

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

MAUSTON - NECEDAH

COLFAX STREET TO STH 80

STH 58

JUNEAU COUNTY

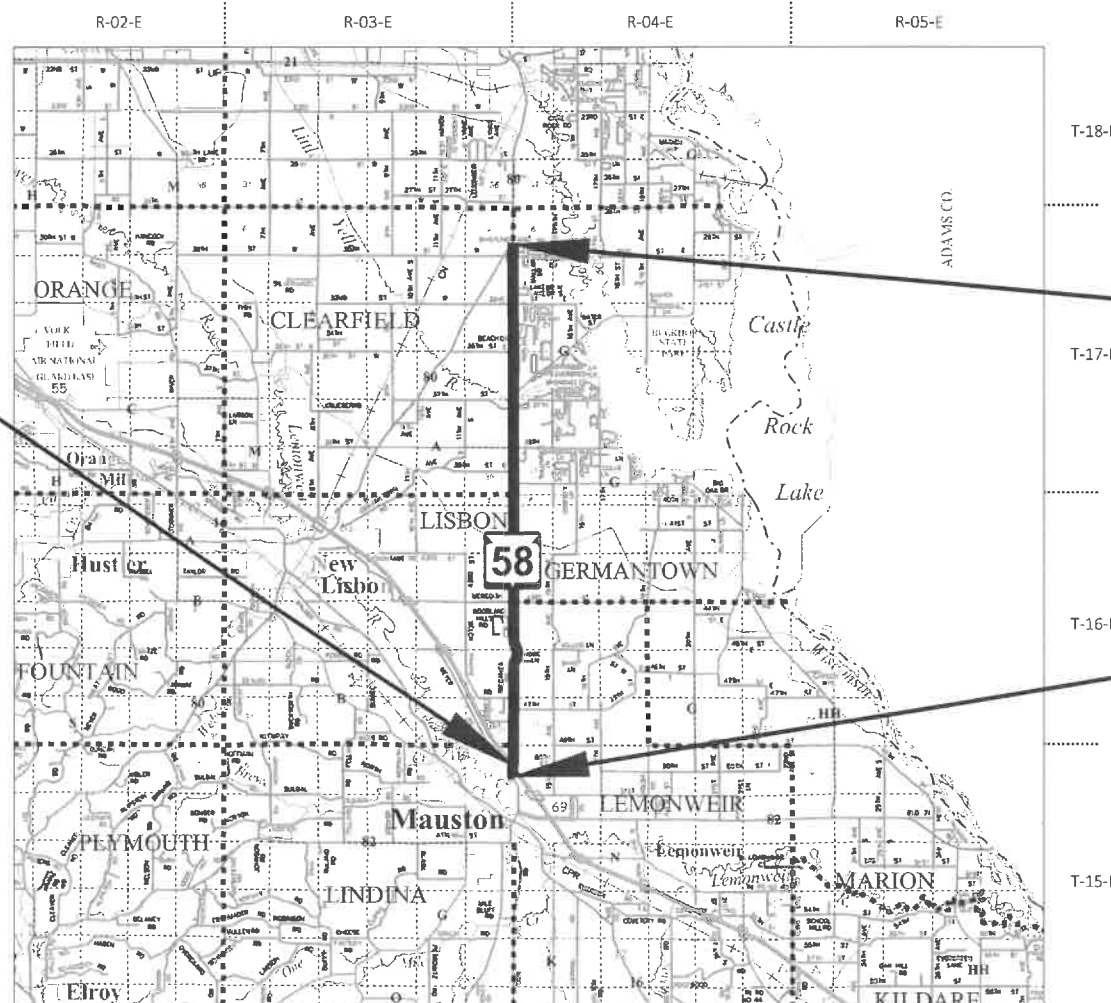
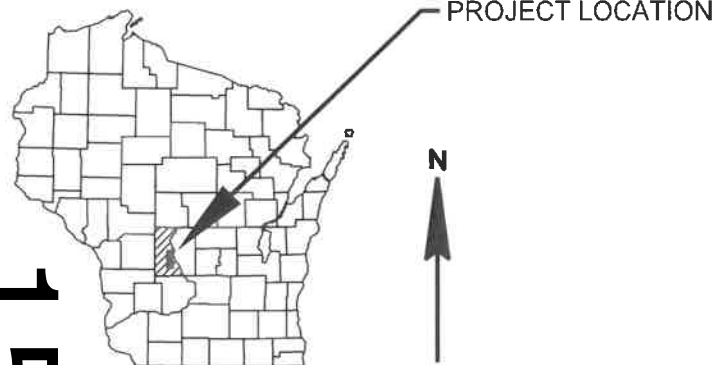
STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
6639-05-60	WISC 2020535	1

ORDER OF SHEETS

Section No.	Title
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 = 104

STATE PROJECT NUMBER
6639-05-60



NET EXCEPTION TO CL LENGTH
STA 119+19 TO 122+71

END PROJECT
STA 705+75

BEGIN PROJECT
STA 106+35
Y: 160,958.471
X: 464,042.602

LAYOUT
SCALE 0 4 MI
TOTAL NET LENGTH OF CENTERLINE = 11.286 MI.

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, JUNEAU COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES. ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO NAVD 88 (2012).

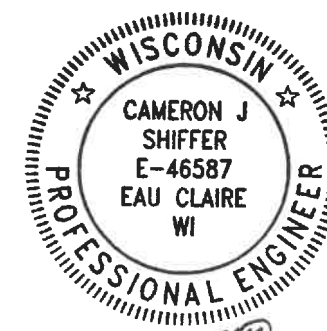
DESIGN DESIGNATION

A.A.D.T. (2023)	=	4,500
A.A.D.T. (2043)	=	5,500
D.H.V.	=	605
D.D.	=	60/40
T.	=	10.3%
DESIGN SPEED	=	60 MPH
ESALS	=	1,400,000

CONVENTIONAL SYMBOLS

PLAN	PROFILE
CORPORATE LIMITS	GRADE LINE
PROPERTY LINE	ORIGINAL GROUND
LOT LINE	MARSH OR ROCK PROFILE (To be noted as such)
LIMITED HIGHWAY EASEMENT	SPECIAL DITCH
EXISTING RIGHT OF WAY	GRADE ELEVATION
PROPOSED OR NEW R/W LINE	CULVERT (Profile View)
SLOPE INTERCEPT	UTILITIES
REFERENCE LINE	ELECTRIC
EXISTING CULVERT	FIBER OPTIC
PROPOSED CULVERT (Box or Pipe)	GAS
COMBUSTIBLE FLUIDS	OVERHEAD
	SANITARY SEWER
	STORM SEWER
	TELEPHONE
MARSH AREA	WATER
	UTILITY PEDESTAL
	POWER POLE
WOODED OR SHRUB AREA	TELEPHONE POLE

ORIGINAL PLANS PREPARED BY
CORRE ENGINEERING
1802 WARDEN STREET
EAU CLAIRE, WI 54703
(608)828-1011
www.correinc.com



DATE: 7/21/20
C. Shiffer
(Professional Engineer Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	CORRE, INC
Designer	CORRE, INC
Project Manager	DANIEL KLEINERTZ, PE
Regional Examiner	SW REGION
Regional Supervisor	JOSEPH GREGAS, PE

APPROVED FOR THE DEPARTMENT
DATE: 7/21/2020
Daniel M. Kleinertz
(Signature)

E

PROJECT ID: 6639-05-60

COUNTY: JUNEAU

15

WITH: N/A

ORDER OF SECTION 2 SHEETS

GENERAL NOTES
PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS
DETOUR PLAN

DNR CONTACT

DNR SERVICE CENTER
KAREN KALVELAGE
3550 MORMON COULEE RD
LA CROSSE, WI 54601
(608) 406-7880
KAREN.KALVELAGE@WISCONSIN.GOV

WISDOT CONTACT

WISDOT SW REGION
DANIEL KLEINERTZ, PE
3550 MORMON COULEE RD
LA CROSSE, WI 54601
(608) 789-5709
DANIEL.KLEINERTZ@DOT.WI.GOV

UTILITY CONTACTS

ALLIANT ENERGY
ELECTRICITY
MARK SCHOEN
338 E STATE ST
MAUSTON, WI 53948
(608) 847-1315
MARKSCHOEN@ALLIANTENERGY.COM

ALLIANT ENERGY
GAS/PETROLEUM
MARK SCHOEN
338 E STATE ST
MAUSTON, WI 53948
(608) 847-1315
MARKSCHOEN@ALLIANTENERGY.COM

AT&T LEGACY
COMMUNICATION LINE
KENNETH COLWELL
866 ROCK CREEK RD.
PLANO, IL 60545
(210) 246-8099
KC1298@ATT.COM

ATC MANAGEMENT, INC.
ELECTRICITY-TRANSMISSION
DOUG VOSBERG
5303 FEN OAK DRIVE
MADISON, WI 53718
(608) 877-7650
DVOSBERG@ATCLLC.COM

CITY OF MAUSTON
SEWER
ROB NELSON
1260 NORTH RD
MAUSTON, WI 53948
(608) 847-4070
RNELSON@MAUSTON.COM

CITY OF MAUSTON
WATER
ROB NELSON
1260 NORTH RD
MAUSTON, WI 53948
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RNELSON@MAUSTON.COM

CONSULTANT CONTACT

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EAU CLAIRE, WI 54703
(715) 299-1894
KMEYER@CORREINC.COM

JUNEAU COUNTY SURVEYOR'S OFFICE

JUNEAU COUNTY SURVEYOR'S OFFICE
GARY DECHANT
2200 EAST STAT ST, RM 110
MAUSTON, WI 53948
(608) 847-9339
GDECHANT@CO.JUNEAU.WI.US

FRONTIER COMMUNICATIONS OF WI LLC
COMMUNICATION LINE
JERRY MOORE
2222 WEST WISCONSIN ST
PORTAGE, WI 53901
(608) 742-9507
JERALD.R.MOORE@FTR.COM

LEMONWEIR VALLEY TELEPHONE COMPANY
COMMUNICATION LINE
BEN GRILLEY
127 US HWY 12
P.O. BOX 267
CAMP DOUGLAS, WI 54618
(608) 427-4036
BEN.GRILLEY@GETLYNXX.COM

MEDIACOM WISCONSIN LLC
COMMUNICATION LINE
CRAIG EGGERT
1240 HIGHWAY 52 SOUTH
CALEDONIA, MN 55926
(563) 419-5160
CEGGERT@MEDIACOMCC.COM

OAKDALE ELECTRIC COOPERATIVE
ELECTRICITY
ROY BOYLES
P.O. BOX 40
OAKDALE, WI 54649-0128
(608) 372-8851
RBOYLES@OAKDALEREC.COM

TDS TELECOM
COMMUNICATION LINE
JEREMIAH LUBEN
229 EAST GREEN BAY ST
BONDUEL, WI 54107
(715) 758-6583
JEREMIAH.LUBEN@TDSTELECOM.COM

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

BORING LOG

BORING NO.	STATION	ASPHALTIC PAVEMENT DEPTH (IN)	RECYCLED ASPHALT DEPTH (IN)	BASE DEPTH (IN)
B-1	108+77	4.5	2.5	10.0
B-2	128+30	7.25	4.0	12.0
B-3	140+45	9.25	-	8.0
B-4	153+12	10.25	-	8.5
B-5	165+26	8.0	4.0	8.0
B-6	177+94	7.0	4.5	5.5
B-7	193+60	5.75	5.0	8.0
B-8	207+86	9.50	-	8.5
B-9	220+53	10.25	-	6.0
B-10	234+26	12.0	-	6.0
B-11	247+53	7.75	-	5.0
B-12	260+73	5.25	7.0	8.5
B-13	274+46	9.75	3.0	4.0
B-14	288+19	9.5	-	7.5
B-15	300+33	4.25	4.0	9.5
B-16	312+17	11.25	-	9.0
B-17	324+31	7.0	4.5	7.5
B-18	336+46	6.5	5.0	6.0
B-19	349+13	12.0	2.0	4.0
B-20	363+39	7.5	2.0	8.5
B-21	373+95	8.5	4.0	8.0
B-22	385+03	9.0	3.0	7.0
B-23	396+65	5.5	8.0	4.5
B-24	408+27	7.75	5.0	8.0
B-25	418+83	5.0	5.0	10.0
B-26	428+33	7.0	3.0	8.0
B-27	441+99	4.5	4.0	6.0
B-28	452+55	5.25	3.0	2.0
B-29	465+22	5.5	3.0	7.5
B-30	477+95	4.5	6.5	3.5
B-31	488+51	5.5	2.0	5.0
B-32	500+12	6.75	3.0	5.0
B-33	511+21	6.0	4.0	5.0
B-34	521+24	-	-	-
B-35	534+89	4.5	-	10.0
B-36	545+45	7.0	3.0	6.0
B-37	558+12	6.0	6.0	2.0
B-38	570+79	6.25	-	8.0
B-39	577+13	6.5	-	7.5
B-40	600+38	6.0	4.0	5.0
B-41	610+41	6.5	3.0	4.5
B-42	620+44	6.0	4.0	4.0
B-43	631+53	7.75	-	6.0
B-44	642+33	7.25	-	8.0
B-45	653+95	7.0	3.0	4.0
B-46	663+45	5.0	-	10.0
B-47	674+01	6.25	4.0	5.0
B-48	684+04	4.5	4.0	3.0
B-49	690+91	5.0	5.0	6.0
B-50	697+77	5.5	-	4.0

GENERAL NOTES

-THERE ARE UTILITY FACILITIES WITHIN THE PROJECT AREA THAT ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL COORDINATE HIS CONSTRUCTION ACTIVITIES WITH A CALL TO DIGGERS HOTLINE AND/OR A DIRECT CALL TO THE UTILITIES THAT HAVE FACILITIES IN THE AREA. NOT ALL UTILITIES ARE MEMBERS OF DIGGERS HOTLINE.

-CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES.

-PRIOR TO THE PLACEMENT OF MGS GUARDRAIL, THE SHOULDERS SHALL BE IN PLACE, SHAPED, AND COMPACTED UNLESS SHOWN OTHERWISE.

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

-HMA PAVEMENT WEIGHT CALCULATIONS ARE BASED ON 112 LB/SY/IN.

-3.5 INCH HMA PAVEMENT 4 MT 58-28 S SHALL BE CONSTRUCTED WITH A 1.75 INCH UPPER LAYER AND A 1.75 INCH LOWER LAYER.

-APPLY TACK COAT AT A RATE OF 0.05 GAL/SY TO COLD-IN-PLACE RECYCLING LAYER AND BETWEEN LAYERS OF HMA PAVEMENT.

-CONTRACTOR WILL BE RESPONSIBLE FOR RESHAPING AND SEEDING ANY PREVIOUSLY GRASSED AREAS WHICH ARE DISTURBED BY HIS OPERATION OUTSIDE OF THE NORMAL CONSTRUCTION LIMITS.

-THE QUANTITY OF THE ITEMS FOR EROSION PROTECTION INCLUDES AN UNDISTRIBUTED AMOUNT FOR PROTECTION, CONTROL, AND ABATEMENT OF WATER POLLUTION RESULTING FROM SOIL EROSION. THE DISTRIBUTION AND LOCATION OF THESE MATERIALS ARE TO BE DETERMINED BY THE ENGINEER.

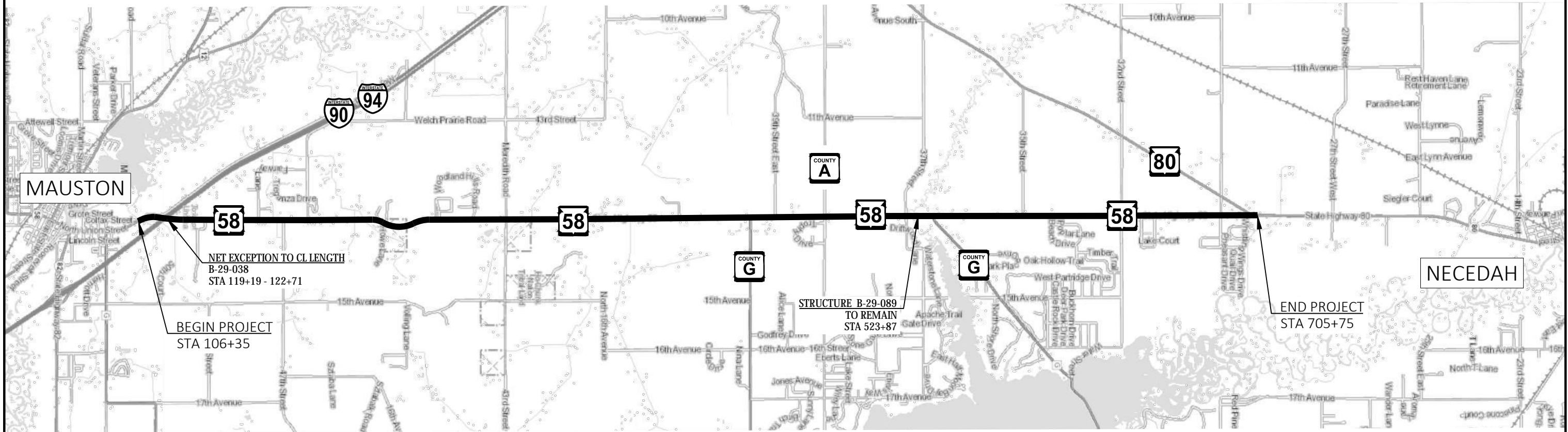
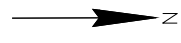
-DISTURBED AREAS WITHIN THE RIGHT OF WAY ARE TO BE TOPSOILED (SALVAGED), FERTILIZED, SEEDED, AND COVERED WITH MULCH OR EROSION MAT AS DIRECTED BY THE ENGINEER.

-IN ORDER TO AVOID IMPACTS TO THE HABITAT ADJACENT TO THE ROADWAY, THERE SHALL BE NO PARKING, STAGING, OR STORAGE OF EQUIPMENT IN UNDISTURBED, NATIVE AREAS. UTILIZE EXISTING PARKING LOTS, DRIVEWAYS, AND SHOULDERS, PROVIDED ADEQUATE PROTECTION IS PROVIDED TO THE HABITAT BEYOND THE TOE OF SLOPE.

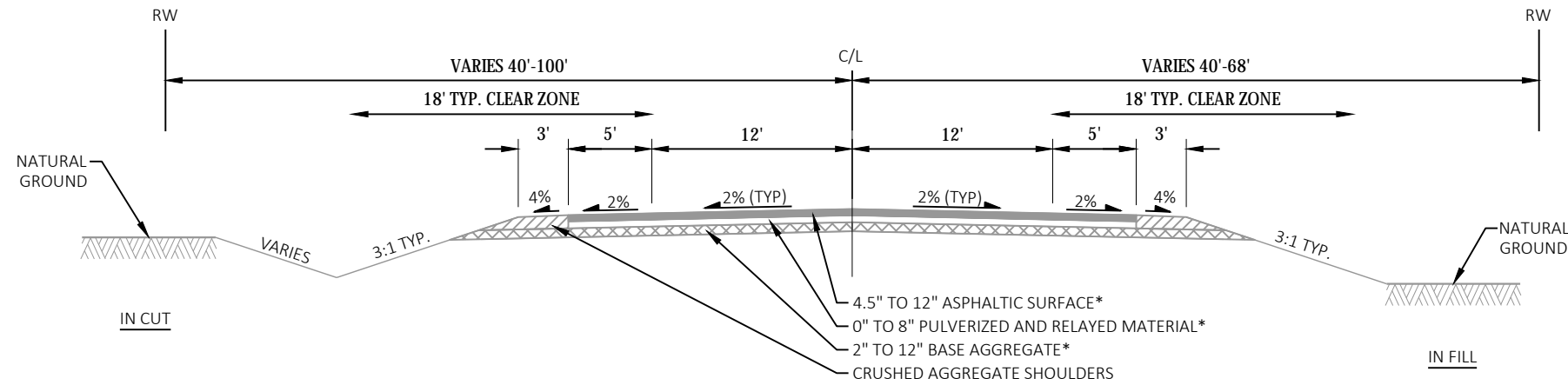
-SECTION CORNER MONUMENTS WILL BE IMPACTED BY THE PROJECT AND ARE SHOWN WITHIN THE CONSTRUCTION PLANS. THE JUNEAU COUNTY SURVEYOR'S OFFICE WILL PERPETUATE AND RE-MONUMENT THESE SECTION CORNERS OUTSIDE OF THE PROJECT. CONTACT THE SURVEYOR'S OFFICE PRIOR TO CONSTRUCTION AND AGAIN AT THE COMPLETION OF PAVING OPERATIONS SO THE SURVEYOR'S OFFICE CAN APPROPRIATELY COORDINATE THEIR RE-MONUMENTATION WORK WITH CONSTRUCTION ACTIVITIES.

STANDARD ABBREVIATIONS

ABUT	ABUTMENT	FTG	FOOTING
AEW	APRON END WALL	HT	HEIGHT
AGG	AGGREGATE	HES	HIGH EARLY STRENGTH
ASPH	ASPHALTIC	CWT	HUNDREDWEIGHT
AVG	AVERAGE	IP	IRON PIPE OR PIN
AADT	ANNUAL AVERAGE DAILY TRAFFIC	LT	LEFT
BK	BACK	LIN FT or LF	LINEAR FOOT
BAD	BASE AGGREGATE DENSE	LS	LUMP SUM
BL or B/L	BASE LINE	MH	MANHOLE
BM	BENCH MARK	ML or M/L	MATCH LINE
BR	BRIDGE	MB	MESSAGE BOARD
CIR	COLD-IN-PLACE RECYCLING	N	NORTH
CL or C/L	CENTER LINE	NB	NORTHBOUND
CC	CENTER TO CENTER	PC	POINT OF CURVATURE
CE	COMMERCIAL ENTRANCE	PI	POINT OF INTERSECTION
CONC	CONCRETE	PT	POINT OF TANGENCY
CO	COUNTY	PCC	PORTLAND CEMENT CONCRETE
CTH	COUNTY TRUNK HIGHWAY	PE	PRIVATE ENTRANCE
CPCS	CULVERT PIPE CORRUGATED STEEL	R	RADIUS
CABC	CRUSHED AGGREGATE BASE COURSE	RL or R/L	REFERENCE LINE
CY or CUYP	CUBIC YARD	RT	RIGHT
CP	CULVERT PIPE	R/W	RIGHT-OF-WAY
CPRC	CULVERT PIPE REINFORCED CONCRETE	RD	ROAD
C&G	CURB AND GUTTER	SHLDR	SHOULDER
DHV	DESIGN HOUR VOLUME	SW	SIDEWALK
DIA	DIAMETER	S	SOUTH
DWY	DRIVEWAY	SB	SOUTHBOUND
E	EAST	SF or SQ FT	SQUARE FEET
EB	EASTBOUND	SY or SQ YD	SQUARE YARD
ELEC	ELECTRIC	SDD	STANDARD DETAIL DRAWINGS
EL or ELEV	ELEVATION	STH	STATE TRUNK HIGHWAYS
ESALS	EQUIVALENT SINGLE AXLE LOADS	STA	STATION
EXC	EXCAVATION	SE	SUPERELEVATION
EBS	EXCAVATION BELOW SUBGRADE	TEL	TELEPHONE
EXP	EXPANSION	UG	UNDERGROUND
FF	FACE TO FACE OR FRONT FACE	VC	VERTICAL CURVE
FE	FIELD ENTRANCE	VPI	VERTICAL POINT OF INTERSECTION
FAB	FLASHING ARROW BOARD	W	WEST
FL or F/L Flow	FLOW LINE	WB	WESTBOUND
FT	FOOT		

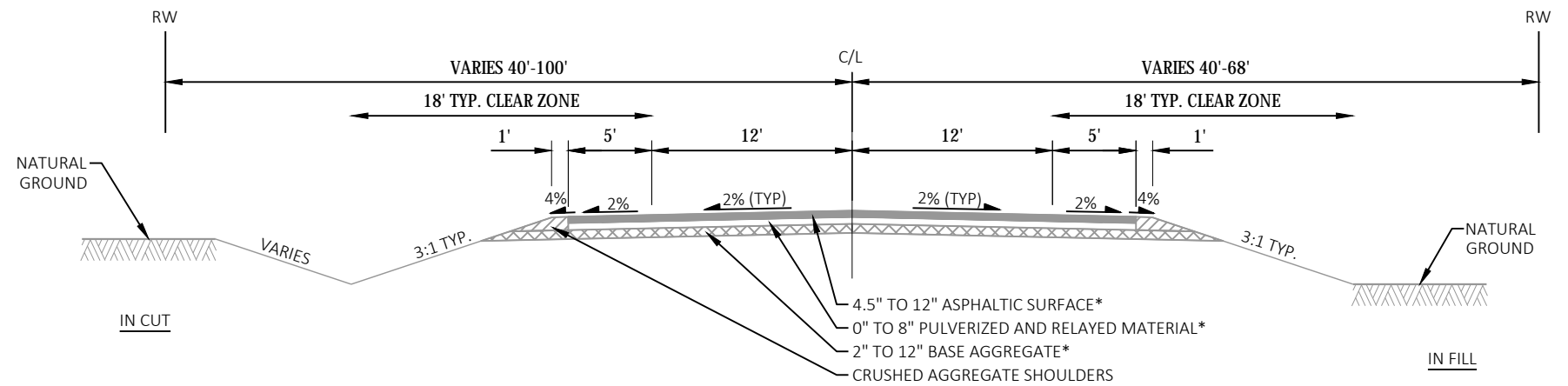


PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PROJECT OVERVIEW	SHEET	E
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TYPICAL EXISTING SECTION - STH 58

STA 106+35 - 114+03



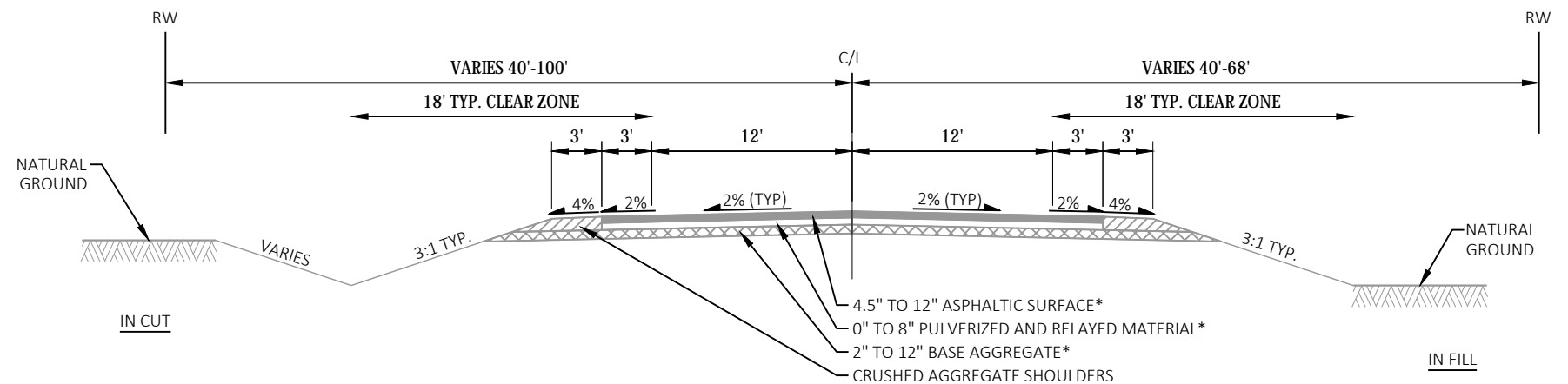
TYPICAL EXISTING SECTION - STH 58

LEFT STATIONING

RIGHT STATIONING

STA 128+61 TO 171+07

STA 129+87 TO 171+07

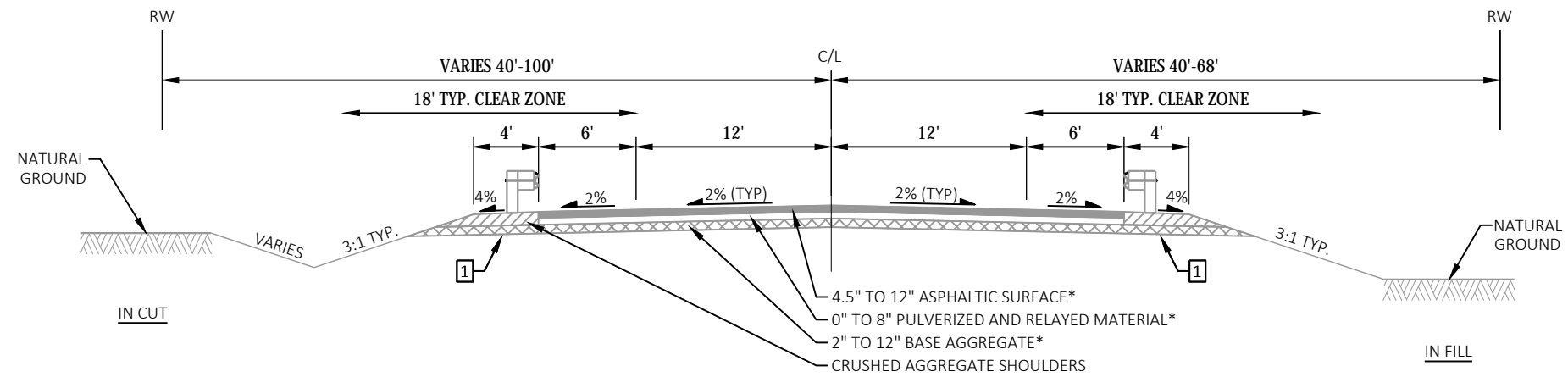


TYPICAL EXISTING SECTION - STH 58

STA 171+07 TO 521+06

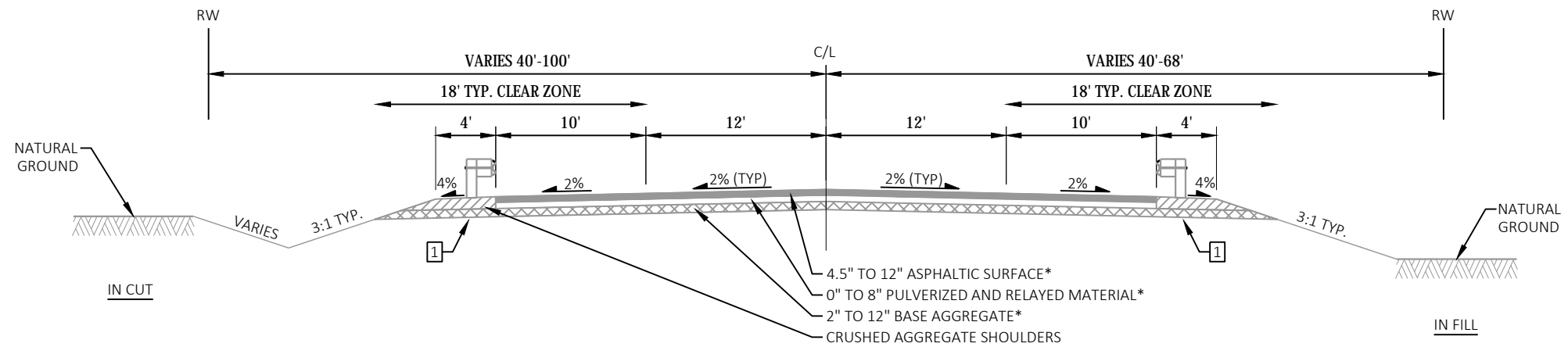
STA 526+66 TO 705+75

* SEE BORING LOG FOR ASPHALT, RECYCLED ASPHALT, AND BASE DEPTHS.



TYPICAL EXISTING SECTION WITH BEAMGUARD - STH 58

LEFT STATIONING	RIGHT STATIONING
STA 114+03 TO 119+19	STA 114+03 TO 119+19
STA 122+71 TO 128+61	STA 122+71 TO 129+87

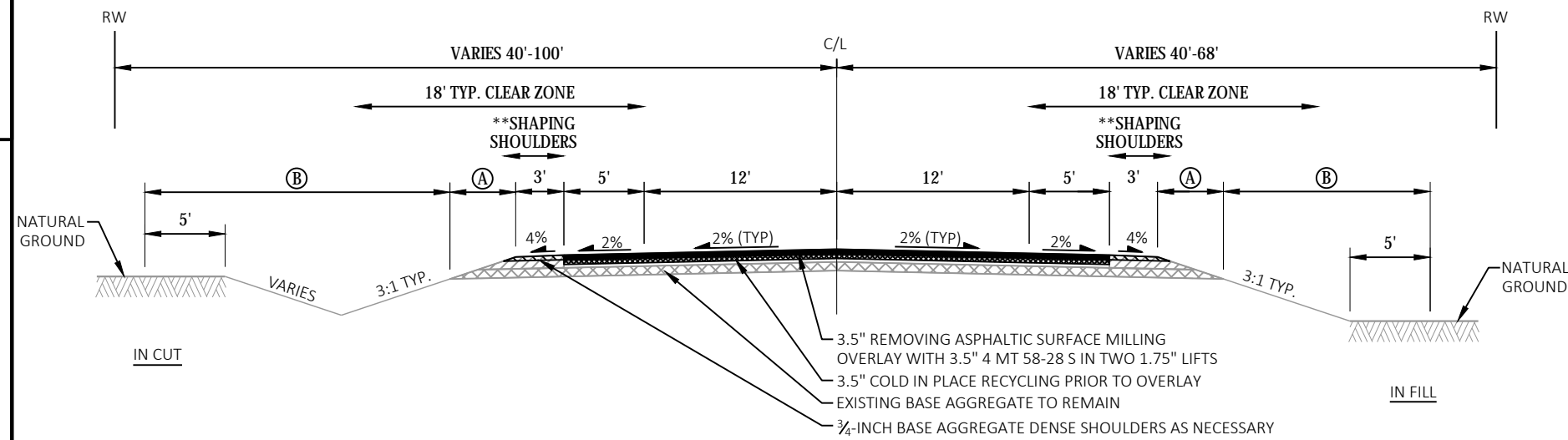


TYPICAL EXISTING SECTION WITH BEAMGUARD - STH 58

STA 521+06 TO 526+66

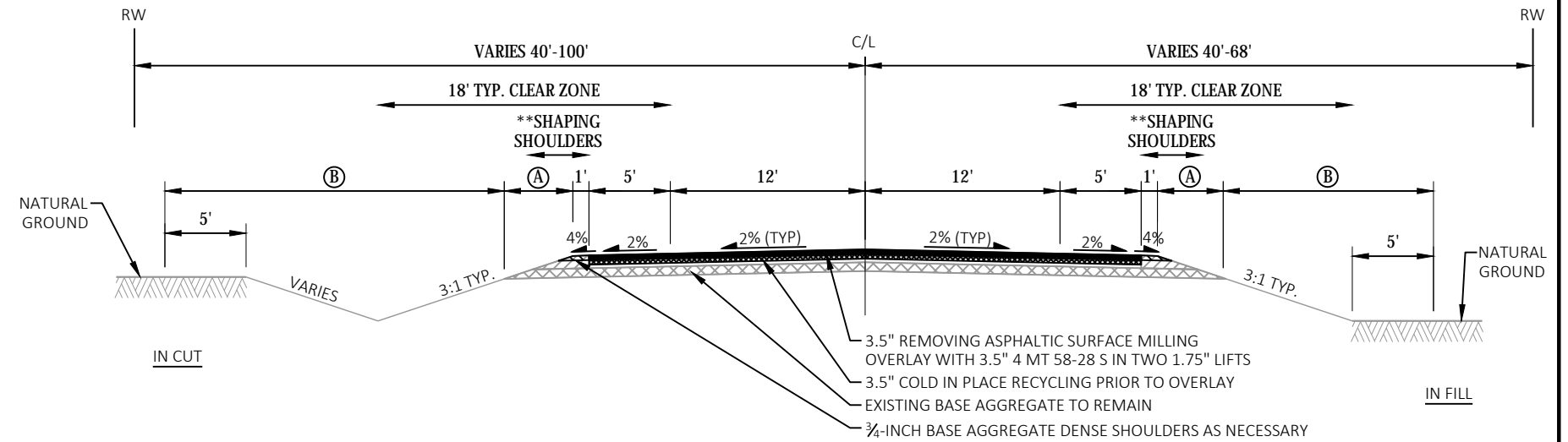
1 SHOULDERS WIDTHS AND BEAMGUARD OFFSETS VARY IN AREAS OF ENERGY ABSORBING TERMINALS. SEE PLAN (SECTION 5) FOR LOCATIONS AND DIMENSIONS.

* SEE BORING LOG FOR ASPHALT, RECYCLED ASPHALT, AND BASE DEPTHS.



TYPICAL PROPOSED SECTION - STH 58

STA 106+35 - 114+03



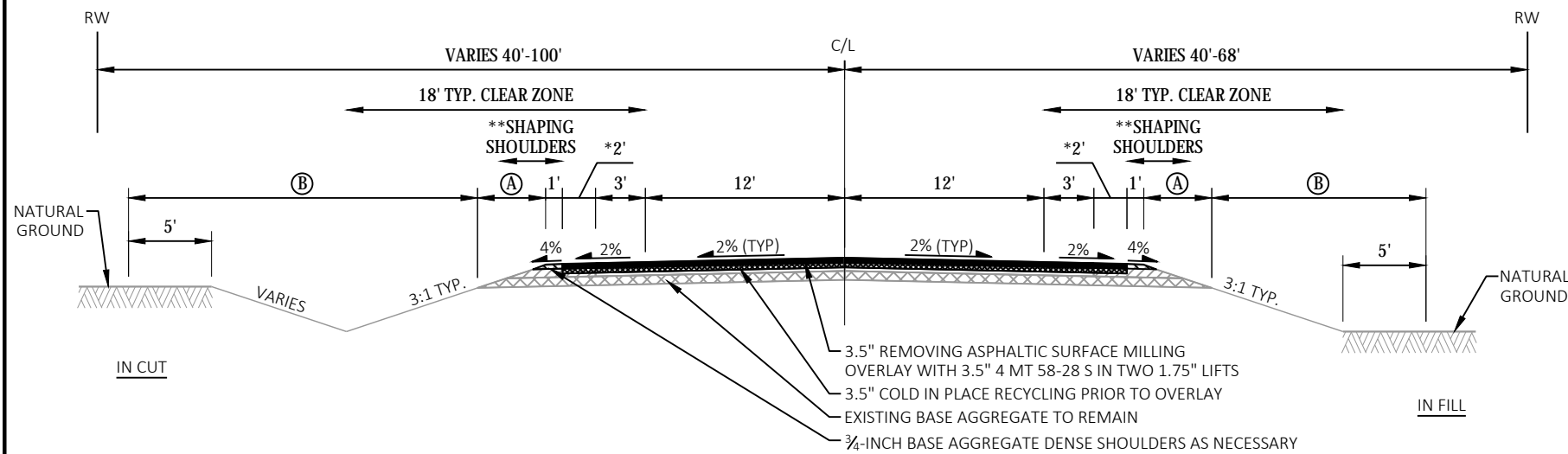
TYPICAL PROPOSED SECTION - STH 58

LEFT STATIONING

STA 128+61 TO 171+07

RIGHT STATIONING

STA 129+87 TO 171+07



TYPICAL PROPOSED SECTION - STH 58

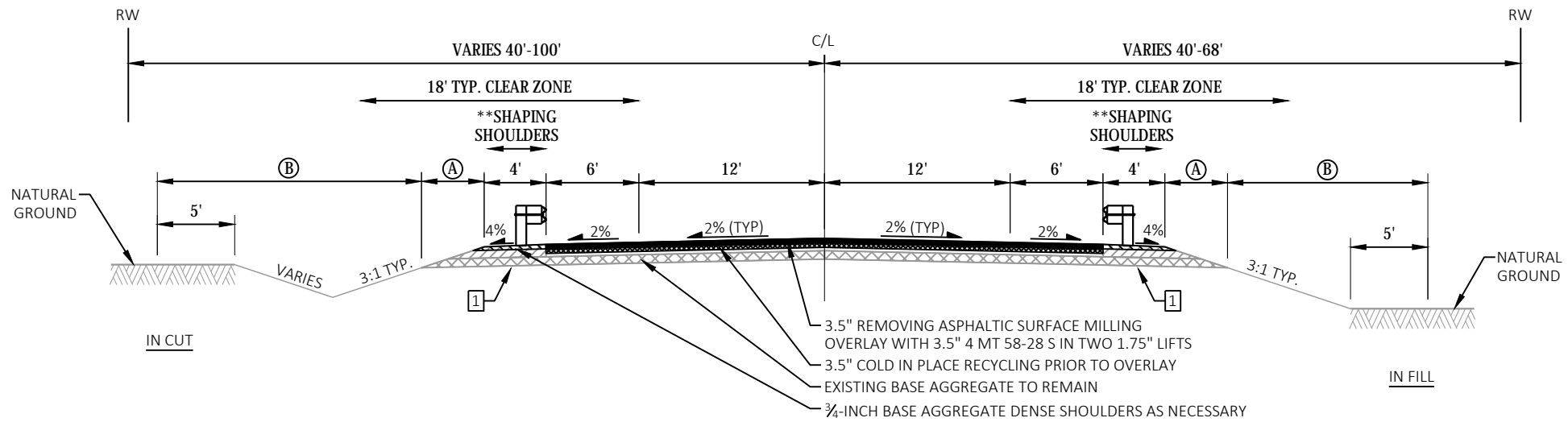
STA 171+07 TO 521+06
STA 526+66 TO 705+75

*2' SHOULDER WIDENING (HSIP)
3.5" 4 MT 58-28 S

*** REMOVAL OF ANY EXCESS MATERIAL IS PAID UNDER ITEM SPV.0035.01 REMOVING EXCESS SHOULDER MATERIAL.

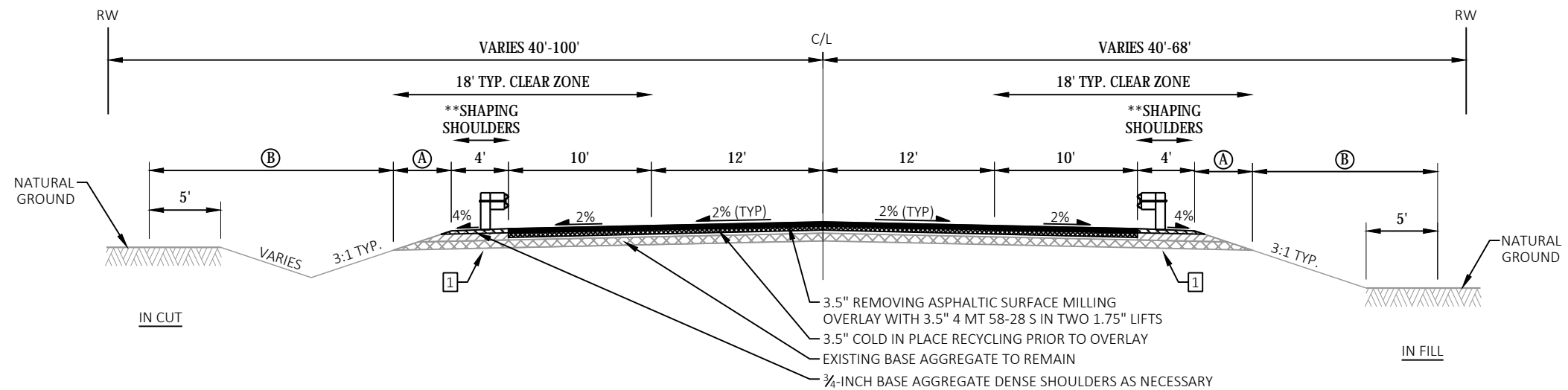
IN ANY DISTURBED AREAS

- (A) SEEDING MIXTURE NO. 20, FERTILIZER TYPE B.
- (B) SALVAGED TOPSOIL, SEEDING MIXTURE NO. 20, FERTILIZER TYPE B, MULCH OR EROSION MAT AS SPECIFIED ELSEWHERE.



TYPICAL PROPOSED SECTION WITH BEAMGUARD - STH 58

<u>LEFT STATIONING</u>	<u>RIGHT STATIONING</u>
STA 114+03 TO 119+19	STA 114+03 TO 119+19
STA 122+71 TO 128+61	STA 122+71 TO 129+87



TYPICAL PROPOSED SECTION WITH BEAMGUARD - STH 58

STA 521+06 TO 526+66

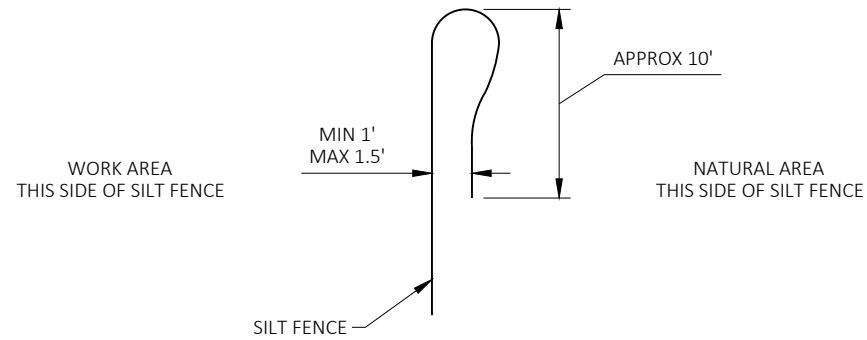
1 SHOULDERS WIDTHS AND BEAMGUARD OFFSETS VARY IN AREAS OF ENERGY ABSORBING TERMINALS. SEE PLAN (SECTION 5) FOR LOCATIONS AND DIMENSIONS.

*** REMOVAL OF ANY EXCESS MATERIAL IS PAID UNDER ITEM SPV.0035.01 REMOVING EXCESS SHOULDER MATERIAL.

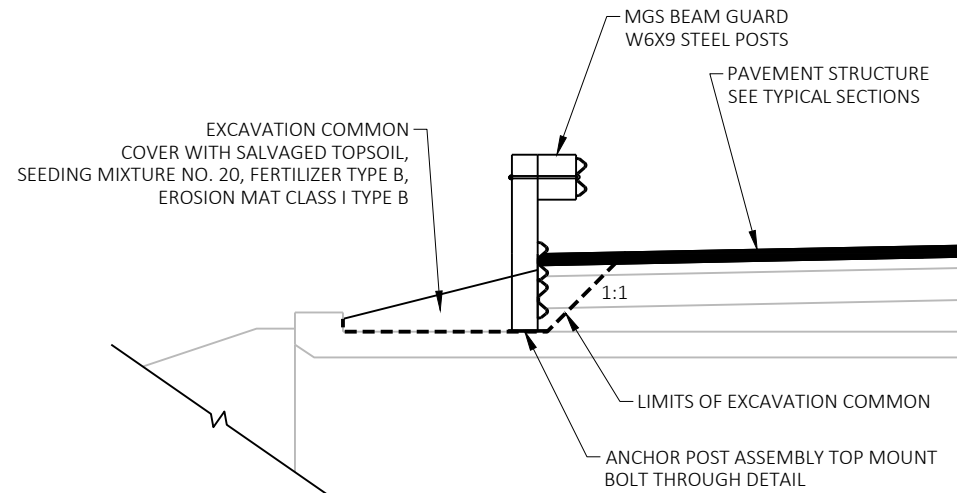
IN ANY DISTURBED AREAS

A SEEDING MIXTURE NO. 20, FERTILIZER TYPE B.

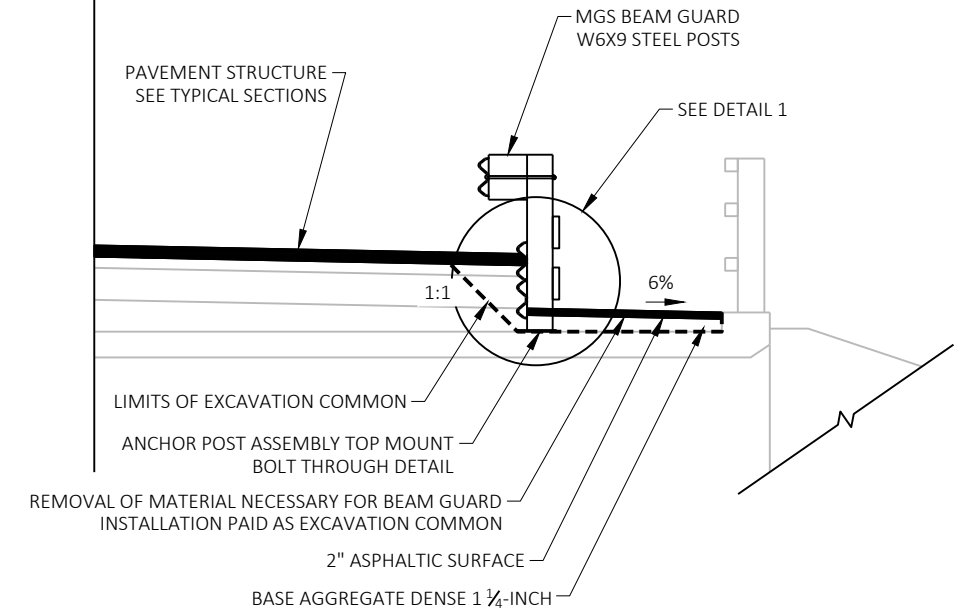
B SALVAGED TOPSOIL, SEEDING MIXTURE NO. 20, FERTILIZER TYPE B, MULCH OR EROSION MAT AS SPECIFIED ELSEWHERE.



SILT FENCE "J-HOOKS" TURN AROUND - PLAN VIEW
INSTALL AT ENDS OF ANY SILT FENCE INSTALLED



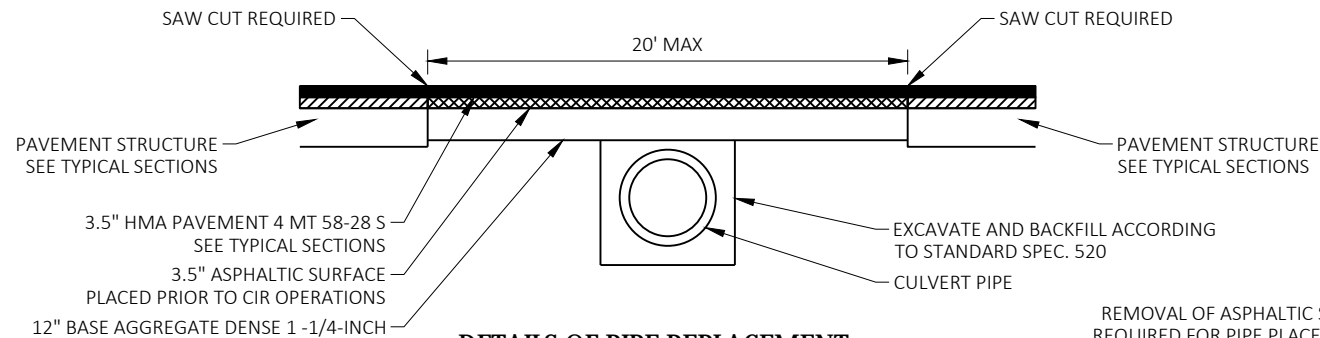
DETAILS OF BEAM GUARD OVER B-29-89
LEFT SIDE



DETAILS OF BEAM GUARD OVER B-29-89
RIGHT SIDE

NOTES:

SECURE EACH ADDITIONAL TYPE W RAIL AND EACH 2" X 10" TREATED LUMBER TO EACH GUARDRAIL POST USING TWO 5/8" BOLTS, FLAT, AND LOCK WASHERS. ALL BOLTS AND HARDWARE MUST BE GALVANIZED.

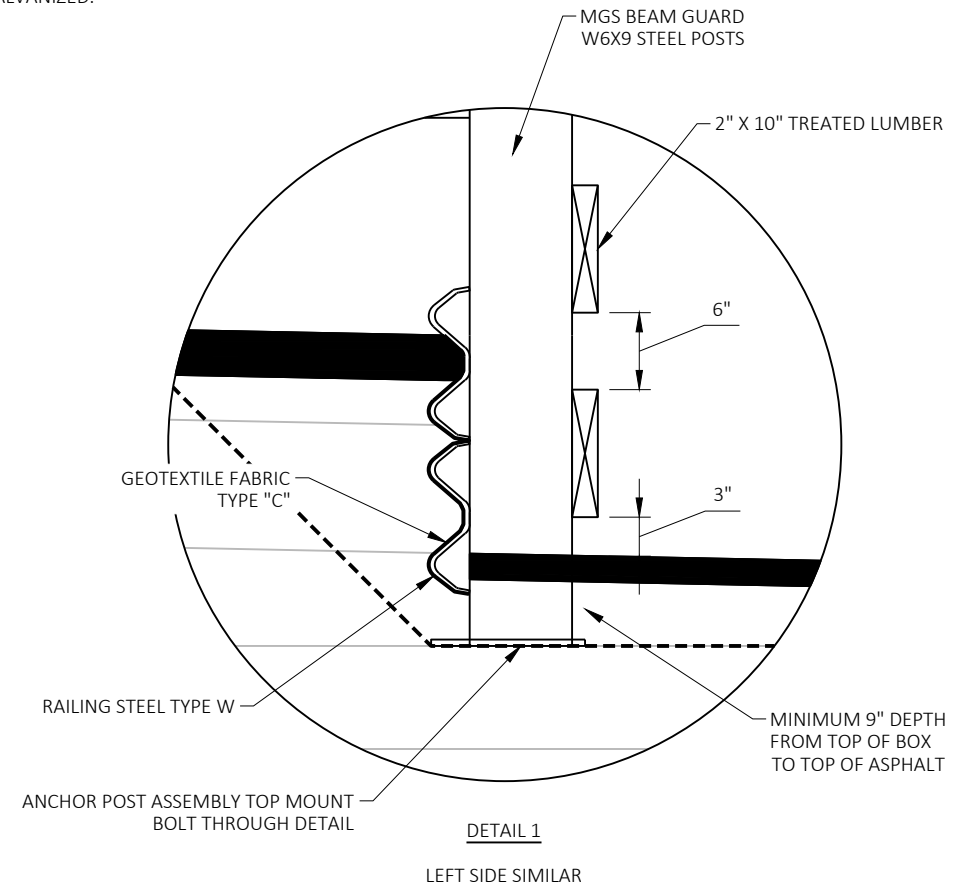


DETAILS OF PIPE REPLACEMENT
STA 133+26

NOTES:

REMOVAL OF ASPHALTIC SURFACE AND OTHER EXCAVATION REQUIRED FOR PIPE PLACEMENT CONSIDERED INCIDENTAL TO REMOVING SMALL PIPE CULVERTS BID ITEM.

MILL AREA OF CULVERT PIPE REPLACEMENT PRIOR TO PLACING 3.5" ASPHALTIC SURFACE.

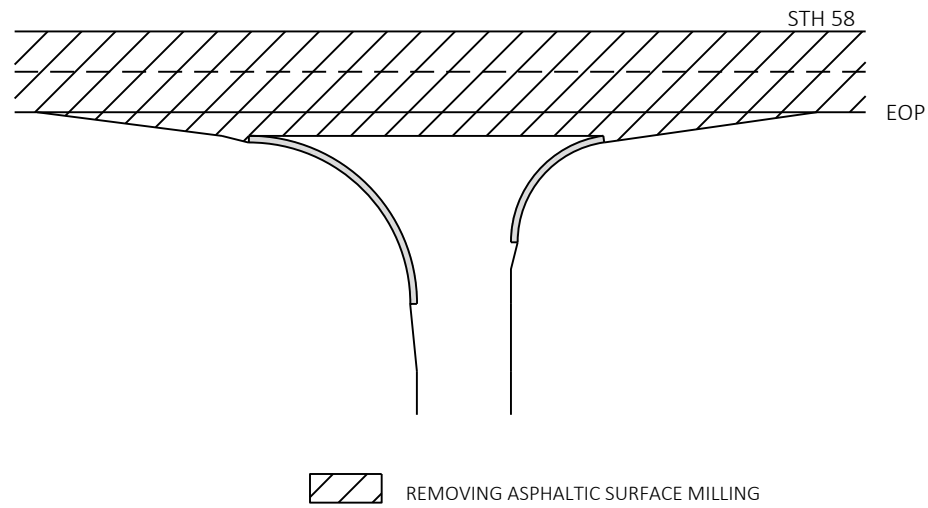


DETAIL 1
LEFT SIDE SIMILAR

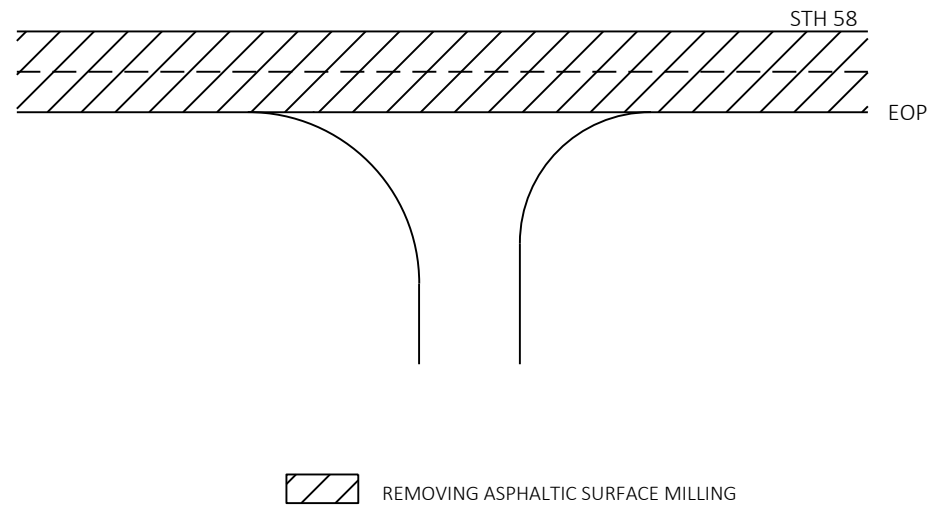
PWL MIXTURE USE TABLE

THE FOLLOWING ACCEPTANCE CRITERIA ARE APPLICABLE TO THIS PROJECT:

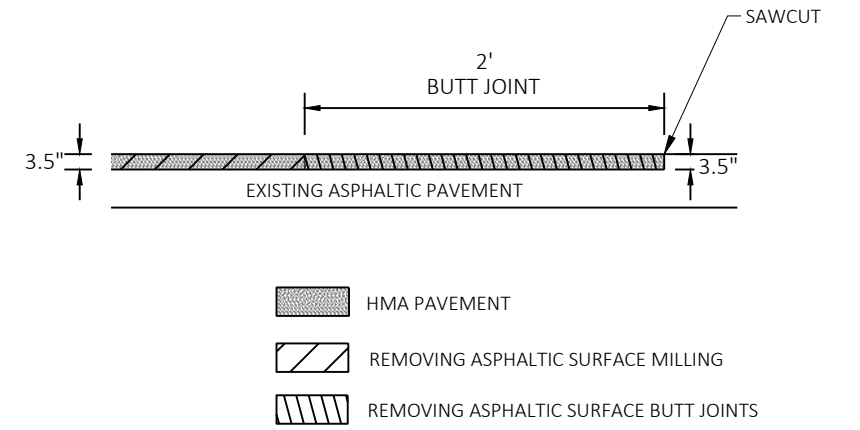
LOCATION	STATION	MIXTURE USE	UNDERLYING SURFACE	BID ITEM	TONS	THICKNESS	QUALITY MANAGEMENT PROGRAM TO BE USED FOR:	
							MIXTURE ACCEPTANCE	DENSITY ACCEPTANCE
12 FOOT DRIVING LANE	106+35 TO 705+75	UPPER LAYER	4 MT 58-28 S	4 MT 58-28 S	15,575	1.75-INCHES	INCENTIVE AIR VOIDS HMA PAVEMENT 460.2010	INCENTIVE DENSITY PWL HMA PAVEMENT 460.2005
12 FOOT DRIVING LANE	106+35 TO 705+75	LOWER LAYER	CIR HMA SURFACE	4 MT 58-28 S	15,575	1.75-INCHES		
PAVED SHOULDERS	106+35 TO 705+75	UPPER LAYER	4 MT 58-28 S	4 MT 58-28 S	4,705	1.75-INCHES		
PAVED SHOULDERS	106+35 TO 705+75	LOWER LAYER	CIR HMA SURFACE	4 MT 58-28 S	4,705	1.75-INCHES		ACCEPTANCE TESTING BY DEPARTMENT, NOT ELIGIBLE FOR INCENTIVE.
TURN LANES	VARIOUS	UPPER LAYER	4 MT 58-28 S	4 MT 58-28 S	2,070	1.75-INCHES		
TURN LANES	VARIOUS	LOWER LAYER	CIR HMA SURFACE	4 MT 58-28 S	2,070	1.75-INCHES		



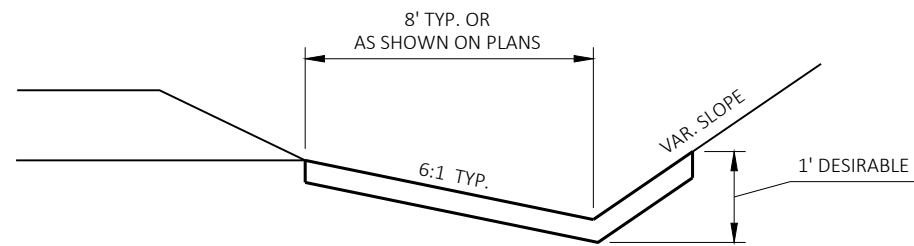
**SIDEROADS AND DRIVEWAYS
WITH CURB & GUTTER**



**SIDEROADS AND DRIVEWAYS
WITHOUT CURB & GUTTER**



BUTT JOINT

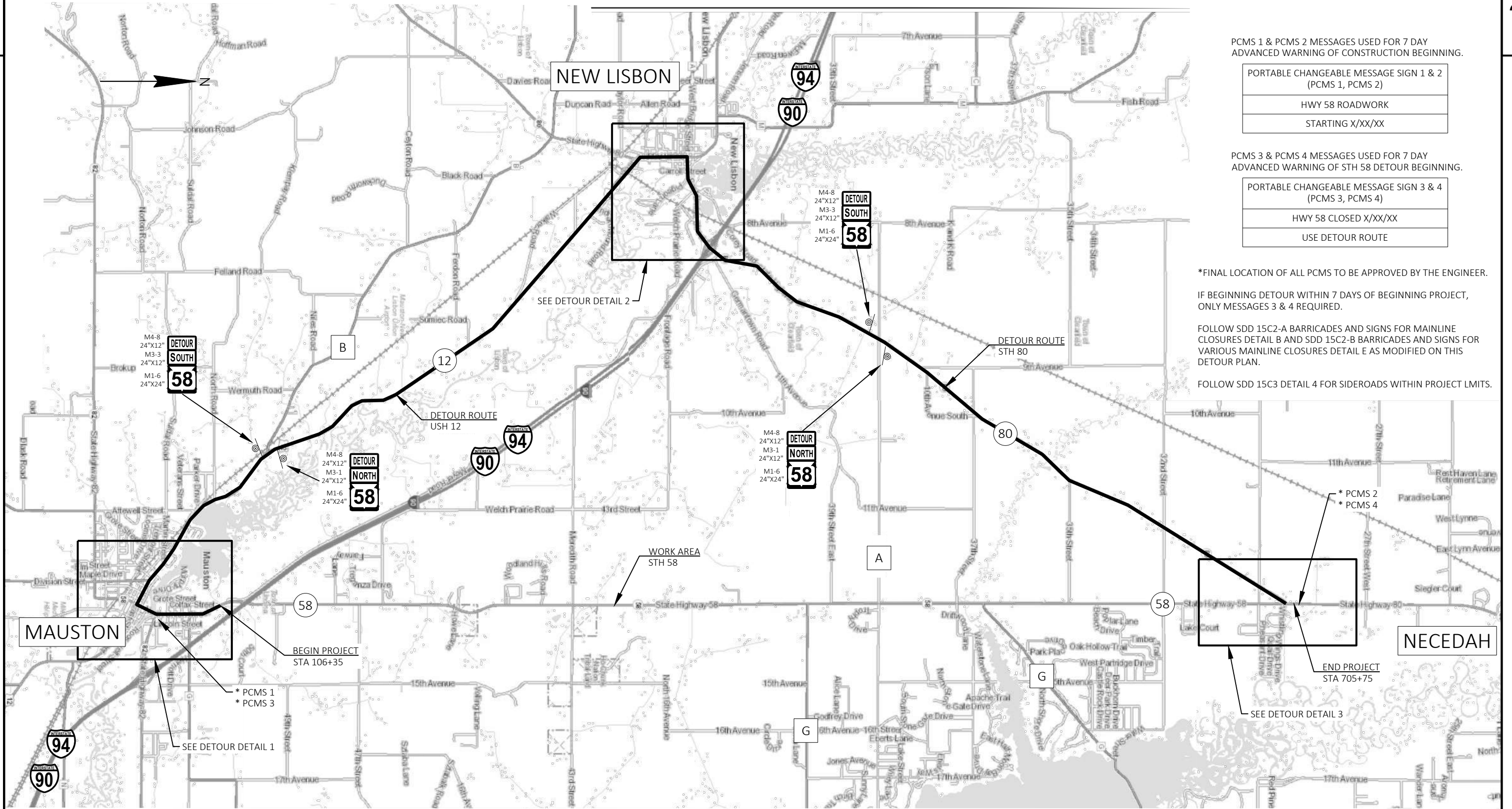


EROSION MAT DETAIL FOR DITCHES

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 = 69 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.54 ACRES



PCMS 1 & PCMS 2 MESSAGES USED FOR 7 DAY
ADVANCED WARNING OF CONSTRUCTION BEGINNING.

PORTABLE CHANGEABLE MESSAGE SIGN 1 & 2 (PCMS 1, PCMS 2)
HWY 58 ROADWORK
STARTING X/XX/XX

PCMS 3 & PCMS 4 MESSAGES USED FOR 7 DAY
ADVANCED WARNING OF STH 58 DETOUR BEGINNING.

PORTABLE CHANGEABLE MESSAGE SIGN 3 & 4 (PCMS 3, PCMS 4)
HWY 58 CLOSED X/XX/XX
USE DETOUR ROUTE

*FINAL LOCATION OF ALL PCMS TO BE APPROVED BY THE ENGINEER.

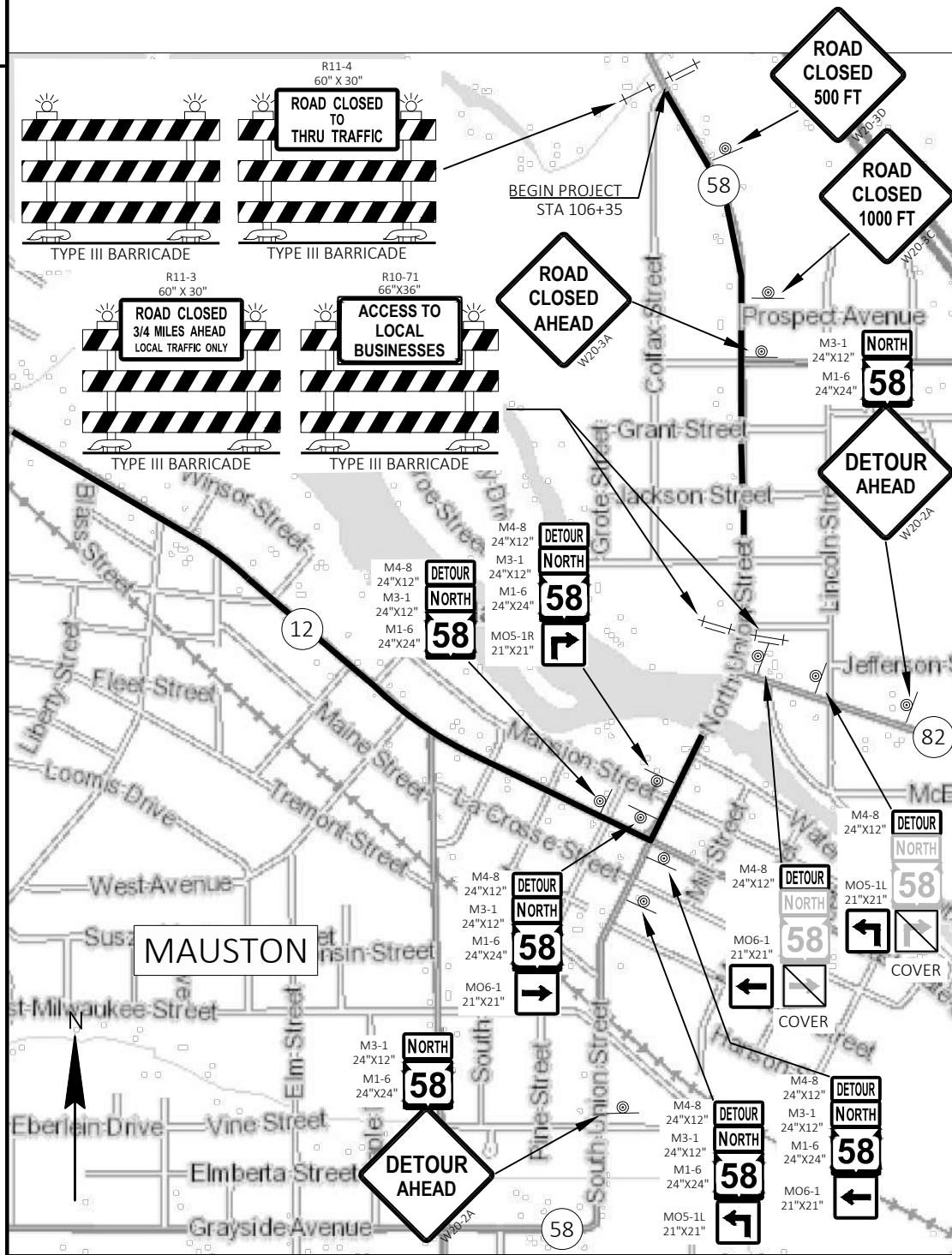
IF BEGINNING DETOUR WITHIN 7 DAYS OF BEGINNING PROJECT,
ONLY MESSAGES 3 & 4 REQUIRED.

FOLLOW SDD 15C2-A BARRICADES AND SIGNS FOR MAINLINE
CLOSURES DETAIL B AND SDD 15C2-B BARRICADES AND SIGNS FOR
VARIOUS MAINLINE CLOSURES DETAIL E AS MODIFIED ON THIS
DETOUR PLAN.

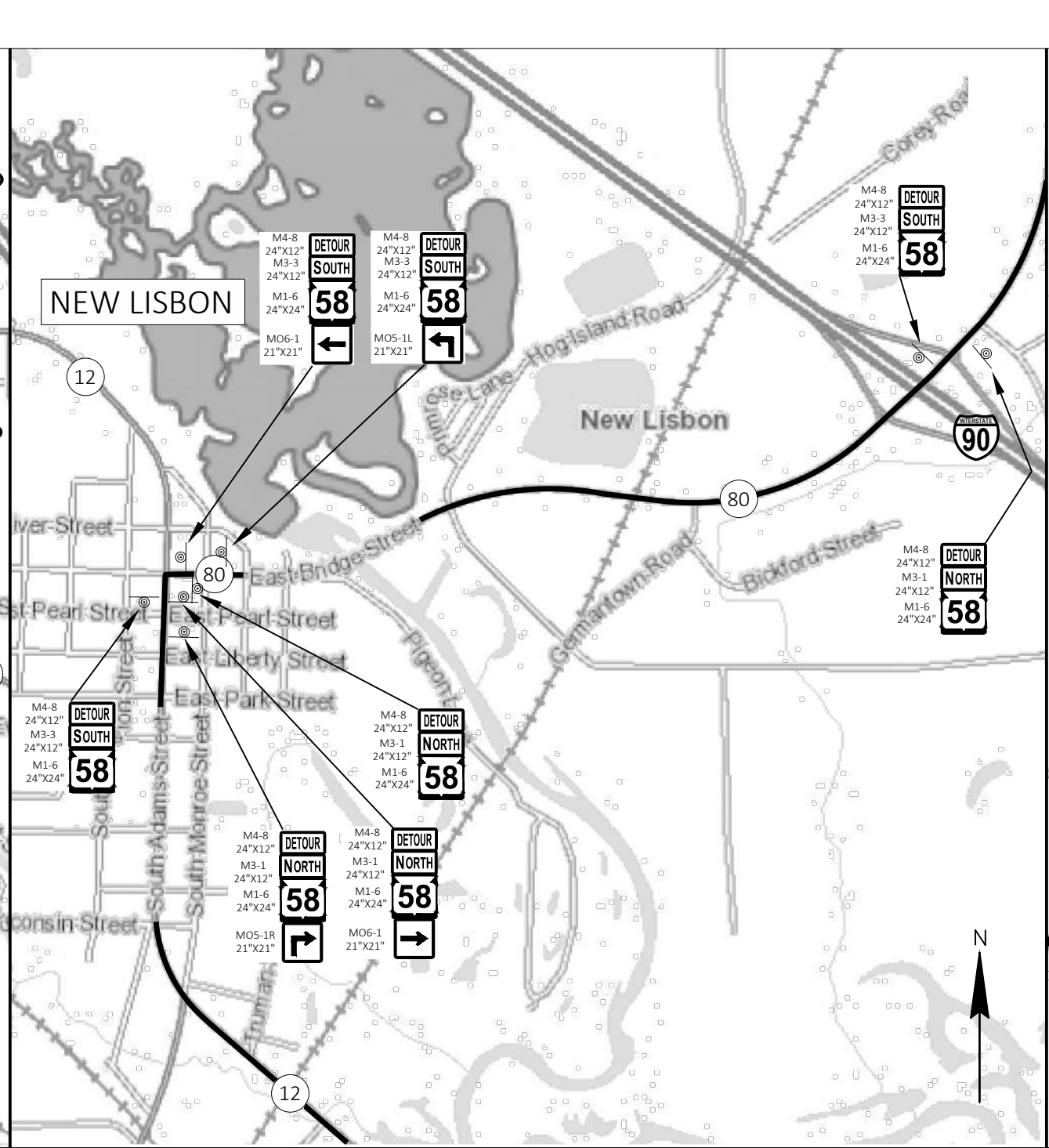
FOLLOW SDD 15C3 DETAIL 4 FOR SIDEROADS WITHIN PROJECT LIMITS.

* PCMS 2
* PCMS 4

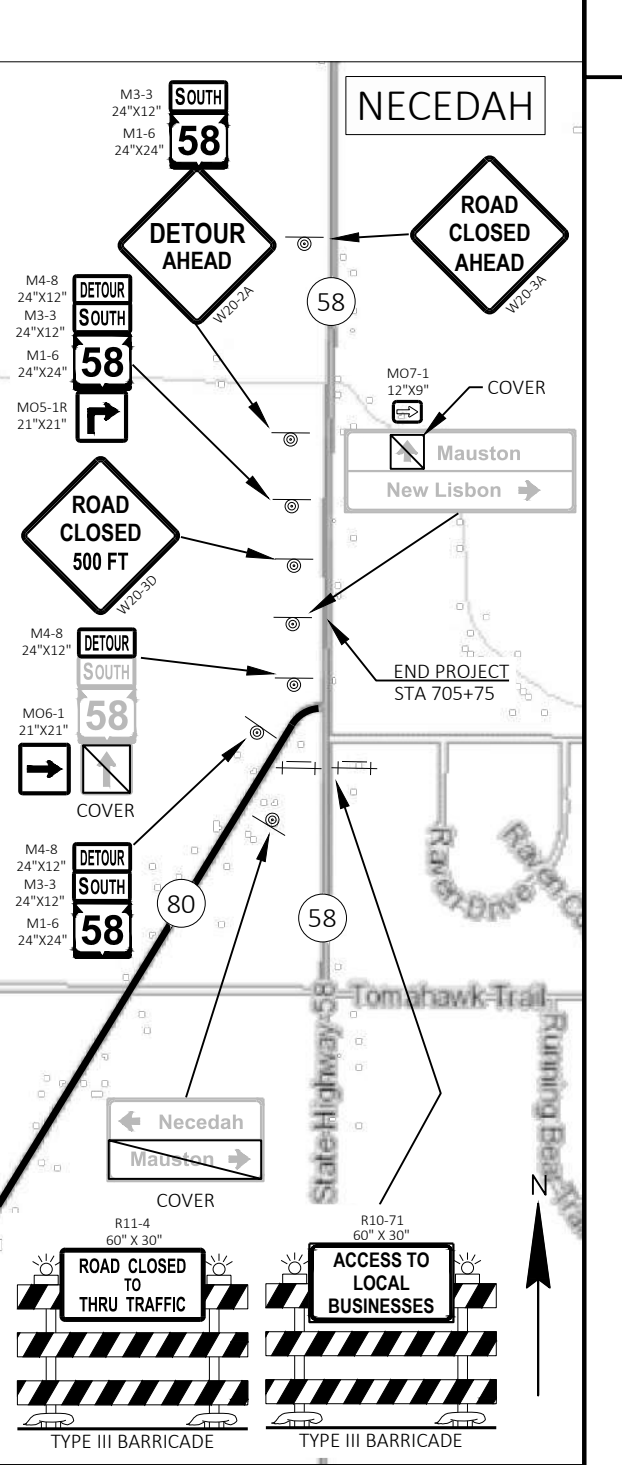
END PROJECT
STA 705+75



DETOUR DETAIL 1



DETOUR DETAIL 2



DETOUR DETAIL 3

PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	DETOUR PLAN	SHEET	E
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Estimate Of Quantities

6639-05-60

Line	Item	Item Description	Unit	Total	Qty
0002	203.0100	Removing Small Pipe Culverts	EACH	1.000	1.000
0004	204.0115	Removing Asphaltic Surface Butt Joints	SY	33.000	33.000
0006	204.0120	Removing Asphaltic Surface Milling	SY	205,850.000	205,850.000
0008	204.0165	Removing Guardrail	LF	2,394.000	2,394.000
0010	205.0100	Excavation Common	CY	100.000	100.000
0012	208.0100	Borrow	CY	423.000	423.000
0014	211.0700.S	Prepare Foundation for CIR Base Layer (project) 01. 6639-05-60	EACH	1.000	1.000
0016	211.0800.S	Base Repair for CIR Layer	CY	2,000.000	2,000.000
0018	213.0100	Finishing Roadway (project) 01. 6639-05-60	EACH	1.000	1.000
0020	305.0110	Base Aggregate Dense 3/4-Inch	TON	4,360.000	4,360.000
0022	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	125.000	125.000
0024	305.0500	Shaping Shoulders	STA	1,196.000	1,196.000
0026	327.1000.S	CIR Asphaltic Base Layer	SY	205,850.000	205,850.000
0028	455.0605	Tack Coat	GAL	22,820.000	22,820.000
0030	455.0770.S	Asphalt Stabilizing Agent	TON	1,211.000	1,211.000
0032	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	1.000	1.000
0034	460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH	2.000	2.000
0036	460.2005	Incentive Density PWL HMA Pavement	DOL	31,150.000	31,150.000
0038	460.2007	Incentive Density HMA Pavement Longitudinal Joints	DOL	23,840.000	23,840.000
0040	460.2010	Incentive Air Voids HMA Pavement	DOL	44,700.000	44,700.000
0042	460.6224	HMA Pavement 4 MT 58-28 S	TON	44,700.000	44,700.000
0044	465.0105	Asphaltic Surface	TON	17.000	17.000
0046	465.0425	Asphaltic Shoulder Rumble Strips 2-Lane Rural	LF	92,260.000	92,260.000
0048	465.0475	Asphalt Centerline Rumble Strips 2-Lane Rural	LF	49,000.000	49,000.000
0050	507.0200	Treated Lumber and Timber	MBM	0.100	0.100
0052	513.7051	Railing Steel Type W	LF	200.000	200.000
0054	520.8000	Concrete Collars for Pipe	EACH	1.000	1.000
0056	521.1235	Apron Endwalls for Pipe Arch Steel 35x24-Inch	EACH	2.000	2.000
0058	522.0124	Culvert Pipe Reinforced Concrete Class III 24-Inch	LF	56.000	56.000
0060	522.1024	Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch	EACH	3.000	3.000
0062	614.2300	MGS Guardrail 3	LF	1,850.000	1,850.000
0064	614.2310	MGS Guardrail 3 HS	LF	200.000	200.000
0066	614.2500	MGS Thrie Beam Transition	LF	158.000	158.000
0068	614.2610	MGS Guardrail Terminal EAT	EACH	8.000	8.000
0070	614.8010	Anchor Post Assembly Top Mount	EACH	16.000	16.000
0072	618.0100	Maintenance And Repair of Haul Roads (project) 01. 6639-05-60	EACH	1.000	1.000
0074	619.1000	Mobilization	EACH	1.000	1.000

Estimate Of Quantities

6639-05-60

Line	Item	Item Description	Unit	Total	Qty
0076	624.0100	Water	MGAL	5.000	5.000
0078	625.0500	Salvaged Topsoil	SY	2,600.000	2,600.000
0080	627.0200	Mulching	SY	360.000	360.000
0082	628.1504	Silt Fence	LF	2,470.000	2,470.000
0084	628.1520	Silt Fence Maintenance	LF	2,470.000	2,470.000
0086	628.1905	Mobilizations Erosion Control	EACH	2.000	2.000
0088	628.1910	Mobilizations Emergency Erosion Control	EACH	1.000	1.000
0090	628.2004	Erosion Mat Class I Type B	SY	2,250.000	2,250.000
0092	628.7504	Temporary Ditch Checks	LF	50.000	50.000
0094	628.7555	Culvert Pipe Checks	EACH	15.000	15.000
0096	629.0210	Fertilizer Type B	CWT	2.000	2.000
0098	630.0120	Seeding Mixture No. 20	LB	76.000	76.000
0100	630.0500	Seed Water	MGAL	64.000	64.000
0102	633.5200	Markers Culvert End	EACH	4.000	4.000
0104	638.2102	Moving Signs Type II	EACH	9.000	9.000
0106	638.4000	Moving Small Sign Supports	EACH	9.000	9.000
0108	642.5201	Field Office Type C	EACH	1.000	1.000
0110	643.0300	Traffic Control Drums	DAY	1,820.000	1,820.000
0112	643.0420	Traffic Control Barricades Type III	DAY	2,268.000	2,268.000
0114	643.0705	Traffic Control Warning Lights Type A	DAY	4,536.000	4,536.000
0116	643.0900	Traffic Control Signs	DAY	8,752.000	8,752.000
0118	643.0920	Traffic Control Covering Signs Type II	EACH	5.000	5.000
0120	643.1050	Traffic Control Signs PCMS	DAY	42.000	42.000
0122	643.5000	Traffic Control	EACH	1.000	1.000
0124	645.0105	Geotextile Type C	SY	56.000	56.000
0126	646.1020	Marking Line Epoxy 4-Inch	LF	33,450.000	33,450.000
0128	646.1040	Marking Line Grooved Wet Ref Epoxy 4-Inch	LF	115,650.000	115,650.000
0130	646.3040	Marking Line Grooved Wet Ref Epoxy 8-Inch	LF	910.000	910.000
0132	646.4520	Marking Line Same Day Epoxy 4-Inch	LF	33,450.000	33,450.000
0134	648.0100	Locating No-Passing Zones	MI	11.300	11.300
0136	649.0105	Temporary Marking Line Paint 4-Inch	LF	48,600.000	48,600.000
0138	650.6000	Construction Staking Pipe Culverts	EACH	1.000	1.000
0140	650.8000	Construction Staking Resurfacing Reference	LF	59,588.000	59,588.000
0142	650.9910	Construction Staking Supplemental Control (project) 01. 6639-05-60	LS	1.000	1.000
0144	650.9920	Construction Staking Slope Stakes	LF	773.000	773.000
0146	690.0150	Sawing Asphalt	LF	503.000	503.000
0148	740.0440	Incentive IRI Ride	DOL	45,230.000	45,230.000
0150	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	2,400.000	2,400.000
0152	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	2,160.000	2,160.000

Estimate Of Quantities

0154	SPV.0035	Special 01. Removing Excess Shoulder Material	CY	4,985.000	6639-05-60 4,985.000
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CATEGORY	STATION	LOCATION	203.0100 REMOVING SMALL PIPE CULVERTS EACH	REMARKS
0010	133+26	ML	1	50 LF, 24-IN CPRC
TOTAL 0010			1	

CATEGORY	STATION TO	STATION	LOCATION	204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS SY	REMARKS
0010	106+35 -	106+37	ML	9	BEGIN PROJECT
0010	119+17 -	119+19	ML	8	B-29-038
0010	122+71 -	122+73	ML	8	B-29-038
0010	705+73 -	705+75	ML	8	END PROJECT
TOTAL 0010				33	

CATEGORY	STATION TO	STATION	LOCATION	204.0120 REMOVING ASPHALTIC SURFACE MILLING SY
0010	106+35 -	119+19	ML	5,050
0010	122+71 -	705+75	ML	200,800
TOTAL 0010				205,850

3

Division	From/To Station	Location	205.0100 Common Excavation	Salvaged/Unusable Pavement Material (2)	Available Material (3)	Unexpanded Fill	Expanded Fill (4)	Mass Ordinate +/- (5)	208.0100 Borrow
			Cut (1)				Factor 1.25		
Division 1									
STH 58	114+24 - 115+68	South of B-29-038	0	0	0	25	31	-31	31
Division 1 Subtotal			0	0	0	25	31	-31	31
Division 2									
STH 58	126+69 - 128+74	North of B-29-038	0	0	0	62	78	-78	78
Division 2 Subtotal			0	0	0	62	78	-78	78
Division 3									
STH 58 (6)	521+25 - 528+00 523+63 - 524+13	B-29-089 B-29-089 Guardrail	0 100	0 6	0 94	251 0	314 0	-314 0	314 0
Division 3 Subtotal			100	6	94	251	314	-314	314
Grand Total			100	6	94	338	423	-423	423

Notes:

- (1) Salvaged/Unusable Pavement Material is included in Cut.
 - (2) Salvaged/Unusable Pavement Material
 - (3) Available Material = Cut - Salvaged/Unusable Pavement Material
 - (4) Expanded Fill Factor = 1.25
 - (5) The Mass Ordinate + or - Qty calculated for the Division. Plus quantity indicates an excess of material within the Division. Minus indicates a shortage of material within the Division.
 - (6) Calculated common excavation required for removal and replacement of guardrail over B-29-089 box culvert based upon construction detail. Quantity not shown in computer earthwork data.
- Use Base Aggregate Dense 1 1/4-Inch material if additional material is required for guardrail replacement or if this excavation is found to be unsuitable.

CATEGORY	STATION TO	STATION	LOCATION	204.0165 REMOVING GUARDRAIL LF
0010	114+95 -	119+55	LT	458
0010	115+08 -	119+02	RT	408
0010	122+34 -	128+52	RT	620
0010	122+66 -	127+25	LT	458
0010	522+75 -	525+05	RT	225
0010	522+76 -	525+06	LT	225
TOTAL 0010				2,394

CATEGORY	LOCATION	EACH	211.0700.S.01 PREPARE FOUNDATION FOR CIR BASE LAYER (PROJECT) (6639-05-60) CY	211.0800.S BASE REPAIR FOR CIR PAVEMENT CY
0010	PROJECT	1	2,000	
TOTAL 0010			1	2,000

CATEGORY	STATION TO	STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	REMARKS
0020	106+35 -	114+38	ML	120	BOP TO GUARDRAIL
0020	114+38 -	129+95	ML	250	GUARDRAIL WIDENING
0020	129+95 -	304+25	ML	1,170	GUARDRAIL TO MEREDITH/43RD ST
0020	304+25 -	474+25	ML	1,140	MEREDITH/43RD ST TO CTH A/38TH ST
0020	474+25 -	517+50	ML	300	CTH A/38TH ST TO 37TH ST
0020	517+50 -	521+44	ML	30	37TH ST TO GUARDRAIL
0020	521+44 -	528+05	ML	140	GUARDRAIL WIDENING
0020	528+05 -	632+25	ML	730	GUARDRAIL TO 32ND ST
0020	632+25 -	705+75	ML	480	32ND ST TO EOP
TOTAL 0020				4,360	

CATEGORY	STATION TO	STATION	LOCATION	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON	REMARKS
0010	133+16 -	133+36	ML	60	CULVERT PIPE REPLACEMENT
0010	523+75 -	524+01	RT	15	B-29-089 GUARDRAIL REPLACEMENT
0010	114+38 -	129+95	ML	25	GUARDRAIL WIDENING
0010	521+44 -	528+05	ML	25	GUARDRAIL WIDENING
TOTAL 0010				125	

CATEGORY	STATION TO	STATION	LOCATION	305.0500 SHAPING SHOULDERS STA
0020	106+35 -	119+19	LT & RT	28
0020	122+71 -	705+75	LT & RT	1,168
TOTAL 0020				1,196

PROJECT NO: 6639-05-60

HWY: STH 58

COUNTY: JUNEAU

MISCELLANEOUS QUANTITIES

SHEET

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CATEGORY	STATION TO	STATION	LOCATION	327.1000.S CIR ASPHALTIC PAVEMENT SY	455.0770.S ASPHALT STABILIZING AGENT TON
0010	106+35 -	119+19	ML	5,050	30
0010	122+71 -	705+75	ML	200,800	1,181
TOTAL 0010				205,850	1,211

CATEGORY	LOCATION	460.0105.S HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP VOLUMETRICS EACH	460.0110.S HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP DENSITY EACH
0010	PROJECT	1	2
TOTAL 0010		1	2

CATEGORY	STATION TO	STATION	LOCATION	465.0425 ASPHALTIC SHOULDER RUMBLE STRIPS 2-LANE RURAL LF	465.0475 ASPHALT CENTERLINE RUMBLE STRIPS 2-LANE RURAL LF	REMARKS
0010	137+00 -	705+75	CL	-	49,000	-
TOTAL 0010				0	49,000	
0020	137+00 -	705+75	LT	44,090	-	TYPE 1
0020	137+00 -	705+75	RT	48,170	-	TYPE 1
TOTAL 0020				92,260	0	
PROJECT TOTAL				92260	49000	

CATEGORY	STATION TO	STATION	LOCATION	507.0200 TREATED LUMBER AND TIMBER MBM	513.7051 RAILING STEEL TYPE W LF	REMARKS
0010	523+63 -	524+13	RT	0.1	100	B-29-89
0010	523+63 -	524+13	LT	-	100	B-29-89
TOTAL 0010				0.1	200	

2-INCH X
10-INCH

CATEGORY	STATION TO	STATION	LOCATION	455.0605 TACK COAT GAL	460.6224 HMA PAVEMENT 4 MT 58-28 S TON	465.0105 ASPHALTIC SURFACE TON	REMARKS
0010	133+16 -	133+36	ML	5	-	15	CULVERT PIPE REPLACEMENT
0010	106+35 -	119+19	ML	505	1,000	-	-
0010	122+71 -	705+75	ML	20,100	39,400	-	-
0010	523+75 -	524+01	RT	-	-	2	B-29-089 SNOWMOBILE PATH
TOTAL 0010				20,610	40,400	17	
0020	171+07 -	304+25	LT & RT	570	1,110	-	FAIRWAY LN TO MEREDITH/43RD ST
0020	304+25 -	474+25	LT & RT	710	1,390	-	MEREDITH/43RD ST TO CTH A/38TH ST
0020	474+25 -	532+25	LT & RT	210	400	-	CTH A/38TH ST TO CTH G N
0020	532+25 -	632+25	LT & RT	420	820	-	CTH G N TO 32ND ST
0020	632+25 -	705+75	LT & RT	300	580	-	32ND ST TO EOP
TOTAL 0020				2,210	4,300	0	
PROJECT TOTAL				22820	44700	17	

CATEGORY	STATION	LOCATION	520.8000 CONCRETE COLLARS FOR PIPE EACH	521.1235 APRON ENDWALLS FOR PIPE ARCH STEEL 35X24-INCH EACH	522.0124 CULVERT PIPE REINFORCED CONCRETE CLASS III 24-INCH LF	522.1024 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 24-INCH EACH
0010	127+14	LT	1	-	6	1
0010	133+26	ML	-	-	50	2
0010	701+57	LT & RT	-	2	-	-
TOTAL 0010			1	2	56	3

CATEGORY	STATION TO	STATION	LOCATION	614.2300 MGS GUARDRAIL 3 LF	614.2310 MGS GUARDRAIL 3 HS LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH	614.8010 ANCHOR POST ASSEMBLY TOP MOUNT EACH	REMARKS
0010	115+14 -	119+54	LT	350	-	39.5	1	-	-
0010	115+15 -	119+22	RT	312.5	-	39.5	1	-	-
0010	122+34 -	128+74	RT	550	-	39.5	1	-	-
0010	122+66 -	127+22	LT	362.5	-	39.5	1	-	-
0010	522+45 -	525+14	RT	62.5	100	-	2	8	STEEL POSTS REQUIRED
0010	522+65 -	526+84	LT	212.5	100	-	2	8	STEEL POSTS REQUIRED
TOTAL 0010				1,850	200	158	8	16	

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CATEGORY	LOCATION	624.0100 WATER MGAL	REMARKS
0010	PROJECT	5	BASE COMPACTION & DUST CONTROL
TOTAL 0010		5	

CATEGORY	STATION TO	STATION	LOCATION	625.0500 SALVAGED TOPSOIL SY	627.0200 MULCHING SY	628.2004 EROSION MAT CLASS I TYPE B SY	628.7504 TEMPORARY DITCH CHECKS LF	628.7555 CULVERT PIPE CHECKS EACH	629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING MIXTURE NO. 20 LB	630.0500 SEED WATER MGAL
0010	114+00	- 115+69	RT	200	200	-	-	-	0.2	6	5
0010	115+42	- 115+70	LT	20	20	-	-	-	0.1	1	1
0010	126+65	- 127+22	LT	150	-	150	-	-	0.1	5	4
0010	128+20	- 128+74	RT	90	90	-	-	-	0.1	3	3
0010	133+26		RT	130	-	130	-	5	0.1	4	3
0010	521+24	- 523+75	RT	310	-	310	-	-	0.2	9	7
0010	521+24	- 528+05	LT	700	-	700	-	-	0.4	19	16
0010	524+01	- 528+17	RT	560	-	560	-	-	0.4	16	13
0010	701+57		LT	100	-	100	-	7	0.1	3	3
0010	UNDISTRIBUTED			340	50	300	50	3	0.3	10	9
TOTAL 0010				2,600	360	2,250	50	15	2.0	76	64

CATEGORY	STATION TO	STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF
0010	113+90	- 116+10	RT	220	220
0010	114+95	- 116+05	LT	120	120
0010	126+25	- 127+25	LT	100	100
0010	128+10	- 128+50	RT	50	50
0010	133+05	- 133+45	LT	40	40
0010	521+00	- 523+60	RT	270	270
0010	521+00	- 523+60	LT	270	270
0010	524+20	- 528+50	RT	430	430
0010	524+20	- 528+50	LT	430	430
0010	701+30	- 701+80	RT	50	50
0010	UNDISTRIBUTED			490	490
TOTAL 0010				2,470	2,470

CATEGORY	LOCATION	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH	633.5200 MARKERS CULVERT END EACH
0010	PROJECT	2	1	
TOTAL 0010		2	1	

CATEGORY	STATION	LOCATION	EACH
0010	133+26	RT & LT	2
0010	701+57	RT & LT	2
TOTAL 0010			4

CATEGORY	LOCATION	638.2102 MOVING SIGNS TYPE II EACH	638.4000 MOVING SMALL SIGN SUPPORTS EACH	REMARKS
0010	PROJECT	9	9	NO PASSING ZONE
TOTAL 0010		9	9	

CATEGORY	LOCATION	643.0300 TRAFFIC CONTROL DRUMS DAY	643.0420 TRAFFIC CONTROL BARRICADES TYPE III DAY	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A DAY	643.0900 TRAFFIC CONTROL SIGNS DAY	643.0920 TRAFFIC CONTROL COVERING SIGNS TYPE II EACH	643.1050 TRAFFIC CONTROL SIGNS PCMS DAY	643.5000 TRAFFIC CONTROL EACH
0010	PROJECT	1,820	-	-	2,200	-	14	1
0010	DETOUR	-	2,268	4,536	6,552	5	28	-
TOTAL 0010		1,820	2,268	4,536	8,752	5	42	1

1 CYCLE

3

3

645.0105
GEOTEXTILE
TYPE C

CATEGORY	STATION TO	STATION	LOCATION	SY	REMARKS
0010	523+63 -	524+13	RT	28	TYPE W RAIL
0010	523+63 -	524+13	LT	28	TYPE W RAIL
TOTAL 0010				56	

648.0100
LOCATING NO-
PASSING ZONES

CATEGORY	LOCATION	MI
0010	PROJECT	11.3
TOTAL 0010		11.3

646.1020 646.1040 646.3040 646.4520 649.0105

MARKING LINE MARKING LINE MARKING LINE MARKING LINE TEMPORARY

GROOVED WET GROOVED WET GROOVED WET GROOVED WET MARKING LINE

MARKING LINE REF EPOXY REF EPOXY SAME DAY MARKING LINE

EPOXY 4-INCH 4-INCH 8-INCH EPOXY 4-INCH PAINT 4-INCH

CATEGORY	STATION TO	STATION	LOCATION	LF	LF	LF	LF	LF	REMARKS
0010	106+35 -	705+75	CL	-	-	-	-	24,300	CIR LAYER
0010	106+35 -	705+75	CL	-	-	-	-	24,300	LOWER LAYER
0010	106+35 -	705+75	CL	-	-	-	33,450	-	STH 58 YELLOW CENTERLINE
0010	106+35 -	705+75	LT	-	58,000	-	-	-	STH 58 WHITE EDGE LINE
0010	106+35 -	705+75	RT	-	57,650	-	-	-	STH 58 WHITE EDGE LINE
0010	137+00 -	704+75	CL	33,450	-	-	-	-	STH 58 CENTERLINE AFTER RUMBLES
0010	472+43 -	473+43	RT	-	-	100	-	-	RIGHT TURN LANE
0010	474+94 -	475+94	LT	-	-	100	-	-	RIGHT TURN LANE
0010	528+17 -	531+67	RT	-	-	350	-	-	RIGHT TURN LANE
0010	700+95 -	704+45	LT	-	-	360	-	-	RIGHT TURN LANE
TOTAL 0010				33,450	115,650	910	33,450	48,600	

690.0150
SAWING
ASPHALT

CATEGORY	STATION TO	STATION	LOCATION	LF
0010	106+35		RT	5
0010	133+16		ML	34
0010	133+36		ML	34
0010	429+04 -	430+79	RT	180
0010	433+79 -	435+93	RT	220
0010	705+75		ML	30
TOTAL 0010				503

650.6000 650.8000 650.9910.01 650.9920

CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION

STAKING STAKING SUPPLEMENTAL STAKING

CONSTRUCTION CONSTRUCTION CONTROL CONSTRUCTION

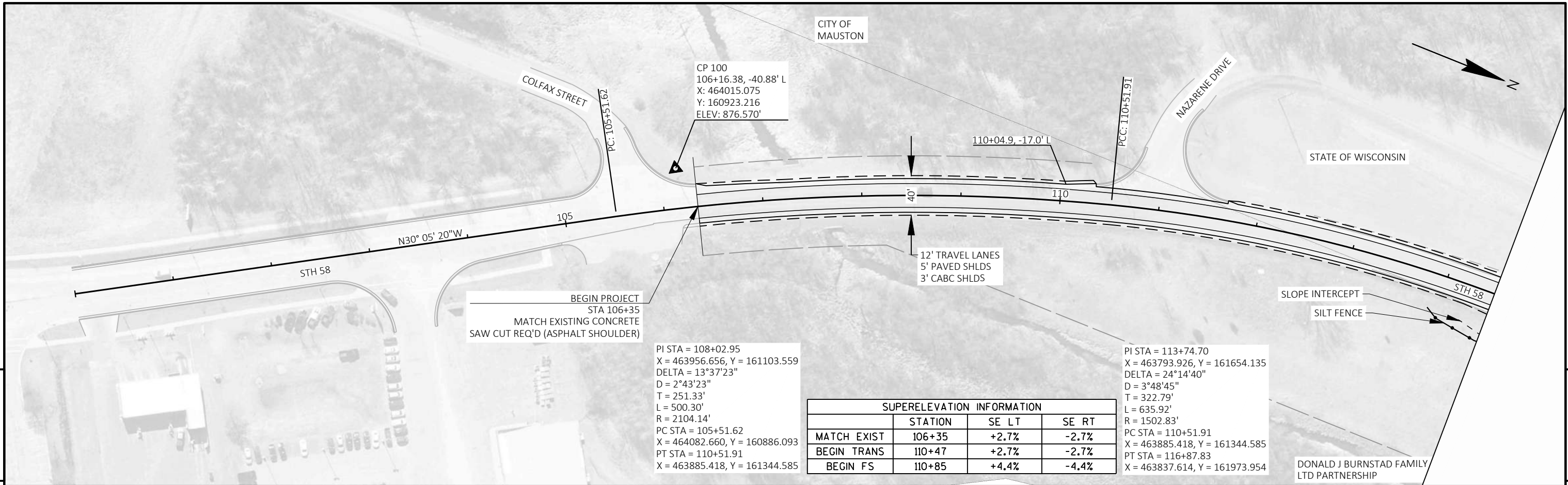
STAKING PIPE RESURFACING (PROJECT) (01. STAKING SLOPE

CULVERTS REFERENCE 6639-05-60) STAKES

CATEGORY	STATION TO	STATION	LOCATION	EACH	LF	LS	LF
0010	133+25		ML	1	-	-	-
0010	106+35 -	705+75	ML	-	59,588	-	-
0010	114+23 -	115+68	RT & LT	-	-	-	145
0010	126+75 -	127+25	LT	-	-	-	50
0010	128+25 -	128+84	RT & LT	-	-	-	59
0010	521+24 -	523+18	RT & LT	-	-	-	194
0010	524+80 -	528+05	RT & LT	-	-	-	325
0010		PROJECT		-	-	1	-
TOTAL 0010				1	59,588	1	773

SPV.0035.01
SPECIAL (01.
REMOVING
EXCESS
SHOULDER
MATERIAL)

CATEGORY	STATION TO	STATION	LOCATION	CY	REMARKS
0020	171+07 -	304+25	ML	1200	FAIRWAY TO MEREDITH/43RD ST
0020	304+25 -	474+25	ML	1600	MEREDITH/43RD ST TO CTH A/38TH ST
0020	474+25 -	517+50	ML	410	CTH A/38TH ST TO 37TH ST
0020	517+50 -	521+44	ML	35	37TH ST TO GUARDRAIL
0020	521+44 -	528+05	ML	60	GUARDRAIL WIDENING
0020	528+05 -	632+25	ML	1000	GUARDRAIL TO 32ND ST
0020	632+25 -	705+75	ML	680	32ND ST TO EOP
TOTAL 0020				4,985	



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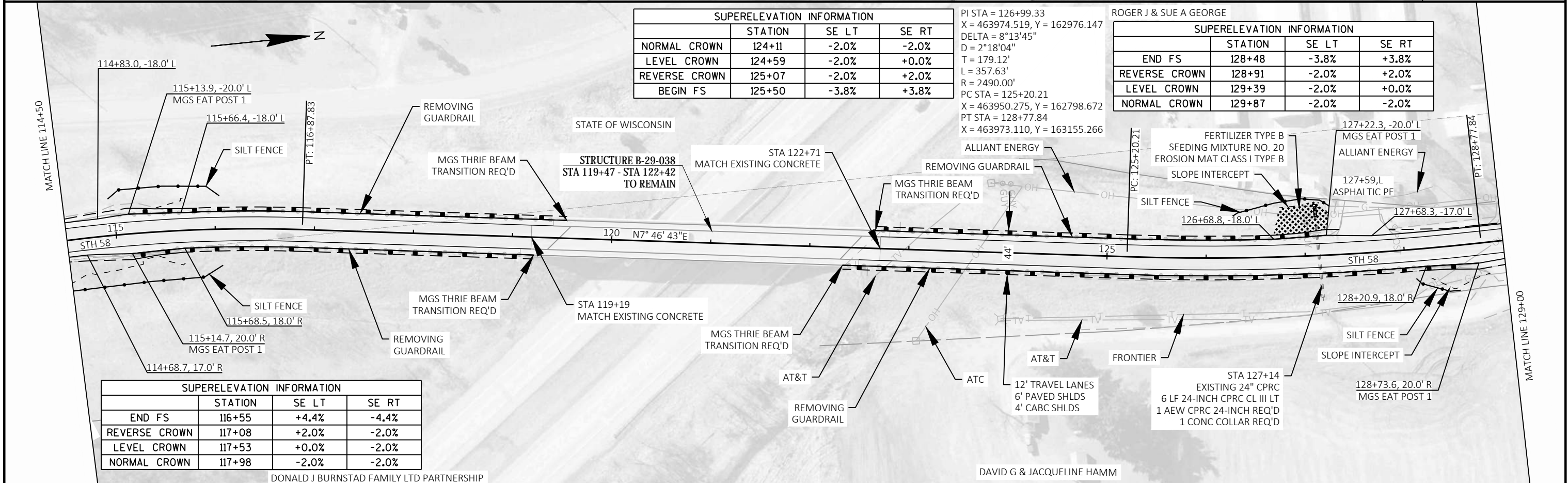
BEGIN PROJECT
STA 106+35
MATCH EXISTING CONCRETE
SAW CUT REQ'D (ASPHALT SHOULDER)

PI STA = 108+02.95
X = 463956.656, Y = 161103.559
DELTA = 13°37'23"
D = 2°43'23"
T = 251.33'
L = 500.30'
R = 2104.14'
PC STA = 105+51.62
X = 464082.660, Y = 160886.093
PT STA = 110+51.91
X = 463885.418, Y = 161344.585

SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
MATCH EXIST	106+35	+2.7%	-2.7%
BEGIN TRANS	110+47	+2.7%	-2.7%
BEGIN FS	110+85	+4.4%	-4.4%

PI STA = 113+74.70
X = 463793.926, Y = 161654.135
DELTA = 24°14'40"
D = 3°48'45"
T = 322.79'
L = 635.92'
R = 1502.83'
PC STA = 110+51.91
X = 463885.418, Y = 161344.585
PT STA = 116+87.83
X = 463837.614, Y = 161973.954

DONALD J BURNSTAD FAMILY LTD PARTNERSHIP



SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
NORMAL CROWN	124+11	-2.0%	-2.0%
LEVEL CROWN	124+59	-2.0%	+0.0%
REVERSE CROWN	125+07	-2.0%	+2.0%
BEGIN FS	125+50	-3.8%	+3.8%

PI STA = 126+99.33
X = 463974.519, Y = 162976.147
DELTA = 8°13'45"
D = 2°18'04"
T = 179.12'
L = 357.63'
R = 2490.00'
PC STA = 125+20.21
X = 463950.275, Y = 162798.672
PT STA = 128+77.84
X = 463973.110, Y = 163155.266

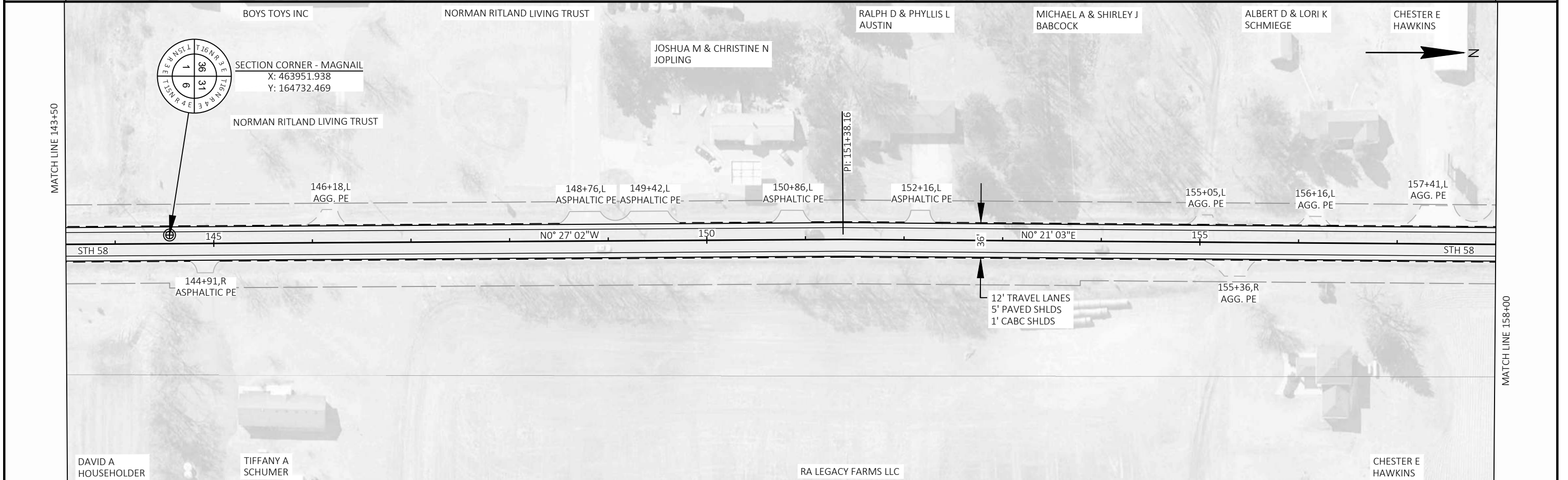
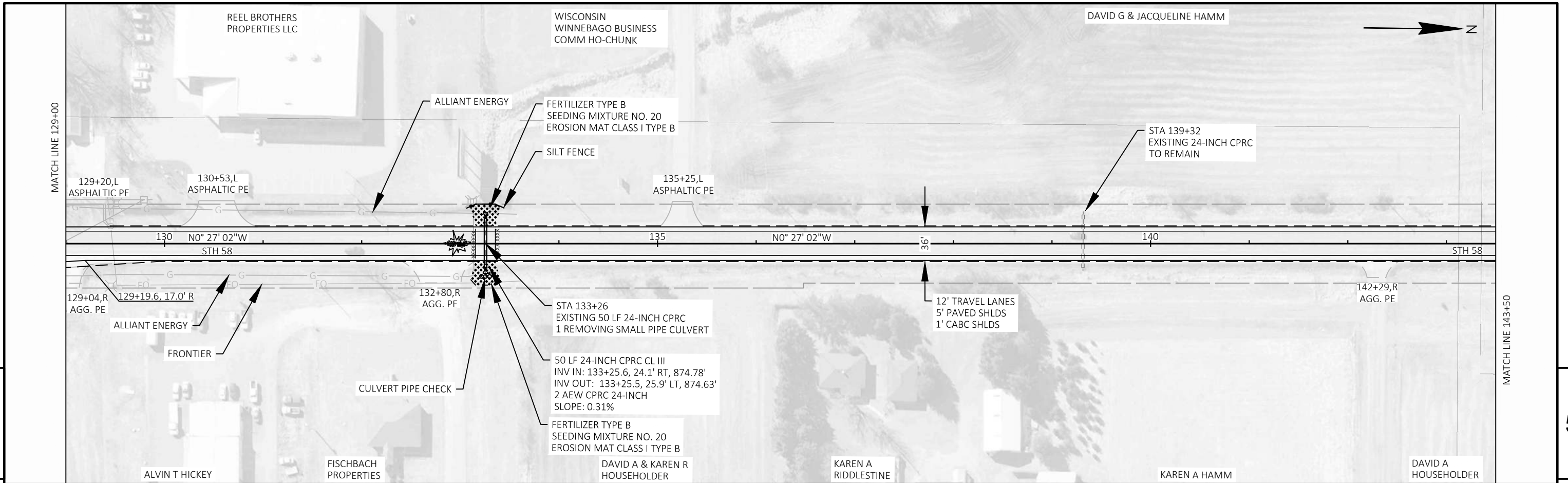
SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
END FS	128+48	-3.8%	+3.8%
REVERSE CROWN	128+91	-2.0%	+2.0%
LEVEL CROWN	129+39	-2.0%	+0.0%
NORMAL CROWN	129+87	-2.0%	-2.0%

ROGER J & SUE A GEORGE

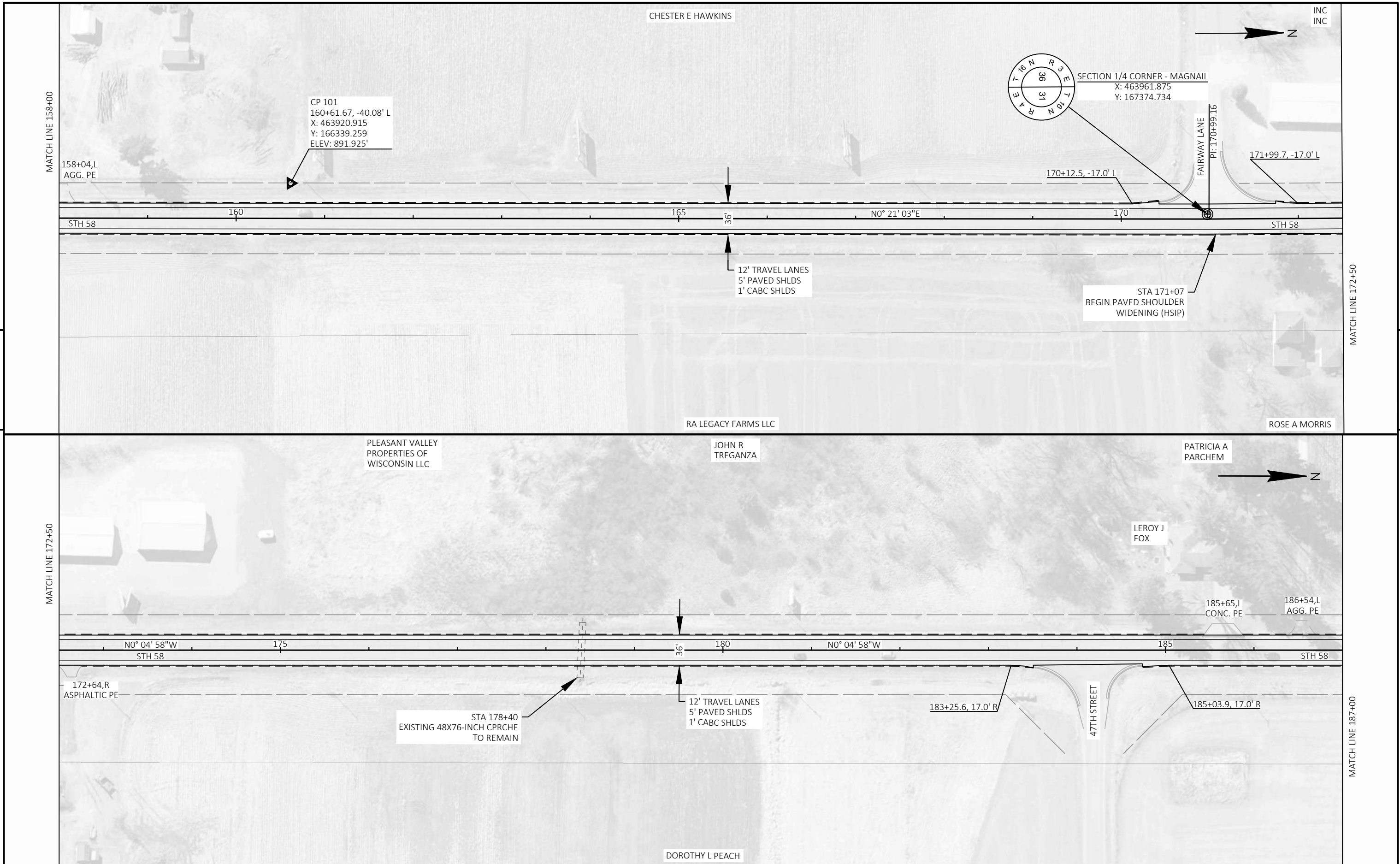
SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
END FS	116+55	+4.4%	-4.4%
REVERSE CROWN	117+08	+2.0%	-2.0%
LEVEL CROWN	117+53	+0.0%	-2.0%
NORMAL CROWN	117+98	-2.0%	-2.0%

DONALD J BURNSTAD FAMILY LTD PARTNERSHIP

DAVID G & JACQUELINE HAMM



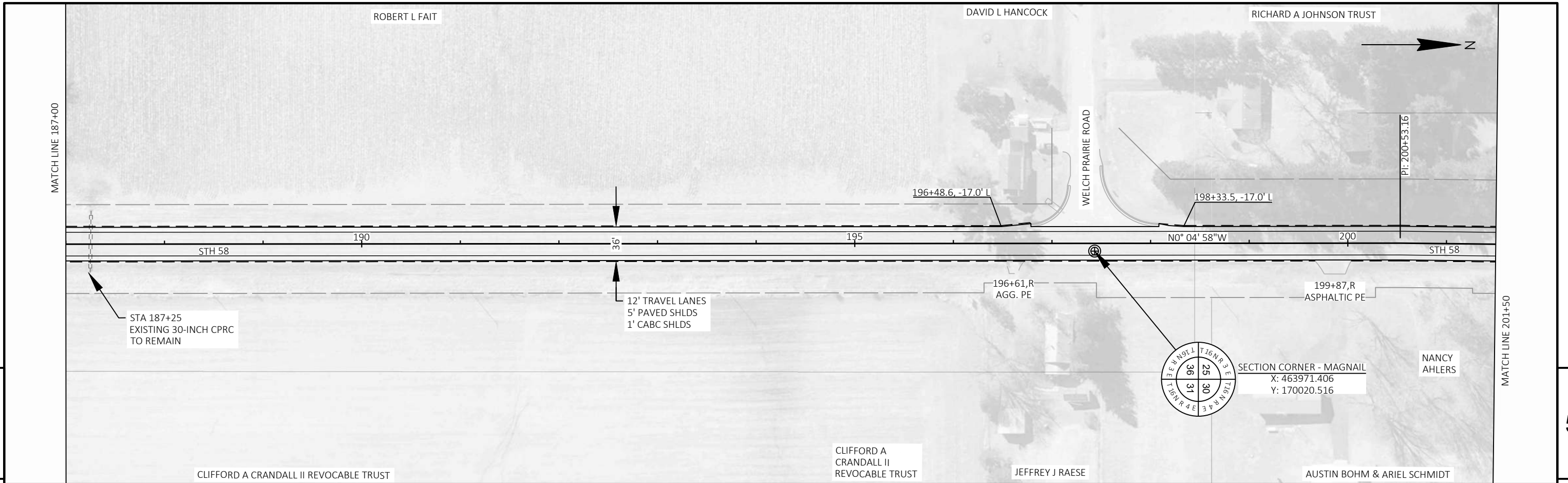
PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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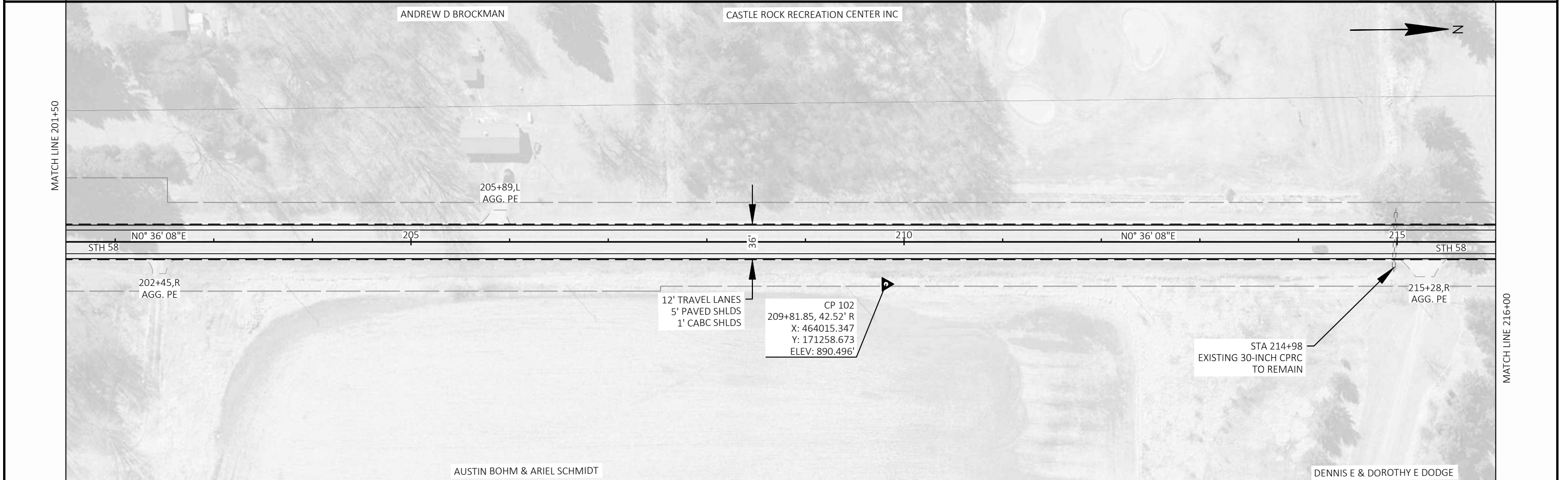
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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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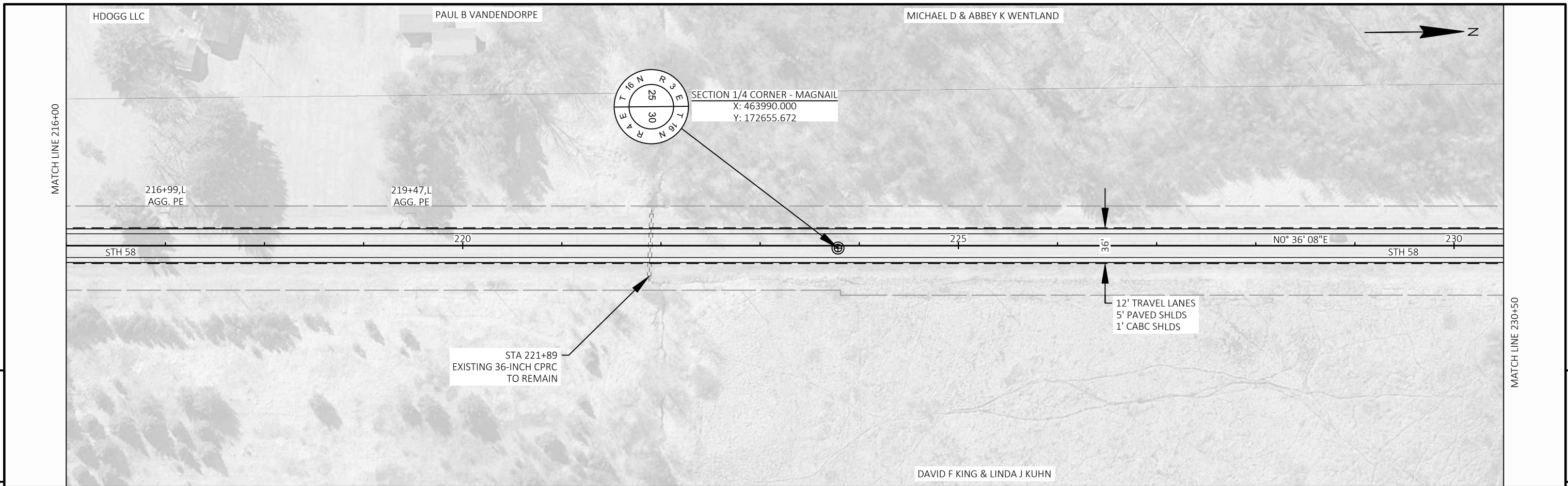


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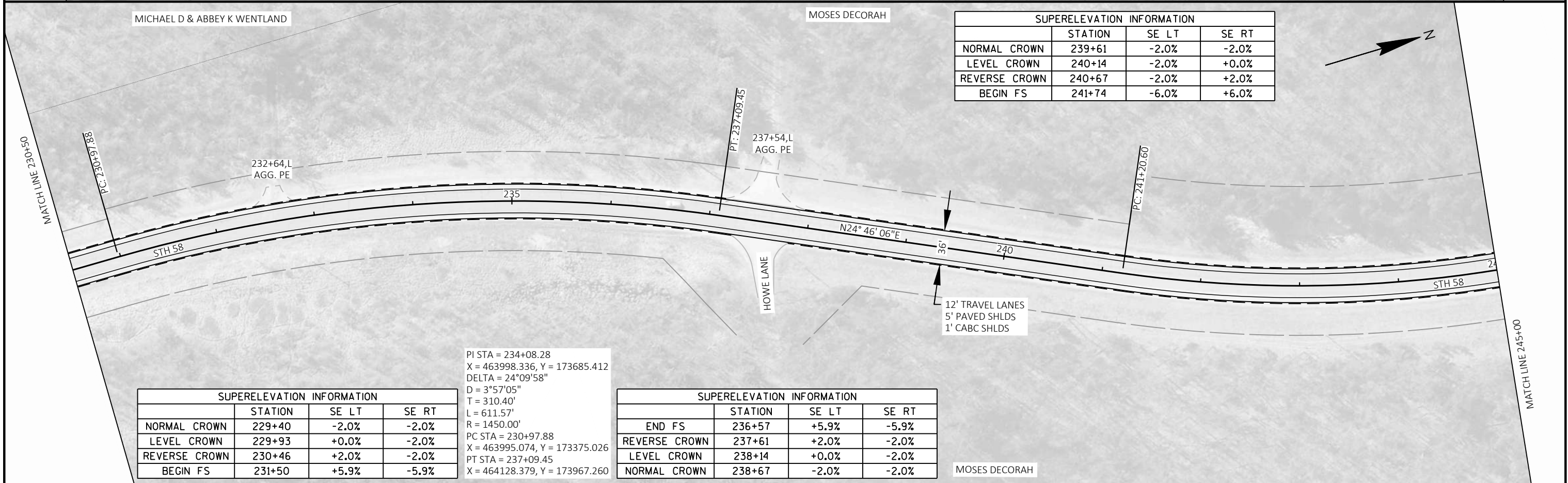


PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
NORMAL CROWN	239+61	-2.0%	-2.0%
LEVEL CROWN	240+14	-2.0%	+0.0%
REVERSE CROWN	240+67	-2.0%	+2.0%
BEGIN FS	241+74	-6.0%	+6.0%

PI STA = 234+08.28
 X = 463998.336, Y = 173685.412
 DELTA = 24°09'58"
 D = 3°57'05"
 T = 310.40'
 L = 611.57'
 R = 1450.00'
 PC STA = 230+97.88
 X = 463995.074, Y = 173375.026
 PT STA = 237+09.45
 X = 464128.379, Y = 173967.260

SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
NORMAL CROWN	229+40	-2.0%	-2.0%
LEVEL CROWN	229+93	+0.0%	-2.0%
REVERSE CROWN	230+46	+2.0%	-2.0%
BEGIN FS	231+50	+5.9%	-5.9%

SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
END FS	236+57	+5.9%	-5.9%
REVERSE CROWN	237+61	+2.0%	-2.0%
LEVEL CROWN	238+14	+0.0%	-2.0%
NORMAL CROWN	238+67	-2.0%	-2.0%

PI STA = 246+79.20
 X = 464534.654, Y = 174847.802
 DELTA = 47°49'08"
 D = 4°32'50"
 T = 558.60'
 L = 1051.59'
 R = 1260.00'
 PC STA = 241+20.60
 X = 464300.628, Y = 174340.585
 PT STA = 251+72.19
 X = 464315.936, Y = 175361.806

SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
END FS	251+19	-6.0%	+6.0%
REVERSE CROWN	252+26	-2.0%	+2.0%
LEVEL CROWN	252+79	-2.0%	+0.0%
NORMAL CROWN	253+32	-2.0%	-2.0%

DANIEL G FORSYTH

JOSEPH T PANNARALE

SHAWN CLEMENTS

MATCH LINE 245+00

STH 58

247+53,R
AGG. PE

251+11,L
AGG. PE

PT: 251+72.19

N23° 03' 02" W

255+74,L
AGG. PE

257+30,R
AGG. PE

257+58,L
AGG. PE

258+75,L
AGG. PE

SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
NORMAL CROWN	255+07	-2.0%	-2.0%
LEVEL CROWN	255+60	+0.0%	-2.0%
REVERSE CROWN	256+13	+2.0%	-2.0%
BEGIN FS	257+17	+5.9%	-5.9%

PI STA = 259+58.09
 X = 464008.220, Y = 176084.962
 DELTA = 23°00'22"
 D = 3°58'50"
 T = 292.93'
 L = 577.97'
 R = 1439.41'
 PC STA = 256+65.16
 X = 464122.915, Y = 175815.419
 PT STA = 262+43.13
 X = 464007.991, Y = 176377.891

MOSES DECORAH

DANIEL G FORSYTH

SLANGE PROPERTIES LLC

GREGORY J & DONNA M RYCZEK

JOAN WIEDMEYER

JOSEPH T & KAREN A PANNARALE

THOMAS J & MICHELE A WILKINSON

JOE F POTTER

WILLIAM H STRACK

MATCH LINE 259+50

STH 58

261+18,L
ASPHALTIC PE

PT: 262+43.13

262+72,L
ASPHALTIC PE

264+35,L
AGG. PE

CP 103
265+91.90, -40.73' L
X: 463966.986
Y: 176726.634
ELEV: 915.598'

265+91.8, -17.0' L

N0° 02' 41" W

267+78.8, -17.0' L

269+85,L
AGG. PE

272+57,L
ASPHALTIC PE

STA 263+02
EXISTING 24-INCH CPRC
TO REMAIN

263+27,R
AGG. PE

12' TRAVEL LANES
5' PAVED SHLDS
1' CABG SHLDS

270+46,R
ASPHALTIC PE

272+59,R
AGG. PE

SUPERELEVATION INFORMATION			
	STATION	SE LT	SE RT
END FS	261+91	+5.9%	-5.9%
REVERSE CROWN	262+95	+2.0%	-2.0%
LEVEL CROWN	263+48	+0.0%	-2.0%
NORMAL CROWN	264+01	-2.0%	-2.0%

ANTON & MARIA HERRHOF

RAYMOND L & BARBARA J SHUMWAY

TONIA J PETERSON &
KENNETH J MOULD

MATCH LINE 274+00

PROJECT NO: 6639-05-60

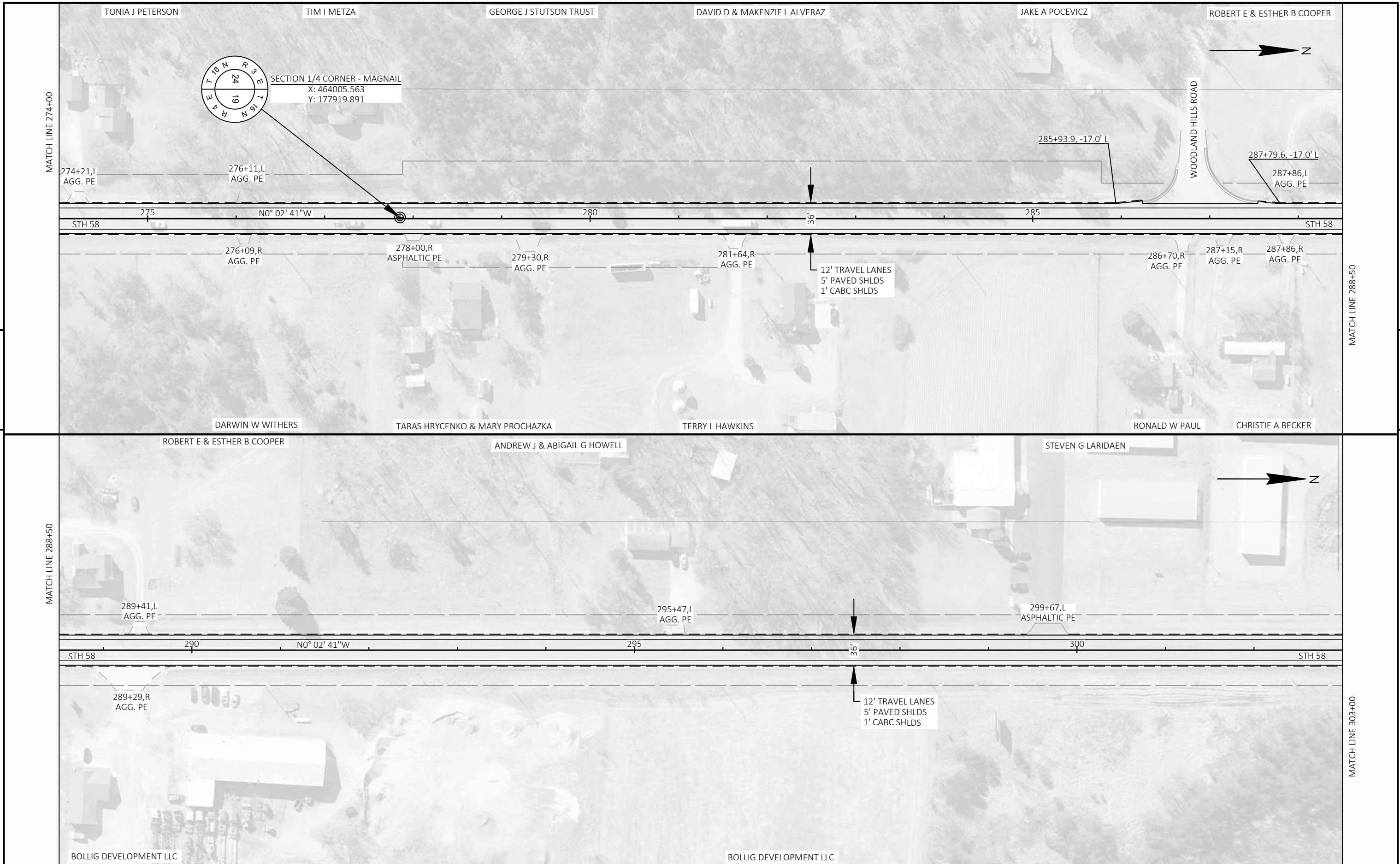
HWY: STH 58

COUNTY: JUNEAU

PLAN

SHEET

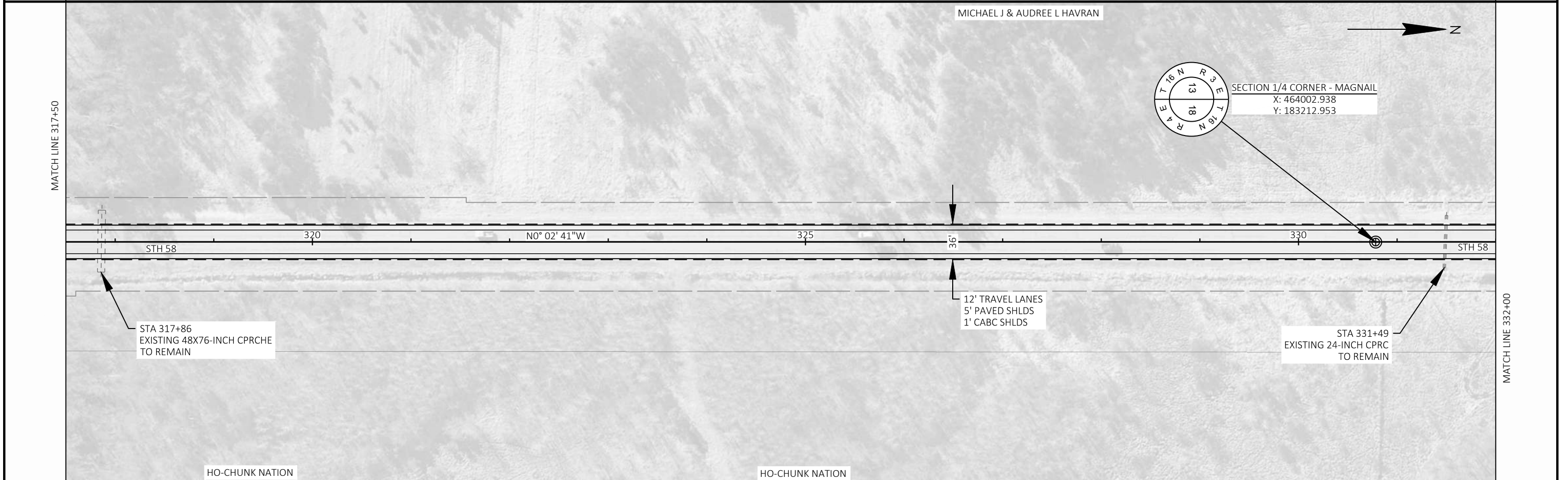
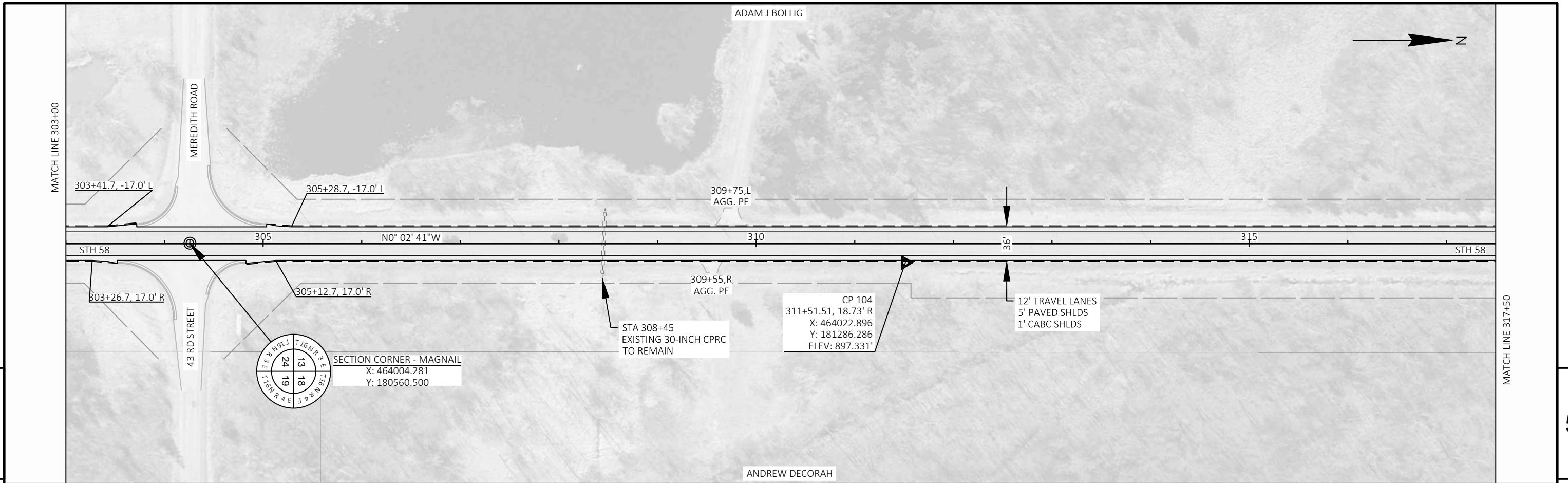
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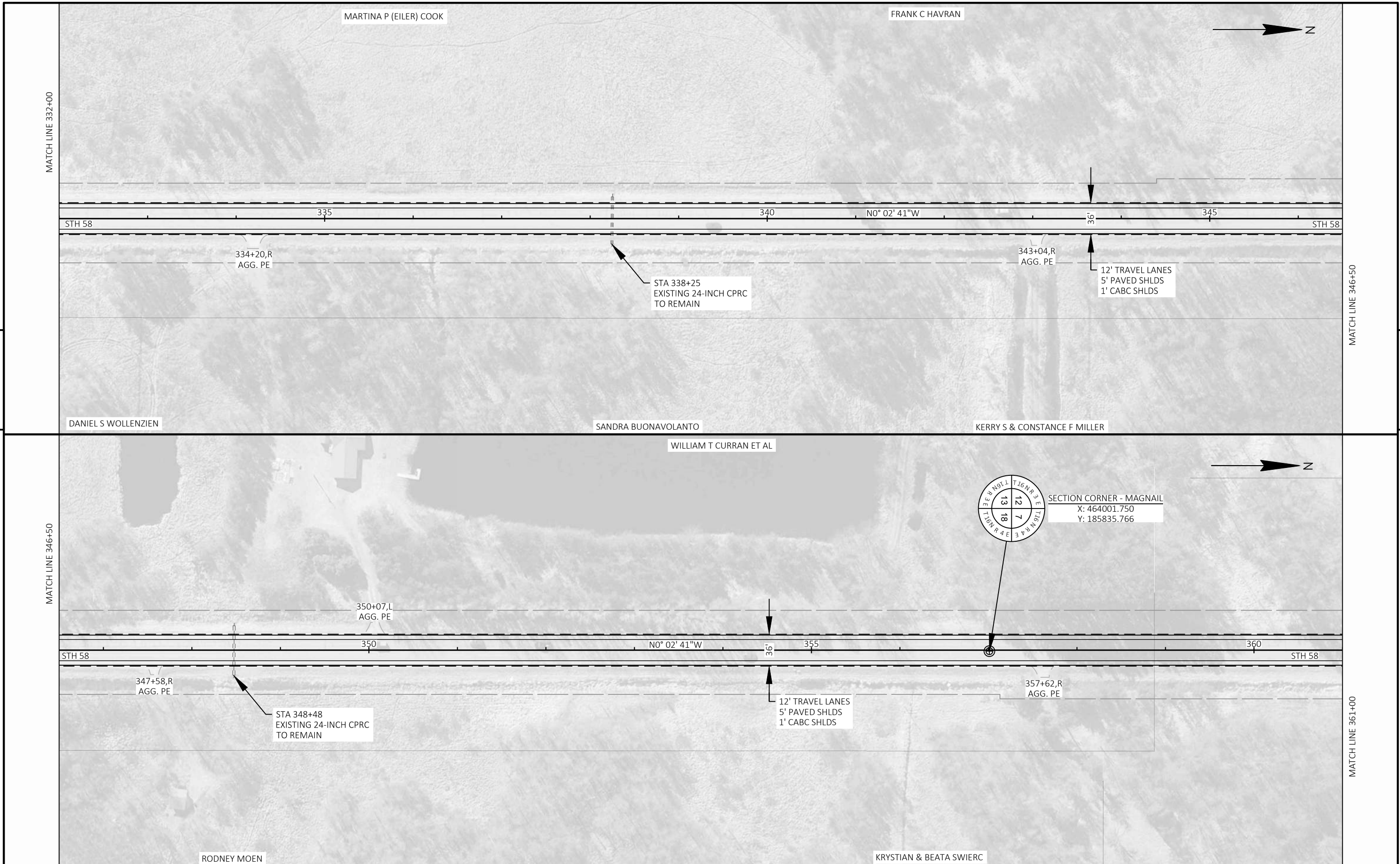
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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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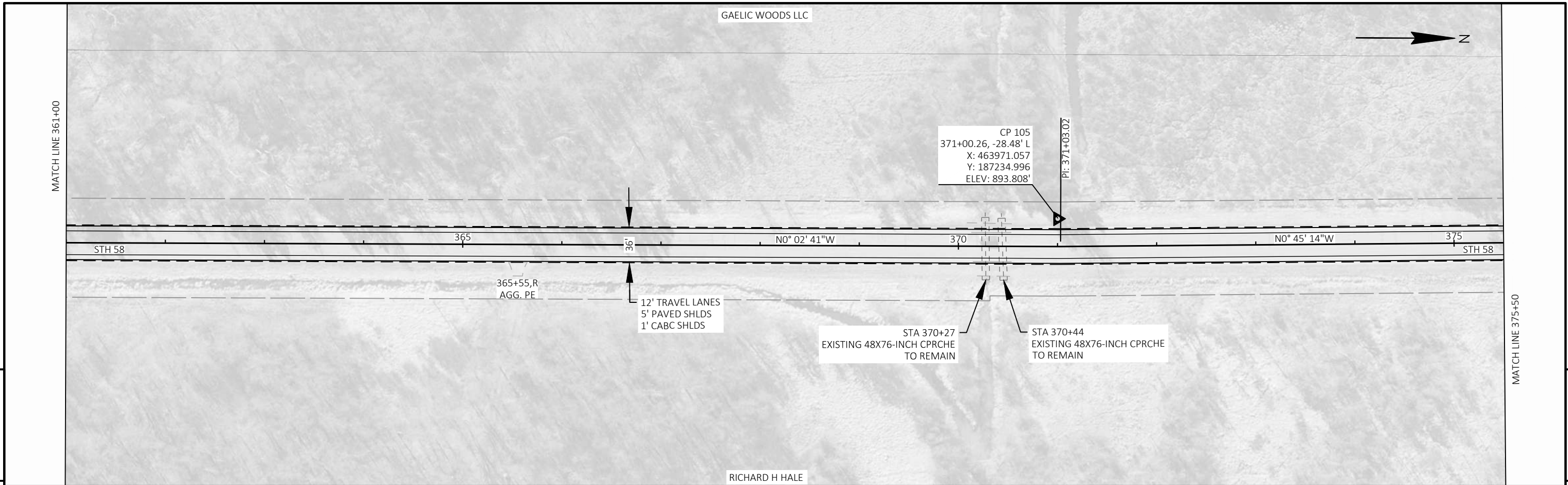
PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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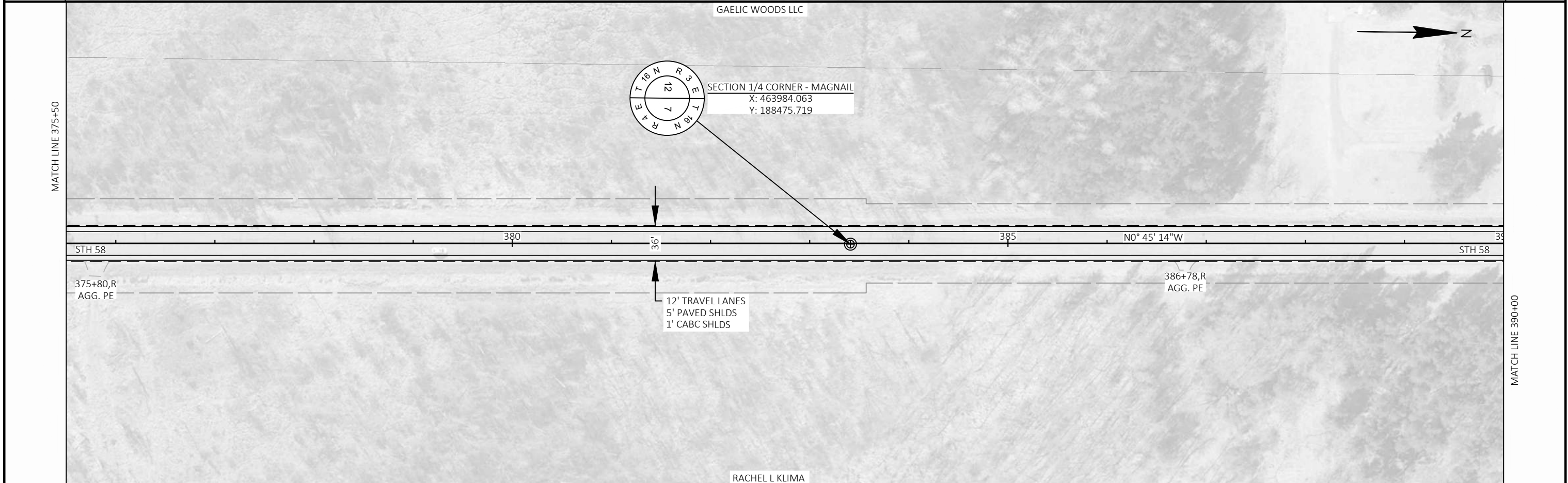
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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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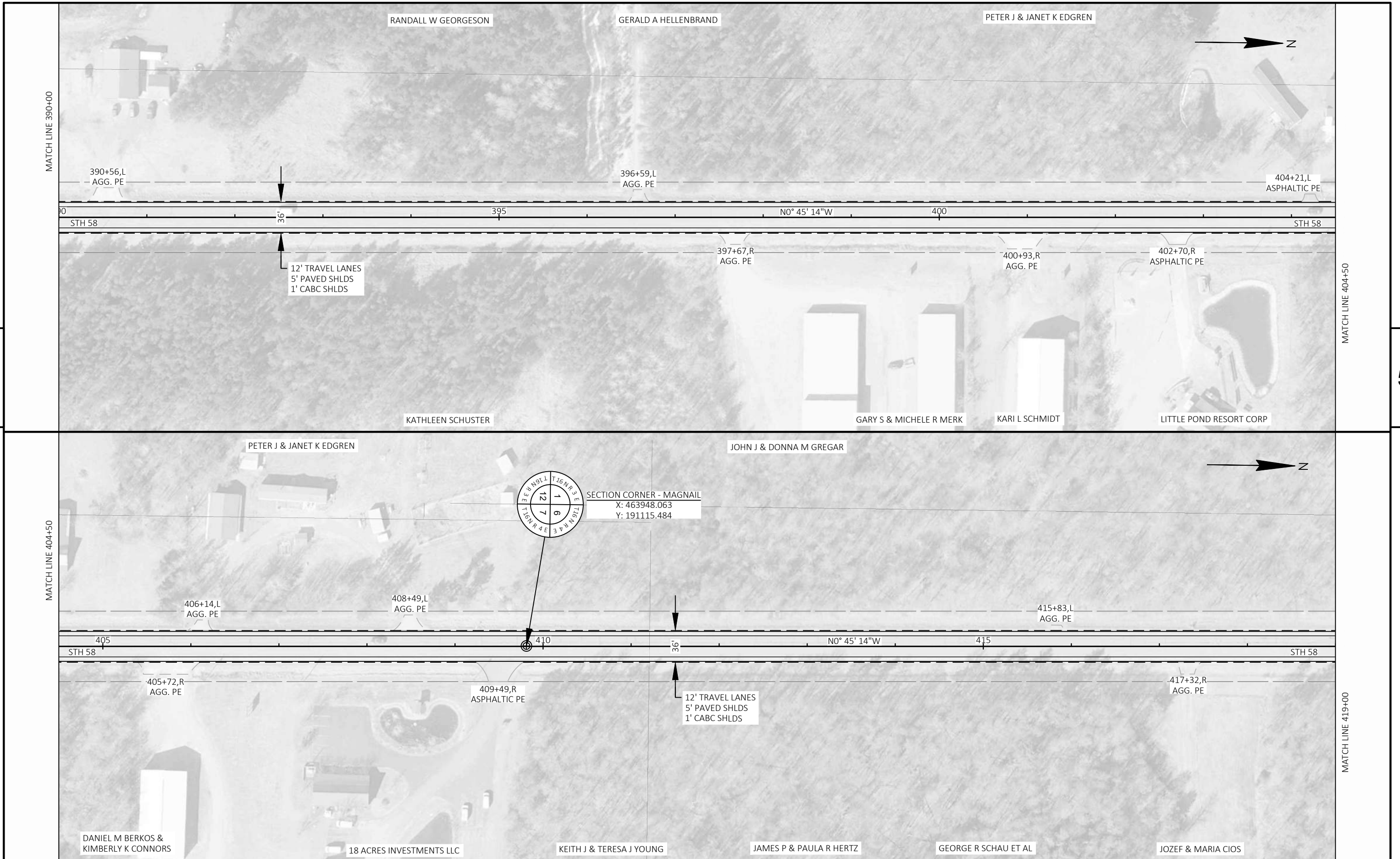
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MATCH LINE 375+50

MATCH LINE 390+00

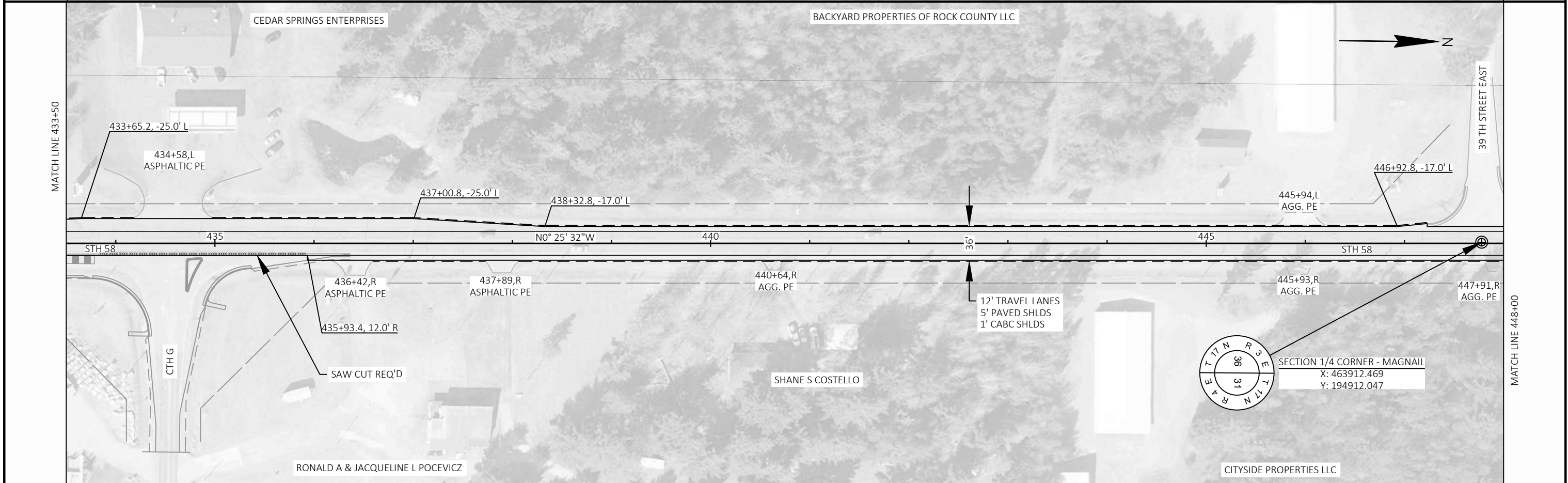
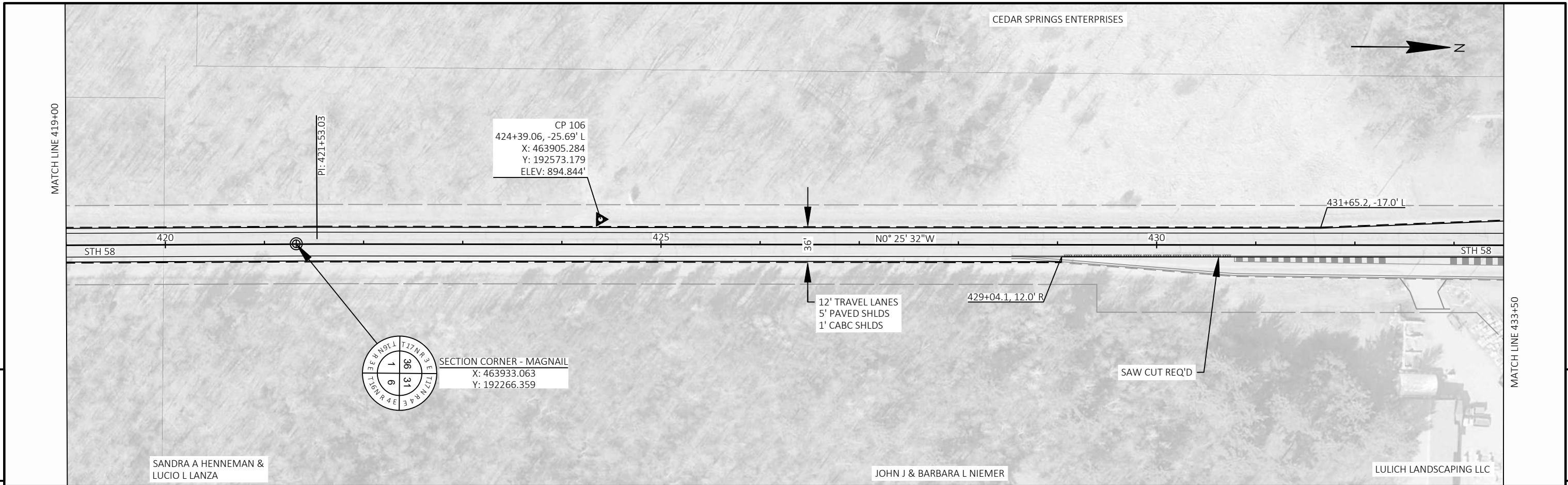
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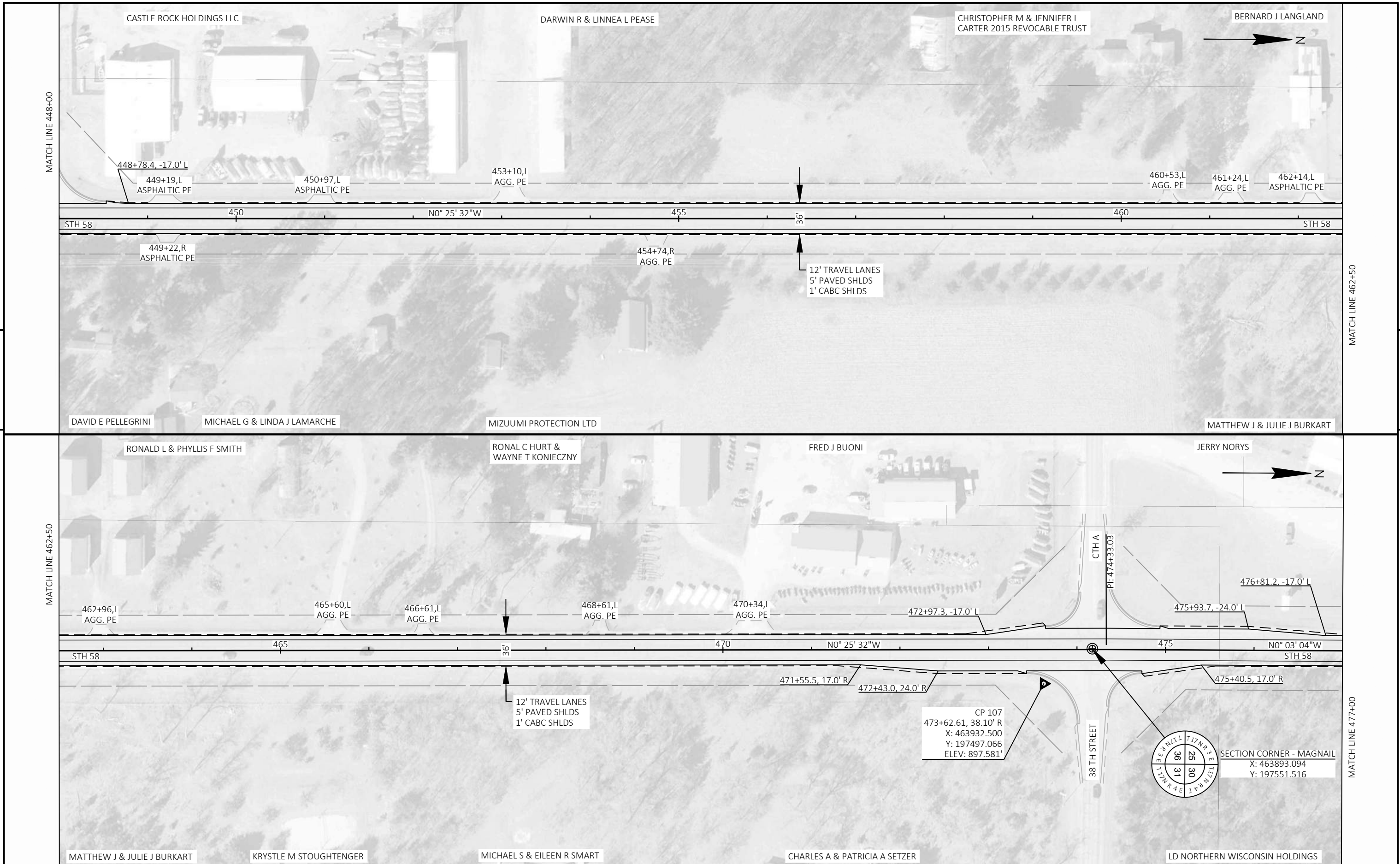
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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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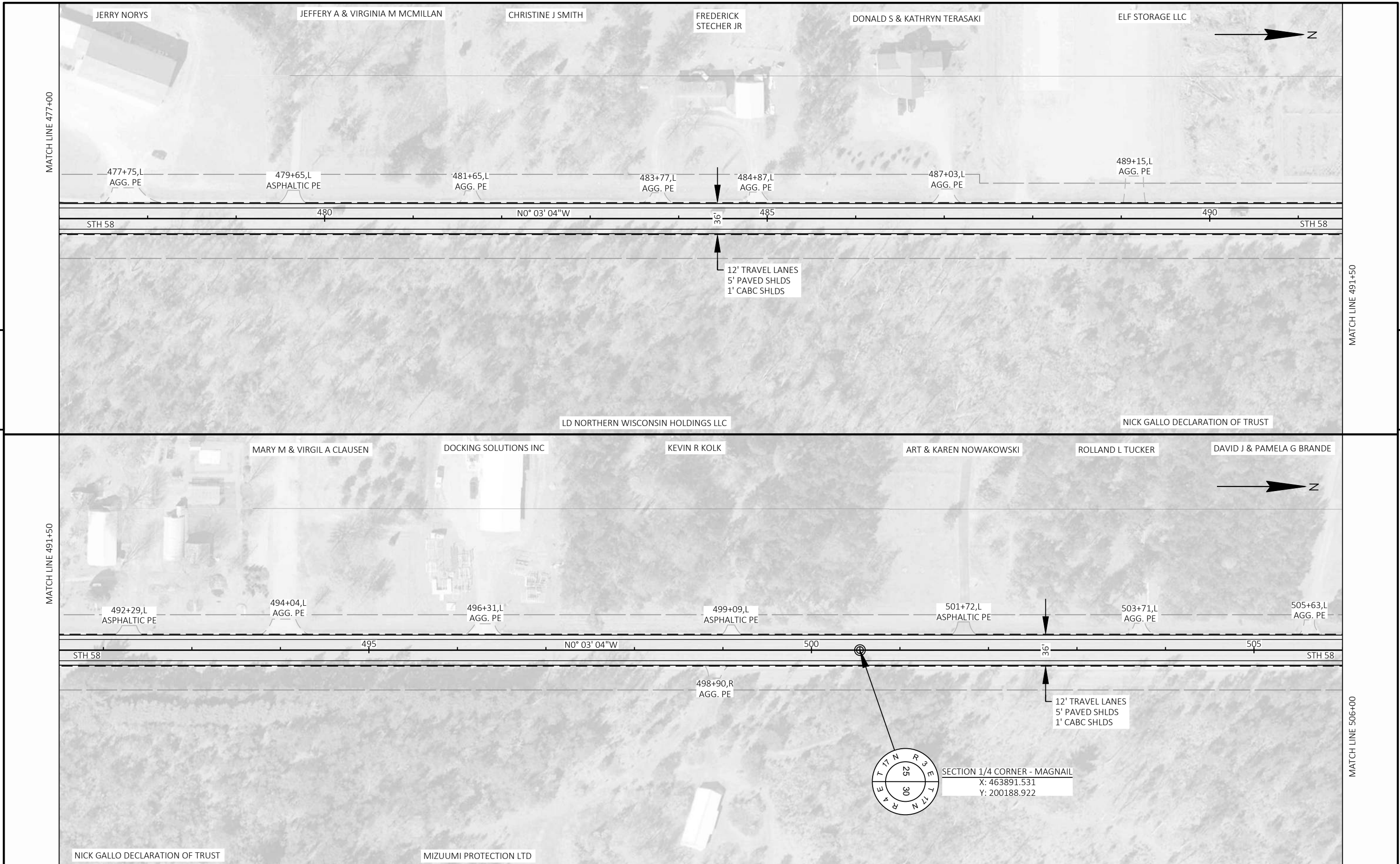
PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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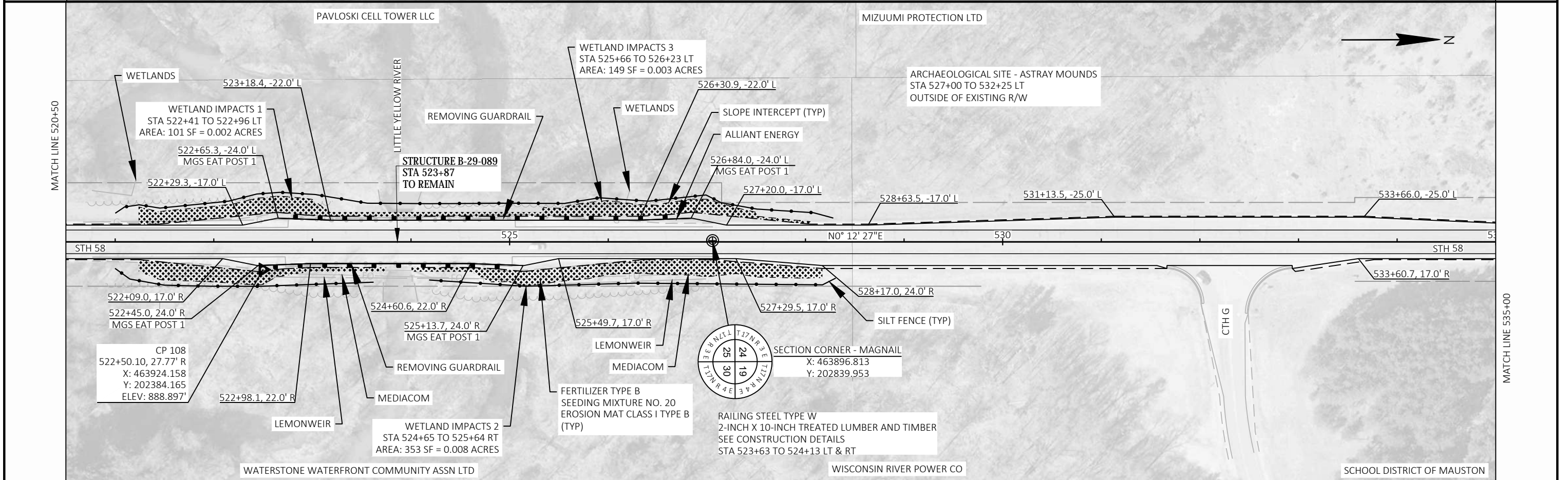
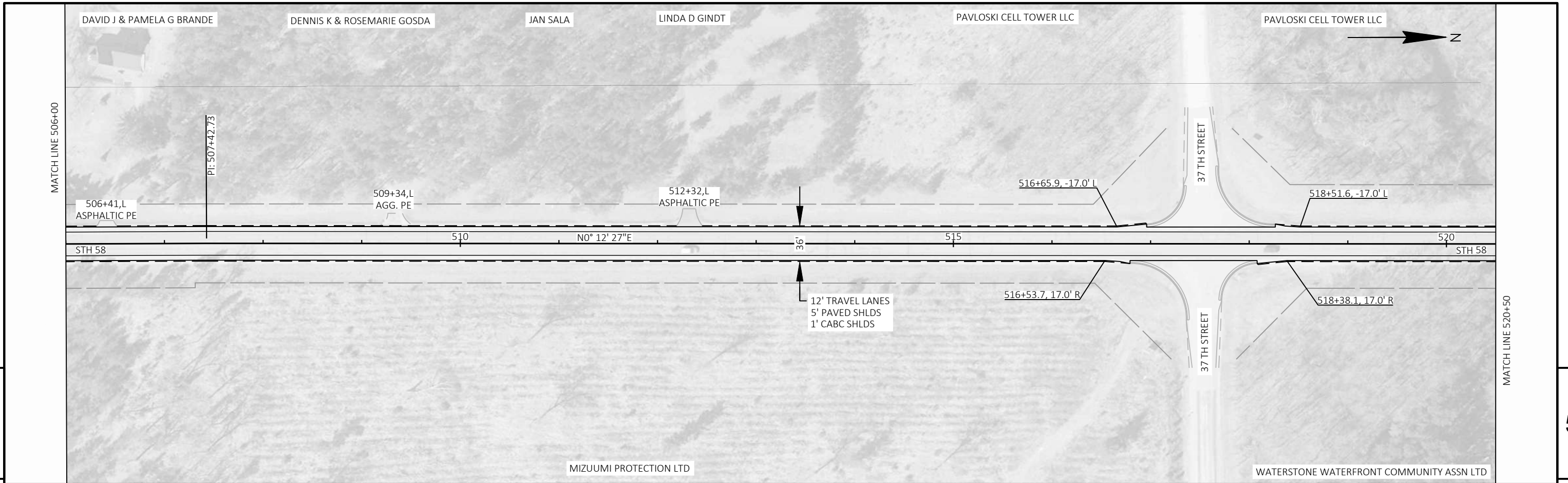
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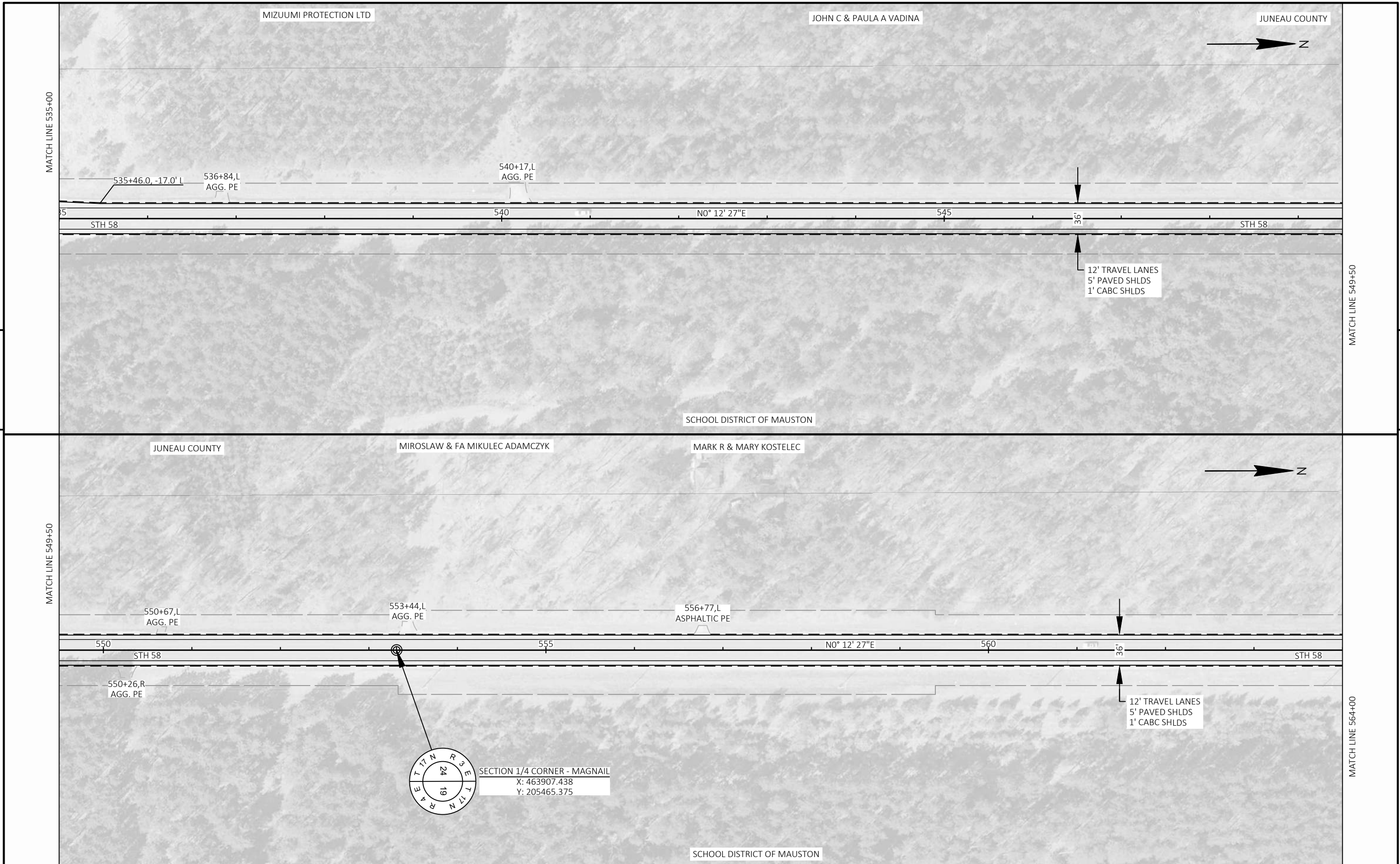
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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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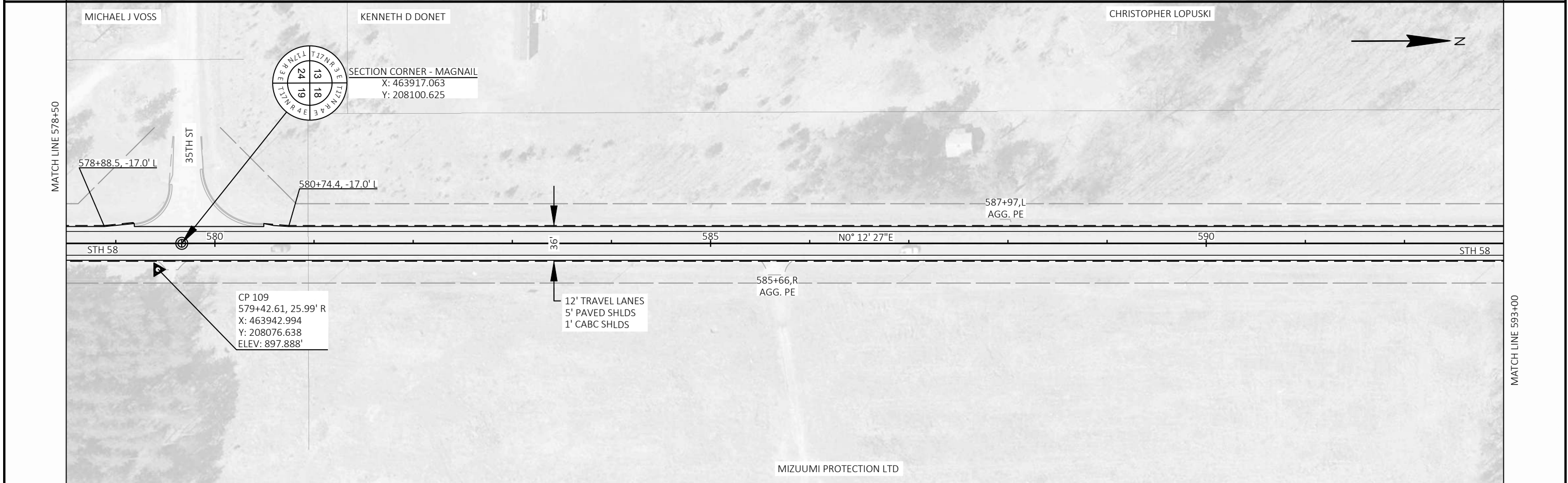
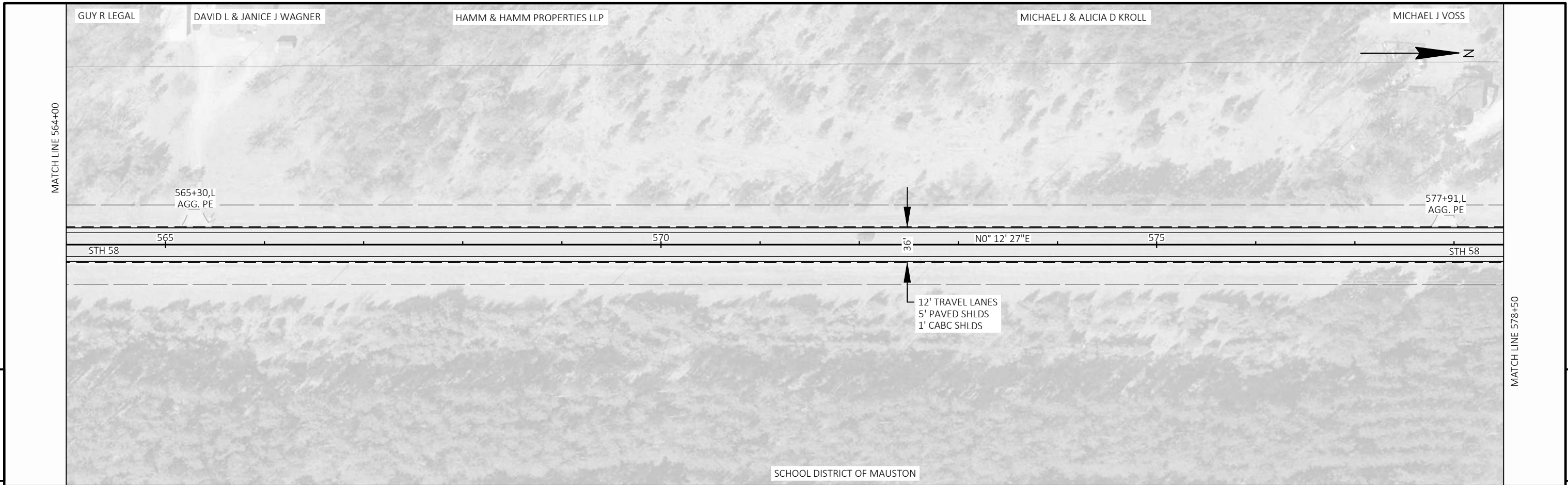
PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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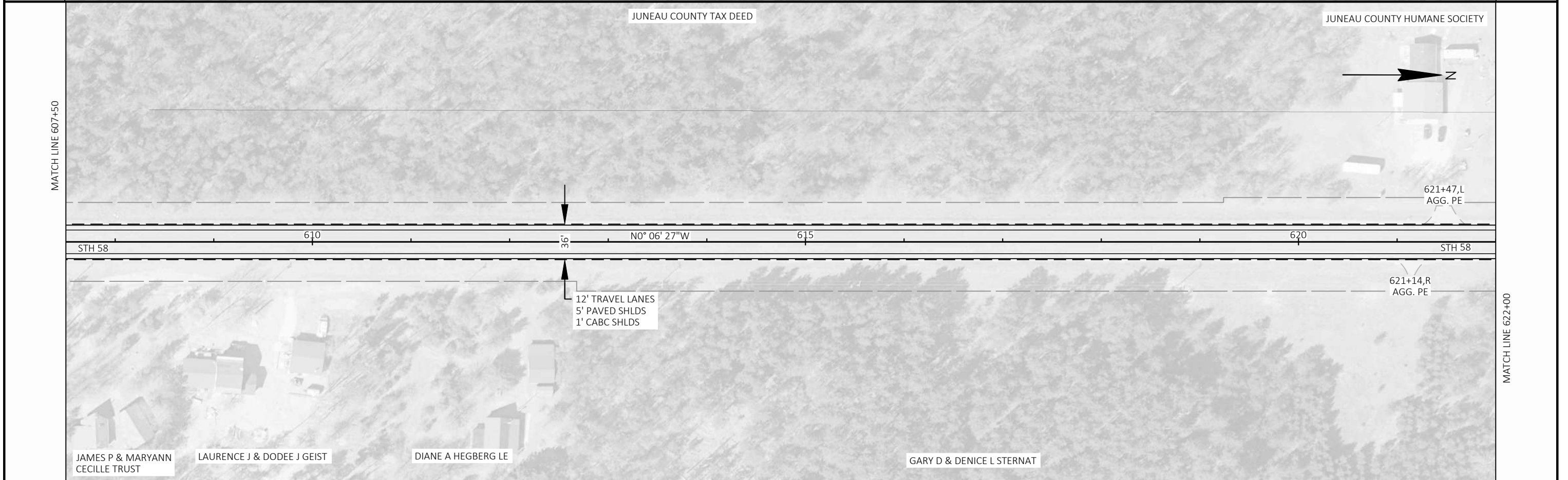
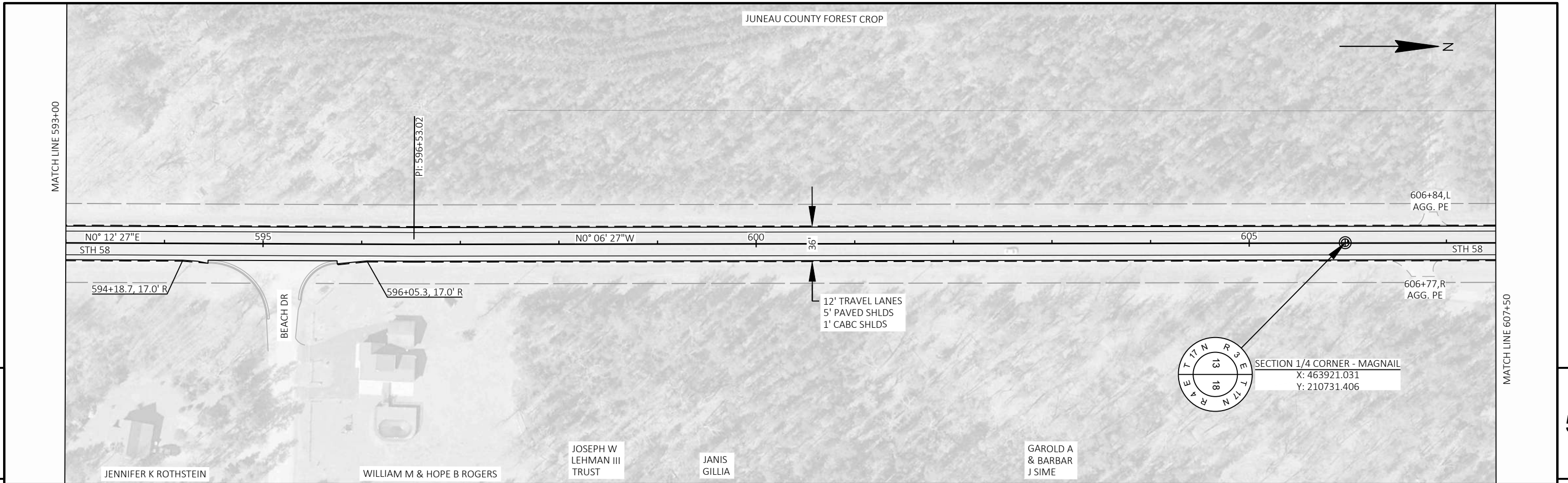
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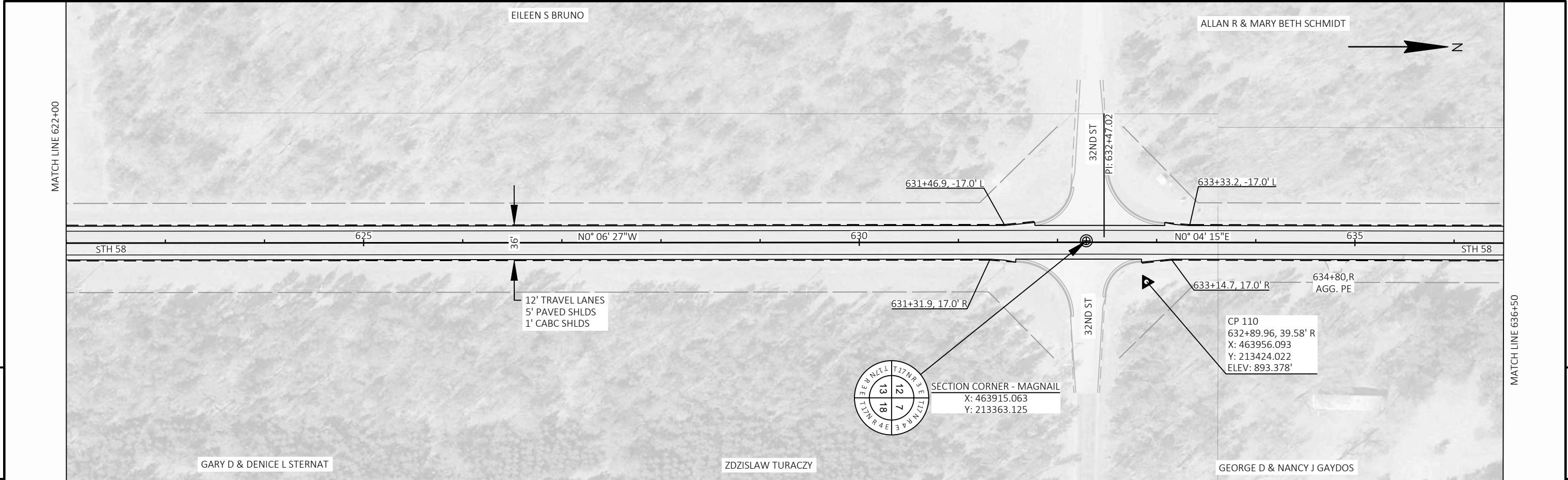
PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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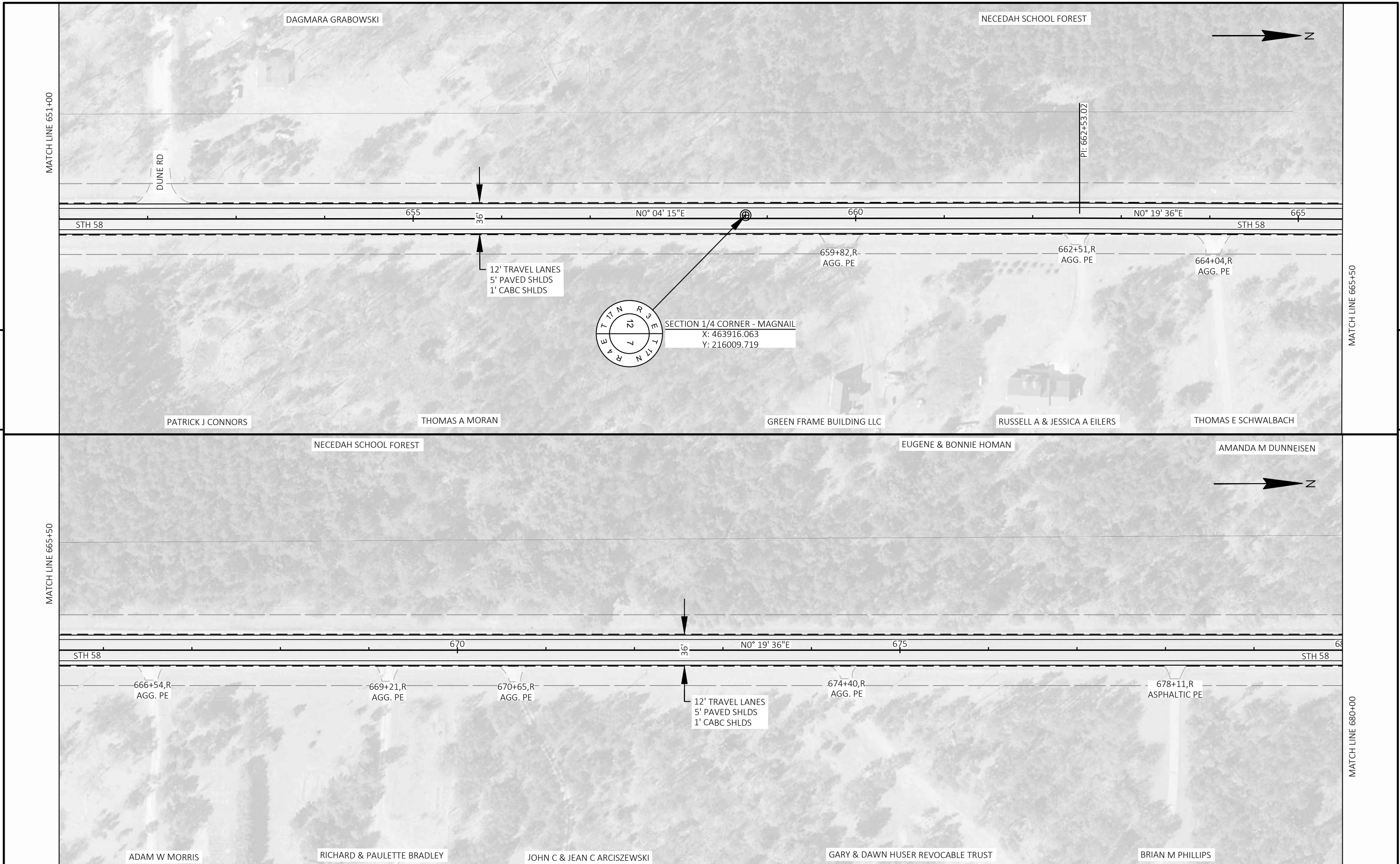
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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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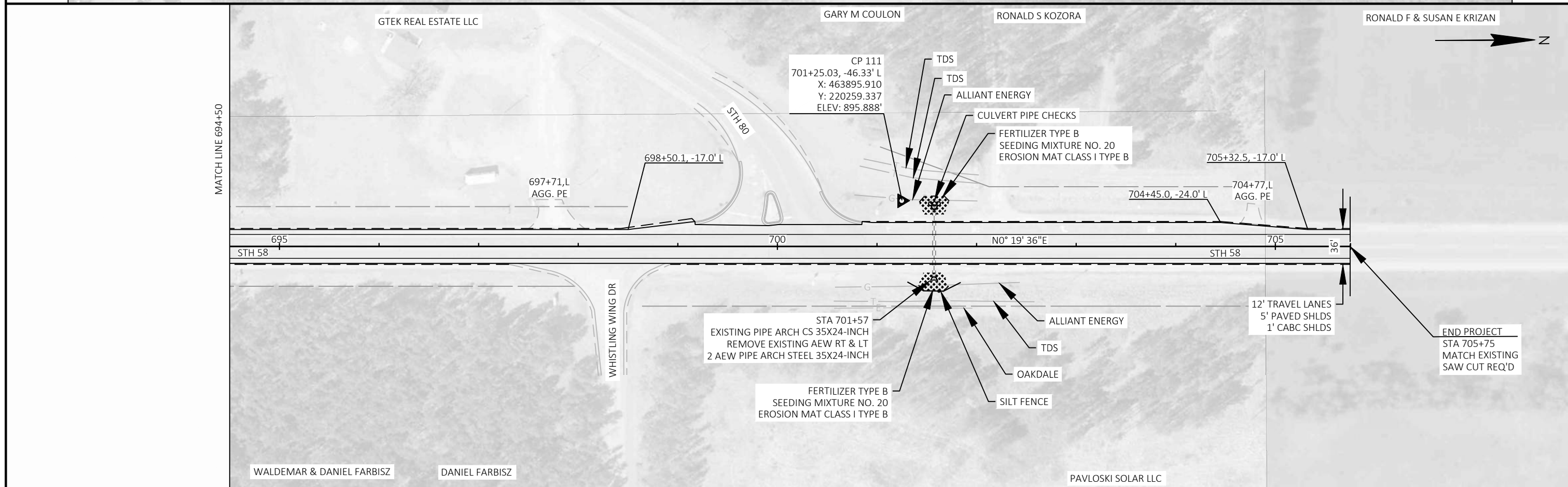
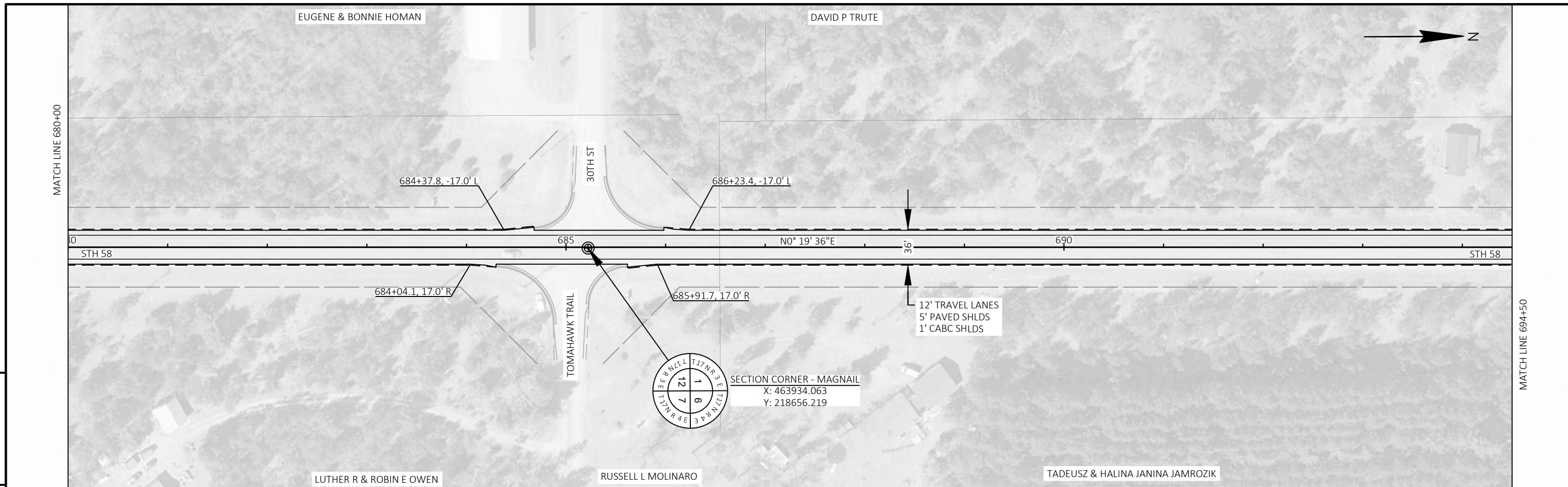
PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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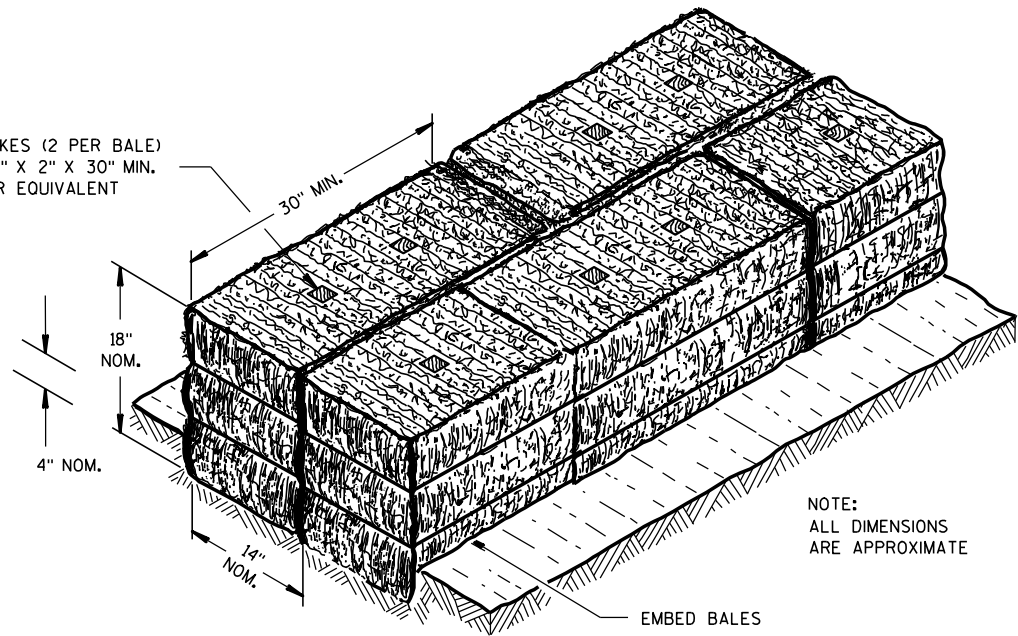


PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	PLAN	SHEET	E
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Standard Detail Drawing List

08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F02-01	APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE
08F04-07	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
13A10-02A	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02B	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02C	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A10-02D	2-LANE RURAL SHOULDER RUMBLE STRIP, MILLING
13A11-03A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-03B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13C19-02	HMA LONGITUDINAL JOINTS
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05E	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05F	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05I	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05J	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05K	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B45-05L	MIDWEST GUARDRAIL SYSTEM THREE BEAM TRANSITION (MGS)
14B51-01A	ANCHOR POST ASSEMBLY TOP-MOUNTED
14B51-01B	ANCHOR POST ASSEMBLY TOP-MOUNTED
14B51-01C	ANCHOR POST ASSEMBLY TOP-MOUNTED
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C02-08C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C03-05	BARRICADES AND SIGNS FOR SIDEROAD CLOSURES
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M. P. H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C05-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M. P. H. OR LESS
15C08-20A	LONGITUDINAL MARKING (MAINLINE)
15C12-07	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C35-04A	PAVEMENT MARKING (INTERSECTIONS)
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS

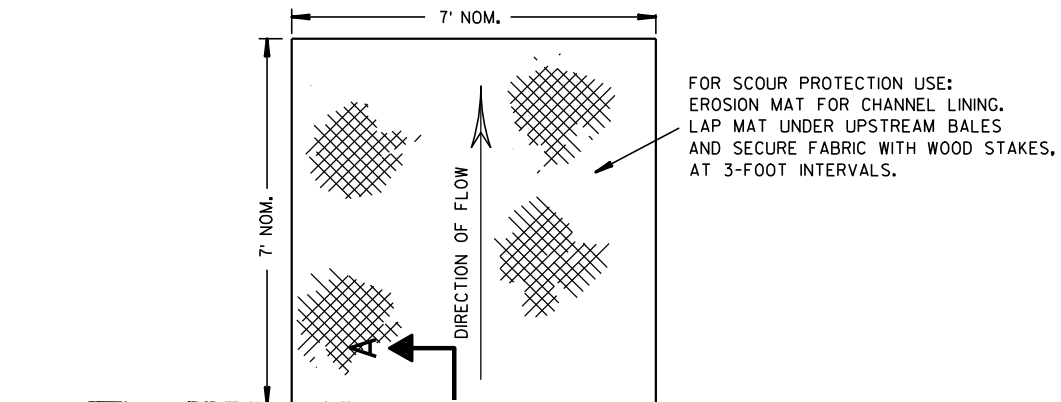
WOOD STAKES (2 PER BALE)
NOMINAL 2" X 2" X 30" MIN.
LENGTH OR EQUIVALENT



NOTE:
ALL DIMENSIONS
ARE APPROXIMATE

EMBED BALES

SECTION A-A

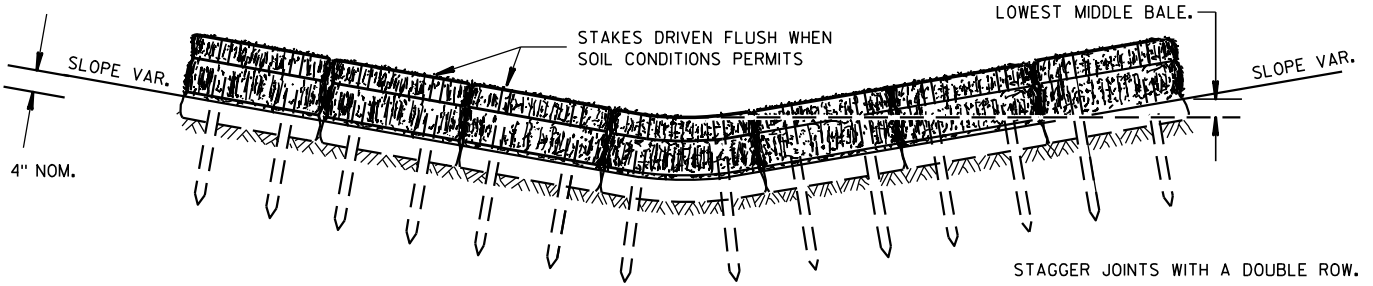


FOR SCOUR PROTECTION USE:
EROSION MAT FOR CHANNEL LINING.
LAP MAT UNDER UPSTREAM BALES
AND SECURE FABRIC WITH WOOD STAKES,
AT 3-FOOT INTERVALS.

PLAN VIEW

STAGGER JOINTS BETWEEN ADJACENT
ROWS OF BALES.

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



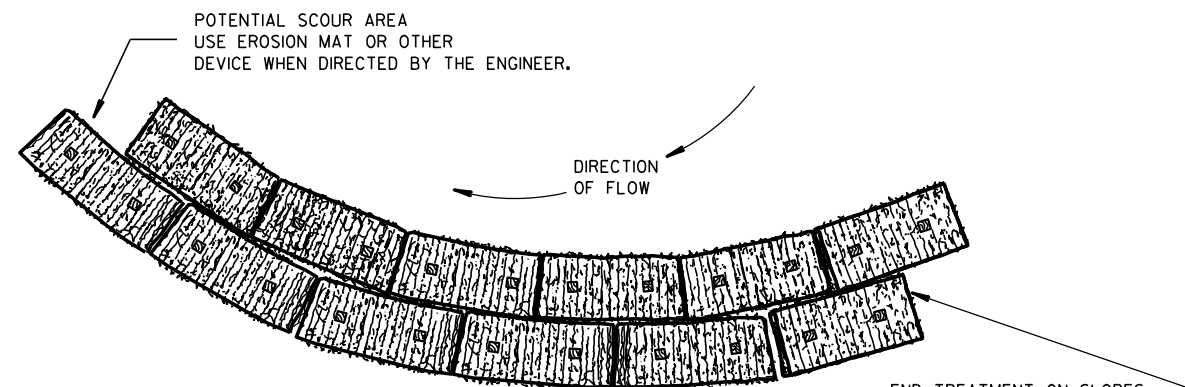
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

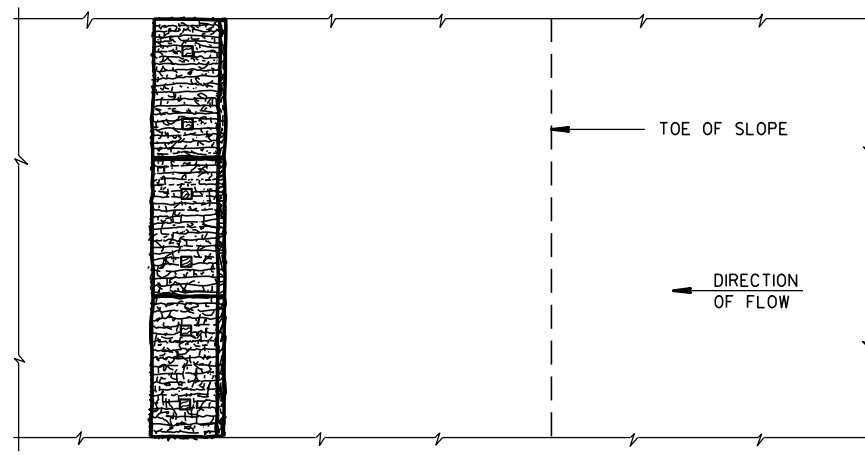
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

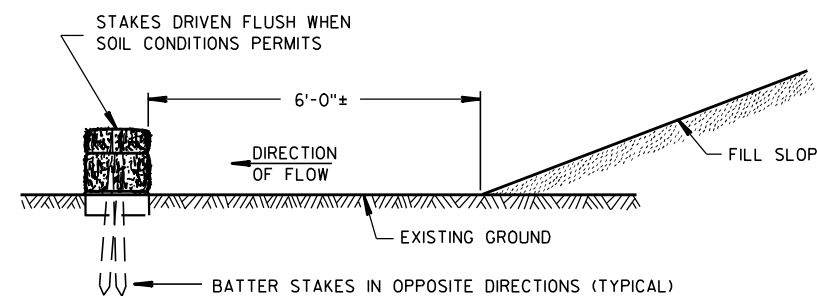


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

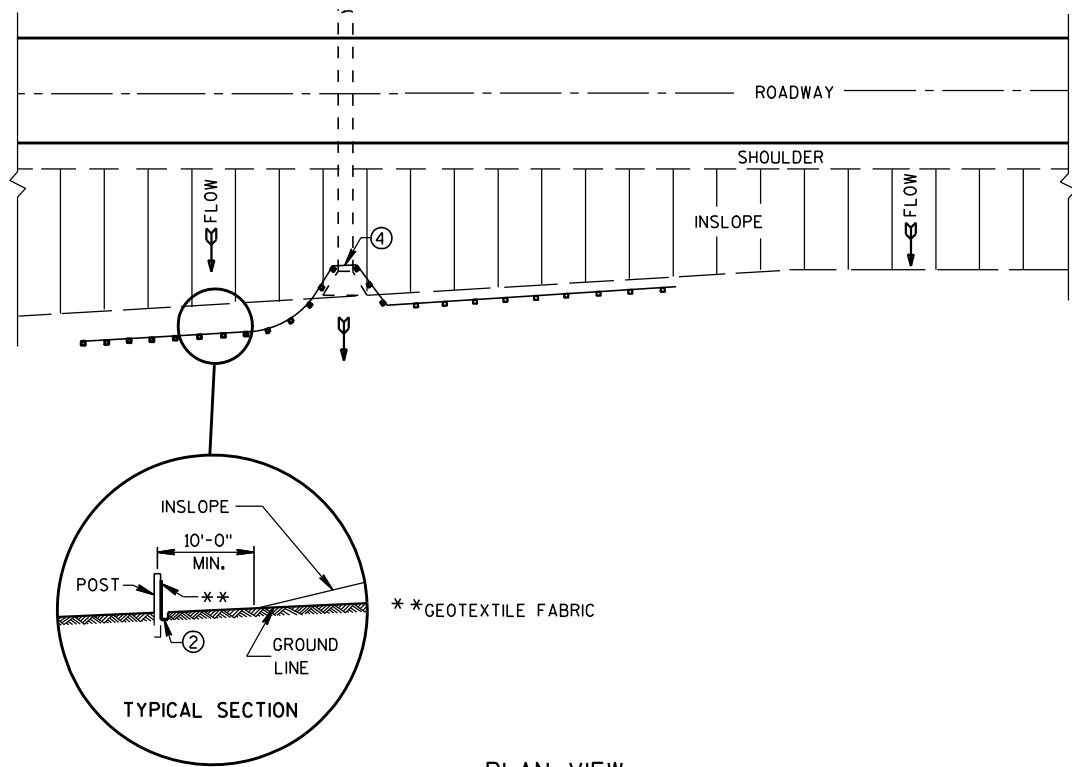
WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

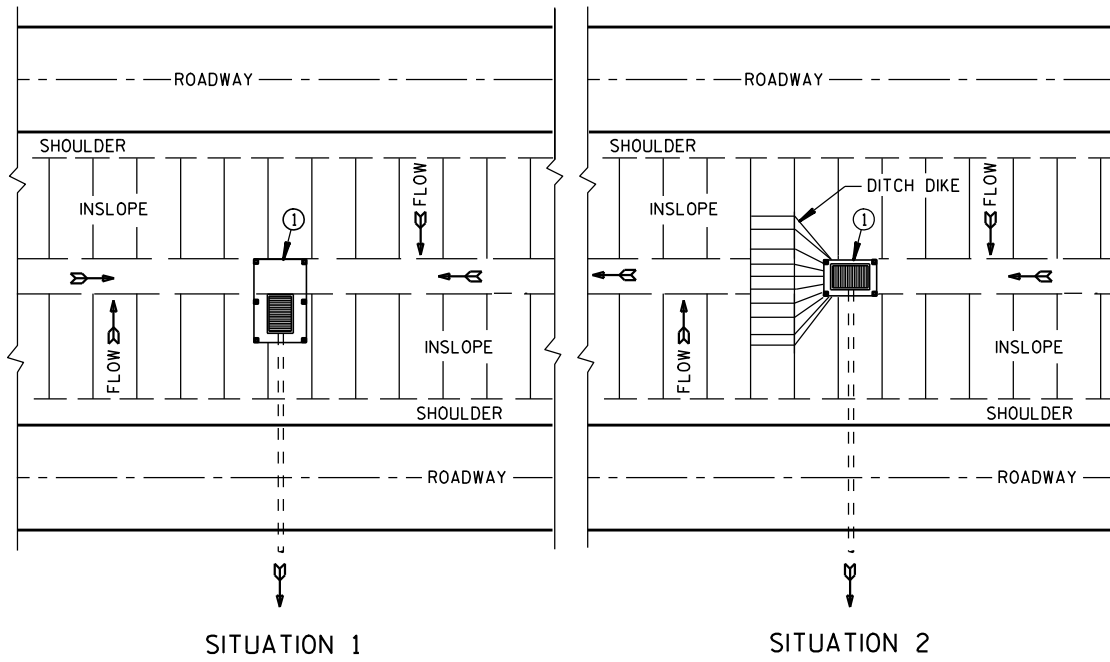
TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE

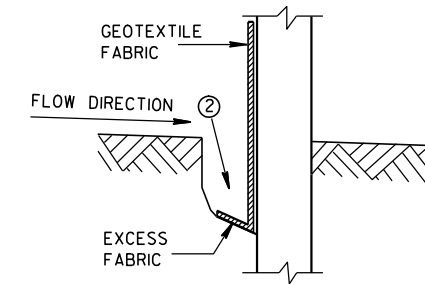


SITUATION 1 SITUATION 2
PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

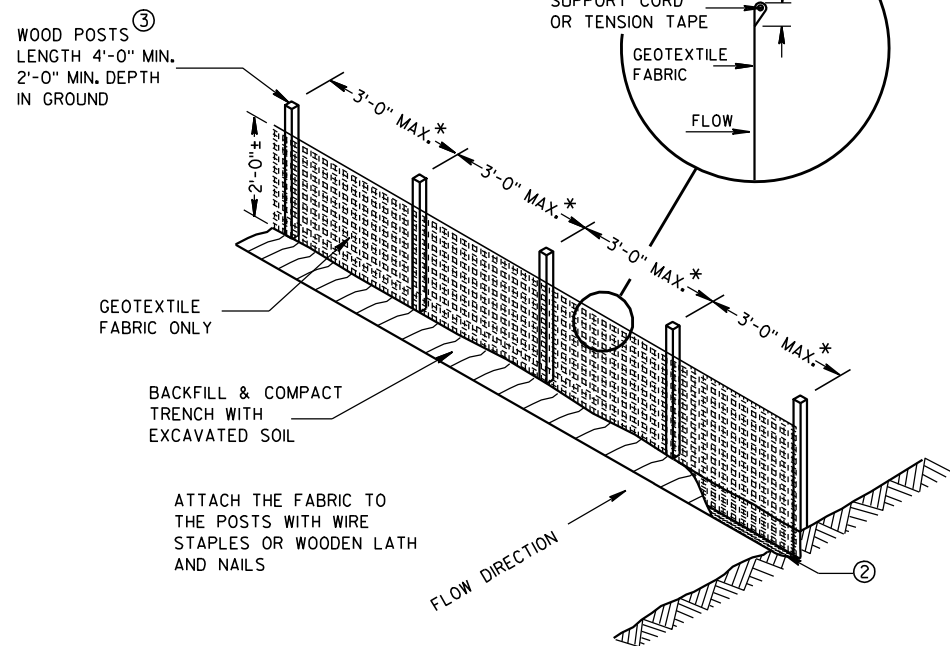
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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



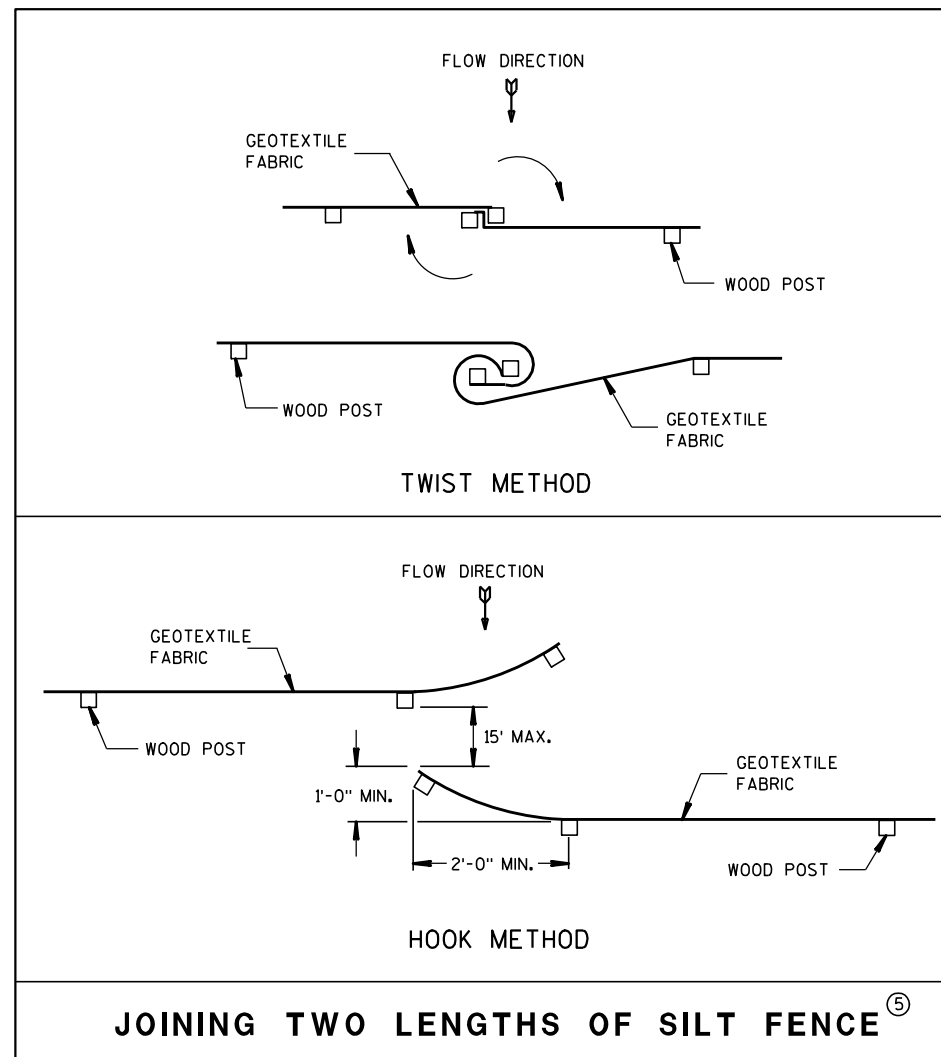
TRENCH DETAIL

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

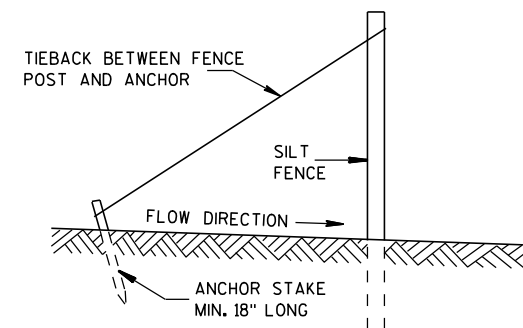


SILT FENCE

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



JOINING TWO LENGTHS OF SILT FENCE ⑤

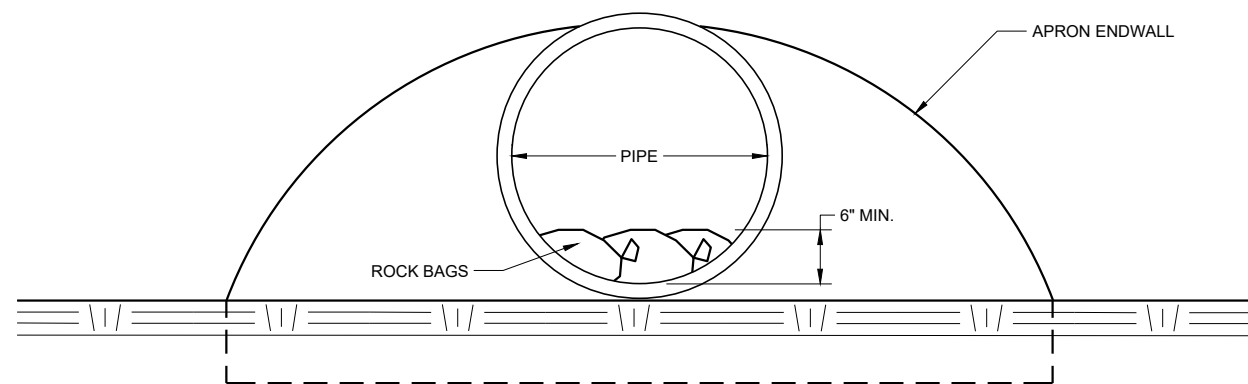


SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

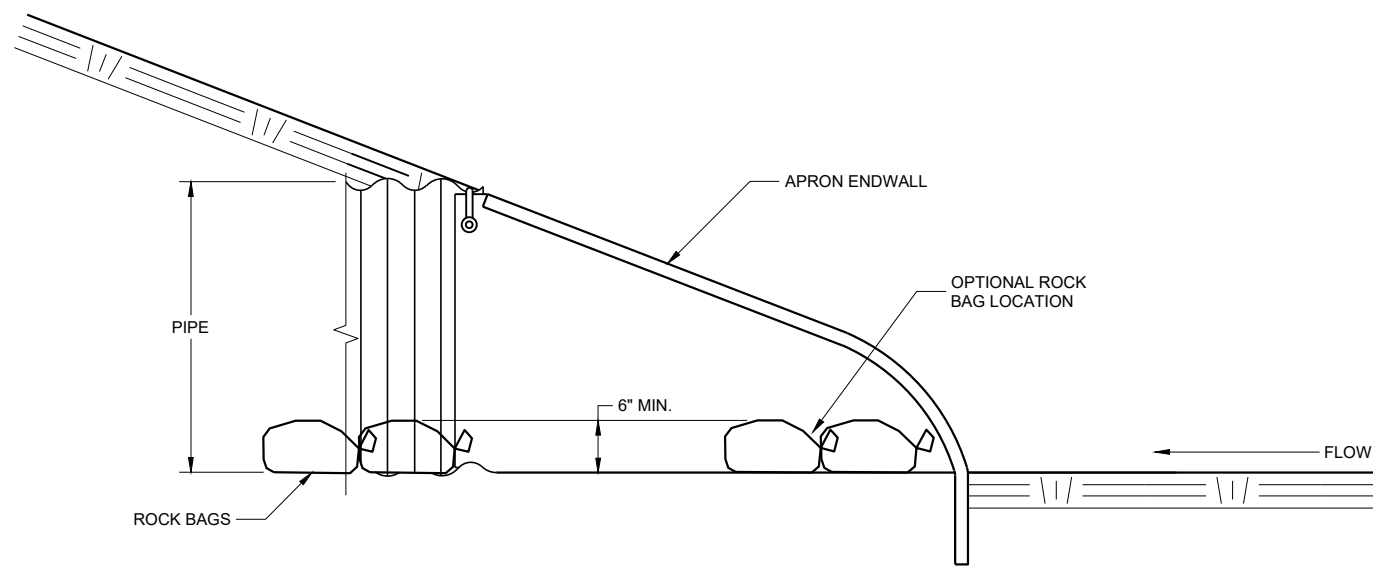
SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



END VIEW



SIDE VIEW

CULVERT PIPE CHECK
 (INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

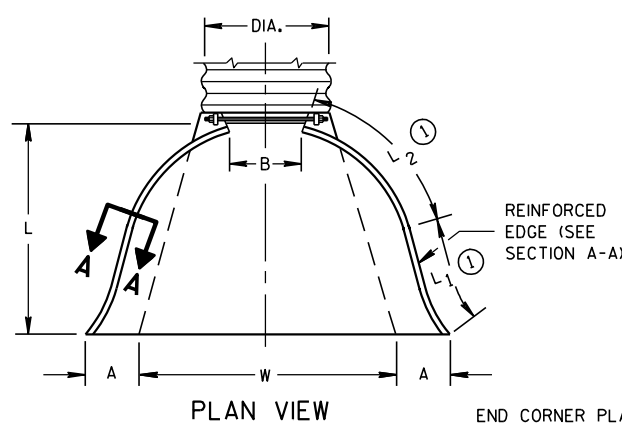
FHWA

METAL APRON ENDWALLS											
PIPE DIA. (IN.)	MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1	L2	W (±2")		
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	36	2 1/2 to 1	1 Pc.
21	.064	.060	9	12	6	36	18	29 5/8	42	2 1/2 to 1	1 Pc.
24	.064	.075	10	13	6	41	18	37 1/4	48	2 1/2 to 1	1 Pc.
30	.079	.075	12	16	8	51	18	52 1/4	60	2 1/2 to 1	1 Pc.
36	.079	.105	14	19	9	60	24	59 3/4	72	2 1/2 to 1	2 Pc.
42	.109	.105	16	22	11	69	24	75 5/8	84	2 1/2 to 1	2 Pc.
48	.109	.105	18	27	12	78	24	81	90	2 1/4 to 1	3 Pc.
54	.109	.105	18	30	12	84	30	85 1/2	102	2 1/4 to 1	3 Pc.
60	.109x	.105x	18	33	12	87	—	—	114	2 to 1	3 Pc.
66	.109x	.105x	18	36	12	87	—	—	120	2 to 1	3 Pc.
72	.109x	.105x	18	39	12	87	—	—	126	2 to 1	3 Pc.
78	.109x	.105x	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.
84	.109x	.105x	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.
90	.109x	.105x	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.
96	.109x	.105x	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.

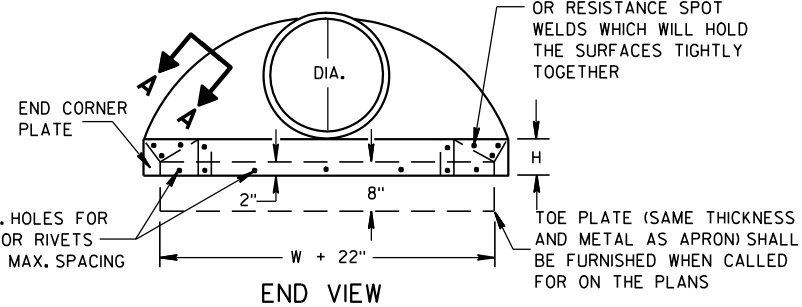
* EXCEPT CENTER PANEL SEE GENERAL NOTES

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

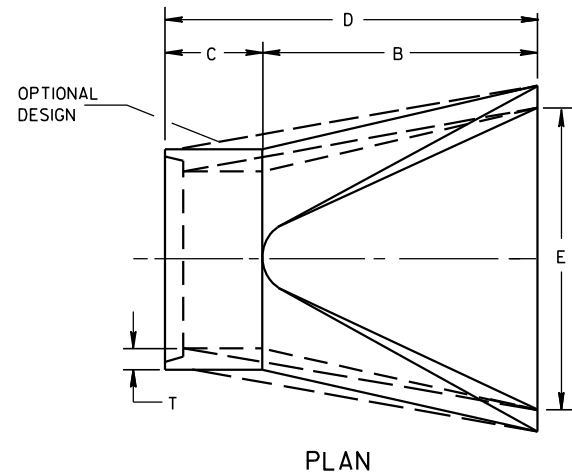
* MINIMUM
** MAXIMUM



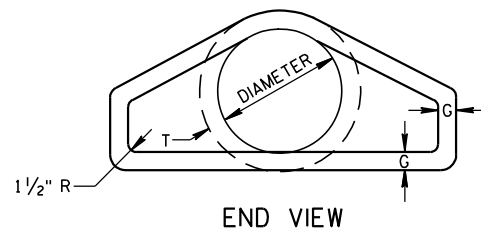
END CORNER PLATES MAY BE FASTENED TO APRON PROPER BY BOLTS, RIVETS, OR RESISTANCE SPOT WELDS WHICH WILL HOLD THE SURFACES TIGHTLY TOGETHER



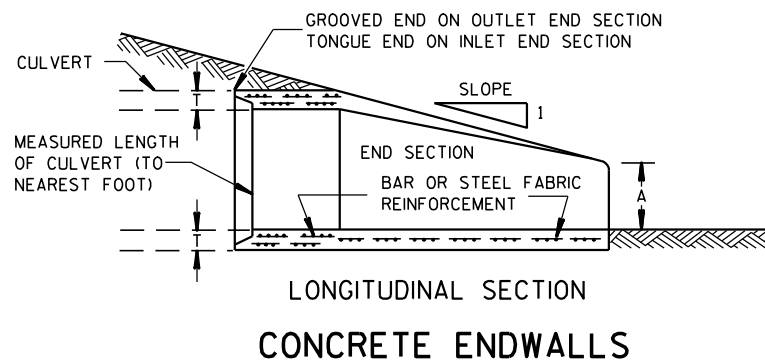
SIDE ELEVATION
METAL ENDWALLS



PLAN

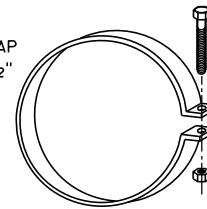


END VIEW

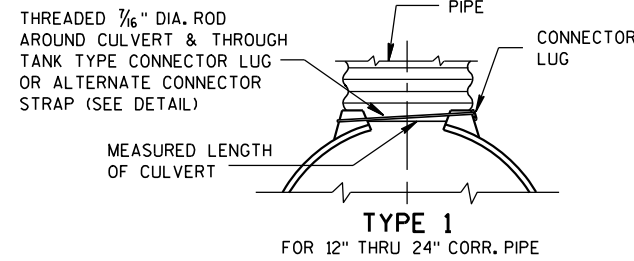


LONGITUDINAL SECTION
CONCRETE ENDWALLS

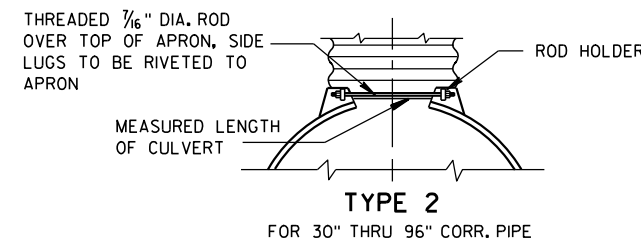
1" WIDE, 12 GA. (0.109" THICK) GALVANIZED STRAP WITH STANDARD 6" X 1/2" BAND BOLT AND NUT



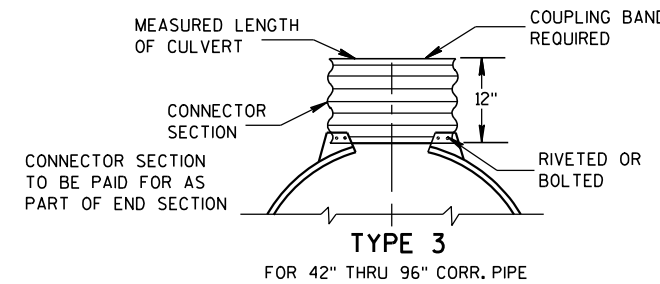
ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



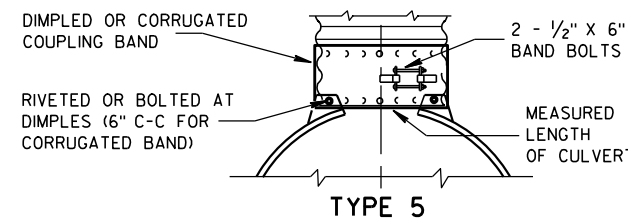
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

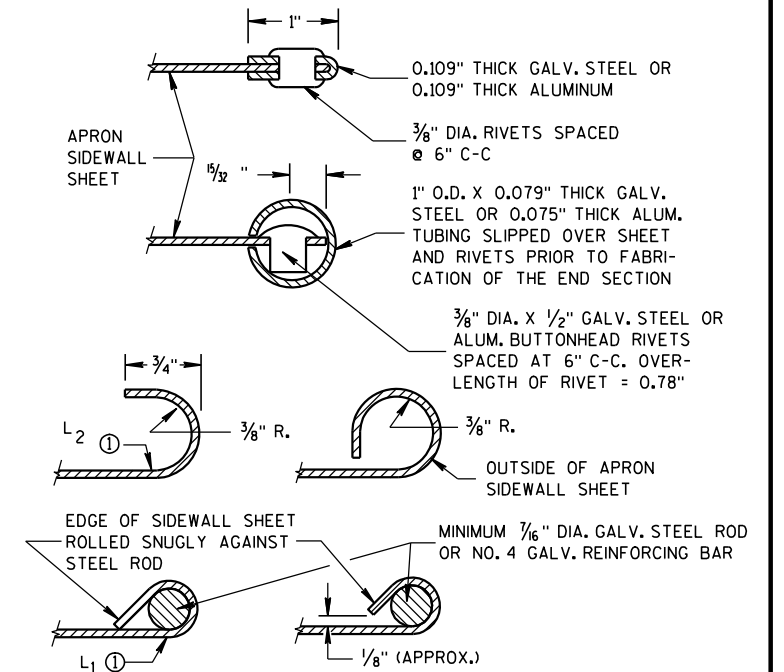
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

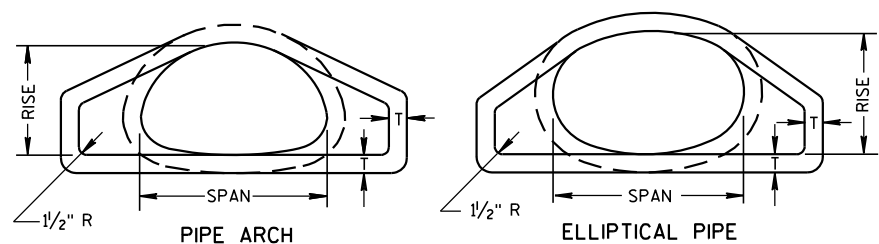
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

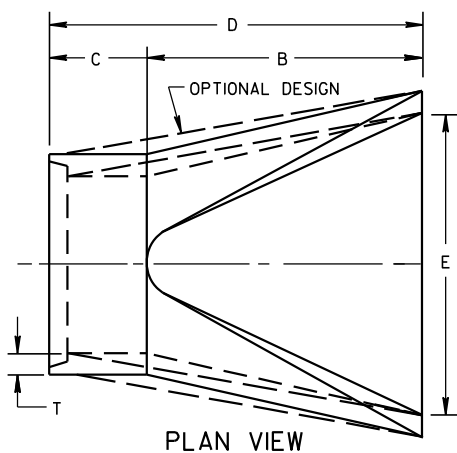
APRON ENDWALLS FOR
CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

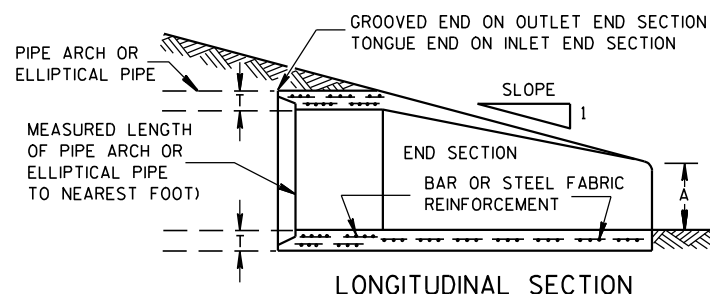
APPROVED
11/30/94 DATE /S/ Rory L. Rhinesmith
DATE CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA



END VIEW



PLAN VIEW



LONGITUDINAL SECTION

CONCRETE ENDWALLS

2- 2 2/3" X 1/2" CORRUGATIONS

EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 (±1")	L2 (±1")	W (±2")		
15	17	13	.064	.060	7	9	6	19	14	16	30	2 1/2 to 1	1 Pc.
18	21	15	.064	.060	7	10	6	23	14	19 3/8	36	2 1/2 to 1	1 Pc.
21	24	18	.064	.060	8	12	6	28	18	21 3/4	42	2 1/2 to 1	1 Pc.
24	28	20	.064	.060	9	14	6	32	18	27 1/2	48	2 1/2 to 1	1 Pc.
30	35	24	.079	.075	10	16	6	39	18	37 5/8	60	2 1/2 to 1	1 Pc.
36	42	29	.079	.075	12	18	8	46	24	45 3/8	75	2 1/2 to 1	1 Pc.
42	49	33	.109	.105	13	21	9	53	24	54 3/4	85	2 1/2 to 1	2 Pc.
48	57	38	.109	.105	18	26	12	63	24	68	90	2 1/2 to 1	3 Pc.
54	64	43	.109	.105	18	30	12	70	24	72 3/4	102	2 1/4 to 1	3 Pc.
60	71	47	.109*	.105*	18	33	12	77	30	82 1/4	114	2 1/4 to 1	3 Pc.
66	77	52	.109*	.105*	18	36	12	77	—	—	126	2 to 1	3 Pc.
72	83	57	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.

3" X 1" CORRUGATIONS

EQUIV. DIA. (Inches)	(Inches)		MIN. THICK. (Inches)		DIMENSIONS (Inches)							APPROX. SLOPE	BODY
	SPAN	RISE	STEEL	ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 (±1")	L2 (±1")	W (±2")		
48	53	41	.109	.105	18	26	12	63	24	72 3/4	90	2 1/2 to 1	2 Pc.
54	60	46	.109	.105	18	30	12	70	30	82 1/4	102	2 to 1	2 Pc.
60	66	51	.109*	.105*	18	33	12	77	—	—	114	1 1/2 to 1	3 Pc.
66	73	55	.109*	.105*	18	36	12	77	—	—	126	1 1/2 to 1	3 Pc.
72	81	59	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.
78	87	63	.109*	.105*	22	38	12	77	—	—	148	1 1/2 to 1	3 Pc.
84	95	67	.109*	.105*	22	34	12	77	—	—	162	1 1/2 to 1	3 Pc.
90	103	71	.109*	.105*	22	38	12	77	—	—	174	1 1/2 to 1	3 Pc.
96	112	75	.109*	.105*	24	40	12	77	—	—	174	1 1/2 to 1	3 Pc.

NOTE: ALL SPLICES TO BE LAP RIVETED OR BOLTED. * EXCEPT CENTER PANEL SEE GENERAL NOTES

REINFORCED CONCRETE PIPE ARCH

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)								APPROX. SLOPE
	**SPAN	**RISE	T	A	B	C	D	E	
24	29	18	3	8 1/2	39	33	72	48	3 to 1
30	36	22	3 1/2	9 1/2	50	46	96	60	3 to 1
36	44	27	4	11 1/8	60	36	96	72	3 to 1
42	51	31	4 1/2	15 1/8	60	36	96	78	3 to 1
48	58	36	5	21	60	36	96	84	3 to 1
54	65	40	5 1/2	25 1/2	60	36	96	90	3 to 1
60	73	45	6	31	60	36	96	96	3 to 1
72	88	54	7	31	60	39	99	120	2 to 1
84	102	62	8	28 1/2	83	19	102	144	2 to 1

REINFORCED CONCRETE ELLIPTICAL PIPE

EQUIV. DIA. (Inches)	DIMENSIONS (Inches)								APPROX. SLOPE
	**SPAN	**RISE	T	A	B	C	D	E	
24	30	19	3 1/4	8 1/2	39	33	72	48	3 to 1
30	38	24	3 3/4	9 1/2	54	18	72	60	3 to 1
36	45	29	4 1/2	11 1/8	60	24	84	72	2 1/2 to 1
42	53	34	5	15 3/4	60	36	96	78	2 1/2 to 1
48	60	38	5 1/2	21	60	36	96	84	2 1/2 to 1
54	68	43	6	25 1/2	60	36	96	90	2 1/2 to 1
60	76	48	6 1/2	30	60	36	96	96	2 1/2 to 1

**NOMINAL SIZE

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.

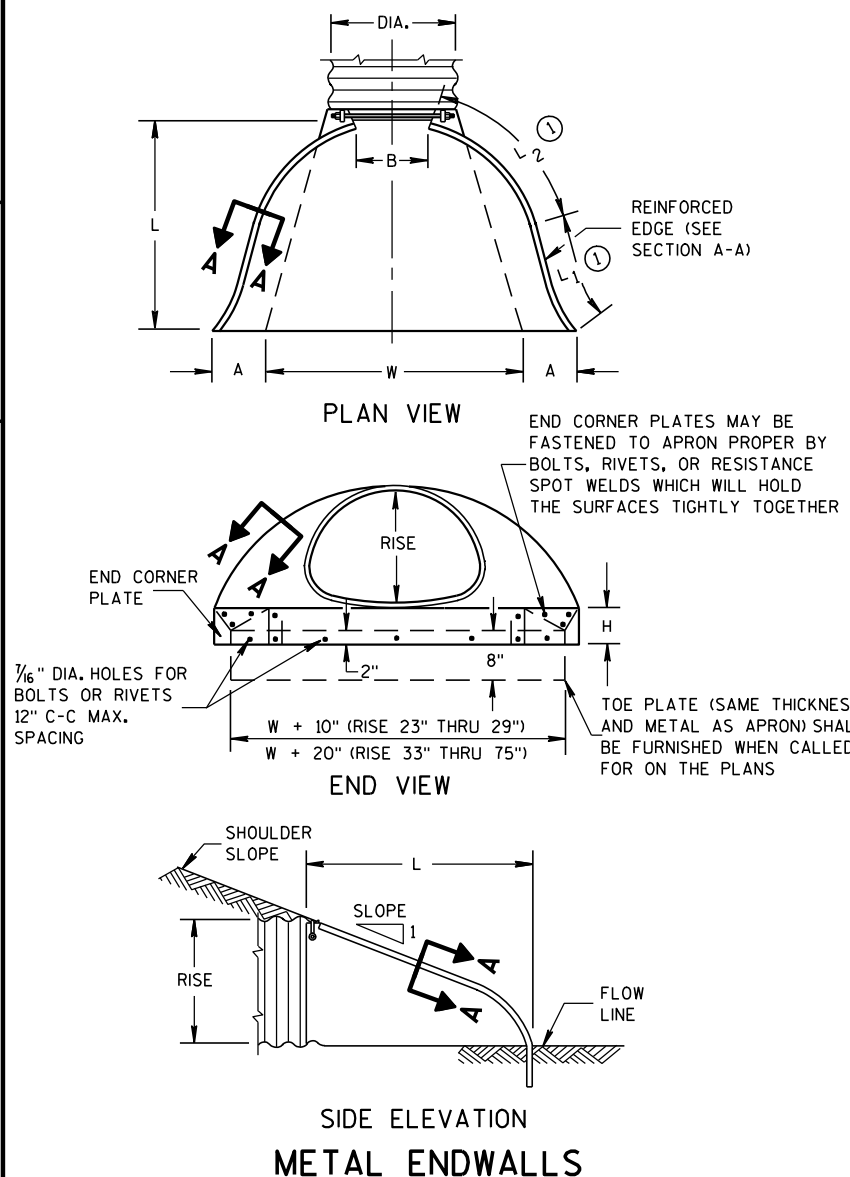
CONCRETE APRON ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR ALUMINUM APRON ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 66" X 51" PIPE ARCH 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 ARCH PERIMETER.

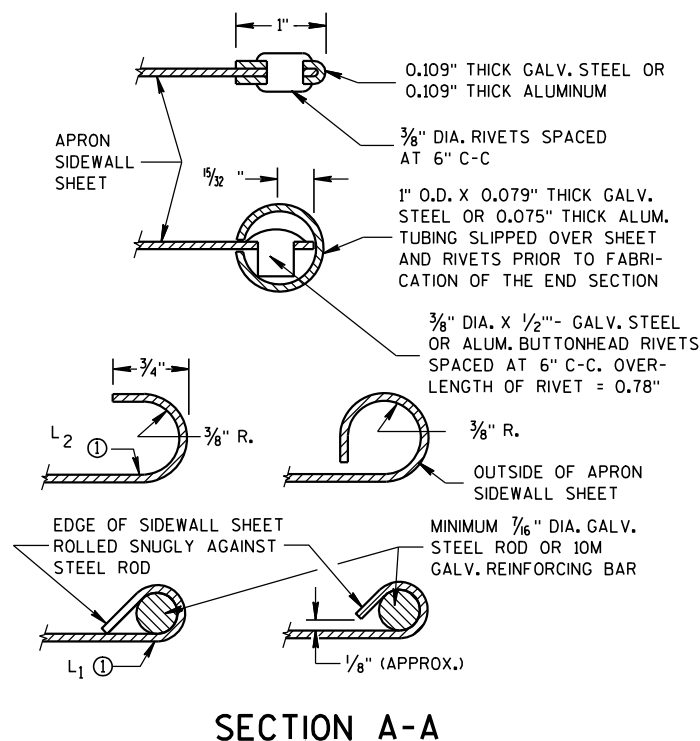
LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 77" X 52" THROUGH 112" X 75" APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER 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.

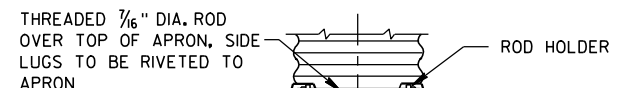
① FOR PIPE ARCH SIZES UP TO 73" X 55" A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.



METAL ENDWALLS

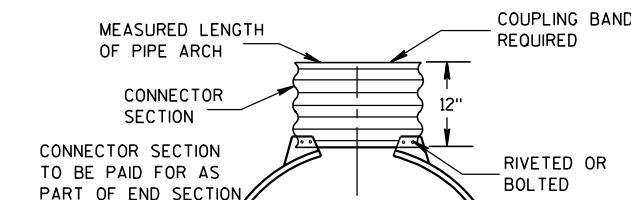


SECTION A-A



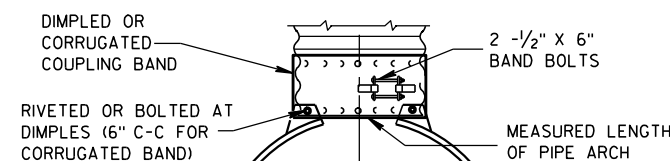
TYPE 2

FOR 17" X 13" THRU 112" X 75" PIPE ARCH



TYPE 3

FOR 64" X 43" THRU 112" X 75" PIPE ARCH



TYPE 5

ALTERNATE FOR: ALL SIZES CORRUGATED PIPE ARCHES

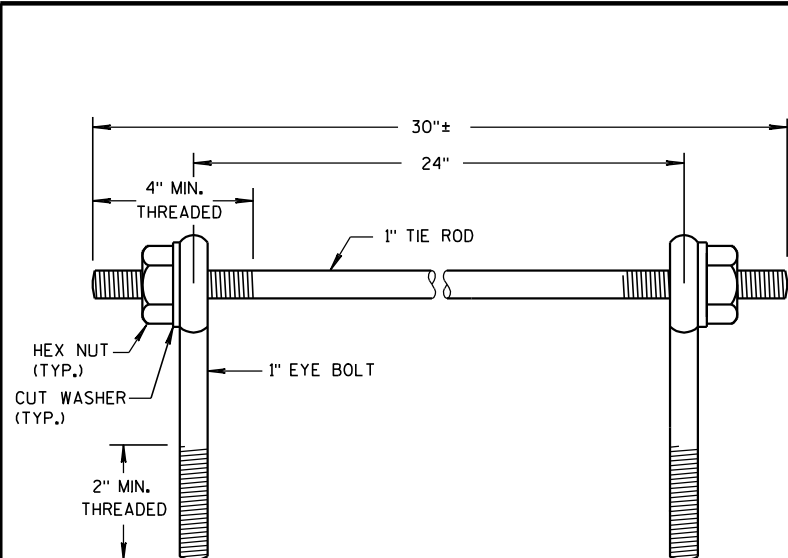
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL.

CONNECTION DETAILS

APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE

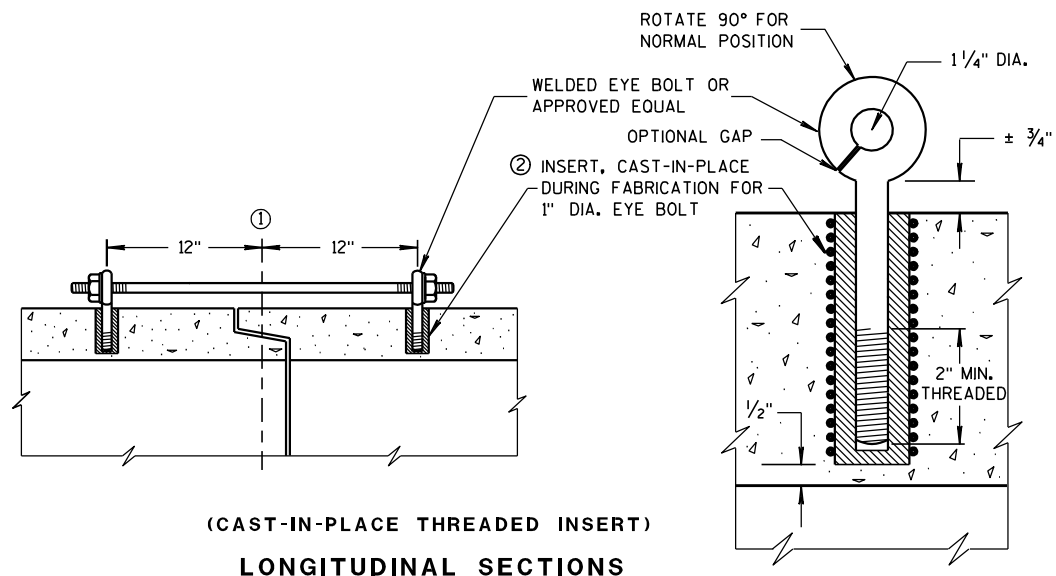
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



EYE BOLTS AND TIE ROD

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



(CAST-IN-PLACE THREADED INSERT)
LONGITUDINAL SECTIONS

GENERAL NOTES

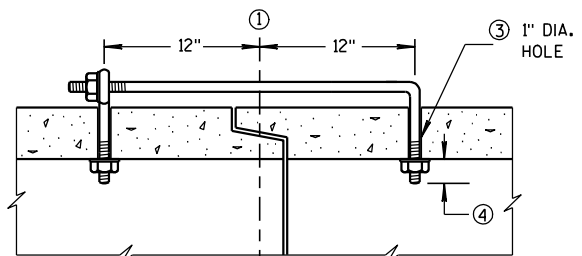
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

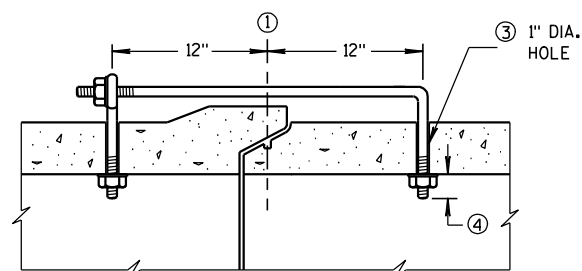
DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR JOINT TIES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

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

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



(TONGUE & GROOVE PIPE)



(MODIFIED BELL PIPE)
LONGITUDINAL SECTION

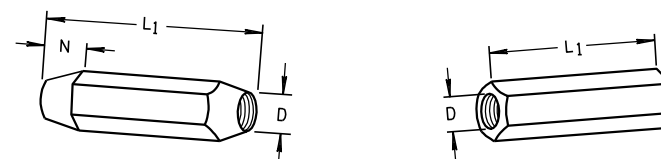
EYE BOLT DIMENSION TABLE

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

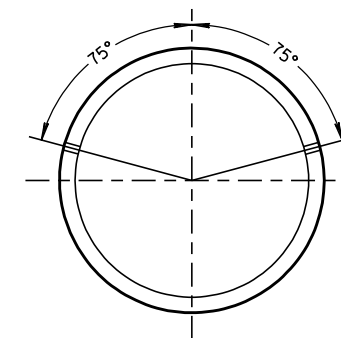
ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L1	N
12-60	5/8	5/8	5	1/2
66-84	3/4	3/4	5	1/2
90-108	1	1	7	1 1/6

DIMENSIONS SHOWN ARE IN INCHES

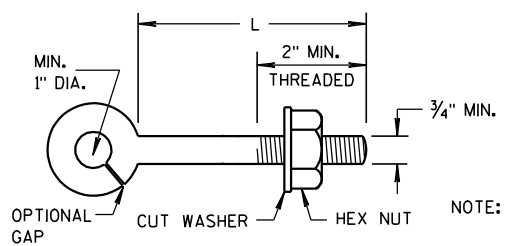


TAPERED PLAIN
RIGHT AND LEFT THREADS
SLEEVE NUTS



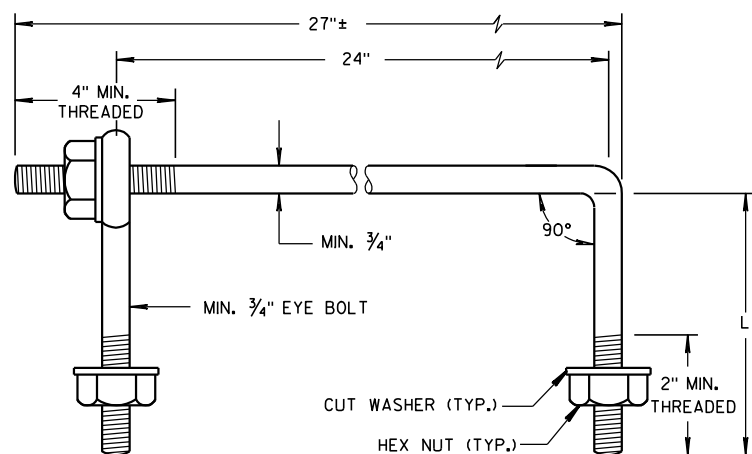
PLACEMENT OF (2) CAST-IN-PLACE
INSERTS OR HOLES DURING FABRICATION
FOR PIPE SECTIONS REQUIRING TIE RODS

TRANSVERSE SECTION



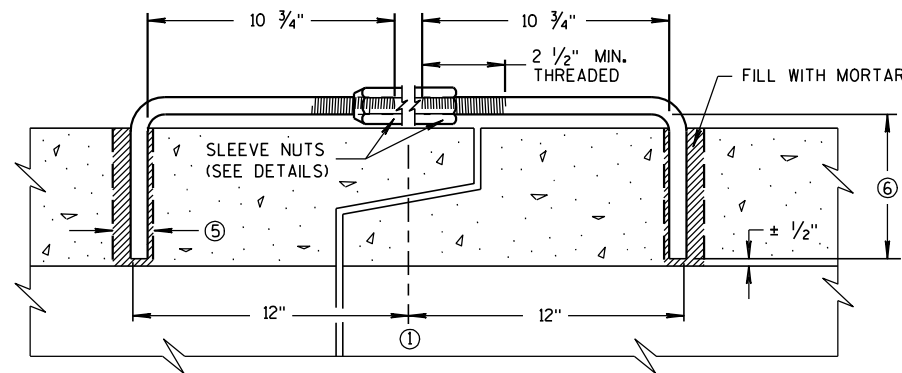
EYE BOLT

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30" LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.



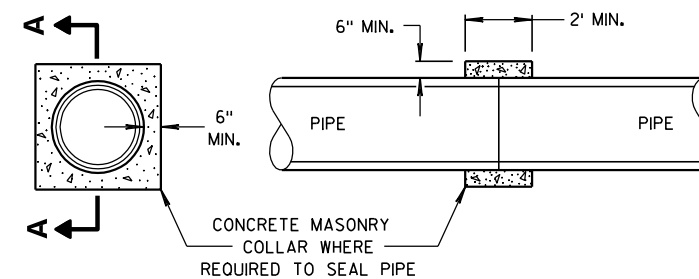
EYE BOLT AND TIE ROD

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



LONGITUDINAL SECTION

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



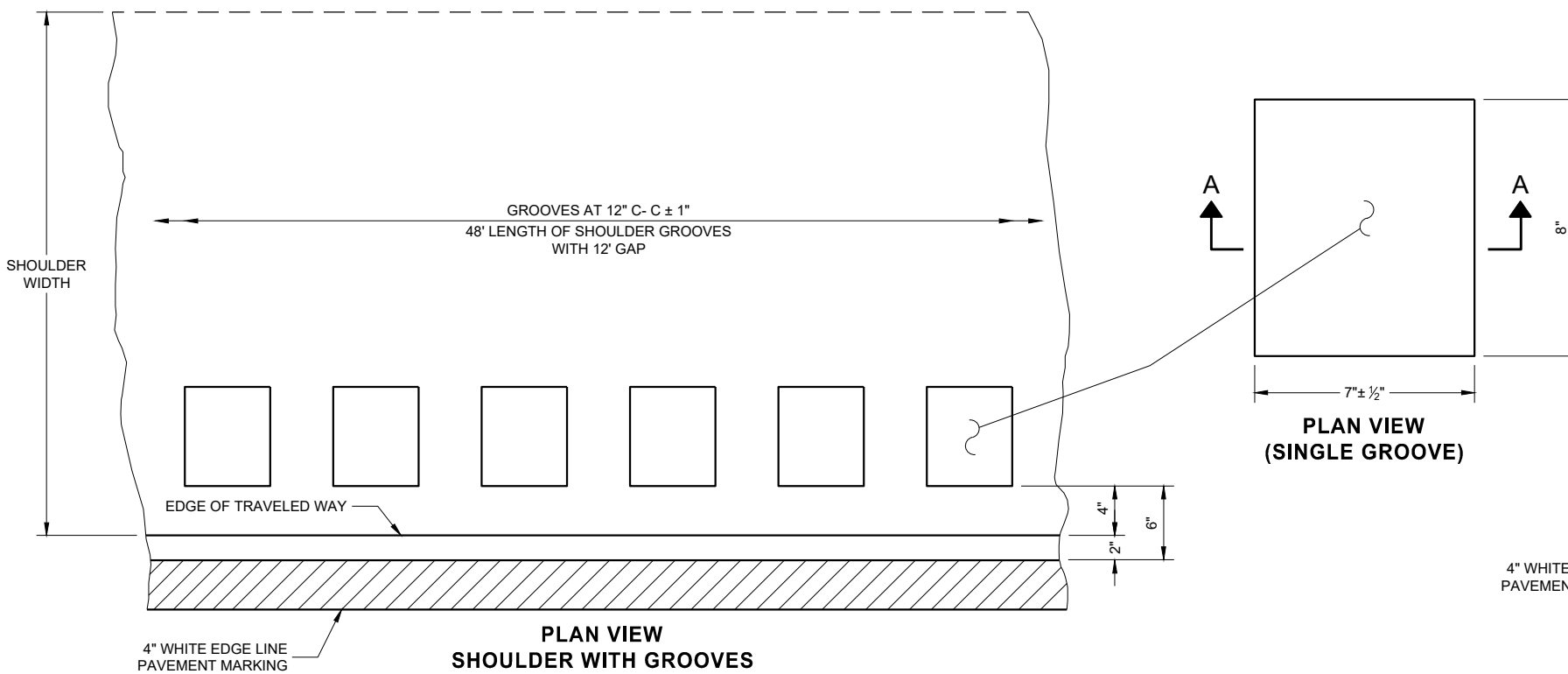
SECTION A-A

CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE
PIPE AND CONCRETE
COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



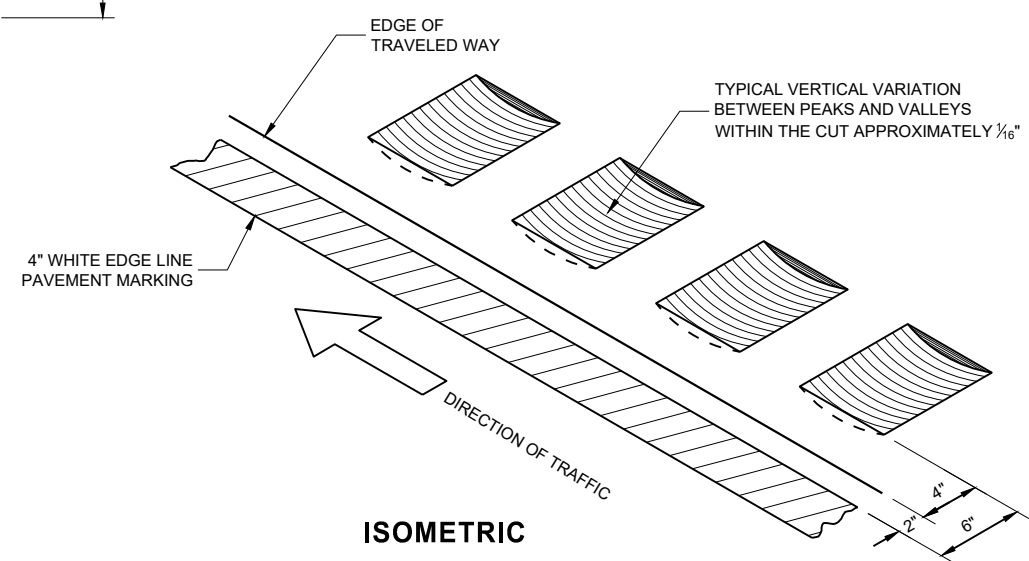
PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP

GENERAL NOTES

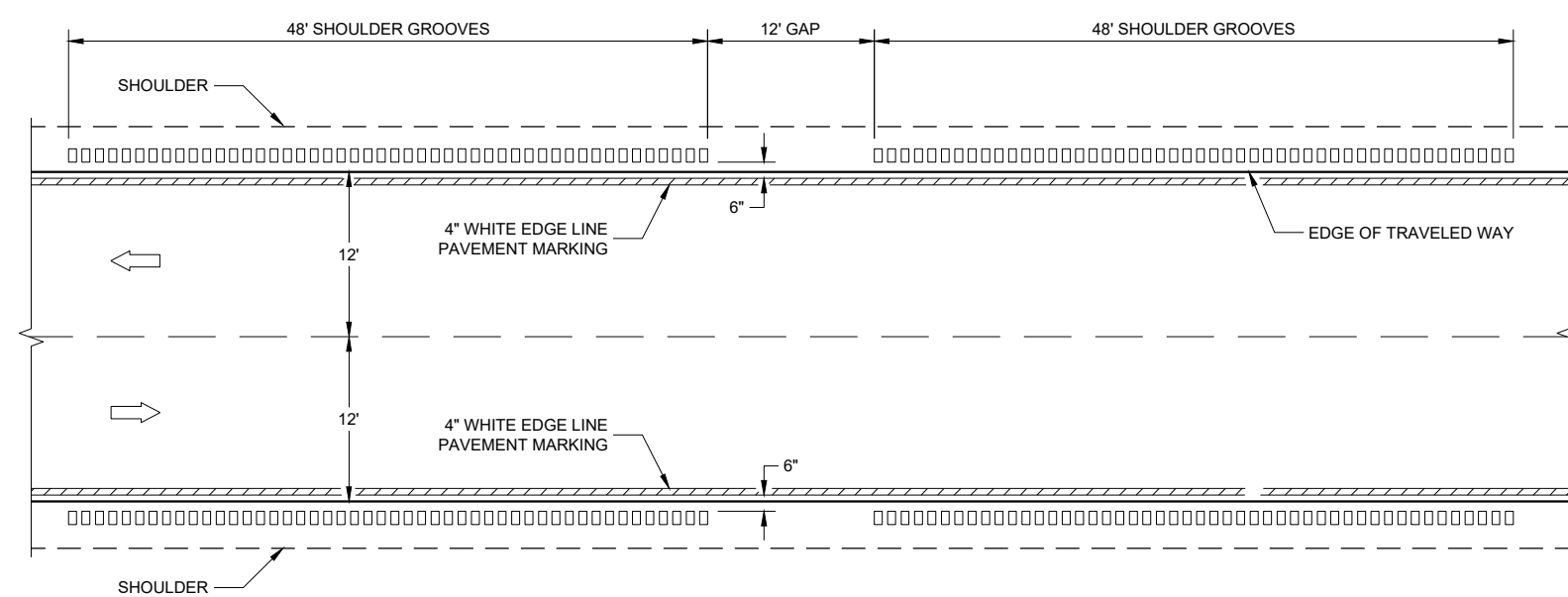
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

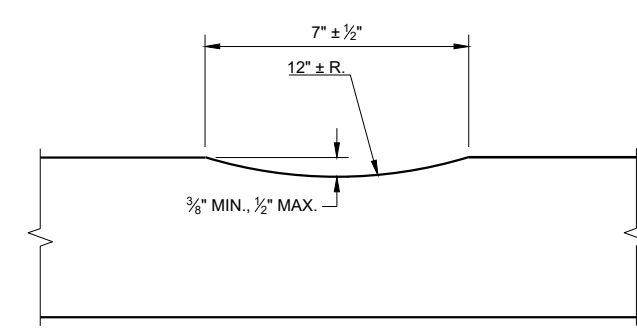
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



ISOMETRIC



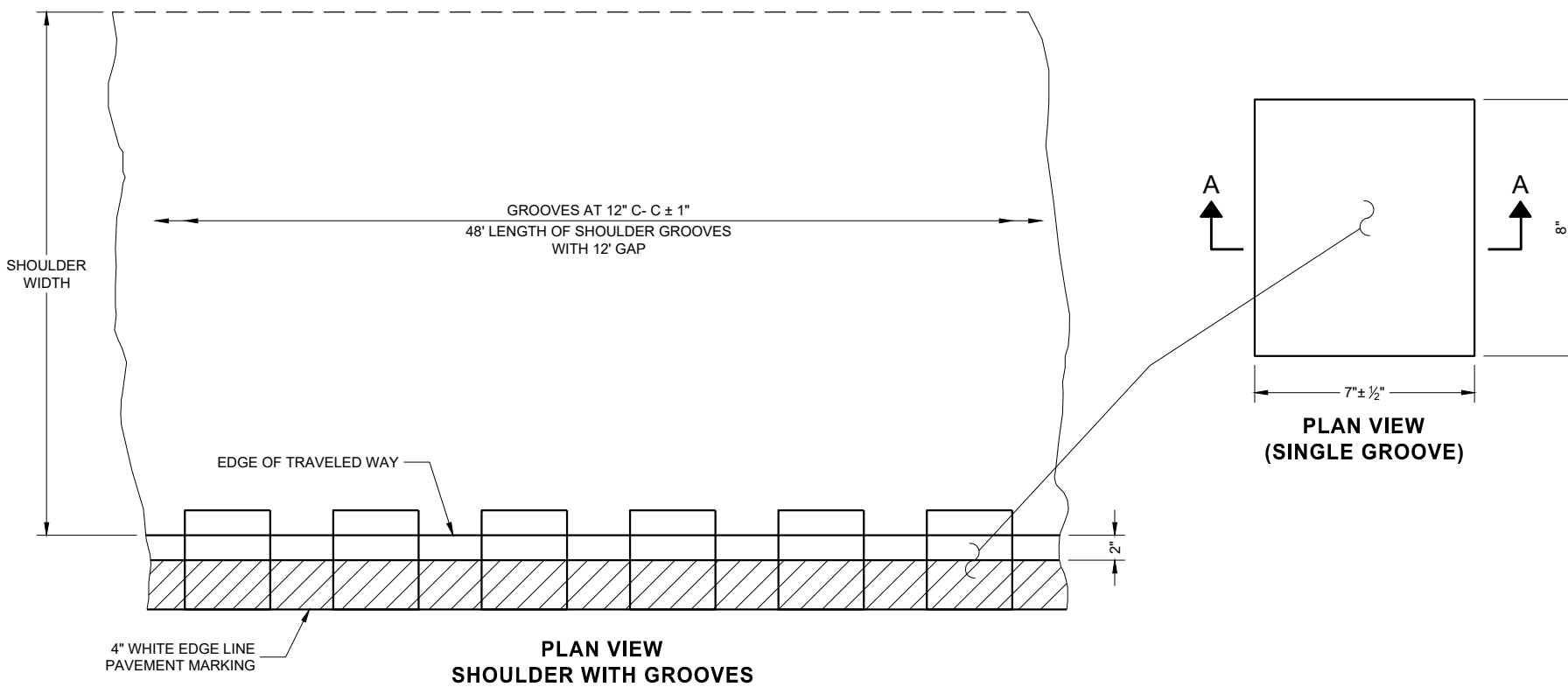
TYPE 1
2 - LANE SHOULDER RUMBLE STRIP



SECTION A - A

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



6

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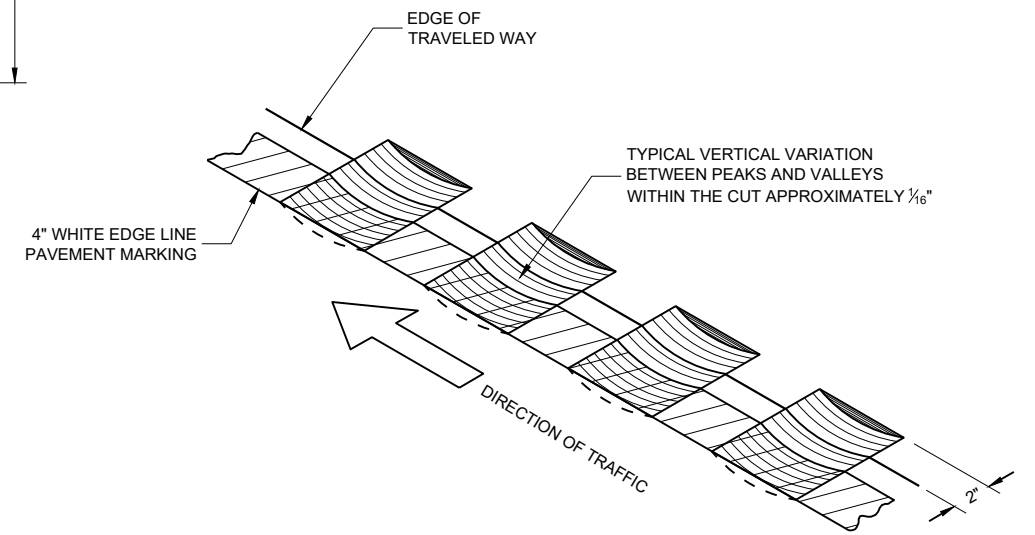
PLACEMENT DETAIL FOR TYPE 2 MILLED RUMBLE STRIP

GENERAL NOTES

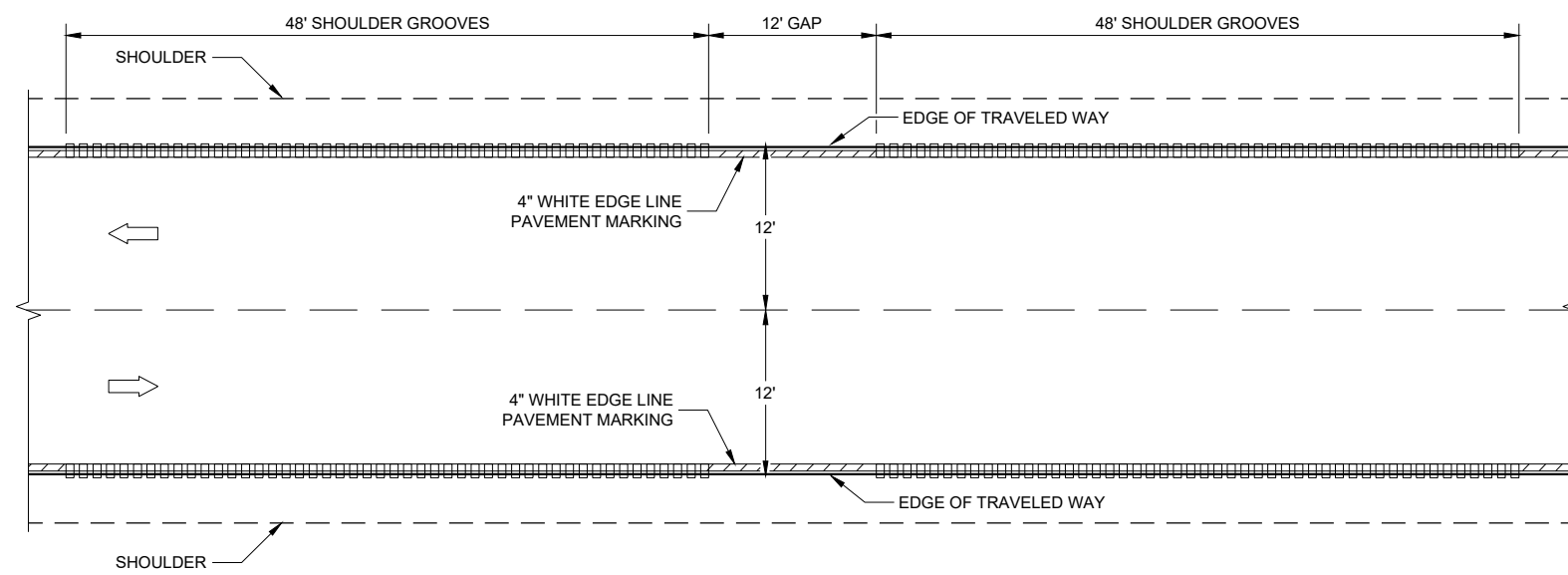
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

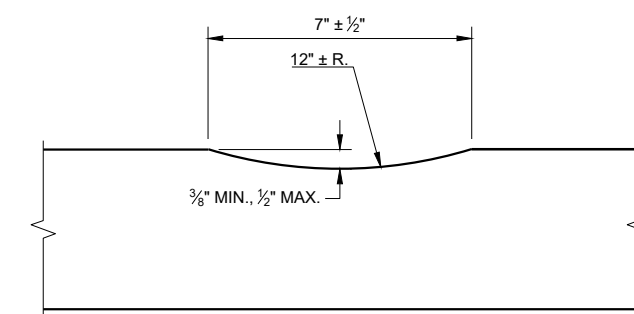
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



ISOMETRIC



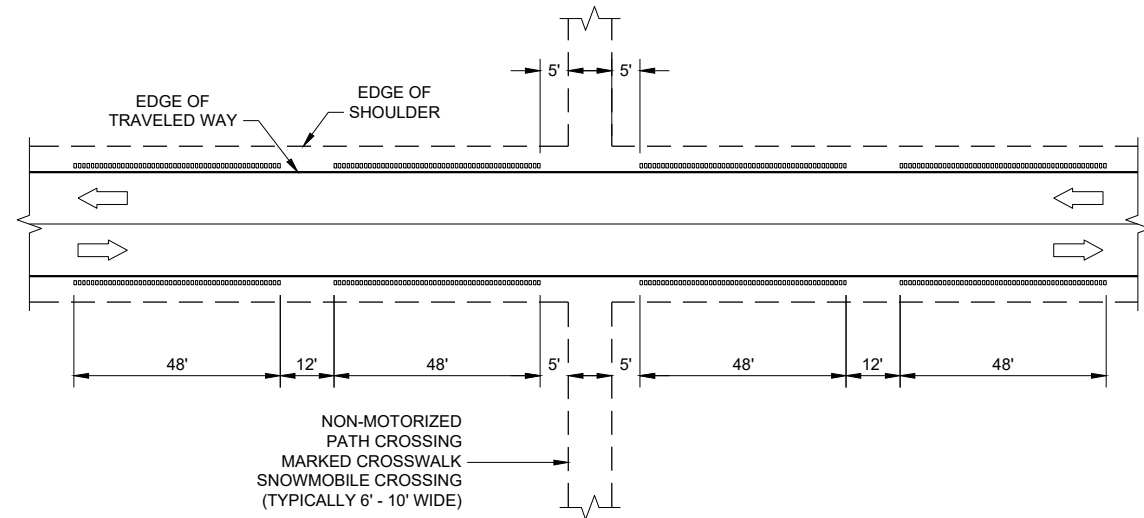
**TYPE 2
2 - LANE SHOULDER RUMBLE STRIP**



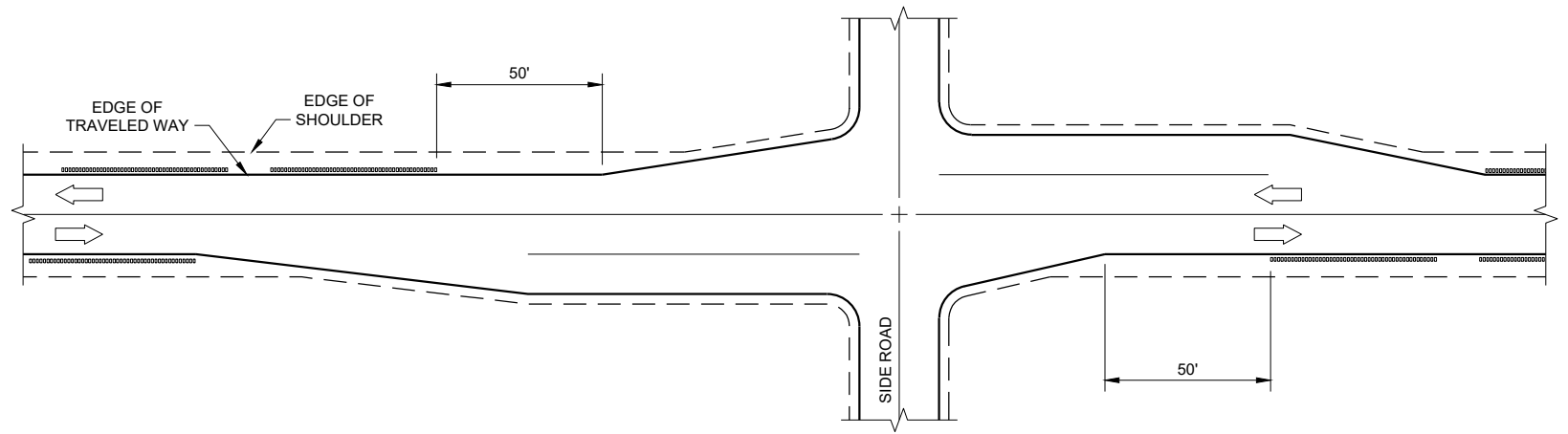
SECTION A - A

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

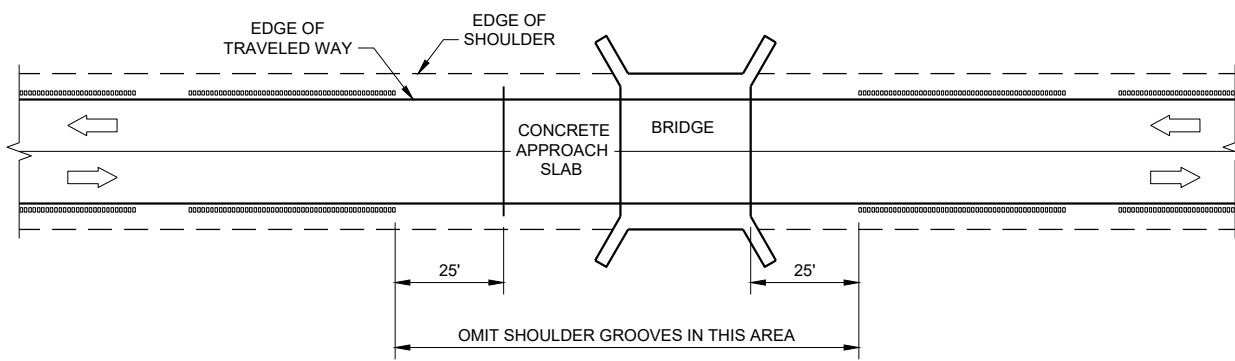
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



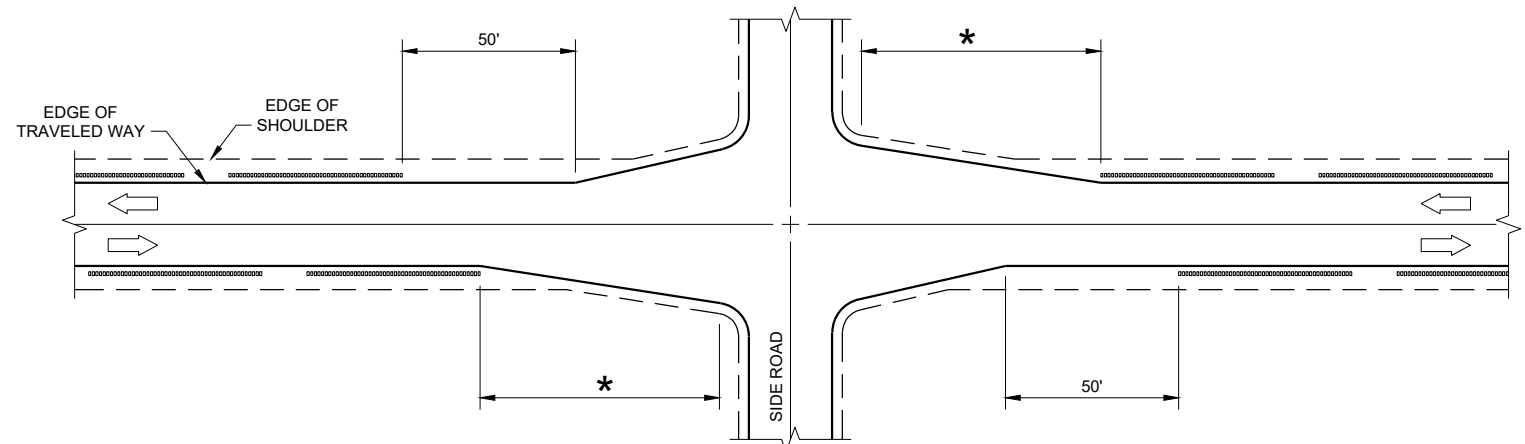
SHOULDER GROOVES AT MISCELLANEOUS CROSSINGS



SHOULDER GROOVES AT RIGHT TURN LANE

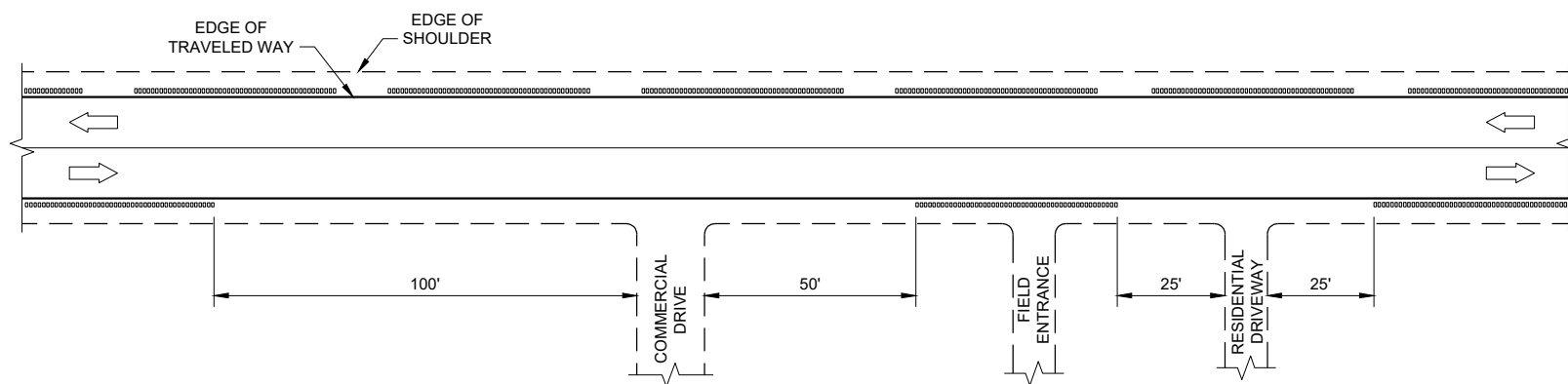


SHOULDER GROOVES AT BRIDGES



* GREATER OF 100' OR APPROACH TAPER LENGTH

SHOULDER GROOVES AT INTERSECTIONS WITH APPROACH TAPER



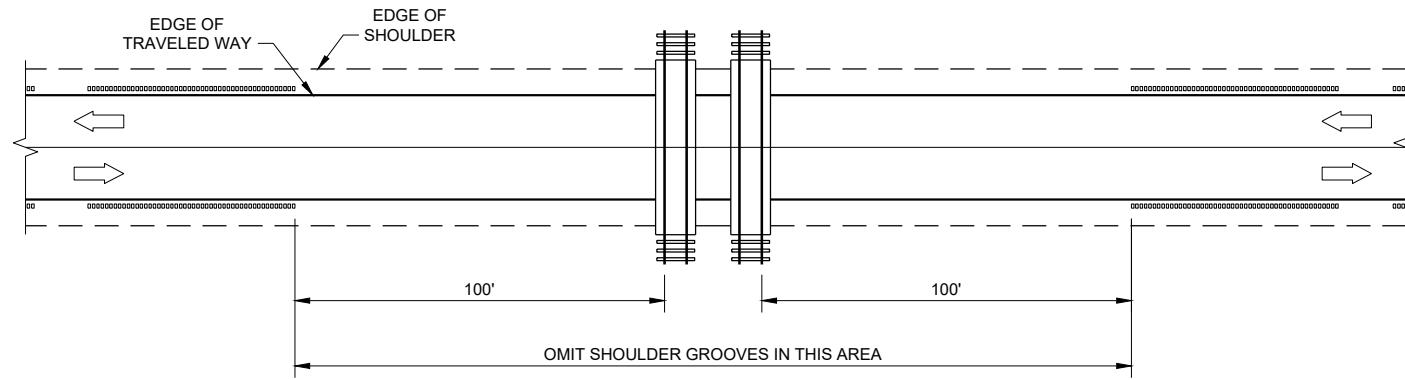
SHOULDER GROOVES AT DRIVEWAYS^①

GENERAL NOTES

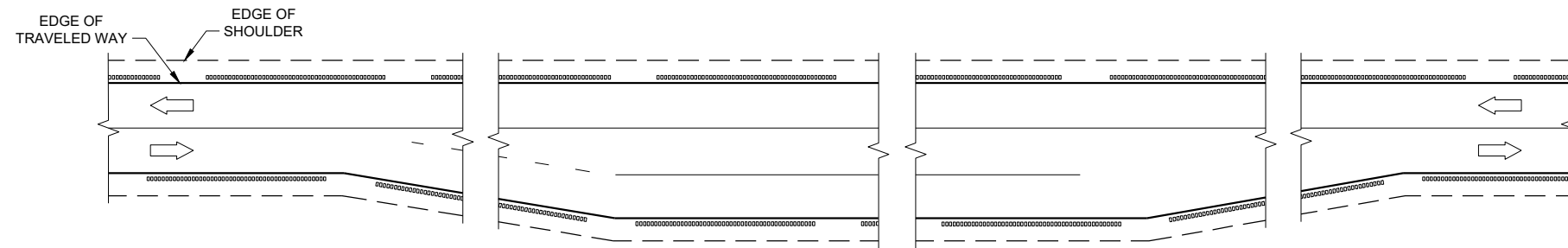
- ① SHOULDER GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.

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

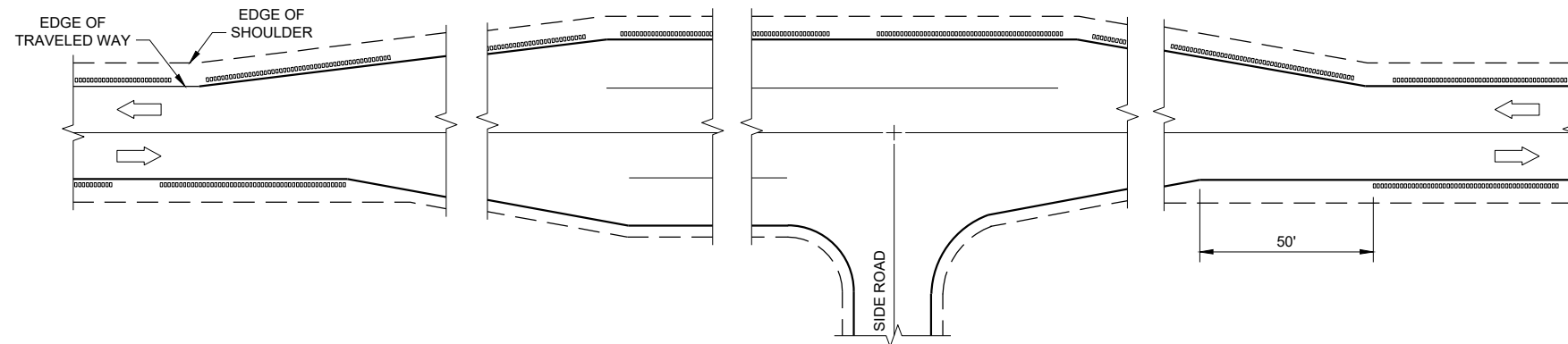
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



SHOULDER GROOVES AT RAILROADS



SHOULDER GROOVES AT PASSING AND CLIMBING LANES



SHOULDER GROOVES AT BYPASS LANES

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

GENERAL NOTES

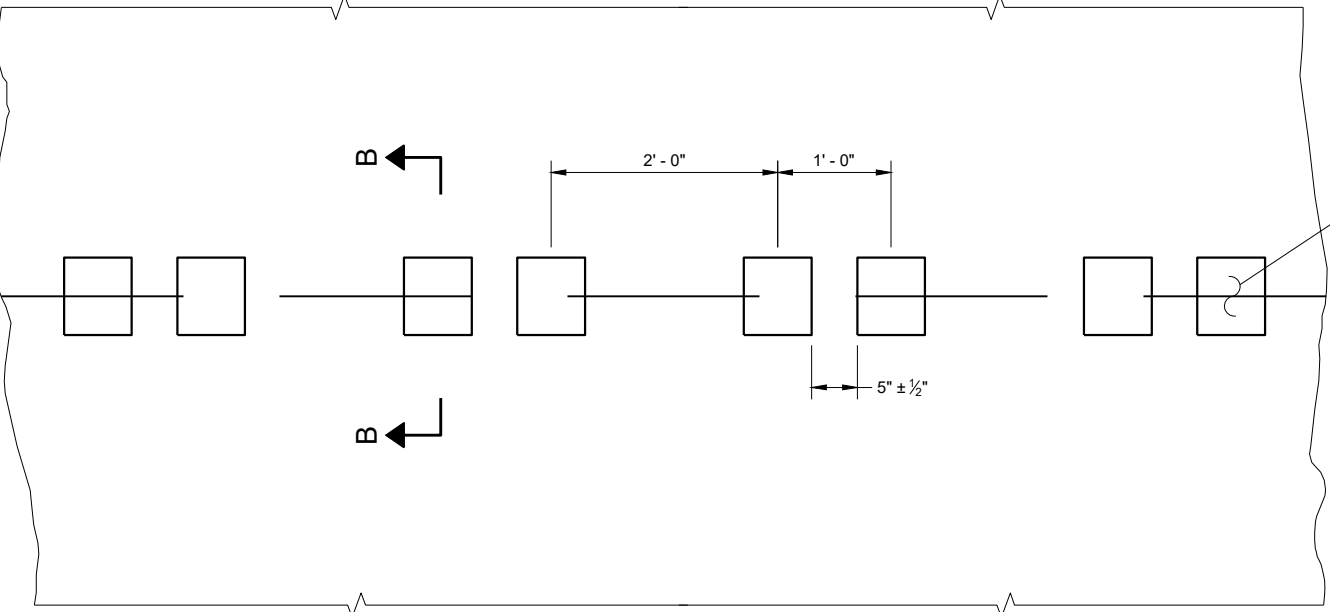
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

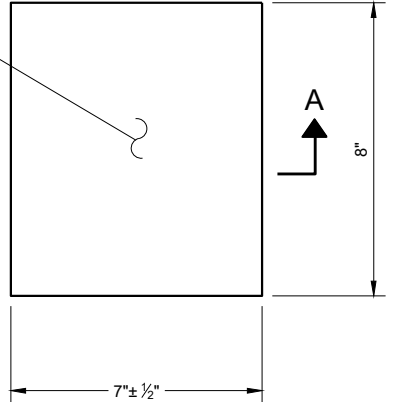
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

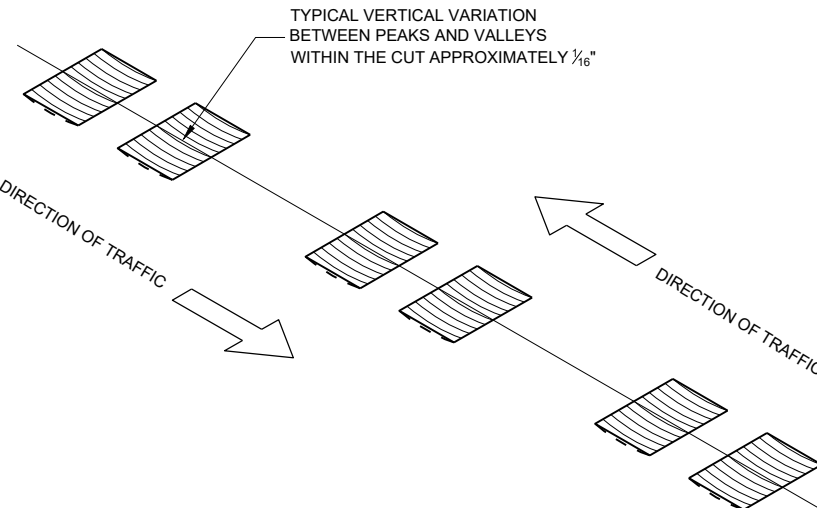
- ① CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



**PLAN VIEW
SHOULDER WITH GROOVES**

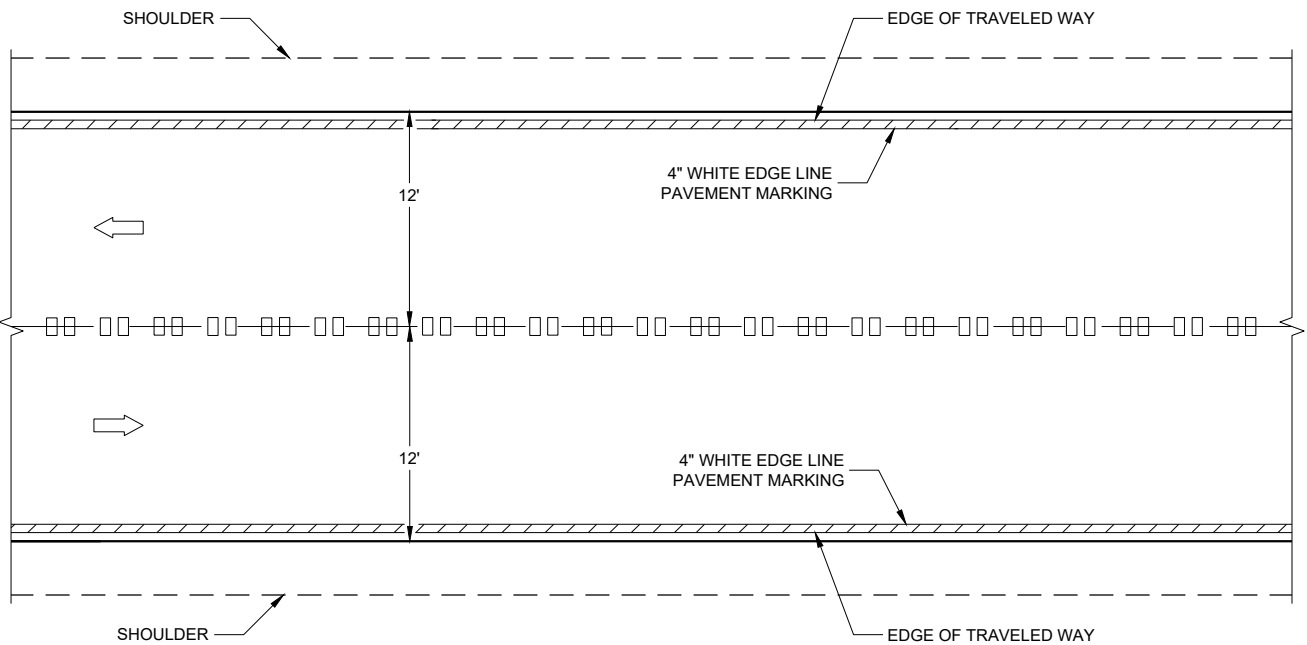


**PLAN VIEW
(SINGLE GROOVE)**

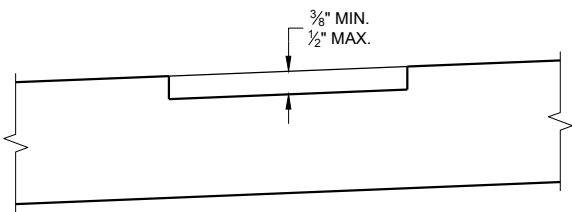


ISOMETRIC

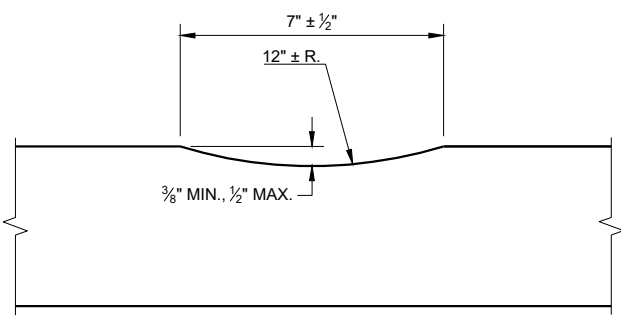
PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP



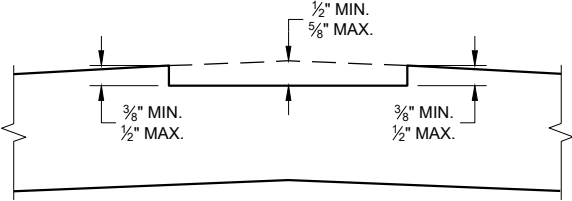
CENTERLINE GROOVES ON TWO-WAY ROADWAYS



**SECTION B - B
SUPERELEVATED ROADWAY**



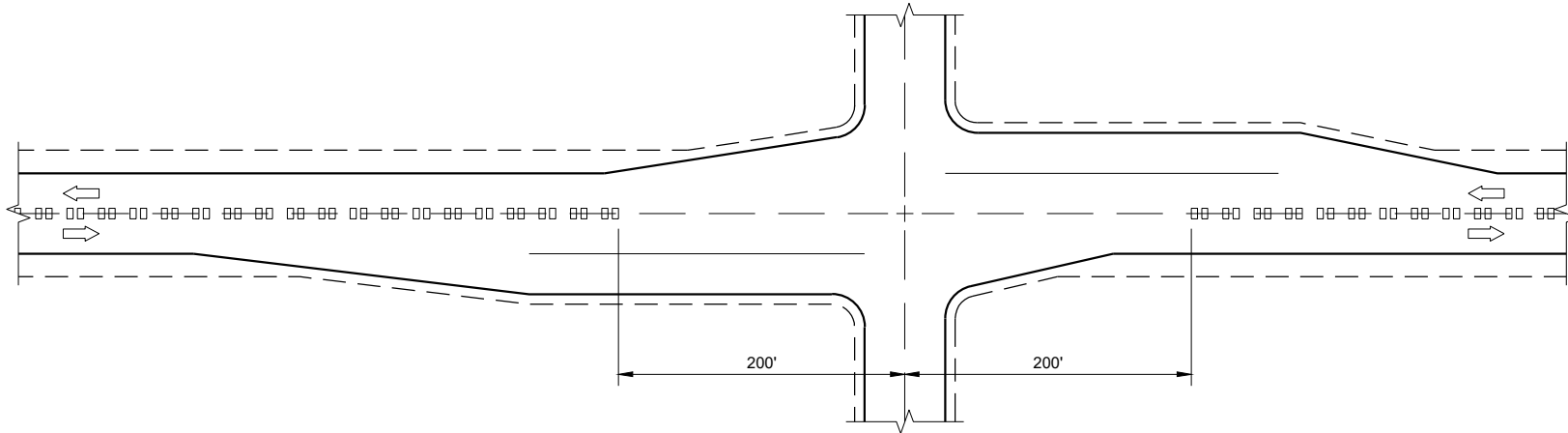
SECTION A - A



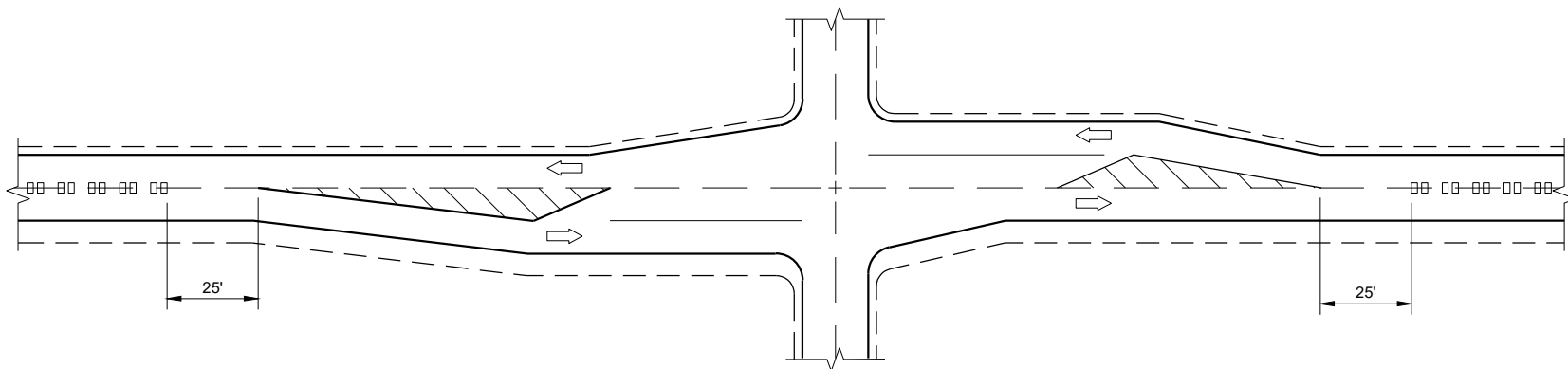
**SECTION B - B
CROWNED ROADWAY**

**2-LANE RURAL
CENTER LINE RUMBLE STRIP,
MILLING**

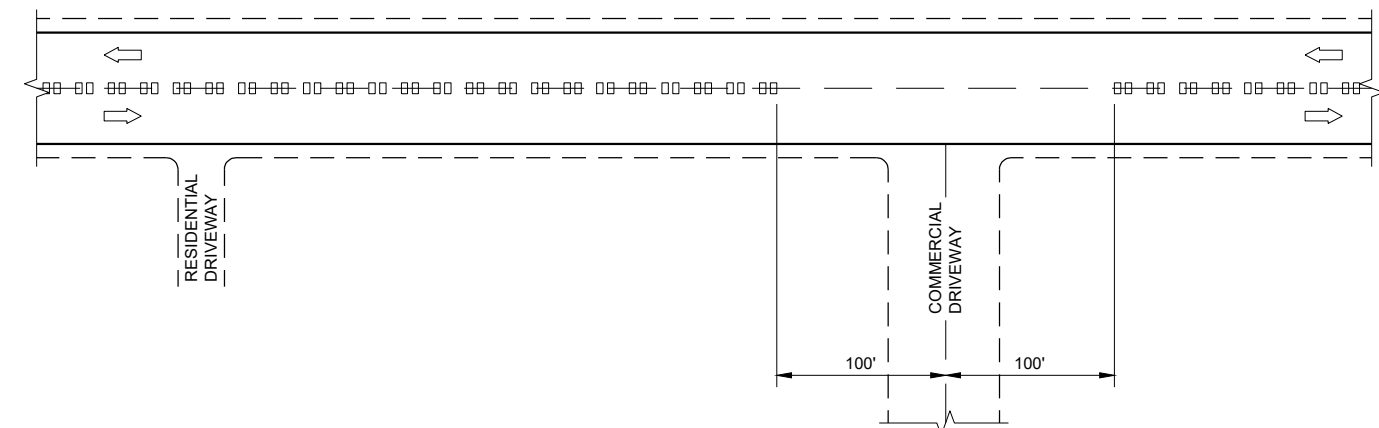
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



CENTERLINE GROOVES AT INTERSECTIONS



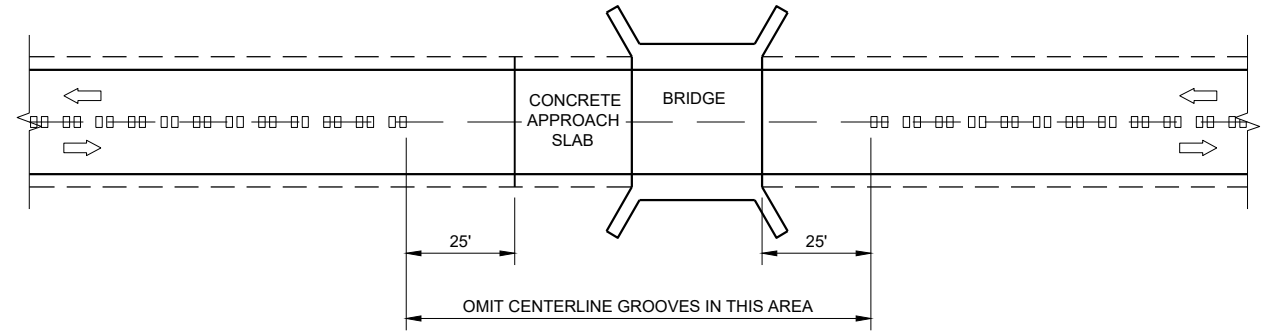
**CENTERLINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)**



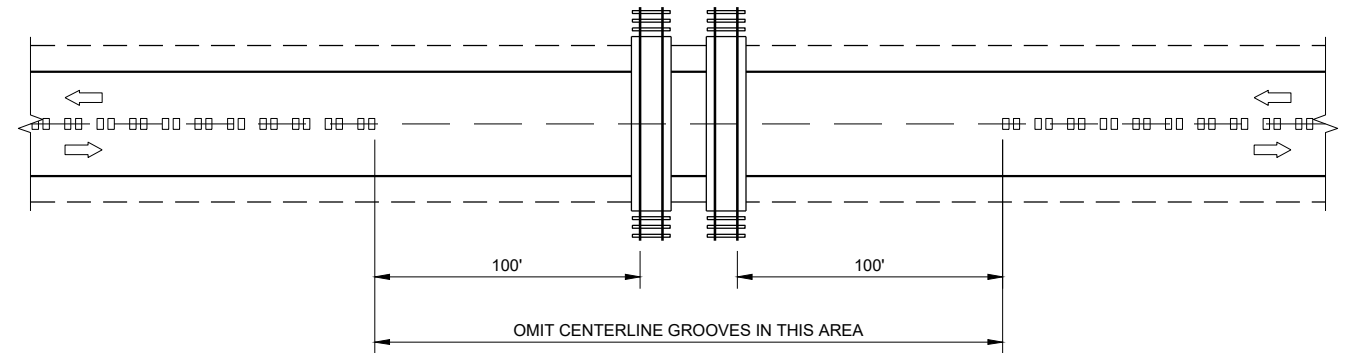
CENTERLINE GROOVES AT DRIVEWAYS^①

GENERAL NOTES

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



CENTERLINE GROOVES AT BRIDGES

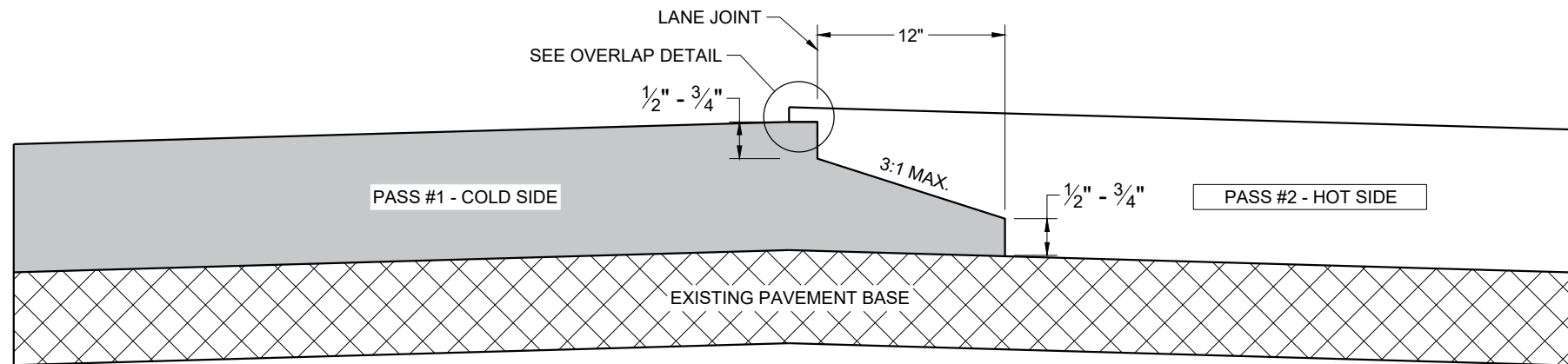


CENTERLINE GROOVES AT RAILROADS

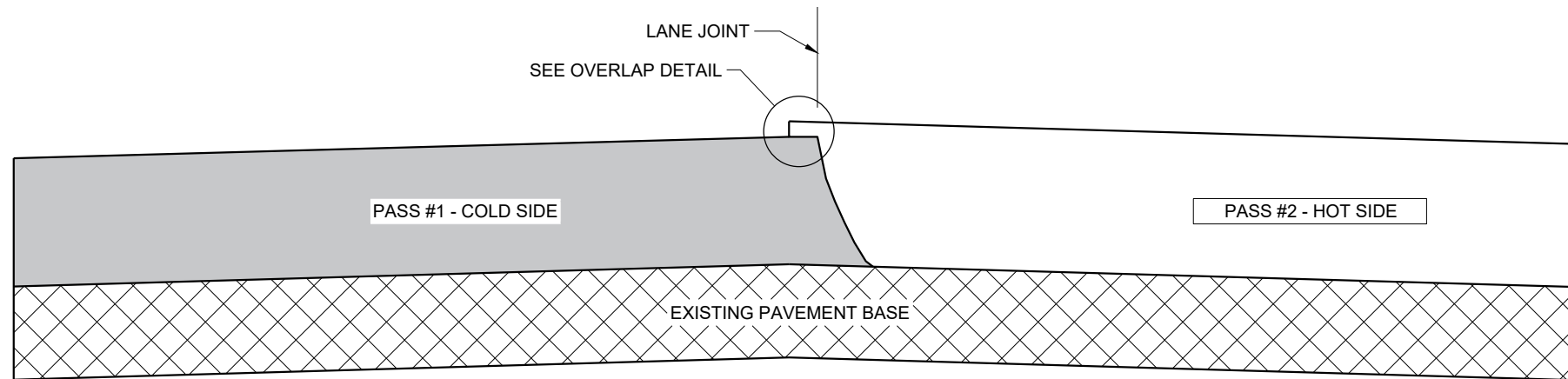
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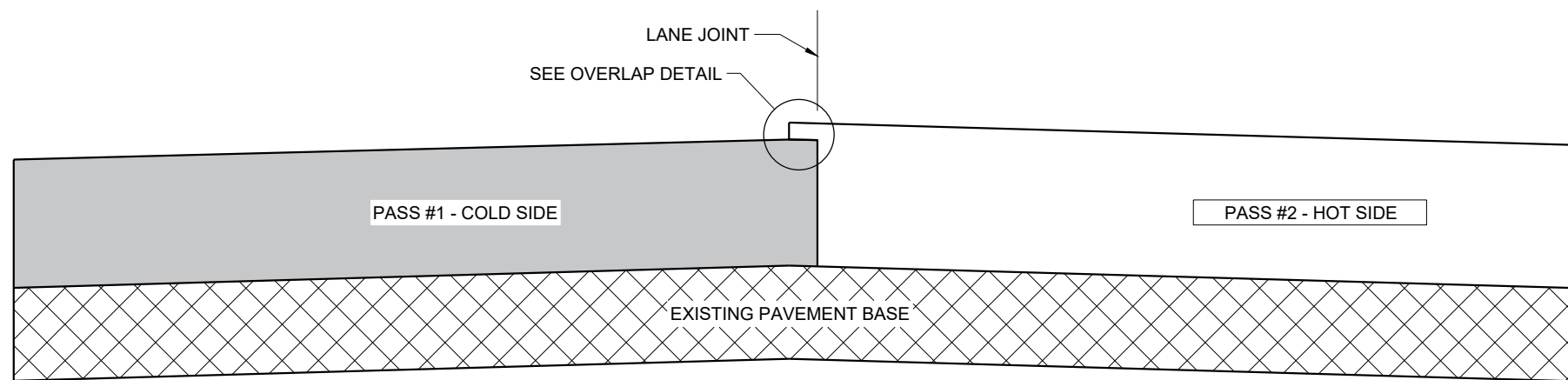
2-LANE RURAL CENTERLINE RUMBLE STRIP, MILLING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 7/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



TYPICAL PAVEMENT CROSS SECTION OF NOTCHED WEDGE LONGITUDINAL JOINT



TYPICAL PAVEMENT CROSS SECTION VERTICAL LONGITUDINAL JOINT



TYPICAL PAVEMENT CROSS SECTION OF MILLED LONGITUDINAL JOINT

GENERAL NOTES

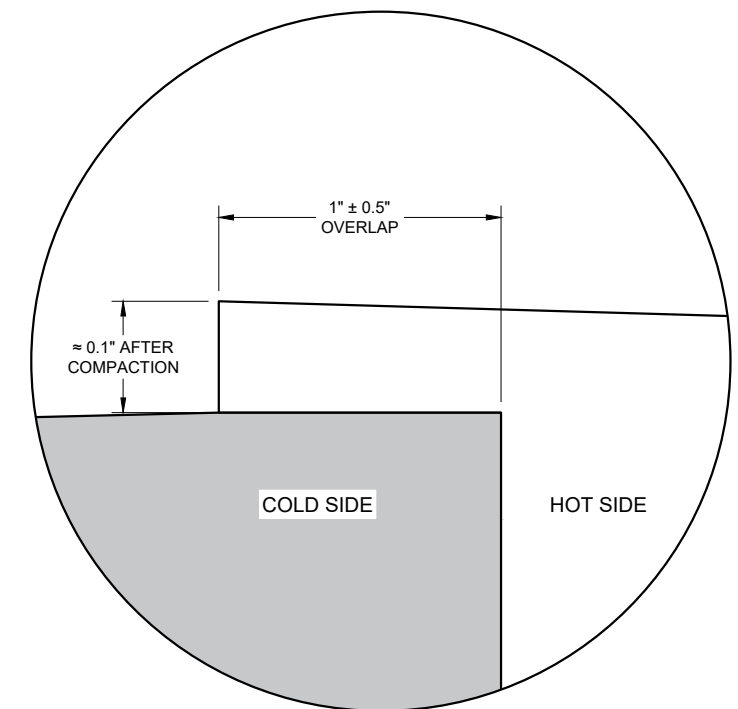
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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



OVERLAP DETAIL (TYPICAL)

6

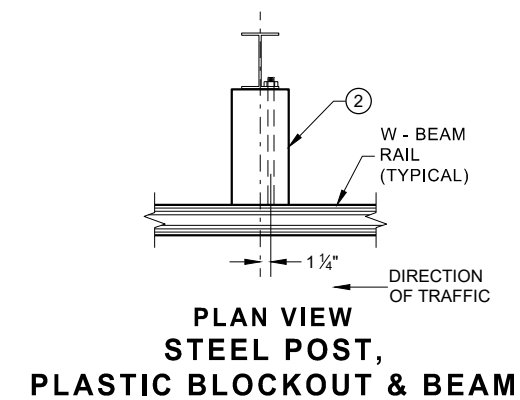
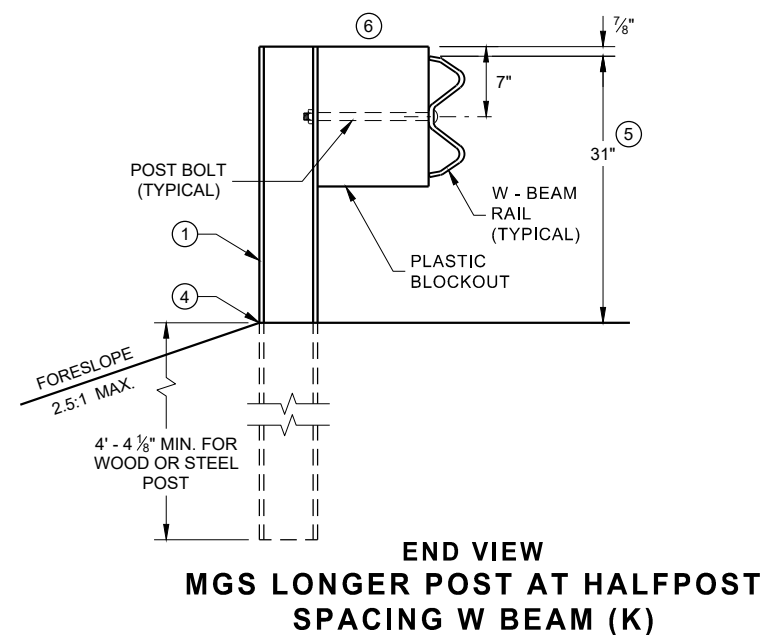
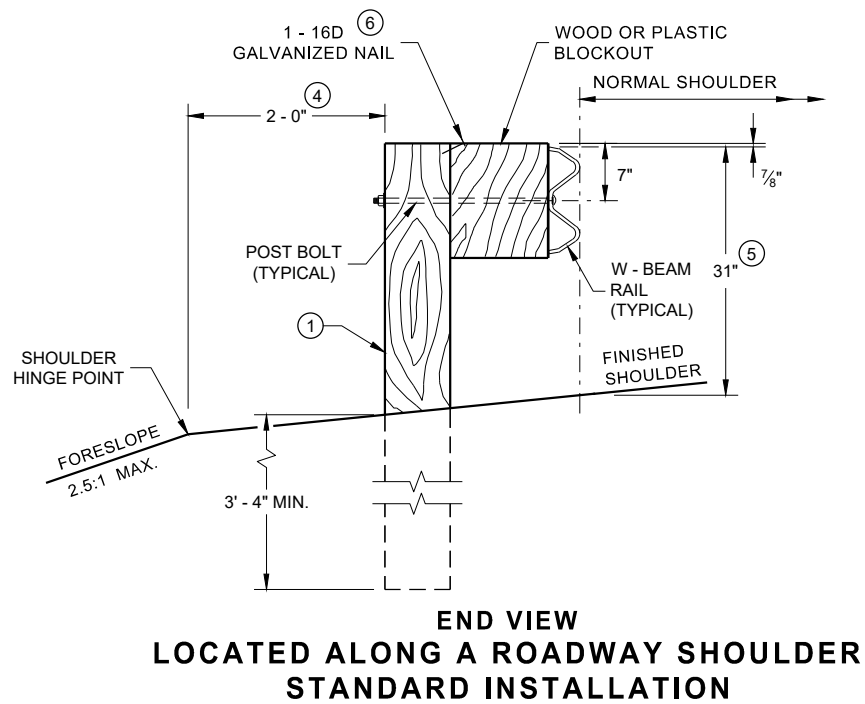
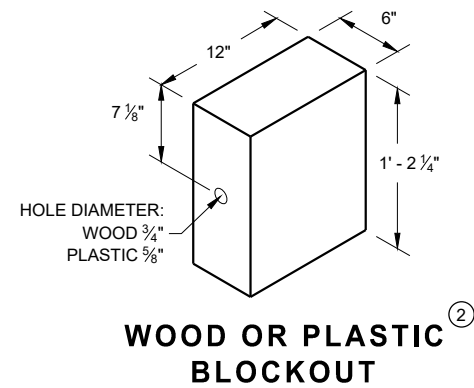
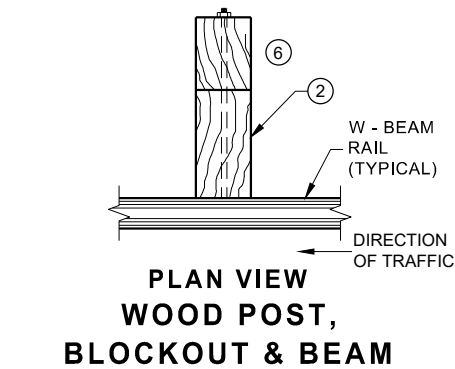
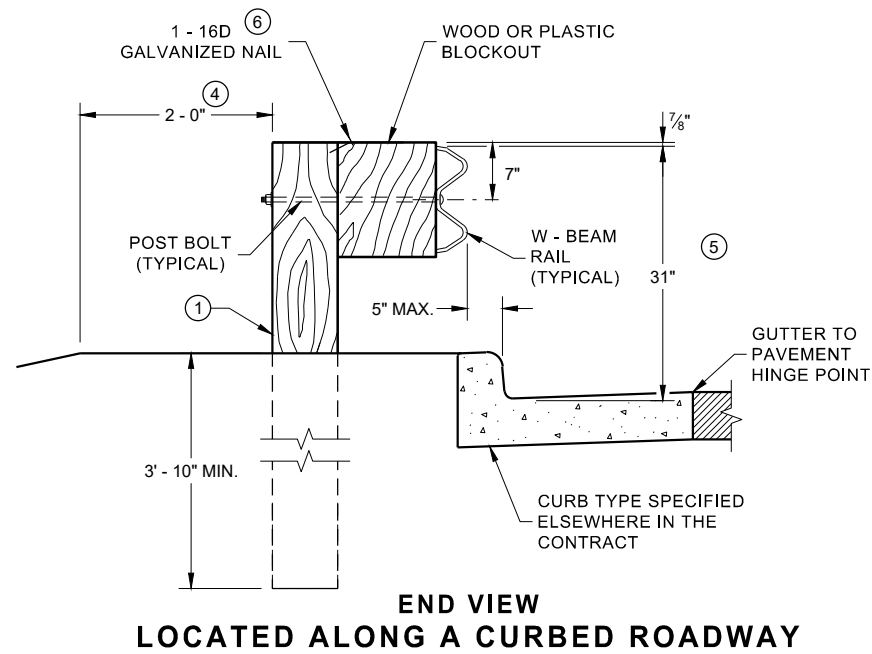
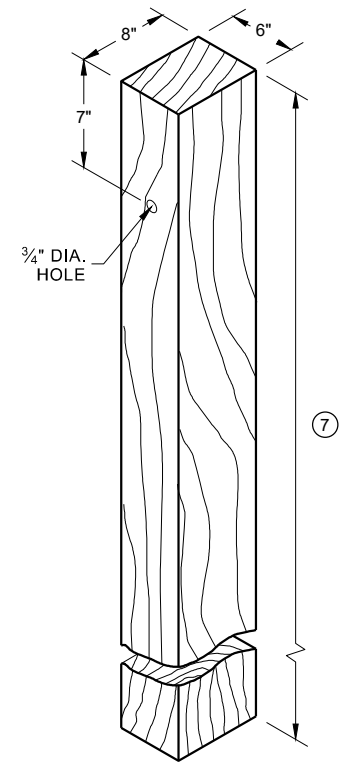
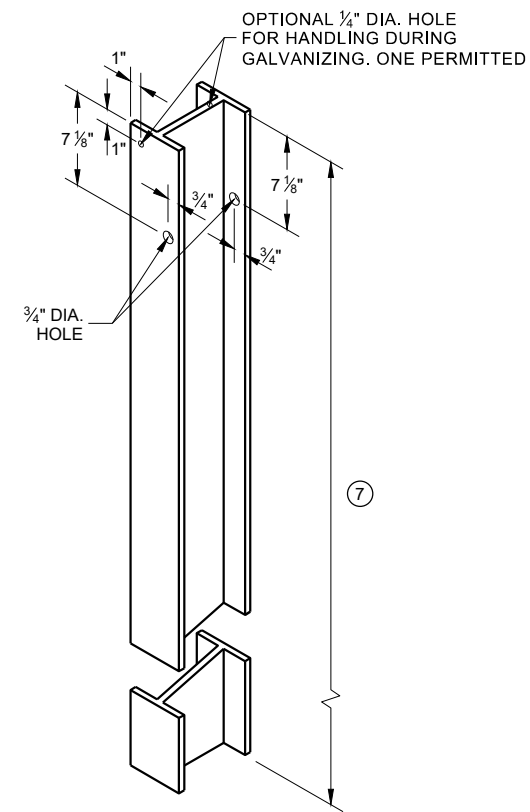
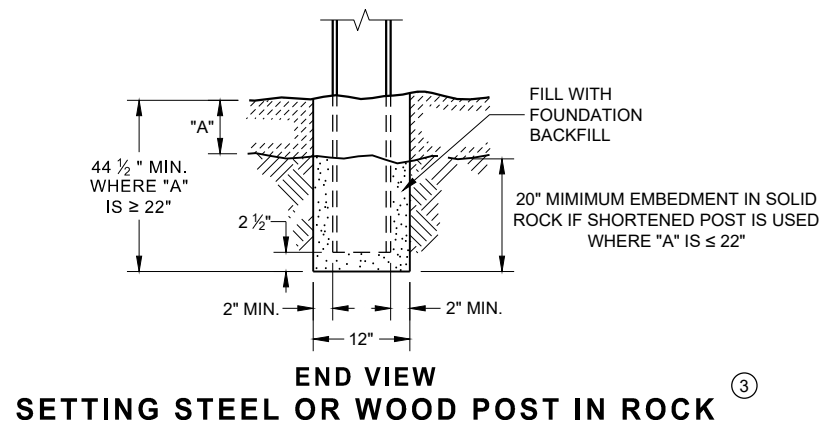
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SDD 13C19 - 02

SDD 13C19 - 02

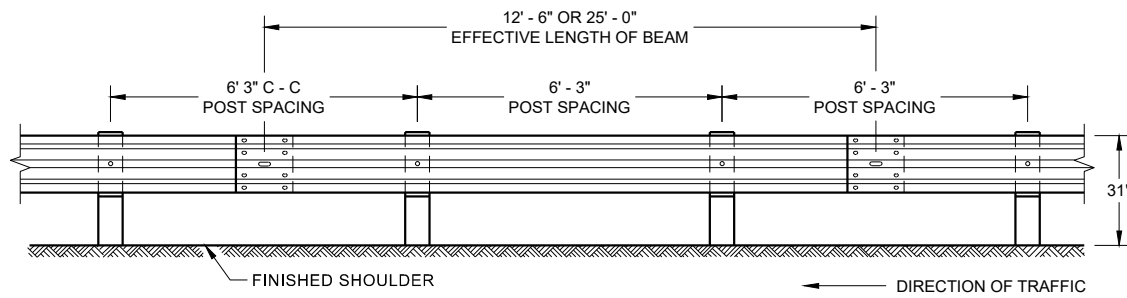
HMA LONGITUDINAL JOINTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED February 2020 DATE	/S/ Steven Hefel HMA PAVEMENT ENGINEER
<small>FHWA</small>	

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

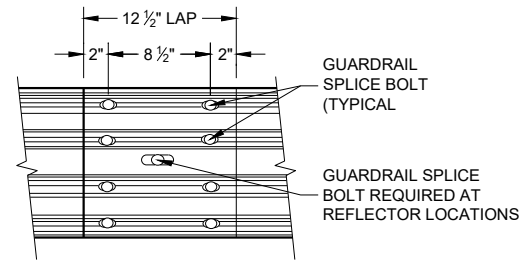


**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



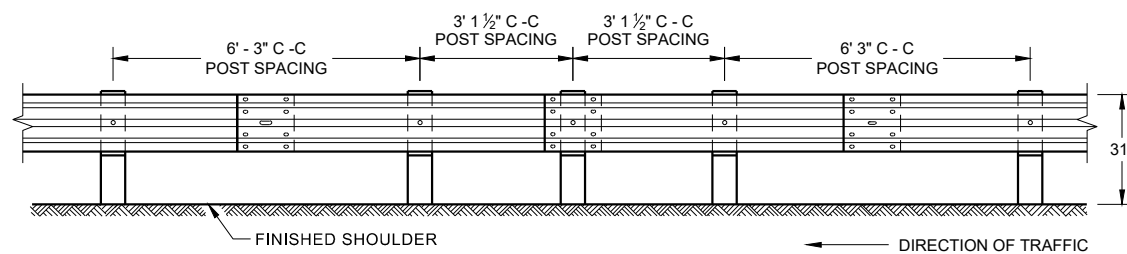
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



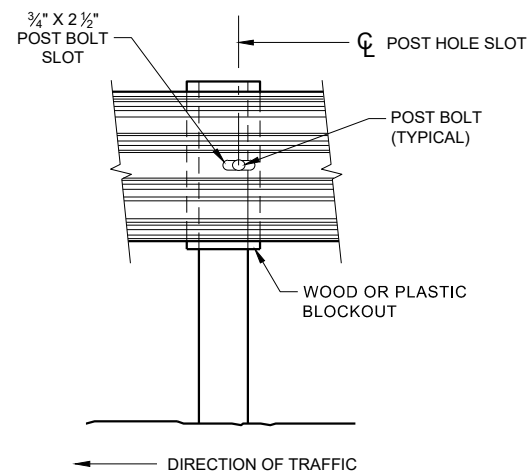
**FRONT VIEW
MID-SPAN BEAM SPLICE**

GENERAL NOTES

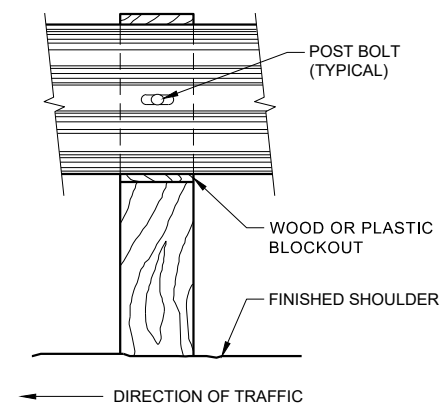
- ⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.
 - ⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER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



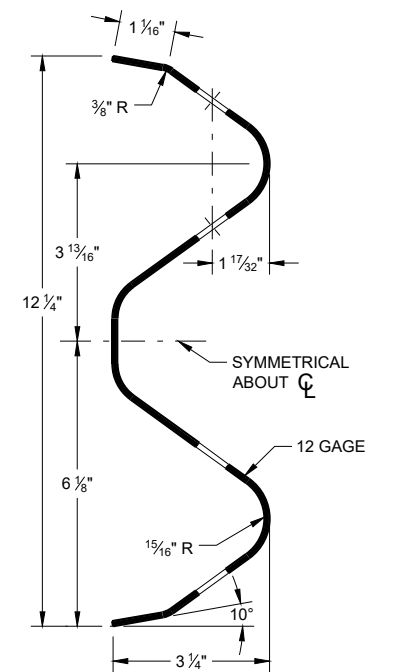
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



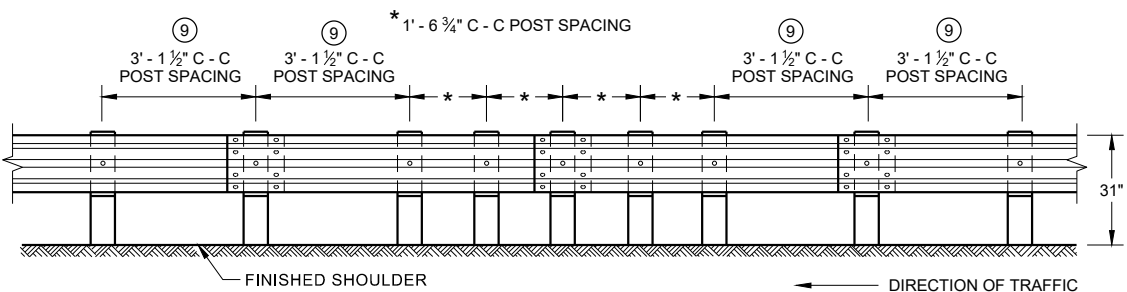
FRONT VIEW AT STEEL POST



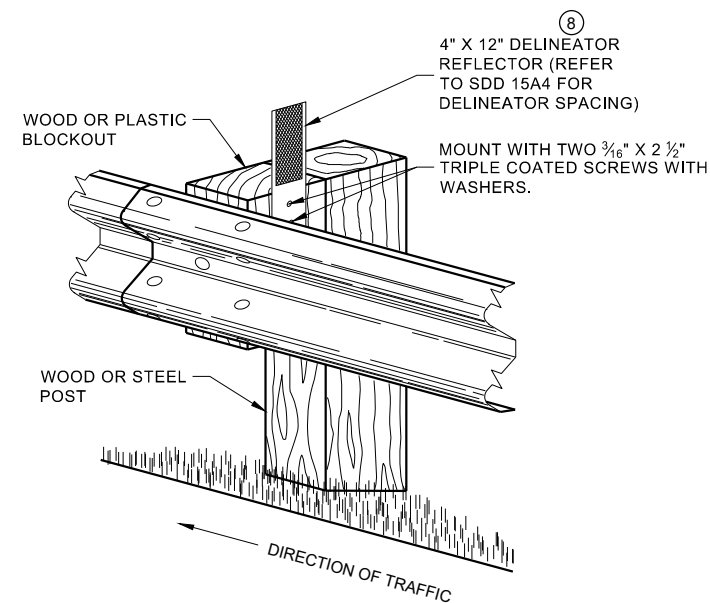
FRONT VIEW AT WOOD POST



SECTION THRU W-BEAM RAIL



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



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

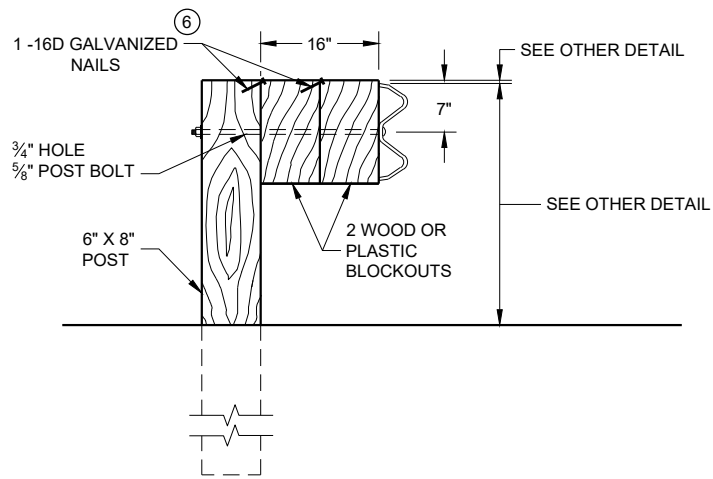
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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6

SDD 14B42 - 06b

SDD 14B42 - 06b

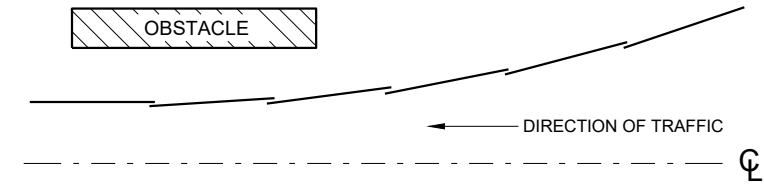
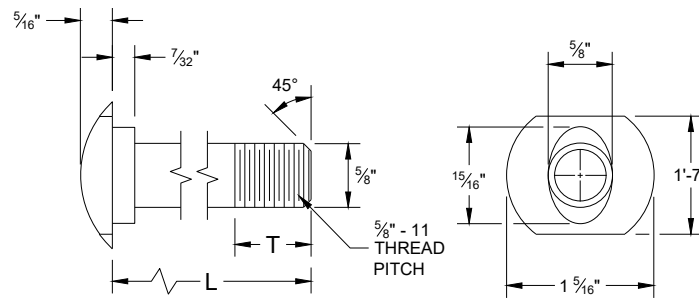


DETAIL FOR 16" BLOCKOUT DEPTH

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

NOTE:

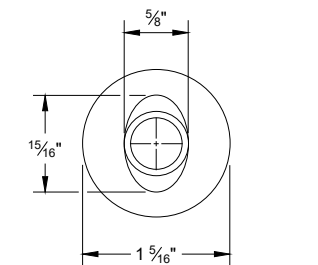
1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3/16".
2. IF THE BOLT EXTENDS MORE THAN 1/4" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.



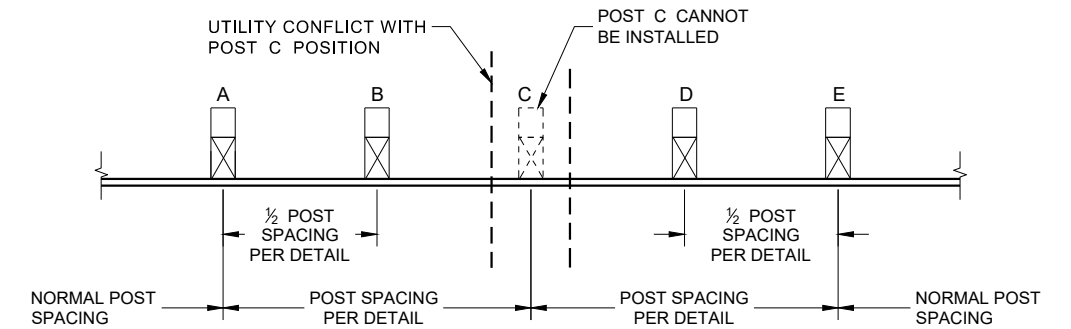
**PLAN VIEW
BEAM LAPPING DETAIL**

POST BOLT TABLE

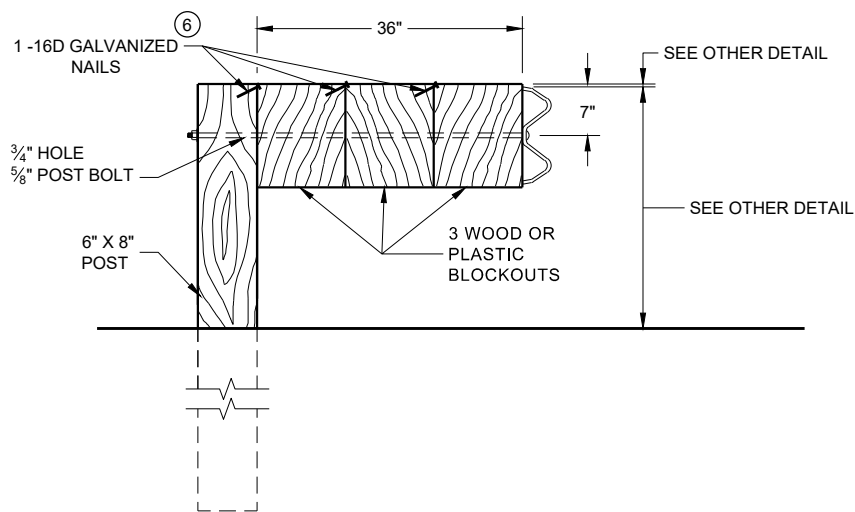
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

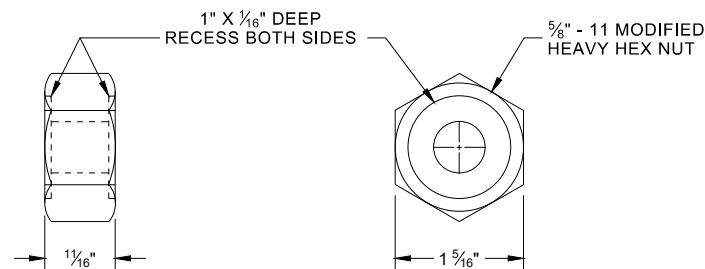


**POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION**

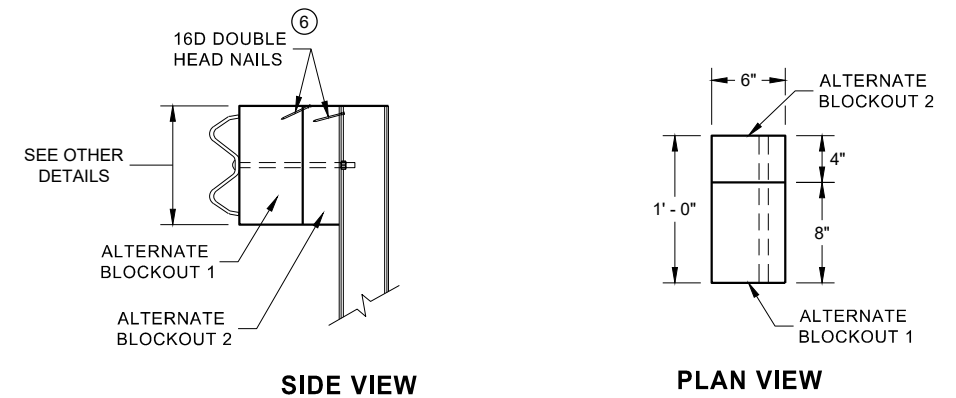


DETAIL FOR 36" BLOCKOUT DEPTH

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



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

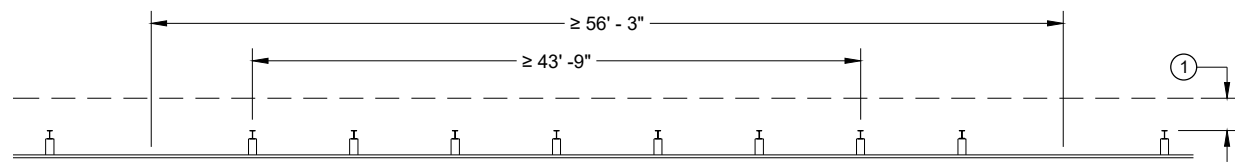


**ALTERNATE WOOD
BLOCKOUT DETAIL**

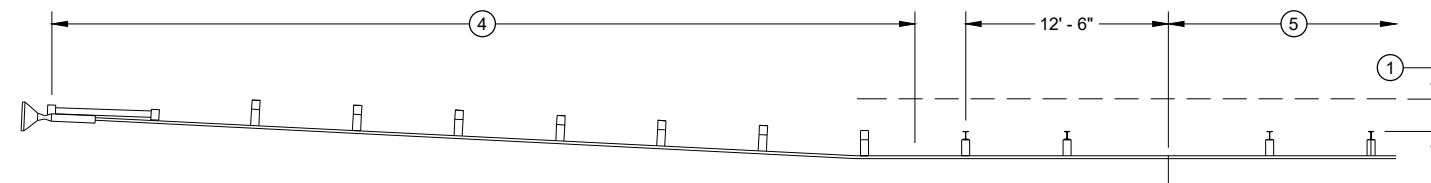
⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

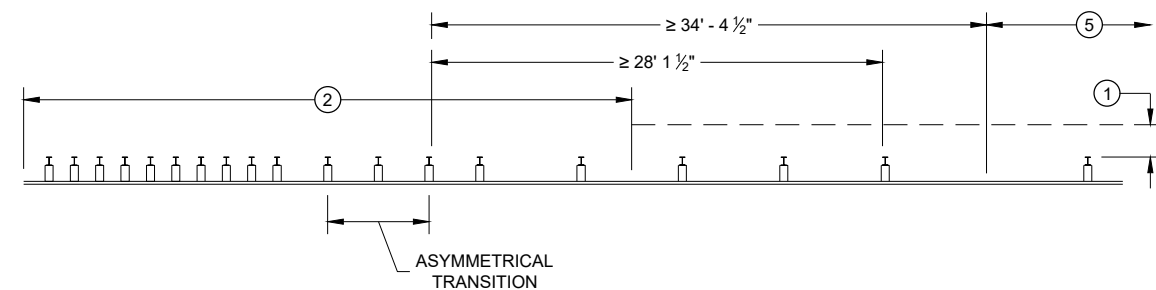
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



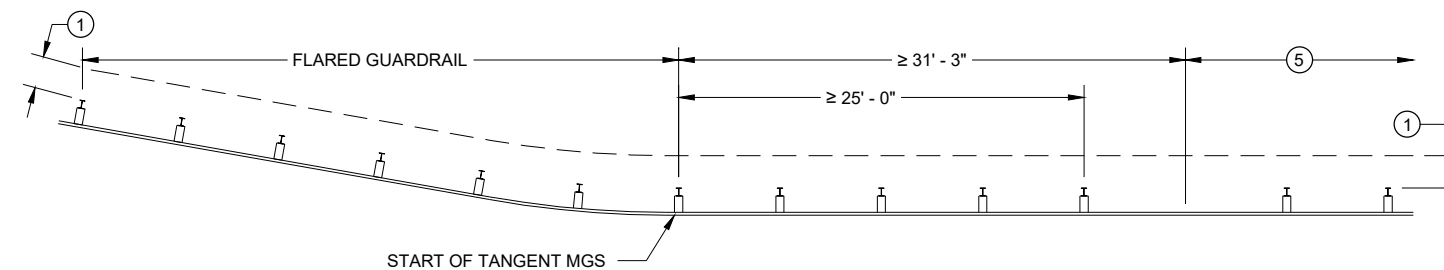
MISSING POST IN NORMAL BEAM GUARD RUN



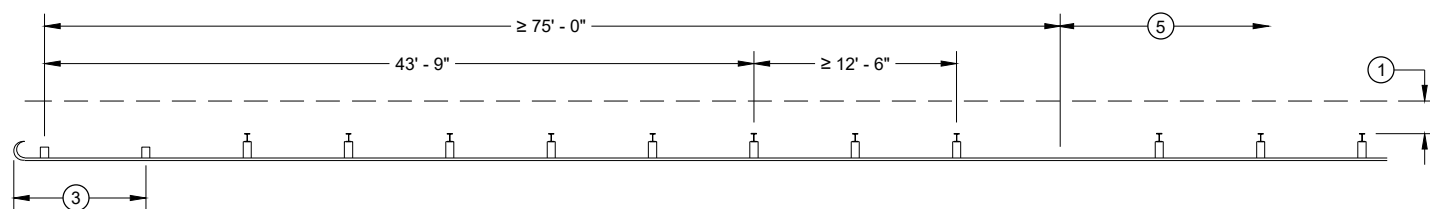
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



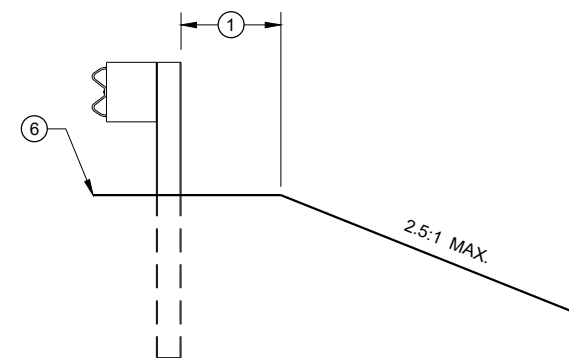
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



MISSING POST IN NORMAL BEAM GUARD RUN NEAR FLARED BEAM GUARD



MISSING POST IN NORMAL BEAM GUARD RUN NEAR TYPE 2 TERMINAL



CROSS SECTION VIEW

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

6

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SDD 14B42 - 06d

SDD 14B42 - 06d

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

GENERAL NOTES

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

SEE SDD 14B42 FOR MORE INFORMATION.

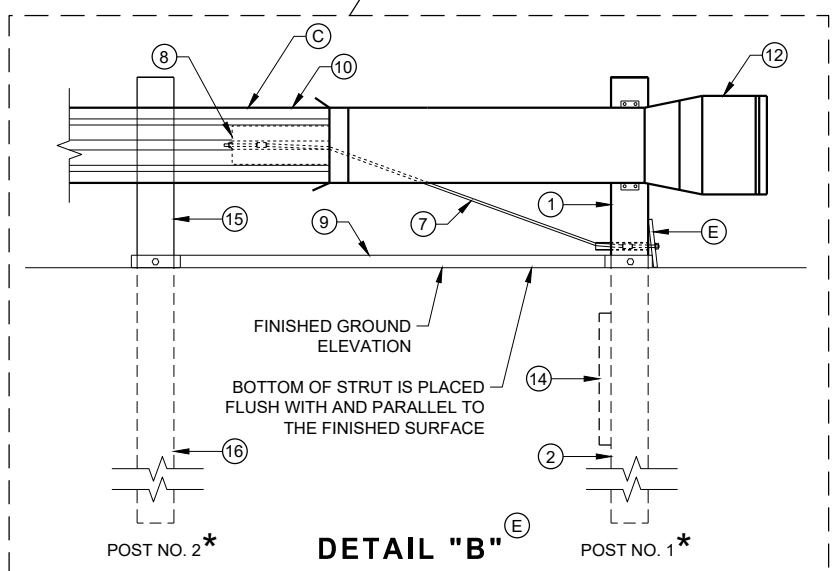
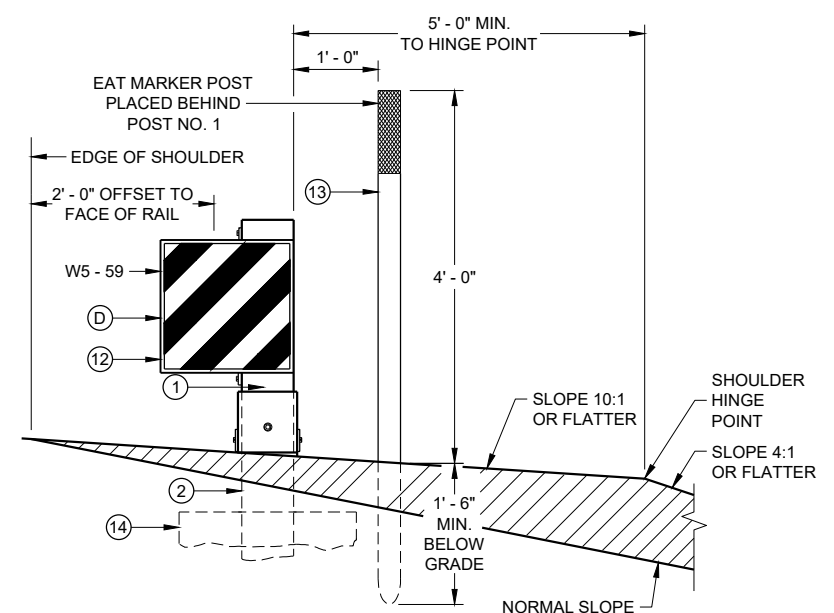
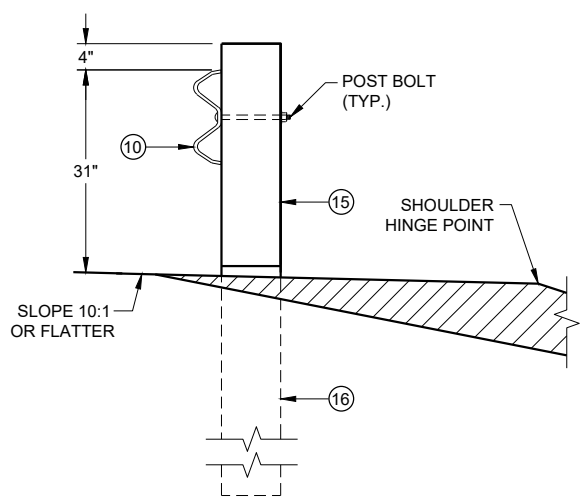
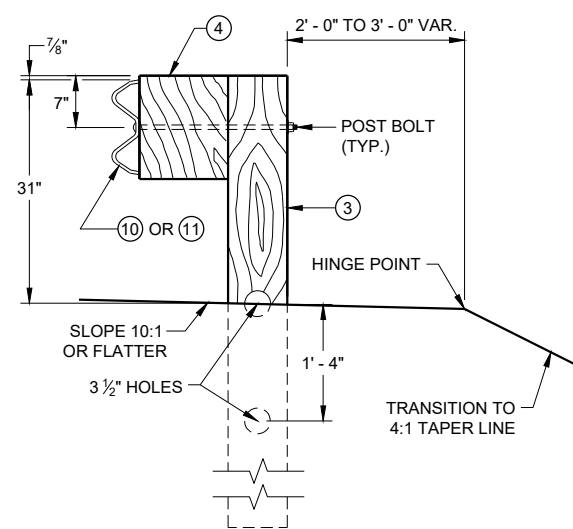
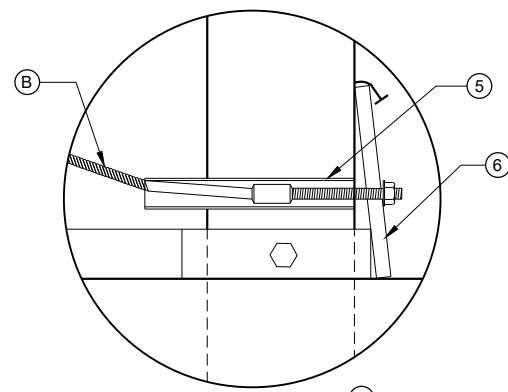
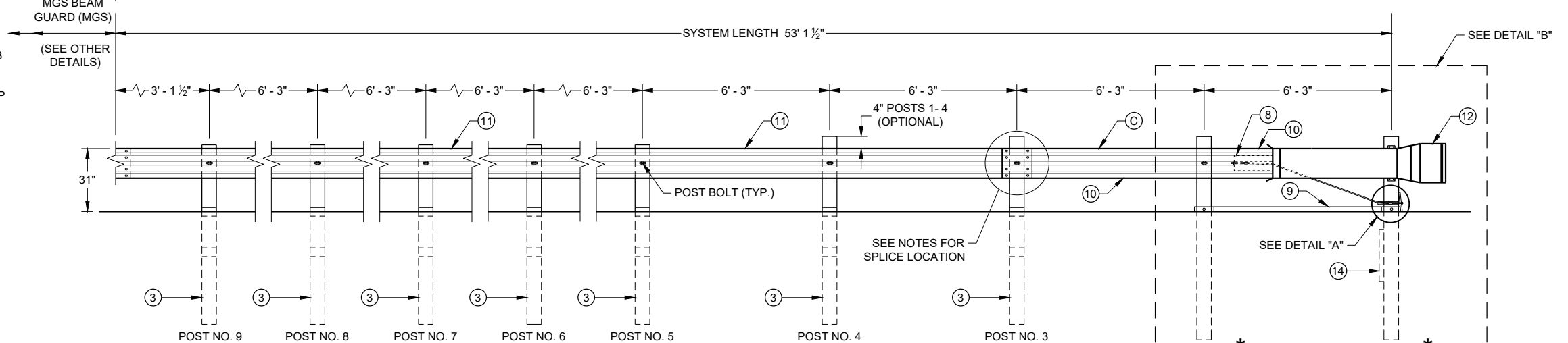
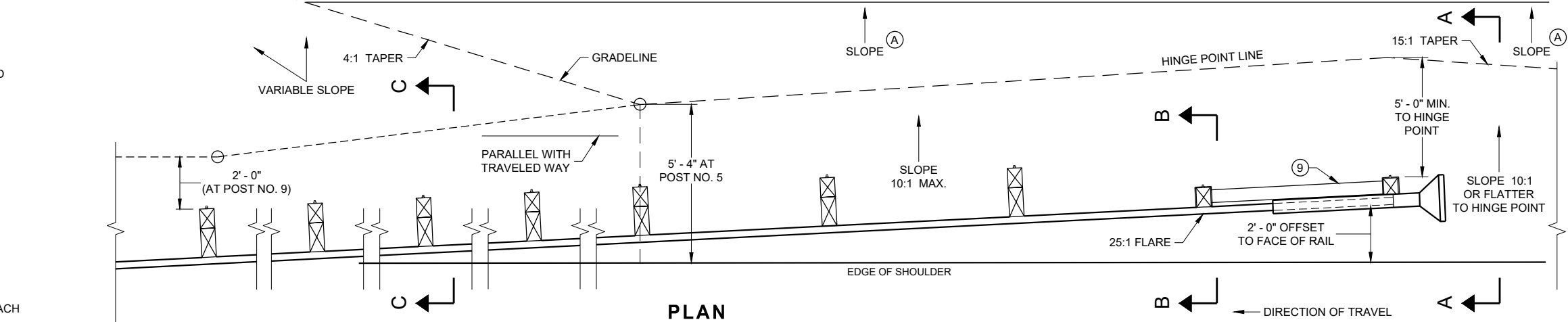
* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

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

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

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

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



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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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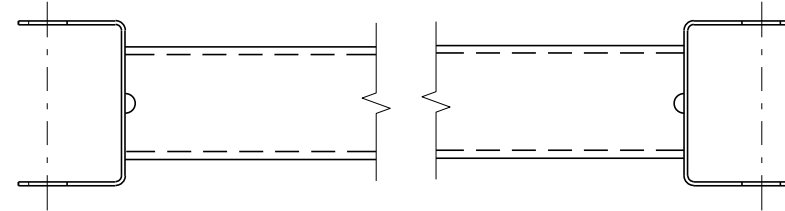
6

SDD 14B44 - 04a

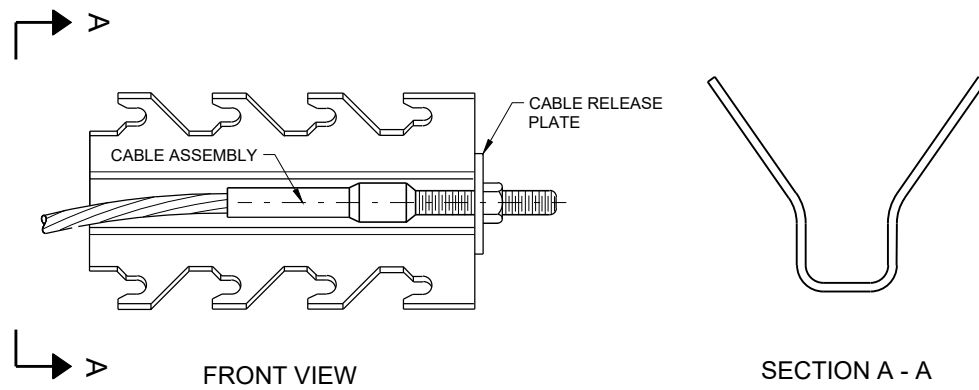
SDD 14B44 - 04a

BILL OF MATERIALS

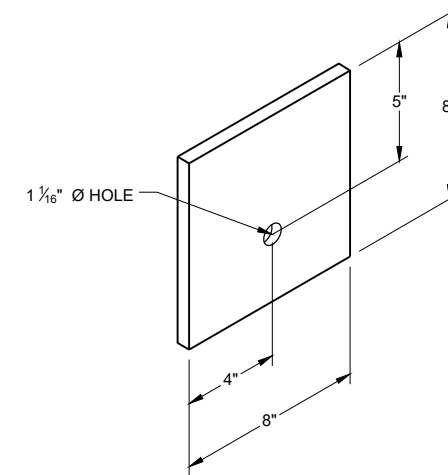
PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	UPPER POST NO. 1 6" X 6" TUBE
②	LOWER POST NO. 1
③	WOOD CRT
④	WOOD BLOCKOUT
⑤	PIPE SLEEVE
⑥	BEARING PLATE
⑦	BCT CABLE ASSEMBLY
⑧	ANCHOR CABLE BOX
⑨	GROUND STRUT
⑩	PERFORATED W-BEAM RAIL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



GENERIC GROUND STRUT ⑨ ⑤



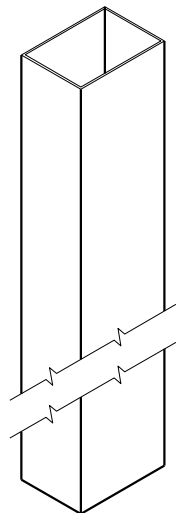
GENERIC ANCHOR CABLE BOX ⑨ ⑤



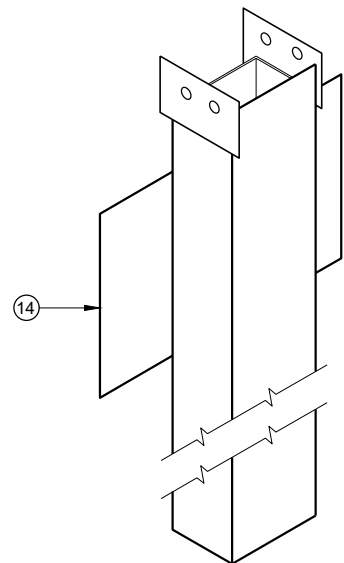
BEARING PLATE ⑥ ⑤

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

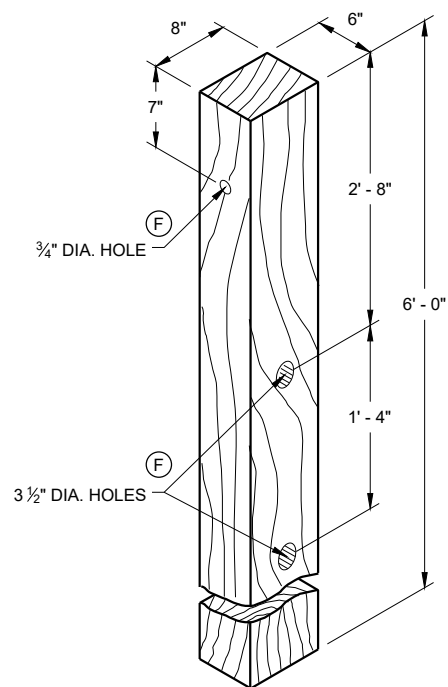
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



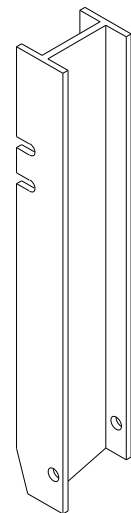
UPPER POST NO. 1 ⁽¹⁾ (E)



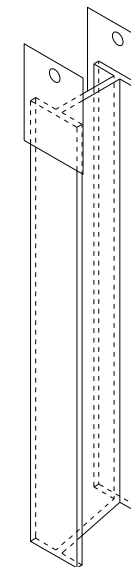
LOWER POST NO. 1 ⁽²⁾ (E)



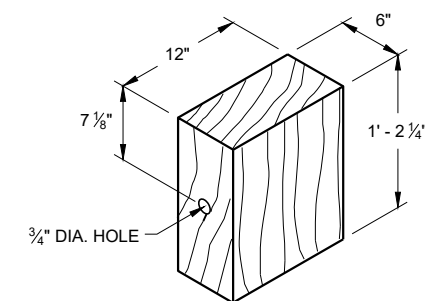
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



UPPER POST NO. 2 ⁽¹⁵⁾ (E)

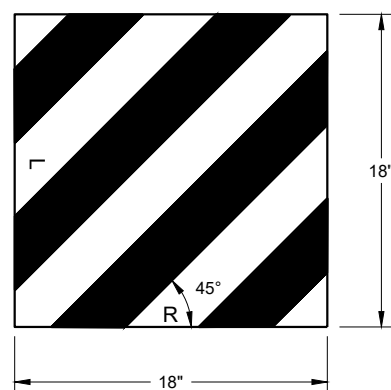


LOWER POST NO. 2 ⁽¹⁶⁾ (E)



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

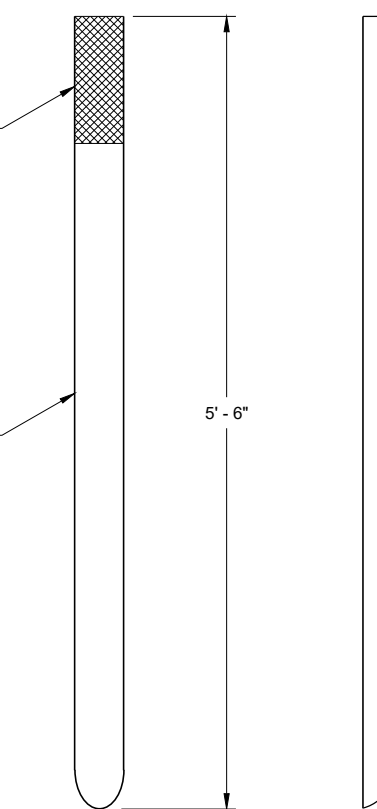
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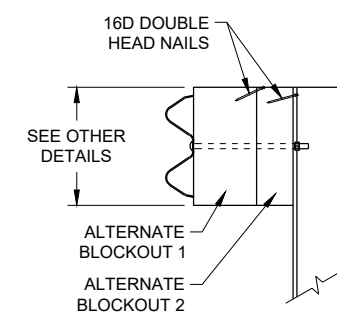
W5 - 59
REFLECTIVE SHEETING DETAIL ^(E)

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

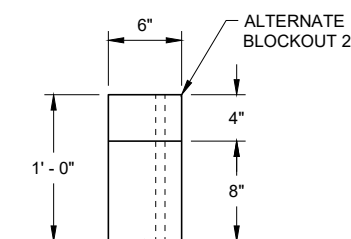
E.A.T. MARKER
POST (YELLOW)



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



SIDE VIEW



TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

6

SDD 14B44 - 04c

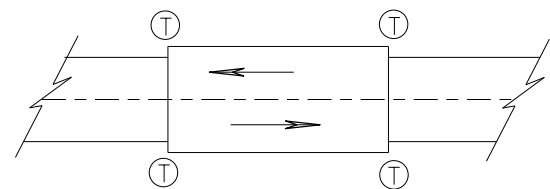
SDD 14B44 - 04c

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

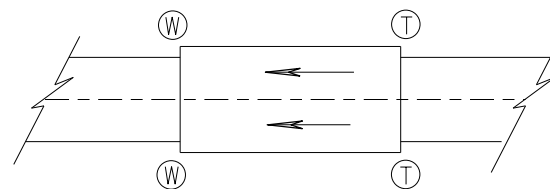
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

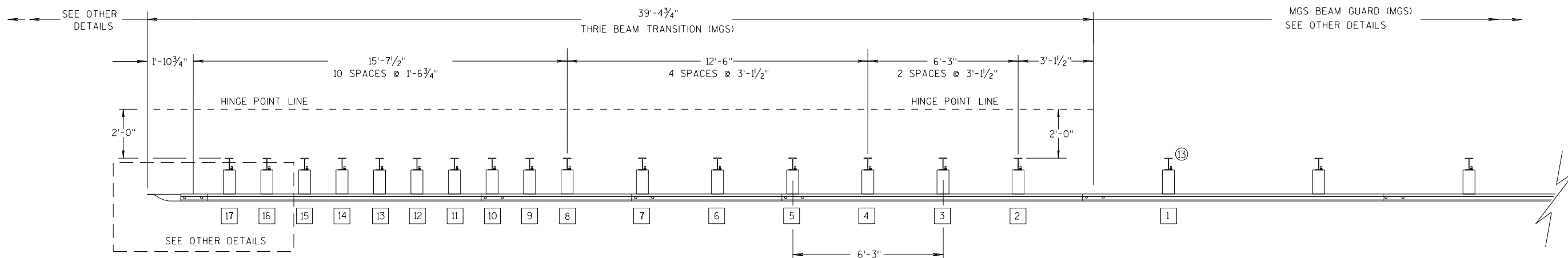
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

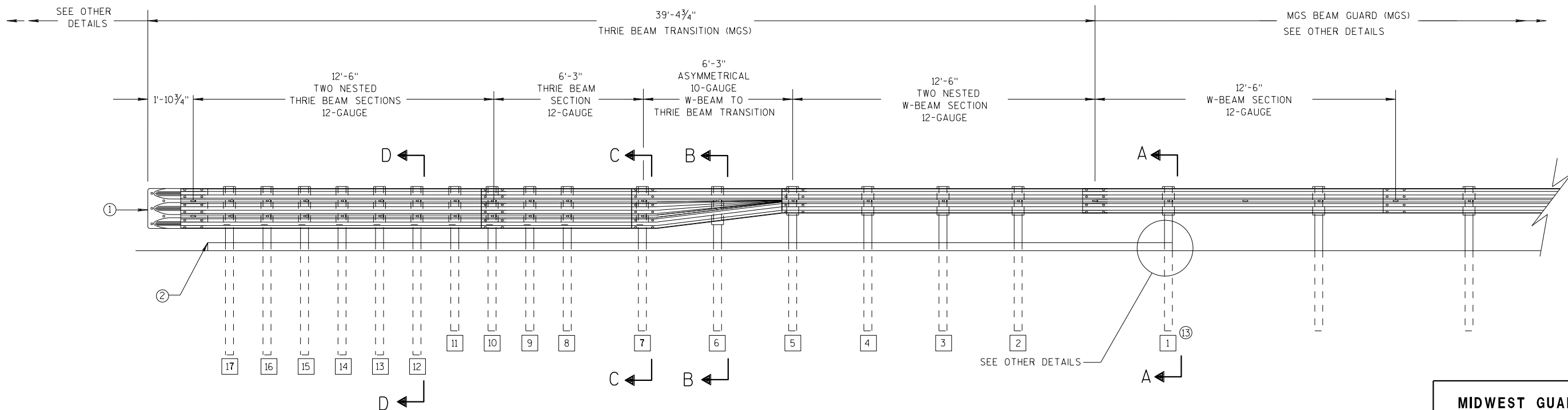
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

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



PLAN VIEW



ELEVATION VIEW

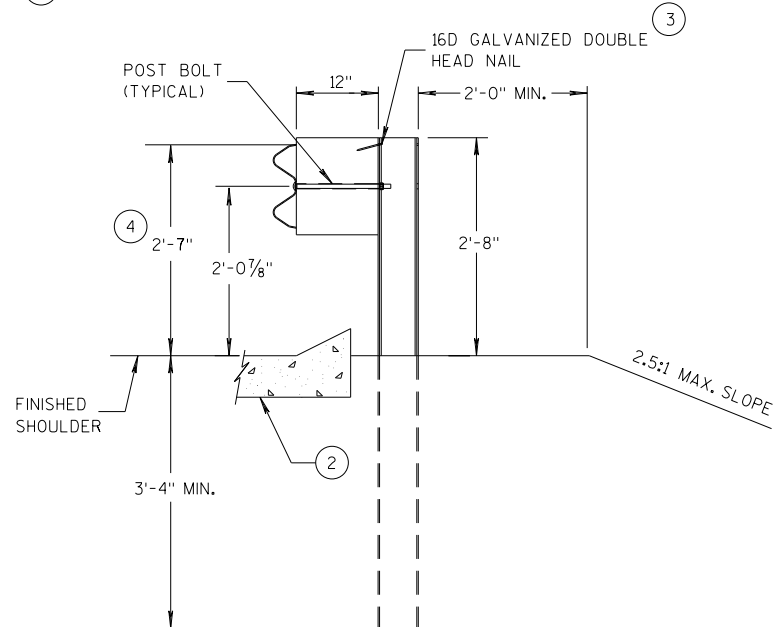
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

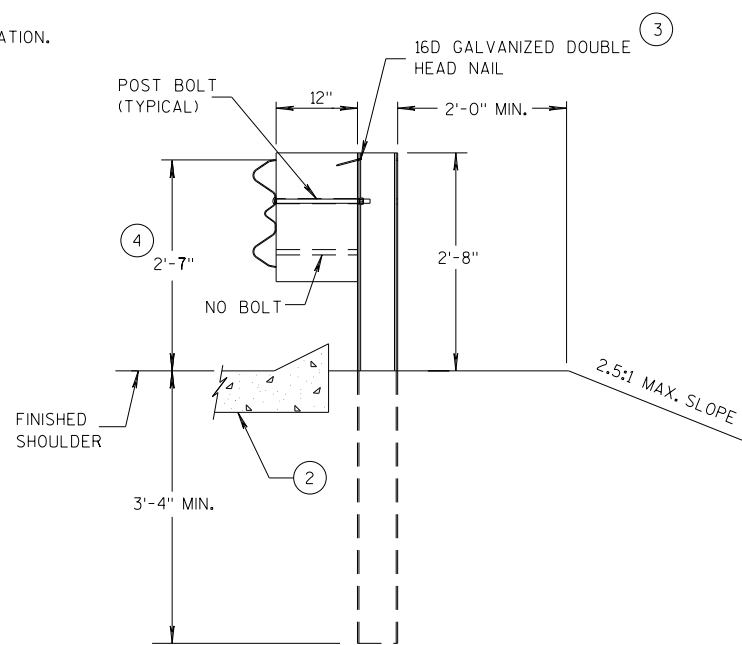
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

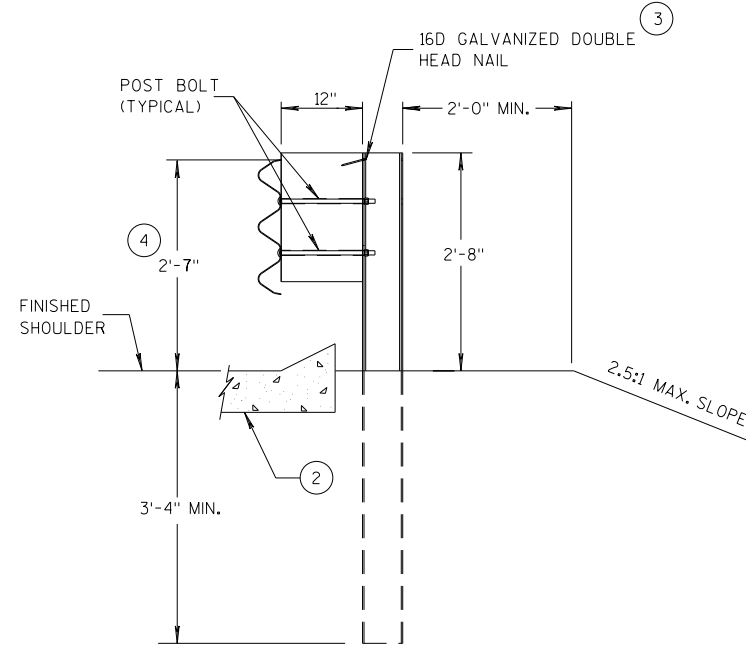
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- ④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".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



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



**SECTION B-B
POST 6**



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

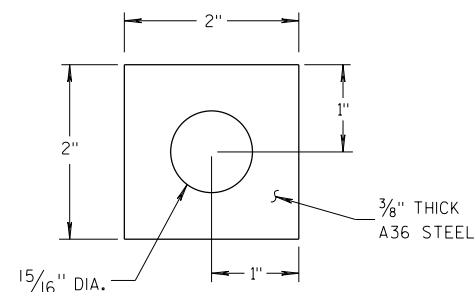
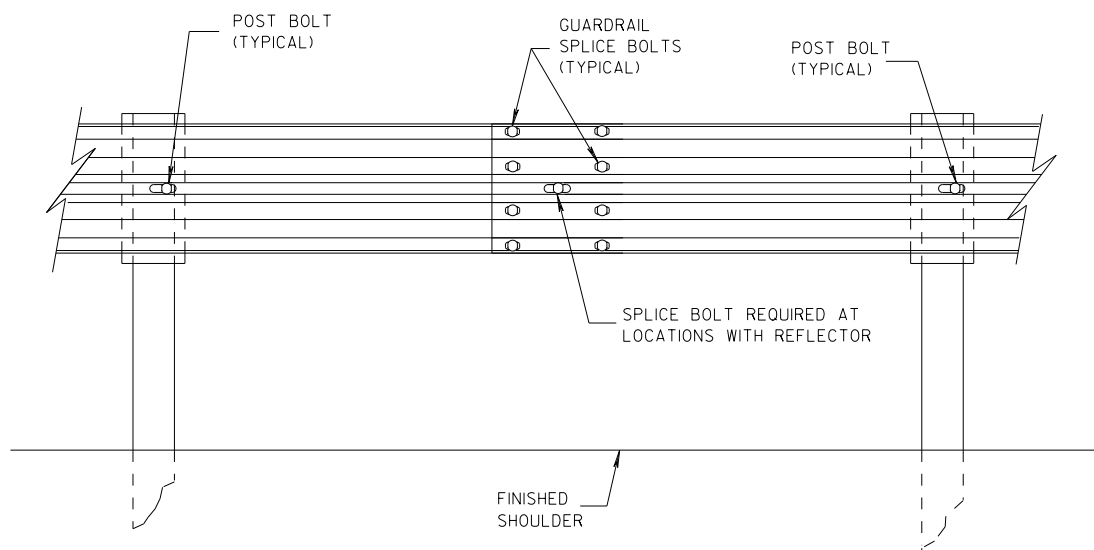
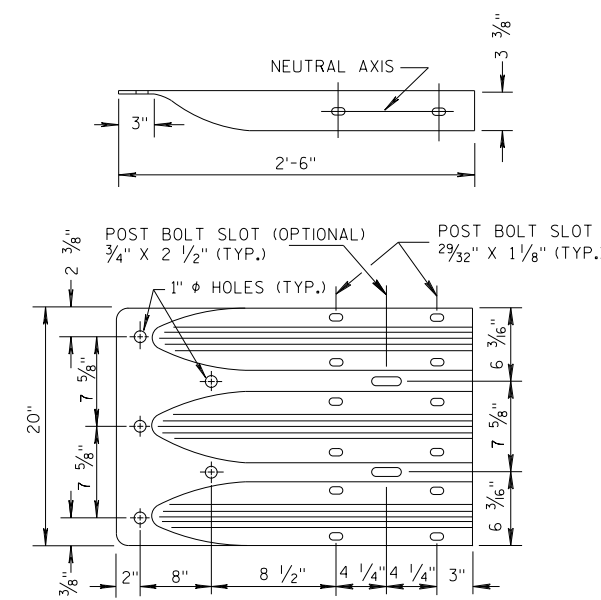


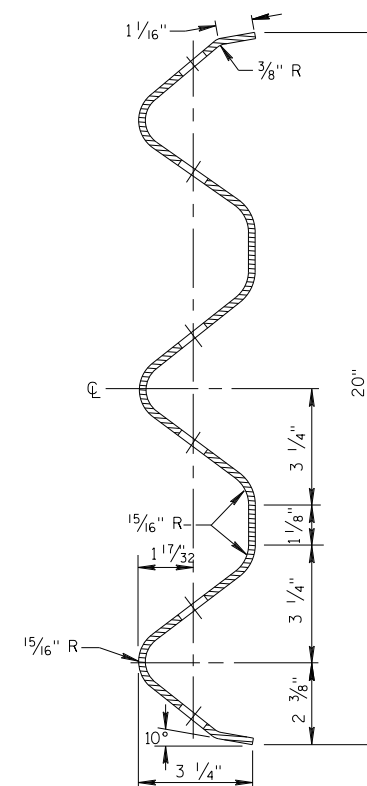
PLATE WASHER DETAIL



SPLICE DETAIL



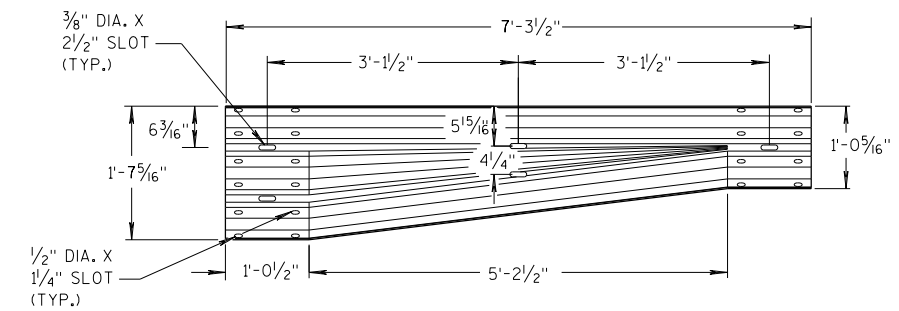
**THRIE BEAM
TERMINAL CONNECTOR**



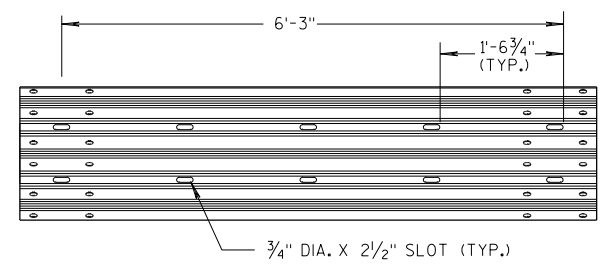
**SECTION THRU THRIE
BEAM RAIL ELEMENT**

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

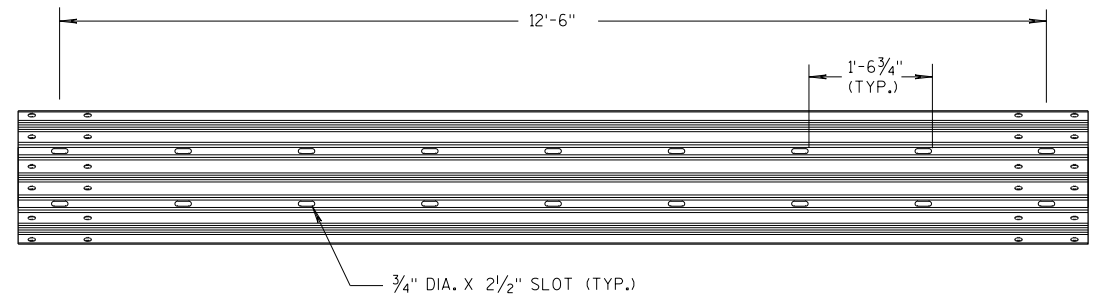
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



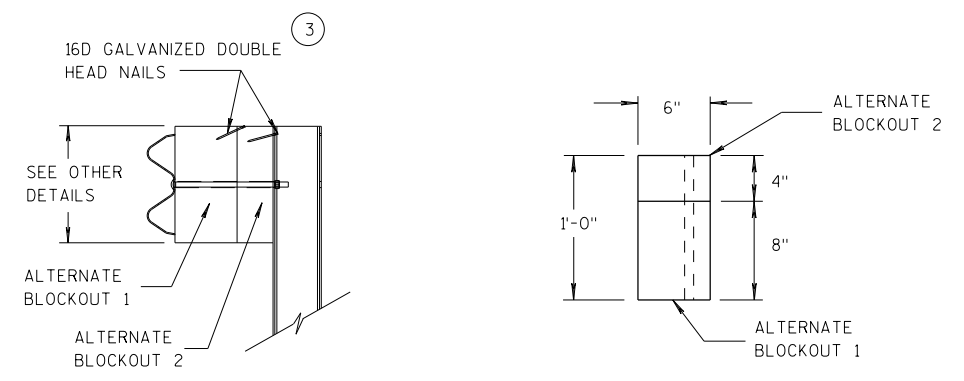
W-BEAM TO THRIE BEAM TRANSITION SECTION



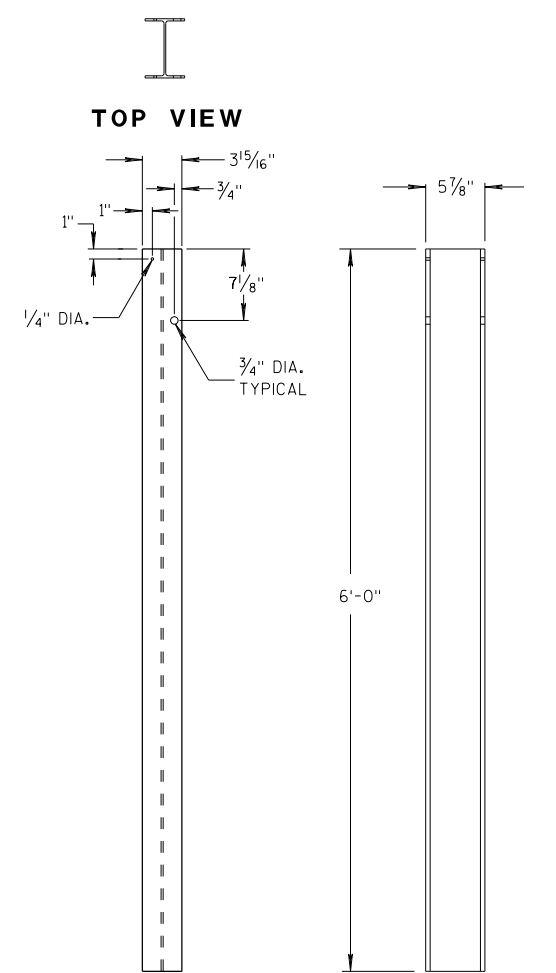
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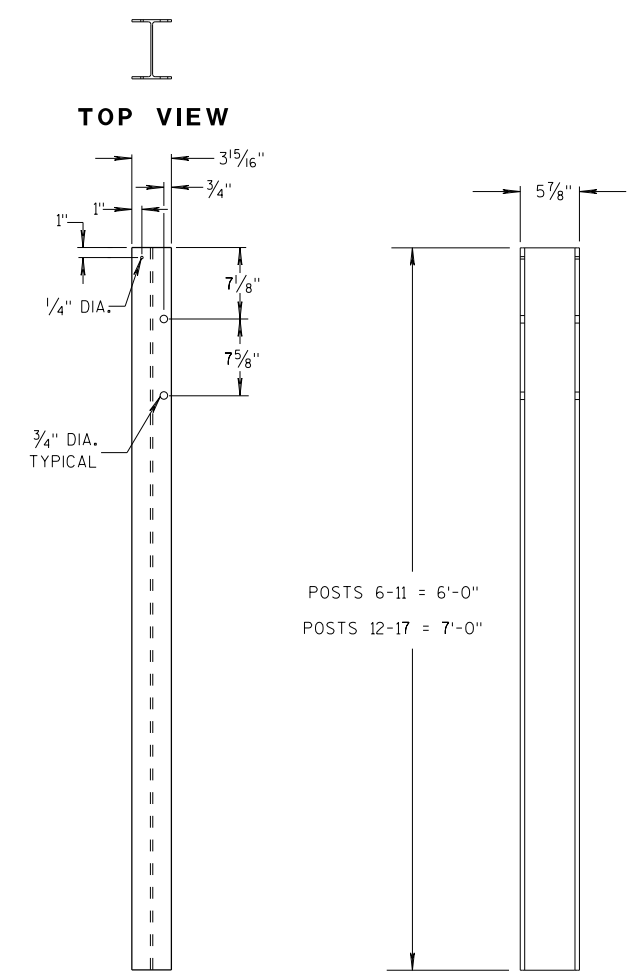
12'-6\"/>



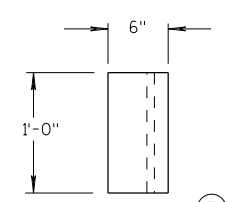
ALTERNATE WOOD BLOCKOUT DETAIL



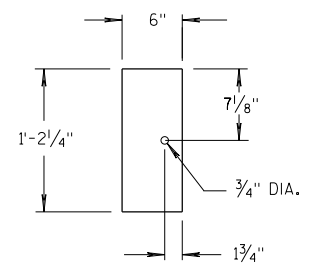
STEEL POSTS 1-5



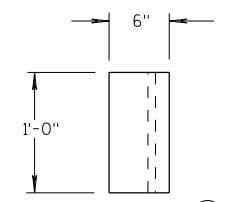
STEEL POSTS 6-17



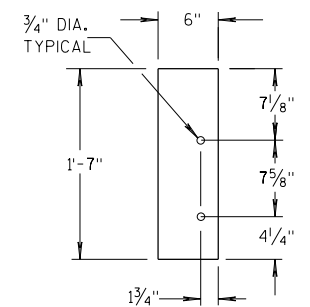
BLOCKOUT POSTS 1-5 TOP VIEW



BLOCKOUT POSTS 1-5 FRONT VIEW



BLOCKOUT POSTS 6-17 TOP VIEW



BLOCKOUT POSTS 6-17 FRONT VIEW

GENERAL NOTES

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

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

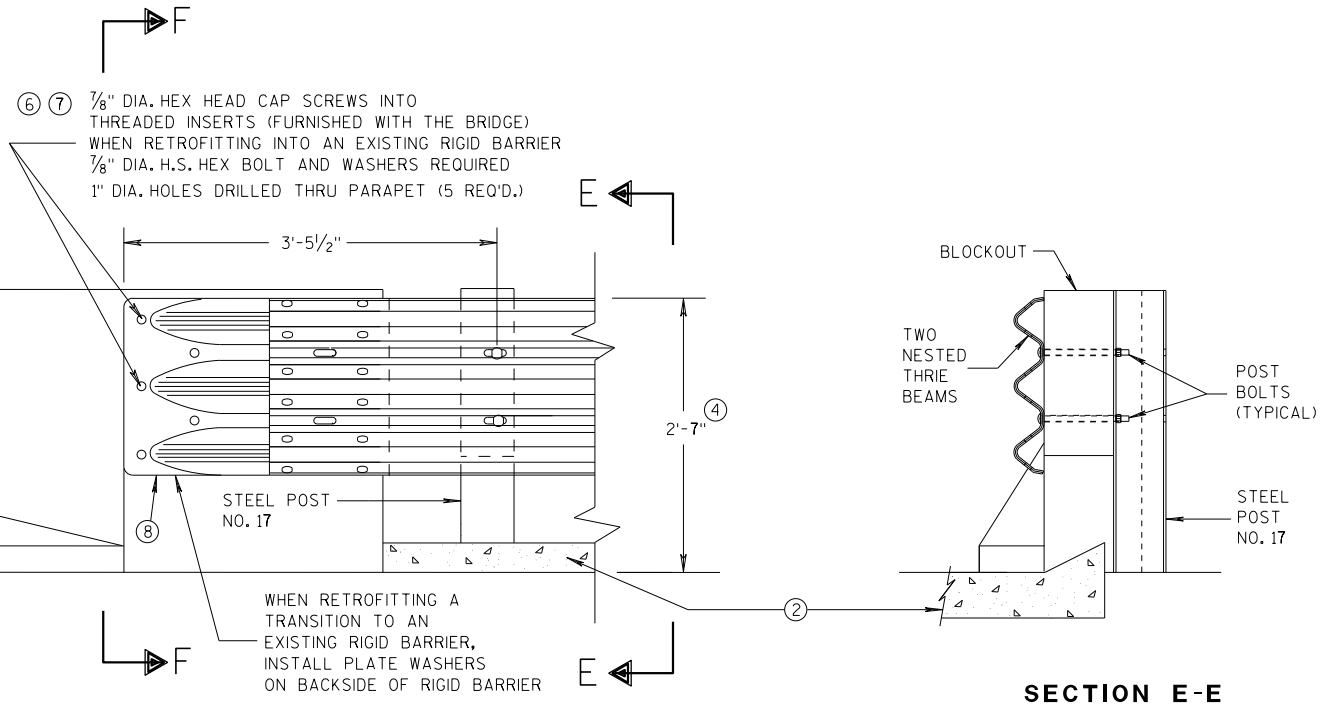
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

6

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

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



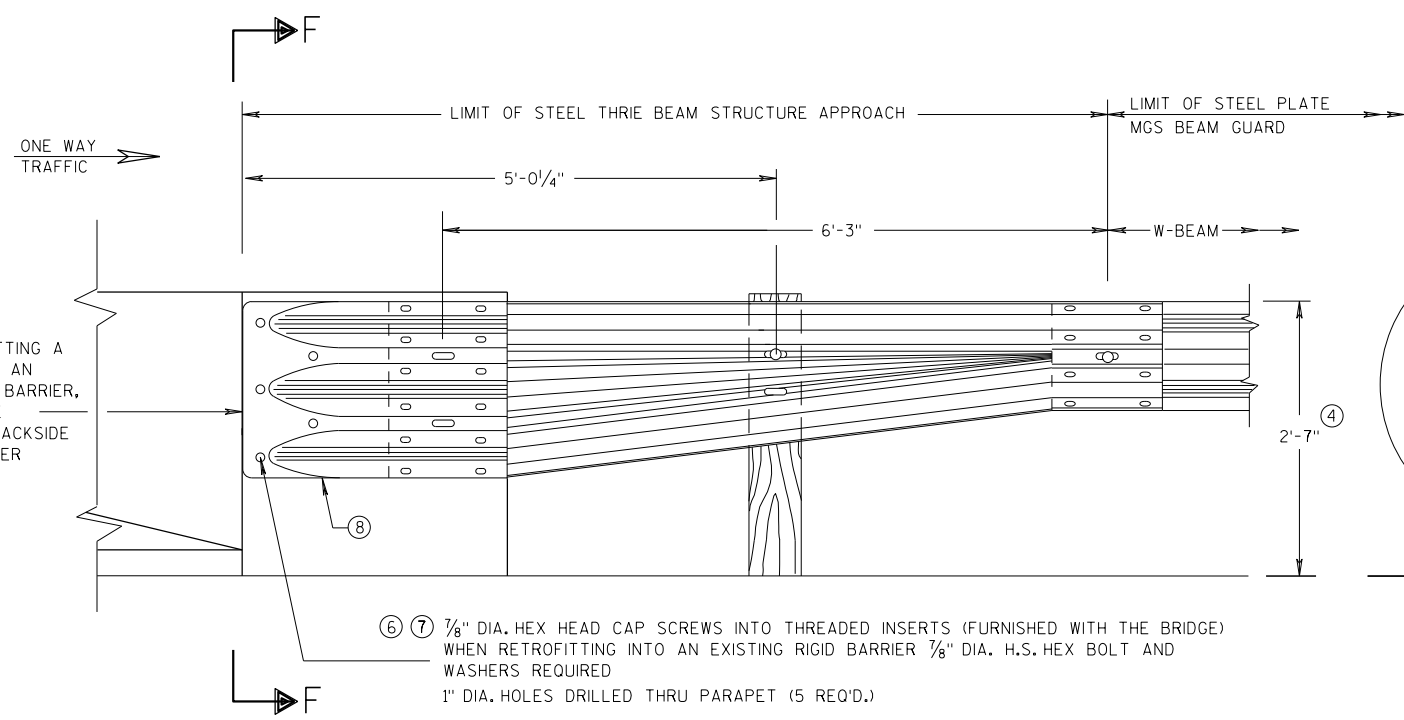
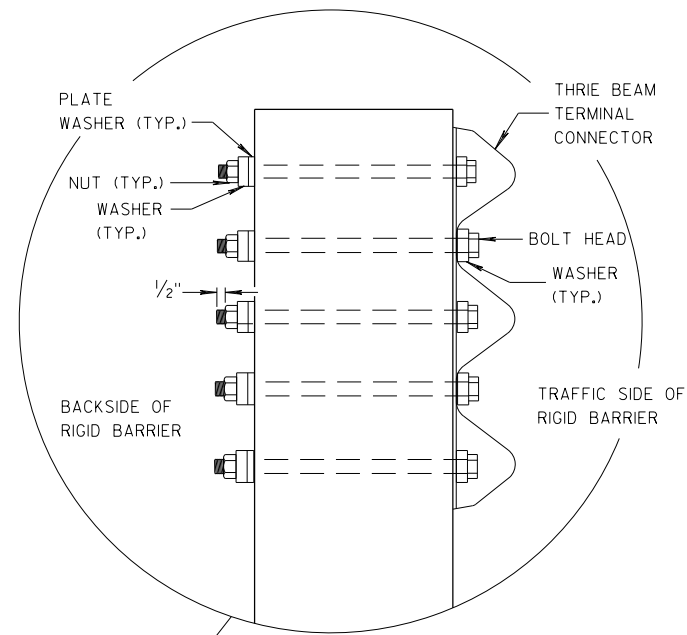
FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

SECTION E-E

GENERAL NOTES

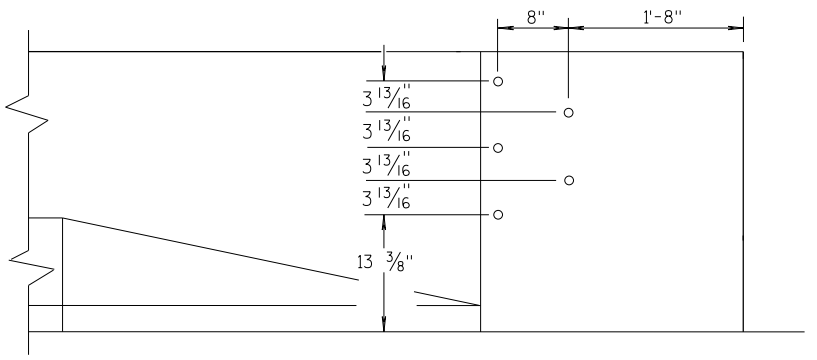
- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- (2) OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
 - (4) TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
 - (6) DRILLING BOLT HOLES THROUGH THE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



FRONT VIEW

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

SECTION F-F



DRILL HOLE LOCATION

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

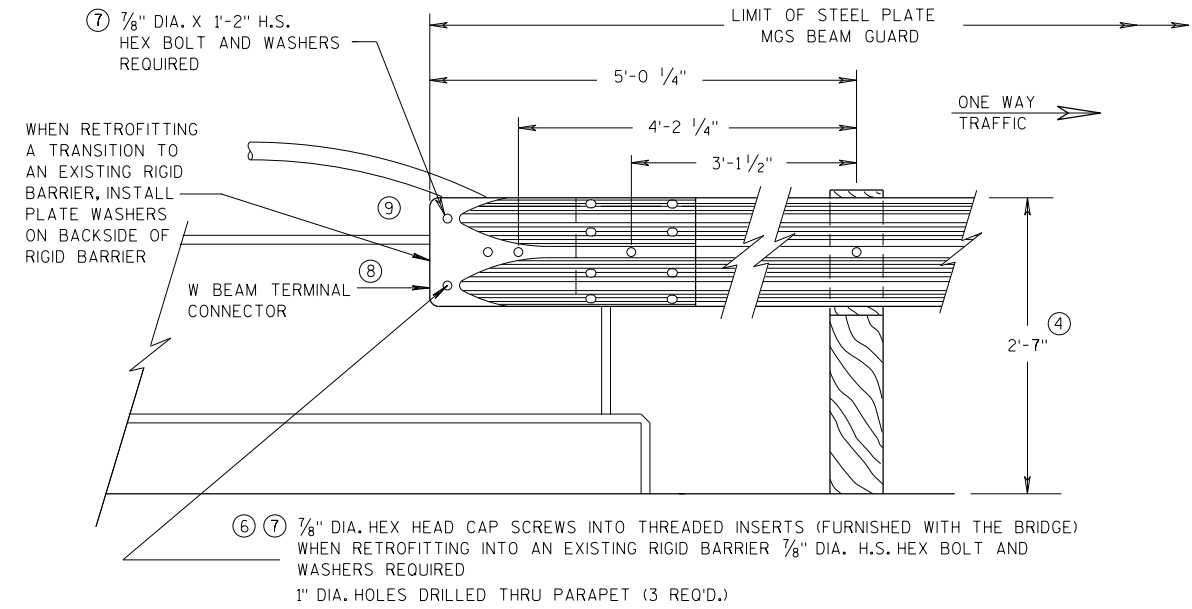
STATE OF WISCONSIN
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APPROVED
DATE 07/2018
DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA

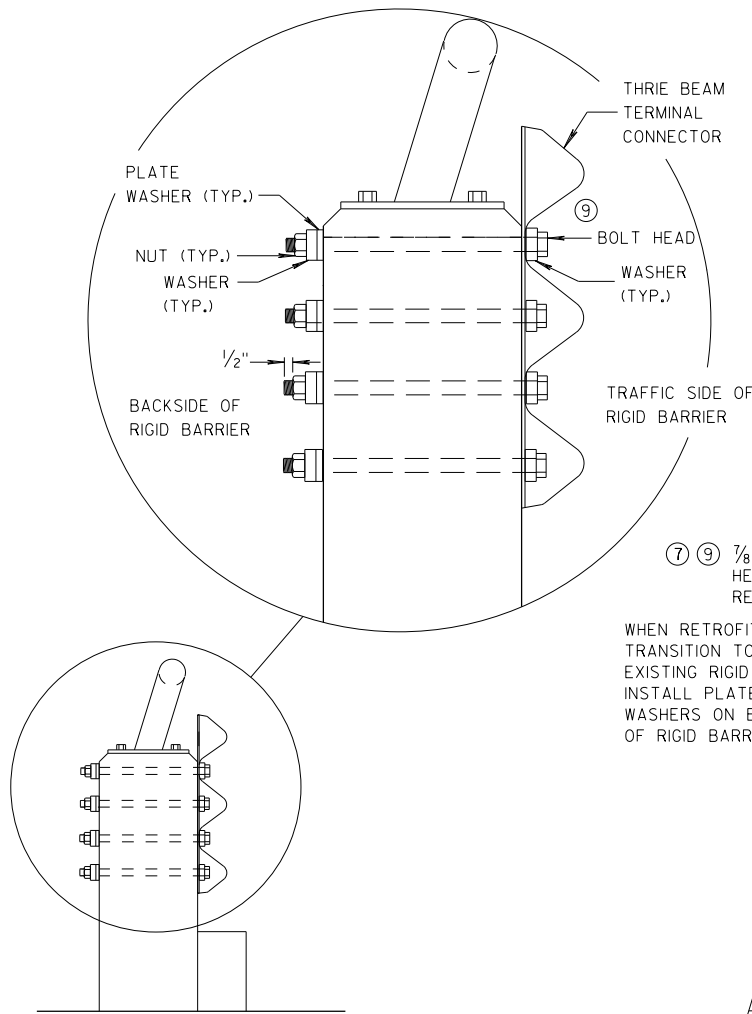
GENERAL NOTES

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

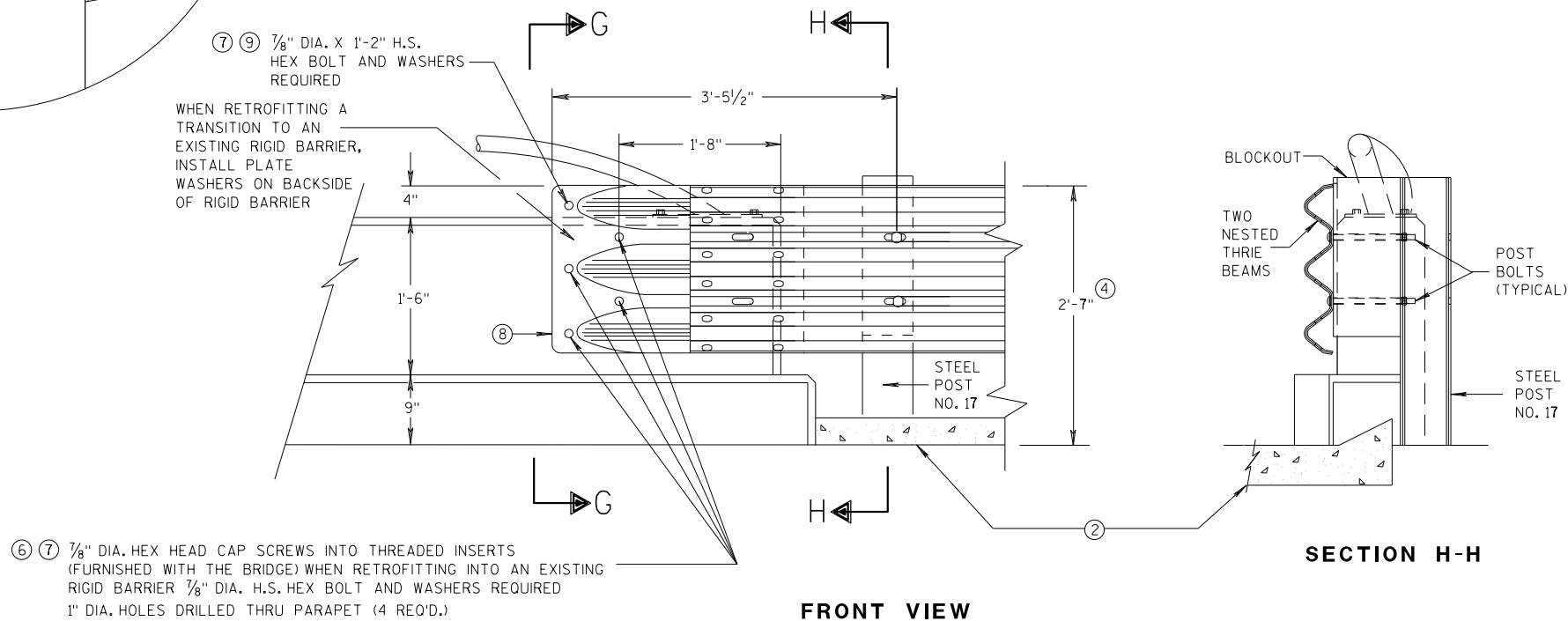
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH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

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

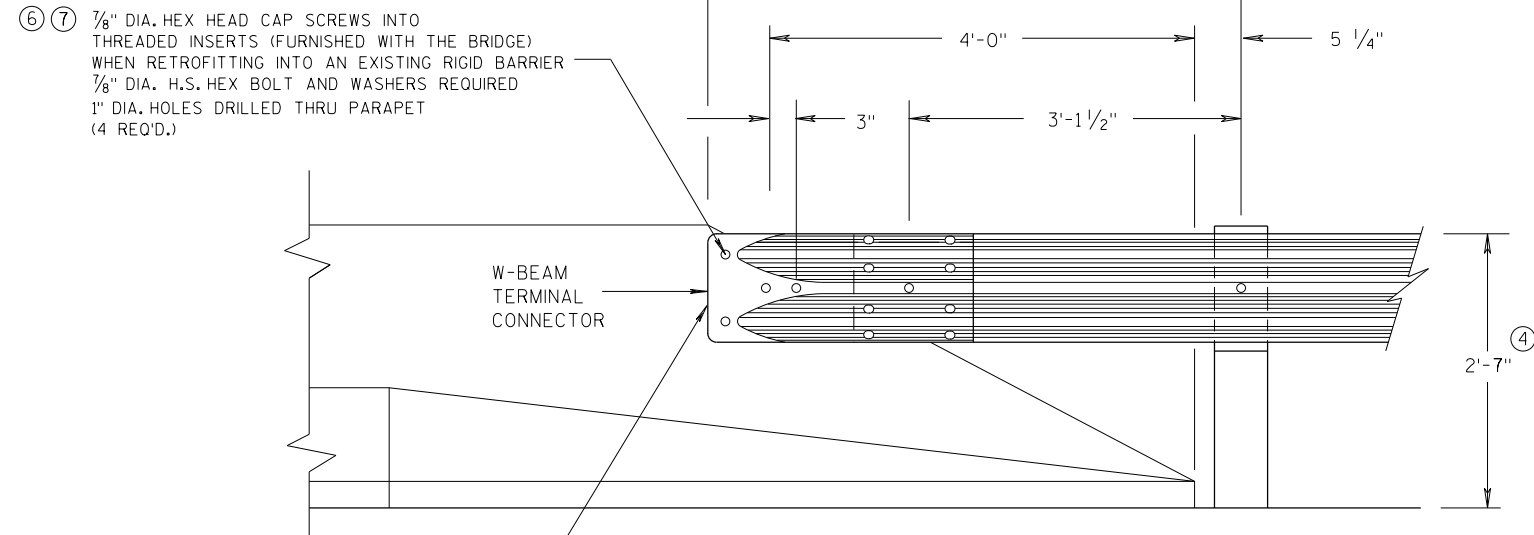
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6

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

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

ONE WAY
TRAFFIC



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

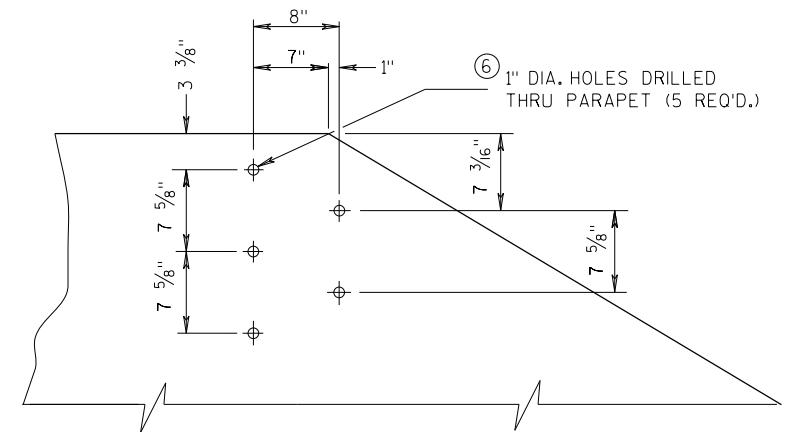
FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

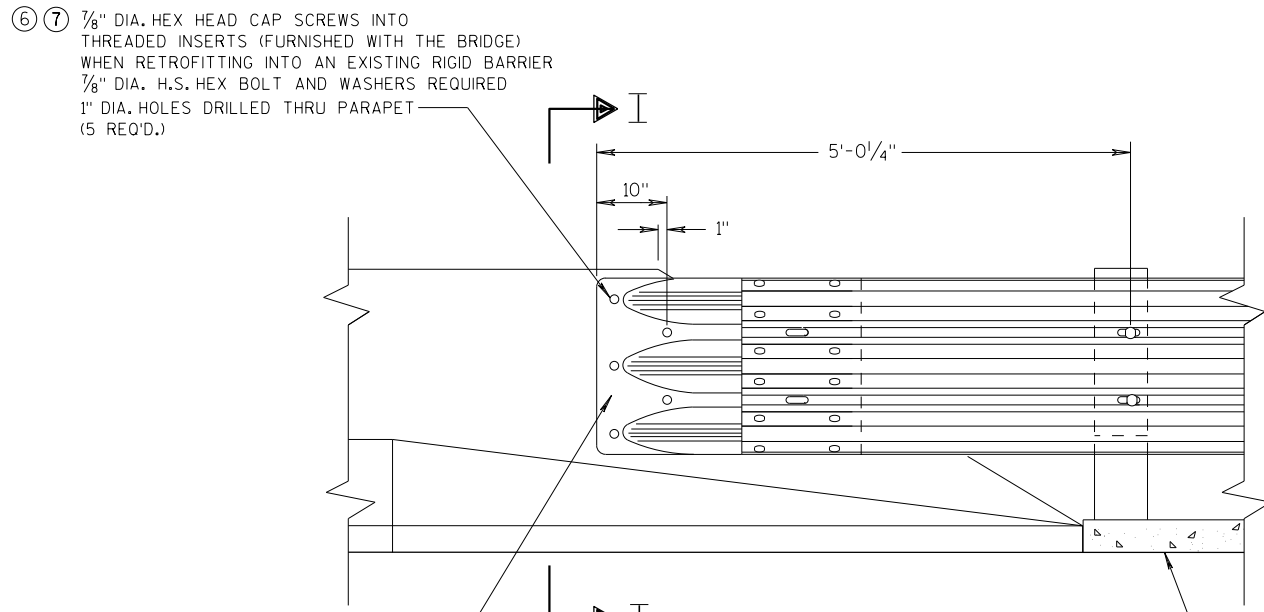
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)

GENERAL NOTES

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



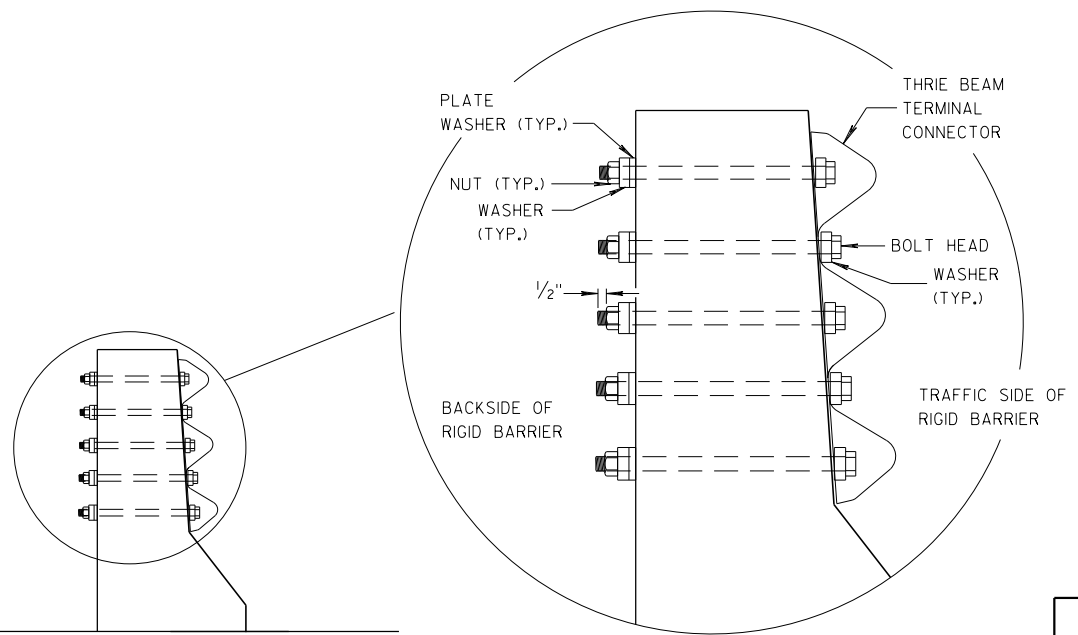
DRILL HOLE LOCATION AND PATTERN FOR THRIE BEAM CONNECTION



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

FRONT VIEW

THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS

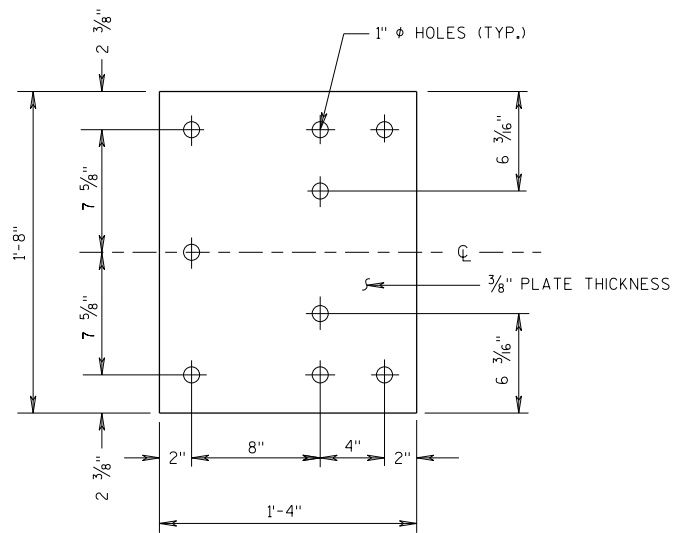


SECTION I-I

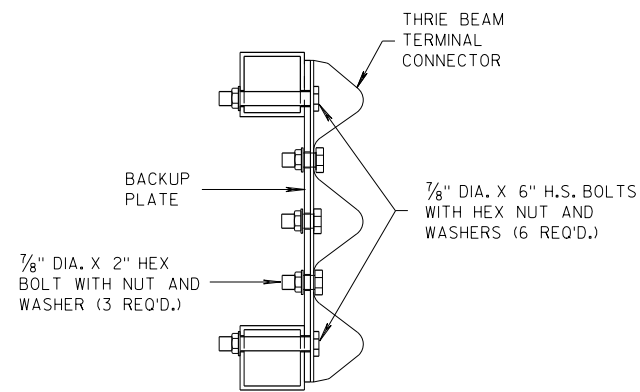
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

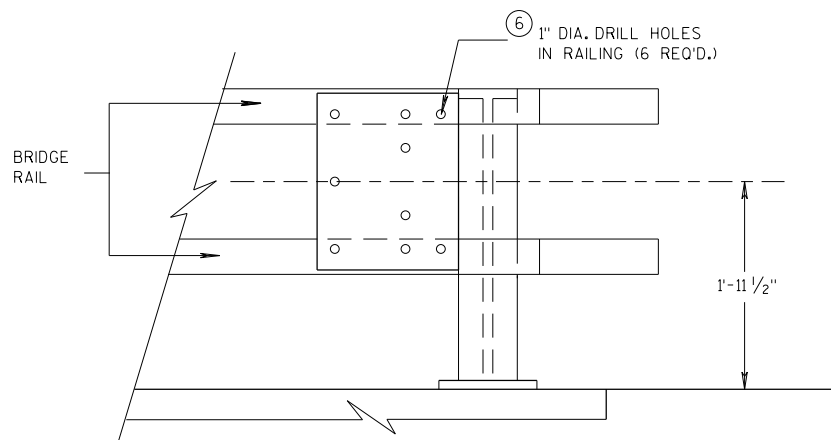
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FHWA



BACK-UP PLATE DETAIL



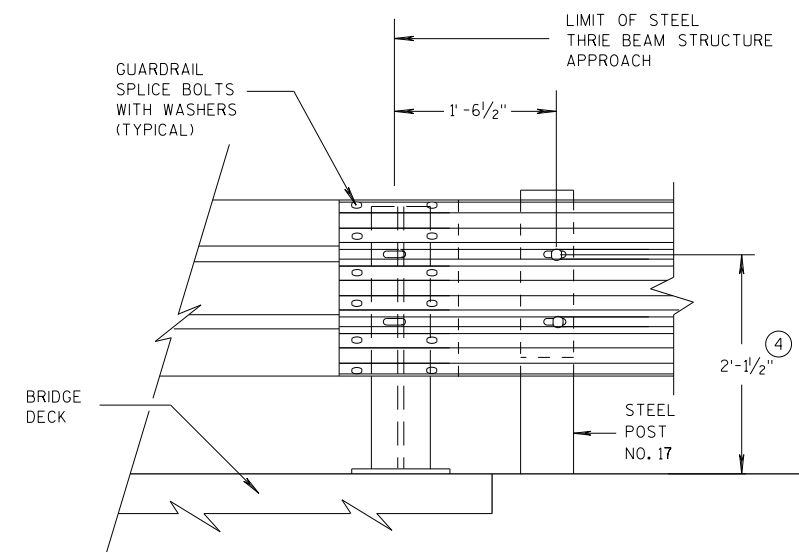
SECTION J-J



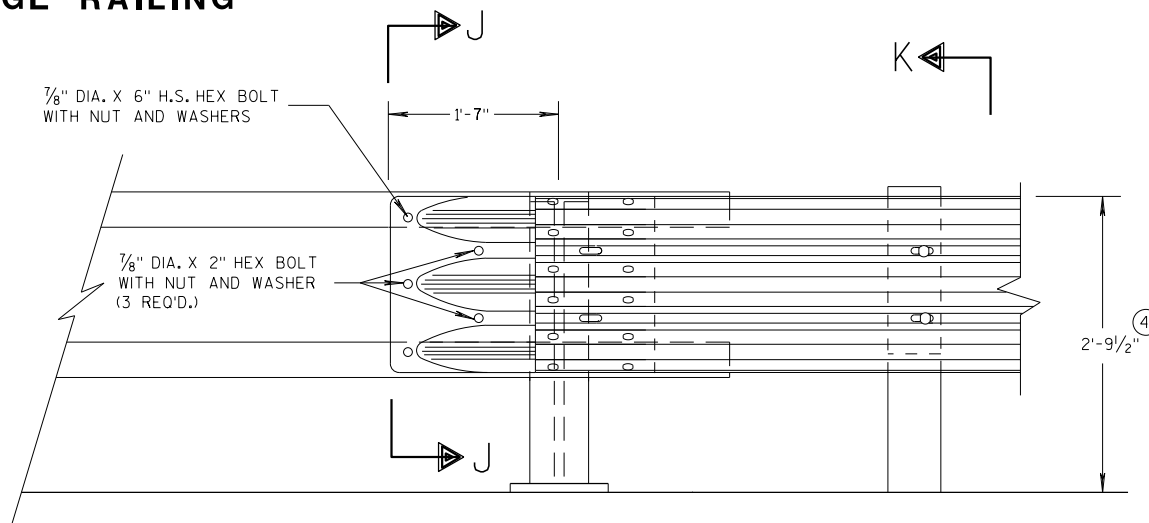
BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

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

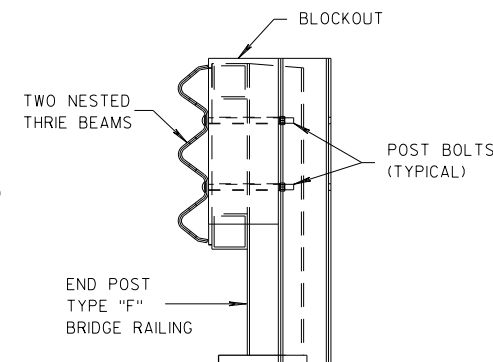


FRONT VIEW THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



FRONT VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

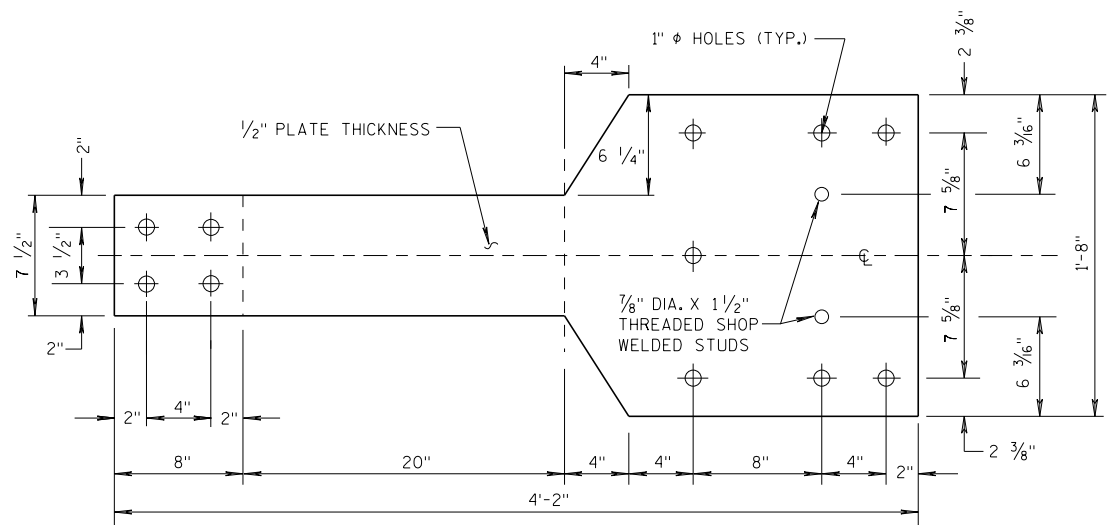
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
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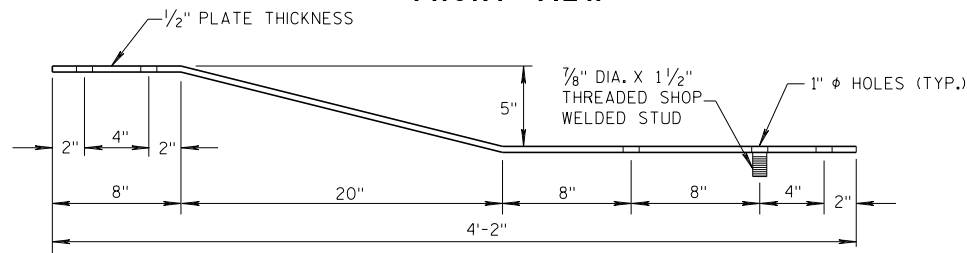
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GENERAL NOTES

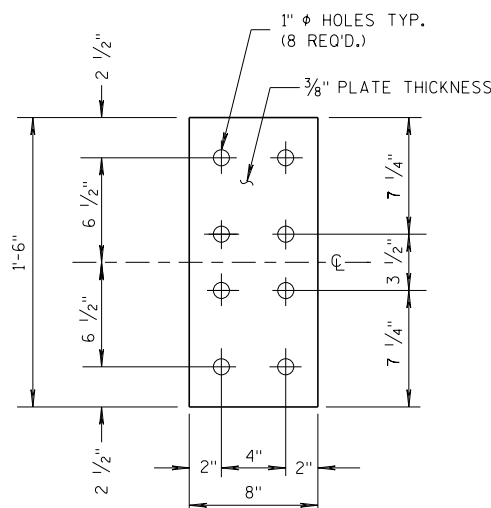
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS ± 1".



FRONT VIEW

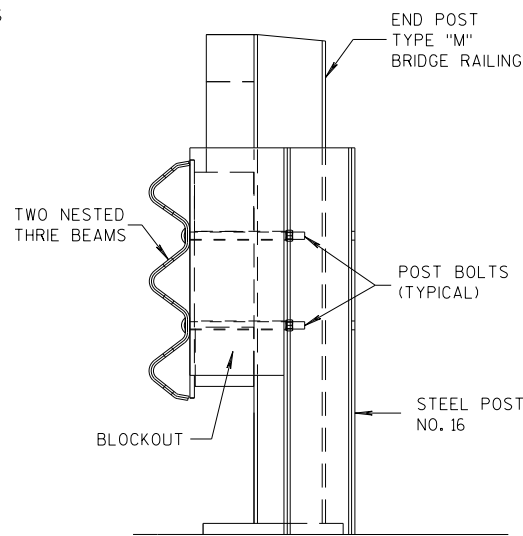


**PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"**

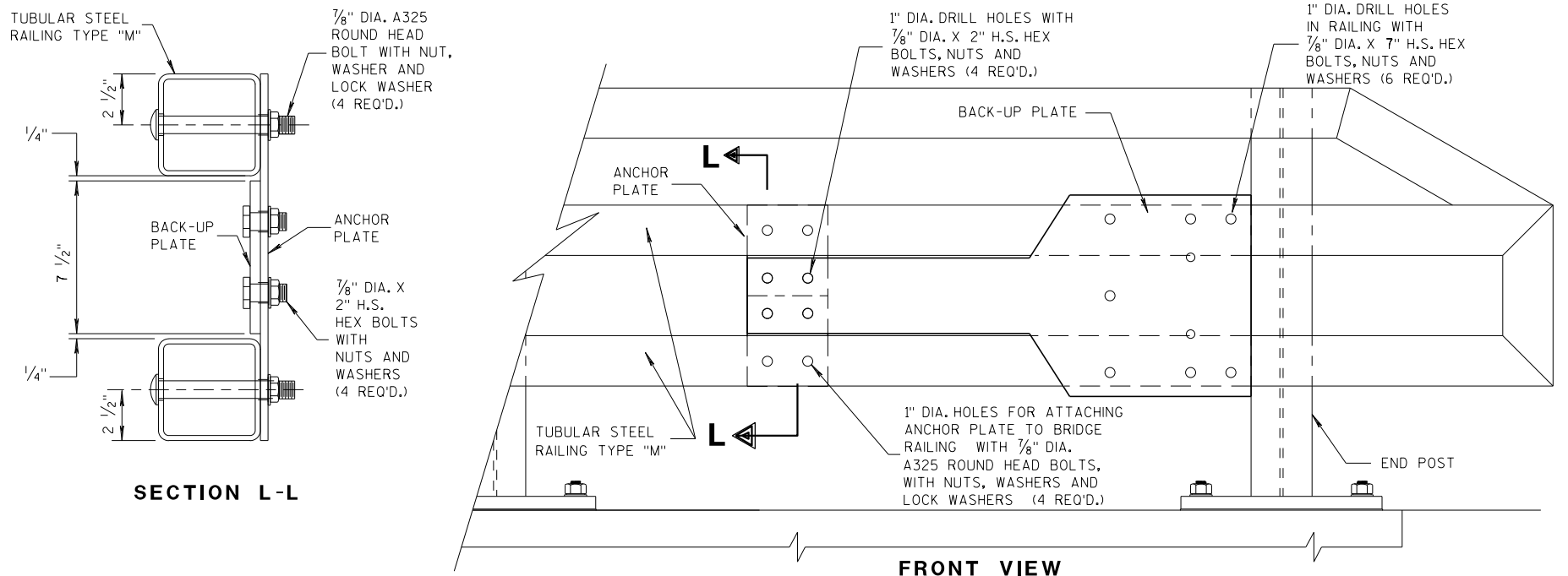


FRONT VIEW

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



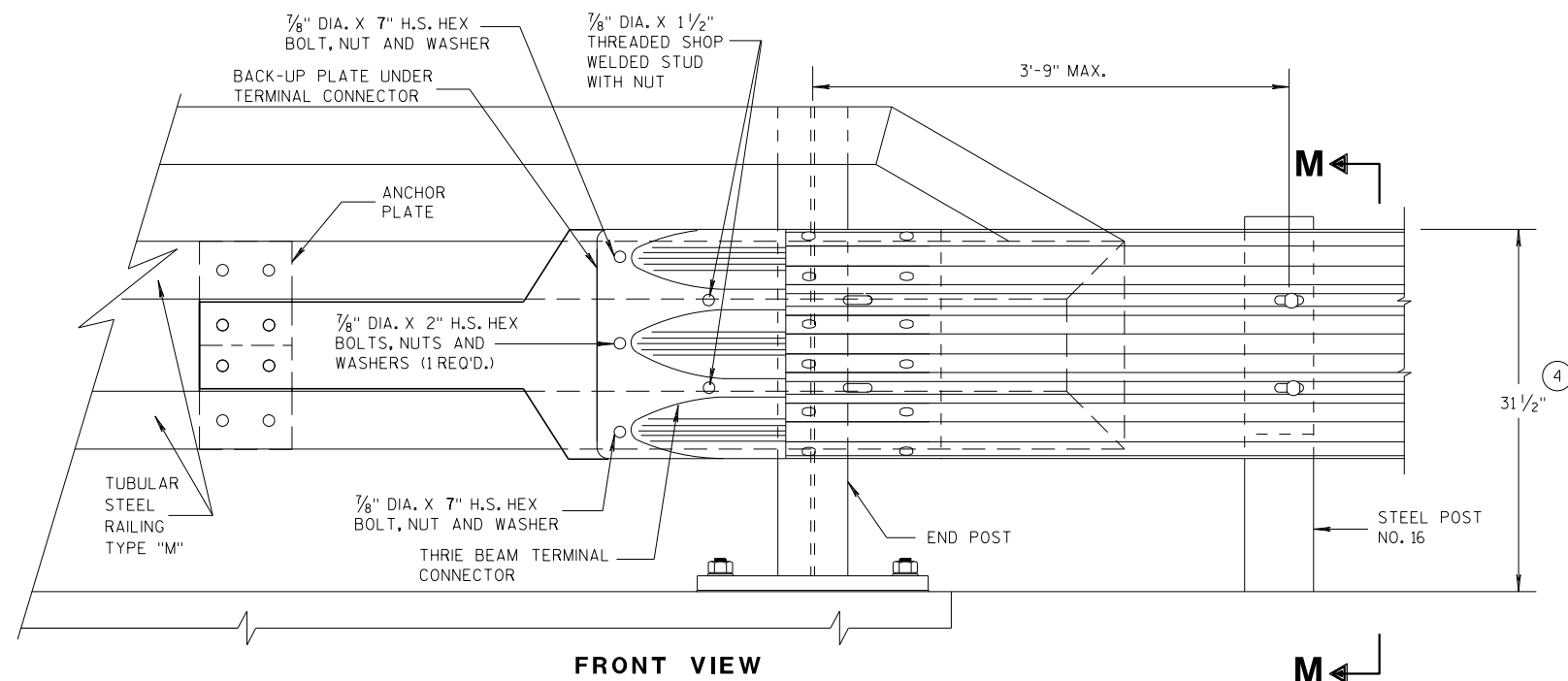
SECTION M-M



SECTION L-L

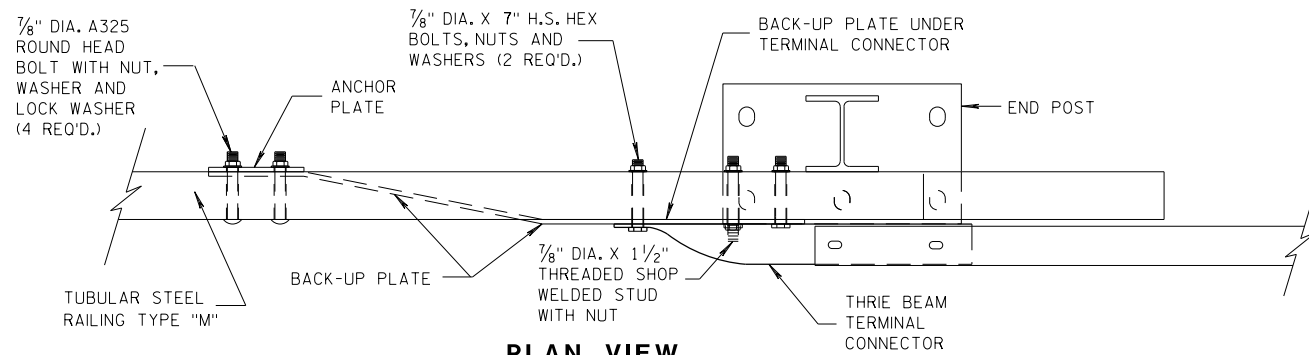
FRONT VIEW

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



FRONT VIEW

M



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

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

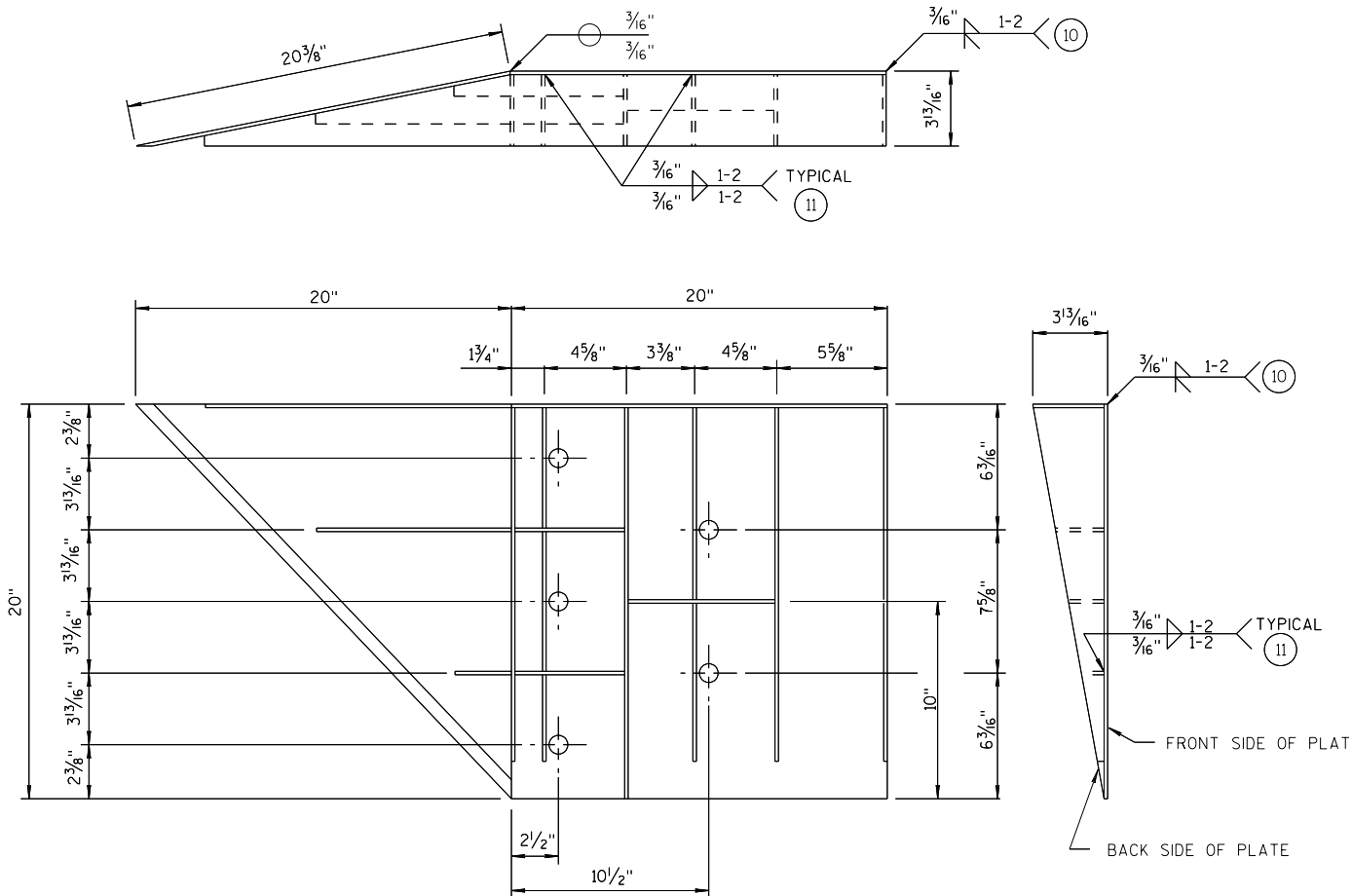
STATE OF WISCONSIN
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ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR
FHWA

GENERAL NOTES

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

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



WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

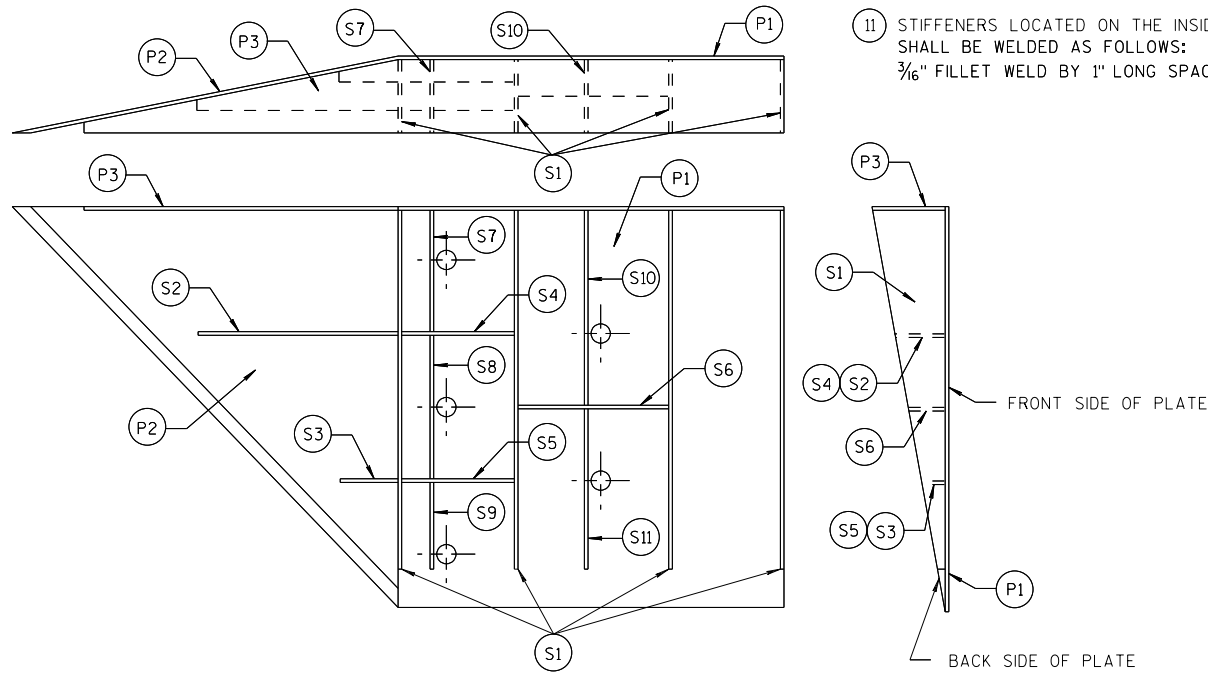


PLATE AND STIFFENER IDENTIFICATION
(VIEWED FROM BACK SIDE OF PLATE)

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

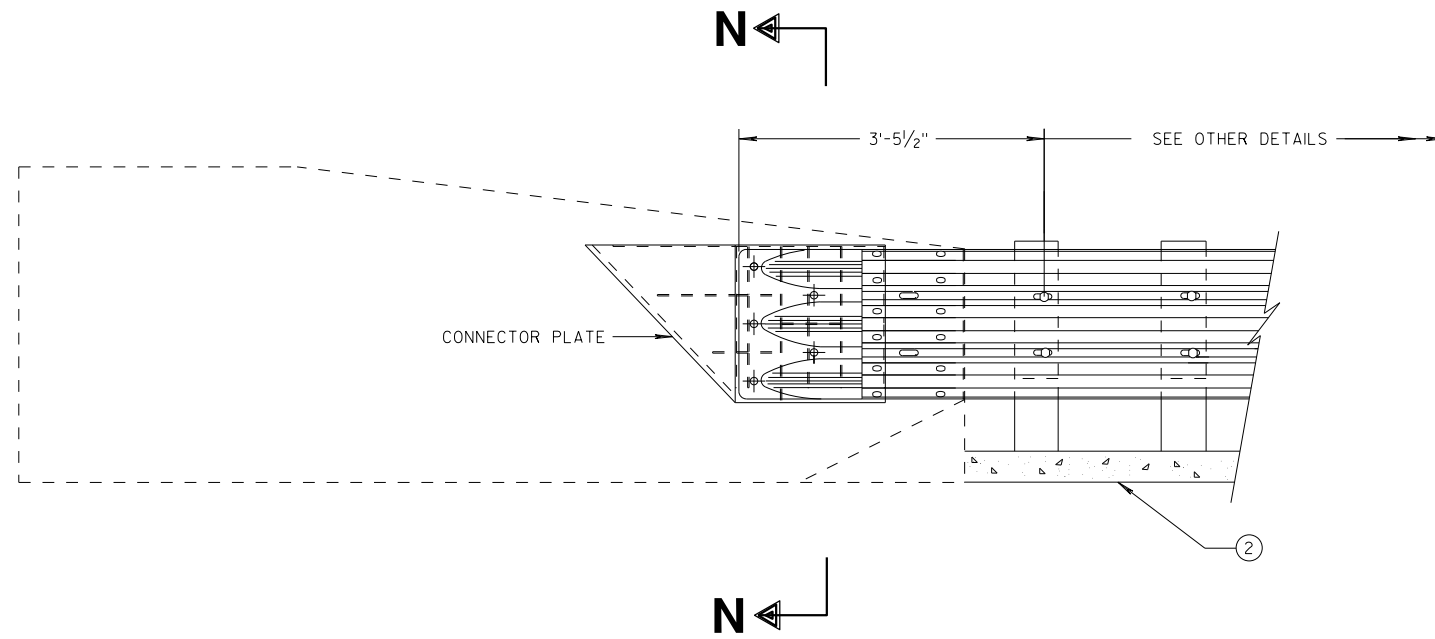
FHWA

GENERAL NOTES

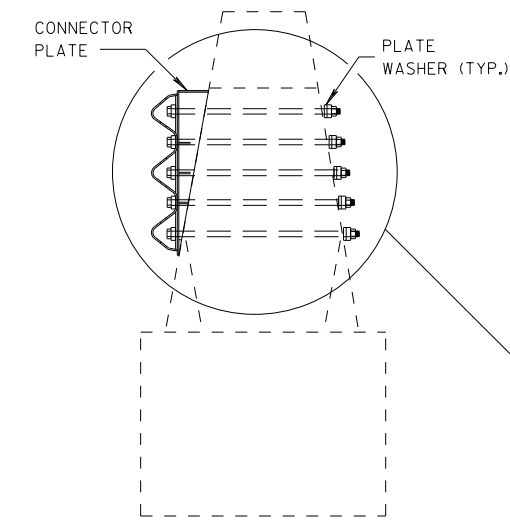
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

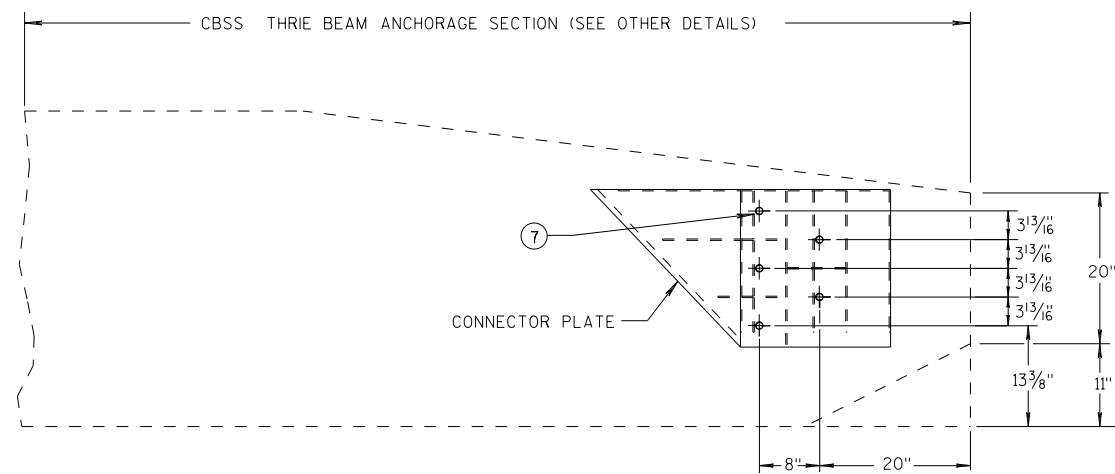
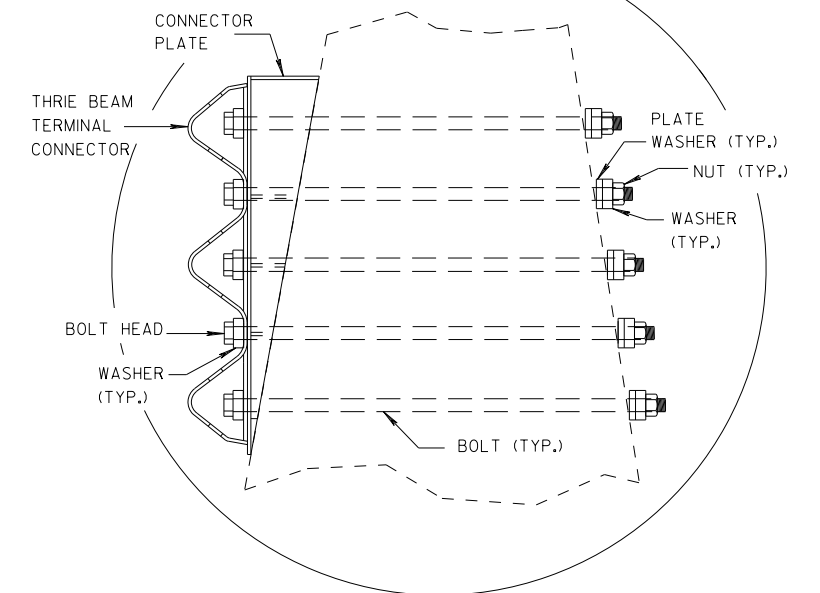
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTION PLATE.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



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



SECTION N-N

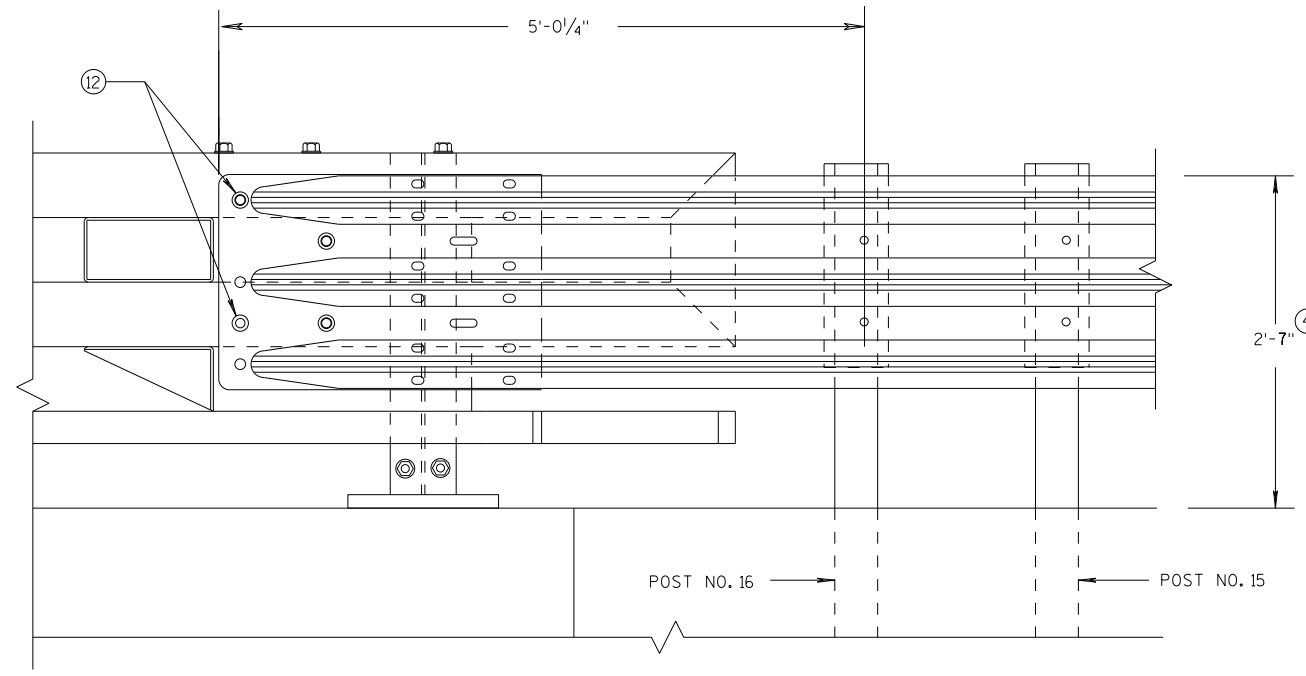


SINGLE SLOPE CONNECTION PLATE PLACEMENT

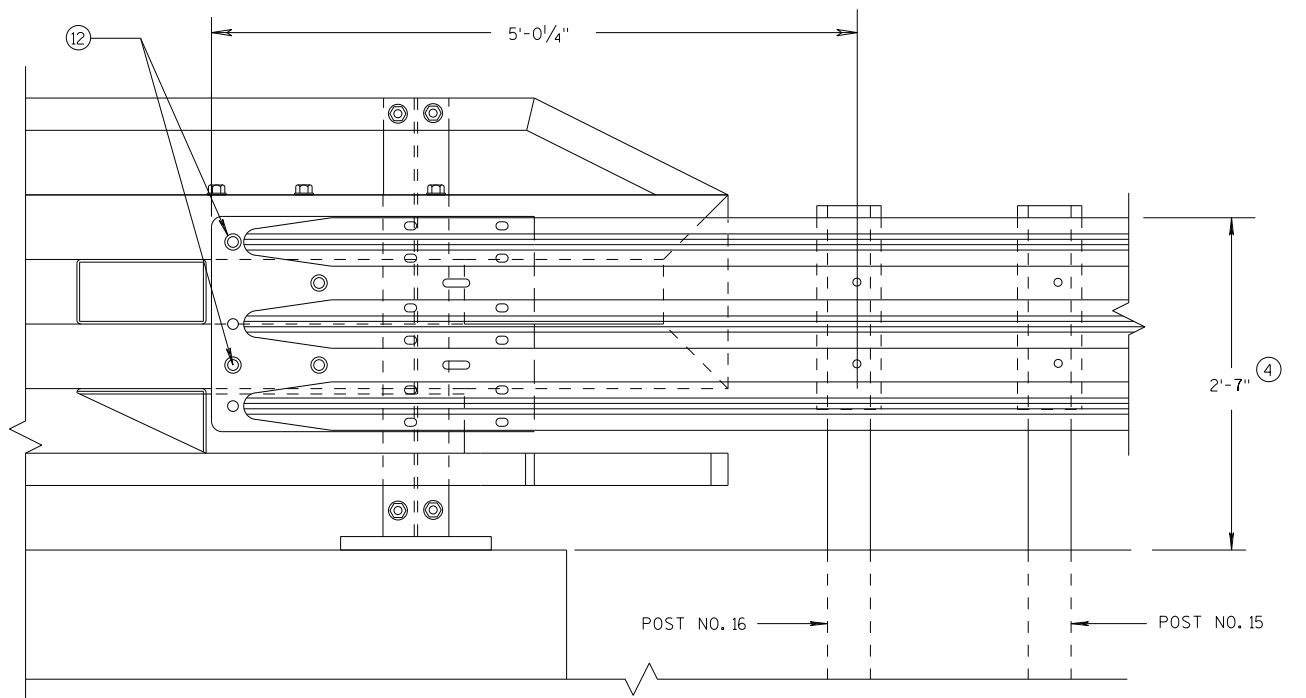
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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



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

GENERAL NOTES

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

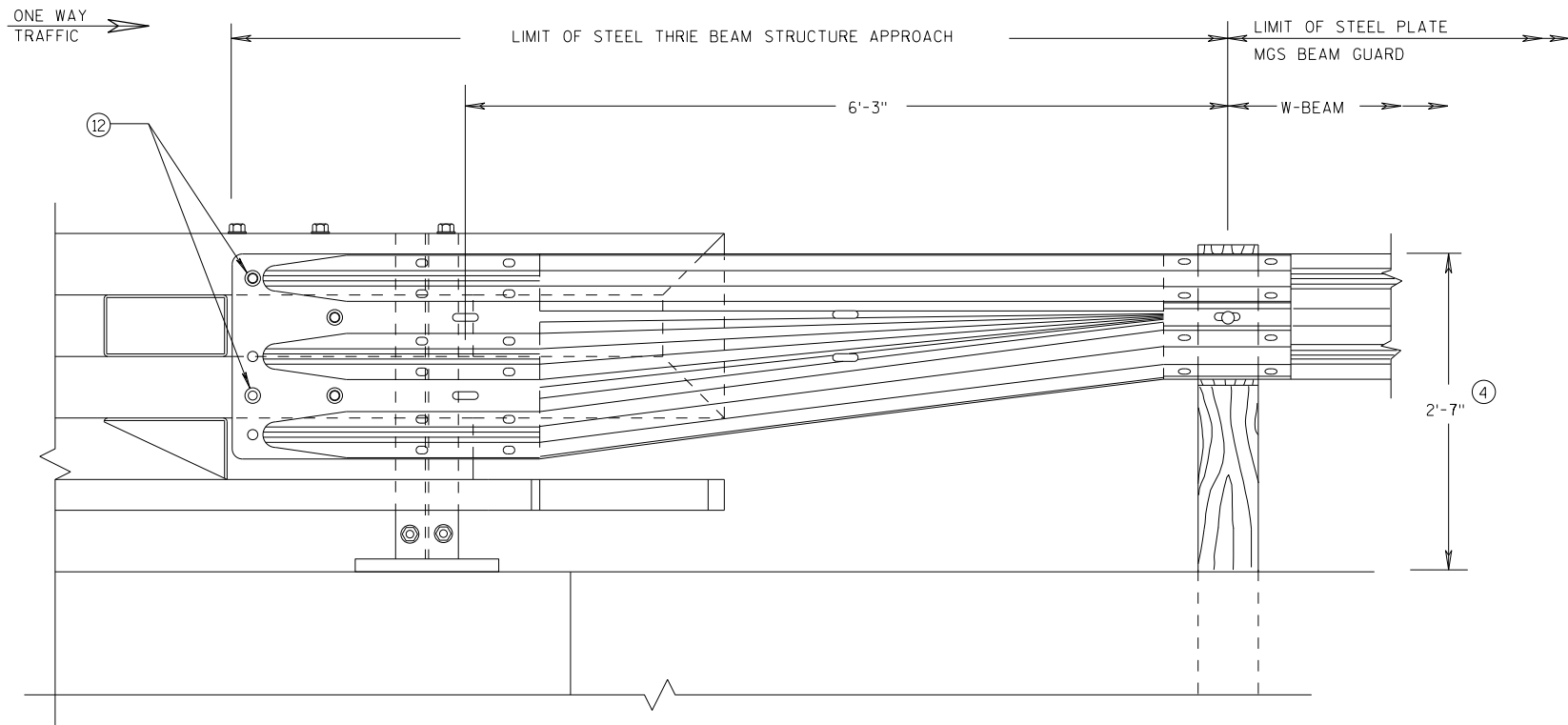
6

6

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

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

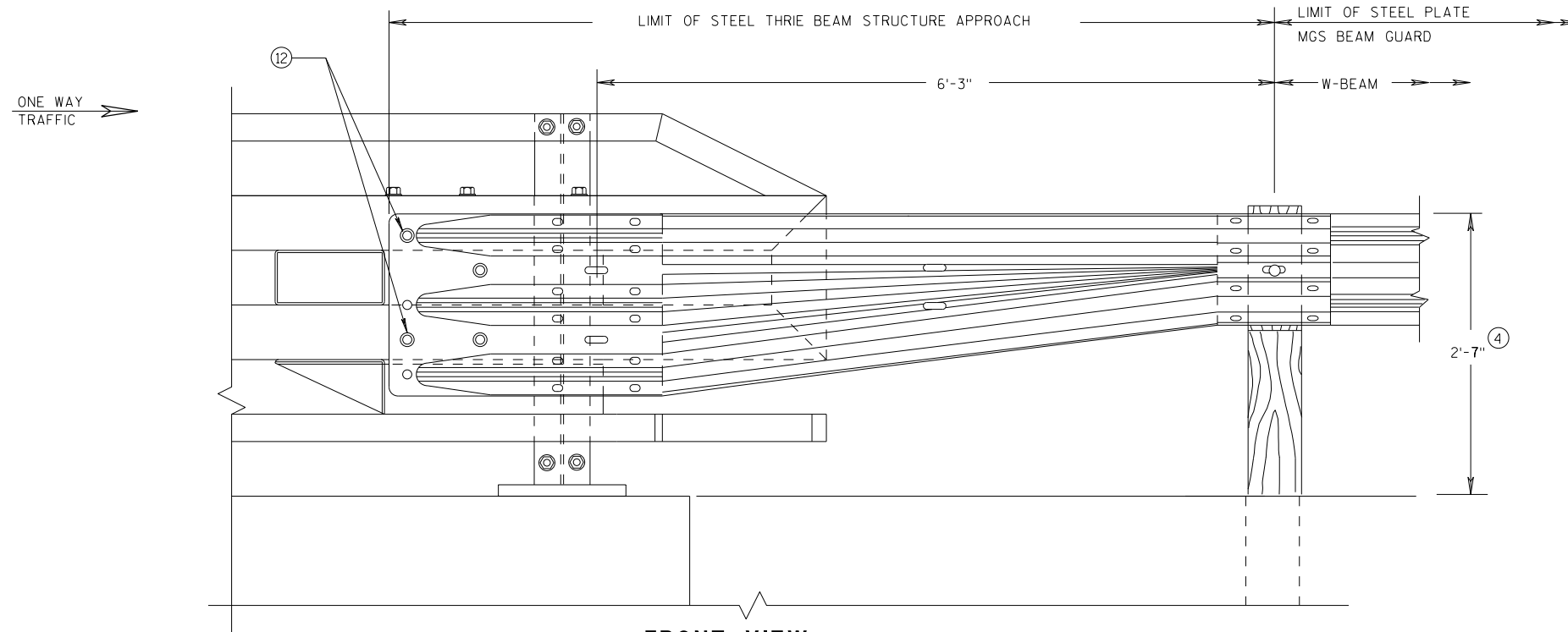
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 7/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA	



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

GENERAL NOTES

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

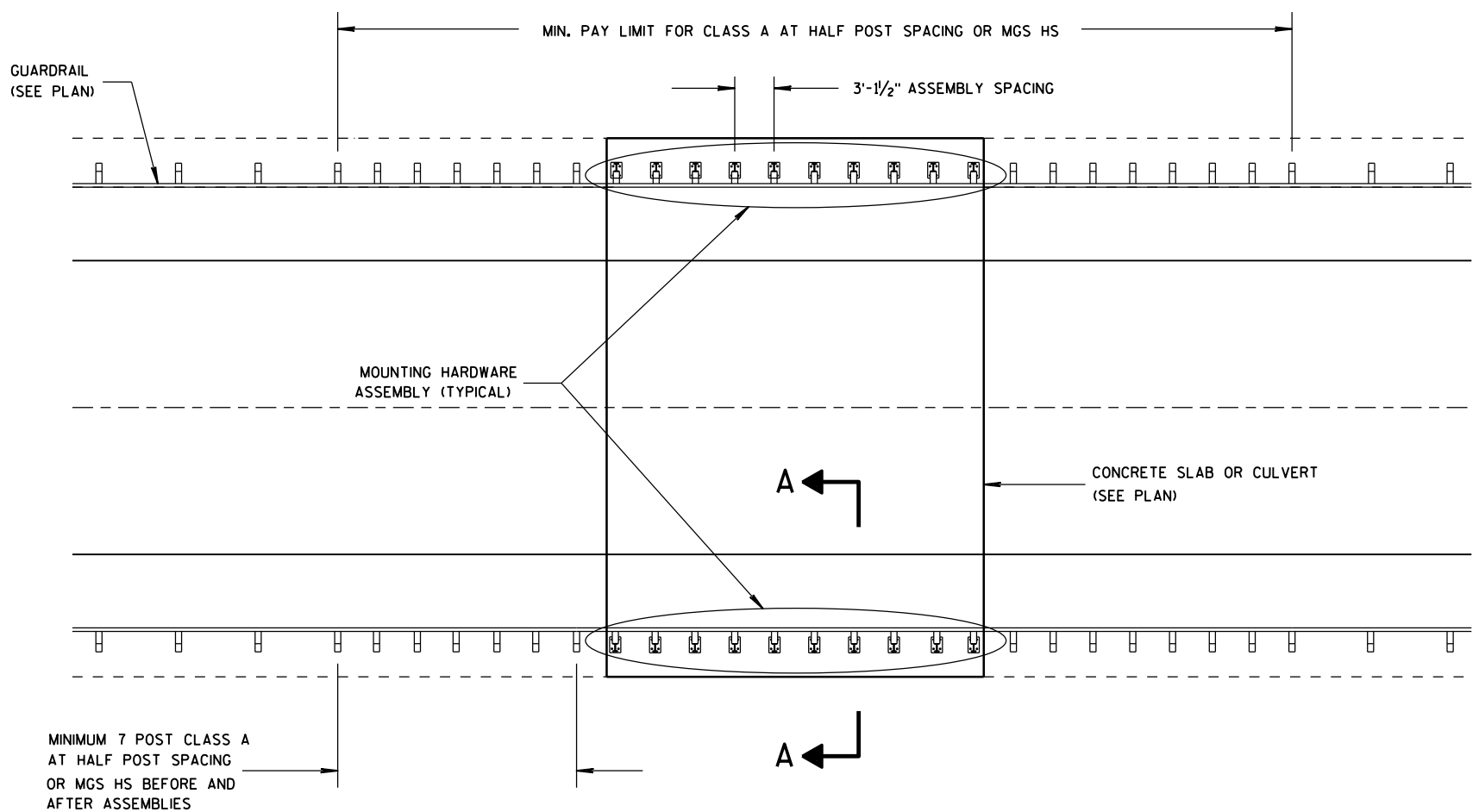


FRONT VIEW
W BEAM TRANSITION AND
CONNECTION TO BRIDGE RAILING TYPE "NY4"
 (USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
 DEPARTMENT OF TRANSPORTATION

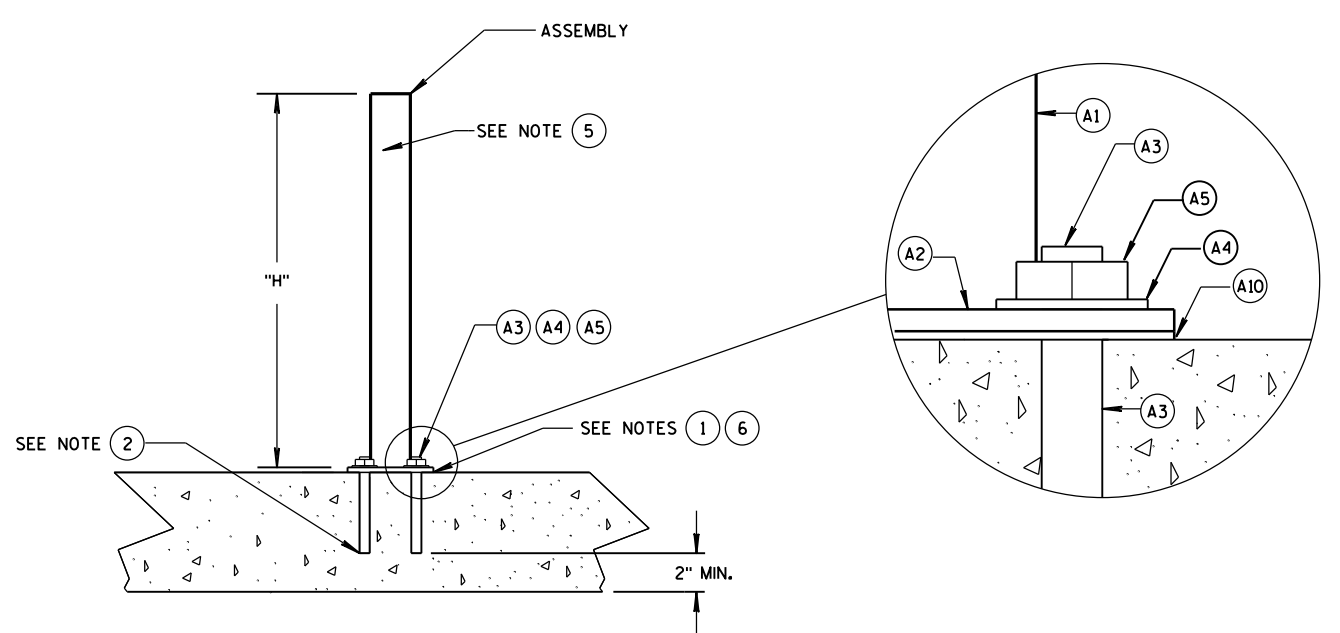
APPROVED
 DATE 7/2018 /S/ Rodney Taylor
 ROADWAY STANDARDS DEVELOPMENT
 UNIT SUPERVISOR
 FHWA



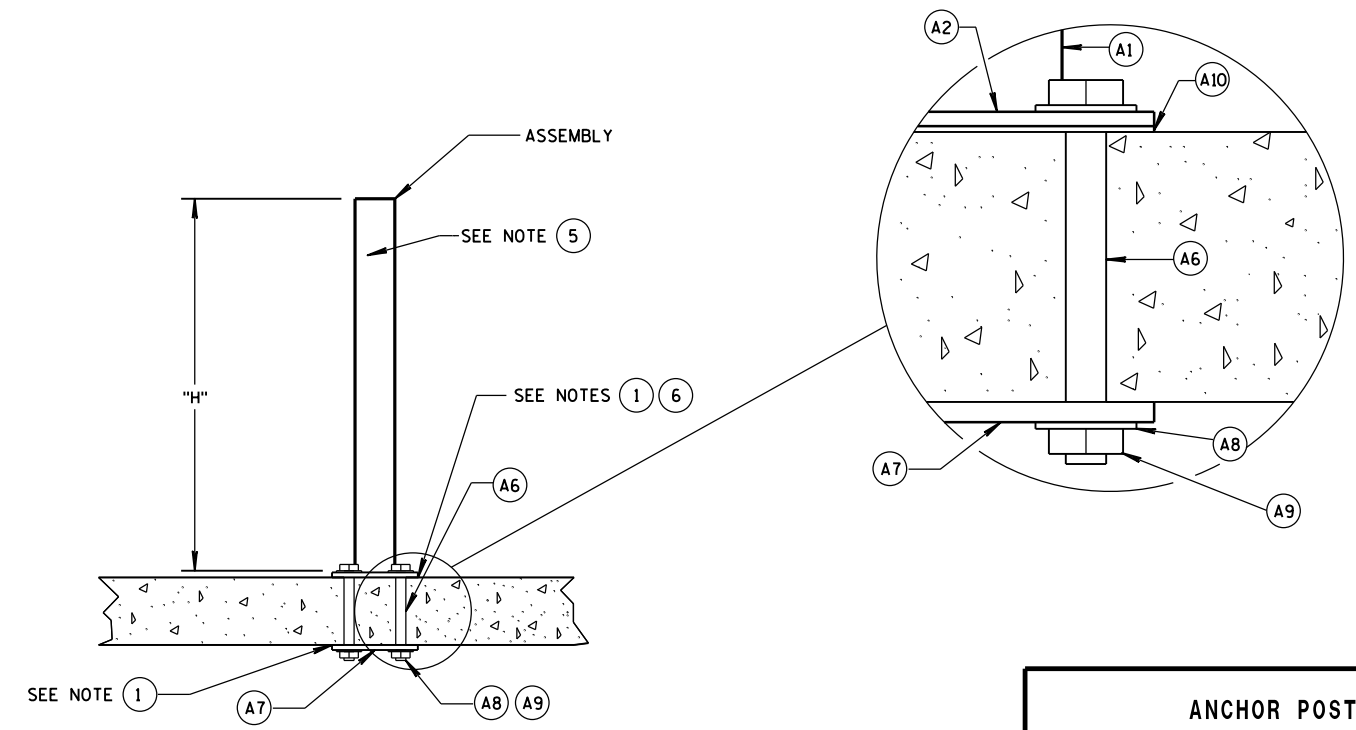
PLAN VIEW

GENERAL NOTES

- HOLES DRILLED INTO CONCRETE SLAB OR CULVERT ARE 1/8-INCH DIAMETER.
- POST BASE PLATE (AND BOTTOM PLATES IF USED) SHALL BE FLAT WITH ALL SURFACES SMOOTH, AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS. CUT BOTTOM OF POST SO THAT POST WILL BE VERTICAL WHEN POST ASSEMBLY IS PLACED ON TOP OF CONCRETE. HEX BOLTS AND THREADED RODS ARE TO BE PLACED PERPENDICULAR TO THE BASE PLATE.
- "H" DIMENSION WILL VARY. SEE PLAN FOR "H" DIMENSION. CONTRACTOR HAS OPTION OF INSTALLING POSTS THAT ARE TALLER THAN "H" DIMENSION AND CUT POSTS TO PROPER "H" DIMENSION IN THE FIELD. IF ELECTING TO FIELD CUT POSTS, DRILL HOLES AT APPROPRIATE LOCATIONS AND APPLY GALVANIZATION.
- GALVANIZE STEEL COMPONENTS AFTER FABRICATION PER SECTION 614 OF THE WISCONSIN DEPT. OF TRANSPORTATION STANDARD SPECIFICATIONS.
- INSTALL 1 NUT AND 1 WASHER WHERE APPLICABLE. PROVIDE SUFFICIENT LENGTH OF BOLT OR THREADED ROD TO ALLOW FOR 1/4-INCH TO 1/2-INCH OF THREAD TO BEYOND THE NUT.
- ① PLACE NON-STAINING, GRAY NON-BITUMINOUS JOINT SEALER ON THE BOTTOM (A2) AND IN DRILL HOLES FOR BOLT THROUGH OPTION.
 - ② BOND STRENGTH OF ADHESIVE IS 1,305 PSI OR GREATER WITH A MINIMUM EMBEDMENT DEPTH OF 8-INCHES. IF MINIMUM EMBEDMENT CANNOT BE ACHIEVED BOLT THROUGH STRUCTURE.
 - ③ USE GAS-METAL ARC WELDING (GMAW) PROCESS WITH ER70S-3 WELDING WIRE AND ARGON-OXYGEN OR CO2 COVER GAS.
 - ④ OTHER COMPONENT OF BARRIER SYSTEM NOT SHOWN. SEE OTHER STANDARD DETAIL DRAWINGS. SEE SDD 14 B 15 OR SDD 14 B 42 FOR MORE DETAILS.
 - ⑤ HOLES TO MOUNT BEAM GUARD AND BLOCK NOT SHOWN ON DRAWINGS. SEE OTHER STANDARD DETAIL DRAWINGS. SEE SDD 14 B 15 OR SDD 14 B 42 FOR MORE DETAILS.
 - ⑥ ADD AND ADJUST SHIM PLATES AS NECESSARY TO INSTALL POST PLUMB. SEE (A10) FOR DETAIL.



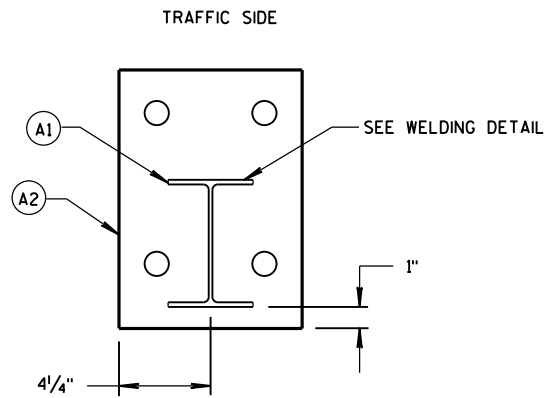
ADHESIVE ANCHOR DETAIL
SEE NOTE ④



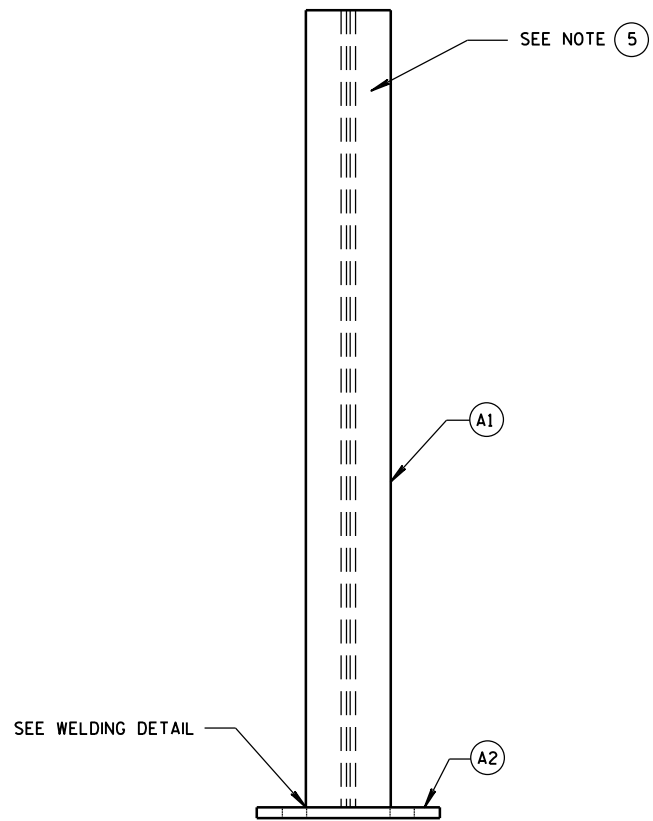
BOLT THROUGH DETAIL
SEE NOTE ④

ANCHOR POST
ASSEMBLY TOP-MOUNTED

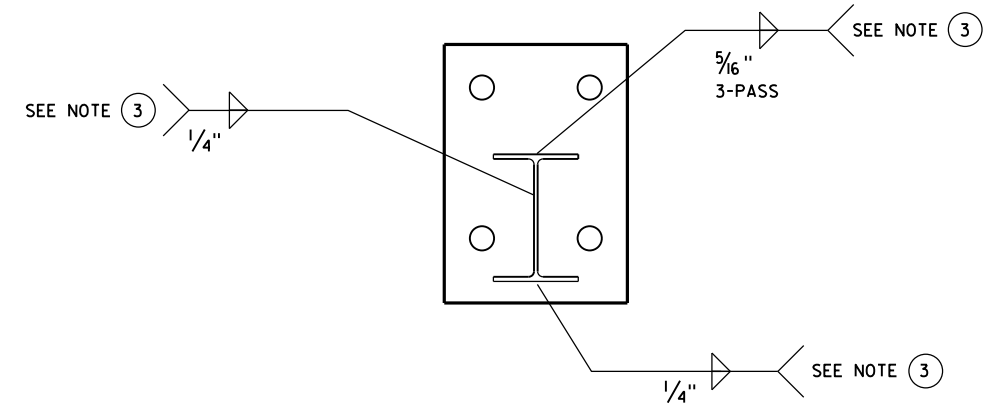
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



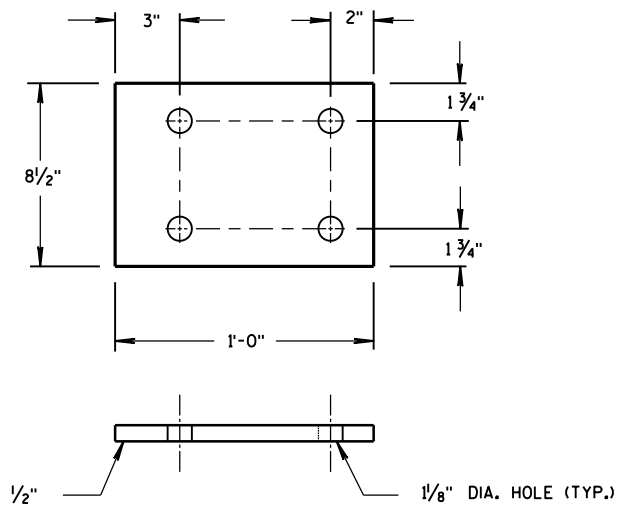
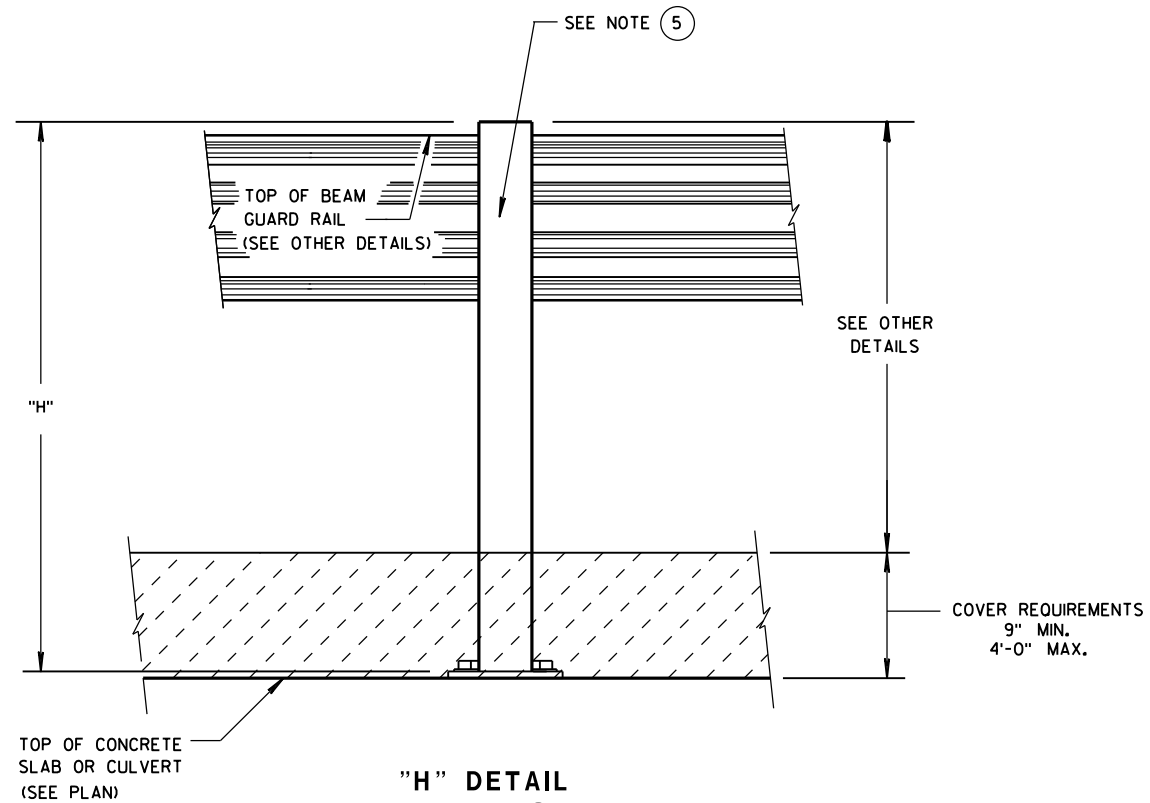
PLAN VIEW OF ASSEMBLY



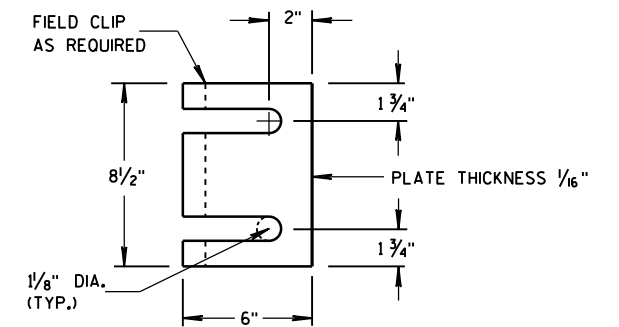
PROFILE VIEW OF ASSEMBLY



WELDING DETAIL



A2 DETAILS



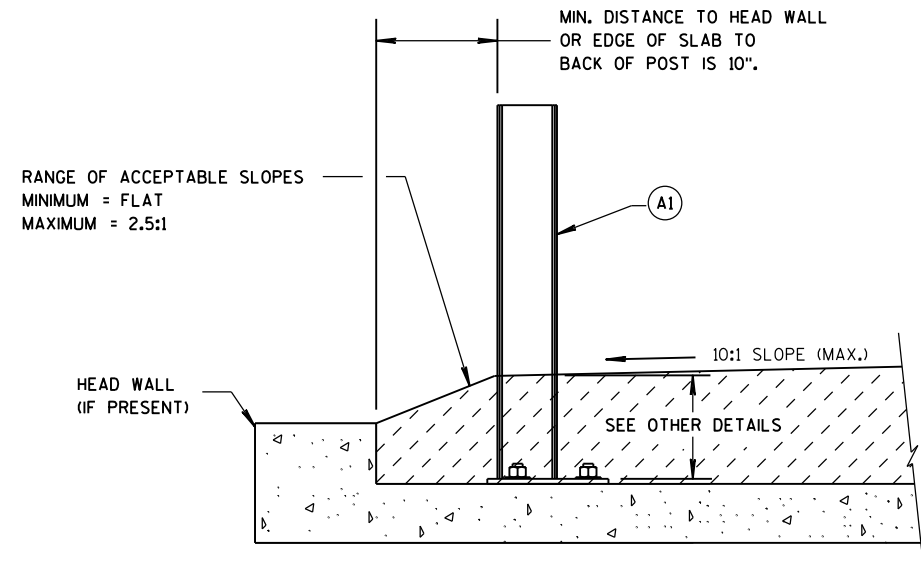
A10 DETAILS

ANCHOR POST
ASSEMBLY TOP-MOUNTED

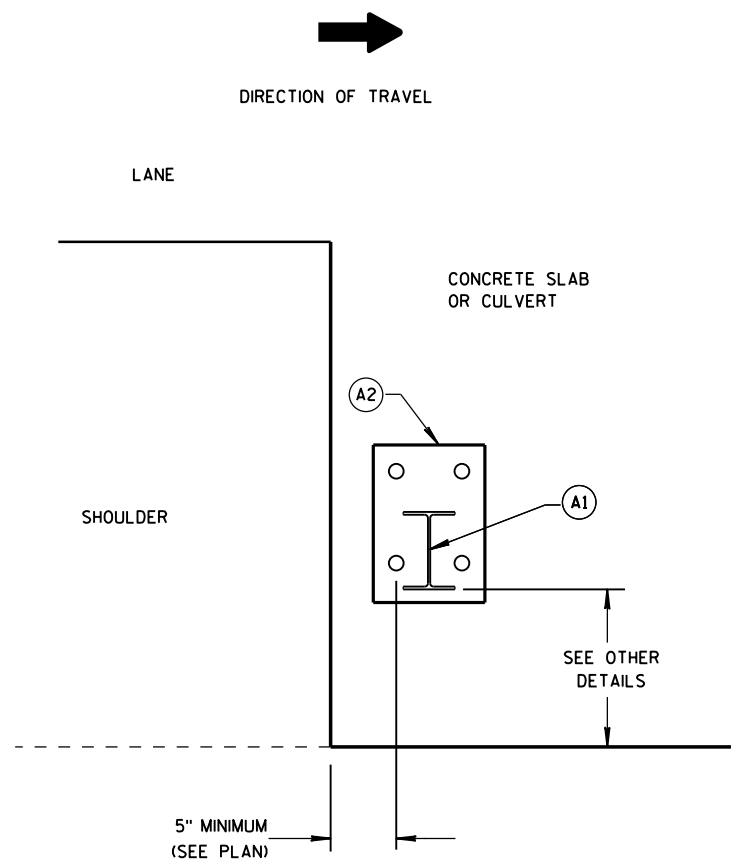
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

MATERIALS LIST

ITEM	DESCRIPTION	MATERIAL SPECIFICATIONS	NOTES
(A1)	W6x9 or W6x8.5	ASTM A992, 50 KSI MIN., ASTM A709 GRADE 50 OR ASTM A36	SEE SDD 14B15 OR 14B42 LENGTH WILL VARY
(A2)	STEEL BASE PLATE	ASTM A992 50 KSI MIN., ASTM A529 GRADE 50, ASTM A572 GRADE 50, OR ASTM A36	
(A3)	1" DIA. THREADED ROD	SAE J429 GRADE 2, ASTM A307 GRADE C, OR ASTM F1554 GRADE 36	LENGTH WILL VARY
(A4)	1" DIA. FLAT WASHER	ASTM F844	
(A5)	1" HEX NUT	ASTM A563A	
(A6)	1" DIA. HEX BOLT	ASTM A307	LENGTH WILL VARY
(A7)	PLATE WASHER	ASTM A992 50 KSI MIN., ASTM A529 GRADE 50, ASTM A572 GRADE 50, OR ASTM A36	
(A8)	1" DIA. FLAT WASHER	ASTM F844	
(A9)	1" DIA. HEX NUT	ASTM A563A	
(A10)	SHIM PLATE	SEE (A2)	4 MAX PER POST



SECTION A-A
SEE NOTE (4)



EDGE PLACEMENT
SEE NOTE (4)

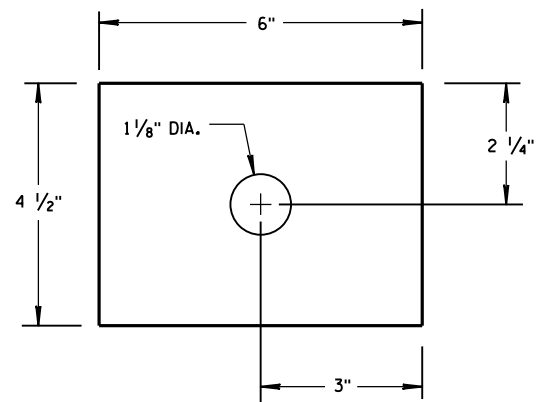
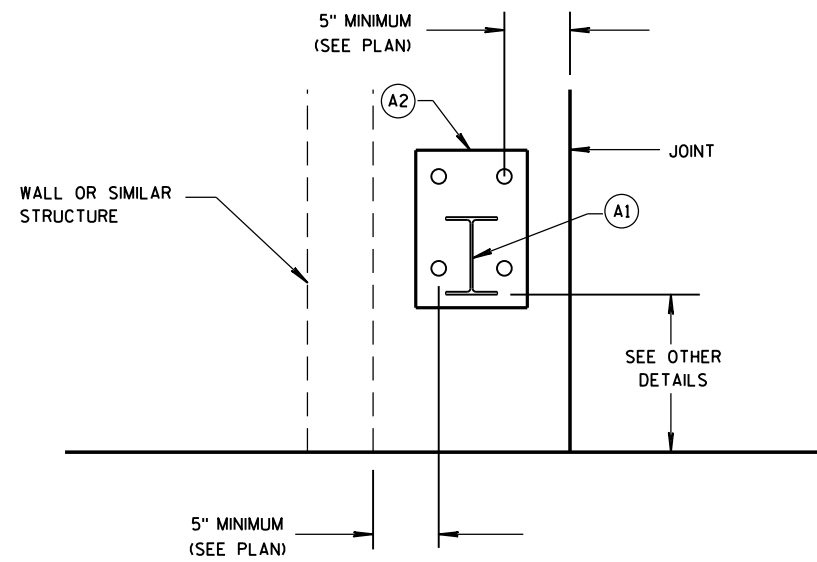
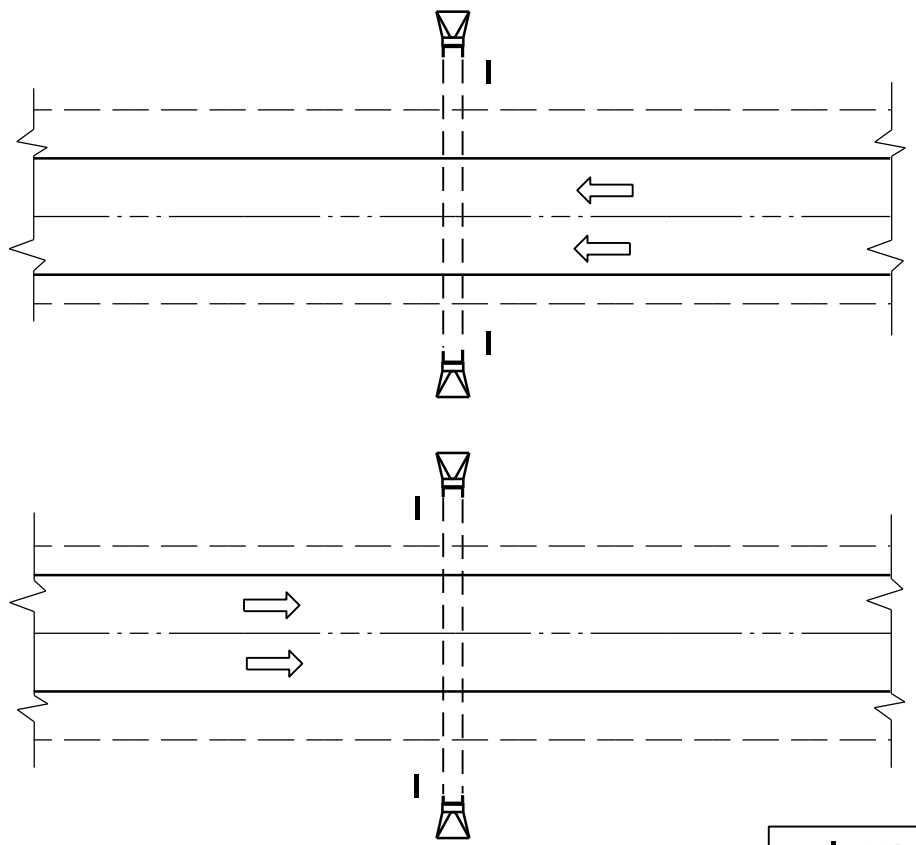


PLATE WASHER - (A7)

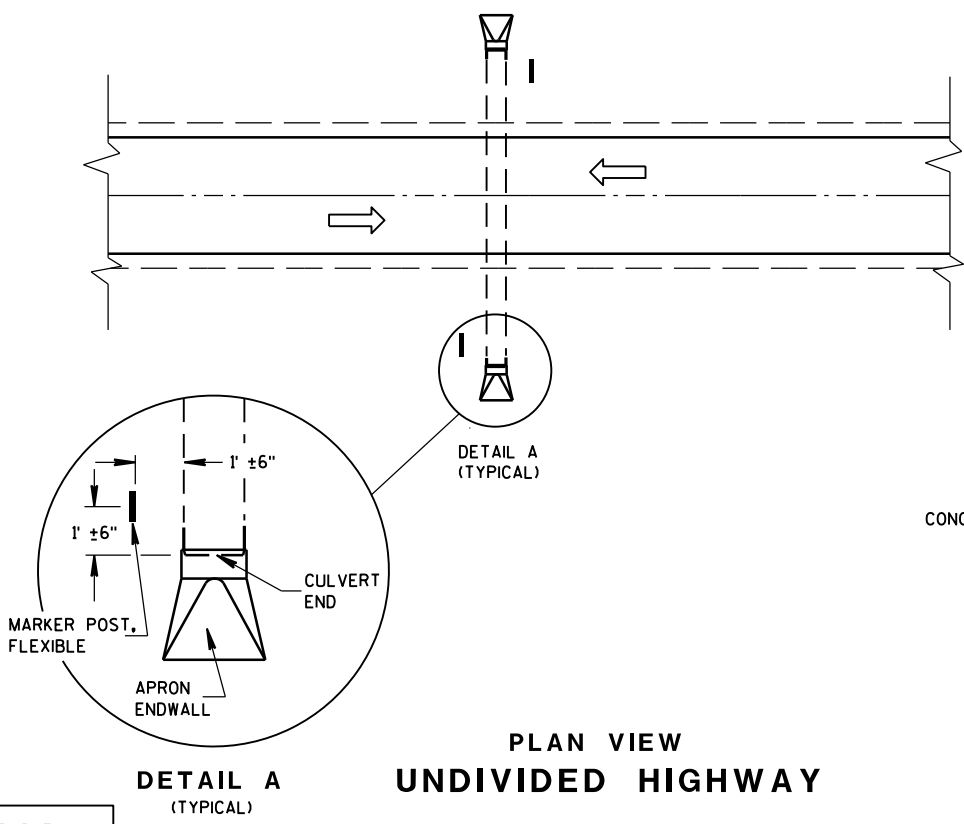


OBSTRUCTION AND JOINT PLACEMENT
SEE NOTE (4)

ANCHOR POST ASSEMBLY TOP-MOUNTED	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2014 DATE	/s/ Jerry H. Zogg ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	



PLAN VIEW
DIVIDED HIGHWAY



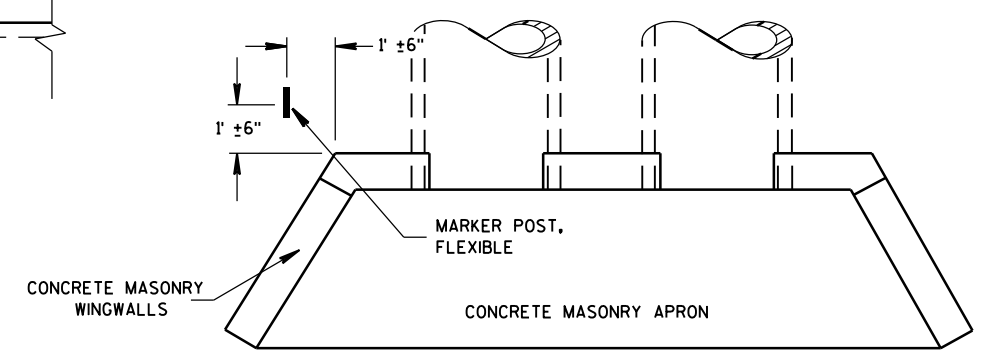
PLAN VIEW
UNDIVIDED HIGHWAY

MARKER POST, FLEXIBLE
DIRECTION OF TRAFFIC FLOW

FLEXIBLE MARKER POST LOCATION

GENERAL NOTES

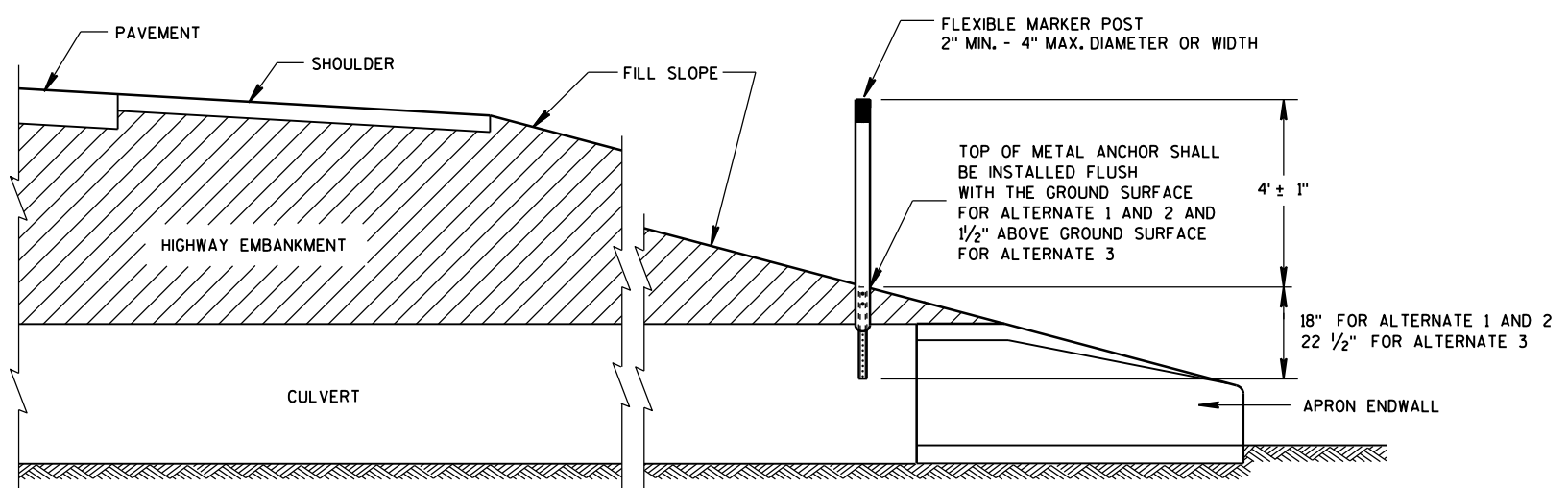
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH

6

6

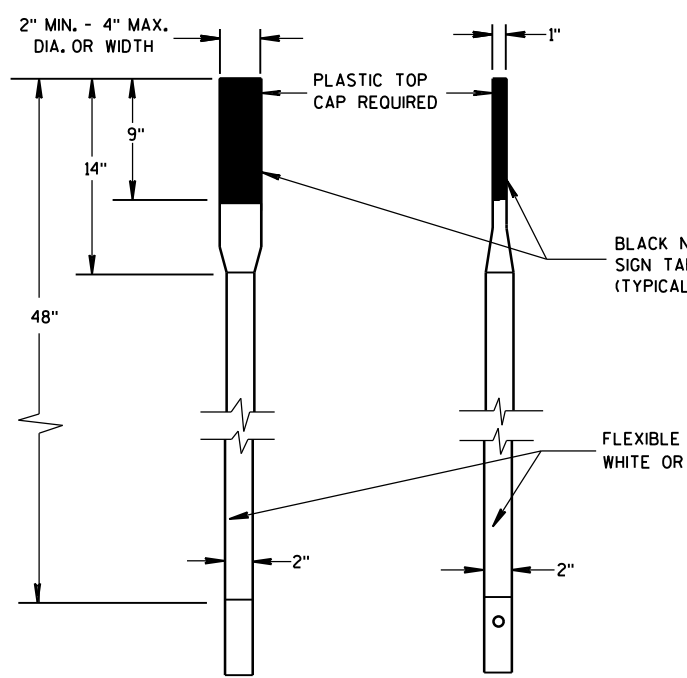


CROSS SECTION
FLEXIBLE MARKER POST

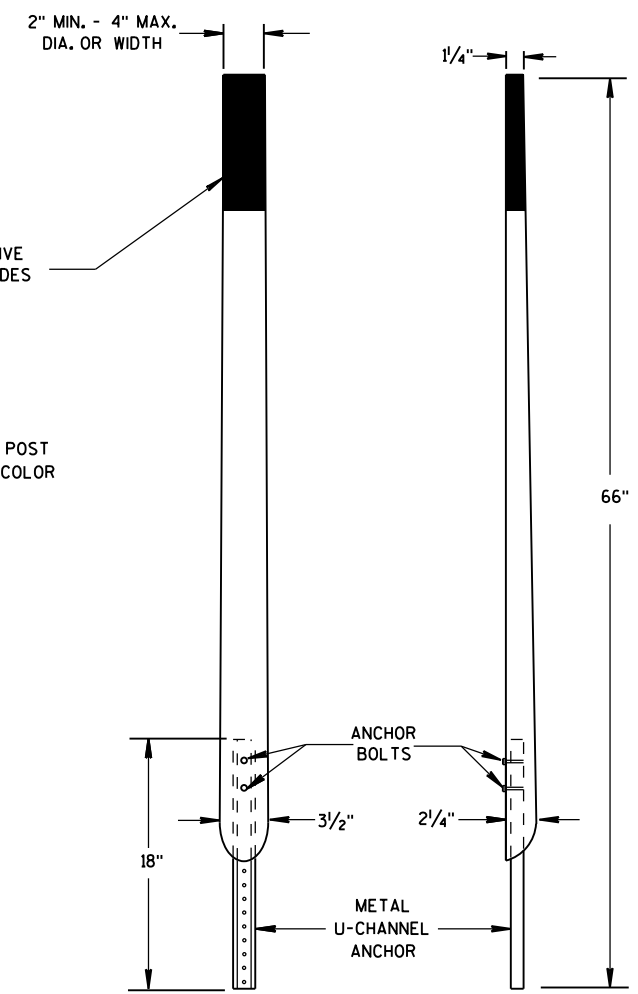
FLEXIBLE MARKER POST
FOR CULVERT END
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

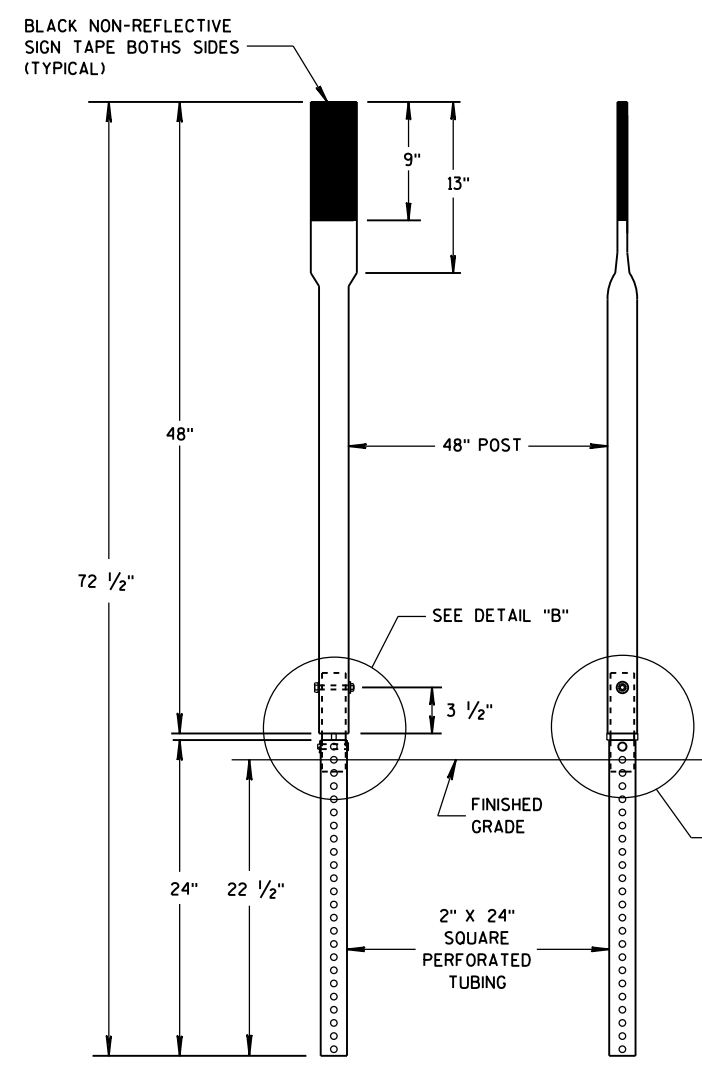
S.D.D. 15 A 3-2a



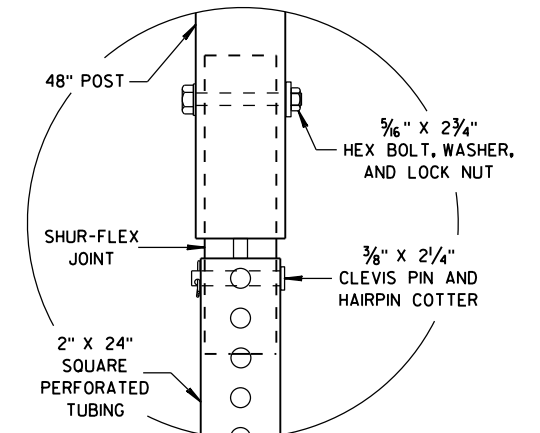
FRONT VIEW SIDE VIEW
ALTERNATE 1



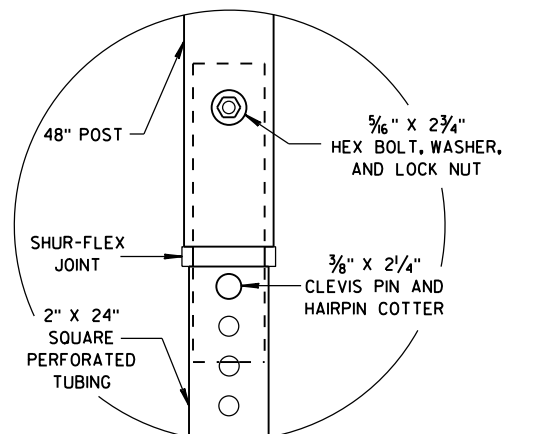
FRONT VIEW SIDE VIEW
ALTERNATE 2



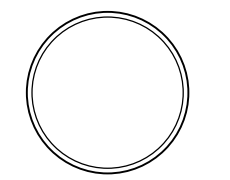
FRONT VIEW SIDE VIEW
ALTERNATE 3



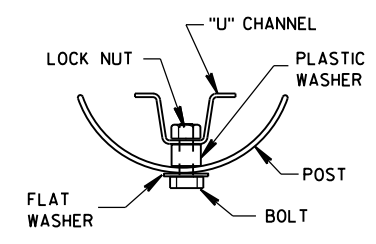
DETAIL B



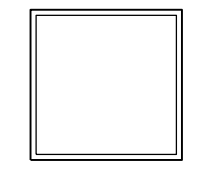
DETAIL C



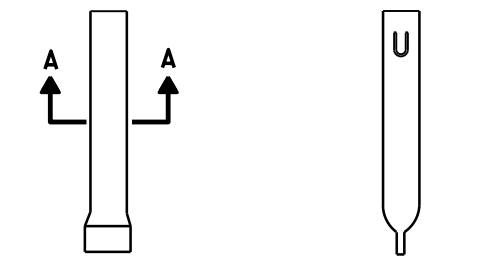
SECTION A-A



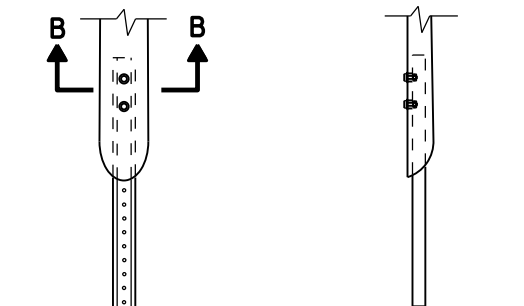
SECTION B-B



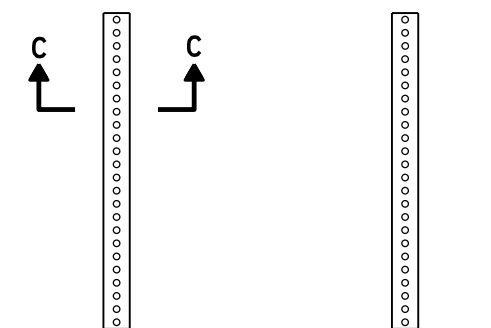
SECTION C-C



FRONT VIEW SIDE VIEW
ALTERNATE 1



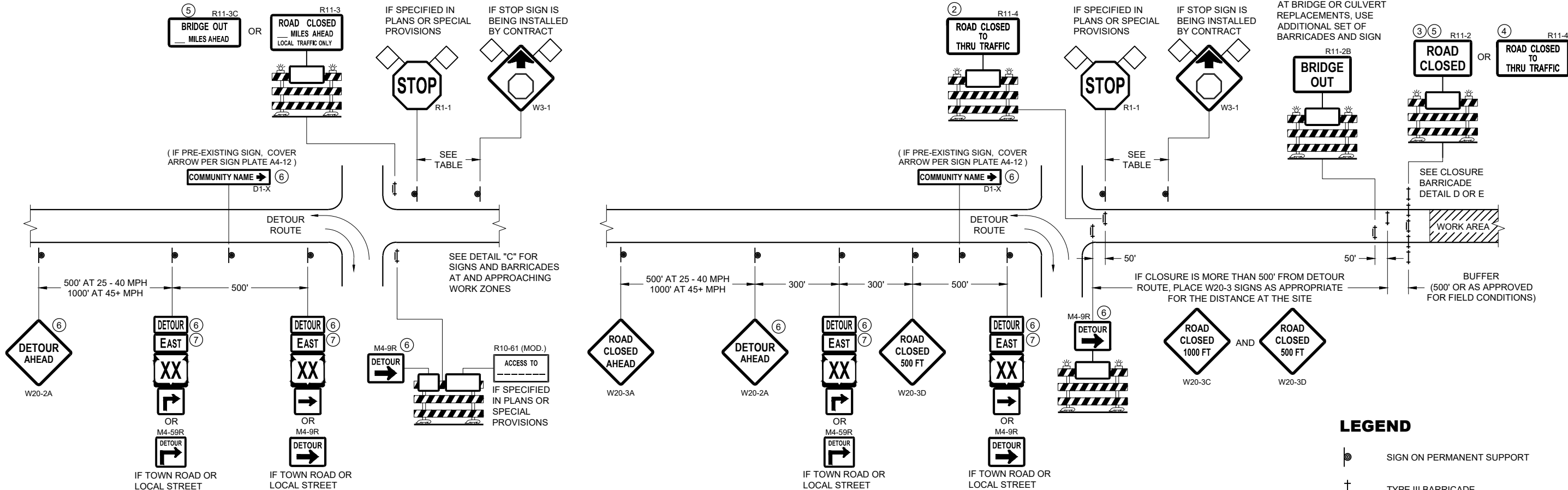
FRONT VIEW SIDE VIEW
ALTERNATE 2



FRONT VIEW SIDE VIEW
ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS

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



**DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR**

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

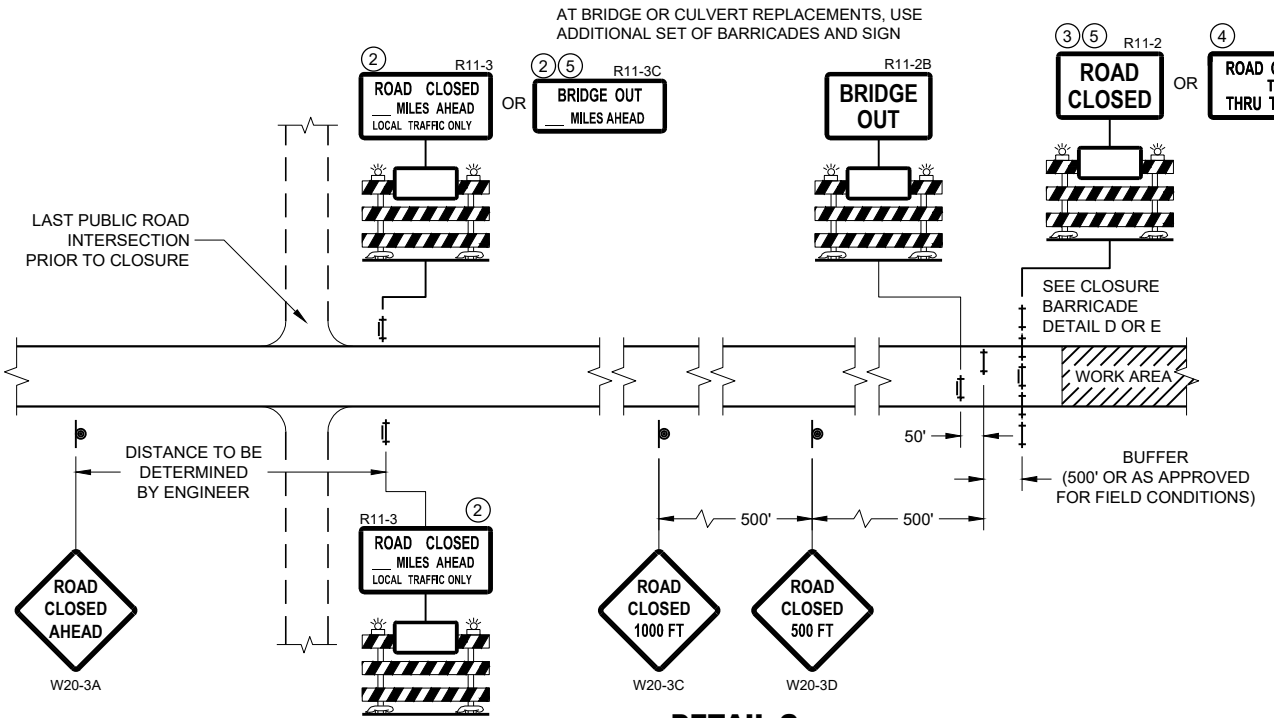
**DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR**

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

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

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

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



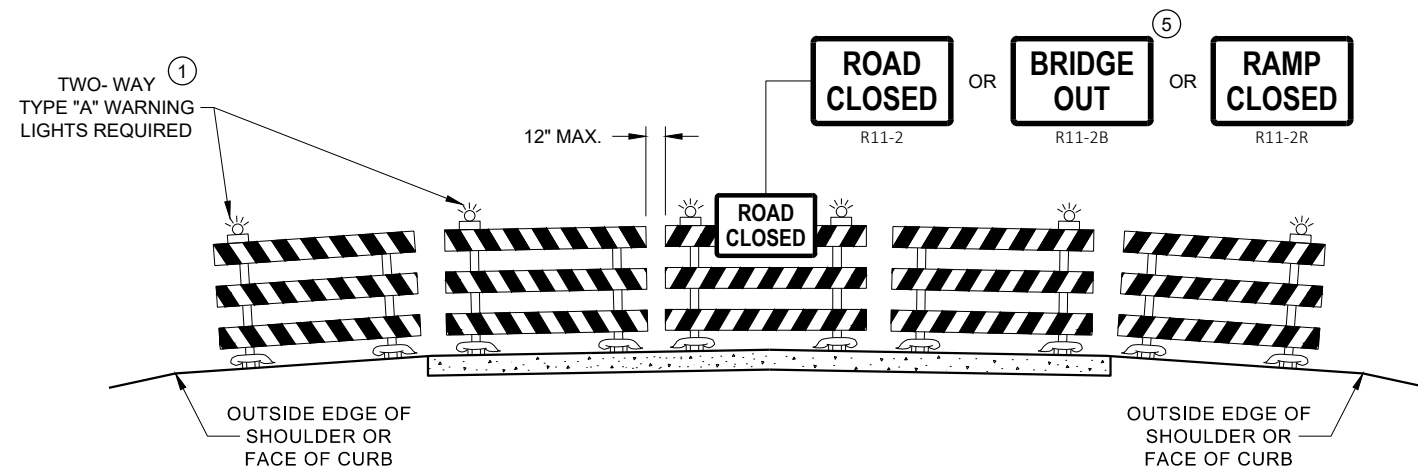
**DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR**

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

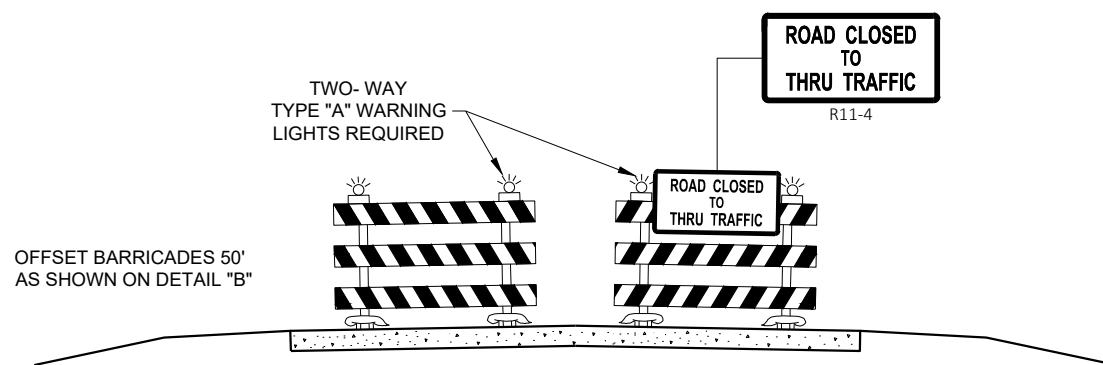
**BARRICADES AND SIGNS
FOR MAINLINE CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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



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

SEE SDD 15C2 - SHEET "a" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

**BARRICADES AND SIGNS
FOR
VARIOUS CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

LEGEND

- SIGN ON PERMANENT SUPPORT
- WORK AREA
- DETOUR M4 - 8
- EAST M3 - X
- XX OR XX OR COUNTY X M1 - 4 M1 - 6 M1 - 5A
- M05 - 1 OR M06 - 1 OR M06 - 1

GENERAL NOTES

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

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

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

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

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

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

SIGN SIZES SHALL BE AS FOLLOWS:

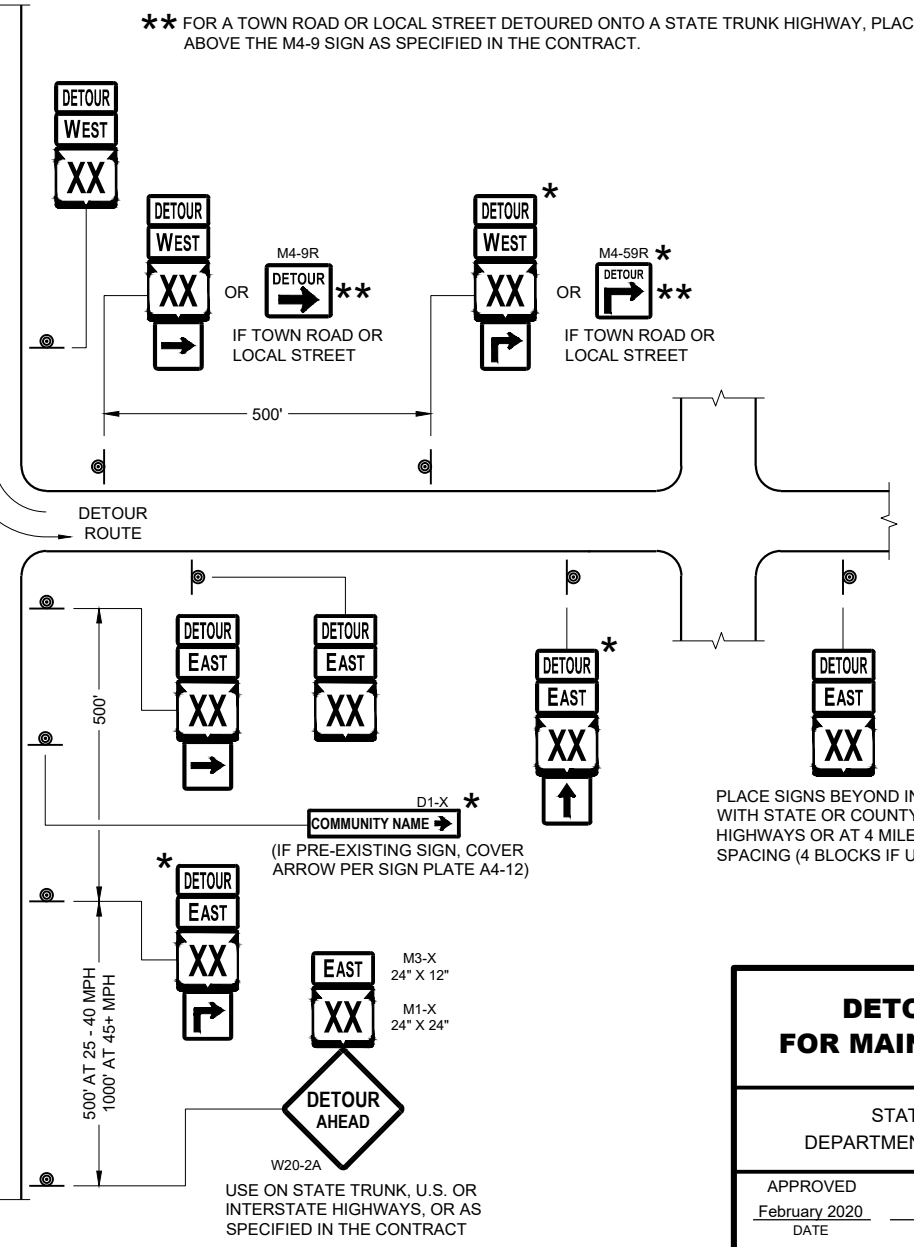
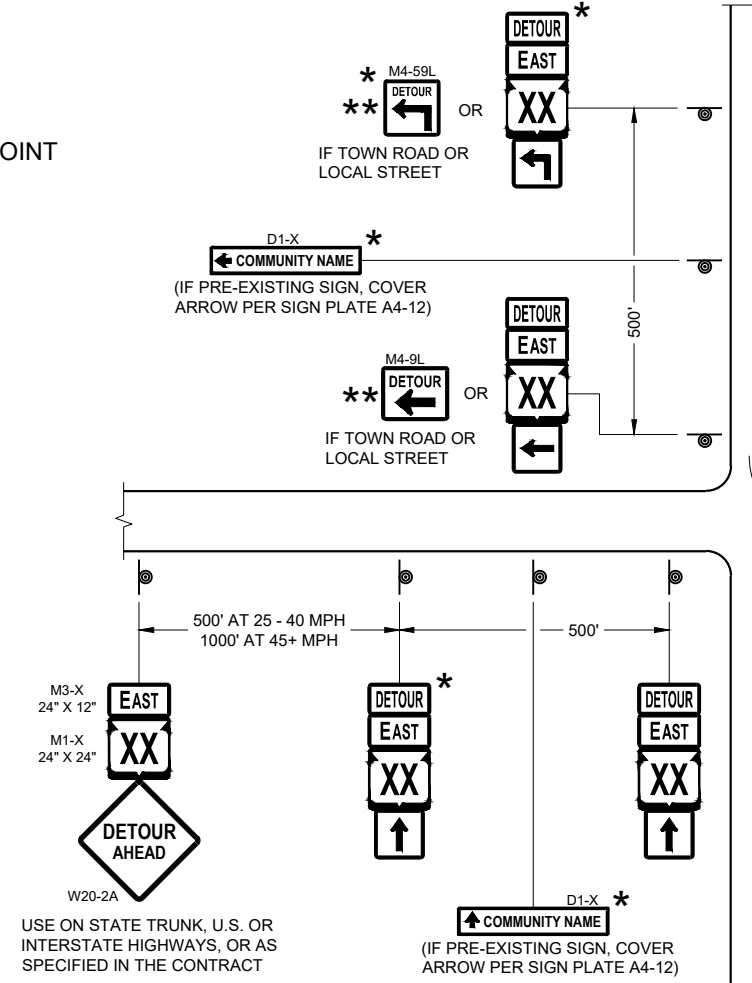
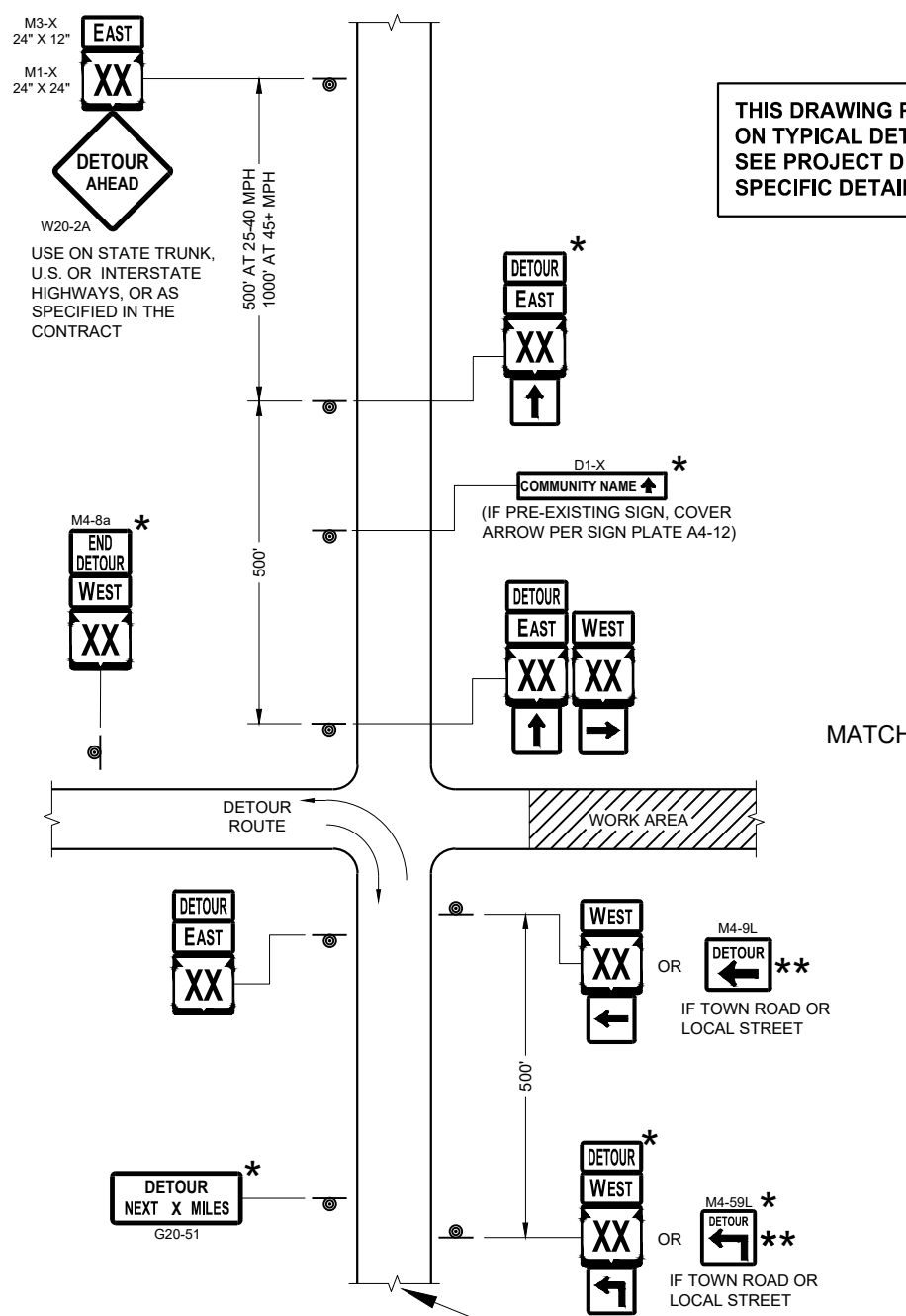
- M3-X SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M4-8 SHALL BE 24" X 12" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
- M1-4, M1-5A AND M1-6 SHALL BE 24" X 24" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
- M05-1 AND M06-1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING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

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

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

MATCH POINT

**DETAIL F
DETOUR SIGNING**



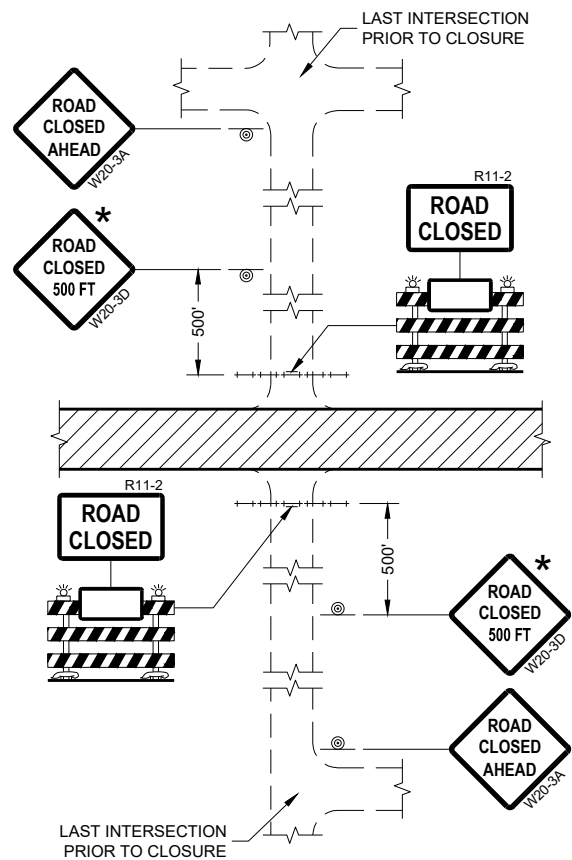
SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS AND DETAIL A OR B ON SDD SHEET 15C02 - SHEET "a"

**DETOUR SIGNING
FOR MAINLINE CLOSURES**

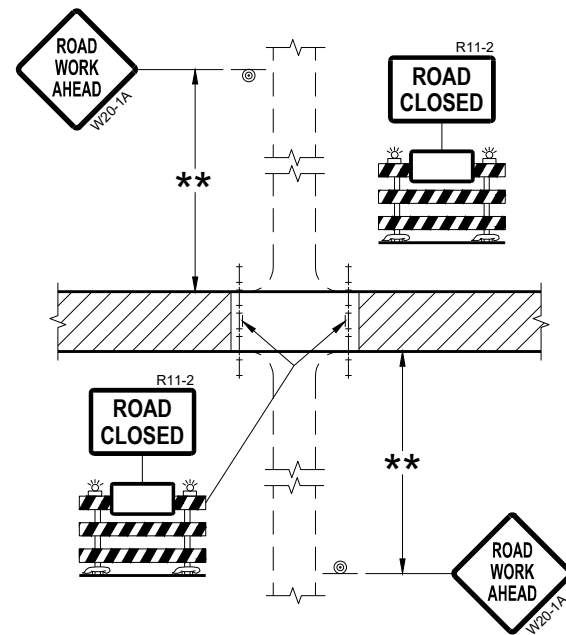
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

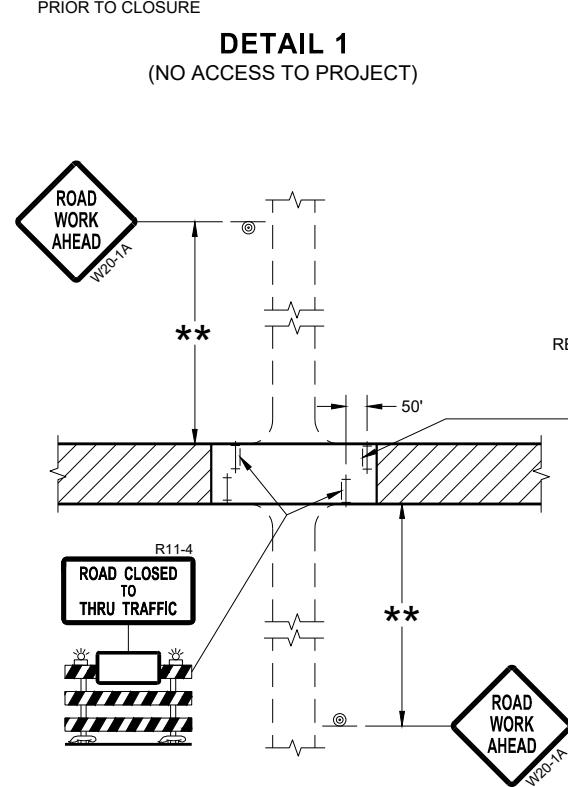
FHWA



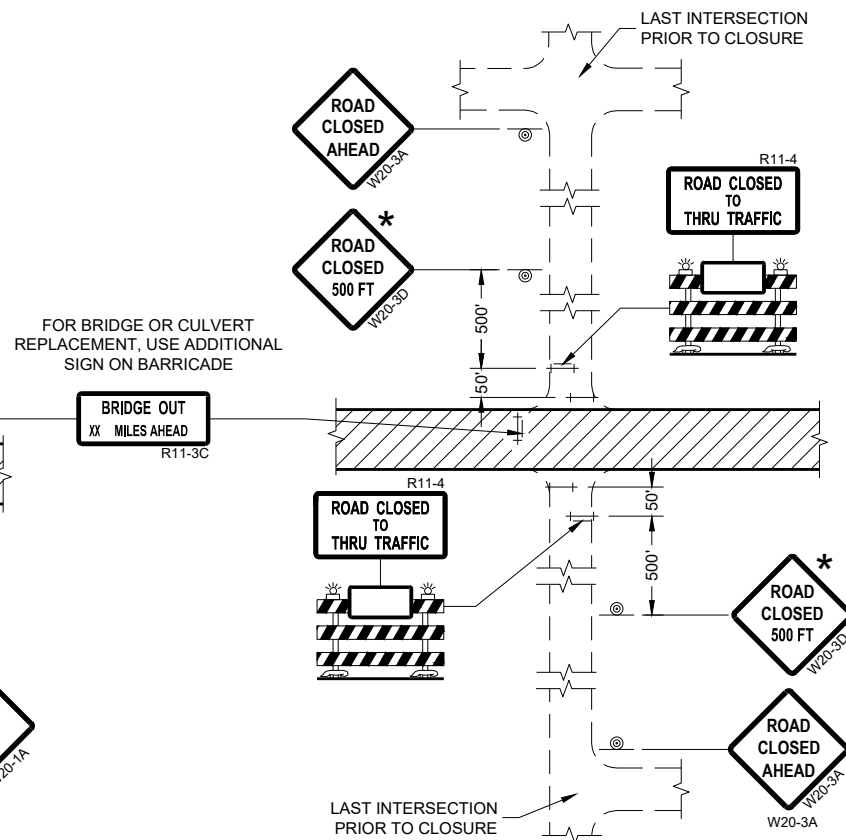
DETAIL 1
(NO ACCESS TO PROJECT)



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



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



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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

LEGEND

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

**BARRICADES AND SIGNS
FOR
SIDEROAD CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

GENERAL NOTES

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

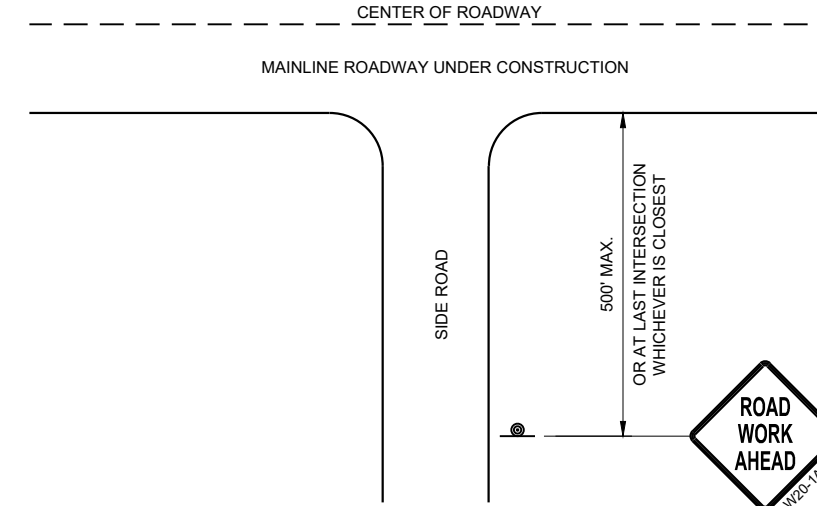
THE SPACING BETWEEN TRAFFIC CONTROL SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND SHOULD PROVIDE A MINIMUM OF 200 FEET (500 FEET DESIRABLE) CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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.

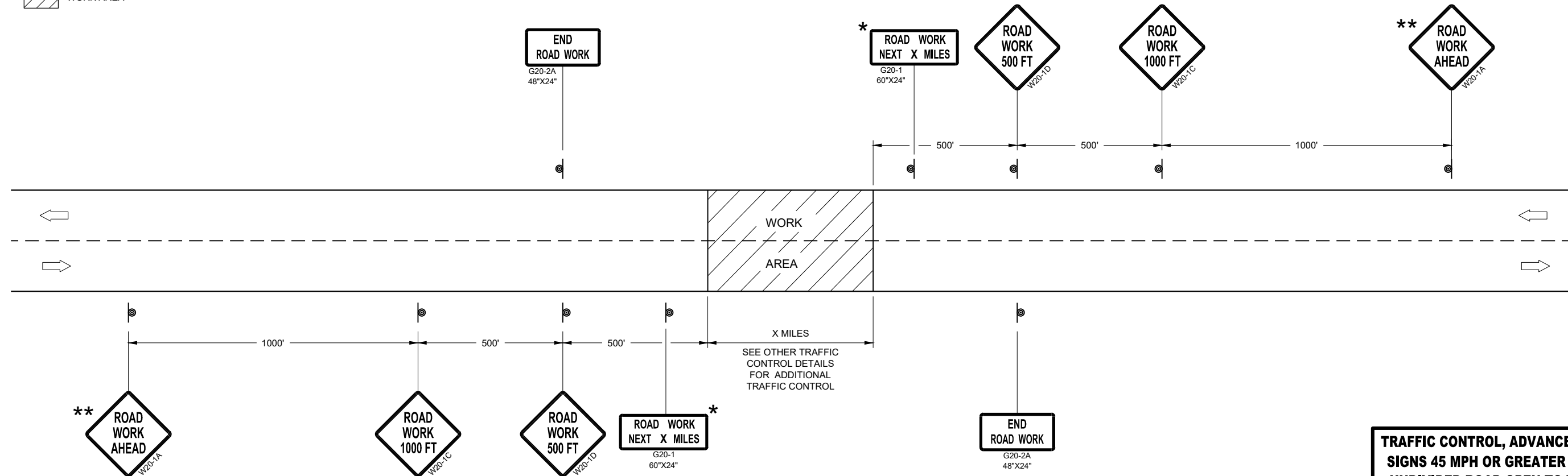
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



**TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL**

LEGEND

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



TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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. IF NECESSARY DUE TO SPACE CONSTRAINTS, 36"X36" SIGNS MAY BE USED INSTEAD OF 48" X 48" SIGNS.

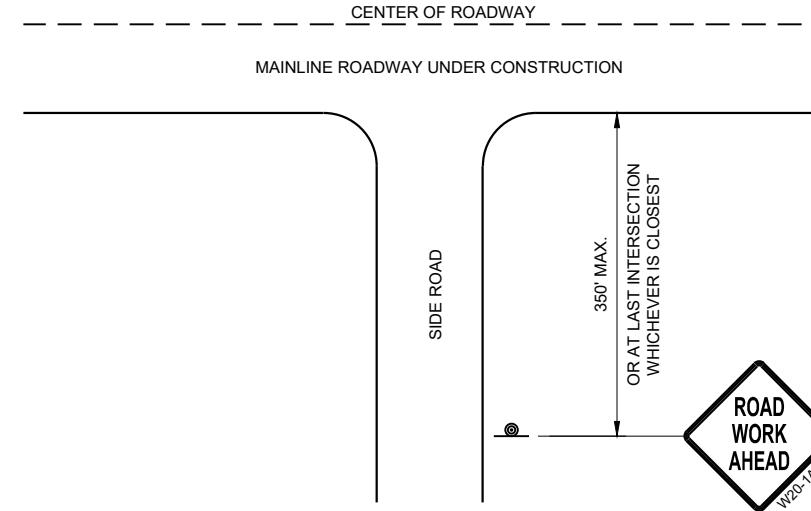
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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.

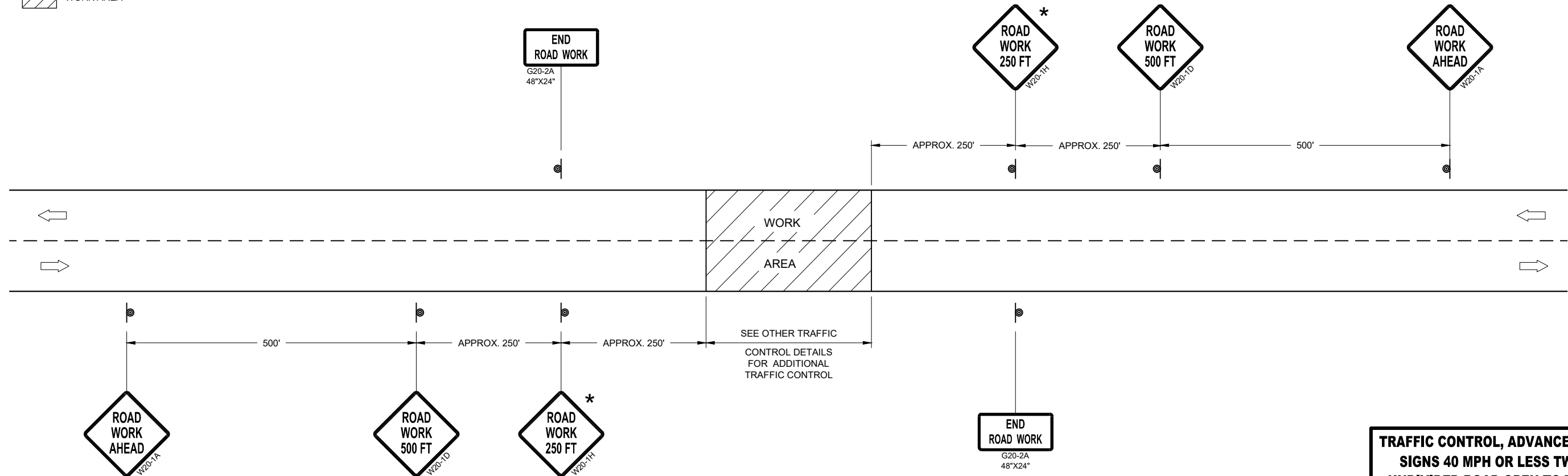
* THE THIRD W20-1 SIGN IS REQUIRED ONLY IF THERE IS AN INTERSECTION BETWEEN THE "ROAD WORK 500 FEET" SIGN AND THE WORK ZONE. ADJUST THE PLACEMENT OF THIS SIGN BASED ON INTERSECTION LOCATION AND OTHER FIELD CONDITIONS.

LEGEND

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



**TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL**



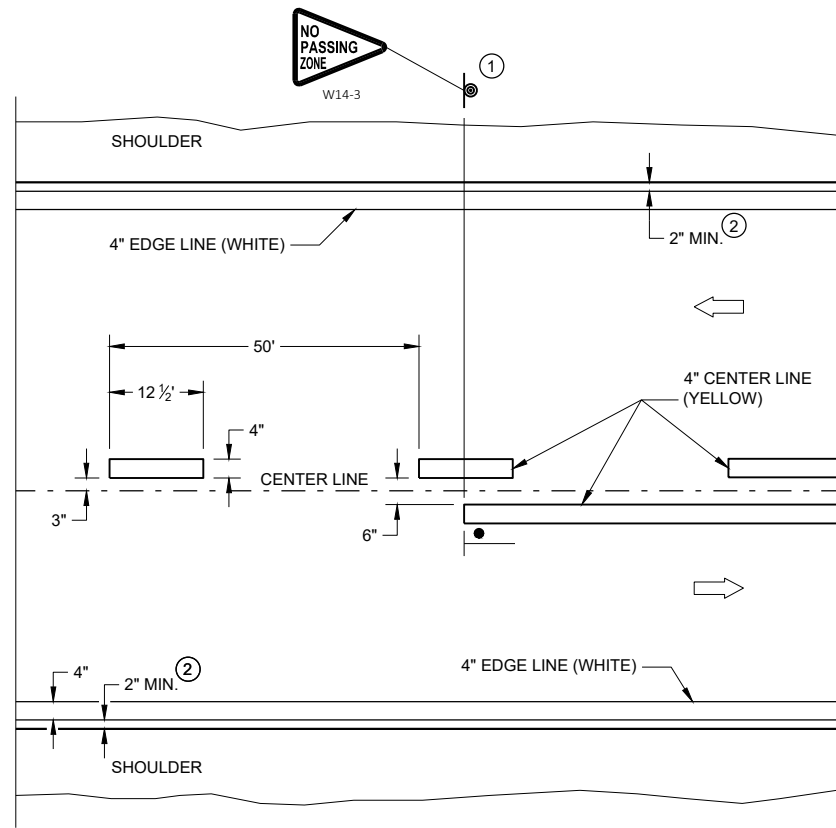
TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40MPH OR LESS

**TRAFFIC CONTROL, ADVANCE WARNING
SIGNS 40 MPH OR LESS TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFICE**

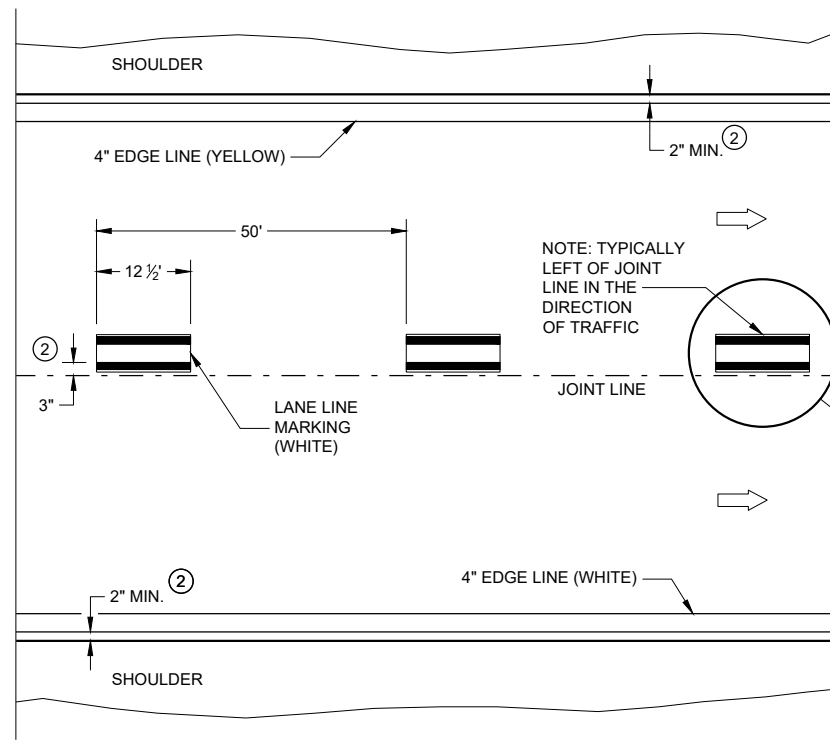
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

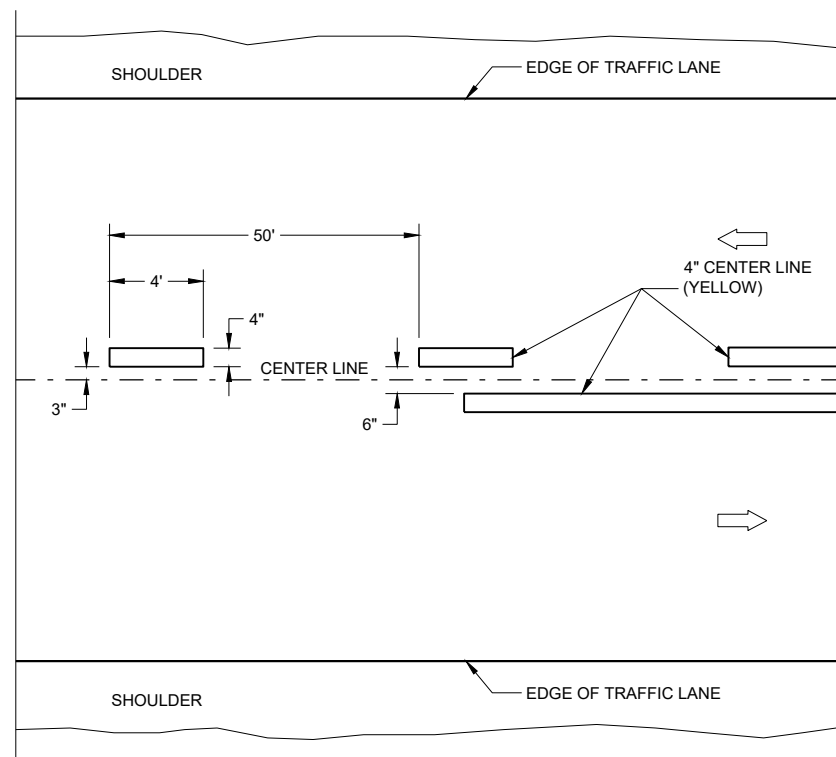


TWO WAY TRAFFIC

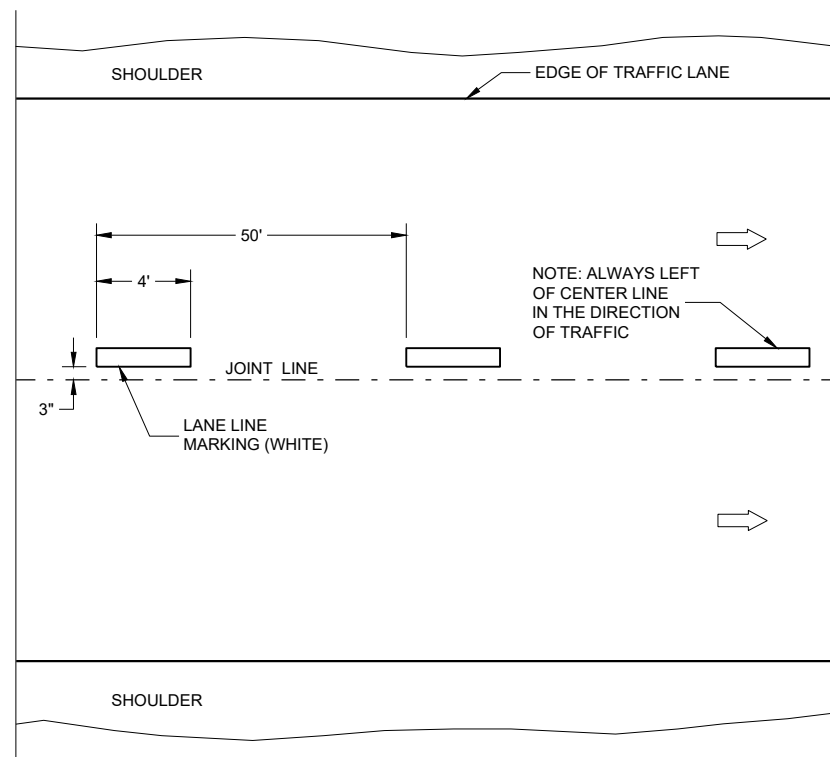


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

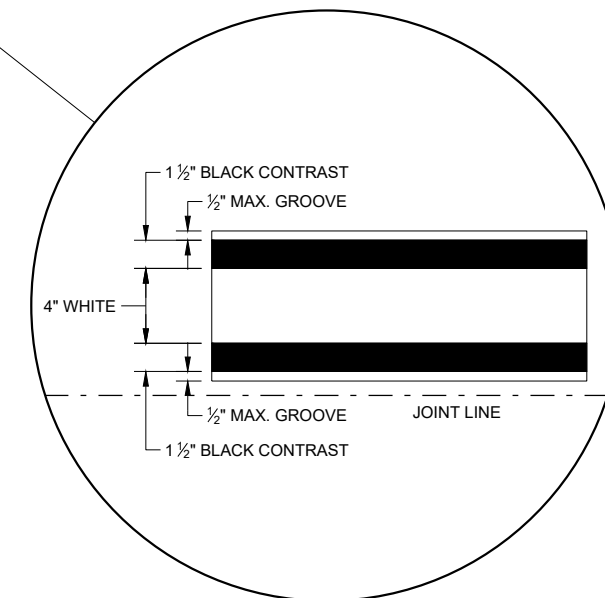
GENERAL NOTES

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

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

LEGEND

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








**LONGITUDINAL MARKING
(MAINLINE)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

LEGEND

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

GENERAL NOTES

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

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

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

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

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

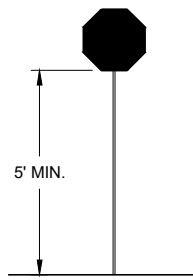
WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

FLAGGING

- FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.
- ① FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
 - ② SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

TEMPORARY PORTABLE RUMBLE STRIPS

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



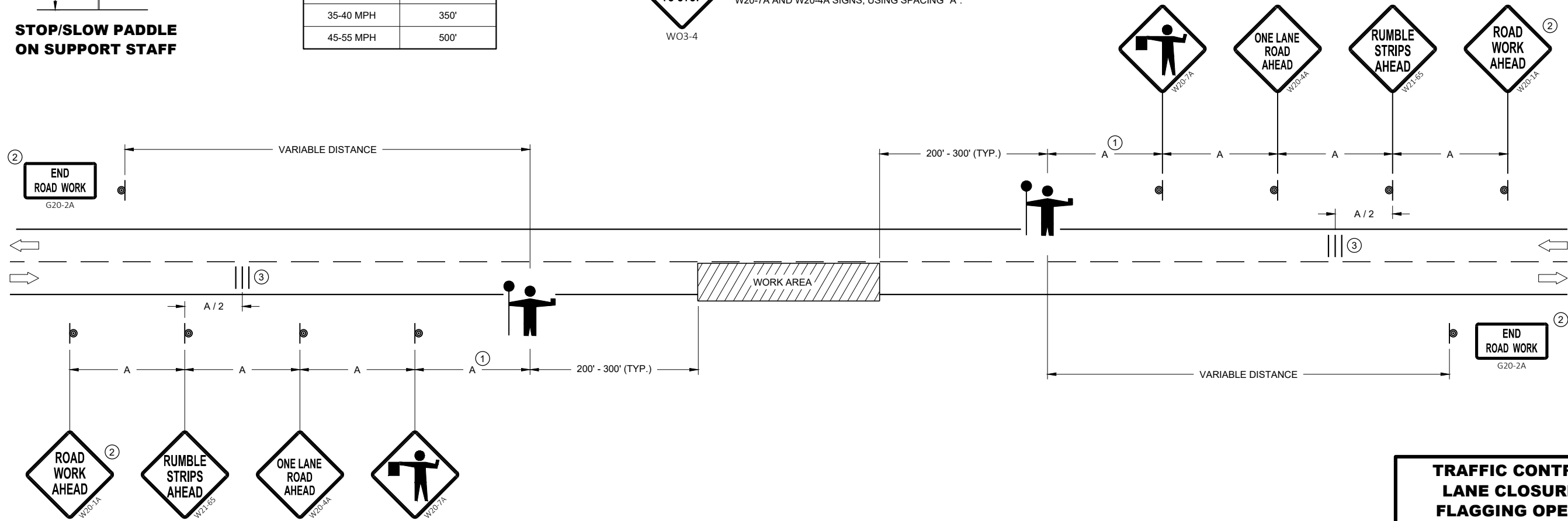
STOP/SLOW PADDLE ON SUPPORT STAFF

SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



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



TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

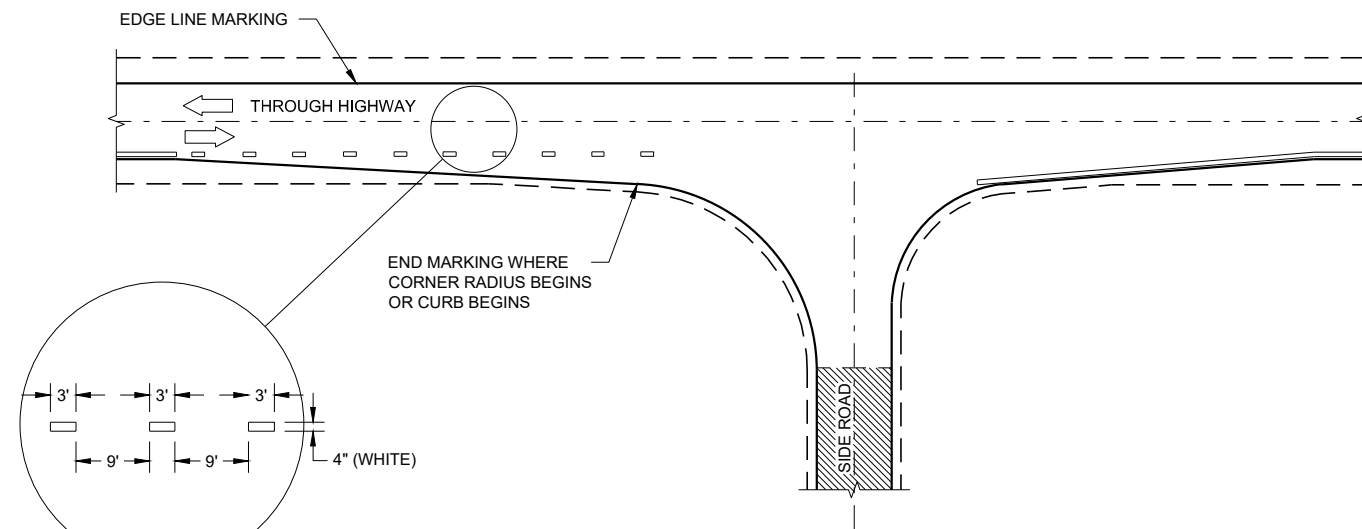
GENERAL NOTES

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

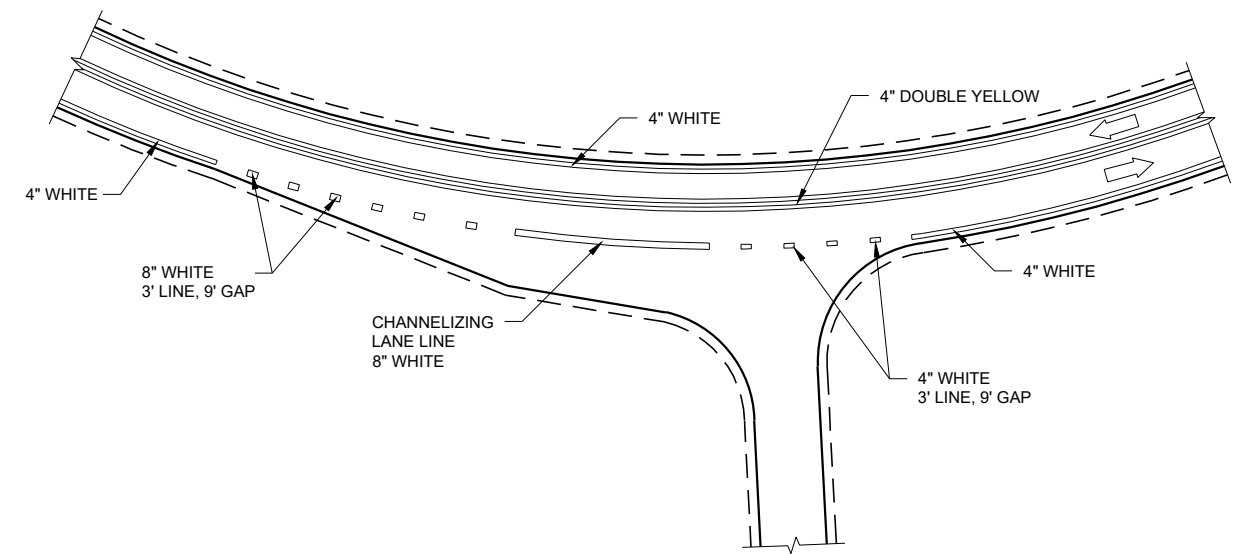
- ① WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.
- ② WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.
- ③ BARRIER LINE ENDS AT SIDE ROAD PAVEMENT / SURFACE EDGE EXTENSION.
- ④ BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER.

LEGEND

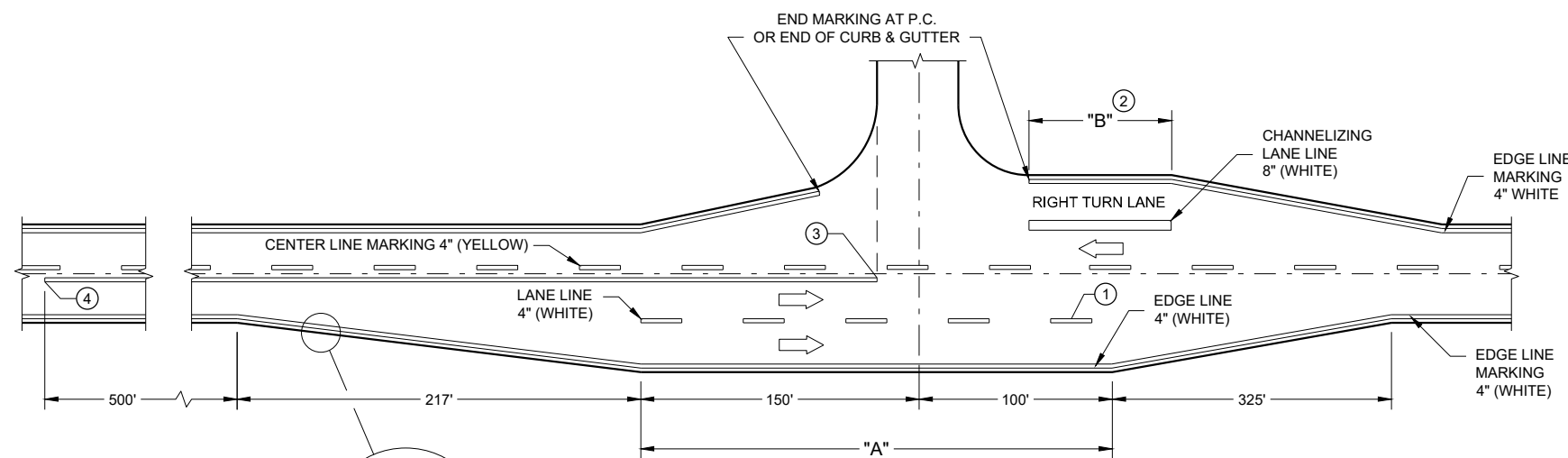
➡ DIRECTION OF TRAVEL



MINOR INTERSECTION



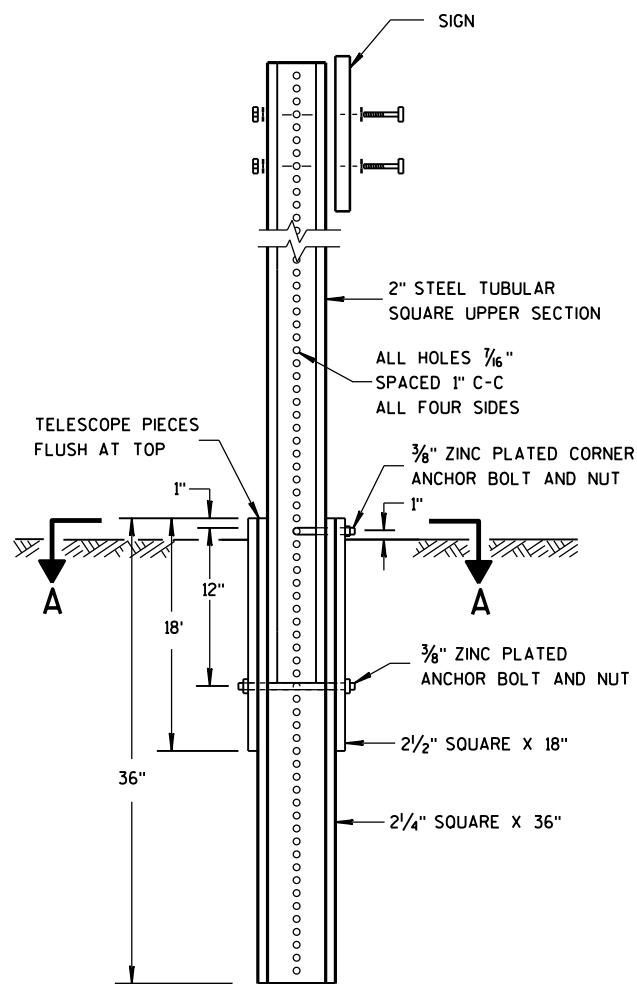
INTERSECTION ON OUTSIDE OF CURVE



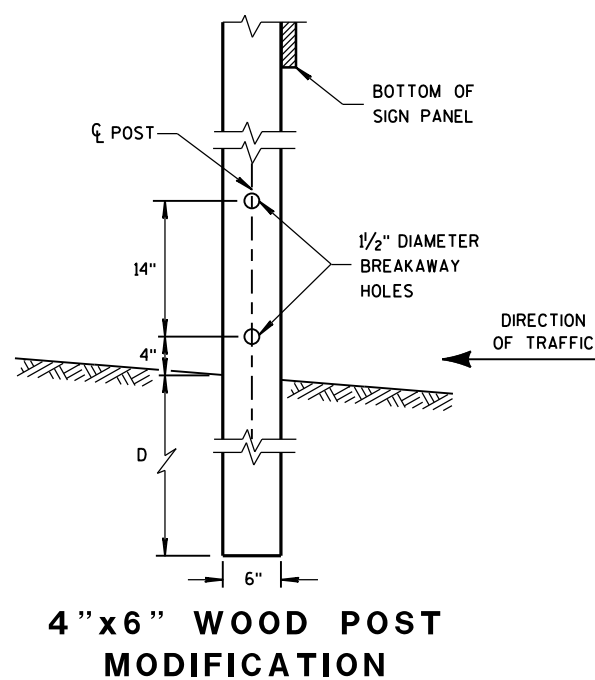
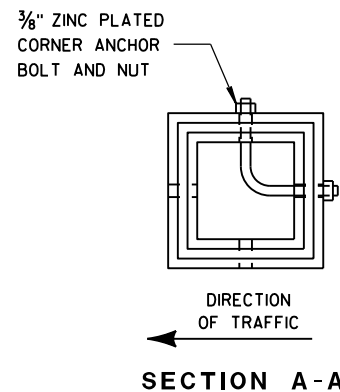
**MAJOR INTERSECTIONS
(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)**

**PAVEMENT MARKING
(INTERSECTIONS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



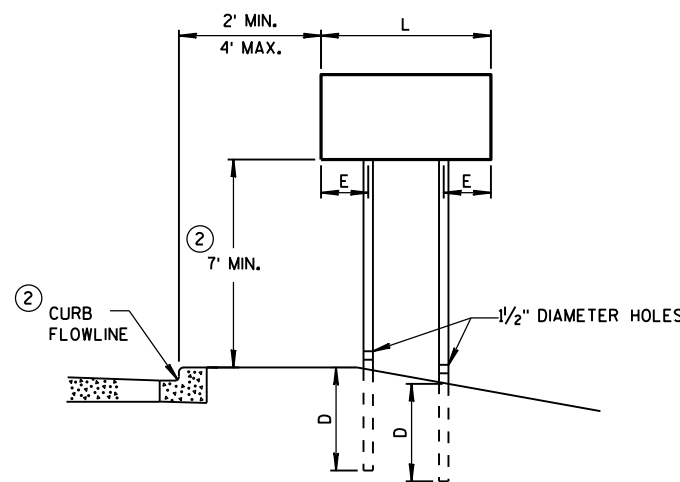
DETAIL OF TUBULAR STEEL SIGN POST



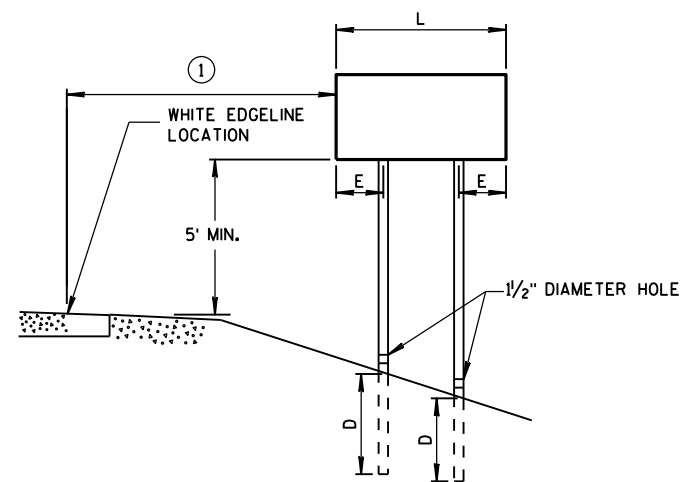
4" X 6" WOOD POST MODIFICATION

GENERAL NOTES

- ① 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.
- ② THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK AND NO PARKING, VERTICAL CLEARANCE MAY BE REDUCED TO 5 FOOT MINIMUM. OFFSET OF SIGNS IS MEASURED FROM THE CURB FLOWLINE.
- ③ FOR SIGNS REQUIRING 4 POSTS, SPACE INTERMEDIATE POSTS EVENLY.



URBAN AREA



RURAL AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

TUBULAR STEEL POSTS

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

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

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

WOOD POST EMBEDMENT DEPTH

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

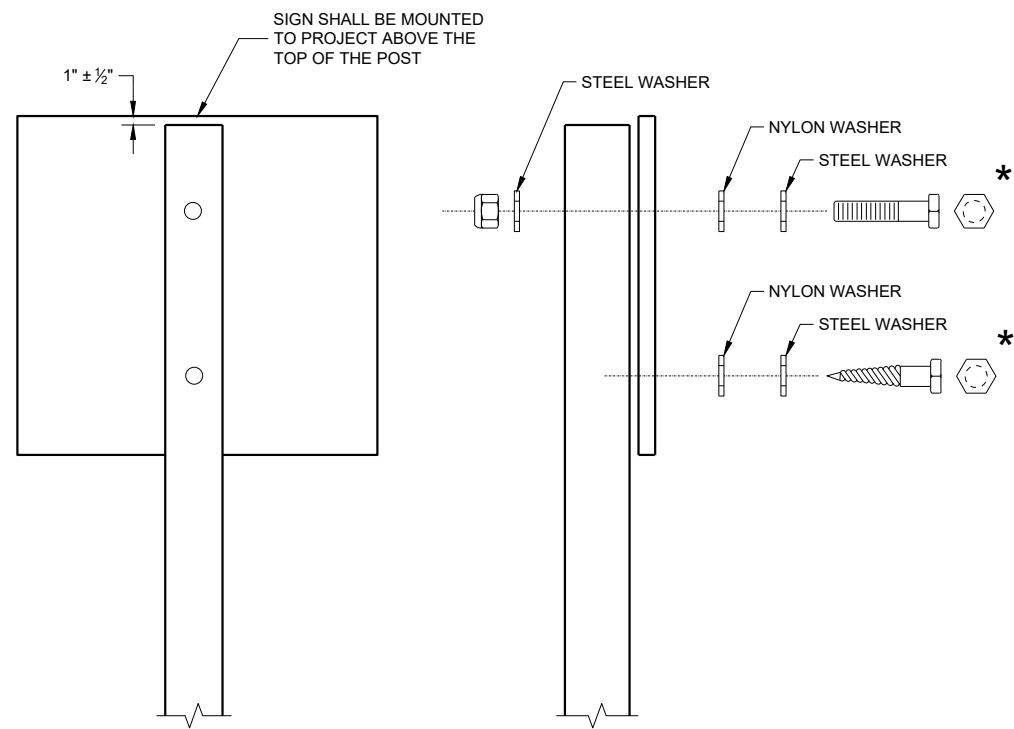
4" X 6" WOOD POST

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

SEE NOTE ③

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION



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

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

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

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

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

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

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

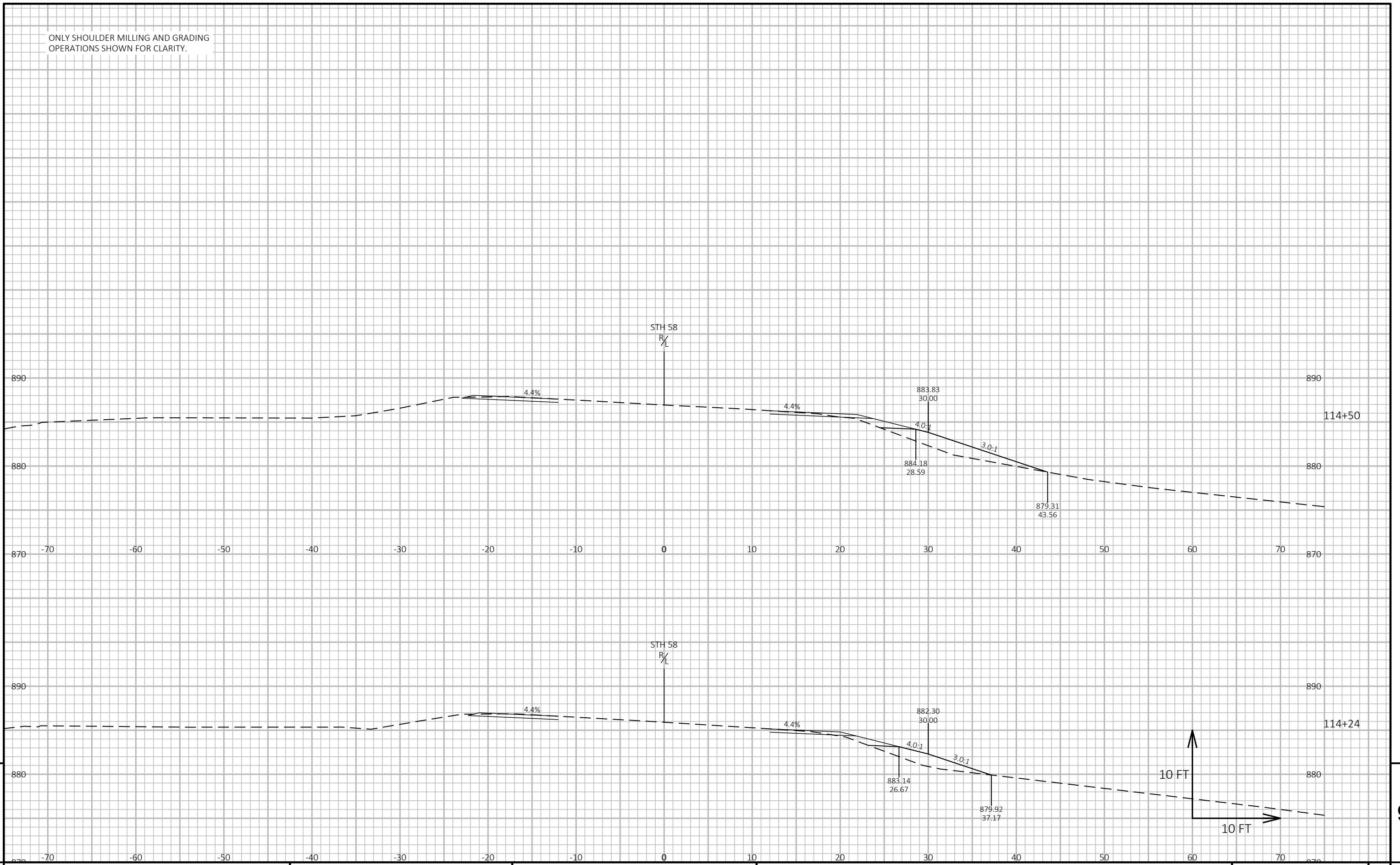
ATTACHMENT OF SIGNS TO POSTS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	

SOUTH OF B-29-038							
Station	AREA (SF)		INCR. VOL. (CY)		CUM. VOL. (CY)		MASS HAUL (CY)
	CUT	FILL	CUT	FILL	CUT	EXPANDED FILL	
					1.00	1.25	
114+24.0	0	9	0	0	0	0	0
114+50.0	0	10	0	11	0	14	-14
115+00.0	0	1	0	13	0	30	-30
115+14.0	0	0	0	0	0	30	-30
115+15.0	0	0	0	0	0	30	-30
115+40.0	0	0	0	0	0	30	-30
115+42.0	0	0	0	0	0	30	-30
115+66.0	0	2	0	1	0	31	-31
115+68.0	0	1	0	0	0	31	-31
LESS SALVAGED/UNUSABLE PAVEMENT MATERIAL							0
TOTAL							-31

NORTH OF B-29-038							
Station	AREA (SF)		INCR. VOL. (CY)		CUM. VOL. (CY)		MASS HAUL (CY)
	CUT	FILL	CUT	FILL	CUT	EXPANDED FILL	
					1.00	1.25	
126+69.0	0	0	0	0	0	0	0
126+96.0	0	30	0	15	0	19	-19
127+00.0	0	32	0	5	0	25	-25
127+22.0	0	10	0	17	0	46	-46
128+00.0	0	0	0	14	0	64	-64
128+21.0	0	0	0	0	0	64	-64
128+47.0	0	10	0	5	0	70	-70
128+74.0	0	1	0	6	0	78	-78
LESS SALVAGED/UNUSABLE PAVEMENT MATERIAL							0
TOTAL							-78

B-29-089							
Station	AREA (SF)		INCR. VOL. (CY)		CUM. VOL. (CY)		MASS HAUL (CY)
	CUT	FILL	CUT	FILL	CUT	EXPANDED FILL	
					1.00	1.25	
521+25.0	0	0	0	0	0	0	0
522+00.0	0	15	0	20	0	25	-25
522+45.0	0	28	0	35	0	69	-69
522+65.0	0	16	0	16	0	89	-89
522+72.0	0	17	0	4	0	94	-94
522+92.0	0	9	0	10	0	107	-107
522+98.0	0	5	0	2	0	110	-110
523+18.0	0	0	0	2	0	113	-113
524+61.0	0	0	0	0	0	113	-113
524+87.0	0	5	0	2	0	116	-116
525+00.0	0	6	0	3	0	120	-120
525+14.0	0	12	0	5	0	126	-126
526+00.0	0	13	0	40	0	176	-176
526+31.0	0	6	0	11	0	190	-190
526+57.0	0	13	0	9	0	201	-201
526+84.0	0	27	0	20	0	226	-226
527+00.0	0	28	0	16	0	246	-246
528+00.0	0	1	0	54	0	314	-314
LESS SALVAGED/UNUSABLE PAVEMENT MATERIAL							0
TOTAL							-314

ONLY SHOULDER MILLING AND GRADING
OPERATIONS SHOWN FOR CLARITY.

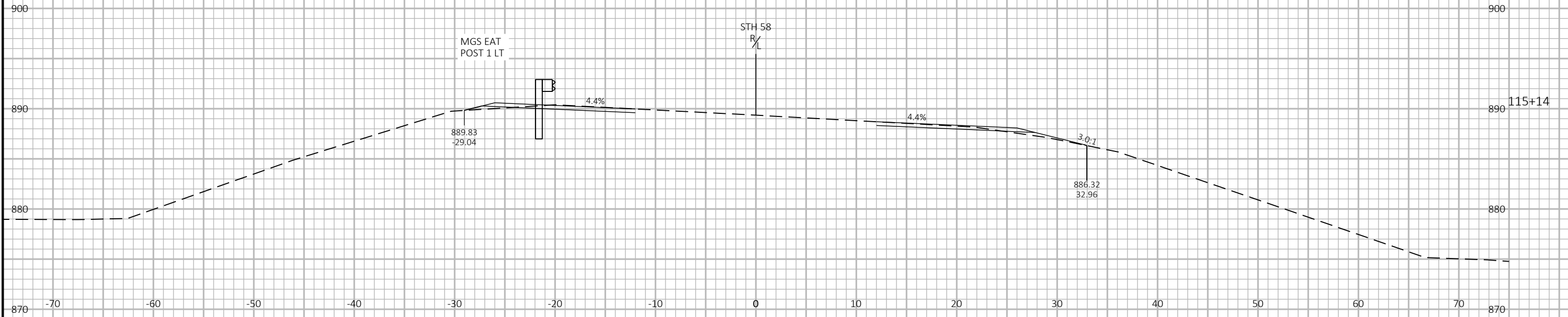


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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	CROSS SECTIONS: STH 58	SHEET	E
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ONLY SHOULDER MILLING AND GRADING
OPERATIONS SHOWN FOR CLARITY.



PROJECT NO: 6639-05-60

HWY: STH 58

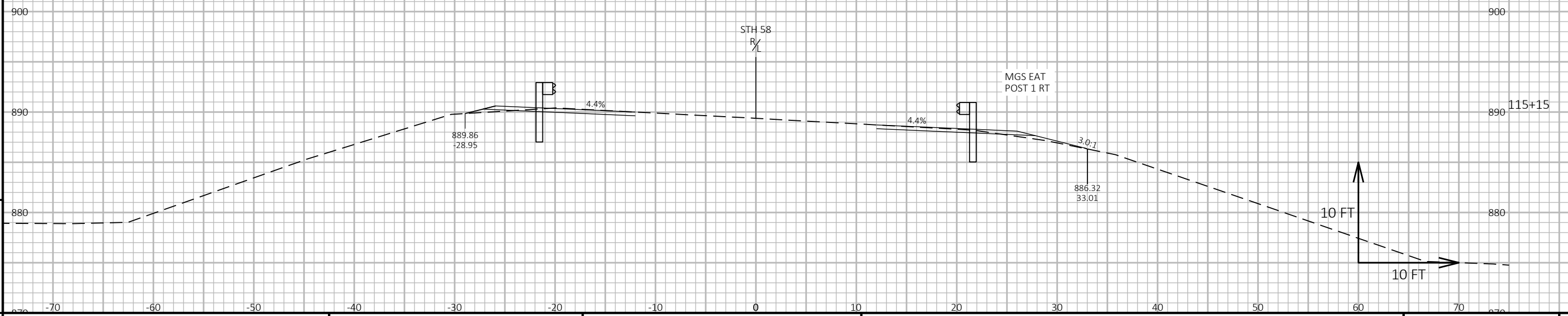
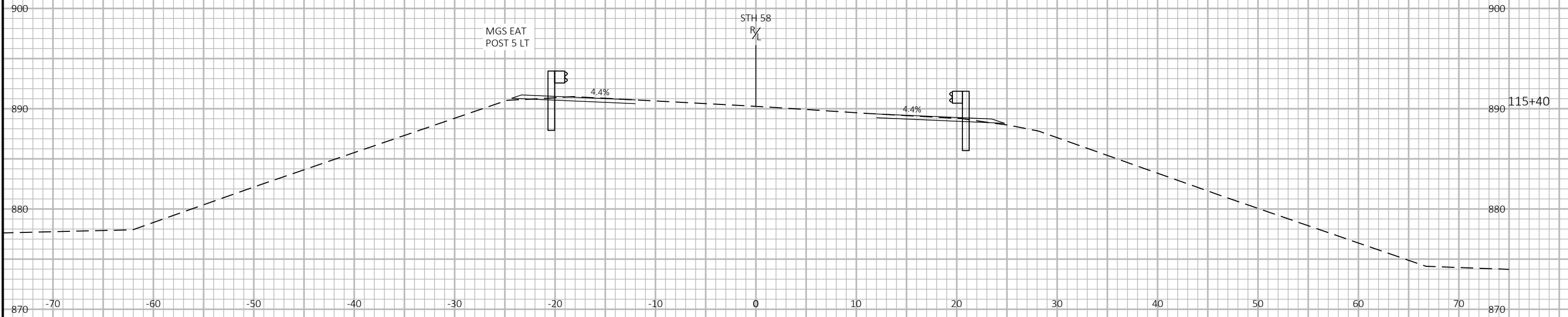
COUNTY: JUNEAU

CROSS SECTIONS: STH 58

SHEET

E

ONLY SHOULDER MILLING AND GRADING
OPERATIONS SHOWN FOR CLARITY.



PROJECT NO: 6639-05-60

HWY: STH 58

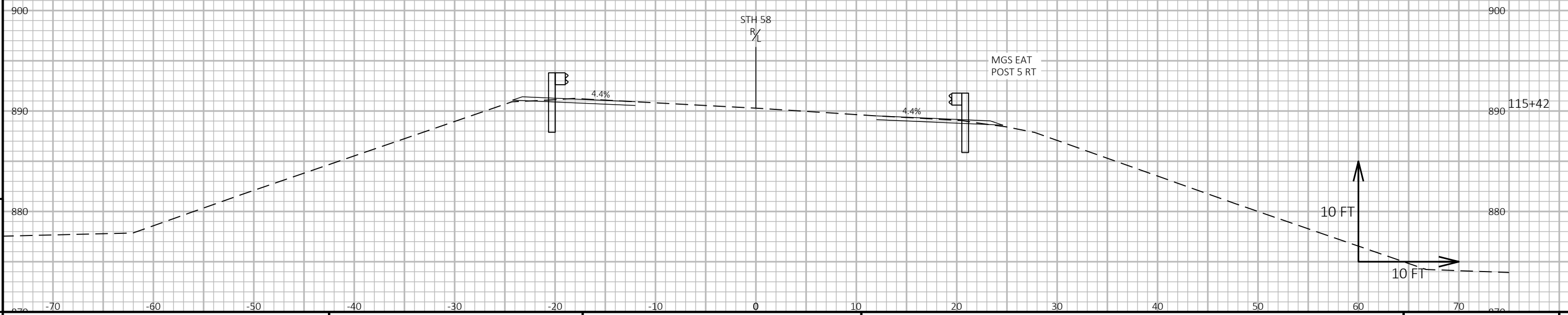
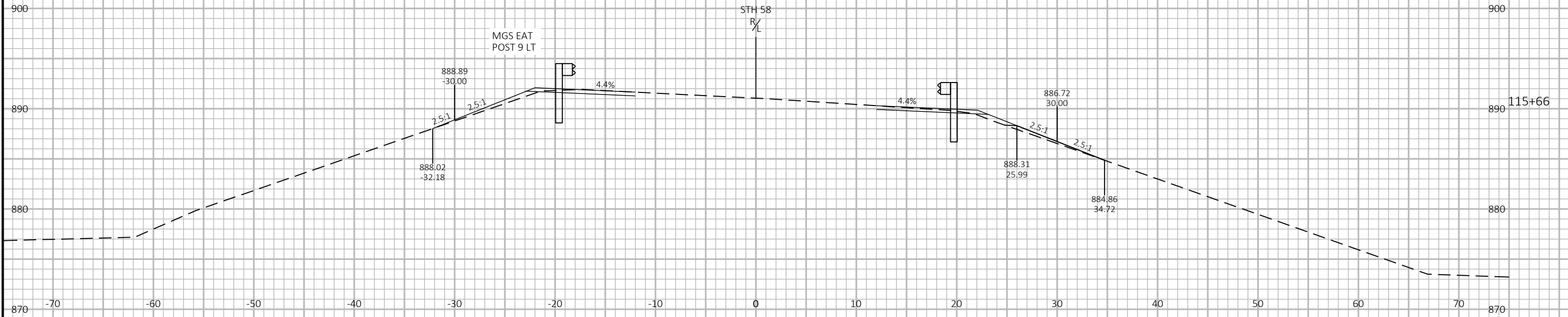
COUNTY: JUNEAU

CROSS SECTIONS: STH 58

SHEET

E

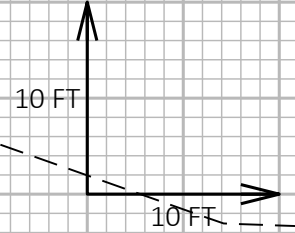
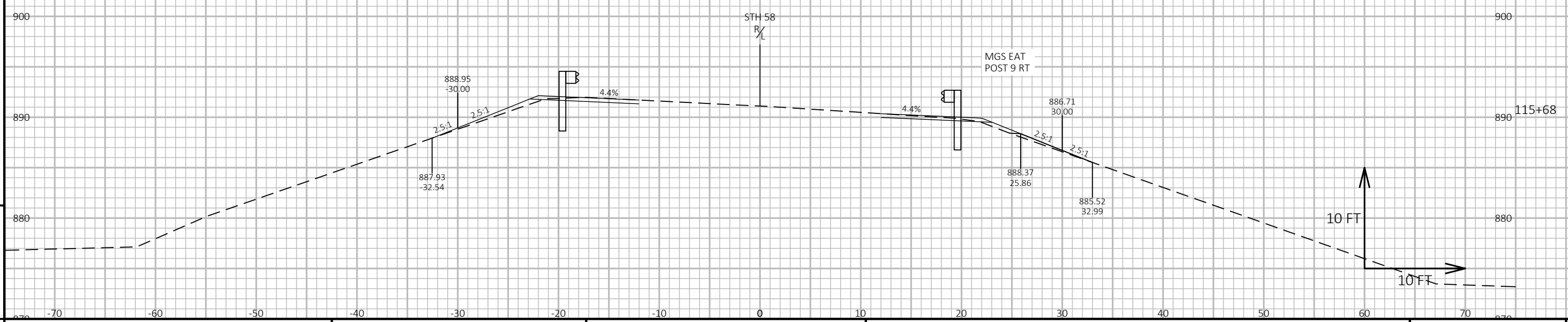
ONLY SHOULDER MILLING AND GRADING
OPERATIONS SHOWN FOR CLARITY.



PROJECT NO: 6639-05-60 HWY: STH 58 COUNTY: JUNEAU CROSS SECTIONS: STH 58 SHEET E

FILE NAME: G:\SHARED DRIVES\PROJECTS\WI - SW REGION\6639-05-30_STH 58_JUNEAU COUNTY\500_CADD\501_C3D_2018\66390530\SHEETS\PLAN\090201-XS.DWG PLOT DATE: 7/27/2020 9:12 PM PLOT BY: CAMERON SHIFFER, PE PLOT NAME: PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

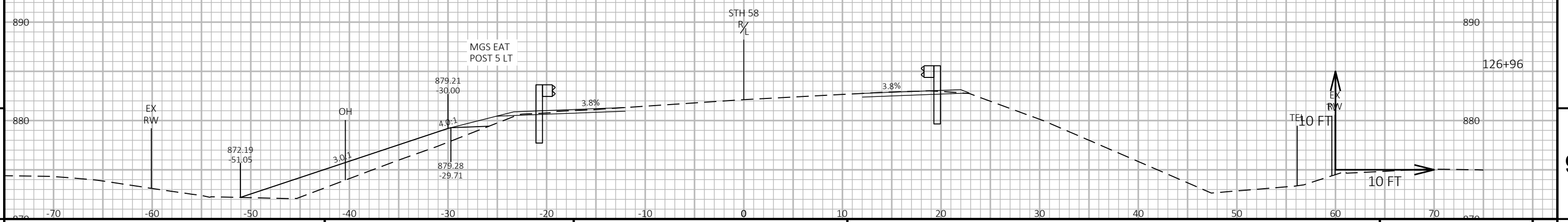
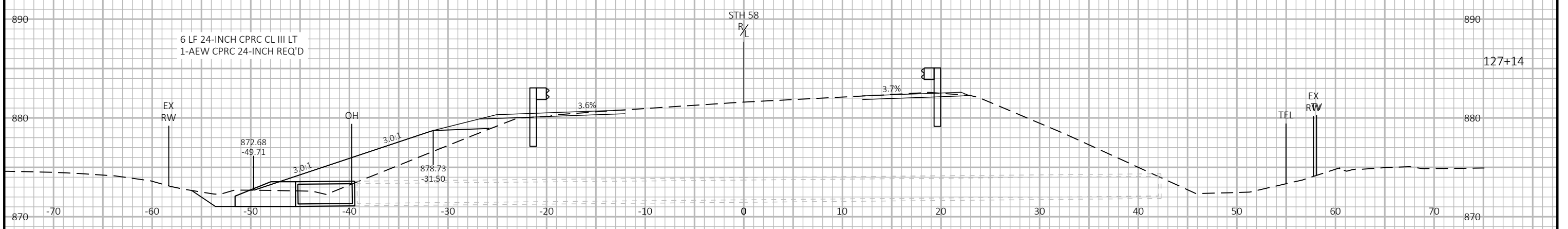
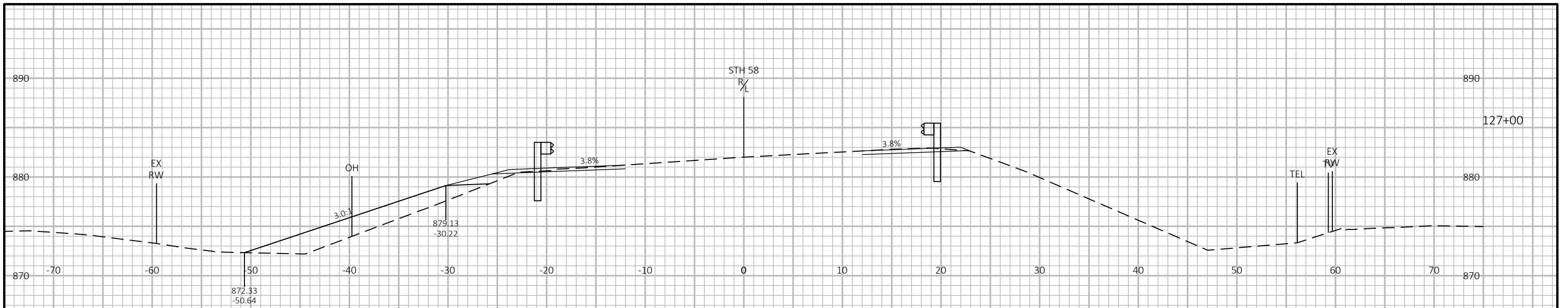
ONLY SHOULDER MILLING AND GRADING
OPERATIONS SHOWN FOR CLARITY.



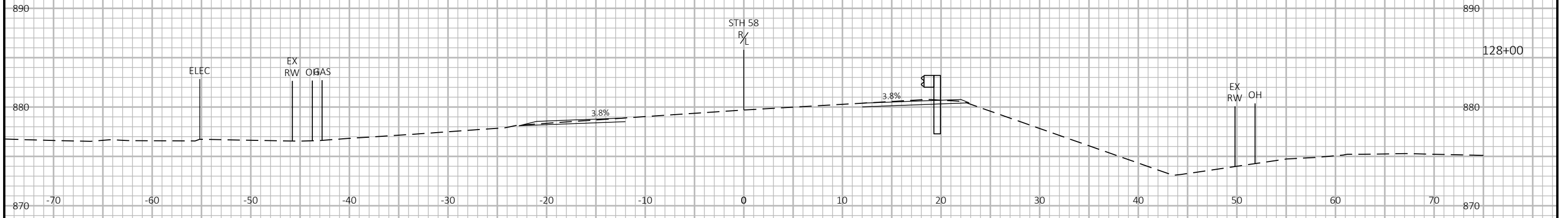
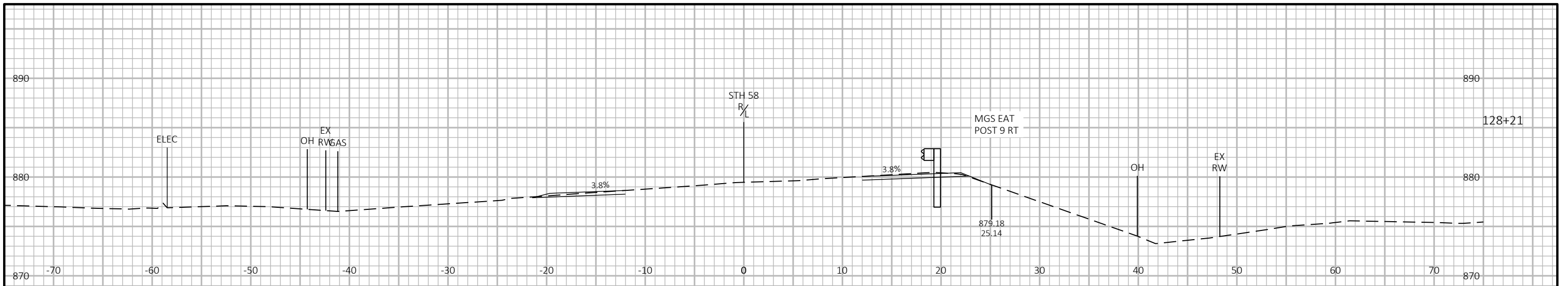
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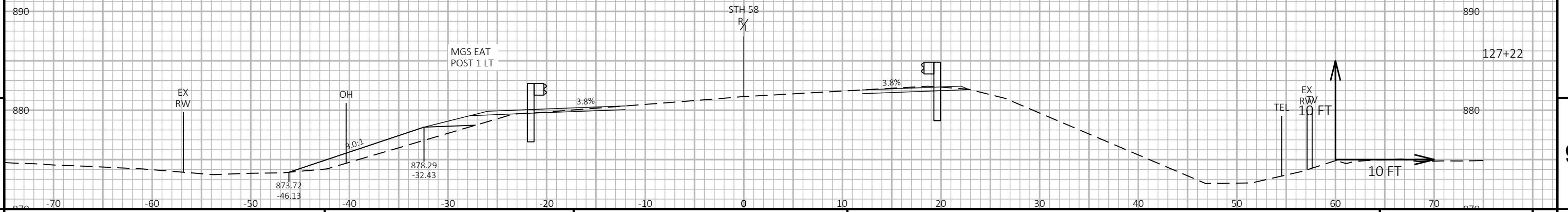
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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	CROSS SECTIONS: STH 58	SHEET
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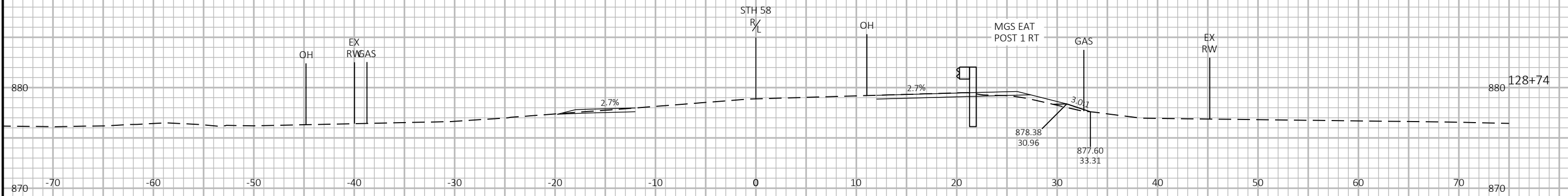
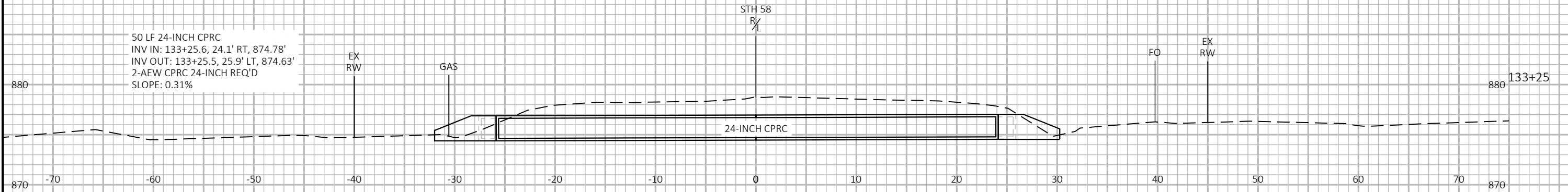
ONLY SHOULDER MILLING AND GRADING
OPERATIONS SHOWN FOR CLARITY.



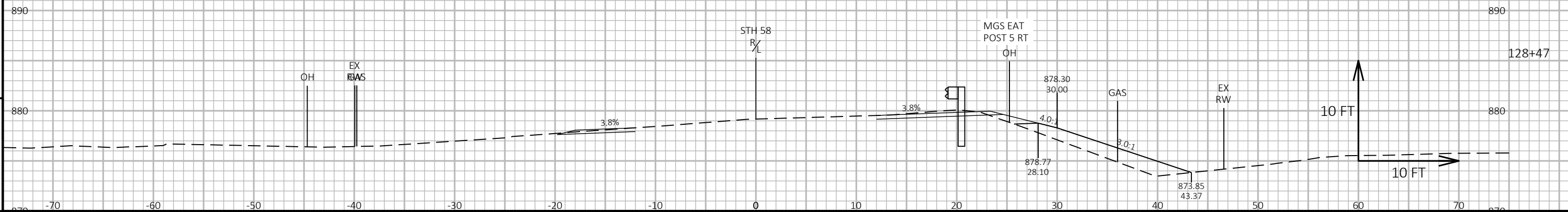
PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	CROSS SECTIONS: STH 58	SHEET	E
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ONLY SHOULDER MILLING AND GRADING
OPERATIONS SHOWN FOR CLARITY.

50 LF 24-INCH CPRC
INV IN: 133+25.6, 24.1' RT, 874.78'
INV OUT: 133+25.5, 25.9' LT, 874.63'
2-AEW CPRC 24-INCH REQ'D
SLOPE: 0.31%

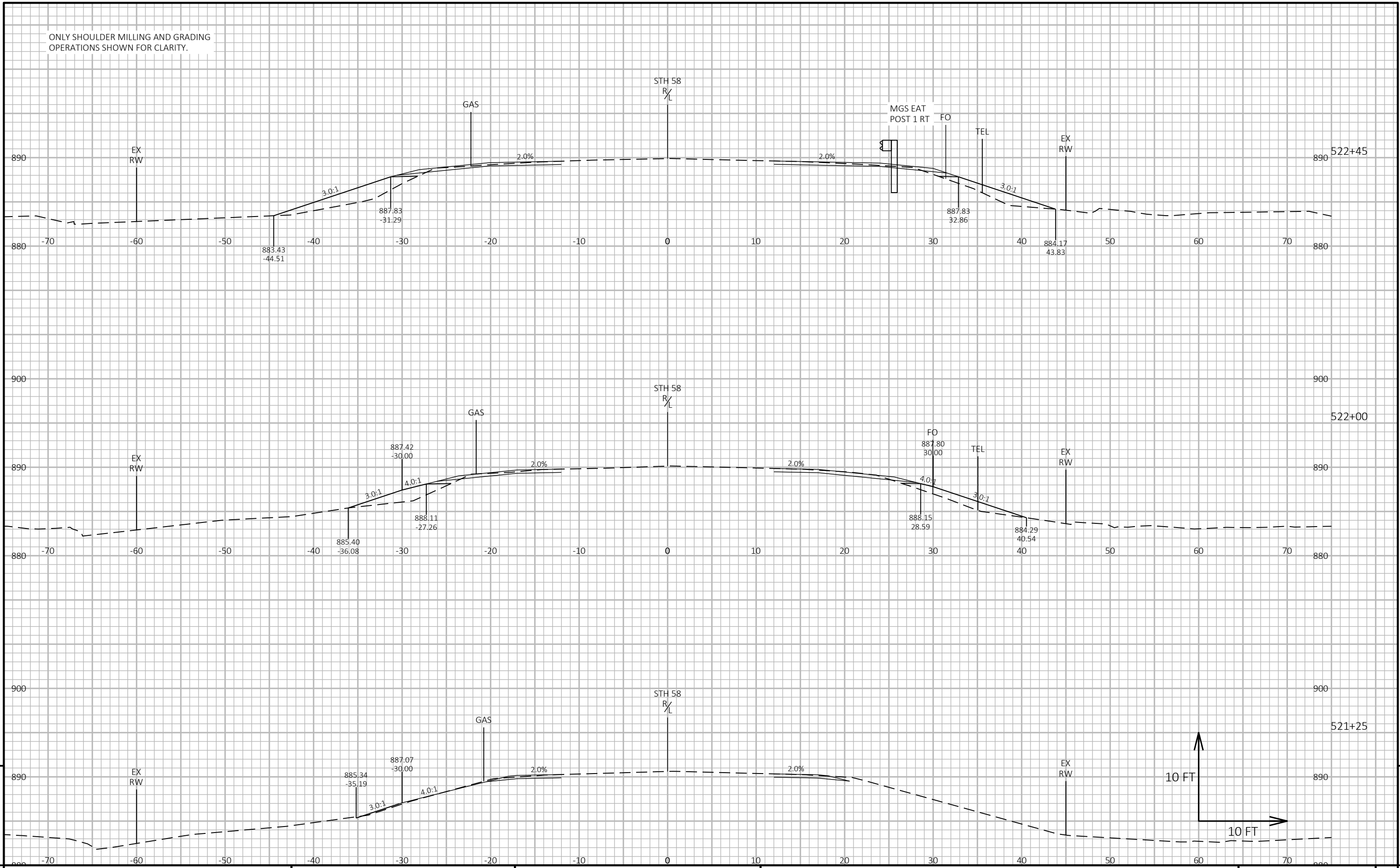


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OPERATIONS SHOWN FOR CLARITY.



PROJECT NO: 6639-05-60 HWY: STH 58 COUNTY: JUNEAU CROSS SECTIONS: STH 58 SHEET E

ONLY SHOULDER MILLING AND GRADING
OPERATIONS SHOWN FOR CLARITY.



PROJECT NO: 6639-05-60

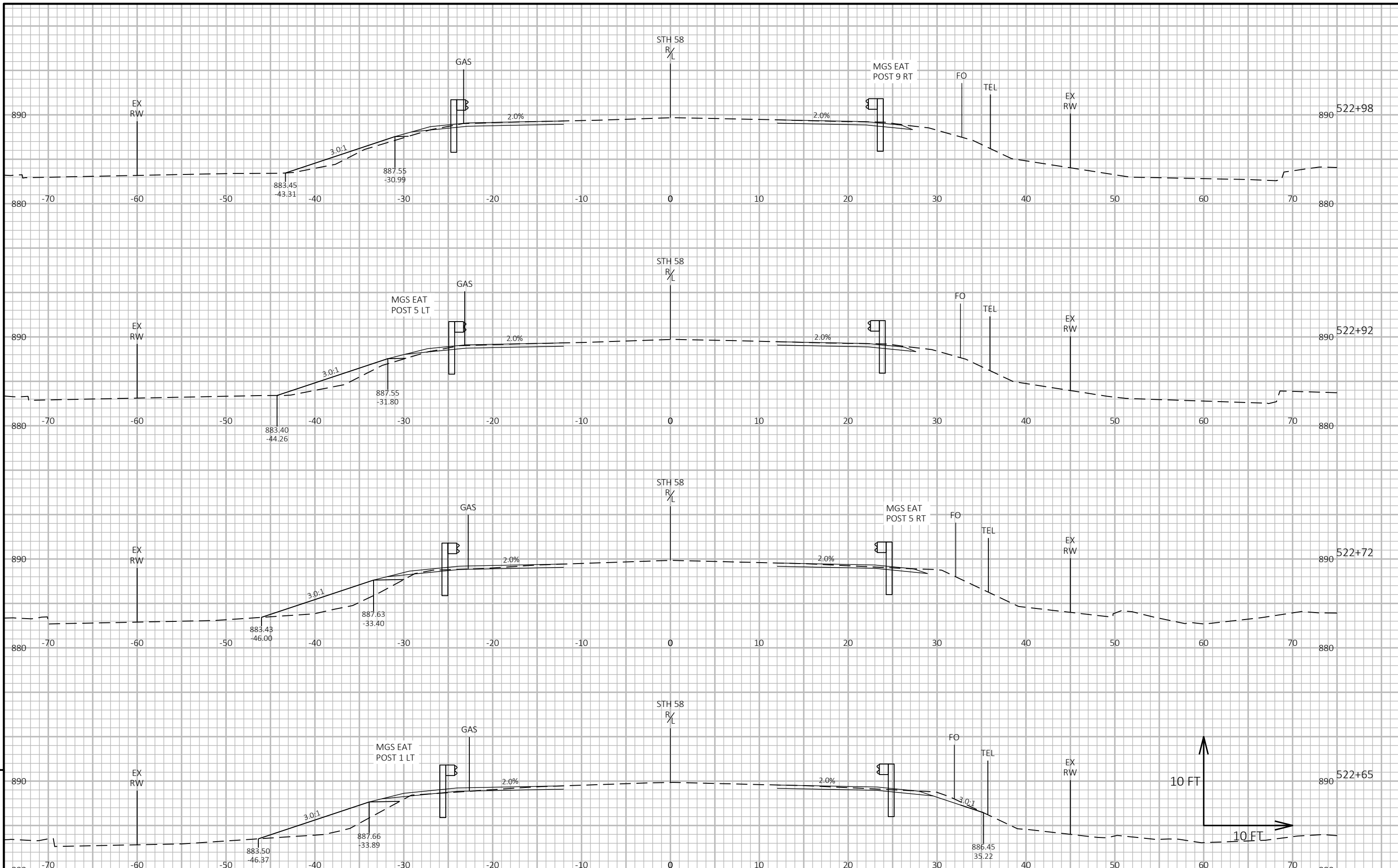
HWY: STH 58

COUNTY: JUNEAU

CROSS SECTIONS: STH 58

SHEET

E



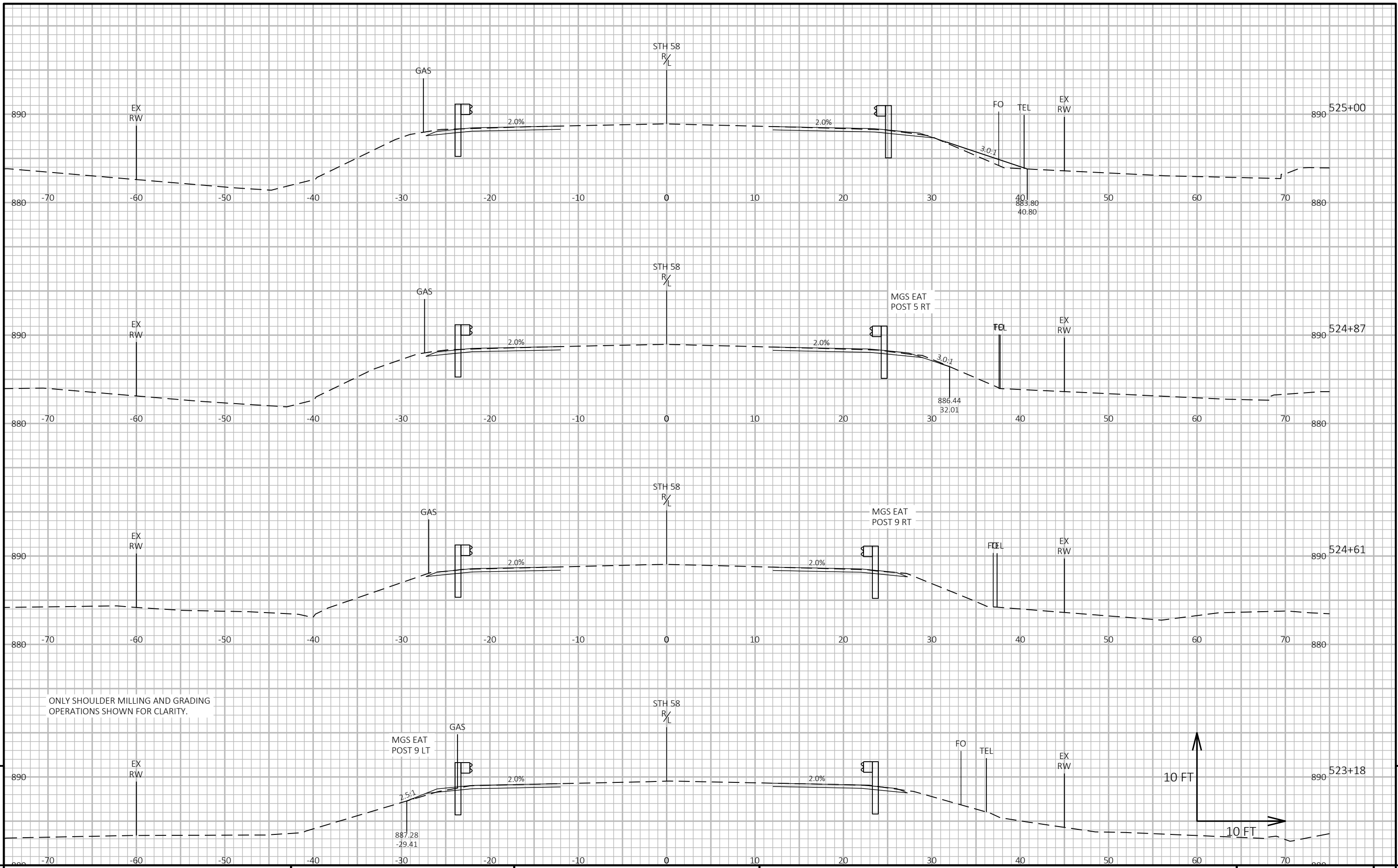
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PROJECT NO: 6639-05-60 HWY: STH 58 COUNTY: JUNEAU CROSS SECTIONS: STH 58 SHEET E

FILE NAME: G:\SHARED DRIVES\PROJECTS\WI - SW REGION\6639-05-30_STH 58_JUNEAU COUNTY\500_CADD\501_C3D_2018\66390530\SHEETS\PLAN\090201-XS.DWG PLOT DATE: 7/27/2020 9:16 PM PLOT BY: CAMERON SHIFFER, PE PLOT NAME: PLOT SCALE: 1 IN:10 FT HORZ. / 1 IN:10 FT VERT. WISDOT/CADD SHEET 49

LAYOUT NAME - 10



PROJECT NO: 6639-05-60

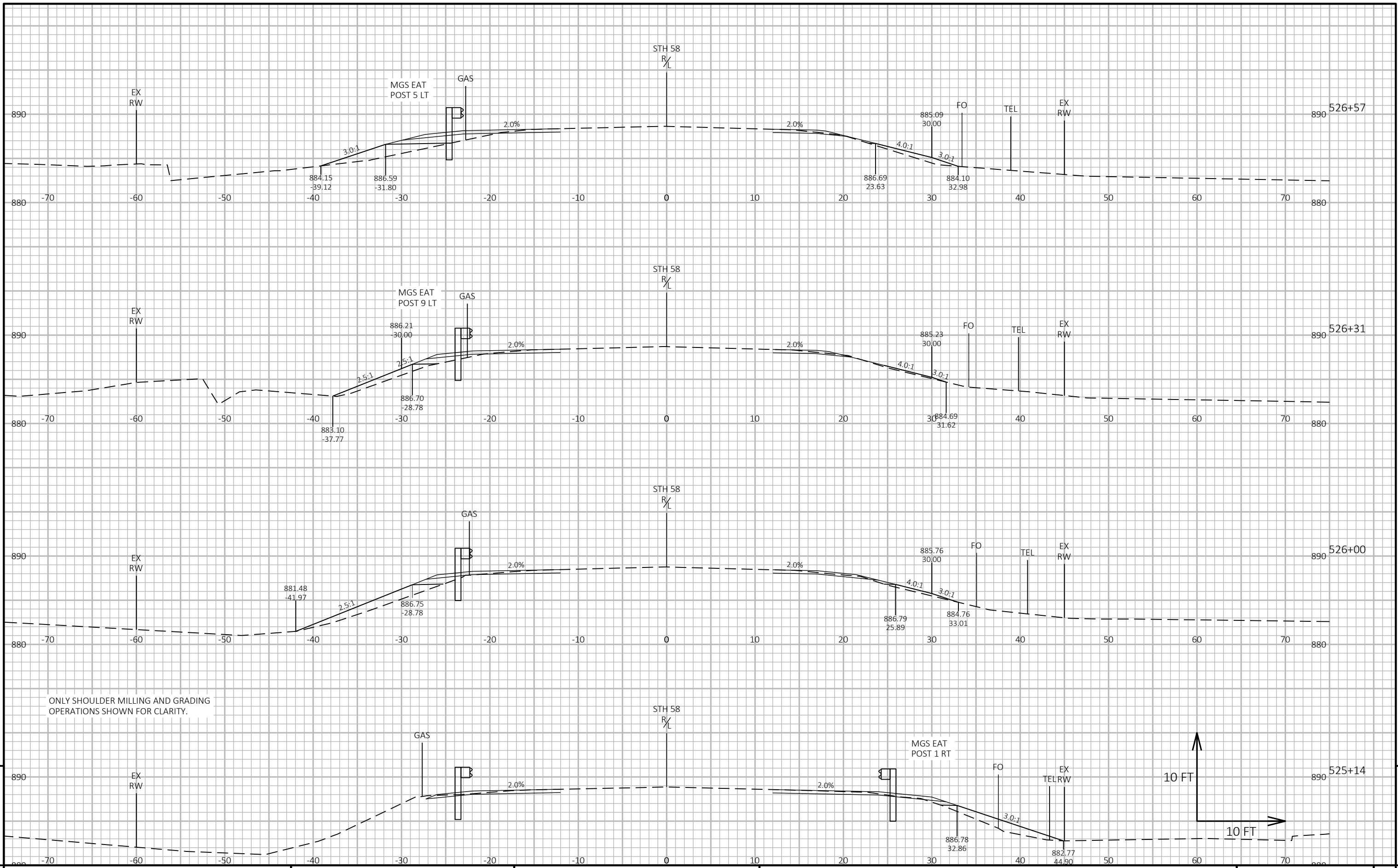
HWY: STH 58

COUNTY: JUNEAU

CROSS SECTIONS: STH 58

SHEET

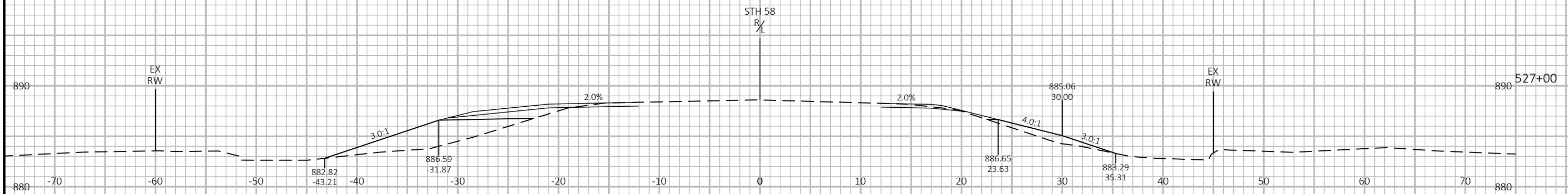
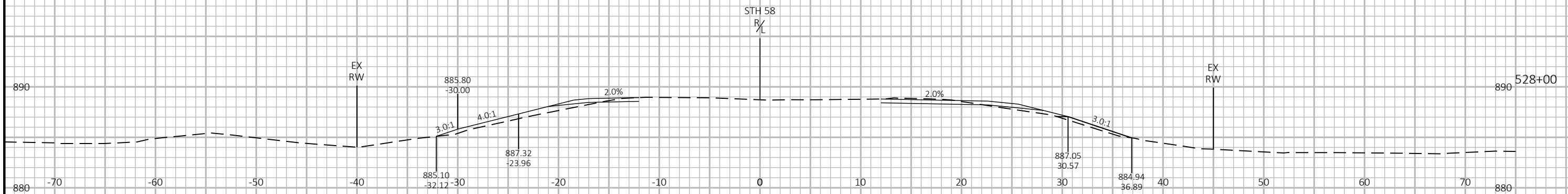
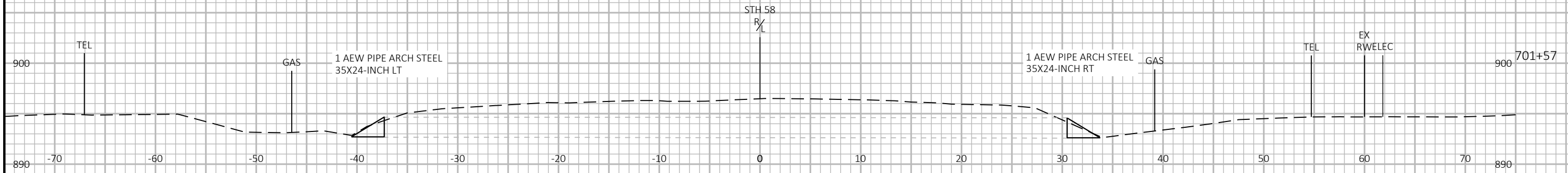
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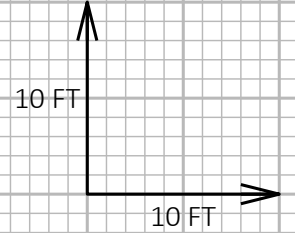
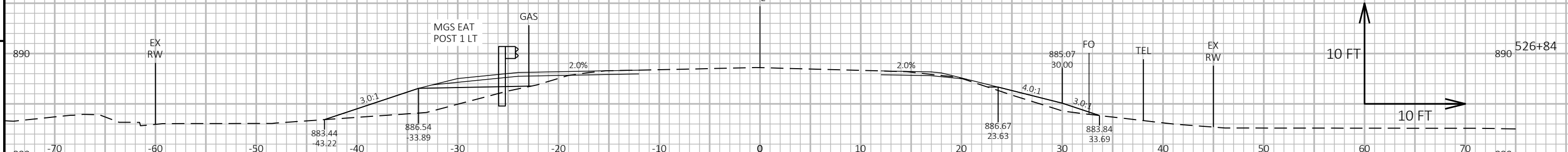
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PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	CROSS SECTIONS: STH 58	SHEET 9
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OPERATIONS SHOWN FOR CLARITY.



ONLY SHOULDER MILLING AND GRADING
OPERATIONS SHOWN FOR CLARITY.



PROJECT NO: 6639-05-60	HWY: STH 58	COUNTY: JUNEAU	CROSS SECTIONS: STH 58	SHEET 9
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Notes



Wisconsin Department of Transportation

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