EAU APRIL 2016

PROJECT ID: 7640-00-70

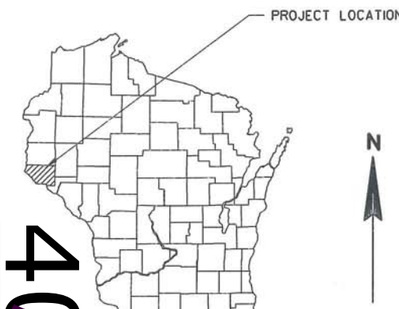
WITH:

COUNTY: PIERCE

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details (includes erosion control plans)
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 = 156



40

DESIGN DESIGNATION

A.A.D.T. 2018	=	2500
A.A.D.T. 2038	=	3000
D.H.V.	=	13.6%
D.D.	=	62/38
T.	=	8.4%
DESIGN SPEED	=	60 MPH
ESALS	=	751,900

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 (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

- GRADE LINE
- ORIGINAL GROUND
- MARSH OR ROCK PROFILE (To be noted as such) (ROCK)
- SPECIAL DITCH (LABEL)
- GRADE ELEVATION (95.36)
- CULVERT (Profile View)

UTILITIES

- ELECTRIC (E)
- FIBER OPTIC (FO)
- GAS (G)
- SANITARY SEWER (SAN)
- STORM SEWER (SS)
- TELEPHONE (T)
- WATER (W)
- UTILITY PEDESTAL
- POWER POLE
- TELEPHONE POLE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

RIVER FALLS - SPRING VALLEY

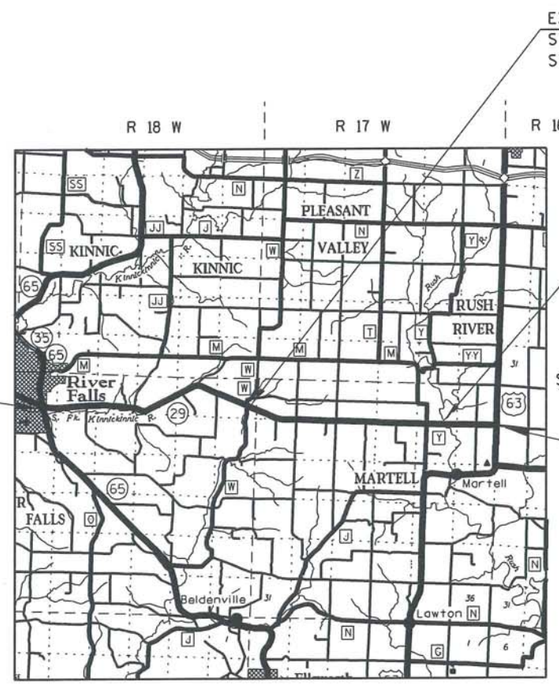
(STH 65 TO USH 63)

STH 29

PIERCE COUNTY

STATE PROJECT NUMBER
7640-00-70

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
7640-00-70	WISC 2016126	1



EXCEPTION TO NET ℄
STRUCTURE B-47-631
STA 490+31.55 - 490+73.83

EXCEPTION TO NET ℄
STRUCTURE B-47-33
STA 747+83.81 - 749+42.07

BEGIN PROJECT
STA 211+25.00
Y = 360354.71
X = 452864.12

ST. CROIX COUNTY T 28 N
PIERCE COUNTY T 27 N

END PROJECT
STA 818+35.00

LAYOUT
SCALE 0 2 MI.

TOTAL NET LENGTH OF CENTERLINE = 11.46 MI.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS). PIERCE COUNTY

ORIGINAL PLANS PREPARED BY

FAA CONSULTING ENGINEERS

WISCONSIN MATTHEW J. GILBERT E-32417 EAU CLAIRE WI REGISTERED PROFESSIONAL ENGINEER

1-13-16

(Date) (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	FAA, INC.
Designer	FAA, INC.
Project Manager	NICOLE PASSUELLO, P.E.
Regional Examiner	CHRISTINE KOSKI
Regional Supervisor	TIM MASON, P.E.
C.O. Examiner	

APPROVED FOR THE DEPARTMENT

DATE: 1/19/16 (Signature)

E

FILE NAME : F:\Drawings\2012-123\0001\1000.dgn PLOT DATE : 1/13/2016 PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : 1 in : 100 ft

WISDOT/CADDS SHEET 10

STANDARD ABBREVIATIONS

ABUT	ABUTMENT
AC	ACRE
AGG	AGGREGATE
ASPH	ASPHALTIC
AVG	AVERAGE
ADT	AVERAGE DAILY TRAFFIC
BAH	BEARING AHEAD
BBK	BEARING BACK
BF	BACK FACE
BM	BENCH MARK
BR	BRIDGE
C/L	CENTER LINE
△	CENTRAL ANGLE OR DELTA
CE	COMMERCIAL ENTRANCE
CMP	CORRIGATED METAL PIPE
CONC	CONCRETE
CP	CULVERT PIPE
CP	CONTROL POINT
CPCP	CULVERT PIPE CORRUGATED POLYETHYLENE
CPRCHE	CULVERT PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL CLASS HE-III
CR	CREEK
CWT	HUNDREDWEIGHT
CY	CUBIC YARD
C & G	CURB AND GUTTER
D	DEGREE OF CURVE/BOX DEPTH
DHV	DESIGN HOUR VOLUME
DD	DIRECTIONAL DISTRIBUTION
DISCH	DISCHARGE
DG	DITCH GRADE
DWY	DRIVEWAY
E	EAST
EL/ELEV	ELEVATION
ENT	ENTRANCE
ESALS	EQUIVALENT SINGLE AXLE LOADS
EXC	EXCAVATION
EBS	EXCAVATION BELOW SUBGRADE
EXIST	EXISTING
FE	FIELD ENTRANCE
FERT	FERTILIZE
FF	FACE TO FACE
FL	FLOW LINE
FO	FIBER OPTIC
FS	FULL SUPER ELEVATION
FT	FOOT
G	GRADE
HMA	HOT MIX ASPHALT
HYD	HYDRANT
ID	INSIDE DIAMETER
INV	INVERT
IP	IRON PIPE OR PIN
K	RATE OF VERTICAL CURVATURE
LHF	LEFT-HAND FORWARD
L	LENGTH OF CURVE
LB	POUND
LF	LINEAR FOOT
LCB	LONG CHORD BEARING
LC	LONG CHORD
LN	LANE
LT	LEFT
LN	LANE
LS	LUMP SUM
LT	LEFT
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MI	MILE
ML	MAINLINE
N	NORTH
NC	NORMAL CROWN
NO	NUMBER
NOR	NORMAL
OBLIT	OBLITERATE
PAVT	PAVEMENT
PC	POINT OF CURVATURE
PE	PRIVATE ENTRANCE
PI	POINT OF INTERSECTION
POB	POINT OF BEGINNING
POE	POINT OF ENDING
PT	POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVRC	POINT OF VERTICAL REVERSE CURVATURE
PVT	POINT OF VERTICAL TANGENCY
R/RAD	RADIUS
RCCP	REINFORCED CONCRETE CULVERT PIPE
REQ'D	REQUIRED
RES	RESIDENCE OR RESIDENTIAL
RHF	RIGHT-HAND FORWARD
R/W	RIGHT OF WAY
RD	ROAD
RDWY	ROADWAY
RR	RAILROAD
RT	RIGHT
SALV	SALVAGED
SAN S	SANITARY SEWER
S	SOUTH
SQ	SQUARE
SF	SQUARE FEET
SY	SQUARE YARD
SDD	STANDARD DETAIL DRAWINGS
STH	STATE TRUNK HIGHWAYS
STA	STATION
SS	STORM SEWER
SE	SUPERELEVATION
T	TANGENT LENGTH
T.	TRUCKS (PERCENT OF)
TC	TOP OF CURB
T OR TN	TOWN
TLE	TEMPORARY LIMITED EASEMENT
†	TON
TYP.	TYPICAL
VAR	VARIABLE
VC	VERTICAL CURVE
W	WEST
X	EAST GRID COORDINATE
Y	NORTH GRID COORDINATE
YD	YARD

GENERAL NOTES

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO USGS DATUM.

WHEN THE QUANTITY OF THE ITEMS OF BASE AGGREGATE IS MEASURED FOR PAYMENT BY THE TON, THE DEPTH OR THICKNESS OF THE LAYER SHOWN ON THE PLANS IS APPROXIMATE AND THE ACTUAL THICKNESS WILL DEPEND ON THE DISTRIBUTION OF THE MATERIAL AS DIRECTED BY THE ENGINEER.

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

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

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

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE FERTILIZED, SEEDED AND MULCHED.

BEARINGS SHOWN ON THE PLANS ARE COUNTY BEARINGS TO THE NEAREST SECOND.

THE LOCATION OF THE DRIVEWAYS WILL BE DETERMINED BY THE ENGINEER.

CURVE DATA IS BASED ON THE ARC DEFINITION.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE COUNTY LAND SURVEYOR CONCERNING MONUMENT AND PROPERTY CORNER PRESERVATION. LANDMARK REFERENCE MONUMENTS SHALL BE PERPETUATED BY THE COUNTY SURVEYOR.

RADIUS DIMENSIONS ARE SHOWN TO FLAGLINE OF CURB & GUTTER OR EDGE OF PAVEMENT.

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

HMA PAVEMENT SHALL CONSIST OF ONE 1-INCH HMA PAVEMENT TYPE 5MT 5834H SPECIAL LEVELING LAYER AND ONE 1.5-INCH HMA PAVEMENT TYPE SMA-SPECIAL UPPER LAYER, AS DEFINED BY THE FINISHED TYPICAL SECTIONS.

WETLANDS EXIST ALONG THE PROJECT. NOT ALL WETLANDS ARE SHOWN ON THE PLAN. DO NOT PLACE FILL IN, STOCKPILE MATERIALS ON, OPERATE EQUIPMENT WITHIN, OR OTHERWISE DISTURB ANY WETLANDS DURING CONSTRUCTION OF THIS PROJECT.

DIGGERS HOTLINE

Dial 811 or (800)242-8511

www.DiggersHotline.com

UTILITIES

AT&T WISCONSIN
304 S DEWEY ST
EAU CLAIRE, WI 54701
ATTENTION: RICK PODOLAK
PHONE: 715-839-5565

BALDWIN TELECOM, INC.
930 MAPLE STREET
P.O. BOX 420
BALDWIN, WI 54002-0420
ATTENTION: KEN CARLSRUD
PHONE: 715-688-1039

DAIRYLAND POWER COOPERATIVE
P.O. BOX 817
LA CROSSE, WI 54602-0817
ATTENTION: KURT CHILDS
PHONE: 608-787-1367

NORTHERN NATURAL GAS COMPANY
4685 212TH STREET WEST
P.O. BOX 188
FARMINGTON MN 55024
ATTENTION: DAN HUEBL
PHONE: 402-530-3414

PIERCE-PEPIN COOPERATIVE SERVICES
P.O. BOX 420
ELLSWORTH, WI 54011
ATTENTION: BRAD RISTOW
PHONE: 715-273-2473

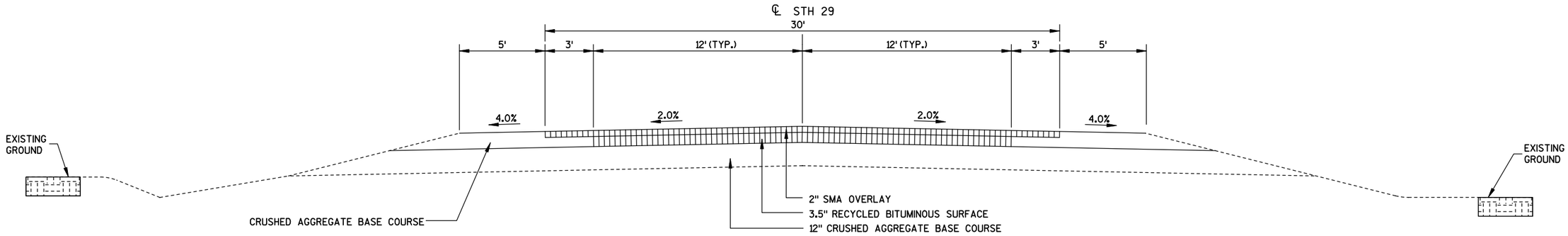
CITY OF RIVER FALLS
222 LEWIS STREET
SUITE 225
RIVER FALLS, WI 54022
ATTENTION: CHUCK BERANEK
PHONE: 715-426-3431

DESIGN CONTACT

FLEMING, ANDRE & ASSOCIATES, INC.
3615 N. HASTINGS WAY
SUITE 100
EAU CLAIRE, WI. 54703-0474
ATTENTION: MATT GUNDRY
PHONE: 715-832-8400

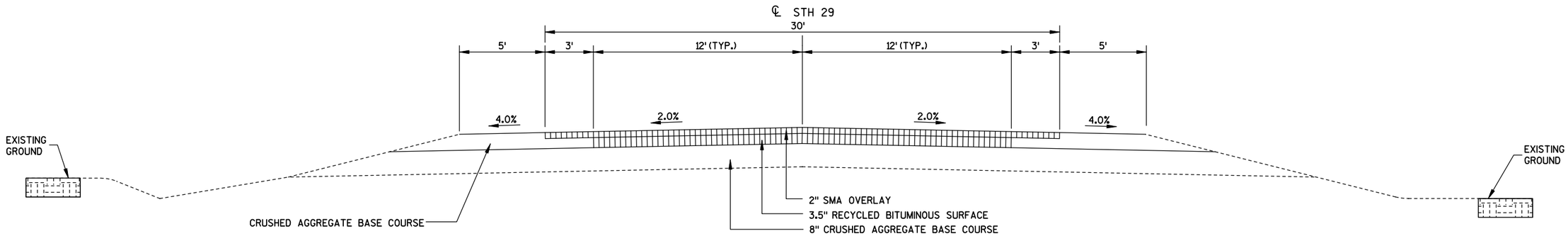
W.D.N.R. CONTACT

DEPARTMENT OF NATURAL RESOURCES WEST CENTRAL REGION
1300 W. CLAIREMONT AVE.
P.O. BOX 4001
EAU CLAIRE, WI. 54701
ATTENTION: CHRIS WILLGER
PHONE: 715-839-2786



EXISTING TYPICAL SECTION - STH 29

STA. 211+25.00 TO STA. 421+58.30

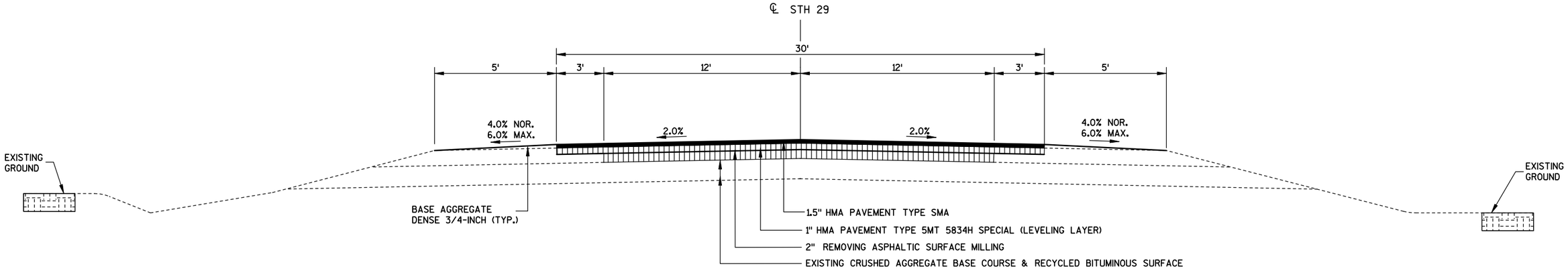


EXISTING TYPICAL SECTION - STH 29

STA. 421+58.30 TO STA. 818+35

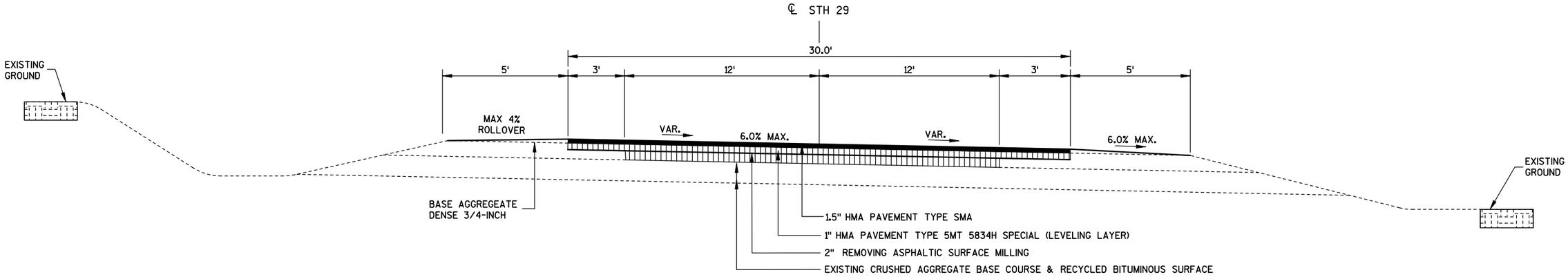
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	EXISTING TYPICAL SECTION	SHEET 3	E

2



FINISHED TYPICAL SECTION - STH 29

STA. 214+07.84 TO STA. 273+10.93
STA. 288+49.38 TO STA. 318+93.90
STA. 326+97.19 TO STA. 327+82.98
STA. 343+74.59 TO STA. 343+84.56
STA. 350+53.15 TO STA. 407+32.84
STA. 423+17.97 TO STA. 526+39.74
STA. 536+89.11 TO STA. 818+35

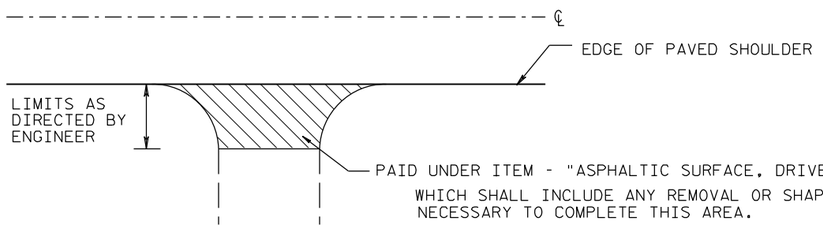


FINISHED SUPERELEVATED SECTION - STH 29

STA. 211+25 TO STA 214+07.84
STA. 273+10.93 TO STA. 288+49.38
STA. 318+93.90 TO STA. 326+97.19
STA. 327+82.98 TO STA. 343+74.59
STA. 343+84.56 TO STA. 350+53.15
STA. 407+32.84 TO STA. 423+17.97
STA. 526+39.74 TO STA. 536+89.11

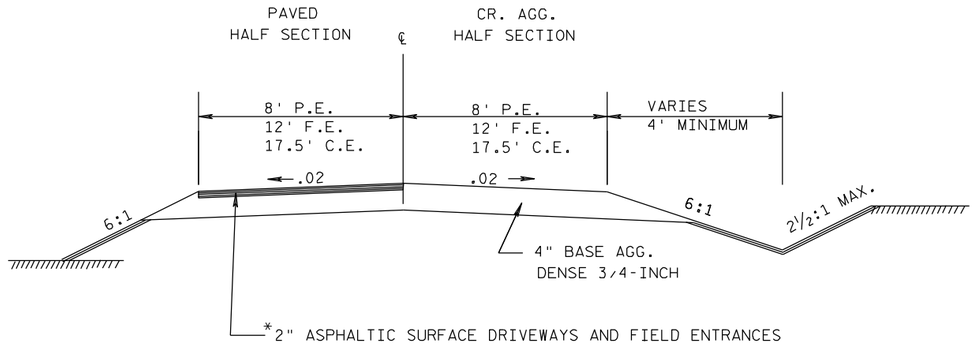
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	FINISHED TYPICAL SECTION	SHEET 4	E

2



ANY ADDITIONAL BASE AGG. DENSE REQ'D. SHALL BE PAID UNDER ITEM - "BASE AGGREGATE DENSE 3/4-INCH"

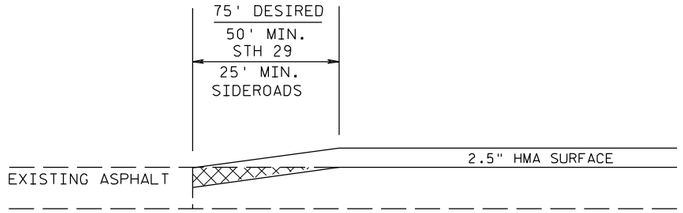
RURAL DRIVEWAY DETAIL - ASPHALT



*OR MATCH EXIST.
ASPH. DEPTH

TYPICAL SECTION
FOR PRIVATE ENTRANCES

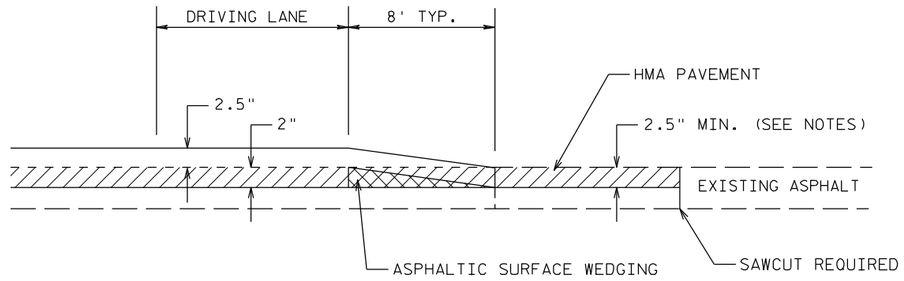
NOTE:
DRIVEWAY PROFILES NOT EXPECTED TO EXCEED 10%. PLACE LOW POINT OF DRIVEWAY PROFILE OVER DITCH FLOW LINE.



BUTT JOINT

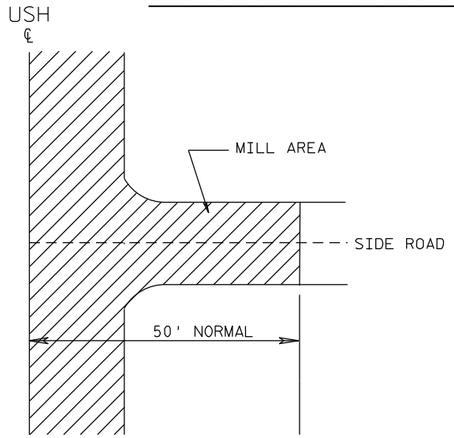
PAID FOR AS REMOVING ASPHALTIC SURFACE BUTT JOINTS

REQUIRED AT BEGIN AND END PAVING LOCATIONS



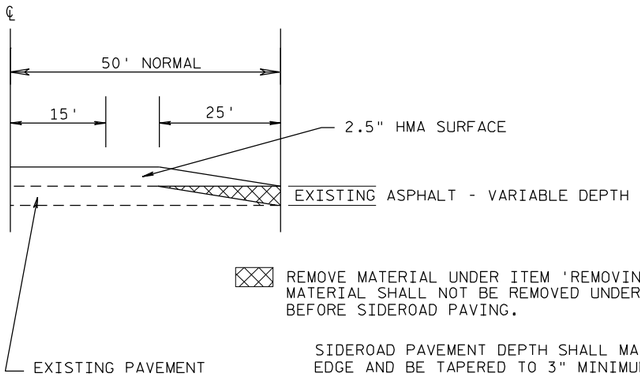
PROFILE VIEW

SIDE ROAD DETAIL - NO CURB & GUTTER



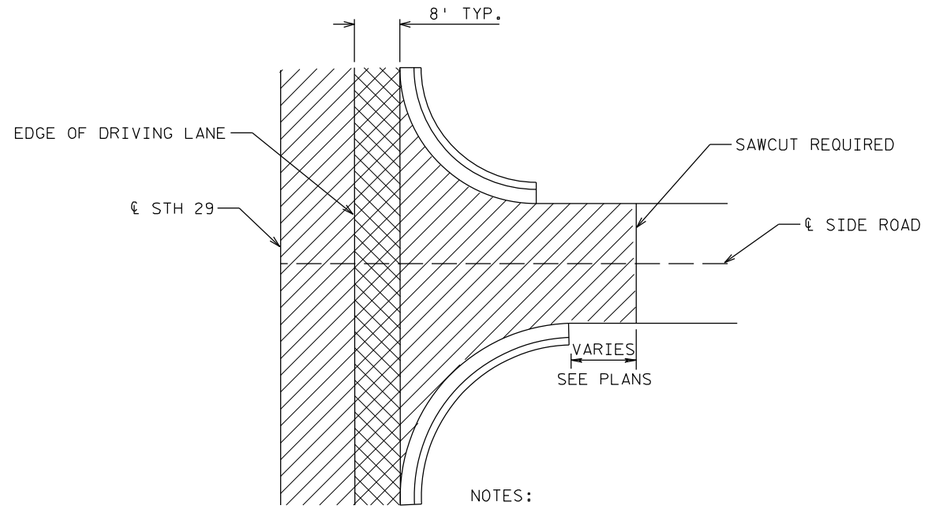
NOTE: IF THE EXISTING SIDEROAD CONSISTS OF A BASE COURSE SURFACE, THE NEW ASPHALT SHALL BE PLACED TO THE ENDS OF THE EXISTING SIDEROAD RADIUS'.

NOT TO SCALE



REMOVE MATERIAL UNDER ITEM 'REMOVING ASPHALT SURFACE , BUTT JOINTS' MATERIAL SHALL NOT BE REMOVED UNDER THIS ITEM UNTIL 24 HOURS BEFORE SIDEROAD PAVING.

SIDEROAD PAVEMENT DEPTH SHALL MATCH AT MAINLINE PAVEMENT EDGE AND BE TAPERED TO 3" MINIMUM AT JOINT



NOTES:

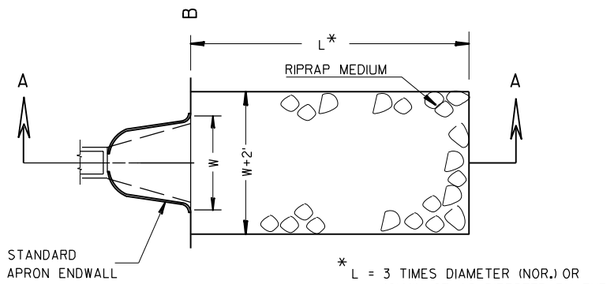
OVERLAY PAVEMENT SHALL MEET EXISTING ELEVATION AT FLAG OF CURB AND SAWCUT.

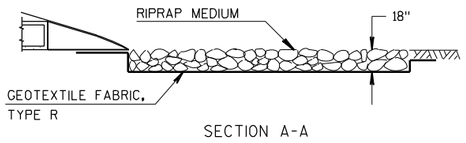
ASPHALTIC SURFACE REMOVAL

ASPHALTIC SURFACE WEDGING

PLAN VIEW

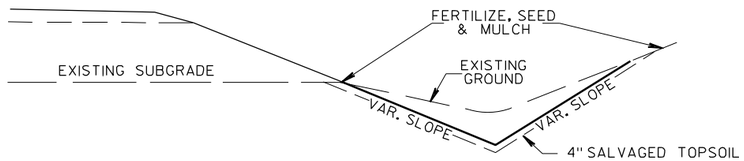
BUTT JOINT DETAILS



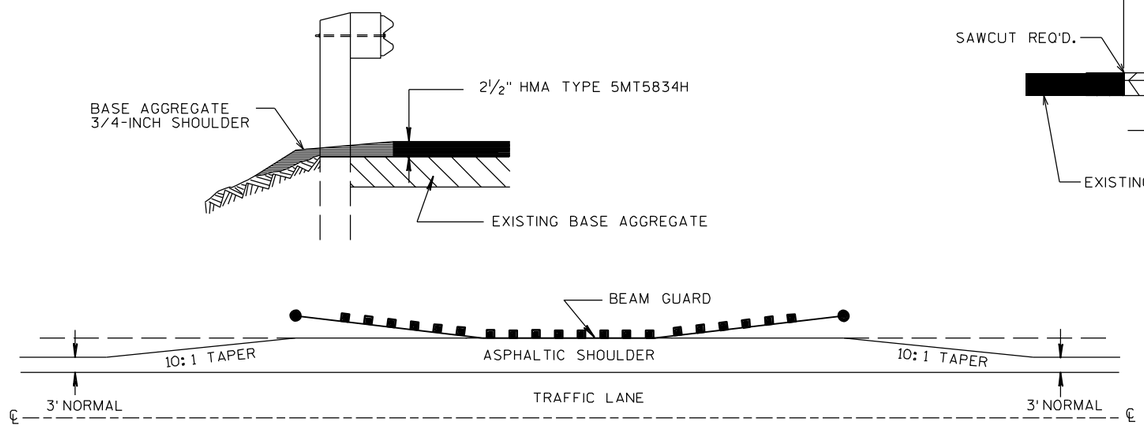


SECTION A-A

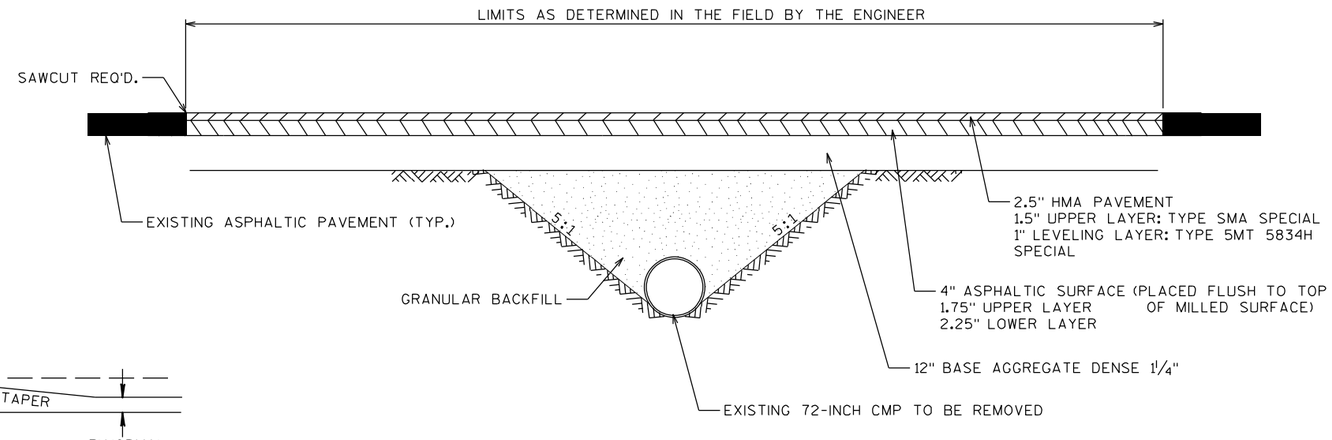
DETAIL AT APRON ENDWALLS



DITCH CLEANING DETAIL



DETAIL FOR ASPHALTIC SHOULDER AT BEAM GUARD



REMOVING STRUCTURE DETAIL

STA 273+50

2

LEGEND

SIGN ON PORTABLE OR PERMANENT SUPPORT

DIRECTION OF TRAFFIC

WORK AREA

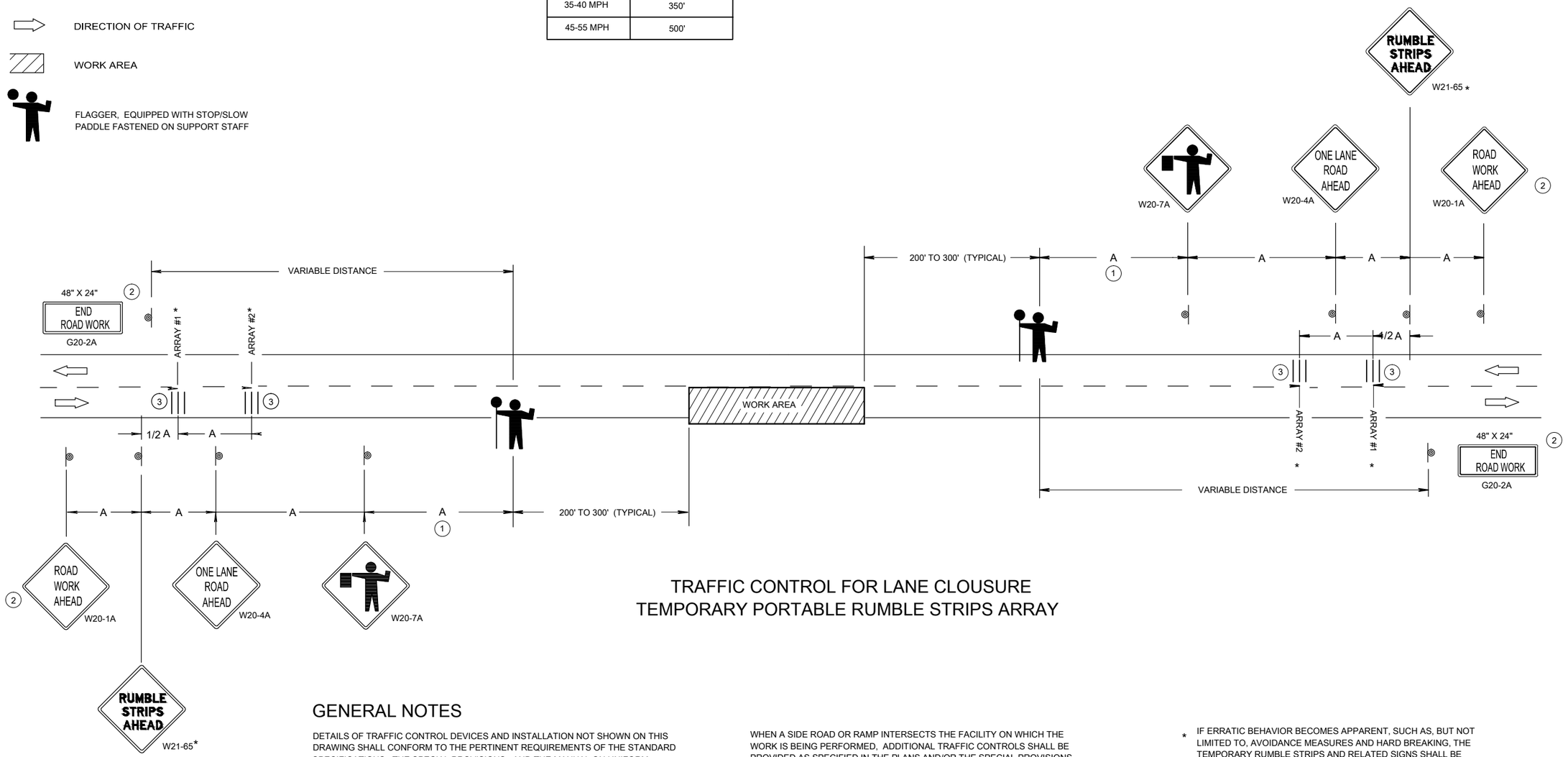
FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN SPACING TABLE

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

WO3-4

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



TRAFFIC CONTROL FOR LANE CLOUSURE
TEMPORARY PORTABLE RUMBLE STRIPS ARRAY

GENERAL NOTES

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

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

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

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

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

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

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

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

* IF ERRATIC BEHAVIOR BECOMES APPARENT, SUCH AS, BUT NOT LIMITED TO, AVOIDANCE MEASURES AND HARD BREAKING, THE TEMPORARY RUMBLE STRIPS AND RELATED SIGNS SHALL BE REMOVED AS DIRECTED BY THE ENGINEER.

(1) FOR A MOVING WORK OPERATION, SIGNING AND TEMPORARY RUMBLE STRIPS SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3,500 FOOT 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.

(3) EACH RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED 8 - 10 FEET CENTER TO CENTER, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

2

N

PI STA. 253+34.35

PT STA. 256+20.76

PC STA. 250+47.91

STH 29

900TH ST.

248+00 249+00 250+00 251+00 252+00 253+00 254+00 255+00 256+00 257+00 258+00 259+00 260+00 261+00 262+00

IN IRON PIPE

IN. REBOD

LEGEND

- SILT FENCE
- TEMPORARY DITCH CHECK
- SURFACE WATER FLOW

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	EROSION CONTROL PLAN	SHEET 9	E

2

2

N

862ND ST.

312+00 313+00 314+00 315+00 316+00 317+00 318+00 319+00 320+00 321+00 322+00 323+00 324+00 325+00 326+00

STH 29

PC STA. 320+53.57

PI STA. 322+98.50

850TH ST.

PT STA. 325+37.52

T&EL OH HO POST GUY IN. MANHOLE

LEGEND

- SILT FENCE
- TEMPORARY DITCH CHECK
- RIP RAP
- SURFACE WATER FLOW

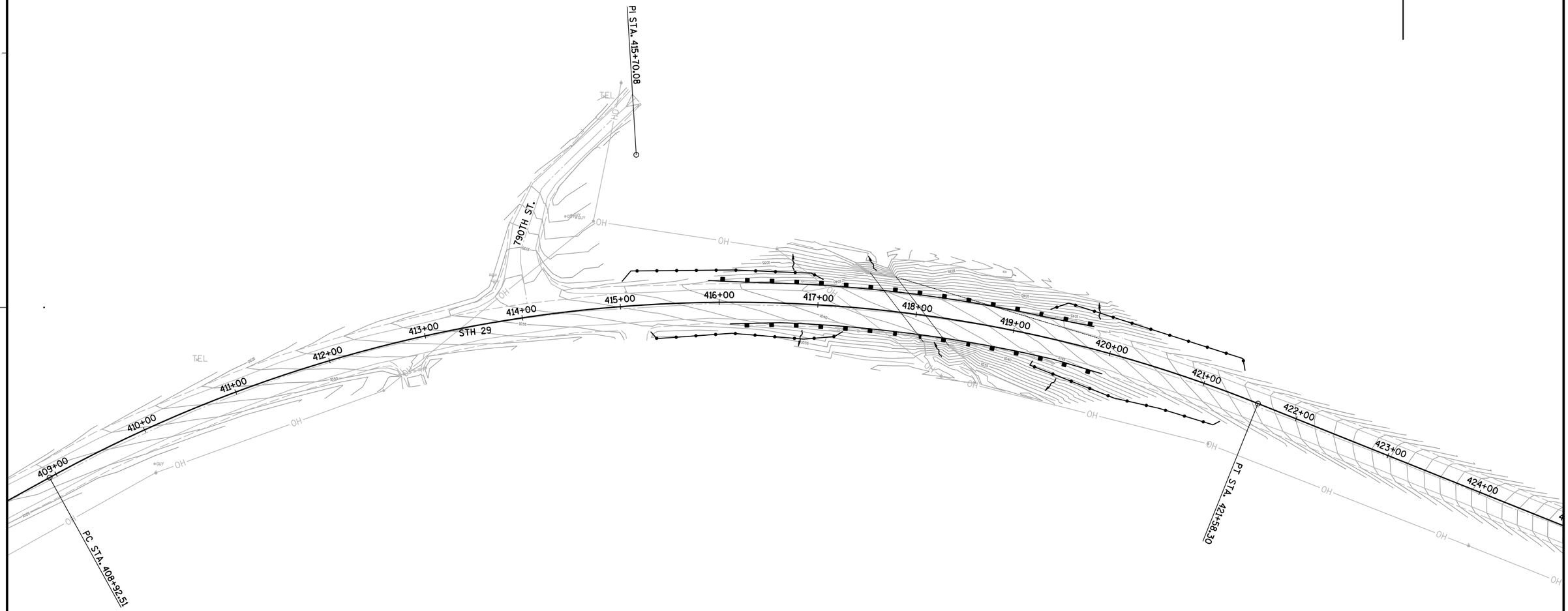
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	EROSION CONTROL PLAN	SHEET 10	E

FILE NAME : F:\Drawings\2012-123\0001\2302.dgn PLOT DATE : 2/17/2016 PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : 1 in : 100 ft

WISDOT/CADDS SHEET 42

2

N



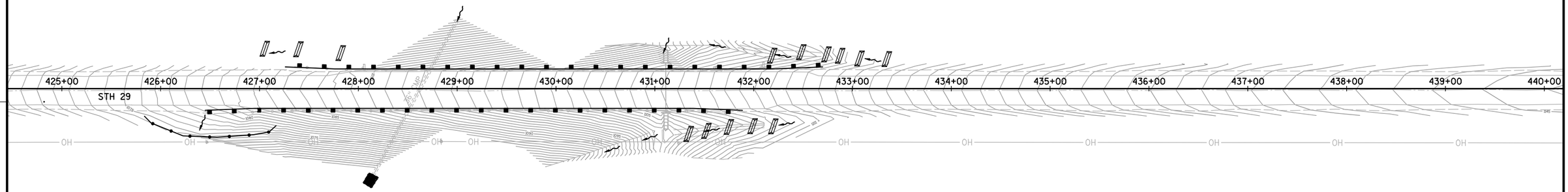
LEGEND

SILT FENCE

SURFACE WATER FLOW

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	EROSION CONTROL PLAN	SHEET 11	E

2



LEGEND

- SILT FENCE
- TEMPORARY DITCH CHECK
- RIP RAP
- SURFACE WATER FLOW

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	EROSION CONTROL PLAN	SHEET 12	E

2

2

N

CTH W

STH 29

477+00 478+00 479+00 480+00 481+00 482+00 483+00 484+00 485+00 486+00 487+00 488+00 489+00 490+00 491+00 492+00

LEGEND

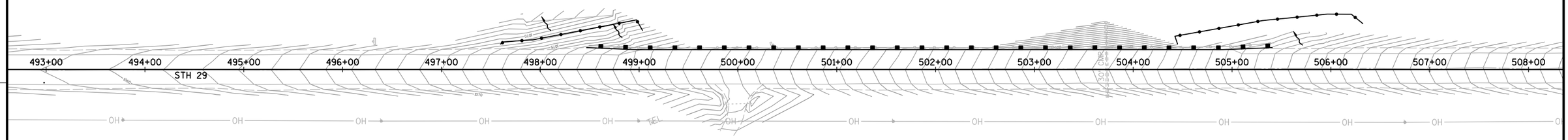
- SILT FENCE
- TEMPORARY DITCH CHECK
- RIP RAP
- SURFACE WATER FLOW

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	EROSION CONTROL PLAN	SHEET 13	E

FILE NAME : F:\Drawings\2012-123\0001\2305.dgn PLOT DATE : 2/17/2016 PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : 1 in : 100 ft

WISDOT/CADDS SHEET 42

2



LEGEND

SILT FENCE

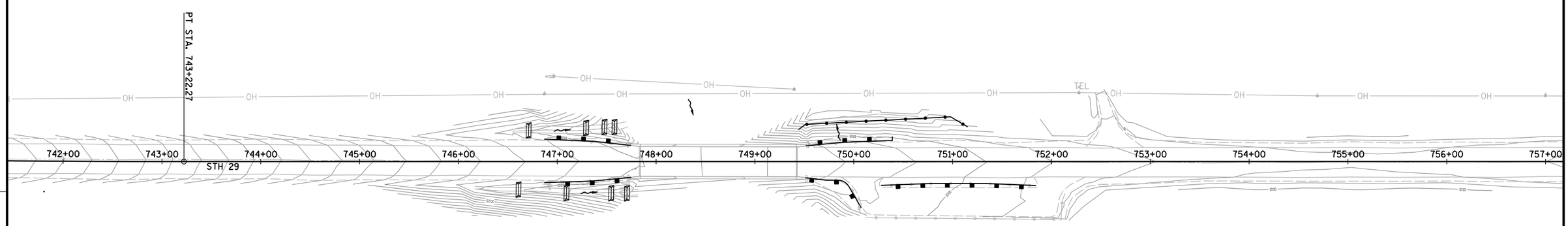
SURFACE WATER FLOW

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	EROSION CONTROL PLAN	SHEET 14	E

2

2

N



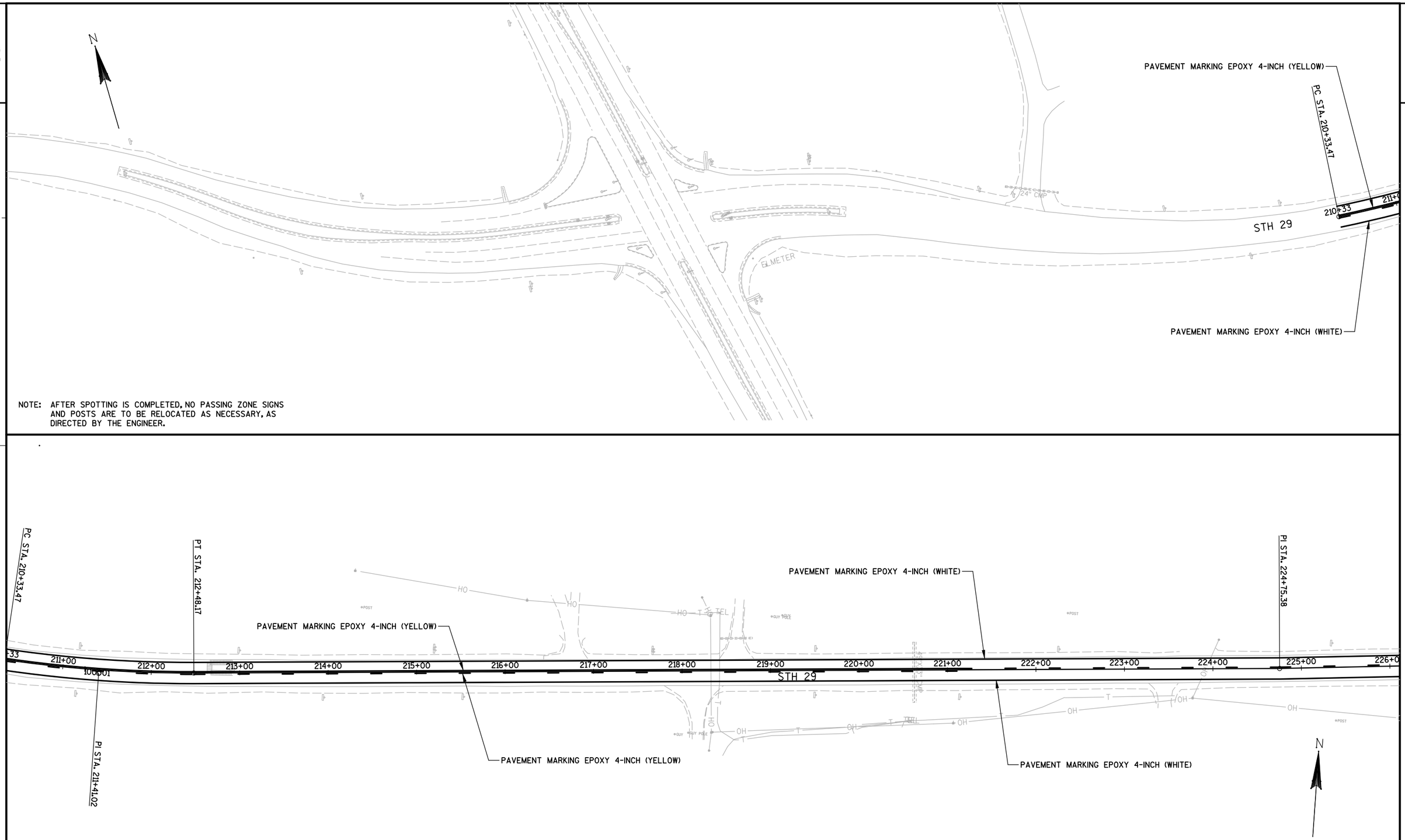
LEGEND

SILT FENCE

TEMPORARY DITCH CHECK

SURFACE WATER FLOW

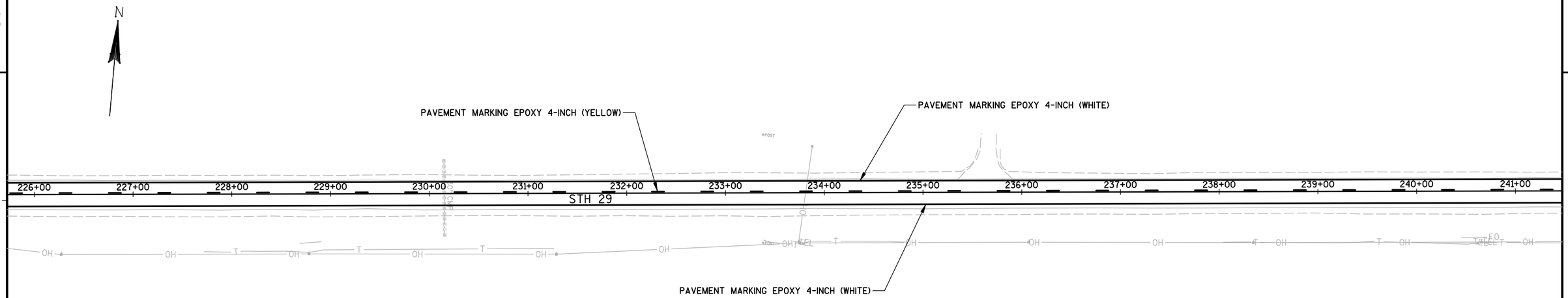
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	EROSION CONTROL PLAN	SHEET 15	E



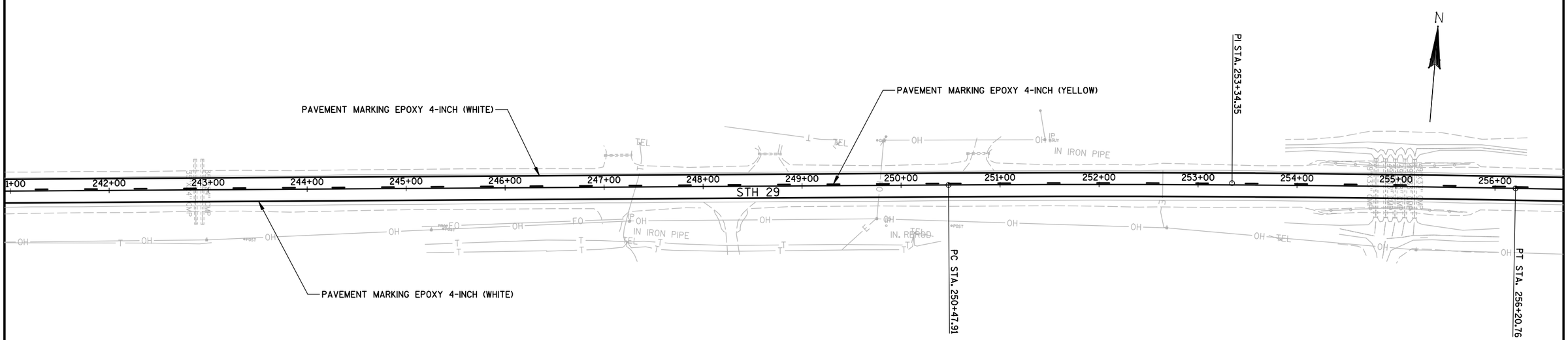
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 16	E

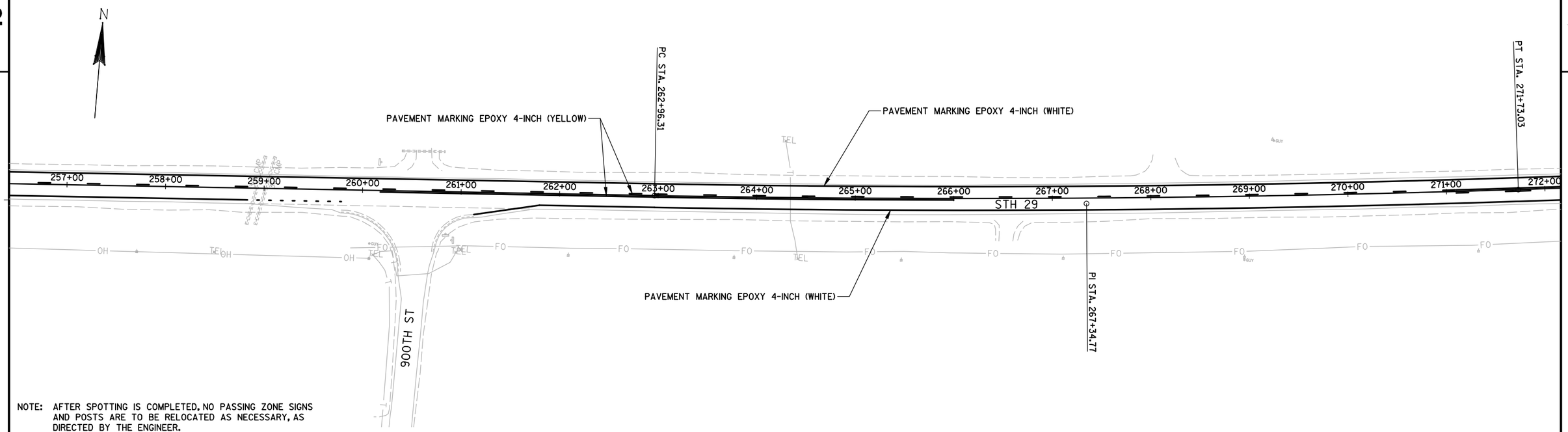
2



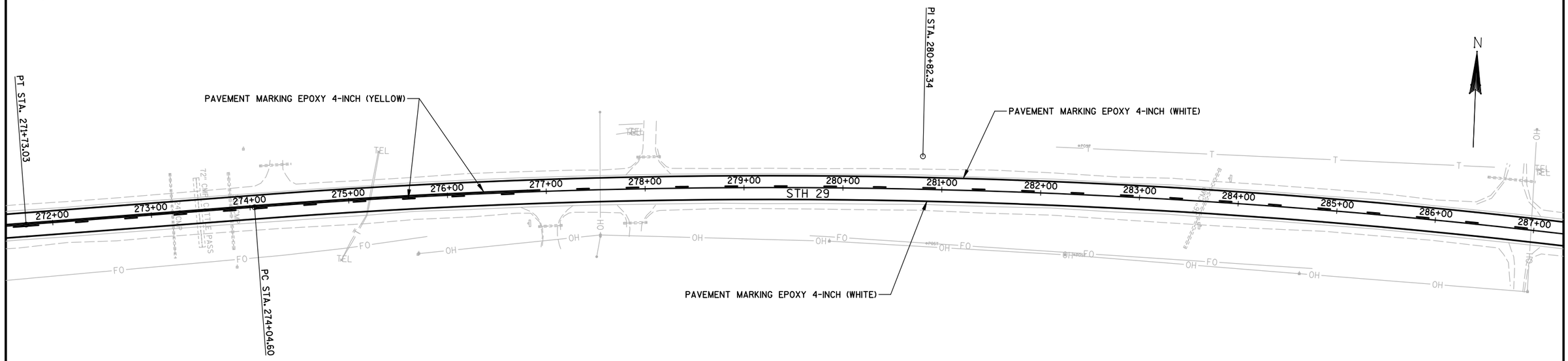
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



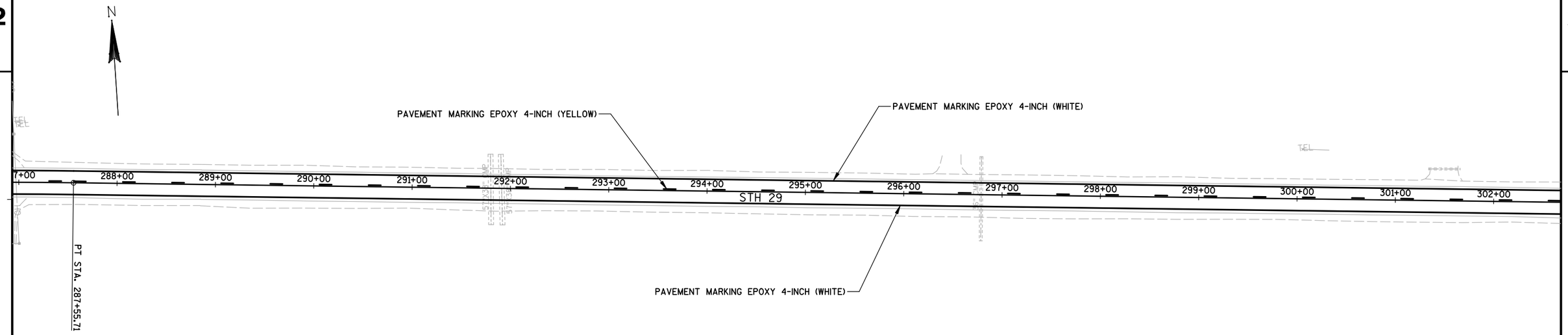
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 17	E



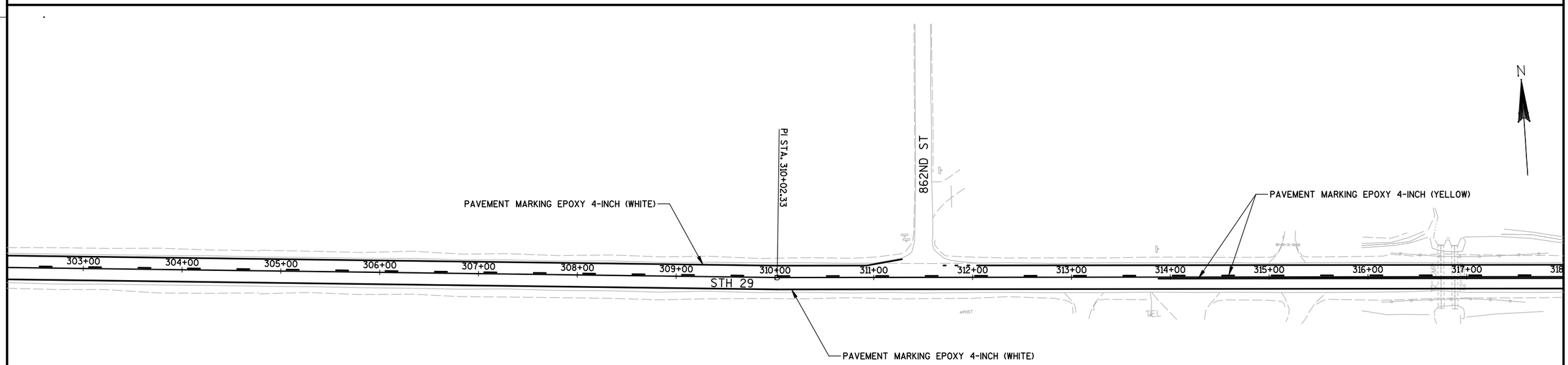
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 18	E

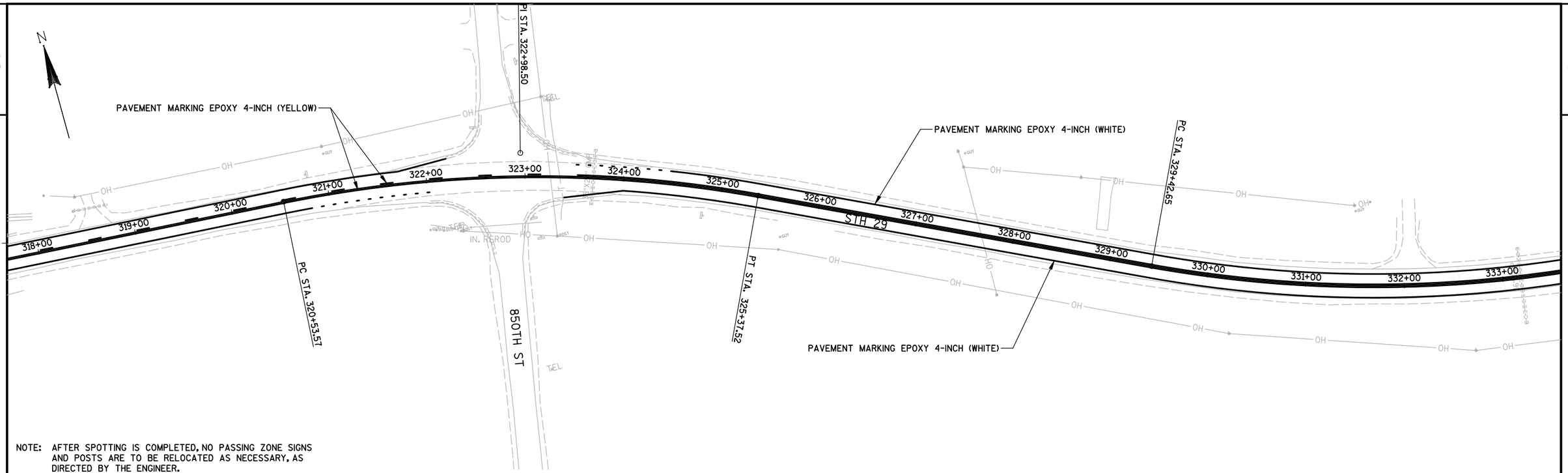


NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.

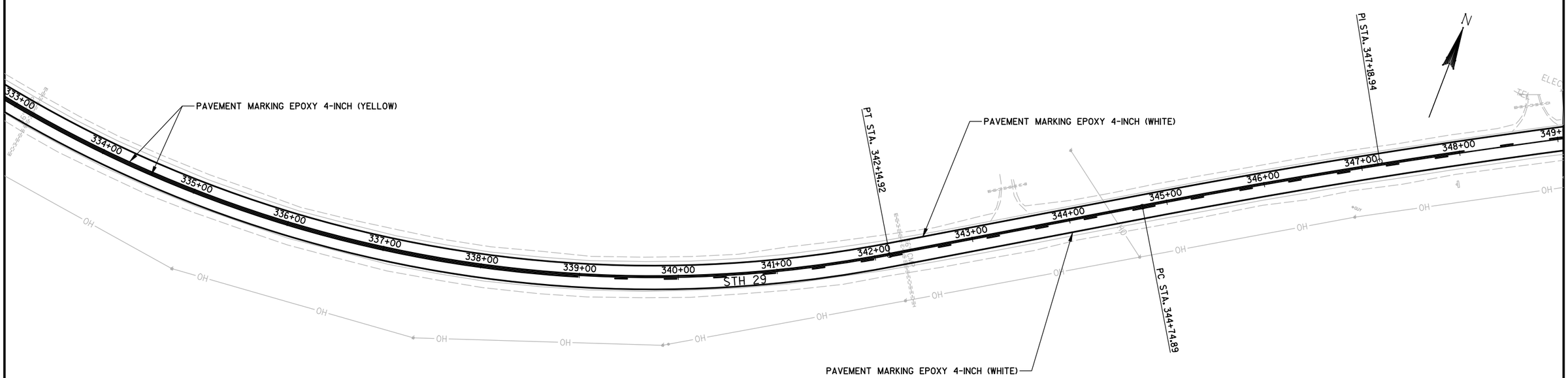


PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 19	E

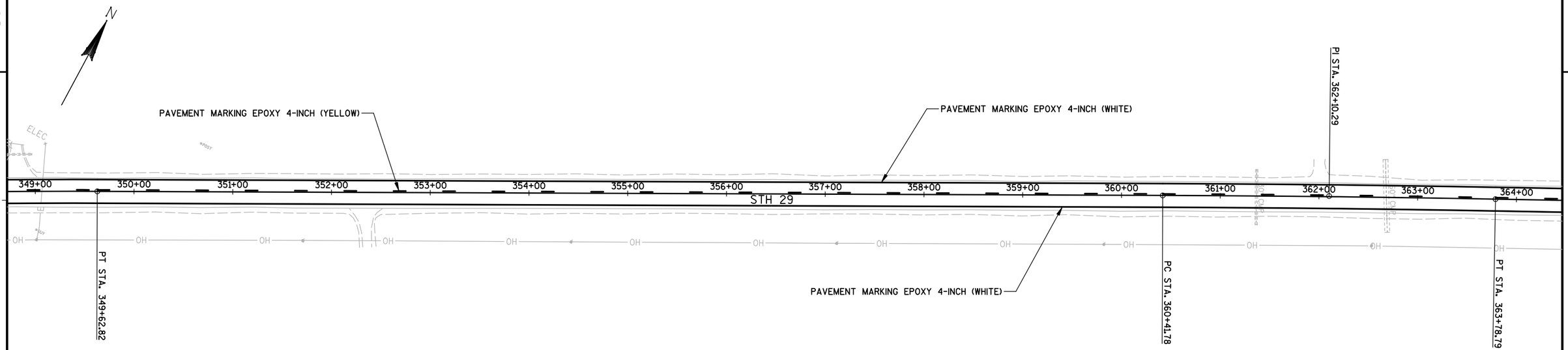
2



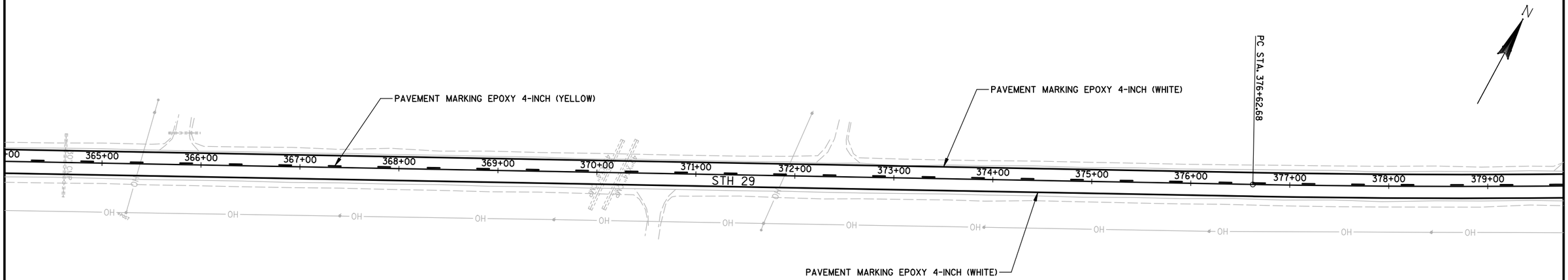
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



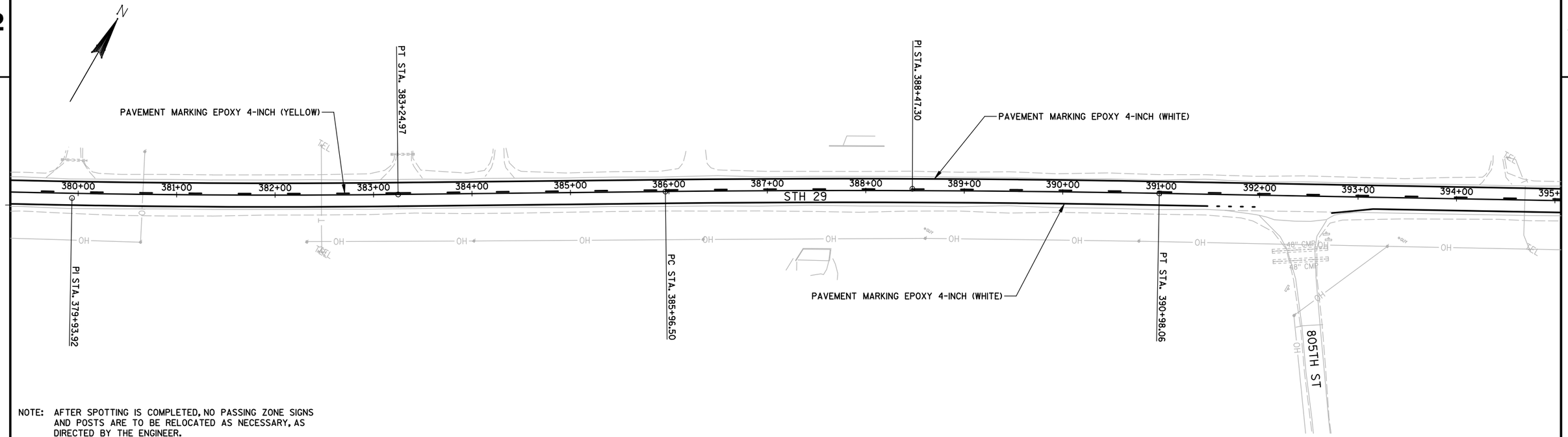
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 20	E



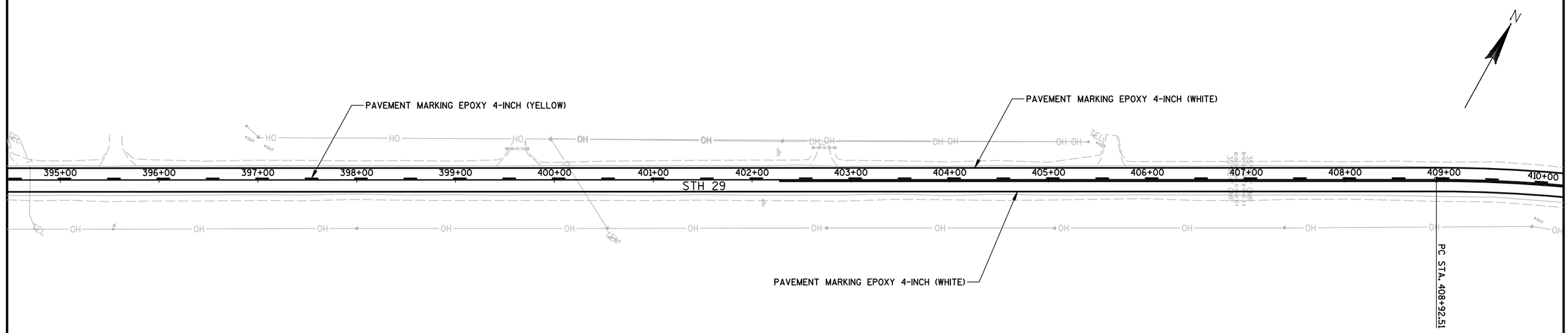
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 21	E



NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET	E

FILE NAME : F:\Drawings\2012-123\0001\2556.dgn PLOT DATE : 2/17/2016 PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : 1 in : 100 ft

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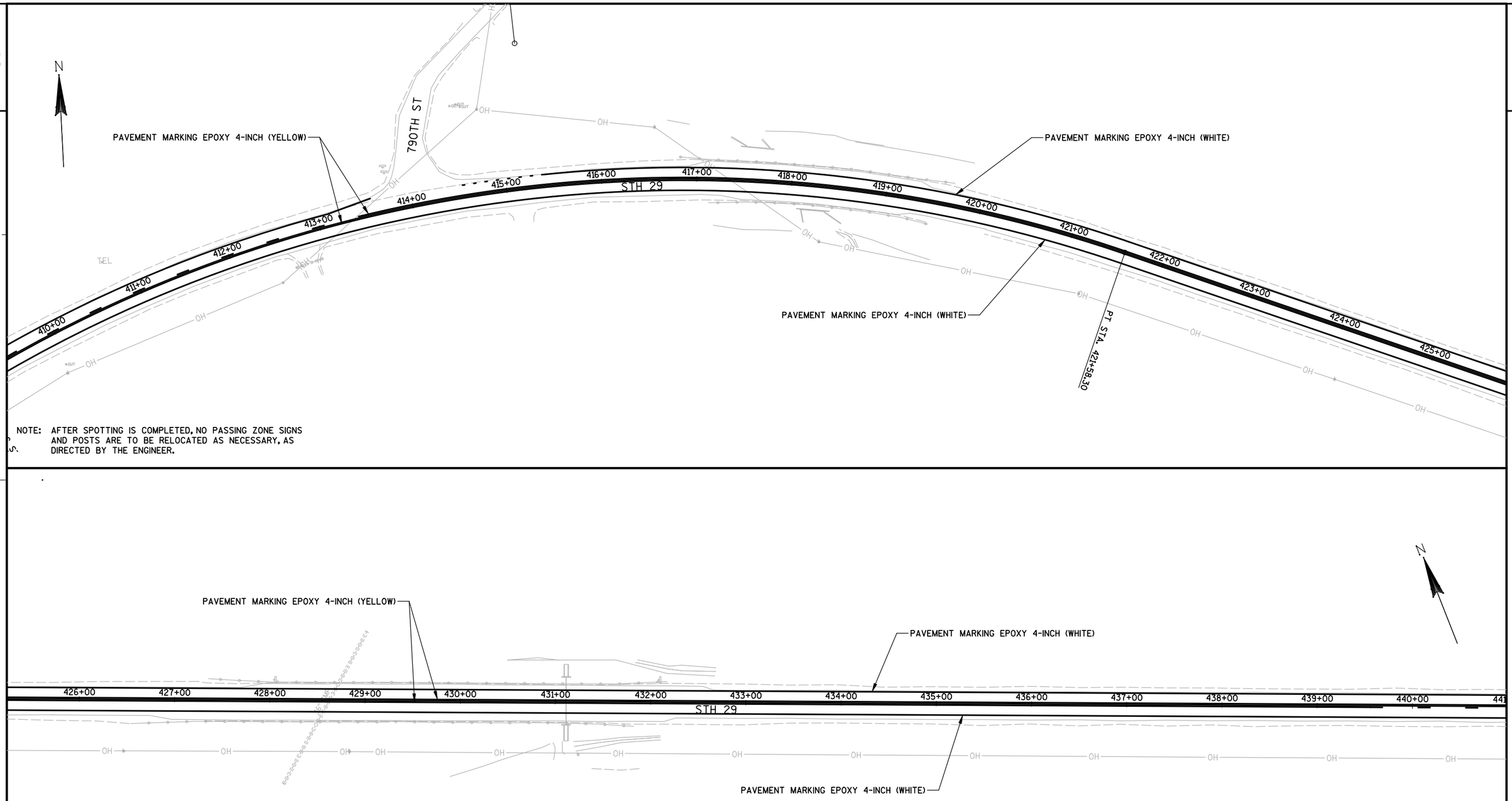
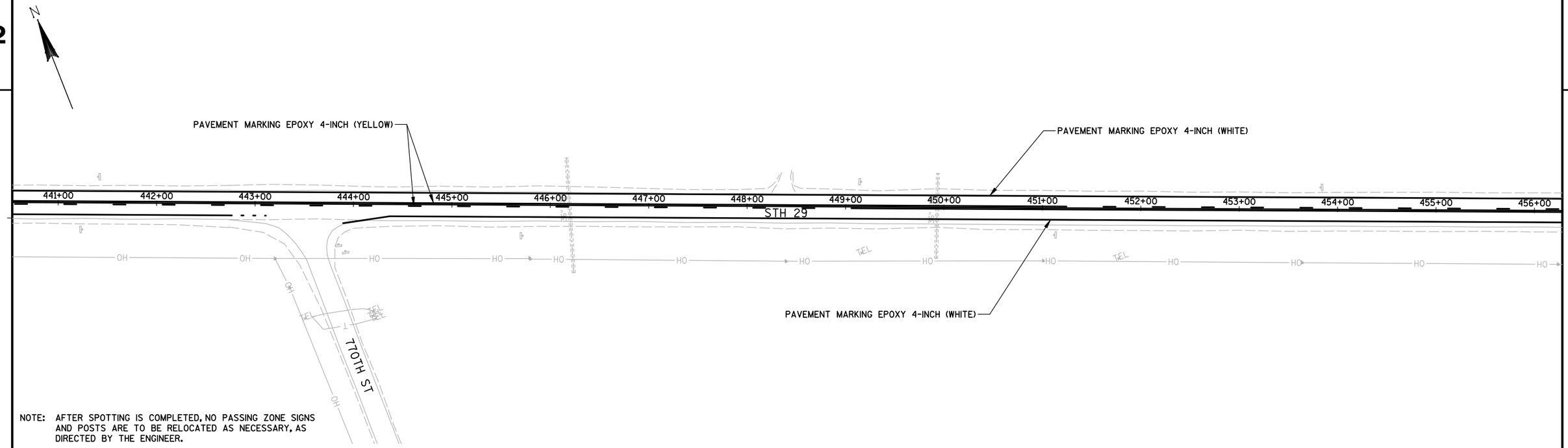


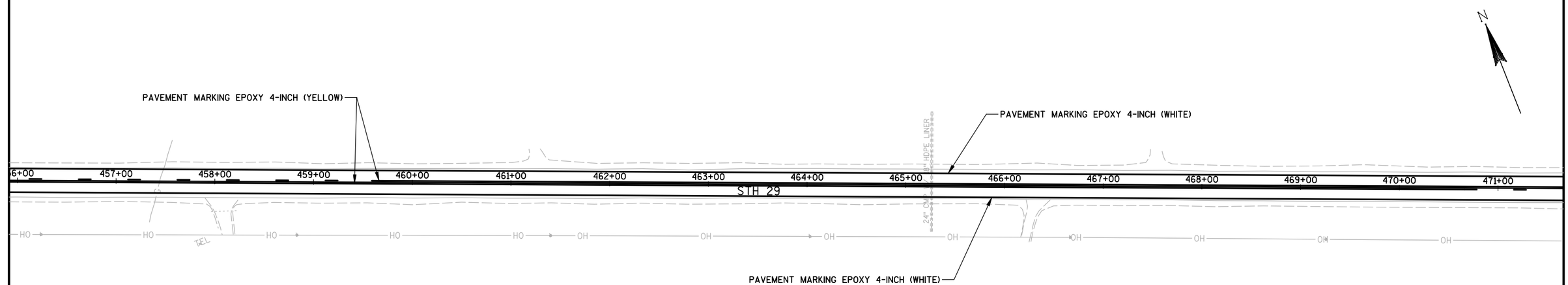
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 23	E

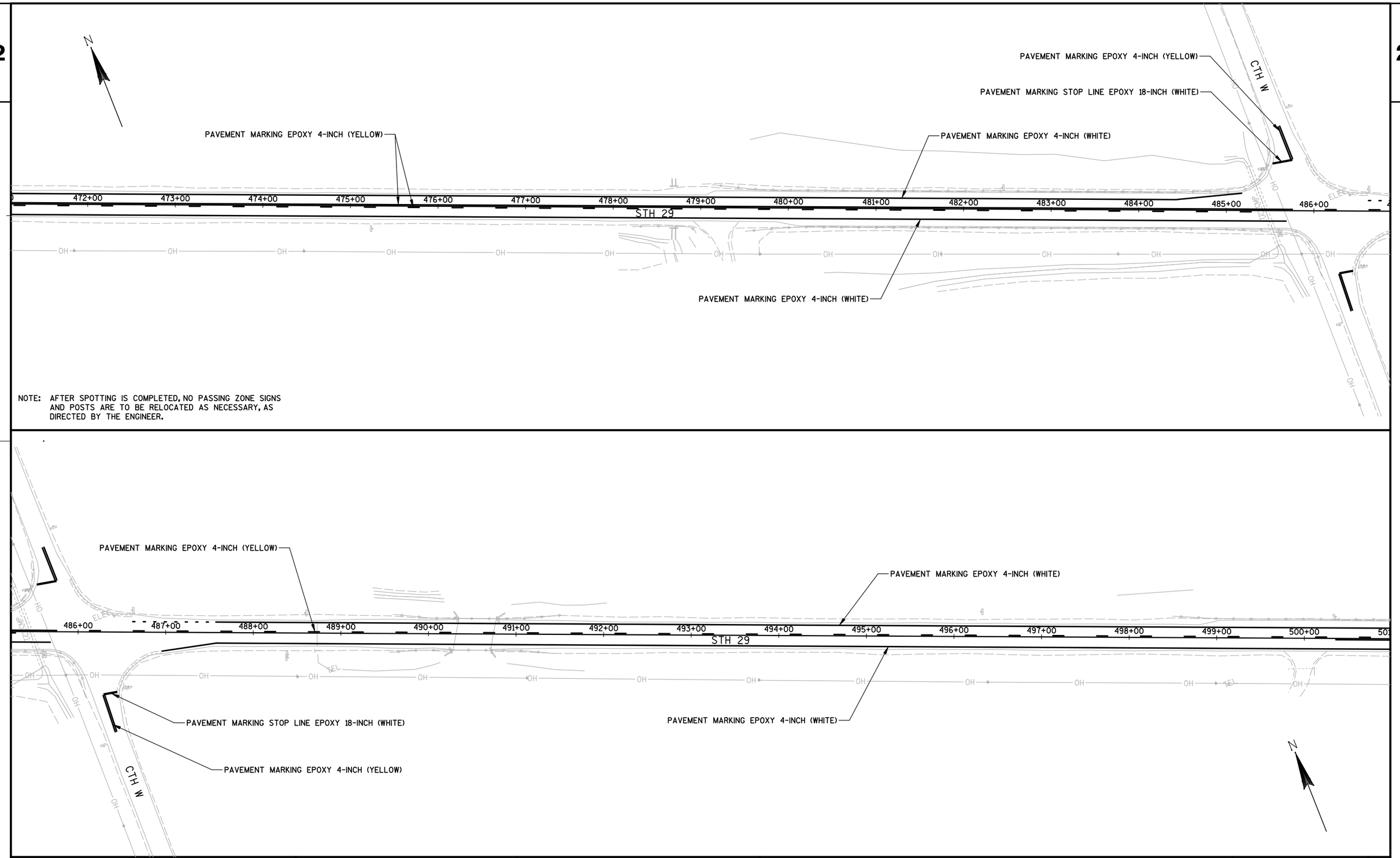
2



NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



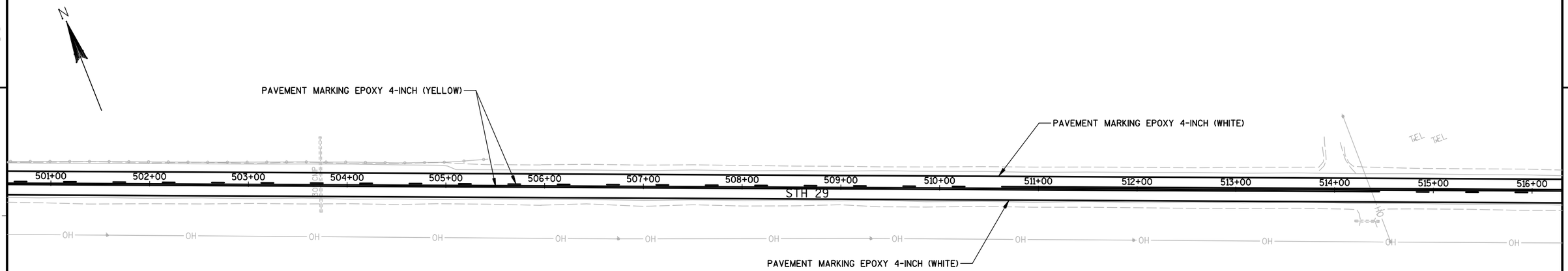
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 24	E



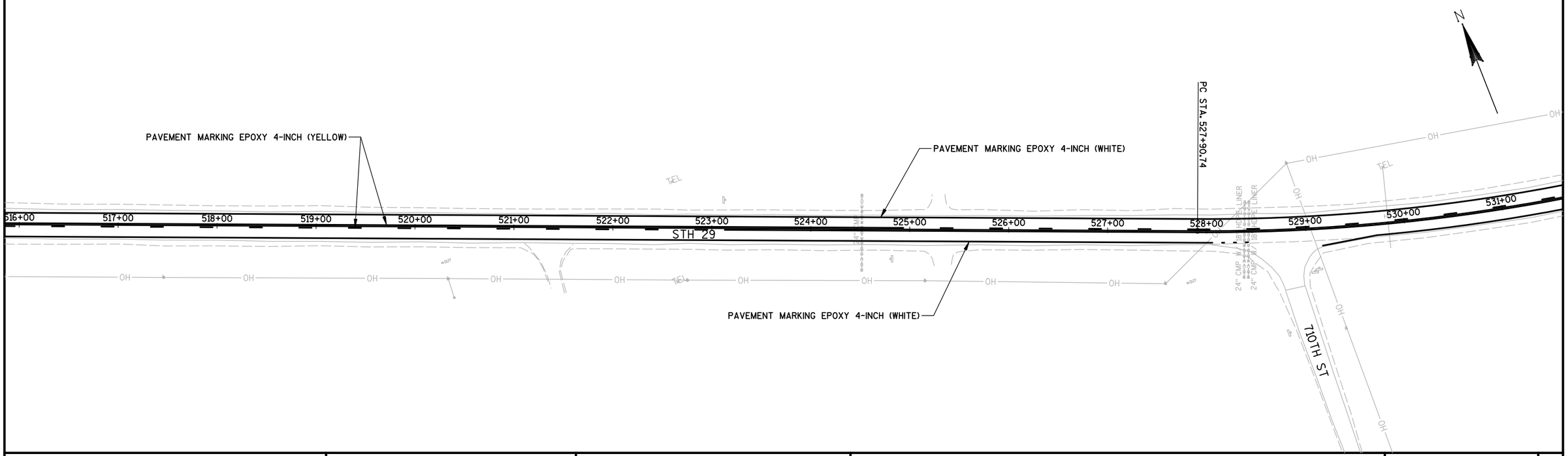
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 25	E

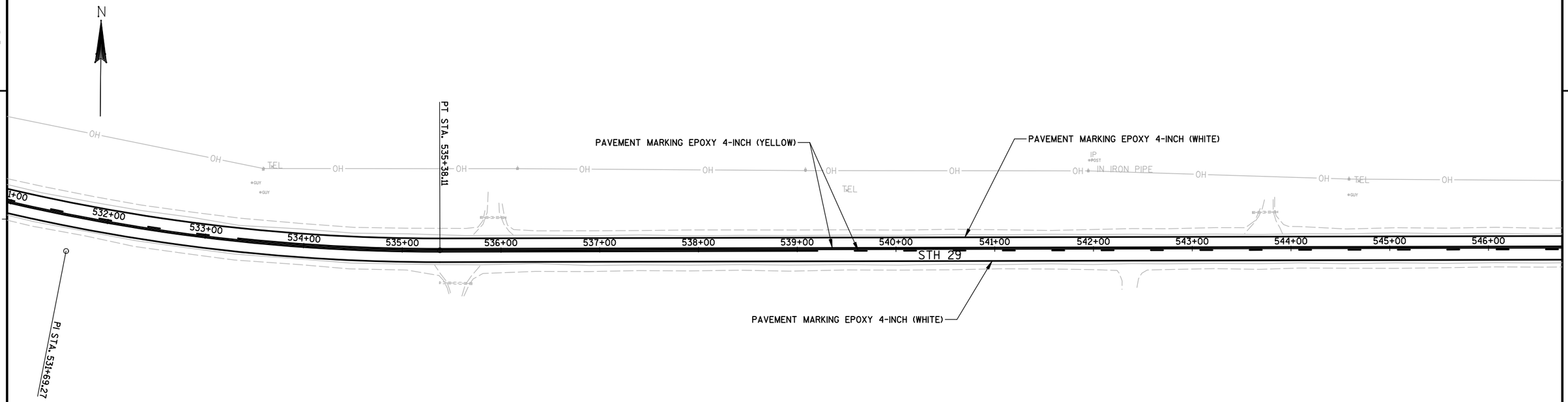
2



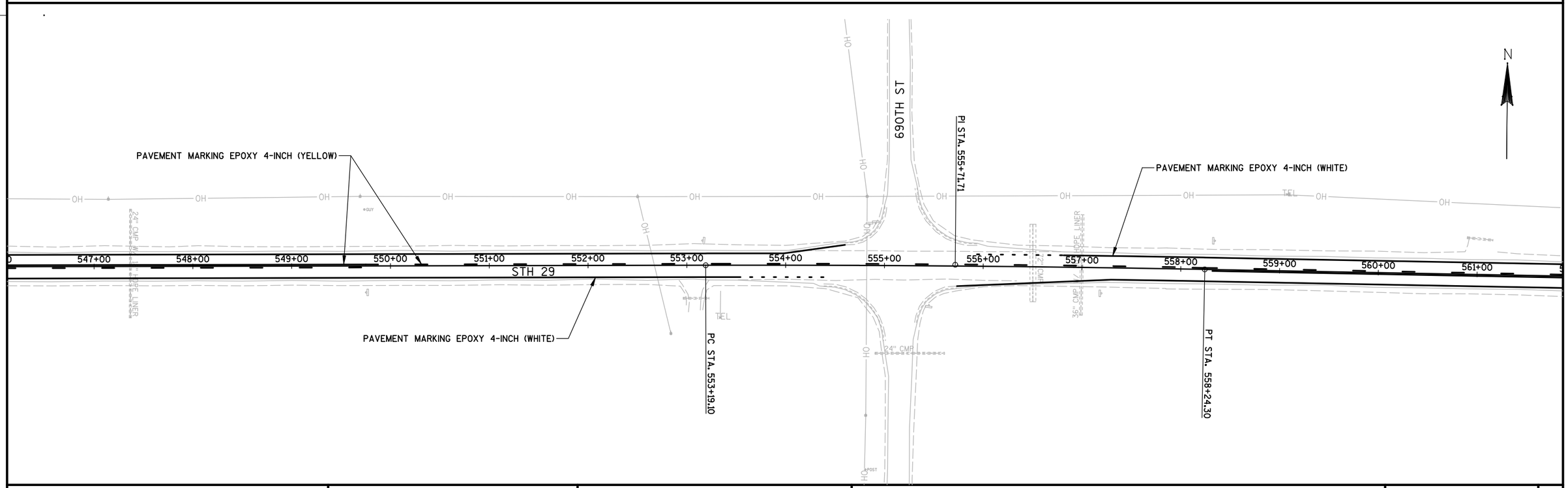
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 26	E

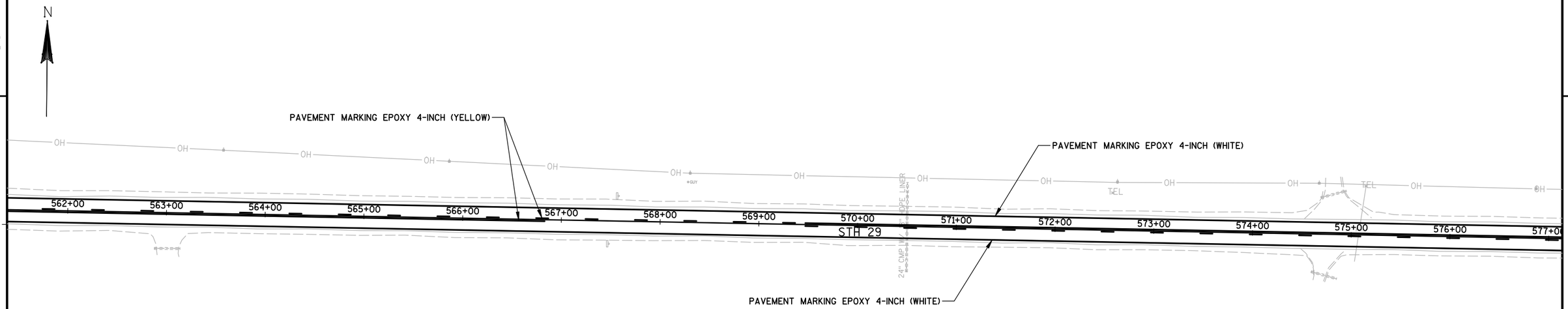


NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.

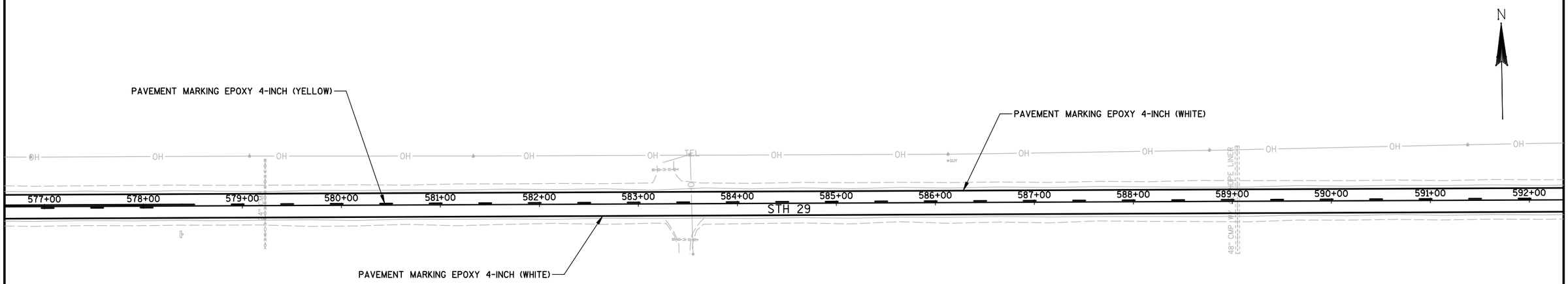


PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 27	E

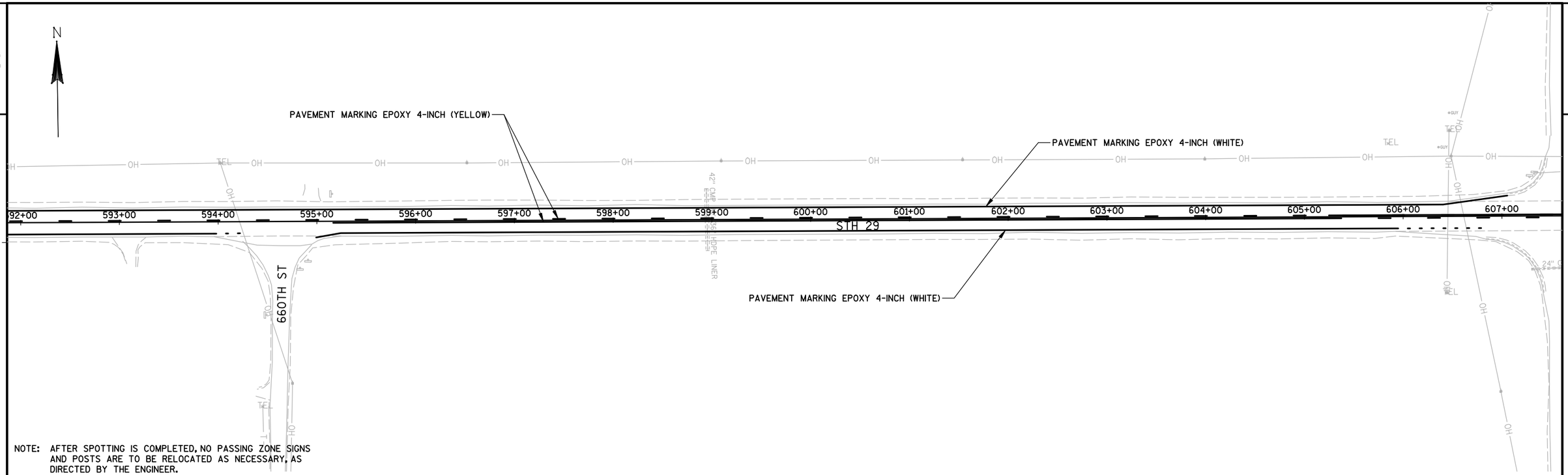
2



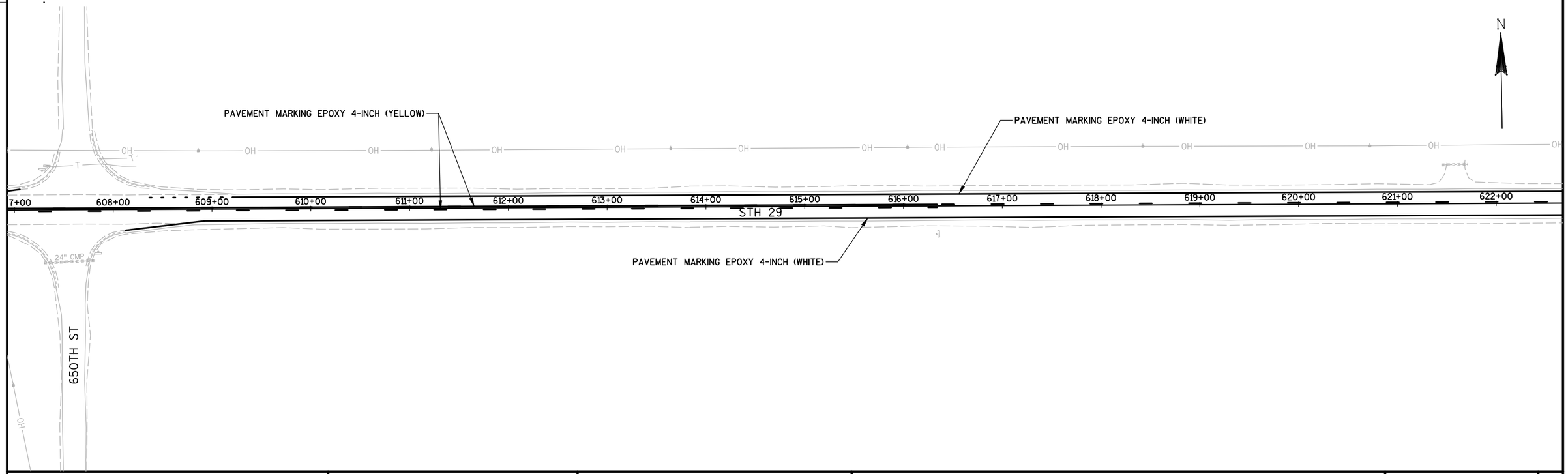
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



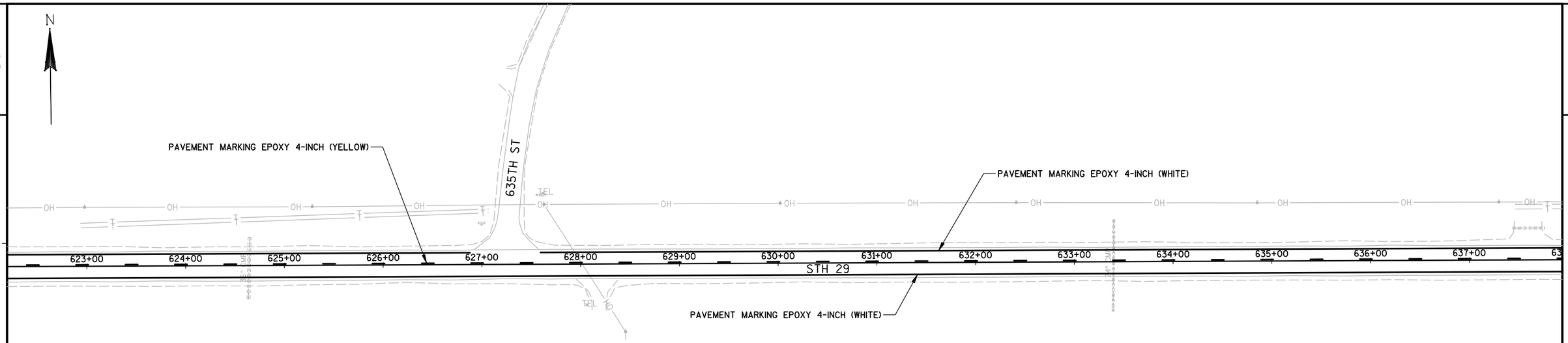
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 28	E



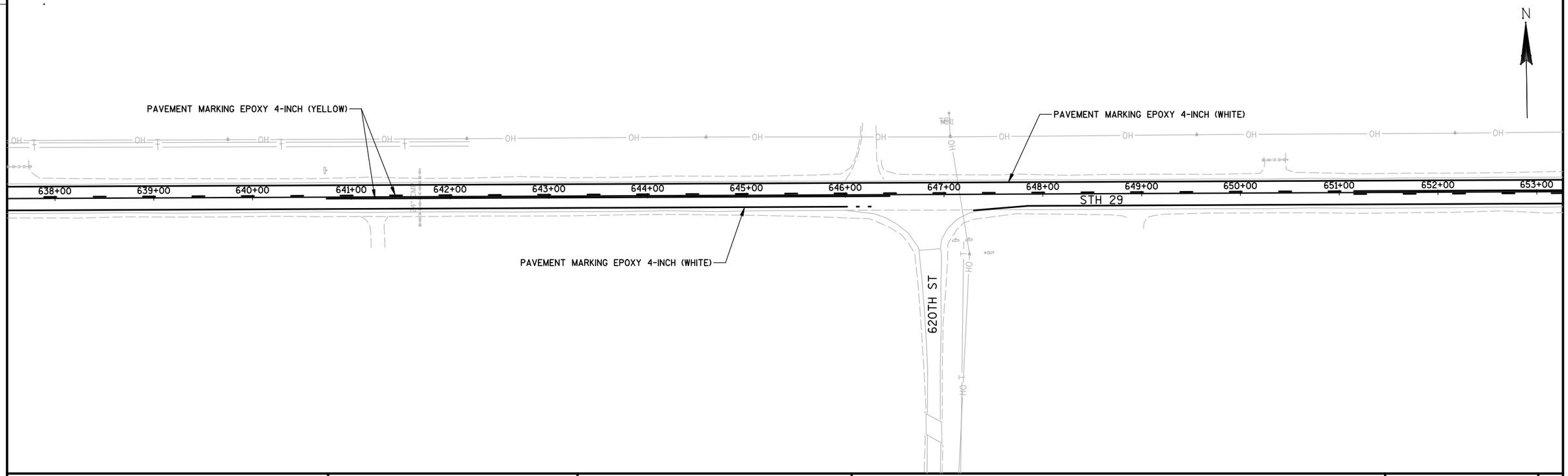
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 29	E

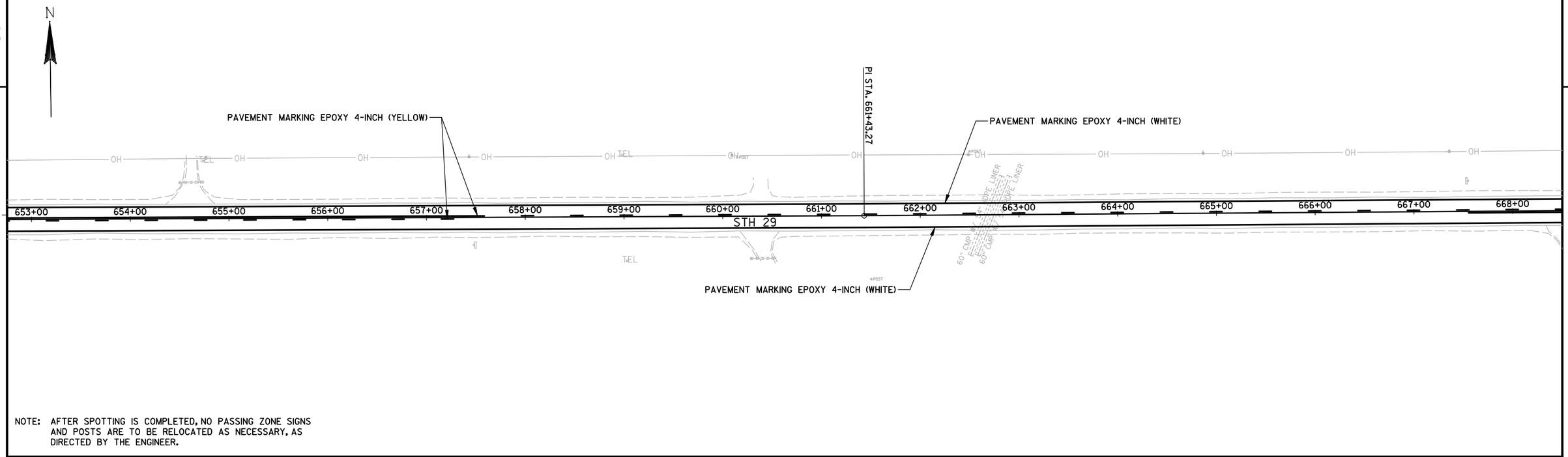


NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.

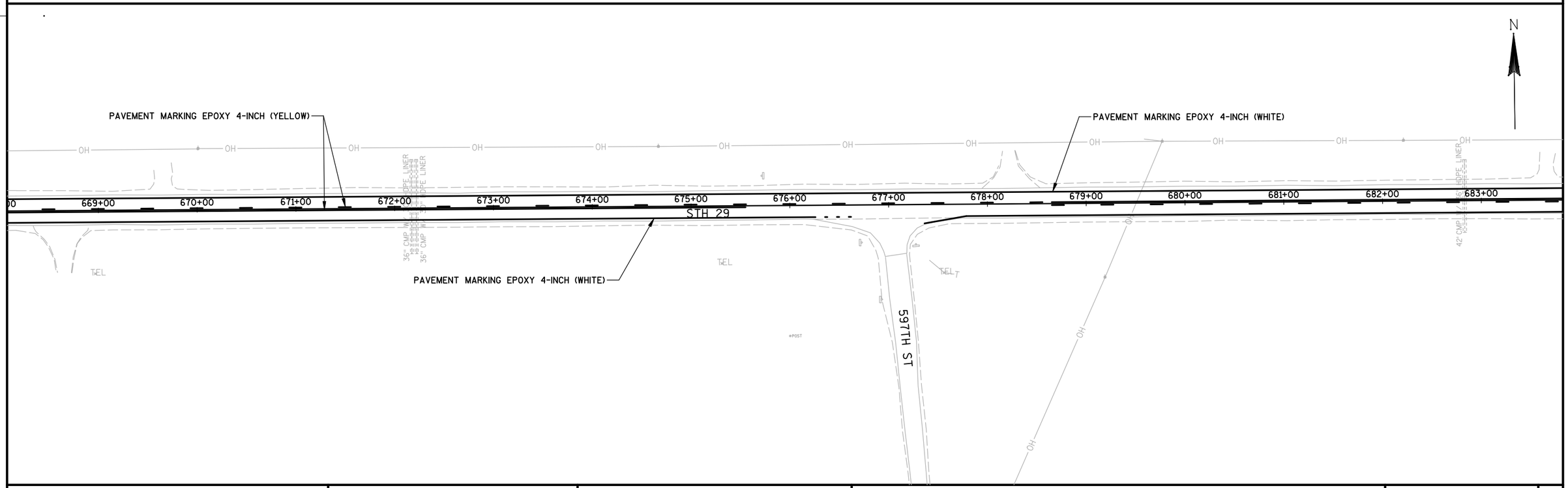


PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 30	E

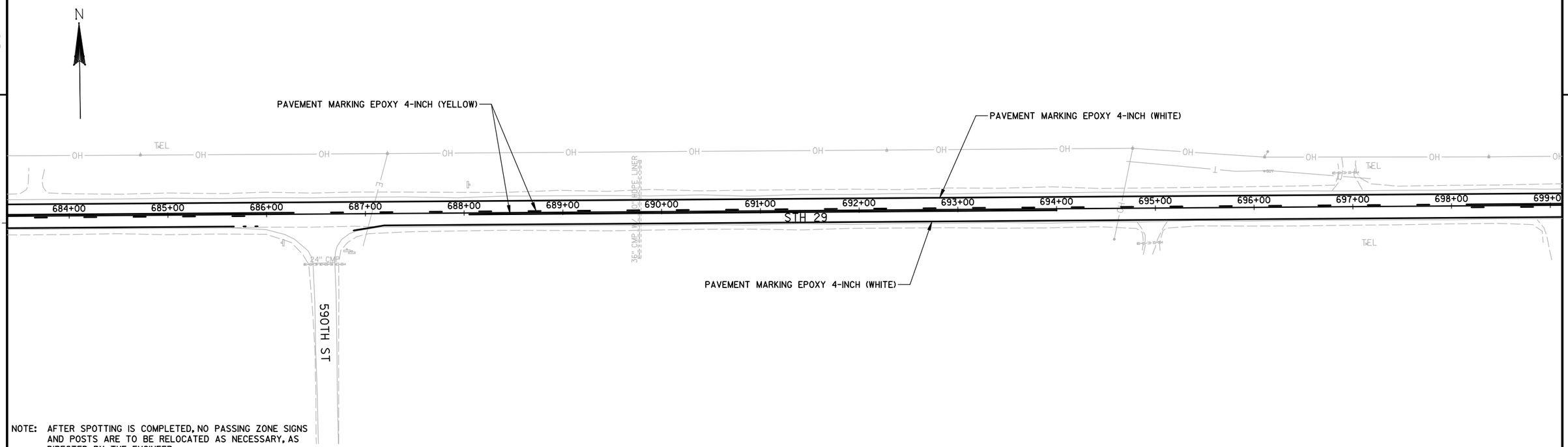
2



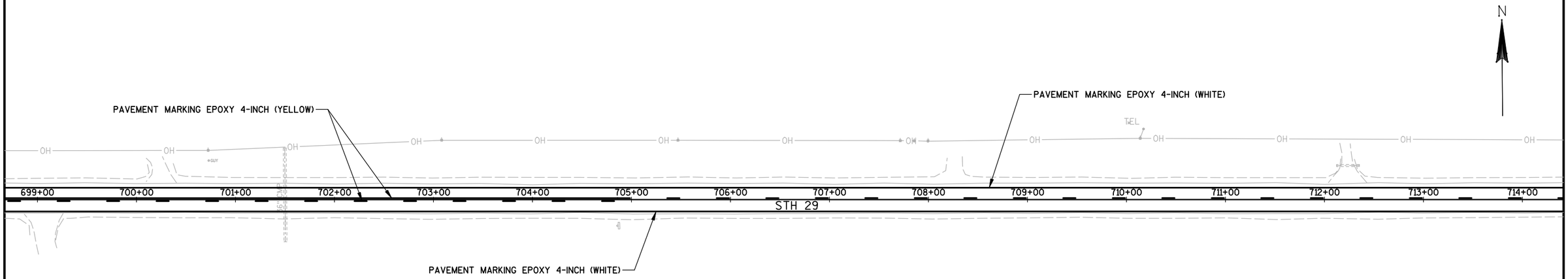
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



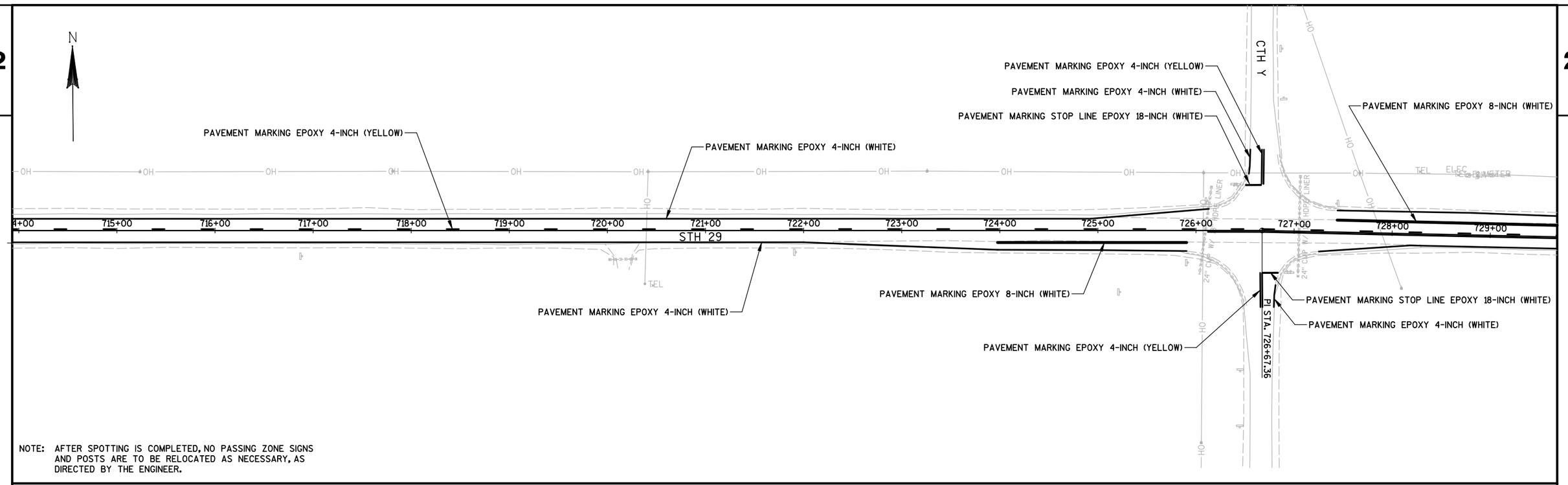
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 31	E



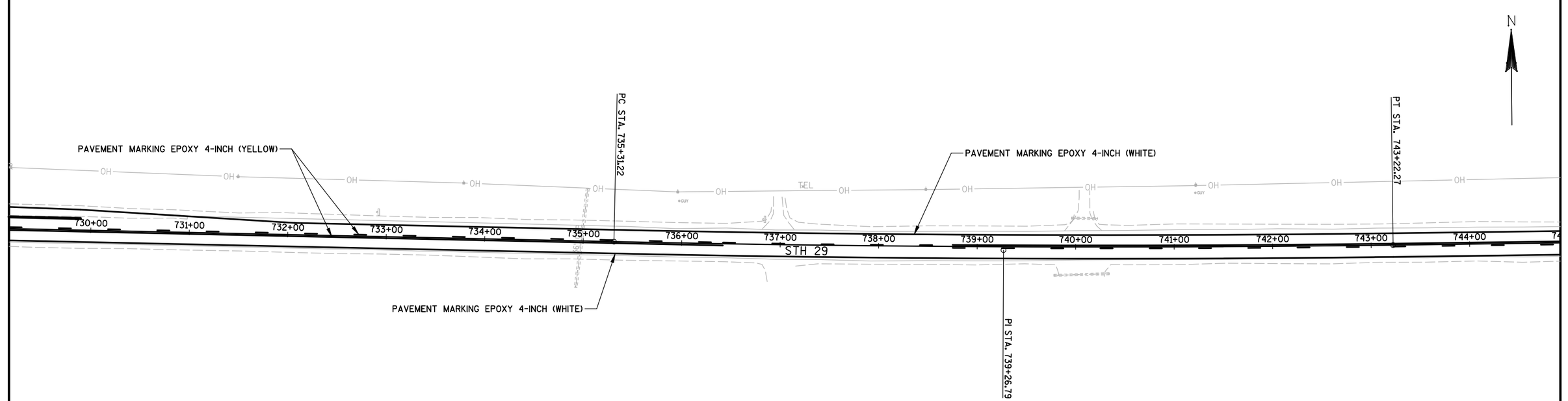
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



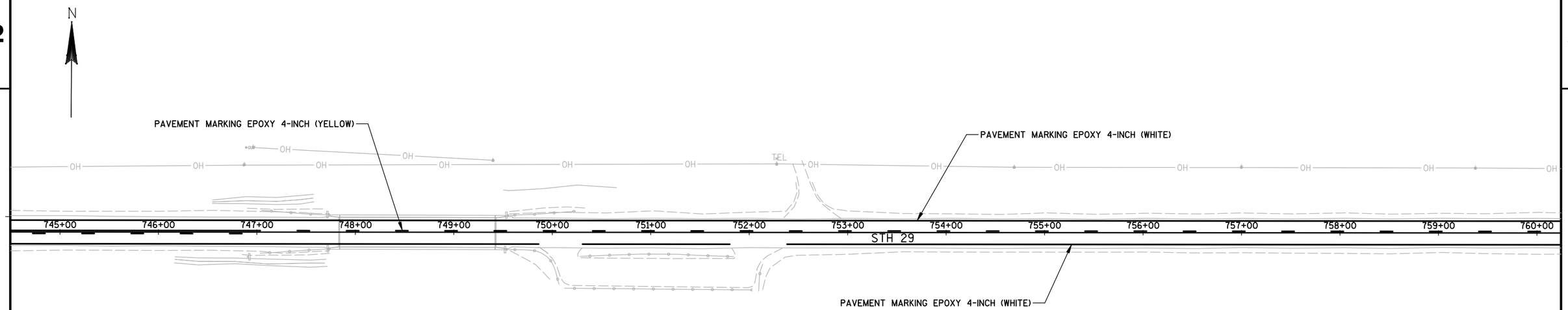
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 32	E



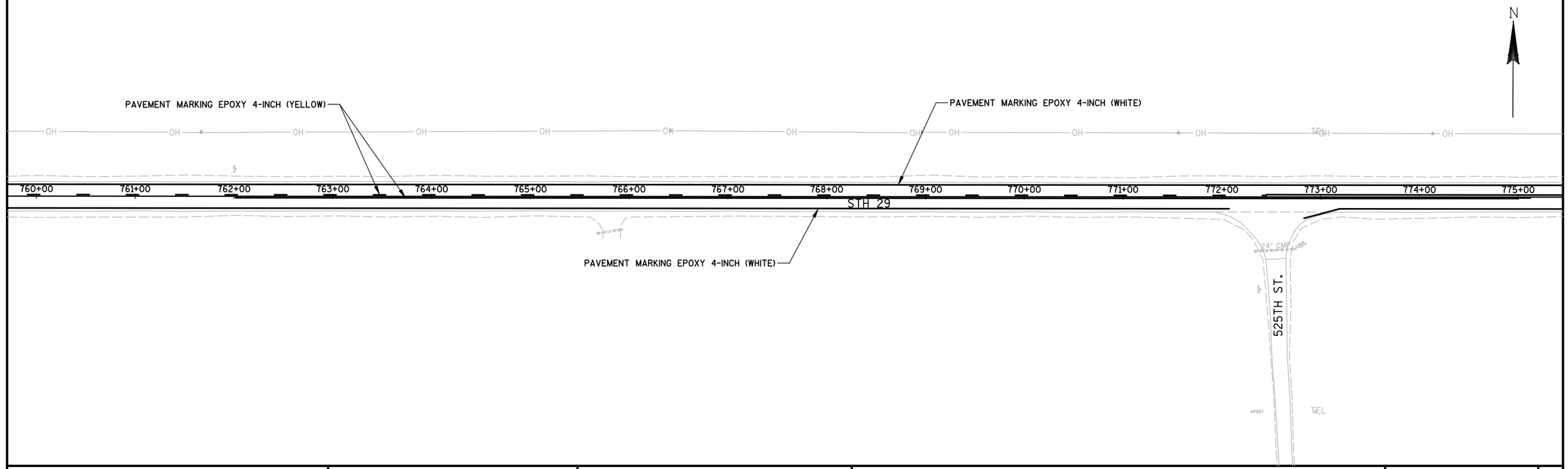
NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 33	E

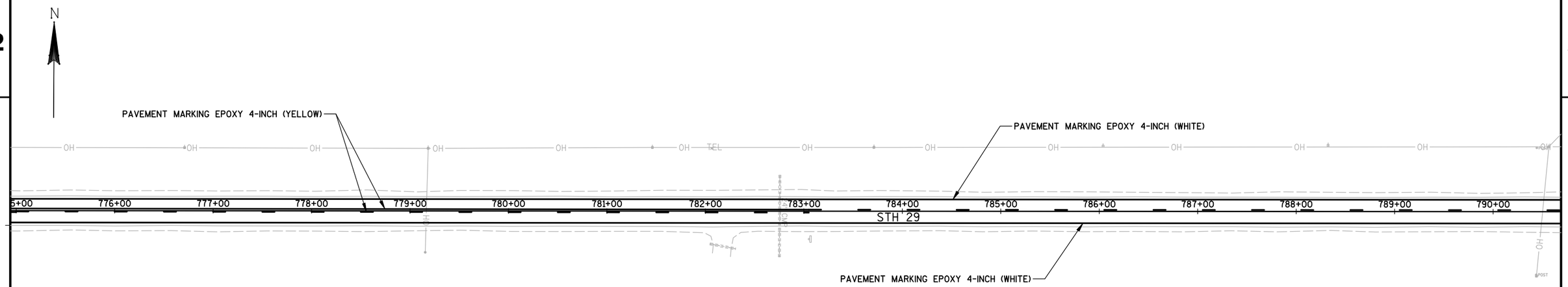


NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.

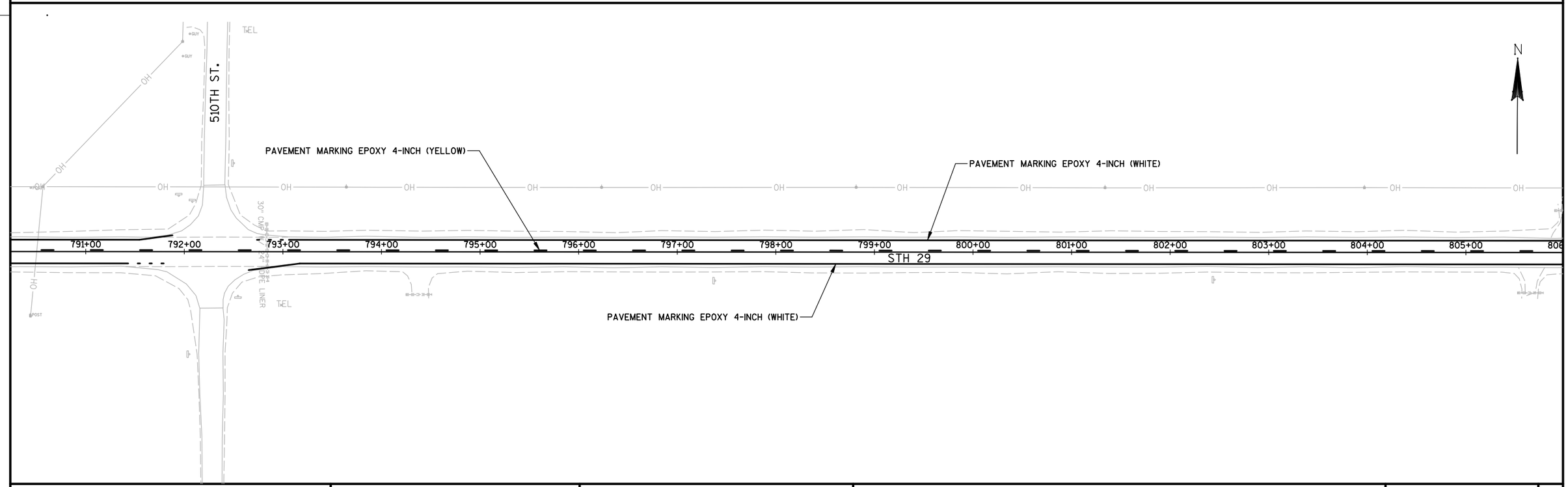


PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 34	E

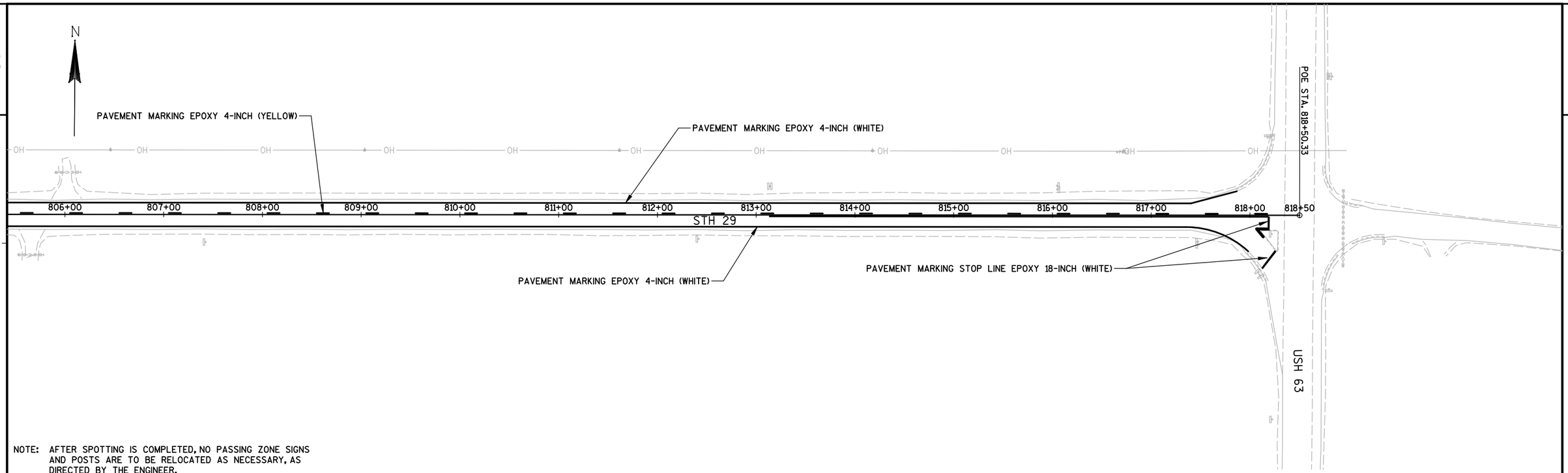
2



NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.



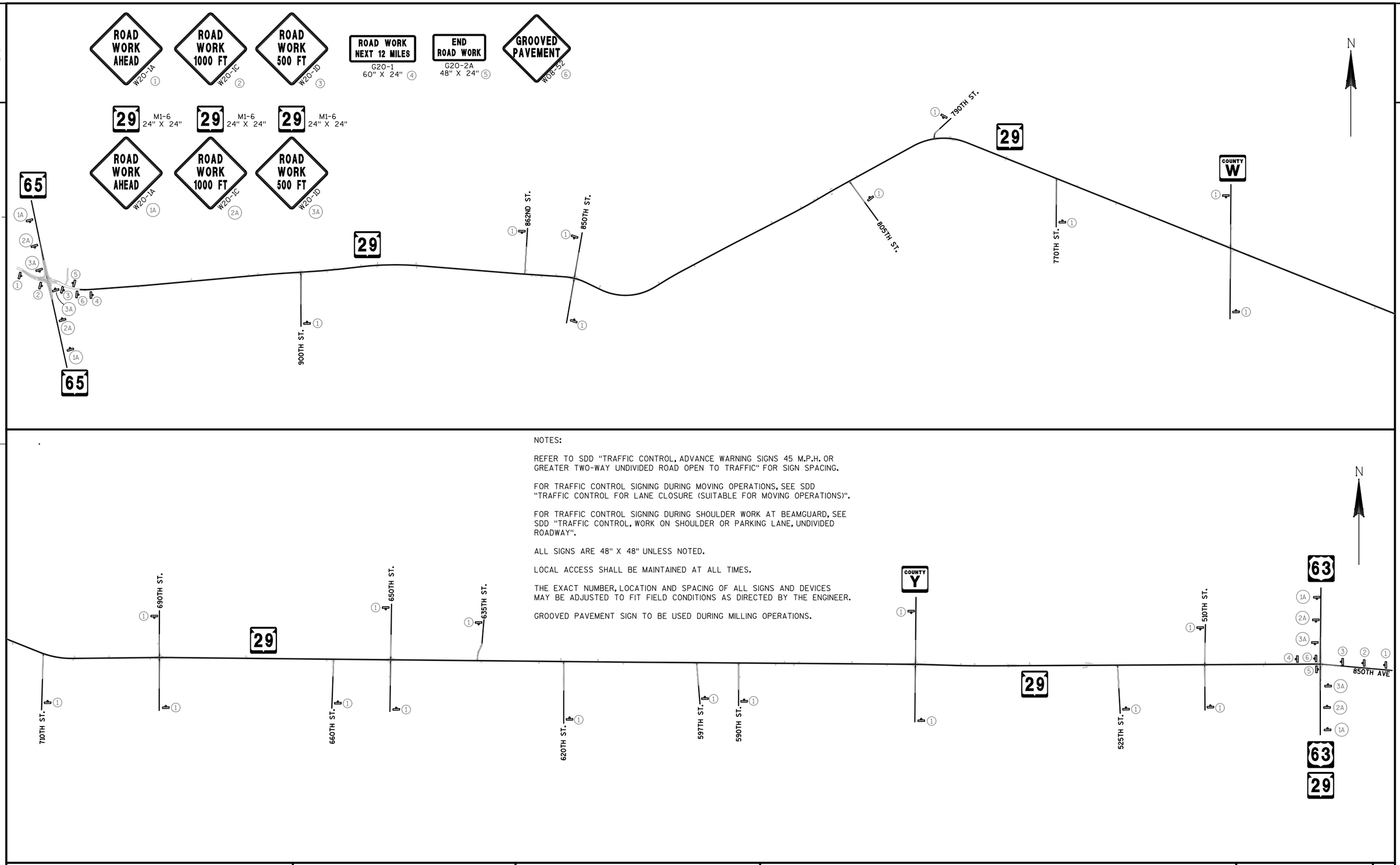
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 35	E



NOTE: AFTER SPOTTING IS COMPLETED, NO PASSING ZONE SIGNS AND POSTS ARE TO BE RELOCATED AS NECESSARY, AS DIRECTED BY THE ENGINEER.

2

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PAVEMENT MARKING	SHEET 36	E



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	TRAFFIC CONTROL	SHEET 37	E

FILE NAME : F:\Drawings\2012-123\0001\2600.dgn PLOT DATE : 2/17/2016 PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : 1 in : 100 ft

DATE 19FEB16 — E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	7640-00-70 QUANTITY
0010	203.0200	Removing Old Structure (station) 01. 273+50	LS	1.000	1.000
0020	204.0115	Removing Asphaltic Surface Butt Joints	SY	1,570.000	1,570.000
0030	204.0120	Removing Asphaltic Surface Milling	SY	209,900.000	209,900.000
0040	204.9060.S	Removing (item description) 01. Apron Endwalls	EACH	31.000	31.000
0050	209.0100	Backfill Granular	CY	710.000	710.000
0060	213.0100	Finishing Roadway (project) 01. 7640-00-70	EACH	1.000	1.000
0070	305.0110	Base Aggregate Dense 3/4-Inch	TON	1,900.000	1,900.000
0080	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	270.000	270.000
0090	305.0500	Shaping Shoulders	STA	1,210.000	1,210.000
0100	440.4410	Incentive IRI Ride	DOL	46,800.000	46,800.000
0110	455.0605	Tack Coat	GAL	21,100.000	21,100.000
0120	460.4110.S	Reheating HMA Pavement Longitudinal Joints	LF	605.000	605.000
0130	465.0105	Asphaltic Surface	TON	120.000	120.000
0140	465.0110	Asphaltic Surface Patching	TON	50.000	50.000
0150	465.0120	Asphaltic Surface Driveways and Field Entrances	TON	155.000	155.000
0160	465.0475	Asphalt Center Line Rumble Strips 2-Lane Rural	LF	53,000.000	53,000.000
0170	520.8700	Cleaning Culvert Pipes	EACH	11.000	11.000
0180	520.9700.S	Culvert Pipe Liners (size) 01. 24-inch	LF	204.000	204.000
0190	520.9700.S	Culvert Pipe Liners (size) 02. 36-inch	LF	159.000	159.000
0200	520.9750.S	Cleaning Culvert Pipes for Liner Verification	EACH	5.000	5.000
0210	521.1024	Apron Endwalls for Culvert Pipe Steel 24-Inch	EACH	23.000	23.000
0220	521.1030	Apron Endwalls for Culvert Pipe Steel 30-Inch	EACH	3.000	3.000
0230	521.1036	Apron Endwalls for Culvert Pipe Steel 36-Inch	EACH	11.000	11.000
0240	521.1042	Apron Endwalls for Culvert Pipe Steel 42-Inch	EACH	3.000	3.000
0250	521.1048	Apron Endwalls for Culvert Pipe Steel 48-Inch	EACH	2.000	2.000
0260	521.1072	Apron Endwalls for Culvert Pipe Steel 72-Inch	EACH	4.000	4.000
0270	521.1235	Apron Endwalls for Pipe Arch Steel 35x24-Inch	EACH	1.000	1.000
0280	521.1249	Apron Endwalls for Pipe Arch Steel 49x33-Inch	EACH	1.000	1.000
0290	521.1257	Apron Endwalls for Pipe Arch Steel 57x38-Inch	EACH	2.000	2.000
0300	524.0636	Apron Endwalls for Culvert Pipe Salvaged 36-Inch	EACH	1.000	1.000
0310	606.0200	Riprap Medium	CY	150.000	150.000
0320	614.0010	Barrier System Grading Shaping Finishing	EACH	30.000	30.000
0330	614.0200	Steel Thrie Beam Structure Approach	LF	20.600	20.600
0340	614.0305	Steel Plate Beam Guard Class A	LF	1,487.500	1,487.500
0350	614.0345	Steel Plate Beam Guard Short Radius	LF	188.000	188.000
0360	614.0370	Steel Plate Beam Guard Energy Absorbing Terminal	EACH	3.000	3.000
0370	614.0390	Steel Plate Beam Guard Short Radius Terminal	EACH	4.000	4.000
0380	614.0920	Salvaged Rail	LF	5,105.000	5,105.000

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DATE 19FEB16 — E S T I M A T E O F Q U A N T I T I E S

LINE NUMBER	ITEM	ITEM DESCRIPTION	UNIT	TOTAL	7640-00-70 QUANTITY
0390	614.2300	MGS Guardrail 3	LF	1,487.500	1,487.500
0400	614.2310	MGS Guardrail 3 HS	LF	75.000	75.000
0410	614.2330	MGS Guardrail 3 K	LF	950.000	950.000
0420	614.2500	MGS Thrie Beam Transition	LF	268.200	268.200
0430	614.2610	MGS Guardrail Terminal EAT	EACH	27.000	27.000
0440	614.8010	Anchor Post Assembly Top Mount	EACH	8.000	8.000
0450	618.0100	Maintenance And Repair of Haul Roads (project) 01. 7640-00-70	EACH	1.000	1.000
0460	619.1000	Mobilization	EACH	1.000	1.000
0470	627.0200	Mulching	SY	1,015.000	1,015.000
0480	628.1504	Silt Fence	LF	2,350.000	2,350.000
0490	628.1520	Silt Fence Maintenance	LF	2,350.000	2,350.000
0500	628.1905	Mobilizations Erosion Control	EACH	4.000	4.000
0510	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0520	628.7504	Temporary Ditch Checks	LF	800.000	800.000
0530	629.0210	Fertilizer Type B	CWT	3.000	3.000
0540	630.0120	Seeding Mixture No. 20	LB	40.000	40.000
0550	633.5200	Markers Culvert End	EACH	58.000	58.000
0560	642.5001	Field Office Type B	EACH	1.000	1.000
0570	643.0100	Traffic Control (project) 01. 7640-00-70	EACH	1.000	1.000
0580	643.0300	Traffic Control Drums	DAY	3,600.000	3,600.000
0590	643.0900	Traffic Control Signs	DAY	4,232.000	4,232.000
0600	645.0130	Geotextile Fabric Type R	SY	290.000	290.000
0610	646.0106	Pavement Marking Epoxy 4-Inch	LF	170,640.000	170,640.000
0620	646.0126	Pavement Marking Epoxy 8-Inch	LF	460.000	460.000
0630	646.0406	Pavement Marking Same Day Epoxy 4-Inch	LF	51,850.000	51,850.000
0640	647.0566	Pavement Marking Stop Line Epoxy 18-Inch	LF	108.000	108.000
0650	648.0100	Locating No-Passing Zones	MI	11.500	11.500
0660	649.0402	Temporary Pavement Marking Paint 4-Inch	LF	84,940.000	84,940.000
0670	650.8000	Construction Staking Resurfacing Reference	LF	60,710.000	60,710.000
0680	650.9910	Construction Staking Supplemental Control (project) 01. 7640-00-70	LS	1.000	1.000
0690	690.0150	Sawing Asphalt	LF	532.000	532.000
0700	ASP.1T0A	On-the-Job Training Apprentice at $5. 00/HR	HRS	2,400.000	2,400.000
0710	ASP.1T0G	On-the-Job Training Graduate at $5.00/HR	HRS	990.000	990.000
0720	SPV.0060	Special 01. Repair Culvert Pipe Liners	EACH	8.000	8.000
0730	SPV.0060	Special 02. Temporary Portable Rumble Strip Array	EACH	4.000	4.000
0740	SPV.0090	Special 01. Ditch Cleaning	LF	2,500.000	2,500.000
0750	SPV.0105	Special 01. Preparation of Foundation for Asphaltic Paving Special	LS	1.000	1.000
0760	SPV.0105	Special 02. Material Transfer Vehicle	LS	1.000	1.000
0770	SPV.0105	Special 03. Milling and Removing Temporary Joint	LS	1.000	1.000
0780	SPV.0195	Special 01. HMA Pavement Type 5MT5834H Special	TON	12,750.000	12,750.000
0790	SPV.0195	Special 02. HMA Pavement Type SMA-Special	TON	17,410.000	17,410.000
0800	SPV.0195	Special 03. SMA Pavement Compaction Acceptance	TON	17,410.000	17,410.000

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REMOVING OLD STRUCTURE (STATION)01. 273+50		203.0200
STATION TO STATION	LOCATION	LS
273+50	MAINLINE	1
ITEM TOTAL		1

REMOVING ASPHALTIC SURFACE BUTT JOINTS		204.0115
STATION TO STATION	LOCATION	SY
211+25 TO 211+75	MAINLINE	170
260+57	900TH ST	70
311+50	862ND ST	65
322+80	850TH ST	145
414+07	790TH ST	120
443+55	770TH ST	90
486+00	CTH W	140
555+15	690TH ST	145
607+60	650TH ST	75
726+67	CTH Y	180
817+85 TO 818+35	MAINLINE	370
ITEM TOTAL		1570

REMOVING ASPHALTIC SURFACE MILLING		204.0120
STATION TO STATION	LOCATION	SY
211+75 TO 817+85	STH 29	202040
260+57	900TH ST	1100
311+50	862ND ST	40
322+80	850TH ST	940
392+40	805TH ST	85
414+07	790TH ST	160
443+55	770TH ST	120
486+00	CTH W	770
528+78	710TH ST	260
555+15	690TH ST	960
607+60	650TH ST	930
646+86	620TH ST	235
677+04	597TH ST	210
686+57	590TH ST	200
726+67	CTH Y	1110
772+54	525TH ST	250
792+30	510TH ST	490
ITEM TOTAL		209900

REMOVING (ITEM DESCRIPTION)01. APRON ENDWALLS		204.9060.S.01
STATION TO STATION	LOCATION	EACH
323+70	RT	1
370+00	LT	1
556+50	LT & RT	2
570+50	LT & RT	2
589+05	LT & RT	2
598+95	RT	1
624+60	LT	1
633+40	LT & RT	2
641+70	RT	1
682+90	LT & RT	2
686+60	590TH ST	2
689+75	LT & RT	2
726+15	LT & RT	2
727+05	LT & RT	2
735+00	LT & RT	2
772+60	525TH ST	2
782+75	LT & RT	2
792+85	LT & RT	2
ITEM TOTAL		31

BACKFILL GRANULAR		209.0100
STATION TO STATION	LOCATION	CY
273+50	CATTLE PASS	710
ITEM TOTAL		710

FINISHING ROADWAY (PROJECT)01. 7640-00-70		213.0100
STATION TO STATION	LOCATION	LS
211+75 TO 817+85	STH 29	1
ITEM TOTAL		1

BASE AGGREGATE DENSE 3/4-INCH		305.0110
STATION TO STATION	LOCATION	TON
211+25 TO 818+35	MAINLINE LT & RT	1900
ITEM TOTAL		1900

BASE AGGREGATE DENSE 1 1/4-INCH		305.0120
STATION TO STATION	LOCATION	TON
273+50	CATTLE PASS	270
ITEM TOTAL		270

SHAPING SHOULDERS		305.0500
STATION TO STATION	LOCATION	STA
211+25 TO 818+35	MAINLINE LT & RT	1210
ITEM TOTAL		1210

TACK COAT		455.0605
STATION TO STATION	LOCATION	GAL
211+25 TO 818+35	STH 29	20195
260+57	900TH ST	120
311+50	862ND ST	10
322+80	850TH ST	110
392+40	805TH ST	10
414+07	790TH ST	30
443+55	770TH ST	20
486+00	CTH W	95
528+78	710TH ST	25
555+15	690TH ST	110
607+60	650TH ST	100
646+86	620TH ST	25
677+04	597TH ST	25
686+57	590TH ST	20
726+67	CTH Y	130
772+54	525TH ST	25
792+30	510TH ST	50
ITEM TOTAL		21100

REHEATING HMA PAVEMENT LONGITUDINAL JOINTS		460.4110.S.
STATION TO STATION	LOCATION	STA
211+25 TO 818+35	STH 29 ℄	605
ITEM TOTAL		605

ASPHALTIC SURFACE		465.0105
STATION TO STATION	LOCATION	TON
273+50	CATTLE PASS	70
211+25 TO 818+35	UNDISTRIBUTED	50
ITEM TOTAL		120

ASPHALTIC SURFACE PATCHING		465.0110
STATION TO STATION	LOCATION	TON
211+25 TO 818+35	UNDISTRIBUTED	50
ITEM TOTAL		50

ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES		465.0120
STATION TO STATION	LOCATION	TON
216+75	PE LT	5
218+10	PE RT	10
218+60	PE LT	5
248+25	PE RT	5
277+00	PE RT	5
315+15	PE LT	5
332+05	PE LT	10
348+80	PE LT	5
365+80	PE LT	5
370+60	PE RT	5
395+60	PE LT	10
399+65	PE LT	10
402+75	PE LT	5
405+65	PE LT	10
412+80	PE RT	10
500+00	PE RT	5
574+40	PE RT	10
583+45	PE RT	5
668+65	PE RT	10
678+20	PE LT	10
750+10	PE RT	5
752+00	PE RT	5
ITEM TOTAL		155

ASPHALT CENTER LINE RUMBLE STRIP 2-LANE RURAL		465.0475
STATION TO STATION	LOCATION	LF
211+25 TO 816+50	CENTER LINE	53000
ITEM TOTAL		53000

CLEANING CULVERT PIPES		520.8700
STATION TO STATION	LOCATION	EACH
242+90	MAINLINE	2
406+90	MAINLINE	2
547+35	MAINLINE	1
555+10	690TH ST RT	1
557+00	MAINLINE	1
607+60	650TH ST RT	1
641+70	MAINLINE	1
701+50	MAINLINE	1
792+85	MAINLINE	1
ITEM TOTAL		11

CULVERT PIPE LINERS (INCH) 01. 24-INCH		520.9700.S.01
STATION TO STATION	LOCATION	LF
524+55	MAINLINE	78
686+60	590TH ST	42
782+75	MAINLINE	84
ITEM TOTAL		204

CULVERT PIPE LINERS (INCH) 02. 36-INCH		520.9700.S.02
STATION TO STATION	LOCATION	LF
624+60	MAINLINE	57
735+00	MAINLINE	102
ITEM TOTAL		159

CLEANING CULVERT PIPES FOR LINEAR VERIFICATION		520.9750.S
STATION TO STATION	LOCATION	EACH
524+55	MAINLINE	1
624+60	MAINLINE	1
686+60	590TH ST	1
735+00	MAINLINE	1
782+75	MAINLINE	1
ITEM TOTAL		5

APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH		521.1024
STATION TO STATION	LOCATION	EACH
465+15	LT & RT	2
524+55	LT & RT	2
528+40	LT & RT	2
528+45	LT & RT	2
570+50	LT & RT	2
633+40	LT & RT	2
641+70	RT	1
686+60	590TH ST	2
726+15	LT & RT	2
727+05	LT & RT	2
772+60	525TH ST	2
782+75	LT & RT	2
ITEM TOTAL		23

APRON ENDWALLS FOR CULVERT PIPE STEEL 30-INCH		521.1030
STATION TO STATION	LOCATION	EACH
503+74	LT	1
792+85	LT & RT	2
ITEM TOTAL		3

APRON ENDWALLS FOR CULVERT PIPE STEEL 36-INCH		521.1036
STATION TO STATION	LOCATION	EACH
557+00	LT & RT	2
624+60	LT	1
672+17	LT & RT	2
672+22	LT & RT	2
689+75	LT & RT	2
735+00	LT & RT	2
ITEM TOTAL		11

APRON ENDWALLS FOR CULVERT PIPE STEEL 42-INCH		521.1042
STATION TO STATION	LOCATION	EACH
598+95	RT	1
682+90	LT & RT	2
ITEM TOTAL		3

APRON ENDWALLS FOR CULVERT PIPE STEEL 48-INCH		521.1048
STATION TO STATION	LOCATION	EACH
589+05	LT & RT	2
ITEM TOTAL		2

APRON ENDWALLS FOR CULVERT PIPE STEEL 72-INCH		521.1072
STATION TO STATION	LOCATION	EACH
485+43	LT & RT	2
556+50	LT & RT	2
ITEM TOTAL		4

APRON ENDWALLS FOR PIPE ARCH STEEL 35x24-INCH		521.1235
STATION TO STATION	LOCATION	EACH
323+70	RT	1
ITEM TOTAL		1

APRON ENDWALLS FOR PIPE ARCH STEEL 49x33-INCH		521.1249
STATION TO STATION	LOCATION	EACH
370+00	LT	1
ITEM TOTAL		1

APRON ENDWALLS FOR PIPE ARCH STEEL 57x38-INCH		521.1257
STATION TO STATION	LOCATION	EACH
291+90	LT & RT	2
ITEM TOTAL		2

APRON ENDWALLS FOR CULVERT PIPE SALVAGED 36-INCH		524.0636
STATION TO STATION	LOCATION	EACH
429+00	RT	1
ITEM TOTAL		1

RIPRAP MEDIUM		606.0200
STATION TO STATION	LOCATION	C.Y.
323+70	LT	5
429+00	RT	6
446+20	RT	6
547+35	LT	4
556+50	LT & RT	32
579+25	RT	4
589+05	LT	8
624+60	LT	6
662+75	LT & RT	50
682+90	RT	7
689+77	LT	6
701+50	RT	6
726+15	LT	4
735+00	RT	6
ITEM TOTAL		150

SALVAGED RAIL		614.0920
STATION TO STATION	LOCATION	L.F.
254+24 TO 255+68	RT	145
254+29 TO 255+74	LT	145
316+14 TO 317+59	RT	145
316+23 TO 317+82	LT	160
416+82 TO 419+79	LT	295
417+12 TO 419+48	RT	235
426+54 TO 431+84	RT	530
427+35 TO 432+20	LT	485
478+21 TO 478+95	RT	80
479+51 TO 486+09	RT	685
479+13 TO 485+50	LT	670
489+56 TO 491+46	RT	190
489+60 TO 491+51	LT	195
498+49 TO 505+42	LT	695
747+04 TO 747+74	LT	70
747+04 TO 747+74	RT	70
749+52 TO 750+24	LT	75
749+52 TO 750+07	RT	75
750+28 TO 751+84	RT	160
ITEM TOTAL		5105

MOBILIZATION		619.1000
STATION TO STATION	LOCATION	EACH
211+25 TO 818+35	MAINLINE	1
ITEM TOTAL		1

ANCHOR POST ASSEMBLIES TOP MOUNTED		614.8010
STATION TO STATION	LOCATION	EACH
418+06.1 TO 418+28.3	BOX CULVERT RT	8
ITEM TOTAL		8

BARRIER SYSTEM GRADING SHAPING FINISHING		614.0010
STATION TO STATION	LOCATION	EACH
254+09 TO 256+15	LT	2
253+59 TO 256+02	RT	2
315+58 TO 317+64	RT	2
315+97 TO 318+04	LT	2
415+90 TO 419+78	LT	2
416+11 TO 419+98	RT	2
426+45 TO 431+89	RT	2
427+26 TO 432+70	LT	2
477+46 TO 478+95	RT	1
477+92 TO 485+52	LT	2
489+39 TO 490+29	RT	1
489+45 TO 490+35	LT	1
490+71 TO 491+61	RT	1
490+76 TO 491+67	RT	1
498+47 TO 505+41	LT	2
746+84 TO 747+76	LT	1
746+84 TO 747+76	RT	1
749+50 TO 750+42	LT	1
750+28 TO 751+84	RT	2
ITEM TOTAL		30

GUARDRAIL SUMMARY

STATION TO STATION	LOCATION	614.0200 STEEL THRIE BEAM STRUCTURE APPROACH LF	614.0305 STEEL PLATE BEAM GUARD CLASS A LF	614.0345 STEEL PLATE BEAM GUARD SHORT RADIUS LF	614.0370 STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL EACH	614.0390 STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL EACH	614.2300 MGS 3 GUARDRAIL LF	614.2310 MGS 3 GUARDRAIL HS LF	614.2330 MGS 3 GUARDRAIL K LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
254+09 TO 256+15	LT	-	-	-	-	-	100.0	-	-	-	2
253+59 TO 256+02	RT	-	-	-	-	-	137.5	-	-	-	2
315+58 TO 317+64	RT	-	-	-	-	-	100.0	-	-	-	2
315+97 TO 318+04	LT	-	-	-	-	-	100.0	-	-	-	2
415+90 TO 419+78	LT	-	-	-	-	-	212.5	-	-	-	2
417+40.5 TO 418+14.4	LT	-	-	-	-	-	-	-	75.0	-	-
416+11 TO 419+98	RT	-	-	-	-	-	200.0	-	-	-	2
417+79.2 TO 418+55.3	RT	-	-	-	-	-	-	75.0	-	-	-
426+45 TO 431+89	RT	-	-	-	-	-	-	-	-	-	2
426+98.1 TO 418+53.7	RT	-	-	-	-	-	-	-	437.5	-	-
427+26 TO 432+70	LT	-	-	-	-	-	-	-	-	-	2
427+79.2 TO 432+16.7	LT	-	-	-	-	-	-	-	437.5	-	-
477+46 TO 478+95	RT	-	112.5	13	1	1	-	-	-	-	-
477+92 TO 485+52	LT	-	675.0	88	2	-	-	-	-	-	-
479+51 TO 486+17	RT	-	662.5	75	-	-	-	-	-	-	-
489+39 TO 490+29	RT	-	-	-	-	2	-	-	-	37.5	1
489+45 TO 490+35	LT	-	-	-	-		-	-	-	37.5	1
490+71 TO 491+61	RT	-	-	-	-	-	-	-	-	37.5	1
490+76 TO 491+67	RT	-	-	-	-	-	-	-	-	37.5	1
498+47 TO 505+41	LT	-	-	-	-	-	587.5	-	-	-	2
746+84 TO 747+76	LT	-	-	-	-	-	-	-	-	39.4	1
746+84 TO 747+76	RT	-	-	-	-	-	-	-	-	39.4	1
749+50 TO 750+42	LT	20.6	37.5	13	-	1	-	-	-	39.4	1
750+28 TO 751+84	RT	-	-	-	-	-	50.0	-	-	-	2
ITEM TOTAL		20.6	1487.5	188	3	4	1487.5	75	950	268.2	27

SILT FENCE		628.1504
STATION TO STATION	LOCATION	LF
252+84 TO 254+09	EAT RT	150
255+53 TO 256+78	EAT RT	150
314+83 TO 316+08	EAT RT	150
317+14 TO 318+39	EAT RT	150
415+18 TO 416+43	EAT LT	150
415+38 TO 416+63	EAT RT	150
419+75 TO 421+00	EAT RT	150
419+80 TO 421+05	EAT LT	150
425+70 TO 426+95	EAT RT	150
488+64 TO 489+89	EAT RT	150
491+11 TO 492+36	EAT RT	150
497+72 TO 498+97	EAT LT	150
504+91 TO 506+16	EAT LT	150
749+89 TO 751+14	EAT LT	150
	UNDISTRIBUTED	250
ITEM TOTAL		2350

SILT FENCE MAINTENANCE		628.1520
STATION TO STATION	LOCATION	LF
252+84 TO 254+09	EAT RT	150
255+53 TO 256+78	EAT RT	150
314+83 TO 316+08	EAT RT	150
317+14 TO 318+39	EAT RT	150
415+18 TO 416+43	EAT LT	150
415+38 TO 416+63	EAT RT	150
419+75 TO 421+00	EAT RT	150
419+80 TO 421+05	EAT LT	150
425+70 TO 426+95	EAT RT	150
488+64 TO 489+89	EAT RT	150
491+11 TO 492+36	EAT RT	150
497+72 TO 498+97	EAT LT	150
504+91 TO 506+16	EAT LT	150
749+89 TO 751+14	EAT LT	150
	UNDISTRIBUTED	250
ITEM TOTAL		2350

MOBILIZATIONS EROSION CONTROL		628.1905
STATION TO STATION	LOCATION	EACH
211+25 TO 818+35	MAINLINE	4
ITEM TOTAL		4

MOBILIZATIONS EMERGENCY EROSION CONTROL		628.1910
STATION TO STATION	LOCATION	EACH
211+25 TO 818+35	MAINLINE	2
ITEM TOTAL		2

TEMPORARY DITCH CHECKS		628.7504
STATION TO STATION	LOCATION	LF
253+34 TO 254+59	EAT LT	30
255+65 TO 256+90	EAT LT	30
315+23 TO 316+48	EAT LT	30
317+54 TO 318+79	EAT LT	45
426+51 TO 427+76	EAT LT	45
431+36 TO 432+61	EAT RT	75
432+20 TO 433+45	EAT LT	60
476+71 TO 477+96	EAT RT	60
477+17 TO 478+42	EAT LT	60
11+09 TO 12+34	CTH W - EAT LT	90
488+70 TO 489+95	EAT LT	30
491+17 TO 492+42	EAT LT	50
746+12 TO 747+37	EAT LT & RT	120
	UNDISTRIBUTED	75
ITEM TOTAL		800

MARKERS CULVERT END		633.5200
STATION TO STATION	LOCATION	EACH
291+90	MAINLINE	2
323+70	MAINLINE	2
370+00	MAINLINE	2
429+00	MAINLINE	2
465+15	MAINLINE	2
485+43	MAINLINE	2
503+74	MAINLINE	2
524+55	MAINLINE	2
528+40	MAINLINE	2
528+45	MAINLINE	2
556+50	MAINLINE	2
557+00	MAINLINE	2
570+50	MAINLINE	2
589+05	MAINLINE	2
598+95	MAINLINE	2
624+60	MAINLINE	2
633+40	MAINLINE	2
641+70	MAINLINE	2
672+17	MAINLINE	2
672+22	MAINLINE	2
682+90	MAINLINE	2
686+60	MAINLINE	2
689+75	MAINLINE	2
726+15	MAINLINE	2
727+05	MAINLINE	2
735+00	MAINLINE	2
772+60	MAINLINE	2
782+75	MAINLINE	2
792+85	MAINLINE	2
ITEM TOTAL		58

FIELD OFFICE TYPE B		642.5001
STATION TO STATION	LOCATION	EACH
211+25 TO 818+35	MAINLINE	1
ITEM TOTAL		1

TRAFFIC CONTROL (PROJECT)01. 7640-00-70		643.0100
STATION TO STATION	LOCATION	EACH
211+25 TO 818+35	MAINLINE	1
ITEM TOTAL		1

TRAFFIC CONTROL DRUMS		643.0300
STATION TO STATION	LOCATION	DAYS
211+25 TO 818+35	BEAMGUARD REMOVALS	3600
ITEM TOTAL		3600

TRAFFIC CONTROL SIGNS		643.0900
STATION TO STATION	LOCATION	DAYS
211+25 TO 818+35	TRAFFIC CONTROL PLAN	4232
ITEM TOTAL		4232

GEOTEXTILE FABRIC TYPE R		645.0130
STATION TO STATION	LOCATION	SY
323+70	LT	10
429+00	RT	11
446+20	RT	11
547+35	LT	10
556+50	LT & RT	65
579+25	RT	9
589+05	LT	17
624+60	LT	11
662+75	LT & RT	100
682+90	RT	14
701+50	RT	11
726+15	LT	10
735+00	RT	11
ITEM TOTAL		290

PAVEMENT MARKING EPOXY 4-INCH		646.0106
STATION TO STATION	LOCATION	LF
211+00 TO 818+35	MAINLINE, RT	170260
486+00	CTH W	190
726+67	CTH Y	190
ITEM TOTAL		170640

PAVEMENT MARKING EPOXY 8-INCH		646.0126
STATION TO STATION	LOCATION	LF
723+98 TO 725+90	MAINLINE RT	192
727+43 TO 729+89	MAINLINE LT	246
818+10	ISLAND RT	22
ITEM TOTAL		460

PAVEMENT MARKING SAME DAY EPOXY 4-INCH		646.0406
STATION TO STATION	LOCATION	LF
211+00 TO 818+35	MAINLINE C/L	51850
ITEM TOTAL		51850

PAVEMENT MARKING STOP LINE EPOXY 18-INCH		647.0566
STATION TO STATION	LOCATION	LF
485+75	CTH W (NORTH)	22
486+10	CTH W (SOUTH)	15
726+50	CTH Y (NORTH)	16
726+75	CTH Y (SOUTH)	18
818+13	RIGHT TURN LANE	22
818+20	MAINLINE	15
ITEM TOTAL		108

LOCATING NO-PASSING ZONES		648.0100
STATION TO STATION	LOCATION	MI
211+25 TO 818+35	MAINLINE C/L	11.5
ITEM TOTAL		11.5

TEMPORARY PAVEMENT MARKING PAINT 4-INCH		649.0402
STATION TO STATION	LOCATION	LF
211+00 TO 818+35	MAINLINE C/L	84940
ITEM TOTAL		84940

CONSTRUCTION STAKING RESURFACING REFERENCE		650.8000
STATION TO STATION	LOCATION	LF
211+25 TO 818+35	STH 29	60710
ITEM TOTAL		60710

CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT)01. 7640-00-70		650.9910
STATION TO STATION	LOCATION	LS
211+25 TO 818+35	STH 29	1
ITEM TOTAL		1

SAWING ASPHALT		690.0150
STATION TO STATION	LOCATION	LF
216+75	DRIVEWAY LT	22
218+10	DRIVEWAY RT	41
218+60	DRIVEWAY LT	25
248+25	DRIVEWAY RT	28
277+00	DRIVEWAY RT	26
315+15	DRIVEWAY LT	21
332+05	DRIVEWAY LT	23
348+80	DRIVEWAY LT	27
365+80	DRIVEWAY LT	16
370+60	DRIVEWAY RT	26
395+60	DRIVEWAY LT	14
399+65	DRIVEWAY LT	14
402+75	DRIVEWAY LT	14
405+65	DRIVEWAY LT	14
500+00	DRIVEWAY RT	31
574+40	DRIVEWAY RT	20
583+45	DRIVEWAY RT	25
668+65	DRIVEWAY RT	45
678+20	DRIVEWAY LT	39
750+10	DRIVEWAY RT	30
752+00	DRIVEWAY RT	31
ITEM TOTAL		532

BARRIER SYSTEM GRADING SHAPING FINISHING								614.0010
STATION	LOCATION	*EXCAVATION COMMON CY	*BORROW CY	*SALVAGED TOPSOIL SY	*FERTILIZER TYPE B CWT	*SEEDING LB	*MULCHING SY	EACH
253+59	RT	-	28	70	0.1	3	130	1
254+09	LT	-	61	280	0.3	6	340	1
256+02	RT	-	53	290	0.3	6	350	1
256+15	LT	-	63	280	0.2	6	340	1
315+58	RT	-	3	50	0.1	2	110	1
315+97	LT	-	45	230	0.2	5	290	1
317+64	RT	-	59	260	0.3	6	320	1
318+04	LT	-	52	260	0.2	6	320	1
415+90	LT	-	55	270	0.2	6	330	1
416+11	RT	-	58	260	0.2	6	320	1
419+78	LT	-	64	260	0.2	6	320	1
419+98	RT	-	46	240	0.2	5	300	1
426+45	RT	-	16	60	0.1	2	120	1
427+26	LT	-	150	410	0.3	8	470	1
431+89	RT	-	24	70	0.1	3	140	1
432+70	LT	-	115	350	0.2	7	410	1
477+46	RT	-	29	80	0.1	3	140	1
477+92	LT	-	48	40	0.1	2	100	1
485+52	LT	-	26	230	0.2	5	300	1
489+39	RT	-	131	380	0.3	8	440	1
489+45	LT	-	163	420	0.4	9	480	1
491+61	RT	-	99	330	0.3	8	390	1
491+67	LT	-	86	340	0.3	8	400	1
498+47	LT	-	112	360	0.3	8	420	1
505+41	LT	-	6	60	0.1	2	120	1
746+84	LT	-	3	50	0.1	2	110	1
746+84	RT	-	3	50	0.1	2	110	1
750+28	RT	-	0	40	0.1	2	90	1
750+42	LT	-	0	40	0.1	2	90	1
751+84	RT	-	52	290	0.3	6	350	1
ITEM TOTAL		-	1650	6350	6	150	8150	30

*FOR INFORMATION ONLY

STATION	LOCATION	SIGN DESCRIPTION	634.0616 WOOD POSTS, 4X6-INCH X 16 FT (EACH)	638.2102 MOVING SIGNS TYPE II (EACH)	638.3000 REMOVING SMALL SIGN SUPPORTS (EACH)
221+15	RT	NO PASSING ZONE	1	1	1
260+18	LT	NO PASSING ZONE	1	1	1
276+81	RT	NO PASSING ZONE	1	1	1
313+88	LT	NO PASSING ZONE	1	1	1
347+92	RT	NO PASSING ZONE	1	1	1
402+28	LT	NO PASSING ZONE	1	1	1
449+16	LT	NO PASSING ZONE	1	1	1
451+12	RT	NO PASSING ZONE	1	1	1
485+63	RT	NO PASSING ZONE	1	1	1
500+36	LT	NO PASSING ZONE	1	1	1
523+13	LT	NO PASSING ZONE	1	1	1
524+81	RT	NO PASSING ZONE	1	1	1
549+75	RT	NO PASSING ZONE	1	1	1
558+32	LT	NO PASSING ZONE	1	1	1
578+39	RT	NO PASSING ZONE	1	1	1
595+15	LT	NO PASSING ZONE	1	1	1
616+34	RT	NO PASSING ZONE	1	1	1
640+75	LT	NO PASSING ZONE	1	1	1
657+46	RT	NO PASSING ZONE	1	1	1
667+55	LT	NO PASSING ZONE	1	1	1
686+15	RT	NO PASSING ZONE	1	1	1
688+05	LT	NO PASSING ZONE	1	1	1
704+86	RT	NO PASSING ZONE	1	1	1
726+12	LT	NO PASSING ZONE	1	1	1
746+91	RT	NO PASSING ZONE	1	1	1
762+02	LT	NO PASSING ZONE	1	1	1
783+05	RT	NO PASSING ZONE	1	1	1
813+14	LT	NO PASSING ZONE	1	1	1
TOTAL			28	28	28

MULCHING, FERTILIZING, & SEEDING				
STATION TO STATION	LOCATION	627.0200 MULCHING SY	629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING MIXTURE NO. 20 LB
323+70	RT	35	0.1	1.3
370+00	LT	35	0.1	1.3
556+50	LT & RT	70	0.2	2.6
570+50	LT & RT	70	0.2	2.6
589+05	LT & RT	70	0.2	2.6
598+95	RT	35	0.1	1.4
624+60	LT	35	0.1	1.3
633+40	LT & RT	70	0.2	2.6
641+70	RT	35	0.1	1.3
682+90	LT & RT	70	0.2	2.6
686+60	590TH ST	35	0.2	2.4
689+75	LT & RT	70	0.2	2.6
726+15	LT & RT	70	0.2	2.6
727+05	LT & RT	70	0.2	2.6
735+00	LT & RT	70	0.2	2.6
772+60	525TH ST	35	0.1	2.4
782+75	LT & RT	70	0.2	2.6
792+85	LT & RT	70	0.2	2.6
ITEM TOTAL		1015	3	40

TEMPORARY PORTABLE RUMBLE STRIP ARRAY		SPV.0060.02
STATION TO STATION	LOCATION	EACH
211+25 TO 818+35	PROJECT	4
ITEM TOTAL		4

DITCH CLEANING		SPV.0090.01
STATION TO STATION	LOCATION	LF
220+63	RT	60
242+91	RT	100
255+00	RT	150
258+90	RT	90
273+20	RT	50
273+80	LT & RT	80
283+48	RT	90
291+90	LT & RT	170
316+88	RT	30
323+68	RT	55
333+19	RT	75
342+30	RT	65
361+37	RT	55
362+70	RT	55
364+62	RT	50
370+07	RT	15
392+12	805TH ST	60
392+73	805TH ST	55
449+94	RT	30
485+60	RT	75
555+62	690TH ST RT	60
579+22	LT & RT	85
607+85	650TH ST RT	55
641+70	RT	120
662+34	LT & RT	75
689+78	LT & RT	195
727+05	LT & RT	140
735+00	LT	40
772+60	525TH ST	75
782+75	RT	65
792+85	LT	60
	UNDISTRIBUTED	120
ITEM TOTAL		2500

REPAIRING CULVERT PIPE LINERS		SPV.0060.01
STATION TO STATION	LOCATION	EACH
465+15	MAINLINE	1
598+95	MAINLINE	1
662+72	MAINLINE	1
662+79	MAINLINE	1
672+17	MAINLINE	1
672+22	MAINLINE	1
682+90	MAINLINE	1
726+15	MAINLINE	1
ITEM TOTAL		8

PREPARATION OF FOUNDATION FOR ASPHALTIC PAVING SPECIAL		SPV.0105.01
STATION TO STATION	LOCATION	LS
211+25 TO 818+35	PROJECT	1
ITEM TOTAL		1

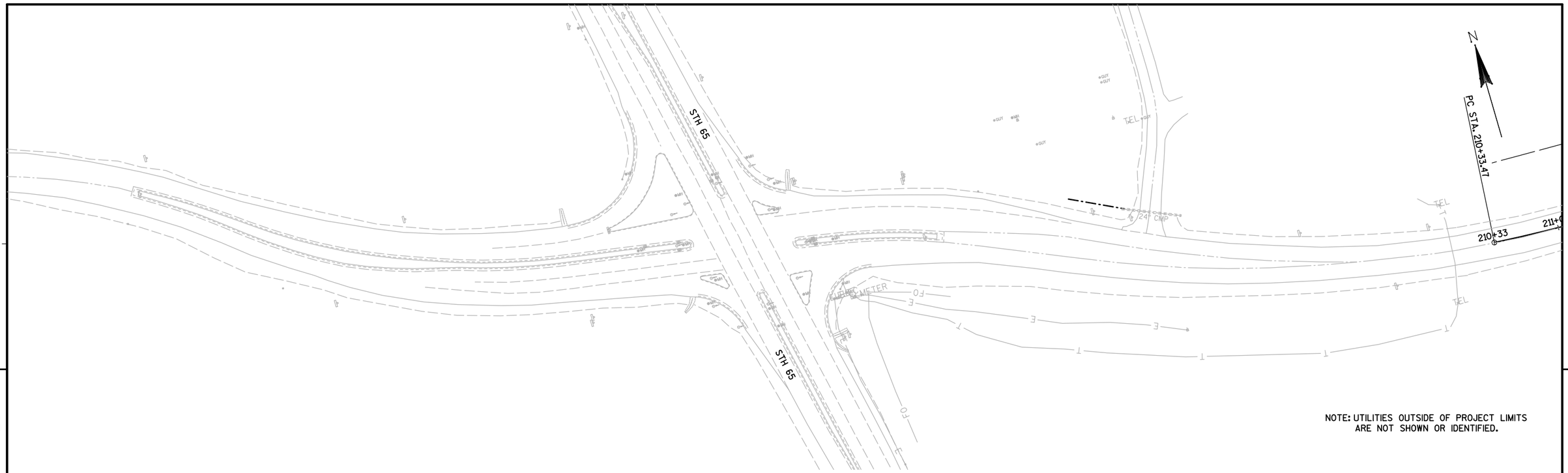
MATERIAL TRANSFER VEHICLE		SPV.0105.02
STATION TO STATION	LOCATION	LS
211+25 TO 818+35	PROJECT	1
ITEM TOTAL		1

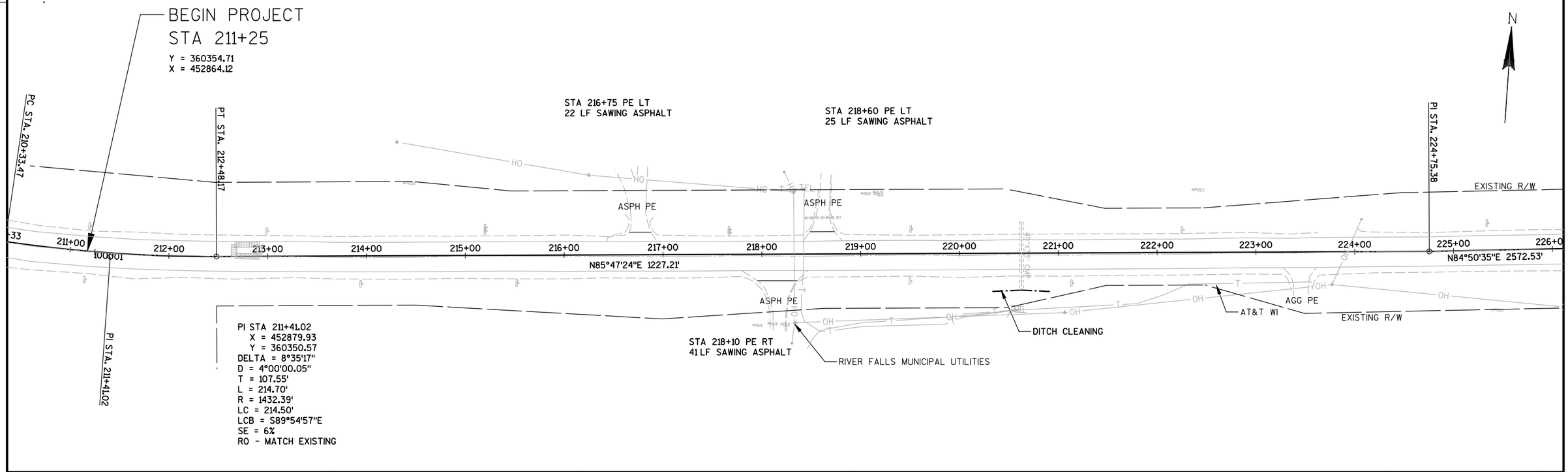
MILLING AND REMOVING TEMPORARY JOINT		SPV.0105.03
STATION TO STATION	LOCATION	LS
211+25 TO 818+35	PROJECT	1
ITEM TOTAL		1

HMA PAVEMENT TYPE 5MT5834H SPECIAL		SPV.0195.01
STATION TO STATION	LOCATION	TON
211+25 TO 818+35	STH 29	11610
260+57	900TH ST	160
311+50	862ND ST	5
322+80	850TH ST	135
392+40	805TH ST	15
414+07	790TH ST	25
443+55	770TH ST	20
486+00	CTH W	110
528+78	710TH ST	35
555+15	690TH ST	140
607+60	650TH ST	135
646+86	620TH ST	35
677+04	597TH ST	30
686+57	590TH ST	30
726+67	CTH Y	160
772+54	525TH ST	35
792+30	510TH ST	70
ITEM TOTAL		12750

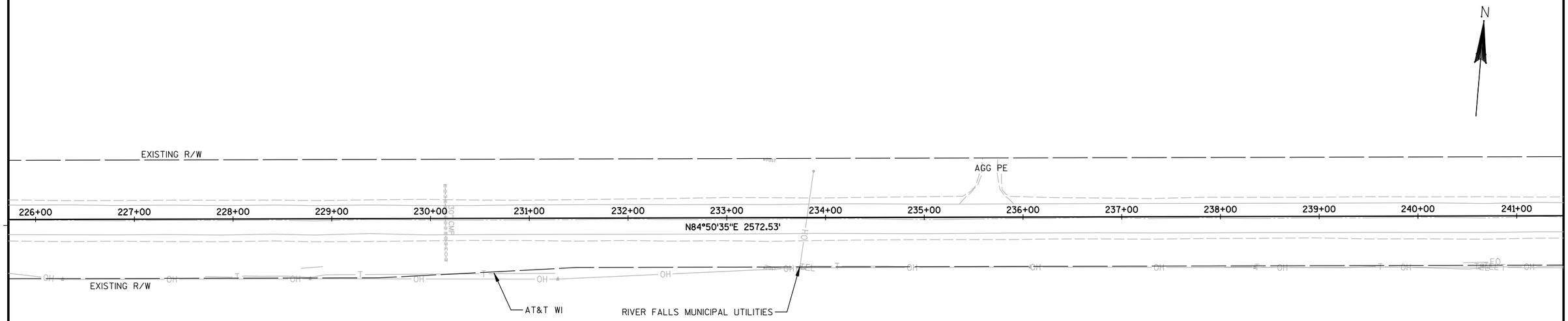
HMA PAVEMENT TYPE SMA-SPECIAL		SPV.0195.02
STATION TO STATION	LOCATION	TON
211+25 TO 818+35	STH 29	17410
ITEM TOTAL		17410

SMA PAVEMENT COMPACTION ACCEPTANCE		SPV.0195.03
STATION TO STATION	LOCATION	TON
211+25 TO 818+35	STH 29	17410
ITEM TOTAL		17410



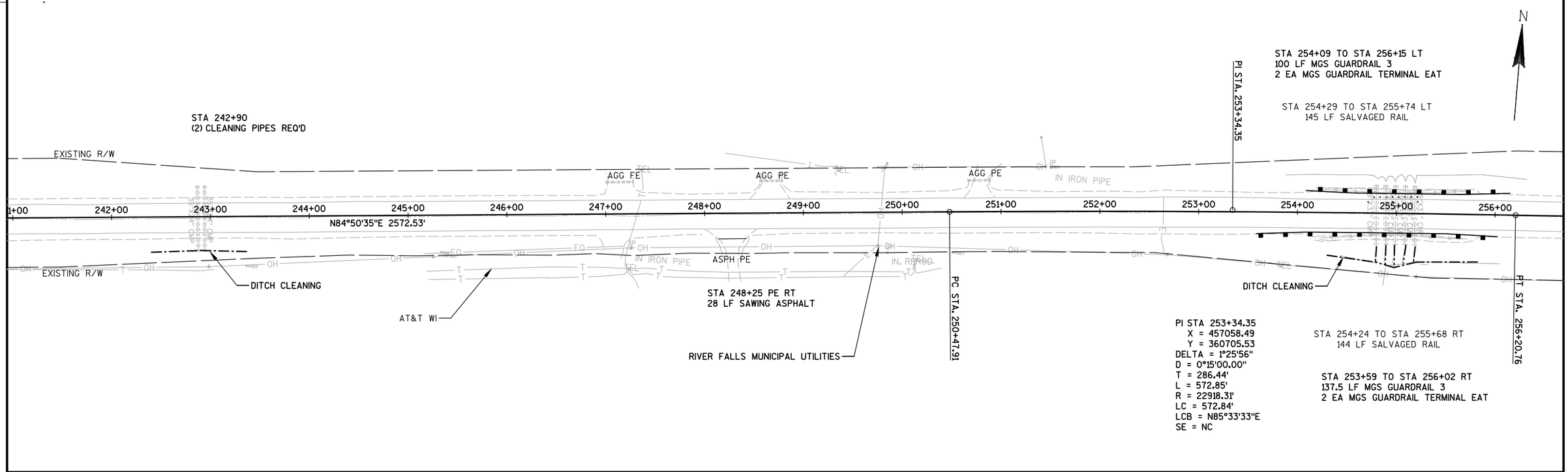


PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 44	E

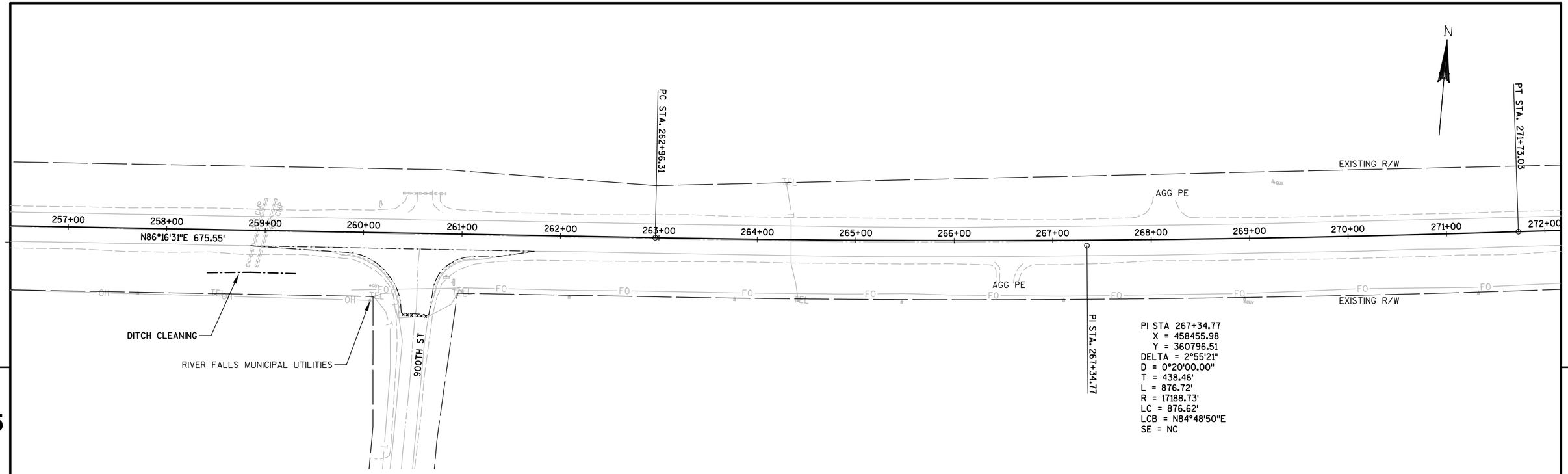


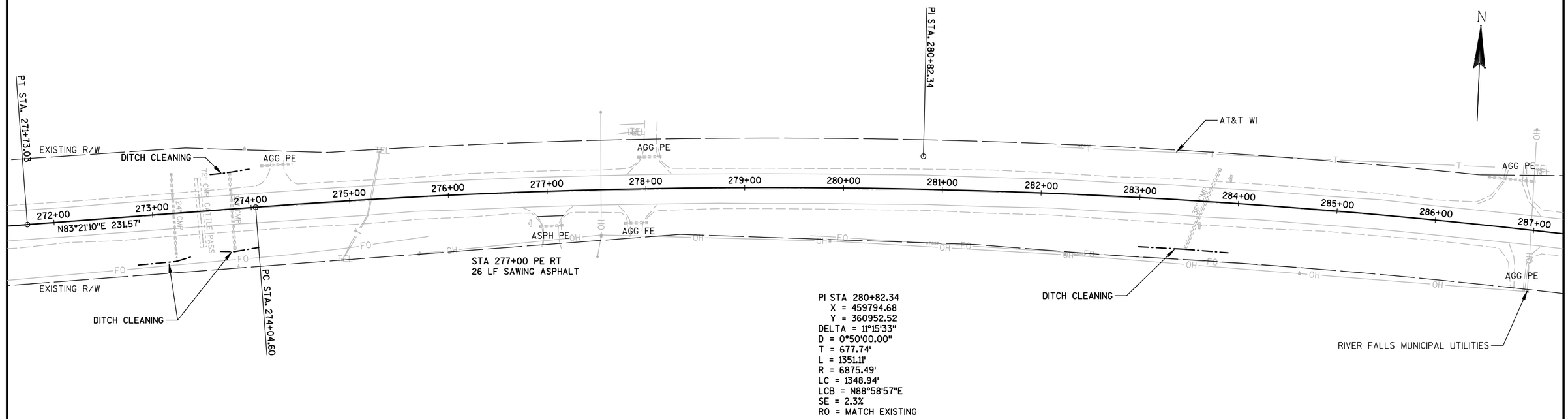
5

5



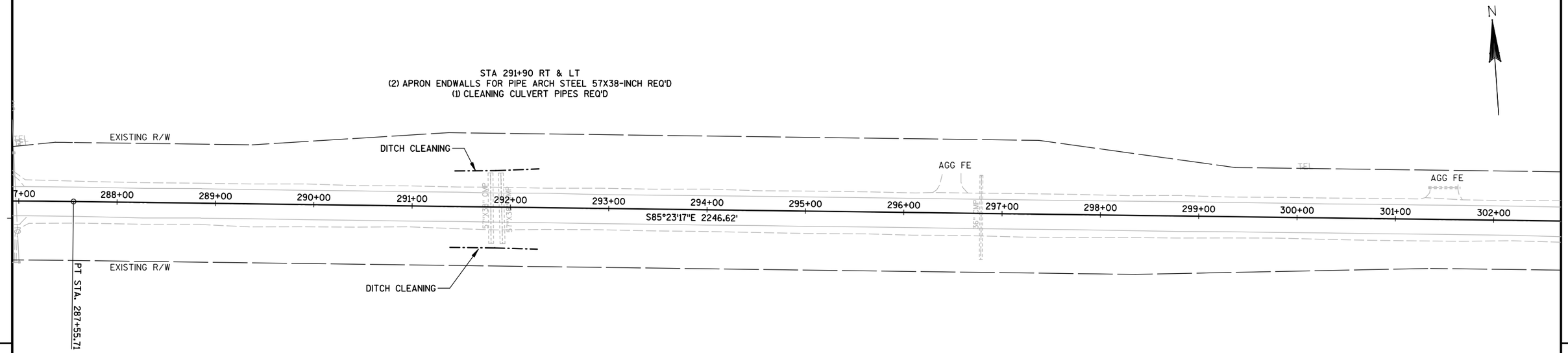
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 45	E

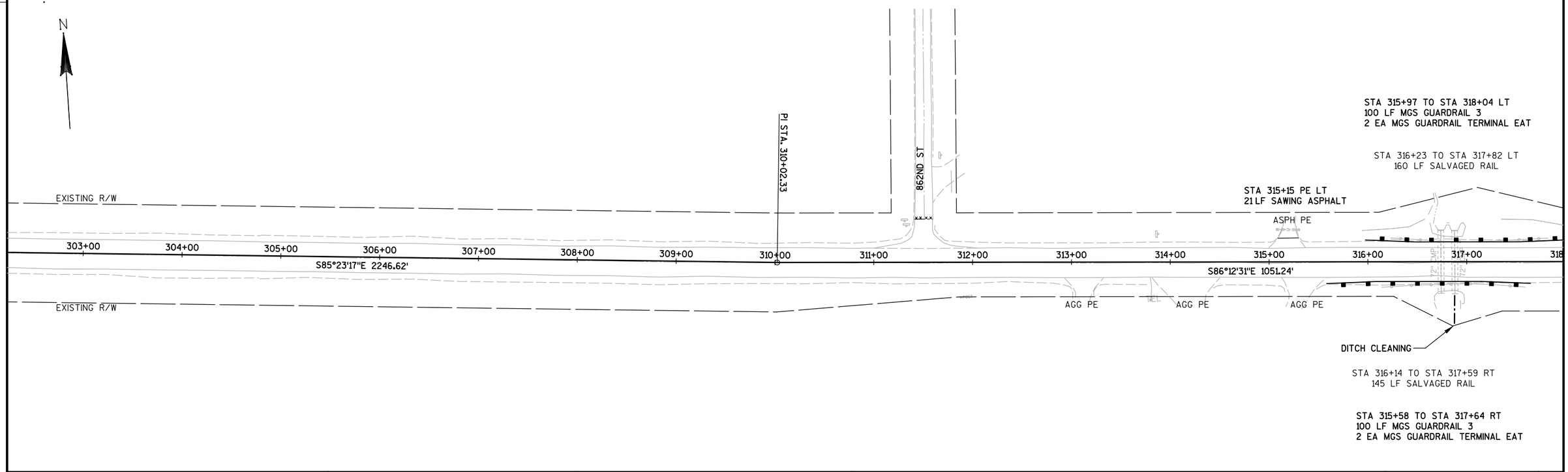




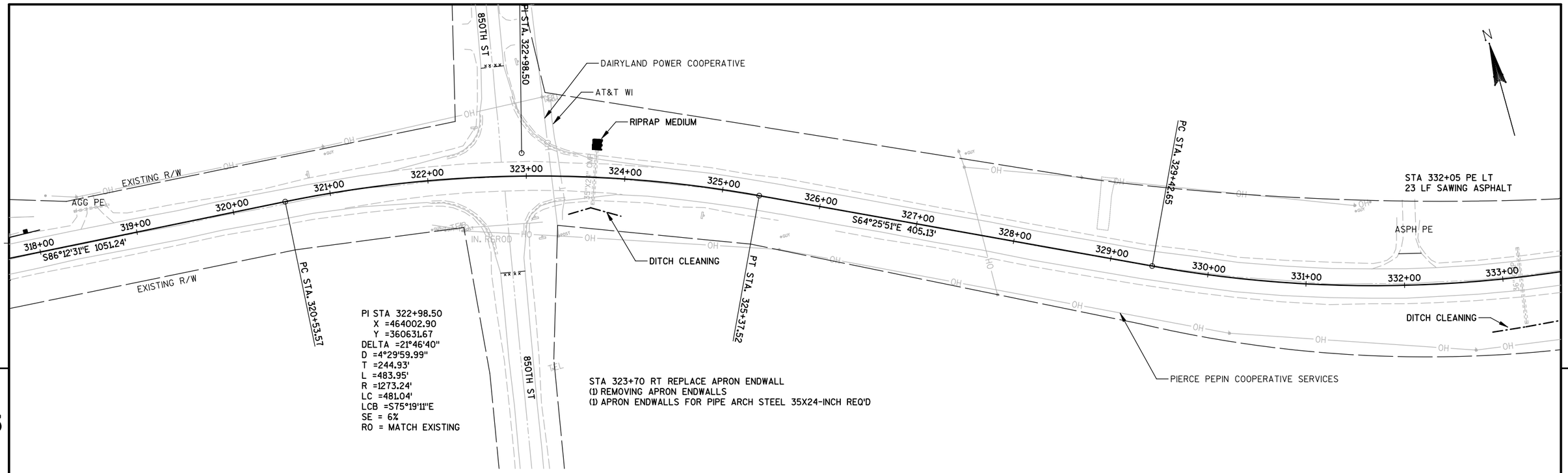
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 46	E

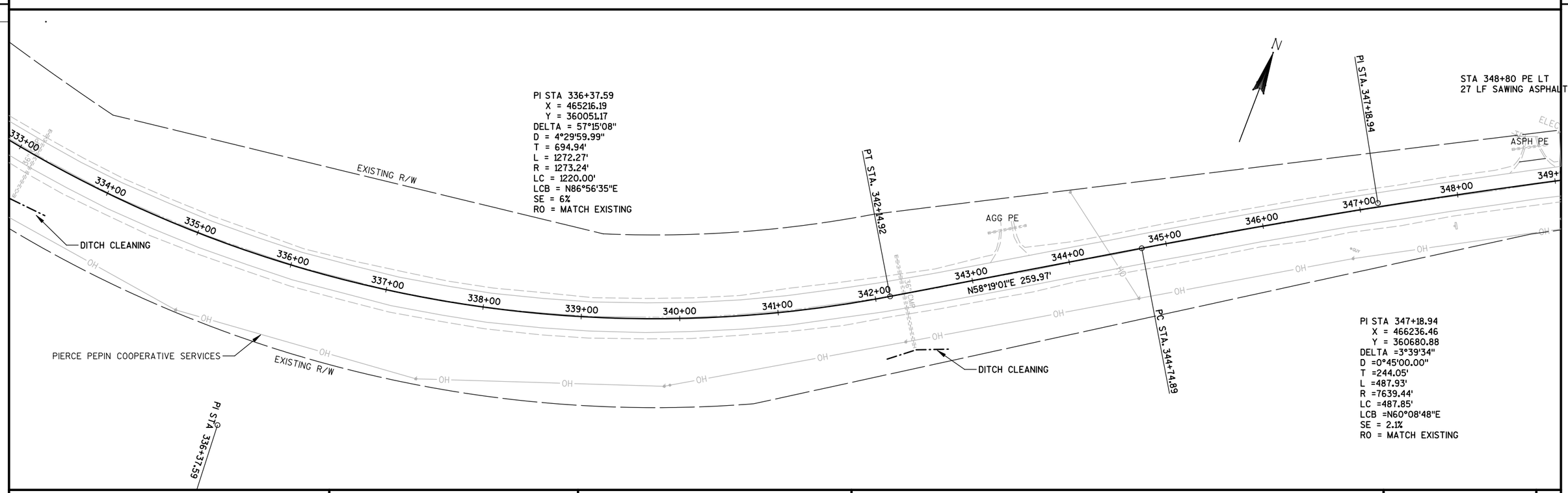
STA 291+90 RT & LT
(2) APRON ENDWALLS FOR PIPE ARCH STEEL 57X38-INCH REQ'D
(1) CLEANING CULVERT PIPES REQ'D



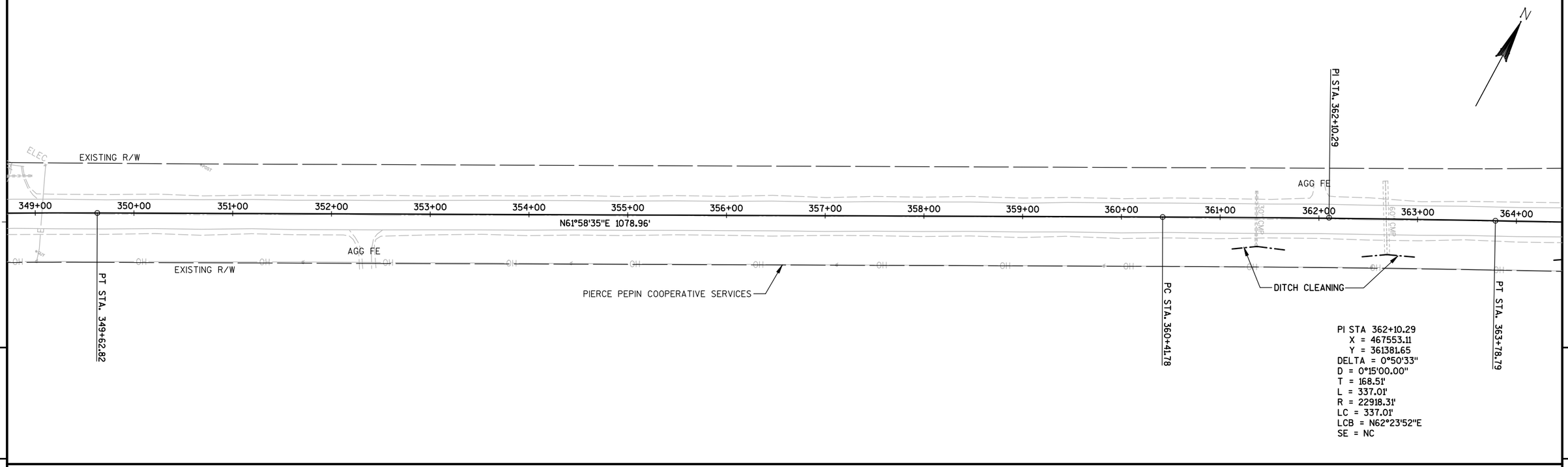


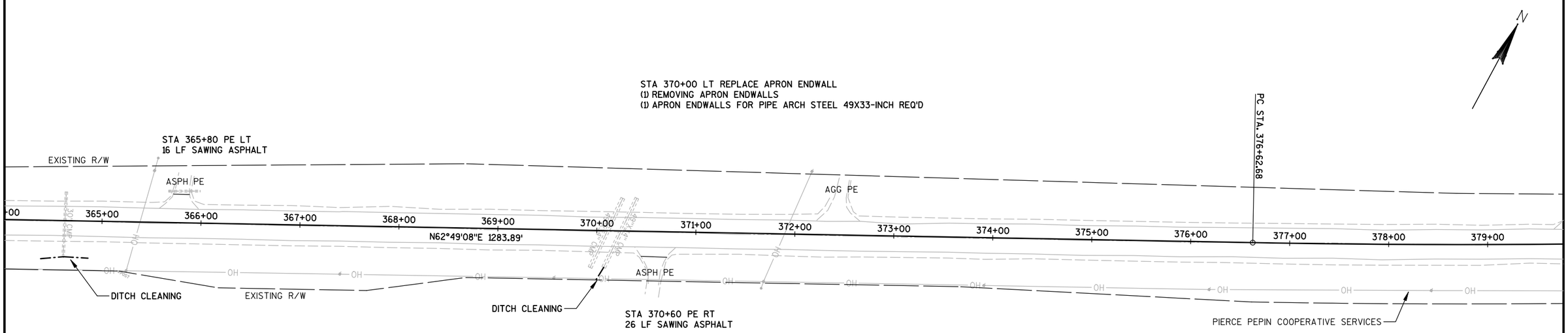
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 47	E



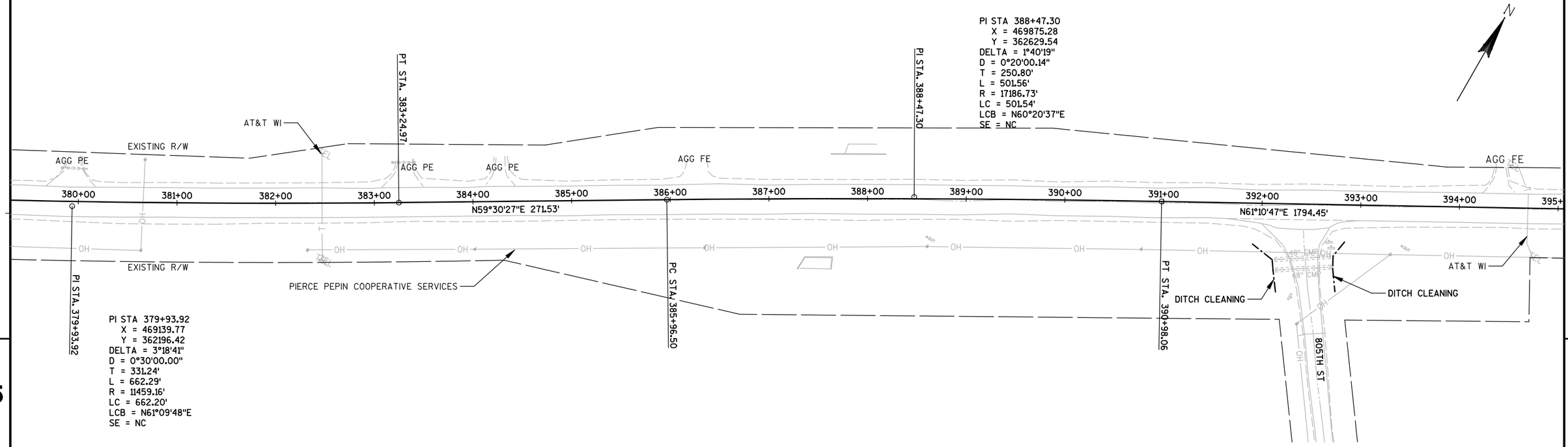


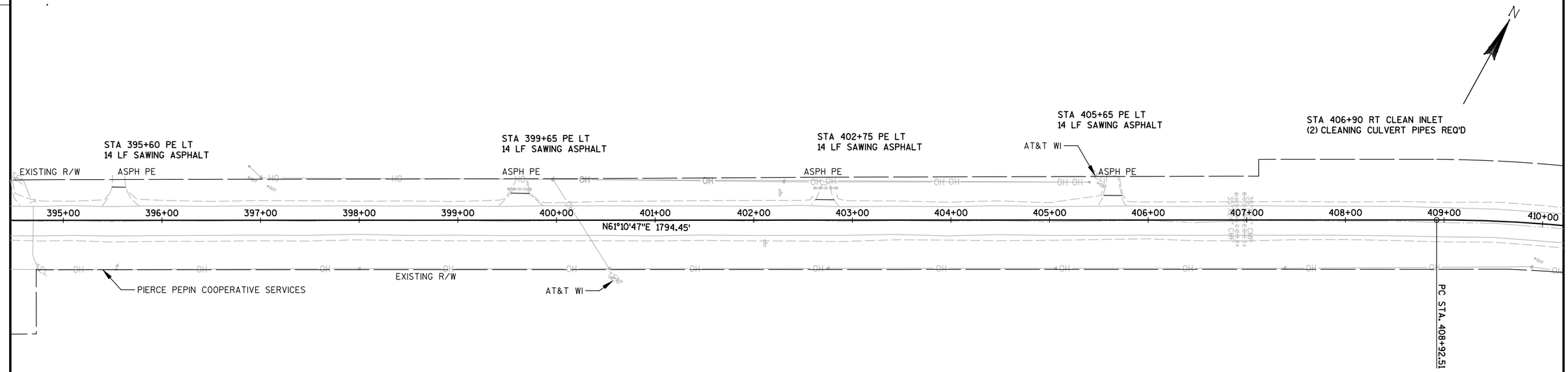
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 48	E





PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 49	E

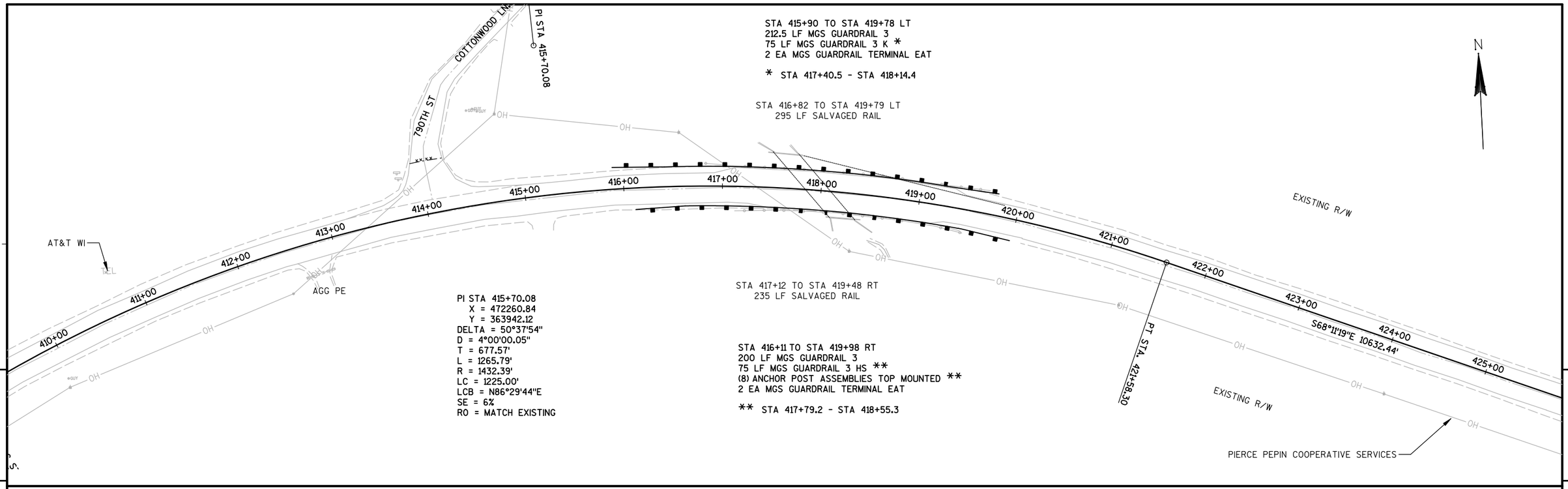




PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 50	E

FILE NAME : f:\drawings\2012-123\0001\5006.dgn PLOT DATE : 2/17/2016 PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : 1 in : 100 ft

WISDOT/CADDS SHEET 44



STA 415+90 TO STA 419+78 LT
212.5 LF MGS GUARDRAIL 3
75 LF MGS GUARDRAIL 3 K *
2 EA MGS GUARDRAIL TERMINAL EAT

* STA 417+40.5 - STA 418+14.4

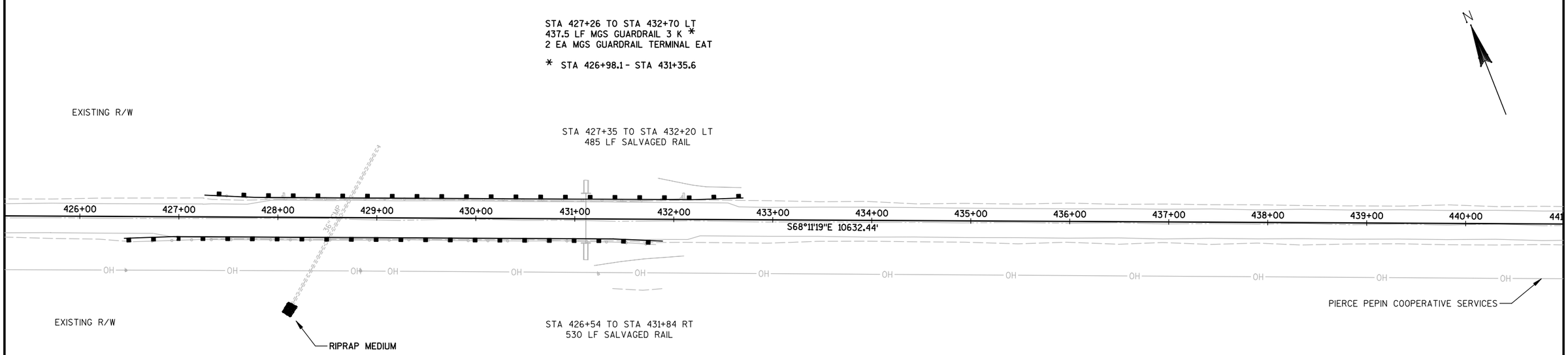
STA 416+82 TO STA 419+79 LT
295 LF SALVAGED RAIL

PI STA 415+70.08
X = 472260.84
Y = 363942.12
DELTA = 50°37'54"
D = 4°00'00.05"
T = 677.57'
L = 1265.79'
R = 1432.39'
LC = 1225.00'
LCB = N86°29'44"E
SE = 6%
RO = MATCH EXISTING

STA 417+12 TO STA 419+48 RT
235 LF SALVAGED RAIL

STA 416+11 TO STA 419+98 RT
200 LF MGS GUARDRAIL 3
75 LF MGS GUARDRAIL 3 HS **
(8) ANCHOR POST ASSEMBLIES TOP MOUNTED **
2 EA MGS GUARDRAIL TERMINAL EAT

** STA 417+79.2 - STA 418+55.3



STA 427+26 TO STA 432+70 LT
437.5 LF MGS GUARDRAIL 3 K *
2 EA MGS GUARDRAIL TERMINAL EAT

* STA 426+98.1 - STA 431+35.6

STA 427+35 TO STA 432+20 LT
485 LF SALVAGED RAIL

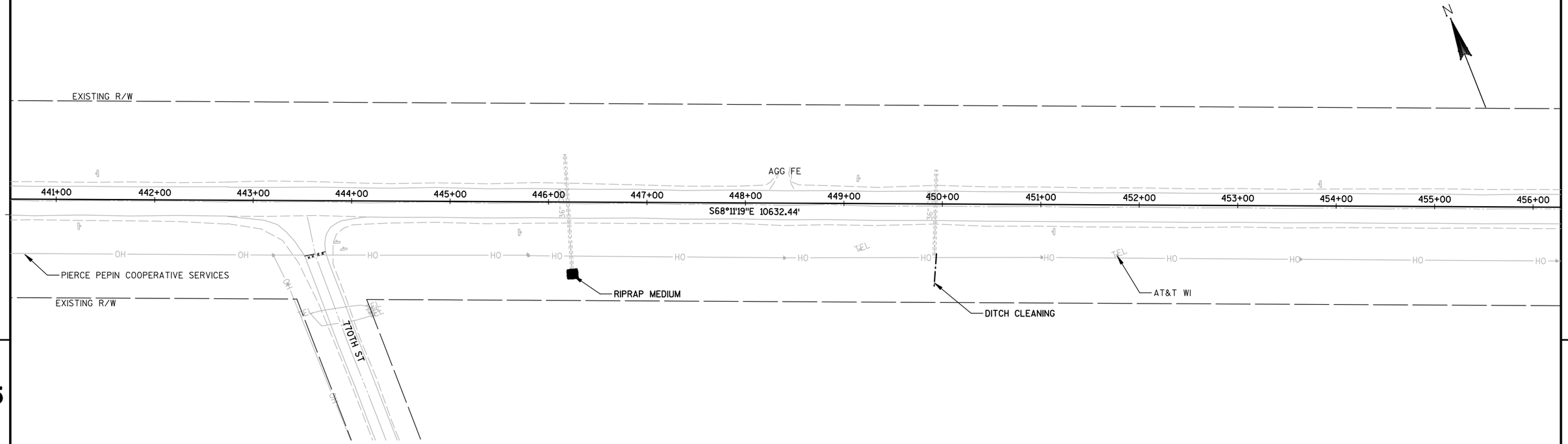
STA 426+54 TO STA 431+84 RT
530 LF SALVAGED RAIL

STA 429+00 RT RE-INSTALL APRON ENDWALL
(1) APRON ENDWALLS FOR CULVERT PIPE SALVAGED 36-INCH REQ'D

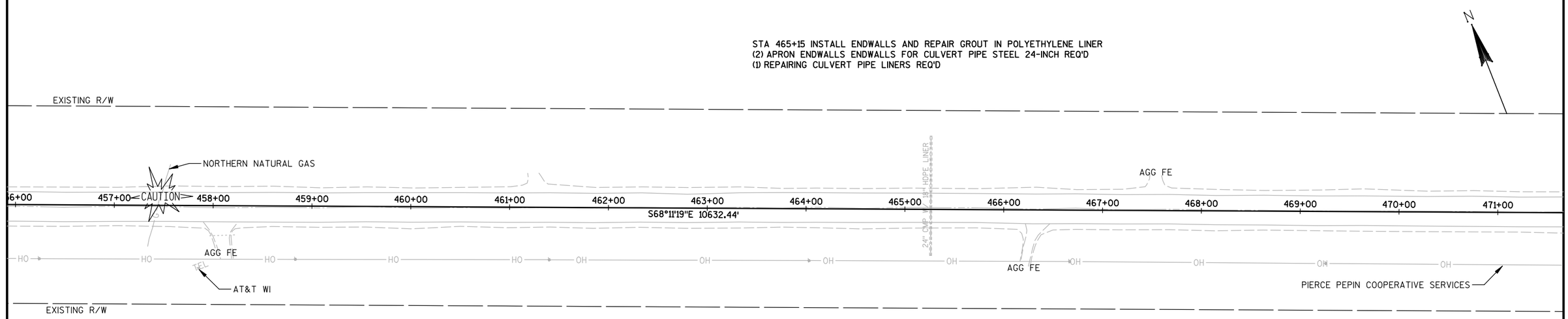
STA 427+26 TO STA 432+69.8 RT
437.5 LF MGS GUARDRAIL 3 K *
2 EA MGS GUARDRAIL TERMINAL EAT

* STA 427+79.2 - STA 432+16.7

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 51	E



STA 465+15 INSTALL ENDWALLS AND REPAIR GROUT IN POLYETHYLENE LINER
(2) APRON ENDWALLS ENDWALLS FOR CULVERT PIPE STEEL 24-INCH REQ'D
(1) REPAIRING CULVERT PIPE LINERS REQ'D



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 52	E

STA 477+92 - 485+52 LT
675 LF STEEL PLATE BEAM GUARD CLASS A
87.5 LF STEEL PLATE BEAM GUARD SHORT RADIUS (45'RAD.)
2 EA STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL

STA 485+43 LT & RT INSTALL APRON ENDWALLS
(2) APRON ENDWALLS FOR CULVERT PIPE STEEL 72-INCH REQ'D

STA 479+13 TO STA 485+50 LT
670 LF SALVAGED RAIL

EXISTING R/W

472+00 473+00 474+00 475+00 476+00 477+00 478+00 479+00 480+00 481+00 482+00 483+00 484+00 485+00 486+00

S68°11'19"E 10632.44'

PIERCE PEPIN COOPERATIVE SERVICES

AGG PE

DITCH CLEANING

EXISTING R/W

CTH W

STA 478+21 TO STA 478+95 RT
80 LF SALVAGED RAIL

STA 479+51 TO STA 486+09 RT
685 LF SALVAGED RAIL

STA 477+46 - 478+95 RT
112.5 LF STEEL PLATE BEAM GUARD CLASS A
12.5 LF STEEL PLATE BEAM GUARD SHORT RADIUS (8'RAD.)
1 EA STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
1 EA STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STA 479+41 - 486+17 RT
662.5 LF STEEL PLATE BEAM GUARD CLASS A
12.5 LF STEEL PLATE BEAM GUARD SHORT RADIUS (8'RAD.)
62.5 LF STEEL PLATE BEAM GUARD SHORT RADIUS (50'RAD.)
2 EA STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

5

5

STA 489+45 TO STA 490+35 LT
37.5 LF MGS THRIE BEAM TRANSITION
1 EA MGS GUARDRAIL TERMINAL EAT

STA 490+76 TO STA 491+67 LT
37.5 LF MGS THRIE BEAM TRANSITION
1 EA MGS GUARDRAIL TERMINAL EAT

STA 498+47 TO STA 505+41
587.5 LF MGS GUARDRAIL 3
2 EA MGS GUARDRAIL TERMINAL EAT

EXISTING R/W

STA 489+60 TO STA 491+51 LT
195 LF SALVAGED RAIL

STA 498+49 TO STA 505+42 LT
695 LF SALVAGED RAIL

CTH W

486+00 487+00 488+00 489+00 490+00 491+00 492+00 493+00 494+00 495+00 496+00 497+00 498+00 499+00 500+00

S68°11'19"E 10632.44'

AT&T WI

STA 489+56 TO STA 491+46 RT
190 LF SALVAGED RAIL

B-47-631
EXCEPTION TO NET ℄
STA 490+31.55 - STA 490+73.83

PIERCE PEPIN COOPERATIVE SERVICES

ASPH PE

STA 500+00 PE RT
31 LF SAWING ASPHALT

EXISTING R/W

STA 489+39 TO STA 490+29 RT
37.5 LF MGS THRIE BEAM TRANSITION
1 EA MGS GUARDRAIL TERMINAL EAT

STA 490+71 TO STA 491+61 RT
37.5 LF MGS THRIE BEAM TRANSITION
1 EA MGS GUARDRAIL TERMINAL EAT

CTH W

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 53	E

STA 503+74 LT INSTALL APRON ENDWALL
(1) APRON ENDWALLS FOR CULVERT PIPE STEEL 30-INCH REQ'D

SEE PREVIOUS SHEET FOR MGS INSTALLATION LIMITS

SEE PREVIOUS SHEET FOR BEAMGUARD REMOVAL LIMITS

EXISTING R/W

AT&T WI

AGG PE

501+00 502+00 503+00 504+00 505+00 506+00 507+00 508+00 509+00 510+00 511+00 512+00 513+00 514+00 515+00 516+00

30" CMP

S68°11'19"E 10632.44'

OH

AGG FE

PIERCE PEPIN COOPERATIVE SERVICES

EXISTING R/W

5

5

STA 528+40 & 528+45 LT & RT INSTALL APRON ENDWALLS
(4) APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH REQ'D

STA 524+55 INSTALL CULVERT LINER
78 LF CULVERT PIPE LINERS 24-INCH REQ'D
(2) APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH REQ'D

PC STA. 527+90.74

EXISTING R/W

AT&T WI

AGG FE

516+00 517+00 518+00 519+00 520+00 521+00 522+00 523+00 524+00 525+00 526+00 527+00 528+00 529+00 530+00 531+00

S68°11'19"E 10632.44'

24" CMP

24" CMP W/ 18" HDPE LINER

24" CMP W/ 18" HDPE LINER

OH

AGG PE

AGG FE

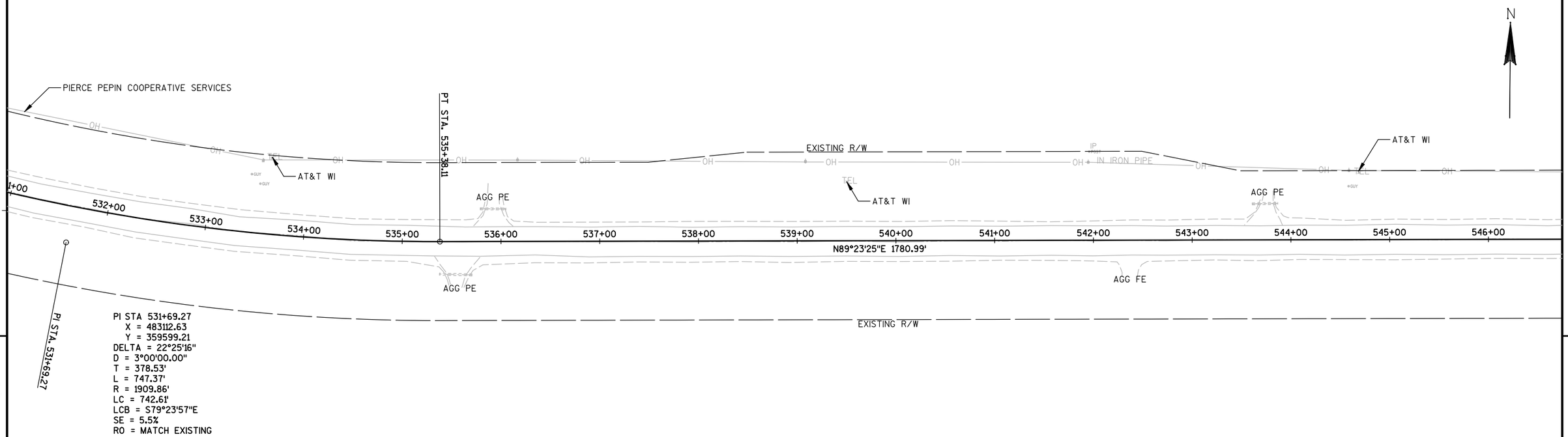
AT&T WI

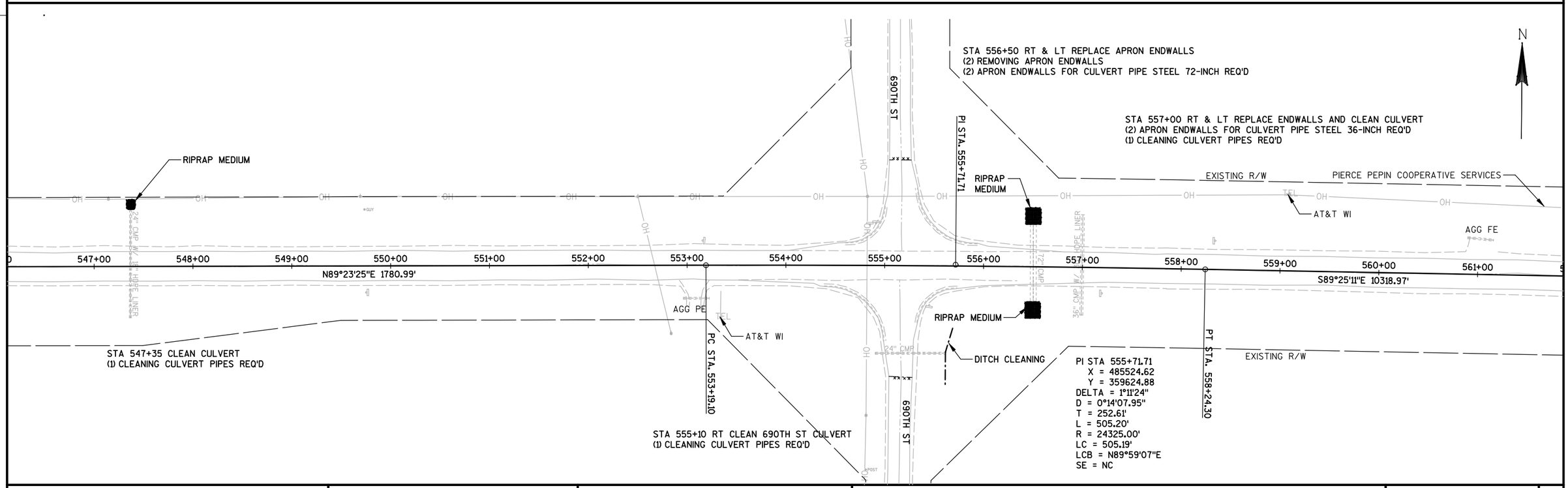
PIERCE PEPIN COOPERATIVE SERVICES

TENTH ST

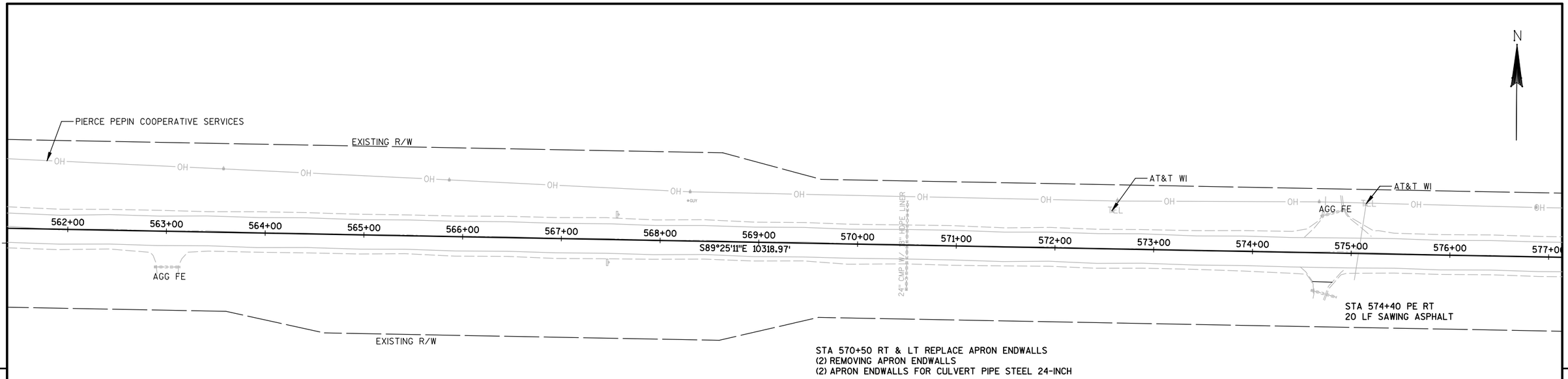
EXISTING R/W

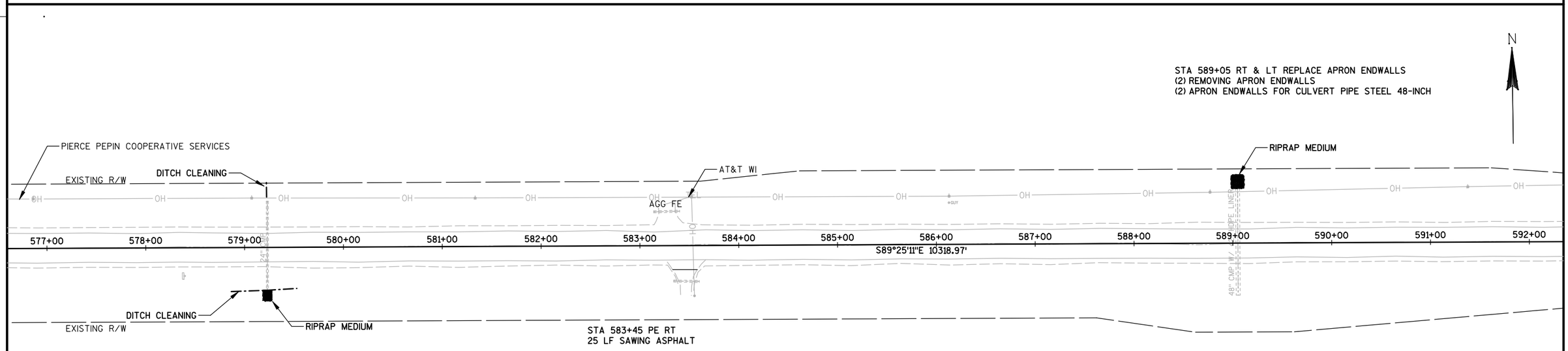
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 54	E





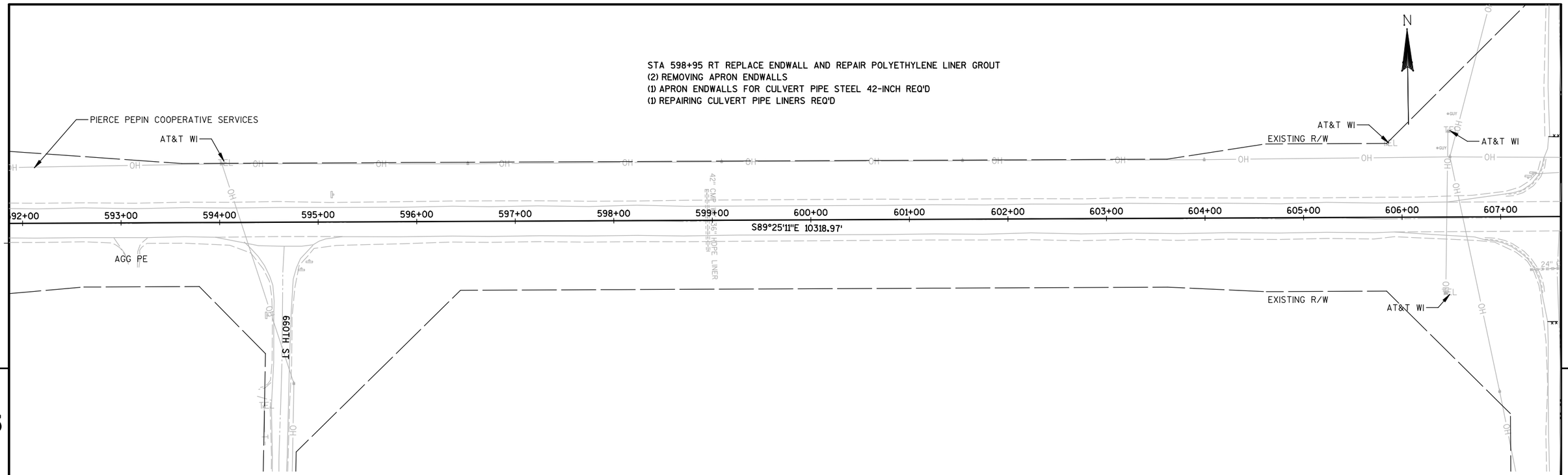
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 55	E





PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 56	E

STA 598+95 RT REPLACE ENDWALL AND REPAIR POLYETHYLENE LINER GROUT
(2) REMOVING APRON ENDWALLS
(1) APRON ENDWALLS FOR CULVERT PIPE STEEL 42-INCH REQ'D
(1) REPAIRING CULVERT PIPE LINERS REQ'D



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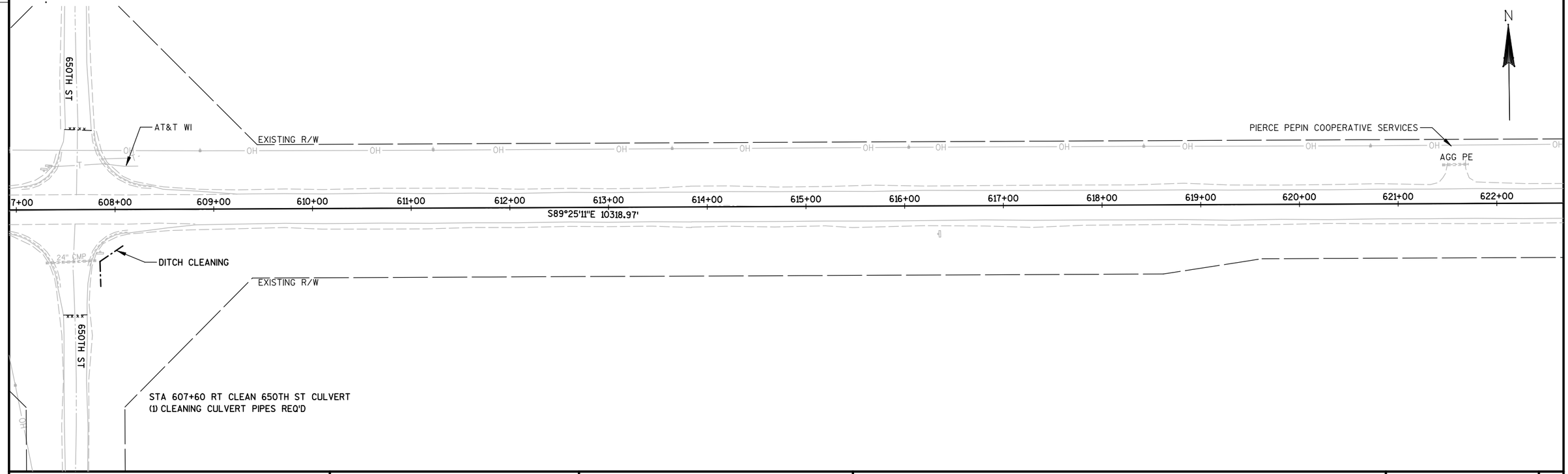


STA 607+60 RT CLEAN 650TH ST CULVERT
(1) CLEANING CULVERT PIPES REQ'D

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 57	E

STA 624+60 LT REPLACE APRON ENDWALL
(1) REMOVING APRON ENDWALLS
(1) APRON ENDWALLS FOR CULVERT PIPE 36-INCH REQ'D
57 LF CULVERT PIPE LINERS 36-INCH REQ'D

635TH ST

STA 633+40 RT & LT REPLACE APRON ENDWALLS
(2) REMOVING APRON ENDWALLS REQ'D
(2) APRON ENDWALLS FOR CULVERT PIPE 24-INCH REQ'D

N

PIERCE PEPIN COOPERATIVE SERVICES

AT&T WI

RIPRAP MEDIUM

EXISTING R/W

TEL

OH

AGG FE

623+00 624+00 625+00 626+00 627+00 628+00 629+00 630+00 631+00 632+00 633+00 634+00 635+00 636+00 637+00 63

36" CMP

S89°25'11"E 10318.97'

24" CMP

AGG PE

AT&T WI

EXISTING R/W

5

5

N

EXISTING R/W

AT&T WI

AT&T WI

PIERCE PEPIN COOPERATIVE SERVICES

OH

AGG PE

AGG FE

638+00 639+00 640+00 641+00 642+00 643+00 644+00 645+00 646+00 647+00 648+00 649+00 650+00 651+00 652+00 653+00

24" CMP

S89°25'11"E 10318.97'

AGG FE

AGG FE

DITCH CLEANING

620TH ST

GUY

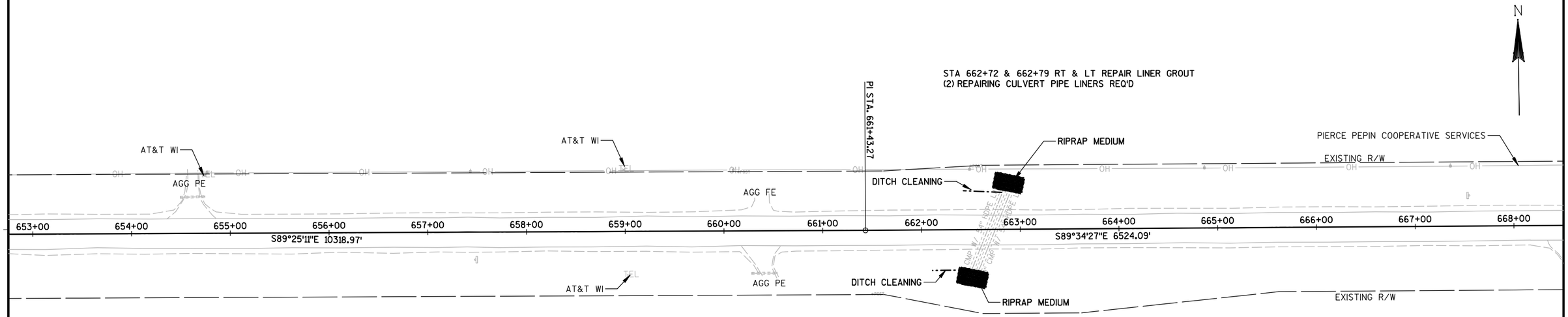
EXISTING R/W

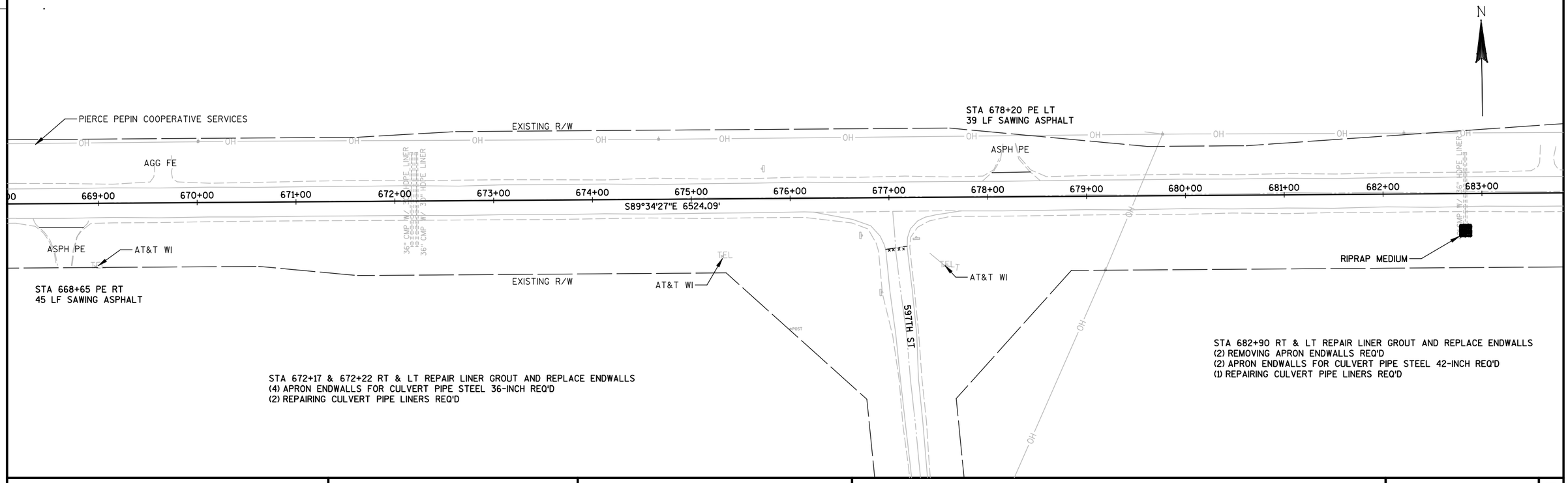
STA 641+25 FE RT
DO NOT IMPROVE

HI VIEW RD.

STA 641+70 RT CLEAN CULVERT AND REPLACE APRON ENDWALL
(1) REMOVING APRON ENDWALLS REQ'D
(1) APRON ENDWALLS FOR CULVERT PIPE 24-INCH REQ'D
(1) CLEANING CULVERT PIPES REQ'D

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 58	E

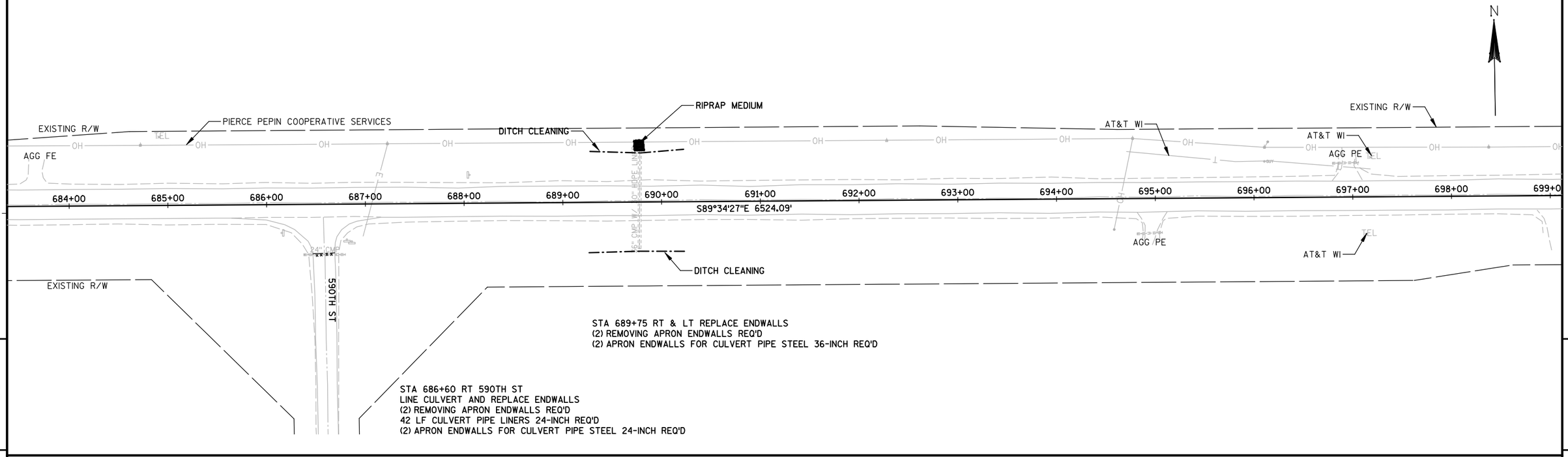


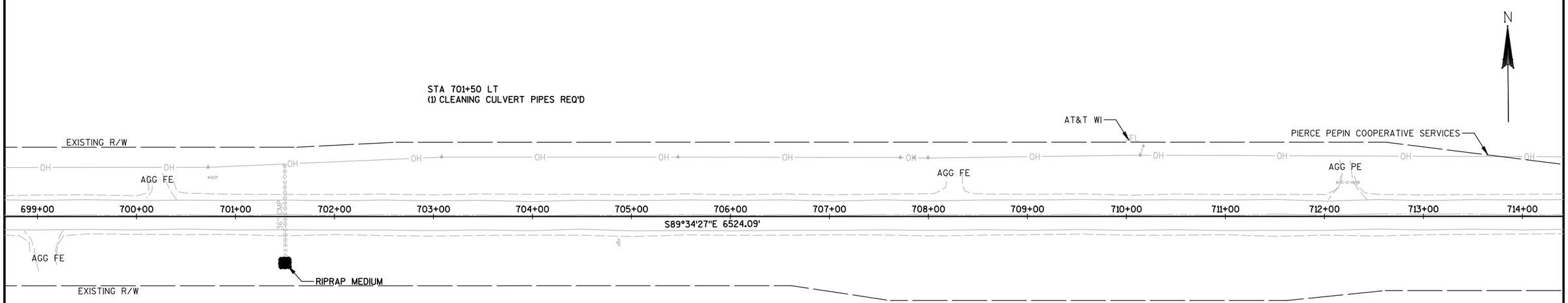


PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 59	E

FILE NAME : f:\drawings\2012-123\0001\5015.dgn PLOT DATE : 2/17/2016 PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : 1 in : 100 ft

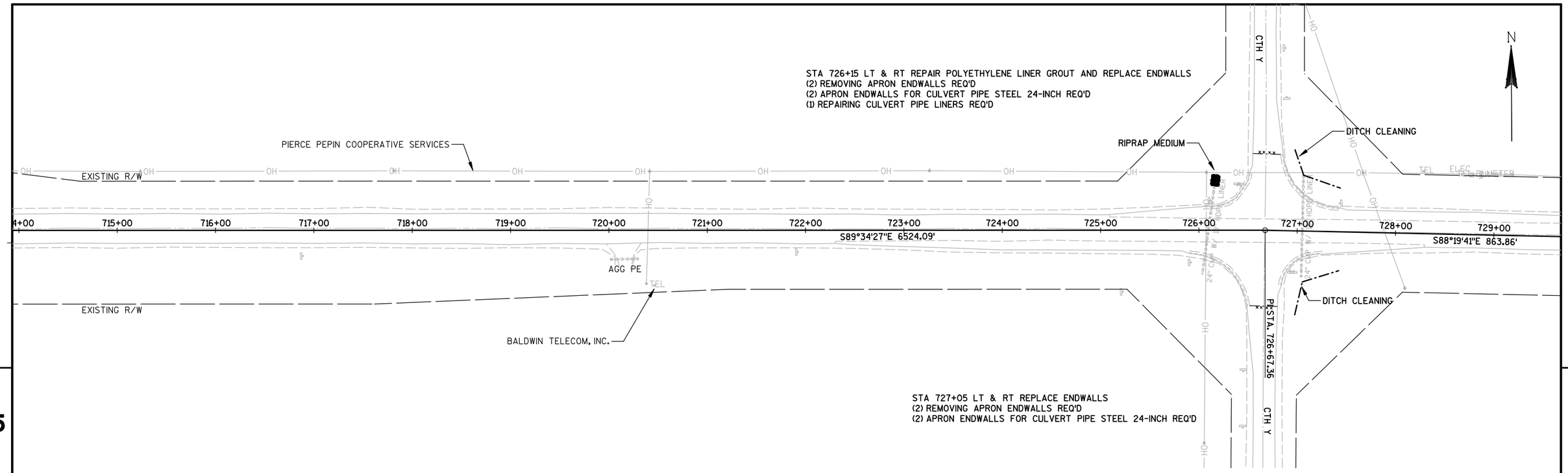
WISDOT/CADDS SHEET 44





PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 60	E

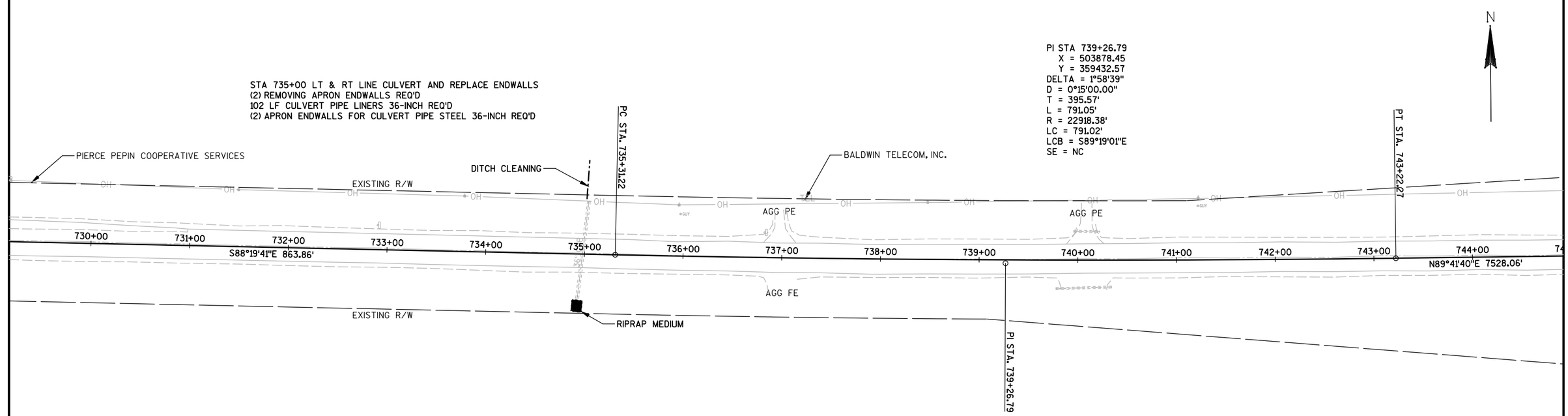
STA 726+15 LT & RT REPAIR POLYETHYLENE LINER GROUT AND REPLACE ENDWALLS
(2) REMOVING APRON ENDWALLS REQ'D
(2) APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH REQ'D
(1) REPAIRING CULVERT PIPE LINERS REQ'D



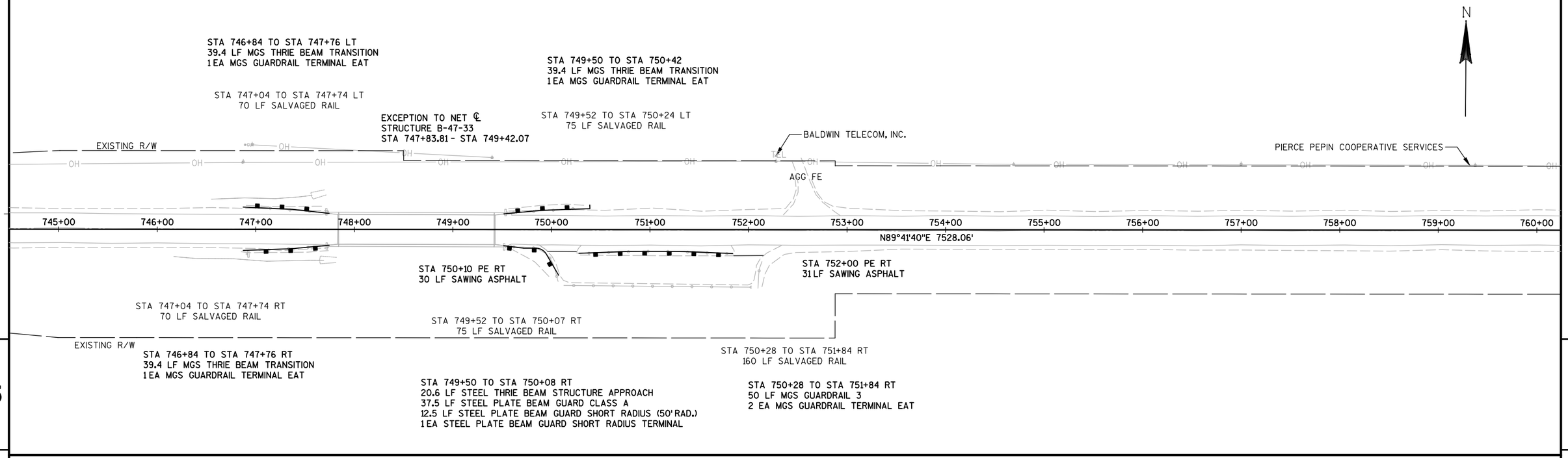
STA 727+05 LT & RT REPLACE ENDWALLS
(2) REMOVING APRON ENDWALLS REQ'D
(2) APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH REQ'D

STA 735+00 LT & RT LINE CULVERT AND REPLACE ENDWALLS
(2) REMOVING APRON ENDWALLS REQ'D
102 LF CULVERT PIPE LINERS 36-INCH REQ'D
(2) APRON ENDWALLS FOR CULVERT PIPE STEEL 36-INCH REQ'D

PI STA 739+26.79
X = 503878.45
Y = 359432.57
DELTA = 1°58'39"
D = 0°15'00.00"
T = 395.57'
L = 791.05'
R = 22918.38'
LC = 791.02'
LCB = S89°19'01"E
SE = NC



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 61	E



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 62	E

STA 782+75 LT & RT LINE PIPE CULVERT AND REPLACE APRON ENDWALLS
(2) REMOVING APRON ENDWALLS REQ'D
84 LF CULVERT PIPE LINERS 24-INCH REQ'D
(2) APRON ENDWALLS FOR CULVERT PIPE STEEL 24-INCH

N

PIERCE PEPIN COOPERATIVE SERVICES

BALDWIN TELECOM, INC.

EXISTING R/W

OH

5+00 776+00 777+00 778+00 779+00 780+00 781+00 782+00 783+00 784+00 785+00 786+00 787+00 788+00 789+00 790+00

N89°41'40"E 7528.06'

EXISTING R/W

DITCH CLEANING

5

5

N

510TH ST

TEL

GUY

OH

EXISTING R/W

DITCH CLEANING

30" STEEL PIPE W/ 24" TIDE LINER

PIERCE PEPIN COOPERATIVE SERVICES

791+00 792+00 793+00 794+00 795+00 796+00 797+00 798+00 799+00 800+00 801+00 802+00 803+00 804+00 805+00 806

N89°41'40"E 7528.06'

AGG FE

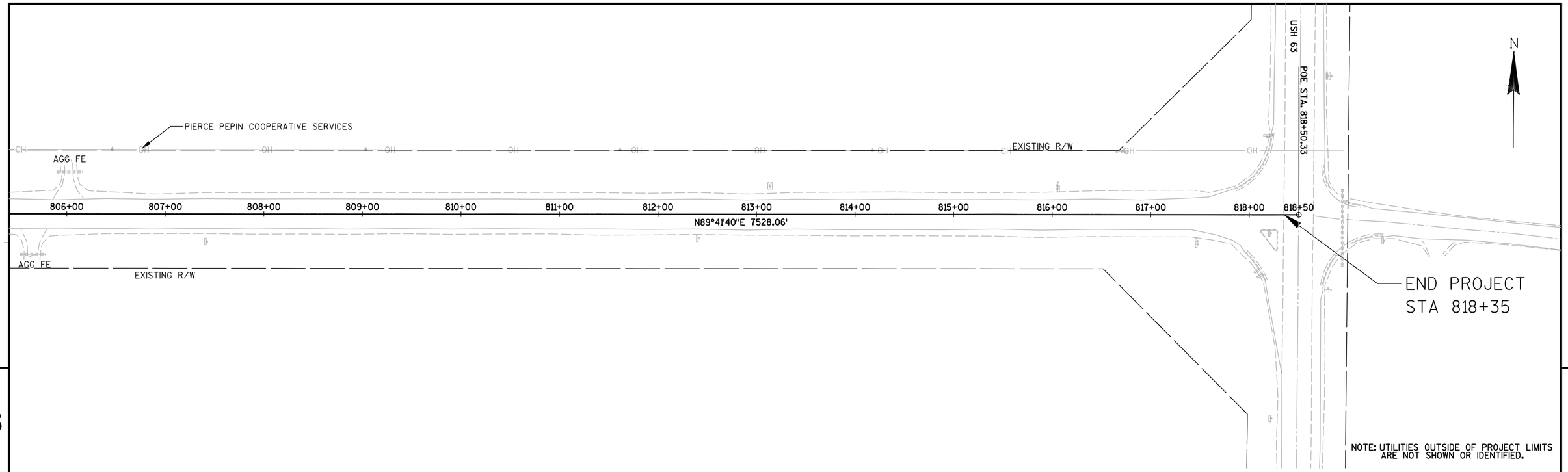
EXISTING R/W

BALDWIN TELECOM, INC.

510TH ST

STA 792+85 LT & RT CLEAN CULVERT AND REPLACE APRON ENDWALLS
(2) REMOVING APRON ENDWALLS REQ'D
(1) CLEANING CULVERT PIPES REQ'D
(2) APRON ENDWALLS FOR CULVERT PIPE STEEL 30-INCH

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 63	E



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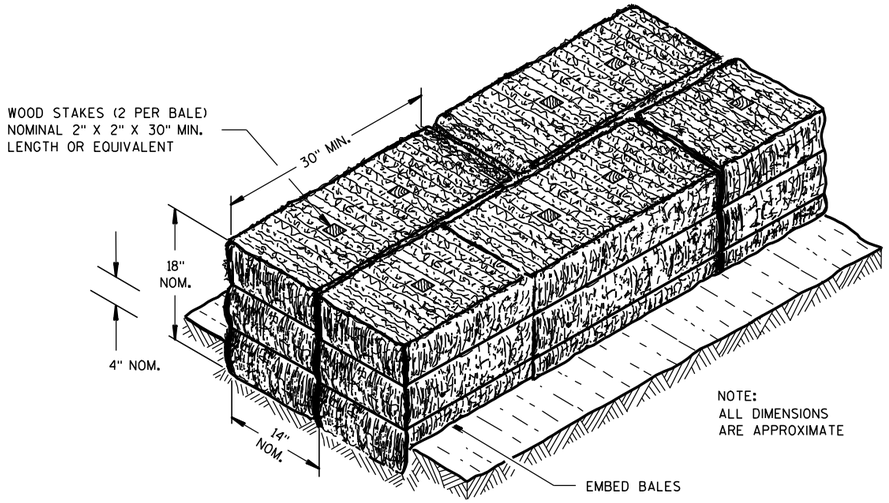
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	PLAN	SHEET 64	E

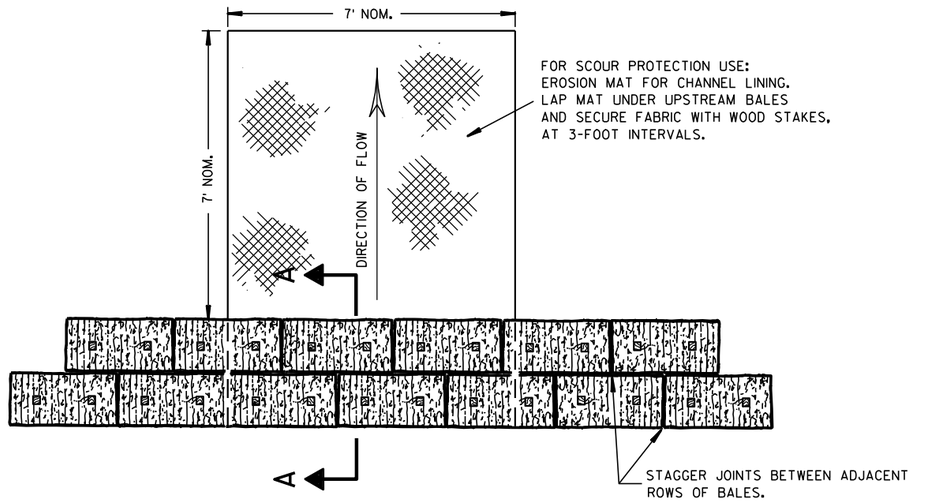
Standard Detail Drawing List

08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08F01-11	APRON ENDWALLS FOR CULVERT PIPE
08F02-01	APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE
13A11-02A	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
13A11-02B	2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING
14B15-08A	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-08B	STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS
14B15-08C	STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS
14B18-06A	STEEL PLATE BEAM GUARD, CLASS "A" (AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS)
14B20-11A	STEEL THRIE BEAM STRUCTURE APPROACH
14B20-11B	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS
14B20-11C	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO VERTICAL FACED PARAPETS
14B20-11D	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SLOPED END PARAPETS
14B20-11E	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPES "F" AND "W"
14B20-11F	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPE "M"
14B20-11G	STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL
14B20-11H	STEEL THRIE BEAM STRUCTURE APPROACH, SINGLE SLOPE ATTACHMENT
14B24-08A	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-08B	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B24-08C	STEEL PLATE BEAM GUARD ENERGY ABSORBING TERMINAL
14B27-01A	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01B	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B27-01C	STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL
14B29-01	SAFETY EDGE
14B42-03A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-03B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-03C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-02A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-04A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04K	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04L	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B51-01A	ANCHOR POST ASSEMBLY TOP-MOUNTED
14B51-01B	ANCHOR POST ASSEMBLY TOP-MOUNTED
14B51-01C	ANCHOR POST ASSEMBLY TOP-MOUNTED
15A03-02A	FLEXIBLE MARKER POST FOR CULVERT END
15A03-02B	FLEXIBLE MARKER POST FOR CULVERT END
15C04-03	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C06-07	SIGNING & MARKING FOR TWO LANE BRIDGES
15C08-16A	PAVEMENT MARKING (MAINLINE)
15C08-16B	PAVEMENT MARKING (INTERSECTIONS)
15C08-16C	PAVEMENT MARKING (CLIMBING LANE & PASSING LANE)
15C08-16D	PAVEMENT MARKING (CLIMBING LANE & PASSING LANE)
15C08-16E	PAVEMENT MARKING (LEFT TURN LANE)
15C08-16F	PAVEMENT MARKING (ISLANDS)
15C12-04	TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)
15C19-03A	MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY
15C19-03B	MOVING PAVEMENT MARKING OPERATION MULTI-LANE UNDIVIDED ROADWAY
15C19-03C	MOVING PAVEMENT MARKING OPERATION MULTI-LANE DIVIDED ROADWAY
15C33-01	STOP LINE AND CROSSWALK PAVEMENT MARKING
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY

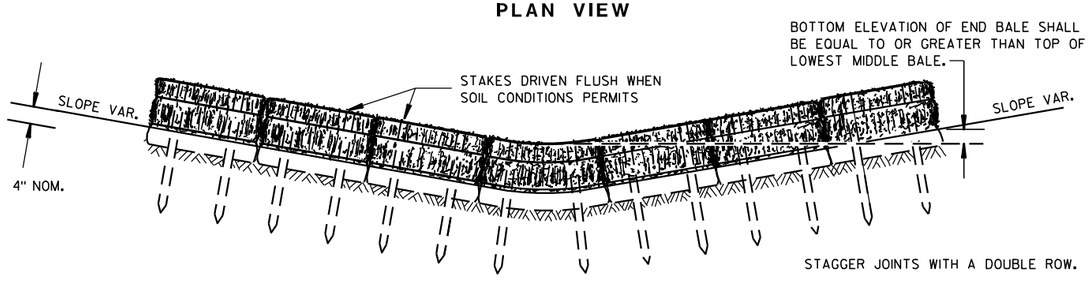
6



SECTION A-A



PLAN VIEW



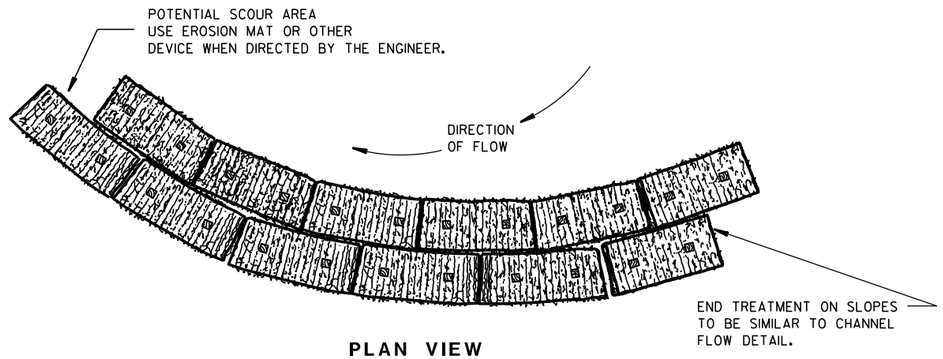
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES (1)

GENERAL NOTES

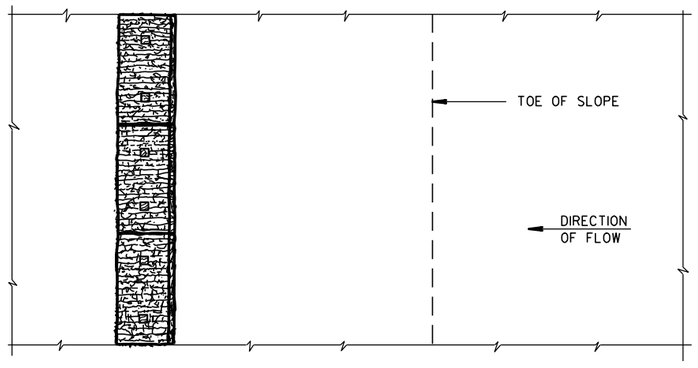
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

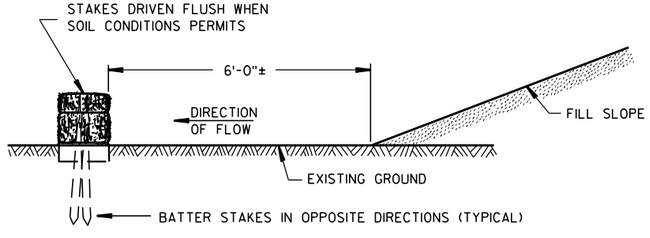


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

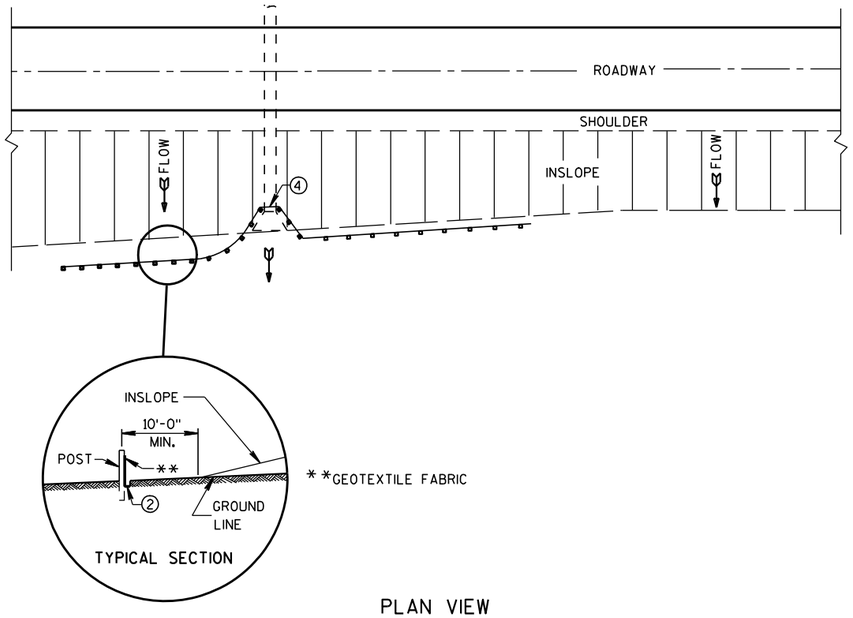
6/04/02 — DATE

/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

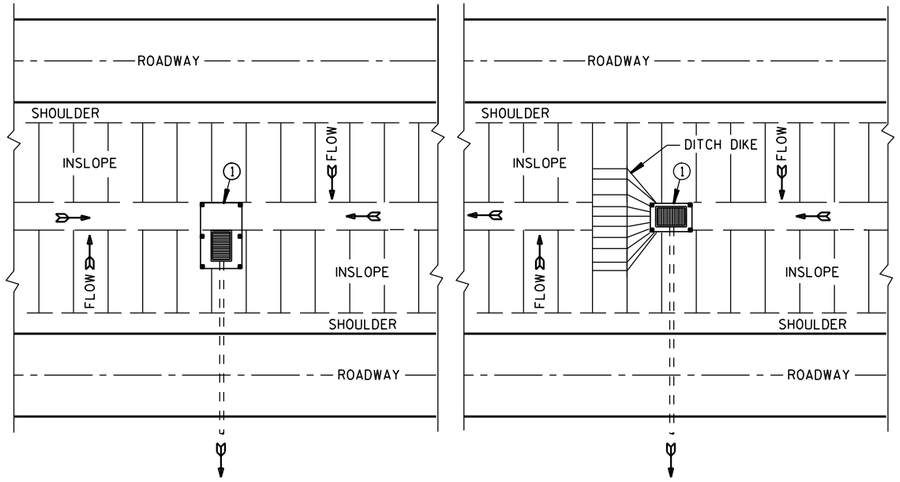
6

S.D.D. 8 E 8-3



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

GENERAL NOTES

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

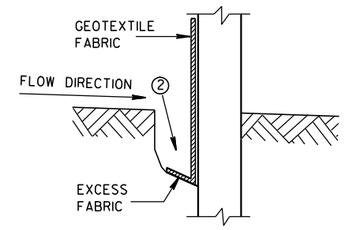
① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.

② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.

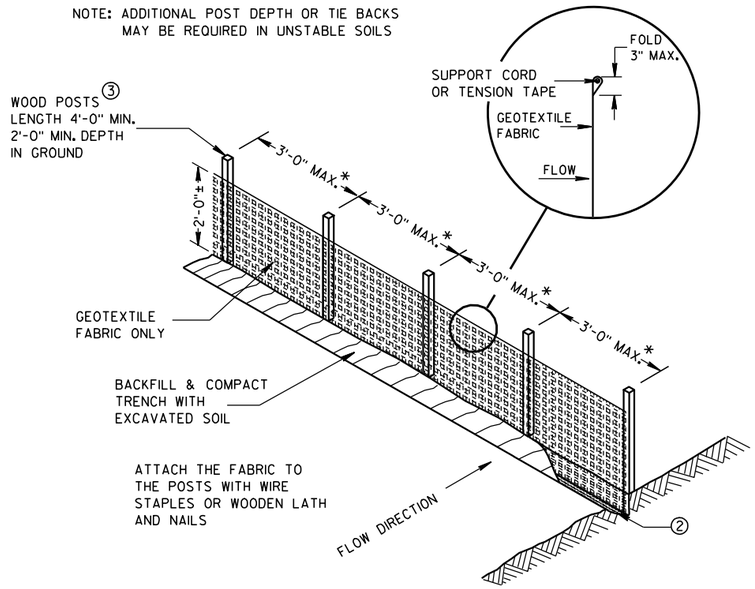
③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.

④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.

⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.

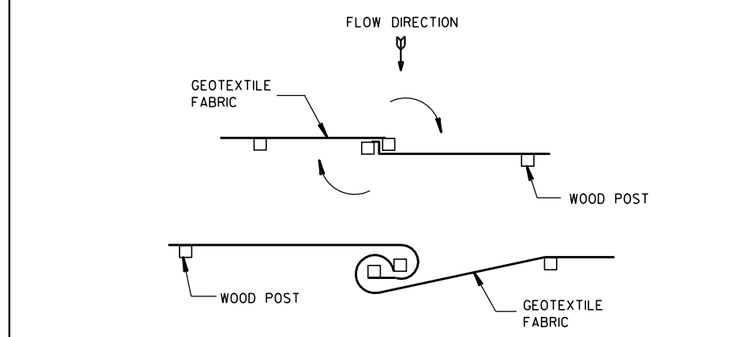


TRENCH DETAIL

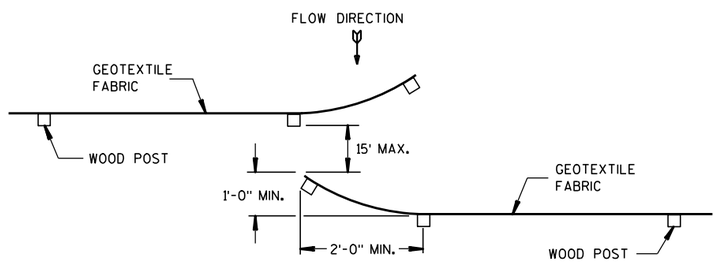


*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

SILT FENCE

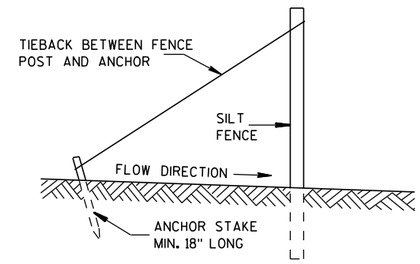


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE ⑤



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 8 E 9-6

6

S.D.D. 8 E 9-6

METAL APRON ENDWALLS

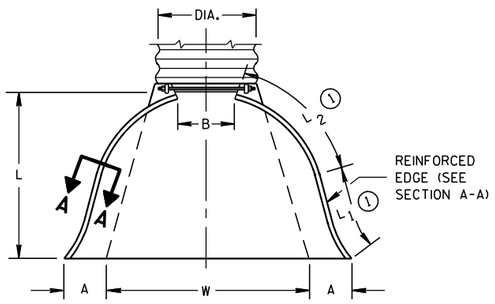
PIPE DIA. (IN.)	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
12	.064	.060	6	6	6	21	12	17 1/2	24	2 1/2 to 1	1 Pc.
15	.064	.060	7	8	6	26	14	21 3/4	30	2 1/2 to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28 1/4	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	.109×	.105×	18	33	12	87	—	—	114	2 to 1	3 Pc.
66	.109×	.105×	18	36	12	87	—	—	120	2 to 1	3 Pc.
72	.109×	.105×	18	39	12	87	—	—	126	2 to 1	3 Pc.
78	.109×	.105×	18	42	12	87	—	—	132	1 1/2 to 1	3 Pc.
84	.109×	.105×	18	45	12	87	—	—	138	1 1/2 to 1	3 Pc.
90	.109×	.105×	18	37	12	87	—	—	144	1 1/2 to 1	3 Pc.
96	.109×	.105×	18	35	12	87	—	—	150	1 1/2 to 1	3 Pc.

× EXCEPT CENTER PANEL SEE GENERAL NOTES

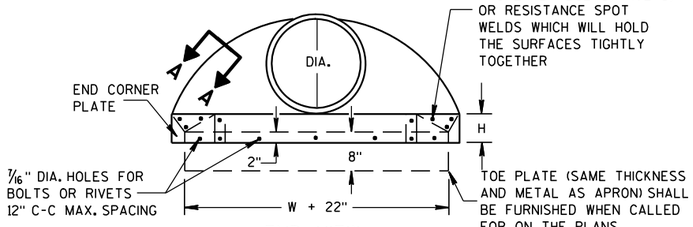
REINFORCED CONCRETE APRON ENDWALLS

PIPE DIA. (IN.)	DIMENSIONS (Inches) T	A	B	C	D	E	G	APPROX. SLOPE
12	2	4	24	48 7/8	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 2/5 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

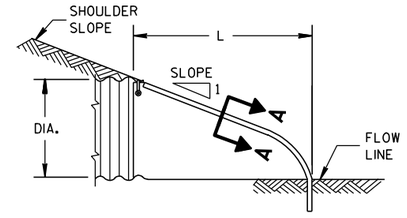
*MINIMUM
**MAXIMUM



PLAN VIEW

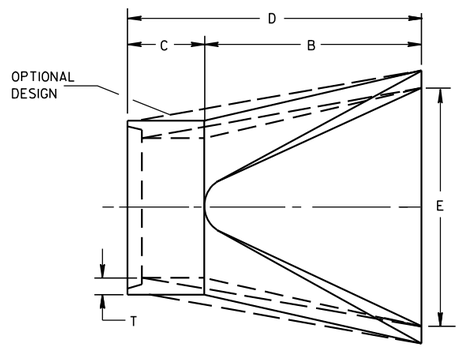


END VIEW

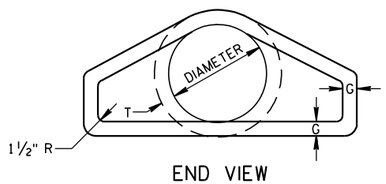


SIDE ELEVATION

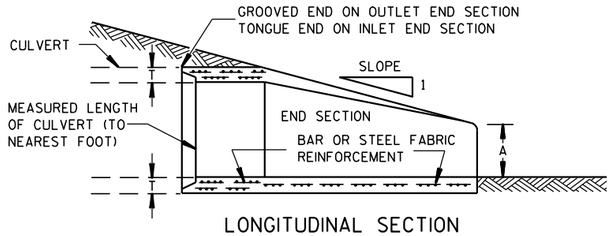
METAL ENDWALLS



PLAN

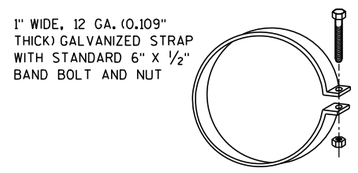


END VIEW



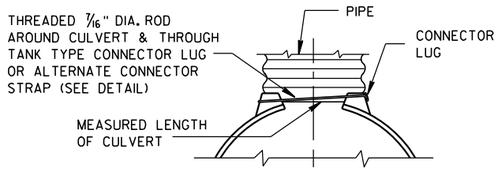
LONGITUDINAL SECTION

CONCRETE ENDWALLS

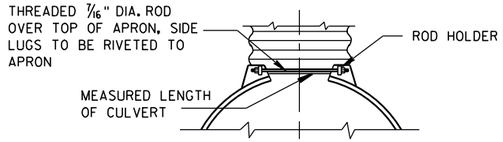


ALTERNATE FOR TYPE 1 CONNECTION

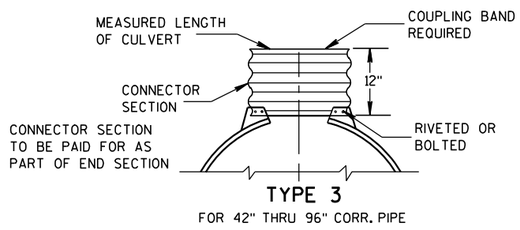
END SECTION CONNECTOR STRAP



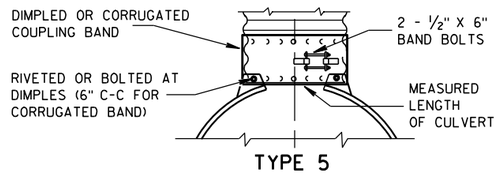
TYPE 1
FOR 12" THRU 24" CORR. PIPE



TYPE 2
FOR 30" THRU 96" CORR. PIPE



TYPE 3
FOR 42" THRU 96" CORR. PIPE



TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

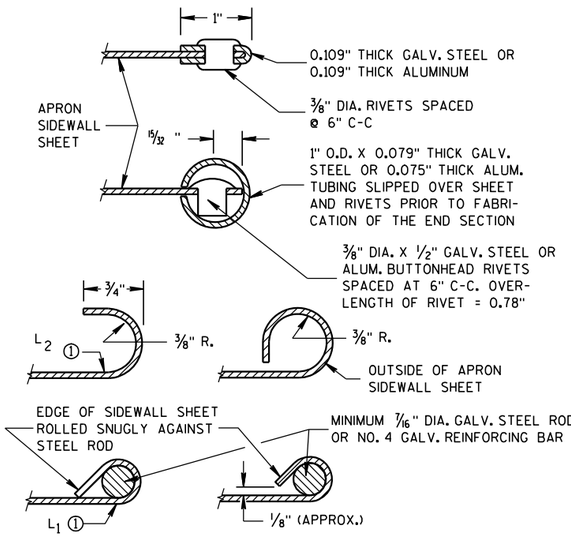
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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

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

CONNECTION DETAILS



SECTION A-A

GENERAL NOTES

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

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR 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.

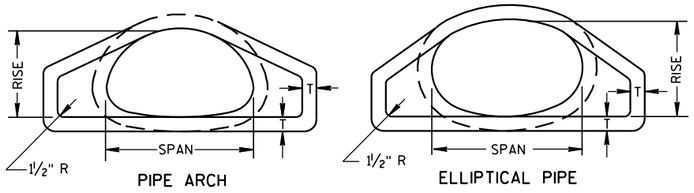
APRON ENDWALLS FOR CULVERT PIPE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

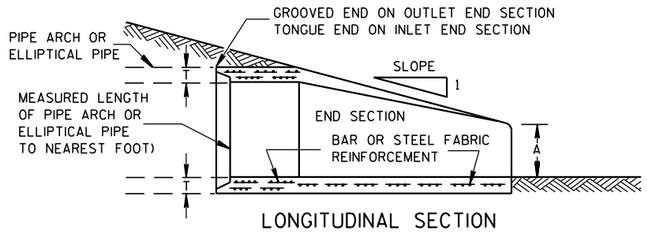
APPROVED
11/30/94 DATE
/S/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

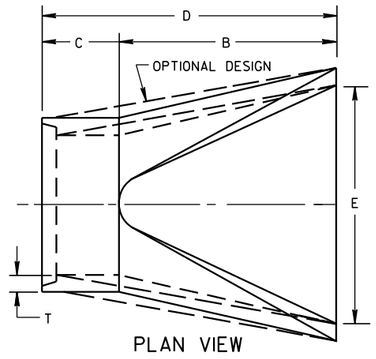
S.D.D. 8 F 1-11



END VIEW

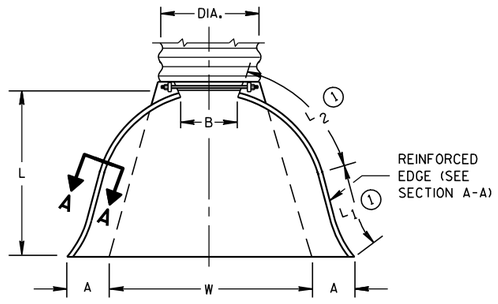


LONGITUDINAL SECTION

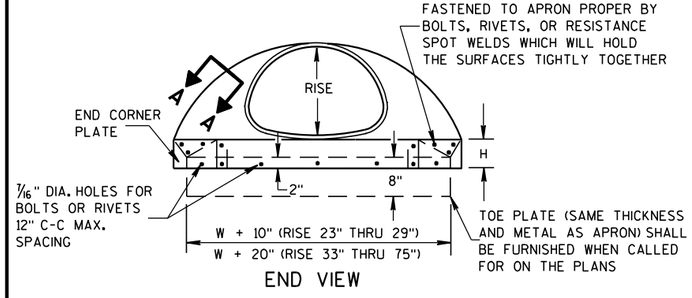


PLAN VIEW

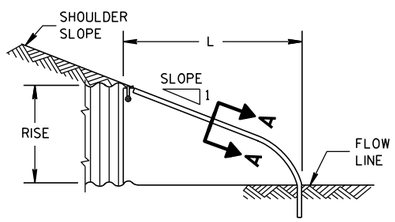
CONCRETE ENDWALLS



PLAN VIEW

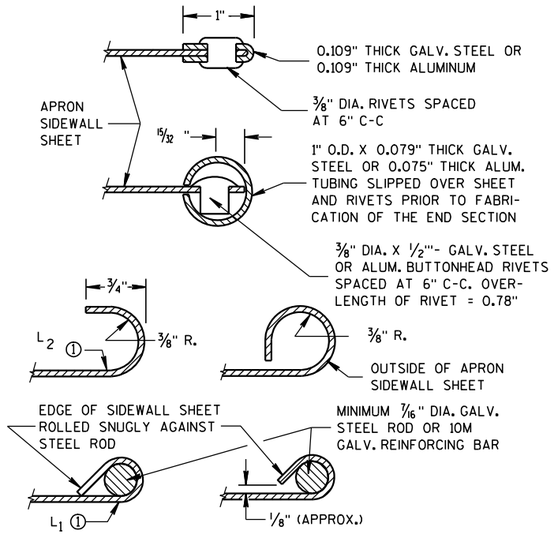


END VIEW



SIDE ELEVATION

METAL ENDWALLS



SECTION A-A

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

EQUIV. DIA. (Inches)	(Inches) SPAN	(Inches) RISE	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
15	17	13	.064	.060	7	9	6	19	14	16	30	2½ to 1	1 Pc.
18	21	15	.064	.060	7	10	6	23	14	19⅜	36	2½ to 1	1 Pc.
21	24	18	.064	.060	8	12	6	28	18	21¾	42	2½ to 1	1 Pc.
24	28	20	.064	.060	9	14	6	32	18	27½	48	2½ to 1	1 Pc.
30	35	24	.079	.075	10	16	6	39	18	37⅝	60	2½ to 1	1 Pc.
36	42	29	.079	.075	12	18	8	46	24	45⅜	75	2½ to 1	1 Pc.
42	49	33	.109	.105	13	21	9	53	24	54¾	85	2½ to 1	2 Pc.
48	57	38	.109	.105	18	26	12	63	24	68	90	2½ to 1	3 Pc.
54	64	43	.109	.105	18	30	12	70	24	72¾	102	2¼ to 1	3 Pc.
60	71	47	.109*	.105*	18	33	12	77	30	82¼	114	2¼ to 1	3 Pc.
66	77	52	.109*	.105*	18	36	12	77	—	—	126	2 to 1	3 Pc.
72	83	57	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.

3" X 1" CORRUGATIONS

EQUIV. DIA. (Inches)	(Inches) SPAN	(Inches) RISE	MIN. THICK. (Inches) STEEL	MIN. THICK. (Inches) ALUM.	DIMENSIONS (Inches) A (±1")	B (MAX.)	H (±1")	L (±1 1/2")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
48	53	41	.109	.105	18	26	12	63	24	72¾	90	2½ to 1	2 Pc.
54	60	46	.109	.105	18	30	12	70	30	82¼	102	2 to 1	2 Pc.
60	66	51	.109*	.105*	18	33	12	77	—	—	114	1½ to 1	3 Pc.
66	73	55	.109*	.105*	18	36	12	77	—	—	126	1½ to 1	3 Pc.
72	81	59	.109*	.105*	18	39	12	77	—	—	138	2 to 1	3 Pc.
78	87	63	.109*	.105*	22	38	12	77	—	—	148	1½ to 1	3 Pc.
84	95	67	.109*	.105*	22	34	12	77	—	—	162	1½ to 1	3 Pc.
90	103	71	.109*	.105*	22	38	12	77	—	—	174	1½ to 1	3 Pc.
96	112	75	.109*	.105*	24	40	12	77	—	—	174	1½ to 1	3 Pc.

NOTE: ALL SPLICES TO BE LAP RIVETED OR BOLTED.

* EXCEPT CENTER PANEL SEE GENERAL NOTES

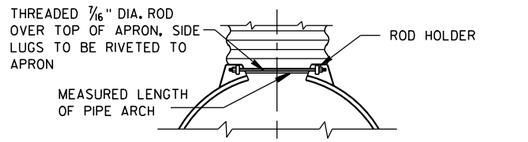
REINFORCED CONCRETE PIPE ARCH

EQUIV. DIA. (Inches)	DIMENSIONS (Inches) ** SPAN	** RISE	T	A	B	C	D	E	APPROX. SLOPE
24	29	18	3	8½	39	33	72	48	3 to 1
30	36	22	3½	9½	50	46	96	60	3 to 1
36	44	27	4	11⅛	60	36	96	72	3 to 1
42	51	31	4½	15 13/16	60	36	96	78	3 to 1
48	58	36	5	21	60	36	96	84	3 to 1
54	65	40	5½	25½	60	36	96	90	3 to 1
60	73	45	6	31	60	36	96	96	3 to 1
72	88	54	7	31	60	39	99	120	2 to 1
84	102	62	8	28½	83	19	102	144	2 to 1

REINFORCED CONCRETE ELLIPTICAL PIPE

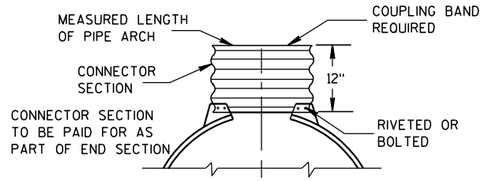
EQUIV. DIA. (Inches)	DIMENSIONS (Inches) ** SPAN	** RISE	T	A	B	C	D	E	APPROX. SLOPE
24	30	19	3¼	8½	39	33	72	48	3 to 1
30	38	24	3¾	9½	54	18	72	60	3 to 1
36	45	29	4½	11⅛	60	24	84	72	2½ to 1
42	53	34	5	15¾	60	36	96	78	2½ to 1
48	60	38	5½	21	60	36	96	84	2½ to 1
54	68	43	6	25½	60	36	96	90	2½ to 1
60	76	48	6½	30	60	36	96	96	2½ to 1

**NOMINAL SIZE



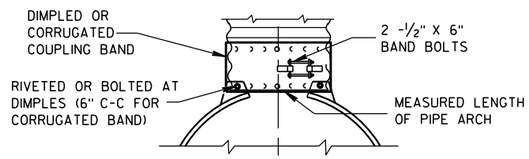
TYPE 2

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



TYPE 3

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



TYPE 5

ALTERNATE FOR:

ALL SIZES CORRUGATED PIPE ARCHES

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

CONNECTION DETAILS

GENERAL NOTES

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

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

ALL THREE PIECE STEEL APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 66" X 51" PIPE ARCH AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE ARCH PERIMETER.

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

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

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

APRON ENDWALLS FOR PIPE ARCH AND ELLIPTICAL PIPE

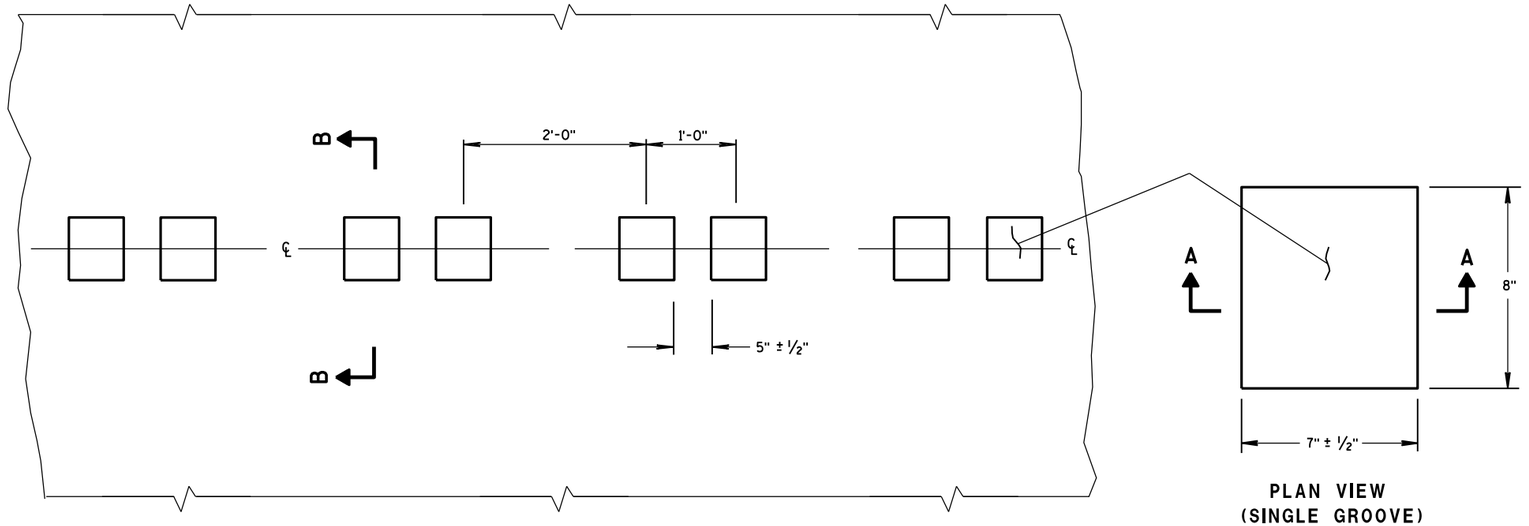
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/30/94 — DATE

/S/ Rory L. Rhinesmith — CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA



PLAN VIEW
CENTER LINE WITH GROOVES

PLAN VIEW
(SINGLE GROOVE)

PLACEMENT DETAIL FOR MILLED RUMBLE STRIP

GENERAL NOTES

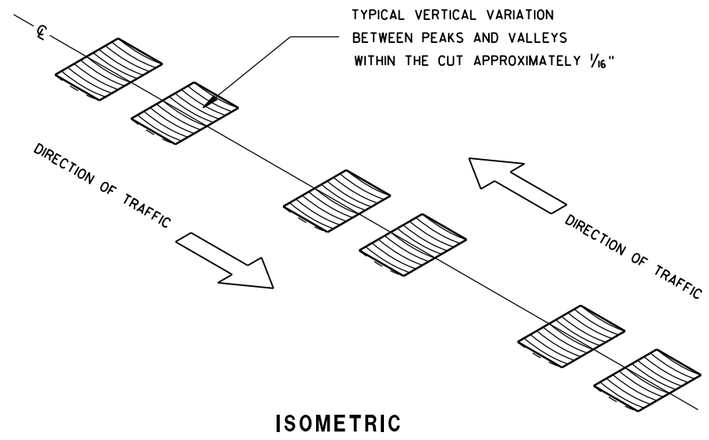
DETAILS OF CONSTRUCTION SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

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



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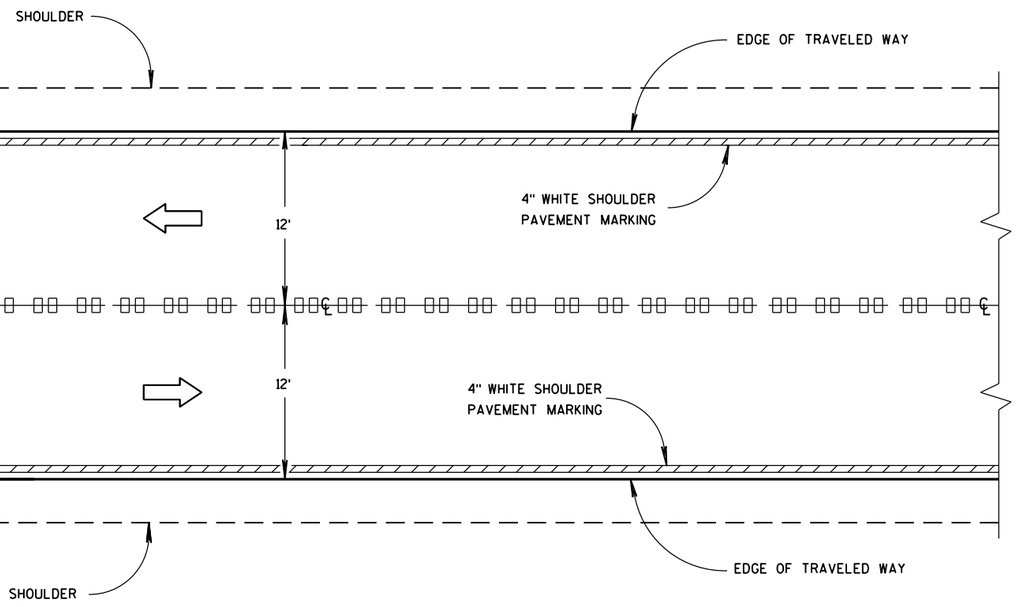
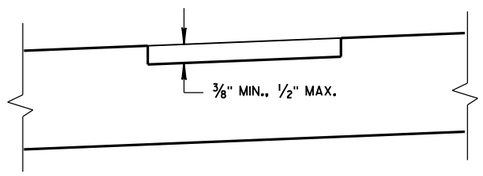
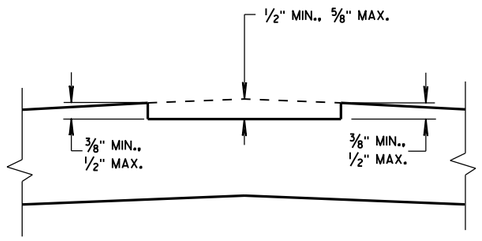


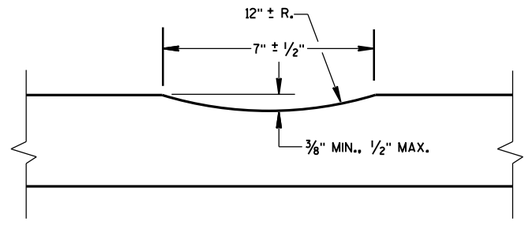
CENTER LINE GROOVES ON TWO-WAY ROADWAYS



SECTION B-B
SUPERELEVATED ROADWAY



SECTION B-B
CROWNED ROADWAY

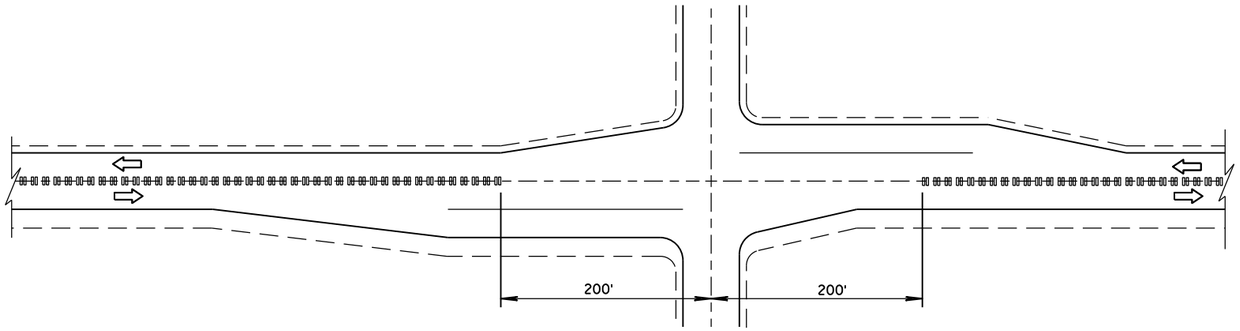


SECTION A-A

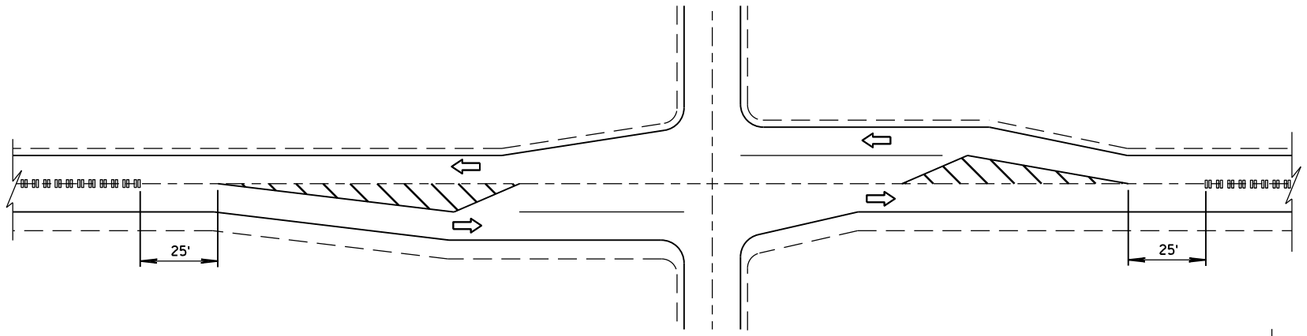
2-LANE RURAL
CENTER LINE RUMBLE STRIP, MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

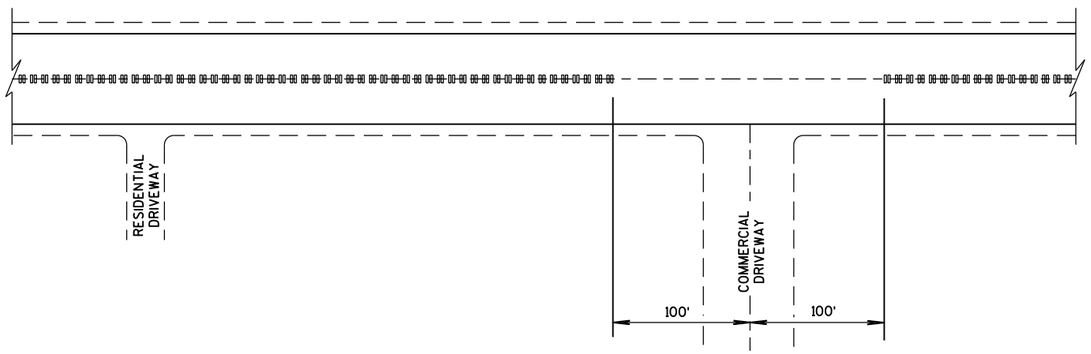
6
S.D.D. 13 A 11-2a



CENTER LINE GROOVES AT INTERSECTIONS

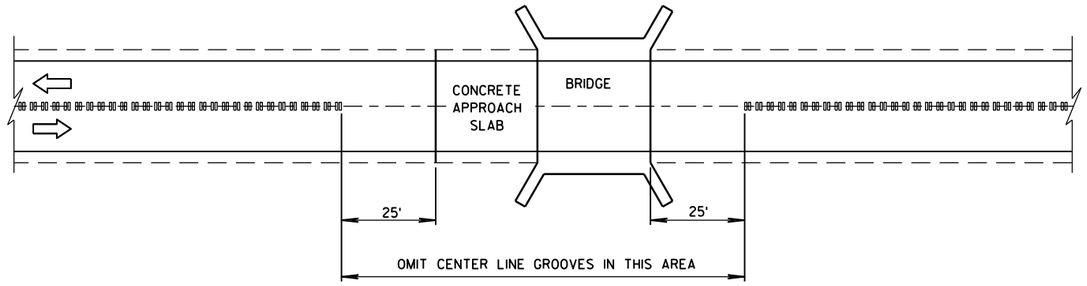


CENTER LINE GROOVES AT INTERSECTIONS
(WITH LEFT TURN LANES)

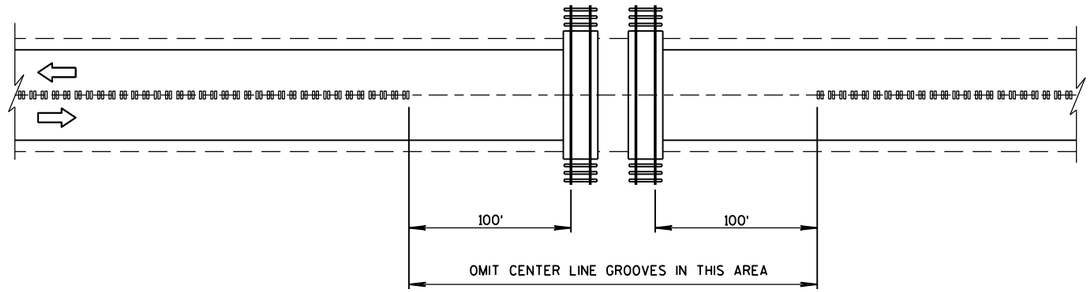


CENTER LINE GROOVES AT DRIVEWAYS (1)

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



CENTER LINE GROOVES AT BRIDGES



CENTER LINE GROOVES AT RAILROADS

6

S.D.D. 13 A 11-2b

6

S.D.D. 13 A 11-2b

2-LANE RURAL
CENTER LINE RUMBLE STRIP, MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

5/15/2013 — DATE

/S/ Jerry H. Zoda — ROADWAY STANDARDS DEVELOPMENT ENGINEER

NT

FHWA

GENERAL NOTES

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

(1) 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.

(2) 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.

(3) INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

(4) USE EITHER WOOD OR APPROVED PLASTIC BLOCKOUTS ON WOOD POSTS.

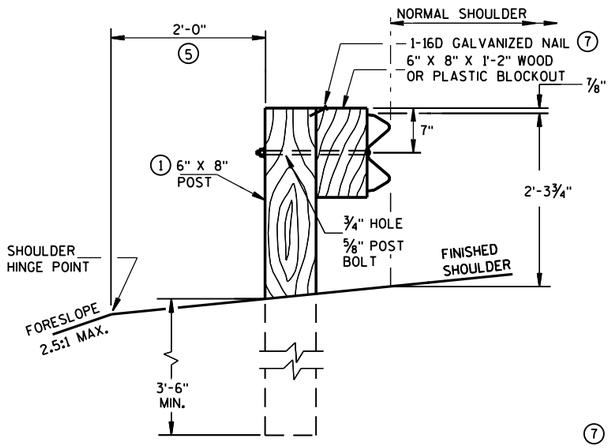
(5) IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).

(6) 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 2½ INCHES DEEP. CUT THE POSTS TO LENGTH AND PLACE IN YHE HOLE. BACKFILL WITH MATERIAL EXCAVATED FROM THE HOLE AND COMPACT ADEQUATEY.

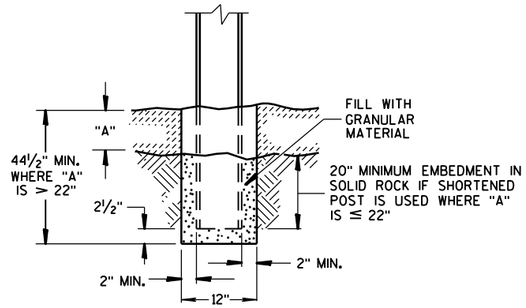
(7) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

INSTALL BEAM GUARD SECTIONS AND ALL NECESSARY HARDWARE ACCORDING TO THE APPLICABLE PLAN AND CURRENT STANDARD AND SUPPLEMENTAL SPECIFICATIONS.

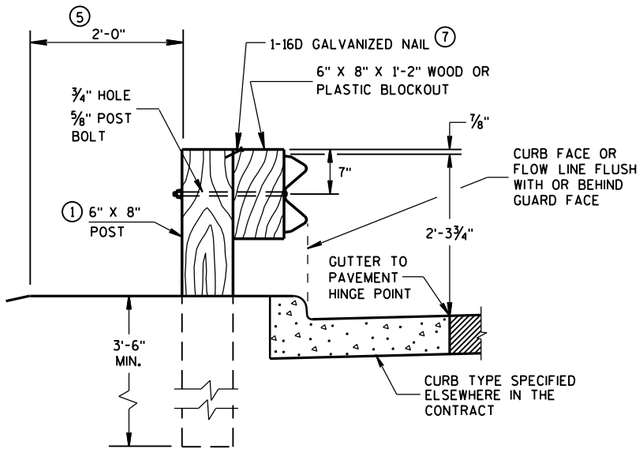
ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



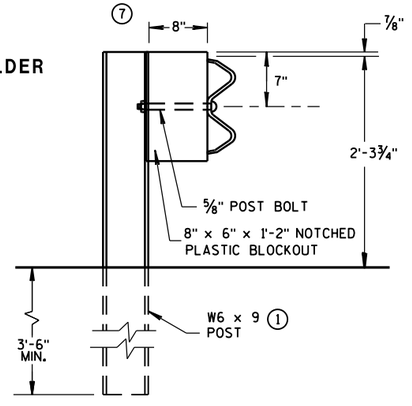
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



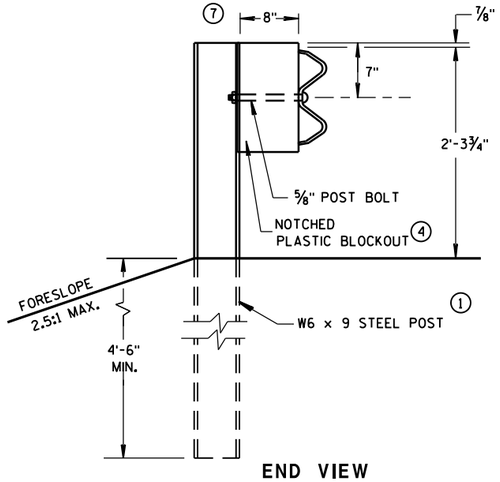
END VIEW
SETTING STEEL OR WOOD POST IN ROCK (6)



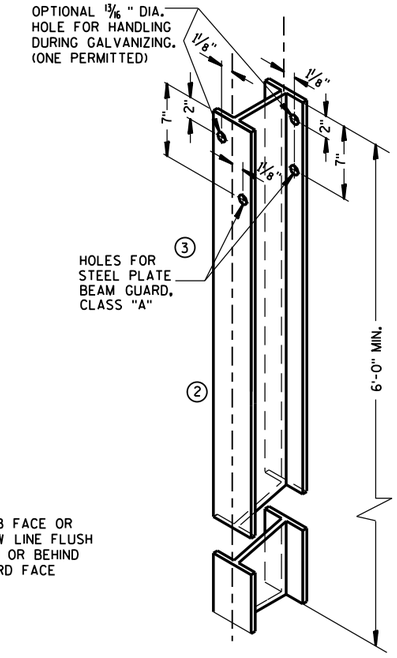
END VIEW
LOCATED ALONG A CURBED ROADWAY



END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION

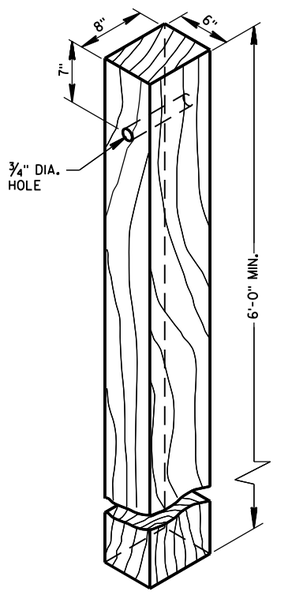


END VIEW
LONGER POST AT HALF
POST SPACING W BEAM
(LHW)

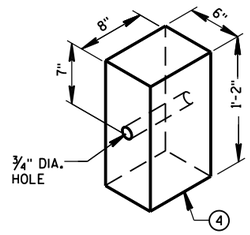


STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) (1)

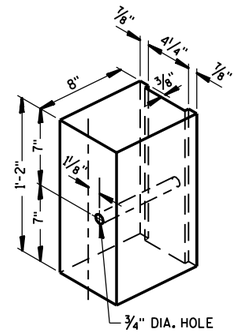
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED



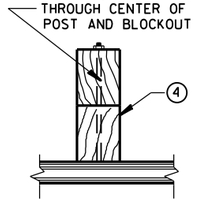
WOOD POST
(6"X8") NOMINAL



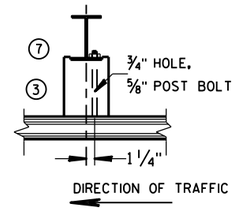
WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



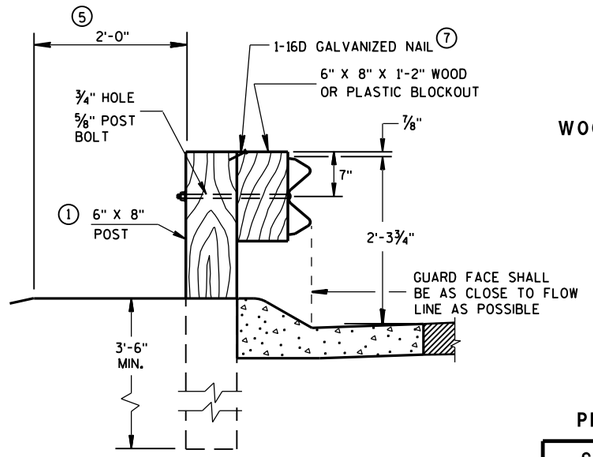
TYPICAL NOTCHED (1)
PLASTIC BLOCKOUT
FOR STEEL POSTS



PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM



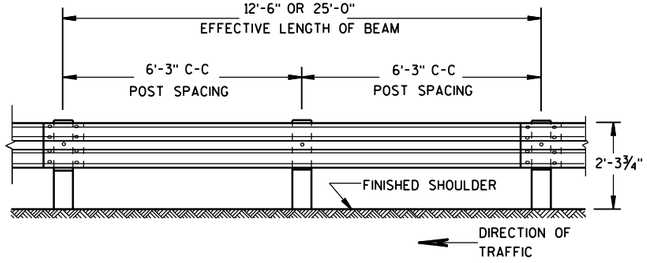
END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

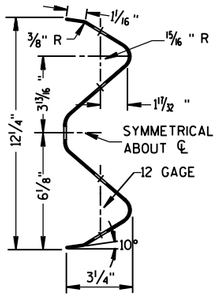
TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

6
S.D.D. 14 B 15-8a

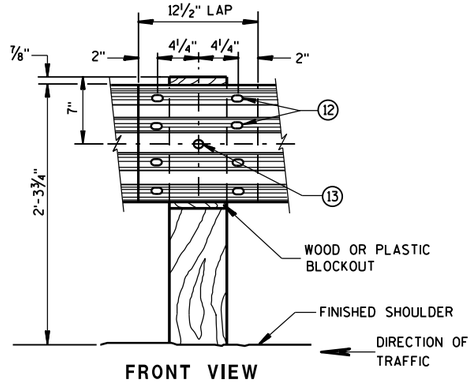


FRONT VIEW

POST SPACING STANDARD INSTALLATION



SECTION THRU W BEAM



FRONT VIEW

BEAM SPLICE AT WOOD POST AND POST MOUNTING DETAIL

GENERAL NOTES

(8) PROVIDE SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH YELLOW REFLECTIVE SHEETING. SHEETING IS TYPE H. SEE STANDARD SPECIFICATION 637.

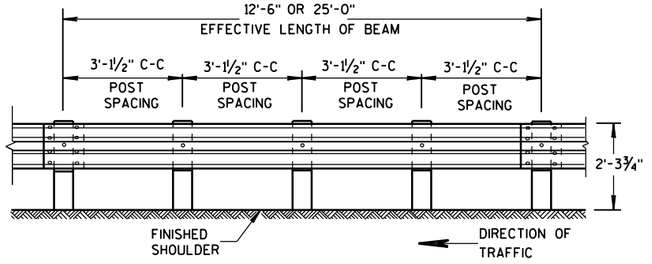
(9) DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

(10) REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.

(11) PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.

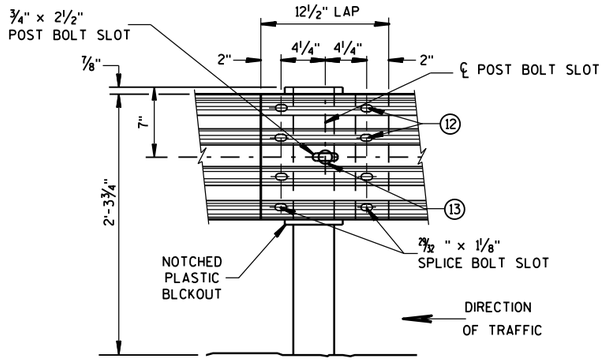
(12) 8 -⅝" ϕ X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.

(13) ⅝" DIA. BUTTON HEAD BOLT AND RECESS NUT WITH ⅝" DIA. F844 FLAT WASHER UNDER NUT.



FRONT VIEW

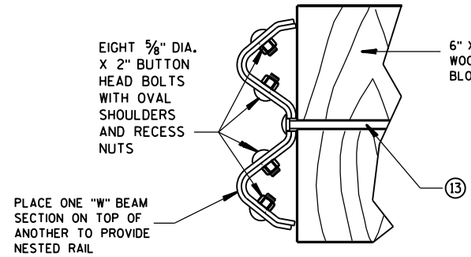
POST SPACING FOR LONGER POST AT HALF POST SPACING W BEAM (LHW)



FRONT VIEW

BEAM SPLICE AT STEEL POST

TYPICAL SPLICING DETAILS OF STEEL PLATE BEAM GUARD

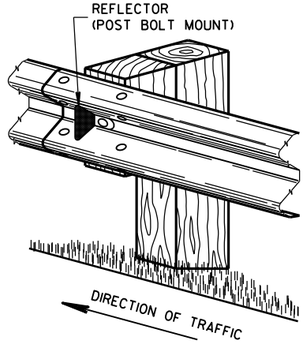


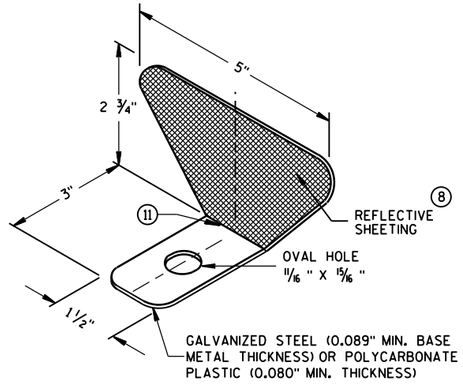
NESTED W BEAM (NW)

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

REFLECTOR SPACING (9)

	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200'	50' C-C	1	3
	> 200'	100' C-C	1	
TWO WAY TRAFFIC	< 200'	25' C-C	1 (10)	6
	> 200'	50' C-C	1	
TWO WAY TRAFFIC	< 200'	50' C-C	2 (11)	3
	> 200'	100' C-C	2	



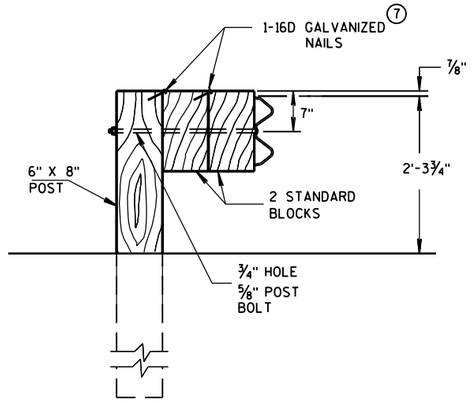


ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION (8)

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

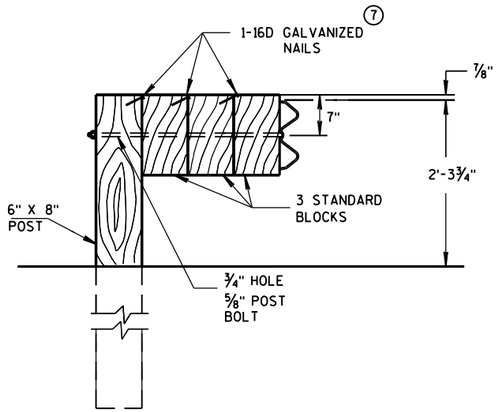
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6
S.D.D. 14 B 15-8b



DETAIL FOR DOUBLE BLOCKS

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

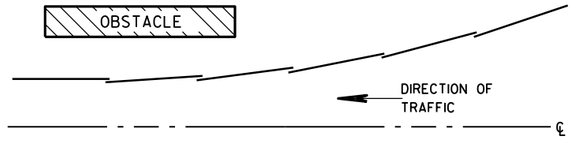


DETAIL FOR TRIPLE BLOCKS

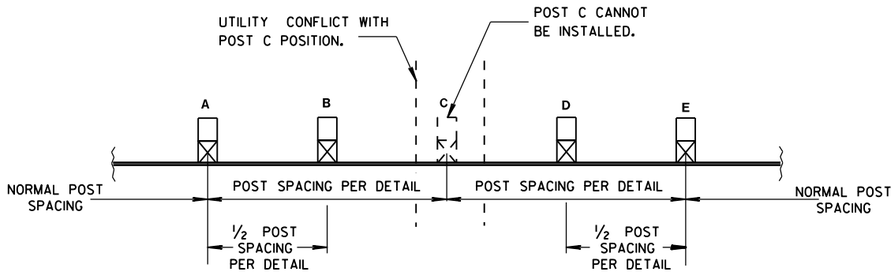
TRIPLE BLOCK DETAIL IS LIMITED TO ONE LOCATION WITHIN A BEAM GUARD RUN.

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

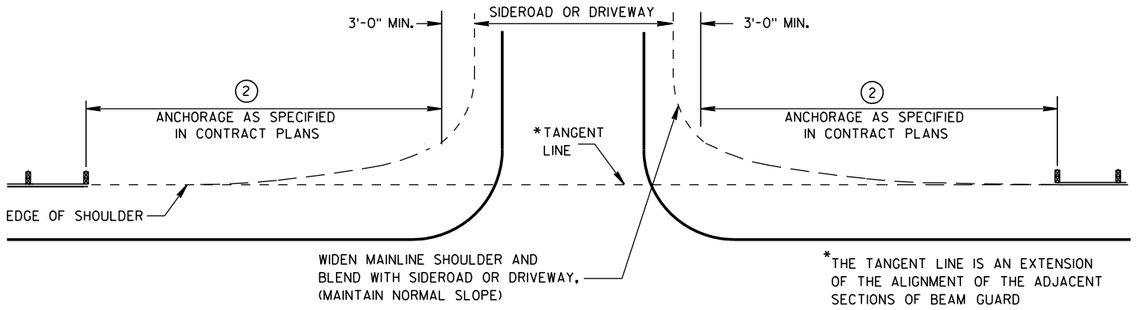
STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

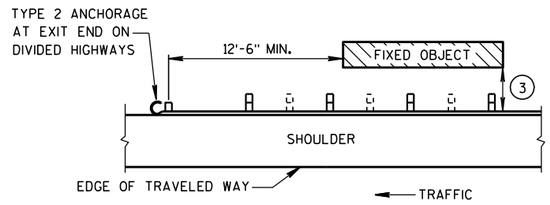
APPROVED
June 2014 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 14 B 15-8c



BEAM GUARD AT SIDEROADS OR DRIVEWAYS



BEAM GUARD AT OBSTACLES EXIT END - ONE WAY TRAFFIC

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE PERTINENT STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

W6 X 9 OR W6 X 8.5 STEEL POSTS WITH 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.

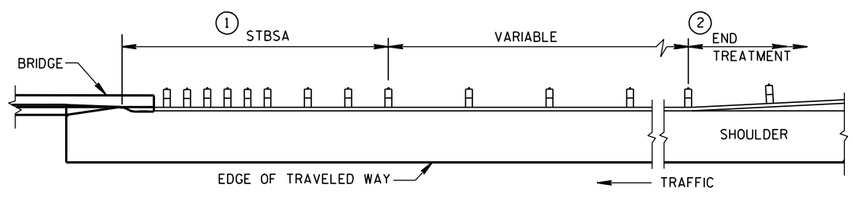
THE LOCATIONS AND LENGTHS OF BEAM GUARD ARE SHOWN ELSEWHERE IN THE PLAN.

(1) STEEL THRIE BEAM STRUCTURAL APPROACH (STBSA) - SEE CURRENT SDD 14B20.

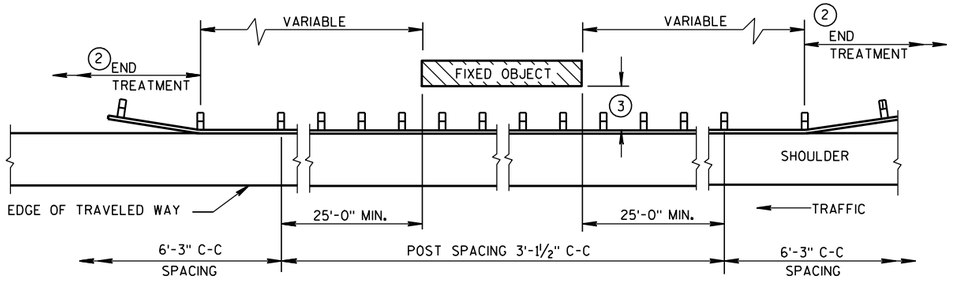
(2) USE AN APPROVED END TREATMENT FOR THE TRAFFIC APPROACH SIDE OF BRIDGE/OBSTACLES. USE TYPE 2 ANCHORAGE ONLY AT THE DOWNSTREAM ENDS OF BEAM GUARD LOCATED ALONG ROADWAYS WITH ONE WAY TRAFFIC.

(3)

MINIMUM LATERAL DISTANCE FROM FACE OF BEAM GUARD TO FIXED OBJECT	POST SPACING
3'-6"	3' - 1½"
4'-6"	6' - 3"

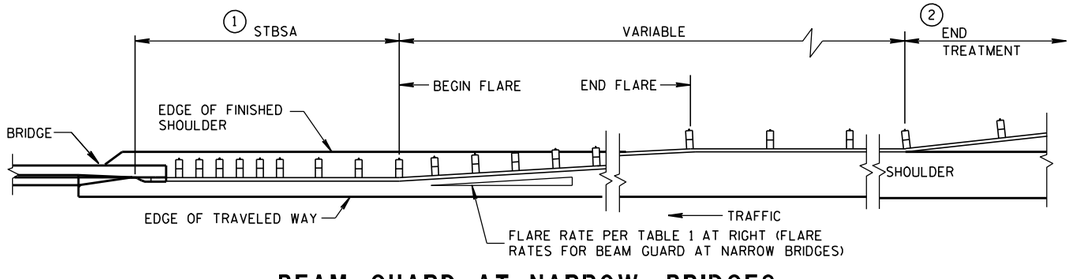


BEAM GUARD AT FULL WIDTH BRIDGES



BEAM GUARD AT OBSTACLES - TWO WAY TRAFFIC

(RAIL TO OBSTACLE CLEARANCE 3'-6" TO 4'-6")



BEAM GUARD AT NARROW BRIDGES
(FLARED TO SHOULDER EDGE, THEN PARALLEL TO ROADWAY)

TABLE 1
FLARE RATES FOR BEAM GUARD AT NARROW BRIDGES

POSTED SPEED (MPH)	FLARE RATE
25	13:1
30	15:1
35	16:1
40	18:1
45	21:1
50	24:1
55	26:1
65	30:1

STEEL PLATE BEAM GUARD CLASS "A" AT BRIDGES, OBSTACLES AND SIDEROADS/DRIVEWAYS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8-21-07 DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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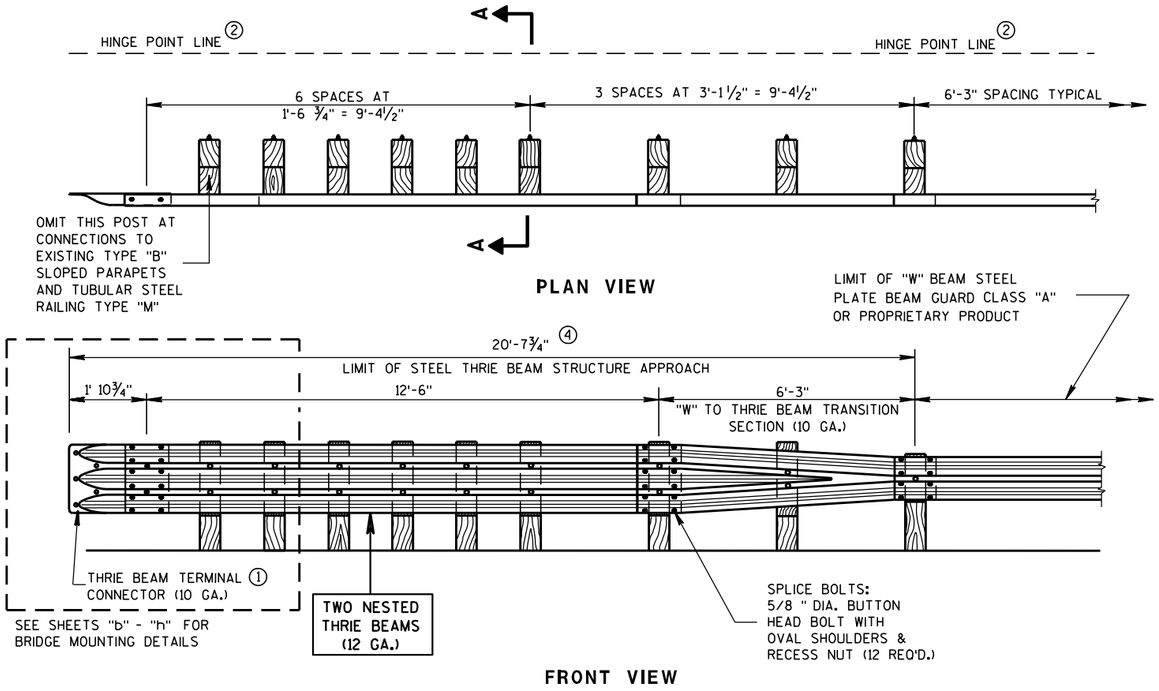
S.D.D. 14 B 18-6a



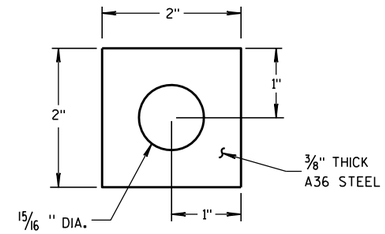


PLATE WASHER DETAIL

GENERAL NOTES

BOLT THE THRIE BEAM TO ALL POSTS AND BLOCKOUTS. DRILL OR PUNCH BOLT HOLES IN THE BEAM IF THE POST SPACING IS LESS THAN 6'-3".

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.

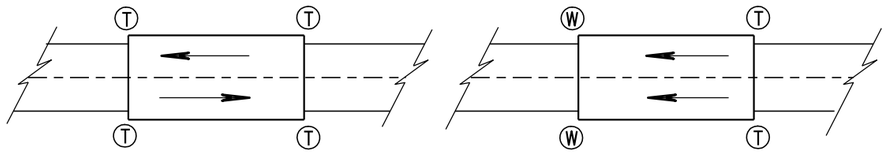
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2" , AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

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

② MINIMUM EMBEDMENT SHALL BE 4'-0". WHERE EXISTING CONDITIONS DO NOT PERMIT THE APPROPRIATE EARTHWORK SHOWN ON THE PLAN TYPICAL SECTIONS OR DETAILS, THE ENGINEER MAY ALLOW THE REDUCTION OR ELIMINATION OF THE 2 FOOT DISTANCE TO THE HINGE POINT. OTHERWISE BUILD AS THE PLAN SHOWS OR AS THE ENGINEER DIRECTS. IF THE 2 FOOT DISTANCE TO THE HINGE POINT IS REDUCED OR ELIMINATED, INCREASE THE POST EMBEDMENT DEPTH TO 4'-6" OR MORE.

③ POST BOLTS ARE 5/8" DIAMETER ASTM A307 BUTTON HEAD BOLT. A POST BOLT REQUIRES A 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX AND A 5/8" DIAMETER F844 FLAT WASHER. LENGTH OF POST BOLT MAY VARY.

④ ALL WOOD POSTS MUST BE 6" X 8" AND AT LEAST 7'-0" LONG.



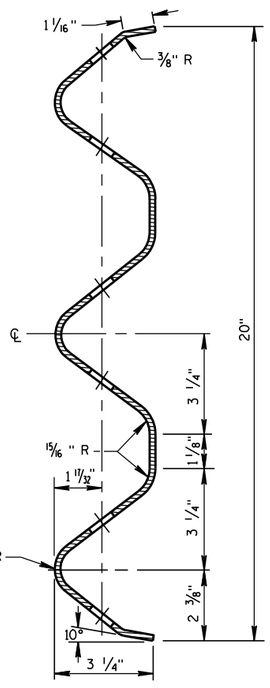
TWO WAY TRAFFIC

ONE WAY TRAFFIC

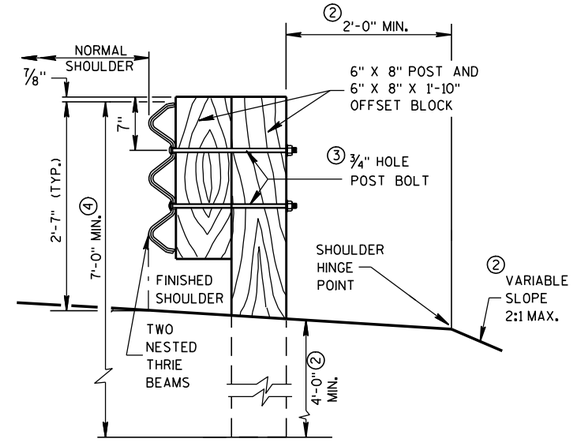
(T) THRIE BEAM CONNECTION

(W) W-BEAM CONNECTION WHEN REQUIRED

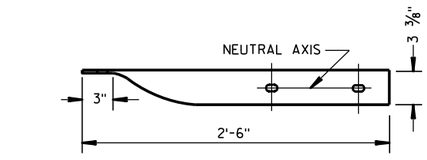
TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

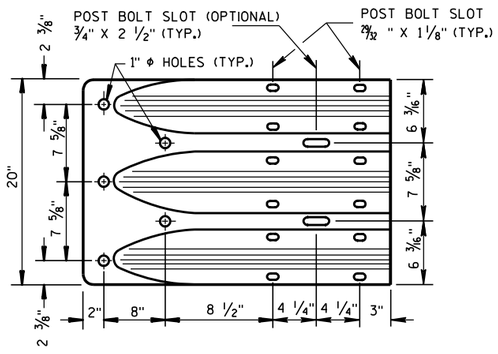


SECTION THRU THRIE BEAM RAIL ELEMENT

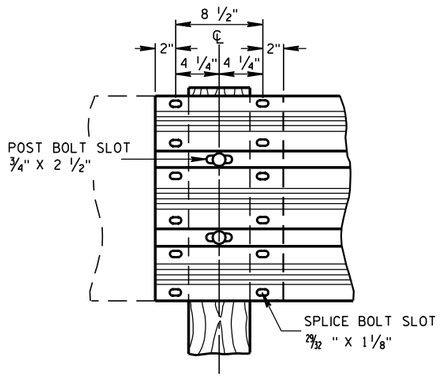


SECTION A-A





THRIE BEAM TERMINAL CONNECTOR



THRIE BEAM SPLICE

STEEL THRIE BEAM STRUCTURE APPROACH

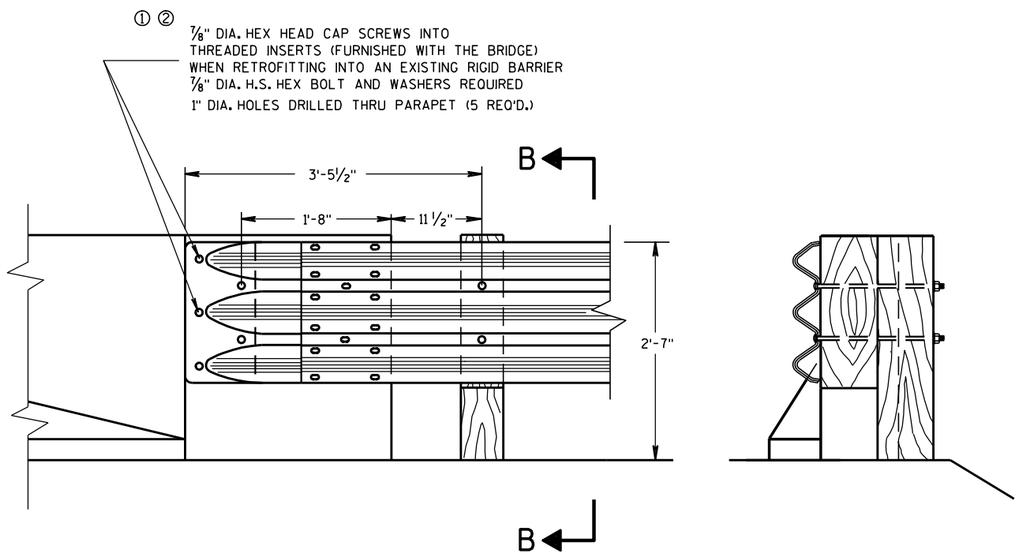
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012 — DATE

/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER

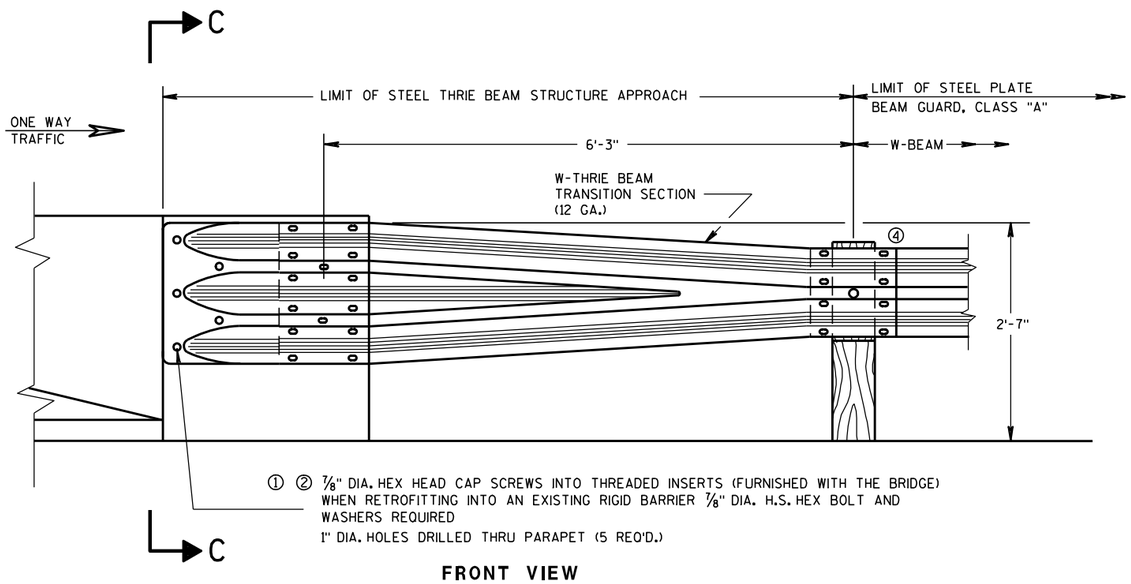
FHWA



FRONT VIEW

SECTION B-B

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS



① ② ⅞" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER ⅞" DIA. H.S. HEX BOLT AND WASHERS REQUIRED
1" DIA. HOLES DRILLED THRU PARAPET (5 REQ'D.)

FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

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

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

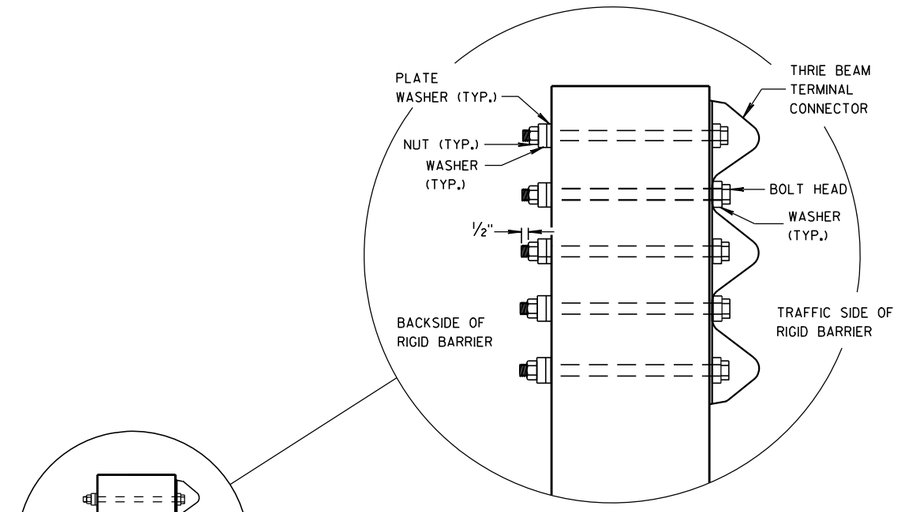
① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

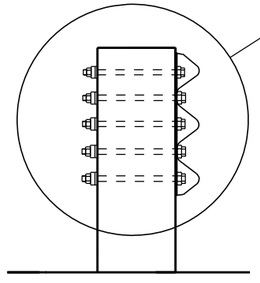
② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X ⅝" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

③ 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 ½".

④ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.





SECTION C-C

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SQUARE END PARAPETS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 — DATE
/S/ Jerry H. [illegible] — ROADWAY STANDARDS [illegible] ENGINEER
FHWA

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S.D.D. 14 B 20-11b

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S.D.D. 14 B 20-11b

GENERAL NOTES

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

BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

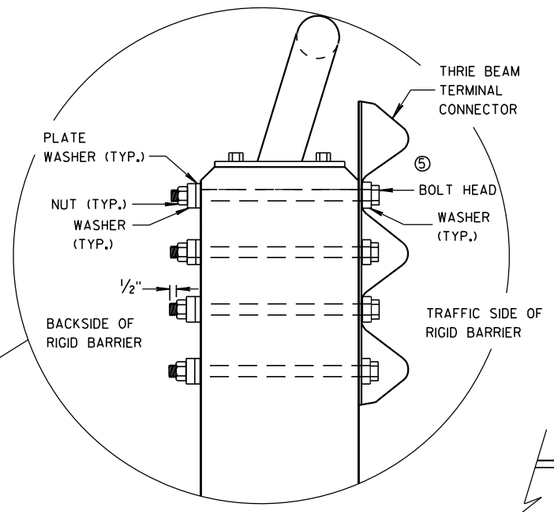
② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X ⅝" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

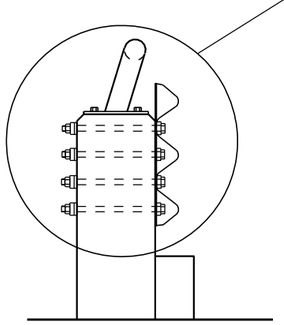
③ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 ½".

④ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

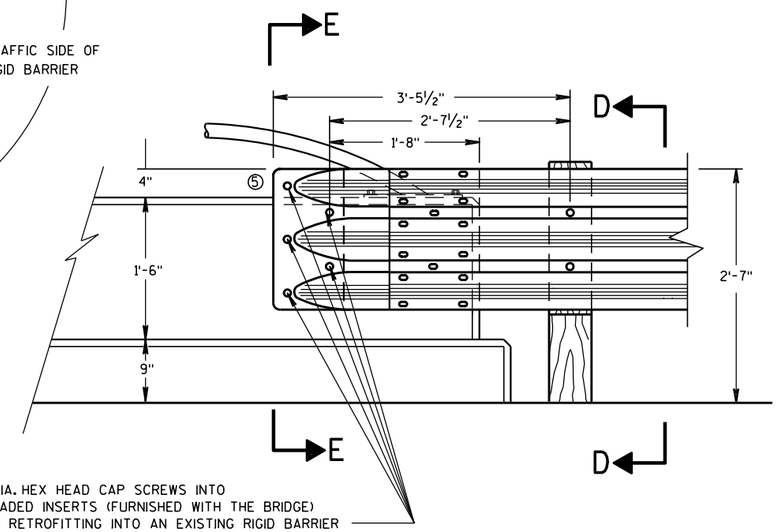
⑤ BOLT, NUT AND WASHERS NOT REQUIRED FOR THIS LOCATION WHEN RETROFITTING AN EXISTING PAPAPET AND THE HOLE IS EITHER ABOVE PARAPET OR WITHIN 4 INCHES OF THE EDGE OF PARAPET.

DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.



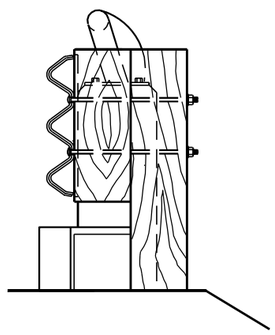


SECTION E-E



① ② ⅞" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER
⅞" DIA. H.S. HEX BOLT AND WASHERS REQUIRED
1" DIA. HOLES DRILLED THRU PARAPET (4 REQ'D.)

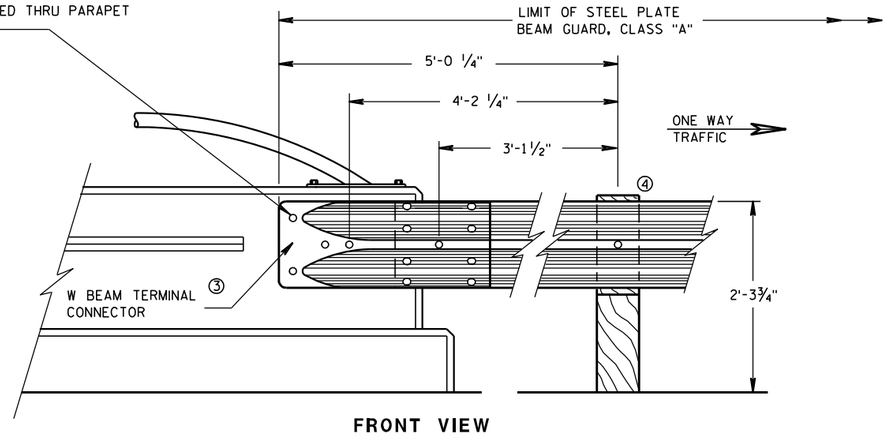
FRONT VIEW



SECTION D-D

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS

① ② ⅞" DIA. HEX HEAD CAP SCREWS INTO THREADED INSERTS (FURNISHED WITH THE BRIDGE) WHEN RETROFITTING INTO AN EXISTING RIGID BARRIER
⅞" DIA. H.S. HEX BOLT AND WASHERS REQUIRED
1" DIA. HOLES DRILLED THRU PARAPET (4 REQ'D.)



FRONT VIEW

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

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO VERTICAL FACED PARAPETS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 — DATE
/S/ Jerry H. Zaa — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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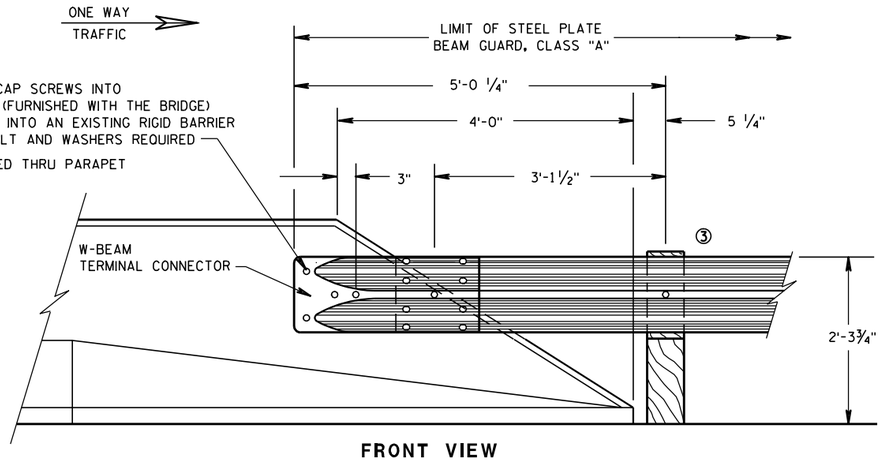
S.D.D. 14 B 20-11c



FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

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

GENERAL NOTES

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

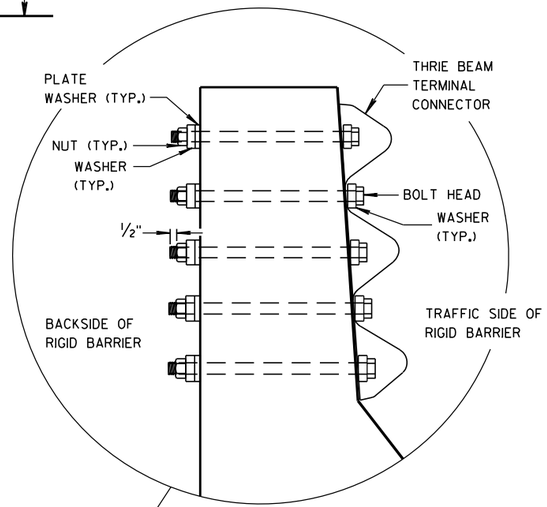
BOLTS, NUTS AND WASHERS SHALL CONFORM TO ASTM A325, A449 AND GALVANIZED PER STANDARD SPECIFICATIONS 614.

① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

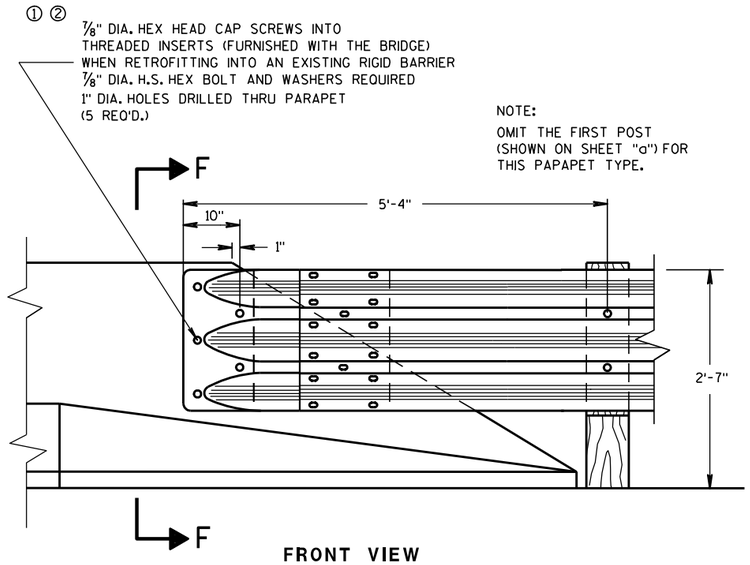
② BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

③ W6 X 9 OR W6 X 8.5 STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS ARE ACCEPTABLE ALTERNATIVES FOR 6" X 8" WOOD POST WITH WOOD OR PLASTIC BLOCKOUTS. USE APPROVED NOTCHED PLASTIC BLOCKOUTS WITH STEEL POSTS.

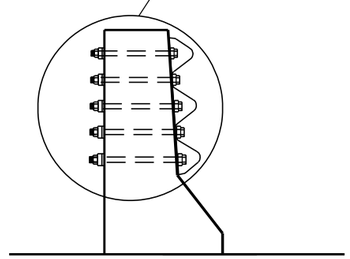
DO NOT USE STEEL POSTS AND NOTCHED PLASTIC BLOCKOUTS IN THE STEEL THRIE BEAM STRUCTURAL APPROACH AND THE TRANSITION SECTION OF STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATIONS.



DRILL HOLE LOCATION AND PATTERN FOR THRIE BEAM CONNECTION



FRONT VIEW



SECTION F-F

THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO SLOPED END PARAPETS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 — DATE
/S/ Jerry H. [illegible] — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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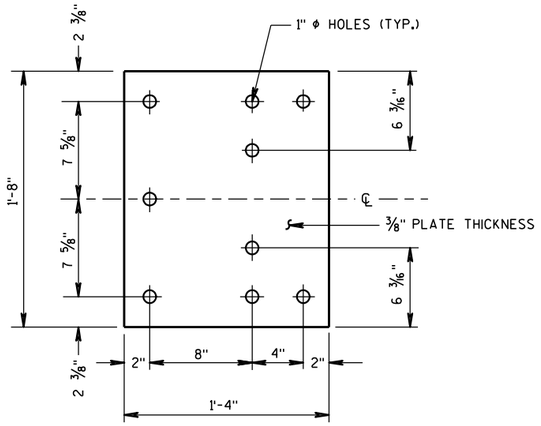
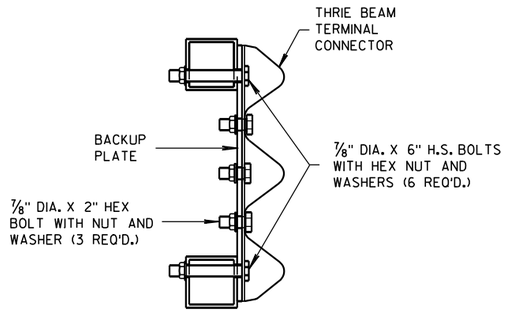
S.D.D. 14 B 20-11d



BACK-UP PLATE DETAIL



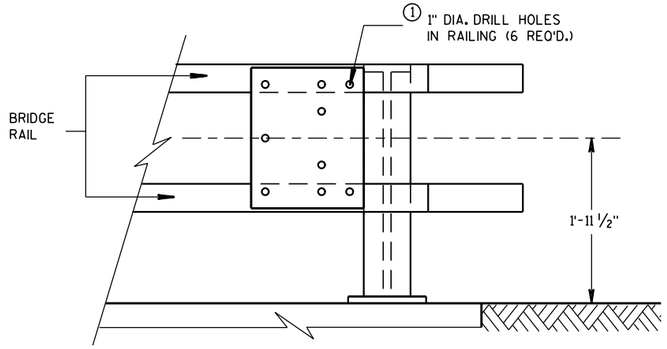
SECTION G-G

GENERAL NOTES

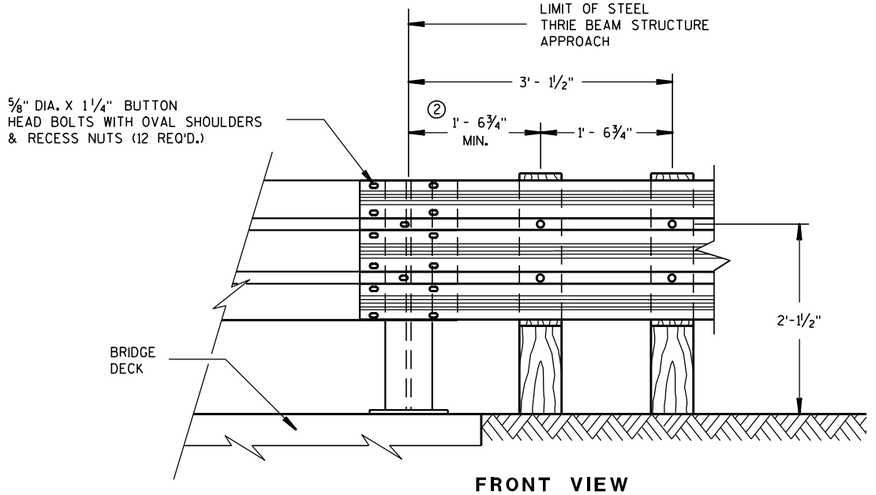
BOLTS, PLATES, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATION A 325 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A 153.

① DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

② VARY THIS DIMENSION DEPENDING ON ABUTMENT TYPE, WINGWALL DETAILS, AND ANGLE OF SKEW. PLACE THE FIRST WOOD POST OFF THE BRIDGE SHALL AS CLOSE AS FEASIBLE TO THE STEEL END POST.

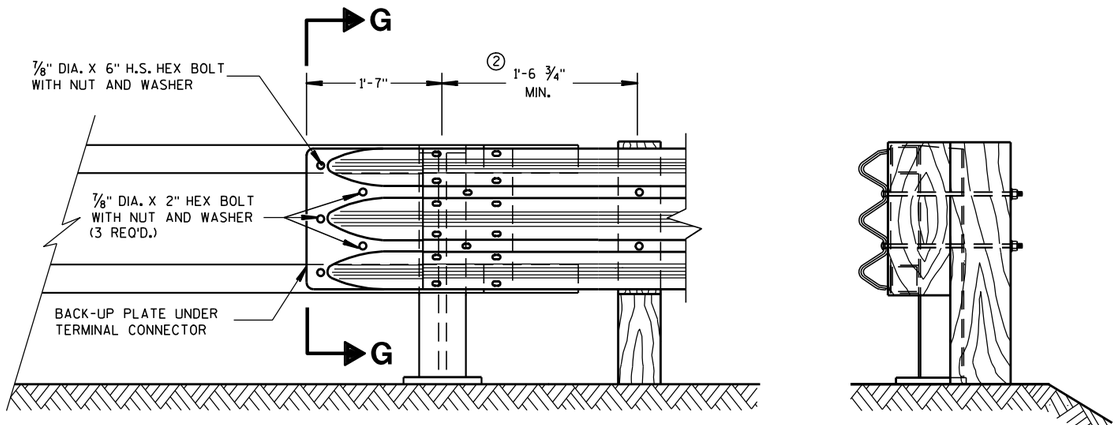


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING



FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



FRONT VIEW

END VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPES "F" AND "W"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012 — DATE

/S/ Jerry H ____ — ROADWAY STANDARDS ENGINEER

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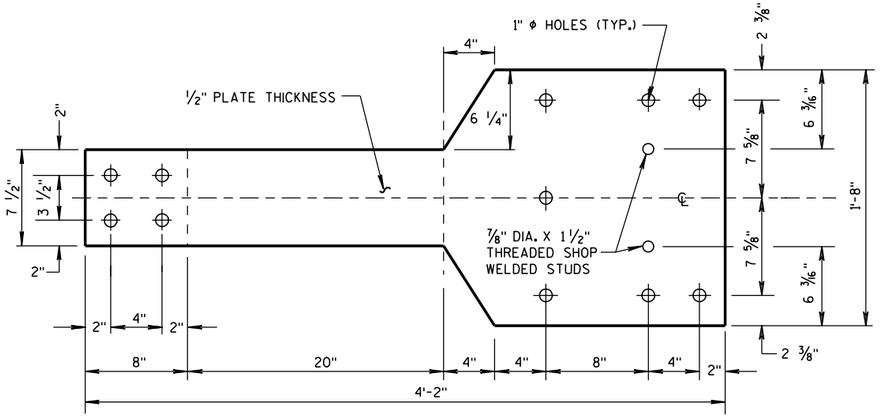
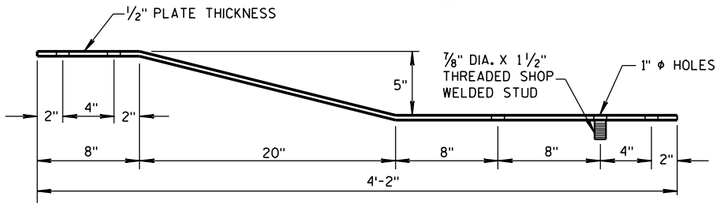
S.D.D. 14 B 20-11e

GENERAL NOTES

① VARY THIS DIMENSION DEPENDING ON ABUTMENT TYPE, WINGWALL DETAILS, AND ANGLE OF SKEW. PLACE THE FIRST WOOD POST OFF THE BRIDGE SHALL BE AS CLOSE AS FEASIBLE TO THE STEEL END POST.

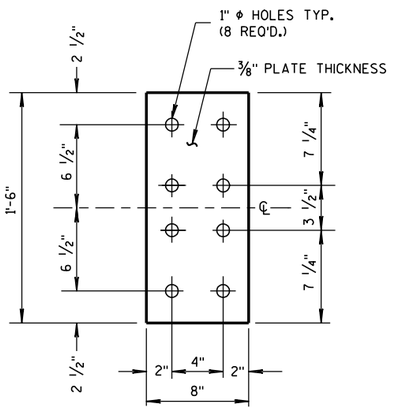


FRONT VIEW



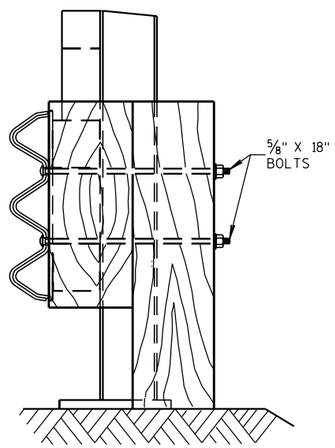
PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

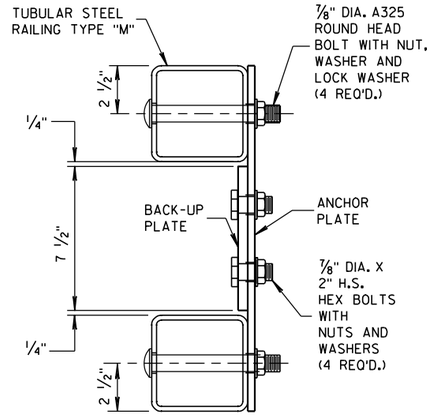


FRONT VIEW

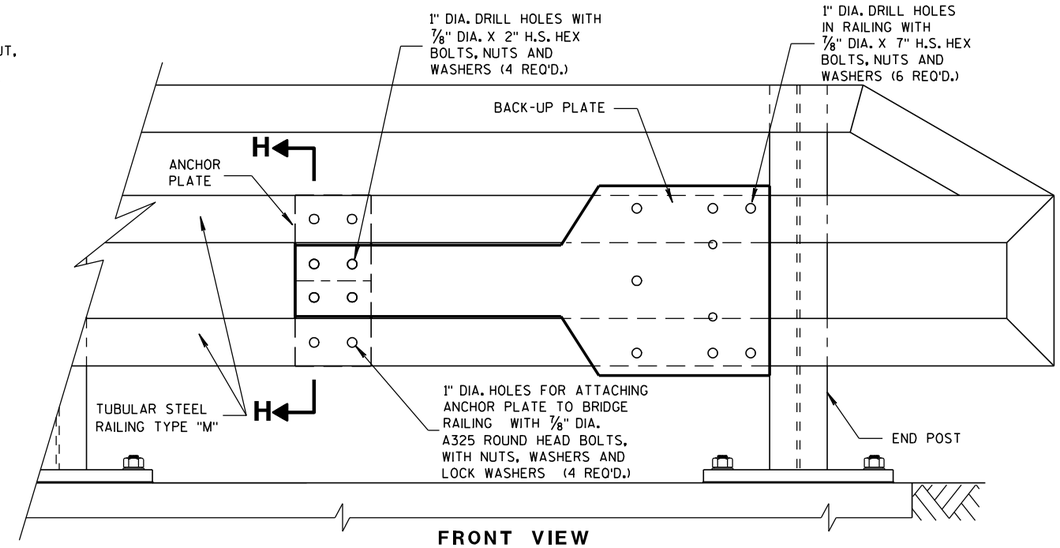
ANCHOR PLATE DETAIL, TYPE "M"



SECTION I-I

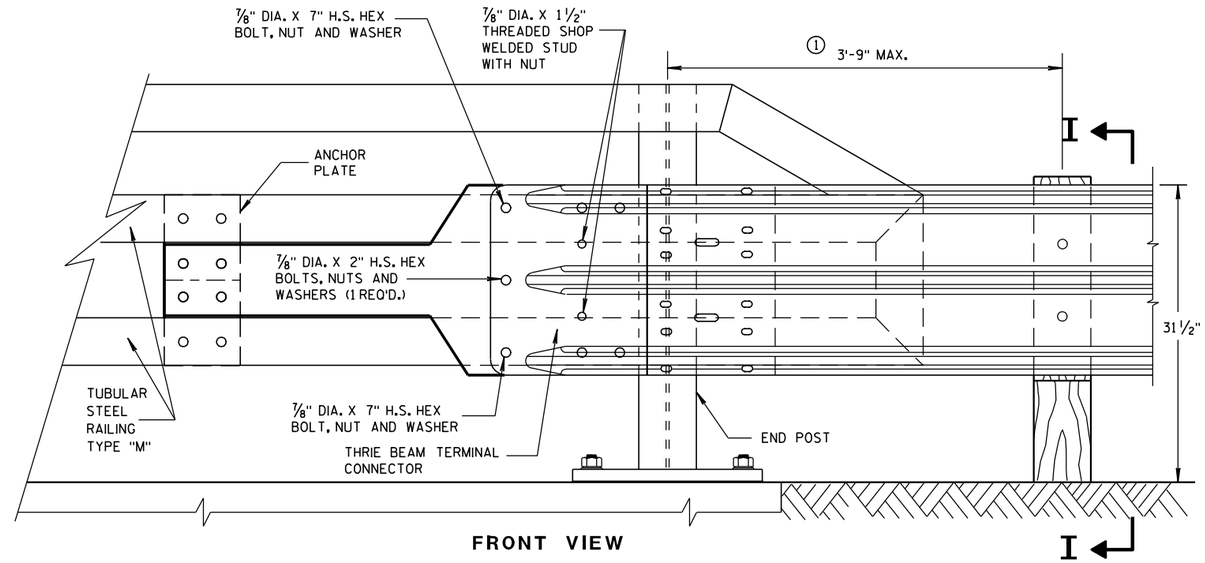


SECTION H-H

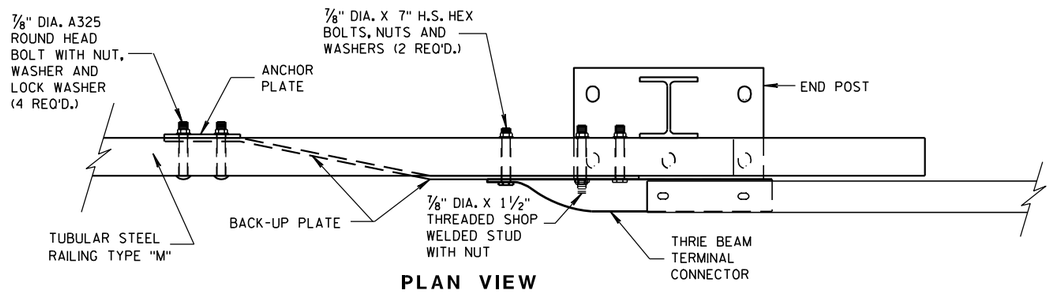


FRONT VIEW

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



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTION TO BRIDGE RAILING TYPE "M"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 — DATE
/S/ Jerry H. [illegible] — ROADWAY STANDARDS ENGINEER
FHWA

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S.D.D. 14 B 20-11f

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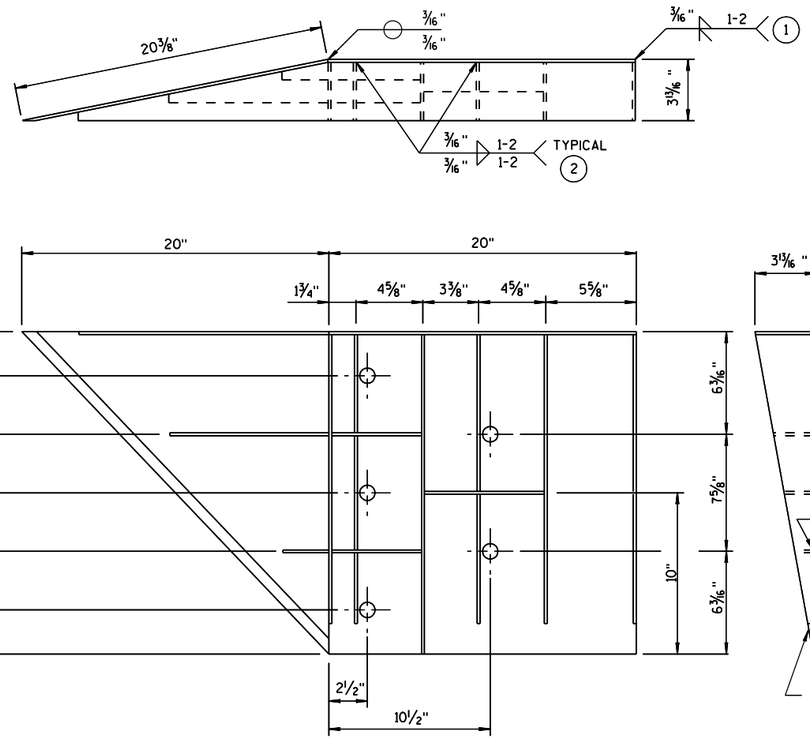
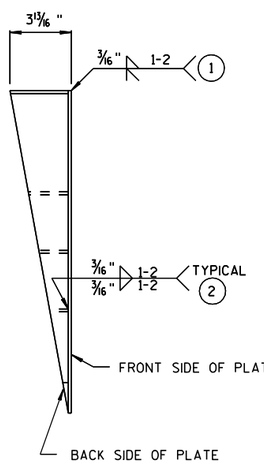
S.D.D. 14 B 20-11f





WELDING INSTRUCTION

(VIEWED FROM BACK SIDE OF PLATE)

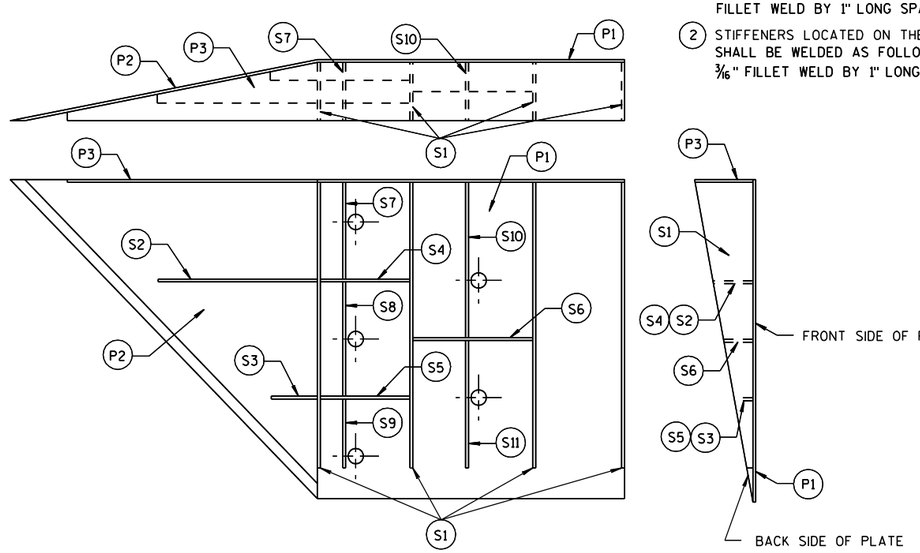


PLATE AND STIFFENER IDENTIFICATION

(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.

(1) 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.

(2) STIFFENERS LOCATED ON THE INSIDE OF THE COVER PLATE SHALL BE WELDED AS FOLLOWS:
3/16" FILLET WELD BY 1" LONG SPACED AT 2".

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 9/16"	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 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" 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 9/16" 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 13/16"	1/4"

STEEL THRIE BEAM STRUCTURE APPROACH

STEEL THRIE BEAM STRUCTURE APPROACH, CONNECTOR PLATE DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/31/2012 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
82
FHWA

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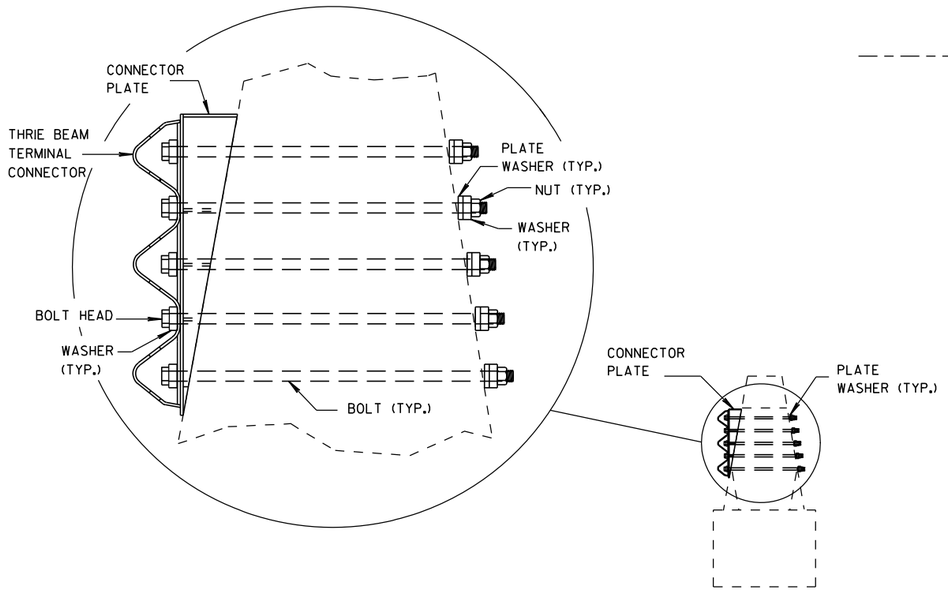
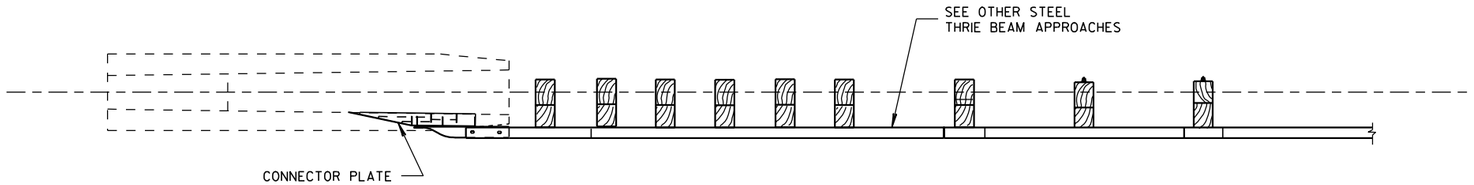
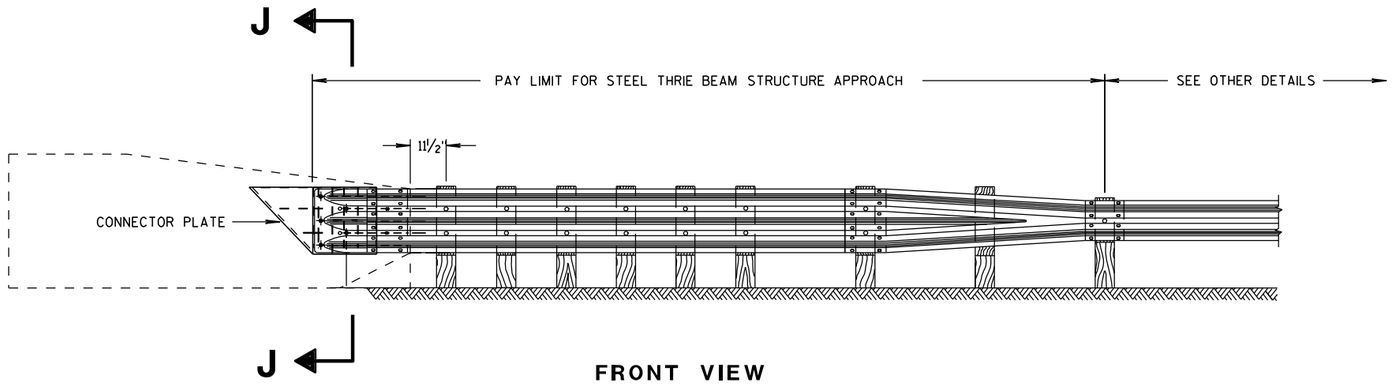
S.D.D. 14 B 20-11g



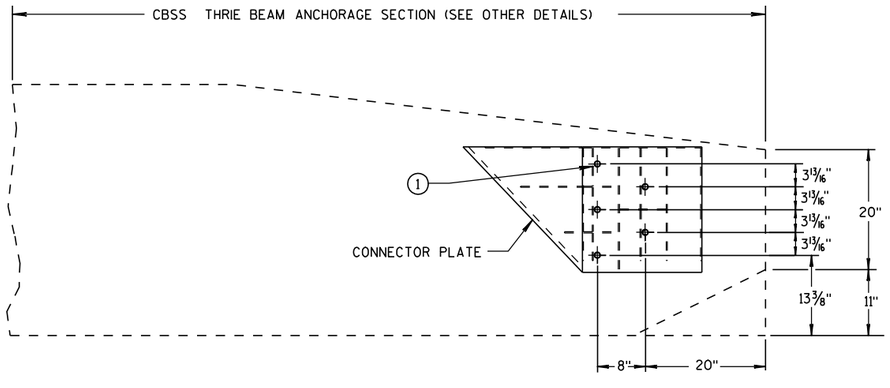
SECTION J-J



PLAN VIEW



FRONT VIEW



CONNECTOR PLATE LOCATION

GENERAL NOTES

CONSTRUCT PER STANDARD SPECIFICATION 614.

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

(1) 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 TERMINAL CONNECTOR. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

STEEL THRIE BEAM STRUCTURE APPROACH

STEEL THRIE BEAM STRUCTURE APPROACH, SINGLE SLOPE ATTACHMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

8/31/2012
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

FHWA

6
S.D.D. 14 B 20-11h

BILL OF MATERIALS

NOTE NO.	QTY.	DESCRIPTION
①	4	WOOD BREAKAWAY TERMINAL POST: 5½" X 7½" X 3'-9"
②	**	STEEL TUBE: OPTION 1 - QUANITY OF 4 TS 8" X 6" X 0.188", 4'-6" LONG OR OPTION 2 - QUANITY OF 2 TS 8" X 6" X 0.188", 6'-0" AND 2 TS 8" X 6" X 0.188", 4'-6" LONG
③	2	SOIL PLATE: 2'-0" X 1'-6" X ¼" **
④	4	WOOD BREAKAWAY CRT POST: 6" X 8" X 6'-0"
⑤	6	WOOD OFFSET BLOCKS: 6' X 8" X 1'-2"
⑥	1	PIPE SLEEVE: 2" X 5 ½" STANDARD PIPE
⑦	1	BEARING PLATE
⑧	1	BCT CABLE ASSEMBLY
⑨	1	CABLE ANCHOR BOX
⑩	1	STRUT & YOKE
⑪	1	STEEL PLATE BEAM, END PANEL 12 GA. 13'-6½" LONG FOR SKT-350, ET-2000 AND ET-2000 PLUS
⑫	3	STEEL PLATE BEAM: 12 GA. 13'-6½"
⑬	1	ET-2000/ET-2000 PLUS GUARDRAIL EXTRUDER OR SKT-350 IMPACT HEAD: AS FURNISHED BY MANUFACTURER
⑭	1	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS
⑮	1	E.A.T. MARKER POST

GENERAL NOTES

FOLLOW MANUFACTURE'S BOLTING RECOMMENDATIONS. IF NONE ARE AVAILABLE, INSTALL ⅝" ø X 1'-6" BUTTON HEAD BOLTS AT ALL POSTS EXCEPT FOR POST 1.

(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) THE 13 SLOT FIRST RAIL PANEL MAY BE USED IN LIEU OF THE 3 SLOT RAIL PANEL ON SKT-350 ONLY.

(D) THE TOP OF THE STEEL TUBE ON POSTS 1 THROUGH 4 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.

(E) THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST 5 THROUGH 8 SHALL BE ¾" ABOVE THE FINISHED GROUND LINE.

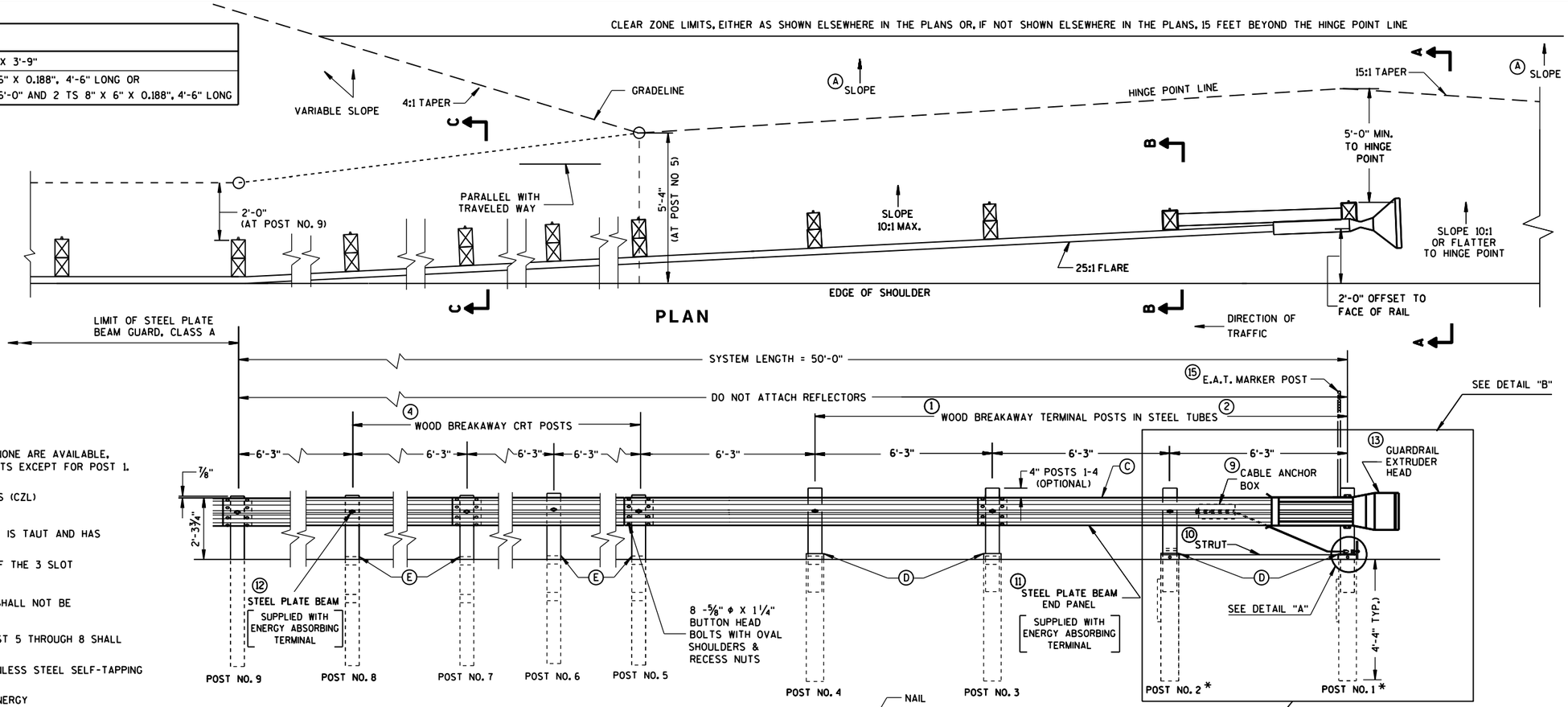
(F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER.

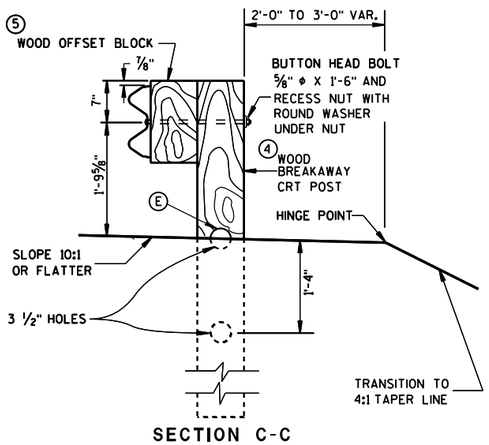
STEEL POSTS SHALL NOT BE ALLOWED FOR USE WITH ENERGY ABSORBING TERMINALS.

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

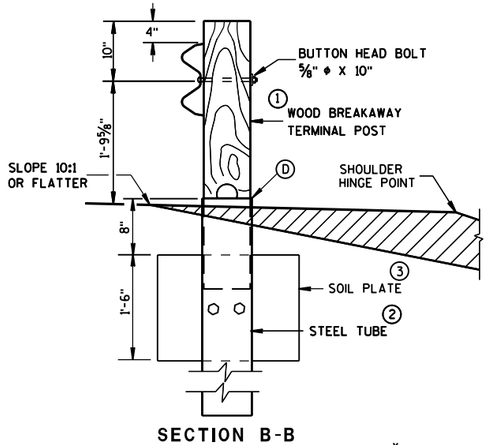
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

** SDD SHOWS 4 - 54 INCH STEEL TUBES WITH SOIL PLATES INSTALLED ON POST 1 AND POST 2. POST 3 AND 4 DO NOT NEED SOIL PLATES. AN ALTERNATIVE INSTALLATION WOULD CONSIST OF 2 - 72 INCH STEEL TUBES ON POST 1 AND POST 2 AND 54 INCH SOIL TUBES ON POSTS 3 AND 4. THE ALTERNATIVE INSTALLATION DOES NOT REQUIRE SOIL PLATES.

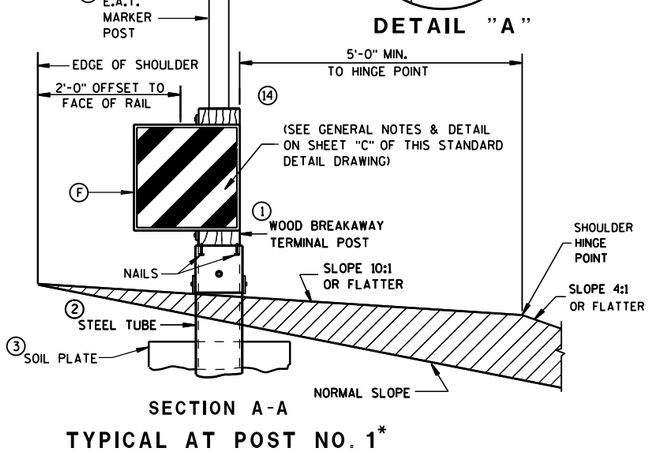




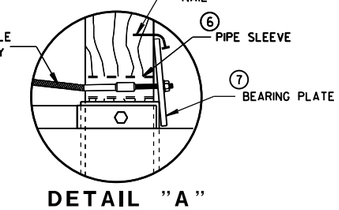
SECTION C-C
TYPICAL AT POST NOS. 6, 8



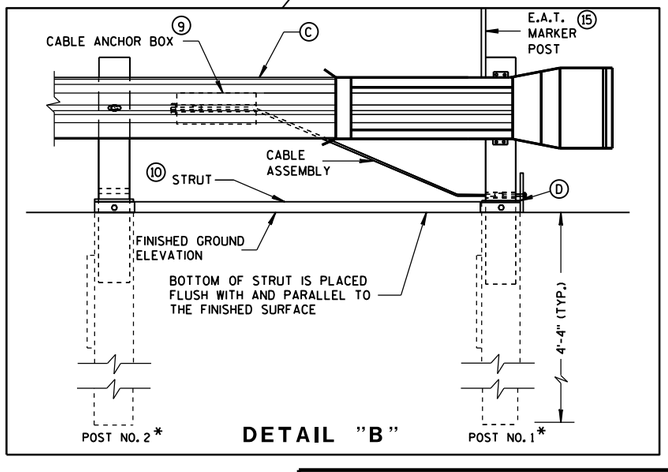
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



DETAIL "B"

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO 84

6

S.D.D. 14 B 24-8a

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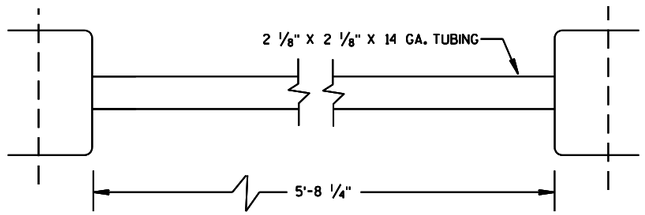
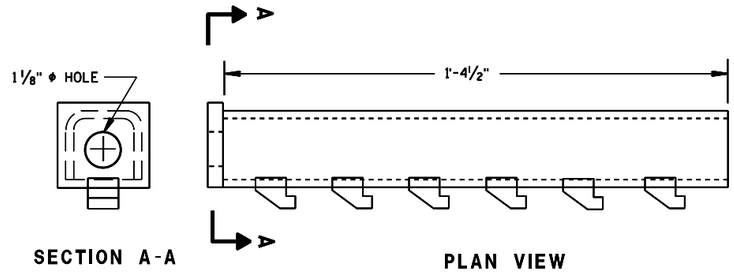
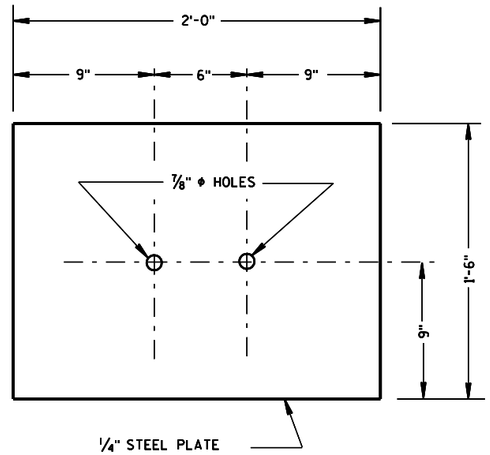
S.D.D. 14 B 24-8a



⑩ STRUT DETAIL (SKT-350)

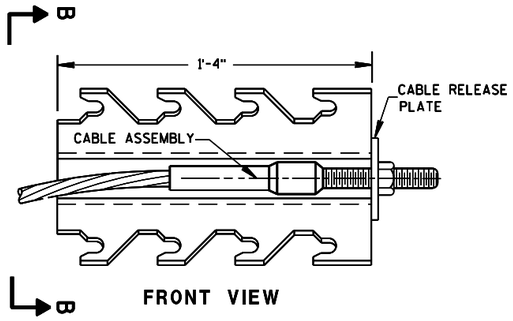


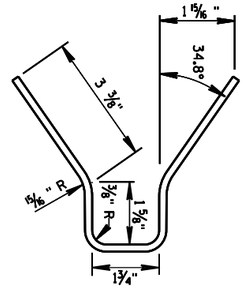
⑨ CABLE ANCHOR BOX (ET-2000/ET-2000 PLUS)



③ SOIL PLATE

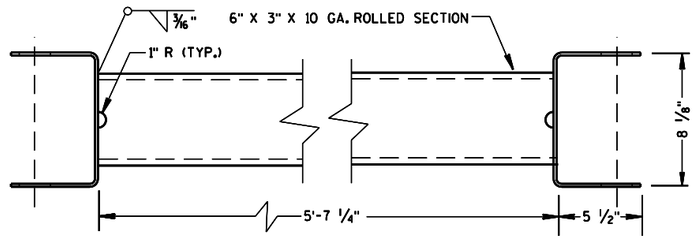
(SKT-350, ET-2000/ET-2000 PLUS)





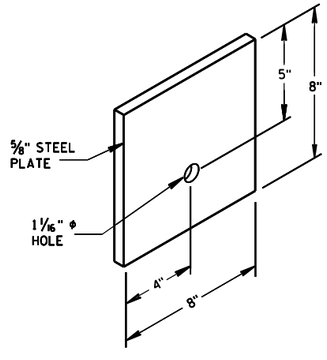
⑨ CABLE ANCHOR BOX (SKT-350)

(SKT-350)



⑩ STRUT DETAIL (ET-2000/ET-2000 PLUS)

(ET-2000/ET-2000 PLUS)



⑦ STEEL BEARING PLATE

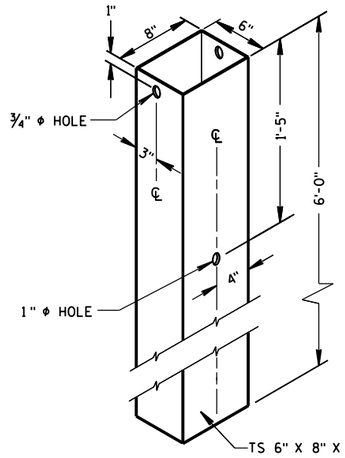
(SKT-350, ET-2000/ET-2000 PLUS)

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

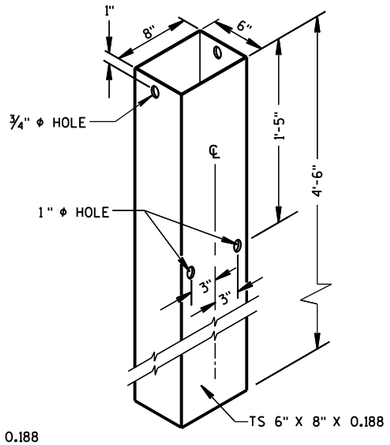
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

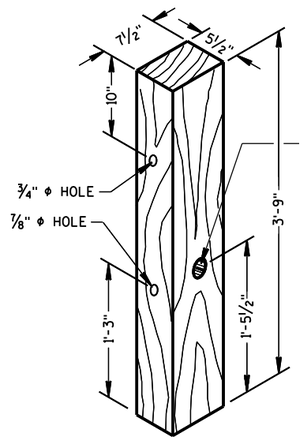
S.D.D. 14 B 24-8b



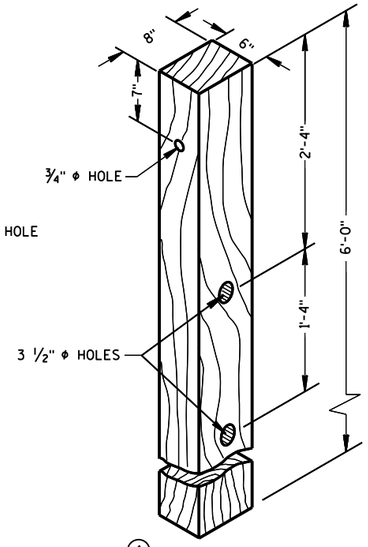
② 72" STEEL TUBE
(POSTS NO. 1-4



② 54" STEEL TUBE
(POSTS NO. 1-4



① TERMINAL POST
(POSTS NO. 1-4



④ CRT POST
(POSTS NO'S 5-8

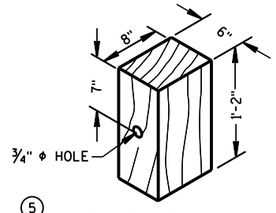
WOOD BREAKAWAY POSTS

GENERAL NOTES

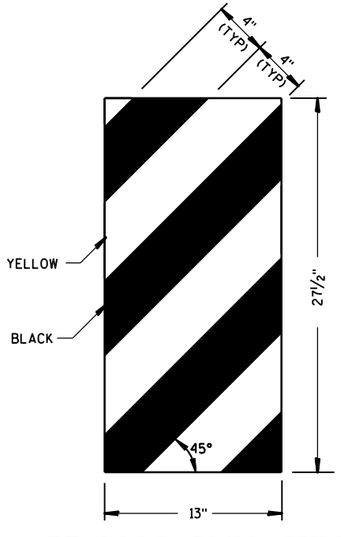
WHEN ROCK IS ENCOUNTERED DURING EXCAVATION, A 12 INCH DIA. POST HOLE EXTENDING 20 INCHES DEEP INTO THE ROCK MAY BE USED IF APPROVED BY THE ENGINEER. GRANULAR MATERIAL SHALL BE PLACED IN THE BOTTOM OF THE HOLE APPROXIMATELY 2 ½" INCHES DEEP TO PROVIDE DRAINAGE. THE SOIL TUBES SHALL BE FIELD CUT TO LENGTH, PLACED IN THE HOLE AND BACKFILLED WITH ADEQUATELY COMPACTED MATERIAL EXCAVATED FROM THE HOLE.

SEE APPROVED PRODUCTS LIST FOR ACCEPTABLE E. A. T. MARKER POST.

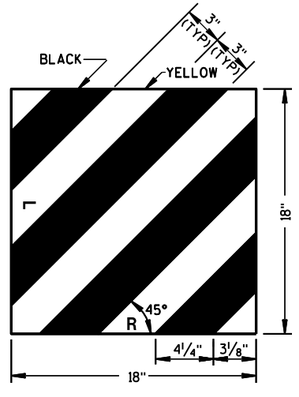
(G) ½" DIA. X 3" LAG BOLT WITH WASHER.



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

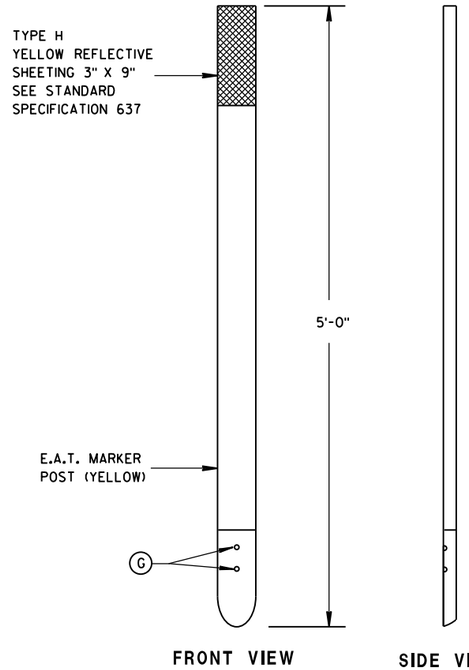


ET-2000 PLUS ONLY



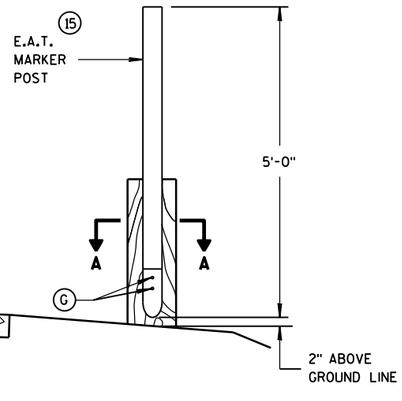
ET-2000 AND SKT-350

⑭ REFLECTIVE SHEETING DETAILS

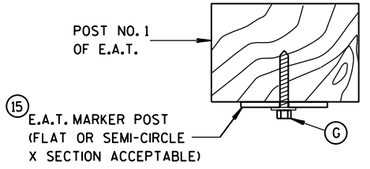


FRONT VIEW SIDE VIEW

⑮ E.A.T. MARKER POST



TYPICAL INSTALLATION OF E.A.T.
MARKER POST BACKSIDE OF POST NO. 1
(E.A.T. AND RAIL REMOVED FOR CLARITY)



SECTION A-A

STEEL PLATE BEAM GUARD
ENERGY ABSORBING TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

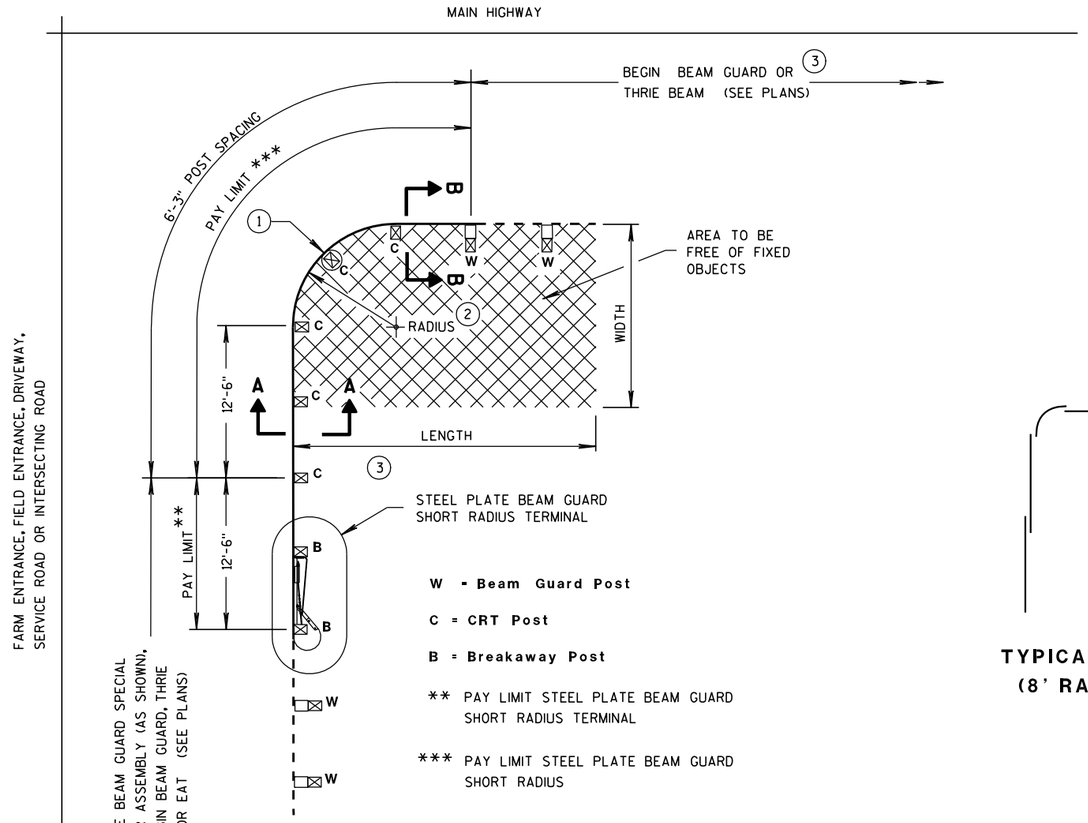
APPROVED
June 2014 — DATE
/S/ Jerry H. Zoda — ROADWAY STANDARDS ENGINEER
FHWA

6

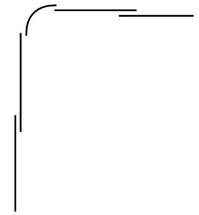
S.D.D. 14 B 24-8c

6

S.D.D. 14 B 24-8c



TYPICAL LAYOUT
(8' RADIUS SHOWN)



TYPICAL LAP SPLICES
(8' RADIUS SHOWN)

GENERAL NOTES

ALL ANGLES, CHANNELS, AND PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36 AND THE STRUCTURAL TUBING SHALL CONFORM TO ASTM A 500. WELDING SHALL MEET THE CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI/AWS D1.1. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A 123. PUNCHING, DRILLING, CUTTING, OR WELDING WILL NOT BE PERMITTED AFTER GALVANIZING. FURNISH AND INSTALL HARDWARE PER STANDARD SPECIFICATION 614.2. UNLESS NOTED OTHERWISE.

SHOP BEND CURVED RAIL SECTIONS.

SEE STANDARD DETAIL DRAWING 14 B 15 FOR OTHER DETAIL.

(1) ON THE 8 FOOT RADIUS INSTALLATION, DO NOT INSTALL BUTTON HEAD BOLT AT CENTER CRT POST.

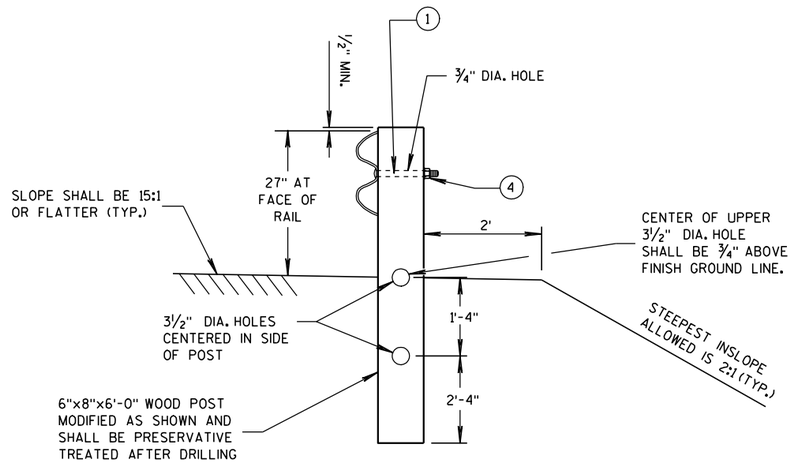
(2) RADIUS FROM 8' - 36'. SEE PLAN.

(3) HEIGHT TRANSITION MAY BE REQUIRED. SEE PLAN OR PROJECT ENGINEER.

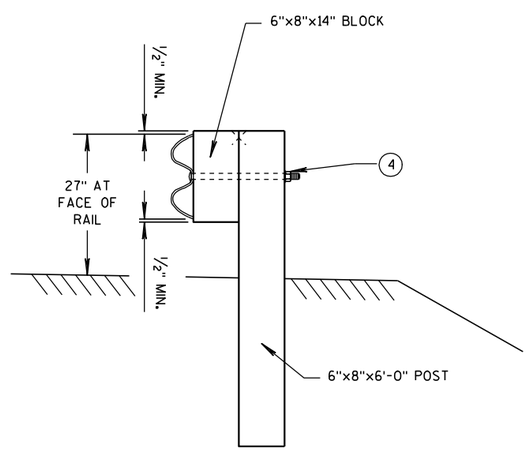
(4) 5/8" ø X 1'-6" BUTTON HEAD BOLT AND RECESS NUT WITH ROUND WASHER UNDER NUT.

RADIUS	NUMBER OF CRT POSTS	*NUMBER AND LENGTH OF CURVED RAILS	REQUIRED AREA FREE OF FIXED OBJECTS (LENGTH x WIDTH)
8'	5	1 at 12.5'	25' x 15'
16'	7	1 at 25'	30' x 15'
24'	9	1 at 25' and 1 at 12.5'	40' x 20'
32'	11	2 at 25'	50' x 20'

* THE NUMBER OF RAILS IS BASED ON A 90° INTERSECTION. SEE PLAN FOR NON 90° INSTALLATIONS.



SECTION A-A
(CRT POST)



SECTION B-B
(BEAM GUARD POST)

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

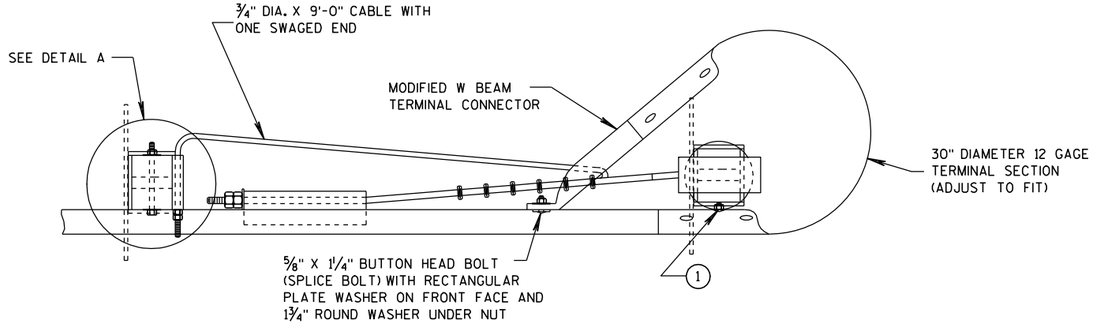
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

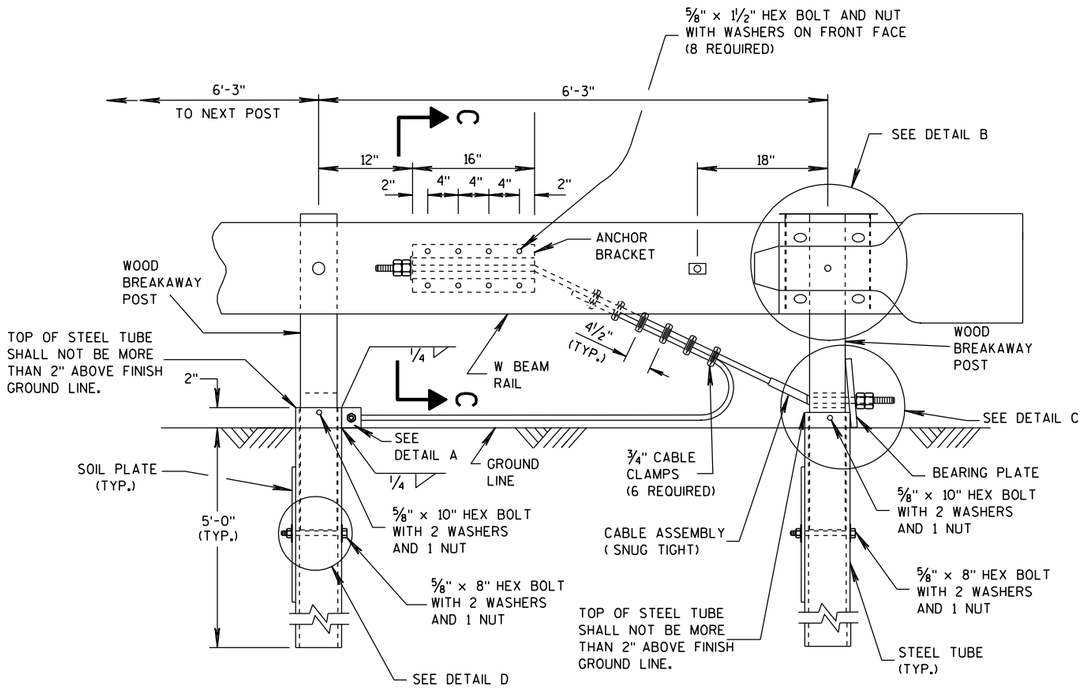
S.D.D. 14 B 27-1a

6

S.D.D. 14 B 27-1a



PLAN VIEW



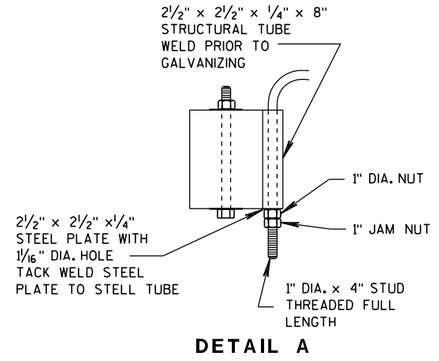
ELEVATION VIEW

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

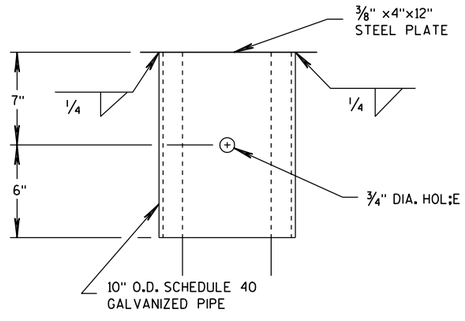
GENERAL NOTES

(1) ATTACH W BEAM RAIL TO THE STEEL PIPE WITH A ⅝" X 2" BUTTON HEAD BOLT WITH NO WASHER. CONNECTION TO THE POST IS NOT REQUIRED.

INSTALL GALVANIZED ¾" (6X19) PREFORMED WIRE OR INDEPENDENT WIRE ROPE CORE CONFORMING TO AASHTO M 30. MANUFACTURE WIRE ROPE OUT OF IMPROVED PLOW STEEL WITH A MINIMUM BREAKING STRENGTH OF 42,800 PSI.



DETAIL A



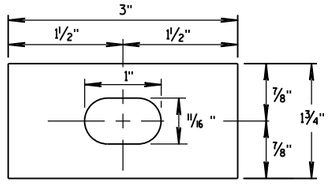
DETAIL B

(BEAM GUARD AND TERMINAL SECTION NOT SHOWN)

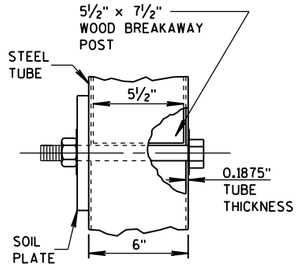
STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

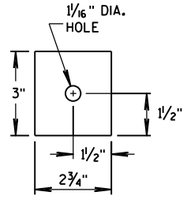
6
S.D.D. 14 B 27-1b



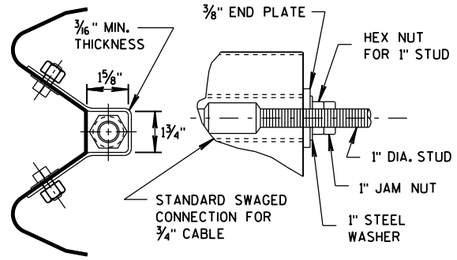
RECTANGULAR PLATE WASHER



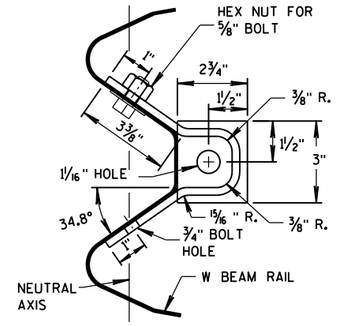
DETAIL D



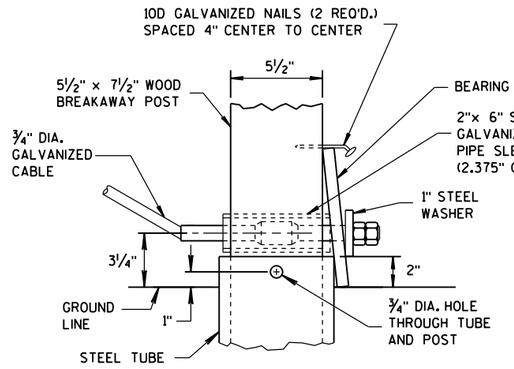
END PLATE



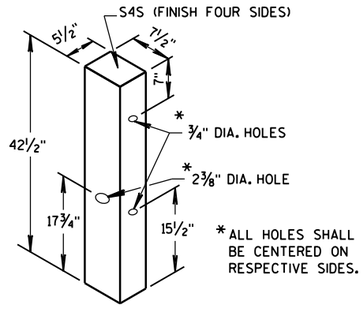
SECTION C-C
(END PLATE REMOVED)



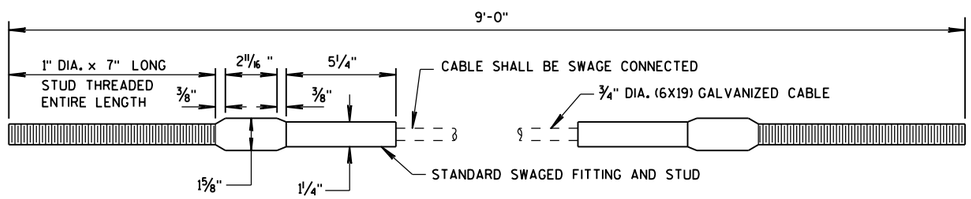
ANCHOR BRACKET



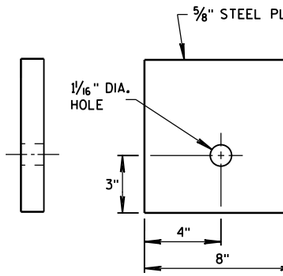
DETAIL C



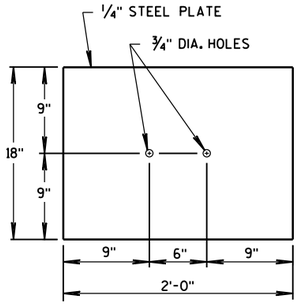
WOOD BREAKAWAY POST



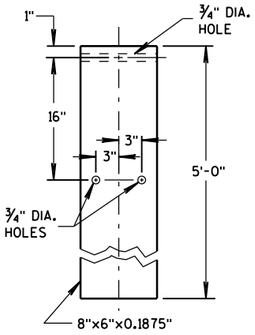
CABLE ASSEMBLY



BEARING PLATE



SOIL PLATE



STEEL TUBE

STEEL PLATE BEAM GUARD SHORT RADIUS TERMINAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

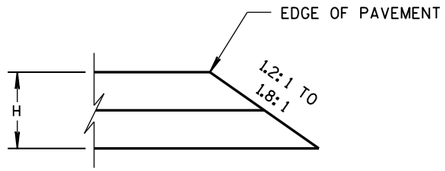
APPROVED
12/18/08 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 14 B 27-1c

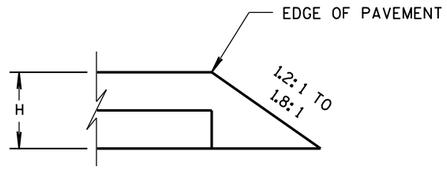
6

S.D.D. 14 B 27-1c



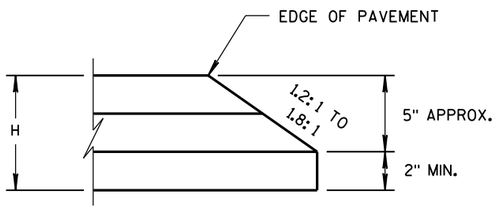
CONSTRUCTED WITH FINAL TWO LAYERS

FOR H 5" OR LESS



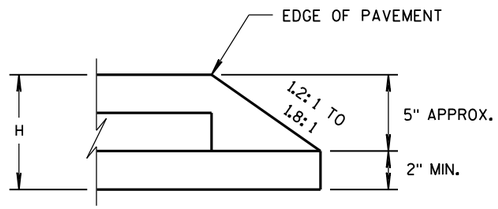
CONSTRUCTED WITH FINAL LAYER

FOR H 5" OR LESS



CONSTRUCTED WITH FINAL TWO LAYERS

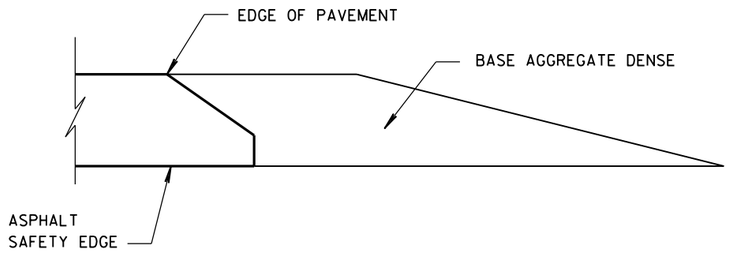
FOR H GREATER THAN 5"



CONSTRUCTED WITH FINAL LAYER

FOR H GREATER THAN 5"

HMA PAVEMENT AND HMA OVERLAYS



FINISHED SHOULDER AGGREGATE PLACEMENT

6

SAFETY EDGE SM

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

11/30/2012
DATE

/S/ Jerry H. Zoda
ROADWAY STANDARDS DEVELOPMENT ENGINEER

FHWA

S.D.D. 14 B 29-1

S.D.D. 14 B 29-1

GENERAL NOTES

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.

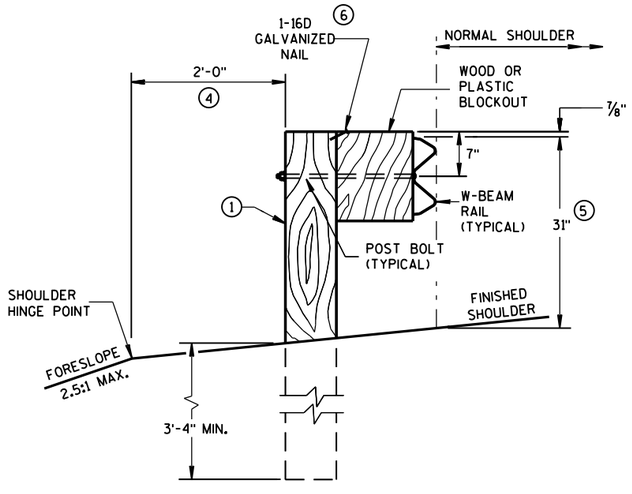
2. USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

3. IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2½ INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL IS TO BE FREE OF LARGE ROCKS.

4. WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).

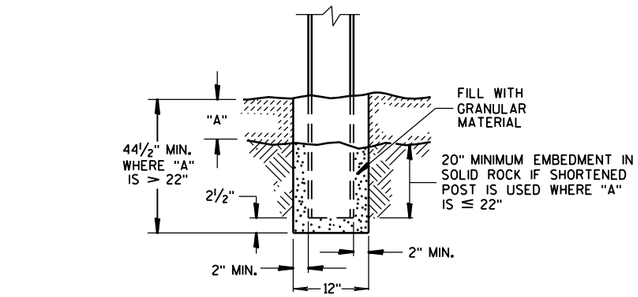
5. FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

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.



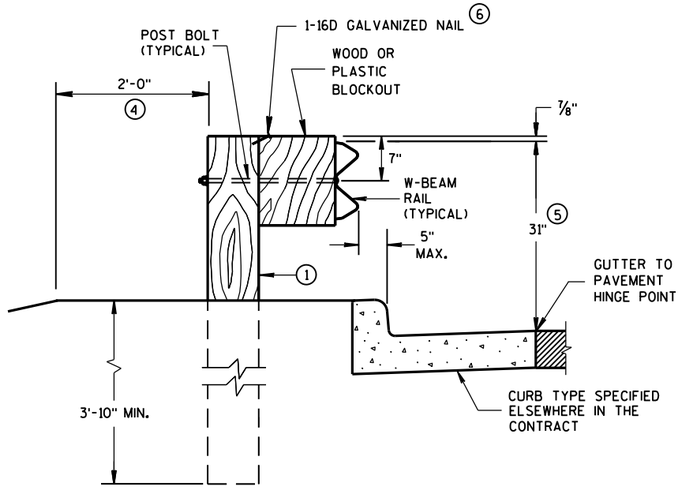
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



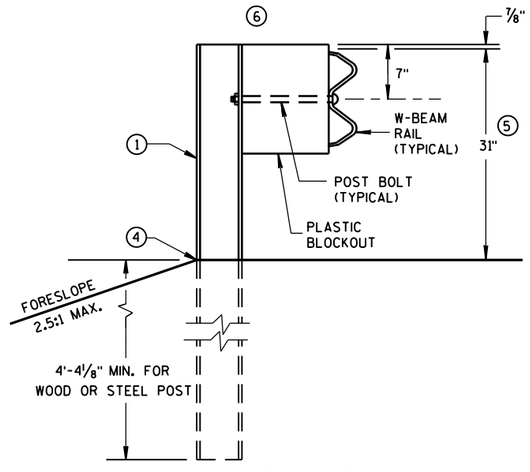
END VIEW

SETTING STEEL OR WOOD POST IN ROCK ③



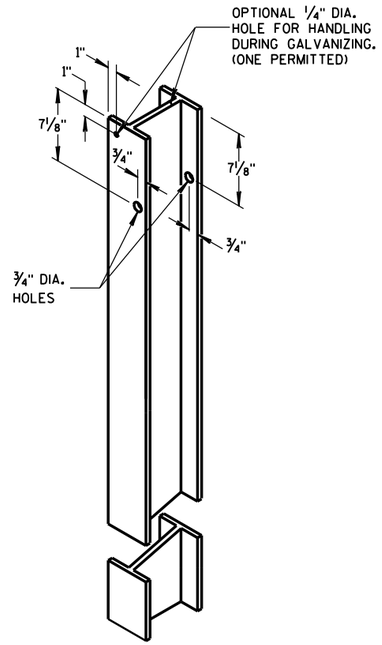
END VIEW

LOCATED ALONG A CURBED ROADWAY

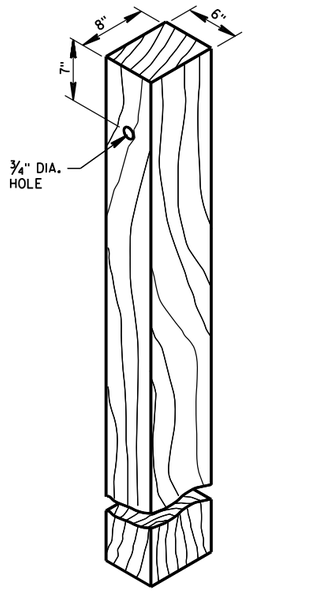


END VIEW

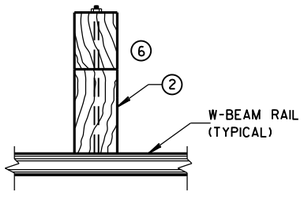
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



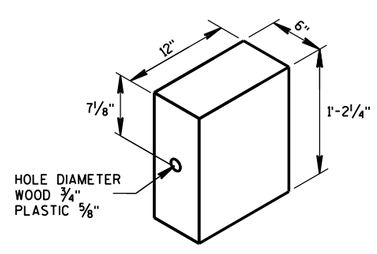
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



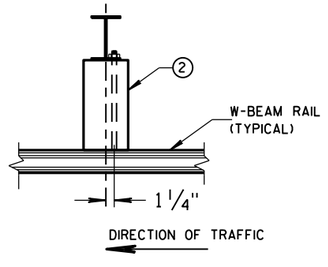
WOOD POST
(6" X 8") NOMINAL ①



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT ②

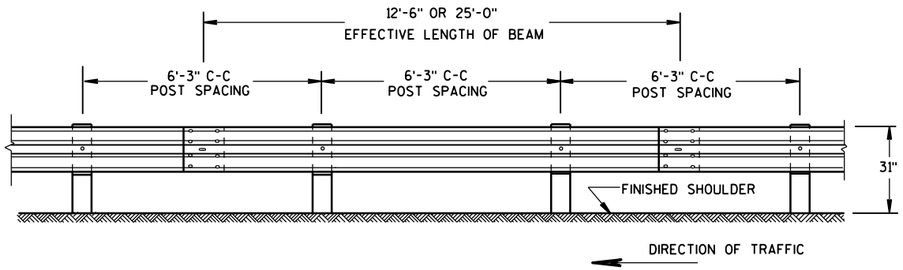


PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

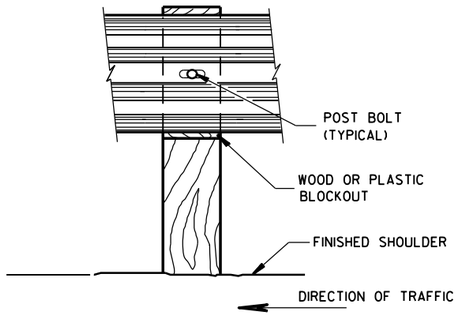
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6
S.D.D. 14 B 42-3a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



FRONT VIEW AT WOOD POST

GENERAL NOTES

(7) PROVIDE SILVER REFLECTIVE SHEETING ON ALL REFLECTORS EXCEPT THOSE LOCATED ALONG THE LEFT EDGE OF ONE-WAY ROADWAYS, WHICH SHALL BE PROVIDED WITH YELLOW REFLECTIVE SHEETING. SHEETING IS TYPE H. SEE STANDARD SPECIFICATION 637.

(8) DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL. RAIL SPLICE LOCATIONS ARE THE ONLY ACCEPTABLE LOCATIONS FOR REFLECTORS.

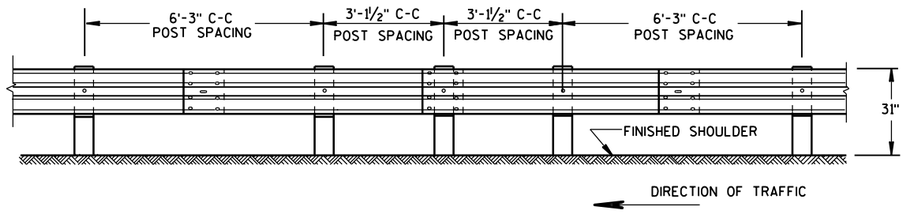
(9) REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.

(10) PROVIDE AN ANGLE OF BEND OF 90° ± 1° FOR TWO-SIDED REFLECTORS.

(11) 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

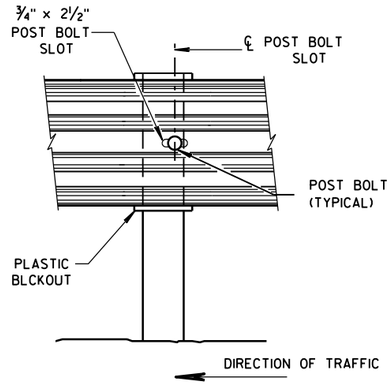
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

GUARD RAIL SPLICE BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.

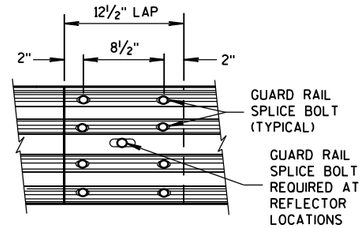


FRONT VIEW

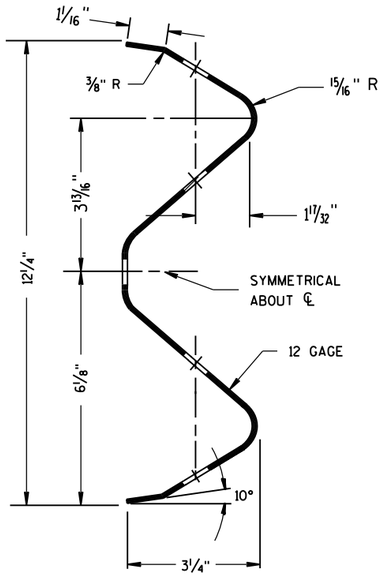
HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)



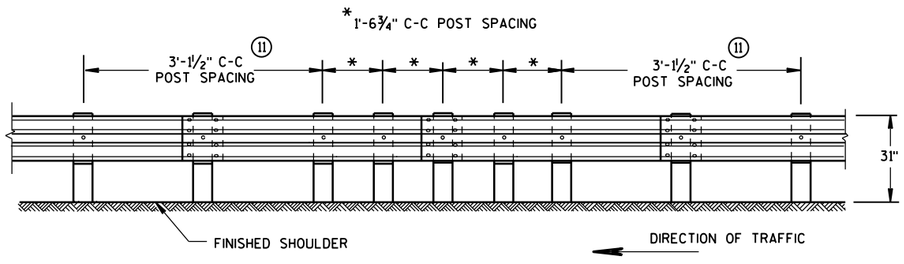
FRONT VIEW AT STEEL POST



FRONT VIEW
MID-SPAN BEAM SPLICE

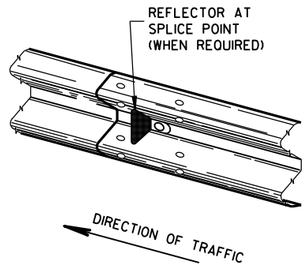


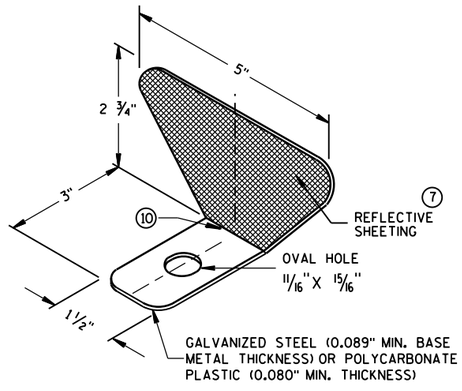
SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)





ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION (7)

REFLECTOR SPACING (8)

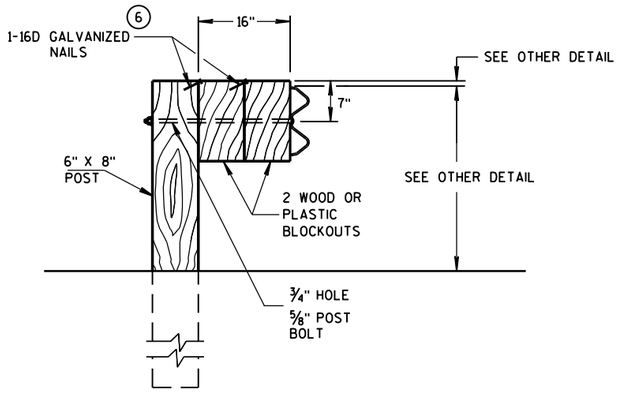
	BEAM GUARD LENGTH	REFLECTOR SPACING	NO. SURFACES REFLECTORIZED	MIN. NO. REFLECTORS
ONE WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	1 1	3
TWO WAY TRAFFIC	< 200' > 200'	25' C-C 50' C-C	1 (9) 1	6
TWO WAY TRAFFIC	< 200' > 200'	50' C-C 100' C-C	2 2 (10)	3

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

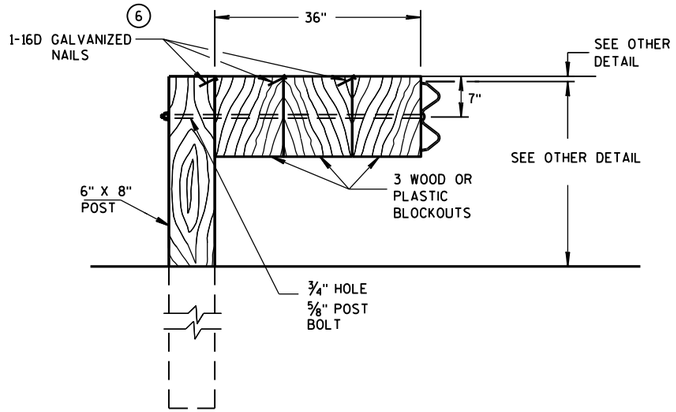
6

S.D.D. 14 B 42-3b



DETAIL FOR 16" BLOCKOUT DEPTH

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

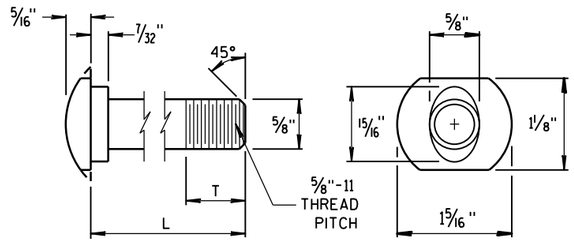


DETAIL FOR 36" BLOCKOUT DEPTH

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

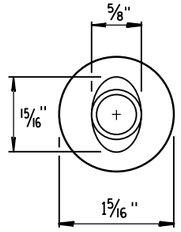
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

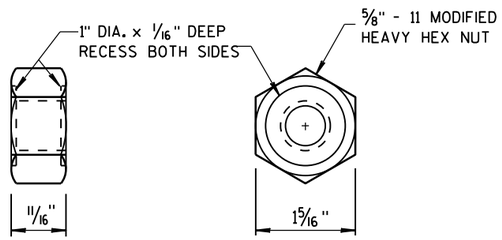


POST BOLT TABLE

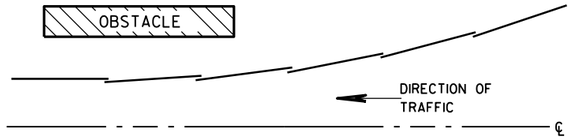
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

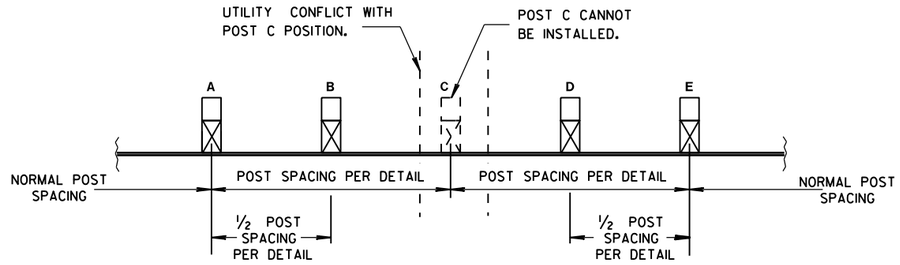


POST BOLT AND RECESS NUT

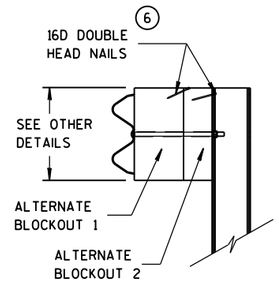


PLAN VIEW

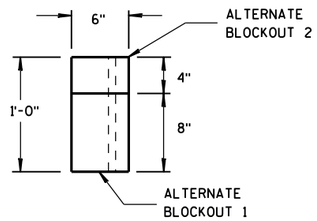
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2014 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

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S.D.D. 14 B 42-3c

GENERAL NOTES

(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 MANUFACTURES REQUIRE DIFFERENT PERFORATED W-BEAM RAIL END PANELS. SEE MANUFACTURES INFORMATION.

(D) THE TOP OF THE STEEL TUBE ON POST 1 AND POST 2 SHALL NOT BE MORE THAN 3" ABOVE THE FINISH GROUND ELEVATION.

(F) ATTACH ALUMINUM SHEET TO E.A.T. HEAD USING 4 STAINLESS STEEL SELF-TAPPING SCREWS. ONE SCREW PER CORNER.

(G) ½" DIAMETER X 3" LONG LAG BOLT AND WASHER.

(H) HARDWARE VARIES BETWEEN DIFFERENT MANUFACTURES. SEE MANUFACTURE'S DRAWING FOR INFORMATION.

(I) DIMENSIONS MAY VARY. SEE MANUFACTURE'S INFORMATION.

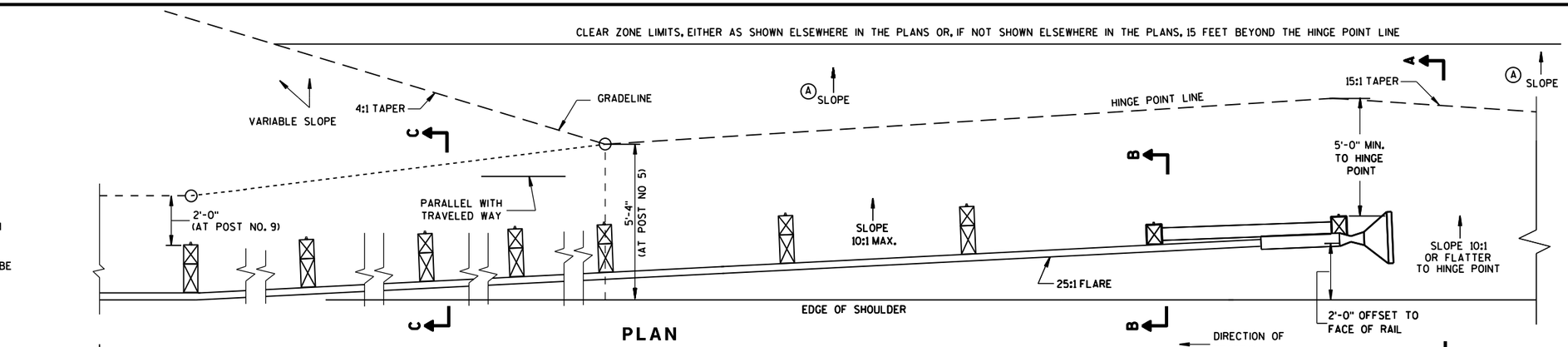
SEE SDD 14B42 FOR MORE INFORMATION.

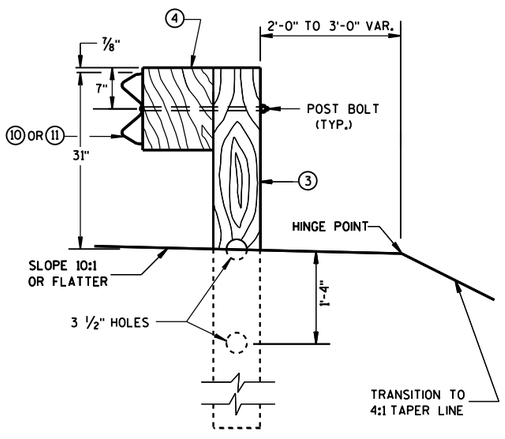
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

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

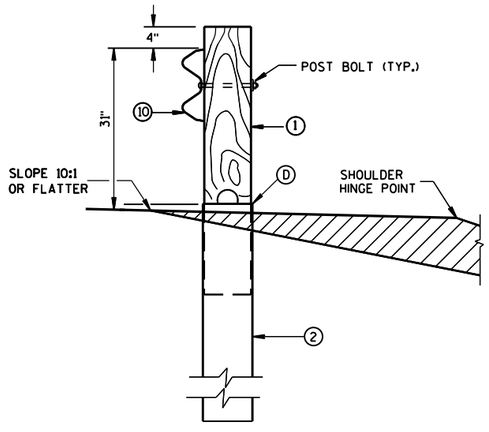
W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

THE CENTER OF THE UPPER 3½" 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.

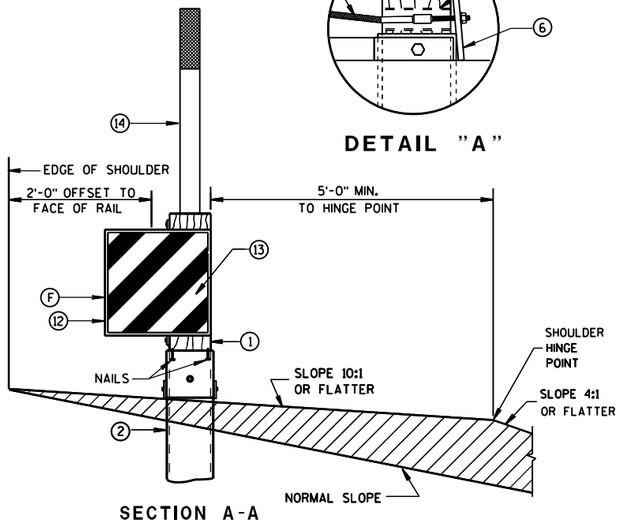




SECTION C-C
TYPICAL AT POST NOS. 3-9

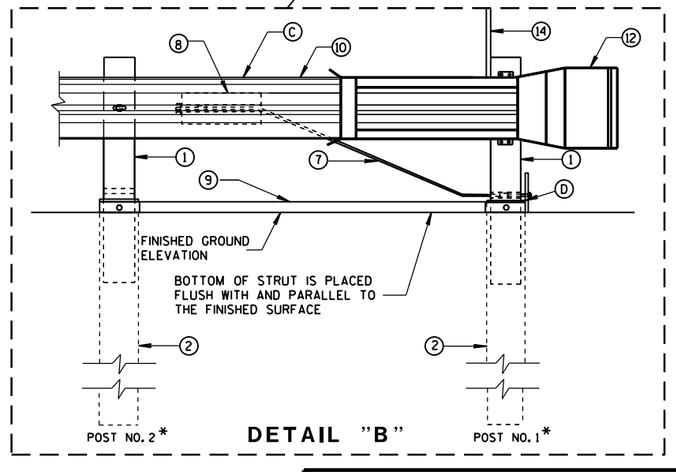


SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*

DETAIL "A"



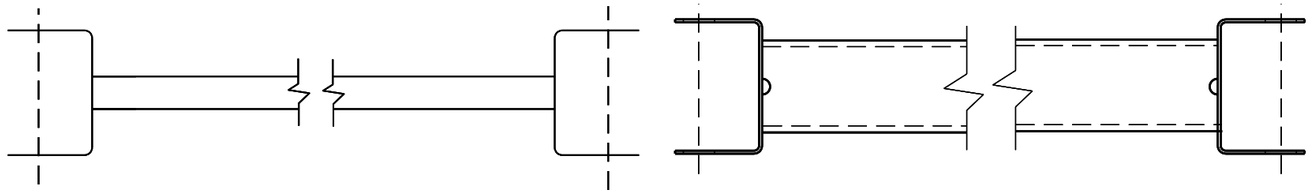
DETAIL "B"

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

S.D.D. 14 B 44-2a

S.D.D. 14 B 44-2a

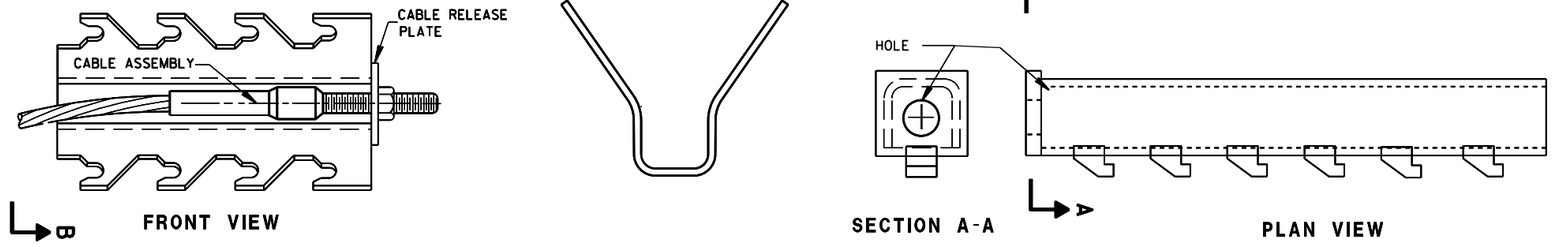


⑨ Ⓗ

GENERIC GROUND STRUT

BILL OF MATERIALS

PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
①	WOOD BREAKAWAY POST
②	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
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	END SECTION EAT
⑬	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS
⑭	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)



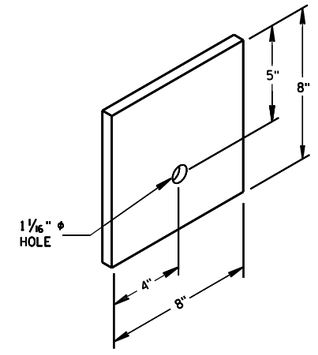
FRONT VIEW

SECTION B-B

SECTION A-A

PLAN VIEW

GENERIC ANCHOR CABLE BOX ⑧ Ⓗ

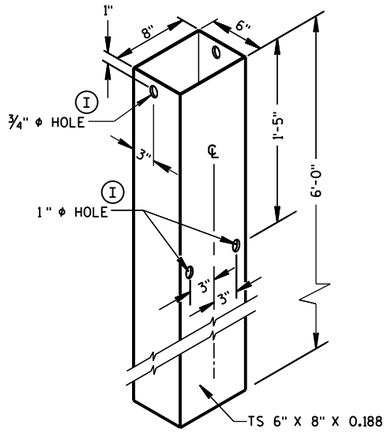


BEARING PLATE ⑥

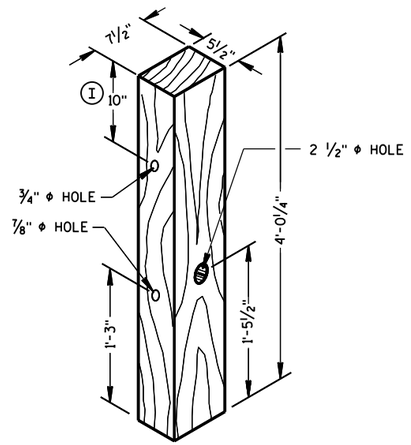
MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6
S.D.D. 14 B 44-2b

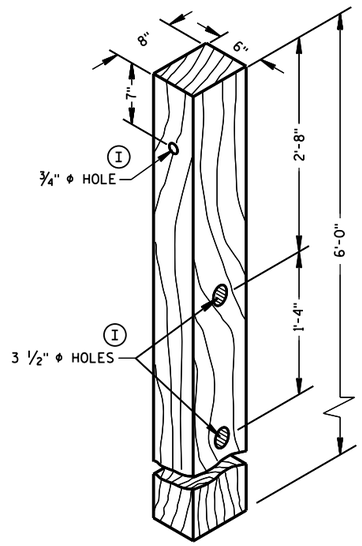


FOUNDATION TUBE (2)



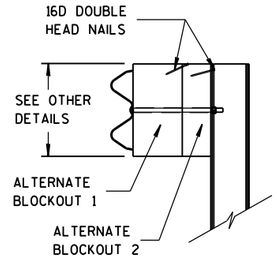
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

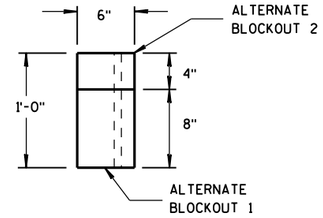


POSTS NUMBER 3-9

WOOD CRT POST (3)

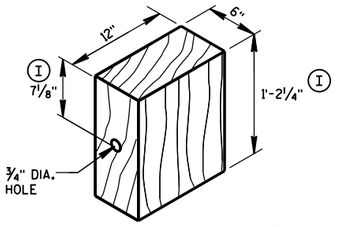


SIDE VIEW



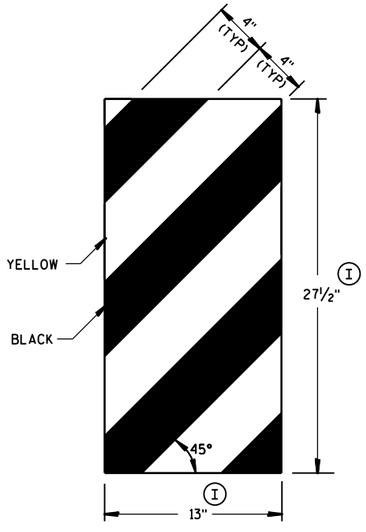
TOP VIEW

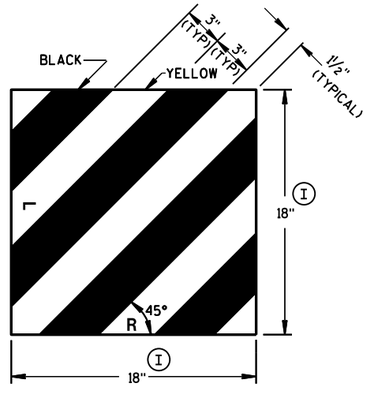
ALTERNATE WOOD BLOCKOUT DETAIL



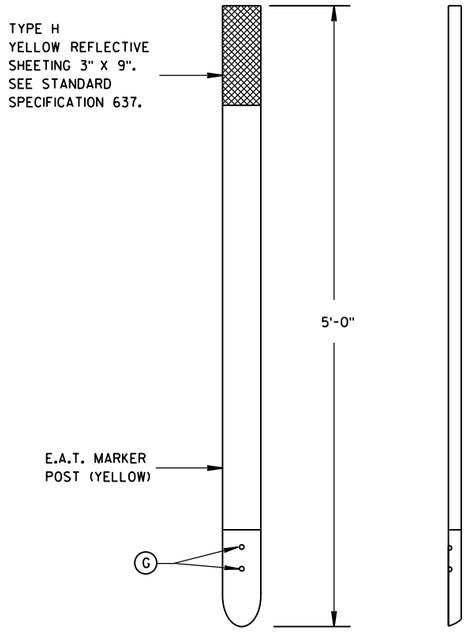
WOOD BLOCKOUT (4)

REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2





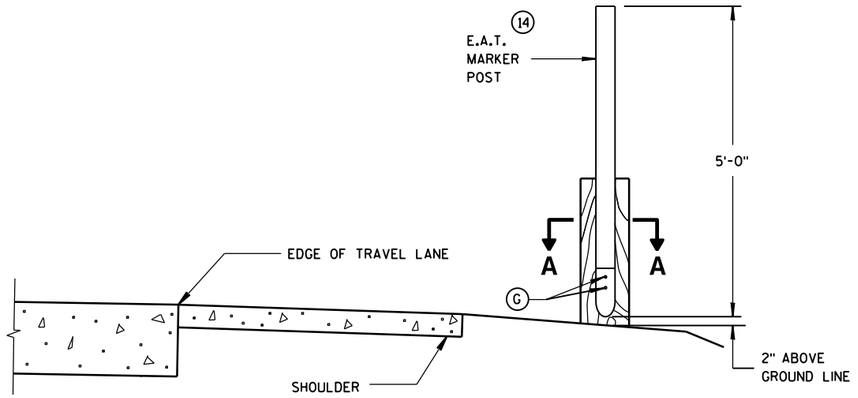
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

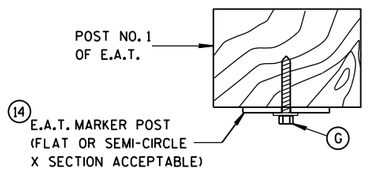
SIDE VIEW

E.A.T. MARKER POST (14)



TYPICAL INSTALLATION OF E.A.T. MARKER POST BACKSIDE OF POST NO. 1

(E.A.T. AND RAIL REMOVED FOR CLARITY)

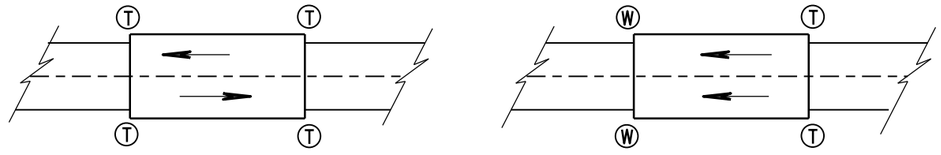


SECTION A-A

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2014 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA



TWO WAY TRAFFIC

ONE WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

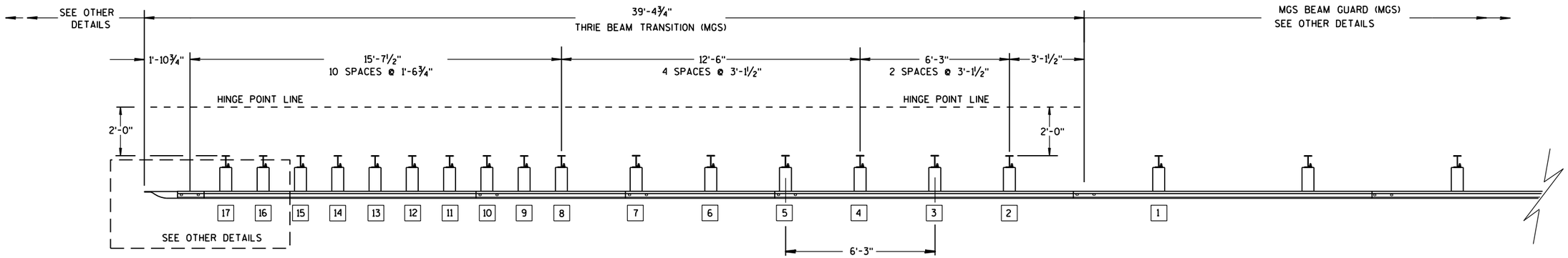
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

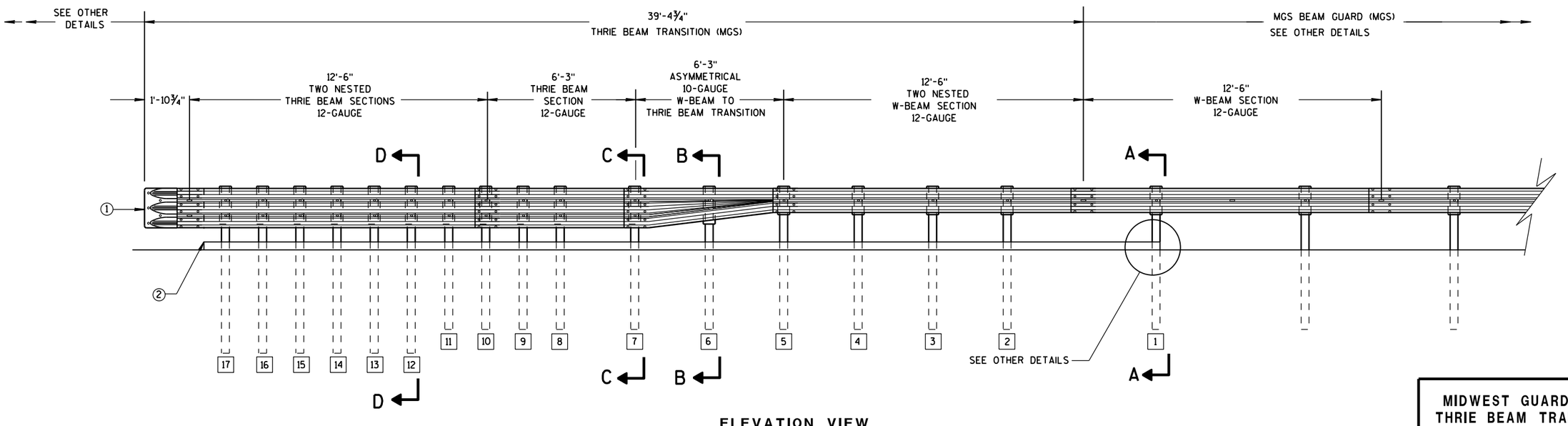
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

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



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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S.D.D. 14 B 45-4a

6

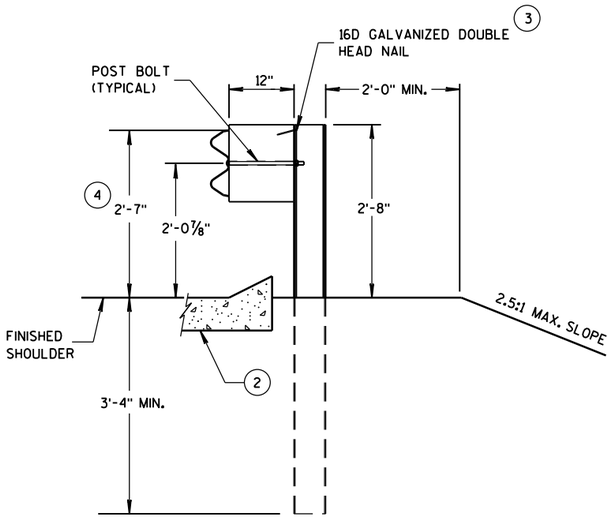
S.D.D. 14 B 45-4a

GENERAL NOTES

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

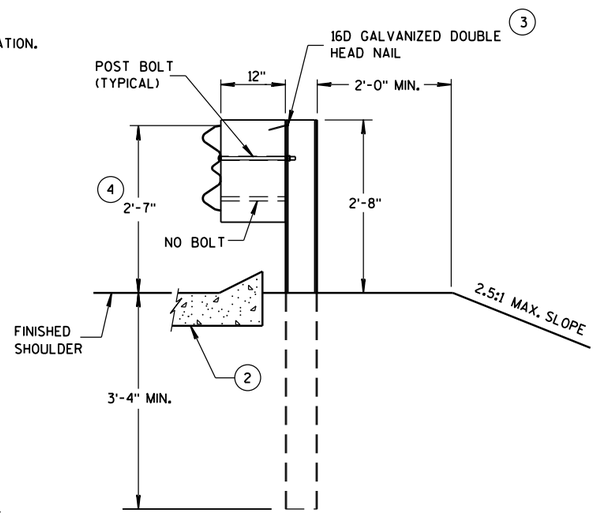
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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



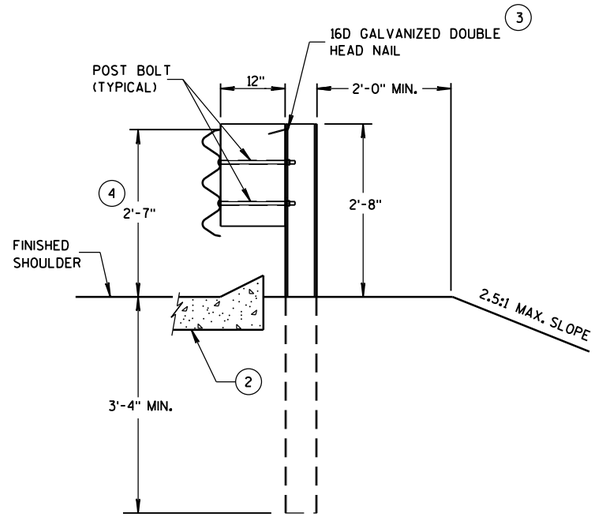
SECTION A-A

POSTS 1-5



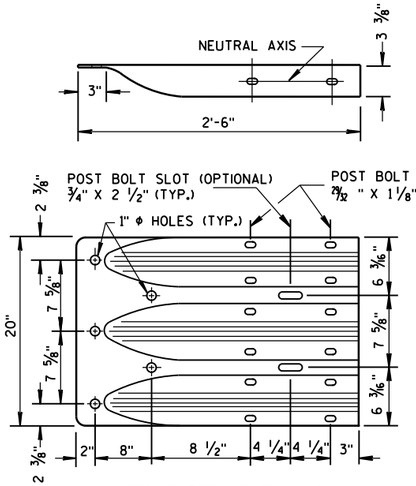
SECTION B-B

POST 6



SECTION C-C

POSTS 7-11



THRIE BEAM TERMINAL CONNECTOR

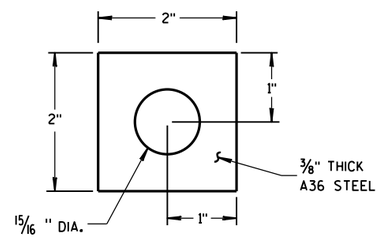
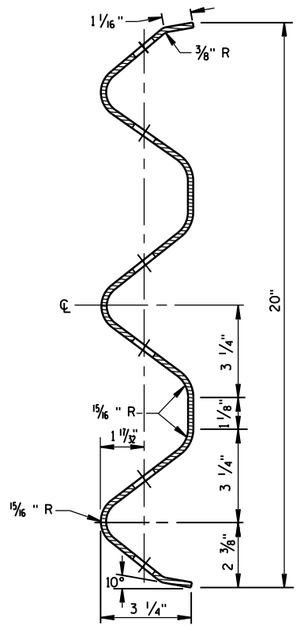
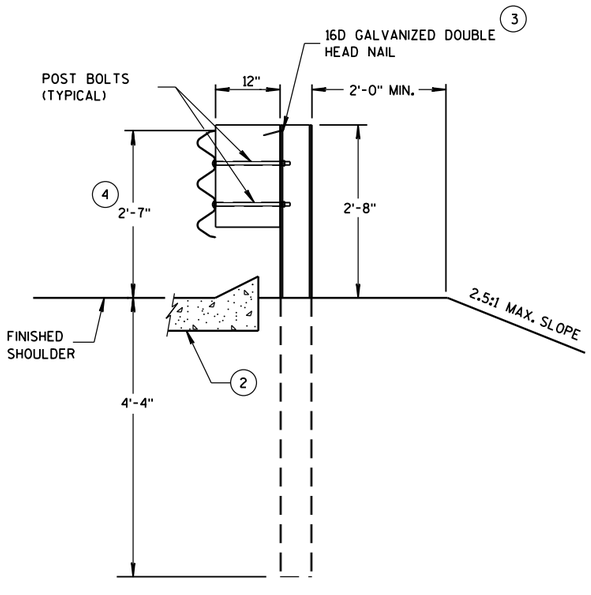


PLATE WASHER DETAIL

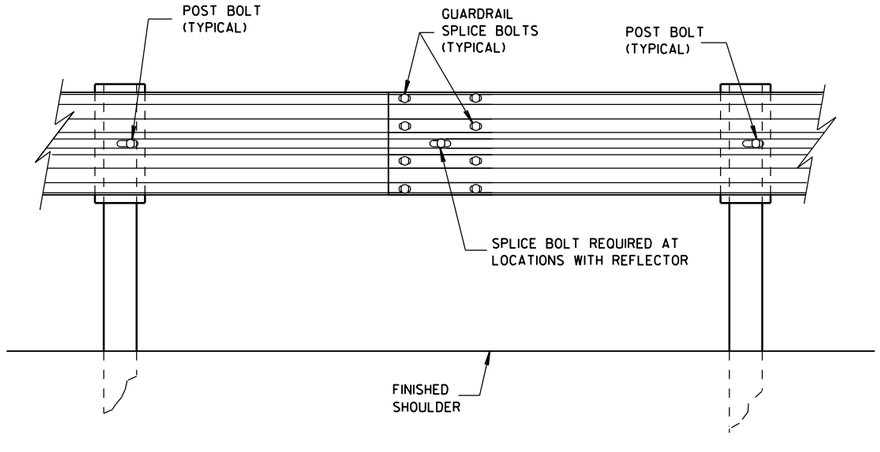


SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION D-D

POSTS 12-17



SPLICE DETAIL

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

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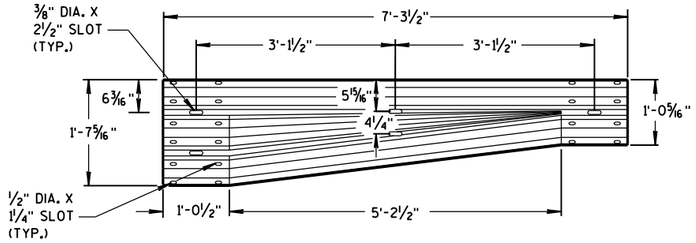
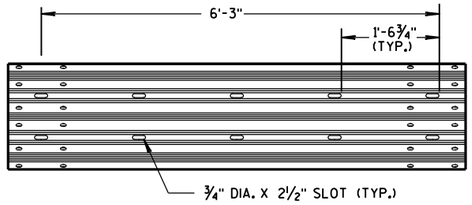
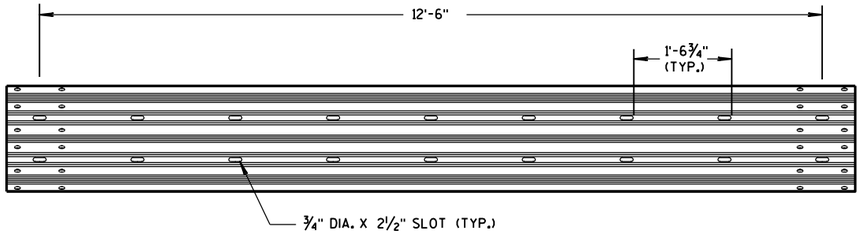
S.D.D. 14 B 45-4b



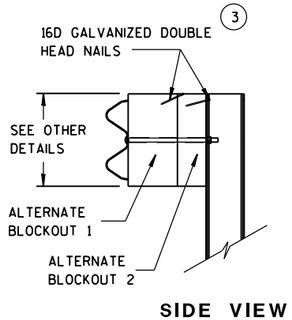
W-BEAM TO THRIE BEAM TRANSITION SECTION



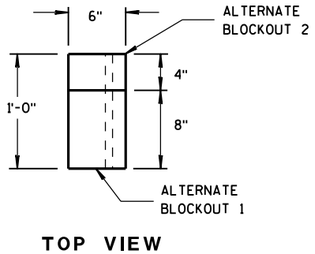
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

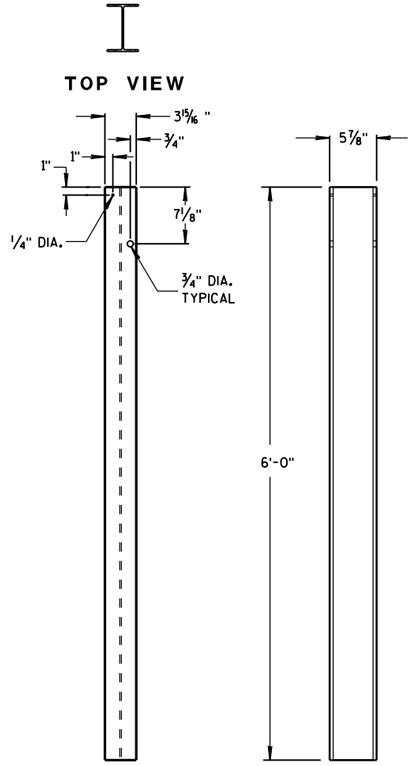


SIDE VIEW



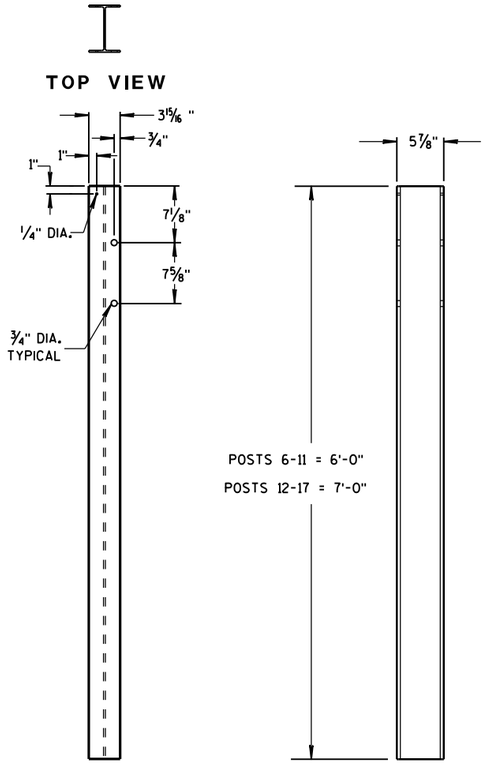
TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL



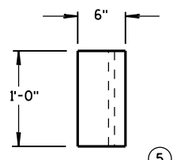
FRONT VIEW SIDE VIEW

STEEL POSTS 1-5

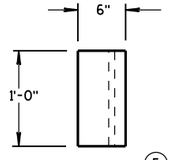


FRONT VIEW SIDE VIEW

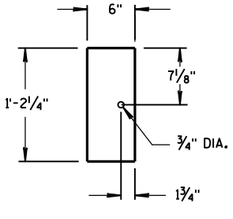
STEEL POSTS 6-17



TOP VIEW (5)

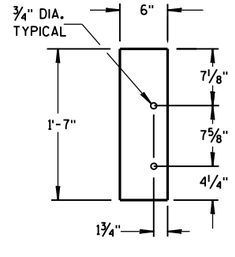


TOP VIEW (5)



FRONT VIEW

BLOCKOUT POSTS 1-5



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.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

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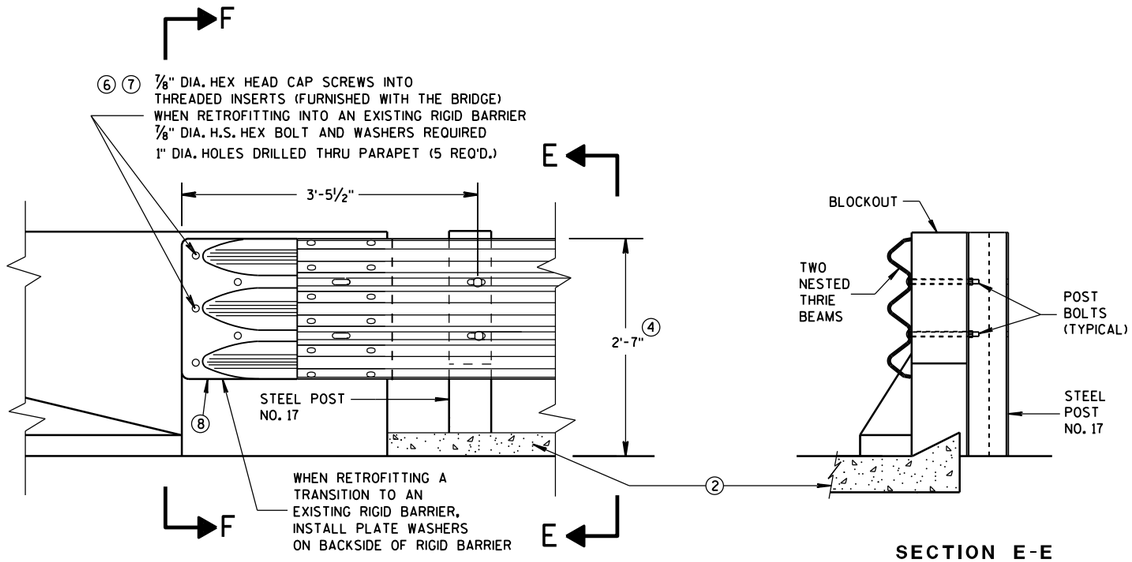


FRONT VIEW

SECTION E-E

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

GENERAL NOTES

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

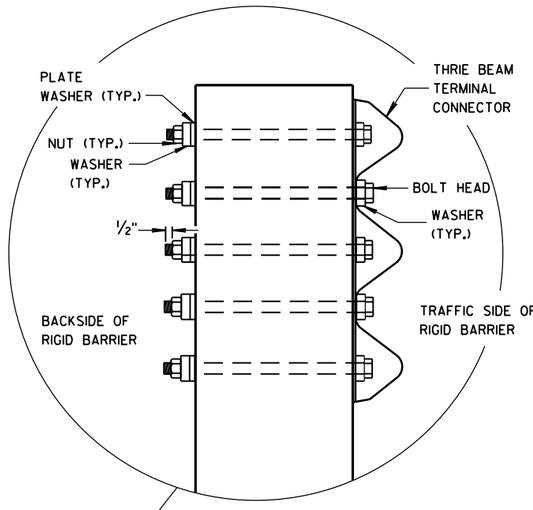
② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

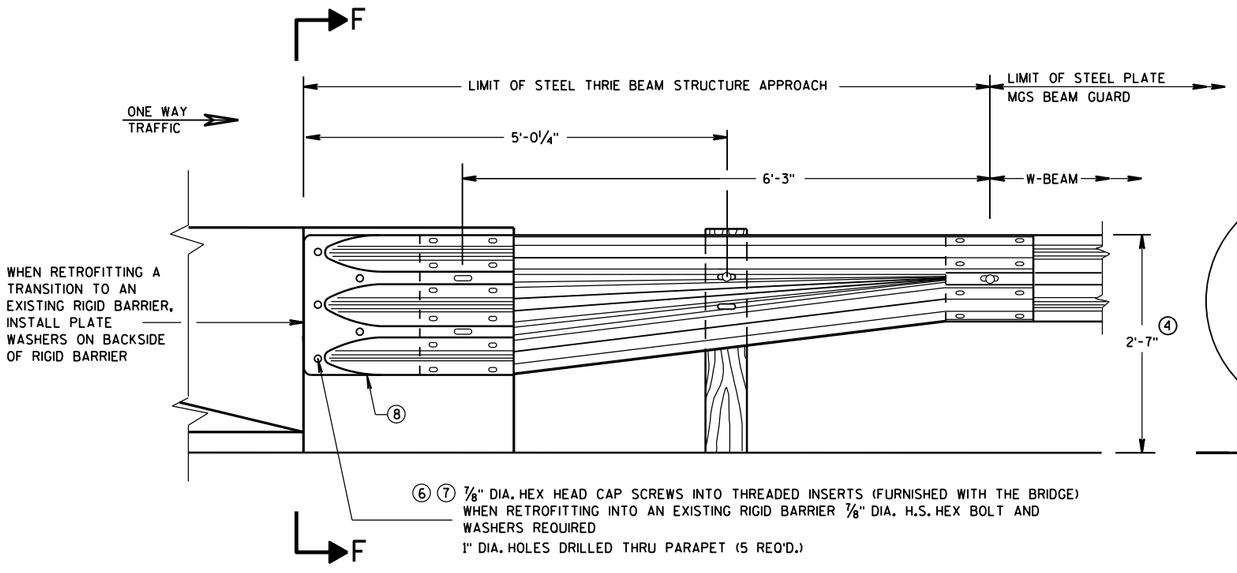
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

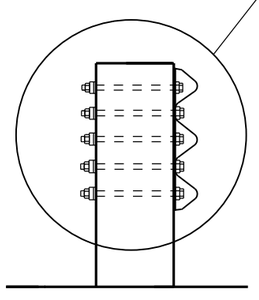
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

⑧ THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".

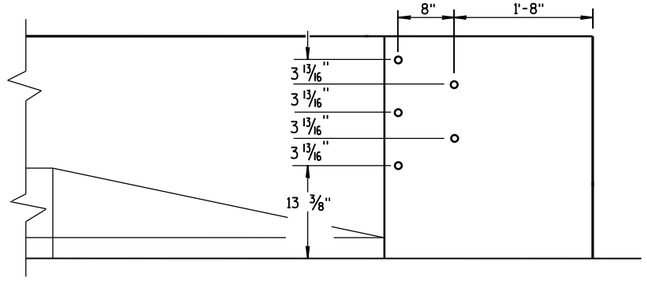




FRONT VIEW



SECTION F-F



DRILL HOLE LOCATION

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS

(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
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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GENERAL NOTES

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

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

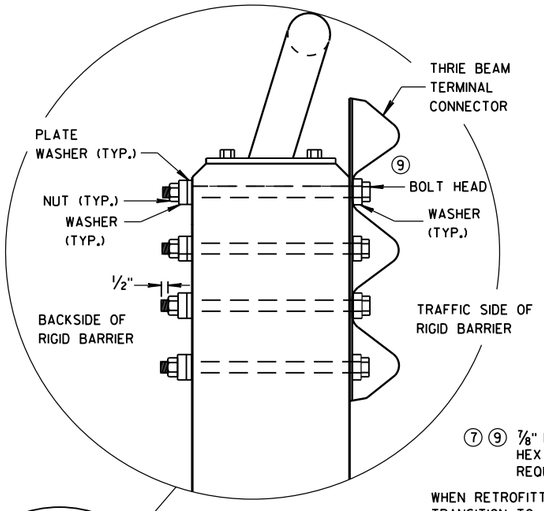
(4) TOLERANCE FOR TOP OF BEAM IS ± 1".

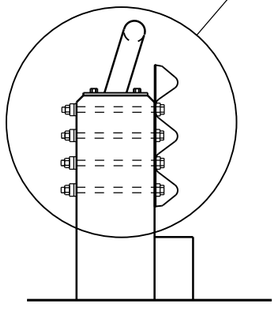
(6) DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

(7) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

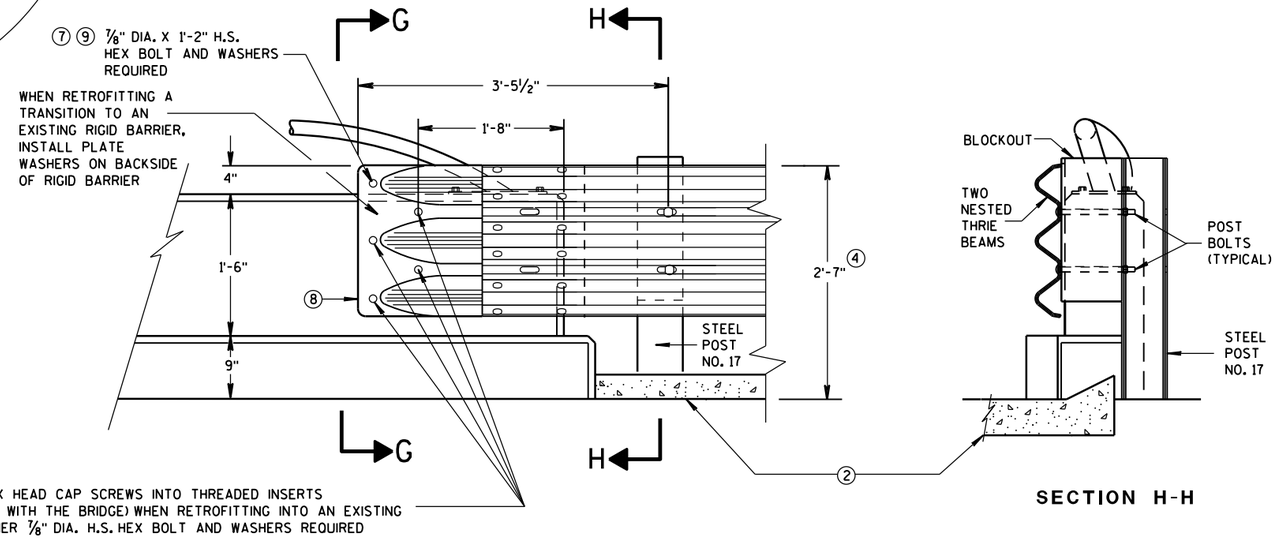
(8) THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".

(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.





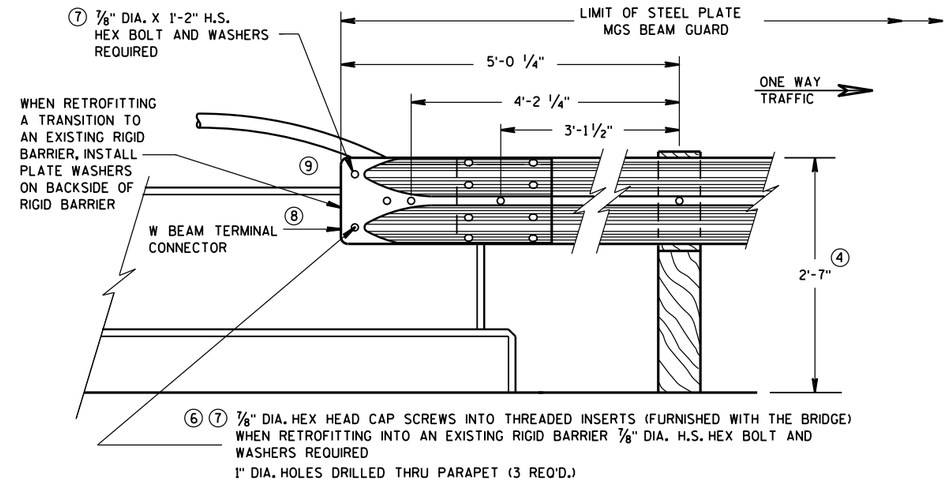
SECTION G-G



FRONT VIEW

SECTION H-H

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)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
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APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
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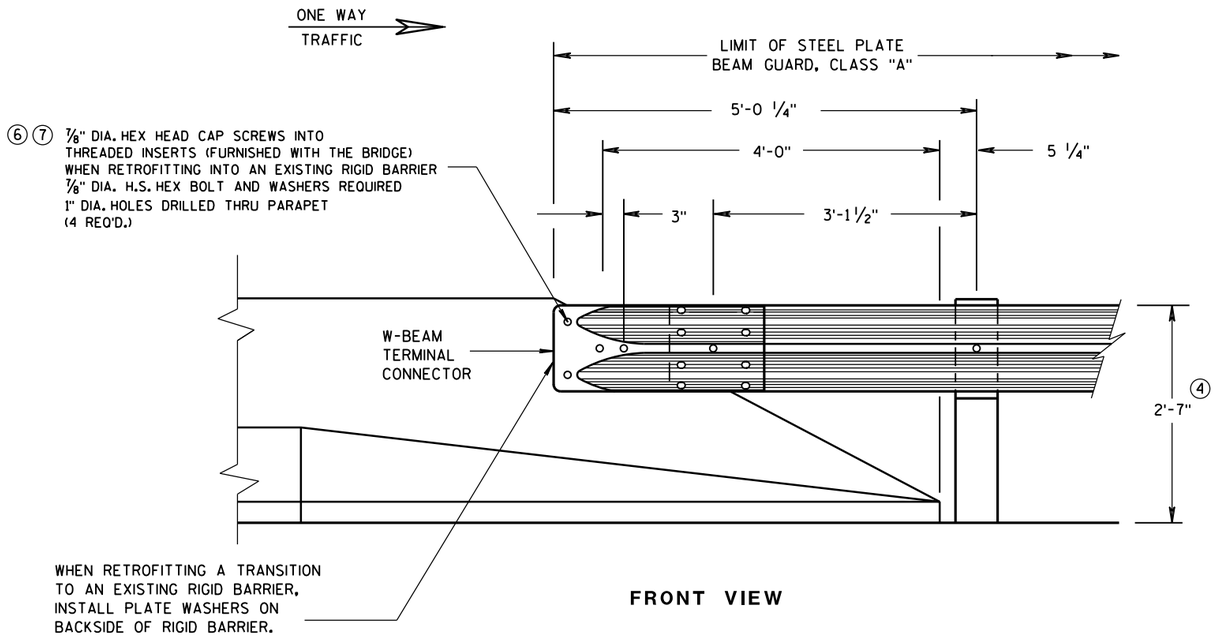


FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

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

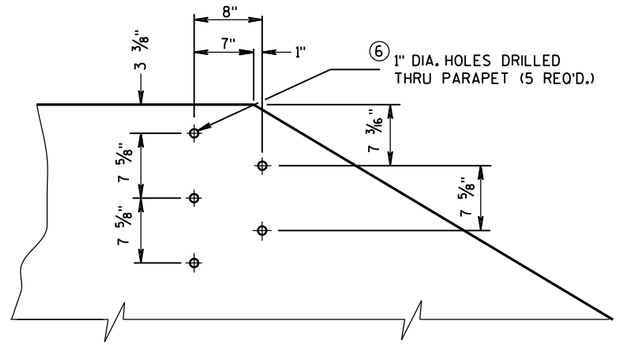
GENERAL NOTES

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

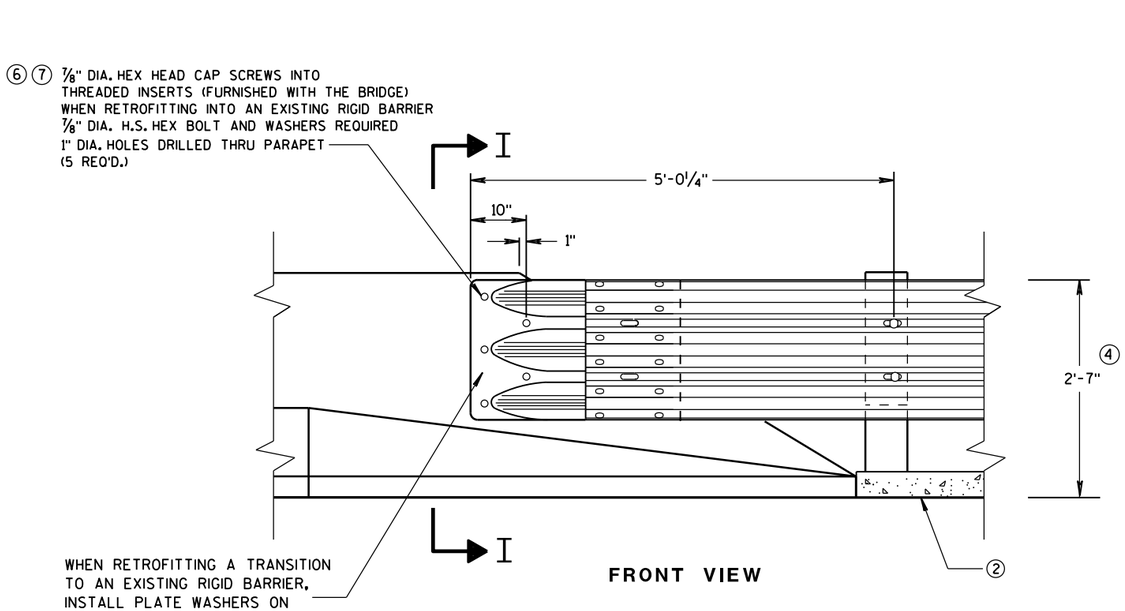
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

⑥ DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. BOLTS THAT EXTEND THROUGH THE PARAPET AND OUT THE BACK FACE REQUIRE A HARDENED ROUND STEEL WASHER THAT IS 2" O.D. X 5/8" THICK AND ONE PLATE WASHER. REPAIR ANY DAMAGED CONCRETE FROM BOLT INSTALLATION.

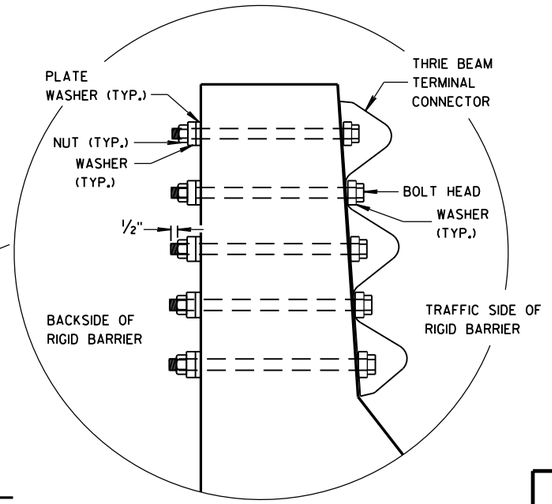


DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION



FRONT VIEW

SECTION I-I



THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
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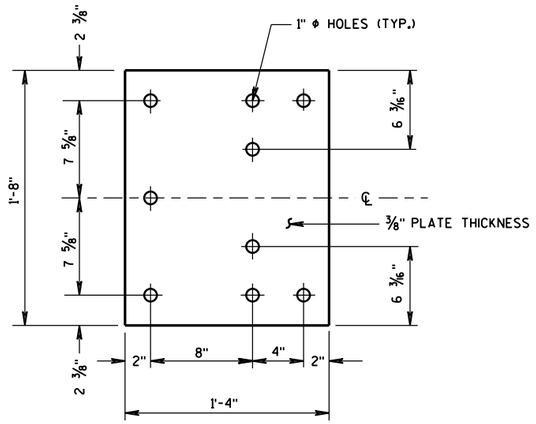
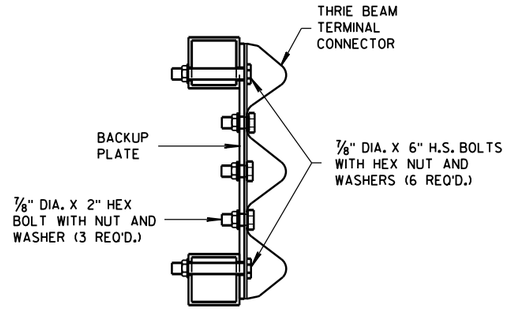
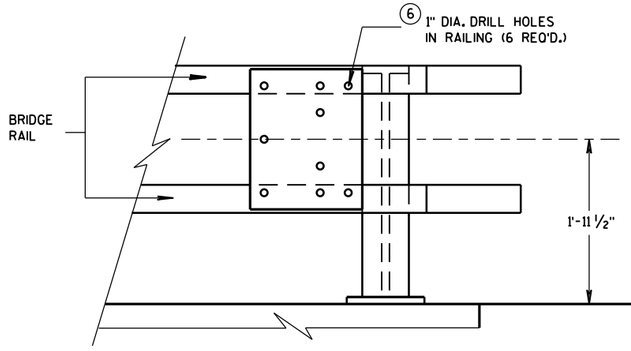


BACK-UP PLATE DETAIL



SECTION J-J

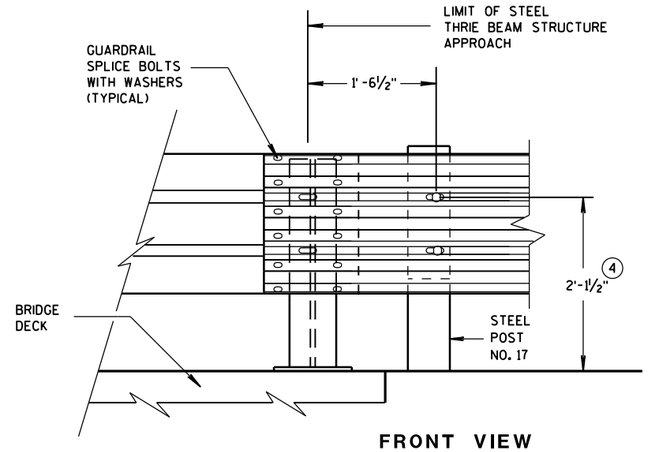


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

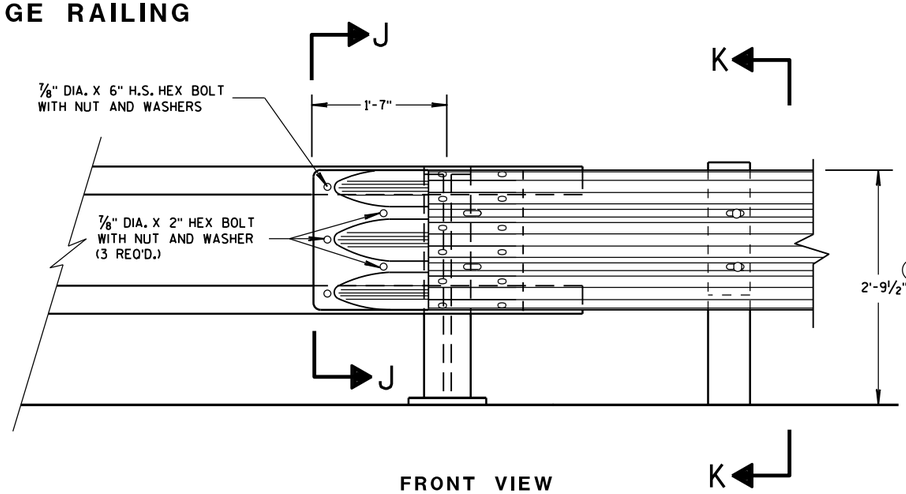
(4) TOLERANCE FOR TOP OF BEAM IS ± 1".

(6) DRILLING HOLES THROUGH THE PAPRPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

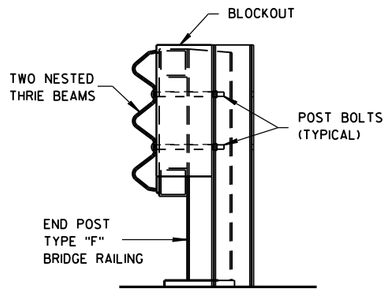


FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



FRONT VIEW



SECTION K-K

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
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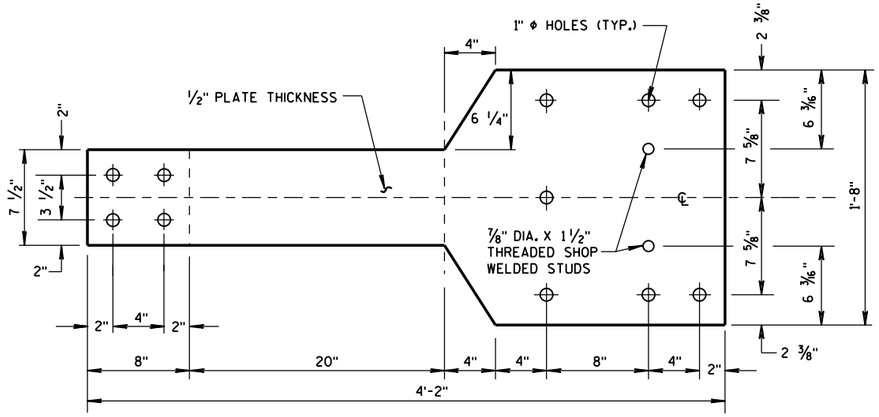
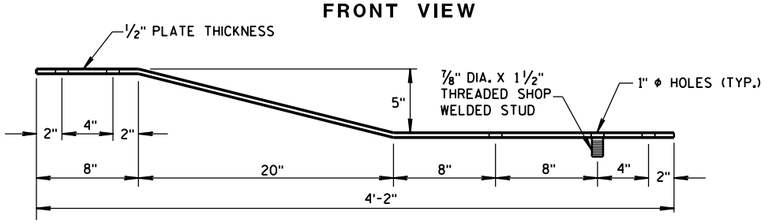
GENERAL NOTES

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

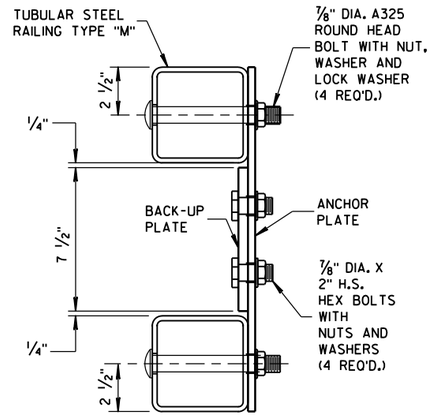


FRONT VIEW

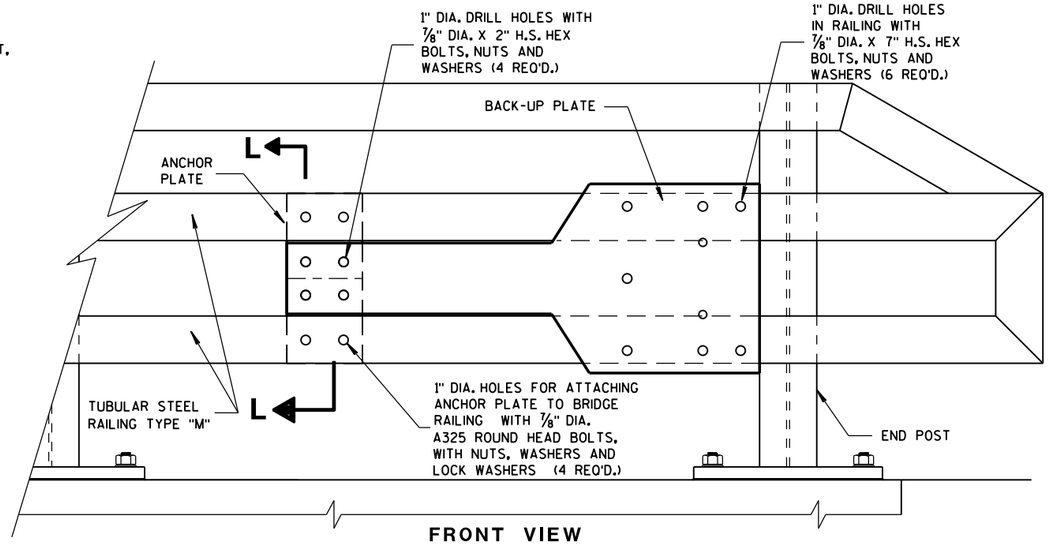


PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

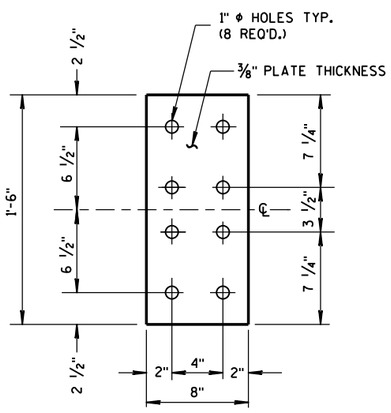


SECTION L-L



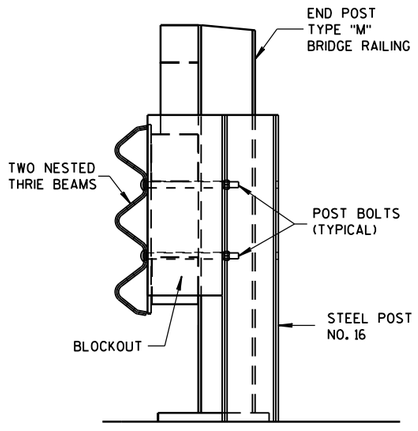
FRONT VIEW

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

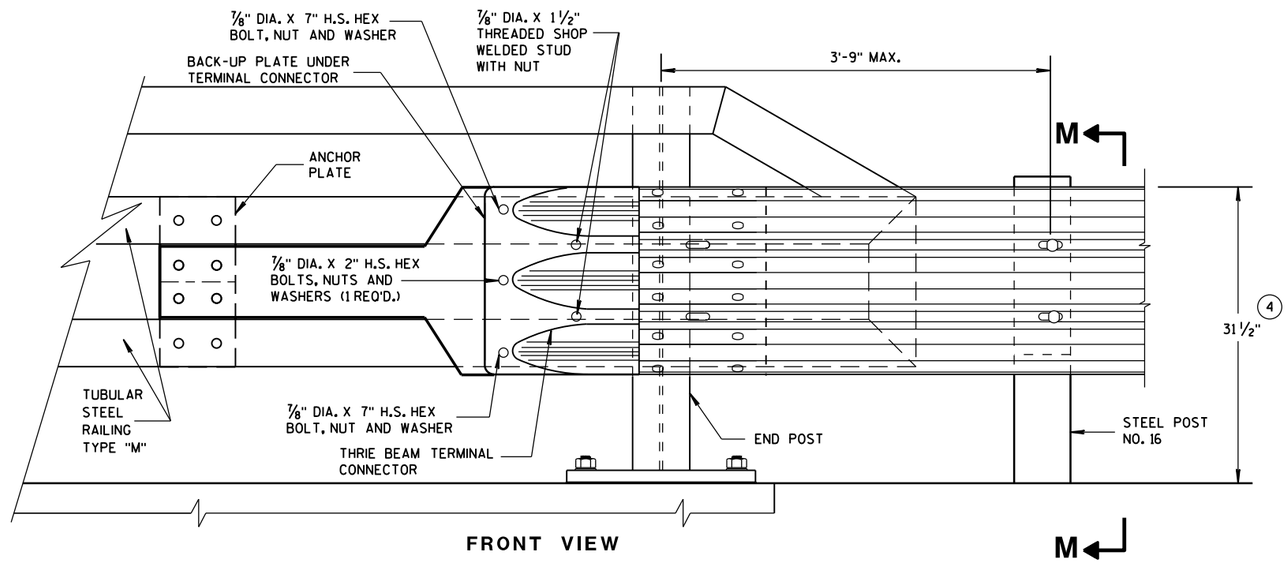


FRONT VIEW

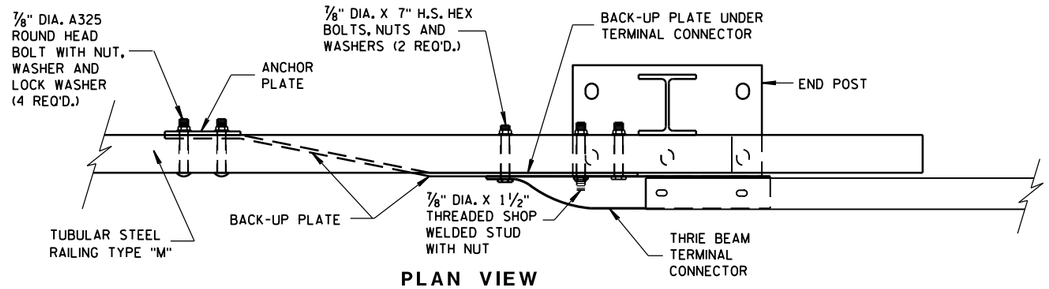
ANCHOR PLATE DETAIL, TYPE "M"



SECTION M-M



FRONT VIEW



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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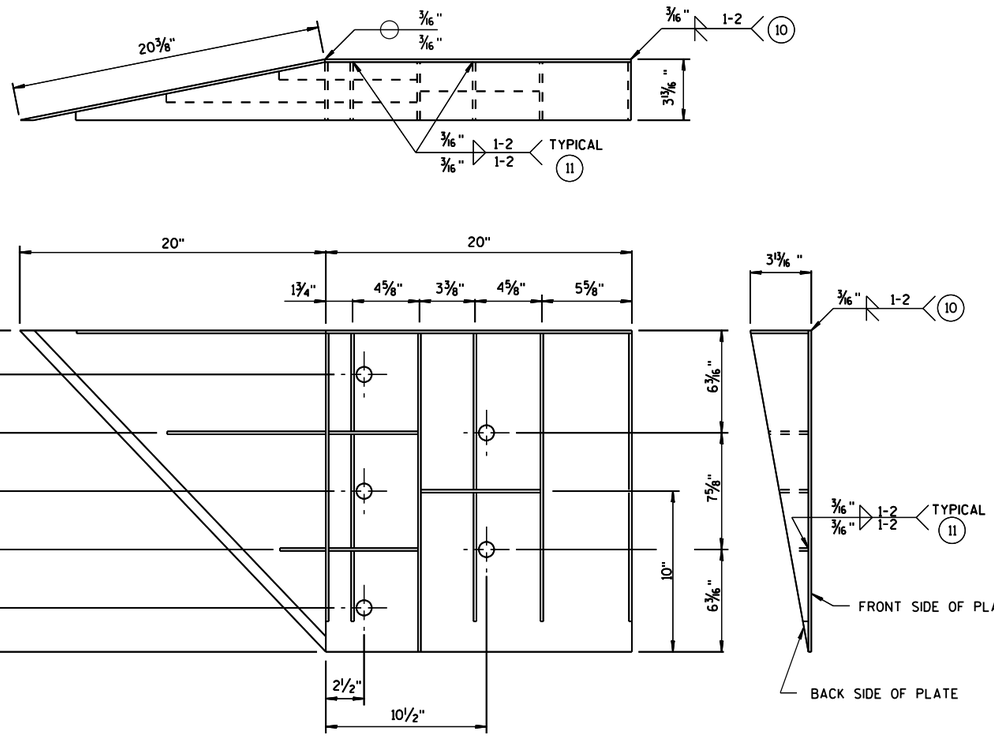

WELDING INSTRUCTION

(VIEWED FROM BACK SIDE OF PLATE)

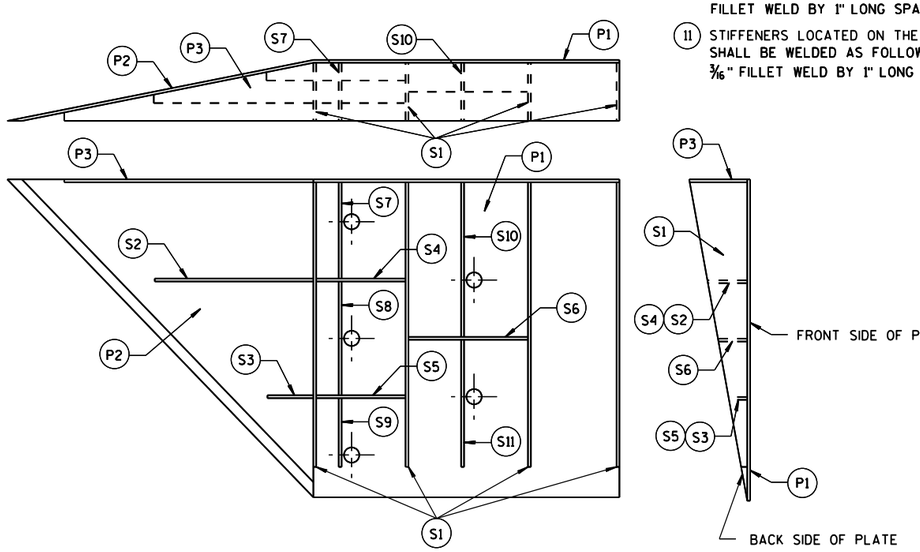

PLATE AND STIFFENER IDENTIFICATION

(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".

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 9/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 3/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" 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 9/16" 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 1/32"	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 13/16"	1/4"

SINGLE SLOPE CONNECTION PLATE

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

6

S.D.D. 14 B 45-4i

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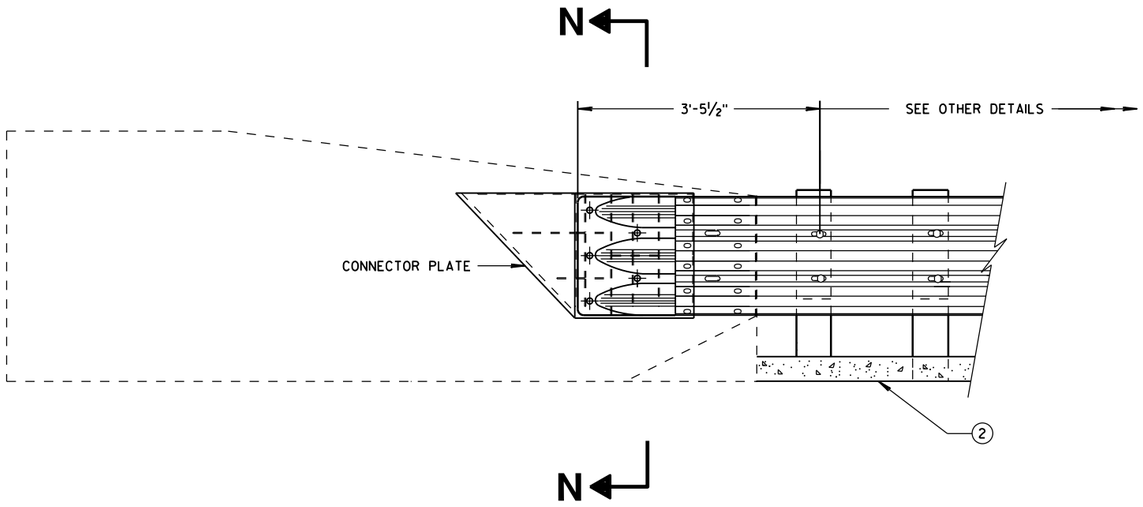
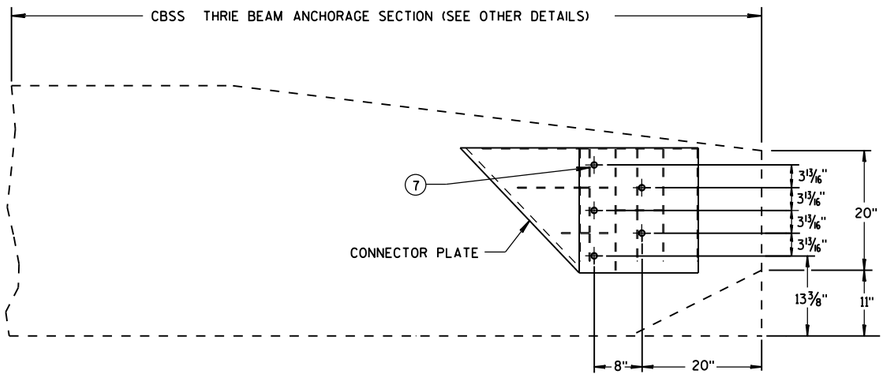
S.D.D. 14 B 45-4i



THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



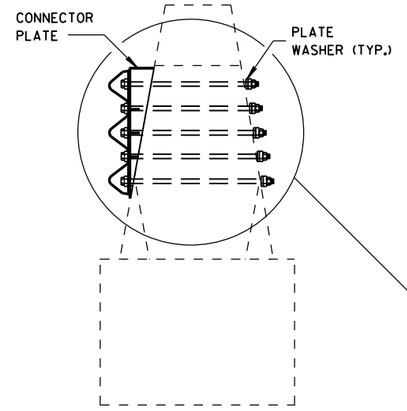
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

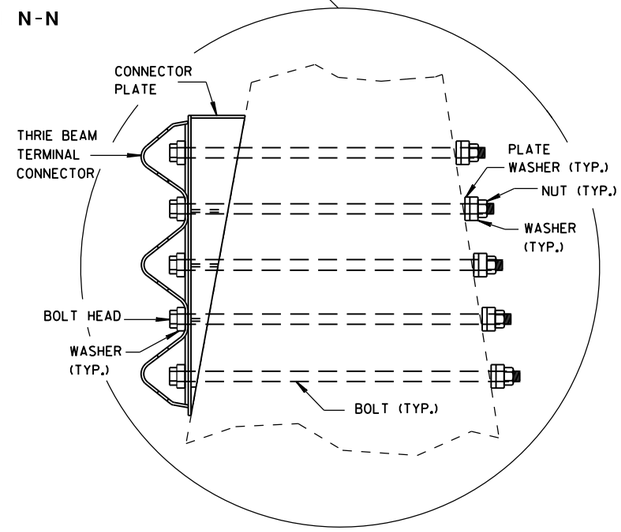
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

(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 5/8" 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

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zoga — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

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S.D.D. 14 B 45-4j

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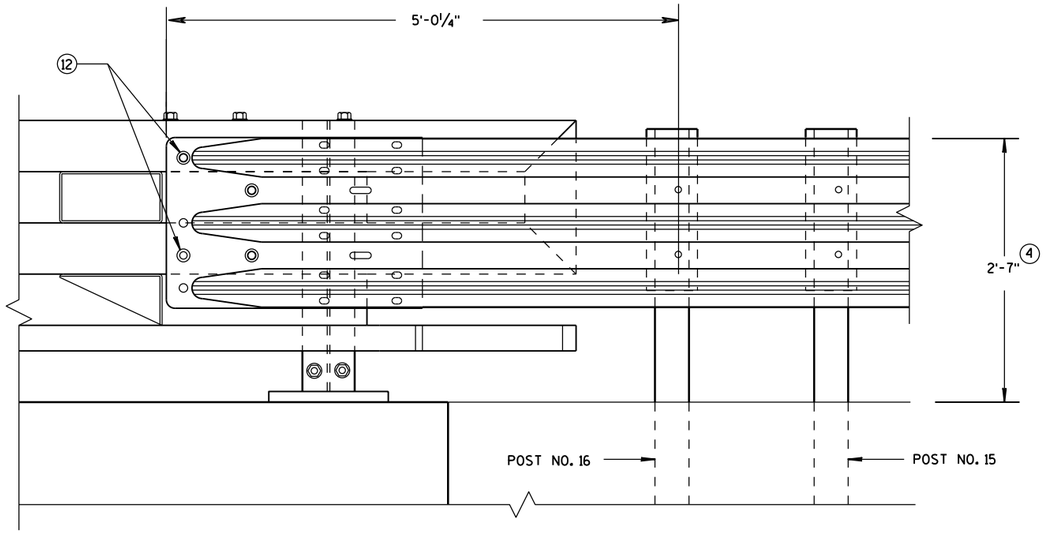
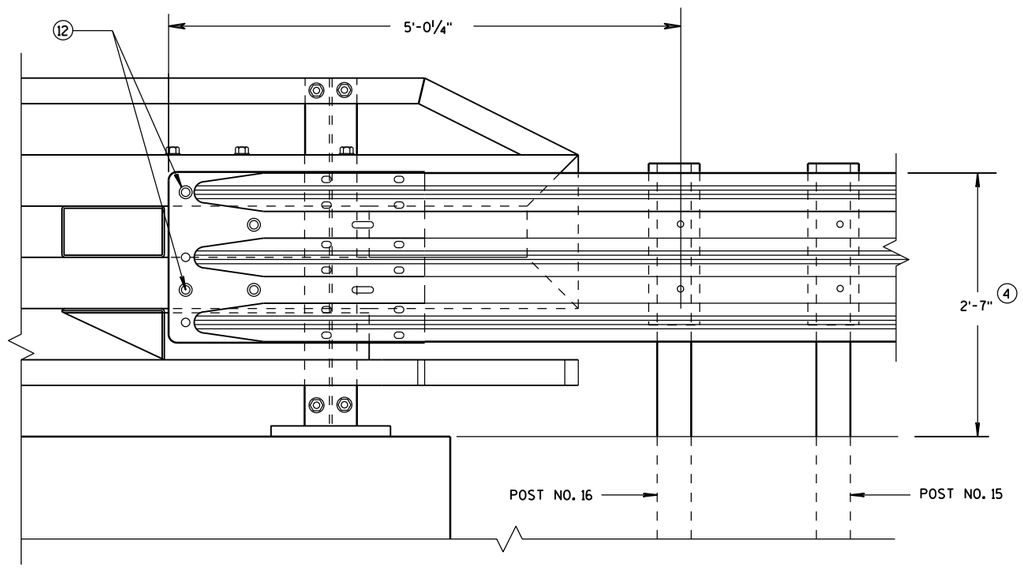
S.D.D. 14 B 45-4j



ELEVATION OF DETAIL AT NY3 END POST

THRIE BEAM RAIL ATTACHMENT



ELEVATION OF DETAIL AT NY4 END POST

THRIE BEAM RAIL ATTACHMENT

GENERAL NOTES

(4) TOLERANCE FOR TOP OF BEAM IS ± 1".

(12) BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE. ON BACKSIDE OF PARAPET ONE ROUND WASHER, AND NUT REQUIRED. BOLT THREAD IS TO EXTEND ½-INCH BEYOND NUT.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS D ENGINEER

FHWA

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S.D.D. 14 B 45-4k

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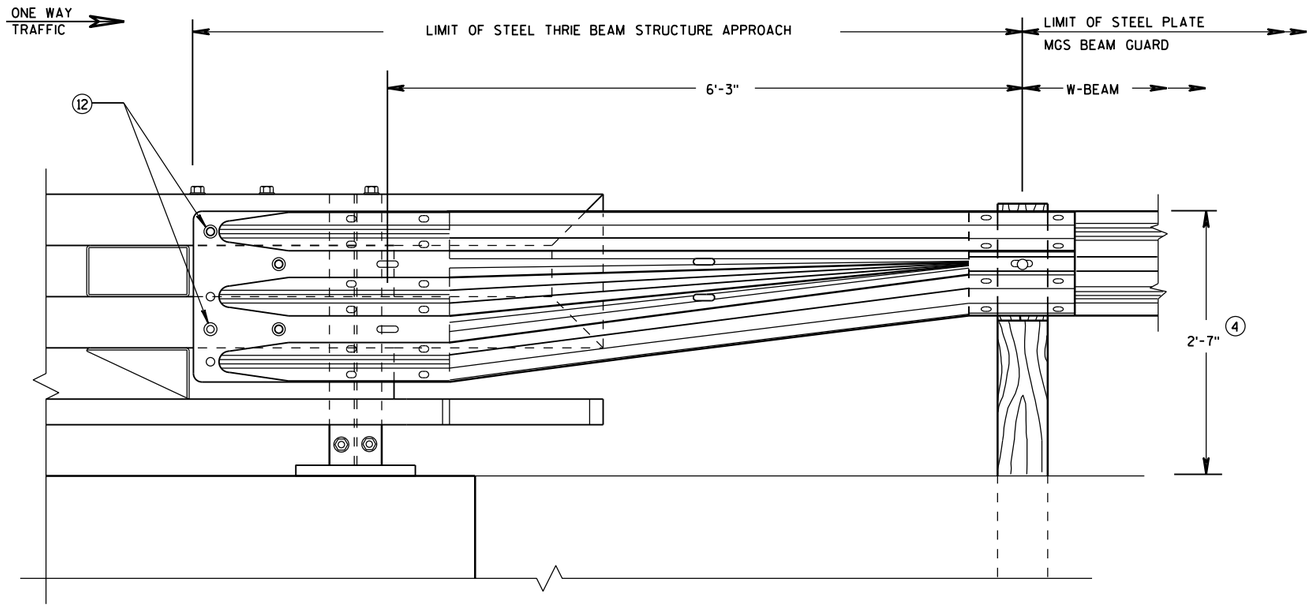
S.D.D. 14 B 45-4k



FRONT VIEW

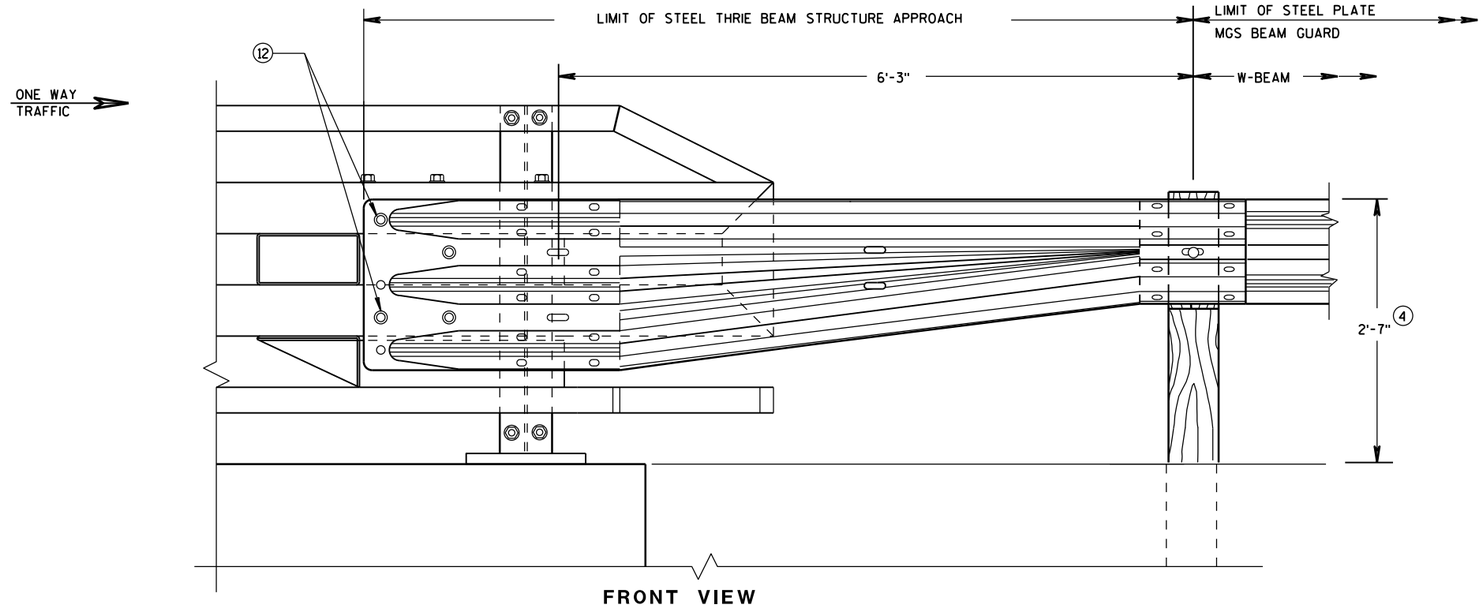
W BEAM TRANSITION AND CONNECTION TO BRIDGE RAILING TYPE "NY3"

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

GENERAL NOTES

(4) TOLERANCE FOR TOP OF BEAM IS ± 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 ½-INCH BEYOND NUT.



FRONT VIEW

W BEAM TRANSITION AND CONNECTION TO BRIDGE RAILING TYPE "NY4"

(USE ONLY ON THE TRAFFIC EXIT END OF ONE WAY BRIDGES)

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
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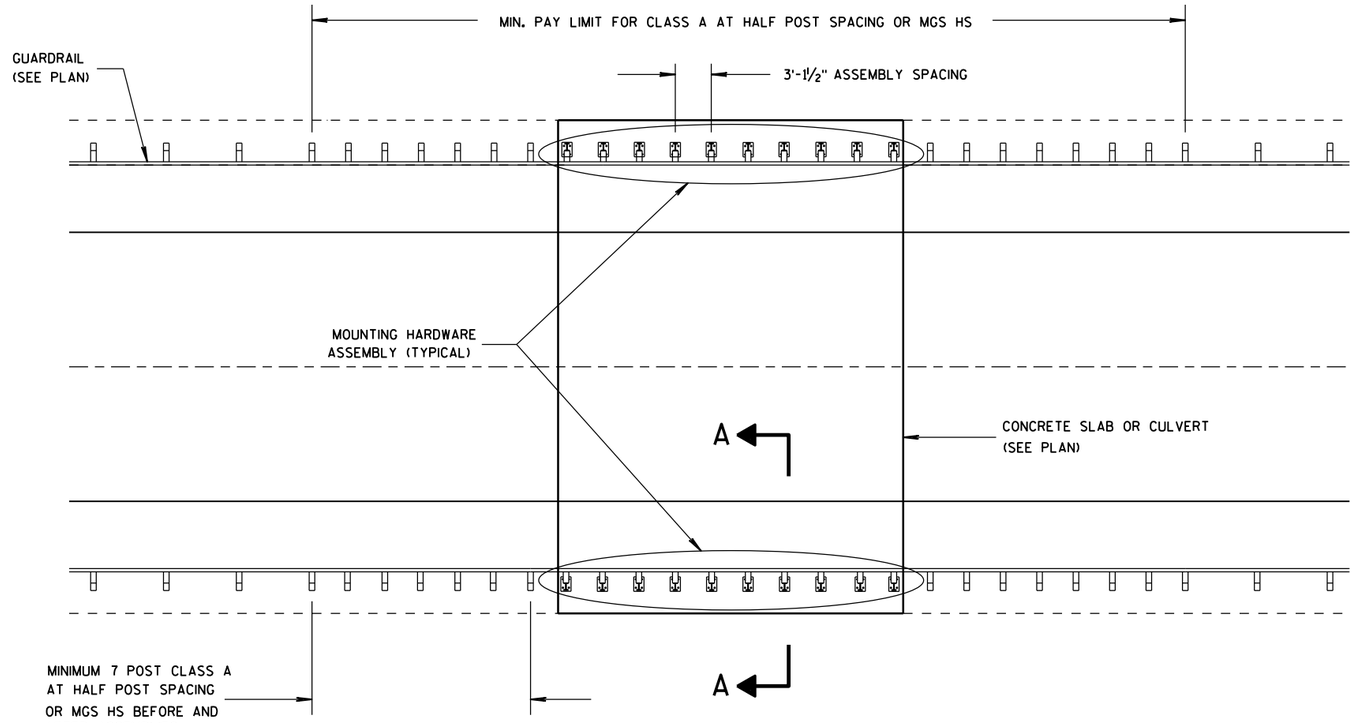
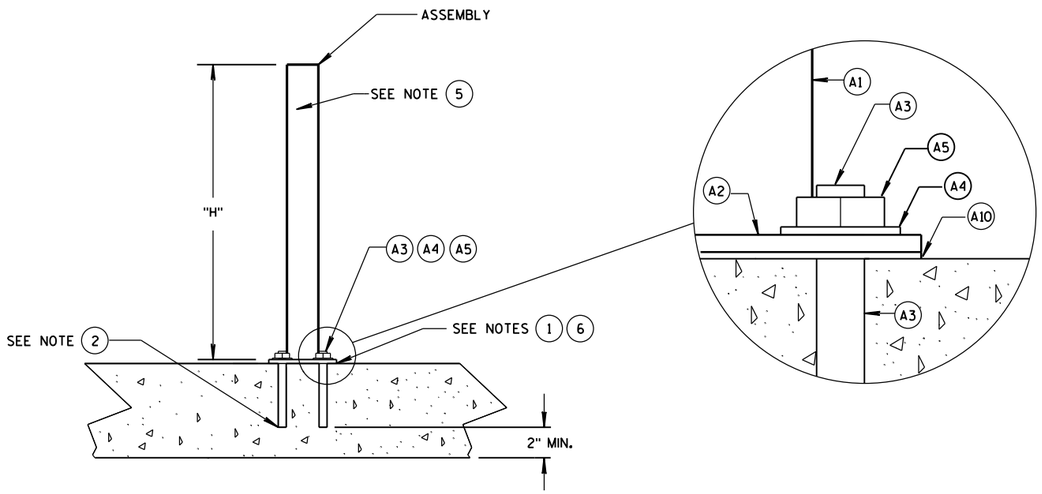
S.D.D. 14 B 45-4L

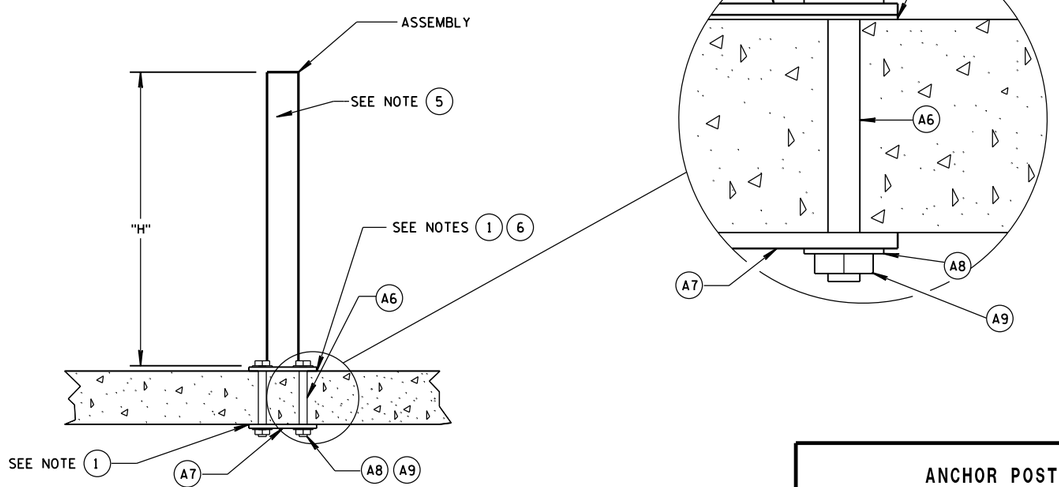


PLAN VIEW



ADHESIVE ANCHOR DETAIL

SEE NOTE 4



BOLT THROUGH DETAIL

SEE NOTE 4

GENERAL NOTES

HOLES DRILLED INTO CONCRETE SLAB OR CULVERT ARE 1⅛-INCH DIAMETER.

POST BASE PLATE (AND BOTTOM PLATES IF USED) SHALL BE FLAT WITH ALL SURFACES SMOOTH, AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUTS. CUT BOTTOM OF POST SO THAT POST WILL BE VERTICAL WHEN POST ASSEMBLY IS PLACED ON TOP OF CONCRETE. HEX BOLTS AND THREADED RODS ARE TO BE PLACED PERPENDICULAR TO THE BASE PLATE.

"H" DIMENSION WILL VARY. SEE PLAN FOR "H" DIMENSION. CONTRACTOR HAS OPTION OF INSTALLING POSTS THAT ARE TALLER THAN "H" DIMENSION AND CUT POSTS TO PROPER "H" DIMENSION IN THE FIELD. IF ELECTING TO FIELD CUT POSTS, DRILL HOLES AT APPROPRIATE LOCATIONS AND APPLY GALVANIZATION.

GALVANIZE STEEL COMPONENTS AFTER FABRICATION PER SECTION 614 OF THE WISCONSIN DEPT. OF TRANSPORTATION STANDARD SPECIFICATIONS.

INSTALL 1 NUT AND 1 WASHER WHERE APPLICABLE. PROVIDE SUFFICIENT LENGTH OF BOLT OR THREADED ROD TO ALLOW FOR ¼-INCH TO ½-INCH OF THREAD TO BEYOND THE NUT.

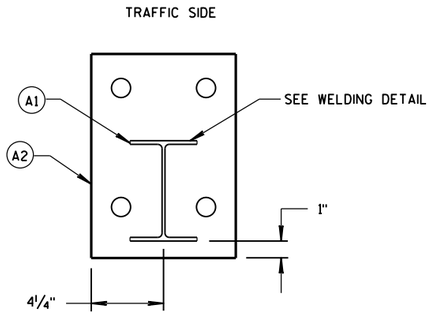
1. PLACE NON-STAINING, GRAY NON-BITUMINOUS JOINT SEALER ON THE BOTTOM (A2) AND IN DRILL HOLES FOR BOLT THROUGH OPTION.
2. BOND STRENGTH OF ADHESIVE IS 1,305 PSI OR GREATER WITH A MINIMUM EMBEDMENT DEPTH OF 8-INCHES. IF MINIMUM EMBEDMENT CANNOT BE ACHIEVED BOLT THROUGH STRUCTURE.
3. USE GAS-METAL ARC WELDING (GMAW) PROCESS WITH ER70S-3 WELDING WIRE AND ARGON-OXYGEN OR CO2 COVER GAS.
4. OTHER COMPONENT OF BARRIER SYSTEM NOT SHOWN. SEE OTHER STANDARD DETAIL DRAWINGS. SEE SDD 14 B 15 OR SDD 14 B 42 FOR MORE DETAILS.
5. HOLES TO MOUNT BEAM GUARD AND BLOCK NOT SHOWN ON DRAWINGS. SEE OTHER STANDARD DETAIL DRAWINGS. SEE SDD 14 B 15 OR SDD 14 B 42 FOR MORE DETAILS.
6. ADD AND ADJUST SHIM PLATES AS NECESSARY TO INSTALL POST PLUMB. SEE (A10) FOR DETAIL.

ANCHOR POST ASSEMBLY TOP-MOUNTED

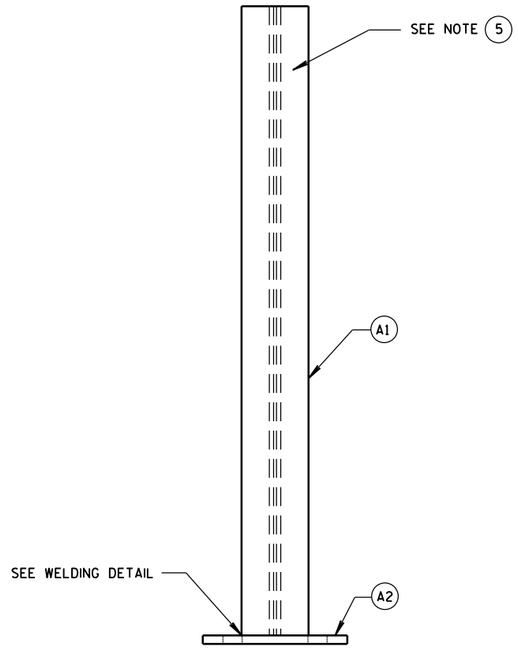
STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6

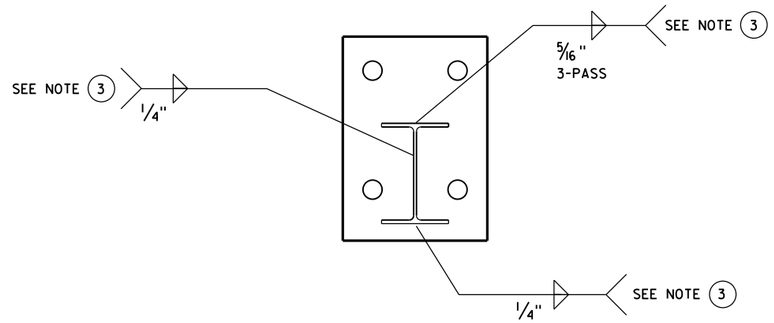
S.D.D. 14 B 51-1a



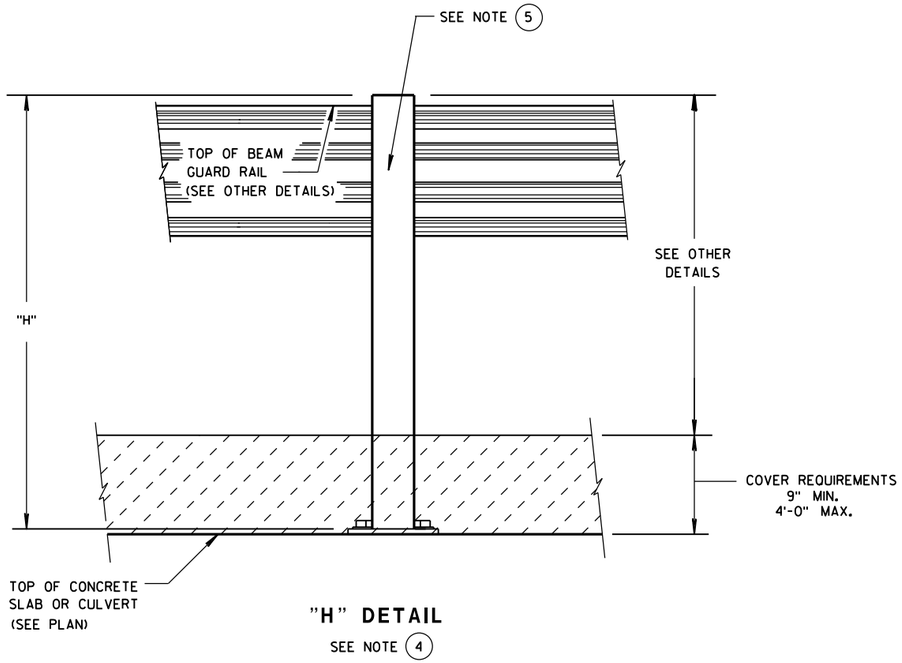
PLAN VIEW OF ASSEMBLY



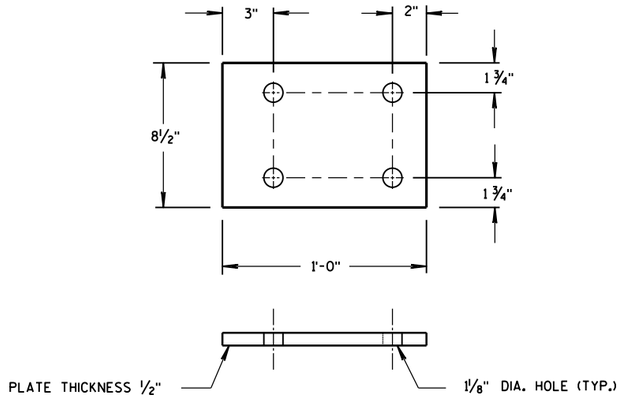
PROFILE VIEW OF ASSEMBLY



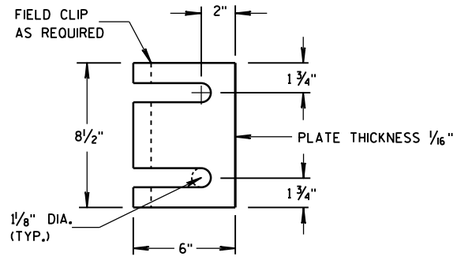
WELDING DETAIL



"H" DETAIL
SEE NOTE (4)



A2 DETAILS



A10 DETAILS

ANCHOR POST
ASSEMBLY TOP-MOUNTED

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

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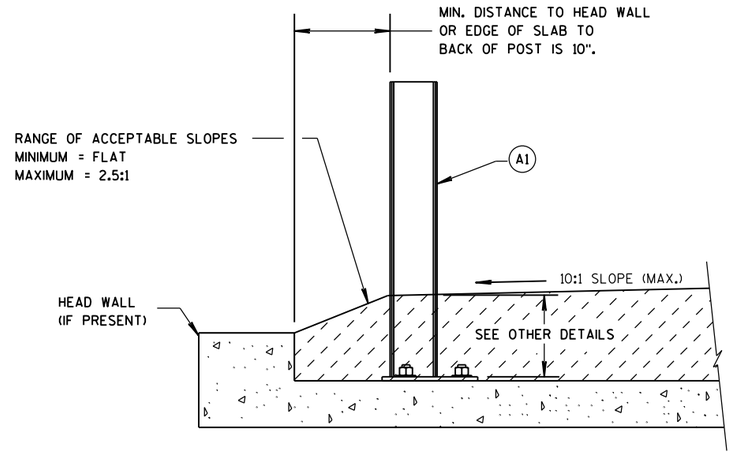
S.D.D. 14 B 51-1b

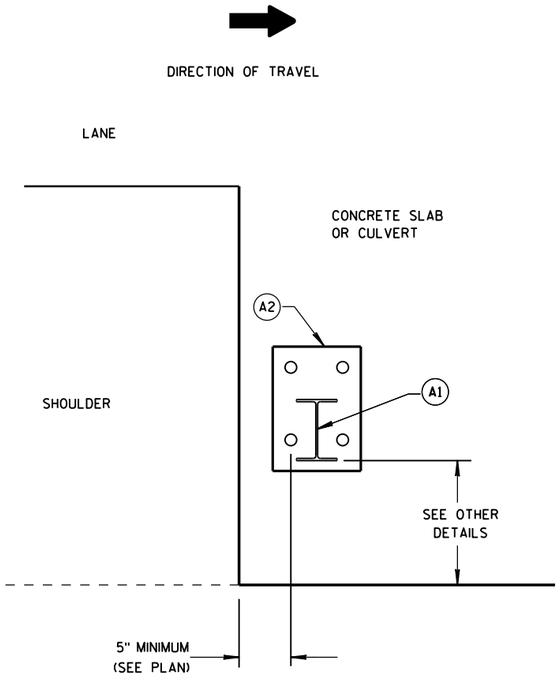
MATERIALS LIST

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



SECTION A-A

SEE NOTE (4)



EDGE PLACEMENT

SEE NOTE (4)

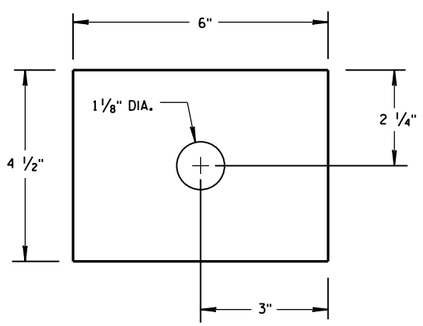
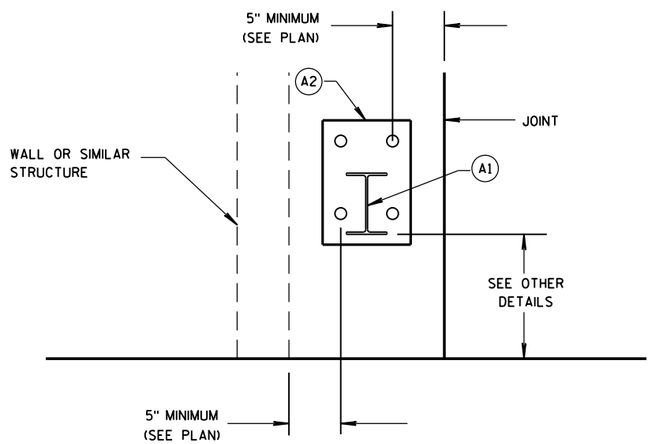


PLATE WASHER - (A7)



OBSTRUCTION AND JOINT PLACEMENT

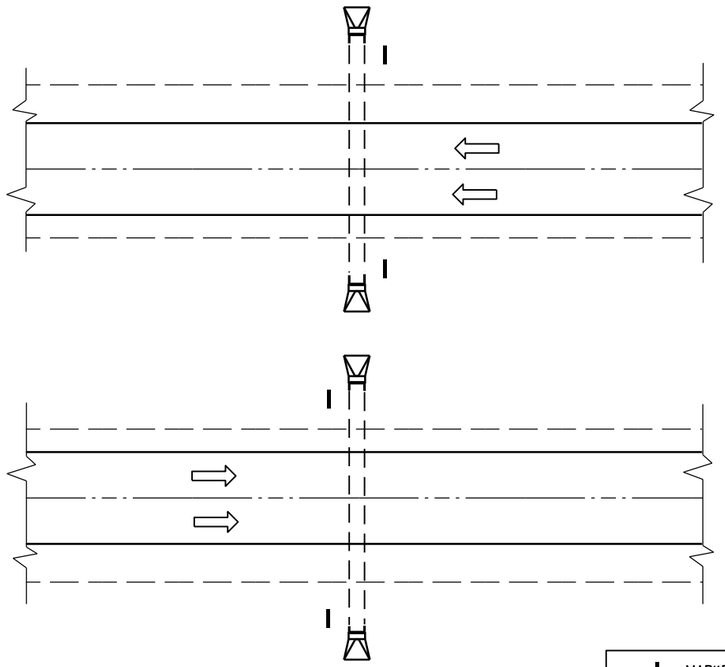
SEE NOTE (4)

ANCHOR POST
ASSEMBLY TOP-MOUNTED

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

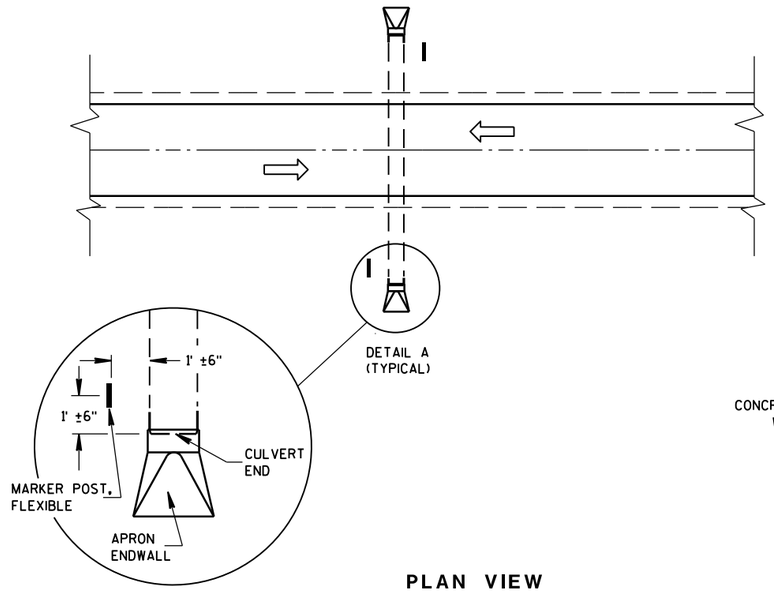
APPROVED
June 2014 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

6
S.D.D. 14 B 51-1c



PLAN VIEW

DIVIDED HIGHWAY



DETAIL A
(TYPICAL)

PLAN VIEW

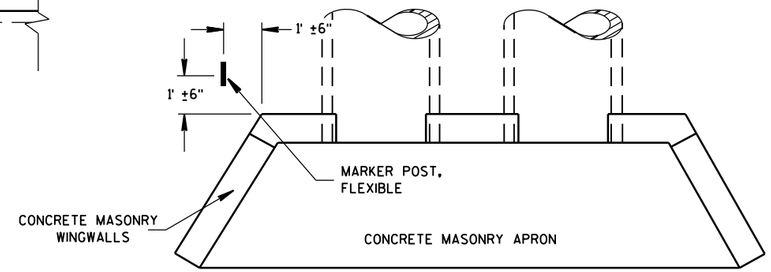
UNDIVIDED HIGHWAY

MARKER POST, FLEXIBLE

DIRECTION OF TRAFFIC FLOW

GENERAL NOTES

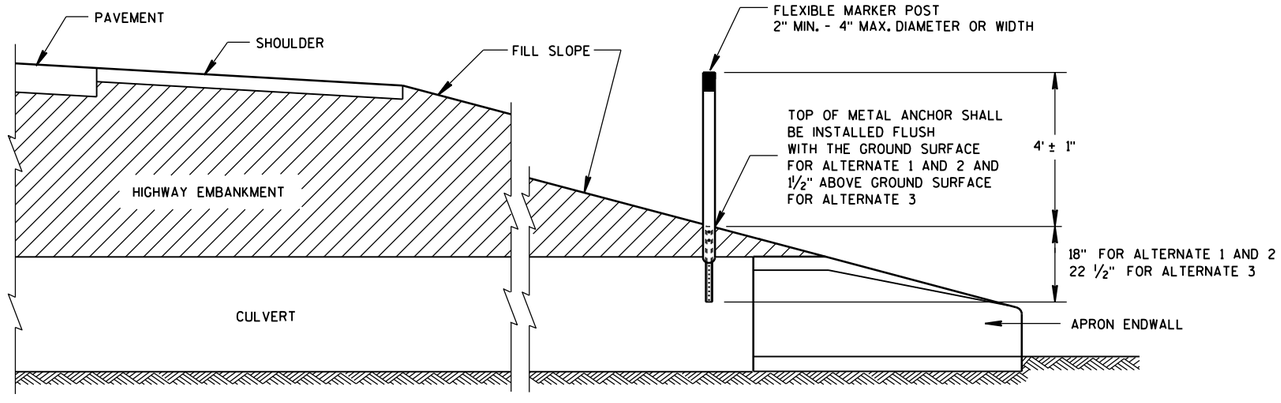
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.



PLAN VIEW

CONCRETE MASONRY ENDWALLS FOR CULVERT PIPE AND PIPE ARCH

FLEXIBLE MARKER POST LOCATION



CROSS SECTION

FLEXIBLE MARKER POST

FLEXIBLE MARKER POST FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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

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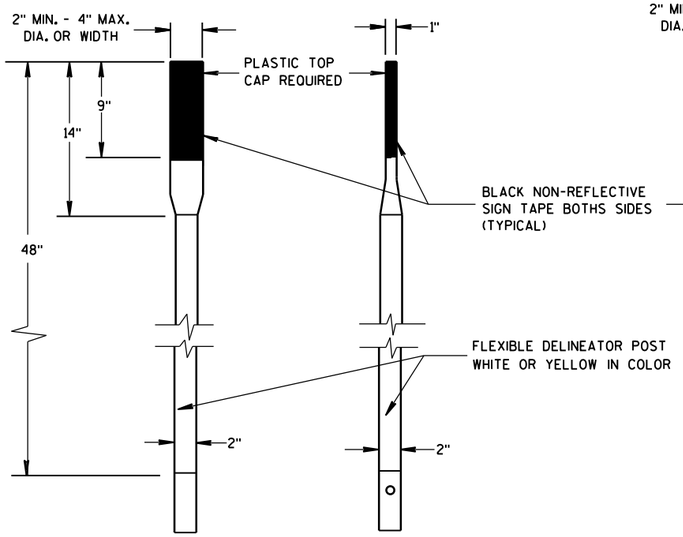
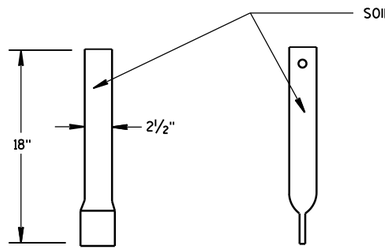
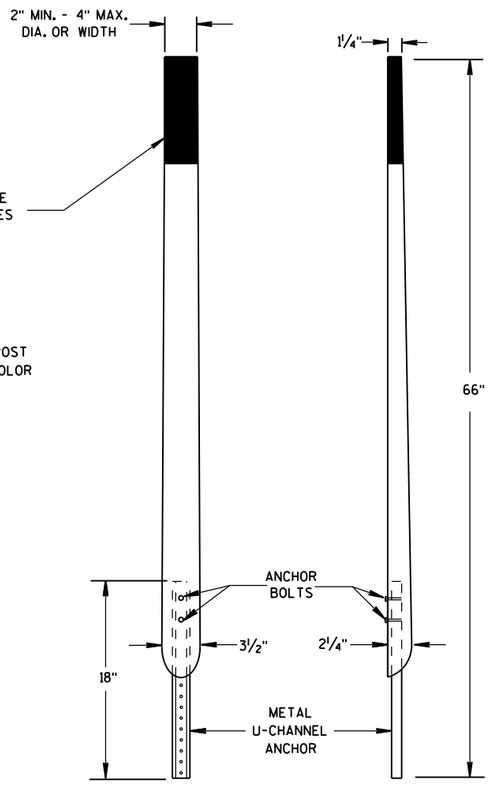
S.D.D. 15 A 3-2a





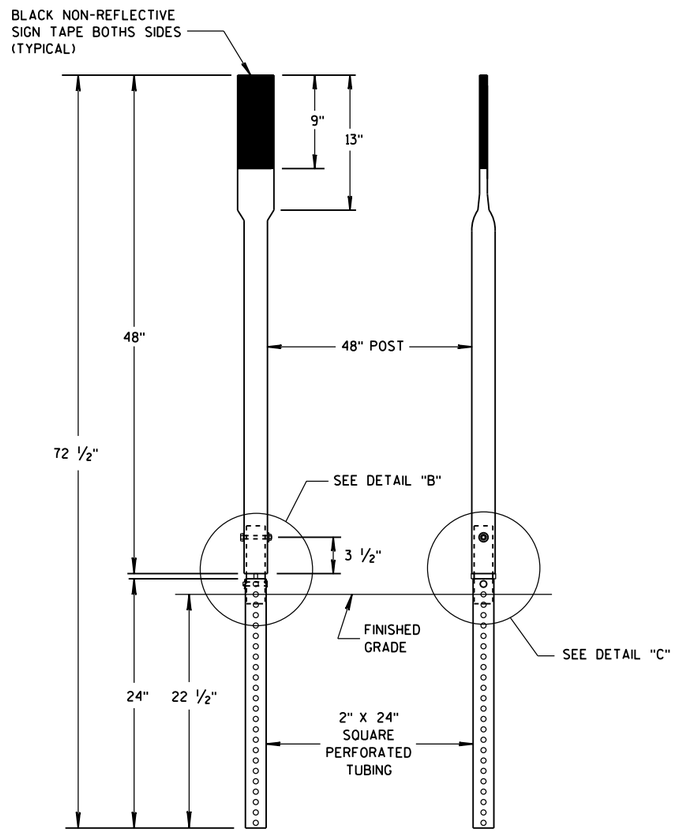
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

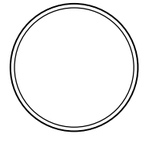
ALTERNATE 2



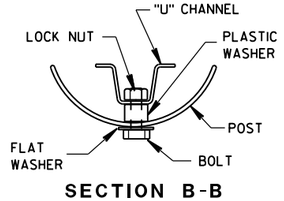
FRONT VIEW SIDE VIEW

ALTERNATE 3

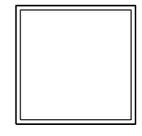
FLEXIBLE MARKER POSTS



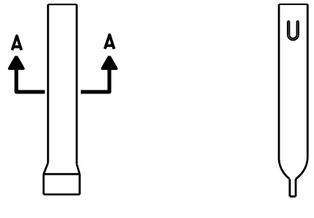
SECTION A-A



SECTION B-B

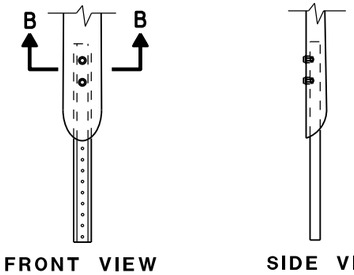


SECTION C-C



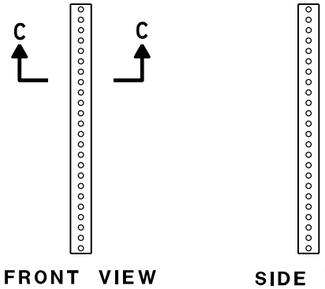
FRONT VIEW SIDE VIEW

ALTERNATE 1



FRONT VIEW SIDE VIEW

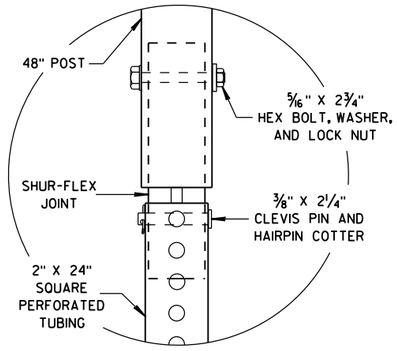
ALTERNATE 2



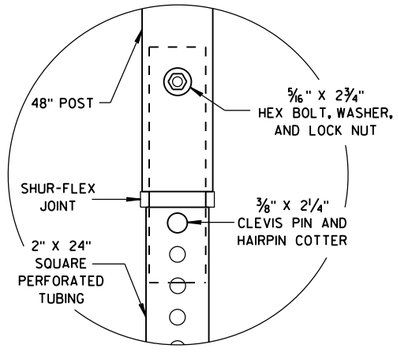
FRONT VIEW SIDE VIEW

ALTERNATE 3

FLEXIBLE MARKER POST ANCHORS



DETAIL B



DETAIL C

FLEXIBLE MARKER POST
FOR CULVERT END

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
10/1/2012
DATE
/S/ Travis Feltes
STATE TRAFFIC ENGINEER
FHWA

6

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

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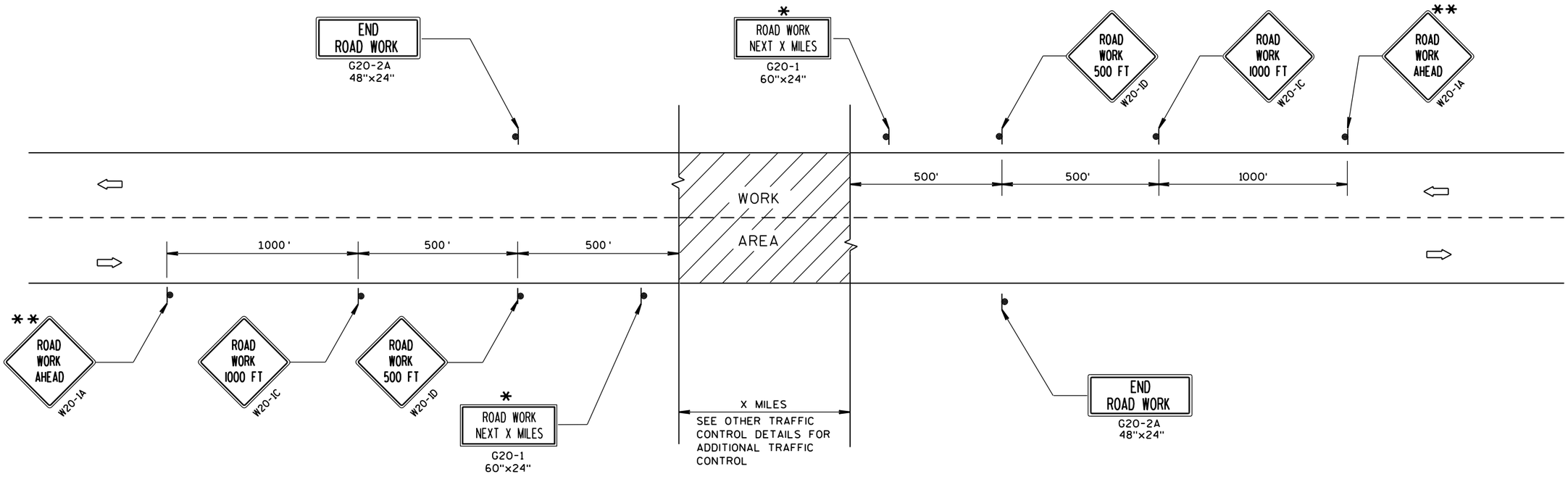
S.D.D. 15 A 3-2b



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL

GENERAL NOTES

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

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

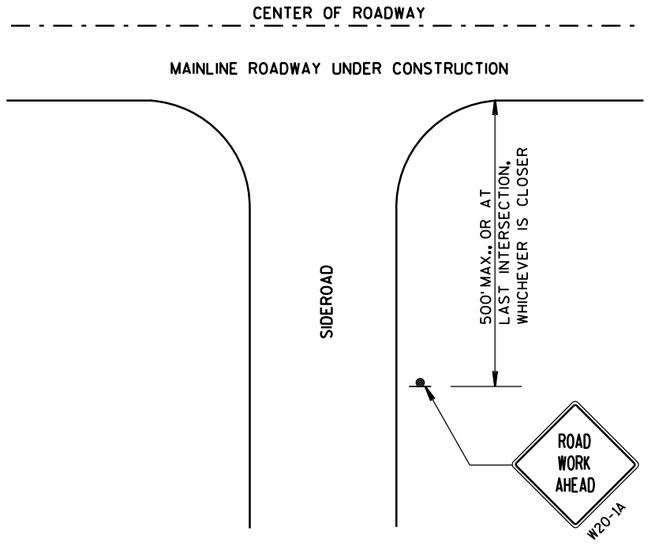
ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

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

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

* OMIT G20-1 SIGNS IF LENGTH OF WORK AREA IS 2 MILES OR LESS.

** PLACE ADDITIONAL W20-1A "ROAD WORK AHEAD" SIGN IF WORK AREA WITHIN THE PROJECT IS SEPARATED BY MORE THAN 2 MILES FROM PREVIOUS WORK AREA.



LEGEND

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2015	/S/ Peter Amakobe Atepe
DATE	STATEWIDE WORK ZONE SAFETY ENGINEER

FHWA

6

S.D.D. 15 C 4-3

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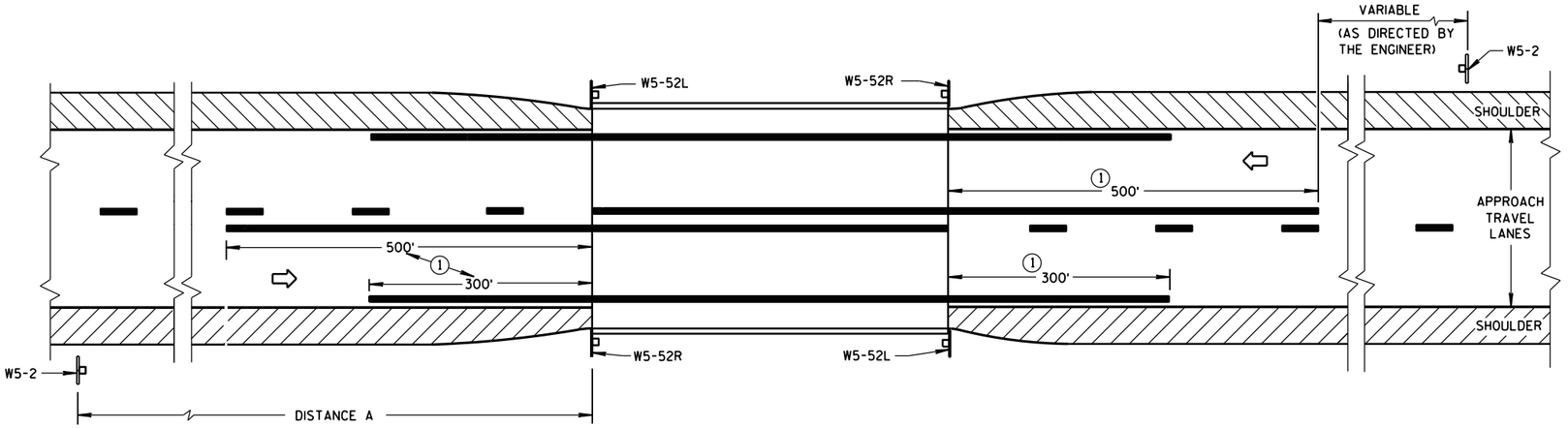
S.D.D. 15 C 4-3



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.

PAVEMENT MARKING SHOWN ON THIS DRAWING IS NOT REQUIRED UNLESS OTHERWISE SPECIFIED IN THE CONTRACT. WHEN SPECIFIED, PAVEMENT MARKING SHALL CONFORM TO THIS DRAWING AND OTHER CONTRACT REQUIREMENTS.

(1) MINIMUM DISTANCE UNLESS OTHERWISE SHOWN ON THE PLAN.

(2) FACE OF OBJECT MARKERS W5-52R, AND W5-52L SHALL BE COVERED WITH TYPE F REFLECTIVE SHEETING.

(3) LOCATE OBJECT MARKER POST(S) BEHIND GUARDRAIL WHEN PRESENT.

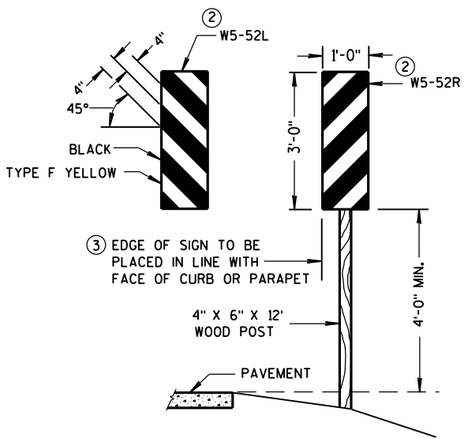
DISTANCE TABLE

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

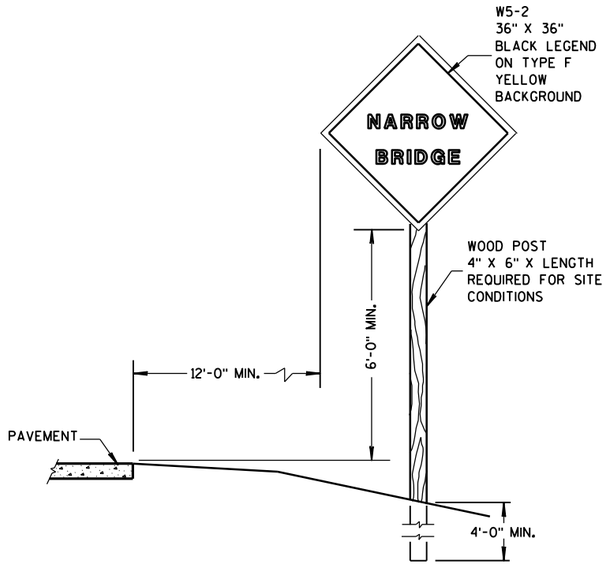
SITUATION 1

WARRANTING CRITERIA:

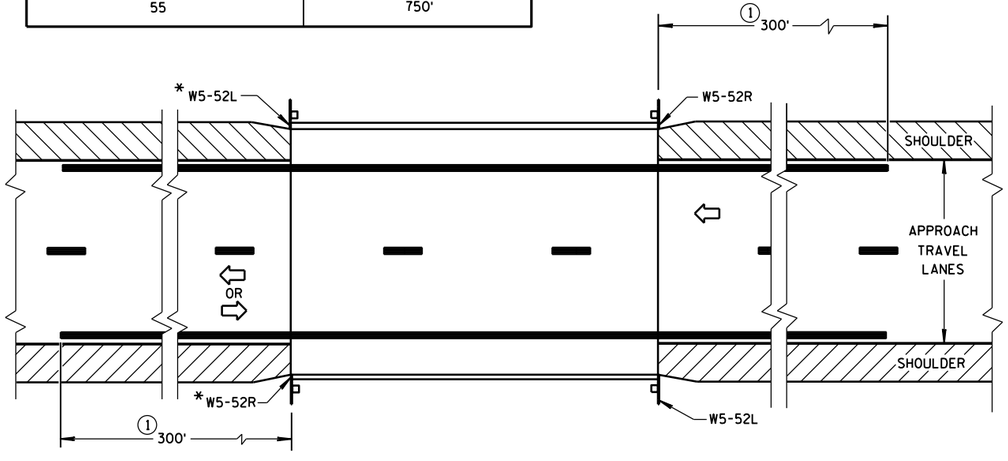
BRIDGE WIDTH IS AT LEAST 16 FEET BUT LESS THAN 24 FEET



OBJECT MARKER PLACEMENT



SIGN PLACEMENT



*OMIT ON ONE-WAY TRAVELLED WAYS

SITUATION 2

WARRANTING CRITERIA:

1. BRIDGE WIDTH IS AT LEAST 24 FEET AND

2. BRIDGE IS LESS THAN 6 FEET WIDER (ON EACH SIDE) THAN APPROACH TRAVEL LANES.

SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

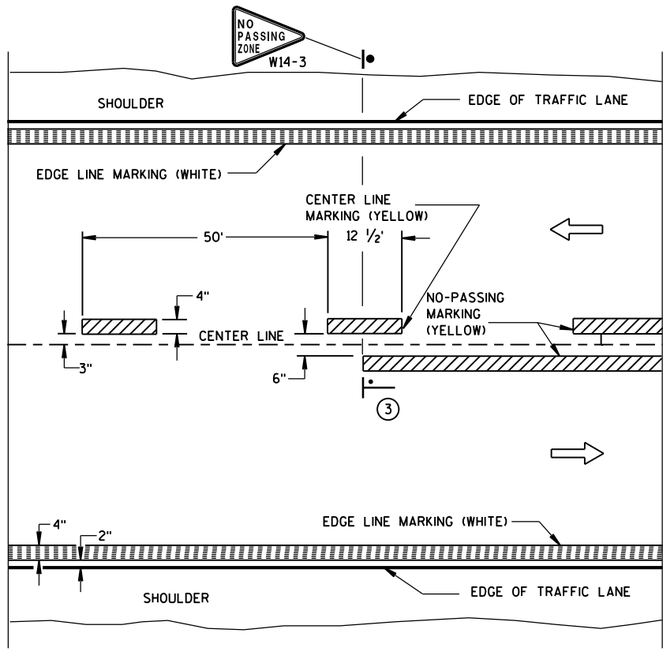
3-2014 DATE

/S/ Travis Feltes STATE TRAFFIC ENGINEER

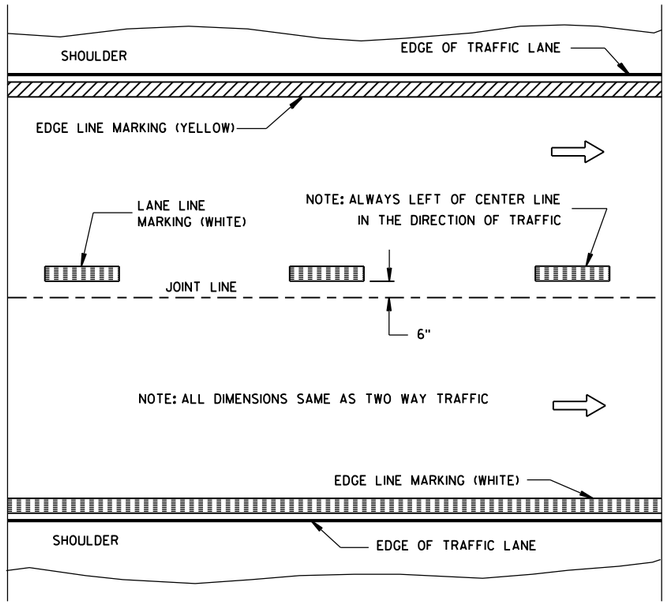
FHWA

6

S.D.D. 15 C 6-7

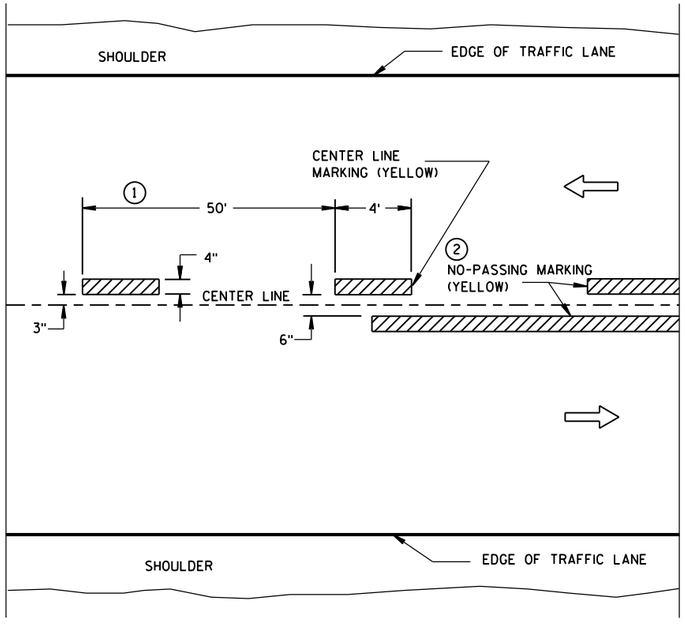


TWO WAY TRAFFIC

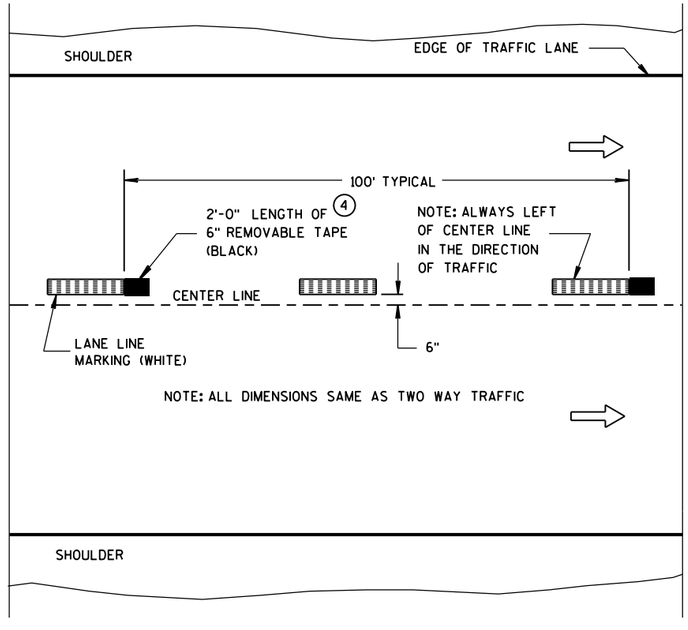


ONE WAY TRAFFIC

PERMANENT PAVEMENT MARKING



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY (INTERMEDIATE) PAVEMENT MARKING

(SHOWS CYCLE FOR TEMPORARY CENTER LINE OR TEMPORARY LANE LINE MARKING)

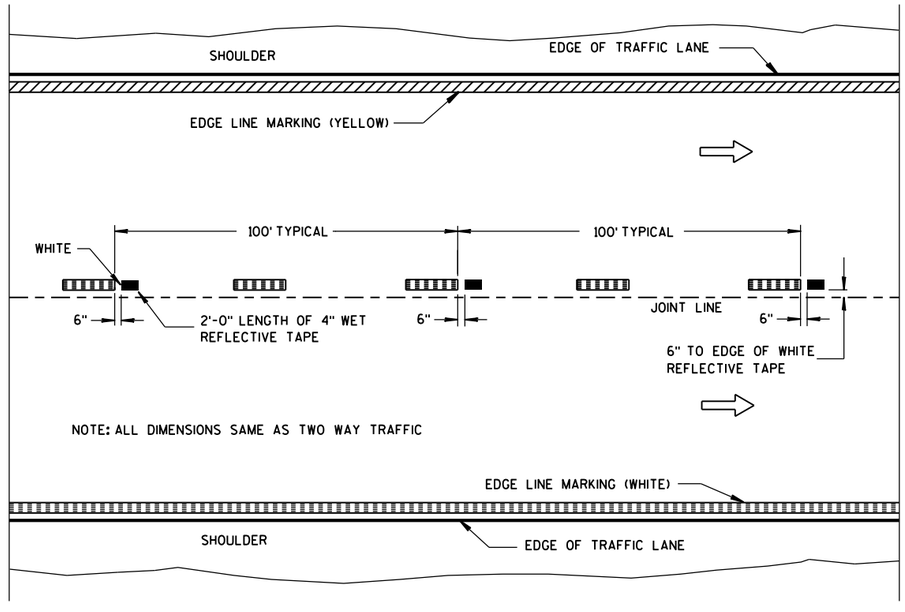
GENERAL NOTES

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

1. HALF CYCLE LENGTHS (25'±) WITH 2' MINIMUM STRIPE LENGTHS SHALL BE PROVIDED ON ROADWAYS (INCLUDING TEMPORARY TRAVELED WAYS) WITH REVERSE CURVATURE, CURVATURE OF OVER 5 DEGREES OR WHEN DIRECTED BY THE ENGINEER TO MARK UNUSUAL ALIGNMENT OF THE TRAVELED WAY.
2. NO PASSING ZONE TEMPORARY PAVEMENT MARKING IS REQUIRED TO BE PLACED, WHERE APPROPRIATE, ALONG WITH CENTERLINE TEMPORARY PAVEMENT MARKING WHEN A SAME DAY PERMANENT PAVEMENT MARKING ITEM IS INCLUDED IN THE CONTRACT.
3. NO PASSING ZONE MARKINGS ARE PLACED ACCORDING TO "T" MARKINGS. IF EXISTING NO PASSING ZONE W14-3 SIGNS ARE BEYOND 50 FEET IN EITHER DIRECTION, THE SIGNS SHALL BE MOVED TO THE "T" MARKINGS.
4. CONCRETE ONLY.

NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL



WET REFLECTIVE TAPE SUPPLEMENT TO
SPRAYED OR NON WET REFLECTIVE TAPE LANE LINE

LEGEND

"T" MARKING

POST MOUNTED SIGN

PAVEMENT MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

5-13-2013
DATE

/S/ Travis Feltes
STATE TRAFFIC E

FHWA

6

S.D.D. 15 C 8-16a

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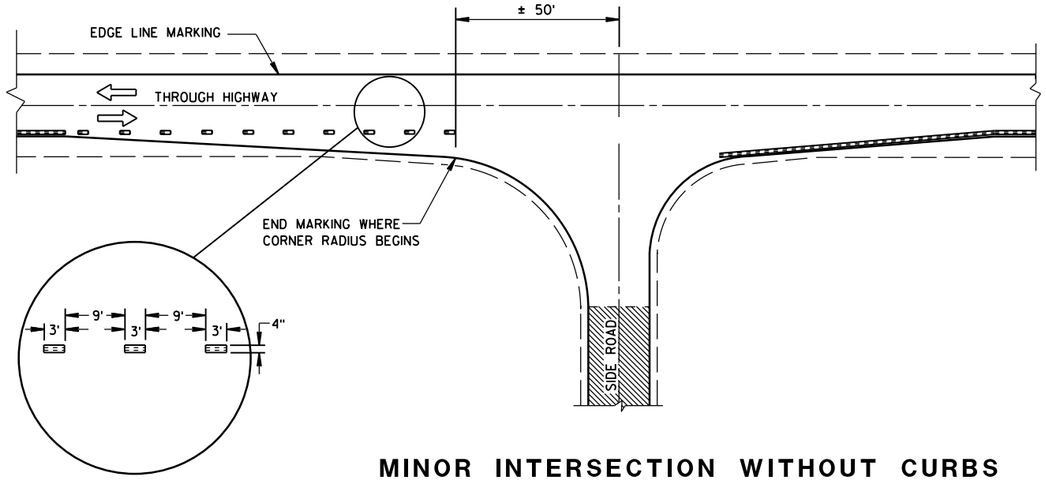
S.D.D. 15 C 8-16a



MINOR INTERSECTION WITHOUT CURBS

GENERAL NOTES

EDGE LINES SHALL BE OMITTED THROUGH INTERSECTIONS. EDGE LINES SHALL BE CONTINUED 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) ALTERNATIVE MARKING SHALL BE PROVIDED WHEN SPECIFIED IN THE CONTRACT. TYPICAL SITUATIONS WHERE THIS MARKING MAY BE REQUIRED ARE WHERE THE INTERSECTION IS ON A SHARP HORIZONTAL CURVE OR CREST VERTICAL CURVE IN AN UNLIGHTED AREA SUCH THAT THE EDGE LINE MAY BE MISLEADING TO THE MOTORIST OR DISAPPEAR FROM SIGHT.

(4) THE EDGE LINE IN THE TAPER AREAS OF THE BYPASS LANE AND THE BYPASS LANE SHALL BE LOCATED 1-FOOT FROM EDGE OF PAVEMENT TO THE OUTSIDE EDGE OF EDGE LINE.

(5) BARRIER LINE ENDS AT SIDE ROAD PAVEMENT/SURFACE EDGE EXTENSION.

(6) BARRIER LINE STARTS 500 FEET PRIOR TO THE BYPASS TAPER.

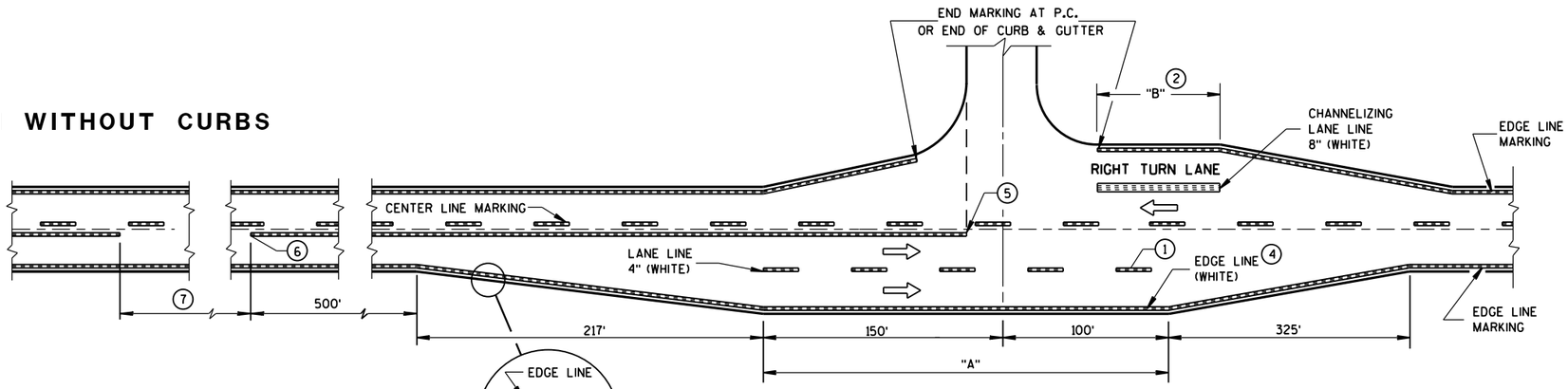
(7) IF THE DISTANCE BETWEEN 2 SUCCESSIVE NO-PASSING ZONES IS LESS THAN THE MINIMUM DISTANCE BETWEEN ZONES, CONNECT THE 2 ZONES.

(8) 3' LINE 9' GAP, EXCEPT RETRACE THE EXISTING LINE - GAP PATTERN WHERE EXISTING MARKINGS ARE IN PLACE.

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

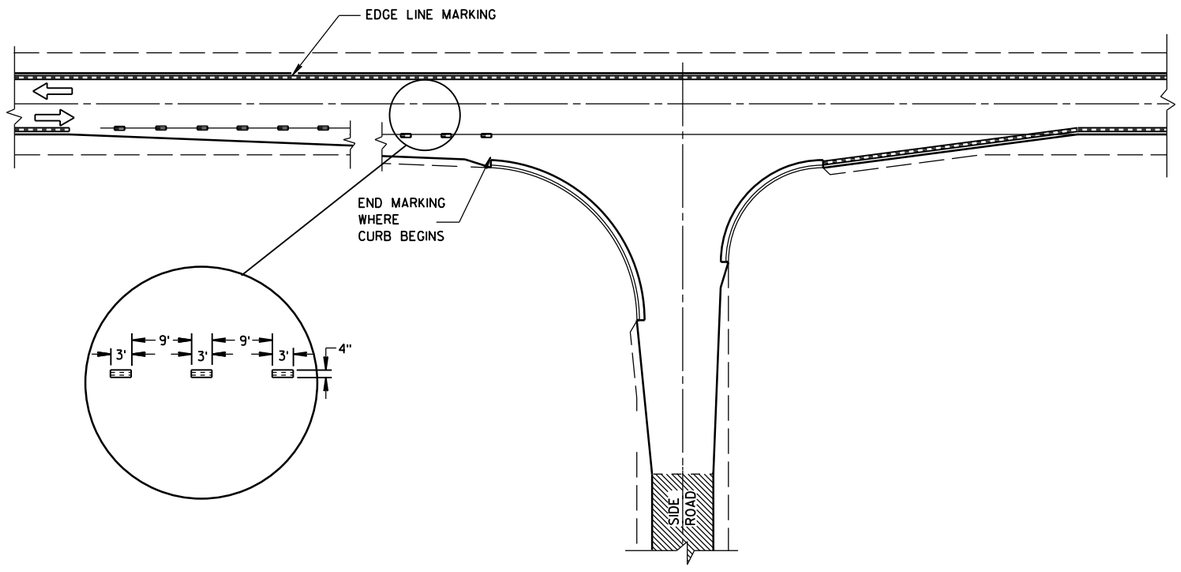
(7)

POSTED SPEED (MPH)	MINIMUM DISTANCE BETWEEN ZONES (FEET)
25 - 30	528
35 - 40	528
45 - 50	686
55	792



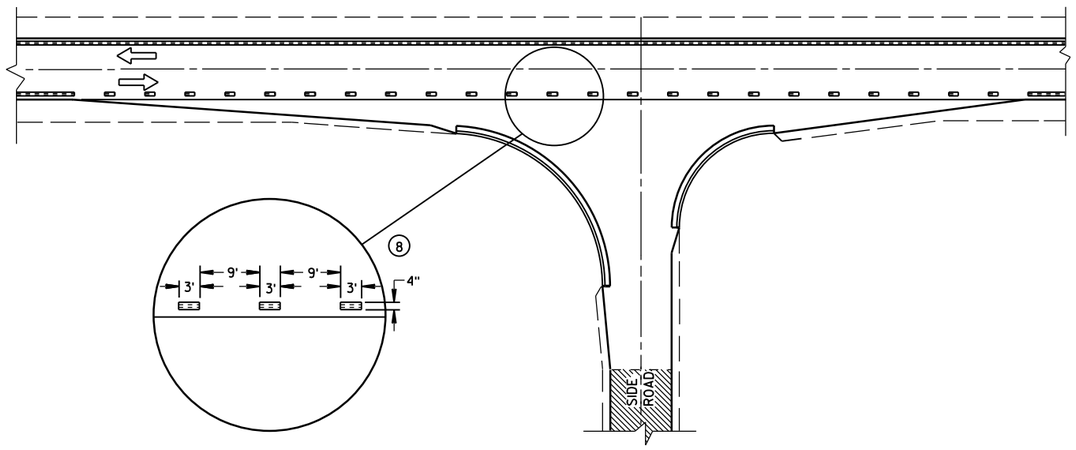
MAJOR INTERSECTIONS

(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANES)



MINOR INTERSECTION WITH CURBS

(TYPICAL MARKING)



MINOR INTERSECTION WITH CURBS

(3) (FOR SPECIAL CONDITIONS AS SPECIFIED)

PAVEMENT MARKING
(INTERSECTIONS)

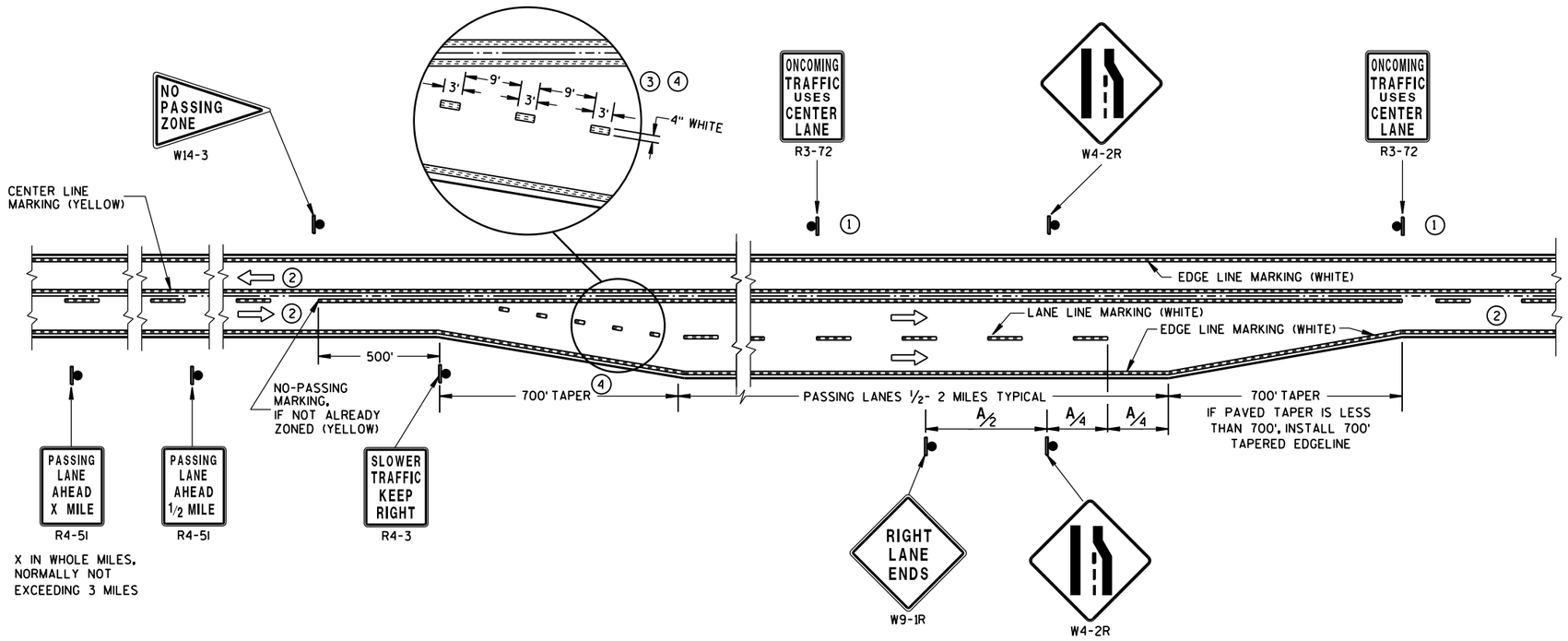
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

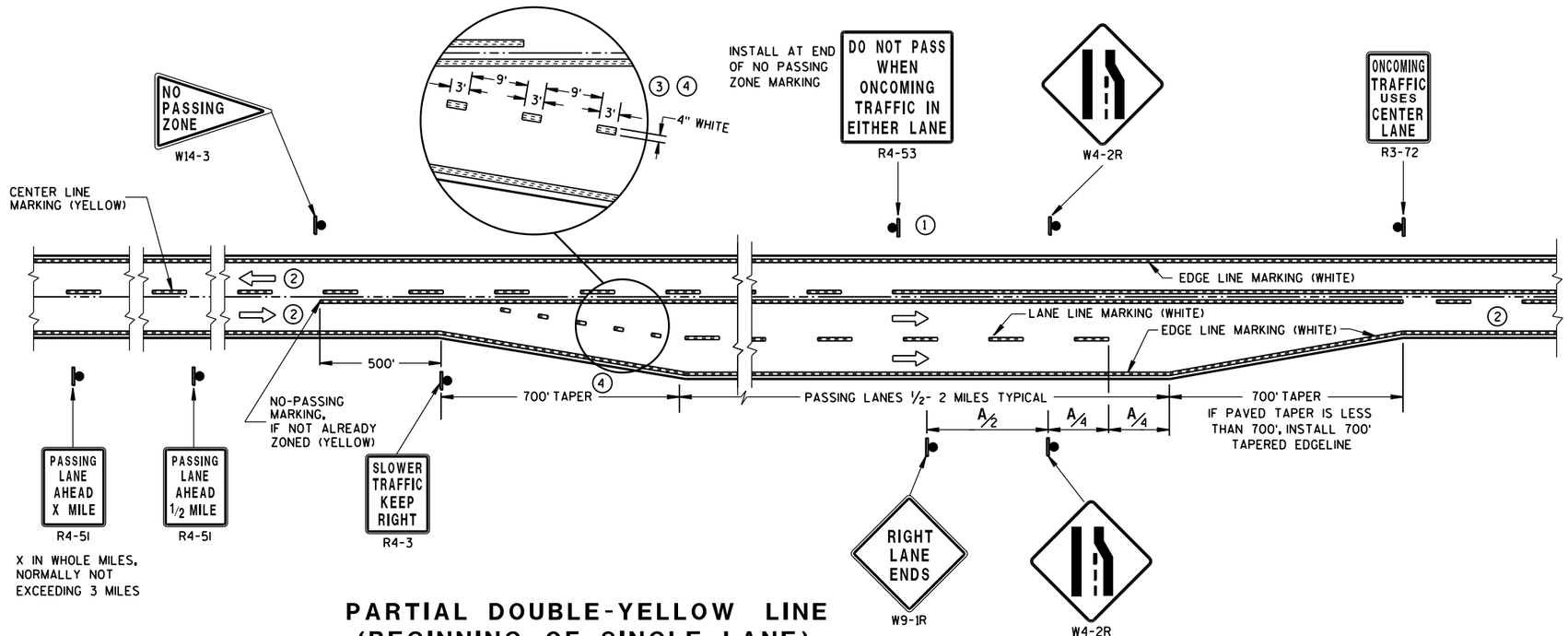
S.D.D. 15 C 8-16b

6

S.D.D. 15 C 8-16b



SOLID DOUBLE-YELLOW LINE
(THROUGHOUT ENTIRE PASSING/CLIMBING LANE)



PARTIAL DOUBLE-YELLOW LINE
(BEGINNING OF SINGLE LANE)

GENERAL NOTES

1. SIGN SHALL BE REPEATED AT 1 MILE INCREMENTS OR AT THE DISCRETION OF THE REGIONAL TRAFFIC ENGINEER.
2. THERE MAY BE SOLID YELLOW ON THE CENTERLINE DUE TO SIGHT CONDITIONS.
3. THE TAPER LENGTH OF THE DOTTED LINE PAVEMENT MARKING SHALL BE 700 FEET, 3'LINE 9'GAP, EXCEPT RETRACE THE EXISTING LINE-GAP PATTERN WHERE EXISTING MARKINGS ARE IN PLACE.
4. WHEN THE ENTRANCE TAPER IS LESS THAN 700 FEET OR THE SHOULDER WIDTH IN THE PASSING/CLIMBING LANE IS LESS THAN THE ADJACENT HIGHWAY, DO NOT INSTALL DOTTED LINE PAVEMENT MARKING.

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

DISTANCE TABLE

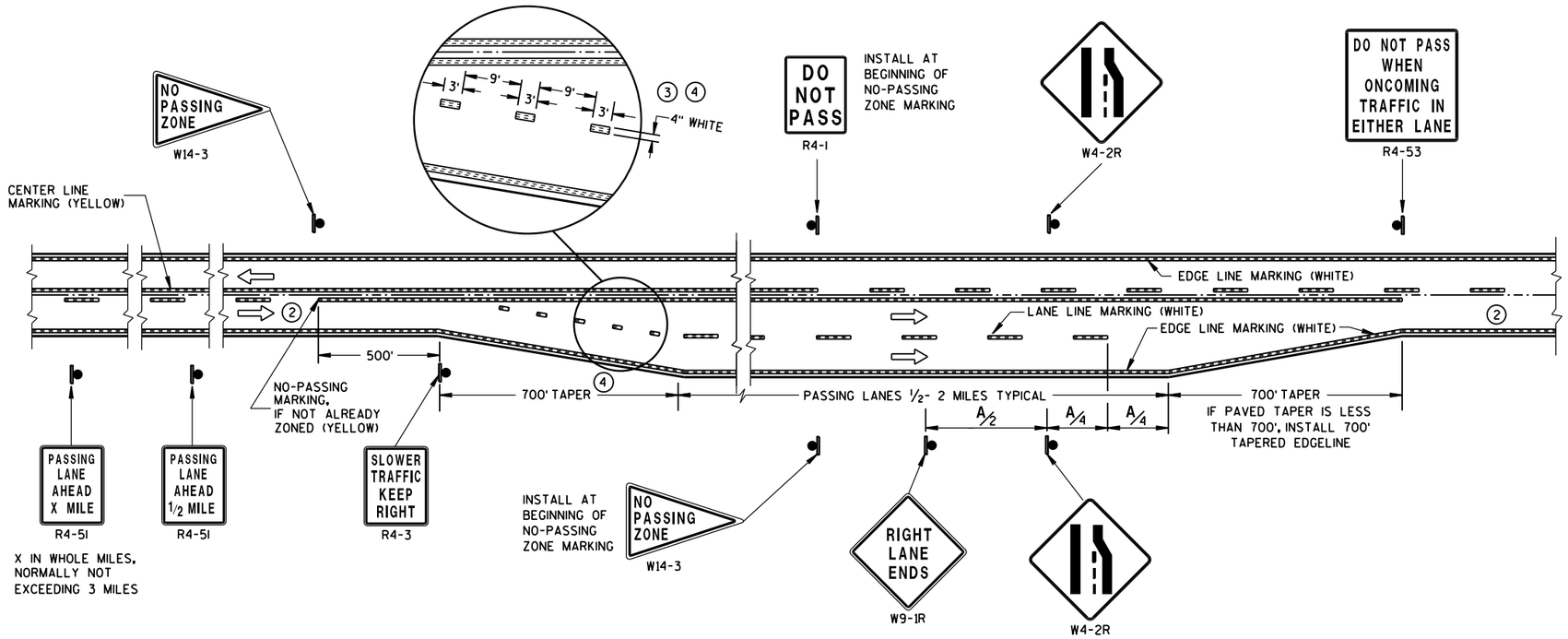
POSTED OR 85th PERCENTILE SPEED	DISTANCE "A"
45	750
50	850
55	950

PAVEMENT MARKING & SIGNING (CLIMBING LANE & PASSING LANE)

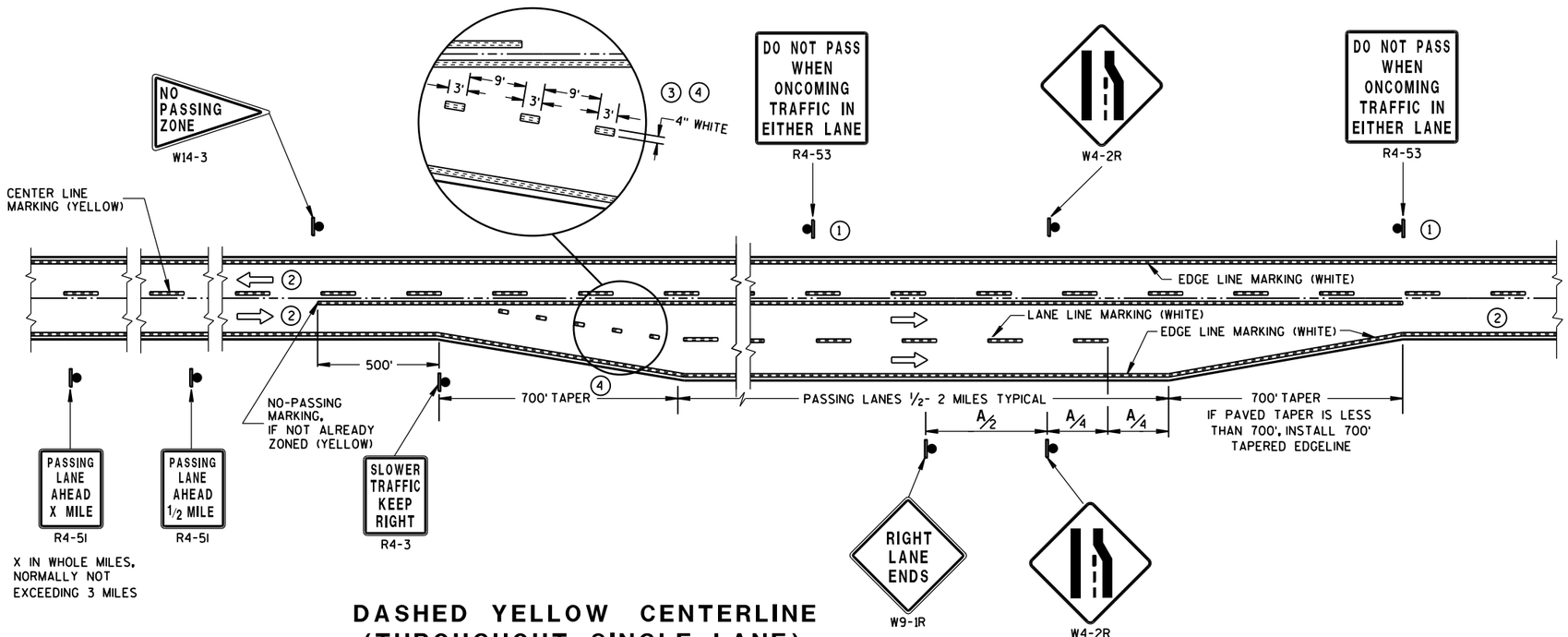
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 15 C 8-16c



SOLID DOUBLE-YELLOW LINE (END OF SINGLE LANE)



DASHED YELLOW CENTERLINE (THROUGHOUT SINGLE LANE)

GENERAL NOTES

1. SIGN SHALL BE REPEATED AT 1/2 MILE INCREMENTS OR AT THE DISCRETION OF THE REGIONAL TRAFFIC ENGINEER.
2. THERE MAY BE SOLID YELLOW ON THE CENTERLINE DUE TO SIGHT CONDITIONS.
3. THE TAPER LENGTH OF THE DOTTED LINE PAVEMENT MARKING SHALL BE 700 FEET, 3'LINE 9'GAP, EXCEPT RETRACE THE EXISTING LINE-GAP PATTERN WHERE EXISTING MARKINGS ARE IN PLACE.
4. WHEN THE ENTRANCE TAPER IS LESS THAN 700 FEET OR THE SHOULDER WIDTH IN THE PASSING/CLIMBING LANE IS LESS THAN THE ADJACENT HIGHWAY, DO NOT INSTALL DOTTED LINE PAVEMENT MARKING.

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

DISTANCE TABLE

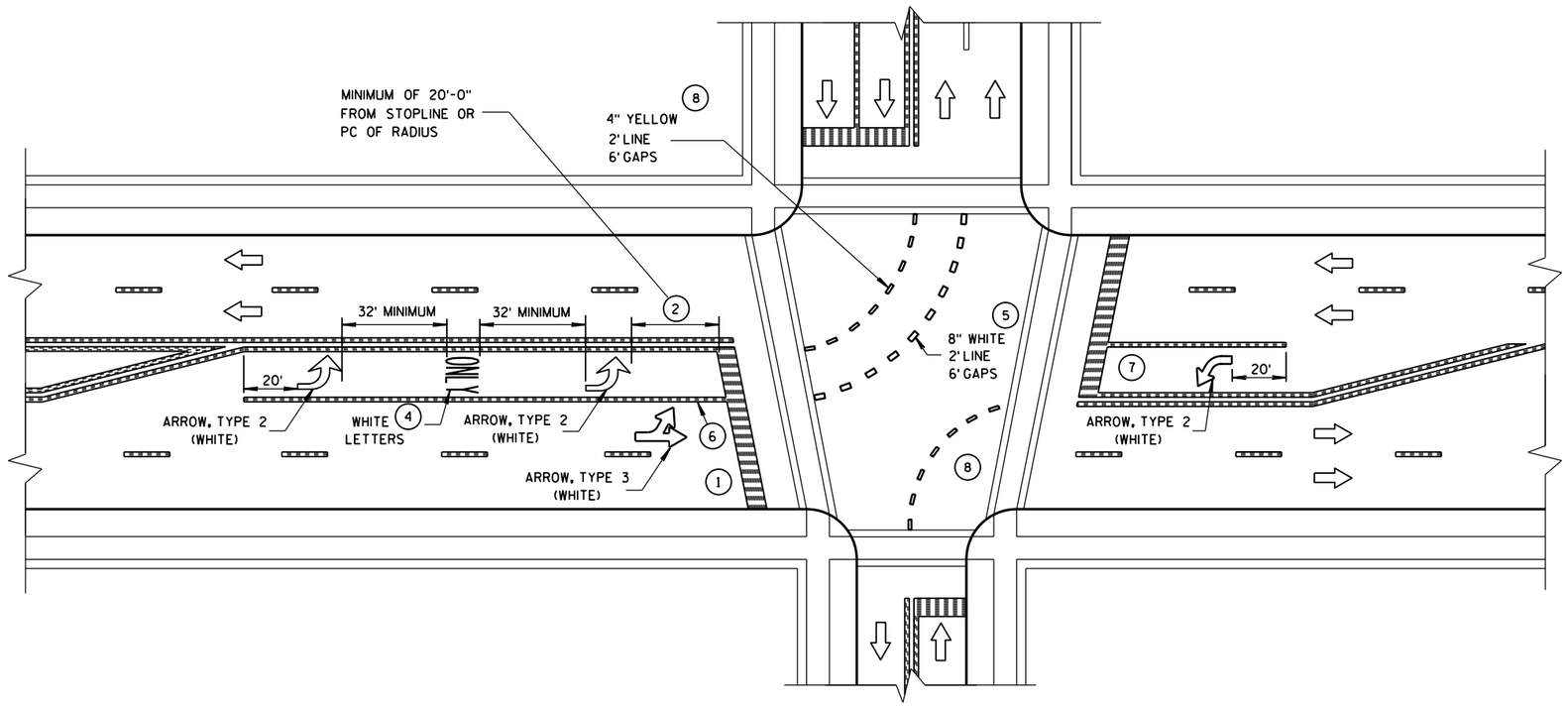
POSTED OR 85th PERCENTILE SPEED	DISTANCE "A"
45	750
50	850
55	950

PAVEMENT MARKING & SIGNING (CLIMBING LANE & PASSING LANE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

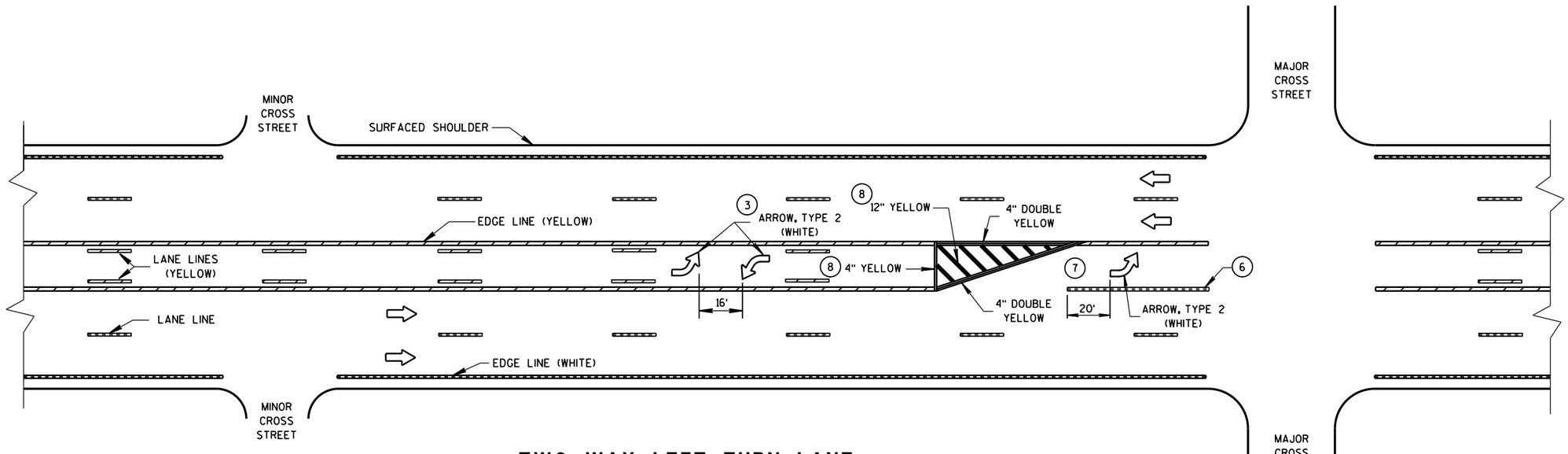
S.D.D. 15 C 8-16d



GENERAL NOTES

1. STOP BAR IS REQUIRED ONLY WHEN SPECIFIED IN THE CONTRACT.
2. DISTANCE MAY BE ADJUSTED TO ACCOMODATE SHORT LEFT TURN LANES. AS APPROVED BY THE ENGINEER.
3. A SET OF ARROWS IS REQUIRED EVERY 400 FEET OR NEAR INTERSECTIONS OR DRIVEWAYS WITH TURNING TRAFFIC.
4. ADD EXTRA SETS OF ONE ARROW AND ONE ONLY PER 160 FEET OR WHEN ON A CURVE.
5. 8" WHITE WITH 2' LINE 6' GAPS FOR DUAL TURN LANE.
6. 8" WHITE
7. ADD SECOND ARROW WHEN TURN BAY IS GREATER THAN OR EQUAL TO 108 FEET.
8. REQUIRED ONLY WHEN SPECIFIED IN THE CONTRACT.

NOTE:
ARROW SYMBOL (⇨)
SHOWS DIRECTION OF TRAVEL



TWO WAY LEFT TURN LANE

PAVEMENT MARKING (LEFT TURN LANE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6

S.D.D. 15 C 8-16e

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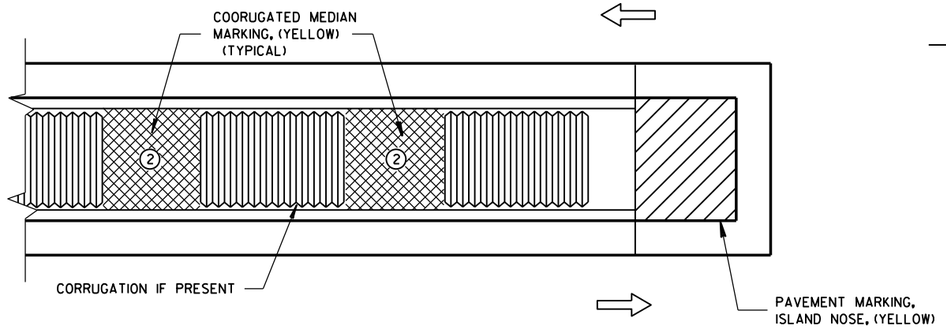
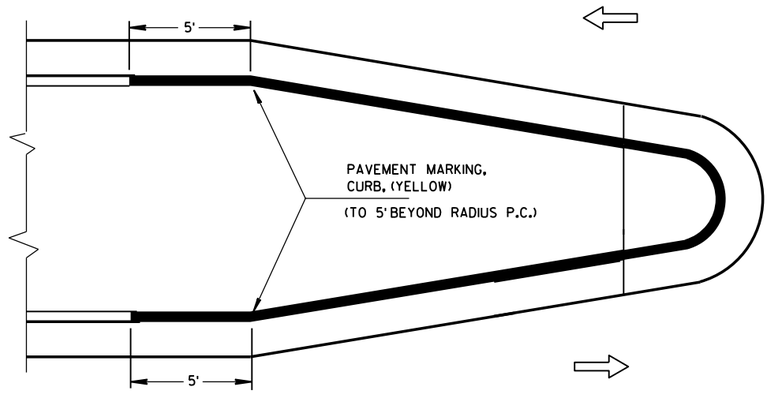
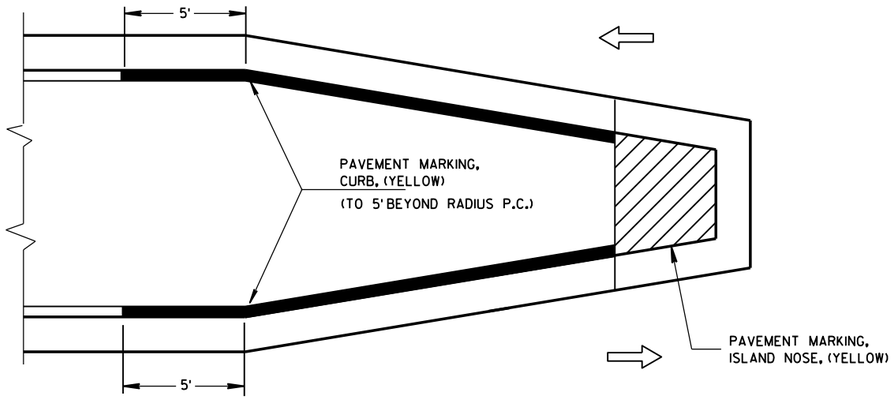
S.D.D. 15 C 8-16e



MEDIAN ISLAND WITH SQUARE BLUNT NOSE

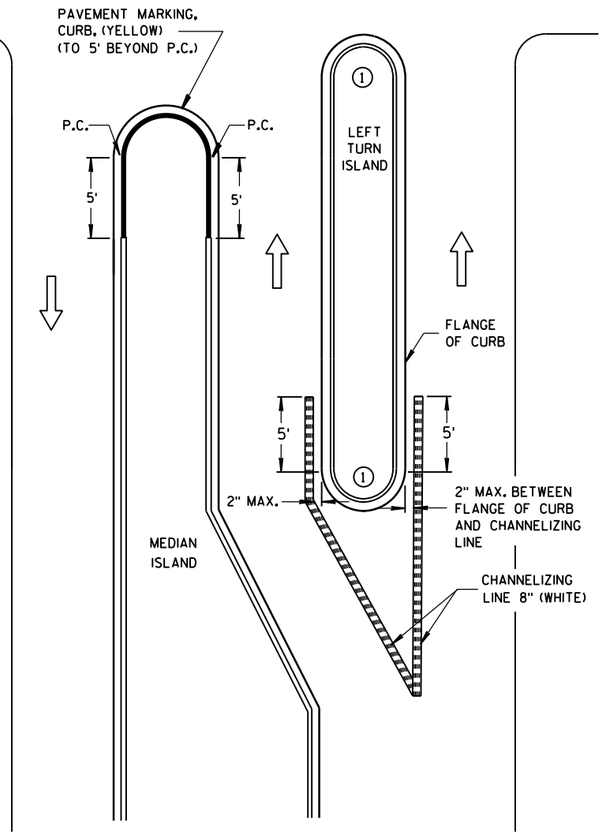


MEDIAN ISLAND WITH ROUND BLUNT NOSE



MEDIAN ISLAND WITH SLOPED NOSE

TYPICAL PLACEMENT OF PAVEMENT MARKING ON MEDIAN ISLANDS

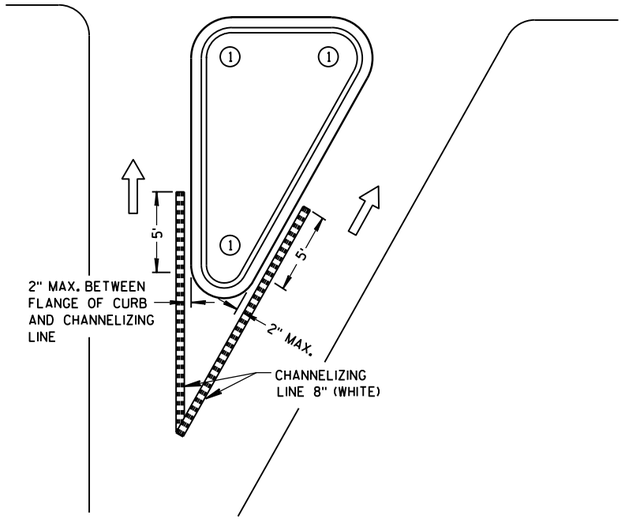


LEFT TURN & MEDIAN ISLAND

GENERAL NOTES

1. DO NOT MARK CURB NOSES THAT SEPARATE LANES OF TRAFFIC TRAVELING IN THE SAME DIRECTION.

2. 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 AND ACCEPTED IN ACCORDANCE WITH THE CONTRACT AND PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE FOOT.



RIGHT TURN ISLAND

LEGEND

- ISLAND NOSE MARKING
- CURB MARKING
- CORRUGATED MEDIAN MARKING
- DIRECTION OF TRAVEL

PAVEMENT MARKING
(ISLANDS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 15 C 8-16f

6

S.D.D. 15 C 8-16f

LEGEND

SIGN ON PORTABLE OR PERMANENT SUPPORT

DIRECTION OF TRAFFIC

WORK AREA

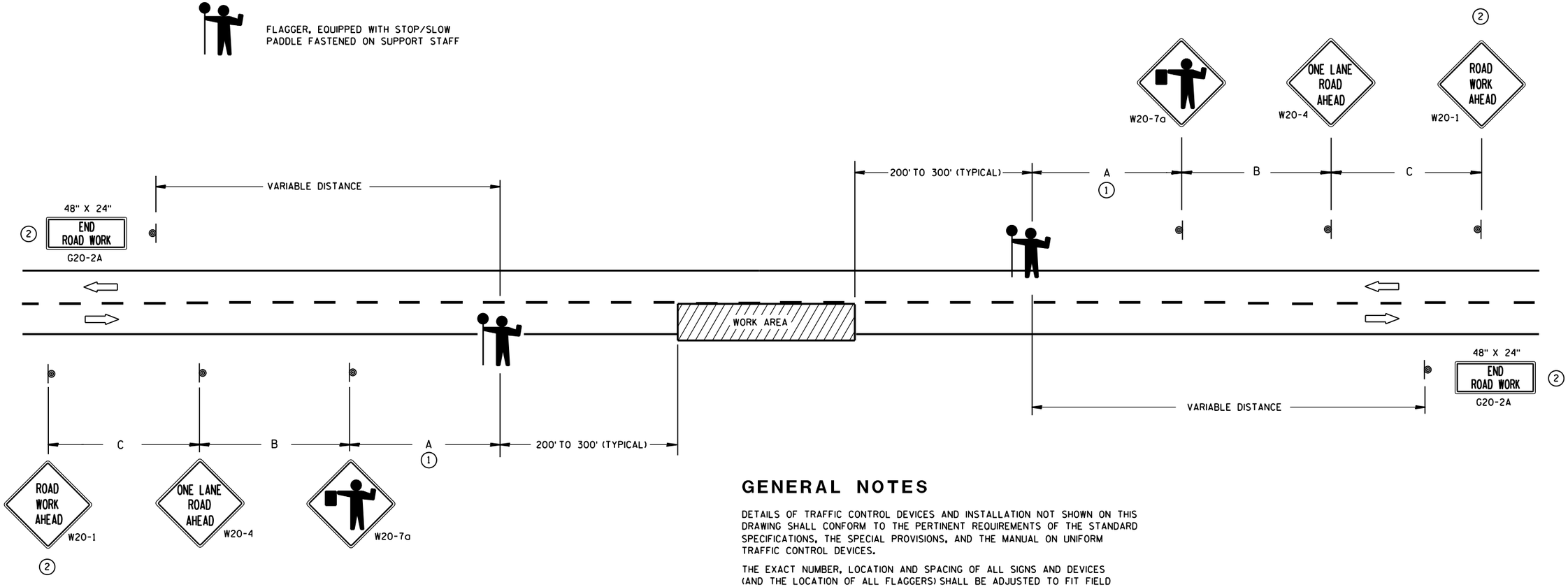
FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN SPACING TABLE

SPEED LIMIT	SIGN SPACING A,B,C
25-35 MPH	200'
35-40 MPH	350'
45-55 MPH	500'

W3-4

USE OF THE "BE PREPARED TO STOP" SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7a AND W20-4 SIGNS. A 500' TYPICAL SPACING SHALL BE PROVIDED BETWEEN THE SIGNS.



(1) FOR A MOVING WORK OPERATION,
SIGNING FOR BOTH DIRECTIONS SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3500 FOOT 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.

GENERAL NOTES

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

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

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

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.

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, COVER OR REMOVE ALL TEMPORARY TRAFFIC CONTROL SIGNS.

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

TRAFFIC CONTROL FOR LANE CLOSURE (SUITABLE FOR MOVING OPERATIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
8/2013 — DATE
/S/ Travis Feltes — STATE TRAFFIC ENGINEER
FHWA

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S.D.D. 15 C 12-4

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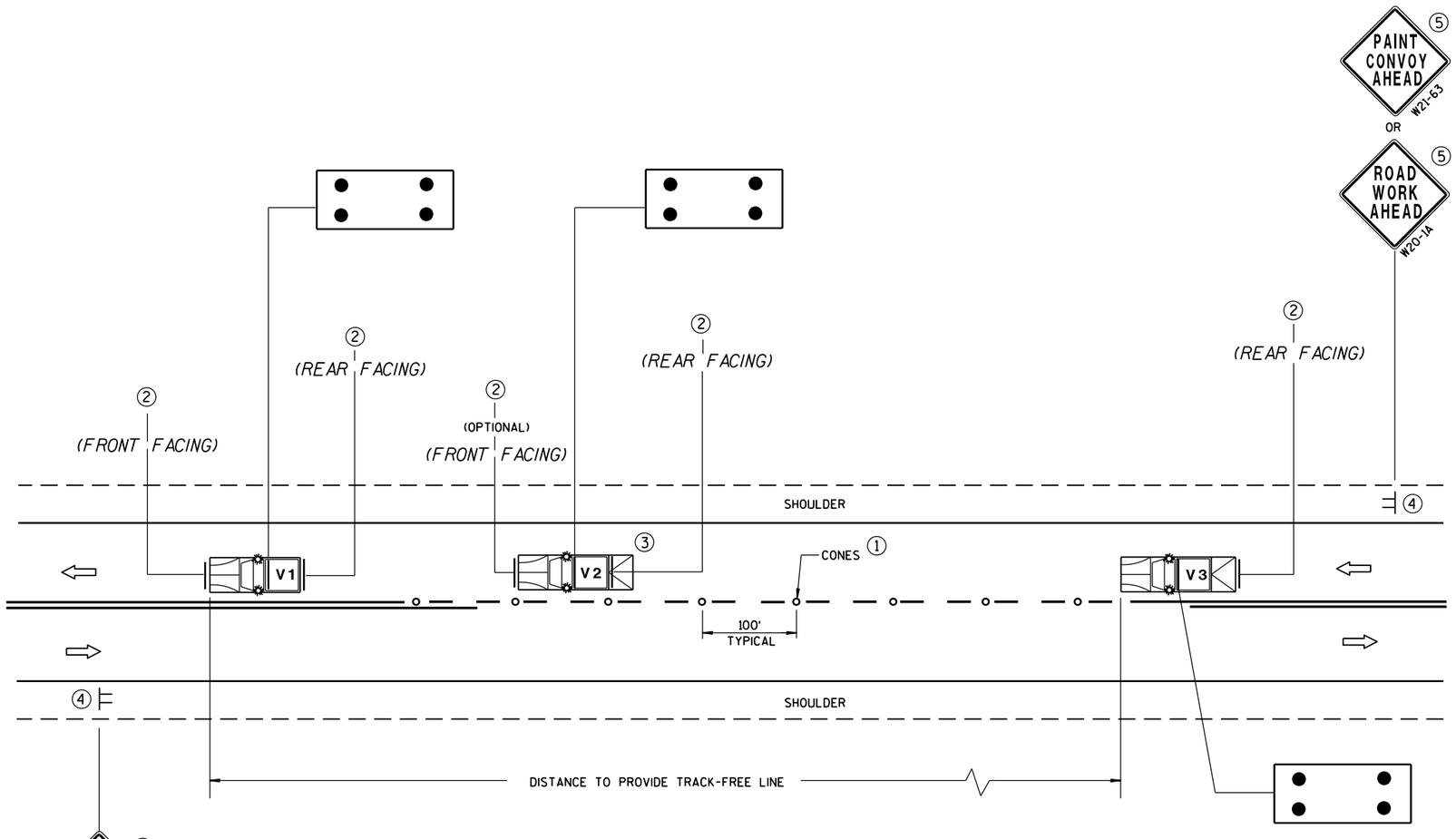
S.D.D. 15 C 12-4



MOVING PAVEMENT MARKING OPERATIONS
TWO-LANE TWO-WAY ROADWAY

GENERAL NOTES

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL OPERATING IN CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

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

IF SPEED LIMIT IS 40 MPH OR LESS STATIONARY SIGNS MAY BE OMITTED IF CONES ARE USED.

ALTERNATE SIGN MESSAGES, SUCH AS "PAINT CREW AHEAD" OR "ROAD PAINTING AHEAD" MAY BE USED.

DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

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

THIS DRAWING SHALL BE USED FOR CENTERLINE OR EDGELINE MARKING.

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR TURN THE STATIONARY WARNING SIGNS AWAY FROM TRAFFIC.

(1) CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

(2) USE STANDARD SIGN W21-64 WITH APPROPRIATE ARROW.

WET PAINT W21-64 OR WET PAINT W21-64

(3) OPTIONAL TRUCK-MOUNTED ATTENUATOR.

(4) SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.

(5) IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1 OR W21-63 ARE NOT REQUIRED.

LEGEND

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

MOVING PAVEMENT MARKING OPERATION
TWO-LANE TWO-WAY ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

/S/ Peter Amakobe Atepe
STATEWIDE WORK ZOI SAFETY ENGIN

DATE

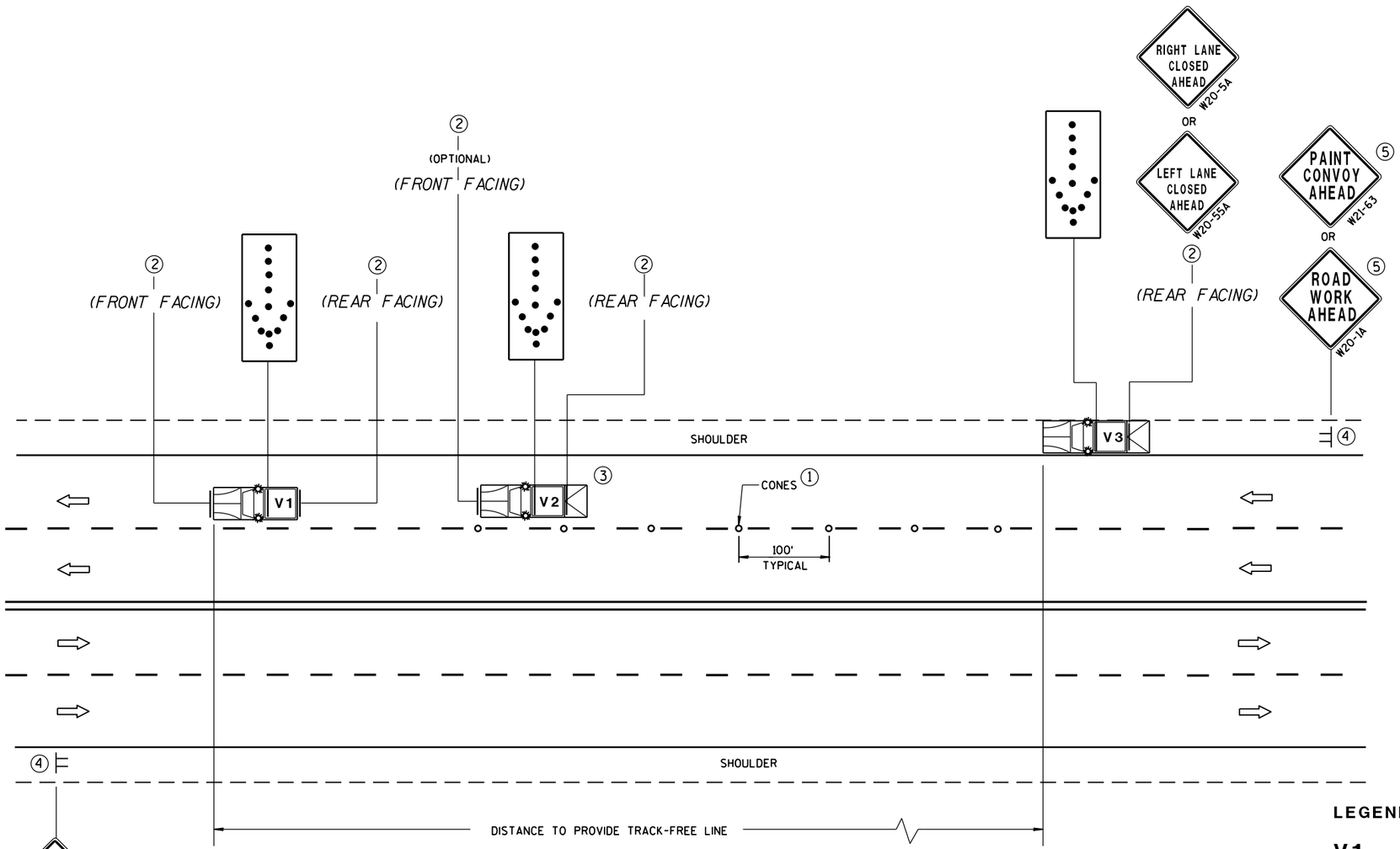
FHWA

6

S.D.D. 15 C 19-3a

6

S.D.D. 15 C 19-3a



GENERAL NOTES

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

ALL VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

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

IF SPEED LIMIT IS 40 MPH OR LESS STATIONARY SIGNS MAY BE OMITTED IF CONES ARE USED.

ALTERNATE SIGN MESSAGES, SUCH AS "PAINT CREW AHEAD" OR "ROAD PAINTING AHEAD" MAY BE USED.

DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

WHEN WORK ACTIVITY BLOCKS THE LEFT LANE, REVERSE TRAFFIC CONTROL.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, PROVIDE ADDITIONAL TRAFFIC CONTROLS AS SPECIFIED IN THE CONTRACT OR AS APPROVED BY THE ENGINEER.

USE AN ATTENUATOR ON THE REARMOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.

FOR EDGELINE MARKING OR IF CONES ARE NOT USED, POSITION THE REARMOST SHADOW VEHICLE ON THE SHOULDER AS SHOWN IN THE MUTCD IF THE SHOULDER HAS ADEQUATE WIDTH.

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR TURN THE STATIONARY WARNING SIGNS AWAY FROM TRAFFIC.

THIS DRAWING SHALL BE USED FOR CENTERLINE OR EDGELINE OR LANELINE MARKING FOR MULTILANE UNDIVIDED ROADWAYS.

(1) CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

(2) USE STANDARD SIGN W21-64 WITH APPROPRIATE ARROW.

WET PAINT W21-64 OR WET PAINT W21-64

(3) OPTIONAL TRUCK-MOUNTED ATTENUATOR.

(4) SIGNS SHALL BE REPEATED APPROXIMATELY EVERY THREE MILES.

(5) IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1 OR W21-63 ARE NOT REQUIRED.

MOVING PAVEMENT MARKING OPERATIONS
MULTI-LANE UNDIVIDED ROADWAY

LEGEND

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

MOVING PAVEMENT MARKING OPERATION
MULTI-LANE UNDIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept. 2015 — DATE
/S/ Peter Amakobe Atepe — STATEWIDE WORK ZON SAFETY ENGINE
FHWA

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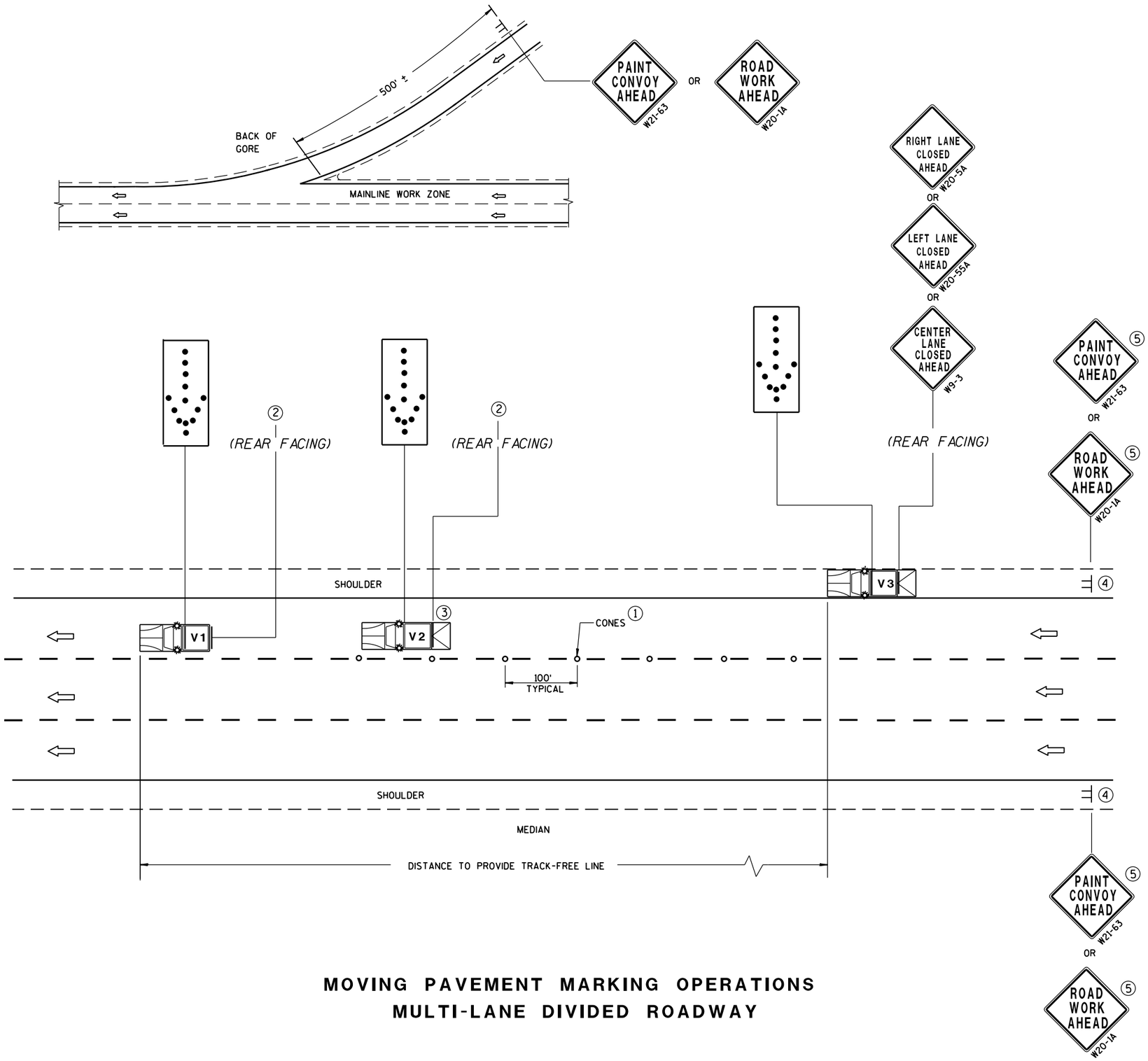
S.D.D. 15 C 19-3b



MOVING PAVEMENT MARKING OPERATIONS
MULTI-LANE DIVIDED ROADWAY

GENERAL NOTES

ALL VEHICLES SHALL BE EQUIPPED WITH TWO 360 DEGREE HIGH INTENSITY YELLOW FLASHING LIGHTS OR STROBE LIGHTS AND OPERATED WITH HEADLIGHTS TURNED ON.

ALL VEHICLES SHALL BE EQUIPPED WITH REAR FACING TYPE B OR C FLASHING ARROW PANEL. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

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

IF SPEED LIMIT IS 40 MPH OR LESS STATIONARY SIGNS MAY BE OMITTED IF CONES ARE USED.

ALTERNATE SIGN MESSAGES, SUCH AS "PAINT CREW AHEAD" OR "ROAD PAINTING AHEAD" MAY BE USED.

DISTANCE BETWEEN VEHICLES MAY VARY ACCORDING TO TERRAIN, SIGHT DISTANCE, PAINT DRYING TIME, AND OTHER FACTORS. WHENEVER ADEQUATE STOPPING SIGHT DISTANCE EXISTS TO THE REAR, SHADOW VEHICLES SHOULD MAINTAIN THE MINIMUM DISTANCE FROM THE WORK VEHICLE AND PROCEED AT THE SAME SPEED AS THE WORK VEHICLE. SHADOW VEHICLES SHOULD SLOW DOWN IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

WHEN WORK ACTIVITY BLOCKS THE LEFT LANE, REVERSE TRAFFIC CONTROL.

WHEN A RAMP INTERSECTS THE FACILITY ON WHICH THE WORK IS BEING PERFORMED, PROVIDE ADDITIONAL TRAFFIC CONTROLS AS SPECIFIED IN THE CONTRACT OR AS APPROVED BY THE ENGINEER.

USE AN ATTENUATOR ON THE REARMOST VEHICLE THAT BLOCKS ALL OR PART OF THE TRAFFIC LANE.

FOR EDGELINE MARKING OR IF CONES ARE NOT USED, POSITION THE REARMOST SHADOW VEHICLE ON THE SHOULDER AS SHOWN IN THE MUTCD IF THE SHOULDER HAS ADEQUATE WIDTH. USE DOUBLE ARROWS WHEN CONVOY IS IN CENTER LANE ONLY.

WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR TURN THE STATIONARY WARNING SIGNS AWAY FROM TRAFFIC.

THIS DRAWING SHALL BE USED FOR EDGELINE OR LANELINE MARKING FOR MULTILANE DIVIDED ROADWAYS.

① CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

② USE STANDARD SIGN W21-64 WITH APPROPRIATE ARROW.

WET PAINT W21-64 OR WET PAINT W21-64

③ OPTIONAL TRUCK-MOUNTED ATTENUATOR.

④ SIGNS SHALL BE REPEATED AFTER EVERY ON RAMP OR EVERY THREE MILES.

⑤ IF CONSTRUCTION WORK ZONE SIGNS ARE IN PLACE, W20-1 OR W21-63 ARE NOT REQUIRED.

LEGEND

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

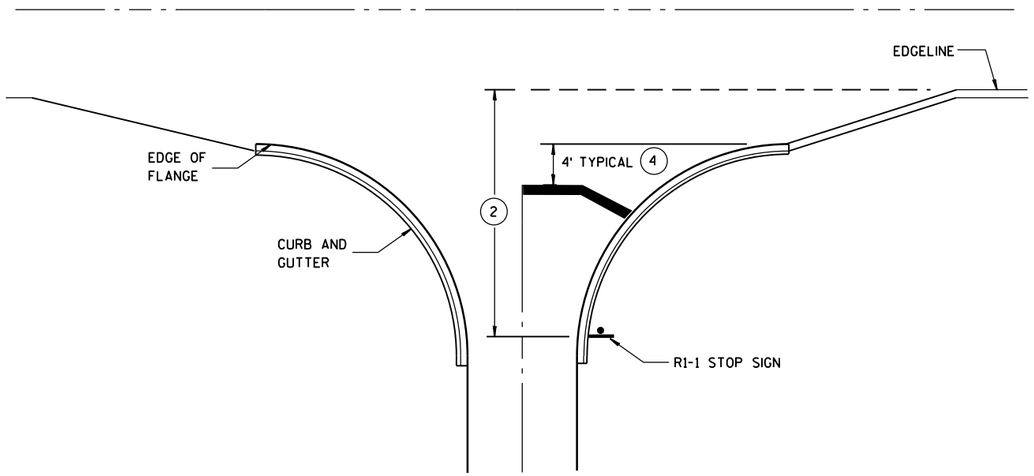
MOVING PAVEMENT MARKING OPERATION
MULTI-LANE DIVIDED ROADWAY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

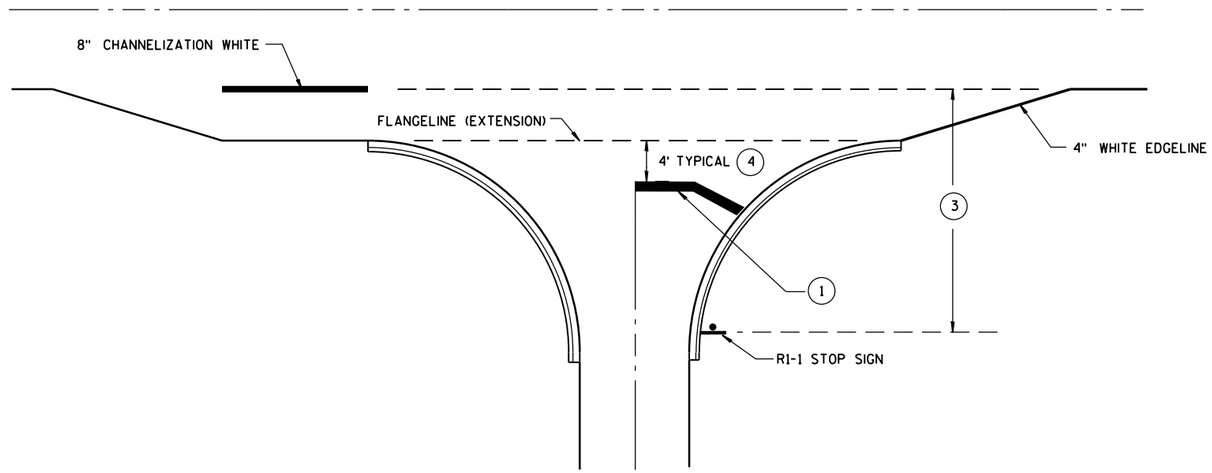
APPROVED
Sept. 2015 — DATE
/S/ Peter Amakobe Atepe — STATEWIDE WORK ZON SAFETY ENGINI
FHWA

6 S.D.D. 15 C 19-3c

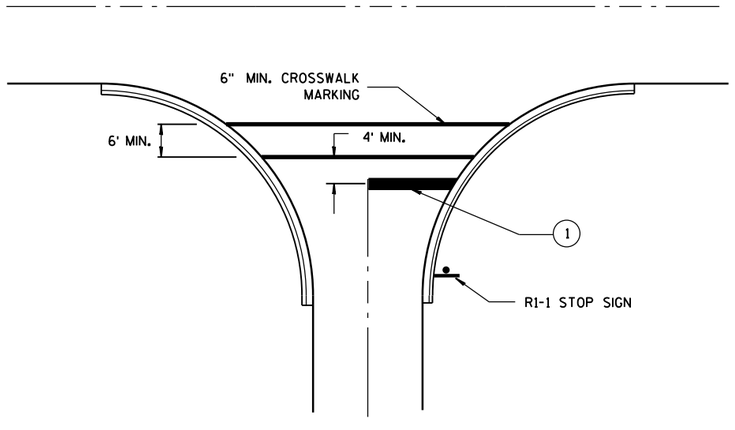
6 S.D.D. 15 C 19-3c



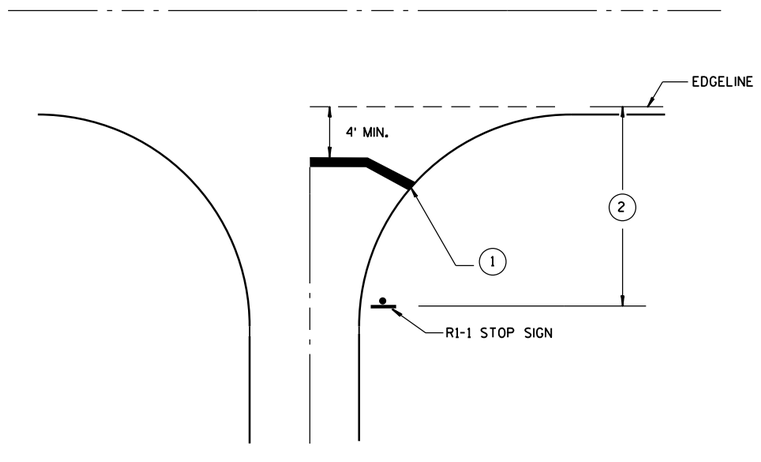
TYPICAL STOP LINE PAVEMENT MARKING WITH CURB AND GUTTER



TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH RIGHT TURN LANE



TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH CROSSWALK MARKING



TYPICAL STOP LINE PAVEMENT MARKING WITHOUT CURB AND GUTTER

GENERAL NOTES

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

STOP LINE AND CROSSWALK PAVEMENT MARKING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

4/30/2013
DATE

/S/ Travis Feltes
STATE TRAFFIC E

FHWA

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S.D.D. 15 C 33-1

GENERAL NOTES

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

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

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

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

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

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

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

TABLE A

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

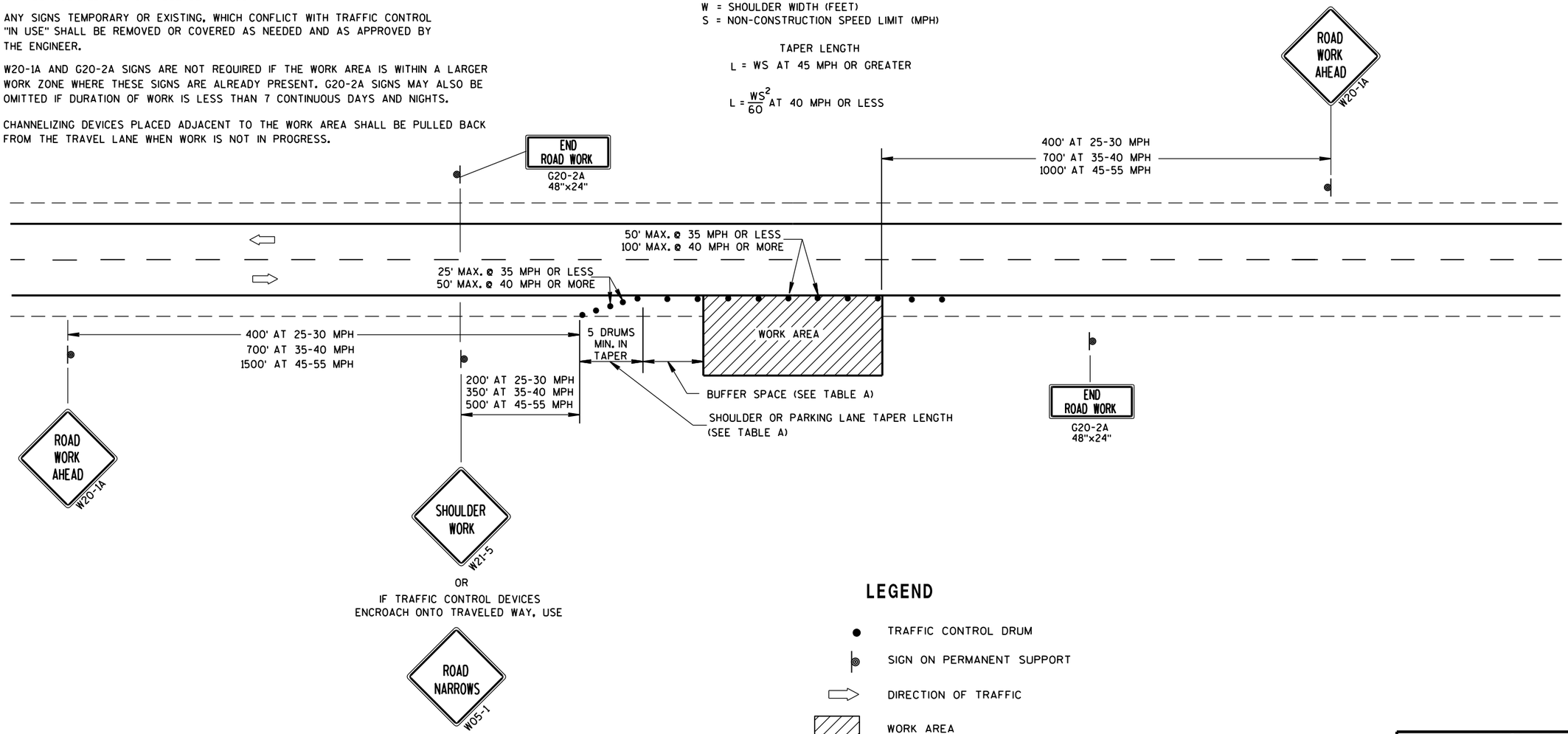
W = SHOULDER WIDTH (FEET)
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH

L = WS AT 45 MPH OR GREATER

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

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



LEGEND

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

July 14, 2015 — DATE

/S/ Peter Amakobe Atepe — STATEWIDE WORK ZO SAFETY ENGI FIC

FHWA

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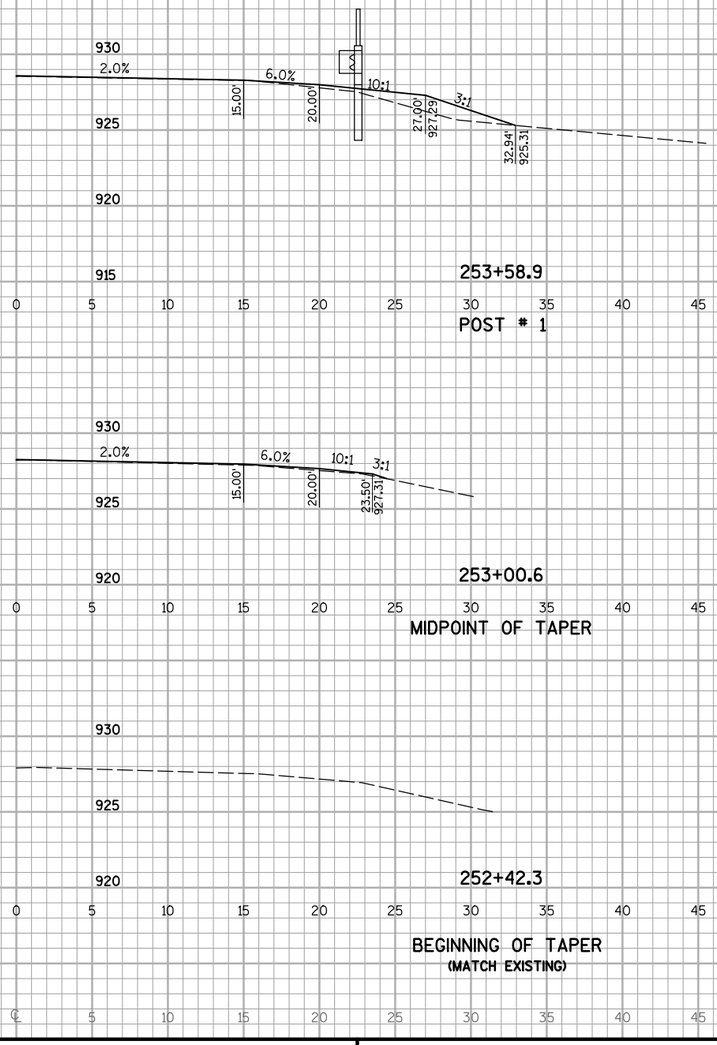
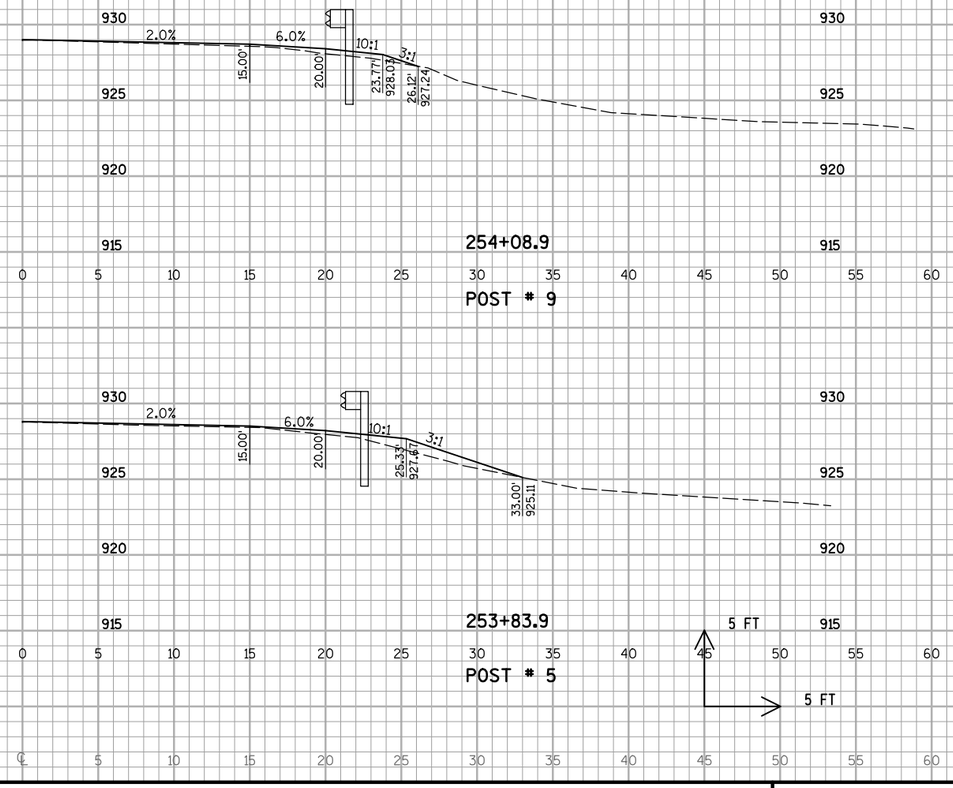
S.D.D. 15 D 28-3





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PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 128	E

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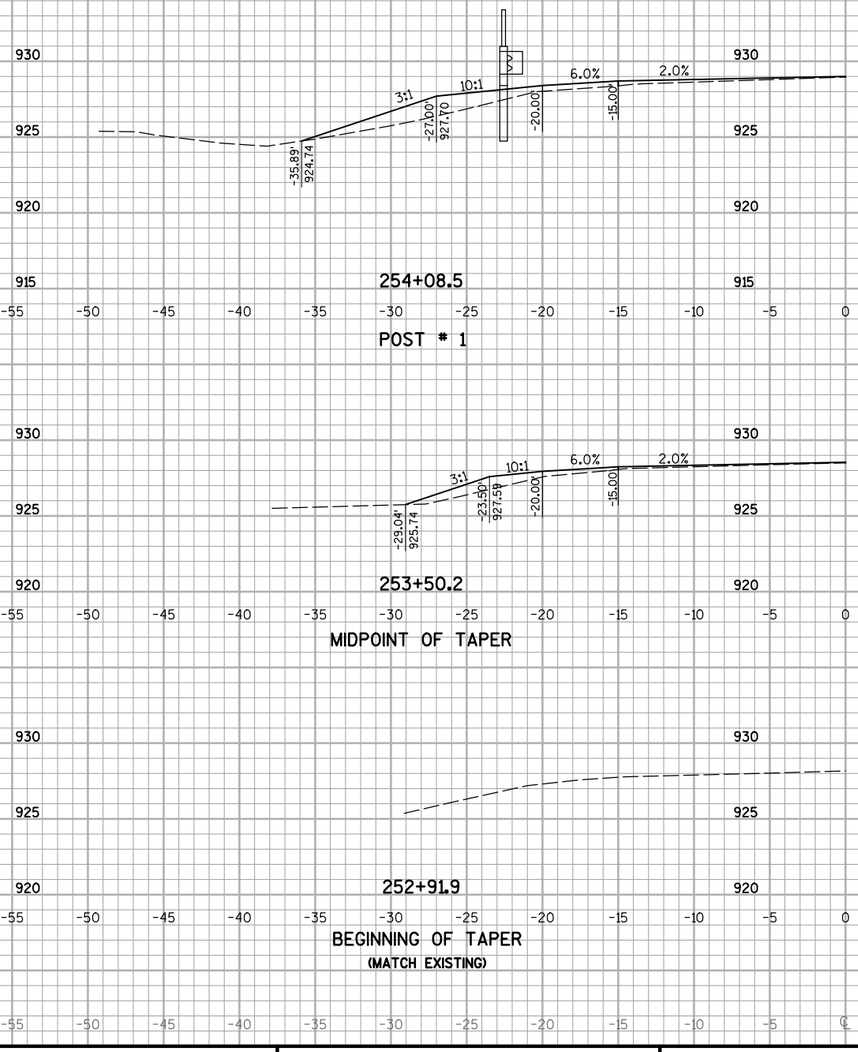
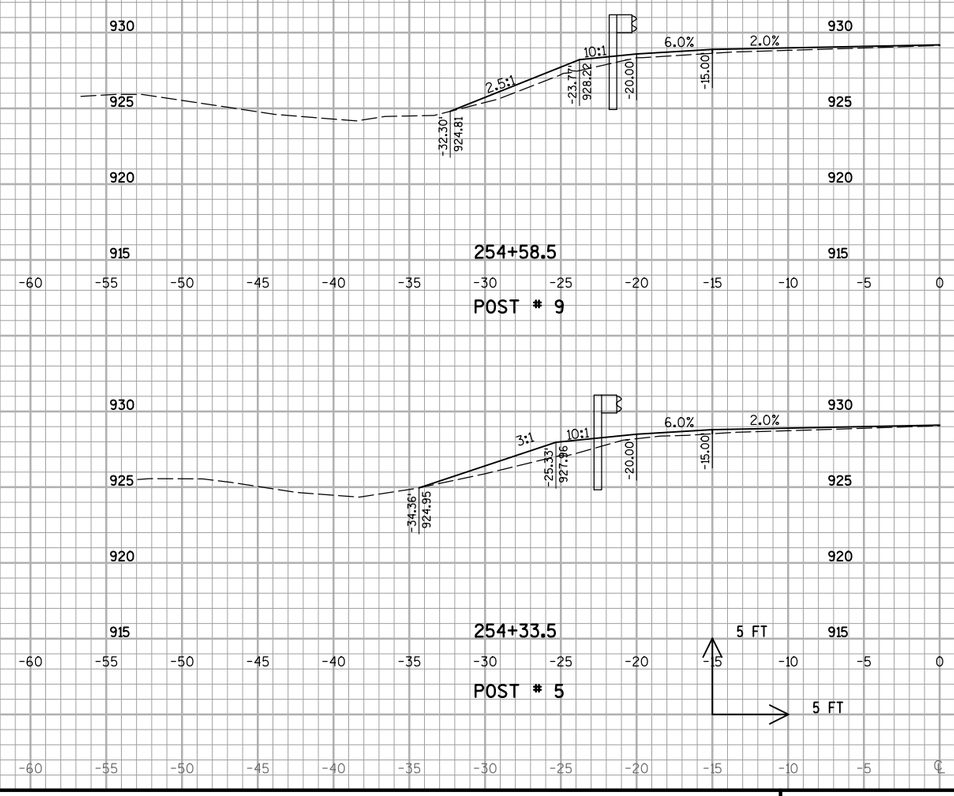
WISDOT/CADDS SHEET 21





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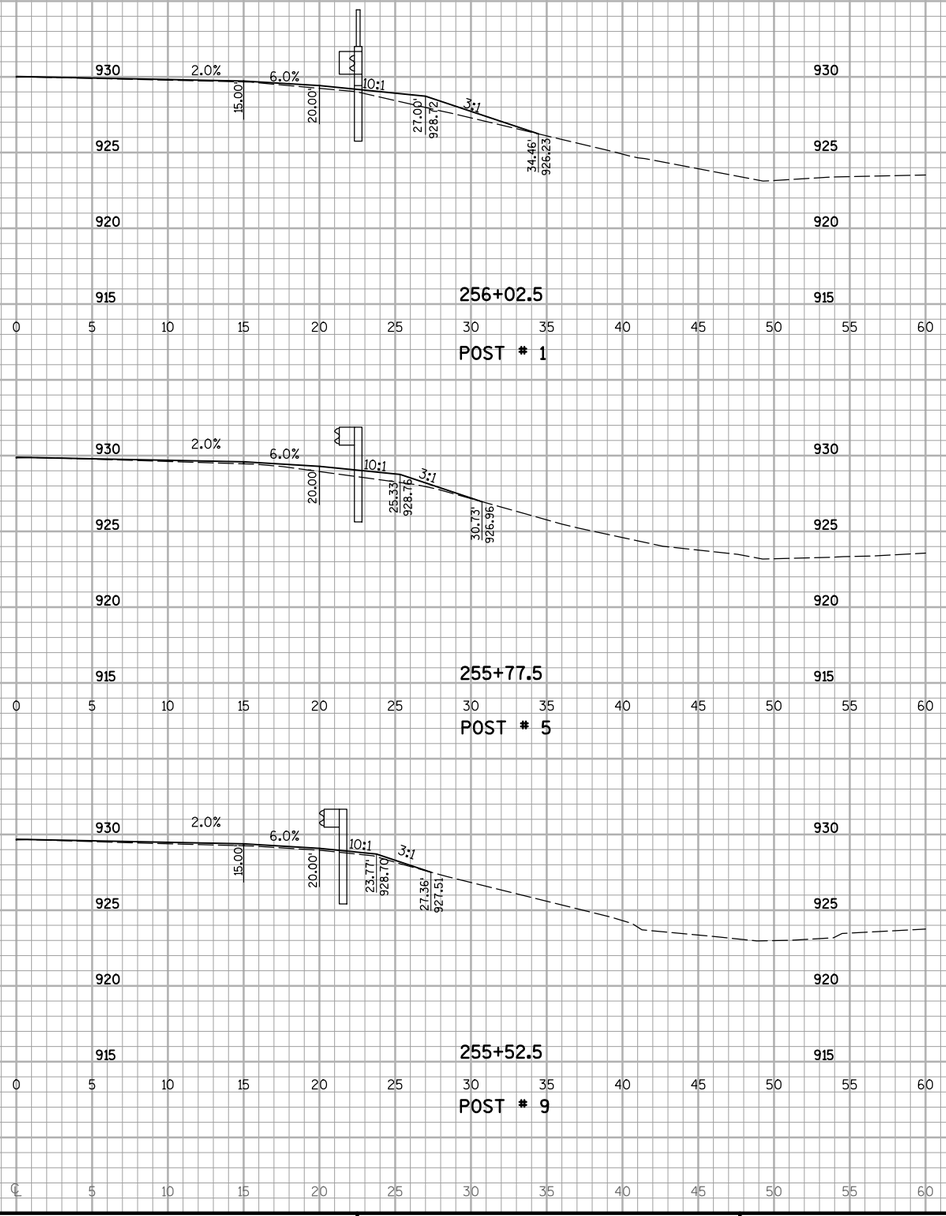
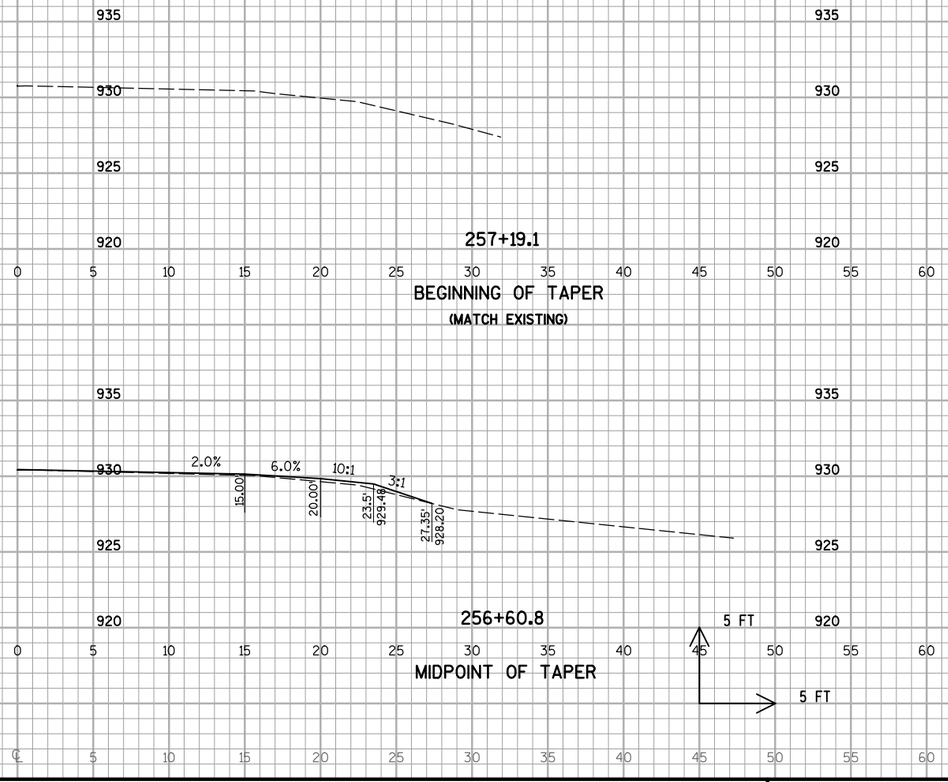
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 129	E





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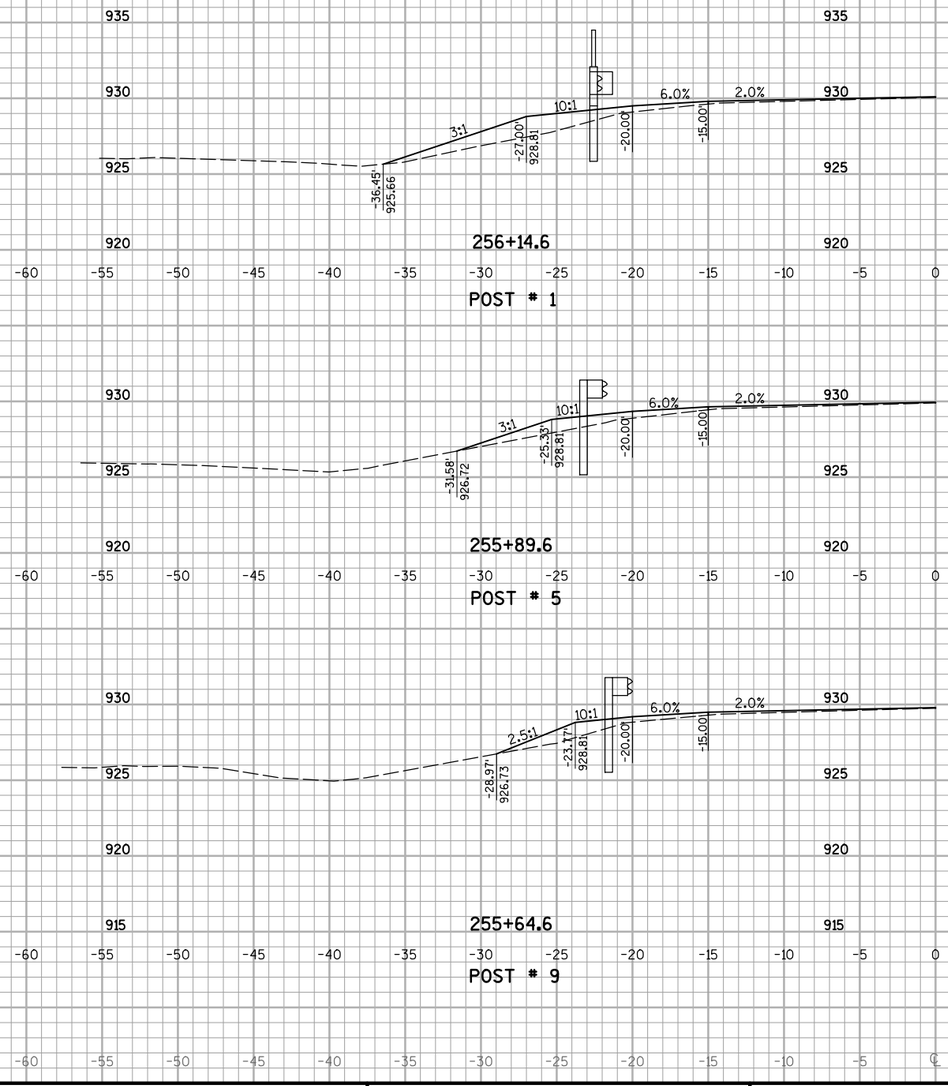
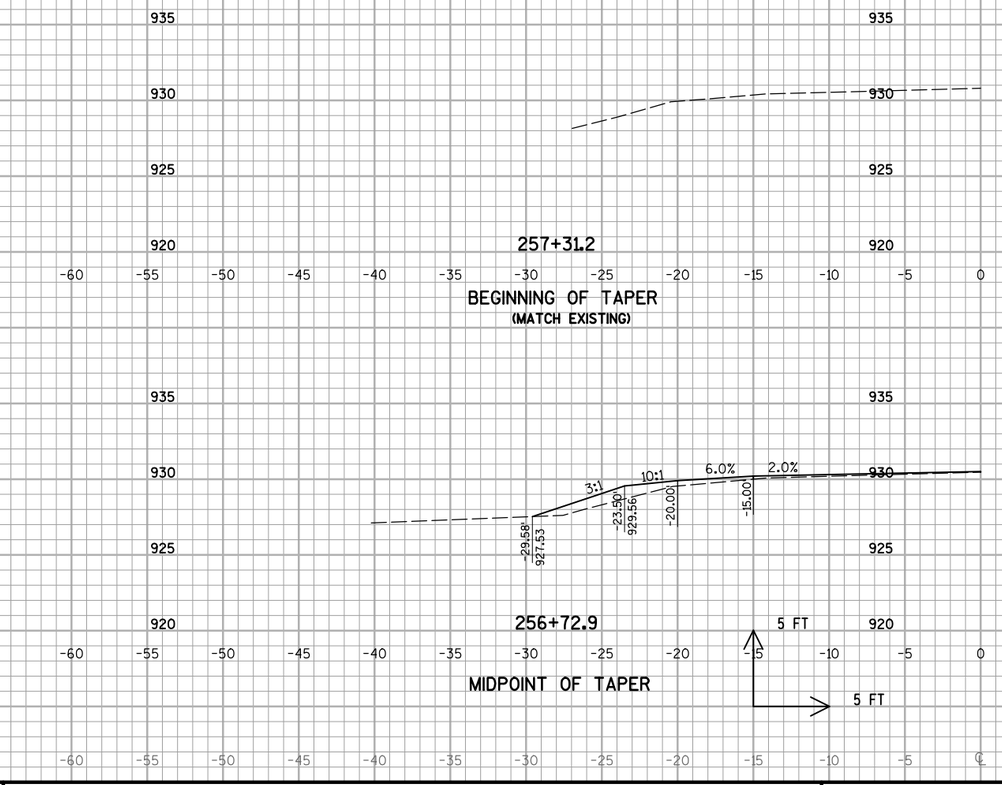
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 130	E





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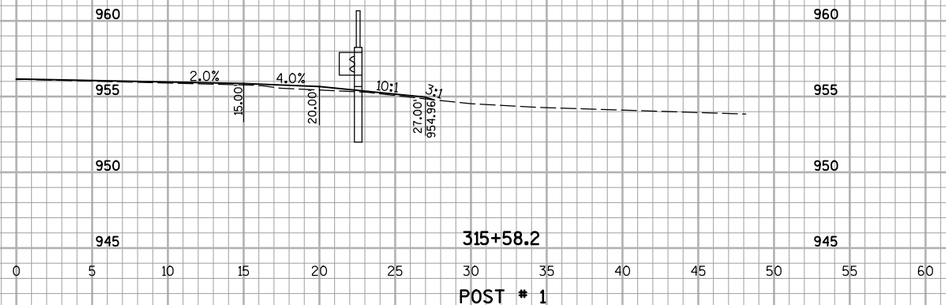
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 131	E



315+58.2

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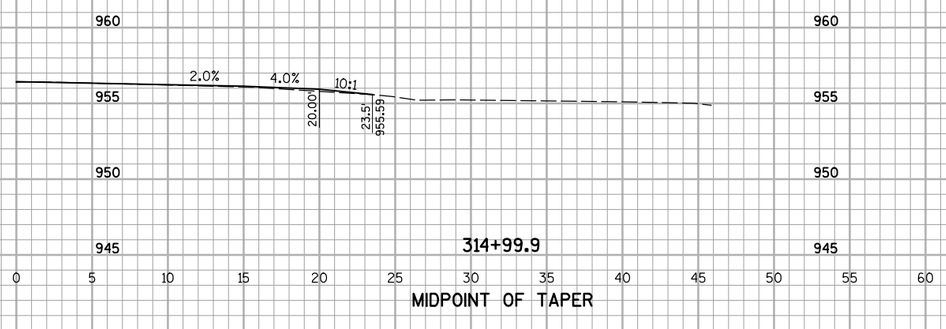

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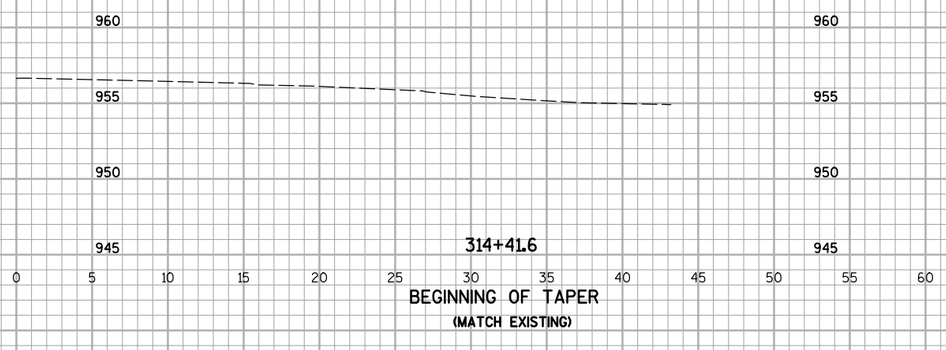
MIDPOINT OF TAPER



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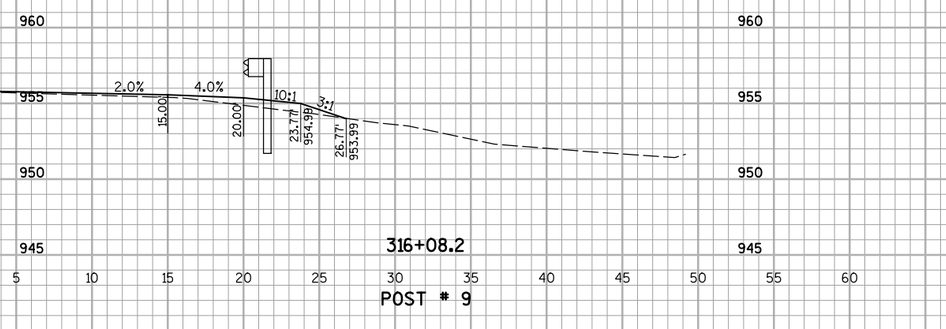
BEGINNING OF TAPER

(MATCH EXISTING)



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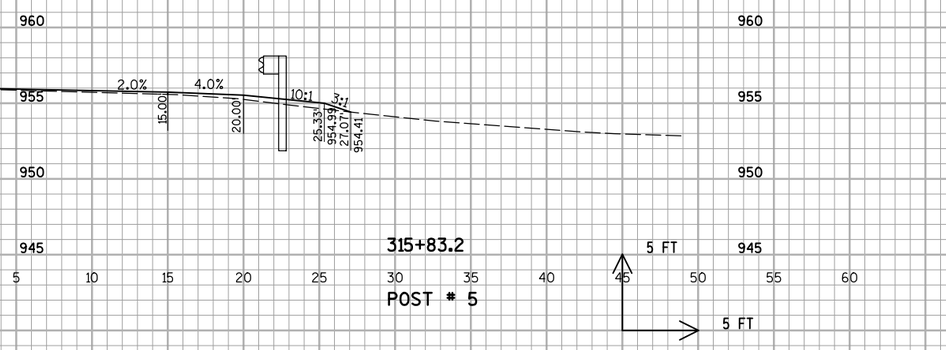

315+83.2

POST # 5

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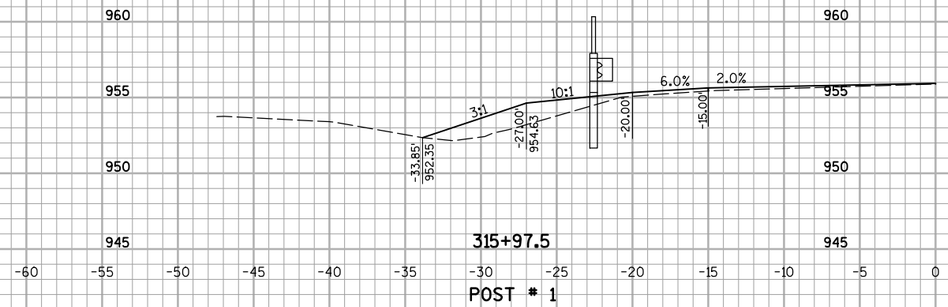
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 132	E



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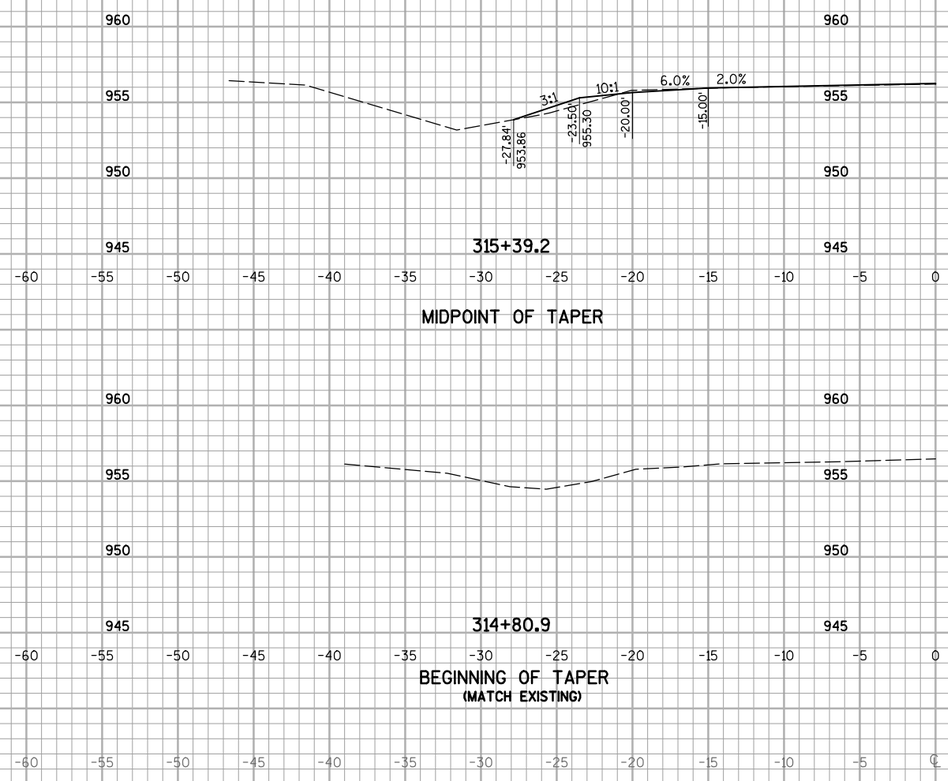
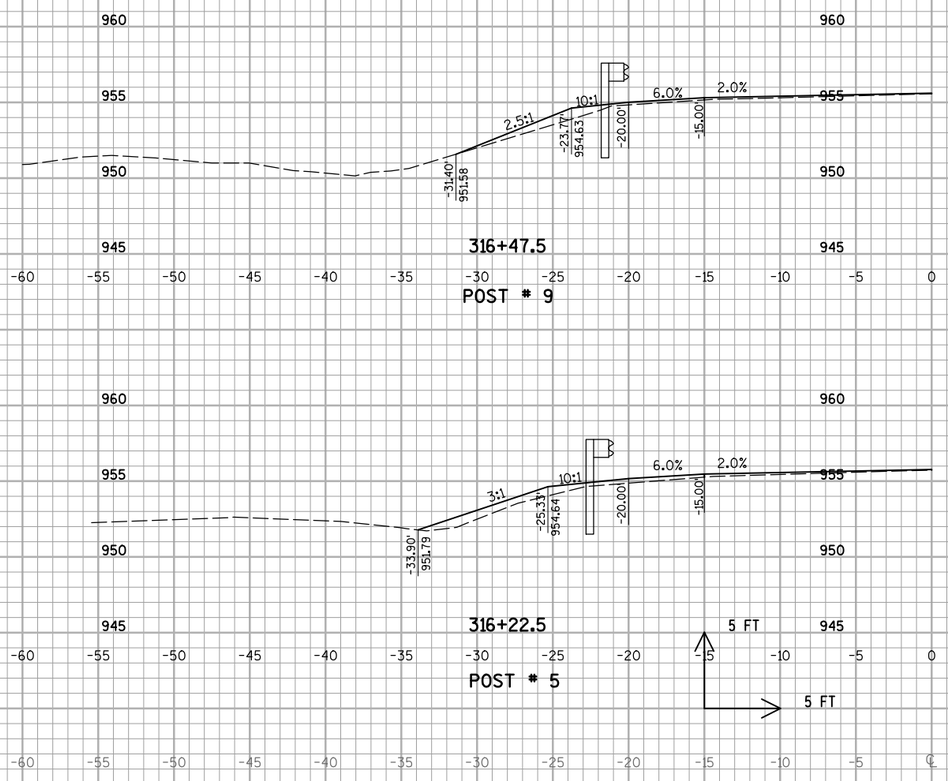


MIDPOINT OF TAPER

BEGINNING OF TAPER
(MATCH EXISTING)



POST # 9

POST # 5

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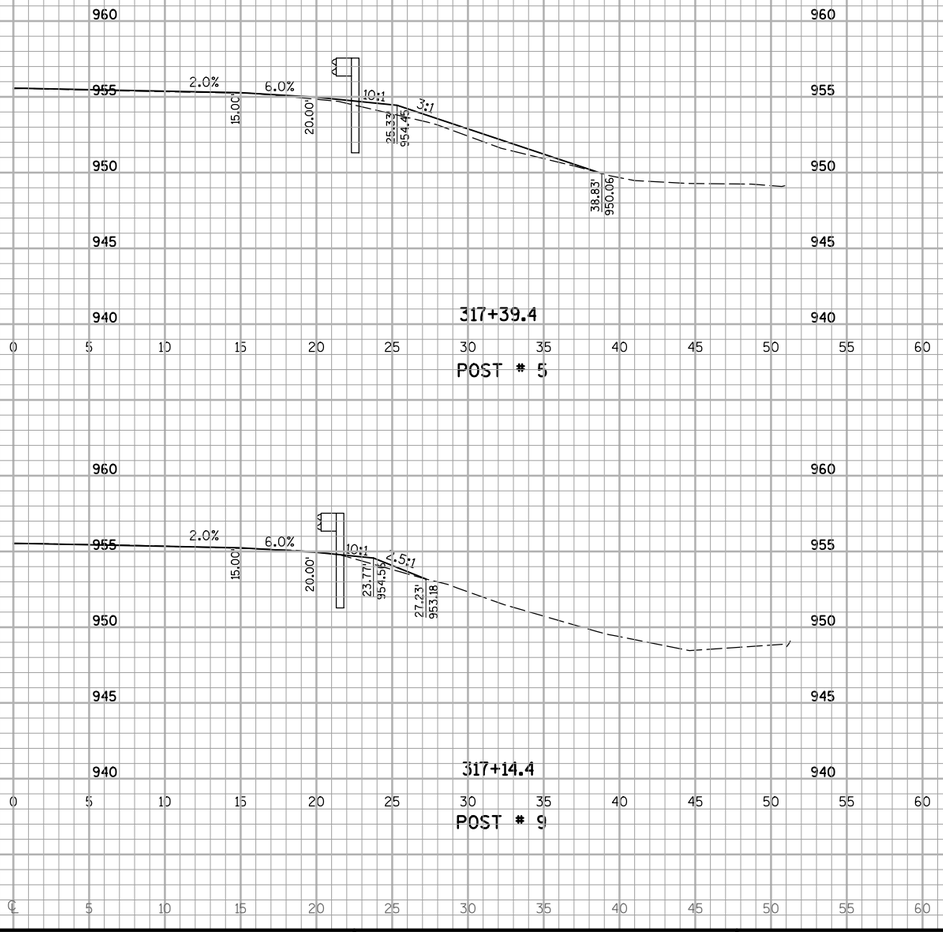
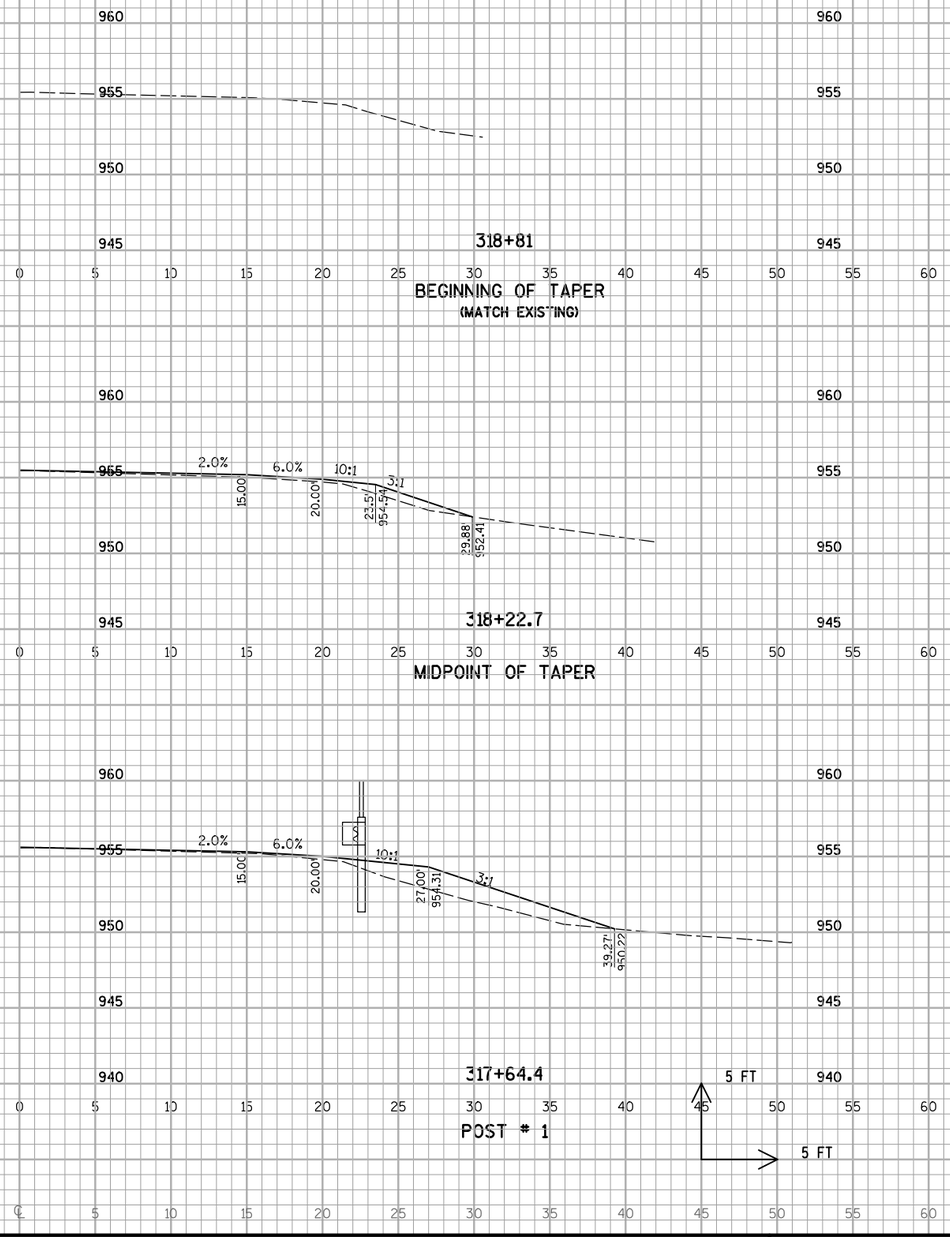
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 133	E





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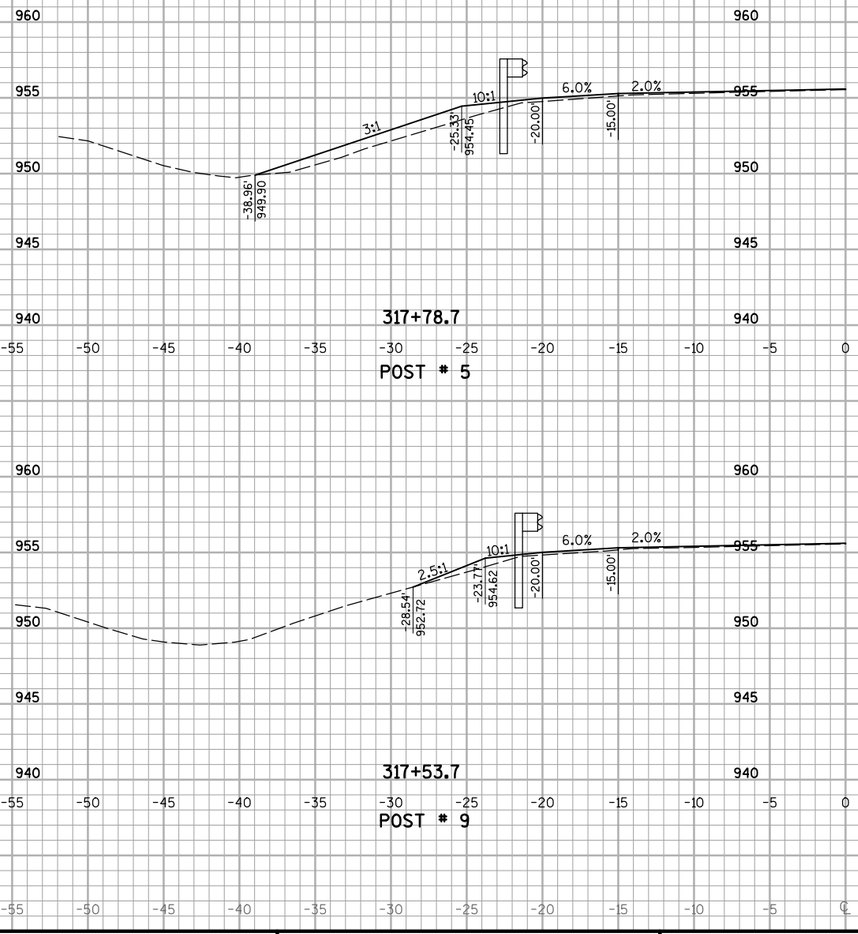
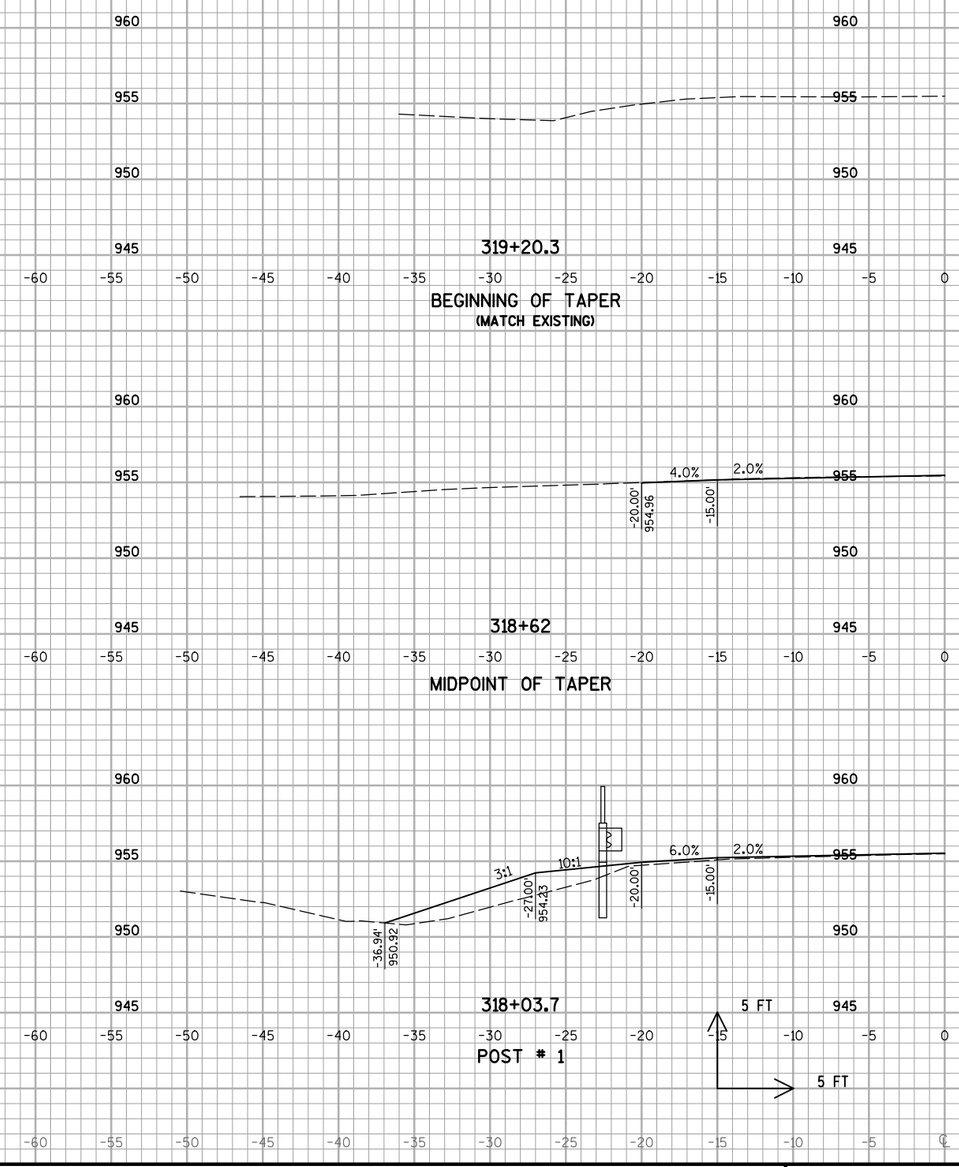
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 134	E





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PROJECT NO: 7640-00-70 | HWY: STH 29 | COUNTY: PIERCE | CROSS SECTIONS: GUARDRAIL | SHEET 135 E

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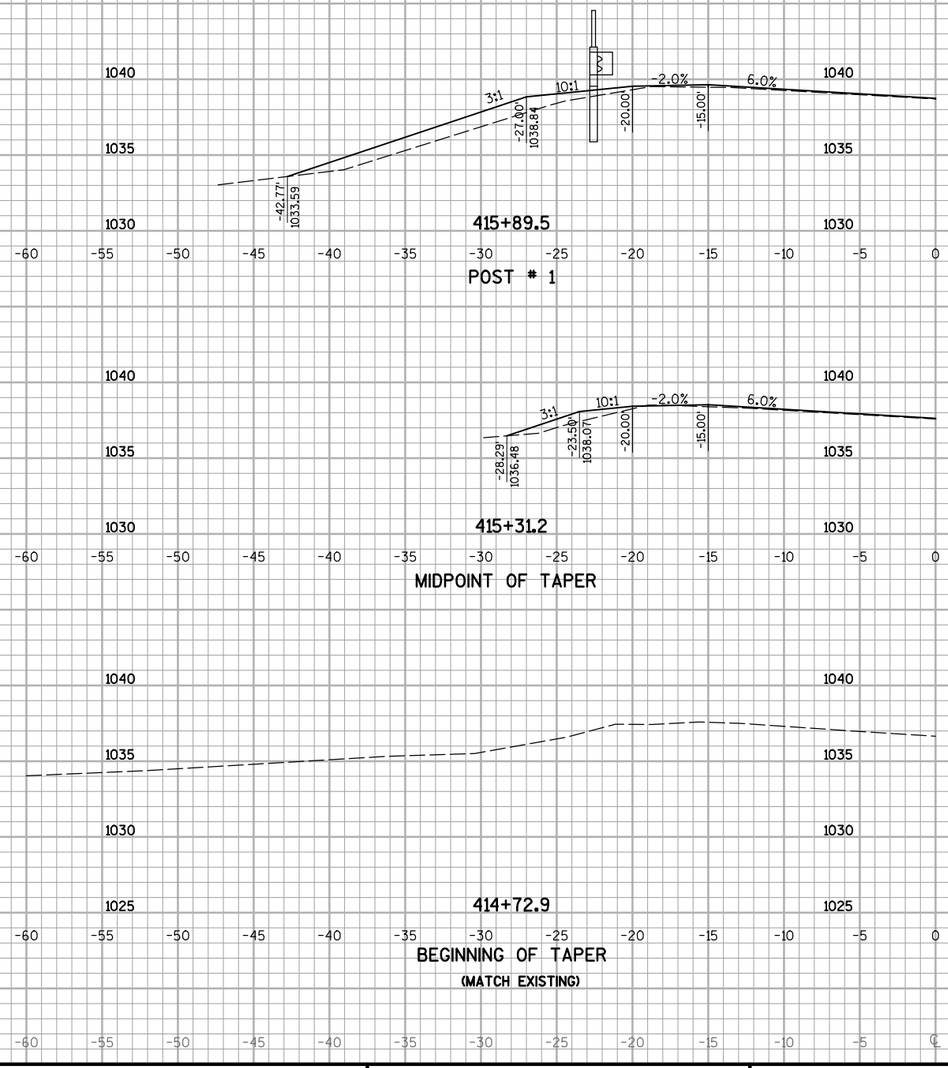
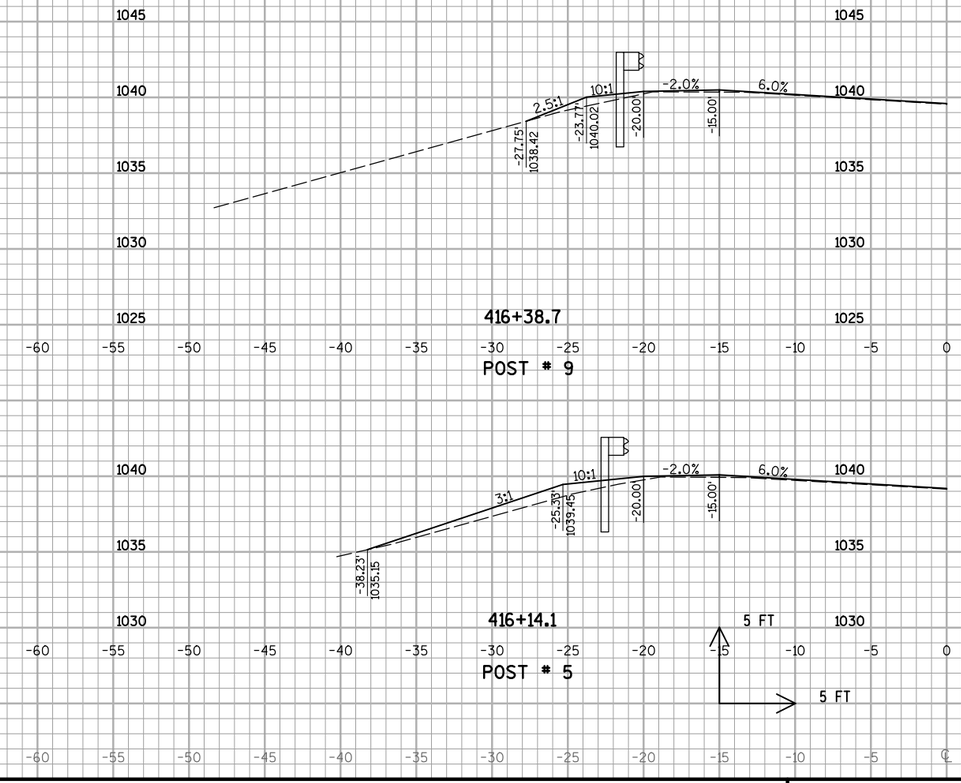
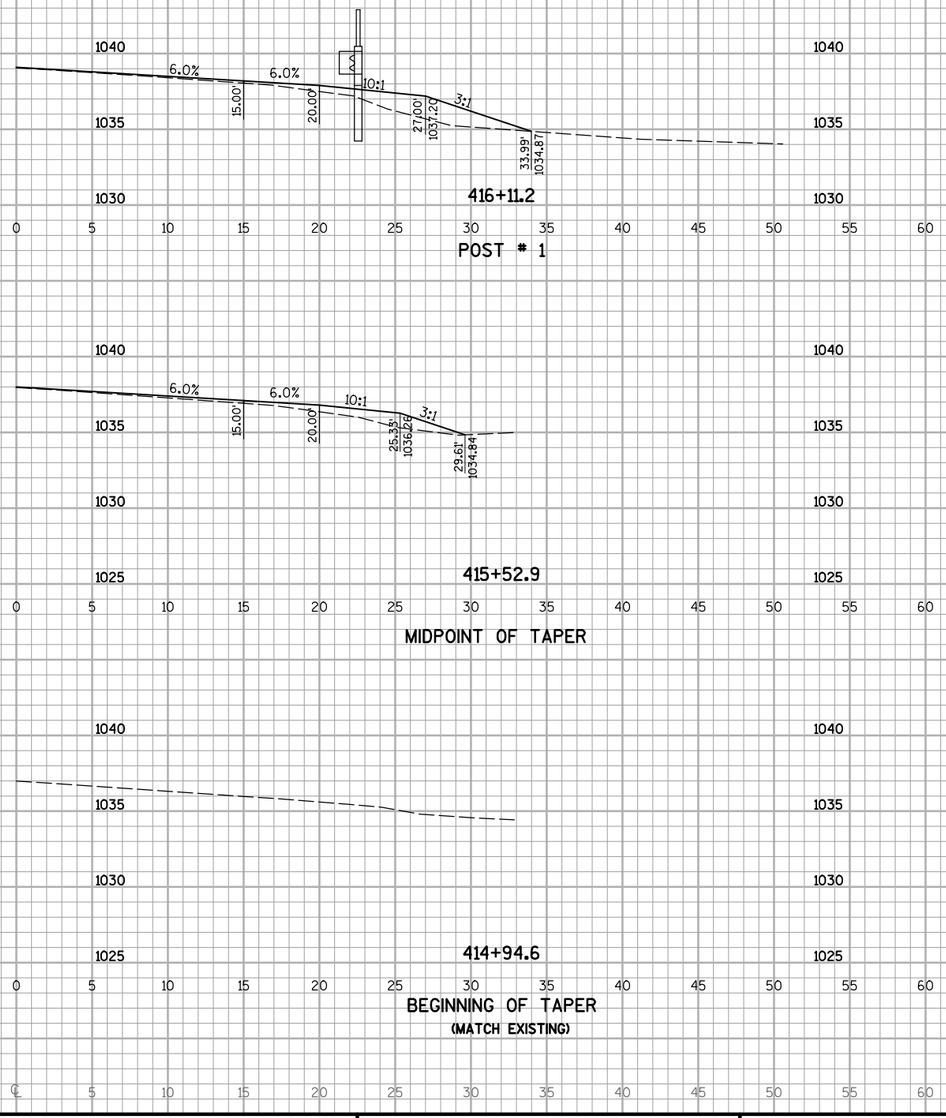


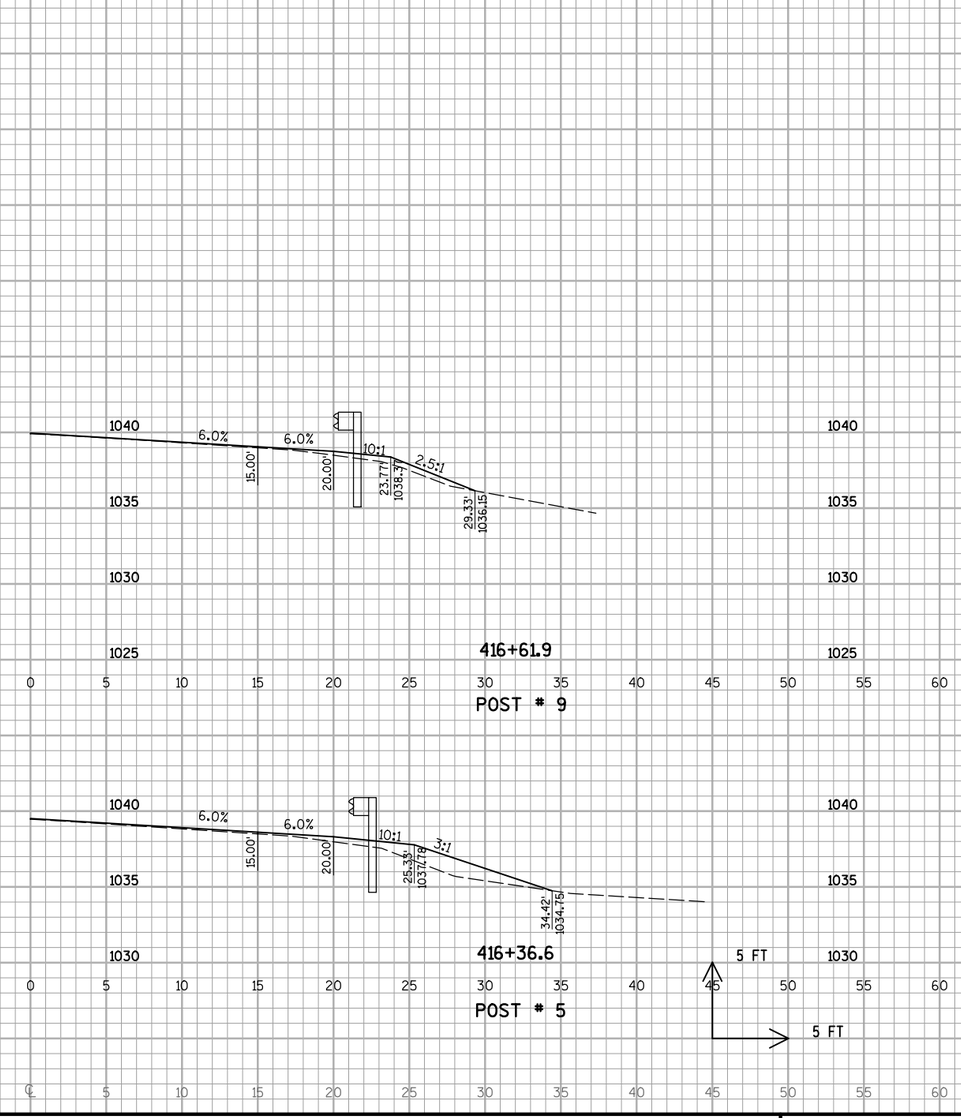


9

9

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 136	E





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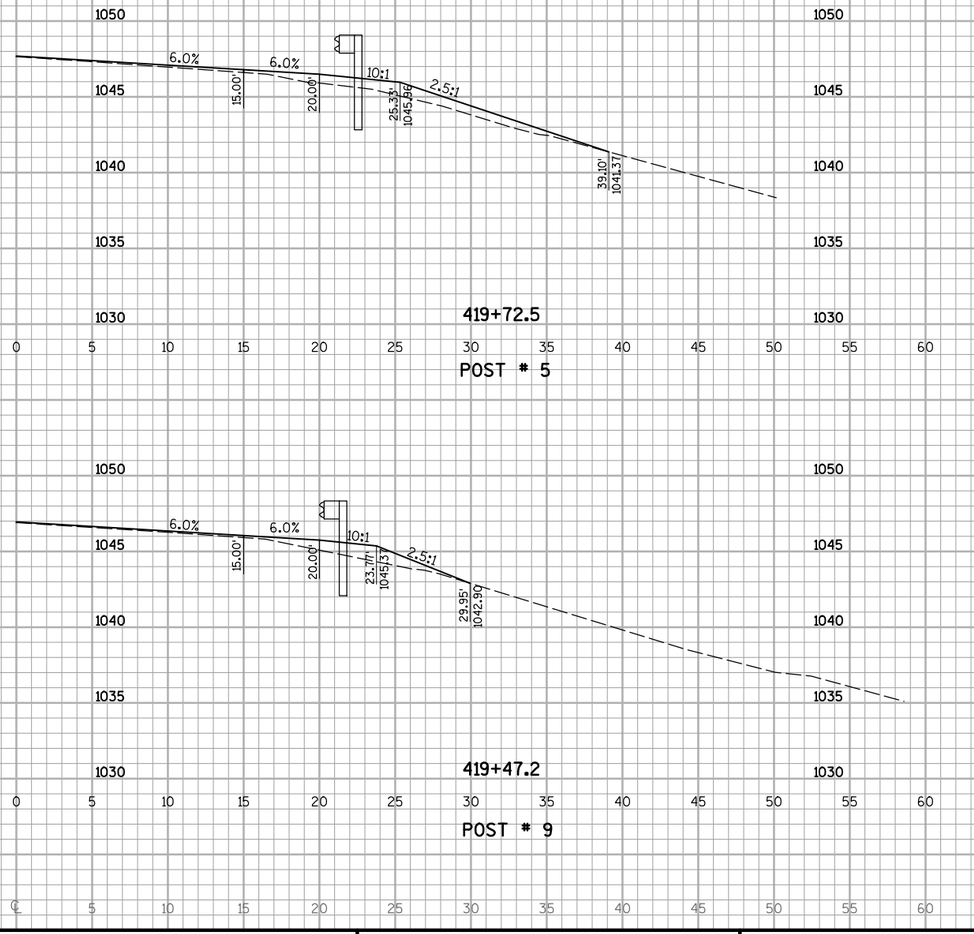
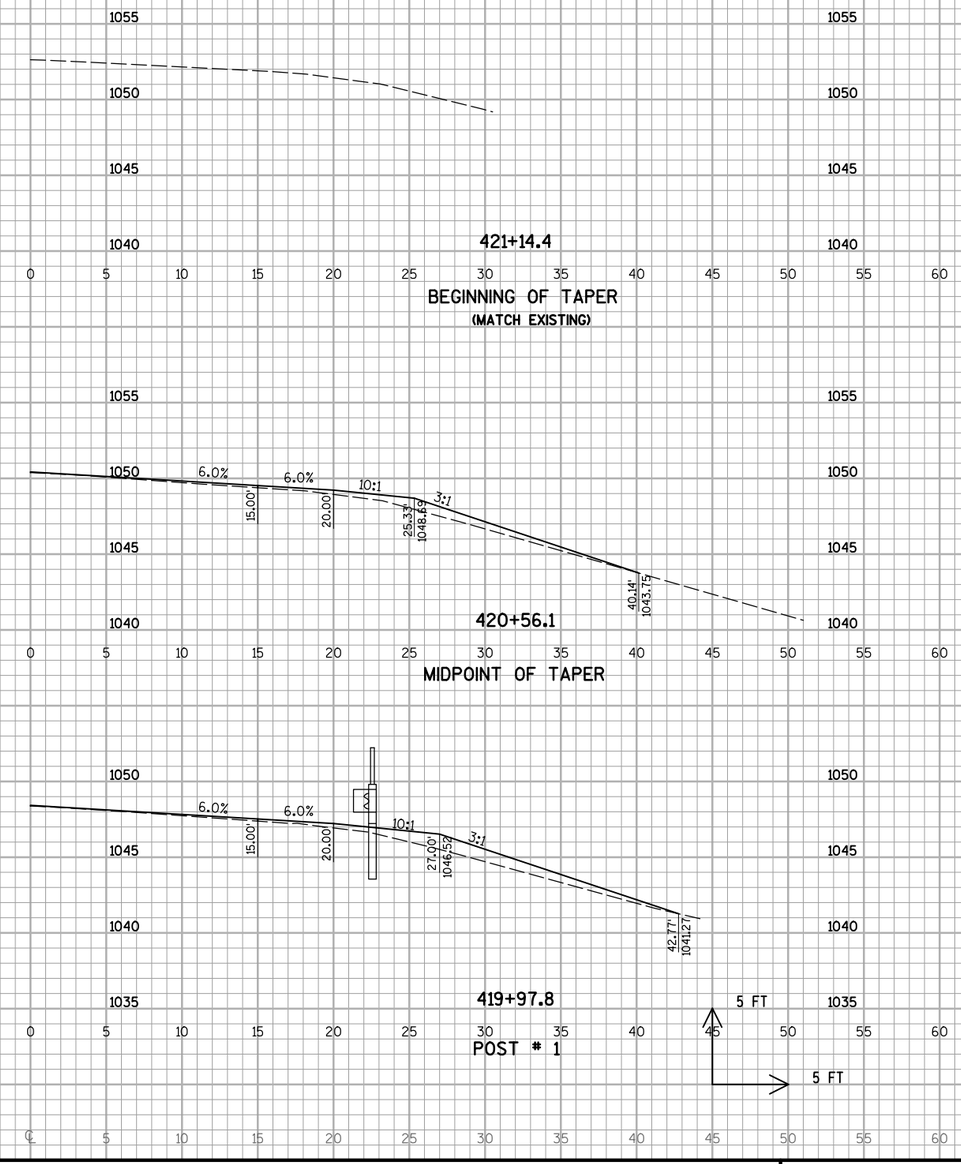
9

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 137	E

FILE NAME : $$....designfile....$$ PLOT DATE : $$...plottingdate...$$ PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : $$.....plotscale.....$$

WISDOT/CADDS SHEET 21





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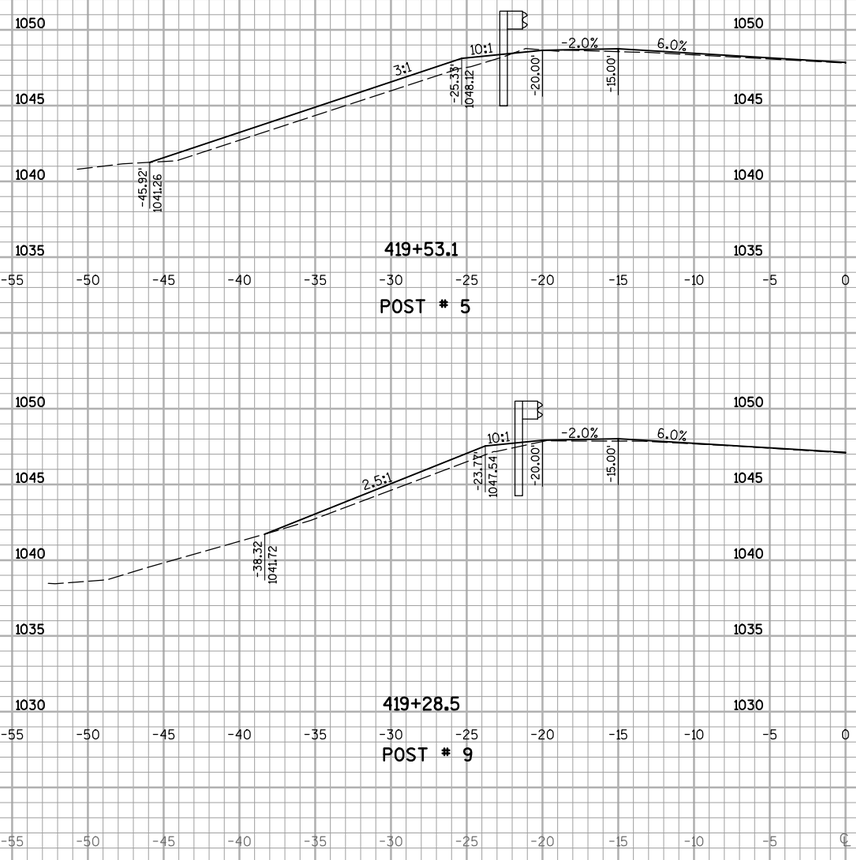
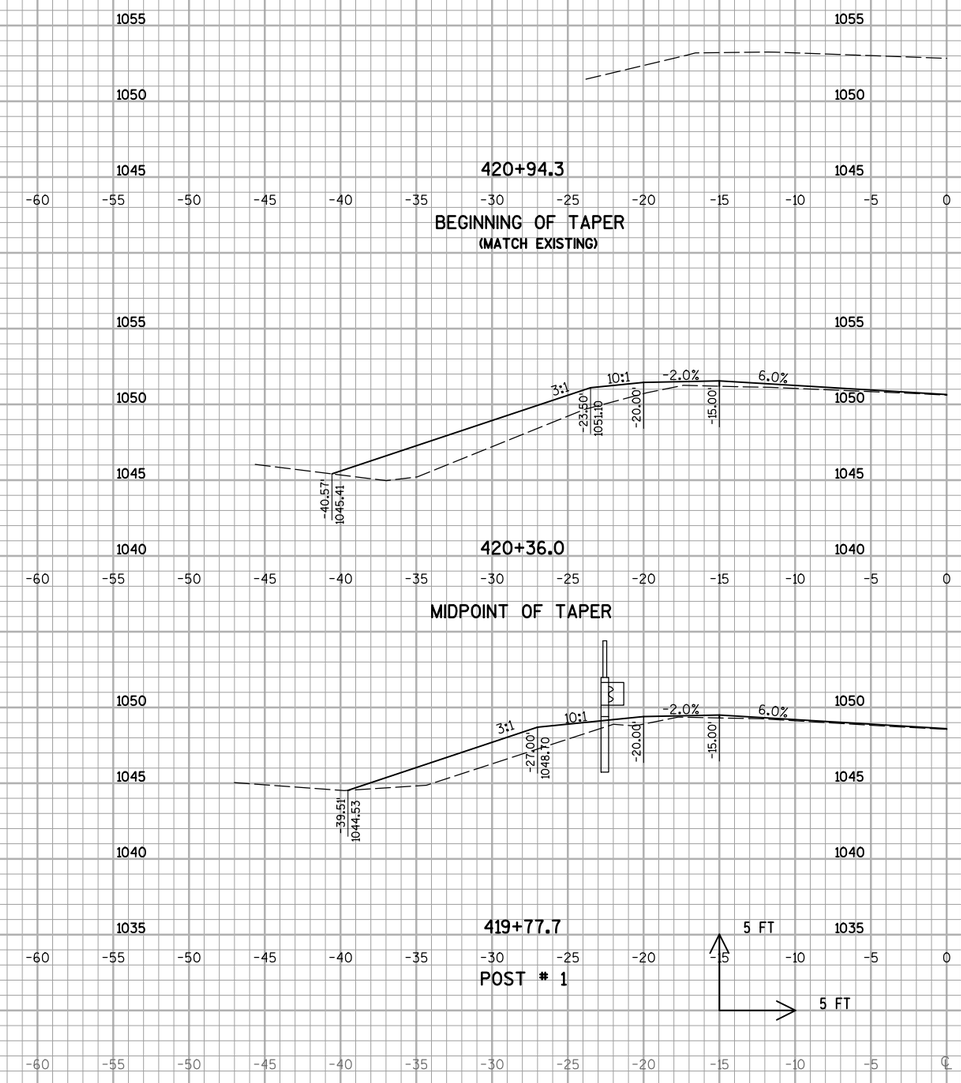
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 138	E





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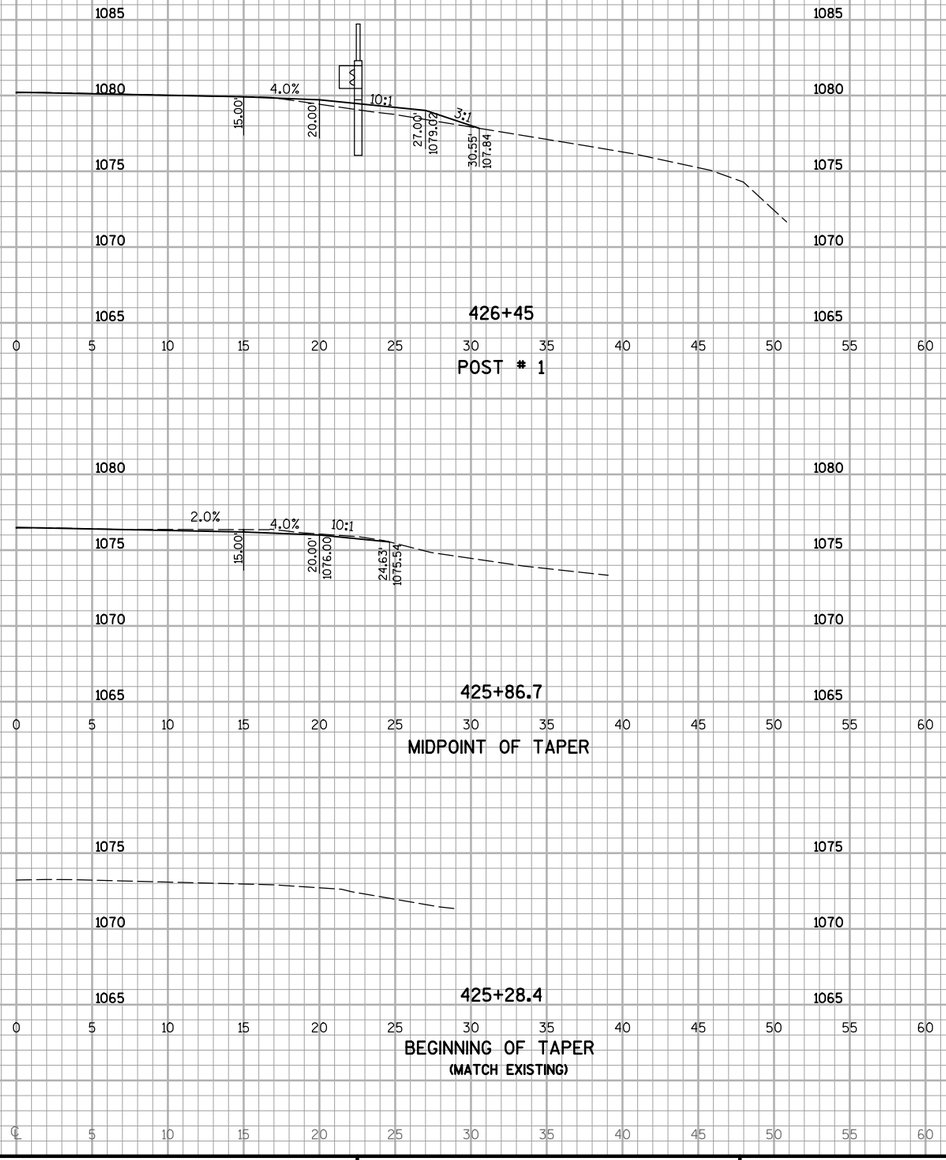
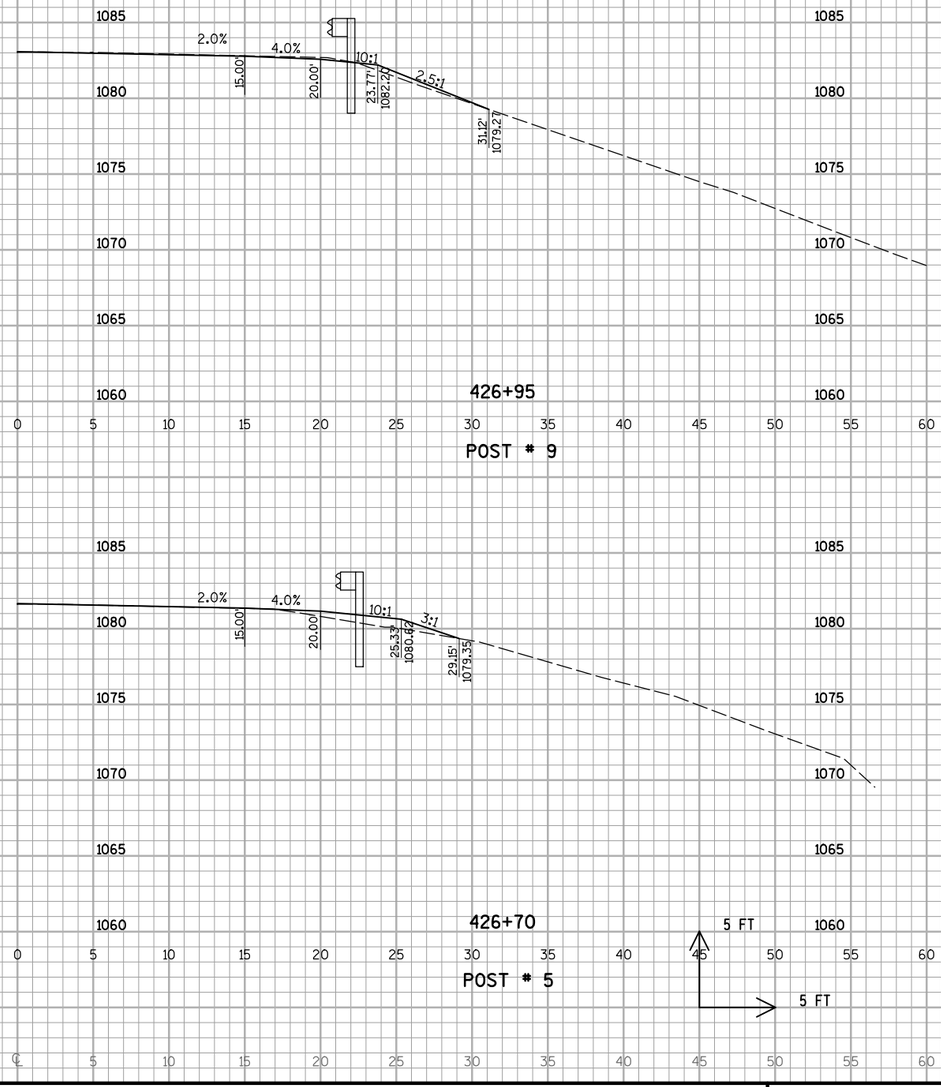
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 139	E





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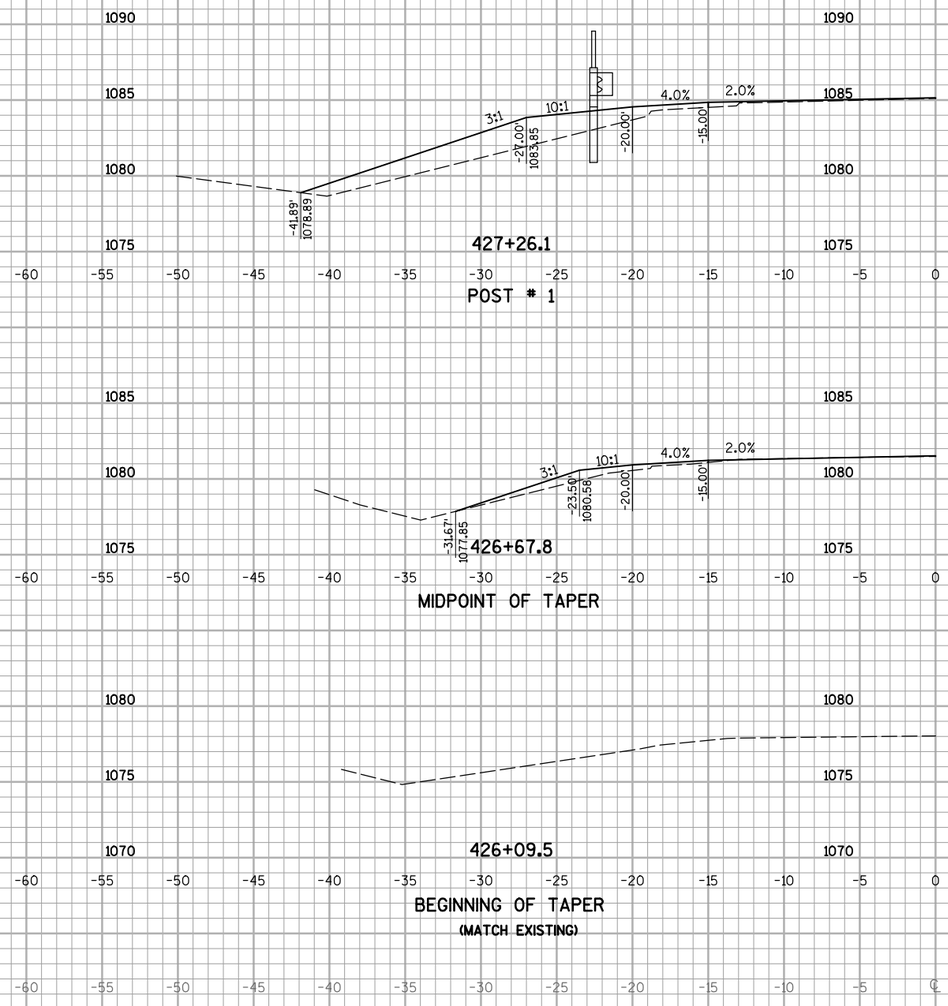
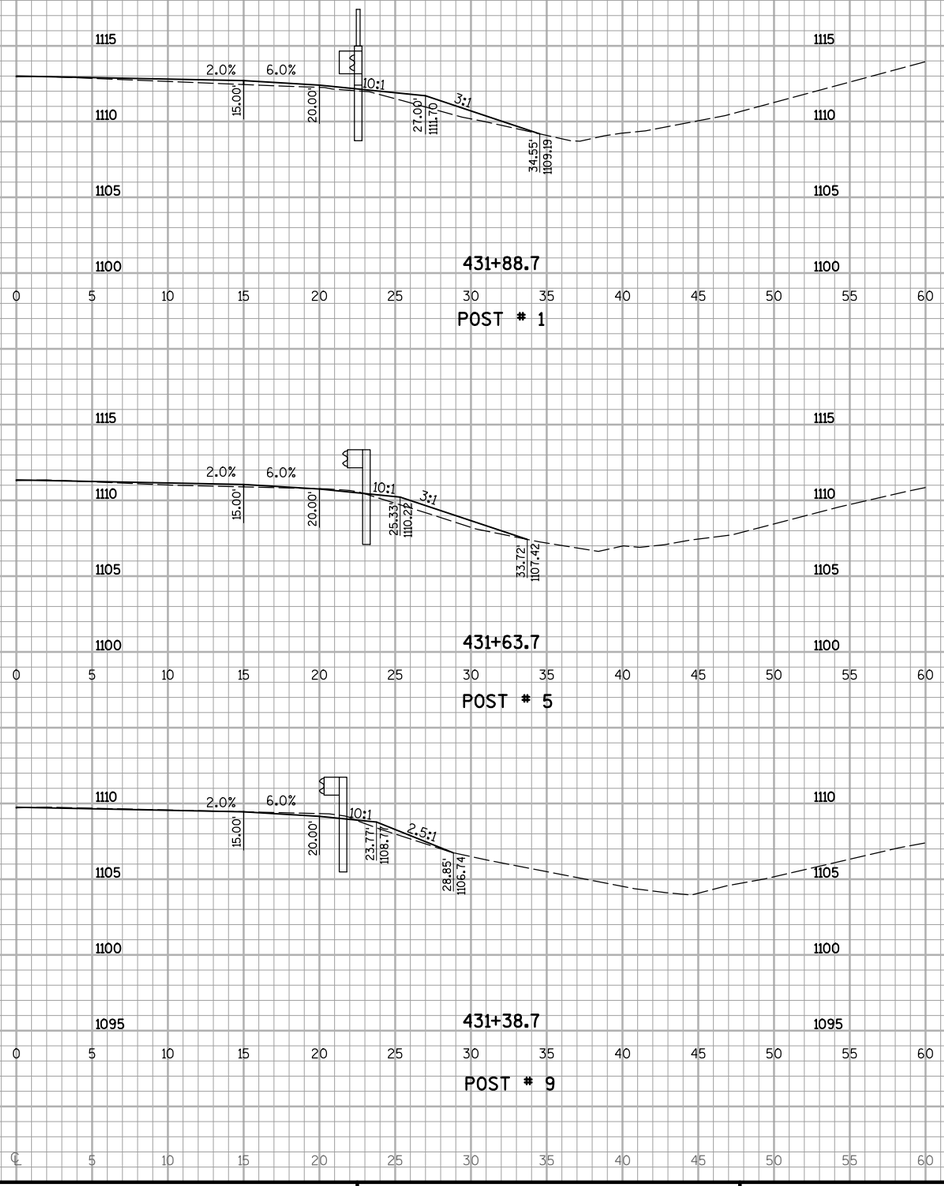
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 140	E

FILE NAME : $$....designfile....$$ PLOT DATE : $$...plottingdate...$$ PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : $$.....plotscale.....$$



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 141	E



431+88.7

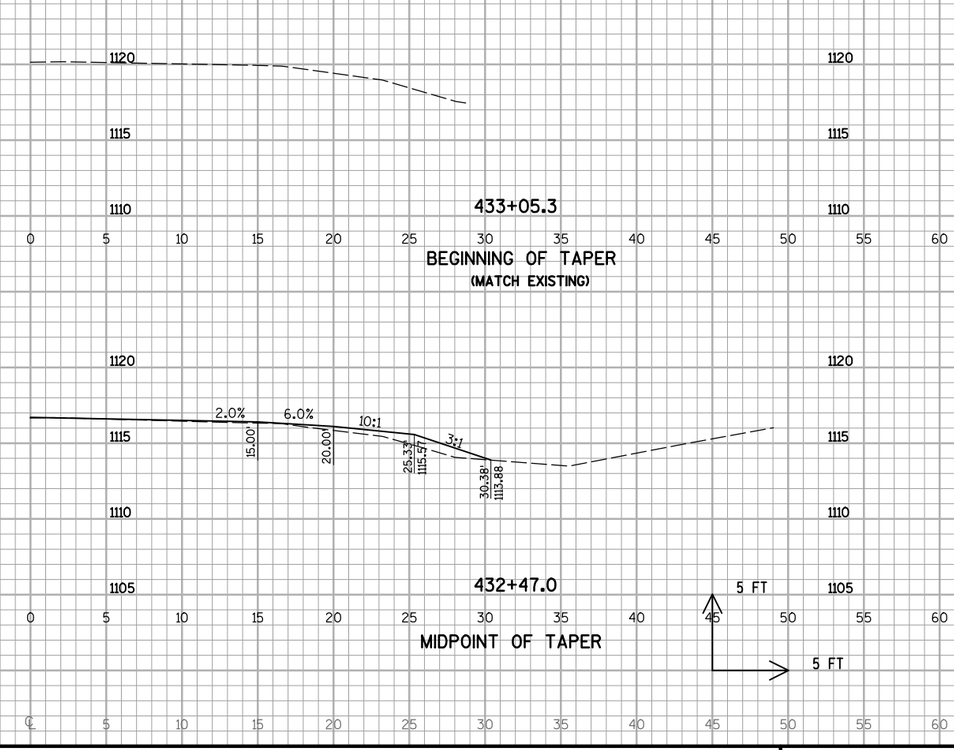
POST # 1

431+63.7

POST # 5

431+38.7

POST # 9



433+05.3

BEGINNING OF TAPER
(MATCH EXISTING)

432+47.0

MIDPOINT OF TAPER

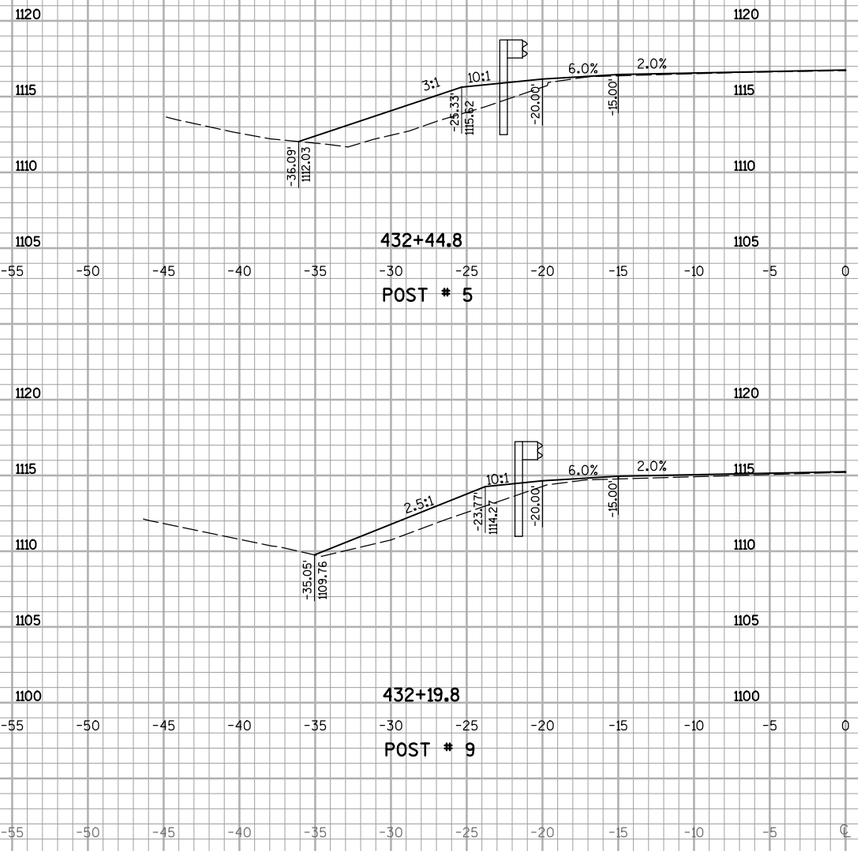
5 FT

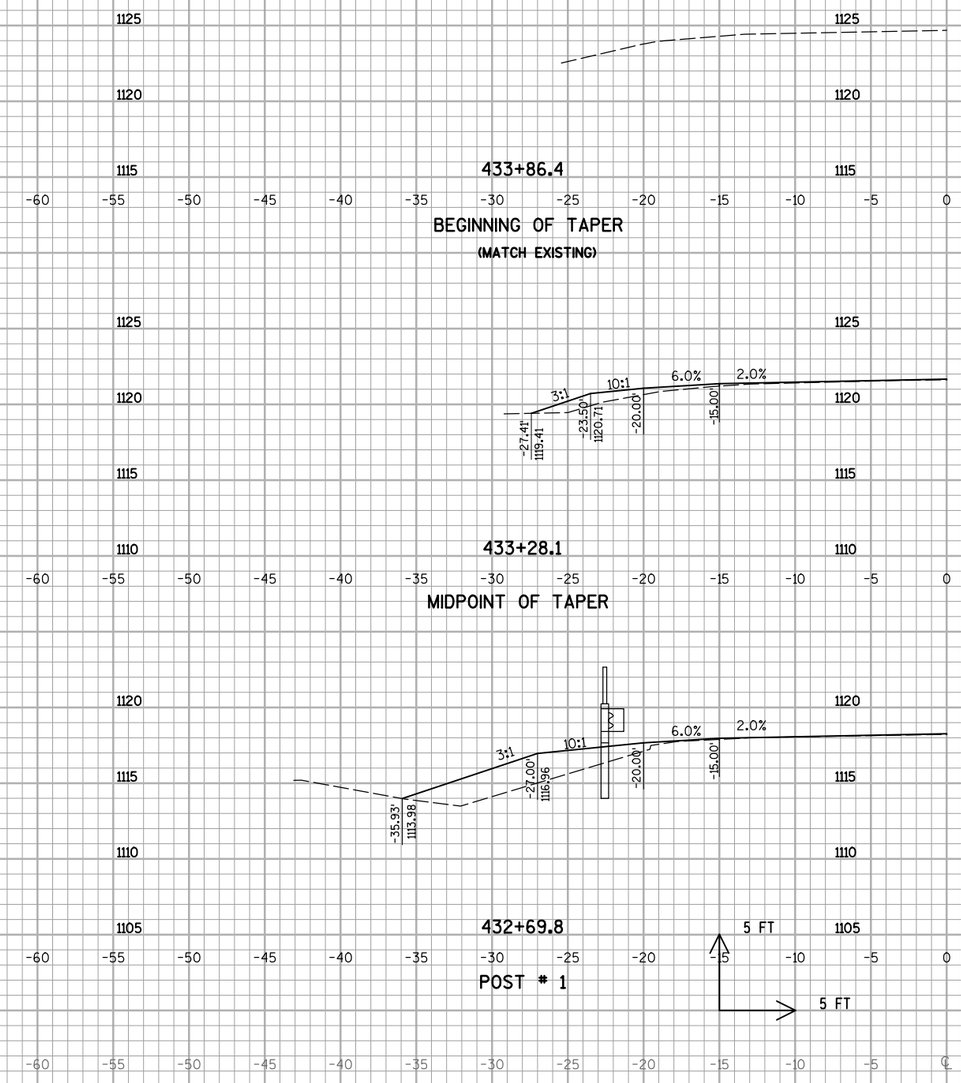
5 FT

9

9

PROJECT NO: 7640-00-70 | HWY: STH 29 | COUNTY: PIERCE | CROSS SECTIONS: GUARDRAIL | SHEET 142 | E





9

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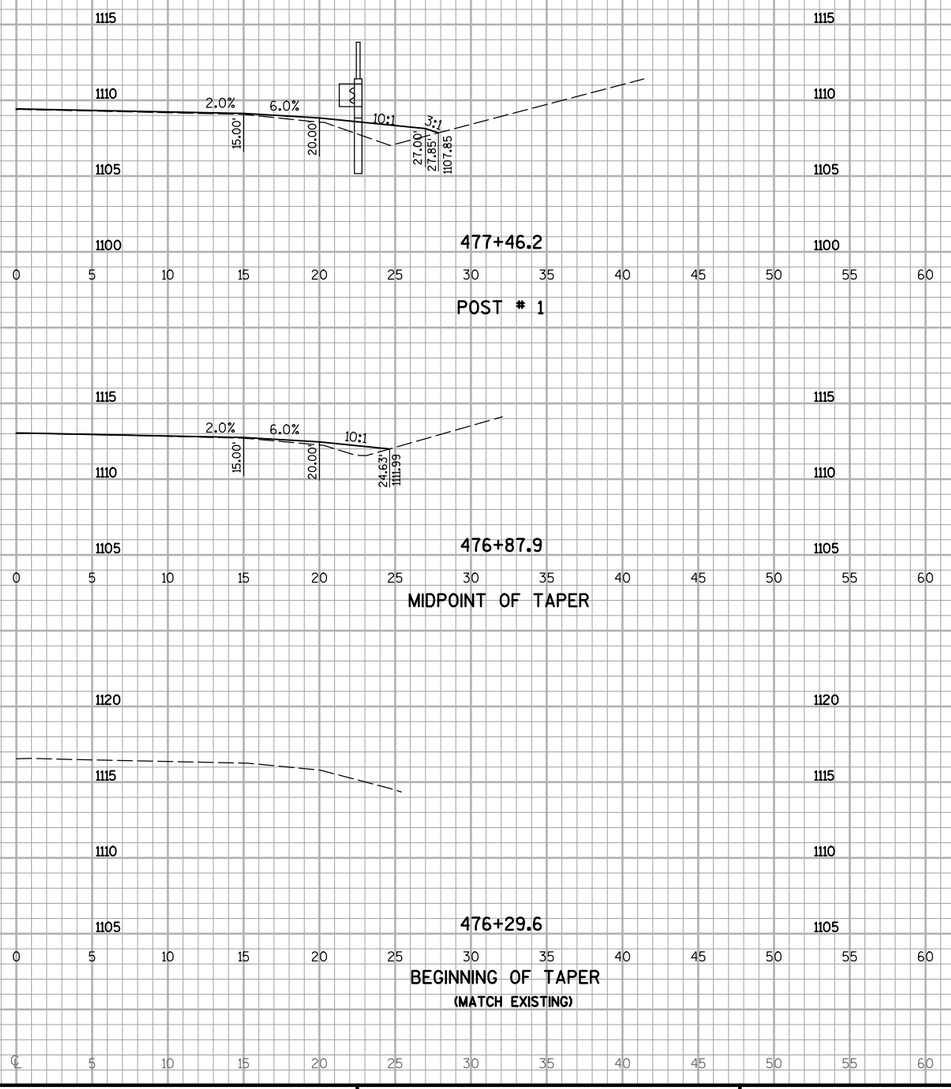
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 143	E



477+46.2

POST # 1

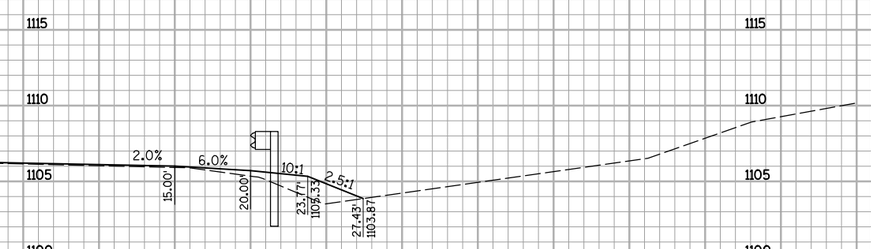
476+87.9

MIDPOINT OF TAPER

476+29.6

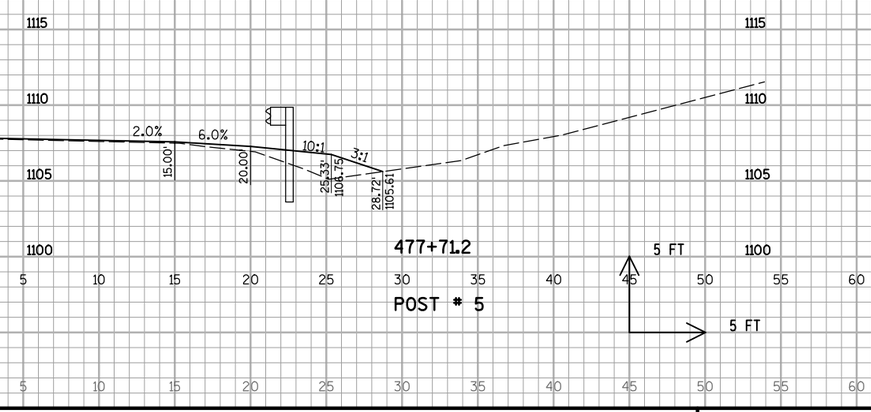
BEGINNING OF TAPER

(MATCH EXISTING)



477+96.2

POST # 9



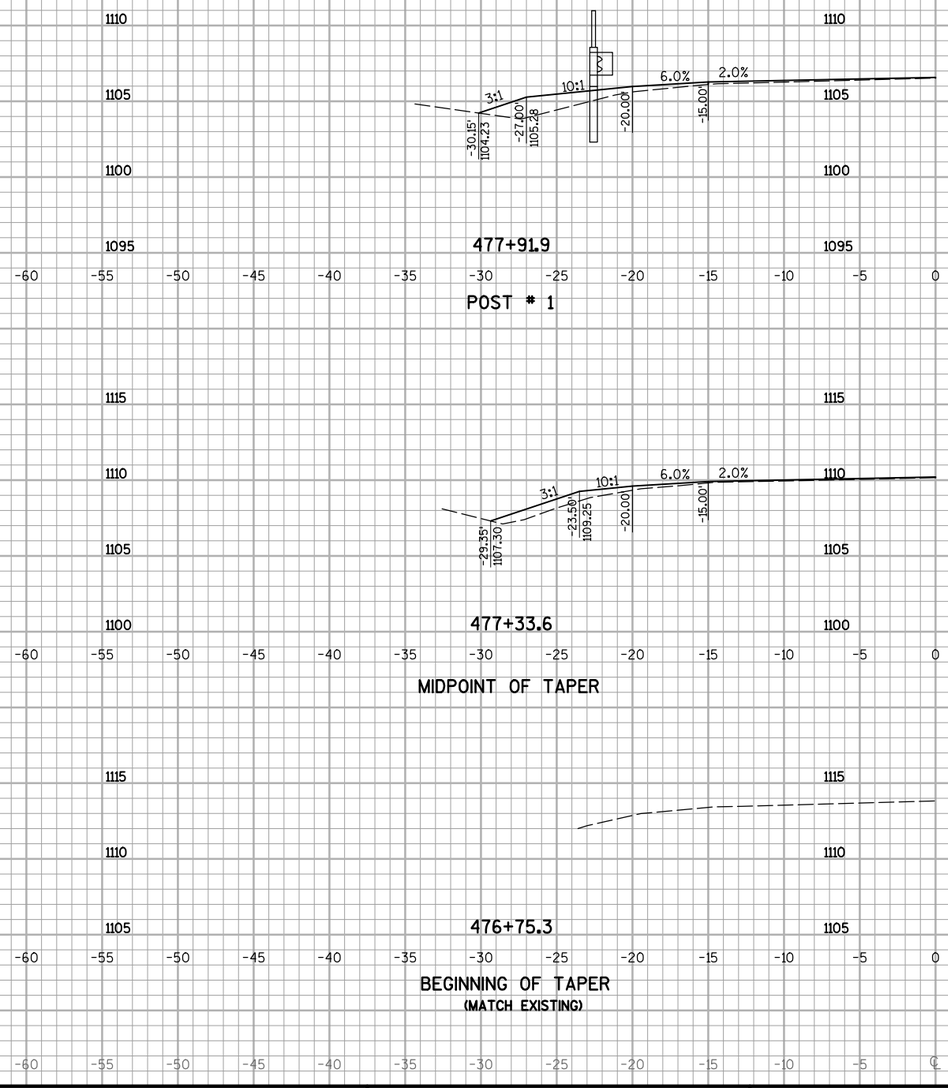
477+71.2

POST # 5

9

9

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 144	E



477+91.9

POST # 1

477+33.6

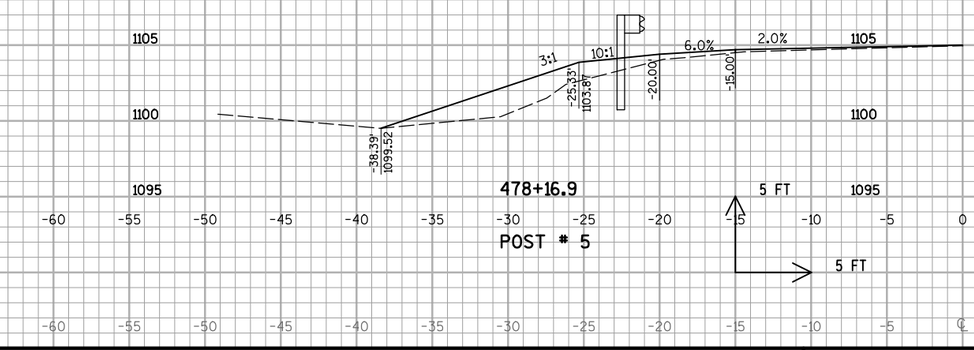
MIDPOINT OF TAPER

476+75.3

BEGINNING OF TAPER
(MATCH EXISTING)

478+41.9

POST # 9



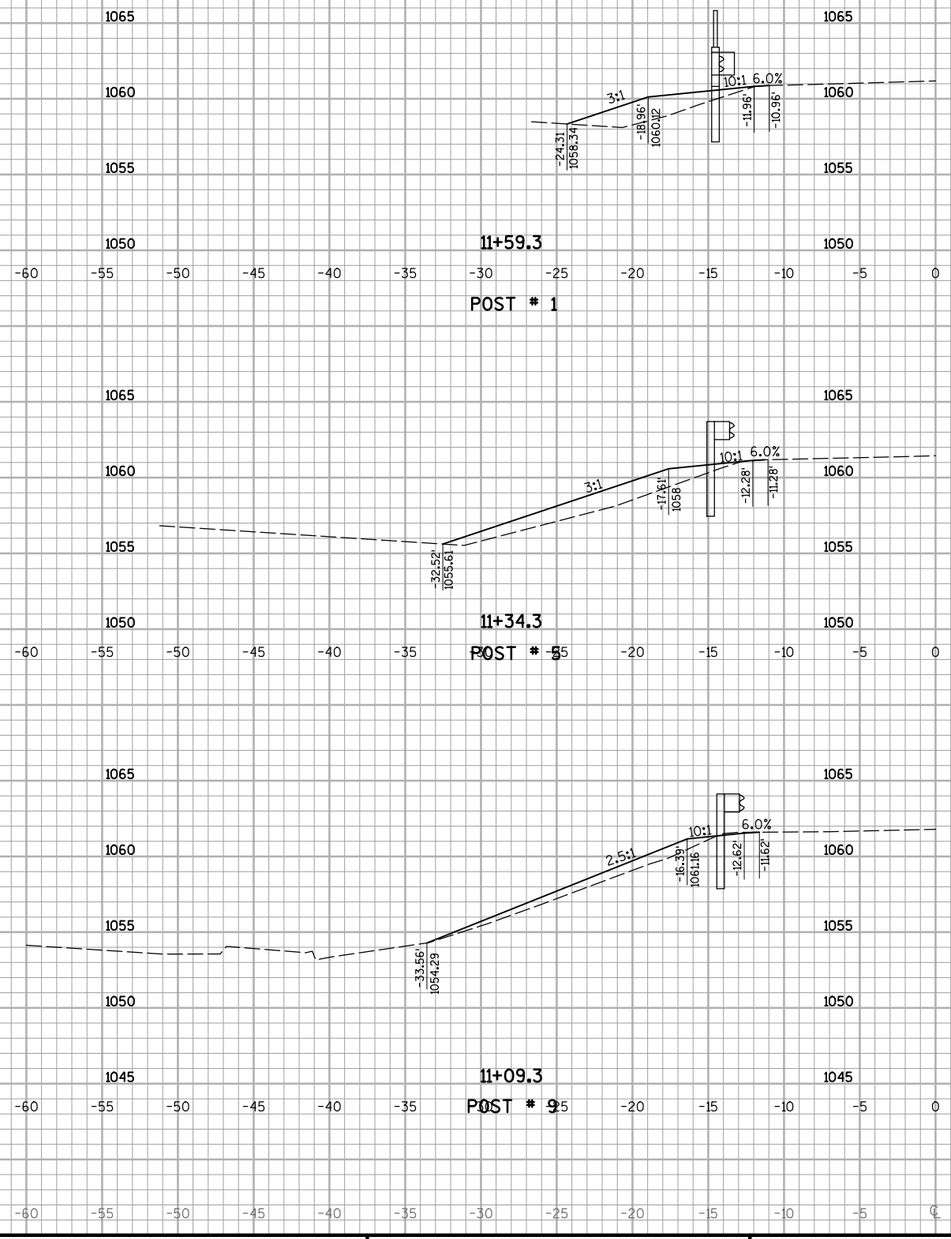
478+16.9

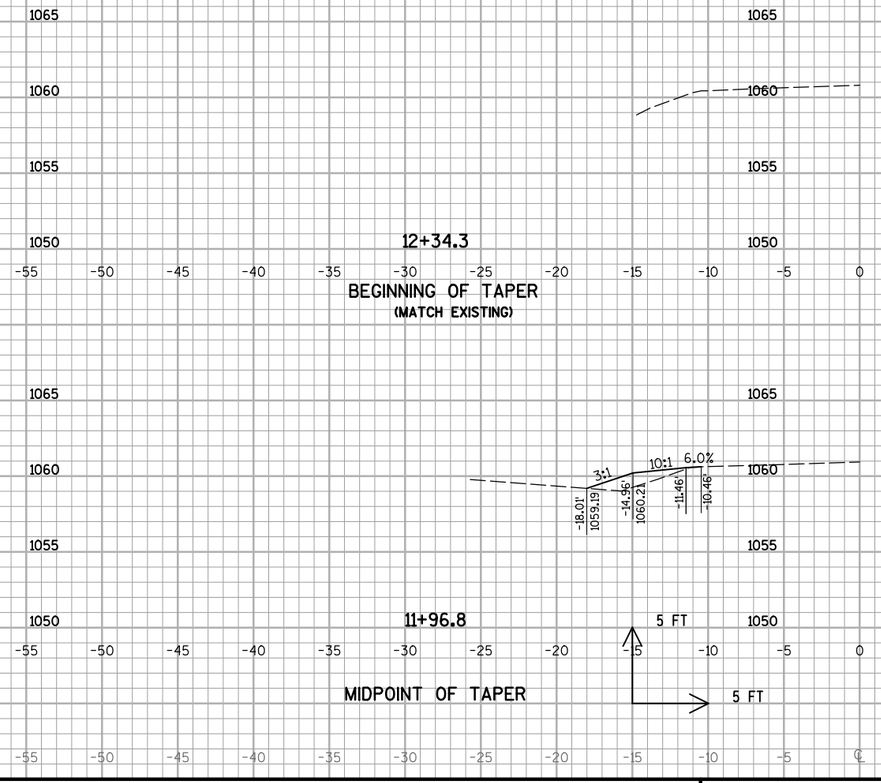
POST # 5

9

9

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 145	E





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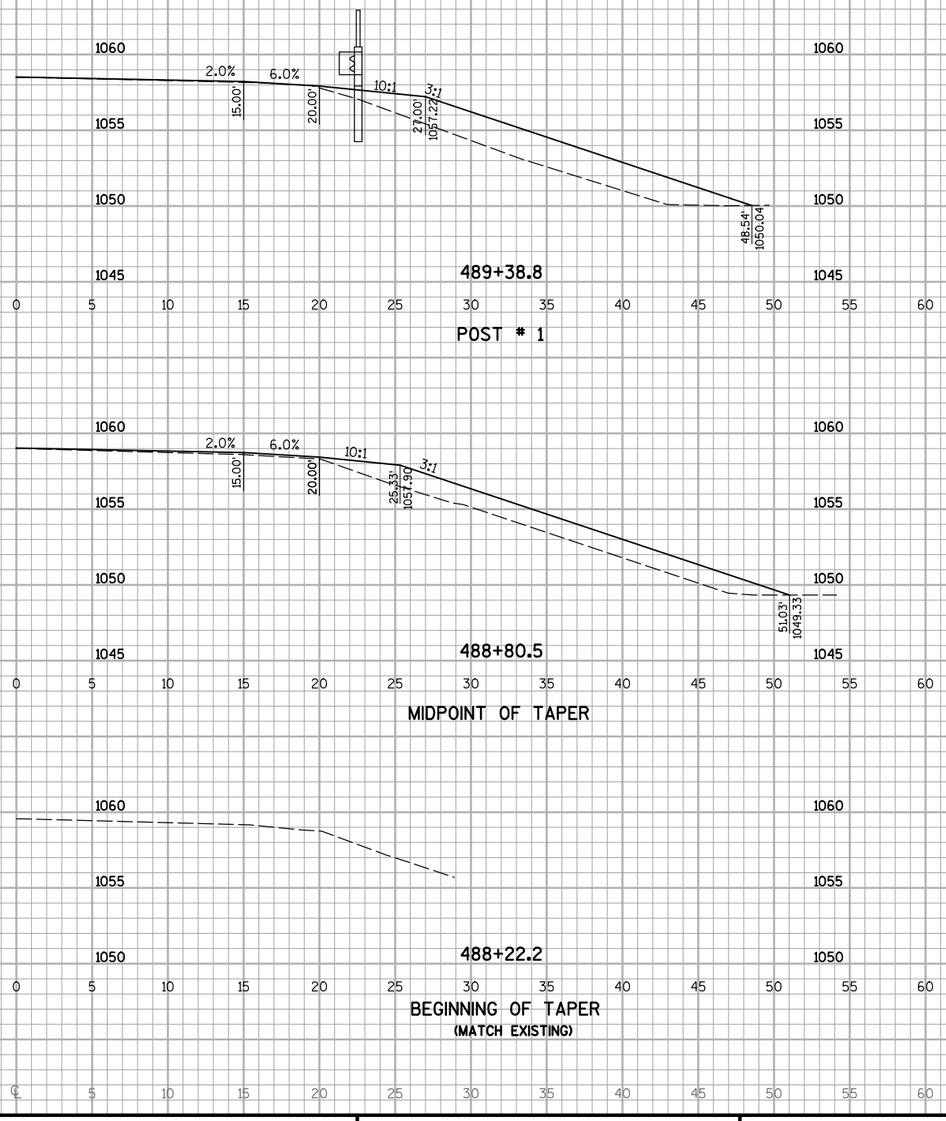
9

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 146	E



488+80.5

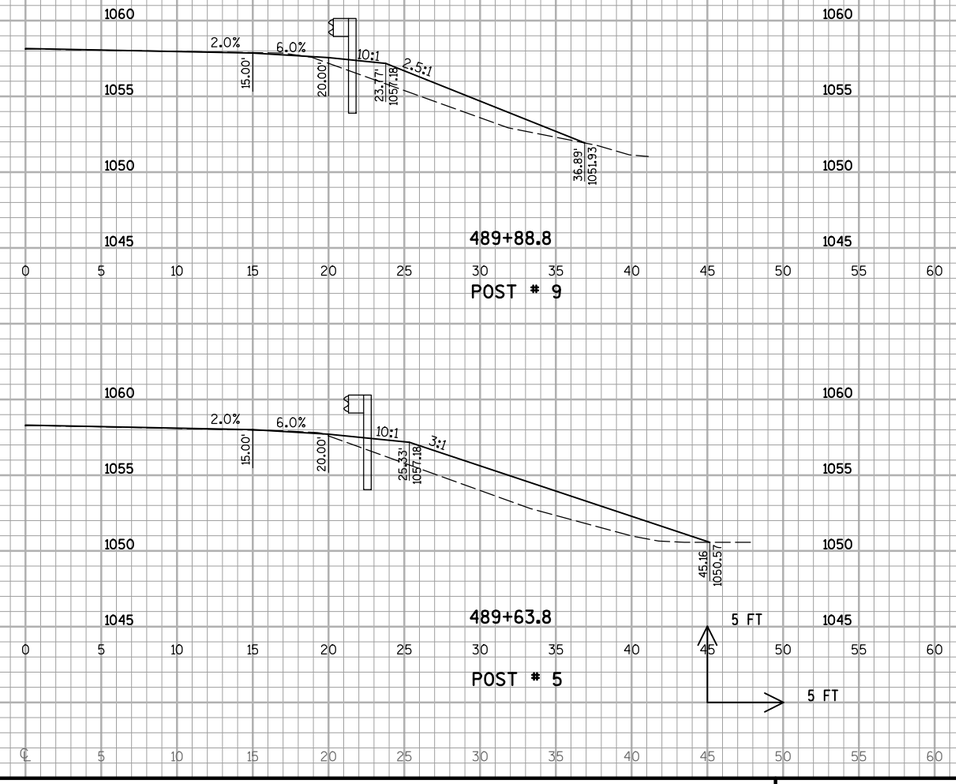
MIDPOINT OF TAPER

488+22.2

BEGINNING OF TAPER
(MATCH EXISTING)

489+38.8

POST # 1



489+88.8

POST # 9

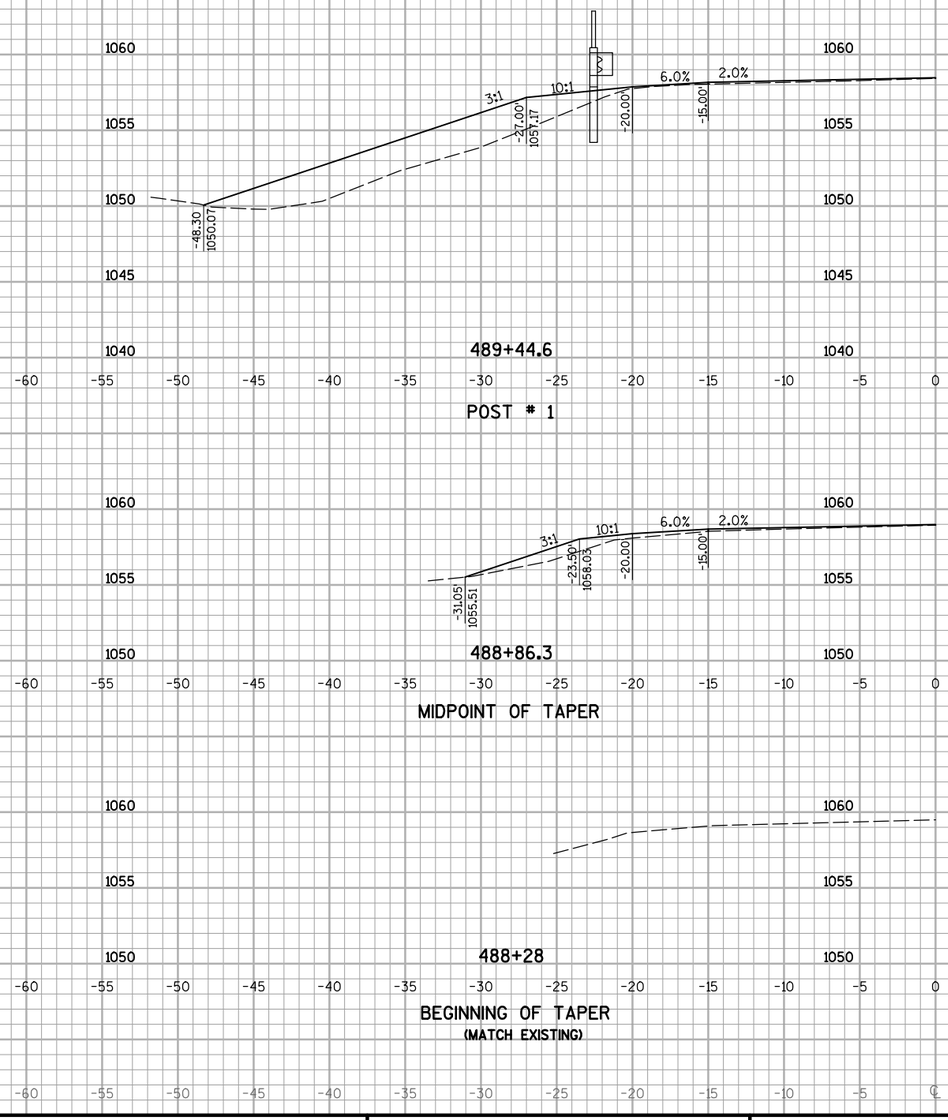
489+63.8

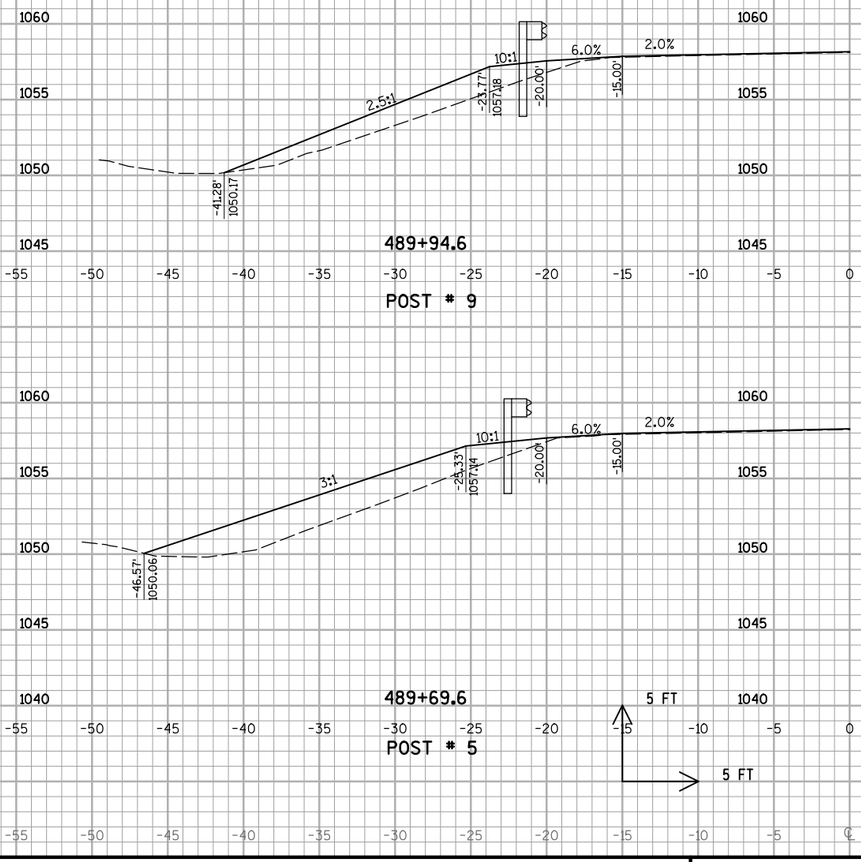
POST # 5

9

9

PROJECT NO: 7640-00-70 | HWY: STH 29 | COUNTY: PIERCE | CROSS SECTIONS: GUARDRAIL | SHEET 147 | E





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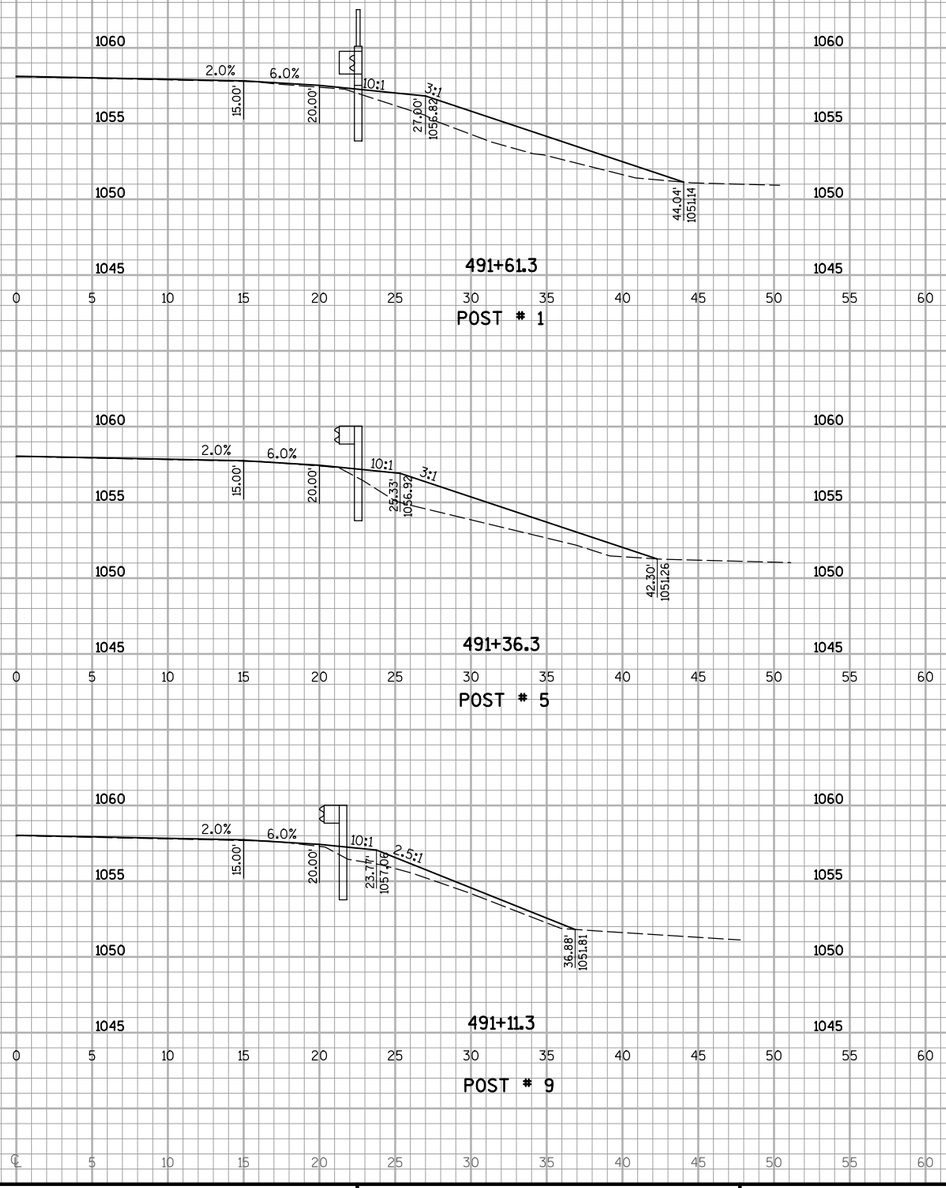
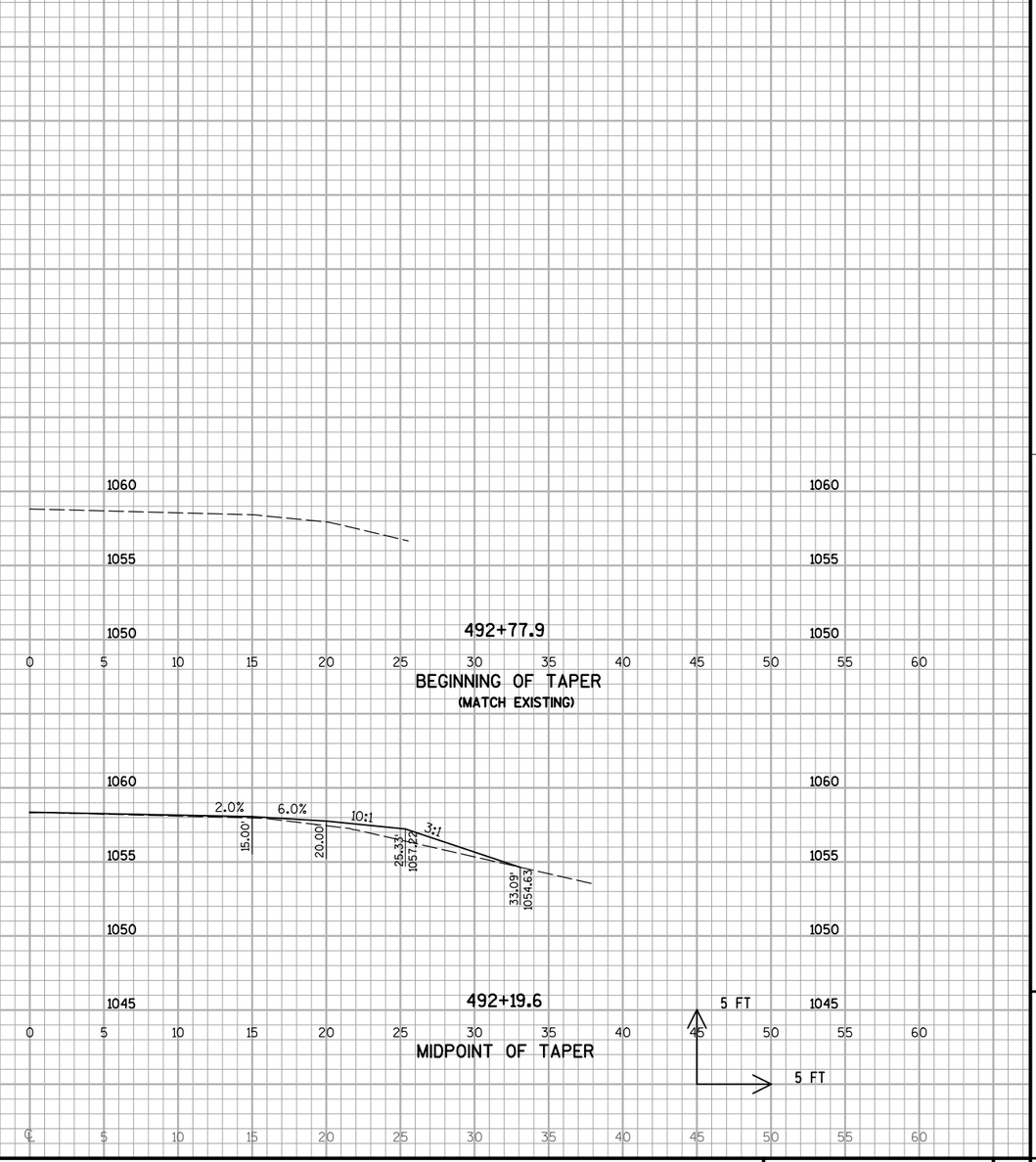
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 148	E





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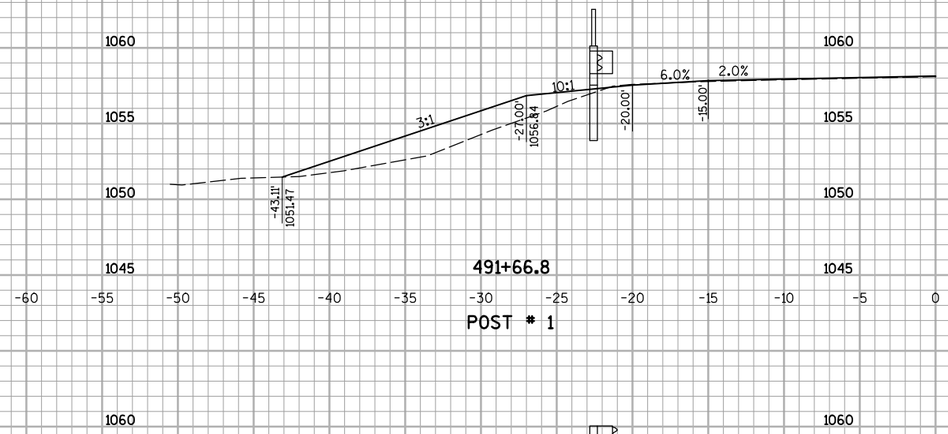
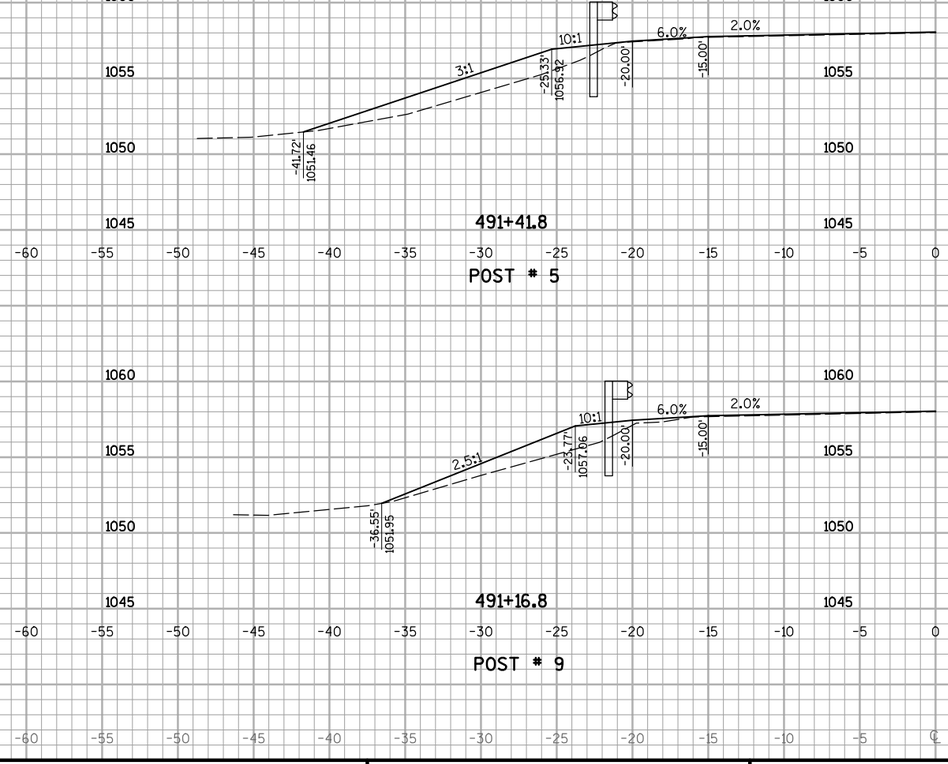
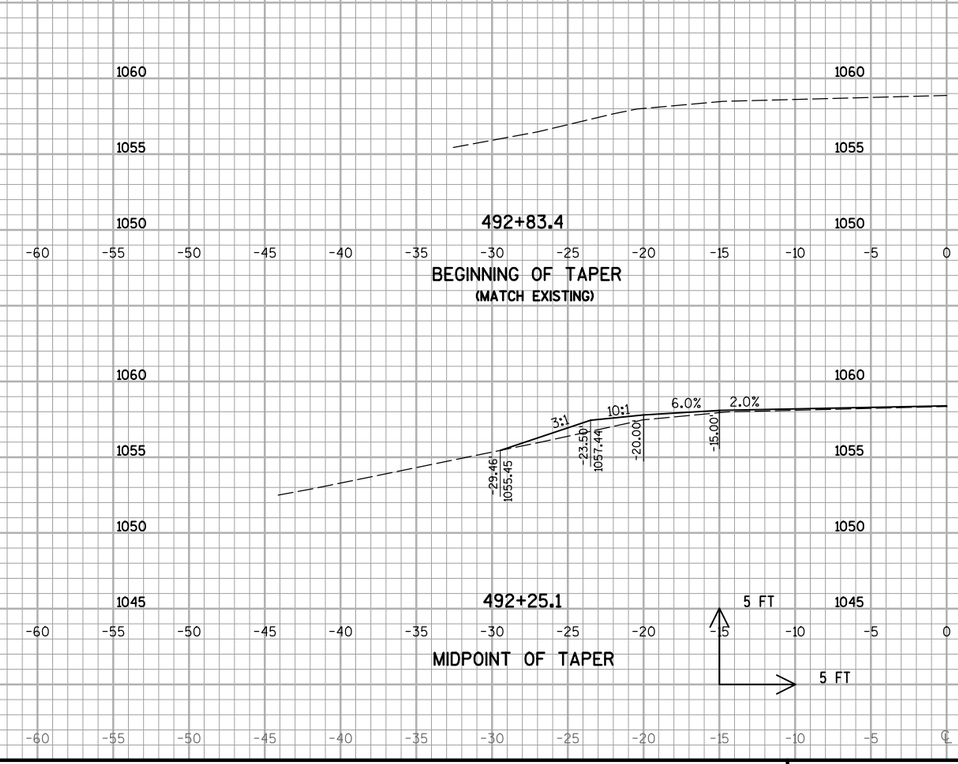
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 149	E







9

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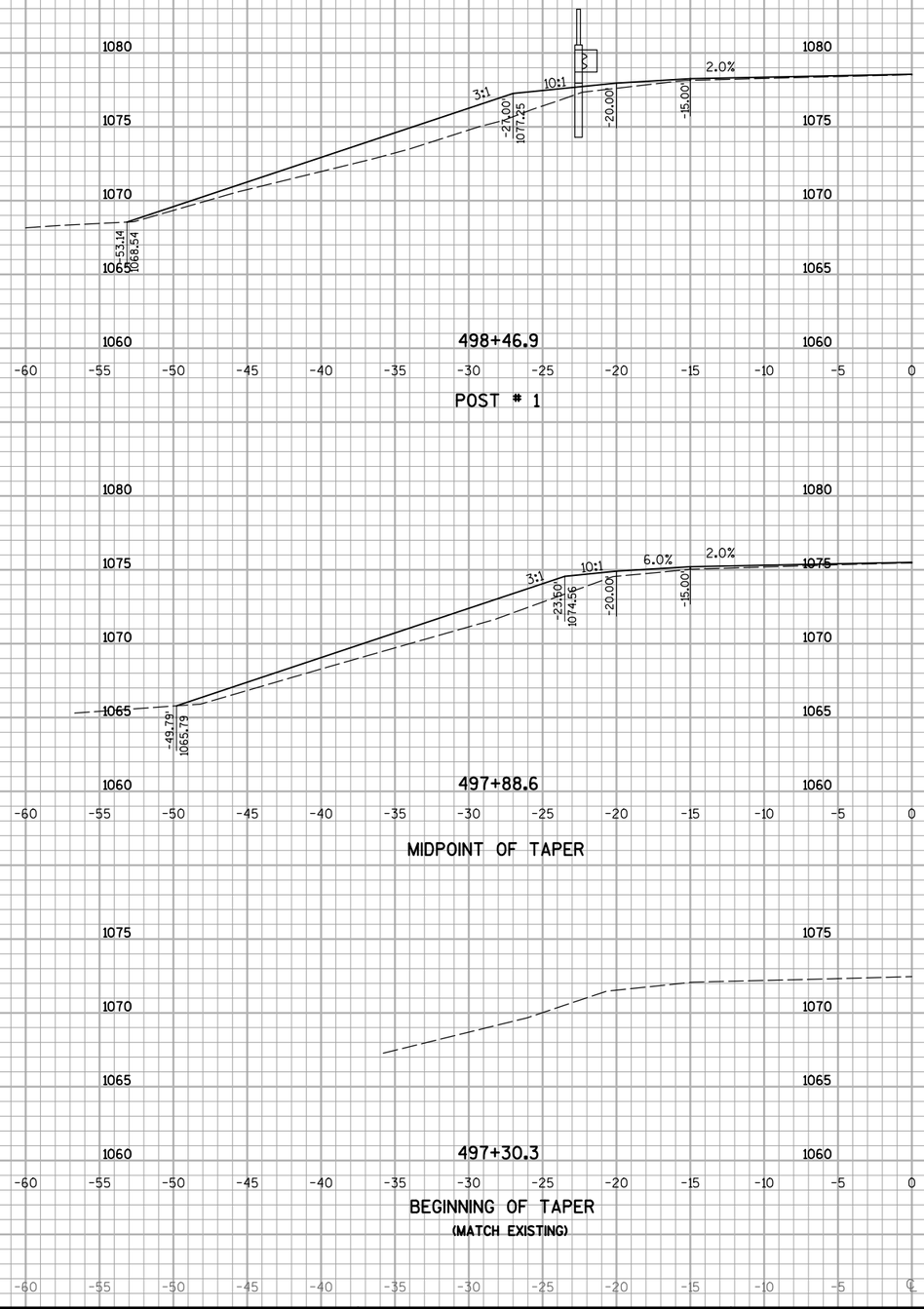
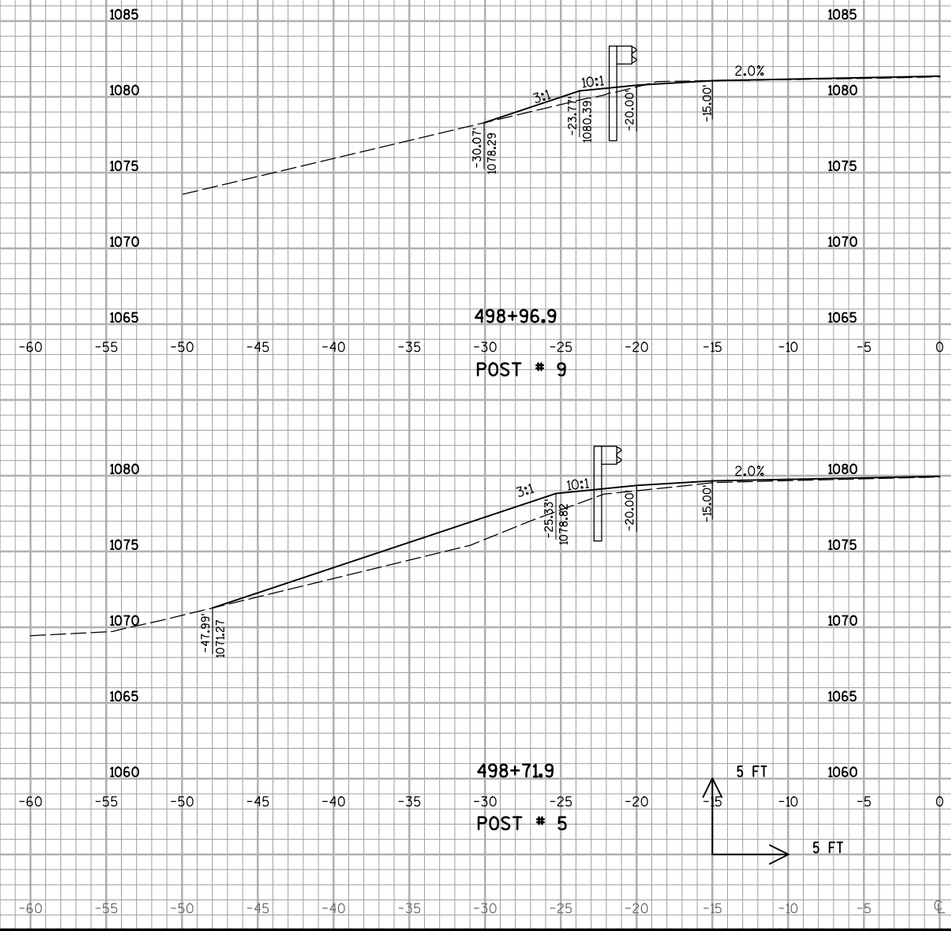
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 150	E





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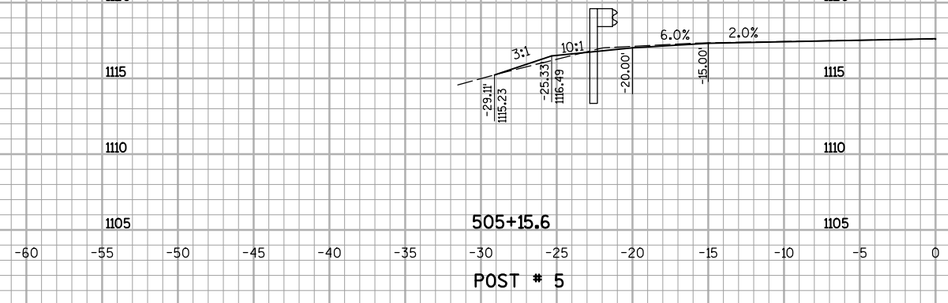
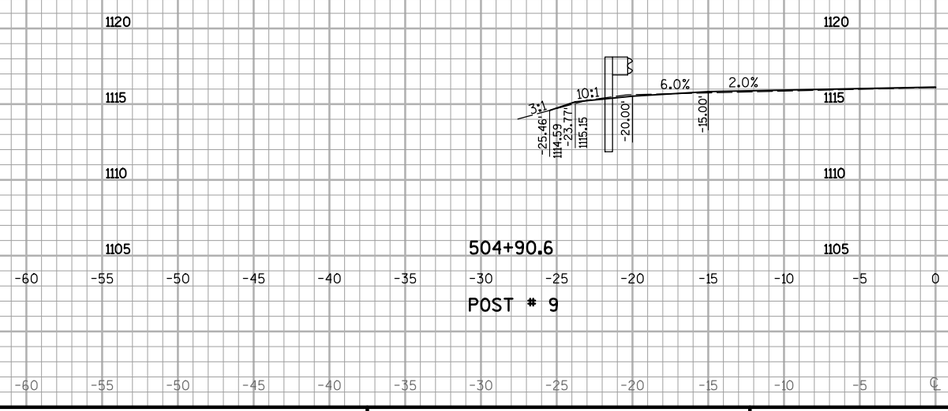
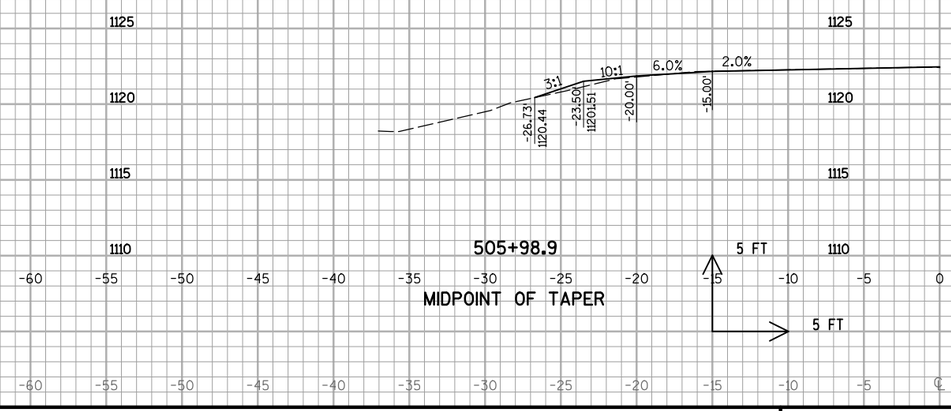
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 151	E







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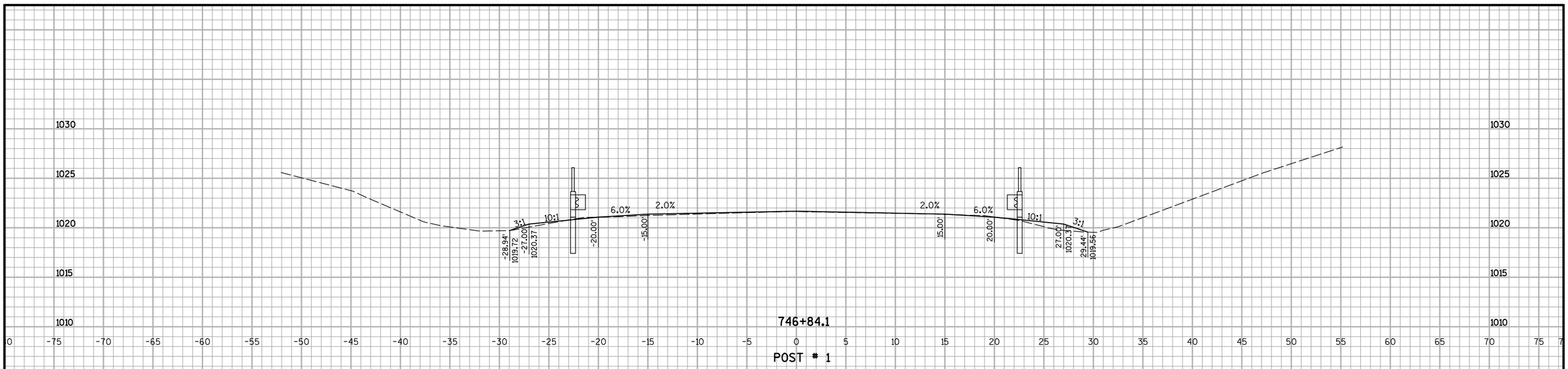
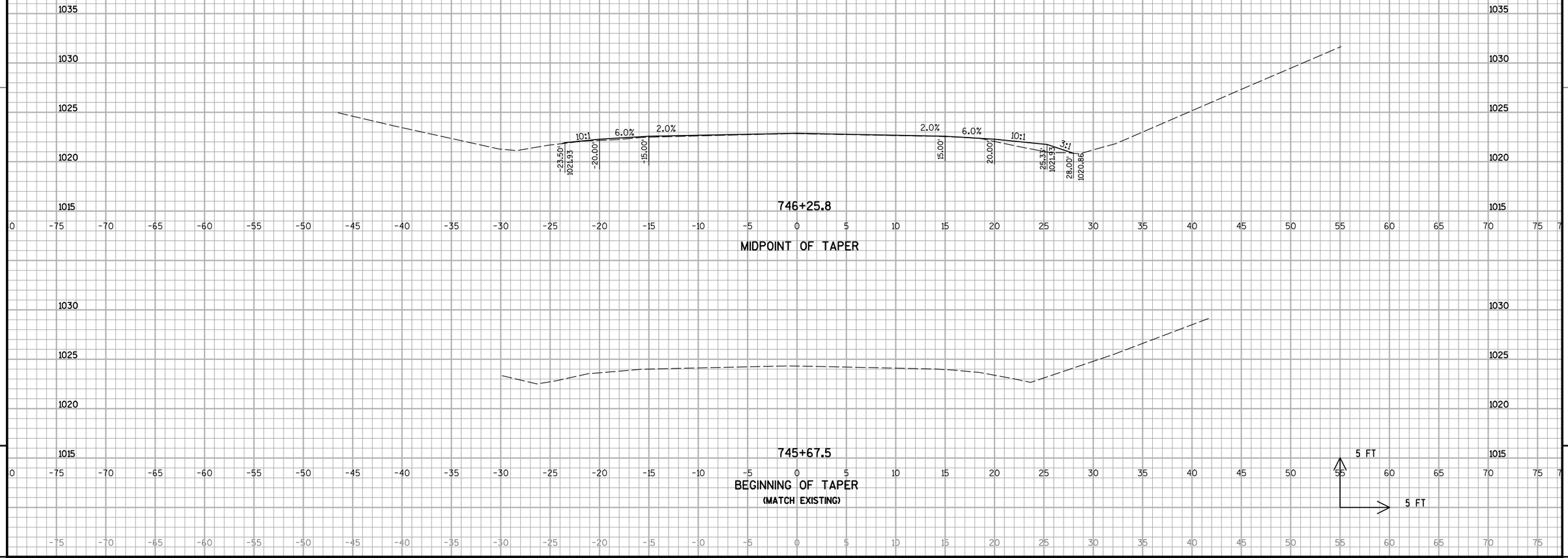
PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 152	E

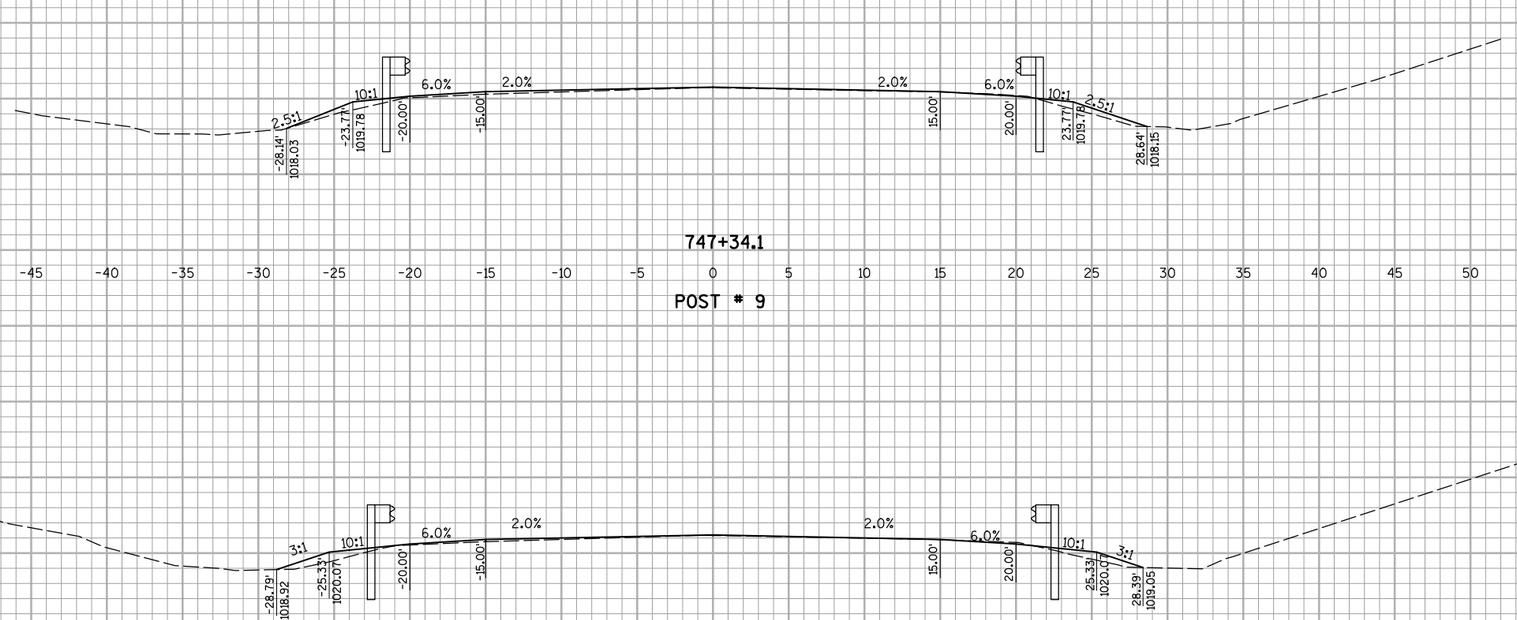




PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 153	E

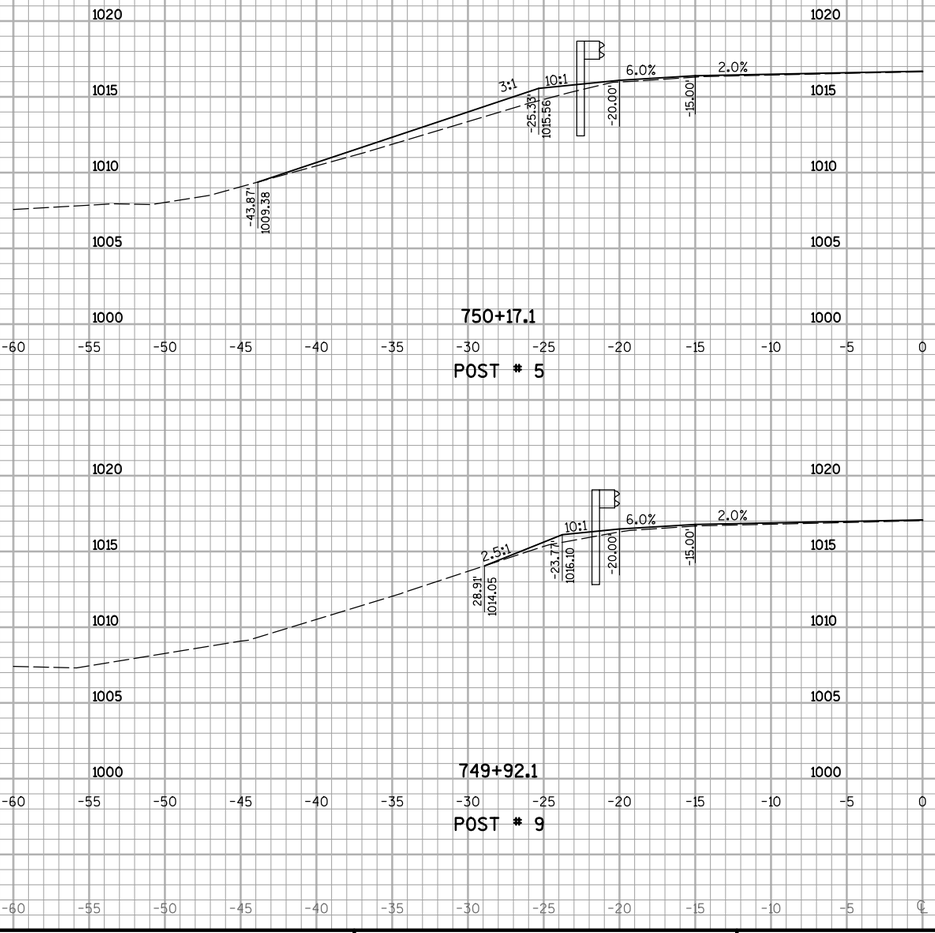
FILE NAME : $$....designfile....$$ PLOT DATE : $$...plottingdate...$$ PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : $$.....plotscale.....$$

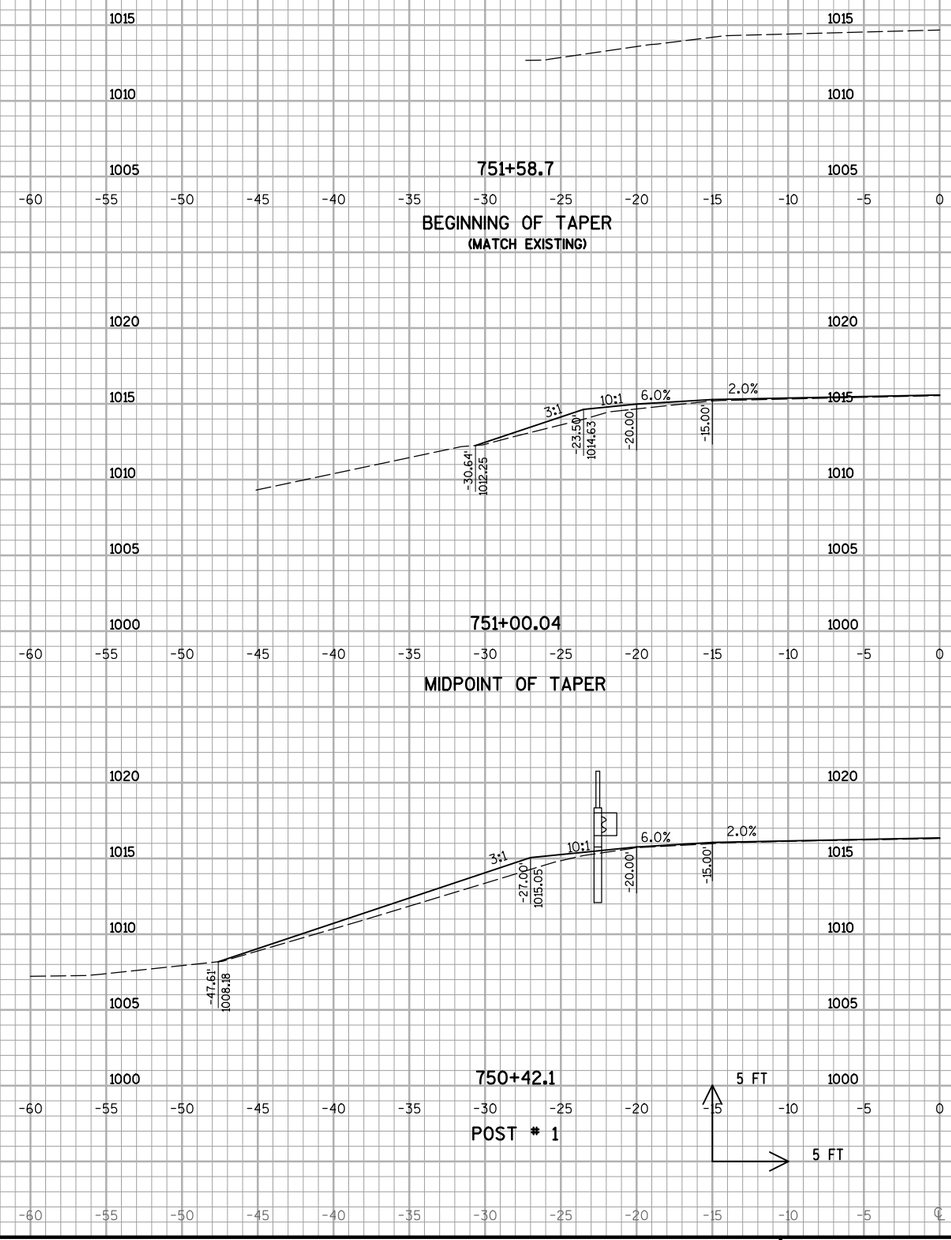
WISDOT/CADDS SHEET 21



PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 154	E

FILE NAME : $$....designfile....$$ PLOT DATE : $$...plottingdate...$$ PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : $$.....plotscale.....$$ WISDOT/CADDS SHEET 21





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9

PROJECT NO: 7640-00-70	HWY: STH 29	COUNTY: PIERCE	CROSS SECTIONS: GUARDRAIL	SHEET 155	E

FILE NAME : $$....designfile....$$ PLOT DATE : $$...plottingdate...$$ PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : $$.....plotscale.....$$

Wisconsin Department of Transportation

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