM TO STANDARD DETAIL DRAWING 15D33.



TYPICAL TRAILER MOUNTED TRAFFIC SIGNAL LOCATION

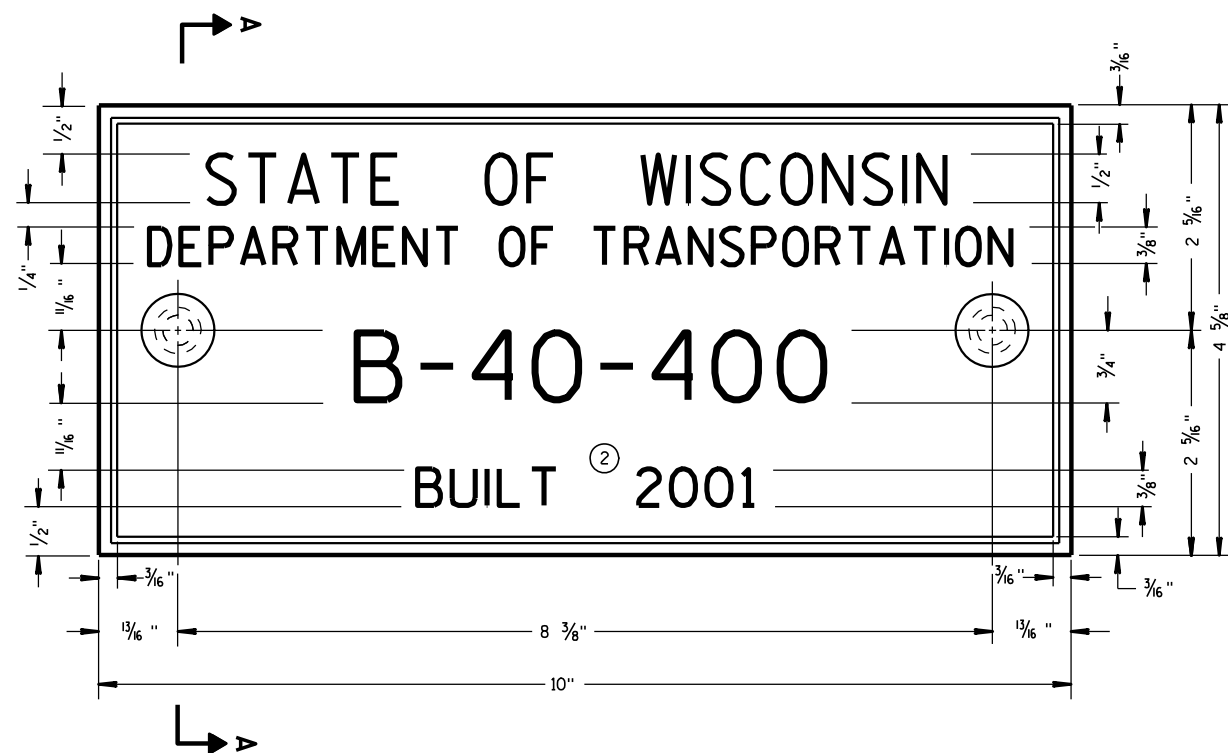
LEGEND

- POST MOUNTED SIGN
- TEMPORARY PRECAST CONCRETE BARRIER
- TRAILER MOUNTED TRAFFIC SIGNAL
- REMOVE PAVEMENT MARKINGS
- DIRECTION OF TRAFFIC

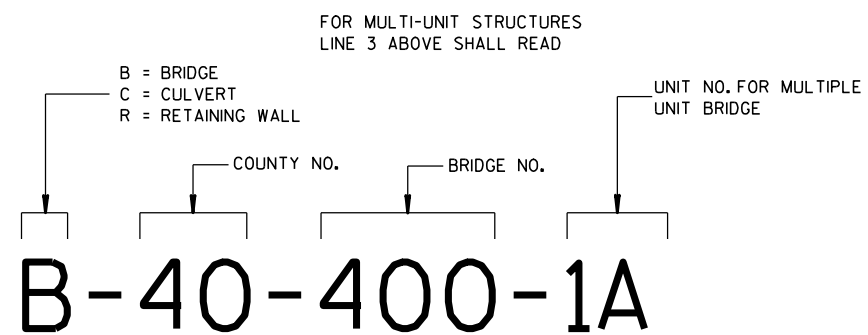
BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2015 /S/ Ahmet Demerbilek
DATE ROADWAY STANDARDS DEVE 55
ENGINEER
FHWA



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



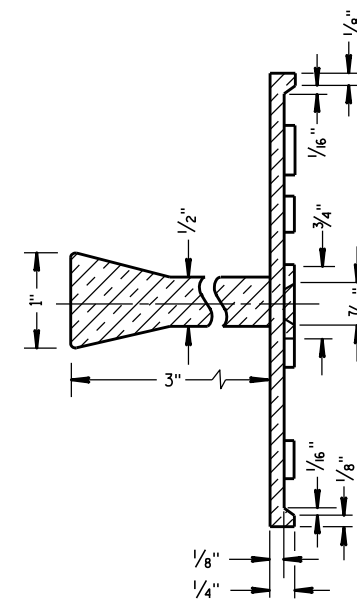
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

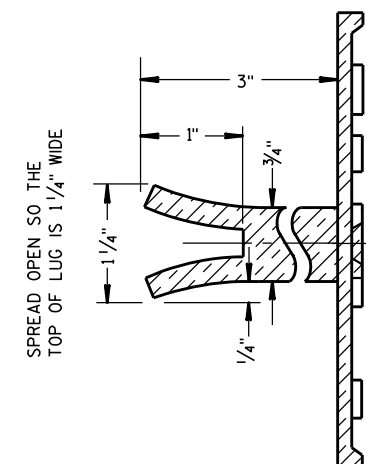
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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

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

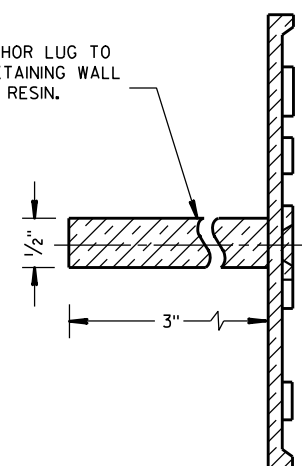


SECTION A-A



ALTERNATE LUG

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



ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

**NAME PLATE
(STRUCTURES)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

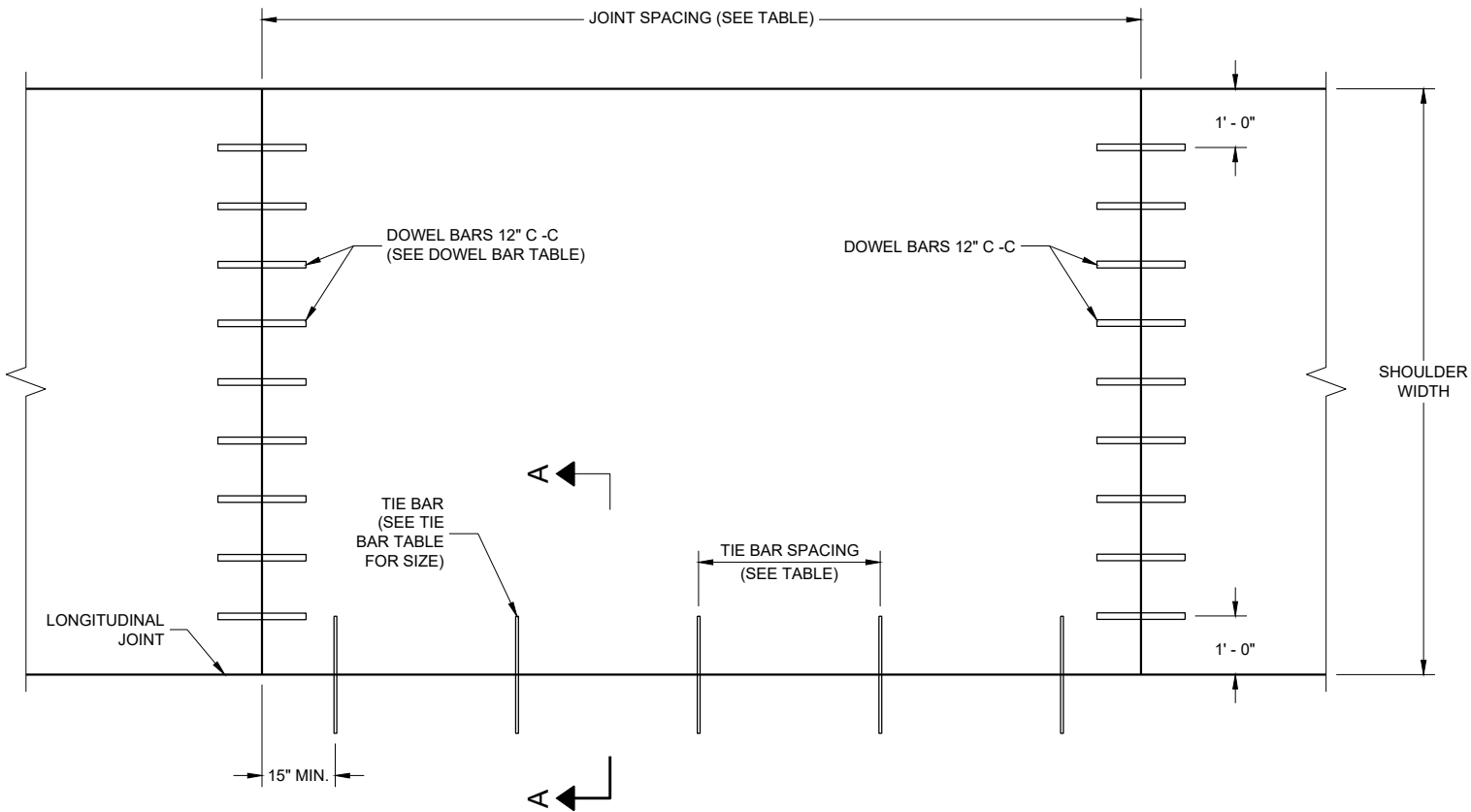
APPROVED

3/26/10
DATE

FHWA

/S/ Scot Beck
CHIEF STRUCTURAL DEVELOPER

JEER



PLAN VIEW
CONCRETE PAVEMENT SHOULDER

TIE BAR TABLE

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

* SUBSTITUTE BENT BATS 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.

PAVEMENT DEPTH, DOWEL BAR SIZE
AND JOINT SPACING TABLE

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

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

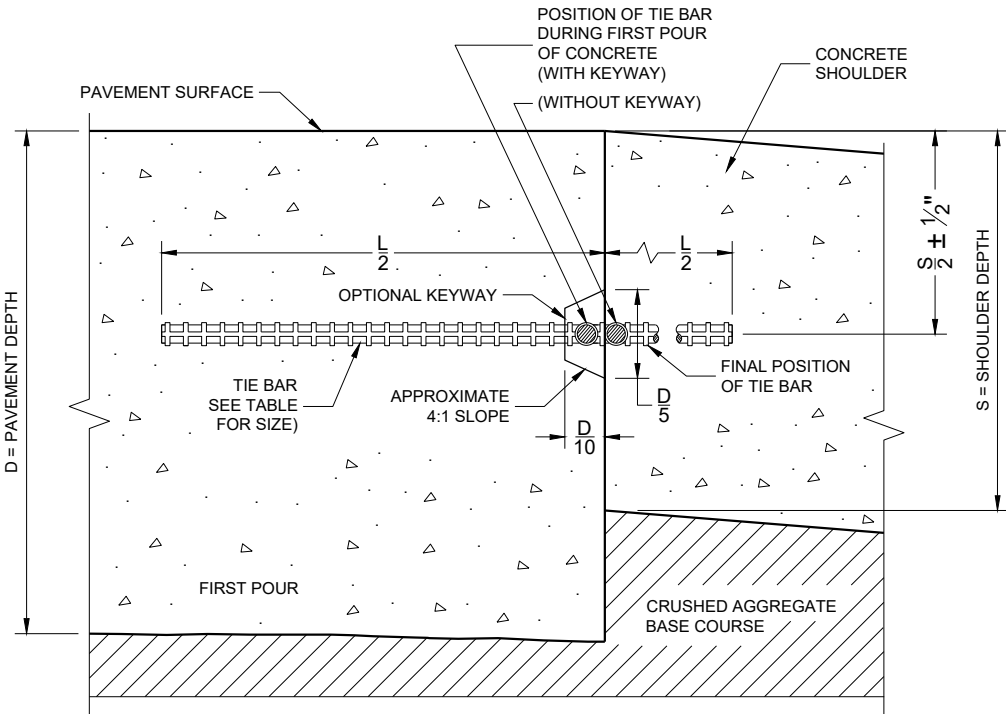
GENERAL NOTES

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

TRANSVERSE JOINT DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

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

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

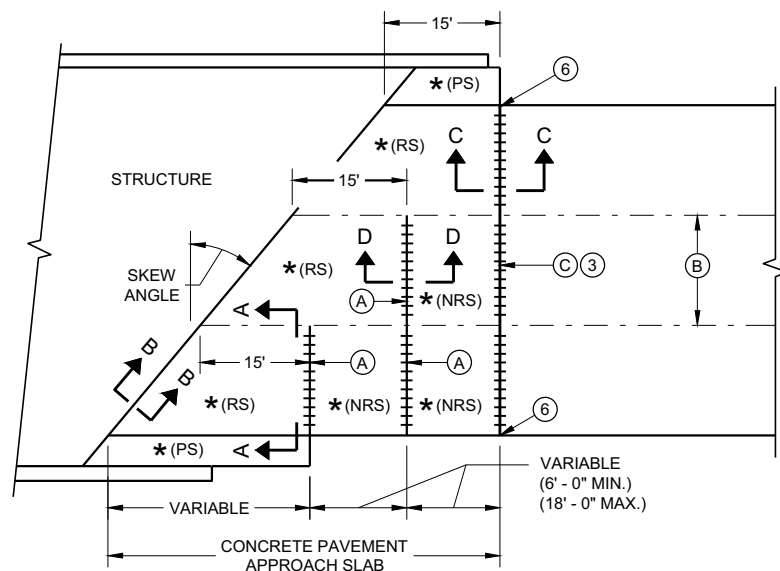


SECTION A - A
LONGITUDINAL CONSTRUCTION JOINT

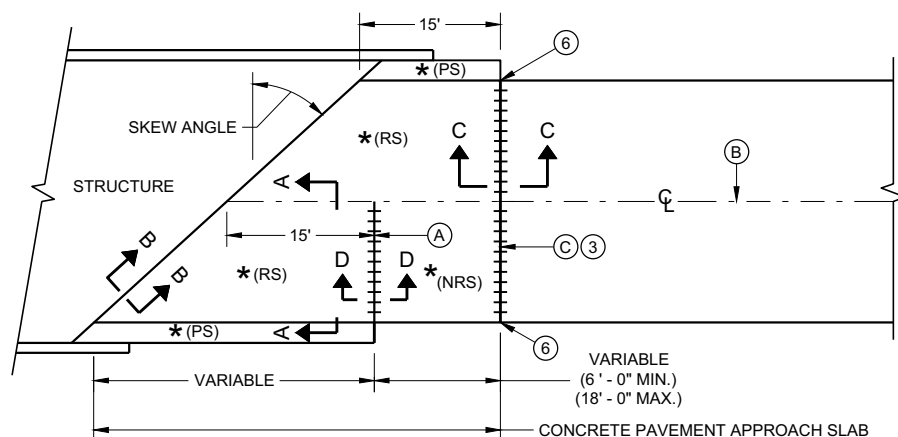
CONCRETE PAVEMENT
SHOULDERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

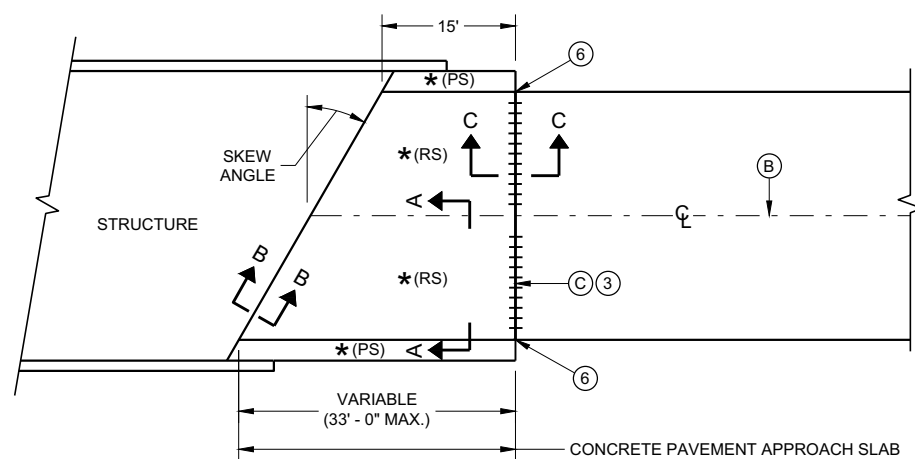
APPROVED
November 2022 /S/ Peter Kemp
DATE PAVEMENT SUPERVISOR 57
FHWA



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



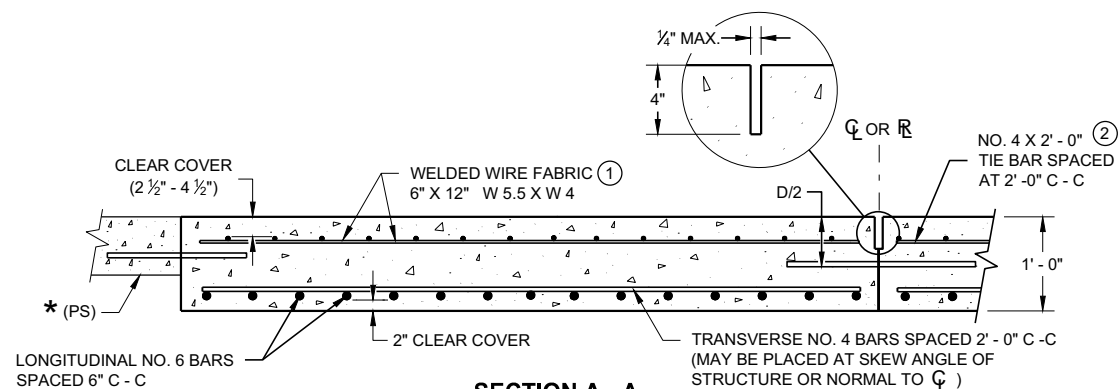
**SKews > 20°
(PAVEMENT WIDTH ≤ 30')**



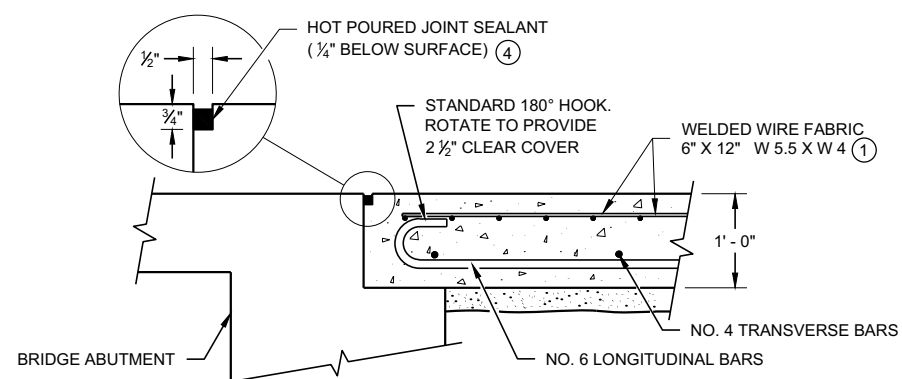
**SKews ≤ 20°
(PAVEMENT WIDTH ≤ 30')**

APPROACH SLAB AND ADJACENT PAVEMENT

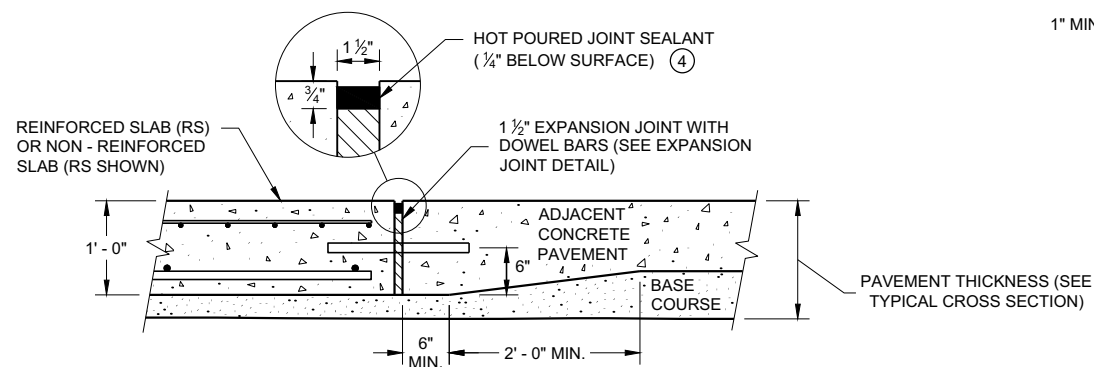
- * (RS) = REINFORCED CONCRETE SLAB
- * (PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
- * (NRS) = NON - REINFORCED CONCRETE SLAB
- *** STANDARD DOWEL BAR DIAMETER (SEE SDD 13C11 AND SDD 13C13)



**SECTION A - A
REINFORCEMENT POSITIONING DETAIL**



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



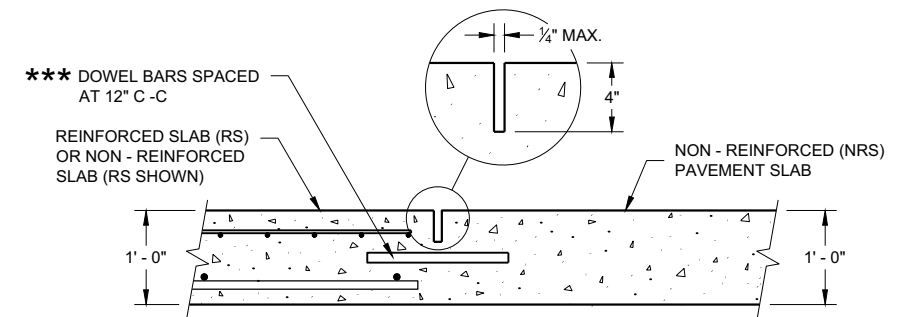
**SECTION C - C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT**

GENERAL NOTES

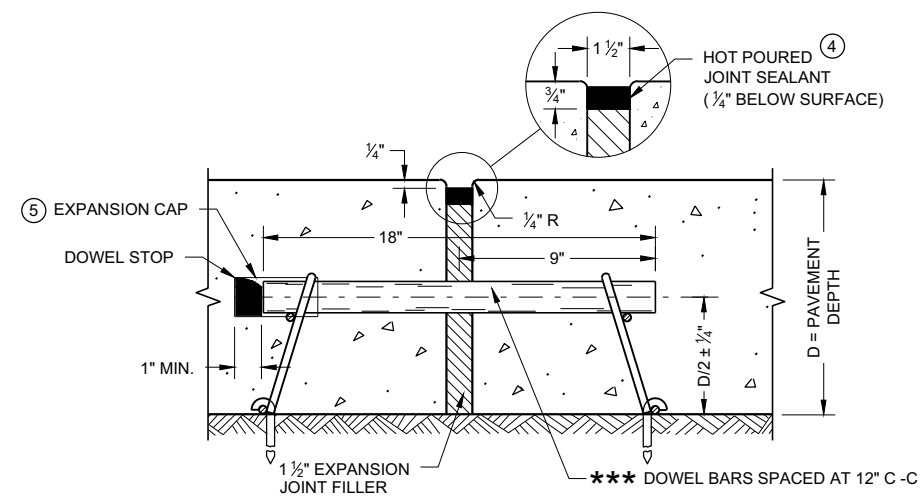
THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

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 CONFORMING TO STANDARD SPECIFICATION 415.2.6.
- 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 $\mathcal{C}$ OR $\mathcal{R}$.
- (B) STANDARD LONGITUDINAL JOINT WITH TIE BARS.
- (C) 1 1/2" EXPANSION JOINT WITH DOWEL BARS NORMAL TO $\mathcal{C}$ OR $\mathcal{R}$.



**SECTION D - D
CONTRACTION JOINT**

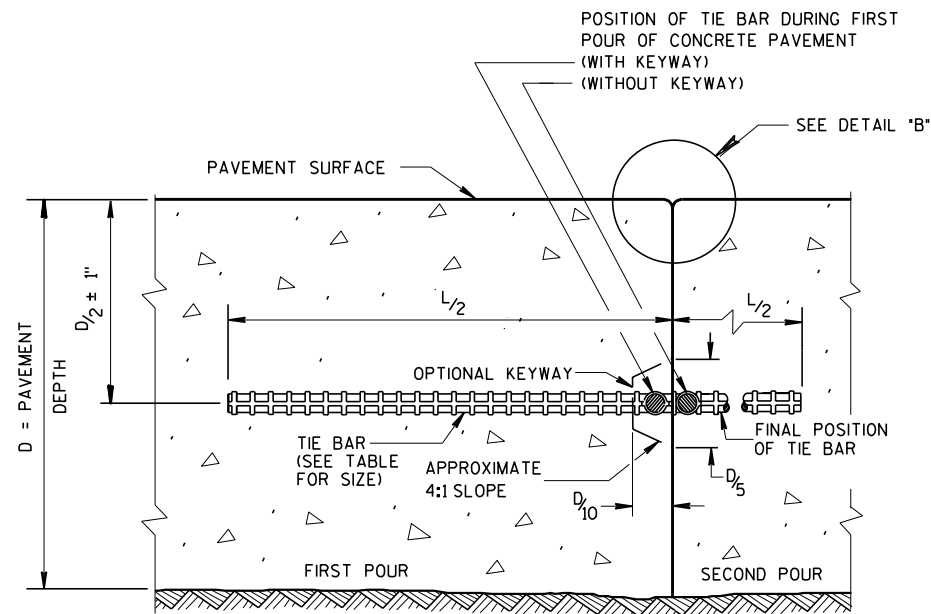


EXPANSION JOINT DETAIL

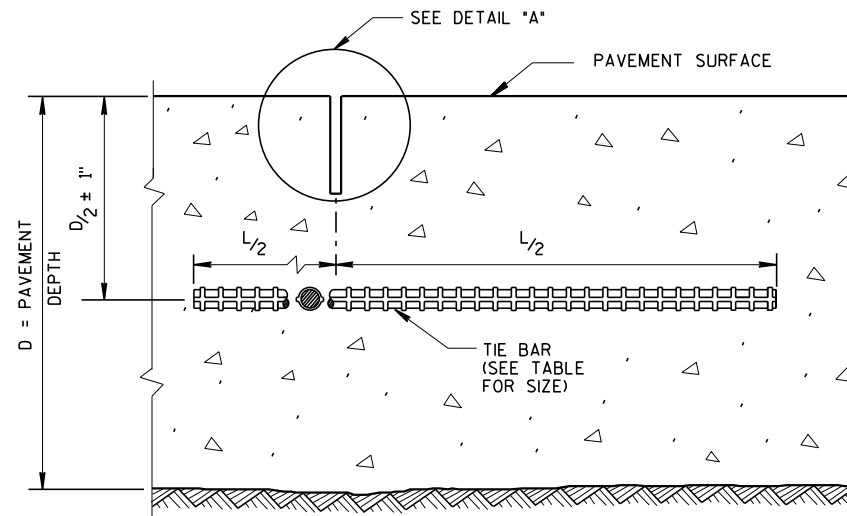
CONCRETE PAVEMENT APPROACH SLAB

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018 /S/ Peter Kemp, P.E.
DATE PAVEMENT SUPERVISOR 58
FHWA



CONSTRUCTION JOINT



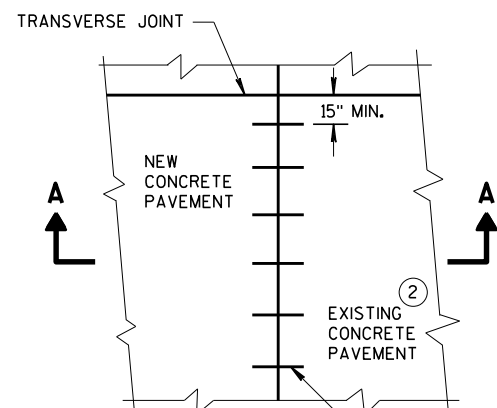
SAWED JOINT

GENERAL NOTES

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

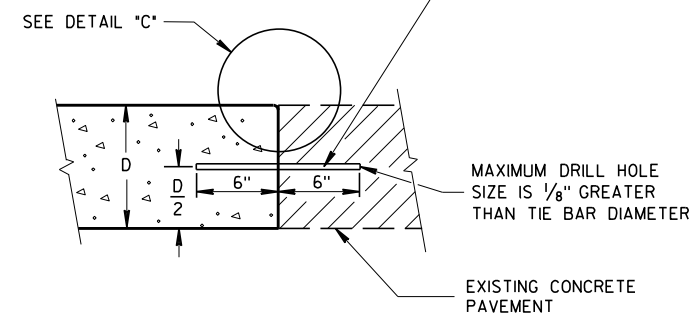
CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

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

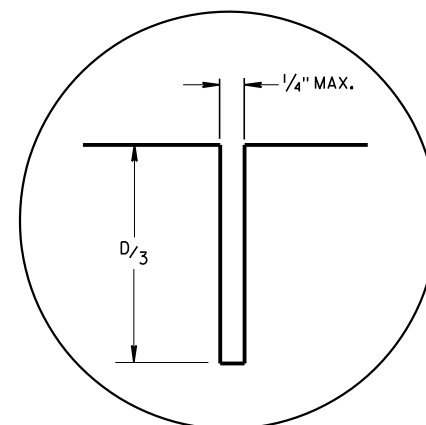


PLAN VIEW

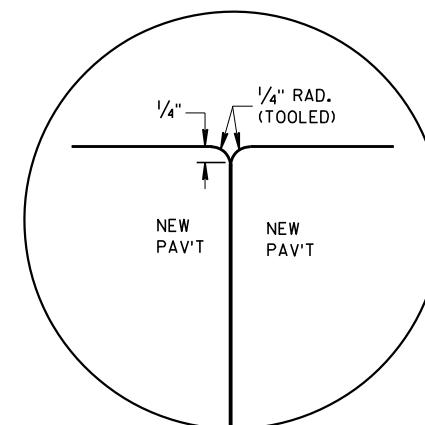
NO. 6 TIE BARS SPACED 30" C-C, INSTALLED PERPENDICULAR TO THE LONGITUDINAL JOINT. ①



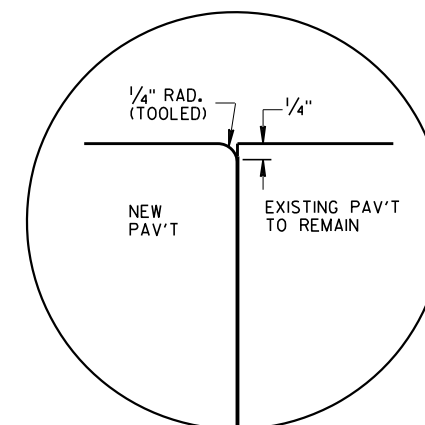
SECTION A-A
LONGITUDINAL CONSTRUCTION JOINT
TIE BARS ANCHORED
INTO EXISTING PAVEMENT



DETAIL "A"



DETAIL "B"



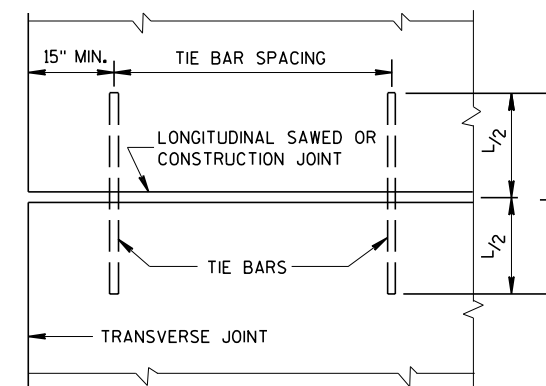
DETAIL "C"

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.



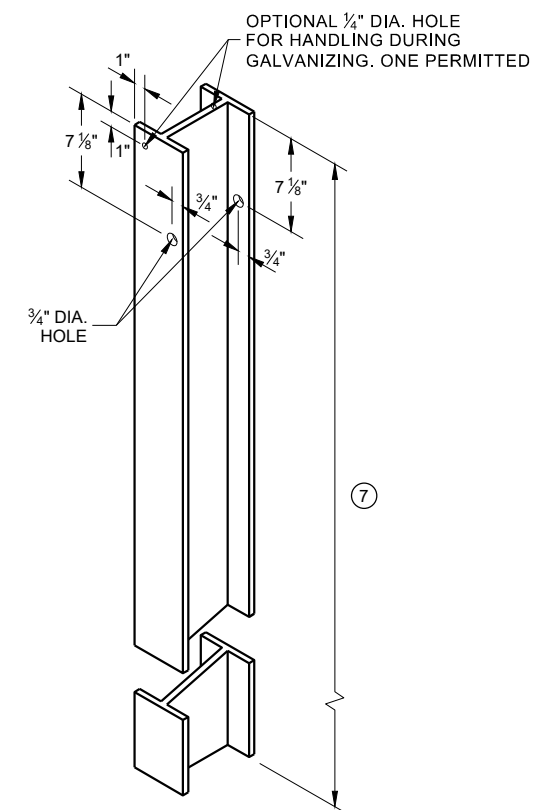
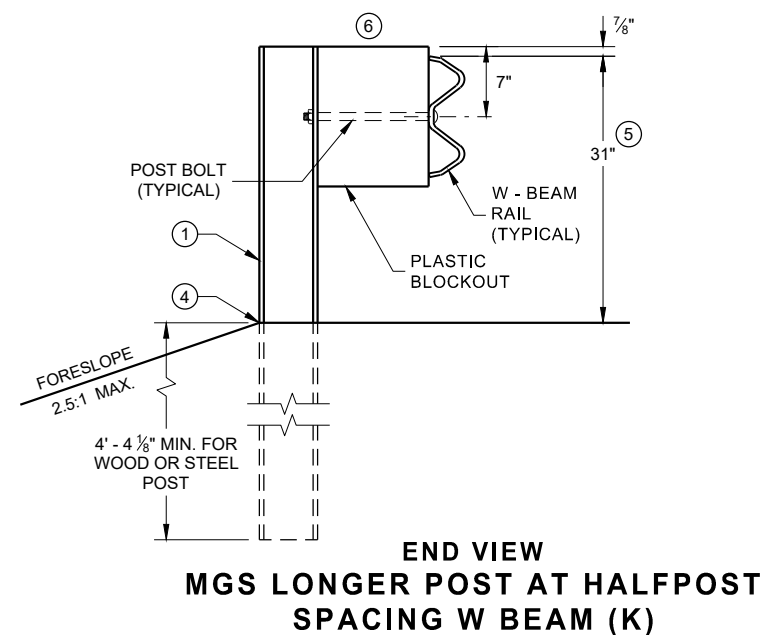
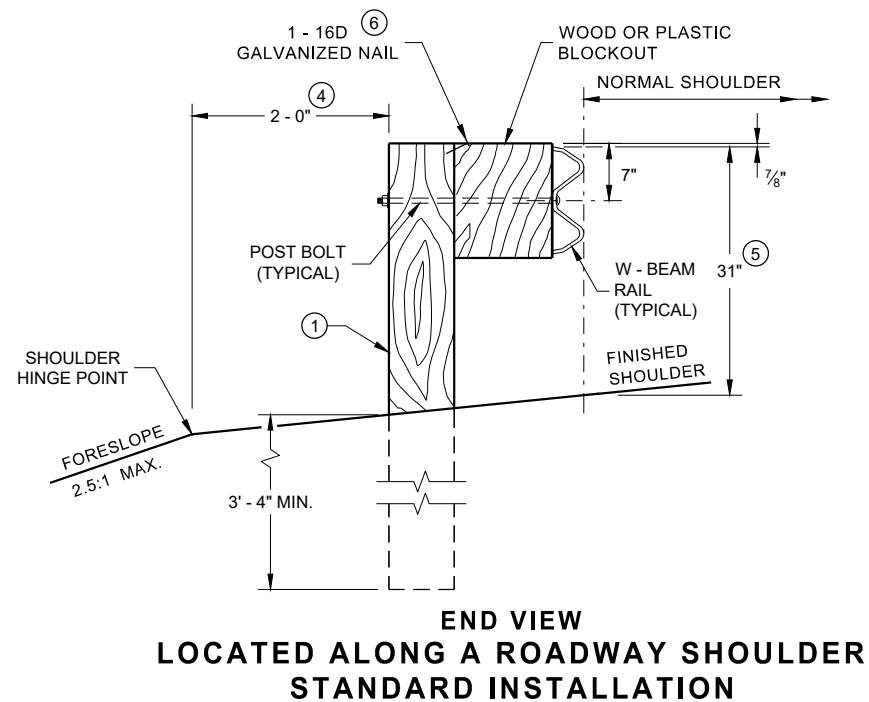
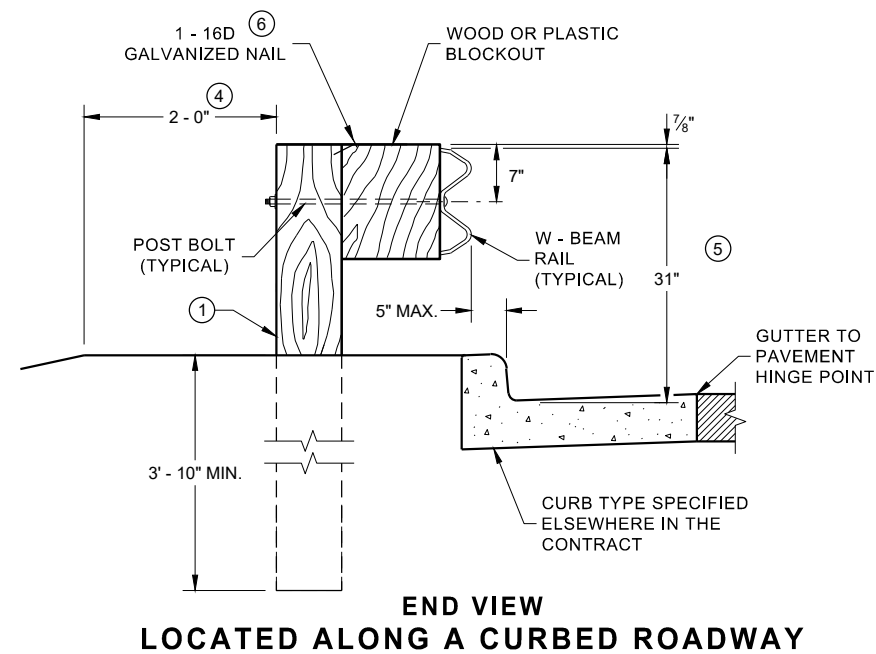
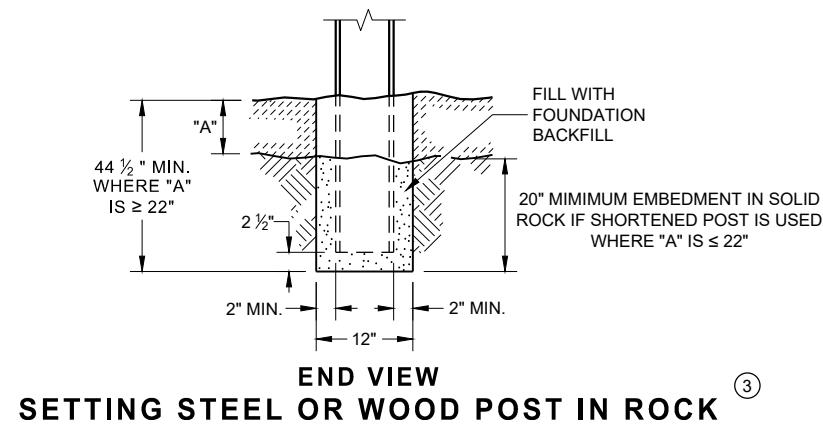
PLAN VIEW
SHOWING LOCATION OF TIE BARS

CONCRETE PAVEMENT
LONGITUDINAL JOINTS AND TIES

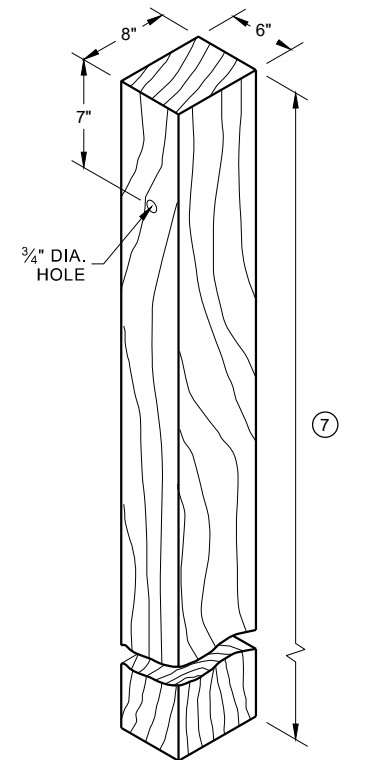
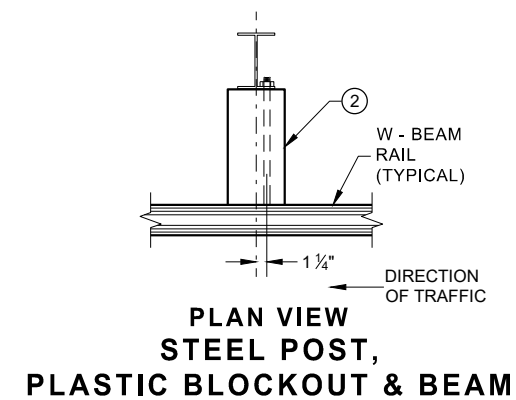
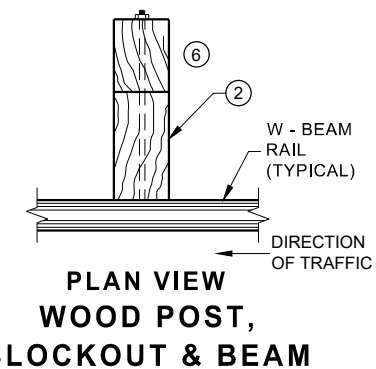
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Peter Kern
DATE PAVEMENT SUPE 60
FHWA

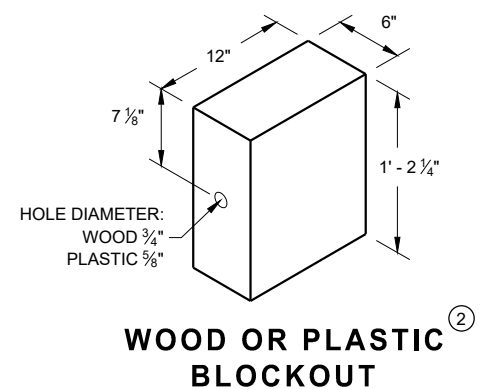
- ① WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- ② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. 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 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 $\pm 1"$. 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".

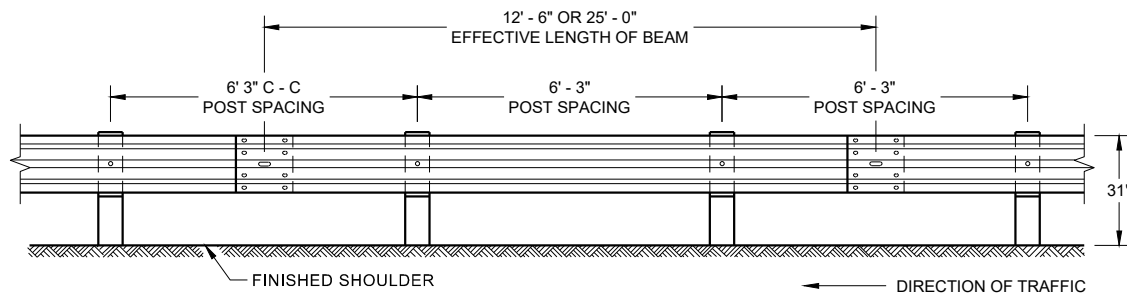


**STEEL POST & HOLE
PUNCHING DETAIL
(W 6 X 9) ①**

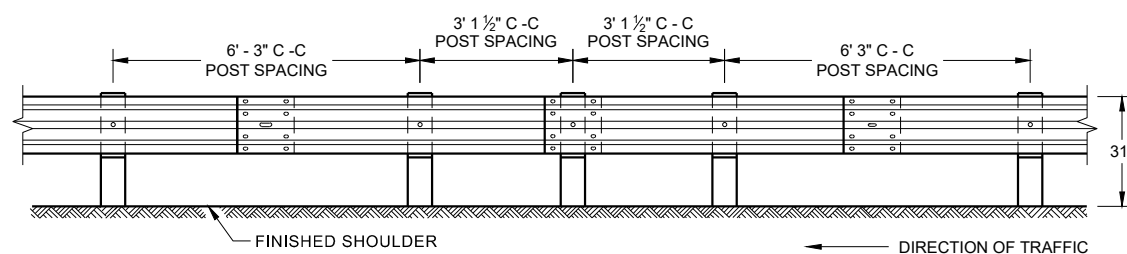


WOOD POST (6" X 8") NOMINAL ⁽¹⁾

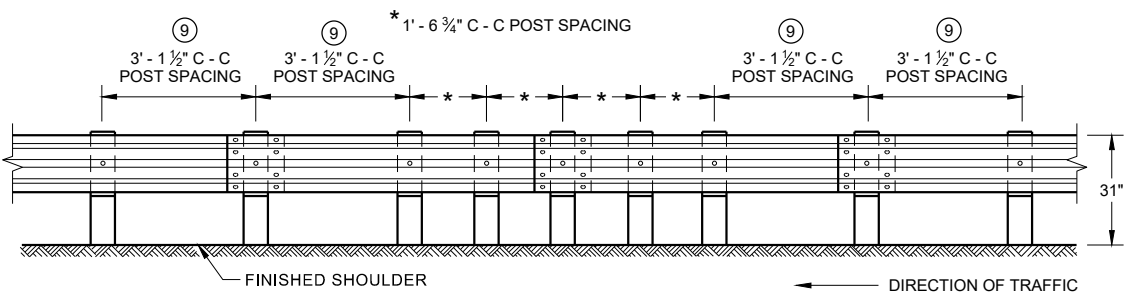




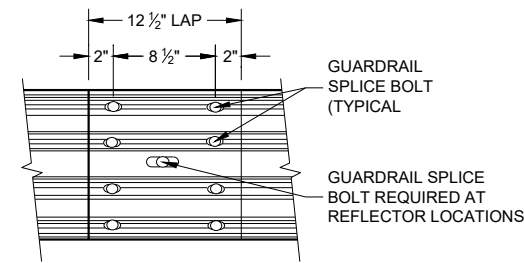
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



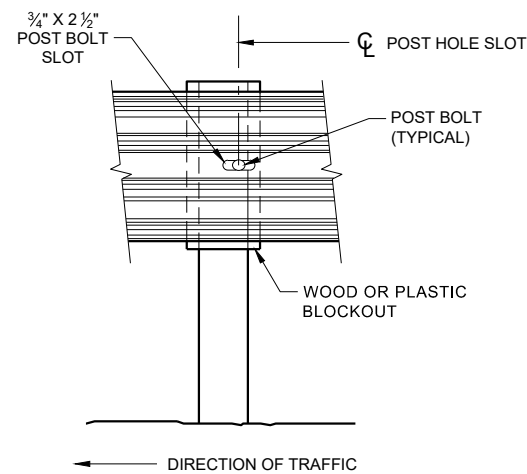
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



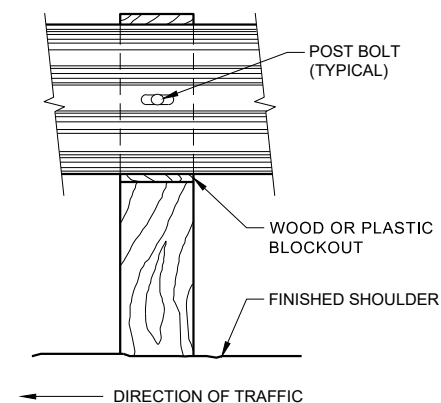
**FRONT VIEW
QUARTER POST SPACING (QS)**



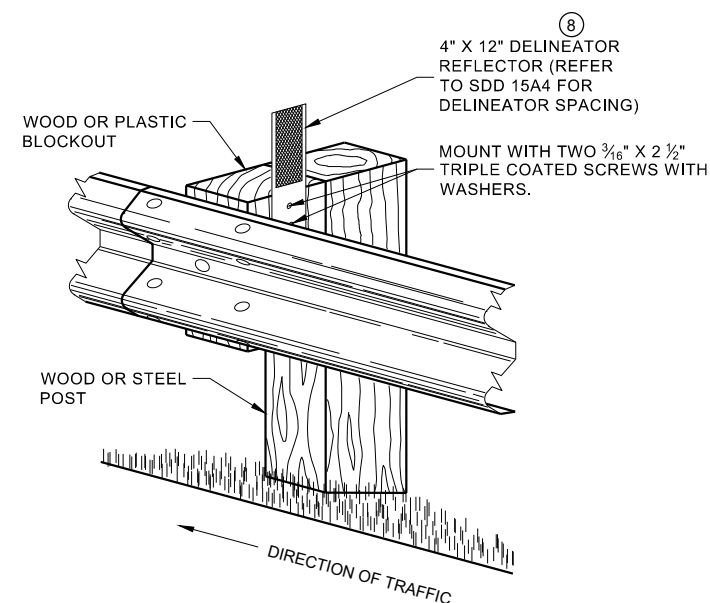
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



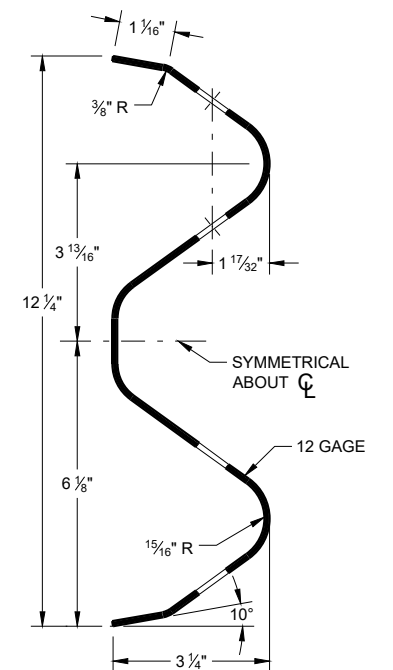
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

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

POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/8" 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.

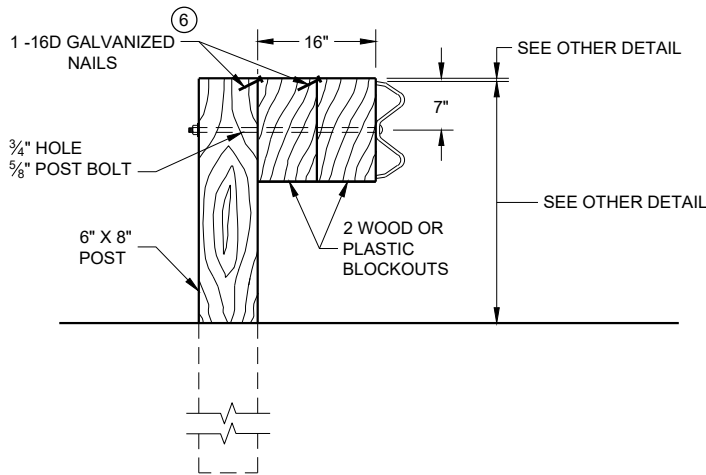
GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

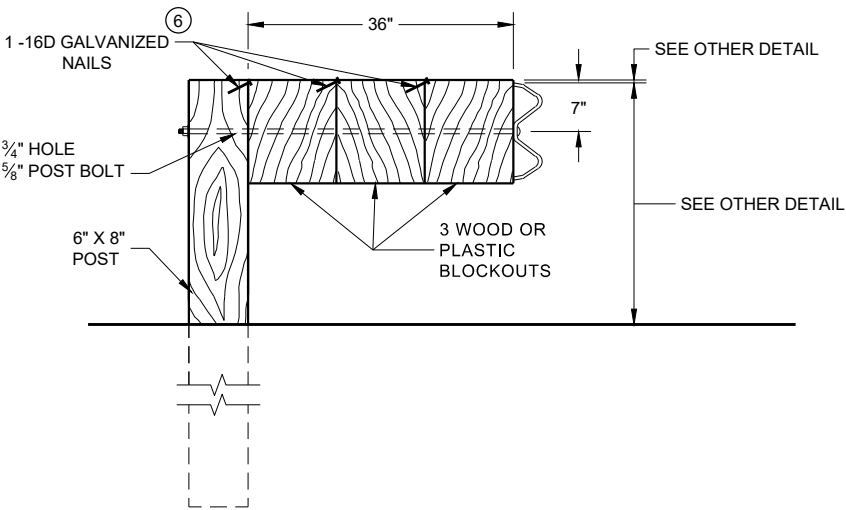
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

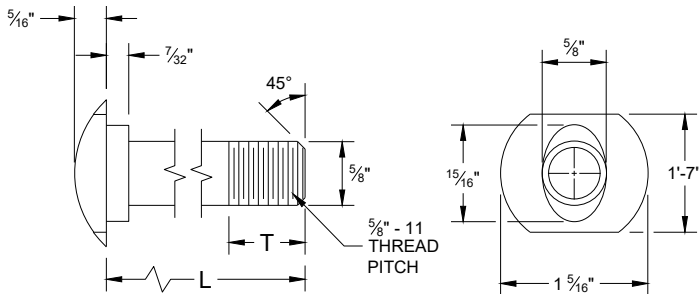
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

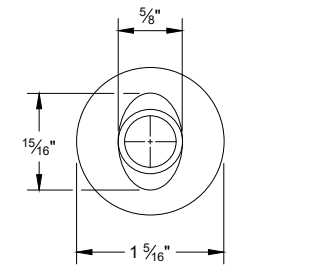
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT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

- 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.

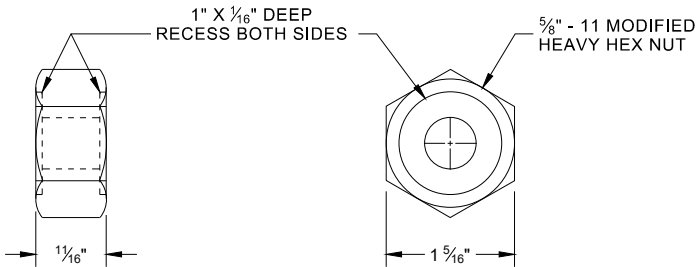


POST BOLT TABLE

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"

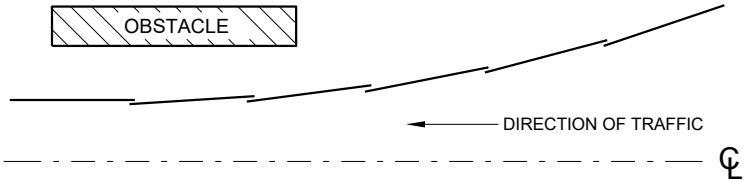


ALTERNATE BOLT HEAD

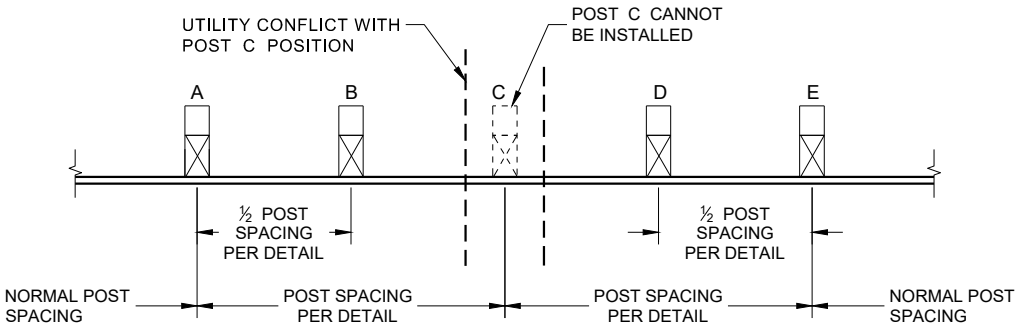


POST BOLT, SPLICE BOLT AND RECESS NUT

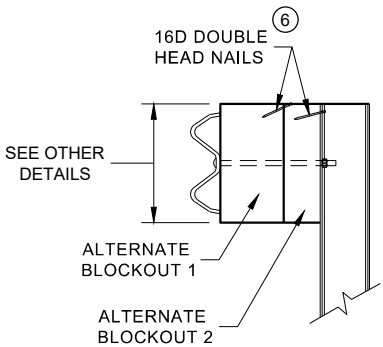
- 6 WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



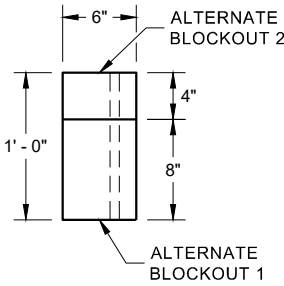
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW

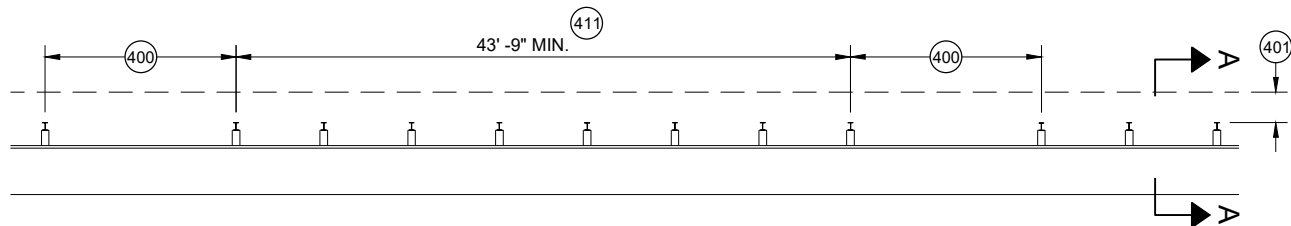


PLAN VIEW

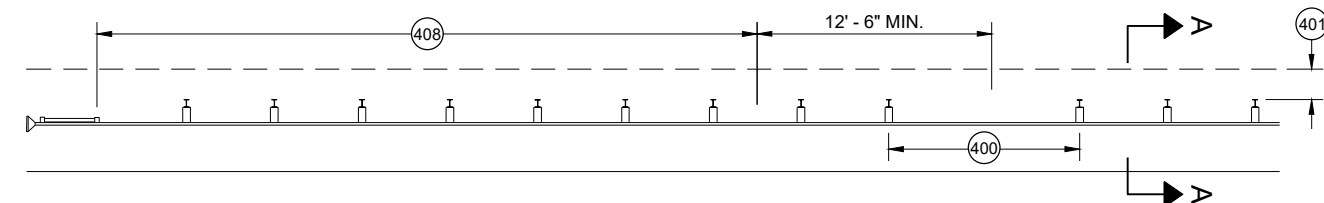
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

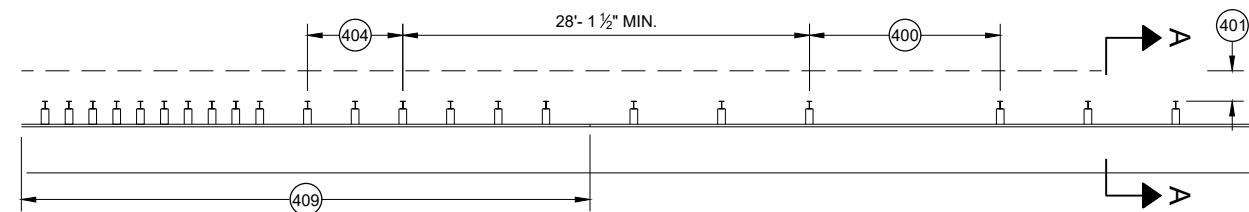
STATE OF WISCONSIN
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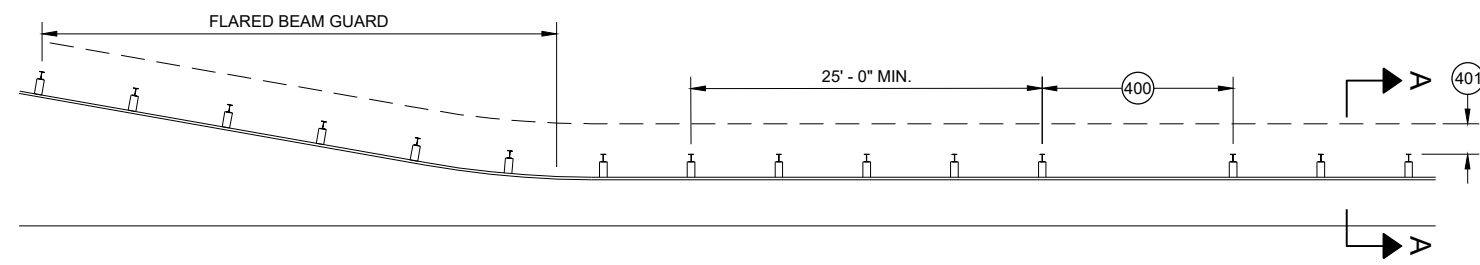
MISSING POST IN MGS GUARDRAIL



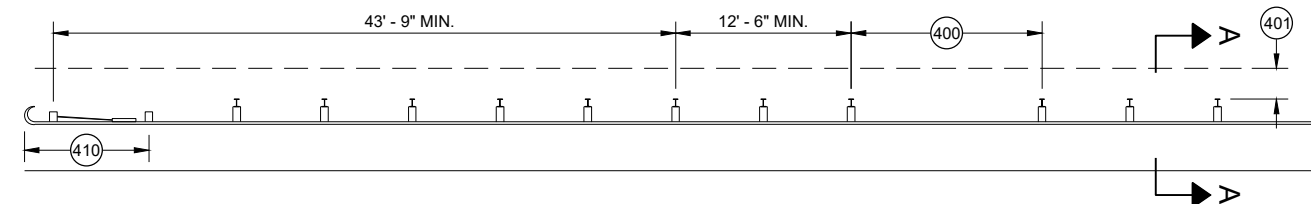
MISSING POST IN MGS GUARDRAIL NEAR EAT



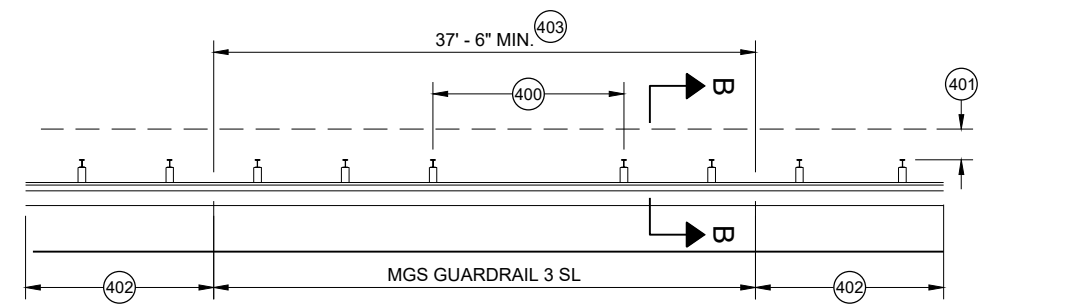
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

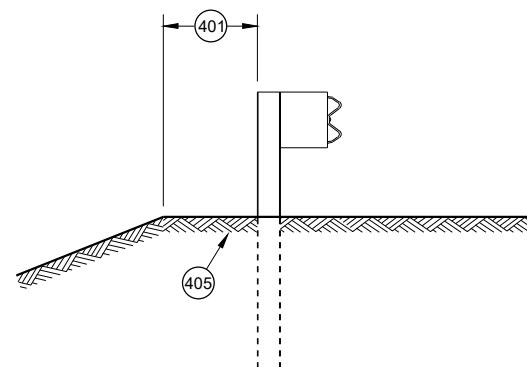


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

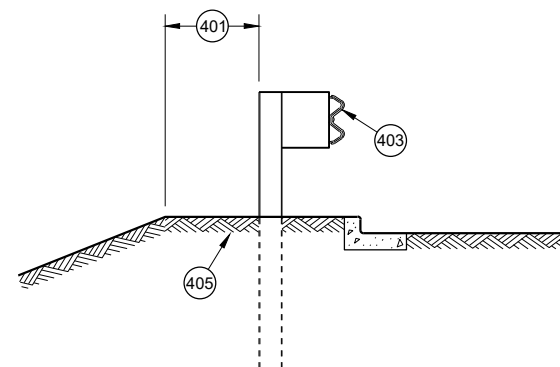


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

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



SECTION A - A



SECTION B - B

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

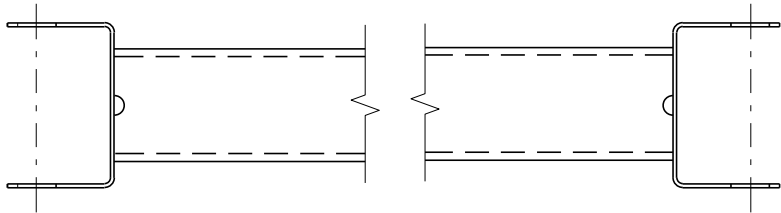
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS.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

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

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.

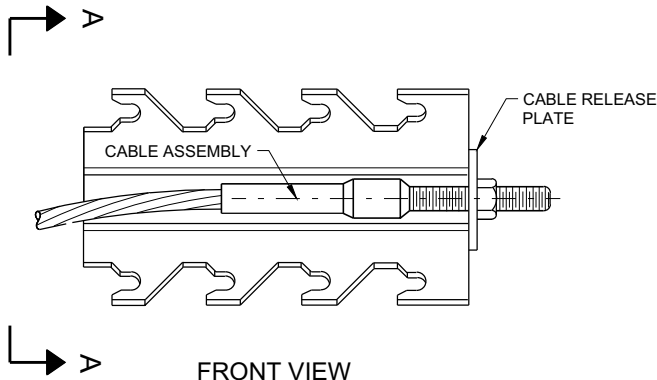


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 65

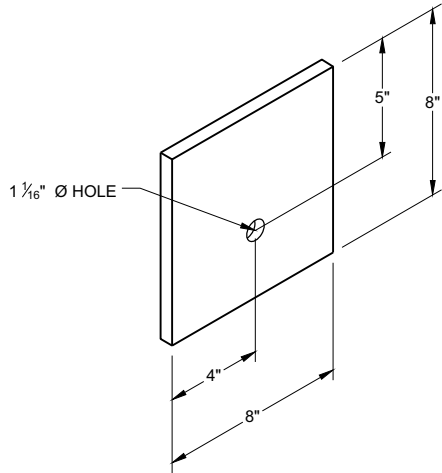
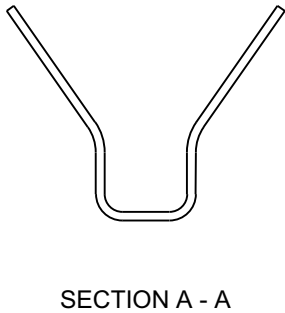


GENERIC GROUND STRUT⁹ ^E

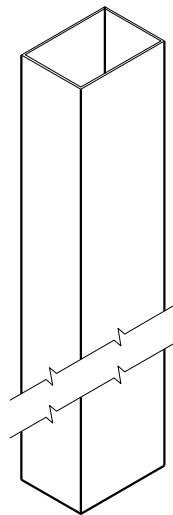
BILL OF MATERIALS	
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED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



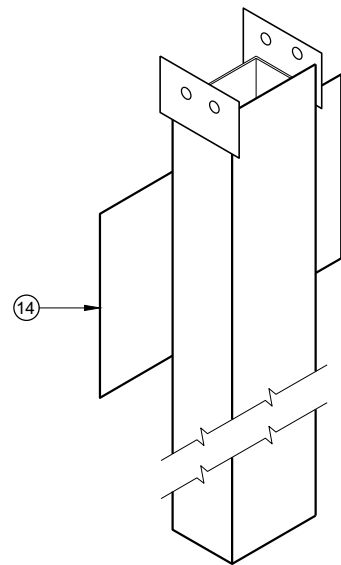
GENERIC ANCHOR CABLE BOX⁹ ^E



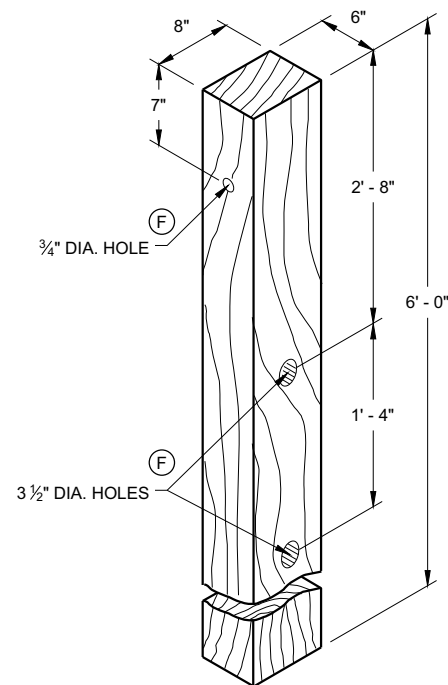
BEARING PLATE⁶ ^E



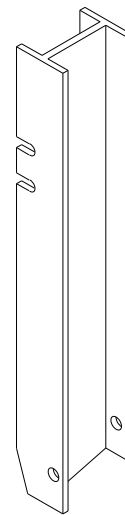
UPPER POST NO. 1 ⁽¹⁾ (E)



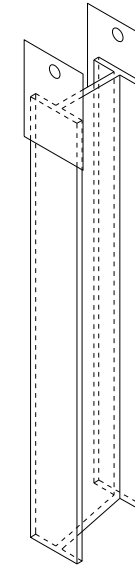
LOWER POST NO. 1 ⁽²⁾ (E)



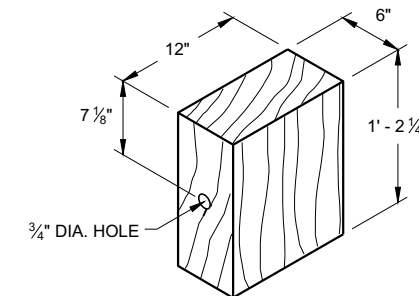
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



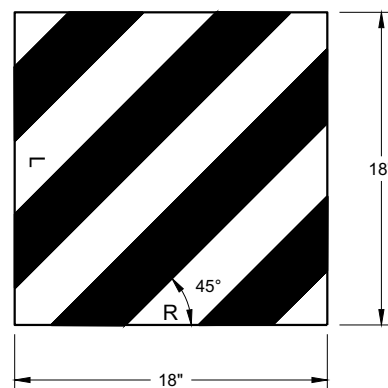
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



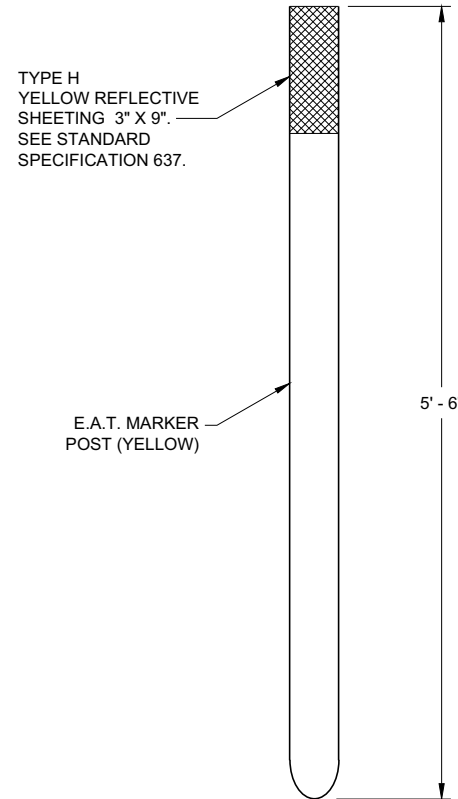
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



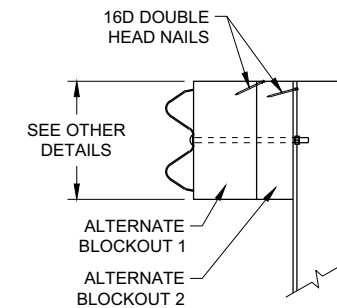
WOOD BLOCKOUT ⁽⁴⁾
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



REFLECTIVE SHEETING DETAIL ^(E)
W5 - 59

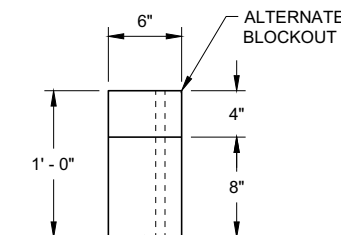


FRONT VIEW
SIDE VIEW
E.A.T. MARKER POST ⁽¹³⁾



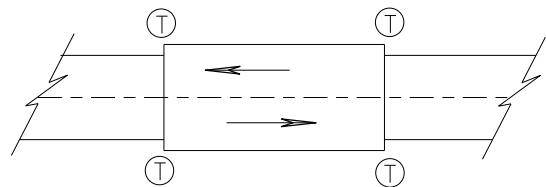
SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

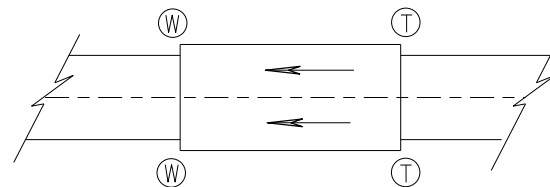


TOP VIEW

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 67
FHWA	



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

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

TRANSITION USES STEEL POSTS ONLY.

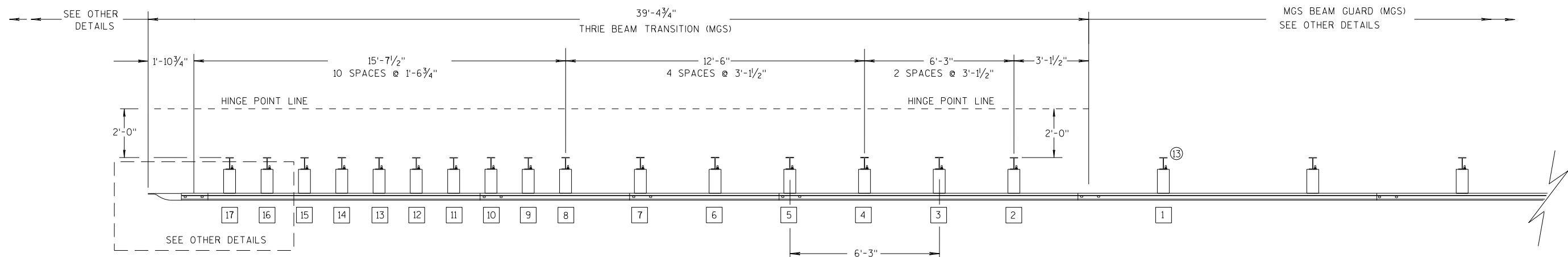
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

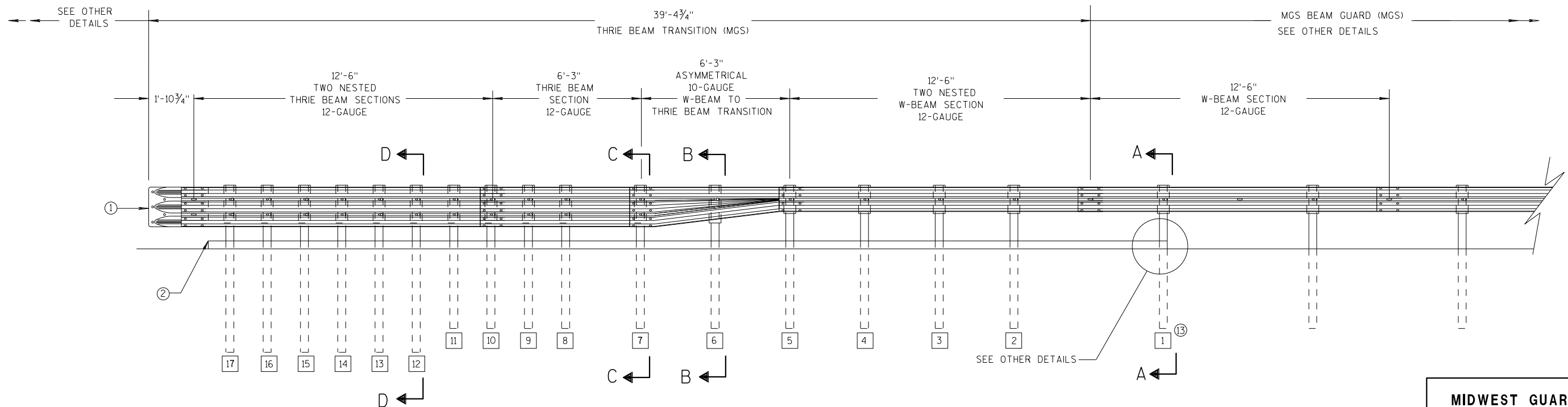
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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

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



PLAN VIEW



ELEVATION VIEW

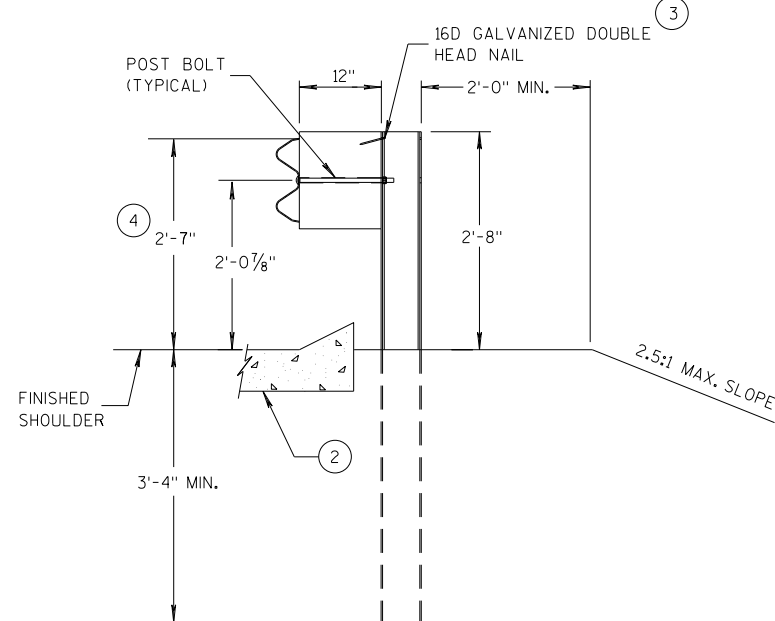
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

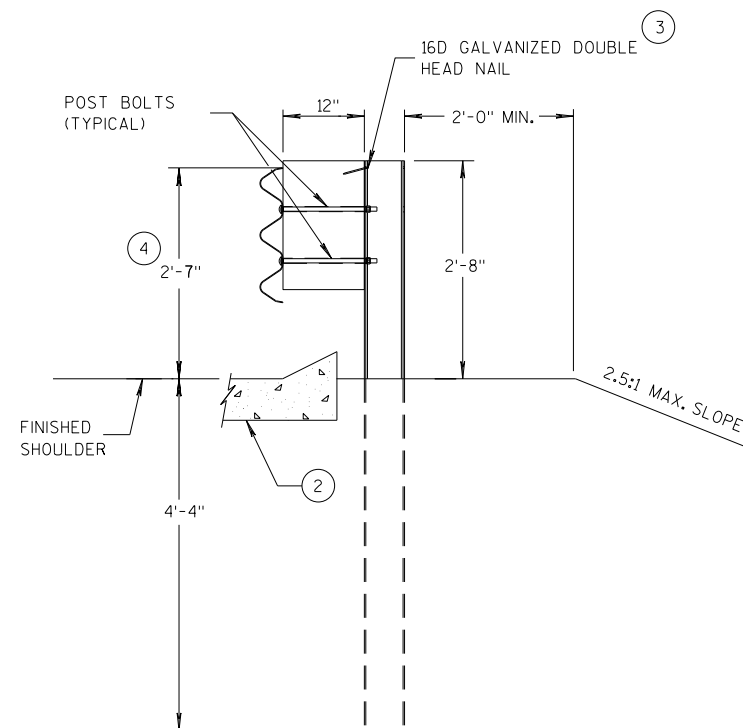
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

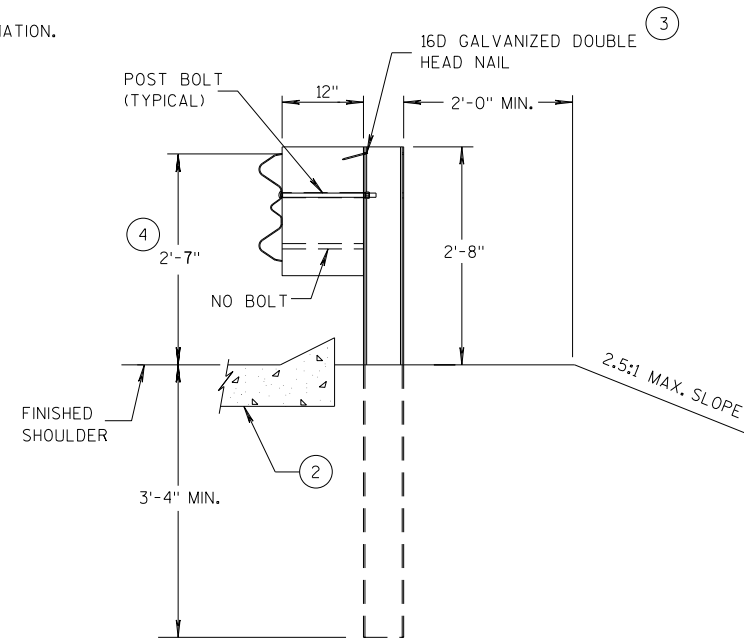
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



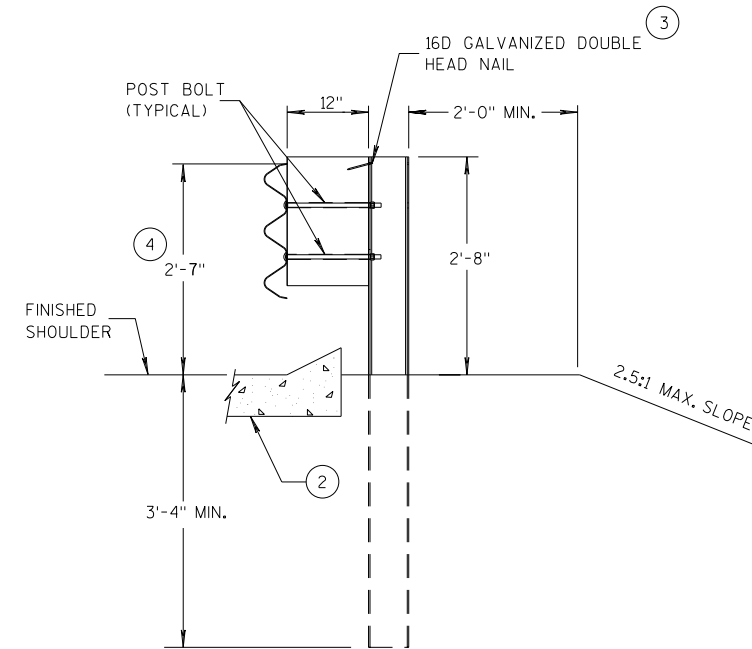
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

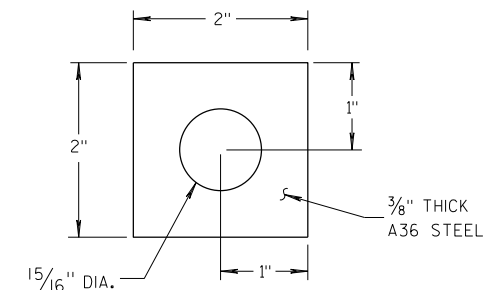
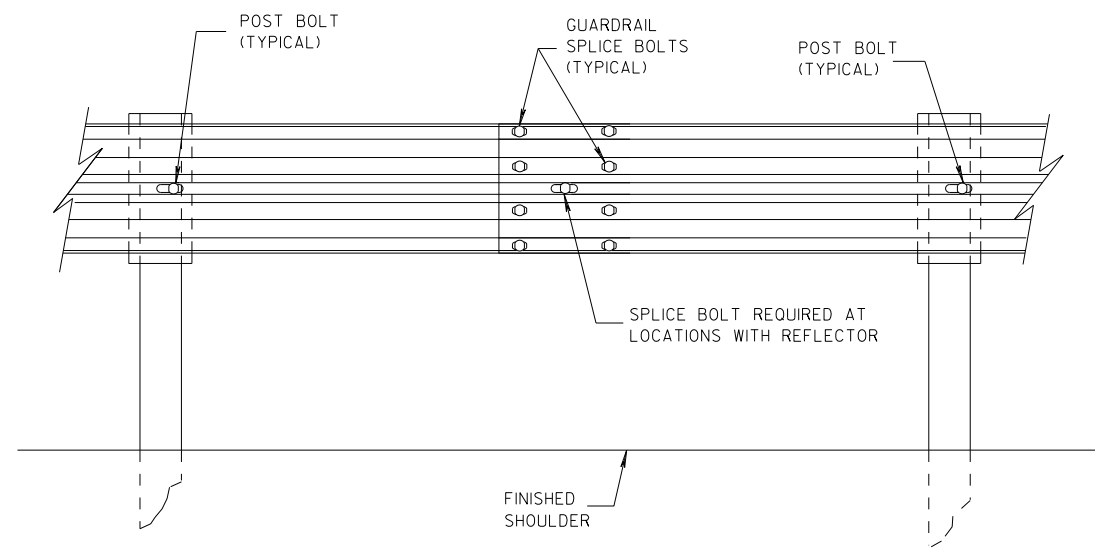
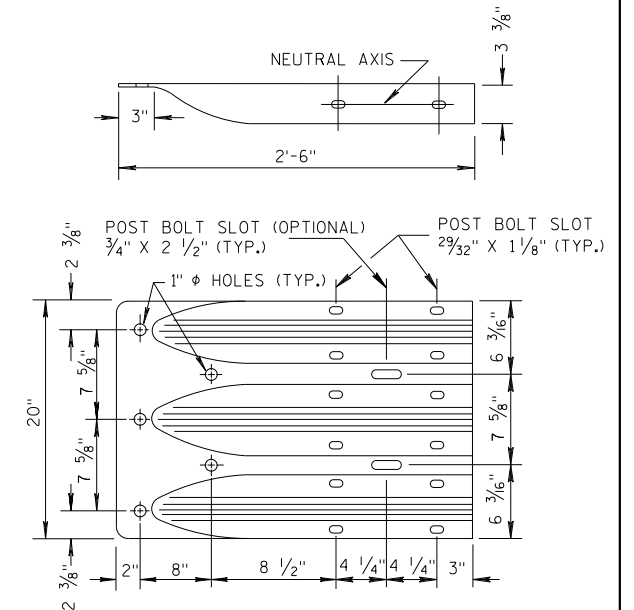


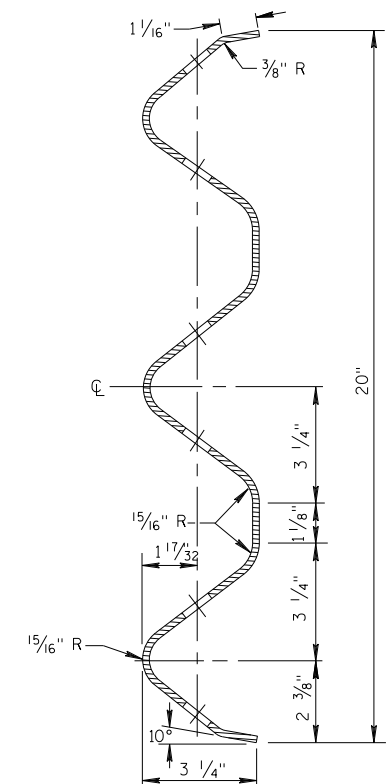
PLATE WASHER DETAIL



SPLICE DETAIL



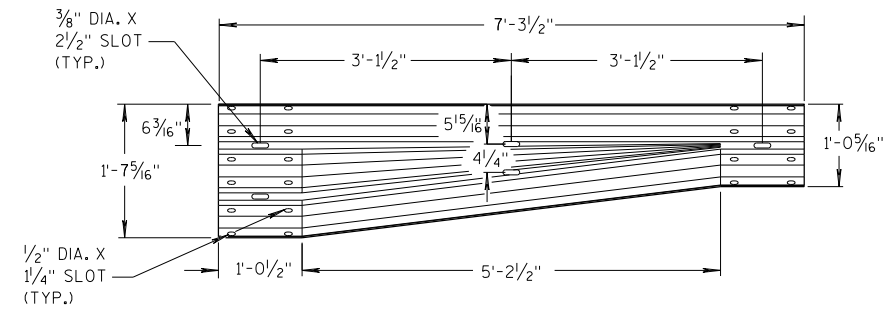
THREE BEAM TERMINAL CONNECTOR



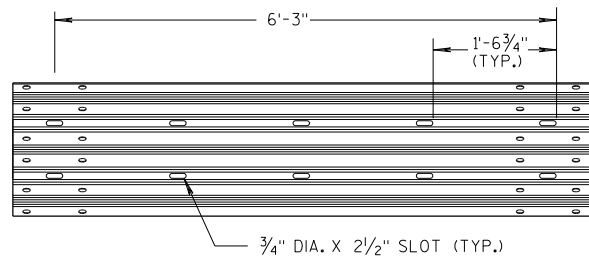
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)

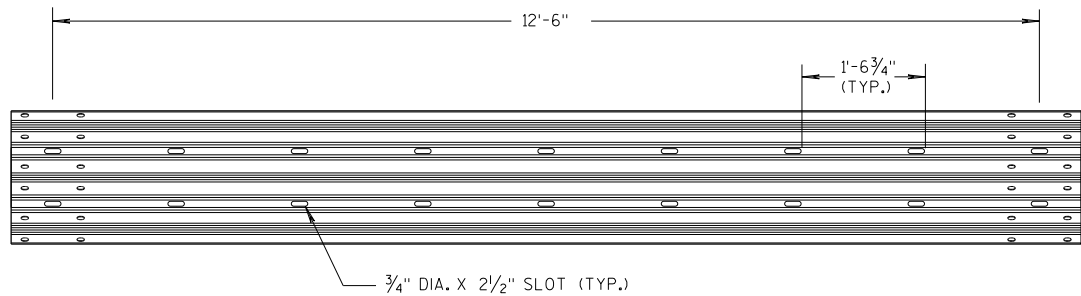
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 69



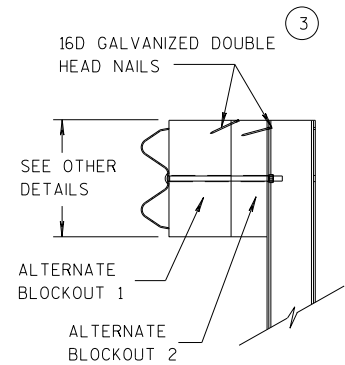
W-BEAM TO THRIE BEAM TRANSITION SECTION



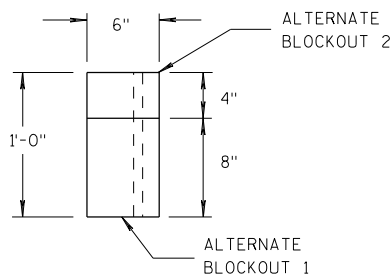
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

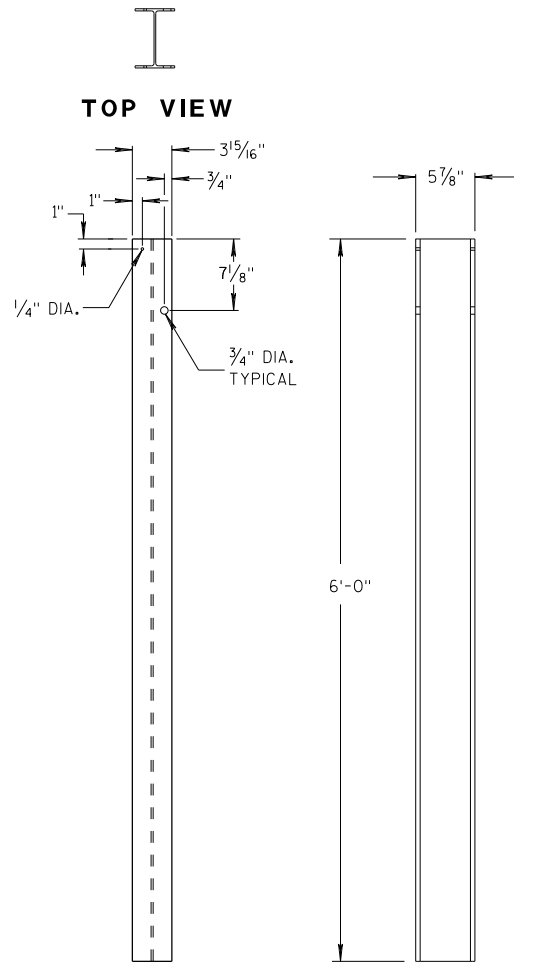


SIDE VIEW



TOP VIEW

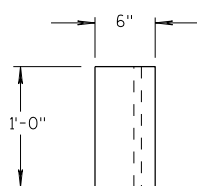
ALTERNATE WOOD BLOCKOUT DETAIL



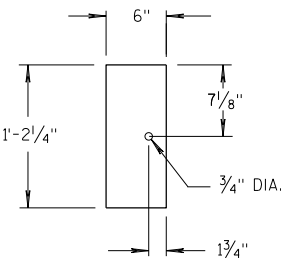
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

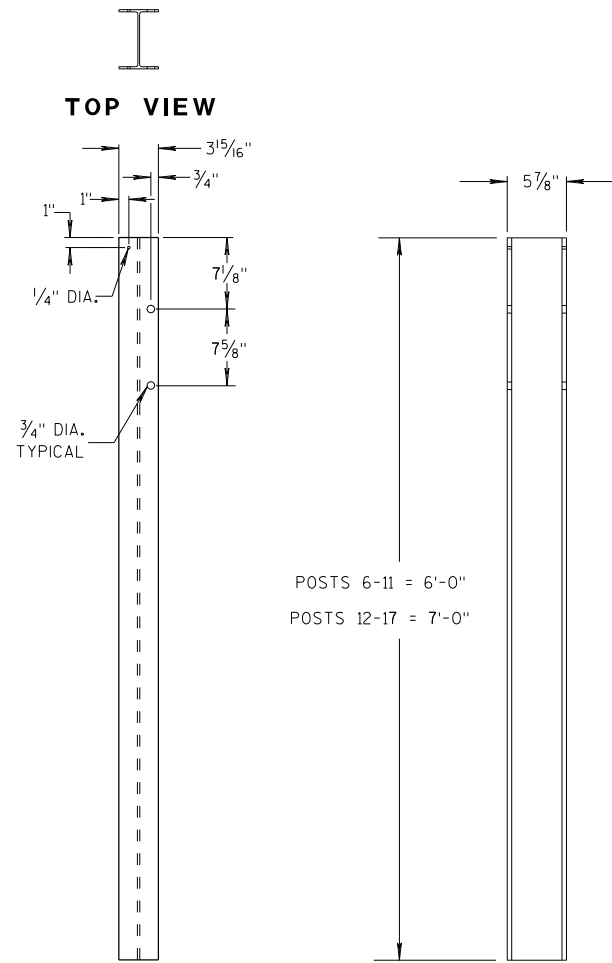


TOP VIEW



FRONT VIEW

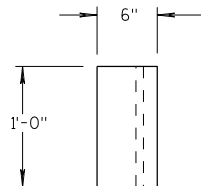
BLOCKOUT POSTS 1-5



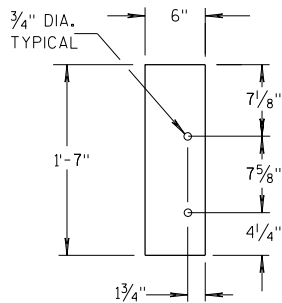
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

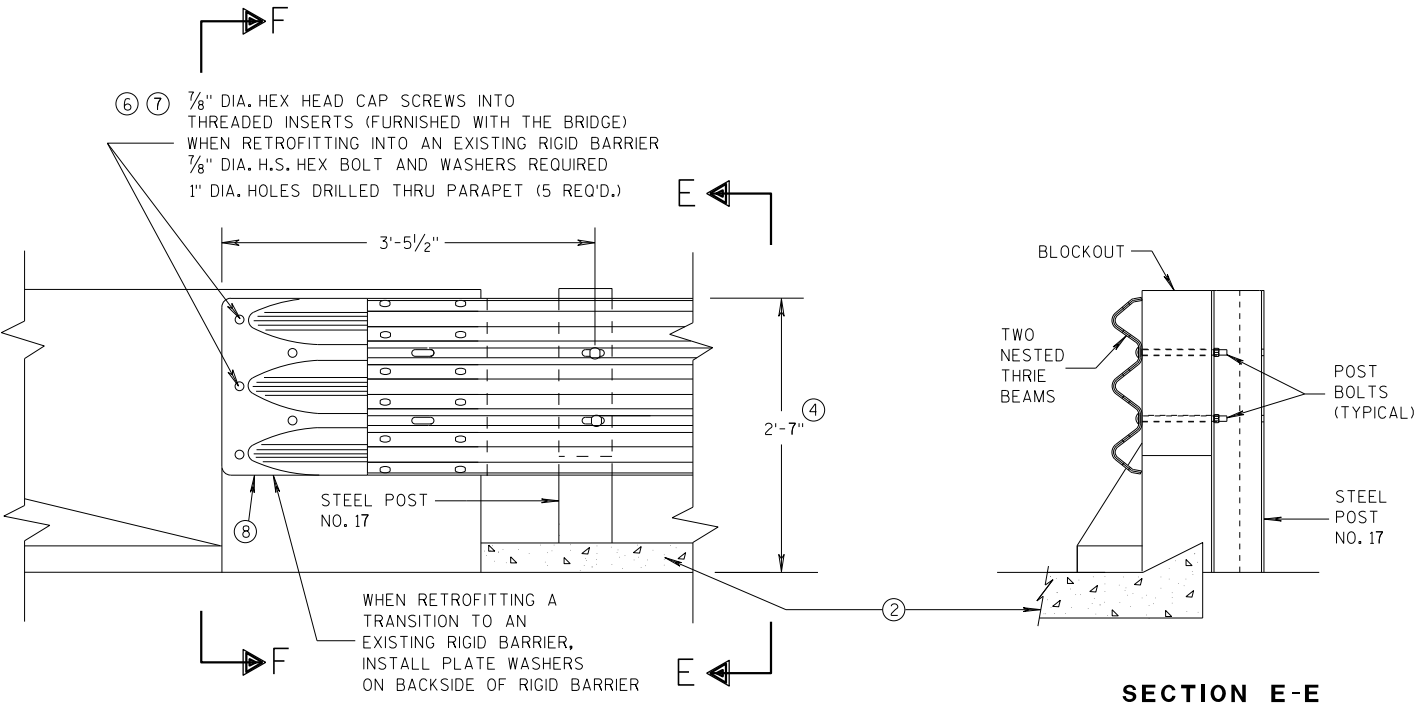
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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

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

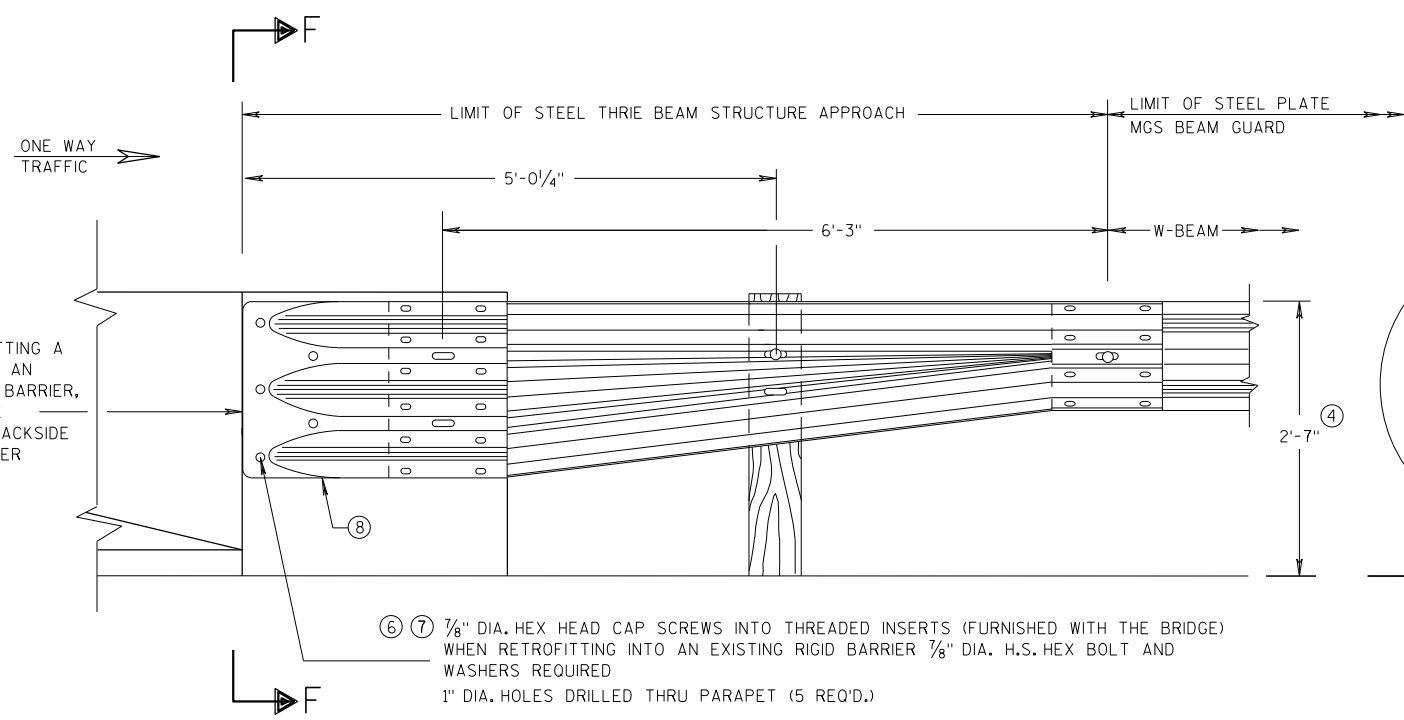
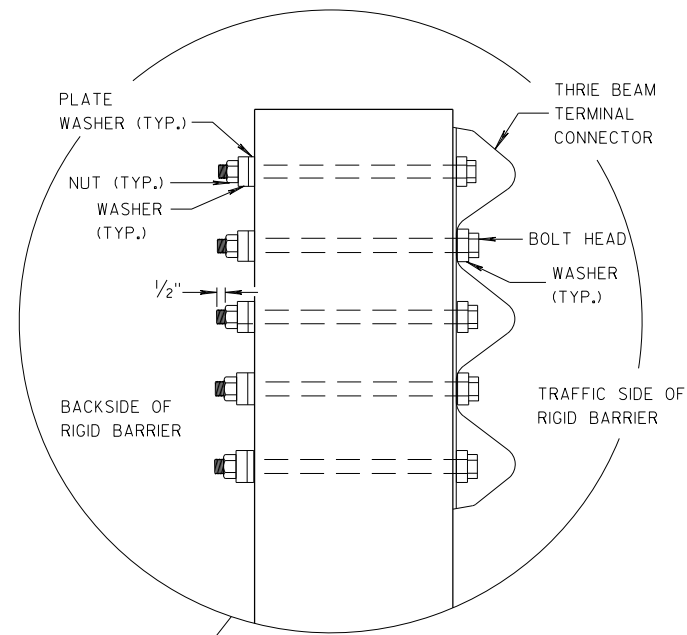
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

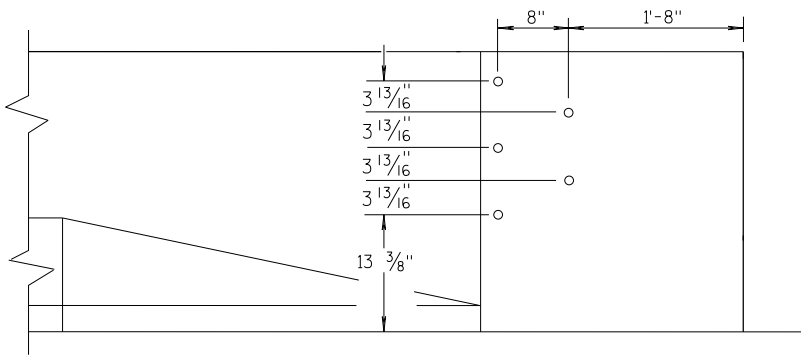


GENERAL NOTES

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



SECTION F-F

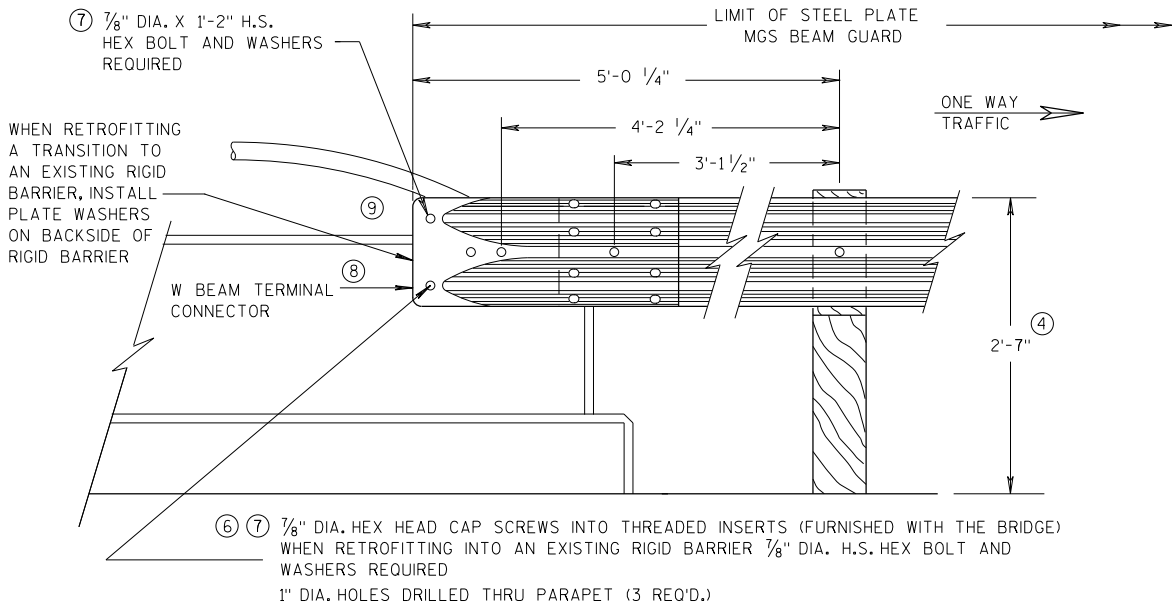


MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS UNIT SUPERVISOR		
FHWA	71	NT	

GENERAL NOTES

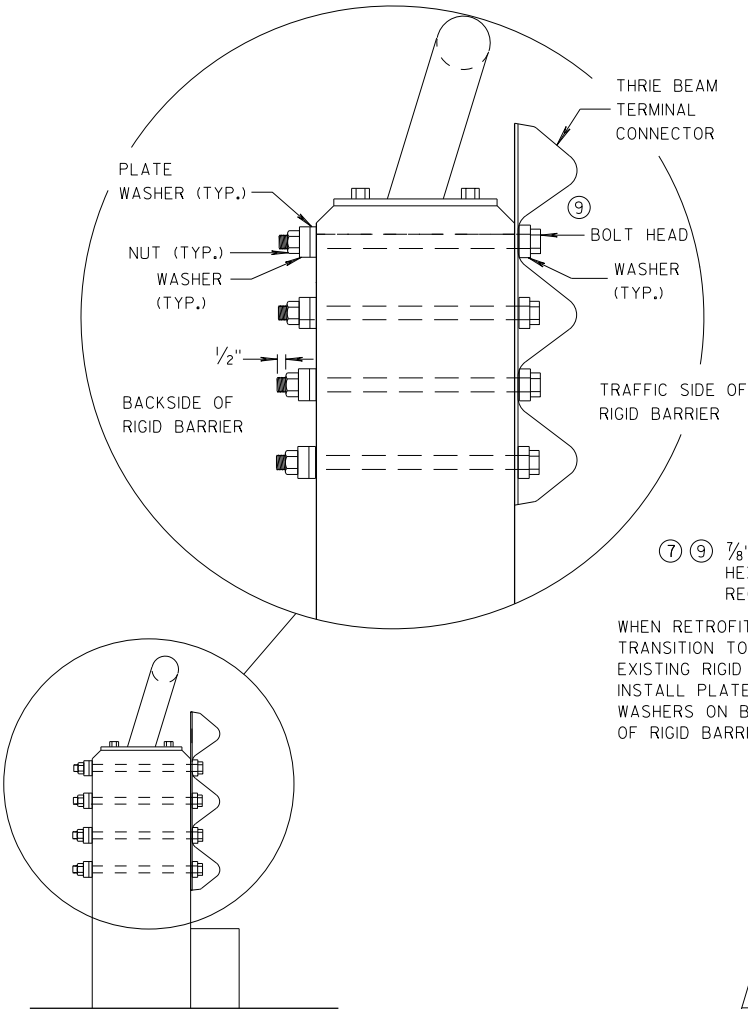
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

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

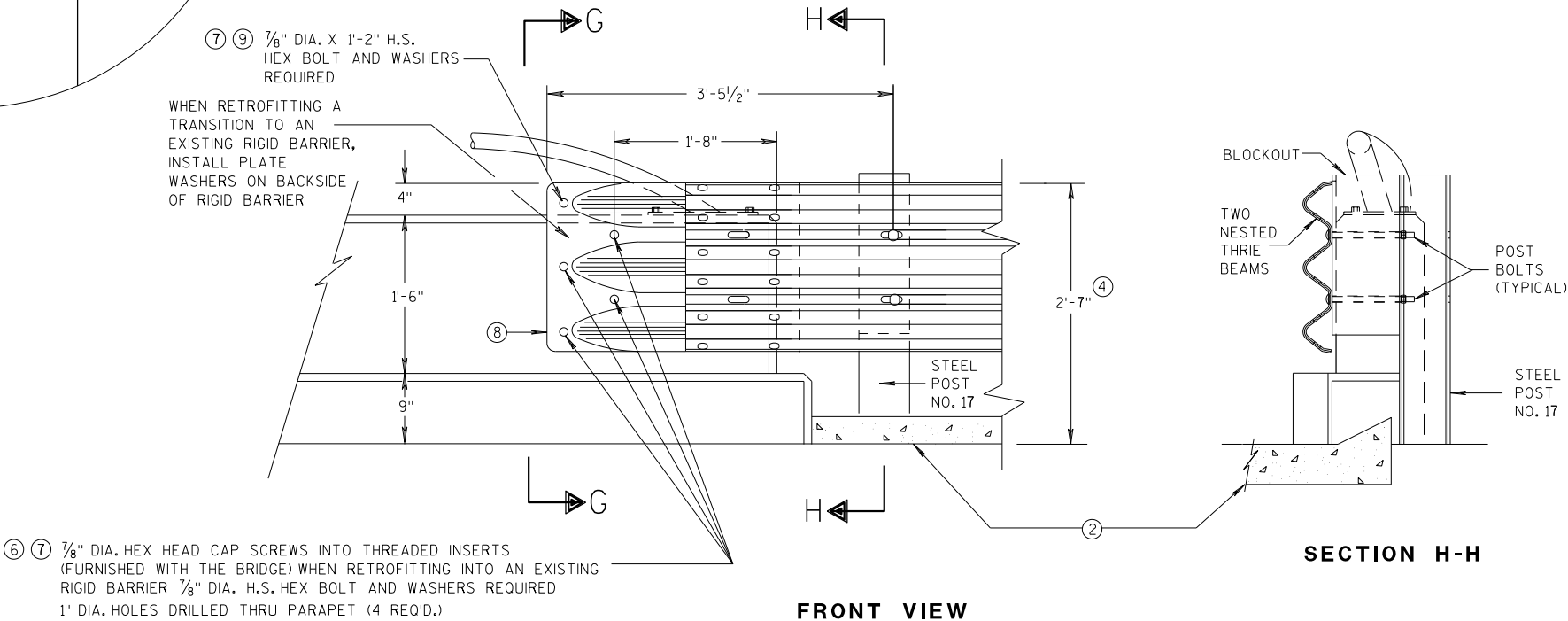


FRONT VIEW

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

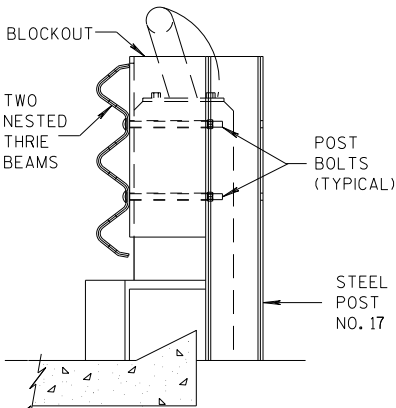


SECTION G-G



FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

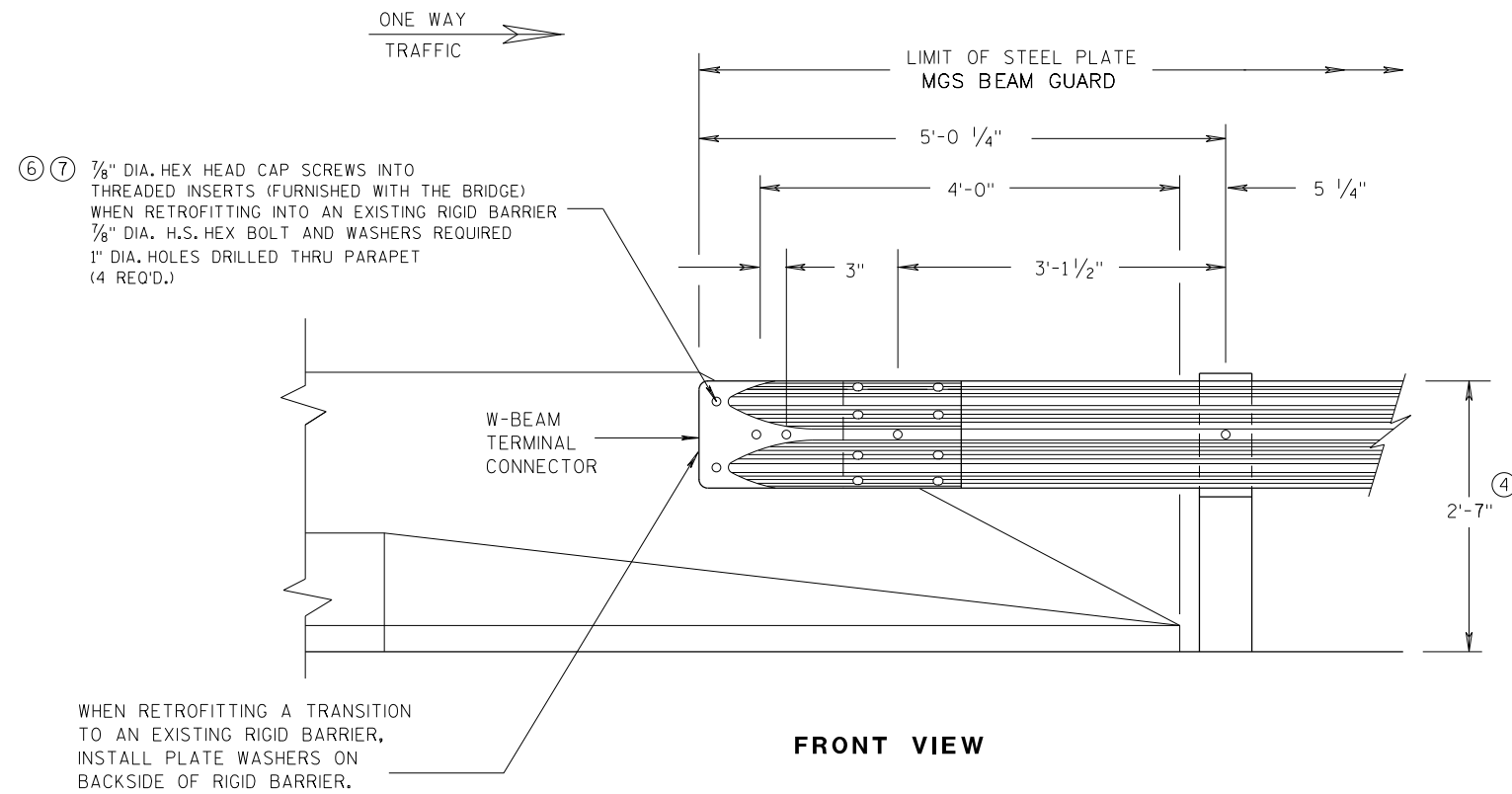


SECTION H-H

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

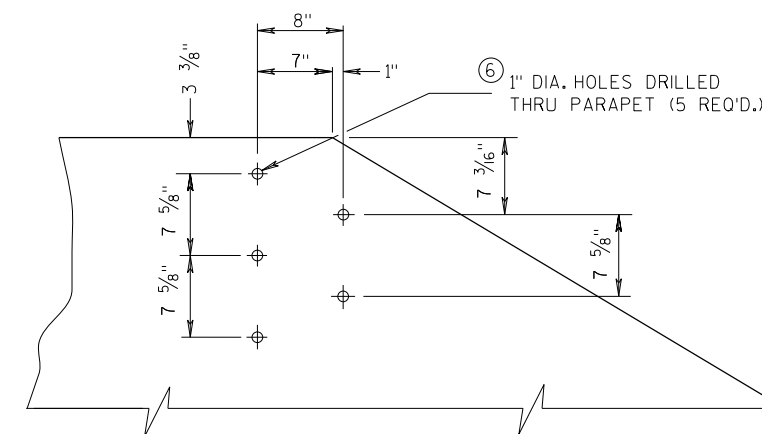
APPROVED
07/2018
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR
72
FHWA



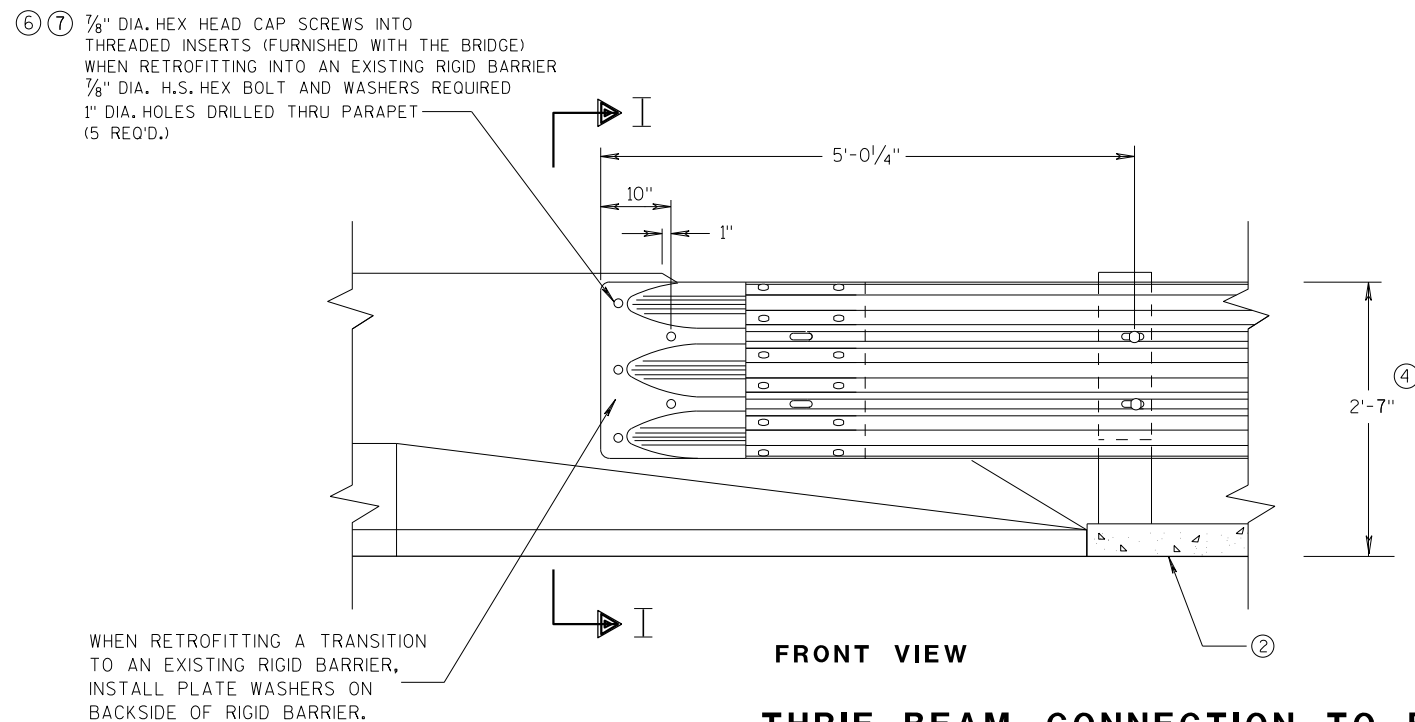
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS**
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

GENERAL NOTES

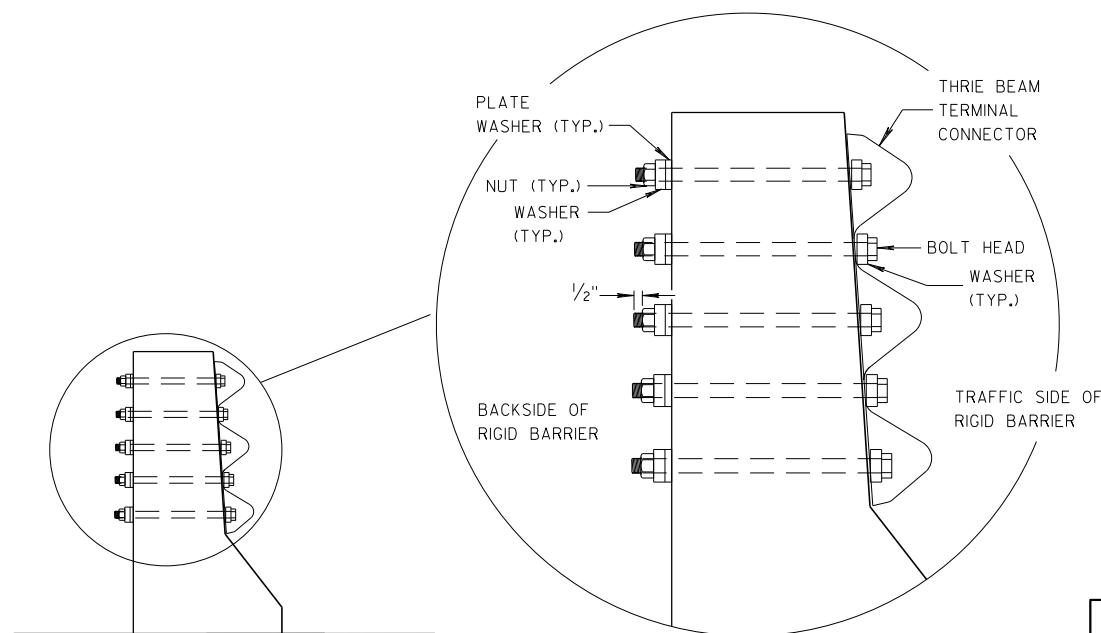
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH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



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



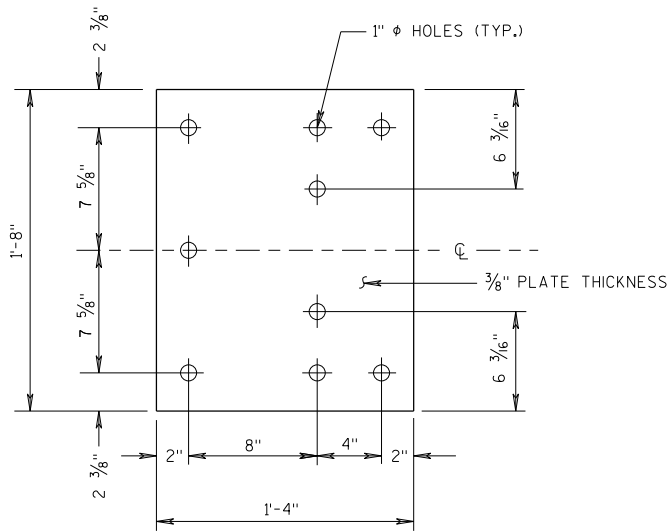
**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



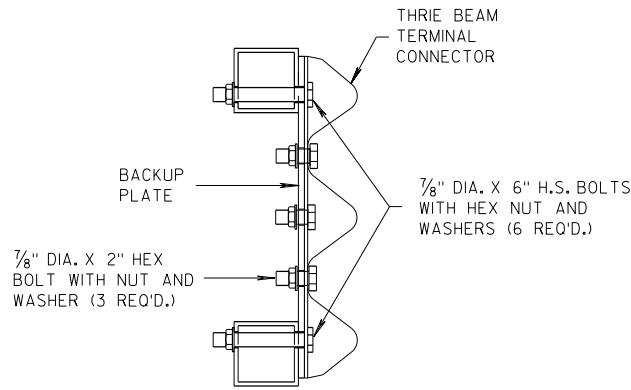
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

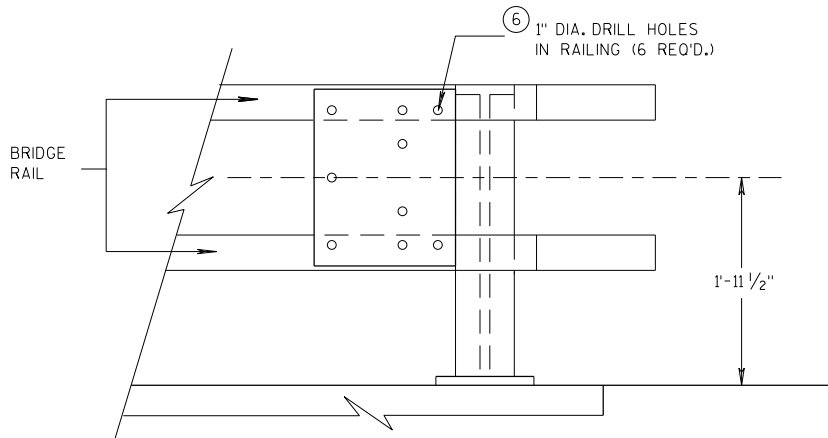
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR 73
FHWA



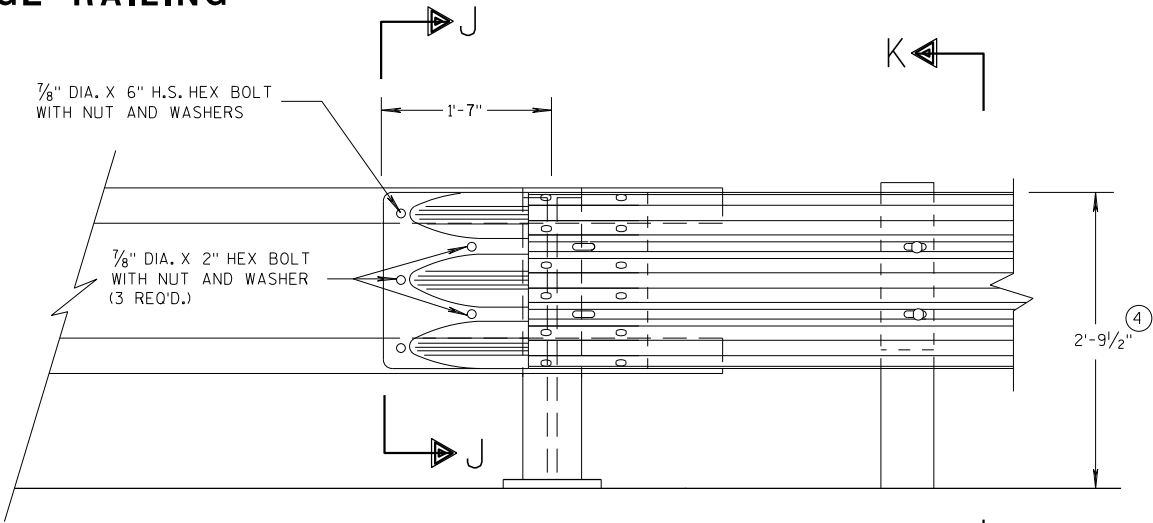
BACK-UP PLATE DETAIL



SECTION J-J

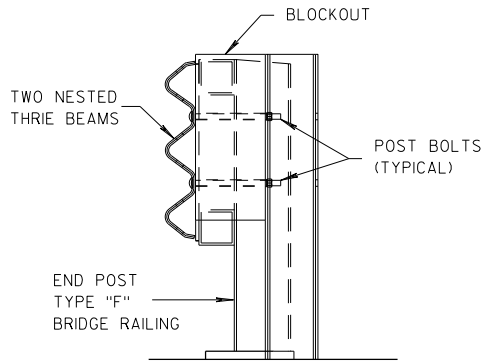


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

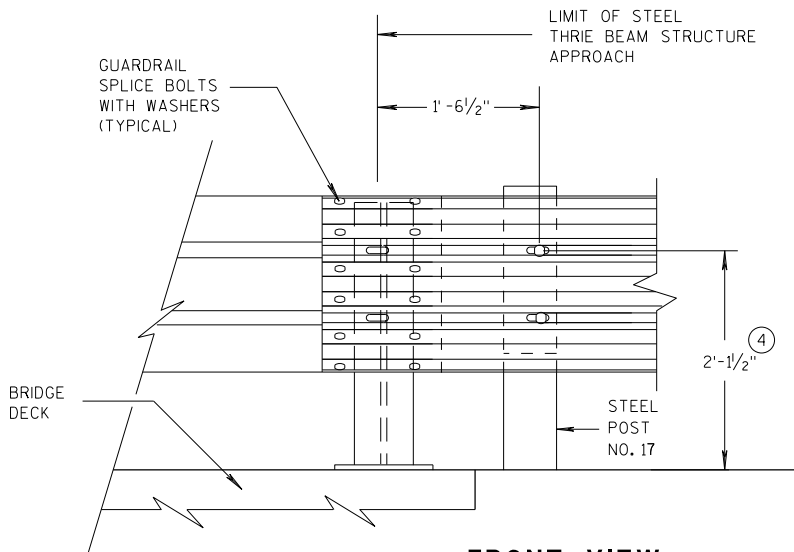
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

GENERAL NOTES

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



FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor 74 ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
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④ TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.



6



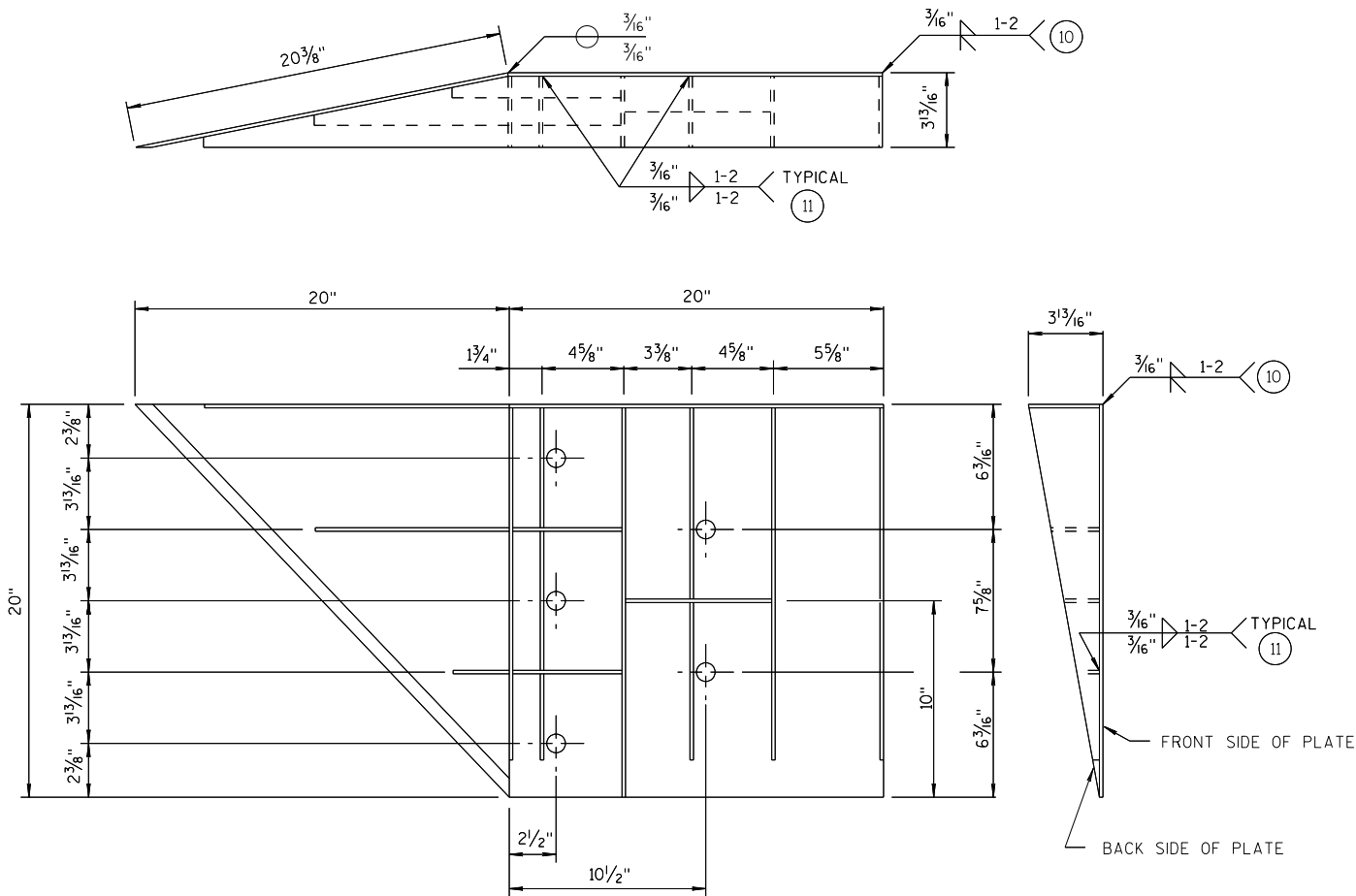
SECTION M-M



FRONT VIEW



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<u>07/2018</u>	/S/ Rodney Taylor	
DATE	ROADWAY STANDARDS	75
	UNIT SUPERVISOR	ENT
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WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

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

SINGLE SLOPE CONNECTION PLATE

GENERAL NOTES

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

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

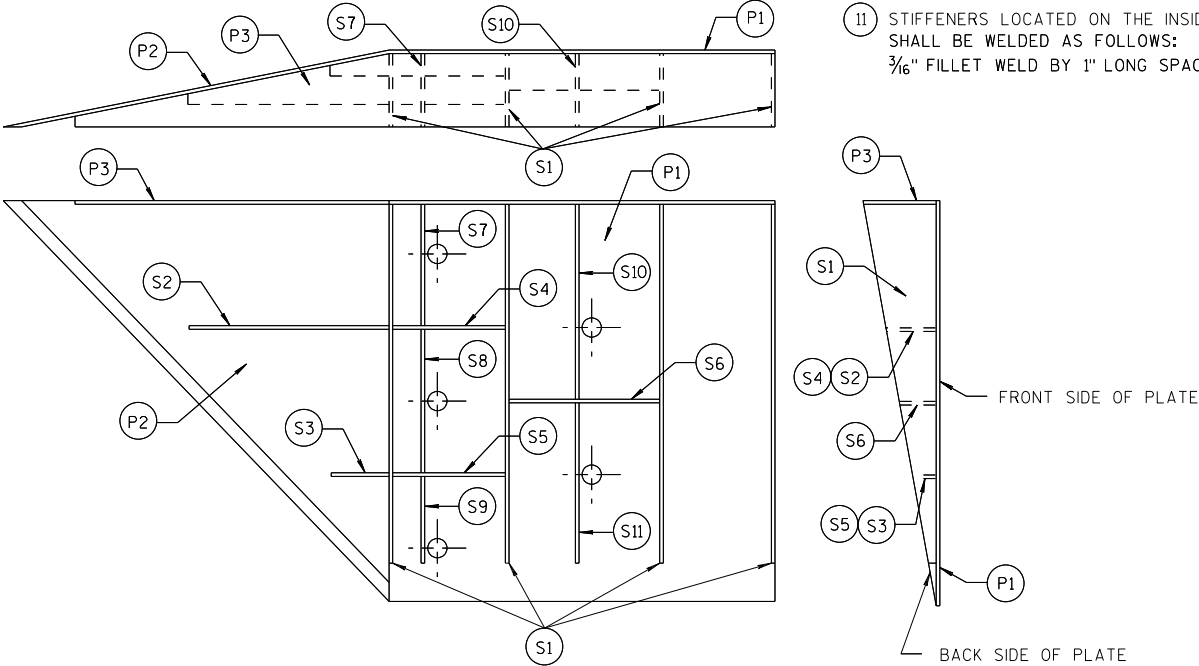


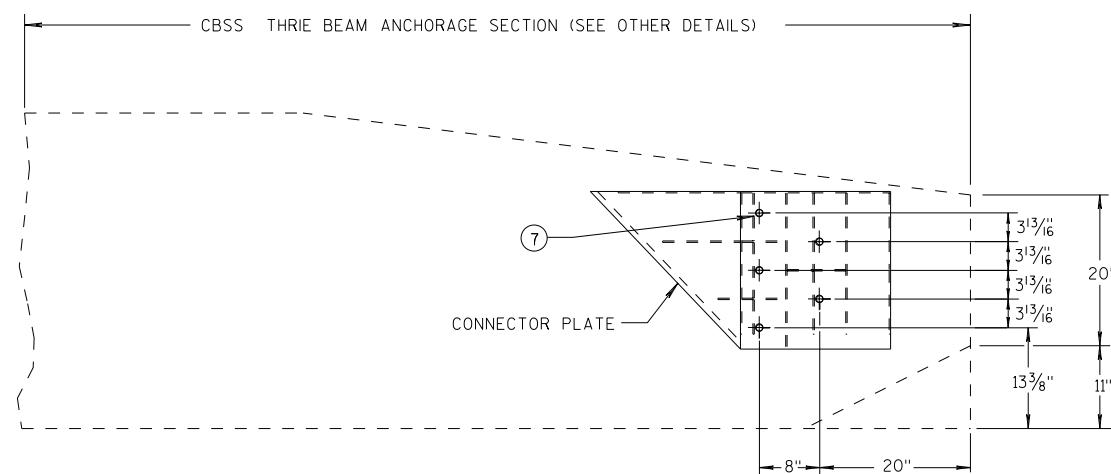
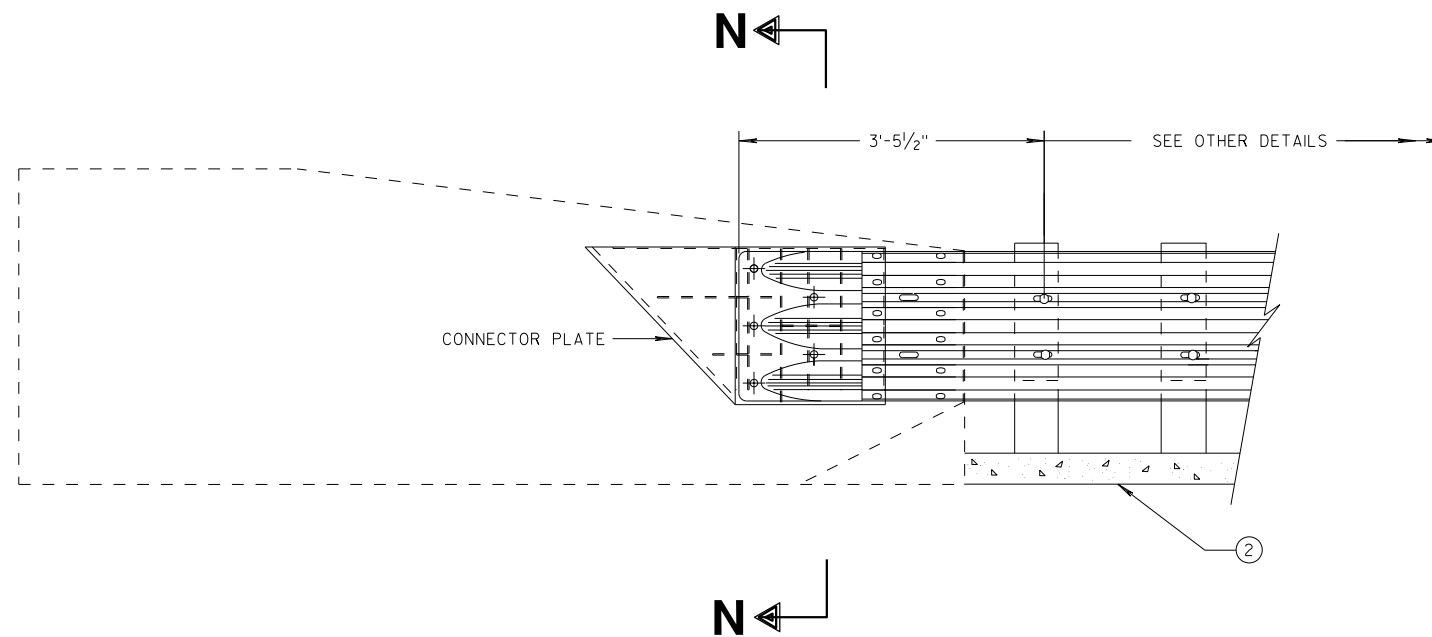
PLATE AND STIFFENER IDENTIFICATION
(VIEWED FROM BACK SIDE OF PLATE)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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DATE
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ROADWAY STANDARDS
UNIT SUPERVISOR
76
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THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



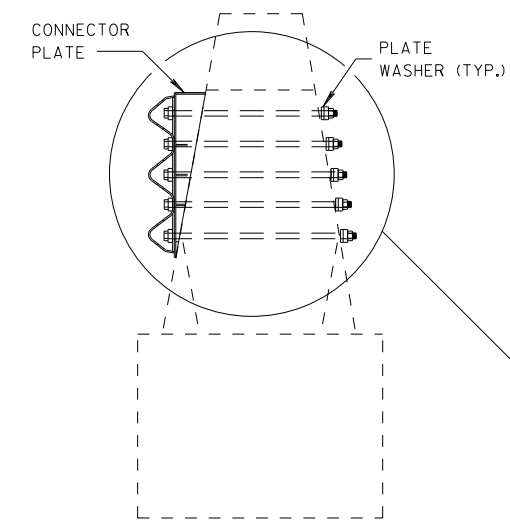
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

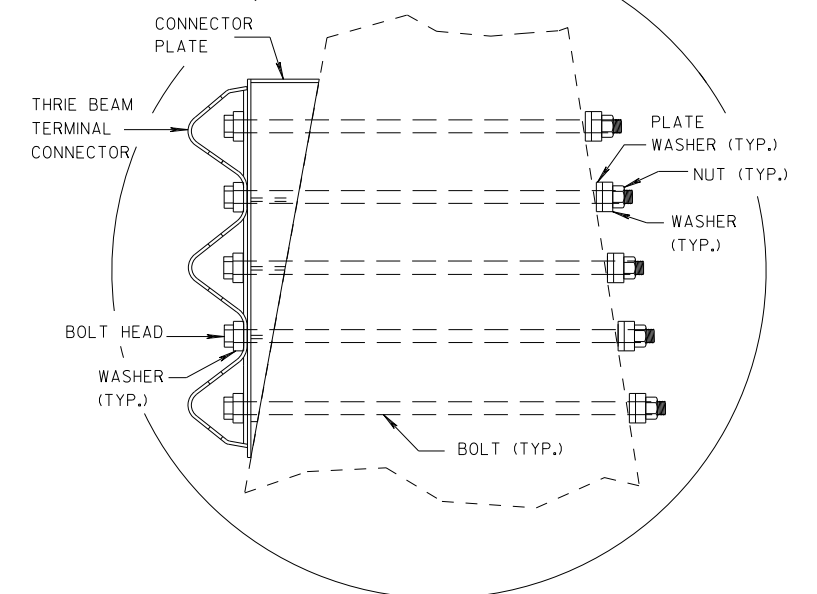
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

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



SECTION N-N

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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7/2018

DATE

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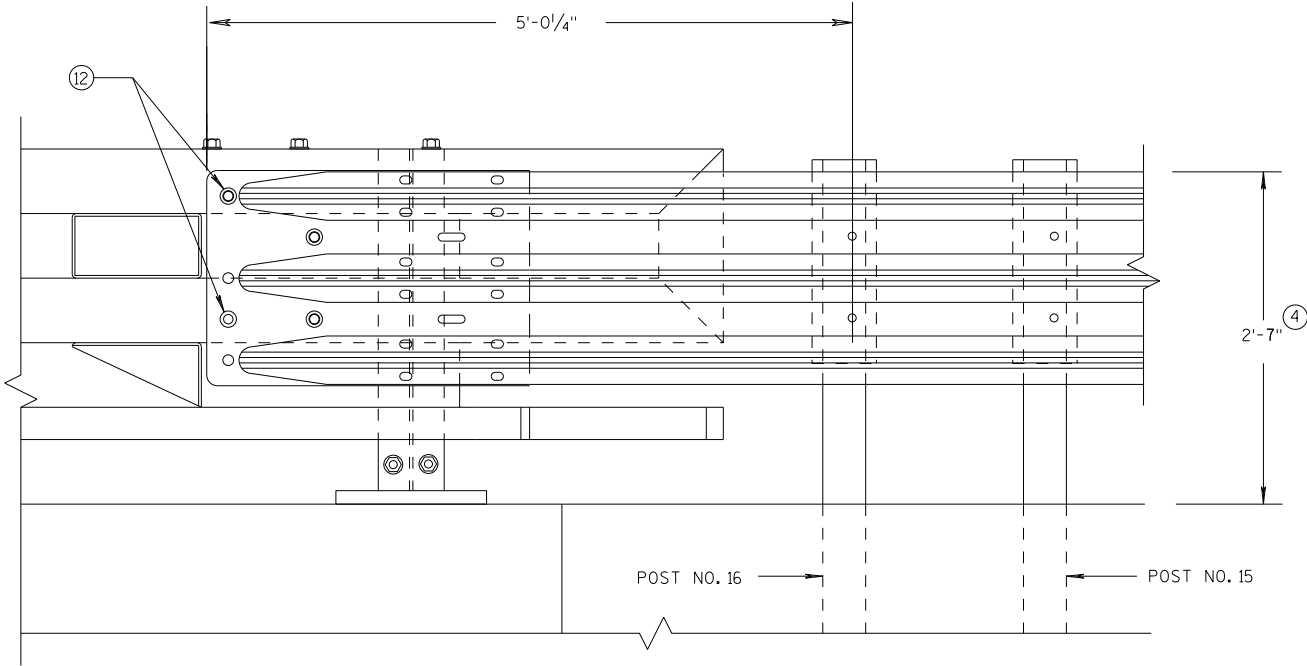
/S/ Rodney Taylor

ROADWAY STANDARDS DISTRICT 77

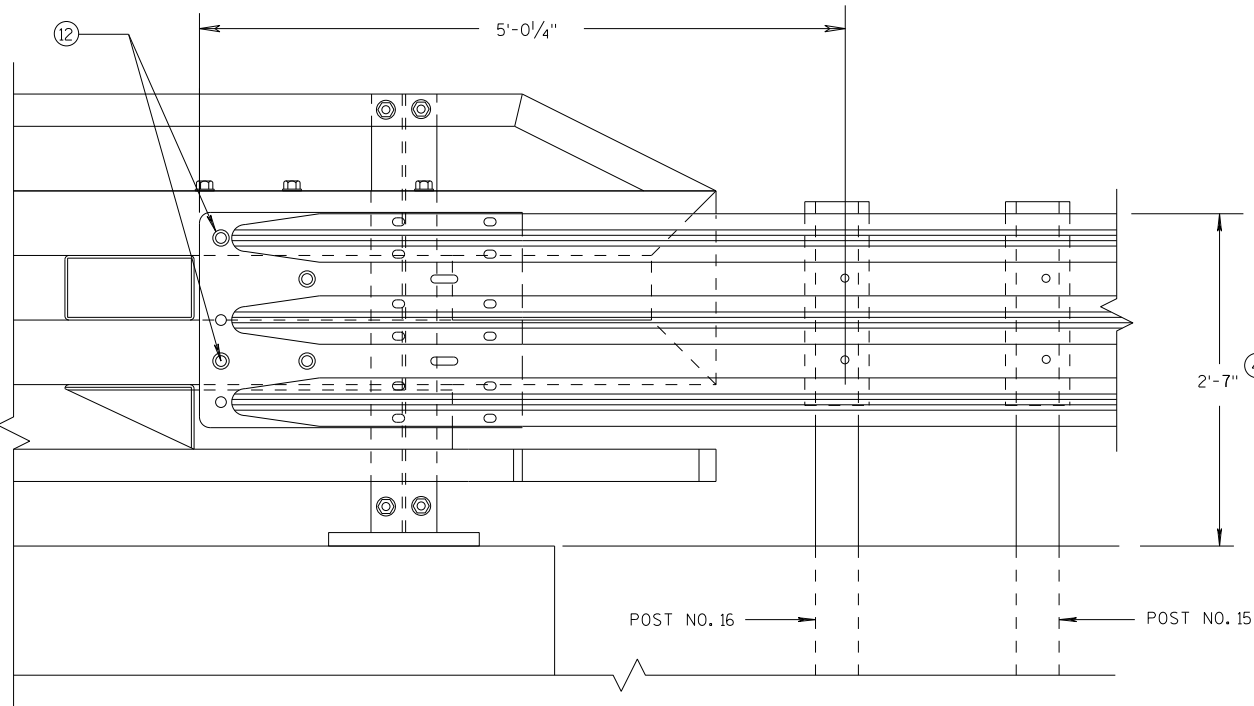
UNIT SUPERVISOR

GENERAL NOTES

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



ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT

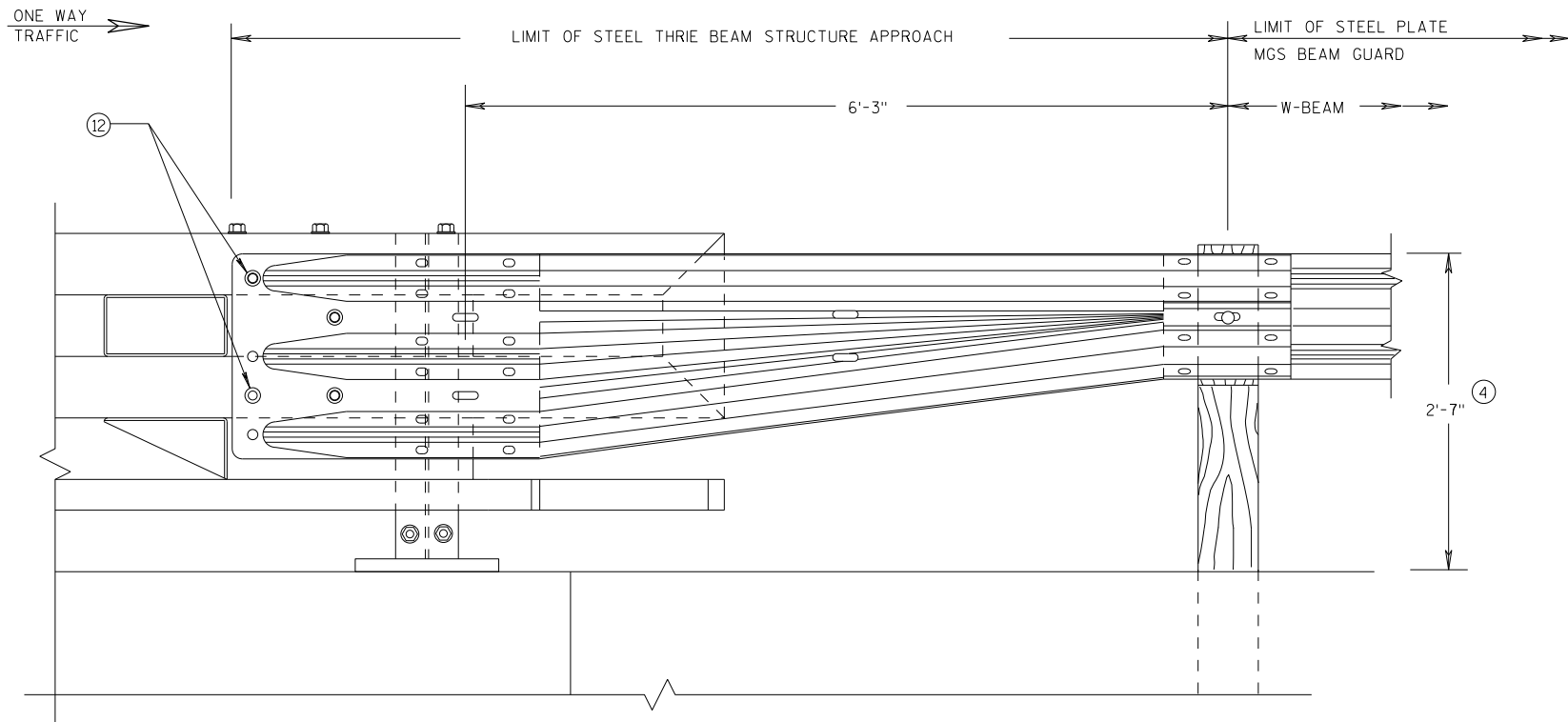


ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 7/2018 /S/ Rodney Taylor
FHWA ROADWAY STANDARDS UNIT SUPERVISOR 78 NT

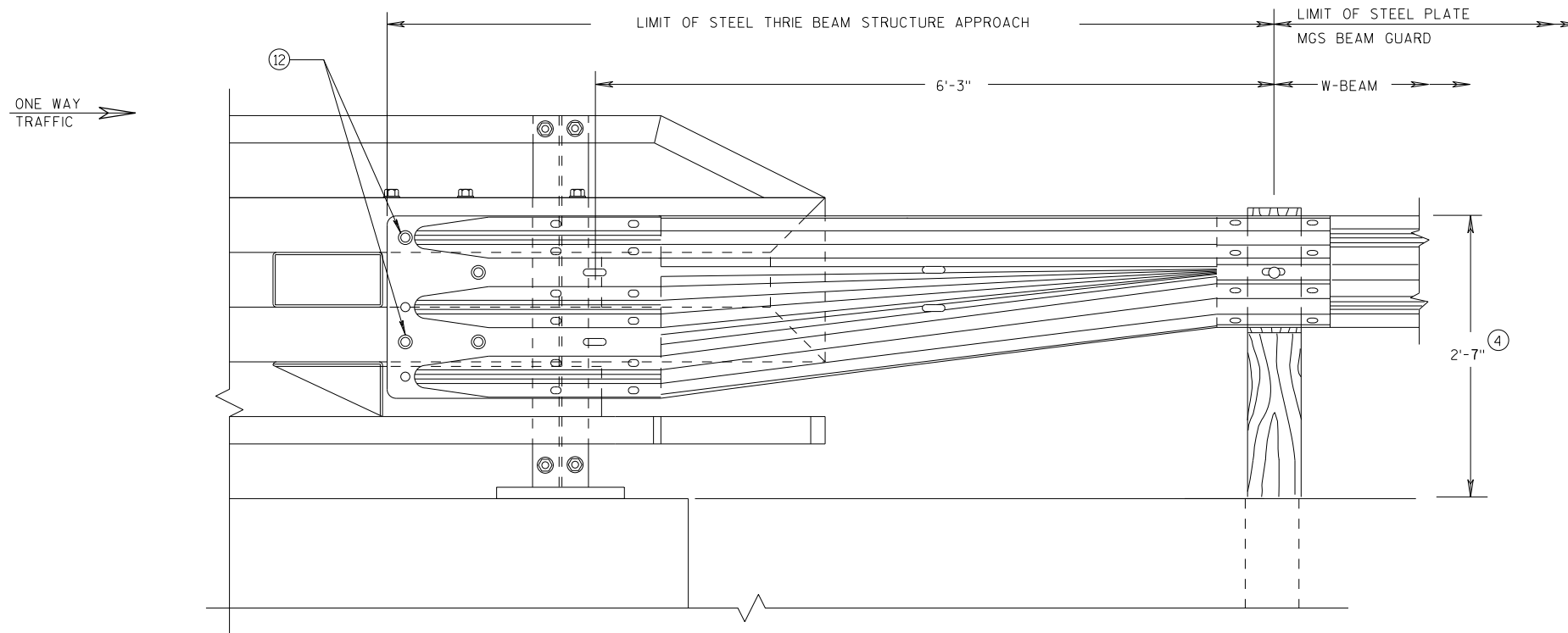


FRONT VIEW

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

GENERAL NOTES

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



FRONT VIEW

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

7/2018

DATE

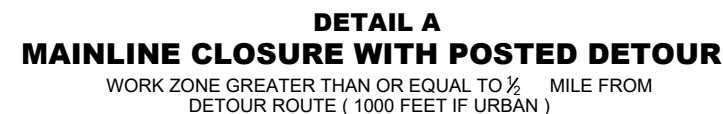
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/S/ Rodney Taylor

ROADWAY STANDARDS C 79

UNIT SUPERVISOR

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



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

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



	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)

 M4 - 8
 M3 - X
 OR  OR 
M1 - 4 M1 - 6 M1 - 5A
 OR 
M05 - 1 M06 - 1

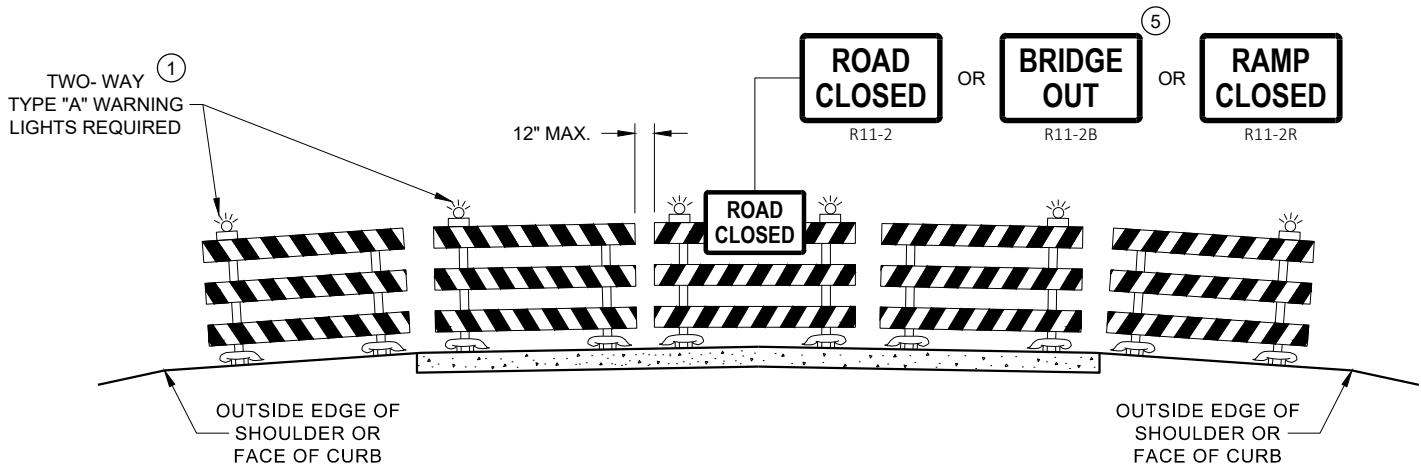
BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

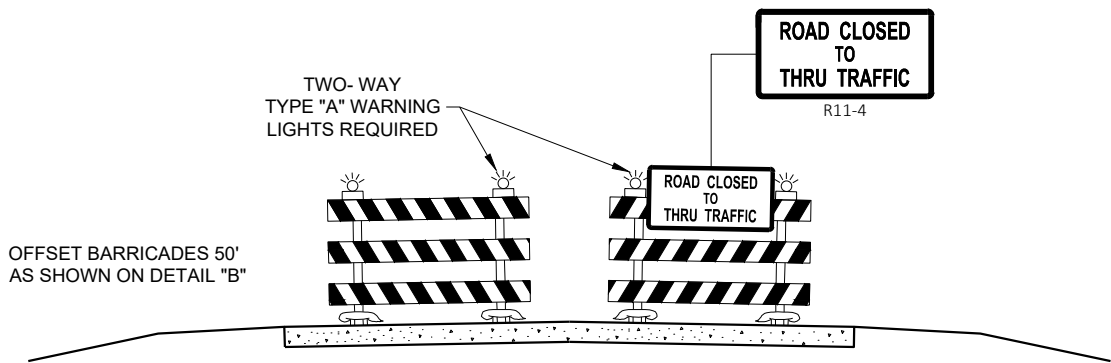
APPROVED
May 2023
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER 80

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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"

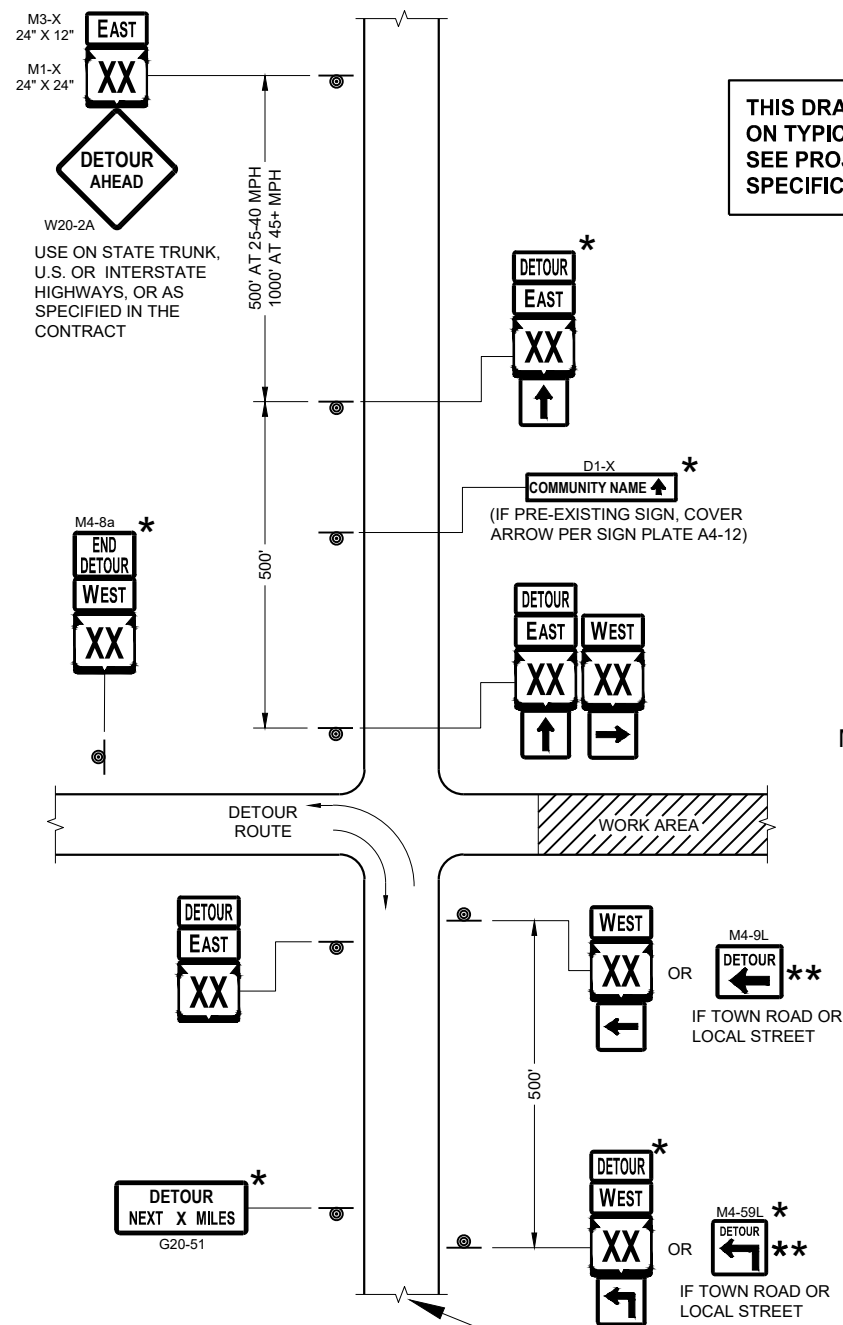
- 1 TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8 FOOT LIGHT SPACING).
- 2 THESE SIGNS 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
May 2023 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 81

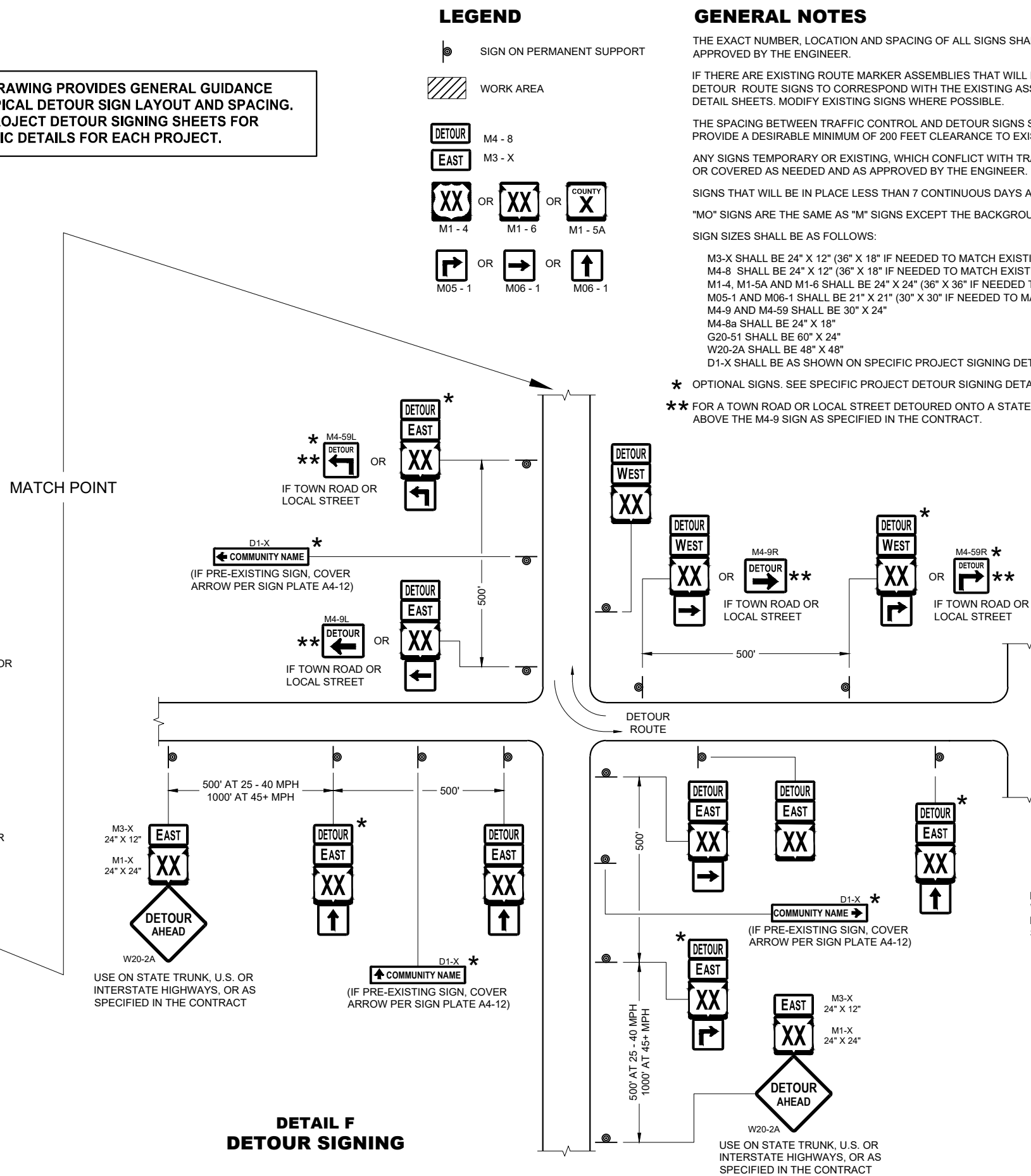
FHWA



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

SEE SPECIFIC PROJECT DETOUR
SIGNING DETAIL SHEETS AND
DETAIL A OR B ON SDD SHEET 15C02 - SHEET "a"

SDD 15C02 - 09c



DETAIL F DETOUR SIGNING

GENERAL NOTES

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

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

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

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

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

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

SIGN SIZES SHALL BE AS FOLLOWS:

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

* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

**** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.**

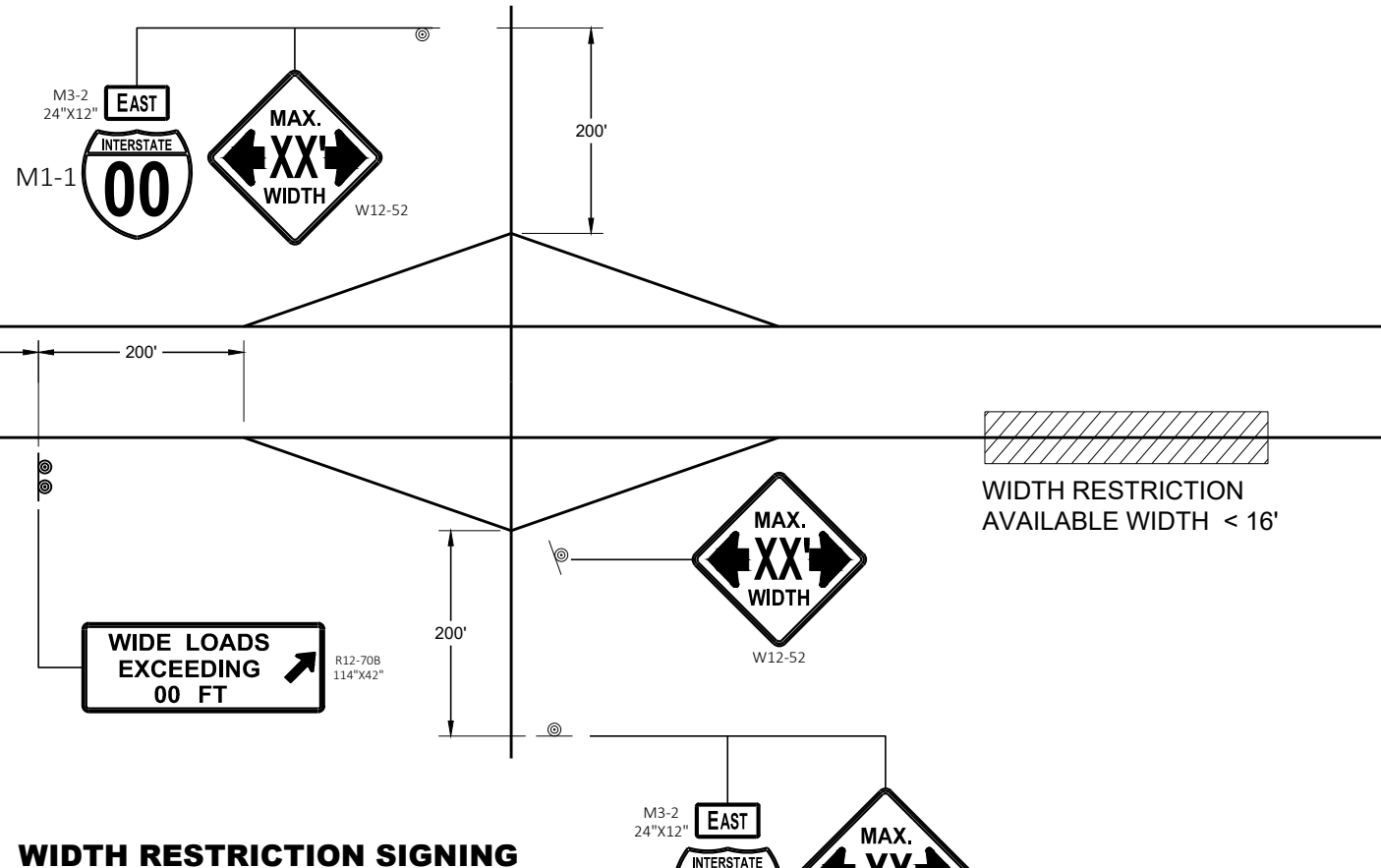
PLACE SIGNS BEYOND INTERSECTIONS
WITH STATE OR COUNTY TRUNK
HIGHWAYS OR AT 4 MILE MAXIMUM
SPACING (4 BLOCKS IF URBAN AREA)

DETOUR SIGNING FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 82

SDD15C02 - 09c



LEGEND

⊙ SIGN ON PERMANENT SUPPORT

GENERAL NOTES

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

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

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

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

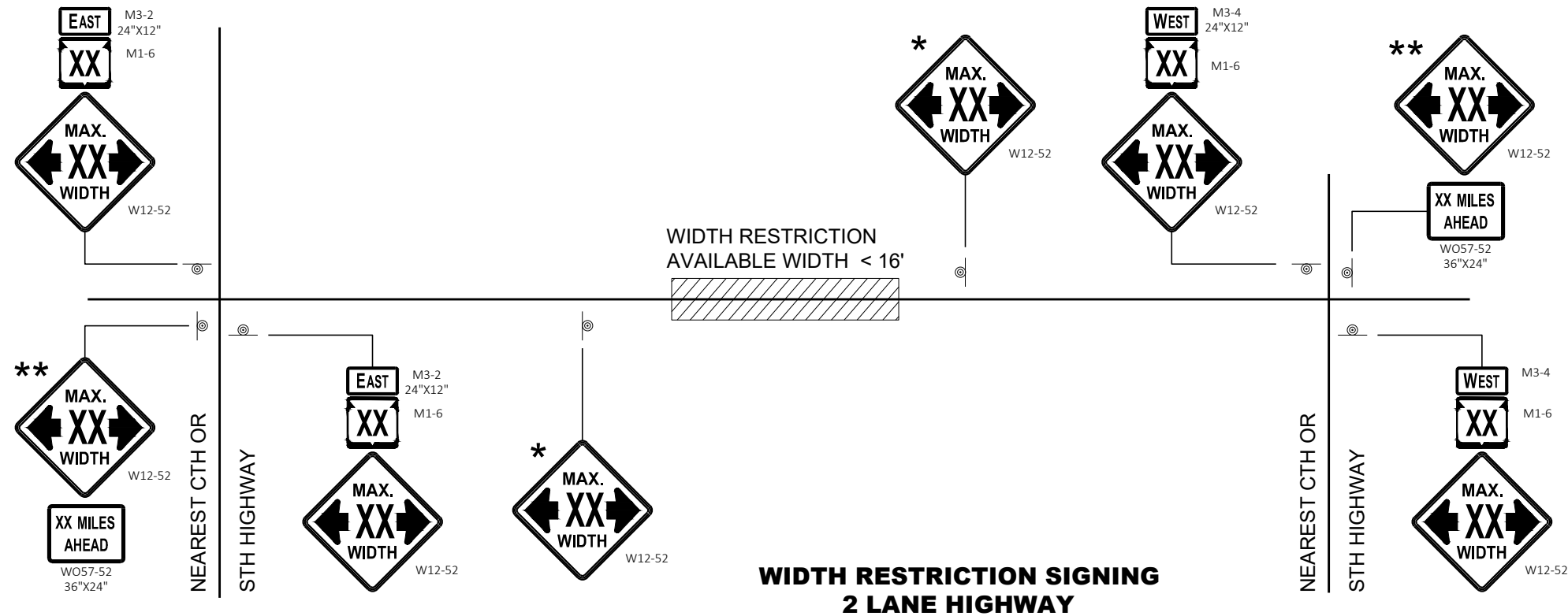
"WO" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

WIDTH ON SIGN TO BE APPROXIMATELY ONE FOOT LESS THAN AVAILABLE WIDTH.

- * PLACE 500 FEET AFTER THE W20 - 1A AND 500 FEET BEFORE ADDITIONAL SIGNS FOR ROADWAYS WITH A PRE - CONSTRUCTION SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350 FOOT TYPICAL SPACING. FOR 25-30 MPH, USE 200 FOOT TYPICAL SPACING.
- ** SIGN SHALL BE VISIBLE FROM ROADWAY.
- *** ADDITIONAL SIGNS NEEDED IF THERE IS AN ON RAMP BETWEEN SIGNS.



WIDTH ON SIGN TO BE APPROX. 1 - FOOT LESS THAN AVAILABLE WIDTH



ADVANCED WIDTH RESTRICTION SIGNING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 83
FHWA

GENERAL NOTES

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

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

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

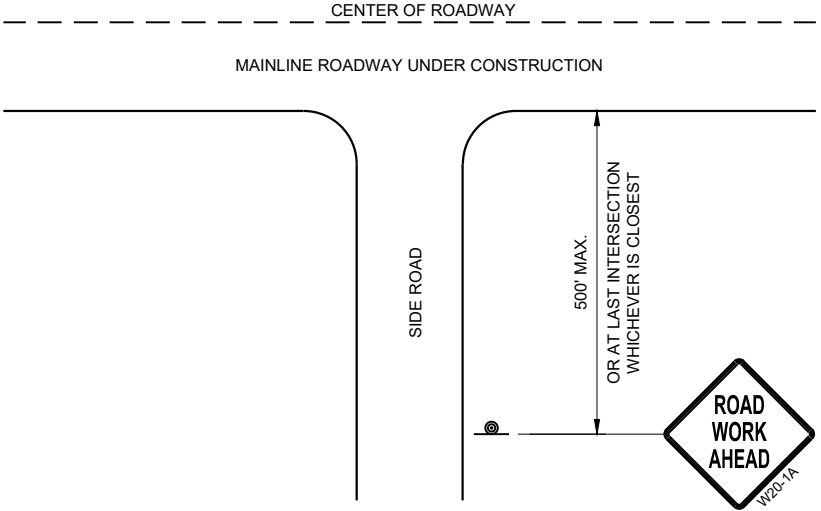
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

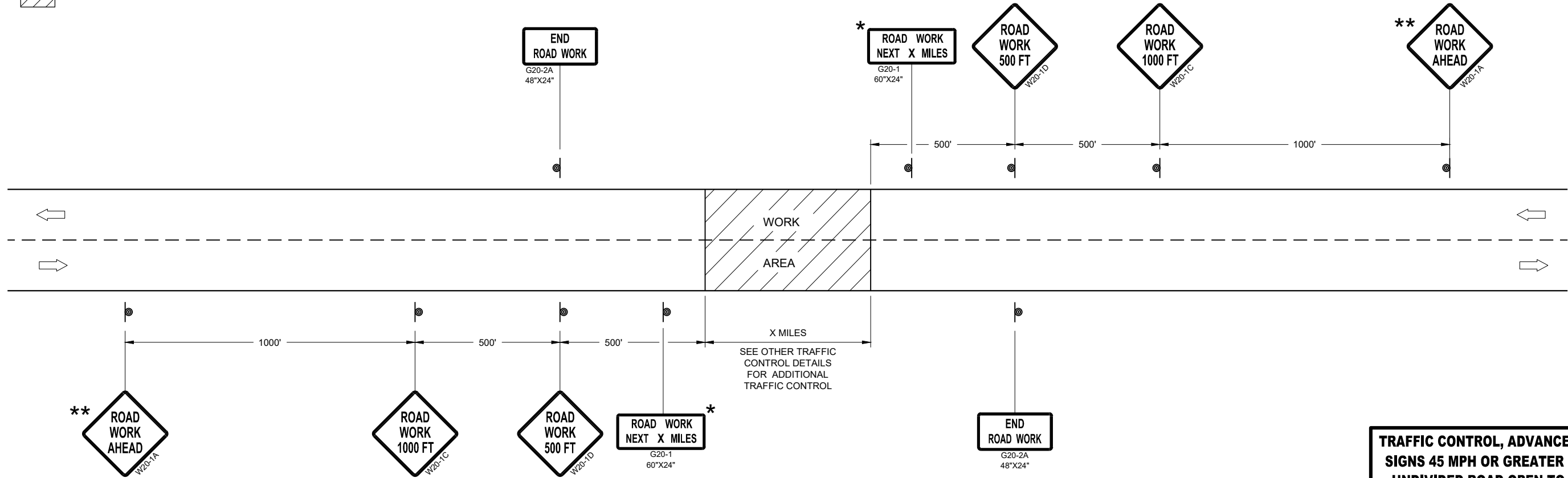
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

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



TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL



TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

TRAFFIC CONTROL, ADVANCE WARNING
SIGNS 45 MPH OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 84

FHWA

SDD 15C08-24a



PERMANENT PAVEMENT MARKING

GENERAL NOTES

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

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

LEGEND

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

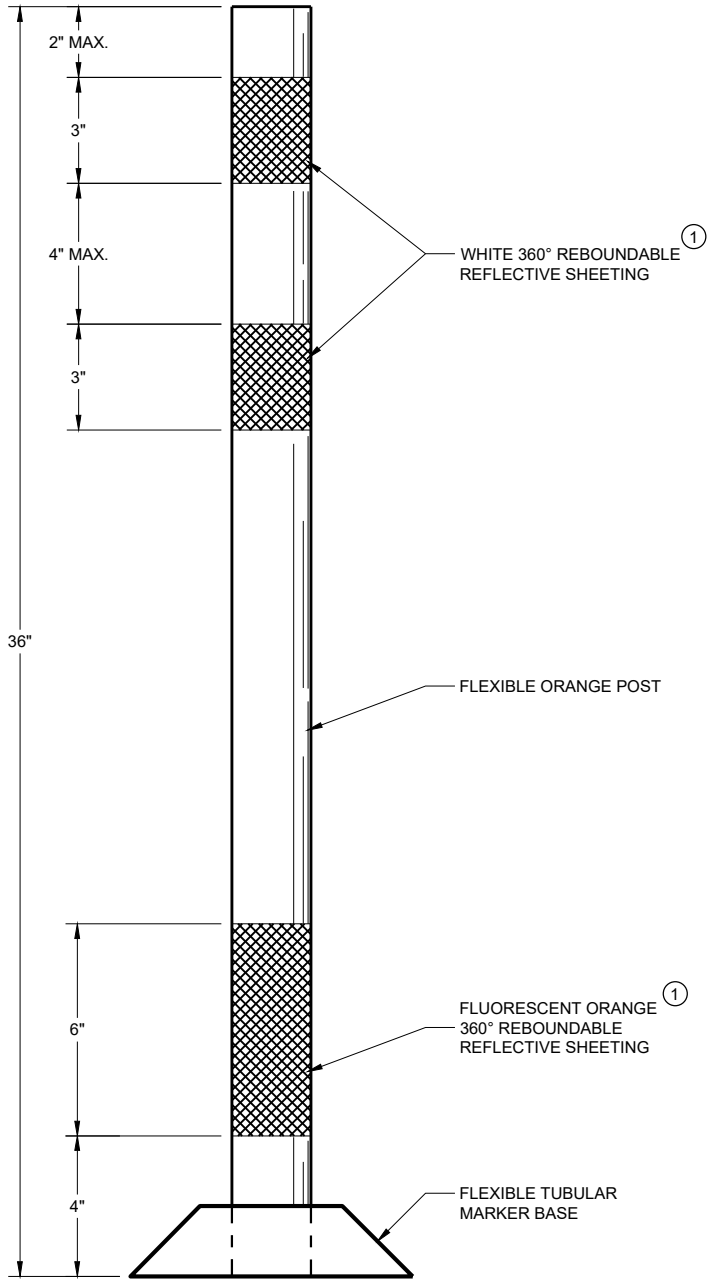
PERMANENT LONGITUDINAL PAVEMENT MARKINGS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December 2024
DATE

/S/ Jeannie Silver
Statewide Pavement Marking Engineer

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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FLEXIBLE TUBULAR
MARKER POST
WORK ZONE

GENERAL NOTES

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

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

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

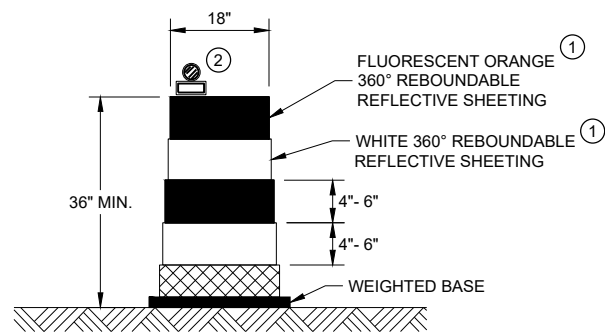
① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.

CHANNELIZING DEVICES
FLEXIBLE TUBULAR
MARKER POST

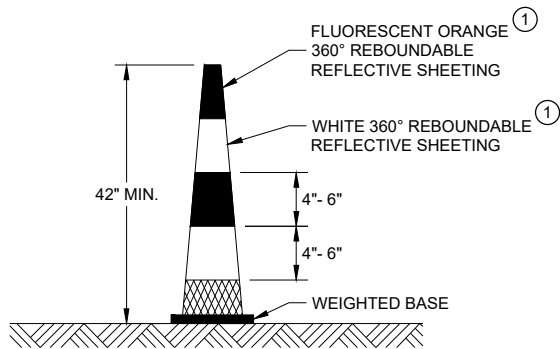
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2022 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 86

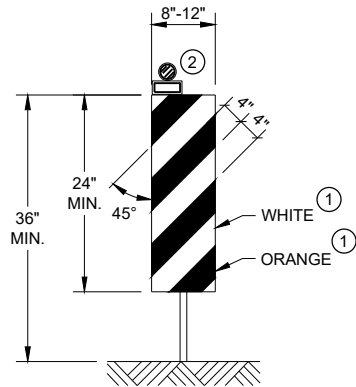
FHWA



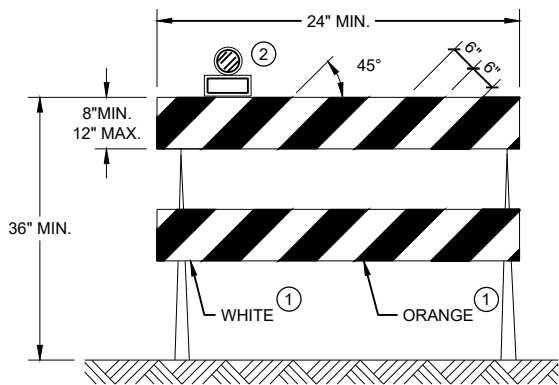
DRUM
BALLAST WIDTHS
RANGE FROM 24"-36"



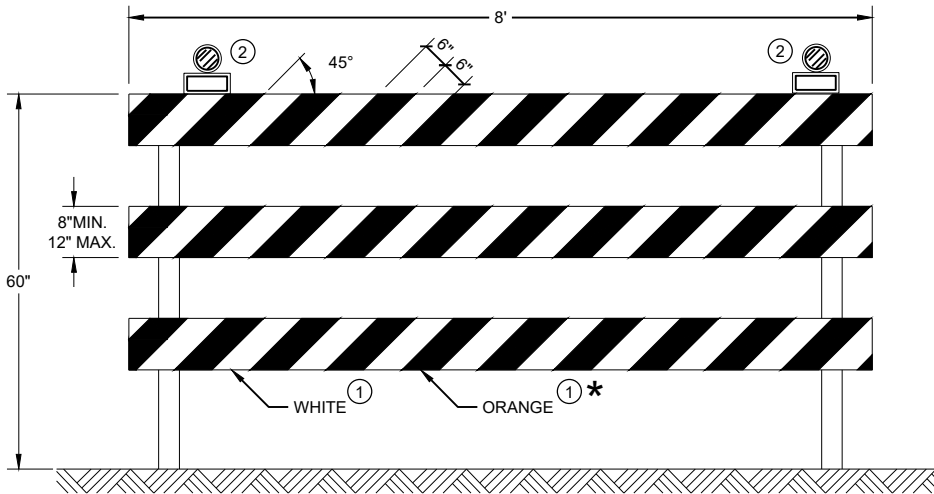
42" CONE
DO NOT USE IN TAPERS
½ SPACING OF DRUMS
BALLAST WIDTHS
RANGE FROM 14"-20"



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



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



TYPE III BARRICADE
IF SIGN MOUNTED, DO NOT COVER MORE THAN 50% OF THE TOP
TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.
* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

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

**CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2022 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 87
FHWA

LEGEND

-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL DRUM
-  TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
-  TEMPORARY DELINEATOR (WHITE, SINGLE DELINEATOR)
-  TYPE III BARRICADE
-  TYPE III BARRICADE WITH ATTACHED SIGN
-  TYPE "A" WARNING LIGHT (FLASHING)
-  TEMPORARY RAISED PAVEMENT MARKERS (TWO WAY YELLOW)
-  TEMPORARY STEEL PLATE BEAM GUARD AND END TREATMENT
-  DIRECTION OF TRAFFIC
-  REMOVE PAVEMENT MARKINGS
-  WORK AREA

GENERAL NOTES

ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.

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

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

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

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

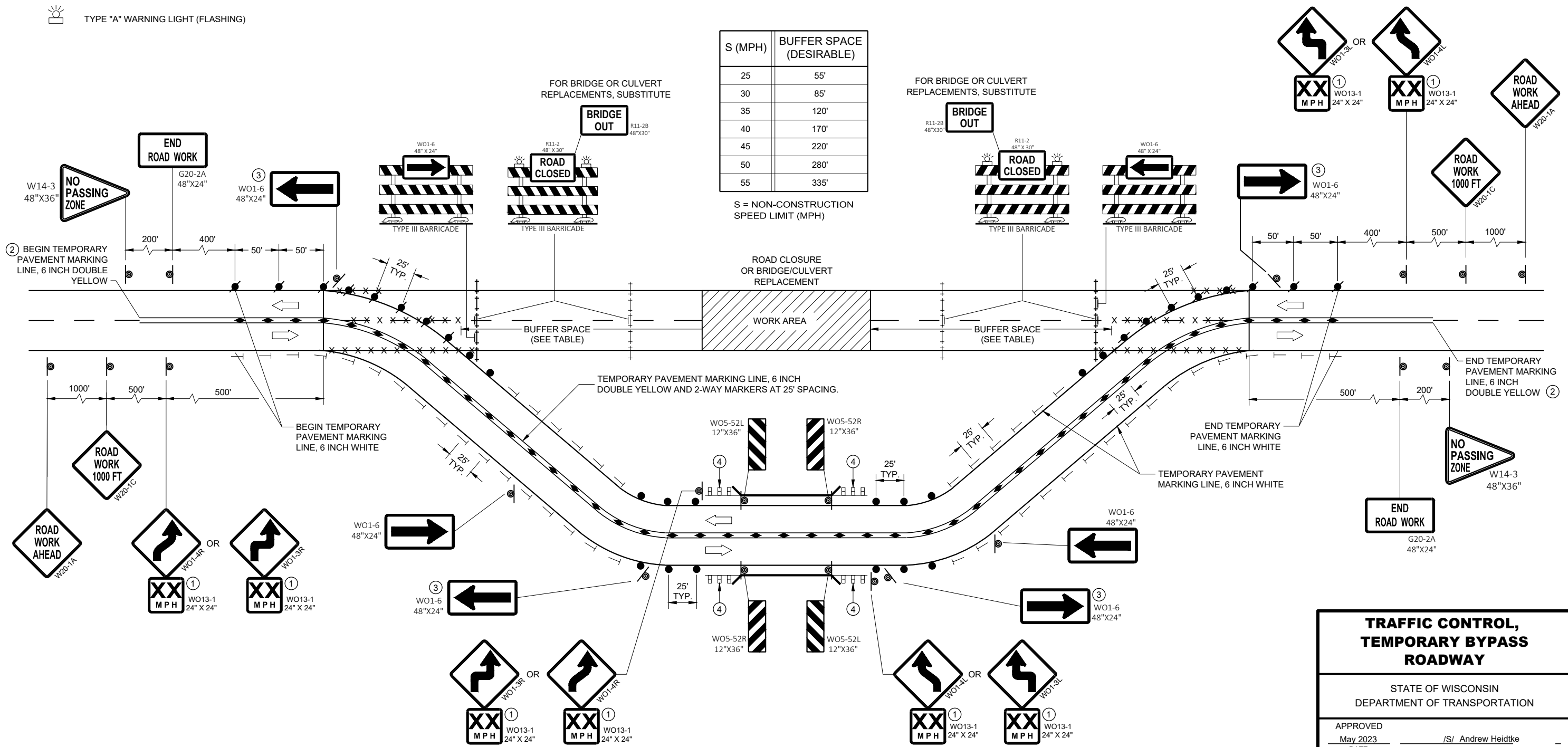
SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL ON STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

EQUIPMENT, VEHICLES, OR MATERIAL SHOULD NOT BE STORED IN BUFFER SPACE.

- ① IF ADVISORY SPEED IS GREATER THAN 30 MPH, USE THE WO1-4 SIGN. IF ADVISORY SPEED IS 30 MPH OR LESS, USE THE WO1-3 SIGN.
- ② WHEN THE DISTANCE TO / FROM THE NEXT CLOSEST NO-PASSING ZONE IS LESS THAN THE MINIMUM DISTANCE BETWEEN ZONES AS INDICATED IN THE SPECIFICATIONS, THE TWO ZONES SHALL BE CONNECTED.
- ③ OMIT THESE WO1-6 SIGNS IF THE ADVISORY SPEED OF THE CURVE IS GREATER THAN 30 MPH.
- ④ TEMPORARY STEEL PLATE BEAM GUARD AND END TREATMENT WHEN INCLUDED IN THE CONTRACT. FOR LAYOUT, SEE DETAILS ELSEWHERE IN THE PLAN.

S (MPH)	BUFFER SPACE (DESIRABLE)
25	55'
30	85'
35	120'
40	170'
45	220'
50	280'
55	335'

S = NON-CONSTRUCTION SPEED LIMIT (MPH)



**TRAFFIC CONTROL,
TEMPORARY BYPASS
ROADWAY**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

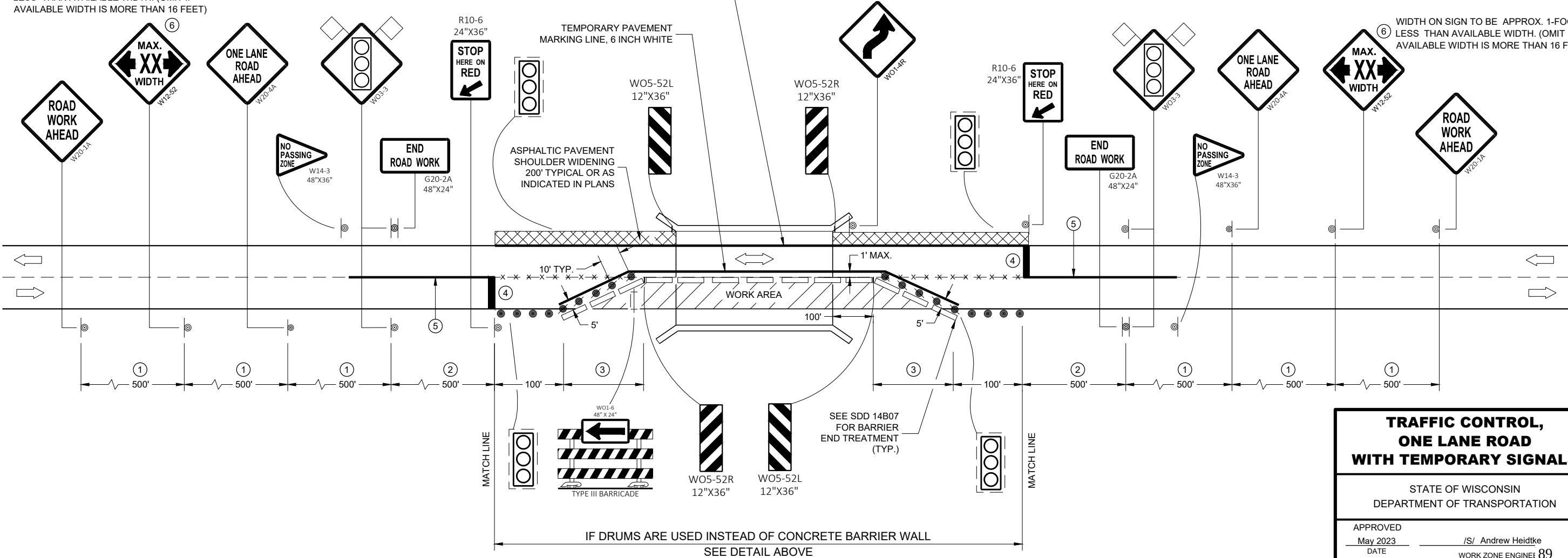
APPROVED
May 2023 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 88

FHWA

LEGEND

- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- FLAGS, 16" X 16" MIN. (ORANGE)
- REMOVING PAVEMENT MARKING
- DIRECTION OF TRAFFIC
- ASPHALTIC PAVEMENT WIDENING
- CONCRETE BARRIER TEMPORARY PRECAST
- TEMPORARY SIGNAL. SEE SDD 09G02 FOR EXACT PLACEMENT

WIDTH ON SIGN TO BE APPROX. 1-FOOT LESS THAN AVAILABLE WIDTH. (OMIT IF AVAILABLE WIDTH IS MORE THAN 16 FEET)



GENERAL NOTES

- THE EXACT NUMBER, LOCATION, AND SPACING OF ALL SIGNS AND DEVICES SHALL BE ADJUSTED TO FIT FIELD CONDITIONS AS APPROVED BY THE ENGINEER.
- THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE..
- THIS LANE CLOSURE IS TYPICAL FOR CLOSING RIGHT LANE - REVERSE FOR CLOSING LEFT LANE.
- ALL SIGNS ARE 48" x 48" UNLESS OTHERWISE NOTED.
- "WO" IS THE SAME AS "W" EXCEPT THE BACKGROUND IS ORANGE.
- ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED OR AS APPROVED BY THE ENGINEER.
- REMOVE PAVEMENT MARKING AND PLACE TEMPORARY PAVEMENT MARKING LINES IF THE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS.
- INSTALL OVERHEAD TEMPORARY SIGNAL HEADS ABOVE THE MIDDLE OF THE TRAVEL LANE THEY ARE CONTROLLING.
- 500 FOOT SPACING SHOWN IS FOR ROADWAYS WITH A PRE-CONSTRUCTION REGULATORY SPEED LIMIT OF 45 MPH OR MORE. FOR 35 - 40 MPH, USE 350 FOOT TYPICAL SPACING. FOR 25 - 30 MPH, USE 200 FOOT TYPICAL SPACING.
 - USE 300 FOOT SPACING IF THE PRE - CONSTRUCTION REGULATORY SPEED IS 35 MPH OR LESS.
 - DIMENSION DETERMINED BY CBTP TAPER FROM EDGE LINE TO TANGENT SECTION OF THE ROAD.
 - TEMPORARY PAVEMENT MARKING LINE, 18 INCH WHITE STOP LINE.
 - 700 FOOT TEMPORARY PAVEMENT MARKING LINE, 6 INCH DOUBLE YELLOW . WHEN THE DISTANCE FOR THE PRECEDING NO - PASSING ZONE IS LESS THAN THE MINIMUM DISTANCE BETWEEN ZONES AS INDICATED IN THE SPECIFICATIONS, THE TWO ZONES SHALL BE CONNECTED.
 - SEE SDD 15C02 - SHEET "F" FOR ADVANCED WIDTH RESTRICTION SIGNING.

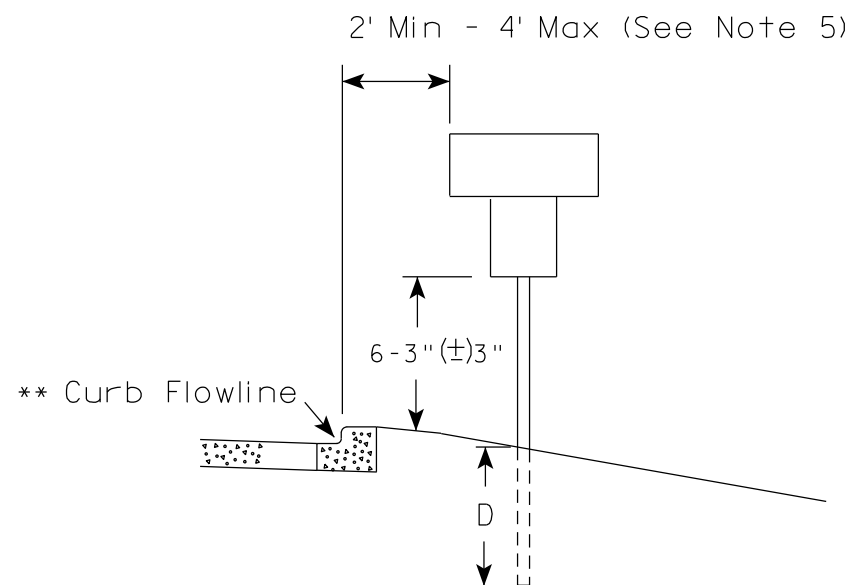
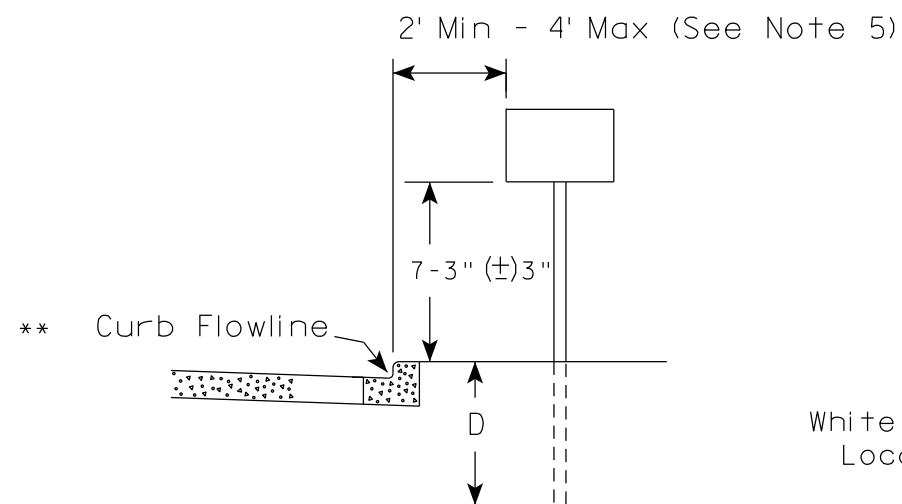
**TRAFFIC CONTROL,
ONE LANE ROAD
WITH TEMPORARY SIGNALS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 89

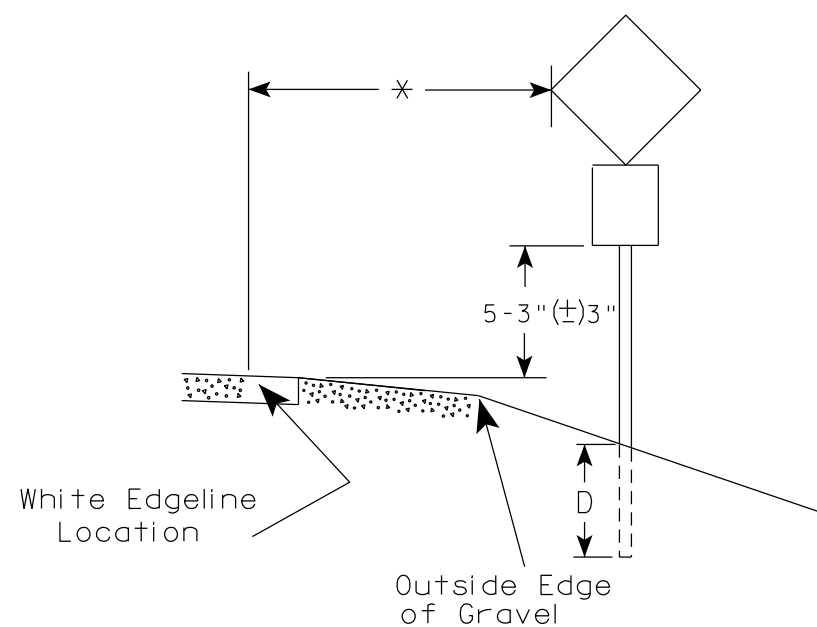
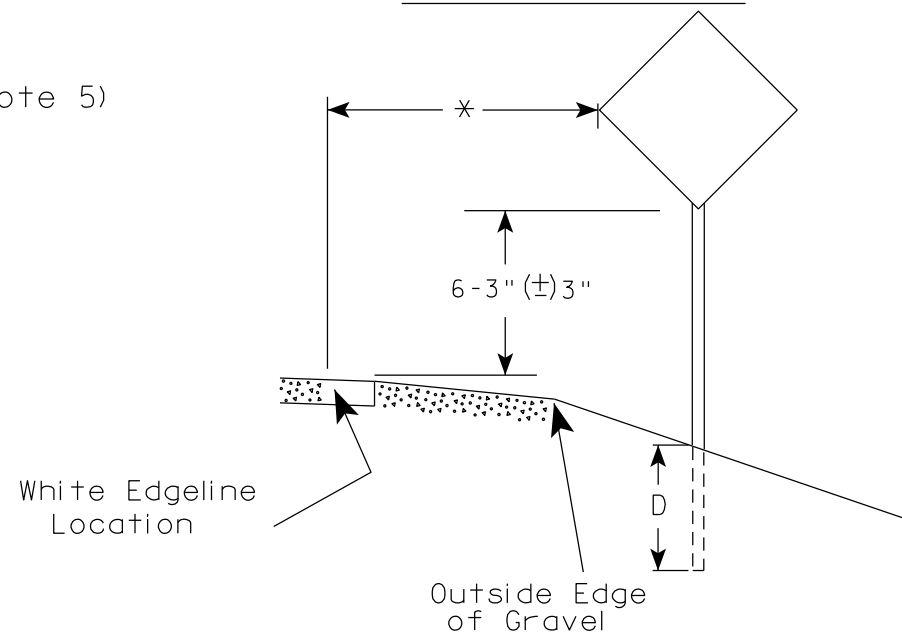
FHWA

URBAN AREA



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

RURAL AREA (See Note 2)



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

POST EMBEDMENT DEPTH

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

GENERAL NOTES

- Signs wider than 4 feet or 20 sq.ft or larger, shall be mounted on multiple posts. Refer to plate A4-4.
- If signs are mounted on or behind barrier wall, see A4-10 sign plate.
The Double Arrow sign (W12-1D) shall be mounted at a height of 2'-3" (±) 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" (±) 3".
- For expressways and freeways, mounting height is 7'- 3" (±) 3" or 6'-3" (±) 3" depending upon existence of a sub-sign.
- Minimum mounting height for signs mounted on traffic signal poles is 5'- 3" (±) 3".
- Offset distance shall be consistent with existing signs or consistent throughout length of project.
- Folding signs shall be mounted at a height of 5'-3" (±) 3" or as directed by the Engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Matthew R. Rauch
for State Traffic Engineer

DATE 12/6/23

PLATE NO. A4-3.23

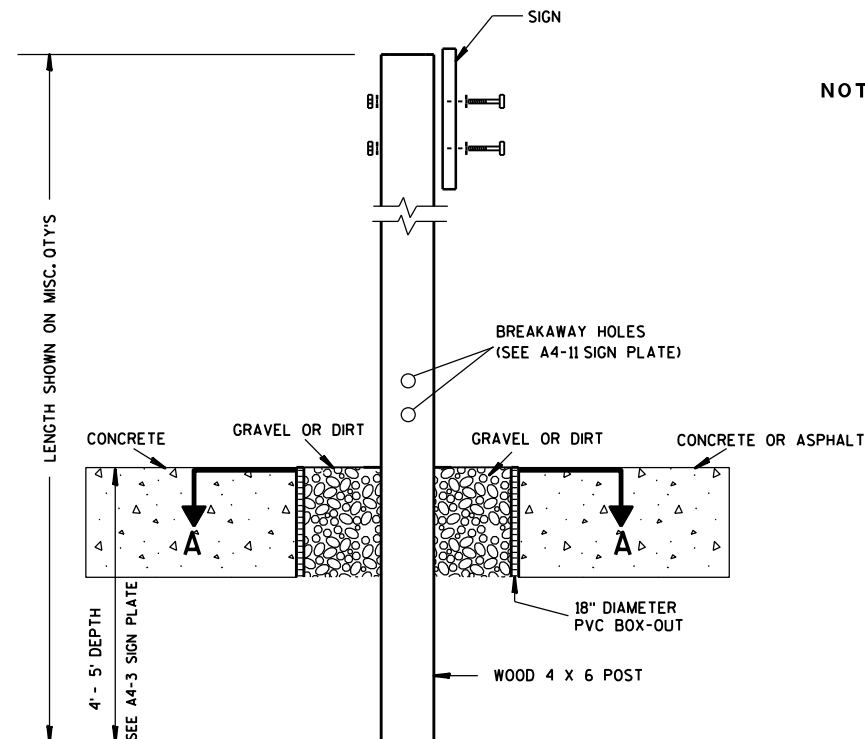
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 90

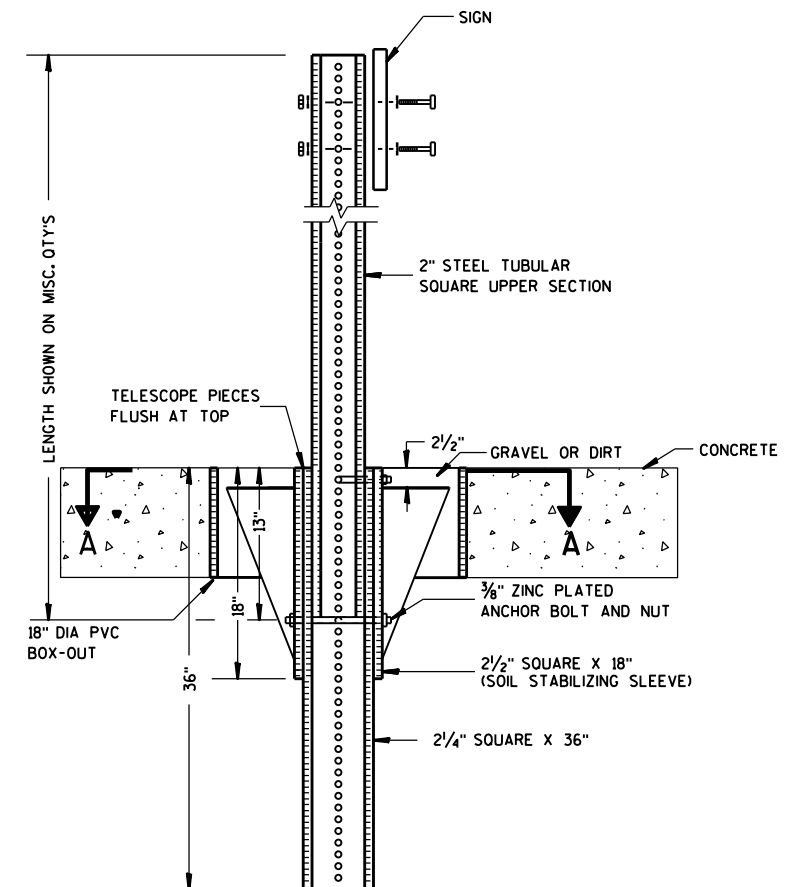
E



ELEVATION VIEW

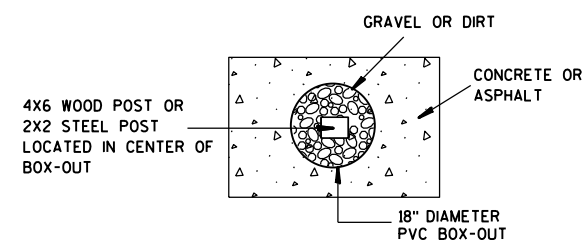
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

**SIGN POST
BOX-OUTS
A4-3B**

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLAT 91 A4-3B.1

PROJECT NO:

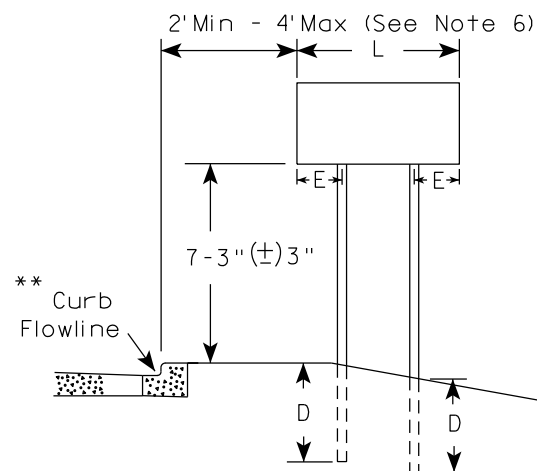
HWY:

COUNTY:

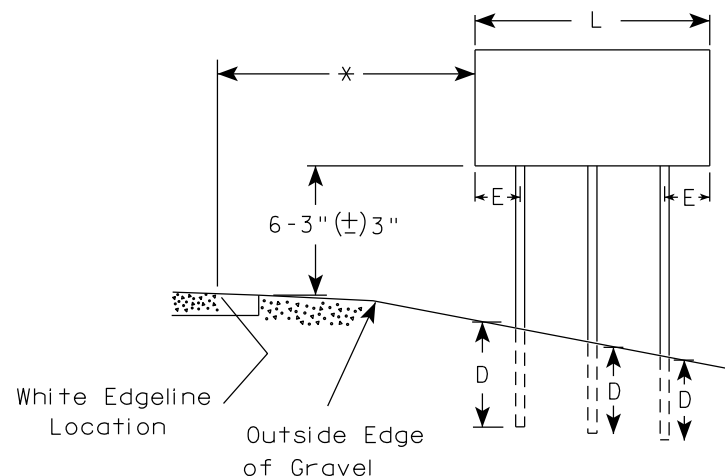
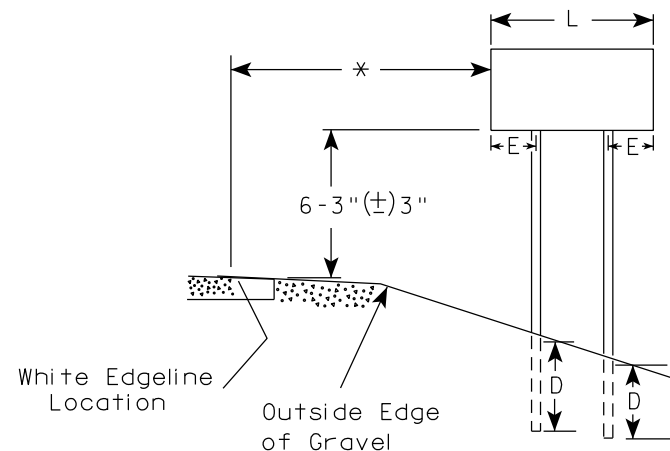
SHEET NO:

E

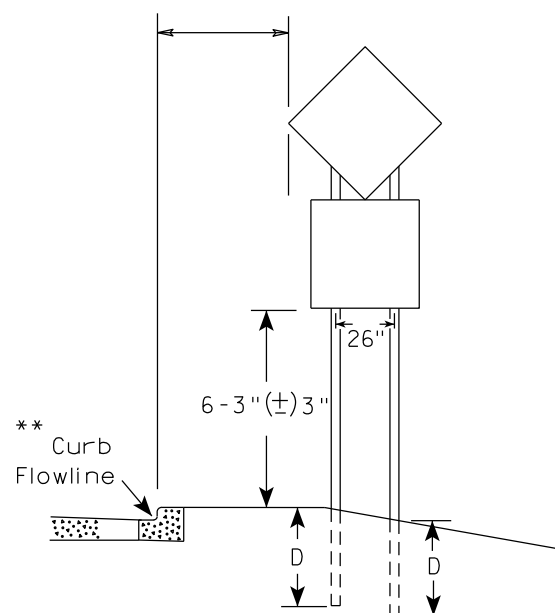
URBAN AREA



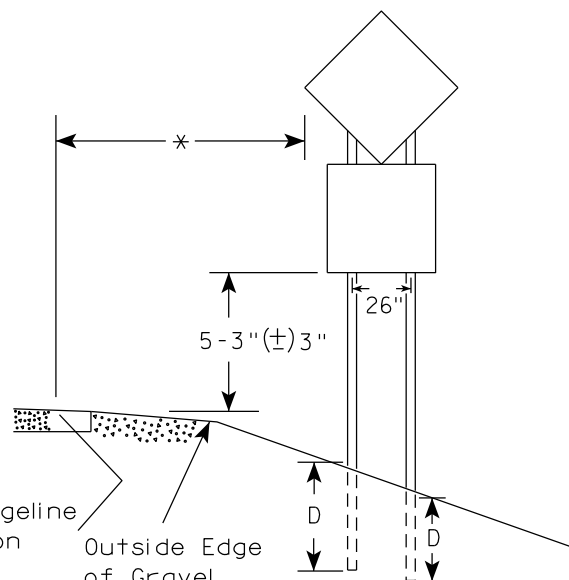
RURAL AREA (See Note 3)



2' Min - 4' Max (See Note 6)



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 12/6/23 PLATE NO. A4-4.16

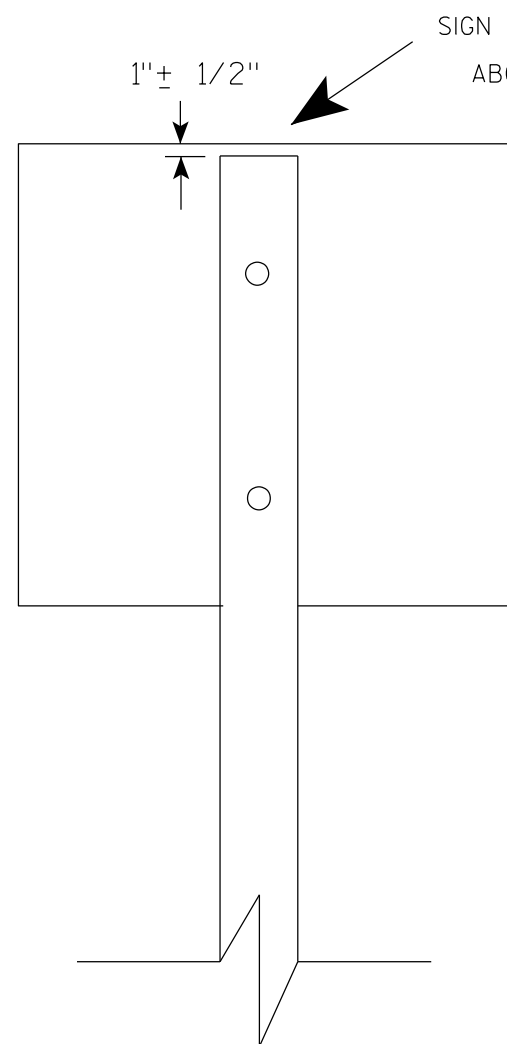
PROJECT NO:

HWY:

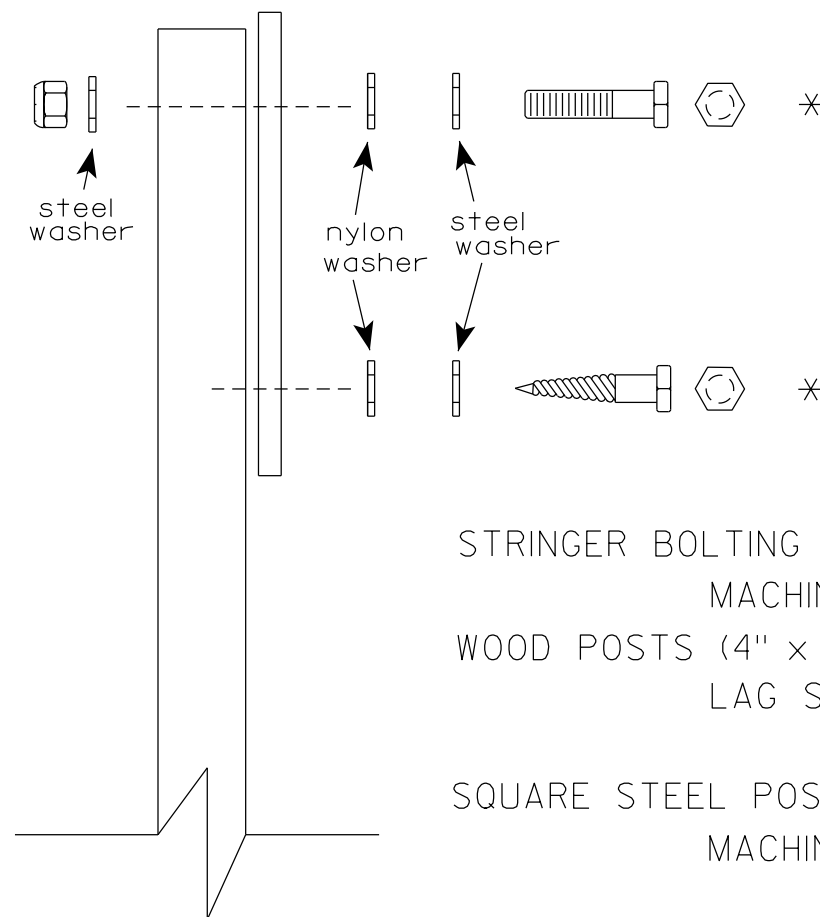
COUNTY:

SHEET NO: 92

E



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 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.

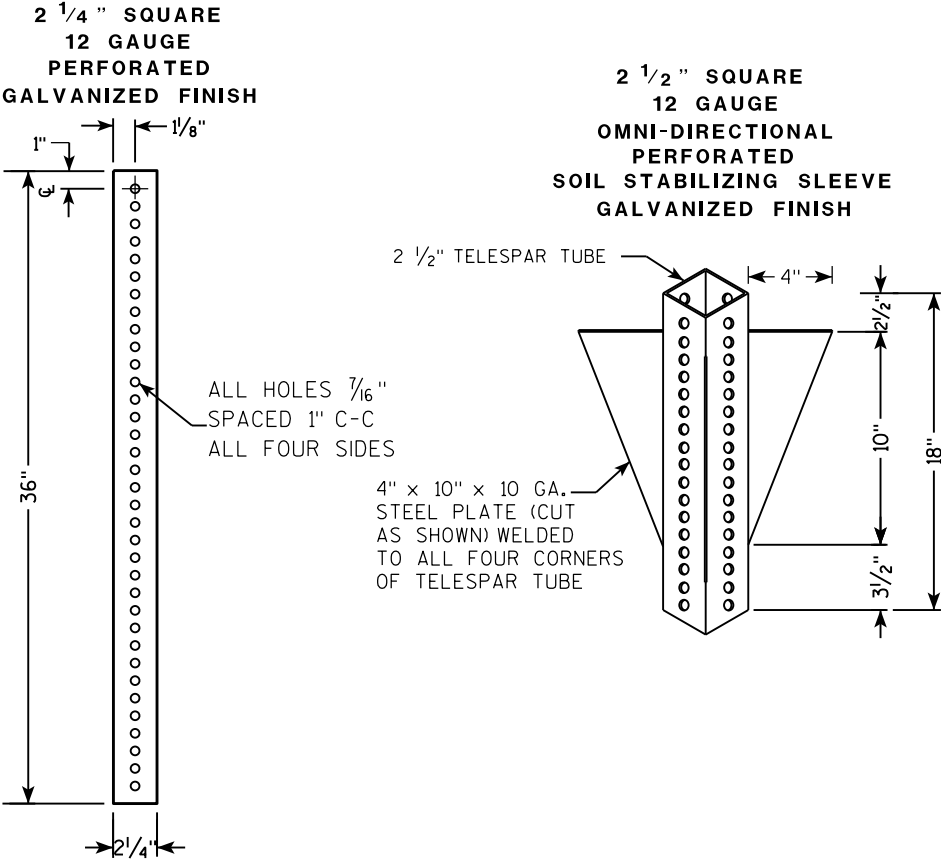
ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

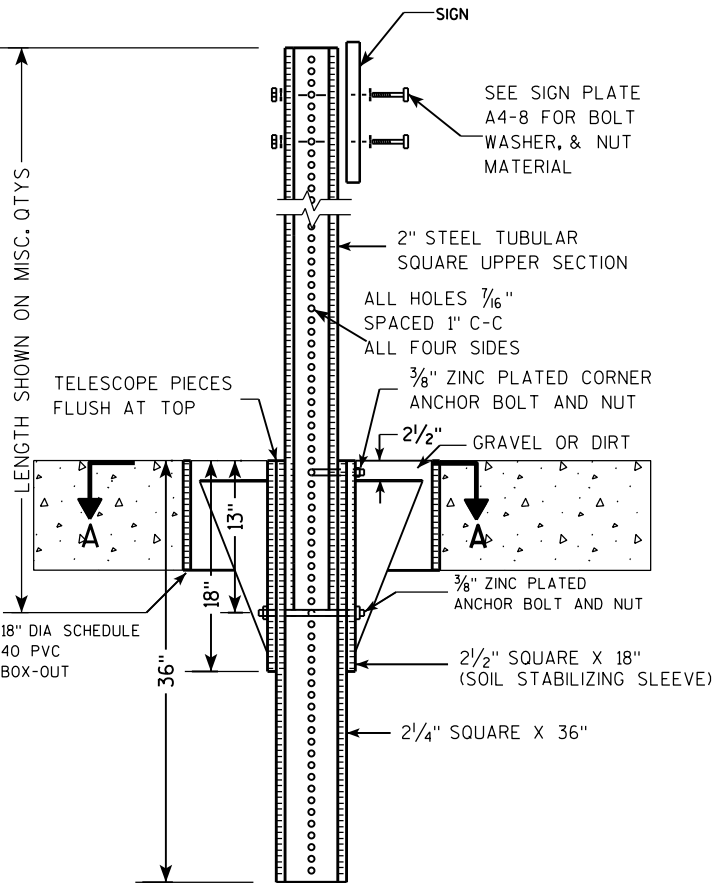
APPROVED Matthew R. Rauch
For State Traffic Engineer

DATE 4/1/2020 PLATE NO. A4-8.9

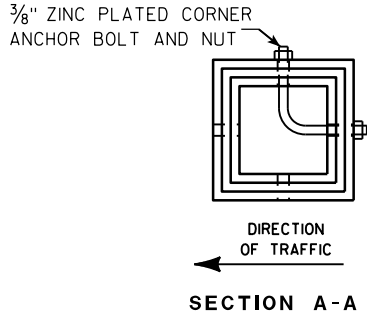
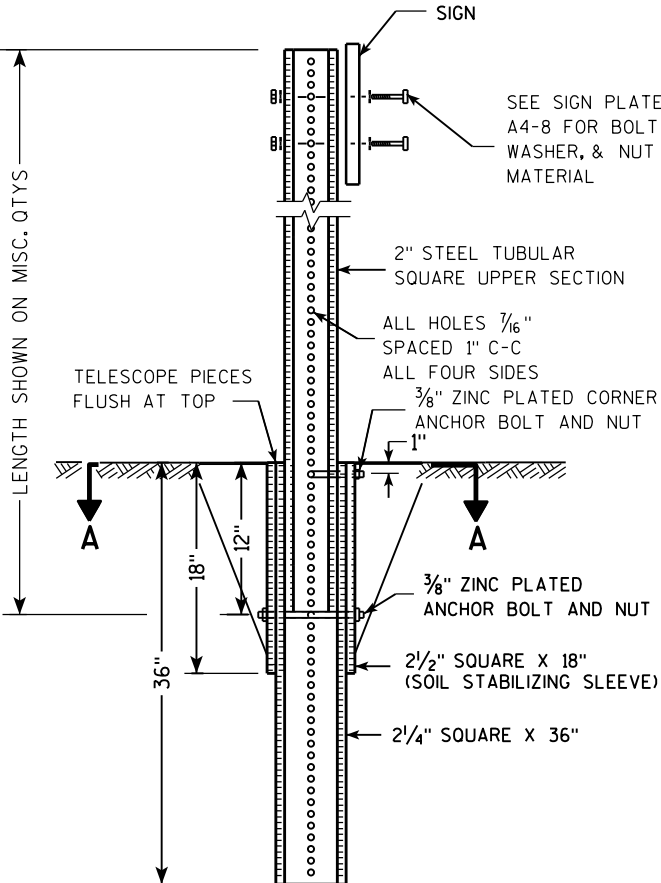
TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM



DETAIL OF TUBULAR STEEL SIGN POST
(IN POURED CONCRETE OR ASPHALT)



DETAIL OF TUBULAR STEEL SIGN POST
(IN LOCATIONS OTHER THAN POURED CONCRETE OR ASPHALT)



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

Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

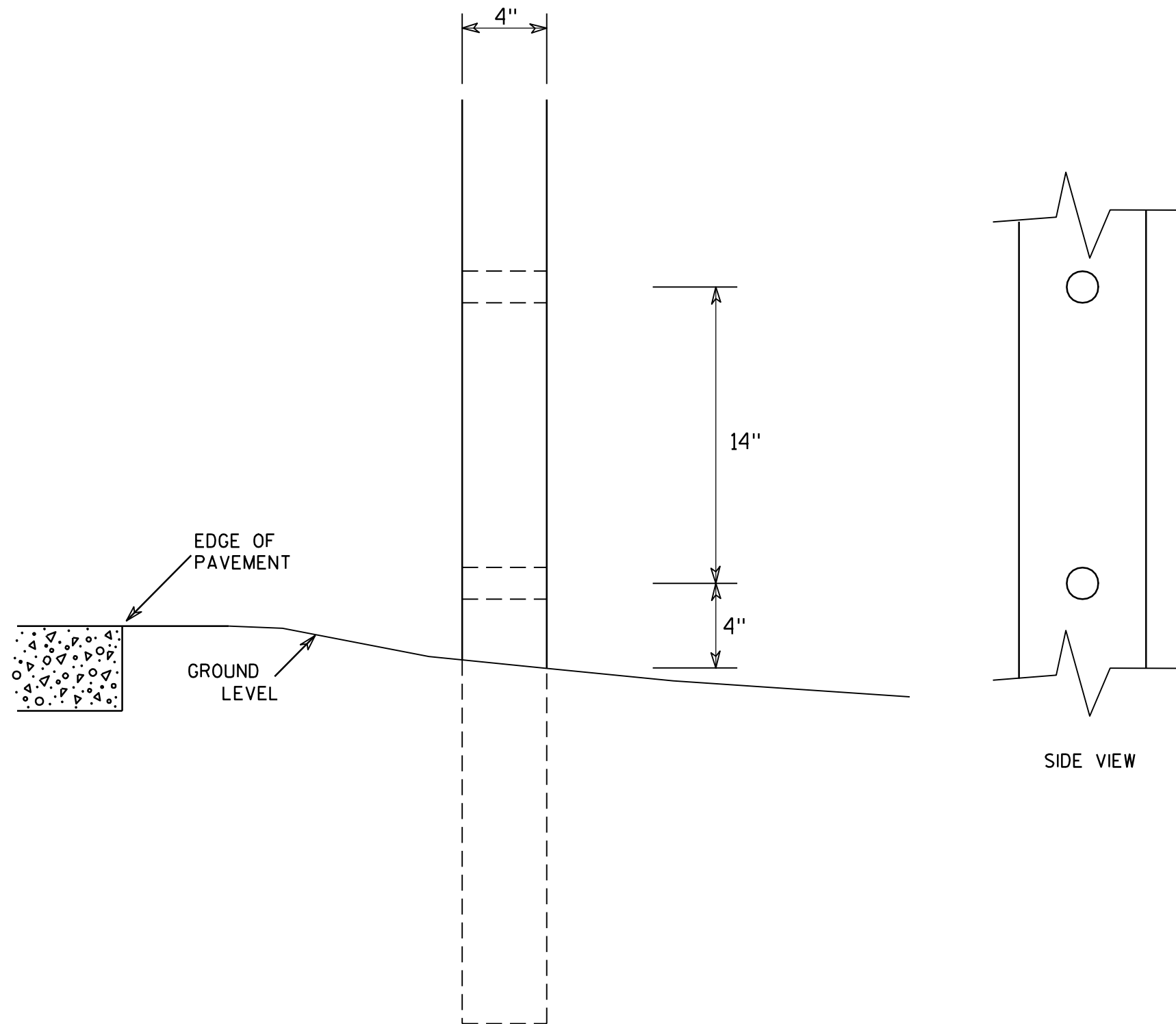
TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/05/15 PLAT 94 14-9.9

7



GENERAL NOTES

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

7

4 X 6 WOOD POST
MODIFICATIONS

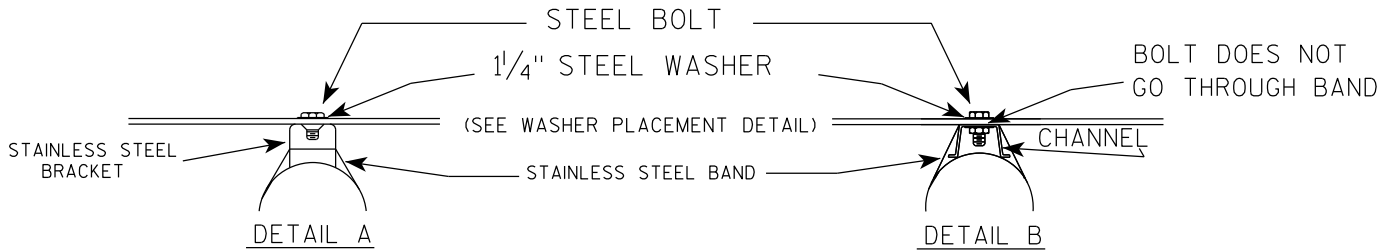
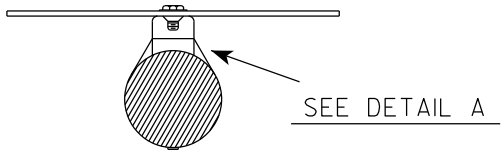
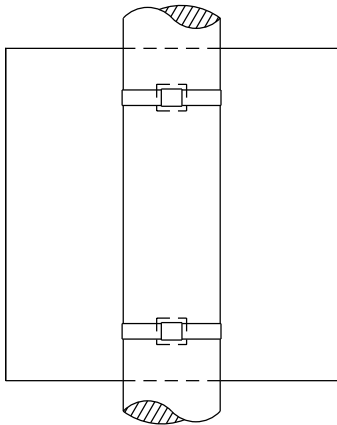
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Chester J. Spang*
for State Traffic Engineer

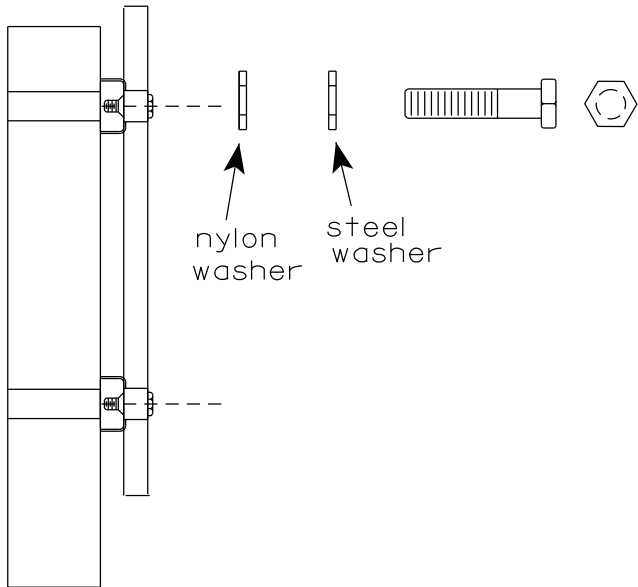
DATE 3/27/97 PLATE NO. A4-11.2

BANDING

SINGLE SIGN



WASHER PLACEMENT

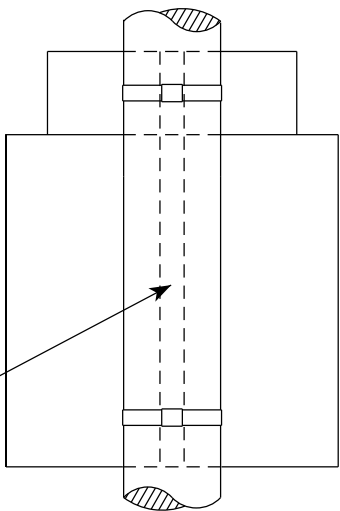


WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

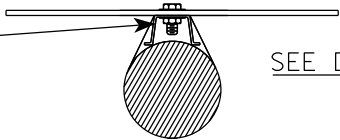
GENERAL NOTES

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

"J" ASSEMBLY



CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

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

VIEW FROM
BACK

VIEW FROM SIDE

VIEW FROM TOP

GENERAL NOTES

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

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

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 4/19/2022 PLATE NO. A5-10.3

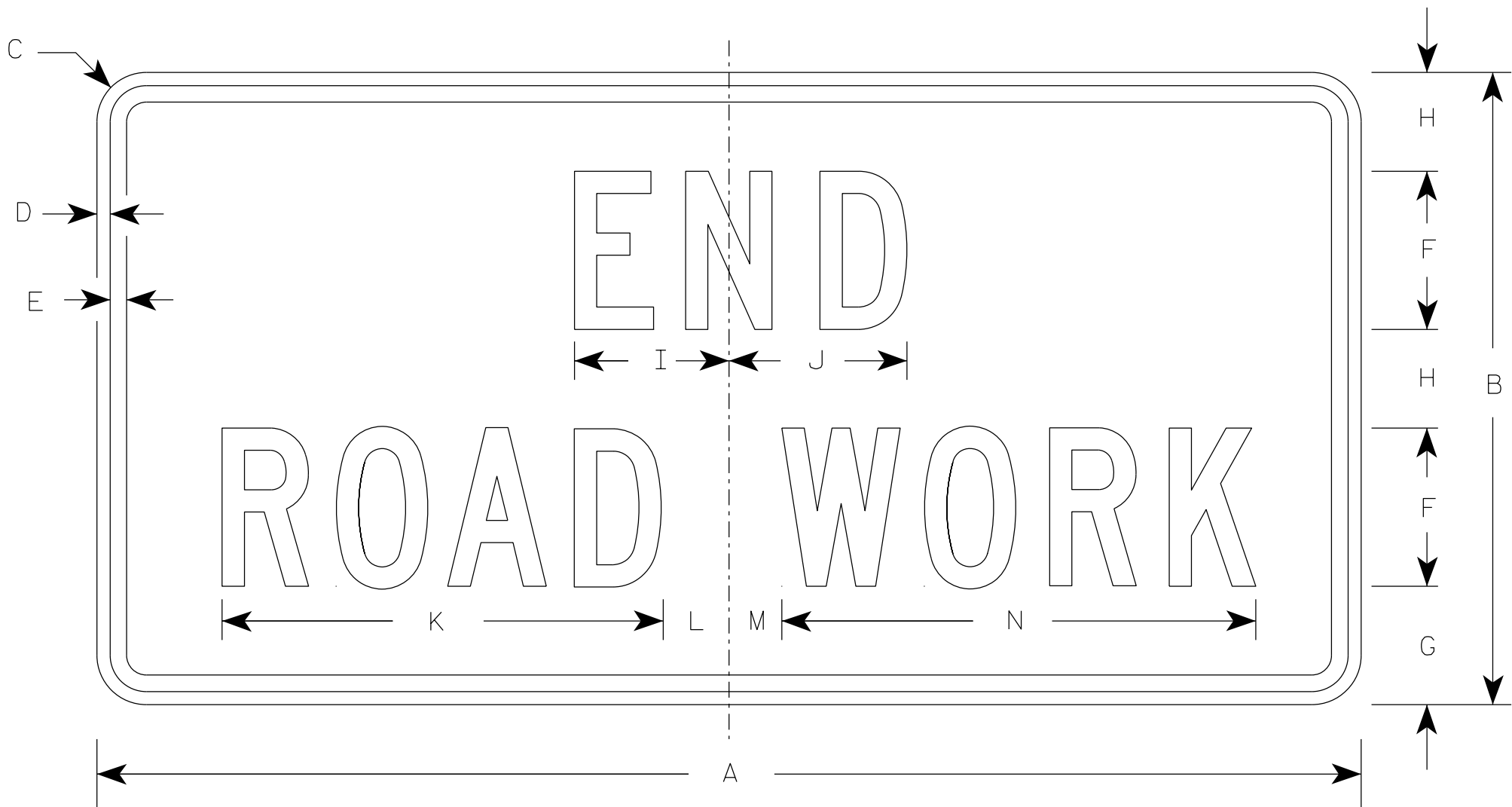
PROJECT NO:

SHEET NO: 97

E

NOTES

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



G20-2A

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 1/2	3/8	1/2	4	3 3/4	2 1/2	4 1/8	4 1/8	11 1/8	2	1	12 1/8													4.5
2	48	24	1 7/8	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0
2M	48	24	1 7/8	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0
3	48	24	1 7/8	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0
4	48	24	1 7/8	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0
5	48	24	1 7/8	1/2	5/8	6	4 1/2	3 3/4	5 7/8	6 3/4	16 3/4	2 1/2	1 3/4	18 1/2													8.0

STANDARD SIGN

G20-2A

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/26/2023 PLATE NO. G20-2A.10

PROJECT NO:

HWY:

COUNTY:

SHEET NO: 98

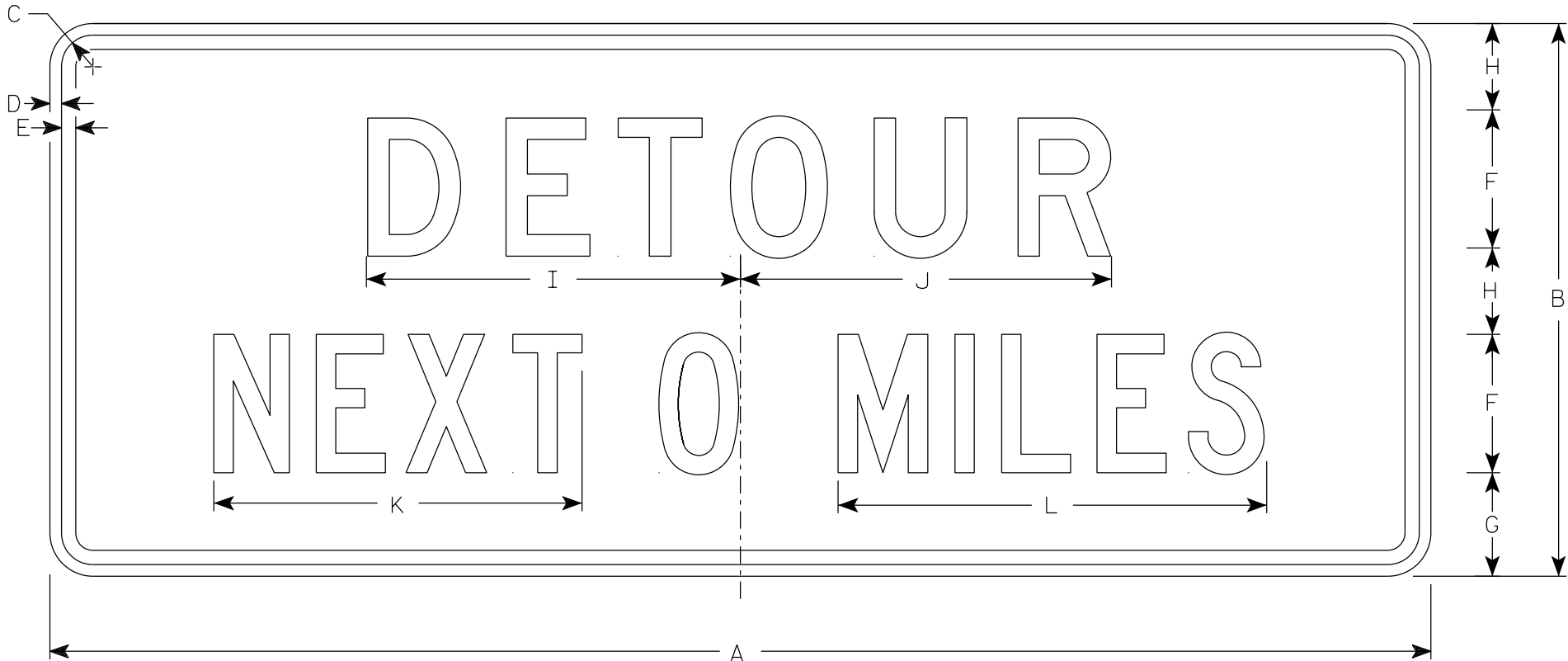
E

7

7

NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Orange
Message - Black
- 3. Message Series - Line 1 is D and Line 2 is C
- 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 5. Round distance to nearest whole Mile and substitute appropriate numerals and optically adjust spacing to achieve proper balance



G20-51

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	60	24	1 7⁄8	1⁄2	5⁄8	6	4 1⁄2	3 3⁄4	16 1⁄4	16 1⁄8	16	18 5⁄8															10.0
2M	60	24	1 7⁄8	1⁄2	5⁄8	6	4 1⁄2	3 3⁄4	16 1⁄4	16 1⁄8	16	18 5⁄8															10.0
3	60	24	1 7⁄8	1⁄2	5⁄8	6	4 1⁄2	3 3⁄4	16 1⁄4	16 1⁄8	16	18 5⁄8															10.0
4	60	24	1 7⁄8	1⁄2	5⁄8	6	4 1⁄2	3 3⁄4	16 1⁄4	16 1⁄8	16	18 5⁄8															10.0
5	60	24	1 7⁄8	1⁄2	5⁄8	6	4 1⁄2	3 3⁄4	16 1⁄4	16 1⁄8	16	18 5⁄8															10.0

STANDARD SIGN

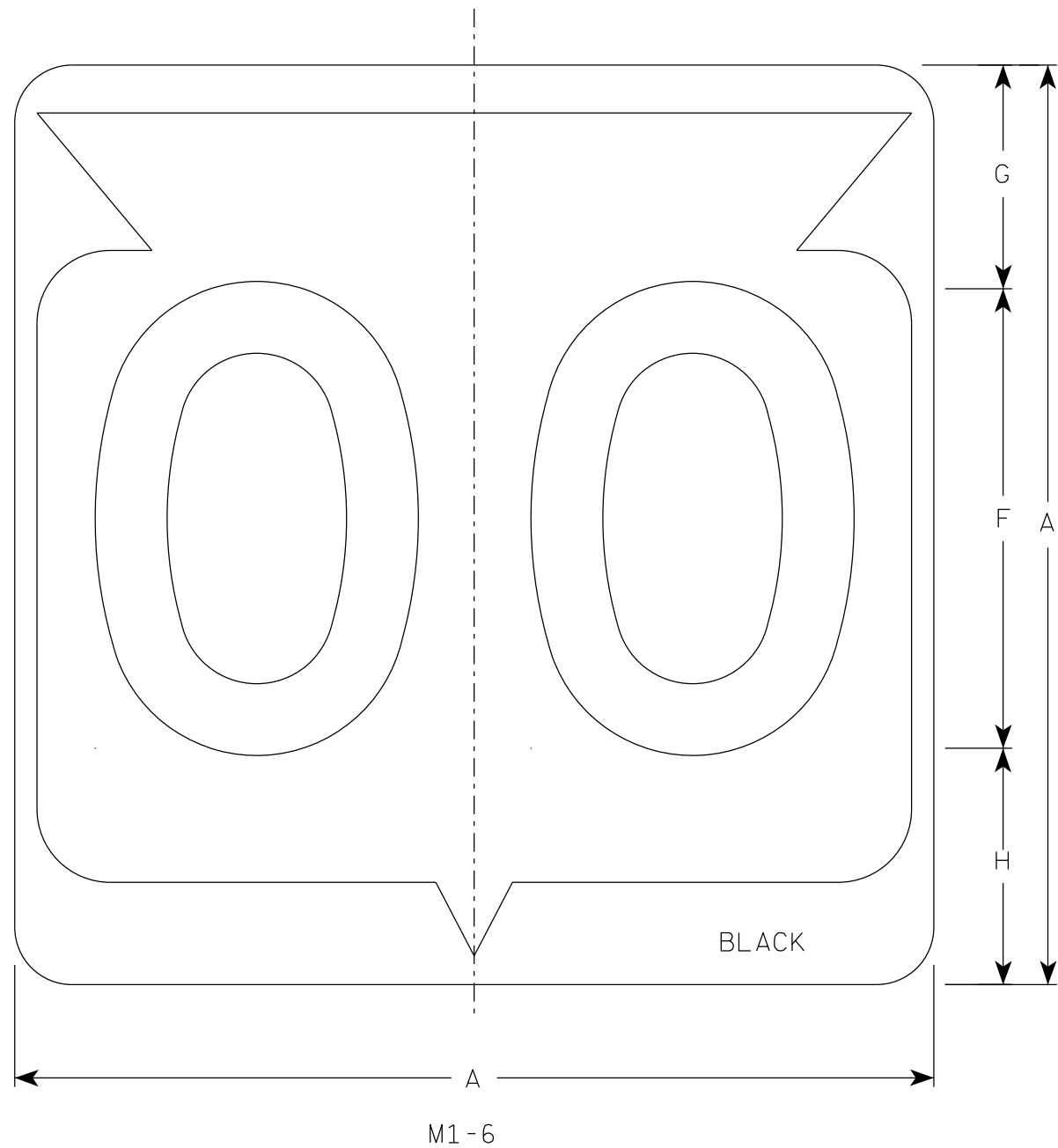
G20-51

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
State Traffic Engineer

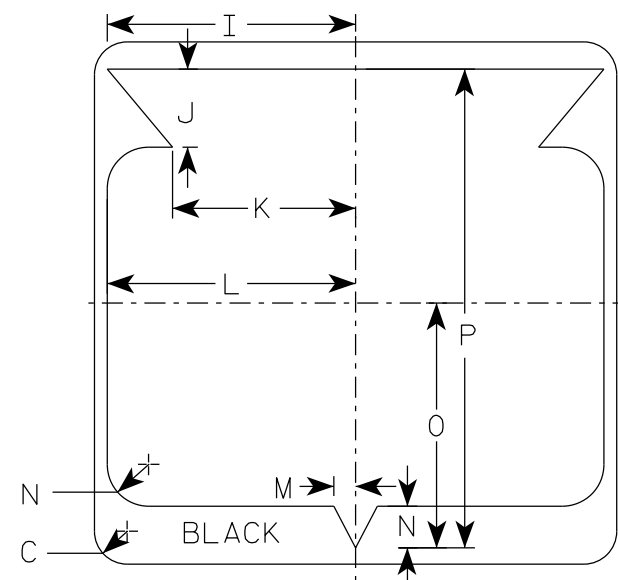
DATE 1/26/2023 PLATE NO. G20-51.3

7



NOTES

1. Sign is Type II - Type H Reflective
2. Color:
Background - White
Message - Black
3. Message Series - D except 3 number signs Series C



7

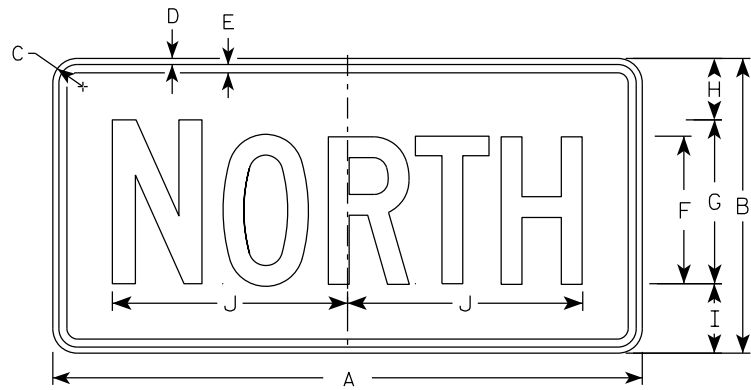
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0
2M	24		1 1/2			12	5 1/2	6 1/2	10 1/4	2 1/2	8 7/8	11 1/2	1	1 7/8	11 1/4	21 7/8											4.0
3	36		2 1/4			18	8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

STATE ROUTE MARKER
M1-6 FOR ASSEMBLIES

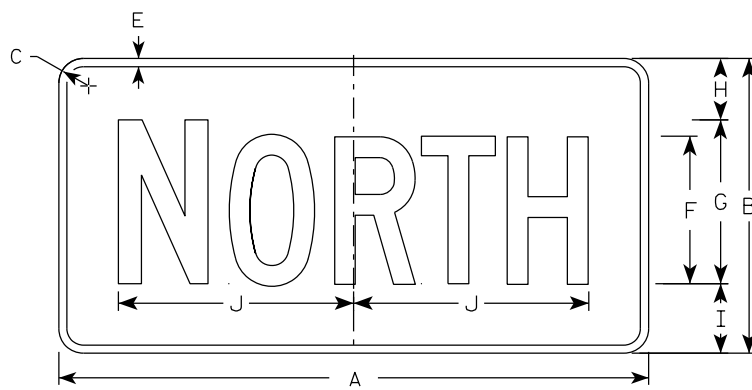
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

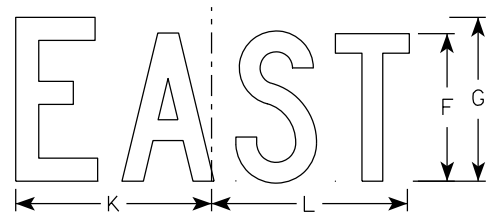
DATE 11/8/2022 PLATE NO. M1-6.11



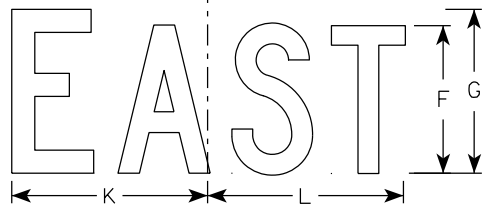
M3-1
MM3-1
MP3-1



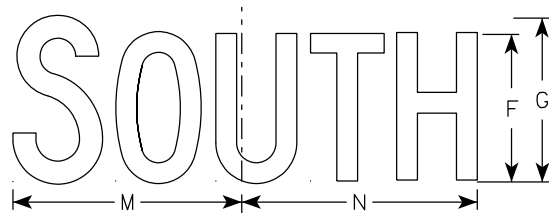
MB3-1
MK3-1
MN3-1



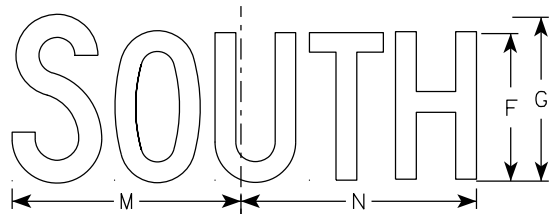
M3-2
MM3-2
MP3-2



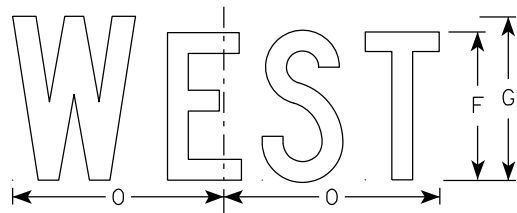
MB3-2
MK3-2
MN3-2



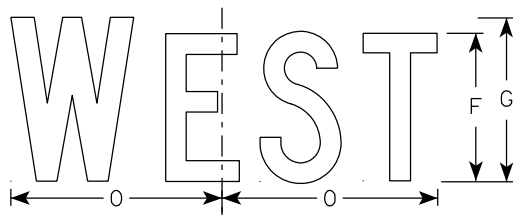
M3-3
MM3-3
MP3-3



MB3-3
MK3-3
MN3-3



M3-4
MM3-4
MP3-4



MB3-4
MK3-4
MN3-4

NOTES

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

7

7

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

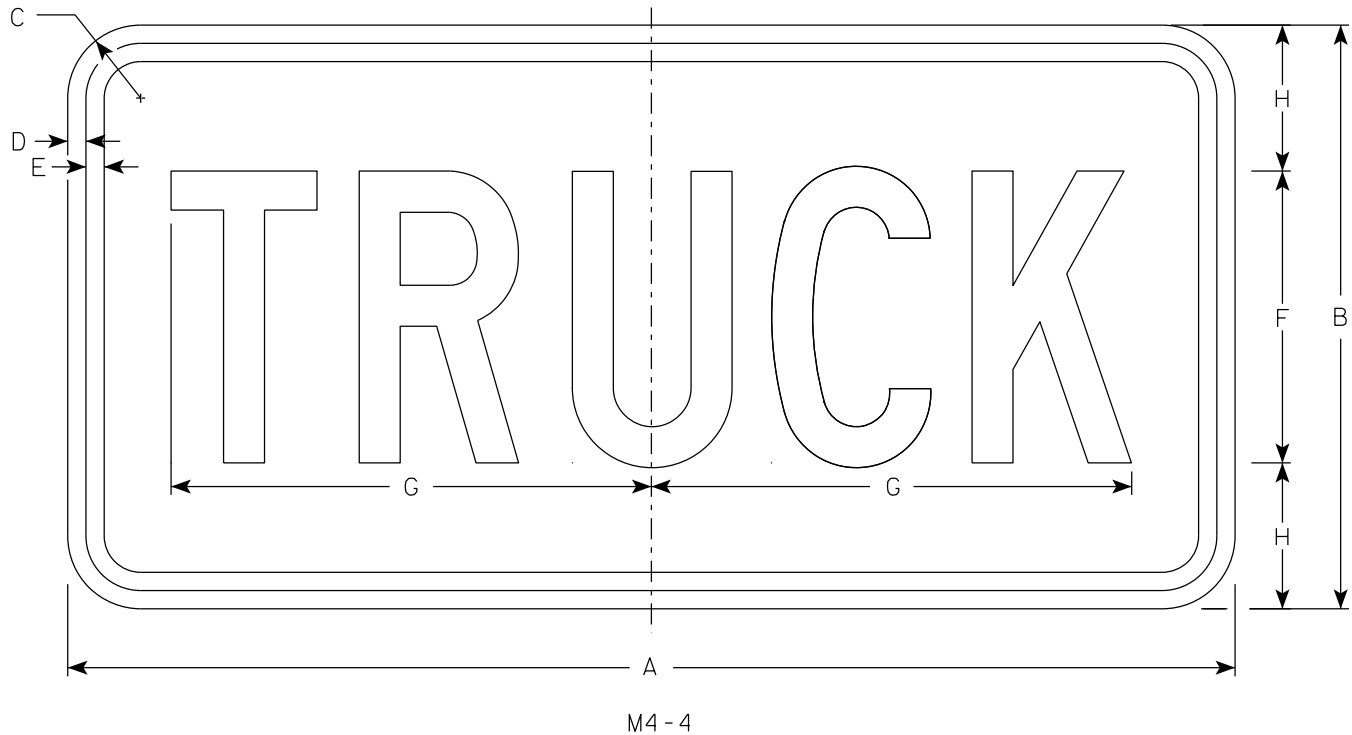
PROJECT NO:	HWY:	COUNTY:	SHEET NO: 101	E
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7

7

NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
 - Background - White
 - Message - Black
- 3. Message Series - C



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/2	3/8	3/8	6	9 7/8	3																			2.0
2M	24	12	1 1/2	3/8	3/8	6	9 7/8	3																			2.0
3	36	18	1 1/2	3/8	1/2	9	15 5/8	4 1/2																			4.5
4	36	18	1 1/2	3/8	1/2	9	15 5/8	4 1/2																			4.5
5	36	18	1 1/2	3/8	1/2	9	15 5/8	4 1/2																			4.5

STANDARD SIGN

M4 - 4

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

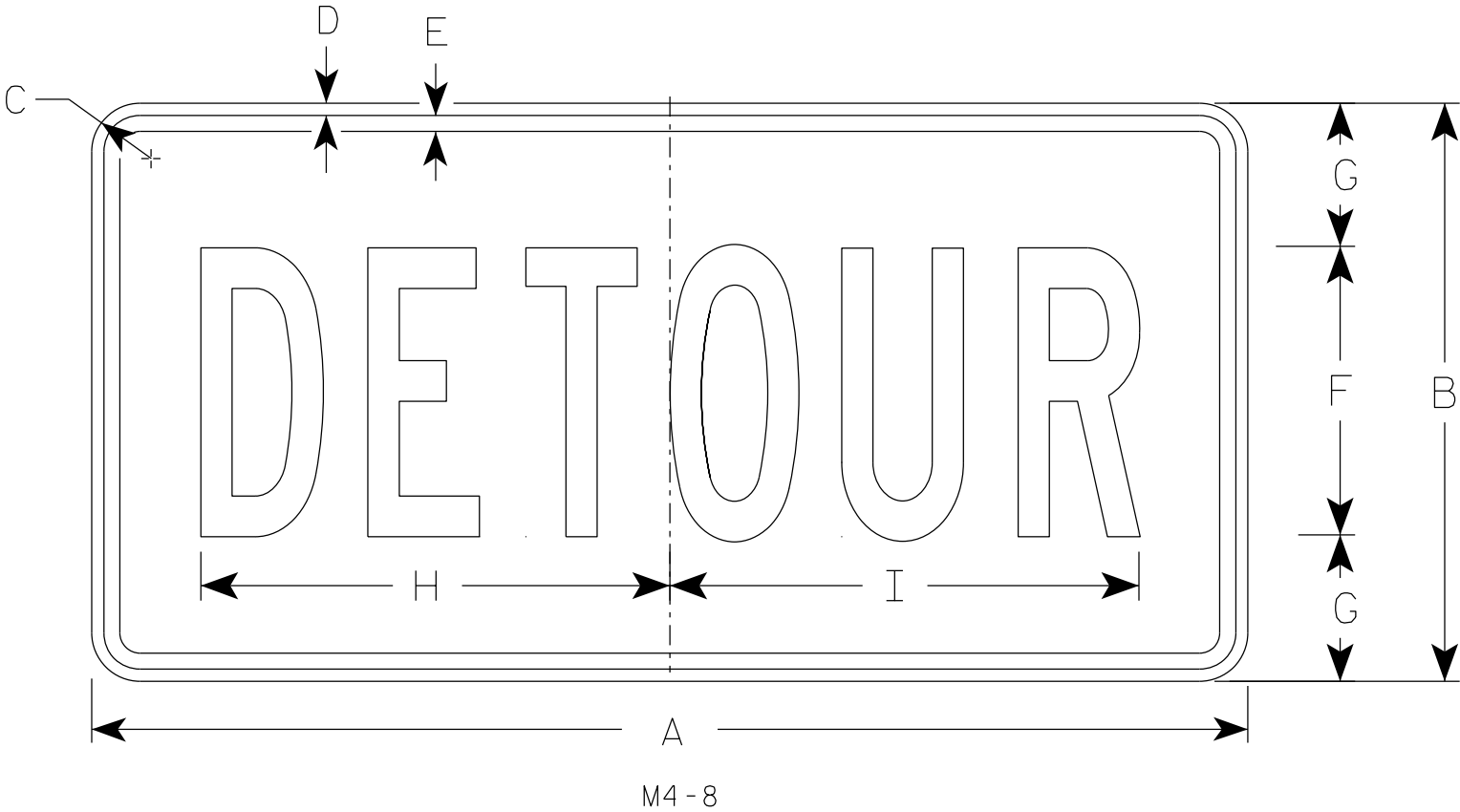
DATE 11/21/2022 PLATE NO. M4-4.4

7

7

NOTES

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



SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/2	3/8	3/8	6	3	10	10 1/4																		2.0
2M	24	12	1 1/2	3/8	3/8	6	3	10	10 1/4																		2.0
3	36	18	1 1/2	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5
4	36	18	1 1/2	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5
5	36	18	1 1/2	3/8	1/2	9	4 1/2	14 5/8	14 1/2																		4.5

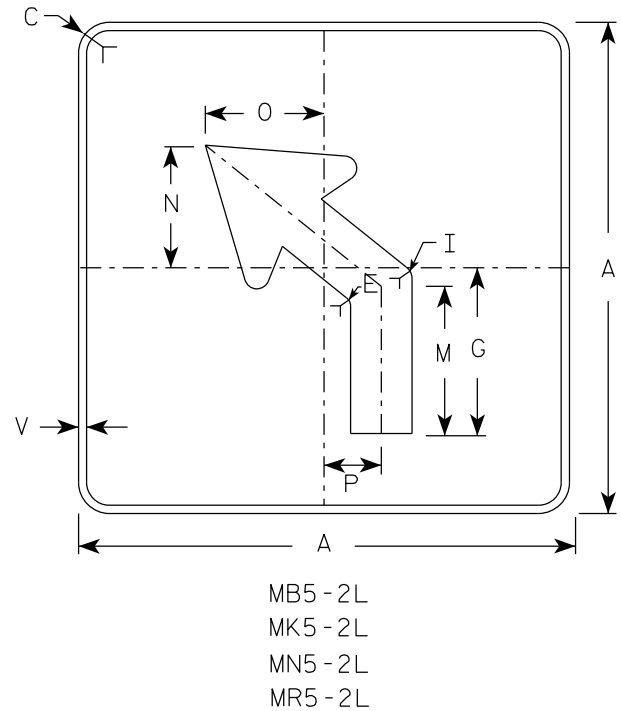
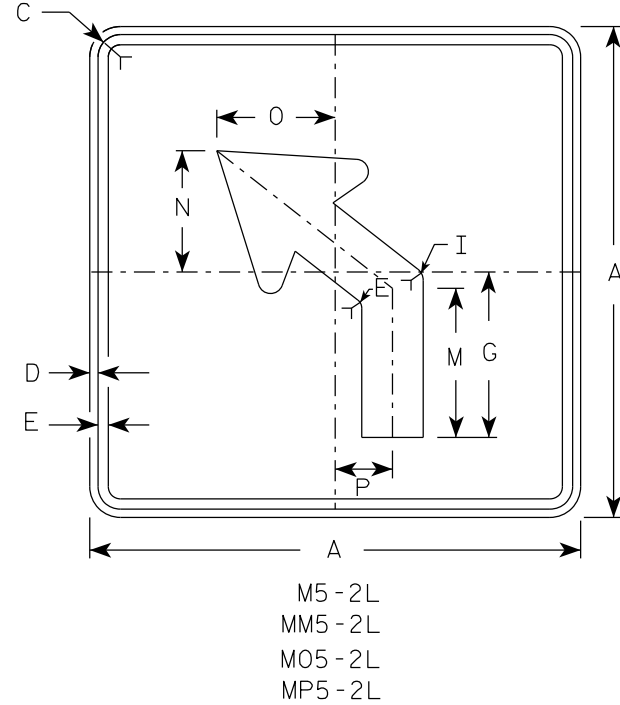
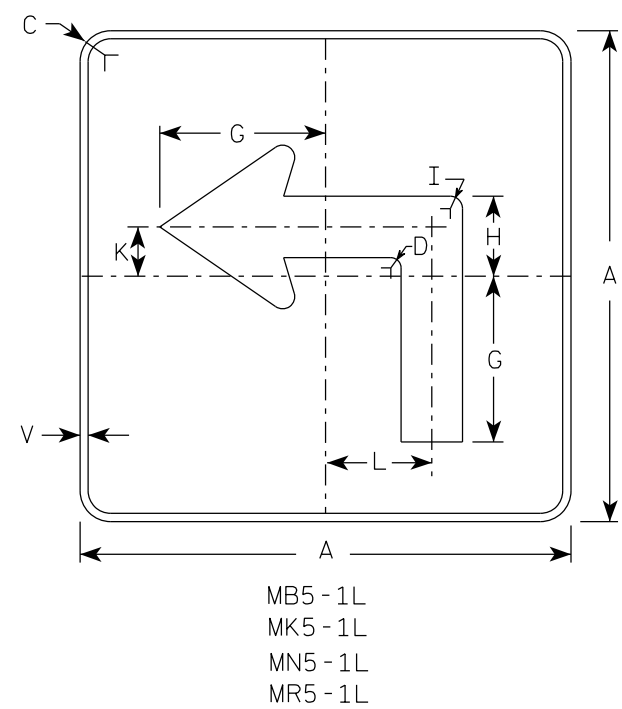
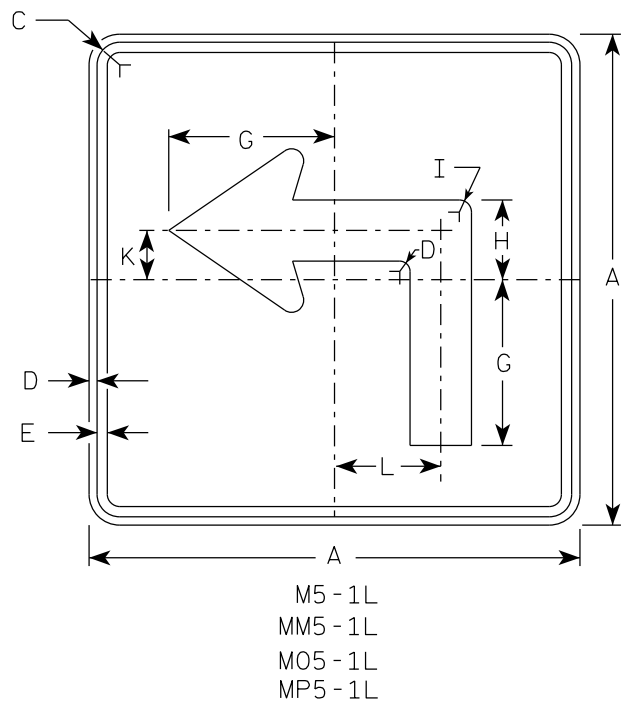
STANDARD SIGN

M4-8

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

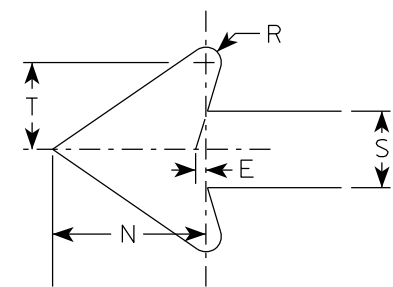
DATE 2/9/2023 PLATE NO. M4-8.4



NOTES

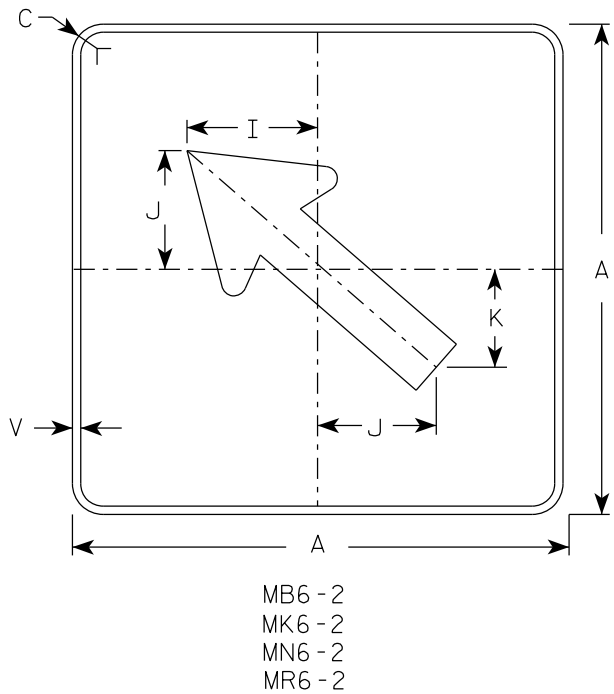
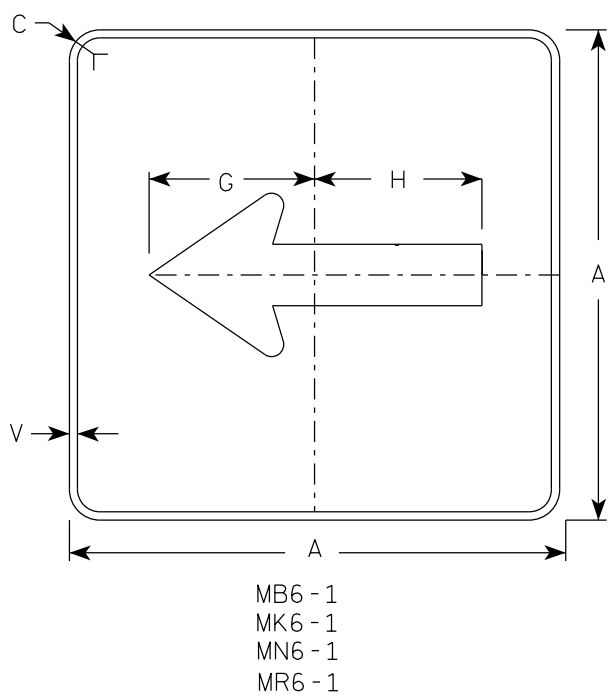
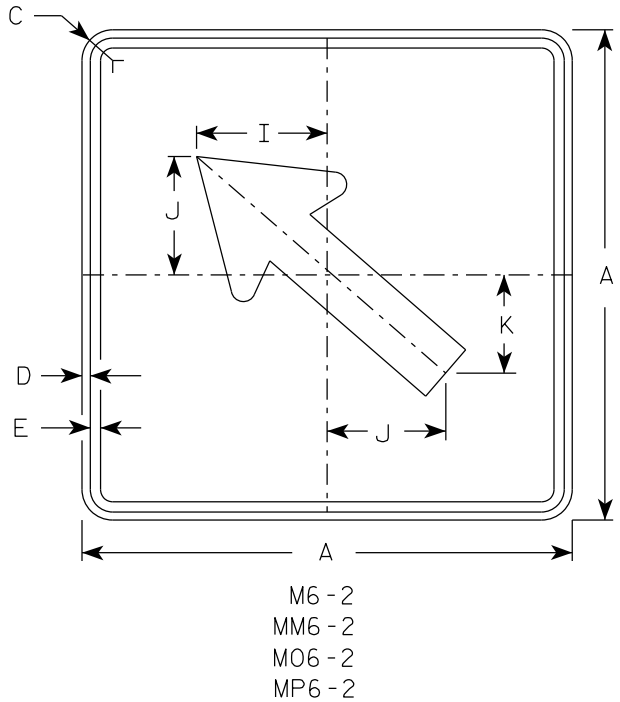
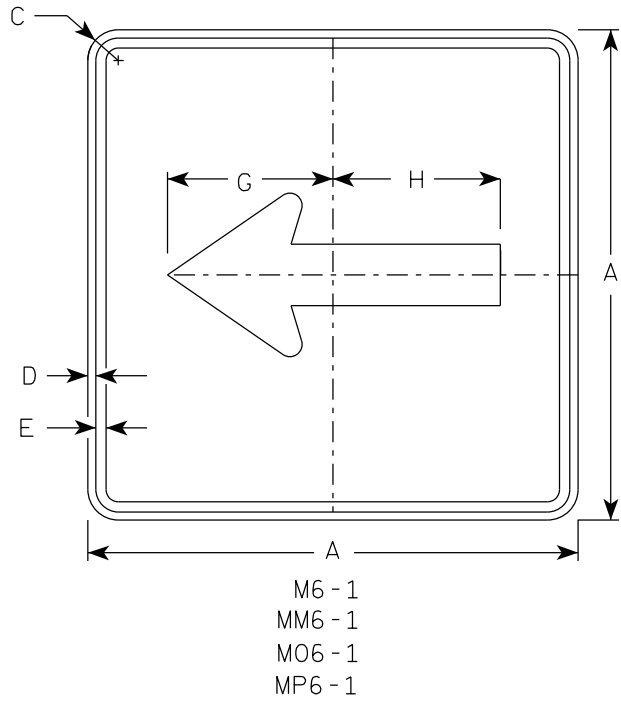
- Signs are Type II - Type H reflective except as shown
- Color:
Background - See note 4
Message - See note 4
- Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- | | | |
|-----------|-------|---|
| M5-1 and | M5-2 | Background - White |
| | | Message - Black |
| MB5-1 and | MB5-2 | Background - Blue |
| | | Message - White |
| MK5-1 and | MK5-2 | Background - Green |
| | | Message - White |
| MM5-1 and | MM5-2 | Background - White |
| | | Message - Green |
| MN5-1 and | MN5-2 | Background - Brown |
| | | Message - White |
| M05-1 and | M05-2 | Background - Orange - Type F Reflective |
| | | Message - Black |
| MP5-1 and | MP5-2 | Background - White |
| | | Message - Blue |
| MR5-1 and | MR5-2 | Background - Brown |
| | | Message - Yellow |
- M5-1R same as M5-1L except arrow points right.
- M5-2R same as M5-2L except arrow tilts right.

ARROW DETAIL

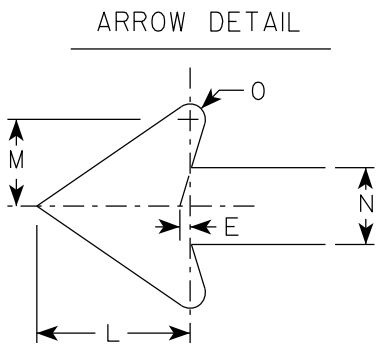


SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	21		1 1/2	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3		1/2					3.06
2M	21		1 1/2	3/8	3/8		7	3 3/8	5/8		2 1/8	4 1/2	6 3/8	5 1/4	5	2 1/2		1/2	2 5/8	3		1/2					3.06
3	30		1 7/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4		1/2					6.25
4	30		1 7/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4		1/2					6.25
5	30		1 7/8	1/2	5/8		10 1/8	4 7/8	7/8		3	6 1/2	9 1/8	7 1/2	7 1/4	3 1/2		3/4	3 3/4	4 1/4		1/2					6.25

PROJECT NO:	HWY:	COUNTY:	SHEET NO: 104	E
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- NOTES
- Signs are Type II - Type H Reflective except as Shown
 - Color:
Background - See note 4
Message - See note 4
 - Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
 - M6-1 and M6-2 Background - White
Message - Black
MB6-1 and MB6-2 Background - Blue
Message - White
MK6-1 and MK6-2 Background - Green
Message - White
MM6-1 and MM6-2 Background - White
Message - Green
MN6-1 and MN6-2 Background - Brown
Message - White
M06-1 and M06-2 Background - Orange - Type F Reflective
Message - Black
MP6-1 and MP6-2 Background - White
Message - Blue
MR6-1 and MR6-2 Background - Brown
Message - Yellow



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

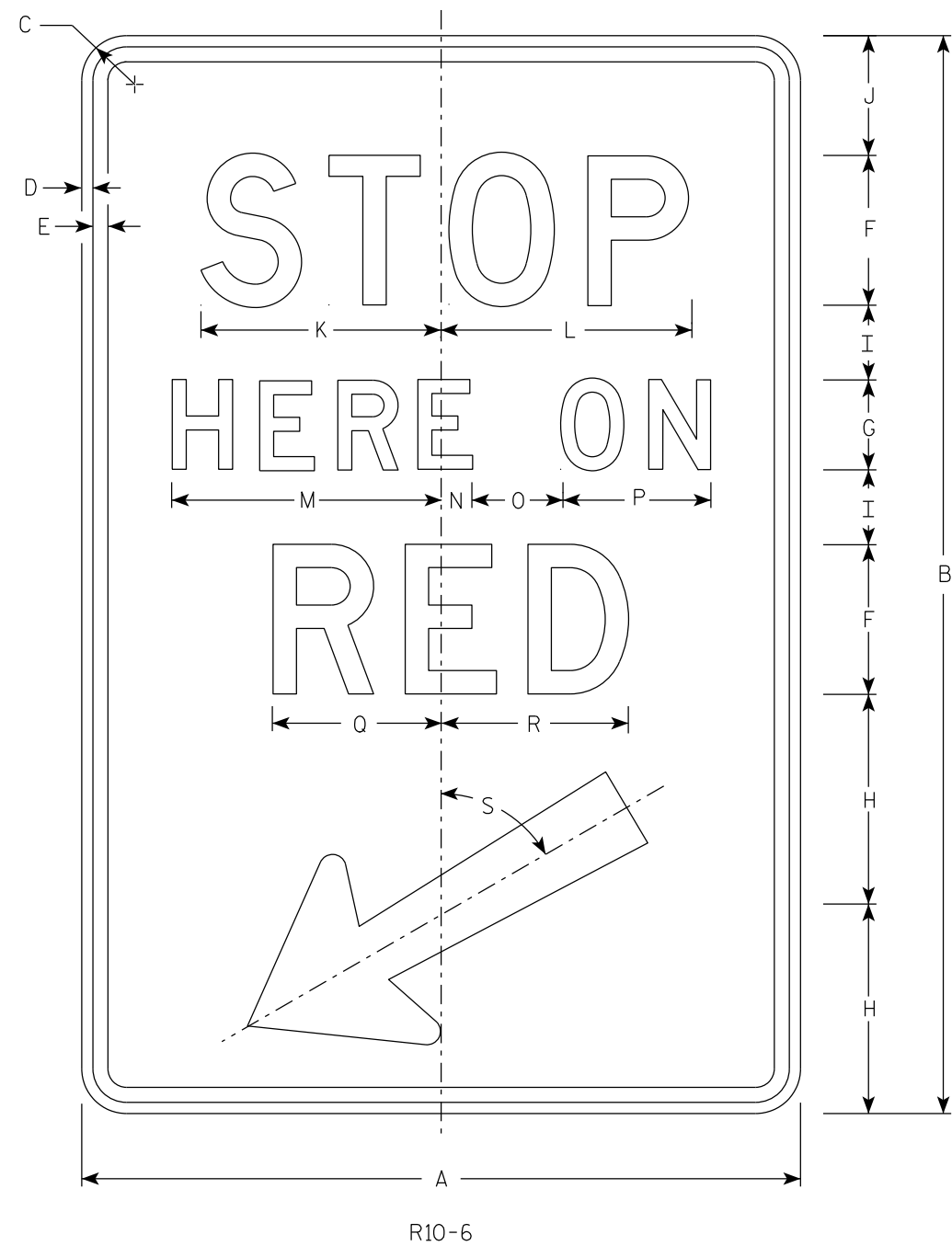
STANDARD SIGN
M6 - 1 & M6 - 2
SERIES

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

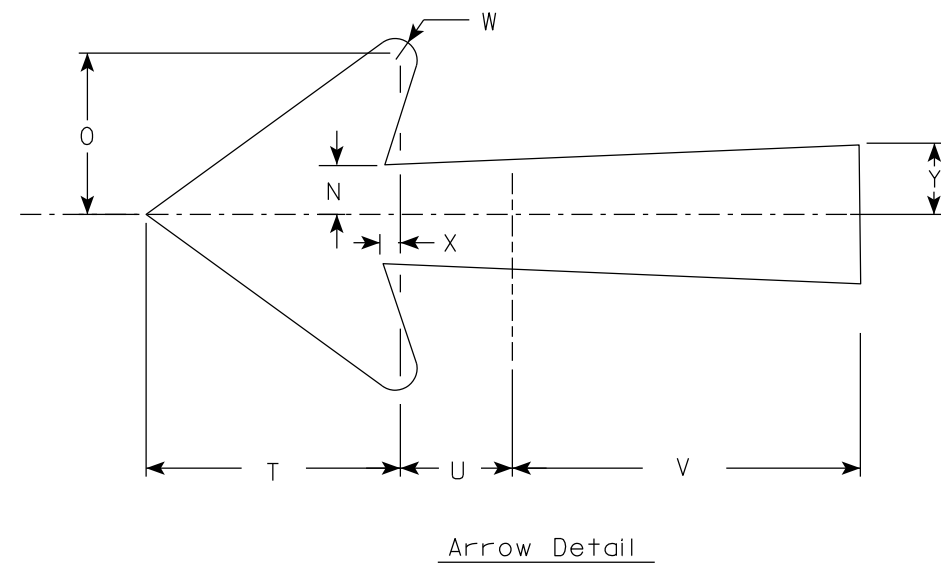
DATE 2/13/2023 PLATE NO. M6-1.16

7



NOTES

- 1. Sign is Type II - Type H Reflective
- 2. Color:
Background - White
Message - Black
- 3. Message Series - D



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	Areq sq. ft.
1																											
2S	24	36	1 1/2	3/8	1/2	5	3	7	2 1/2	4	8	8 3/8	9	1	3	5	5 5/8	6 1/4	60°	5 1/4	2 1/4	7 1/8	1/2	3/8	1 3/8		6.0
2M	24	36	1 1/2	3/8	1/2	5	3	7	2 1/2	4	8	8 3/8	9	1	3	5	5 5/8	6 1/4	60°	5 1/4	2 1/4	7 1/8	1/2	3/8	1 3/8		6.0
3																											
4																											
5																											

PROJECT NO:

HWY:

COUNTY:

SHEET NO: 106

E

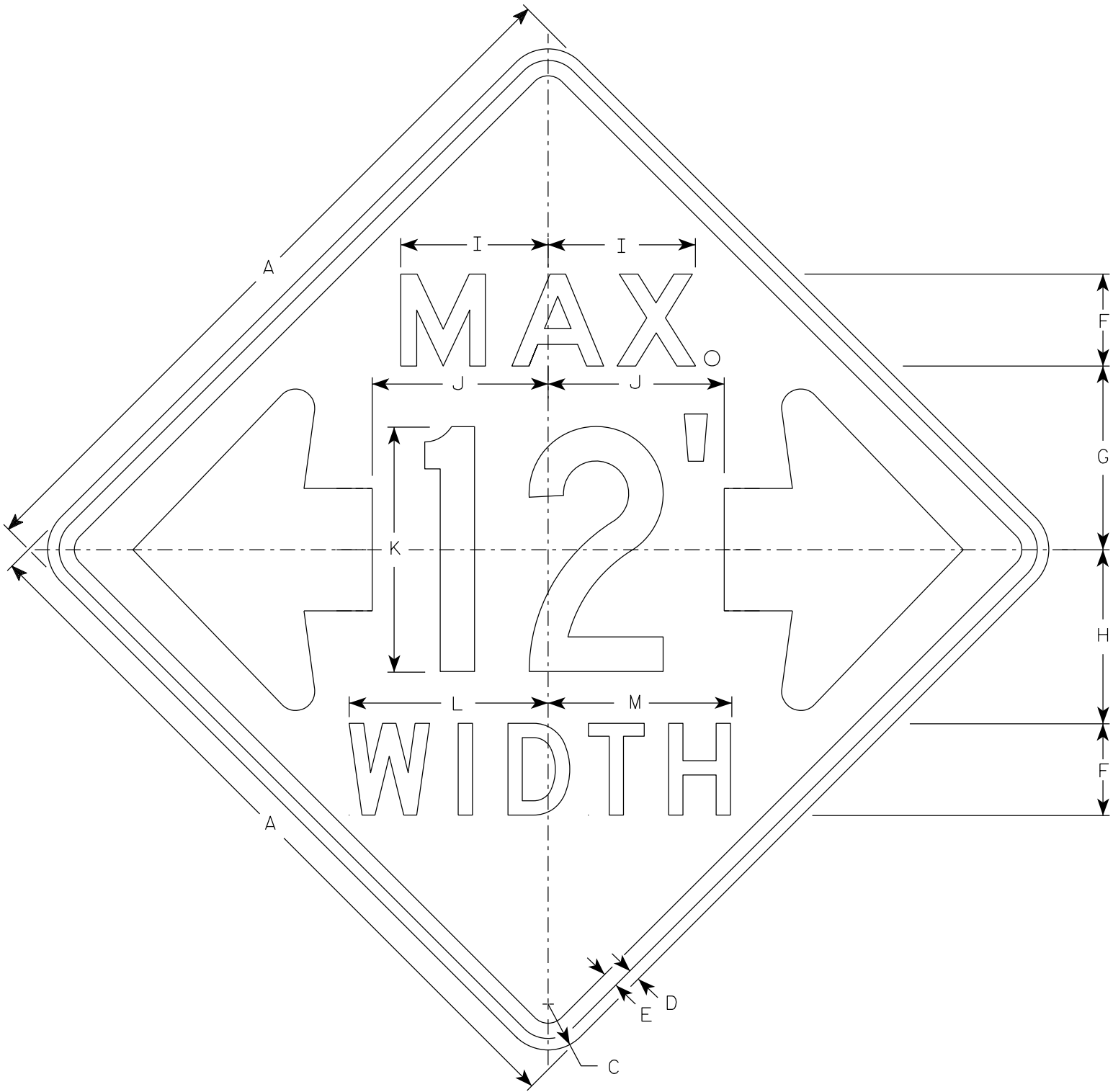
FILE NAME : C:\CAEfiles\Projects\tr_stdplate\R106.dgn

PLOT DATE : 25-JAN 2024 11:01

PLOT BY : mscj9h

PLOT NAME :

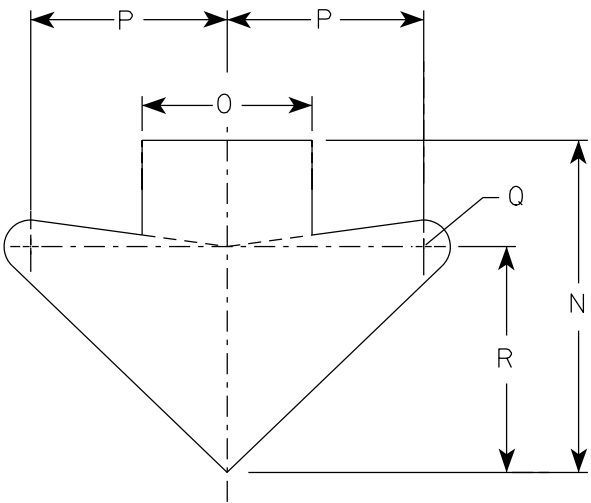
PLOT SCALE : \$\$.....plotscale.....\$\$WISDOT/CADDs SHEET 42



W12-52

NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Orange
Message - Black
- 3. Message Series - See note 5
- 4. The top line is series E, the numerals are series C, and the bottom line is series D.
- 5. Substitute appropriate numerals and adjust spacing as required.



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48		3	¾	1	6	12	11 ⅜	9 ⅝	11 ½	16	13	12	15 ⅝	8	9 ¼	1 ¼	10 ⅝									16.0
2M	48		3	¾	1	6	12	11 ⅜	9 ⅝	11 ½	16	13	12	15 ⅝	8	9 ¼	1 ¼	10 ⅝									16.0
3																											
4																											
5																											

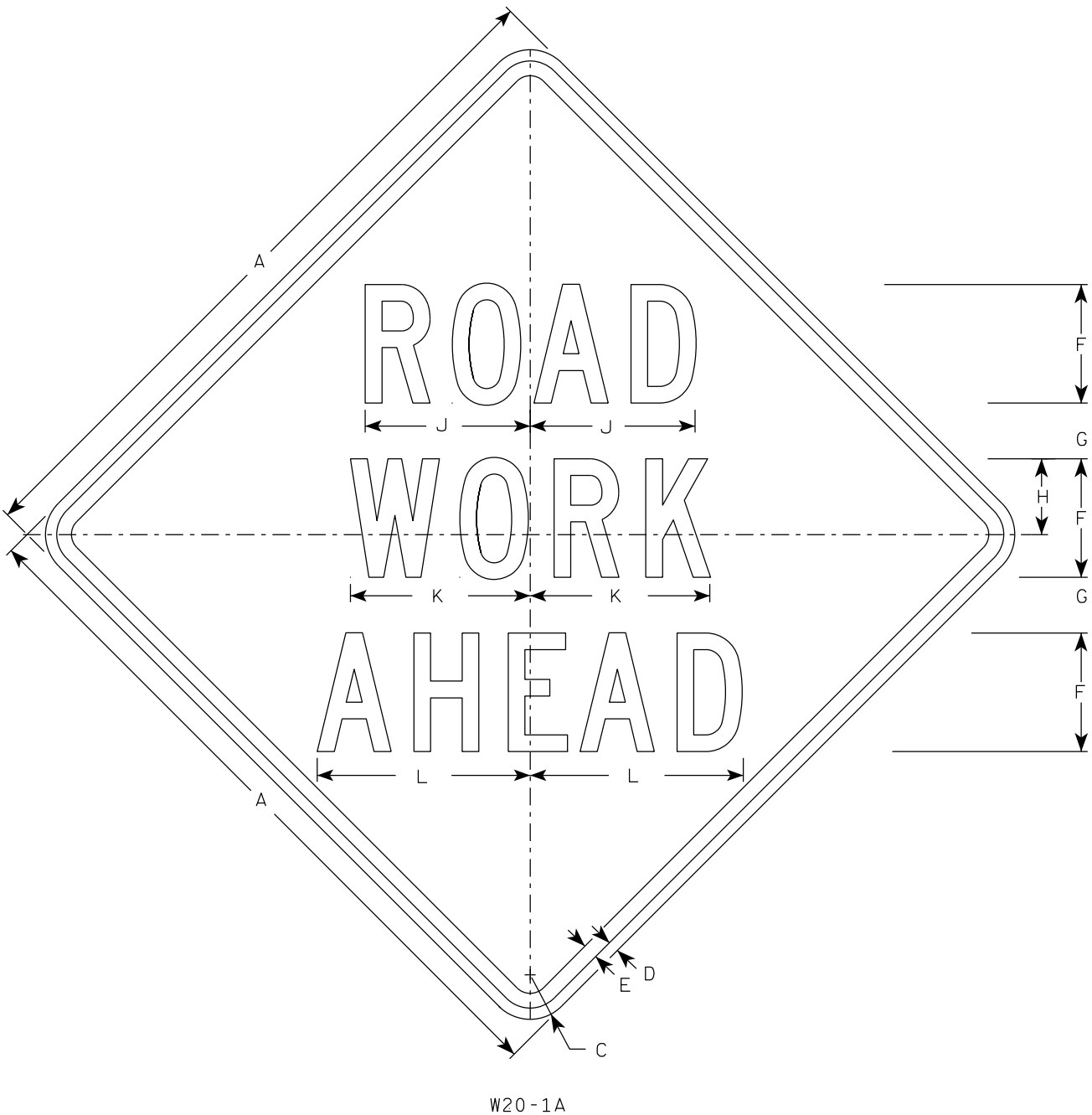
STANDARD SIGN

W12-52

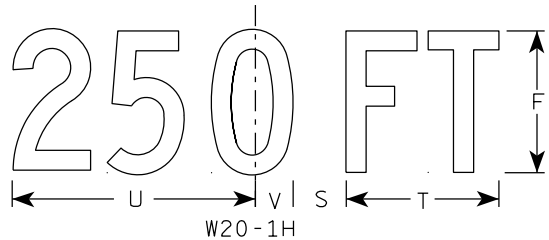
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

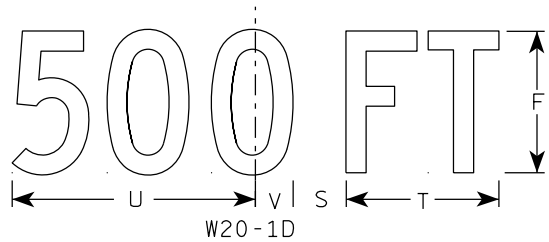
DATE 3/10/2024 PLATE NO. W12-52.8



W20-1A



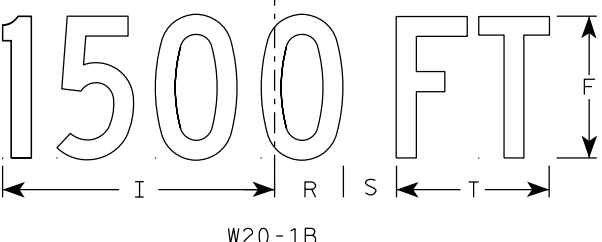
W20-1H



W20-1D

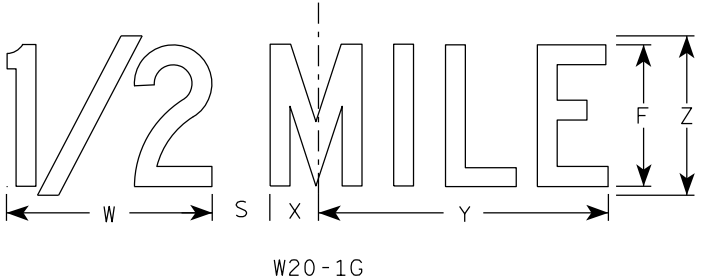


W20-1C

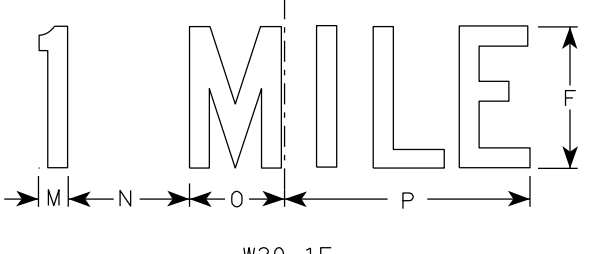


W20-1B

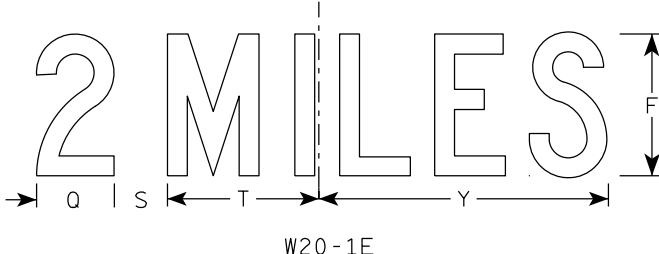
- NOTES
1. Sign is Type II - Type F Reflective
 2. Color:
Background - Orange
Message - Black
 3. Message Series - C
 4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.



W20-1G



W20-1F



W20-1E

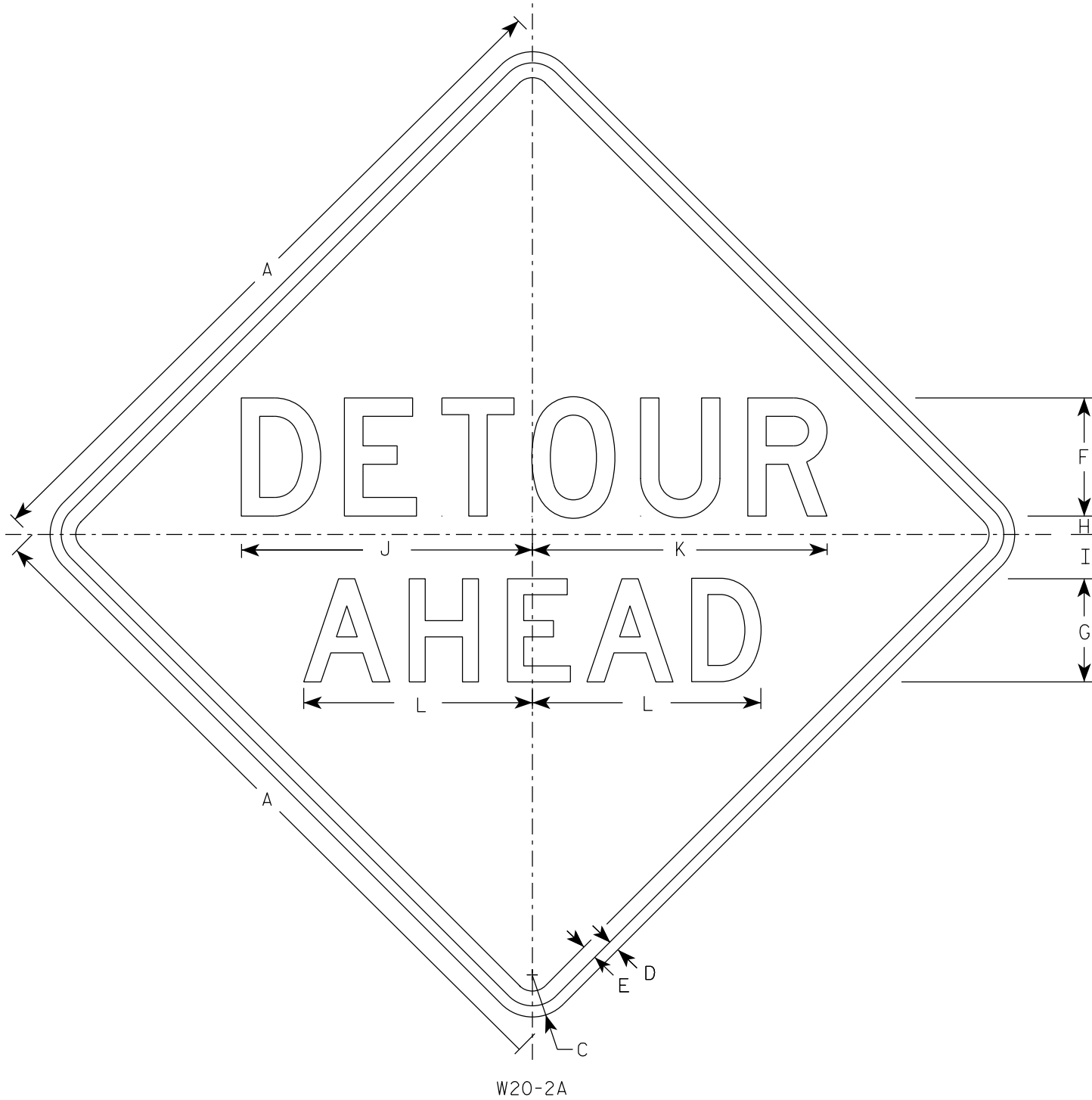
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	v	W	X	Y	Z	Area sq. ft.
1	36		2 1/4	5/8	3/4	5	2 5/8	3 1/4	10 1/8	7	7 5/8	8 7/8	1 1/8	4 1/2	3 1/2	9	3 1/4	2 1/2	2 1/4	5 5/8	9	1 3/8	8	1 3/4	10 3/4	6	9.0
2S	48		3	3/4	1	8	3 3/4	5 1/8	15 3/8	11 1/8	12 1/8	14 3/8	1 5/8	6 7/8	5 3/8	13 7/8	4 3/8	3 7/8	3	8 5/8	13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

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

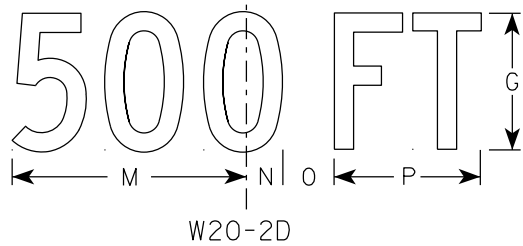
WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

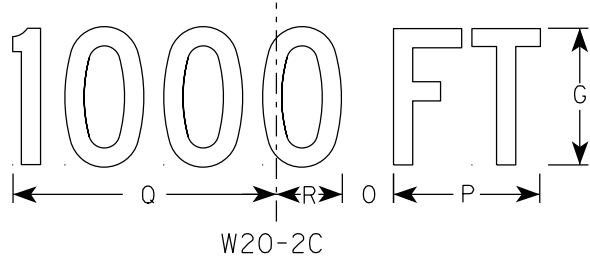
DATE 1/10/2024 PLATE NO. W20-1.12



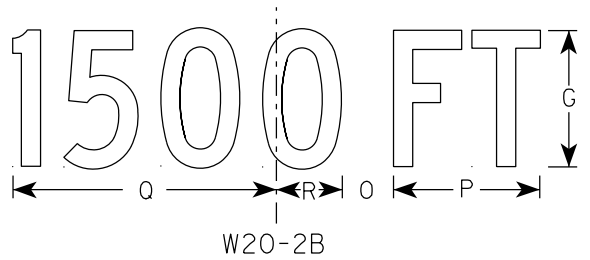
W20-2A



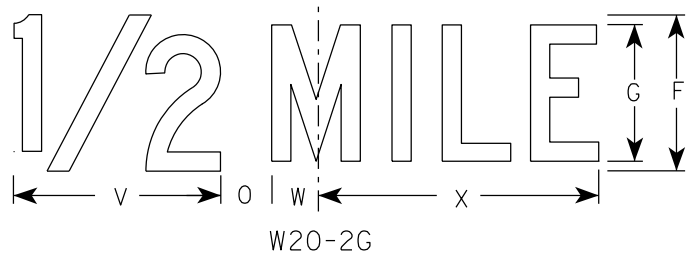
W20-2D



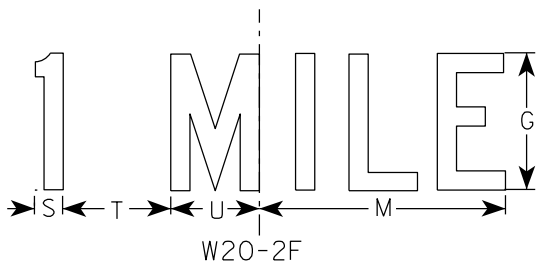
W20-2C



W20-2B



W20-2G



W20-2F

NOTES

1. Sign is Type II - Type F Reflective
2. Color:
Background - Orange
Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Line 1 is Series D.
Line 2 is Series D for AHEAD and Series C for all other distances.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	v	w	X	Y	Z	Area sq. ft.
1	36		2 1/4	5/8	3/4	6	5	1	2 1/4	14 3/4	15	11 5/8	9	1 3/8	1 7/8	5 5/8	10 1/8	2 1/2	1 1/8	4 1/2	3 1/2	8	1 3/4	10 3/4			9.0
2S	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
2M	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
3	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
4	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0
5	48		3	3/4	1	8	7	1 1/4	3	19 3/4	20	15 1/2	12	1 7/8	2 5/8	7 1/2	13 1/2	3 3/8	1 1/2	6	4 5/8	10 5/8	2 3/8	14 3/8			16.0

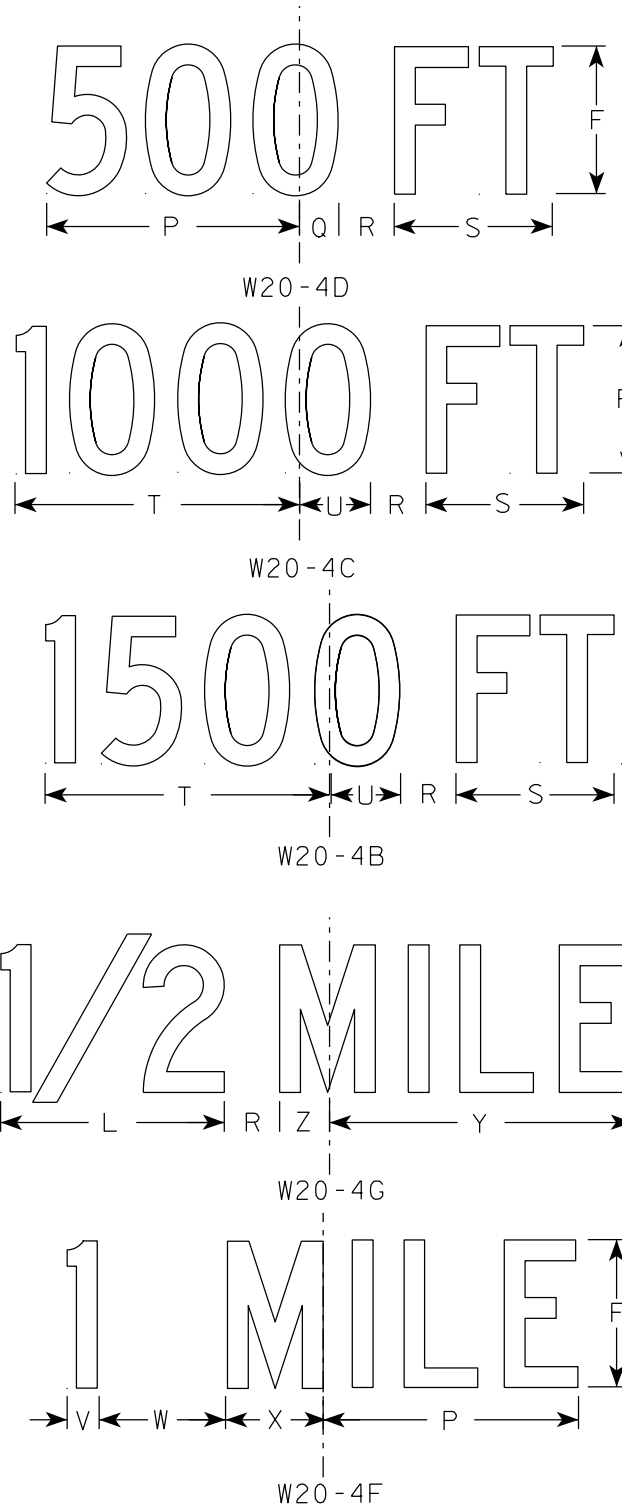
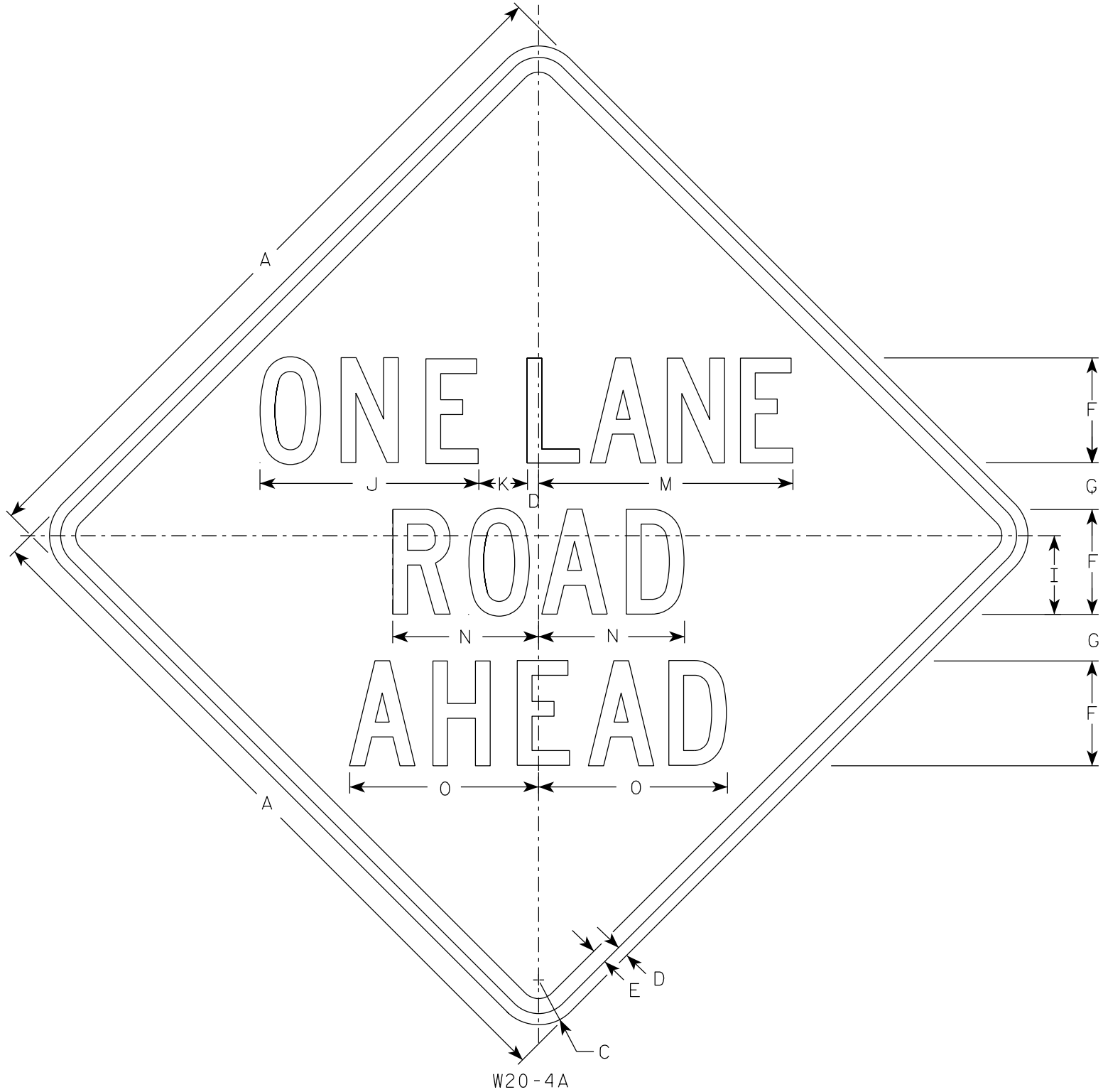
STANDARD SIGN
W20-2A,B,C,D,F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

DATE 1/10/2024 PLATE NO. W20-2.7

7



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

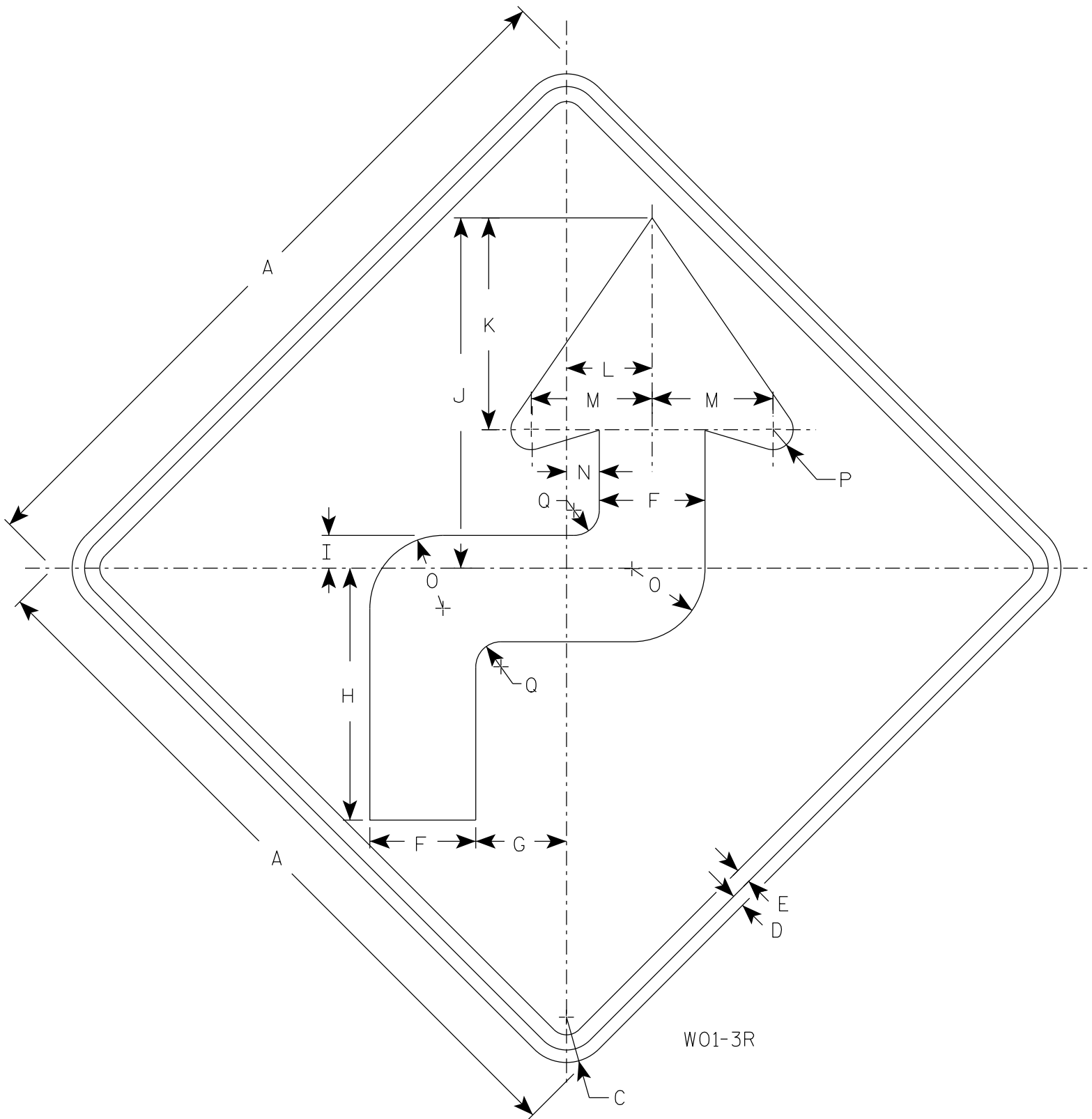
SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		2 1/4	5/8	3/4	5	2 3/8	6	3 3/4	10 3/8	2 3/8	8	13 1/2	7	8 7/8	9	1 3/8	1 7/8	5 5/8	10 1/8	2 1/2	1 1/8	4 1/2	3 1/2	10 3/4	1 3/4	9.0
2S	48		3	3/4	1	7	3 1/8	8	5 1/4	14 5/8	3 1/4	10 5/8	17 3/4	9 3/4	12 5/8	12	1 7/8	2 5/8	7 1/2	13 1/2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

STANDARD SIGN
W20-4A, B, C, D, F & G

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/10/2024 PLATE NO. W20-4.10



NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Orange
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. W01-3L is the same as W01-3R except the arrow is reversed along the vertical centerline.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		2 1/4	5/8	3/4	5 1/4	4 1/2	12 1/2	1 5/8	17 3/8	10 1/2	4 1/4	6	1 5/8	3 5/8	1	1 1/4										9.0
2S	48		3	3/4	1	7	6	16 5/8	2 1/4	23 1/4	14	5 5/8	8	2 1/8	4 7/8	1 1/4	1 5/8										16.0
2M	48		3	3/4	1	7	6	16 5/8	2 1/4	23 1/4	14	5 5/8	8	2 1/8	4 7/8	1 1/4	1 5/8										16.0
3	48		3	3/4	1	7	6	16 5/8	2 1/4	23 1/4	14	5 5/8	8	2 1/8	4 7/8	1 1/4	1 5/8										16.0
4	48		3	3/4	1	7	6	16 5/8	2 1/4	23 1/4	14	5 5/8	8	2 1/8	4 7/8	1 1/4	1 5/8										16.0
5	48		3	3/4	1	7	6	16 5/8	2 1/4	23 1/4	14	5 5/8	8	2 1/8	4 7/8	1 1/4	1 5/8										16.0

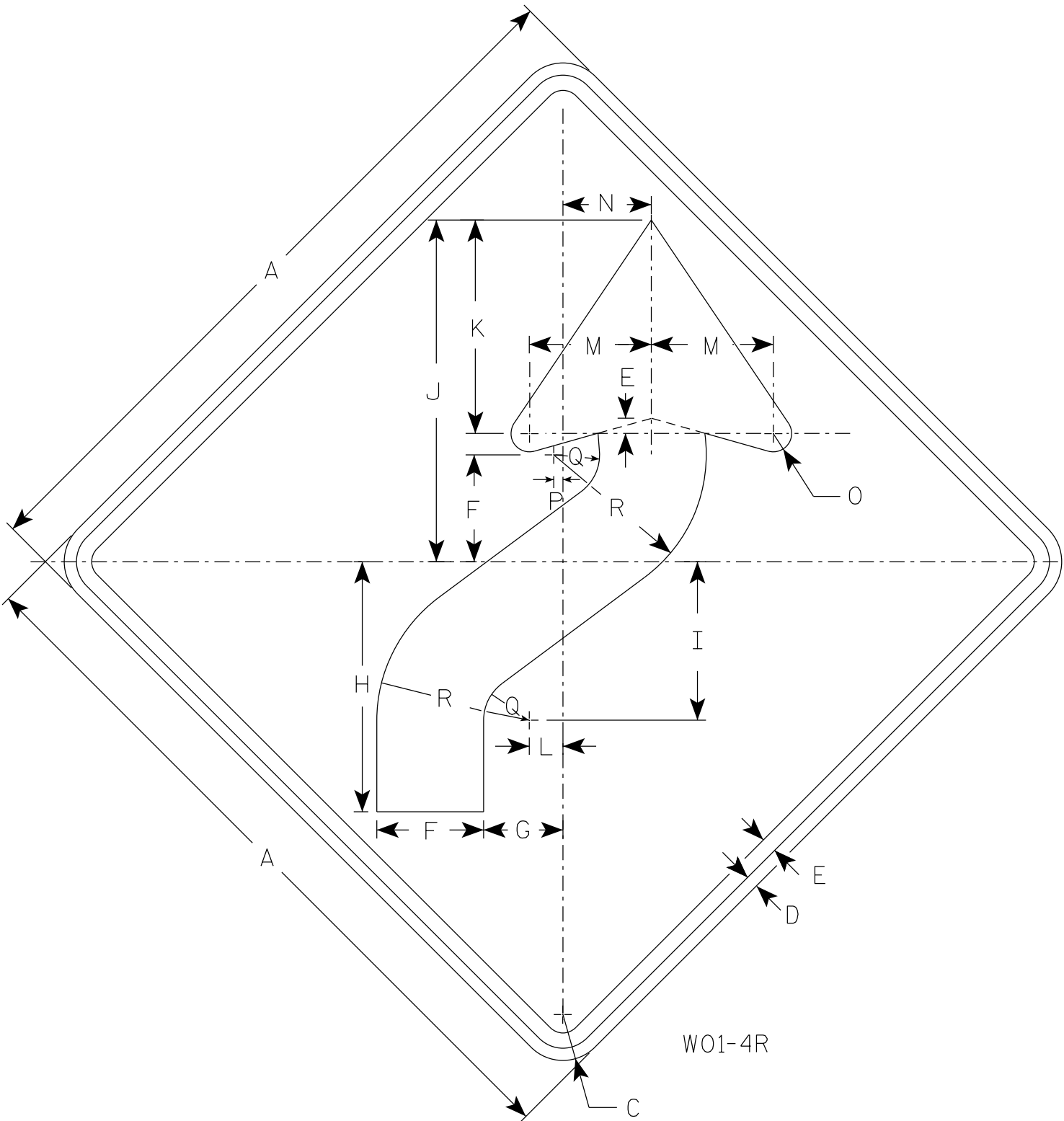
STANDARD SIGN

W01-3

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/24/2024 PLATE NO. W01-3.2



NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
Background - Orange
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. W01-4L is the same as W01-4R except the arrow is reversed along the vertical centerline.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	36		2 1/4	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
2S	48		3	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
2M	48		3	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
3	48		3	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
4	48		3	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
5	48		3	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

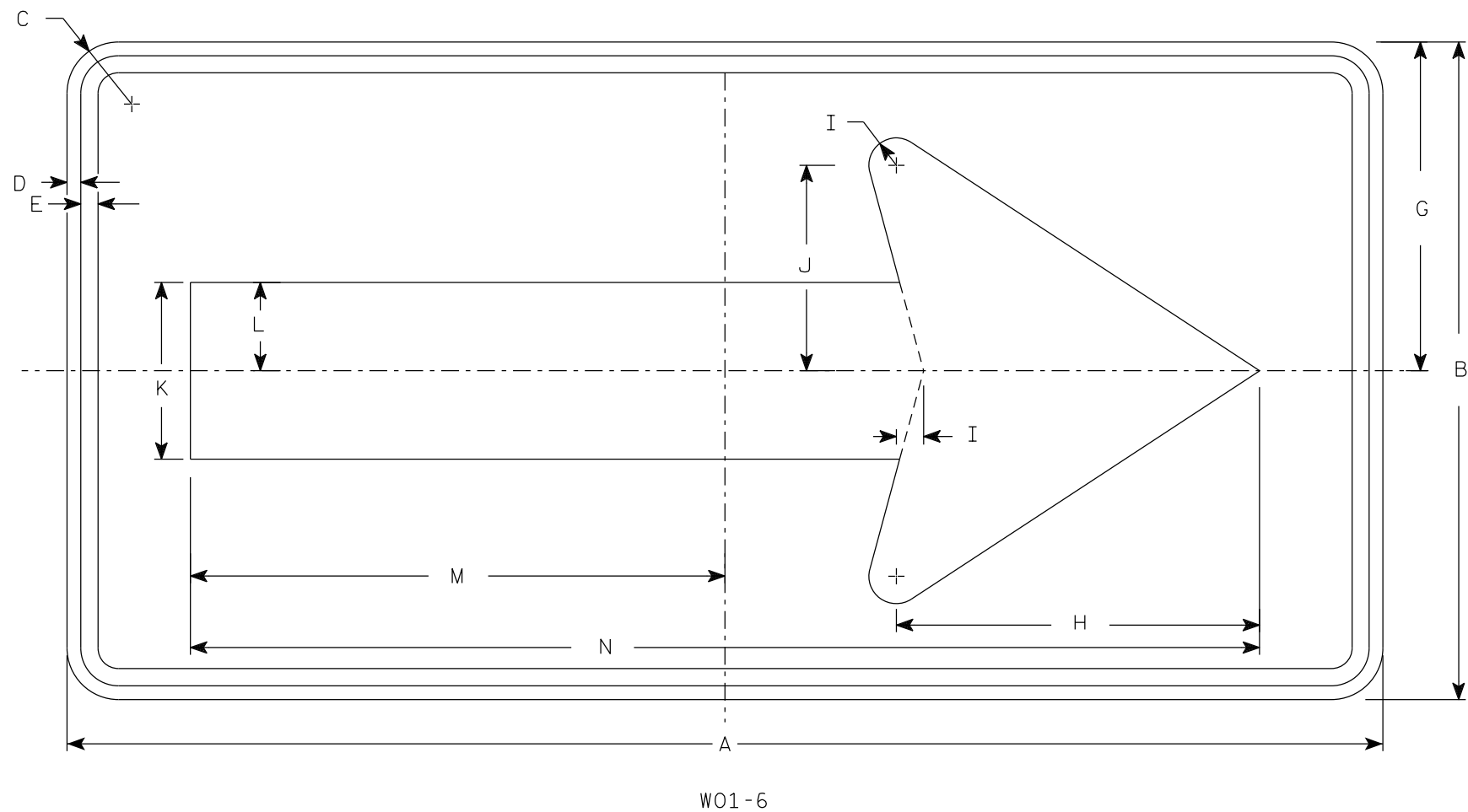
STANDARD SIGN
W01-4

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/24/2024 PLATE NO. W01-4.2

7



NOTES

1. Sign is Type II - Type F Reflective
2. Color:
Background - Orange
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.

7

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

STANDARD SIGN
W01-6

WISCONSIN DEPT OF TRANSPORTATION

APPROVED
Matthew R. Rauch
for State Traffic Engineer

DATE 1/24/2024 PLATE NO. W01-6.2

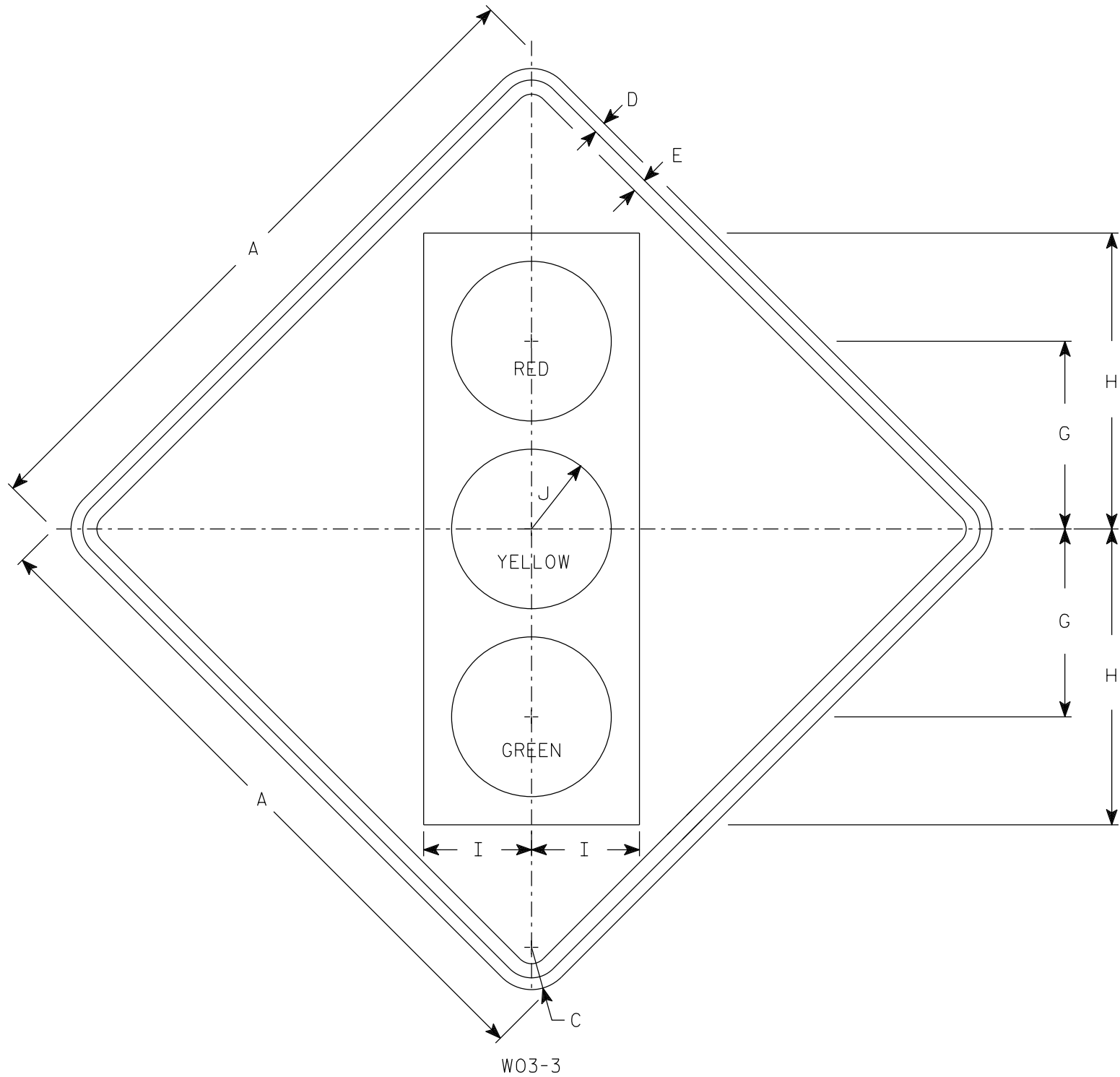
PROJECT NO:

HWY:

COUNTY:

SHEET NO: 113

E



NOTES

- 1. Sign is Type II - Type F Reflective
- 2. Color:
 - Background - Orange
 - Message - See Note 4
- 3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
- 4. Symbol and border are non-reflective black.
 - Top circle - Type H Reflectorized Red
 - Center circle - Same as background
 - Bottom circle - Type H Reflectorized Green

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

PROJECT NO:

HWY:

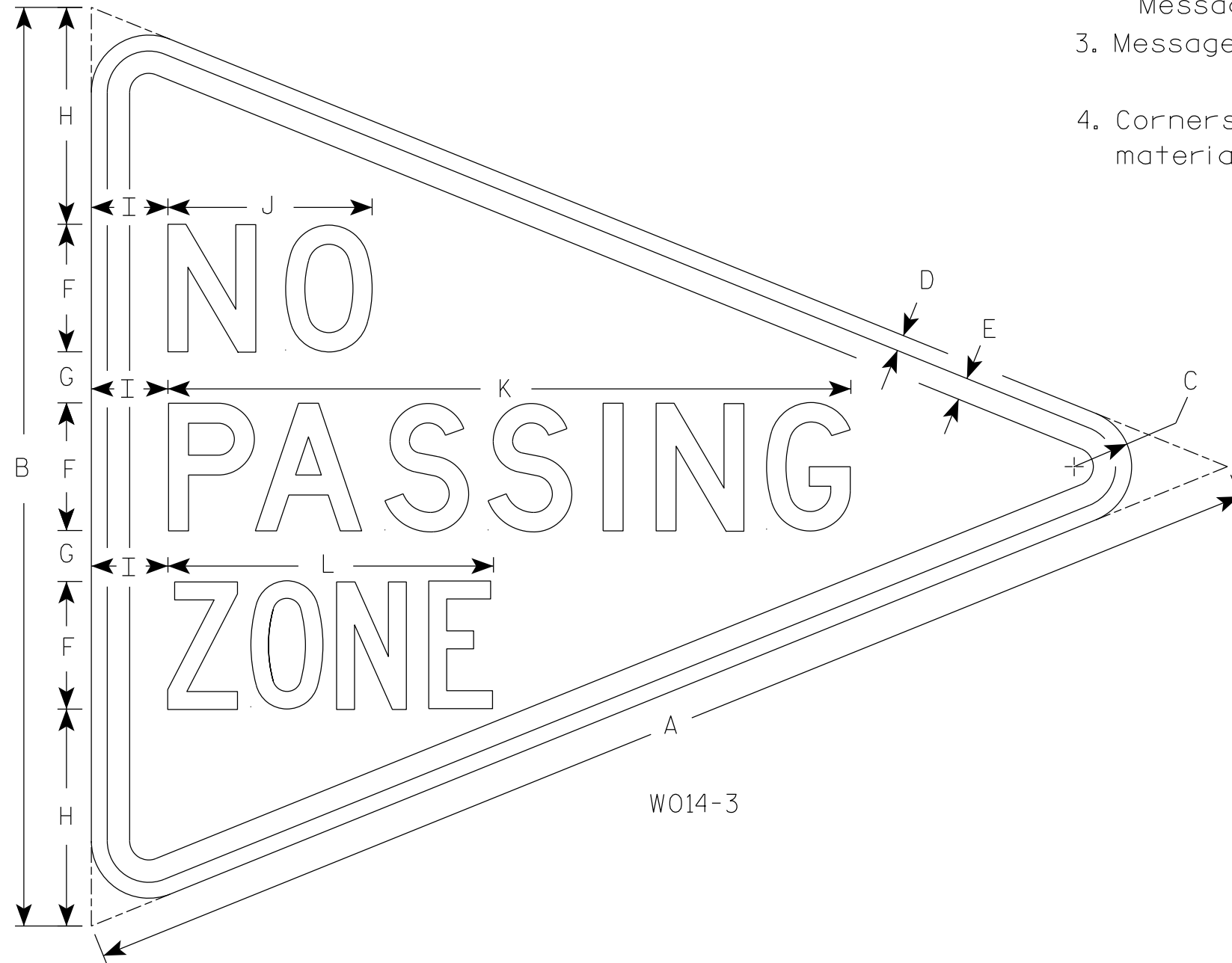
COUNTY:

SHEET NO:

E

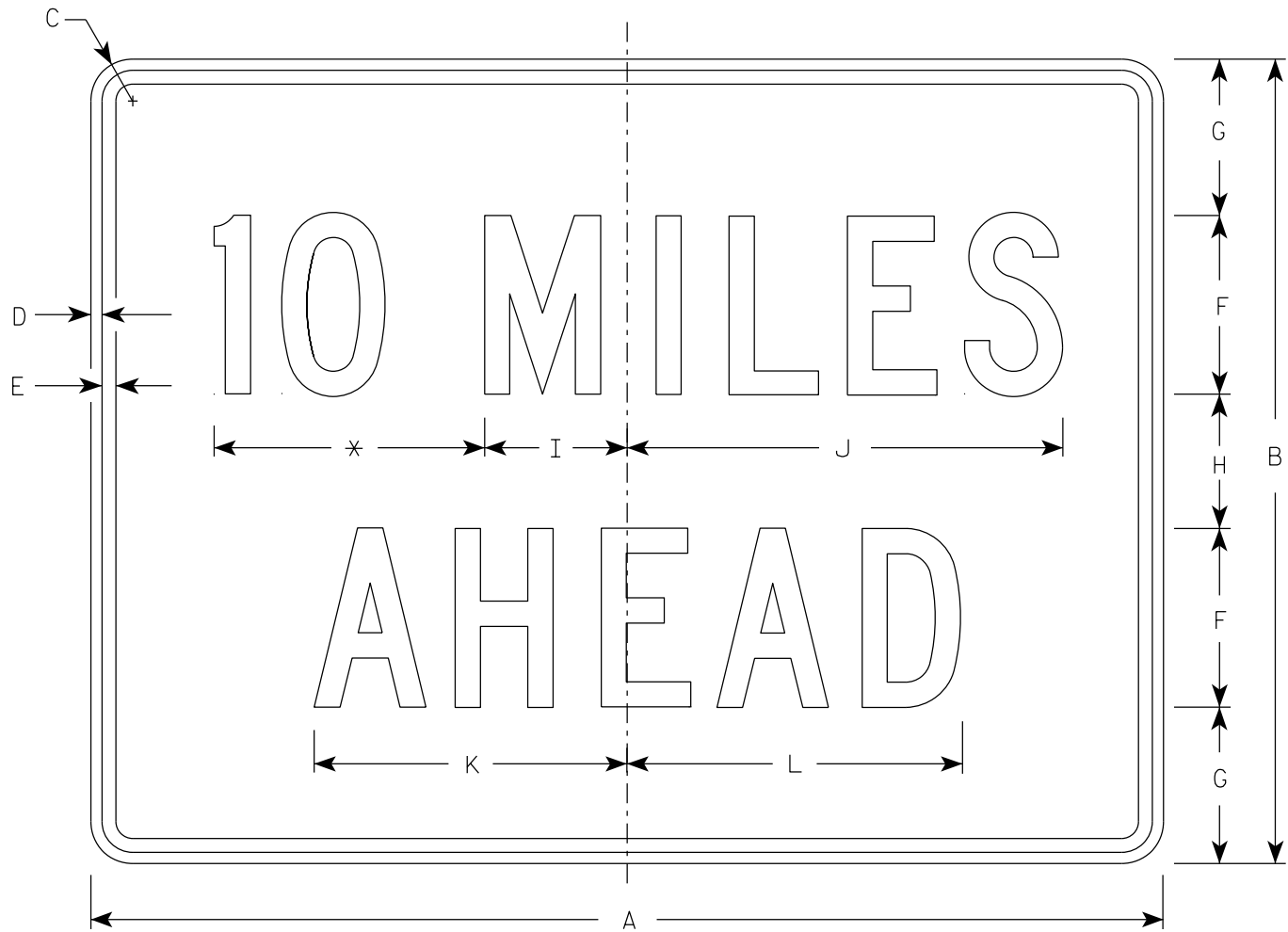
NOTES

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

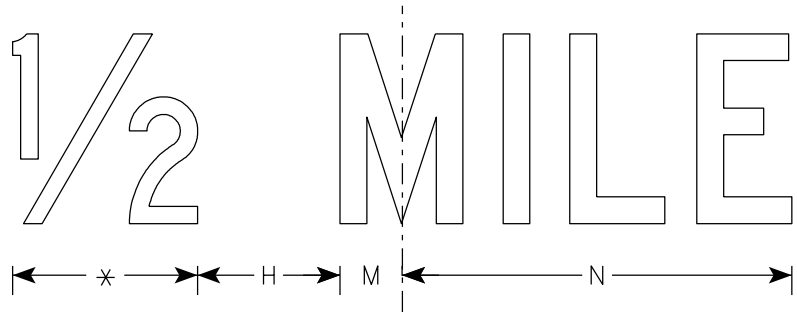


SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	36	2 1/4	5/8	7/8	5	2	8 1/2	3	8	26 3/4	12 3/4															5.56
2M																											
3																											
4																											
5																											

7



W057-52



* See note 5

NOTES

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

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

STANDARD SIGN
W057-52

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/1/2024 PLATE NO. W057-52.3

NOTES

UTILITY AND BYPASS OFFSETS NOT SHOWN TO SCALE. SEE ROADWAY PLANS FOR DETAILS



FILL VOIDS WITH "SELECT CRUSHED MATERIAL FOR TRAVEL CORRIDOR" AS DESCRIBED IN THE SPV AND AS DIRECTED BY THE ENGINEER. WORK TO BE COMPLETED AFTER "RIPRAP HEAVY" IS PLACED.



AREA TO BE EXCAVATED INCLUDED IN "EXCAVATION FOR STRUCTURES BRIDGES B-16-156". SEE GENERAL NOTES FOR EXCAVATION PAY LIMITS.

* PROVIDE FOR THRIE BEAM GUARD RAIL ATTACHMENT. AT UNUSED ANCHOR ASSEMBLIES CAULK HOLES SHUT WITH "100% SILICONE CAULK."



INDICATES WING NUMBER



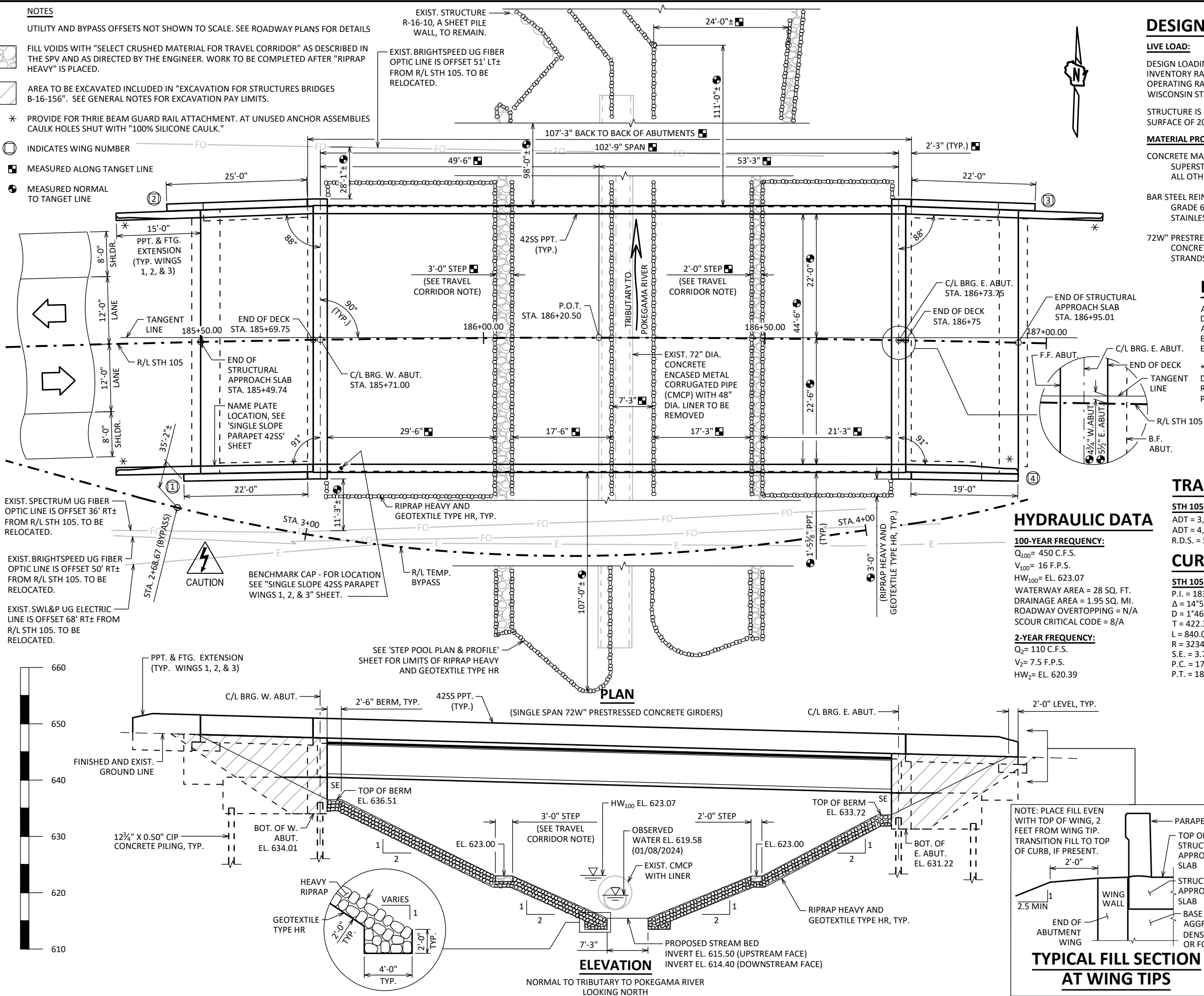
MEASURED ALONG TANGENT LINE



MEASURED NORMAL TO TANGENT LINE

EXIST. STRUCTURE R-16-10, A SHEET PILE WALL, TO REMAIN.

EXIST. BRIGHTSPEED UG FIBER OPTIC LINE IS OFFSET 51' LT± FROM R/L STH 105. TO BE RELOCATED.



DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING: RF = 1.17
OPERATING RATING: RF = 1.52
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV): 250 (KIPS)

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 POUNDS PER SQUARE FOOT.

MATERIAL PROPERTIES:

CONCRETE MASONRY:

SUPERSTRUCTURE & STRUCTURAL APPROACH SLAB $f'_c = 4,000$ PSI
ALL OTHER $f'_c = 3,500$ PSI

BAR STEEL REINFORCEMENT

GRADE 60 $f_y = 60,000$ PSI
STAINLESS, GRADE 60 $f_y = 60,000$ PSI

72W" PRESTRESSED GIRDERS:

CONCRETE MASONRY $f'_c = 8,000$ PSI
STRANDS: 0.6" DIA. WITH ULTIMATE TENSILE STRENGTH OF 270,000 P.S.I.

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON 12 $\frac{3}{4}$ " X 0.50" CIP CONCRETE PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 210 TONS ** PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED 70'-0" LONG AT WEST ABUTMENT. ESTIMATED 60'-0" LONG AT EAST ABUTMENT.

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

LIST OF DRAWINGS

1. GENERAL PLAN
2. CROSS SECTION & QUANTITIES
3. STEP POOL PLAN & PROFILE
4. SUBSURFACE EXPLORATION
5. WEST ABUTMENT
6. WEST ABUTMENT DETAILS 1
7. WEST ABUTMENT DETAILS 2
8. EAST ABUTMENT
9. EAST ABUTMENT DETAILS 1
10. EAST ABUTMENT DETAILS 2
11. 72W" PRESTRESSED GIRDER DETAILS 1
12. 72W" PRESTRESSED GIRDER DETAILS 2
13. INTERMEDIATE STEEL DIAPHRAGM
14. SUPERSTRUCTURE
15. CONCRETE DIAPHRAGM CORNER DETAILS
16. SUPERSTRUCTURE DETAILS
17. SINGLE SLOPE 42SS PARAPET-WINGS 1, 2, & 3
18. SINGLE SLOPE 42SS PARAPET-WING 4
19. PARAPET EXTENSION-WINGS 1, 2, & 3
20. PARAPET FOOTING-WINGS 1, 2, & 3
21. WEST STRUCTURAL APPROACH SLAB
22. WEST STRUCTURAL APPROACH SLAB
23. EAST STRUCTURAL APPROACH SLAB
24. EAST STRUCTURAL APPROACH SLAB DETAILS

TRAFFIC DATA

STH 105

ADT = 3,500 (2026)
ADT = 4,220 (2047)
R.D.S. = 55 MPH

CURVE DATA

STH 105

P.I. = 183+82.47
 $\Delta = 14^\circ 52' 50''$ RT
D = 1'46'17"
T = 422.38'
L = 840.00'
R = 3234.30'
S.E. = 3.7%
P.C. = 179+60.10
P.T. = 187+91.98

HYDRAULIC DATA

100-YEAR FREQUENCY:

 $Q_{100} = 450$ C.F.S.
 $V_{100} = 16$ F.P.S.
HW₁₀₀ = EL. 623.07
WATERWAY AREA = 28 SQ. FT.
DRAINAGE AREA = 1.95 SQ. MI.
ROADWAY OVERTOPPING = N/A
SCOUR CRITICAL CODE = 8/A

2-YEAR FREQUENCY:

 $Q_2 = 110$ C.F.S.
 $V_2 = 7.5$ F.P.S.
HW₂ = EL. 620.39

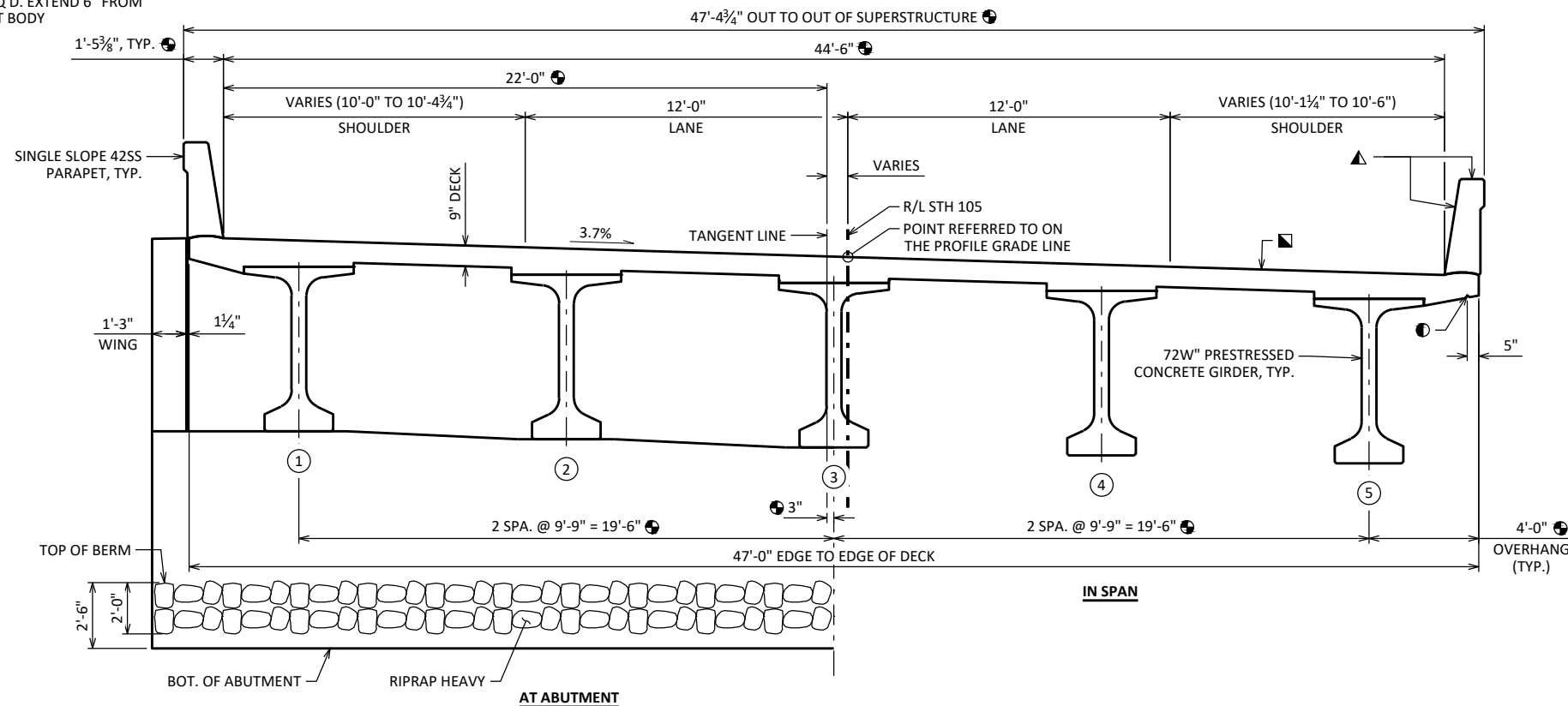
STRUCTURE DESIGN CONTACTS:

RYAN HARRIS 608-266-2963
KYLE BUSCH 608-267-0465

NO.	DATE	REVISION	BY
ACCEPTED KHB 10/31/25 CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-16-156			
STH 105 OVER TRIBUTARY TO POKEGAMA RIVER			
COUNTY	DOUGLAS	CITY	SUPERIOR
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATION			
DESIGNED BY	RRH	DESIGN CK'D	MWB
DRAWN BY	WWR	PLANS CK'D	RRH
GENERAL PLAN			SHEET 1 OF 24 117

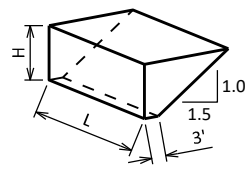
LEGEND

- MEASURED NORMAL TO TANGENT LINE
- INDICATES GIRDER NUMBER
- 3/4" V-GROOVE REQ'D. EXTEND 6" FROM F.F. OF ABUTMENT BODY



CROSS SECTION THRU ROADWAY

LOOKING EAST



TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	SUPER	W. STRUCT. APP. SLAB	WEST ABUT.	EAST ABUT.	E. STRUCT. APP. SLAB	TOTALS
203.0220	REMOVING STRUCTURE (CONCRETE ENCASED METAL CORRUGATED PIPE)	EACH	-	-	-	-	-	1
206.1001	EXCAVATION FOR STRUCTURES BRIDGES B-16-156	EACH	-	-	-	-	-	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	-	394	-	-	332	726
305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	-	120	-	-	150	270
502.0100	CONCRETE MASONRY BRIDGES	CY	265.3	74.2	90.8	82.0	69.2	582
502.3200	PROTECTIVE SURFACE TREATMENT	SY	545	99	-	-	99	743
502.3210	PIGMENTED SURFACE SEALER	SY	101	24	-	-	22	147
503.0172	PRESTRESSED GIRDER TYPE I 72W-INCH	LF	519	-	-	-	-	519
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	-	-	7970	6910	-	14,880
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	37,820	12,090	8690	6750	11,190	76,540
505.0800.S	BAR STEEL REINFORCEMENT HS STAINLESS STRUCTURES	LB	-	820	-	-	820	1640
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	-	-	5	5	-	10
506.4000	STEEL DIAPHRAGMS B-16-156	EACH	8	-	-	-	-	8
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	-	-	15	14	-	29
550.2128	PILING CIP CONCRETE 12 3/4 X 0.50-INCH	LF	-	-	840	720	-	1560
606.0300	RIPRAP HEAVY	CY	-	-	642	686	-	1328
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	-	-	105	105	-	210
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	-	2	-	-	2	4
645.0111	GEOTEXTILE DF SCHEDULE A	SY	-	-	41	41	-	82
645.0120	GEOTEXTILE TYPE HR	SY	-	-	1152	1196	-	2348
SPV.0060	ROCK WEIR	EACH	-	-	-	-	-	14
SPV.0195	SELECT CRUSHED MATERIAL FOR TRAVEL CORRIDOR	TON	-	-	26	20	-	46
	NON-BID ITEMS							
	FILLER	SIZE	---	---	---	---	---	1/2", 3/4", 1 1/2"

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

STATE PROJECT NUMBER

8760-00-72

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

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

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

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-16-156" SHALL BE THE EXISTING GROUNDLINE.

AT THE BACK FACE OF ABUTMENT ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL TYPE A. ALSO EXCLUDED IS THE "BASE AGGREGATE DENSE 1 1/4-INCH" AS DETAILED ON THE STRUCTURAL APPROACH SLAB SHEETS.

EXCAVATION BELOW THE ABUTMENT AND ABUTMENT BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE BOTTOM OF ABUTMENT.

THE QUANTITY FOR BACKFILL STRUCTURE IS CALCULATED BASED ON THE DETAIL SHOWN IN THE PLANS.

ELASTOMERIC BEARING PADS NEED NOT BE INDIVIDUALLY MOLDED PROVIDED THE CUT EDGES ARE SMOOTH AND TRUE.

PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE ENTIRE EXPOSED TOP OF DECK AND APPROACH SLAB SURFACES AND TO THE VERTICAL AND HORIZONTAL SURFACES OF THE PAVING NOTCHES AT ABUTMENT DIAPHRAGMS.

PIGMENTED SURFACE SEALER TO BE APPLIED TO THE FRONT FACE AND THE TOP OF THE PARAPETS, INCLUDING PARAPETS ON APPROACH SLABS, AND ON PARAPET FOOTINGS.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE TYPE "HR" TO THE EXTENT SHOWN ON 'GENERAL PLAN' SHEET, THE ABUTMENT DETAILS, AND 'STEP POOL PLAN & PROFILE' SHEET.

THE HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE "72W PRESTRESSED GIRDER DETAILS 2" SHEET.

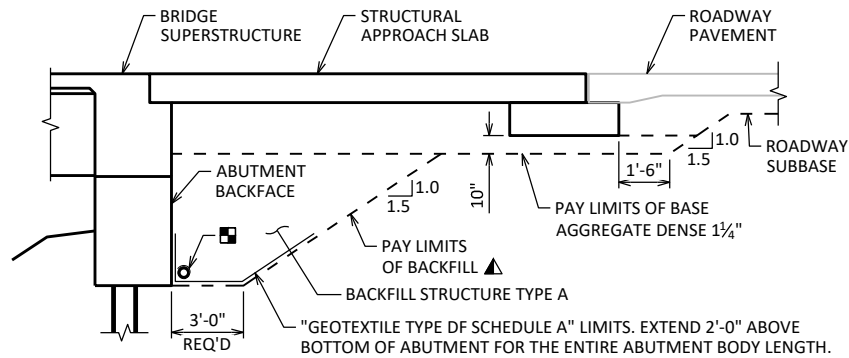
SEE ROADWAY PLANS FOR TRAFFIC CONTROL AND STAGING.

"SELECT CRUSHED MATERIAL" THAT IS APPLIED AT THE ROCK WEIRS, AS DEFINED IN THE ROCK WEIR SPV, IS PAID FOR SEPARATELY UNDER SPV.0060, "ROCK WEIR".

"EXCAVATION FOR STRUCTURES BRIDGES B-16-156" IS PAYMENT FOR REMOVING VOLUME WITHIN ABUTMENT FOOTPRINT AS DEFINED ON SHEET 1. REMAINING EXCAVATION IS DEFINED AND COVERED IN THE ROADWAY PLAN AND MISCELLANEOUS QUANTITIES.

ABUTMENT BACKFILL DIAGRAM

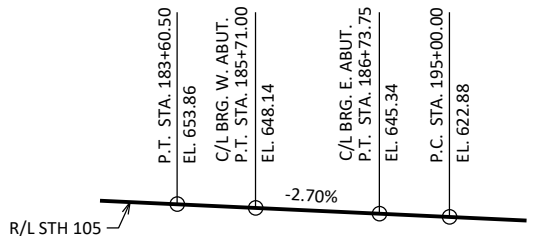
L = OUT TO OUT OF ABUTMENT BODY INCLUDING WINGS (FT)
H = AVERAGE ABUTMENT FILL HEIGHT (FT)
EF = EXPANSION FACTOR (1.20 FOR CY BID ITEMS AND 1.00 FOR TON BID ITEMS)
V_{CF} = (L)(3.0')(H) + (L)(0.5)(1.5H)(H)
V_{CY} = V_{CF}(EF)/27
V_{TON} = V_{CY}(2.0)



TYPICAL SECTION THRU ABUTMENT

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

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



PROFILE GRADE LINE - STH 105

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156		DRAWN BY WWR	PLANS CK'D RRR
CROSS SECTION & QUANTITIES		SHEET 2 118	

NOTES

ALL WORK AND MATERIALS (INCLUDING BOULDERS) REQ'D. TO CONSTRUCT ROCK WEIRS AND STEP POOL PER PLAN ARE INCLUDED IN BID ITEM "SPV.0060 ROCK WEIR".

FURNISH BOULDERS ANGULAR AND NOT ROUNDED. INCLUDED IN BID ITEM "SPV.0060 ROCK WEIR".

INDICATES ROCK WEIR NUMBER

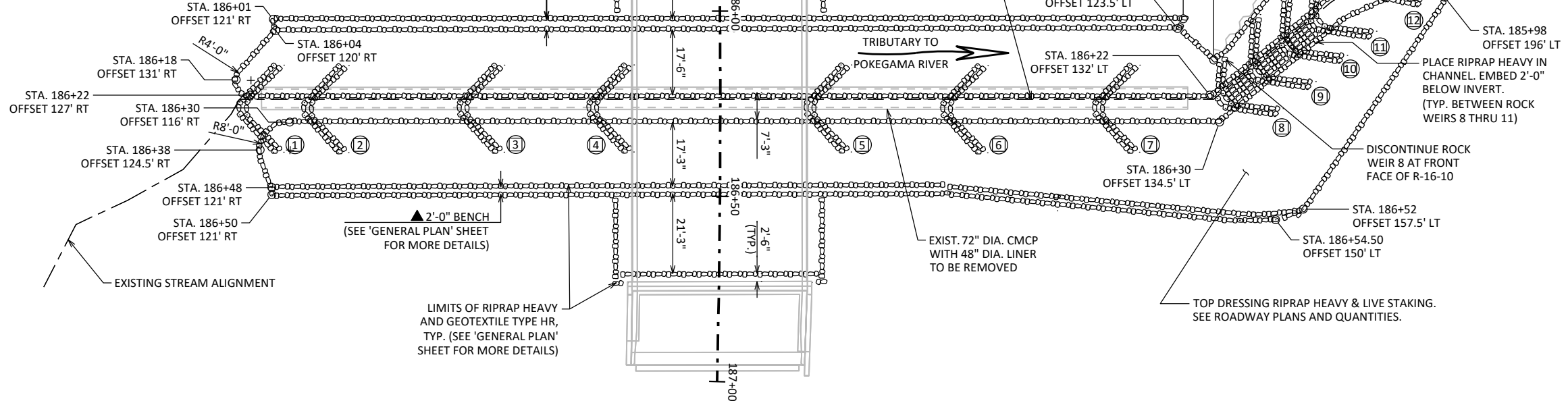
PLACE RIPRAP HEAVY AND GEOTEXTILE TYPE HR ALONG FRONT FACE OF R-16-10 (EXISTING SHEET PILE WALL) TO LIMITS SHOWN IN PLAN.

BOULDERS AND RIPRAP VOIDS FILLED WITH "SELECT CRUSHED MATERIAL" TOPPED WITH 2" LAYER OF "SAND" WASHED INTO BOULDERS AS DESCRIBED IN "SPV.0060 ROCK WEIR".

TOP OF ROCK WEIR VARIES 6" TO 12" ABOVE ADJACENT STREAMBED.

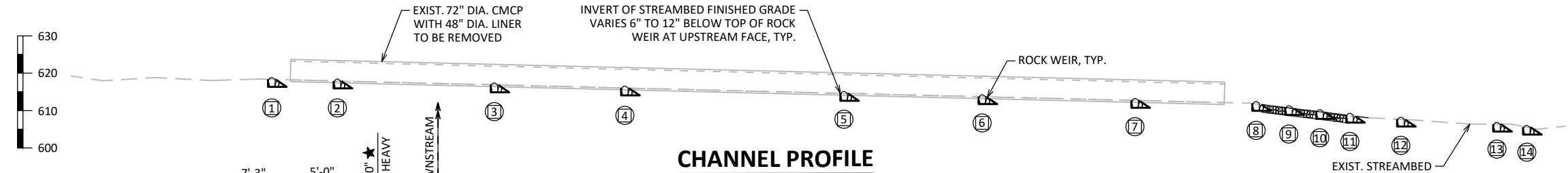
FILL VOIDS WITH "SELECT CRUSHED MATERIAL FOR TRAVEL CORRIDOR".

SEE EROSION CONTROL PLANS FOR ADDITIONAL DETAILS.



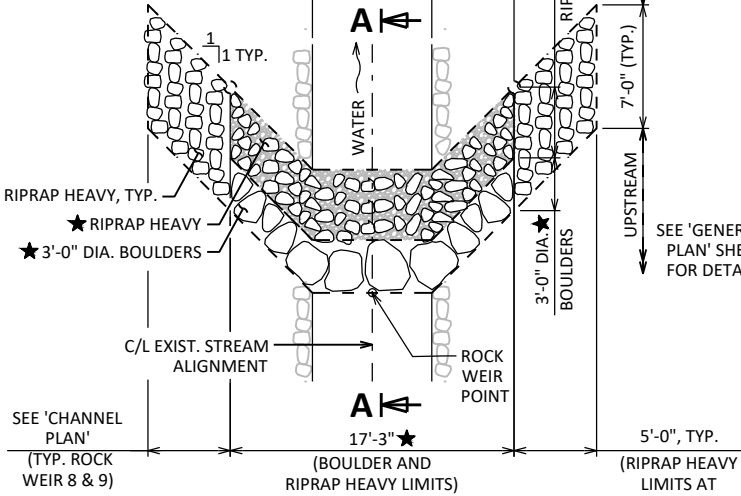
CHANNEL PLAN

(SEE 'GENERAL PLAN' SHEET FOR UTILITIES AND DIMENSIONS)

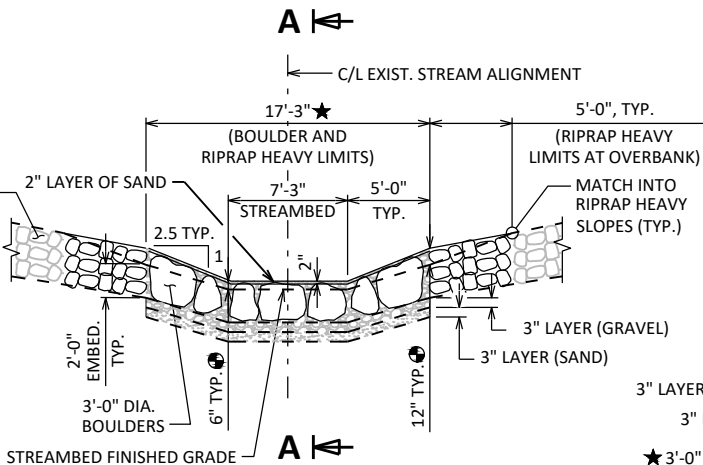


CHANNEL PROFILE

(ALONG STREAM ALIGNMENT)

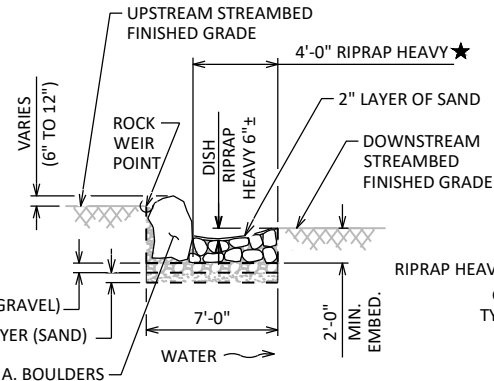


ROCK WEIR PLAN DETAIL

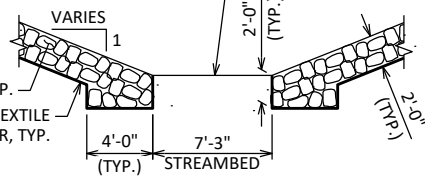


CROSS SECTION THRU ROCK WEIR

(LOOKING DOWNSTREAM)



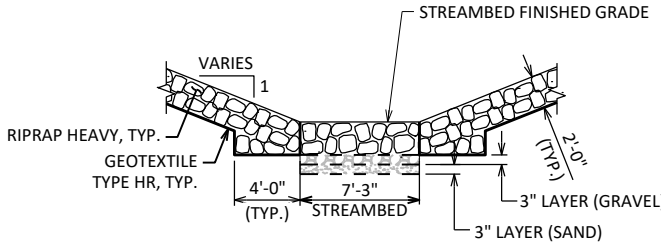
SECTION A-A



TYPICAL CROSS SECTION THRU CHANNEL

ROCK WEIR DATA

ROCK WEIR PT.	STATION	OFFSET	BEARING	STREAMBED FINISHED GRADE (UPSTREAM OF ROCK WEIR PT.)
1	186+26	127.8' RT	N 2°10'34" W	618.10
2	186+26	110.3' RT	N 2°10'34" W	617.40
3	186+26	68.3' RT	N 2°10'34" W	616.40
4	186+26	33.4' RT	N 2°10'34" W	615.40
5	186+26	25.3' LT	N 2°10'34" W	614.40
6	186+26	62.3' LT	N 2°10'34" W	613.40
7	186+26	103.2' LT	N 2°10'34" W	612.40
8	186+23	136.7' LT	N 41°46'44" W	611.40
9	186+16	145.5' LT	N 41°46'44" W	610.40
10	186+10	154.0' LT	N 41°46'44" W	609.40
11	186+03	162.0' LT	N 41°46'44" W	608.40
12	185+94	175.6' LT	N 38°17'10" W	607.30
13	185+79	201.8' LT	N 58°07'52" W	606.30
14	185+65	209.0' LT	N 79°50'50" W	605.30



CROSS SECTION THRU CHANNEL AT ROCK WEIRS 8 THRU 11

NOTE: PAYMENT FOR SAND AND GRAVEL BASE IS INCLUDED IN SPV.0060 ROCK WEIR.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY WWR		PLANS CK'D RRH	
STEP POOL PLAN & PROFILE		SHEET 3	119

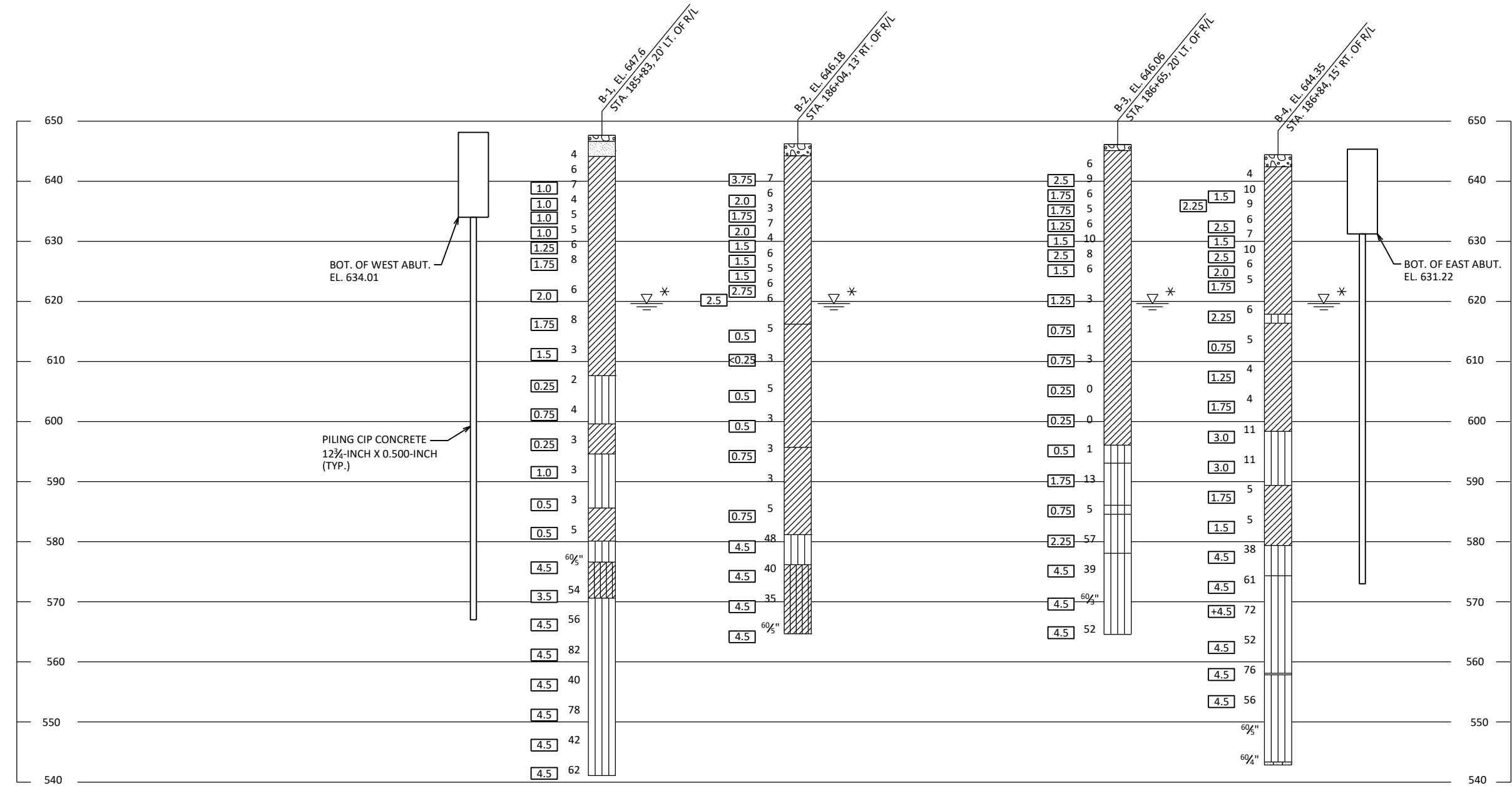
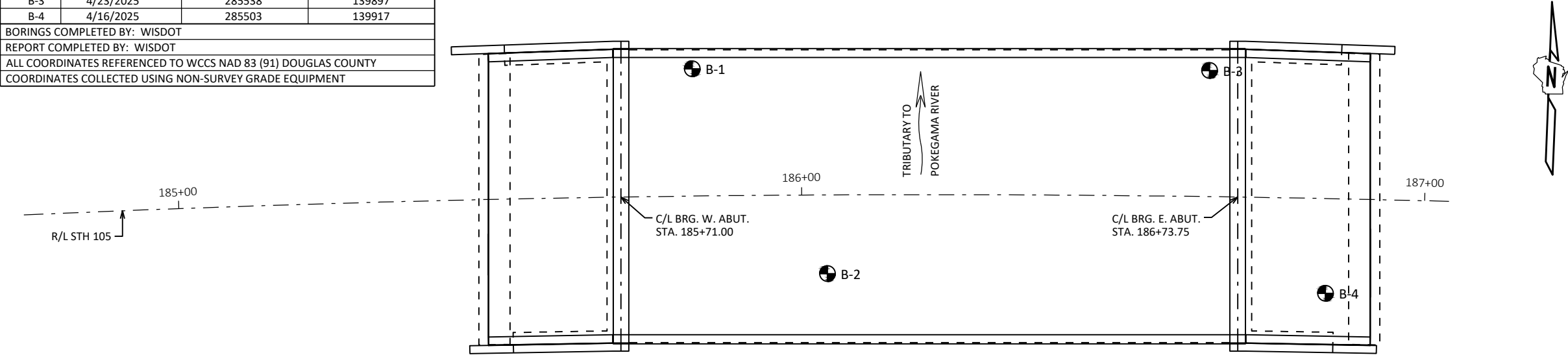
BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B-1	4/24/2025	285535	139814
B-2	4/15/2025	285503	139837
B-3	4/23/2025	285538	139897
B-4	4/16/2025	285503	139917

BORINGS COMPLETED BY: WISDOT

REPORT COMPLETED BY: WISDOT

ALL COORDINATES REFERENCED TO WCCS NAD 83 (91) DOUGLAS COUNTY

COORDINATES COLLECTED USING NON-SURVEY GRADE EQUIPMENT



* THE GROUND WATER ELEVATION WAS DETERMINED FROM NEARBY CULVERT IN JANUARY 2025, NOT ENCOUNTERED WHILE DRILLING.

STATE PROJECT NUMBER

8760-00-72

MATERIAL SYMBOLS

ASPHALT

CONCRETE

SAND

BOULDERS OR COBBLES

SHALE

TOPSOIL

FILL

CLAY

LIMESTONE

SANDSTONE

PEAT

GRAVEL

SILT

BEDROCK (UNKNOWN)

IGNEOUS/META

LEGEND OF BORING

BORING #/EL. STA./OFFSET

ST

0.25

(1)

(2)

17

F-C

COBBLE OR BOULDER

WEATHERED LIMESTONE

CORE RUN #1 - 24'-29'

REC=80%, RQD=72%

(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 ELEVATION

▽ AT TIME OF DRILLING

▼ END OF DRILLING

▽ AFTER DRILLING

ABBREVIATIONS

F-FINE M-MEDIUM C-COARSE 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.

NO.

DATE

REVISION

BY

STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

STRUCTURES DESIGN SECTION

STRUCTURE

B-16-156

DRAWN BY

KRV

PLANS CK'D

RRH

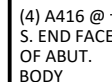
SUBSURFACE EXPLORATION

SHEET 4

120

8

8



(ABUT BODY DIMENSIONS TAKEN NORMAL TO TANGENT LINE)
(WING DIMENSIONS TAKEN ALONG WINGS)



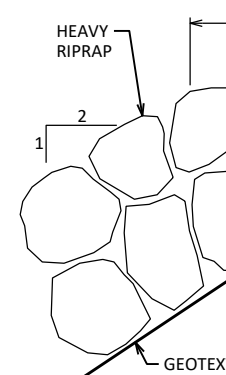
(LOOKING AT F.F. OF ABUT., SHOWING B.F. ABUT. BODY REINF.



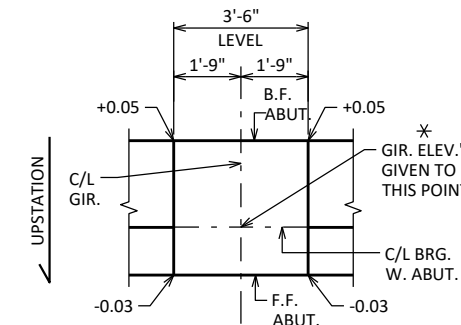
(LOOKING AT F.F. OF ABUT.. SHOWING F.F. ABUT. BODY REINE.)

-

STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

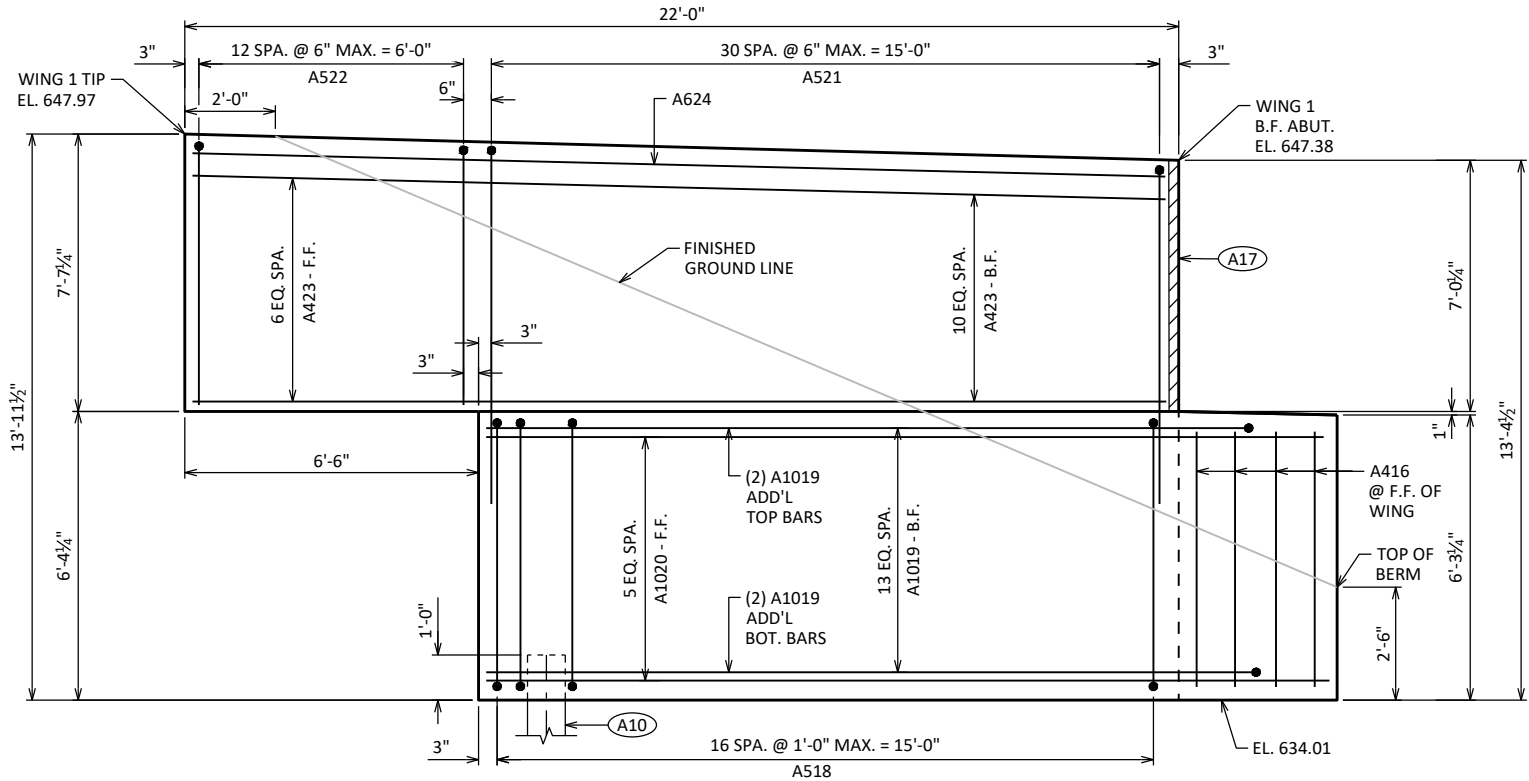


- A10 SUPPORT ABUTMENT ON 12 $\frac{3}{4}$ " DIA. X 0.50" CIP CONCRETE PILING, ESTIMATED 70'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.
- A15 PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.
- A17 $\frac{1}{2}$ " FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF $\frac{1}{2}$ " FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD $\frac{1}{2}$ " BELOW SURFACE OF CONCRETE) EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE
- A18 $\frac{3}{4}$ " CORK FILLER UP VERT. BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.
- A19 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.



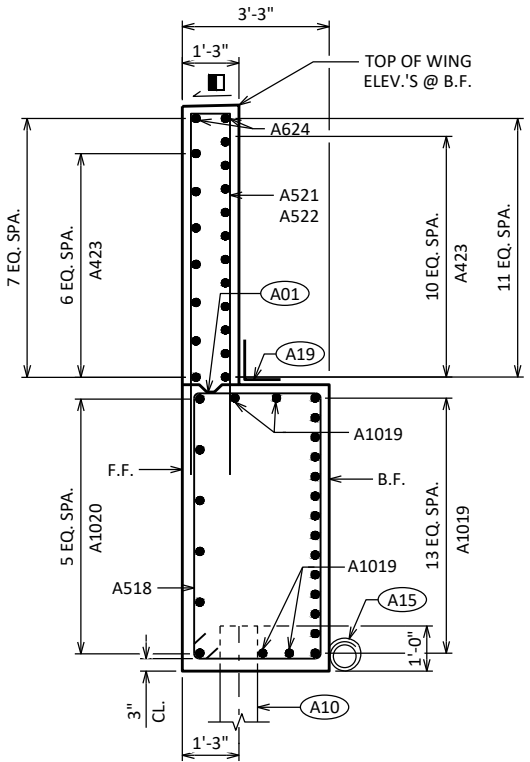
* SLOPED BEAM SEAT DETAIL

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE		B-16-156	
		DRAWN BY	PLANS CK'D
		WWR	RRH
WEST ABUTMENT		SHEET 5 121	

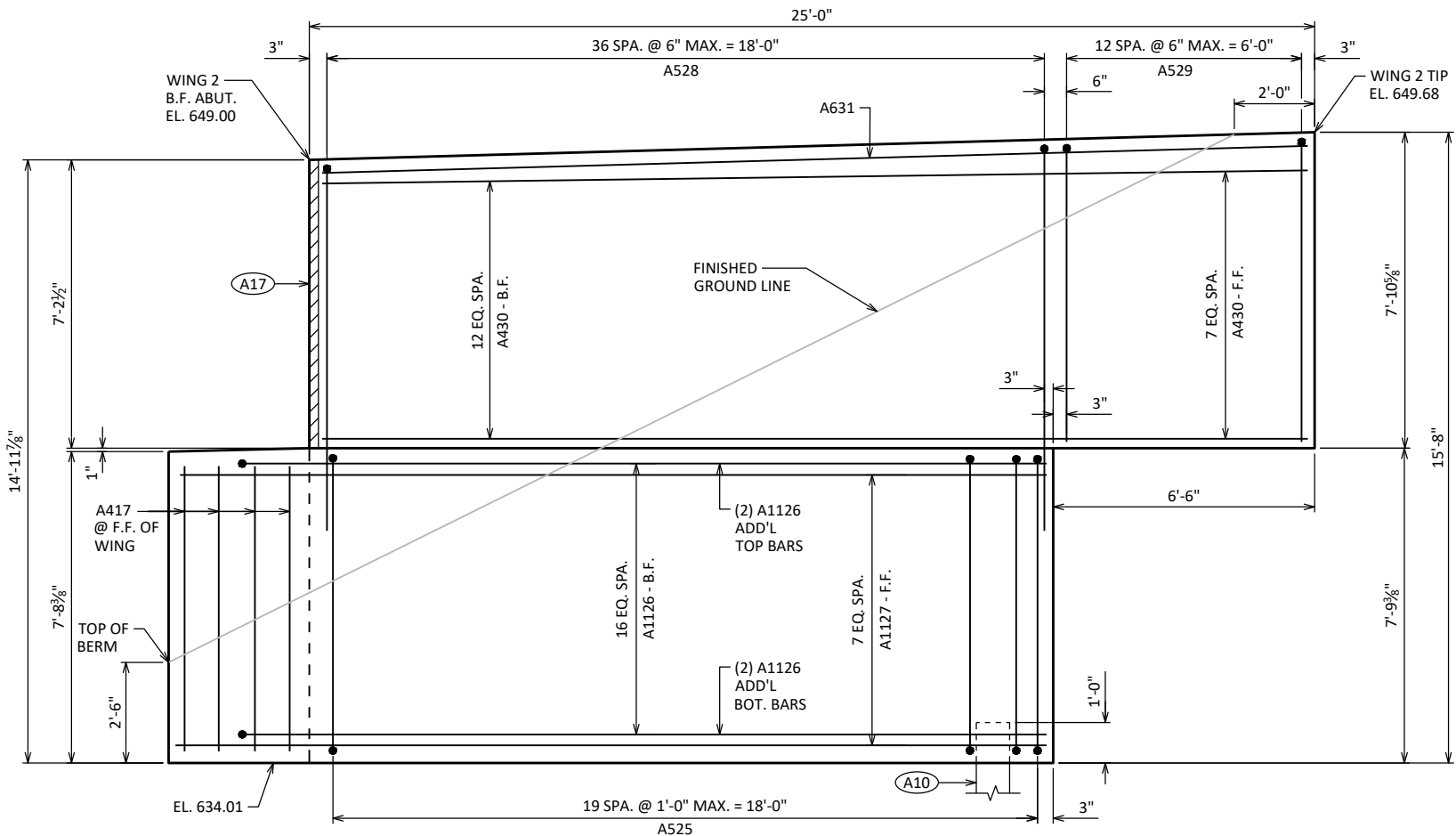


WING 1 ELEVATION

LOOKING AT F.F.

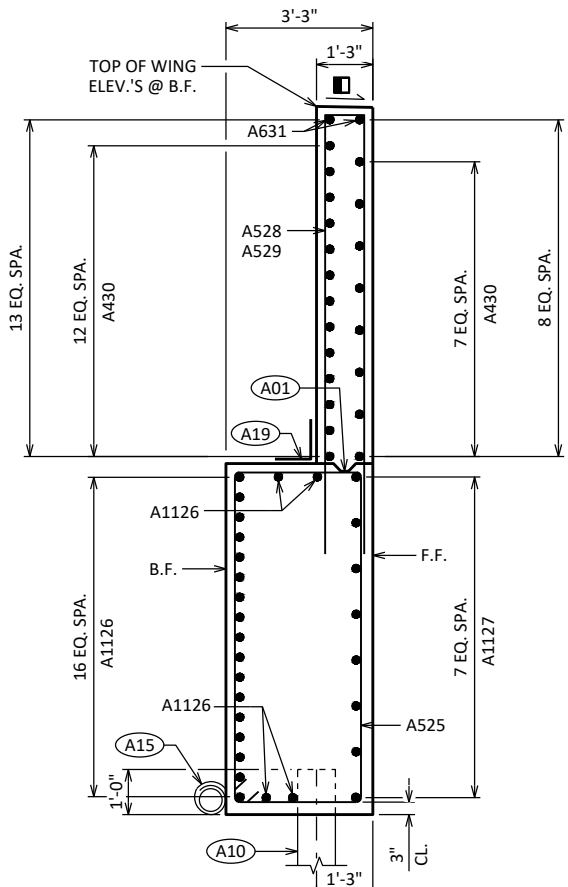


SECTION THRU WING 1



WING 2 ELEVATION

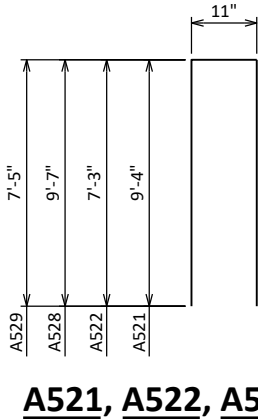
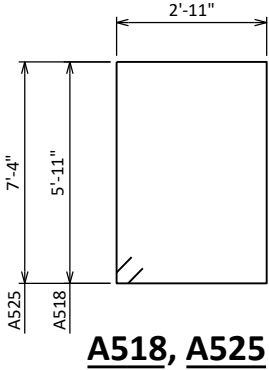
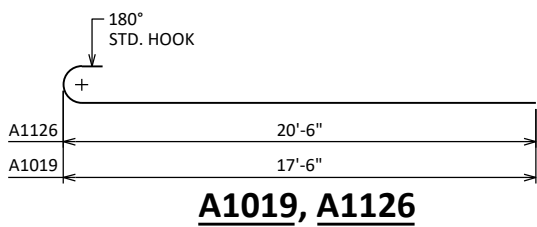
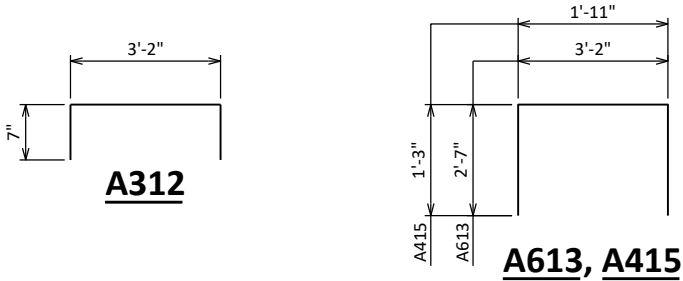
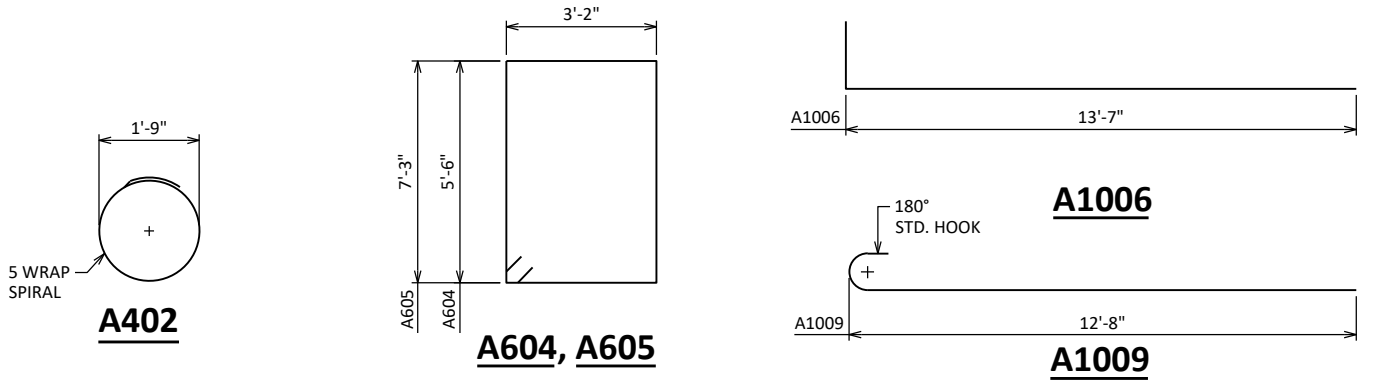
LOOKING AT F.F.



SECTION THRU WING 2

- SLOPE TO DRAIN
- A01 CONST. JOINT: KEYWAY FORMED BY A BEVELED 2 x 6.
- A10 SUPPORT ABUTMENT ON 12 3/4" DIA. X 0.50" CIP CONCRETE PILING, ESTIMATED 70'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.
- A15 PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.
- A17 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 3/8" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- A19 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

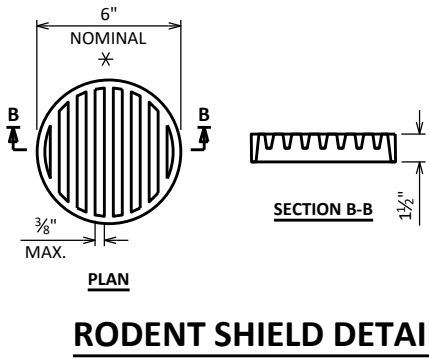
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY WWR		PLANS CK'D RRH	
WEST ABUTMENT DETAILS 1		SHEET 6 122	



BILL OF BARS

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

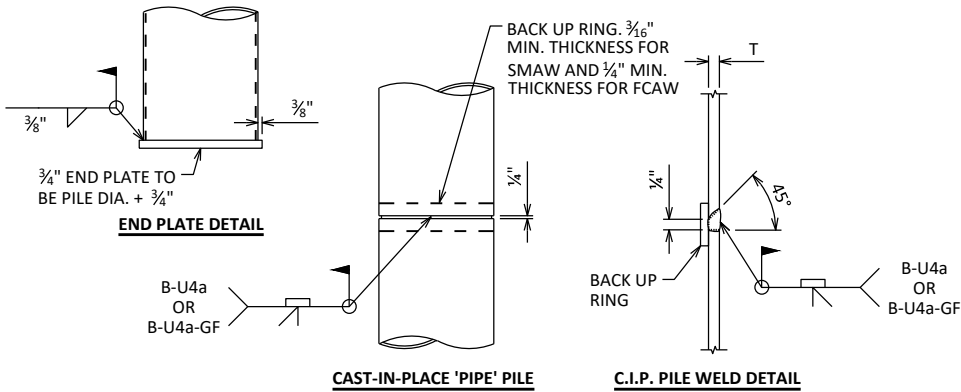
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
A601		4	25'-9"			ABUT. BODY-BOT.-HORIZ.
A402		10	28'-0"	X		ABUT. BODY-SPIRAL-1 PER BODY PILE
A403		20	2'-6"			ABUT. BODY-VERT.-2 PER BODY PILE
A604		41	18'-2"	X		ABUT. BODY-VERT.-STIRRUP
A605		6	21'-8"	X		ABUT. BODY-VERT.-STIRRUP
A1006		22	15'-1"	X		ABUT. BODY-HORIZ.-F.F.
A607		10	31'-7"			ABUT. BODY-HORIZ.-F.F.
A608		16	33'-10"			ABUT. BODY-HORIZ.-B.F.
A1009		49	14'-1"	X		ABUT. BODY-HORIZ.-B.F.
A410		5	29'-3"			ABUT. BODY-HORIZ.-B.F.
A411		5	15'-6"			ABUT. BODY-HORIZ.-B.F.
A312		16	4'-2"	X		ABUT. BODY-VERT. U-BAR-TOP-SUPPORT
A613		25	8'-0"	X		ABUT. BODY-VERT.-TOP U-BAR
A414		12	8'-3"			ABUT. BODY-HORIZ.-TOP-BTWN. BEAM SEATS
A415		20	4'-3"	X		ABUT. BODY-VERT.-TOP U-BAR-BTWN. BEAM SEATS
A416	X	4	5'-10"			ABUT. BODY-VERT.-S. END FACE
A417	X	4	7'-3"			ABUT. BODY-VERT.-N. END FACE
A518	X	17	18'-4"	X		WING BODY 1-VERT.-STIRRUP
A1019	X	18	18'-11"	X		WING BODY 1-HORIZ.-B.F., TOP, & BOT.
A1020	X	6	18'-8"			WING BODY 1-HORIZ.-F.F.
A521	X	31	19'-4"	X		WING BODY/WALL 1-VERT. U-BAR
A522	X	13	15'-2"	X		WING WALL 1-VERT. U-BAR
A423	X	18	21'-8"			WING WALL 1-HORIZ.- F.F. & B.F.
A624	X	2	21'-8"			WING WALL 1-HORIZ.-TOP
A525	X	20	21'-2"	X		WING BODY 2-VERT.-STIRRUP
A1126	X	21	22'-1"	X		WING BODY 2-HORIZ.-B.F., TOP, & BOT.
A1127	X	8	21'-8"			WING BODY 2-HORIZ.-F.F.
A528	X	37	19'-10"	X		WING BODY/WALL 2-VERT. U-BAR
A529	X	13	15'-6"	X		WING WALL 2-VERT. U-BAR
A430	X	21	24'-8"			WING WALL 2-HORIZ.- F.F. & B.F.
A631	X	2	24'-8"			WING WALL 2-HORIZ.-TOP



✱ DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SO SLOTS ARE VERTICAL.

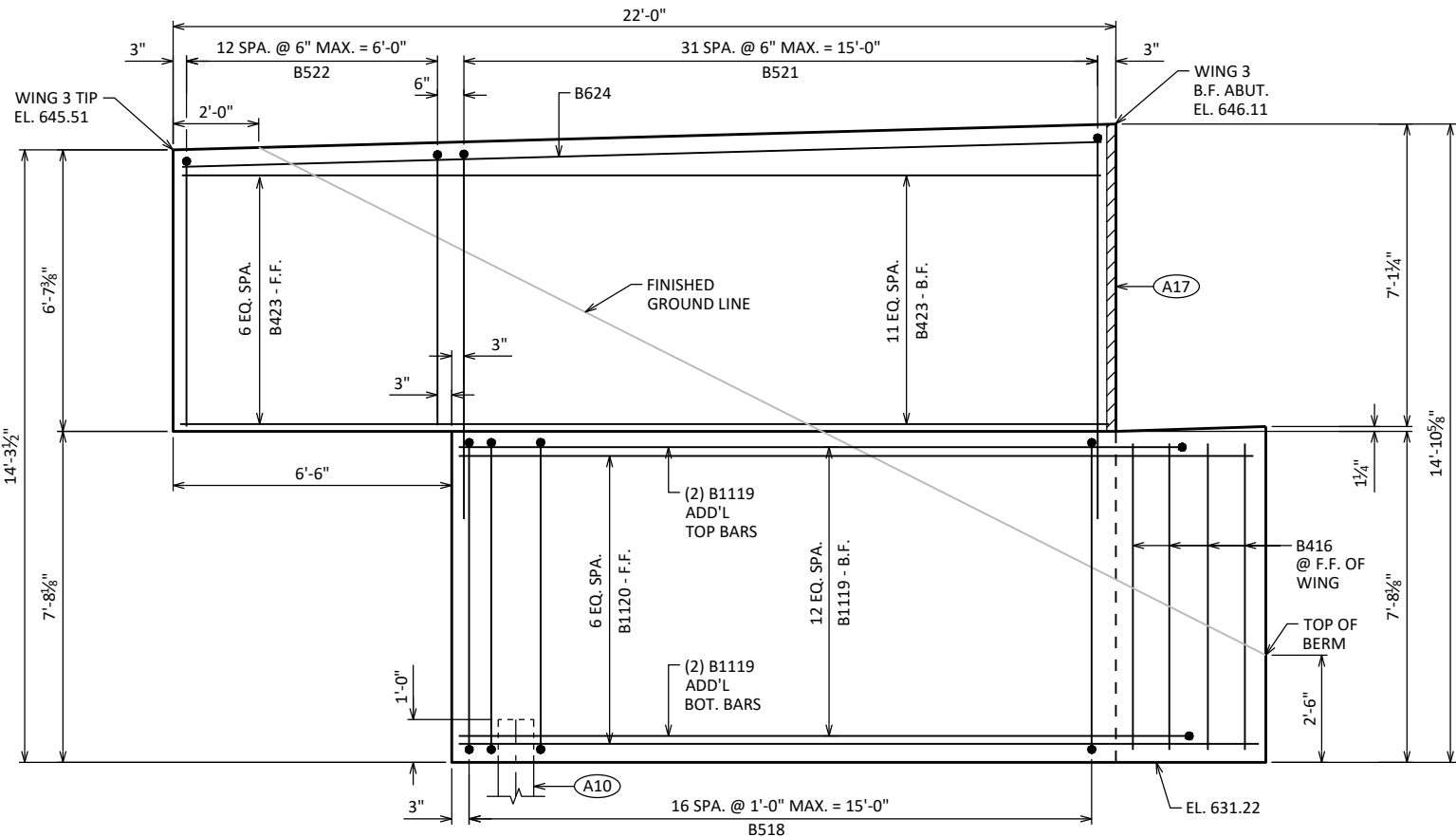
THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".

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



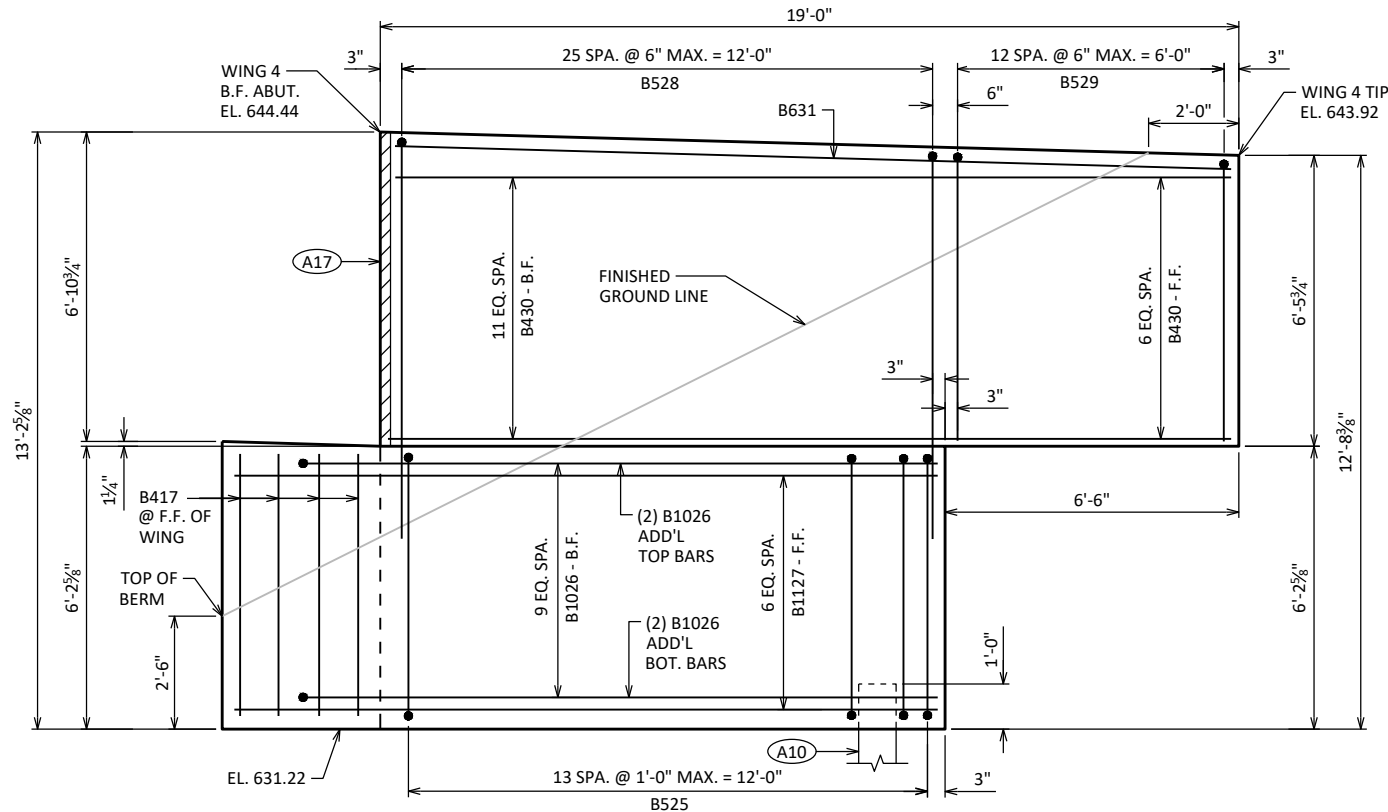
CIP PILE DETAILS

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE		B-16-156	
DRAWN BY		WWR	PLANS CK'D RRH
WEST ABUTMENT DETAILS 2		SHEET 7 123	



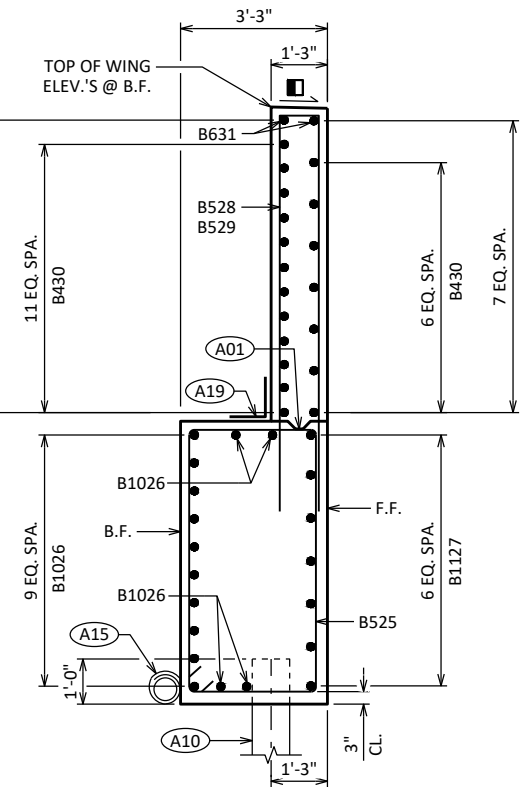
WING 3 ELEVATION

LOOKING AT F.F.

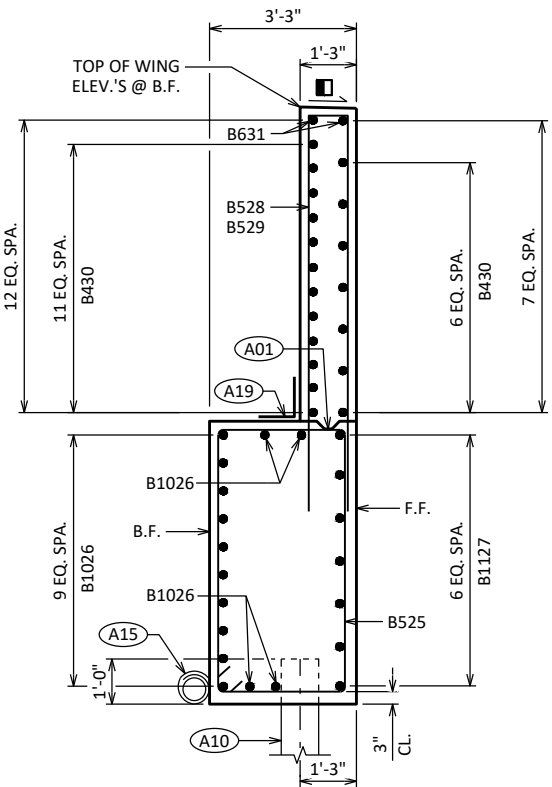


WING 4 ELEVATION

LOOKING AT F.F.



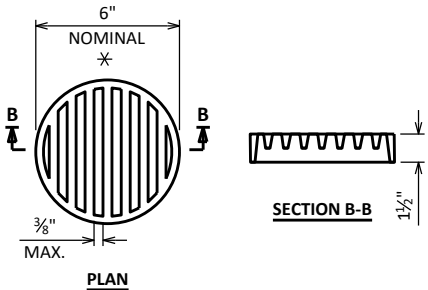
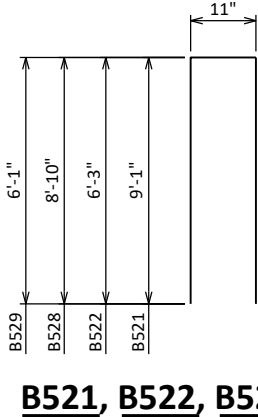
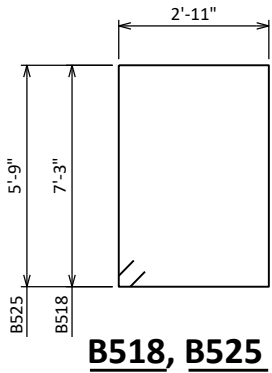
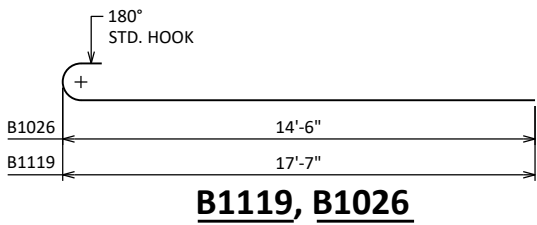
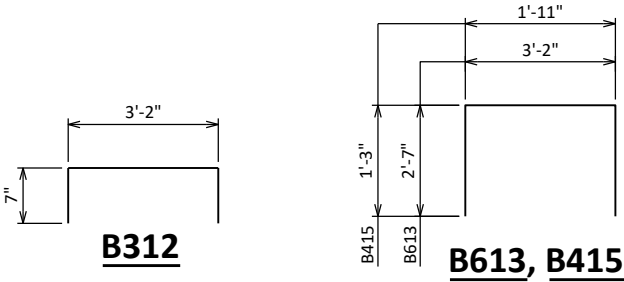
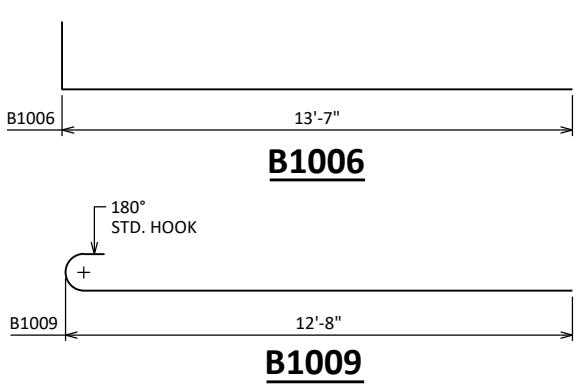
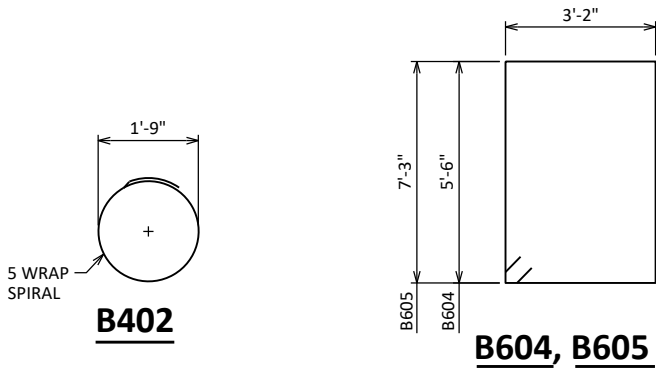
SECTION THRU WING 3



SECTION THRU WING 4

- SLOPE TO DRAIN
- A01 CONST. JOINT: KEYWAY FORMED BY A BEVELED 2 x 6.
- A10 SUPPORT ABUTMENT ON 12 3/4" DIA. X 0.50" CIP CONCRETE PILING, ESTIMATED 60'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.
- A15 PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. RODENT SHIELD REQUIRED.
- A17 1/2" FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/2" BELOW SURFACE OF CONCRETE). EXTEND SEALER 3" BELOW GUTTER LINE AT INSIDE FACE.
- A19 18" (RMW) RUBBERIZED MEMBRANE WATERPROOFING SEAL ALL HORIZ. & VERT. JOINTS AT BACKFACE.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY WWR		PLANS CK'D RRH	
EAST ABUTMENT DETAILS 1		SHEET 9	125

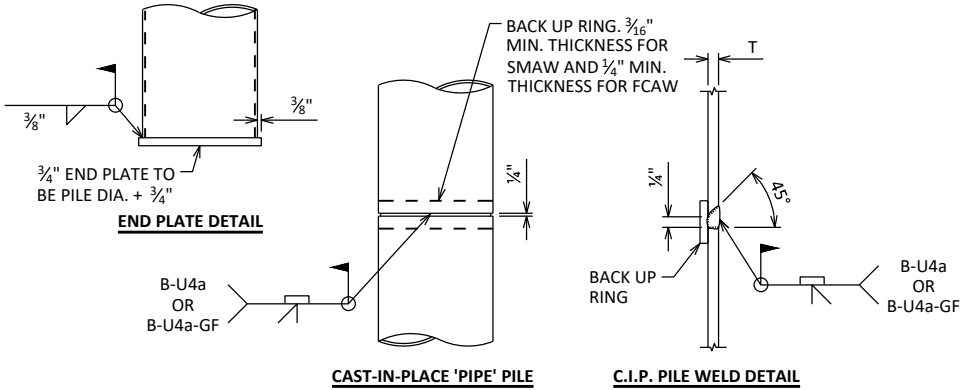


RODENT SHIELD DETAIL

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

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

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



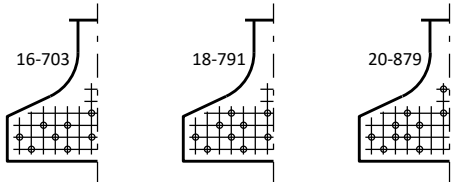
CIP PILE DETAILS

BILL OF BARS

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

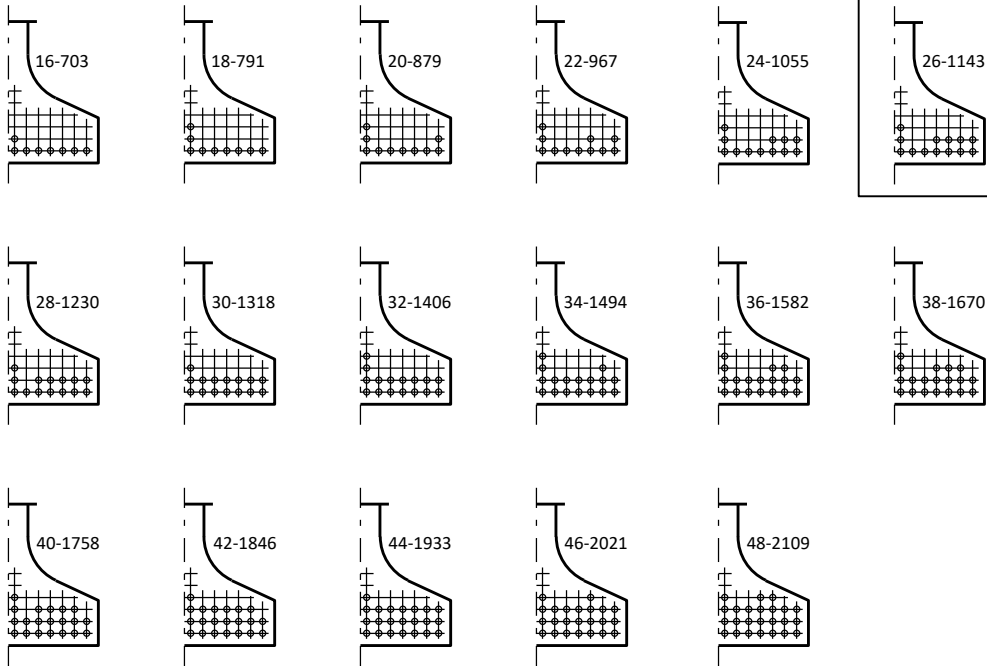
BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
B601		4	25'-9"			ABUT. BODY-BOT.-HORIZ.
B402		10	28'-0"	X		ABUT. BODY-SPIRAL-1 PER BODY PILE
B403		20	2'-6"			ABUT. BODY-VERT.-2 PER BODY PILE
B604		41	18'-2"	X		ABUT. BODY-VERT.-STIRRUP
B605		6	21'-8"	X		ABUT. BODY-VERT.-STIRRUP
B1006		20	15'-1"	X		ABUT. BODY-HORIZ.-F.F.
B607		10	31'-7"			ABUT. BODY-HORIZ.-F.F.
B608		12	33'-10"			ABUT. BODY-HORIZ.-B.F.
B1009		37	14'-1"	X		ABUT. BODY-HORIZ.-B.F.
B410		5	29'-3"			ABUT. BODY-HORIZ.-B.F.
B411		5	15'-6"			ABUT. BODY-HORIZ.-B.F.
B312		16	4'-2"	X		ABUT. BODY-VERT. U-BAR-TOP-SUPPORT
B613		25	8'-0"	X		ABUT. BODY-VERT.-TOP U-BAR
B414		12	8'-3"			ABUT. BODY-HORIZ.-TOP-BTWN. BEAM SEATS
B415		20	4'-3"	X		ABUT. BODY-VERT.-TOP U-BAR-BTWN. BEAM SEATS
B416	X	4	7'-3"			ABUT. BODY-VERT.-N. END FACE
B417	X	4	5'-9"			ABUT. BODY-VERT.-S. END FACE
B518	X	17	21'-0"	X		WING BODY 3-VERT.-STIRRUP
B1119	X	17	19'-2"	X		WING BODY 3-HORIZ.-B.F., TOP, & BOT.
B1120	X	7	18'-8"			WING BODY 3-HORIZ.-F.F.
B521	X	32	18'-10"	X		WING BODY/WALL 3-VERT. U-BAR
B522	X	13	13'-2"	X		WING WALL 3-VERT. U-BAR
B423	X	19	21'-8"			WING WALL 3-HORIZ.- F.F. & B.F.
B624	X	2	21'-8"			WING WALL 3-HORIZ.-TOP
B525	X	14	18'-0"	X		WING BODY 4-VERT.-STIRRUP
B1026	X	14	15'-11"	X		WING BODY 4-HORIZ.-B.F., TOP, & BOT.
B1127	X	7	15'-8"			WING BODY 4-HORIZ.-F.F.
B528	X	26	18'-4"	X		WING BODY/WALL 4-VERT. U-BAR
B529	X	13	12'-10"	X		WING WALL 4-VERT. U-BAR
B430	X	19	18'-8"			WING WALL 4-HORIZ.- F.F. & B.F.
B631	X	2	18'-8"			WING WALL 4-HORIZ.-TOP

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE		B-16-156	
DRAWN BY		WWR	PLANS CK'D RRH
EAST ABUTMENT DETAILS 2		SHEET 10 126	



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

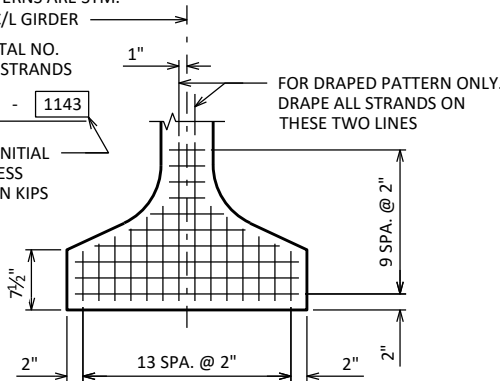
0.6" DIA. STRANDS



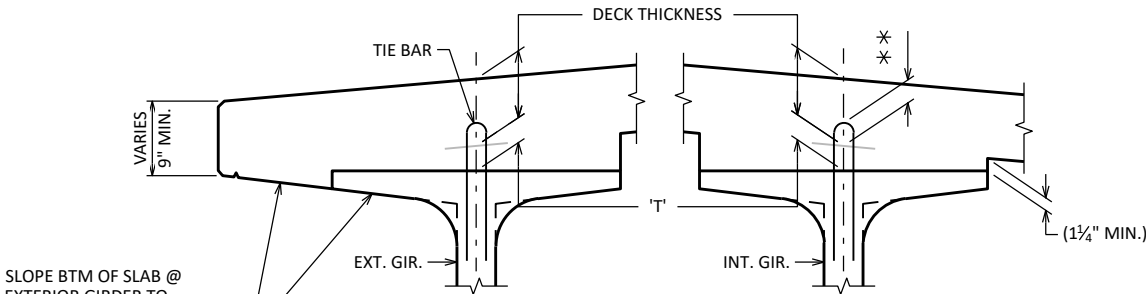
ALL PATTERNS ARE SYM.
ABOUT C/L GIRDER

TOTAL NO.
OF STRANDS
26 - 1143

TOTAL INITIAL
PRESTRESS
FORCE IN KIPS



TYP. STRAND PATTERN



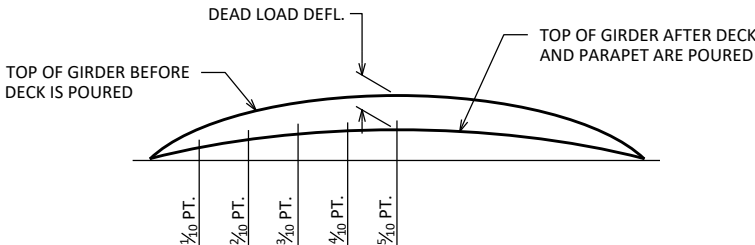
DECK HAUNCH DETAIL

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 DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN 1/2" OR, IF 3" MINIMUM DECK EMBEDMENT OF TIE BAR CANNOT BE OBTAINED.

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

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

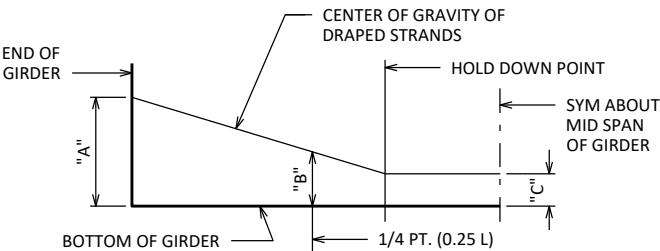
NOTE: AN AVERAGE HAUNCH ('T') OF 3 3/4" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".



DEAD LOAD DEFLECTION DIAGRAM

ARRANGEMENT AT C/L SPAN - FOR GIRDERS WITH DRAPED STRANDS

0.6" DIA. STRANDS



DRAPED STRAND PROFILE

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

SPAN	CAMBER (IN.) *
1	1.624

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

THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156		DRAWN BY KRV	PLANS CK'D RRH
72W" PRESTRESSED GIRDER DETAILS 2		SHEET 12 128	

NOTES

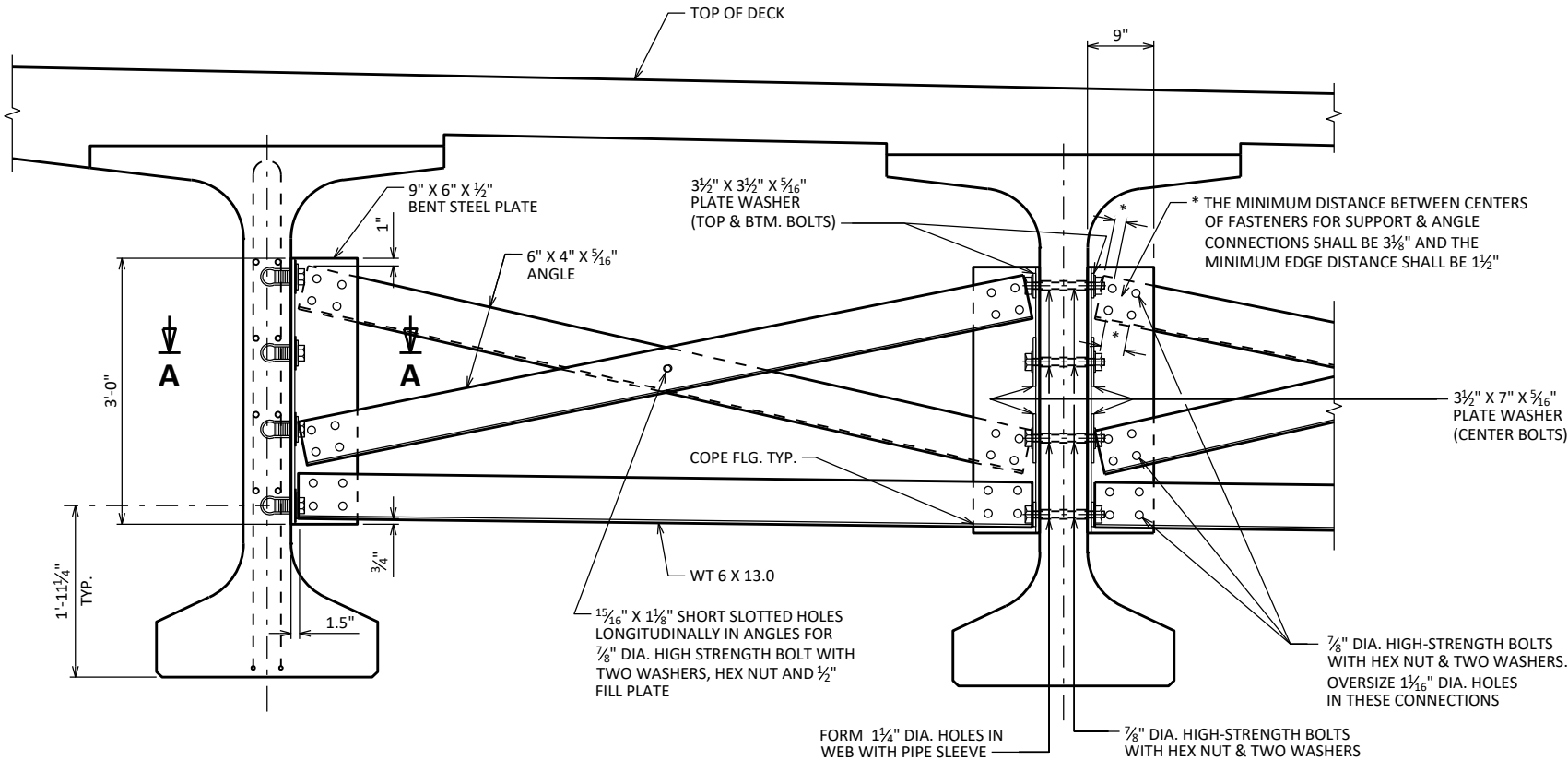
ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-16-156", EACH.

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.

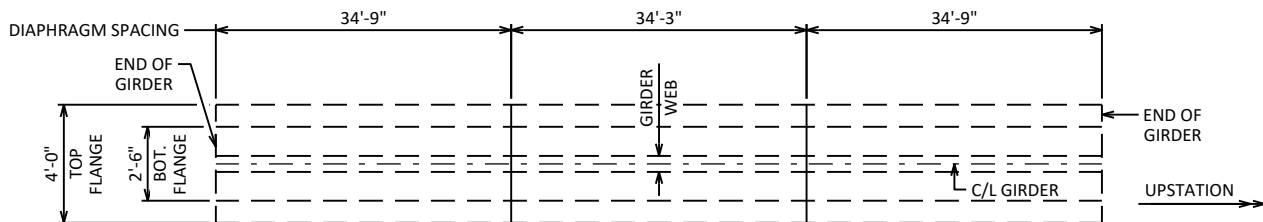


EXTERIOR GIRDER

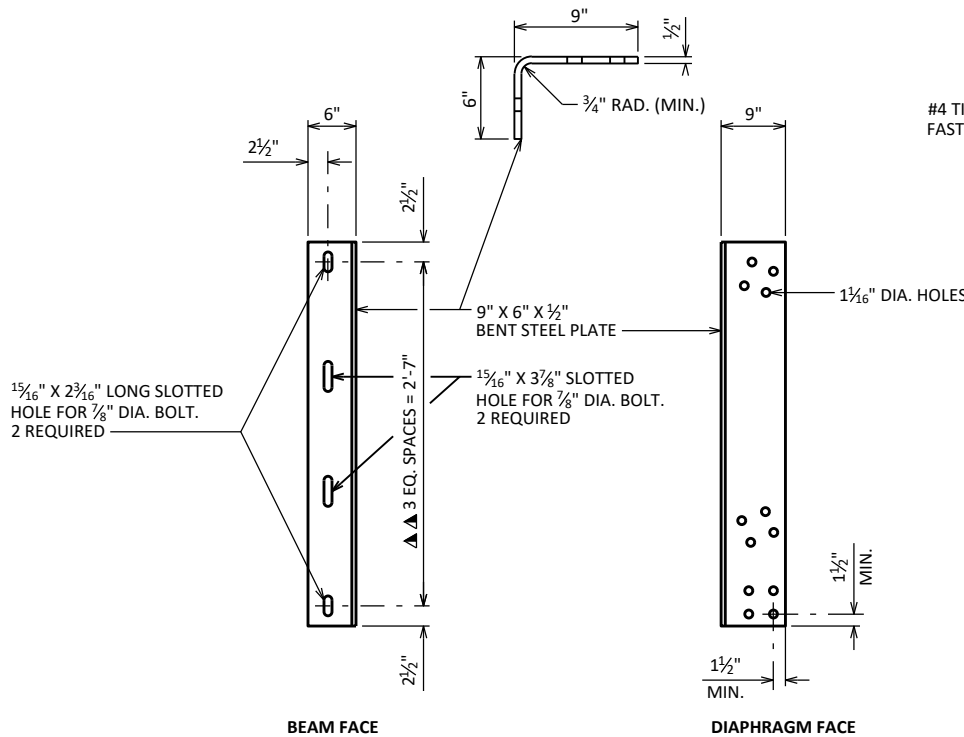
INTERIOR GIRDER
(FOR CONTINUOUS LINE DIAPHS.)

PART TRANSVERSE SECTION AT DIAPHRAGM

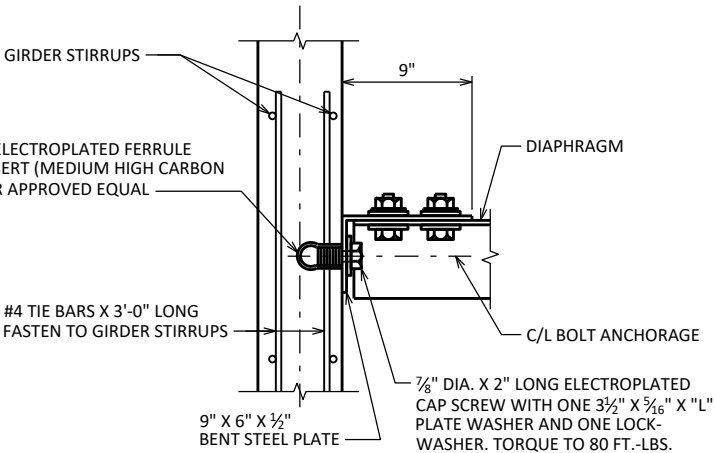
(72W" PRESTRESSED GIRDER)



DIAPHRAGM SPACING PLAN



DIAPHRAGM SUPPORT



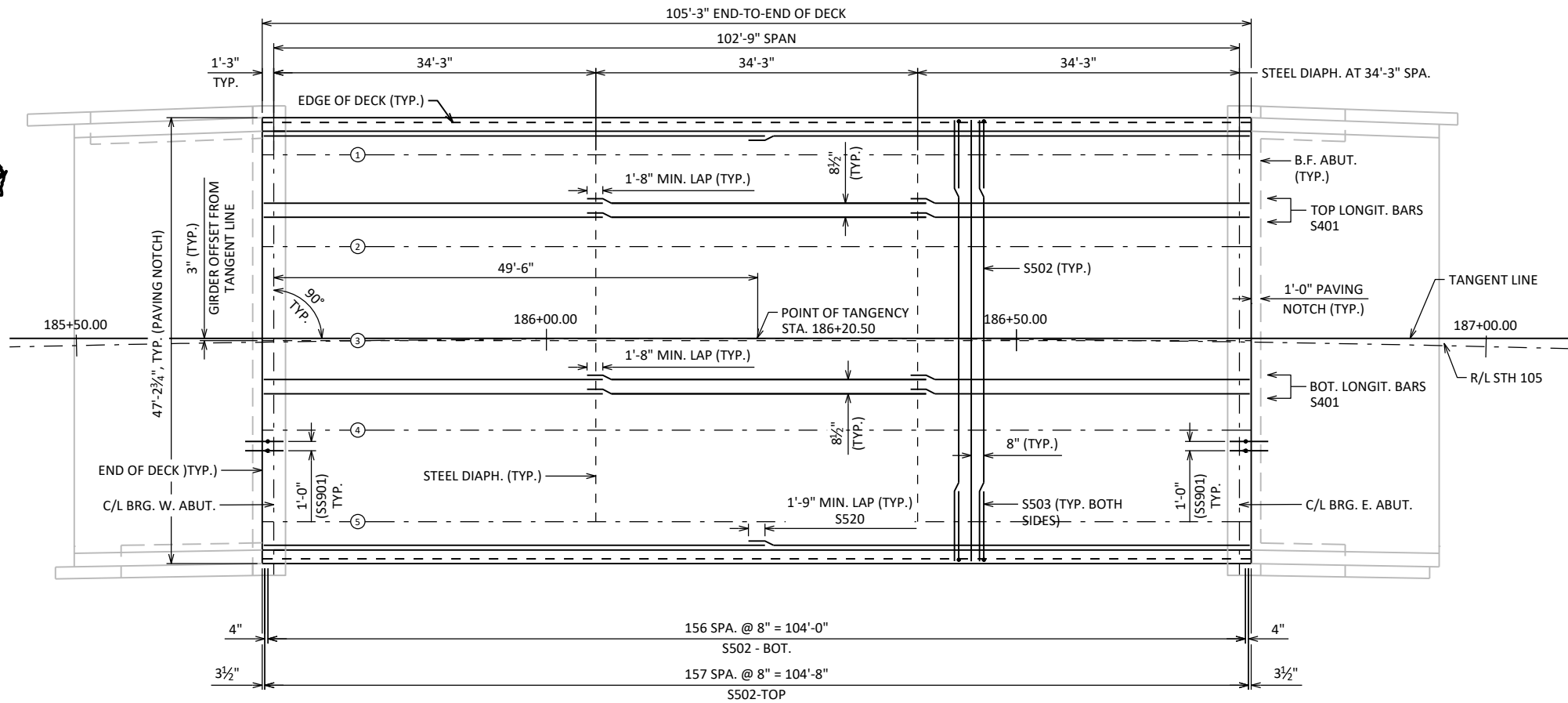
SECTION A-A

(FOR EXTERIOR ATTACHMENT)

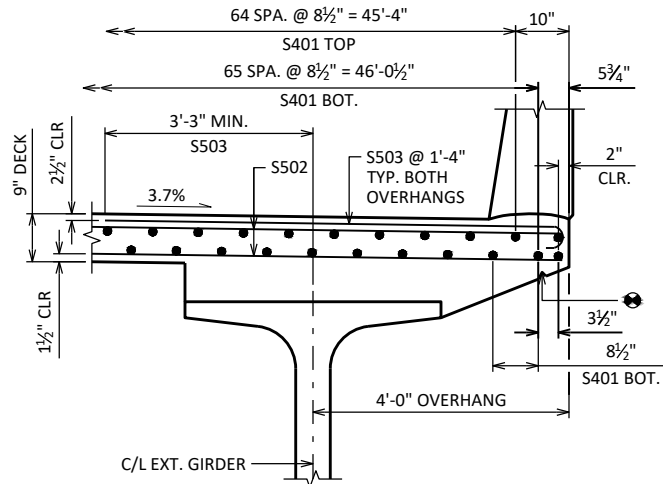
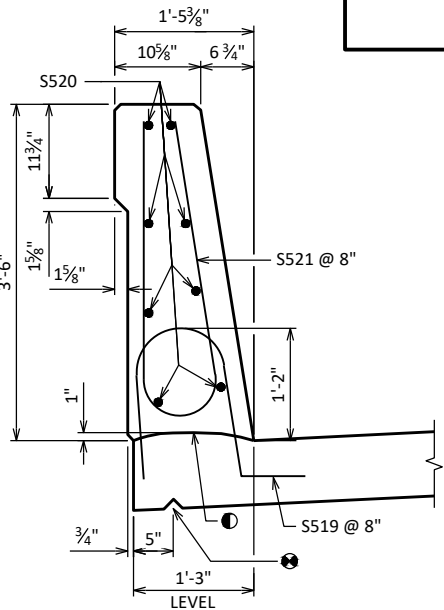
"L" = 3 ½"; TOP AND BOTTOM BOLTS
"L" = 7"; CENTER BOLTS

▲▲ BOLT HOLES SHALL BE SPACED SO AS TO MISS PRESTRESSED STRANDS IN CONCRETE BEAMS.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156		DRAWN BY KRV	PLANS CK'D RRH
INTERMEDIATE STEEL DIAPHRAGM		SHEET 13 129	

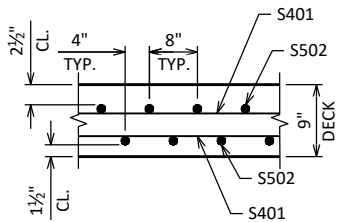


SECTION THRU PARAPET ON DECK



SECTION THRU EDGE OF DECK

TYP. BOTH SIDES (PARAPET REINFORCEMENT NOT SHOWN FOR CLARITY)

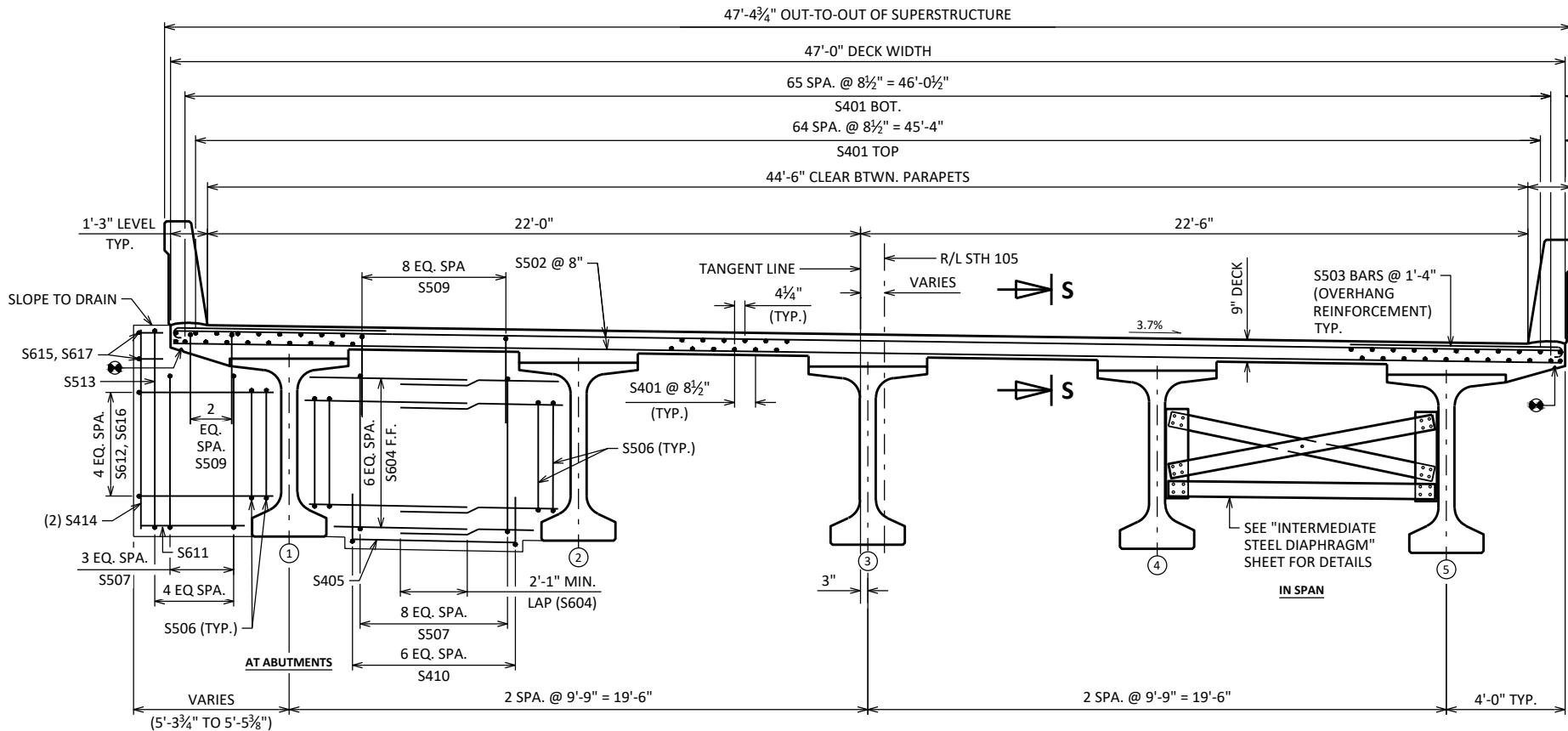


SECTION S-S

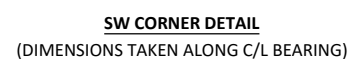
- 3/4" V-GROOVE REQUIRED EXTEND TO 6" FROM F.F. OF ABUT. BODY
- CONST. JOINT - STRIKE OFF AS SHOWN
- INDICATES GIRDER NUMBER

CROSS SECTION THRU BRIDGE

LOOKING EAST (DIMENSIONS NORMAL TO TANGENT LINE)



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY KRV		PLANS CK'D RRH	
SUPERSTRUCTURE		SHEET 14	130

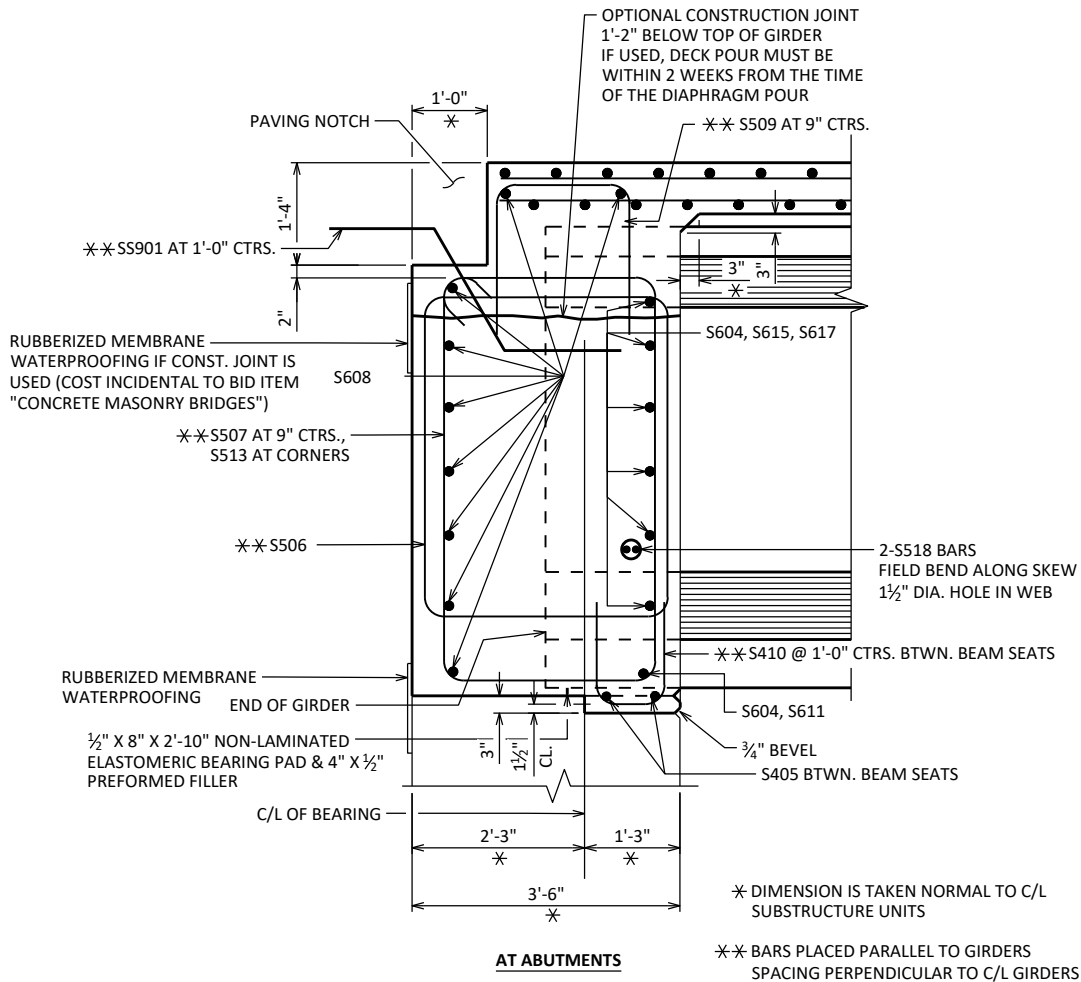


DIAPHRAGM END PLAN DETAILS

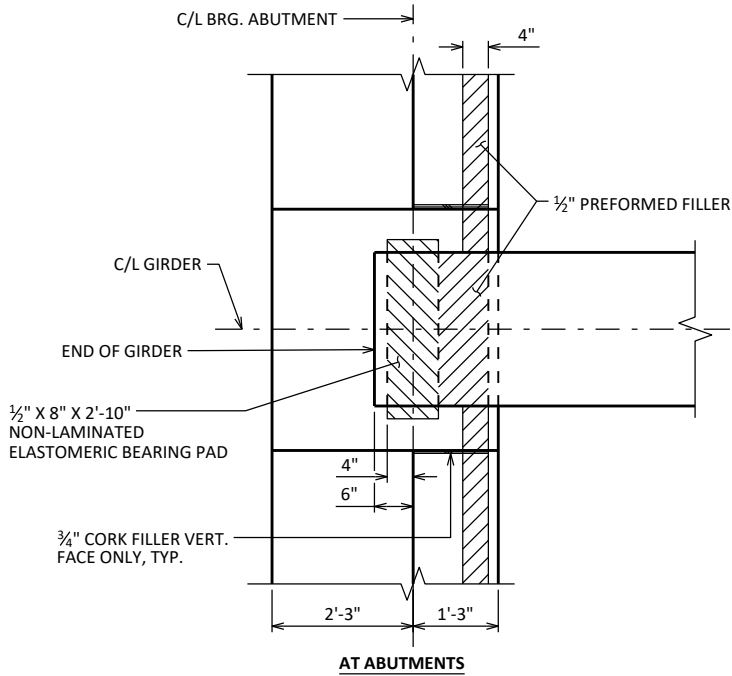
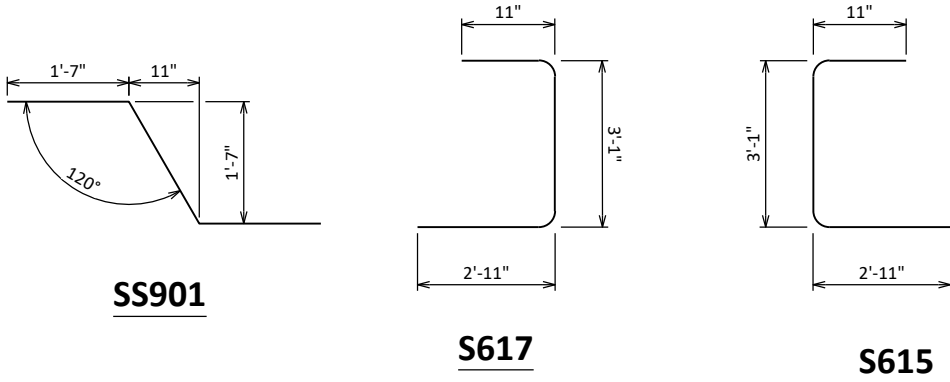
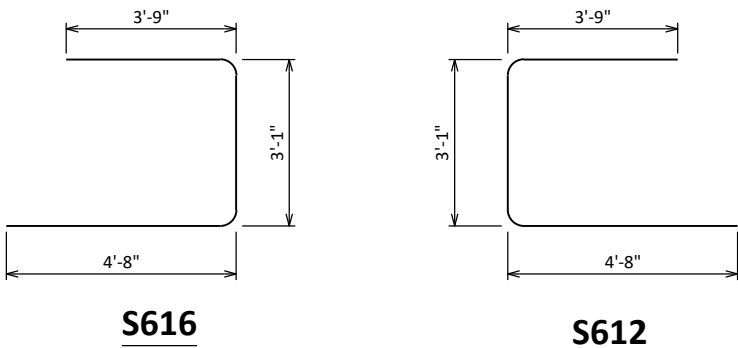
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE		B-16-156	
DRAWN BY		KRV	PLANS CK'D RRH
CONCRETE DIAPHRAGM CORNER DETAILS		SHEET 15 131	

TOP OF DECK ELEVATIONS

LOCATION	C/L BRG. WEST ABUT.	1/10 PT.	2/10 PT.	3/10 PT.	4/10 PT.	5/10 PT.	6/10 PT.	7/10 PT.	8/10 PT.	9/10 PT.	C/L BRG. EAST ABUT.
LT. EOD	648.96	648.67	648.39	648.11	647.83	647.55	647.28	647.00	646.73	646.46	646.18
GIRDER 1	648.86	648.57	648.29	648.01	647.73	647.45	647.18	646.90	646.63	646.35	646.08
GIRDER 2	648.50	648.21	647.93	647.65	647.37	647.09	646.81	646.54	646.26	645.99	645.72
TANGENT LINE	648.15	647.87	647.58	647.30	647.02	646.74	646.46	646.18	645.91	645.63	645.36
R/L	648.14	647.86	647.58	647.30	647.02	646.74	646.46	646.18	645.90	645.62	645.34
GIRDER 3	648.15	647.86	647.57	647.29	647.01	646.73	646.45	646.18	645.90	645.62	645.35
GIRDER 4	647.79	647.50	647.22	646.93	646.65	646.37	646.09	645.81	645.54	645.26	644.99
GIRDER 5	647.42	647.14	646.86	646.57	646.29	646.01	645.73	645.45	645.17	644.90	644.62
RT. EOD	647.33	647.04	646.76	646.47	646.19	645.91	645.63	645.35	645.07	644.79	644.52



PART. LONGIT. SECTION



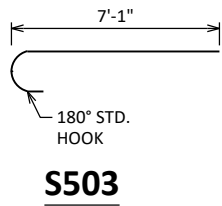
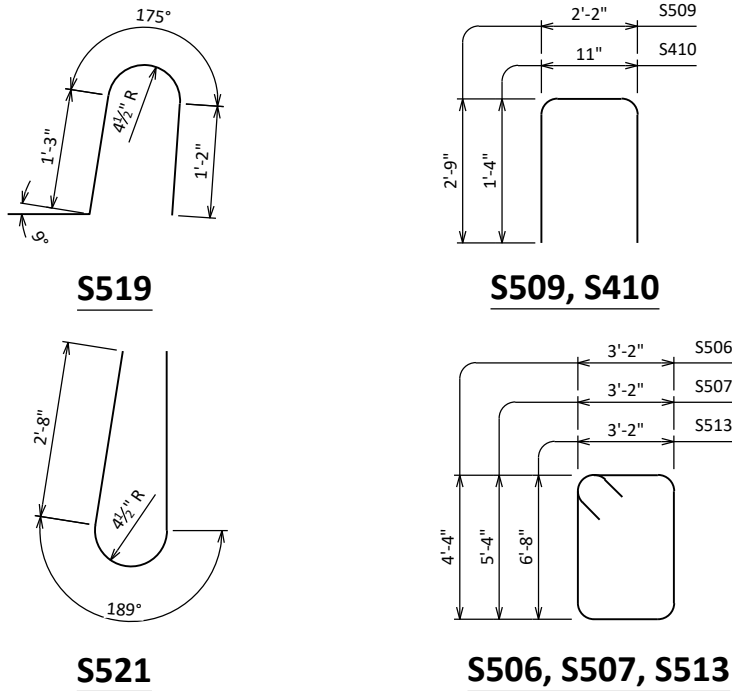
BEARING PAD DETAIL

BILL OF BARS

NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
S401	X	405	36'-1"			DECK - TOP & BOT. LONGIT.
S502	X	315	46'-8"			DECK - TOP & BOT. TRANS.
S503	X	160	7'-8"	X		DECK - OVERHANG TRANS.
S604	X	112	5'-6"			DIAPH. - F.F. HORZ. BTWN. GIRDERS
S405	X	16	5'-11"			DIAPH. - BOT. HORZ. BTWN. BEAM SEATS
S506	X	40	15'-8"	X		DIAPH. - VERT. BELOW GIRDER TOP FLANGE
S507	X	88	17'-8"	X		DIAPH. - VERT. BTWN. BEAM SEATS & AT CORNERS
S608	X	18	49'-0"			DIAPH. - B.F. HORZ.
S509	X	84	7'-5"	X		DECK & DIAPH. - TOP VERT. BTWN. GIRDERS
S410	X	56	3'-5"	X		DIAPH. - BOT. VERT. BTWN. BEAM SEATS
S611	X	4	3'-8"			DIAPH. - BOT. HORZ. AT CORNERS
S612	X	10	11'-2"	X		DIAPH. - SE & SW ENDS HORZ.
S513	X	4	20'-4"	X		DIAPH. - VERT. OUTER STIRRUP
S414	X	8	6'-8"			DIAPH. - VERT.
S615	X	4	6'-7"	X		DIAPH. - SE & SW ENDS TOP HORZ.
S616	X	10	11'-2"	X		DIAPH. - NE & NW ENDS HORZ.
S617	X	4	6'-7"	X		DIAPH. - NE & NW ENDS TOP HORZ.
S518	X	20	6'-0"			DIAPH. - HORZ. THRU GIRDER
S519	X	318	4'-5"	X		DECK/PARAPET - VERT.
S520	X	32	53'-4"			PARAPET - HORZ.
S521	X	318	6'-8"	X		PARAPET - VERT.

STAINLESS STEEL						
SS901	96	5'-0"	X			CONC. ABUT. DIAPH. TO APPROACH SLAB

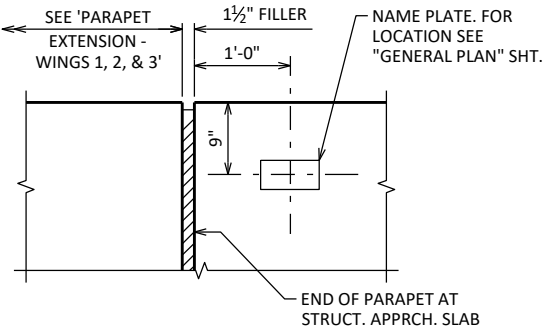


NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156		DRAWN BY KRV	PLANS CK'D RRRH
SUPERSTRUCTURE DETAILS		SHEET 16 132	

BILL OF BARS

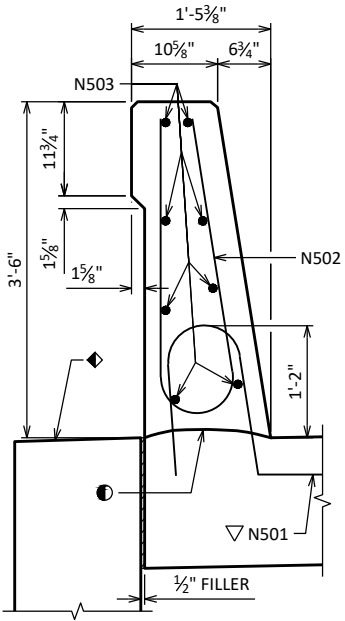
FOR STRUCTURAL APPROACH SLAB PARAPETS

BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
N501	X	93	4'-5"	X		PARAPET VERT.
N502	X	93	6'-8"	X		PARAPET VERT.
N503	X	24	19'-8"			PARAPET HORIZ.

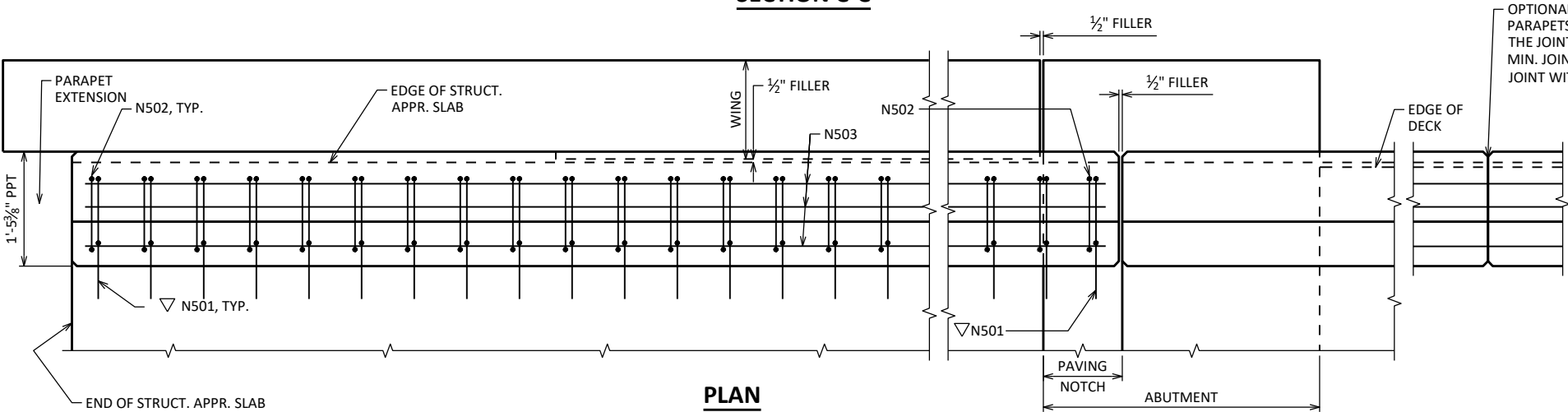


WING 1 NAME PLATE

LOOKING AT INSIDE FACE OF PARAPET



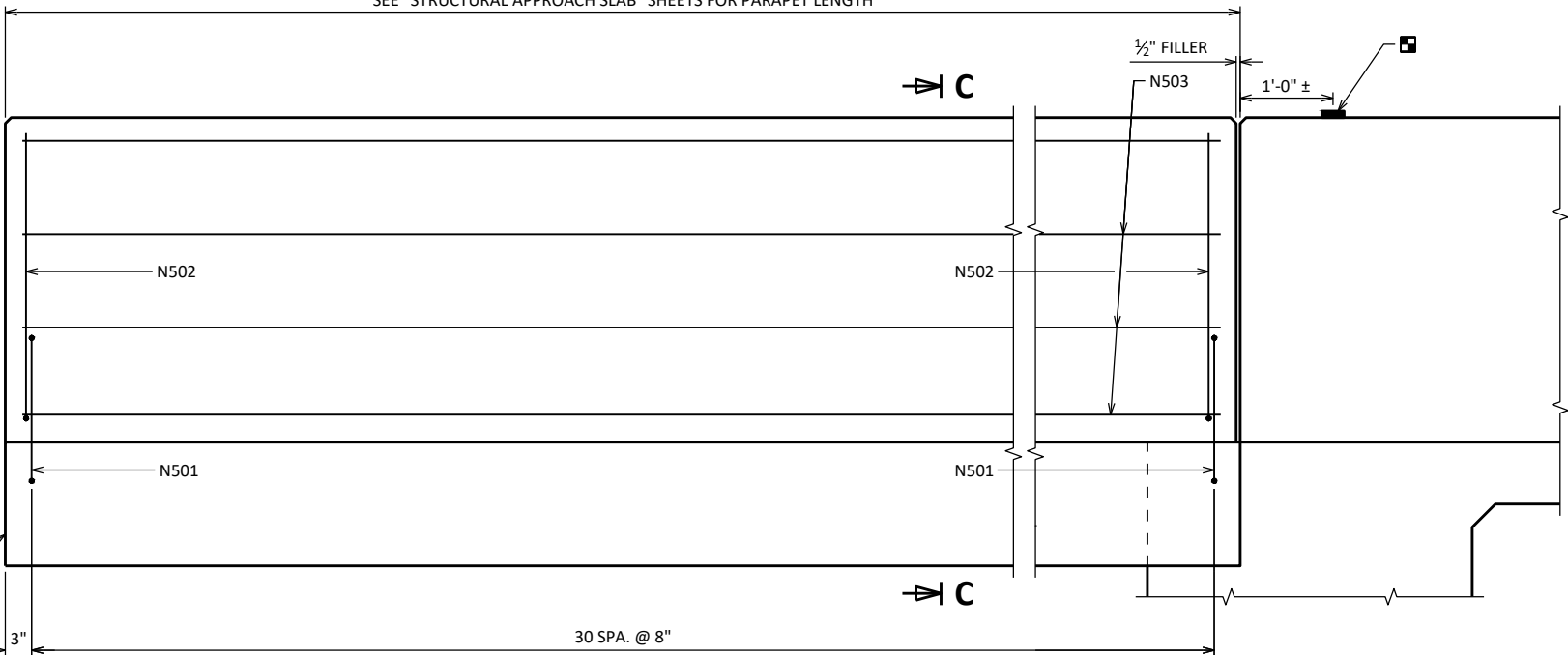
SECTION C-C



PLAN

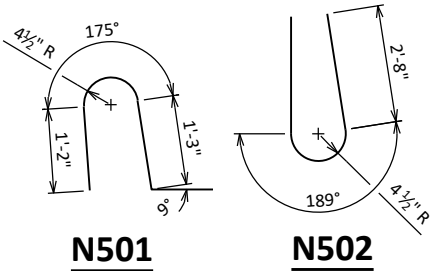
NW CORNER SHOWN, SW AND NE CORNERS SIMILAR

SEE "STRUCTURAL APPROACH SLAB" SHEETS FOR PARAPET LENGTH



INSIDE ELEVATION

NW CORNER SHOWN, SW AND NE CORNERS SIMILAR
WING & STRUCTURAL APPROACH SLAB FOOTING NOT SHOWN FOR CLARITY



N501

N502

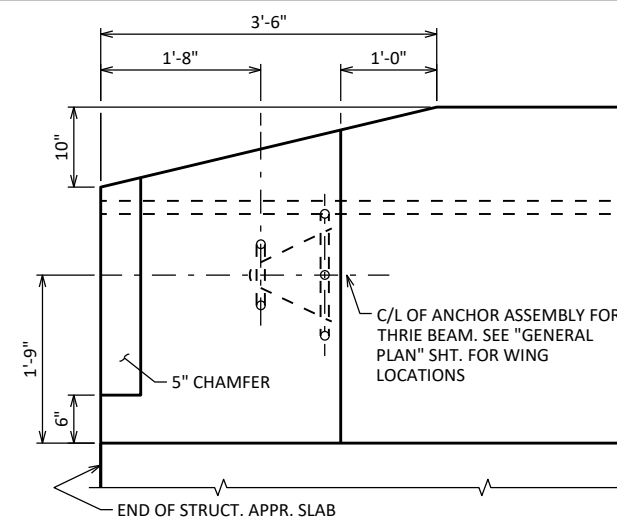
- CONST. JOINT - STRIKE OFF AS SHOWN
- ◆ SLOPE FOR DRAINAGE
- ▽ N501 BARS TO BE TIED TO STRUCTURAL APPROACH SLAB STEEL BEFORE STRUCTURAL APPROACH SLAB IS POURED.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY KRV		PLANS CK'D RRH	
SINGLE SLOPE 42SS PARAPET - WINGS 1, 2, & 3		SHEET 17 133	

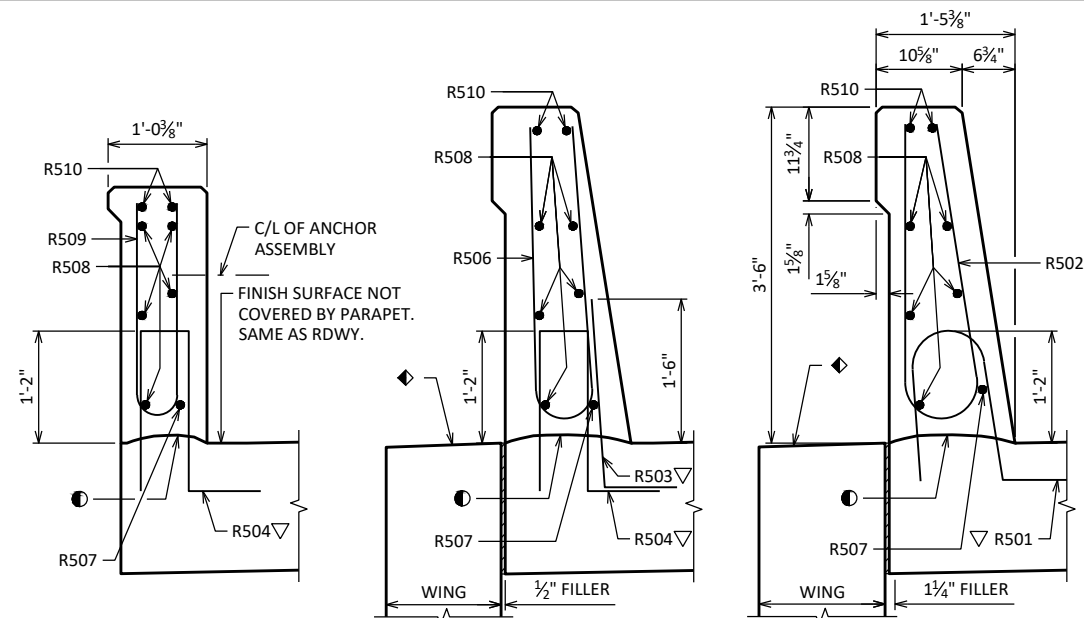
FOR STRUCTURAL APPROACH SLAB PARAPETS

BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
R501	X	17	4'-5"	X		PARAPET VERT.
R502	X	17	6'-8"	X		PARAPET VERT.
R503	X	12	2'-9"	X		PARAPET VERT.
R504	X	17	4'-4"	X		PARAPET VERT.
R505	X	5	6'-5"	X		PARAPET VERT.
R506	X	6	6'-6"	X		PARAPET VERT.
R507	X	1	19'-8	X		PARAPET HORIZ.
R508	X	5	19'-8			PARAPET HORIZ.
R509	X	6	5'-5"	X		PARAPET VERT.
R510	X	2	19'-8	X		PARAPET HORIZ.

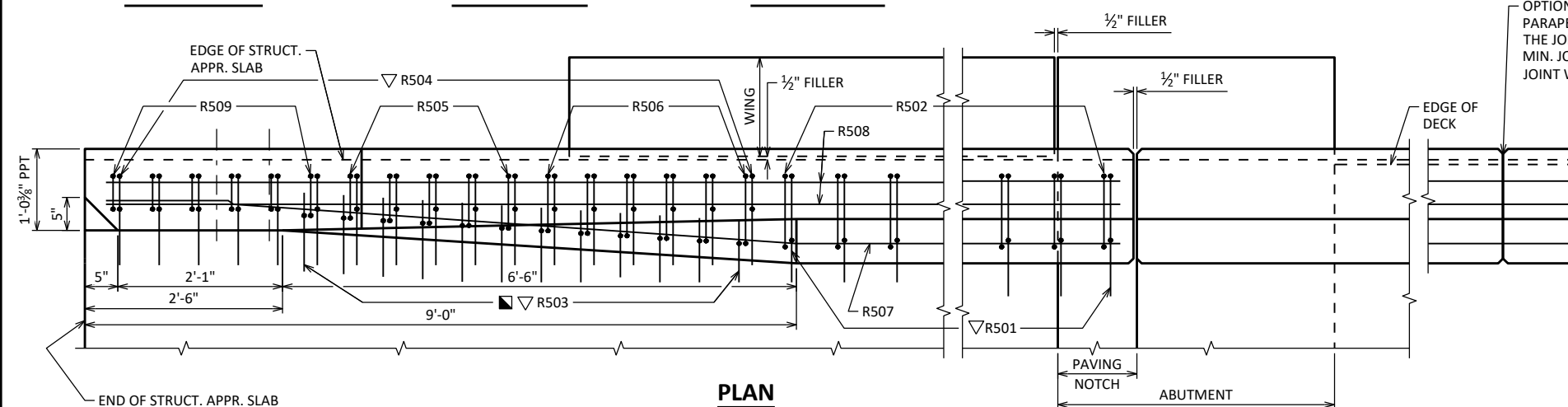
▲ LENGTH SHOWN FOR BAR IS AN AVERAGE AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



LOOKING AT INSIDE FACE OF PARAPET

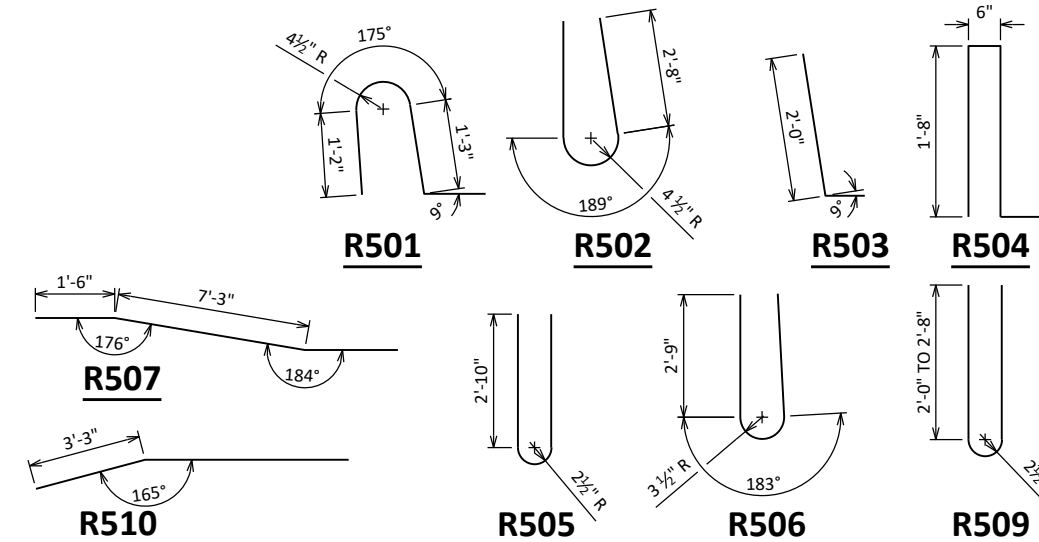


SECTION C-C



SE CORNER SHOWN

OPTIONAL CONSTRUCTION JOINTS IN THE
PARAPETS MAY BE USED. RUN BAR REINF. THRU
THE JOINT. LAP LONGIT. BARS A MIN. OF 1'-9".
MIN. JOINT SPACING OF 80'-0". DEFINE CONST.
JOINT WITH A $\frac{3}{4}$ " - 'V' GROOVE

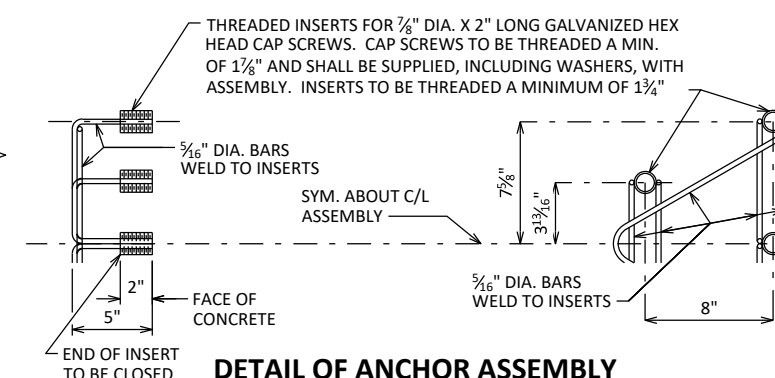


R504

R510

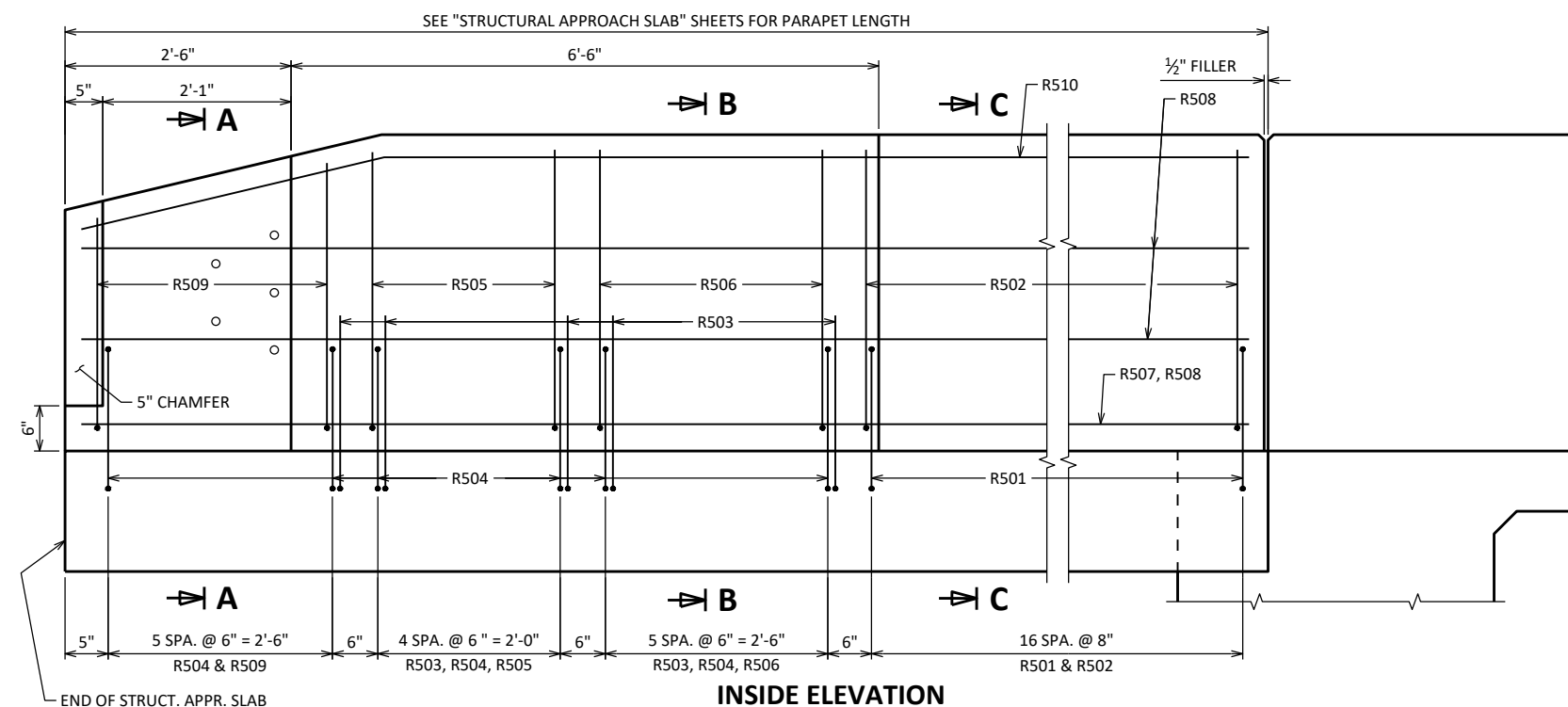
R509

- CONST. JOINT - STRIKE OFF AS SHOWN
- ◆ SLOPE FOR DRAINAGE
- USE CARE TO PLACE R503 BARS CORRECTLY ALONG TRANSITION OF PARAPET.
- ▽ R501, R503, AND R504 BARS TO BE TIED TO STRUCTURAL APPROACH SLAB STEEL BEFORE STRUCTURAL APPROACH SLAB IS POURED.



NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH ASTM F2329.

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



SE CORNER SHOWN
WING & STRUCTURAL APPROACH SLAB FOOTING NOT SHOWN FOR CLARITY

BILL OF BARS

FOR STRUCTURAL APPROACH SLAB PARAPETS

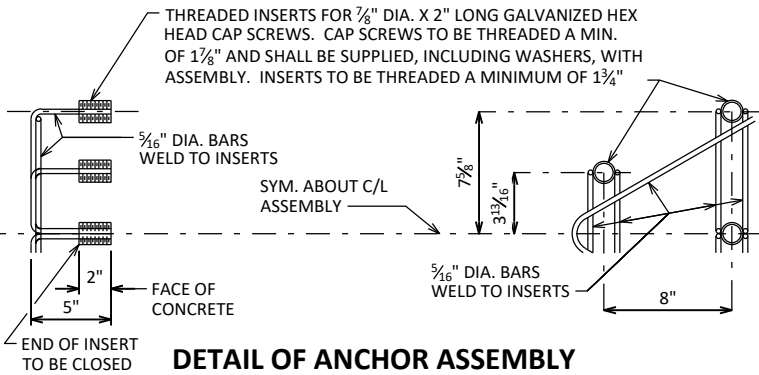
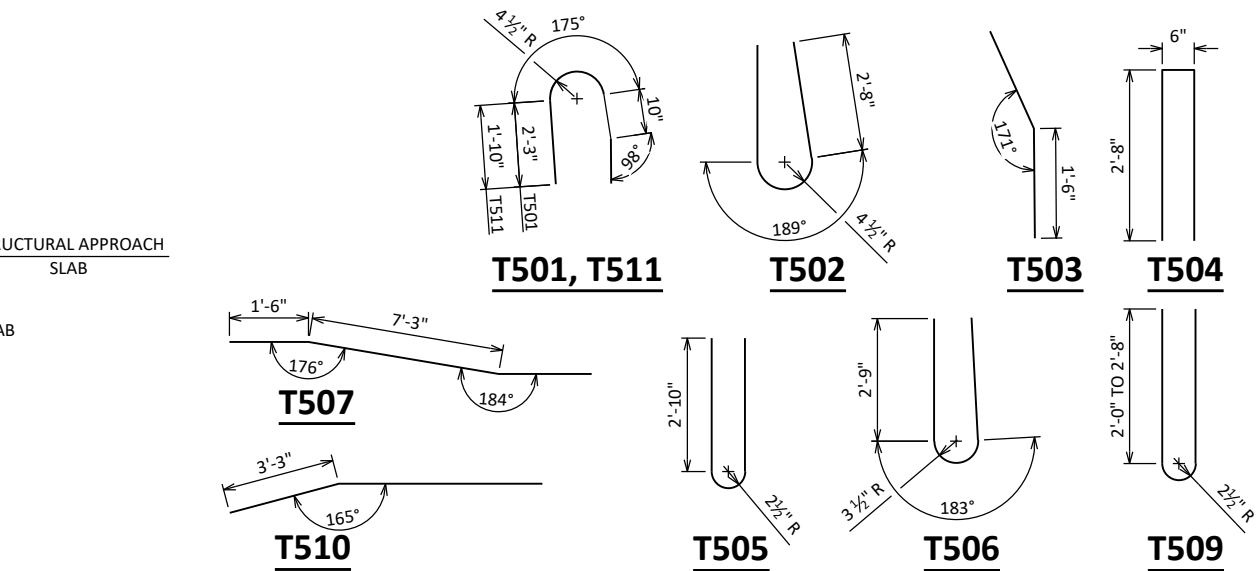
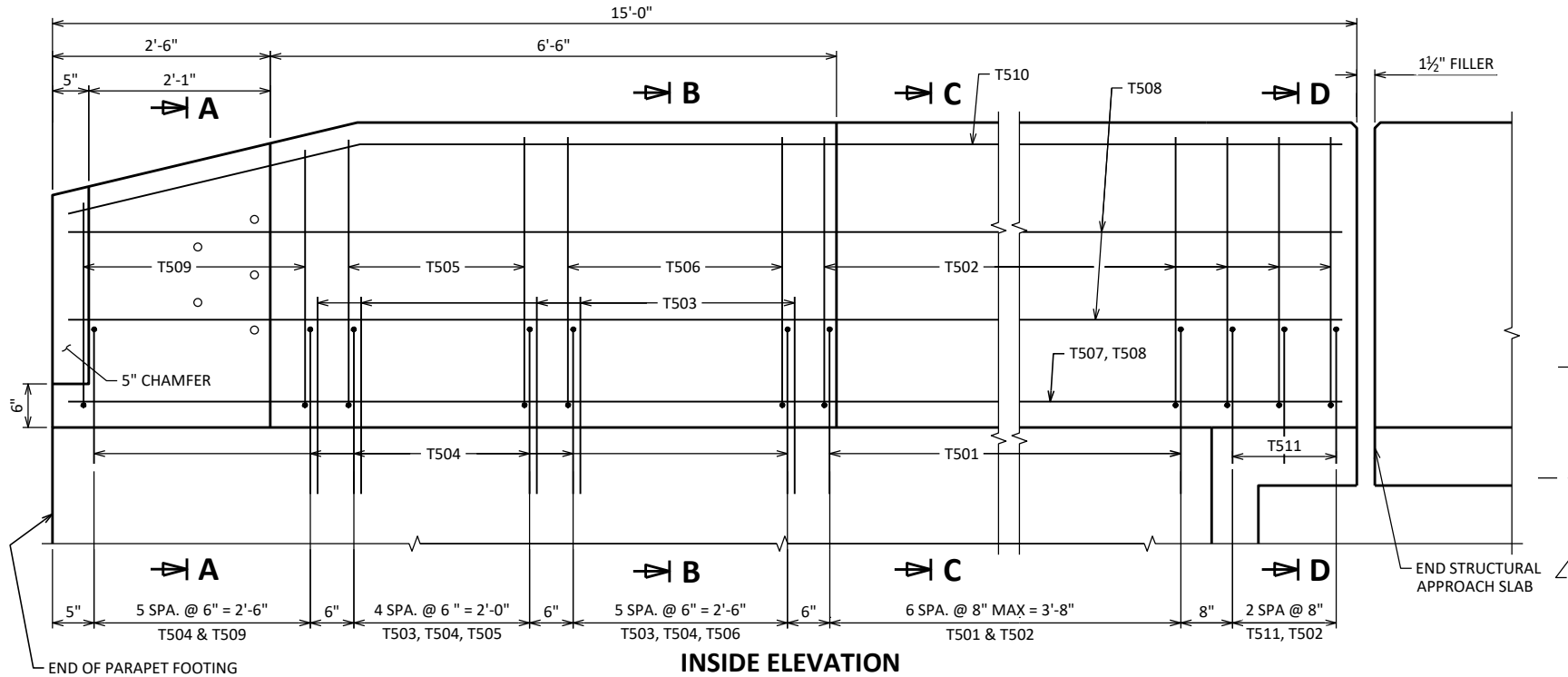
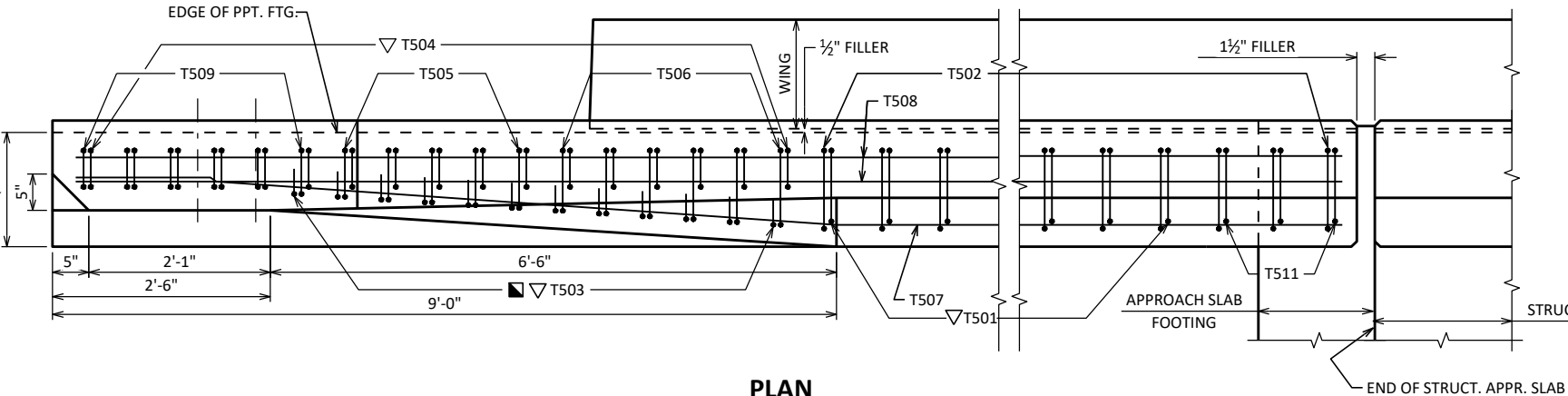
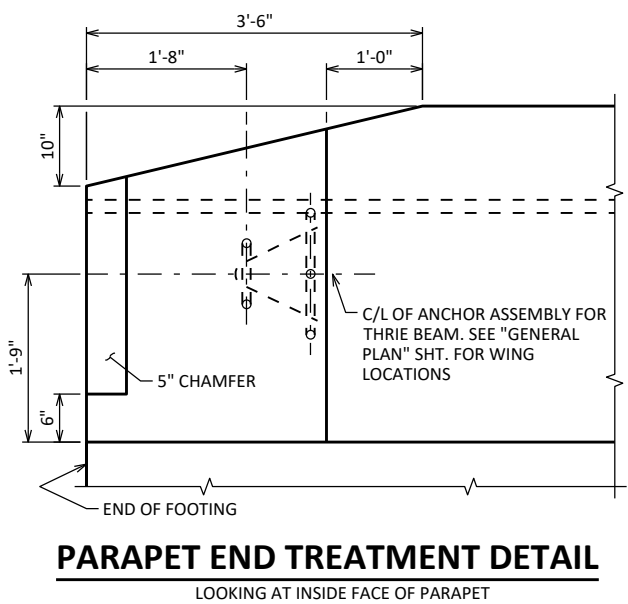
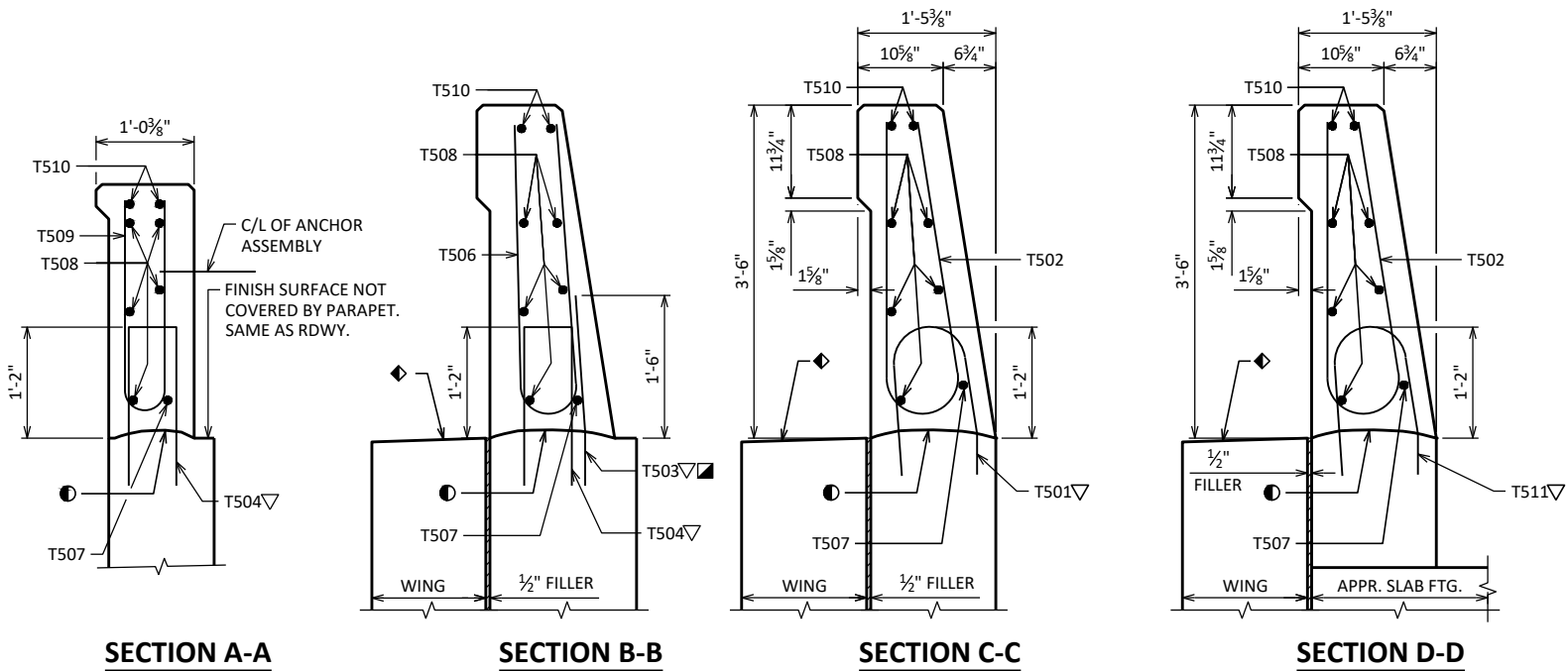
BAR MARK	COAT	W. APPR.	E. APPR.	LENGTH	BENT	BAR SERIES	LOCATION
T501	X	14	7	5'-10"	X		PARAPET VERT.
T502	X	20	10	6'-8"	X		PARAPET VERT.
T503	X	24	12	3'-0"	X		PARAPET VERT.
T504	X	34	17	5'-7"	X		PARAPET VERT.
T505	X	10	5	6'-5"	X		PARAPET VERT.
T506	X	12	6	6'-6"	X		PARAPET VERT.
T507	X	2	1	14'-8"	X		PARAPET HORIZ.
T508	X	10	5	14'-8"			PARAPET HORIZ.
T509	X	12	6	5'-5"	X	▲	PARAPET VERT.
T510	X	4	2	14'-8"	X		PARAPET HORIZ.
T511	X	6	3	5'-2"	X		PARAPET/SLAB FTG. VERT.

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

BAR SERIES TABLE

BUNDLE AND TAG EACH SERIES SEPARATELY.

BAR MARK	NO. REQ'D.	LENGTH
T509	3 SERIES OF 6	4'-9" TO 6'-1"

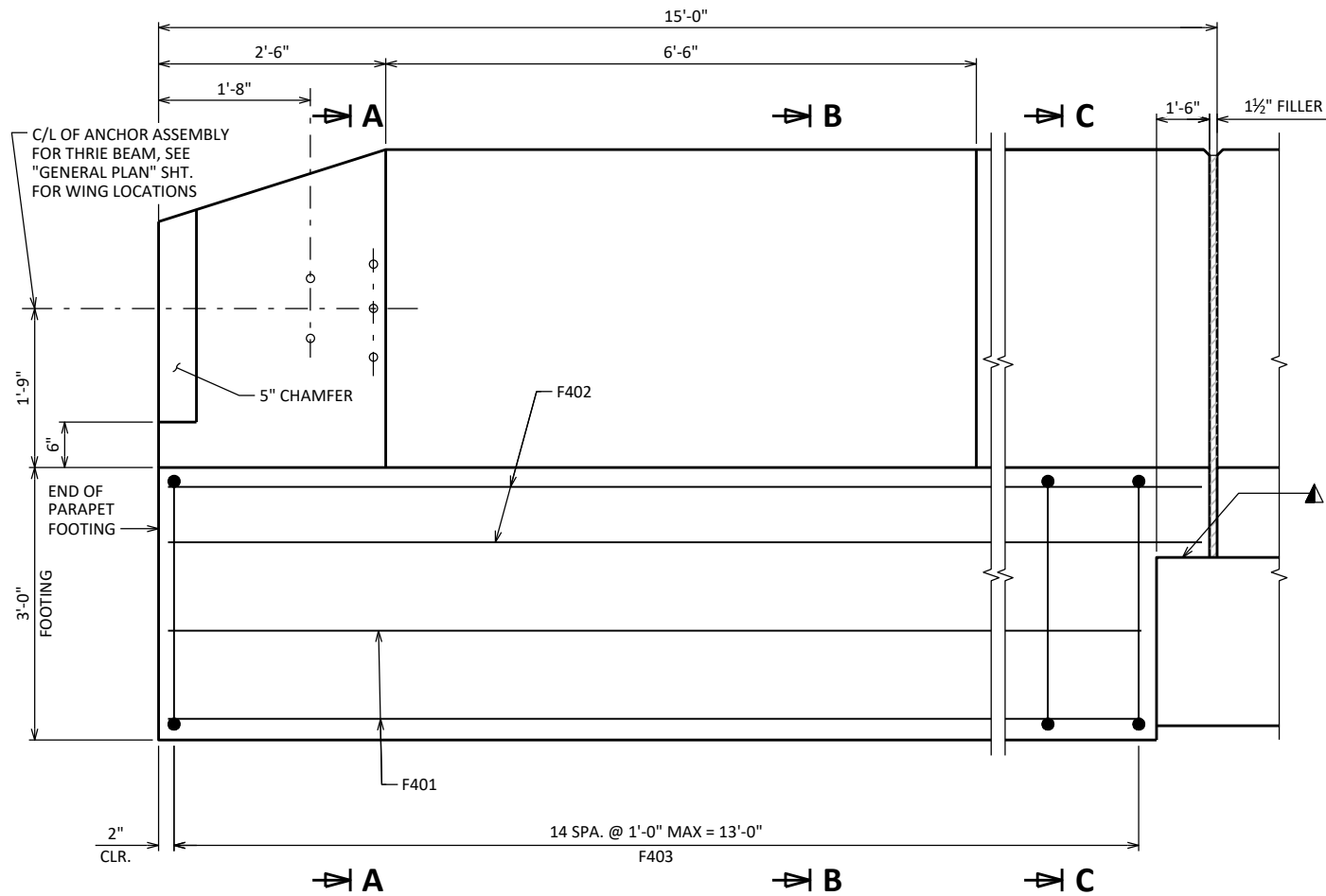


DETAIL OF ANCHOR ASSEMBLY

NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH ASTM F2329.

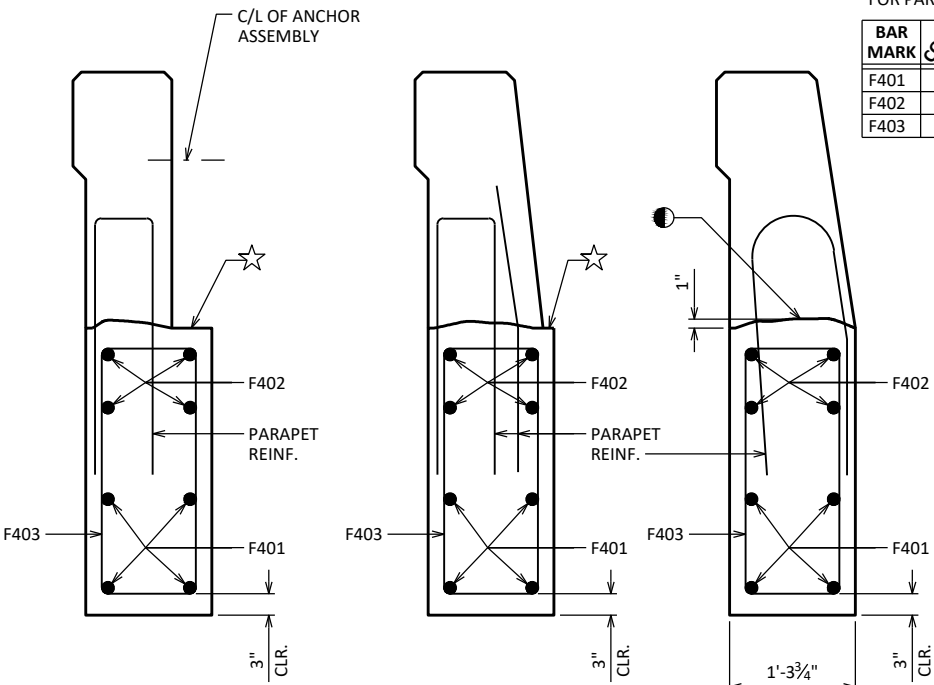
ASSEMBLY SHALL BE BID ITEM "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY KRV		PLANS CK'D RRH	
PARAPET EXTENSION - WINGS 1, 2, & 3		SHEET 19 135	



INSIDE ELEVATION

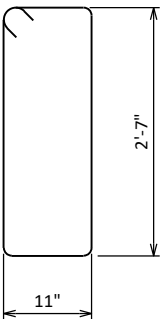
NW CORNER SHOWN, SW AND NE CORNERS SIMILAR



SECTION A-A

SECTION B-B

SECTION C-C



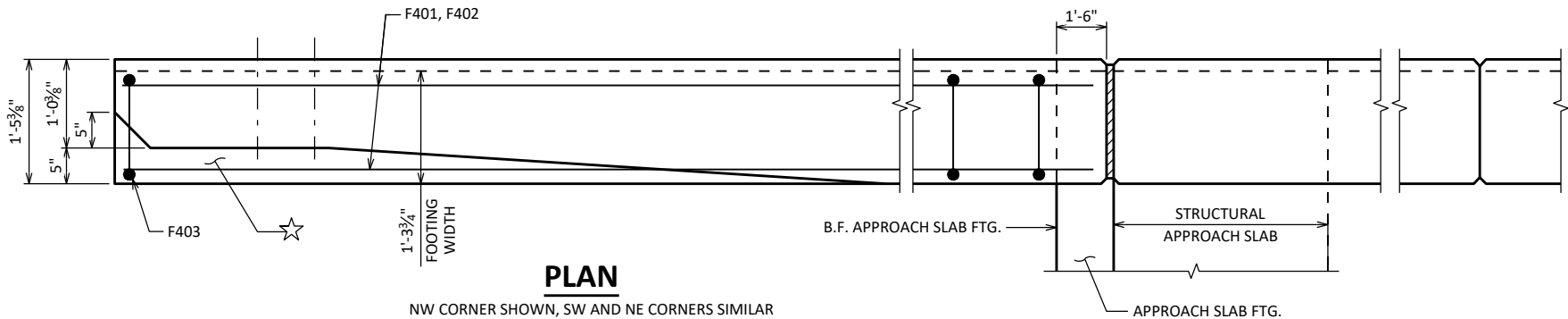
F403

BILL OF BARS

FOR PARAPET FOOTINGS

BAR MARK	COAT	W. APPR.	E. APPR.	LENGTH	BENT	BAR SERIES	LOCATION
F401	X	8	4	13'-0"			PARAPET FOOTING - HORZ.
F402	X	8	4	14'-6"			PARAPET FOOTING - HORZ.
F403	X	30	15	7'-6"	X		PARAPET FOOTING - VERT.

☆ FINISH SURFACE NOT COVERED BY PARAPET SAME AS ROADWAY



PLAN

NW CORNER SHOWN, SW AND NE CORNERS SIMILAR

NOTE

PARAPET SHOWN FOR INFORMATION ONLY. SEE PARAPET SHEETS FOR PARAPET DETAILS AND REINFORCEMENT.

▲ STEEL TROWEL HORIZ. SURFACE OF APPROACH SLAB FOOTING AT LOCATION OF PARAPET FOOTING. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS BETWEEN PARAPET FOOTING AND HORIZ. SURFACE OF PAVING NOTCH. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".

● CONSTR. JOINT - STRIKE OFF AS SHOWN

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY KRV		PLANS CK'D RRH	
PARAPET FOOTING - WINGS 1, 2, & 3		SHEET 20	136

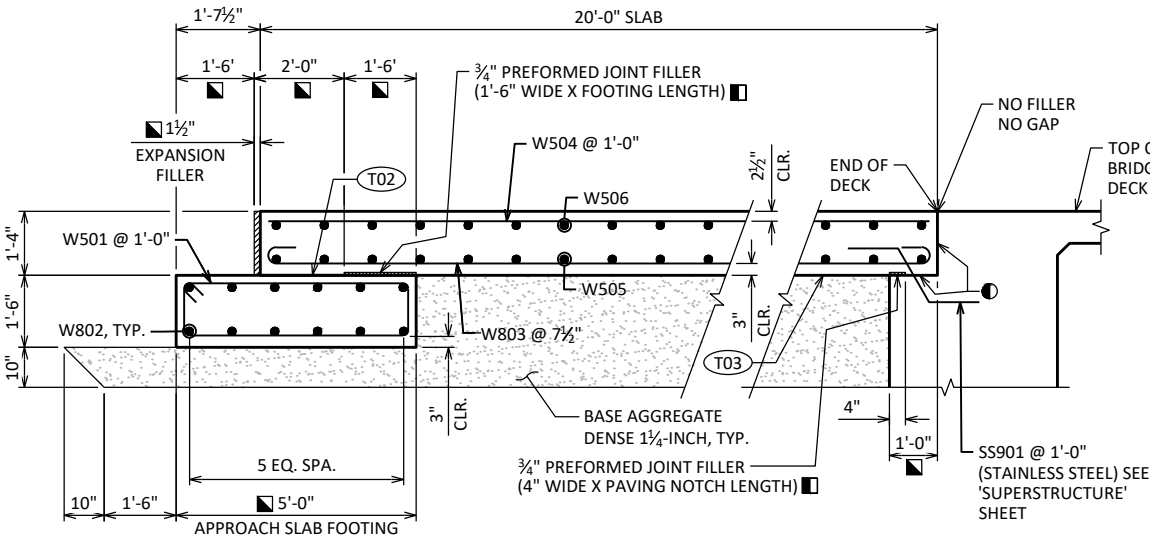


BILL OF BARS

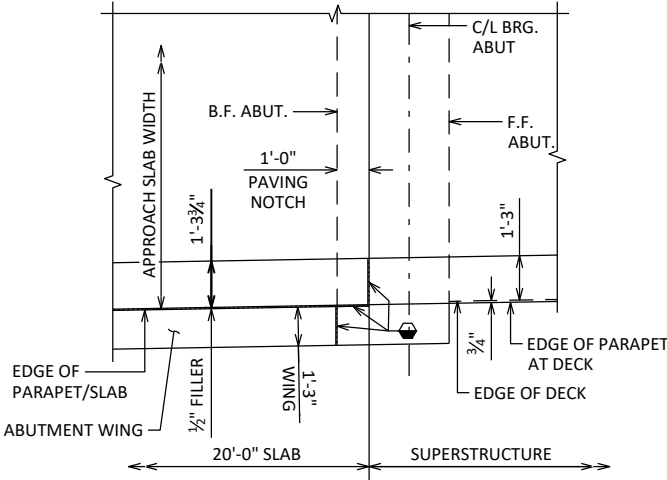
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
W501	X	48	12'-2"	X		APPROACH SLAB FTG. - STIRRUP
W802	X	12	46'-3"			APPROACH SLAB FTG. - TRANS.
W803	X	78	21'-6"	X		APPROACH SLAB. - LONG. - BOT.
W504	X	48	19'-8"			APPROACH SLAB. - LONG. - TOP
W505	X	21	46'-5"		▲	APPROACH SLAB. - TRANS. - BOT.
W506	X	21	46'-5"		▲	APPROACH SLAB. - TRANS. - TOP
W507	X	40	4'-1"	X		APPROACH SLAB. - TRANS. - TOP - WING

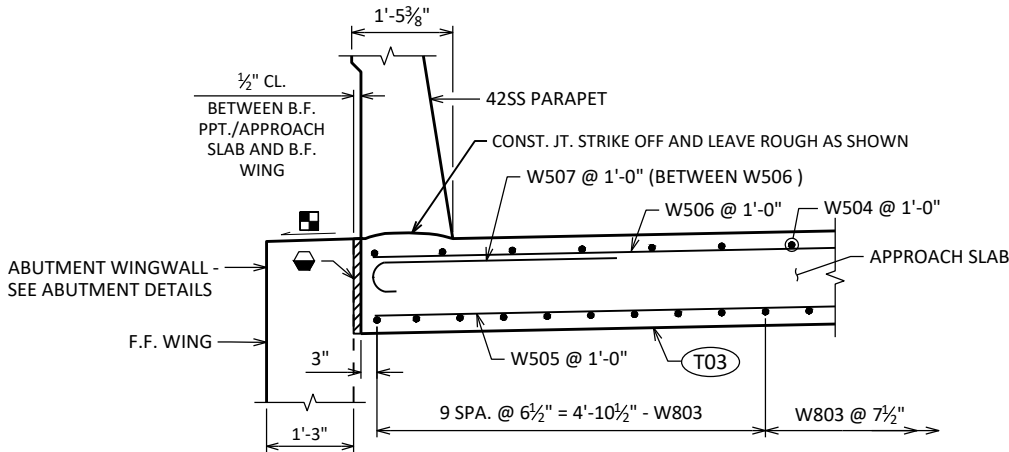
▲ LENGTH SHOWN FOR BAR IS AN AVERAGE AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



SECTION THRU APPROACH SLAB

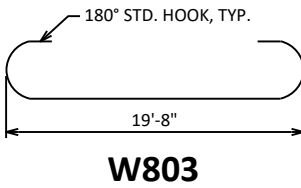
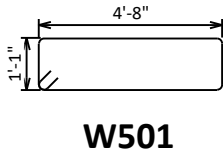
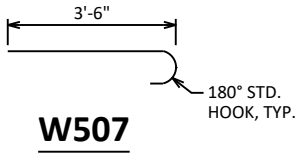


APPROACH SLAB PARTIAL PLAN



SECTION A-A

(PARAPET REINFORCEMENT NOT SHOWN FOR CLARITY)

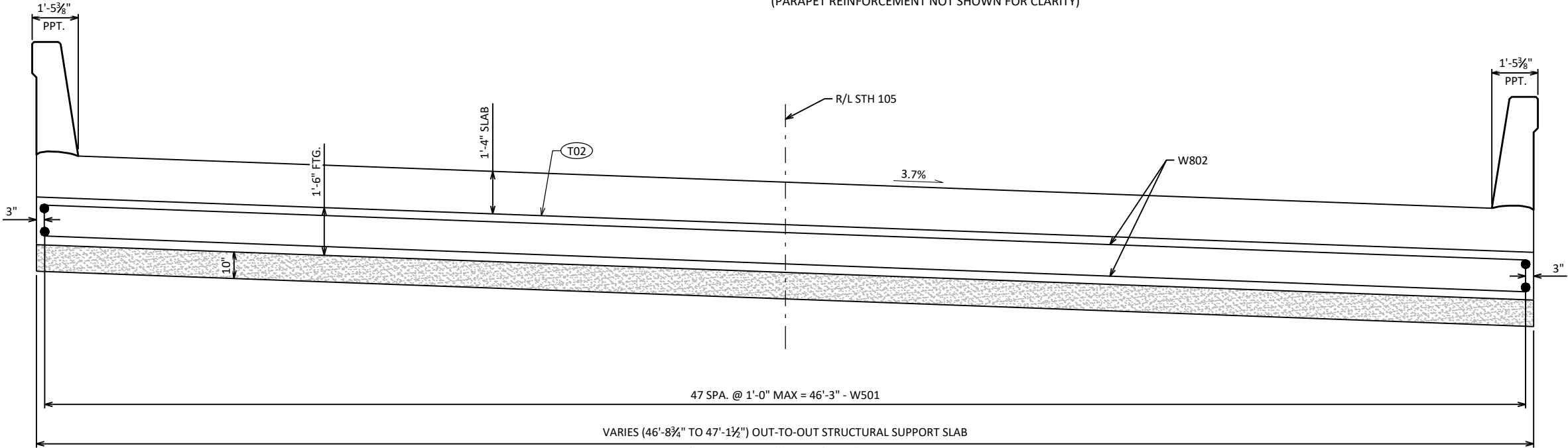


BAR SERIES TABLE

BUNDLE AND TAG EACH SERIES SEPARATELY.

BAR MARK	NO. REQ'D.	LENGTH
W505	1 SERIES OF 21	46'-3" TO 46'-7"
W506	1 SERIES OF 21	46'-3" TO 46'-7"

- ACCORDING TO STANDARD SPEC 502.2.7
- SLOPE TO DRAIN
- 🔧 SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 3/8" BELOW SURFACE OF CONCRETE)
- 🔧 APPLY PROTECTIVE SURFACE TREATMENT TO PAVING NOTCH SURFACES PRIOR TO POURING STRUCTURAL APPROACH SLAB.
- MEASURED NORMAL TO ABUTMENT.
- T02 STEEL TROWEL TOP SURFACE OF FOOTING AND PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE LENGTH OF THE FOOTING.
- T03 PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF SUBGRADE BENEATH SLAB.

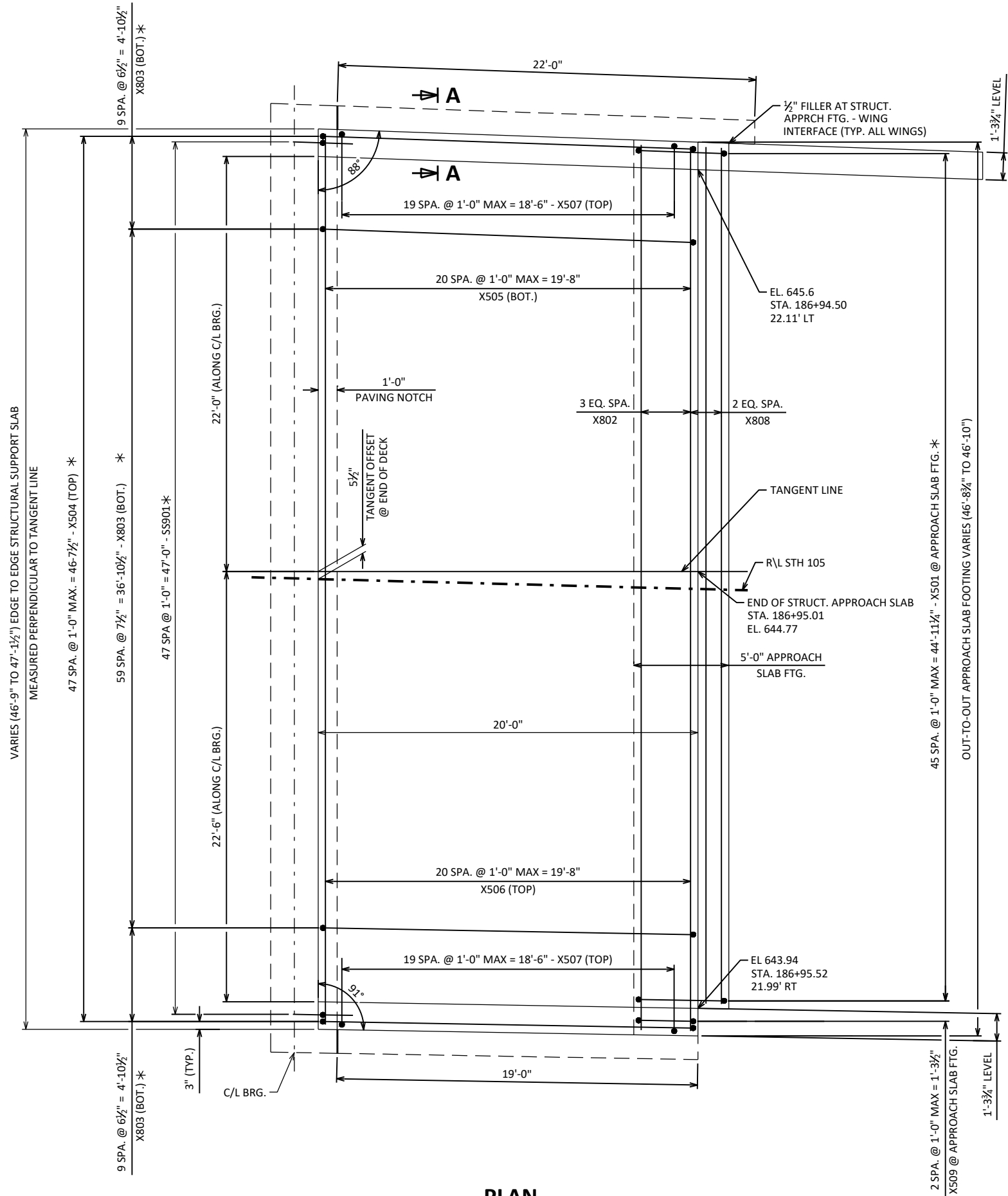


CROSS SECTION THRU STRUCTURAL APPROACH SLAB

LOOKING EAST
(SHOWING FOOTING STEEL ONLY)

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY KRV		PLANS CK'D RRH	
WEST STRUCTURAL APPROACH SLAB DETAILS		SHEET 22	138

✱ BARS PLACED PARALLEL TO ALIGNMENT



PLAN

STATE PROJECT NUMBER

8760-00-72

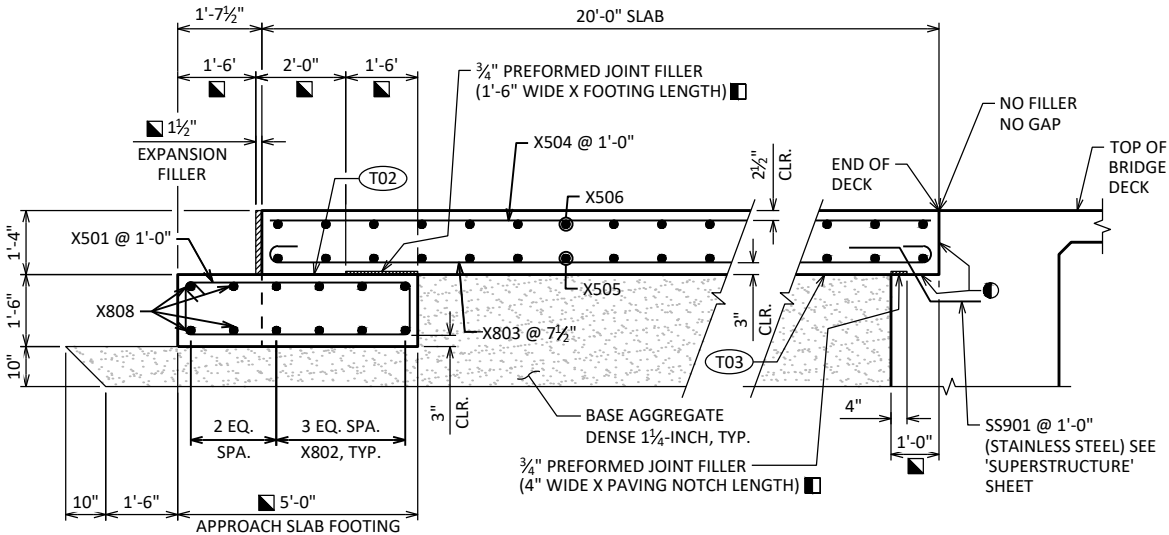
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY KRV		PLANS CK'D	RRH
EAST STRUCTURAL APPROACH SLAB		SHEET 23	139

BILL OF BARS

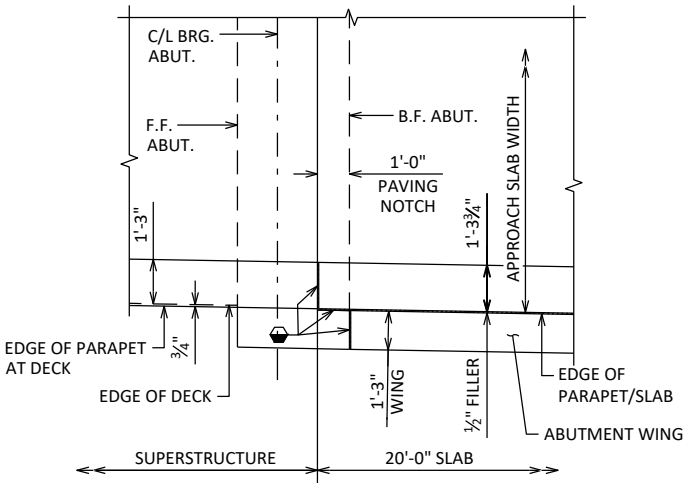
NOTE: THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

BAR MARK	COAT	NO. REQ'D.	LENGTH	BENT	BAR SERIES	LOCATION
X501	X	46	12'-2"	X		APPROACH SLAB FTG. - STIRRUP
X802	X	8	46'-3"			APPROACH SLAB FTG. - TRANS.
X803	X	78	21'-6"	X		APPROACH SLAB. - LONG. - BOT.
X504	X	48	19'-8"			APPROACH SLAB. - LONG. - TOP
X505	X	21	46'-5"		▲	APPROACH SLAB. - TRANS. - BOT.
X506	X	21	46'-5"		▲	APPROACH SLAB. - TRANS. - TOP
X507	X	40	4'-1"	X		APPROACH SLAB. - TRANS. - TOP - WING
X808	X	4	45'-1"			APPROACH SLAB FTG. - TRANS.
X509	X	2	9'-0"	X		APPROACH SLAB FTG. - STIRRUP - CORNER

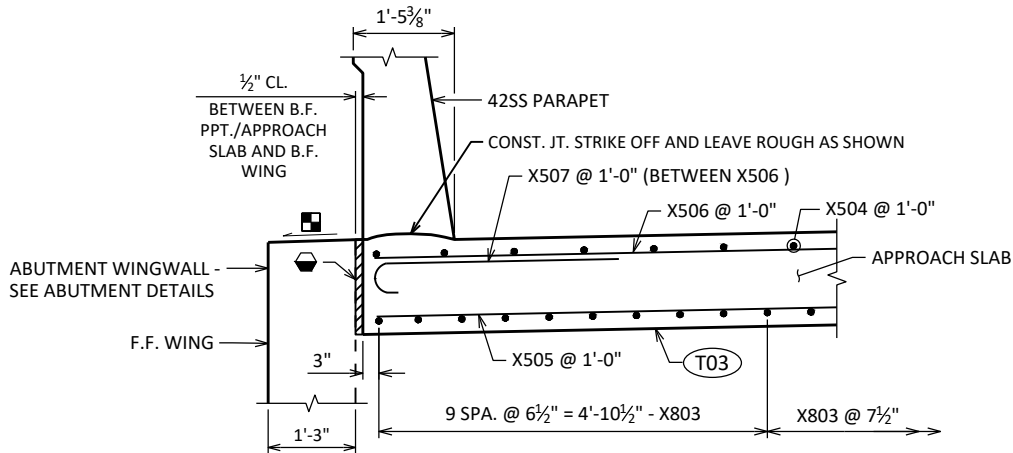
▲ LENGTH SHOWN FOR BAR IS AN AVERAGE AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



SECTION THRU APPROACH SLAB

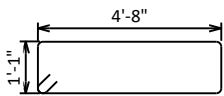
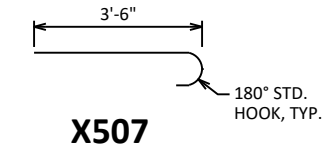


APPROACH SLAB PARTIAL PLAN

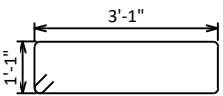


SECTION A-A

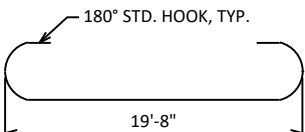
(PARAPET REINFORCEMENT NOT SHOWN FOR CLARITY)



X501



X509



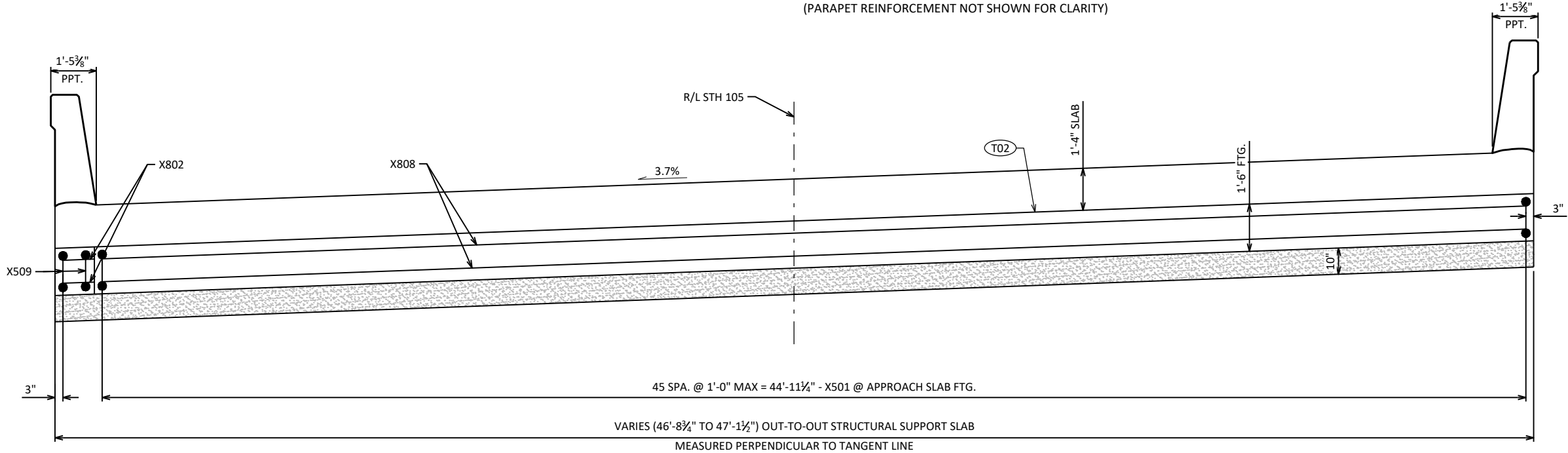
X803

BAR SERIES TABLE

BUNDLE AND TAG EACH SERIES SEPARATELY.

BAR MARK	NO. REQ'D.	LENGTH
X505	1 SERIES OF 21	46'-3" TO 46'-7"
X506	1 SERIES OF 21	46'-3" TO 46'-7"

- ACCORDING TO STANDARD SPEC 502.2.7
- SLOPE TO DRAIN
- SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF 1/2" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE)
- APPLY PROTECTIVE SURFACE TREATMENT TO PAVING NOTCH SURFACES PRIOR TO POURING STRUCTURAL APPROACH SLAB.
- MEASURED NORMAL TO ABUTMENT.
- (T02) STEEL TROWEL TOP SURFACE OF FOOTING AND PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE LENGTH OF THE FOOTING.
- (T03) PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF SUBGRADE BENEATH SLAB.

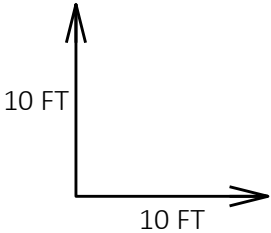


CROSS SECTION THRU STRUCTURAL APPROACH SLAB

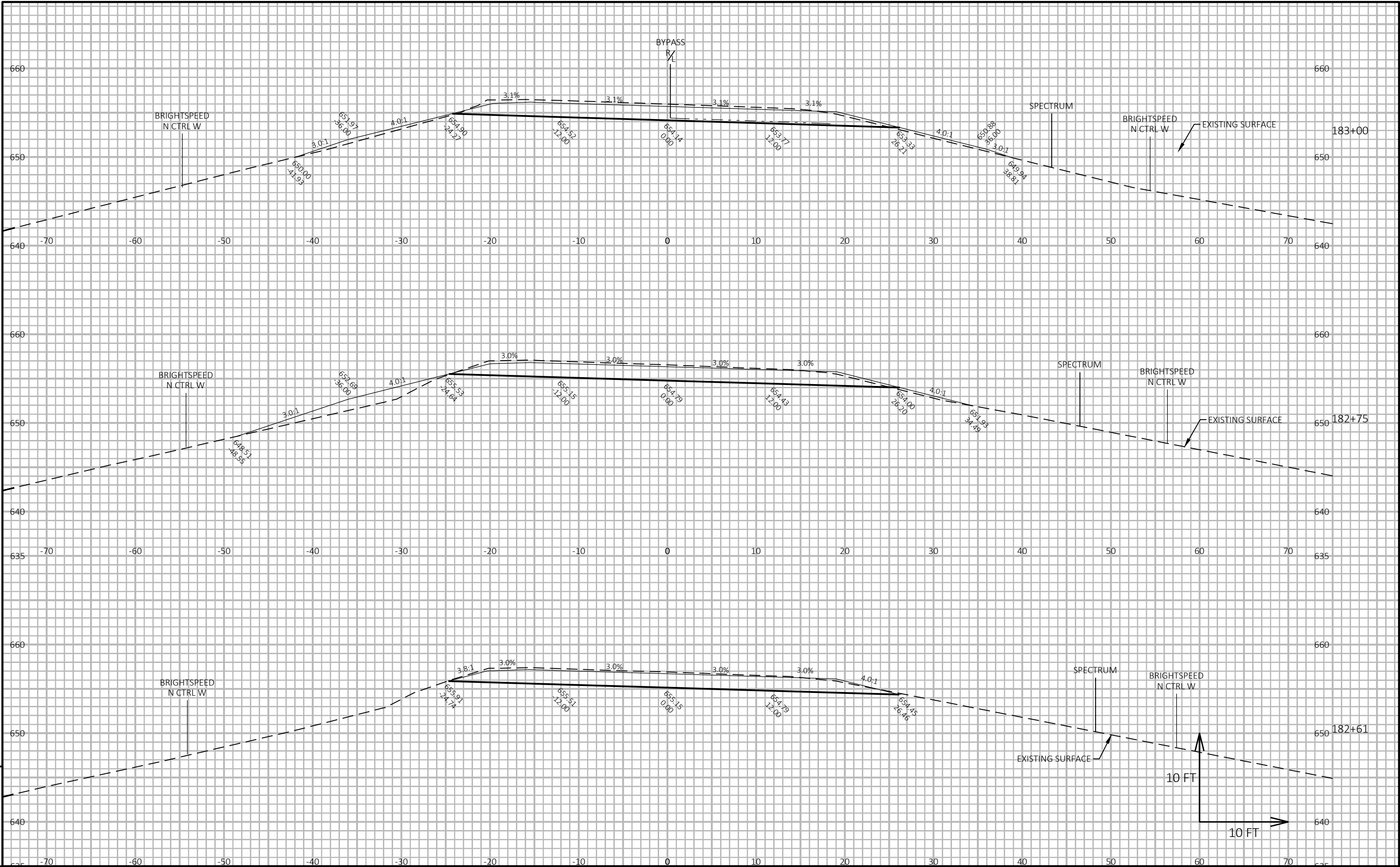
LOOKING WEST
(SHOWING FOOTING STEEL ONLY)

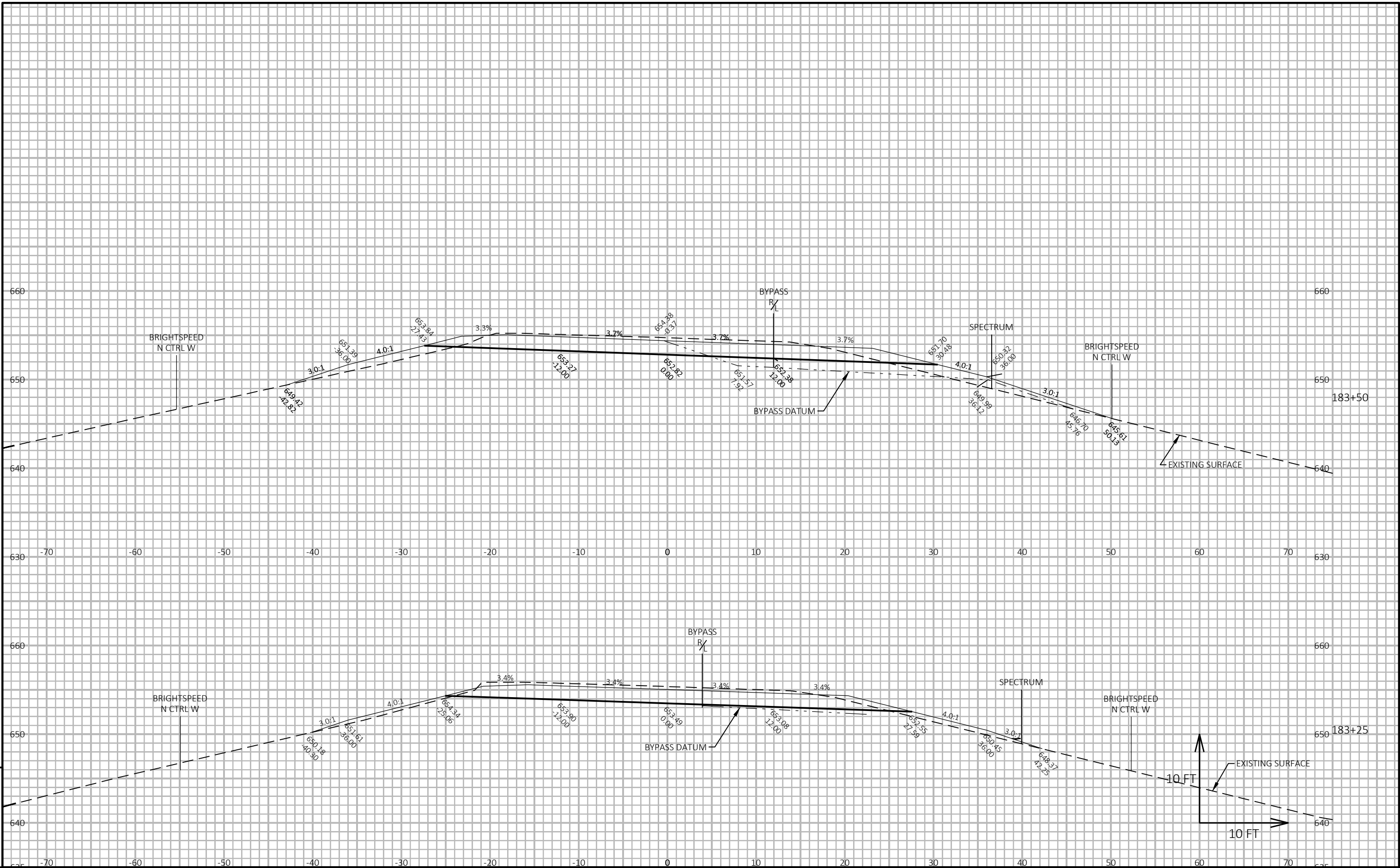
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-16-156			
DRAWN BY KRV		PLANS CK'D	RRH
EAST STRUCTURAL APPROACH SLAB DETAILS		SHEET 24	140

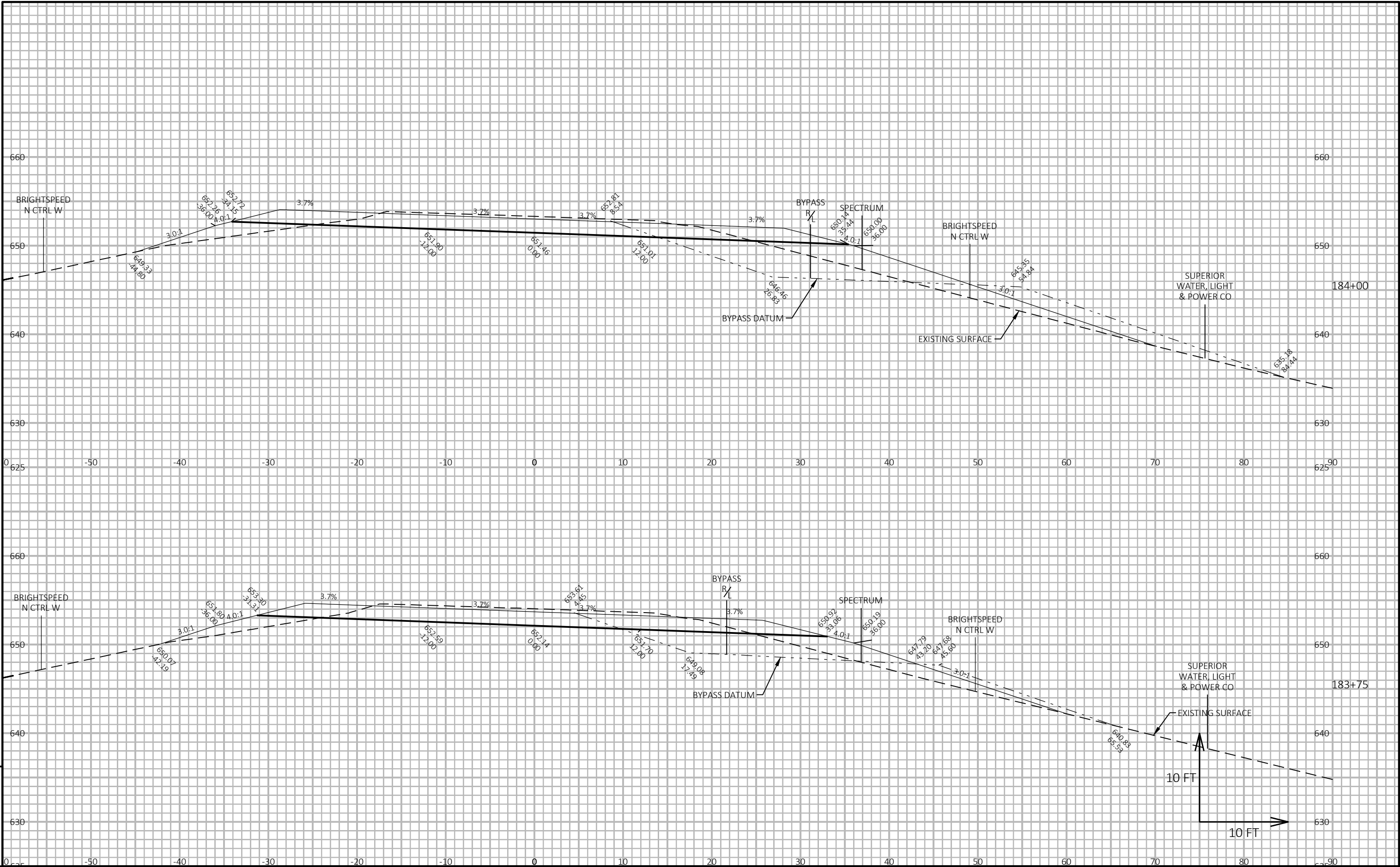
STATION		DISTANCE	AREA (SF)									INCREMENTAL VOL (CY) (UNADJUSTED)									CUMULATIVE VOL (CY)											
			STAGE 1 CUT (BYPASS)	STAGE 2A STREAMBED CUT	STAGE 2B CUT (INSTALL NORTH BEAMGUARD)	STAGE 3A CUT (REMOVE BYPASS)	STAGE 3B CUT (INSTALL SOUTH BEAMGUARD)	UNUSABLE MATERIAL	STAGE 1 BYPASS EMBANKMENT	STAGE 2B BEAMGUARD EMBANKMENT NORTH	STAGE 3B BEAMGUARD EMBANKMENT SOUTH	STAGE 1 CUT (INSTALL BYPASS)	STAGE 2A STREAMBED CUT	STAGE 2B CUT (INSTALL NORTH BEAMGUARD)	STAGE 3A CUT (REMOVE BYPASS)	STAGE 3B CUT (INSTALL SOUTH BEAMGUARD)	UNUSABLE MATERIAL	STAGE 1 BYPASS EMBANKMENT	STAGE 2B BEAMGUARD EMBANKMENT NORTH	STAGE 3B BEAMGUARD EMBANKMENT SOUTH	STAGE 1 CUT (INSTALL BYPASS)	STAGE 2A STREAMBED CUT	STAGE 2B CUT (INSTALL NORTH BEAMGUARD)	STAGE 3A CUT (REMOVE BYPASS)	STAGE 3B CUT (INSTALL SOUTH BEAMGUARD)	STAGE 1 BYPASS EMBANKMENT	STAGE 2B BEAMGUARD EMBANKMENT NORTH	STAGE 3B BEAMGUARD EMBANKMENT SOUTH	TOTAL CUT	MASS ORDINATE STAGE 1	MASS ORDINATE STAGES 2-3	
182+50		0	0.00	0.00	38.86	0.00	36.60	75.46	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
182+75		25	0.00	0.00	40.00	0.00	34.90	74.90	0.00	18.80	1.73	0	0	37	0	0	37	0	9	1	0	0	37	0	0	0	12	1	37	0	-14	
183+00		25	42.14	0.00	40.79	0.00	35.51	76.30	0.00	5.04	2.94	20	0	37	0	55	112	0	11	2	20	0	74	0	55	0	27	4	149	20	-51	
183+25		25	53.52	0.00	41.61	0.00	36.45	78.06	0.00	5.17	6.96	44	0	38	0	71	153	0	5	5	64	0	112	0	126	0	34	11	302	64	-109	
183+50		25	60.06	0.00	40.33	0.00	36.41	76.74	6.38	11.85	18.50	53	0	38	0	81	172	3	8	12	117	0	150	0	207	4	45	27	474	113	-189	
183+75		25	67.41	0.00	38.43	0.00	36.63	75.06	28.10	14.60	38.09	59	0	36	0	91	186	16	12	26	176	0	186	0	298	26	61	62	660	150	-299	
184+00		25	69.78	0.00	36.85	0.00	36.32	73.17	59.88	16.52	57.06	64	0	35	0	94	193	41	14	44	240	0	221	0	392	81	80	122	853	159	-441	
184+25		25	63.37	0.00	36.96	0.00	35.05	72.01	80.12	10.35	71.66	62	0	34	0	84	180	65	12	60	302	0	255	0	476	169	96	203	1033	133	-600	
184+50		25	52.13	0.00	37.30	94.29	32.92	164.51	93.93	2.90	38.54	53	0	34	44	66	197	81	6	51	355	0	289	44	542	278	104	271	1230	77	-730	
184+75		25	37.96	0.00	35.88	103.44	31.67	170.99	103.00	0.70	23.41	42	0	34	92	45	213	91	2	29	397	0	323	136	587	401	107	311	1443	-4	-814	
185+00		25	29.41	0.00	34.11	112.33	30.24	146.44	112.24	0.82	24.20	31	0	32	100	34	197	100	1	22	428	0	355	236	621	536	108	340	1640	-108	-876	
185+25		25	45.42	0.00	30.30	108.59	29.04	167.93	0.00	2.04	18.22	35	0	30	102	50	217	52	1	20	463	0	385	338	671	606	109	367	1857	-143	-940	
185+50		25	51.16	75.16	25.43	94.53	24.50	219.62	94.55	0.00	6.04	45	35	26	94	51	251	44	1	11	508	35	411	432	722	666	111	382	2108	-158	-1001	
185+75		25	61.27	1450.18	0.00	81.02	0.00	1531.20	80.79	0.00	0.00	52	706	12	81	28	879	81	0	3	560	741	423	513	750	775	111	386	2987	-215	-1057	
185+80		5	63.99	1838.12	0.00	78.43	0.00	1916.55	78.23	0.00	0.00	12	304	0	15	0	331	15	0	0	572	1045	423	528	750	795	111	386	3318	-223	-1069	
185+85		5	66.69	2215.71	0.00	76.03	0.00	2291.74	75.94	0.00	0.00	12	375	0	14	0	401	14	0	0	584	1420	423	542	750	814	111	386	3719	-230	-1081	
185+90		5	69.62	2590.02	0.00	141.56	0.00	2731.58	74.07	0.00	0.00	13	445	0	20	0	478	14	0	0	597	1865	423	562	750	833	111	386	4197	-236	-1094	
185+95		5	72.56	2962.91	0.00	236.95	0.00	3199.86	72.66	0.00	0.00	13	514	0	35	0	562	14	0	0	610	2379	423	597	750	852	111	386	4759	-242	-1107	
186+00		5	74.75	3341.75	0.00	522.09	0.00	3863.84	72.12	0.00	0.00	14	584	0	70	0	668	13	0	0	624	2963	423	667	750	869	111	386	5427	-245	-1121	
186+05		5	76.88	3418.36	0.00	604.74	0.00	4023.10	70.94	0.00	0.00	14	626	0	104	0	744	13	0	0	638	3589	423	771	750	887	111	386	6171	-249	-1135	
186+10		5	82.10	3803.34	0.00	801.10	0.00	4604.44	69.27	0.00	0.00	15	669	0	130	0	814	13	0	0	653	4258	423	901	750	905	111	386	6985	-252	-1150	
186+15		5	87.41	3798.03	0.00	1006.66	0.00	4804.69	67.49	0.00	0.00	16	704	0	167	0	887	13	0	0	669	4962	423	1068	750	922	111	386	7872	-253	-1166	
186+20		5	92.11	4580.47	0.00	1185.94	0.00	5766.41	62.12	0.00	0.00	17	776	0	203	0	996	12	0	0	686	5738	423	1271	750	938	111	386	8868	-252	-1183	
186+25		5	96.41	4721.05	0.00	1257.12	0.00	5978.17	57.76	0.00	0.00	17	861	0	226	0	1104	11	0	0	703	6599	423	1497	750	953	111	386	9972	-250	-1200	
186+30		5	97.01	4590.37	0.00	1241.10	0.00	5831.47	53.05	0.00	0.00	18	862	0	231	0	1111	10	0	0	721	7461	423	1728	750	967	111	386	11083	-246	-1218	
186+35		5	97.28	4167.34	0.00	1062.12	0.00	5229.46	48.03	0.00	0.00	18	811	0	213	0	1042	9	0	0	739	8272	423	1941	750	979	111	386	12125	-240	-1236	
186+40		5	96.08	3787.10	0.00	874.60	0.00	4661.70	46.31	0.00	0.00	18	737	0	179	0	934	9	0	0	757	9009	423	2120	750	991	111	386	13059	-234	-1254	
186+45		5	93.45	3431.30	0.00	684.35	0.00	4115.65	45.20	0.00	0.00	18	668	0	144	0	830	8	0	0	775	9677	423	2264	750	1002	111	386	13889	-227	-1272	
									COLUMN SUBTOTALS			775	9680	425	2260	750	13890						COLUMN SUBTOTALS			1005	110	390				

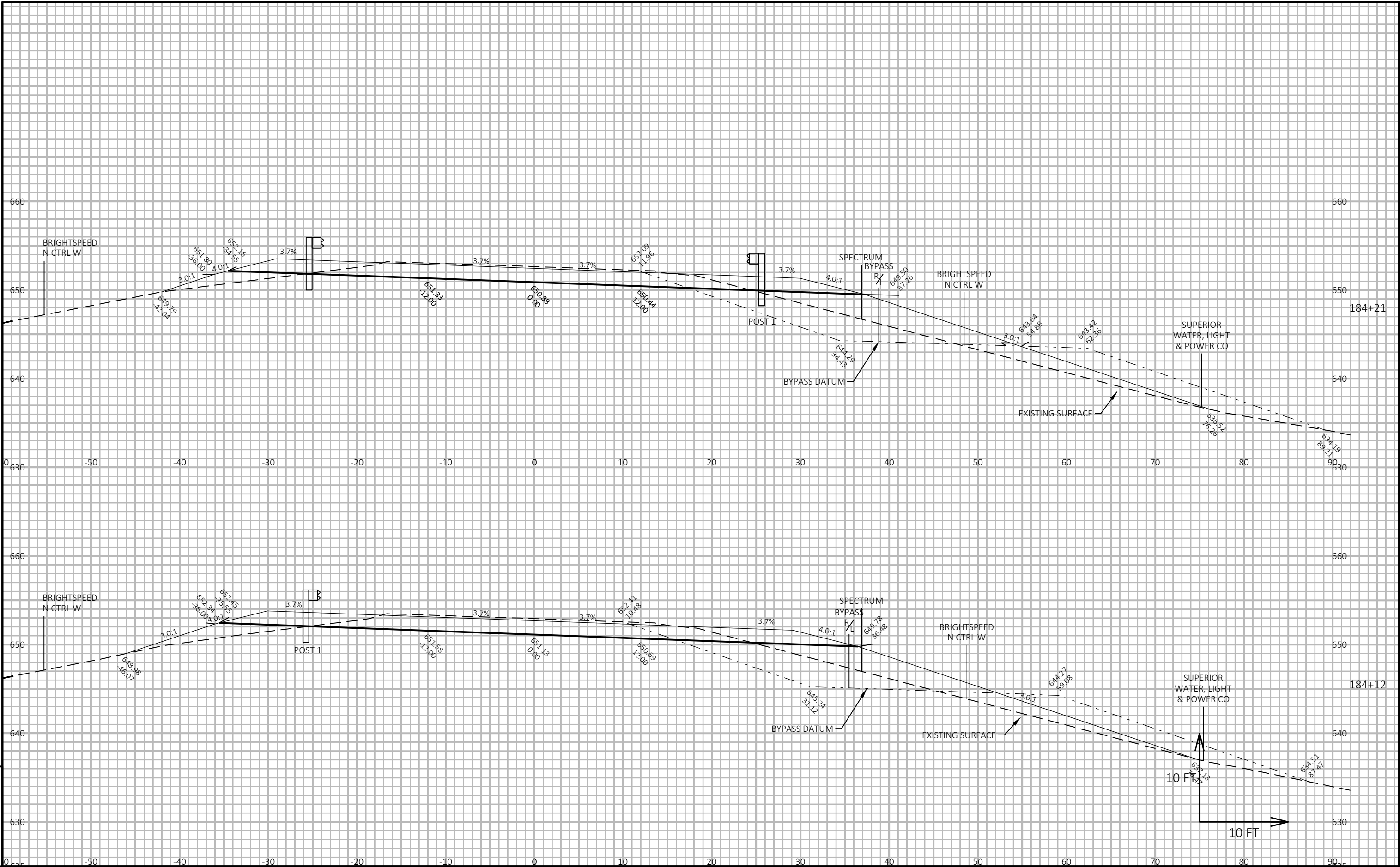


A right triangle is shown with a vertical leg labeled 10 FT and a horizontal leg labeled 10 FT. The legs meet at a right angle at the origin of the coordinate system.



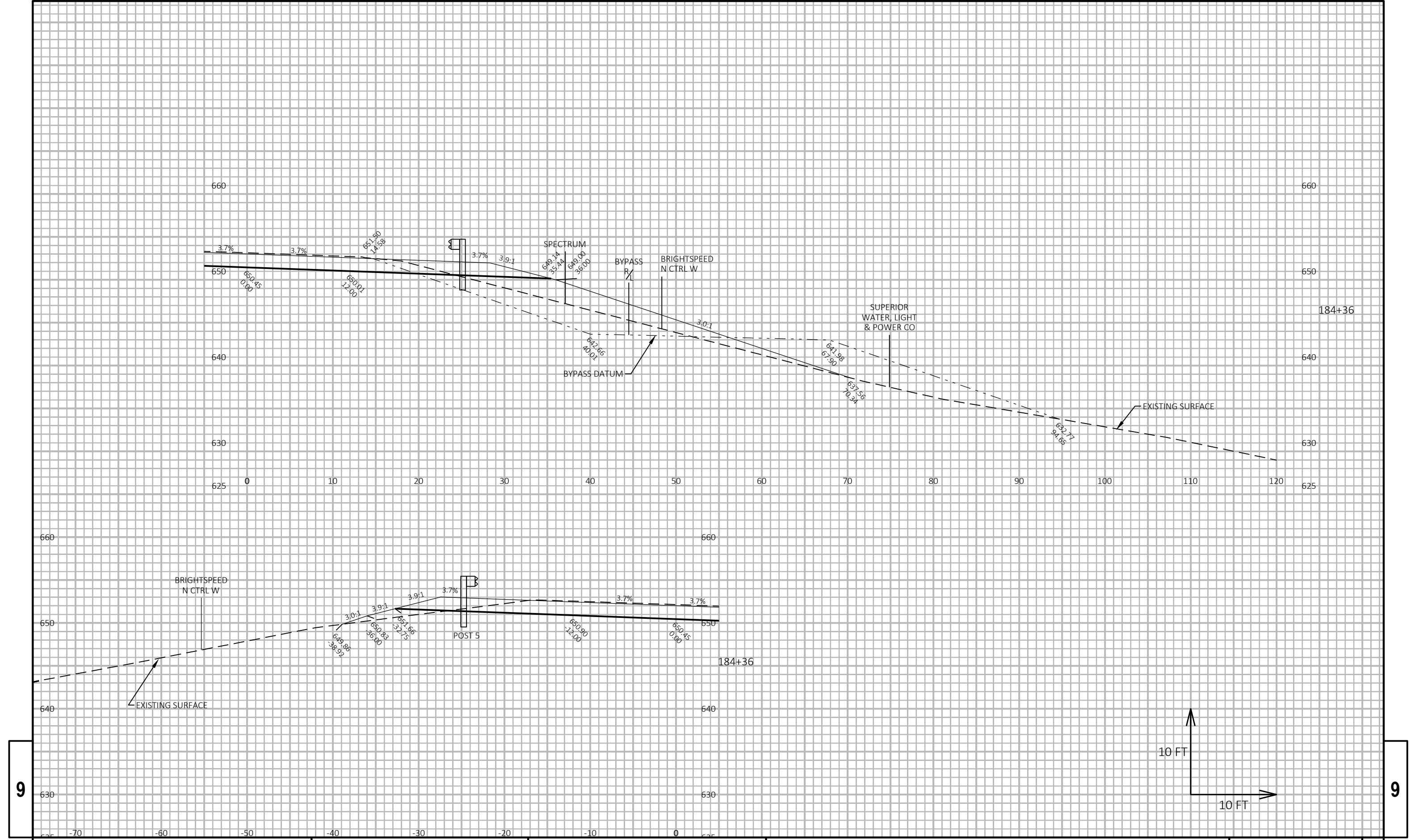






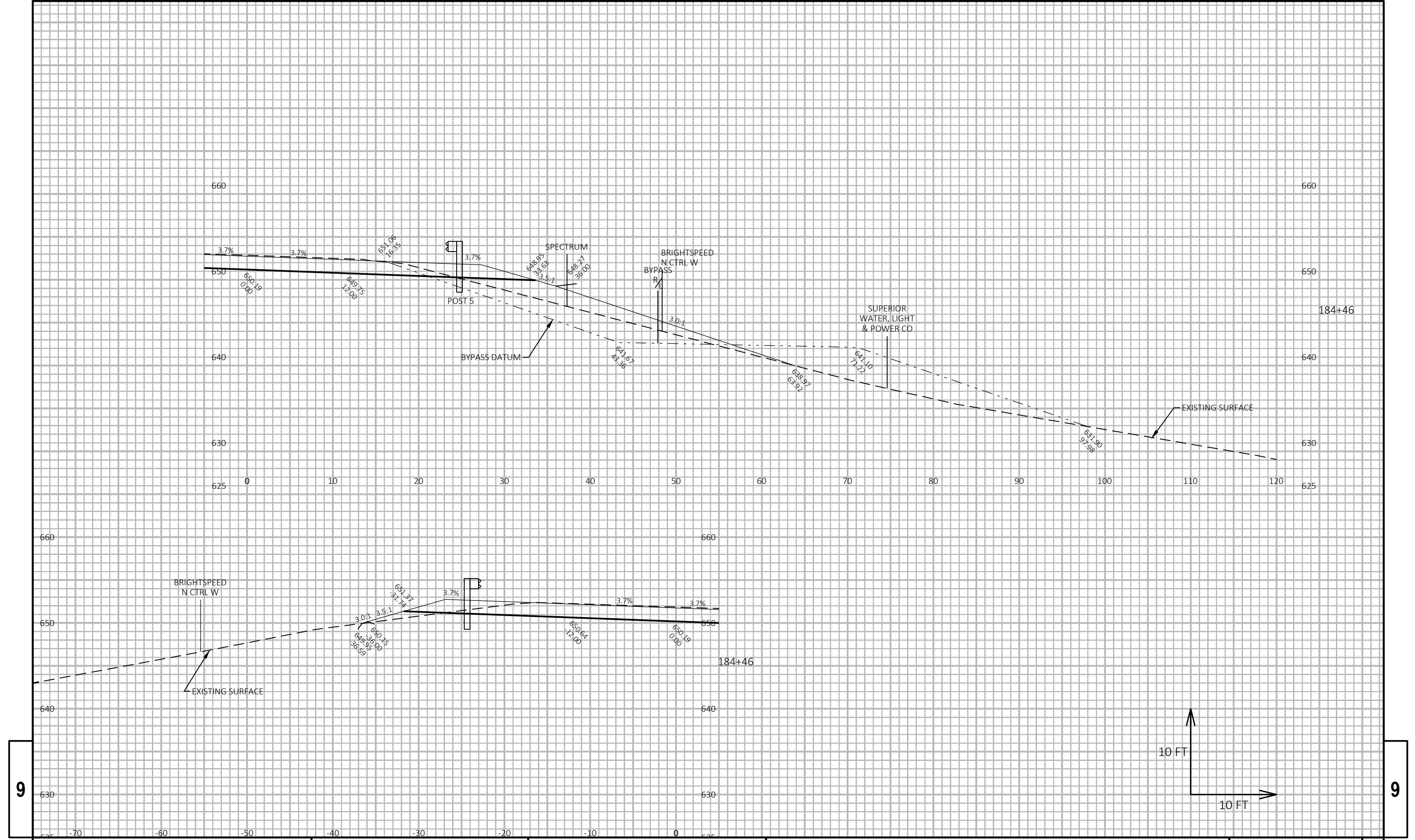
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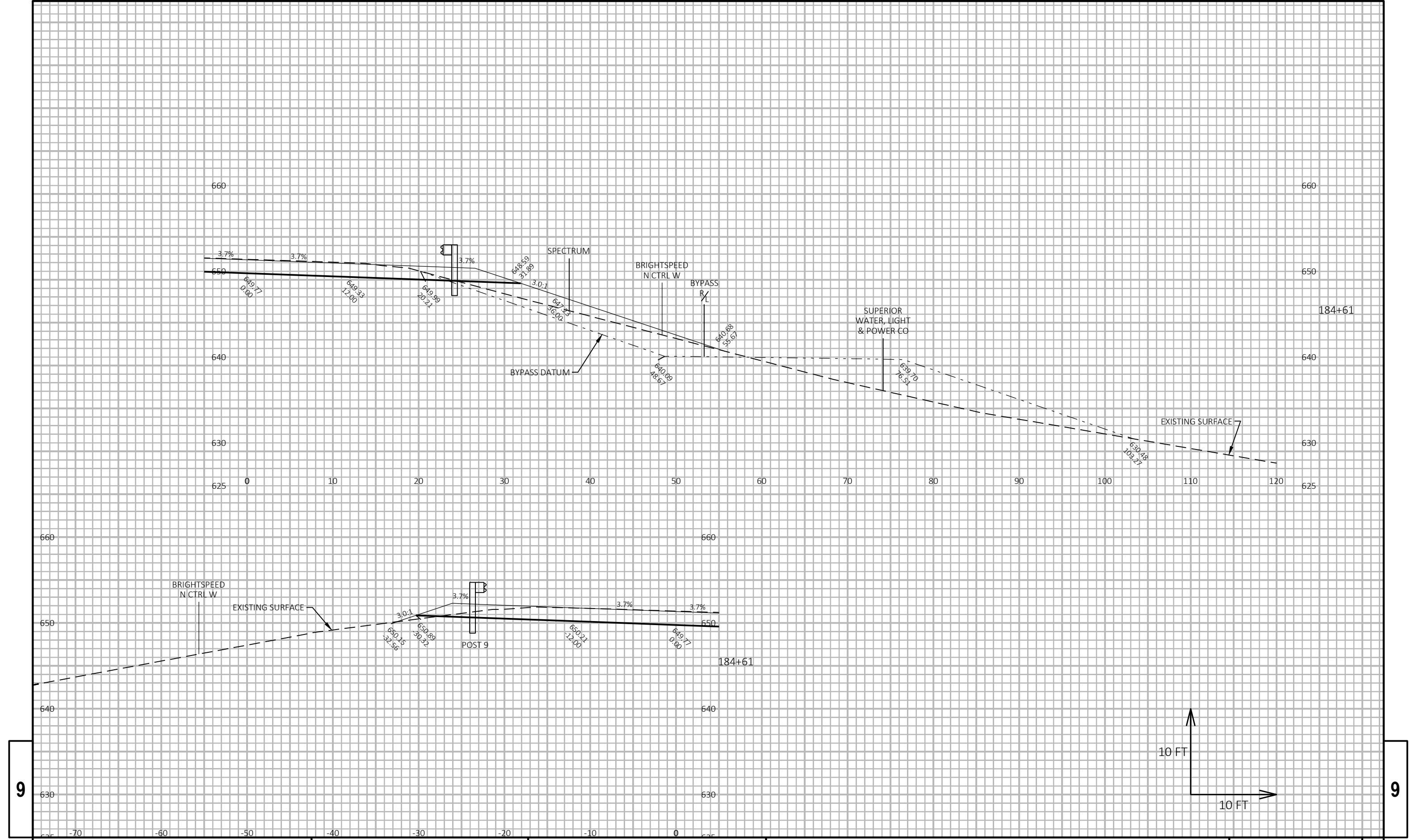
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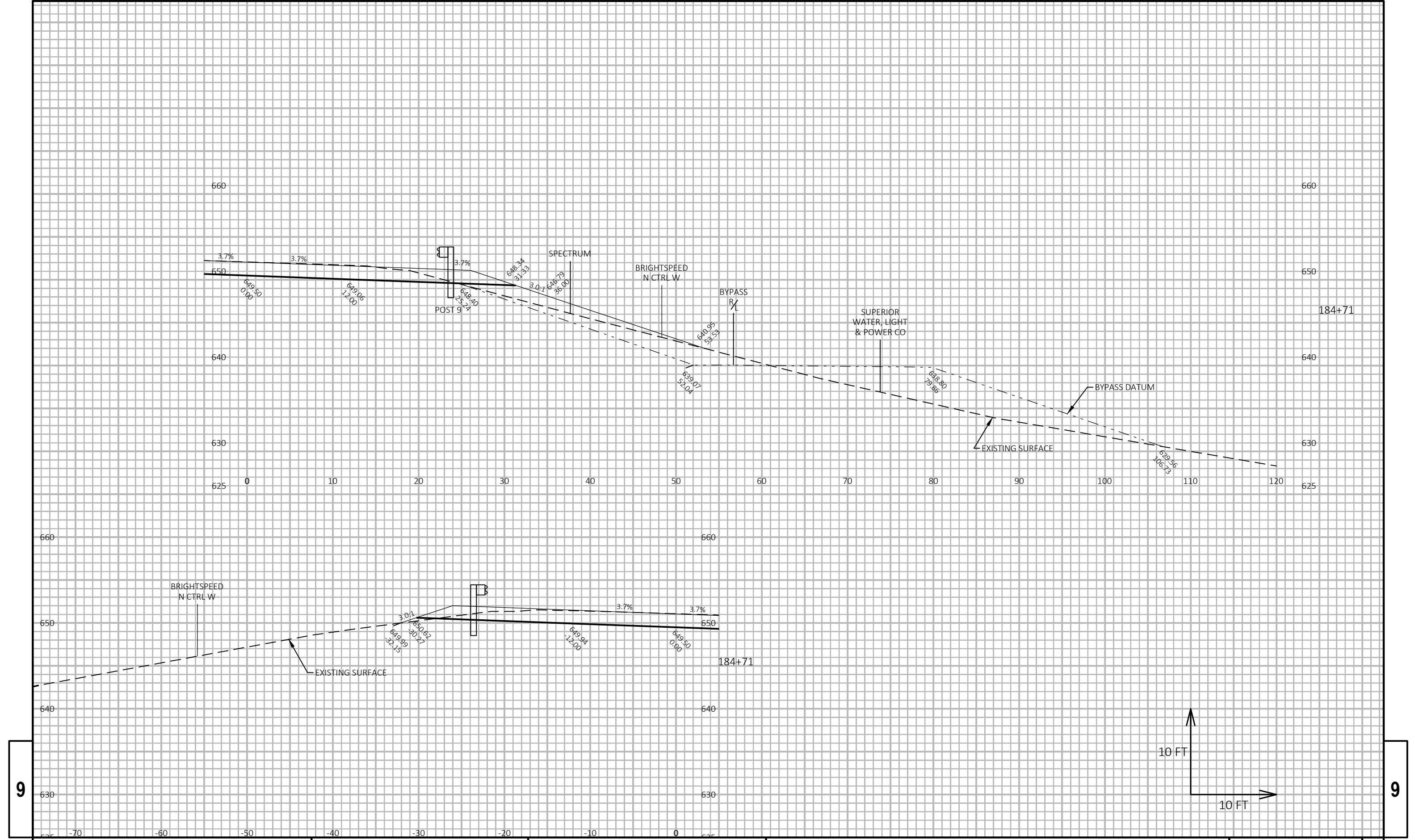
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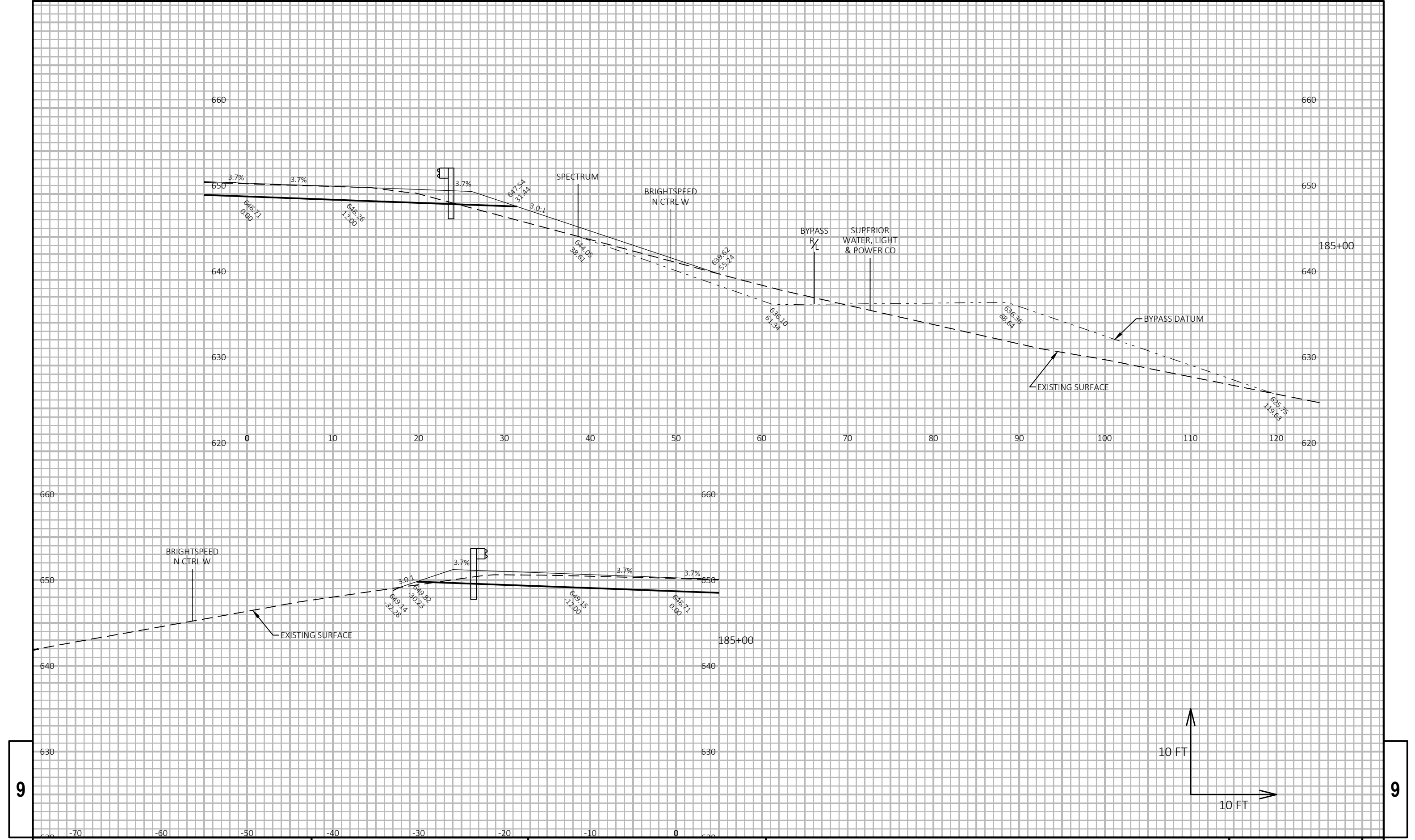


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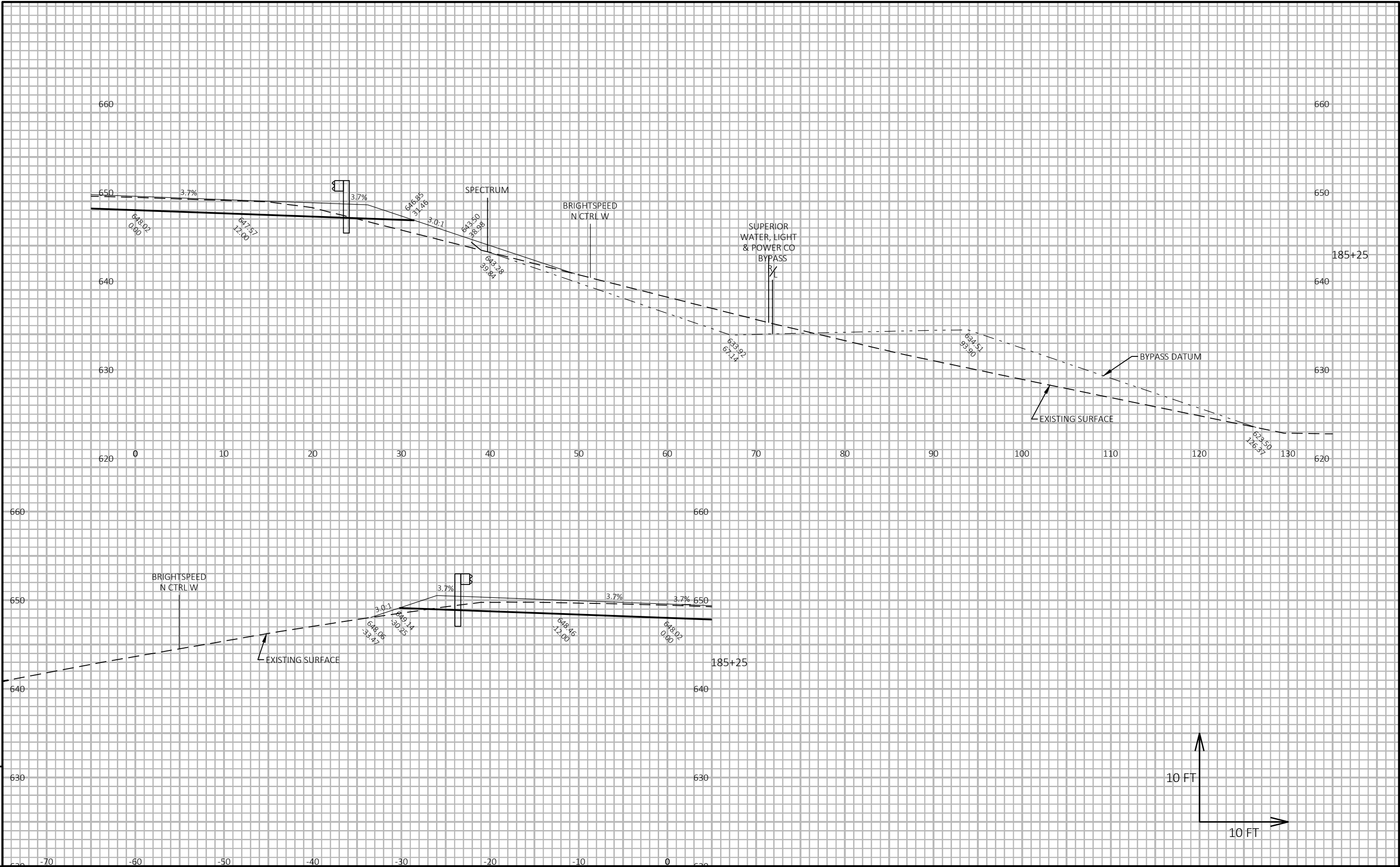




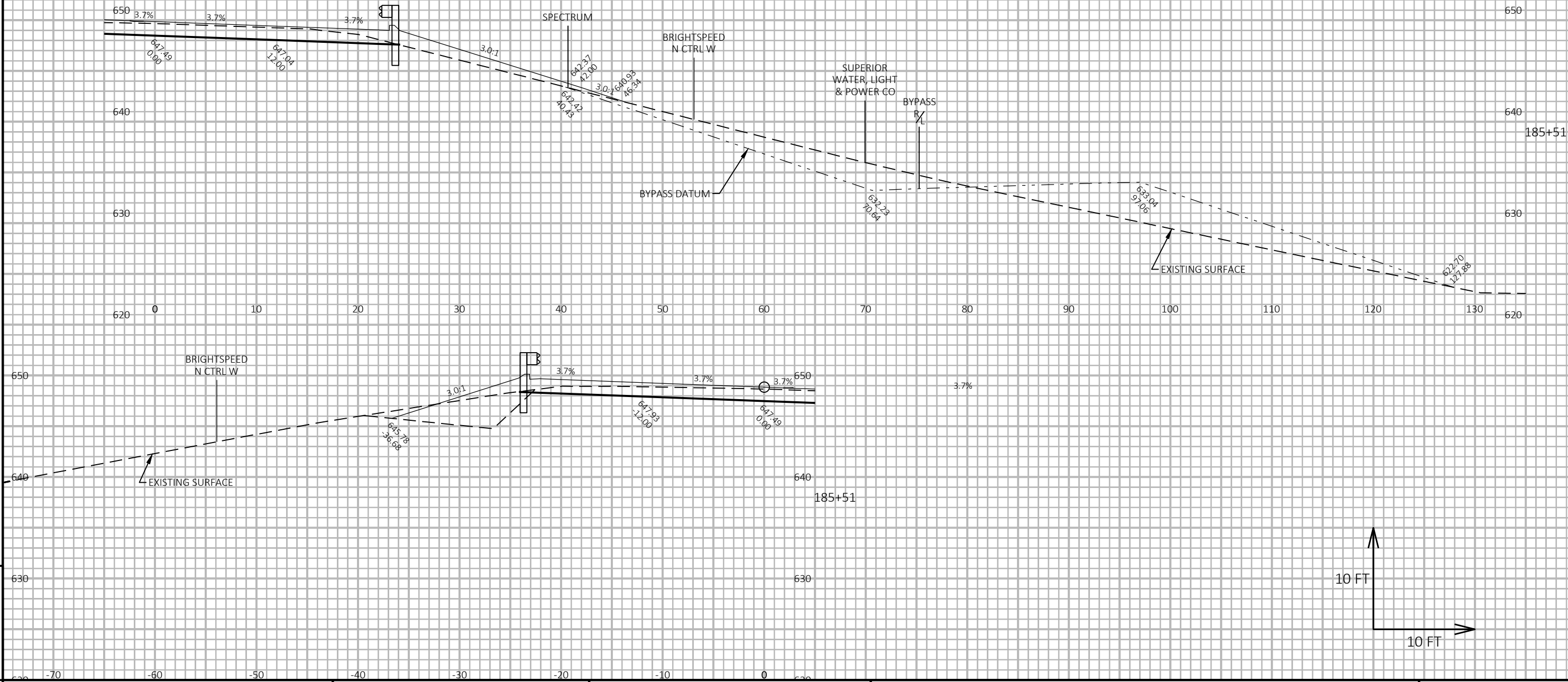


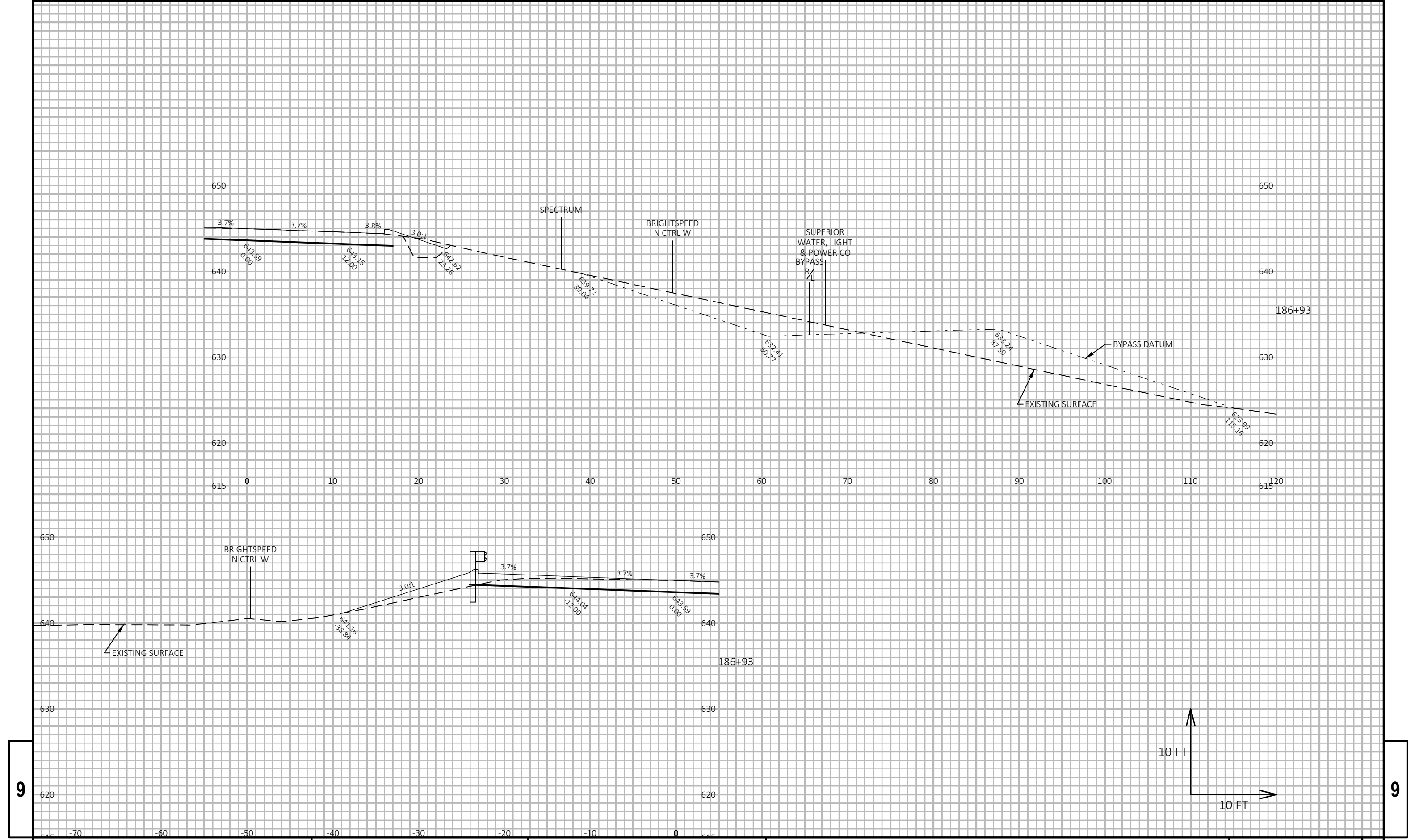
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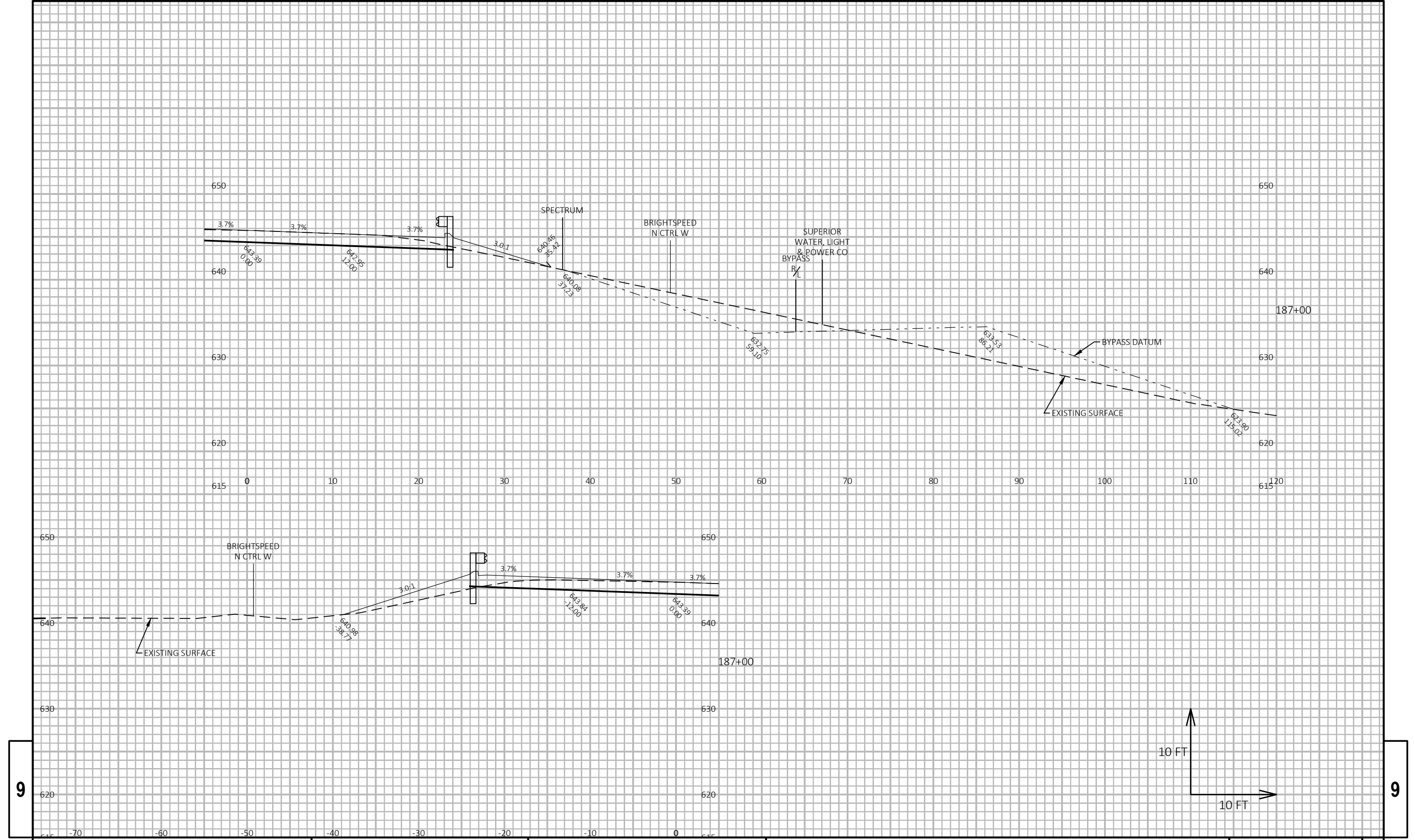
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BRIDGE STRUCTURE B-16-0156

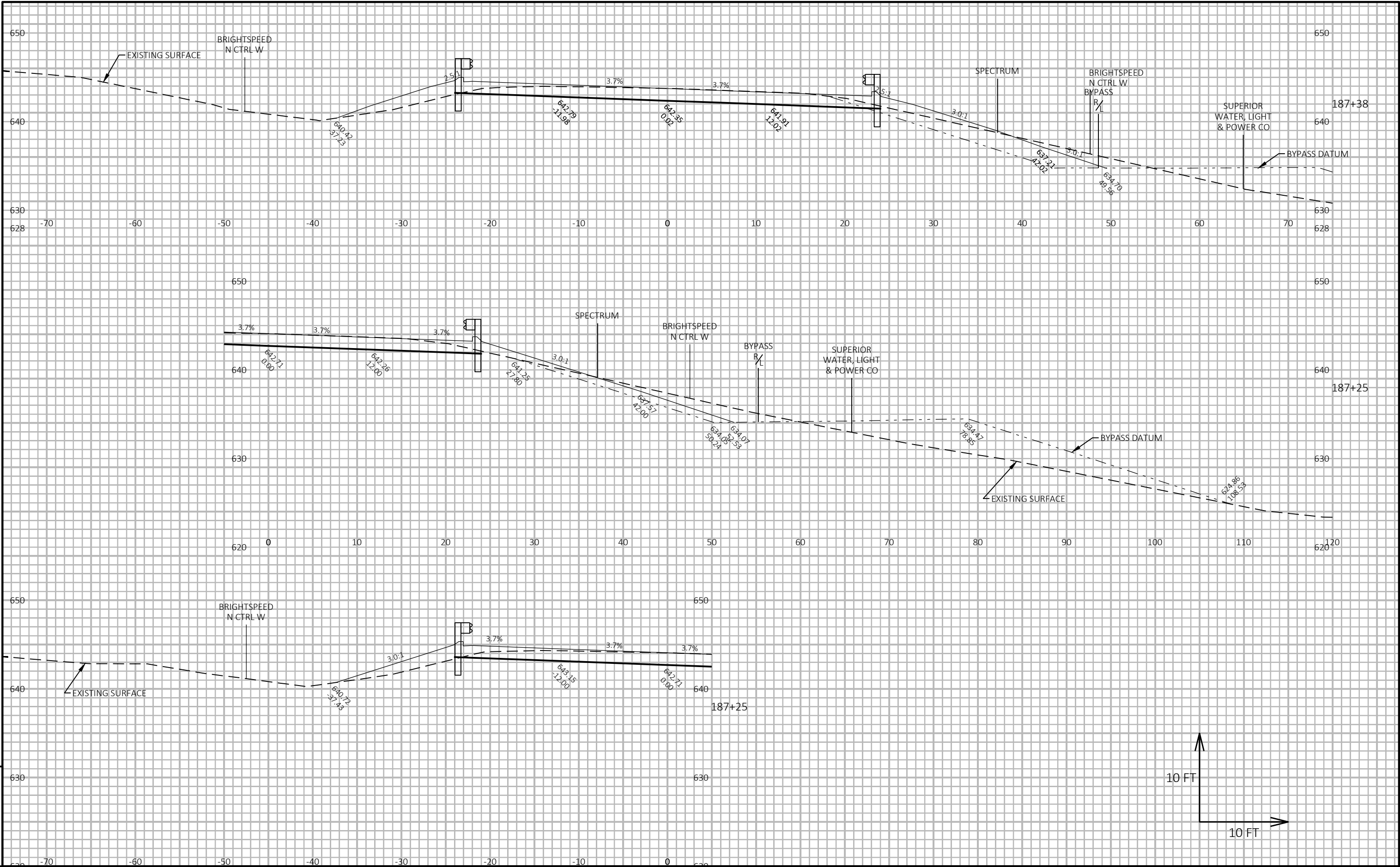


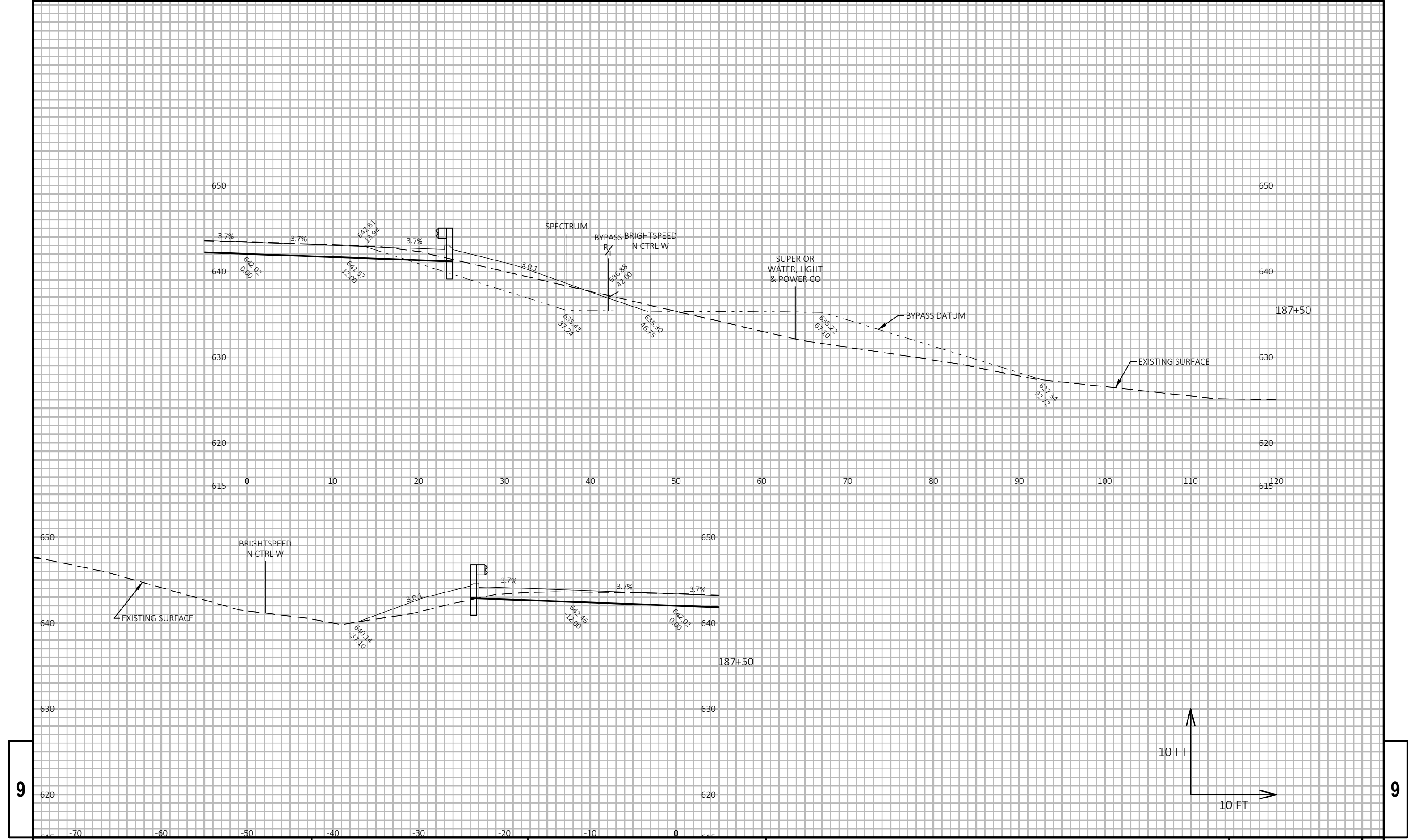


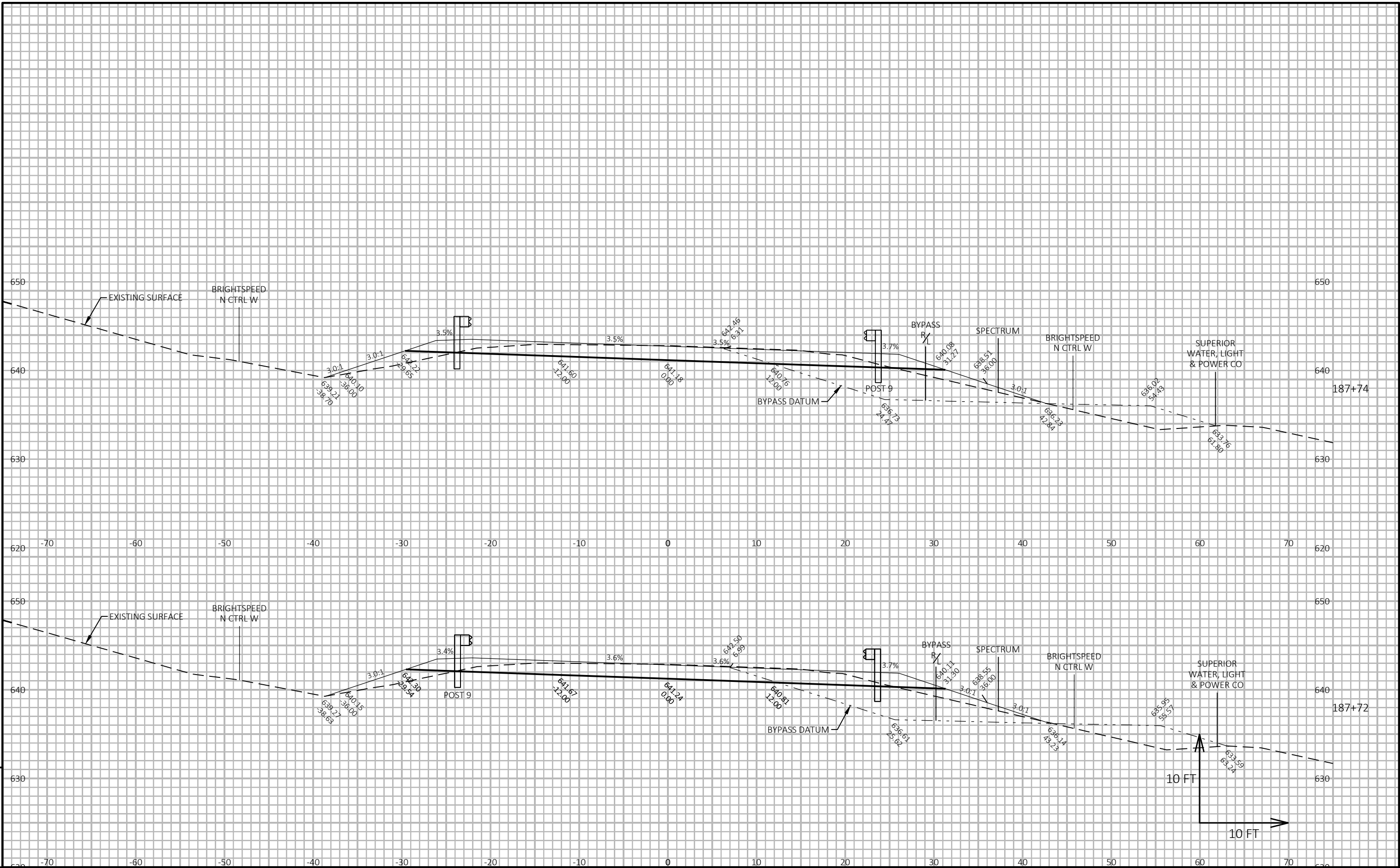


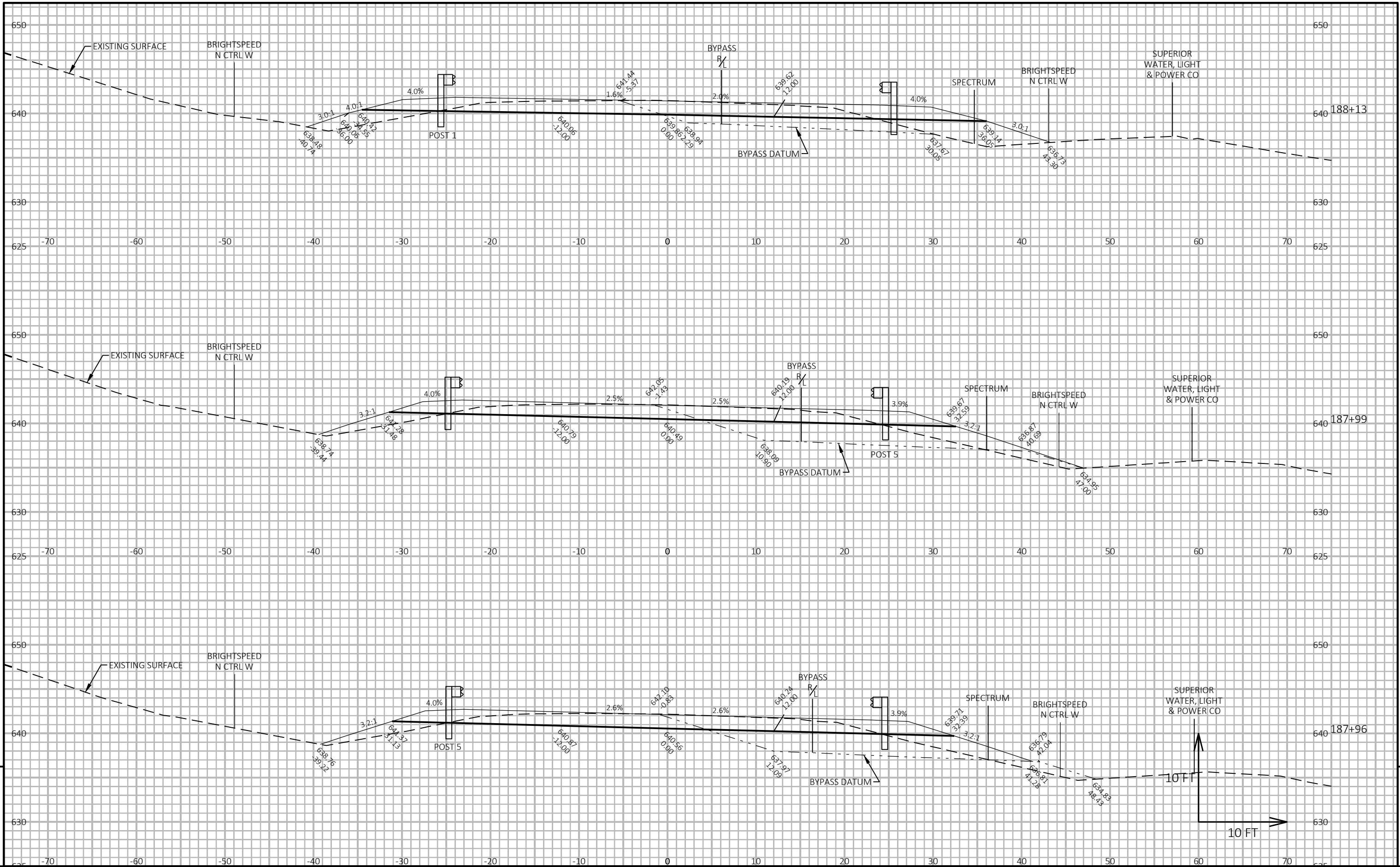
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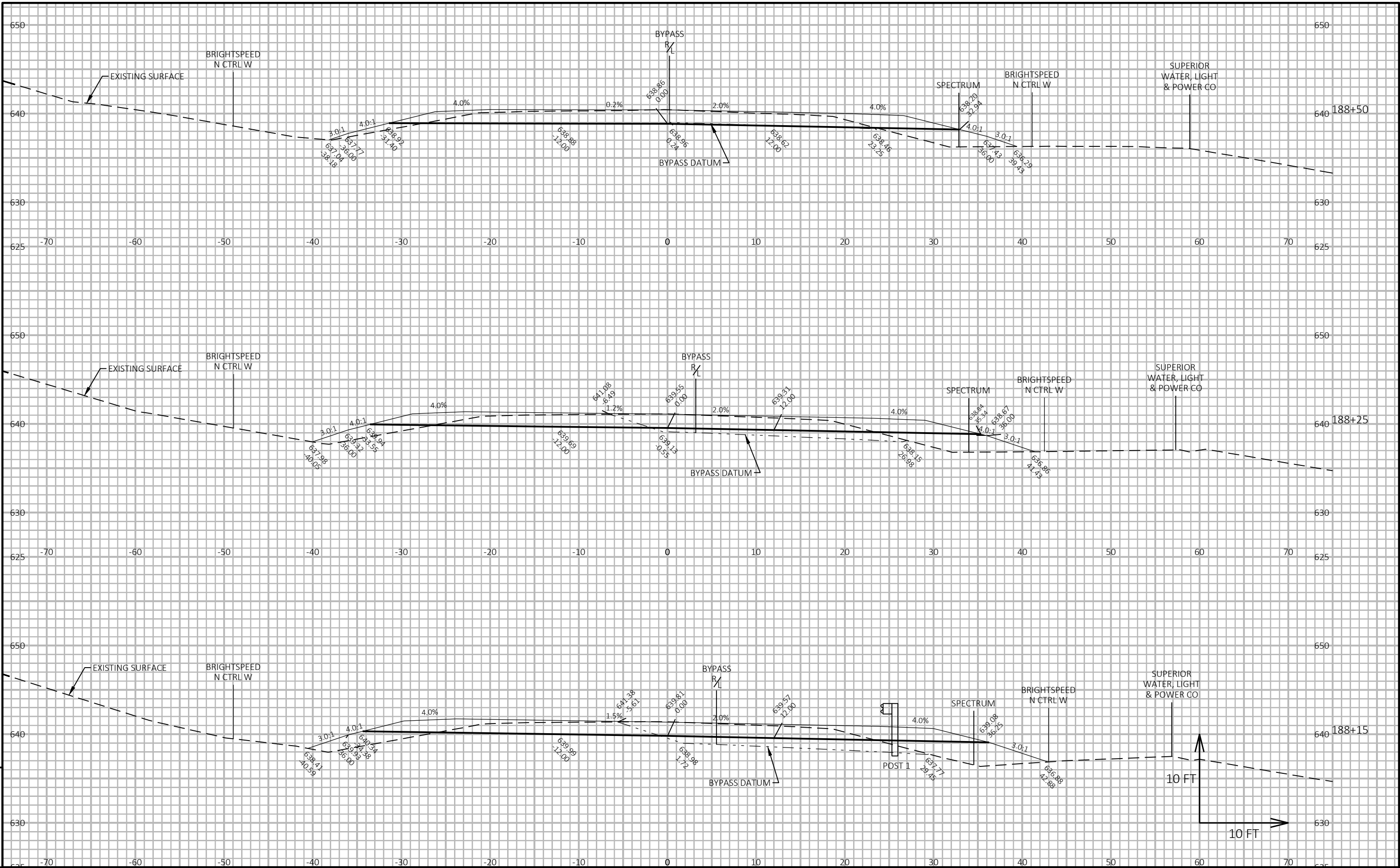
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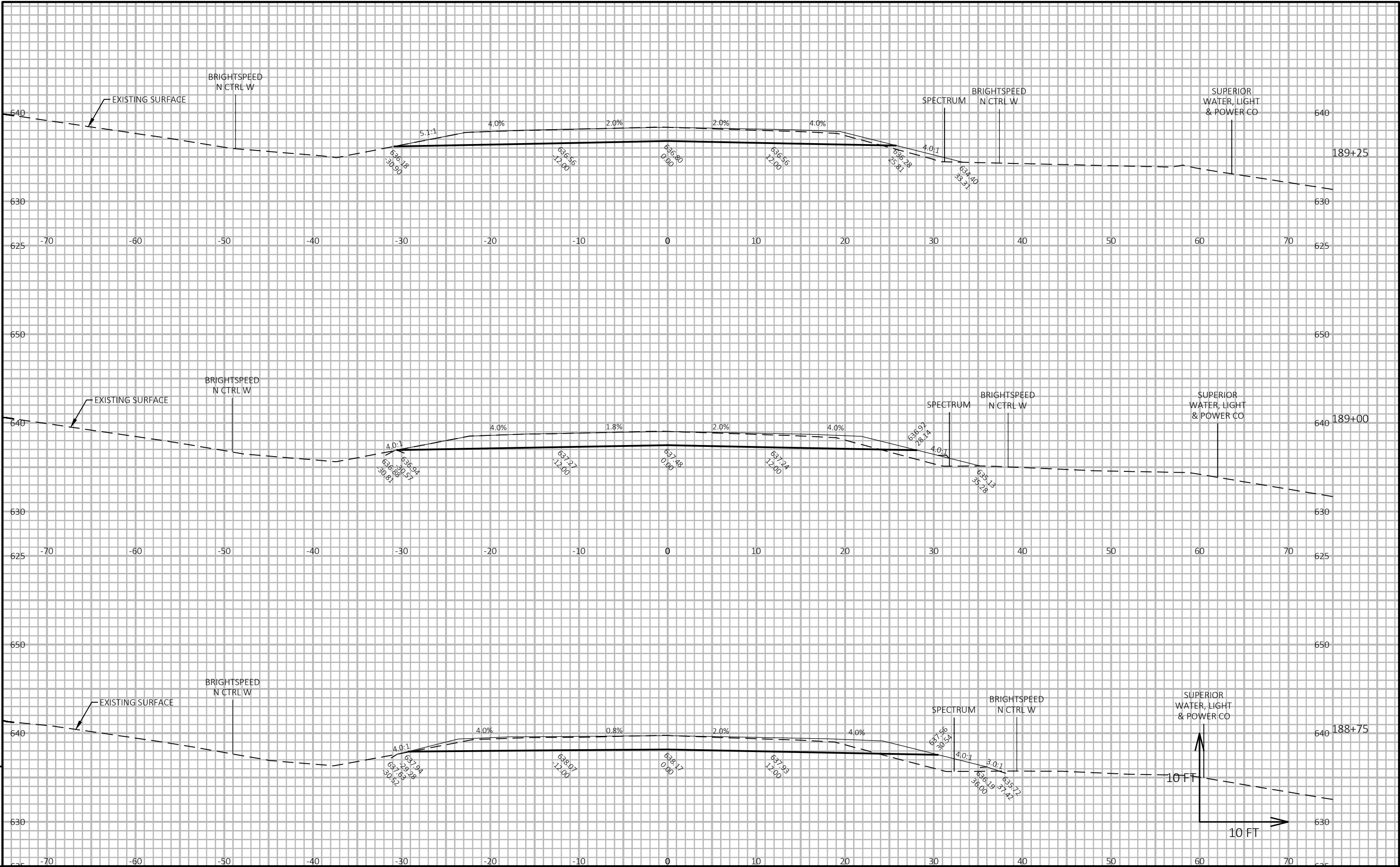




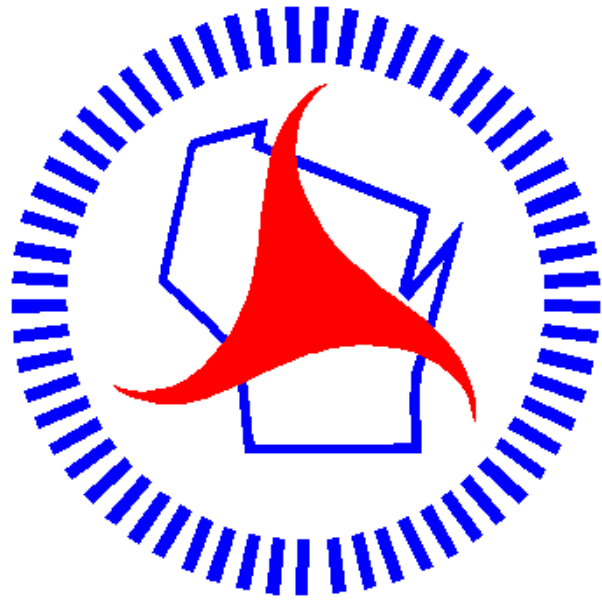








Notes



Wisconsin Department of Transportation

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