

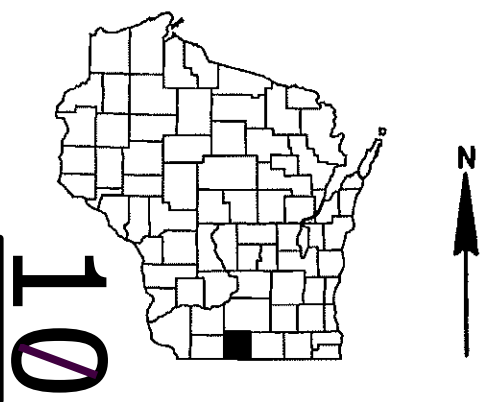
MAD PROJECT ID: 5320-02-60 WITH: N/A COUNTY: GREEN

MAY 2019

ORDER OF SHEETS

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

TOTAL SHEETS = 76



DESIGN DESIGNATION 5320-02-30

A.A.D.T.	2015	=	2680-4090
A.A.D.T.	2035	=	3290-5000
D.H.V.		=	-
D.D.		=	-
T.		=	-
DESIGN SPEED		=	55 MPH
ESALS		=	1,000,000

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	SANITARY SEWER
	STORM SEWER
	TELEPHONE
MARSH AREA	WATER
	UTILITY PEDESTAL
WOODED OR SHRUB AREA	POWER POLE
	TELEPHONE POLE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

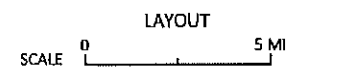
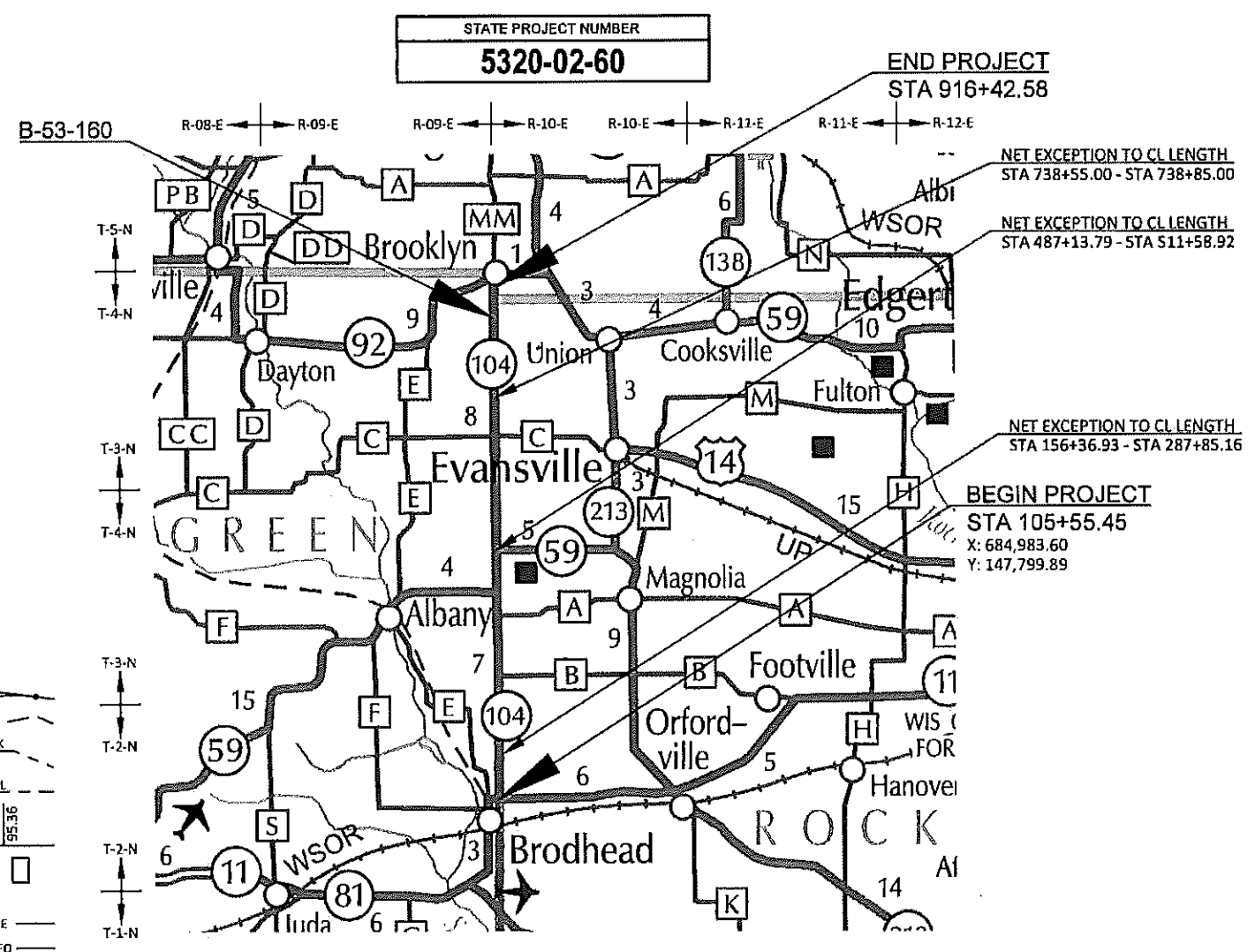
PLAN OF PROPOSED IMPROVEMENT

BRODHEAD - BROOKLYN

STH 11 TO STH 92

STH 104

GREEN COUNTY



TOTAL NET LENGTH OF CENTERLINE = 12.398 MI

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

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
5320-02-60	WISC 2019280	1

ORIGINAL PLANS PREPARED BY

benesch

Alfred Benesch & Company
1300 West Canal Street, Suite 150
Milwaukee, Wisconsin 53233
Phone: 414.224.3340 Fax: 414.225.0000

WISCONSIN PROFESSIONAL ENGINEER

AMANDA E. ZACHARIAS
E-35716
MILWAUKEE
WISCONSIN

DATE: 1/23/19 *Amanda Zacharias*
(Professional Engineer Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	SIGMA
Designer	ALFRED BENESCH & CO
Project Manager	JEFF BERENS, PE
Regional Examiner	SOUTHWEST REGION
Regional Supervisor	BRANDON LAMERS, PE

APPROVED FOR THE DEPARTMENT

DATE: 1/24/19 *Jim Benesch*
(Signature)

E

UTILITY CONTACTS

ALLIANT ENERGY – ELECTRIC & GAS

1915 STATE ROAD 69 S
MONROE, WI 53566
BETSI BASS
608-333-4343
BetsiBass@AlliantEnergy.com

ATC – ELECTRIC TRANSMISSION

5303 FEN OAK DRIVE
MADISON, WI 53718
DOUG VOSBERG
608-877-7650
dvosberg@atcllc.com

CHARTER COMMUNICATIONS

1348 PLAINFIELD AVE
JANESVILLE, WI 53545
DAVID MOLDENHAUER
608-206-0494
David.Moldenhauer@charter.com

WE ENERGIES - GAS/PETROLEUM

N3025 14TH AVE
MONROE, WI 53566
ADAM MARING
608-426-1715
Adam.Maring@we-energies.com

MID-AMERICA PIPELINE

5354 AMERICAN LEGION ROAD SOUTHEAST
IOWA CITY, IA 52240
BRIAN MUELLER
319-430-6979
bmueller@eprod.com

FRONTIER - COMMUNICATION

2222 WEST WI STREET
PORTAGE, WI 53901
JERRY MOORE
608-346-0353
jerald.r.moore@ftr.com

TDS TELECOM - COMMUNICATION

827 16th AVE
MONROE, WI 53566
MICHAEL HAMMEL
608-426-0843
Michael.Hammel@tdstelecom.com

WINDSTREAM KDL - COMMUNICATION

1858 WRIGHT ST
MADISON, WI 53704
KEVIN PARRIS
608-416-3291
kevin.j.parris@windstream.com

EVANSVILLE WATER & LIGHT - ELECTRICITY

PO BOX 529
EVANSVILLE, WI 53536
CHAD RENLY
608-490-1313
Chad.renly@ci.evansville.wi.gov

NORTHERN – NATURAL GAS

5557 COUNTY HIGHWAY D
PLATTEVILLE, WI 53818
LEONARD KLAAS
608-778-8514
Leonard.Klaas@nngco.com

VILLAGE OF BROOKLYN – SEWER & WATER

102 WINDY LANE
BROOKLYN, WI 53521
LEIF SPILDE
608-455-1840
spilde@brooklynwi.gov

OTHER AGENCIES

WISDNR

DNR SOUTHERN REGION
3911 FISH HATCHERY ROAD
FITCHBURG, WI 53711
SHELLEY WARWICK
608-444-2835
shelley.warwick@wisconsin.gov

DESIGN

ALFRED BENESCH & COMPANY
1300 WEST CANAL STREET
SUITE 150
MILWAUKEE, WI 53233
BEN WEIGAND
414-308-1322
bweigand@benesch.com

WISDOT

SOUTHWEST REGION
2101 WRIGHT STREET
MADISON, WI 53704
JEFF BERENS
608-245-2656
Jeff.Berens@dot.wi.gov

PAVEMENT LOCATION	TOTAL PAVEMENT THICKNESS	LAYER	TYPE
PROJECT LENGTH	2"	2" UPPER	4 LT 58-28 S
PAVED SHOULDER WIDENING	4"	2" UPPER	4 LT 58-28 S
		2" LOWER	ASPHALTIC SURFACE

ORDER OF SECTION 2 SHEETS

GENERAL NOTES
PROJECT OVERVIEW
TYPICAL SECTIONS
CONSTRUCTION DETAILS
MGS DETAILS
PLAN DETAILS
DETOUR PLAN

STANDARD ABBREVIATIONS

AGG	AGGREGATE	HORIZ	HORIZONTAL	SHLDR	SHOULDER
AADT	ANNUAL AVERAGE DAILY TRAFFIC	INL	INLET	SW	SIDEWALK
ASPH	ASPHALT DRIVEWAY	INV	INVERT	S	SOUTH
AVG	AVERAGE	JCT	JUNCTION	SPECS	SPECIFICATIONS
ADT	AVERAGE DAILY TRAFFIC	LT	LEFT	SF	SQUARE FEET
BM	BENCH MARK	LF	LINEAR FOOT	SY	SQUARE YARD
CB	CATCH BASIN	LS	LUMP SUM	STD	STANDARD
C/L	CENTERLINE	MH	MANHOLE	SDD	STANDARD DETAIL DRAWINGS
CONC	CONCRETE	ML	MATCH LINE	STH	STATE TRUNK HIGHWAYS
CO	COUNTY	N	NORTH	STA	STATION
CTH	COUNTY TRUNK HIGHWAY	Y	NORTH GRID COORDINATE	SS	STORM SEWER
CWT	HUNDREDWEIGHT	NO	NUMBER	STR	STRUCTURE OR STRUCTURAL
CY	CUBIC YARD	PAVT	PAVEMENT	TEL	TELEPHONE
DHV	DESIGN HOUR VOLUME	PERM	PERMANENT	TEMP	TEMPORARY
DIA	DIAMETER	PLE	PERMANENT LIMITED EASEMENT	TLE	TEMPORARY LIMITED EASEMENT
E	EAST	PT	POINT	T	TON
X	EAST GRID COORDINATE	PCC	PORTLAND CEMENT CONCRETE	TYP	TYPICAL
ELEC	ELECTRIC	PROJ	PROJECT	UG	UNDERGROUND
ELEV	ELEVATION	PL	PROPERTY LINE	USH	UNITED STATES HIGHWAY
ESALS	EQUIVALENT SINGLE AXLE LOADS	R/L	REFERENCE LINE	W	WATER
ESTR	EXISTING SIGN TO REMAIN	RT	RIGHT	WM	WATER MAIN
EXC	EXCAVATION	R/W	RIGHT-OF-WAY	WV	WATER VALVE
EBS	EXCAVATION BELOW SUBGRADE	RD	ROAD	W	WEST
EXIST	EXISTING	RDWY	ROADWAY	YD	YARD
FT	FOOT	SEC	SECTION		
GRVL	GRAVEL DRIVEWAY				

GENERAL NOTES

1. 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.
2. NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT THE APPROVAL OF THE ENGINEER.
3. DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE SEEDED AND MULCHED.
4. HMA PAVEMENT WEIGHT CALCULATIONS ARE BASED ON 112 LB/SY/IN.
5. PAVING OPERATION SHALL BE CONSISTENT WITH THE PLAN TYPICAL SECTIONS AND CONSTRUCTED TO PREVENT HMA LONGITUDINAL JOINTS FROM BEING LOCATED WITHIN A DRIVING, TURNING, PASSING, OR PARKING LANE.
6. ALIGNMENT AND STATIONING ARE APPROXIMATE. ESTABLISH AN ALIGNMENT DOWN THE CENTERLINE OF STH 104 BASED ON FIELD MEASUREMENTS. PAYMENT IS INCLUDED AS PART OF THE ITEM "CONSTRUCTION STAKING RESURFACING REFERENCE."

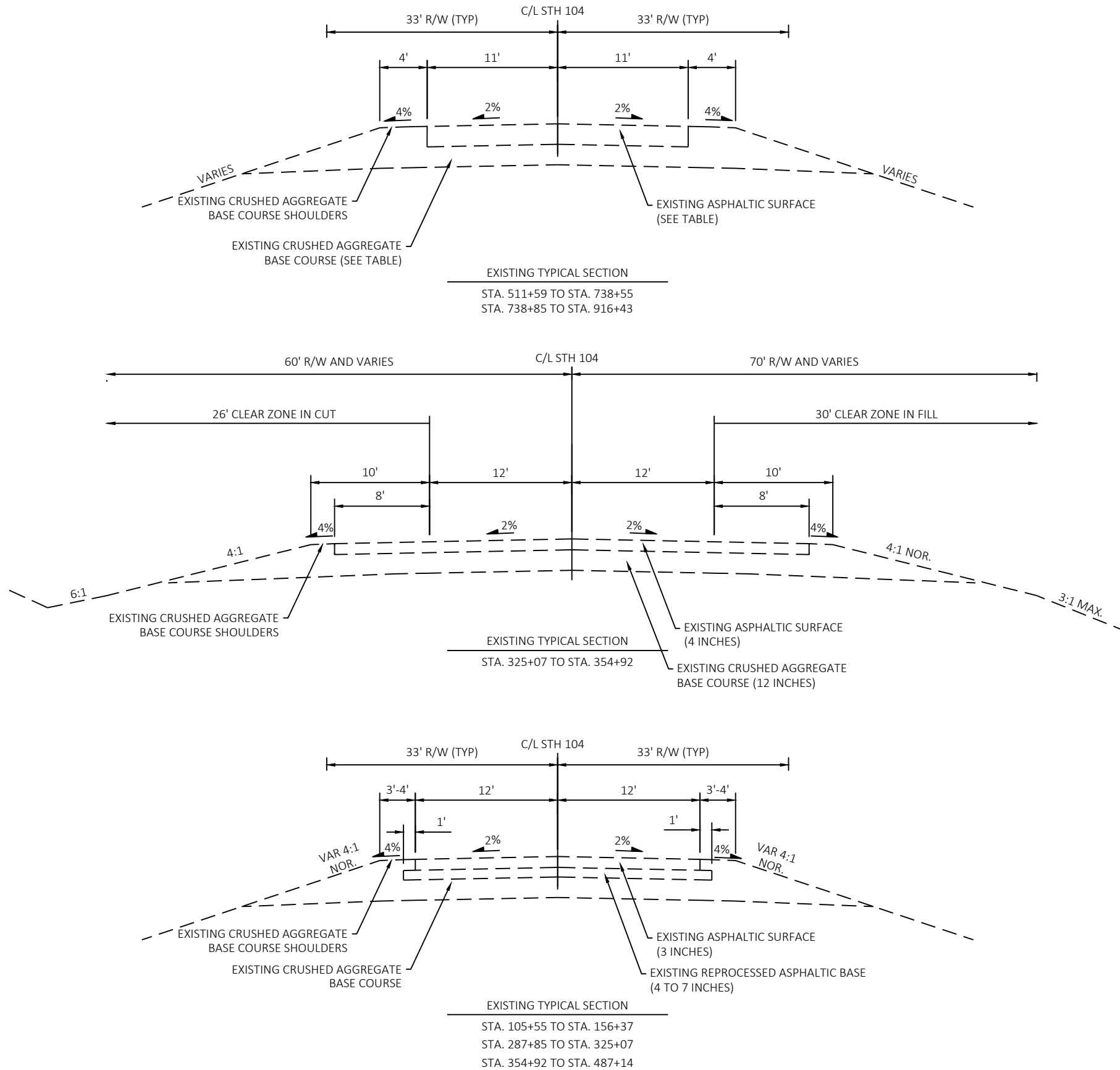
EROSION CONTROL GENERAL NOTES

1. RE-TOPSOIL DISTURBED AREAS, AS DESIGNATED BY THE ENGINEER. SEED AND E-MAT TOP-SOILED AREAS, AS DESIGNATED BY THE ENGINEER, WITHIN FIVE (5) CALENDAR DAYS AFTER PLACEMENT OF TOPSOIL. IF GRADED AREAS ARE LEFT EXPOSED FOR MORE THAN (14) CALENDAR DAYS, SEED THOSE AREAS WITH TEMPORARY SEED.
2. STOCKPILE EXCESS MATERIAL OR SPOILS ON UPLAND AREAS AWAY FROM WETLANDS, FLOODPLAINS AND WATERWAYS. STOCKPILED SOIL SHALL BE PROTECTED AGAINST EROSION. IF STOCKPILED MATERIAL IS LEFT FOR MORE THAN FOURTEEN (14) CALENDAR DAYS, SEED THE STOCKPILE WITH TEMPORARY SEED.
3. QUANTITIES FOR EROSION CONTROL ITEMS HAVE BEEN INCLUDED IN THE PROJECT, BUT ARE NOT REPRESENTED ON THE PLAN. THE LOCATIONS AND TYPE OF EROSION CONTROL ITEMS WILL BE DETERMINED BY THE CONTRACTOR'S ECIP AND BY THE ENGINEER. EROSION CONTROL ITEMS SHALL BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED OR UNTIL THE ENGINEER DETERMINES THAT THE ITEM IS NO LONGER REQUIRED.

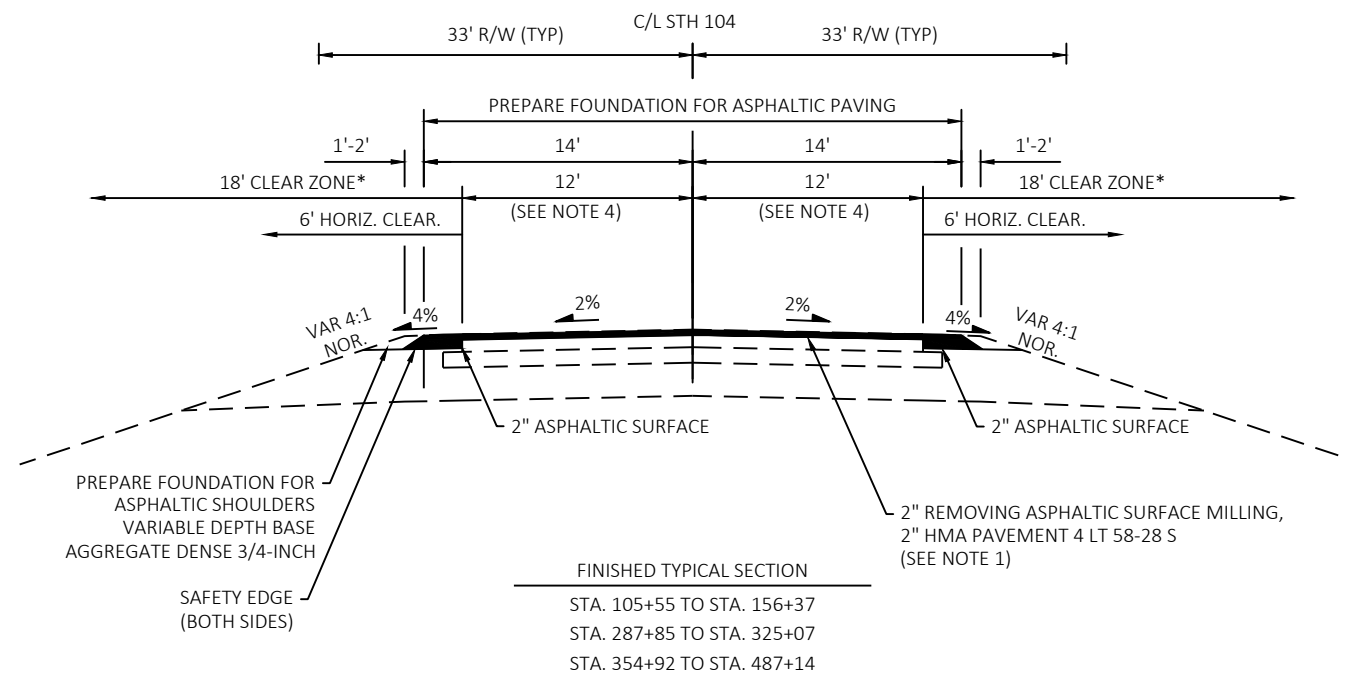
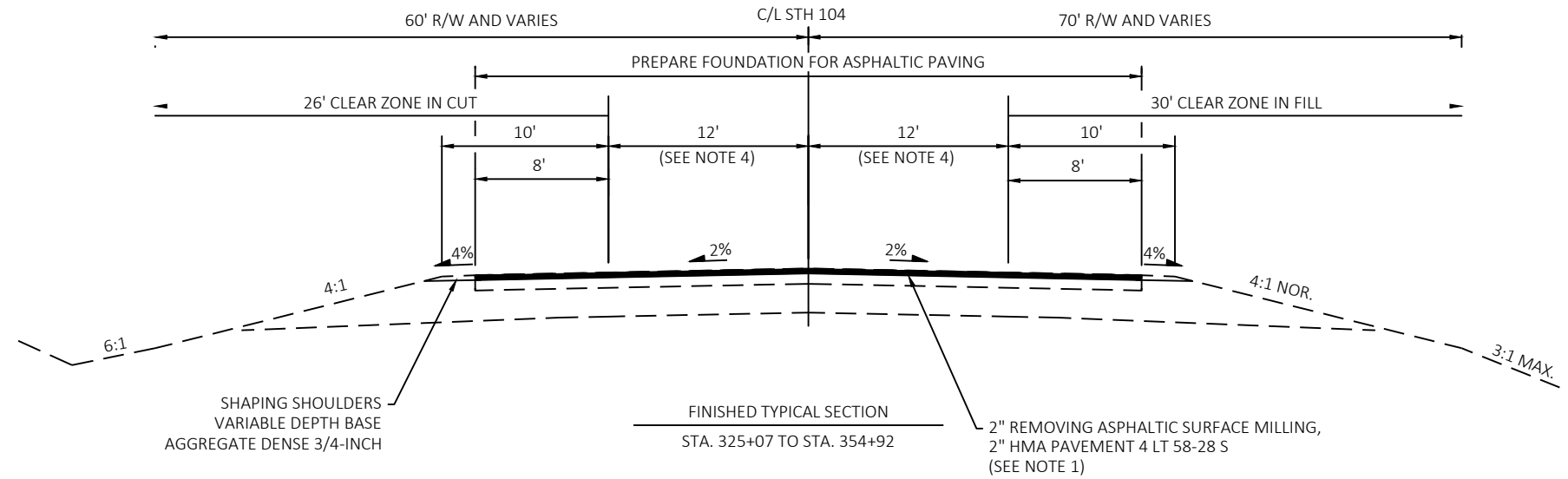




PROJECT NO: 5320-02-60	HWY: STH 104	COUNTY: GREEN	PROJECT OVERVIEW	SHEET	E
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EXISTING PAVEMENT BORINGS (FOR REFERENCE ONLY)						
BORING #	LOG MILE	STATION	OFFSET	EX ASPHALT THICKNESS	EX BASE THICKNESS	NOTES
	0	499+70				STH 59 East
B-1	0.24	512+37	6' Rt	9"	9"	Fill
B-2	0.51	526+63	9' Rt	9"	8"	Fill
B-3	0.99	551+97	6' Lt	8"	8"	Cut/Fill
B-4	1.4	573+62	3' Lt	8"	8"	Cut/Fill
	1.43	575+20				Milbrandt Rd
B-5	1.61	584+71	9' Lt	8"	8"	Fill
B-6	1.87	598+44	3' Rt	7"	6"	Cut/Fill
	1.93	601+60				Croft Rd
B-7	2.11	611+11	12' Rt	11"	7"	Fill
B-8	2.45	629+06	9' Rt	7"	8"	Cut/Fill
B-9	2.78	646+48	3' Rt	7"	6"	Cut
B-10	3.07	661+80	6' Lt	12"	7"	Fill
	3.25	671+30				CTH C West
B-11	3.32	675+00	9' Lt	14"	4"	Cut/Fill
B-12	3.75	697+70	12' Lt	6"	6"	Cut/Fill
B-13	4.06	714+07	3' Lt	10"	4"	Cut
B-14	4.32	727+80	6' Rt	10"	5"	Fill
	4.41	732+55				Emery Rd
B-15	4.58	741+52	3' Rt	8"	4"	Fill
B-16	4.87	756+84	9' Rt	8"	11"	Fill
B-17	5.18	773+20	6' Lt	8"	12"	Cut/Fill
B-18	5.43	786+40	6' Rt	7.5"	13.5"	Fill
B-19	5.7	800+66	9' Lt	7"	12"	Fill
	5.75	803+30				King Rd
B-20	6	816+50	12' Lt	7.5"	11"	Cut
	6.25	829+70				Amiden Rd
B-21	6.29	831+81	9' Rt	8"	12"	Fill
B-22	6.64	850+29	6' Rt	7.5"	13"	Fill
B-23	6.9	864+02	3' Rt	6.5"	9"	Fill
B-24	7.18	878+80	6' Lt	7"	12"	Fill
B-25	7.44	892+53	3' Lt	6"	12"	Fill
B-26	7.66	904+15	9' Lt	6"	12"	Fill
	7.78	910+48				Railroad St
B-27	7.81	912+07	6' Rt	5"	12"	Fill
	7.92	917+88				STH 92

**NOTES:**

1. APPLY TACK COAT AT A RATE OF 0.07 GAL/SY TO THE MILLED SURFACE AND SHOULDER WIDENING LOWER LAYER.
 2. APPLY TACK COAT TO VERTICAL SURFACE BETWEEN EXISTING AND NEW PAVEMENT.
 3. MARK LANE LINES AS FOLLOWS:
 - BEGIN PROJECT TO 511+59 - 12' LANES
 - 511+59 TO END PROJECT - 11' LANES
- * CLEAR ZONE SHOWN IS DESIRABLE, CONDITIONS IN THE FIELD VARY

PROJECT NO: 5320-02-60

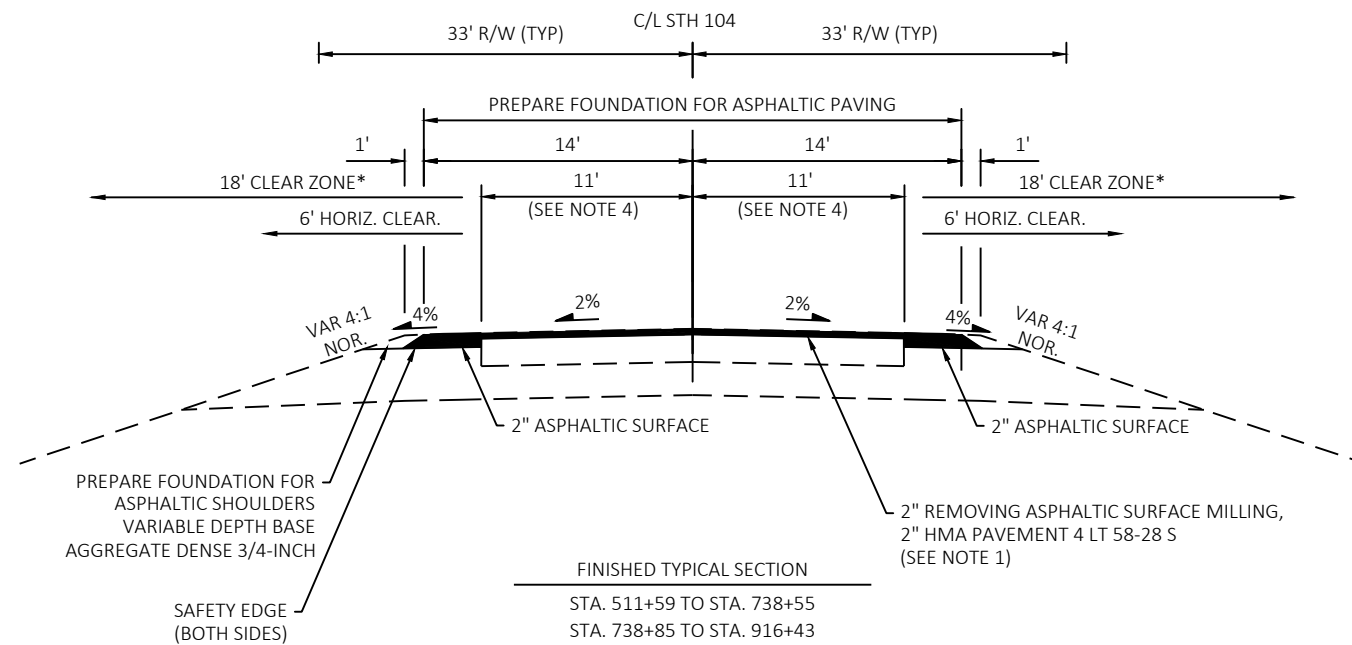
HWY: STH 104

COUNTY: GREEN

TYPICAL SECTIONS

SHEET

E

**NOTES:**

1. APPLY TACK COAT AT A RATE OF 0.07 GAL/SY TO THE MILLED SURFACE AND SHOULDER WIDENING LOWER LAYER.
 2. APPLY TACK COAT TO VERTICAL SURFACE BETWEEN EXISTING AND NEW PAVEMENT.
 3. MARK LANE LINES AS FOLLOWS:
 - BEGIN PROJECT TO 511+59 - 12' LANES
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PROJECT NO: 5320-02-60

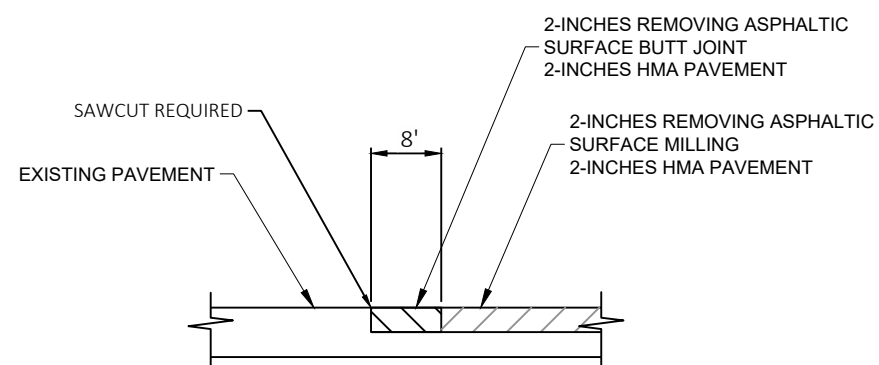
HWY: STH 104

COUNTY: GREEN

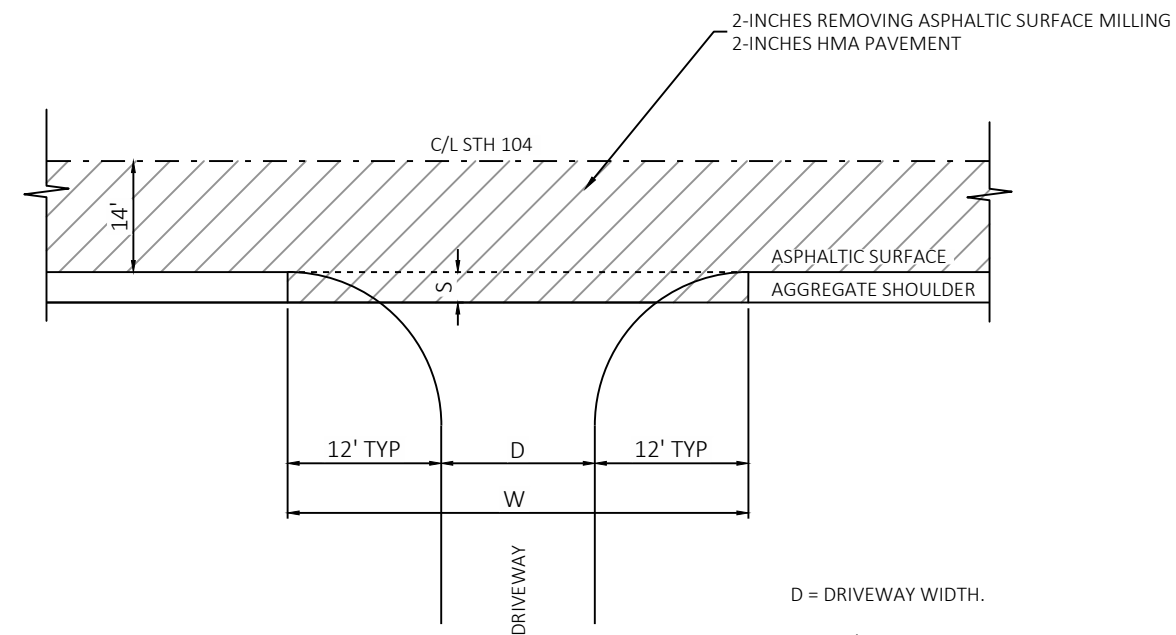
TYPICAL SECTIONS

SHEET

E

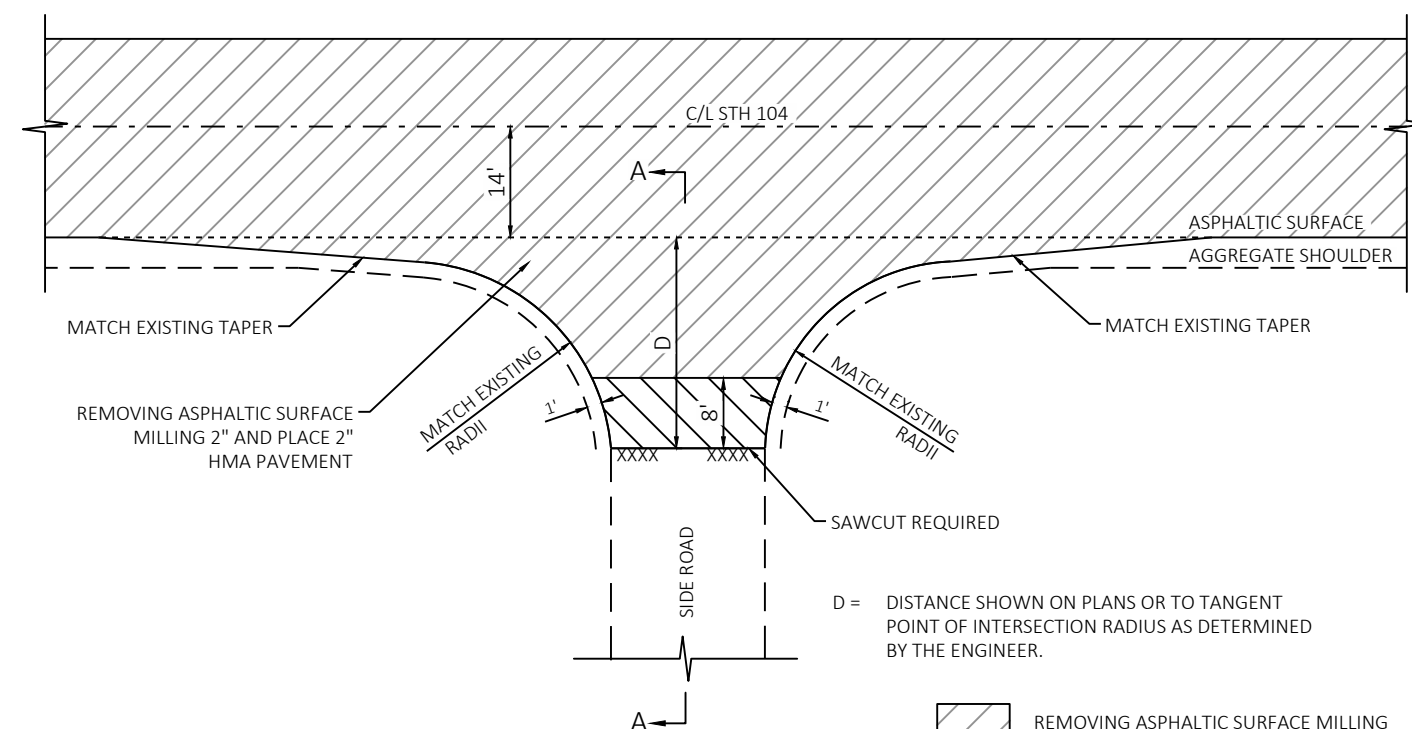


SECTION A-A

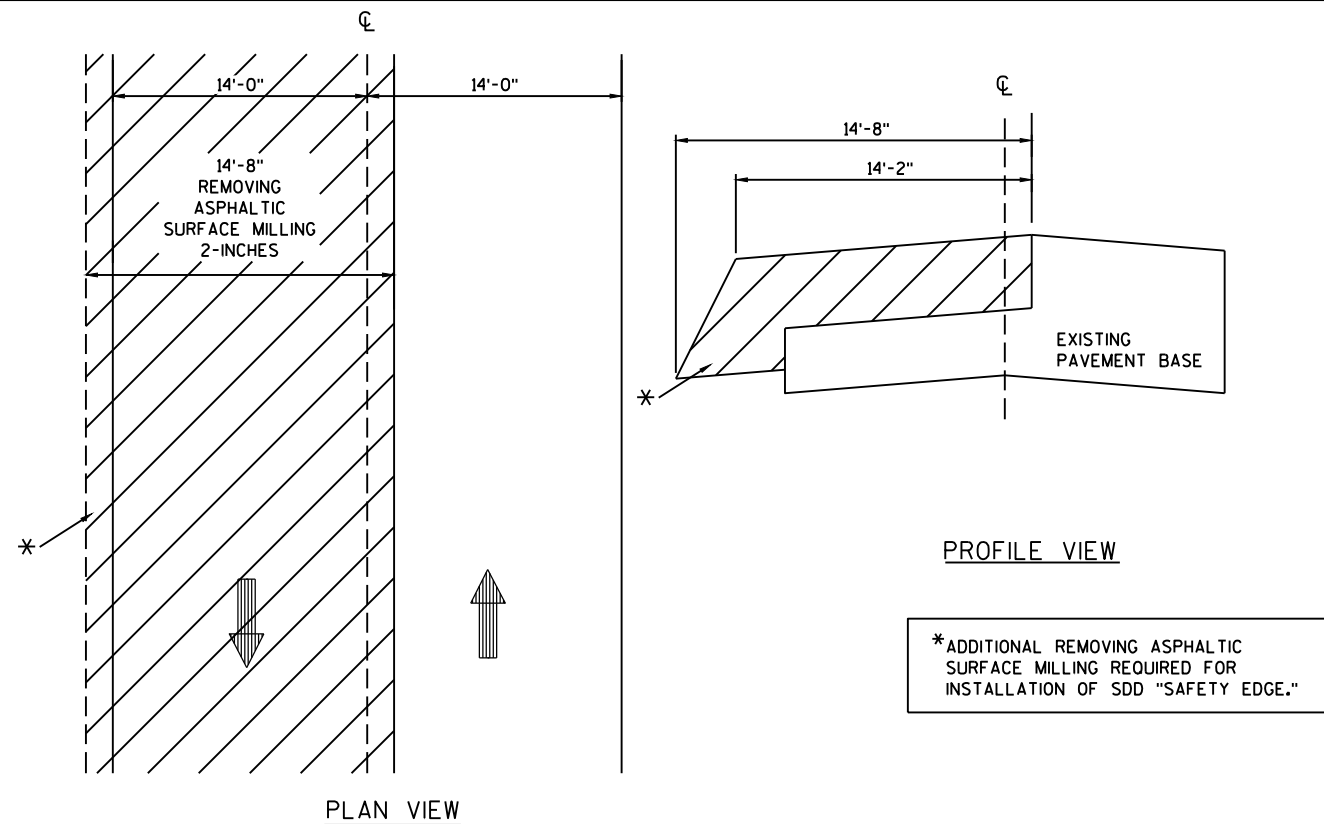


TYPICAL DRIVEWAY DETAIL

W = TOTAL WIDTH TO BE VERIFIED IN THE FIELD BY THE ENGINEER.

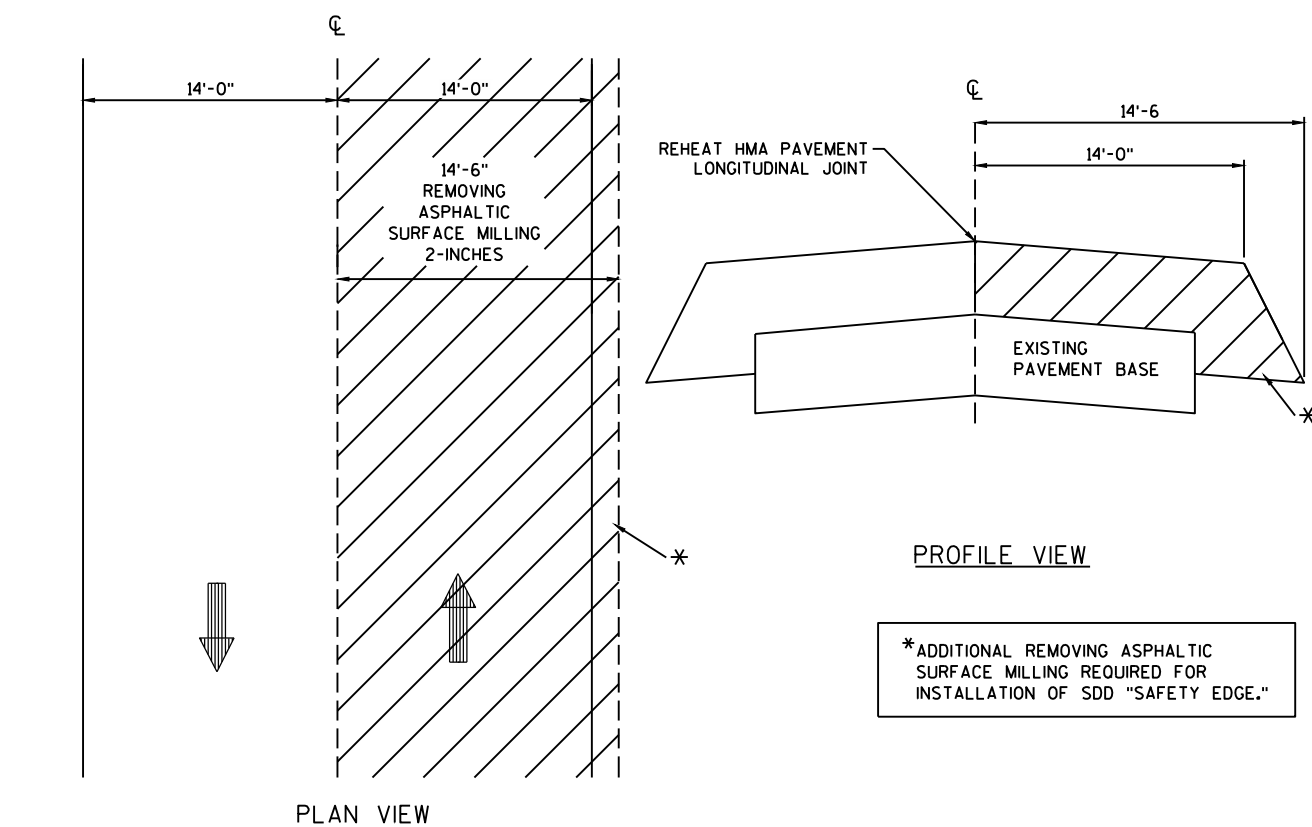


-  REMOVING ASPHALTIC SURFACE MILLING
-  REMOVING ASPHALTIC SURFACE BUTT JOINT



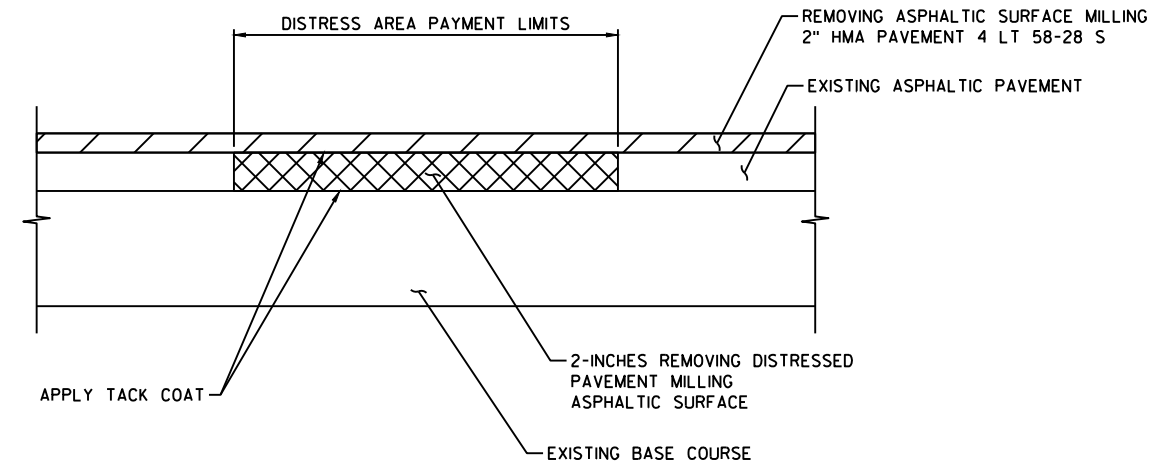
2-INCHES HMA PAVEMENT 4 LT 58-28 S

FIRST PASS DETAIL

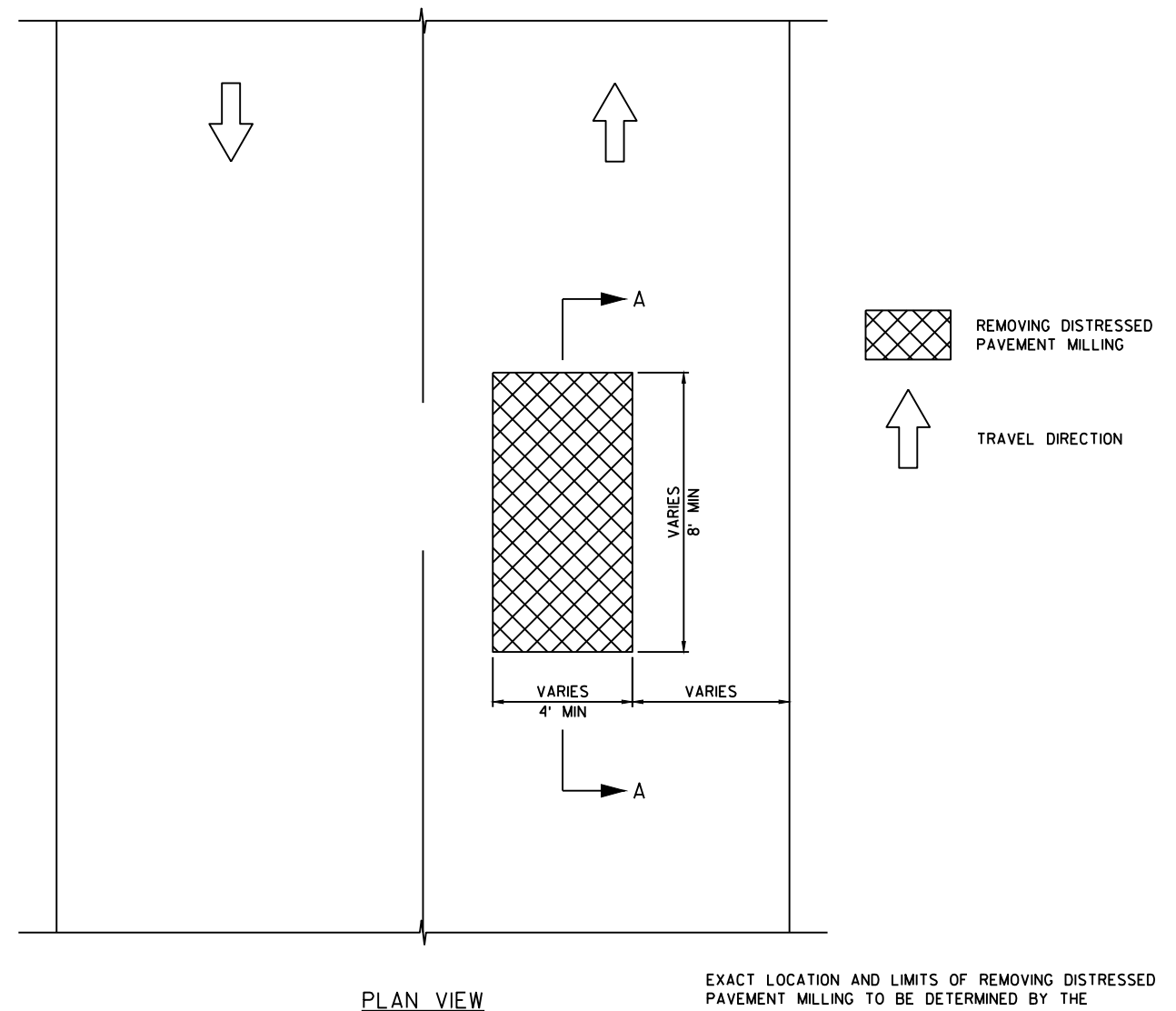


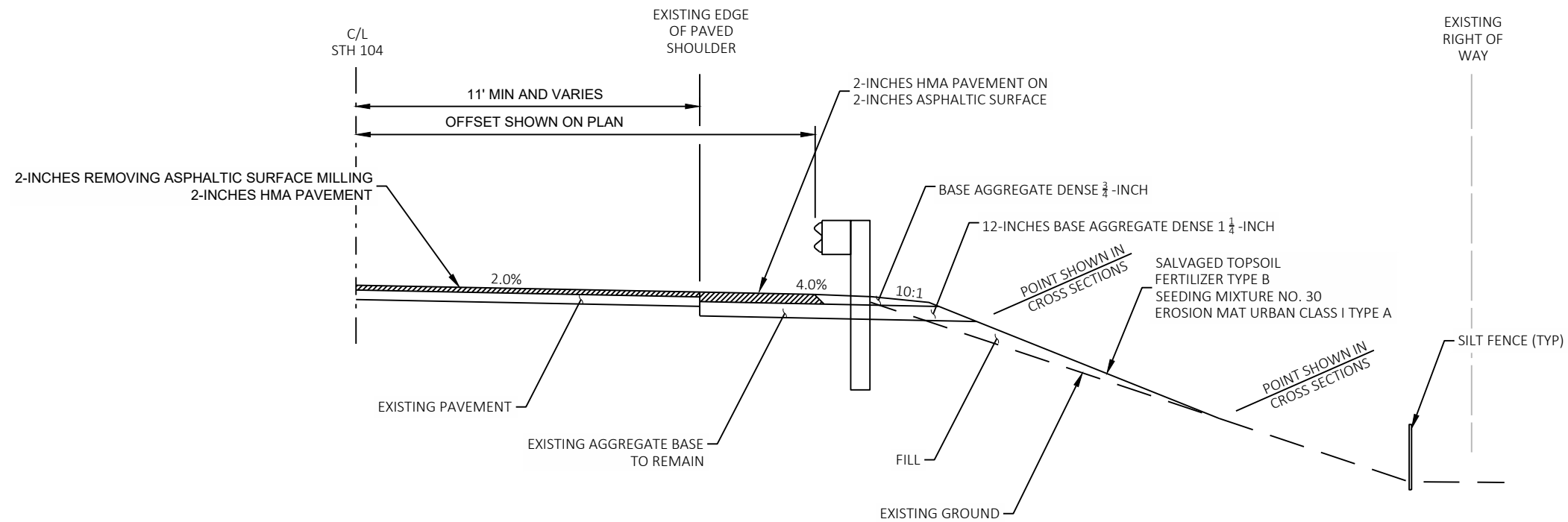
2-INCHES HMA PAVEMENT 4 LT 58-28 S

SECOND PASS DETAIL



PAVEMENT SECTION AT DISTRESS AREAS
SECTION A-A





NOTES:

EXCAVATION COMMON, FILL, BORROW, SALVAGED TOPSOIL, FERTILIZER AND SEEDING ARE INCIDENTAL TO BARRIER SYSTEM GRADING SHAPING FINISHING.

SEE STANDARD DETAIL DRAWINGS FOR MORE INFORMATION.

MGS GUARDRAIL GRADING, SHAPING, AND FINISHING

PROJECT NO: 5320-02-60

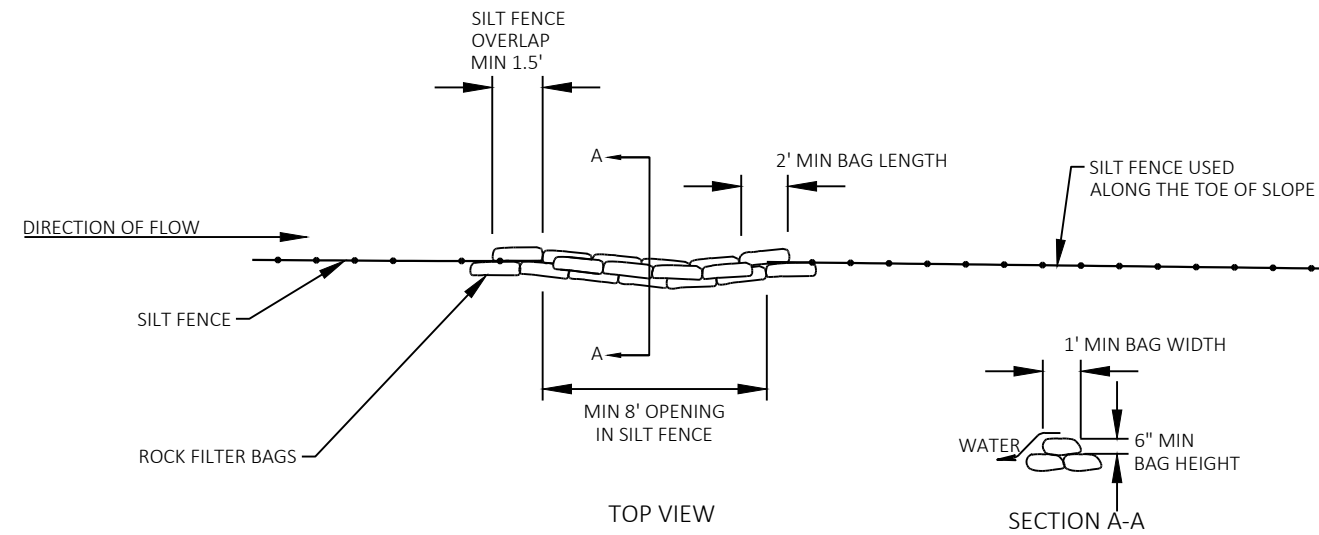
HWY: STH 104

COUNTY: GREEN

CONSTRUCTION DETAILS

SHEET

E



ROCK BAGS USED FOR SILT FENCE RELIEF

PROJECT NO: 5320-02-60

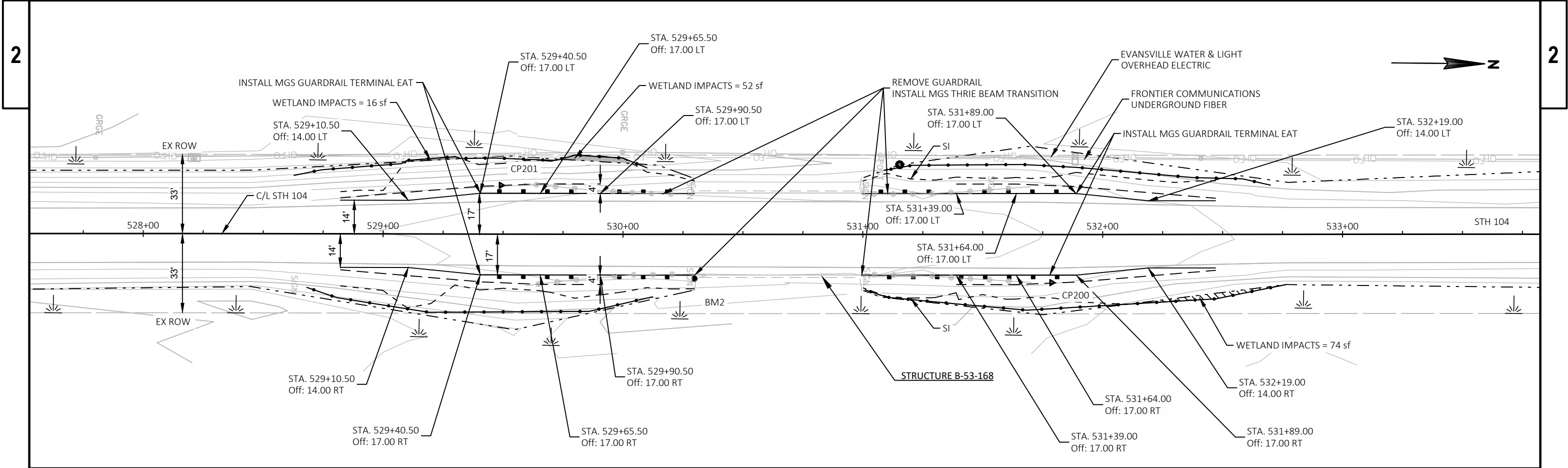
HWY: STH 104

COUNTY: GREEN

CONSTRUCTION DETAILS

SHEET

E



CONTROL POINTS						
I.D.	DESCRIPTION	STATION	OFFSET	ELEVATION	Y	X
CP200	REBAR	531+78.74	20.04	847.25	190417.85	684343.41
CP201	REBAR	529+49.14	-20.34	847.16	190187.67	684306.66
BM2	CUT SQUARE	530+29.79	18.49	847.95	190268.91	684344.25

LEGEND

DITCH CHECK

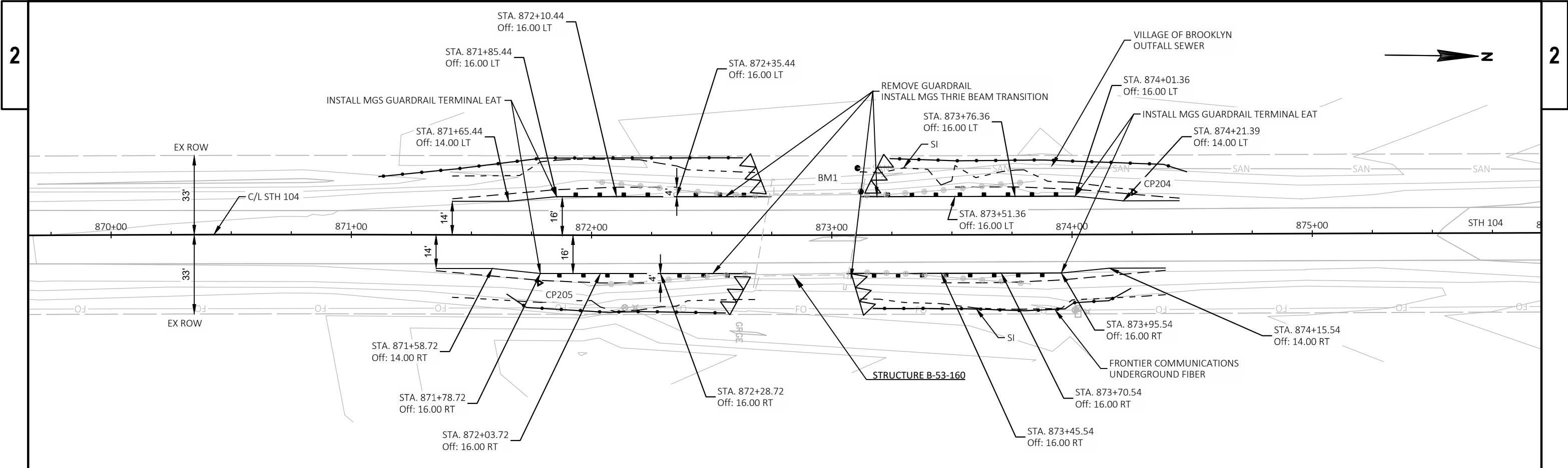
SILT FENCE

SLOPE INTERCEPT

WETLAND BOUNDARY

WETLAND IMPACTS

NOTES
ALL DISTURBED AREAS TO BE PROTECTED WITH EROSION MAT URBAN CLASS I TYPE A UNLESS OTHERWISE NOTED.



CONTROL POINTS						
I.D.	DESCRIPTION	STATION	OFFSET	ELEVATION	Y	X
CP204	REBAR	874+25.72	-17.63	954.05	224661.79	683971.00
CP205	REBAR	871+78.41	19.95	954.11	224414.51	684008.73
BM1	CUT SQUARE	873+12.11	-18.07	954.68	224548.22	683970.82

LEGEND

DITCH CHECK

SILT FENCE

SLOPE INTERCEPT

WETLAND BOUNDARY

NOTES
ALL DISTURBED AREAS TO BE PROTECTED WITH EROSION MAT URBAN CLASS I TYPE A UNLESS OTHERWISE NOTED.



PROJECT NO: 5320-02-60	HWY: STH 104	COUNTY: GREEN	PLAN DETAILS	SHEET	E
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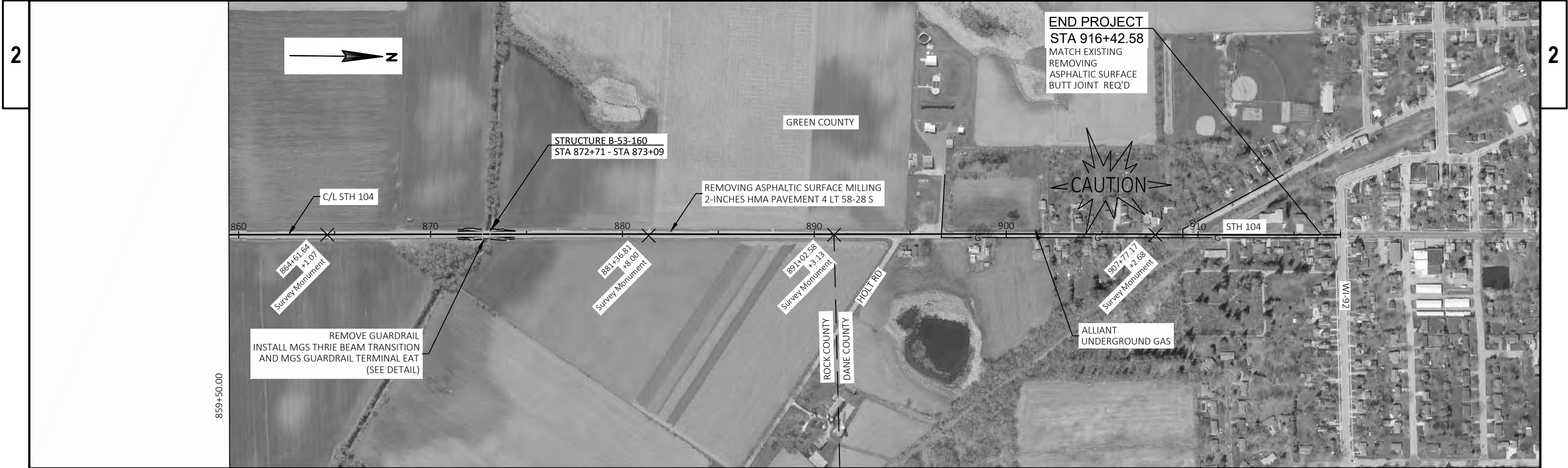


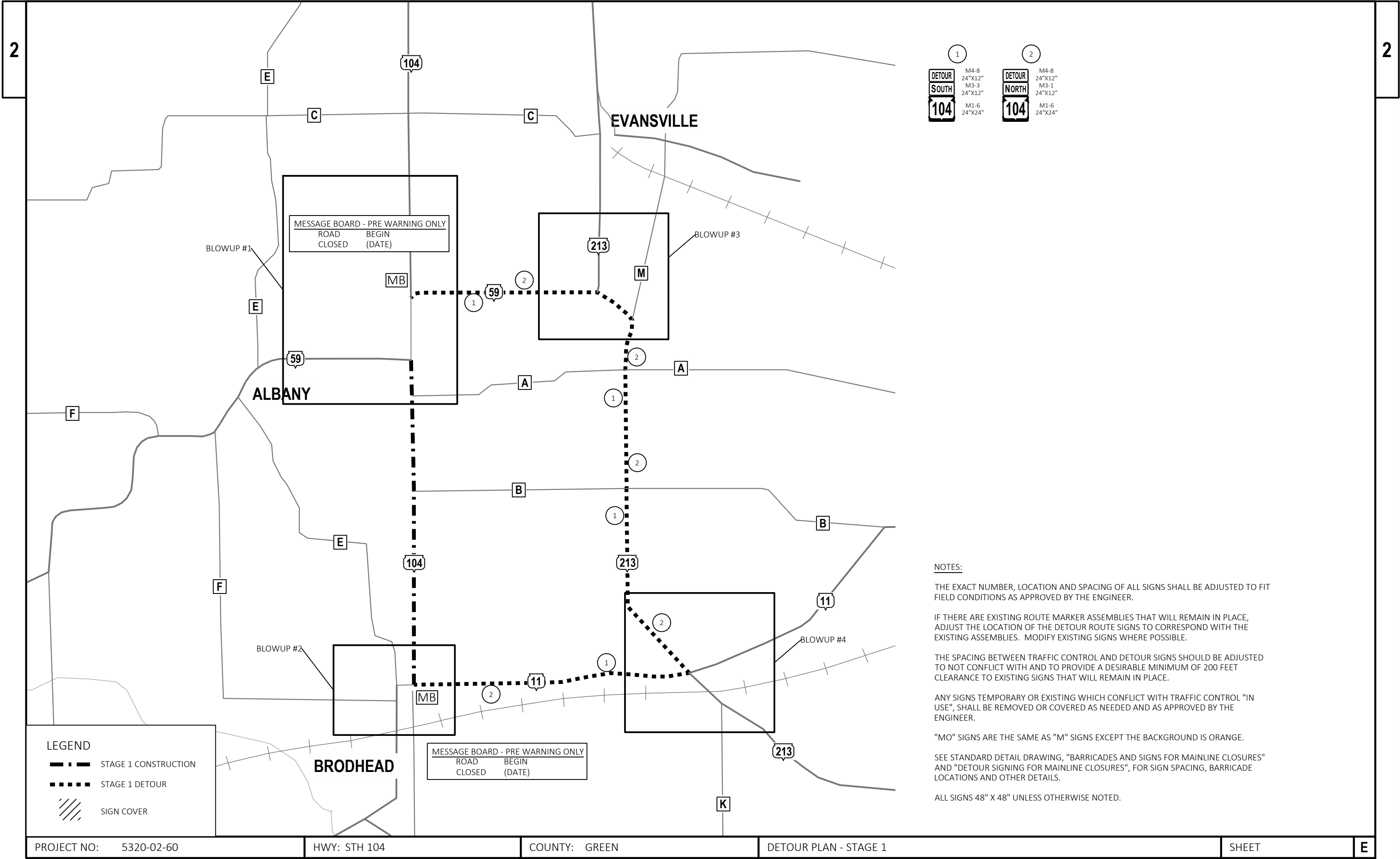
PROJECT NO: 5320-02-60	HWY: STH 104	COUNTY: GREEN	PLAN DETAILS	SHEET	E
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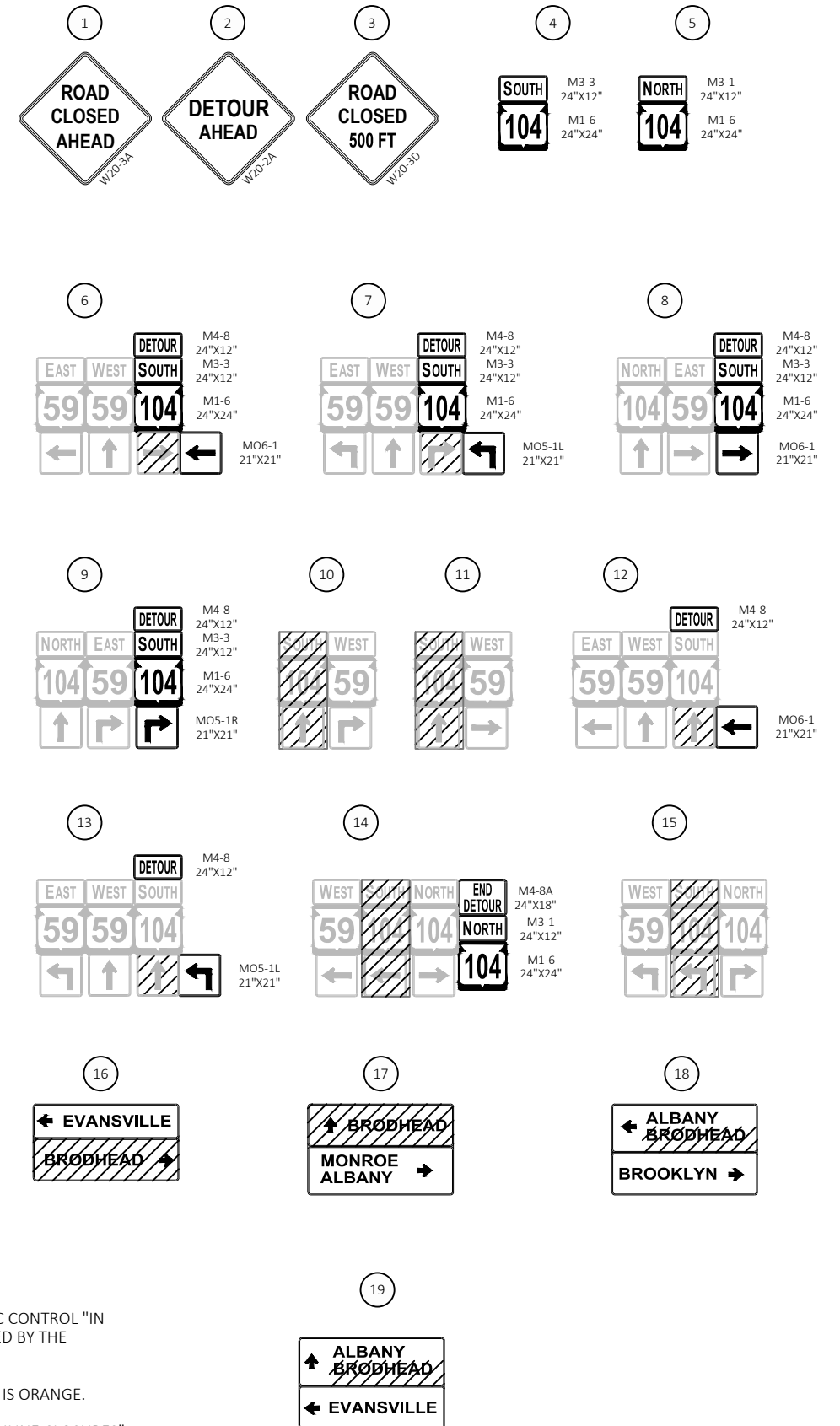




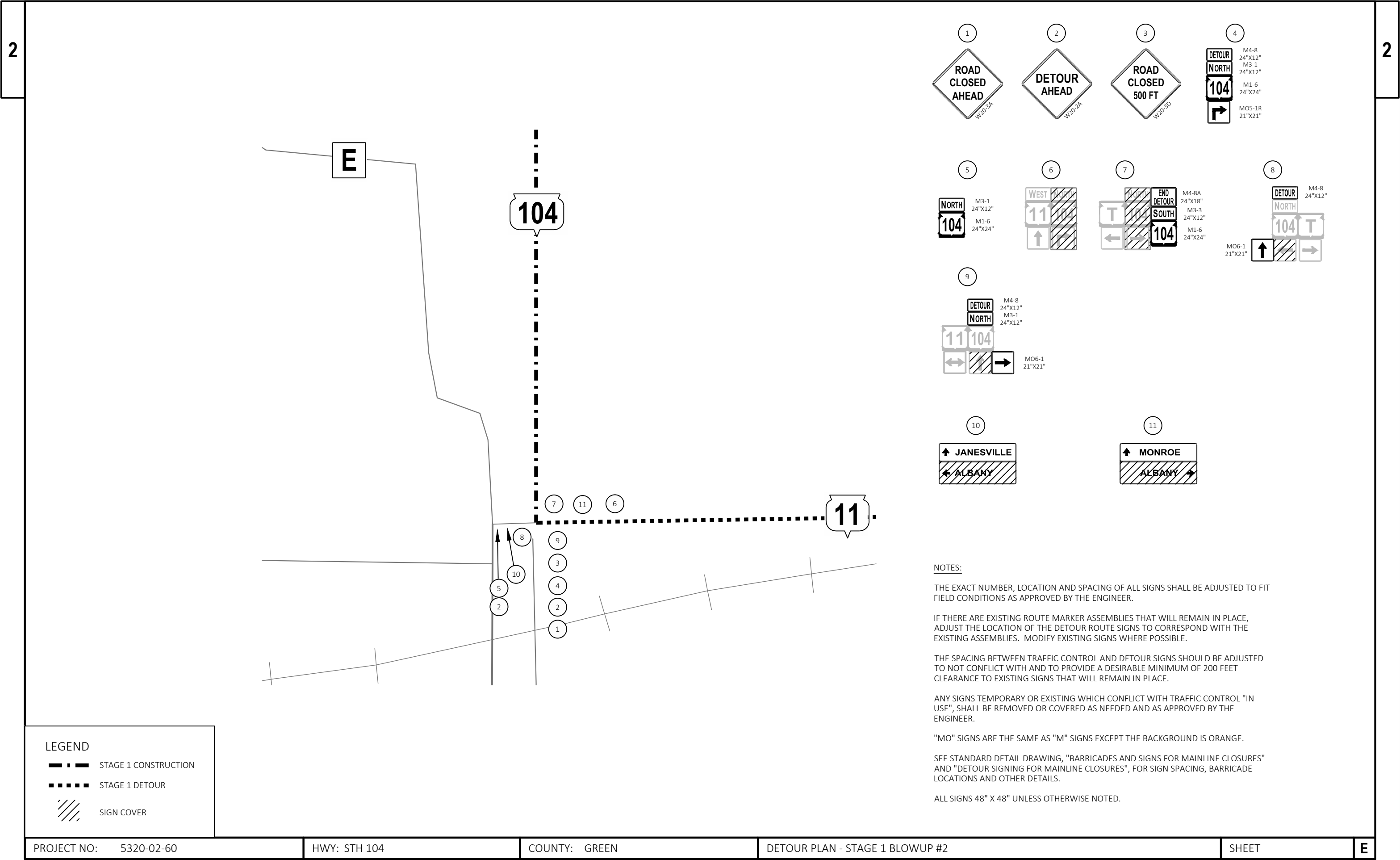


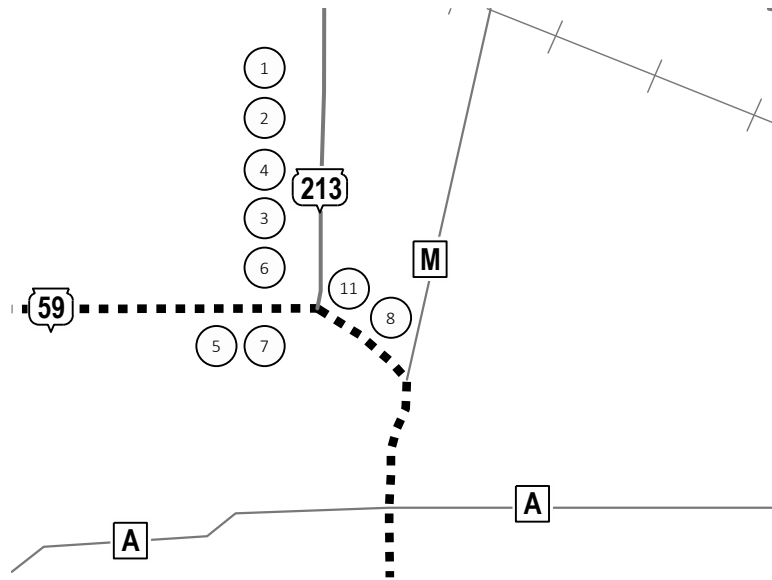




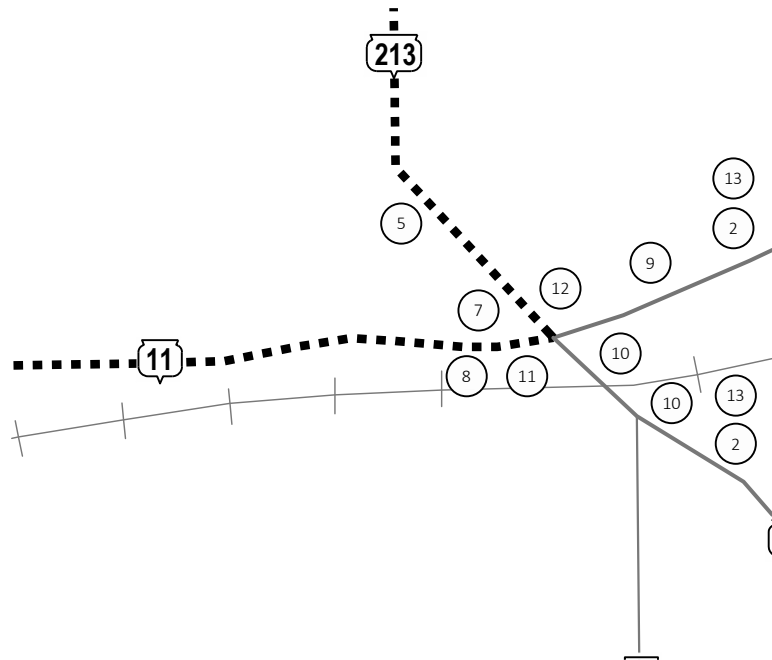


WISDOT/CADDS SHEET 42





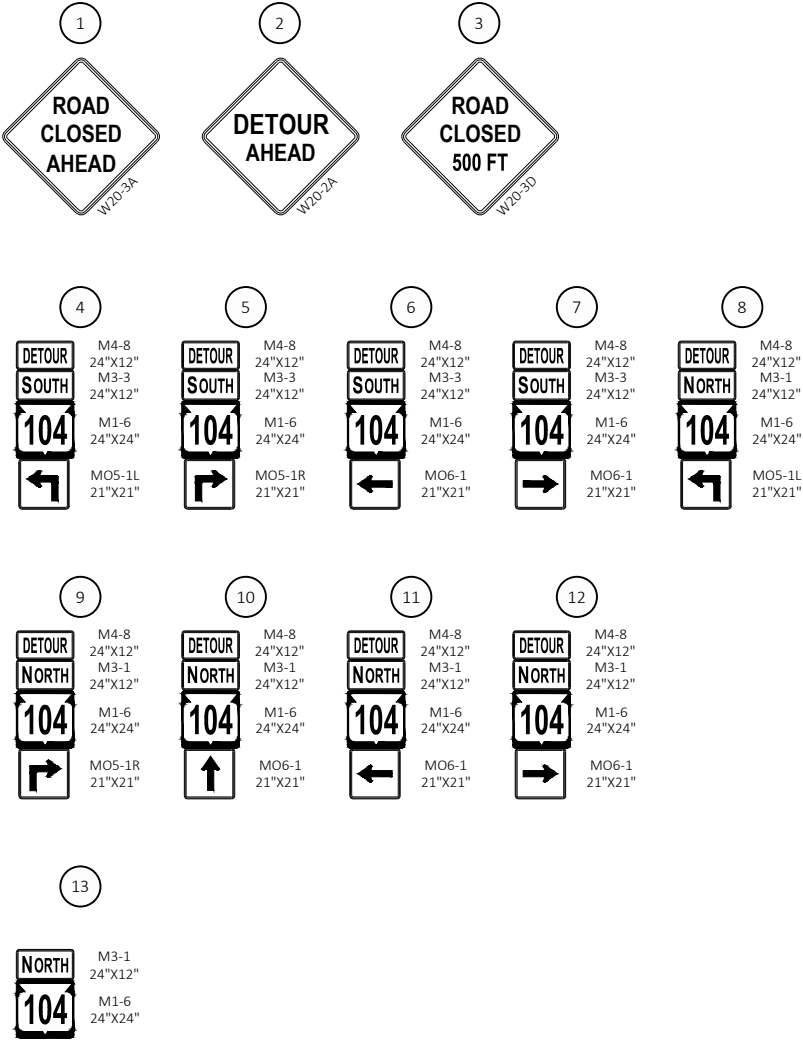
BLOWUP #3



BLOWUP #4

LEGEND

- · — · — STAGE 1 CONSTRUCTION
- - - - - STAGE 1 DETOUR
- /// SIGN COVER



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. MODIFY EXISTING SIGNS WHERE POSSIBLE.

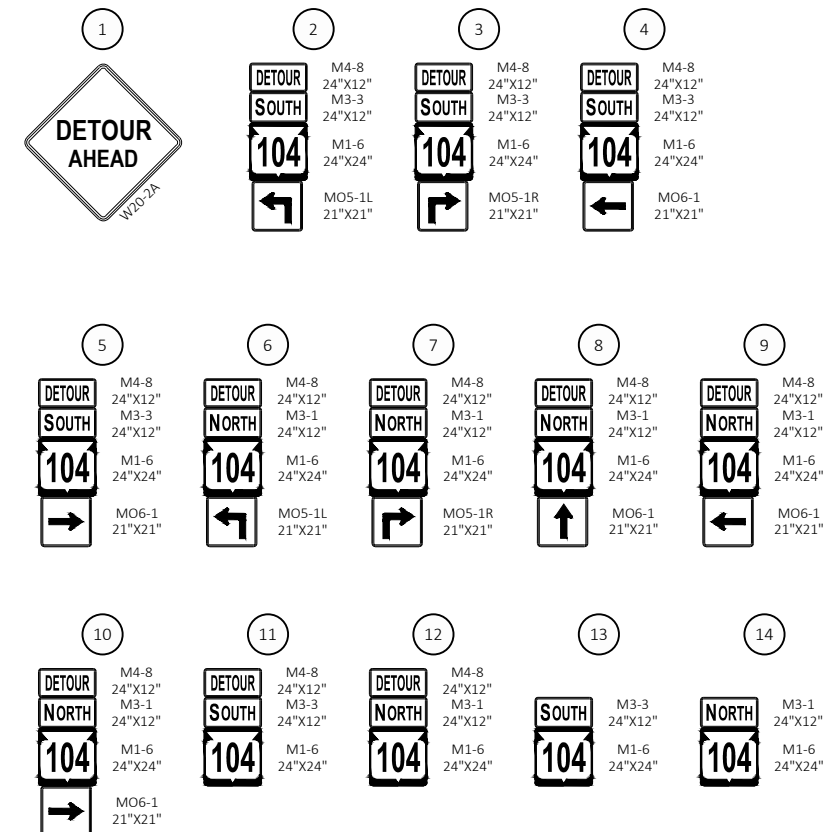
THE SPACING BETWEEN TRAFFIC CONTROL AND DETOUR SIGNS SHOULD BE ADJUSTED TO NOT CONFLICT WITH AND TO PROVIDE A DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

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.

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

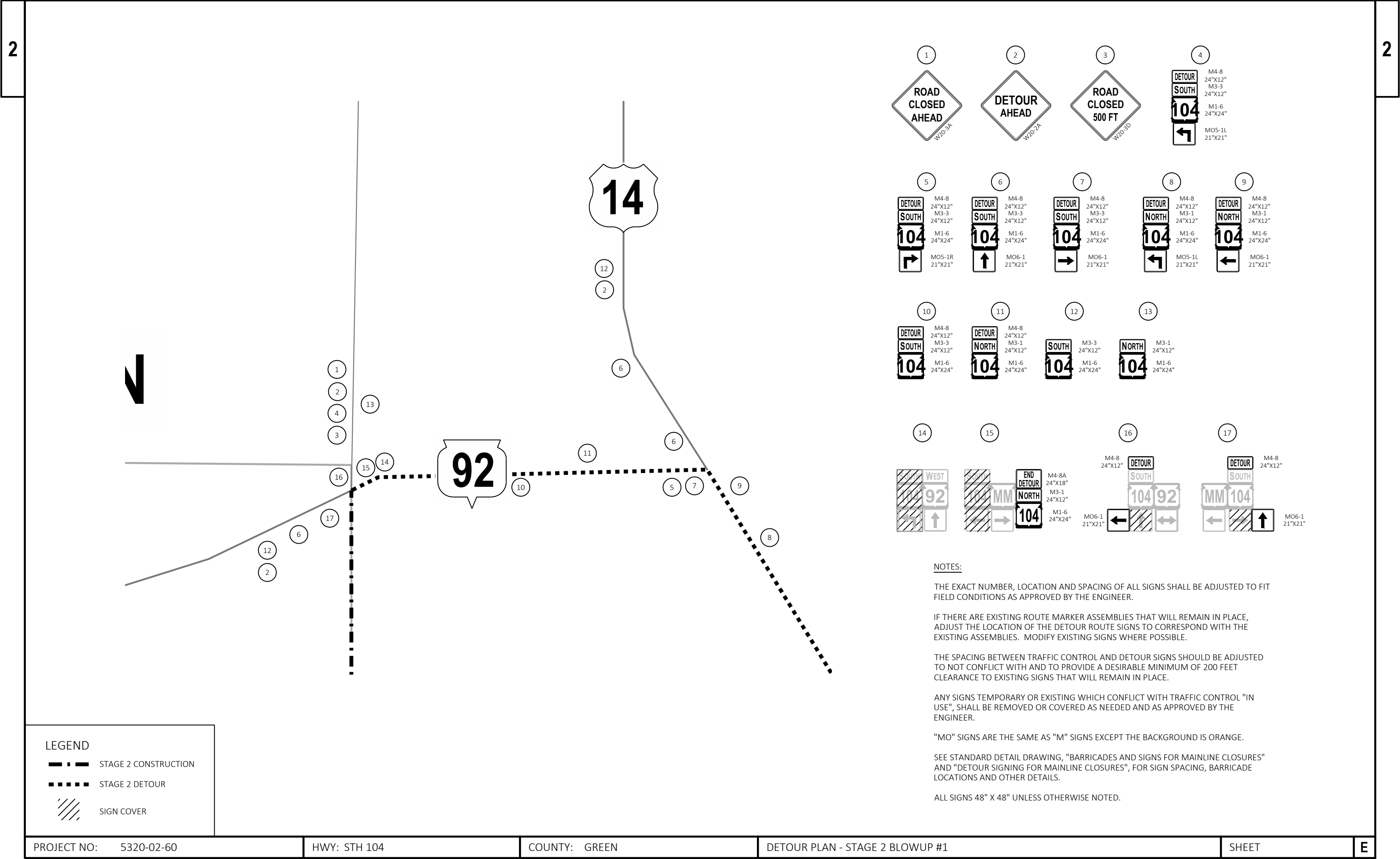
SEE STANDARD DETAIL DRAWING, "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" AND "DETOUR SIGNING FOR MAINLINE CLOSURES", FOR SIGN SPACING, BARRICADE LOCATIONS AND OTHER DETAILS.

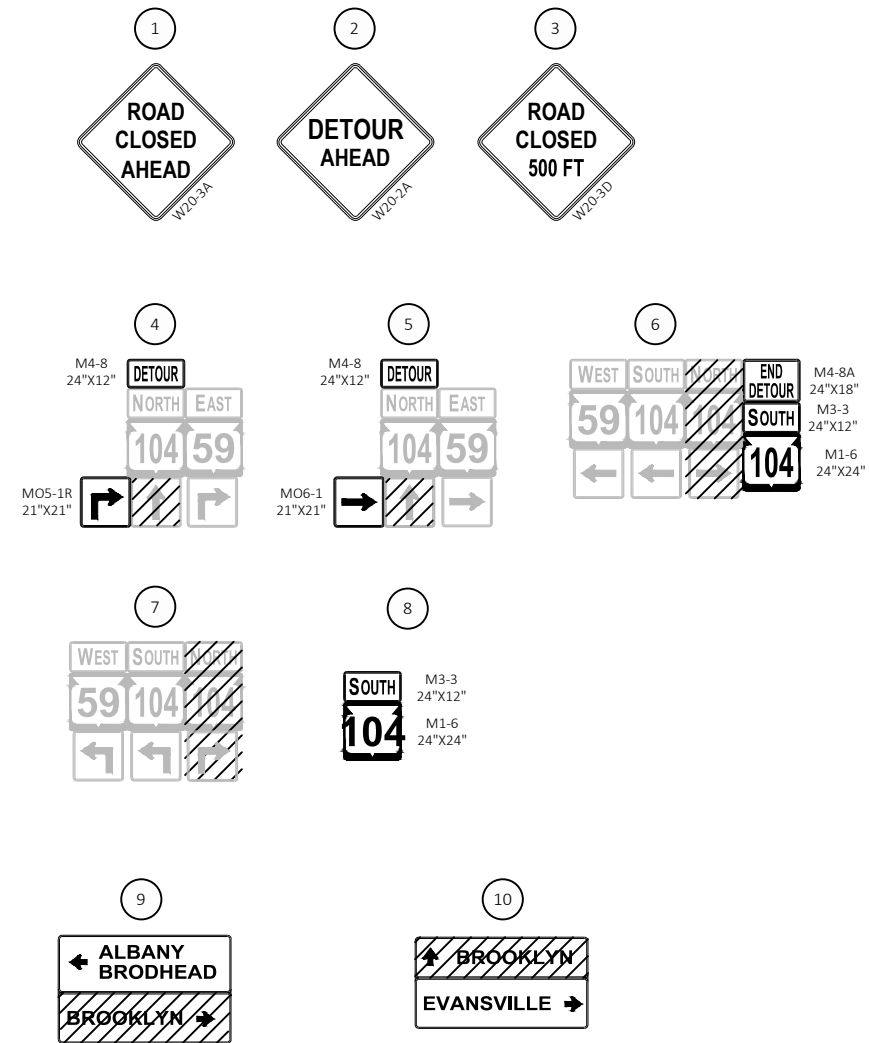
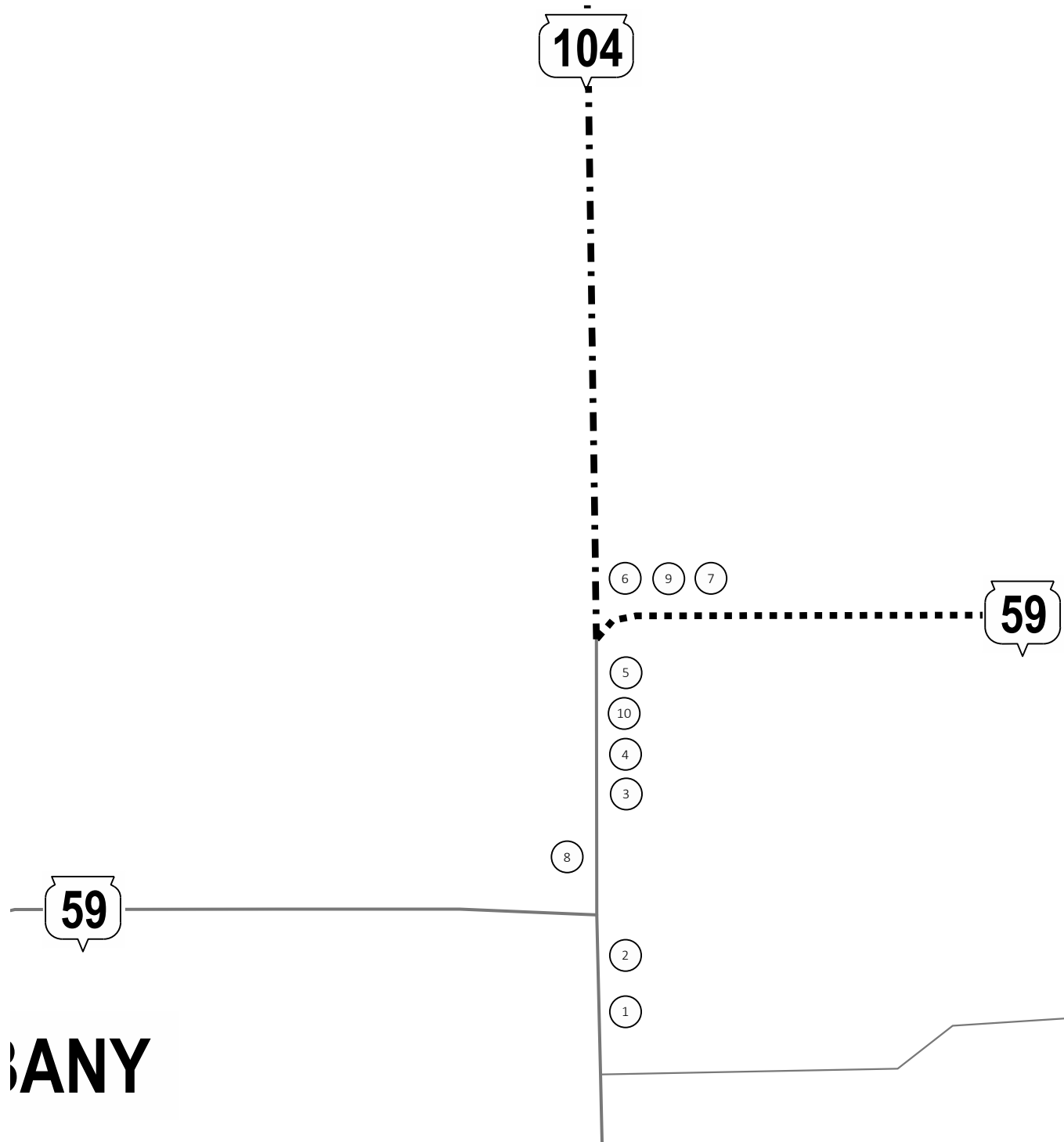
ALL SIGNS 48" X 48" UNLESS OTHERWISE NOTED.



ALL SIGNS 48" X 48" UNLESS OTHERWISE NOTED.

 SIGN COVER



**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. 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.

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

SEE STANDARD DETAIL DRAWING, "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" AND "DETOUR SIGNING FOR MAINLINE CLOSURES", FOR SIGN SPACING, BARRICADE LOCATIONS AND OTHER DETAILS.

ALL SIGNS 48" X 48" UNLESS OTHERWISE NOTED.

LEGEND

— · — · — STAGE 2 CONSTRUCTION

····· STAGE 2 DETOUR

/// SIGN COVER

PROJECT NO: 5320-02-60

HWY: STH 104

COUNTY: GREEN

DETOUR PLAN - STAGE 2 BLOWUP #2

SHEET

E

Estimate Of Quantities

5320-02-60

Line	Item	Item Description	Unit	Total	Qty
0002	204.0115	Removing Asphaltic Surface Butt Joints	SY	987.000	987.000
0004	204.0120	Removing Asphaltic Surface Milling	SY	224,396.000	224,396.000
0006	204.0165	Removing Guardrail	LF	600.000	600.000
0008	211.0100	Prepare Foundation for Asphaltic Paving (project) 01. 5320-02-60	LS	1.000	1.000
0010	211.0400	Prepare Foundation for Asphaltic Shoulders	STA	1,248.000	1,248.000
0012	213.0100	Finishing Roadway (project) 01. 5320-02-60	EACH	1.000	1.000
0014	305.0110	Base Aggregate Dense 3/4-Inch	TON	8,606.000	8,606.000
0016	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	16.000	16.000
0018	305.0500	Shaping Shoulders	STA	60.000	60.000
0020	455.0605	Tack Coat	GAL	15,794.000	15,794.000
0022	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	1.000	1.000
0024	460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH	2.000	2.000
0026	460.2005	Incentive Density PWL HMA Pavement	DOL	24,140.000	24,140.000
0028	460.2010	Incentive Air Voids HMA Pavement	DOL	24,140.000	24,140.000
0030	460.4110.S	Reheating HMA Pavement Longitudinal Joints	LF	65,355.000	65,355.000
0032	460.5224	HMA Pavement 4 LT 58-28 S	TON	24,140.000	24,140.000
0034	465.0105	Asphaltic Surface	TON	5,055.000	5,055.000
0036	509.1500	Concrete Surface Repair	SF	74.000	74.000
0038	509.5100.S	Polymer Overlay	SY	147.000	147.000
0040	614.0010	Barrier System Grading Shaping Finishing	EACH	8.000	8.000
0042	614.2500	MGS Thrie Beam Transition	LF	316.000	316.000
0044	614.2610	MGS Guardrail Terminal EAT	EACH	8.000	8.000
0046	618.0100	Maintenance And Repair of Haul Roads (project) 01. 5320-02-60	EACH	1.000	1.000
0048	619.1000	Mobilization	EACH	1.000	1.000
0050	624.0100	Water	MGAL	86.000	86.000
0052	625.0500	Salvaged Topsoil	SY	60.000	60.000
0054	628.1104	Erosion Bales	EACH	12.000	12.000
0056	628.1504	Silt Fence	LF	1,200.000	1,200.000
0058	628.1520	Silt Fence Maintenance	LF	1,200.000	1,200.000
0060	628.1905	Mobilizations Erosion Control	EACH	2.000	2.000
0062	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0064	628.2006	Erosion Mat Urban Class I Type A	SY	915.000	915.000
0066	628.7504	Temporary Ditch Checks	LF	100.000	100.000
0068	628.7570	Rock Bags	EACH	30.000	30.000
0070	630.0130	Seeding Mixture No. 30	LB	2.000	2.000
0072	630.0200	Seeding Temporary	LB	5.000	5.000
0074	634.0622	Posts Wood 4x6-Inch X 22-FT	EACH	10.000	10.000
0076	638.2102	Moving Signs Type II	EACH	10.000	10.000

Estimate Of Quantities

5320-02-60

Line	Item	Item Description	Unit	Total	Qty
0078	642.5001	Field Office Type B	EACH	1.000	1.000
0080	643.0300	Traffic Control Drums	DAY	112.000	112.000
0082	643.0310.S	Temporary Portable Rumble Strips	LS	1.000	1.000
0084	643.0420	Traffic Control Barricades Type III	DAY	2,420.000	2,420.000
0086	643.0705	Traffic Control Warning Lights Type A	DAY	4,840.000	4,840.000
0088	643.0900	Traffic Control Signs	DAY	8,410.000	8,410.000
0090	643.0920	Traffic Control Covering Signs Type II	EACH	24.000	24.000
0092	643.1050	Traffic Control Signs PCMS	DAY	28.000	28.000
0094	643.5000	Traffic Control	EACH	1.000	1.000
0096	646.1020	Marking Line Epoxy 4-Inch	LF	204,559.000	204,559.000
0098	646.3020	Marking Line Epoxy 8-Inch	LF	50.000	50.000
0100	646.4505	Marking Line Same Day Paint 4-Inch	LF	64,951.000	64,951.000
0102	646.6120	Marking Stop Line Epoxy 18-Inch	LF	20.000	20.000
0104	648.0100	Locating No-Passing Zones	MI	12.400	12.400
0106	650.8000	Construction Staking Resurfacing Reference	LF	65,465.000	65,465.000
0108	650.9910	Construction Staking Supplemental Control (project) 01. 5320-02-60	LS	1.000	1.000
0110	690.0150	Sawing Asphalt	LF	943.000	943.000
0112	740.0440	Incentive IRI Ride	DOL	49,600.000	49,600.000
0114	SPV.0060	Special 01. Verify Landmark Reference Monuments	EACH	48.000	48.000
0116	SPV.0060	Special 02. Landmark Reference Monuments Special	EACH	2.000	2.000
0118	SPV.0180	Special 01. Removing Distressed Pavement Milling	SY	9,914.000	9,914.000

REMOVALS							
LOCATION	WIDTH		204.0115	204.0120	SPV.0180.01	NOTES	
	FIRST PASS	SECOND PASS	REMOVING ASPHALTIC SURFACE BUTT JOINTS (SY)	REMOVING ASPHALTIC SURFACE MILLING (SY)	REMOVING DISTRESSED PAVEMENT MILLING (SY)		
105+55 to 105+63	14.67	14.5	26	-	-	ASSUMING 4% DISTRESSED PAVEMENT	
105+63 to 156+29	14.67	14.5	-	16418	657		
156+29 to 156+37	14.67	14.5	26	-	-		
NET EXCEPTION							
287+85 to 287+93	14.67	14.5	26	-	-	ASSUMING 4% DISTRESSED PAVEMENT	
287+93 to 325+07	14.67	14.5	-	12037	482		
325+07 to 354+92	20.17	20	-	13322	533		
354+92 to 487+06	14.67	14.5	-	42824	1713	ASSUMING 4% DISTRESSED PAVEMENT	
487+06 to 487+14	14.67	14.5	26	-	-	NET EXCEPTION	
511+59 to 511+67	14.67	14.5	26	-	-		
511+67 to 530+21	14.67	14.5	-	6009	301		
530+21 to 530+29	14.67	14.5	26	-	-	ASSUMING 5% DISTRESSED PAVEMENT	
B-53-168							
531+00 to 531+08	14.67	14.5	26	-	-		
531+08 to 738+47	14.67	14.5	-	67210	3361	ASSUMING 5% DISTRESSED PAVEMENT	
738+47 to 738+55	14.67	14.5	26	-	-	NET EXCEPTION	
738+85 to 738+93	14.67	14.5	26	-	-		
738+93 to 872+63	14.67	14.5	-	43329	2167		
872+63 to 872+71	14.67	14.5	26	-	-	B-53-160	
873+10 to 873+18	14.67	14.5	26	-	-		
873+18 to 916+35	14.67	14.5	-	13991	700		
916+35 to 916+43	14.67	14.5	26	-	-	ASSUMING 5% DISTRESSED PAVEMENT	
ST JOHN RD			27	310	-	BYPASS LANE	
W FOOTVILLE BRODHEAD RD			27	310	-		
CTH B			27	310	-		
ATKINSON RD			27	1063	-		
W TOWNSEND RD			27	310	-		
BUMP RD			27	310	-		
CTH A			27	310	-		
WI-59 WEST			27	310	-		
W FINNERNAN RD			27	310	-	BYPASS LANE	
HAMMER RD			27	1063	-		
DUNPHY RD			27	310	-		
ENGLISH SETTLEMENT RD			27	310	-		
W MILBRANDT RD			27	310	-		
W CROFT RD			27	310	-		
BROOKLYN-ALBANY RD			27	310	-		
CTH C WEST			27	310	-		
CTH C EAST			27	310	-		
ELMER RD			27	310	-		
W EMERY RD			27	310	-		
YARWOOD RD			27	310	-		
KING RD			27	310	-		
W EVANSVILLE BROOKLYN RD			27	310	-		
AMIDON RD			27	310	-		
HOLT RD			27	310	-		
RAILROAD ST			27	310	-		
TOTALS			987	224396	9914		

ALL ITEMS ON THIS PAGE ARE CATEGORY 0010

ASPHALTIC ITEMS					
LOCATION	211.0400	455.0605	460.4110.S	460.5224	465.0105
	PREPARE	TACK	REHEATING	HMA	ASPHALTIC
	FOUNDATION FOR ASPHALTIC SHOULDERS (STA)	COAT (GAL)	HMA PAVEMENT LONGITUDINAL JOINTS (LF)	PAVEMENT 4 LT 58-28 S (TON)	SURFACE (TON)
105+55 to 105+63	0.16	2	8	3.0	0.4
105+63 to 156+29	101.32	1150	5066	1838.8	325.8
156+29 to 156+37	0.16	2	8	3.0	0.4
NET EXCEPTION					
287+85 to 287+93	0.16	2	8	3.0	0.4
287+93 to 325+07	74.28	843	3714	1348.1	238.9
325+07 to 354+92	-	933	2985	1492.1	59.7
354+92 to 487+06	264.28	2998	13214	4796.2	849.7
487+06 to 487+14	0.16	2	8	3.0	0.4
NET EXCEPTION					
511+59 to 511+67	0.16	2	8	3.0	0.6
511+67 to 530+21	37.08	421	1854	673.0	172.2
530+21 to 530+29	0.16	2	8	3.0	0.6
B-53-168					
531+00 to 531+08	0.16	2	8	3.0	0.6
531+08 to 738+47	414.78	4705	20739	7527.5	1925.0
738+47 to 738+55	0.16	2	8	3.0	0.4
NET EXCEPTION					
738+85 to 738+93	0.16	2	8	3.0	0.6
738+93 to 872+63	267.40	3034	13370	4852.9	1076.7
872+63 to 872+71	0.16	2	8	3.0	0.6
B-53-160					
873+10 to 873+18	0.16	2	8	3.0	0.6
873+18 to 916+35	86.34	980	4317	1567.0	400.8
916+35 to 916+43	0.16	2	8	-	0.6
ST JOHN RD	-	24	-	0.4	-
W FOOTVILLE BRODHEAD RD	-	24	-	0.4	-
CTH B	-	24	-	0.4	-
ATKINSON RD	-	77	-	1.1	-
W TOWNSEND RD	-	24	-	0.4	-
BUMP RD	-	24	-	0.4	-
CTH A	-	24	-	0.4	-
WI-59 WEST	-	24	-	0.4	-
W FINNERNAN RD	-	24	-	0.4	-
HAMMER RD	-	77	-	1.1	-
DUNPHY RD	-	24	-	0.4	-
ENGLISH SETTLEMENT RD	-	24	-	0.4	-
W MILBRANDT RD	-	24	-	0.4	-
W CROFT RD	-	24	-	0.4	-
BROOKLYN-ALBANY RD	-	24	-	0.4	-
CTH C WEST	-	24	-	0.4	-
CTH C EAST	-	24	-	0.4	-
ELMER RD	-	24	-	0.4	-
W EMERY RD	-	24	-	0.4	-
YARWOOD RD	-	24	-	0.4	-
KING RD	-	24	-	0.4	-
W EVANSVILLE BROOKLYN RD	-	24	-	0.4	-
AMIDON RD	-	24	-	0.4	-
HOLT RD	-	24	-	0.4	-
RAILROAD ST	-	24	-	0.4	-
TOTALS	1248	15794	65355	24140	5055

SHOULDER ITEMS		
	305.0110 BASE AGGREGATE DENSE 3/4-INCH (TON)	305.0500 SHAPING SHOULDERS (STA)
LOCATION		
105+55 to 105+63	1.06	-
105+63 to 156+29	667.09	-
156+29 to 156+37	1.06	-
NET EXCEPTION		
287+85 to 287+93	1.06	-
287+93 to 325+07	489.06	-
325+07 to 354+92	393.07	59.70
354+92 to 487+06	1740.01	-
487+06 to 487+14	1.06	-
NET EXCEPTION		
511+59 to 511+67	1.06	-
511+67 to 530+21	244.14	-
530+21 to 530+29	1.06	-
B-53-168		
531+00 to 531+08	1.06	-
531+08 to 738+47	2730.90	-
738+47 to 738+55	1.06	-
NET EXCEPTION		
738+85 to 738+93	1.06	-
738+93 to 872+63	1760.55	-
872+63 to 872+71	1.06	-
B-53-160		
873+10 to 873+18	1.06	-
873+18 to 916+35	568.46	-
916+35 to 916+43	1.06	-
ST JOHN RD	-	-
W FOOTVILLE BRODHEAD RD	-	-
CTH B	-	-
ATKINSON RD	-	-
W TOWNSEND RD	-	-
BUMP RD	-	-
CTH A	-	-
WI-59 WEST	-	-
W FINNERNAN RD	-	-
HAMMER RD	-	-
DUNPHY RD	-	-
ENGLISH SETTLEMENT RD	-	-
W MILBRANDT RD	-	-
W CROFT RD	-	-
BROOKLYN-ALBANY RD	-	-
CTH C WEST	-	-
CTH C EAST	-	-
ELMER RD	-	-
W EMERY RD	-	-
YARWOOD RD	-	-
KING RD	-	-
W EVANSVILLE BROOKLYN RD	-	-
AMIDON RD	-	-
HOLT RD	-	-
RAILROAD ST	-	-
TOTALS	8606	60

MGS GUARDRAIL																
				204.0165 REMOVING GUARDRAIL	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH	614.0010 BARRIER SYSTEM GRADING SHAPING FINISHING	614.2500 MGS THRIE BEAM TRANSITION	614.2610 MGS GUARDRAIL TERMINAL EAT	*	*	*	*	628.2006 EROSION MAT URBAN CLASS I TYPE A	*	SEEDING MIXTURE NO. 30	
LOCATION				(LF)	(TON)	(EACH)	(LF)	(EACH)	EXCAVATION COMMON (CY)	FILL (CY)	BORROW (CY)	TOPSOIL (SY)	(SY)	FERTILIZER TYPE B (CWT)	(LB)	
529+41	to	BRIDGE	LT	75	2	1	39.5	1	14.5	15.0	0.5	140	140	0.09	3	
529+41	to	BRIDGE	RT	75	2	1	39.5	1	14.5	15.0	0.5	140	140	0.09	3	
B-53-168																
BRIDGE	to	531+89	LT	75	2	1	39.5	1	11.2	10.0	-	70	70	0.05	2	
BRIDGE	to	531+89	RT	75	2	1	39.5	1	11.2	10.0	-	140	140	0.09	3	
871+85	to	BRIDGE	LT	75	2	1	39.5	1	4.4	26.7	22.3	145	145	0.10	3	
871+79	to	BRIDGE	RT	75	2	1	39.5	1	4.4	26.7	22.3	85	85	0.06	2	
B-53-160																
BRIDGE	to	874+01	LT	75	2	1	39.5	1	8.0	19.4	11.4	70	70	0.05	2	
BRIDGE	to	873+96	RT	75	2	1	39.5	1	8.0	19.4	11.4	125	125	0.08	3	
				600	16	8	316	8	915							

* NON-BID ITEM, ITEMS AND QUANTITIES LISTED FOR BID INFORMATION ONLY , ITEMS INCIDENTAL TO BARRIER SYSTEM GRADING SHAPING FINISHING.

EROSION CONTROL AND RESTORATION											
624.0100 WATER		625.0500 SALVAGED TOPSOIL *	628.1104 EROSION BALES	628.1504 SILT FENCE	628.1520 SILT FENCE MAINTENANCE	628.1905 MOBILIZATIONS EROSION CONTROL	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL	628.7504 TEMPORARY DITCH CHECKS	628.7570 ROCK BAGS	630.0130 SEEDING MIXTURE NO. 30 *	630.0200 SEEDING TEMPORARY **
LOCATION	(MGAL)	(SY)	(EA)	(LF)	(LF)	(EACH)	(EACH)	(LF)	(EA)	(LB)	(LB)
UNDISTRIBUTED	86	60	12	1200	1200	2	2	100	30	2	5
TOTALS	86	60	12	1200	1200	2	2	100	30	2	5

* ITEM TO BE USED FOR DISTURBED AREAS **NOT** RELATED TO BARRIER SYSTEM GRADING SHAPING FINISHING (SEE EROSION CONTROL GENERAL NOTE 1)

* ITEM TO BE USED FOR STOCKPILE STABILIZATION (SEE EROSION CONTROL GENERAL NOTE 2)

ALL ITEMS ON THIS PAGE ARE CATEGORY 0010

PERMANENT SIGNING		
	634.0618	638.2102
	POSTS	MOVING
	WOOD	SIGNS
	4x6-INCH	TYPE II
	x 18-FT	
LOCATION	(EA)	(EA)
UNDISTRIBUTED PASSING ZONE RELOCATIONS	10	10
TOTALS	10	10

PAVEMENT MARKING										
			646.1020		646.3020		646.4505		646.6120	
			MARKING LINE		MARKING LINE		MARKING LINE		MARKING LINE	
			EPOXY		EPOXY		SAME DAY		STOP LINE	
			4-INCH		8-INCH		PAINT		EPOXY	
							4-INCH		18-INCH	
LOCATION *	x		WHITE		YELLOW		WHITE		YELLOW	
			(LF)	x	(LF)		(LF)	x	(LF)	(MI)
105+55 to 115+00	2		1890	1.25	1181	-	1.08	1021	-	-
115+00 to 156+37	2		8274	0.25	1034	-	0.08	331	-	-
NET EXCEPTION										
287+85 to 304+00	2		3230	1.25	2019	-	1.08	1744	-	-
304+00 to 320+00	2		3200	0.25	400	-	0.08	128	-	-
320+00 to 336+00	2		3200	1.25	2000	-	1.08	1728	-	-
336+00 to 344+00	2		1600	2	1600	-	2	1600	-	-
344+00 to 367+00	2		4600	1.25	2875	-	1.08	2484	-	-
367+00 to 382+00	2		3000	2	3000	-	2	3000	-	-
382+00 to 393+00	2		2200	1.25	1375	-	1.08	1188	-	-
393+00 to 402+00	2		1800	0.25	225	-	0.08	72	-	-
402+00 to 440+00	2		7600	1.25	4750	-	1.08	4104	-	-
440+00 to 450+00	2		2000	0.25	250	-	0.08	80	-	-
450+00 to 460+00	2		2000	1.25	1250	-	1.08	1080	-	-
460+00 to 469+00	2		1800	2	1800	-	2	1800	-	-
469+00 to 475+00	2		1200	1.25	750	-	1.08	648	-	-
475+00 to 487+14	2		2428	0.25	304	-	0.08	97	-	-
NET EXCEPTION										
511+59 to 518+00	2		1282	2	1282	-	2	1282	-	-
518+00 to 542+00	2		4800	1.25	3000	-	1.08	2592	-	-
542+00 to 567+00	2		5000	2	5000	-	2	5000	-	-
567+00 to 578+00	2		2200	1.25	1375	-	1.08	1188	-	-
578+00 to 598+00	2		4000	0.25	500	-	0.08	160	-	-
598+00 to 609+00	2		2200	1.25	1375	-	1.08	1188	-	-
609+00 to 637+00	2		5600	2	5600	-	2	5600	-	-
637+00 to 659+00	2		4400	1.25	2750	-	1.08	2376	-	-
659+00 to 702+00	2		8600	2	8600	-	2	8600	-	-
702+00 to 712+00	2		2000	1.25	1250	-	1.08	1080	-	-
712+00 to 738+55	2		5310	0.25	664	-	0.08	212	-	-
NET EXCEPTION										
738+85 to 748+00	2		1830	0.25	229	-	0.08	73	-	-
748+00 to 758+00	2		2000	1.25	1250	-	1.08	1080	-	-
758+00 to 763+00	2		1000	2	1000	-	2	1000	-	-
763+00 to 815+00	2		10400	1.25	6500	-	1.08	5616	-	-
815+00 to 821+00	2		1200	2	1200	-	2	1200	-	-
821+00 to 852+00	2		6200	1.25	3875	-	1.08	3348	-	-
852+00 to 905+00	2		10600	0.25	1325	-	0.08	424	-	-
905+00 to 910+00	2		1000	1.25	625	-	1.08	540	-	-
910+00 to 916+43	2		1286	2	1286	-	2	1286	-	-
ATKINSON RD			65		-	50		-	-	-
HAMMER RD			65		-	-		-	-	-
HOLT RD			-		-	-		-	20	-
PROJECT			-		-	-		-	-	12.40
TOTALS			204559			50		64951	20	12.40

* LOCATIONS OF PASSING ZONES GIVEN FOR ESTIMATION ONLY. ACTUAL MARKINGS IN THE FIELD TO BE BASED ON LOCATION NO-PASSING ZONES.

ALL ITEMS ON THIS PAGE ARE CATEGORY 0010

TRAFFIC CONTROL

			643.0300		643.1050		643.0310.S		643.0420		643.0705		643.0900		643.0920		643.5000	
			TC		TC		TEMPORARY		TC		TC		TC		TC		TC	
			DRUMS		SIGNS		PORTABLE		BARRICADES		WARNING		SIGNS		COVERING			
					PCMS		RUMBLE		TYPE III		LIGHTS				SIGNS			
							STRIPS				TYPE A				TYPE II			
															*			
STAGE	DURATION	#	(DAY)	#	(DAY)	(LS)	#	(DAY)	#	(DAY)	#	(DAY)	#	(DAY)	(EACH)	(EACH)		
STAGE 1 DETOUR	30	-	-	2	14	-	30	900	60	1800	171	5130	12	-				
STAGE 2 DETOUR	40	-	-	2	14	-	38	1520	76	3040	197	7880	8	-				
FLAGGING AT STH 59	3	-	-	-	-	1	-	-	-	-	10	30	-	-				
GUARDRAIL INSTALLATION	20	16	112	-	-	-	-	-	-	-	4	80	-	-				
UNDISTRIBUTED				-	-	-	-	-	-	-	6	420	4	1				
TOTALS				112	28	1		2,420		4,840		8,410	24	1				

* SIGNS TO BE COVERED FOR THE DURATION OF EACH STAGE, NO ADDITIONAL CYCLES

SAWING

		690.0150
		SAWING
		ASPHALT
LOCATION	(LF)	
105+55	24	
156+37	24	
NET EXCEPTION		
287+85	24	
487+14	24	
NET EXCEPTION		
511+59	24	
738+55	24	
NET EXCEPTION		
738+85	24	
916+43	24	
ST JOHN RD	30	
W FOOTVILLE BRODHEAD RD	30	
CTH B	30	
ATKINSON RD	30	
W TOWNSEND RD	30	
BUMP RD	30	
CTH A	30	
WI-59 WEST	30	
W FINNERNAN RD	30	
HAMMER RD	31	
DUNPHY RD	30	
ENGLISH SETTLEMENT RD	30	
W MILBRANDT RD	30	
W CROFT RD	30	
BROOKLYN-ALBANY RD	30	
CTH C WEST	30	
CTH C EAST	30	
ELMER RD	30	
W EMERY RD	30	
YARWOOD RD	30	
KING RD	30	
W EVANSVILLE BROOKLYN RE	30	
AMIDON RD	30	
HOLT RD	30	
RAILROAD ST	30	
TOTALS	943	

CONSTRUCTION STAKING

		650.8000	650.9910	SPV.0060.01	SPV.0060.02
		RESURFACING	SUPPLEMENTAL	VERIFY	LANDMARK
		REFERENCE	CONTROL	LANDMARK	REFERENCE
			(5320-02-60)	REFERENCE	MONUMENTS
LOCATION	(LF)	(LS)	(EA)	MONUMENTS	SPECIAL
105+55 to 156+37	5082	-	-	-	-
NET EXCEPTION					
287+85 to 487+14	19929	-	-	-	-
NET EXCEPTION					
511+59 to 738+55	22696	-	-	-	-
NET EXCEPTION					
738+85 to 916+43	17758	-	-	-	-
105+00	-1.0	-	-	1	-
120+13	-14.3	-	-	1	-
131+38	0.7	-	-	1	-
146+37	-13.7	-	-	1	-
302+46	-18.6	-	-	1	-
313+48	-10.0	-	-	1	-
328+90	-17.0	-	-	1	-
340+12	-8.6	-	-	1	-
355+08	-11.2	-	-	1	-
366+75	0.6	-	-	1	-
381+45	-5.5	-	-	1	-
393+41	-1.3	-	-	1	-
407+83	-7.4	-	-	1	-
420+07	-1.3	-	-	1	-
434+16	1.6	-	-	1	-
446+76	2.8	-	-	1	-
460+49	3.4	-	-	1	-
473+45	-4.1	-	-	1	-
486+85	-14.1	-	-	1	-
513+21	-3.7	-	-	1	-
525+74	2.7	-	-	1	-

CONSTRUCTION STAKING

		650.8000	650.9910	SPV.0060.01	SPV.0060.02
		RESURFACING	SUPPLEMENTAL	VERIFY	LANDMARK
		REFERENCE	CONTROL	LANDMARK	REFERENCE
			(5320-02-60)	REFERENCE	MONUMENTS
LOCATION	(LF)	(LS)	(EA)	MONUMENTS	SPECIAL
539+37	-15.0	-	-	1	-
552+86	0.9	-	-	1	-
565+52	-20.4	-	-	1	-
574+81	0.8	-	-	1	-
591+93	-15.2	-	-	1	-
601+09	-3.4	-	-	1	-
618+22	-19.8	-	-	1	-
627+39	-5.3	-	-	1	-
644+68	-12.4	-	-	1	-
653+77	0.7	-	-	1	-
671+16	-15.4	-	-	1	-
680+13	-3.4	-	-	1	-
697+33	-7.7	-	-	1	-
706+21	3.0	-	-	1	-
723+52	-15.0	-	-	1	-
732+27	-2.1	-	-	1	-
758+67	-1.0	-	-	1	-
776+38	-19.9	-	-	1	-
785+11	1.1	-	-	1	-
802+68	-9.0	-	-	1	-
828+98	0.8	-	-	1	-
837+95	2.0	-	-	1	-
855+18	4.9	-	-	1	-
864+62	1.1	-	-	1	-
881+37	8.0	-	-	1	-
891+03	3.1	-	-	1	-
907+77	2.7	-	-	1	-
Project	-	1	-	-	2
TOTALS	65465	1	48	2	

ALL ITEMS ON THIS PAGE ARE CATEGORY 0010

PROJECT NO: 5320-02-60

HWY: STH 104

COUNTY: GREEN

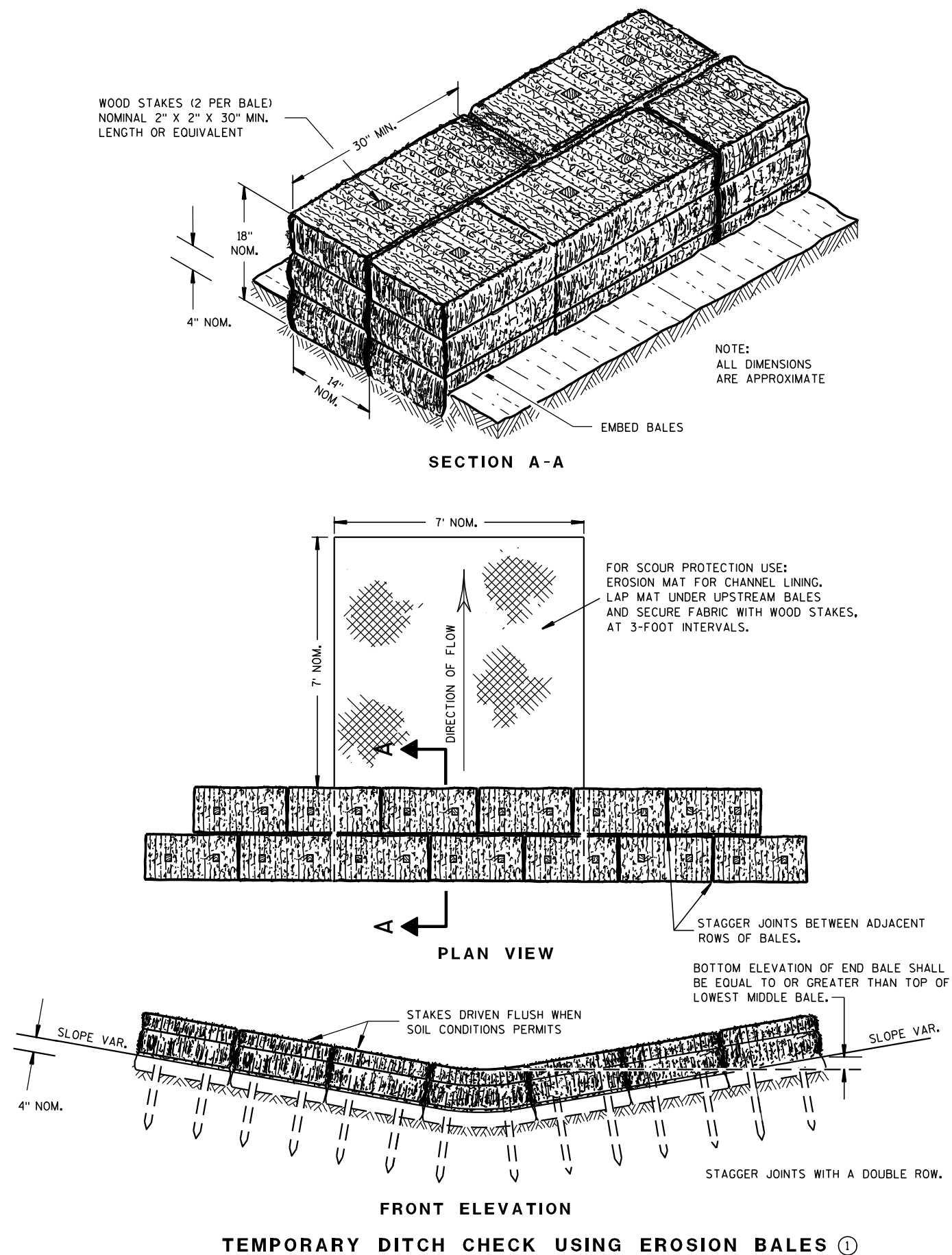
MISCELLANEOUS QUANTITIES

SHEET

E

Standard Detail Drawing List

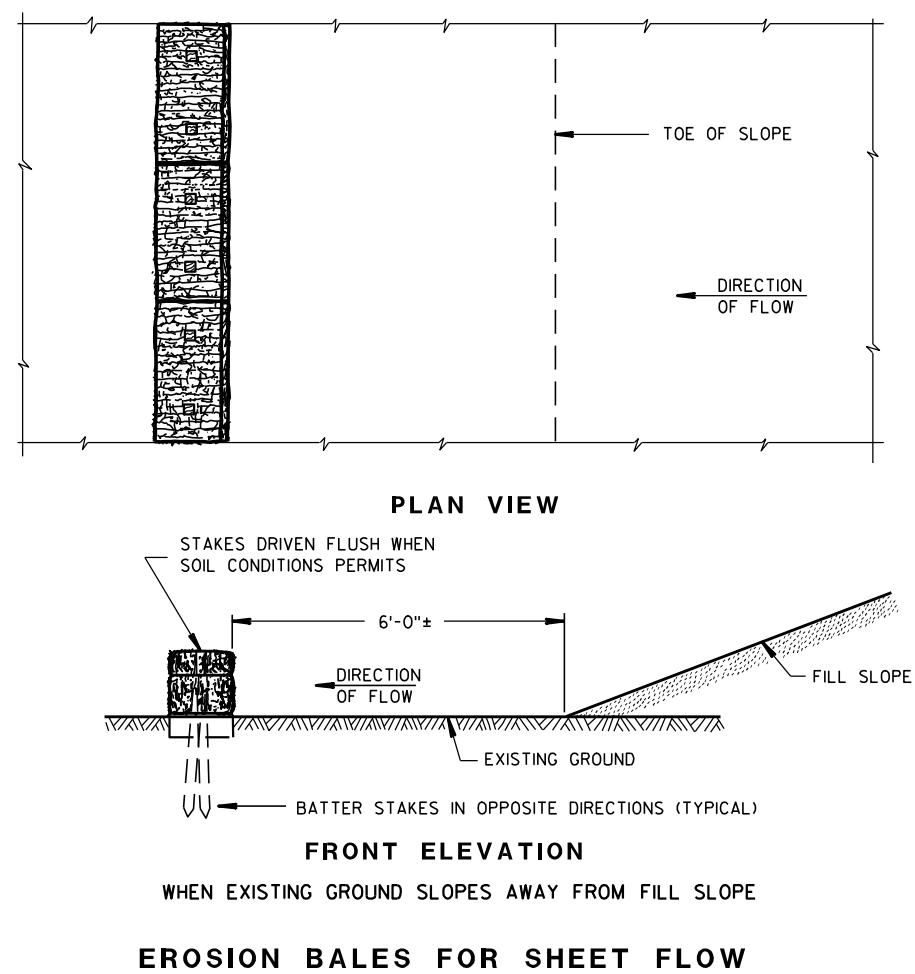
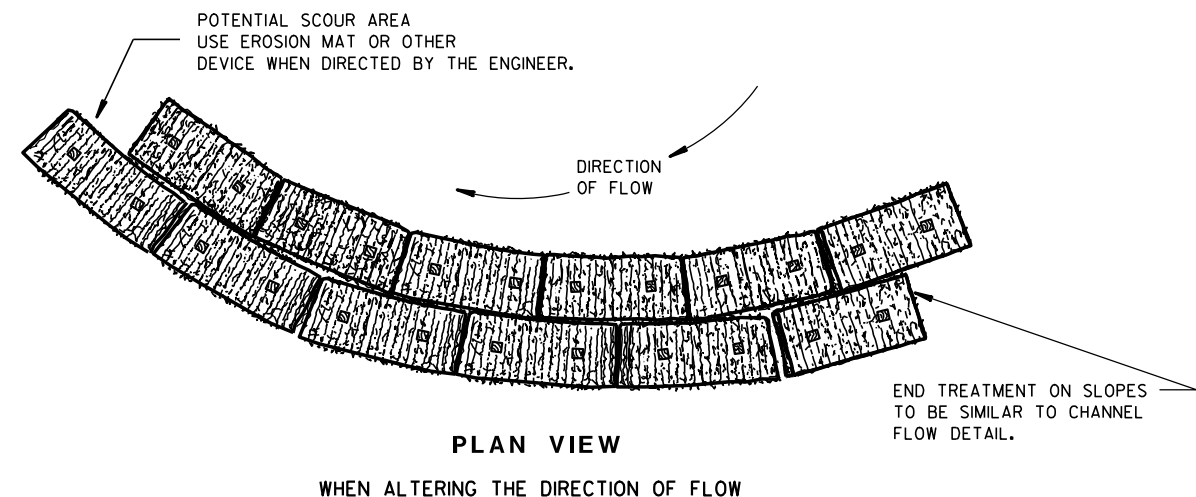
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
14B42-06A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-06D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C02-07A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-07C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-19A	LONGITUDINAL MARKING (MAINLINE)
15C11-07A	CHANNELIZING DEVICES FLEXIBLE TUBULAR MARKER POST
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-06	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C19-05A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15C33-03	STOP LINE AND CROSSWALK PAVEMENT MARKING
15C35-03A	PAVEMENT MARKING (INTERSECTIONS)
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS
15D39-02	TRAFFIC CONTROL, DROP-OFF SIGNING
16A01-07	LANDMARK REFERENCE MONUMENTS AND COVERS



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.

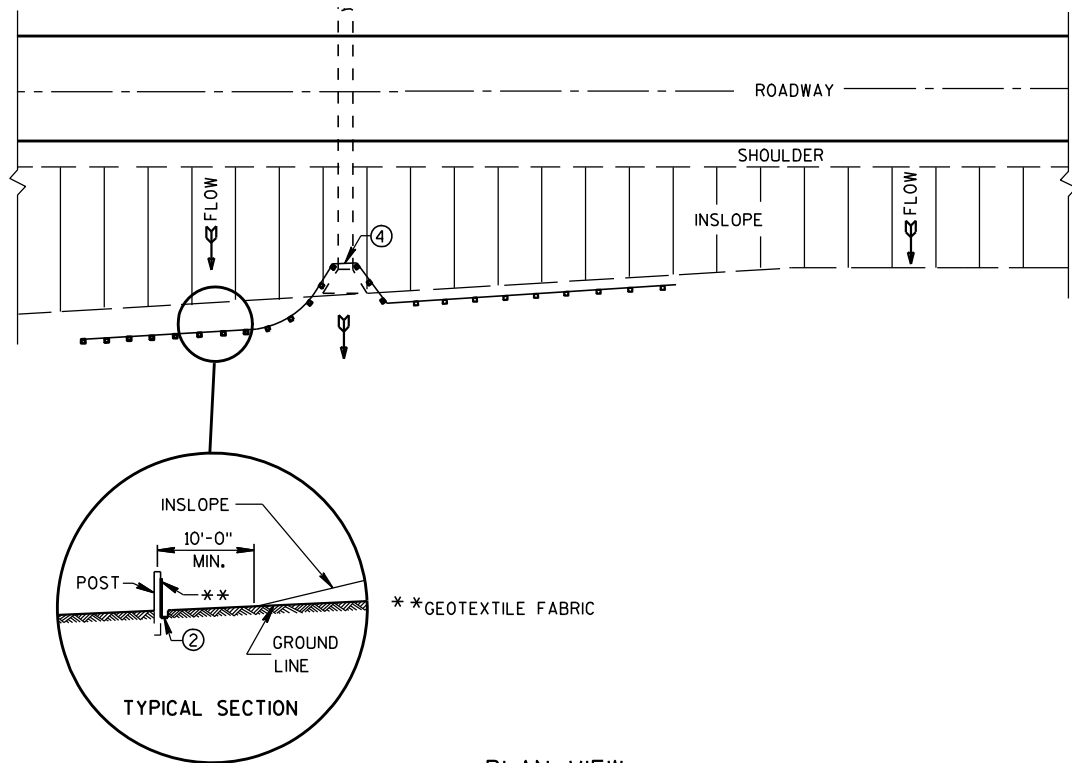
TYPICAL INSTALLATIONS OF
EROSION BALES / TEMPORARY
DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

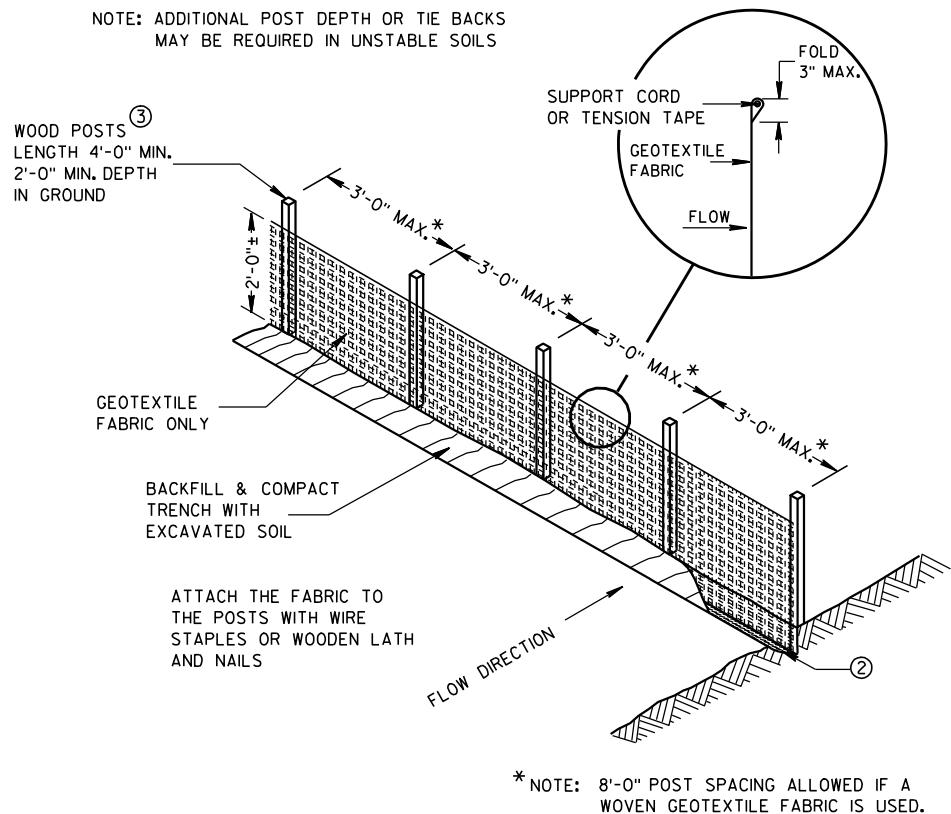
APPROVED

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

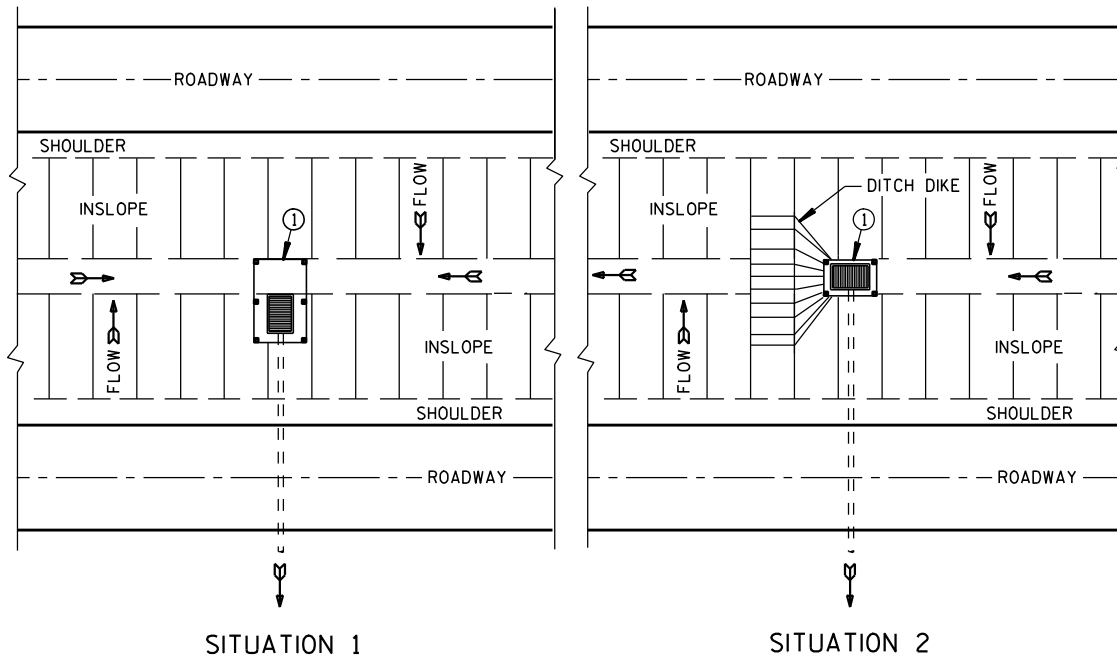
FHWA



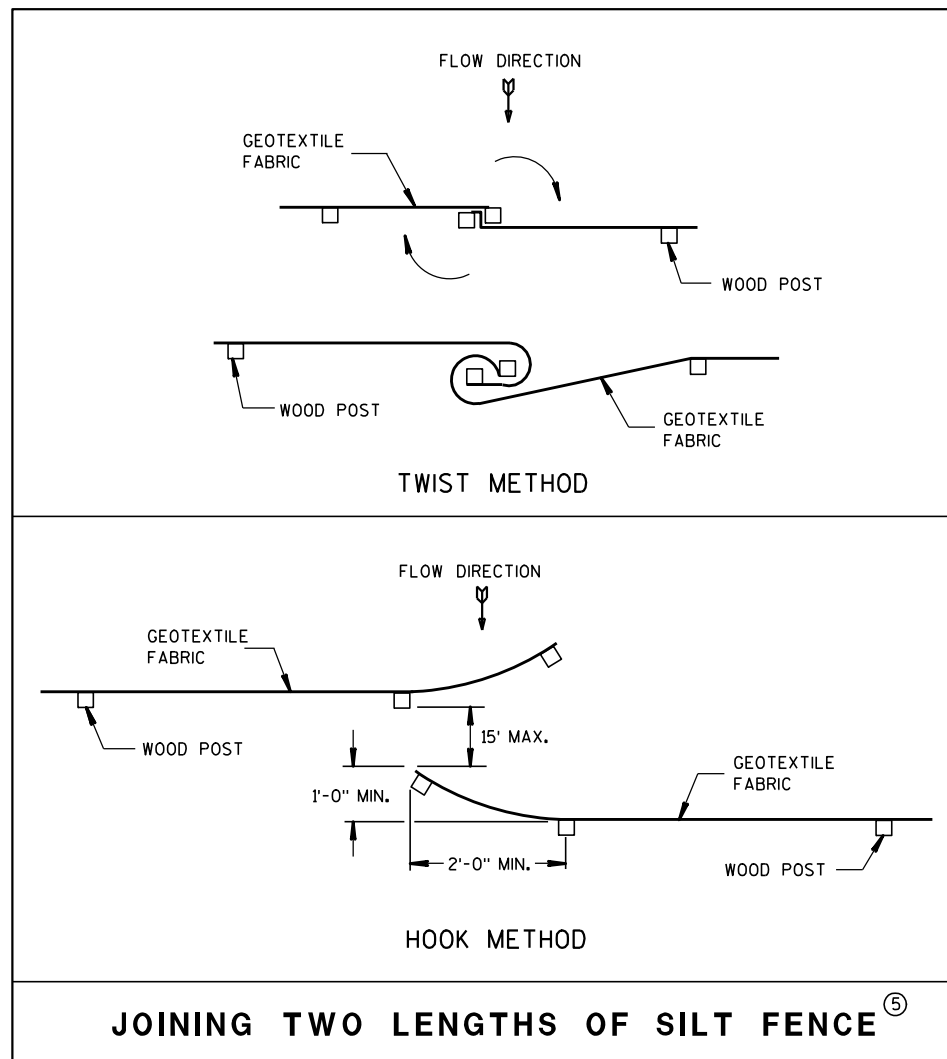
PLAN VIEW
TYPICAL APPLICATION OF SILT FENCE



SILT FENCE



PLAN VIEW
SILT FENCE AT MEDIAN SURFACE DRAINS

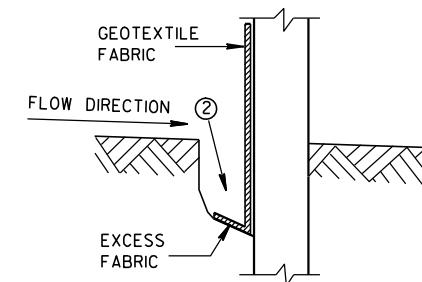


JOINING TWO LENGTHS OF SILT FENCE ⑤

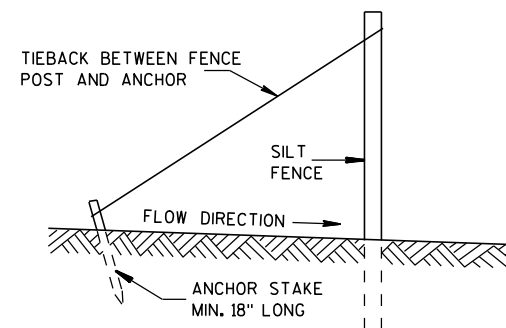
GENERAL NOTES

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

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



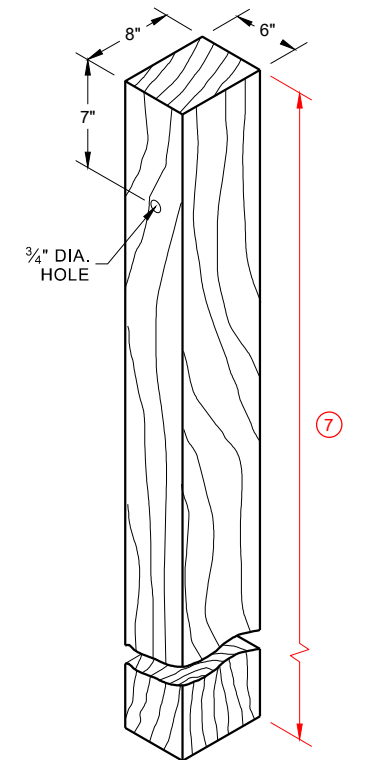
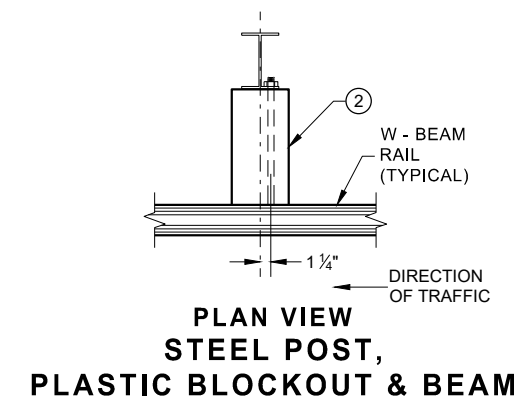
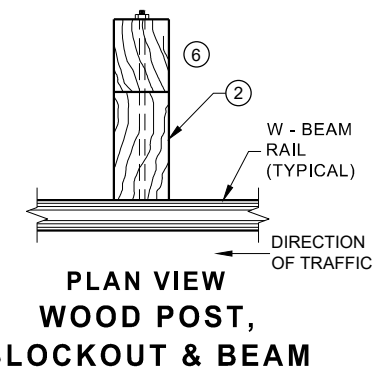
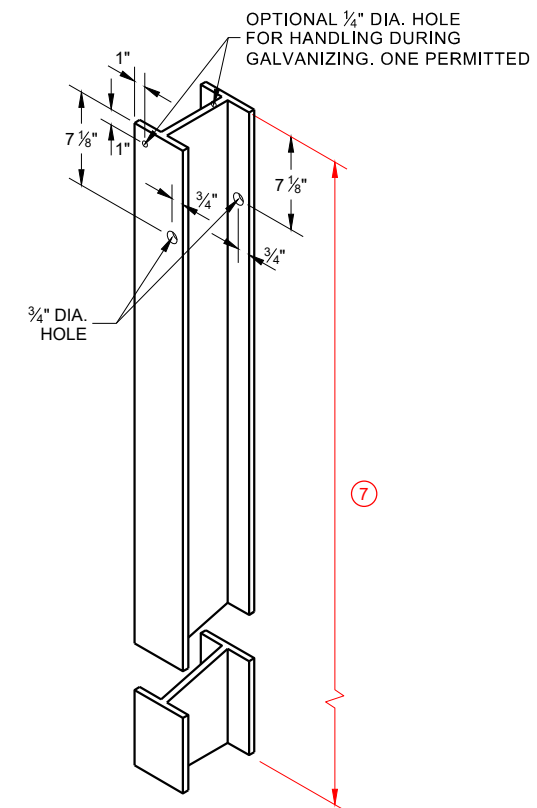
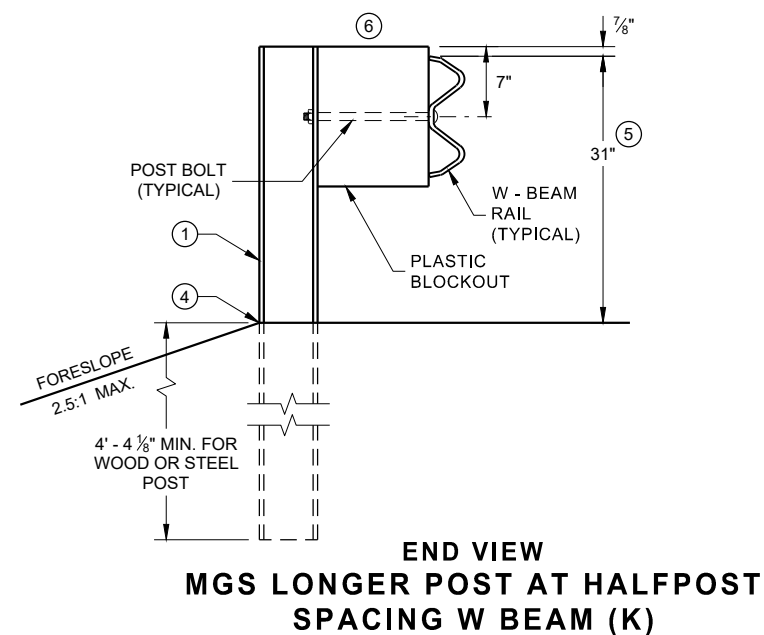
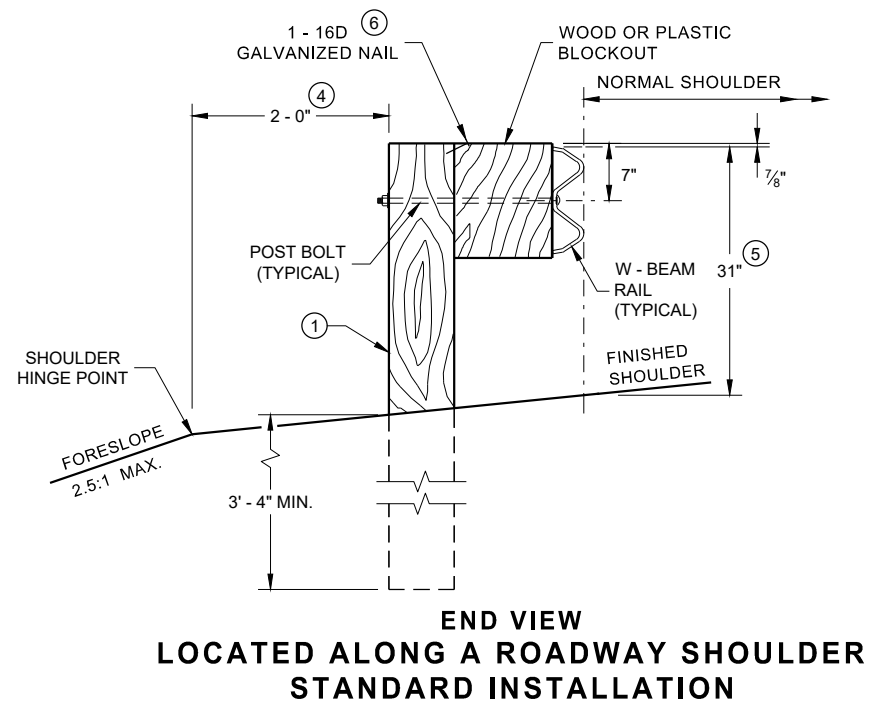
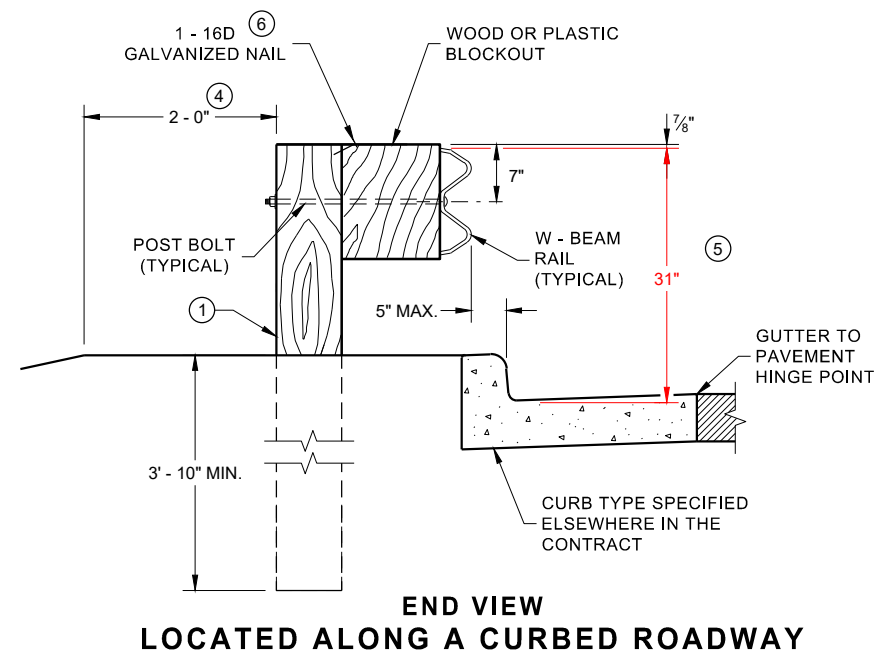
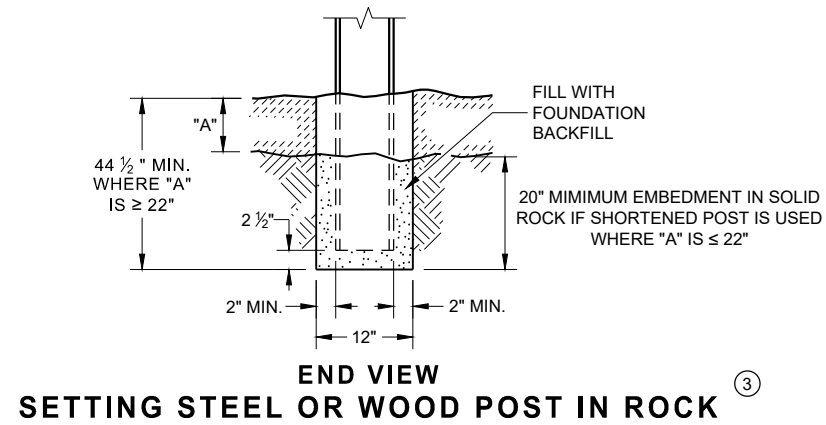
TRENCH DETAIL



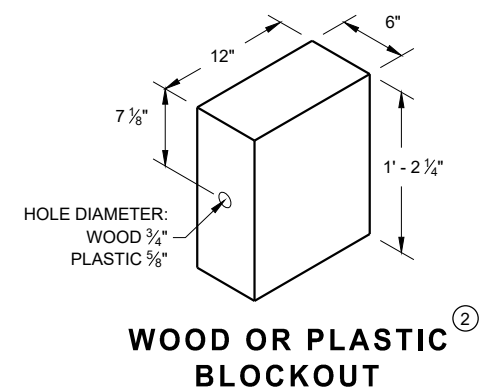
SILT FENCE TIE BACK
(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4-29-05 DATE	/S/ Beth Canestra CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	

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

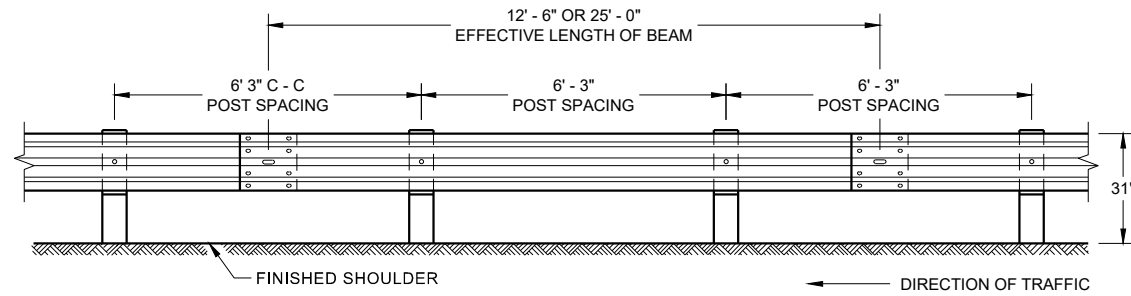


WOOD POST (6" X 8") NOMINAL ⁽¹⁾

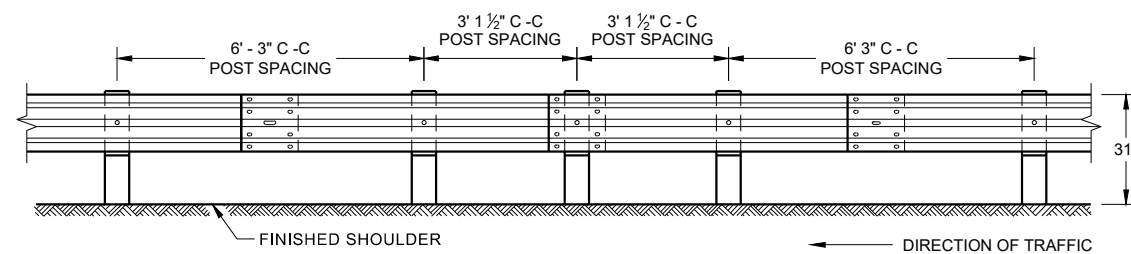


MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

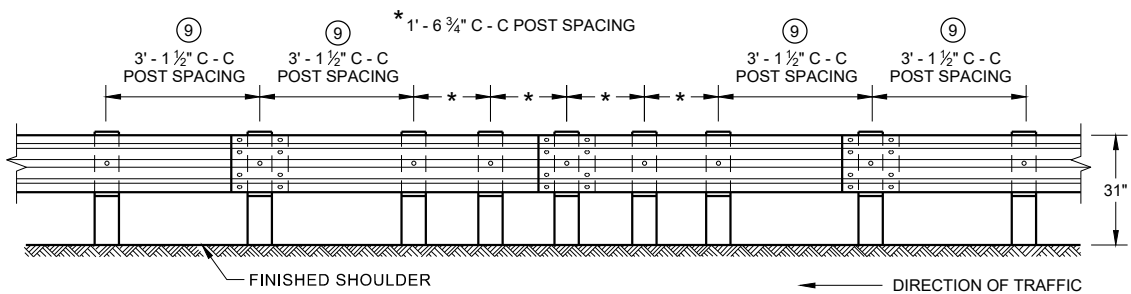
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



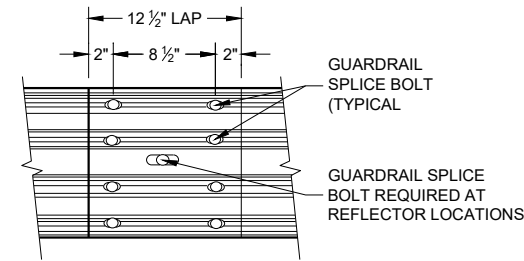
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



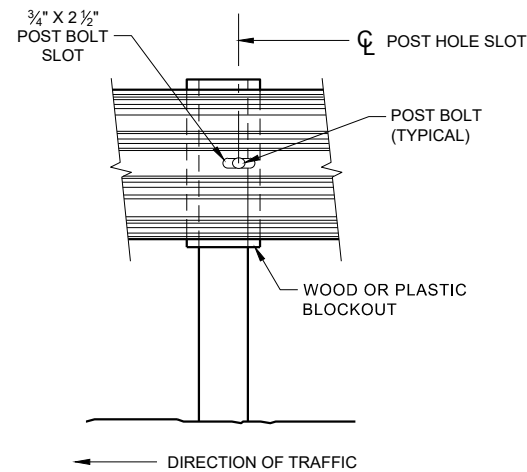
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



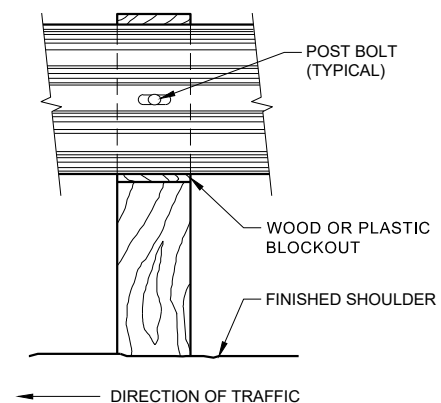
**FRONT VIEW
QUARTER POST SPACING (QS)**



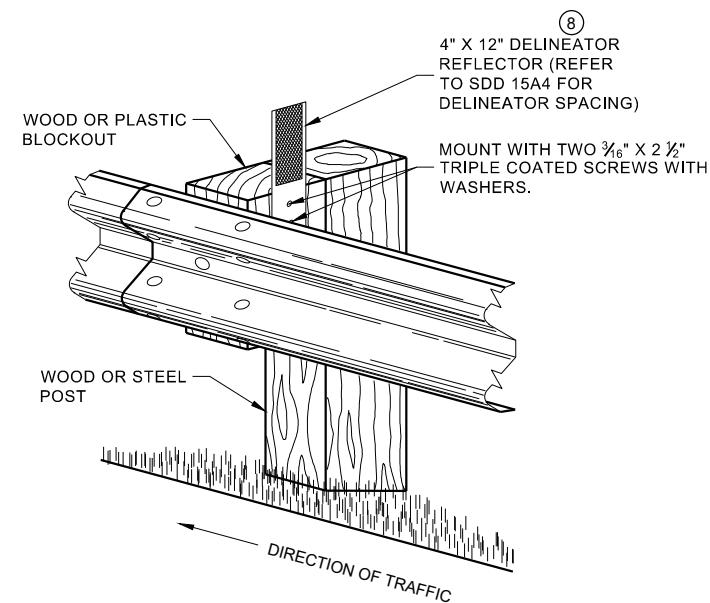
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



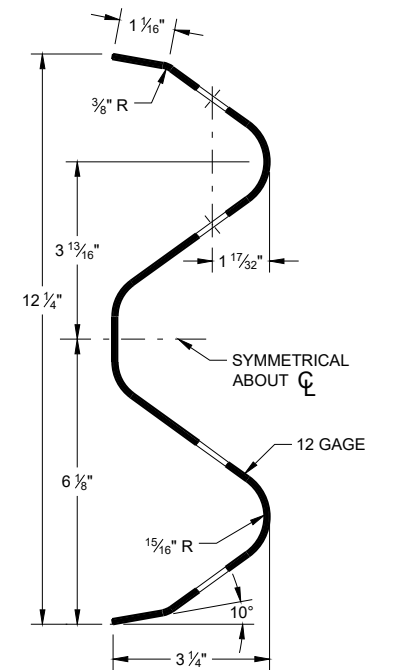
FRONT VIEW AT WOOD POST



**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

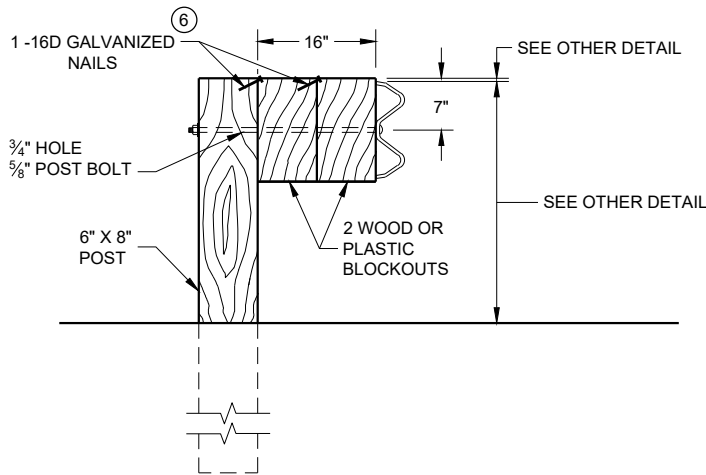
- 8 DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.
 - 9 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.
- POST BOLTS ARE A 3/8"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



SECTION THRU W-BEAM RAIL

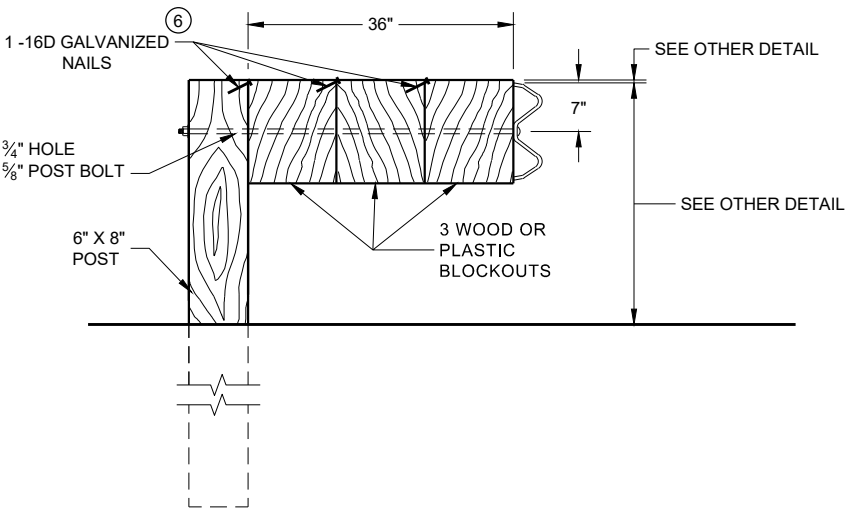
**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



DETAIL FOR 16" BLOCKOUT DEPTH

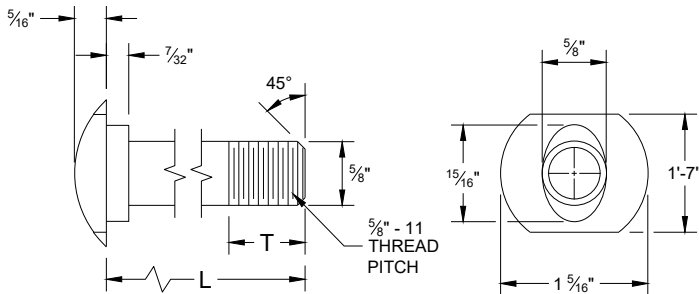
IT IS ACCEPTABLE TO USE BLOCKOUTS UP TO 16" DEEP TO INCREASE THE POST OFFSET TO AVOID UNDERGROUND OBSTACLES. THERE IS NO LIMIT TO THE NUMBER OF POSTS THAT CAN HAVE ADDITIONAL BLOCKOUTS UP TO 16" DEEP.



DETAIL FOR 36" BLOCKOUT DEPTH

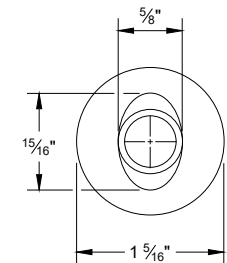
NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT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

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

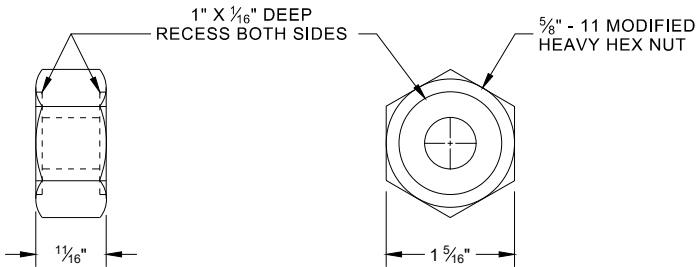


POST BOLT TABLE

L	T (MIN.)
1 $\frac{1}{4}$ "	1 $\frac{1}{8}$ "
2"	1 $\frac{3}{4}$ "
10"	4"
14"	4 $\frac{1}{16}$ "
18"	4"
21"	4 $\frac{1}{16}$ "
25"	4"

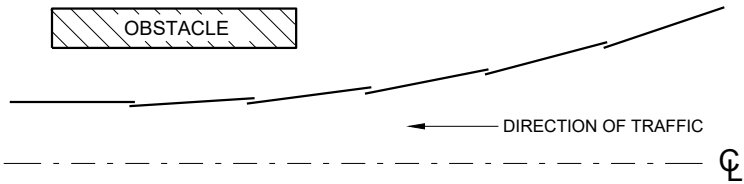


ALTERNATE BOLT HEAD

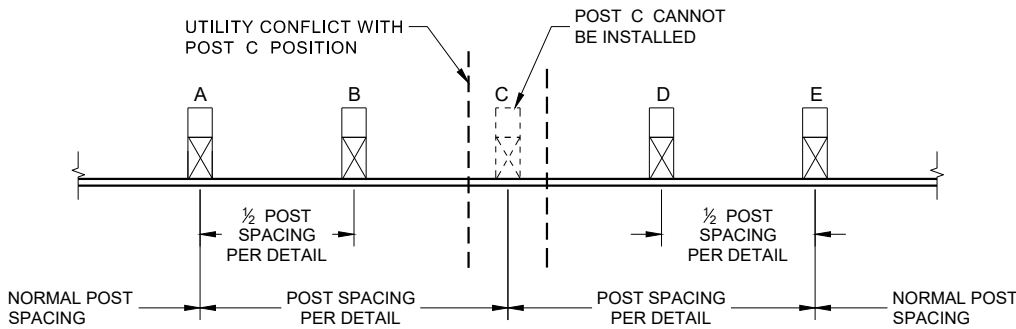


POST BOLT, SPLICE BOLT AND RECESS NUT

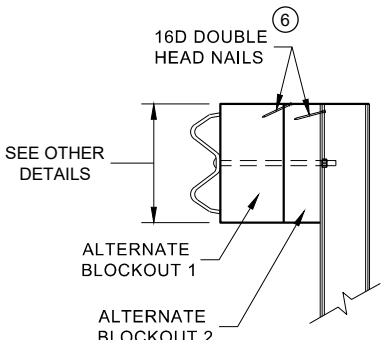
- ⑥ WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



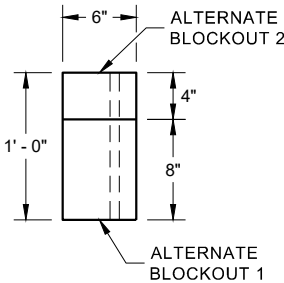
PLAN VIEW
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS
UNDERGROUND OBSTRUCTION



SIDE VIEW

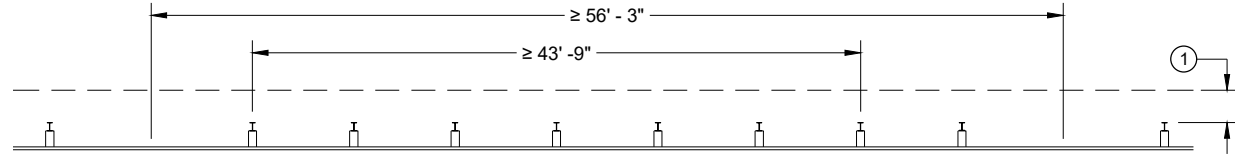


PLAN VIEW

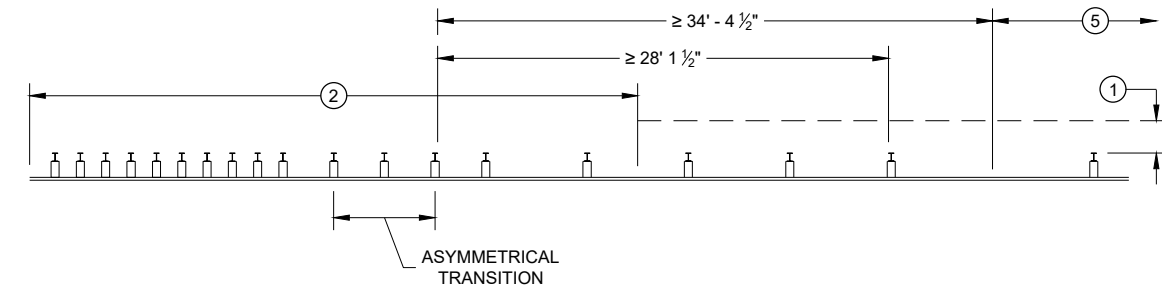
ALTERNATE WOOD
BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

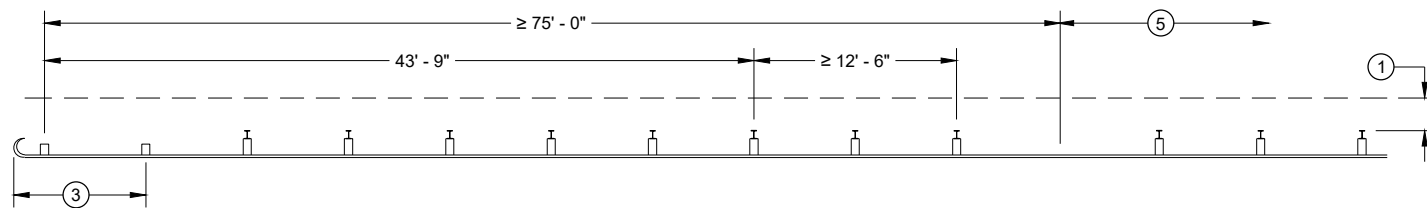
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



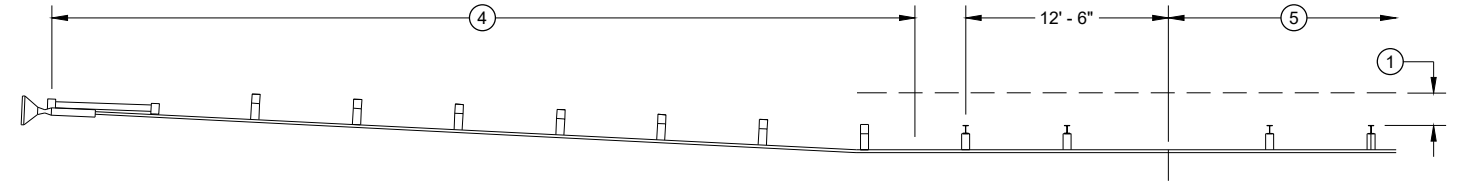
MISSING POST IN NORMAL BEAM GUARD RUN



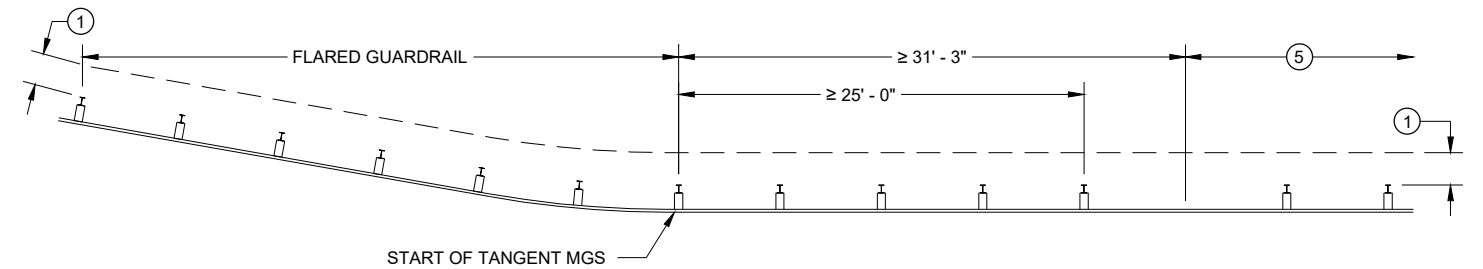
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



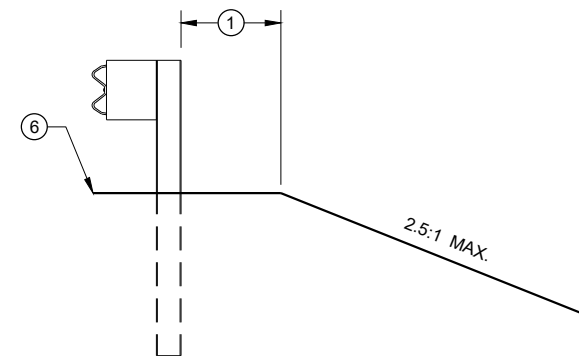
MISSING POST IN NORMAL BEAM GUARD RUN
NEAR TYPE 2 TERMINAL



MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



MISSING POST IN NORMAL BEAM GUARD RUN
NEAR FLARED BEAM GUARD



CROSS SECTION VIEW

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

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

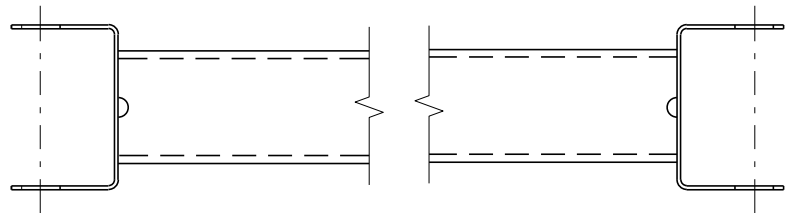
- (A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- (B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- (C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS.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

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

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

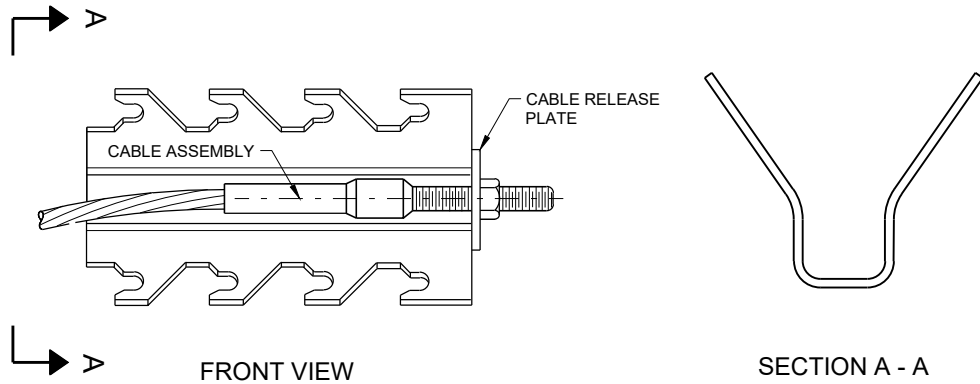


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

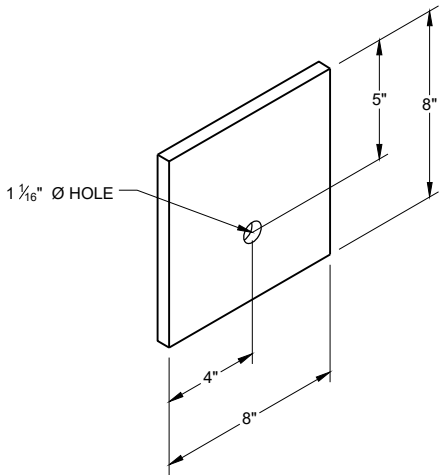


GENERIC GROUND STRUT⁹ ^E

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



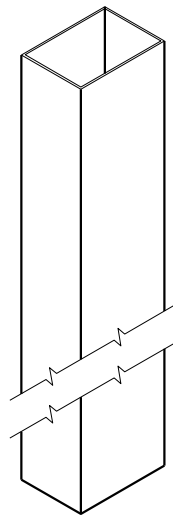
GENERIC ANCHOR CABLE BOX⁹ ^E



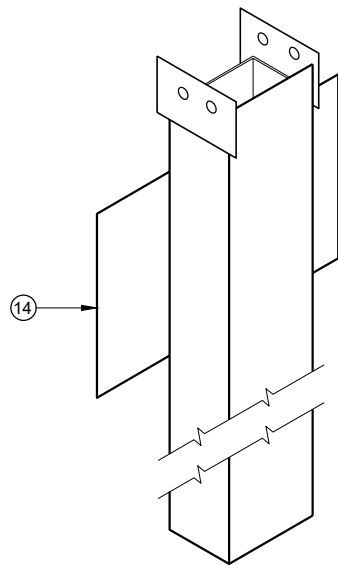
BEARING PLATE⁶ ^E

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

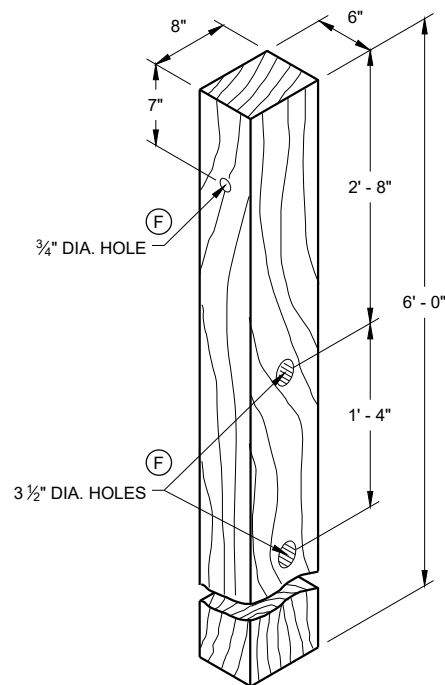
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



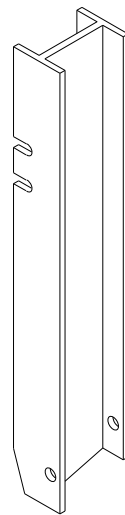
UPPER POST NO. 1^① (E)



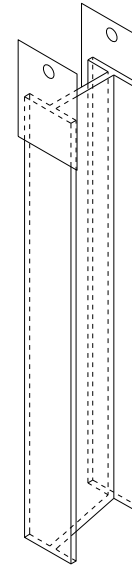
LOWER POST NO. 1^② (E)



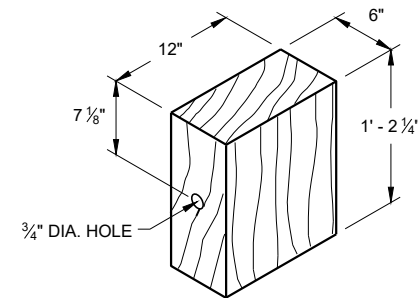
WOOD CRT POST^③ (E)
POSTS NUMBER 3-9



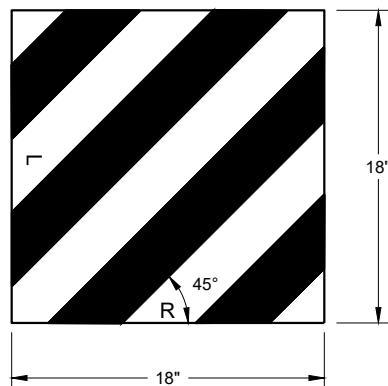
UPPER POST NO. 2^⑮ (E)



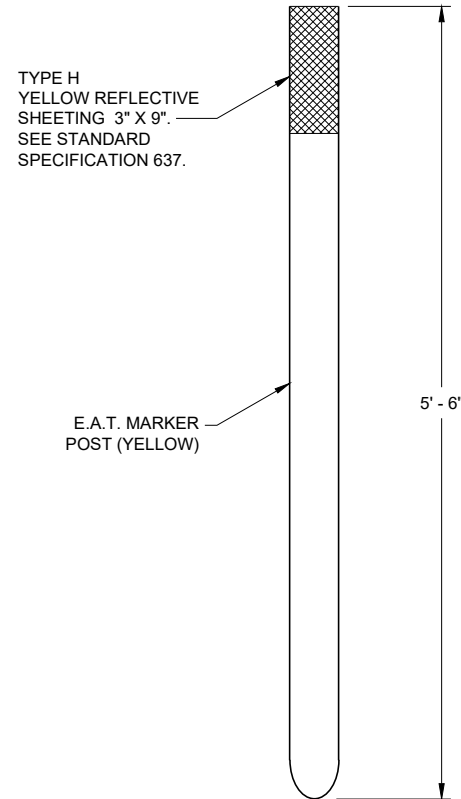
LOWER POST NO. 2^⑯ (E)



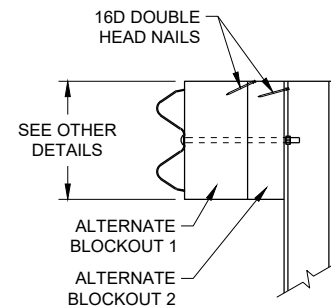
WOOD BLOCKOUT^④
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



REFLECTIVE SHEETING DETAIL^⑤

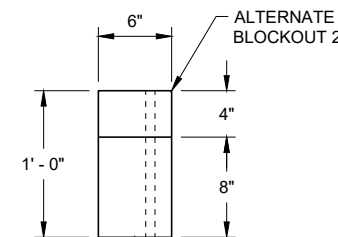


E.A.T. MARKER POST^⑬



SIDE VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

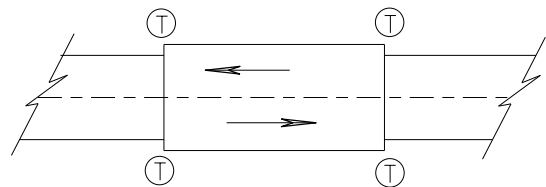


TOP VIEW

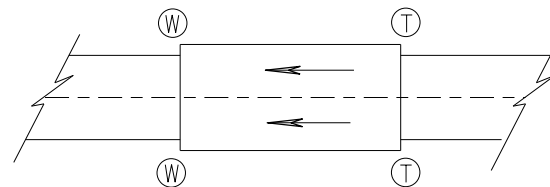
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



TWO WAY TRAFFIC



ONE WAY TRAFFIC

(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

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

TRANSITION USES STEEL POSTS ONLY.

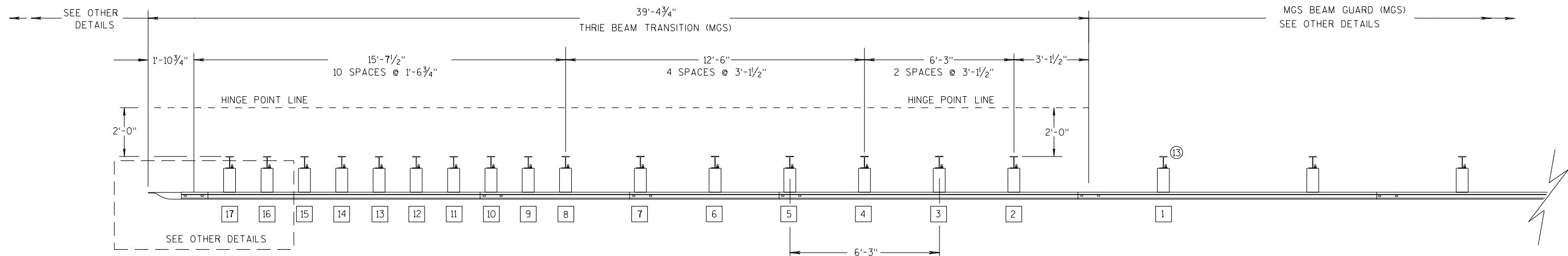
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

POST 2 THROUGH 17 USES STEEL POST ONLY

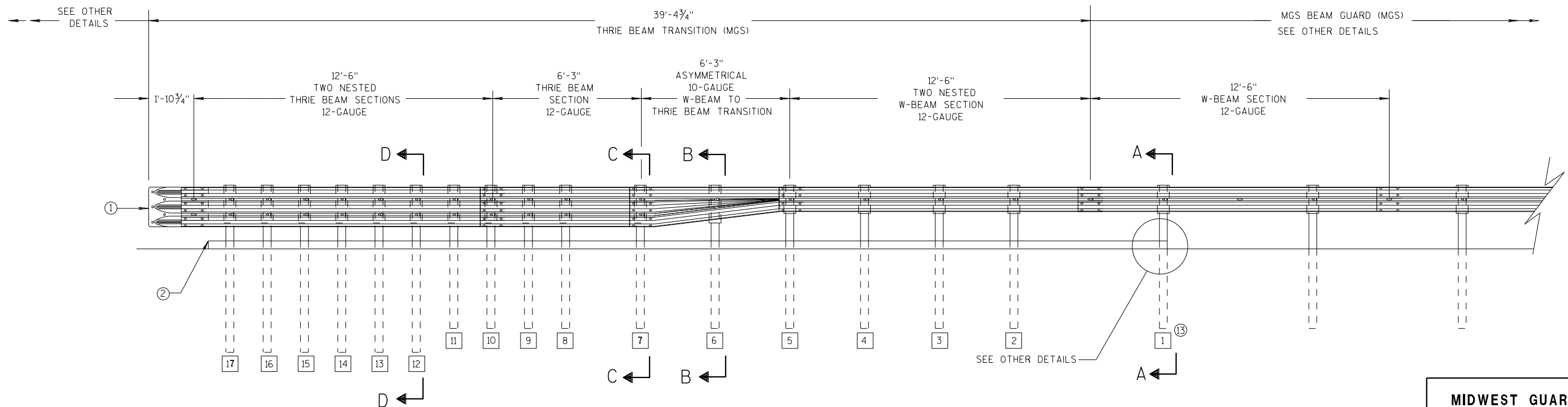
① BRIDGE RAILING TYPE "W" DOES NOT REQUIRE A TERMINAL CONNECTOR.

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

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



PLAN VIEW



ELEVATION VIEW

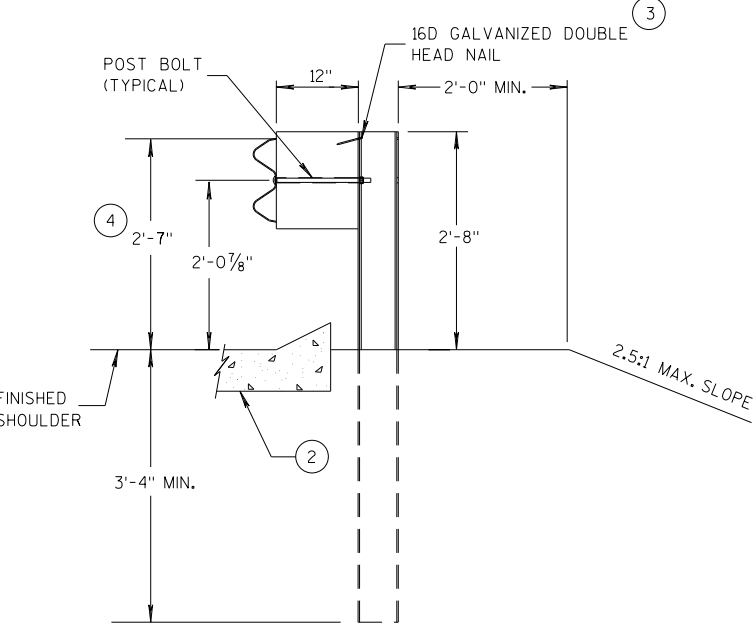
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

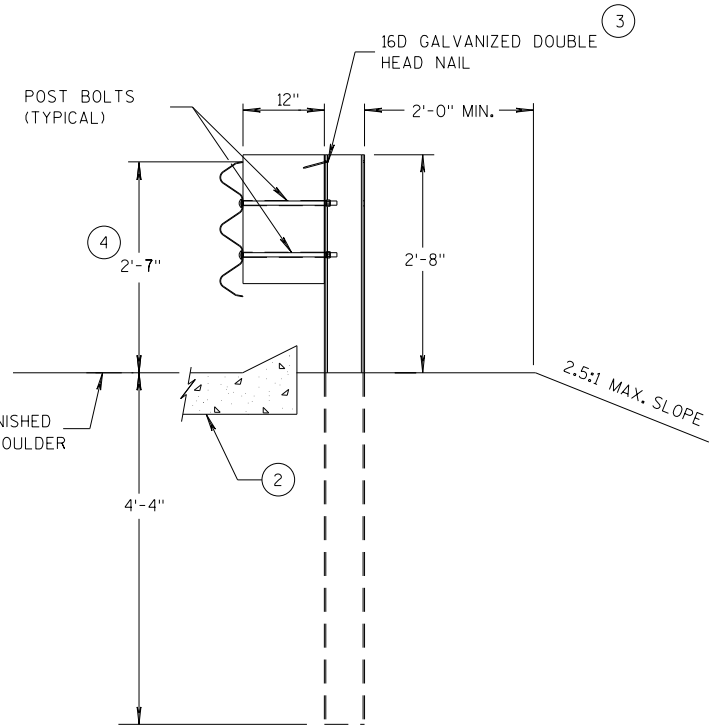
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

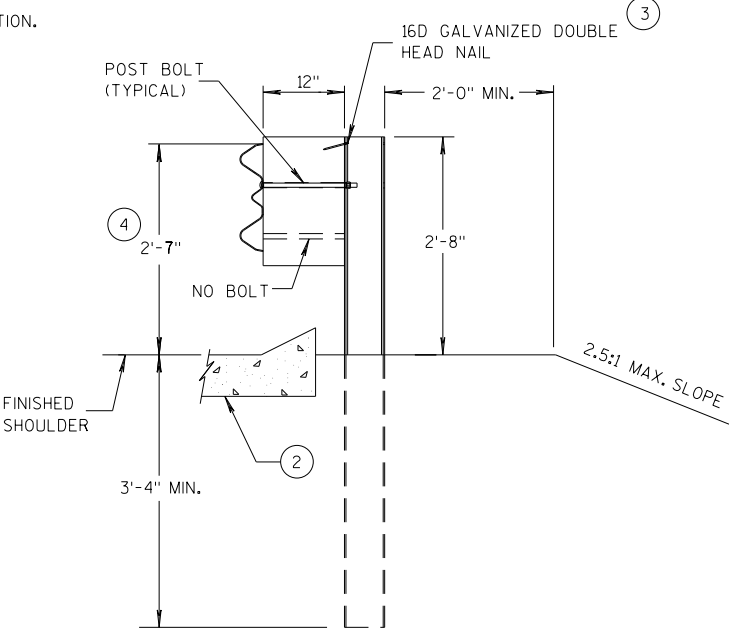
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



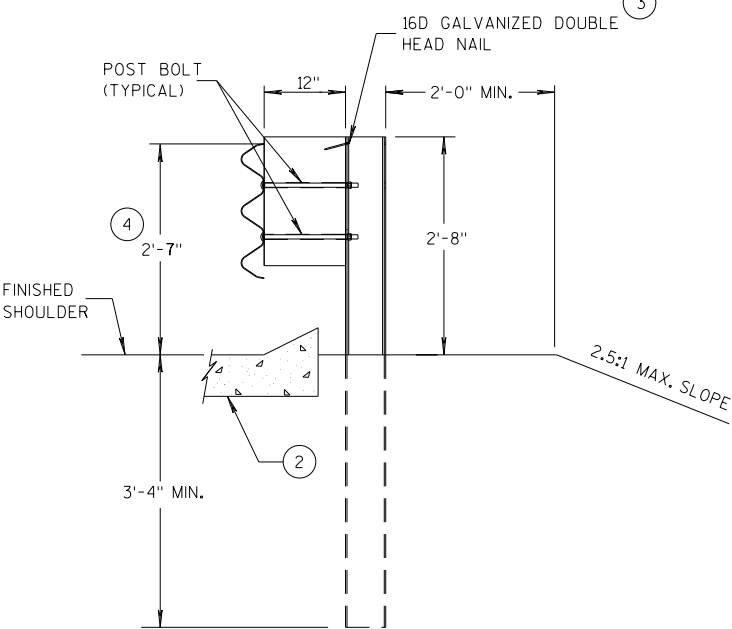
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

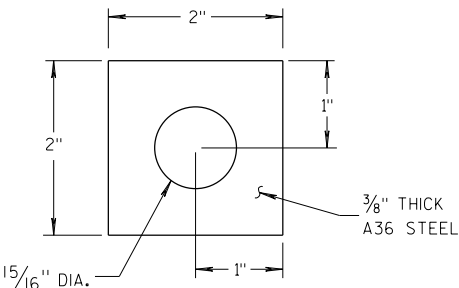
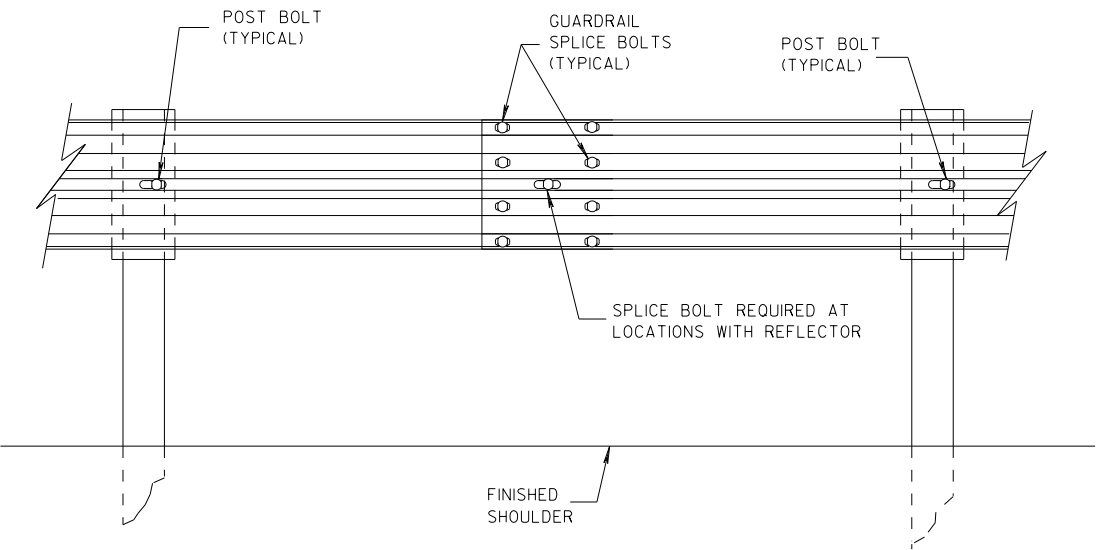
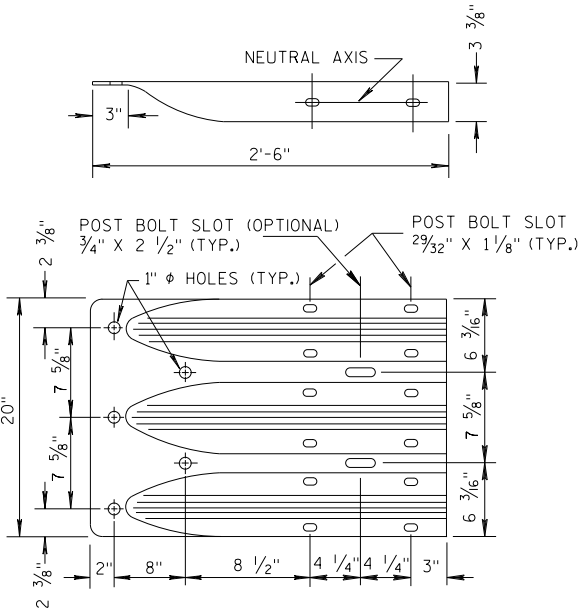


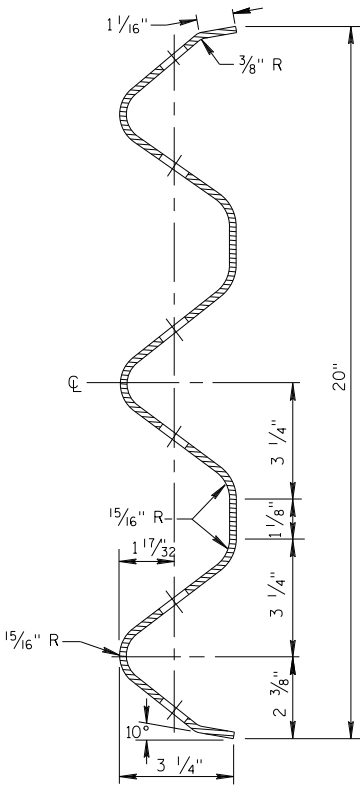
PLATE WASHER DETAIL



SPLICE DETAIL



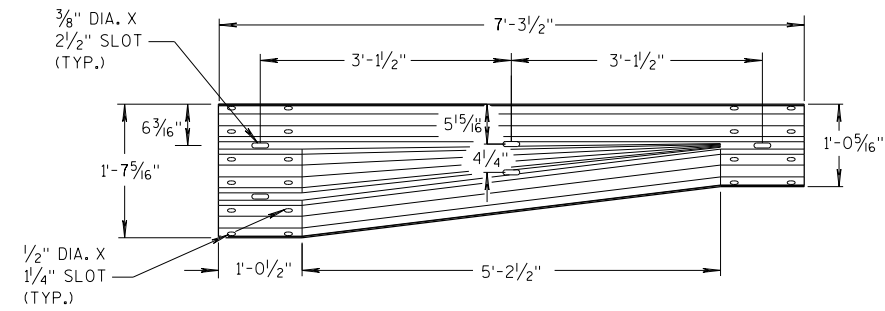
THRIE BEAM
TERMINAL CONNECTOR



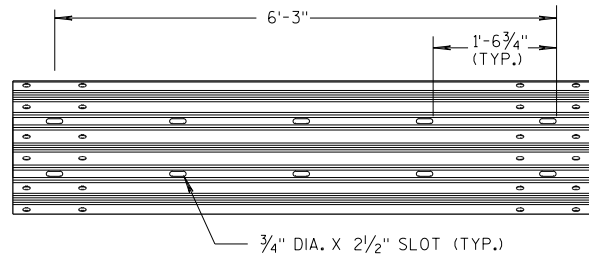
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

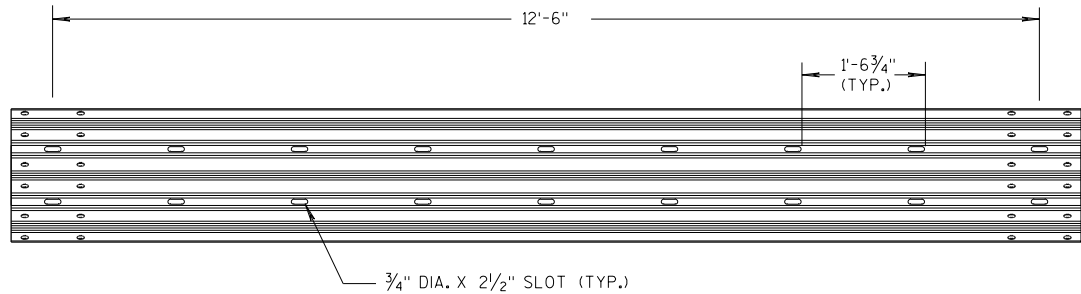
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



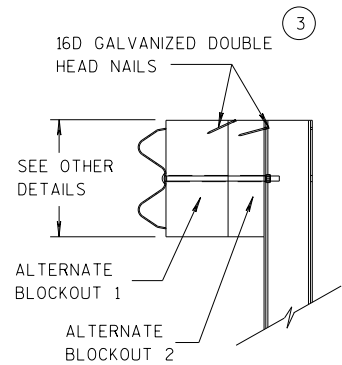
W-BEAM TO THRIE BEAM TRANSITION SECTION



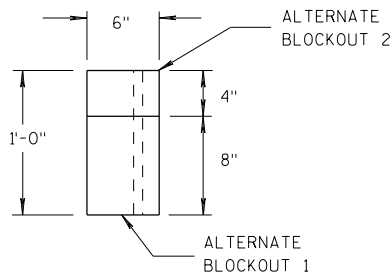
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

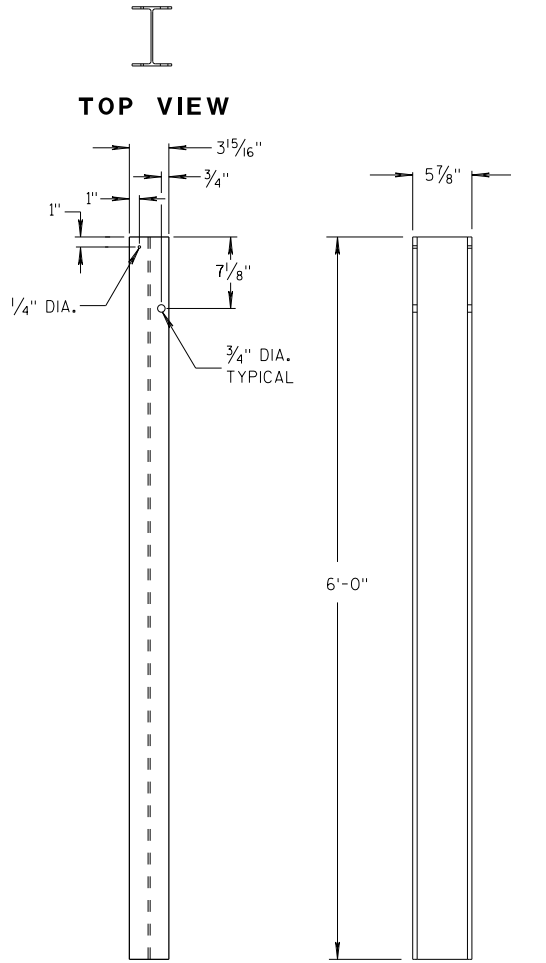


SIDE VIEW



TOP VIEW

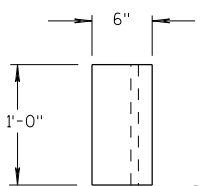
ALTERNATE WOOD BLOCKOUT DETAIL



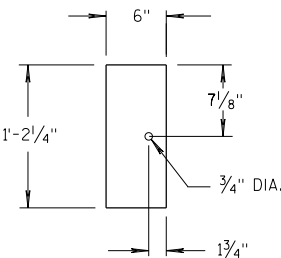
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

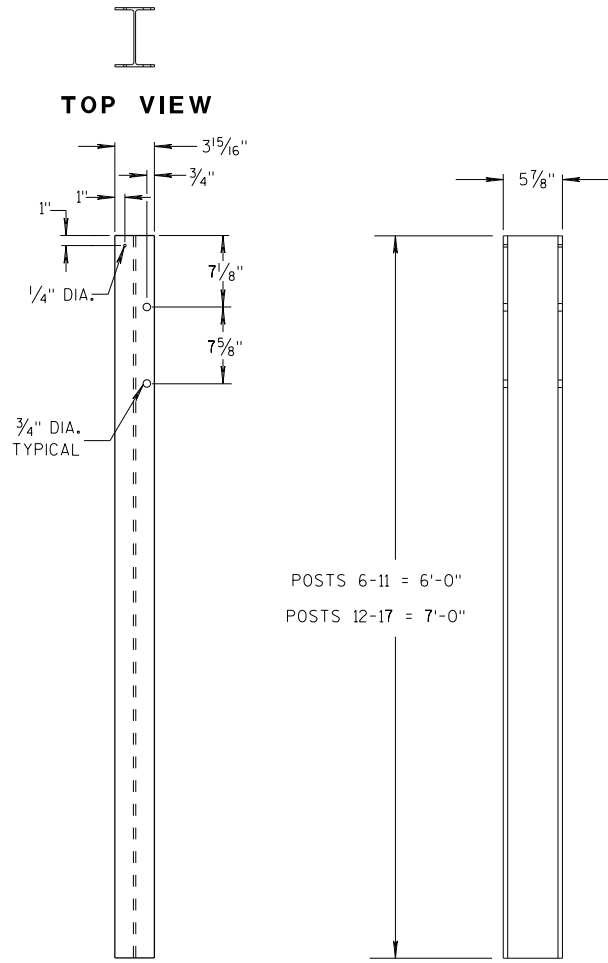


TOP VIEW



FRONT VIEW

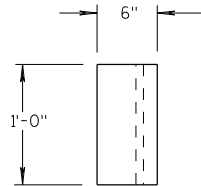
BLOCKOUT POSTS 1-5



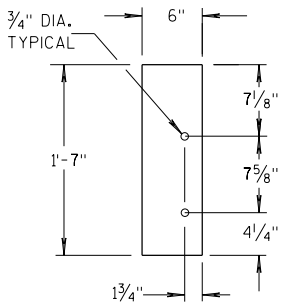
FRONT VIEW

SIDE VIEW

STEEL POSTS 6-17



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

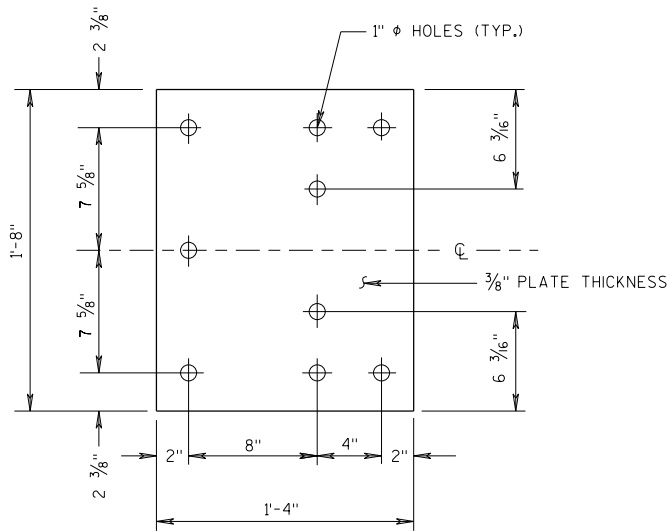
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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

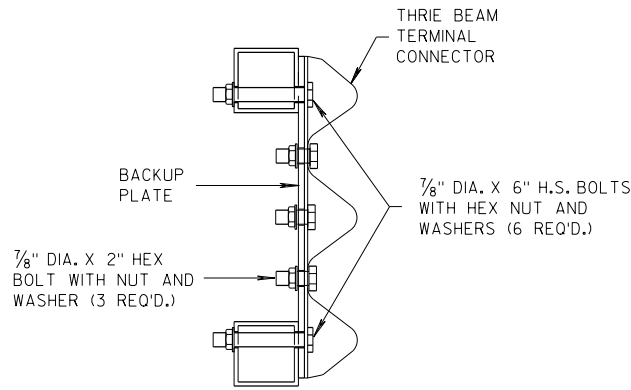
⑬ STEEL OR WOOD POST IS ACCEPTABLE AT POST 1. SEE SDD 14B42.

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

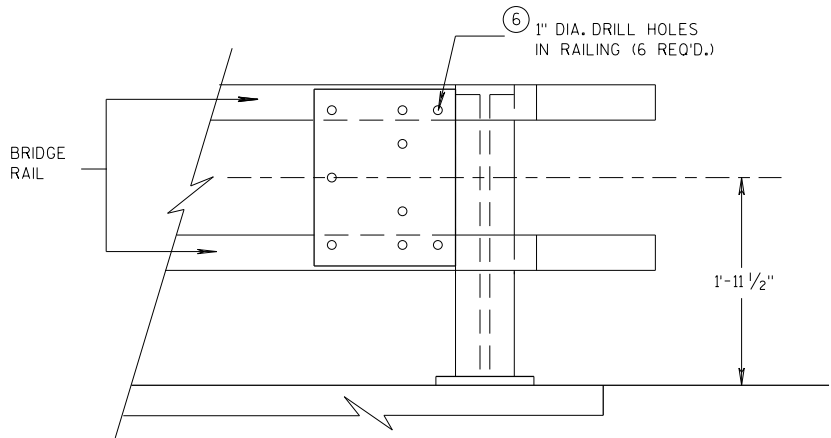
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



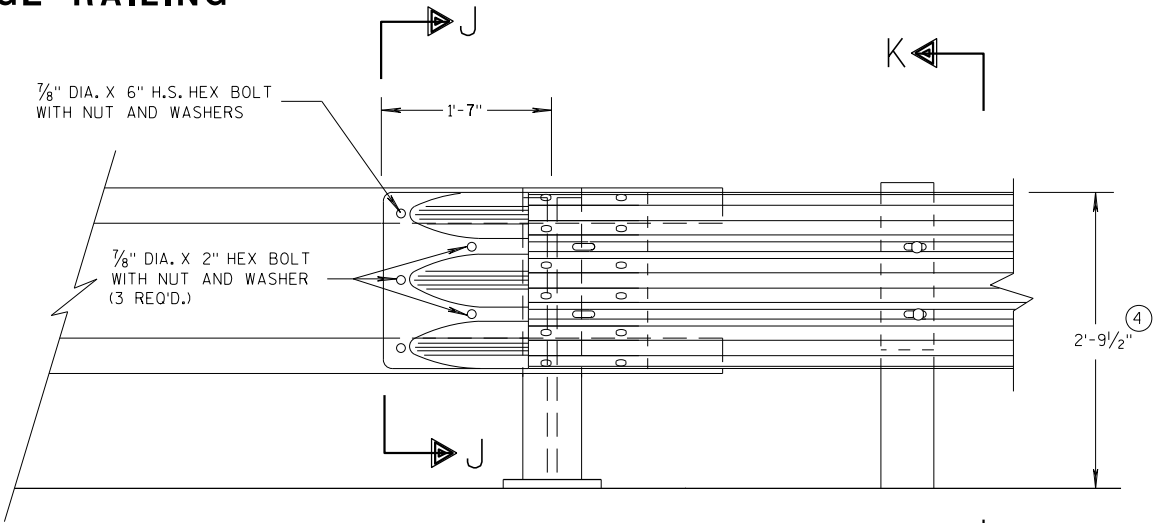
BACK-UP PLATE DETAIL



SECTION J-J

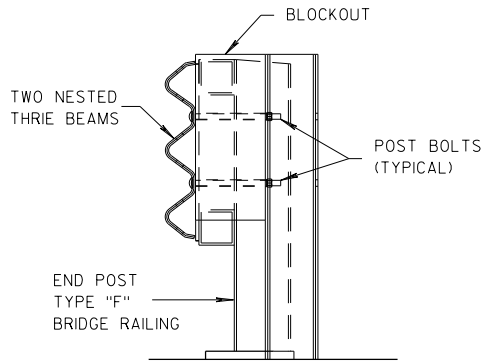


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

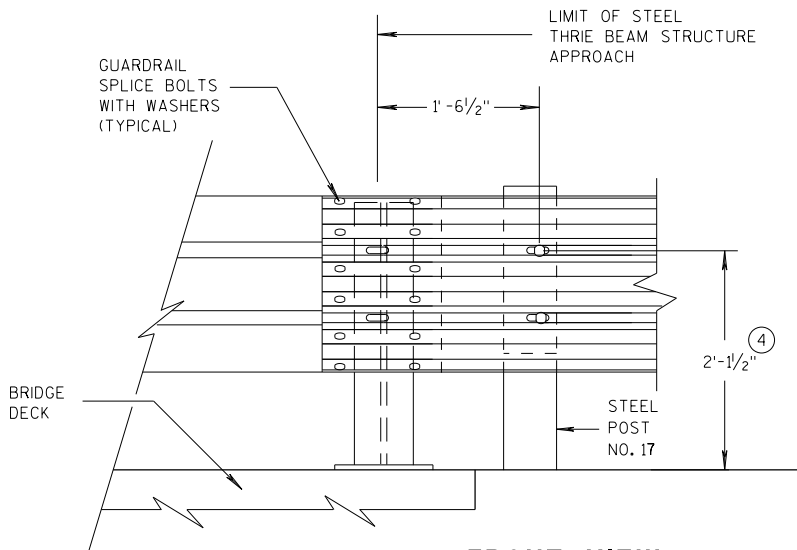
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

GENERAL NOTES

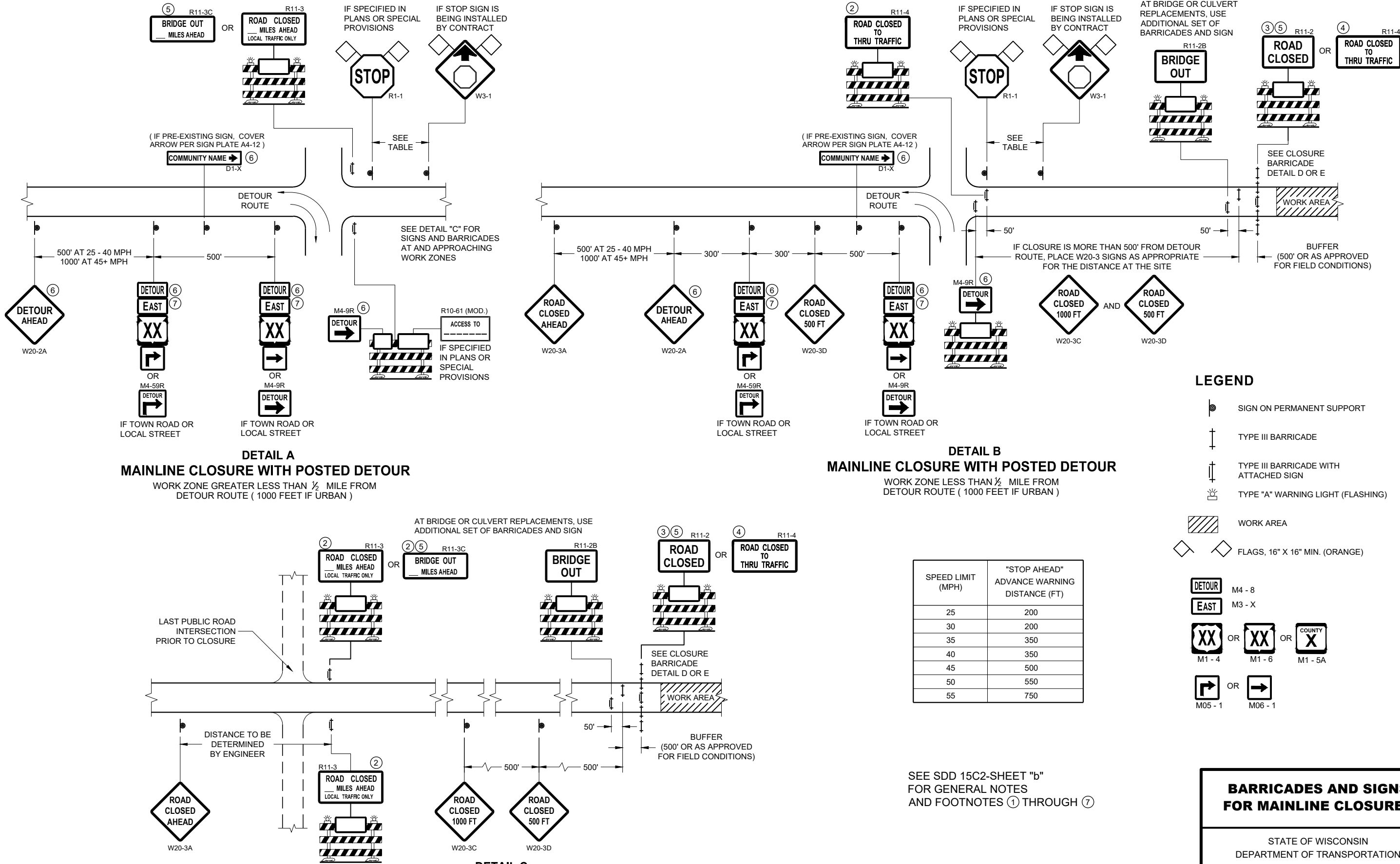
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING HOLES THROUGH THE PAPER, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.



FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

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

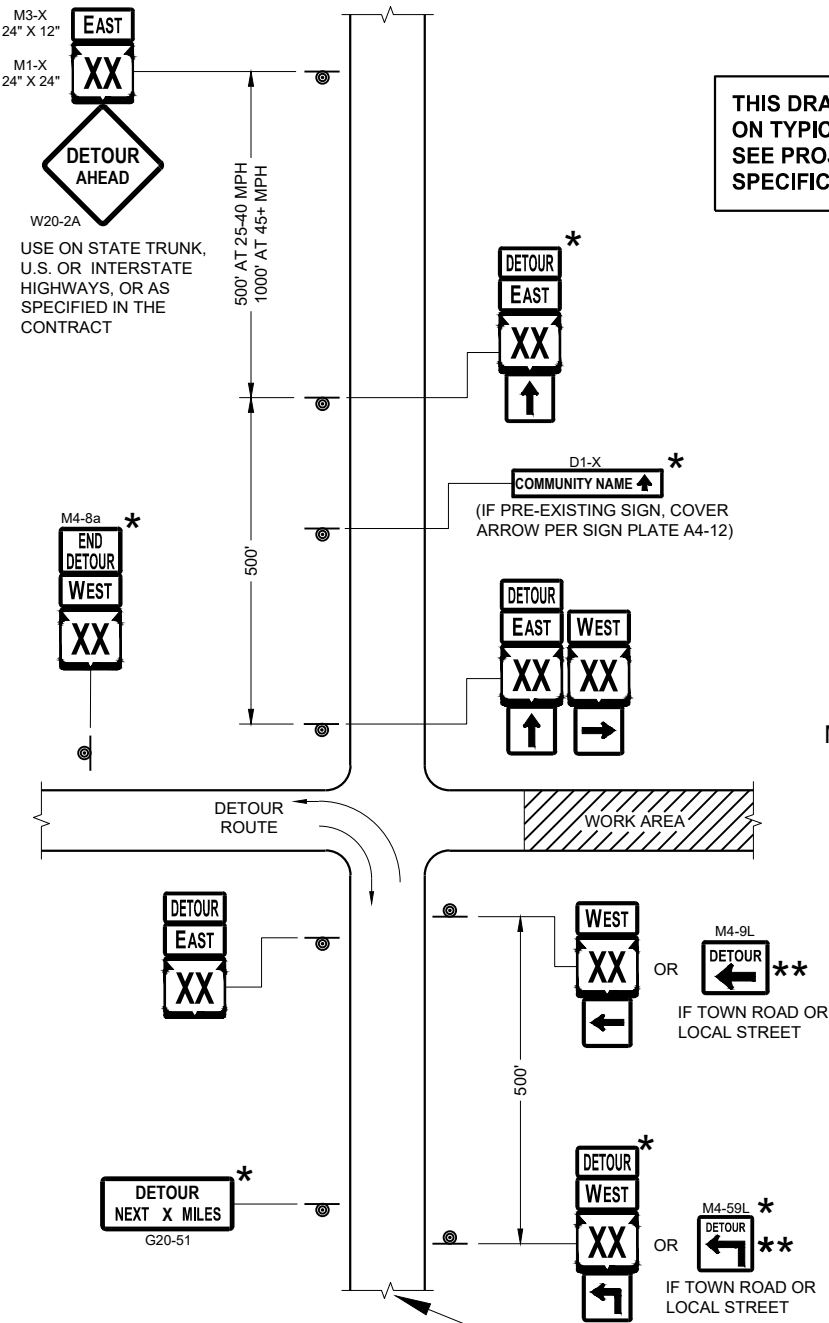


**BARRICADES AND SIGNS
FOR MAINLINE CLOSURES**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

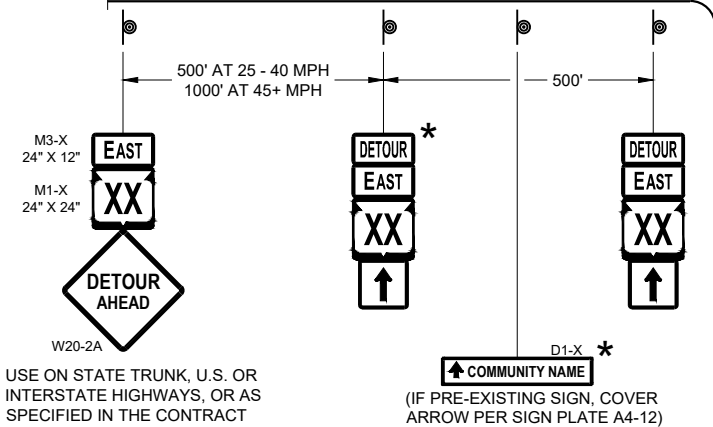
FHWA



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

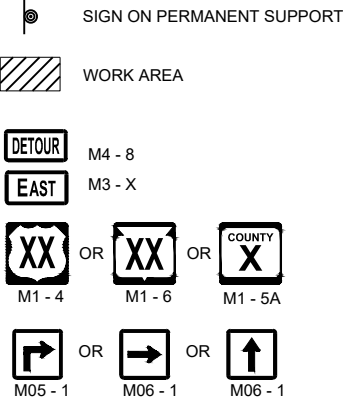
THIS DRAWING PROVIDES GENERAL GUIDANCE
ON TYPICAL DETOUR SIGN LAYOUT AND SPACING.
SEE PROJECT DETOUR SIGNING SHEETS FOR
SPECIFIC DETAILS FOR EACH PROJECT.

MATCH POINT



DETAIL F
DETOUR SIGNING

LEGEND



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.

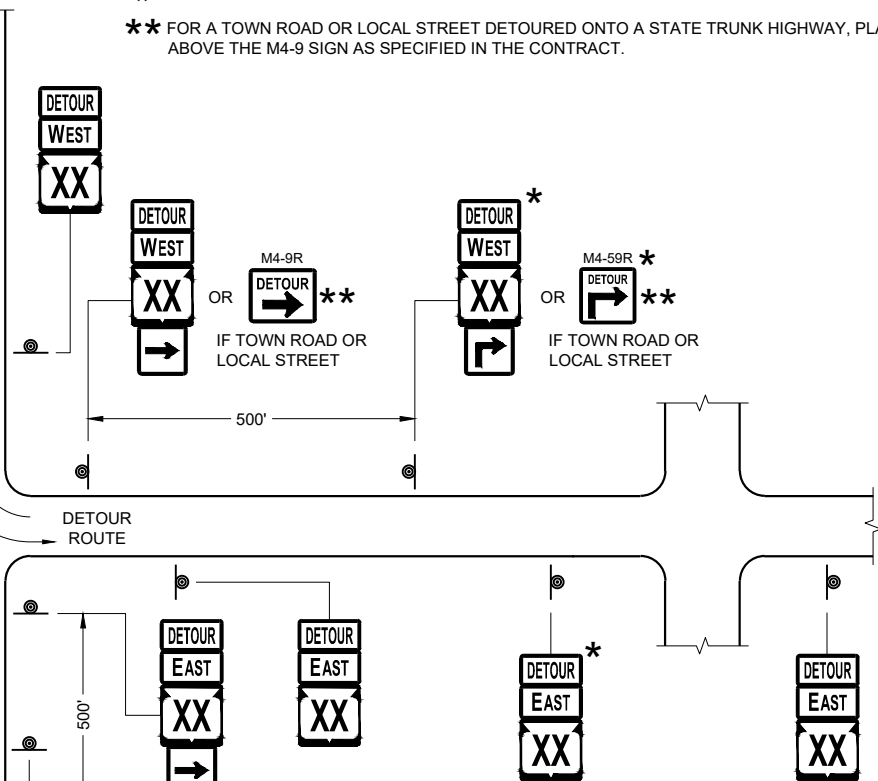
SIGNS THAT WILL BE IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

"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" (30" X 15" 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"
- W20-2 SHALL BE 48" X 48"
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

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

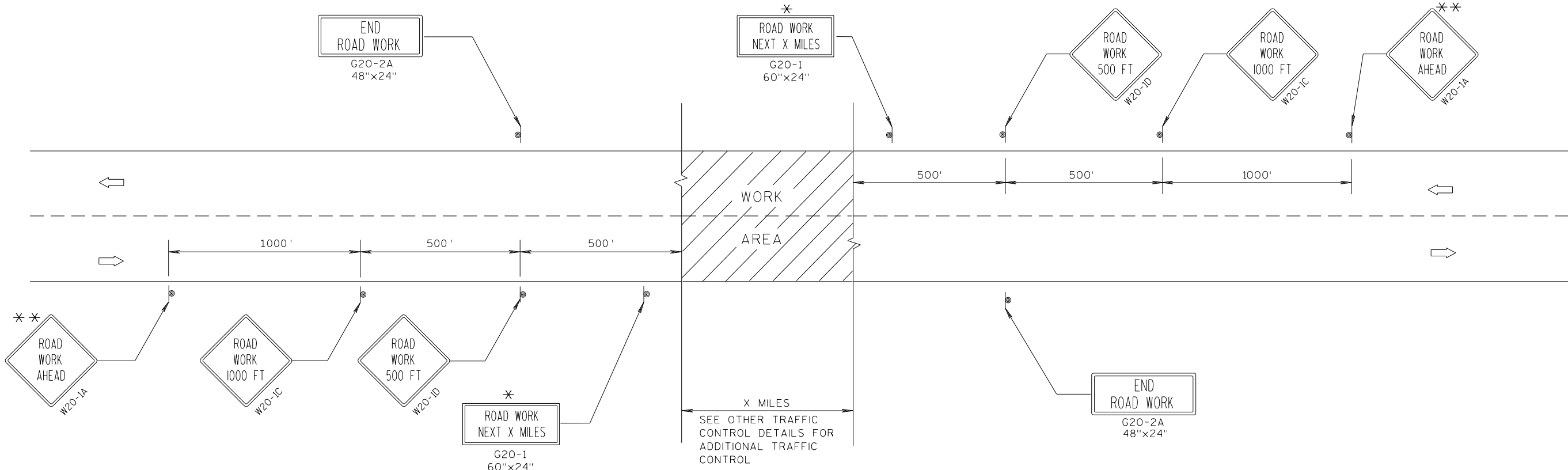


PLACE SIGNS BEYOND INTERSECTIONS
WITH STATE OR COUNTY TRUNK
HIGHWAYS OR AT 4 MILE MAXIMUM
SPACING (4 BLOCKS IF URBAN AREA)

DETOUR SIGNING
FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

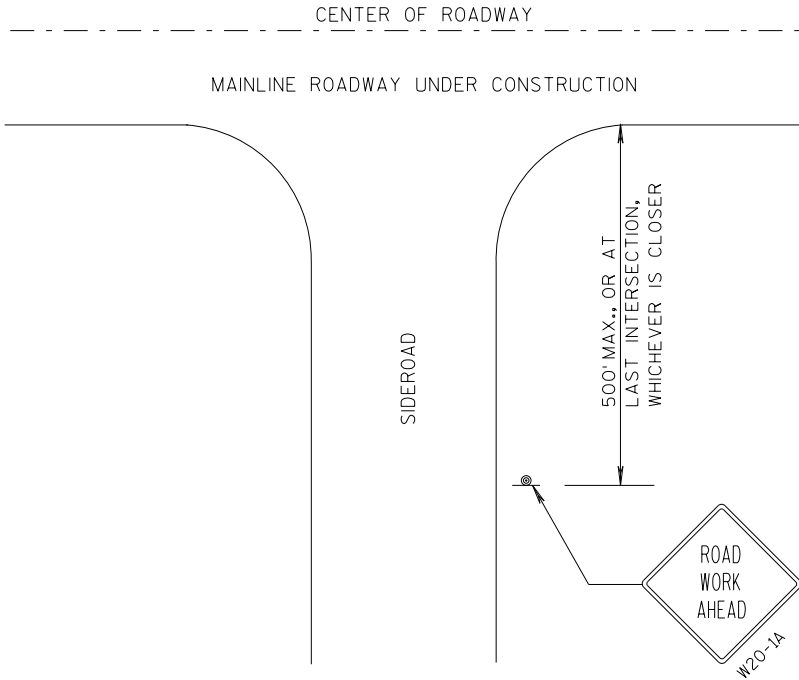
APPROVED
November 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER
FHWA



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL

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"x48" UNLESS OTHERWISE NOTED.
- SIGNS THAT WILL BE IN PLACE LESS THAN 7 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 RE-ESTABLISHED.
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.
- * * PLACE ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



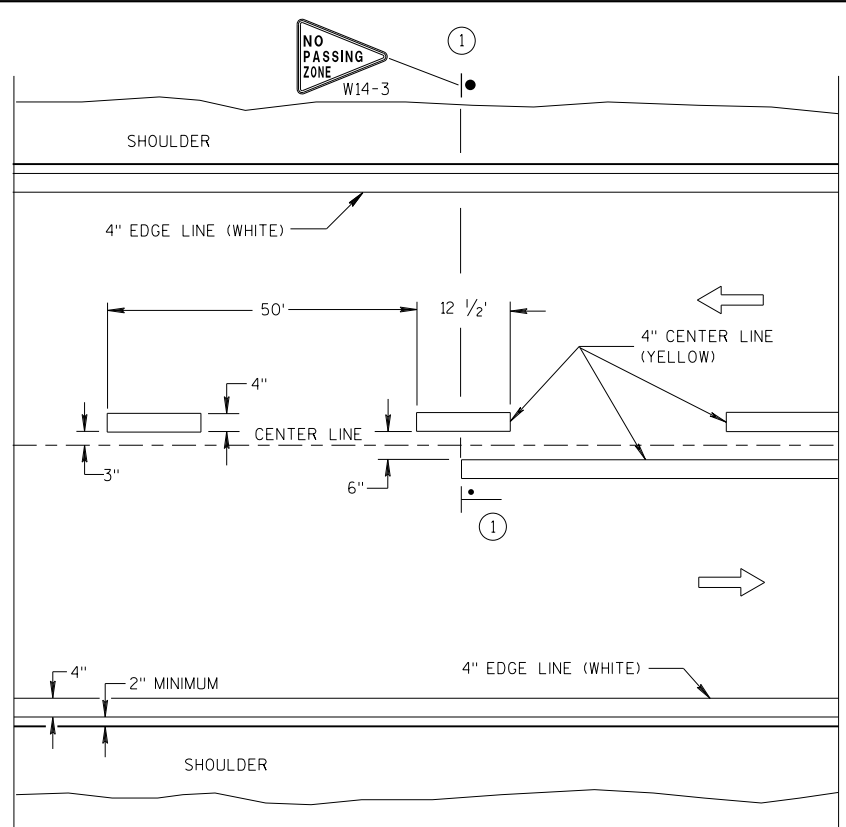
LEGEND

- ⊙ SIGN ON PERMANENT SUPPORT
- ➡ DIRECTION OF TRAFFIC
- ▨ WORK AREA

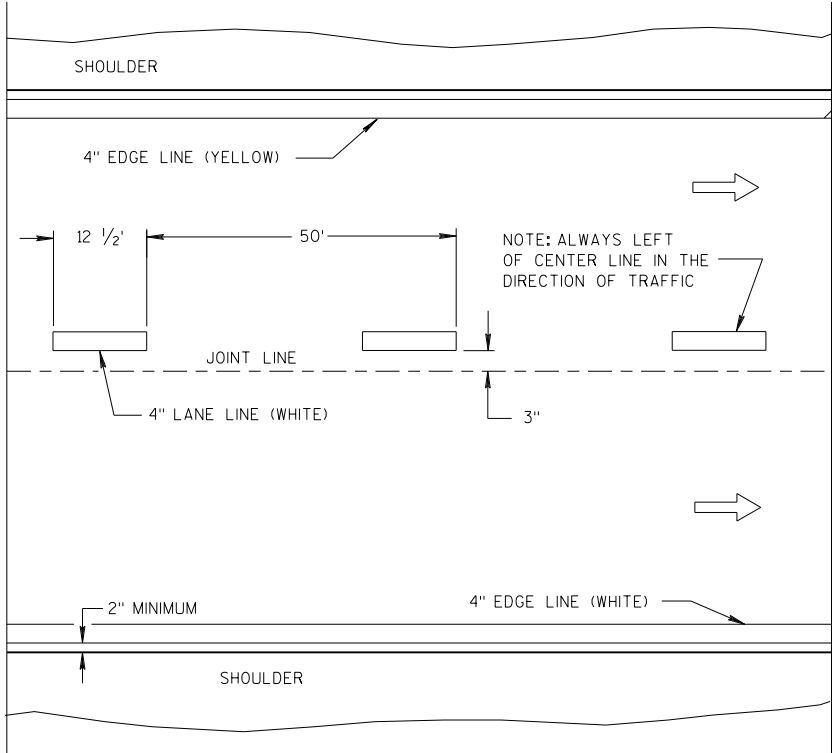
TRAFFIC CONTROL, ADVANCE
WARNING SIGNS 45 M.P.H.
OR GREATER TWO-WAY
UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER
FHWA

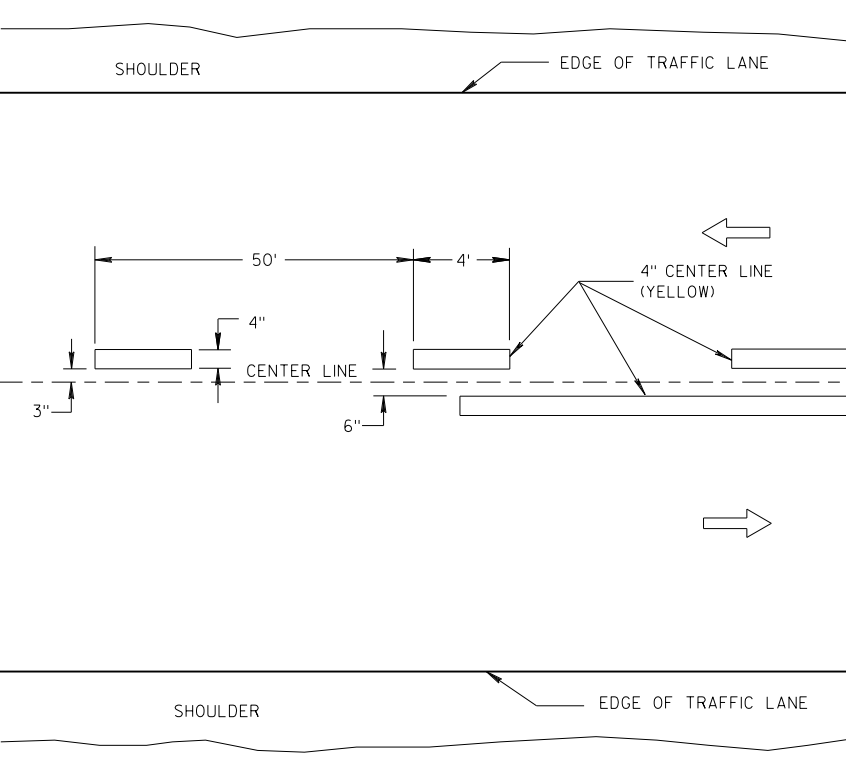


TWO WAY TRAFFIC

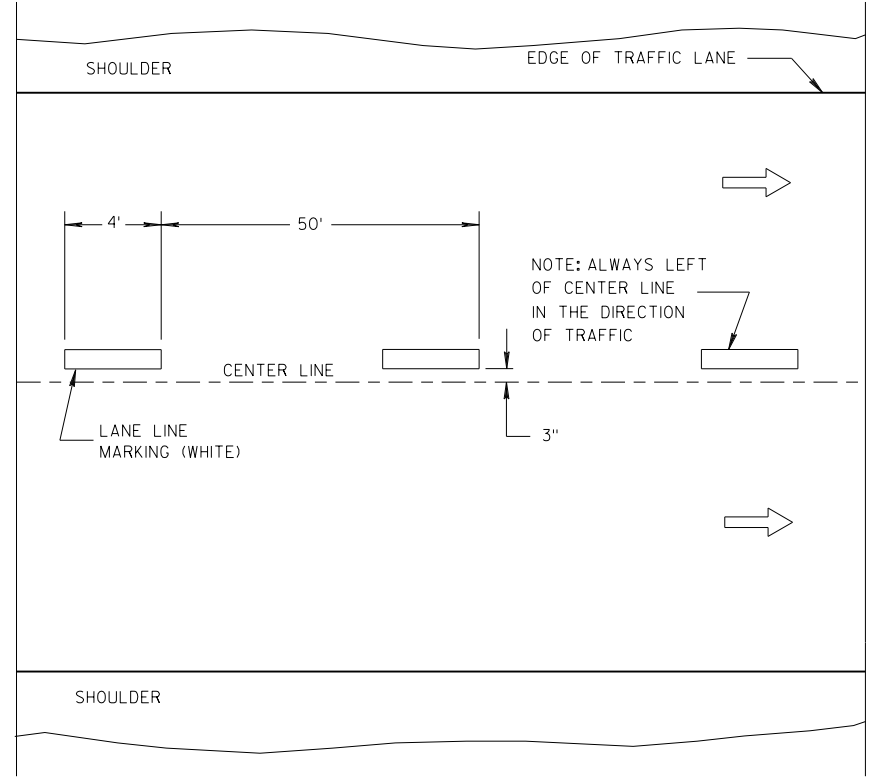


ONE WAY TRAFFIC

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 WITHIN 50 FEET OF THE "T" MARKING.

NOTE

ARROW SYMBOL (➡) SHOWS DIRECTION OF TRAVEL

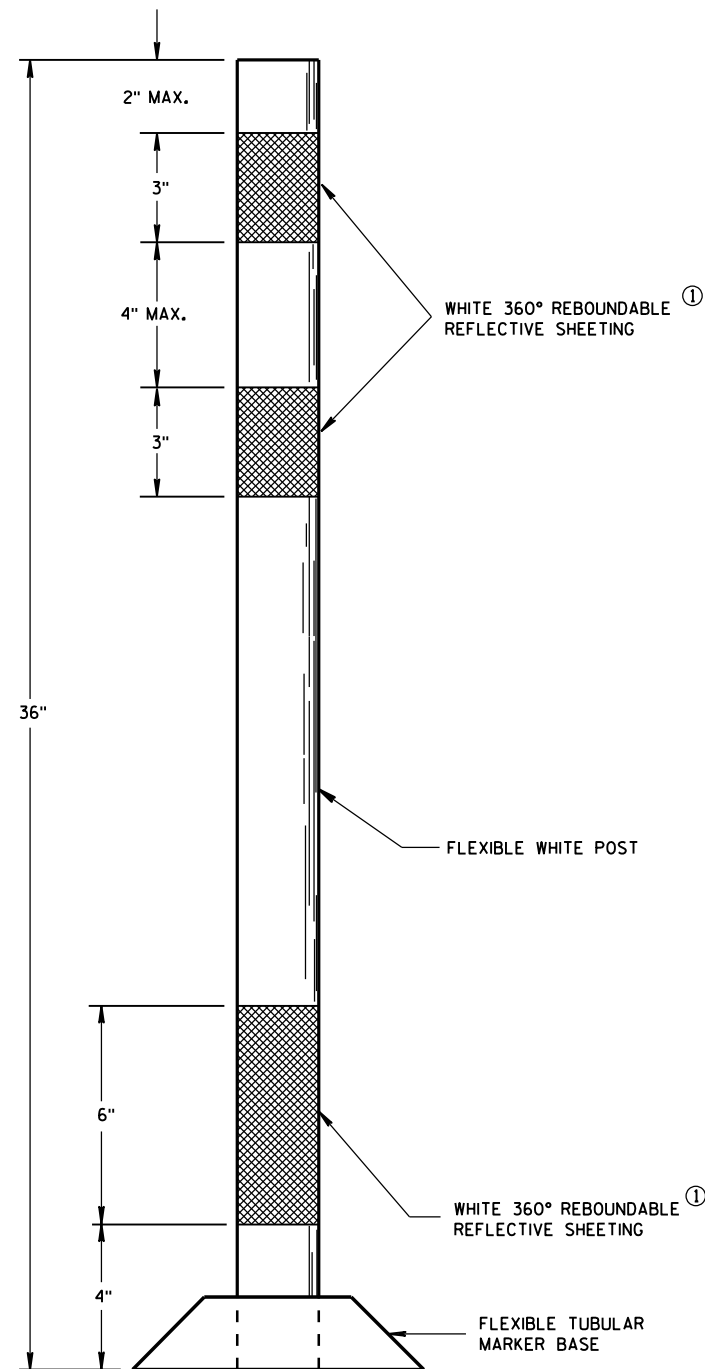
LEGEND

- "T" MARKING
- POST MOUNTED SIGN

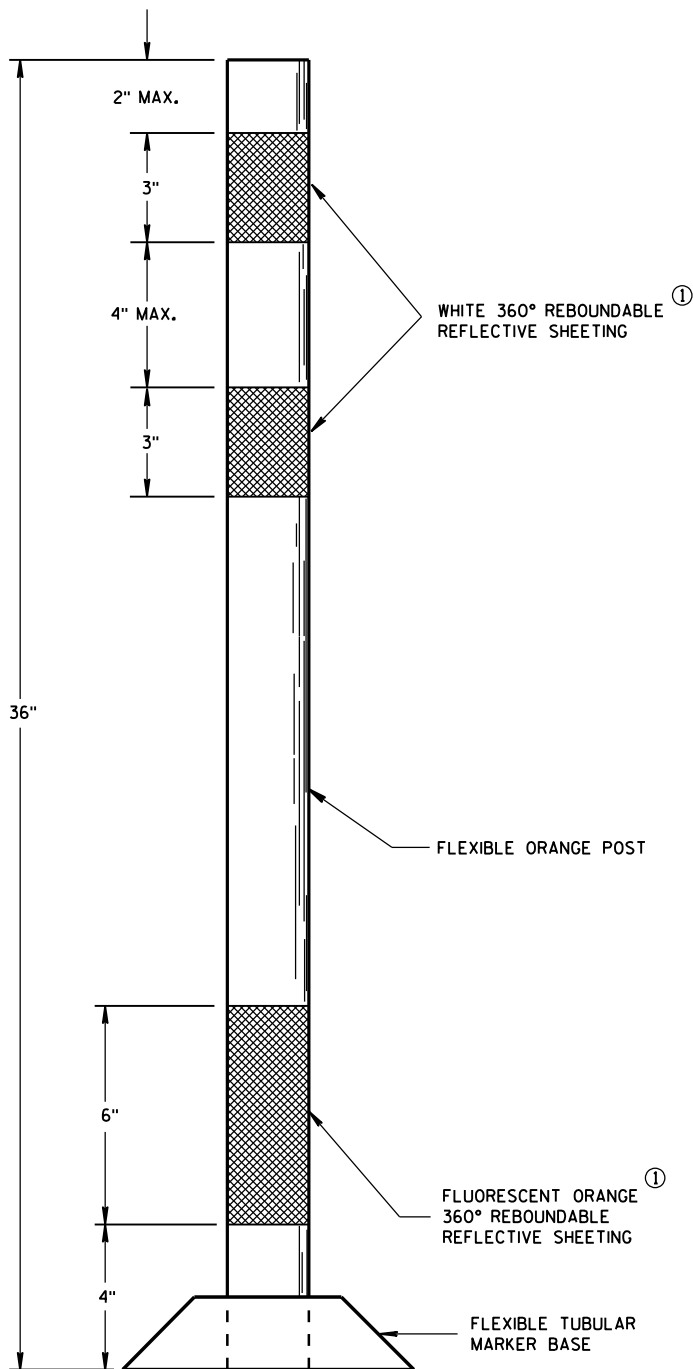
LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 /S/ Matthew R. Rauch
DATE STATE SIGNING AND MARKING ENGINEER
FHWA



**FLEXIBLE
TUBULAR MARKER POST
PERMANENT CROSSOVER**



**FLEXIBLE
TUBULAR MARKER POST
WORK ZONE**

GENERAL NOTES

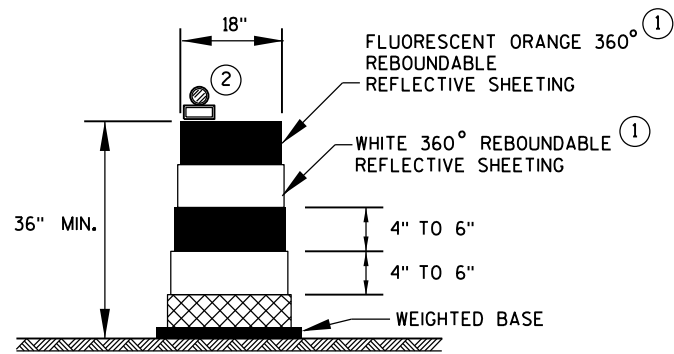
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

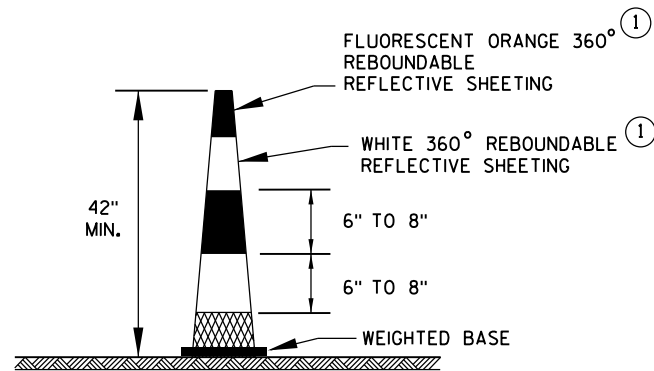
THE ASPHALTIC ADHESIVE OR BUTYL PAD FURNISHED SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, UNLESS DIRECTED BY THE ENGINEER TO USE BOLTS.

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

CHANNELIZING DEVICES FLEXIBLE TUBULAR MARKER POST	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Andrew Heldtke WORK ZONE ENGINEER
FHWA	



DRUM

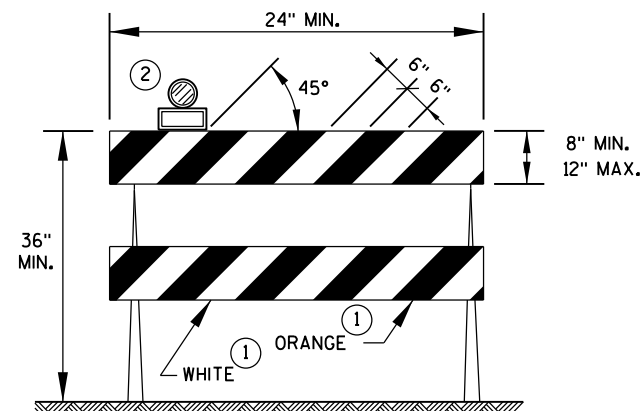


42" CONE

DO NOT USE IN TAPERS
1/2 SPACING OF DRUMS

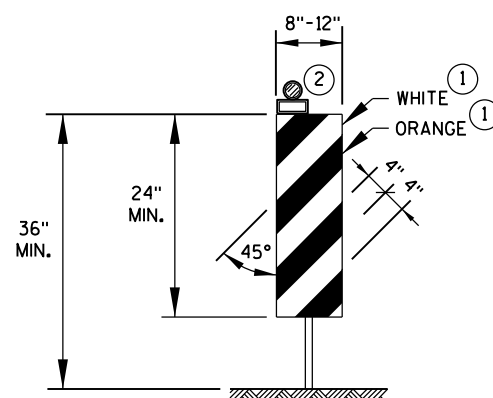
GENERAL NOTES

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



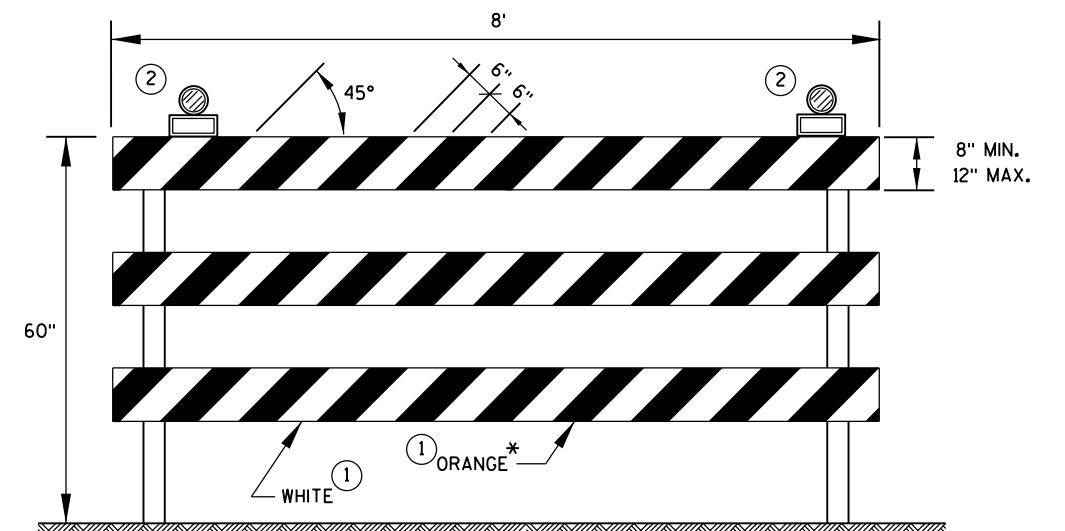
TYPE 2 BARRICADE

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



VERTICAL PANEL

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



TYPE 3 BARRICADE

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

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

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

June 2017
DATE

FHWA

/S/ Andrew Heidtke
WORK ZONE ENGINEER

LEGEND

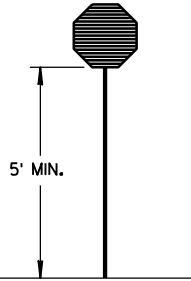
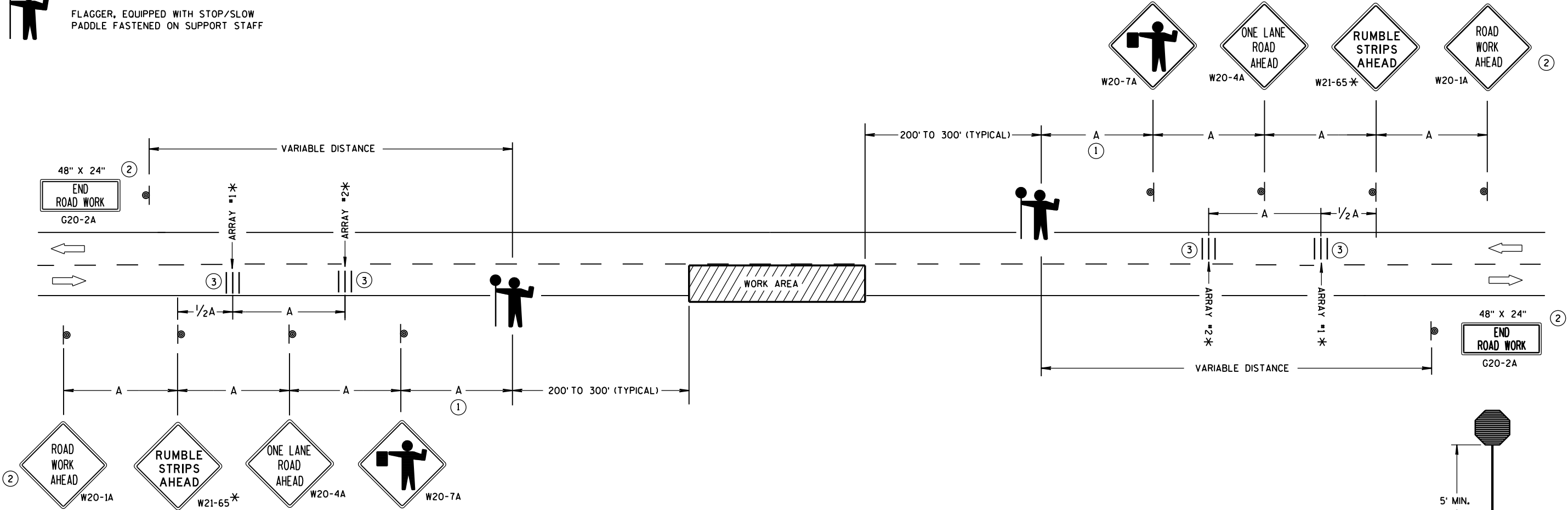
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA
- FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



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



STOP/SLOW PADDLE ON SUPPORT STAFF

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

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.

THE EXACT NUMBER, LOCATION AND SPACING OF ALL SIGNS AND DEVICES (AND THE 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.

"W0" SIGNS ARE THE SAME AS "W" SIGNS EXCEPT THE BACKGROUND IS ORANGE.

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.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS. PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

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

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 RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

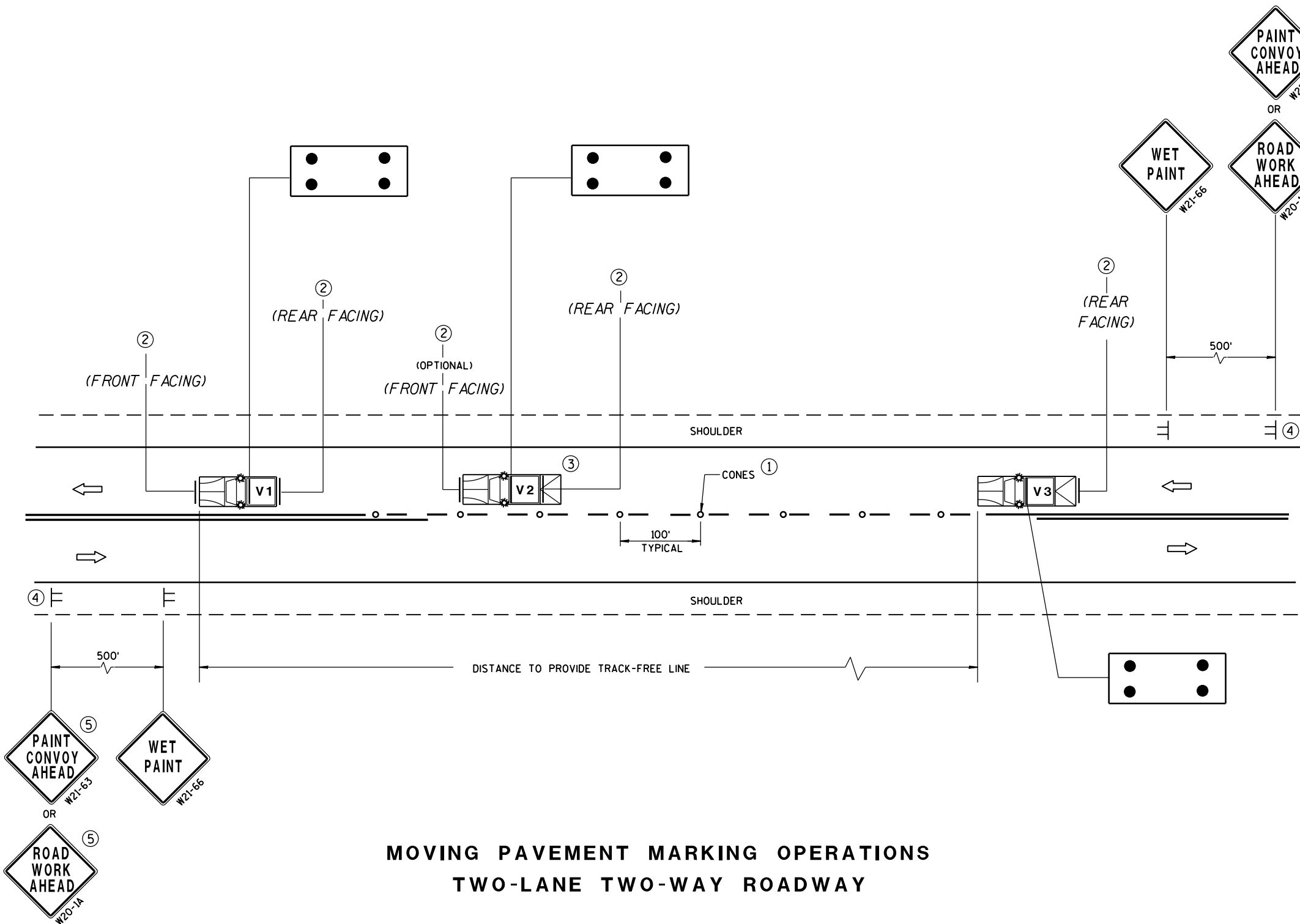
* UTILIZE TEMPORARY RUMBLE STRIPS WHEN FLAGGING OPERATION IS ANTICIPATED TO BE STATIONARY IN EXCESS OF TWO HOURS.

- FOR A MOVING WORK OPERATION, SIGNING AND TEMPORARY RUMBLE STRIPS (IF USED) SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3,500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.
- SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- EACH TEMPORARY RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

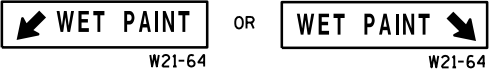
APPROVED
June 2017 /S/ Andrew Heldtke
DATE WORK ZONE ENGINEER
FHWA



MOVING PAVEMENT MARKING OPERATIONS
TWO-LANE TWO-WAY ROADWAY

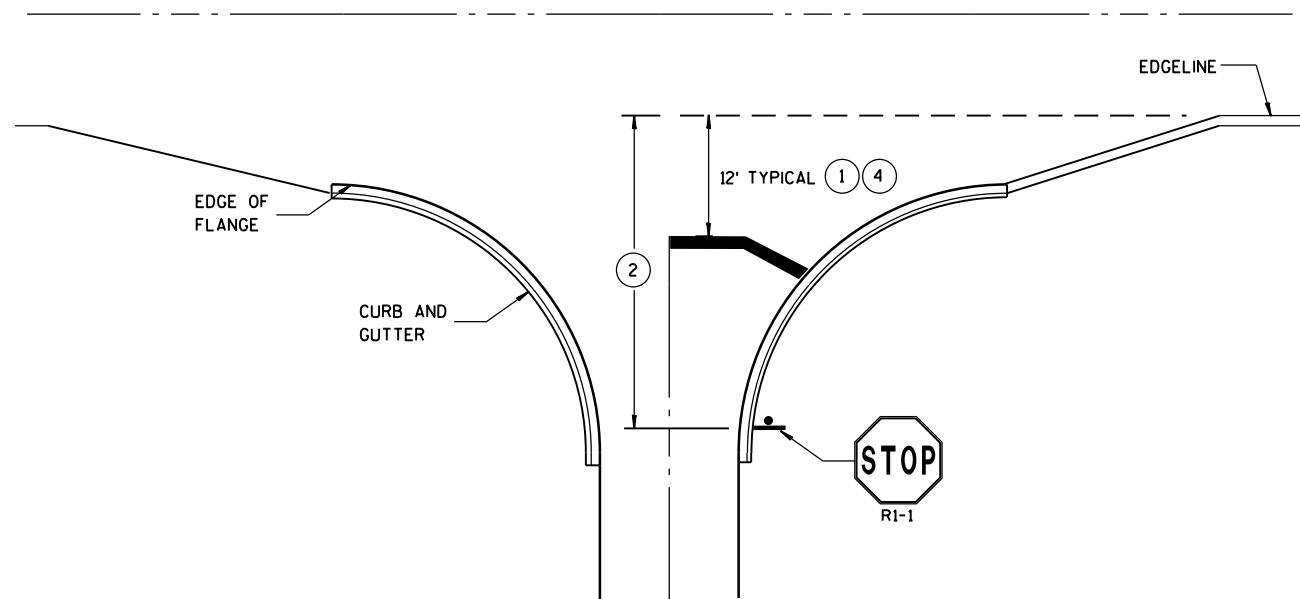
GENERAL NOTES

- ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.
- VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL OPERATING IN CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.
- ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE SPECIFIED.
- IF SPEED LIMIT IS 40 MPH OR LESS STATIONARY SIGNS MAY BE OMITTED IF CONES ARE USED.
- ALTERNATE SIGN MESSAGES, SUCH AS "PAINT CREW AHEAD" OR "ROAD PAINTING AHEAD" MAY BE USED.
- DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.
- THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS.
- THIS DRAWING SHALL BE USED FOR CENTERLINE OR EDGELINE MARKING.
- WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR TURN THE STATIONARY WARNING SIGNS AWAY FROM TRAFFIC.
- ① CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.
- ② USE STANDARD SIGN W21-64 WITH APPROPRIATE ARROW.
- ③ OPTIONAL TRUCK-MOUNTED ATTENUATOR.
- ④ SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.
- ⑤ IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1 OR W21-63 ARE NOT REQUIRED.

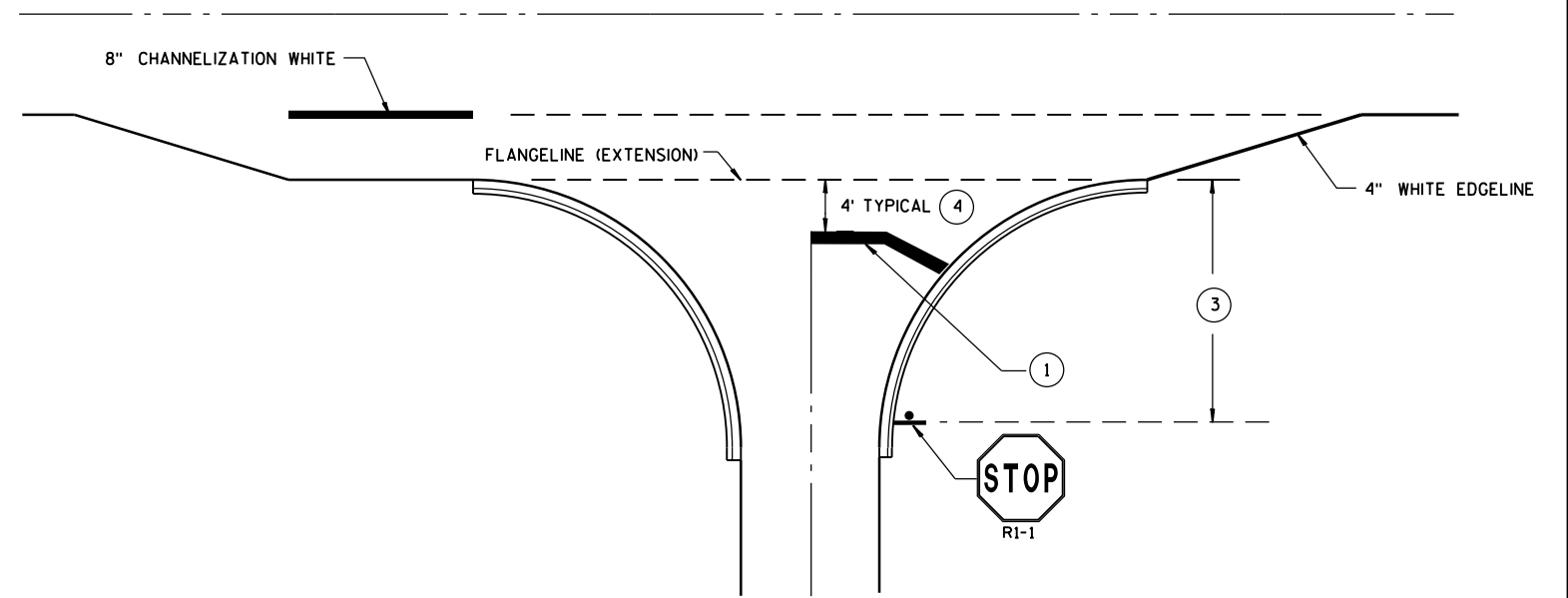


- LEGEND**
- V1** LEAD VEHICLE
- V2** SHADOW VEHICLE
- V3** TRAIL VEHICLE WITH TMA
- TMA** TRUCK-MOUNTED ATTENUATOR
- SIGN ON TEMPORARY SUPPORT
- DIRECTION OF TRAFFIC
- CONES
- FLASHING ARROW PANEL (CAUTION)

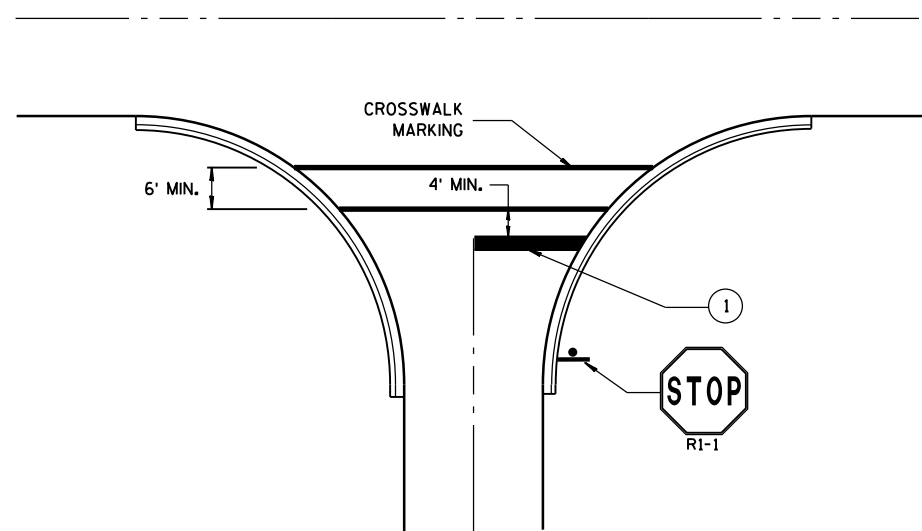
MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED Sept., 2017 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER
FHWA	



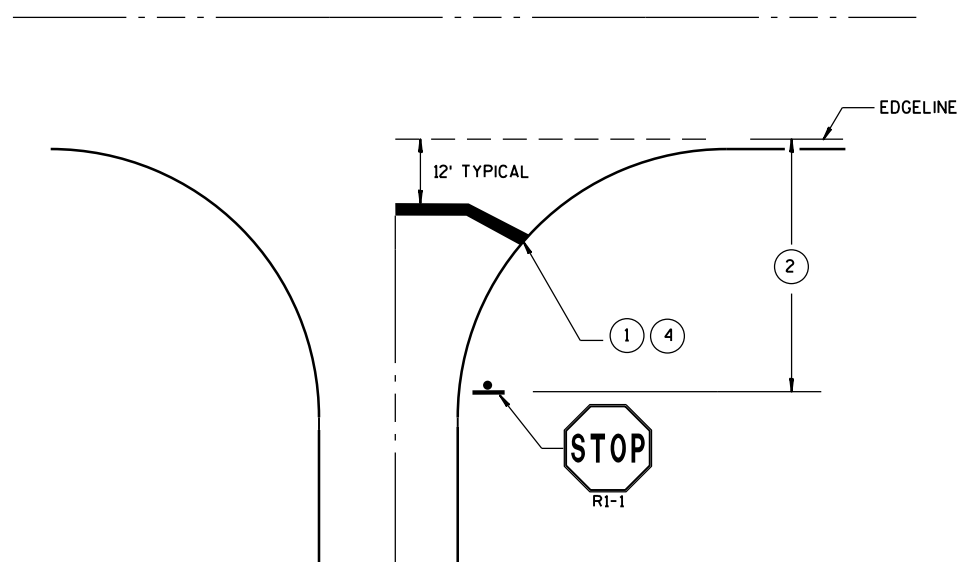
**TYPICAL STOP LINE PAVEMENT MARKING
WITH CURB AND GUTTER**



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



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



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

GENERAL NOTES

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

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

**STOP LINE AND CROSSWALK
PAVEMENT MARKING**

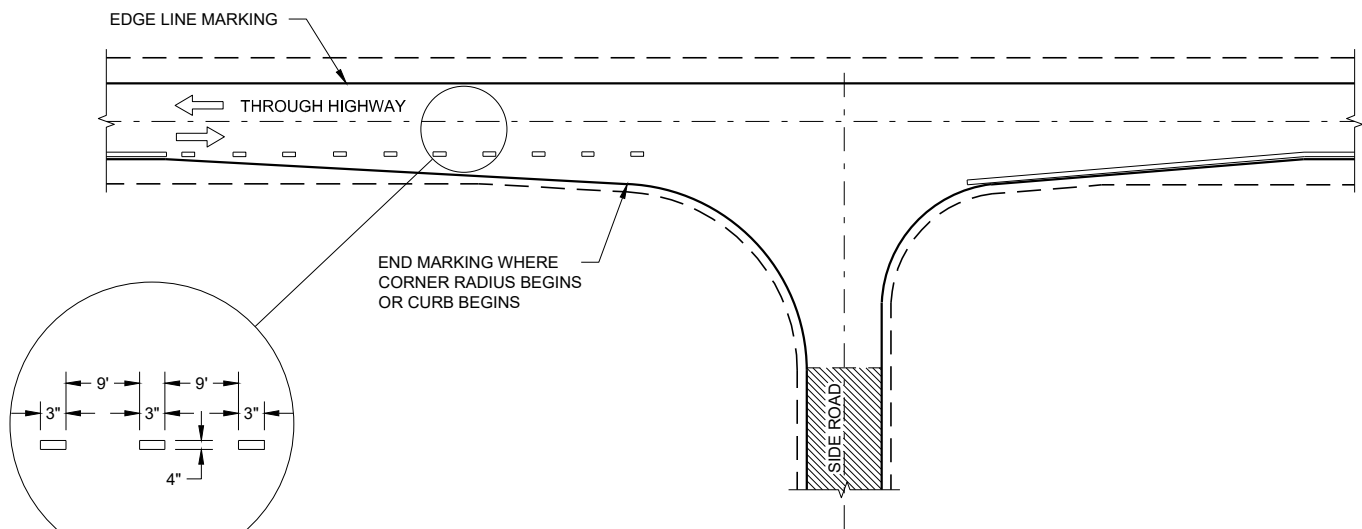
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

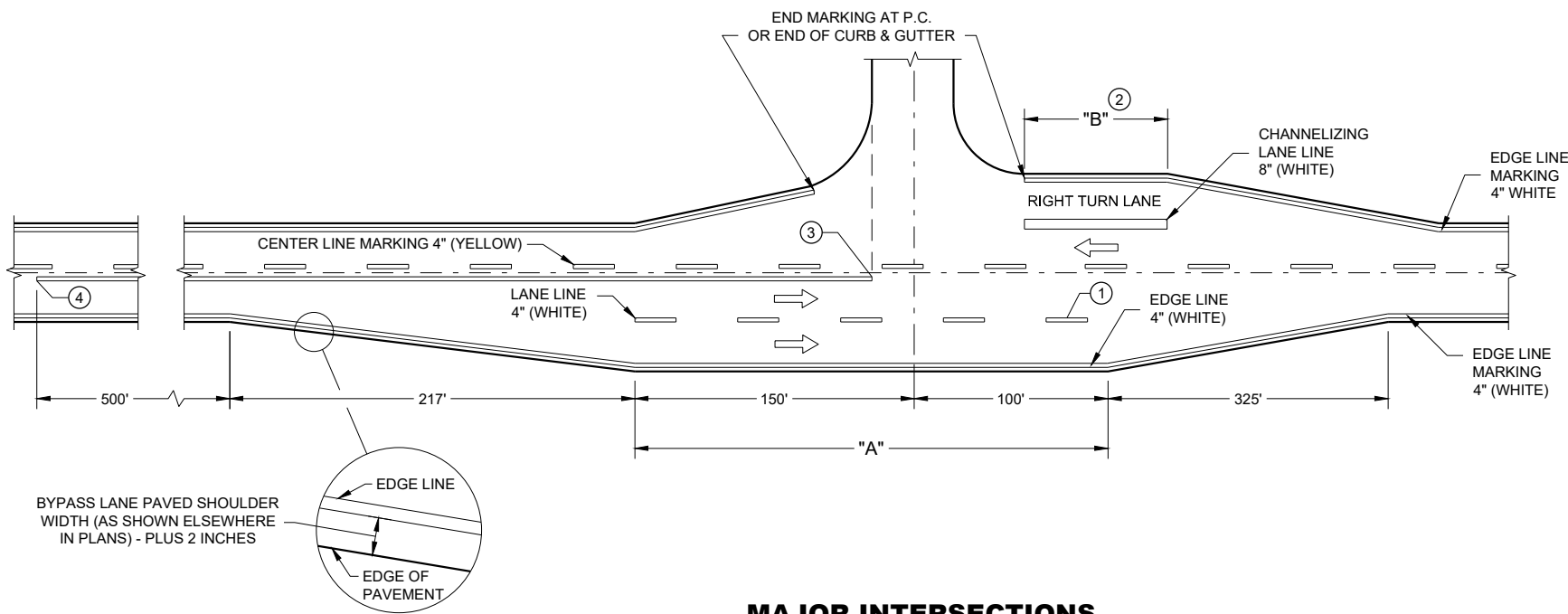
Sept., 2017
DATE

FHWA

/S/ Matthew R. Rauch
STATE SIGNING AND MARKING ENGINEER



MINOR INTERSECTION



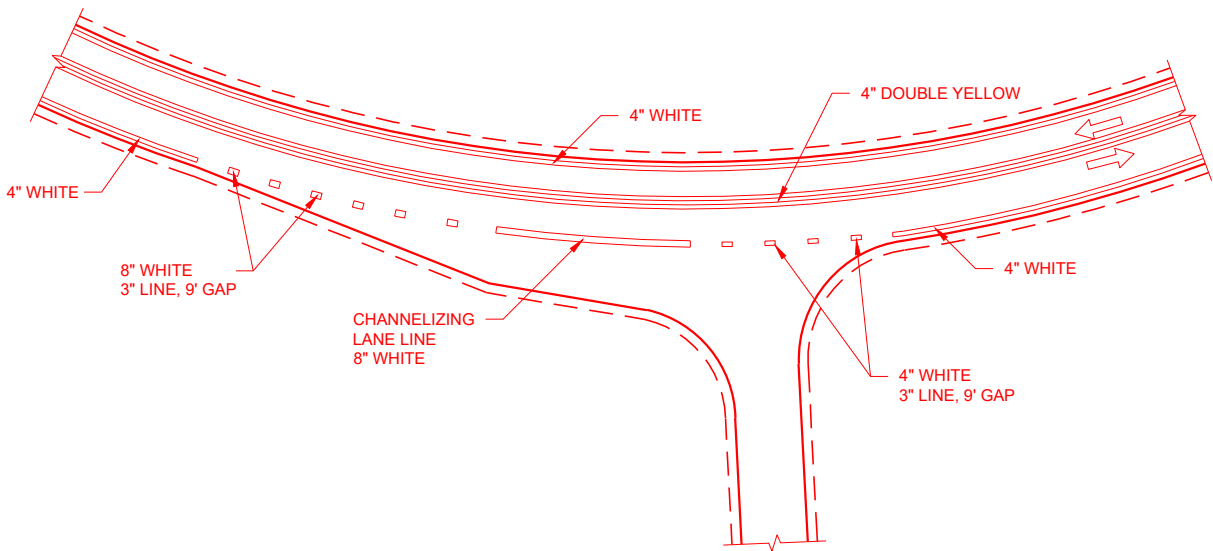
MAJOR INTERSECTIONS
(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANE)

GENERAL NOTES

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

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

ARROW SYMBOL (➡) SHOWS DIRECTION OF TRAVEL



INTERSECTION ON OUTSIDE OF CURVE

PAVEMENT MARKING
(INTERSECTIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

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

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

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

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

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

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

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

TABLE A

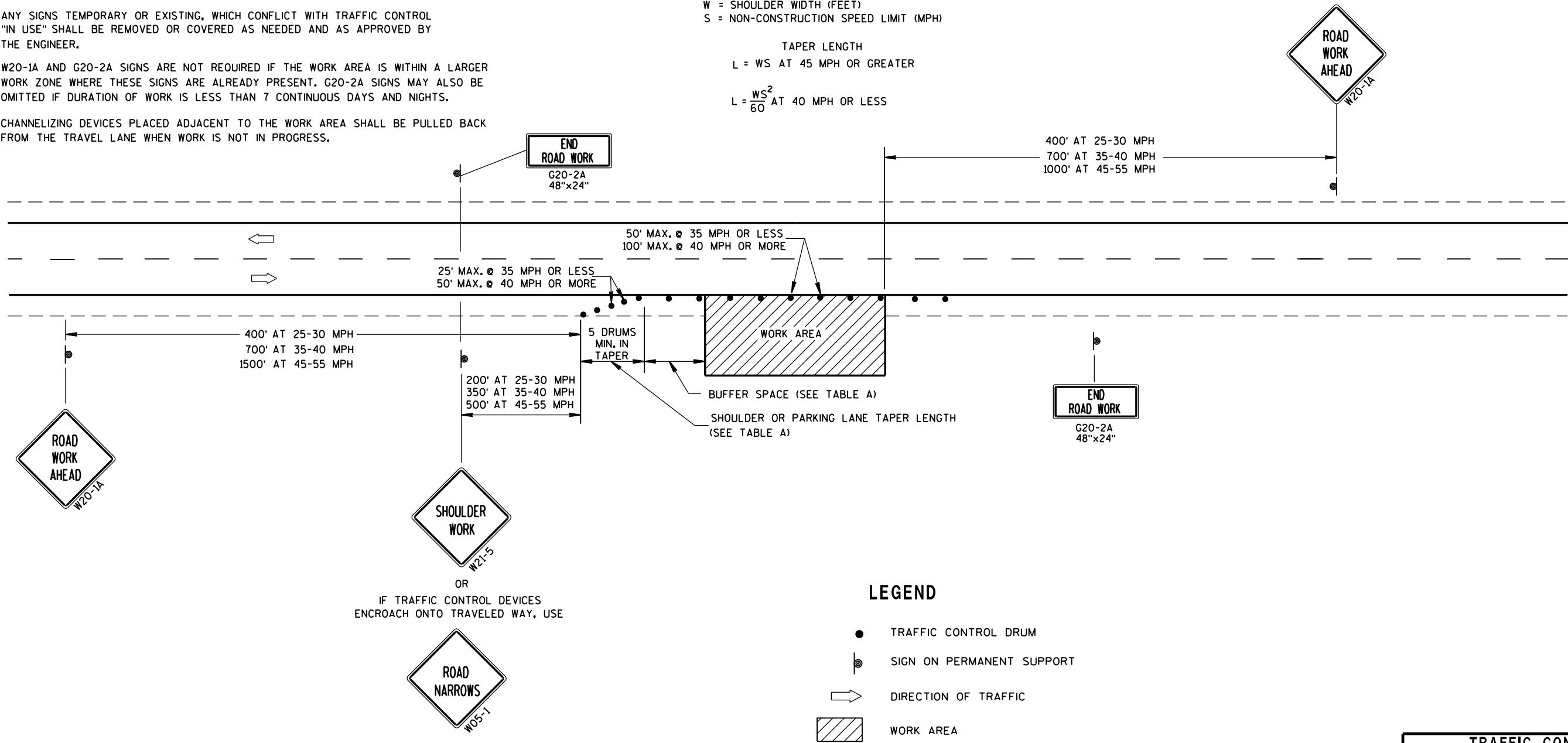
SHOULDER TAPER LENGTH (FEET)					BUFFER SPACE (FEET)
S \ W	4	6	8	10	
30	20	30	40	50	200
35	30	45	55	70	250
40	40	55	75	90	305
45	60	90	120	150	360
50	70	100	135	170	425
55	75	110	150	185	495

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

TAPER LENGTH
L = WS AT 45 MPH OR GREATER

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

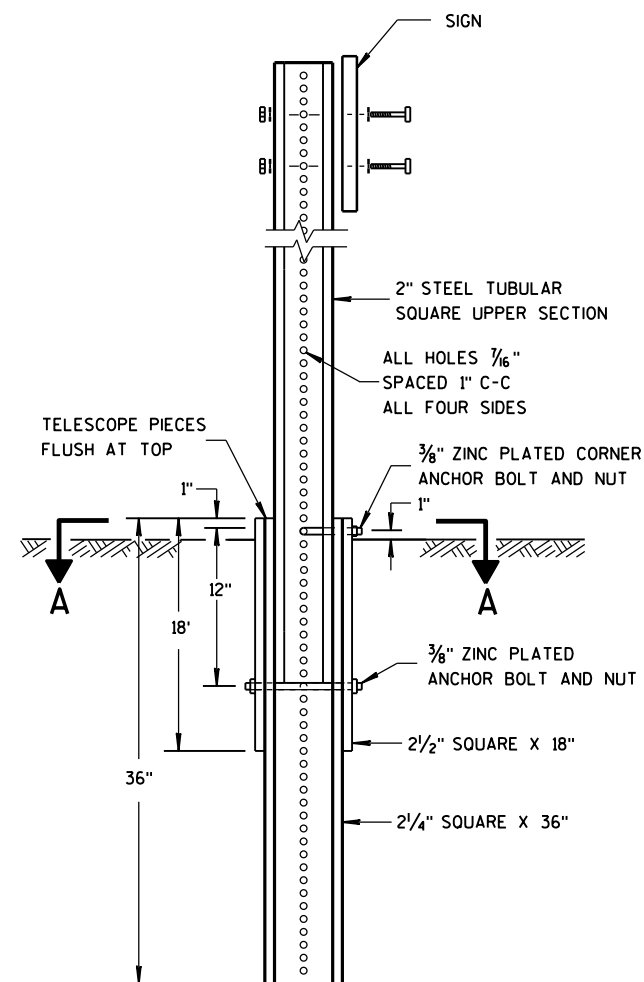
SHOULDER TAPER LENGTH = $\frac{1}{3}L$



LEGEND

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

TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED July 14, 2015 DATE	/S/ Peter Amakobe Atepe STATEWIDE WORK ZONE TRAFFIC SAFETY ENGINEER
FHWA	

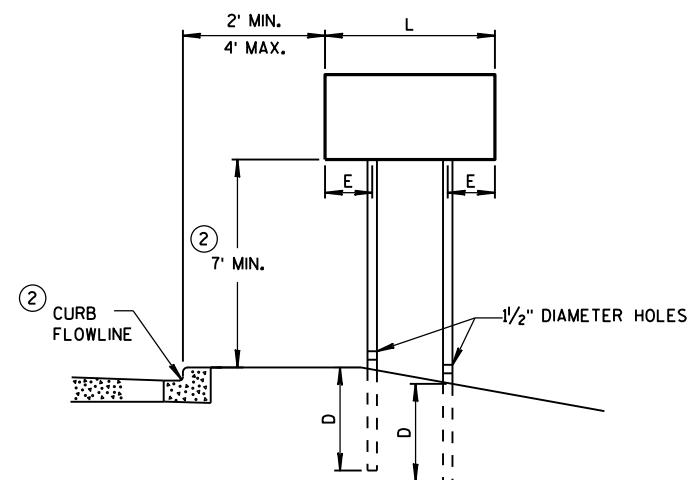
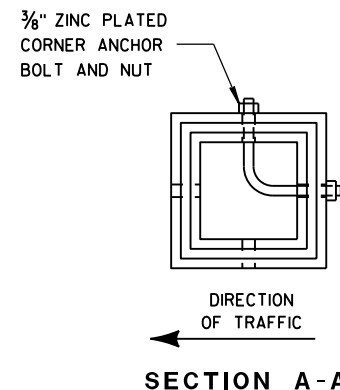


DETAIL OF TUBULAR
STEEL SIGN POST

TUBULAR STEEL POSTS

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

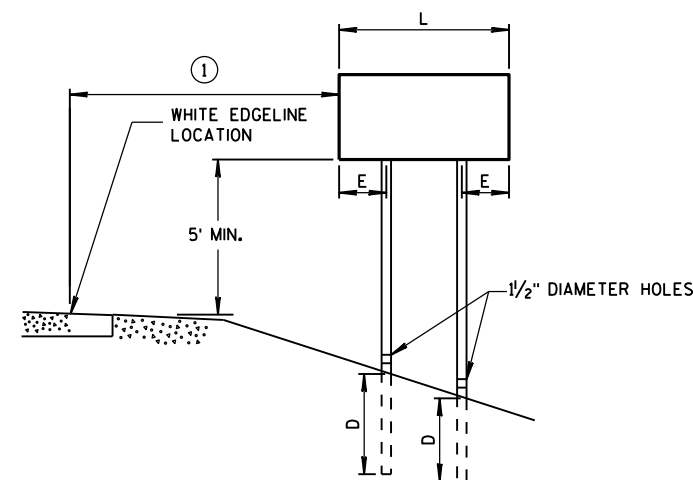
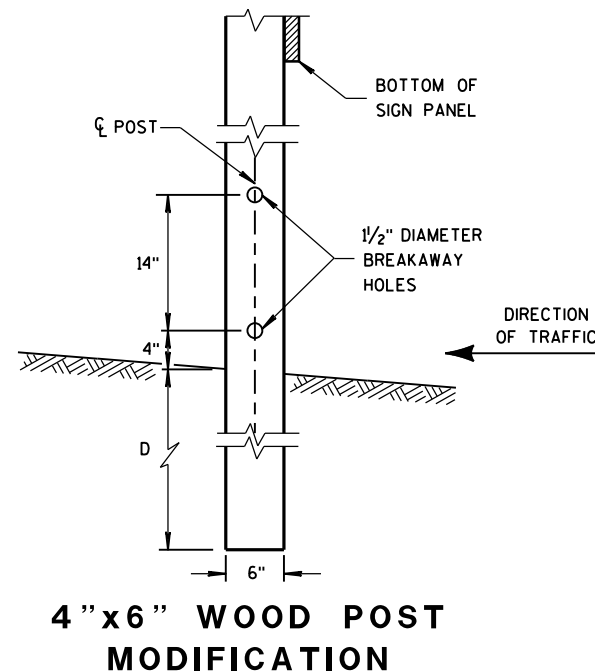
SIGNS WIDER THAN 3 FEET OR LARGER THAN 9 SQ. FT. SHALL
BE MOUNTED ON MULTIPLE POSTS (SEE ABOVE TABLE).
SIGNS LARGER THAN 27 SQ. FT. SHALL NOT BE MOUNTED
ON TUBULAR STEEL POSTS.



URBAN AREA

POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

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



RURAL AREA

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

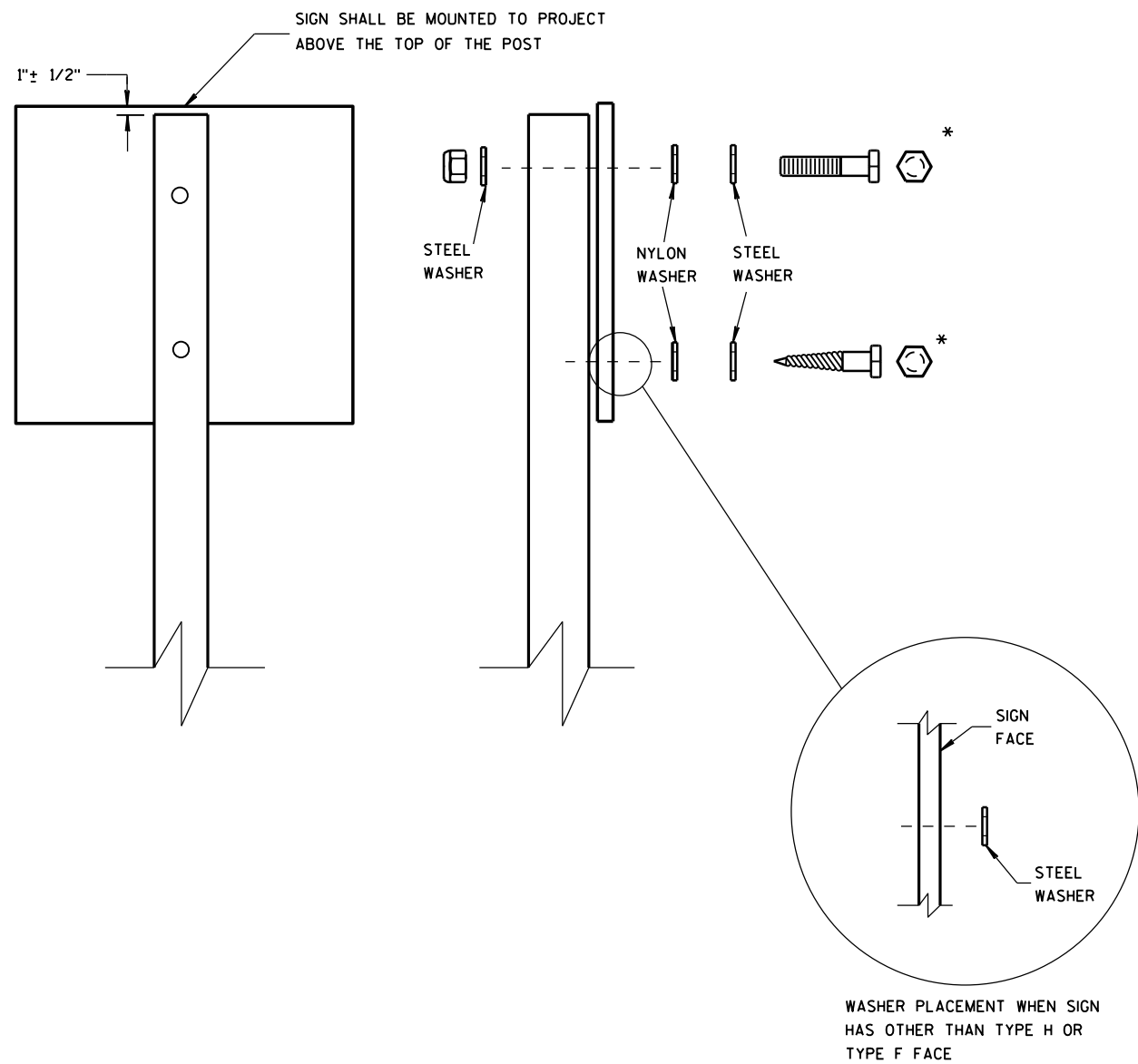
SEE NOTE ③

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.

TEMPORARY TRAFFIC CONTROL
SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



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

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

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

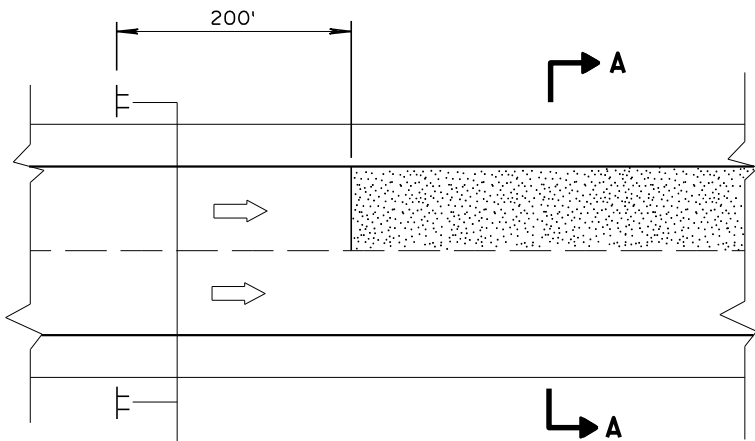
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - 3/8" x 3"
 - MACHINE BOLTS - 5/16" x 6-1/2" OR 7" LENGTH W/ NUTS

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

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

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

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

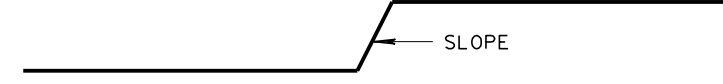


MULTI-LANE

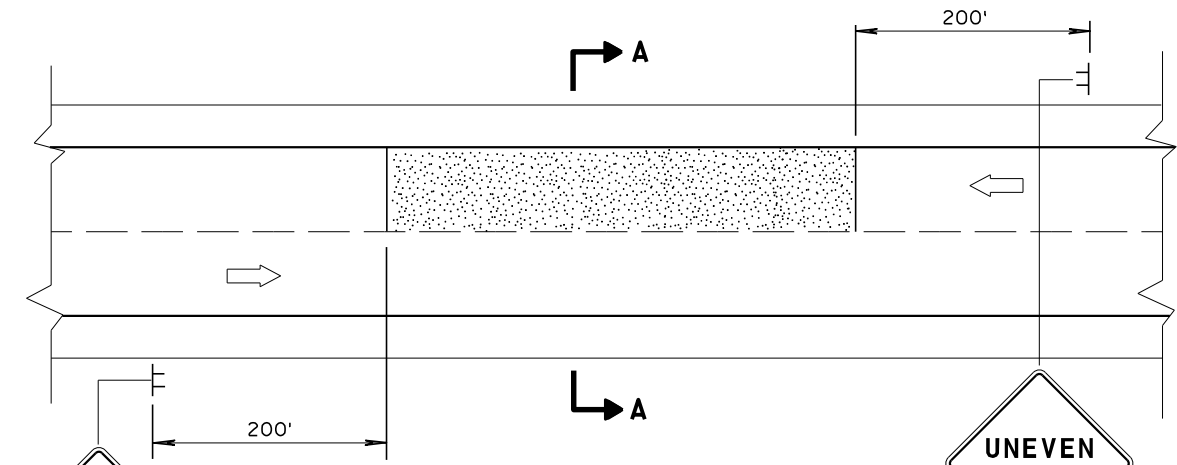


SECTION A-A

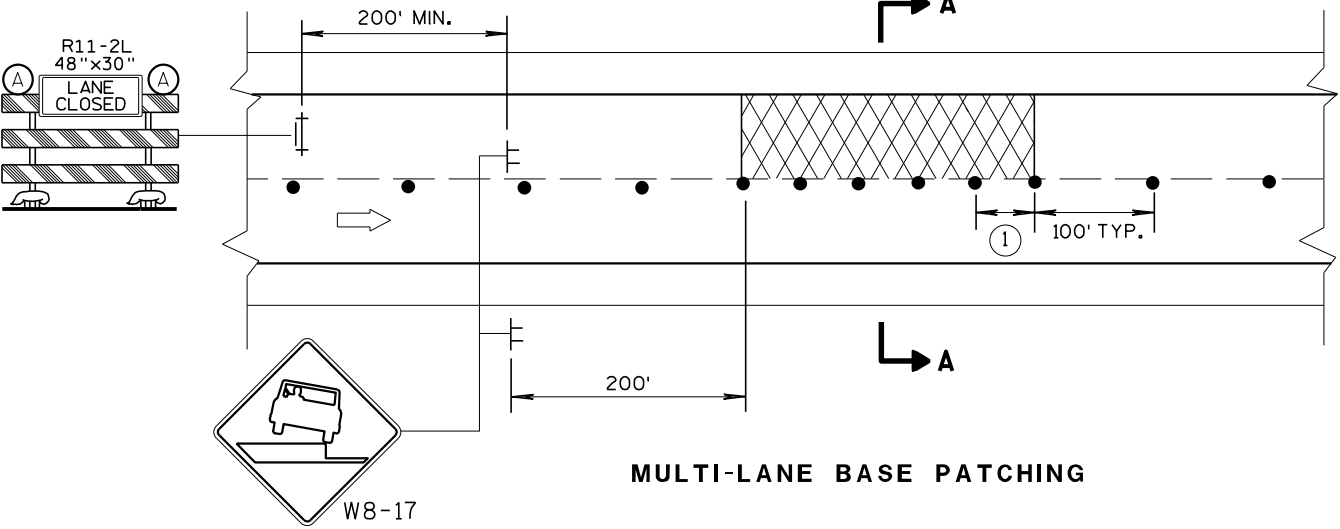
OR



SECTION A-A

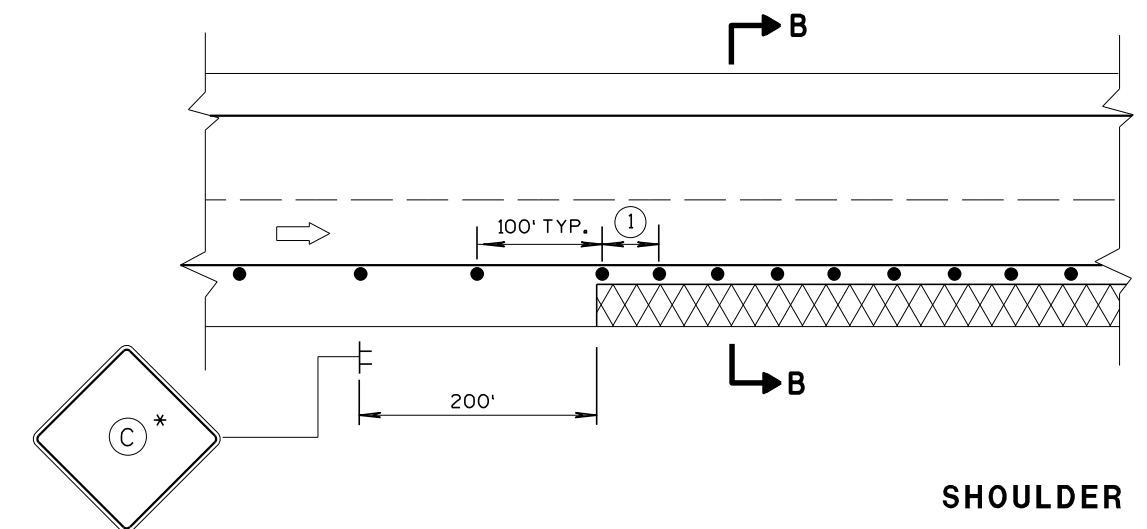


TWO-WAY TWO LANE

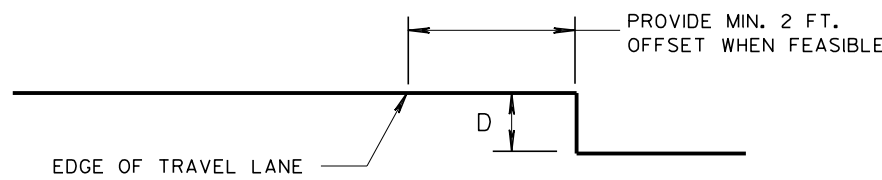


MULTI-LANE BASE PATCHING

ADJACENT LANE DROP-OFFS



SHOULDER DROP-OFFS



SECTION B-B

GENERAL NOTES

FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.

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

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

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

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

① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

LEGEND

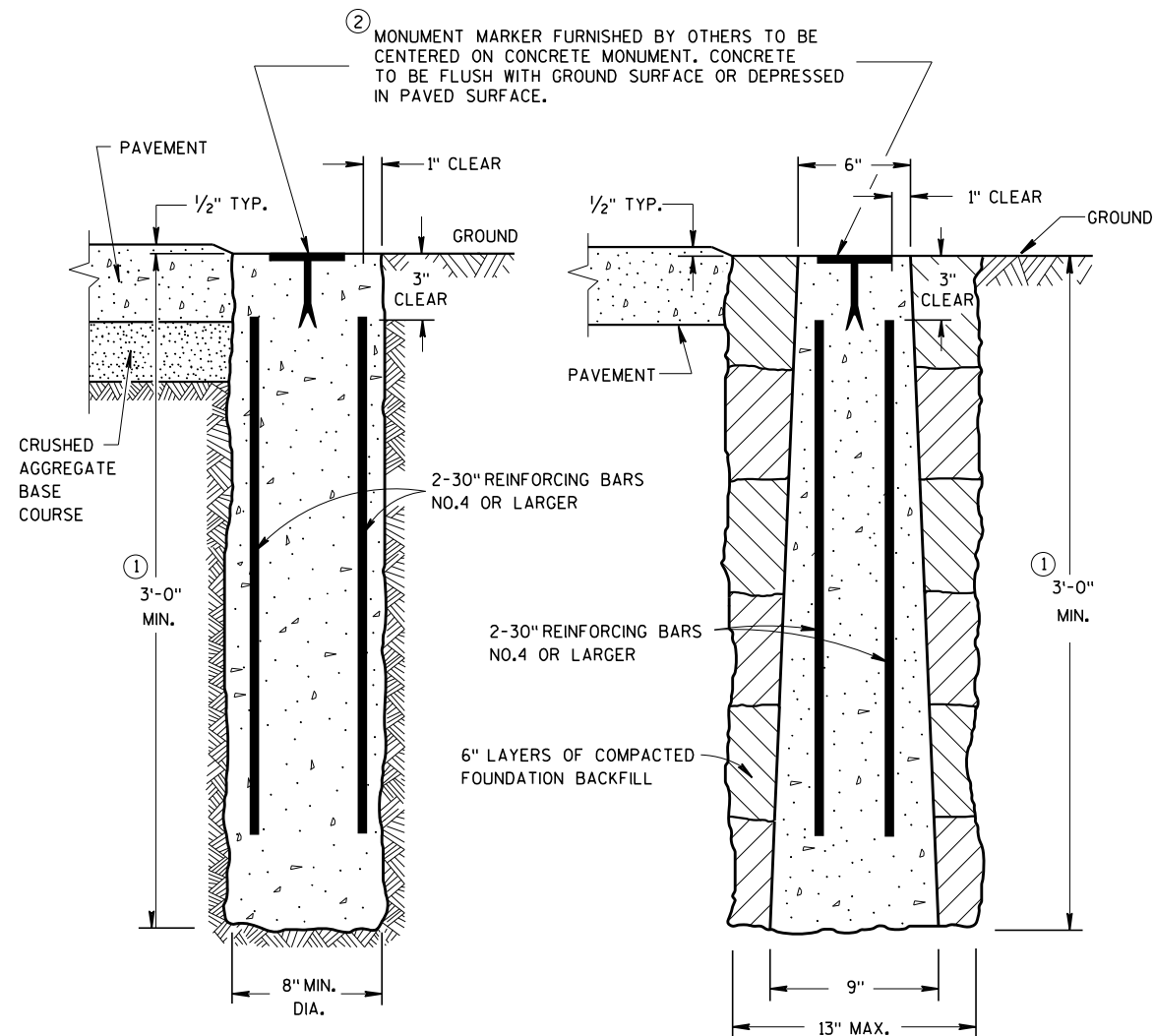
- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON TEMPORARY SUPPORT
- TRAFFIC CONTROL DRUM
- TYPE "A" WARNING LIGHT (FLASHING)
- DIRECTION OF TRAFFIC
- WORK AREA WITH DROP-OFF
- MILLED SURFACE

D	SIGN (C)
< 2" WITH A SLOPE STEEPER THAN 3:1	 W08-9
2" < 6" WITH A SLOPE STEEPER THAN 3:1	 W8-9A PROVIDE A 3:1 OR FLATTER SLOPE OF MATERIAL ADJACENT TO THE PAVEMENT

TRAFFIC CONTROL,
DROP-OFF SIGNING

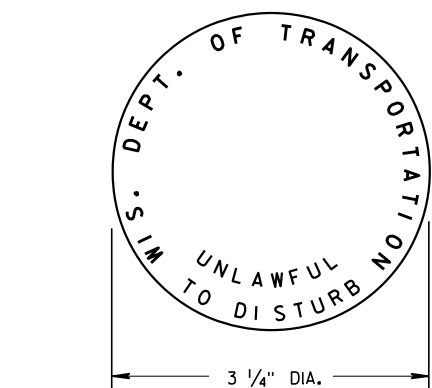
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER
FHWA

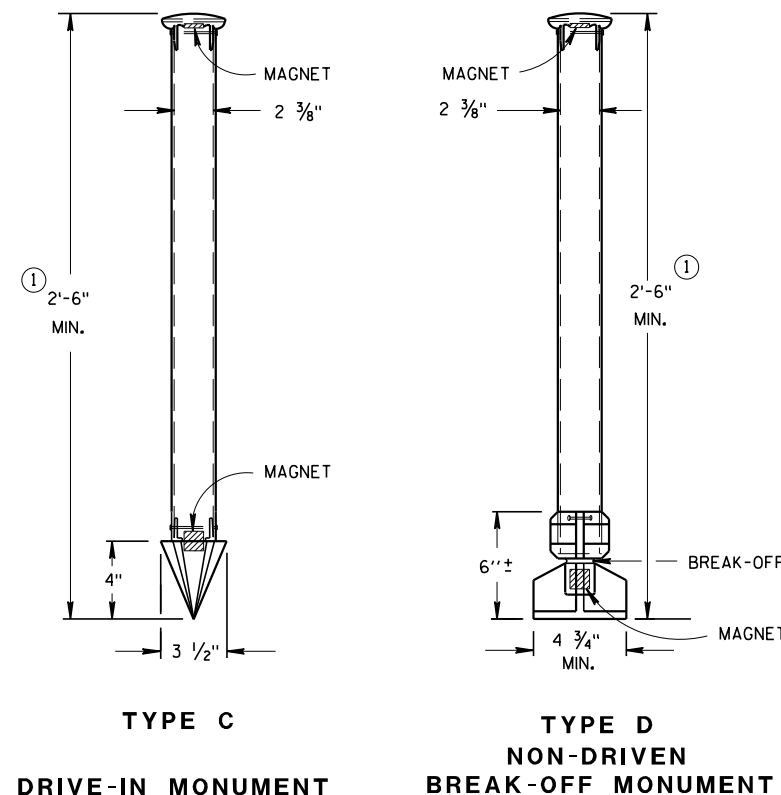


**CAST-IN-PLACE
CONCRETE MONUMENTS
TYPE A**

PRECAST



**WIS DOT MONUMENT
MARKER LOGO
FOR TYPES "A", "C", & "D"**



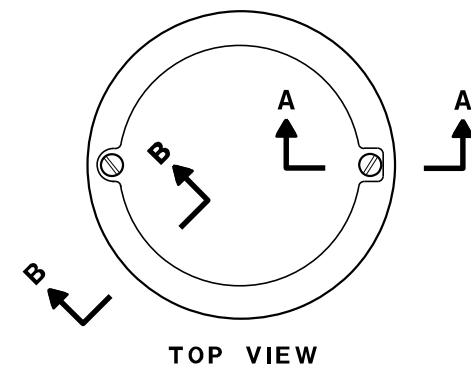
TYPE C

DRIVE-IN MONUMENT

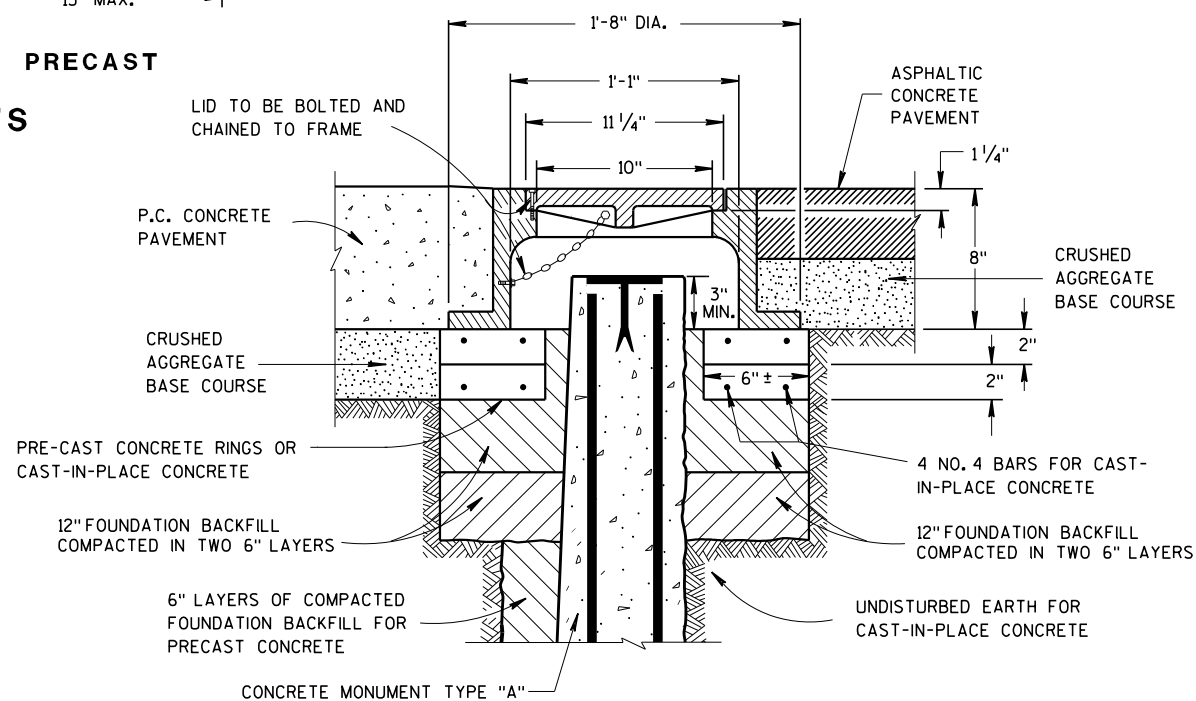
**TYPE D
NON-DRIVEN
BREAK-OFF MONUMENT**

ALUMINUM MONUMENTS

(INCLUDES MARKER)



TOP VIEW



CAST IRON MONUMENT COVER

(APPROXIMATE WEIGHT 95 LBS)

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.

DETAILED DRAWINGS OF PROPOSED ALTERNATE DESIGNS FOR METAL MONUMENTS OR MONUMENT COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

PERMANENT MAGNETS SHALL BE INSERTED NEAR THE TOP AND BOTTOM OF ALL ALUMINUM MONUMENTS SO THE MONUMENT CAN EASILY BE DETECTED BY A METAL DETECTOR.

THE CAST IRON MONUMENT COVER SHALL BE A "NON-ROCKING" TYPE. ADJUSTMENT OF THE COVER TO GRADE MAY BE ACCOMPLISHED BY THE USE OF MORTAR AND BRICK, OR BY EITHER PRECAST OR CAST-IN-PLACE REINFORCED CONCRETE GRADE RINGS.

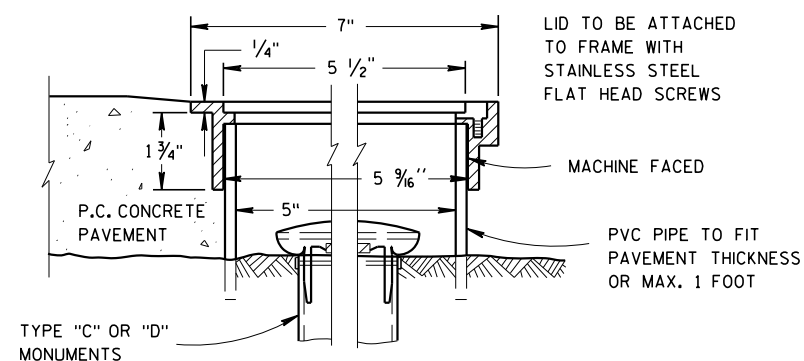
MONUMENTS SHALL BE LOCATED AND PLACED AT THE DIRECTION OF THE ENGINEER.

ALUMINUM MONUMENTS AND MONUMENT COVERS SHALL BE MADE FROM AN ALUMINUM AND MAGNESIUM ALLOY AS DETERMINED BY THE MANUFACTURER.

THE MONUMENT COVERS DETAILED ON THIS DRAWING ARE NOT EQUAL ALTERNATES. MONUMENT COVERS SHALL BE CAST IRON UNLESS ALUMINUM IS SPECIFIED ELSEWHERE IN THE CONTRACT.

MONUMENT SHALL BE CAST-IN-PLACE CONCRETE UNLESS PRECAST CONCRETE OR ALUMINUM MONUMENTS ARE SPECIFIED IN THE CONTRACT OR PERMITTED BY THE ENGINEER

- ① MINIMUM LENGTH SHALL BE 4'-0" FOR MONUMENTS INSTALLED IN PAVED AREAS.
- ② AN OFFICIAL COUNTY MONUMENT MARKER SUPPLIED BY A COUNTY MAY BE REQUIRED FOR SOME SECTION CORNERS AND WITNESS MONUMENTS INSTEAD OF THIS WIS DOT MARKER.



SECTION B-B SECTION A-A

ALUMINUM MONUMENT COVER

(APPROXIMATE WEIGHT 2 LBS)
(FOR CONCRETE PAVEMENT ONLY)

**LANDMARK REFERENCE
MONUMENTS AND COVERS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018 /S/ Raymond A. Kumapayi
DATE CHIEF SURVEYING AND MAPPING ENGINEER
FHWA

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.

DECK SURFACE PREPARATION IS INCLUDED IN THE BID ITEM "POLYMER OVERLAY"

CONCRETE SURFACE REPAIR LOCATIONS ARE TO BE IDENTIFIED AND COORDINATED WITH THE ENGINEER.

PROVIDE A CONTAINMENT SYSTEM TO PREVENT DEBRIS AND SOLVENTS FROM FALLING ONTO FACILITIES AND WATERWAYS LOCATED UNDER THE STRUCTURE. PRIOR TO STARTING WORK, SUBMIT A DEBRIS AND SOLVENT CONTAINMENT PLAN TO THE ENGINEER FOR REVIEW. COST OF THE CONTAINMENT SYSTEM IS INCLUDED IN THE ITEM "POLYMER OVERLAY".

① INDICATES WING NUMBER

LIST OF DRAWINGS:

1. GENERAL PLAN & ELEVATION

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HS-20
INVENTORY RATING: HS-24
OPERATIONAL RATING: HS-40

WISCONSIN STANDARD PERMIT VEHICLE LOAD:

WIS-SPV: 220 KIPS

TRAFFIC DATA

STH 104
A.A.D.T. = 4,090 (2015)
A.A.D.T. = 5,000 (2035)

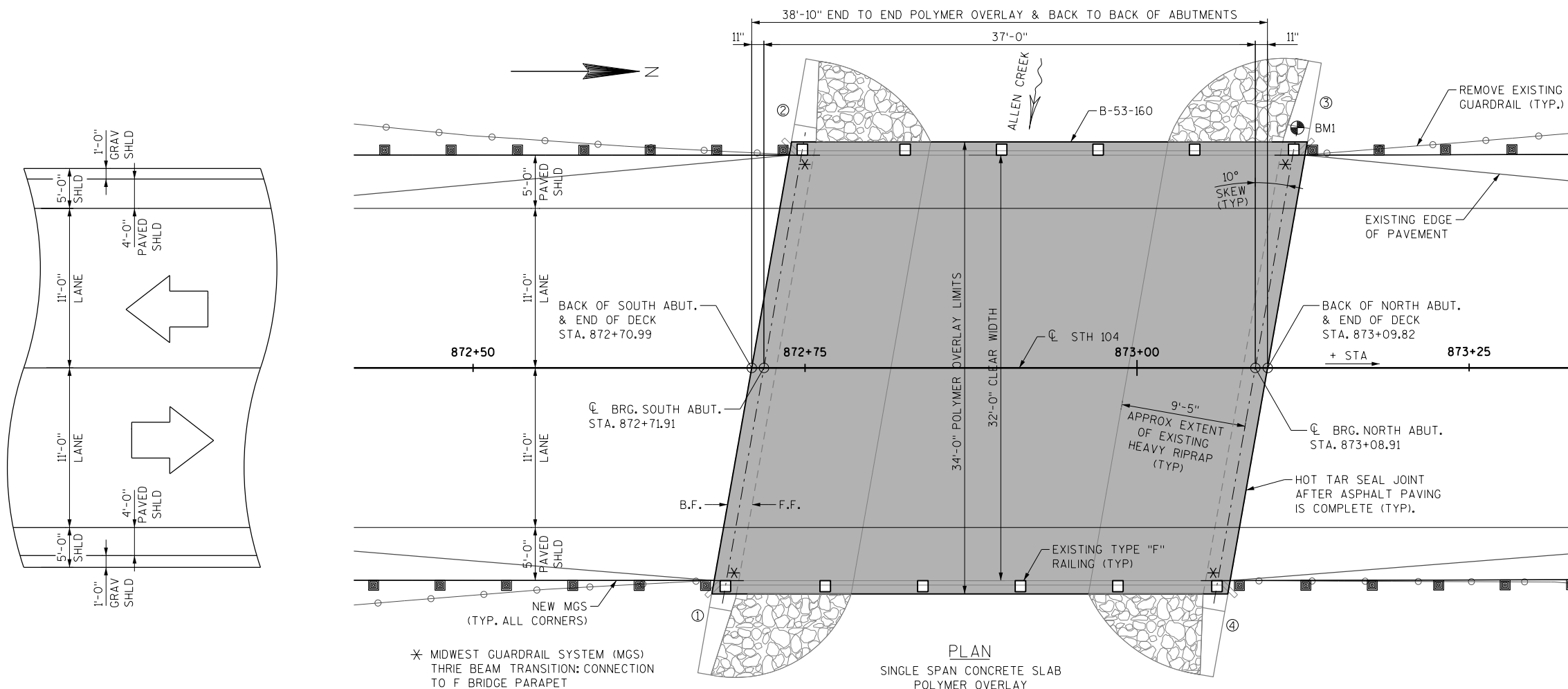
STRUCTURES DESIGN CONTACTS

BRIDGE OFFICE:

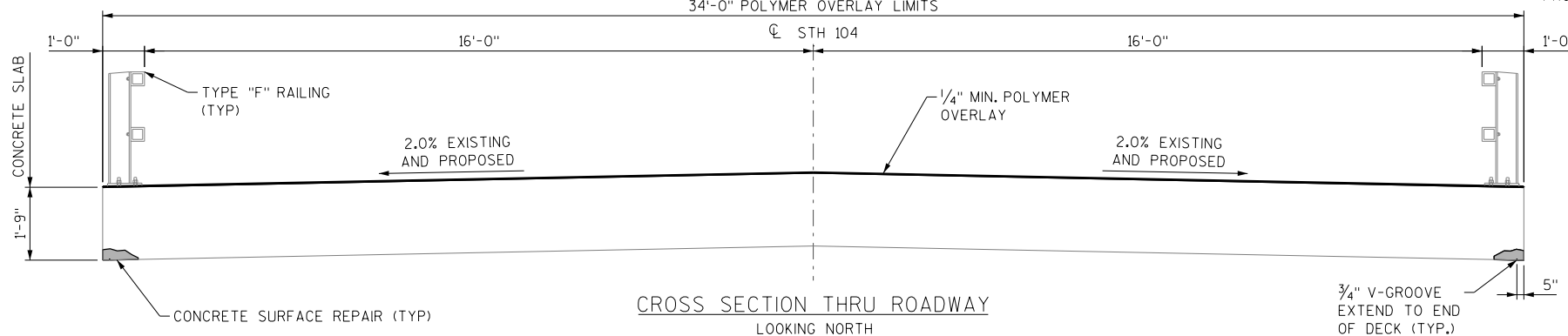
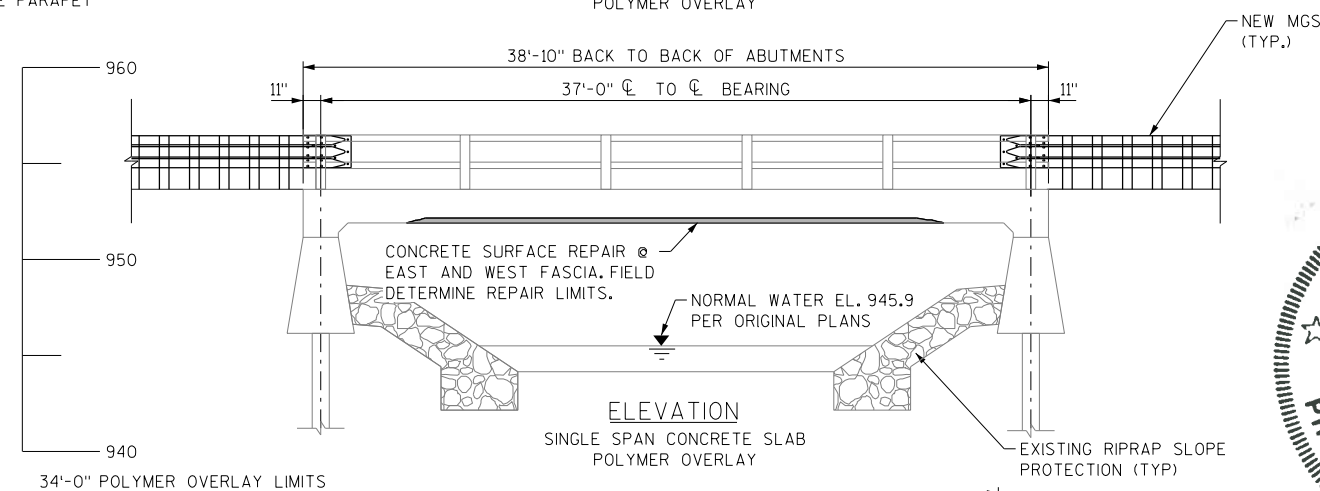
WILLIAM DREHER, PE
(608) 266-8489

CONSULTANT:

WILLIAM J. ZIPPEL, PE, SE
ALFRED BENESCH & CO
1300 W CANAL ST, SUITE 150
MILWAUKEE, WI 53233
(414) 308-1321



* MIDWEST GUARDRAIL SYSTEM (MGS)
THREE BEAM TRANSITION: CONNECTION
TO F BRIDGE PARAPET



BENCHMARK

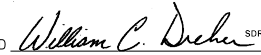
NO.	STATION	DESCRIPTION	ELEV. Δ
BM1	873+12	CUT SQUARE IN NW CORNER OF BRIDGE	954.68

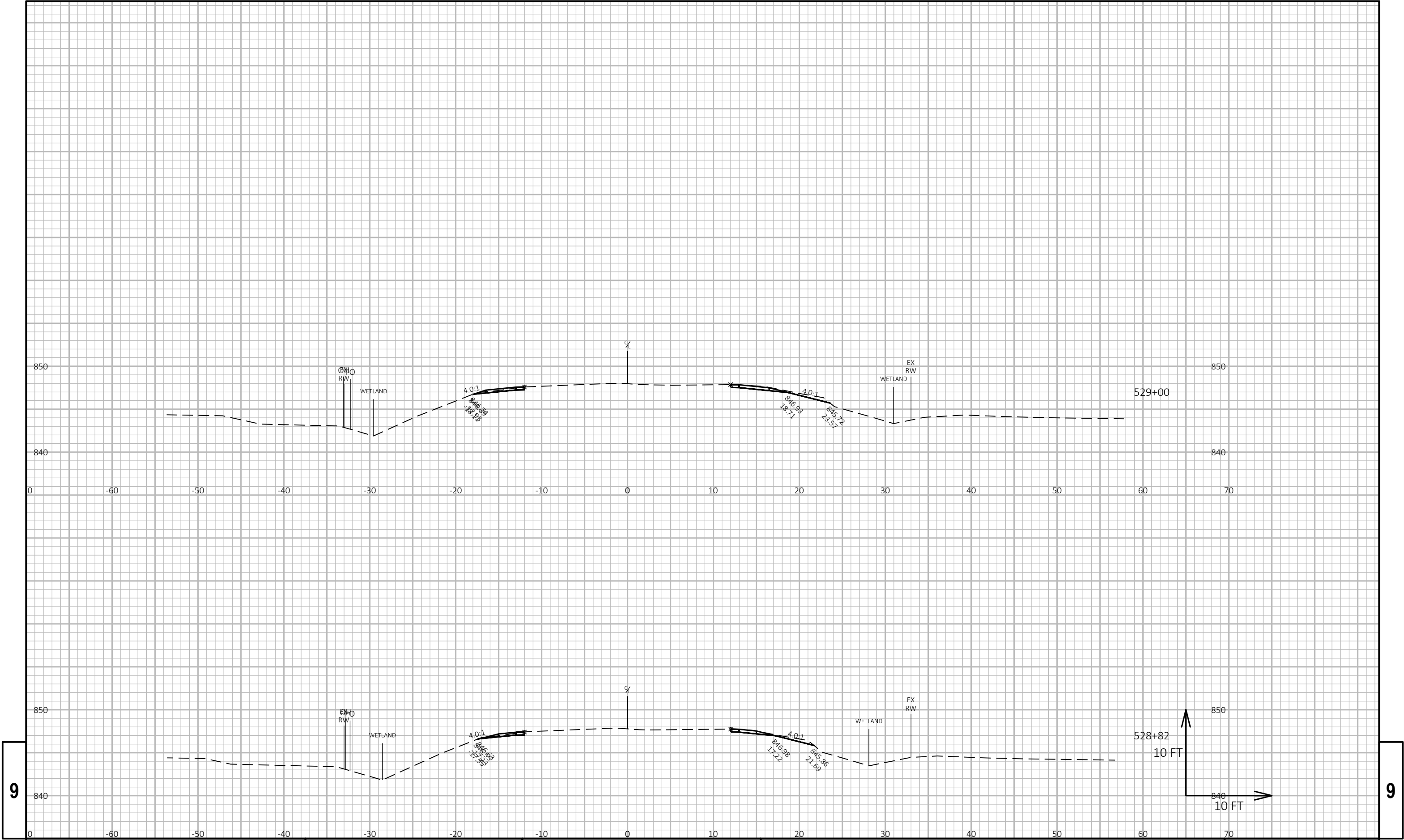
▲ MONUMENT SURVEYED USING GPS EQUIPMENT

TOTAL ESTIMATED QUANTITIES

ITEM NUMBER	ITEM DESCRIPTION	UNIT	TOTAL
509.1500	CONCRETE SURFACE REPAIR	SF	74
509.5100.S	POLYMER OVERLAY	SY	147



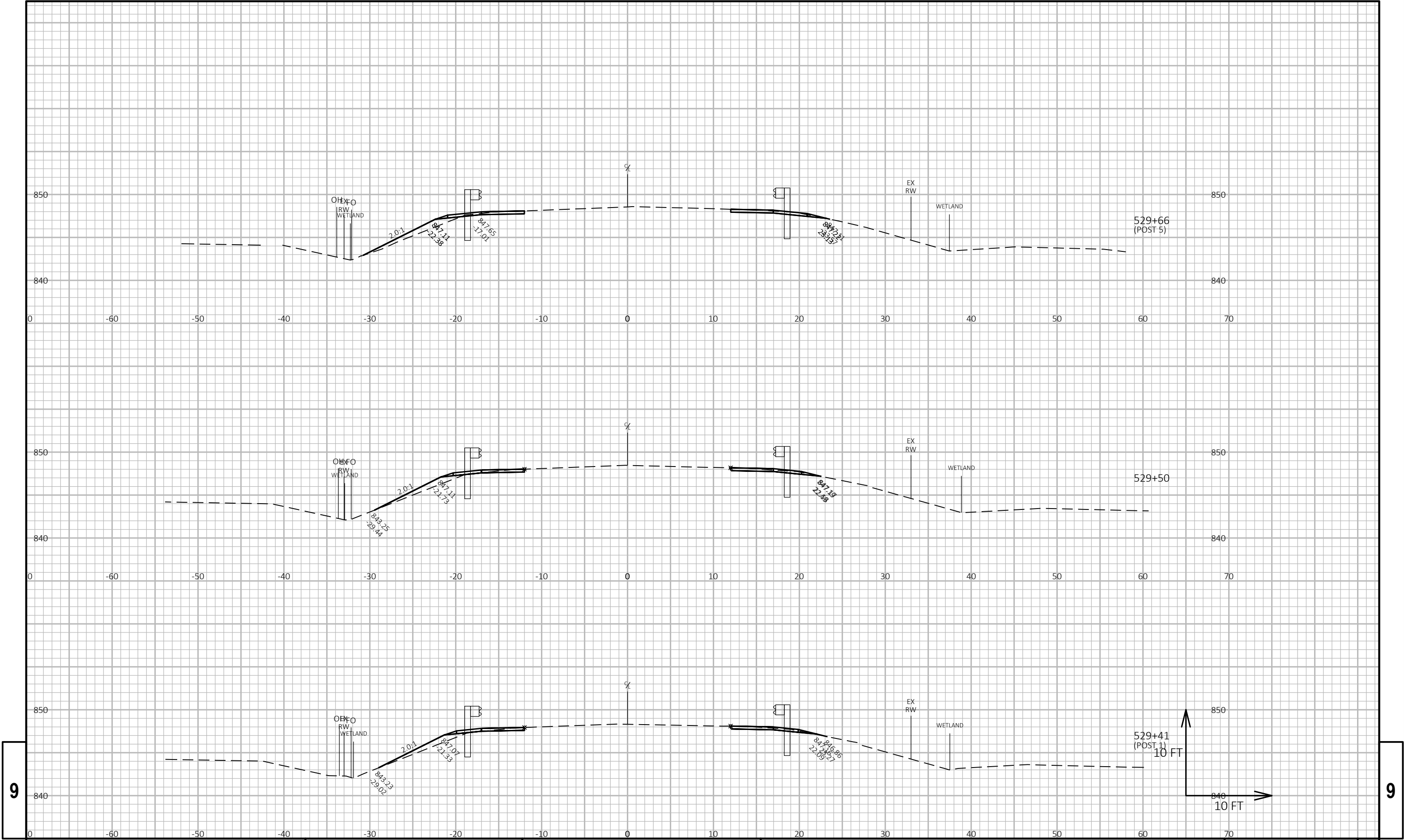
NO.	DATE	REVISION	BY
 Alfred Benesch & Company 1300 West Canal Street, Suite 150 Milwaukee, Wisconsin 53233 414-308-1310 Job No. 20255.00			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED  02/05/19		DATE	
STRUCTURE B-53-160			
STH 104 OVER ALLEN CREEK			
COUNTY	ROCK	TOWN/CITY/VILLAGE	UNION
DESIGN SPEC. REHABILITATION N/A			
DESIGNED BY	JAP	DESIGN CK'D.	WJZ
DRAWN BY	BJW	PLANS CK'D.	WJZ
GENERAL PLAN & ELEVATION			SHEET 1 OF 1



9

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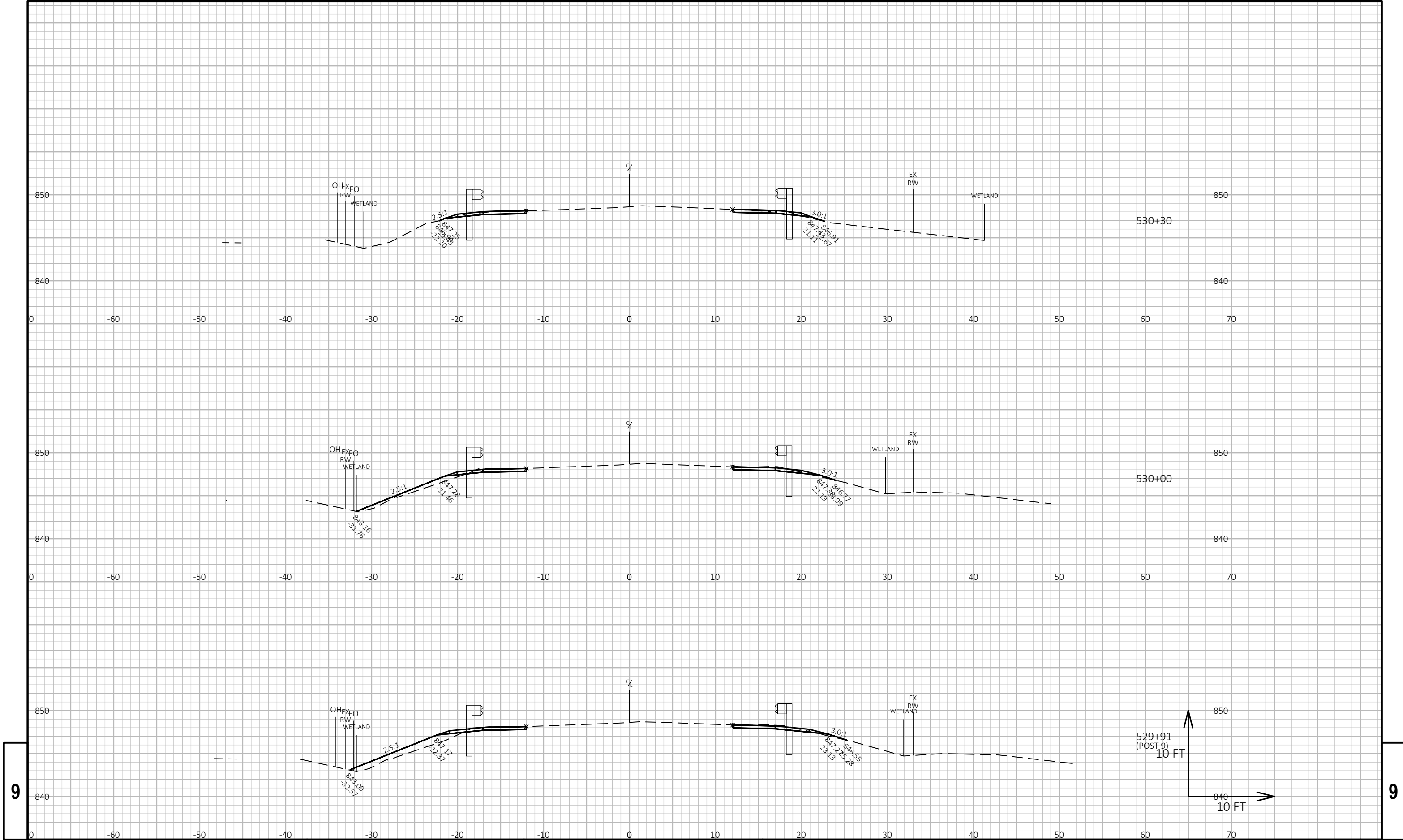
PROJECT NO: 5320-02-60	HWY: STH 104	COUNTY: GREEN	CROSS SECTIONS: GUARDRAIL	SHEET	E
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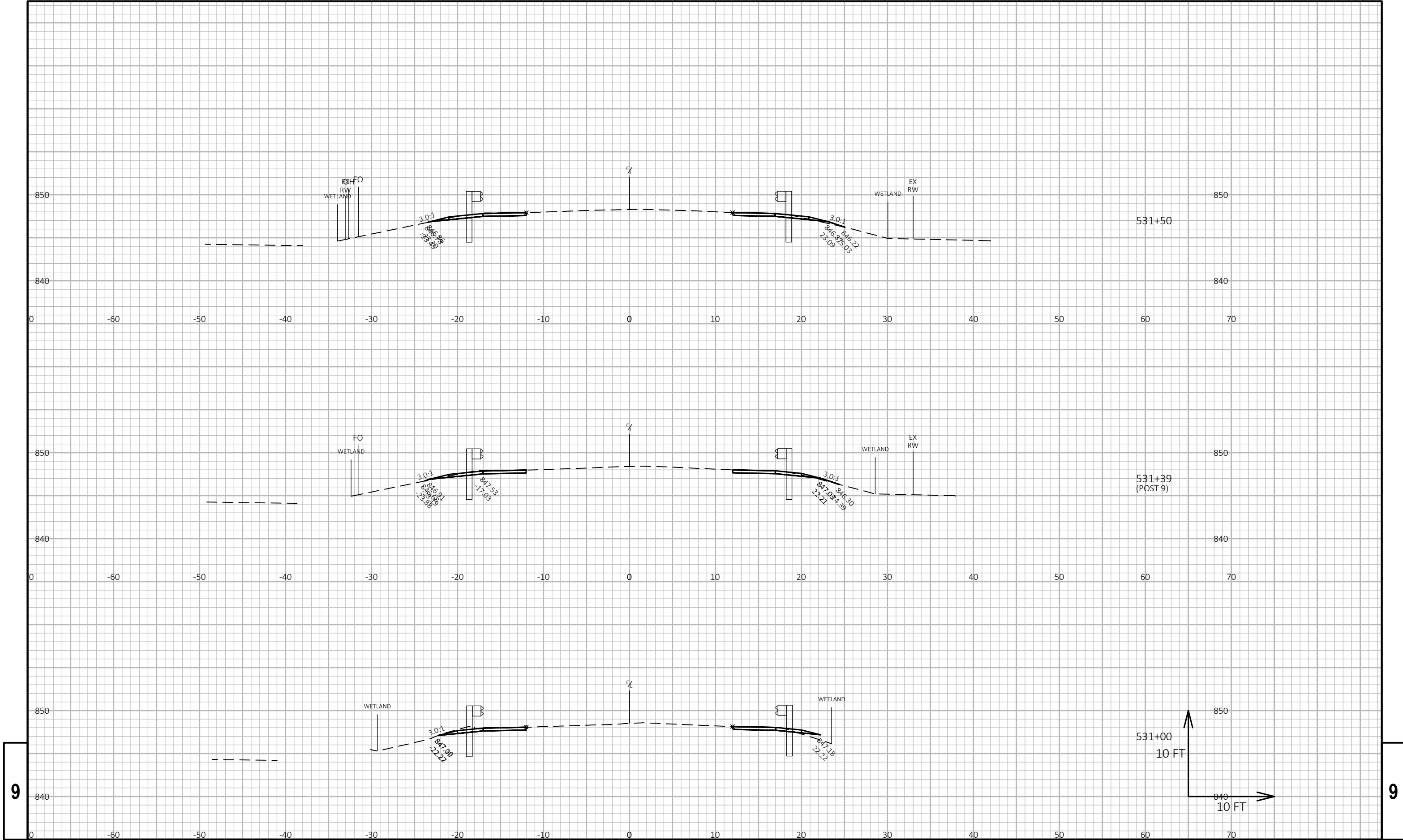


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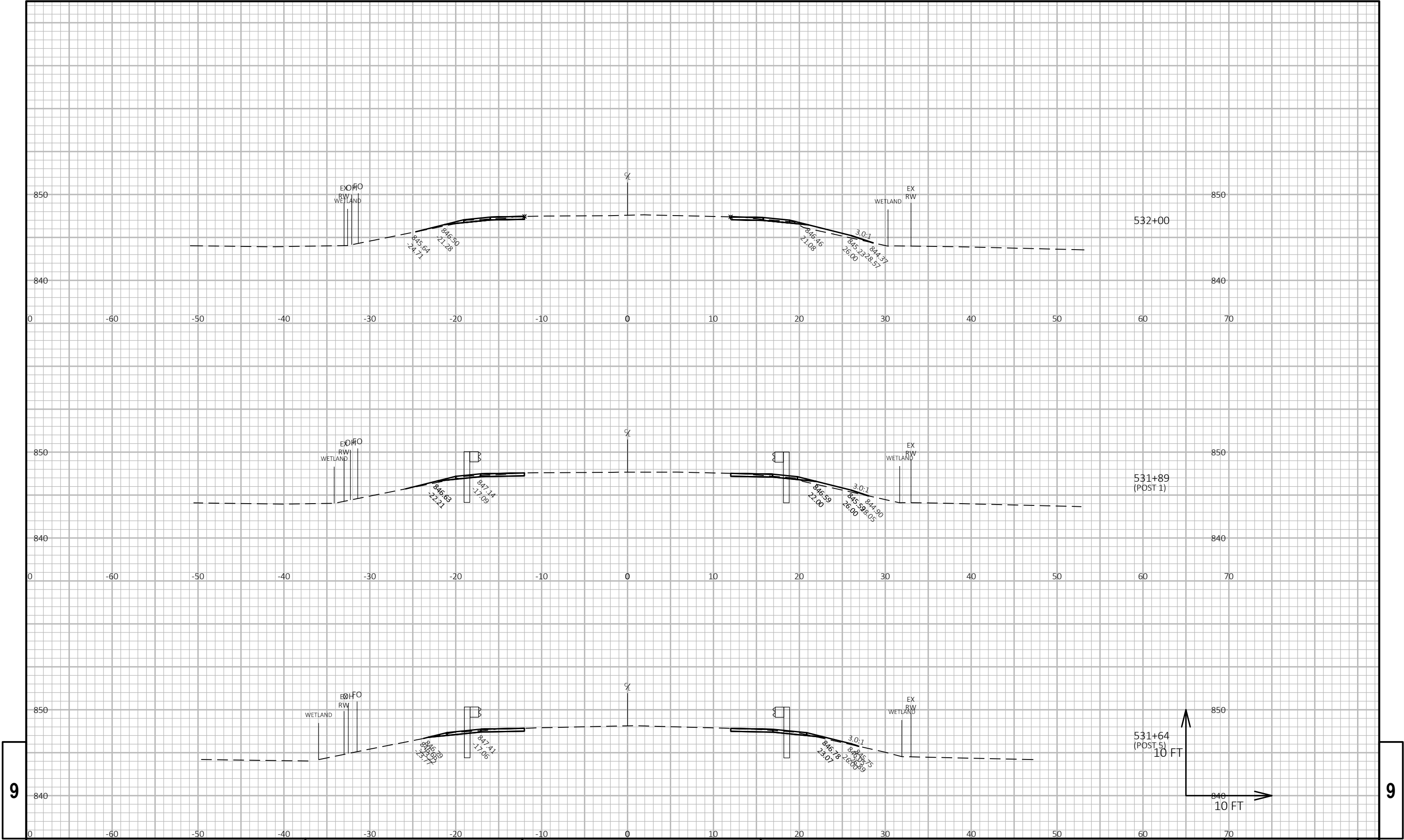
PROJECT NO: 5320-02-60	HWY: STH 104	COUNTY: GREEN	CROSS SECTIONS: GUARDRAIL	SHEET	E
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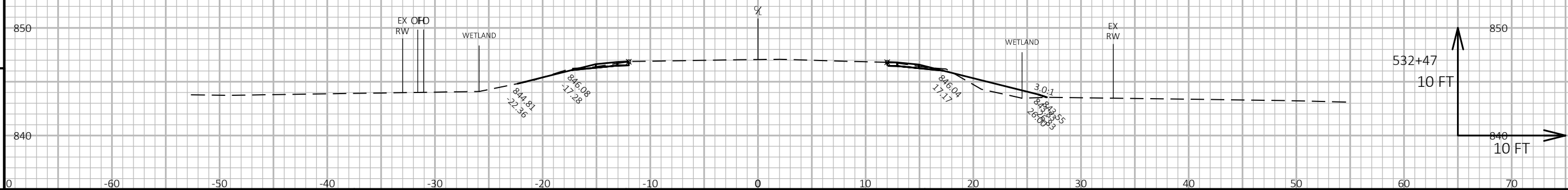


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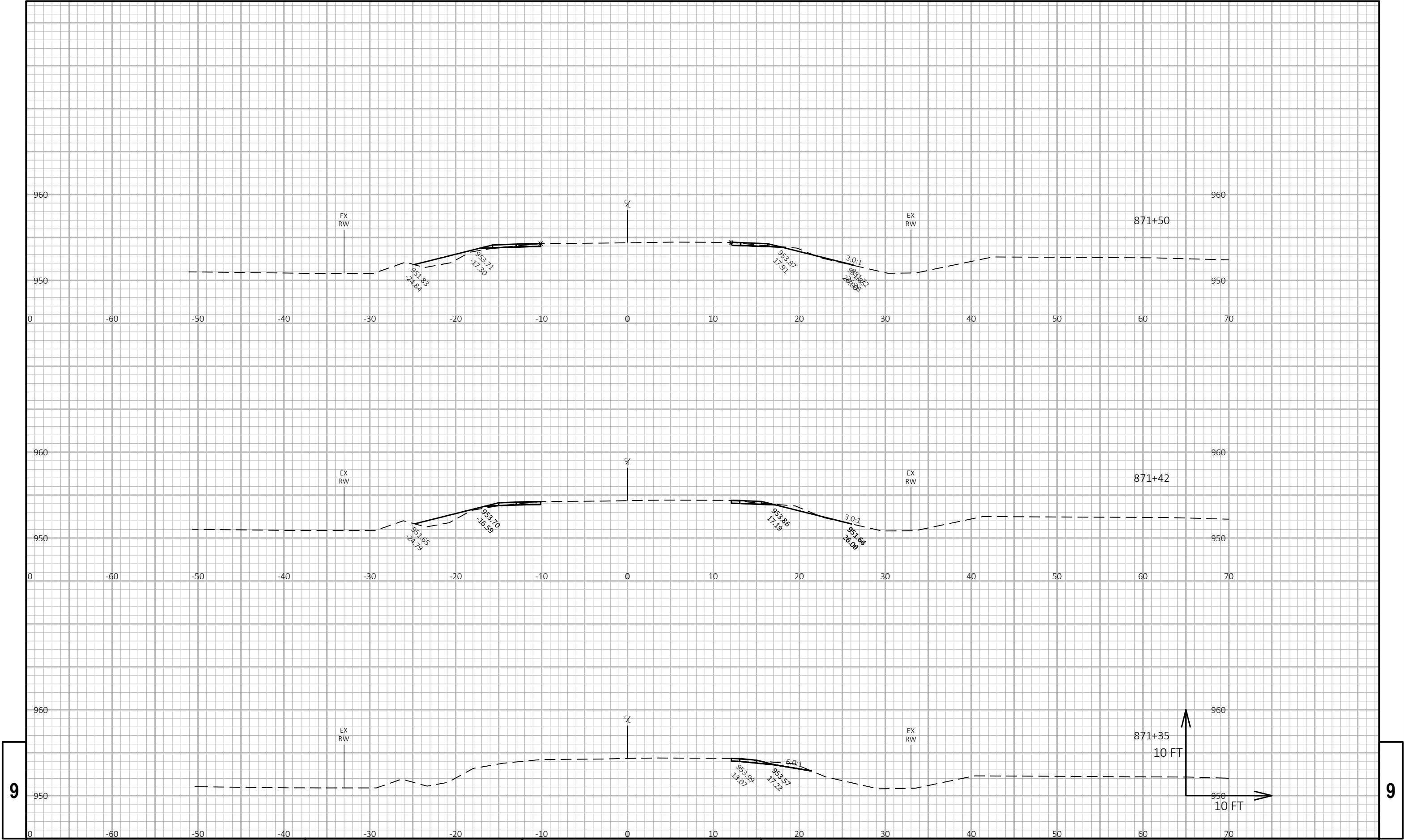
PROJECT NO: 5320-02-60	HWY: STH 104	COUNTY: GREEN	CROSS SECTIONS: GUARDRAIL	SHEET	E
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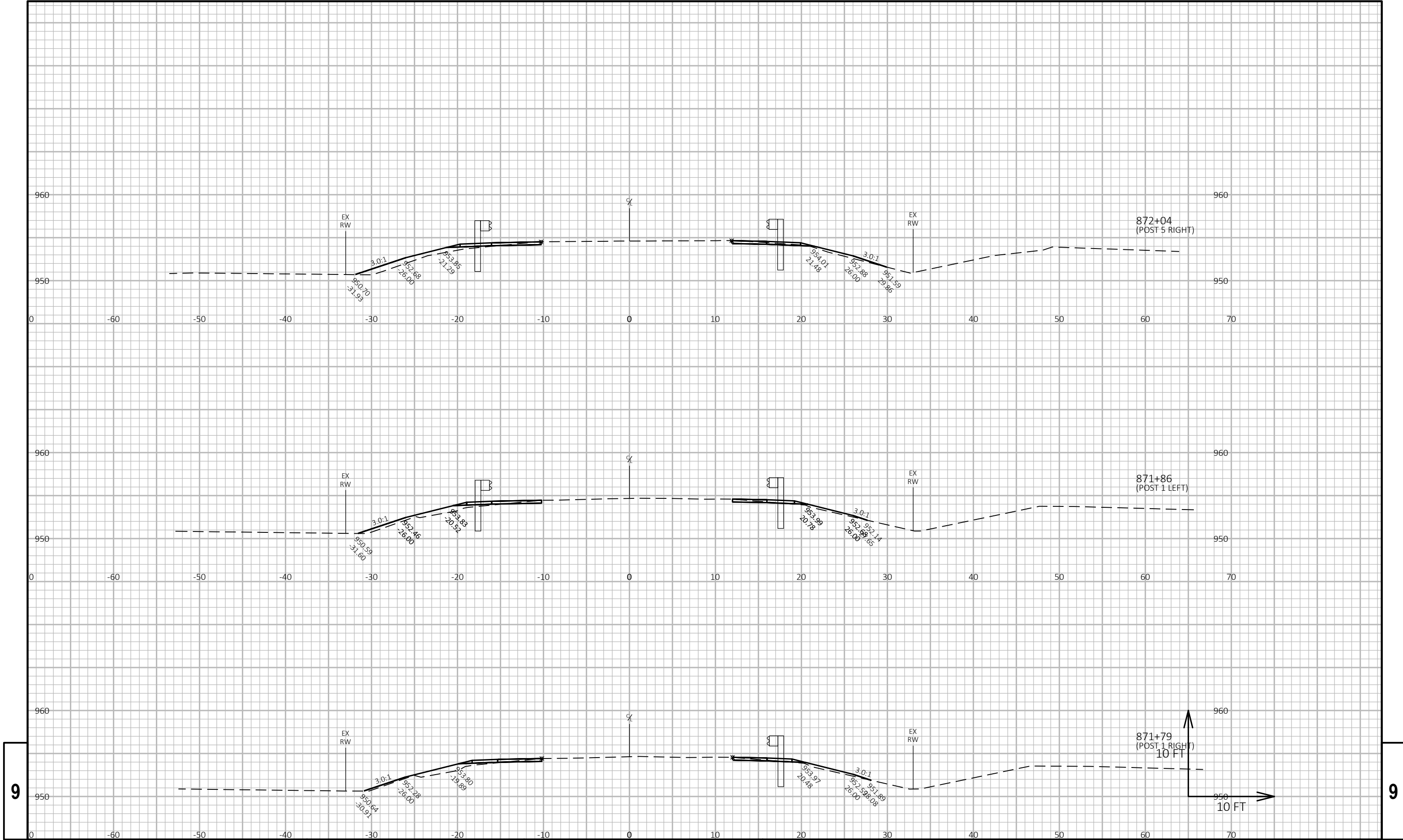
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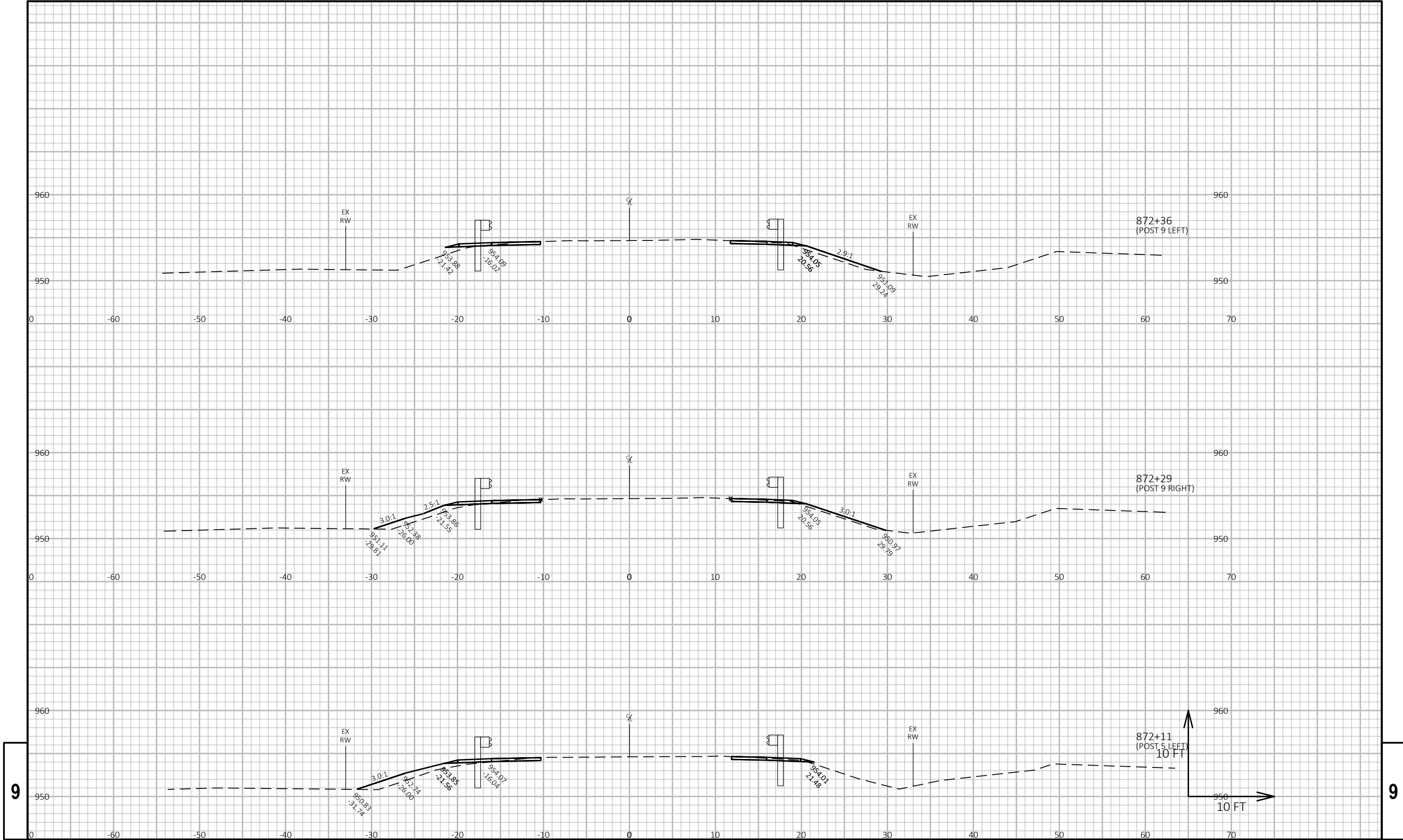
PROJECT NO: 5320-02-60	HWY: STH 104	COUNTY: GREEN	CROSS SECTIONS: GUARDRAIL	SHEET	E
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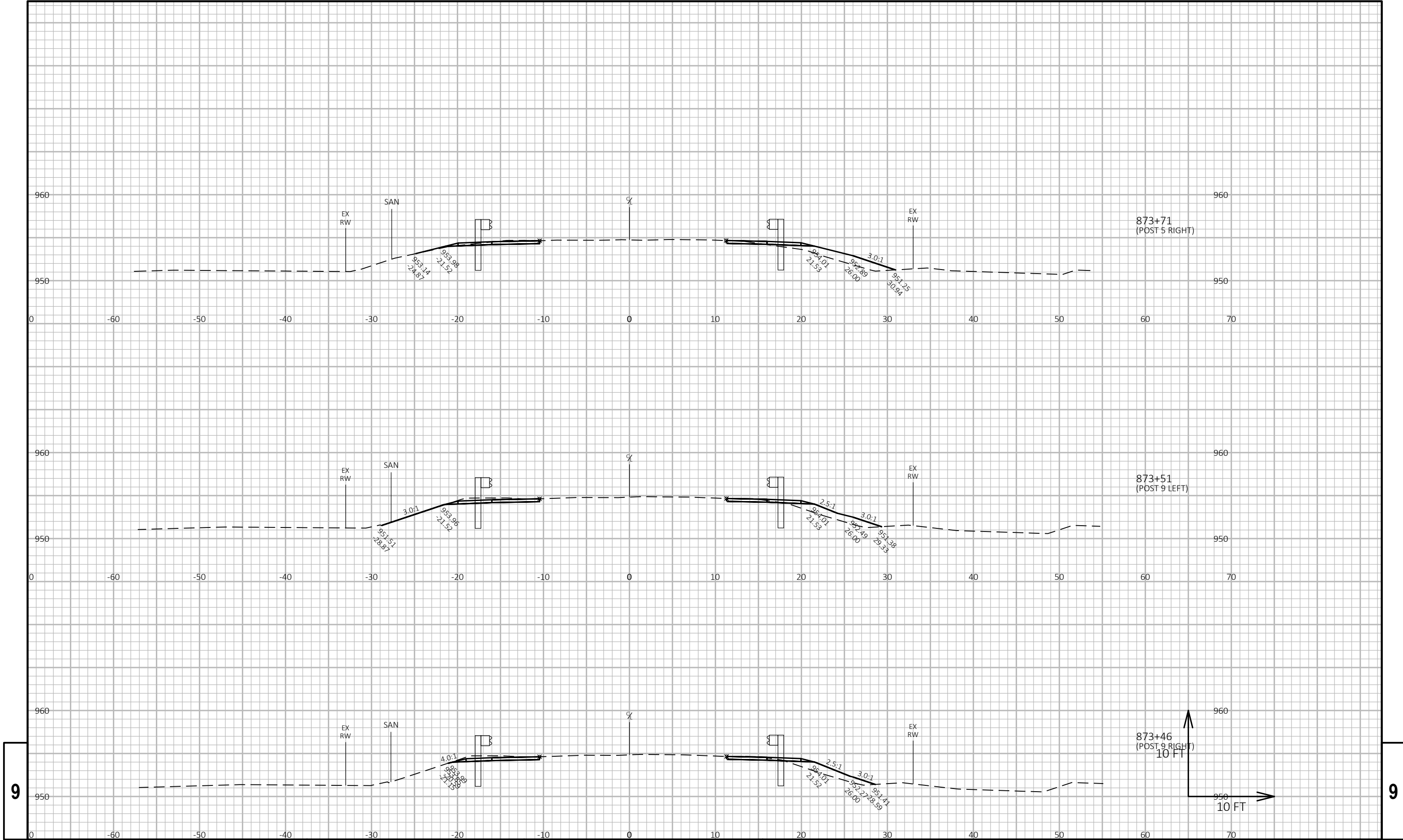


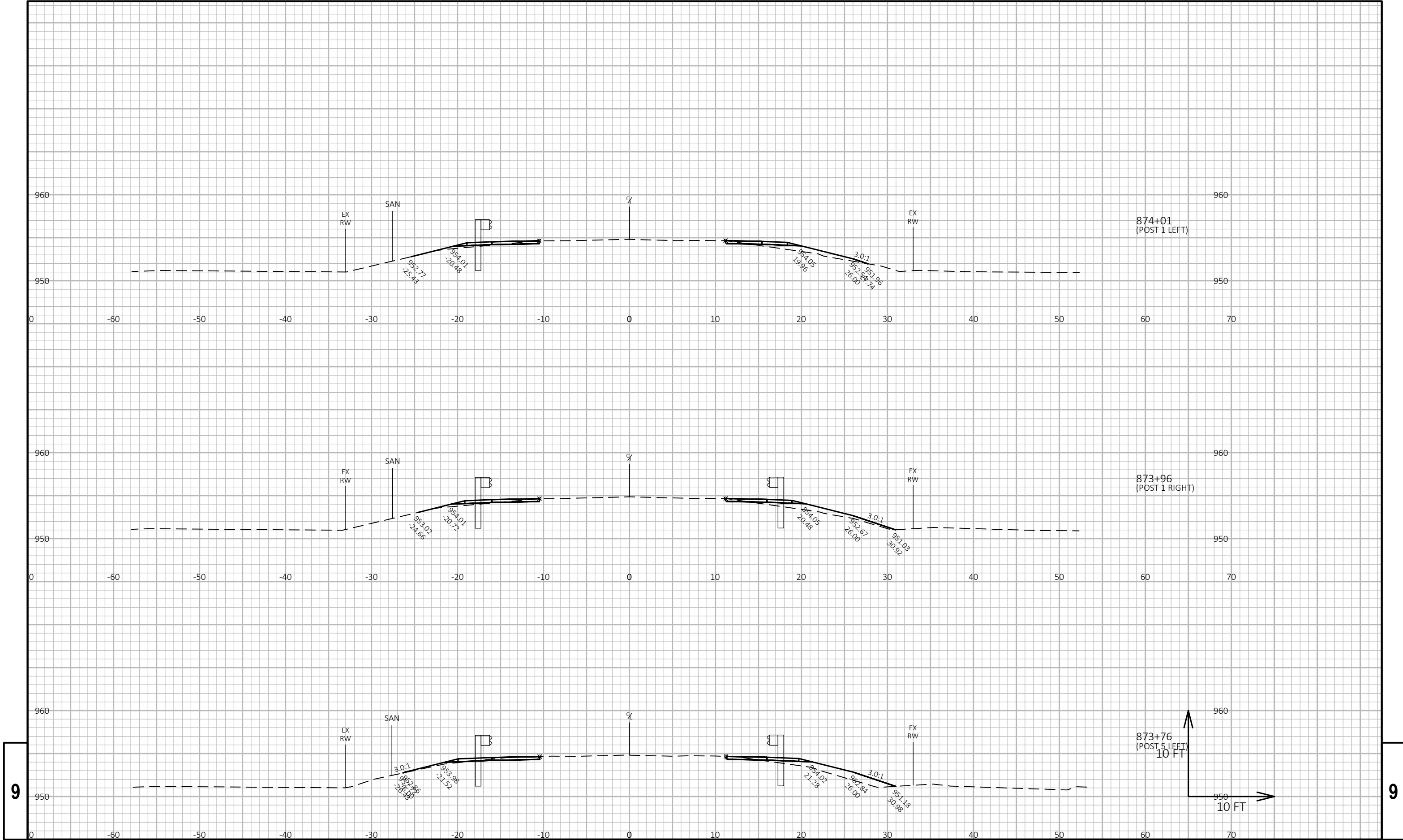


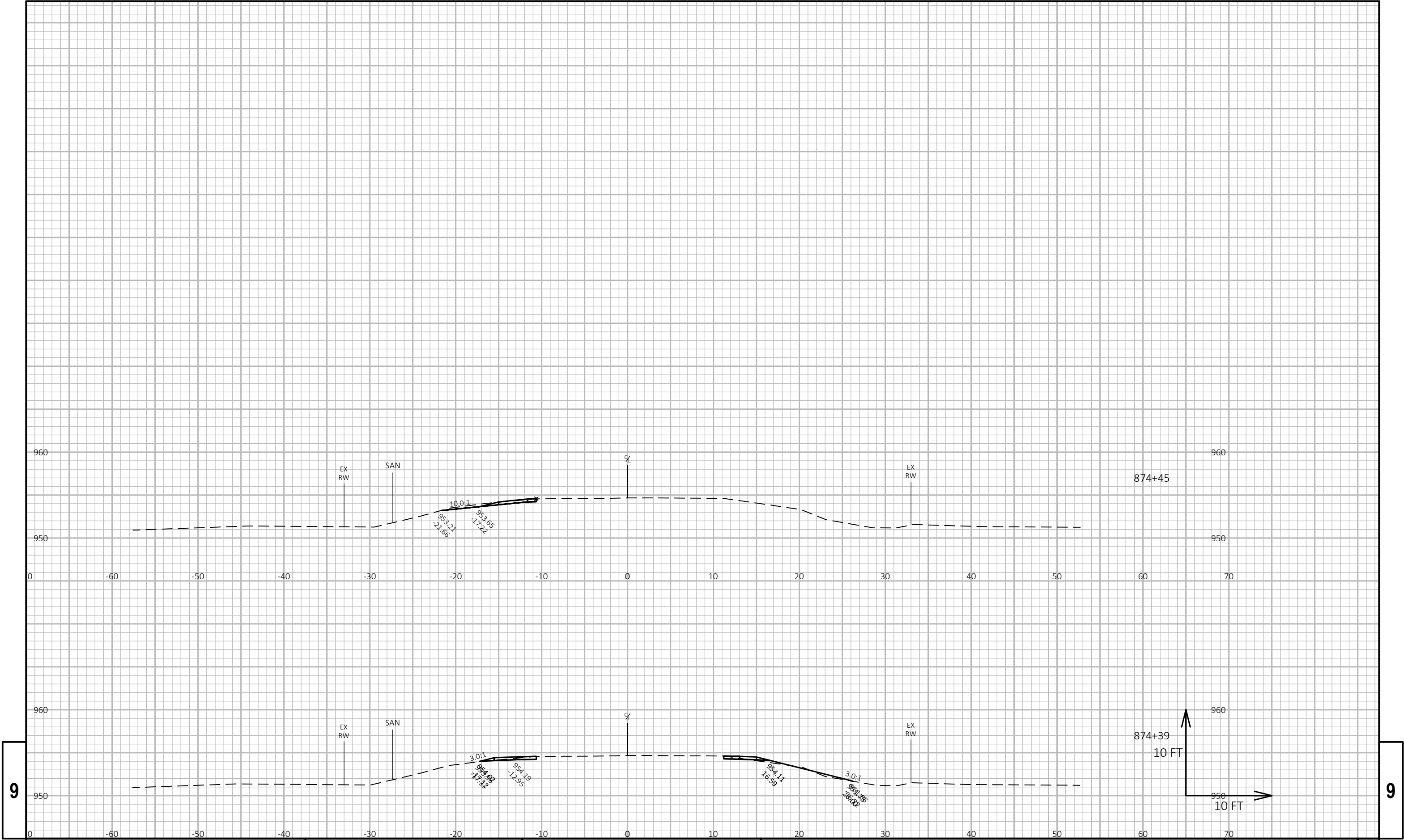
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PROJECT NO: 5320-02-60	HWY: STH 104	COUNTY: GREEN	CROSS SECTIONS: GUARDRAIL	SHEET	E
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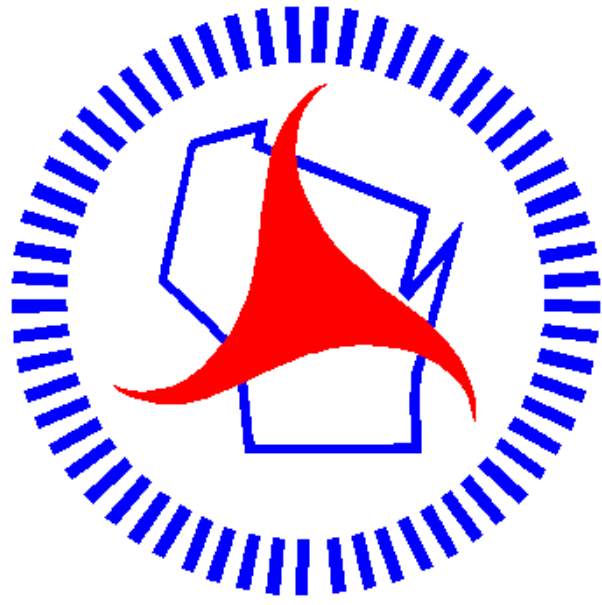




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Notes



Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

<http://www.dot.wisconsin.gov>