

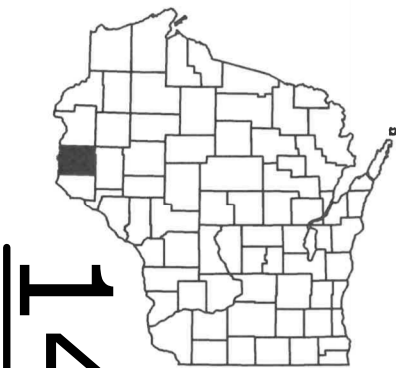
EAU PROJECT ID: 1540-02-76 WITH: 1540-02-78 & 8949-00-75 COUNTY: ST. CROIX

OCTOBER 2024

ORDER OF SHEETS

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

TOTAL SHEETS = 174



DESIGN DESIGNATION 1540-02-06

A.A.D.T.	2026	=	10010
A.A.D.T.	2046	=	12360
D.H.V.		=	1230
D.D.		=	60/40
T.		=	16.8%
DESIGN SPEED		=	55 MPH
ESALS		=	N/A

CONVENTIONAL SYMBOLS

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

RIVER FALLS - NEW RICHMOND

(70TH AVE TO USH 12 WEST)

STH 65
ST. CROIX COUNTY

STATE PROJECT NUMBER
1540-02-76

RIVER FALLS - NEW RICHMOND

(USH 12 EAST TO RICHMOND WAY)

STH 65
ST. CROIX COUNTY

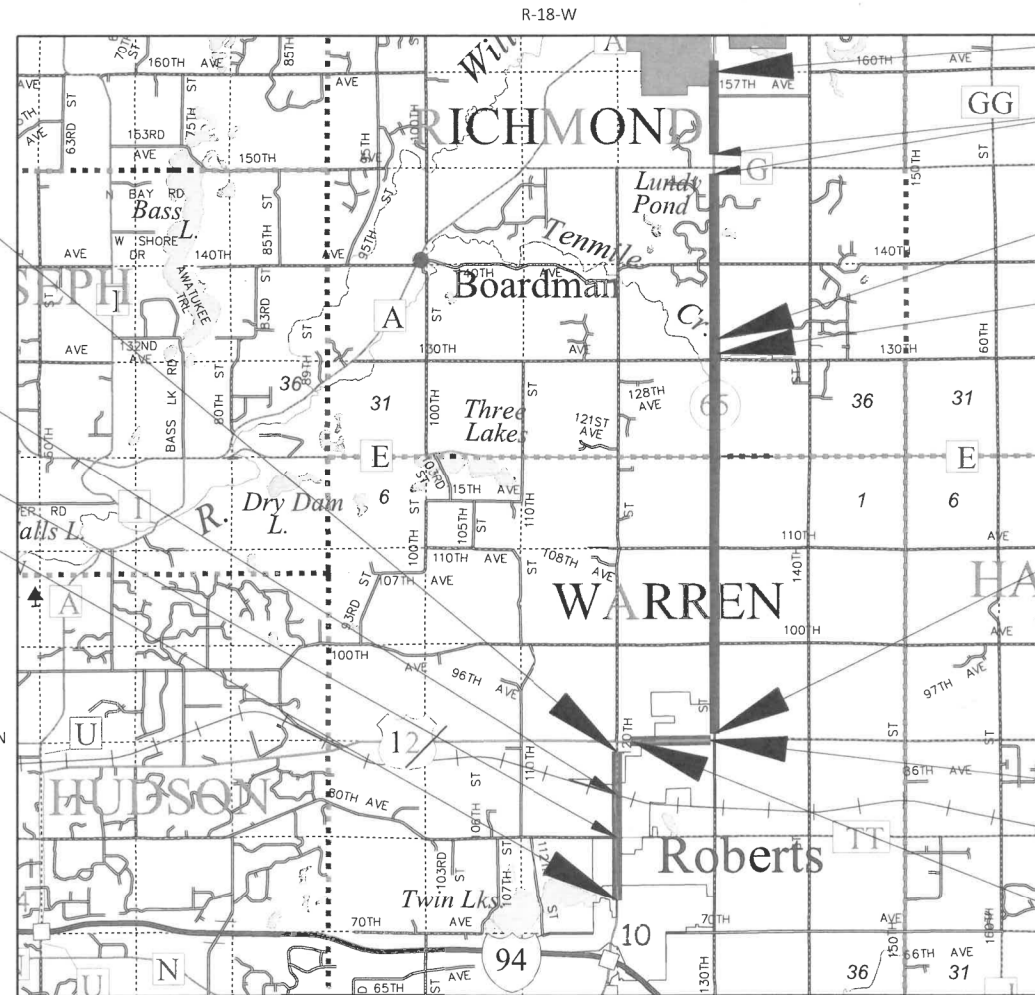
STATE PROJECT NUMBER
1540-02-78

HUDSON - BALDWIN

(STH 65 S TO STH 65 N)

USH 12
ST. CROIX COUNTY

STATE PROJECT NUMBER
8949-00-75



LAYOUT
SCALE 0 2 MI

1540-02-76 TOTAL NET LENGTH OF CENTERLINE = 1.364 MI
1540-02-78 TOTAL NET LENGTH OF CENTERLINE = 6.746 MI
8949-00-75 TOTAL NET LENGTH OF CENTERLINE = 0.771 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), ST. CROIX 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

1540-02-76

1540-02-78

8949-00-75

FEDERAL PROJECT

PROJECT

WISC 2025012

WISC 2025013

WISC 2025018

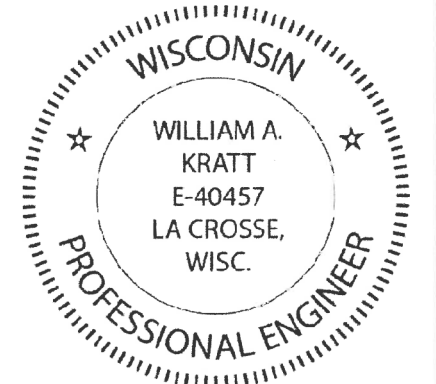
CONTRACT

1

1

1

ORIGINAL PLANS PREPARED BY



DATE: 4/16/24 William A. Kratt (Professional Engineer Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY	
Surveyor	I & S GROUP, INC.
Designer	I & S GROUP, INC.
Project Manager	LANCE WILLISTON, P.E. - KL ENGINEERING
Regional Examiner	REGIONAL EXAMINER
Regional Supervisor	JAMES KOENIG, P.E.

APPROVED FOR THE DEPARTMENT
James Koenig P.E.
DATE: 2024.04.16
08:41:53 -05'00" E

2	DIGGERSHOTLINE Dial 811 or (800)242-8511 www.DiggersHotline.com UTILITY CONTACTS AT&T WISCONSIN - COMMUNICATION LINE RICK PODOLAK 4TH FLOOR 304 S DEWEY ST EAU CLAIRE, WI 54701 715-410-0656 (MOBILE) rp4514@att.com BALDWIN TELECOM, INC. - COMMUNICATION LINE MATT KNEGENDORF 930 MAPLE ST BALDWIN, WI 54002 715-760-0968 (MOBILE) mknegendorf@lswi.net CENTURYLINK COMMUNICATIONS, LLC - COMMUNICATION LINE JOHN RUFF 479 APOLLO DR, SUITE 50 LINO LAKES, MN 55014 651-295-2275 (OFFICE) jruff@terratrechllc.net relocations@lumen.com FRONTIER COMMUNICATIONS of WI LLC - COMMUNICATION LINE JEREMY ZEHM 1851 N 14TH AVE WAUSAU, WI 54401 715-243-9243 (OFFICE) jeremy.zehm@ftr.com LEVEL 3 COMMUNICATIONS LLC - COMMUNICATION LINE JOHN RUFF 479 APOLLO DR, SUITE 50 LINO LAKES, MN 55014 651-295-2275 (OFFICE) jruff@terratechllc.net relocations@lumen.com MIDCO - COMMUNICATION LINE URIAH PHILLIPS 210 MCKINLEY ST N CAMBRIDGE, MN 55008 507-848-5005 (MOBILE) uriah.phillips@midco.com COGENT COMMUNICATION - COMMUNICATION LINE STEVEN HUGHES 1457 COUNTY ROAD 545 S SKANDIA, MI 49885 814-553-2300 (OFFICE) SHughes@CogentCo.com VERIZON BUSINESS - COMMUNICATION LINE RJ CICATELLO 15725 W RYERSON RD NEW BERLIN, WI 53151 262-232-1323 (OFFICE) randy.cicatello@verizon.com investigations@verizonbusiness.com WINDSTREAM KDL, LLC - COMMUNICATION LINE ERIC BECKER 314 N DANZ AVE GREEN BAY, WI 54302 920-461-9825 (OFFICE) eric.becker@windstream.com DAIRYLAND POWER COOPERATIVE - ELECTRICITY MICHAEL LYDON 3200 EAST AVE S P.O. BOX 817 LA CROSSE, WI 54602-0817 608-787-1381 (OFFICE) Michael.Lydon@DairylandPower.com ST. CROIX ELECTRIC COOPERATIVE - ELECTRICITY BRIAN FERG 1925 RIDGEWAY ST PO BOX 160 HAMMOND, WI 54015-0160 715-796-7000 (OFFICE) 715-796-5633 (MOBILE) brianf@scecnnet.net XCEL ENERGY- ELECTRICITY DARREN NORDSKOG 2001 OLD HIGHWAY 35 S HUDSON, WI 54016 715-386-4798 (OFFICE) 715-796-5633 (MOBILE) brianf@scecnnet.net XCEL ENERGY- ELECTRICITY - TRANSMISSION MITCHELL DEINGER 414 NICOLLET MALL, 5TH FLOOR MINNEAPOLIS, MN 55401 612-321-3109 (OFFICE) mitchell.a.dienger@xcelenergy.com MIDWEST NATURAL GAS, INC. - GAS/PETROLEUM RICK SCHERMERHORN 3600 STATE HIGHWAY 157, SUITE 200 P.O. BOX 429 LA CROSSE, WI 54602-0429 608-781-1011 (OFFICE) 608-780-0210 (MOBILE) ricks@midwestnaturalgas.com XCEL ENERGY- GAS/PETROLEUM DARREN NORDSKOG 2001 OLD HIGHWAY 35 S HUDSON, WI 54016 715-386-4798 (OFFICE) 715-410-3755 (MOBILE) darren.m.nordskog@xcelenergy.com VILLAGE OF ROBERTS - SEWER JOHN BOND 107 E MAPLE ST ROBERTS, WI 54023-9703 715-749-3126 (OFFICE) 715-760-1312 (MOBILE) rbtswwtp@baldwin-telecom.net VILLAGE OF ROBERTS - WATER JOHN BOND 107 E MAPLE ST ROBERTS, WI 54023-9703 715-749-3126 (OFFICE) 715-760-1312 (MOBILE) rbtswwtp@baldwin-telecom.net		EMERGENCY CONTACT NUMBERS FOR XCEL ENERGY ELECTRIC 24-HOUR EMERGENCY SERVICE: 1-800-895-1999 GAS 24-HOUR EMERGENCY SERVICE: 1-800-895-2999							
	DNR LIAISON AMY LESIK DEPARTMENT OF NATURAL RESOURCES 1300 W. CLAIREMONT AVE. EAU CLAIRE, WI 54701 PHONE: 715-495-1903 EMAIL: AMY.LESIK@WISCONSIN.GOV									
	US ARMY CORPS OF ENGINEERS 1114 S OAK ST LA CRESCENT, MINNESOTA 55947 PHONE: 651-290-5905 EMAIL: USACE_Requests_MN@usace.army.mil									
	ST. CROIX COUNTY HIGHWAY COMMISSIONER ROBBIE KREJCI 300 OAK RIDGE PARKWAY BALDWIN, WI 54002 PHONE: 608-786-3810 FAX: 608-786-3816									
	DESIGN CONTACTS LANCE WILLISTON, KL ENGINEERING WISDOT PROJECT MANAGER 393 RED CEDAR STREET, SUITE 2 MENOMONIE, WI 54751 PHONE: (608) 663-1218 EMAIL: LWILLISTON@KLENGINEERING.COM HEIDI SCHWARZ., ISG INC. CONSULTANT PROJECT MANAGER 201 MAIN STREET, SUITE 1020 LA CROSSE, WI 54601 PHONE: (608) 789-2034 EMAIL: HEIDI.SCHWARZ@ISGINC.COM									
ORDER OF SECTION 2 SHEETS GENERAL NOTES PROJECT OVERVIEW TYPICAL SECTIONS CONSTRUCTION DETAILS EROSION CONTROL PLAN PAVEMENT MARKING										
PROJECT NO: 1540-02-76, 1540-02-78, 8949-00-75		HWY: STH 65		COUNTY: ST. CROIX		GENERAL NOTES		SHEET 2		E

GENERAL NOTES

- THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS AS SHOWN ON THE PLAN ARE APPROXIMATE. THERE MAY BE OTHER UTILITY INSTALLATIONS WITHIN THE PROJECT AREA THAT ARE NOT SHOWN.
- NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY LOCAL MUNICIPAL UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.
- NO TREES OR SHRUBS ARE TO BE REMOVED WITHOUT APPROVAL OF THE ENGINEER.
- PROTECT INLETS WITH PROPER INLET PROTECTION AT LOCATIONS EXHIBITING RISK OF BEING IMPACTED BY CONSTRUCTION OPERATIONS AS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESHAPING AND SEEDING ANY PREVIOUSLY GRASSED AREAS WHICH ARE DISTURBED BY ANY OPERATION OUTSIDE OF THE NORMAL CONSTRUCTION LIMITS AT THE CONTRACTOR EXPENSE.
- ORIGINAL DEPARTMENT CONTROL DOES NOT EXIST. IF CONTROL IS DEEMED NECESSARY, IT WILL BE INCIDENTAL TO THE ITEM CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT).
- SAWCUT ASPHALTIC DRIVEWAYS AND/OR PARKING LOTS AT THE MATCHLINE AS SHOWN IN THE CONSTRUCTION DETAILS OR AS DIRECTED BY THE ENGINEER.
- FERTILIZER SHALL NOT BE USED NEAR NAVIGABLE WATERWAYS OR WETLANDS.
- THE EXACT LOCATIONS AND LIMITS OF PRIVATE ENTRANCES SHALL BE DETERMINED BY THE ENGINEER.
- PLACE ALL TOPSOIL IN ALL GRASSED AREAS DESIGNATED BY THE ENGINEER IMMEDIATELY AFTER GRADING HAS BEEN COMPLETED. SEED, MULCH AND FERTILIZE OR SOD AND FERTILIZE ALL AREAS 5 DAYS AFTER PLACEMENT OF TOPSOIL.
- THE EROSION CONTROL FEATURES AS SHOWN ON THE PLANS ARE AT SUGGESTED LOCATIONS. EXACT LOCATION WILL BE DETERMINED BY THE ENGINEER.
- PRIOR TO THE PLACEMENT OF MGS GUARDRAIL, THE SHOULDERS SHALL BE IN PLACE, SHAPED AND COMPACTED UNLESS SHOWN OTHERWISE.
- HMA PAVEMENT WEIGHT CALCULATIONS ARE BASED ON 112 LB/SY/IN.
- APPLY TACK COAT AT A RATE OF 0.07 GAL/SY TO MILLED PAVEMENT SURFACES AND 0.05 GAL/SY BETWEEN LAYERS OF HMA PAVEMENT.

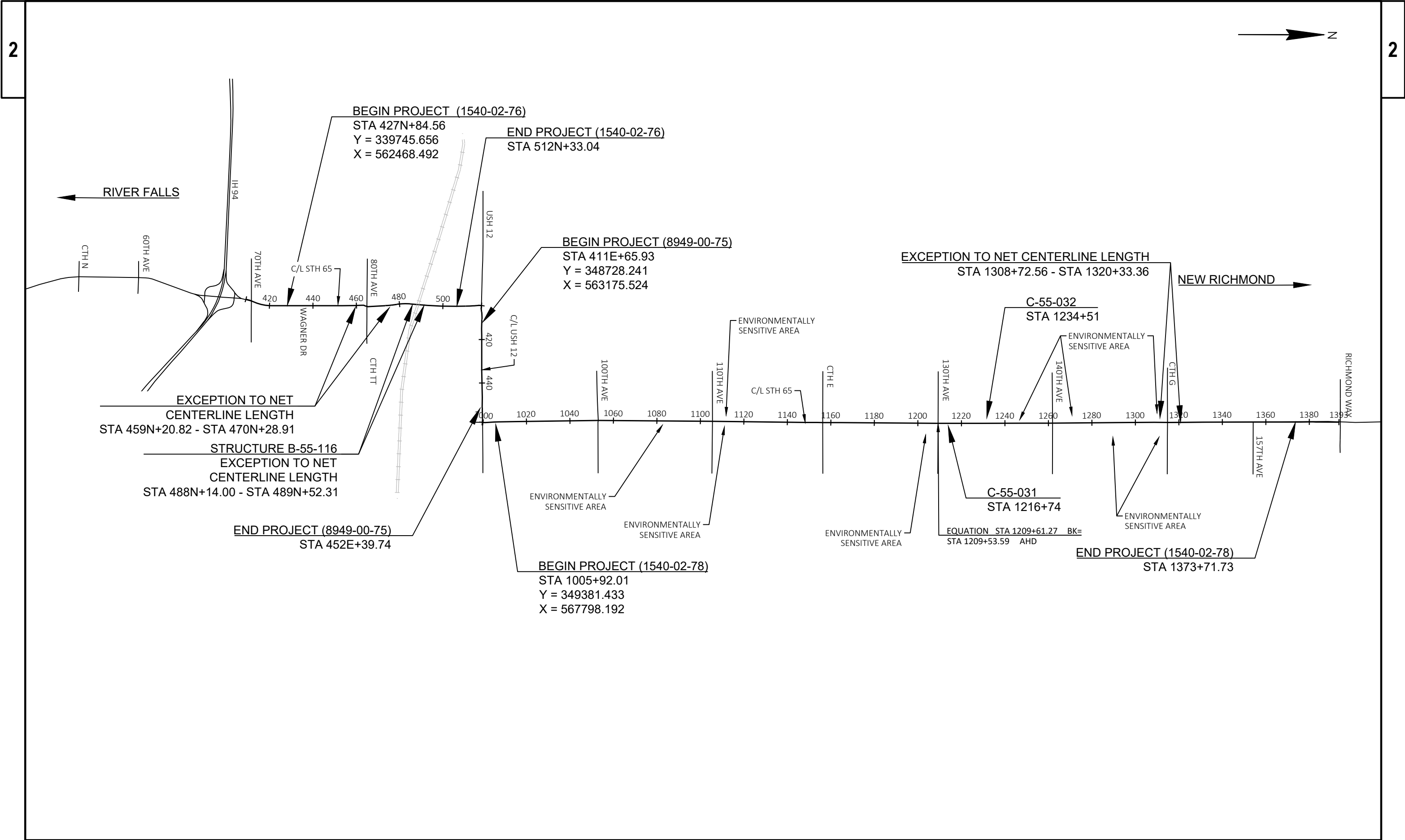
AC	ACRE
AGG	AGGREGATE
AH	AHEAD
AADT	ANNUAL AVERAGE DAILY TRAFFIC
ASPH	ASPHALTIC
AVG	AVERAGE
BK	BACK
BAD	BASE AGGREGATE DENSE
BM	BENCH MARK
BR	BRIDGE
CL or C/L	CENTER LINE
CE	COMMERCIAL ENTRANCE
CONC	CONCRETE
CO	COUNTY
CTH	COUNTY TRUNK HIGHWAY
CR	CREEK
CABC	CRUSHED AGGREGATE BASE COURSE
CY or CUYD	CUBIC YARD
CULV	CULVERT
CP	CULVERT PIPE
C & G	CURB AND GUTTER
D	DEGREE OF CURVE
DIA	DIAMETER
DISCH	DISCHARGE
E	EAST
EB	EASTBOUND
EL or ELEV	ELEVATION
EW	ENDWALL
ENT	ENTRANCE
EXC	EXCAVATION

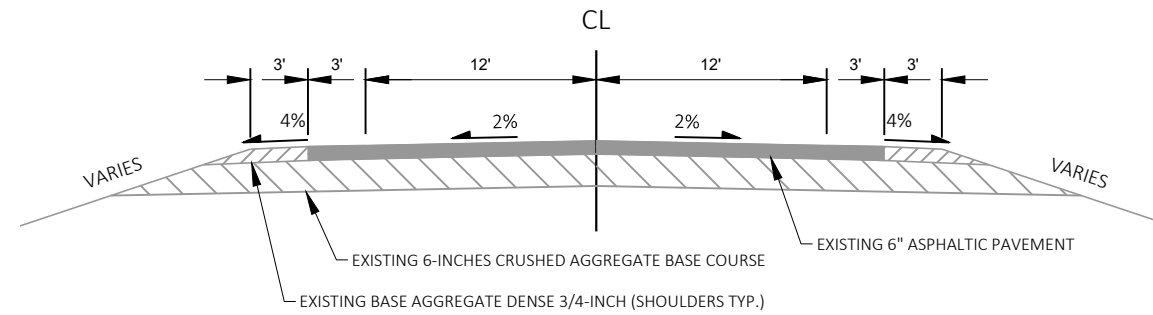
STANDARD ABBREVIATIONS

EX	EXISTING	SHLDR	SHOULDER
FERT	FERTILIZER	SB	SOUTHBOUND
FE	FIELD ENTRANCE	SF or SQ FT	SQUARE FEET
FL or F/L	FLOW LINE	SY or SQ YD	SQUARE YARD
FT	FOOT	SDD	STANDARD DETAIL DRAWINGS
HMA	HOT MIX ASPHALT	STH	STATE TRUNK HIGHWAYS
CWT	HUNDREDWEIGHT	SE	SUPERELEVATION
INL	INLET	T	TANGENT
INV	INVERT	TEMP	TEMPORARY
JCT	JUNCTION	USH	UNITED STATES HIGHWAY
LT	LEFT	V	VELOCITY OR DESIGN SPEED
L	LENGTH OF CURVE	VC	VERTICAL CURVE
LIN FT or LF	LINEAR FOOT	WB	WESTBOUND
LS	LUMP SUM	YD	YARD
NC	NORMAL CROWN		
N	NORTH		
NB	NORTHBOUND		
NO	NUMBER		
PT	POINT		
PC	POINT OF CURVATURE		
PI	POINT OF INTERSECTION		
PT	POINT OF TANGENCY		
PCC	PORTLAND CEMENT CONCRETE		
LB	POUND		
PE	PRIVATE ENTRANCE		
R	RADIUS		
RL or R/L	REFERENCE LINE		
RT	RIGHT		
R/W	RIGHT-OF-WAY		
RD	ROAD		



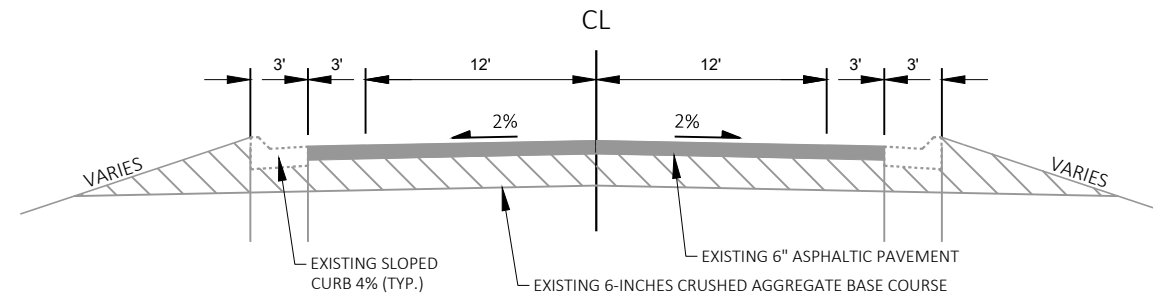
Dial  or (800)242-8511
www.DiggersHotline.com





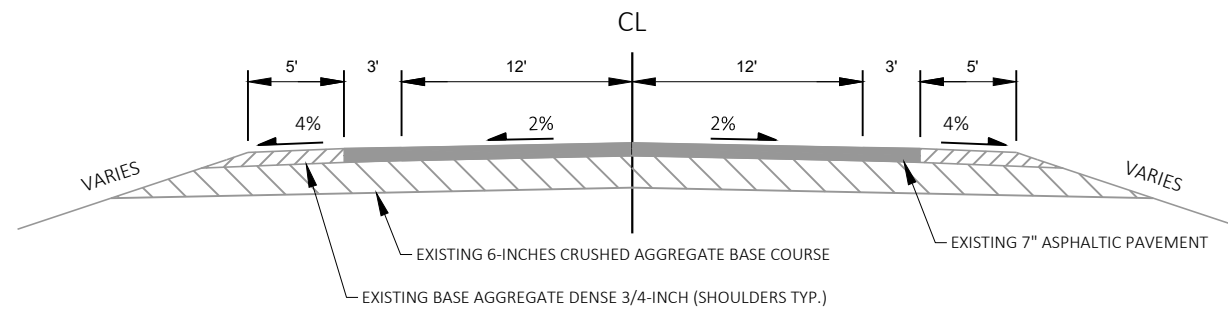
TYPICAL EXISTING SECTION FOR USH 12

PROJECT ID 8949-00-75 NO CURB
STA 411E+65.93 TO STA 418E+06.53
STA 421E+53.12 TO STA 452E+39.74



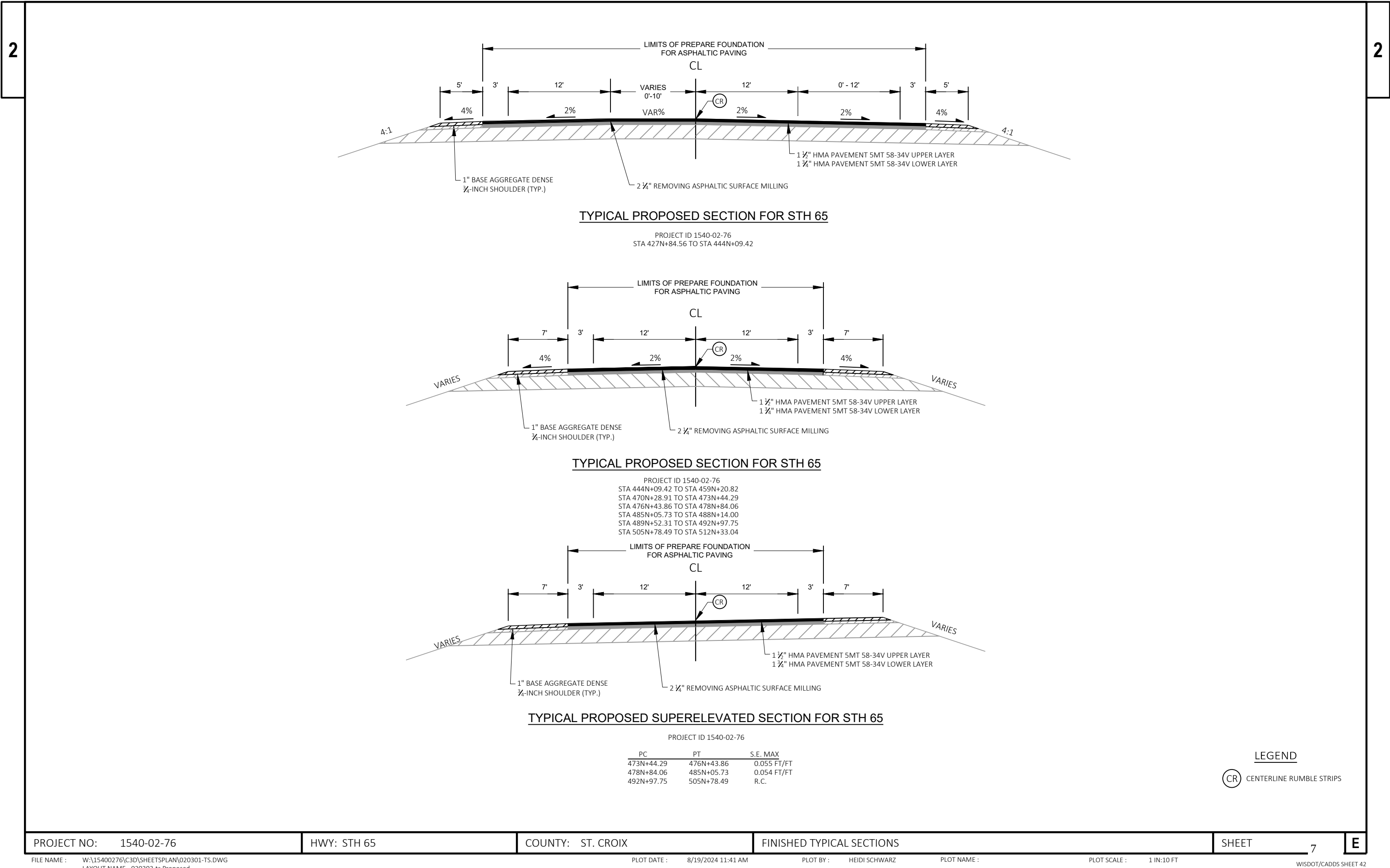
TYPICAL EXISTING SECTION FOR USH 12

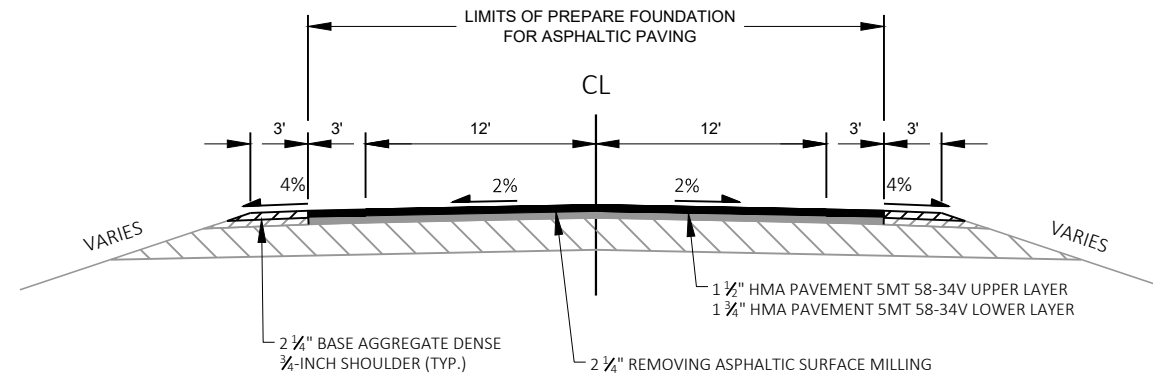
PROJECT ID 8949-00-75 CURB
STA 418E+06.53 TO STA 421E+53.12



TYPICAL EXISTING SECTION FOR STH 65

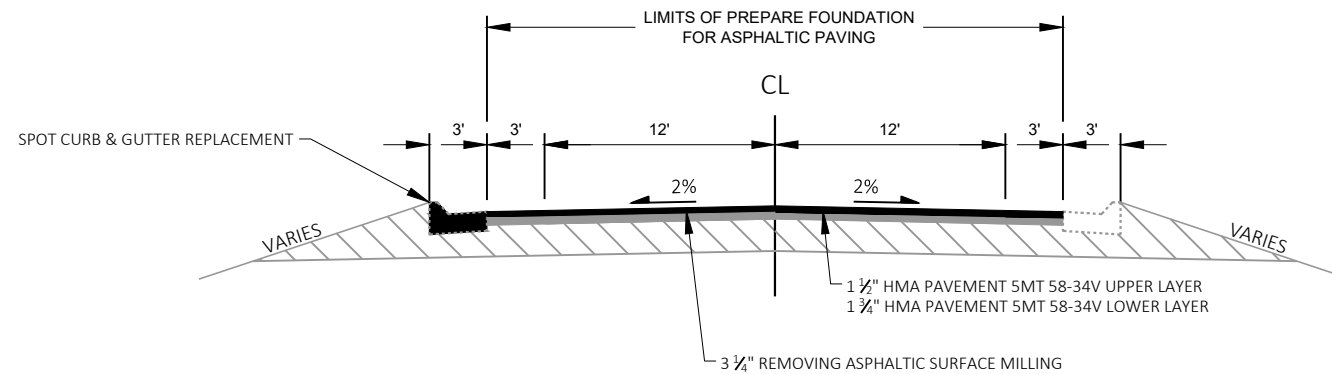
PROJECT ID 1540-02-78
STA 1005+92.01 TO STA 1373+71.73





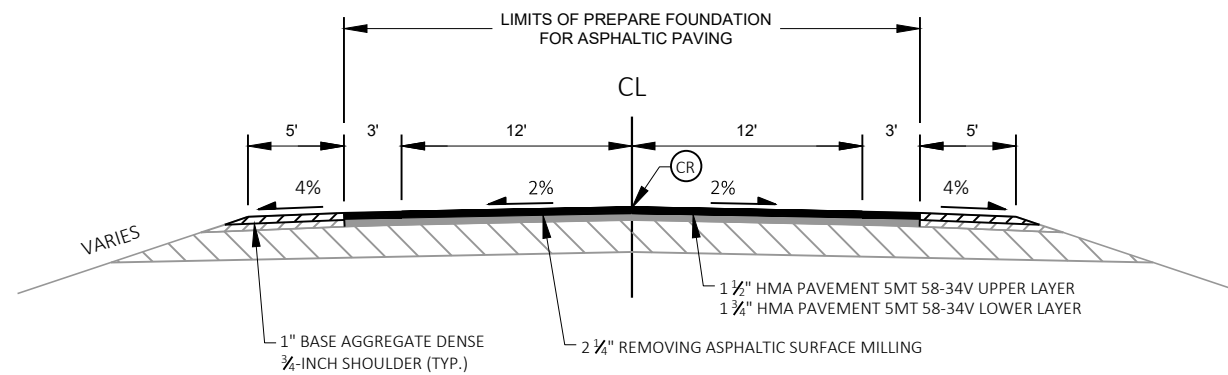
TYPICAL PROPOSED SECTION FOR USH 12

PROJECT ID 8949-00-75 NO CURB
STA 411E+65.93 TO STA 418E+06.53
STA 421E+53.12 TO STA 452E+39.74



TYPICAL PROPOSED SECTION FOR USH 12

PROJECT ID 8949-00-75 CURB
STA 418E+06.53 TO STA 421E+53.12

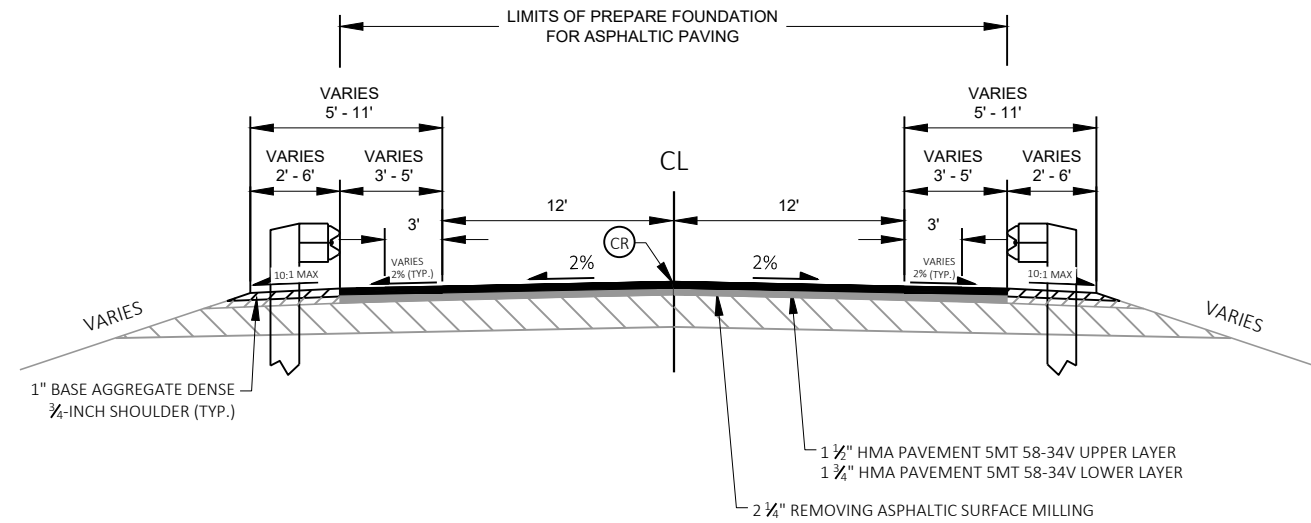


TYPICAL PROPOSED SECTION FOR STH 65

PROJECT ID 1540-02-78
STA 1005+92.01 TO STA 1308+72.56
STA 1320+33.36 TO STA 1373+71.73

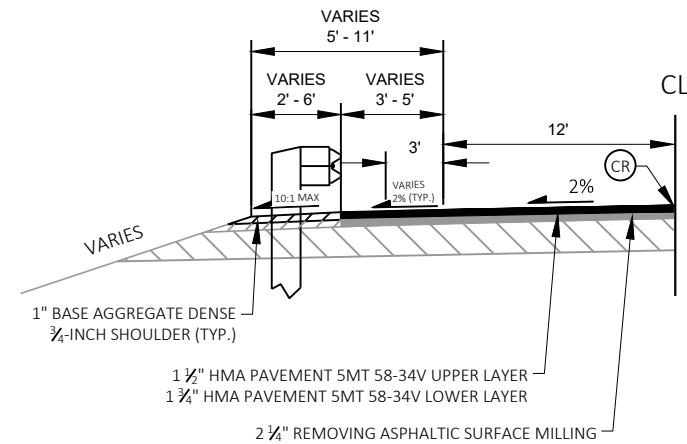
LEGEND

CR CENTERLINE RUMBLE STRIPS



TYPICAL PROPOSED SECTION FOR STH 65

PROJECT ID 1540-02-76
STA 477N+27.00 TO STA 485N+09.00
STA 489N+52.31 TO STA 492N+97.00

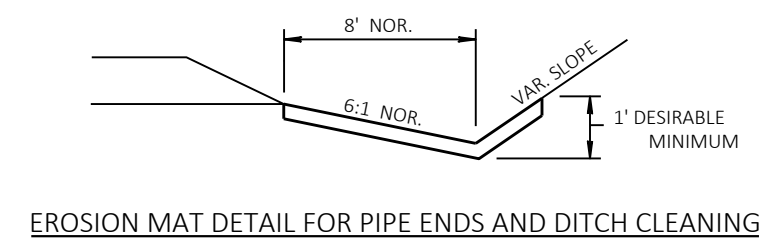
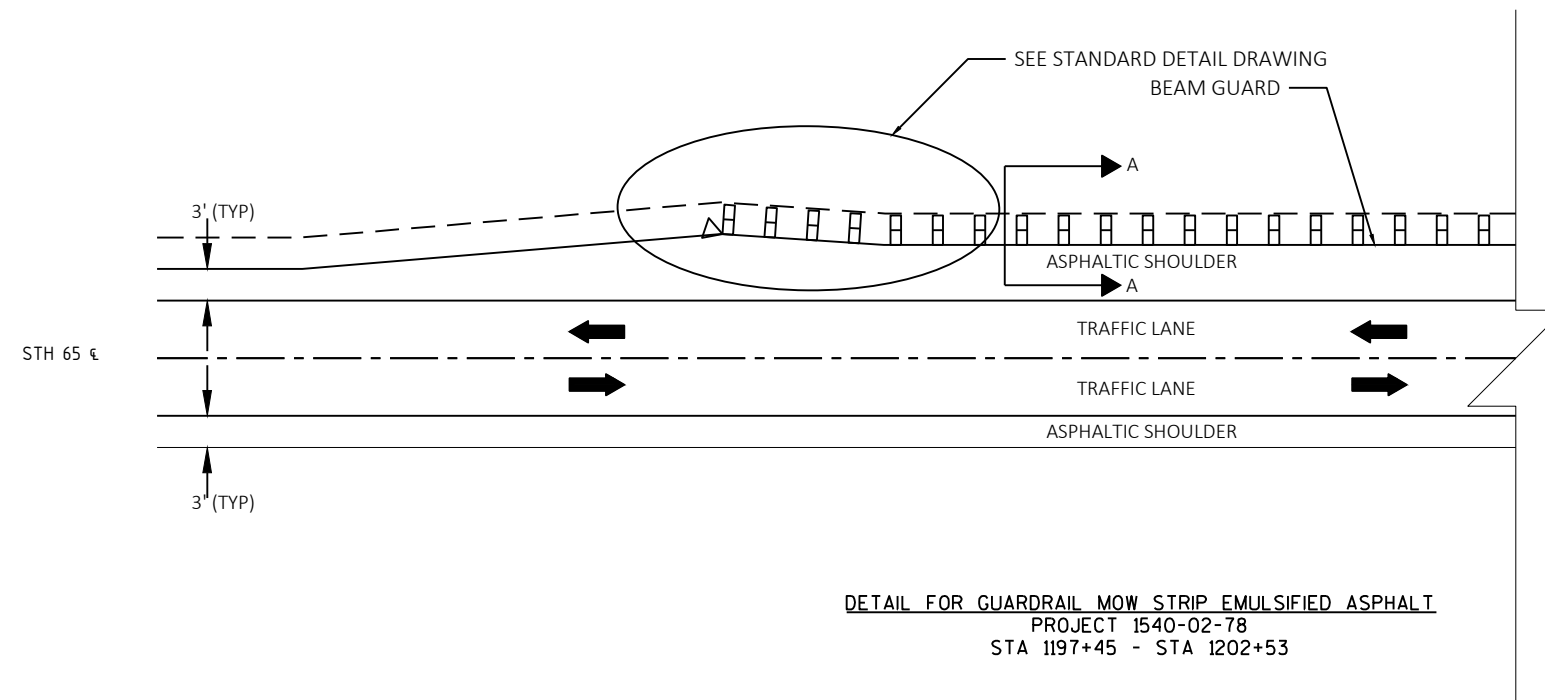
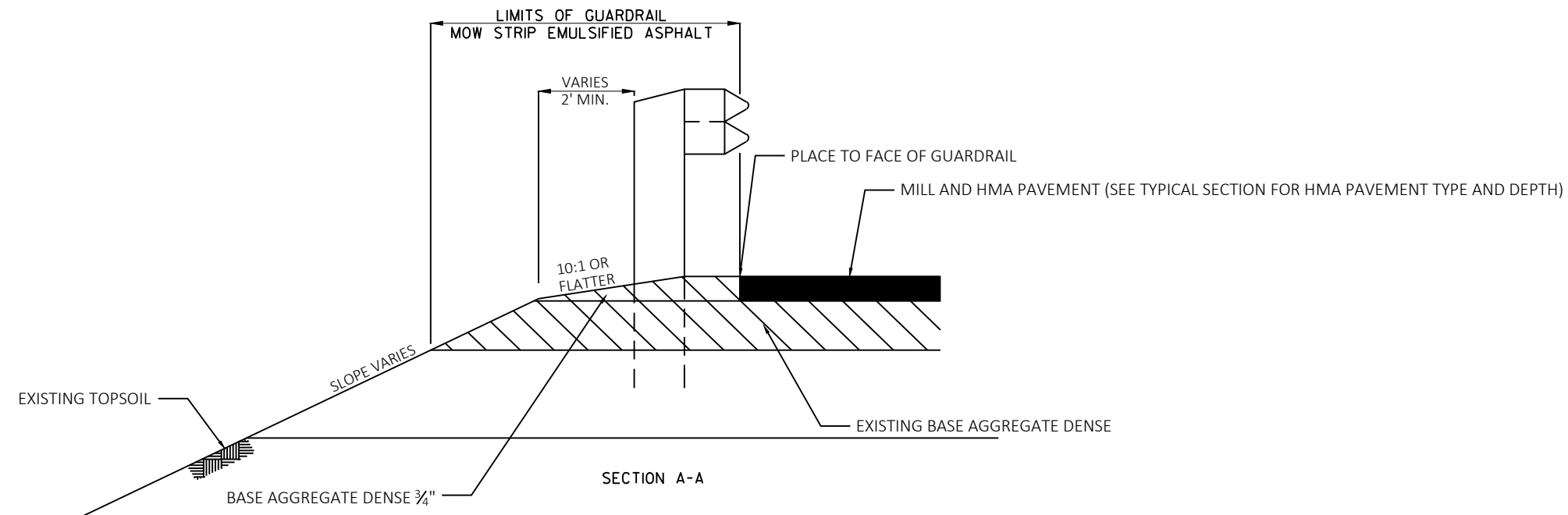


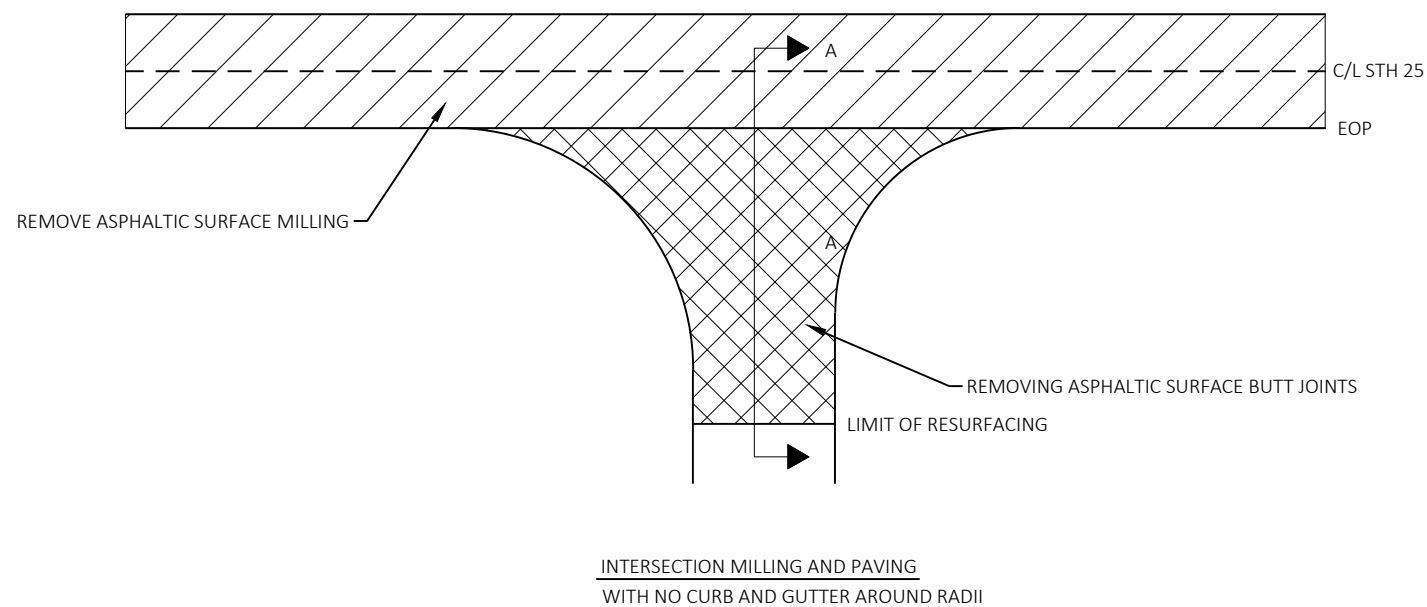
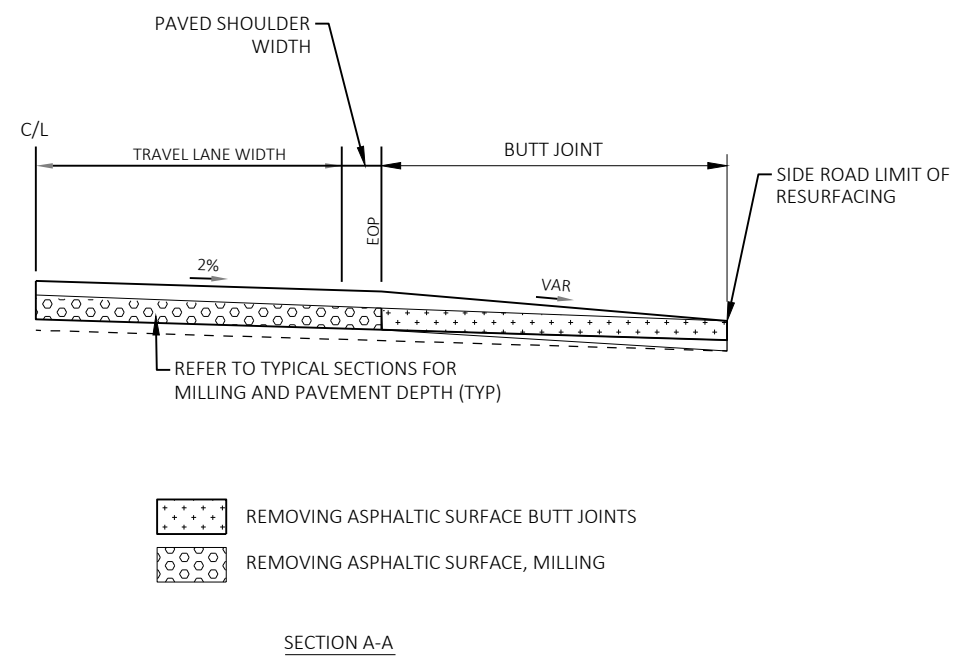
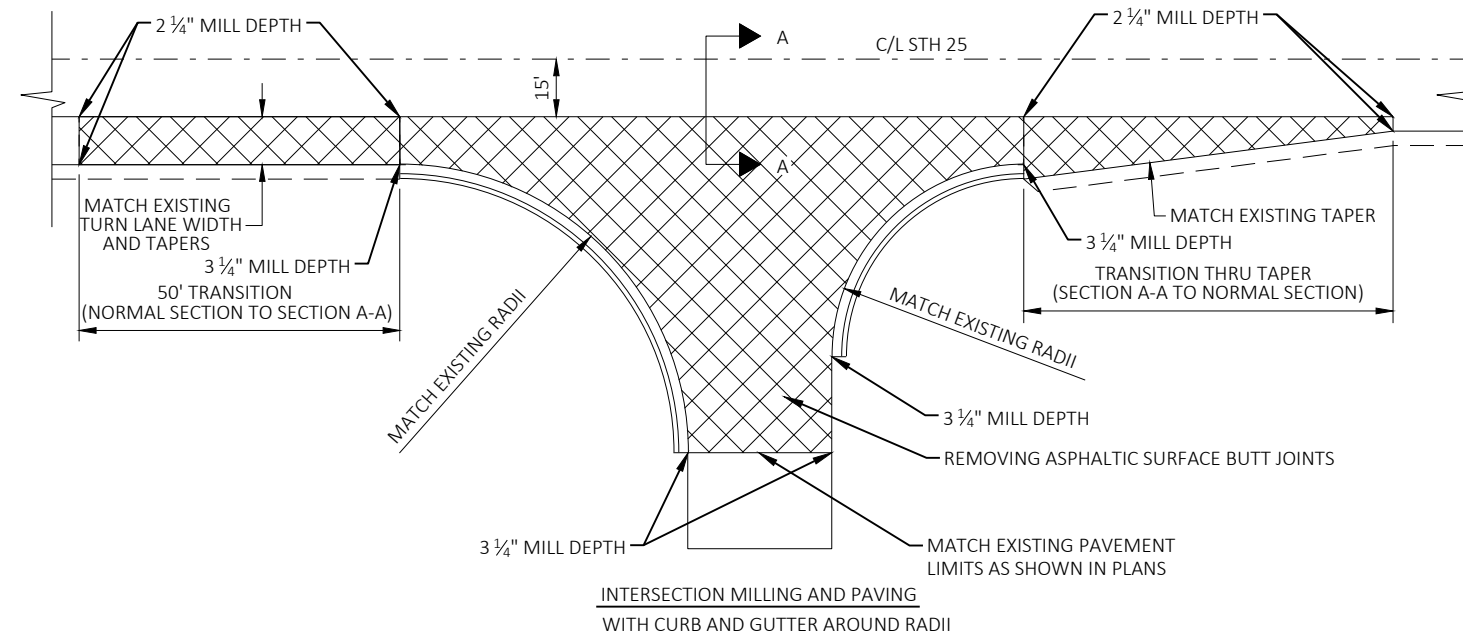
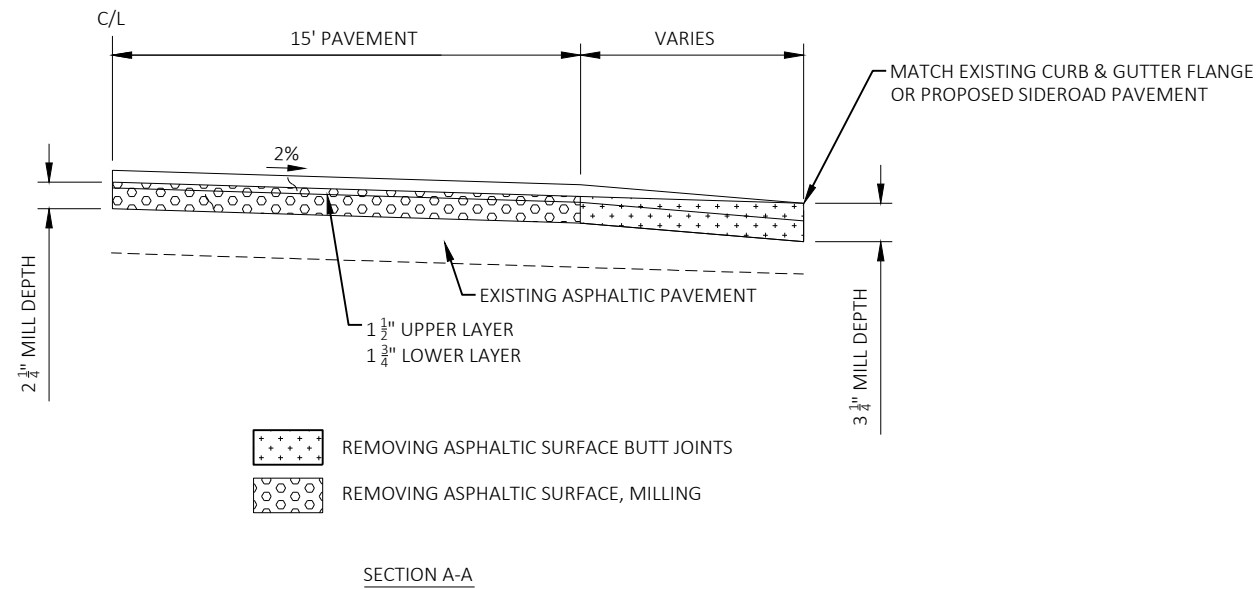
TYPICAL PROPOSED SECTION FOR STH 65

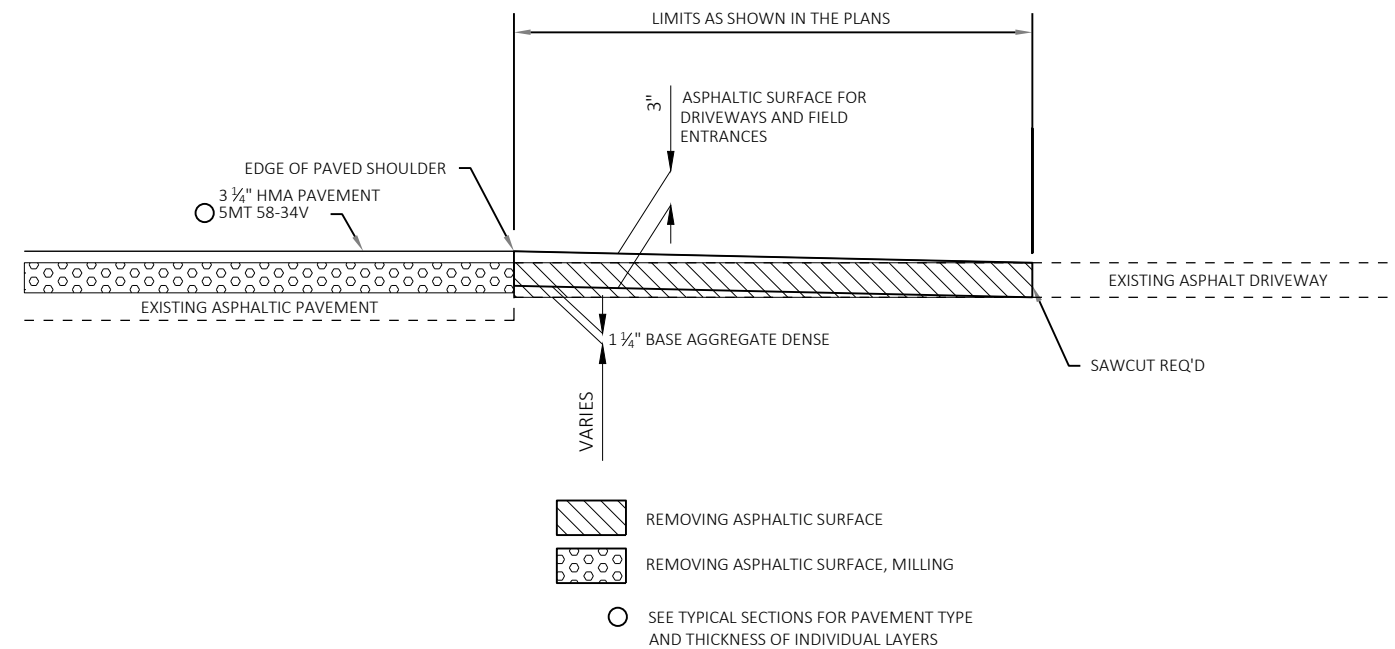
PROJECT ID 1540-02-76
STA 1046+27.00 TO STA 1052+60.00
STA 1197+45.00 TO STA 1202+53.00
STA 1304+53.00 TO STA 1307+78.00

LEGEND

CR CENTERLINE RUMBLE STRIPS

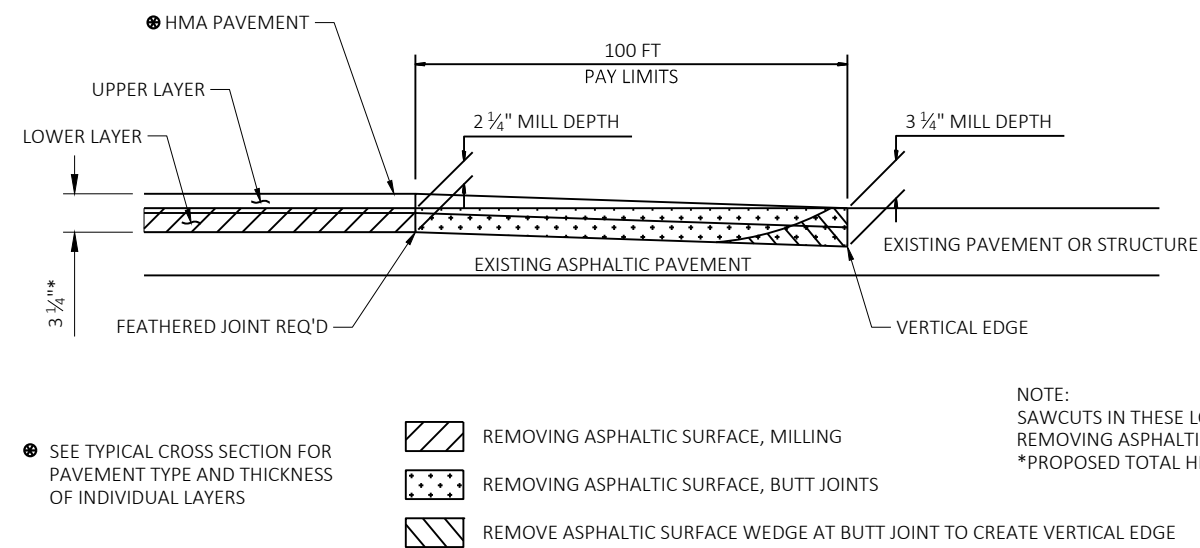






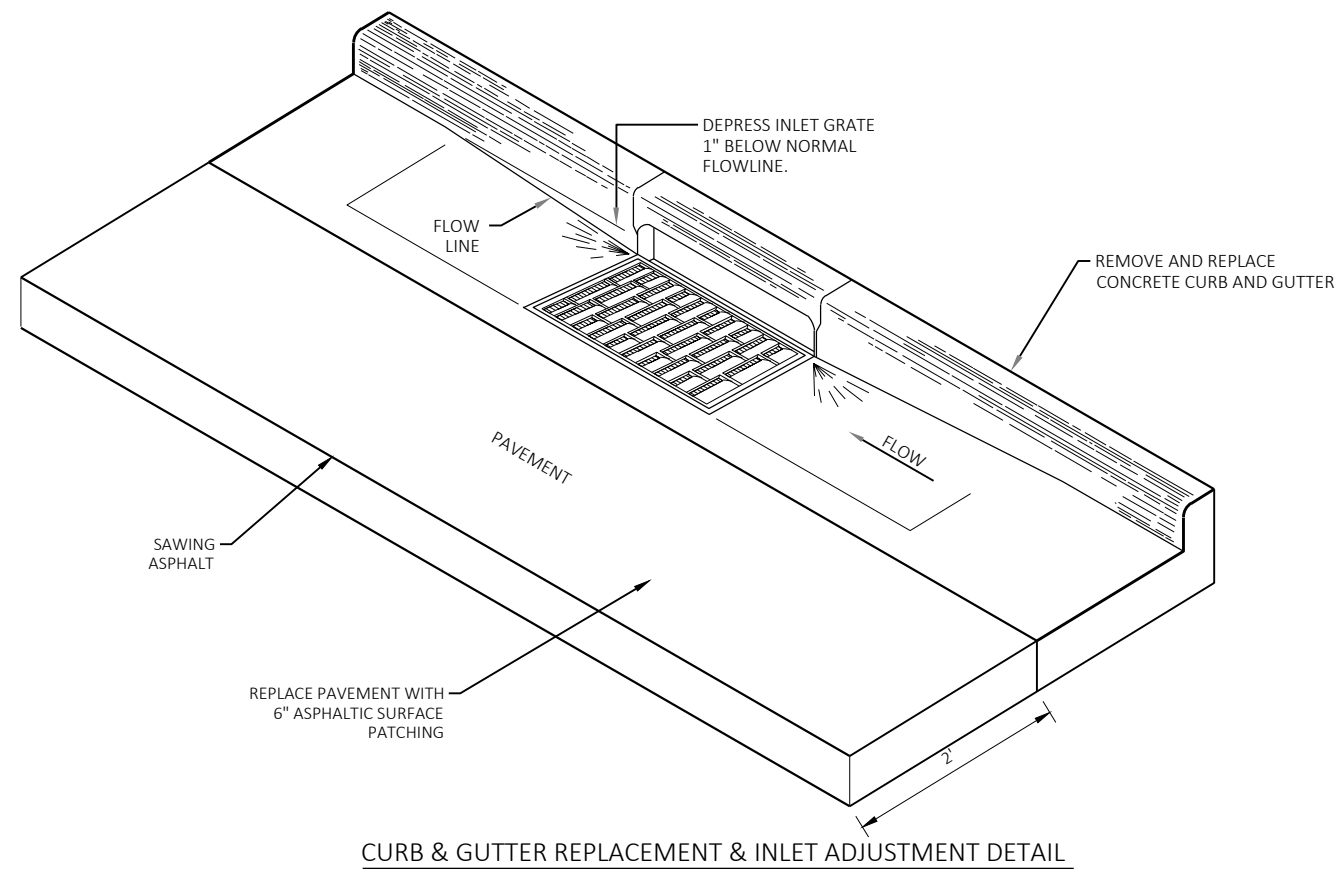
REMOVING ASPHALTIC SURFACE DETAIL

DRIVEWAYS

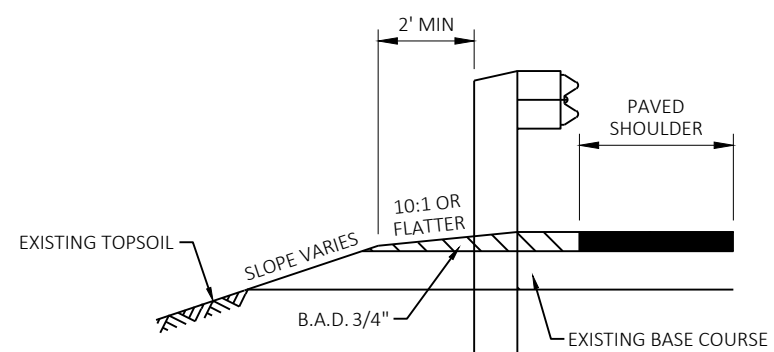


BUTT JOINT DETAIL FOR MILLED ASPHALTIC PAVEMENTS (PROFILE CHANGE)

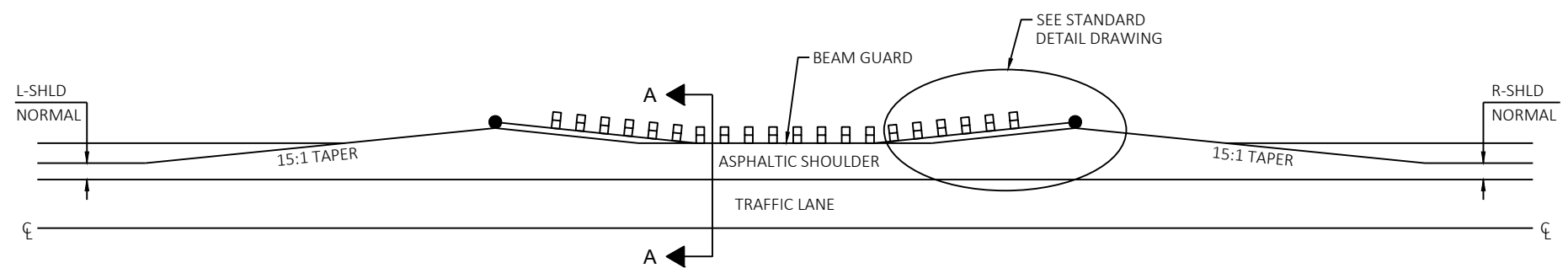
MAINLINE



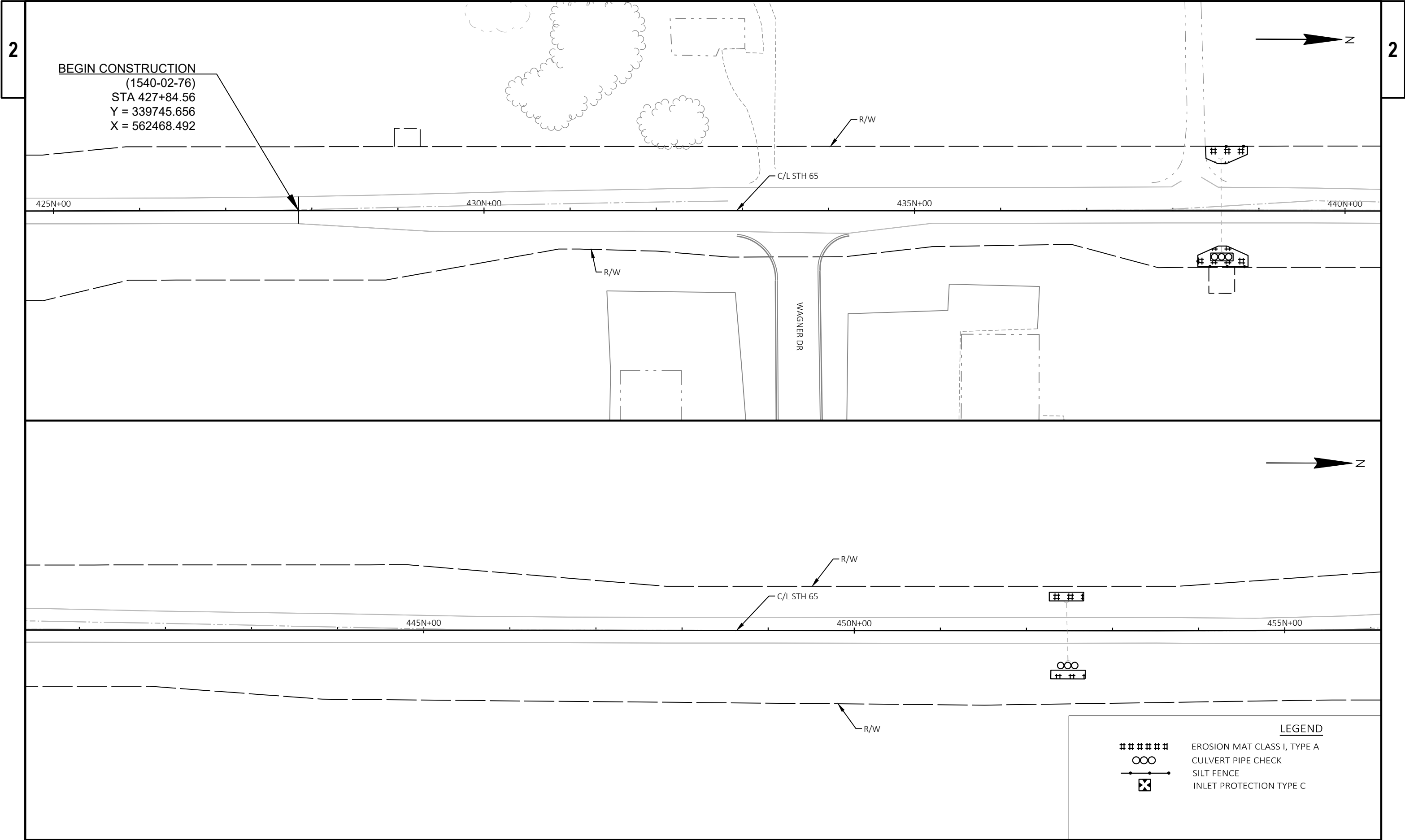
CURB & GUTTER REPLACEMENT & INLET ADJUSTMENT DETAIL

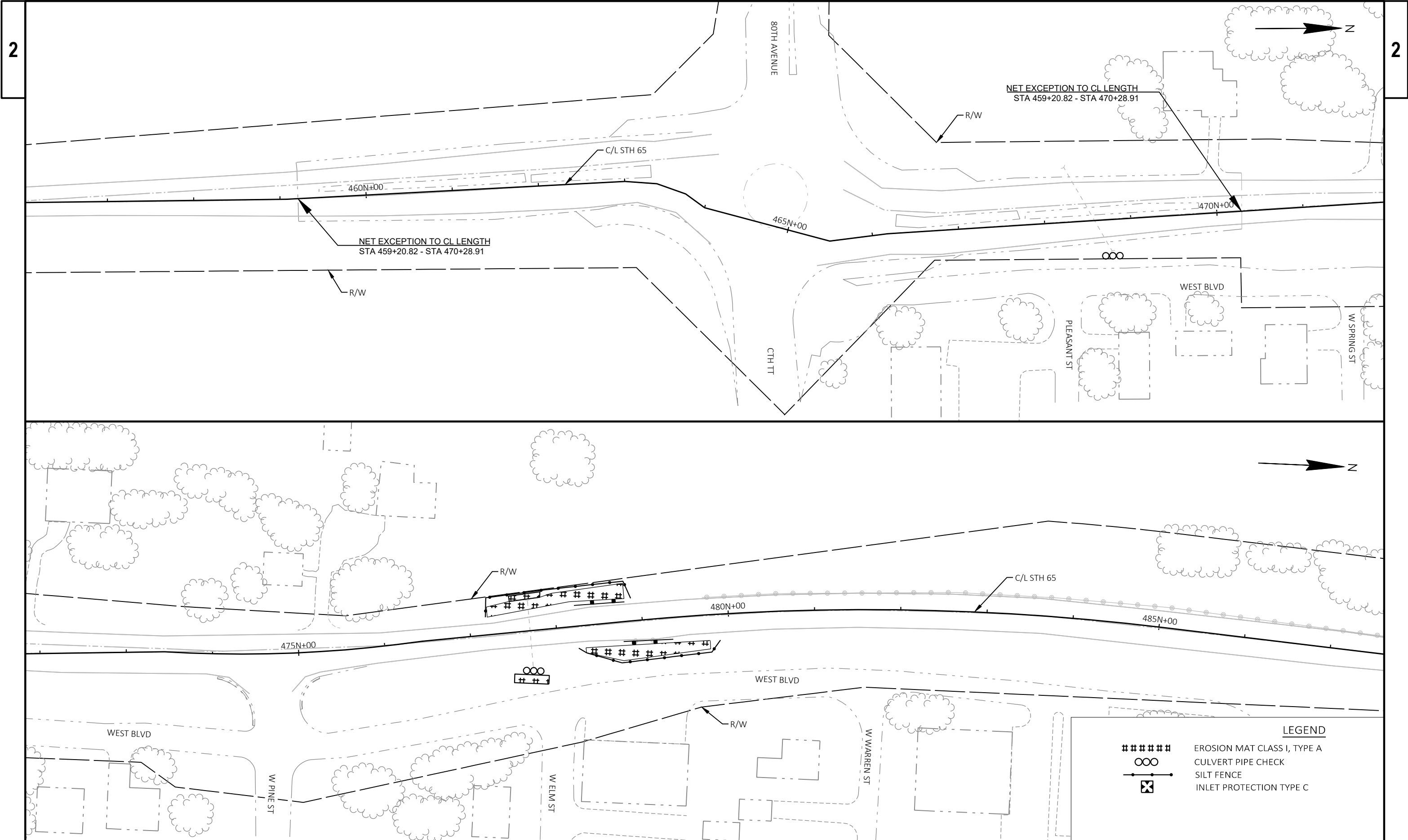


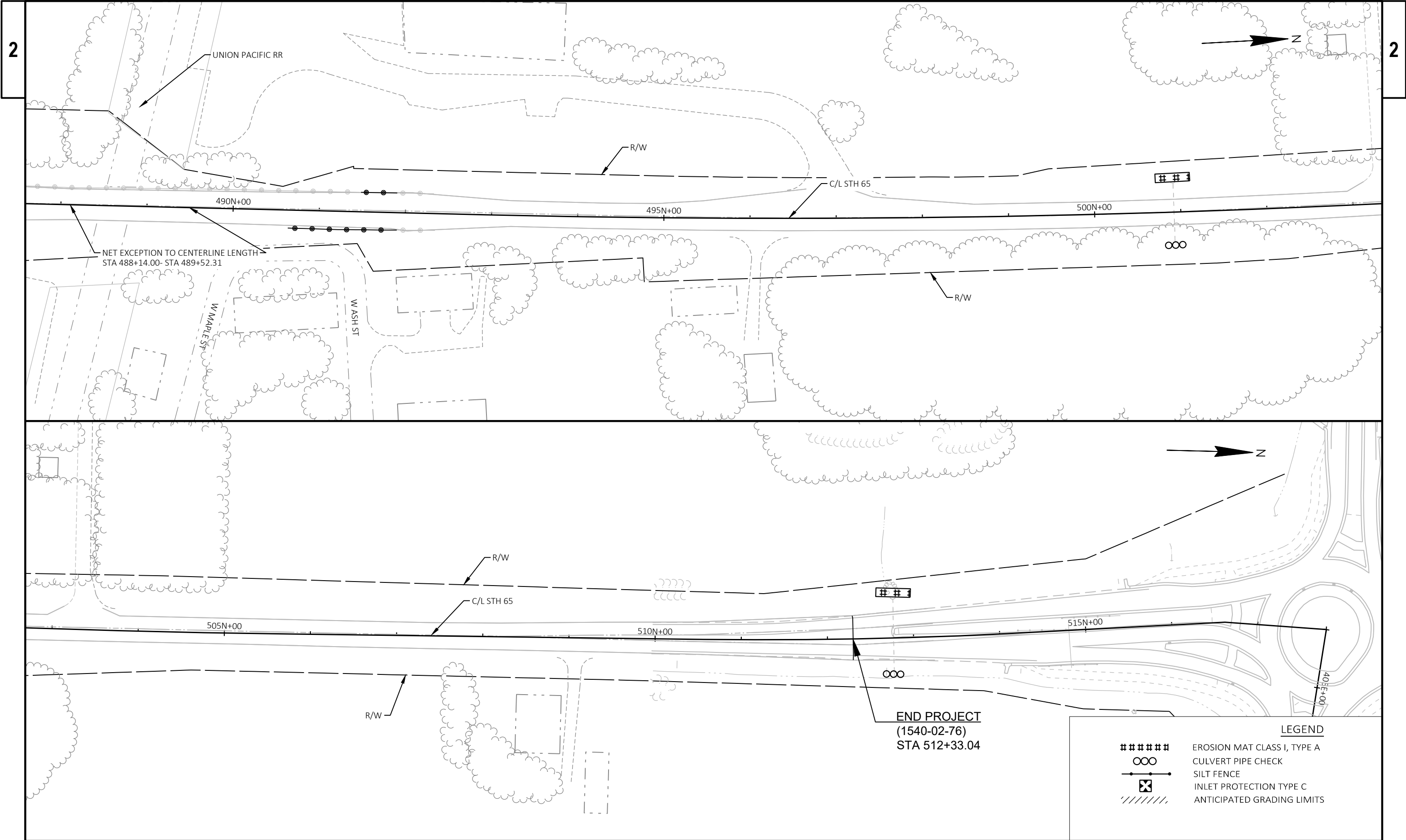
SECTION A-A

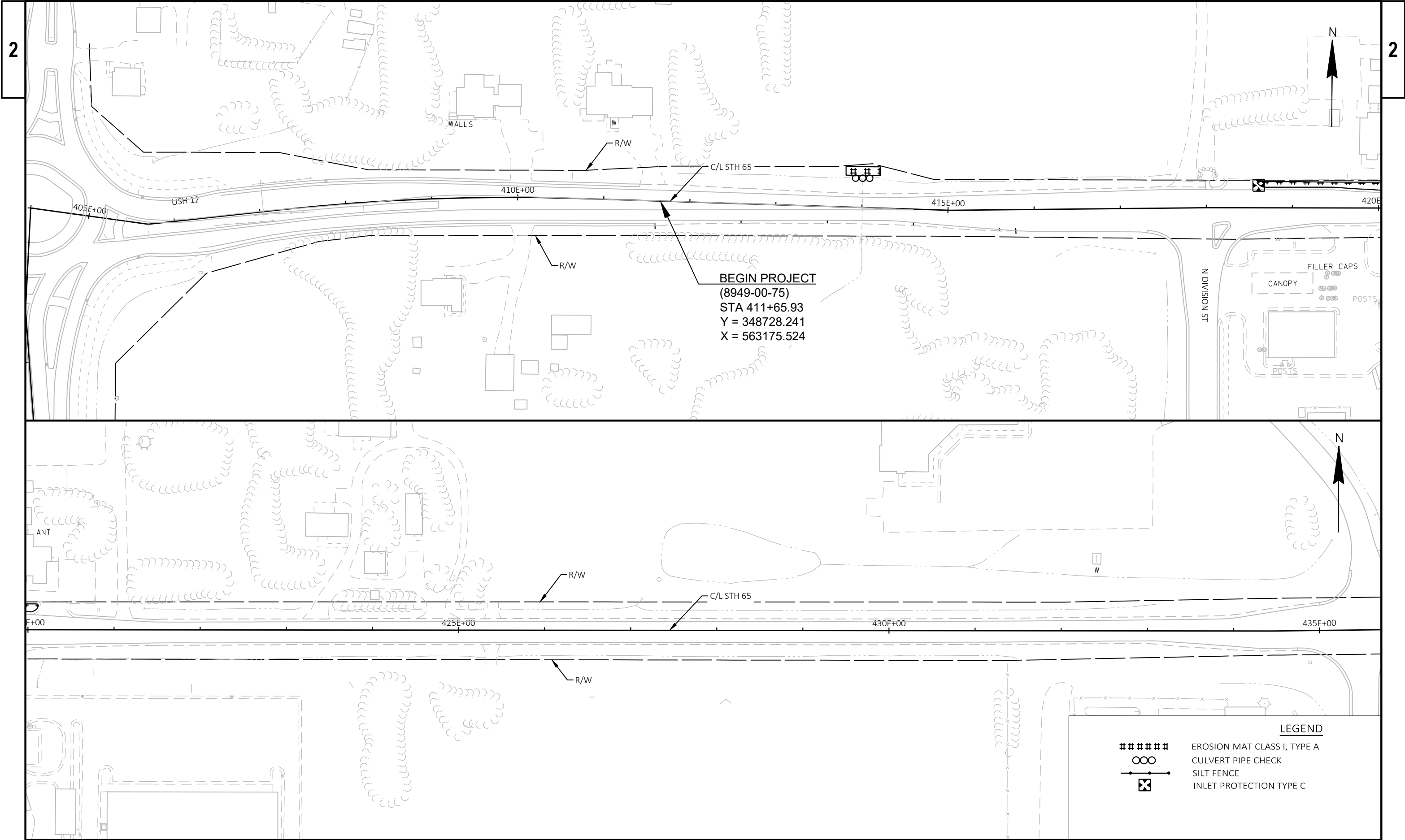


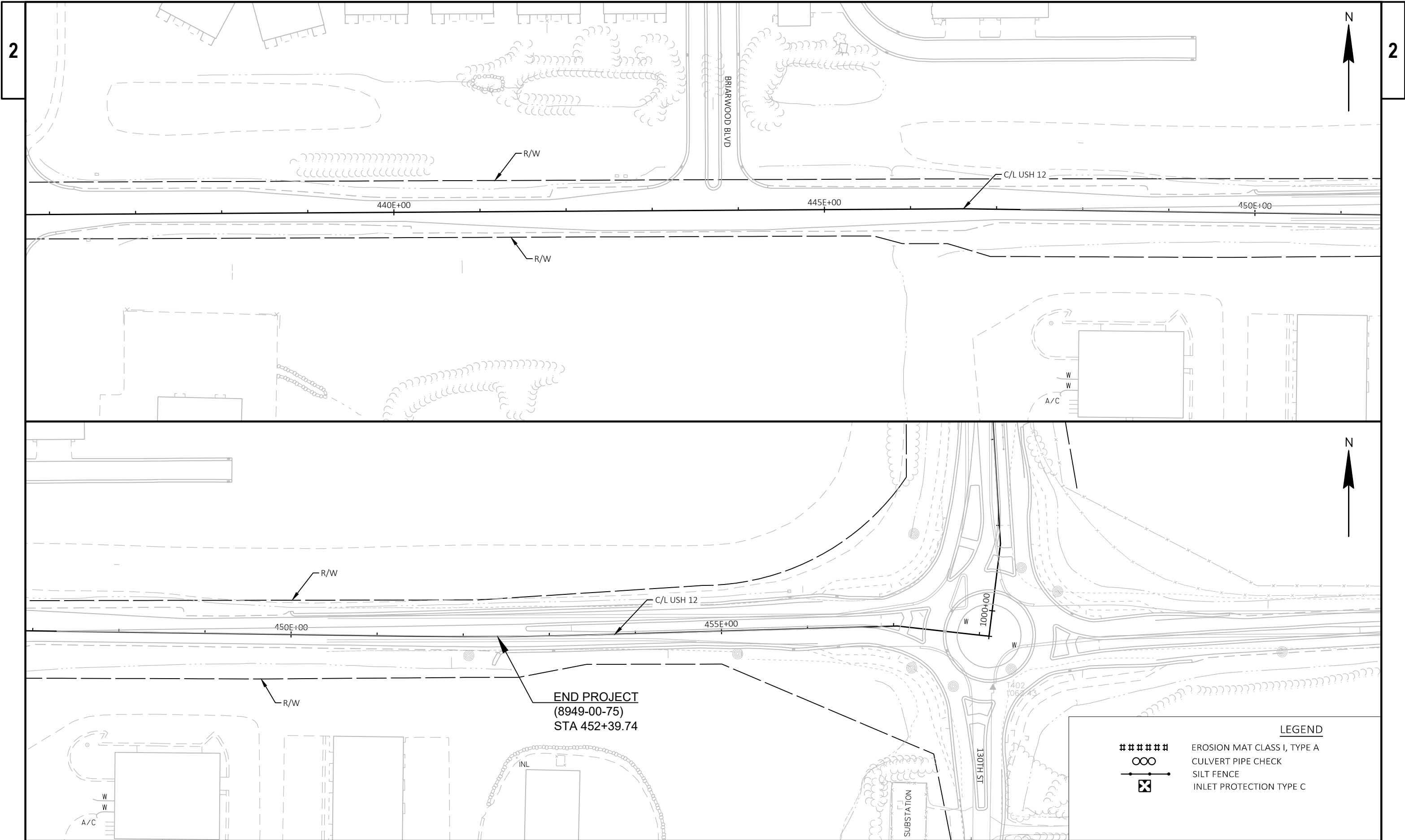
DETAIL FOR ASPHALTIC SHOULDER AT BEAM GUARD

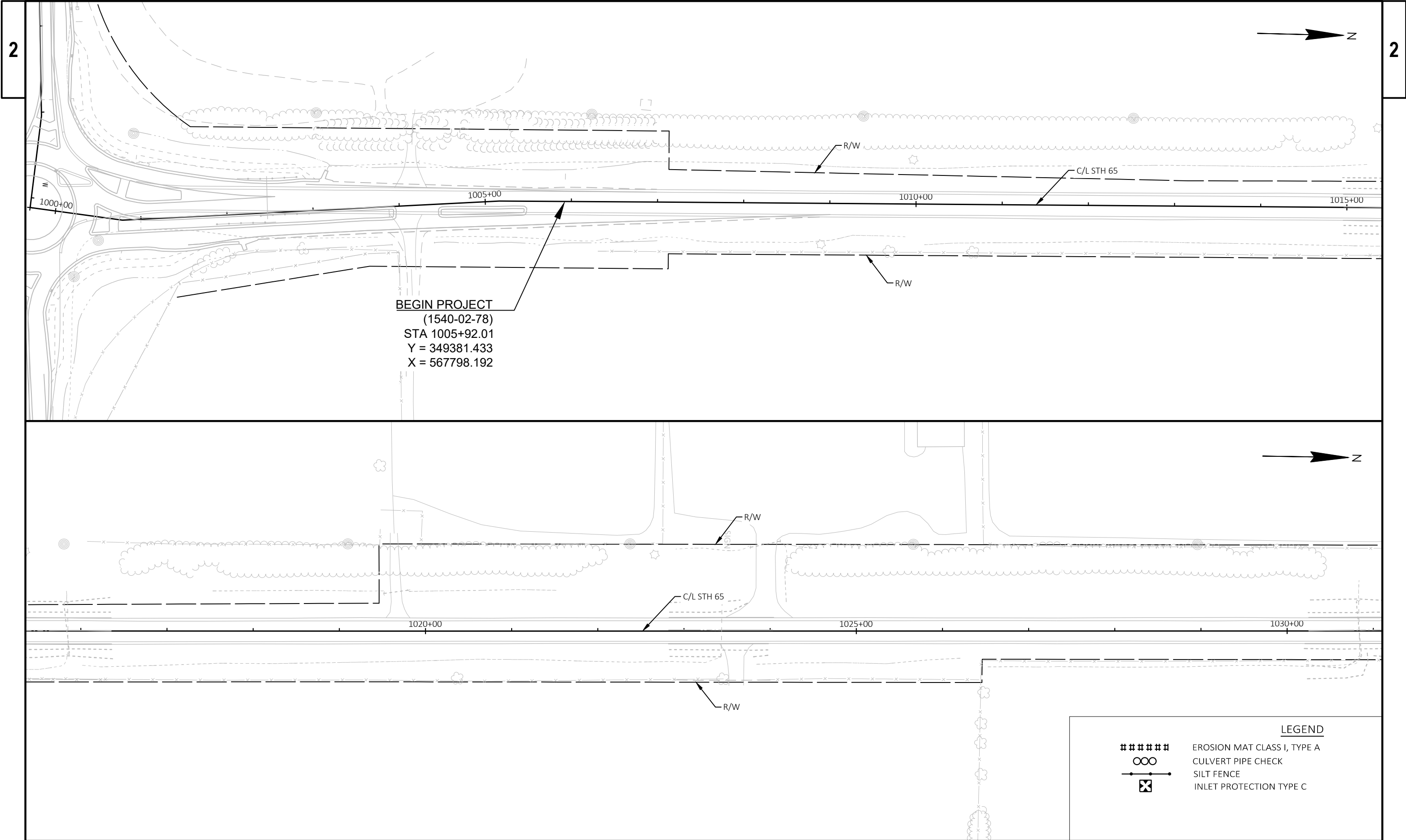






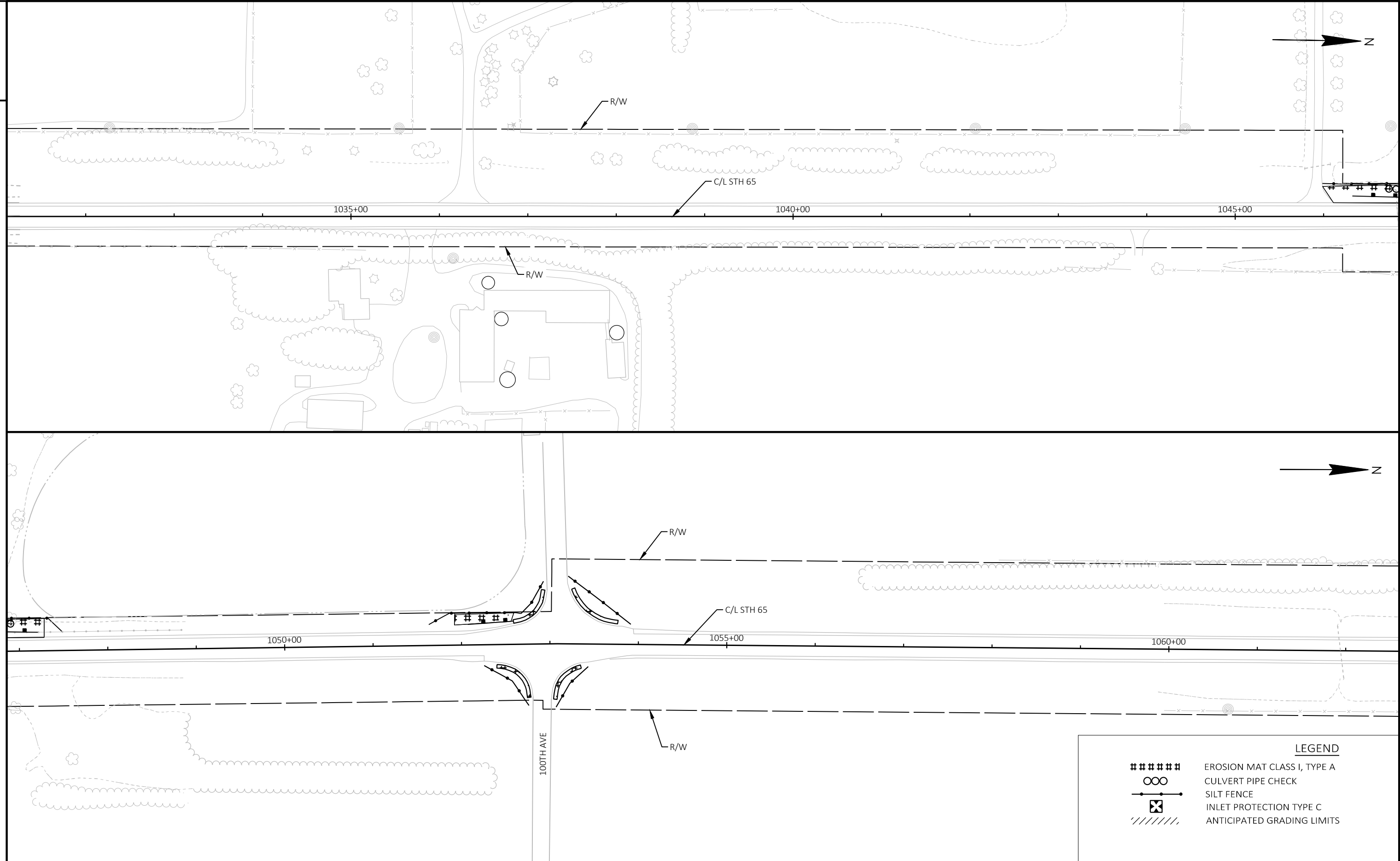






2

2



PROJECT NO: 1540-02-78

HWY: STH 65

COUNTY: ST. CROIX

EROSION CONTROL PLAN - STH 65 NORTH

SHEET 20

E

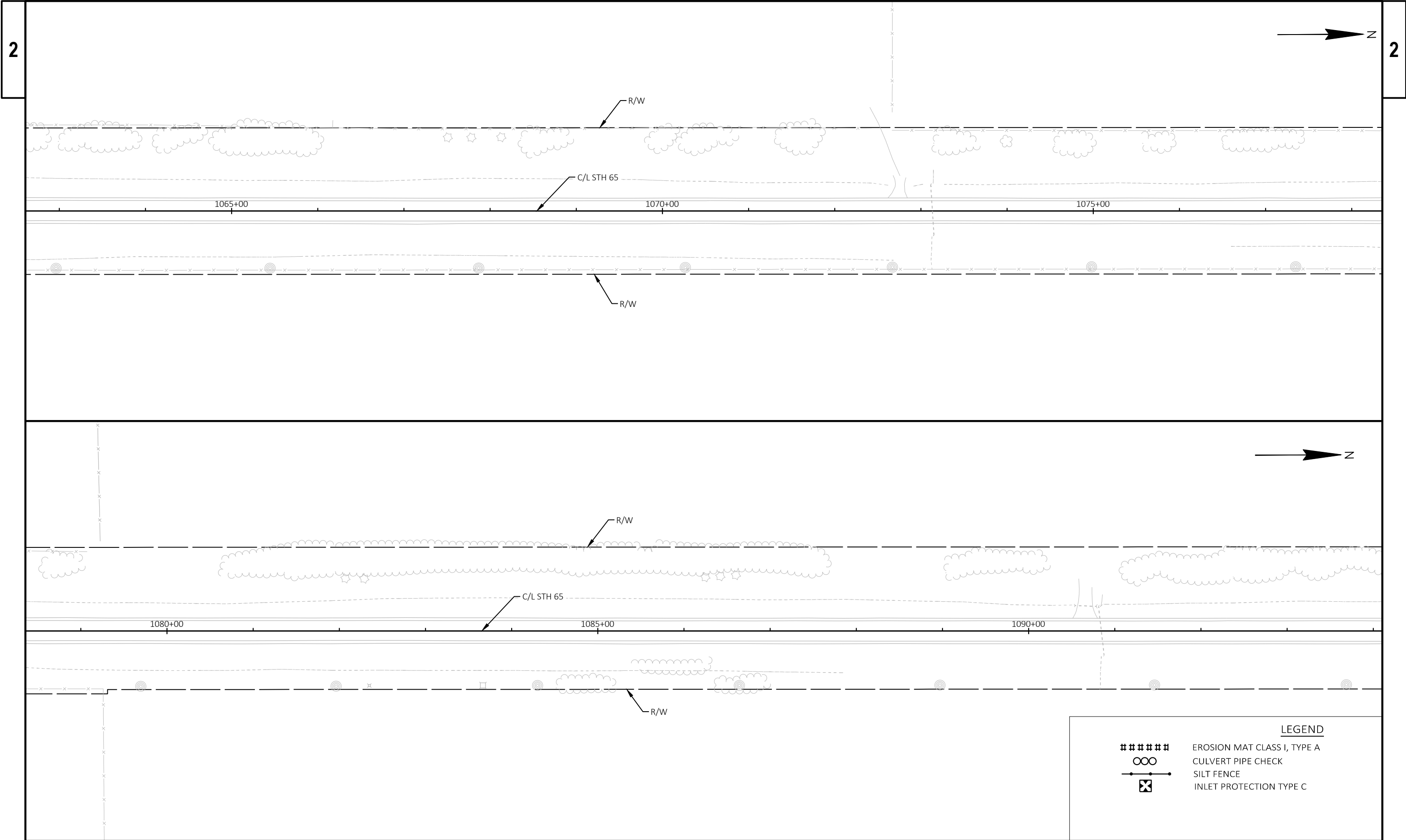
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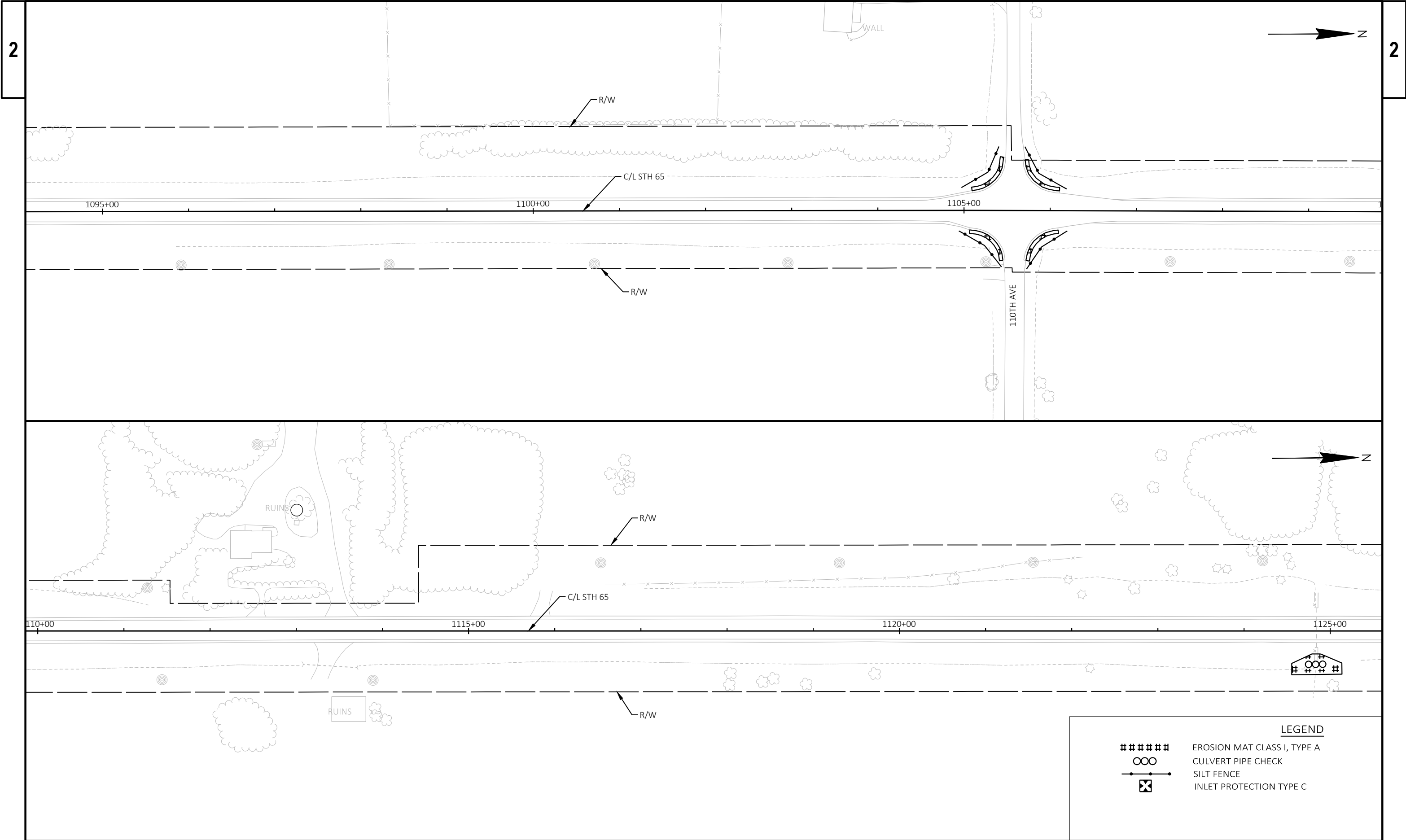
PLOT DATE : 8/20/2024 11:48 AM PLOT BY : HEIDI SCHWARZ

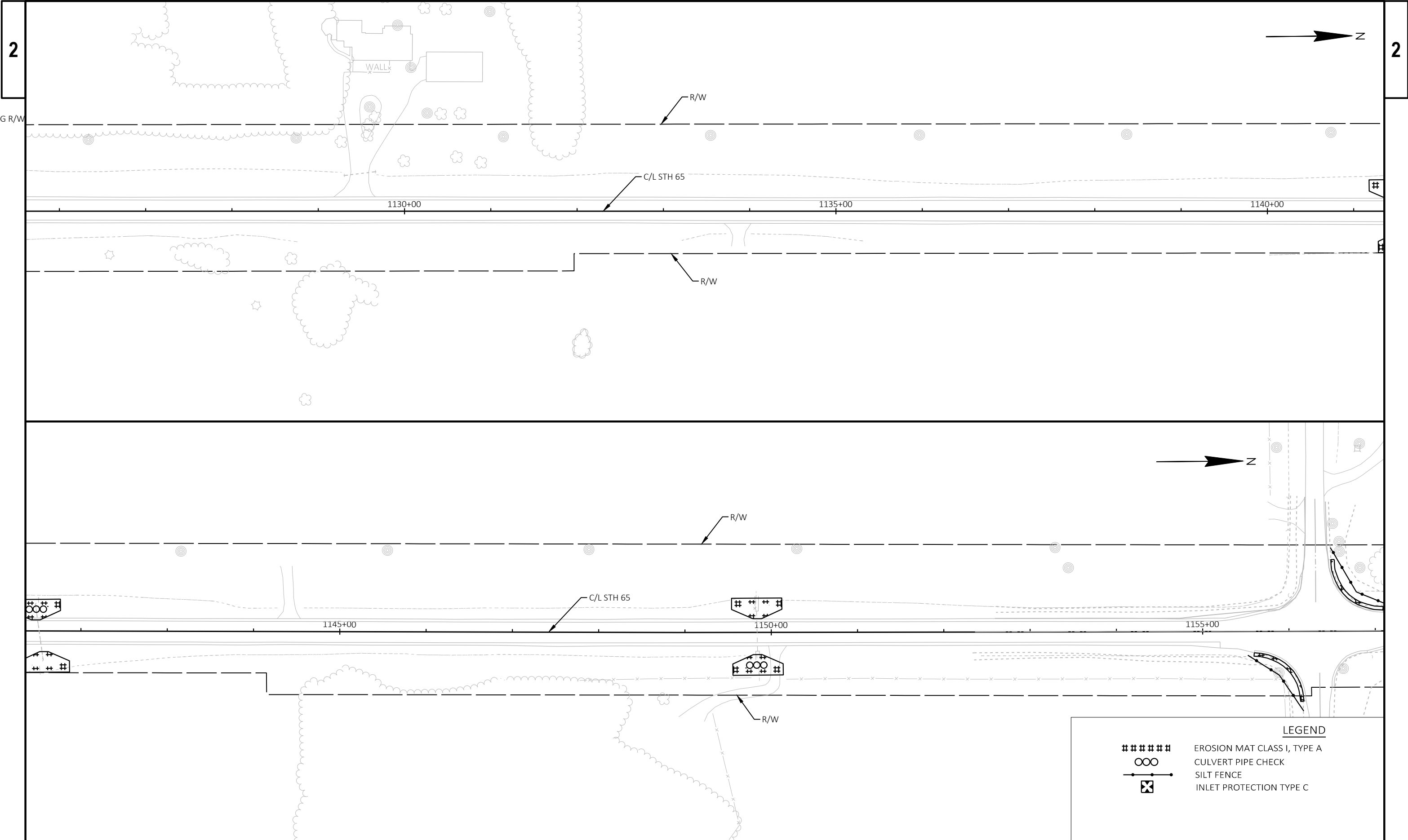
PLOT BY : HEIDI SCHWARZ PLOT NAME :

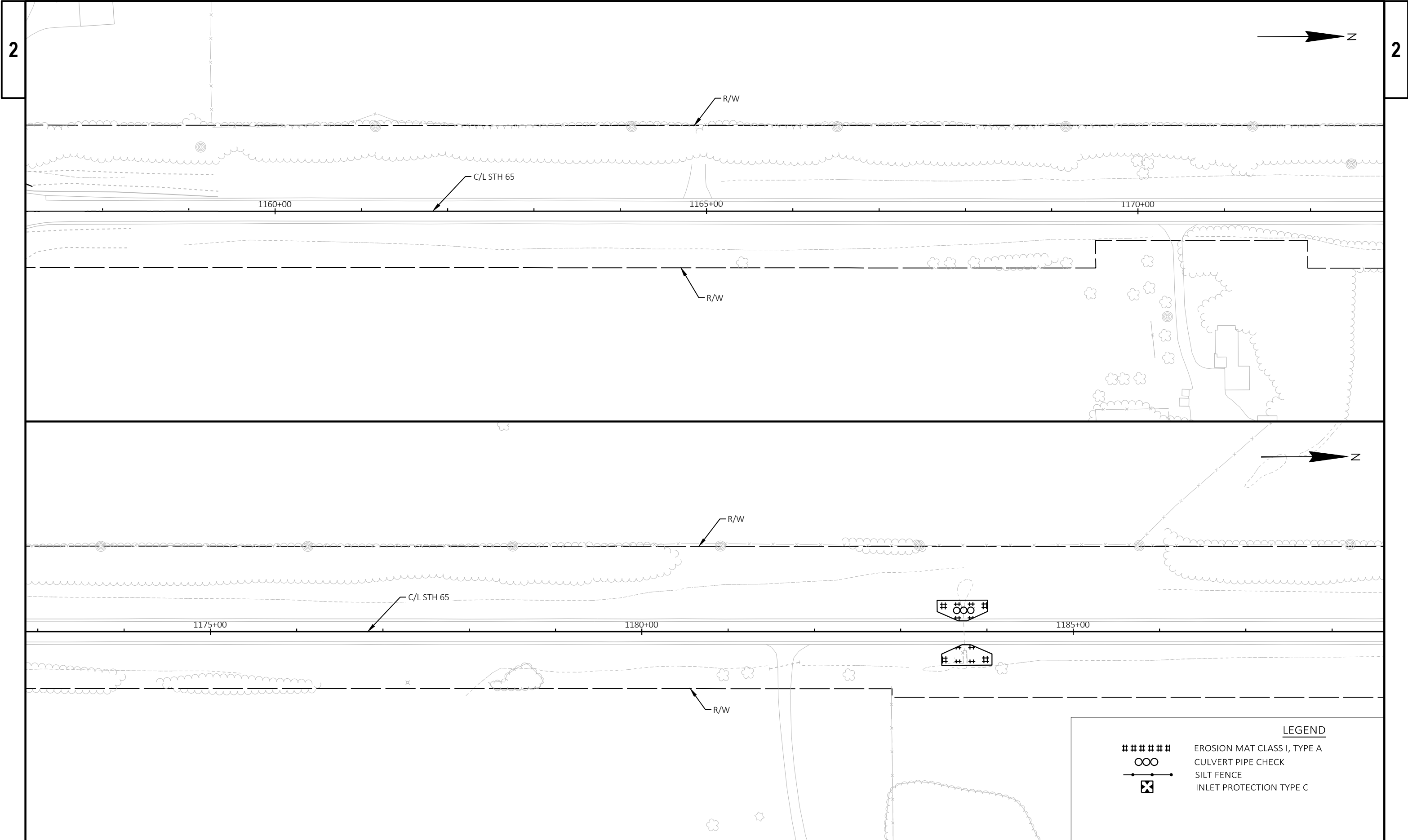
PLOT NAME : _____ WACDOT/CADD SHEET 4.1

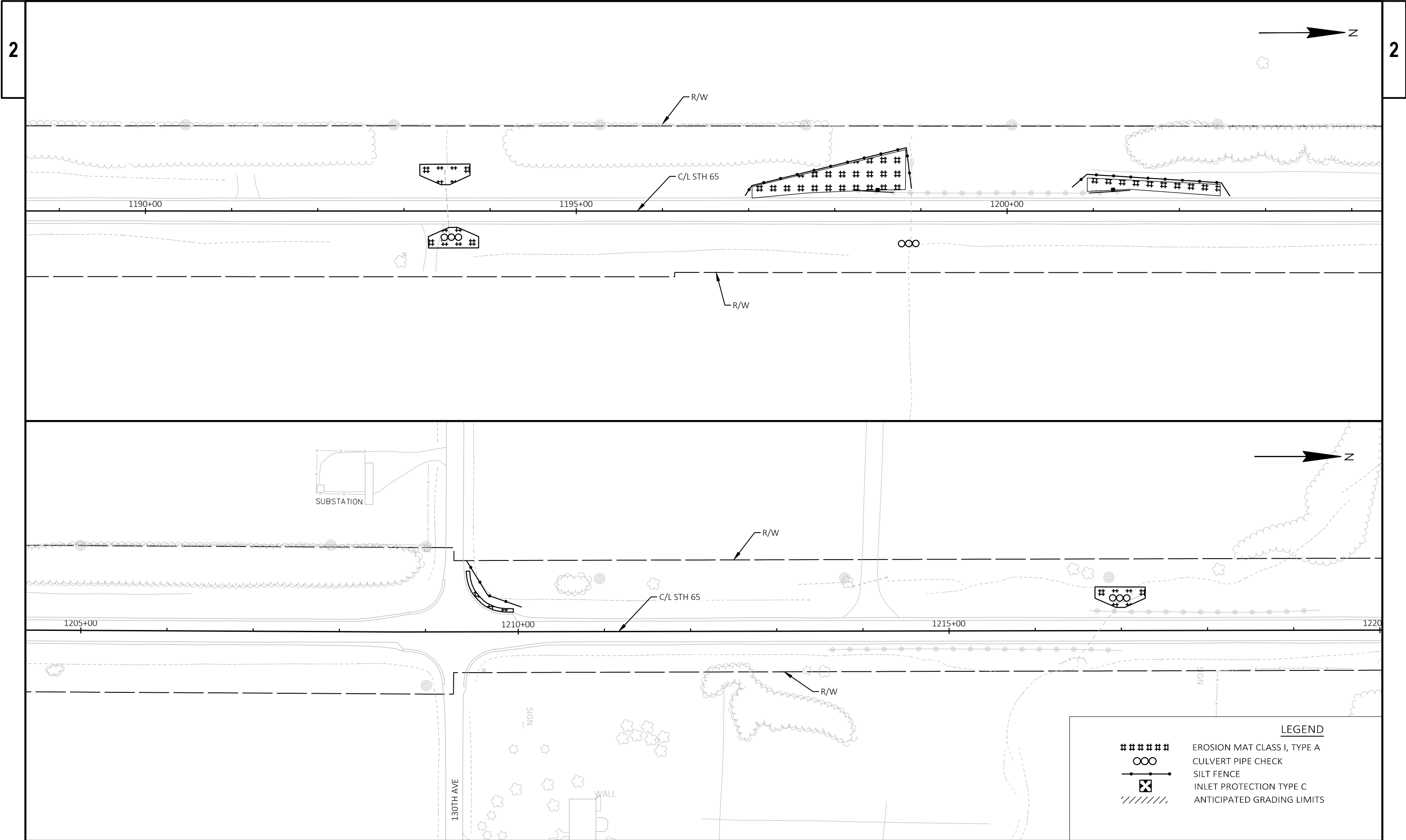
WISDOT/CADDS SHEET 44

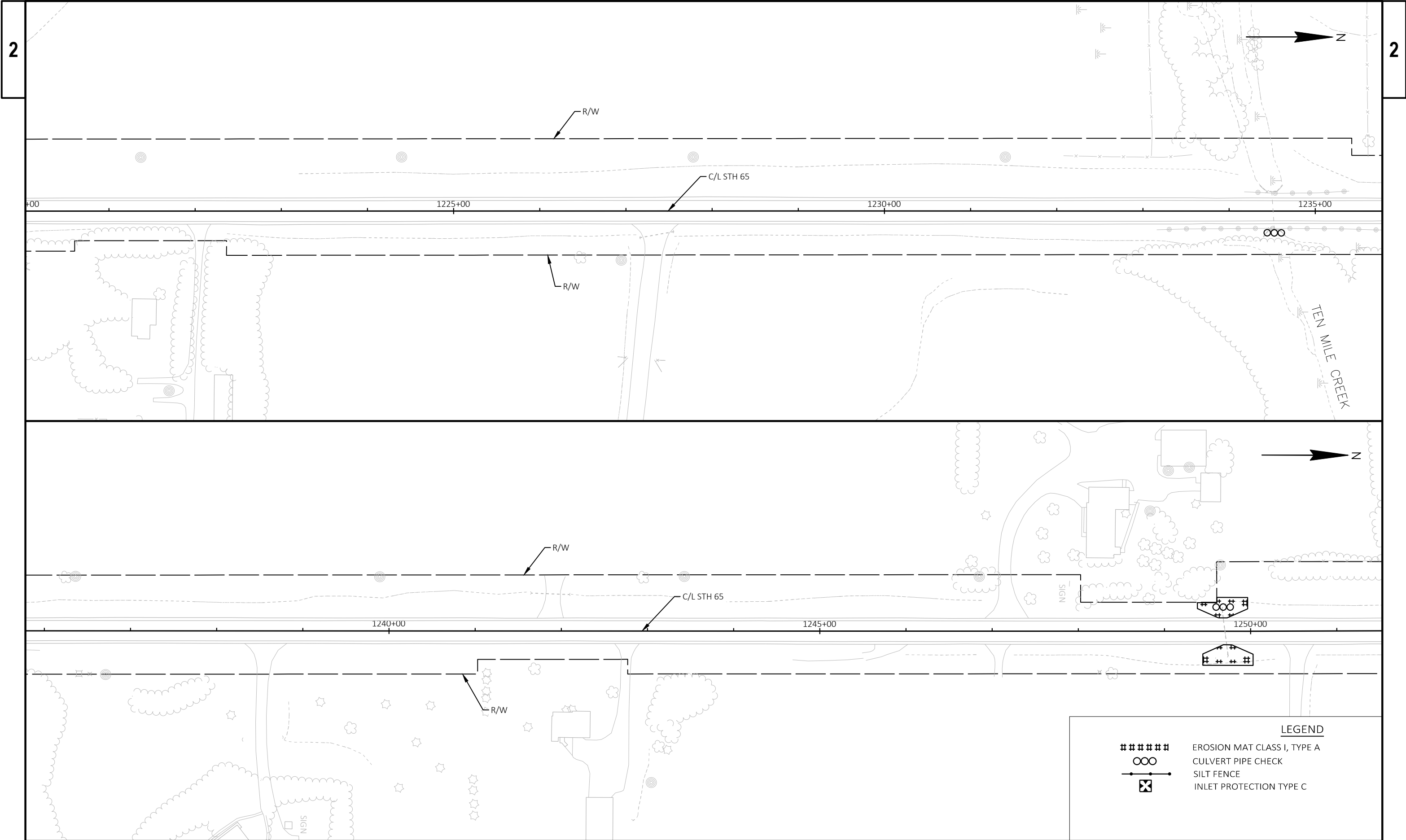


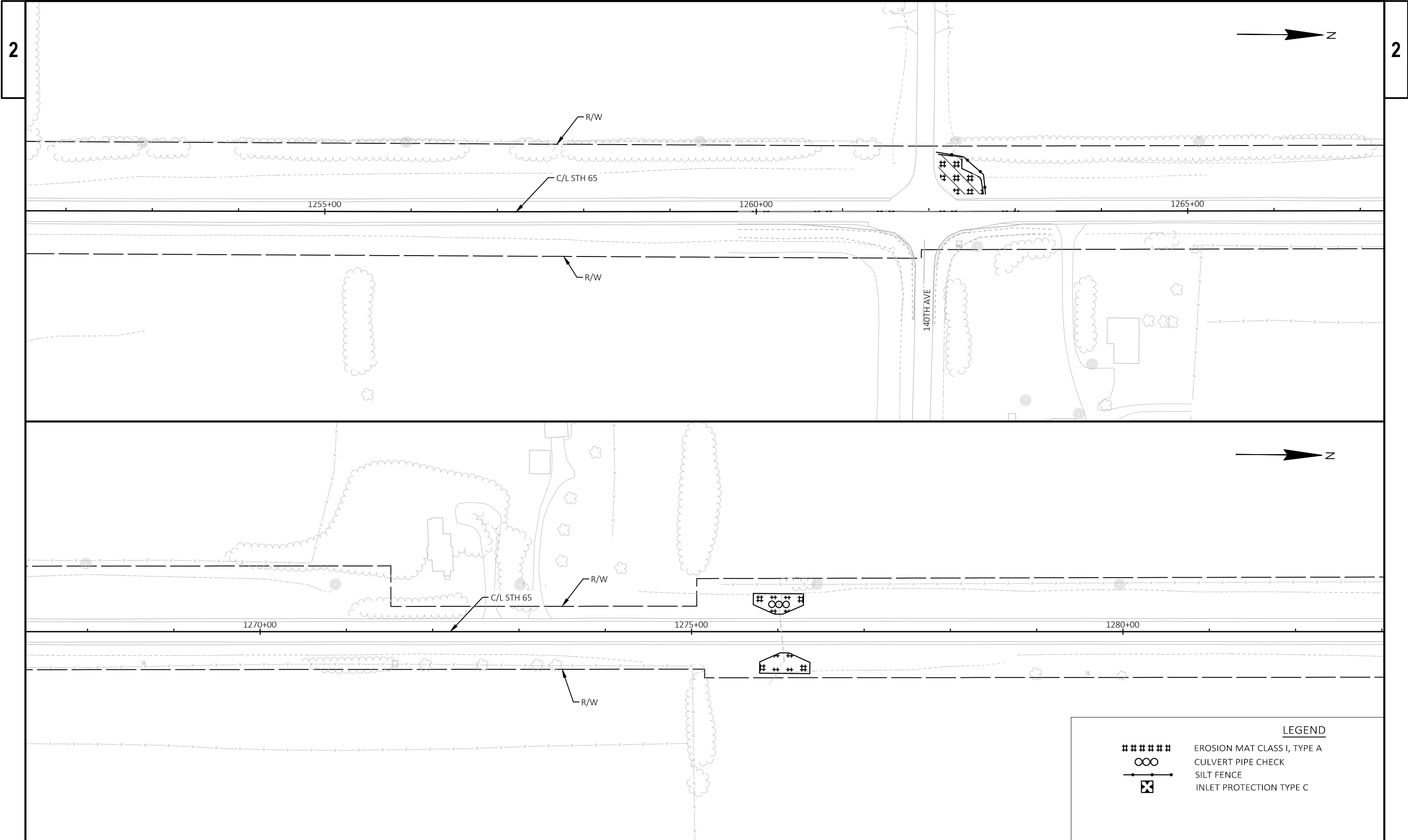












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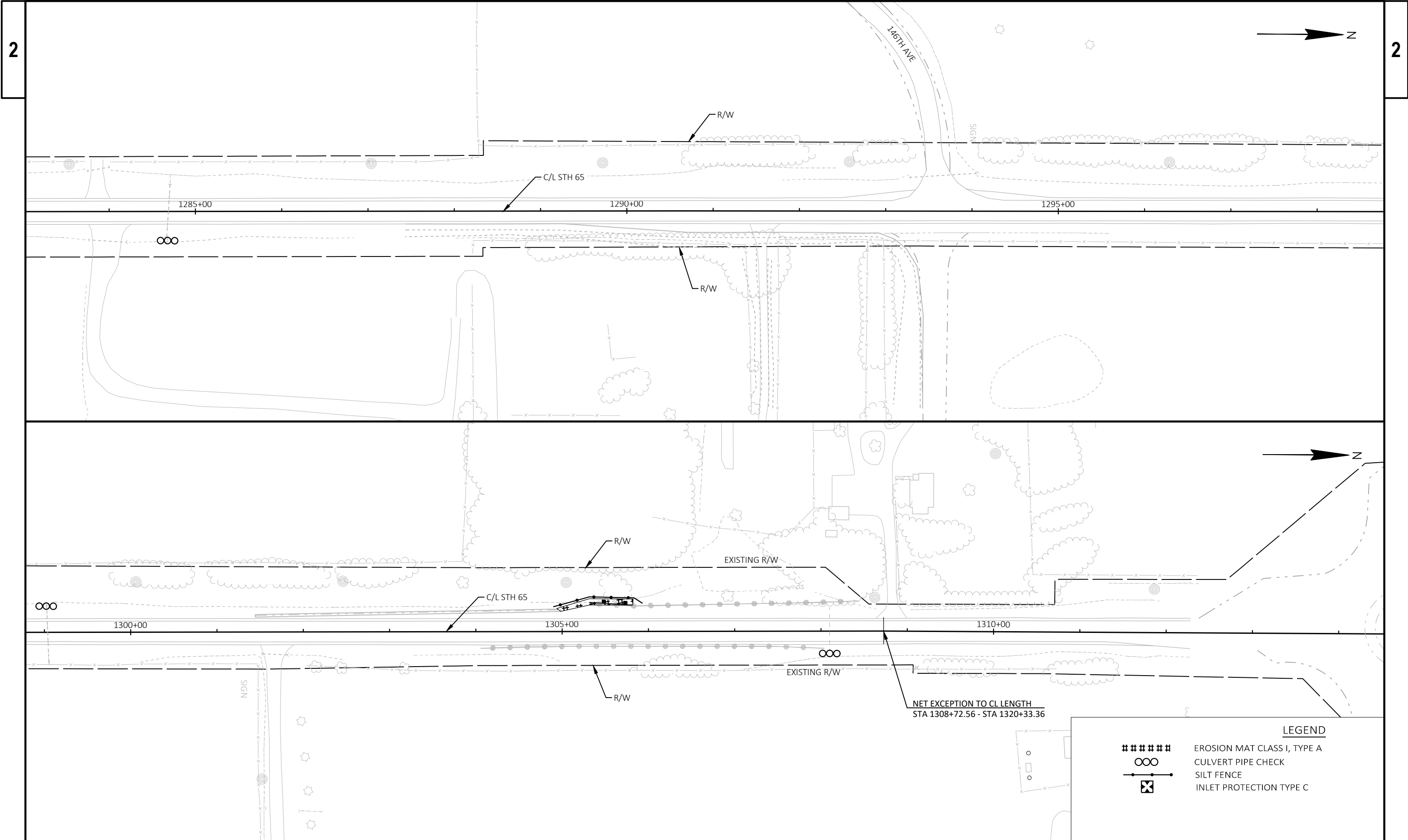
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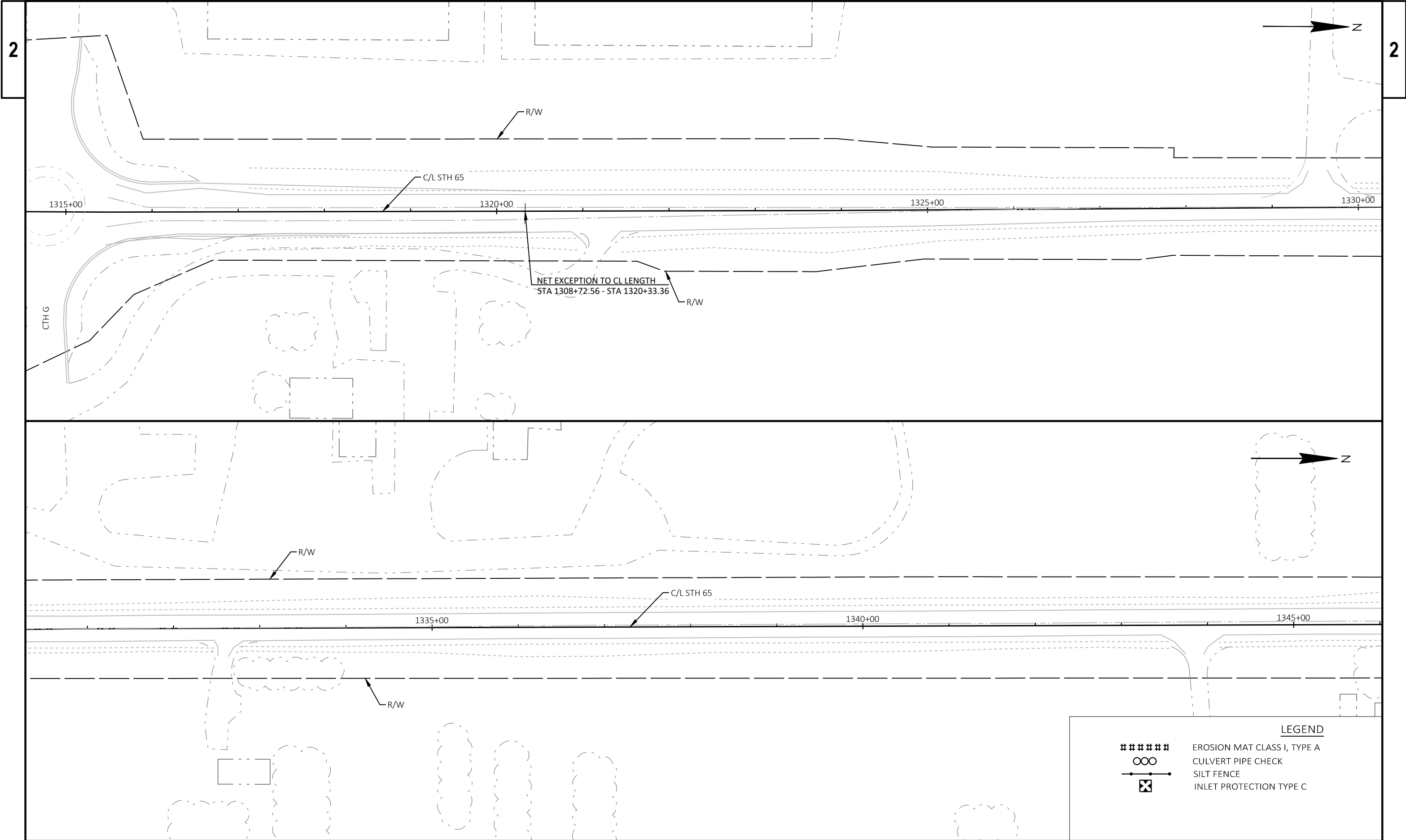
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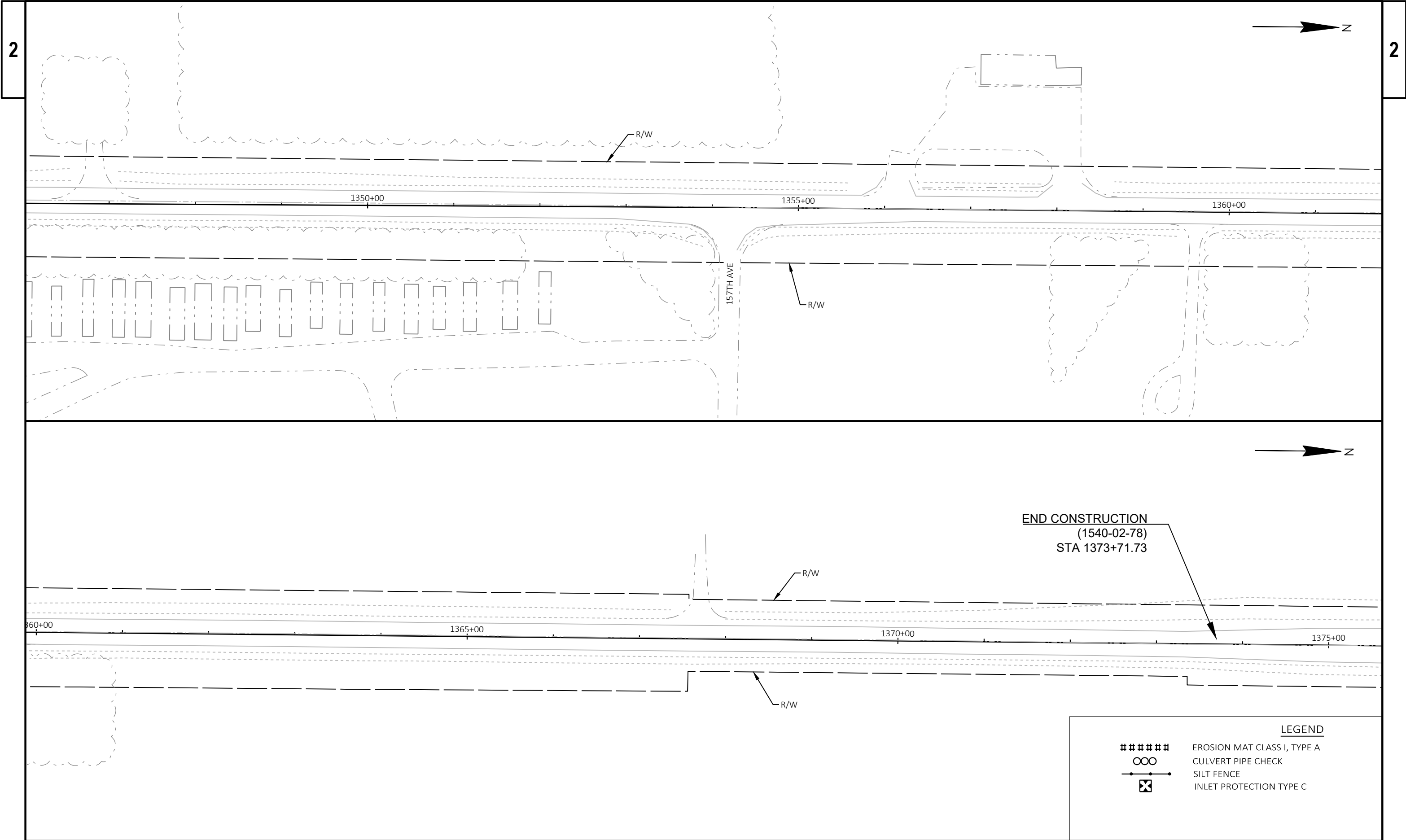
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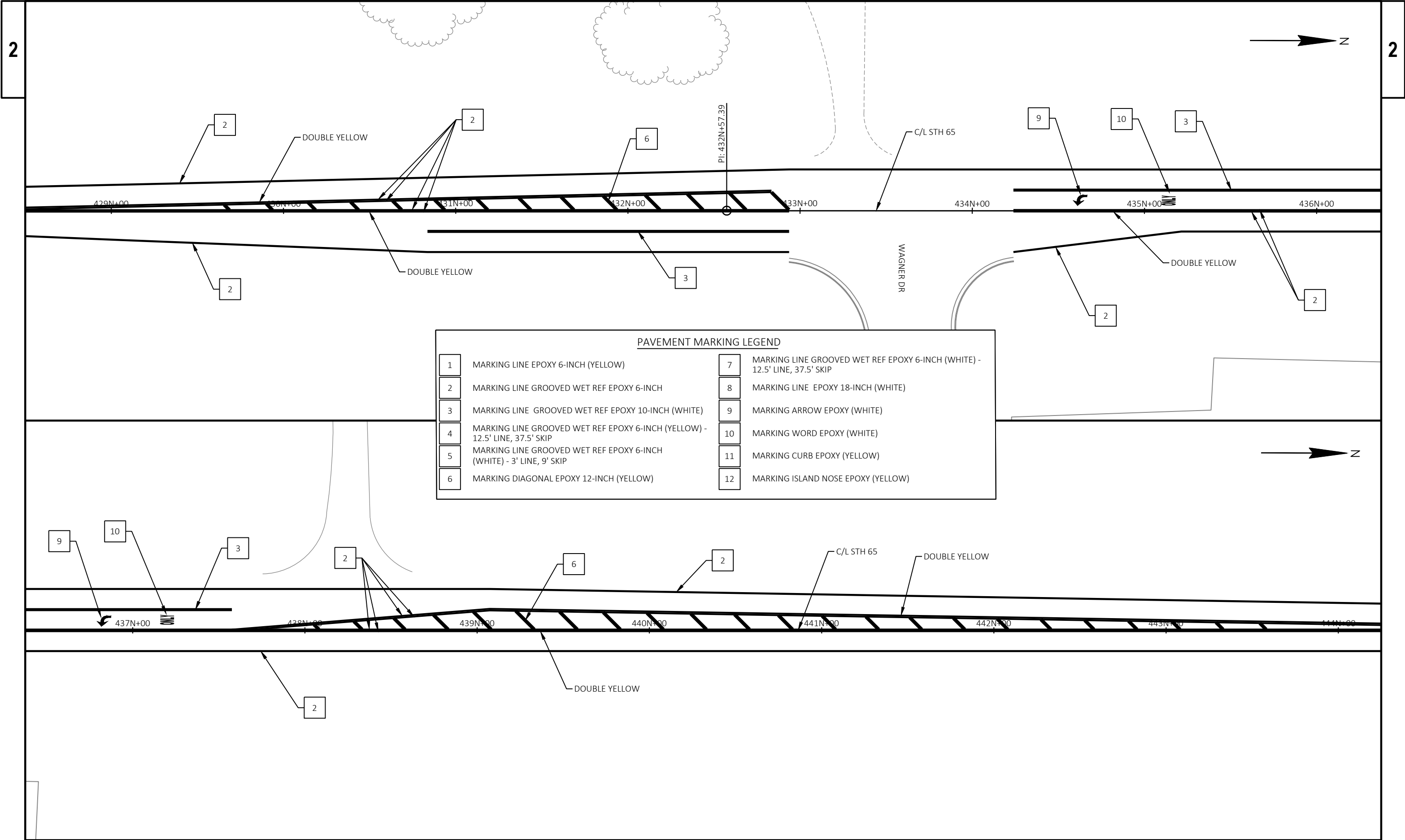
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LEGEND

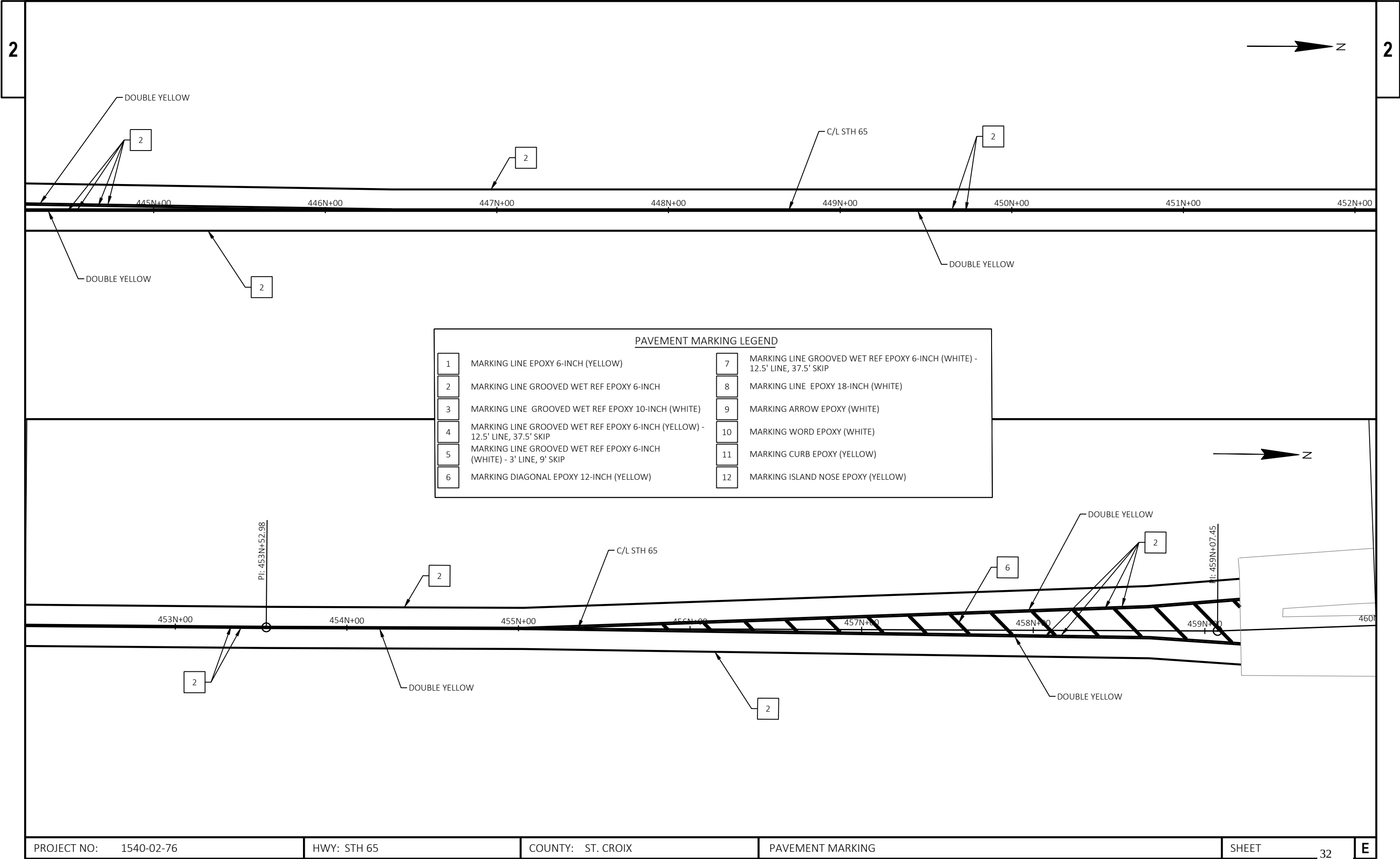




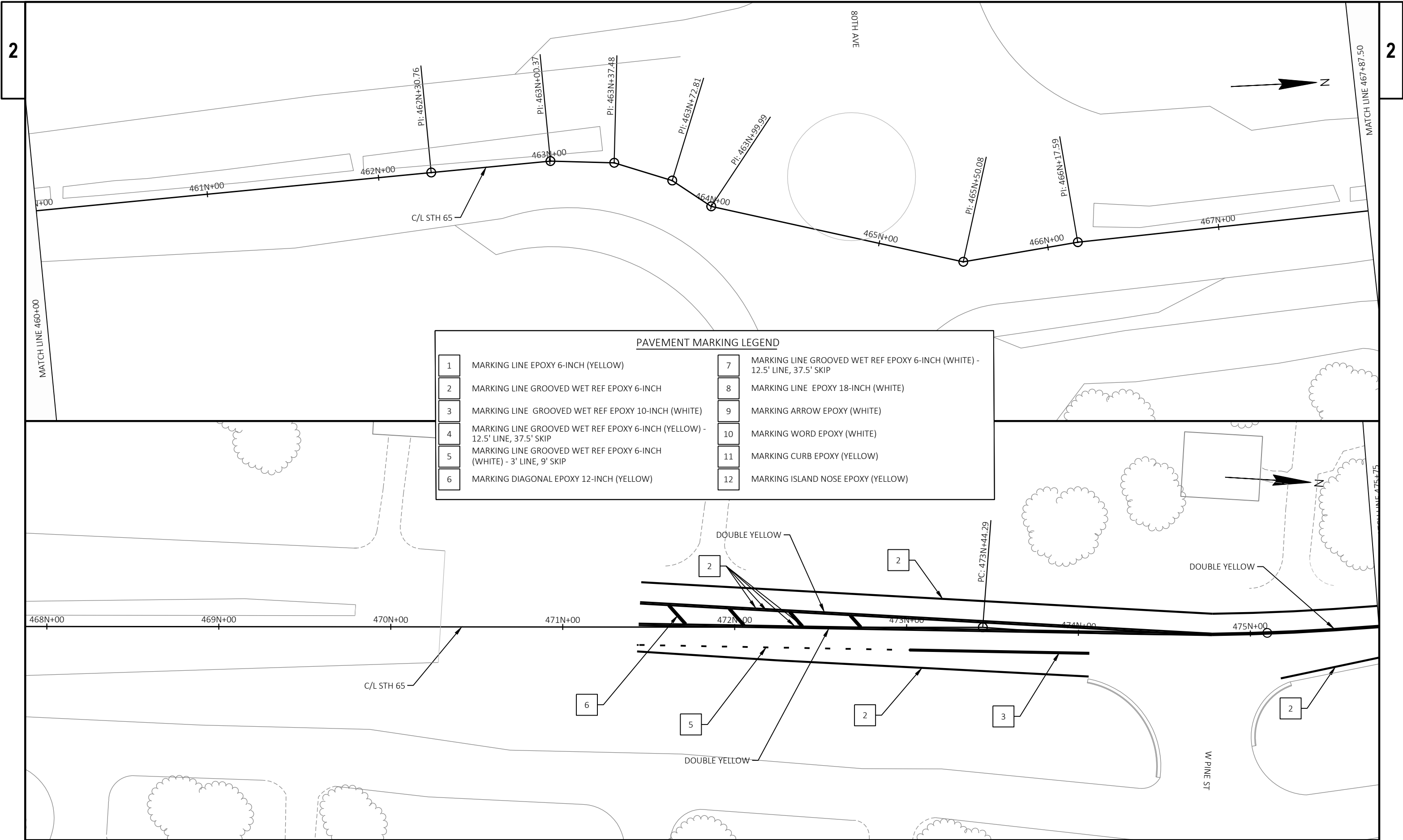


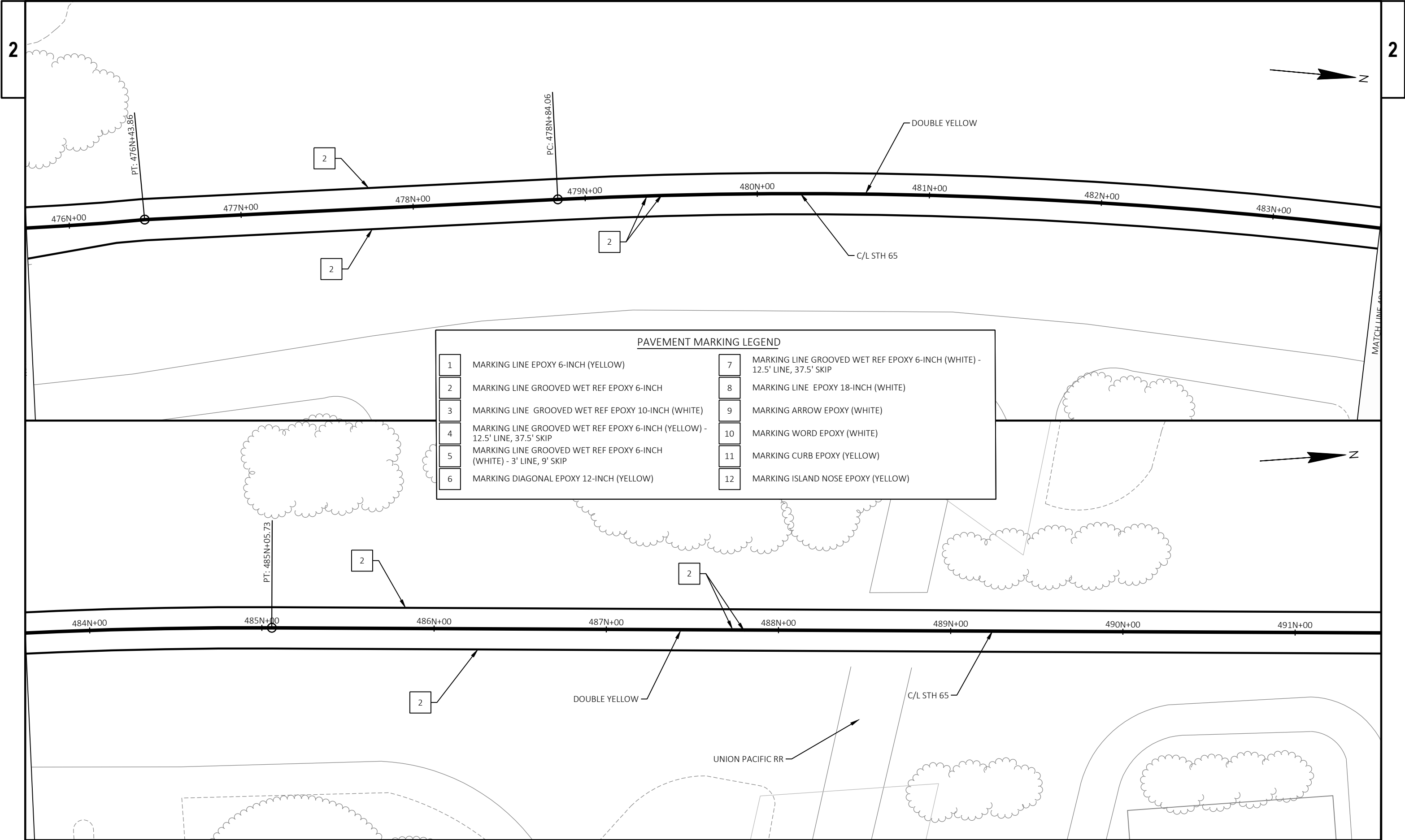


PAVEMENT MARKING LEGEND			
1	MARKING LINE EPOXY 6-INCH (YELLOW)	7	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 12.5' LINE, 37.5' SKIP
2	MARKING LINE GROOVED WET REF EPOXY 6-INCH	8	MARKING LINE EPOXY 18-INCH (WHITE)
3	MARKING LINE GROOVED WET REF EPOXY 10-INCH (WHITE)	9	MARKING ARROW EPOXY (WHITE)
4	MARKING LINE GROOVED WET REF EPOXY 6-INCH (YELLOW) - 12.5' LINE, 37.5' SKIP	10	MARKING WORD EPOXY (WHITE)
5	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 3' LINE, 9' SKIP	11	MARKING CURB EPOXY (YELLOW)
6	MARKING DIAGONAL EPOXY 12-INCH (YELLOW)	12	MARKING ISLAND NOSE EPOXY (YELLOW)

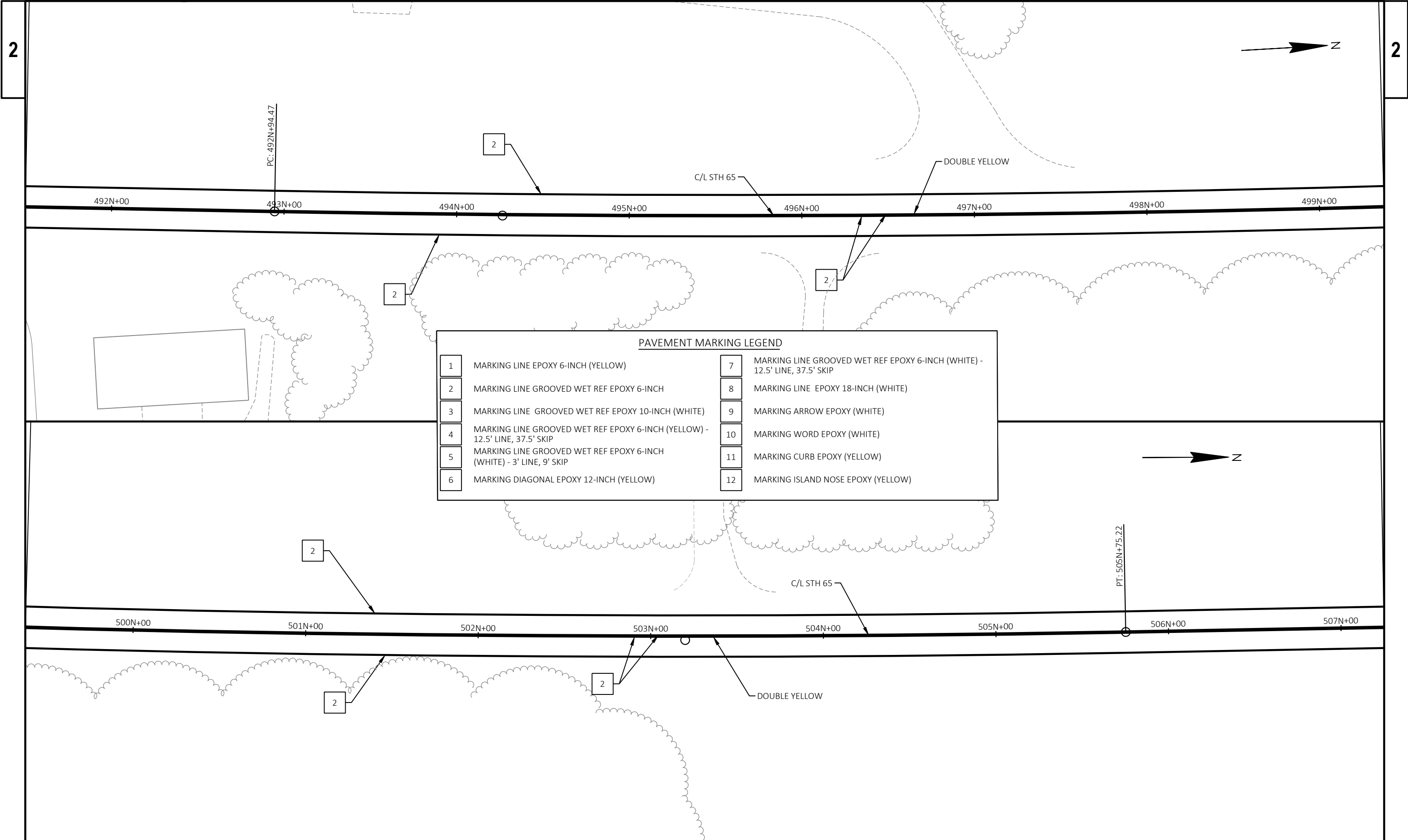


PAVEMENT MARKING LEGEND	
1	MARKING LINE EPOXY 6-INCH (YELLOW)
2	MARKING LINE GROOVED WET REF EPOXY 6-INCH
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8	MARKING LINE EPOXY 18-INCH (WHITE)
9	MARKING ARROW EPOXY (WHITE)
10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)

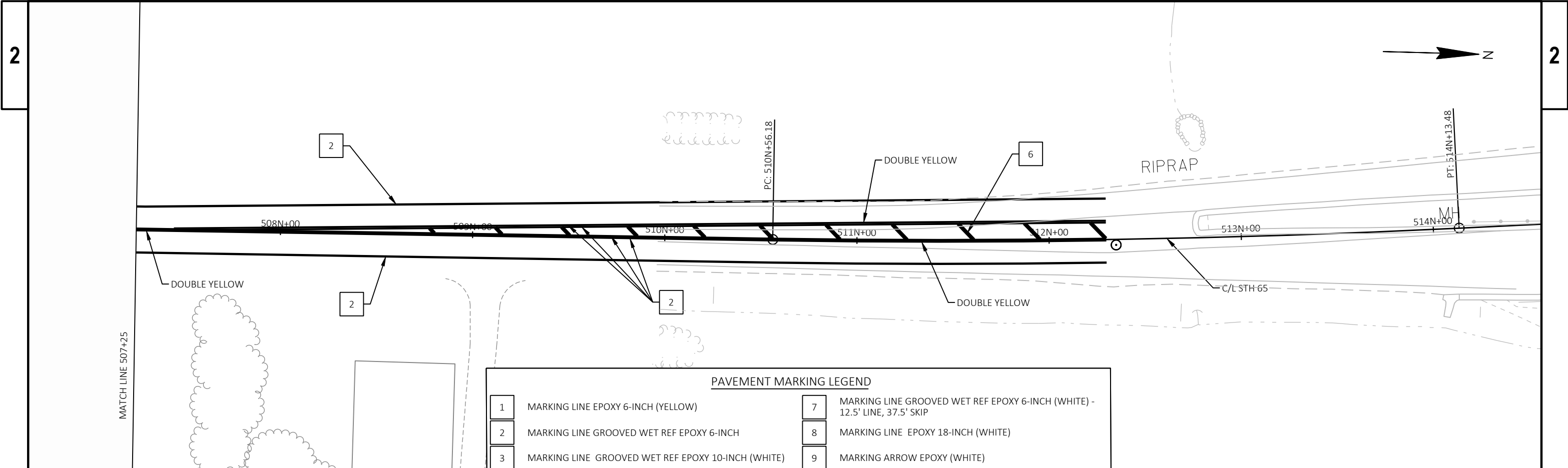




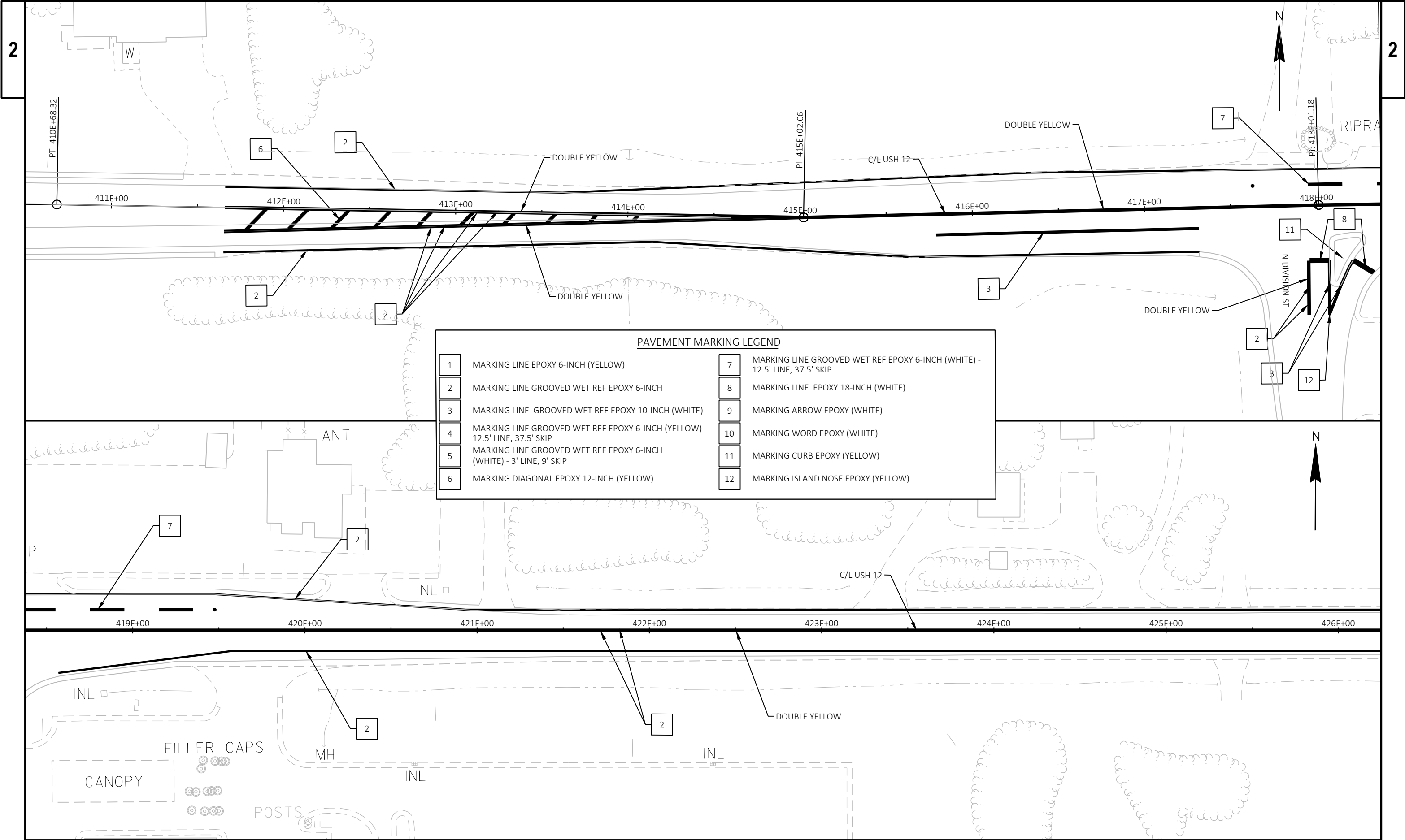
PAVEMENT MARKING LEGEND	
1	MARKING LINE EPOXY 6-INCH (YELLOW)
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10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)

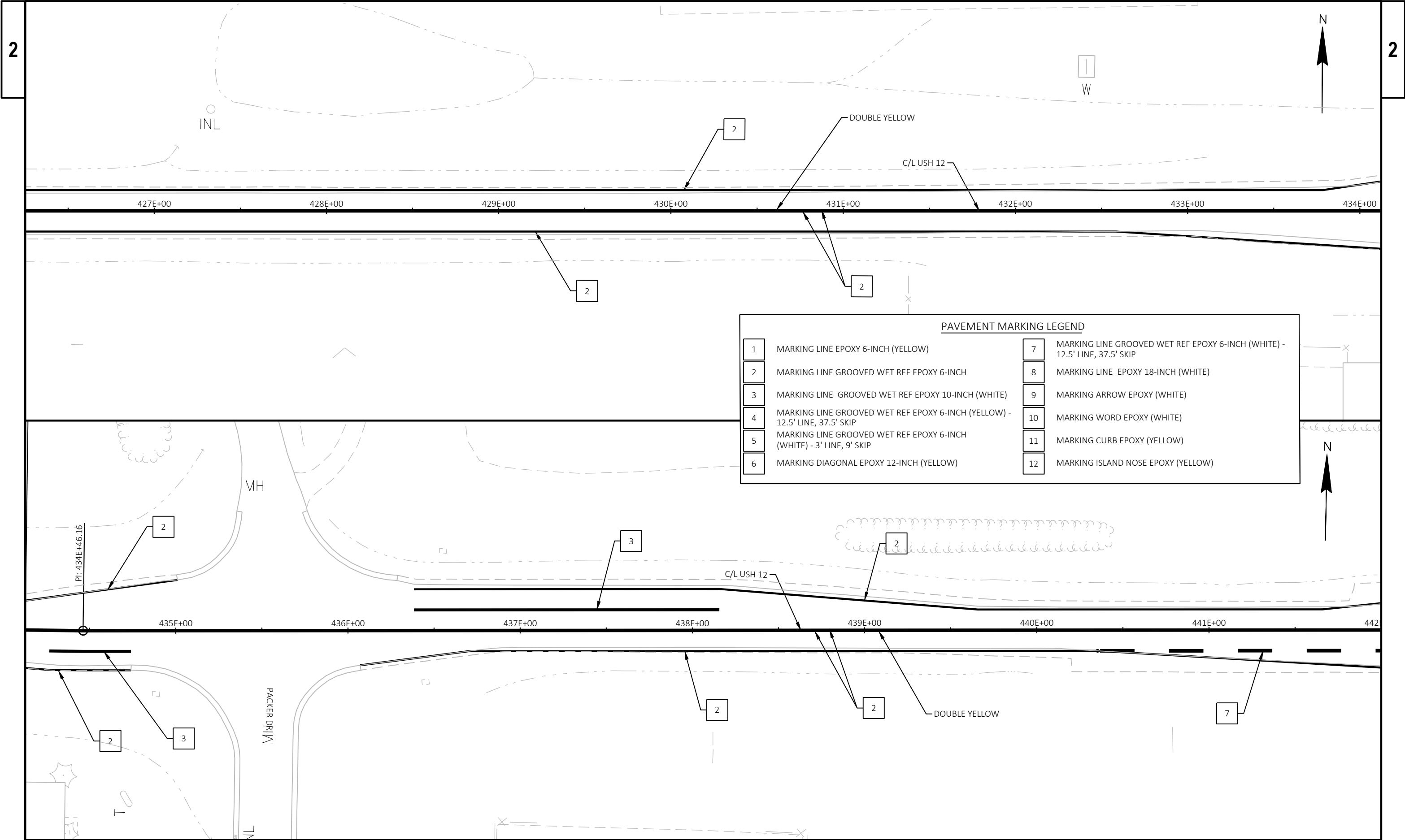


PAVEMENT MARKING LEGEND	
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9	MARKING ARROW EPOXY (WHITE)
10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)

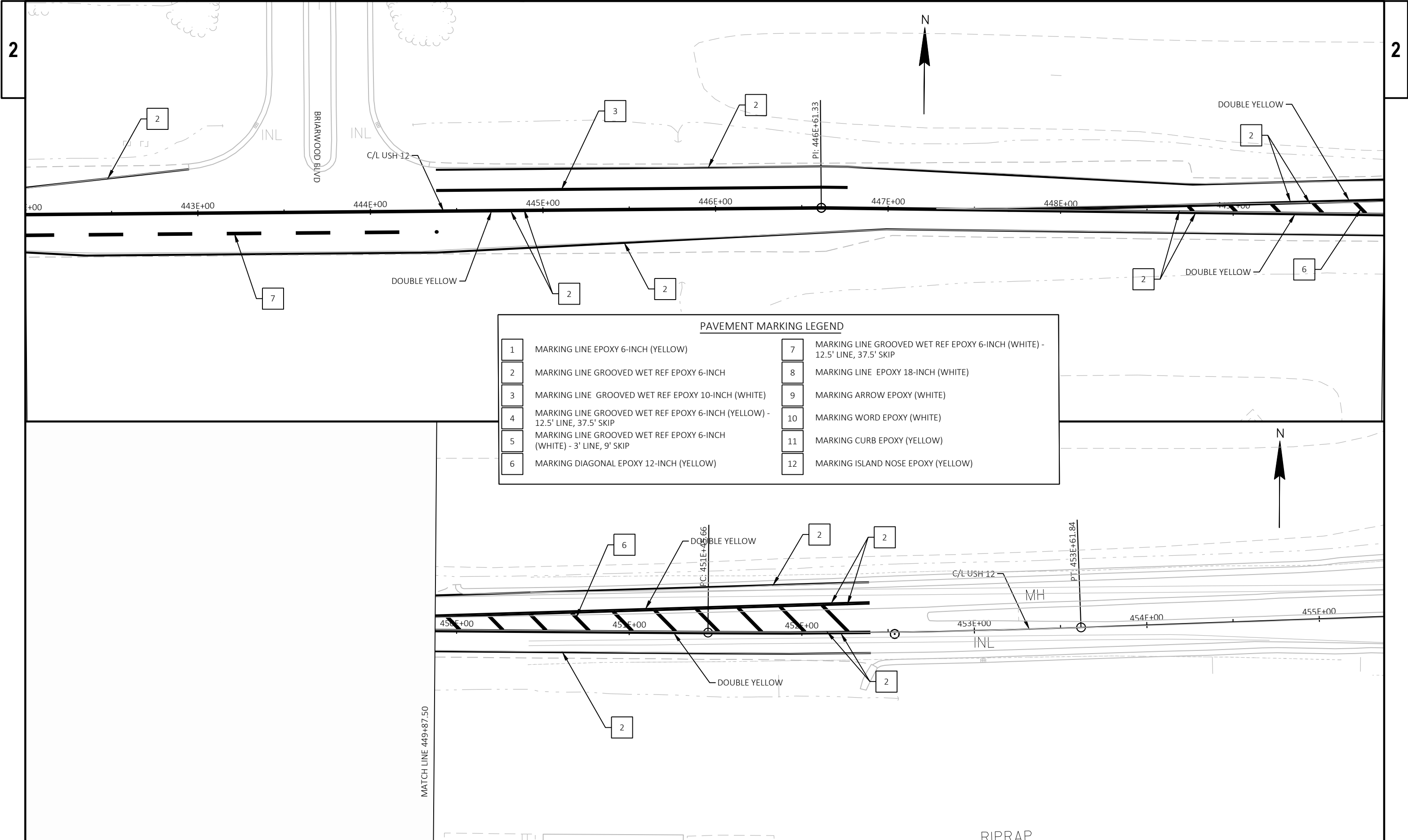


PAVEMENT MARKING LEGEND	
1	MARKING LINE EPOXY 6-INCH (YELLOW)
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10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)





PAVEMENT MARKING LEGEND	
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10	MARKING WORD EPOXY (WHITE)
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12	MARKING ISLAND NOSE EPOXY (YELLOW)



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10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)

PROJECT NO: 8949-00-75

HWY: STH 65

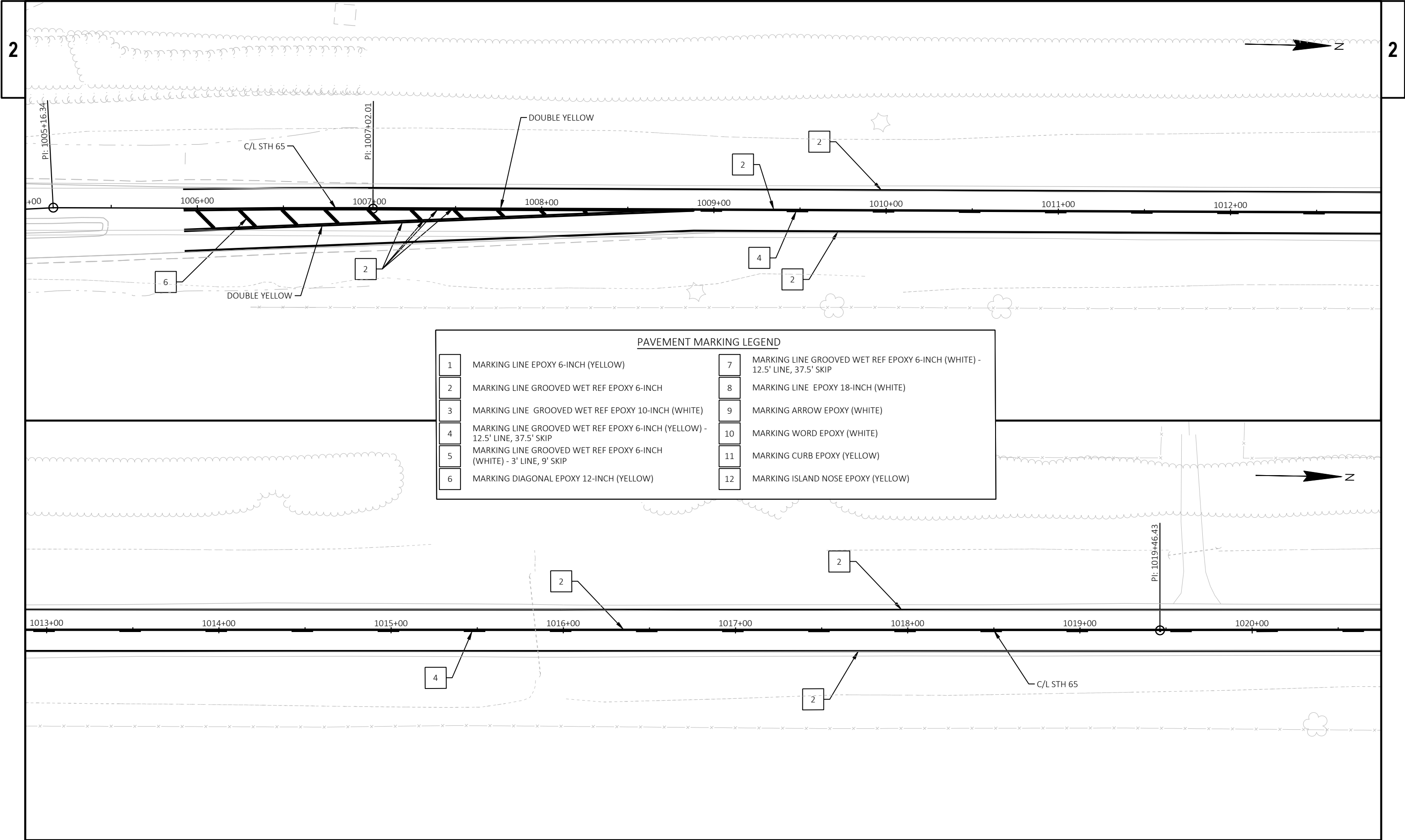
COUNTY: ST. CROIX

PAVEMENT MARKING

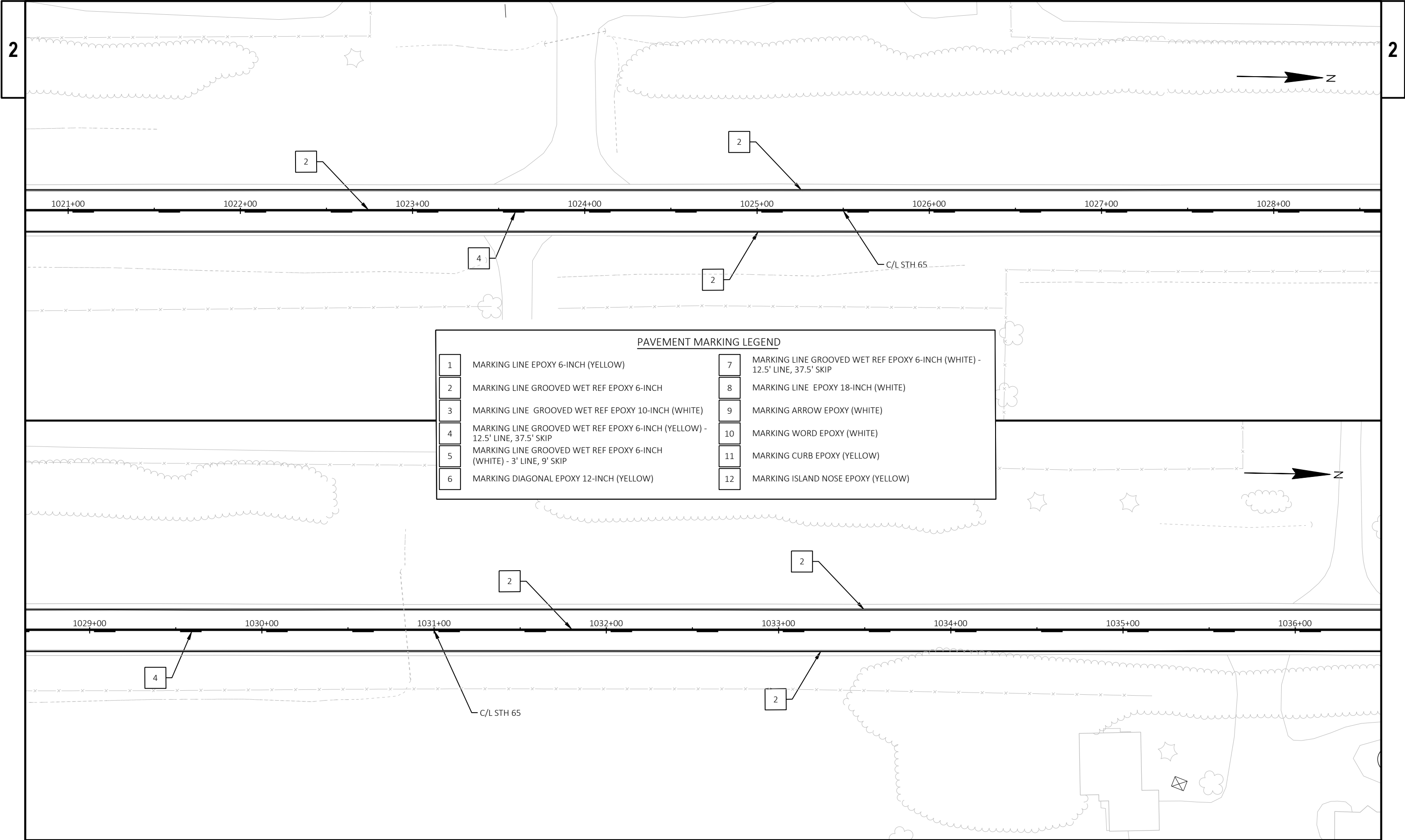
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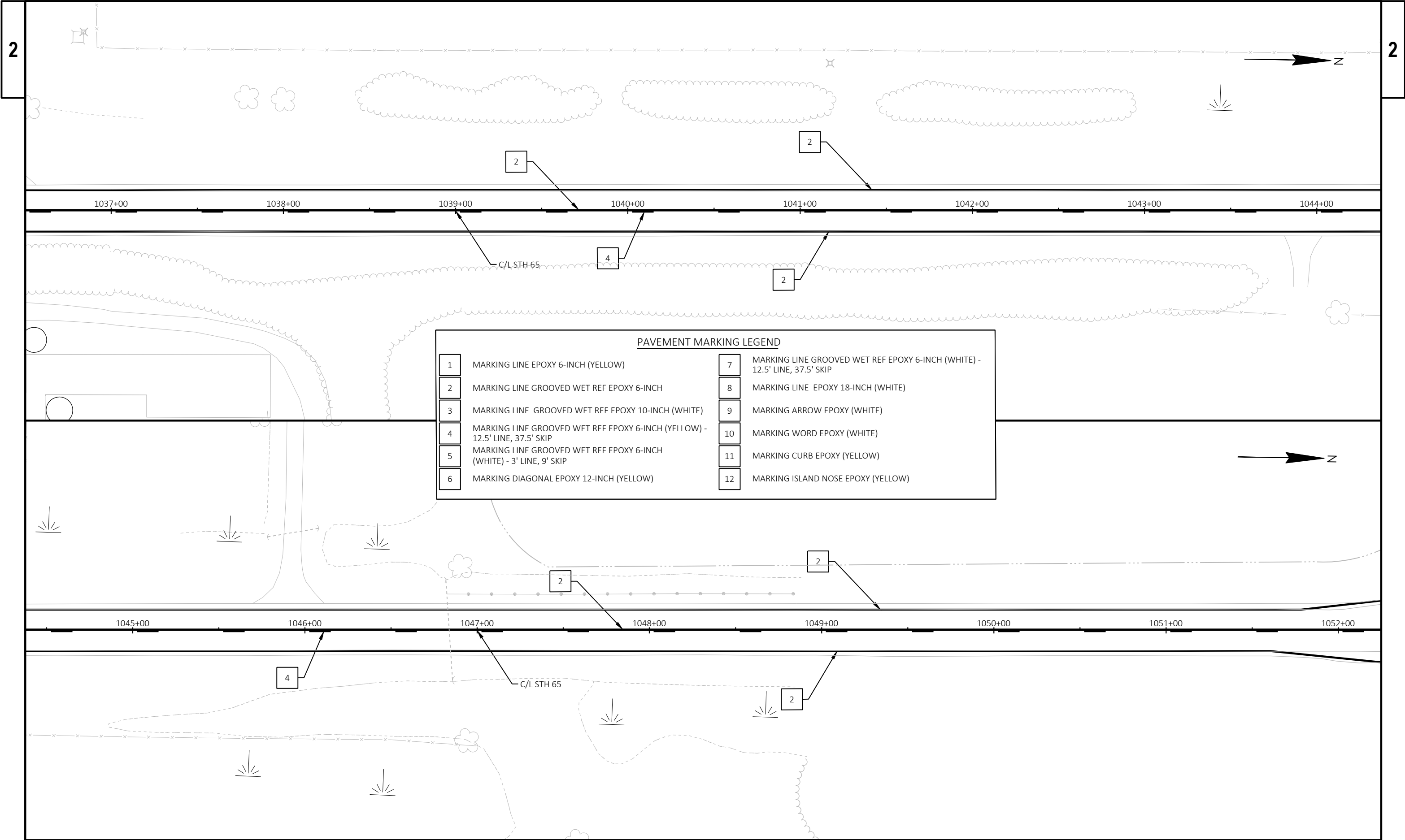
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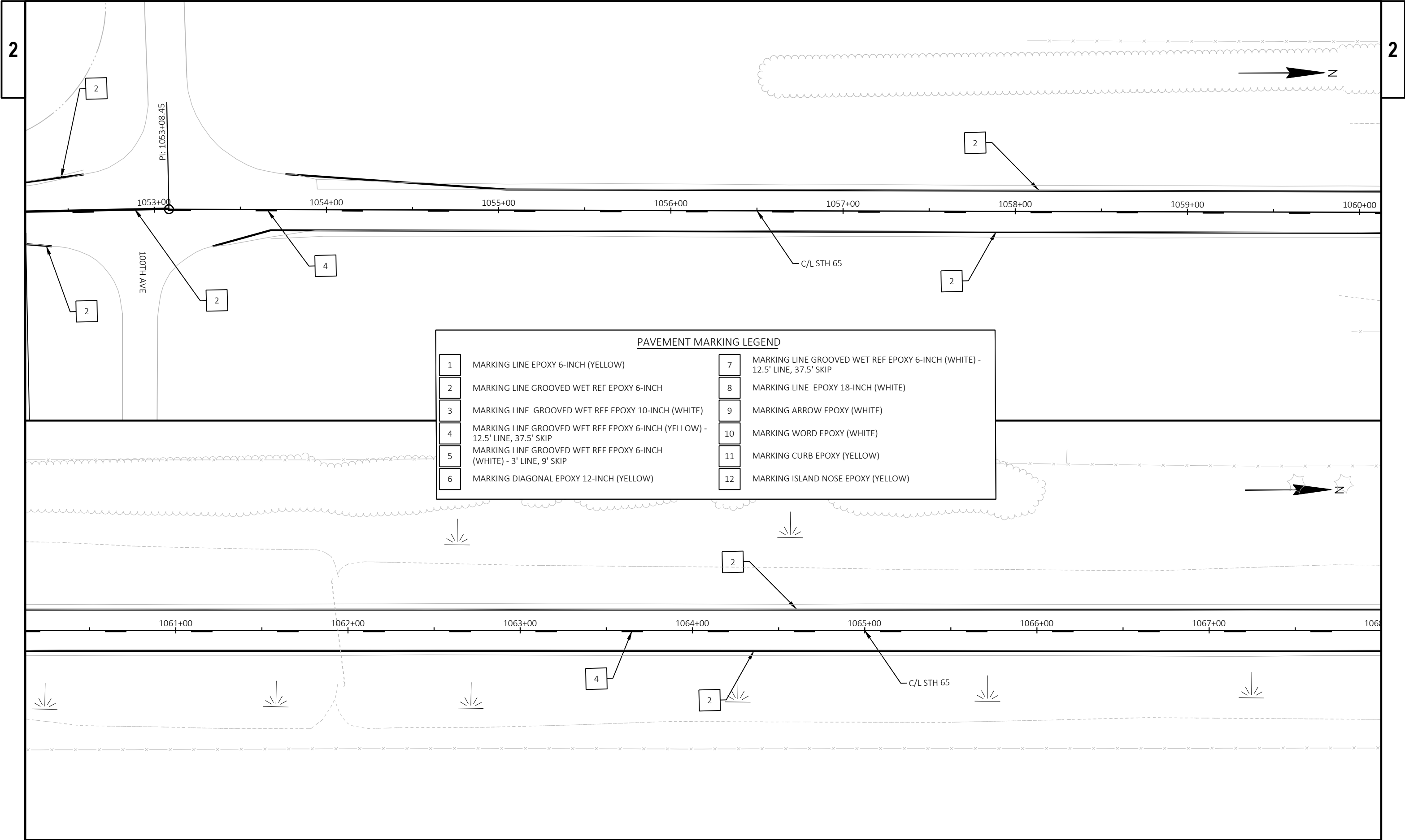
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10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)

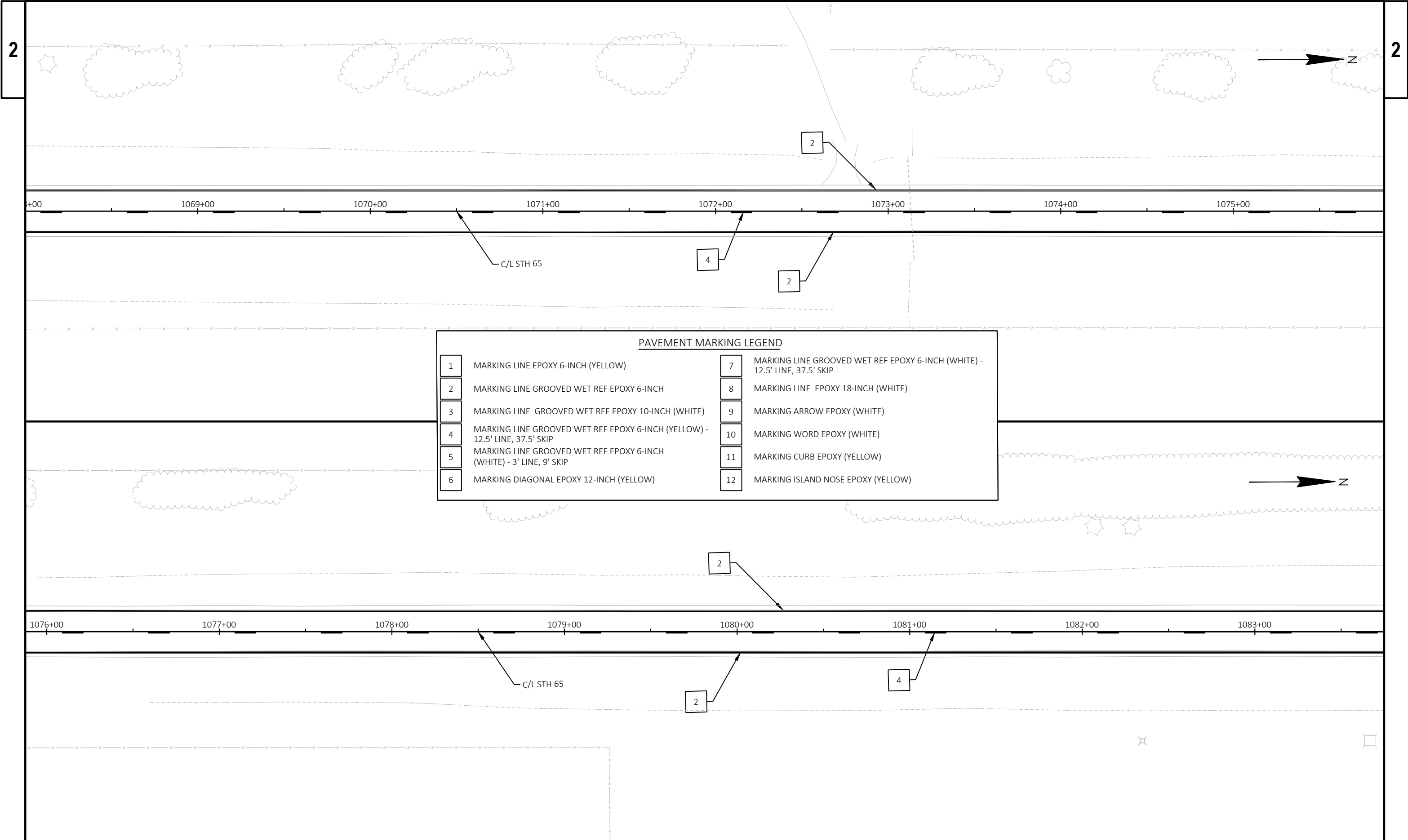


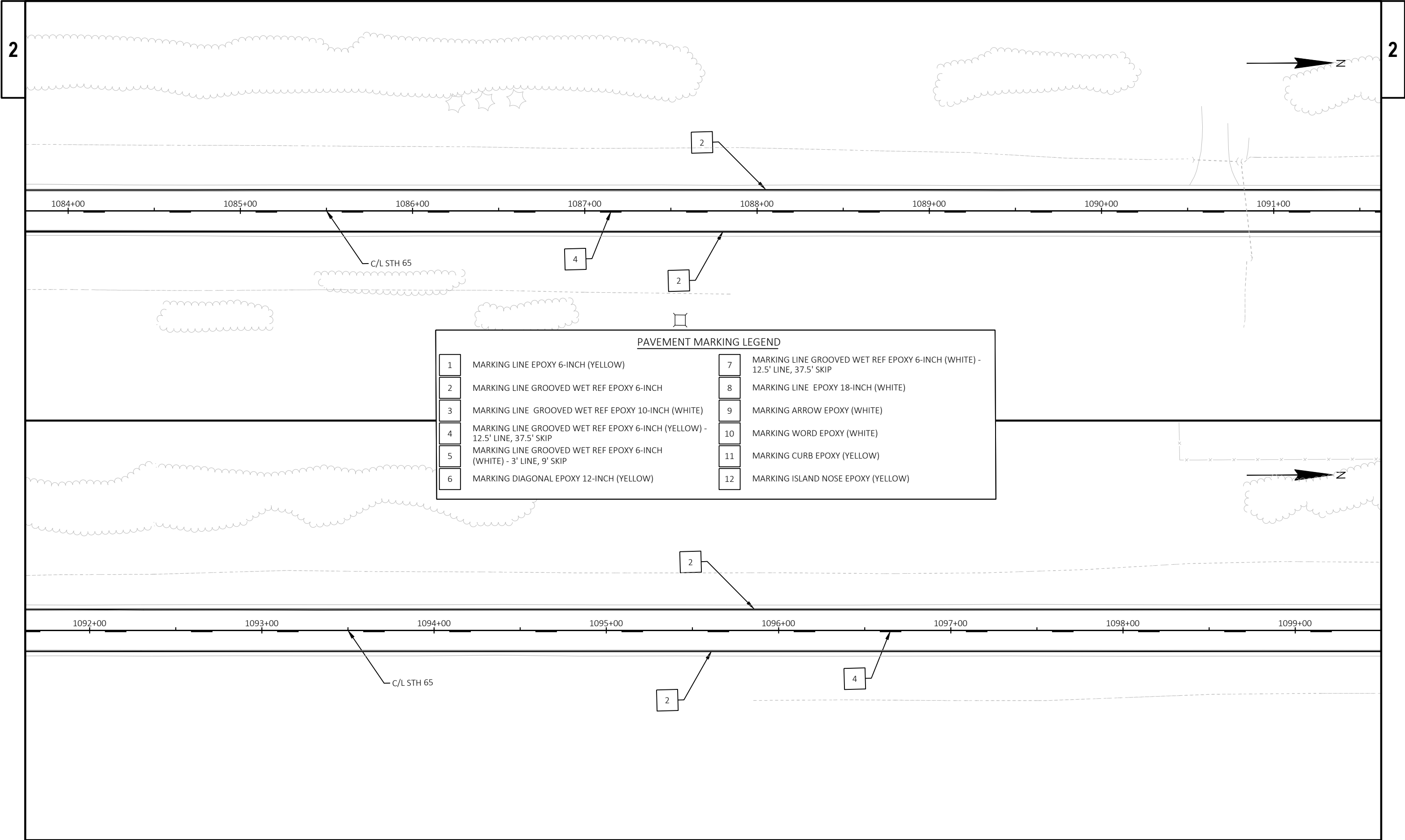
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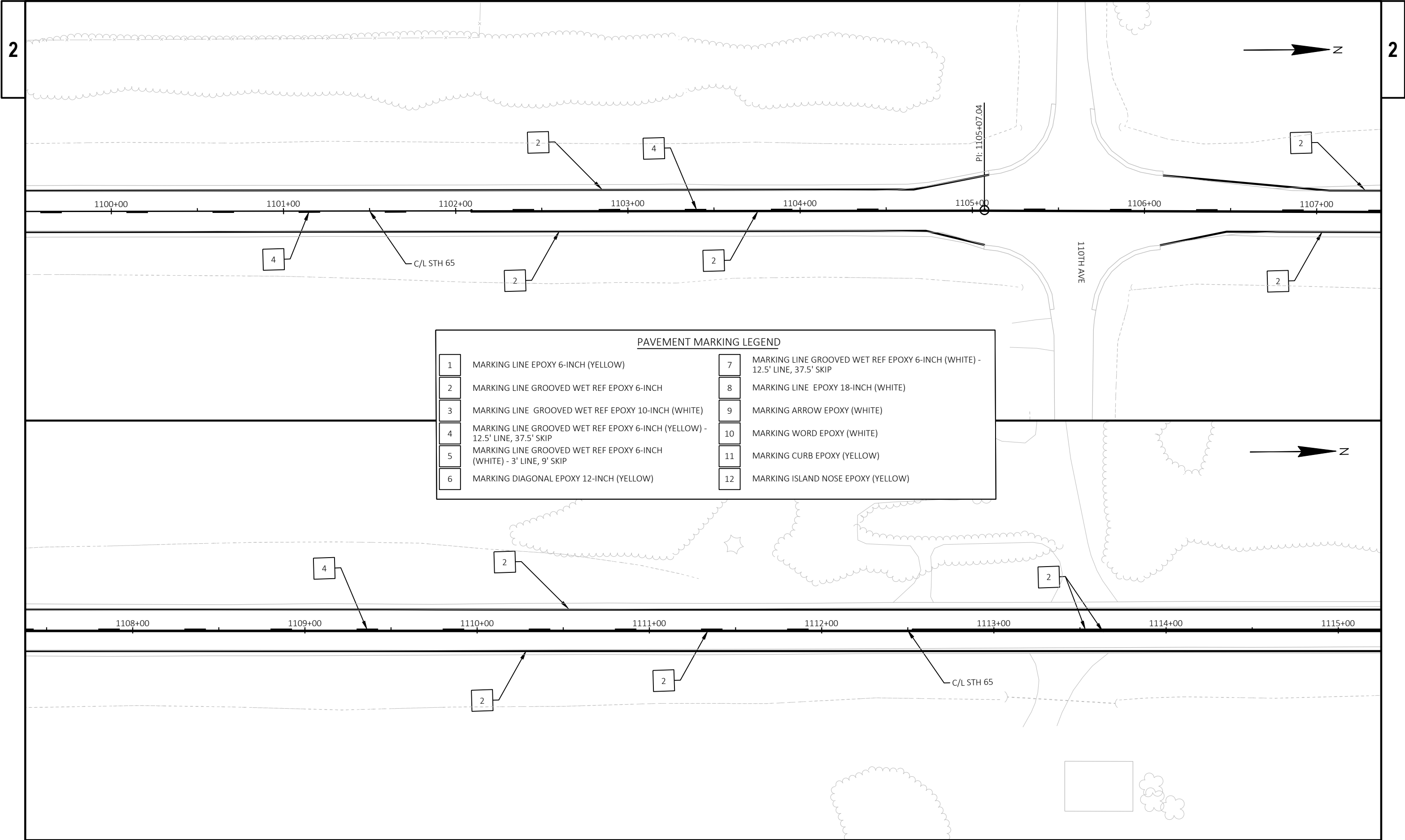
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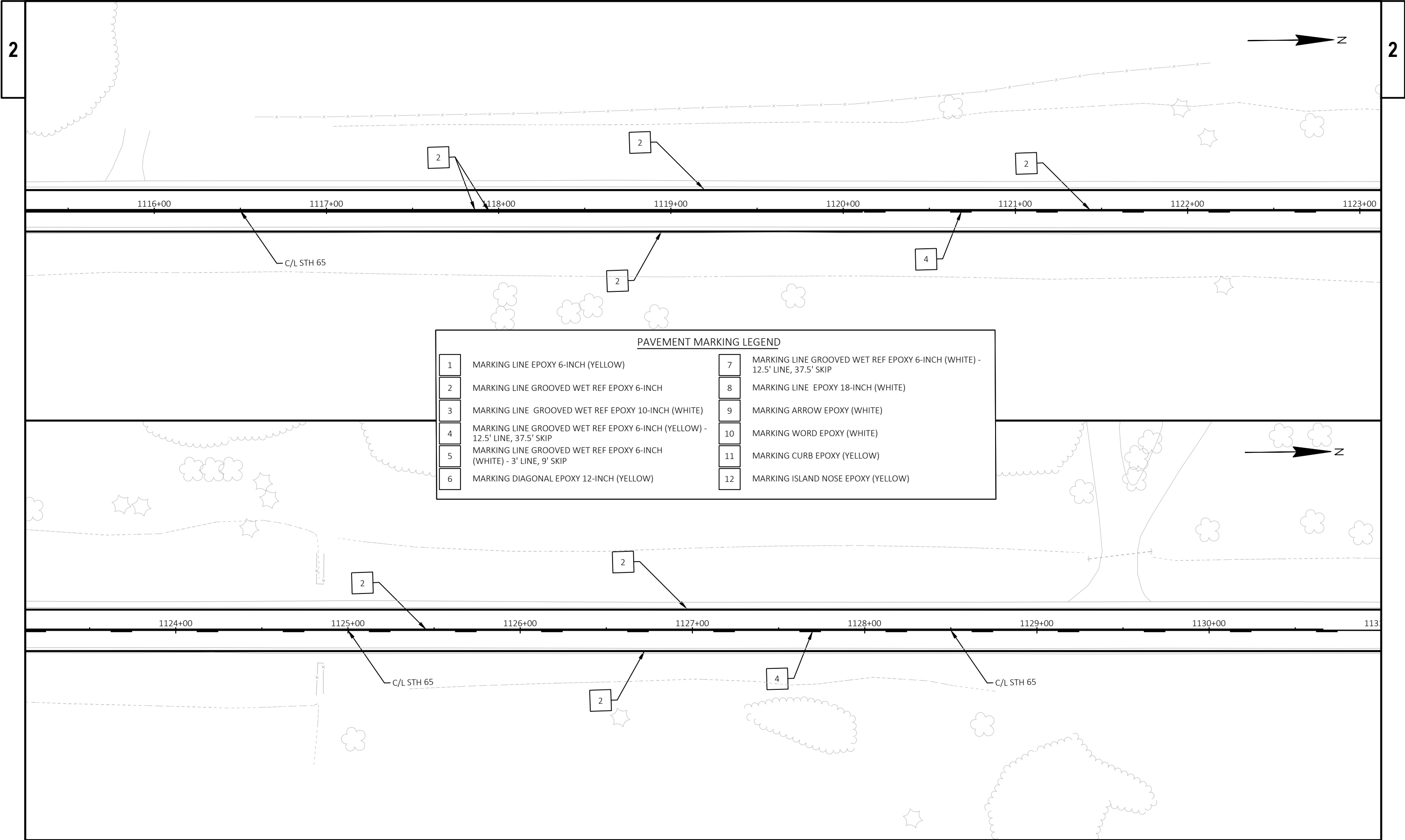




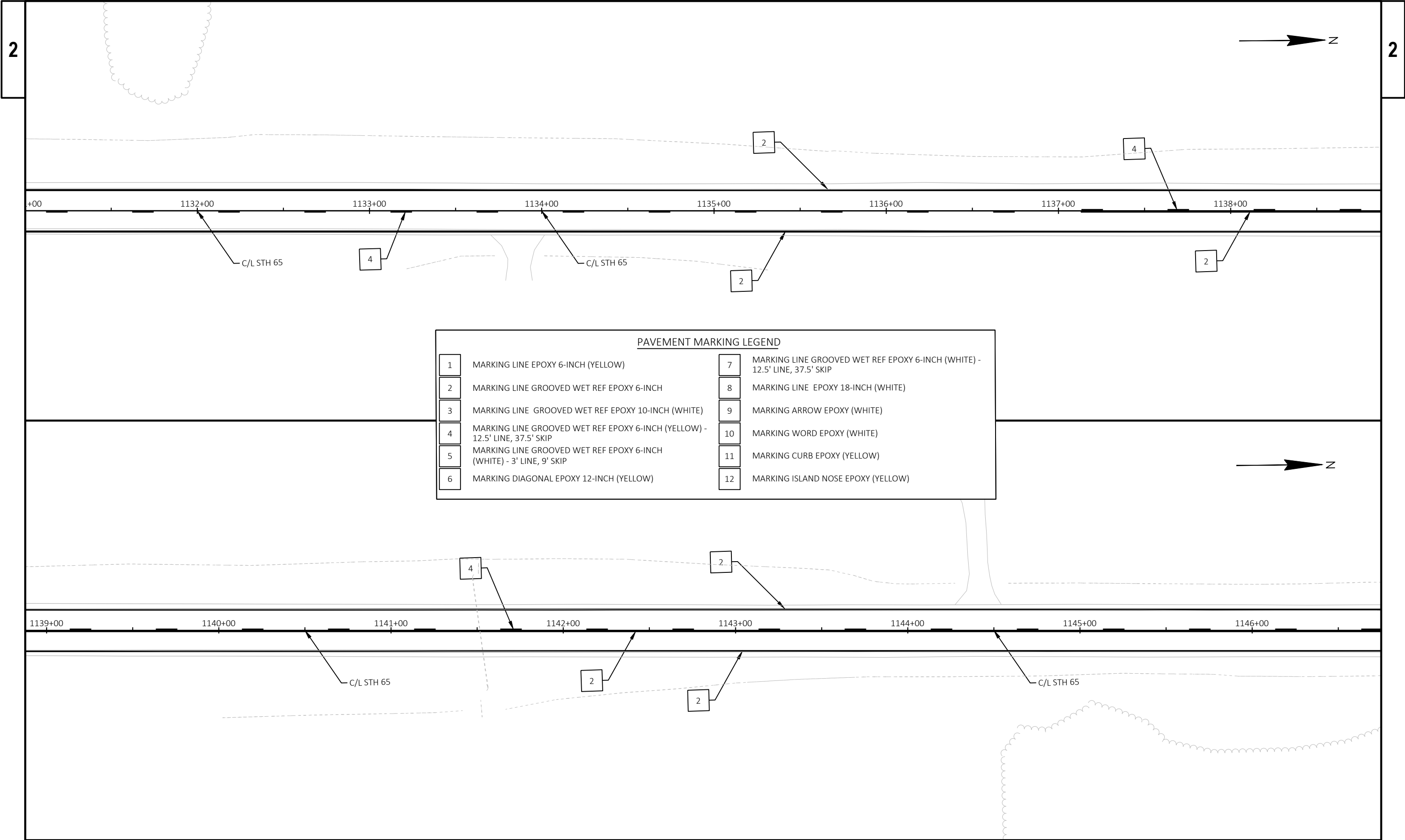
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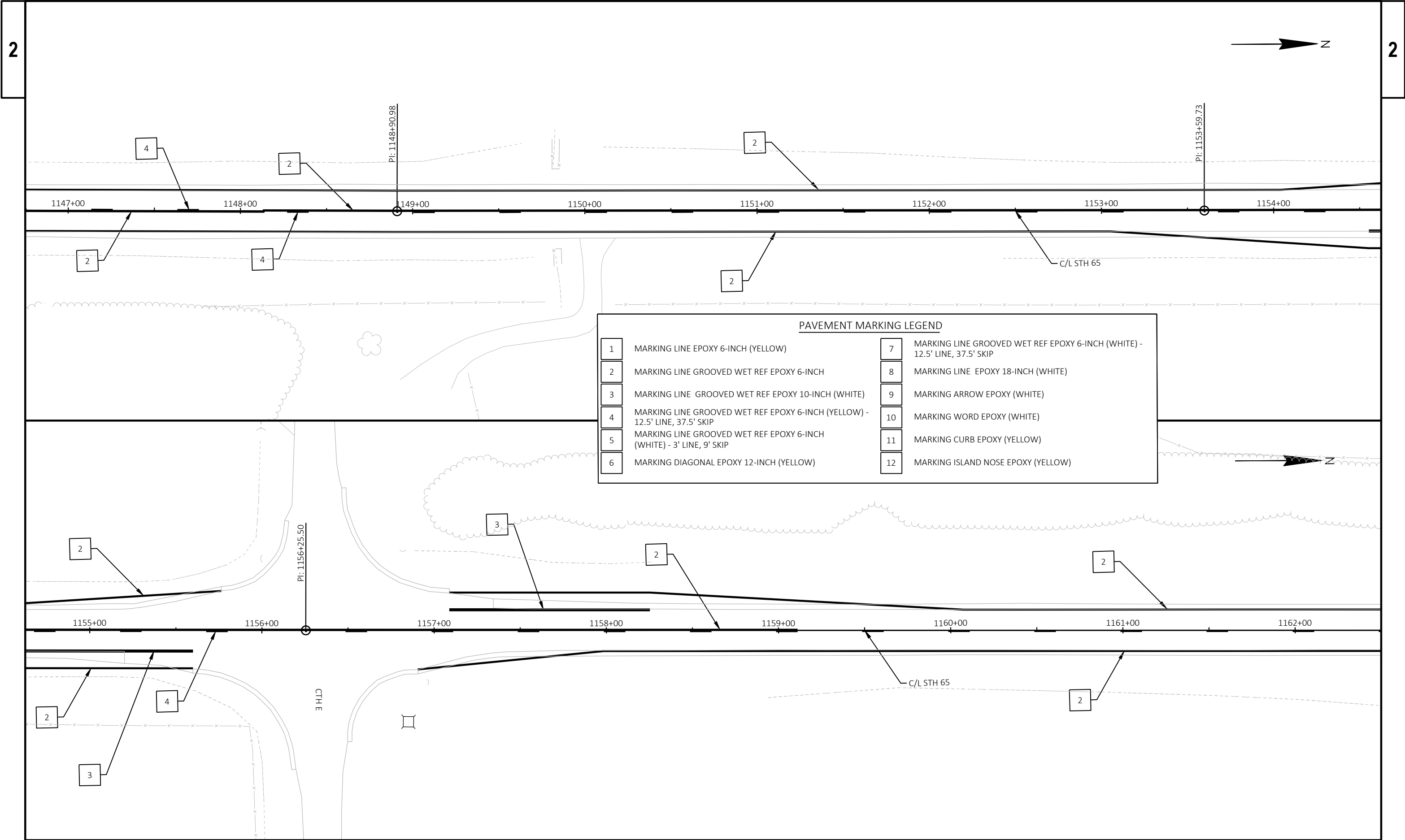


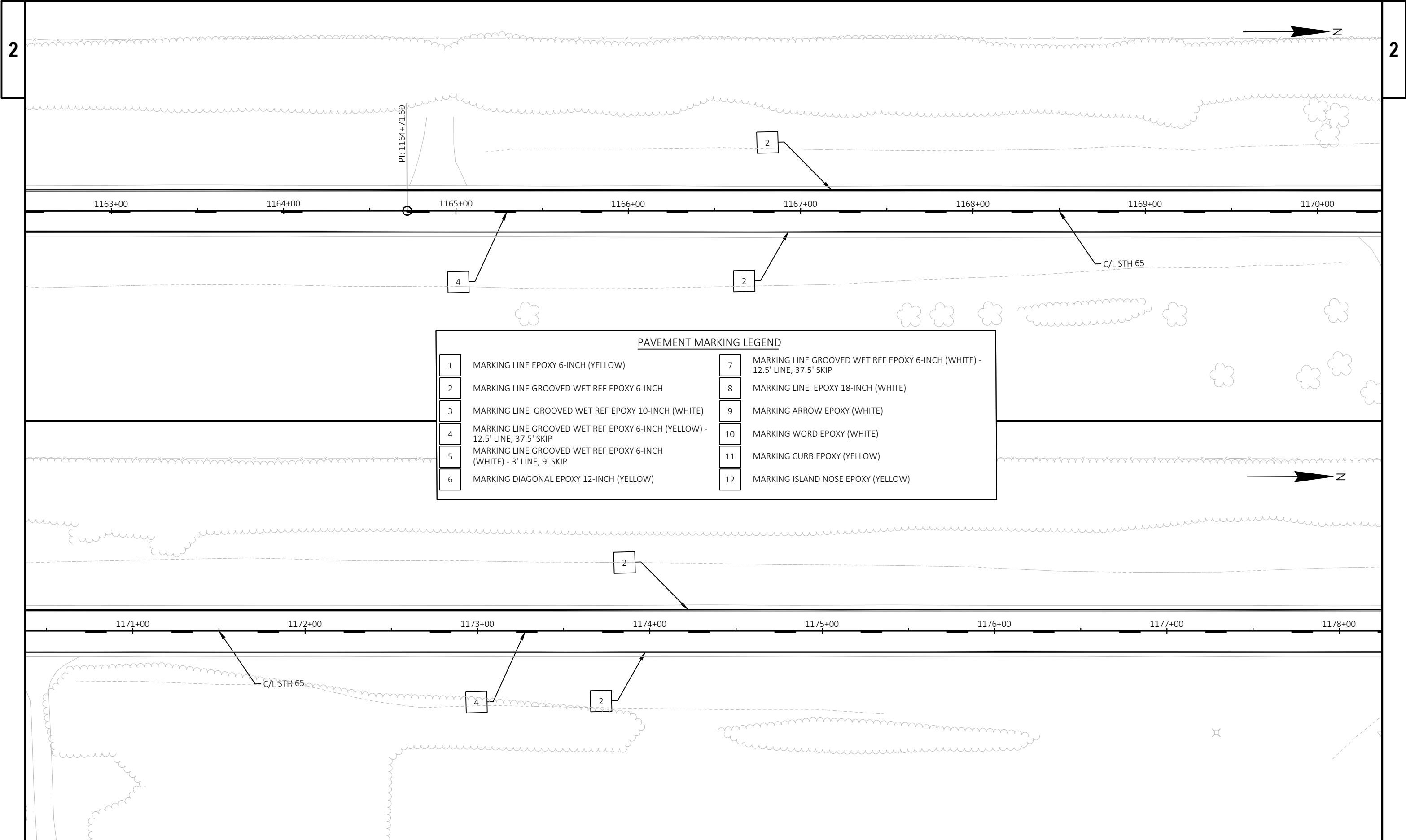
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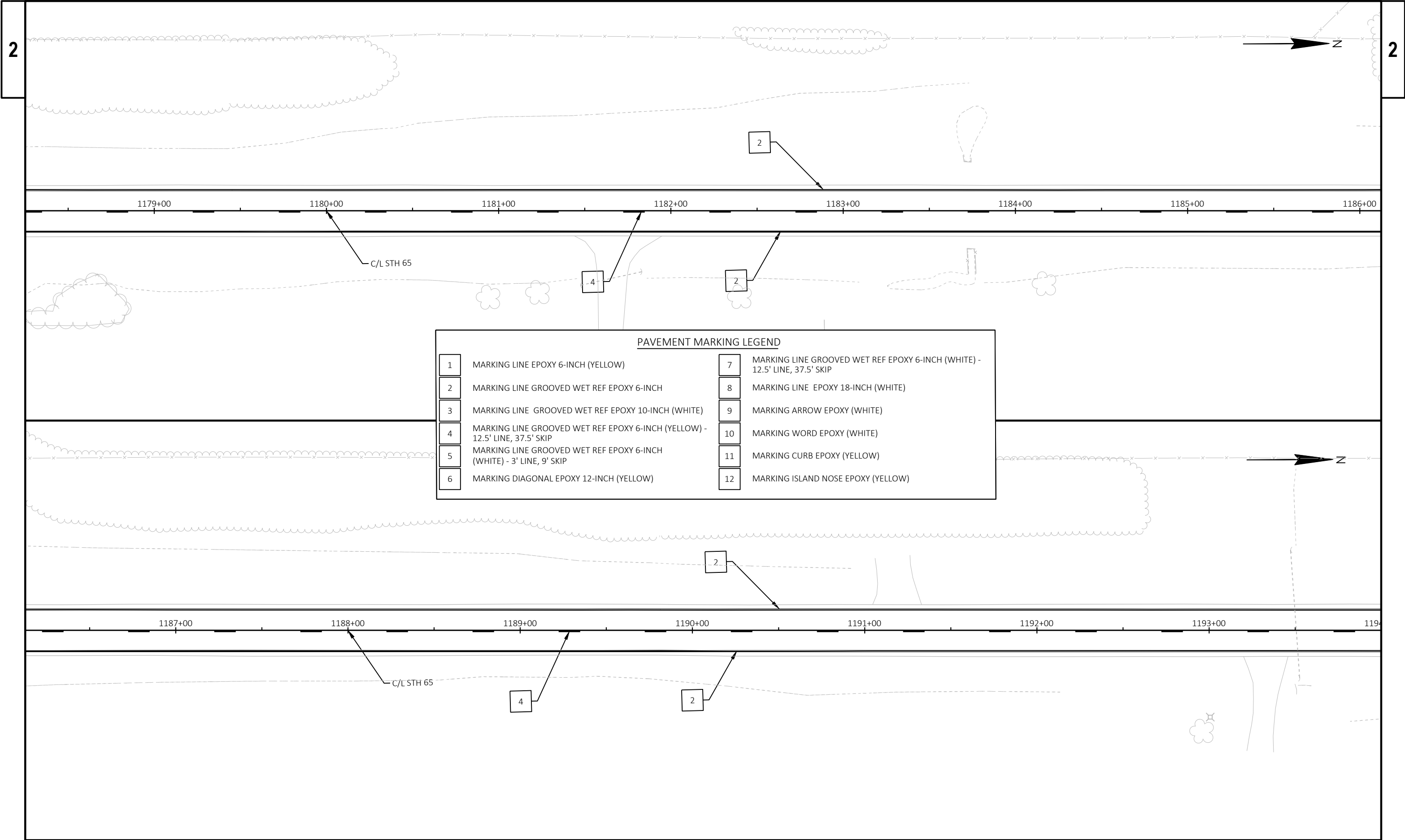
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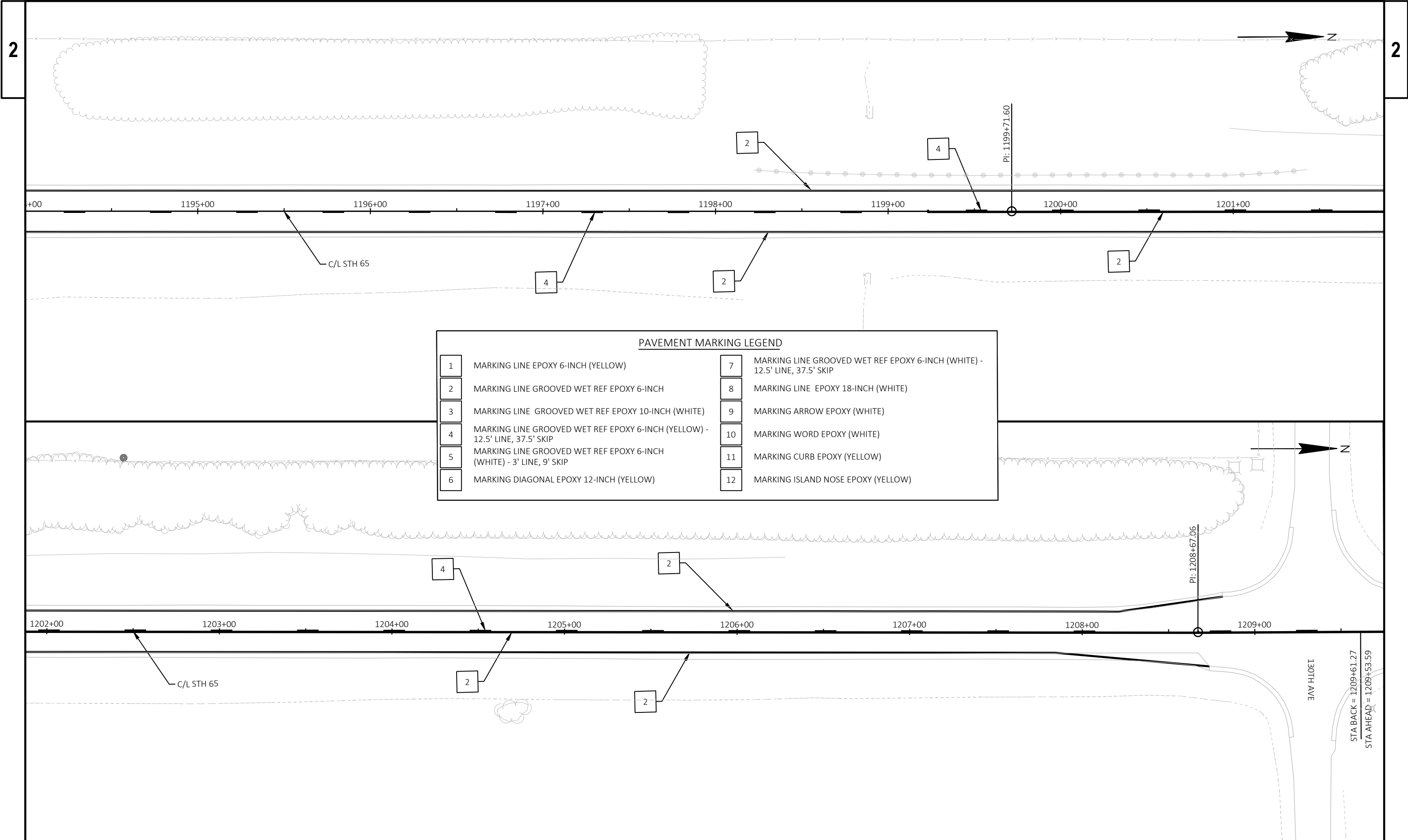




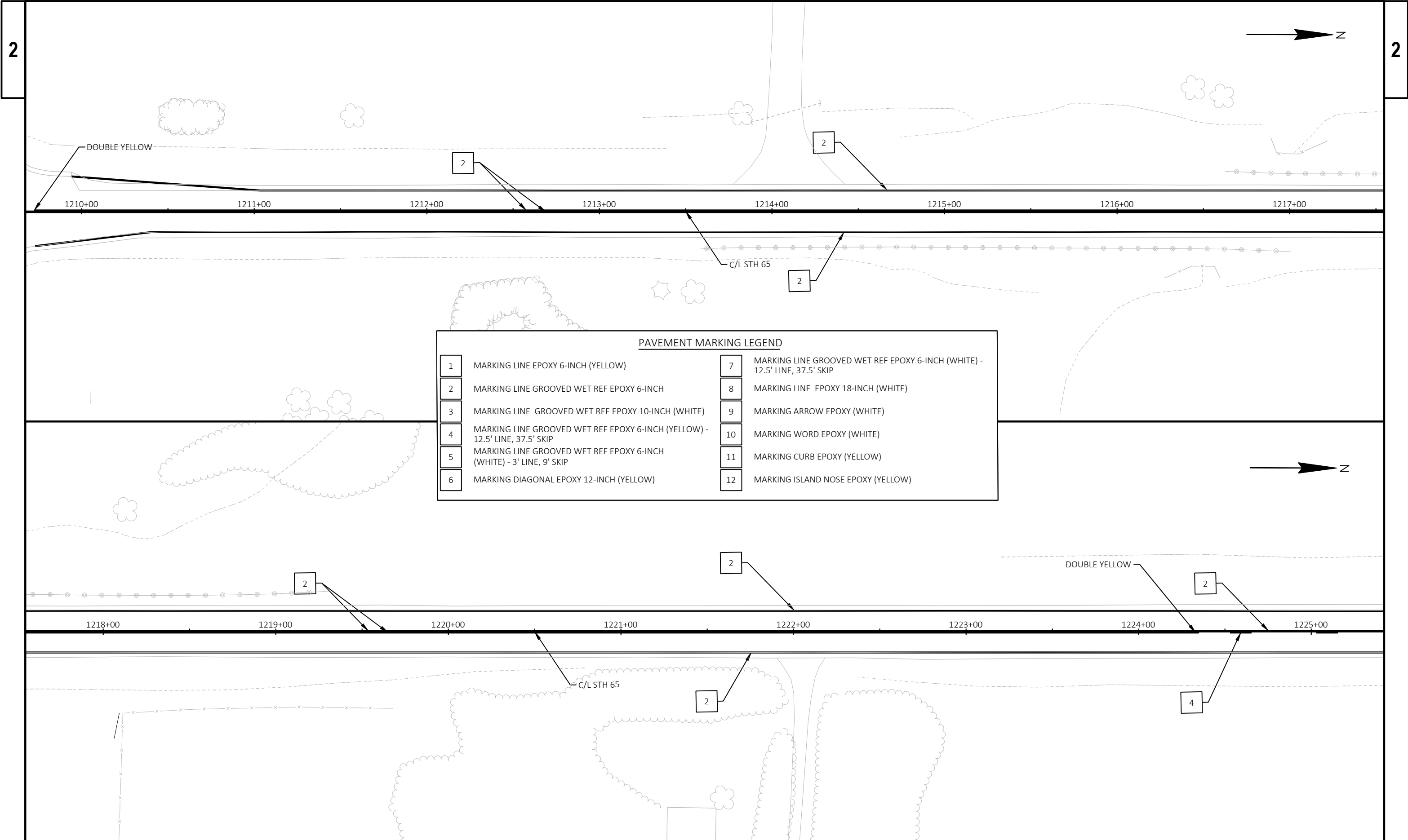
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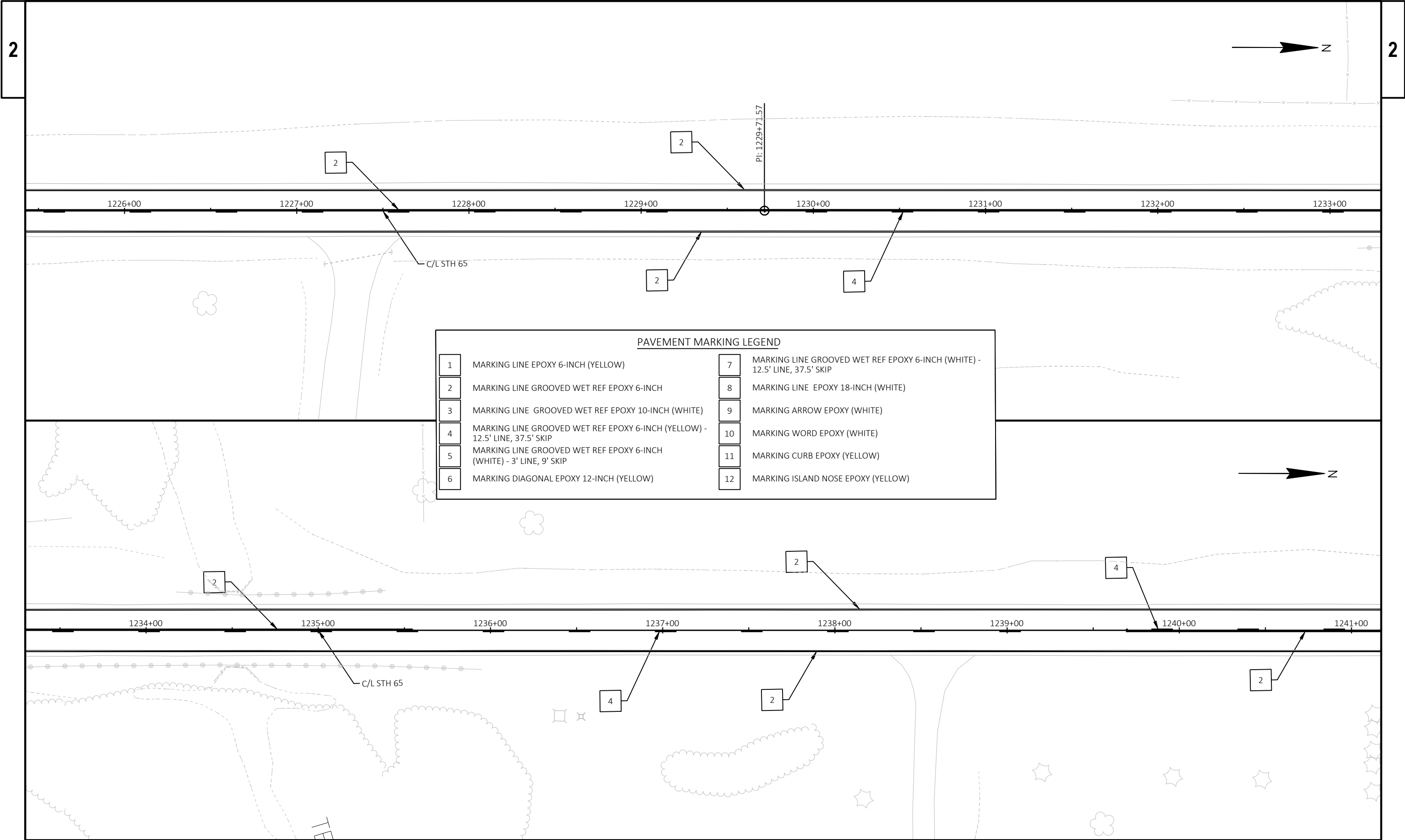
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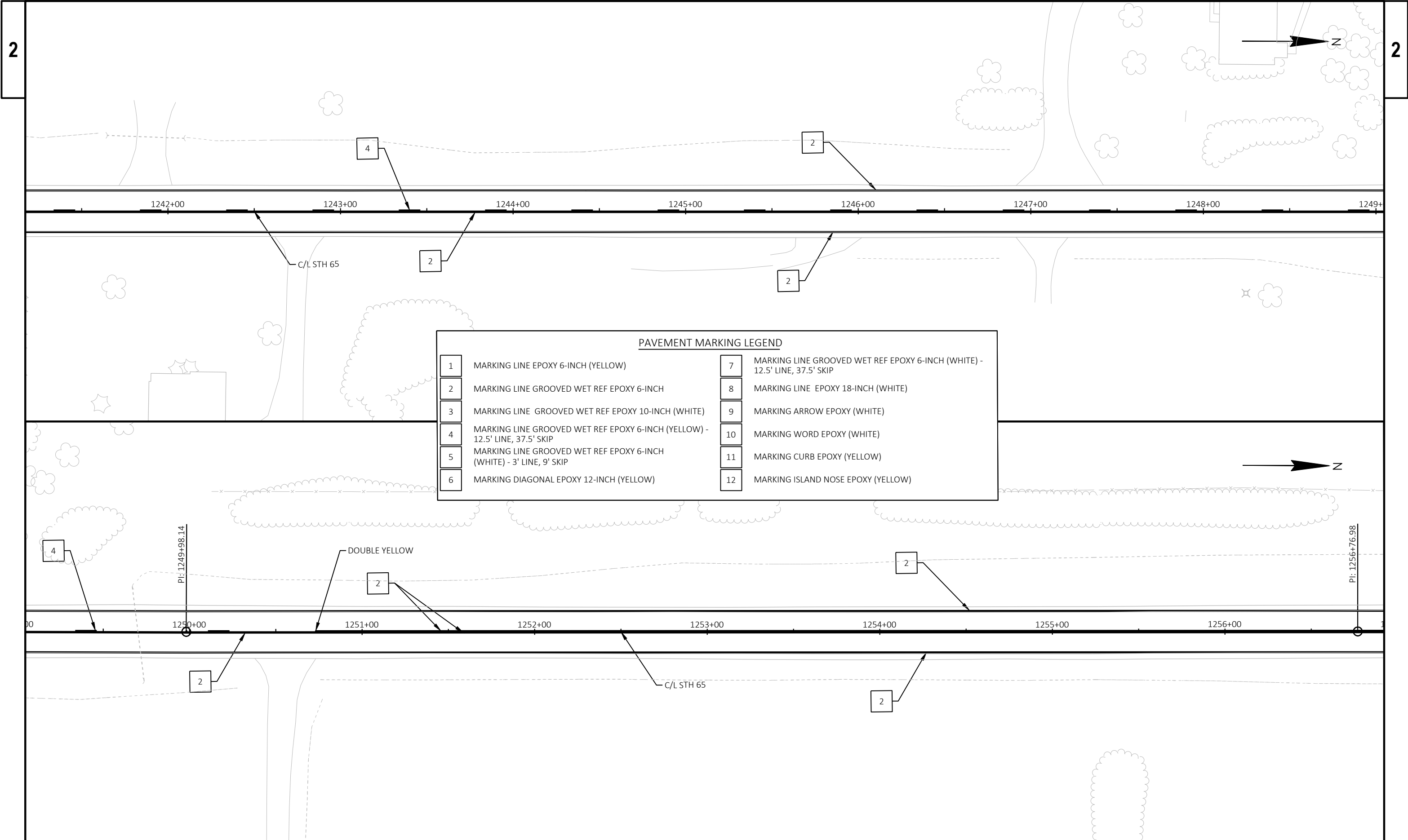
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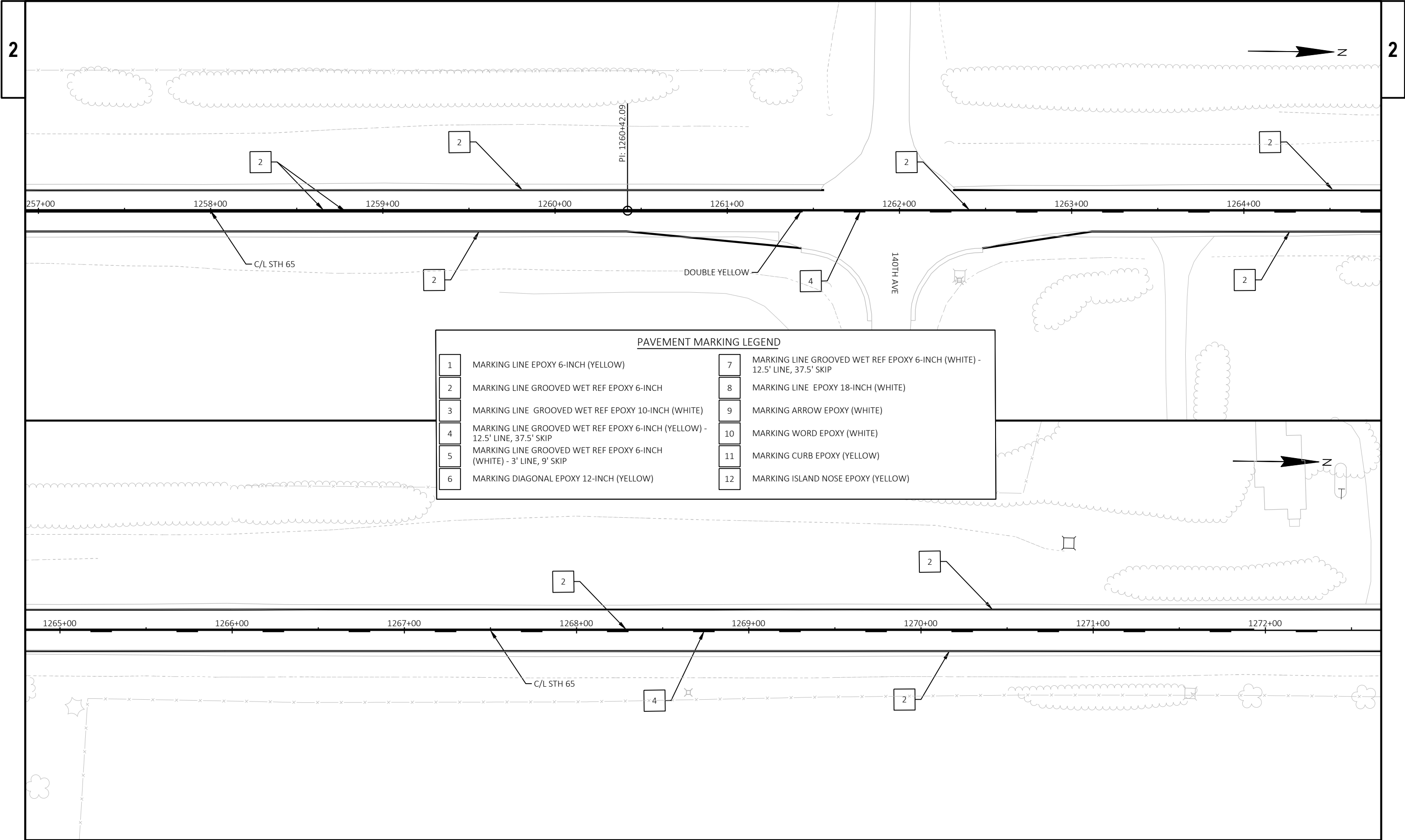
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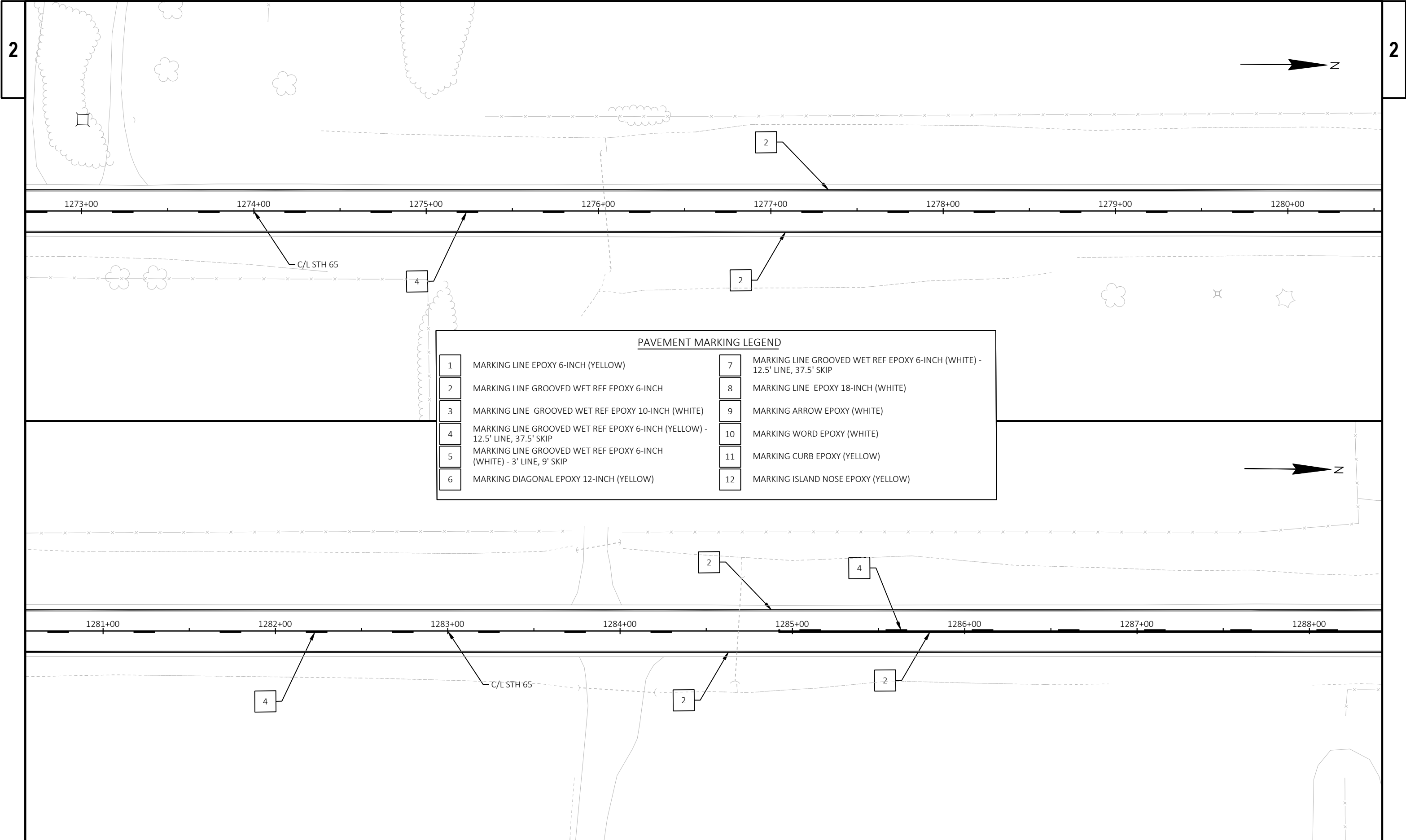


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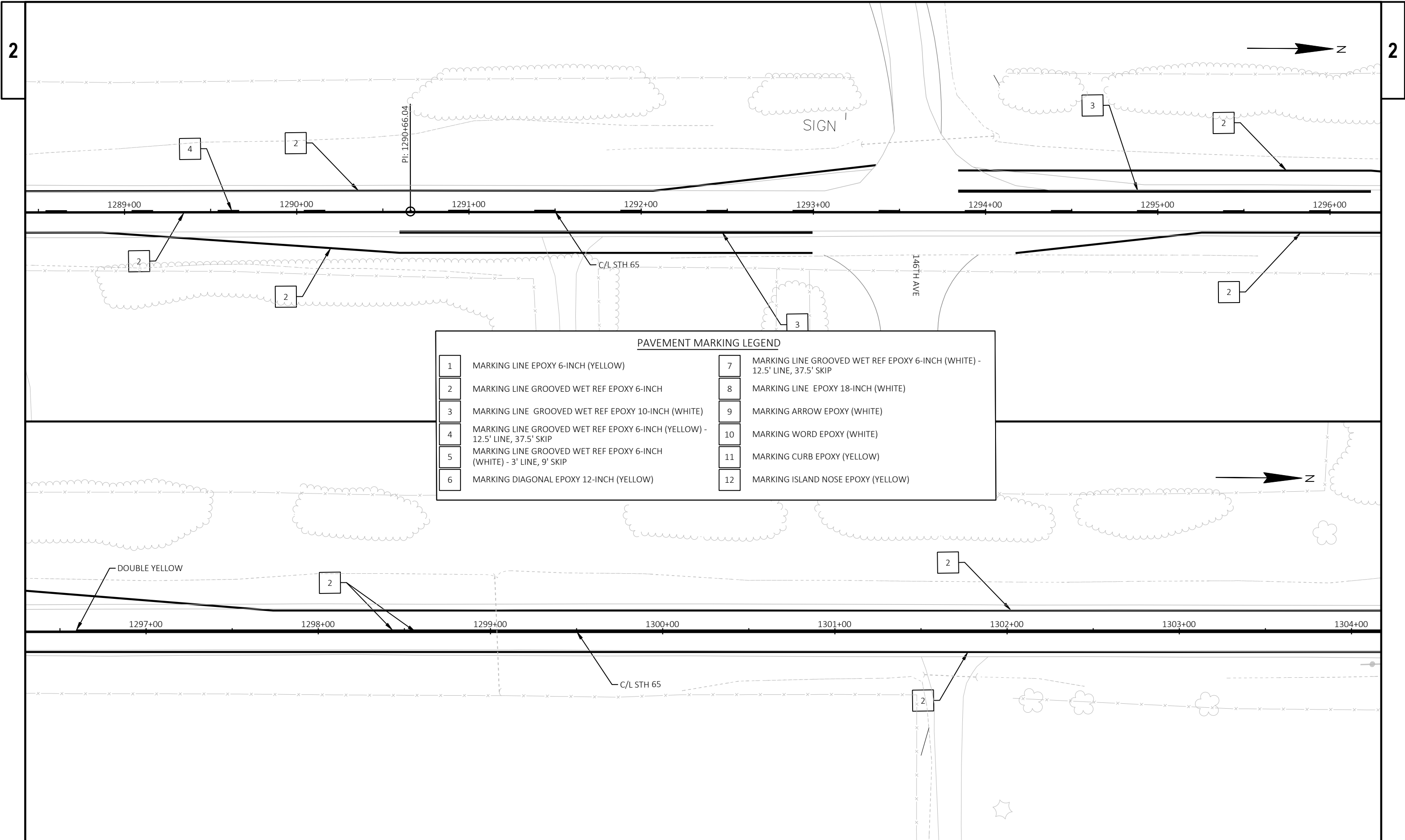


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3	MARKING LINE GROOVED WET REF EPOXY 10-INCH (WHITE)
4	MARKING LINE GROOVED WET REF EPOXY 6-INCH (YELLOW) - 12.5' LINE, 37.5' SKIP
5	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 3' LINE, 9' SKIP
6	MARKING DIAGONAL EPOXY 12-INCH (YELLOW)
7	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 12.5' LINE, 37.5' SKIP
8	MARKING LINE EPOXY 18-INCH (WHITE)
9	MARKING ARROW EPOXY (WHITE)
10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)

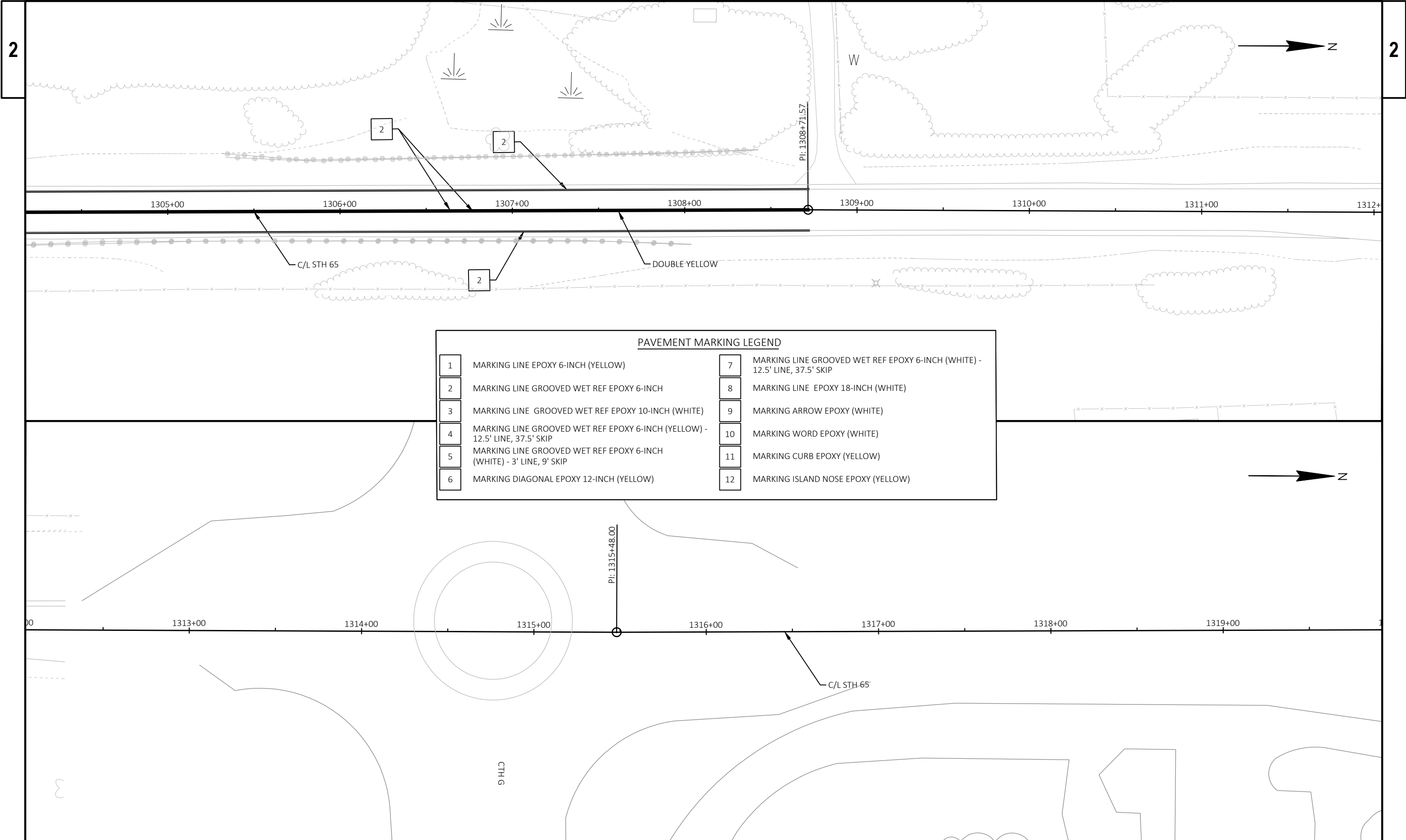




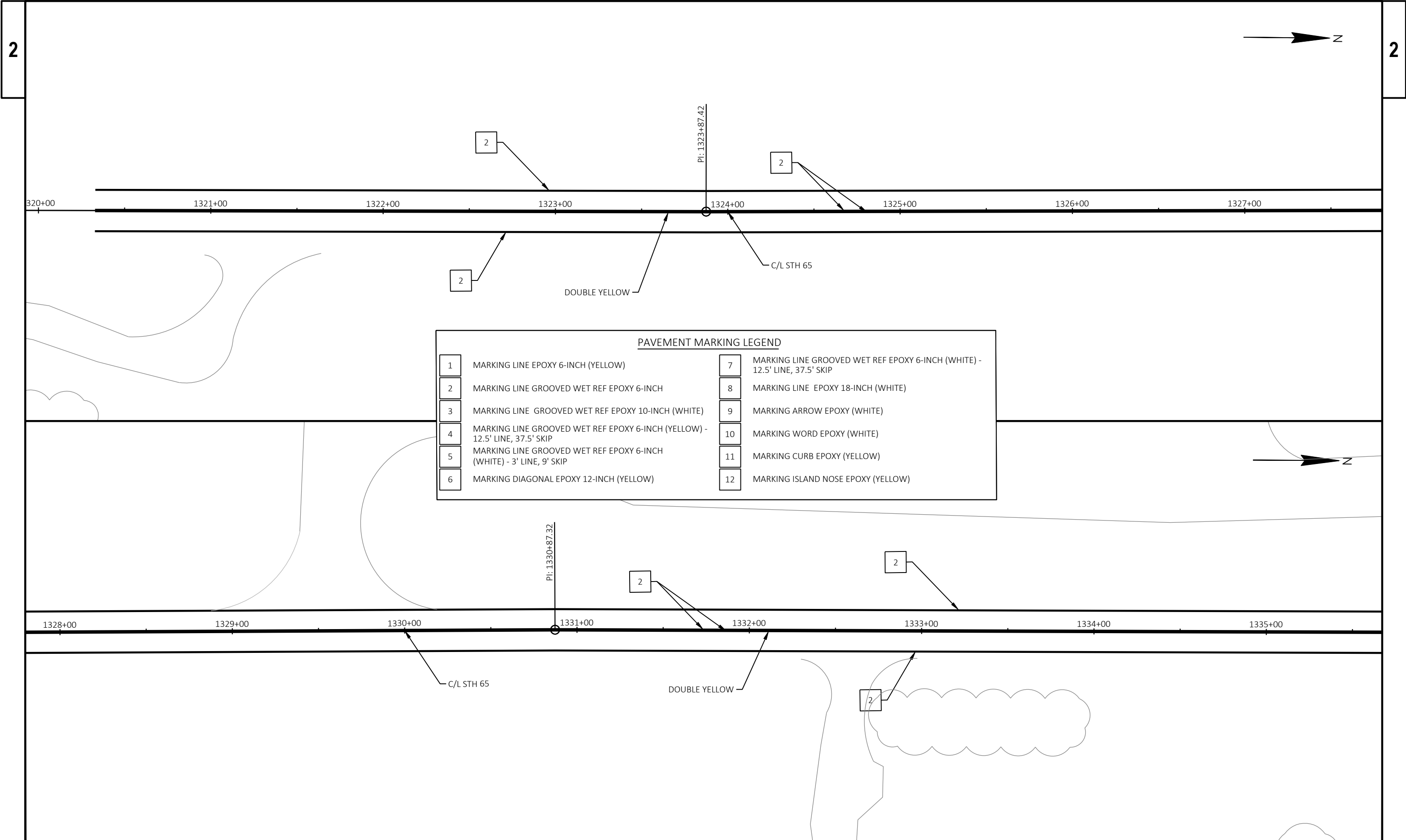
PAVEMENT MARKING LEGEND			
1	MARKING LINE EPOXY 6-INCH (YELLOW)	7	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 12.5' LINE, 37.5' SKIP
2	MARKING LINE GROOVED WET REF EPOXY 6-INCH	8	MARKING LINE EPOXY 18-INCH (WHITE)
3	MARKING LINE GROOVED WET REF EPOXY 10-INCH (WHITE)	9	MARKING ARROW EPOXY (WHITE)
4	MARKING LINE GROOVED WET REF EPOXY 6-INCH (YELLOW) - 12.5' LINE, 37.5' SKIP	10	MARKING WORD EPOXY (WHITE)
5	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 3' LINE, 9' SKIP	11	MARKING CURB EPOXY (YELLOW)
6	MARKING DIAGONAL EPOXY 12-INCH (YELLOW)	12	MARKING ISLAND NOSE EPOXY (YELLOW)



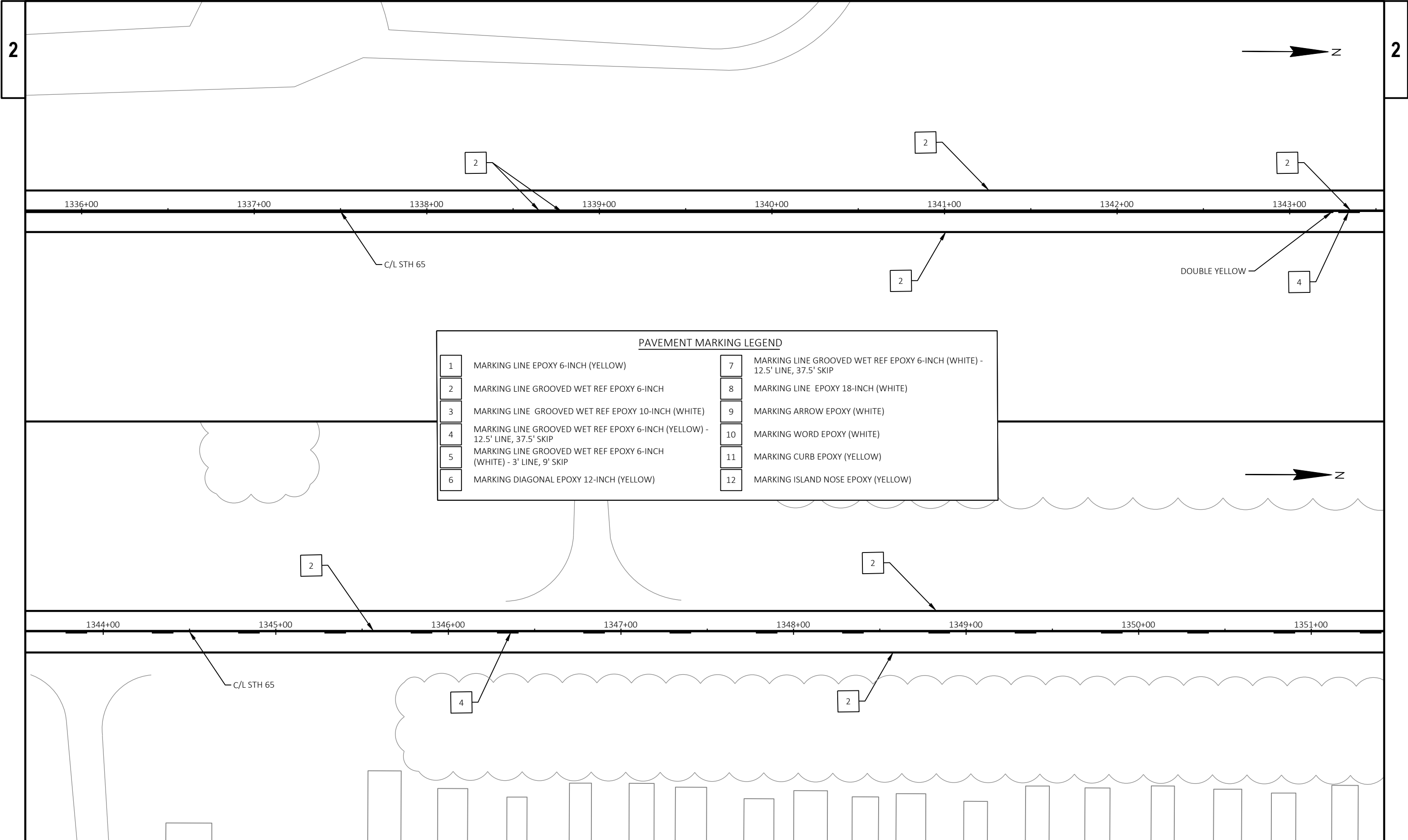
PAVEMENT MARKING LEGEND			
1	MARKING LINE EPOXY 6-INCH (YELLOW)	7	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 12.5' LINE, 37.5' SKIP
2	MARKING LINE GROOVED WET REF EPOXY 6-INCH	8	MARKING LINE EPOXY 18-INCH (WHITE)
3	MARKING LINE GROOVED WET REF EPOXY 10-INCH (WHITE)	9	MARKING ARROW EPOXY (WHITE)
4	MARKING LINE GROOVED WET REF EPOXY 6-INCH (YELLOW) - 12.5' LINE, 37.5' SKIP	10	MARKING WORD EPOXY (WHITE)
5	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 3' LINE, 9' SKIP	11	MARKING CURB EPOXY (YELLOW)
6	MARKING DIAGONAL EPOXY 12-INCH (YELLOW)	12	MARKING ISLAND NOSE EPOXY (YELLOW)



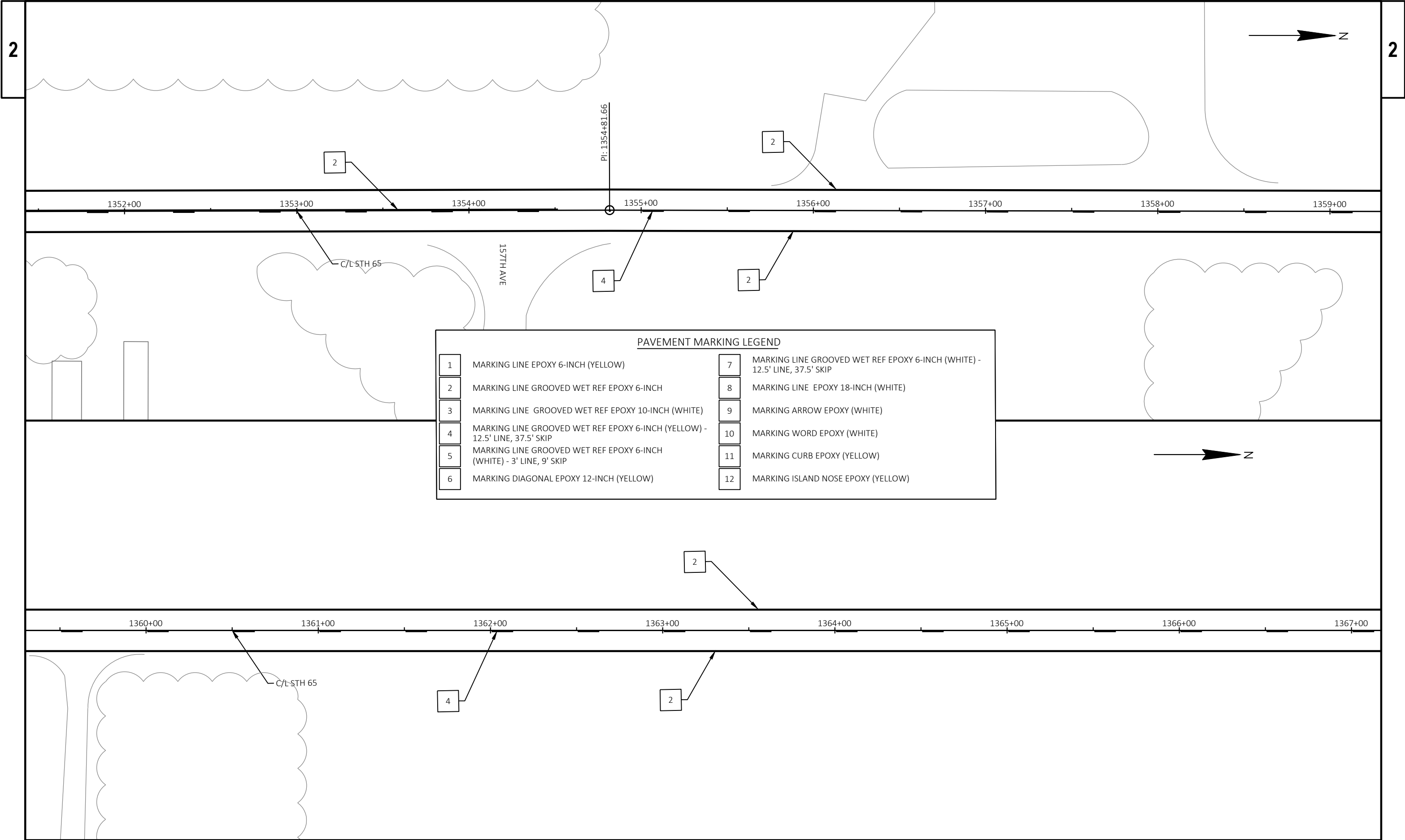
PAVEMENT MARKING LEGEND	
1	MARKING LINE EPOXY 6-INCH (YELLOW)
2	MARKING LINE GROOVED WET REF EPOXY 6-INCH
3	MARKING LINE GROOVED WET REF EPOXY 10-INCH (WHITE)
4	MARKING LINE GROOVED WET REF EPOXY 6-INCH (YELLOW) - 12.5' LINE, 37.5' SKIP
5	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 3' LINE, 9' SKIP
6	MARKING DIAGONAL EPOXY 12-INCH (YELLOW)
7	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 12.5' LINE, 37.5' SKIP
8	MARKING LINE EPOXY 18-INCH (WHITE)
9	MARKING ARROW EPOXY (WHITE)
10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)



PAVEMENT MARKING LEGEND	
1	MARKING LINE EPOXY 6-INCH (YELLOW)
2	MARKING LINE GROOVED WET REF EPOXY 6-INCH
3	MARKING LINE GROOVED WET REF EPOXY 10-INCH (WHITE)
4	MARKING LINE GROOVED WET REF EPOXY 6-INCH (YELLOW) - 12.5' LINE, 37.5' SKIP
5	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 3' LINE, 9' SKIP
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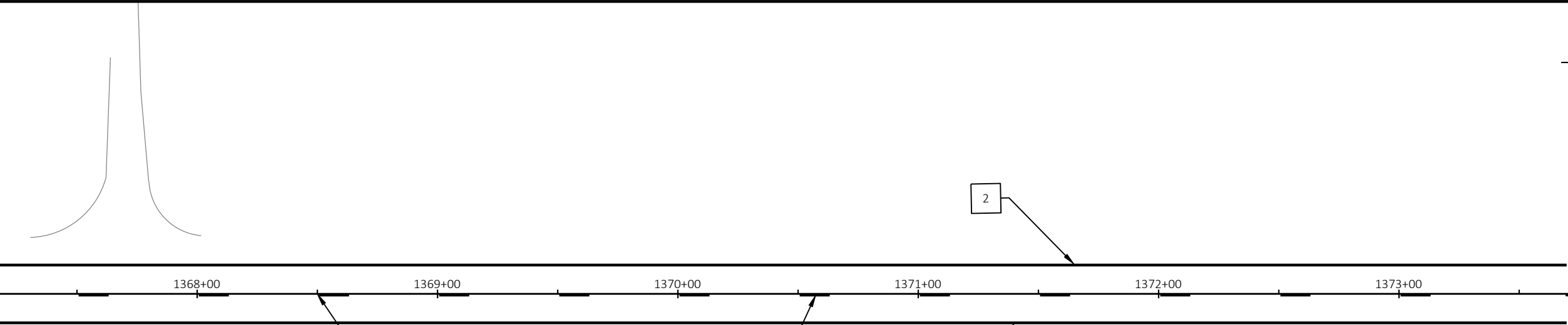


PAVEMENT MARKING LEGEND	
1	MARKING LINE EPOXY 6-INCH (YELLOW)
2	MARKING LINE GROOVED WET REF EPOXY 6-INCH
3	MARKING LINE GROOVED WET REF EPOXY 10-INCH (WHITE)
4	MARKING LINE GROOVED WET REF EPOXY 6-INCH (YELLOW) - 12.5' LINE, 37.5' SKIP
5	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 3' LINE, 9' SKIP
6	MARKING DIAGONAL EPOXY 12-INCH (YELLOW)
7	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 12.5' LINE, 37.5' SKIP
8	MARKING LINE EPOXY 18-INCH (WHITE)
9	MARKING ARROW EPOXY (WHITE)
10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)



2

2



PAVEMENT MARKING LEGEND	
1	MARKING LINE EPOXY 6-INCH (YELLOW)
2	MARKING LINE GROOVED WET REF EPOXY 6-INCH
3	MARKING LINE GROOVED WET REF EPOXY 10-INCH (WHITE)
4	MARKING LINE GROOVED WET REF EPOXY 6-INCH (YELLOW) - 12.5' LINE, 37.5' SKIP
5	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 3' LINE, 9' SKIP
6	MARKING DIAGONAL EPOXY 12-INCH (YELLOW)
7	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 12.5' LINE, 37.5' SKIP
8	MARKING LINE EPOXY 18-INCH (WHITE)
9	MARKING ARROW EPOXY (WHITE)
10	MARKING WORD EPOXY (WHITE)
11	MARKING CURB EPOXY (YELLOW)
12	MARKING ISLAND NOSE EPOXY (YELLOW)

1	MARKING LINE EPOXY 6-INCH (YELLOW)	7	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 12.5' LINE, 37.5' SKIP
2	MARKING LINE GROOVED WET REF EPOXY 6-INCH	8	MARKING LINE EPOXY 18-INCH (WHITE)
3	MARKING LINE GROOVED WET REF EPOXY 10-INCH (WHITE)	9	MARKING ARROW EPOXY (WHITE)
4	MARKING LINE GROOVED WET REF EPOXY 6-INCH (YELLOW) - 12.5' LINE, 37.5' SKIP	10	MARKING WORD EPOXY (WHITE)
5	MARKING LINE GROOVED WET REF EPOXY 6-INCH (WHITE) - 3' LINE, 9' SKIP	11	MARKING CURB EPOXY (YELLOW)
6	MARKING DIAGONAL EPOXY 12-INCH (YELLOW)	12	MARKING ISLAND NOSE EPOXY (YELLOW)

Estimate Of Quantities

					1540-02-76	1540-02-78	8949-00-75
Line	Item	Item Description	Unit	Total	Qty	Qty	Qty
0002	204.0110	Removing Asphaltic Surface	SY	2,270.000	830.000	1,007.000	433.000
0004	204.0115	Removing Asphaltic Surface Butt Joints	SY	11,455.000	3,562.000	5,501.000	2,392.000
0006	204.0120	Removing Asphaltic Surface Milling	SY	163,768.000	26,601.000	121,168.000	15,999.000
0008	204.0150	Removing Curb & Gutter	LF	935.000		778.000	157.000
0010	204.0165	Removing Guardrail	LF	53.000		53.000	
0012	204.9060.S	Removing (item description) 01. Culvert Endwalls	EACH	5.000	3.000	2.000	
0014	208.0100	Borrow	CY	50.000		50.000	
0016	211.0101	Prepare Foundation for Asphaltic Paving (project) 01. 1540-02-76	EACH	1.000	1.000		
0018	211.0101	Prepare Foundation for Asphaltic Paving (project) 02. 8949-00-75	EACH	1.000			1.000
0020	211.0101	Prepare Foundation for Asphaltic Paving (project) 03. 1540-02-78	EACH	1.000		1.000	
0022	213.0100	Finishing Roadway (project) 01. 1540-02-76	EACH	1.000	1.000		
0024	213.0100	Finishing Roadway (project) 02. 8949-00-75	EACH	1.000			1.000
0026	213.0100	Finishing Roadway (project) 03. 1540-02-78	EACH	1.000		1.000	
0028	305.0110	Base Aggregate Dense 3/4-Inch	TON	6,795.000	1,270.000	5,199.000	326.000
0030	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,350.000	555.000	675.000	120.000
0032	455.0605	Tack Coat	GAL	20,888.000	3,592.000	15,114.000	2,182.000
0034	460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH	1.000		1.000	
0036	460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH	2.000		2.000	
0038	460.2005	Incentive Density PWL HMA Pavement	DOL	22,770.000	3,500.000	17,290.000	1,980.000
0040	460.2007	Incentive Density HMA Pavement Longitudinal Joints	DOL	93,800.000	14,410.000	71,240.000	8,150.000
0042	460.2010	Incentive Air Voids HMA Pavement	DOL	33,180.000	5,590.000	24,120.000	3,470.000
0044	460.6645	HMA Pavement 5 MT 58-34 V	TON	31,680.000	5,448.000	22,923.000	3,309.000
0046	460.9000.S	Material Transfer Vehicle	EACH	1.000	0.190	0.690	0.120
0048	465.0105	Asphaltic Surface	TON	1,000.000	190.000	690.000	120.000
0050	465.0110	Asphaltic Surface Patching	TON	400.000	76.000	276.000	48.000
0052	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	341.000	140.000	171.000	30.000
0054	465.0315	Asphaltic Flumes	SY	5.000		5.000	
0056	465.0560	Asphaltic Rumble Strips, Centerline	LF	38,340.000	6,517.000	31,823.000	
0058	520.8700	Cleaning Culvert Pipes	EACH	10.000		10.000	
0060	520.9700.S	Culvert Pipe Liners (size) 01. 24-Inch	LF	89.000	89.000		
0062	520.9750.S	Cleaning Culvert Pipes for Liner Verification	EACH	1.000	1.000		
0064	521.1024	Apron Endwalls for Culvert Pipe Steel 24-Inch	EACH	2.000	2.000		
0066	521.1030	Apron Endwalls for Culvert Pipe Steel 30-Inch	EACH	1.000	1.000		
0068	522.1024	Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch	EACH	2.000		2.000	
0070	601.0557	Concrete Curb & Gutter 6-Inch Sloped 36-Inch Type D	LF	935.000		778.000	157.000
0072	611.8115	Adjusting Inlet Covers	EACH	1.000			1.000
0074	614.0010	Barrier System Grading Shaping Finishing	EACH	7.000	2.000	5.000	
0076	614.0305	Steel Plate Beam Guard Class A	LF	50.000		50.000	
0078	614.0370	Steel Plate Beam Guard Energy Absorbing Terminal	EACH	1.000		1.000	
0080	614.0397	Guardrail Mow Strip Emulsified Asphalt	SY	190.000		190.000	
0082	614.0400	Adjusting Steel Plate Beam Guard	LF	2,320.000	2,220.000	100.000	
0084	614.0950	Replacing Guardrail Posts and Blocks	EACH	93.000	72.000	21.000	
0086	618.0100	Maintenance and Repair of Haul Roads (project) 01. 1540-02-76	EACH	1.000	1.000		
0088	618.0100	Maintenance and Repair of Haul Roads (project) 02. 8949-00-75	EACH	1.000			1.000
0090	618.0100	Maintenance and Repair of Haul Roads (project) 03. 1540-02-78	EACH	1.000		1.000	
0092	619.1000	Mobilization	EACH	1.000	0.190	0.690	0.120
0094	624.0100	Water	MGAL	105.000	43.000	60.000	2.000
0096	625.0100	Topsoil	SY	2,803.000	939.000	1,653.000	211.000
0098	628.1504	Silt Fence	LF	3,018.000	765.000	2,253.000	

Estimate Of Quantities

					1540-02-76	1540-02-78	8949-00-75
Line	Item	Item Description	Unit	Total	Qty	Qty	Qty
0100	628.1520	Silt Fence Maintenance	LF	3,018.000	765.000	2,253.000	
0102	628.1905	Mobilizations Erosion Control	EACH	6.000	2.000	2.000	2.000
0104	628.1910	Mobilizations Emergency Erosion Control	EACH	6.000	2.000	2.000	2.000
0106	628.2002	Erosion Mat Class I Type A	SY	2,758.000	894.000	1,653.000	211.000
0108	628.7015	Inlet Protection Type C	EACH	1.000			1.000
0110	628.7555	Culvert Pipe Checks	EACH	80.000	17.000	61.000	2.000
0112	629.0210	Fertilizer Type B	CWT	3.400	0.900	2.200	0.300
0114	630.0120	Seeding Mixture No. 20	LB	108.000	28.000	72.000	8.000
0116	630.0500	Seed Water	MGAL	96.000	25.000	64.000	7.000
0118	633.5200	Markers Culvert End	EACH	10.000	4.000	6.000	
0120	642.5001	Field Office Type B	EACH	1.000	0.190	0.690	0.120
0122	643.0300	Traffic Control Drums	DAY	1,209.000	288.000	800.000	121.000
0124	643.0900	Traffic Control Signs	DAY	4,023.000	921.000	2,085.000	1,017.000
0126	643.1050	Traffic Control Signs PCMS	DAY	28.000	7.000	7.000	14.000
0128	643.3165	Temporary Marking Line Paint 6-Inch	LF	184,981.000	58,500.000	97,243.000	29,238.000
0130	643.5000	Traffic Control	EACH	1.000	0.190	0.690	0.120
0132	646.2020	Marking Line Epoxy 6-Inch	LF	64.000			64.000
0134	646.2040	Marking Line Grooved Wet Ref Epoxy 6-Inch	LF	158,097.000	33,499.000	107,237.000	17,361.000
0136	646.4020	Marking Line Epoxy 10-Inch	LF	2,178.000	649.000	702.000	827.000
0138	646.5020	Marking Arrow Epoxy	EACH	2.000	2.000		
0140	646.5120	Marking Word Epoxy	EACH	2.000	2.000		
0142	646.6120	Marking Stop Line Epoxy 18-Inch	LF	25.000			25.000
0144	646.7120	Marking Diagonal Epoxy 12-Inch	LF	1,129.000	733.000	89.000	307.000
0146	646.8120	Marking Curb Epoxy	LF	68.000			68.000
0148	646.8220	Marking Island Nose Epoxy	EACH	3.000			3.000
0150	650.5500	Construction Staking Curb Gutter and Curb & Gutter	LF	935.000		778.000	157.000
0152	650.8000	Construction Staking Resurfacing Reference	LF	47,035.000	7,342.000	35,619.000	4,074.000
0154	650.9911	Construction Staking Supplemental Control (project) 01. 1540-02-76	EACH	1.000	1.000		
0156	650.9911	Construction Staking Supplemental Control (project) 02. 8949-00-75	EACH	1.000			1.000
0158	650.9911	Construction Staking Supplemental Control (project) 03. 1540-02-78	EACH	1.000		1.000	
0160	650.9920	Construction Staking Slope Stakes	LF	100.000		100.000	
0162	690.0150	Sawing Asphalt	LF	1,659.000	178.000	1,163.000	318.000
0164	740.0440	Incentive IRI Ride	DOL	35,633.000	5,563.000	26,984.000	3,086.000
0166	ASP.1T0A	On-the-Job Training Apprentice at \$5.00/HR	HRS	1,500.000	500.000	500.000	500.000
0168	ASP.1T0G	On-the-Job Training Graduate at \$5.00/HR	HRS	990.000	330.000	330.000	330.000
0170	SPV.0060	Special 01. Ditch Cleaning	EACH	20.000	7.000	12.000	1.000
0172	SPV.0060	Special 02. Replacing Posts and Blocks - EAT	EACH	64.000	24.000	40.000	

3

REMOVING ASPHALTIC SURFACE

204.0110 204.0115 204.0120 REMOVING ASPHALTIC SURFACE REMOVING ASPHALTIC SURFACE BUTT JOINTS REMOVING ASPHALTIC SURFACE MILLING								
CATEGORY	STATION	TO	STATION	LOCATION	SY	SY	SY	REMARKS
0010	427N+84	-	459N+21	STH 65	213	1,283	12,166	1540-02-76
0010	470N+28	-	512N+33	STH 65	617	2,279	14,435	1540-02-76
1540-02-76 SUBTOTAL					830	3,562	26,601	
0010	411E+65	-	452E+40	USH 12	433	2,392	15,999	8949-00-75
8949-00-75 SUBTOTAL					433	2,392	15,999	
0010	1005+92	-	1308+72	STH 65	245	4,467	103,317	1540-02-78
0010	1308+72	-	1373+72	STH 65	762	1,034	17,851	1540-02-78
1540-02-78 SUBTOTAL					1,007	5,501	121,168	
TOTAL 0010					2,270	11,455	163,768	

REMOVING CURB & GUTTER

204.0150 REMOVING CURB & GUTTER						
CATEGORY	STATION	TO	STATION	LOCATION	LF	REMARKS
0010	418E+53	-	420E+16	USH 12 LT	157	8949-00-75
8949-00-75 SUBTOTAL					157	
0010	1052+39	-	1053+77	STH 65 LT & RT	253	1540-02-78
0010	1105+06		1106+11	STH 65 LT & RT	248	1540-02-78
0010	1155+59	-	1157+09	STH 65 LT & RT	191	1540-02-78
0010	1209+48	-	1210+00	STH 65 LT	86	1540-02-78
1540-02-78 SUBTOTAL					778	
TOTAL 0010					935	

3

REMOVING CULVERT ENDWALLS

204.9060.S.01 REMOVING CULVERT ENDWALLS				
CATEGORY	STATION	LOCATION	EACH	REMARKS
0010	438N+56	STH 65 LT & RT	2	1540-02-76
0010	477N+73	STH 65 RT	1	1540-02-76
1540-02-76 SUBTOTAL			3	
0010	1249+70	STH 65 LT & RT	2	1540-02-78
1540-02-78 SUBTOTAL			2	
TOTAL 0010			5	

REMOVING GUARDRAIL

					204.0165	
					REMOVING	
					GUARDRAIL	
CATEGORY	STATION	TO	STATION	LOCATION	LF	REMARKS
0010	1046+81	-	1047+34	STH 65 LT	53	1540-02-78 END TERMINAL
1540-02-78 SUBTOTAL					53	
TOTAL 0010					53	

3

BORROW

CATEGORY	STATION	TO	STATION	LOCATION	208.0100 BORROW CY	REMARKS
0010	1262+05	-	1262+72	STH 65 LT	50	GRADE NW QUAD 140TH AVE
1540-02-78 SUBTOTAL					50	
TOTAL 0010					50	

BASE AGGREGATE DENSE 3/4-INCH

CATEGORY	STATION	TO	STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON
0010	427N+84	-	512N+33	STH 65	1,270	555
1540-02-76 SUBTOTAL					1,270	555
0010	411E+65	-	452E+39	USH 12	326	120
8949-00-75 SUBTOTAL					326	120
0010	1005+92	-	1373+71	STH 65	5,199	675
1540-02-78 SUBTOTAL					5,199	675
TOTAL 0010					6,795	1,350

PREPARE FOUNDATION FOR ASPHALTIC PAVING

CATEGORY	STATION	TO	STATION	LOCATION	211.0101.01 PREPARE FOUNDATION FOR ASPHALTIC PAVING (PROJECT) (01. 1540-02-76) EACH	211.0101.02 PREPARE FOUNDATION FOR ASPHALTIC PAVING (PROJECT) (02. 8949-00-75) EACH	211.0101.03 PREPARE FOUNDATION FOR ASPHALTIC PAVING (PROJECT) (03. 1540-02-78) EACH	REMARKS
0010	427N+84	-	512N+33	STH 65	1	-	-	1540-02-76
1540-02-76 SUBTOTAL					1	-	-	
0010	411E+65	-	452E+39	USH 12	-	1	-	8949-00-75
8949-00-75 SUBTOTAL					-	1	-	
0010	1005+92	-	1373+71	STH 65	-	-	1	1540-02-78
1540-02-78 SUBTOTAL					-	-	1	
TOTAL 0010					1	1	1	

FINISHING ROADWAY

CATEGORY	STATION	TO	STATION	LOCATION	213.0100.01 FINISHING ROADWAY (PROJECT) (01. 1540-02-76) EACH	213.0100.02 FINISHING ROADWAY (PROJECT) (02. 8949-00-75) EACH	213.0100.03 FINISHING ROADWAY (PROJECT) (03. 1540-02-78) EACH	REMARKS
0010	427N+84	-	512N+33	STH 65	1	-	-	1540-02-76
1540-02-76 SUBTOTAL					1	-	-	
0010	411E+65	-	452E+39	USH 12	-	1	-	8949-00-75
8949-00-75 SUBTOTAL					-	1	-	
0010	1005+92	-	1373+71	STH 65	-	-	1	1540-02-78
1540-02-78 SUBTOTAL					-	-	1	
TOTAL 0010					1	1	1	

3

HMA PWL Mixture Use Table								
Project ID: 1540-02-76								
Location	Station	Mixture Use:	Underlying Surface	Bid Item	Tons	Thickness	Quality Management program to be used for:	
							Mixture Acceptance	Density Acceptance
12 foot driving lane	427+84 to 459+21 470+29 to 488+14 489+52 to 512+33 Proj. 1540-02-76	Upper Layer	5MT 58-34V	5MT 58-34V	1613	1-1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Incentive Density PWL HMA Pavement 460.2005
12 foot driving lane	429+07 to 459+21 470+29 to 488+14 489+52 to 512+33 Proj. 1540-02-76	Lower Layer	Milled Existing HMA Surface	5MT 58-34V	1882	1-3/4"	PWL Incentive Air Voids HMA Pavement 460.2010	Incentive Density PWL HMA Pavement 460.2005
3' shoulder	429+07 to 459+21 470+29 to 488+14 489+52 to 512+33 Proj. 1540-02-76	Upper Layer	5MT 58-34V	5MT 58-34V	216	1-1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
3' shoulder	429+07 to 459+21 470+29 to 488+14 489+52 to 512+33 Proj. 1540-02-76	Lower Layer	Milled Existing HMA Surface	5MT 58-34V	252	1-3/4"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
Turn Lanes/ Side Roads	Various, Proj. 1540-02-76	Upper Layer	5MT 58-34V	5MT 58-34V	749	1-1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
Turn Lanes/ Side Roads	Various, Proj. 1540-02-76	Lower Layer	Milled Existing HMA Surface	5MT 58-34V	877	1-3/4"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
Various Patches Proj. 1540-02-76	Various	Patches	Milled Existing HMA Surface	Asphalt Surface	511	Varies	QMP AS PER SS 465	Acceptance by ordinary compaction
Project ID: 8949-00-75								
12 foot driving lane	411+66 to 452+40 Proj. 8949-00-75	Upper Layer	5MT 58-34V	5MT 58-34V	913	1-1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Incentive Density PWL HMA Pavement 460.2005
12 foot driving lane	411+66 to 452+40 Proj. 8949-00-75	Lower Layer	Milled Existing HMA Surface	5MT 58-34V	1065	1-3/4"	PWL Incentive Air Voids HMA Pavement 460.2010	Incentive Density PWL HMA Pavement 460.2005
3' shoulder	411+66 to 452+40 Proj. 8949-00-75	Upper Layer	5MT 58-34V	5MT 58-34V	114	1-1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
3' shoulder	411+66 to 452+40 Proj. 8949-00-75	Lower Layer	Milled Existing HMA Surface	5MT 58-34V	133	1-3/4"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
Side Roads	Various, Proj. 8949-00-75	Upper Layer	5MT 58-34V	5MT 58-34V	574	1-1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
Side Roads	Various, Proj. 8949-00-75	Lower Layer	Milled Existing HMA Surface	5MT 58-34V	673	1-3/4"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
Various Patches Proj. 8949-00-75	Various	Patches	Milled Existing HMA Surface	Asphalt Surface	275	Varies	QMP AS PER SS 465	Acceptance by ordinary compaction
Project ID: 1540-02-78								
12 foot driving lane	1005+92 to 1373+72 Proj. 1540-02-78	Upper Layer	5MT 58-34V	5MT 58-34V	7979	1-1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Incentive Density PWL HMA Pavement 460.2005
12 foot driving lane	1005+92 to 1373+72 Proj. 1540-02-78	Lower Layer	Milled Existing HMA Surface	5MT 58-34V	9308	1-3/4"	PWL Incentive Air Voids HMA Pavement 460.2010	Incentive Density PWL HMA Pavement 460.2005
3' shoulder	1005+92 to 1373+72 Proj. 1540-02-78	Upper Layer	5MT 58-34V	5MT 58-34V	997	1-1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
3' shoulder	1005+92 to 1373+72 Proj. 1540-02-78	Lower Layer	Milled Existing HMA Surface	5MT 58-34V	1164	1-3/4"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
Side Roads	Various, Proj. 1540-02-78	Upper Layer	5MT 58-34V	5MT 58-34V	2150	1-1/2"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
Side Roads	Various, Proj. 1540-02-78	Lower Layer	Milled Existing HMA Surface	5MT 58-34V	2523	1-3/4"	PWL Incentive Air Voids HMA Pavement 460.2010	Acceptance testing by the department; Not eligible for incentive
Various Patches Proj. 1540-02-78	Various	Patches	Milled Existing HMA Surface	Asphalt Surface	1215	Varies	QMP AS PER SS 465	Acceptance by ordinary compaction

HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP

CATEGORY	DESCRIPTION	MIX	UNDERLYING SURFACE	460.0105.S	460.0110.S	460.9000.S	REMARKS
				HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP VOLUMETRICS EACH	HMA PERCENT WITHIN LIMITS (PWL) TEST STRIP DENSITY EACH	MATERIAL TRANSFER VEHICLE EACH	
0010	UPPER/LOWER LAYER	5 MT 58-34 V	MILLED SURFACE/ LOWER LAYER	1	2	-	ALL PROJECTS
0010	-	-	-	-	-	0.19	1540-02-76
0010	-	-	-	-	-	0.12	8949-00-75
0010	-	-	-	-	-	0.69	1540-02-78
TOTAL 0010				1	2	1.00	

HMA ITEMS

CATEGORY	STATION	TO	STATION	LOCATION	455.0605	460.6645	465.0105	465.0110	465.0120	465.0315	465.0560	REMARKS
					TACK COAT GAL	HMA PAVEMENT 5 MT 58-34 V TON	ASPHALTIC SURFACE TON	ASPHALTIC SURFACE PATCHING TON	ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES TON	ASPHALTIC FLUMES SY	ASPHALTIC RUMBLE STRIPS, CENTERLINE LF	
0010	427N+84	-	459N+21	STH 65	1,571	2,383	-	-	36	-	3,101	1540-02-76
0010	470N+28	-	512N+33	STH 65	2,021	3,065	-	-	104	-	3,416	1540-02-76
UNDISTRIBUTED					-	-	190	76	-	-	-	REPAIR/PREPARE FOUNDATION FOR ASPHALT PAVING AND PATCHING
1540-02-76 SUBTOTAL					3,592	5,448	190	76	140	0	6,517	
0010	411E+66	-	452E+40	USH 12	2,182	3,309	-	-	30	-	-	8949-00-75
UNDISTRIBUTED					-	-	120	48	-	-	-	REPAIR/PREPARE FOUNDATION FOR ASPHALT PAVING AND PATCHING
8949-00-75 SUBTOTAL					2,182	3,309	120	48	30	0	0	
0010	1005+92	-	1308+73	STH 65	12,848	19,486	-	-	42	-	27,564	1540-02-78
0010	1305+00	-	1305+05	STH 65 LT	-	-	-	-	-	5	-	1540-02-78
0010	1320+34	-	1373+72	STH 65	2,266	3,437	-	-	129	-	4,259	1540-02-78
UNDISTRIBUTED					-	-	690	276	-	-	-	REPAIR/PREPARE FOUNDATION FOR ASPHALT PAVING AND PATCHING
1540-02-78 SUBTOTAL					15,114	22,923	690	276	171	5	31,823	
TOTAL 0010					20,888	31,680	1,000	400	341	5	38,340	

CULVERT PIPE						
520.8700 520.9700.S.01 520.9750.S CLEANING CULVERT PIPES CULVERT PIPE LINERS (SIZE) (01.24-Inch) CLEANING CULVERT PIPES FOR LINER VERIFICATION						
CATEGORY	STATION	LOCATION	EACH	LF	EACH	REMARKS
0010	438N+36	STH 65	-	89	1	1540-02-76
1540-02-76 SUBTOTAL			-	89	1	
0010	1124+84	STH 65	1	-	-	1540-02-78
0010	1141+51	STH 65	1	-	-	1540-02-78
0010	1149+83	STH 65	1	-	-	1540-02-78
0010	1183+74	STH 65	1	-	-	1540-02-78
0010	1216+74	STH 65	1	-	-	1540-02-78
0010	1234+51	STH 65	1	-	-	1540-02-78
0010	1249+70	STH 65	1	-	-	1540-02-78
0010	1276+04	STH 65	1	-	-	1540-02-78
0010	1284+68	STH 65	1	-	-	1540-02-78
0010	1299+04	STH 65	1	-	-	1540-02-78
1540-02-78 SUBTOTAL			10	0	0	
TOTAL 0010			10	89	1	

APRON ENDWALLS						
521.1024 521.1030 522.1024 APRON ENDWALLS FOR CULVERT PIPE APRON ENDWALLS FOR CULVERT PIPE APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 24-INCH						
CATEGORY	STATION	LOCATION	EACH	EACH	EACH	REMARKS
0010	438N+56	STH 65 LT & RT	2	-	-	1540-02-76
0010	477N+73	STH 65 LT	-	1	-	1540-02-76
1540-02-76 SUBTOTAL			2	1	0	
0010	1249+70	STH 65 LT & RT	-	-	2	1540-02-78
1540-02-78 SUBTOTAL			-	-	2	
TOTAL 0010			2	1	2	

CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE D						
601.0557 CONCRETE CURB & GUTTER 6-INCH SLOPED 36-INCH TYPE D						
CATEGORY	STATION	TO	STATION	LOCATION	LF	REMARKS
0010	418E+53	-	420E+16	USH 12 LT	157	8949-00-75
8949-00-75 SUBTOTAL					157	
0010	1052+39	-	1053+77	STH 65 LT & RT	253	1540-02-78
0010	1105+06	-	1106+11	STH 65 LT & RT	248	1540-02-78
0010	1155+59	-	1157+09	STH 65 LT & RT	191	1540-02-78
0010	1209+48	-	1210+00	STH 65 LT	86	1540-02-78
1540-02-78 SUBTOTAL					778	
TOTAL 0010					935	

ADJUSTING INLET COVERS				
611.8115 ADJUSTING INLET COVERS				
CATEGORY	STATION	LOCATION	EACH	REMARKS
0010	418E+58	USH 12 LT	1	8949-00-75
8949-00-75 SUBTOTAL			1	
TOTAL 0010			1	

BEAMGUARD RESTORATION

614.0010						*	*	*	*	*	*
BARRIER SYSTEM GRADING SHAPING						EROSION MAT CLASS			SEEDING MIXTURE		
CATEGORY	STATION	TO	STATION	LOCATION	FINISHING EACH	BORROW CY	TOPSOIL SY	1 TYPE A SY	FERTILIZER CWT	NO. 20 LB	SEED WATER MGAL
0010	477N+62	-	480N+50	STH 65 LT & RT	2	65	1120	1120	0.8	31	26
1540-02-76 SUBTOTAL					2	65	1,120	1,120	1	31	26
0010	1046+27	-	1053+35	STH 65 LT	2	90	737	737	0.5	20	17
0010	1197+45	-	1202+53	STH 65 LT	2	666	500	500	0.4	14	12
0010	1304+53	-	1308+20	STH 65 LT	1	6	250	250	0.2	7	6
1540-02-78 SUBTOTAL					5	762	1,487	1,487	1	41	35
TOTAL 0010					7	827	2,607	2,607	2	72	61

* FOR INFORMATION PURPOSES ONLY, INCIDENTAL TO BID ITEM 614.0010

MOBILIZATION

619.1000 MOBILIZATION	
CATEGORY	LOCATION
0010	PROJECT 1540-02-76
0010	PROJECT 8949-00-75
0010	PROJECT 1540-02-78
TOTAL 0010	
1	

MAINTENANCE AND REPAIR OF HAUL ROADS

618.0100.01 MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) (01. 1540-02-76)		618.0100.02 MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) (02. 8949-00-75)		618.0100.03 MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) (03. 1540-02-78)	
CATEGORY	LOCATION	EACH	EACH	EACH	EACH
0010	PROJECT 1540-02-76	1	-	-	-
0010	PROJECT 8949-00-75	-	1	-	-
0010	PROJECT 1540-02-78	-	-	1	1
TOTAL 0010		1	1	1	1

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					BEAM GUARD						
					614.0305	614.0370	614.0397	614.0400	614.0950	SPV.0060.02 SPECIAL (02. REPLACING GUARDRAIL POST AND BLOCKS - EAT)	
CATEGORY	STATION	TO	STATION	LOCATION	STEEL PLATE BEAM GUARD CLASS A LF	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL EACH	GUARDRAIL MOW STRIP EMULSIFIED ASPHALT SY	ADJUSTING STEEL PLATE BEAM GUARD LF	REPLACING GUARDRAIL POSTS AND BLOCKS EACH	REPLACING GUARDRAIL POST AND BLOCKS - EAT) EACH	REMARKS
0010	478N+52	-	488N+10	STH 65 LT	-	-	-	945	-	6	1540-02-76
0010	479N+41	-	488N+10	STH 65 RT	-	-	-	865	-	6	1540-02-76
0010	489N+50	-	192N+20	STH 65 LT	-	-	-	205	-	6	1540-02-76
0010	489N+50	-	492N+20	STH 65 RT	-	-	-	205	-	6	1540-02-76
UNDISTRIBUTED					-	-	-	-	72	-	AS NEEDED IF ADJUSTMENT CAN'T MEET REQUIRED CLEARANCE
1540-02-76 SUBTOTAL					0	0	0	2,220	72	24	
0010	1046+30	-	1052+10	STH 65 LT	50	1	-	100	3	8	1540-02-78
0010	1052+10	-	1052+60	STH 65 LT	-	-	-	-	-	8	1540-02-78
0010	1197+45	-	1200+70	STH 65 LT	-	-	190	-	3	8	1540-02-78
0010	1200+70	-	1201+20	STH 65 LT	-	-	-	-	-	8	1540-02-78
0010	1305+97	-	1307+84	STH 65 LT	-	-	-	-	-	8	1540-02-78
UNDISTRIBUTED					-	-	-	-	15		AS NEEDED IF ADJUSTMENT CAN'T MEET REQUIRED CLEARANCE
1540-02-78 SUBTOTAL					50	1	190	100	21	40	
TOTAL 0010					50	1	190	2,320	93	64	

		<u>WATER</u>	
		624.0100	
CATEGORY	LOCATION	WATER MGAL	REMARKS
0010	STH 65	43	1540-02-76
1540-02-76 SUBTOTAL		43	
0010	USH 12	2	8949-00-75
8949-00-75 SUBTOTAL		2	
0010	STH 65	60	1540-02-78
1540-02-78 SUBTOTAL		60	
TOTAL 0010		105	

EROSION CONTROL ITEMS												
					628.1504	628.1520	628.1905	628.1910	628.2002	628.7015	628.7555	
							MOBILIZATIONS	MOBILIZATIONS				
							EROSION	EROSION	EROSION MAT	INLET PROTECTION	CULVERT PIPE	
					SILT FENCE	SILT FENCE	CONTROL	CONTROL	CLASS I TYPE A	TYPE C	CHECKS	REMARKS
CATEGORY	STATION	TO	STATION	LOCATION	LF	LF	EACH	EACH	SY	EACH	EACH	
0010	427N+84	-	512N+33	STH 65	-	-	2	2	-	-	-	1540-02-76
0010	438N+46	-	438N+66	STH 65 LT & RT	150	150	-	-	250	-	2	CLEANING DITCH
0010	452N+43	-	452N+63	STH 65 LT & RT	-	-	-	-	90	-	2	CLEANING DITCH
0010	468N+76	-	468N+76	STH 65 RT	-	-	-	-	-	-	2	CLEANING DITCH
0010	477N+62	-	480N+50	STH 65 LT & RT	380	380	-	-	70	-	3	EAT* AND CLEANING DITCH
0010	500N+92	-	500N+92	STH 65 LT & RT	-	-	-	-	45	-	3	CLEANING DITCH
0010	512N+68	-	512N+88	STH 65 LT	-	-	-	-	-	-	5	CLEANING DITCH
UNDISTRIBUTED					235	235	-	-	439	-	-	
1540-02-76 SUBTOTAL					765	765	2	2	894	0	17	
0010	411E+65	-	452E+39	USH 12	-	-	2	2				8949-00-75
0010	413E+92	-	414E+12	USH 12 LT	-	-	-	-	45	-	2	CLEANING DITCH
0010	418E+60	-	420E+20	USH 12 LT	-	-	-	-	115	1	-	RESTORE BEHIND CURB
UNDISTRIBUTED					-	-	-	-	51	-	-	REPLACEMENT
8949-00-75 SUBTOTAL					0	0	2	2	211	1	2	
0010	1005+92	-	1373+71	STH 65	-	-	2	2	-	-	-	1540-02-78
												EAT*, CLEANING DITCH,
												RESTORE BEHIND CURB
0010	1046+27	-	1054+00	STH 65 LT & RT	550	550	-	-	45	-	3	REPLACEMENT
												RESTORE BEHIND CURB
0010	1105+04	-	1106+11	STH 65 LT & RT	275	275	-	-	100	-	-	REPLACEMENT
0010	1124+73	-	1124+93	STH 65 RT	-	-	-	-	45	-	5	CLEANING DITCH
0010	1141+41	-	1141+61	STH 65 LT & RT	-	-	-	-	90	-	3	CLEANING DITCH
0010	1149+73	-	1149+93	STH 65 LT & RT	-	-	-	-	90	-	5	CLEANING DITCH
												RESTORE BEHIND CURB
0010	1155+52	-	1157+10	STH 65 LT & RT	200	200	-	-	80	-	-	REPLACEMENT
0010	1183+64	-	1183+84	STH 65 LT & RT	-	-	-	-	90	-	5	CLEANING DITCH
0010	1193+41	-	1193+61	STH 65 LT & RT	-	-	-	-	90	-	3	CLEANING DITCH
0010	1197+45	-	1202+53	STH 65 LT & RT	450	450	-	-	90	-	5	EAT* AND CLEANING DITCH
												RESTORE BEHIND CURB
0010	1209+51	-	1210+00	STH 65 LT	90	90	-	-	40	-	-	REPLACEMENT
0010	1216+64	-	1216+84	STH 65 LT	-	-	-	-	45	-	10	CLEANING DITCH
0010	1234+41	-	1234+61	STH 65 RT	-	-	-	-	-	-	10	CLEANING DITCH
0010	1249+60	-	1249+80	STH 65 LT	-	-	-	-	90	-	2	CLEANING DITCH
												RESTORE NW QUADRANT
0010	1262+05	-	1262+57	STH 65 LT	-	-	-	-	67	-	-	140TH AVE
0010	1275+93	-	1276+13	STH 65 LT & RT	-	-	-	-	90	-	3	CLEANING DITCH
0010	1284+68	-	1284+68	STH 65 LT & RT	-	-	-	-	-	-	2	CULVERT PIPE
0010	1298+94	-	1299+14	STH 65 LT & RT	-	-	-	-	-	-	2	CULVERT PIPE
0010	1305+53	-	1308+20	STH 65 LT & RT	110	110	-	-	-	-	3	EAT* AND CULVERT PIPE
UNDISTRIBUTED					578	578	-	-	601	-	-	
1540-02-78 SUBTOTAL					2,253	2,253	2	2	1,653	0	61	
TOTAL 0010					3,018	3,018	6	6	2,758	1	80	

EAT* EROSION MAT QUANTITY SHOWN ELSEWHERE IN PLAN

FINISHING MATERIALS									
CATEGORY	STATION	TO	STATION	LOCATION	625.0100	629.0210	630.0120	630.0500	REMARKS
					TOPSOIL SY	FERTILIZER TYPE B CWT	SEEDING MIXTURE NO. 20 LB	SEED WATER MGAL	
0010	438N+46	-	438N+66	STH 65 LT & RT	250	0.2	7	6	CLEANING DITCH
0010	452N+43	-	452N+63	STH 65 LT & RT	90	0.1	3	3	CLEANING DITCH
0010	477N+62	-	480N+50	STH 65 LT & RT	70	0.1	2	2	CLEANING DITCH
0010	500N+92	-	500N+92	STH 65 LT	45	0.1	2	2	CLEANING DITCH
0010	512N+58	-	512N+98	STH 65 LT	45	0.1	2	2	CLEANING DITCH
UNDISTRIBUTED					439	0.3	12	10	
1540-02-76 SUBTOTAL					939	0.9	28	25	
0010	413E+92	-	414E+12	USH 12 LT	45	0.1	2	2	CLEANING DITCH
0010	418E+60	-	420E+20	USH 12 LT	115	0.1	4	3	RESTORE BEHIND CURB REPLACEMENT
UNDISTRIBUTED					51	0.1	2	2	
8949-00-75 SUBTOTAL					211	0.3	8	7	
0010	1046+27	-	1053+35	STH 65 LT	45	0.5	20	17	1540-02-78
0010	1105+04	-	1106+11	STH 65 LT & RT	100	0.1	3	3	RESTORE BEHIND CURB REPLACEMENT
0010	1124+73	-	1124+93	STH 65 RT	45	0.1	2	2	CLEANING DITCH
0010	1141+41	-	1141+61	STH 65 LT & RT	90	0.1	3	3	CLEANING DITCH
0010	1149+73	-	1149+93	STH 65 LT & RT	90	0.1	3	3	CLEANING DITCH
0010	1155+52	-	1157+10	STH 65 LT & RT	80	0.1	3	2	RESTORE BEHIND CURB REPLACEMENT
0010	1183+64	-	1183+84	STH 65 LT & RT	90	0.1	3	3	CLEANING DITCH
0010	1193+41	-	1193+61	STH 65 LT & RT	90	0.1	3	3	CLEANING DITCH
0010	1197+45	-	1202+53	STH 65 LT	90	0.1	3	3	CLEANING DITCH
0010	1209+51	-	1210+00	STH 65 LT	40	0.1	2	1	CLEANING DITCH
0010	1216+64	-	1216+84	STH 65 LT	45	0.1	2	2	CLEANING DITCH
0010	1249+60	-	1249+80	STH 65 LT	90	0.1	3	3	CLEANING DITCH
0010	1262+05	-	1262+57	STH 65 LT	67	0.1	2	2	RESTORE NW QUAD 140TH AVE
0010	1275+93	-	1276+13	STH 65 LT & RT	90	0.1	3	3	CLEANING DITCH
UNDISTRIBUTED					601	0.4	17	14	
1540-02-78 SUBTOTAL					1,653	2.2	72	64	
TOTAL 0010					2,803	3.4	108	96	

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				643.0300	643.0900	643.1050	643.5000		
				TRAFFIC CONTROL DRUMS	TRAFFIC CONTROL SIGNS	TRAFFIC CONTROL SIGNS PCMS	TRAFFIC CONTROL		
CATEGORY	LOCATION	DAYS	DAY	DAY	DAY	DAY	EACH	REMARKS	
0010	STH 65	1	20	10				DITCH	
0010	429N+15	2	76	12				AEW	
0010	429N+53	1	20	6				AEW	
0010	STH 65	2	72	30				GUARDRAIL / CURB	
0010	STH 65	30		150				GROOVED PAVEMENT	
0010	STH 65	60		420				BUMP	
0010	STH 65	99		198				AHEAD/END	
0010	STH 65	8		80				FLAGGING	
0010	STH 65	5	100	15				SHOULDERS	
0010	STH 65					7	0.19	1540-02-76	
1540-02-76 SUBTOTAL			288	921	7		0.19		
'0010	USH 12	1	22	6				AEW	
'0010	USH 12	2	24	10				CURB	
0010	USH 12	30		180				GROOVED PAVEMENT	
0010	USH 12	60		360				BUMP	
0010	USH 12	99		396				AHEAD/END	
0010	USH 12	5		50				FLAGGING	
0010	USH 12	3	75	15				SHOULDERS	
0010	USH 12					14	0.12	8949-00-75	
8949-00-75 SUBTOTAL			121	1017	14		0.12		
'0010	STH 65	1	170	61				DITCH	
'0010	STH 65	2	302	124				GUARDRAIL / CURB	
0010	STH 65	30		510				GROOVED PAVEMENT	
0010	STH 65	60		960				BUMP	
0010	STH 65	99		198				AHEAD/END	
0010	STH 65	20		200				FLAGGING	
0010	STH 65	8	328	32				SHOULDERS	
0010	STH 65					7	0.69	1540-02-78	
1540-02-78 SUBTOTAL			800	2,085	7		0.69		
TOTAL 0010			1,209	4,023	28		1		

MARKERS CULVERT END				
				633.5200 MARKERS CULVERT END
CATEGORY	STATION	LOCATION	EACH	REMARKS
0010	477N+72	STH 65 LT	1	1540-02-76
UNDISTRIBUTED			3	1540-02-76
1540-02-76 SUBTOTAL			4	
UNDISTRIBUTED			6	1540-02-78
1540-02-78 SUBTOTAL			6	
TOTAL 0010			10	

FIELD OFFICE TYPE B			
		642.5001 FIELD OFFICE TYPE B	
CATEGORY	LOCATION	EACH	REMARKS
0010	PROJECT 1540-02-76	0.19	
0010	PROJECT 8949-00-75	0.12	
0010	PROJECT 1540-02-78	0.69	
TOTAL 0010		1	

3

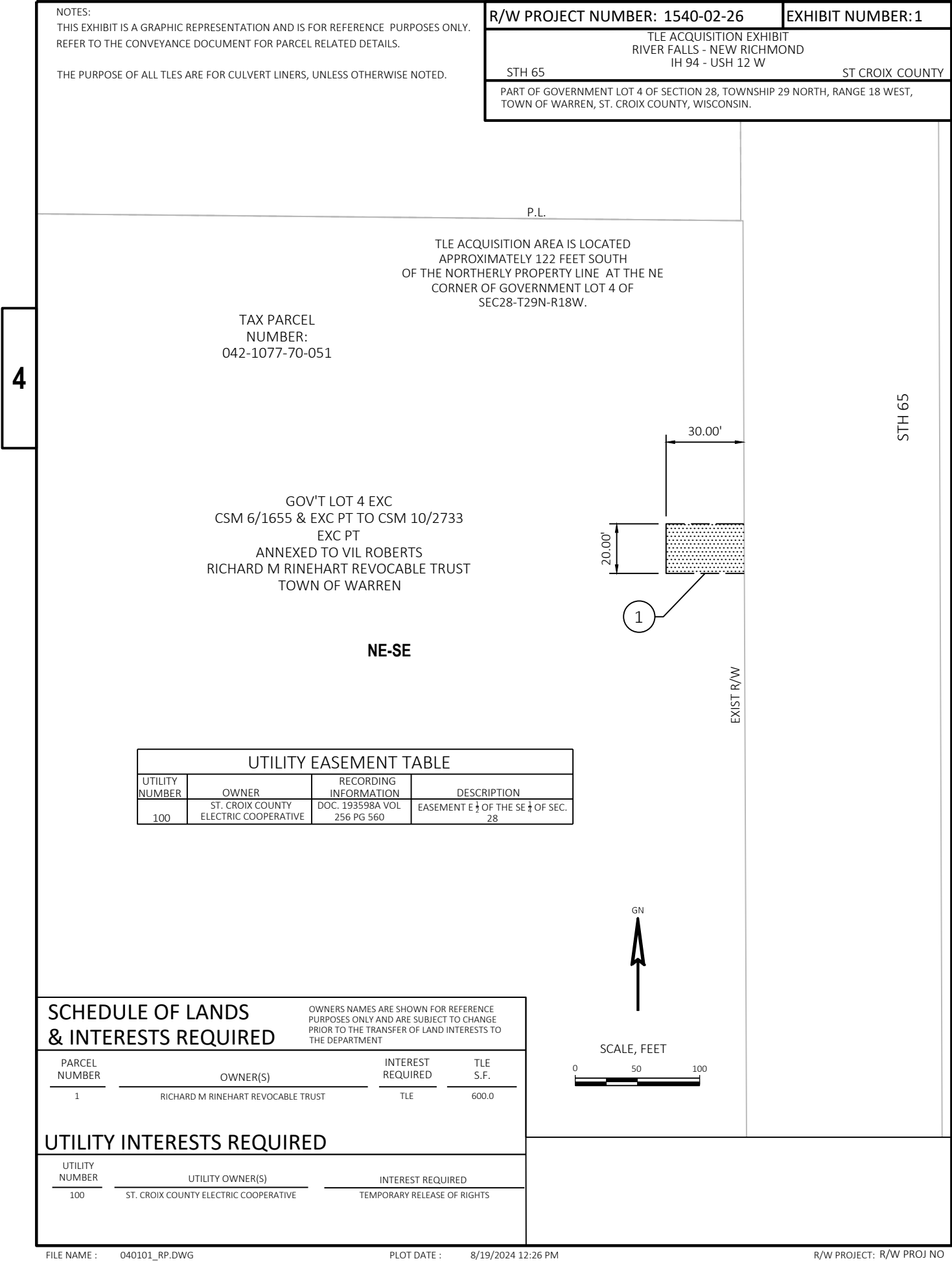
PAVEMENT MARKING														
CATEGORY	STATION	TO	STATION	LOCATION	643.3165	646.2040	646.4020	646.5020	646.5120	646.6120	646.7120	646.8120	646.8220	REMARKS
					TEMPORARY MARKING LINE PAINT 6-INCH LF	MARKING LINE GROOVED WET REF EPOXY 6-INCH LF	MARKING LINE EPOXY 10-INCH LF	MARKING ARROW EPOXY EACH	MARKING WORD EPOXY EACH	MARKING STOP LINE EPOXY 18- INCH LF	MARKING DIAGONAL EPOXY 12-INCH LF	MARKING CURB EPOXY LF	MARKING ISLAND NOSE EPOXY EACH	
0010	427N+84	-	512N+33	STH 65	-	-	-	2	2	-	733	-	-	WORDS, SYMBOLS, DIAGONALS
0010	427N+84		432N+95	STH 65 CL	6,132	2,044	-	-	-	-	-	-	-	SPLITTER ISLAND DOUBLE YELLOW
0010	434N+25		437N+50	STH 65 CL	1,950	650	-	-	-	-	-	-	-	DOUBLE YELLOW
0010	437N+50		446N+30	STH 65 CL	10,560	3,520	-	-	-	-	-	-	-	SPLITTER ISLAND DOUBLE YELLOW
0010	446N+30		455N+00	STH 65 CL	5,220	1,740	-	-	-	-	-	-	-	DOUBLE YELLOW
0010	455N+00		459N+25	STH 65 CL	5,100	1,700	-	-	-	-	-	-	-	SPLITTER ISLAND DOUBLE YELLOW
0010	471N+40		474N+77	STH 65 CL	4,044	1,348	-	-	-	-	-	-	-	SPLITTER ISLAND DOUBLE YELLOW
0010	474N+77		507N+40	STH 65 CL	19,578	6,526	-	-	-	-	-	-	-	DOUBLE YELLOW
0010	507N+40		512N+33	STH 65 CL	5,916	1,972	-	-	-	-	-	-	-	SPLITTER ISLAND DOUBLE YELLOW
0010	427N+84	-	459N+21	STH 65 LT	-	3,013	334	-	-	-	-	-	-	WHITE
0010	470N+29	-	512N+33	STH 65 LT	-	4,085	-	-	-	-	-	-	-	WHITE
0010	429N+07	-	432N+91	STH 65 RT	-	386	210	-	-	-	-	-	-	WHITE
0010	434N+24	-	459N+21	STH 65 RT	-	2,498	-	-	-	-	-	-	-	WHITE
0010	471N+43	-	474N+06	STH 65 RT	-	303	105	-	-	-	-	-	-	WHITE
0010	475N+26	-	512N+33	STH 65 RT	-	3,714	-	-	-	-	-	-	-	WHITE
1540-02-76 SUBTOTAL		-			58,500	33,499	649	2	2	0	733	0	0	
		-												
0010	411E+66	-	452E+40	USH 12 CL	-	-	-	-	-	25	307	-	-	DIAGONALS, STOP BAR
0010	411E+66		415E+00	USH 12 CL	4,008	1,336	-	-	-	-	-	-	-	SPLITTER ISLAND DOUBLE YELLOW
0010	415E+00		447E+75	USH 12 CL	19,650	6,550	-	-	-	-	-	-	-	DOUBLE YELLOW
0010	447E+75		452E+40	USH 12 CL	5,580	1,860	-	-	-	-	-	-	-	SPLITTER ISLAND DOUBLE YELLOW
0010	411E+66	-	435E+01	USH 12 LT	-	2,336	-	-	-	-	-	-	-	WHITE
0010	436E+28	-	442E+95	USH 12 LT	-	658	177	-	-	-	-	-	-	WHITE
0010	444E+34	-	452E+40	USH 12 LT	-	801	238	-	-	-	-	-	-	WHITE
0010	411E+66		417E+31	USH 12 RT	-	567	153	-	-	-	-	-	-	WHITE
0010	418E+07	-	434E+74	USH 12 RT	-	1,619	158	-	-	-	-	68	3	WHITE
0010	436E+07	-	452E+40	USH 12 RT	-	1,634	101	-	-	-	-	-	-	WHITE
8949-00-75 SUBTOTAL					29,238	17,361	827	0	0	25	307	68	3	

PAVEMENT MARKING (CONTINUED)

CATEGORY	STATION	TO	STATION	LOCATION	643.3165 TEMPORARY MARKING LINE PAINT 6-INCH LF	646.2040 MARKING LINE GROOVED WET REF EPOXY 6-INCH LF	646.4020 MARKING LINE EPOXY 10-INCH LF	646.5020 MARKING ARROW EPOXY EACH	646.5120 MARKING WORD EPOXY EACH	646.6120 MARKING STOP LINE EPOXY 18- INCH LF	646.7120 MARKING DIAGONAL EPOXY 12-INCH LF	646.8120 MARKING CURB EPOXY LF	646.8220 MARKING ISLAND NOSE EPOXY EACH	REMARKS
0010	1005+92	-	1373+70	STH 65 CL			-	-	-	-	89	-	-	DIAGONALS
0010	1005+92		1008+90	STH 65 CL	3,576	1,192	-	-	-	-	-	-	-	SPLITTER ISLAND DOUBLE YELLOW
0010	1008+90		1053+00	STH 65 CL	14,289	5,513	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1053+00		1102+07	STH 65 CL	1,178	1,227	-	-	-	-	-	-	-	DASHED
0010	1102+07		1112+30	STH 65 CL	3,315	1,279	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1112+30		1120+10	STH 65 CL	4,680	1,560	-	-	-	-	-	-	-	DOUBLE YELLOW
0010	1120+10		1130+65	STH 65 CL	3,419	1,319	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1130+65		1137+13	STH 65 CL	156	162	-	-	-	-	-	-	-	DASHED
0010	1137+13		1159+10	STH 65 CL	7,119	2,747	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1159+10		1199+23	STH 65 CL	964	1,004	-	-	-	-	-	-	-	DASHED
0010	1199+23		1209+72	STH 65 CL	3,399	1,312	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1209+72		1224+33	STH 65 CL	8,766	2,922	-	-	-	-	-	-	-	DOUBLE YELLOW
0010	1224+33		1235+55	STH 65 CL	3,636	1,403	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1235+55		1239+69	STH 65 CL	100	104	-	-	-	-	-	-	-	DASHED
0010	1239+69		1250+73	STH 65 CL	3,577	1,380	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1250+73		1261+43	STH 65 CL	6,420	2,140	-	-	-	-	-	-	-	DOUBLE YELLOW
0010	1261+43		1271+94	STH 65 CL	3,406	1,314	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1271+94		1284+92	STH 65 CL	312	325	-	-	-	-	-	-	-	DASHED
0010	1284+92		1296+59	STH 65 CL	3,782	1,459	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1296+59		1308+73	STH 65 CL	7,284	2,428	-	-	-	-	-	-	-	DOUBLE YELLOW
0010	1320+33		1343+25	STH 65 CL	13,752	4,584	-	-	-	-	-	-	-	DOUBLE YELLOW
0010	1343+25		1354+52	STH 65 CL	3,652	1,409	-	-	-	-	-	-	-	SOLID/ DASHED YELLOW
0010	1354+52		1373+70	STH 65 CL	461	480	-	-	-	-	-	-	-	DASHED
0010	1005+92	-	1052+60	STH 65 LT	-	4,668	-	-	-	-	-	-	-	WHITE
0010	1053+76	-	1105+10	STH 65 LT	-	5,135	-	-	-	-	-	-	-	WHITE
0010	1106+11	-	1155+77	STH 65 LT	-	4,966	-	-	-	-	-	-	-	WHITE
0010	1157+09	-	1208+81	STH 65 LT	-	5,174	117	-	-	-	-	-	-	WHITE
0010	1209+94	-	1261+56	STH 65 LT	-	5,163	-	-	-	-	-	-	-	WHITE
0010	1262+31	-	1293+36	STH 65 LT	-	3,106	-	-	-	-	-	-	-	WHITE
0010	1293+87	-	1308+73	STH 65 LT	-	1,489	240	-	-	-	-	-	-	WHITE
0010	1320+33	-	1373+70	STH 65 LT	-	5,337	-	-	-	-	-	-	-	WHITE
0010	1005+92	-	1052+40	STH 65 RT	-	4,648	-	-	-	-	-	-	-	WHITE
0010	1053+34	-	1105+07	STH 65 RT	-	5,135	-	-	-	-	-	-	-	WHITE
0010	1106+09	-	1155+60	STH 65 RT	-	4,952	105	-	-	-	-	-	-	WHITE
0010	1156+91	-	1208+74	STH 65 RT	-	5,184	-	-	-	-	-	-	-	WHITE
0010	1209+73	-	1261+43	STH 65 RT	-	5,171	-	-	-	-	-	-	-	WHITE
0010	1262+48	-	1293+10	STH 65 RT	-	3,053	240	-	-	-	-	-	-	WHITE
0010	1294+17	-	1308+73	STH 65 RT	-	1,456	-	-	-	-	-	-	-	WHITE
0010	1320+33	-	1373+70	STH 65 RT	-	5,337	-	-	-	-	-	-	-	WHITE
1540-02-78 SUBTOTAL					97,243	107,237	702	0	0	0	89	0	0	
TOTAL 0010					184,981	158,097	2,178	2	2	25	1,129	68	3	

NOTE: TEMP. PAVEMENT MARKING PLACED IN 3 APPLICATIONS (MILLED, LOWER & FINAL LAYER)

CONSTRUCTION STAKING												
		650.5500		650.8000		650.9911.01		650.9911.02		650.9911.03		650.9920
		CONSTRUCTION		CONSTRUCTION		CONSTRUCTION		CONSTRUCTION		CONSTRUCTION		
		STAKING CURB		STAKING		STAKING		STAKING		STAKING		
		GUTTER AND CURB		RESURFACING		SUPPLEMENTAL		SUPPLEMENTAL		SUPPLEMENTAL		CONSTRUCTION
		& GUTTER		REFERENCE		(PROJECT) (01.		(PROJECT) (02.		(PROJECT) (03.		STAKING SLOPE
						1540-02-76)		8949-00-75)		1540-02-78)		STAKES
CATEGORY	STATION	TO	STATION	LOCATION	LF	LF	EACH	EACH	EACH	EACH	LF	REMARKS
0010	427N+84	-	459N+21	STH 65	-	3,137	-	-	-	-	-	1540-02-76
0010	470N+28	-	512N+33	STH 65	-	4,205	-	-	-	-	-	1540-02-76
0010	429N+07	-	512N+33	STH 65	-	-	1	-	-	-	-	1540-02-76
1540-02-76 SUBTOTAL					0	7,342	1	0	0	0	0	
0010	411E+65	-	452E+39	USH 12	157	4,074	-	1	-	-	-	8949-00-75
8949-00-75 SUBTOTAL					157	4,074	-	1	-	-	-	
0010	1005+92	-	1308+72	STH 65	778	30,280	-	-	-	-	-	1540-02-78
0010	1320+33	-	1373+72	STH 65	-	5,339	-	-	-	-	-	1540-02-78
					-	-	-	-	-	-	100	1540-02-78
0010	1005+92	-	1373+71	STH 65	-	-	-	-	1	-	-	1540-02-78
1540-02-78 SUBTOTAL					778	35,619	0	0	1	100		
TOTAL 0010					935	47,035	1	1	1	100		
CLEANING DITCH												
SPV.0060.01 SPECIAL (01. DITCH CLEANING)												
SAWING ASPHALT												
		690.0150		SAWING ASPHALT								
CATEGORY	STATION	TO	STATION	LOCATION	LF	REMARKS						
0010	438N+00	-	438N+50	STH 65 LT	178	DRIVEWAYS						
1540-02-76 SUBTOTAL					178							
0010	411E+65	-	452E+39	USH 12	136	DRIVEWAYS						
0010	418E+53	-	420E+16	USH 12 LT	182	8949-00-75 CURB REPLACEMENT						
8949-02-75 SUBTOTAL					318							
0010	1005+92	-	1373+72	STH 65 LT & RT	308	DRIVEWAYS						
0010	1052+39	-	1053+35	STH 65 LT & RT	279	1540-02-78 CURB REPLACEMENT						
0010	1105+04	-	1106+11	STH 65 LT & RT	278	1540-02-78 CURB REPLACEMENT						
0010	1155+27	-	1157+12	STH 65 LT & RT	202	1540-02-78 CURB REPLACEMENT						
0010	1209+48	-	1210+00	STH 65 LT	96	1540-02-78 CURB REPLACEMENT						
1540-02-78 SUBTOTAL					1,163							
TOTAL 0010					1,659							
					</							



BEGIN PROJECT
(1540-02-76)
STA 427N+84.56
Y = 339745.656
X = 562468.492

426+61.0
15.0' LT

PI: 427N+11.34

CENTURYLINK

TLE

BALDWIN TELECOM INC.

432+81.9
27.0' LT

PI: 432N+57.39

GRAVEL DRIVEWAY
BASE AGGREGATE DENSE $\frac{3}{4}$ "

R/W

C/L STH 65

REMOVING ASPHALTIC SURFACE

VILLAGE OF ROBERTS

ASPHALTIC SURFACE DRIVEWAYS
AND FIELD ENTRANCES

CENTURYLINK

BALDWIN TELECOM INC.

439+67.0
27.0' LT

425N+00

430N+00

N0° 12' 18"W

N0° 09' 32"W

435N+00

440N+00

546.05'

2095.59'

427+83.6
15.0' RT

REMOVING ASPHALTIC
SURFACE BUTT JOINTS

430+58.0
24.0' RT

REMOVING ASPHALTIC
SURFACE BUTT JOINTS

WAGNER DR

435+21.3
15.0' RT

VILLAGE OF ROBERTS

STA 438N+56.21
EXISTING 24"X89' CMCP
CULVERT PIPE LINERS (24-INCH)
REMOVING CULVERT ENDWALLS - LT & RT
AEW FOR CULVERT PIPE STEEL 24-INCH - LT & RT
CLEANING DITCH - LT & RT

AT&T WISCONSIN

TLE

5

5

→ Z

R/W

446+67.1
15.0' LT

445N+00

450N+00

N0° 24' 44"W 455N+00

454+65.8
15.0' LT

STA 452N+53.81
EXISTING 24"X66' CMCP
CLEANING DITCH - LT & RT

MIDWEST NATURAL GAS, INC.

CAUTION

PI: 453N+52.98

554.47'

C/L STH 65

R/W

PROJECT NO: 1540-02-76

HWY: STH 65

COUNTY: ST. CROIX

PLAN - STH 65 SOUTH

SHEET

80

E

FILE NAME : W:\15400276\C3D\SHEETSPLAN\050101-PP.DWG
LAYOUT NAME - 050201-pn

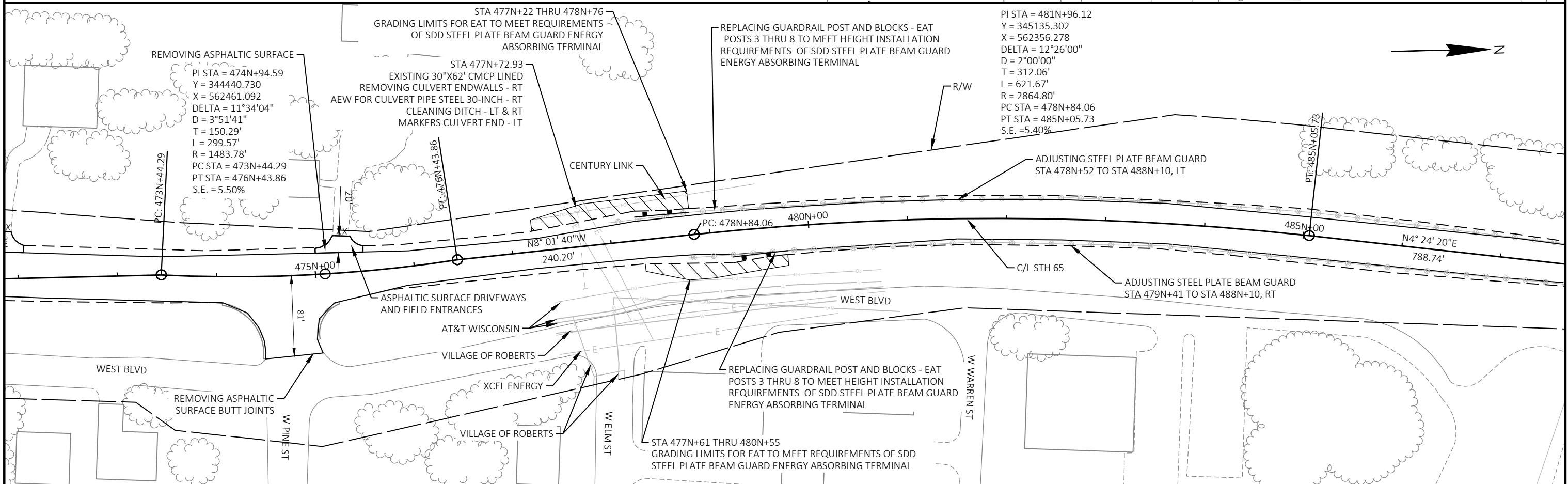
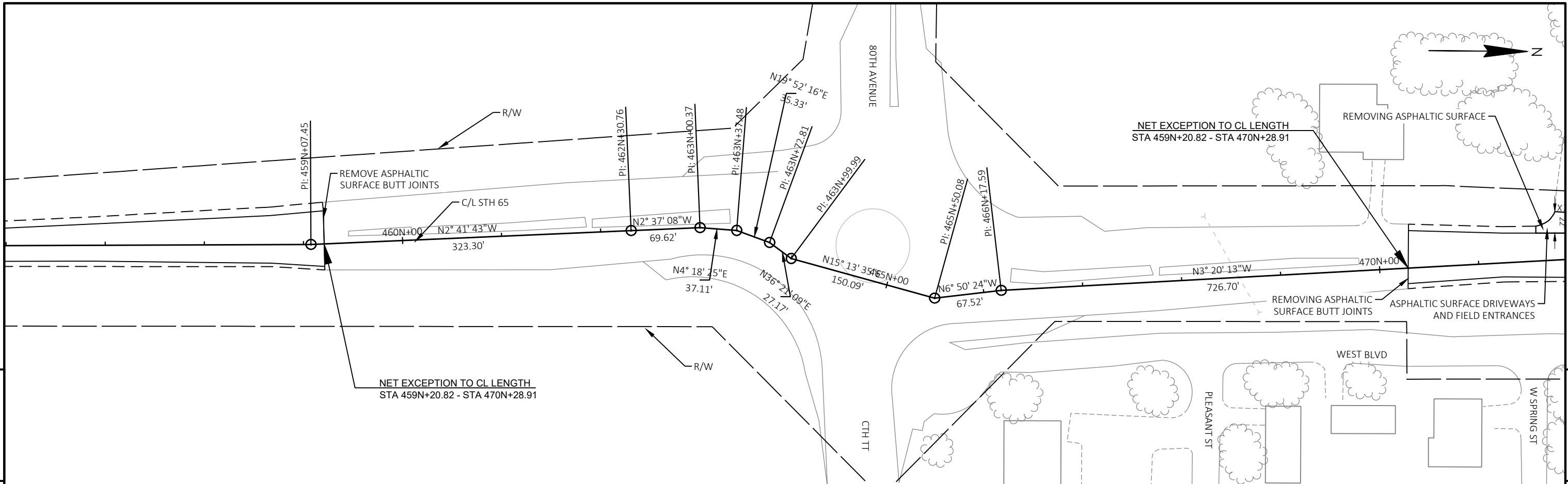
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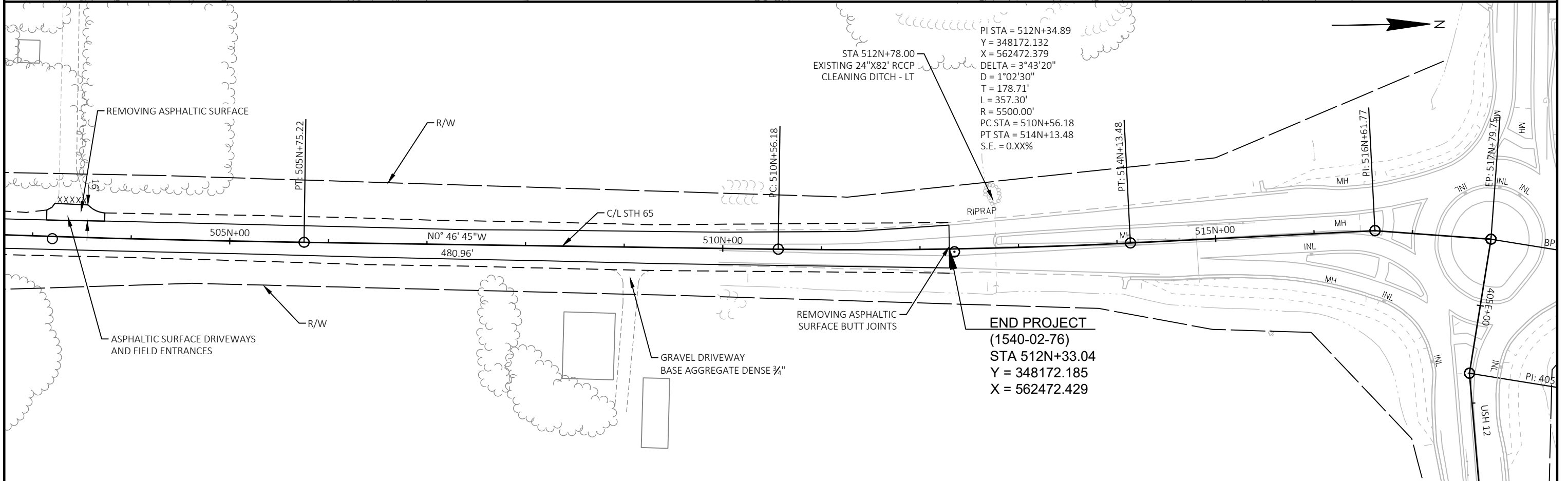
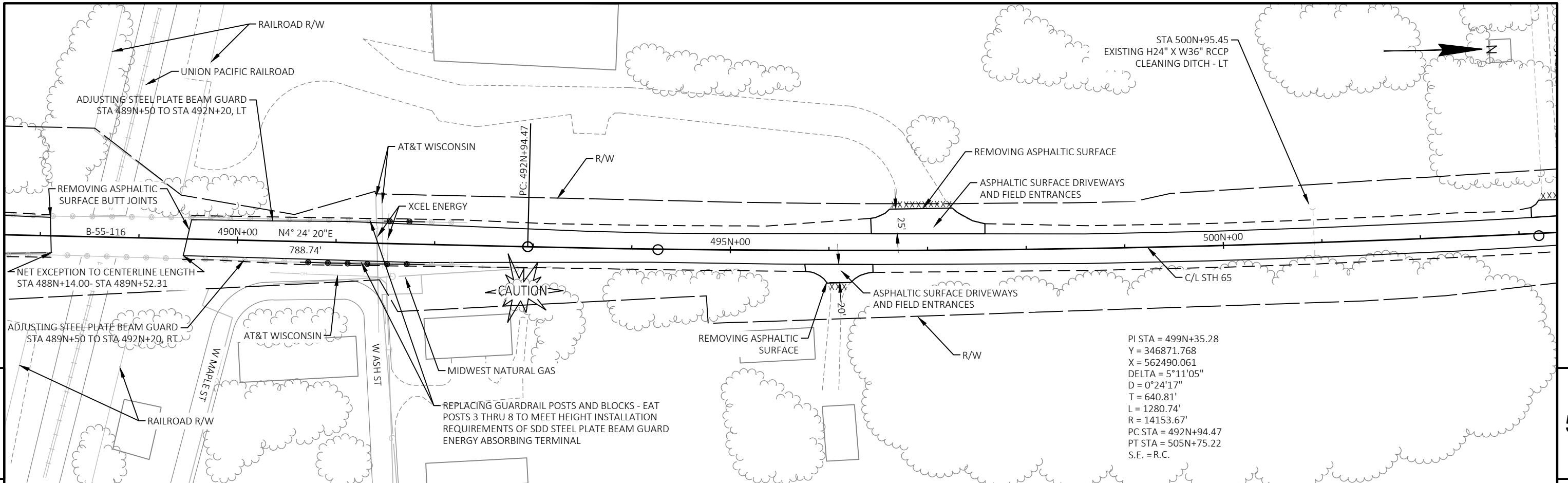
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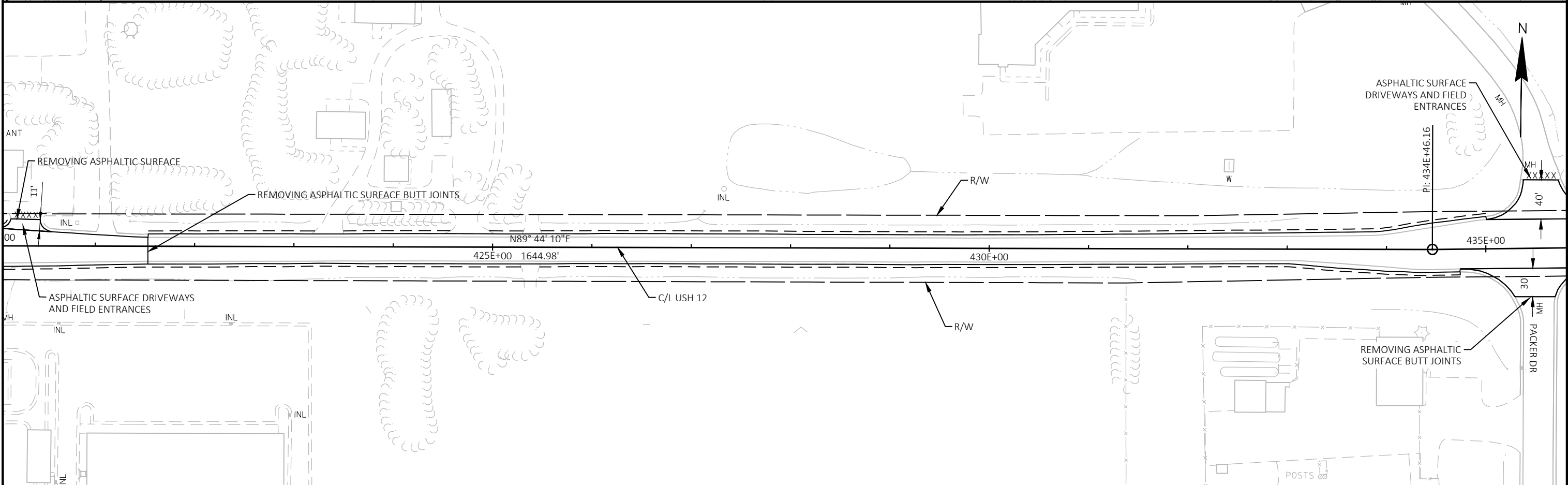
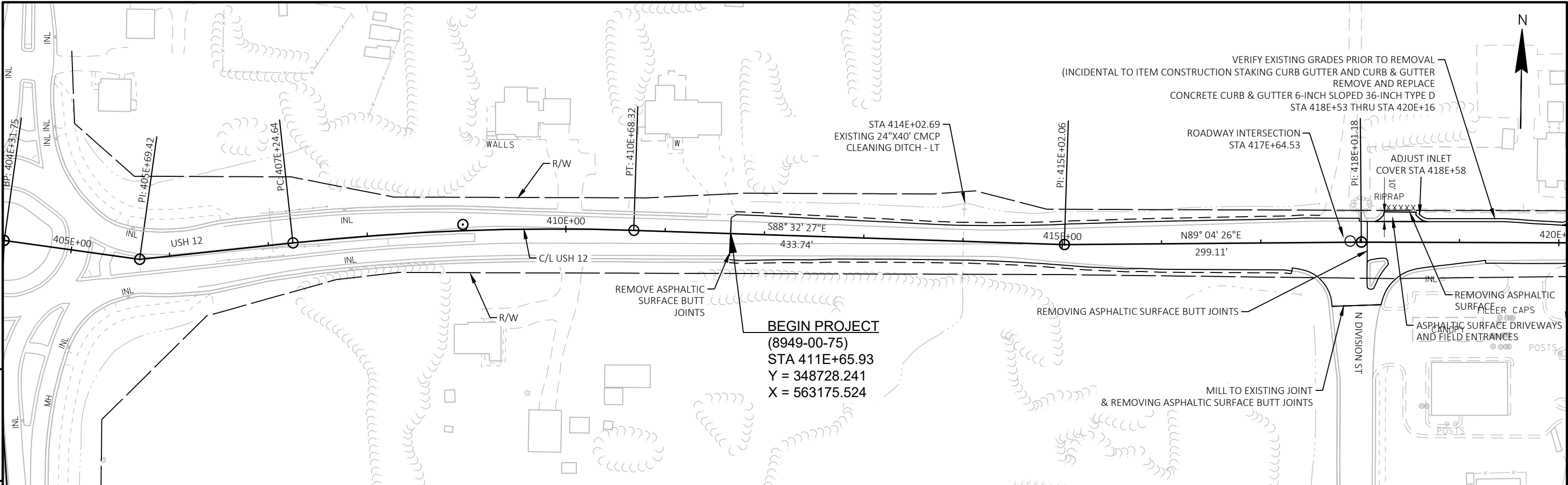
PLOT NAME :

PLOT SCALE : 1 IN:100 FT

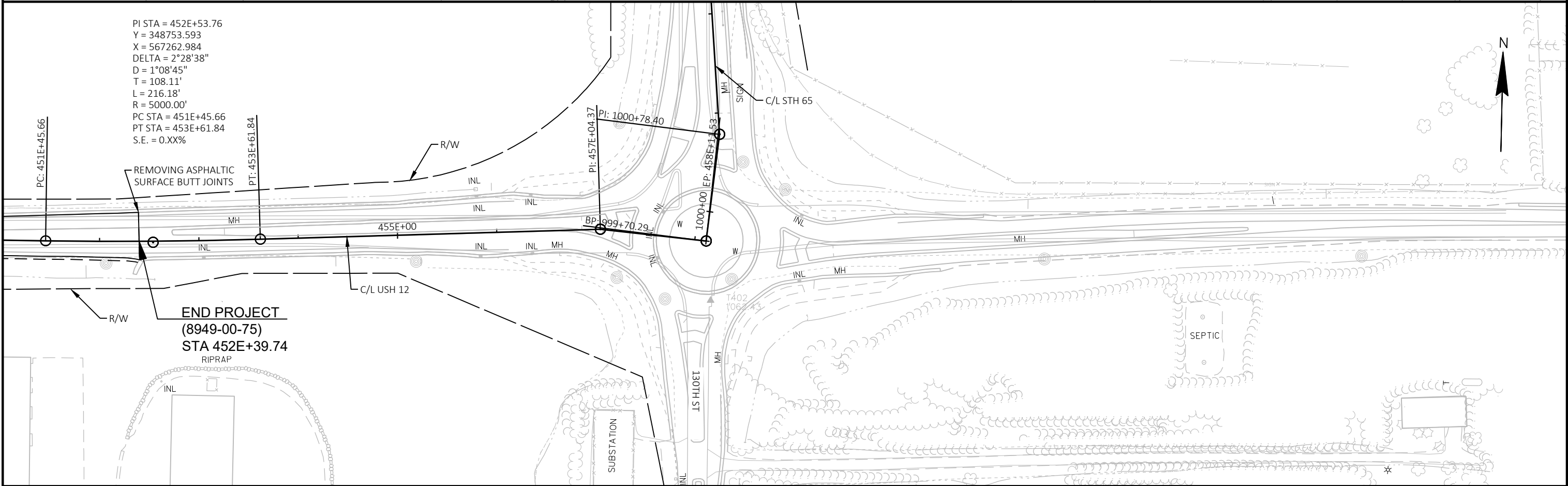
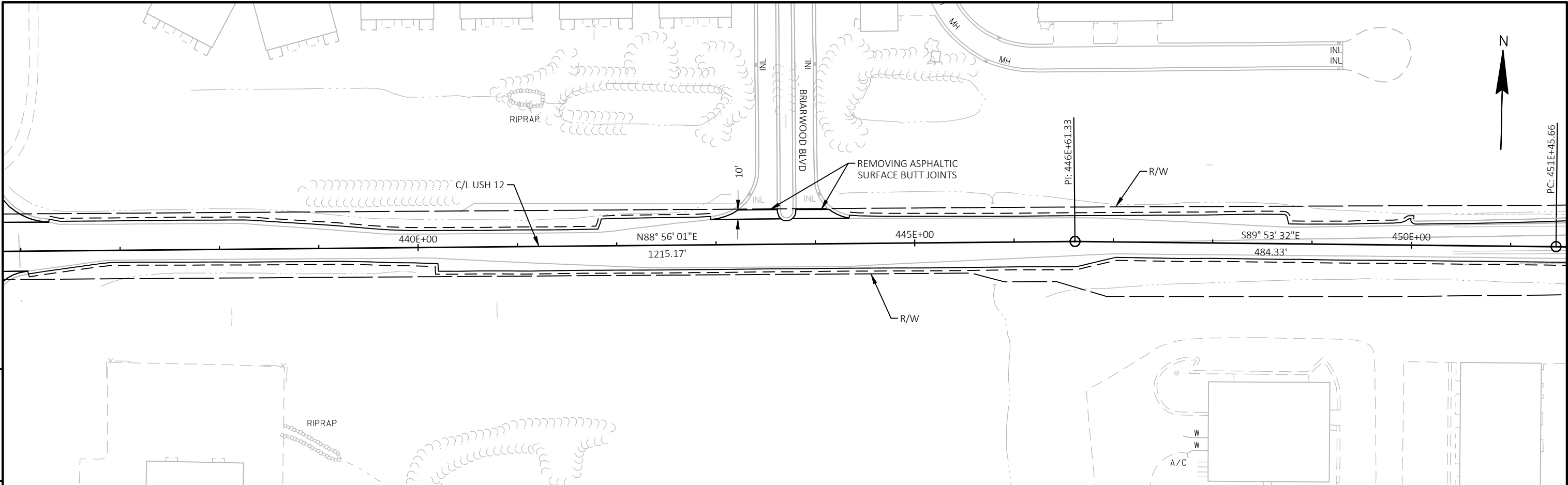
WISDOT/CADDs SHEET 44



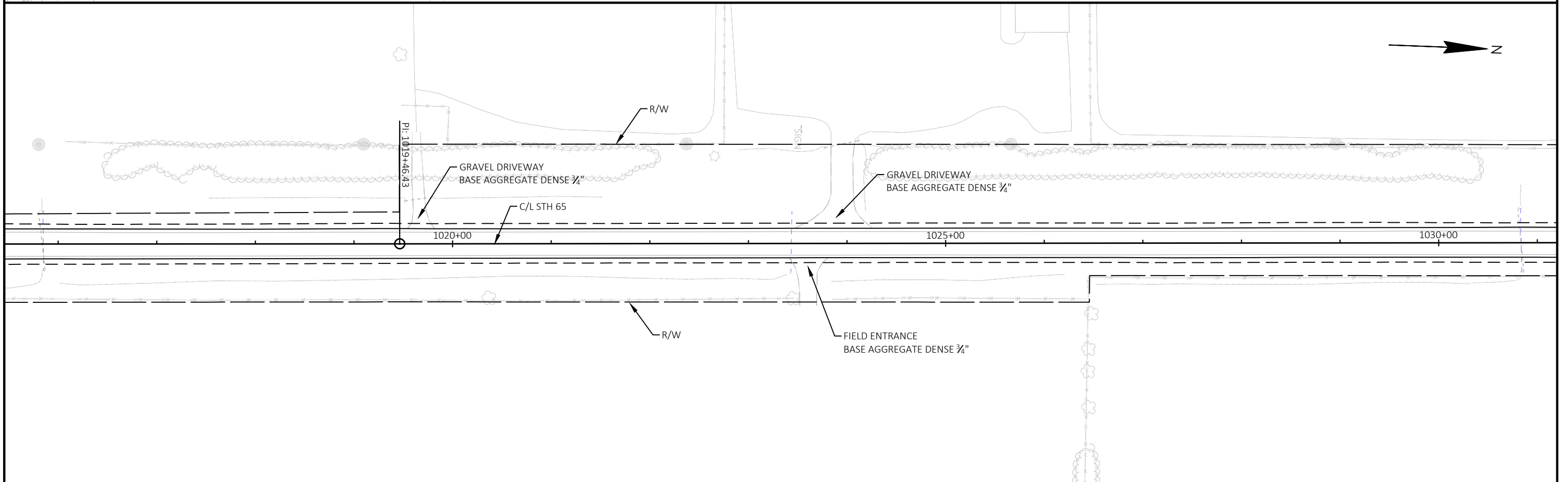
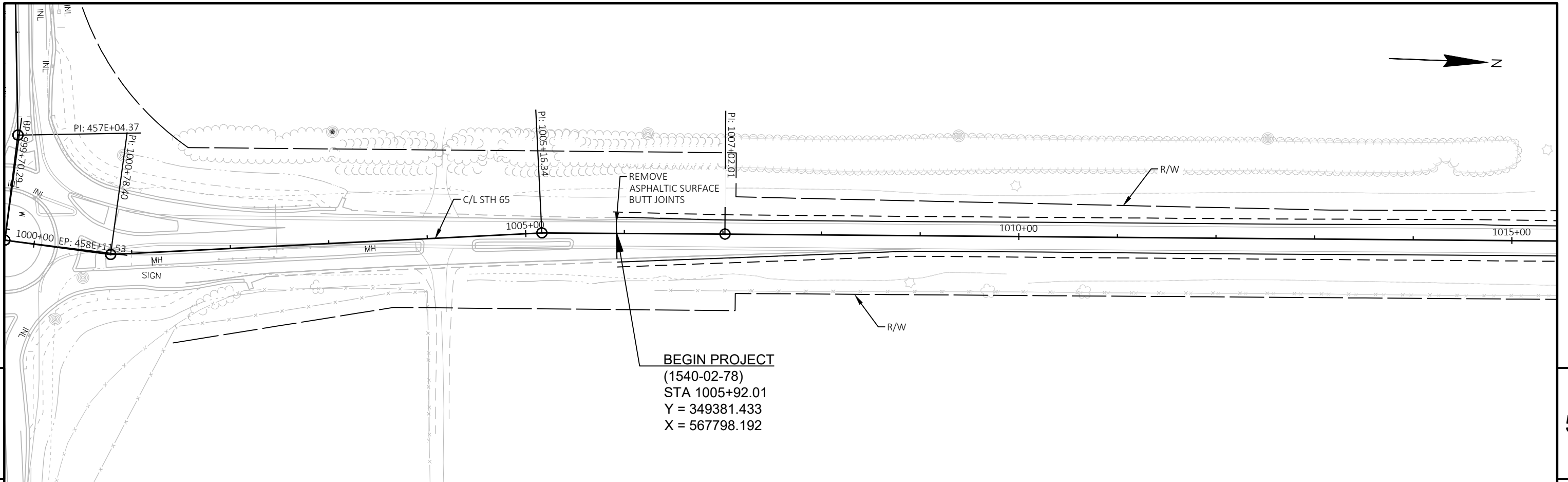


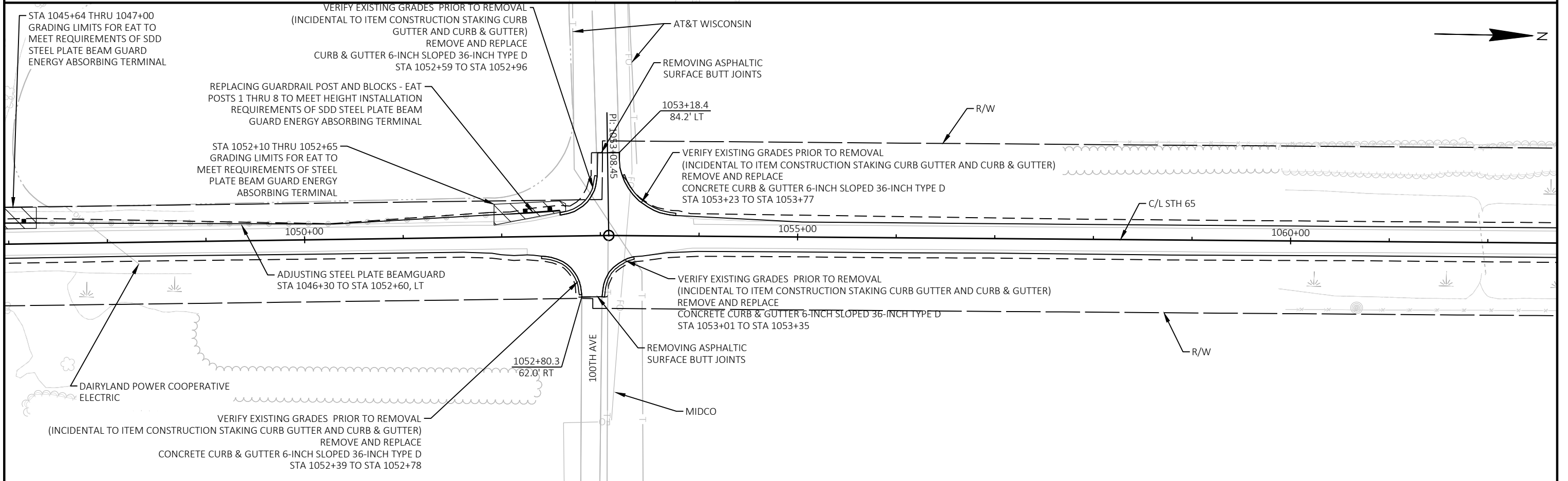
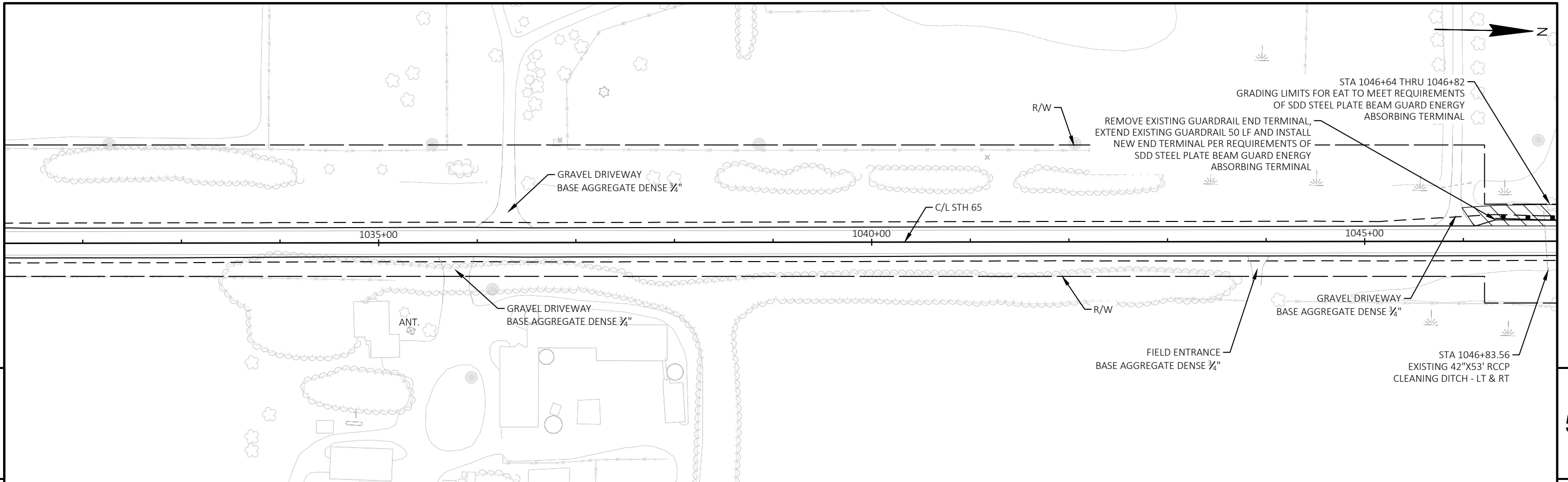


PROJECT NO: 8949-00-75	HWY: USH 12	COUNTY: ST. CROIX	USH 12 WEST TO USH 12 EAST	SHEET 83	E
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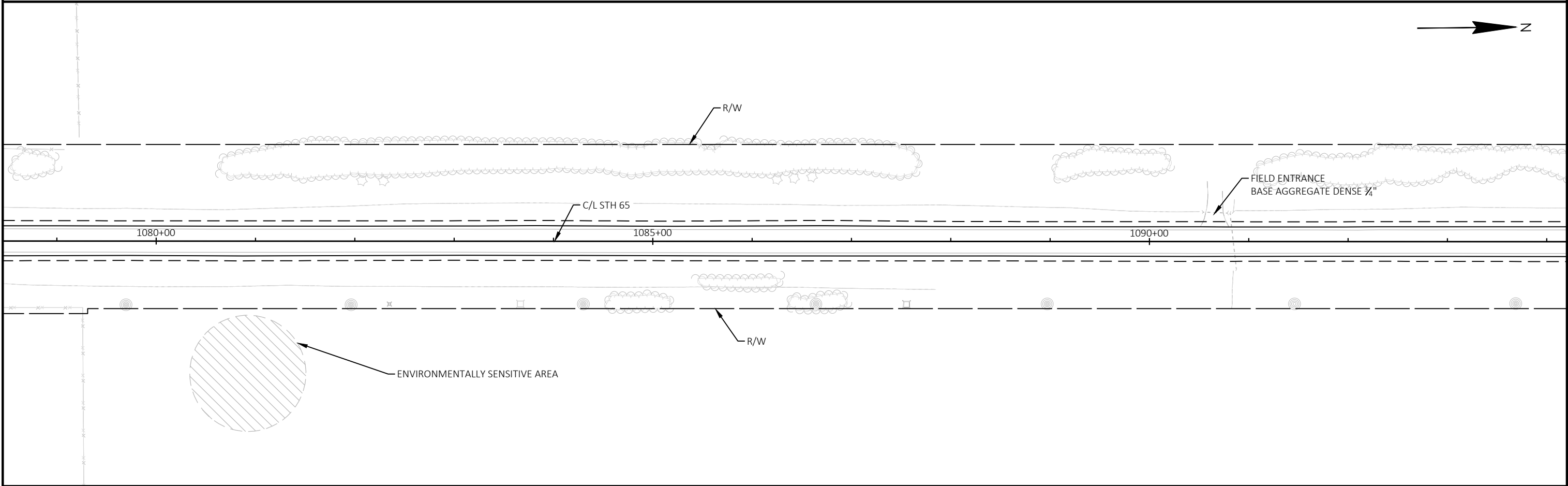
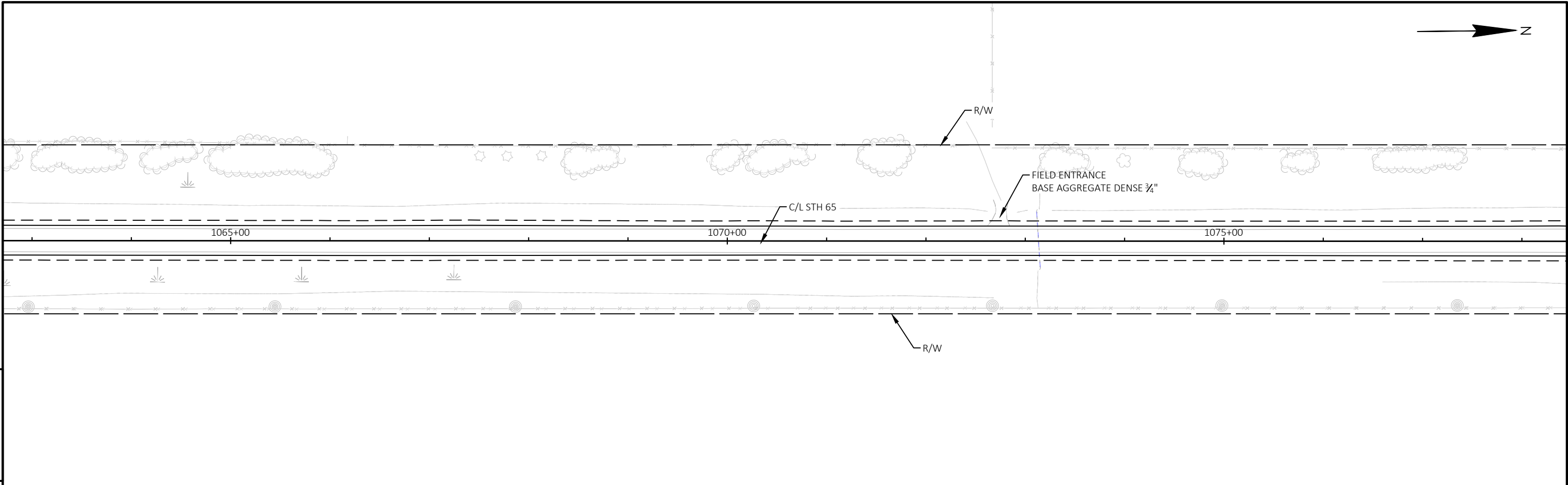


PROJECT NO: 8949-00-75	HWY: USH 12	COUNTY: ST. CROIX	USH 12 WEST TO USH 12 EAST	SHEET 84	E
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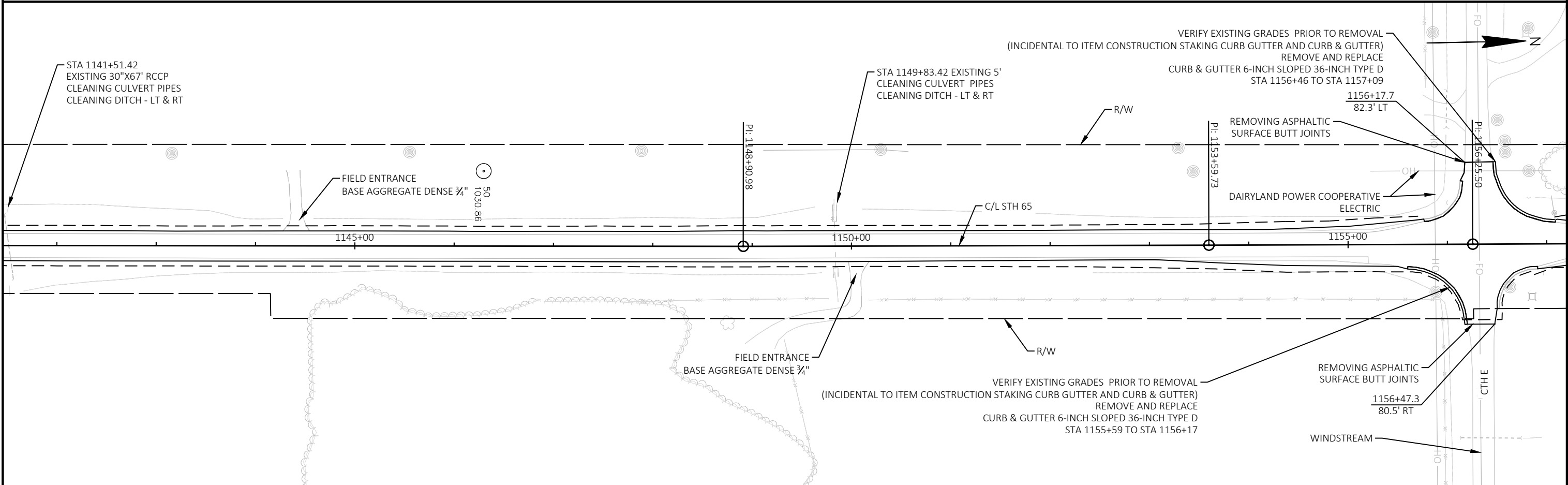
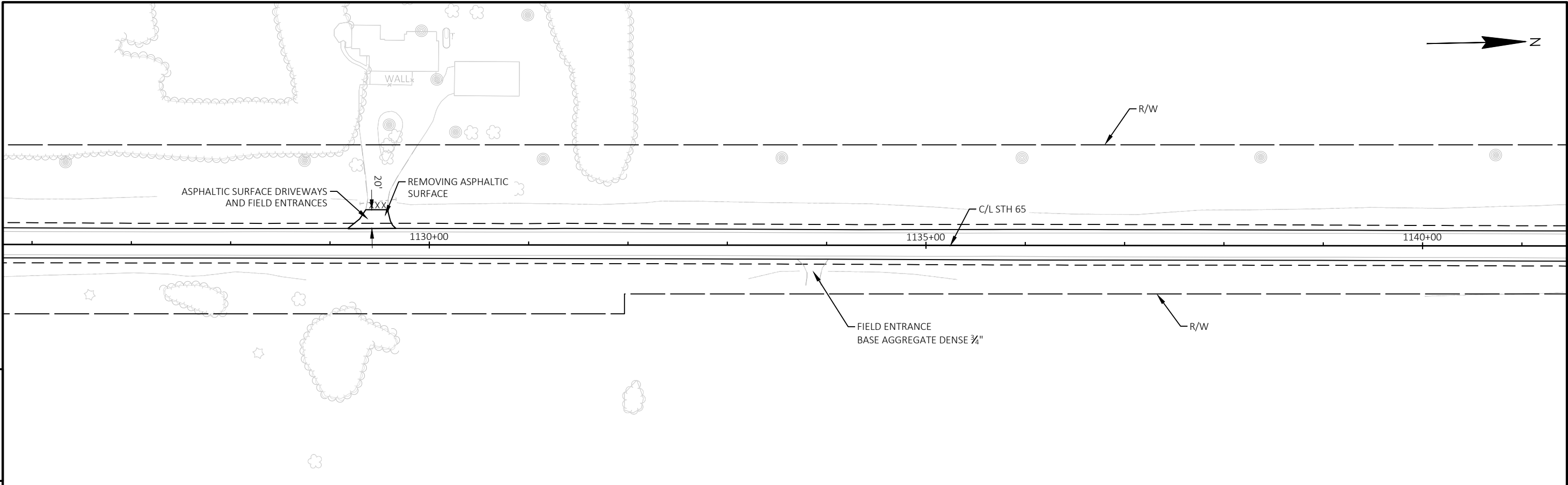


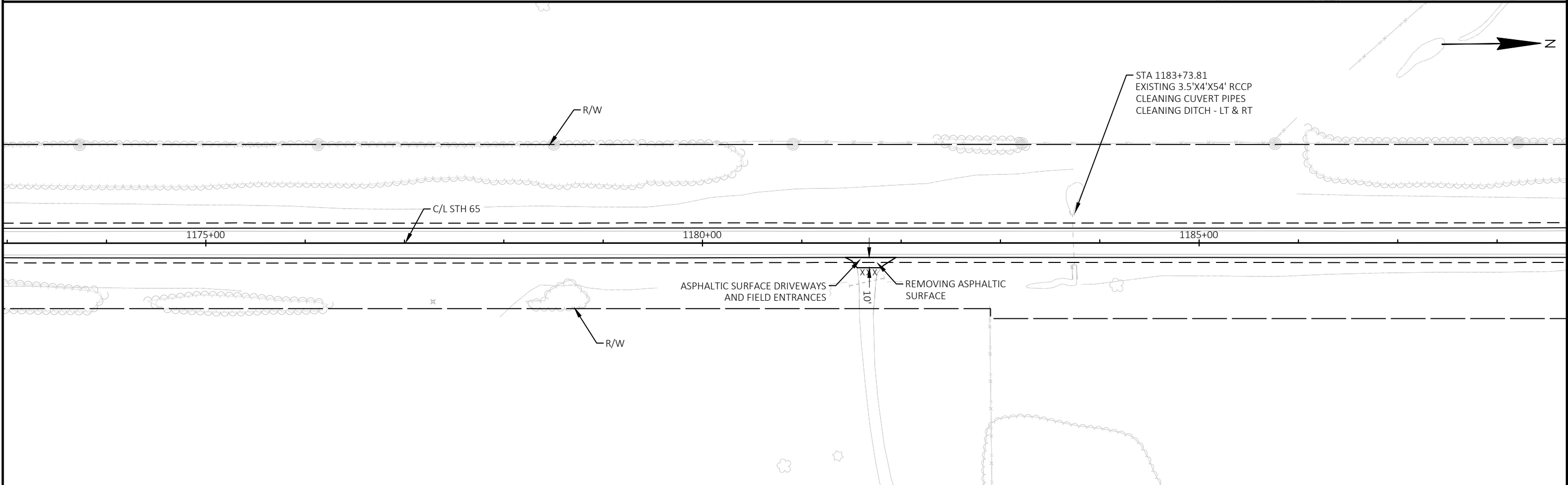
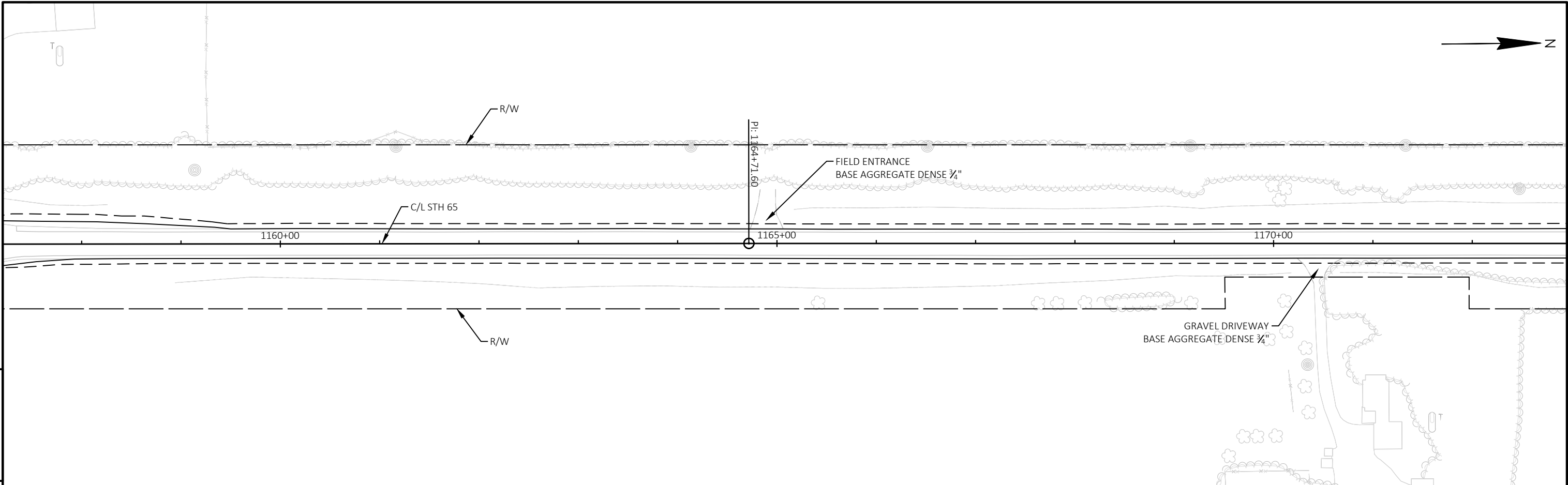


PROJECT NO: 1540-02-78	HWY: STH 65	COUNTY: ST. CROIX	PLAN - STH 65 NORTH	SHEET 86	E
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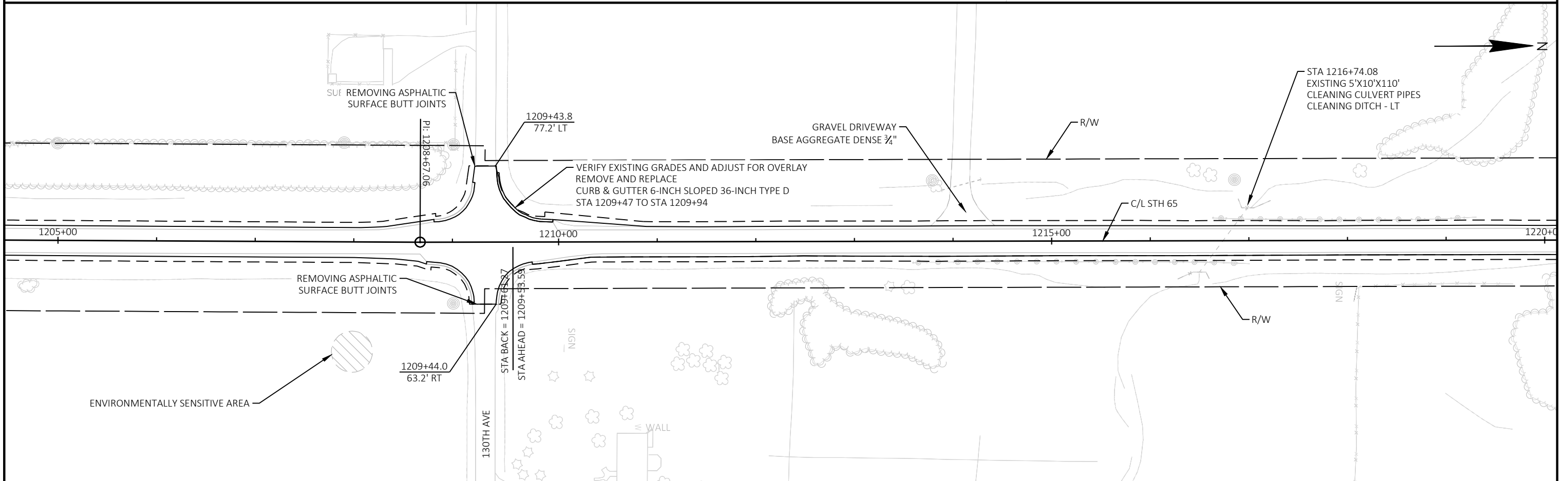
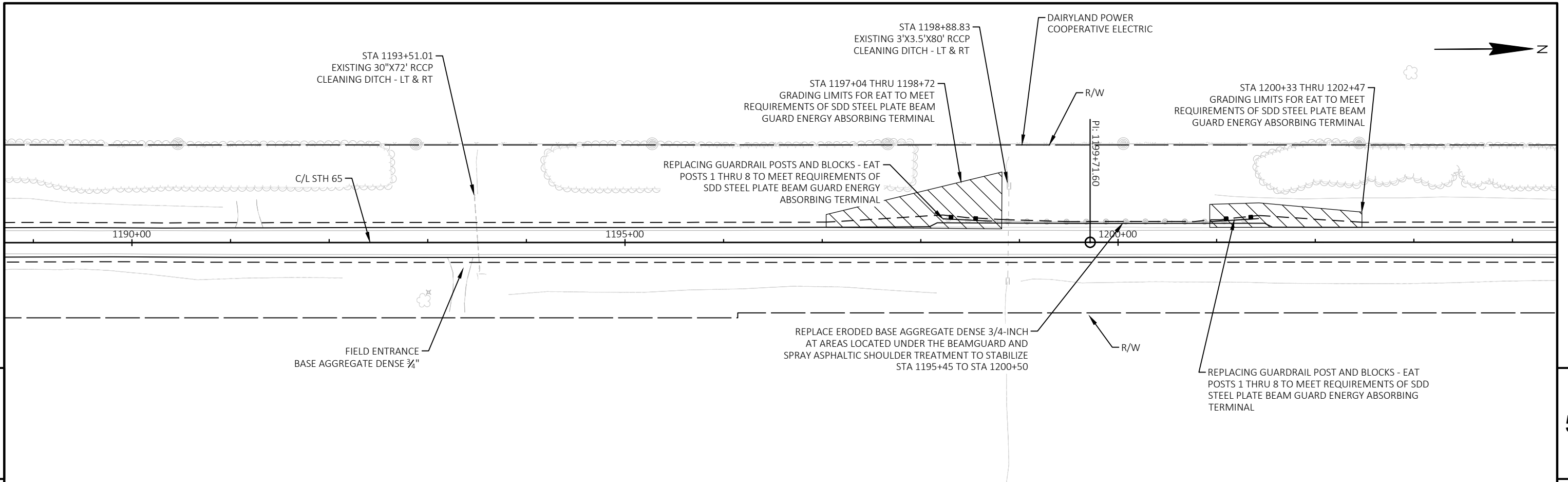


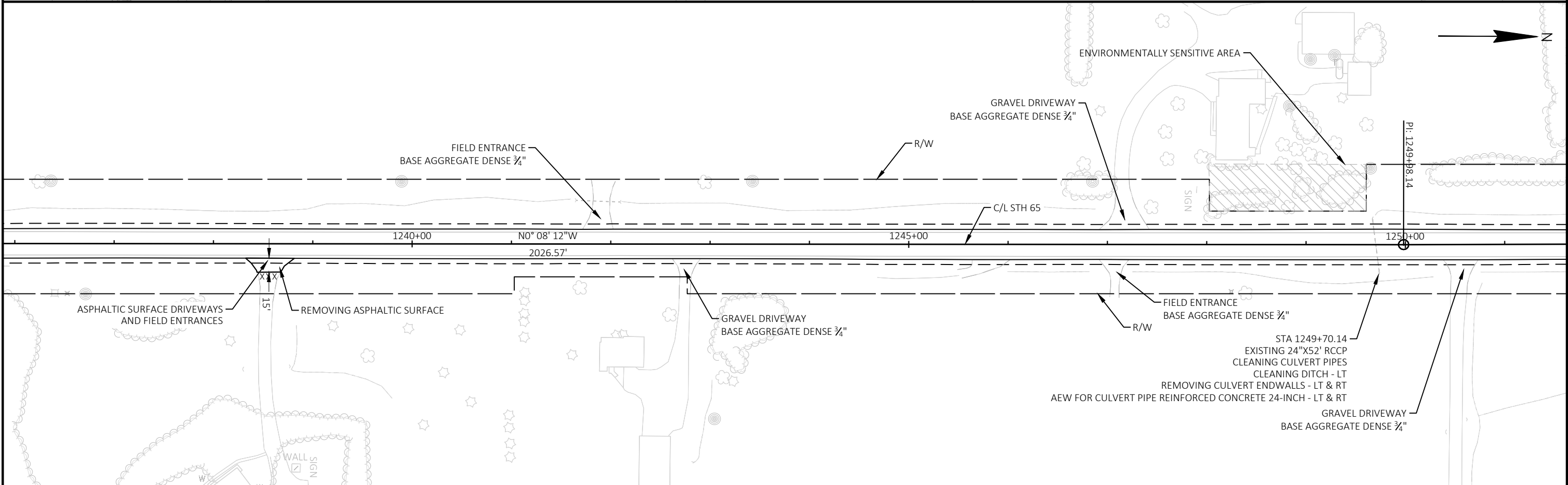
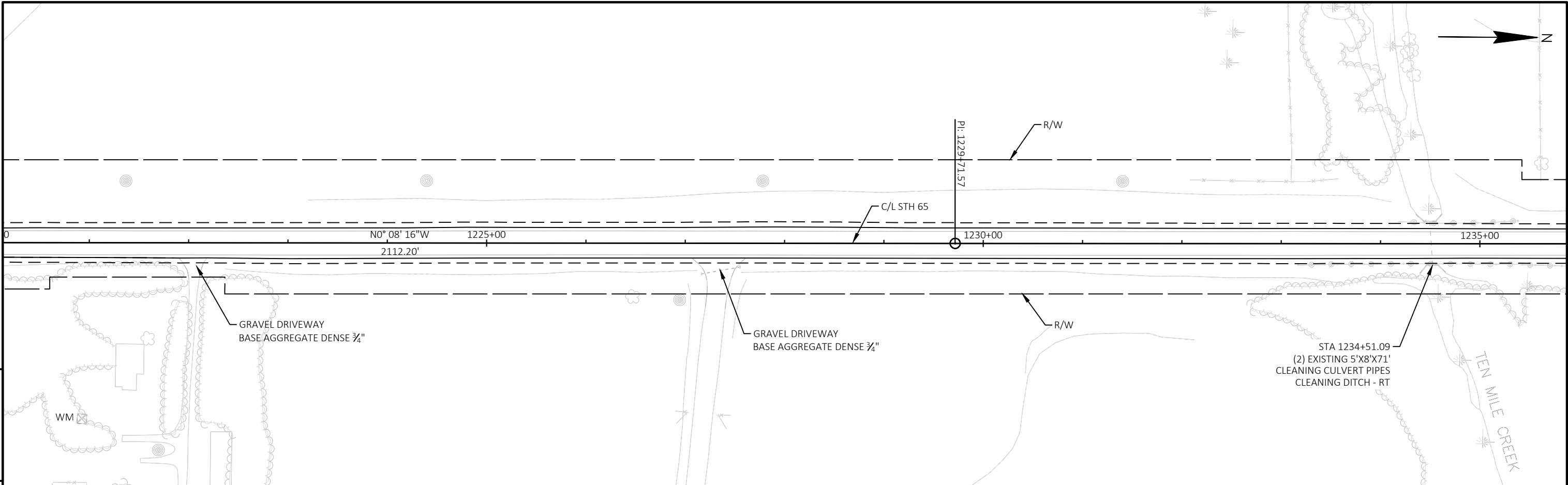
PROJECT NO: 1540-02-78	HWY: STH 65	COUNTY: ST. CROIX	PLAN - STH 65 NORTH	SHEET 87	E
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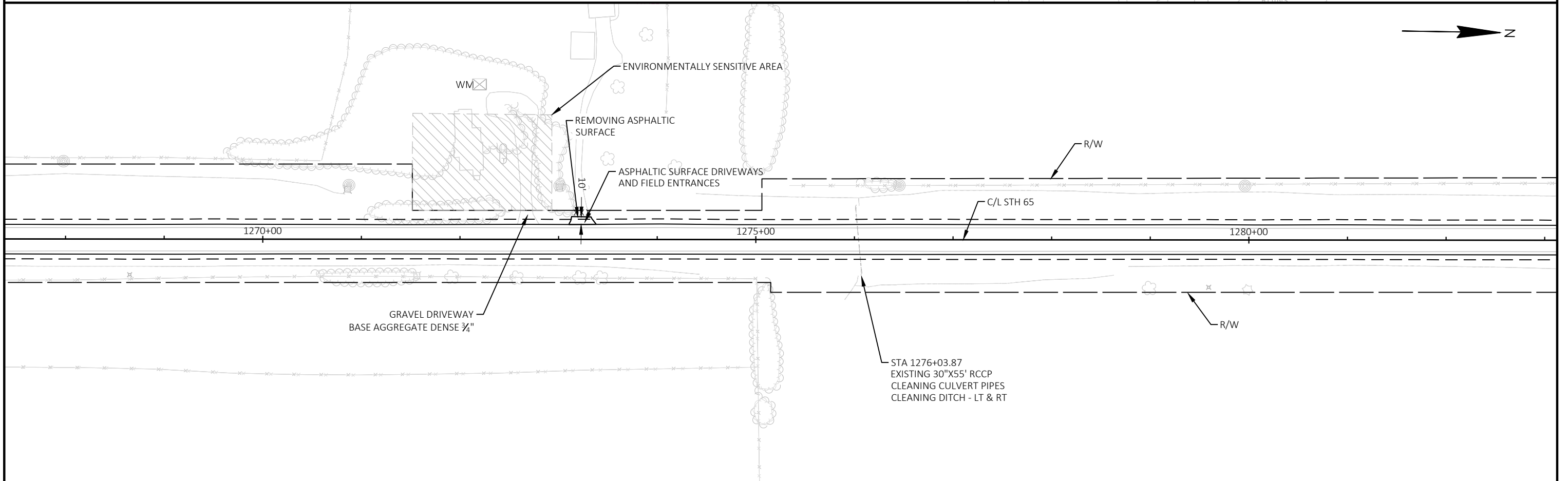
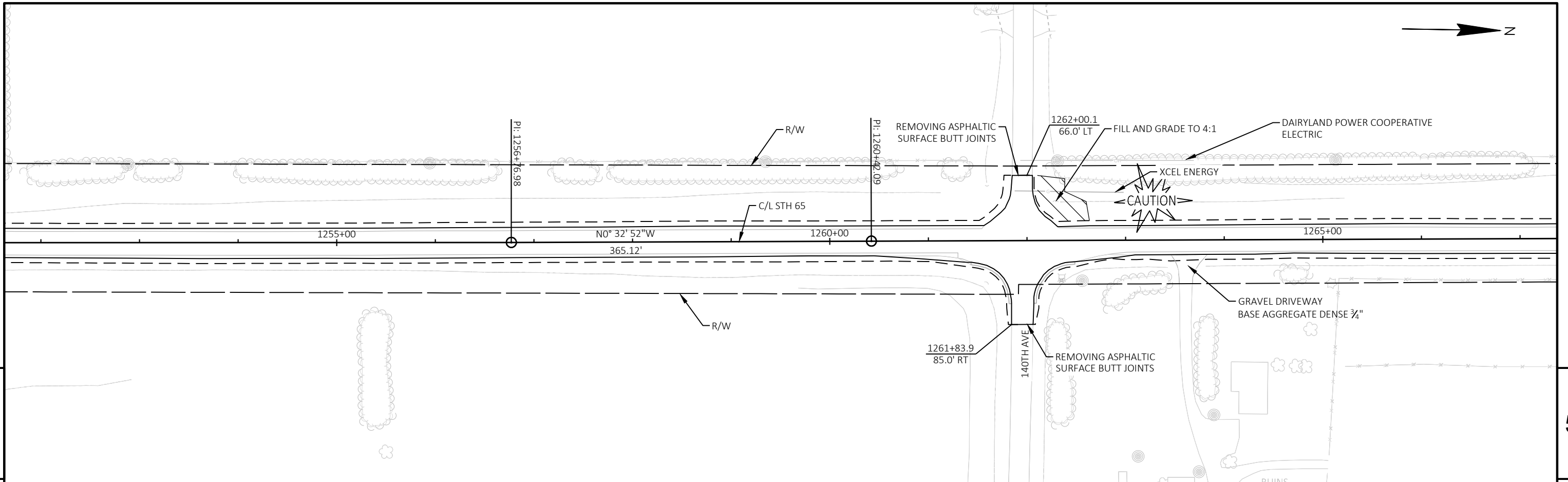


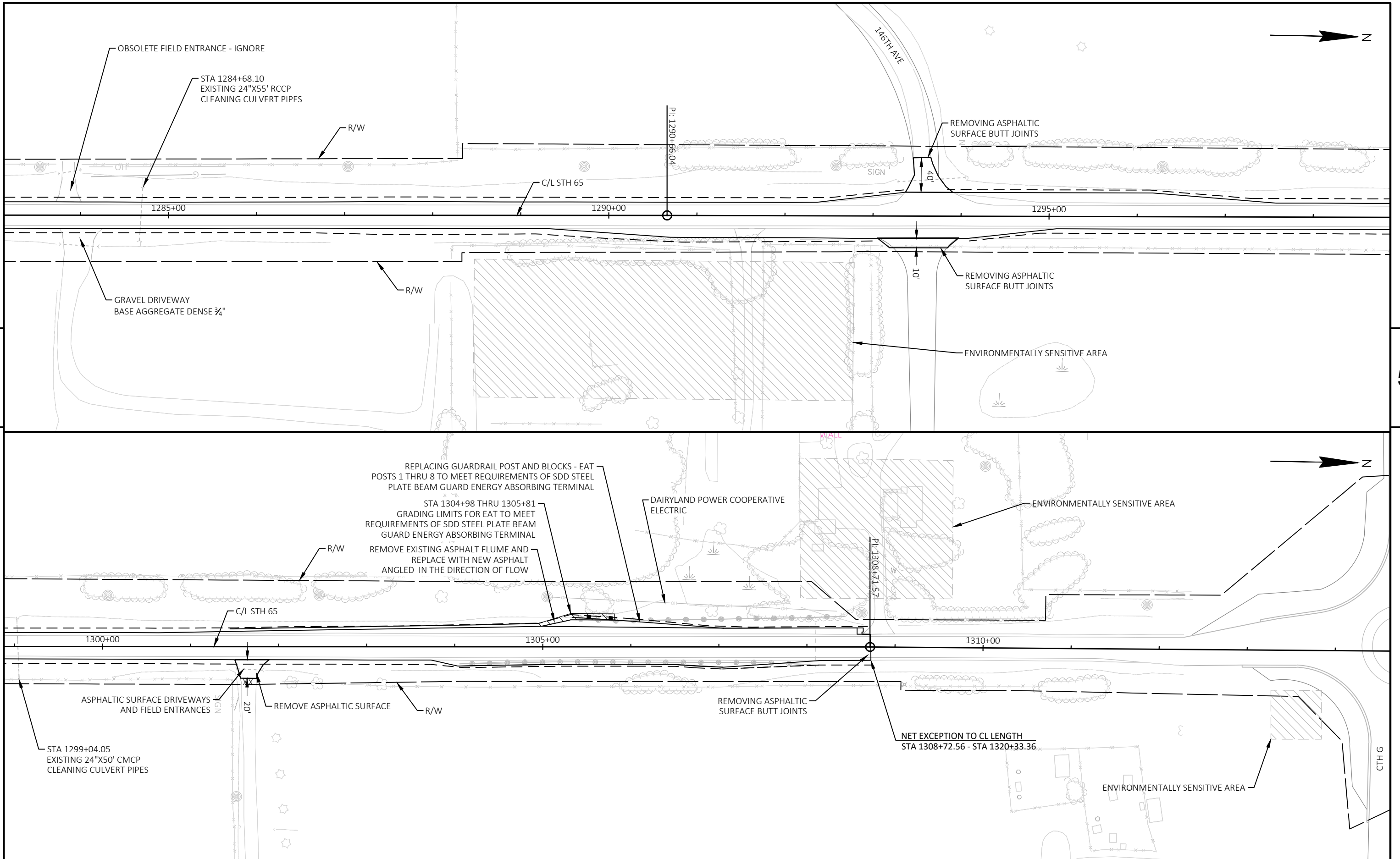


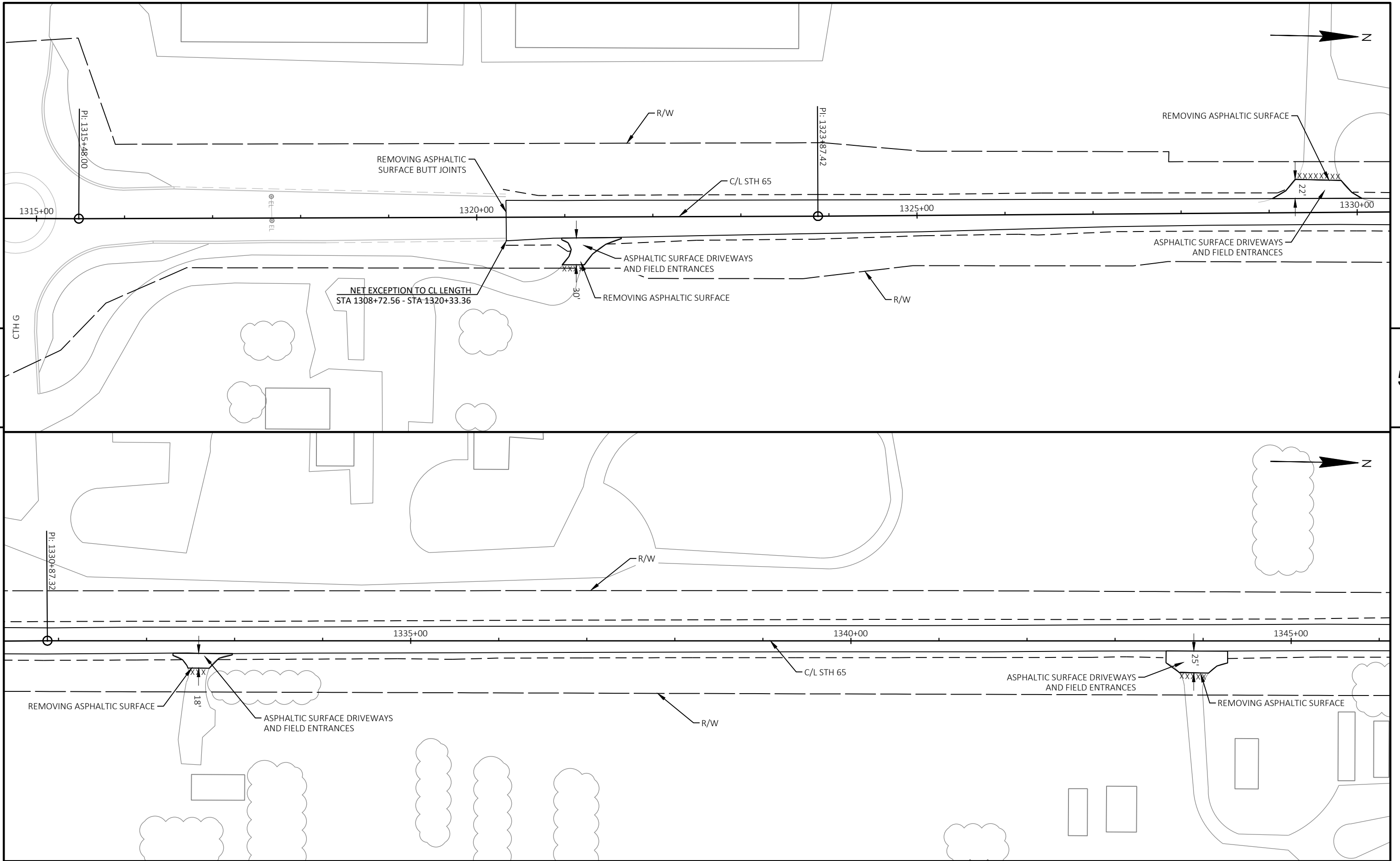
PROJECT NO: 1540-02-78	HWY: STH 65	COUNTY: ST. CROIX	PLAN - STH 65 NORTH	SHEET 90	E
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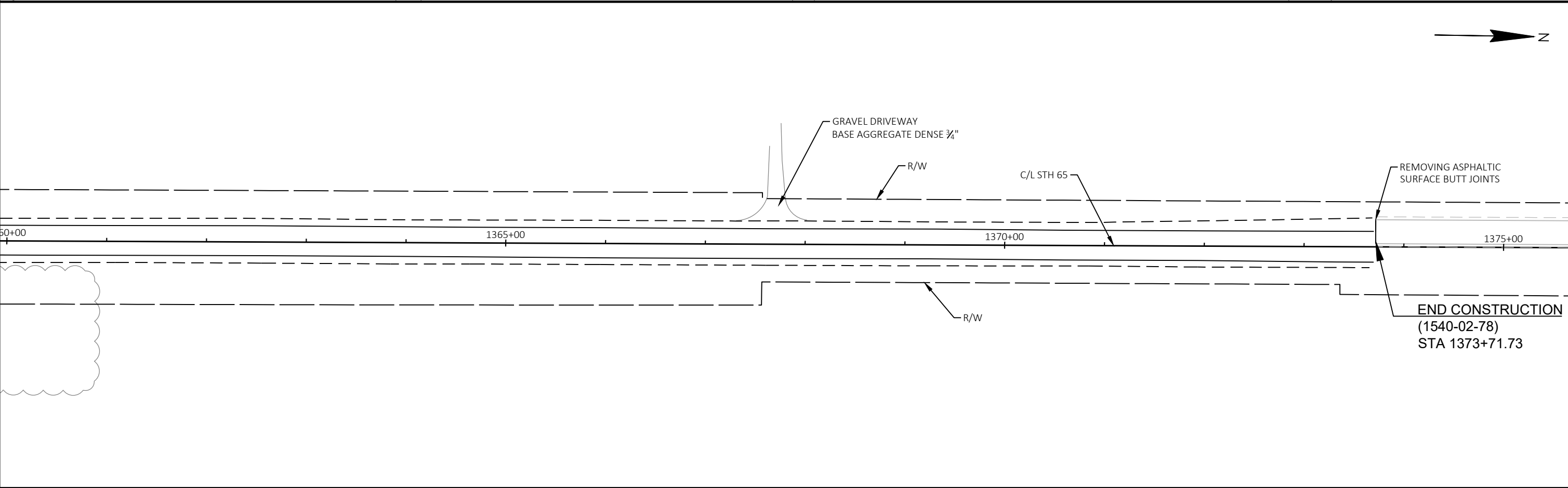
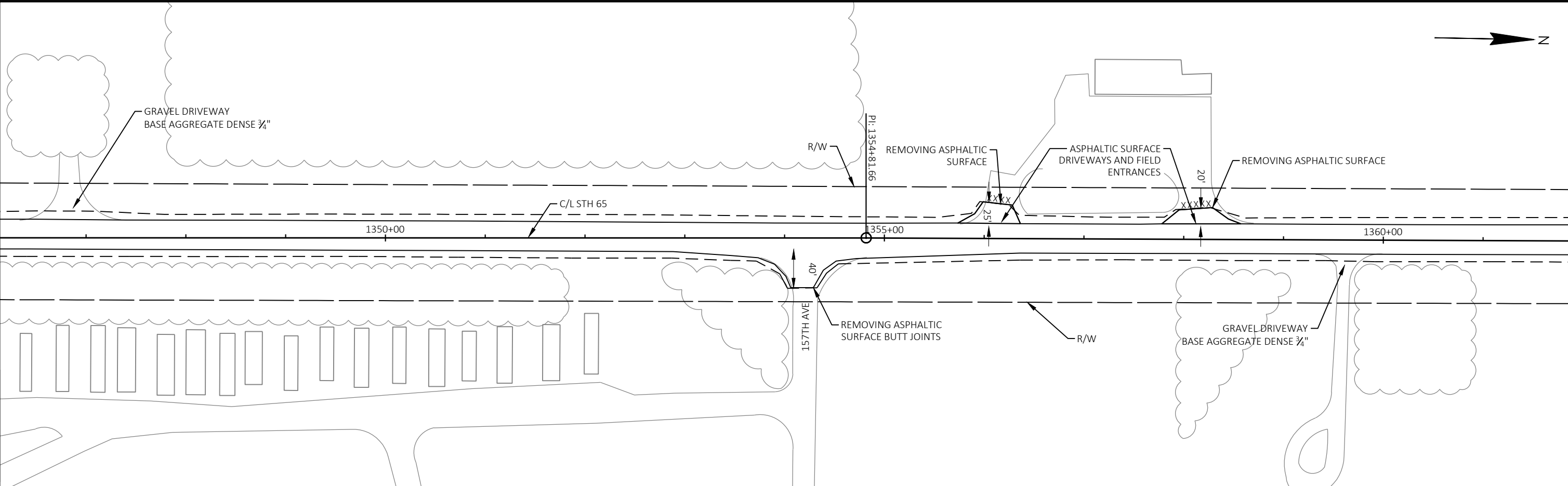






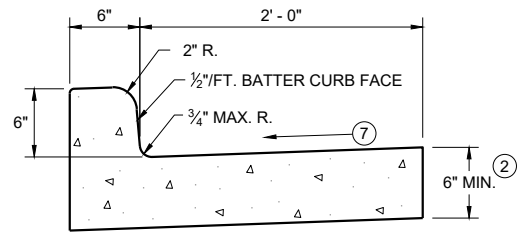




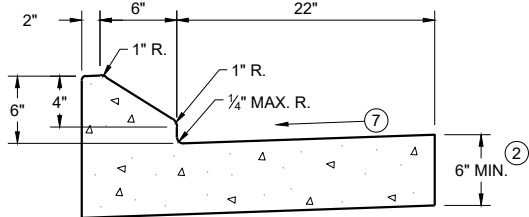


Standard Detail Drawing List

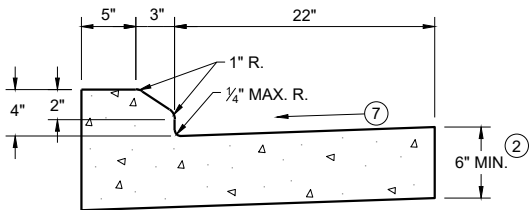
08D01-23A	CONCRETE CURB & GUTTER
08D01-23B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D04-07	CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES
08D22-01	DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
08E15-01	CULVERT PIPE CHECK
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F04-08	JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL
08F08-02	STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED CROSS DRAINS
13A11-04A	CENTERLINE RUMBLE STRIPS - ASPHALT
13A11-04D	CENTERLINE RUMBLE STRIPS - INTERSECTIONS, DRIVEWAYS, BRIDGES, RAILROADS
13C19-03	HMA LONGITUDINAL JOINTS
14B15-11A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-11B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-11C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B24-09A	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-09B	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-09C	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B29-01	SAFETY EDGE
14B42-07A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-07D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-04A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-04C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-05A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05K	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-05L	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C04-05	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C07-15B	PAVEMENT MARKING WORDS
15C07-15C	PAVEMENT MARKING ARROWS
15C08-23A	PERMANENT LONGITUDINAL PAVEMENT MARKINGS
15C08-23B	TEMPORARY LONGITUDINAL PAVEMENT MARKING
15C08-23C	PAVEMENT MARKING (TURN LANES)
15C08-23D	PAVEMENT MARKING (TURN LANES)
15C11-10B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15C12-09A	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C12-09B	TRAFFIC CONTROL, LANE CLOSURE WITH AUTOMATED FLAGGER ASSISTANCE DEVICE
15C18-08A	MEDIAN ISLAND MARKING PAVEMENT MARKINGS
15C18-08B	MEDIAN ISLAND MARKING MEDIAN ISLAND NOSE
15C19-08A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15C33-04	STOP LINE AND CROSSWALK PAVEMENT MARKING
15C35-06A	PAVEMENT MARKING (INTERSECTIONS)
15D28-04	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D39-02	TRAFFIC CONTROL, DROP-OFF SIGNING
15D44-02	TRAFFIC CONTROL, SIGNING ON ROADWAYS WITH MILLED SURFACES
15D51-01	TRAFFIC CONTROL, MOBILE OPERATIONS ON AN UNDIVIDED ROADWAY



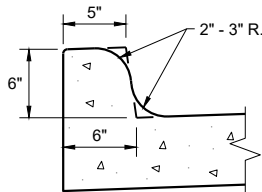
TYPES A^① & D



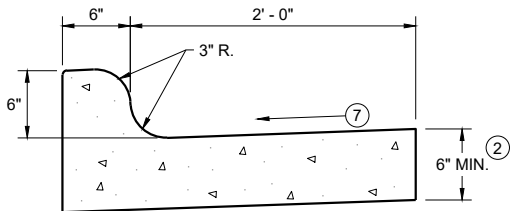
6" SLOPED CURB TYPES G^① & J



4" SLOPED CURB TYPES G^① & J

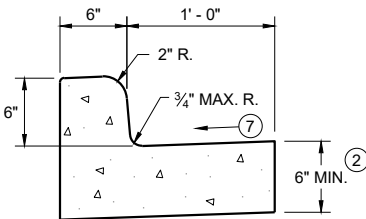


TYPES K^① & L
(OPTIONAL CURB SHAPE)



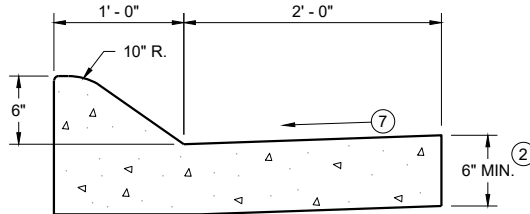
TYPES K^① & L

CONCRETE CURB AND GUTTER 30"

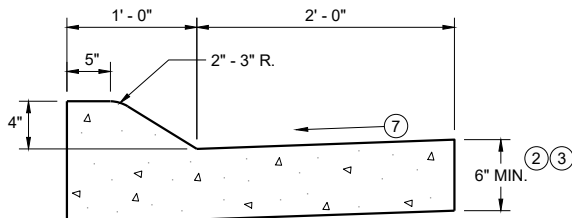


TYPES A^① & D

CONCRETE CURB AND GUTTER 18"

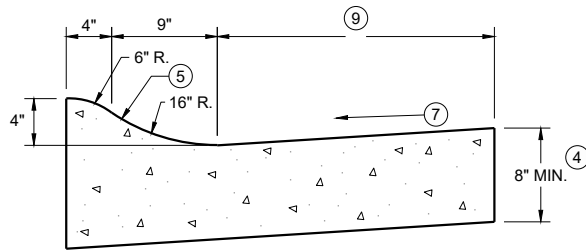


6" SLOPED CURB TYPES A^① & D



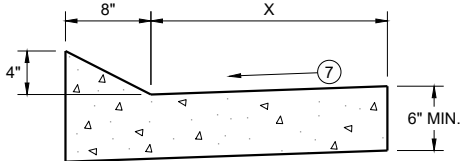
4" SLOPED CURB TYPES A^① & D

CONCRETE CURB AND GUTTER 36"



4" SLOPED CURB TYPES R^① & T

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

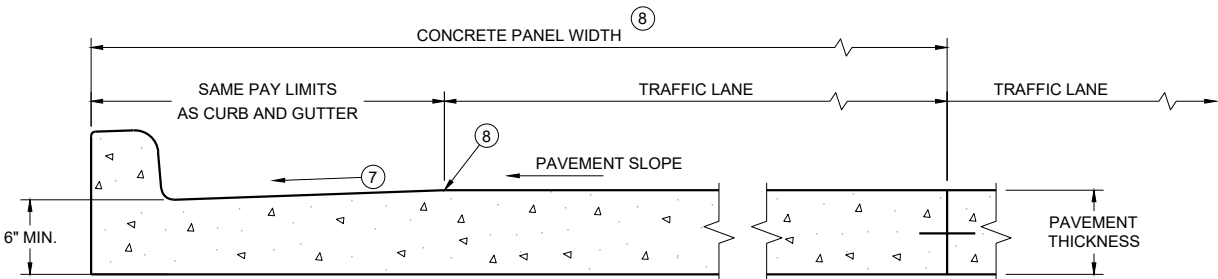


TYPES TBT & TBTT^①

CONCRETE CURB AND GUTTER

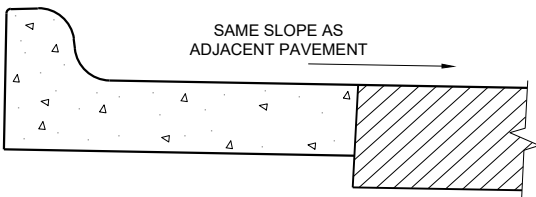
PAVEMENT THICKNESS
AND MAXIMUM CONCRETE
PANEL WIDTH TABLE

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



PARTIAL SECTION OF PAVEMENT
WITH INTEGRAL CURB AND GUTTER

* BIKE LANE IS NOT SHOWN



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

GENERAL NOTES

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

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

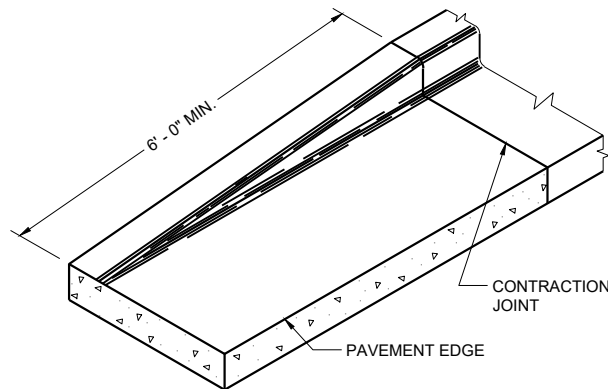
INTEGRAL CURB AND GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB AND GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE.

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

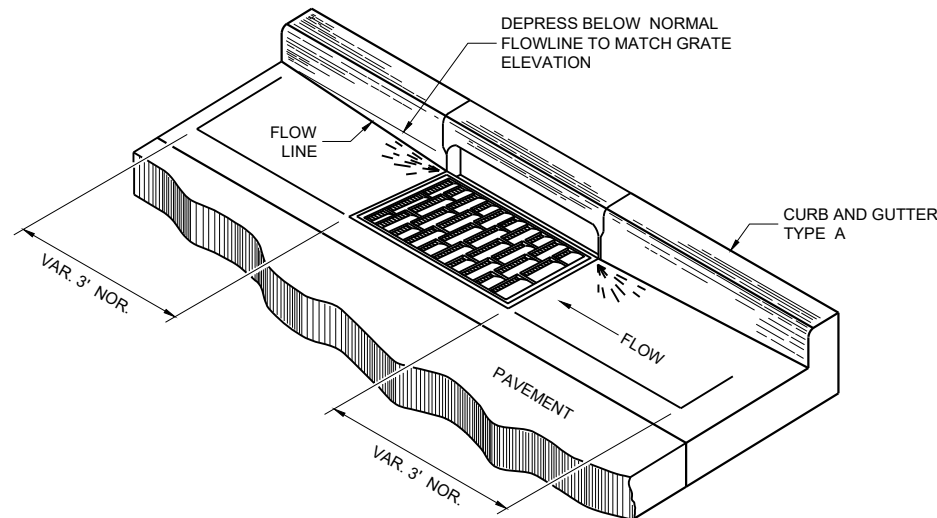
- ① TIE BARS ARE REQUIRED FOR CURB AND GUTTERS TYPES A, G, K, R, AND TBTT.
- ② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ③ USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.
- ④ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.
- ⑤ UNLESS OTHERWISE NOTED, FOR STAKING PURPOSES THE FACE OF CURB IS 6" FROM THE BACK OF CURB.
- ⑥ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.
- ⑦ USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
- ⑧ INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.
- ⑨ CONCRETE CURB AND GUTTER 4-INCH SLOPED 30-INCH TYPE "R" AND "T" = 17 INCHES
CONCRETE CURB AND GUTTER 4-INCH SLOPED 36-INCH TYPE "R" AND "T" = 23 INCHES

CONCRETE CURB AND GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

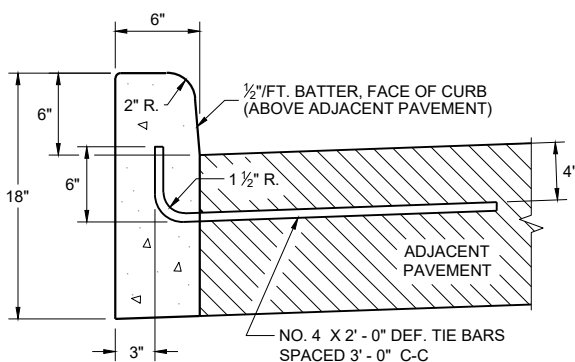


END SECTION CURB AND GUTTER

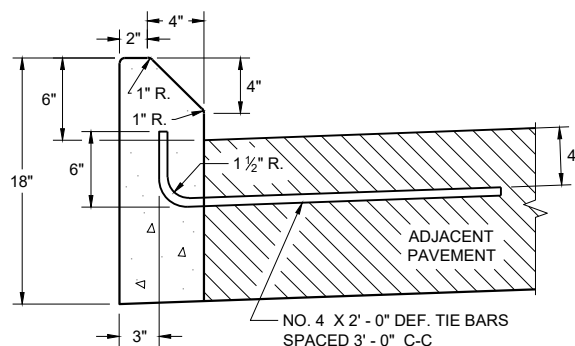


DETAIL OF CURB AND GUTTER AT INLETS

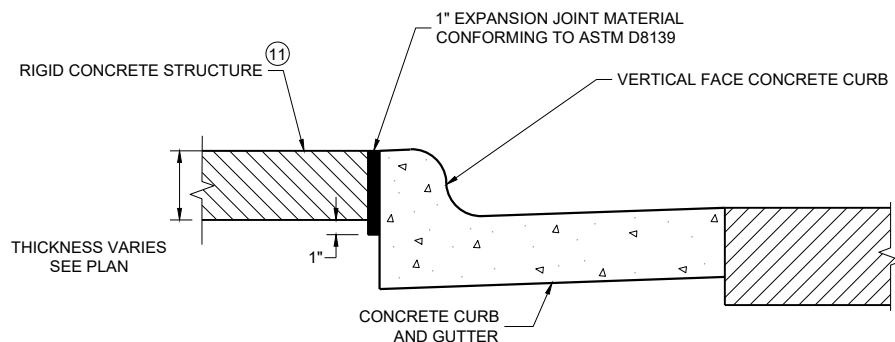
(TYPICAL H INLET COVER SHOWN)



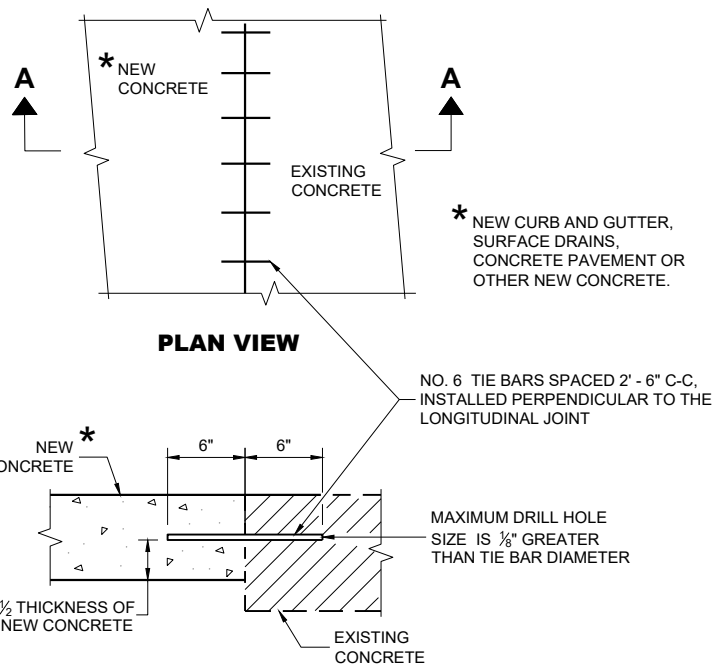
TYPES A^① & D



TYPES G^① & J
CONCRETE CURB



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



SECTION A - A
TIE BARS DRILLED INTO EXISTING PAVEMENT

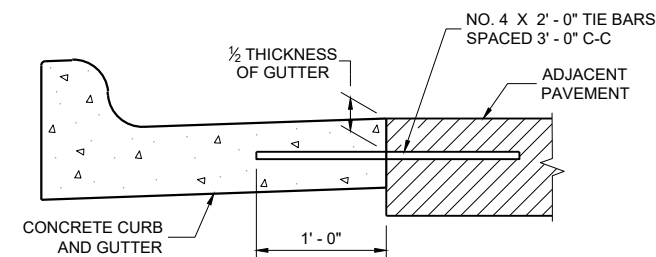
GENERAL NOTES

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

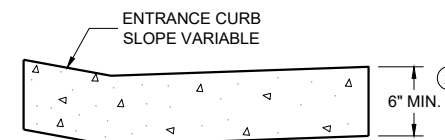
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

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



TYPICAL TIE BAR LOCATION^①



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

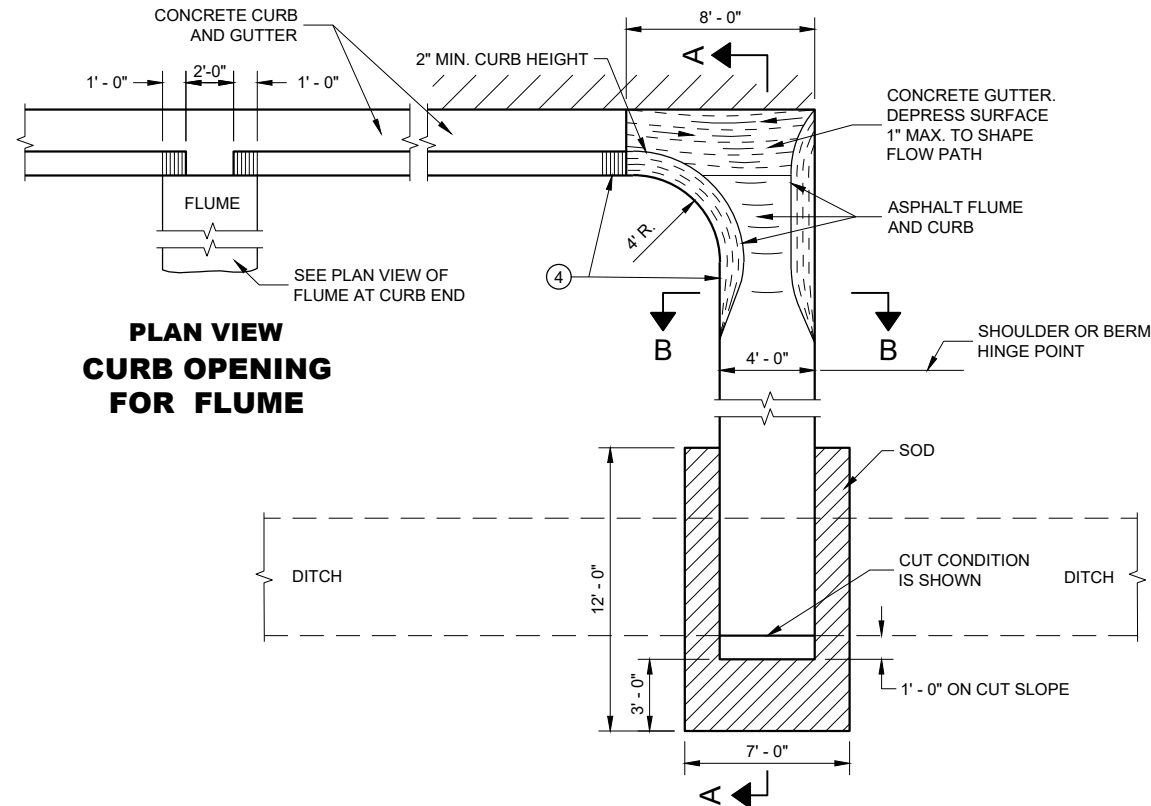
CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

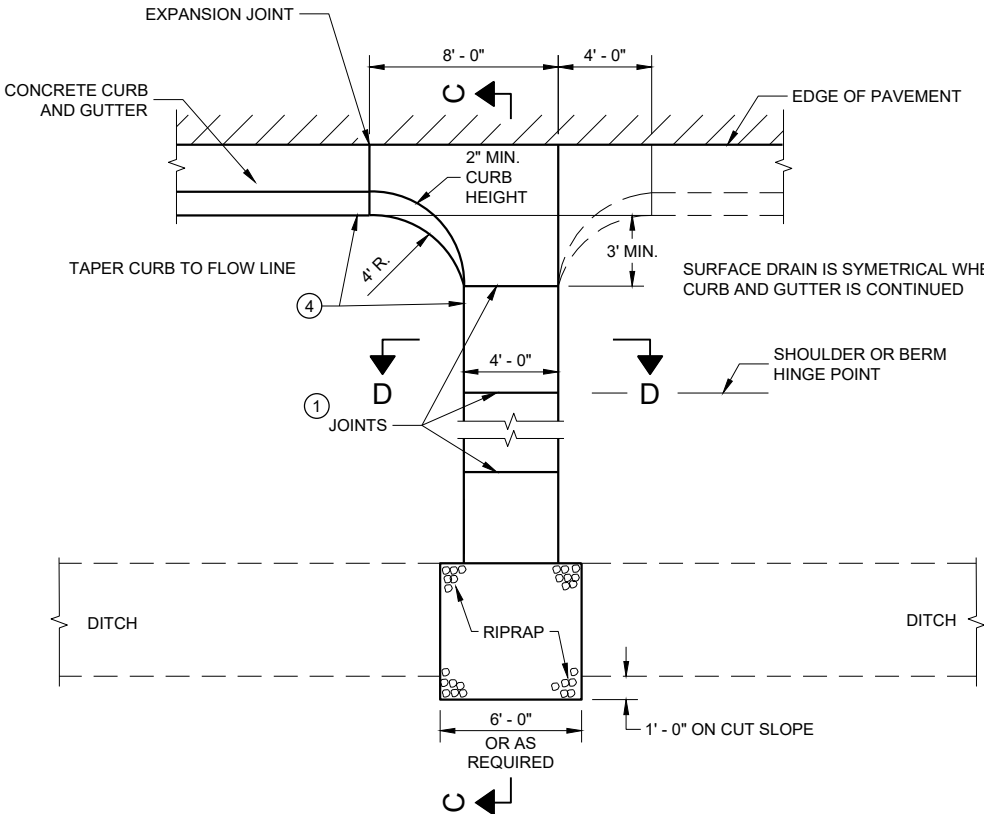
NOTE: TAPER CURB ENDS TO GUTTER IN 1' - 0"

ASPHALTIC FLUME



PLAN VIEW
CURB OPENING
FOR FLUME

PLAN VIEW
FLUME AT CURB END



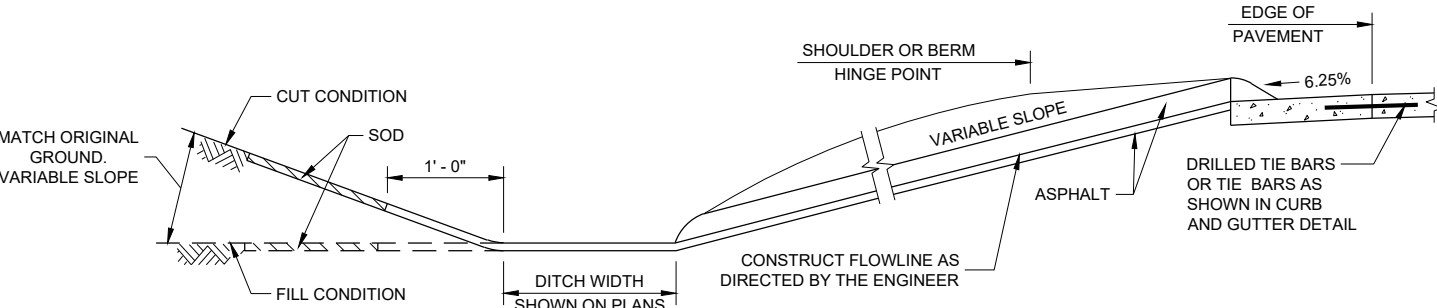
PLAN VIEW
CONCRETE SURFACE DRAIN

GENERAL NOTES

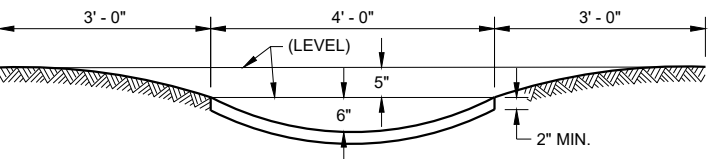
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

4" X 4" - W3.0 X W3.0 CONCRETE REINFORCEMENT SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

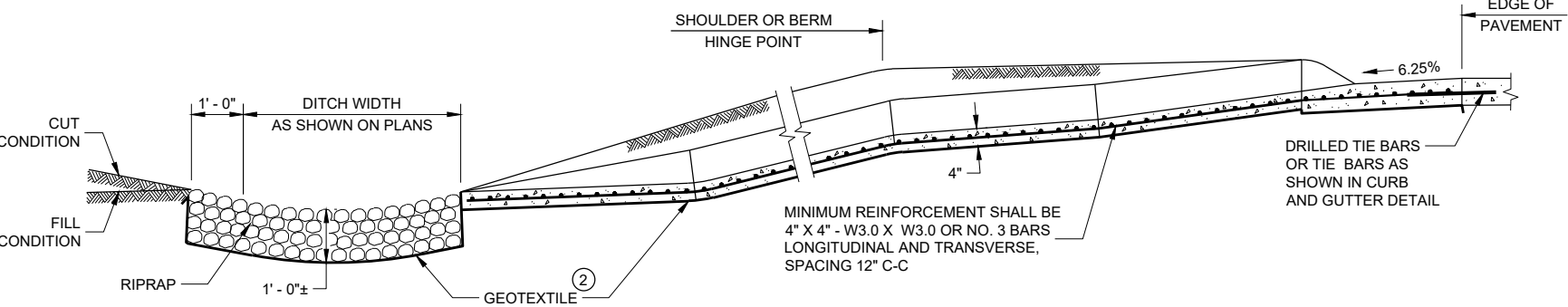
- ① JOINTS SHALL BE 1/8" TO 1/4" WIDE BY 1 1/2" DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.
- ② GEOTEXTILE TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.
- ③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED.
- ④ ANGLE OF FLUME IN RELATION TO BACK OF CURB TO BE CONSTRUCTED PER THE PLAN DETAILS OR AS DIRECTED BY THE ENGINEER. ANGLE OF FLUME MAY BE OTHER THAN 90 DEGREES AS SHOWN.



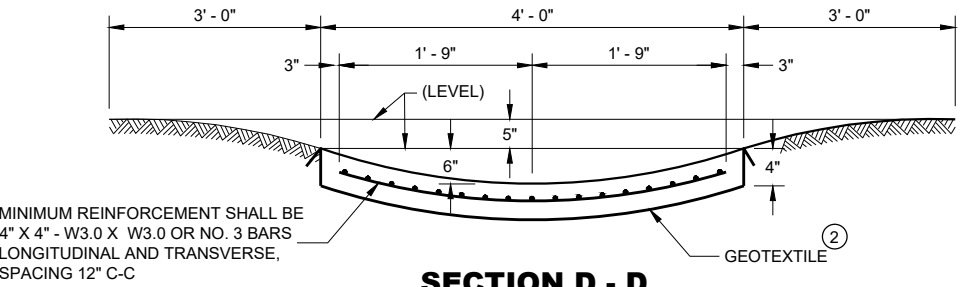
SECTION A - A



SECTION B - B



SECTION C - C

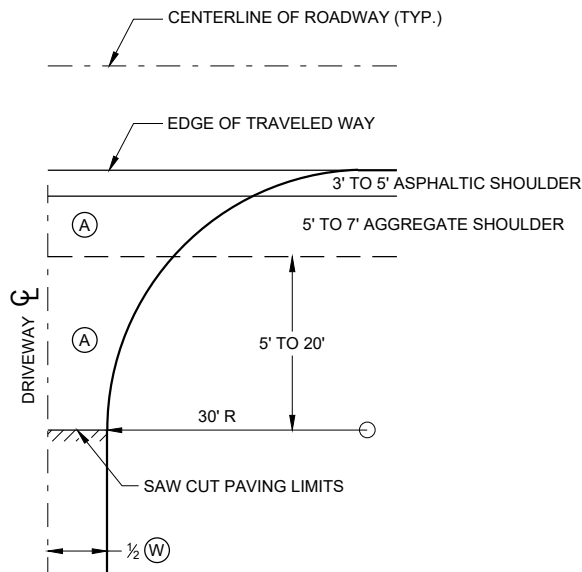


SECTION D - D

CONCRETE SURFACE
DRAINS AND
ASPHALTIC FLUMES

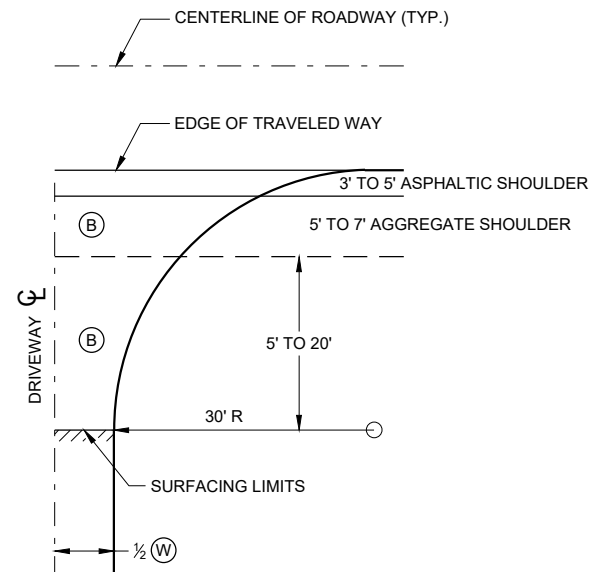
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT ENGINEER
100
FHWA

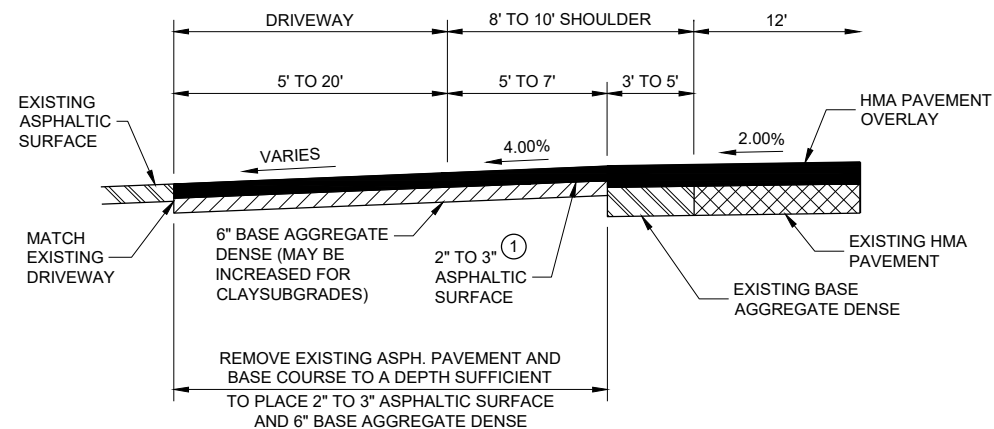


**PLAN VIEW
HALF SECTION**

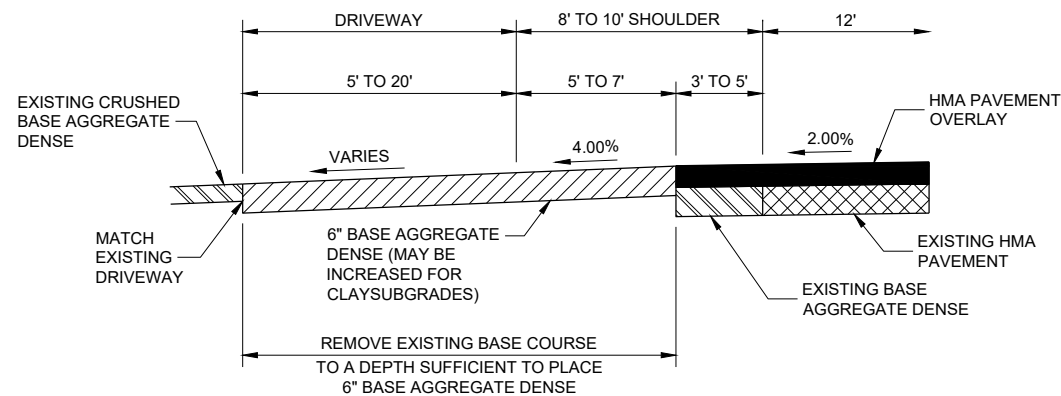
- (A) : PAID FOR AS ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES. (TON)
- (B) : PAID FOR AS BASE AGGREGATE DENSE 1 1/4" (TON)
- (W) : DRIVEWAY WIDTH 16' MIN. - 24' MAX.



**PLAN VIEW
HALF SECTION**



**PROFILE VIEW
RURAL ENTRANCE
WITH ASPHALTIC SURFACE
RESURFACING PROJECTS**



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

GENERAL NOTES

- ① DESIGN WILL DETERMINE FINAL DRIVEWAY ASPHALTIC THICKNESS BASED ON TYPE OF USAGE AND LOADINGS.

DRIVEWAYS WITHOUT CURB AND GUTTER RESURFACING PROJECTS RURAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December 2016 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER

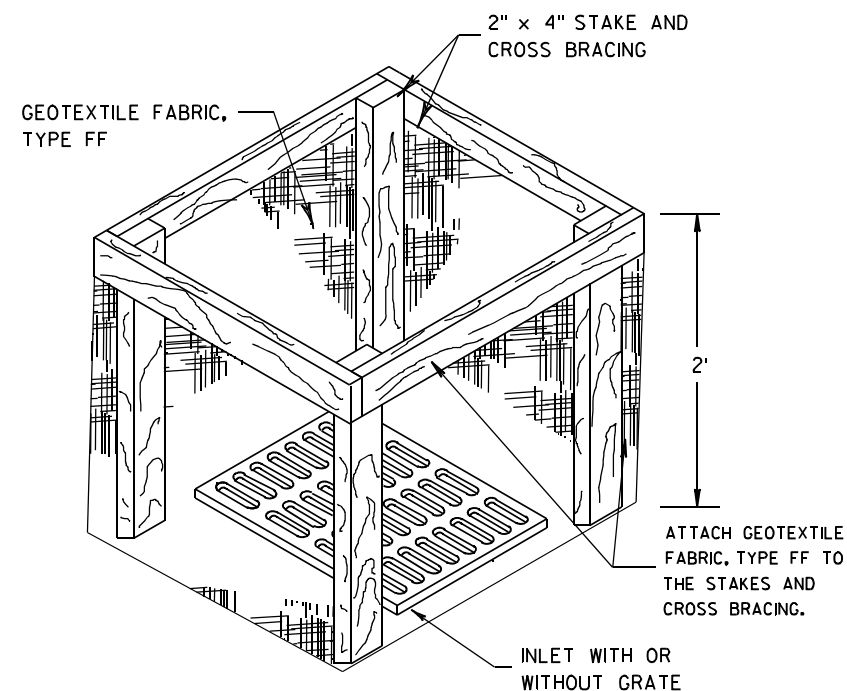
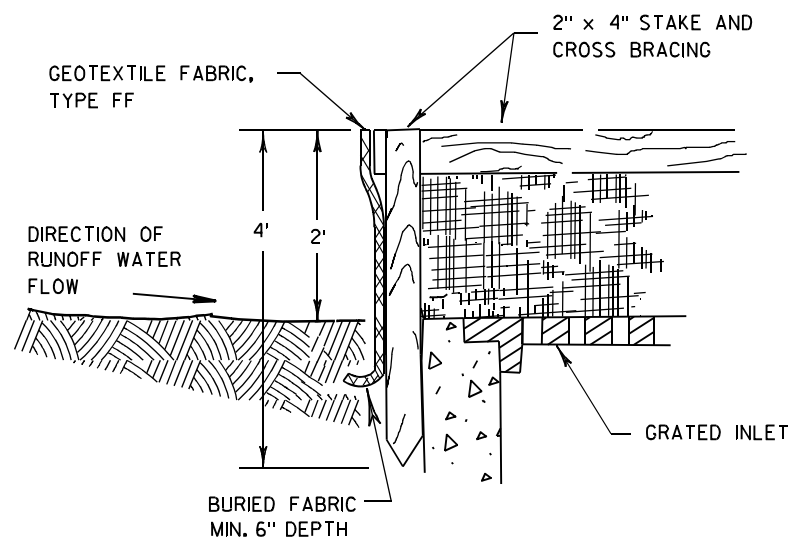
FHWA



- 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 1½" X 1½" 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.



SILT FENCE
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION
APPROVED <u>4-29-05</u> DATE <u>/S/ Beth Cannata</u> CHIEF ROADWAY DEVELOP <u>102</u> ENGINEER FHWA



INLET PROTECTION, TYPE A

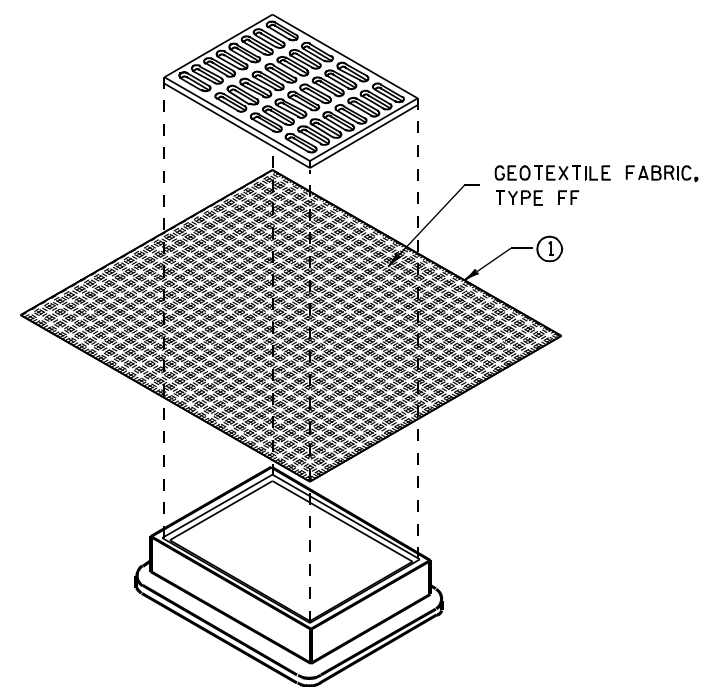
GENERAL NOTES

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

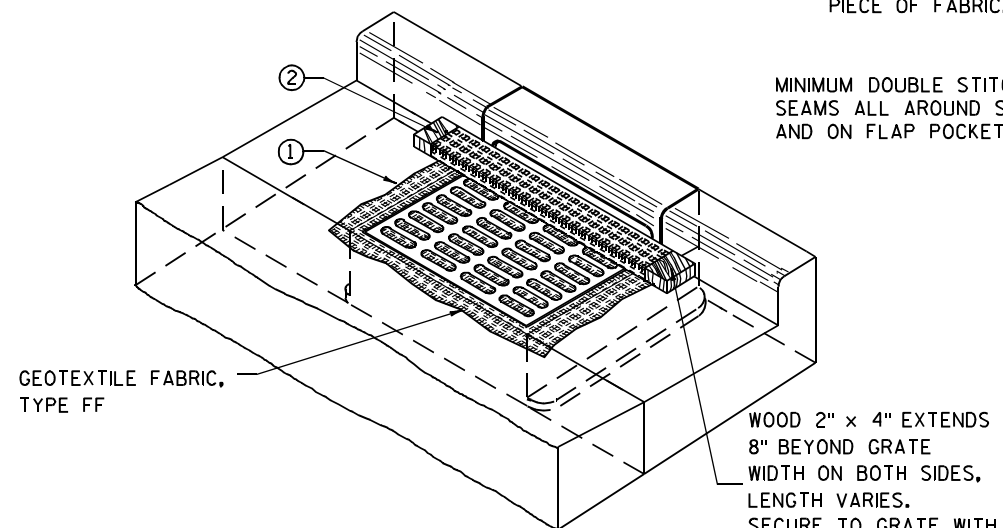
WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

- ① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- ② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
- ③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.



**INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)**

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



INLET PROTECTION, TYPE C (WITH CURB BOX)

INSTALLATION NOTES

TYPE B & C

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

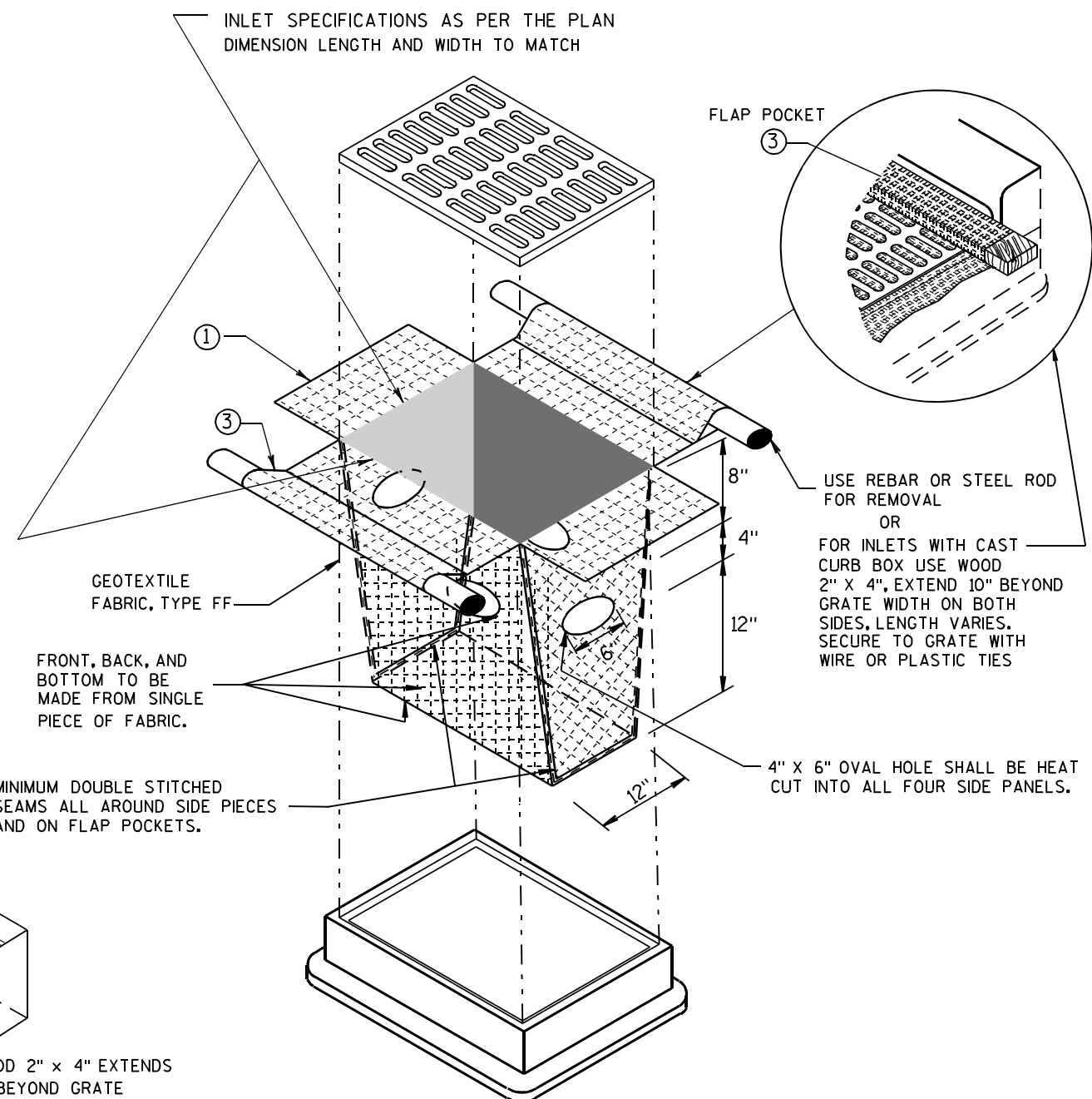
THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

TYPE D

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLower THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.



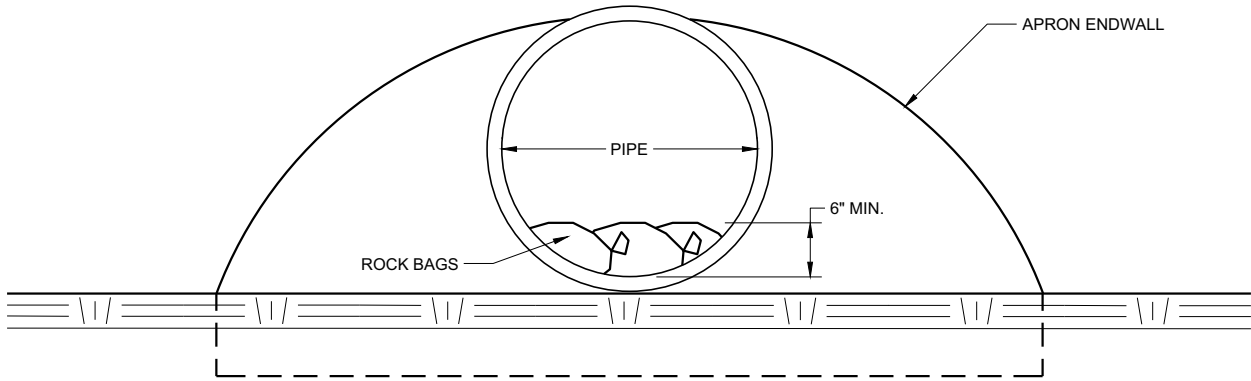
INLET PROTECTION, TYPE D

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE ②)

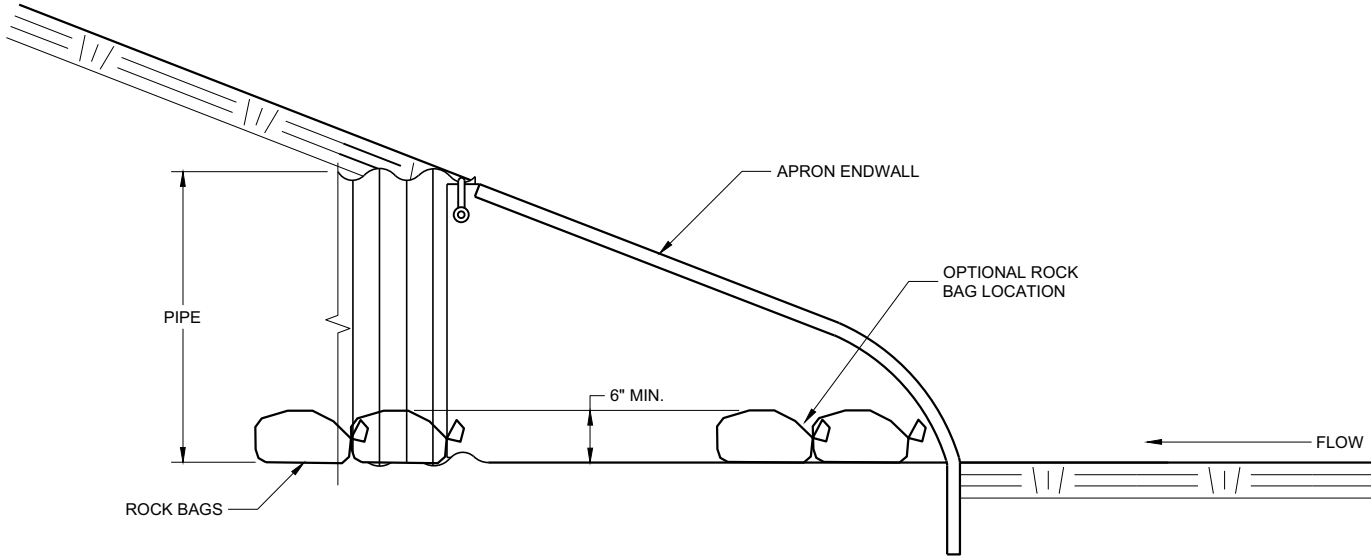
**INLET PROTECTION
TYPE A, B, C, AND D**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/16/02 /S/ Beth Connolly
DATE 103
FHWA CHIEF ROADWAY DEVELOPMENT ENGINEER



END VIEW



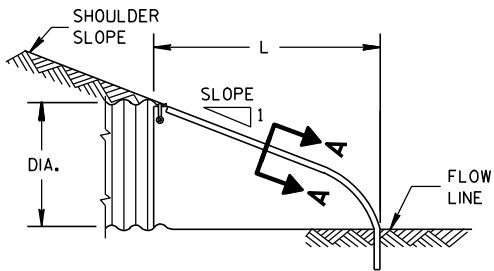
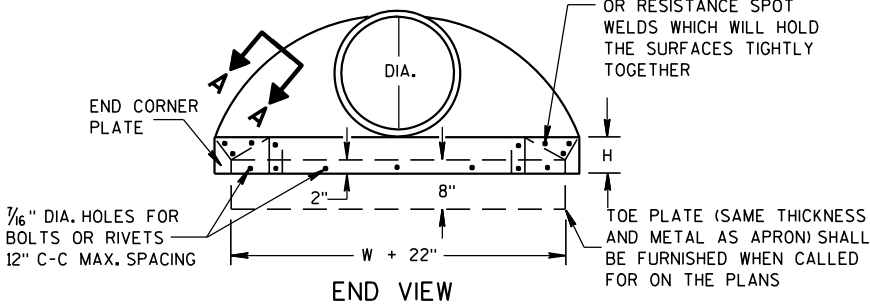
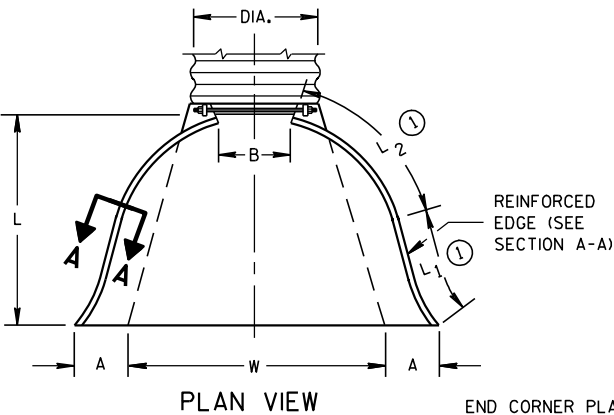
SIDE VIEW

CULVERT PIPE CHECK
(INSTALL ON INLET END ONLY)

CULVERT PIPE CHECK			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
APPROVED			
May 2019	/S/ Daniel Schave		
DATE	EROSION CONTROL ENGI	104	
FHWA			

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

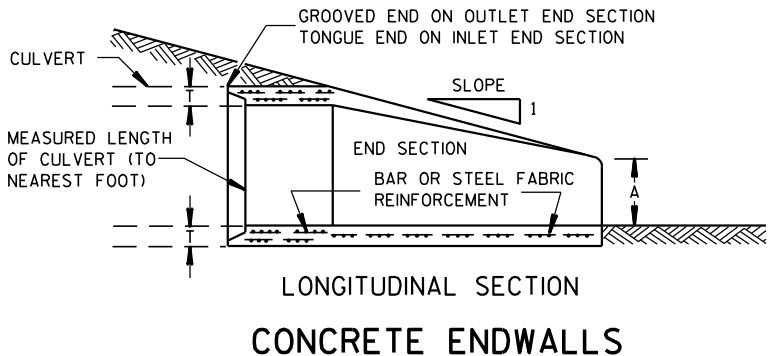
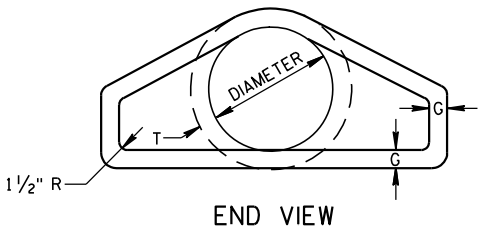
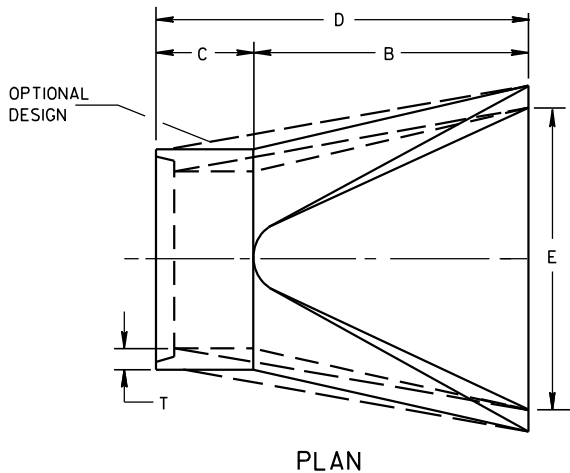
* EXCEPT CENTER PANEL
SEE GENERAL NOTES



SIDE ELEVATION
METAL ENDWALLS

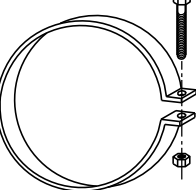
REINFORCED CONCRETE APRON ENDWALLS								
PIPE DIA. (IN.)	DIMENSIONS (Inches)							APPROX. SLOPE
	T	A	B	C	D	E	G	
12	2	4	24	48 ¹ / ₈	72 ¹ / ₈	24	2	3 to 1
15	2 ¹ / ₄	6	27	46	73	30	2 ¹ / ₄	3 to 1
18	2 ¹ / ₂	9	27	46	73	36	2 ¹ / ₂	3 to 1
21	2 ³ / ₄	9	36	37 ¹ / ₂	73 ¹ / ₂	42	2 ³ / ₄	3 to 1
24	3	9 ¹ / ₂	43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

*MINIMUM
**MAXIMUM

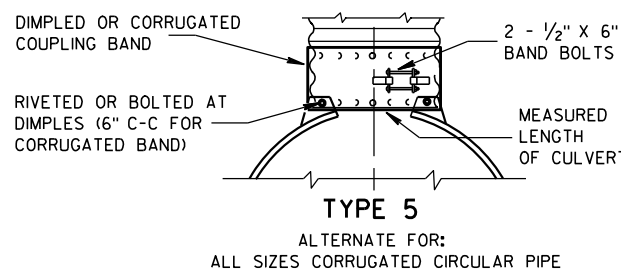
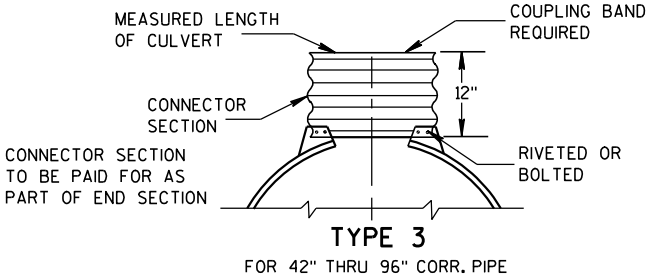
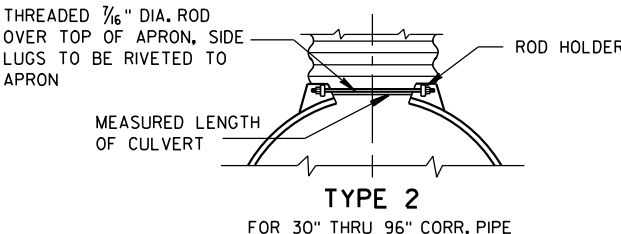
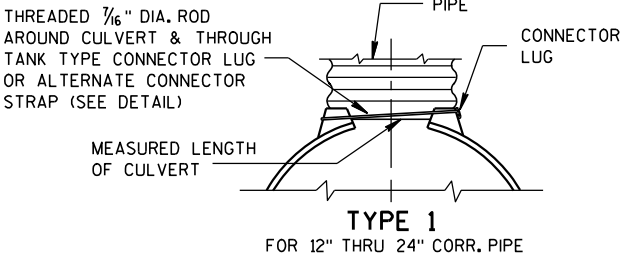


LONGITUDINAL SECTION
CONCRETE ENDWALLS

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



ALTERNATE FOR TYPE 1 CONNECTION
END SECTION CONNECTOR STRAP



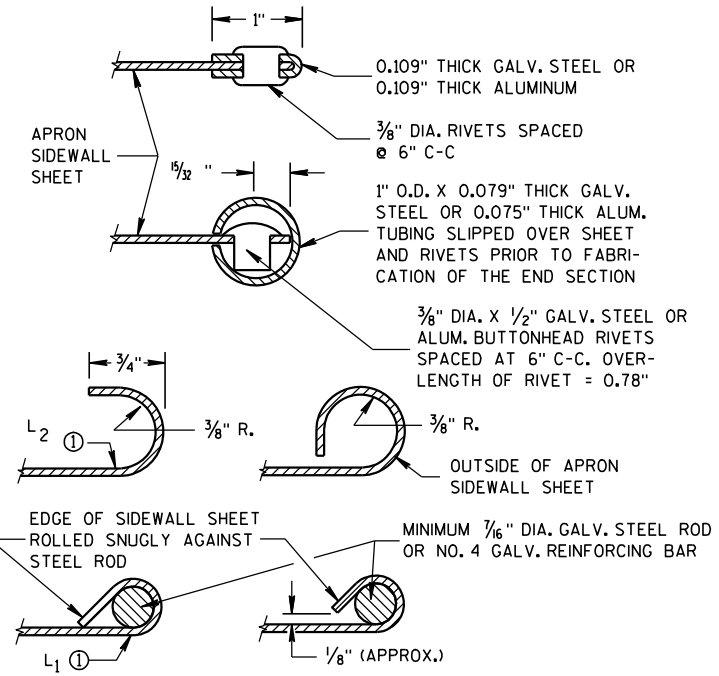
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

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

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

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

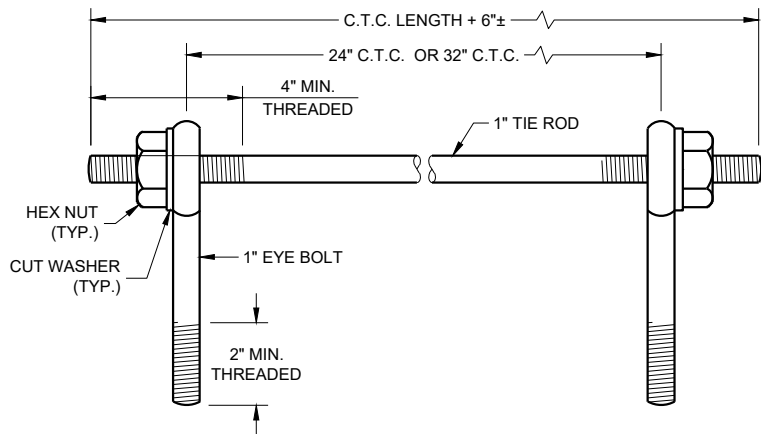
WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

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

APRON ENDWALLS FOR
CULVERT PIPE

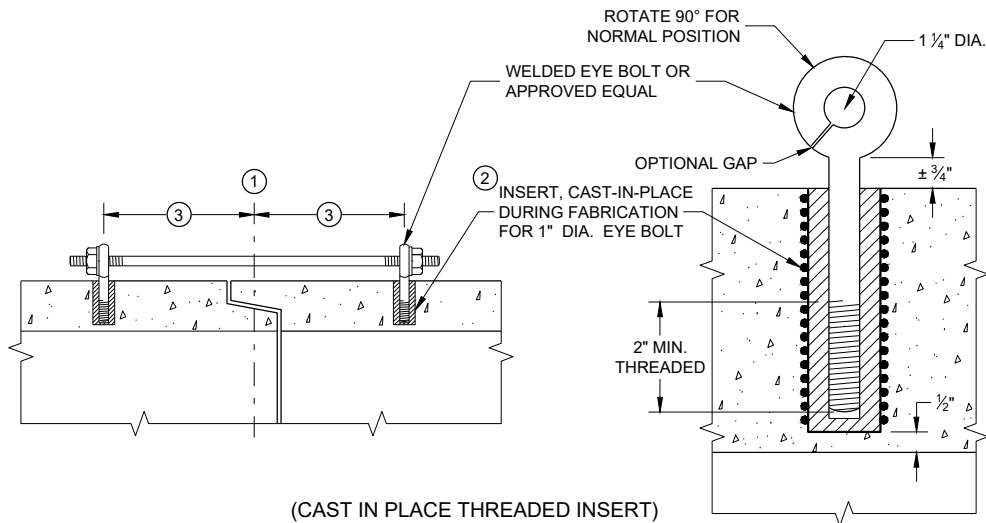
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/30/94
DATE
/S/ Rory L. Rhin...
CHIEF ROADWAY DEVELOP 105
NEER
FHWA



EYE BOLTS AND TIE ROD

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



(CAST IN PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

GENERAL NOTES

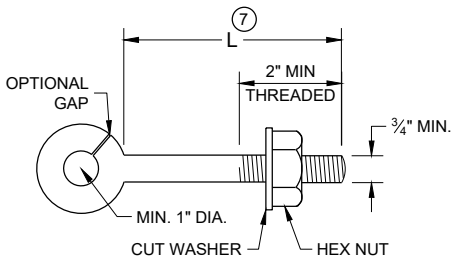
DETAILS OF CONSTRUCTION, MATERIALS, AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

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

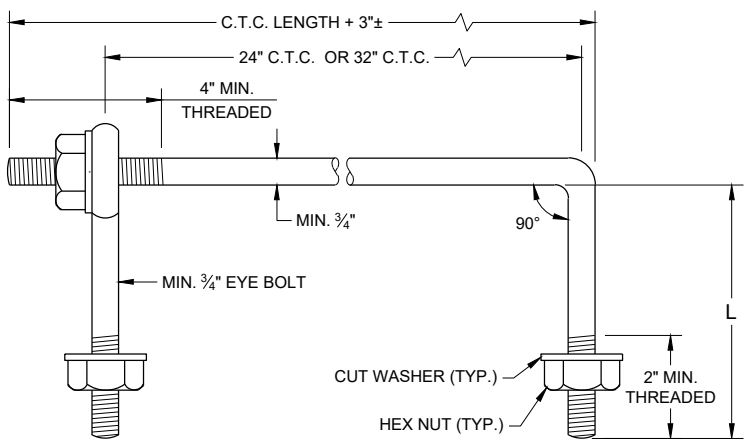
JOINT TIES TO BE HOT-DIP GALVANIZED PER ASTM A 153.

- 1 CENTER LINE OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.
- 2 THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.
- 3 HOLES SHALL BE CAST-IN-PLACE OR DRILLED PER THE APPLICABLE DETAIL, AND EQUAL DISTANCE FROM THE CENTERLINE OF THE JOINT.
- 4 BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.
- 5 OPENING TO BE ROD DIAMETER PLUS 1 INCH.
- 6 LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.
- 7 EYE BOLT LENGTH DETERMINED BY WALL THICKNESS, BELL THICKNESS AND BOLT PROJECTION INSIDE PIPE.

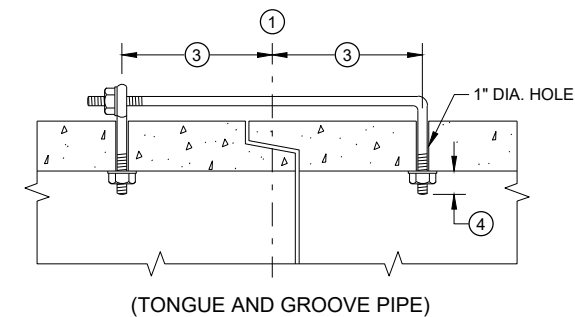


EYE BOLT 7

NOTE: TWO EYE BOLTS MAY BE USED WITH A 30" OR 38" LONG THREADED ROD IN LIEU OF THE 90° BENT TIE ROD.



EYE BOLT AND TIE ROD

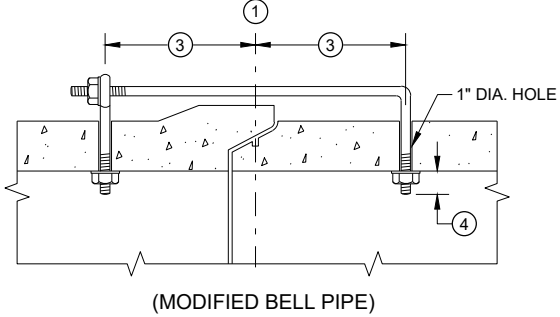


(TONGUE AND GROOVE PIPE)

LONGITUDINAL SECTION

(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 2)

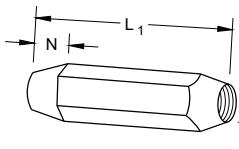


(MODIFIED BELL PIPE)

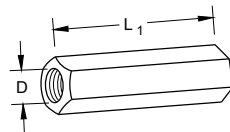
ADJUSTABLE TIE ROD TABLE

PIPE DIAMETER	TIE ROD DIAMETER	D	L ₁	N
12 - 60	5/8	5/8	5	1/2
66 - 84	3/4	3/4	5	1/2
90 - 144	1	1	7	1 1/16

DIMENSIONS SHOWN ARE IN INCHES

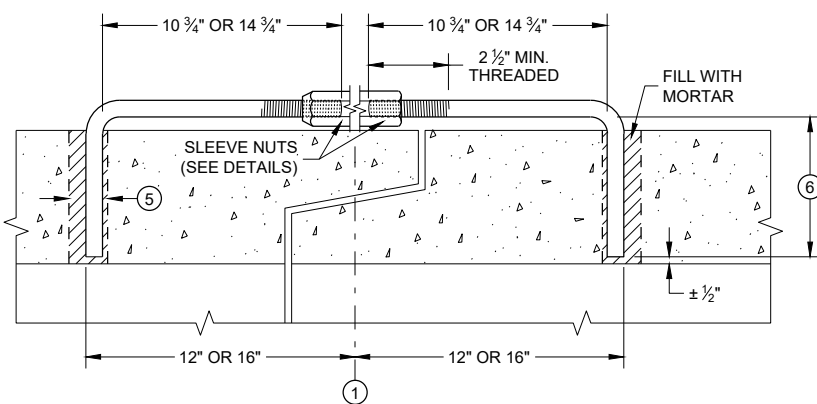


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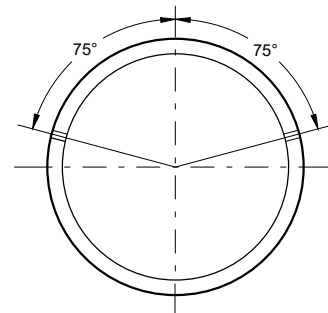
PLAIN

RIGHT AND LEFT THREADS
SLEEVE NUTS



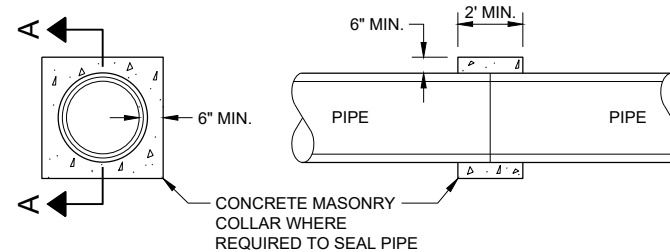
LONGITUDINAL SECTION

ADJUSTABLE TIE ROD (ALTERNATE NO. 3)



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

TRANSVERSE SECTION



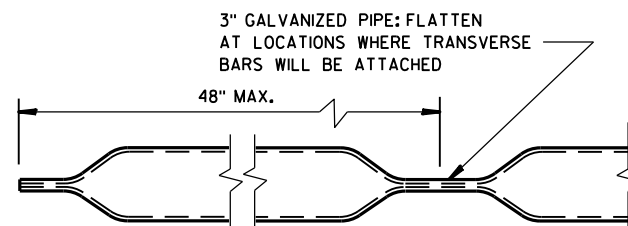
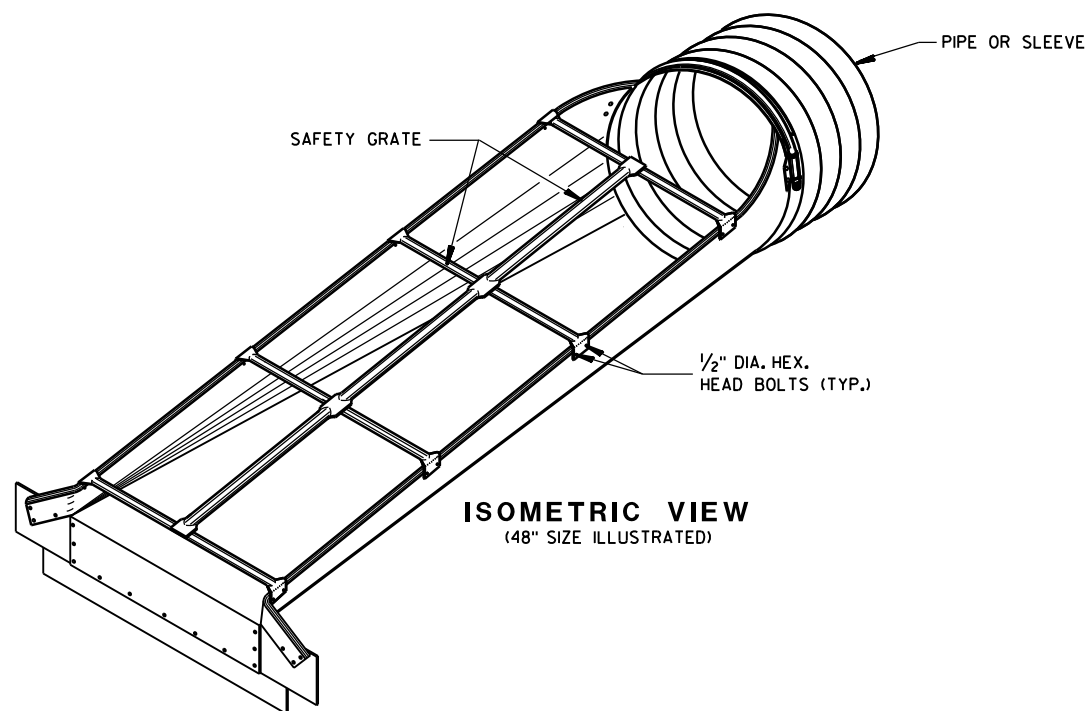
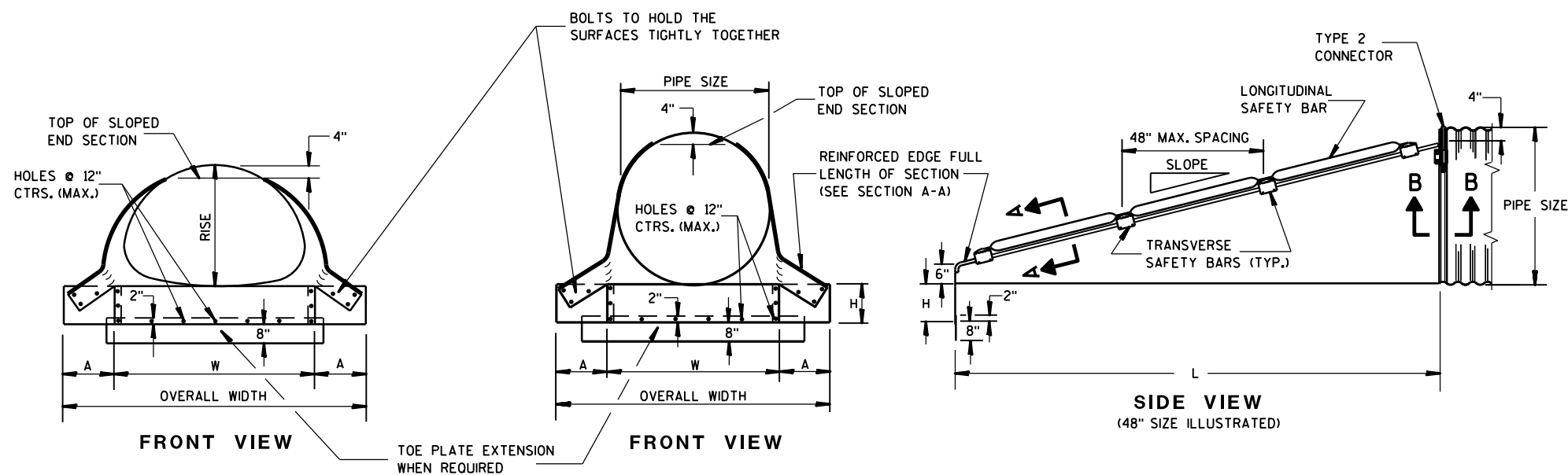
SECTION A - A

CONCRETE COLLAR DETAIL

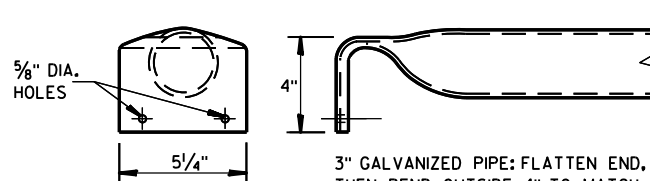
JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

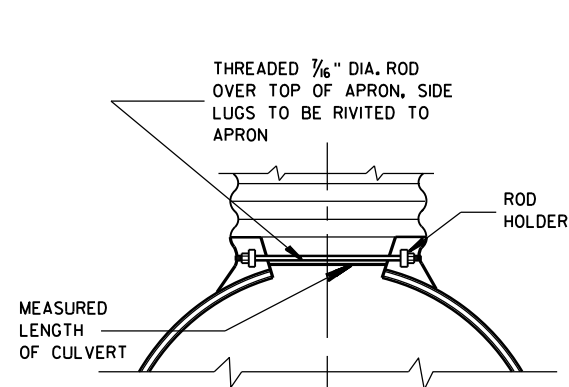
APPROVED
November 2021 /S/ Rodney Taylor
DATE ROADWAY STANDARDS DEVELOPMENT ENGINEER 106
FHWA



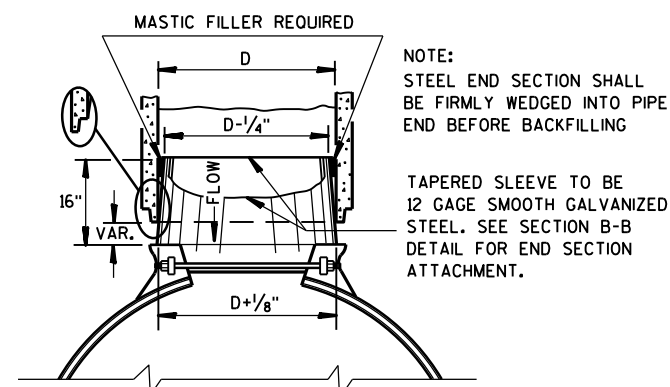
LONGITUDINAL SAFETY BAR



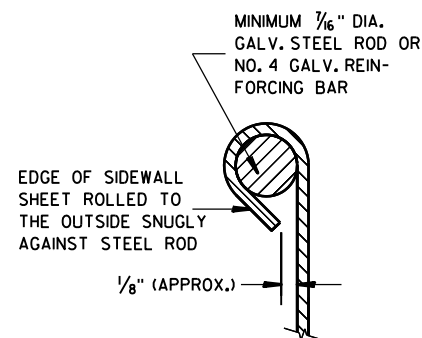
TRANSVERSE SAFETY BAR



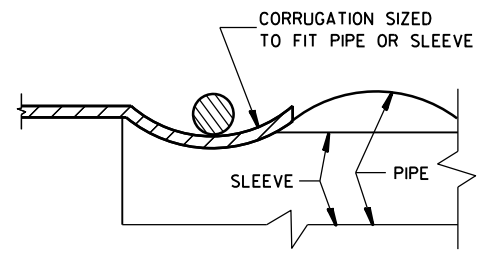
TYPE 2 CONNECTOR DETAIL



STEEL ADAPTER SLEEVE FOR CONCRETE PIPE



SECTION A-A



SECTION B-B

GENERAL NOTES

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

SAFETY GRATES SHALL BE FABRICATED FROM 3-INCH DIAMETER GALVANIZED PIPE MEETING THE REQUIREMENTS OF ASTM A-53, GRADE B, SCHEDULE 40 OR APPROVED EQUAL. THE LONGITUDINAL BAR SHALL BE WELDED TO THE TRANSVERSE BARS WHERE THE BARS CROSS. THE NUMBER OF TRANSVERSE BARS REQUIRED WILL VARY DEPENDING ON THE LENGTH OF THE END SECTION.

SLOPED STEEL ENDWALLS LOCATED AT THE ENDS OF CONCRETE CULVERT PIPE SHALL BE FURNISHED WITH STEEL ADAPTER SLEEVES.

STEEL APRON ENDWALLS FOR CULVERT PIPE CROSS DRAINS

PIPE DIA. (IN.)	MIN. THICK. IN.	GAGE	DIMENSIONS (inches)				L DIMENSIONS			
			A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
36	.109	12	12	9	42	66	4:1	104	6:1	156
42	.109	12	16	12	48	80	4:1	128	6:1	192
48	.109	12	16	12	54	86	4:1	152	6:1	228
54	.109	12	16	12	60	92	4:1	176	6:1	264
60	.109	12	16	12	66	98	4:1	200	6:1	300

STEEL APRON ENDWALLS FOR PIPE ARCH SLOPED CROSS DRAINS

EQUIV. DIA. (IN.)	INCHES		MIN. THICK. IN.	GAGE	DIMENSIONS (inches)				L DIMENSIONS			
	SPAN	RISE			A	H	W	OVERALL WIDTH	SLOPE	LENGTH INCHES	SLOPE	LENGTH INCHES
30	35	24	.079	14	12	9	41	65	4:1	56	6:1	84
36	42	29	.109	12	12	9	48	72	4:1	76	6:1	114
42	49	33	.109	12	16	12	55	87	4:1	92	6:1	138
48	57	38	.109	12	16	12	63	95	4:1	112	6:1	168
54	64	43	.109	12	16	12	70	102	4:1	132	6:1	198
60	71	47	.109	12	16	12	77	109	4:1	148	6:1	222

STEEL APRON ENDWALLS FOR CULVERT PIPE AND PIPE ARCH SLOPED CROSS DRAINS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

6/5/2012

DATE

/S/ Jerry H. Zoagg

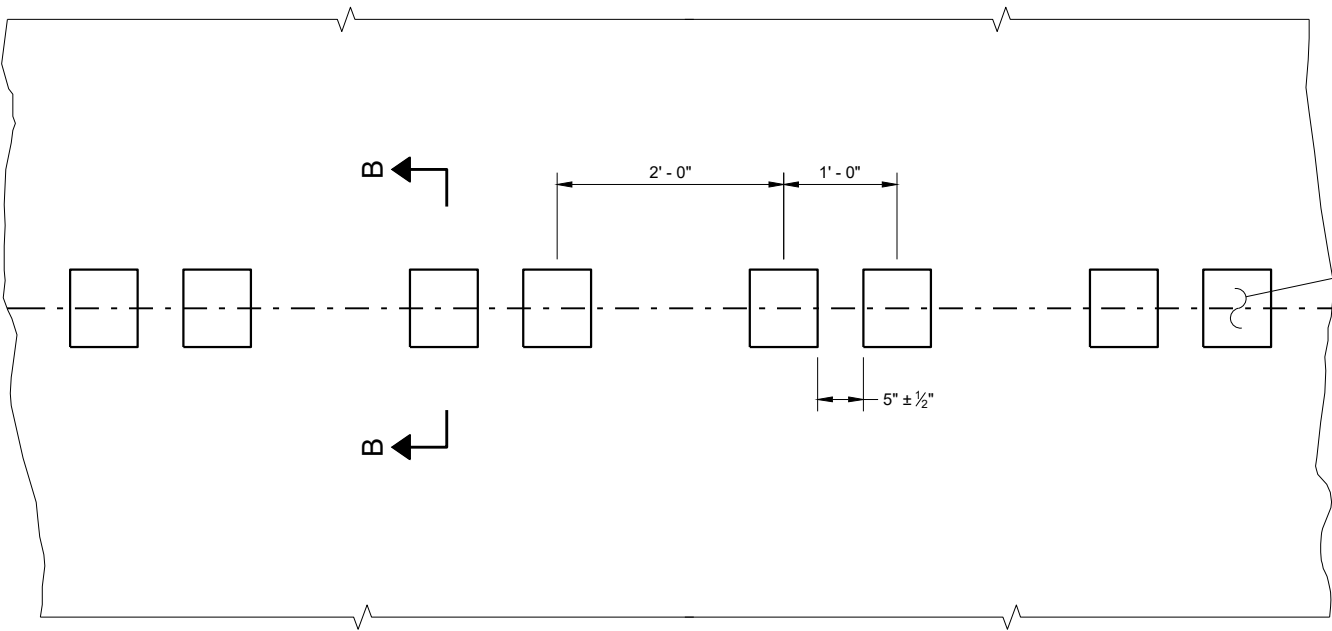
ROADWAY STANDARDS

FHWA

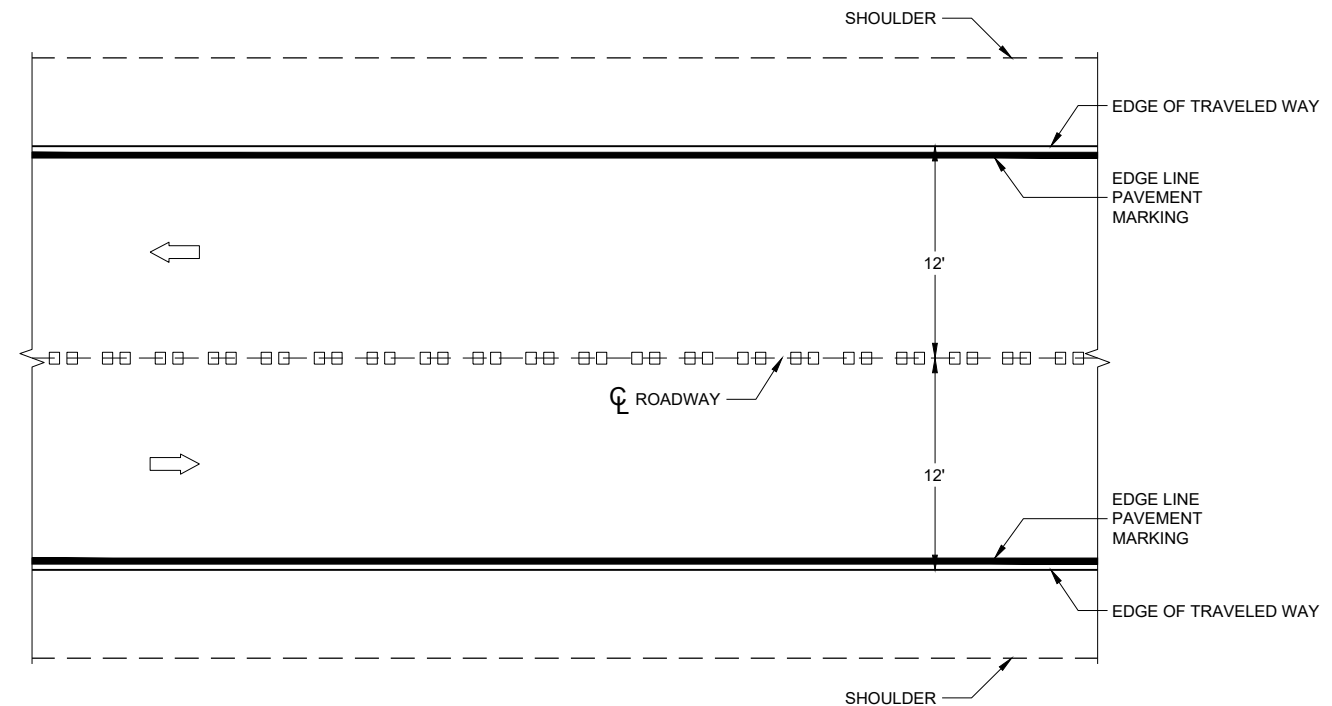
ENGINEER

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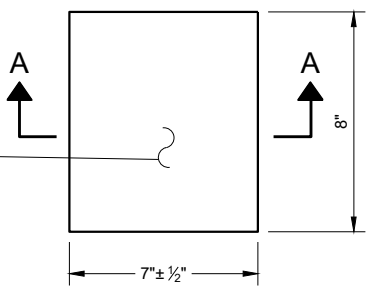


PLAN DETAIL VIEW

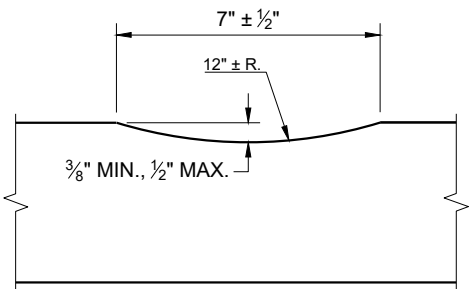


PLAN VIEW

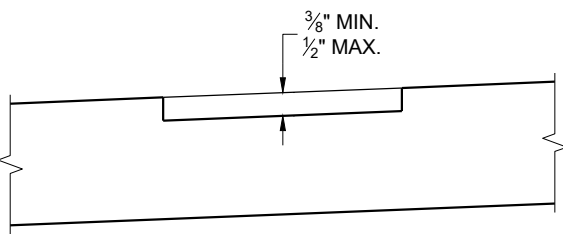
CENTERLINE RUMBLE STRIPS - ASPHALT



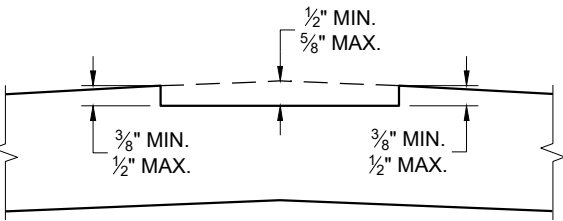
PLAN VIEW
(SINGLE GROOVE)



SECTION A - A



SECTION B - B
SUPERELEVATED ROADWAY

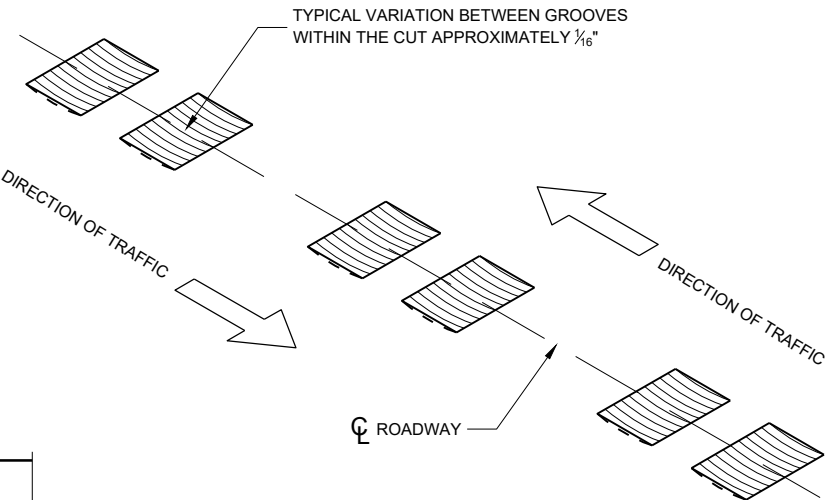


SECTION B - B
CROWNED ROADWAY

GENERAL NOTES

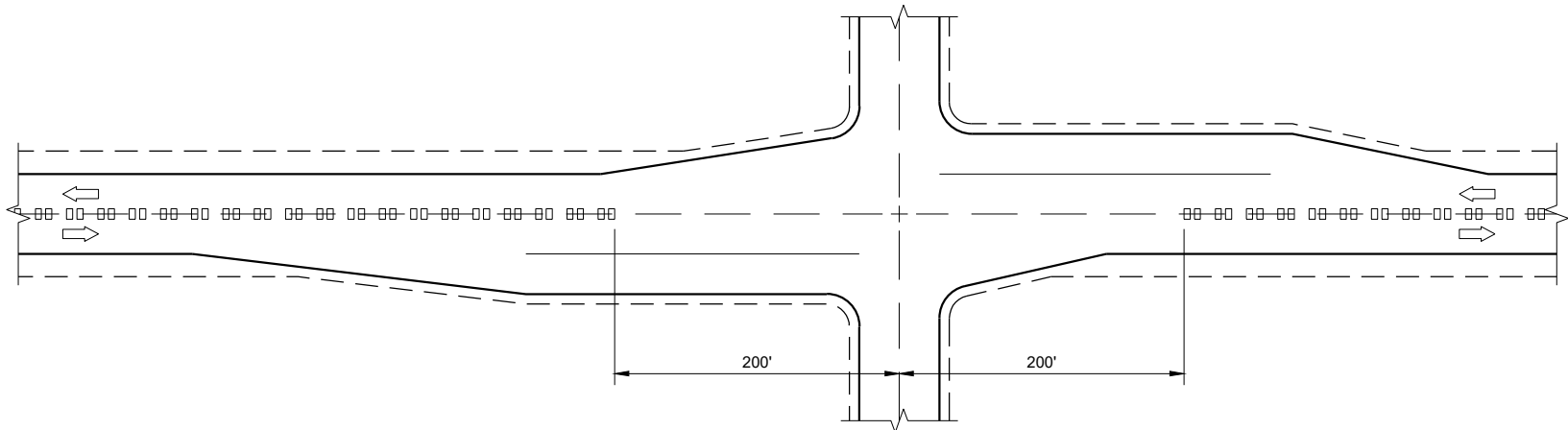
DO NOT MILL SHOULDER GROOVES THROUGH INTERSECTIONS, MARKED CROSSWALKS, NON-MOTORIZED PATH CROSSINGS, ETC. REFER TO SDD 13A11 SHEETS "d" AND "e".

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

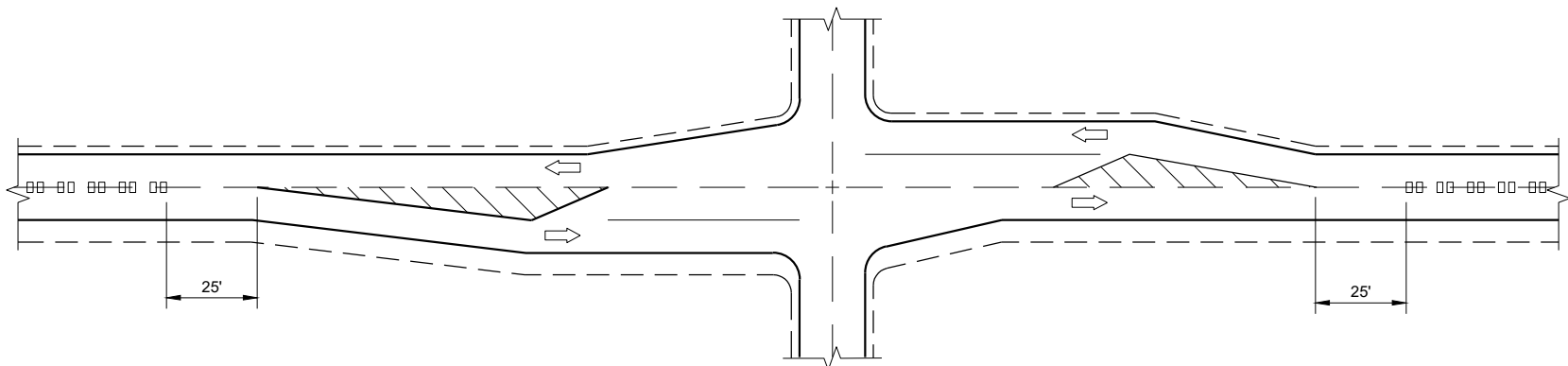


CENTERLINE RUMBLE STRIPS - ASPHALT

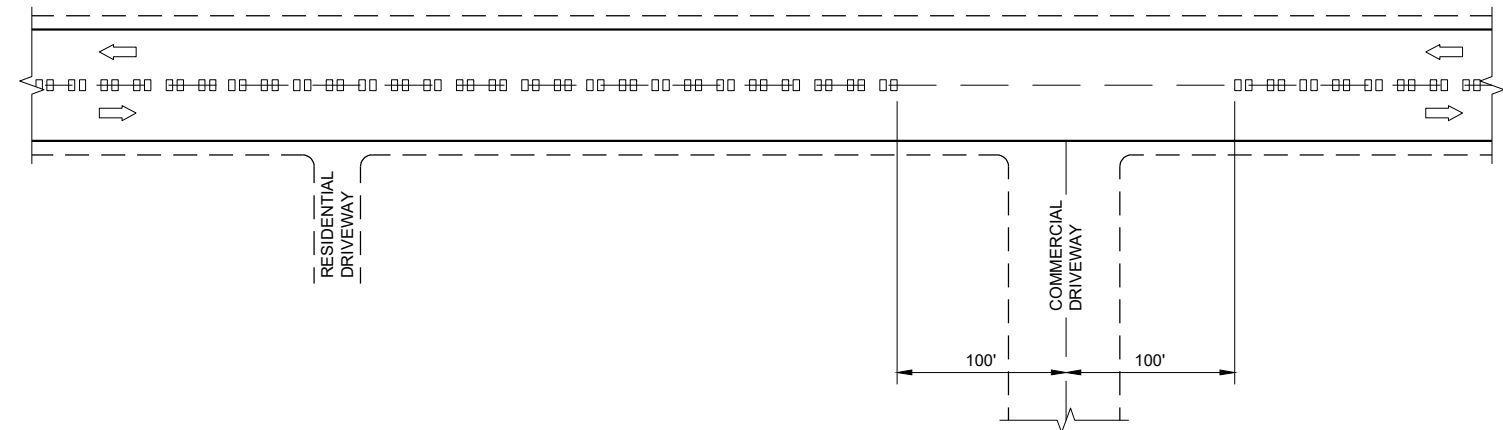
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 108



CENTERLINE GROOVES AT INTERSECTIONS



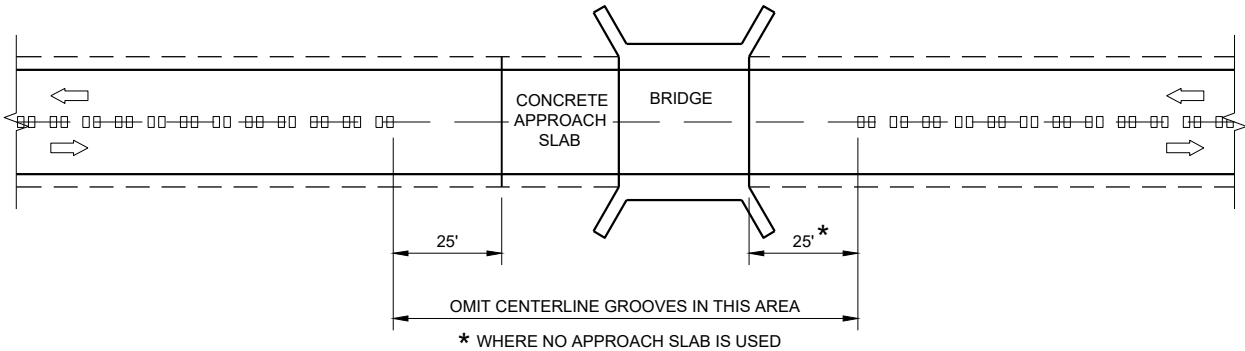
CENTERLINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)



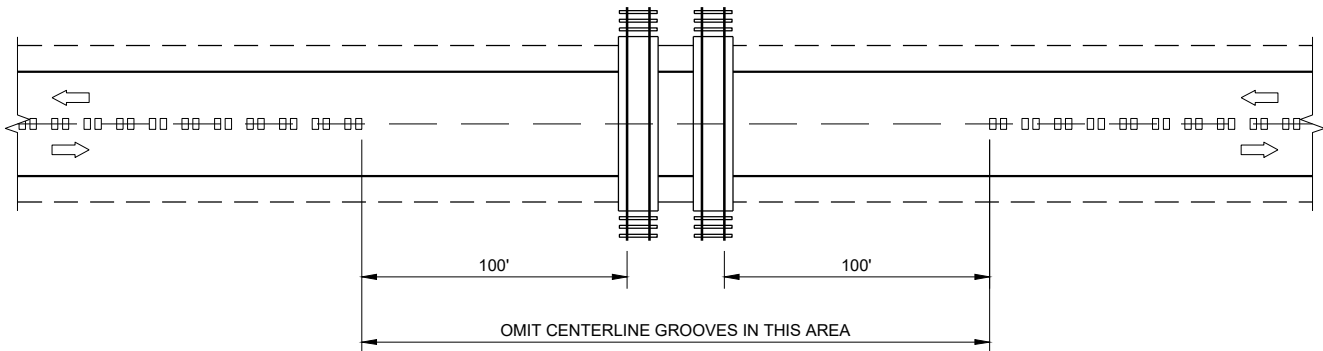
CENTERLINE GROOVES AT DRIVEWAYS^①

GENERAL NOTES

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



CENTERLINE GROOVES AT BRIDGES



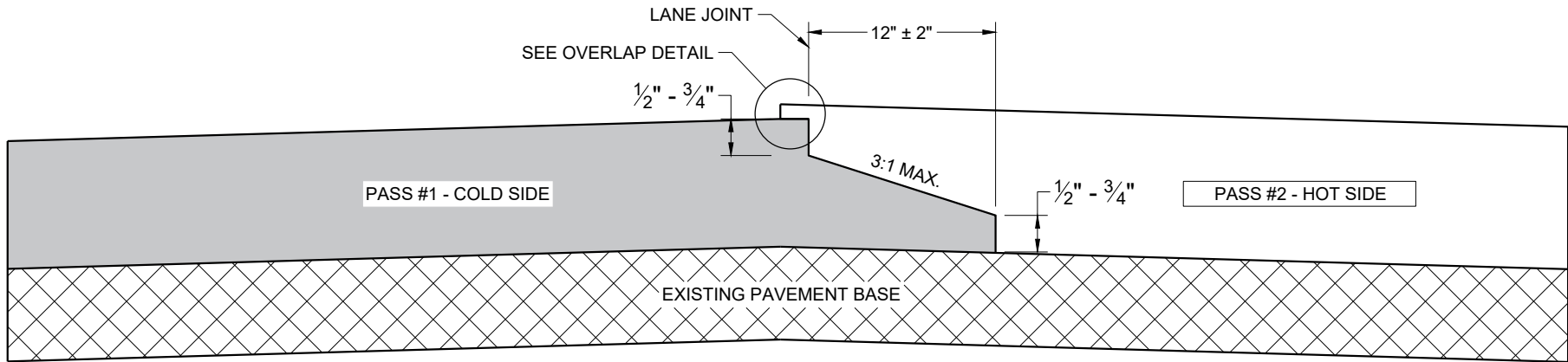
CENTERLINE GROOVES AT RAILROADS

CENTER LINE
RUMBLE STRIPS -
INTERSECTIONS, DRIVEWAYS,
BRIDGES, RAIL ROADS

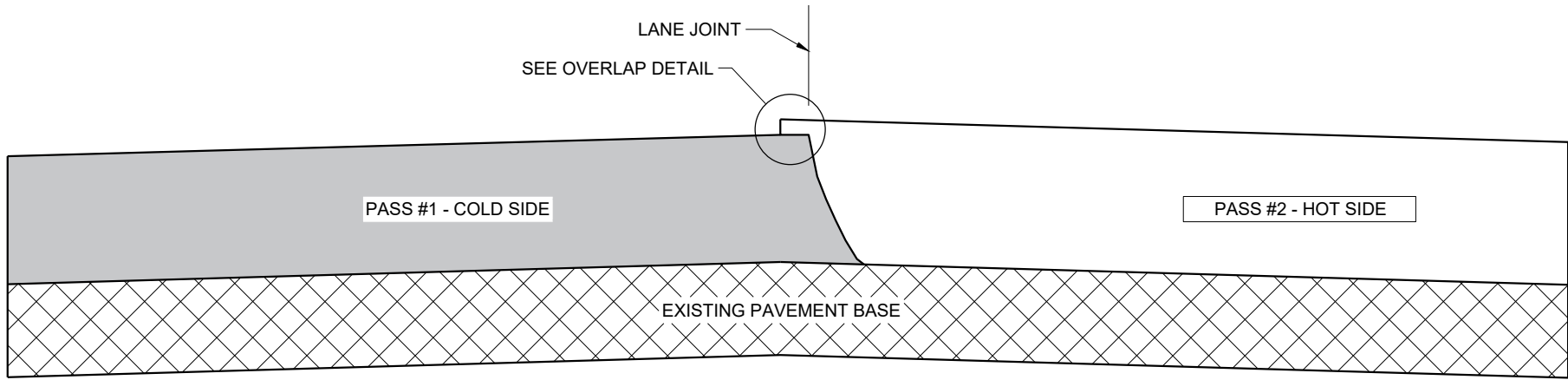
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023
DATE
/S/ John Jenkins
ROADWAY STANDARDS DEVELOPMENT ENGINEER
109

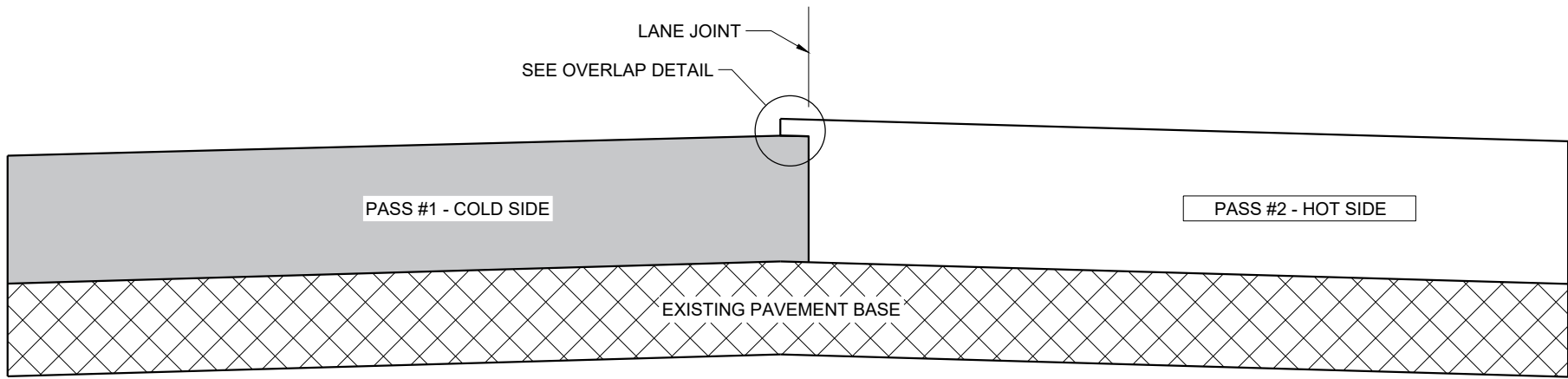
FHWA



**TYPICAL PAVEMENT CROSS SECTION
NOTCHED WEDGE JOINT**



**TYPICAL PAVEMENT CROSS SECTION
VERTICAL JOINT**



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

GENERAL NOTES

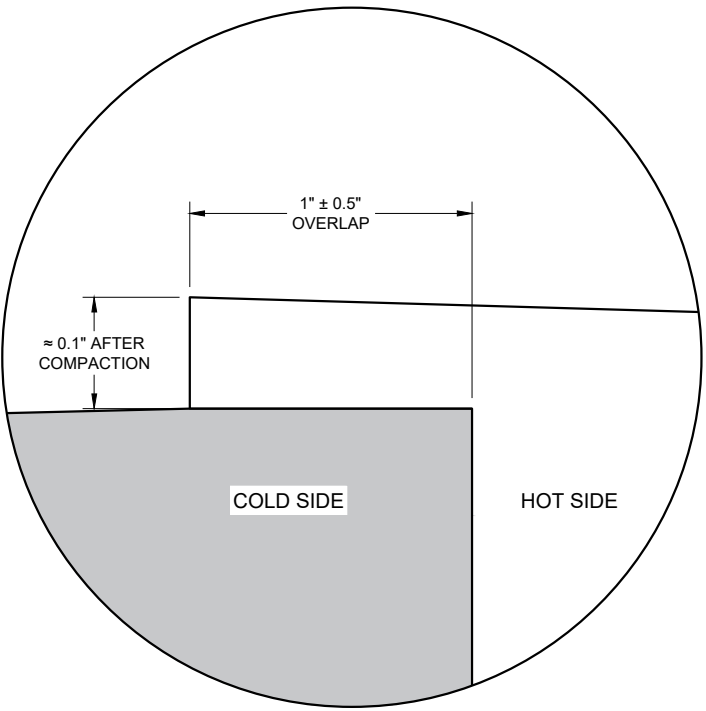
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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



OVERLAP DETAIL (TYPICAL)

HMA LONGITUDINAL JOINTS

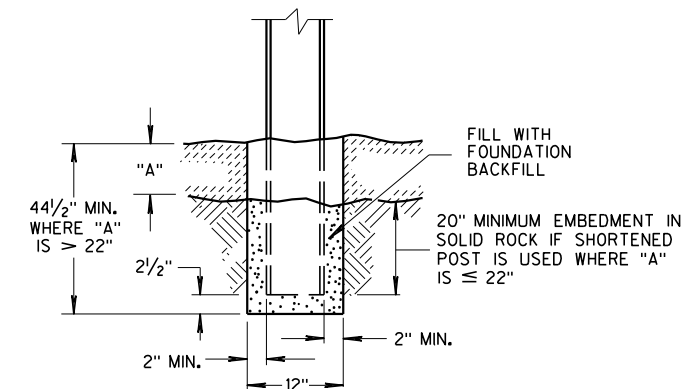
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2020 /S/ Steven Hefel
DATE HMA PAVEMENT ENGIN 110
FHWA

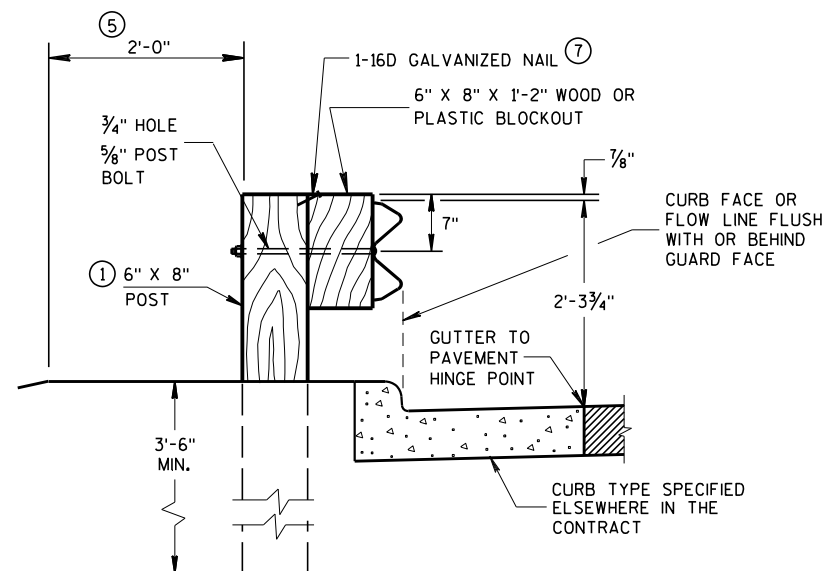
GENERAL NOTES

- W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POSTS WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS. APPROVED PLASTIC BLOCKOUT DESIGNS MAY VARY FROM THIS TYPICAL DETAIL WHEN USED IN CONJUNCTION WITH STEEL POSTS. DO NOT MIX STEEL POSTS AND WOOD POSTS IN A SINGLE INSTALLATION.
- USE STRUCTURAL STEEL POSTS CONFORMING TO ASTM A 36. GALVANIZED POSTS ACCORDING TO AASHTO M 111. EITHER SET THE POSTS IN DRILLED HOLES OR DRIVE TO GRADE. REMOVE MUSHROOMING CAUSED BY DRIVING AND REPAIR DAMAGED SPELTER COATING ON GALVANIZED POSTS.
- INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.
- USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.
- IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).
- IF ROCK IS ENCOUNTERED DURING EXCAVATION, THE ENGINEER MAY APPROVE USING A 12 INCH DIAMETER POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 1/2 INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN THE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATELY.
- 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.

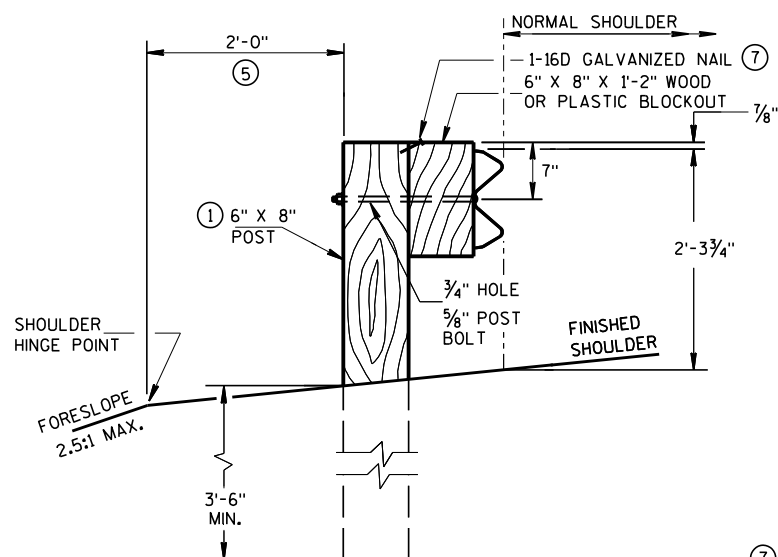
INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



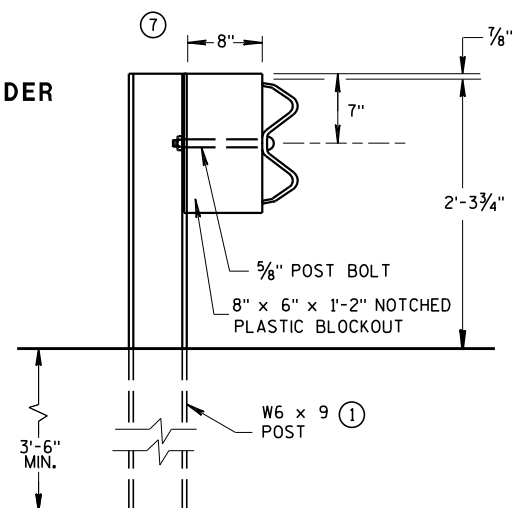
END VIEW
SETTING STEEL OR WOOD POST IN ROCK ⑥



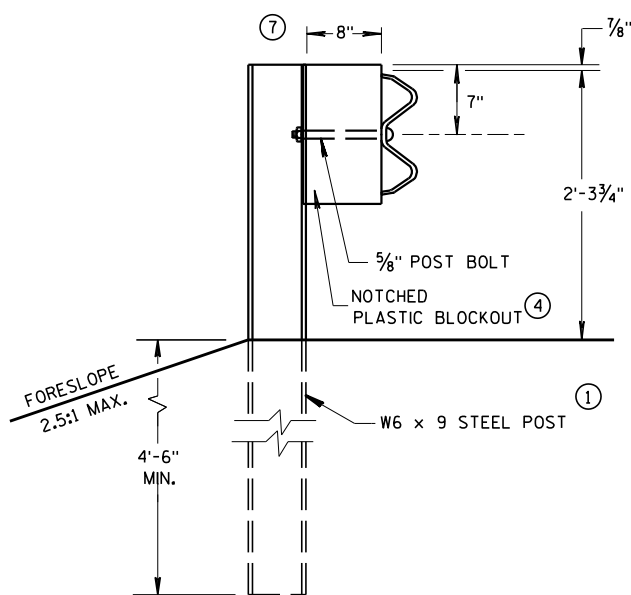
END VIEW
LOCATED ALONG A CURBED ROADWAY



END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION

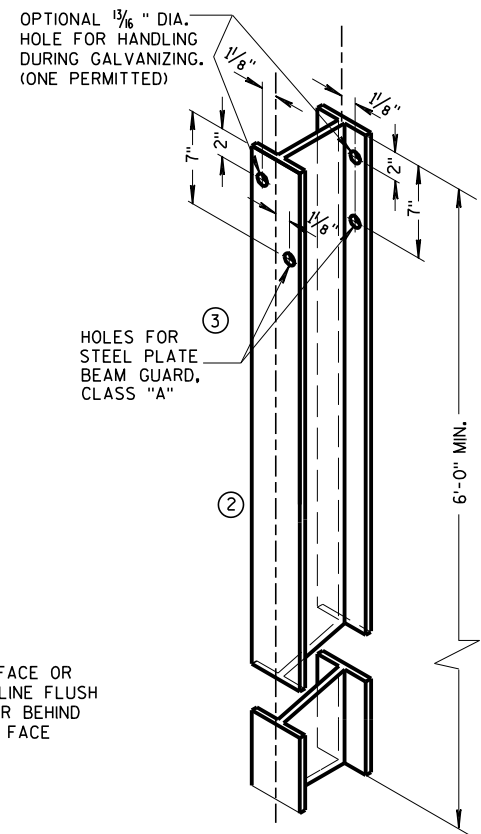


END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION



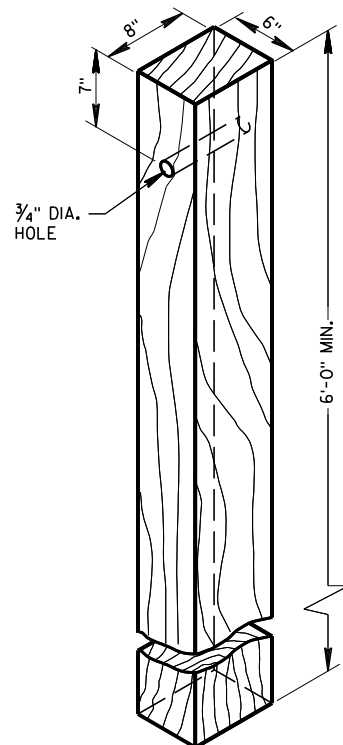
END VIEW
LONGER POST AT HALF
POST SPACING W BEAM
(LHW)

TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

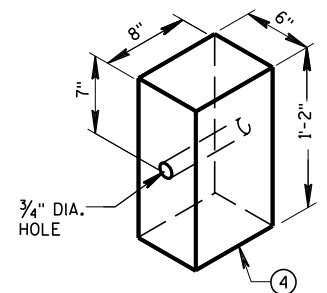


STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) ①

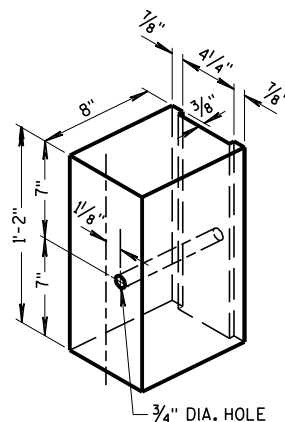
ALL HOLES 1/8" DIAMETER EXCEPT AS NOTED



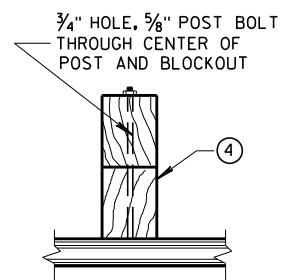
WOOD POST
(6" X 8") NOMINAL



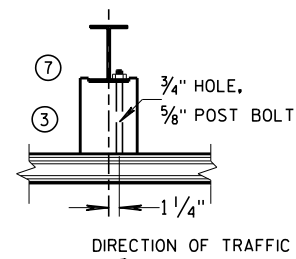
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



TYPICAL NOTCHED
PLASTIC BLOCKOUT
FOR STEEL POSTS ①



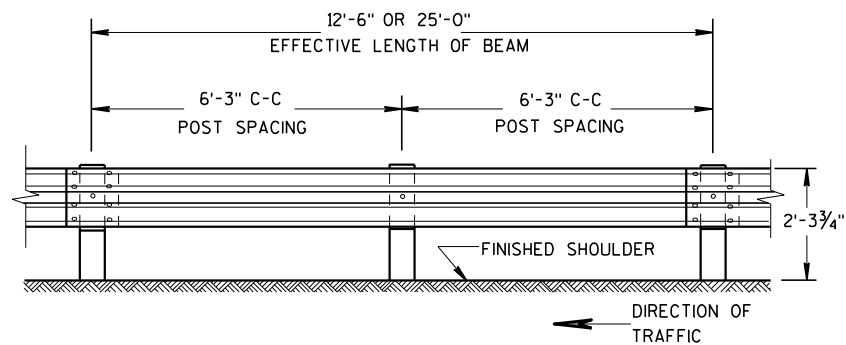
PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM

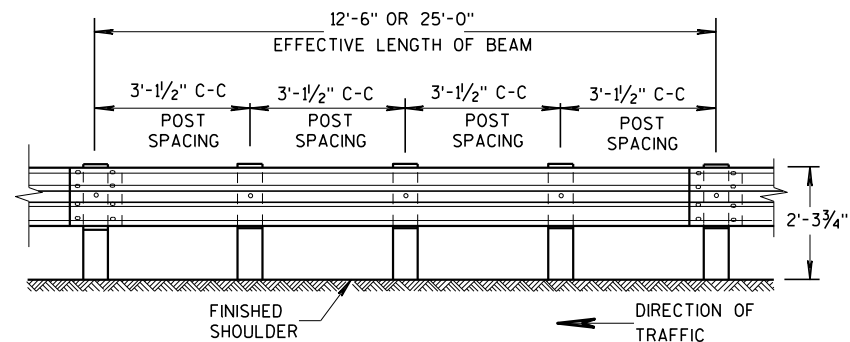
STEEL PLATE BEAM GUARD,
CLASS "A"
INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



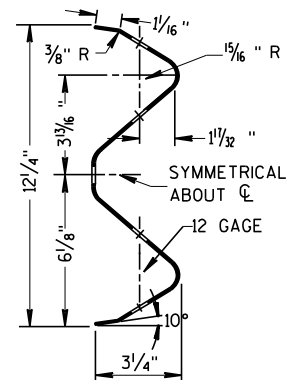
FRONT VIEW

POST SPACING STANDARD INSTALLATION

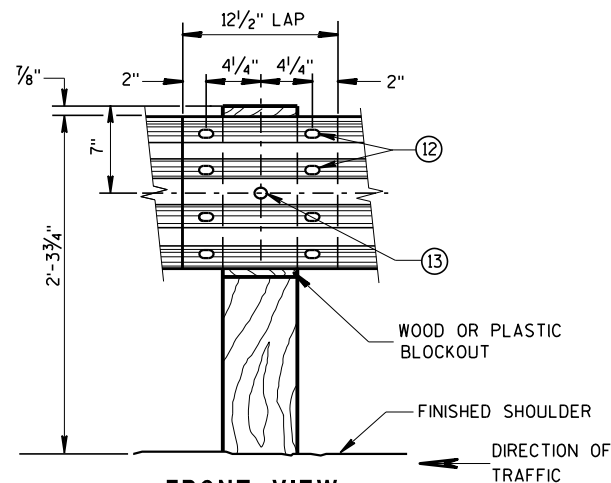


FRONT VIEW

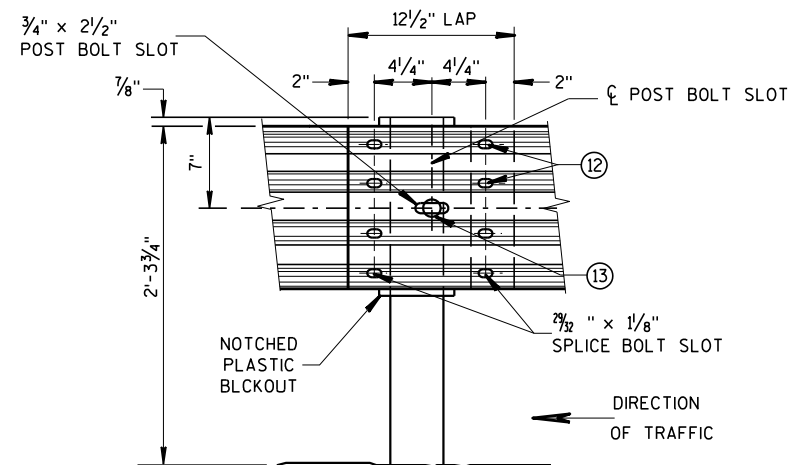
POST SPACING FOR LONGER POST
AT HALF POST SPACING W BEAM (LHW)



SECTION THRU W BEAM



FRONT VIEW
BEAM SPLICE AT WOOD POST
AND POST MOUNTING DETAIL

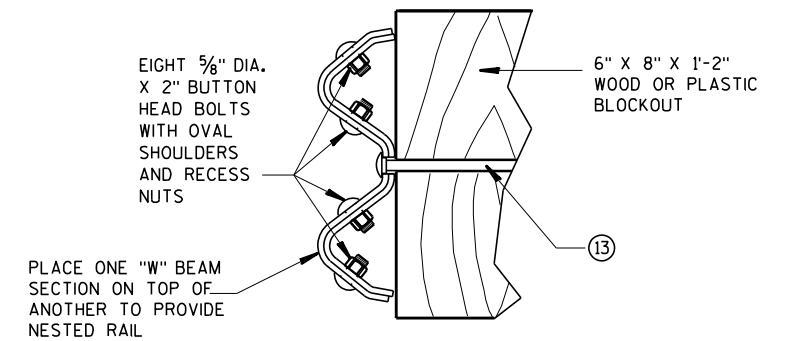


FRONT VIEW
BEAM SPLICE AT STEEL POST
TYPICAL SPlicing DETAILS
OF STEEL PLATE BEAM GUARD

GENERAL NOTES

FURNISH GUARDRAIL DEFLECTORS FROM APPROVED PRODUCTS LIST.

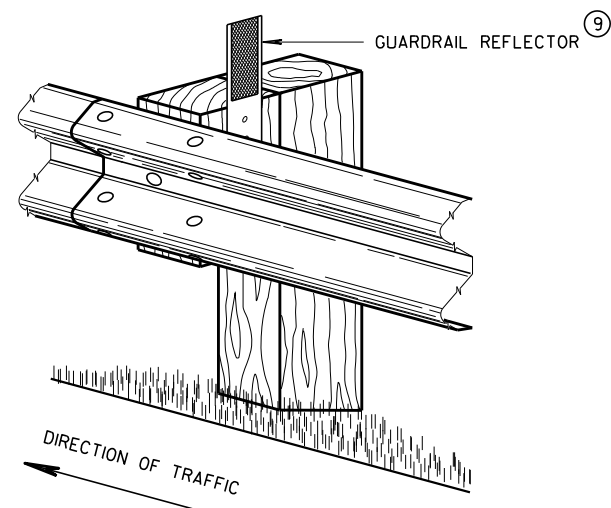
- ⑨ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINA. START REFLECTORS AT POST #9 AND SPACE EVENLY EVERY 100 FEET (MAX.) TO THE END OF GUARDRAIL RUN, USING A MINIMUM OF 3 REFLECTORS.
- ⑫ 8 - 5/8" ϕ X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.
- ⑬ 5/8" DIA. BUTTON HEAD BOLT AND RECESS NUT WITH 5/8" DIA. F844 FLAT WASHER UNDER NUT.



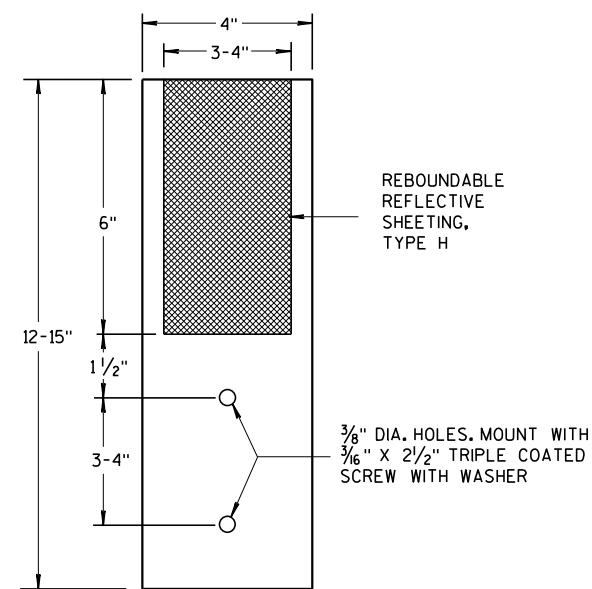
NESTED W BEAM (NW)

USE ALL OTHER STANDARD BEAM GUARD DETAILS FOR
CONSTRUCTING NESTED W BEAM (NW)

* USE DOUBLE SIDED WHITE GUARDRAIL REFLECTORS ON ROADWAYS WITH BI-DIRECTIONAL TRAFFIC (NO MEDIAN). USE SINGLE SIDED WHITE (RIGHT SIDE) AND SINGLE SIDED YELLOW (LEFT SIDE) ON ROADWAYS WITH MEDIAN SEPARATION.



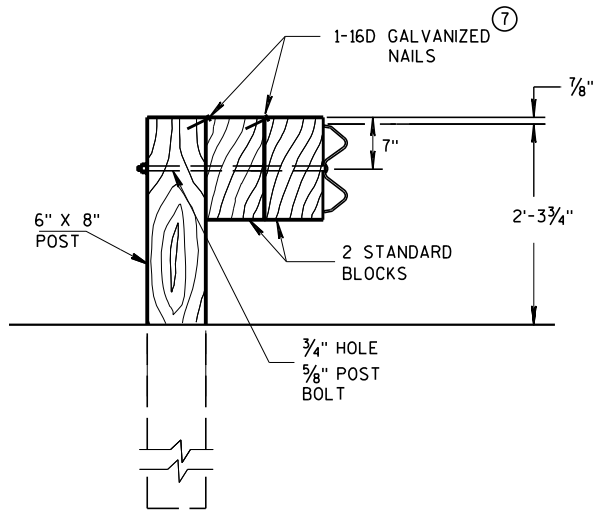
4" X 12" GUARDRAIL REFLECTOR DETAIL
AND TYPICAL INSTALLATION *



4"x 12" GUARDRAIL REFLECTOR

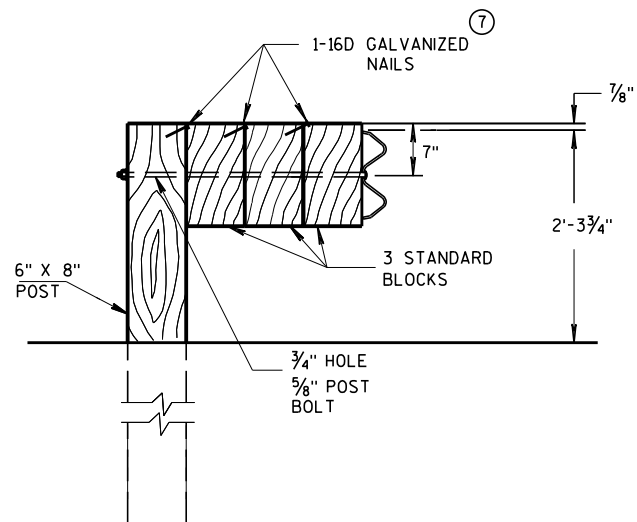
STEEL PLATE BEAM GUARD,
CLASS "A",
INSTALLATION & ELEMENTS

STATE OF WISCO¹¹²
DEPARTMENT OF TRANSPORTATION



DETAIL FOR DOUBLE BLOCKS

THE NUMBER OF DOUBLE BLOCK POSTS
WITHIN A BARRIER RUN IS UNLIMITED

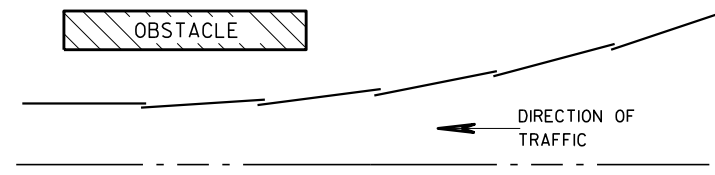


DETAIL FOR TRIPLE BLOCKS

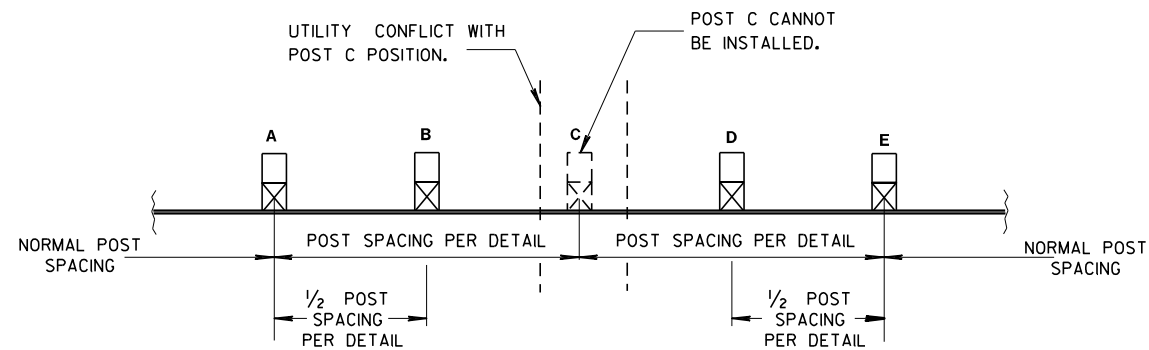
TRIPLE BLOCK DETAIL IS LIMITED TO ONE
LOCATION WITHIN A BEAM GUARD RUN.

NOTES: USE DOUBLE OR TRIPLE BLOCKS WHEN UNDERGROUND OBSTACLES
PREVENT THE POST FROM BEING INSTALLED.

DO NOT USE EXTRA 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.



PLAN VIEW BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION

STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Rodney Taylor
DATE ROADWAY STANDARDS 113 UNIT SUPERVISOR
FHWA

BILL OF MATERIALS

NOTE NO.	DESCRIPTION
①	WOOD BREAKAWAY TERMINAL POST: 5½" X 7½" X 3'-9"
②	STEEL TUBE TS 8" X 6" X 0.188", 6'-0"
④	WOOD BREAKAWAY CRT POST: 6" X 8" X 6'-0"
⑤	WOOD OFFSET BLOCKS: 6' X 8" X 1'-2"
⑥	PIPE SLEEVE: 2" X 5 ½" STANDARD PIPE
⑦	BEARING PLATE
⑧	BCT CABLE ASSEMBLY
⑨	CABLE ANCHOR BOX
⑩	STRUT & YOKE
⑪	STEEL PLATE BEAM, END PANEL 12 GA.
⑫	STEEL PLATE BEAM: 12 GA. 13'-6½"
⑬	IMPACT HEAD
⑭	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS

GENERAL NOTES

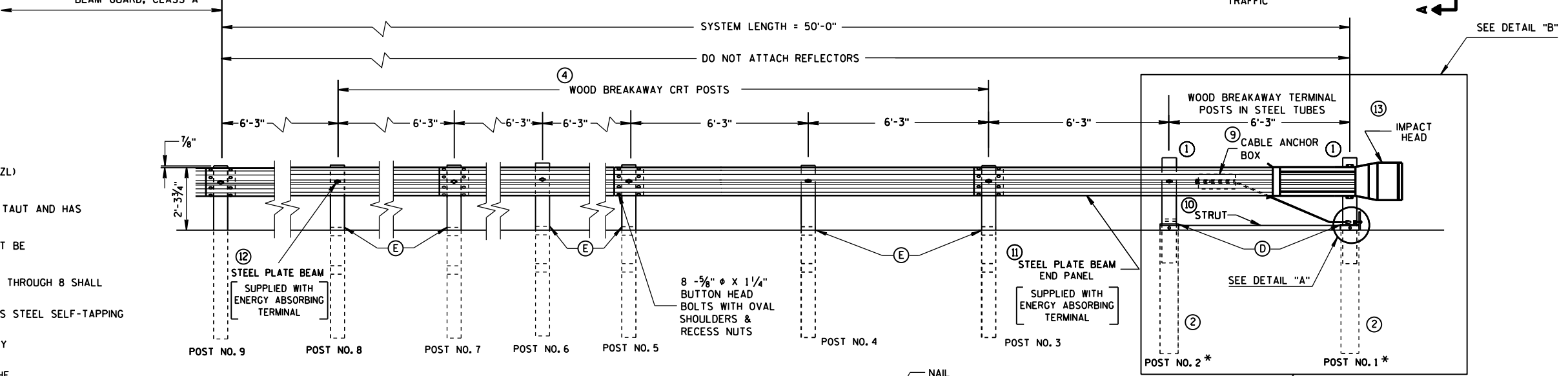
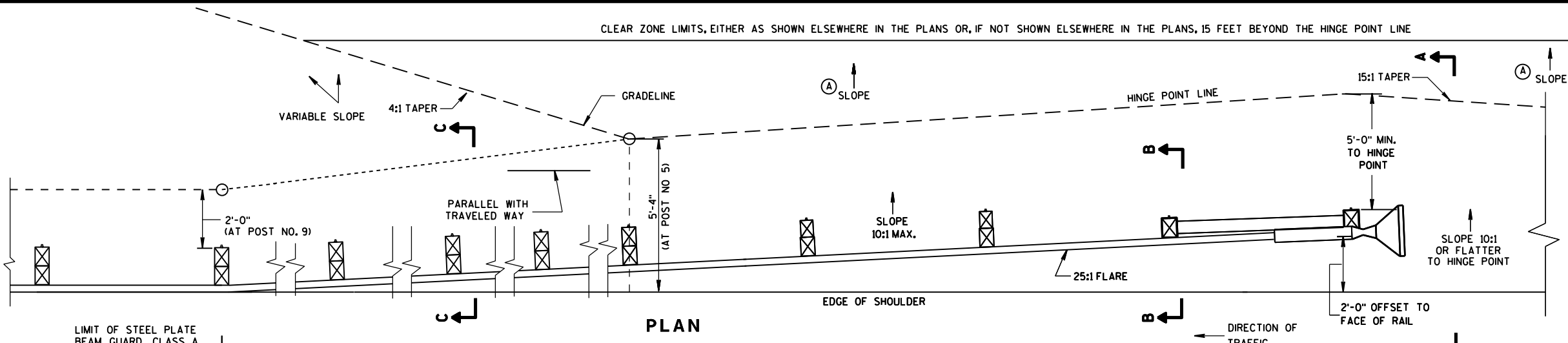
FOLLOW MANUFACTURE'S BOLTING RECOMMENDATIONS.

- (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.
- (D) THE TOP OF THE STEEL TUBE ON POSTS 1 AND 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.
- (E) THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST 3 THROUGH 8 SHALL BE ¾" ABOVE THE FINISHED GROUND LINE.
- (F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS, ONE SCREW PER CORNER.

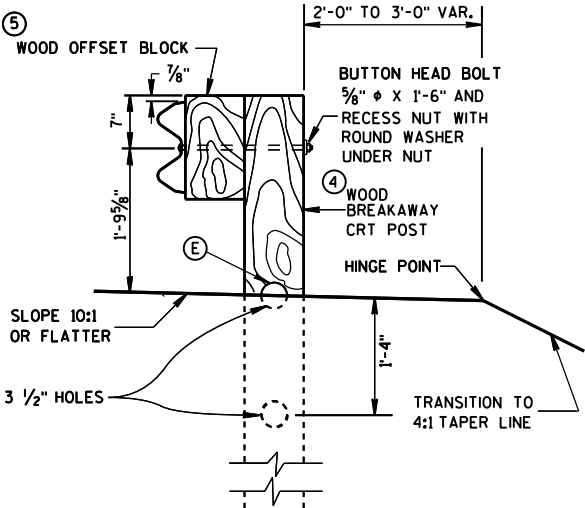
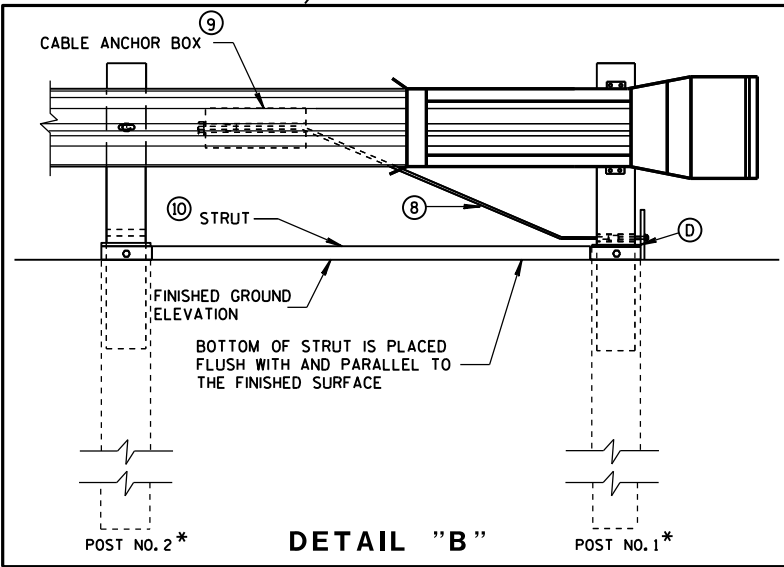
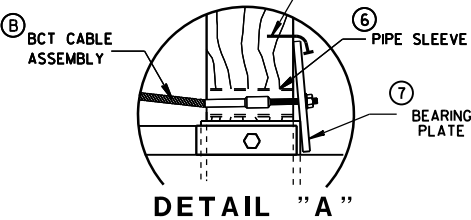
STEEL POSTS SHALL NOT BE ALLOWED FOR USE WITH ENERGY ABSORBING TERMINALS.

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

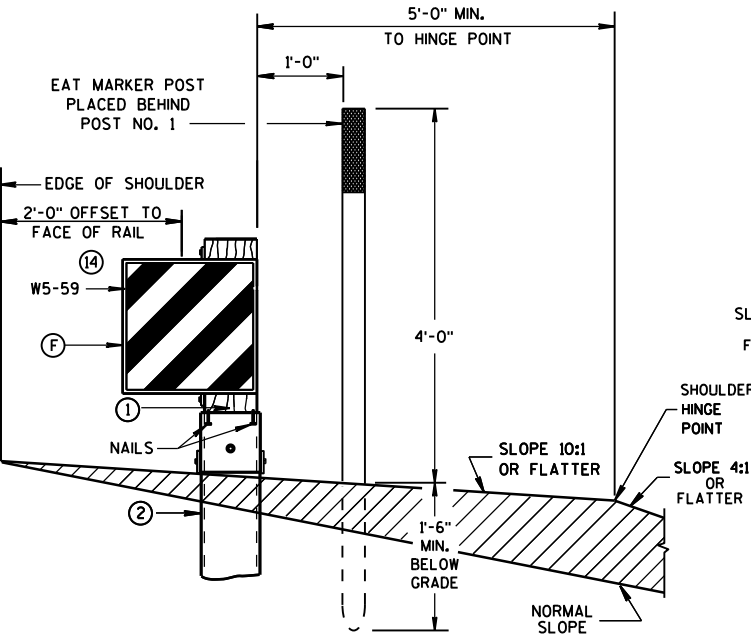
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.



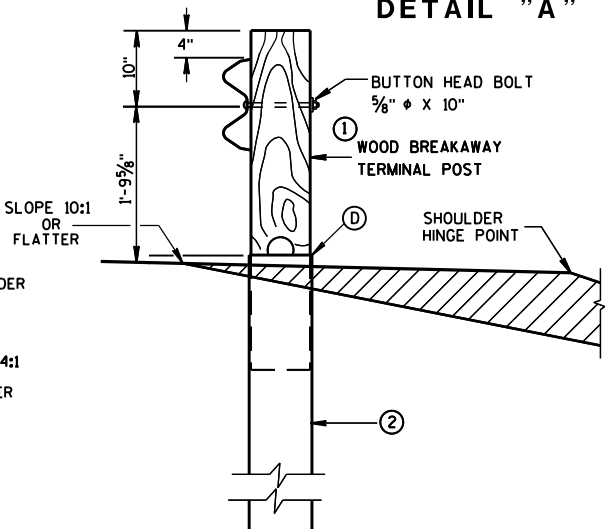
ELEVATION



SECTION C-C
TYPICAL AT POST NOS. 6, 8



SECTION A-A
TYPICAL AT POST NO. 1*

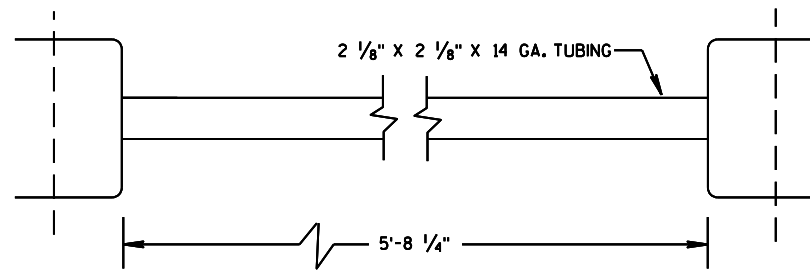


SECTION B-B
TYPICAL AT POST NO. 2*

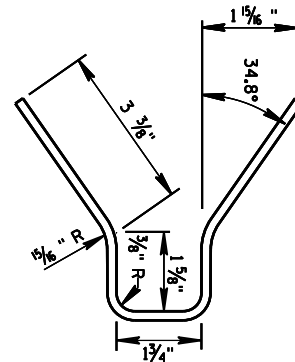
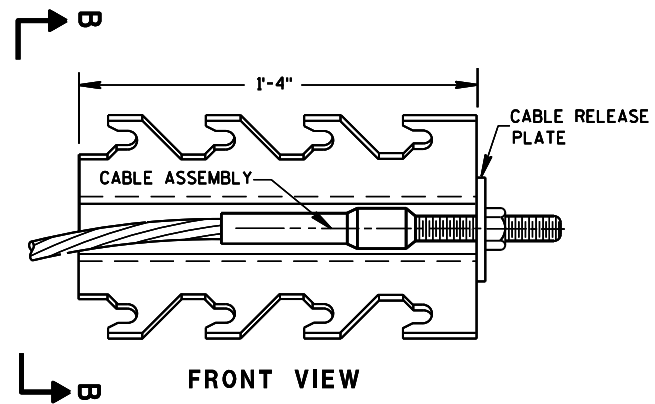
STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

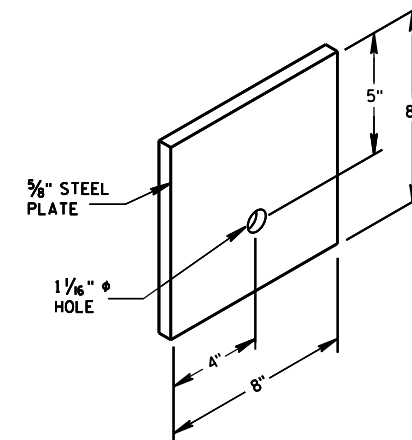
114



⑩ STRUT DETAIL



⑨ CABLE ANCHOR BOX

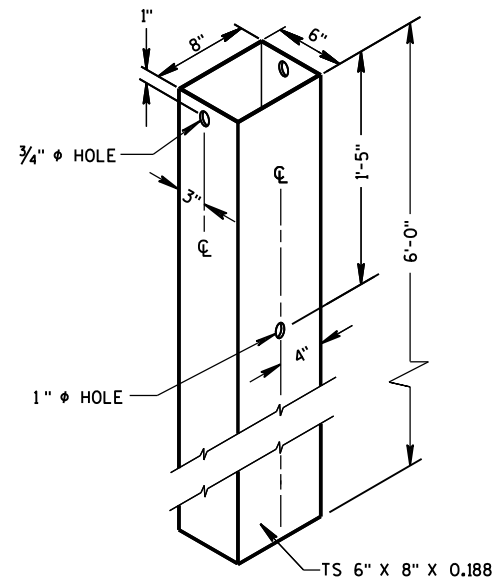


⑦ STEEL BEARING PLATE

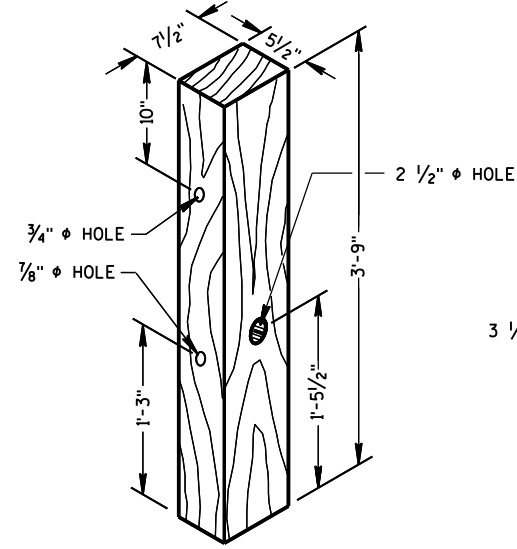
STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

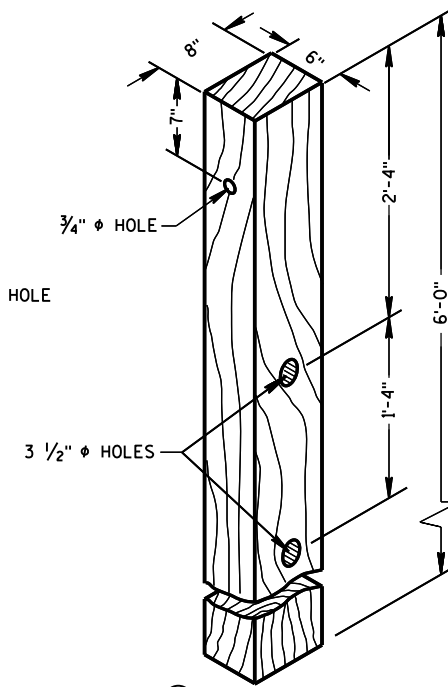
115



② **72" STEEL TUBE**
(POSTS NO. 1-2)

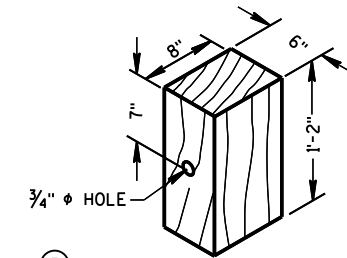


① **TERMINAL POST**



④ **CRT POST**
(POSTS NO'S 5-8)

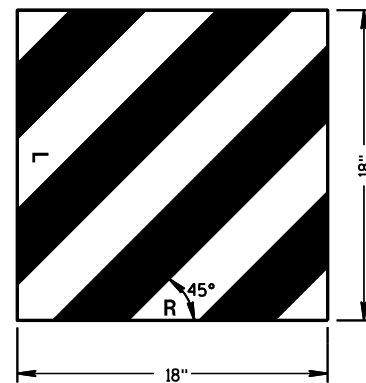
WOOD BREAKAWAY POSTS



⑤ **WOOD OFFSET BLOCK**
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2

GENERAL NOTES

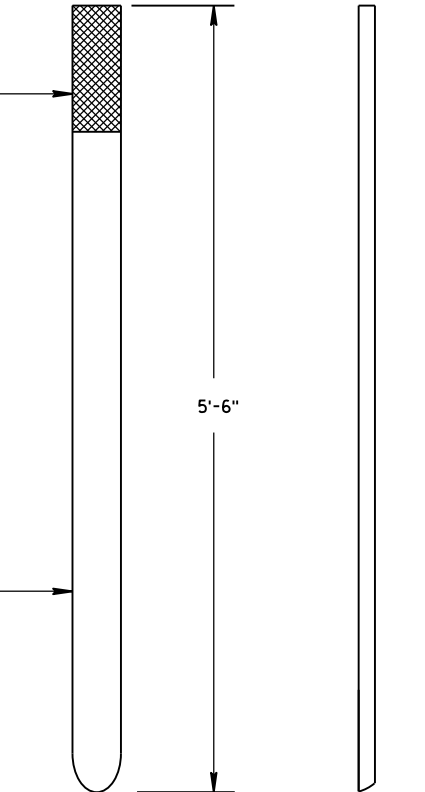
WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 12 INCH DIA. POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 1/2" INCHES DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.



⑭ **REFLECTIVE SHEETING DETAILS**

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

E.A.T. MARKER
POST (YELLOW)
SEE APPROVED
PRODUCTS LIST

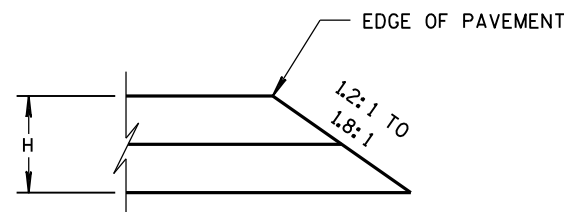


E.A.T. MARKER POST

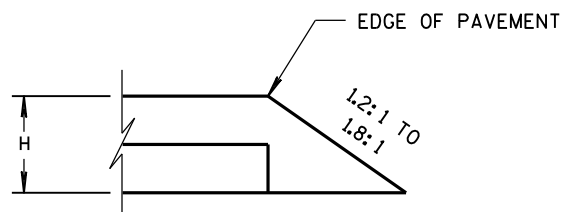
**STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

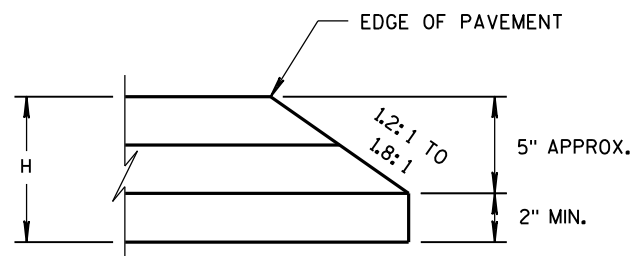
APPROVED
June 2017 /S/ Rodney Taylor
DATE ROADWAY STANDARDS 116 ENT
FHWA UNIT SUPERVISOR



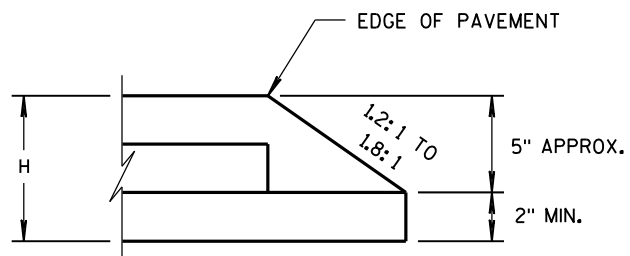
CONSTRUCTED WITH FINAL TWO LAYERS
FOR H 5" OR LESS



CONSTRUCTED WITH FINAL LAYER
FOR H 5" OR LESS

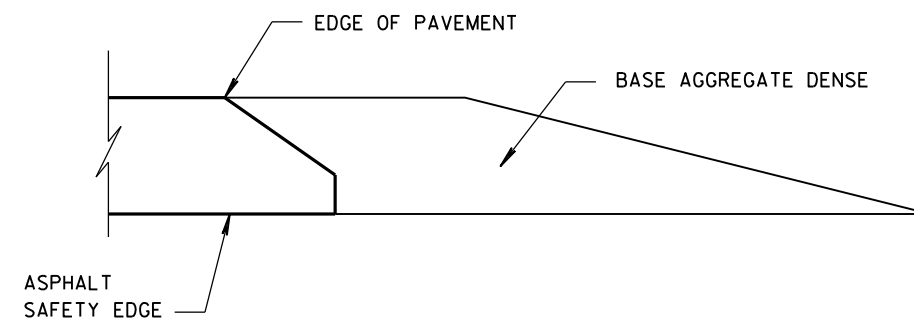


CONSTRUCTED WITH FINAL TWO LAYERS
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER
FOR H GREATER THAN 5"

HMA PAVEMENT AND HMA OVERLAYS



FINISHED SHOULDER AGGREGATE PLACEMENT

SAFETY EDGE_{SM}

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

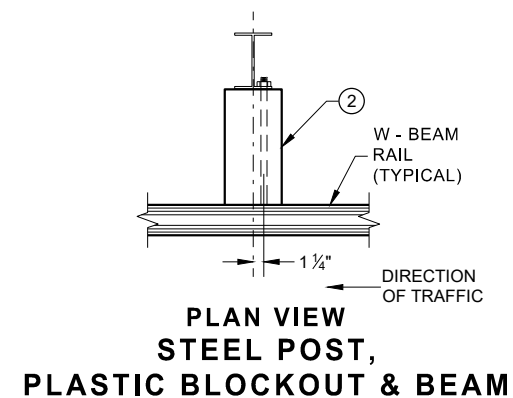
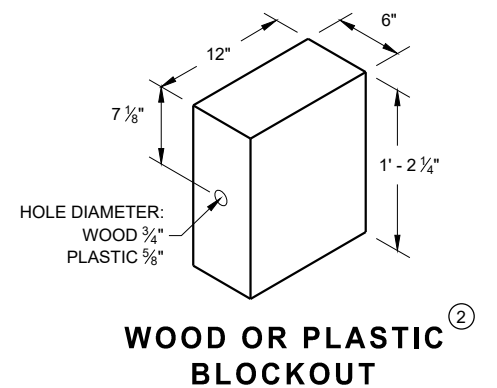
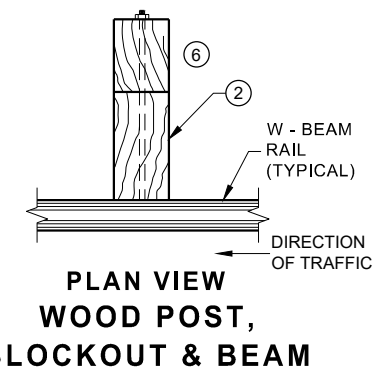
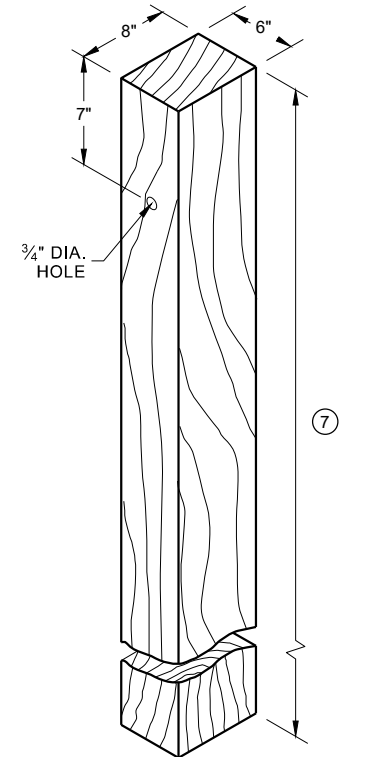
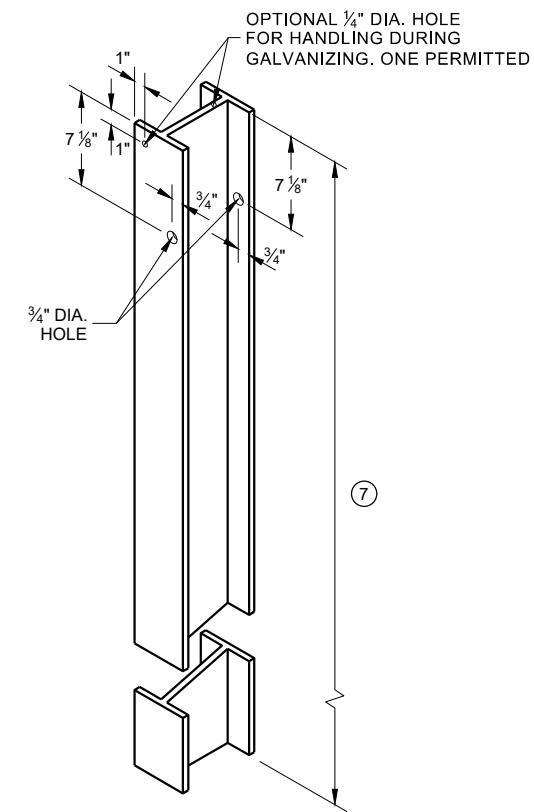
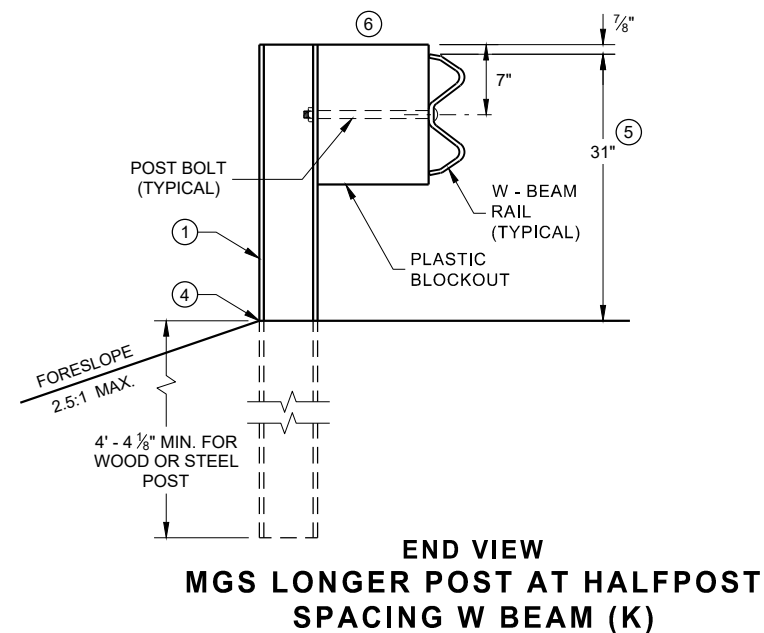
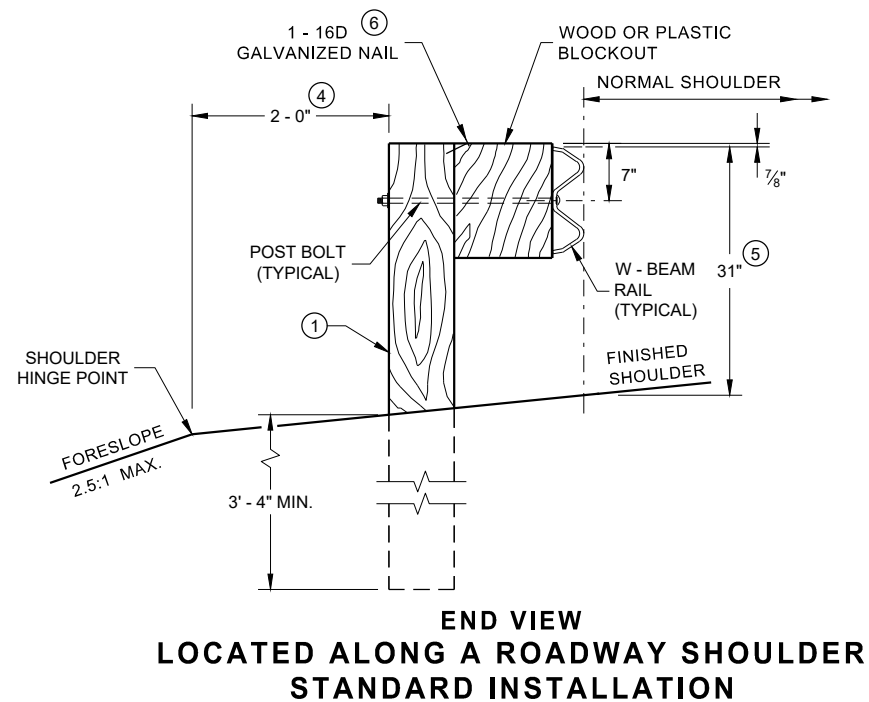
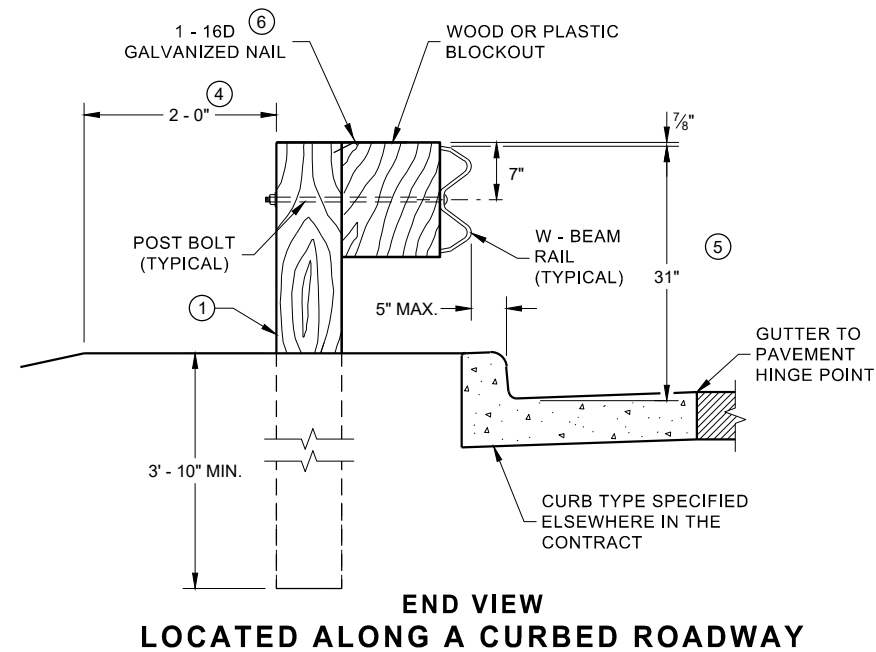
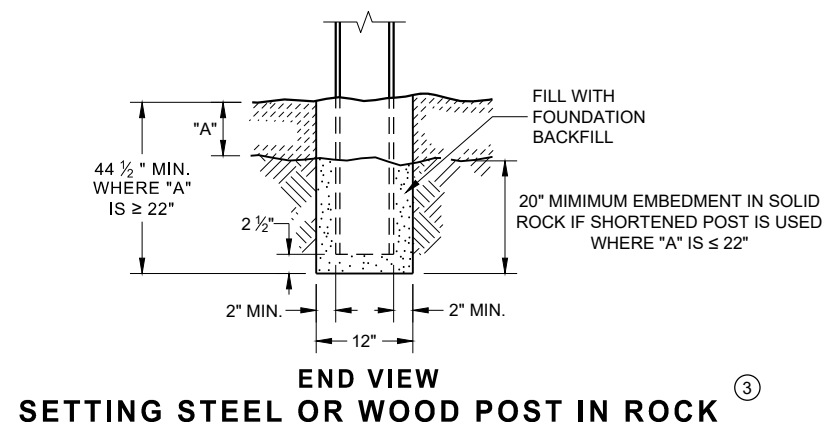
APPROVED
11/30/2012
DATE

/s/ Jerry H. Zoaga
ROADWAY STANDARDS
ENGINEER

117
ENT

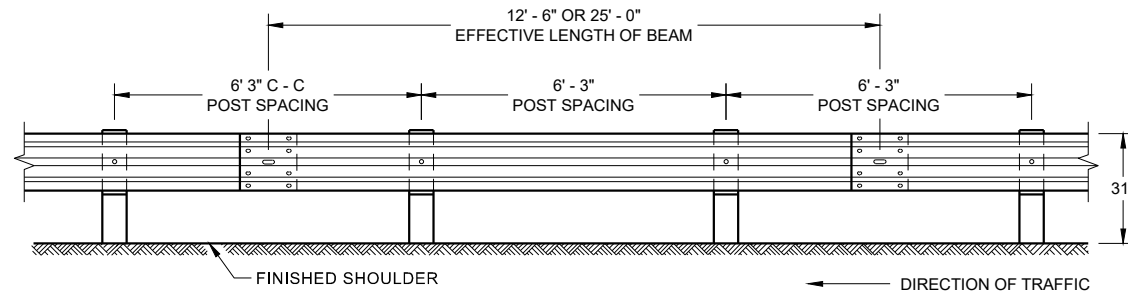
FHWA

- 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".

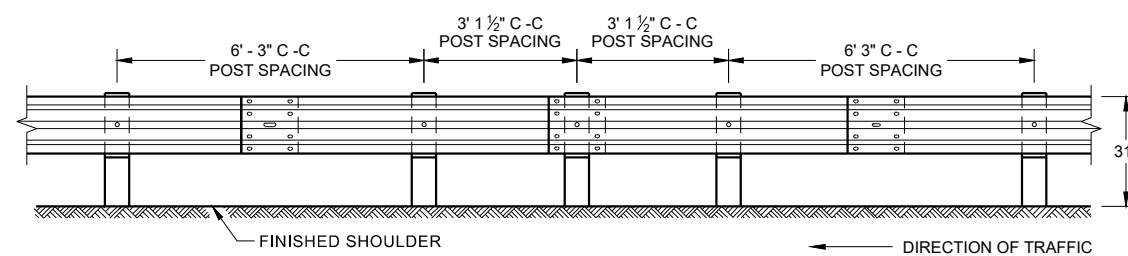


**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

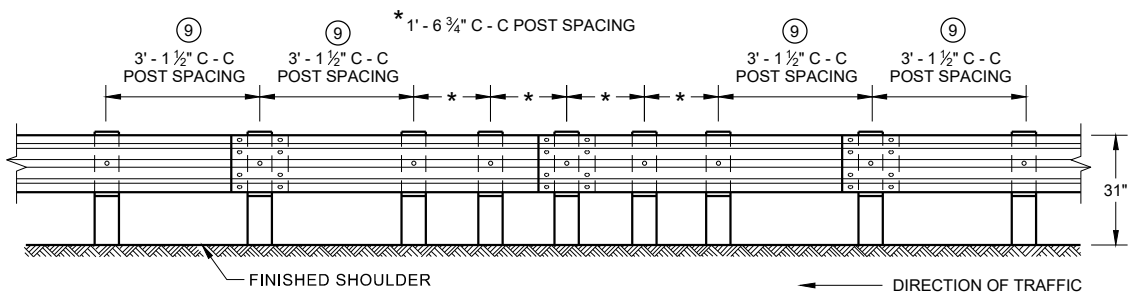
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 118



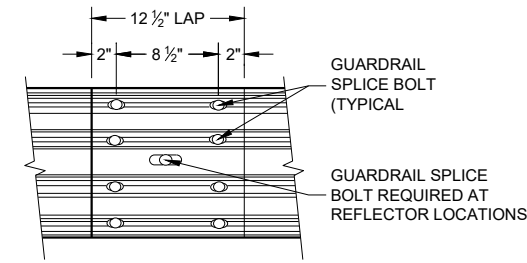
**FRONT VIEW
POST SPACING STANDARD INSTALLATION**



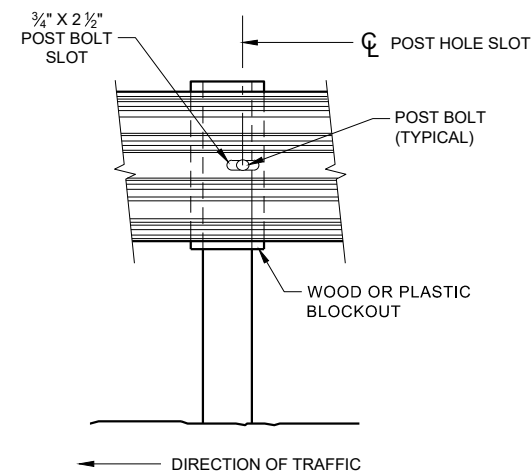
**FRONT VIEW
HALF POST SPACING (HS) AND
HALF POST SPACING WITH LONGER POSTS (K)**



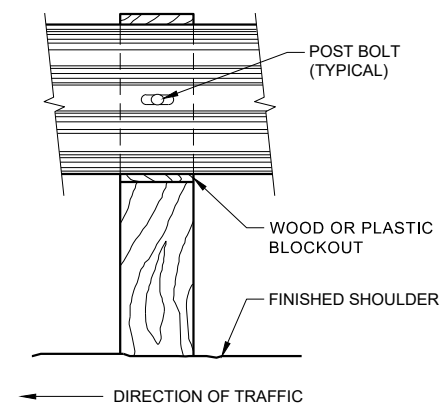
**FRONT VIEW
QUARTER POST SPACING (QS)**



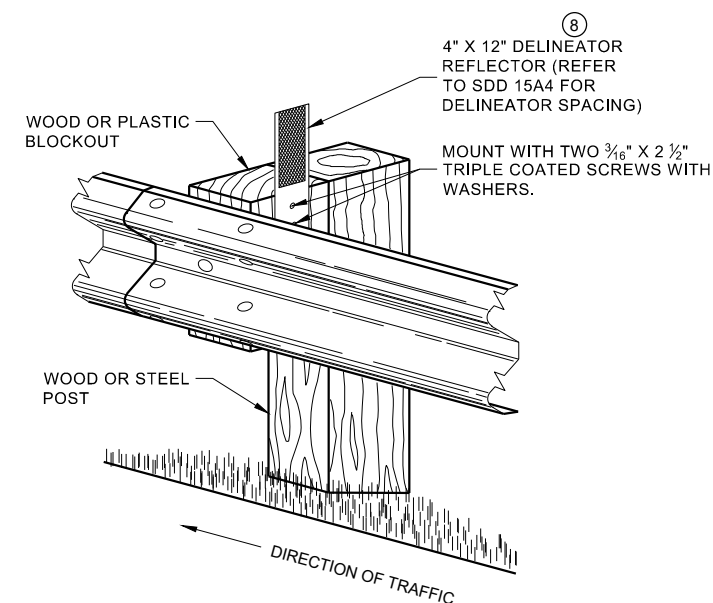
**FRONT VIEW
MID-SPAN BEAM SPLICE**



FRONT VIEW AT STEEL POST



FRONT VIEW AT WOOD POST



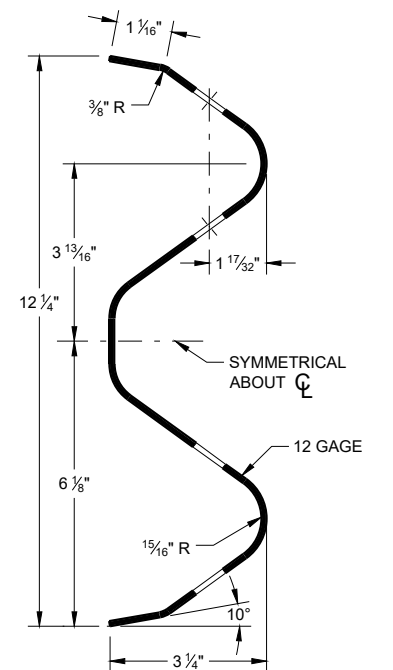
**ONE SIDED REFLECTOR DETAIL
AND TYPICAL INSTALLATION**

GENERAL NOTES

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

POST BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 3/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A 3/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 3/4" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



SECTION THRU W-BEAM RAIL

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



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.

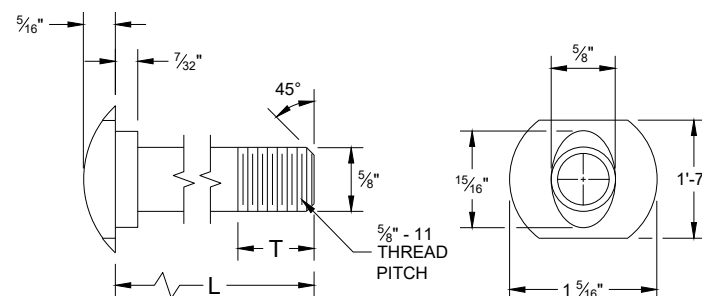


NOTES: UNDER SPECIAL CIRCUMSTANCES, SUCH AS AVOIDING OBSTACLES THAT ARE NOT RELOCATED, IT IS ACCEPTABLE TO INSTALL ADDITIONAL BLOCKOUTS TO OBTAIN UP TO 36" DEPTH FOR ONE OR TWO POSTS IN A SECTION OF GUARDRAIL.

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.

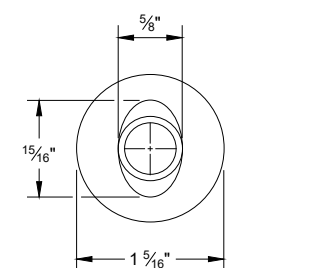
NOTE:

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.

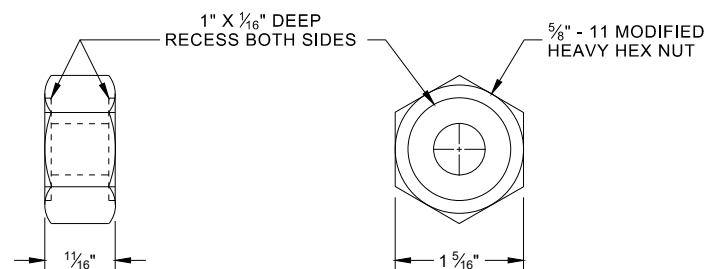


POST BOLT TABLE

L	T (MIN.)
1 ¼"	1 ½"
2"	1 ¾"
10"	4"
14"	4 ⅙"
18"	4"
21"	4 ⅙"
25"	4"

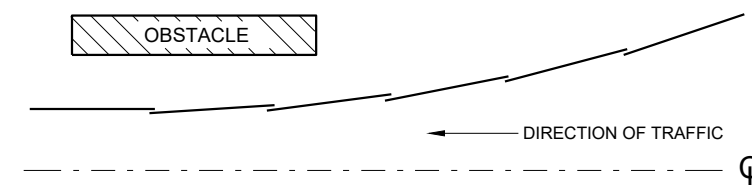


ALTERNATE BOLT HEAD

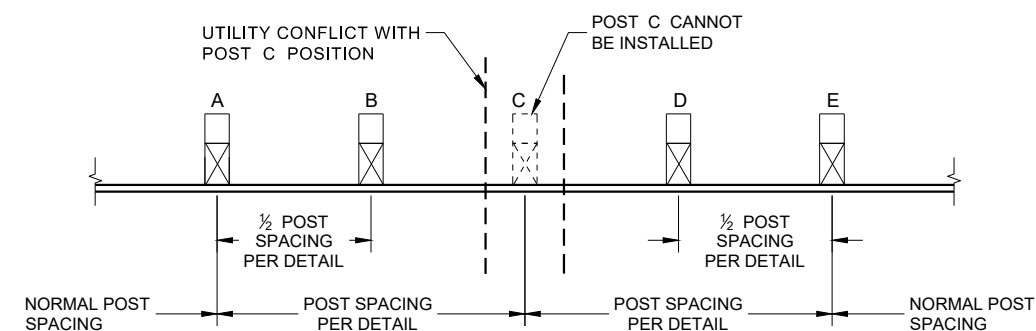


POST BOLT, SPLICE BOLT AND RECESS NUT

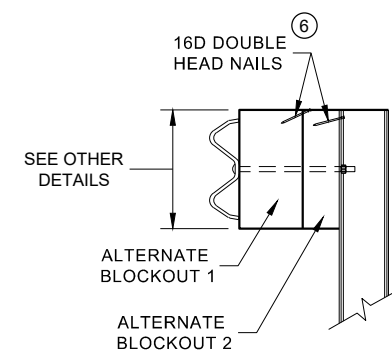
⑥ WHEN USING STEEL POST AD WOOD BLOCKOUTS, INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



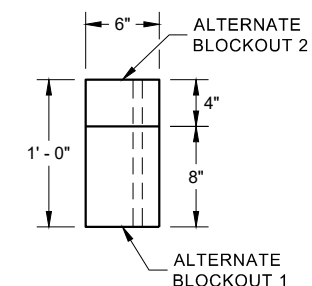
**PLAN VIEW
BEAM LAPPING DETAIL**



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW

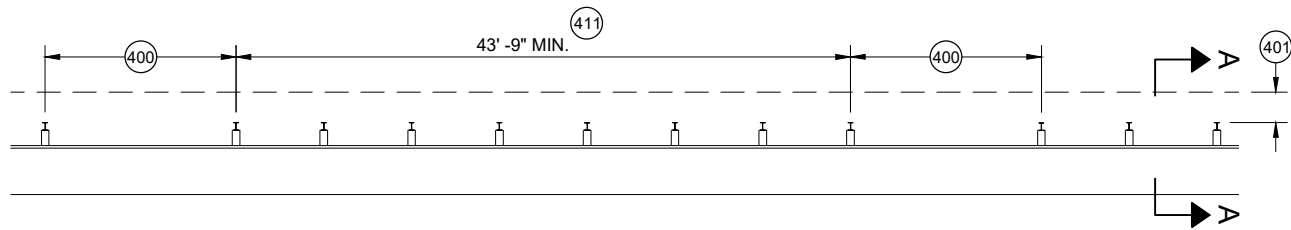


PLAN VIEW

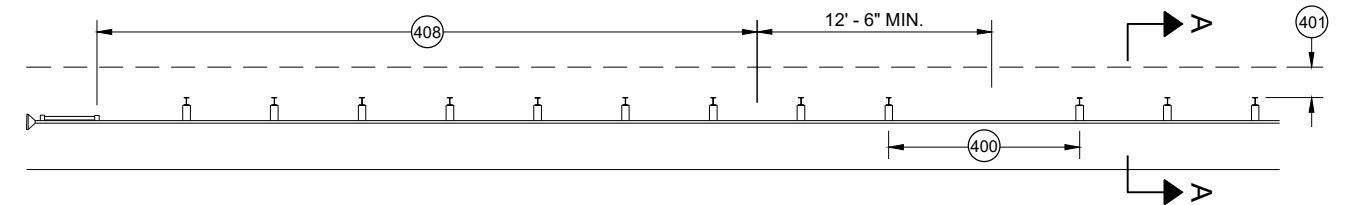
ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

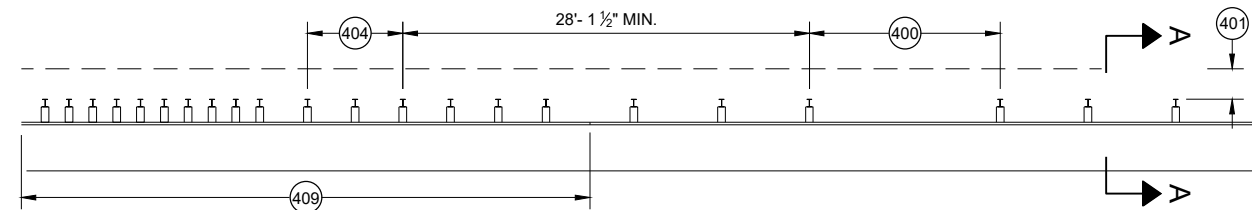
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 120



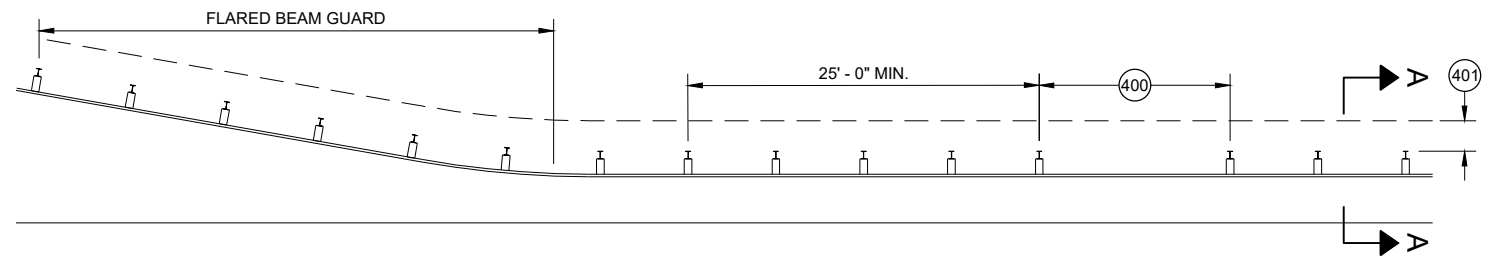
MISSING POST IN MGS GUARDRAIL



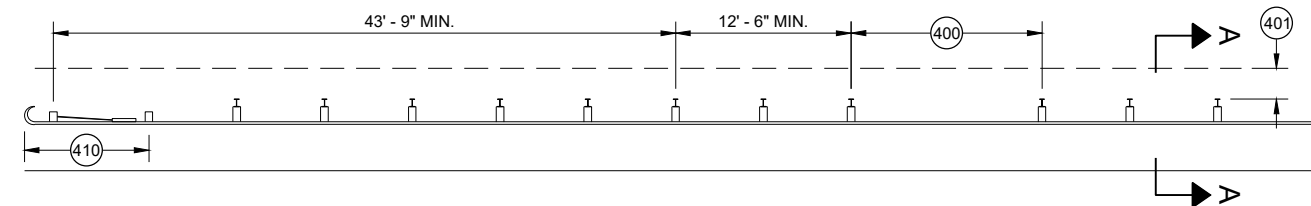
MISSING POST IN MGS GUARDRAIL NEAR EAT



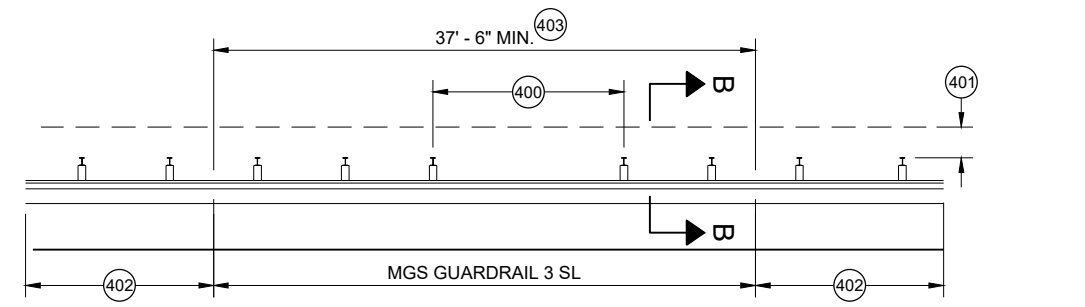
MISSING POST IN MGS GUARDRAIL NEAR AN APPROACH TRANSITION



MISSING POST IN MGS GUARDRAIL NEAR FLARED BEAM GUARD

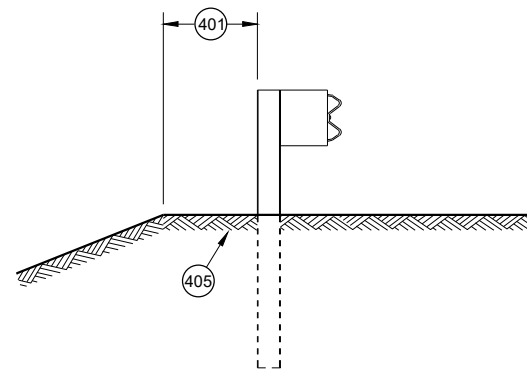


MISSING POST IN MGS GUARDRAIL NEAR A TYPE 2 END TERMINAL

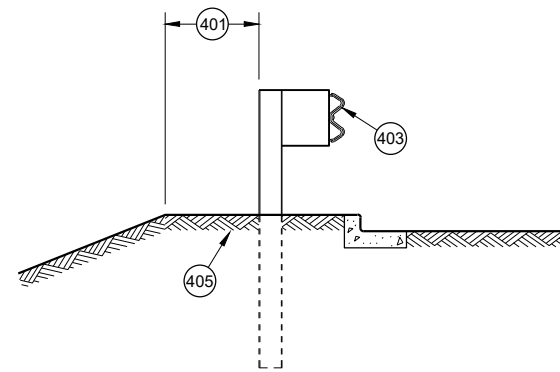


MISSING POST IN SHORT SPAN MGS GUARDRAIL NEAR CURB (SL)

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



SECTION A - A



SECTION B - B

**MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2021
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR 121

FHWA

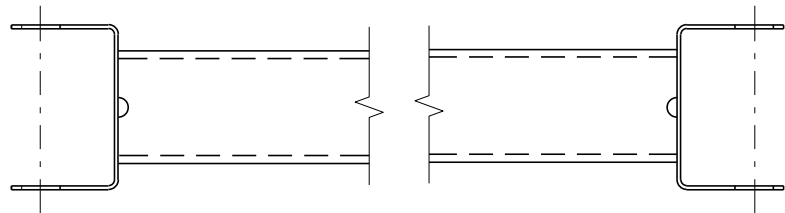
- A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL) AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.
- B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED
- C) DIFFERENT MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. 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.

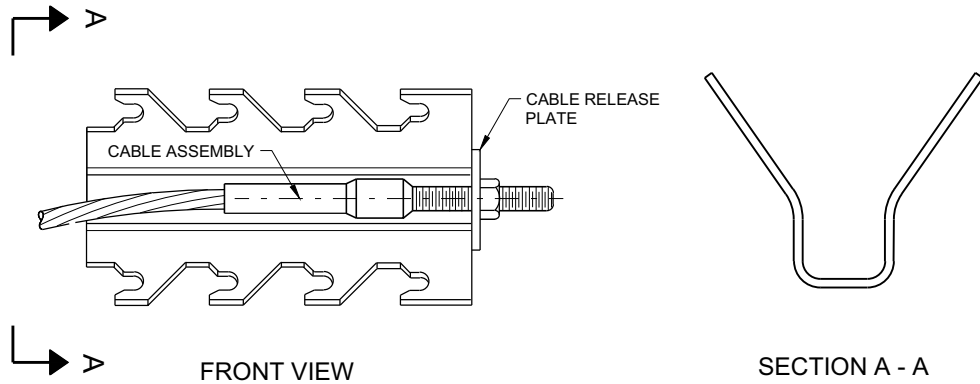


STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 122

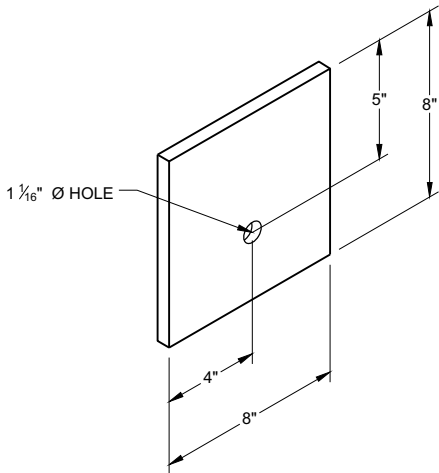


GENERIC GROUND STRUT⁹ ^E

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



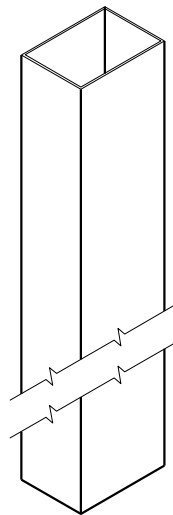
GENERIC ANCHOR CABLE BOX⁹ ^E



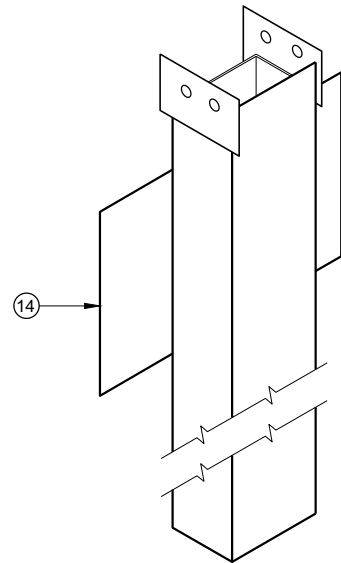
BEARING PLATE⁶ ^E

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

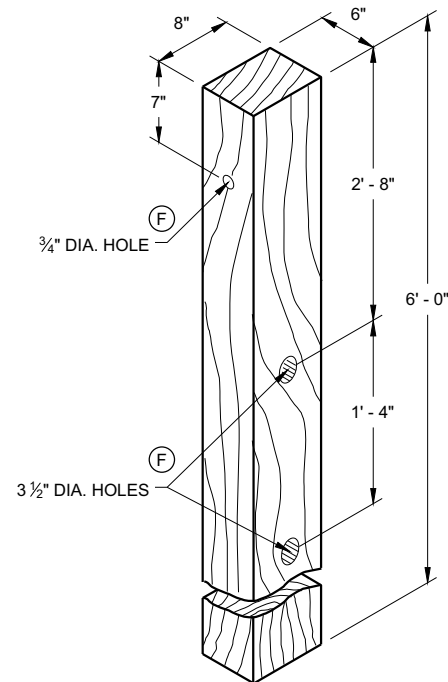
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 123



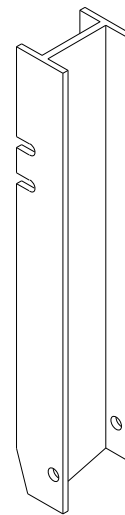
UPPER POST NO. 1 ⁽¹⁾ (E)



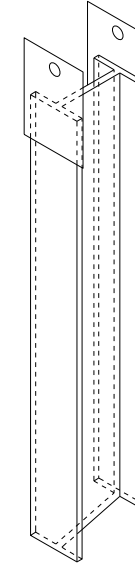
LOWER POST NO. 1 ⁽²⁾ (E)



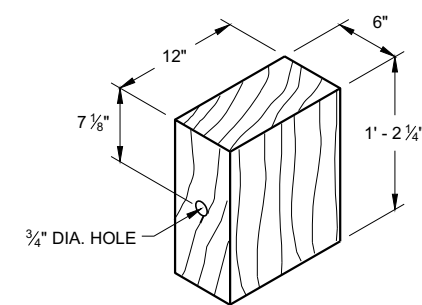
WOOD CRT POST ⁽³⁾ (E)
POSTS NUMBER 3-9



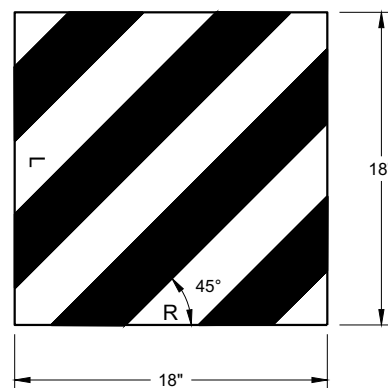
UPPER POST NO. 2 ⁽¹⁵⁾ (E)



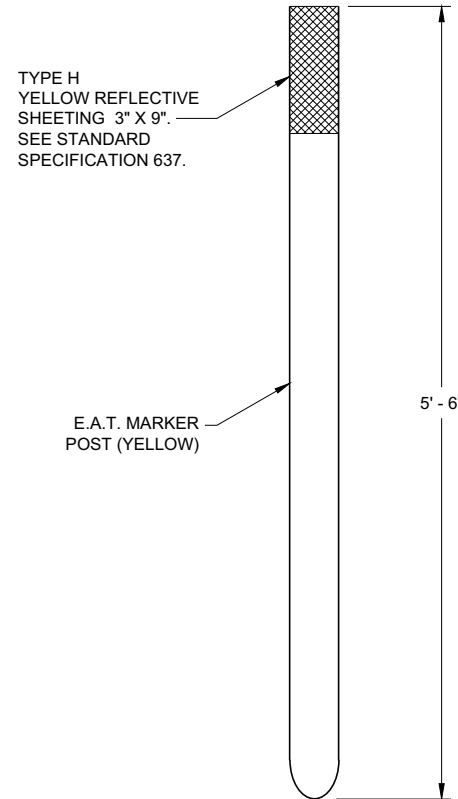
LOWER POST NO. 2 ⁽¹⁶⁾ (E)



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



REFLECTIVE SHEETING DETAIL ^(E)

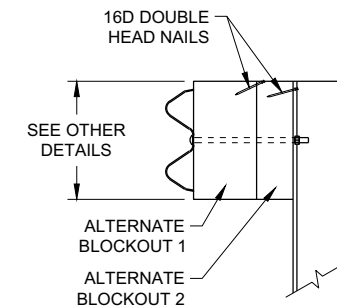


FRONT VIEW

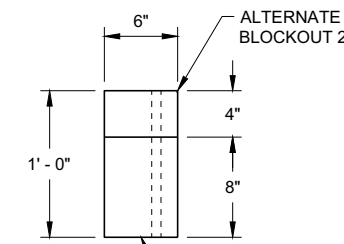


SIDE VIEW

E.A.T. MARKER POST ⁽¹³⁾



SIDE VIEW



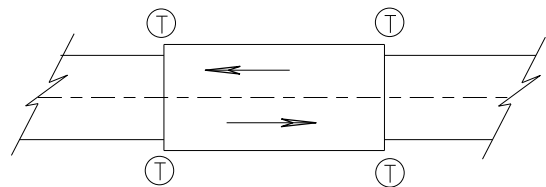
TOP VIEW

ALTERNATE WOOD
BLOCKOUT DETAIL

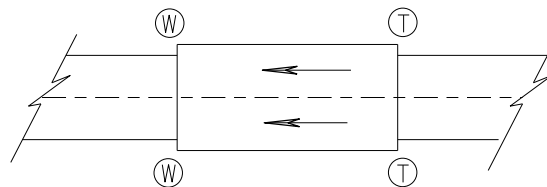
**MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 DATE /S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR 124
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

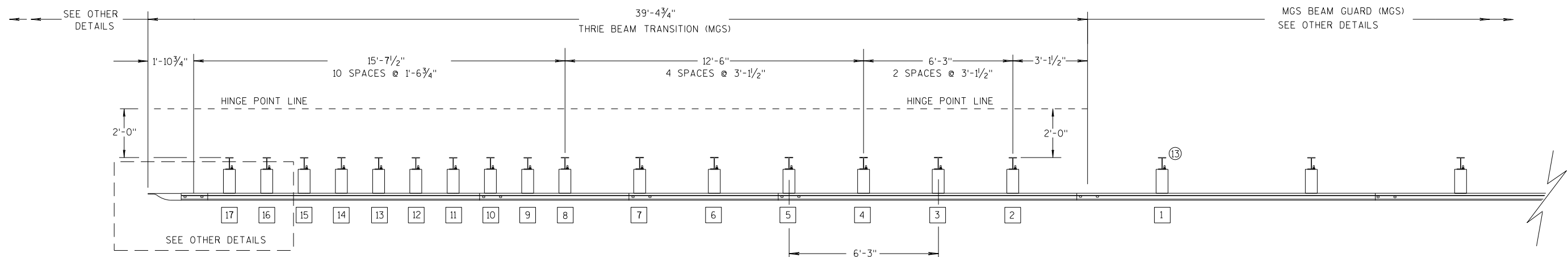
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

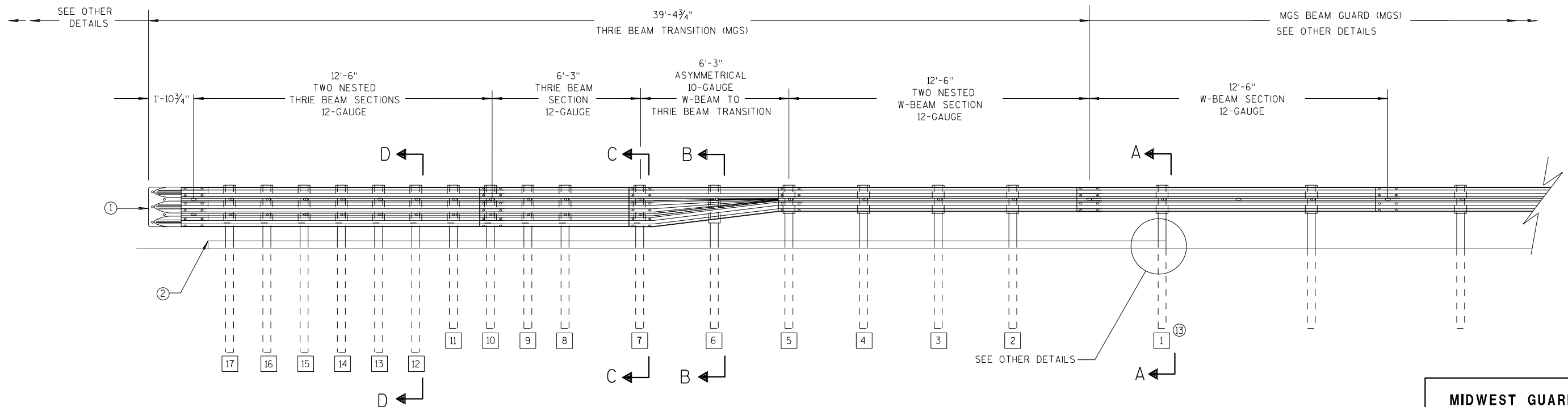
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

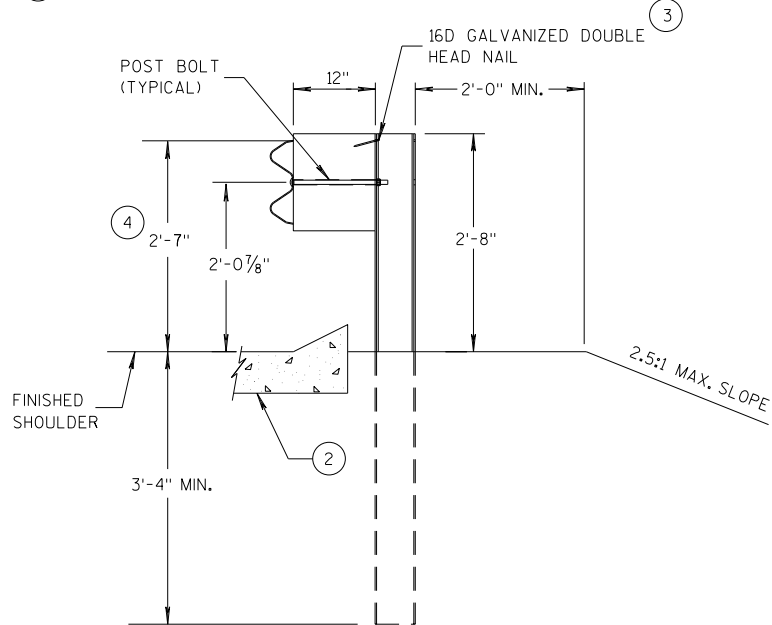
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

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

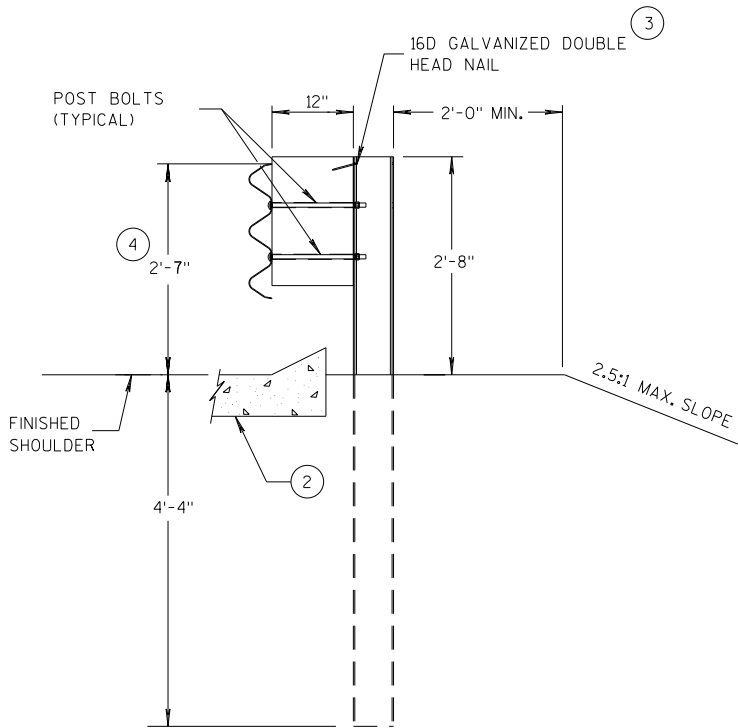
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 125

GENERAL NOTES

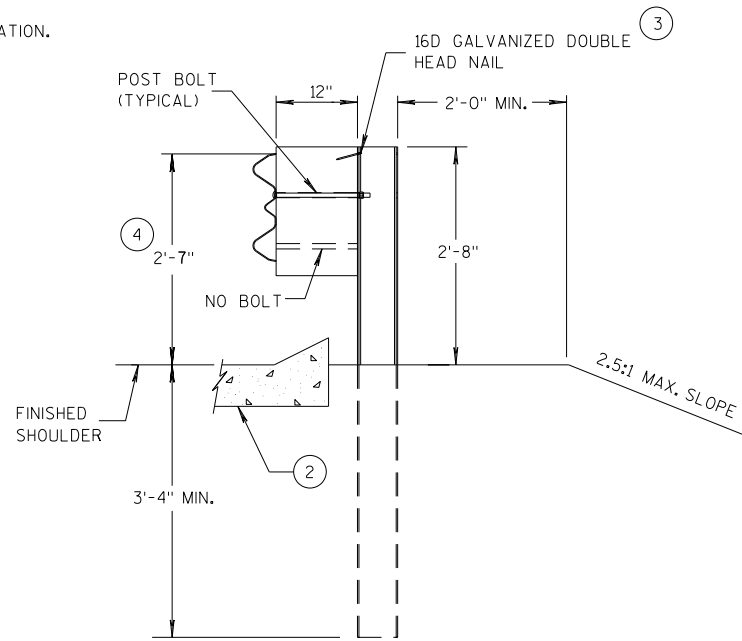
- 2 OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- 3 WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.
- 4 TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm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



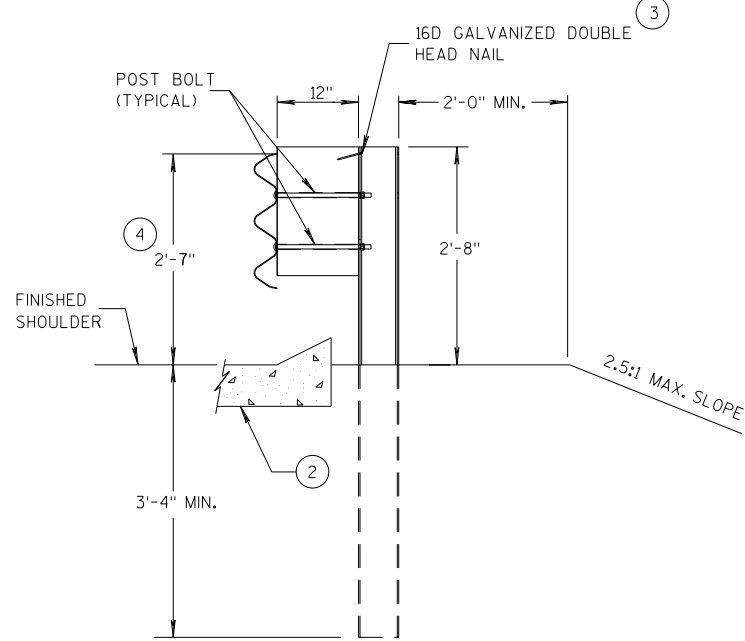
SECTION A-A
POSTS 1-5



SECTION D-D
POSTS 12-17



SECTION B-B
POST 6



SECTION C-C
POSTS 7-11

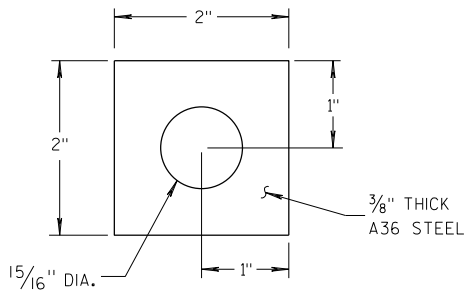
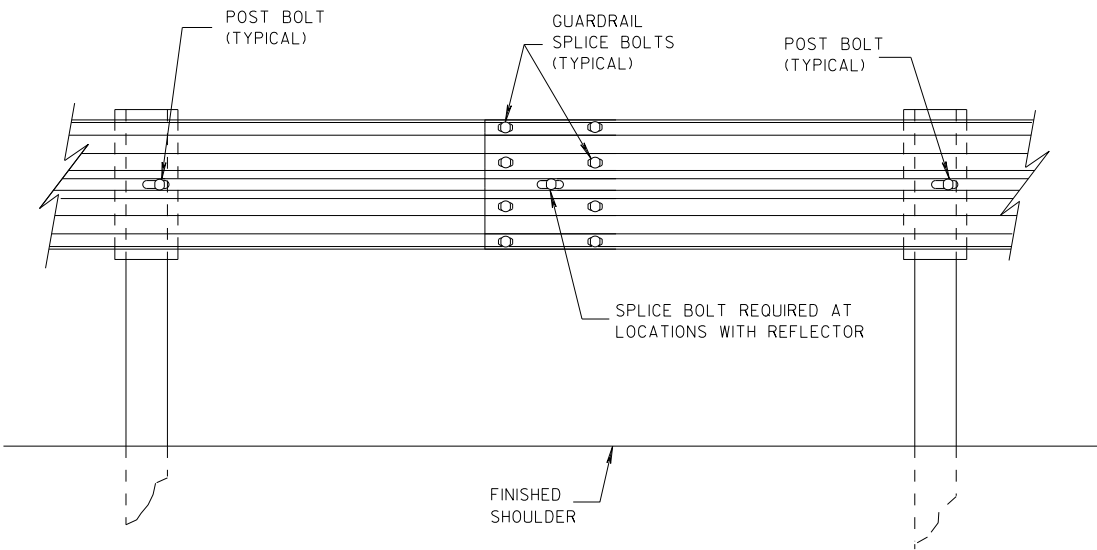
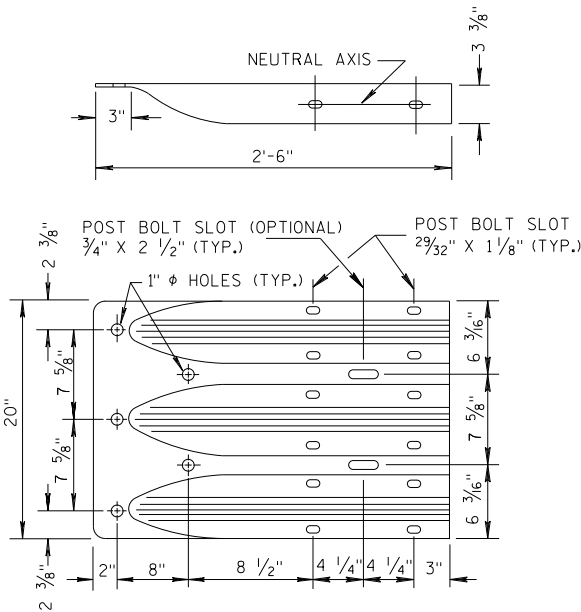


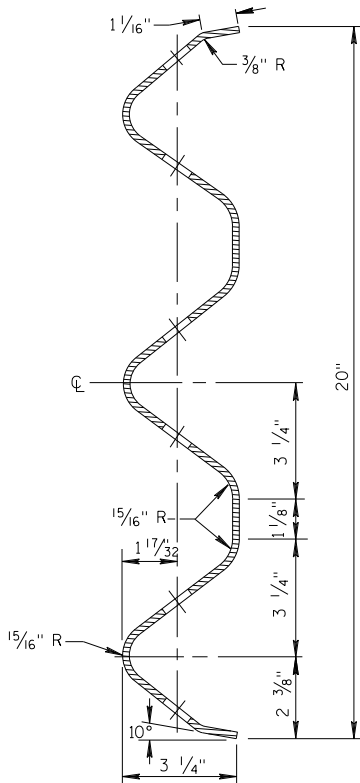
PLATE WASHER DETAIL



SPLICE DETAIL



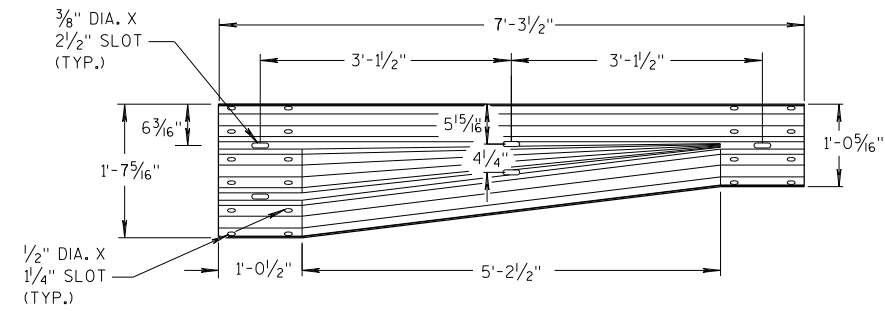
THRIE BEAM
TERMINAL CONNECTOR



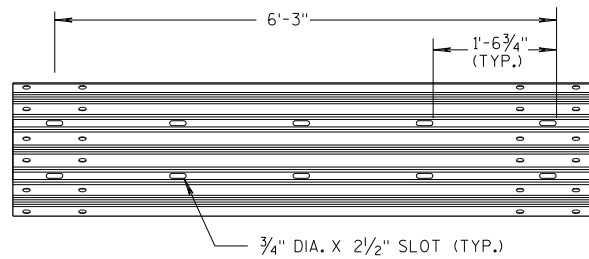
SECTION THRU THRIE
BEAM RAIL ELEMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

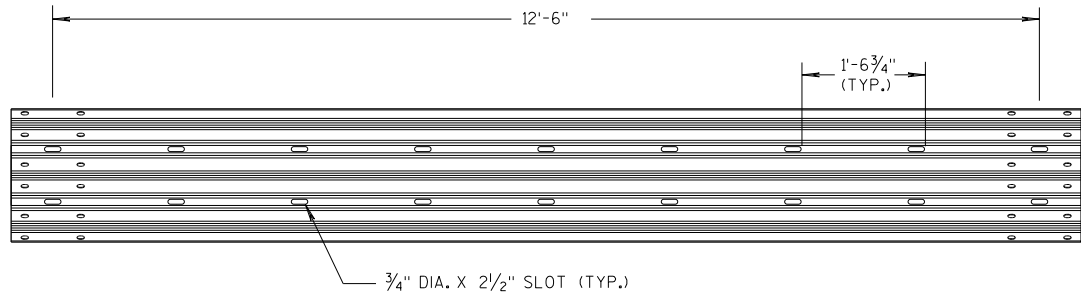
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



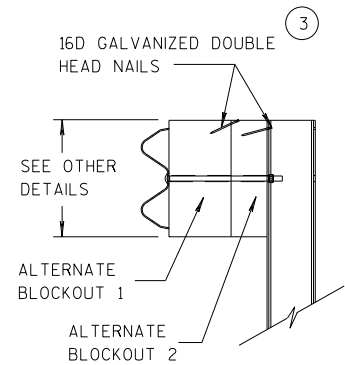
W-BEAM TO THRIE BEAM TRANSITION SECTION



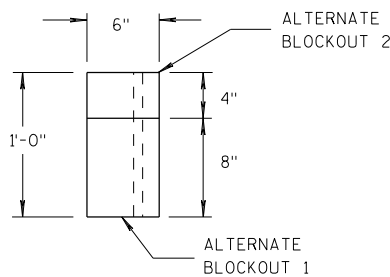
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

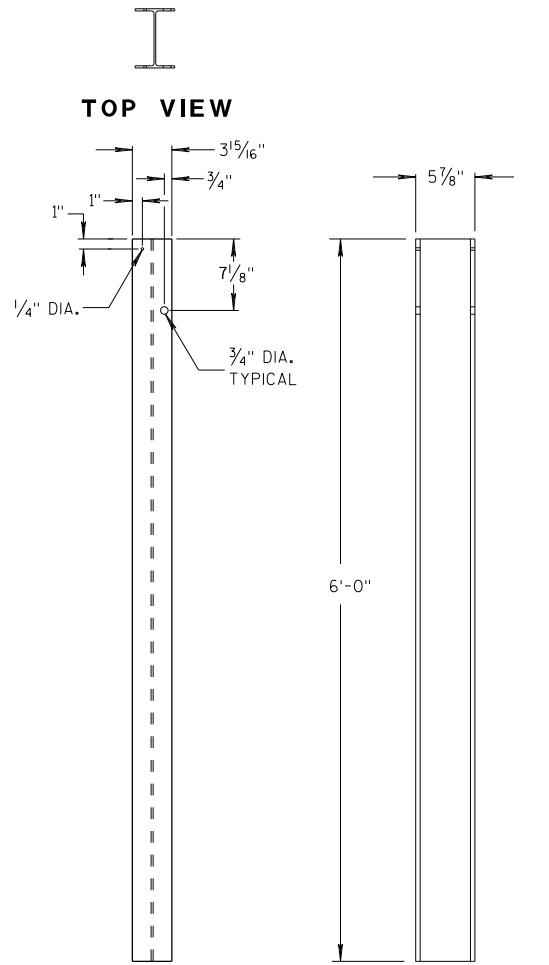


SIDE VIEW



TOP VIEW

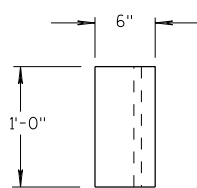
ALTERNATE WOOD BLOCKOUT DETAIL



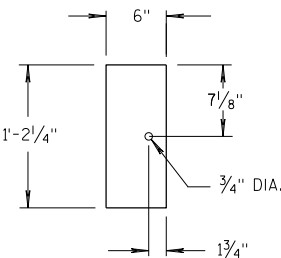
FRONT VIEW

SIDE VIEW

STEEL POSTS 1-5

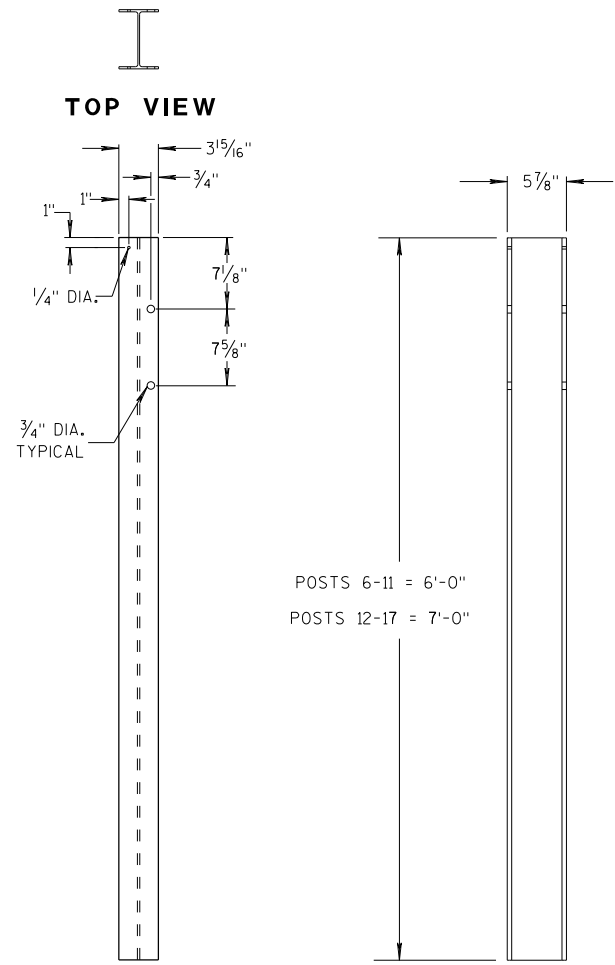


TOP VIEW



FRONT VIEW

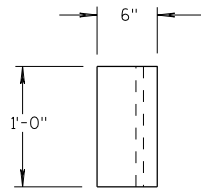
BLOCKOUT POSTS 1-5



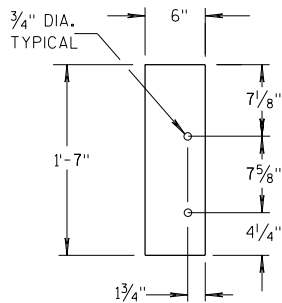
FRONT VIEW

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.

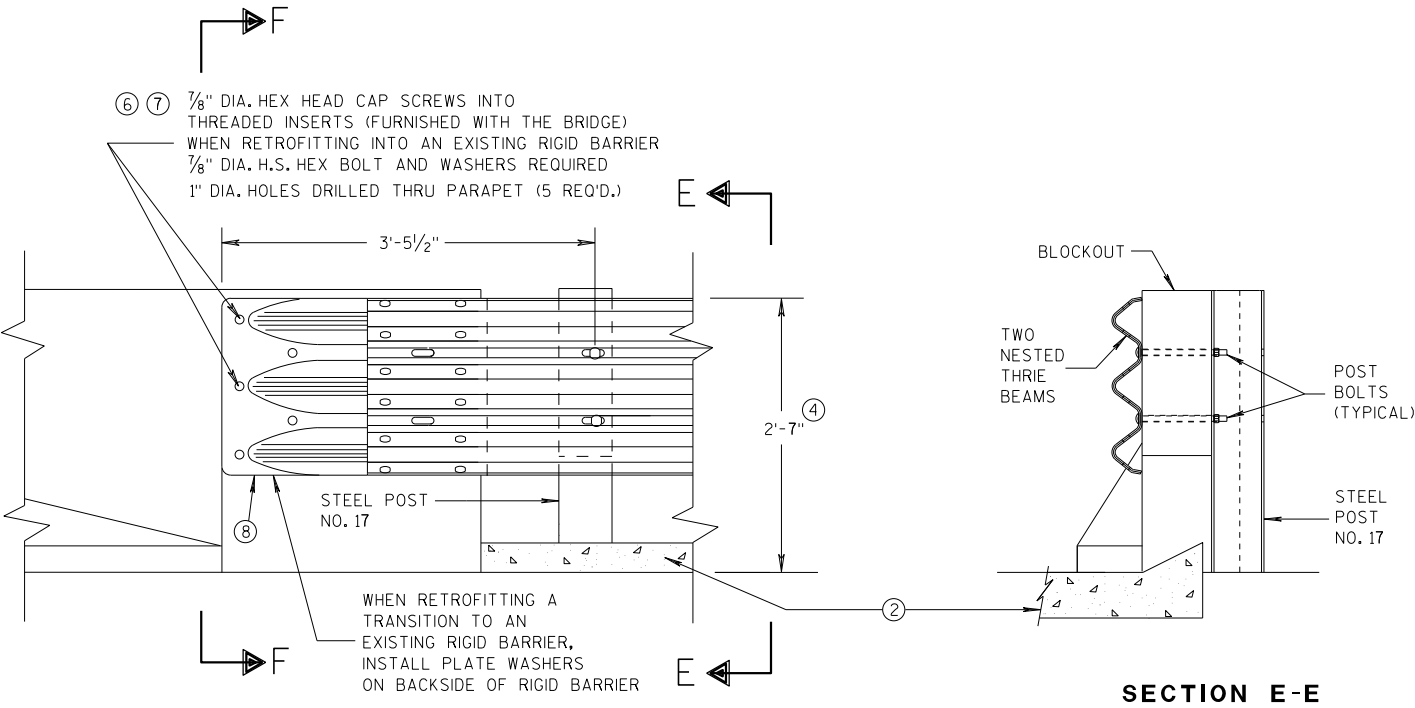
③ WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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



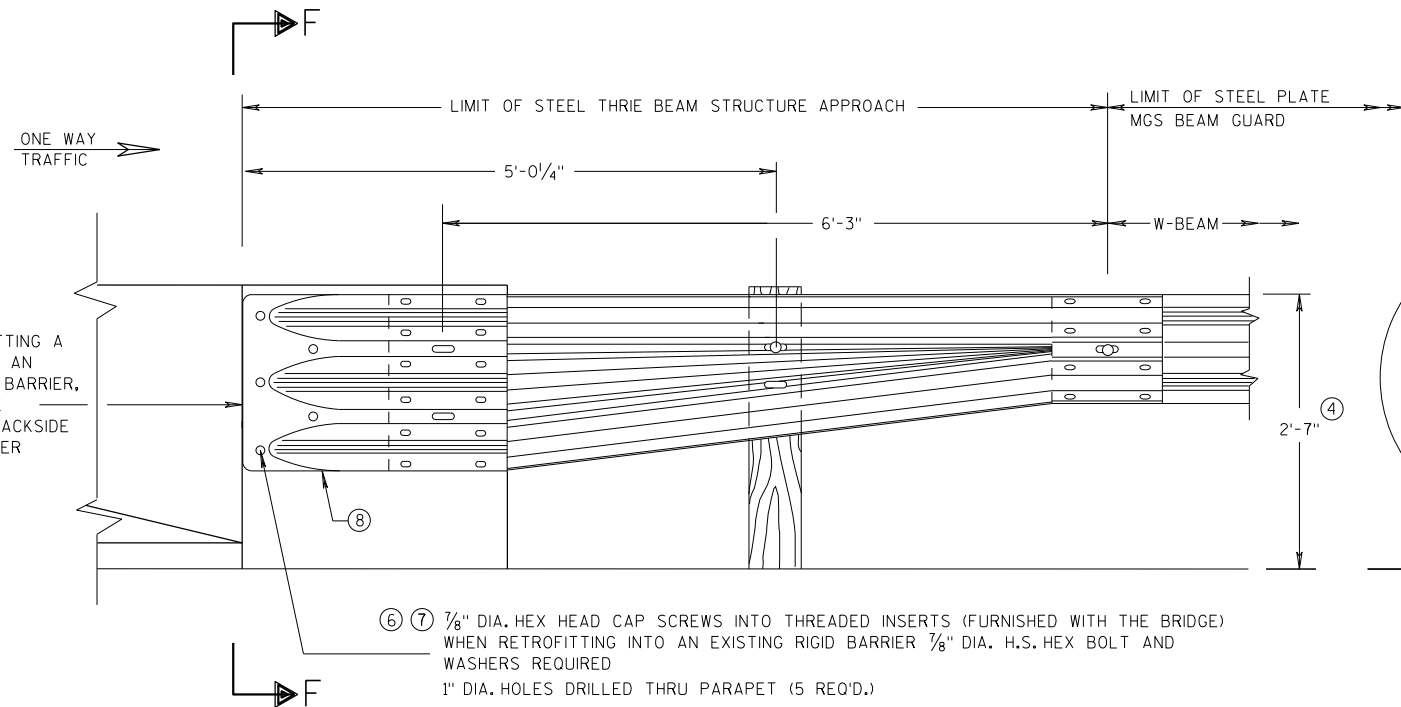
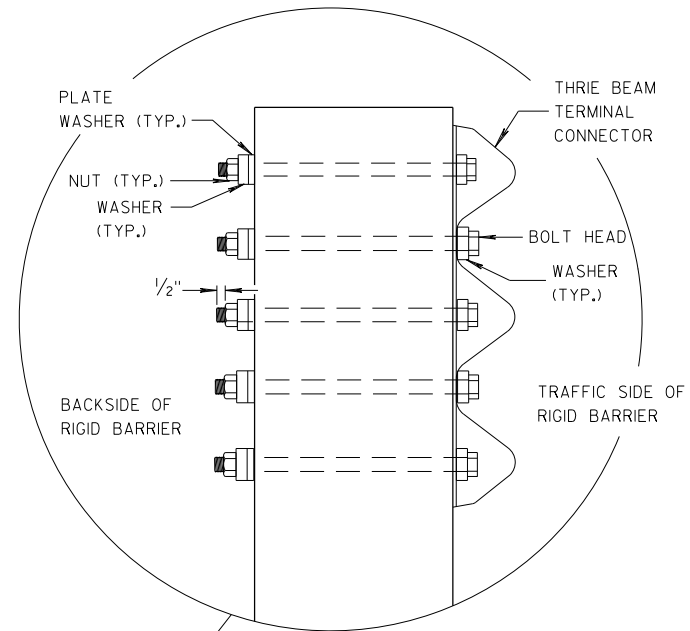
FRONT VIEW

**THRIE BEAM CONNECTION TO BRIDGE
PARAPET WITH SQUARE ENDS**

SECTION E-E

GENERAL NOTES

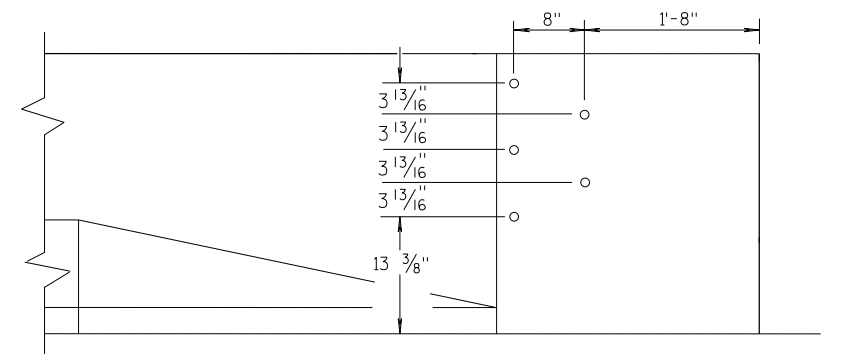
- THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSITION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
 - ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
 - ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET,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



FRONT VIEW

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

SECTION F-F



DRILL HOLE LOCATION

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

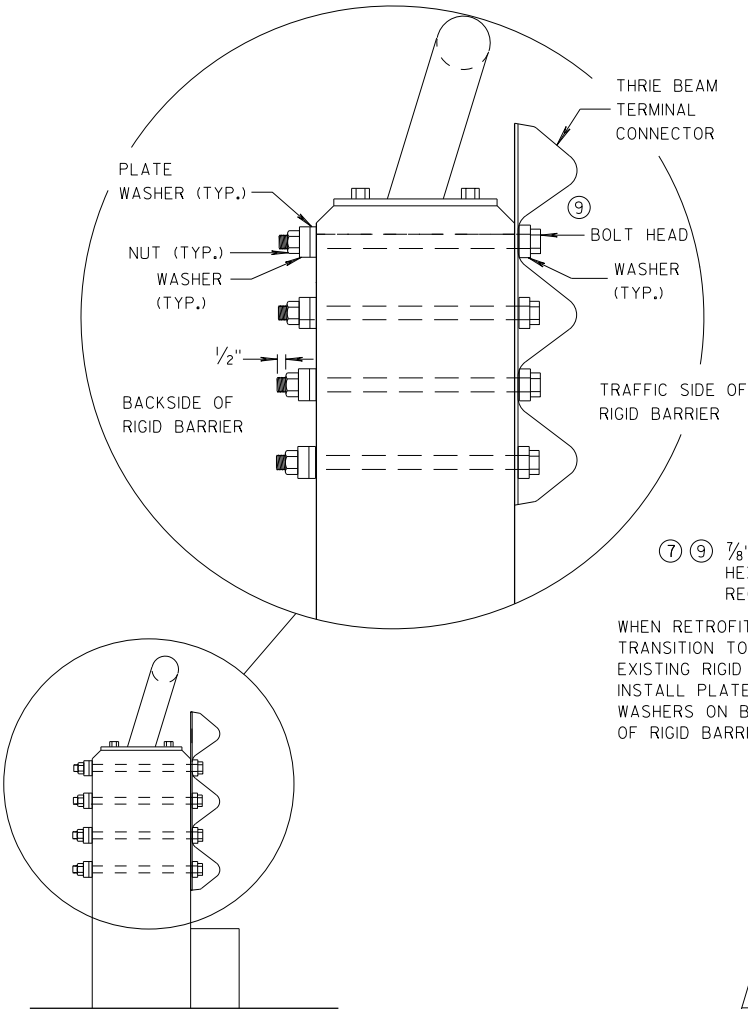
STATE OF WISCONSIN
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APPROVED
DATE 07/2018
DATE ROADWAY STANDARDS UNIT SUPERVISOR
/S/ Rodney Taylor
128
FHWA

GENERAL NOTES

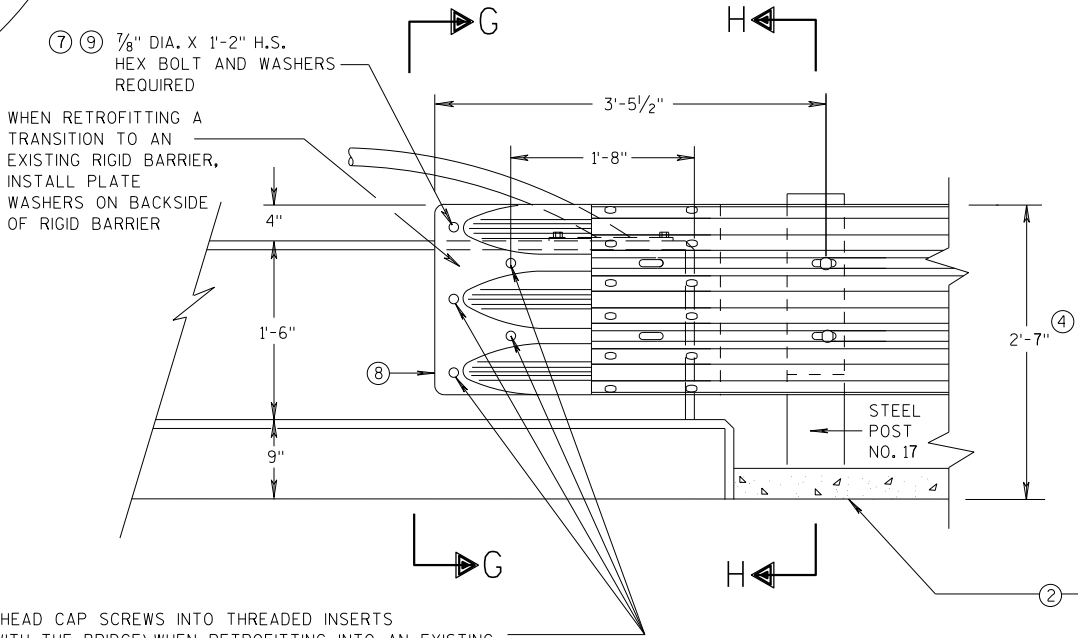
THESE ARE TYPICAL CONNECTION DETAILS. ADJUST THE POSTION OF CONNECTIONS TO EXISTING BRIDGES TO FIT THE ACTUAL BRIDGE AND SITE DIMENSIONS.

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



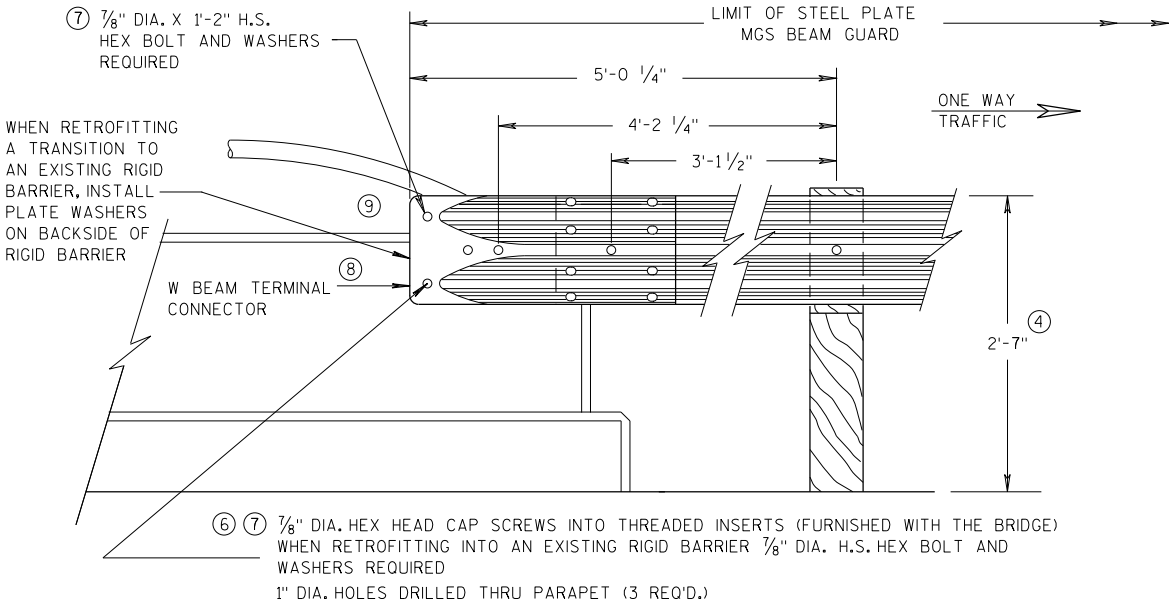
SECTION G-G

- ⑥ ⑦
- $\frac{7}{8}"$ DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER $\frac{7}{8}"$ DIA. H.S. HEX BOLT AND WASHERS REQUIRED 1" DIA. HOLES DRILLED THRU PARAPET (4 REQ'D.)



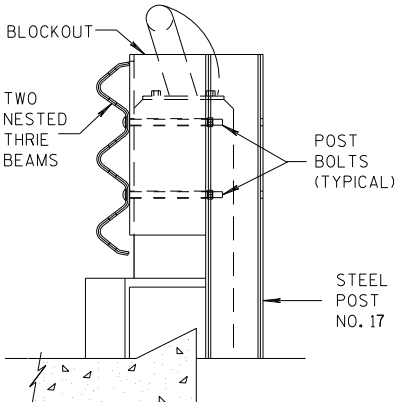
FRONT VIEW

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



FRONT VIEW

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

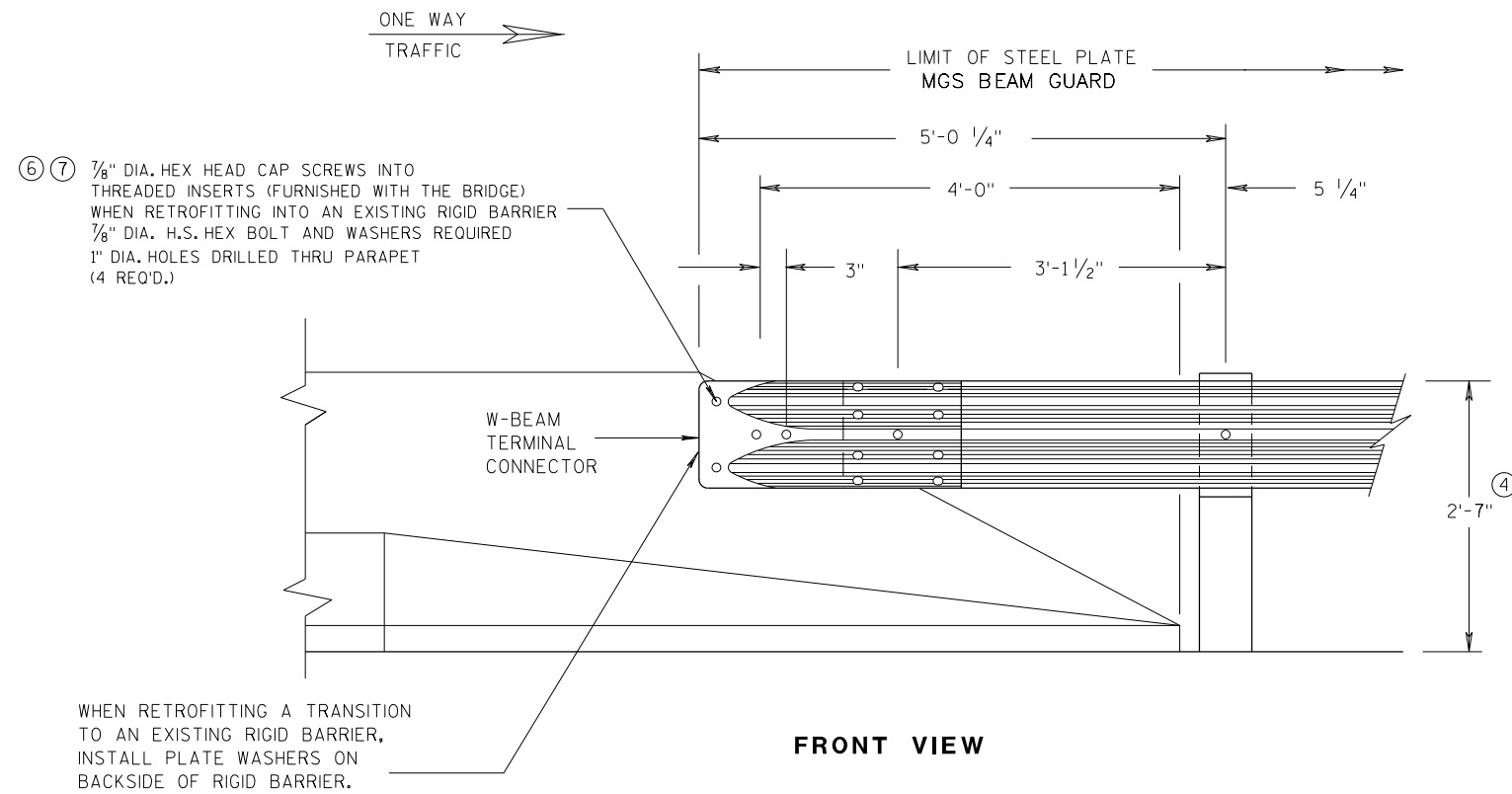


SECTION H-H

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

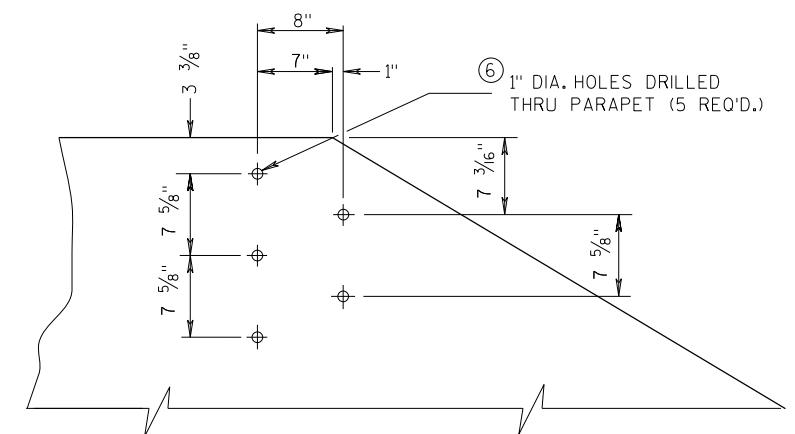
APPROVED
07/2018 /S/ Rodney Taylor
DATE ROADWAY STANDARDS UNIT SUPERVISOR
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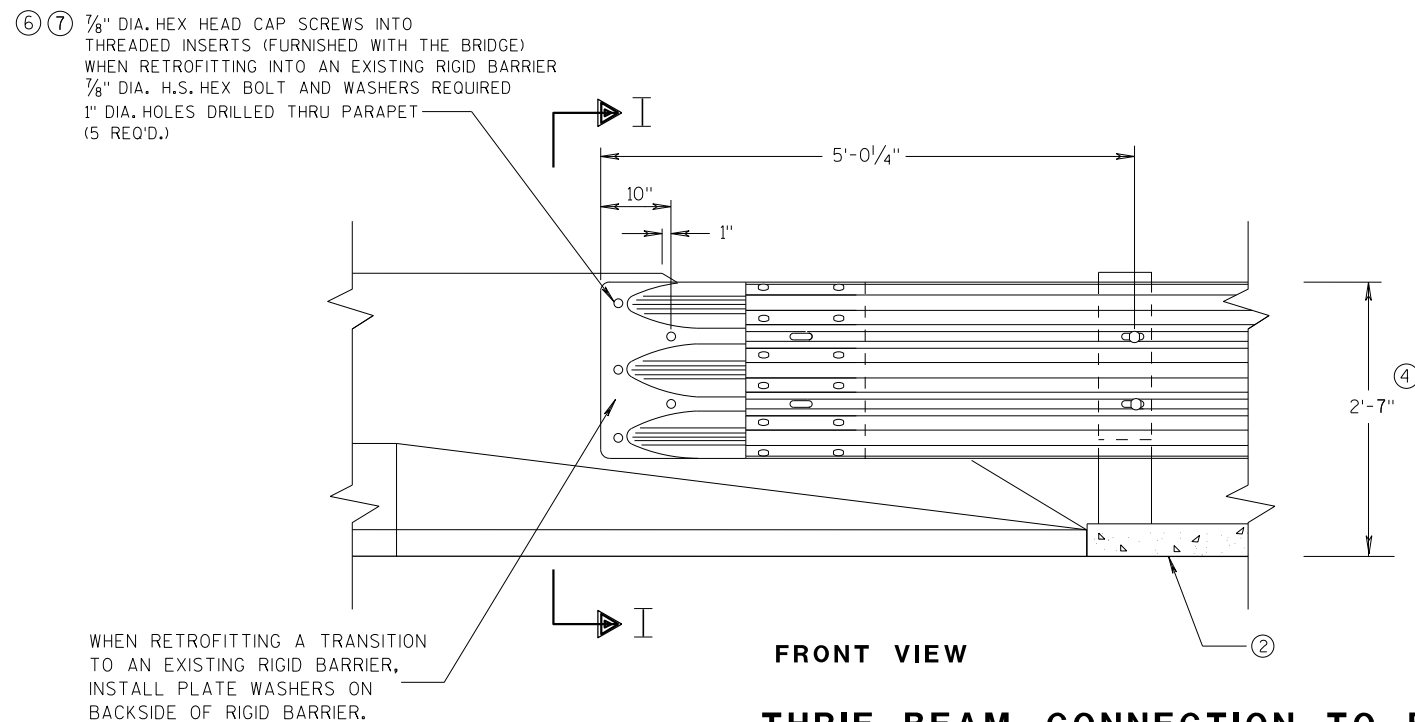
**W BEAM CONNECTION TO
PARAPETS WITH SLOPED ENDS
(USE ONLY AT TRAFFIC EXIT END OF ONE WAY BRIDGE)**

GENERAL NOTES

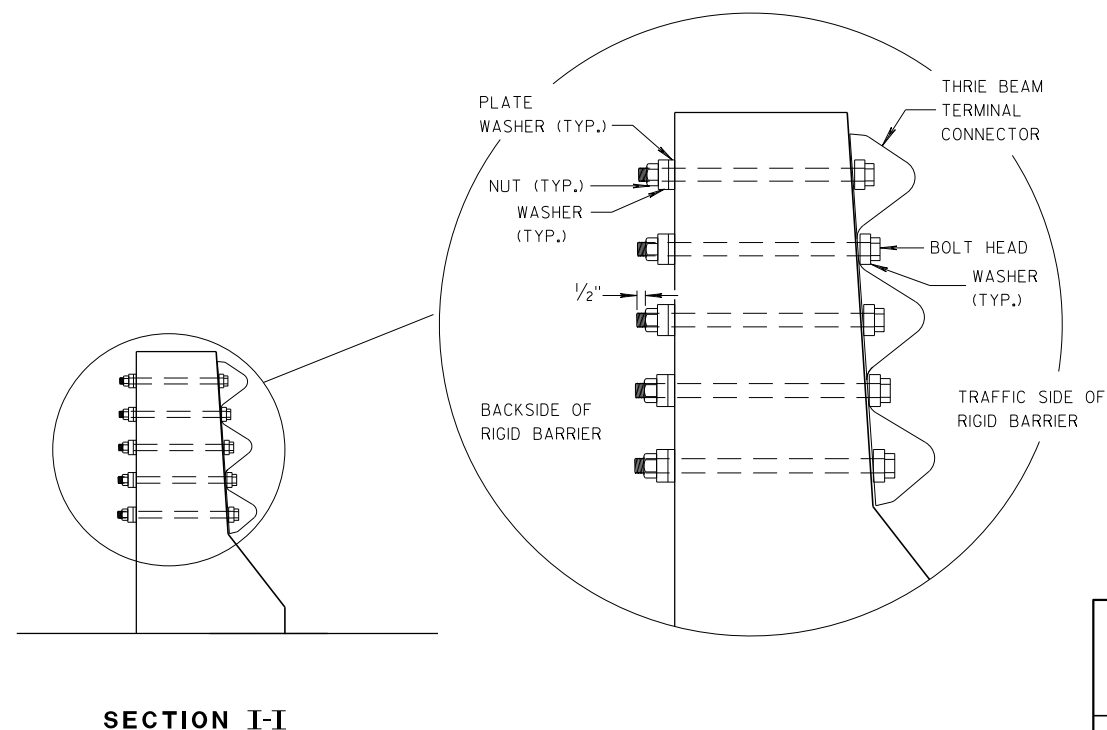
- ② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.
- ④ TOLERANCE FOR TOP OF BEAM IS $\pm 1"$.
- ⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.
- ⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH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



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



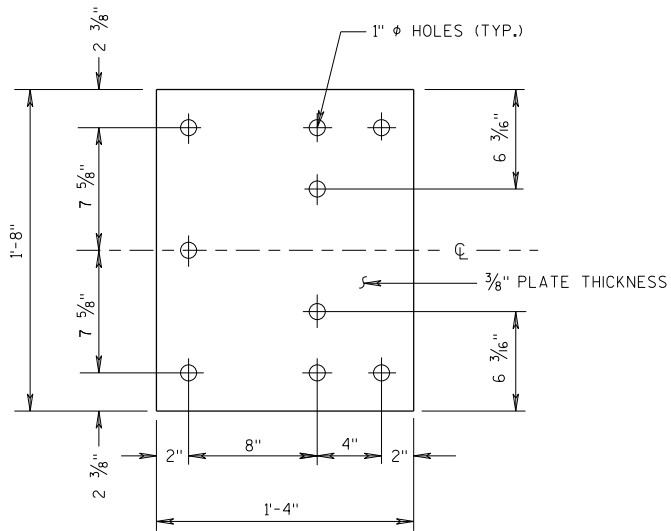
**THRIE BEAM CONNECTION TO BRIDGE
PARAPETS WITH SLOPED ENDS**



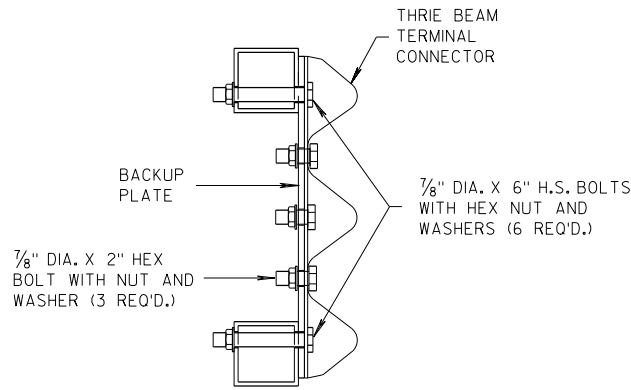
**MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

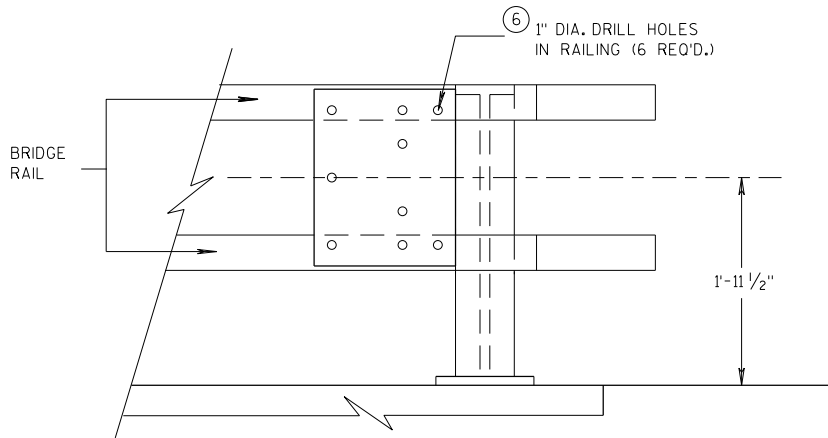
APPROVED
DATE 07/2018 /S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR 130
FHWA



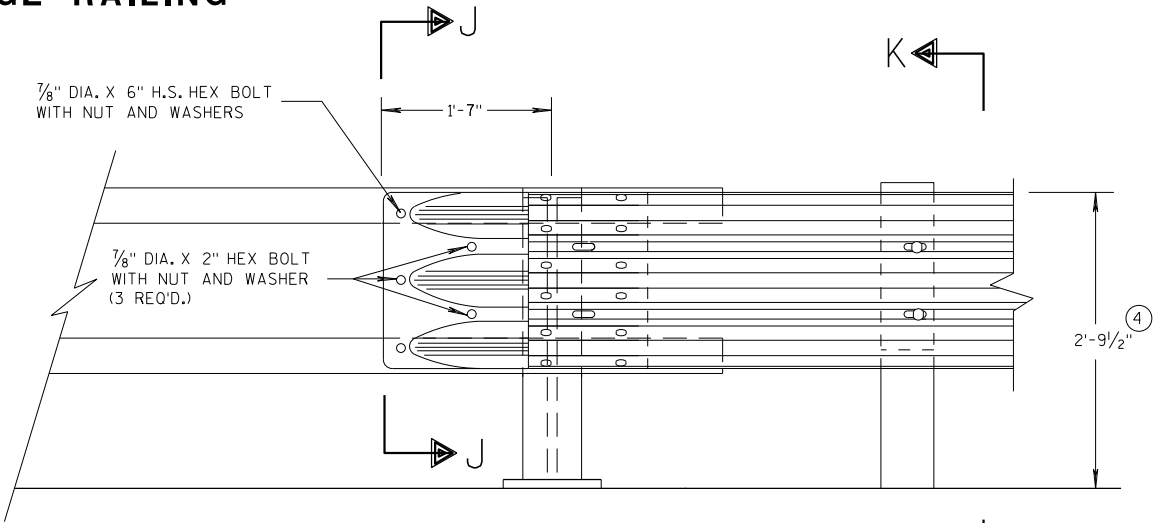
BACK-UP PLATE DETAIL



SECTION J-J

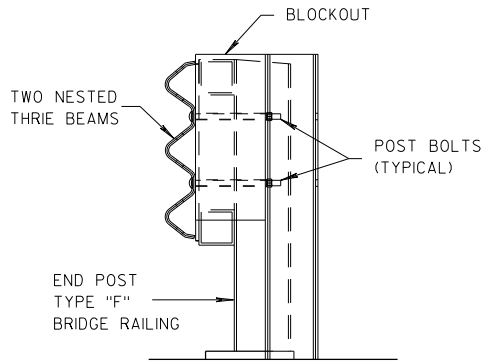


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

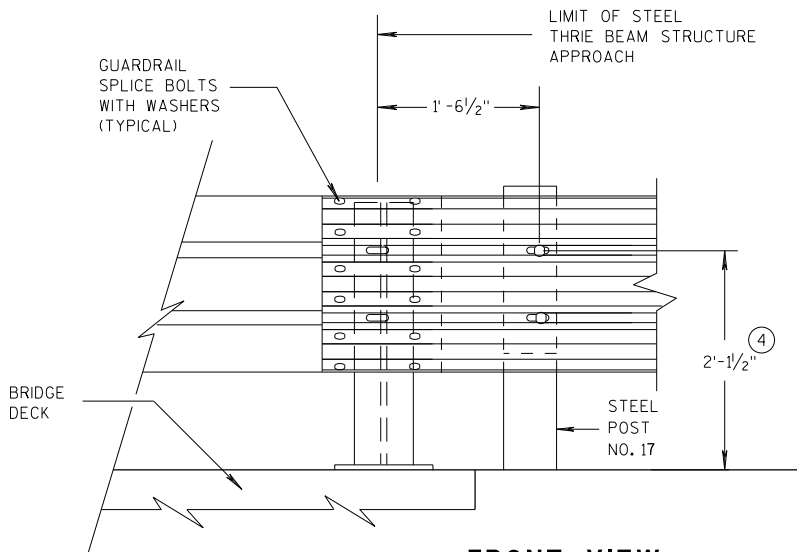
THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"



SECTION K-K

GENERAL NOTES

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



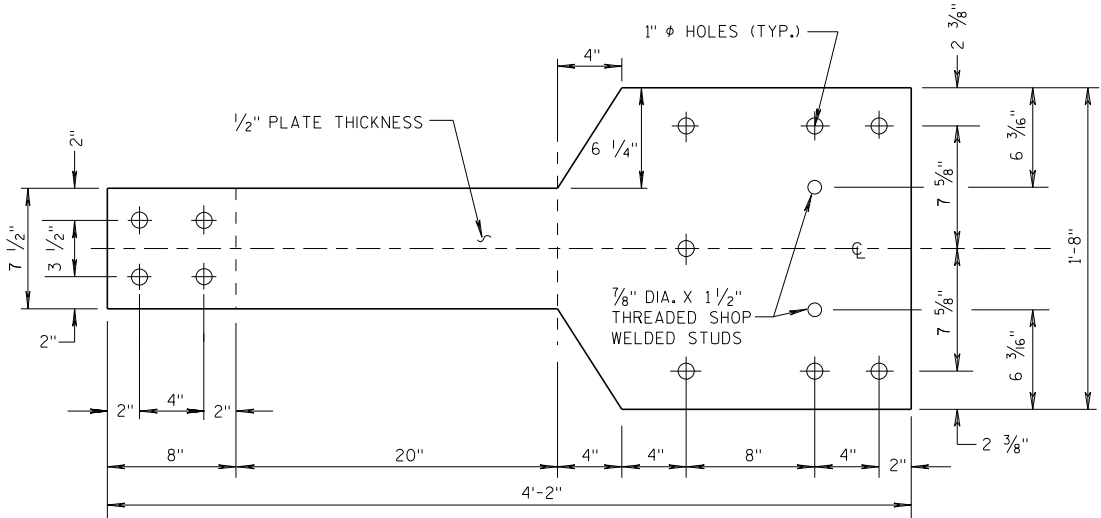
FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"

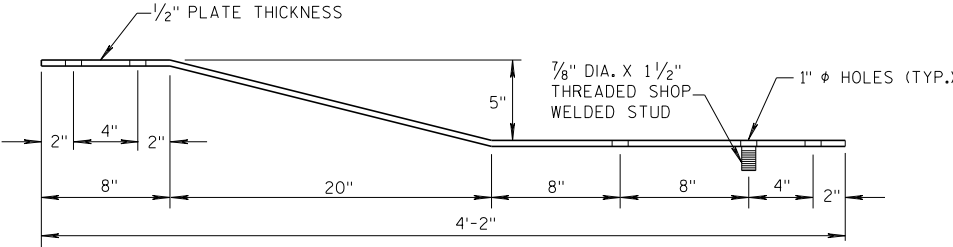
MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)		
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION		
APPROVED 07/2018 DATE	/S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR	131
FHWA		

GENERAL NOTES

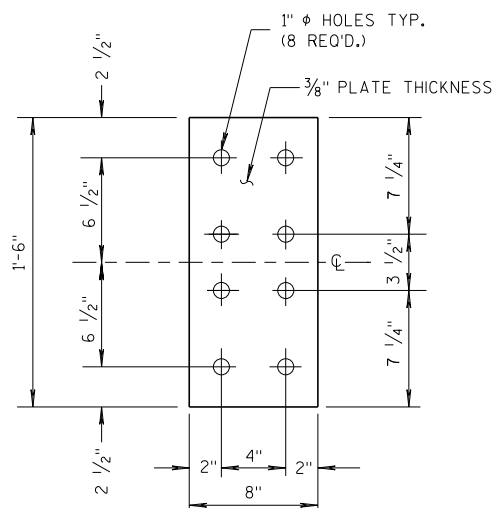
④ TOLERANCE FOR TOP OF W-BEAM RAIL IS $\pm 1"$.



FRONT VIEW

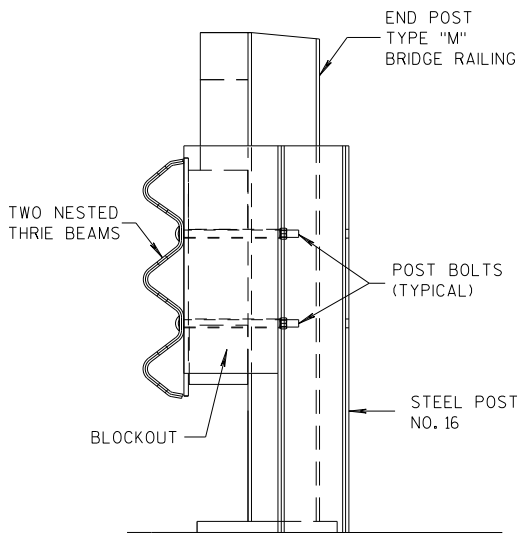


PLAN VIEW
BACK-UP PLATE DETAIL, TYPE "M"

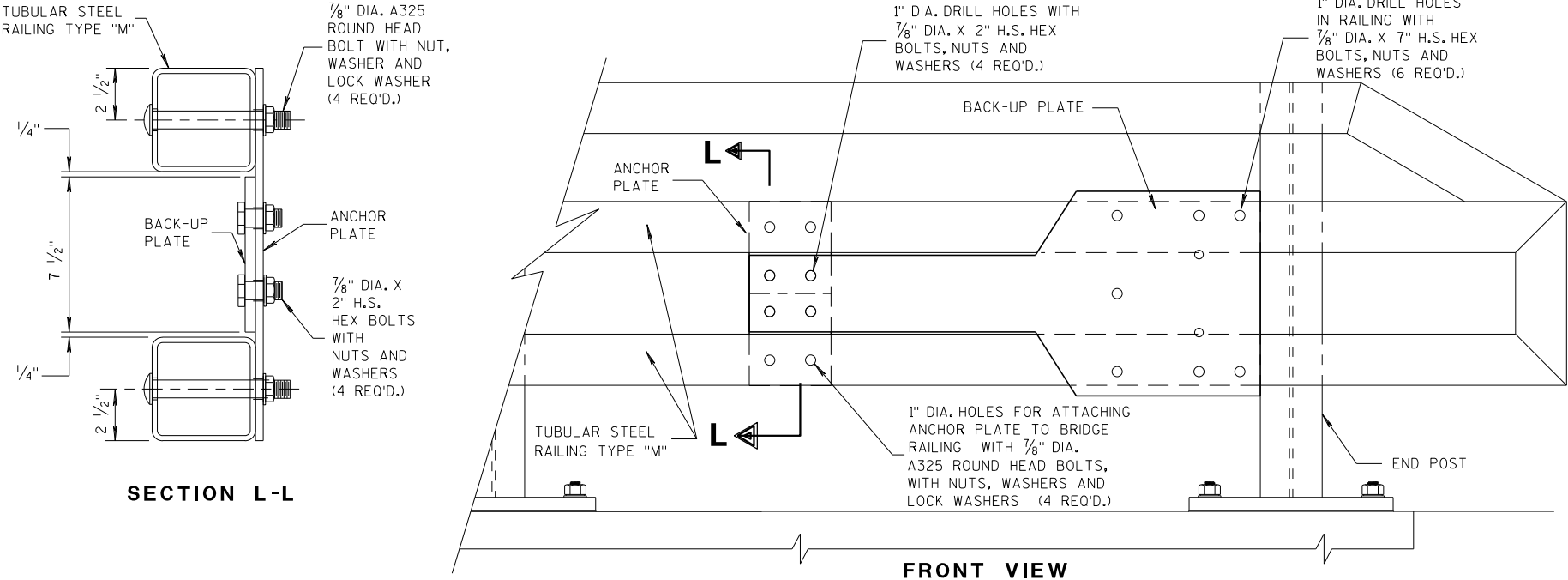


FRONT VIEW

ANCHOR
PLATE DETAIL,
TYPE "M"



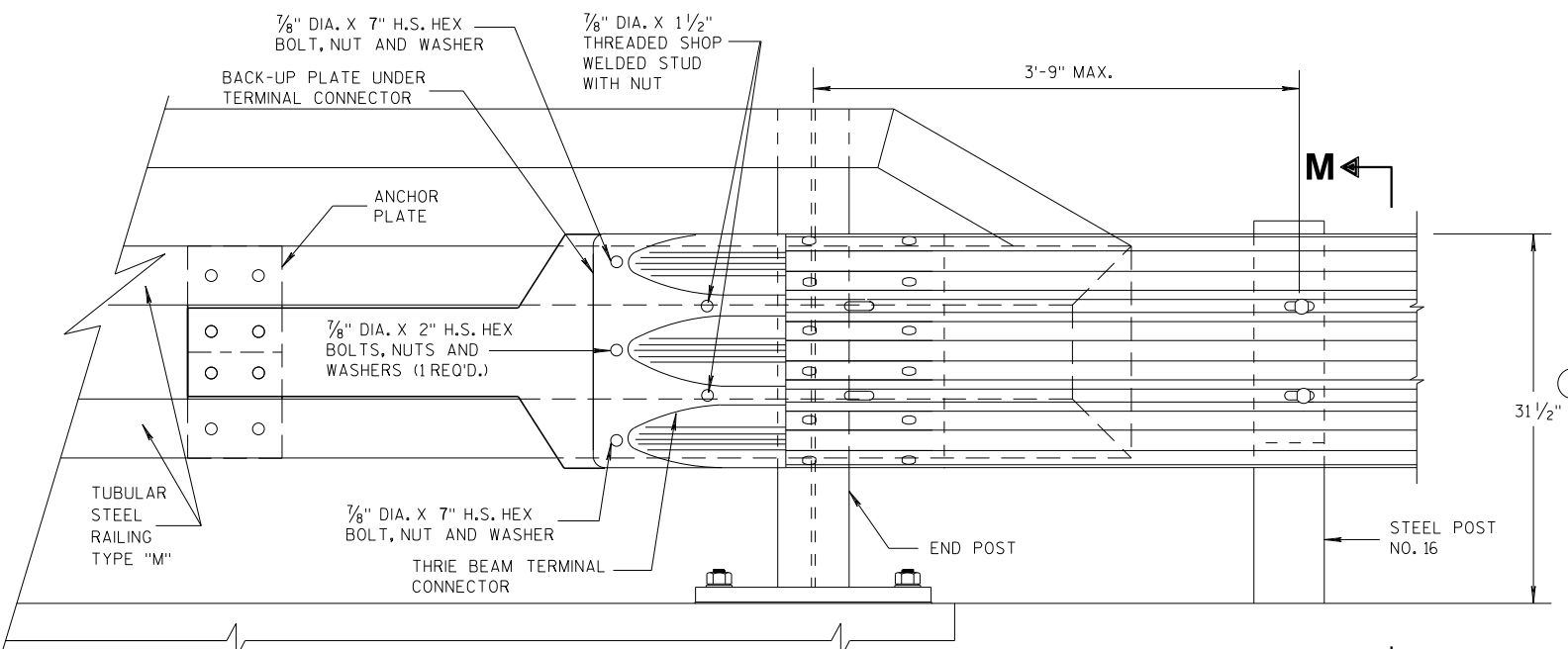
SECTION M-M



SECTION L-L

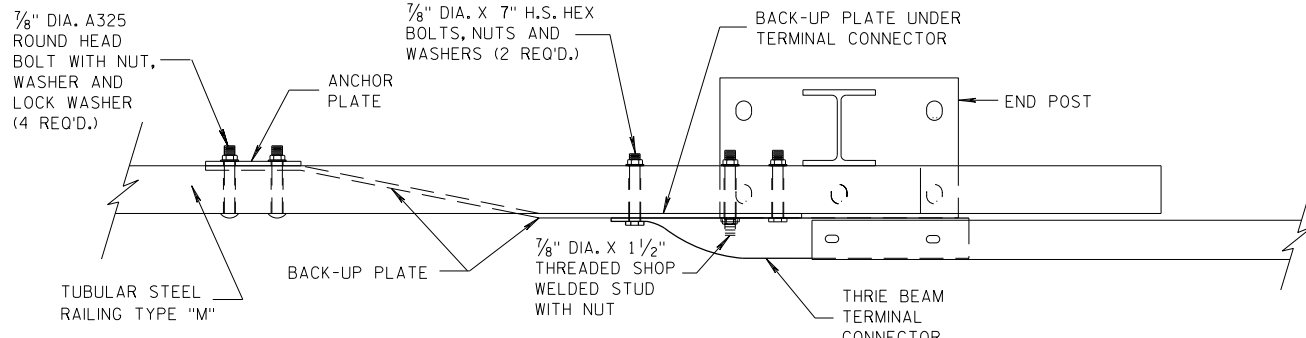
FRONT VIEW

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



FRONT VIEW

M



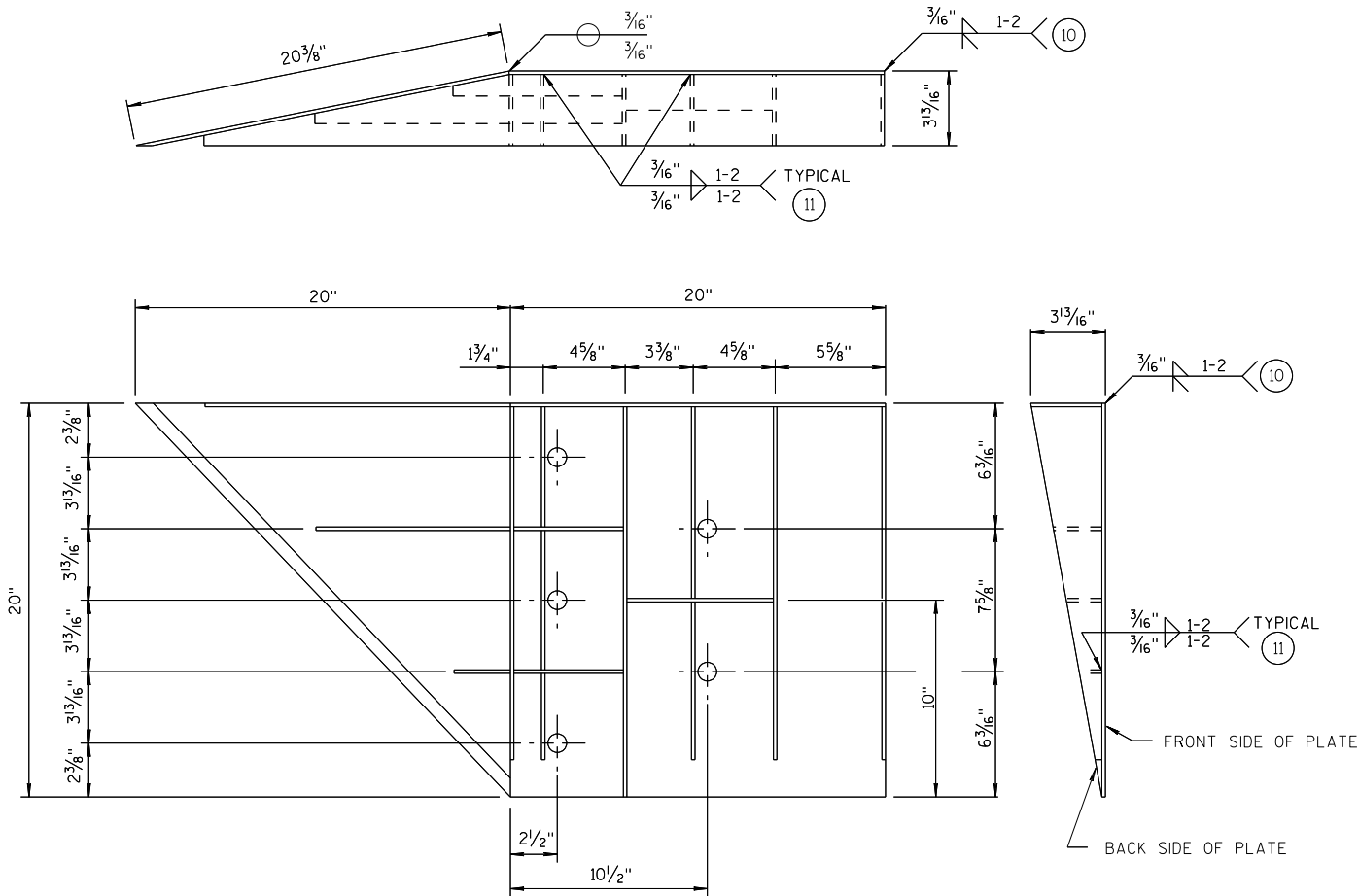
PLAN VIEW

THREE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THREE BEAM TRANSITION (MGS)

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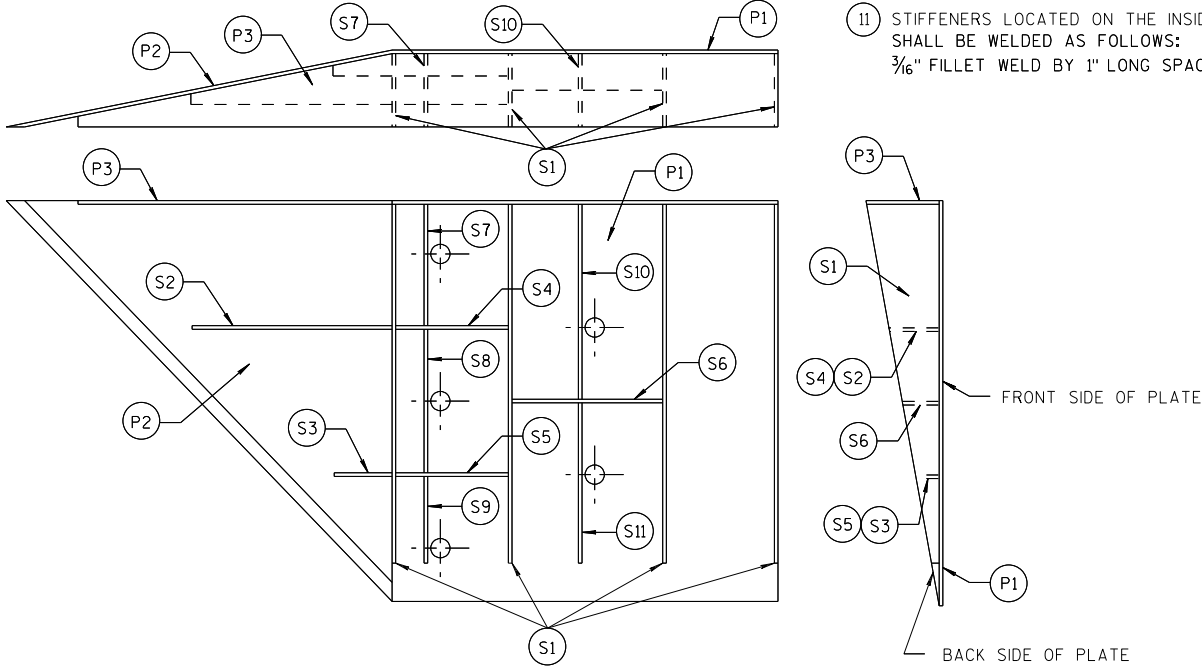


WELDING INSTRUCTION
(VIEWED FROM BACK SIDE OF PLATE)

SINGLE SLOPE CONNECTION PLATE

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

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



GENERAL NOTES

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

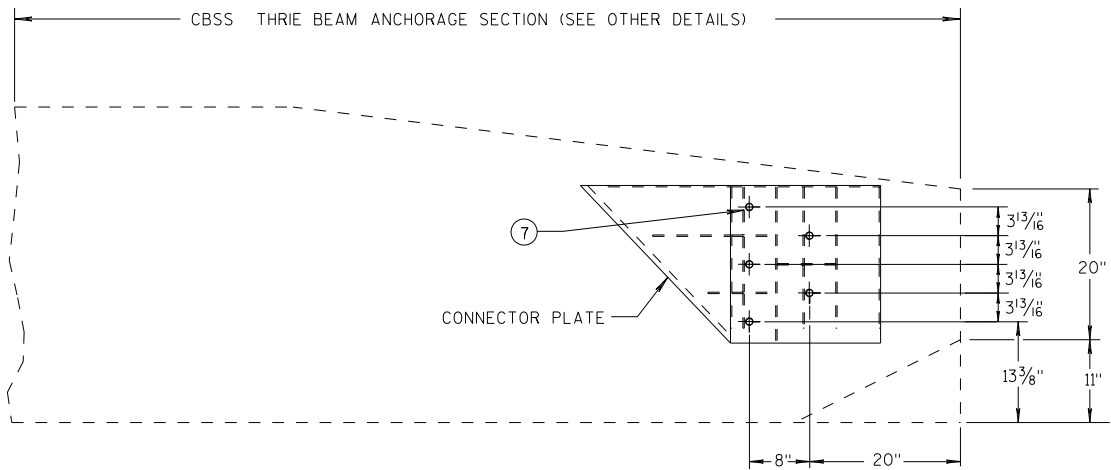
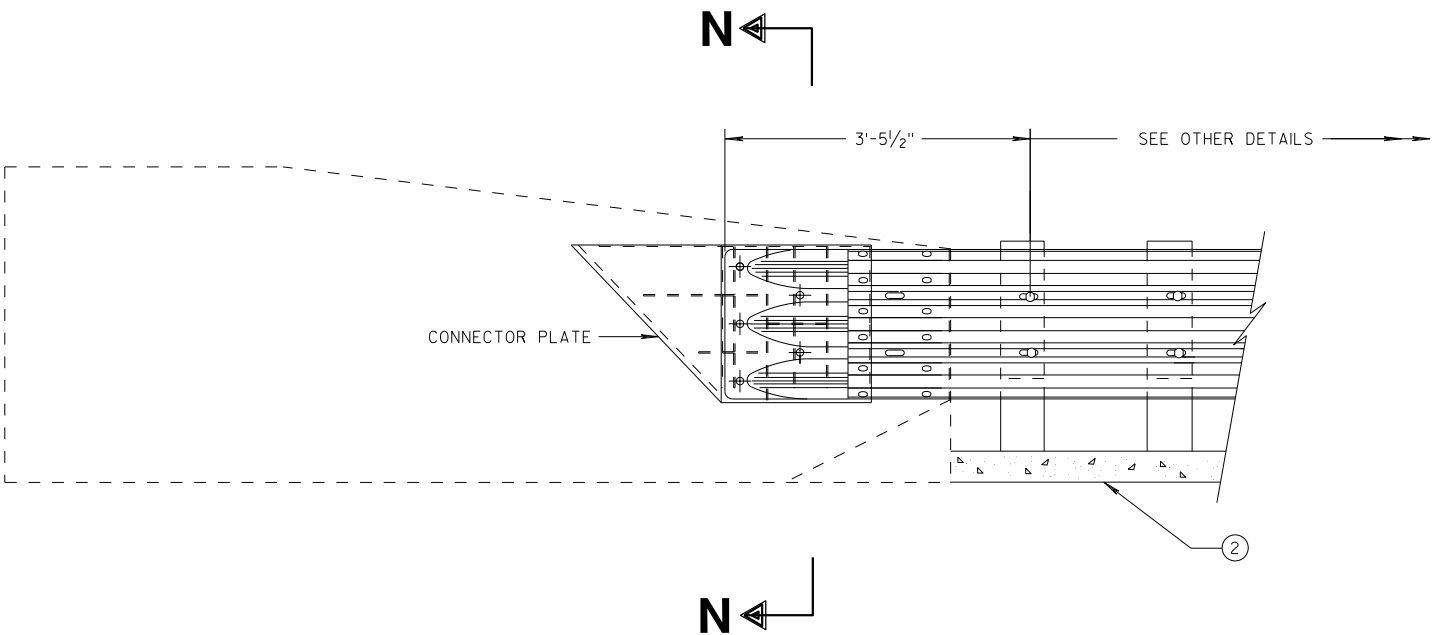
- 10 STIFFENERS LOCATED AT THE OUTSIDE EDGES OF THE COVER PLATES SHALL BE WELDED AS FOLLOWS:
SINGLE BEVEL GROOVE WELD ON EXTERNAL SIDES AND 3/16" FILLET WELD BY 1" LONG SPACED AT 2" ON INTERNAL SIDES.
- 11 STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
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THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



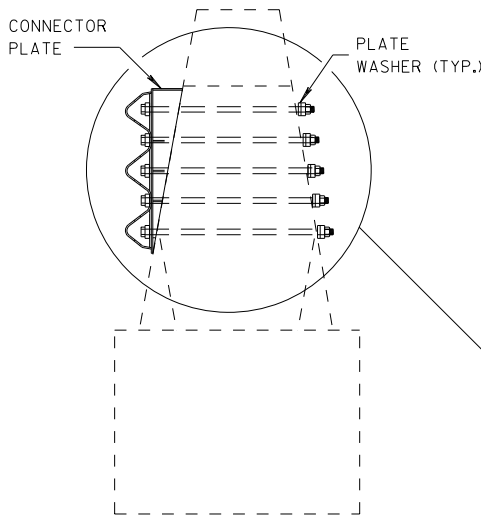
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

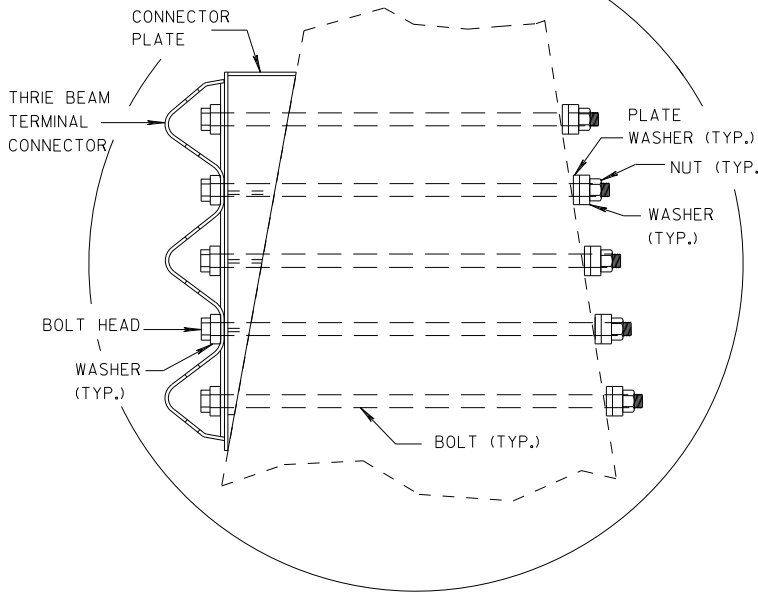
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

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



SECTION N-N



MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

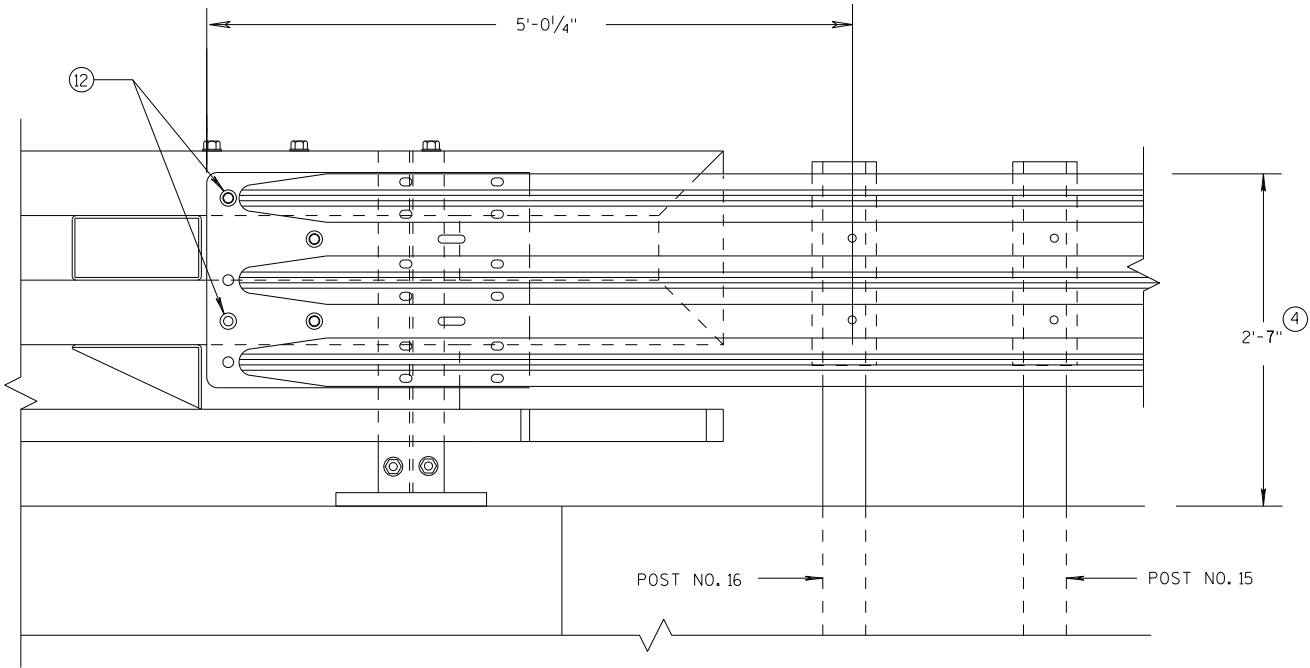
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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DATE 7/2018
FHWA

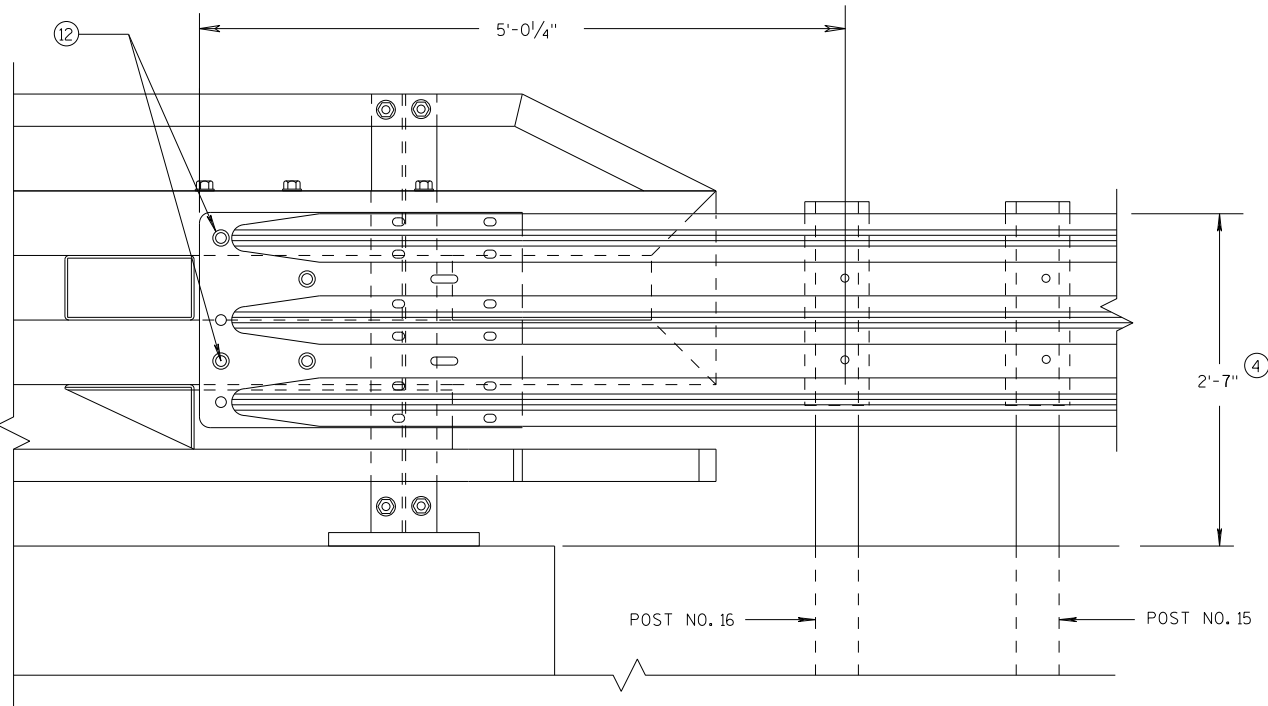
/S/ Rodney Taylor
ROADWAY STANDARDS DESIGN
UNIT SUPERVISOR 134

GENERAL NOTES

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



ELEVATION OF DETAIL AT NY3 END POST
THRIE BEAM RAIL ATTACHMENT

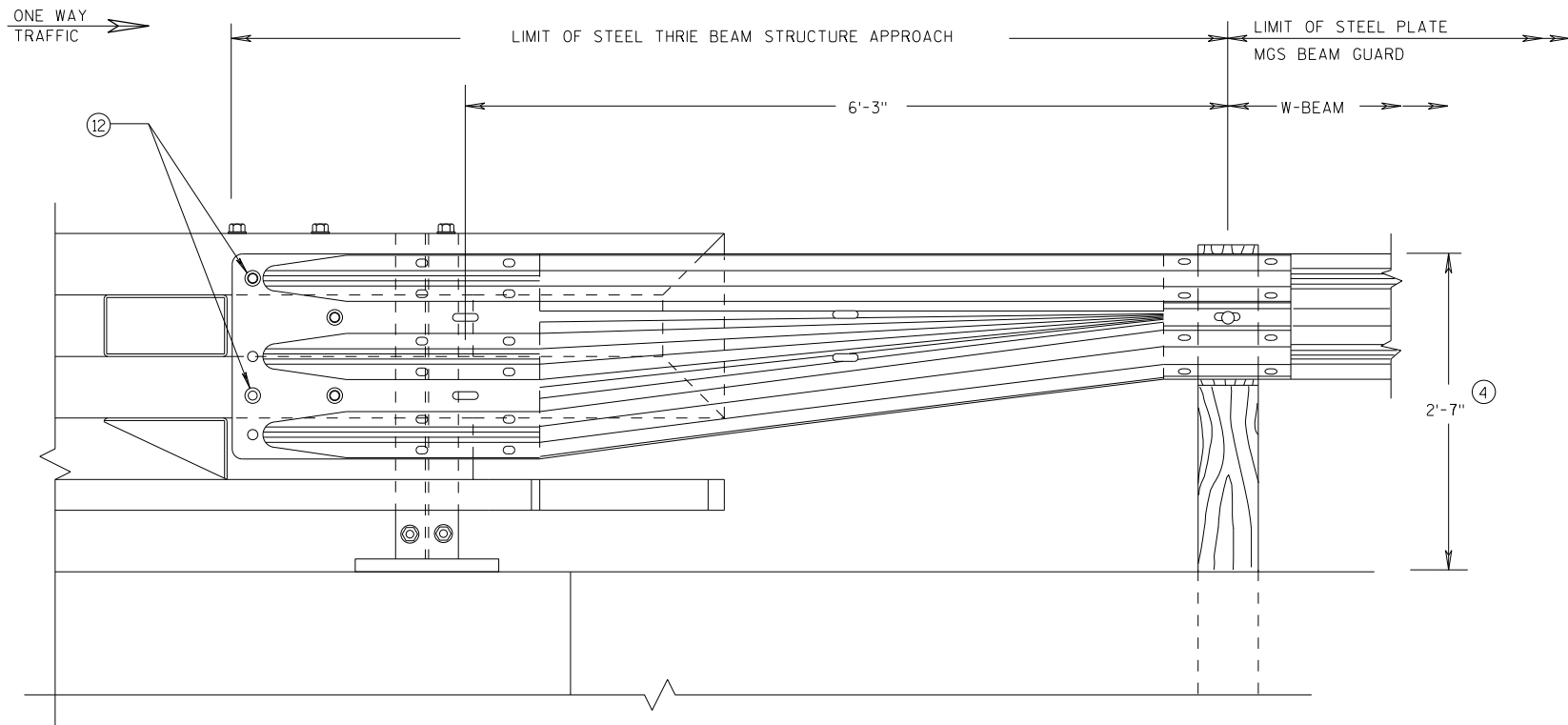


ELEVATION OF DETAIL AT NY4 END POST
THRIE BEAM RAIL ATTACHMENT

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
DATE 7/2018 /S/ Rodney Taylor
ROADWAY STANDARDS UNIT SUPERVISOR 135 NT
FHWA



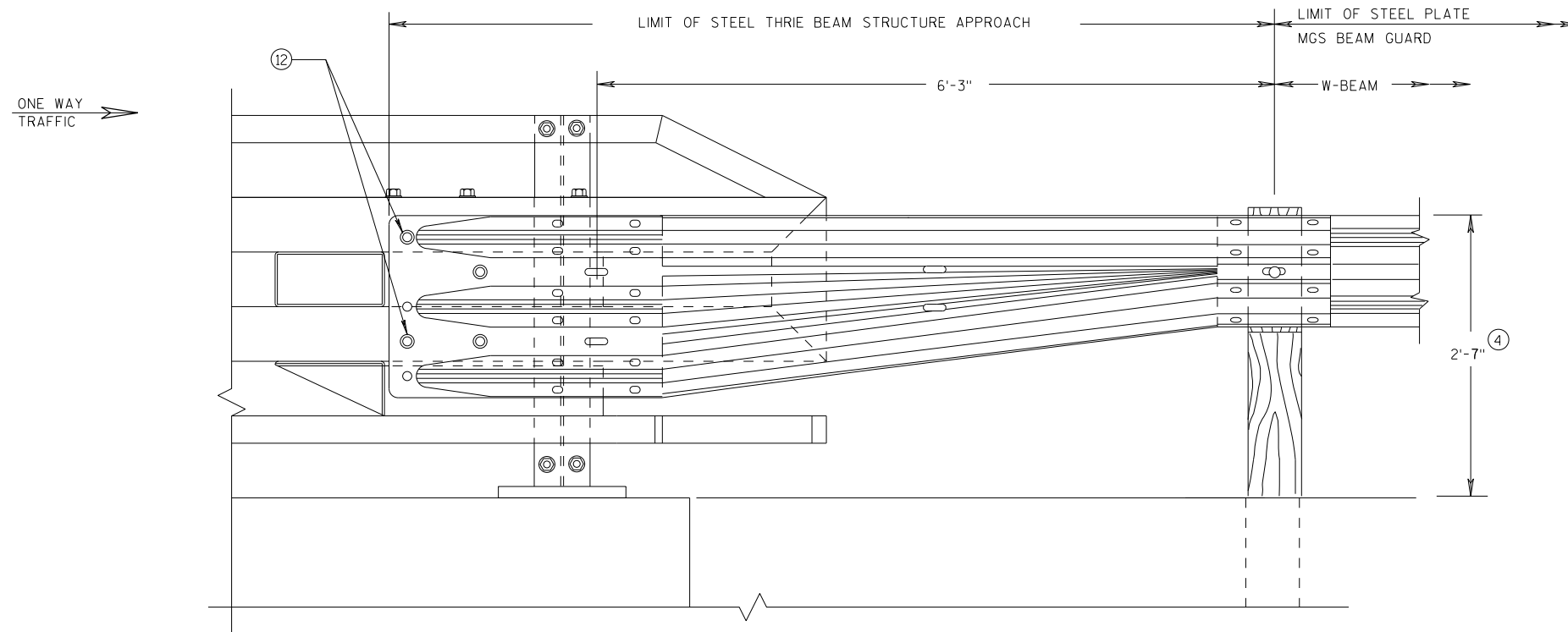
GENERAL NOTES

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

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

FRONT VIEW

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



FRONT VIEW

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

7/2018

DATE

FHWA

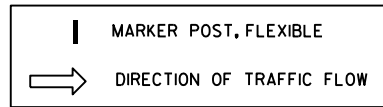
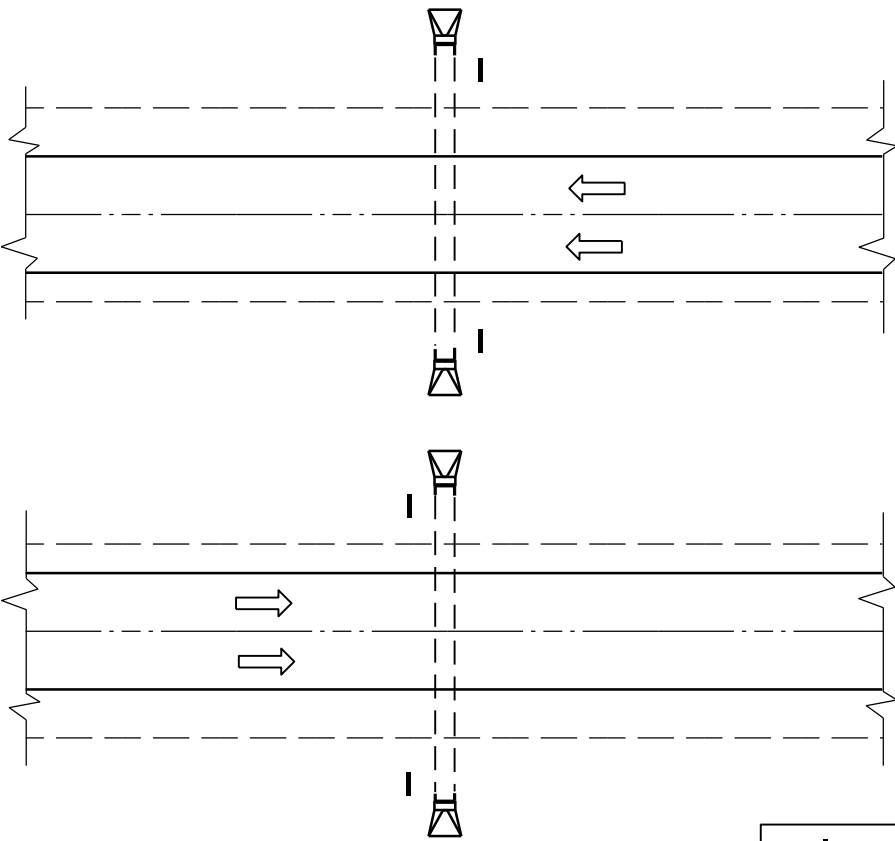
/S/ Rodney Taylor

ROADWAY STANDARDS C 136

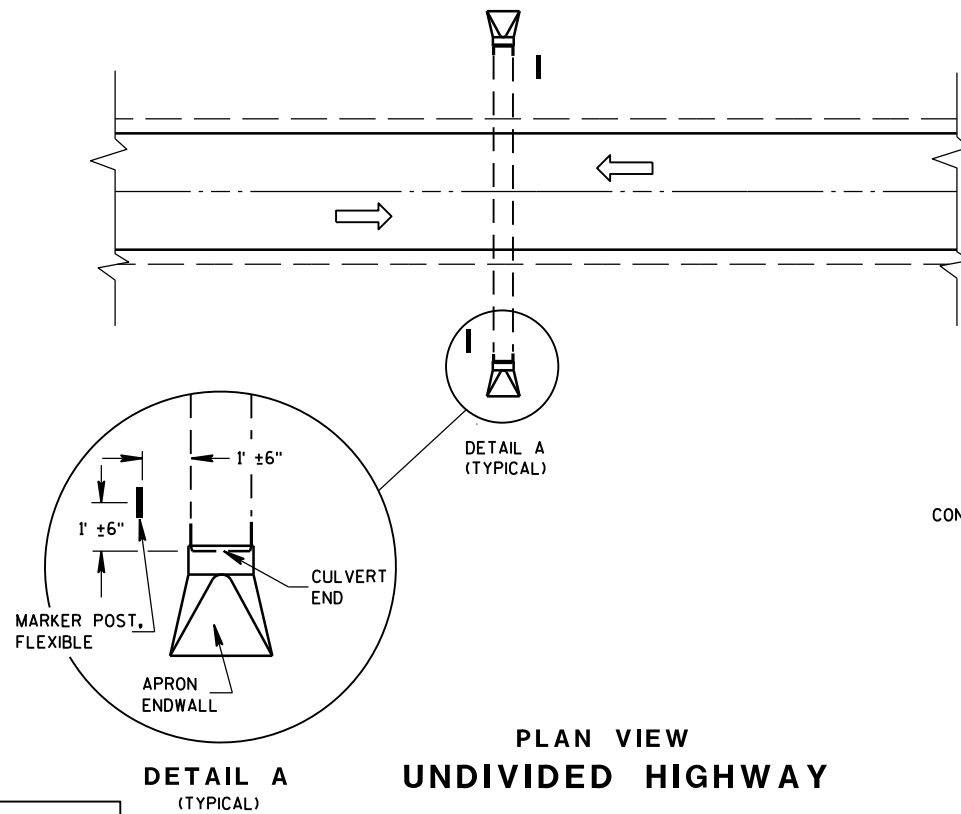
UNIT SUPERVISOR

NT

PLAN VIEW
DIVIDED HIGHWAY



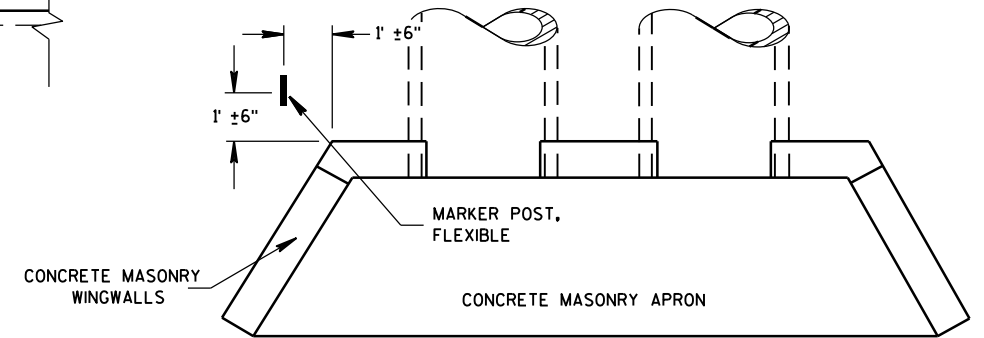
PLAN VIEW
UNDIVIDED HIGHWAY



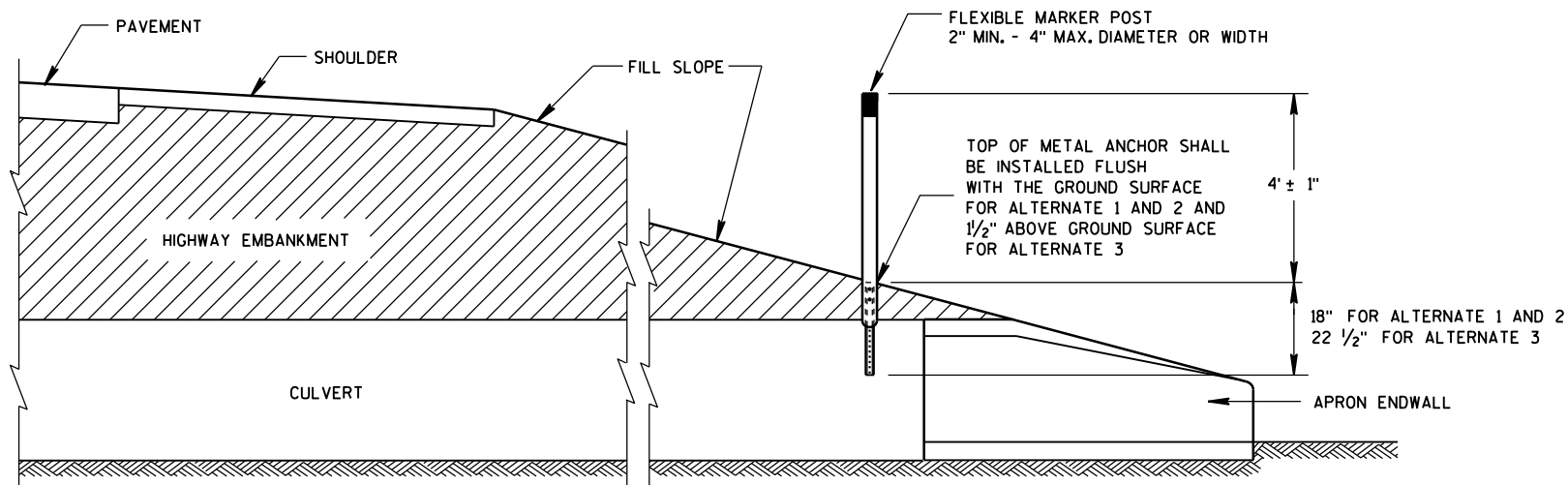
FLEXIBLE MARKER POST LOCATION

GENERAL NOTES

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



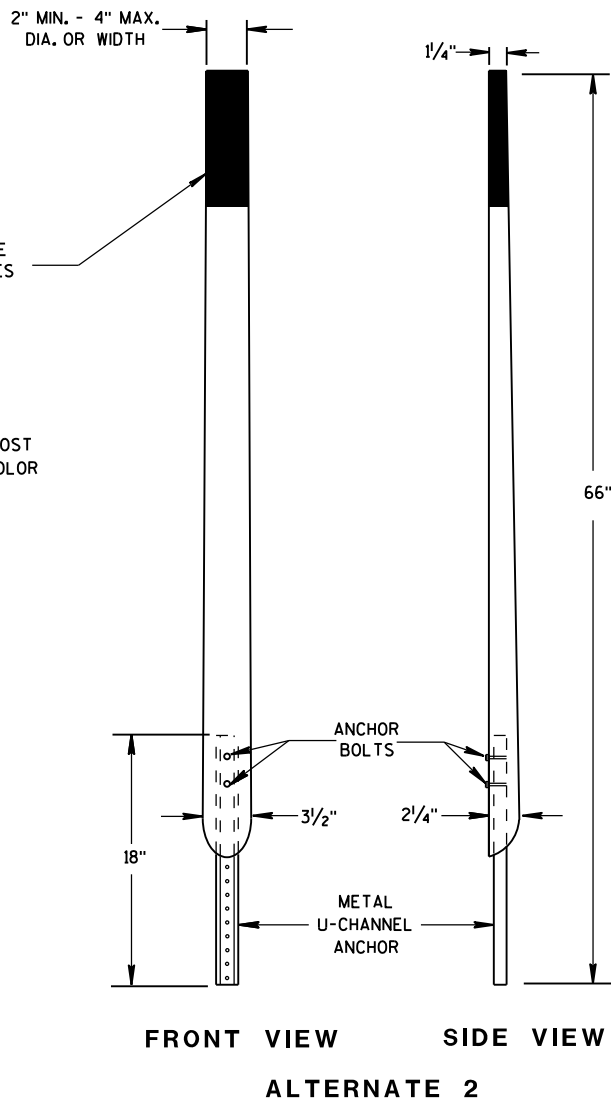
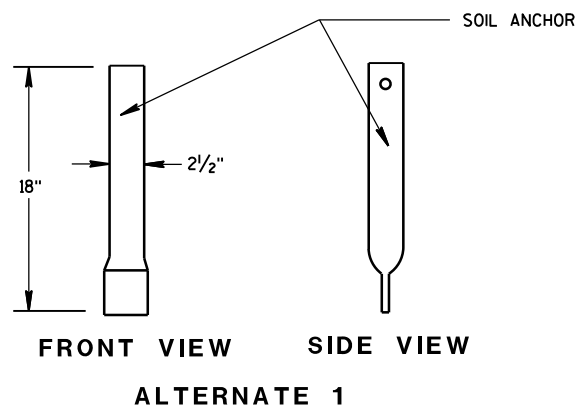
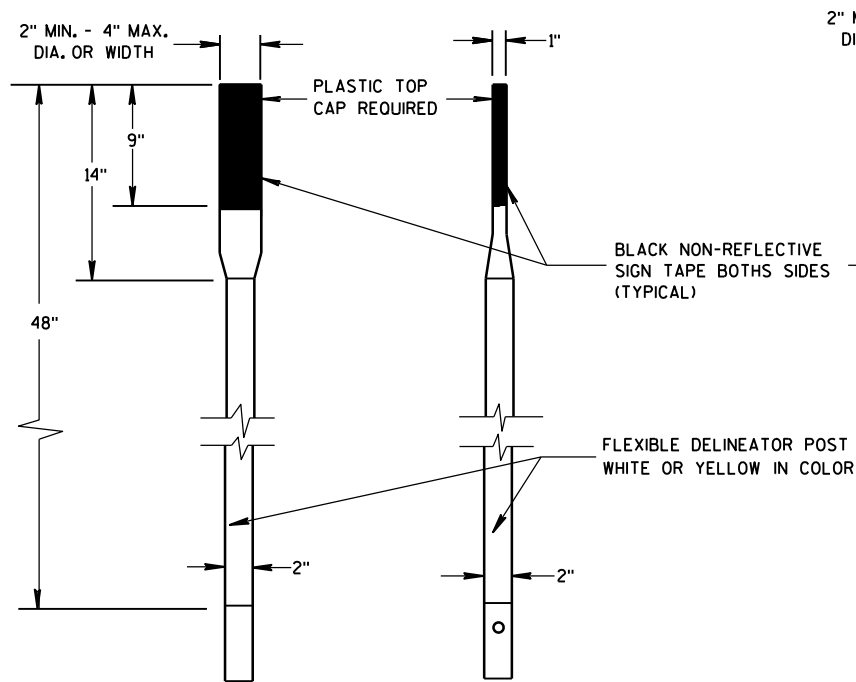
PLAN VIEW
CONCRETE MASONRY ENDWALLS FOR
CULVERT PIPE AND PIPE ARCH



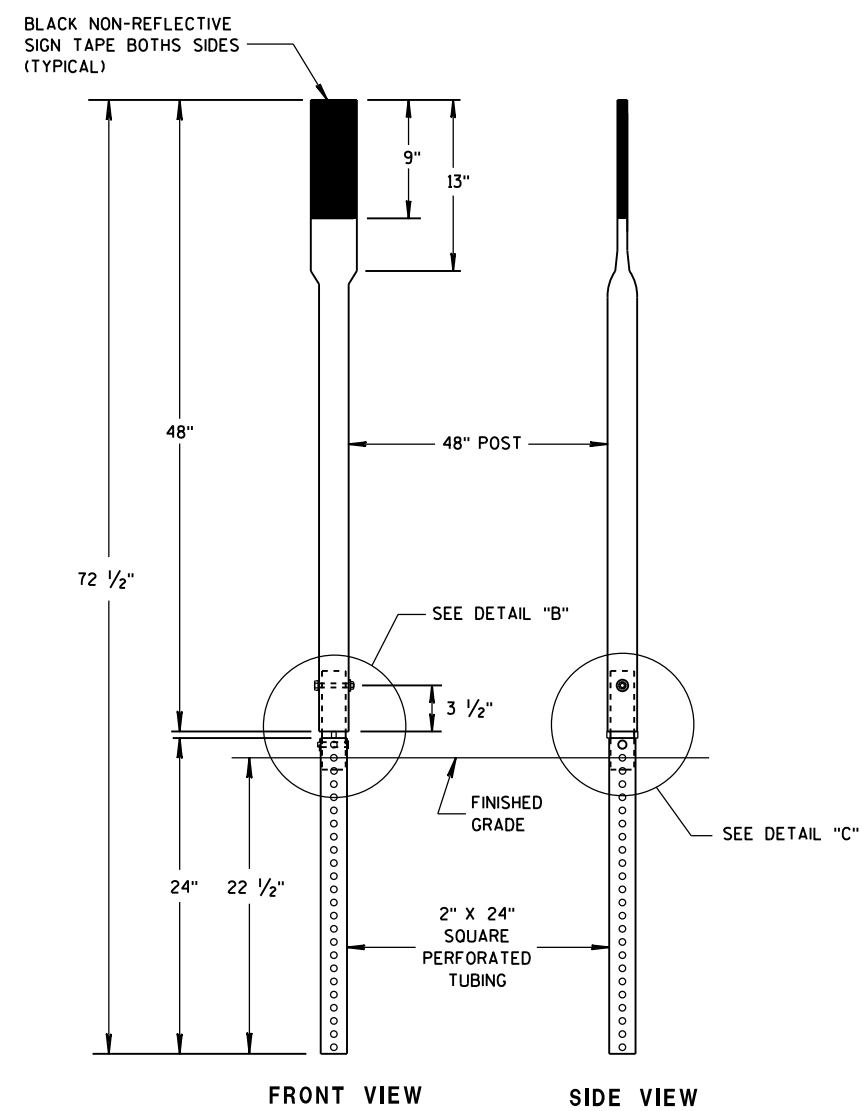
CROSS SECTION
FLEXIBLE MARKER POST

FLEXIBLE MARKER POST
FOR CULVERT END

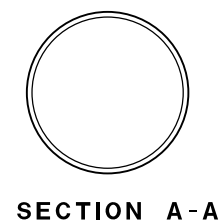
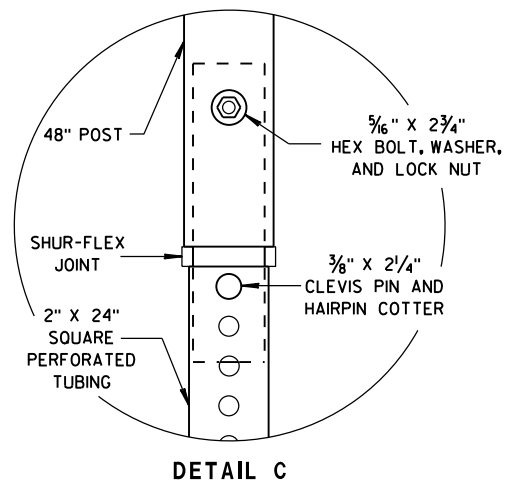
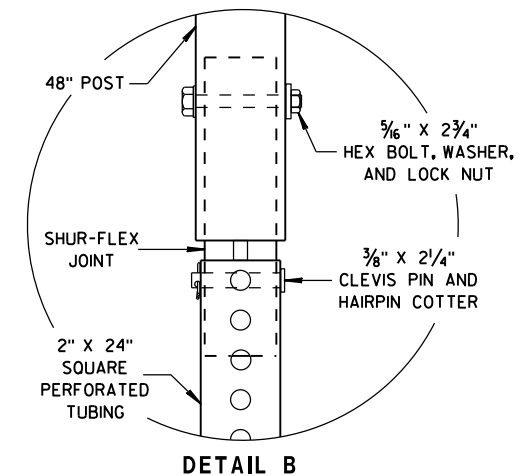
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 137



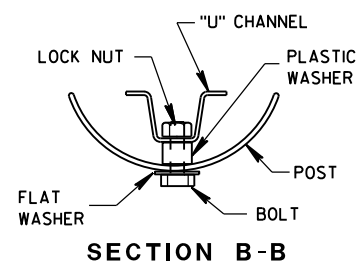
FLEXIBLE MARKER POSTS



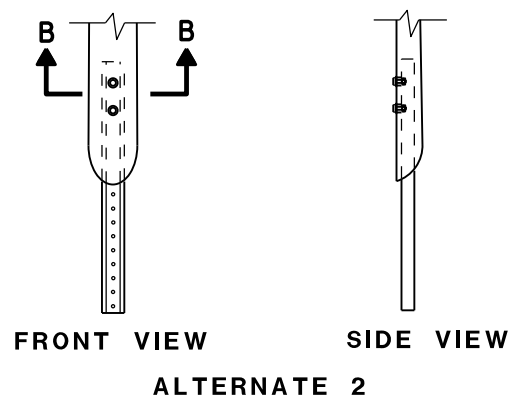
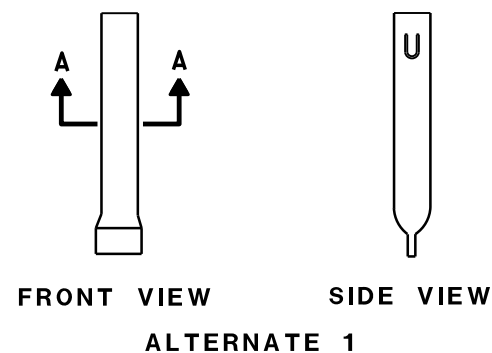
SECTION C-C



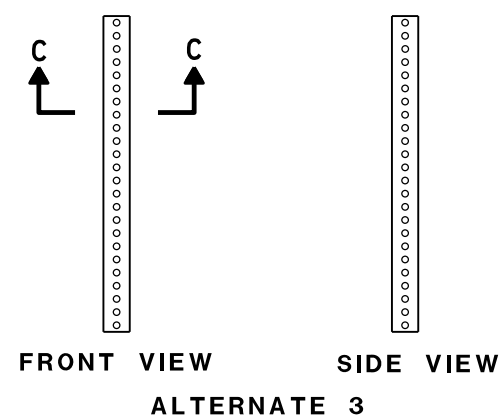
SECTION A-A



SECTION B-B



FLEXIBLE MARKER POST ANCHORS



SECTION C-C

FLEXIBLE MARKER POST
FOR CULVERT ENDSTATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

10/1/2012

DATE

FHWA

/S/ Travis Feltes
STATE TRAFFIC ENGINEER 138

IGN

GENERAL NOTES

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

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

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

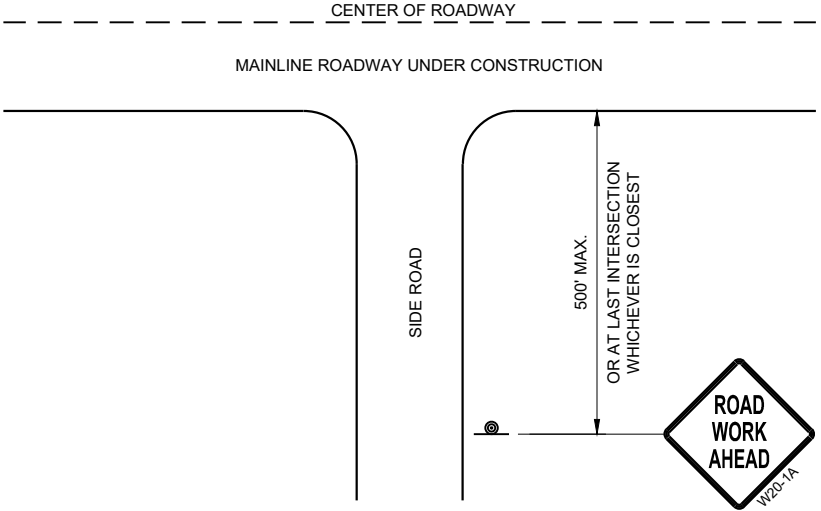
SIGNS THAT WILL BE IN PLACE LESS THAN SEVEN CONTINUOUS DAYS AND NIGHTS MAY BE MOUNTED ON PORTABLE SUPPORTS.

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

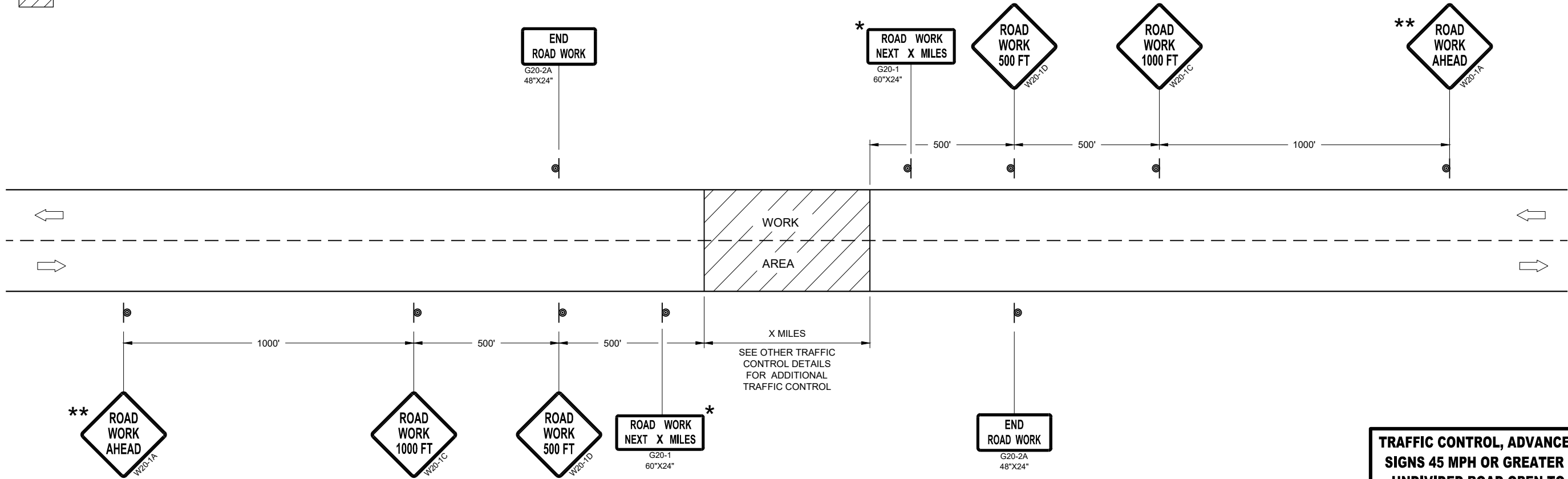
- * OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS
- ** PLACE AN ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.

LEGEND

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



TYPICAL SIDE ROAD APPROACH
WARNING SIGN DETAIL

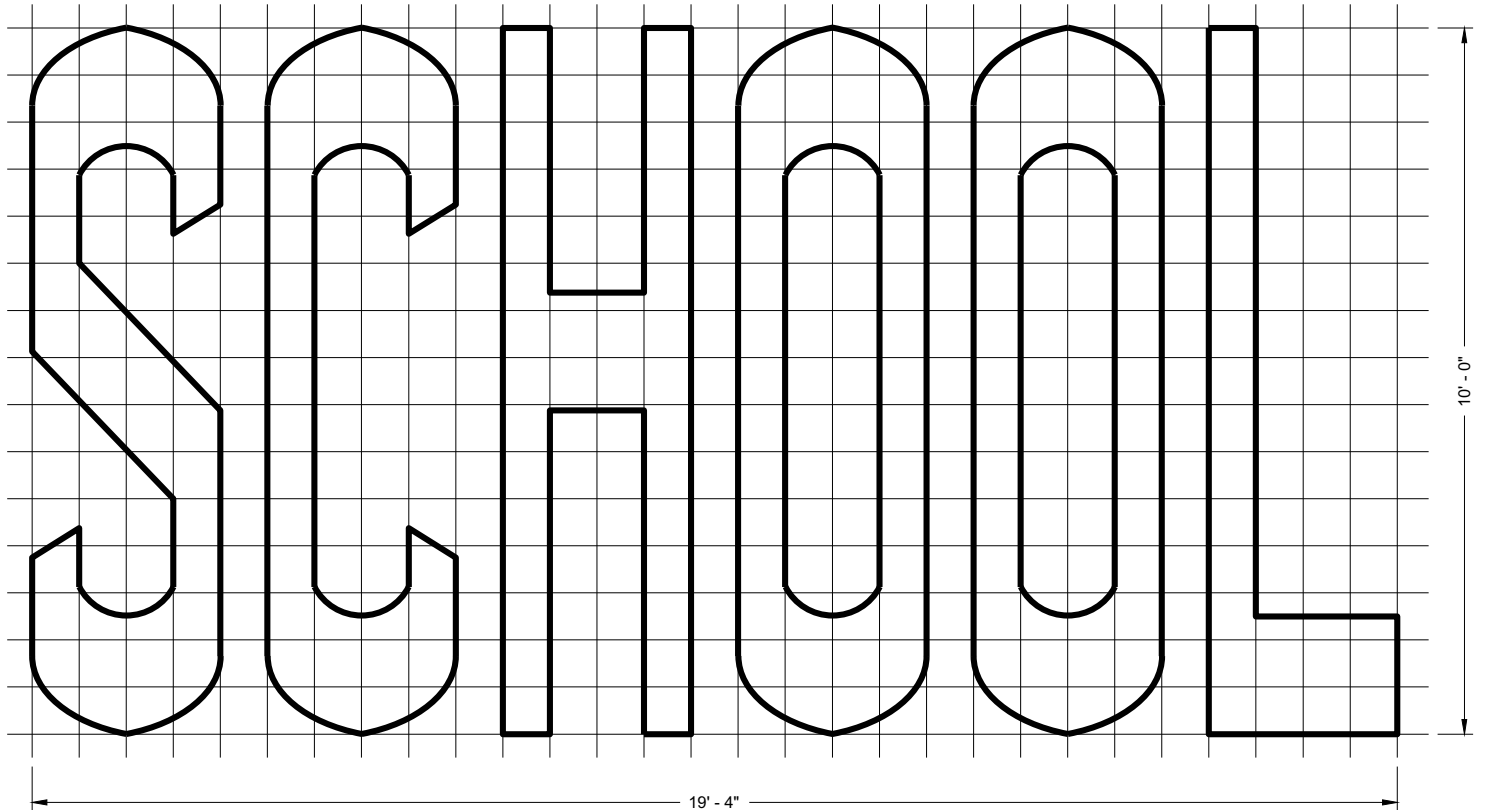
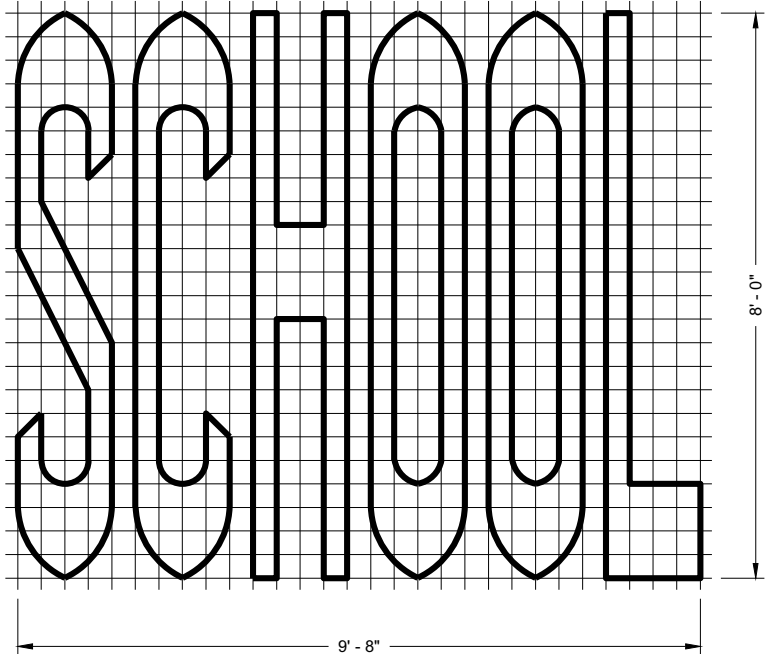
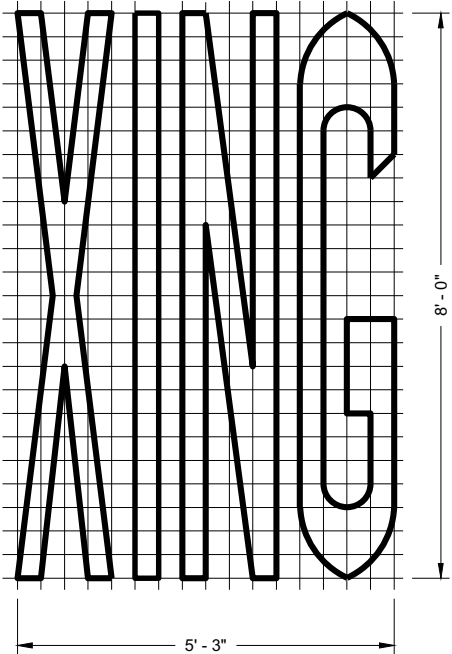
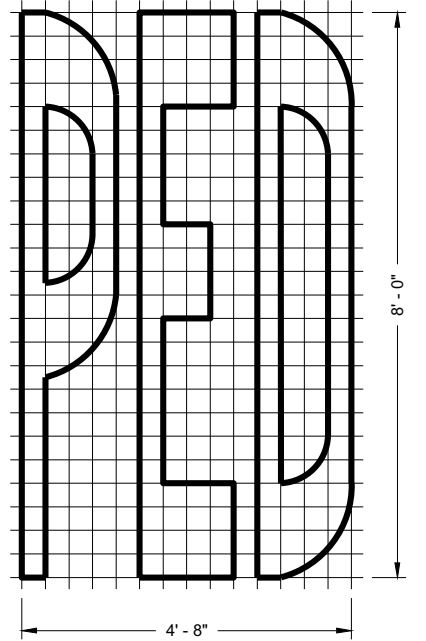
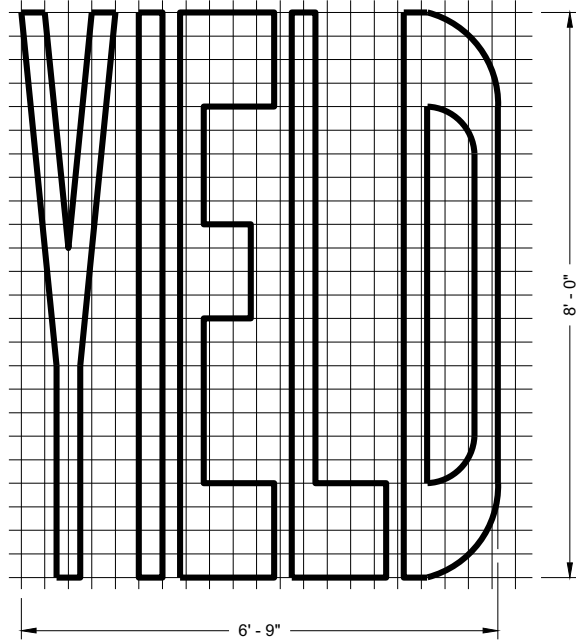
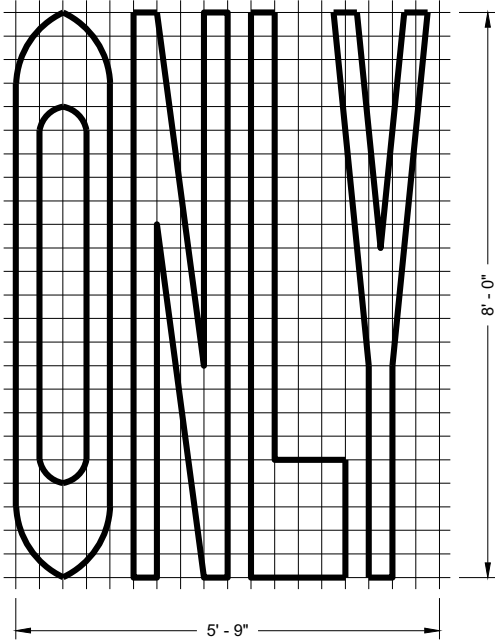
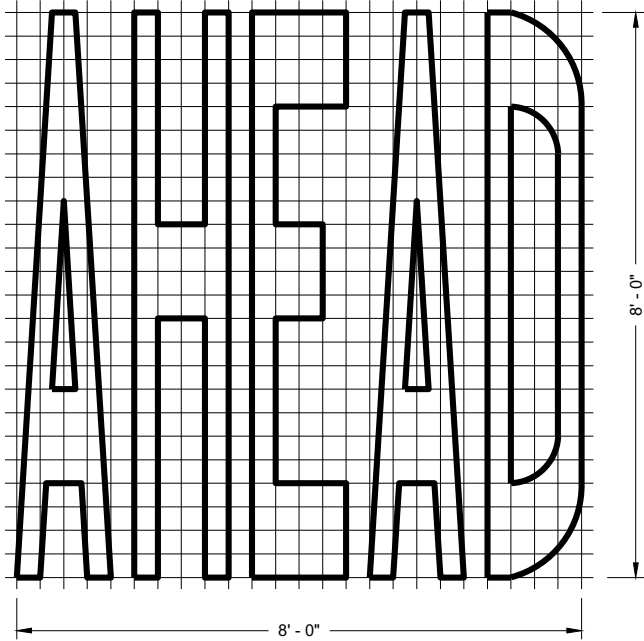
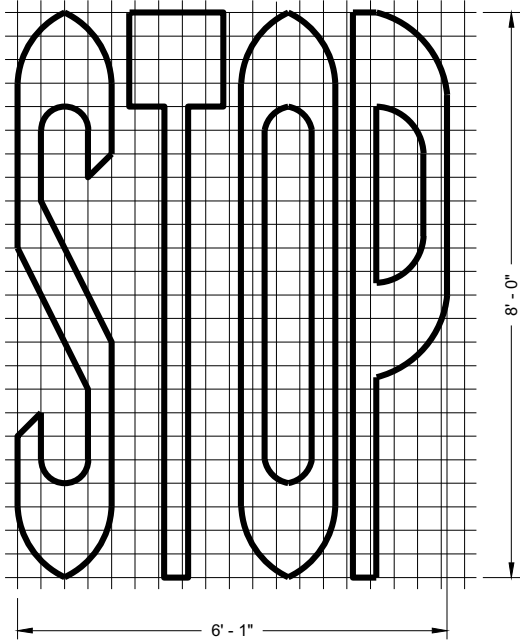


TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 139
FHWA



SINGLE LANE

TWO - LANE

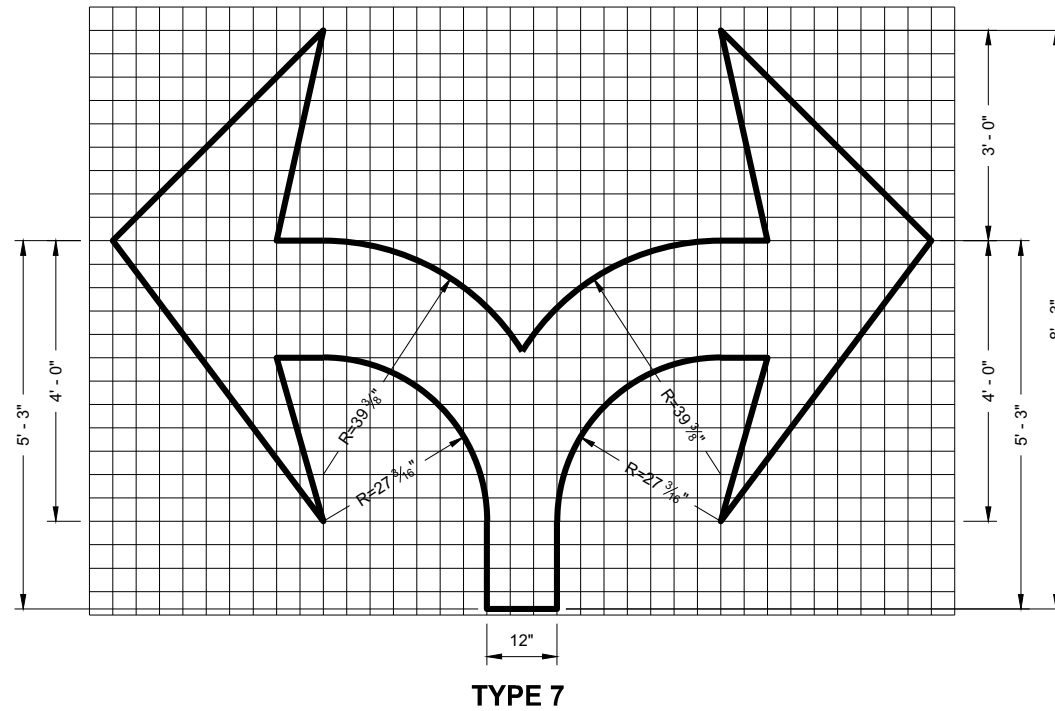
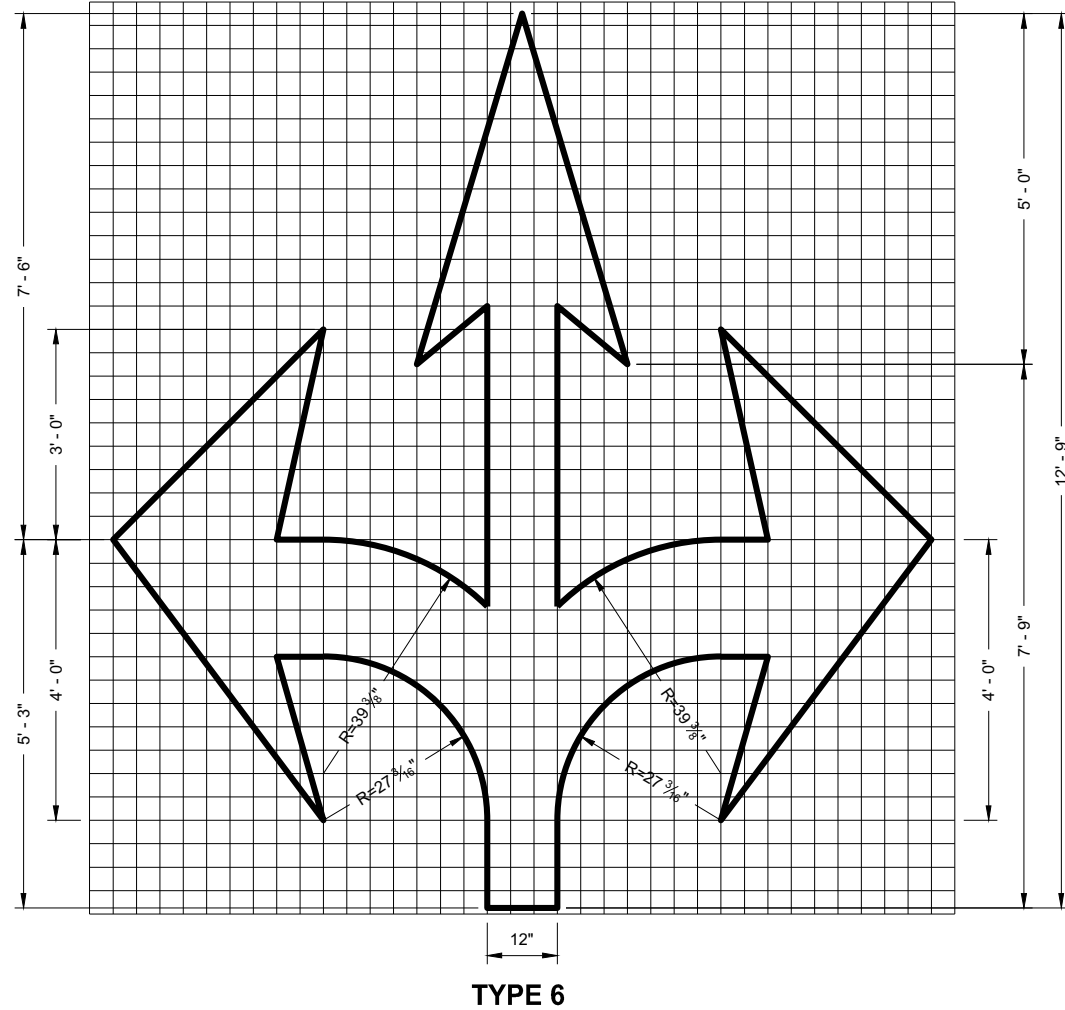
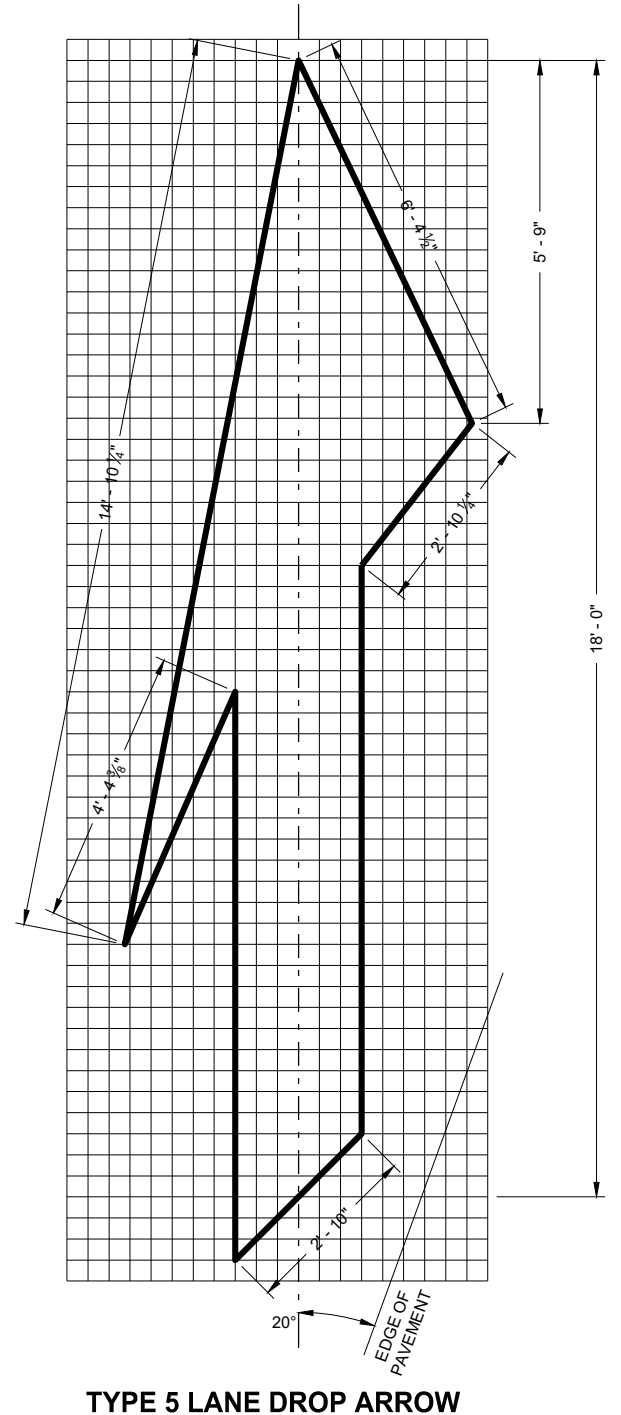
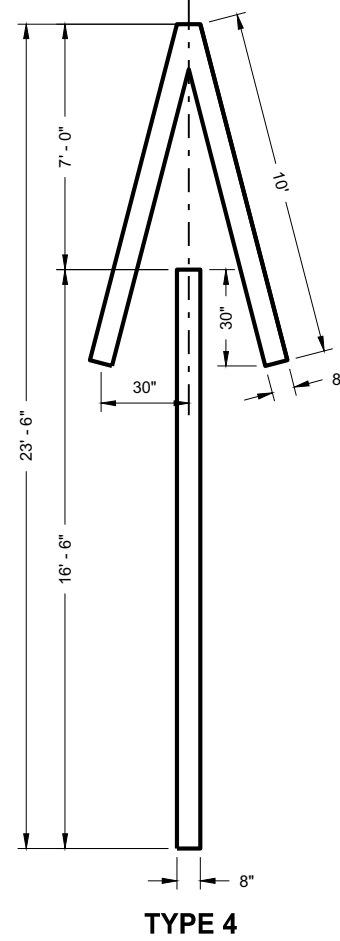
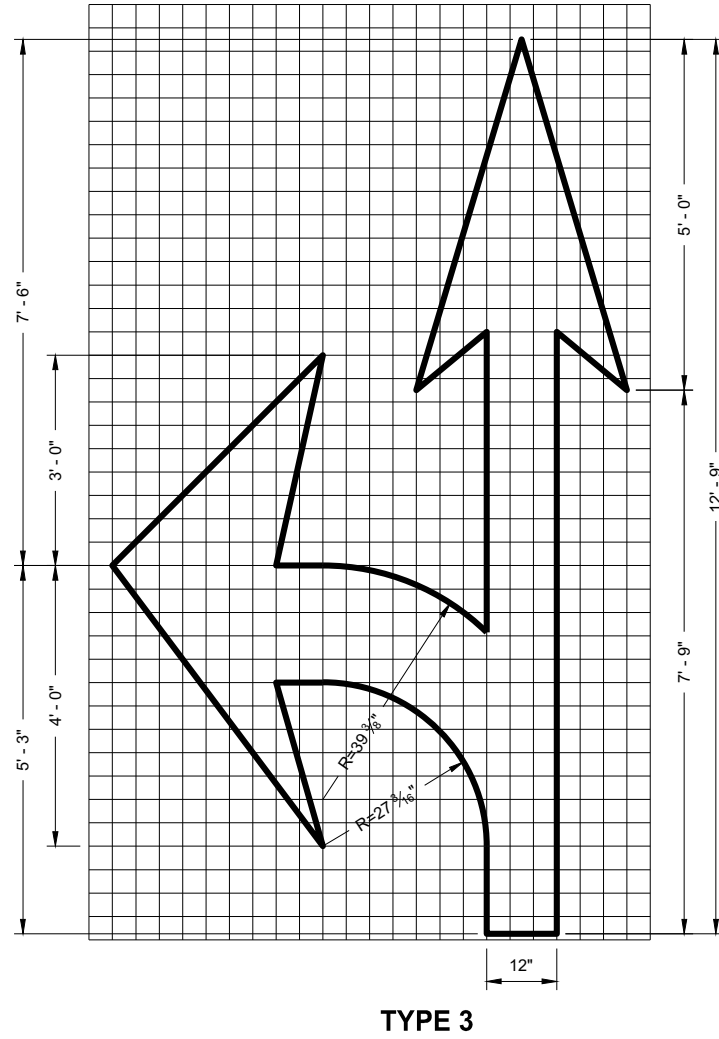
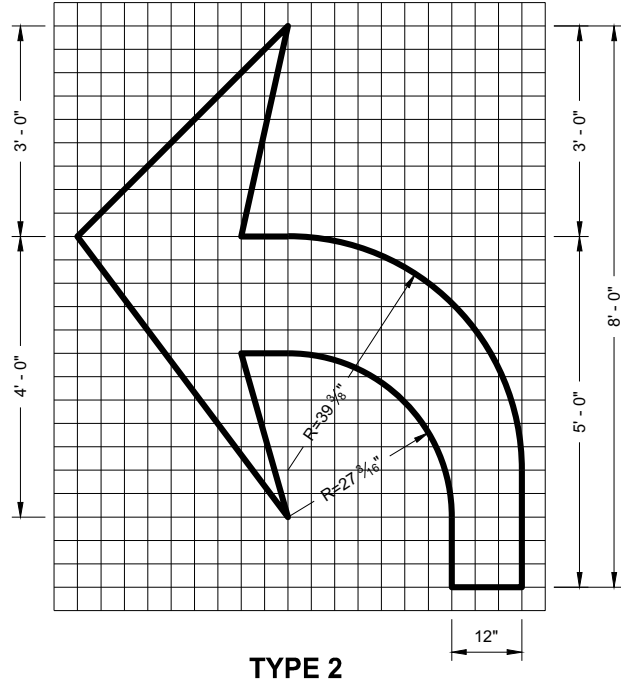
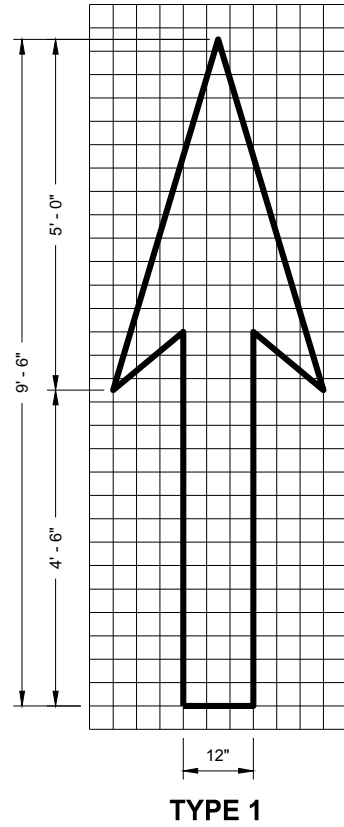
GENERAL NOTES

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

PAVEMENT MARKING WORDS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019 /S/ Matthew Rauch
DATE STATE SIGNING AND MAP ENGINEER 140
FHWA



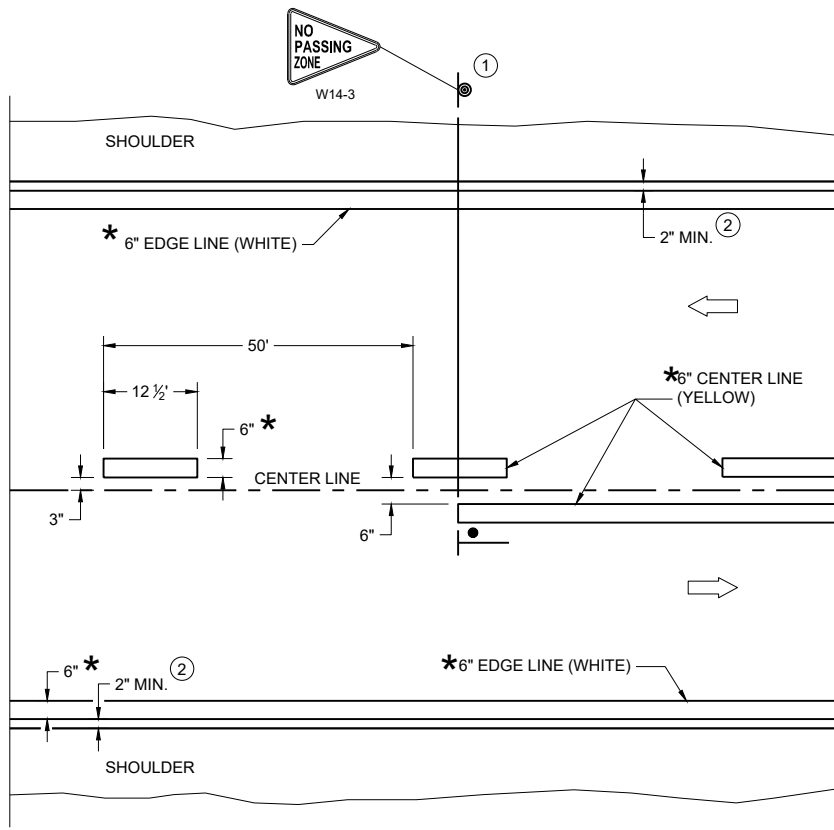
GENERAL NOTES

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

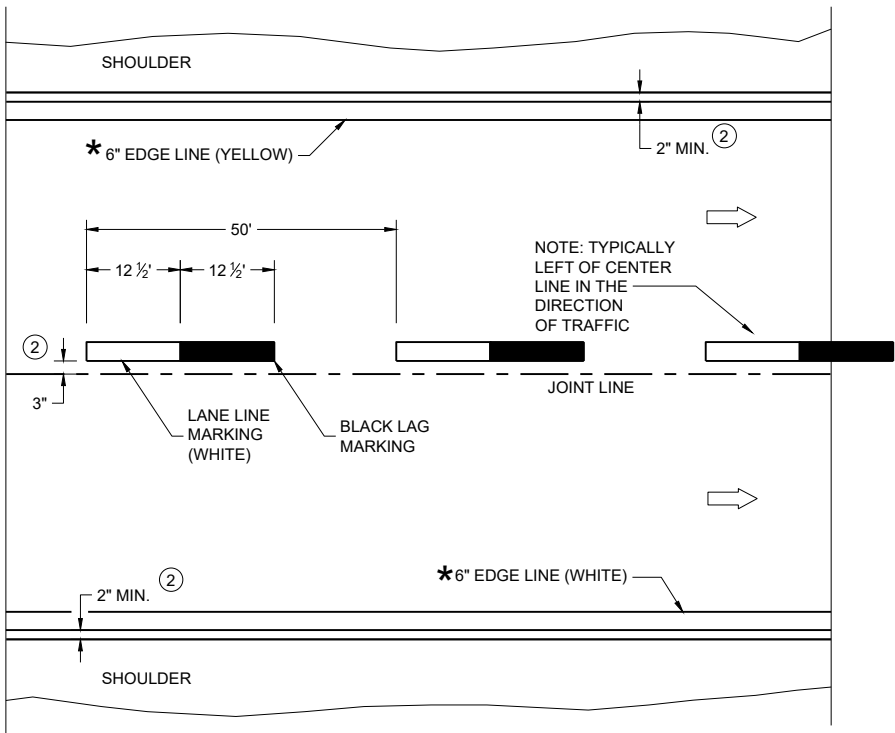
PAVEMENT MARKING ARROWS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019
DATE
/S/ Matthew Rauch
STATE SIGNING AND MAP ENGINEER 141
FHWA



TWO WAY TRAFFIC



ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING

*CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

GENERAL NOTES

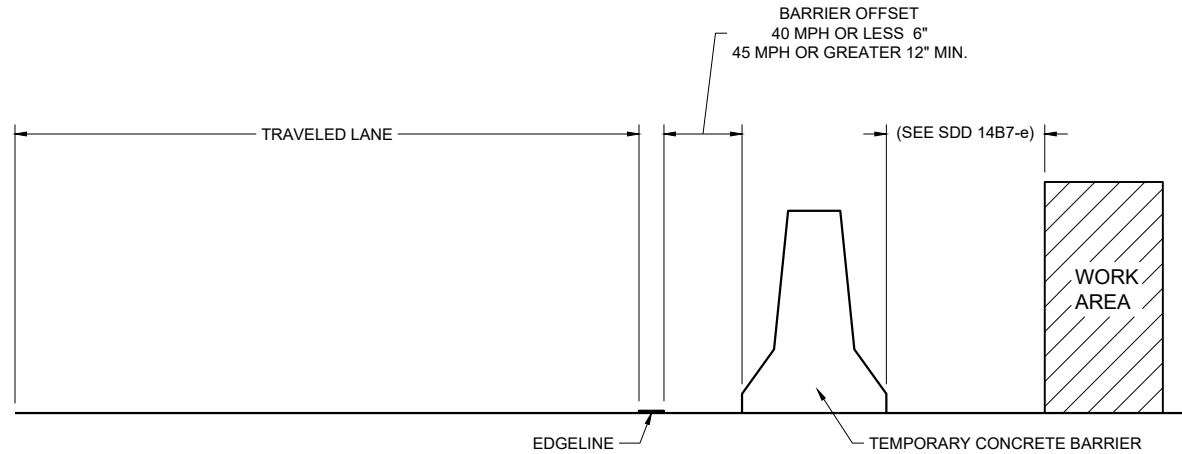
DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

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

LEGEND

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

PERMANENT LONGITUDINAL PAVEMENT MARKINGS	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2023 DATE	/S/ Jeannie Silver Statewide Pavement Marking Engineer
FHWA 142	



TEMPORARY BARRIER OFFSET FROM EDGE LINE

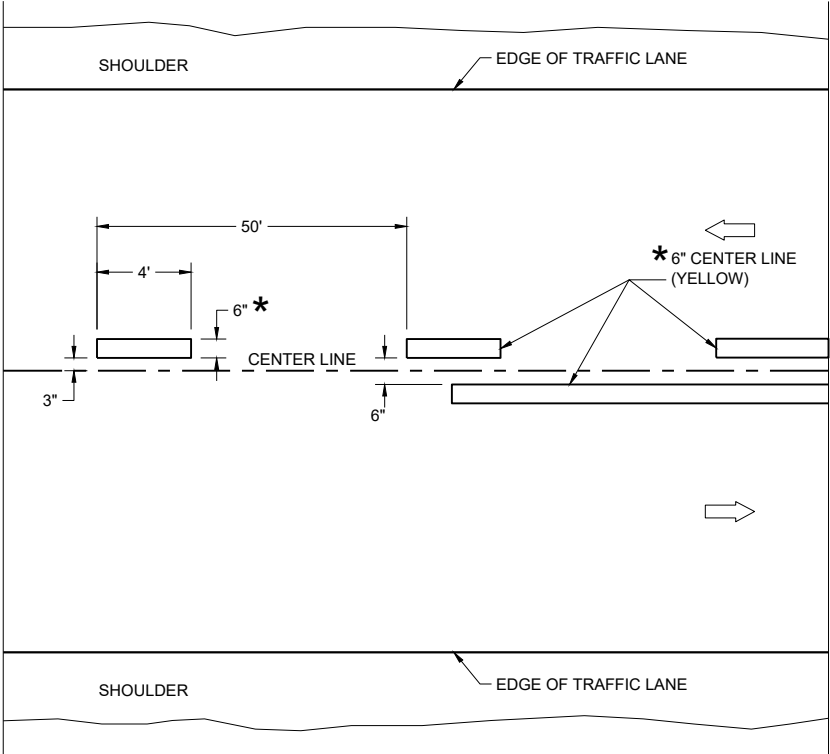
GENERAL NOTES

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

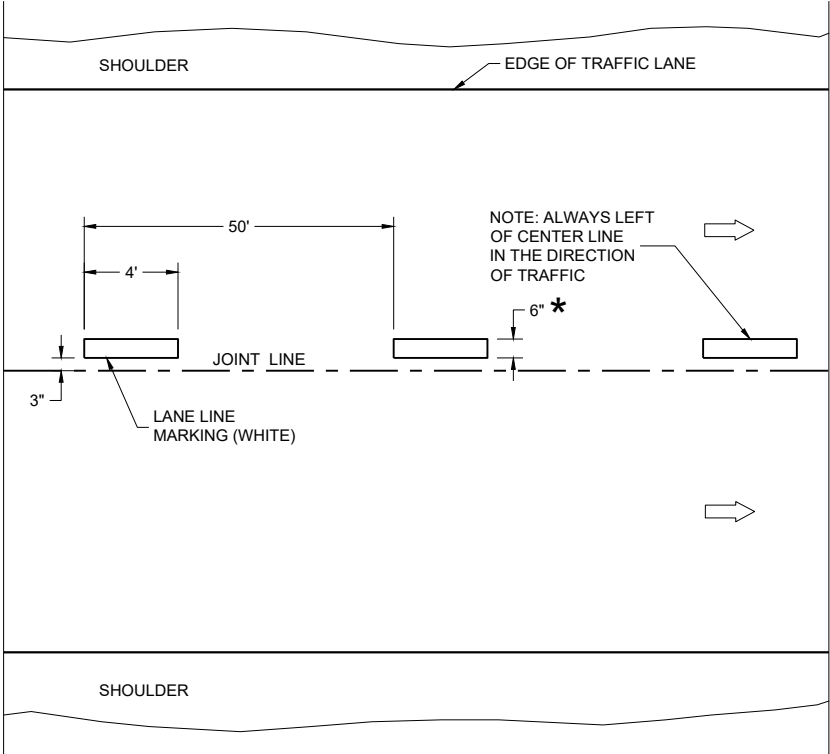
LEGEND

DIRECTION OF TRAFFIC

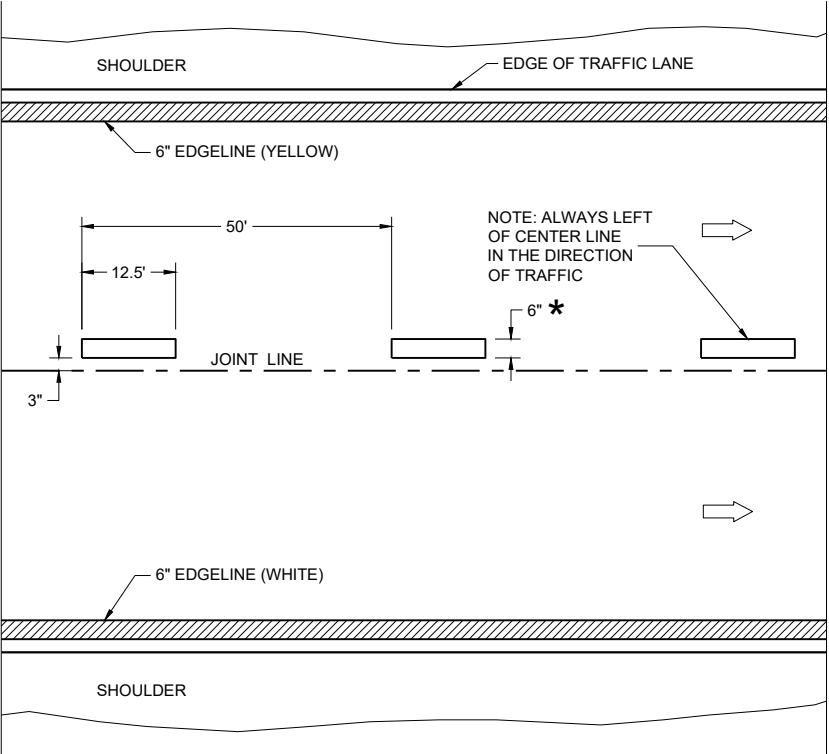
* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES



TWO WAY TRAFFIC



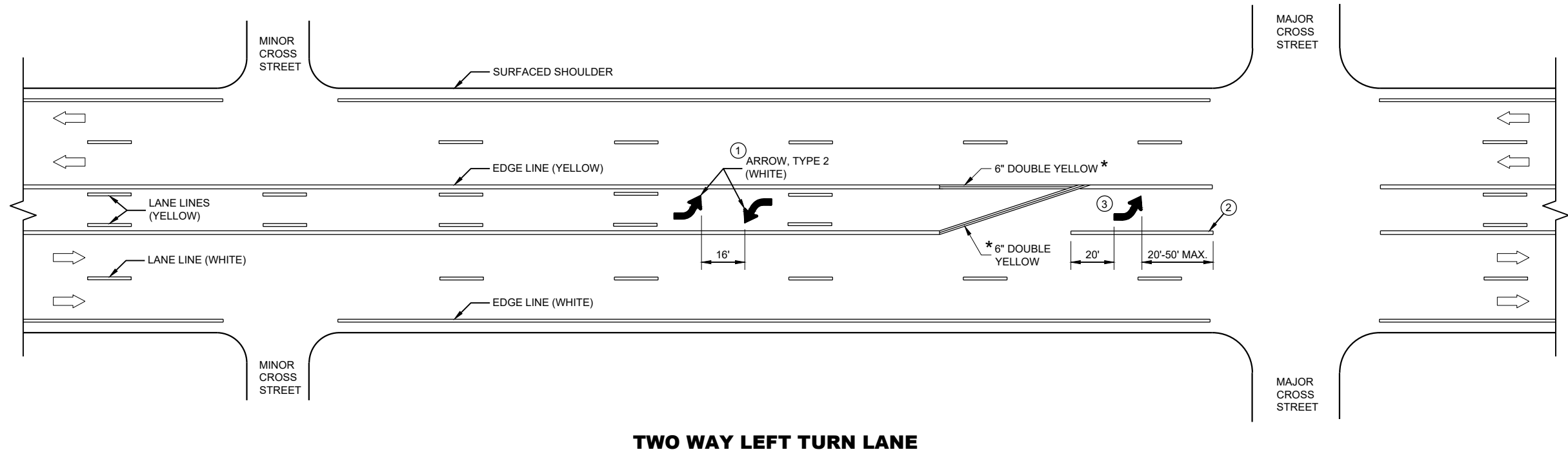
ONE WAY TRAFFIC



FREEWAYS AND EXPRESSWAYS

TEMPORARY PAVEMENT MARKING

TEMPORARY LONGITUDINAL PAVEMENT MARKING	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2023 DATE	/S/ Jeannie Silver Statewide Pavement Marking Engineer
FHWA	

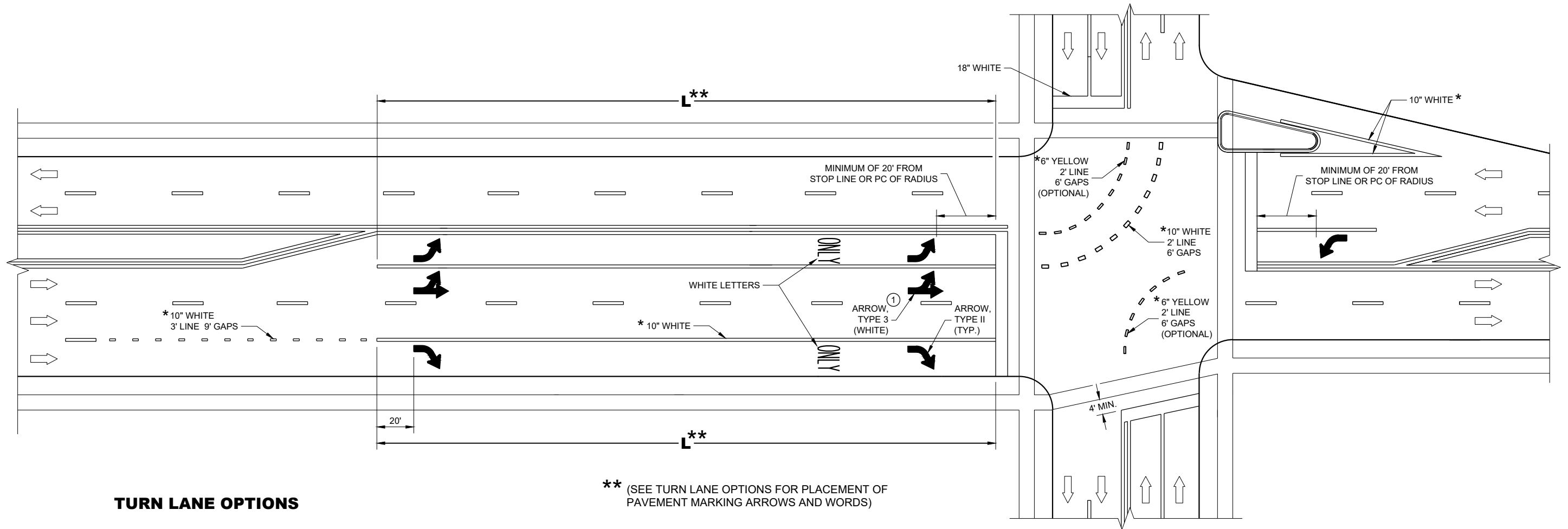


GENERAL NOTES

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

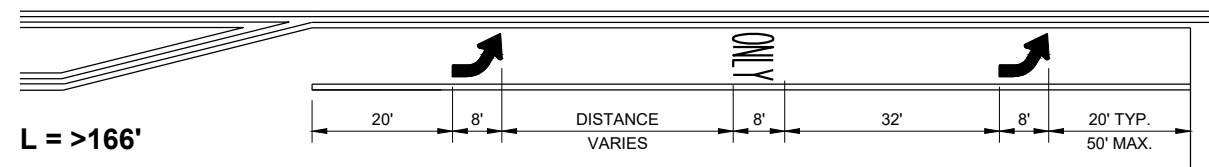
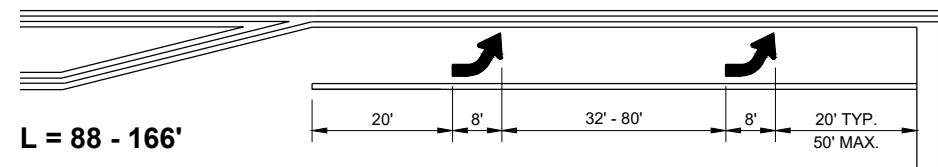
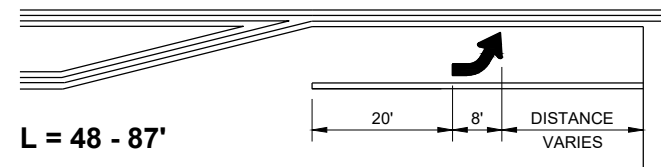
➡ DIRECTION OF TRAFFIC

* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES



TURN LANE OPTIONS

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



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

GENERAL NOTES

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

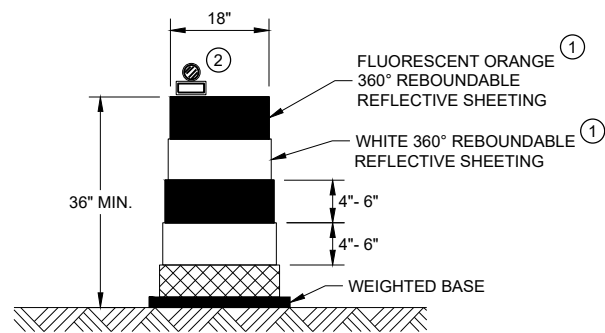
➡ DIRECTION OF TRAFFIC

L = LENGTH OF TURN BAY

* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

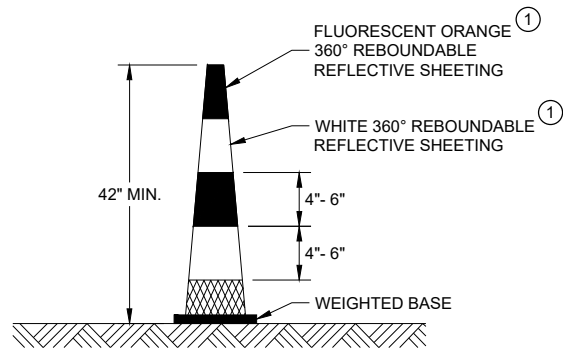
PAVEMENT MARKING
(TURN LANES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION 145



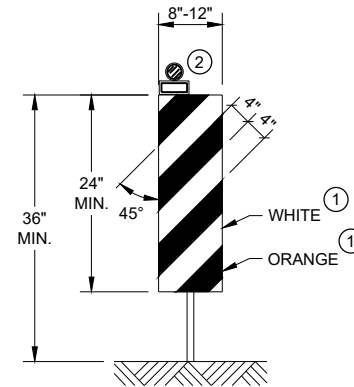
DRUM

BALLAST WIDTHS
RANGE FROM 24"-36"



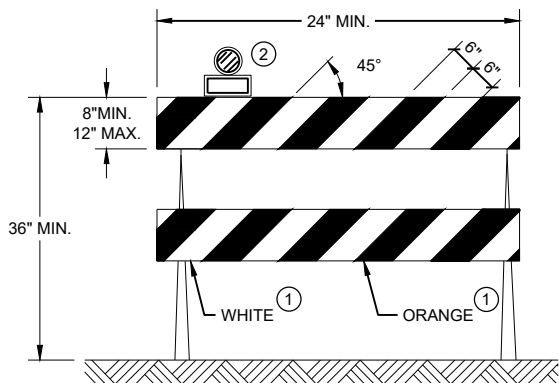
42" CONE

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



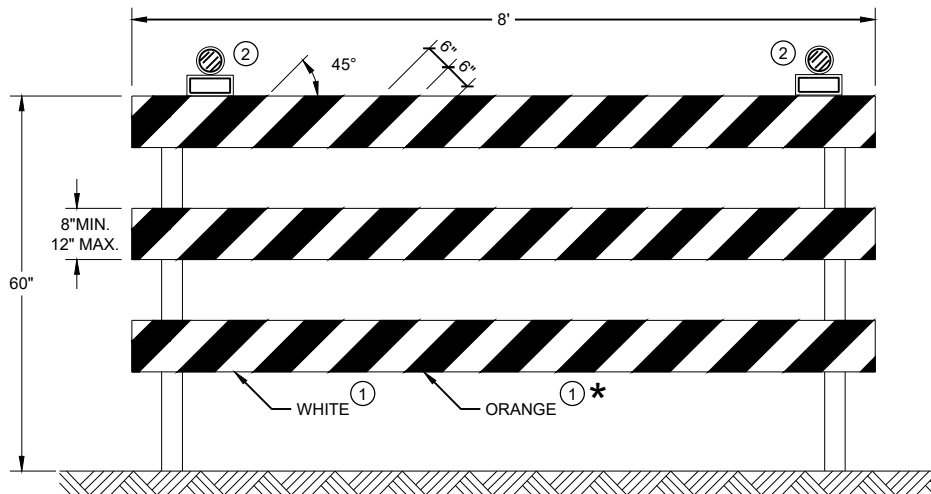
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2022 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 146

FHWA

LEGEND

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

GENERAL NOTES

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

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

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

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

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

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

FLAGGING

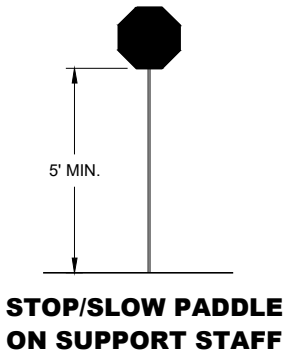
FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES. THEY SHALL BE EQUIPPED WITH STOP/SLOW PADDLES FASTENED ON SUPPORT STAFFS. WHEN THE FLAGGING OPERATION IS NOT IN EFFECT REMOVE TEMPORARY PORTABLE RUMBLE STRIPS PRIOR TO COVERING OR REMOVING ALL ADVANCE SIGNING.

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

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

TEMPORARY PORTABLE RUMBLE STRIPS

- UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSE ACROSS THE LANE AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER
- ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.
- INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.
- PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.
- DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.

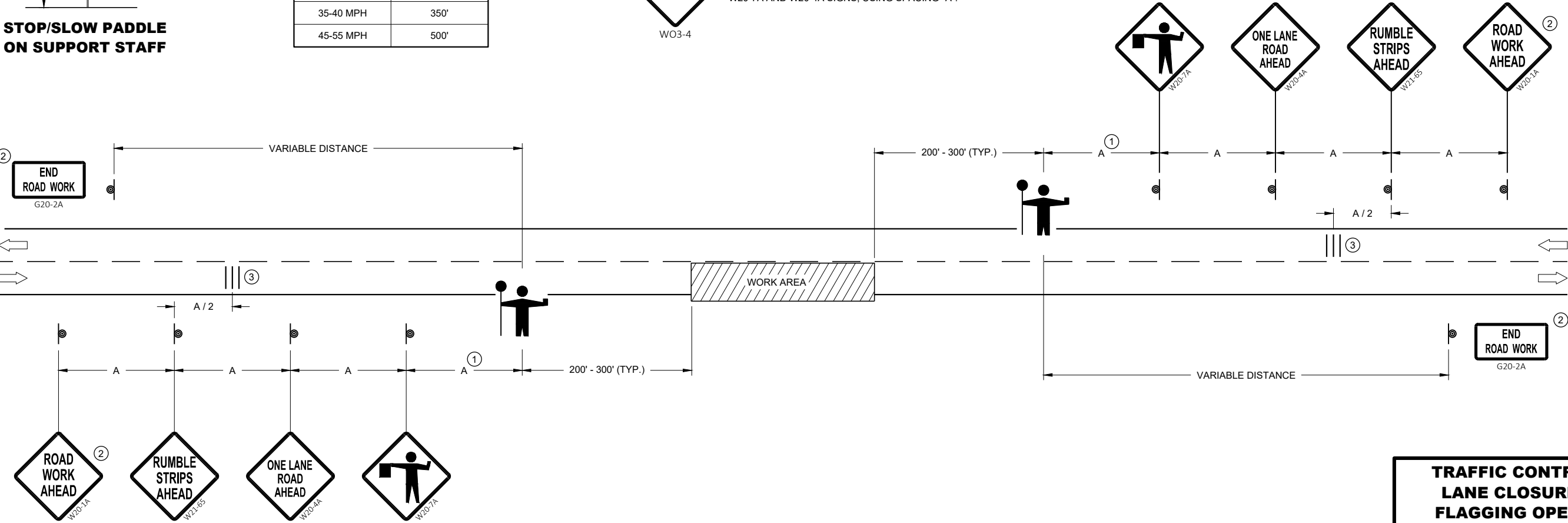


SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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



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



TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED May 2022 DATE	/S/ Andrew Heidtke WORK ZONE ENGINEER 147
FHWA	

	SIGN ON PERMANENT SUPPORT
	TRAFFIC CONTROL CONE 42-INCH
	TRAFFIC CONTROL DRUM
	TEMPORARY PORTABLE RUMBLE STRIP ARRAY
	DIRECTION OF TRAFFIC
	WORK AREA
AFAD	AUTOMATED FLAGGER ASSISTANCE DEVICE (AFAD)

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

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

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

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

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

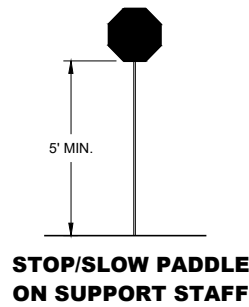
WHEN A SIDE ROAD OR RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, ADDITIONAL TRAFFIC CONTROLS SHALL BE PROVIDED AS SPECIFIED IN THE PLANS AND/OR THE SPECIAL PROVISIONS OR AS APPROVED BY THE ENGINEER.

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

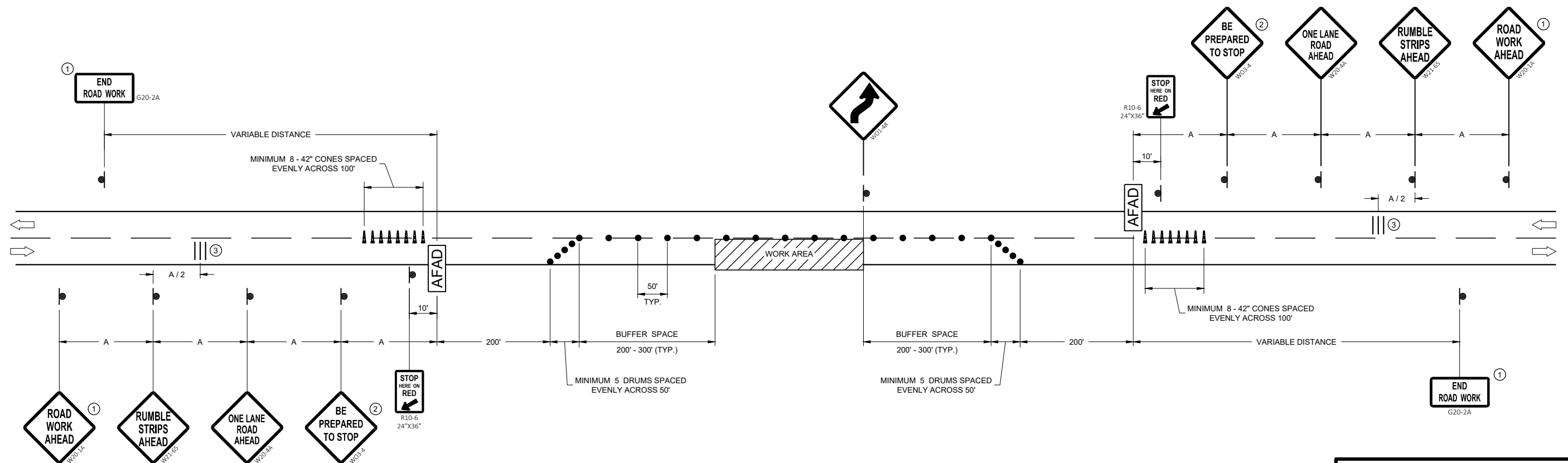
WHEN THE DISTANCE BETWEEN FLAGGERS EXCEEDS 2 MILES, A PILOT CAR IS REQUIRED. WHEN CURVES REDUCE SIGHT DISTANCE BELOW 400', A PILOT CAR IS REQUIRED.

- ① SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.
- ② IF FLAGGERS ARE PHYSICALLY NEEDED TO FLAG, REPLACE W03-4 SIGNS WITH W20-7A SIGNS.

- UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.
- ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FROM THE APPROVED PRODUCTS LIST.
- PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.
- DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.
- ③ EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS PLACED TRANSVERSELY AT THE LOCATIONS SHOWN. WITHIN EACH ARRAY, SPACING BETWEEN RUMBLE STRIPS SHALL BE 15 FEET ON CENTER.

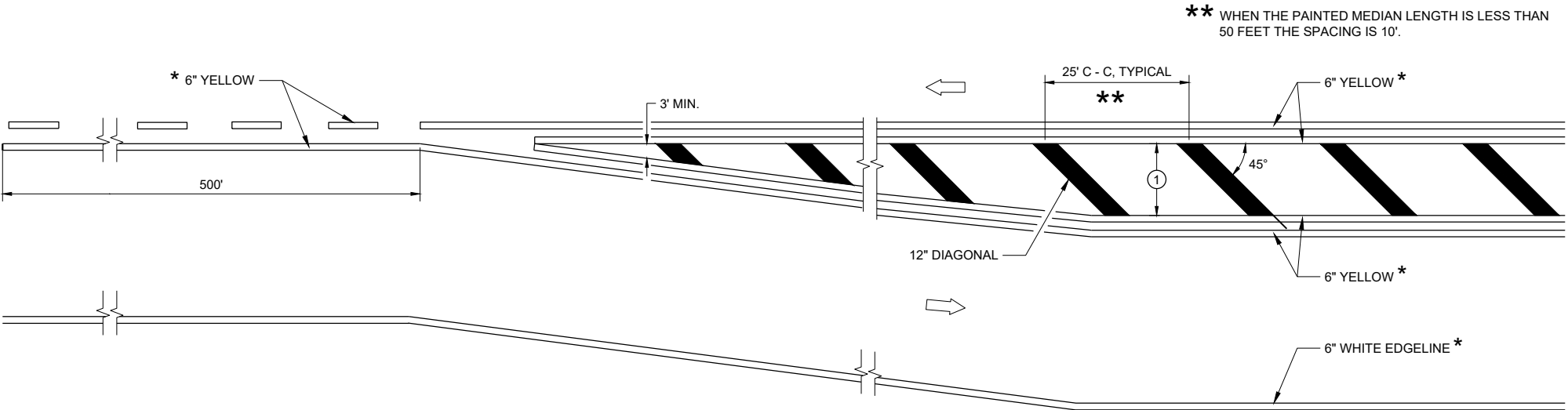


SPEED LIMIT	SPACING "A"
25-30 MPH	200'
35-40 MPH	350'
45-55 MPH	500'

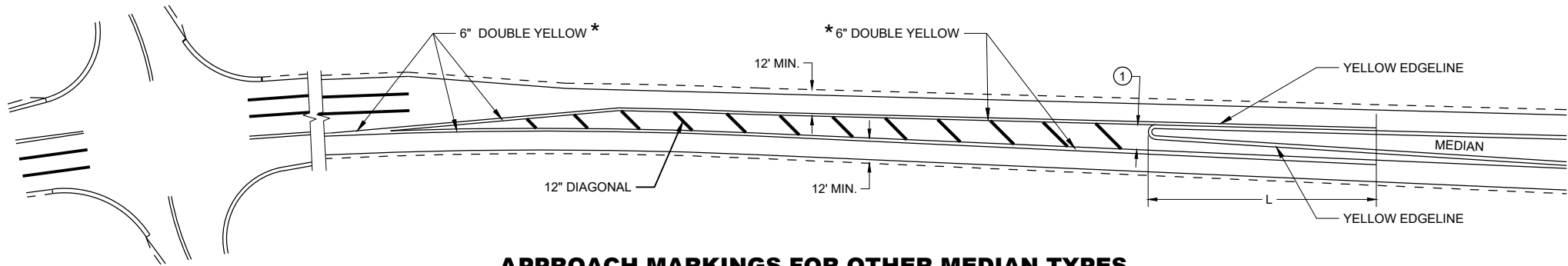


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May 2022 /S/ Andrew Heidtke
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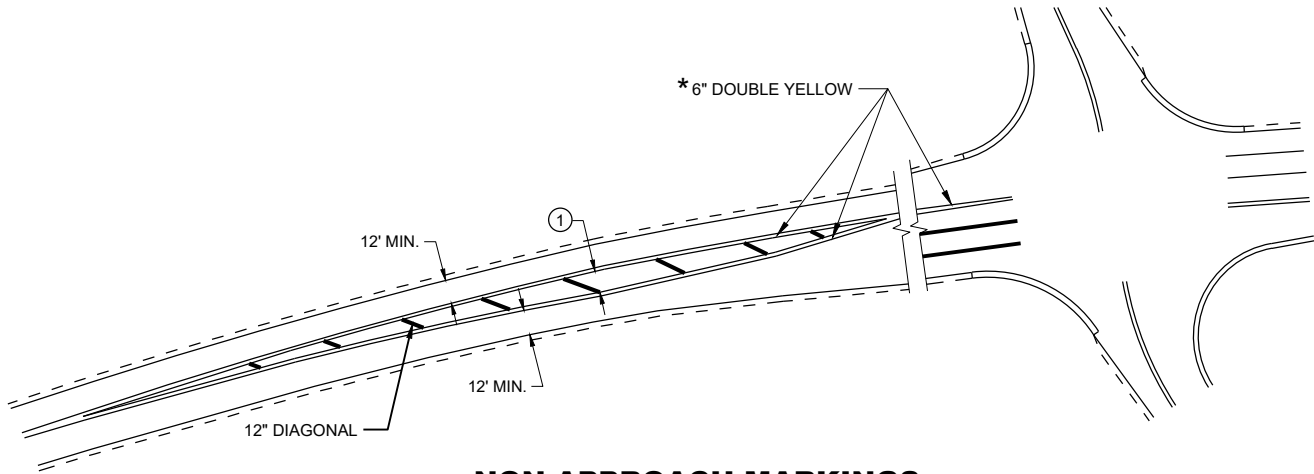
FHWA



MEDIAN ISLAND DETAIL



APPROACH MARKINGS FOR OTHER MEDIAN TYPES



NON-APPROACH MARKINGS

GENERAL NOTES

- ① DIAGONALS ARE OPTIONAL WHEN PAINTED ISLAND IS LESS THAN 6 FEET AT THE WIDEST POINT. OMIT DIAGONALS IF WIDTH IS LESS THAN 4 FEET.

➡ DIRECTION OF TRAVEL

* CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

SPEED LIMIT	L
<35 MPH	5'
35> MPH	50'

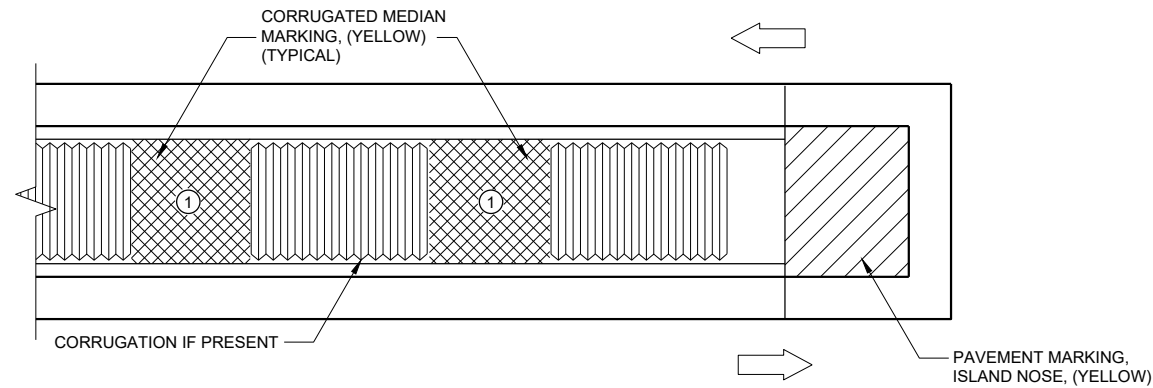
**MEDIAN ISLAND
PAVEMENT MARKINGS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

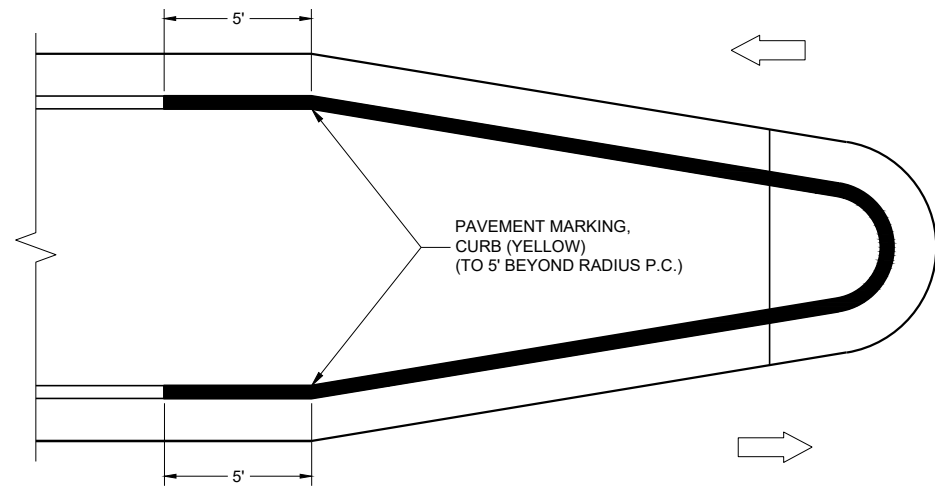
APPROVED
May 2023
DATE

/s/ Jeannie Silver
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

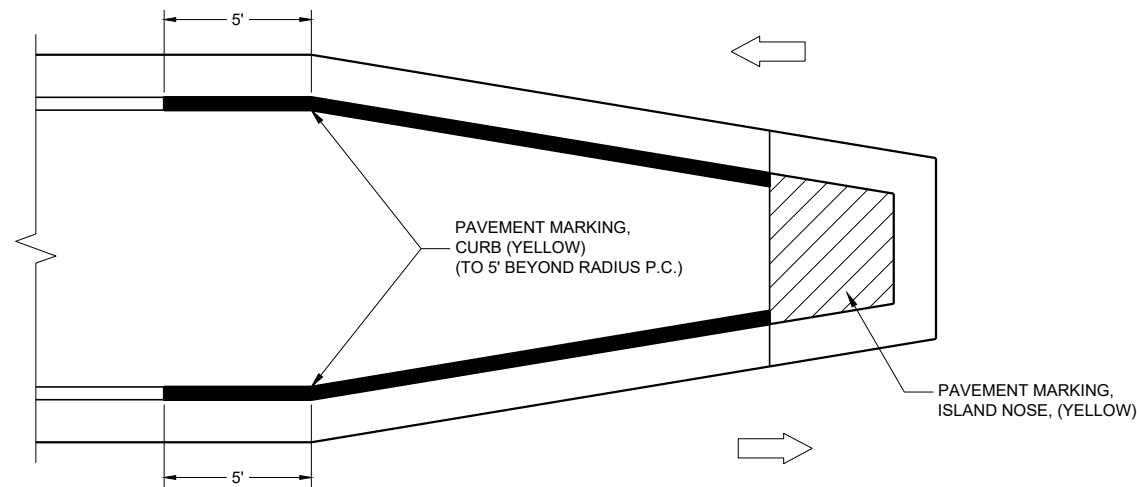
FHWA



MEDIAN ISLAND WITH SQUARE BLUNT NOSE



MEDIAN ISLAND WITH ROUND BLUNT NOSE



MEDIAN ISLAND WITH SLOPED NOSE

TYPICAL PLACEMENT OF PAVEMENT MARKING ON MEDIAN ISLANDS

GENERAL NOTES

WHEN CONCRETE CORRUGATED MEDIAN IS CONSTRUCTED TO SEPARATE TRAFFIC OPERATING IN THE OPPOSING DIRECTION, YELLOW PAVEMENT MARKING SHALL BE APPLIED TO THE FLAT PORTION OF THE CONCRETE CORRUGATED MEDIAN. THE ITEM OF PAVEMENT MARKING, CONCRETE CORRUGATED MEDIAN, WILL BE MEASURED IN PLACE AND ACCEPTED IN ACCORDANCE WITH THE CONTRACT AND PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FOOT.

- ① APPLY PAVEMENT MARKING TO THE FLAT PORTION OF CORRUGATED MEDIAN.

 ISLAND NOSE MARKING

 CURB MARKING

 CORRUGATED MEDIAN MARKING

 DIRECTION OF TRAVEL

PAVEMENT MARKINGS,
MEDIAN ISLAND NOSE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2023
DATE

/s/ Jeannie Silver
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

FHWA

V1	LEAD VEHICLE
V2	MARKING VEHICLE
V3	SHADOW VEHICLE

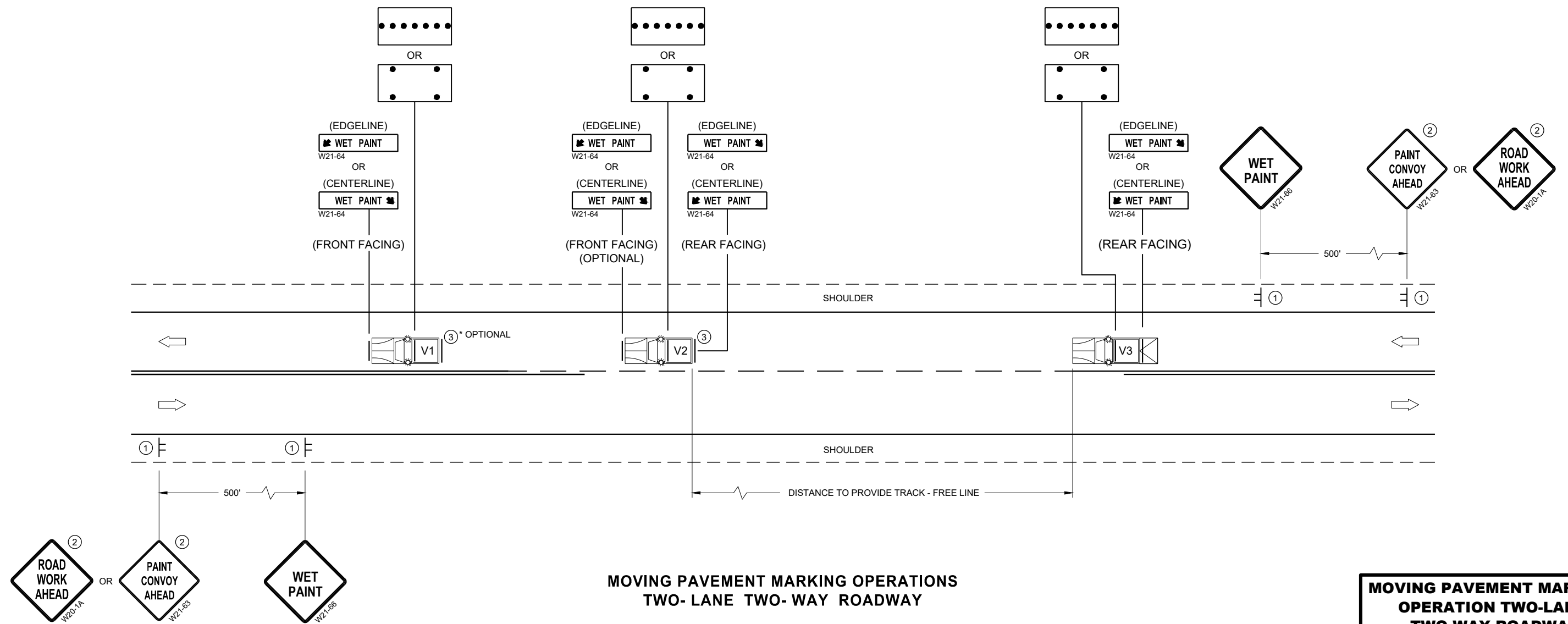


FLASHING ARROW PANEL (CAUTION)

THE WORK AND SHADOW VEHICLES SHOULD PULL OVER PERIODICALLY TO ALLOW TRAFFIC TO PASS.

CONES SHALL BE A MINIMUM OF 28" FOR WET PAVEMENT MARKING .

- ① SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.
- ② IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1A OR W21-63 ARE NOT REQUIRED.
- ③ V1 AND V2 CAN BE SWITCHED SO THAT THE MARKER IS THE LEAD VEHICLE.



MOVING PAVEMENT MARKING OPERATIONS TWO- LANE TWO- WAY ROADWAY

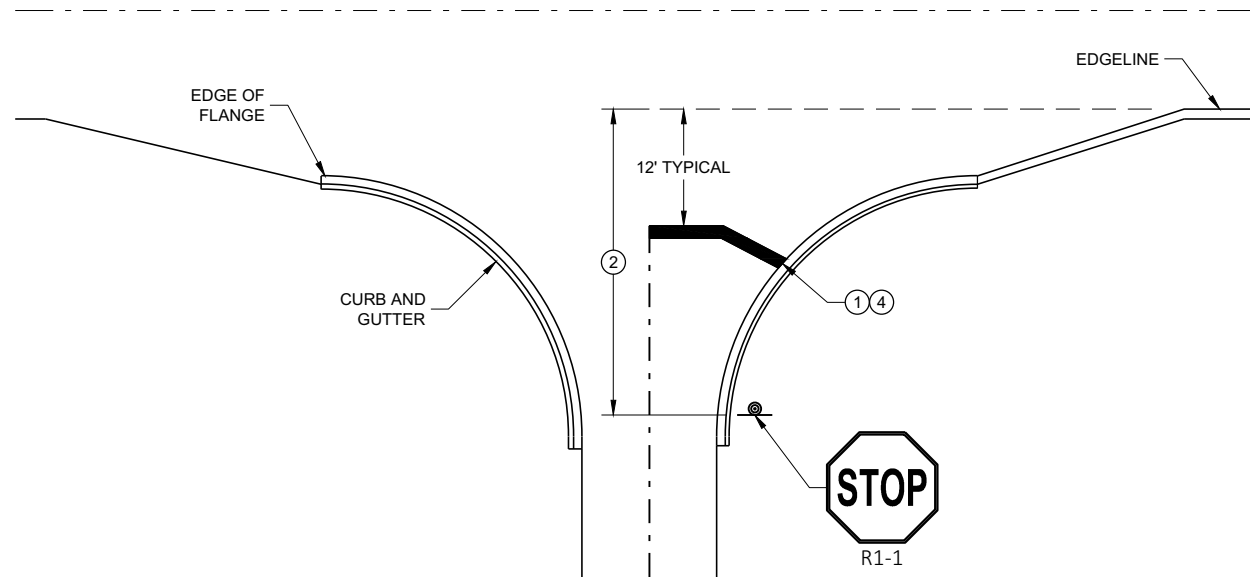
MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

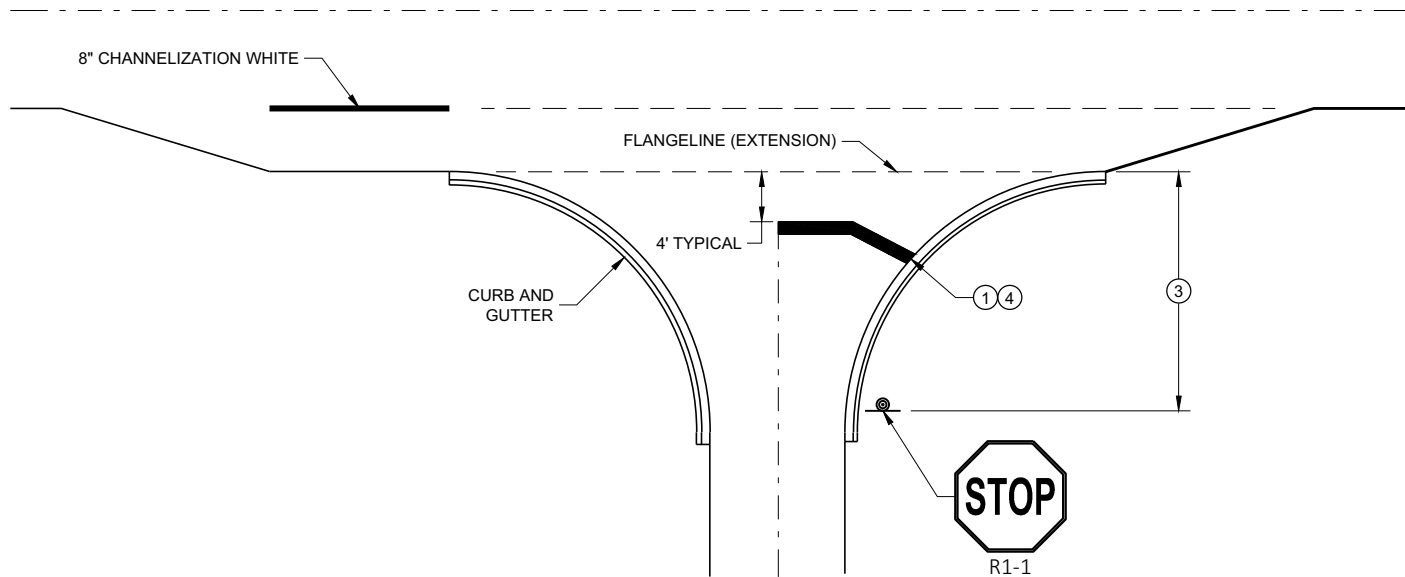
APPROVED
February 2023
DATE

/S/ Andrew L. ...
WORK ZONE EN 151

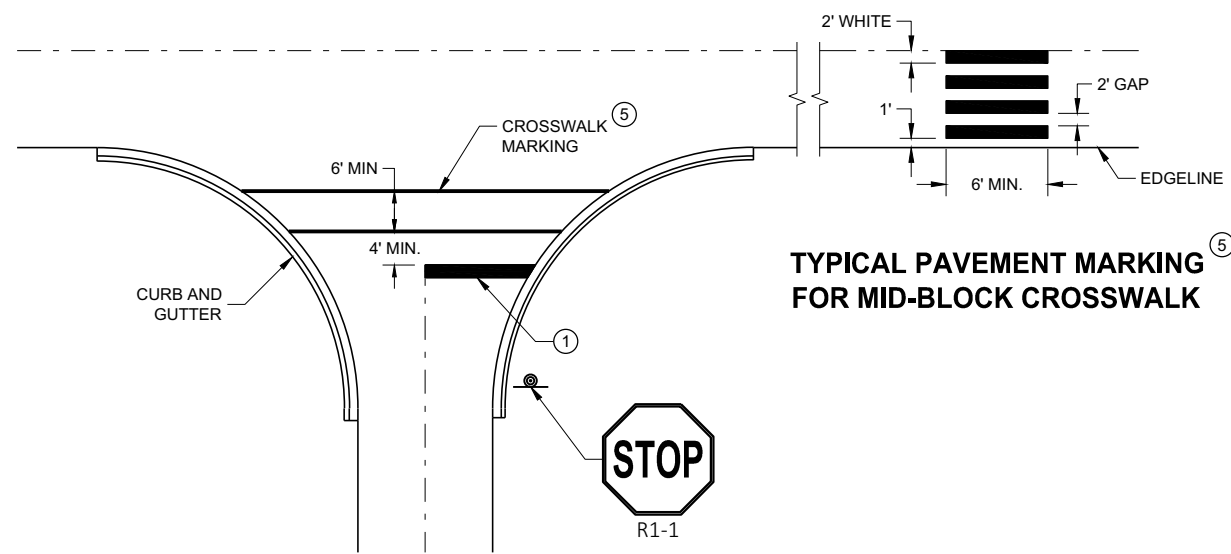
FHWA



TYPICAL STOP LINE PAVEMENT MARKING
WITH CURB AND GUTTER

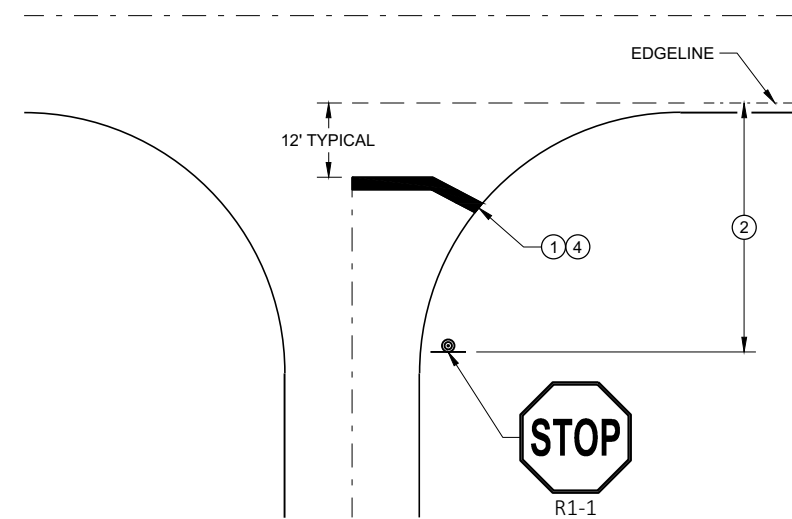


TYPICAL STOP LINE PAVEMENT MARKING
FOR SIDEROADS WITH RIGHT TURN LANE



TYPICAL STOP LINE PAVEMENT MARKING FOR
SIDEROADS WITH CROSSWALK MARKING

TYPICAL PAVEMENT MARKING
FOR MID-BLOCK CROSSWALK



TYPICAL STOP LINE PAVEMENT MARKING
WITHOUT CURB AND GUTTER

GENERAL NOTES

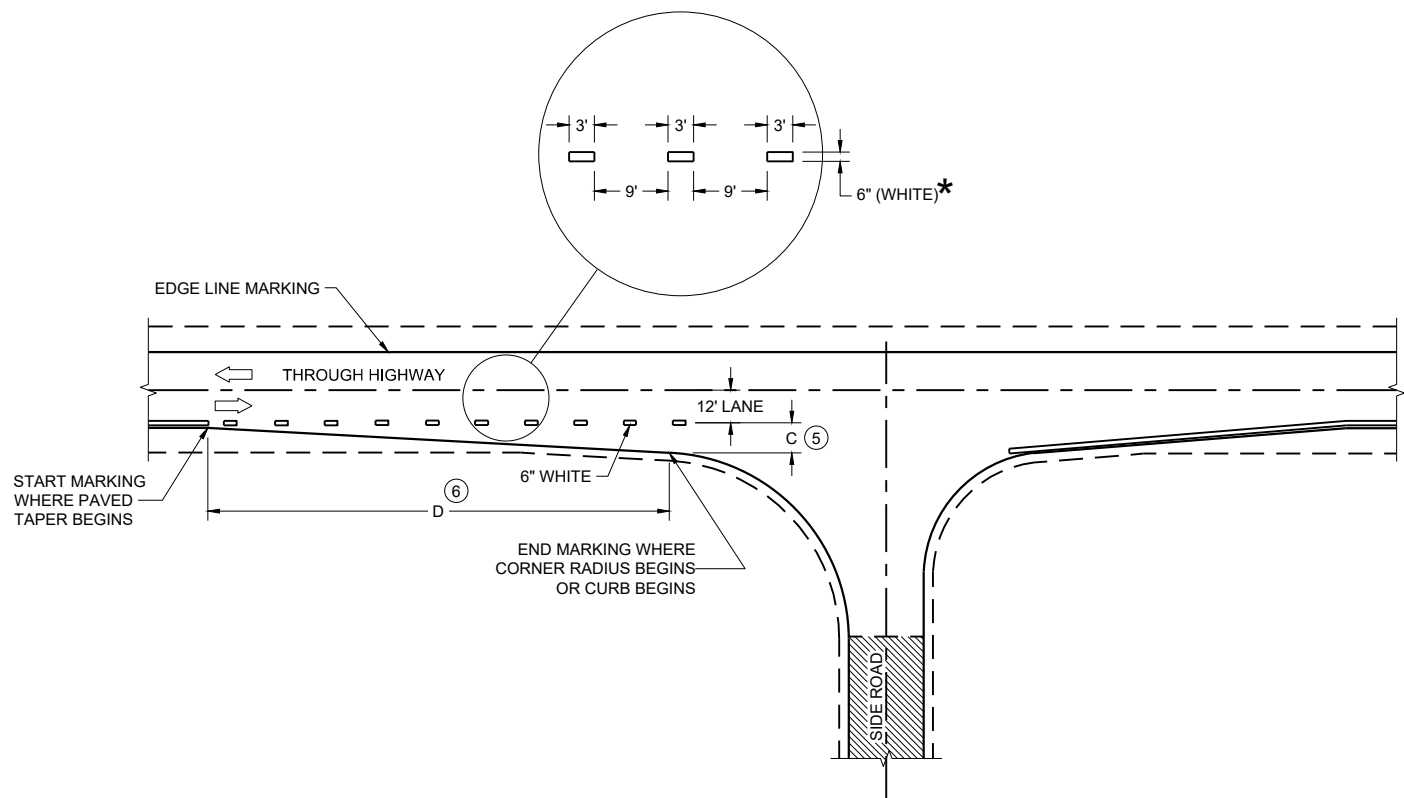
STOP SIGN SHALL BE PLACED A MINIMUM OF 6 FEET TO A MAXIMUM OF 50 FEET FROM THE EDGE LINE LOCATION.

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

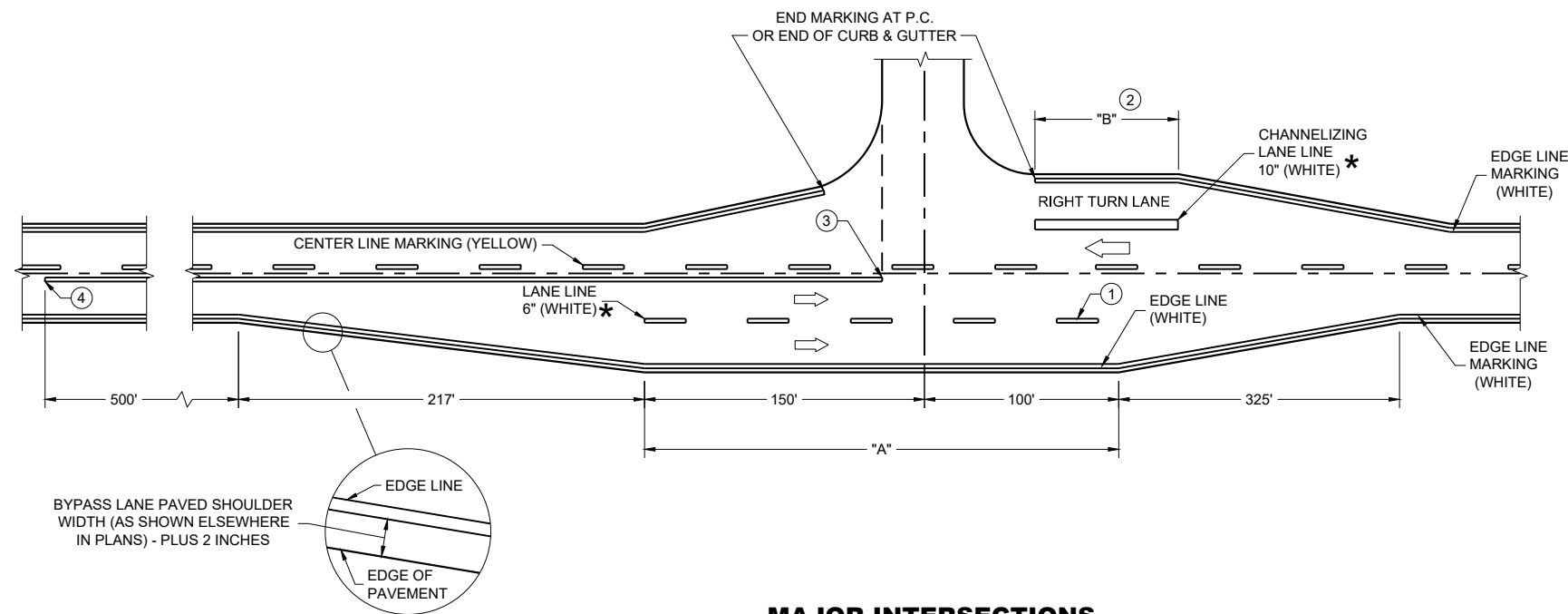
STOP LINE AND CROSSWALK
PAVEMENT MARKING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019 /S/ Matthew Rauch
DATE STATE SIGNING AND MAP ENGINEER 152
FHWA



MINOR INTERSECTION



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

*CONFIRM MARKING LINE WIDTH WITH THE MISCELLANEOUS QUANTITIES

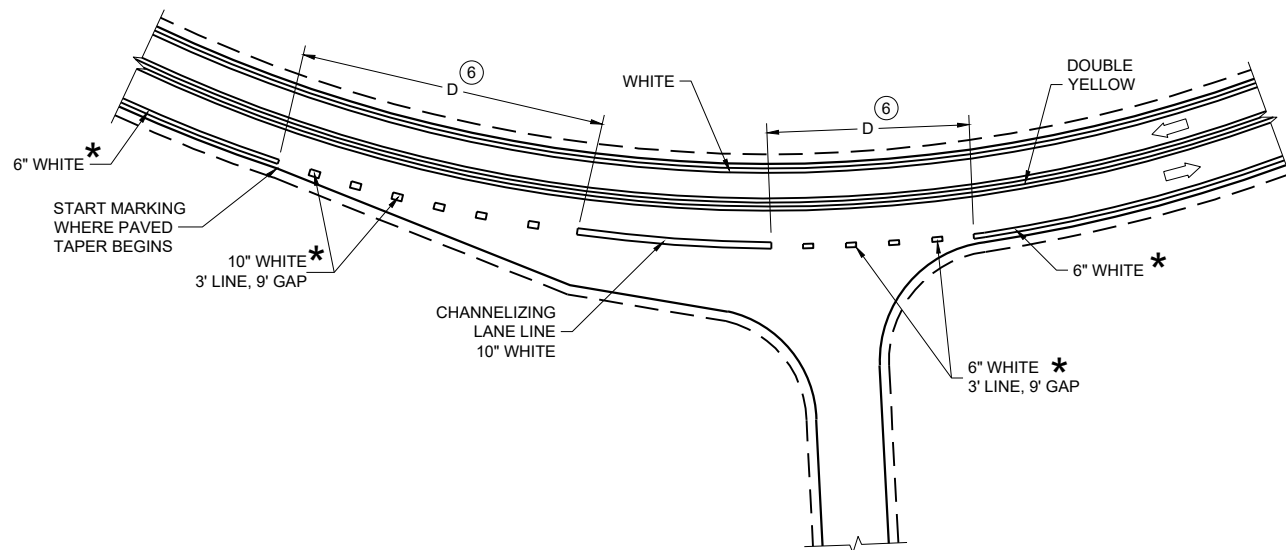
GENERAL NOTES

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.
- ⑤ WHEN DISTANCE "C" IS LESS THAN 4 FEET, OMIT DOTTED EXTENSION.
- ⑥ WHEN DISTANCE "D" IS LESS THAN 50 FEET, OMIT DOTTED EXTENSION.

LEGEND

➡ DIRECTION OF TRAVEL



INTERSECTION ON OUTSIDE OF CURVE

PAVEMENT MARKING
(INTERSECTIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

LEGEND

-  SIGN ON PERMANENT SUPPORT
-  TRAFFIC CONTROL DRUM
-  DIRECTION OF TRAFFIC
-  WORK ZONE

GENERAL NOTES

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

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

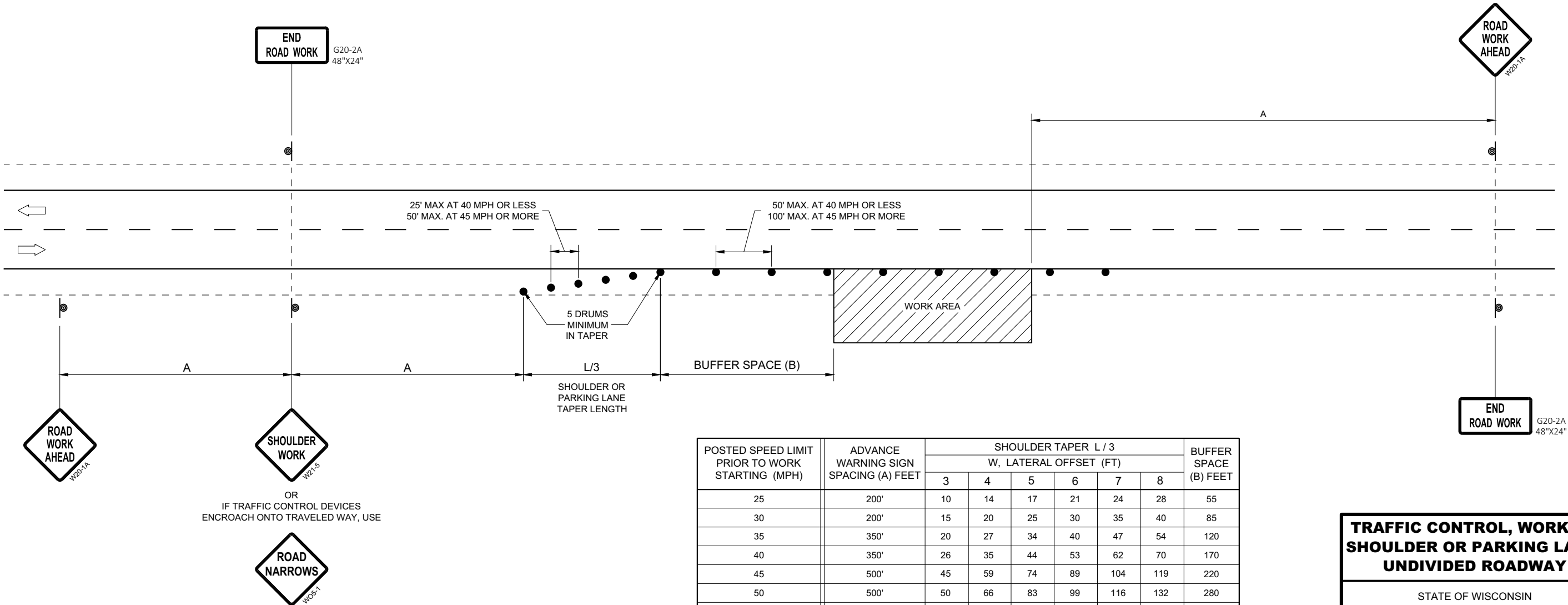
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

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

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

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

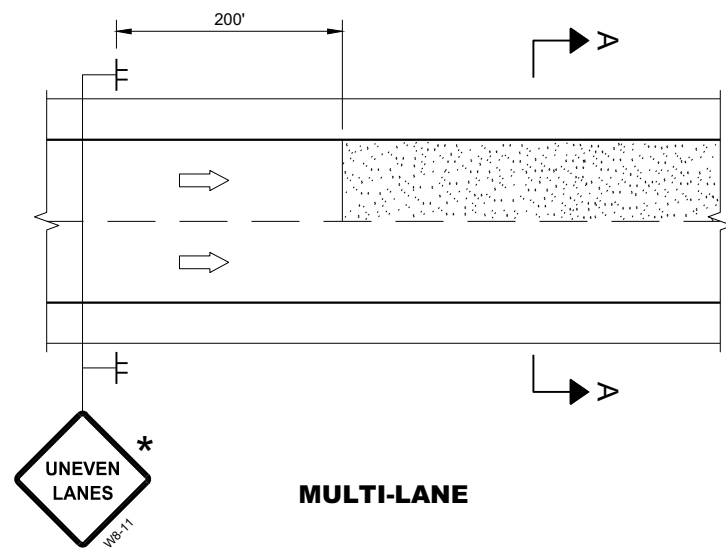
W20-1A AND G20-2A SIGNS ARE NOT REQUIRED IF THE WORK AREA IS WITHIN A LARGER WORK ZONE WHERE THESE SIGNS ARE ALREADY PRESENT. G20-2A SIGNS MAY ALSO BE OMITTED IF DURATION OF WORK IS LESS THAN 7 CONTINUOUS DAYS AND NIGHTS.



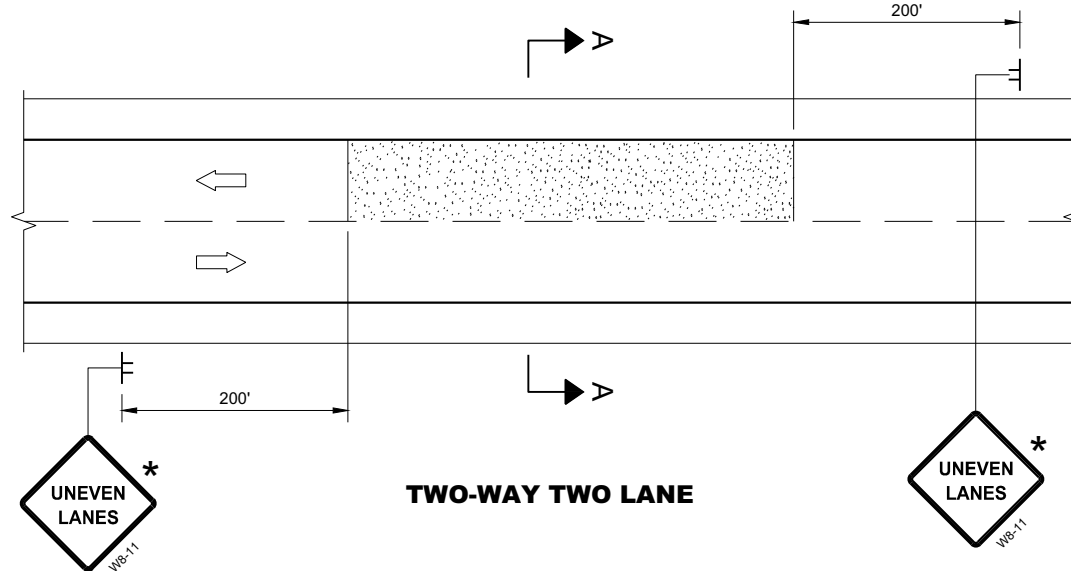
TRAFFIC CONTROL, WORK ON
SHOULDER OR PARKING LANE,
UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

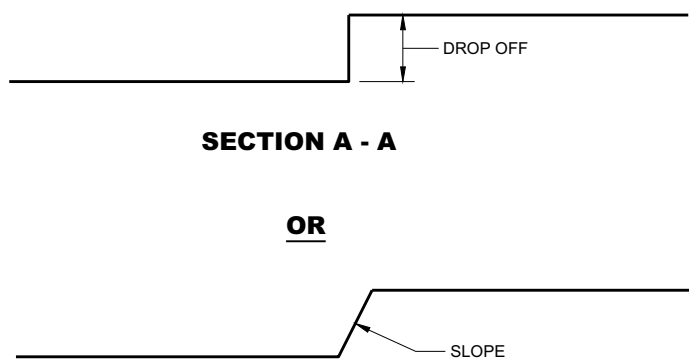
APPROVED
May 2020
DATE
/S/ Andrew Heidtke
STATEWIDE WORK ZONE T
SAFETY ENGINEER 154
FHWA



MULTI-LANE



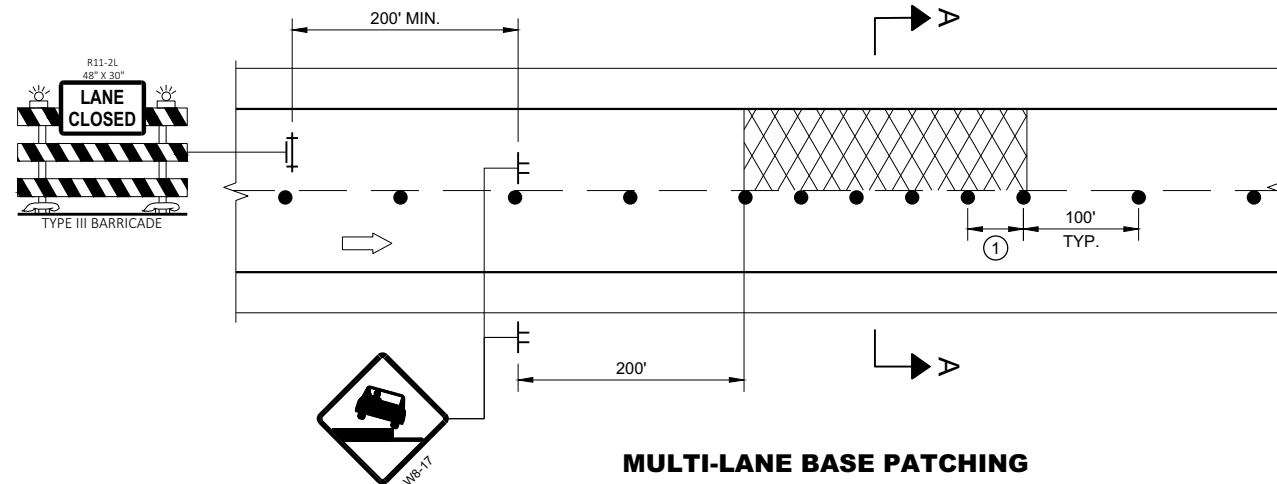
TWO-WAY TWO LANE



SECTION A - A

OR

SECTION A - A



MULTI-LANE BASE PATCHING

ADJACENT LANE DROP-OFFS

GENERAL NOTES

FOR SPOT LOCATIONS USE ENGINEERING JUDGEMENT WHEN PLACING ADDITIONAL SIGNS.

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

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

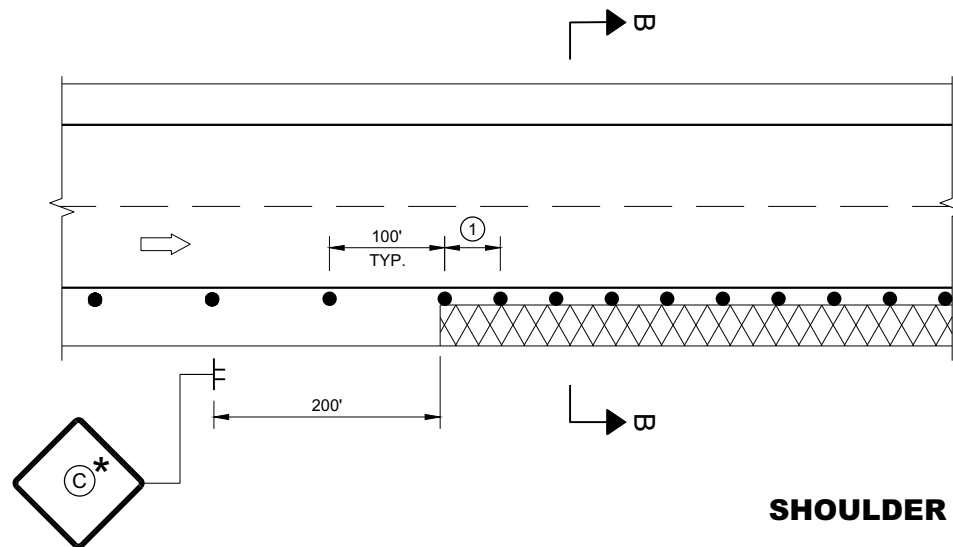
WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

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

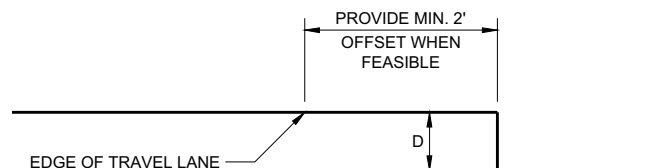
① USE CLOSER SPACING WHEN DELINEATING DROP-OFF.

LEGEND

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



SHOULDER DROP-OFFS



SECTION B - B

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

**TRAFFIC CONTROL,
DROP-OFF SIGNING**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
March 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER 155

FHWA

GENERAL NOTES

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

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

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

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

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

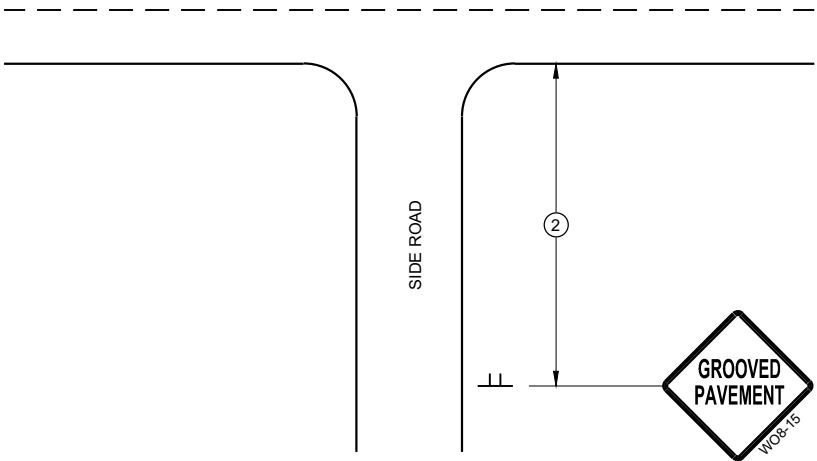
ALL SIGNS INAPPROPRIATE TO THE STATUS OF THE CONTROL ZONE, INCLUDING PRE-EXISTING SIGNS IN THE VICINITY, SHALL BE COVERED OR REMOVED AS DIRECTED BY THE ENGINEER.

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

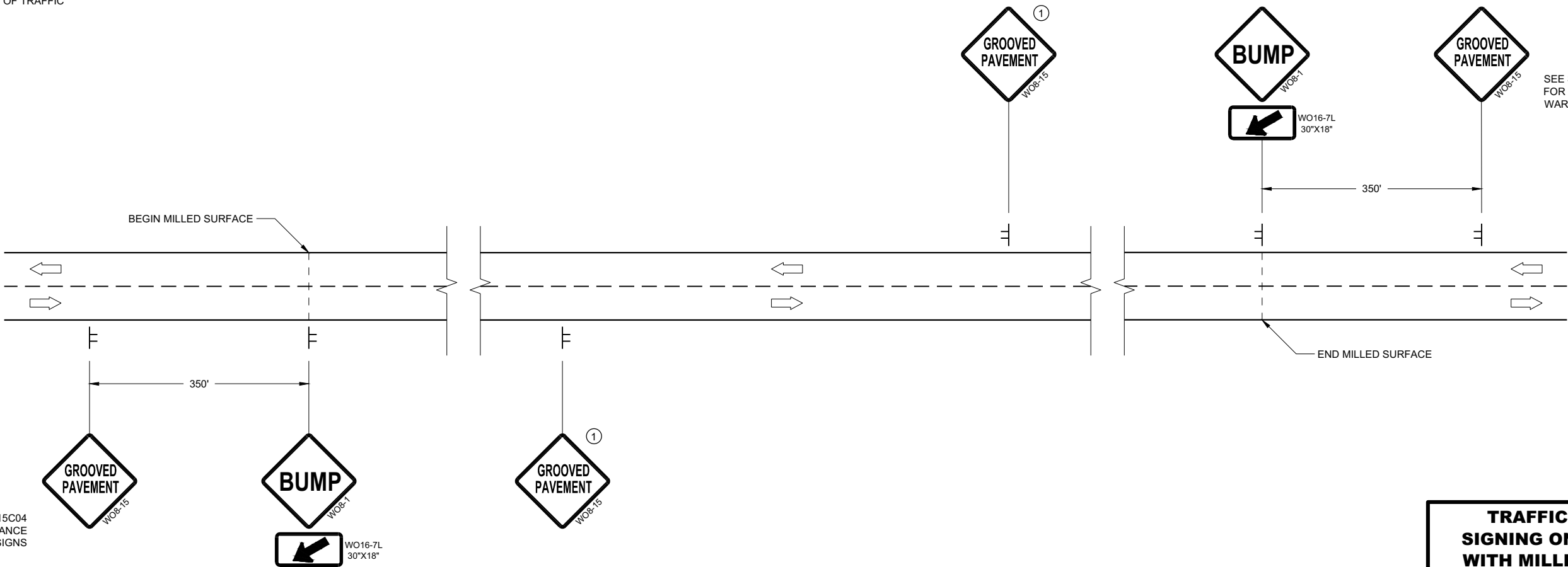
- ① PLACE SIGNS 350' IN ADVANCE OF MILLED SURFACES AND AT 1 MILE INTERVALS, OR AS DIRECTED BY THE ENGINEER.
- ② PLACE SIGN 200' MIN. FROM INTERSECTION AND 200' MIN. AFTER ADVANCE WARNING SIGN SHOWN IN SDD 15C04.

LEGEND

-  SIGN ON TEMPORARY SUPPORT
-  DIRECTION OF TRAFFIC



TYPICAL SIDE ROAD APPROACH
SIGN DETAIL



SEE SDD15C04
FOR ADVANCE
WARNING SIGNS

SEE SDD15C04
FOR ADVANCE
WARNING SIGNS

DETAIL FOR SIGNING ON MILLED SURFACES

TRAFFIC CONTROL,
SIGNING ON ROADWAYS
WITH MILLED SURFACES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER 156

FHWA

LEGEND

- V1

WORK VEHICLE
- V2

SHADOW VEHICLE
- 

TRUCK MOUNTED ATTENUATOR (TMA)
- 

FLASHING ARROW PANEL (CAUTION)
- 

WORK AREA
- 

DIRECTION OF TRAFFIC

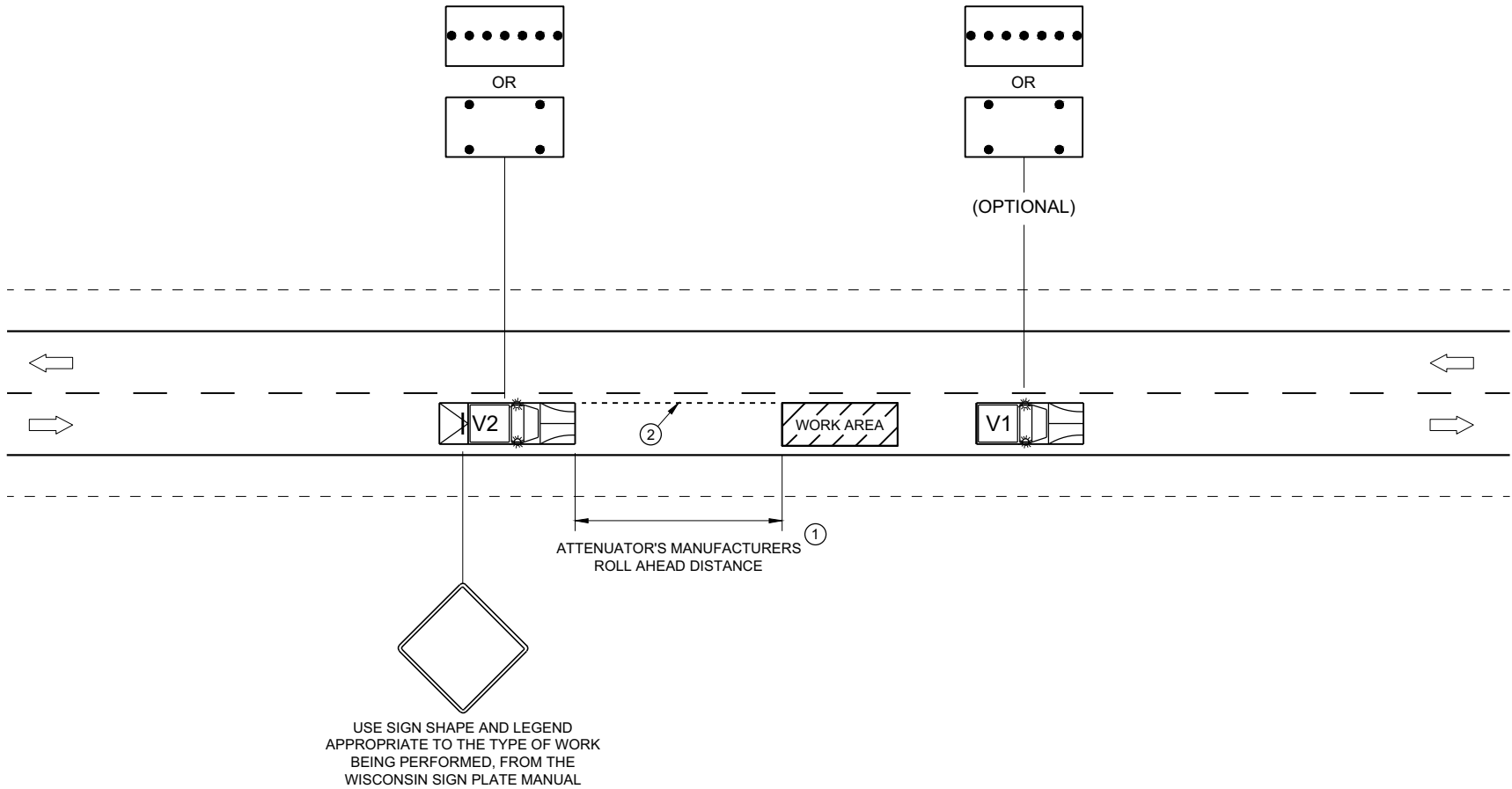
POSTED SPEED PRIOR TO WORK STARTING (MPH)	DECISION SIGHT DISTANCE (D)
0 - 25	550'
30	550'
35	700'
40	700'
45	900'
50	900'
55	1200'

GENERAL NOTES

- ALL SIGNS ARE 48"X48" UNLESS OTHERWISE NOTED.
- MOBILE IS WORK THAT MOVES CONTINUOUSLY OR MOVES AT LEAST THE DECISION SIGHT DISTANCE EVERY 15 MINUTES.
- ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.
- ALL ARROW PANELS SHALL BE REAR FACING, TYPE "B" OR "C", AND DISPLAYING THE FLASHING CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.
- USE AN ATTENUATOR ON THE REARMOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.
- ①

DISTANCE BETWEEN VEHICLES MAY INCREASE FROM THE ATTENUATOR'S ROLL AHEAD BASED ON TERRAIN, SIGHT DISTANCE, 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.
- ②

ALIGN LEFT SIDE OF SHADOW VEHICLE WITH EDGE OF WORK AREA.

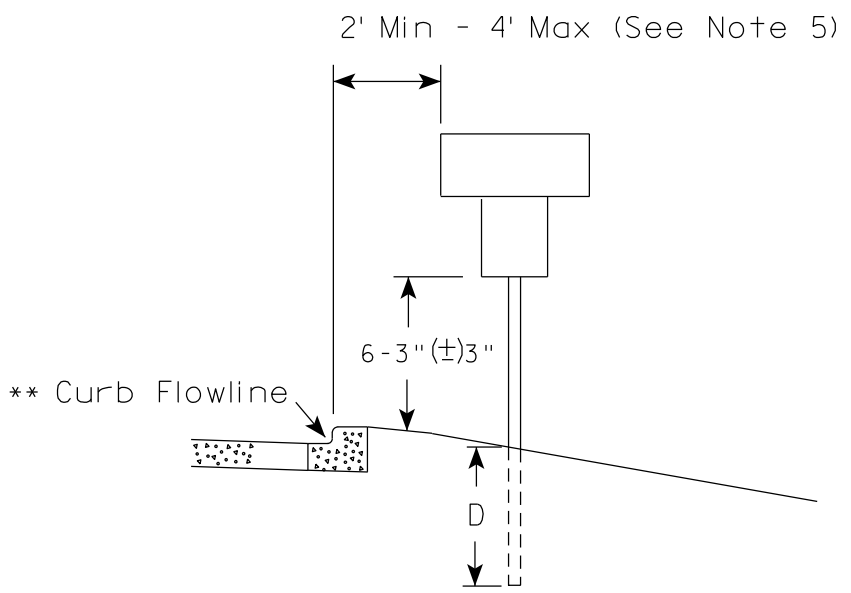
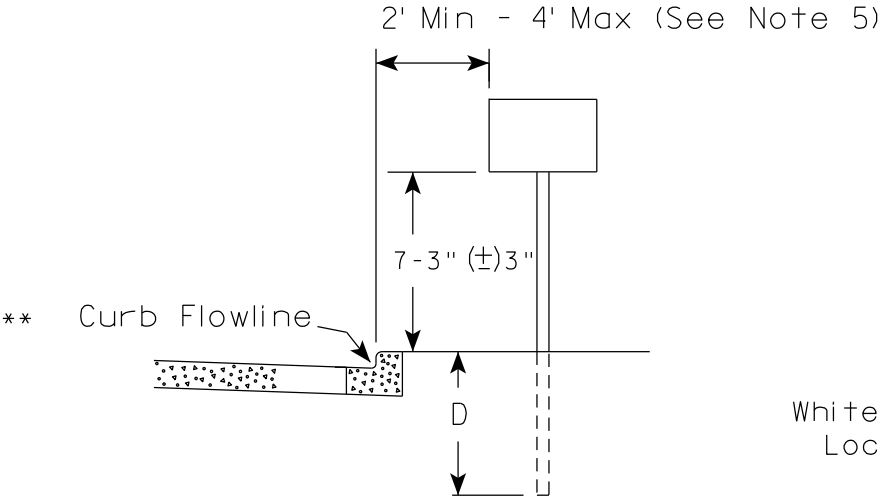


TRAFFIC CONTROL,
MOBILE OPERATIONS ON
AN UNDIVIDED ROADWAY

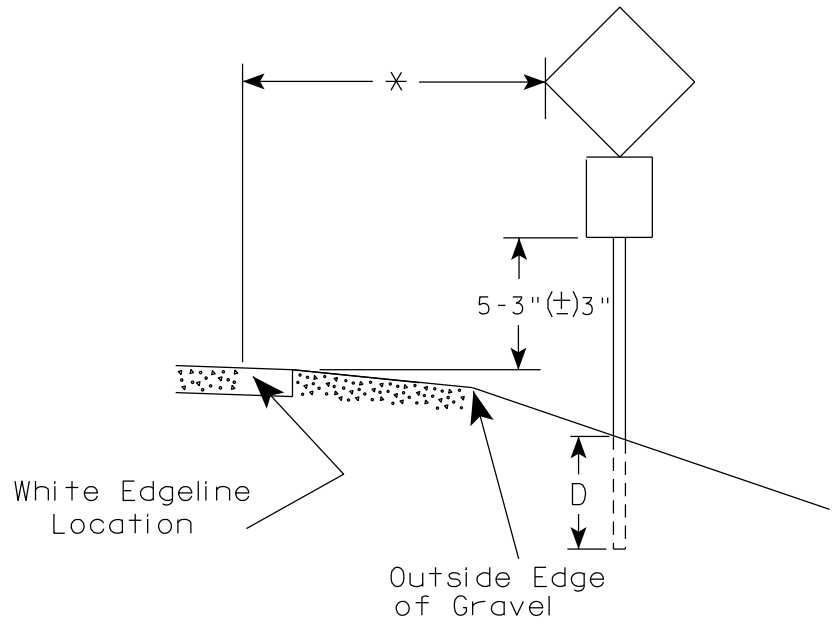
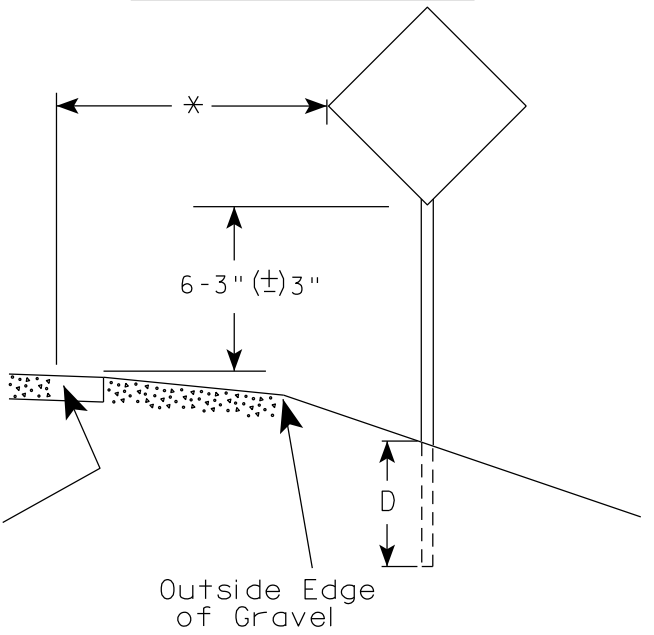
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2021 /S/ Andrew Heidtke
DATE STATEWIDE WORK ZONE T SAFETY ENGINEER 157
FHWA

URBAN AREA



RURAL AREA (See Note 2)



POST EMBEDMENT DEPTH

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

GENERAL NOTES

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

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

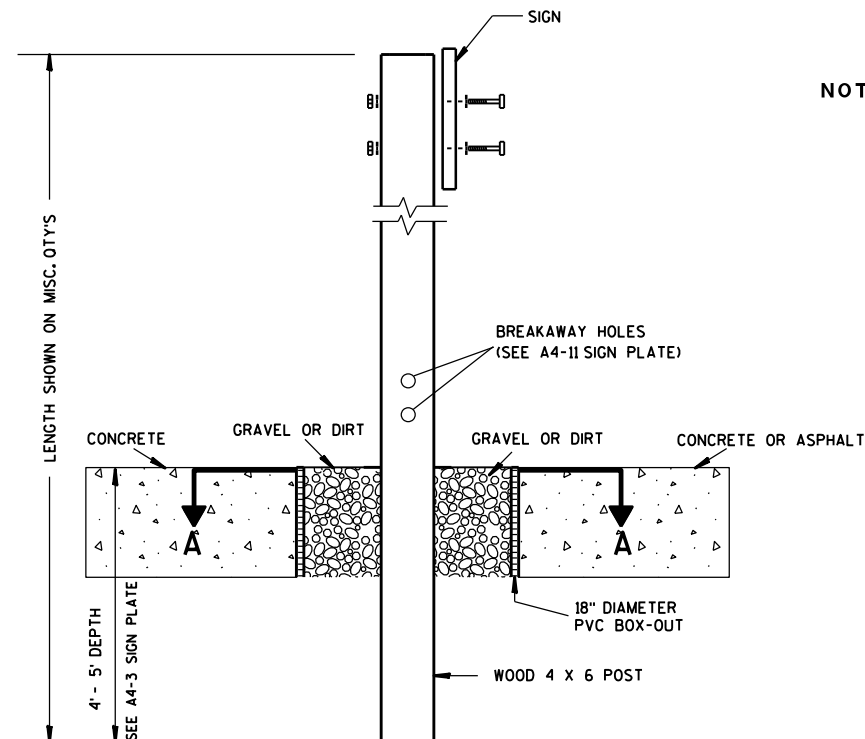
* 6 feet from edge of a paved shoulder or 12 feet from the edge of pavement (edge line location) or 2 feet from outside edge of gravel, whichever is greater unless directed by project engineer.

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

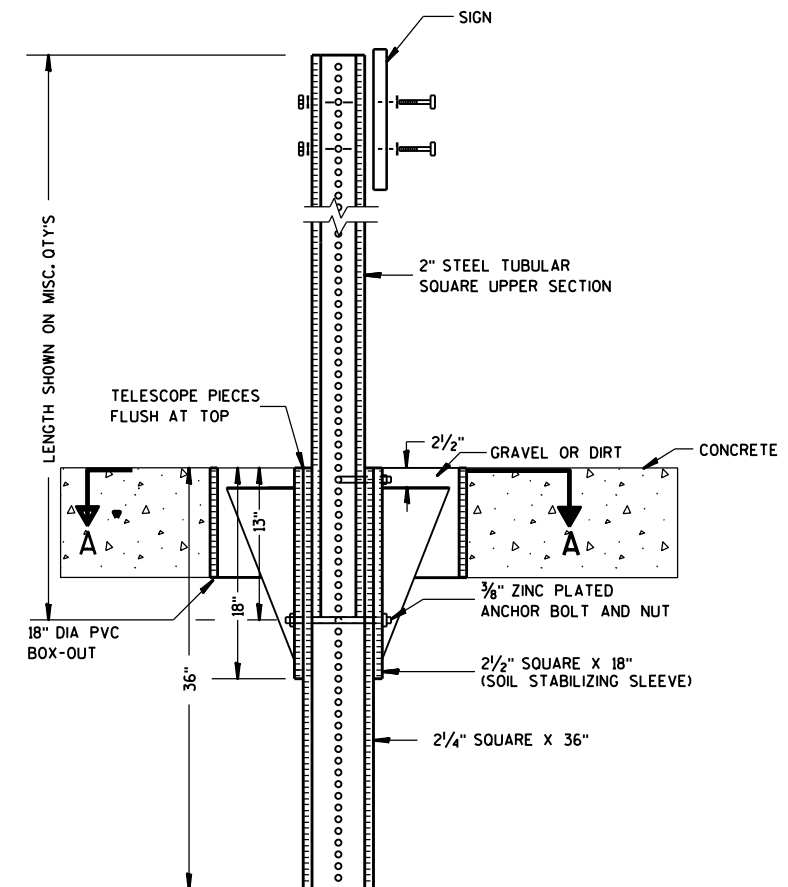
DATE 12/6/23 PLATE NO. A4-3.23



ELEVATION VIEW

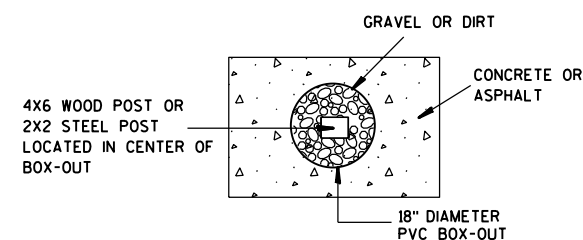
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

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

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 1/27/14 PLAT 159 A4-3B.1

PROJECT NO:

HWY:

COUNTY:

SHEET NO:

E

GENERAL NOTES

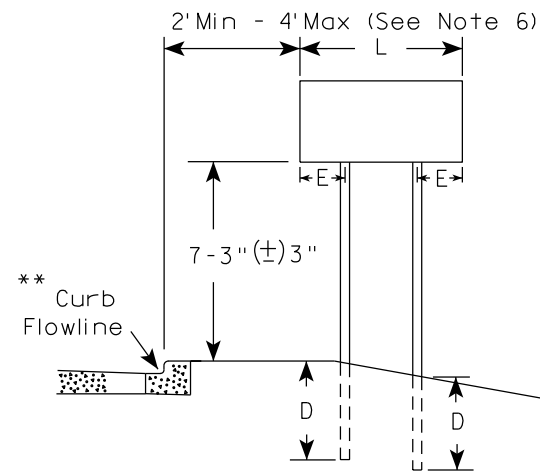
- For 3 or 4 post installations, individual post spacing shall be greater than 3'-6".
- See tables below for required number of posts.
- For expressways and freeways, mounting height is 7'-3" (±) 3" or 6'-3" (±) 3" depending upon existence of sub-sign.
- The (±) tolerance for mounting height is 3 inches.
- J-Assemblies are considered to be one sign for mounting height.
- Offset distance shall be consistent with existing signs or consistent throughout length of project.
- Folding signs shall be mounted at a height of 5'-3" (±) 3" or as directed by the engineer.
- The Double Arrow sign (W12-1) shall be mounted at a height of 2'-3" (±) 3". The Chevron sign (W1-8), Roundabout Chevron panel (R6-4B), Clearance Markers (W5-52), Mile Markers (D10 series), In Road Object Markers (W5-54) & End of Road Markers (W5-56) shall be mounted at a height of 4'-3" (±) 3".

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

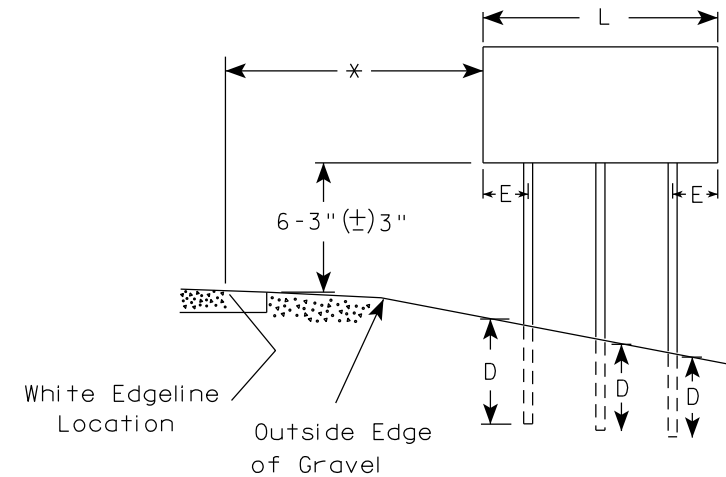
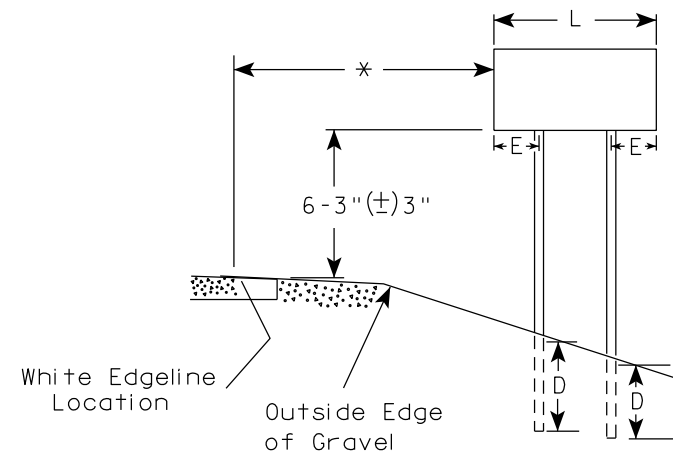
** The existence of curb and gutter does not in itself mandate the vertical clearance illustrated. That height is typically measured where there is sidewalk adjacent to the roadway or parking is permitted. In the absence of sidewalk vertical clearance is measured from the top of the curb. Offset of signs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

*** See A4-3 sign plate for signs 4' or less in width and less than 20 S.F. in area.

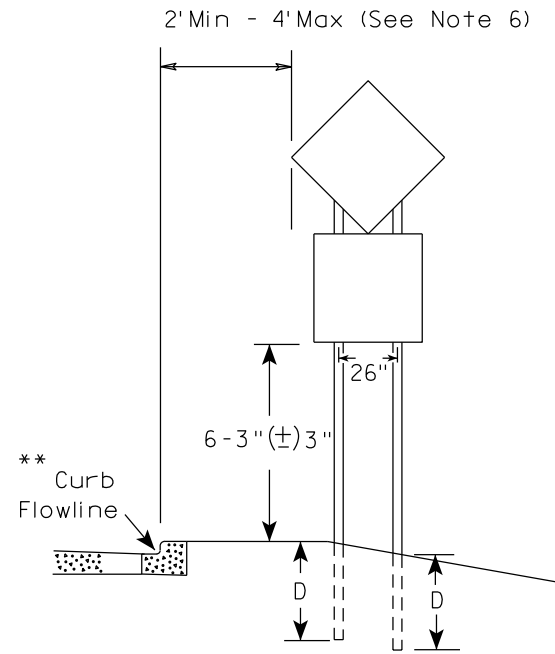
URBAN AREA



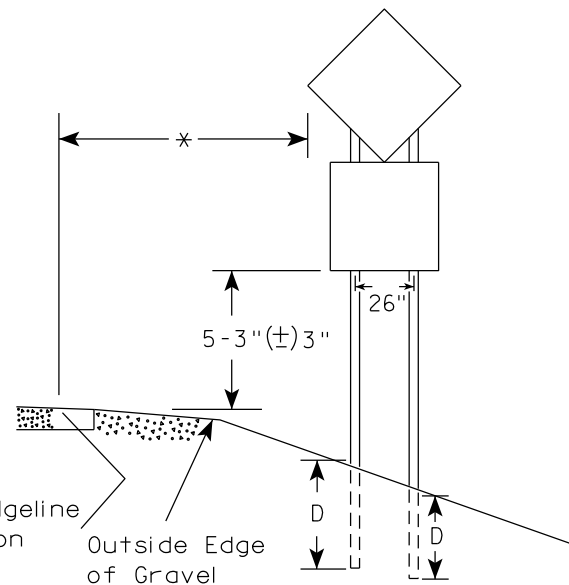
RURAL AREA (See Note 3)



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



48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

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

POST EMBEDMENT DEPTH

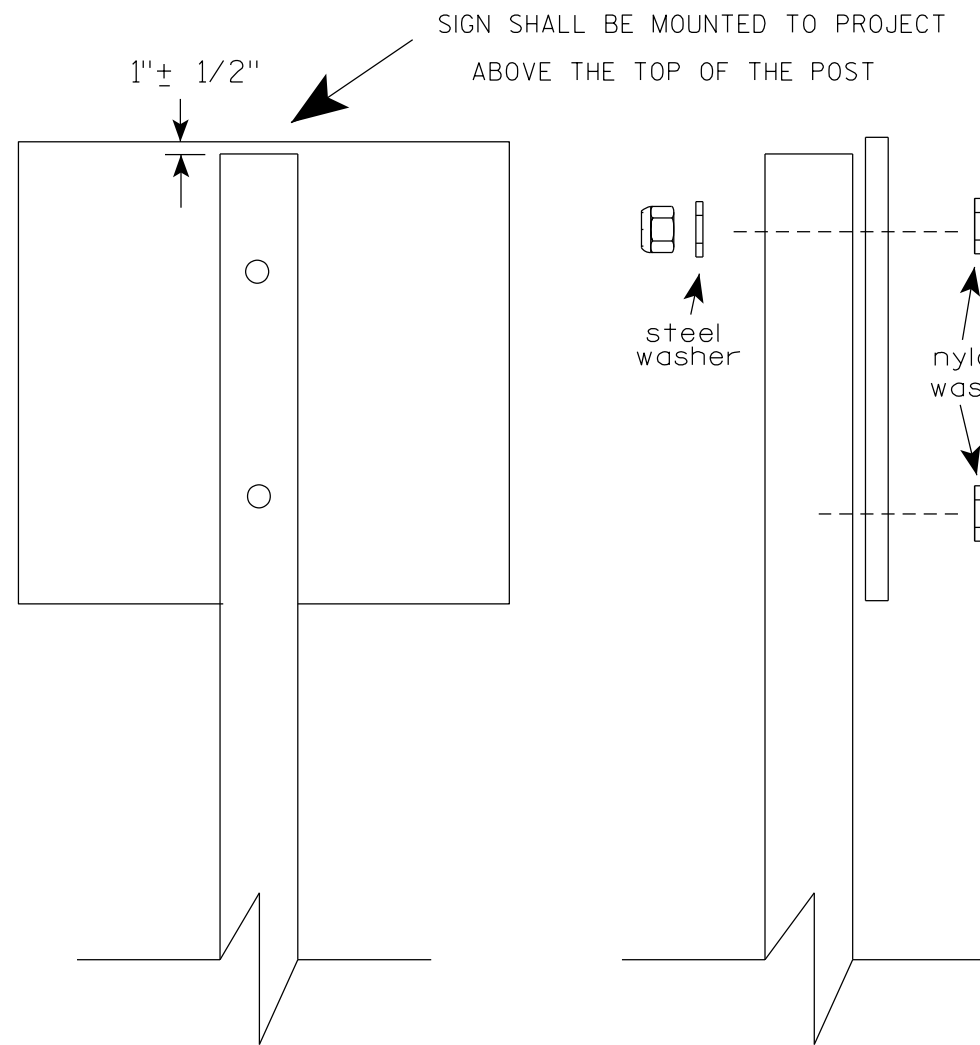
Area of Sign Installation (Sq.Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

TYPICAL INSTALLATION
OF TYPE II SIGNS
ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

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



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

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

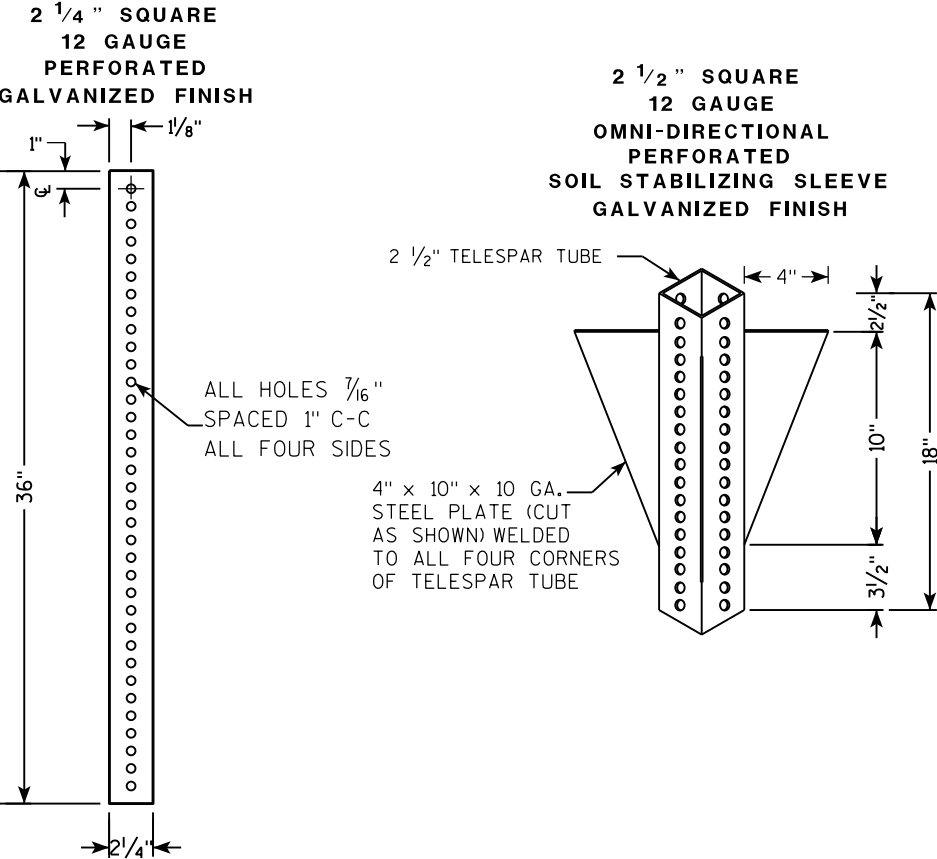
Threads on bolts and nuts shall be manufactured with sufficient allowance for the cadmium plate or galvanized coating to permit the nuts to run freely on the bolts.

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

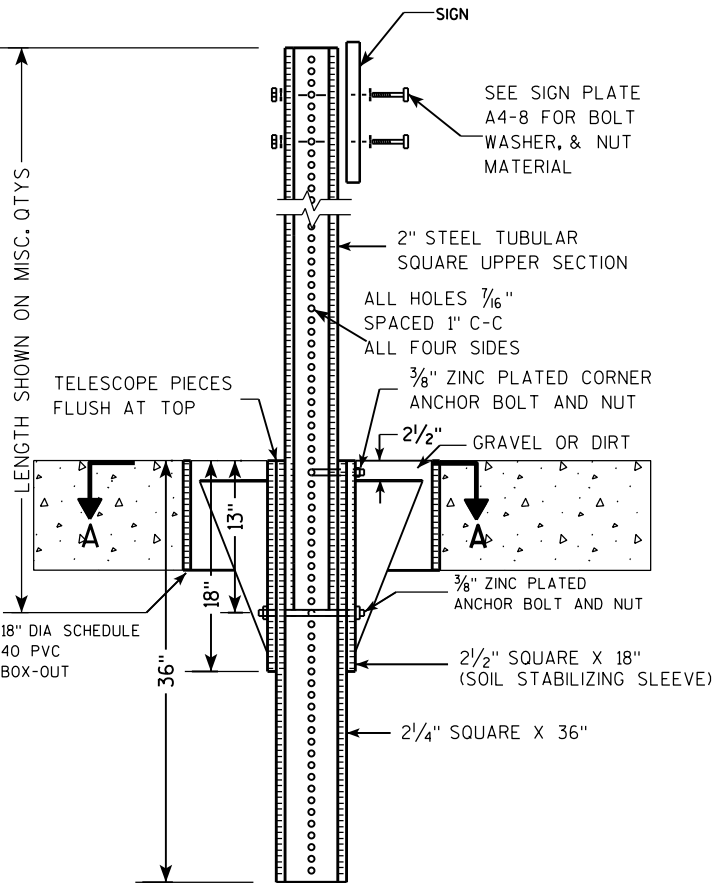
* Two different fastening systems are shown for illustration purposes. On any individual sign, either one or the other system shall be used. Actual number of fasteners per sign varies with the sign area, but normally there are two. For a single post installation, all signs greater than 9 sq. ft. require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

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

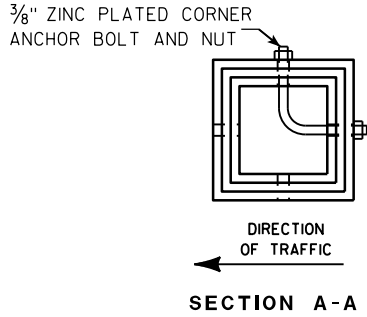
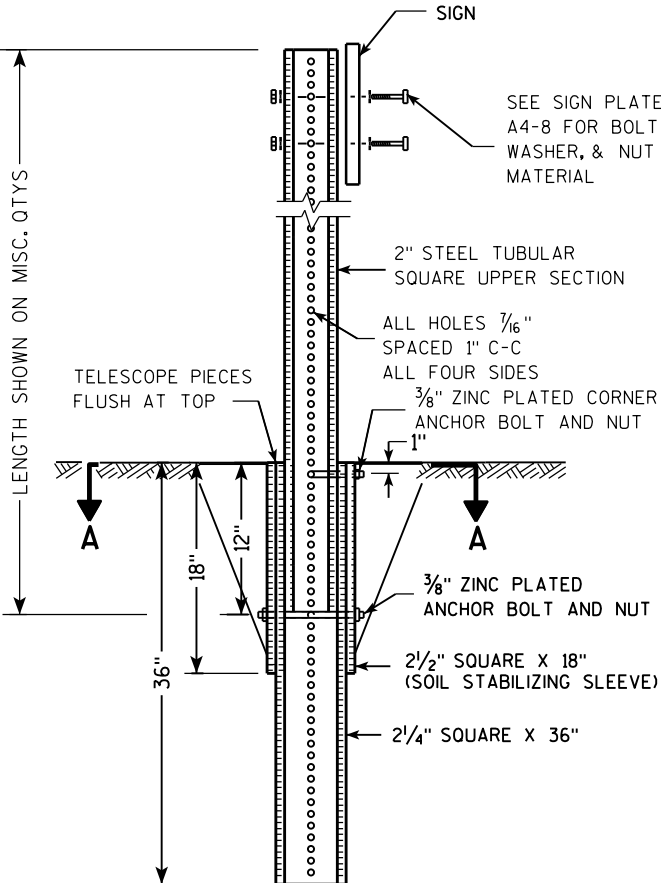
TELESCOPIC TUBING ANCHORS
TWO PIECE SYSTEM



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



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



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

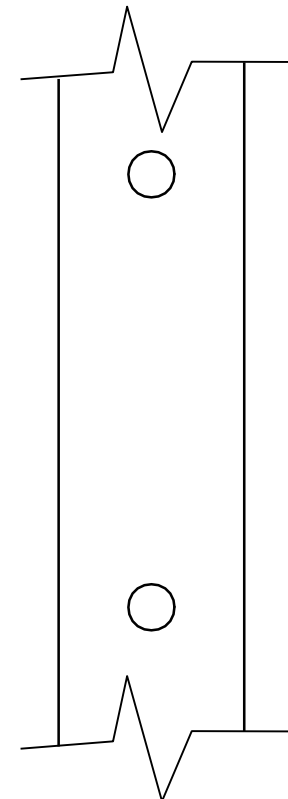
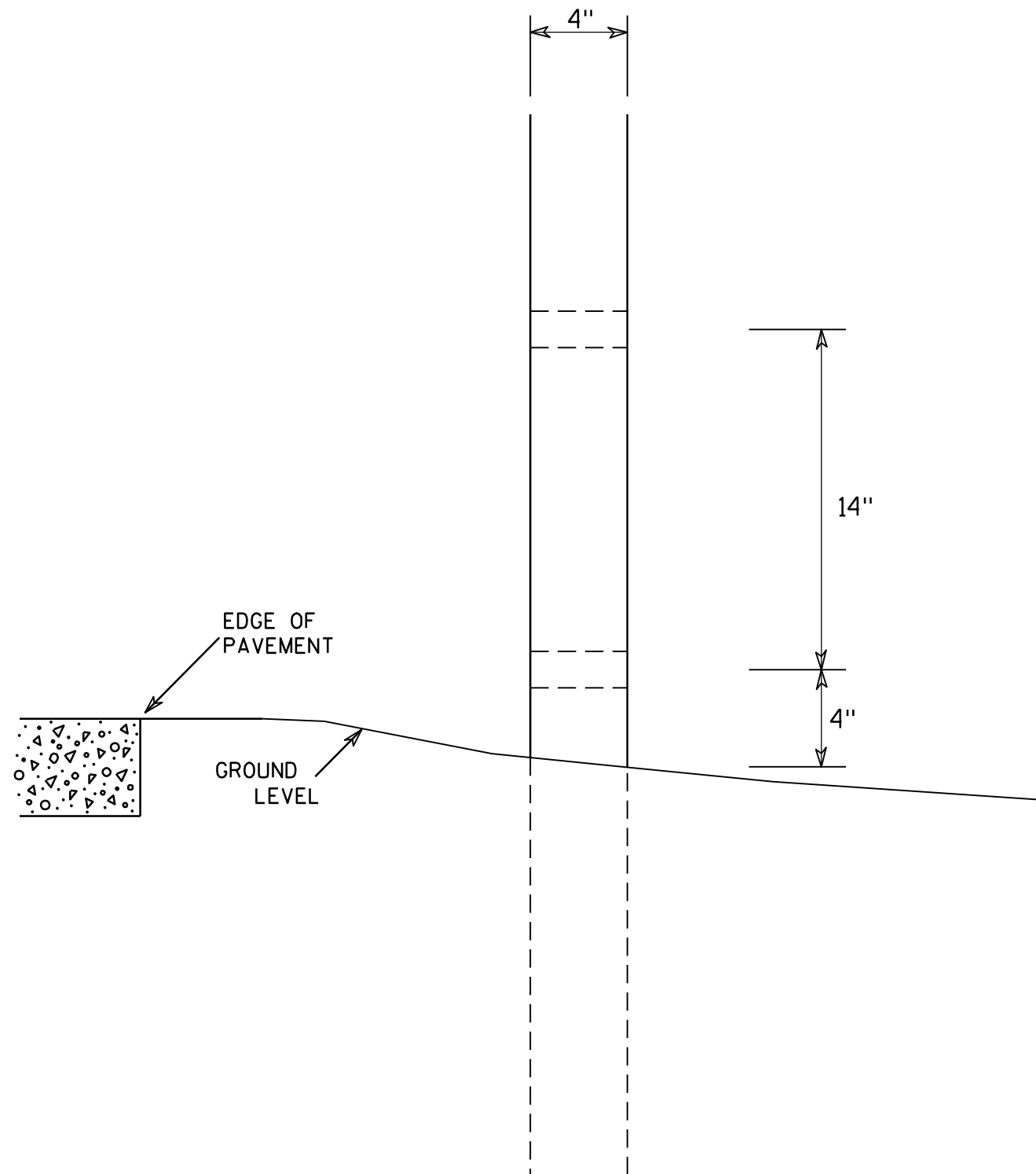
Signs wider than 3 feet or larger than 9 sq. ft shall be mounted on multiple posts (see above table).

TUBULAR STEEL
SIGN POST
A4-9

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 2/05/15 PLAT 162 14-9.9



SIDE VIEW

GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1 1/2" diameter holes drilled perpendicular to the roadway centerline.

4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED

Chester J. Spang
for State Traffic Engineer

DATE 3/27/97

PLATE NO. A4-11.2

PROJECT NO:

HWY:

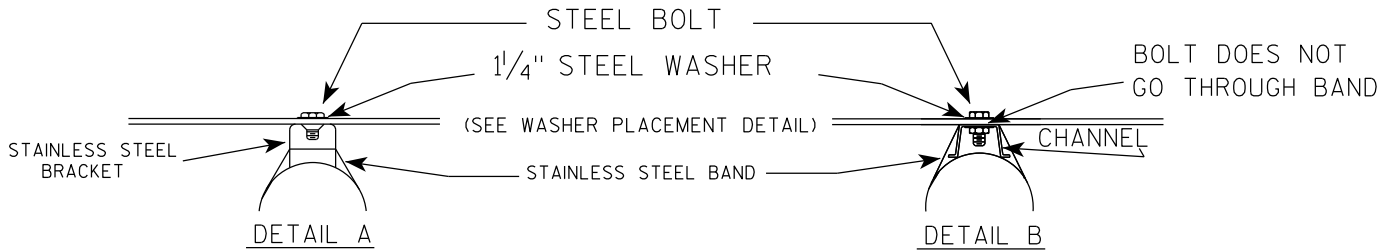
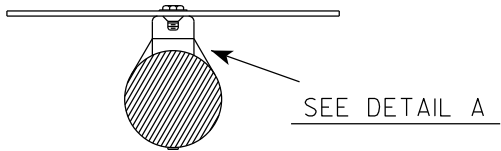
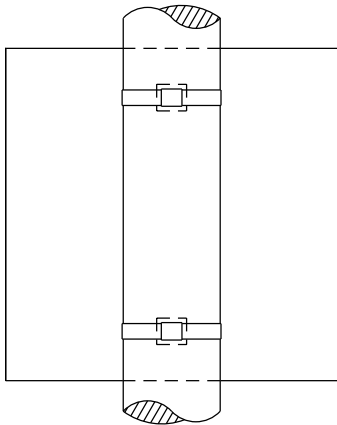
COUNTY:

SHEET NO: 163

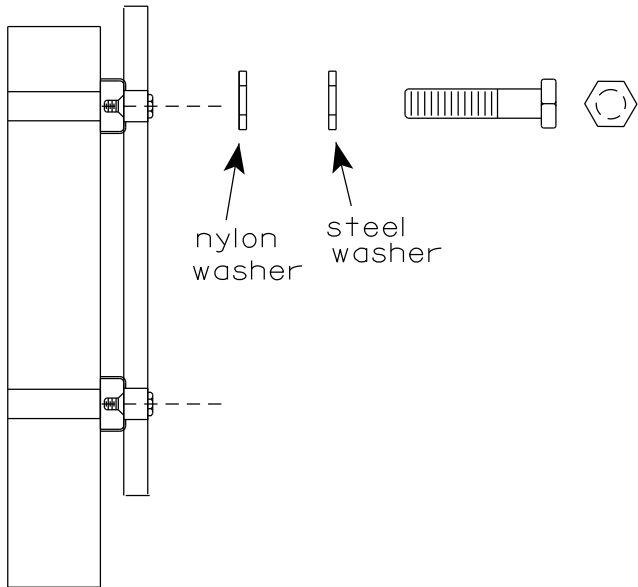
E

BANDING

SINGLE SIGN



WASHER PLACEMENT

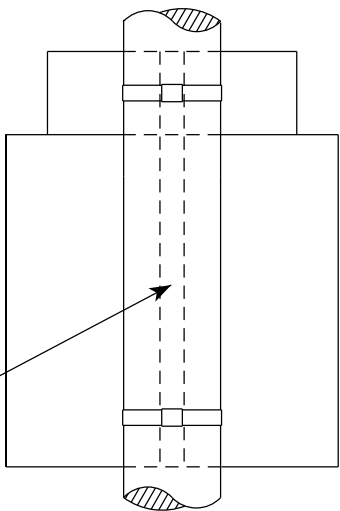


WASHERS (ALL POSTS) -
1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON
FOR ALL TYPE H SIGNS

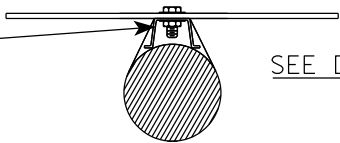
GENERAL NOTES

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

"J" ASSEMBLY



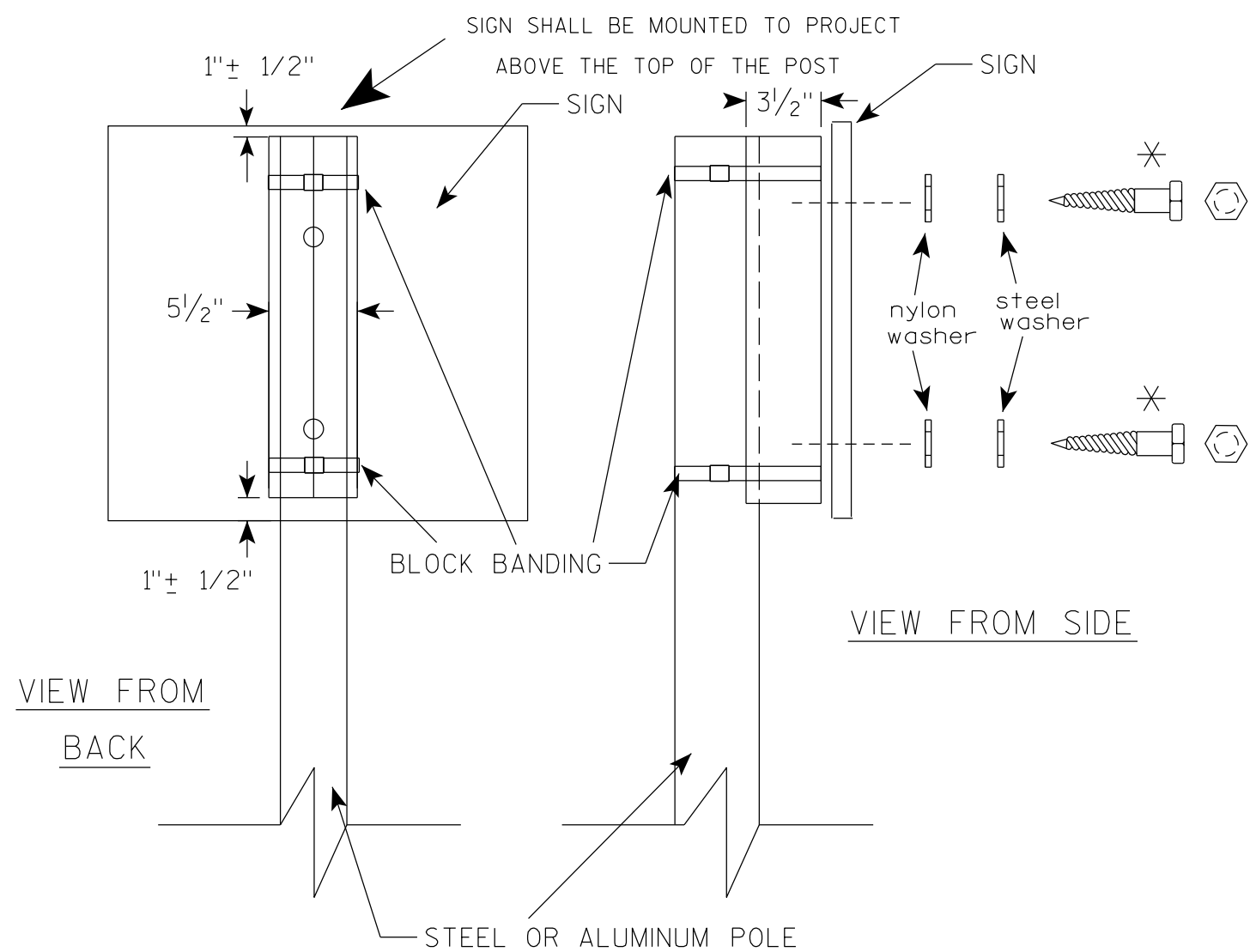
CHANNEL
SEE TYPICAL PANEL
INSTALLATION SHEET



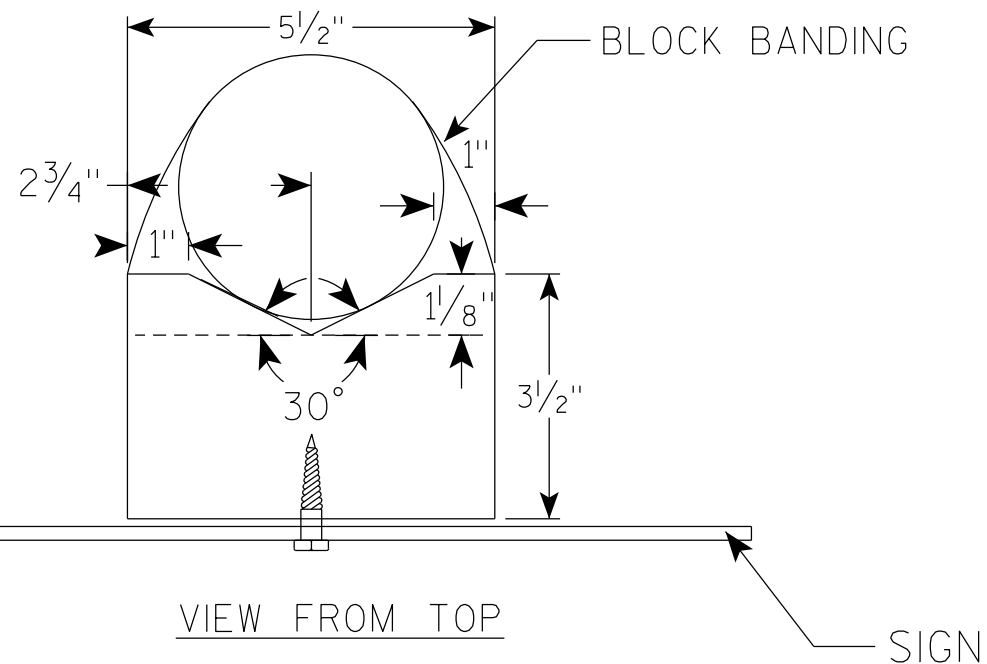
STANDARD SIGN
SIGN BANDING DETAILS

WISCONSIN DEPT OF TRANSPORTATION

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



VIEW FROM
BACK



GENERAL NOTES

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

✱ LAG BOLTS SHALL BE 3/8" X 2 1/2"

BLOCK BANDING DETAIL
(V-BLOCK OPTION)

WISCONSIN DEPT OF TRANSPORTATION

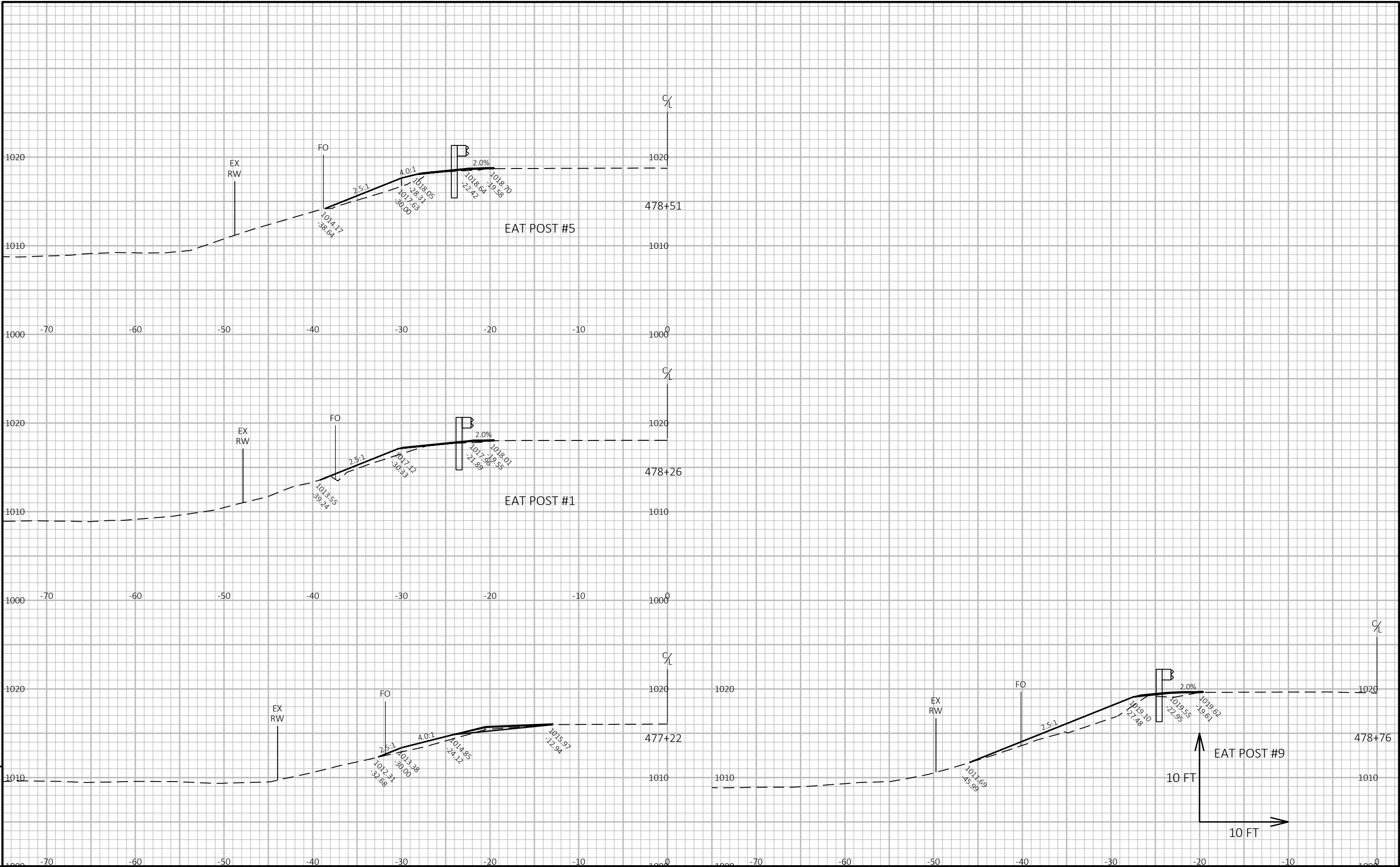
APPROVED *Matthew R. Rauch*
for State Traffic Engineer

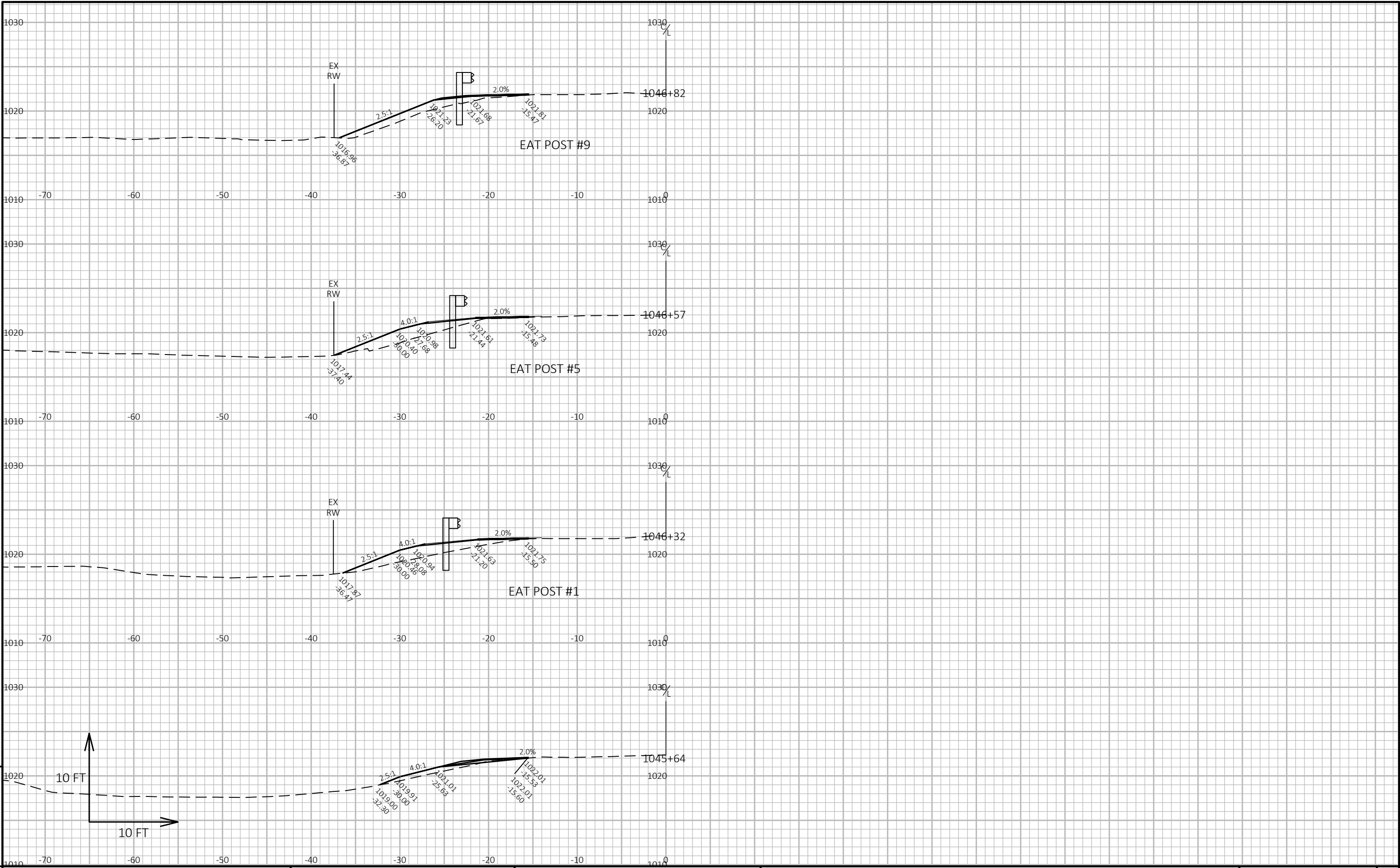
DATE 4/19/2022 PLATE NO. A5-10.3

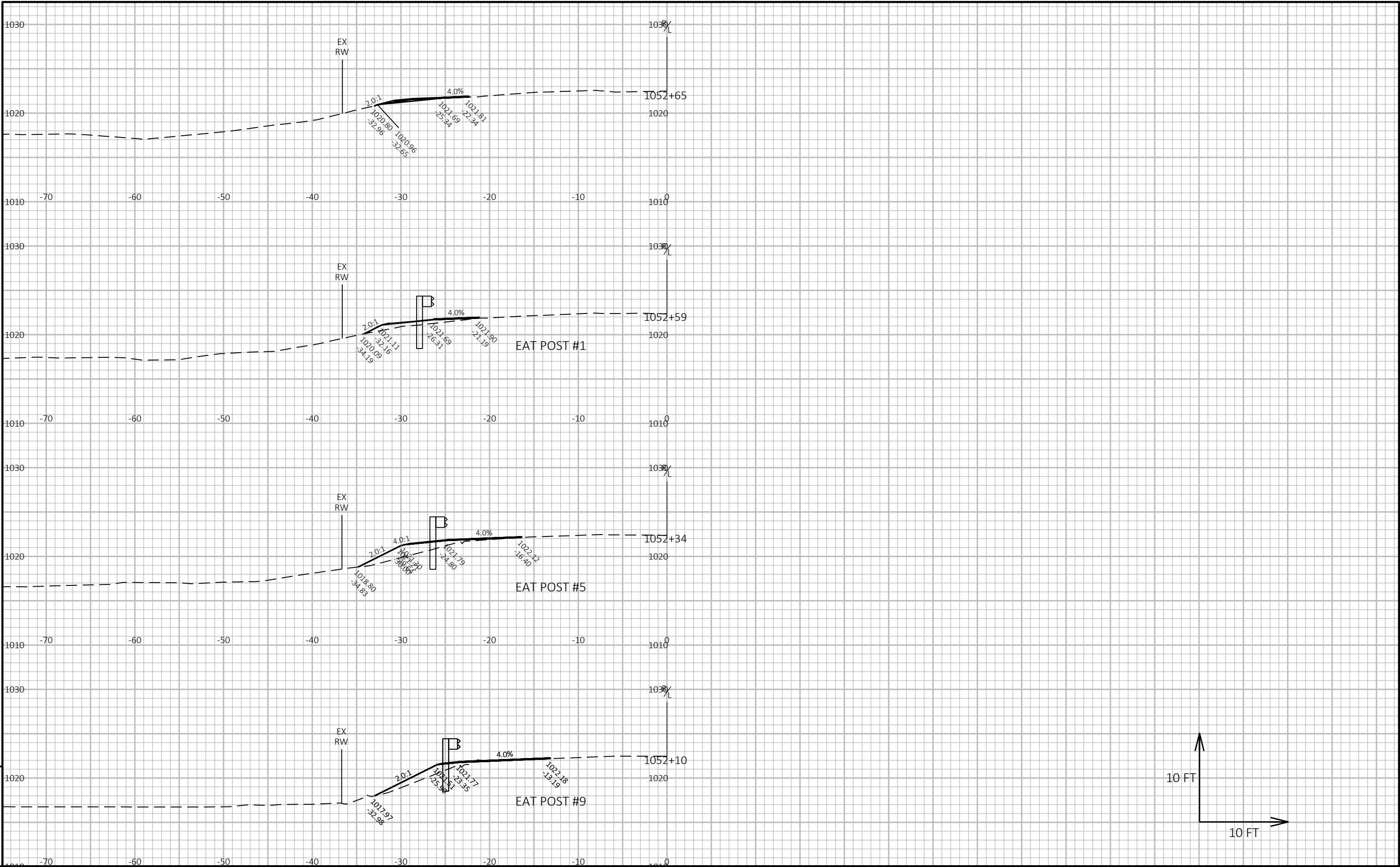
PROJECT NO:

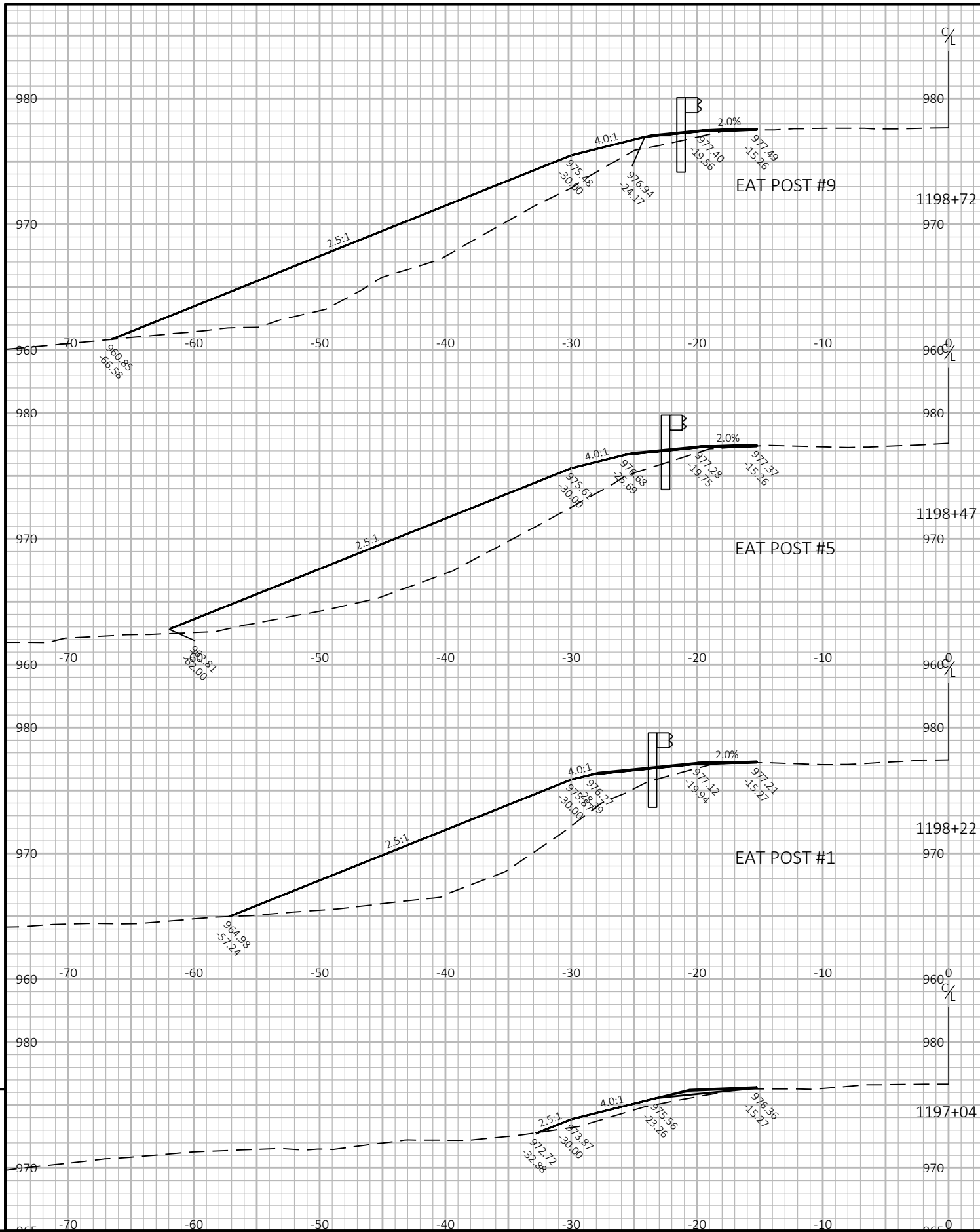
SHEET NO: 165

E









PROJECT NO: 1540-02-78

HWY: STH 65

COUNTY: ST. CROIX

CROSS SECTIONS: CROSS SECTIONS - STH 65 NORTH

SHEET

170

E

FILE NAME : W:\15400276\C3D\SHEETS\PLAN\090201_XS.DWG
LAYOUT NAME - 090207-xs

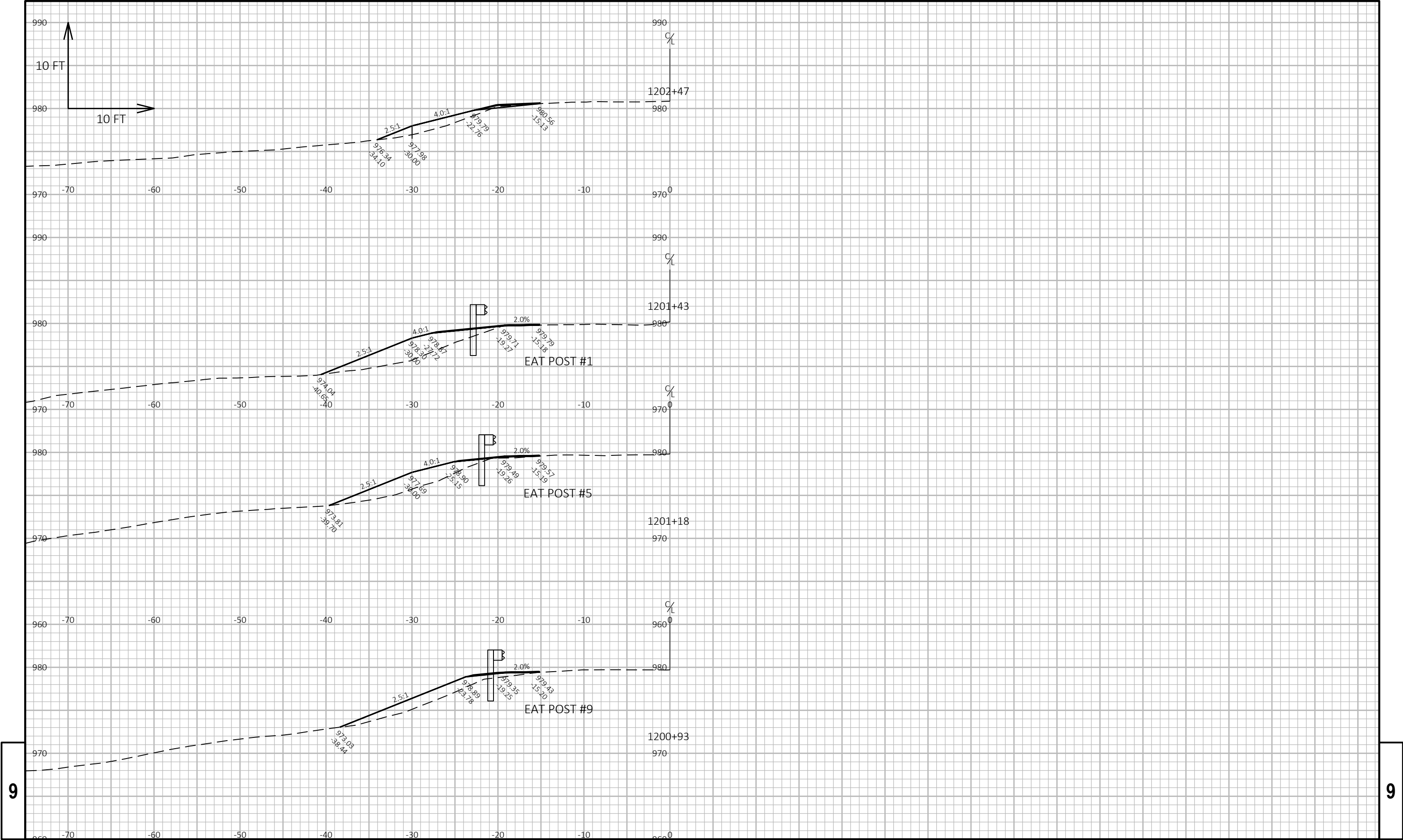
PLOT DATE : 8/21/2024 4:27 PM

PLOT BY : HEIDI SCHWARZ

PLOT NAME :

PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

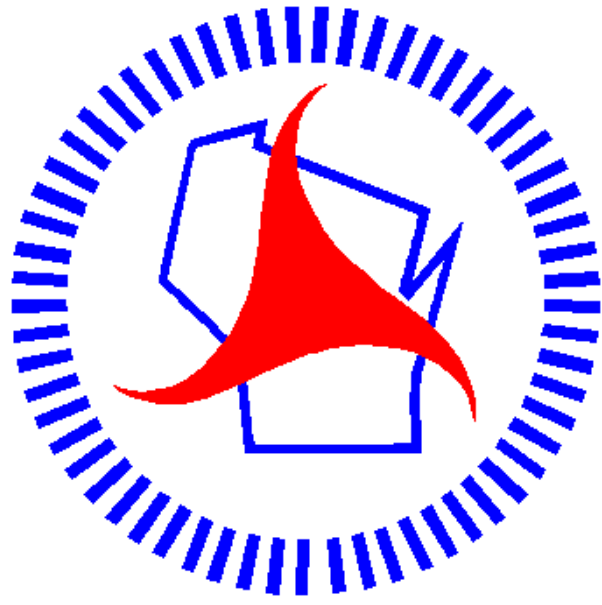
WISDOT/CADDs SHEET 49



9

9

Notes



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