RHI

JUNE 2020

PROJECT ID: 6251-11-70

WITH: N/A

COUNTY: SHAWANO

ORDER OF SHEETS



TOTAL SHEETS = 90

12

N

DESIGN DESIGNATION 6251-11-70

| | | | |
|---|---|---|---|
| A.A.D.T. | 2020 | = | 5,600 |
| A.A.D.T. | 2040 | = | 7,000 |
| D.H.V. | | = | 605 |
| D.D. | | = | 60/40 |
| T. | | = | 15.9% |
| DESIGN SPEED | | = | 60 MPH |
| ESALS | | = | 1,950,000 |

CONVENTIONAL SYMBOLS

PLAN

- CORPORATE LIMITS
- PROPERTY LINE
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE (300'EB)
- 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**

# CLINTONVILLE - SHAWANO

**WAUPACA COUNTY LINE TO CTH CC**

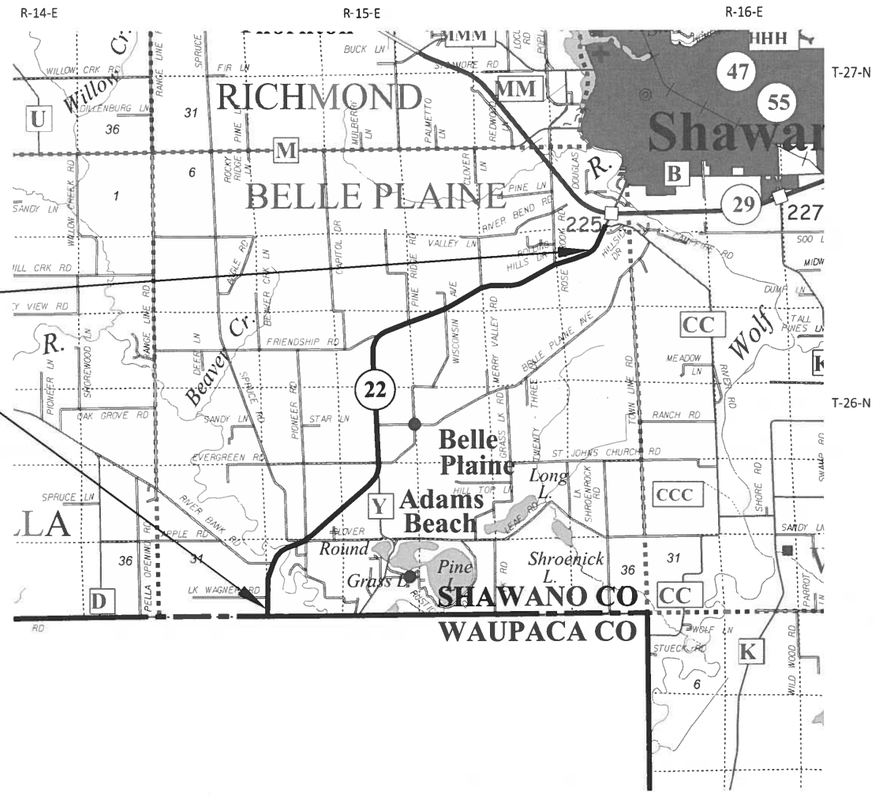
## STH 22

## SHAWANO COUNTY

| STATE PROJECT NUMBER |
|---|
| 6251-11-70 |

END PROJECT
STA 457+23

BEGIN PROJECT
STA 74+87
Y=235,319.155
X=834,601.444




LAYOUT

SCALE 0 2 MI

TOTAL NET LENGTH OF CENTERLINE = 7.242 MILES

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

| STATE PROJECT | FEDERAL PROJECT | |
|---|---|---|
| | PROJECT | CONTRACT |
| 6251-11-70 | WISC 2020333 | 1 |
| | | |
| | | |
| | | |

ORIGINAL PLANS PREPARED BY

OMNNI ASSOCIATES

WISCONSIN
MICHAEL A. MALCOLM
E-30025
Appleton, WI
PROFESSIONAL ENGINEER

12-02-2019

DATE: _____ (Professional Engineer Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

| | |
|---|---|
| Surveyor | OMNNI ASSOCIATES, INC |
| Designer | OMNNI ASSOCIATES, INC |
| Project Manager | JIM VOLKMANN |
| Regional Examiner | REGIONAL EXAMINER |
| Regional Supervisor | JED PETERS |

APPROVED FOR THE DEPARTMENT

DATE: 12/05/2019 (Signature)

E

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-010101-TI.DWG

PLOT DATE : 11/27/2019 11:08 AM PLOT BY : ANDREW WESTBROOK PLOT NAME :

## GENERAL NOTES

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

THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPERATELY.

THE PROJECT REFERENCE LINE IS BASED ON AS-BUILT PLAN AND FIELD INFORMATION. THE LOCATION OF THE REFERENCE LINE MAY VARY SLIGHTLY FROM THE ACTUAL CENTER LINE.

ALL DISTURBED AREAS NOT OTHERWISE SURFACED ARE TO BE TOPSOILED, SEEDED, FERTILIZED, AND E-MATTED.

INLET OFFSETS ARE GIVEN TO THE CENTER OF THE STRUCTURE.
ENDWALL OFFSETS ARE GIVEN TO THE END OF PIPE.

## UTILITIES

| | |
|---|---|
| ELECTRIC | ALLIANT ENERGY - ELECTRIC<br>SETH SCHOUNARD<br>708 NE 7TH ST<br>MARION, WI 54950<br>TELEPHONE: (715)-754-4331<br>EMAIL: sethschounard@alliantenergy.com |
| ELECTRIC | ATC MANAGEMENT, INC. - ELECTRICITY TRANSMISSION<br>CHRIS DAILEY<br>PO BOX 47<br>WAUKESHA, WI 53817<br>TELEPHONE: (262) 506-6884<br>EMAIL: cdailey@atcllc.com |
| GAS | WE ENERGIES - GAS / PETROLEUM<br>JESUS VICTORIA<br>800 S LYNNDALE DR<br>APPLETON, WI 54914<br>TELEPHONE: (920) 380-3314<br>MOBILE: (920) 470-3812<br>EMAIL: jesus.victoria@wecenergygroup.com |
| COMMUNICATIONS | CHARTER COMMUNICATIONS<br>RUDI RUDIGER<br>5024 HEFFRON ST<br>STEVENS POINT, WI 54481<br>MOBILE: (715)-204-5339<br>EMAIL: rudi.rudiger@charter.com |
| COMMUNICATION | FRONTIER COMMUNICATIONS OF WI LLC<br>RUSS RYAN<br>118 DIVISION ST<br>PLYMOUTH, WI 53073<br>TELEPHONE: (920)-583-3275<br>MOBILE: (920) 737-9662<br>EMAIL: russell.w.ryan@ftr.com |
| ELECTRIC | SHAWANO MUNICIPAL UTILITIES<br>ROBERT KOEPP<br>PO BOX 436<br>122 N SAWYER ST<br>SHAWANO, WI 54166<br>TELEPHONE: (715) 701-8983<br>MOBILE: (715) 853-9314<br>EMAIL: rkoepp@cityofshawano.com |

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

## OTHER CONTACTS

| | |
|---|---|
| DNR LIAISON | JIM DOPERALSKI<br>DEPARTMENT OF NATURAL RESOURCES<br>2984 SHAWANO AVENUE<br>GREEN BAY, WI 54307-0448<br>TELEPHONE: (920) 662-5119<br>EMAIL: james.doperalski@wisconsin.gov |

## RUNOFF COEFFICIENT TABLE

| | HYDROLOGIC SOIL GROUP | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | | | B | | | C | | | D | | |
| | SLOPE RANGE (PERCENT) | | | SLOPE RANGE (PERCENT) | | | SLOPE RANGE (PERCENT) | | | SLOPE RANGE (PERCENT) | | |
| LAND USE: | 0-2 | 2-6 | 6 & OVER | 0-2 | 2-6 | 6 & OVER | 0-2 | 2-6 | 6 & OVER | 0-2 | 2-6 | 6 & OVER |
| ROW CROPS | 0.08 | 0.16 | 0.22 | 0.12 | 0.20 | 0.27 | 0.15 | 0.24 | 0.33 | 0.19 | 0.28 | 0.38 |
| | 0.22 | 0.30 | 0.38 | 0.26 | 0.34 | 0.44 | 0.30 | 0.37 | 0.50 | 0.34 | 0.41 | 0.56 |
| MEDIAN STRIP - | 0.19 | 0.20 | 0.24 | 0.19 | 0.22 | 0.26 | 0.20 | 0.23 | 0.30 | 0.20 | 0.25 | 0.30 |
| TURF | 0.24 | 0.26 | 0.30 | 0.25 | 0.28 | 0.33 | 0.26 | 0.30 | 0.37 | 0.27 | 0.32 | 0.40 |
| SIDE SLOPE - | | | 0.25 | | | 0.27 | | | 0.28 | | | 0.30 |
| TURF | | | 0.32 | | | 0.34 | | | 0.36 | | | 0.38 |
| PAVEMENT: | | | | | | | | | | | | |
| ASPHALT | .70 - .95 | | | | | | | | | | | |
| CONCRETE | .80 - .95 | | | | | | | | | | | |
| BRICK | .70 - .80 | | | | | | | | | | | |
| DRIVES, WALKS | .75 - .85 | | | | | | | | | | | |
| ROOFS | .75 - .95 | | | | | | | | | | | |
| GRAVEL ROADS, SHOULDERS | .40 - .60 | | | | | | | | | | | |

TOTAL PROJECT AREA =101 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES =0.15 ACRES

## ORDER OF "SECTION 2" SHEETS

2

N

FRIENDSHIP RD

PINE RIDGE RD

STH 22

MAPLE LEAF RD

ROSE BROOK RD

WISCONSIN AVE

BELLE PLAINE AVE

EVERGREEN RD

WISCONSIN AVE

SPRUCE RD

STH 22

CTH Y

RIVER BANK RD

PIONEER RD

CLOVER LEAF RD

LAKE WAGNER RD

HICKORY LN

SHAWANO CO

WAUPACA CO

290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460

280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70

END PROJECT 6251-11-70
STA 457+23.00
Y=259,222.007
X=857,469.946

BEGIN PROJECT 6251-11-70
STA 74+87.00
Y=235,319.155
X=834,601.444

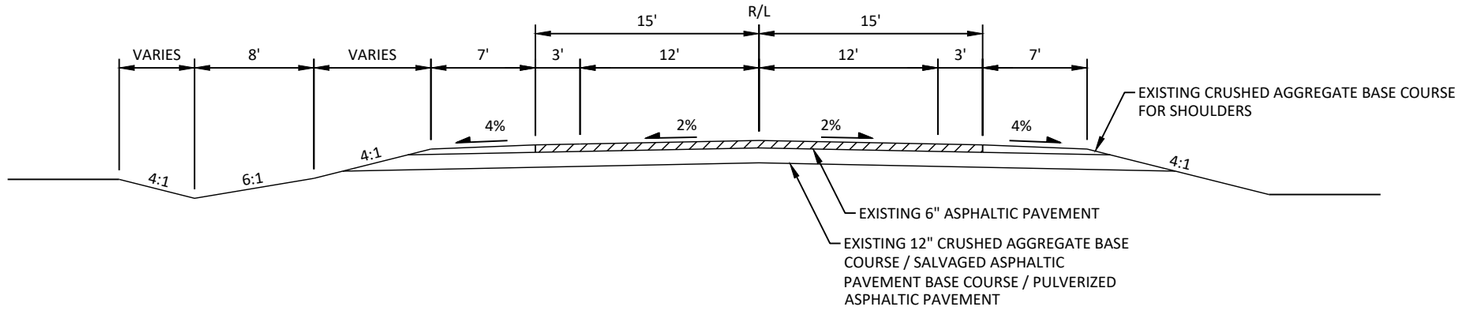
2

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PROJECT OVERVIEW | SHEET 3 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-020201-PO.DWG
LAYOUT NAME - 62511170-020201-po

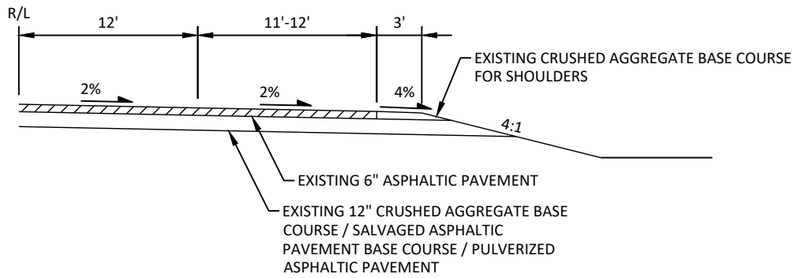
PLOT DATE : 9/3/2019 9:06 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:2000 FT

WISDOT/CADDS SHEET 42



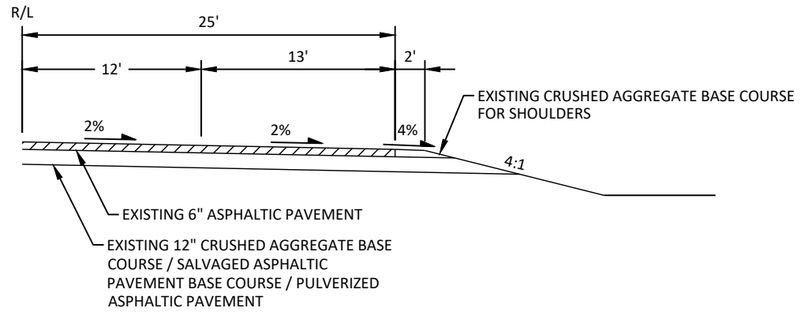

## EXISTING TYPICAL SECTION FOR STH 22

STA 74+87 TO STA 457+23



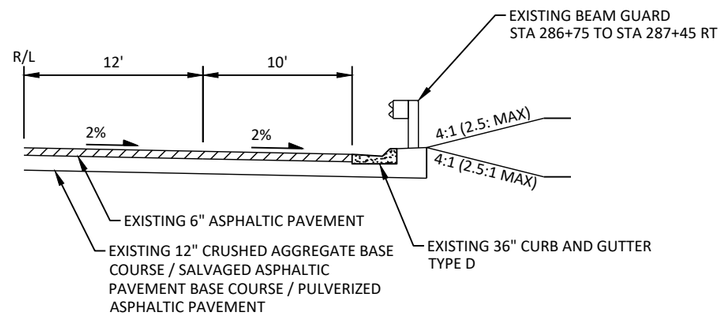

## EXISTING TYPICAL HALF-SECTION FOR STH 22 TURN LANES AND TAPERS

VARIOUS LOCATIONS, LT AND RT



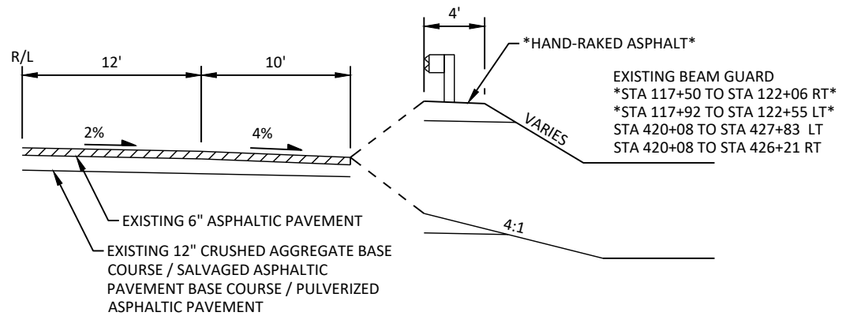

## EXISTING TYPICAL HALF-SECTION FOR STH 22 BYPASS LANES

STA 294+00 TO STA 297+50 RT




## EXISTING TYPICAL HALF-SECTION FOR STH 22 AT CURB AND GUTTER SECTION

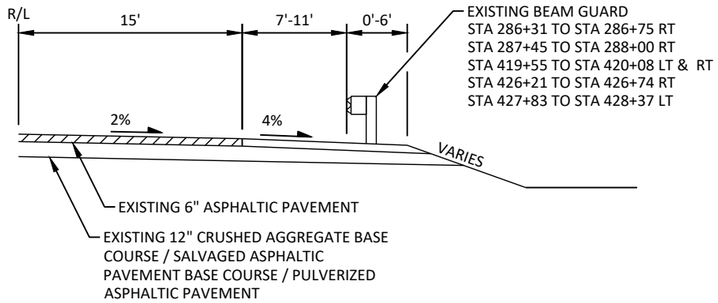
STA 280+11 TO STA 282+60 LT
STA 286+75 TO STA 287+45 RT
STA 328+53 TO STA 331+66 RT
STA 361+48 TO STA 363+63 LT




## EXISTING TYPICAL HALF-SECTION FOR STH 22 FULL WIDTH PAVED SHOULDERS

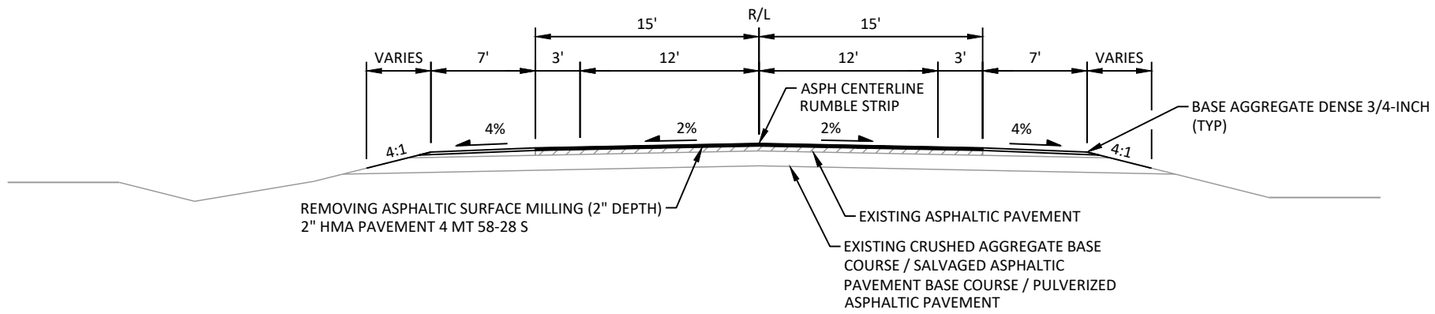
STA 117+50 TO STA 122+06 RT
STA 117+92 TO STA 122+55 LT
STA 390+06 TO STA 394+70 LT
STA 387+91 TO STA 393+63 RT
STA 420+08 TO STA 427+83 LT
STA 420+08 TO STA 426+21 RT

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | TYPICAL SECTION: STH 22 | SHEET 4 | E |
|---|---|---|---|---|---|



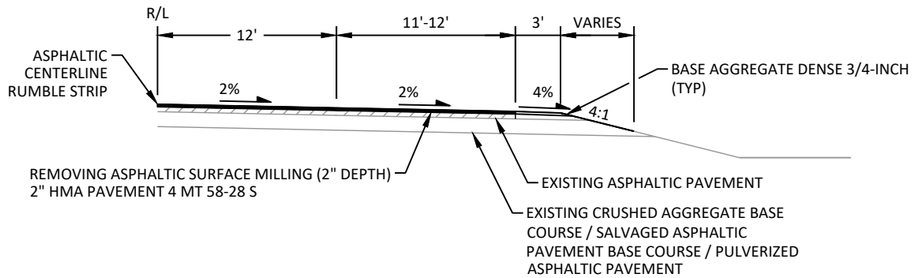

## EXISTING TYPICAL HALF-SECTION FOR STH 22 BEAM GUARD TERMINAL AND APPROACHES

STA 285+24 TO STA 286+75 RT
STA 287+45 TO STA 290+19 RT
STA 418+64 TO STA 420+08 LT & RT
STA 426+21 TO STA 427+68 RT
STA 427+83 TO STA 429+29 LT



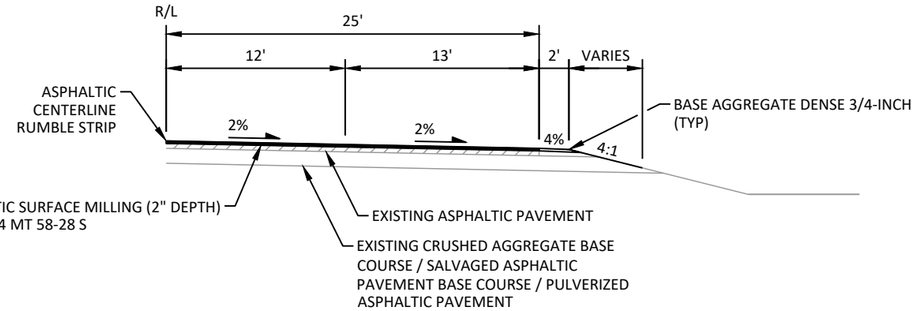

## PROPOSED TYPICAL SECTION FOR STH 22

STA 74+87 TO STA 457+23



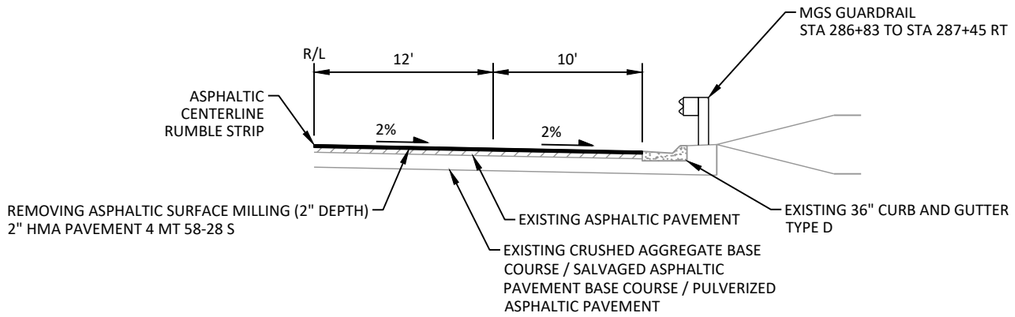

## PROPOSED TYPICAL HALF-SECTION FOR STH 22 TURN LANES AND TAPERS

VARIOUS LOCATIONS, LT AND RT



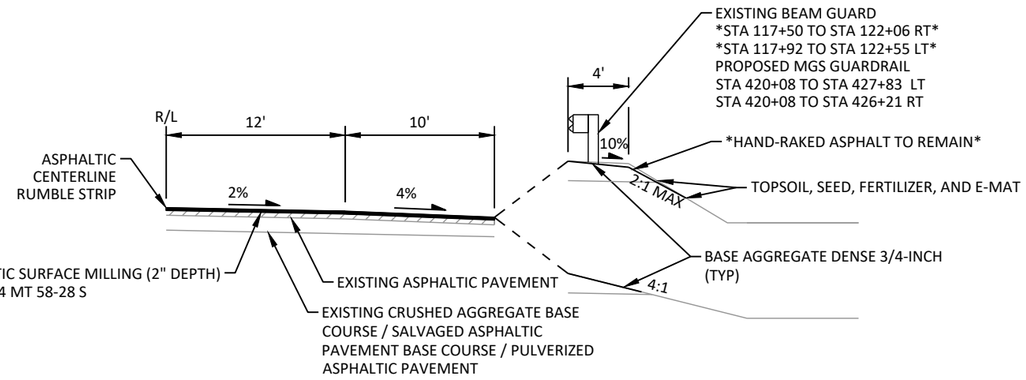

## PROPOSED TYPICAL HALF-SECTION FOR STH 22 BYPASS LANE

STA 294+00 RT TO STA 297+50 RT




## PROPOSED TYPICAL HALF-SECTION FOR STH 22 AT CURB AND GUTTER SECTION

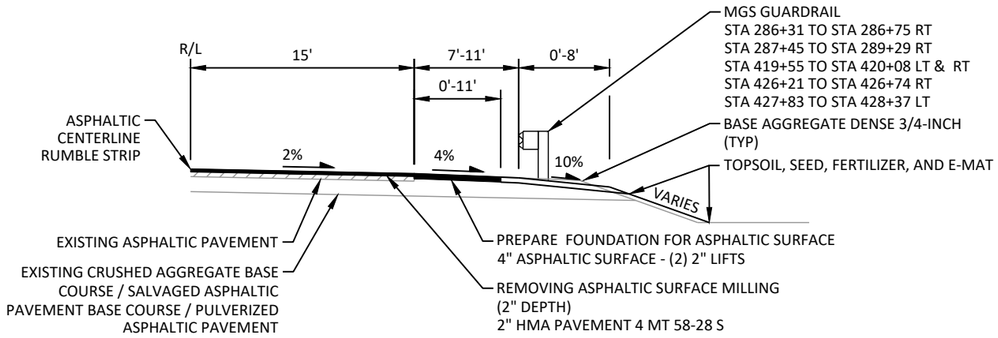
STA 280+11 TO STA 282+60 LT
STA 286+83 TO STA 287+45 RT
STA 328+53 TO STA 331+66 RT
STA 361+48 TO STA 363+63 LT




## PROPOSED TYPICAL HALF-SECTION FOR STH 22 FULL WIDTH PAVED SHOULDERS

STA 117+50 TO STA 122+06 RT
STA 117+92 TO STA 122+55 LT
STA 390+06 TO STA 394+70 LT
STA 387+91 TO STA 393+63 RT
STA 420+08 TO STA 427+83 LT
STA 420+08 TO STA 426+21 RT

2




## PROPOSED TYPICAL HALF-SECTION FOR STH 22 BEAM GUARD TERMINAL AND APPROACHES

STA 285+24 TO STA 286+75 RT
STA 287+45 TO STA 290+19 RT
STA 418+64 TO STA 420+08 LT & RT
STA 426+21 TO STA 427+68 RT
STA 427+83 TO STA 429+29 LT

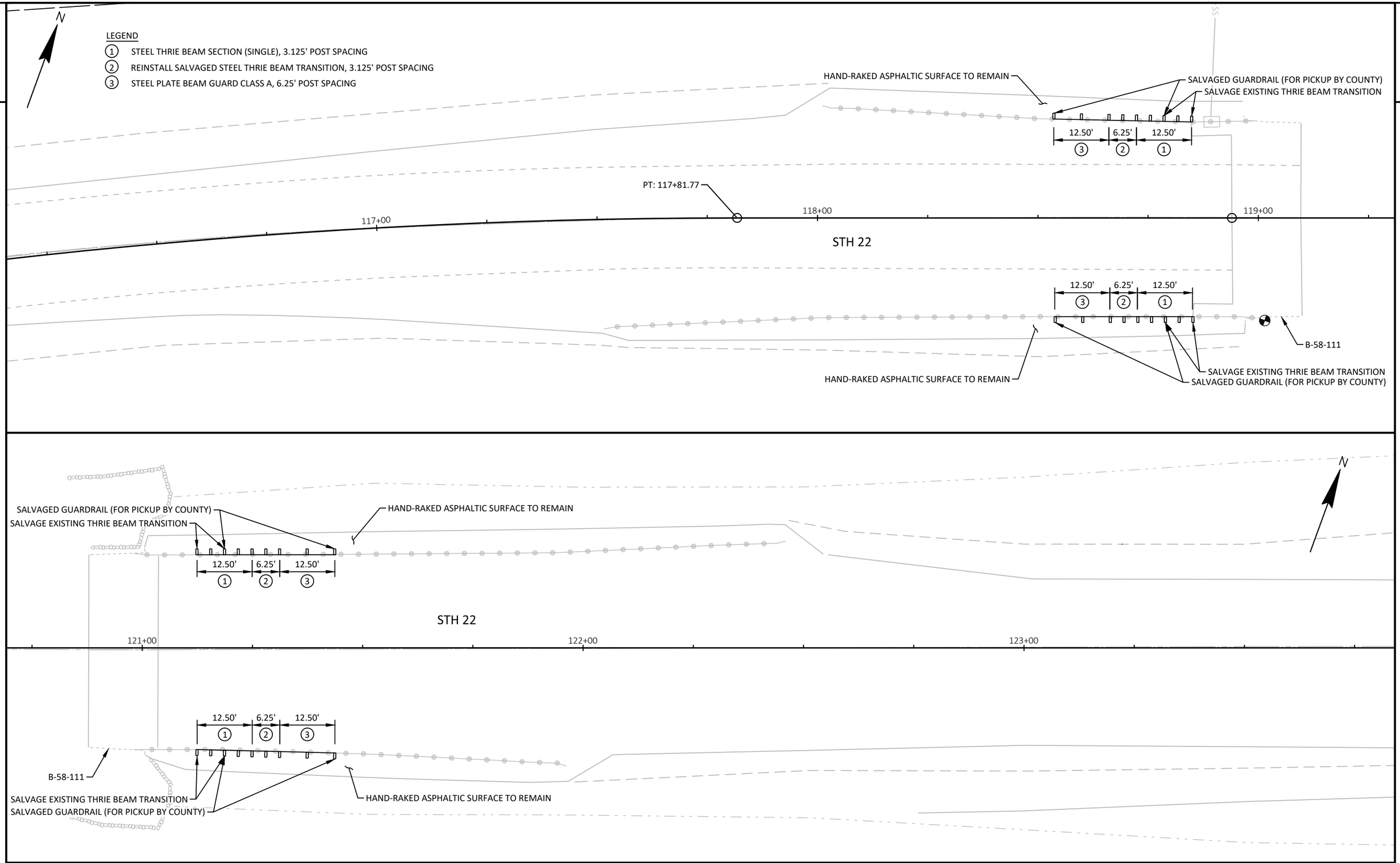
| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | TYPICAL SECTION: STH 22 | SHEET 7 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-020301-TS.DWG
LAYOUT NAME - 62511170-020304-ts
PLOT DATE : 12/2/2019 10:09 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT

2

LEGEND

1. STEEL THRIE BEAM SECTION (SINGLE), 3.125' POST SPACING
2. REINSTALL SALVAGED STEEL THRIE BEAM TRANSITION, 3.125' POST SPACING
3. STEEL PLATE BEAM GUARD CLASS A, 6.25' POST SPACING




2

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | GUARDRAIL DETAILS AND EROSION CONTROL | SHEET 8 | E |
|---|---|---|---|---|---|


FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-021001-CD.DWG
LAYOUT NAME - 62511170-021001-cd
PLOT DATE : 3/31/2020 12:49 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:20 FT
WISDOT/CADDS SHEET 44

2

N

STH 22

285+00

286+00

287+00

PC: 285+28.56

REMOVING ASPHALTIC SURFACE

SAWCUT

PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS
4" ASPHALTIC SURFACE - (2) 2" LIFTS

53.13'
EAT MGS

+82.77
15.00' R

62.50'
MGS GUARDRAIL 3
R = 1,452'

+45.02
15.00' R

SURFACE FLOW ARROW, TYP

+23.64
15.29' R

+30.86
26.00' R

+48.39
24.00'

+48.39
28.00' R

EXIST CURB AND GUTTER TO REMAIN

SALVAGED RAIL

+84.86
24.00' R

+84.86
28.00' R

+56.29
29.33' R

CULVERT PIPE CHECK

SLOPE INTERCEPT,
TYP

DITCH FLOWLINE,
TYP

+30.86
32.00' R

+82.54
22.11' R

REMOVE AND REPLACE ASPHALT FLUME
LOCATE NEW FLUME TO AVOID CONFLICT WITH PROPOSED GUARDRAIL POSTS

EXIST R/W PER AS-BUILT MAPPING

NOTE: ALL DISTURBED AREAS NOT OTHERWISE SURFACED
SHALL BE TOPSOILED, FERTILIZED, SEEDED, AND E-MATTED.

N

STH 22

288+00

289+00

290+00

REMOVING ASPHALTIC SURFACE

125.00'
MGS GUARDRAIL 3

+45.02
15.00' R

53.13'
EAT MGS

PREPARE FOUNDATION FOR
ASPHALTIC SHOULDERS
4" ASPHALTIC SURFACE - (2) 2" LIFTS

SAWCUT

+48.39
24.00' R

+48.39
28.00' R

+25.82
22.00' R

+75.32
22.00' R

+25.93
26.00' R

R = 1,454'

+75.32
26.00' R

+29.25
24.00' R

+19.25
15.00' R

EXISTING CURB AND
GUTTER TO REMAIN

SALVAGED RAIL

DITCH FLOWLINE,
TYP

SLOPE INTERCEPT,
TYP

+29.25
30.00' R

SILT FENCE

+34.81
26.66' R

EXIST R/W PER AS-BUILT MAPPING

SURFACE FLOW ARROW, TYP

TEMPORARY DITCH CHECK

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | GUARDRAIL DETAILS AND EROSION CONTROL | SHEET 9 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-021001-CD.DWG
LAYOUT NAME - 62511170-021002-cd
PLOT DATE : 1/17/2020 12:25 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:20 FT
WISDOT/CADDS SHEET 44

2

+37.21
22.15' L

15:1 TAPER

+63.34
14.83' L

10:1 TAPER

+55.00
30.00' L

+80.00
27.33' L

+08.12
26.00' L

SALVAGED RAIL, TYP

+55.00
24.00' L

+08.12
22.00' L

+08.12
15.00' L

53.12'
EAT MGS

775.00'
MGS GUARDRAIL 3

PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS
4" ASPHALTIC SURFACE - (2) 2" LIFTS

STH 22

418+00

419+00

420+00

SAWCUT, TYP

REMOVING ASPHALTIC SURFACE

53.12'
EAT MGS

612.50'
MGS GUARDRAIL 3

+08.12
15.00' R

+08.12
22.00' R

+65.00
15.00' R

10:1 TAPER

+55.00
24.00' R

15:1 TAPER

+80.00
27.33' R

+08.12
26.00' R

+55.00
30.00' R

+41.68
22.45' R

SLOPE INTERCEPT,
TYP

DITCH FLOWLINE,
TYP

SILT FENCE, TYP

NOTE: ALL DISTURBED AREAS NOT OTHERWISE SURFACED
SHALL BE TOPSOILED, FERTILIZED, SEEDED, AND E-MATTED.

SLOPE INTERCEPT,
TYP

+83.13
26.00' L

+11.25
27.33' L

+36.25
30.00' L

+36.25
24.00' L

+83.13
22.00' L

+83.13
15.00' L

775.00'
MGS GUARDRAIL 3

53.13'
EAT MGS

REMOVING ASPHALTIC SURFACE

STH 22

426+00

427+00

428+00

612.50'
MGS GUARDRAIL 3

53.12'
EAT MGS

PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS
4" ASPHALTIC SURFACE - (2) 2" LIFTS

SAWCUT, TYP

+20.62
15.00' R

+68.00
14.58' R

10:1 TAPER

+20.62
22.00' R

SALVAGED RAIL, TYP

REMOVING ASPHALTIC SURFACE

+73.75
24.00' R

15:1 TAPER

SLOPE INTERCEPT,
TYP

+20.62
26.00' R

+73.75
28.00' R

+39.53
23.61' R

DITCH FLOWLINE,
TYP

ROCK BAGS FOR SILT
FENCE RELIEF

SILT FENCE, TYP

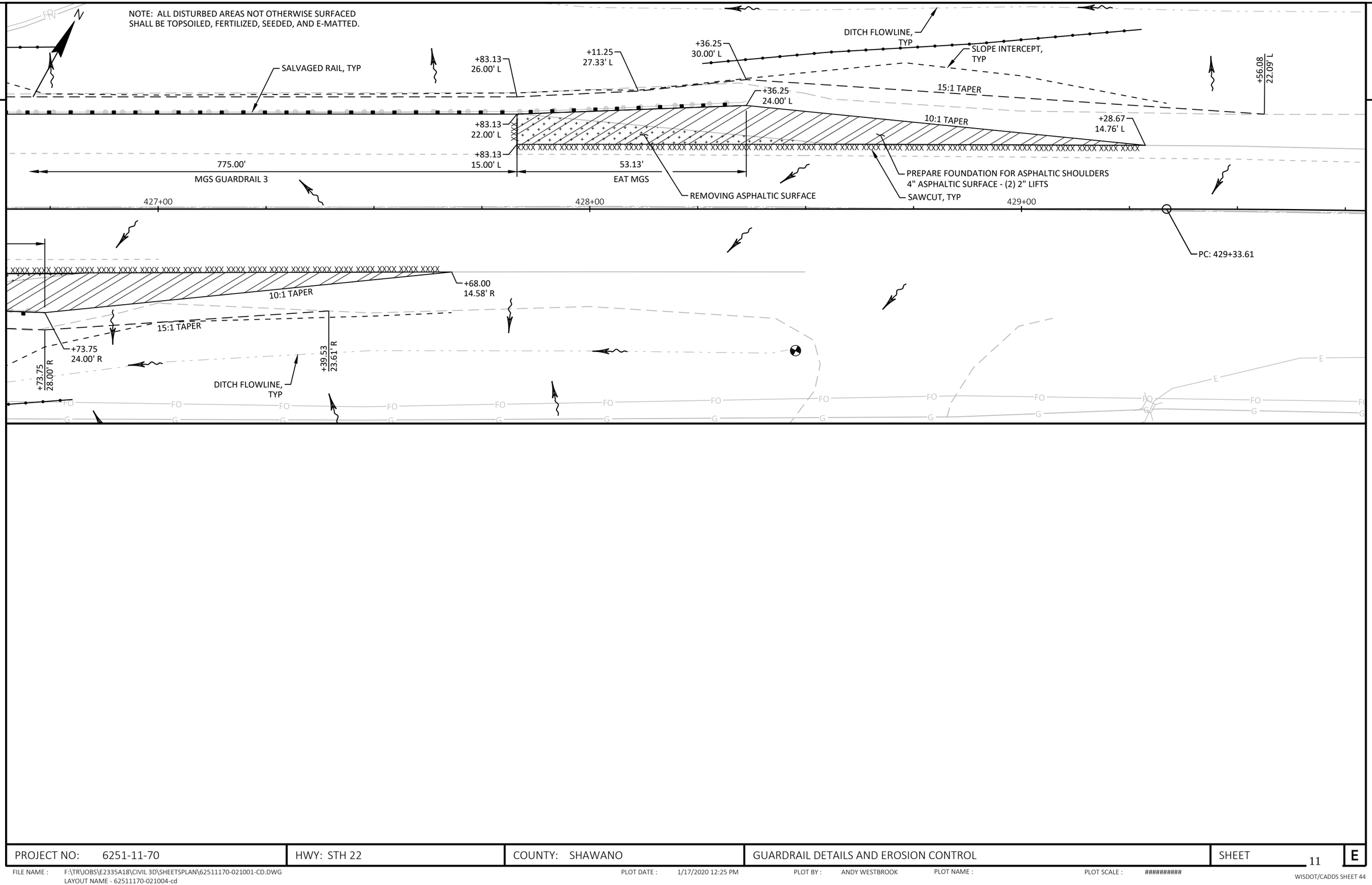
| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | GUARDRAIL DETAILS AND EROSION CONTROL | SHEET 10 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-021001-CD.DWG
LAYOUT NAME - 62511170-021003-cd

PLOT DATE : 1/17/2020 12:25 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 44

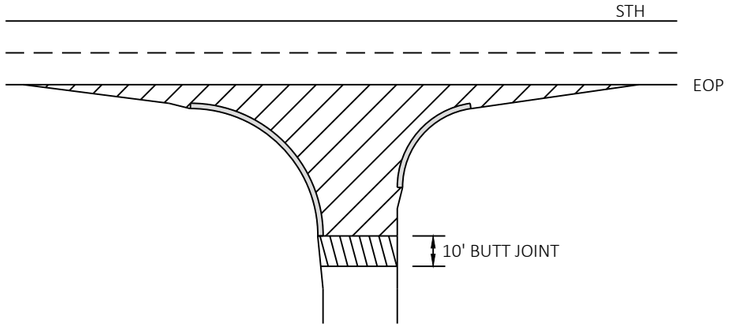
NOTE: ALL DISTURBED AREAS NOT OTHERWISE SURFACED SHALL BE TOPSOILED, FERTILIZED, SEEDED, AND E-MATTED.




| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | GUARDRAIL DETAILS AND EROSION CONTROL | SHEET 11 | E |
|---|---|---|---|---|---|

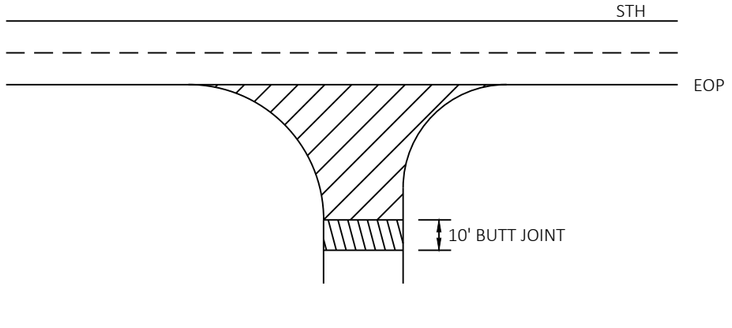
FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-021001-CD.DWG
LAYOUT NAME - 62511170-021004-cd

PLOT DATE : 1/17/2020 12:25 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : ##########



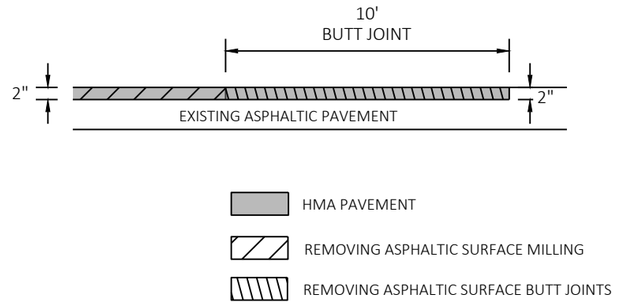

## SIDE ROAD BUTT JOINT

WITH CURB AND GUTTER



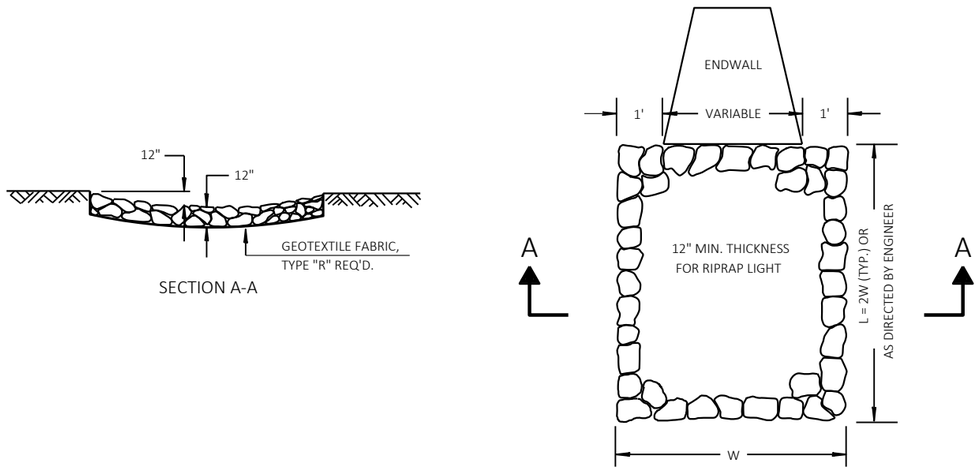

## SIDE ROAD BUTT JOINT

WITHOUT CURB AND GUTTER

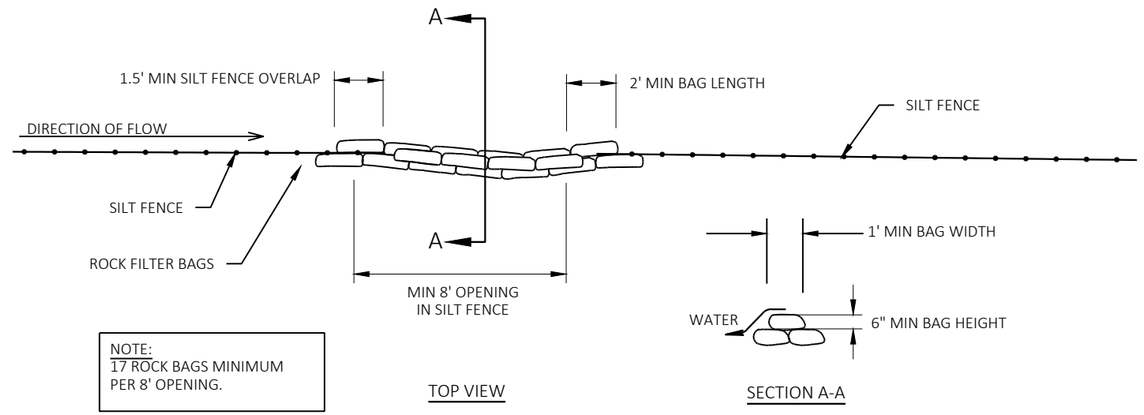



## BUTT JOINT

MAINLINE AND SIDE ROADS

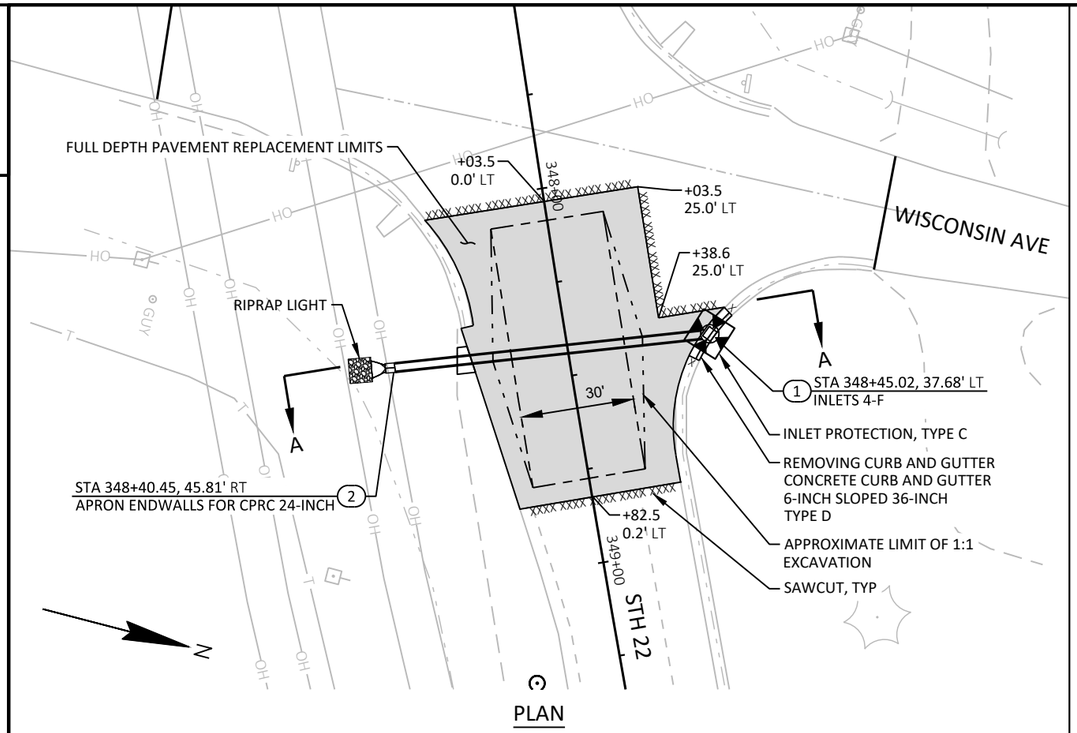



## RIPRAP LIGHT TREATMENT AT CULVERTS

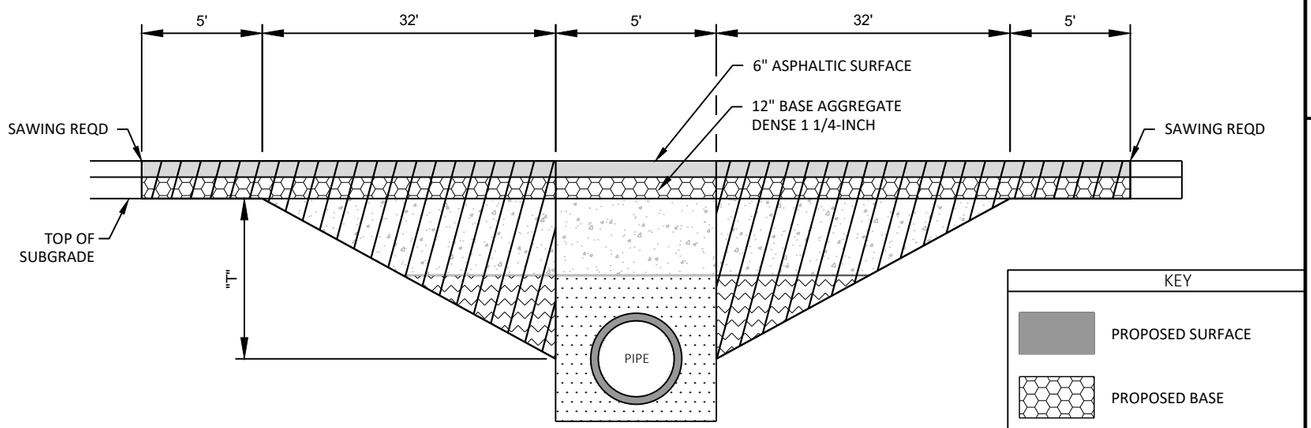



## ROCK BAGS USED FOR SILT FENCE RELIEF

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CONSTRUCTION DETAILS | SHEET 12 | E |
|---|---|---|---|---|---|

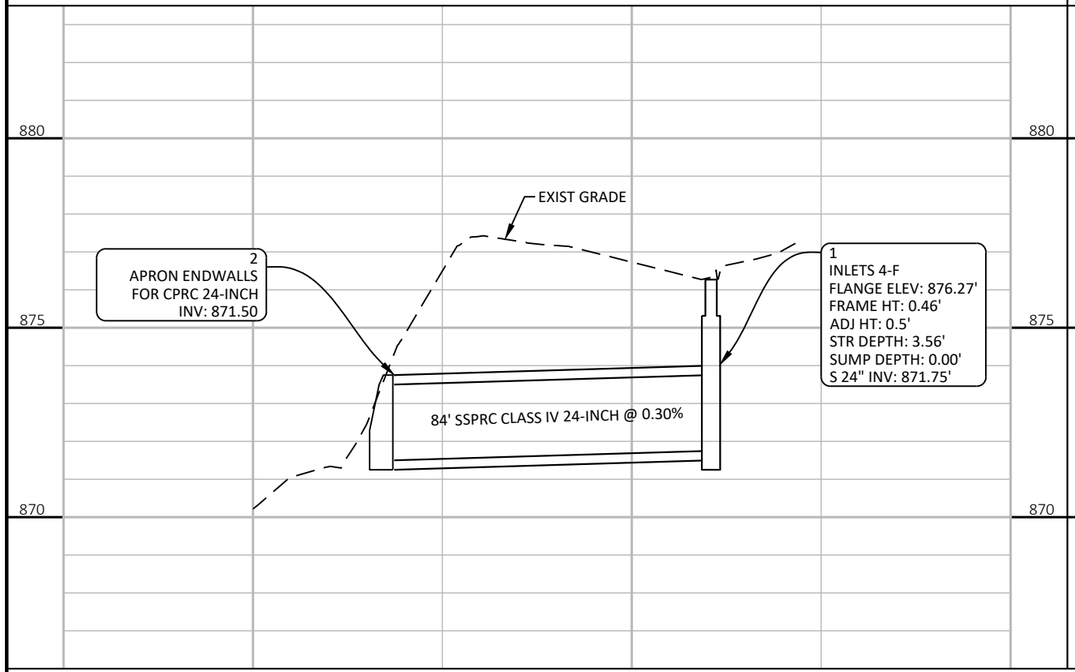



PLAN

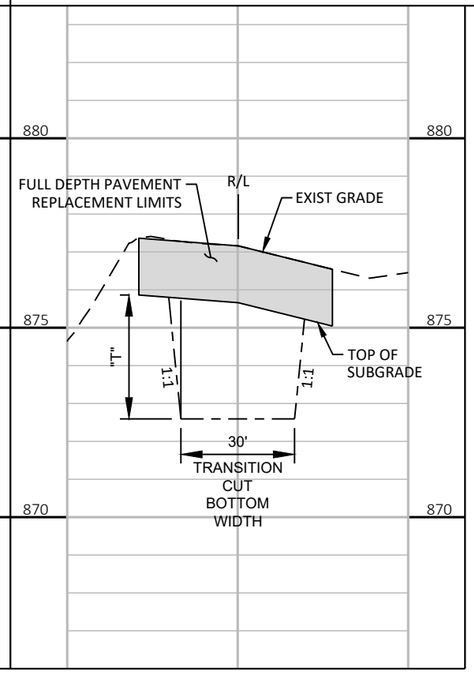



TRANSITION CUT DEPTH (T) = THE LESSER OF DEPTH TO CENTER OF PIPE OR 5 FT.
DO NOT EXTEND TRANSITION CUT BELOW HORIZONTAL CENTER OF PIPE.

TRANSITION CUT DETAIL
(ALONG ROADWAY CENTERLINE)




STORM SEWER PROFILE




SECTION A-A
(AT EDGE OF STORM SEWER TRENCH)

## NOTES

1. TRANSITION CUT IS PAID AS EXCAVATION COMMON.
2. IF EXCAVATED MATERIAL IS DEEMED ACCEPTABLE BY THE ENGINEER, USE TO BACKFILL THE TRANSITION CUT AREA. PAYMENT IS INCIDENTAL TO THE STORM SEWER ITEM.
3. IF EXCAVATED MATERIAL IS UNACCEPTABLE, BACKFILL THE TRANSITION CUT AREA WITH BACKFILL GRANULAR GRADE 2.
4. PERFORM CULVERT PIPE INSTALLATION, BACKFILL, AND HMA PAVING BEFORE MILLING AND OVERLAY.

## Estimate Of Quantities

6251-11-70

| Line | Item | Item Description | Unit | Total | Qty |
|---|---|---|---|---|---|
| 0002 | 204.0110 | Removing Asphaltic Surface | SY | 180.000 | 180.000 |
| 0004 | 204.0115 | Removing Asphaltic Surface Butt Joints | SY | 715.000 | 715.000 |
| 0006 | 204.0120 | Removing Asphaltic Surface Milling | SY | 143,860.000 | 143,860.000 |
| 0008 | 204.0150 | Removing Curb & Gutter | LF | 15.000 | 15.000 |
| 0010 | 205.0100 | Excavation Common | CY | 355.000 | 355.000 |
| 0012 | 209.2500 | Backfill Granular Grade 2 | TON | 220.000 | 220.000 |
| 0014 | 211.0100 | Prepare Foundation for Asphaltic Paving (project) 01. 6251-11-70 | LS | 1.000 | 1.000 |
| 0016 | 211.0400 | Prepare Foundation for Asphaltic Shoulders | STA | 17.000 | 17.000 |
| 0018 | 213.0100 | Finishing Roadway (project) 01. 6251-11-70 | EACH | 1.000 | 1.000 |
| 0020 | 305.0110 | Base Aggregate Dense 3/4-Inch | TON | 6,170.000 | 6,170.000 |
| 0022 | 305.0120 | Base Aggregate Dense 1 1/4-Inch | TON | 315.000 | 315.000 |
| 0024 | 455.0605 | Tack Coat | GAL | 10,155.000 | 10,155.000 |
| 0026 | 460.0105.S | HMA Percent Within Limits (PWL) Test Strip Volumetrics | EACH | 1.000 | 1.000 |
| 0028 | 460.0110.S | HMA Percent Within Limits (PWL) Test Strip Density | EACH | 1.000 | 1.000 |
| 0030 | 460.2005 | Incentive Density PWL HMA Pavement | DOL | 11,720.000 | 11,720.000 |
| 0032 | 460.2007 | Incentive Density HMA Pavement Longitudinal Joints | DOL | 57,615.000 | 57,615.000 |
| 0034 | 460.2010 | Incentive Air Voids HMA Pavement | DOL | 16,560.000 | 16,560.000 |
| 0036 | 460.6224 | HMA Pavement 4 MT 58-28 S | TON | 16,530.000 | 16,530.000 |
| 0038 | 465.0105 | Asphaltic Surface | TON | 320.000 | 320.000 |
| 0040 | 465.0110 | Asphaltic Surface Patching | TON | 215.000 | 215.000 |
| 0042 | 465.0315 | Asphaltic Flumes | SY | 10.000 | 10.000 |
| 0044 | 465.0475 | Asphalt Centerline Rumble Strips 2-Lane Rural | LF | 31,650.000 | 31,650.000 |
| 0046 | 522.1024 | Apron Endwalls for Culvert Pipe Reinforced Concrete 24-Inch | EACH | 1.000 | 1.000 |
| 0048 | 524.0124 | Culvert Pipe Salvaged 24-Inch | LF | 8.000 | 8.000 |
| 0050 | 524.0624 | Apron Endwalls for Culvert Pipe Salvaged 24-Inch | EACH | 2.000 | 2.000 |
| 0052 | 601.0557 | Concrete Curb & Gutter 6-Inch Sloped 36-Inch Type D | LF | 15.000 | 15.000 |
| 0054 | 606.0100 | Riprap Light | CY | 2.000 | 2.000 |
| 0056 | 608.0424 | Storm Sewer Pipe Reinforced Concrete Class IV 24-Inch | LF | 84.000 | 84.000 |
| 0058 | 611.0615 | Inlet Covers Type F | EACH | 1.000 | 1.000 |
| 0060 | 611.3004 | Inlets 4-FT Diameter | EACH | 1.000 | 1.000 |
| 0062 | 614.0010 | Barrier System Grading Shaping Finishing | EACH | 3.000 | 3.000 |
| 0064 | 614.0230 | Steel Thrie Beam | LF | 50.000 | 50.000 |
| 0066 | 614.0305 | Steel Plate Beam Guard Class A | LF | 50.000 | 50.000 |
| 0068 | 614.0920 | Salvaged Rail | LF | 1,559.000 | 1,559.000 |
| 0070 | 614.0925 | Salvaged Guardrail End Treatments | EACH | 6.000 | 6.000 |
| 0072 | 614.2300 | MGS Guardrail 3 | LF | 1,575.000 | 1,575.000 |
| 0074 | 614.2610 | MGS Guardrail Terminal EAT | EACH | 6.000 | 6.000 |

6251-11-70

| Line | Item | Item Description | Unit | Total | Qty |
|---|---|---|---|---|---|
| 0076 | 618.0100 | Maintenance And Repair of Haul Roads (project) 01. 6251-11-70 | EACH | 1.000 | 1.000 |
| 0078 | 619.1000 | Mobilization | EACH | 1.000 | 1.000 |
| 0080 | 624.0100 | Water | MGAL | 65.000 | 65.000 |
| 0082 | 628.1504 | Silt Fence | LF | 820.000 | 820.000 |
| 0084 | 628.1520 | Silt Fence Maintenance | LF | 820.000 | 820.000 |
| 0086 | 628.1905 | Mobilizations Erosion Control | EACH | 2.000 | 2.000 |
| 0088 | 628.1910 | Mobilizations Emergency Erosion Control | EACH | 2.000 | 2.000 |
| 0090 | 628.2002 | Erosion Mat Class I Type A | SY | 1,950.000 | 1,950.000 |
| 0092 | 628.7015 | Inlet Protection Type C | EACH | 1.000 | 1.000 |
| 0094 | 628.7504 | Temporary Ditch Checks | LF | 30.000 | 30.000 |
| 0096 | 628.7555 | Culvert Pipe Checks | EACH | 9.000 | 9.000 |
| 0098 | 628.7570 | Rock Bags | EACH | 40.000 | 40.000 |
| 0100 | 634.0614 | Posts Wood 4x6-Inch X 14-FT | EACH | 5.000 | 5.000 |
| 0102 | 638.2102 | Moving Signs Type II | EACH | 5.000 | 5.000 |
| 0104 | 642.5001 | Field Office Type B | EACH | 1.000 | 1.000 |
| 0106 | 643.0300 | Traffic Control Drums | DAY | 1,432.000 | 1,432.000 |
| 0108 | 643.0900 | Traffic Control Signs | DAY | 262.000 | 262.000 |
| 0110 | 643.1000 | Traffic Control Signs Fixed Message | SF | 64.000 | 64.000 |
| 0112 | 643.5000 | Traffic Control | EACH | 1.000 | 1.000 |
| 0114 | 645.0130 | Geotextile Type R | SY | 10.000 | 10.000 |
| 0116 | 646.1020 | Marking Line Epoxy 4-Inch | LF | 50,869.000 | 50,869.000 |
| 0118 | 646.1040 | Marking Line Grooved Wet Ref Epoxy 4-Inch | LF | 76,472.000 | 76,472.000 |
| 0120 | 646.3040 | Marking Line Grooved Wet Ref Epoxy 8-Inch | LF | 2,998.000 | 2,998.000 |
| 0122 | 648.0100 | Locating No-Passing Zones | MI | 7.540 | 7.540 |
| 0124 | 649.0105 | Temporary Marking Line Paint 4-Inch | LF | 43,752.000 | 43,752.000 |
| 0126 | 649.0120 | Temporary Marking Line Epoxy 4-Inch | LF | 47,701.000 | 47,701.000 |
| 0128 | 650.4000 | Construction Staking Storm Sewer | EACH | 2.000 | 2.000 |
| 0130 | 650.8000 | Construction Staking Resurfacing Reference | LF | 38,236.000 | 38,236.000 |
| 0132 | 650.9910 | Construction Staking Supplemental Control (project) 01. 6251-11-70 | LS | 1.000 | 1.000 |
| 0134 | 690.0150 | Sawing Asphalt | LF | 1,200.000 | 1,200.000 |
| 0136 | 690.0250 | Sawing Concrete | LF | 6.000 | 6.000 |
| 0138 | 740.0440 | Incentive IRI Ride | DOL | 28,808.000 | 28,808.000 |
| 0140 | SPV.0060 | Special 01. Salvage and Reinstall Thrie Beam Transition | EACH | 4.000 | 4.000 |
| 0142 | SPV.0180 | Special 01. Restoration | SY | 1,000.000 | 1,000.000 |

## REMOVING ASPHALTIC SURFACE

| STATION | | TO STATION | ROADWAY | 204.0110 REMOVING ASPHALTIC SURFACE SY | 204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS SY | 204.0120 REMOVING ASPHALTIC SURFACE MILLING SY | COMMENTS |
|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | |
| CATEGORY 0010 | | | | | | | |
| 74+87 | - | 103+00 | STH 22 | --- | 100 | 10,530 | |
| 103+00 | - | 133+00 | STH 22 | --- | 195 | 12,550 | |
| 133+00 | - | 163+00 | STH 22 | --- | 30 | 10,810 | |
| 163+00 | - | 193+00 | STH 22 | --- | --- | 10,000 | |
| 193+00 | - | 223+00 | STH 22 | --- | 110 | 12,800 | |
| 223+00 | - | 253+00 | STH 22 | --- | 35 | 10,780 | |
| 253+00 | - | 283+00 | STH 22 | --- | --- | 10,240 | |
| 283+00 | - | 313+00 | STH 22 | 74 | 40 | 11,530 | |
| 313+00 | - | 343+00 | STH 22 | --- | 35 | 11,040 | |
| 343+00 | - | 373+00 | STH 22 | --- | 70 | 11,880 | |
| 373+00 | - | 403+00 | STH 22 | --- | 35 | 11,600 | |
| 403+00 | - | 433+00 | STH 22 | 106 | 30 | 11,800 | |
| 433+00 | - | 457+23 | STH 22 | --- | 35 | 8,300 | |
| | | PROJECT TOTALS | | 180 | 715 | 143,860 | |

## PREPARE FOUNDATION FOR ASPHALTIC PAVING

| STATION | TO | STATION | ROADWAY | 211.0100 LS | COMMENT |
|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | |
| CATEGORY 0010 | | | | | |
| UNDISTRUBUTED | | | STH 22 | 1 | |
| | | PROJECT TOTAL | | 1 | |

## PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS

| STATION | TO | STATION | DIR | ROADWAY | 211.0400 STA | COMMENT |
|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | |
| CATEGORY 0010 | | | | | | |
| 285+24 | - | 286+75 | RT | STH 22 | 2 | |
| 287+47 | - | 290+19 | RT | STH 22 | 4 | |
| 418+65 | - | 420+08 | LT | STH 22 | 3 | |
| 418+65 | - | 420+08 | RT | STH 22 | 3 | |
| 426+20 | - | 427+68 | RT | STH 22 | 2 | |
| 427+83 | - | 429+29 | LT | STH 22 | 3 | |
| | | PROJECT TOTAL | | | 17 | |

## SALVAGED RAIL

| STATION | | TO STATION | DIR | ROADWAY | 614.0920 SALVAGED RAIL LF | 614.0925 SALVAGED GUARDRAIL END TREATMENTS EA |
|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | |
| CATEGORY 0010 | | | | | | |
| 118+47 | - | 118+72 | RT | STH 22 | 25 | --- |
| 118+47 | - | 118+72 | LT | STH 22 | 25 | --- |
| 121+24 | - | 121+49 | RT | STH 22 | 25 | --- |
| 121+24 | - | 121+49 | LT | STH 22 | 25 | --- |
| 286+30 | - | 287+97 | RT | STH 22 | 63 | 2 |
| 419+57 | - | 426+73 | RT | STH 22 | 617 | 2 |
| 419+57 | - | 428+36 | LT | STH 22 | 779 | 2 |
| | | PROJECT TOTALS | | | 1,559 | 6 |

NOTE: "SALVAGED GUARDRAIL END TREATMENTS" ITEM INCLUDES 50 LF OF GUARDRAIL AT EACH END TREATMENT. REMAINING RAIL PAID AS "SALVAGED RAIL".

## EXCAVATION COMMON

| STATION | | TO STATION | ROADWAY | 205.0100 CY | COMMENTS |
|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | |
| CATEGORY 0010 | | | | | |
| 348+03 | - | 348+83 | STH 22 | 355 | TRANSITON CUT AND ASPHALTIC PAVEMENT REMOVAL |
| | | PROJECT TOTALS | | 355 | |

## BACKFILL GRANULAR GRADE 2

| STATION | | TO STATION | ROADWAY | 209.2500 TON | COMMENTS |
|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | |
| CATEGORY 0010 | | | | | |
| 348+03 | - | 348+83 | STH 22 | 220 | FOR TRANSITION CUT BACKFILL IF EXISTING MATERIAL IS UNSUITABLE |
| | | PROJECT TOTALS | | 220 | |

## BASE AGGREGATE DENSE

| STATION | TO | STATION | ROADWAY | 305.0110 3/4-INCH TON | 305.0120 1 1/4-INCH TON | 624.0100 WATER MGAL | COMMENTS |
|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | |
| CATEGORY 0010 | | | | | | | |
| 74+87 | - | 103+00 | STH 22 | 470 | --- | 5 | SHOULDER |
| 103+00 | - | 133+00 | STH 22 | 390 | --- | 4 | SHOULDER |
| 133+00 | - | 163+00 | STH 22 | 520 | --- | 5 | SHOULDER |
| 163+00 | - | 193+00 | STH 22 | 540 | --- | 5 | SHOULDER |
| 193+00 | - | 223+00 | STH 22 | 460 | --- | 5 | SHOULDER |
| 223+00 | - | 253+00 | STH 22 | 510 | --- | 5 | SHOULDER |
| 253+00 | - | 283+00 | STH 22 | 520 | --- | 5 | SHOULDER |
| 283+00 | - | 313+00 | STH 22 | 480 | --- | 5 | SHOULDER |
| 313+00 | - | 343+00 | STH 22 | 480 | --- | 5 | SHOULDER |
| 343+00 | - | 373+00 | STH 22 | 480 | --- | 5 | SHOULDER |
| 373+00 | - | 403+00 | STH 22 | 410 | --- | 4 | SHOULDER |
| 403+00 | - | 433+00 | STH 22 | 480 | --- | 5 | SHOULDER |
| 433+00 | - | 457+23 | STH 22 | 430 | --- | 4 | SHOULDER |
| 348+42 | - | 348+42 | STH 22 | --- | 315 | 3 | FULL DEPTH PAVT REPL |
| | | | PROJECT TOTALS | 6,170 | 315 | 65 | |

## ASPHALTIC ITEMS

| STATION | TO | STATION | ROADWAY | 455.0605 TACK COAT GAL | 460.6224 HMA PAVEMENT 4 MT 58-28 S TON | 465.0105 ASPHALTIC SURFACE TON | COMMENTS |
|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | |
| CATEGORY 0010 | | | | | | | |
| 74+87 | - | 103+00 | STH 22 | 740 | 1,210 | --- | OVERLAY |
| 103+00 | - | 133+00 | STH 22 | 880 | 1,445 | --- | OVERLAY |
| 133+00 | - | 163+00 | STH 22 | 760 | 1,245 | --- | OVERLAY |
| 163+00 | - | 193+00 | STH 22 | 700 | 1,150 | --- | OVERLAY |
| 193+00 | - | 223+00 | STH 22 | 900 | 1,470 | --- | OVERLAY |
| 223+00 | - | 253+00 | STH 22 | 750 | 1,240 | --- | OVERLAY |
| 253+00 | - | 283+00 | STH 22 | 720 | 1,180 | --- | OVERLAY |
| 283+00 | - | 313+00 | STH 22 | 800 | 1,320 | --- | OVERLAY |
| 313+00 | - | 343+00 | STH 22 | 770 | 1,270 | --- | OVERLAY |
| 343+00 | - | 373+00 | STH 22 | 830 | 1,365 | --- | OVERLAY |
| 373+00 | - | 403+00 | STH 22 | 810 | 1,335 | --- | OVERLAY |
| 403+00 | - | 433+00 | STH 22 | 820 | 1,345 | --- | OVERLAY |
| 433+00 | - | 457+23 | STH 22 | 580 | 955 | --- | OVERLAY |
| 285+24 | - | 290+19 | STH 22 | 45 | --- | 80 | SHOULDER WIDENING |
| 348+42 | - | 348+42 | STH 22 | 0 | --- | 150 | CULVERT REPLACEMENT |
| 418+65 | - | 429+29 | STH 22 | 50 | --- | 90 | SHOULDER WIDENING |
| | | | PROJECT TOTALS | 10,155 | 16,530 | 320 | |

## ASPHALTIC SURFACE PATCHING

| STATION | TO | STATION | ROADWAY | 465.0110 TON | COMMENT |
|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | |
| CATEGORY 0010 | | | | | |
| UNDISTRUBUTED | | | STH 22 | 15 | TEMP RAMPING |
| UNDISTRUBUTED | | | STH 22 | 200 | MINOR REPAIRS |
| | | | PROJECT TOTAL | 215 | |

## ASPHALTIC FLUMES

| STATION | DIR | ROADWAY | 465.0315 SY | COMMENTS |
|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | |
| CATEGORY 0010 | | | | |
| 286+80 | RT | STH 22 | 10 | LOCATE TO AVOID CONFLICT WITH PROPOSED GUARDRAIL POSTS |
| | | PROJECT TOTALS | 10 | |

## ASPHALTIC CENTERLINE RUMBLE STRIPS 2-LANE RURAL

| STATION | TO | STATION | ROADWAY | 465.0475 LF | COMMENTS |
|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | |
| CATEGORY 0010 | | | | | |
| 74+87 | - | 103+00 | STH 22 | 2,150 | |
| 103+00 | - | 133+00 | STH 22 | 1,800 | |
| 133+00 | - | 163+00 | STH 22 | 2,500 | |
| 163+00 | - | 193+00 | STH 22 | 2,800 | |
| 193+00 | - | 223+00 | STH 22 | 2,200 | |
| 223+00 | - | 253+00 | STH 22 | 2,600 | |
| 253+00 | - | 283+00 | STH 22 | 3,000 | |
| 283+00 | - | 313+00 | STH 22 | 2,600 | |
| 313+00 | - | 343+00 | STH 22 | 2,600 | |
| 343+00 | - | 373+00 | STH 22 | 2,600 | |
| 373+00 | - | 403+00 | STH 22 | 2,200 | |
| 403+00 | - | 433+00 | STH 22 | 2,300 | |
| 433+00 | - | 457+23 | STH 22 | 2,300 | |
| | | | PROJECT TOTALS | 31,650 | |

## HMA PAVEMENT PWL TEST STRIP

| ROADWAY | 460.0105.S VOLUMETRICS EACH | 460.0110.S DENSITY EACH | COMMENTS |
|---|---|---|---|
| PROJECT 6251-11-70 | | | |
| CATEGORY 0010 | | | |
| STH 22 | 1 | 1 | |
| PROJECT TOTALS | 1 | 1 | |

## HMA MIXTURE ACCEPTANCE

| STATION TO STATION | | | ROADWAY | LOCATION | UNDERLAYING SURFACE | MIXTURE USE | BID ITEM | LAYER DEPTH (IN) | TONNAGE | COMMENT |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | | | | |
| CATEGORY 0010 | | | | | | | | | | |
| 74+87 | - | 103+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 860 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 350 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 103+00 | - | 133+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 525 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 133+00 | - | 163+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 325 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 163+00 | - | 193+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 230 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 193+00 | - | 223+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 550 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 223+00 | - | 253+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 320 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 253+00 | - | 283+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 260 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 283+00 | - | 313+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 400 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 313+00 | - | 343+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 350 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 343+00 | - | 373+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 445 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 373+00 | - | 403+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 415 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 403+00 | - | 433+00 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 920 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 425 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 433+00 | - | 457+23 | STH 22 | DRIVING LANE | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 740 | |
| | | | | SHLDS / SIDE ROADS | MILLED HMA | UPPER | 4 MT 58-28 S | 2 | 215 | DENSITY ACCEPTANCE TESTING BY DEPARTMENT; NOT ELIGIBLE FOR INCENTIVE |
| 348+42 | - | 348+42 | STH 22 | CULVERT REPLACEMENT | BASE AGG | UPPER/LOWER | ASPH SURF | 6 | --- | ACCEPTANCE BY ORDINARY COMPACTION |

PROJECT TOTALS

3

## CONCRETE CURB AND GUTTER

| STATION | | TO STATION | ROADWAY | 204.0150 REMOVING CURB AND GUTTER LF | 601.0557 6-INCH SLOPED 36-INCH TYPE D LF |
|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | |
| CATEGORY 0010 | | | | | |
| 348+40 | - | 348+51 | STH 22 | 15 | 15 |
| PROJECT TOTALS | | | | 15 | 15 |

## MOVING SIGNS

| SIGN | 638.2102 MOVING SIGNS TYPE 2 EACH | 634.0614 POST WOOD 4X6-INCH 14-FT SF | REMARKS |
|---|---|---|---|
| UNDISTRIBUTED | 5 | 5 | IF MOVING SIGNS IS REQUIRED, UTILIZE EXISTING POSTS UNLESS DIRECTED BY ENGINEER TO USE NEW WOOD POSTS |
| PROJECT TOTALS | 5 | 5 | |

## TRAFFIC CONTROL

| PROJECT | 643.5000 TRAFFIC CONTROL PROJECT EA |
|---|---|
| 6251-11-70 | 1 |
| PROJECT TOTALS | 1 |

3

## GUARDRAIL

| STATION | TO | STATION | DIR | ROADWAY | 614.0230 STEEL THRIE BEAM LF | 614.0305 STEEL PLATE BEAM GUARD CLASS A LF | SPV.0060.01 SALVAGE AND REINSTALL THRIE BEAM TRANSISTION EA | 614.2300 MGS GUARDRAIL 3 LF | 614.2610 MGS GUARDRAIL TERMINAL EAT EA | COMMENT |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | | | | |
| CATEGORY 0010 | | | | | | | | | | |
| 117+57 | - | 119+00 | RT | STH 22 | 12.5 | 12.5 | 1 | --- | --- | |
| 118+07 | - | 119+00 | LT | STH 22 | 12.5 | 12.5 | 1 | --- | --- | |
| 120+98 | - | 121+90 | RT | STH 22 | 12.5 | 12.5 | 1 | --- | --- | |
| 120+98 | - | 122+40 | LT | STH 22 | 12.5 | 12.5 | 1 | --- | --- | |
| 286+31 | - | 289+29 | RT | STH 22 | --- | --- | --- | 187.5 | 2 | |
| 419+55 | - | 428+36 | LT | STH 22 | --- | --- | --- | 775.0 | 2 | |
| 419+55 | - | 426+74 | RT | STH 22 | --- | --- | --- | 612.5 | 2 | |
| PROJECT TOTAL | | | | | 50.0 | 50.0 | 4 | 1575.0 | 6 | |

## TRAFFIC CONTROL

| LOCATION | APPROX. SERVICE PERIOD DAYS | 643.0300 DRUMS NO. | 643.0300 DRUMS DAYS | 643.0900 SIGNS NO. | 643.0900 SIGNS DAYS | 643.1000 SIGNS FIXED MESSAGE * SF |
|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | |
| CATEGORY 0010 | | | | | | |
| STH 22 | | 0 | 0 | 0 | 0 | 64 |
| STH 22 (SHOULDER CLOSURE B-58-111) | 14 | 30 | 420 | 6 | 84 | -- |
| STH 22 (SHOULDER CLOSURE CULVERT STA 287+35) | 14 | 17 | 238 | 5 | 70 | -- |
| STH 22 (SHOULDER CLOSURE CULVERT STA 423+59) | 14 | 46 | 644 | 6 | 84 | -- |
| SUBTOTALS | | | 1,302 | | 238 | 64 |
| UNDISTRIBUTED | | | 130 | | 24 | 0 |
| TOTALS | | | 1,432 | | 262 | 64 |

*NOTE: INSTALL G20-57 AT PROJECT LIMITS SEVEN DAYS IN ADVANCE OF CONSTRUCTION

3

## DRAINAGE ITEMS

| STRUCTURE NO | STATION | OFFSET | DIR | ROADWAY | 522.1024 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 24-INCH EA | 524.0124 CULVERT PIPE SALVAGED 24-INCH LF | 524.0624 APRON ENDWALLS FOR CULVERT PIPE SALVAGED 24-INCH EA | 608.0424 STORM SEWER REINFORCED CONCRETE CLASS IV 24-INCH | 611.0615 INLET COVERS TYPE F EA | 611.3004 INLETS 4-FT DIAMETER EA | 650.4000 CONSTRUCTION STAKING STORM SEWER EA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | | | | | |
| CATEGORY 0010 | | | | | | | | | | | |
| EX | 423+54.64 | 85.17' | RT | STH 22 | --- | --- | 1 | --- | --- | --- | --- |
| EX | 423+63.72 | 101.93' | LT | STH 22 | --- | 8 | 1 | --- | --- | --- | --- |
| 1 | 348+55.00 | 43.00' | LT | STH 22 | --- | --- | --- | --- | 1 | 1 | 1 |
| 2 | 348+40.45 | 45.81' | RT | STH 22 | 1 | --- | --- | 84 | --- | --- | 1 |
| | | | | PROJECT TOTALS | 1 | 8 | 2 | 84 | 1 | 1 | 2 |

## EROSION CONTROL

| STATION | | TO STATION | ROADWAY | 628.1504 SILT FENCE LF | 628.1520 SILT FENCE MAINTENANCE LF | 628.1905 MOBILIZATIONS EROSION CONTROL EA | 628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EA | 628.7015 INLET PROTECTION TYPE C EA | 628.7504 TEMPORARY DITCH CHECKS LF | 628.7555 CULVERT PIPE CHECKS EA | 628.7570 ROCK BAGS EA | 645.0130 GEOTEXTILE TYPE R SY | 606.0100 RIPRAP LIGHT CY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | | | | | | | |
| CATEGORY 0010 | | | | | | | | | | | | | |
| 285+24 | - | 290+19 | STH 22 | 170 | 170 | 2 | 2 | --- | 15 | 3 | --- | --- | --- |
| 348+03 | - | 348+83 | STH 22 | --- | --- | | | 1 | --- | --- | --- | 10 | 2 |
| 418+65 | - | 429+29 | STH 22 | 500 | 500 | | | --- | --- | 3 | 20 | --- | --- |
| UNDISTRIBUTED | | | | 150 | 150 | --- | --- | --- | 15 | 3 | 20 | --- | --- |
| PROJECT TOTALS | | | | 820 | 820 | 2 | 2 | 1 | 30 | 9 | 40 | 10 | 2 |

3

## RESTORATION

| STATION TO STATION | DIR | ROADWAY | LOCATION | SPV.0180.01 RESTORATION SY | FOR INFORMATION ONLY SEED WATER MGAL | TOPSOIL SY | EROSION MAT CLASS I TYPE A SY | FERTILIZER TYPE B CWT | SEEDING MIXTURE #30 LB |
|---|---|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | | | |
| CATEGORY 0010 | | | | | | | | | |
| 348+40 | LT/RT | STH 22 | SS INLET AND OUTFALL | 100 | 2 | 100 | 100 | 0.1 | 2 |
| 423+59 | LT/RT | STH 22 | RESET CULVERT ENDWALLS | 320 | 7 | 320 | 320 | 0.2 | 6 |
| UNDISTRIBUTED | | STH 22 | | 580 | 13 | 580 | 580 | 0.4 | 11 |
| | | PROJECT TOTALS | | 1,000 | * | * | * | * | * |

*NOTE: TOPSOIL, SEED, FERTILIZER, EROSION MAT, AND WATER PAID UNDER RESTORATION ITEM.

## BARRIER SYSTEM GRADING SHAPING FINISHING

| STATION TO STATION | | | DIR | ROADWAY | 614.0010 BARRIER SYSTEM GRADING SHAPING FINISHING EA | FOR INFORMATION ONLY SEED WATER MGAL | TOPSOIL SY | 628.2002 EROSION MAT CLASS I TYPE A SY | FOR INFORMATION ONLY FERTILIZER TYPE B CWT | SEEDING MIXTURE #30 LB |
|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | | | | |
| CATEGORY 0010 | | | | | | | | | | |
| 285+24 | - | 290+19 | RT | STH 22 | 1 | 8 | 340 | 340 | 0.2 | 6 |
| 418+40 | - | 429+33 | LT | STH 22 | 1 | 14 | 620 | 620 | 0.4 | 11 |
| 418+40 | - | 427+68 | RT | STH 22 | 1 | 22 | 990 | 990 | 0.6 | 18 |
| | | | | PROJECT TOTALS | 3 | ** | ** | 1,950 | ** | ** |

**NOTE: TOPSOIL, SEED, WATER, AND FERTILIZER ITEMS FOR RESTORATION OF DISTURBED AREAS ADJACENT TO BEAM GUARD AND EAT APPROACHES PAID UNDER "BARRIER SYSTEM GRADING SHAPING FINISHING" ITEM.

3

## PAVEMENT MARKING

| STATION TO STATION | | | ROADWAY | 646.1020 MARKING LINE EPOXY 4-INCH (YELLOW) LF | 646.1040 MARKING LINE GROOVED WET REF EPOXY 4-INCH (WHITE) LF | 648.0100 LOCATING NO PASSING ZONES MI | 649.0105 TEMPORARY MARKING LINE PAINT 4-INCH (YELLOW) LF | 649.0120 TEMPORARY MARKING LINE EPOXY 4-INCH (YELLOW) LF | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | | | |
| CATEGORY 0010 | | | | | | | | | |
| 74+87 | - | 103+00 | STH 22 | 4,775 | 5,626 | 0.53 | 4,583 | 4,775 | |
| 103+00 | - | 133+00 | STH 22 | 5,941 | 6,000 | 0.57 | 5,927 | 5,941 | |
| 133+00 | - | 163+00 | STH 22 | 1,747 | 6,000 | 0.57 | 1,237 | 1,747 | |
| 163+00 | - | 193+00 | STH 22 | 1,922 | 6,000 | 0.57 | 1,412 | 1,922 | |
| 193+00 | - | 223+00 | STH 22 | 3,653 | 6,000 | 0.57 | 3,285 | 3,653 | |
| 223+00 | - | 253+00 | STH 22 | 750 | 6,000 | 0.57 | 240 | 750 | |
| 253+00 | - | 283+00 | STH 22 | 1,488 | 6,000 | 0.57 | 978 | 1,488 | |
| 283+00 | - | 313+00 | STH 22 | 4,726 | 6,000 | 0.57 | 4,460 | 4,726 | |
| 313+00 | - | 343+00 | STH 22 | 2,689 | 6,000 | 0.57 | 2,179 | 2,689 | |
| 343+00 | - | 373+00 | STH 22 | 5,441 | 6,000 | 0.57 | 5,314 | 5,441 | |
| 373+00 | - | 403+00 | STH 22 | 6,000 | 6,000 | 0.57 | 6,000 | 6,000 | |
| 403+00 | - | 433+00 | STH 22 | 3,723 | 6,000 | 0.57 | 3,291 | 3,723 | |
| 433+00 | - | 457+23 | STH 22 | 4,846 | 4,846 | 0.46 | 4,846 | 4,846 | |
| | | | STH 22 | 3,168 | -- | 0.30 | -- | -- | FOR LOCATING NO PASSING ZONE BEYOND PROJECT LIMITS |
| | | | PROJECT TOTALS | 50,869 | 76,472 | 7.54 | 43,752 | 47,701 | |

NOTE: TEMPORARY PAVEMENT MARKING PAINT APPLIED TO MILLED SURFACE
NOTE: TEMPORARY MARKING EPOXY FOR APPLICATION BEFORE CENTER LINE RUMBLE STRIP PLACED. PLACE 12.5 FT SKIPS.
NOTE: PAVEMENT MARKING EPOXY 4-INCH (YELLOW) FOR APPLICATION AFTER CENTER LINE RUMBLE STRIP PLACED

## PAVEMENT MARKING

| STATION TO STATION | | | ROADWAY | 646.3040 MARKING LINE GROOVED WET REF EPOXY 8-INCH (WHITE) LF |
|---|---|---|---|---|
| CATEGORY 0010 | | | | |
| 79+26 | - | 81+18 | STH 22 | 192 |
| 103+10 | - | 105+06 | STH 22 | 196 |
| 122+50 | - | 124+30 | STH 22 | 180 |
| 126+12 | - | 127+74 | STH 22 | 162 |
| 130+24 | - | 132+16 | STH 22 | 192 |
| 133+68 | - | 135+53 | STH 22 | 185 |
| 196+65 | - | 198+50 | STH 22 | 185 |
| 206+53 | - | 207+53 | STH 22 | 100 |
| 208+80 | - | 210+80 | STH 22 | 200 |
| 231+74 | - | 233+83 | STH 22 | 209 |
| 296+61 | - | 298+87 | STH 22 | 226 |
| 321+32 | - | 323+07 | STH 22 | 175 |
| 345+00 | - | 346+93 | STH 22 | 193 |
| 348+61 | - | 350+75 | STH 22 | 214 |
| 377+73 | - | 379+65 | STH 22 | 192 |
| 432+90 | | 434+87 | STH 22 | 197 |
| | | | TOTAL | 2,998 |

## CONSTRUCTION STAKING

| STATION TO STATION | | | LOCATION | 650.8000 CONSTRUCTION STAKING RESURFACING REFERENCE LF |
|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | |
| CATEGORY 0010 | | | | |
| 74+87 | - | 457+23 | STH 13 | 38,236 |
| | | | PROJECT TOTAL | 38,236 |

NOTE: STORM SEWER STAKING IN RESPECTIVE TABLE

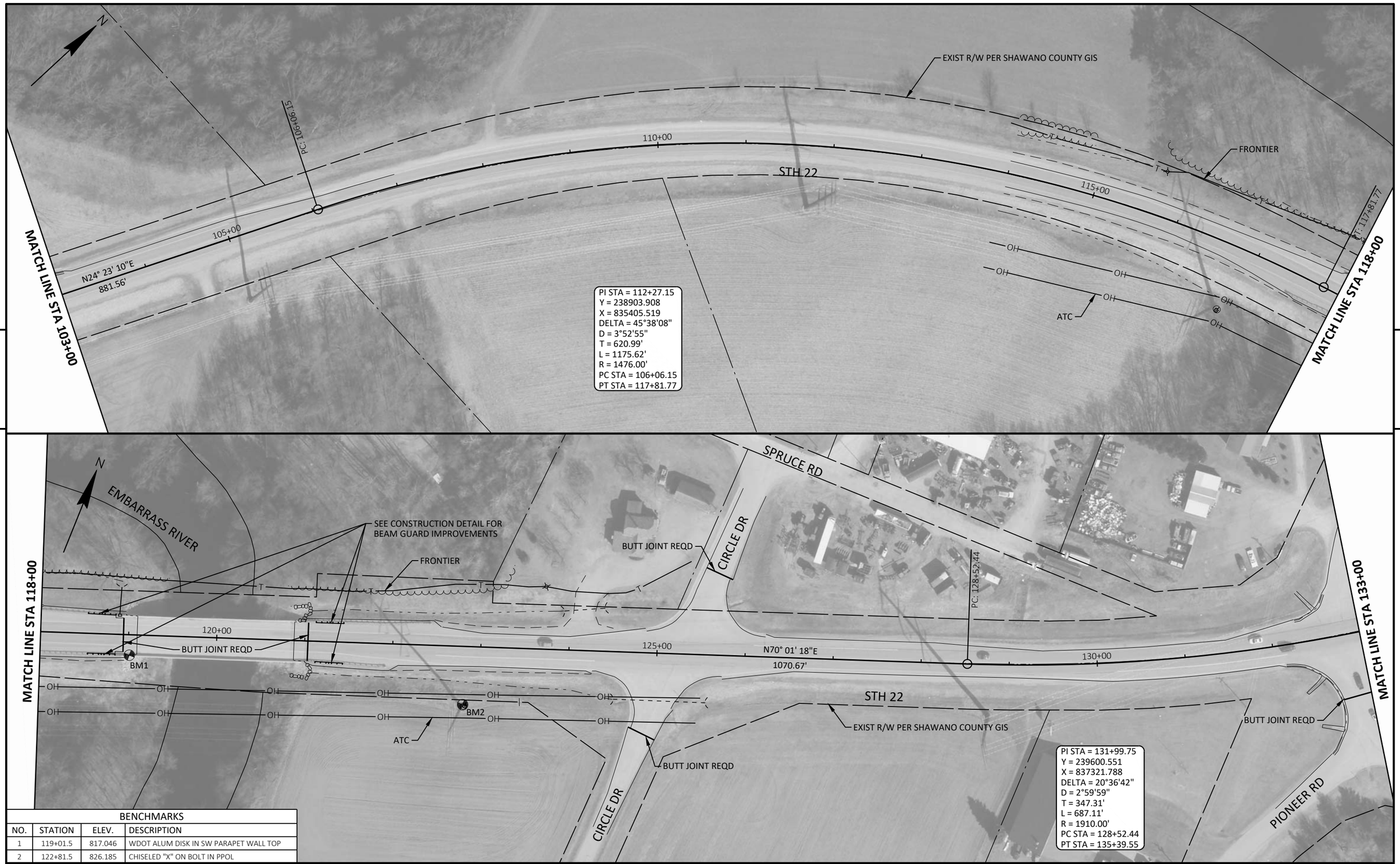
## SAWING

| STATION | TO | STATION | DIR | ROADWAY | 690.0150 ASPHALT LF | 690.0250 CONCRETE LF | COMMENT |
|---|---|---|---|---|---|---|---|
| PROJECT 6251-11-70 | | | | | | | |
| CATEGORY 0010 | | | | | | | |
| 285+24 | - | 286+75 | RT | STH 22 | 160 | --- | |
| 287+47 | - | 290+19 | RT | STH 22 | 280 | --- | |
| 348+03 | - | 348+83 | - | STH 22 | 150 | 6 | |
| 418+65 | - | 420+08 | LT | STH 22 | 150 | --- | |
| 418+65 | - | 420+08 | RT | STH 22 | 150 | --- | |
| 426+20 | - | 427+68 | RT | STH 22 | 155 | --- | |
| 427+84 | - | 429+29 | LT | STH 22 | 155 | --- | |
| | | | PROJECT TOTAL | | 1,200 | 6 | |


| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 23 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050201-pn

PLOT DATE : 1/16/2020 12:35 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT




| BENCHMARKS | | | |
|---|---|---|---|
| NO. | STATION | ELEV. | DESCRIPTION |
| 1 | 119+01.5 | 817.046 | WDOT ALUM DISK IN SW PARAPET WALL TOP |
| 2 | 122+81.5 | 826.185 | CHISELED "X" ON BOLT IN PPOL |

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 24 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050202-pn

PLOT DATE : 1/21/2020 9:45 AM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44


5

5

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 25 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050203-pn

PLOT DATE : 1/16/2020 12:36 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44

MATCH LINE STA 163+00

PT: 165+63.70

EXIST R/W PER SHAWANO COUNTY GIS

STH 22

165+00 | 170+00 | 175+00

N50° 12' 52"E
2652.42'

PI STA = 163+53.09
Y = 241657.131
X = 839722.085
DELTA = 0°48'16"
D = 0°11'28"
T = 210.62'
L = 421.23'
R = 30000.00'
PC STA = 161+42.47
PT STA = 165+63.70

MATCH LINE STA 178+00

5

5

MATCH LINE STA 178+00

EXIST R/W PER SHAWANO COUNTY GIS

PC: 192+16.12

STH 22

180+00 | 185+00 | 190+00

N50° 12' 52"E
2652.42'

MATCH LINE STA 193+00

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 26 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050204-pn

PLOT DATE : 1/16/2020 12:36 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44


| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 27 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050205-pn

PLOT DATE : 1/16/2020 12:36 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44


5

5

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 28 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050206-pn

PLOT DATE : 1/16/2020 12:36 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44


5

5

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 29 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050207-pn

PLOT DATE : 1/16/2020 12:36 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

| BENCHMARKS | | | |
|---|---|---|---|
| NO. | STATION | ELEV. | DESCRIPTION |
| 3 | 287+67.1 | 858.992 | 60D NAIL IN PPOL #26-15-16 4/26 |
| 4 | 285+72.1 | 854.417 | 60D NAIL IN PPOL #26-15-16 24/24 |


5

5

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 30 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050208-pn

PLOT DATE : 1/16/2020 12:36 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44


5

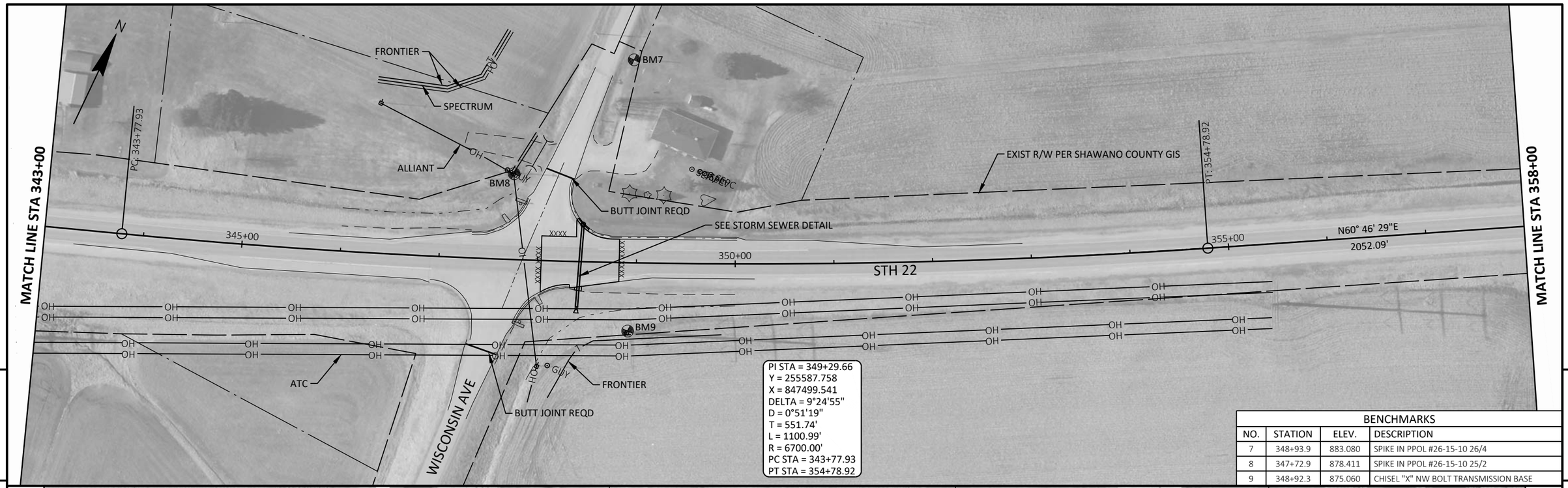
5

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 31 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050209-pn

PLOT DATE : 1/16/2020 12:36 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44




| BENCHMARKS | | | |
|---|---|---|---|
| NO. | STATION | ELEV. | DESCRIPTION |
| 7 | 348+93.9 | 883.080 | SPIKE IN PPOL #26-15-10 26/4 |
| 8 | 347+72.9 | 878.411 | SPIKE IN PPOL #26-15-10 25/2 |
| 9 | 348+92.3 | 875.060 | CHISEL "X" NW BOLT TRANSMISSION BASE |


| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 32 E |
|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050210-pn
PLOT DATE : 1/16/2020 12:37 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44


5

5

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 33 | E |
|---|---|---|---|---|---|


FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050211-pn
PLOT DATE : 1/16/2020 12:37 PM
PLOT BY : ANDY WESTBROOK
PLOT NAME :
PLOT SCALE : 1 IN:100 FT
WISDOT/CADDS SHEET 44

MATCH LINE STA 403+00

EXIST R/W PER SHAWANO COUNTY GIS

PT: 408+73.50

405+00

410+00

N61° 11' 23"E
2060.11'

415+00

STH 22

MATCH LINE STA 418+00

PI STA = 402+80.50
Y = 257054.286
X = 852479.064
DELTA = 30°22'47"
D = 2°29'59"
T = 622.29'
L = 1215.28'
R = 2292.00'
PC STA = 396+58.22
PT STA = 408+73.50

5

5

MATCH LINE STA 418+00

BM5

RESET 24" RCP ENDWALL AND ONE SECTION OF CULVERT

EXIST R/W PER SHAWANO COUNTY GIS

FRONTIER

SLOPE INTERCEPT, TYP

PC: 429+33.61

BUTT JOINT REQD

ROSEBROOK RD

420+00

N61° 11' 23"E
2060.11'

425+00

430+00

BM6

STH 22

ALLIANT

SEE CONSTRUCTION DETAIL FOR BEAM GUARD IMPROVEMENTS

CULVERT PIPE CHECK

WE ENERGIES

SPECTRUM

EXIST R/W PER AS-BUILT MAPPING

RESET 24" RCP ENDWALL

SLOPE INTERCEPT, TYP

MATCH LINE STA 433+00

PI STA = 433+37.08
Y = 258541.396
X = 855182.972
DELTA = 16°01'56"
D = 1°59'59"
T = 403.47'
L = 801.67'
R = 2865.00'
PC STA = 429+33.61
PT STA = 437+35.28

BENCHMARKS

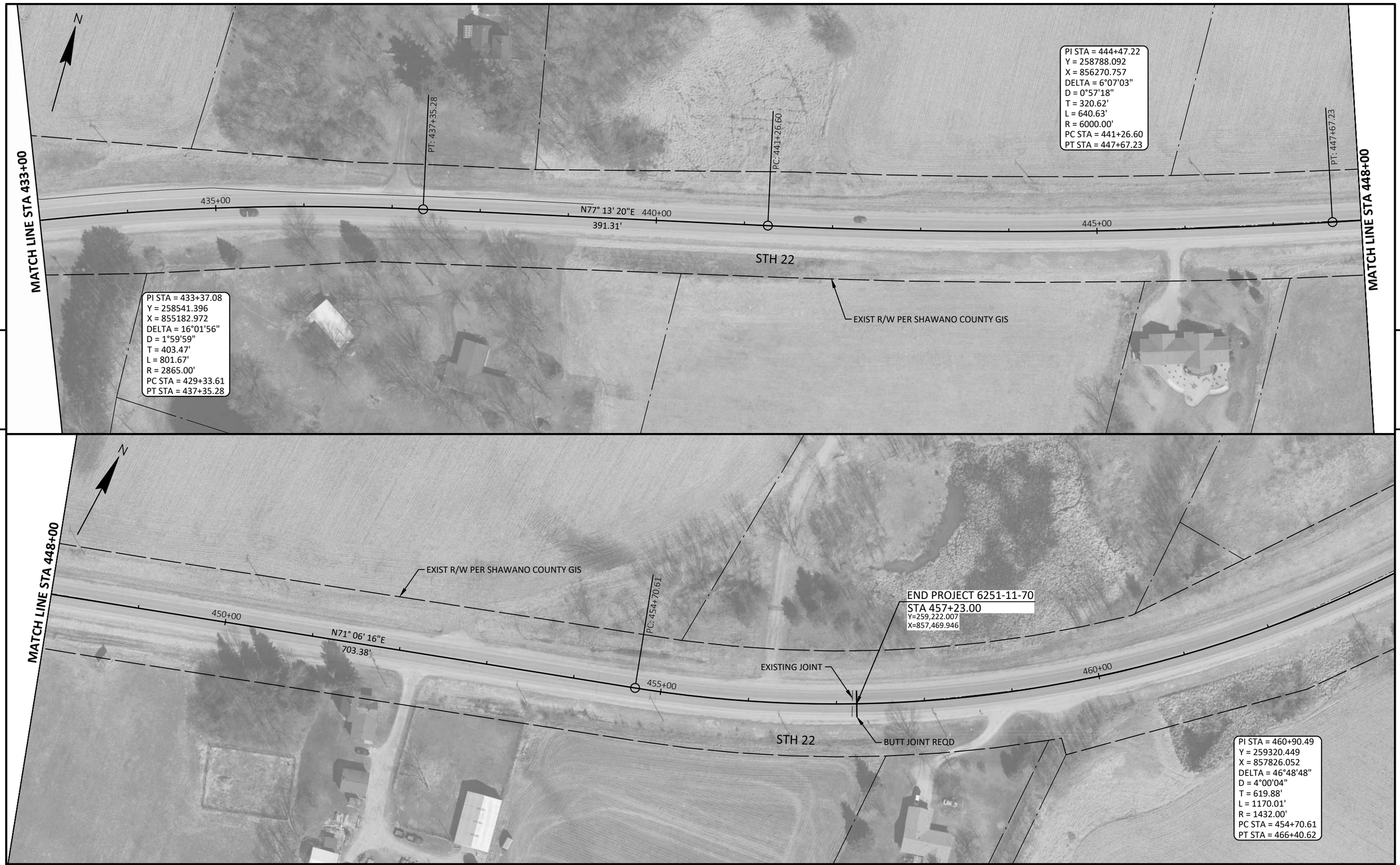
| NO. | STATION | ELEV. | DESCRIPTION |
|---|---|---|---|
| 5 | 419+05.1 | 877.335 | 60D NAIL IN 12" RED PINE |
| 6 | 428+47.6 | 886.832 | BM MAG NAIL SET IN CMCP |

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 34 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050212-pn

PLOT DATE : 1/16/2020 12:37 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

WISDOT/CADDS SHEET 44



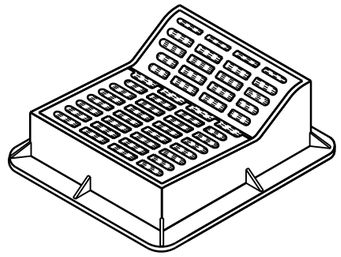

| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | PLAN: STH 22 | SHEET 35 | E |
|---|---|---|---|---|---|

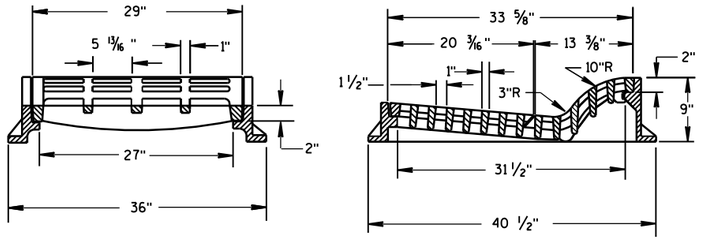
FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-050201-PN.DWG
LAYOUT NAME - 62511170-050213-pn

PLOT DATE : 1/16/2020 12:37 PM PLOT BY : ANDY WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:100 FT

# Standard Detail Drawing List

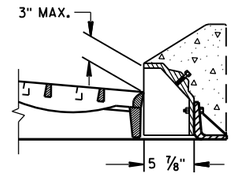
| | |
|---|---|
| 08A05-19C | INLET COVERS TYPE F, HM, HM-S, S, T, V, HM-GJ, & HM-GJ-S |
| 08C06-02 | INLETS 3-FT AND 4-FT DIAMETER |
| 08D01-20A | CONCRETE CURB & GUTTER |
| 08D04-05 | CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES |
| 08E08-03 | TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS |
| 08E09-06 | SILT FENCE |
| 08E10-02 | INLET PROTECTION TYPE A, B, C AND D |
| 08E15-01 | CULVERT PIPE CHECK |
| 08F01-11 | APRON ENDWALLS FOR CULVERT PIPE |
| 08F04-07 | JOINT TIES FOR CONCRETE PIPE  AND CONCRETE COLLAR DETAIL |
| 13A11-03A | 2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING |
| 13A11-03B | 2-LANE RURAL CENTER LINE RUMBLE STRIP, MILLING |
| 13C19-02 | HMA LONGITUDINAL JOINTS |
| 14B15-11A | STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS |
| 14B15-11B | STEEL PLATE BEAM GUARD, CLASS "A" INSTALLATION & ELEMENTS |
| 14B15-11C | STEEL PLATE BEAM GUARD, CLASS "A", INSTALLATION & ELEMENTS |
| 14B20-11A | STEEL THRIE BEAM STRUCTURE APPROACH |
| 14B42-06A | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B42-06B | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B42-06C | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B42-06D | MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL |
| 14B44-04A | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS) |
| 14B44-04B | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS) |
| 14B44-04C | MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS) |
| 15C04-05 | TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC |
| 15C08-19A | LONGITUDINAL MARKING (MAINLINE) |
| 15C08-19B | PAVEMENT MARKING (TURN LANES) |
| 15C08-19C | PAVEMENT MARKING (TURN LANES) |
| 15C11-07B | CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS |
| 15C12-07 | TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION |
| 15C19-06A | MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY |
| 15D12-07A | TRAFFIC CONTROL, LANE CLOSURE |
| 15D28-03 | TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED  ROADWAY |
| 15D38-02A | TEMPORARY TRAFFIC CONTROL SIGN MOUNTING |
| 15D38-02B | ATTACHMENT OF SIGNS TO POSTS |






## TYPE "F"

USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.




## ALTERNATIVE CURB BOX FOR TYPE "HM" COVER

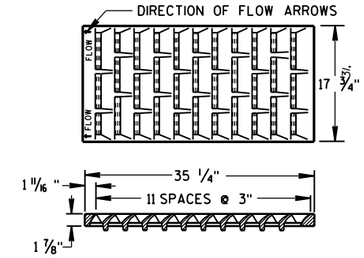
USE WITH TYPES G & J CONCRETE CURB & GUTTER, 30 INCH
NOTED AS TYPE HM-GJ ON DRAINAGE TABLE

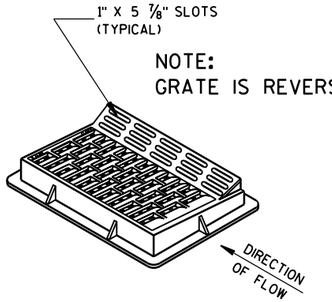
NOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM-GJ" COVER
NOTED AS TYPE HM-GJ-S ON DRAINAGE TABLE

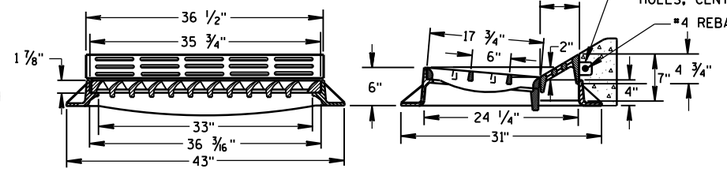
## GENERAL NOTES

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

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



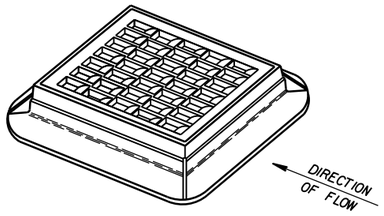



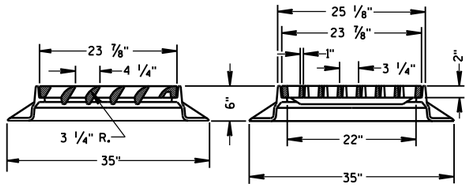




## TYPE "HM"

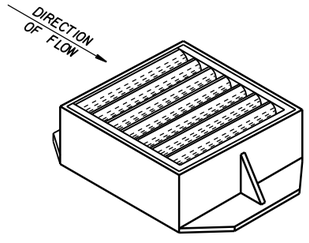
USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.

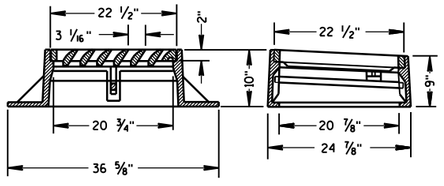
NOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM" COVER
NOTED AS TYPE HM-S ON DRAINAGE TABLE



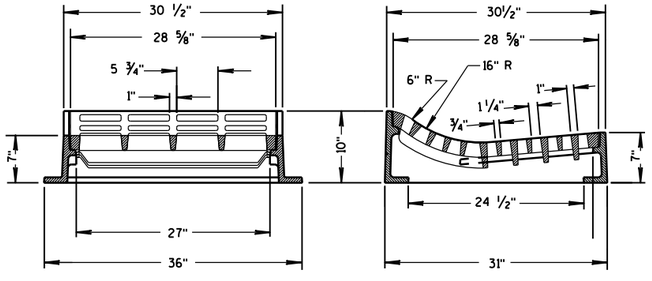




## TYPE "S"



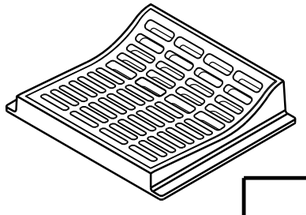




## TYPE "V"




## TYPE "T"

USE WITH TYPES R & T CONCRETE CURB & GUTTER, 36 INCH.



## INLET COVERS
## TYPE F, HM, HM-S, S, T, V, HM-GJ, & HM-GJ-S

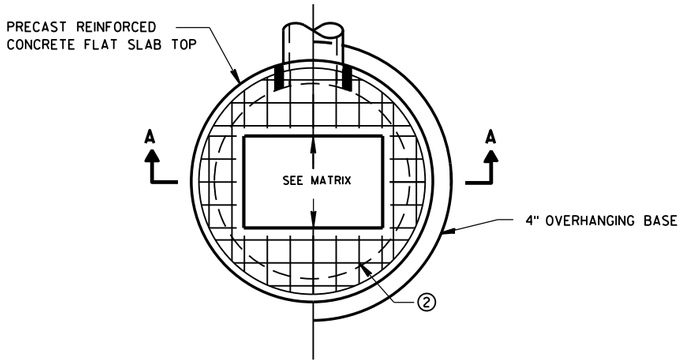
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
11/27/2013
DATE

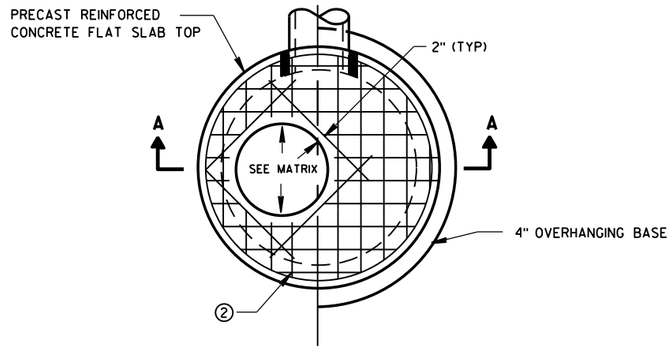
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

FHWA

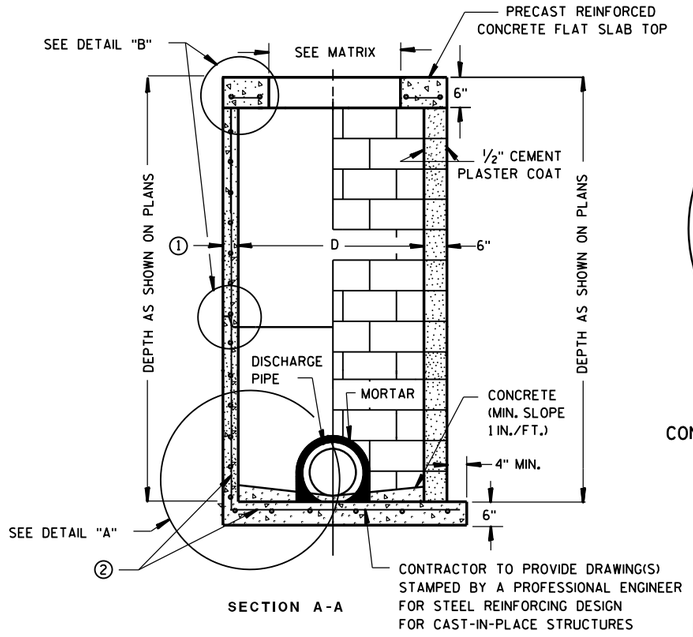

6
S.D.D. 8 A 5-19c




PLAN VIEW RECTANGULAR OPENING




PLAN VIEW CIRCULAR OPENING

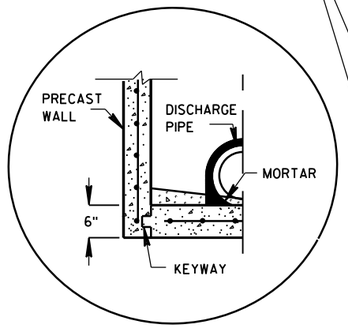



SECTION A-A

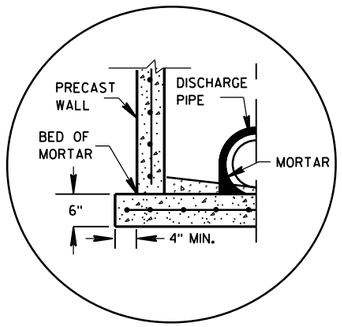
**PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE**

**CONCRETE BLOCK WITH CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ②**

**CIRCULAR INLETS W/ FLAT TOP**

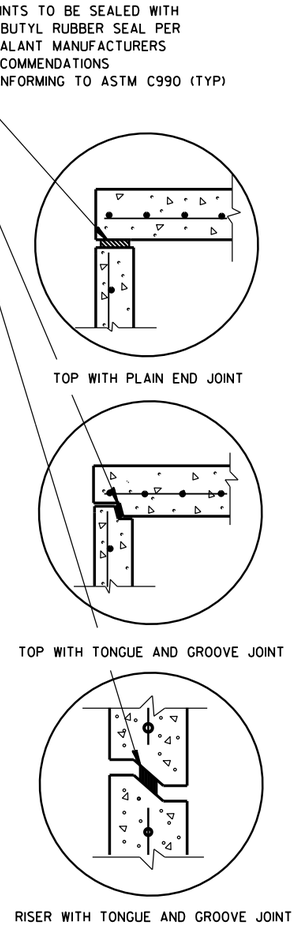



PRECAST REINFORCED
CONCRETE WITH INTEGRAL BASE OPTION




SEPARATE PRECAST REINFORCED
CONCRETE BASE OPTION

**DETAIL "A"**




TOP WITH PLAIN END JOINT

TOP WITH TONGUE AND GROOVE JOINT

RISER WITH TONGUE AND GROOVE JOINT

**DETAIL "B"**

## GENERAL NOTES

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

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

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

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

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

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

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M199.

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

4" OVERHANGING BASES ARE REQUIRED FOR ALL CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

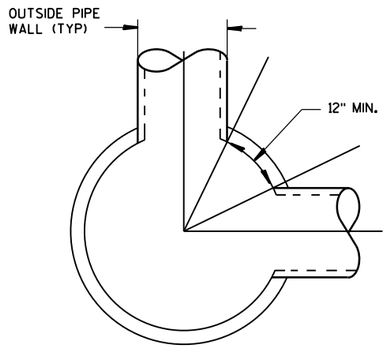
FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

① MINIMUM WALL THICKNESS SHALL BE 4-IN FOR 3-FT DIAMETER AND 5-IN FOR 4-FT DIAMETER PRECAST INLETS.

② FOR PRECAST CATCH BASINS PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.

## INLET COVER OPENING MATRIX

| | INLET COVER TYPE | ALL A'S | ALL B'S | BW | C | F | ALL H'S | S | T | V | WM | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| INLET SIZE | OPENING SIZE (FT) | | | | | | | | | | | |
| 3-FT | 2 DIA. | | | | X | | | | | | | X |
| | 2X2 | X | X | | | | | X | | X | | |
| 4-FT | 2 DIA. | | | | X | | | | | | | X |
| | 2X2 | X | X | | | | | X | | X | | |
| | 2X2.5 | | | X | | | | X | X | X | X | |
| | 2X3 | | | | | | X | | | | | |
| | 2.5X3 | | | | | X | | | | | | |




**DETAIL "C"**

## PIPE MATRIX

| INLET SIZE | MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES | |
|---|---|---|
| | 180° SEPARATION (IN) | 90° SEPARATION (IN) |
| 3-FT | 15 | 12 |
| 4-FT | 24 | 18 |

**INLETS 3-FT AND 4-FT DIAMETER**

INLETS 3-FT
AND 4-FT DIAMETER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept.. 2016 — DATE
/S/ Rodney Taylor
ROADWAY STANDARDS | UNIT SUPERVI — ENT
FHWA

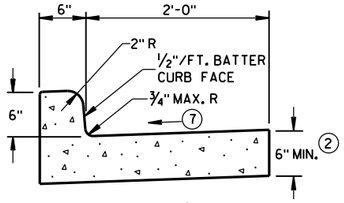


6

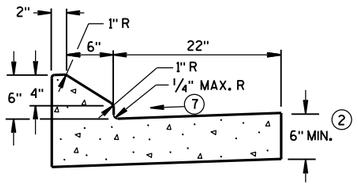
S.D.D. 8 C 6-2

6

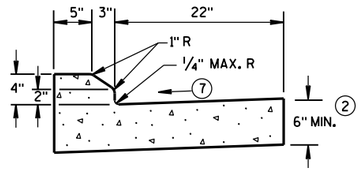
S.D.D. 8 C 6-2



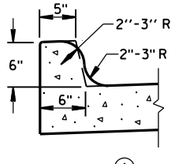

TYPES A (1) & D



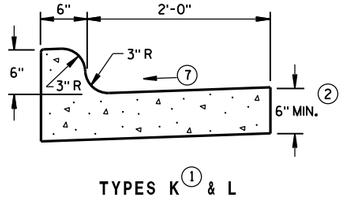

6" SLOPED CURB TYPES G (1) & J




4" SLOPED CURB TYPES G (1) & J

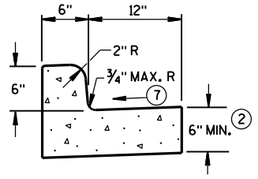



TYPES K (1) & L
(OPTIONAL CURB SHAPE)



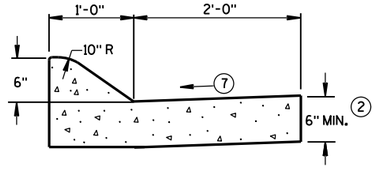

TYPES K (1) & L

CONCRETE CURB & GUTTER 30"

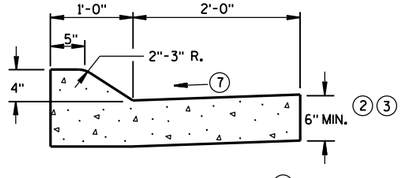



TYPES A (1) & D

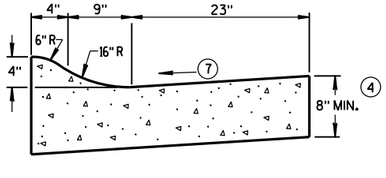
CONCRETE CURB & GUTTER 18"




6" SLOPED CURB TYPES A (1) & D

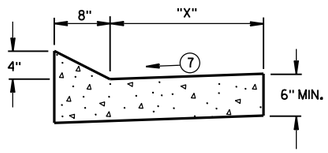



4" SLOPED CURB TYPES A (1) & D




4" SLOPED CURB TYPES R (1) & T (5)

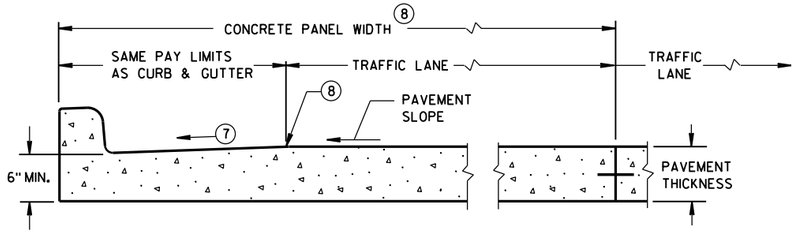
CONCRETE CURB & GUTTER 36"



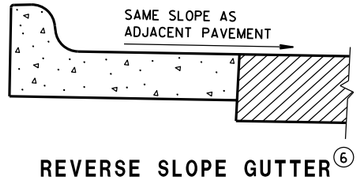

TYPES TBT & TBTT (1)

CONCRETE CURB & GUTTER

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




PARTIAL SECTION OF PAVEMENT *
WITH INTEGRAL CURB & GUTTER




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

## GENERAL NOTES

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

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

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

WHERE THE TRANSVERSE JOINTS IN THE PAVEMENT ARE REQUIRED TO BE SEALED, THE JOINTS IN THE INTEGRAL CURB AND GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME TYPE OF SEALANT. THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB AND GUTTER.

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

(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K, R AND TBTT.

(2) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(3) USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.

(4) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(5) THE FACE OF CURB IS 6" FROM THE BACK OF CURB.

(6) WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.

(7) USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.

(8) INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.

### PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

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

* BIKE LANE IS NOT SHOWN.

CONCRETE CURB & GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



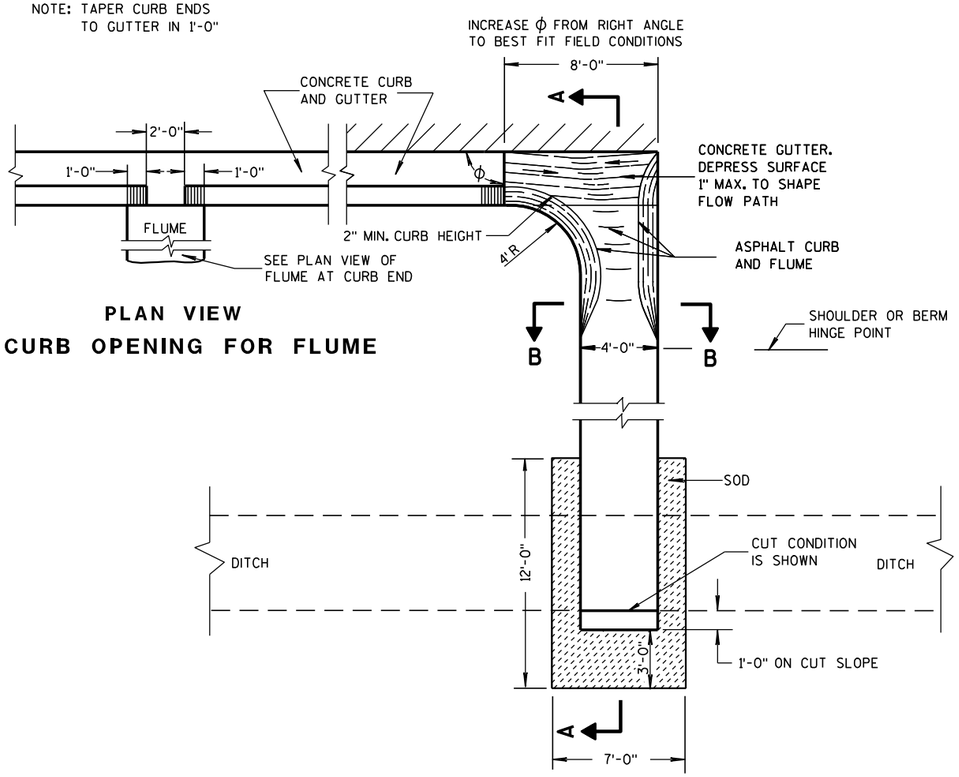
6

S.D.D. 8 D 1-20a

6

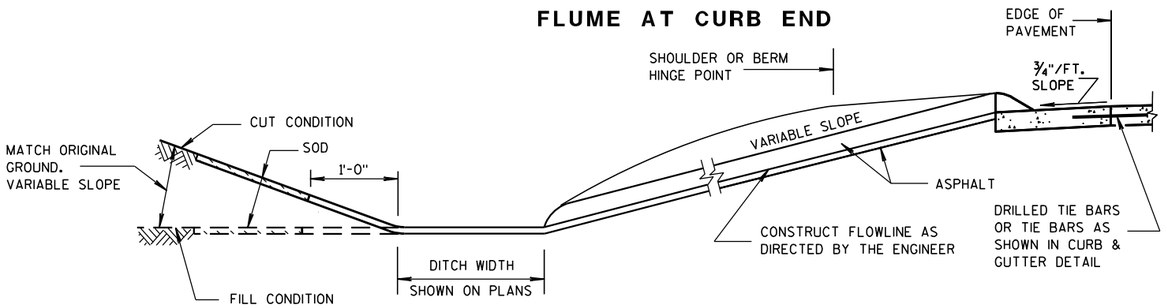
S.D.D. 8 D 1-20a

## ASPHALTIC FLUME

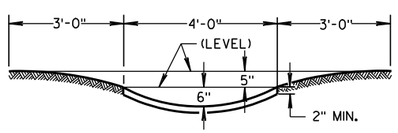



PLAN VIEW
CURB OPENING FOR FLUME

PLAN VIEW
FLUME AT CURB END




SECTION A-A




SECTION B-B

## GENERAL NOTES

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

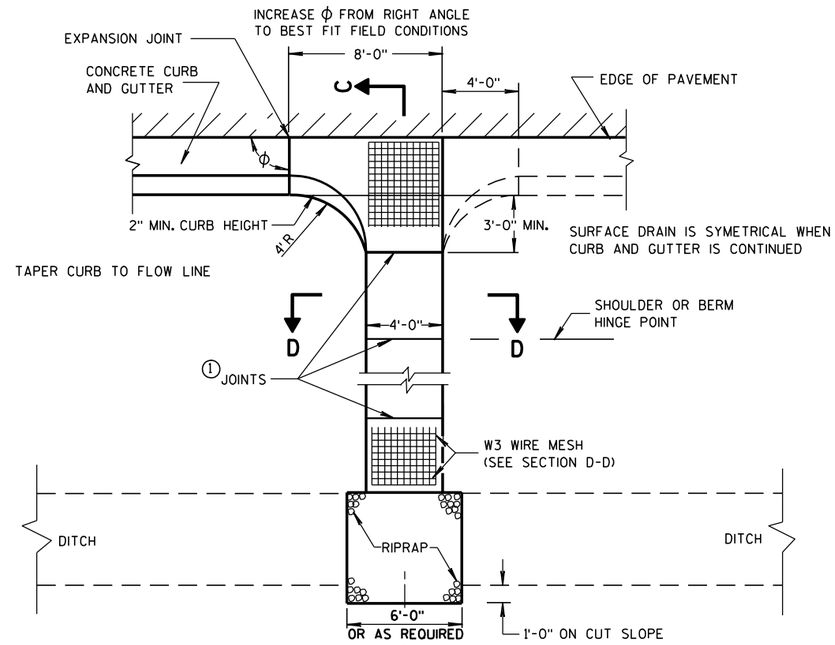
WELDED STEEL WIRE FABRIC SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATION M55.

① JOINTS SHALL BE $\frac{1}{8}$ TO $\frac{1}{4}$ INCH WIDE BY $1\frac{1}{2}$ INCHES DEEP AND SPACED AT UNIFORM INTERVALS OF APPROXIMATELY 4 FEET.

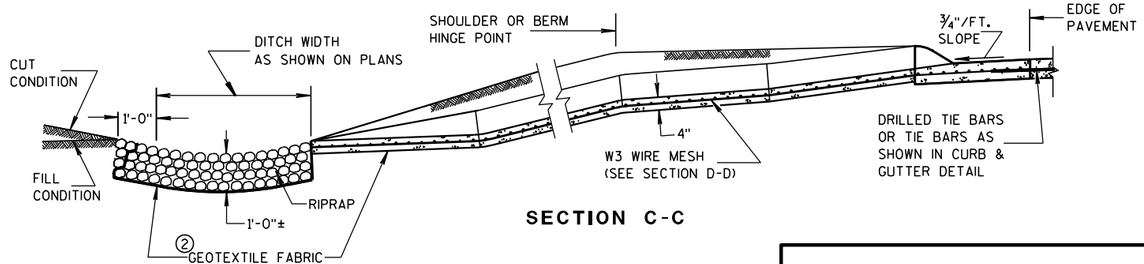
② GEOTEXTILE FABRIC TYPE "R" SHALL UNDERLAY THE FULL LENGTH AND WIDTH OF THE CONCRETE SURFACE DRAIN AND RIPRAP.

③ CONCRETE SURFACE DRAIN WITHOUT CURB AND GUTTER MAY BE USED ON BACKSLOPES WHEN SPECIFIED

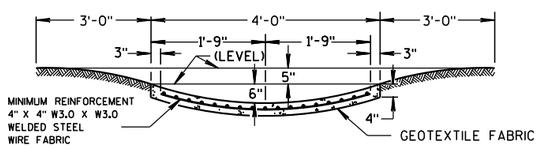
## ③ CONCRETE SURFACE DRAIN




PLAN VIEW




SECTION C-C




SECTION D-D

# CONCRETE SURFACE DRAINS & ASPHALTIC FLUMES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
9-4-08 DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER
MENT

FHWA

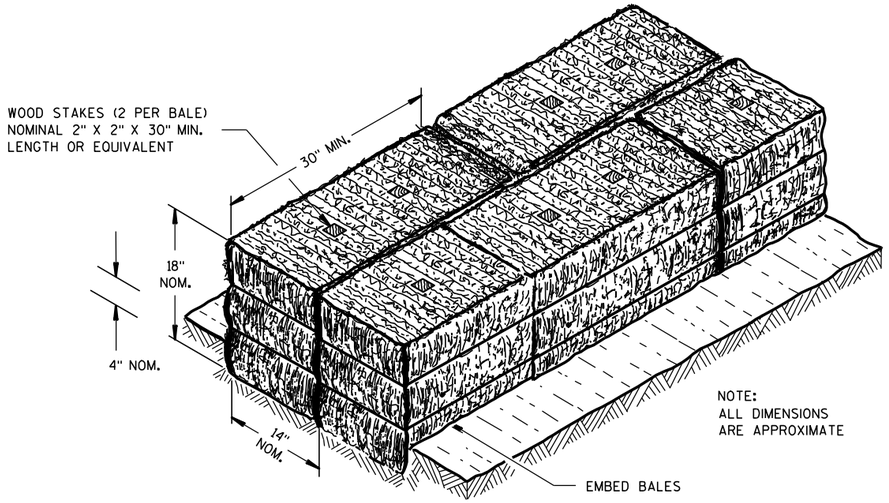


6

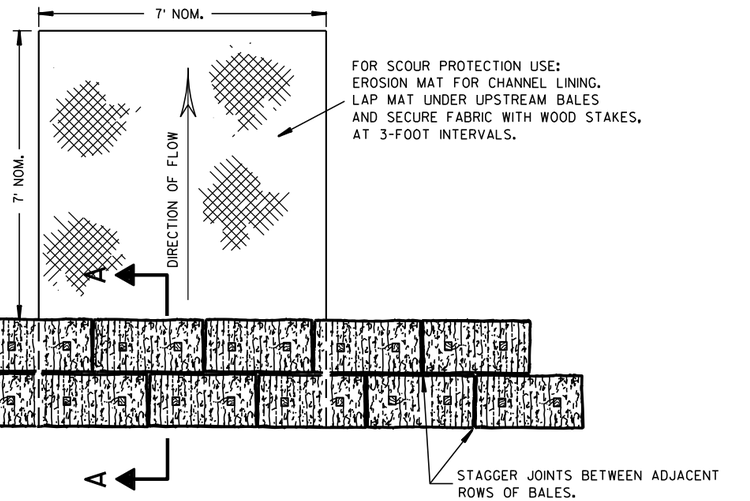
S.D.D. 8 D 4-5

6

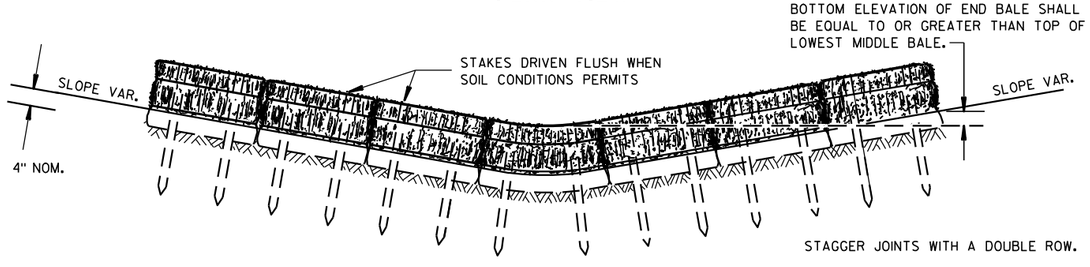
S.D.D. 8 D 4-5




**SECTION A-A**




**PLAN VIEW**



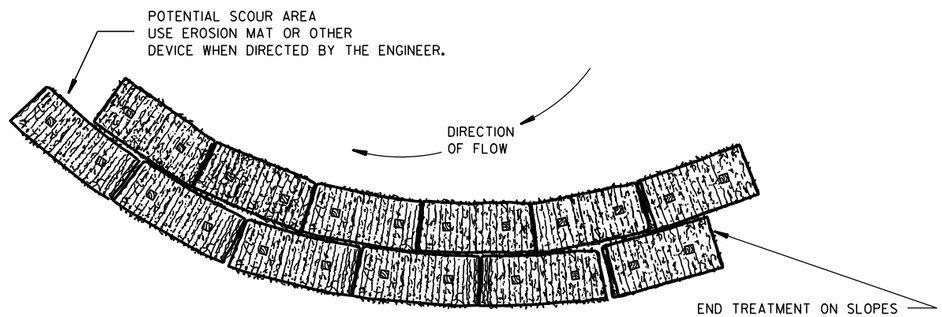

**FRONT ELEVATION**

## TEMPORARY DITCH CHECK USING EROSION BALES ①

## GENERAL NOTES

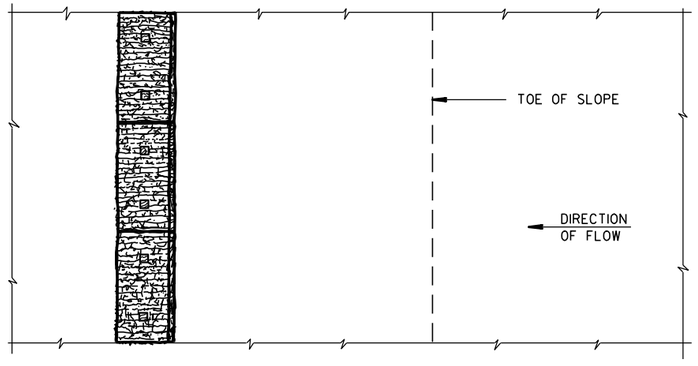
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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.

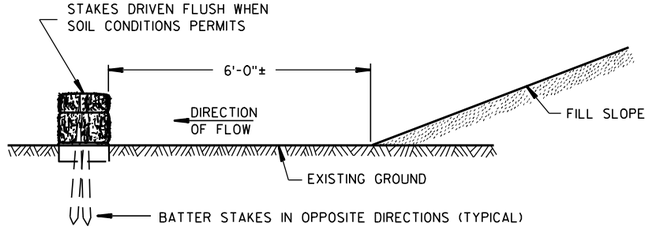



**PLAN VIEW**

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

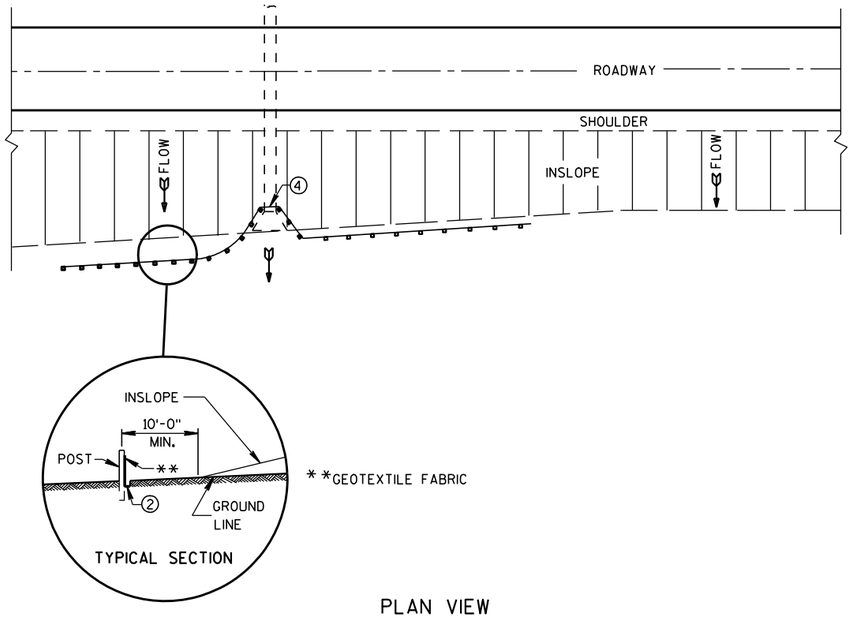


6

S.D.D. 8 E 8-3

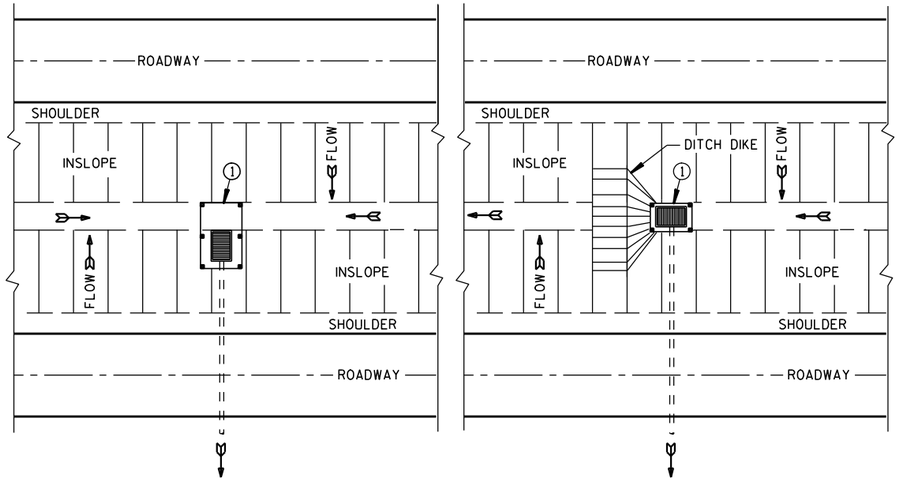
6

S.D.D. 8 E 8-3




PLAN VIEW

## TYPICAL APPLICATION OF SILT FENCE



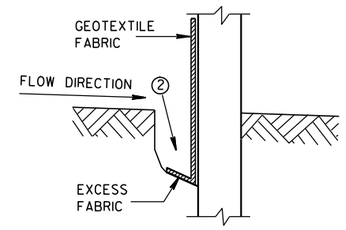

PLAN VIEW

## SILT FENCE AT MEDIAN SURFACE DRAINS

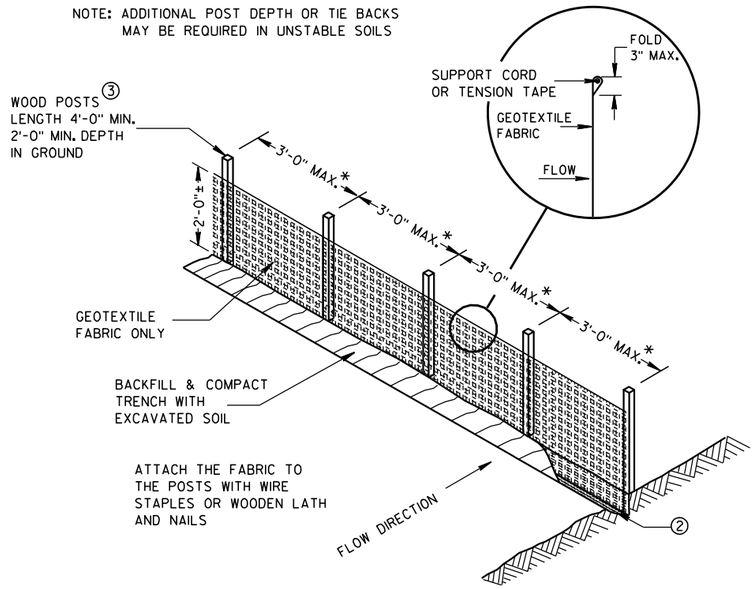
## GENERAL NOTES

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

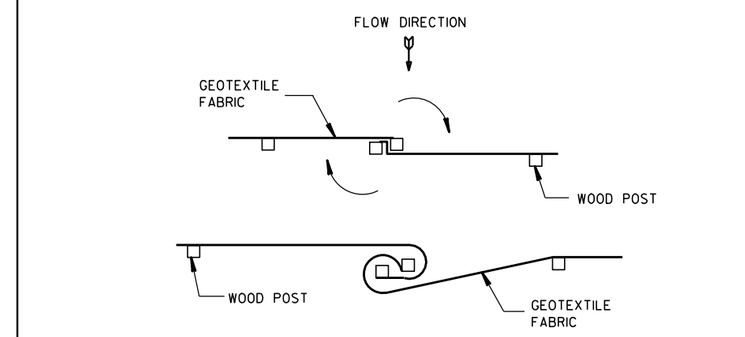
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL 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.



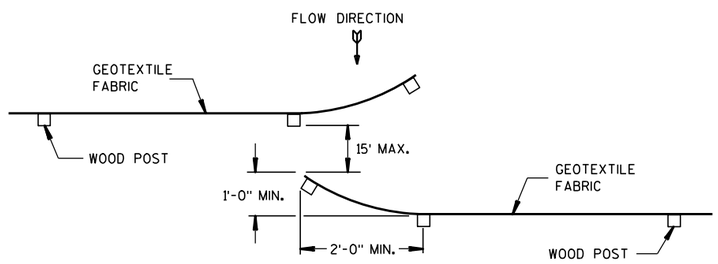

## TRENCH DETAIL




## SILT FENCE

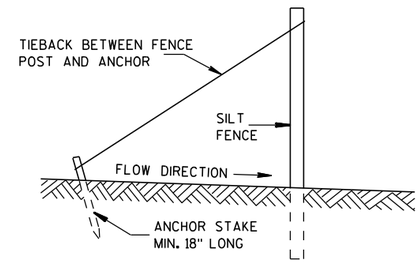



TWIST METHOD




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

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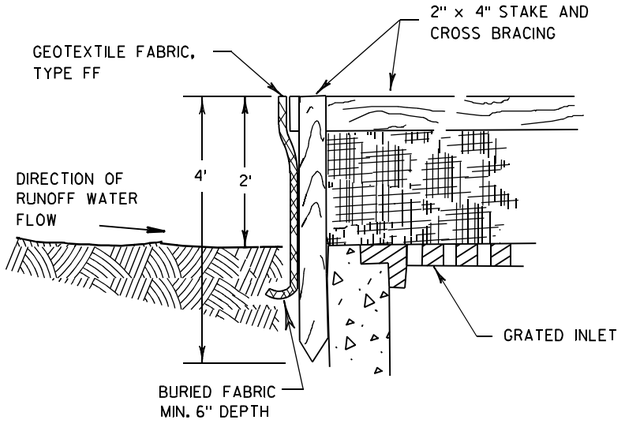
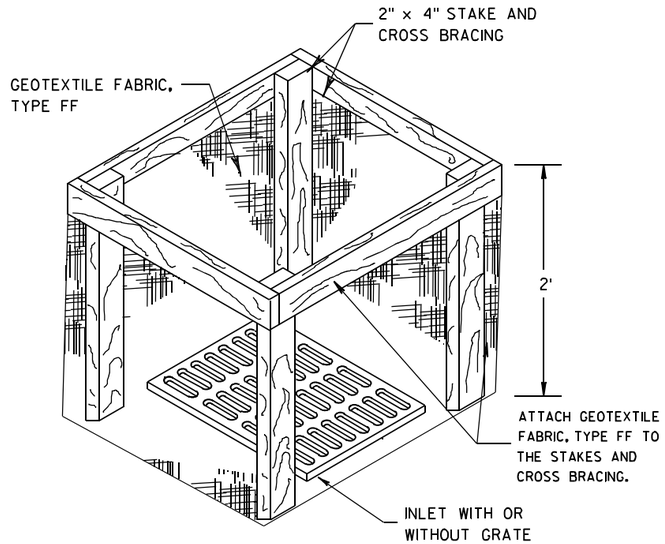
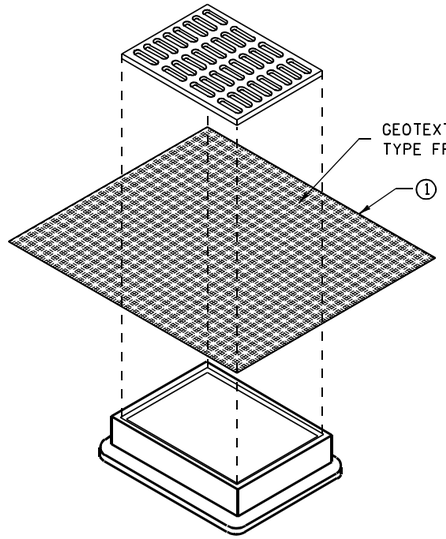
S.D.D. 8 E 9-6



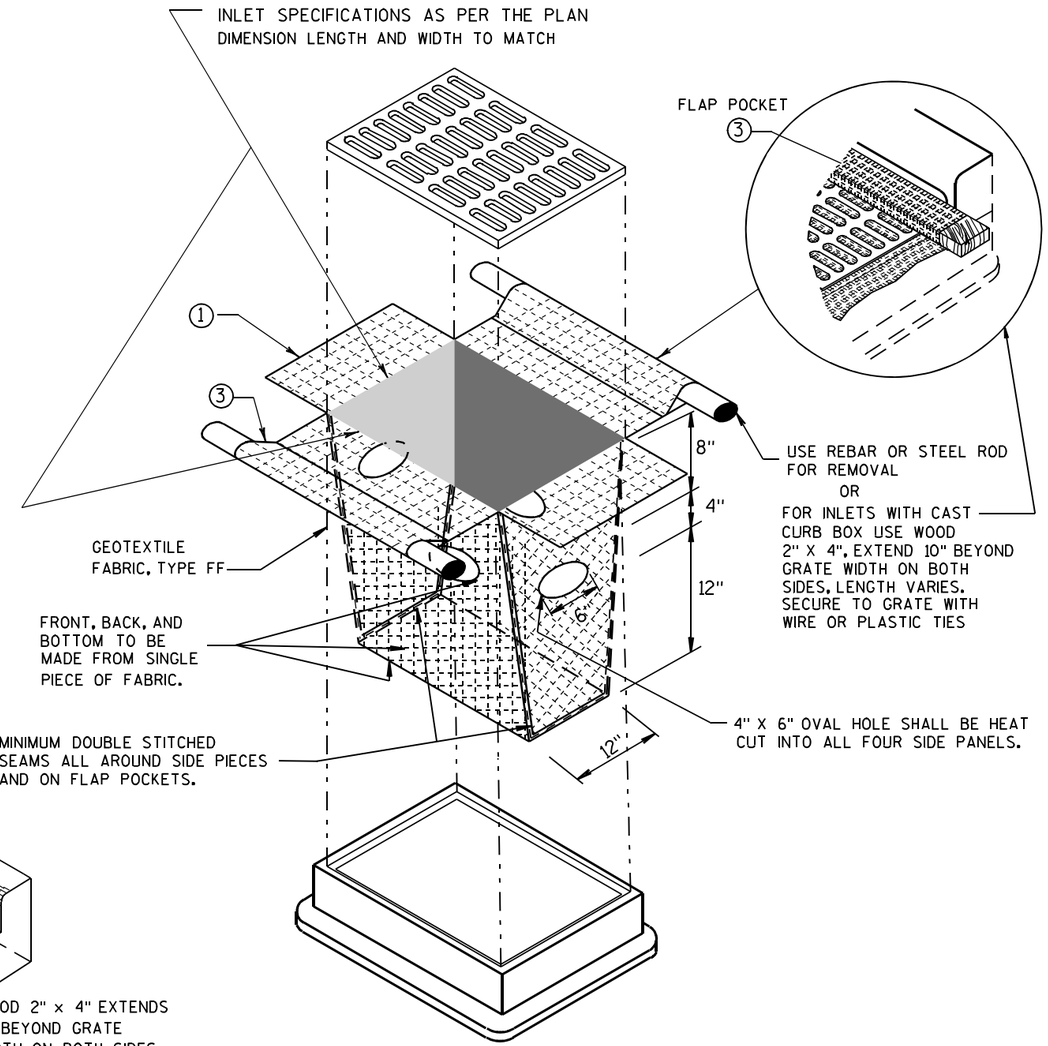




## INLET PROTECTION, TYPE A



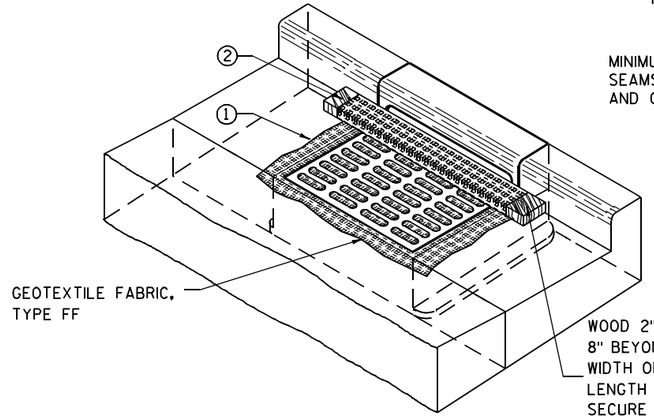

## INLET PROTECTION, TYPE B
## (WITHOUT CURB BOX)

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




## INLET PROTECTION, TYPE D

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




## INLET PROTECTION, TYPE C (WITH CURB BOX)

## GENERAL NOTES

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

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

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

① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.

③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.

## INSTALLATION NOTES

### TYPE B & C

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

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

### TYPE D

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

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

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

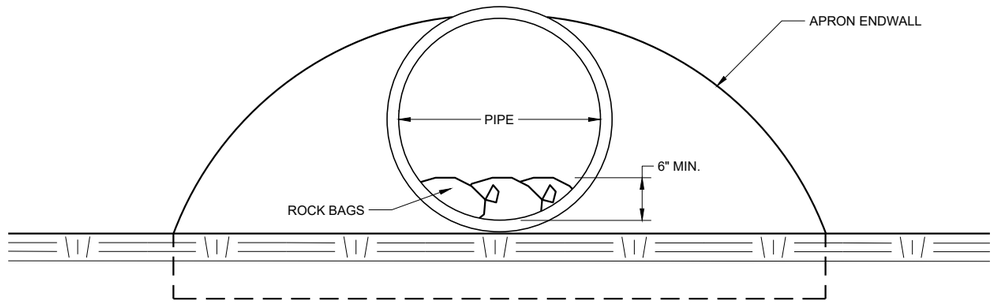
10/16/02
DATE

/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

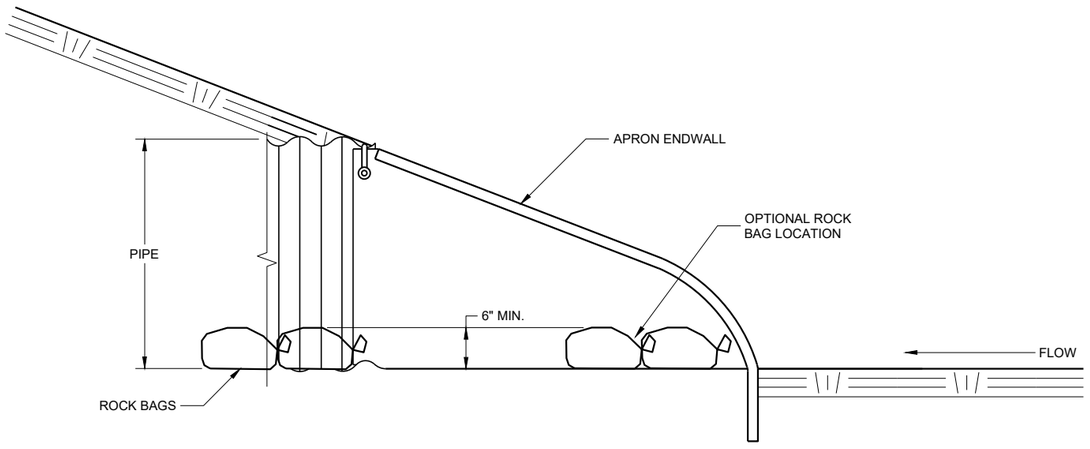
FHWA




6
S.D.D. 8 E 10-2




**END VIEW**




**SIDE VIEW**

## CULVERT PIPE CHECK

(INSTALL ON INLET END ONLY)

**CULVERT PIPE CHECK**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA



6

SDD 08E15 - 01

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SDD 08E15 - 01

## METAL APRON ENDWALLS

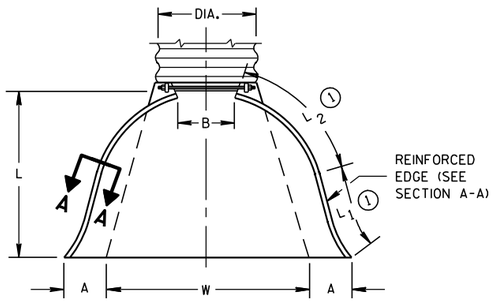
| PIPE DIA. (IN.) | MIN. THICK. (Inches) STEEL | MIN. THICK. (Inches) ALUM. | DIMENSIONS (Inches) A (±1") | B (MAX.) | H (±1") | L (±1 1/2") | L1 ① | L2 ① | W (±2") | APPROX. SLOPE | BODY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | .064 | .060 | 6 | 6 | 6 | 21 | 12 | 17 1/2 | 24 | 2 1/2 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

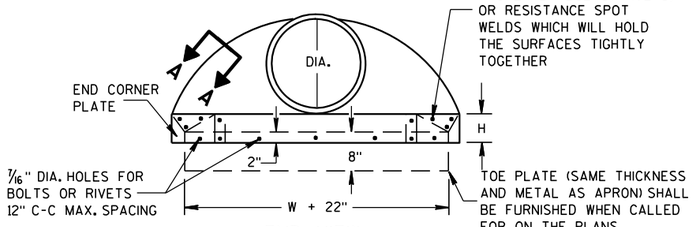
## REINFORCED CONCRETE APRON ENDWALLS

| 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 |

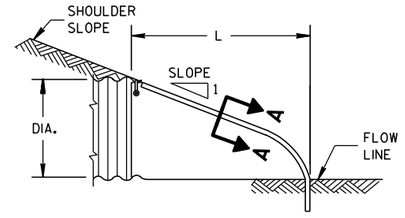
*MINIMUM
**MAXIMUM




PLAN VIEW

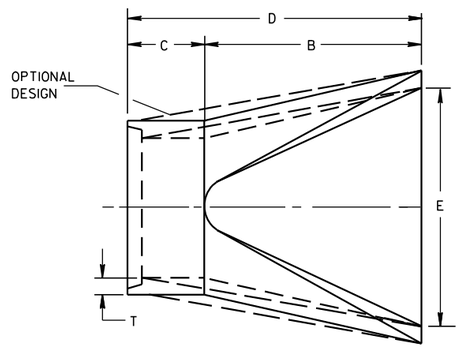



END VIEW

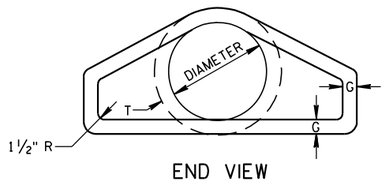



SIDE ELEVATION

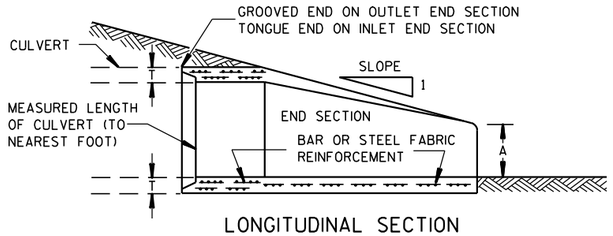
## METAL ENDWALLS




PLAN

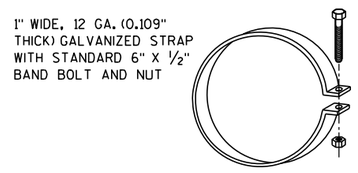



END VIEW



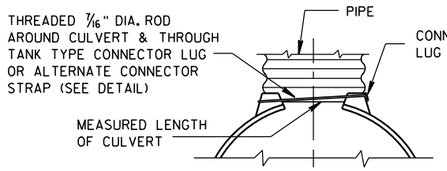

LONGITUDINAL SECTION

## CONCRETE ENDWALLS

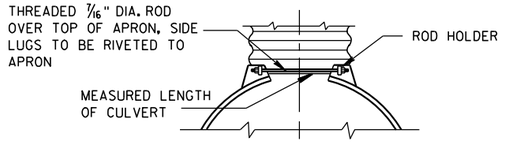



ALTERNATE FOR TYPE 1 CONNECTION

## END SECTION CONNECTOR STRAP



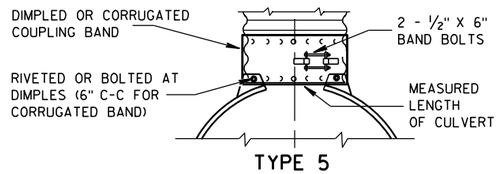

TYPE 1
FOR 12" THRU 24" CORR. PIPE




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

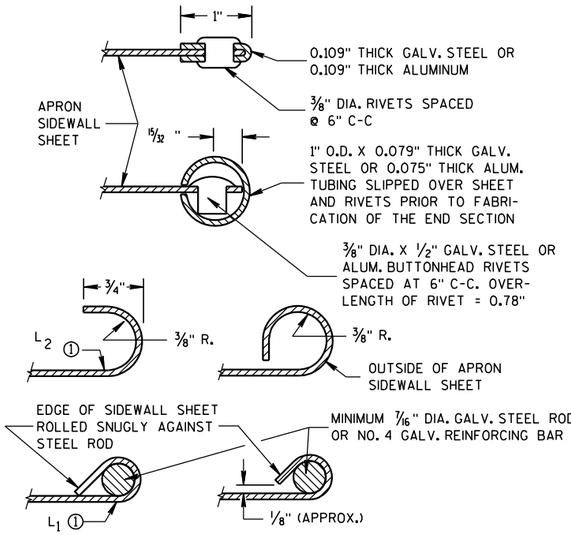
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL. AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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

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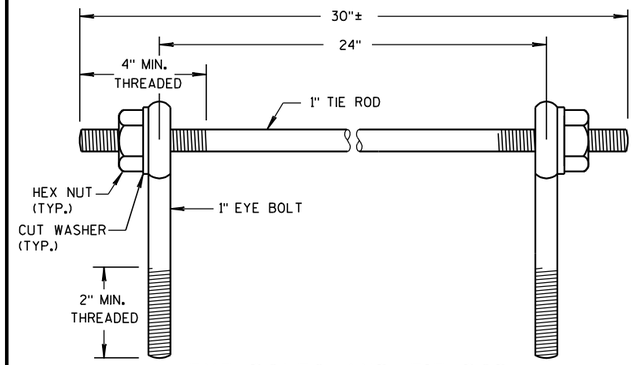
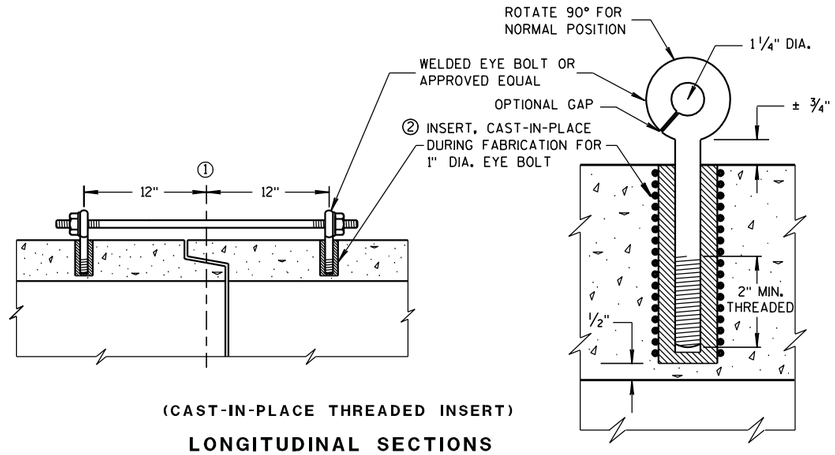
S.D.D. 8 F 1-11




EYE BOLTS AND TIE ROD




(CAST-IN-PLACE THREADED INSERT)

LONGITUDINAL SECTIONS

# EYE BOLT AND TIE ROD ASSEMBLY (ALTERNATE NO. 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 APPLICABLE SPECIAL PROVISIONS.

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

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

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

① ℄ OF TONGUE AND GROOVE OR BELL AND SPIGOT JOINTS.

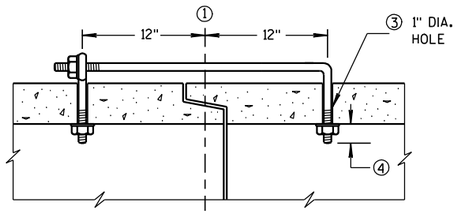
② THE INSIDE OF THE THREADED INSERTS SHALL BE CLEAN TO ALLOW THE INSERTION OF THREADED EYE BOLTS.

③ HOLES SHALL BE CAST-IN-PLACE OR DRILLED 12 INCHES FROM ℄ OF TONGUE AND GROOVE.

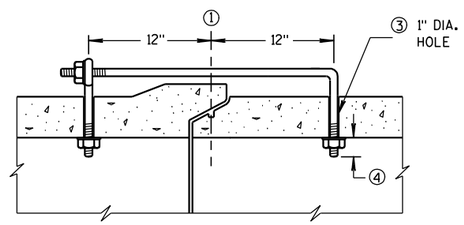
④ BOLT PROJECTION INSIDE OF PIPE SHALL NOT EXCEED 2 INCHES.

⑤ OPENING TO BE ROD DIAMETER PLUS 1 INCH.

⑥ LENGTH ADEQUATE TO EXTEND TO WITHIN 1/2 INCH OF THE INNER SURFACE OF THE PIPE.




(TONGUE & GROOVE PIPE)

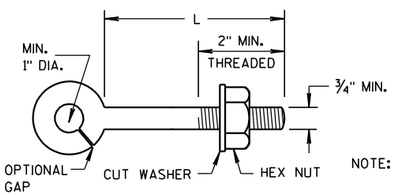



(MODIFIED BELL PIPE)

LONGITUDINAL SECTION

**EYE BOLT DIMENSION TABLE**

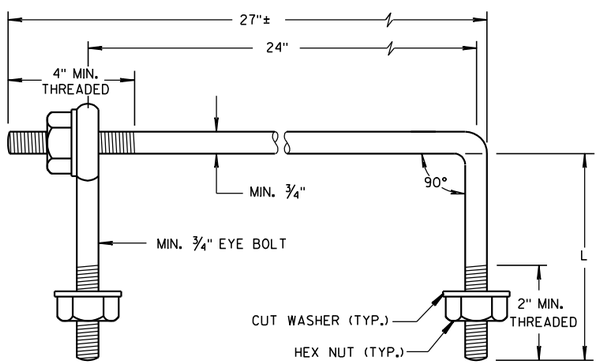
| PIPE SIZE | L = LENGTH | |
|---|---|---|
| | TONGUE & GROOVE PIPE | MODIFIED BELL PIPE |
| 18" TO 24" | 4 1/2" | 6 1/4" |
| 30" | 5" | 7" |
| 36" | 5 1/2" | 7" |
| 42" | 6" | |
| 48" | 6 1/2" | |
| 60" | 7 1/2" | |
| 66" | 8" | |




NOTE:

EYE BOLT

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




EYE BOLT AND TIE ROD

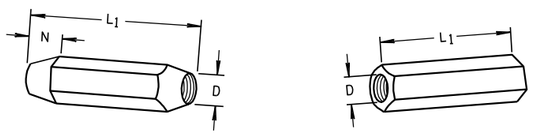
(JOINT TIES FOR 18" TO 66" DIA. CONCRETE PIPE)

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

**ADJUSTABLE TIE ROD TABLE**

| PIPE DIAMETER | TIE ROD DIAMETER | D | $L_1$ | N |
|---|---|---|---|---|
| 12-60 | 5/8 | 5/8 | 5 | 1/2 |
| 66-84 | 3/4 | 3/4 | 5 | 1/2 |
| 90-108 | 1 | 1 | 7 | 1 1/16 |

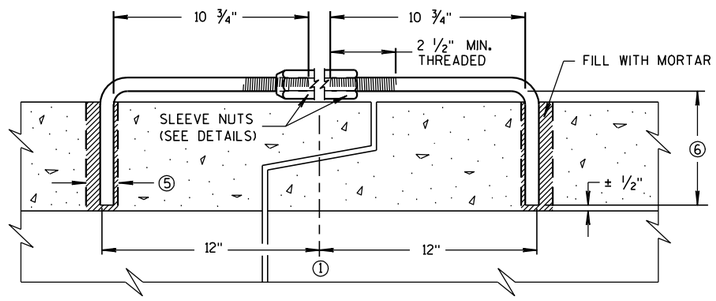
DIMENSIONS SHOWN ARE IN INCHES




TAPERED PLAIN

RIGHT AND LEFT THREADS

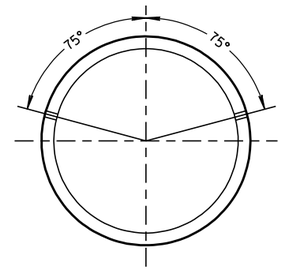
SLEEVE NUTS




LONGITUDINAL SECTION

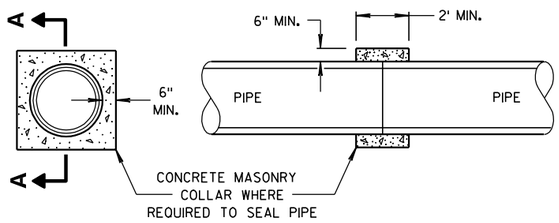
(JOINT TIES FOR 12" TO 108" DIA. CONCRETE PIPE)

# ADJUSTABLE TIE ROD (ALTERNATE NO. 3)




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

TRANSVERSE SECTION




SECTION A-A

# CONCRETE COLLAR DETAIL

JOINT TIES FOR CONCRETE PIPE AND CONCRETE COLLAR DETAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



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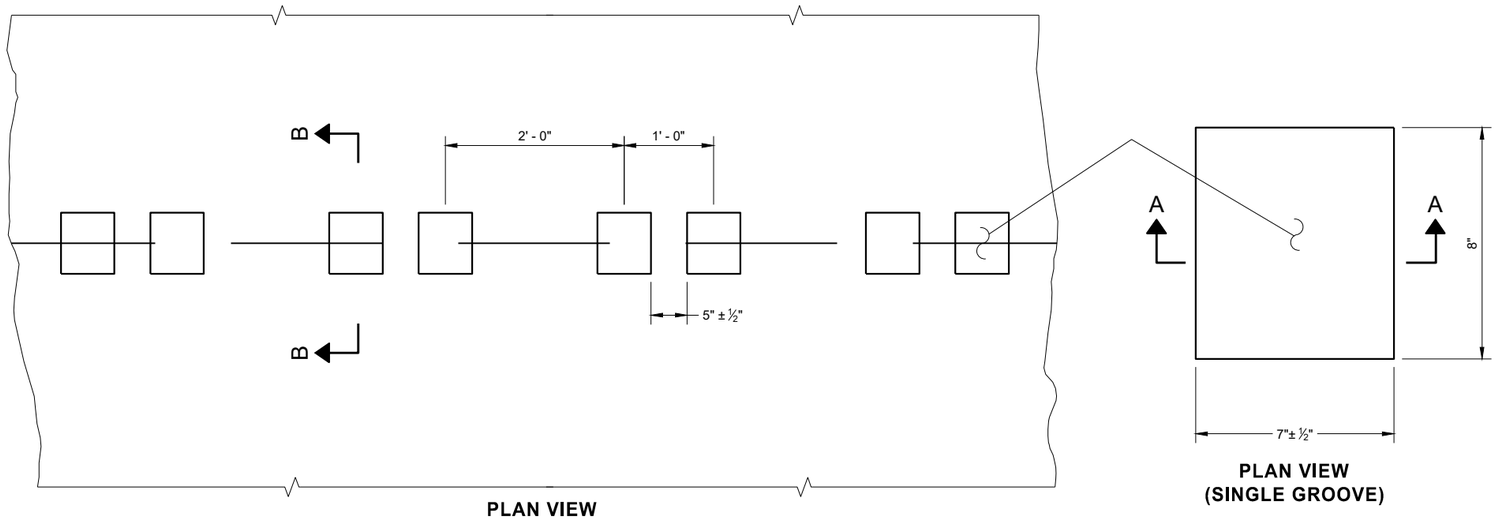
S.D.D. 8 F 4-7




PLAN VIEW
SHOULDER WITH GROOVES




PLAN VIEW
(SINGLE GROOVE)

## PLACEMENT DETAIL FOR TYPE 1 MILLED RUMBLE STRIP

## GENERAL NOTES

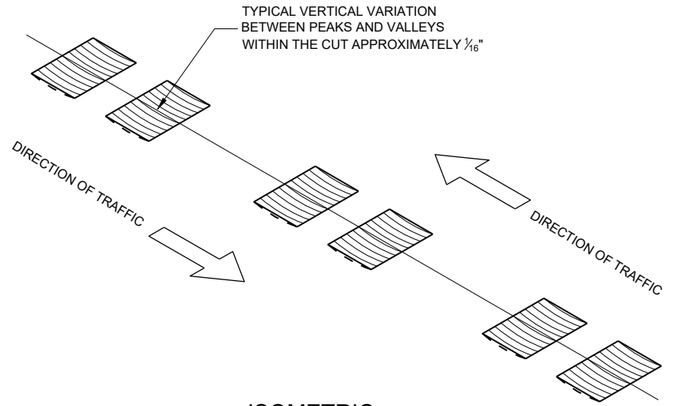
DETAILS OF CONSTRUCTION NO SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

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

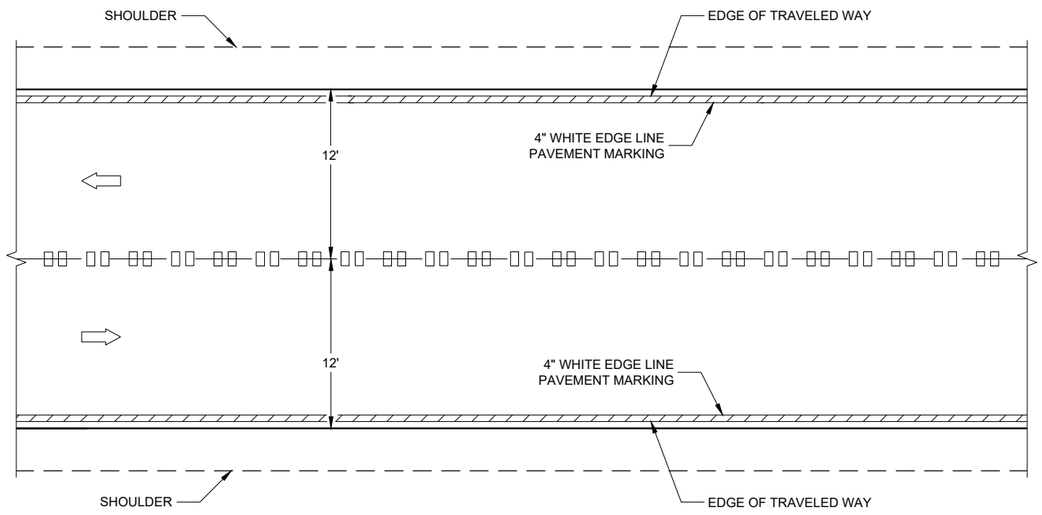
INSTALL PAVEMENT MARKING AFTER THE GROOVES ARE INSTALLED.

SEE SIGNING PLAN FOR SIGN REQUIREMENTS THAT MAY BE NEEDED.

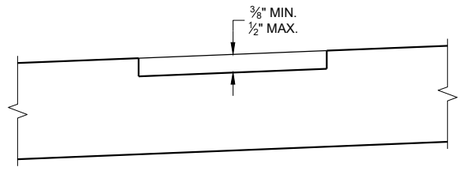
(1) CENTERLINE GROOVES MAY BE OMITTED IN AREAS WITH HIGH CONCENTRATIONS OF DRIVEWAYS. WHEN DIRECTED BY THE ENGINEER.



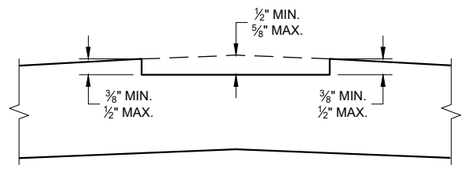

ISOMETRIC



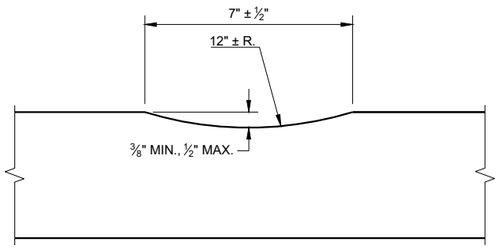

## CENTERLINE GROOVES ON TWO-WAY ROADWAYS




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 TRANSPORTATION



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SDD 13A11 - 03a

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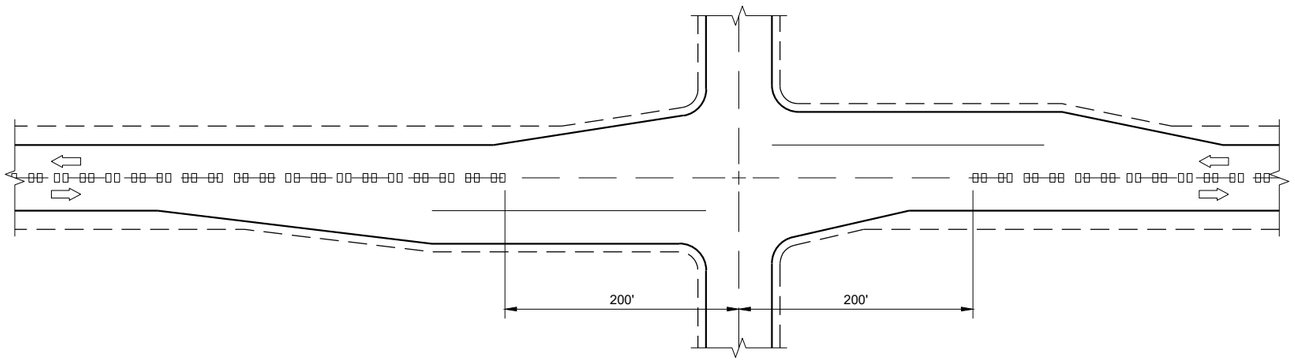
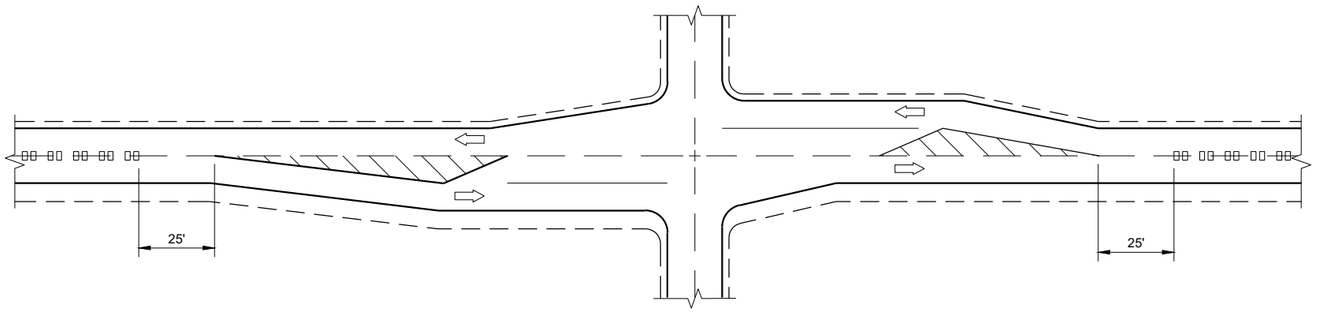
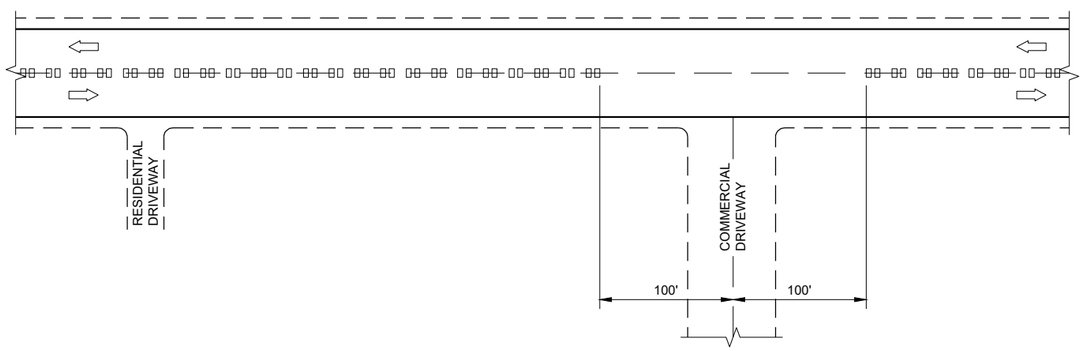
SDD 13A11 - 03a




## CENTERLINE GROOVES AT INTERSECTIONS



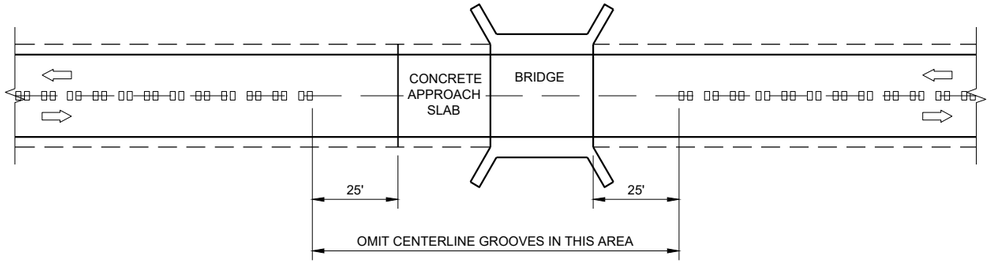

## CENTERLINE GROOVES AT INTERSECTIONS (WITH LEFT TURN LANES)



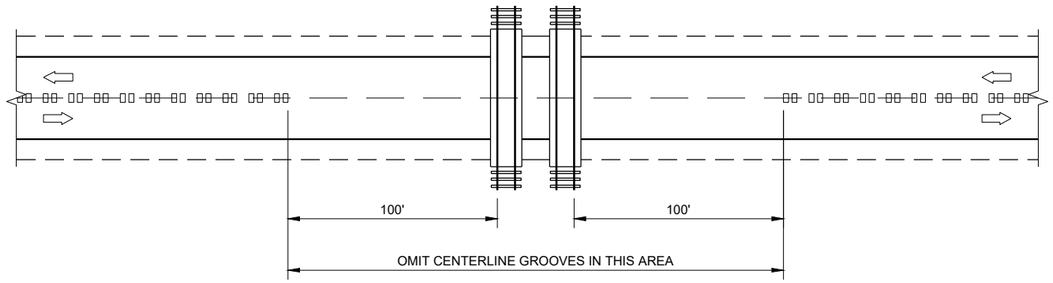

## CENTERLINE GROOVES AT DRIVEWAYS (1)

## GENERAL NOTES

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




## CENTERLINE GROOVES AT BRIDGES




## CENTERLINE GROOVES AT RAILROADS

# 2-LANE RURAL CENTERLINE RUMBLE STRIP, MILLING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA





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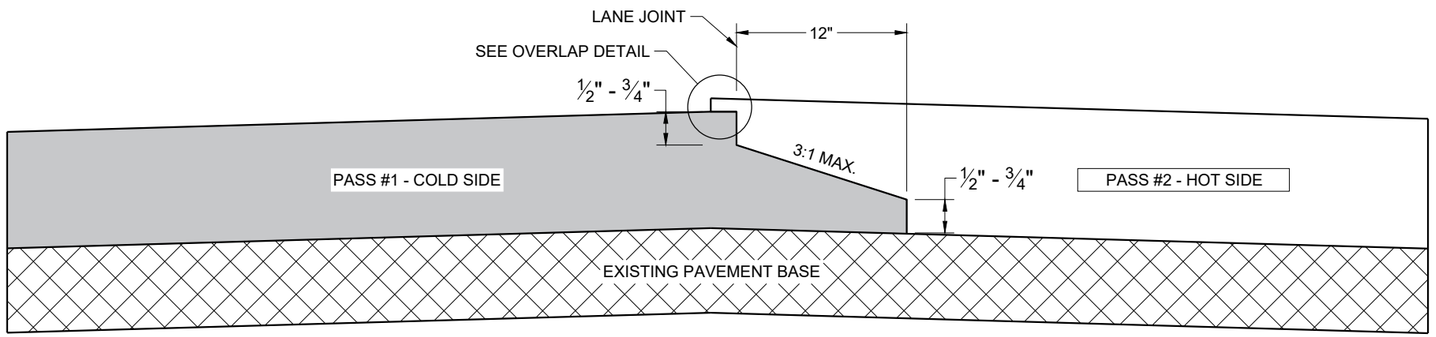
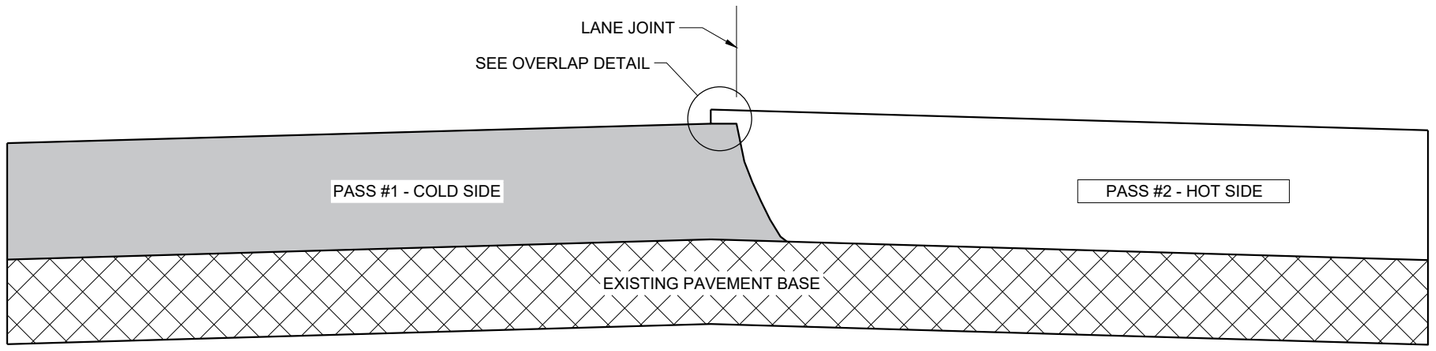
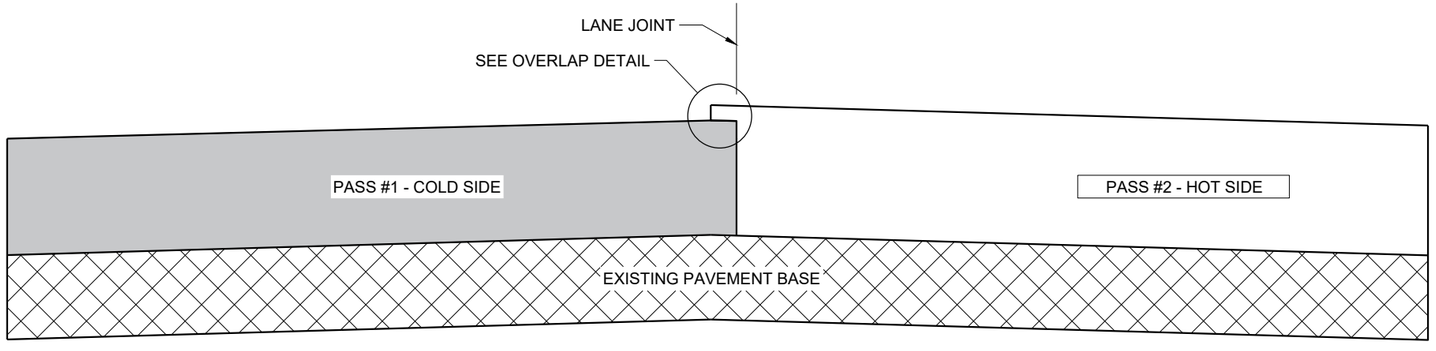
SDD 13A11 - 03b




**TYPICAL PAVEMENT CROSS SECTION**
**OF NOTCHED WEDGE LONGITUDINAL JOINT**




**TYPICAL PAVEMENT CROSS SECTION**
**VERTICAL LONGITUDINAL JOINT**




**TYPICAL PAVEMENT CROSS SECTION**
**OF MILLED LONGITUDINAL JOINT**

## GENERAL NOTES

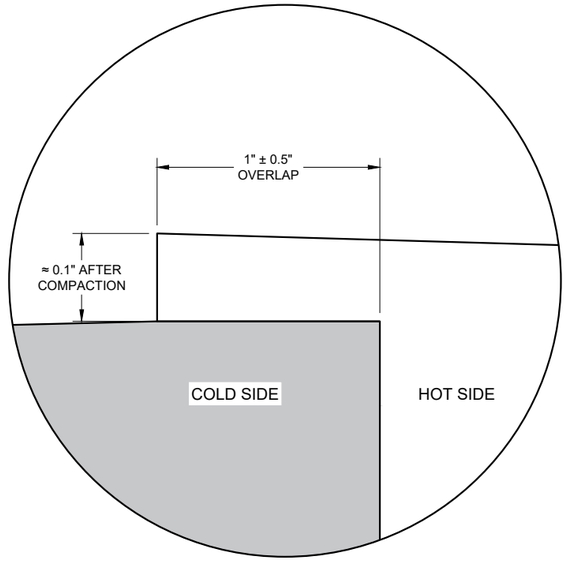
IN ADDITION TO THE DETAILS PROVIDED IN THIS DRAWING, CONFORM TO STANDARD SPECIFICATION 450.3.2.8 FOR WHEN A NOTCHED WEDGE JOINT IS REQUIRED AND FOR GENERAL JOINT CONSTRUCTION REQUIREMENTS.

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

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

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

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




**OVERLAP DETAIL (TYPICAL)**

**HMA LONGITUDINAL JOINTS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020
DATE

/S/ Steven Hefel
HMA PAVEMENT ENGIN

FHWA



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SDD 13C19 - 02

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SDD 13C19 - 02

## GENERAL NOTES

(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.

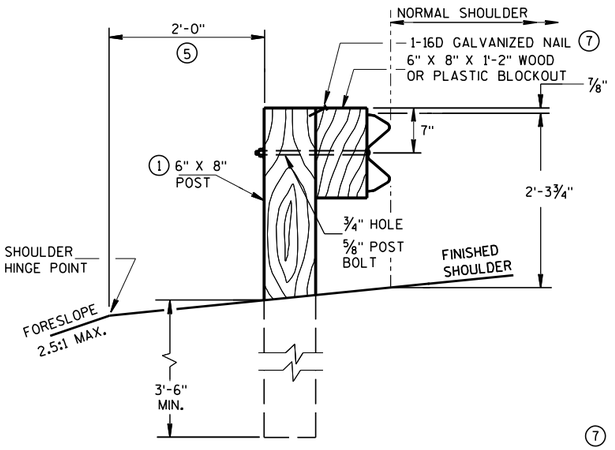
(5) IF THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING, W BEAM (LHW).

(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.

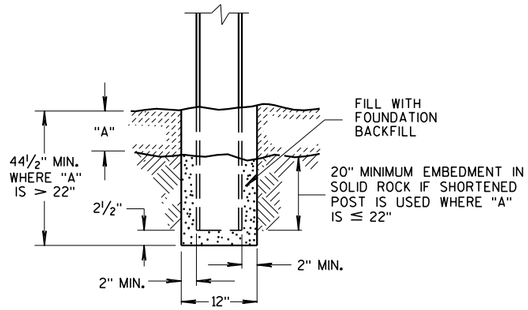
(7) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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

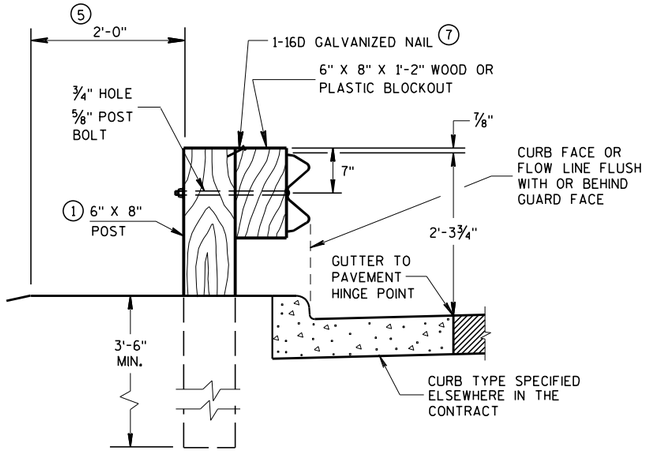
ALL DIMENSIONS ARE SUBJECT TO MANUFACTURER'S TOLERANCES EXCEPT WHERE ALLOWABLE TOLERANCES ARE SHOWN.



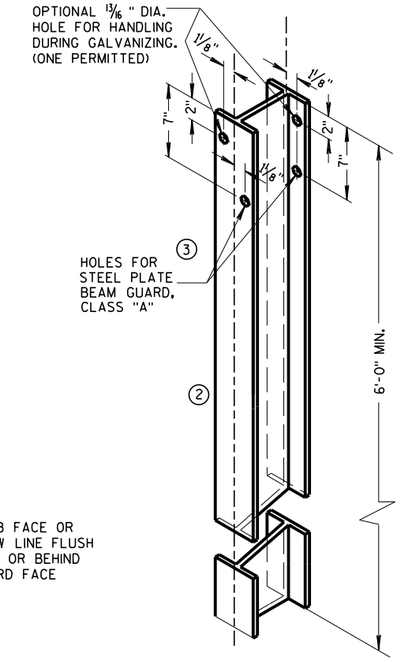

END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION




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

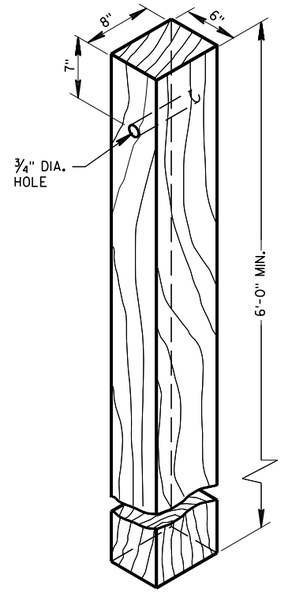



END VIEW
LOCATED ALONG A CURBED ROADWAY

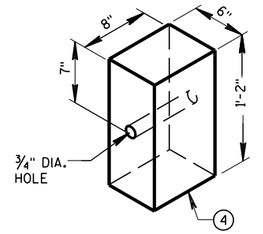



STEEL POST &
HOLE PUNCHING DETAIL
(W6 X 9) (1)

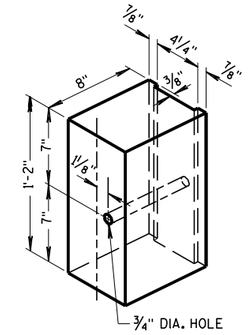
ALL HOLES 13/16" DIAMETER EXCEPT AS NOTED



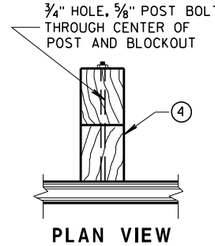

WOOD POST
(6"X8") NOMINAL



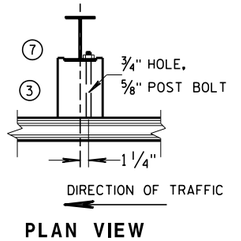

WOOD OR PLASTIC
BLOCKOUT FOR
WOOD POSTS



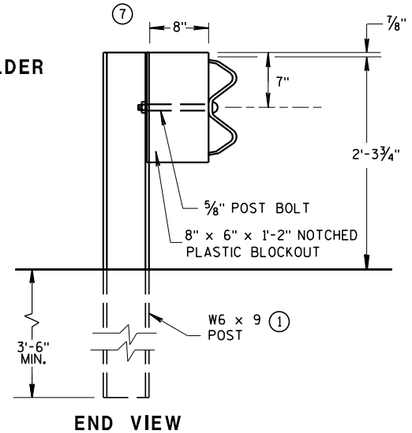

TYPICAL NOTCHED
PLASTIC BLOCKOUT
FOR STEEL POSTS (1)



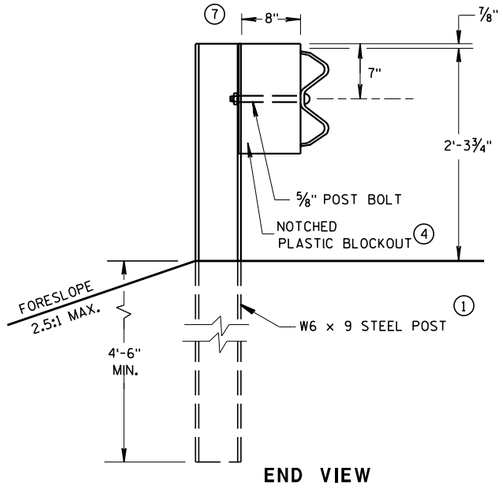

PLAN VIEW
WOOD POST, BLOCKOUT & BEAM



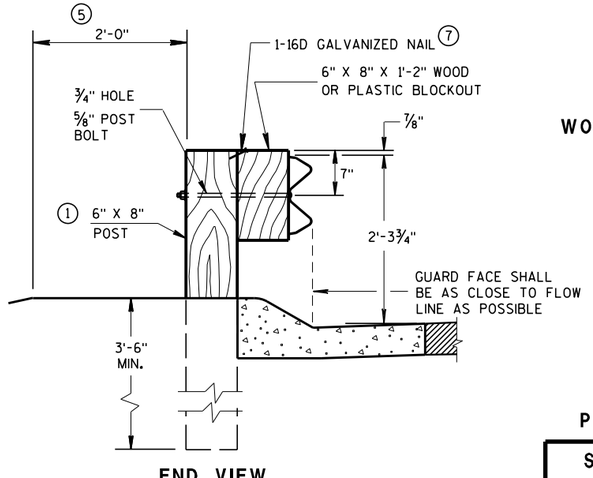

PLAN VIEW
STEEL POST, NOTCHED
PLASTIC BLOCKOUT & BEAM




END VIEW
STEEL POST & NOTCHED
PLASTIC BLOCKOUT ALTERNATIVE
STANDARD INSTALLATION




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




END VIEW
LOCATED ALONG A
MOUNTABLE CURBED ROADWAY

## TYPICAL INSTALLATION OF STEEL PLATE BEAM GUARD

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



S.D.D. 14 B 15-11a

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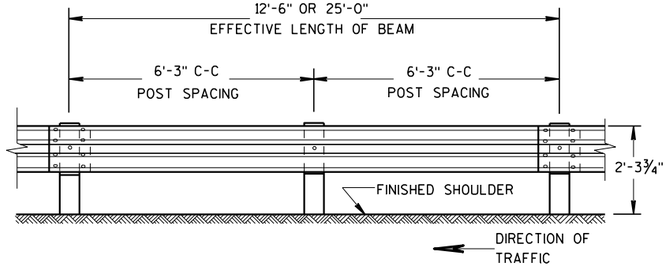
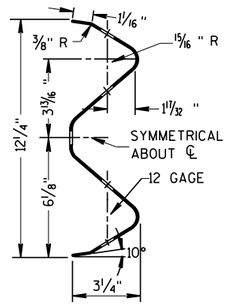
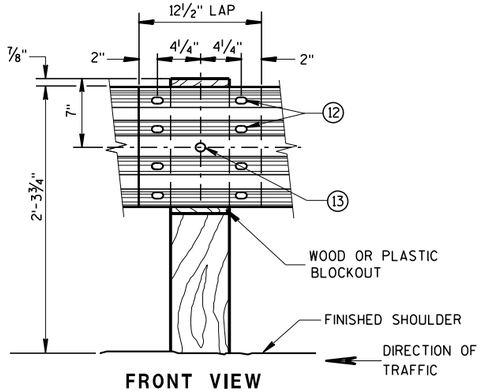



FRONT VIEW

## POST SPACING STANDARD INSTALLATION




## SECTION THRU W BEAM




FRONT VIEW

## BEAM SPLICE AT WOOD POST AND POST MOUNTING DETAIL

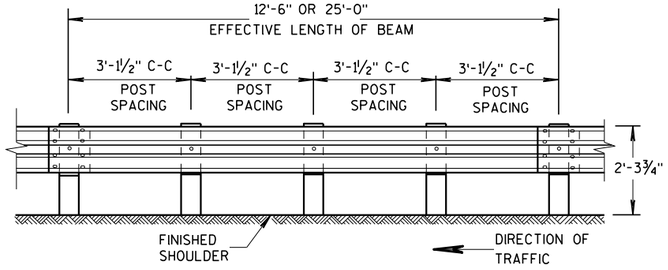
## GENERAL NOTES

FURNISH GUARDRAIL DEFLECTORS FROM APPROVED PRODUCTS LIST.

(9) DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINA. START REFLECTORS AT POST #9 AND SPACE EVENLY EVERY 100 FEET (MAX.) TO THE END OF GUARDRAIL RUN, USING A MINIMUM OF 3 REFLECTORS.

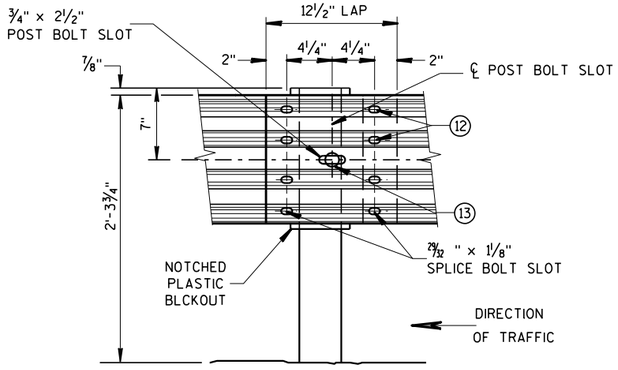
(12) 8 -⅝" ϕ X 2" BUTTON HEAD BOLTS WITH OVAL SHOULDERS & RECESS NUTS.

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



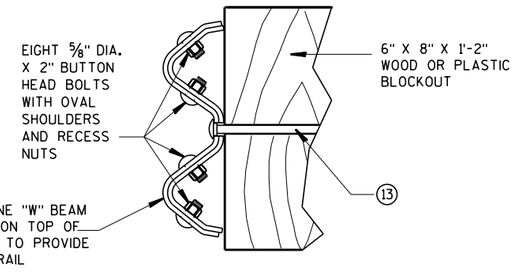

FRONT VIEW

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




FRONT VIEW

## BEAM SPLICE AT STEEL POST

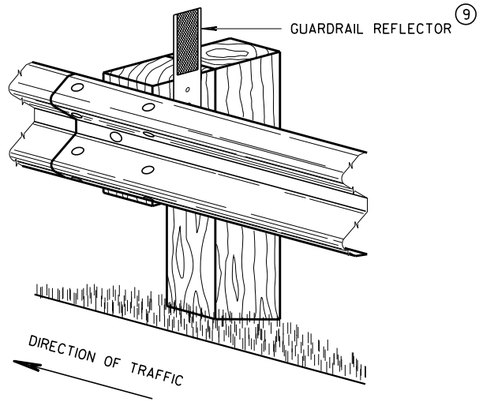



## NESTED W BEAM (NW)

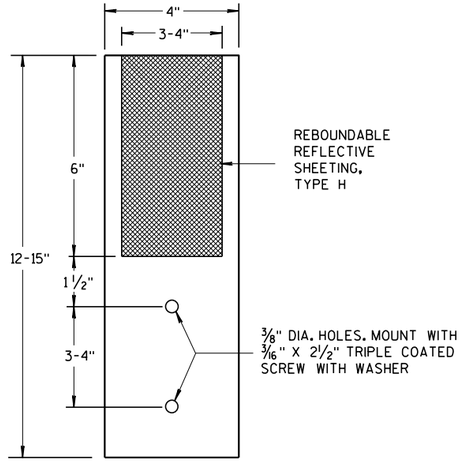
USE ALL OTHER STANDARD BEAM GUARD DETAILS FOR CONSTRUCTING NESTED W BEAM (NW)

## TYPICAL SPLICING DETAILS OF STEEL PLATE BEAM GUARD

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




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




4"x 12" GUARDRAIL REFLECTOR

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

STATE OF WISCO 51
DEPARTMENT OF TRANSPORTATION

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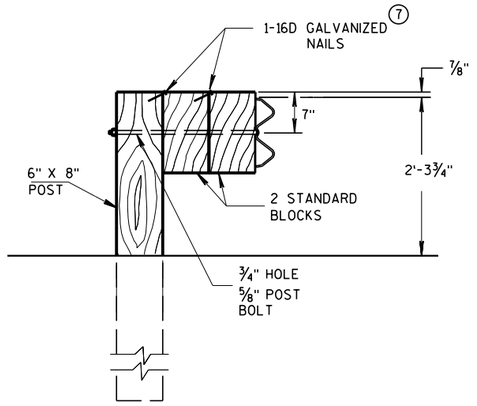
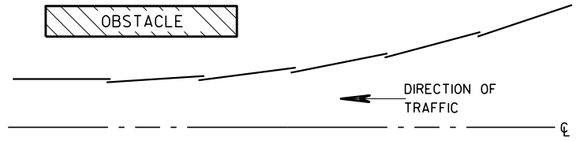
S.D.D. 14 B 15-11b

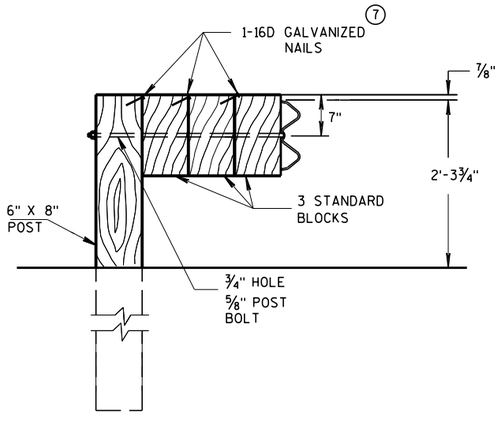



**DETAIL FOR DOUBLE BLOCKS**

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

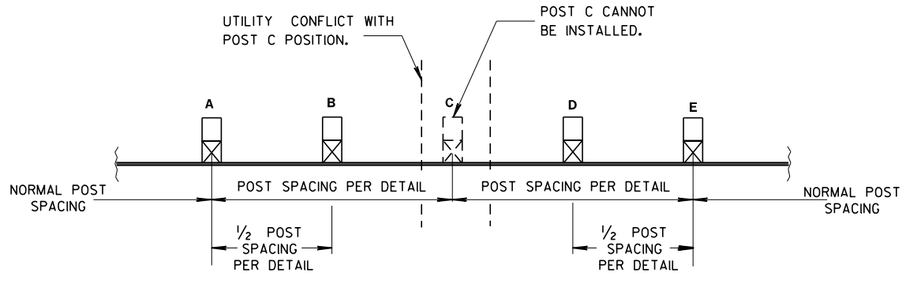



**PLAN VIEW**
**BEAM LAPPING DETAIL**




**DETAIL FOR TRIPLE BLOCKS**

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




**POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION**

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.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS UNIT SUPERVISOR
52 — MENT
FHWA

6

S.D.D. 14 B 15-11c

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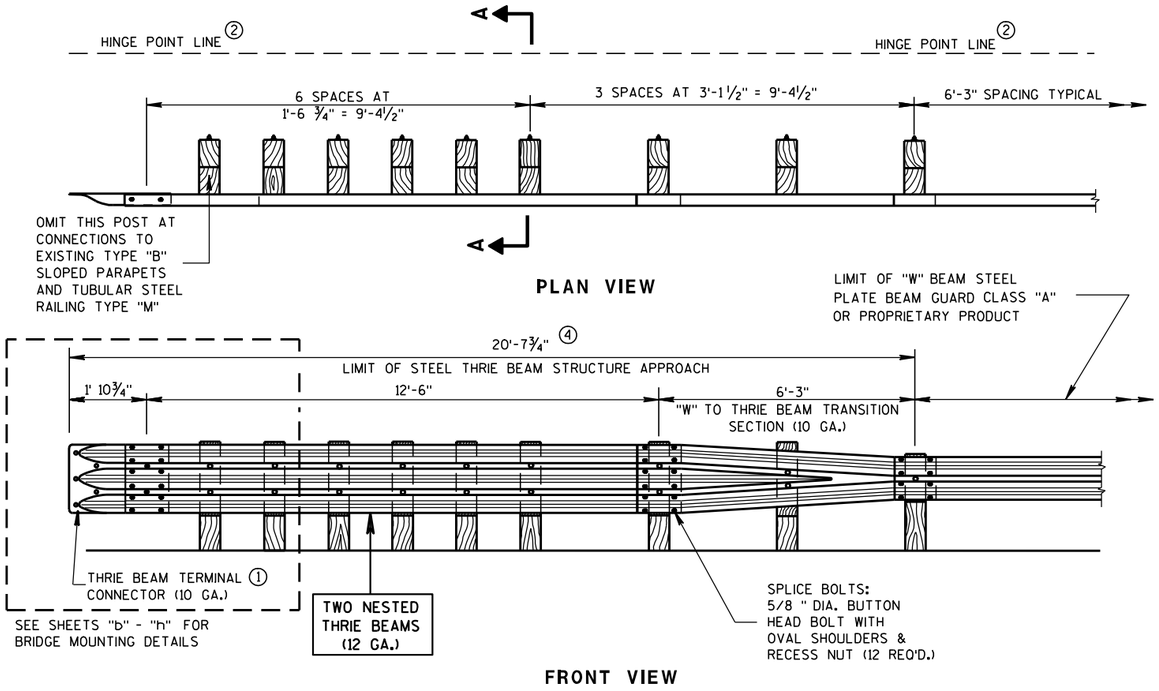
S.D.D. 14 B 15-11c



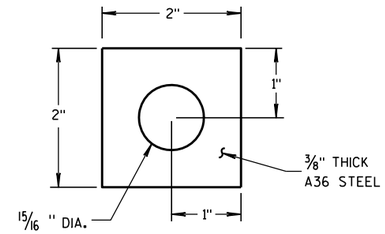




PLATE WASHER DETAIL

## 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.

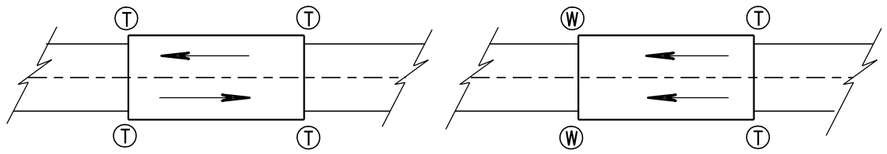
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2 1/2" , AND 12" DIAMETER AROUND POST. SEE 14B15 FOR MORE DETAILS.

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.



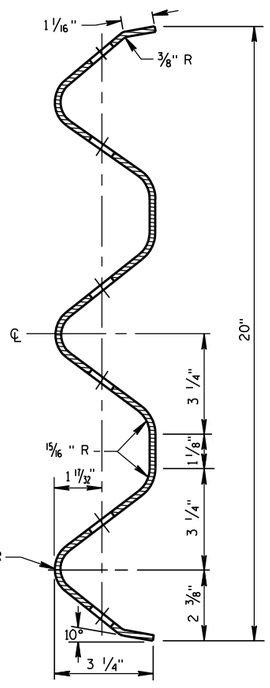

TWO WAY TRAFFIC

ONE WAY TRAFFIC

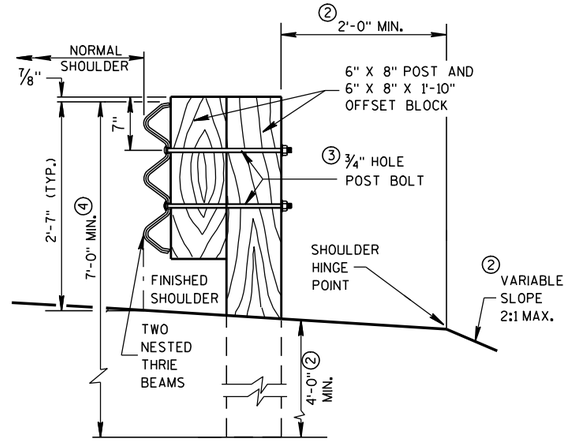
T THRIE BEAM CONNECTION

W W-BEAM CONNECTION WHEN REQUIRED

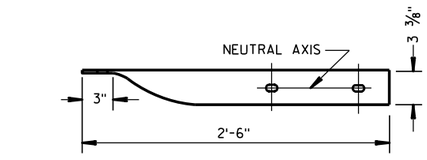
TYPICAL LOCATIONS OF THRIE BEAM AND W-BEAM CONNECTIONS TO BRIDGE

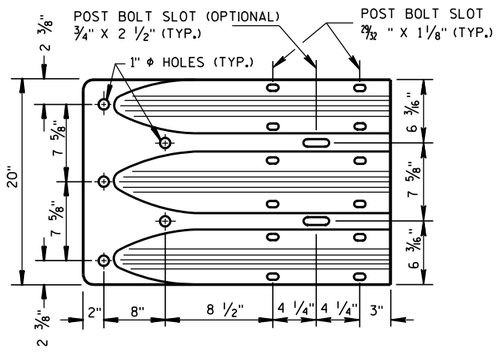



SECTION THRU THRIE BEAM RAIL ELEMENT

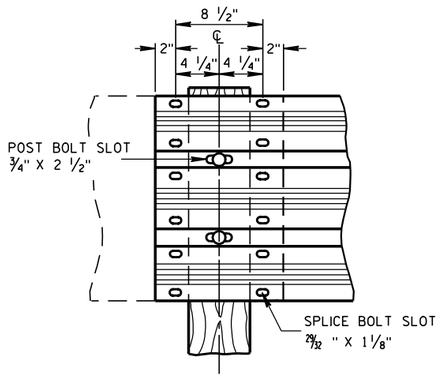



SECTION A-A




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

(1) WOOD OR STEEL POSTS (w6X9 OR w6X8.5) MAY BE USED. DO NOT INTERMIX WOOD AND STEEL POSTS. INSTALL STEEL POSTS WITH HOLES ON APPROACHING TRAFFIC SIDE.

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

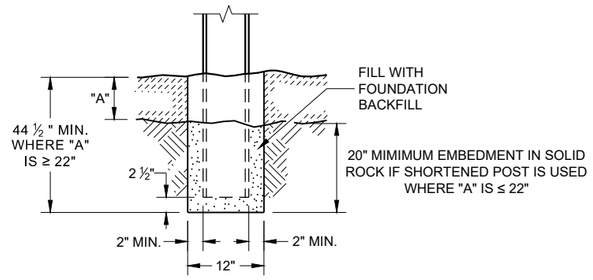
(3) IF ROCK IS ENCOUNTERED DURING EXCAVATION, PROVIDE A HOLE 12 INCHES IN DIAMETER EXTENDING 20 INCHES DEEP INTO THE ROCK. PLACE APPROXIMATELY 2 1/2" INCHES OF GRANULAR MATERIAL IN THE BOTTOM OF THE HOLE. CUT THE POSTS THE TO LENGTH AMD INSTALL. BACKFILL WITH EXCAVATED MATERIAL AND COMPACT. BACKFILL 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).

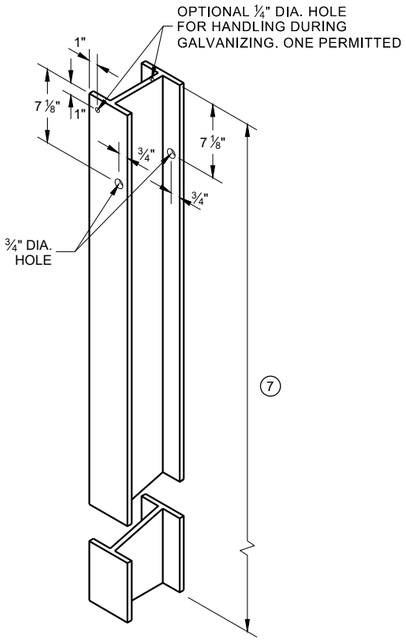
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS +1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27 ¾" TO 32".

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

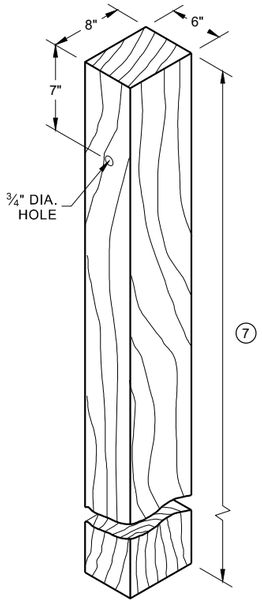
(7) TOTAL POST LENGTH FOR TYPE K IS 7' - 0".
TOTAL POST LENGTH FOR OTHER MGS TYPES IS 6' - 0".



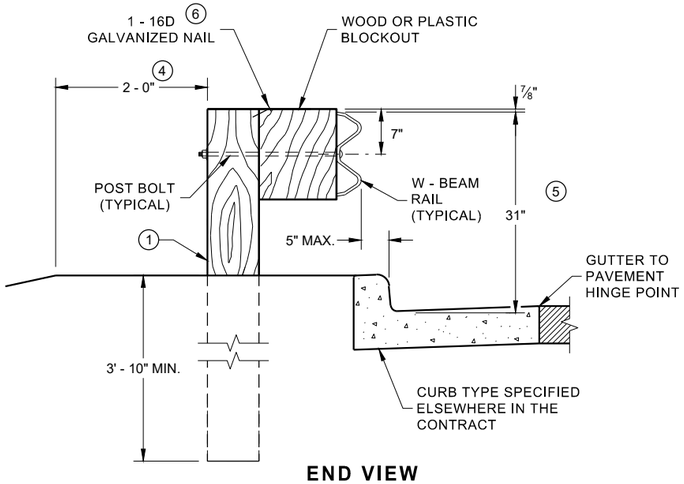

END VIEW
**SETTING STEEL OR WOOD POST IN ROCK** (3)



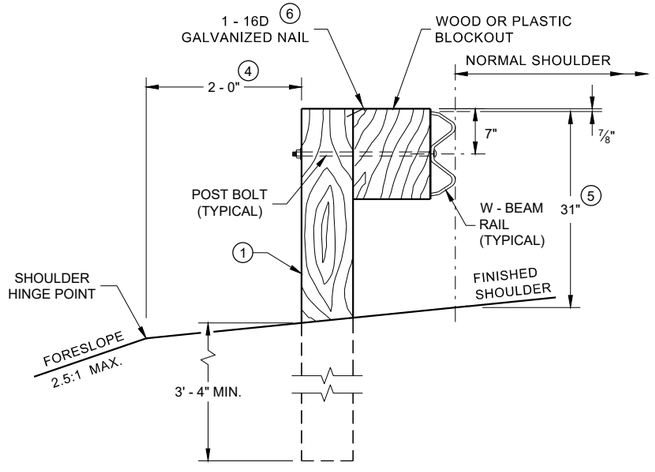

**STEEL POST & HOLE PUNCHING DETAIL (W 6 X 9)** (1)



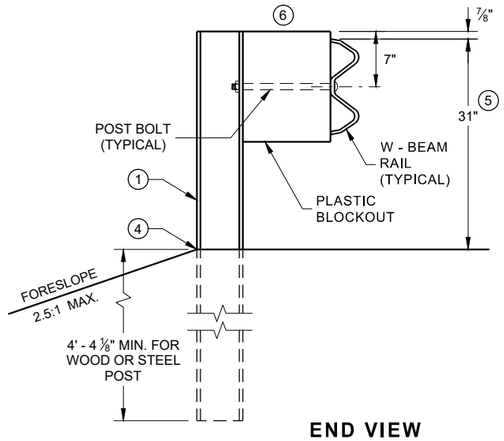

**WOOD POST (6" X 8") NOMINAL** (1)



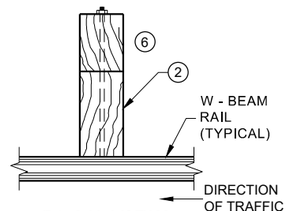

END VIEW
**LOCATED ALONG A CURBED ROADWAY**



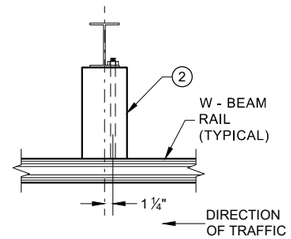

END VIEW
**LOCATED ALONG A ROADWAY SHOULDER STANDARD INSTALLATION**



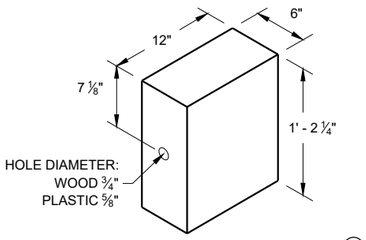

END VIEW
**MGS LONGER POST AT HALFPOST SPACING W BEAM (K)**




PLAN VIEW
**WOOD POST, BLOCKOUT & BEAM**




PLAN VIEW
**STEEL POST, PLASTIC BLOCKOUT & BEAM**




**WOOD OR PLASTIC BLOCKOUT** (2)

**MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL**

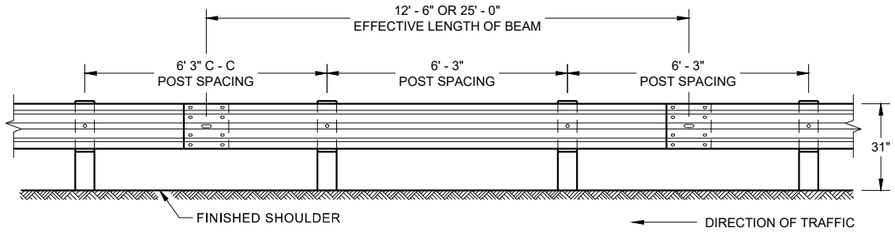
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



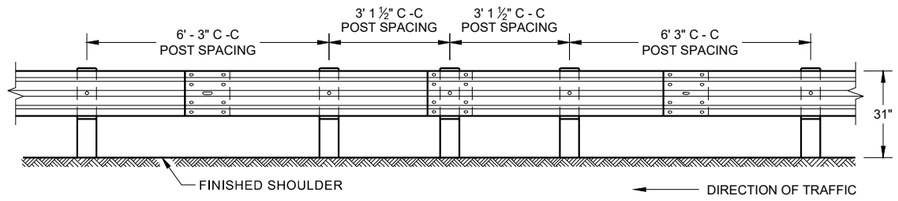
SDD 14B42 - 06a

6

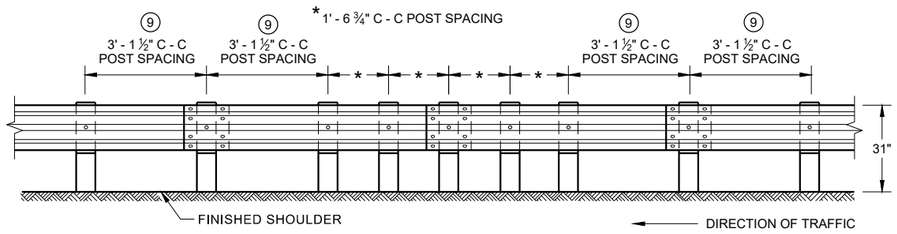
SDD 14B42 - 06a



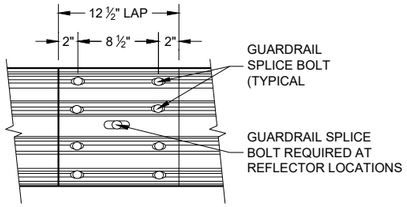

**FRONT VIEW**
**POST SPACING STANDARD INSTALLATION**




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




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




**FRONT VIEW**
**MID-SPAN BEAM SPLICE**

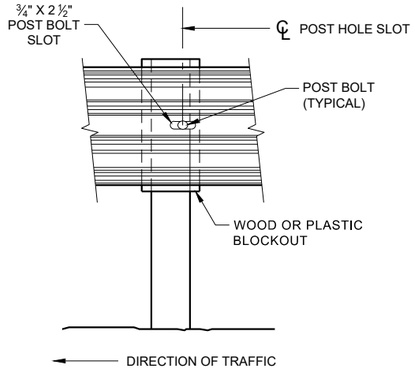
## GENERAL NOTES

⑧ DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

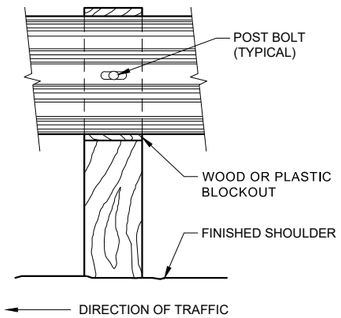
⑨ 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

POST BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND ⅝" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

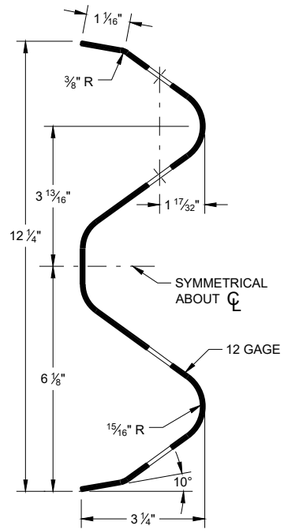
GUARD RAIL SPLICE BOLTS ARE A ⅝" DIAMETER ASTM A307 GUARDRAIL HEAD BOLT. A GUARDRAIL SPLICE BOLT REQUIRES ⅝" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT.



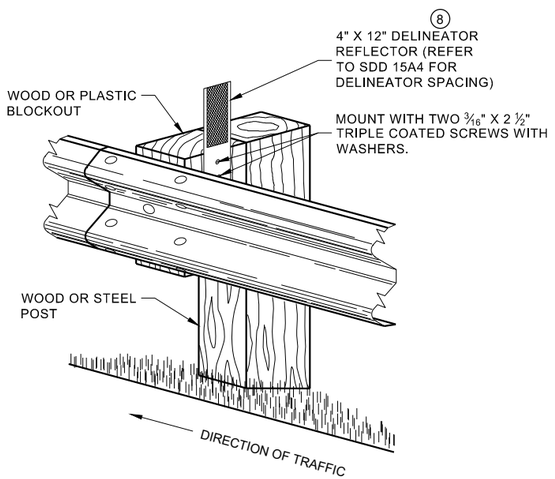

**FRONT VIEW AT STEEL POST**




**FRONT VIEW AT WOOD POST**




**SECTION THRU W-BEAM RAIL**



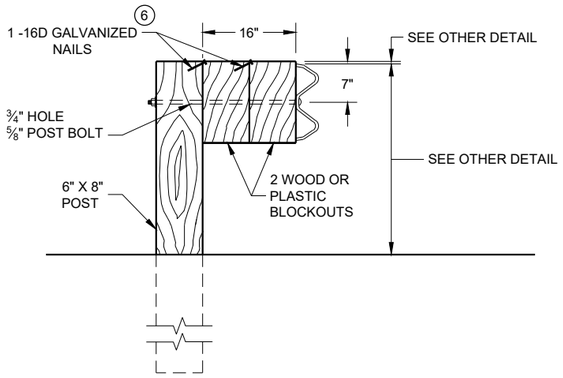

**ONE SIDED REFLECTOR DETAIL**
**AND TYPICAL INSTALLATION**

**MIDWEST GUARDRAIL SYSTEM**
**(MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



6
SDD 14B42 - 06b

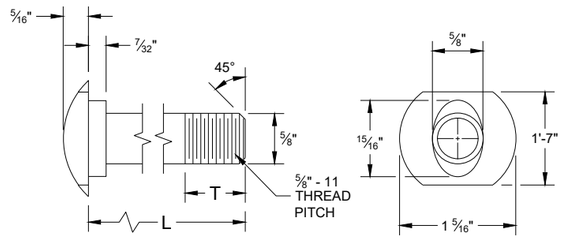



## DETAIL FOR 16" BLOCKOUT DEPTH

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

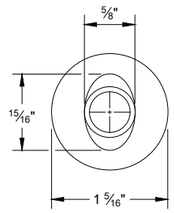
NOTE:

1. ALL FILLETS SHALL HAVE A MINIMUM RADIUS OF 3⁄16".
2. IF THE BOLT EXTENDS MORE THAN ¼" FROM THE NUT THE BOLT SHOULD BE TRIMMED BACK.

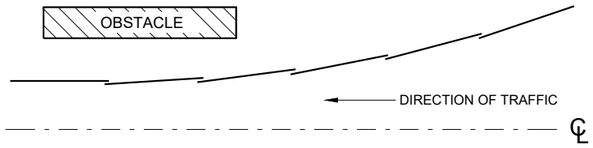



## POST BOLT TABLE

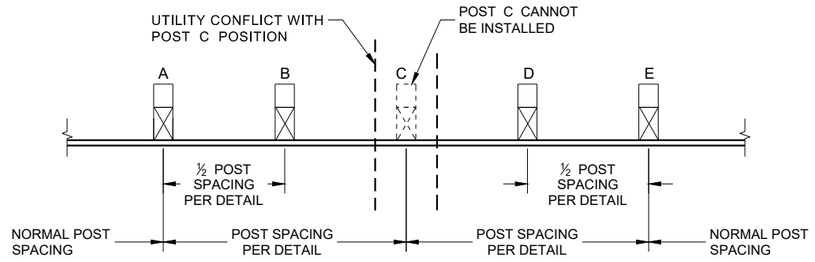
| L | T (MIN.) |
|---|---|
| 1 ¼" | 1 ⅛" |
| 2" | 1 ¾" |
| 10" | 4" |
| 14" | 4 1⁄16" |
| 18" | 4" |
| 21" | 4 1⁄16" |
| 25" | 4" |



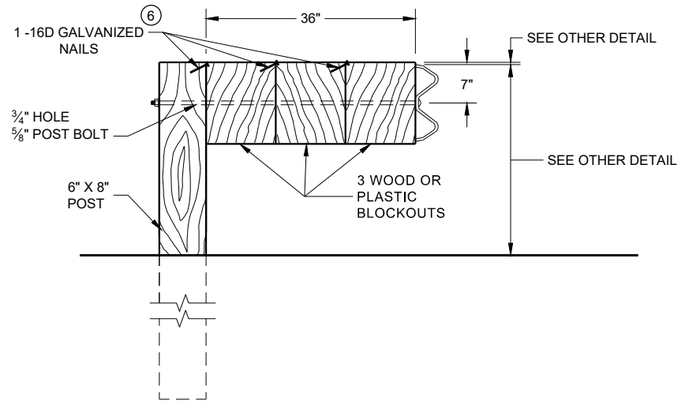

## ALTERNATE BOLT HEAD



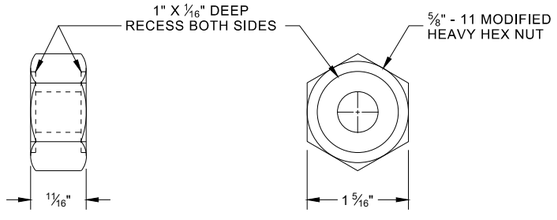

## PLAN VIEW
## BEAM LAPPING DETAIL



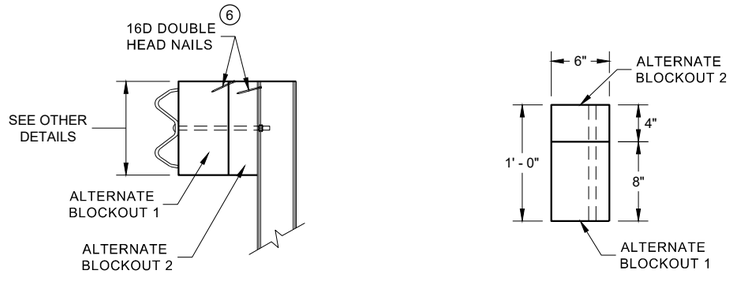

## POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION




## DETAIL FOR 36" BLOCKOUT DEPTH




## POST BOLT, SPLICE BOLT AND RECESS NUT




SIDE VIEW PLAN VIEW

## ALTERNATE WOOD BLOCKOUT DETAIL

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.

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

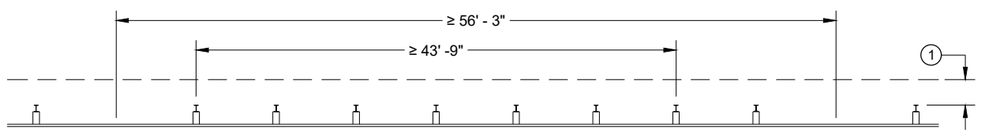
**MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTA

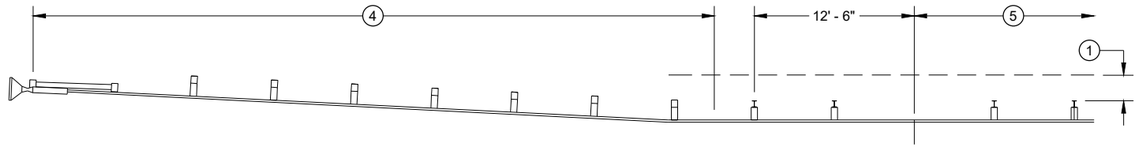



6

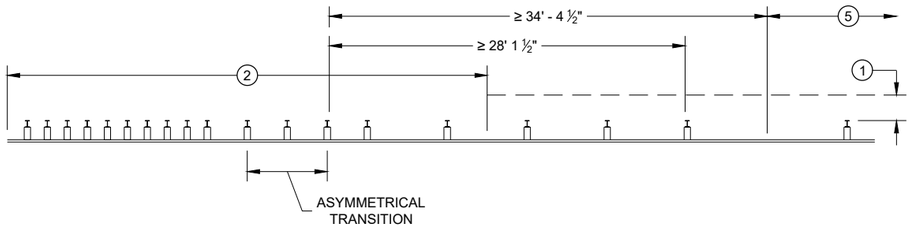

SDD 14B42 - 06c



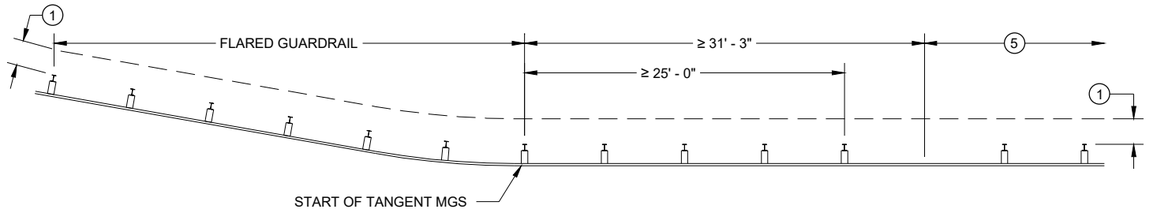

**MISSING POST IN NORMAL BEAM GUARD RUN**



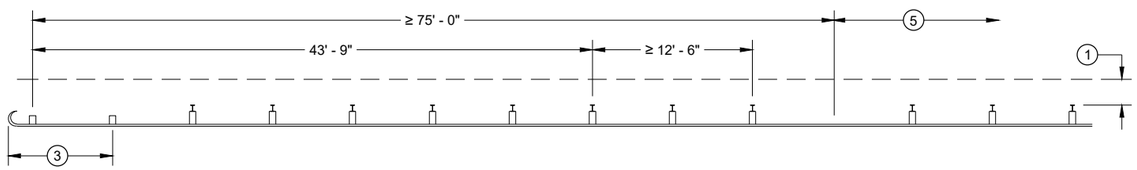

**MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT**



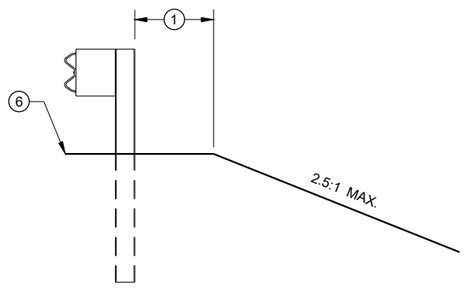

**MISSING POST NEAR APPROACH THRIE BEAM TRANSITION**




**MISSING POST IN NORMAL BEAM GUARD RUN NEAR FLARED BEAM GUARD**




**MISSING POST IN NORMAL BEAM GUARD RUN NEAR TYPE 2 TERMINAL**




**CROSS SECTION VIEW**

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

**MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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




6


SDD 14B42 - 06d

## 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 MANUFACTURERS REQUIRE DIFFERENT PERFORATED W - BEAM RAIL END PANELS. SEE MANUFACTURER'S INFORMATION.

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

(E) HARDWARE MAY VARY BETWEEN MANUFACTURER. SEE MANUFACTURER'S DRAWING FOR INFORMATION.

DIMENSIONS MAY VARY, MANUFACTURER'S INFORMATION.

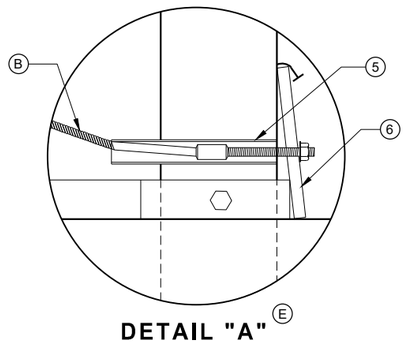
SEE SDD 14B42 FOR MORE INFORMATION.

* DO NOT ATTACH BLOCKOUTS TO POST 1 AND 2.

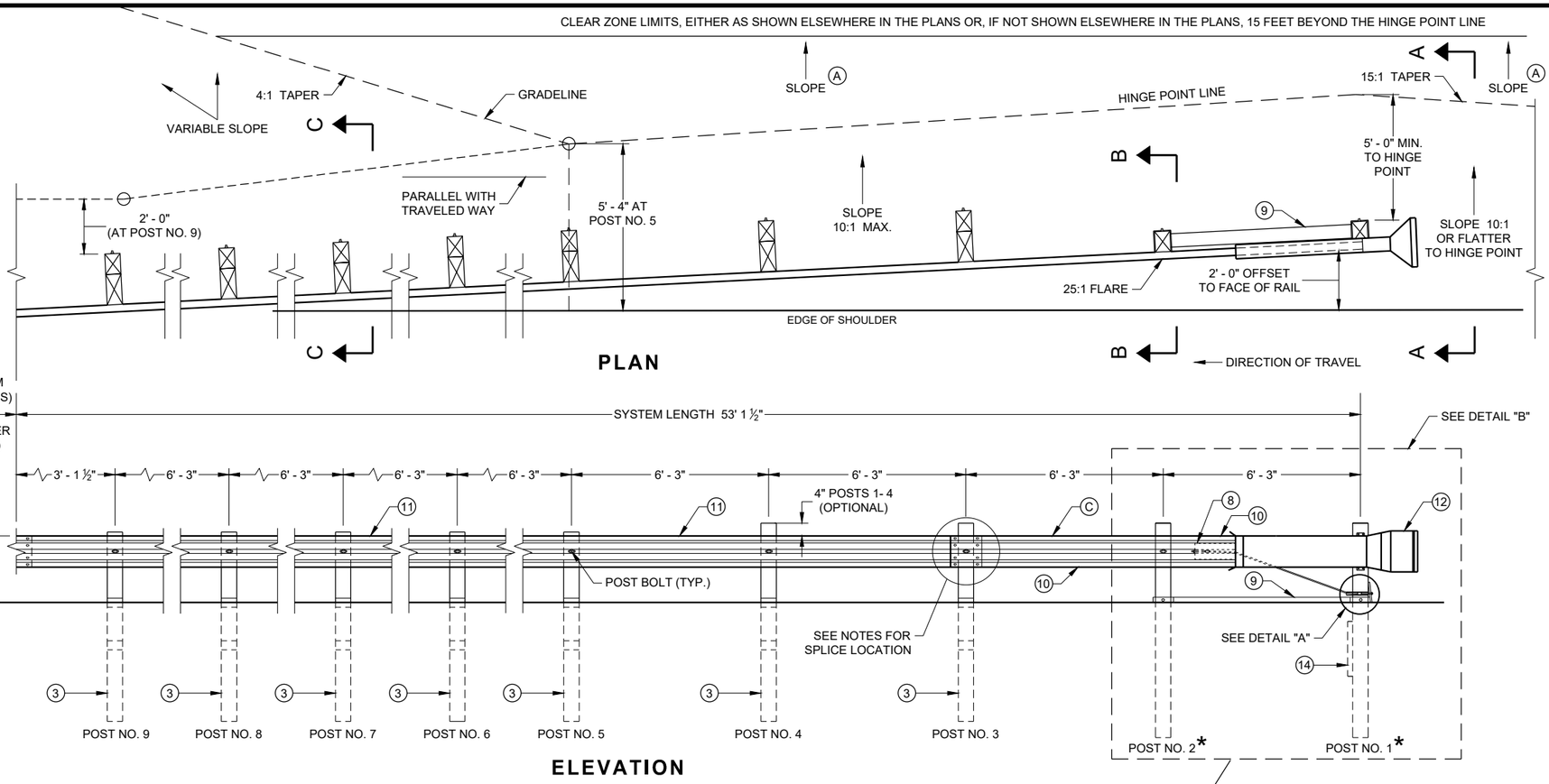
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

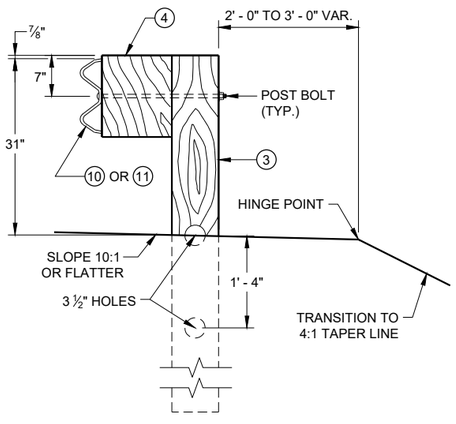
SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

THE CENTER OF THE UPPER 3 ½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE. WOOD BLOCKS ON POSTS NUMBERED 3 THROUGH 9 MAY BE ADJUSTED UP TO 3" ABOVE THE TOP OF POST.

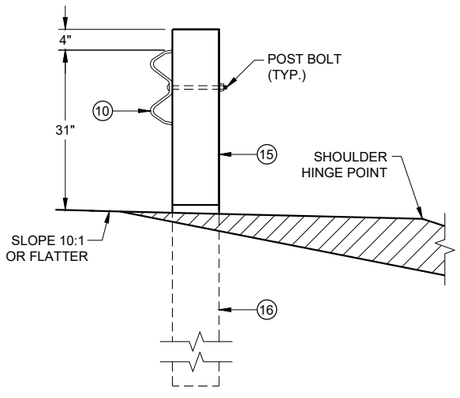



DETAIL "A" (E)

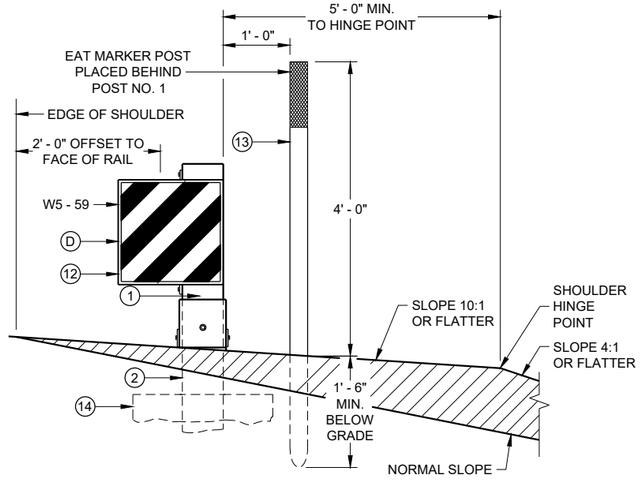


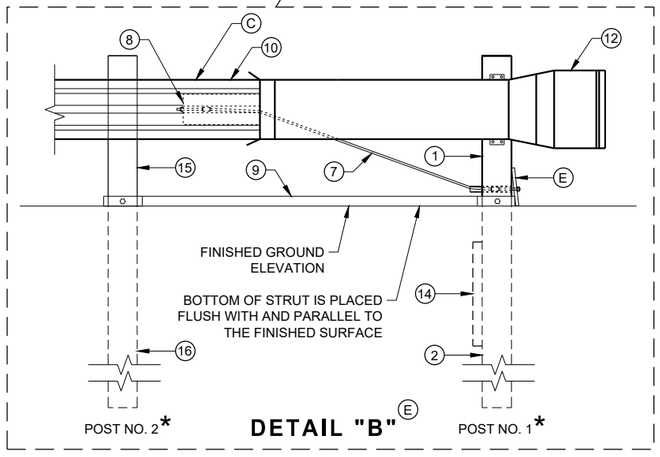

SECTION C - C
TYPICAL AT POST NOS. 3 - 9




SECTION B - B
TYPICAL AT POST NO. 2*




SECTION A - A
TYPICAL AT POST NO. 1*




DETAIL "B" (E)

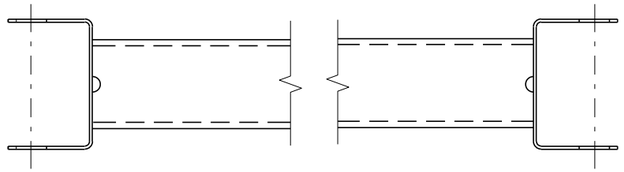
**MIDWEST GUARDRAIL SYSTEM**
**ENERGY ABSORBING TERMINAL (MGS)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



SDD 14B44 - 04a

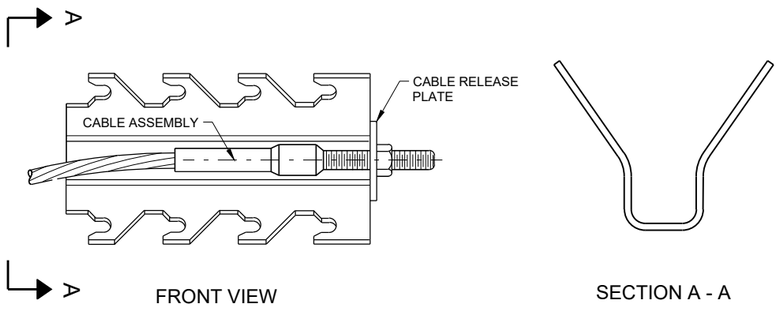
SDD 14B44 - 04a



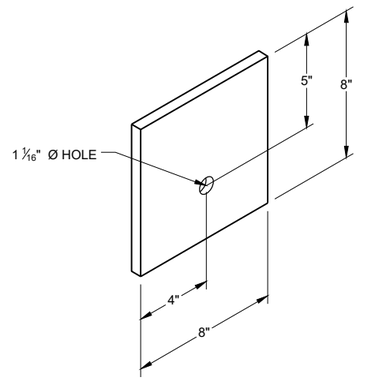
## GENERIC GROUND STRUT ⑨ Ⓔ

## BILL OF MATERIALS

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




## GENERIC ANCHOR CABLE BOX ⑧ Ⓔ




## BEARING PLATE ⑥ Ⓔ

6

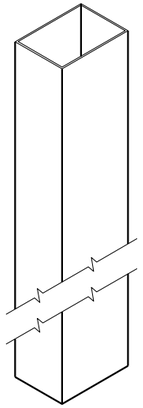
6

SDD 14B44 - 04b

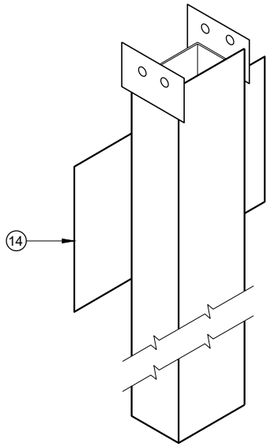
SDD 14B44 - 04b

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

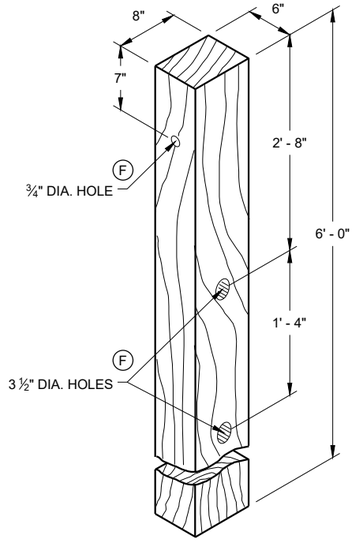
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



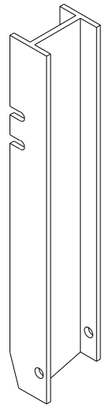
**UPPER POST NO. 1** (1) (E)



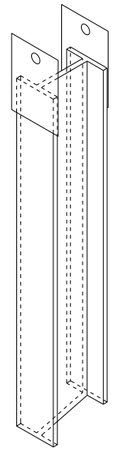

**LOWER POST NO. 1** (2) (E)



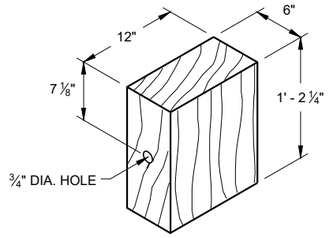

**WOOD CRT POST** (3) (E)
POSTS NUMBER 3-9



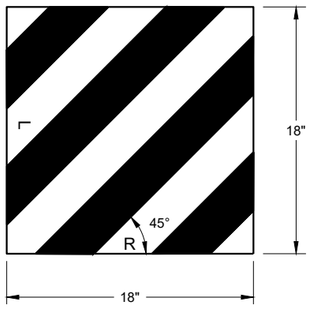
**UPPER POST NO. 2** (15) (E)



**LOWER POST NO. 2** (16) (E)

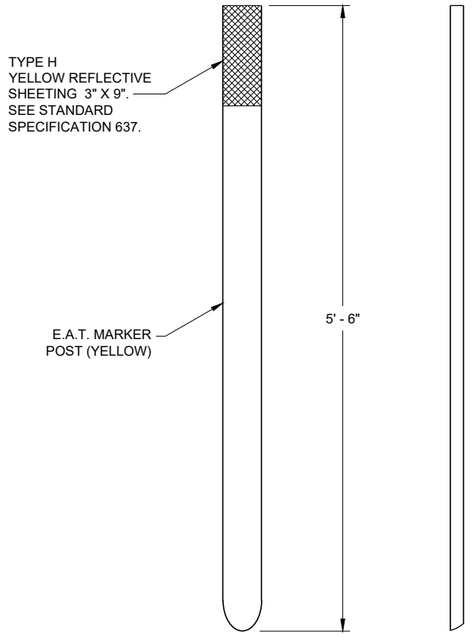



**WOOD BLOCKOUT** (4)
REQ'D. AT ALL POSTS EXCEPT POST NO'S 1 & 2



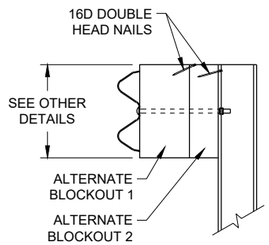

W5 - 59

**REFLECTIVE SHEETING DETAIL** (E)

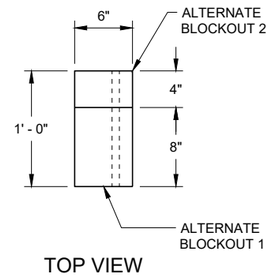



FRONT VIEW SIDE VIEW

**E.A.T. MARKER POST** (13)




SIDE VIEW




TOP VIEW

**ALTERNATE WOOD BLOCKOUT DETAIL**

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA




6

SDD 14B44 - 04c
SDD 14B44 - 04c

## GENERAL NOTES

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

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

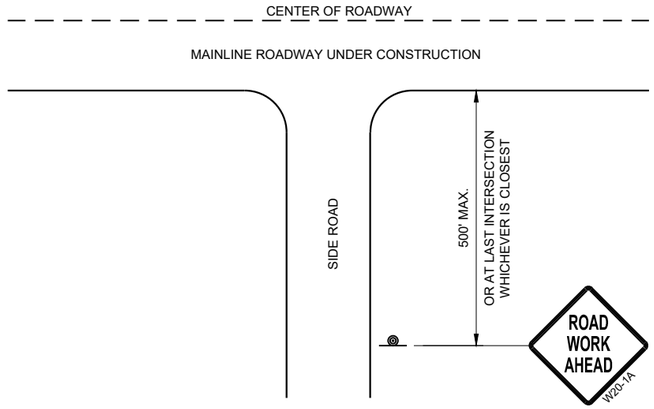
ALL SIGNS ARE 48" X 48" UNLESS OTHERWISE NOTED.

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

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

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

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



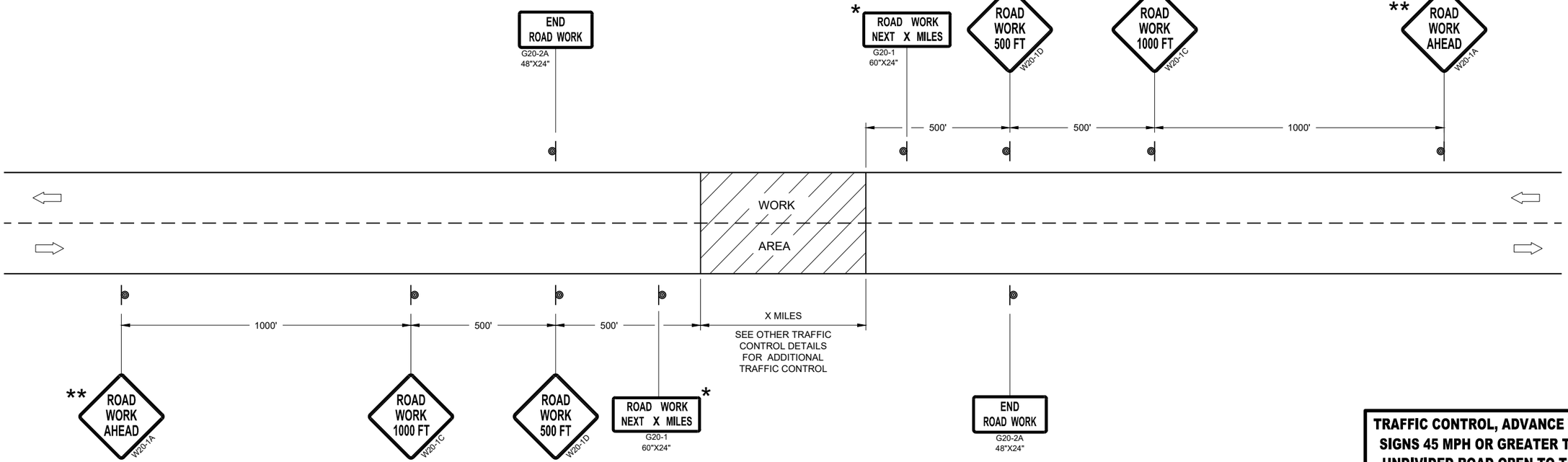

**TYPICAL SIDE ROAD APPROACH WARNING SIGN DETAIL**

## LEGEND

SIGN ON PERMANENT SUPPORT

DIRECTION OF TRAFFIC

WORK AREA




**TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45MPH OR GREATER**

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
July 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA



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SDD 15C04 - 05

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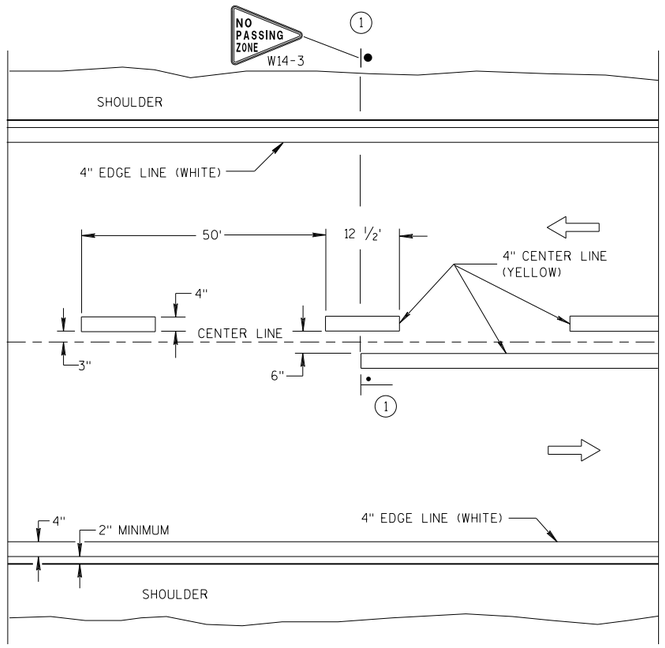
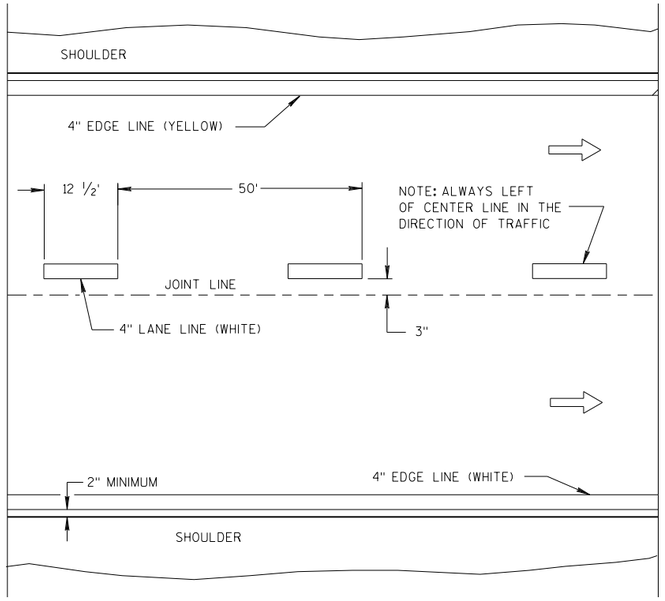
SDD 15C04 - 05




TWO WAY TRAFFIC




ONE WAY TRAFFIC

## PERMANENT PAVEMENT MARKING

## GENERAL NOTES

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

(1) LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING.

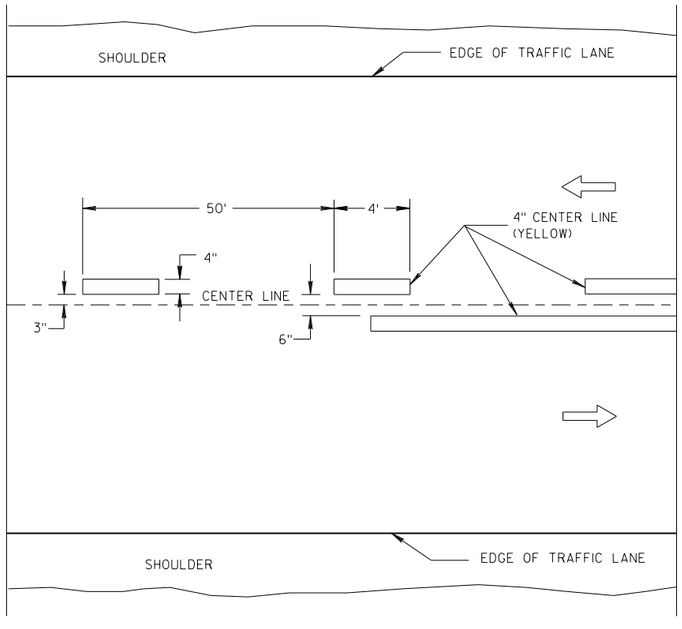
## NOTE

ARROW SYMBOL ( ⇨ ) SHOWS DIRECTION OF TRAVEL

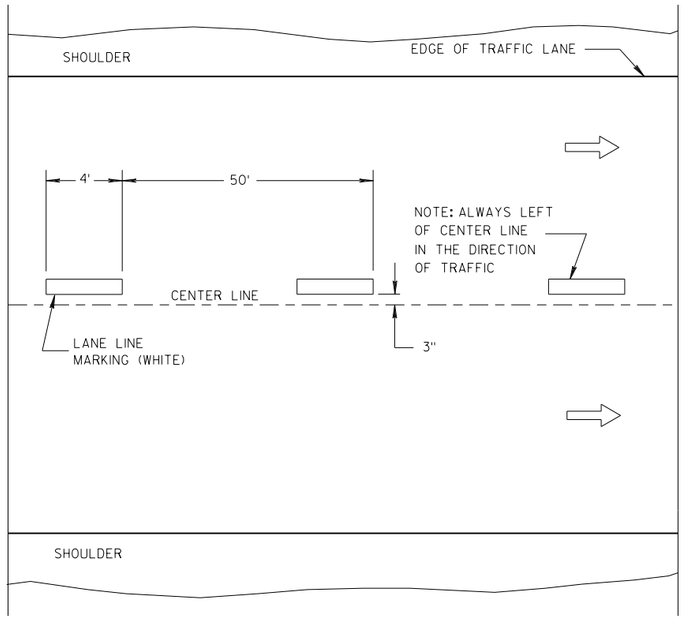
## LEGEND

"T" MARKING

POST MOUNTED SIGN




TWO WAY TRAFFIC




ONE WAY TRAFFIC

## TEMPORARY PAVEMENT MARKING

**LONGITUDINAL MARKING (MAINLINE)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

7/2018 — DATE

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

FHWA



6

S.D.D. 15 C 8-19a

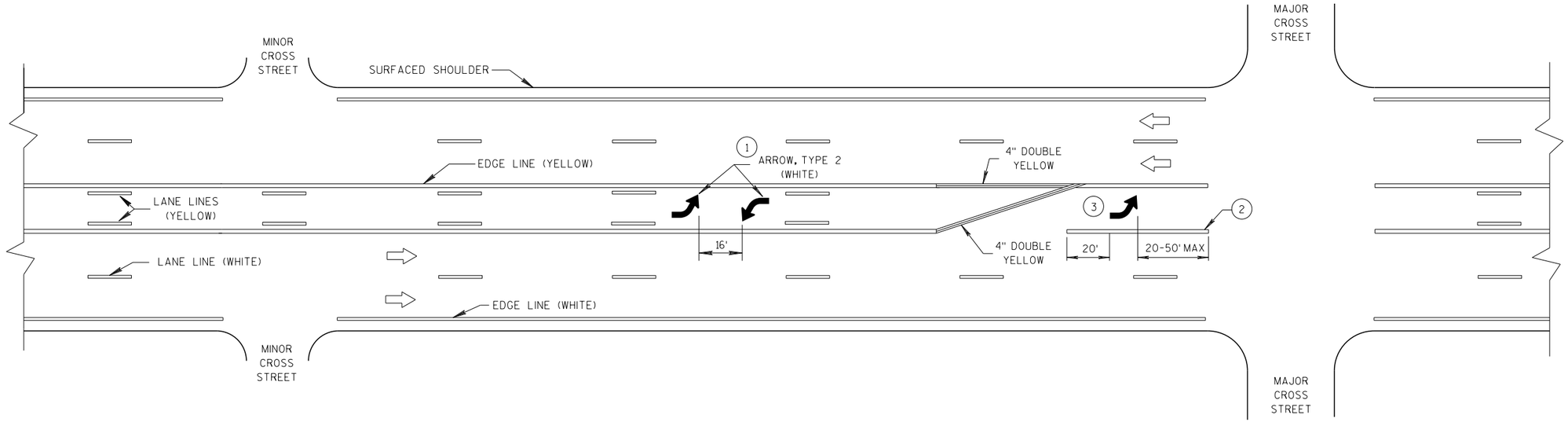
6

S.D.D. 15 C 8-19a

## GENERAL NOTES

1. A SET OF ARROWS IS REQUIRED EVERY 400 FEET OR NEAR INTERSECTIONS OR DRIVEWAYS WITH TURNING TRAFFIC.
2. 8" WHITE
3. TURN BAY LENGTH OF LESS THAN 48'DOES NOT REQUIRE PAVEMENT ARROWS OR TEXT

DIRECTION OF TRAFFIC




## TWO WAY LEFT TURN LANE

**PAVEMENT MARKING (TURN LANES)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

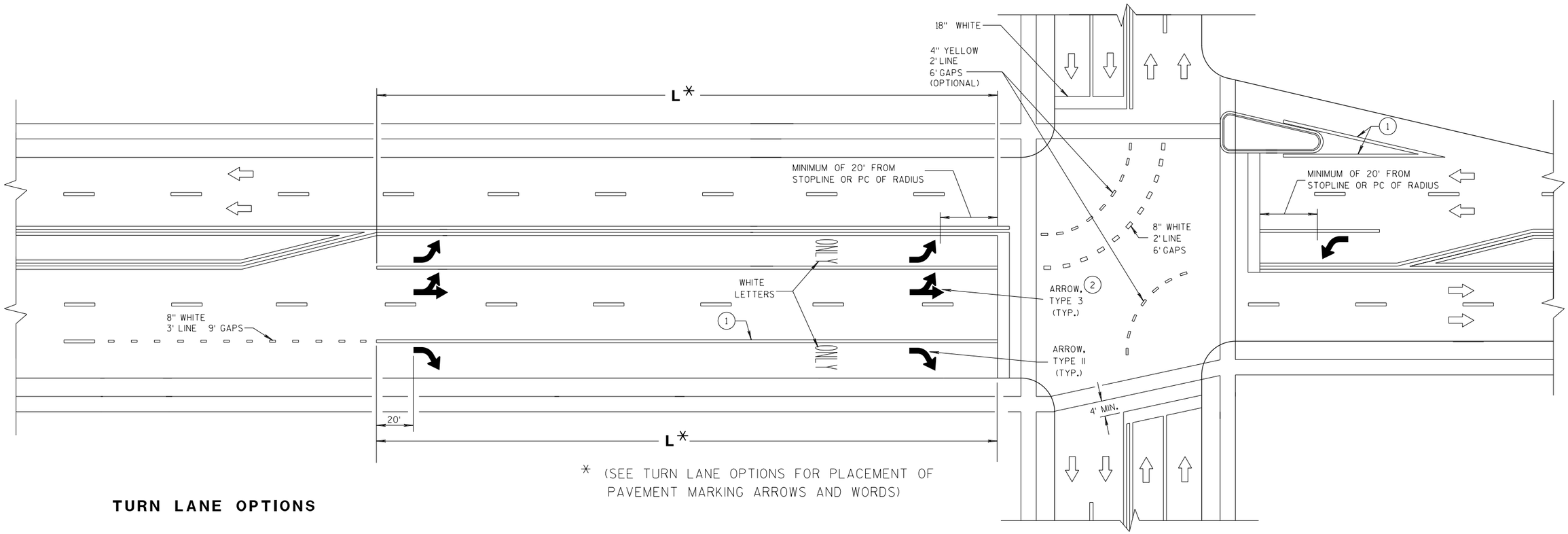


6

S.D.D. 15 C 8-19b

6

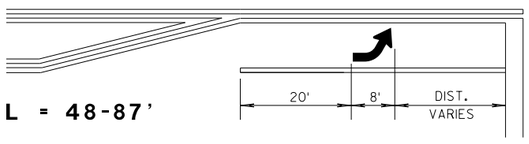
S.D.D. 15 C 8-19b



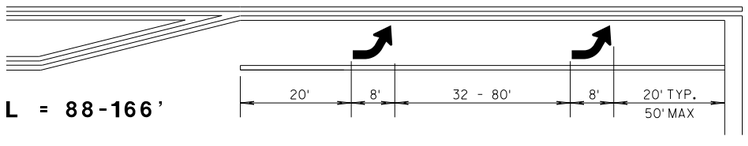

* (SEE TURN LANE OPTIONS FOR PLACEMENT OF PAVEMENT MARKING ARROWS AND WORDS)

## TURN LANE OPTIONS

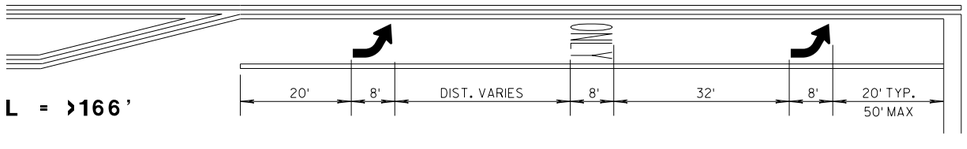
LENGTH OF TURN BAY (**L**) OF 0-47' DOES NOT REQUIRE PAVEMENT MARKING ARROWS OR WORDS




**L = 48-87'**




**L = 88-166'**




**L = >166'**

## GENERAL NOTES

(1) 8" WHITE

(2) QUANTITY AND LOCATION OF TYPE 3 ARROW ARE THE SAME AS THE TYPE II ARROWS IN THE ADJACENT TURN LANE. FOR TURN LANES WITH A PHYSICAL SEPARATION, THE ARROWS AND ONLY MARKING ARE ELIMINATED.

⇨ DIRECTION OF TRAFFIC

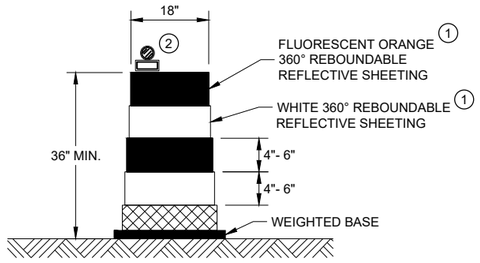
**L** = LENGTH OF TURN BAY

**PAVEMENT MARKING (TURN LANES)**

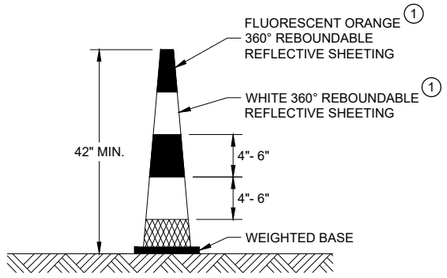
## GENERAL NOTES

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

(2) LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.

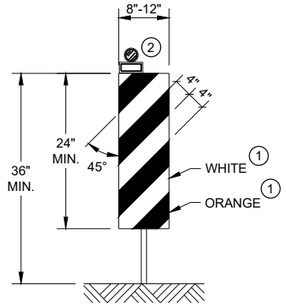



### DRUM



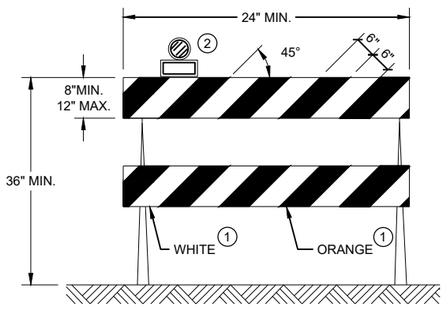

### 42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



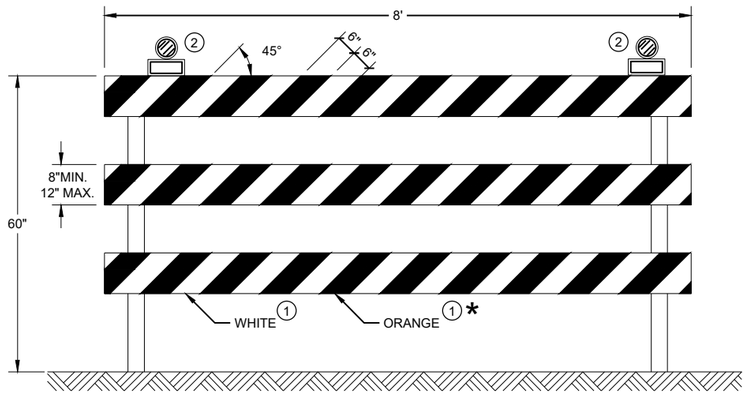

### VERTICAL PANEL

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




### TYPE II BARRICADE

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




### TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA



6

SDD 15C11 - 07b

6

SDD 15C11 - 07b

## LEGEND

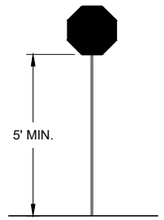
SIGN ON PORTABLE OR PERMANENT SUPPORT

TEMPORARY PORTABLE RUMBLE STRIP ARRAY

DIRECTION OF TRAFFIC

WORK AREA

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




**STOP/SLOW PADDLE ON SUPPORT STAFF**

## GENERAL NOTES

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

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

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

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

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

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

## FLAGGING

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

(1) FOR MOVING WORK OPERATIONS, POST ADDITIONAL W20-7A FLAGGER SIGNS AT APPROXIMATELY 3,500' INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.

(2) SIGN NOT REQUIRED IF FLAGGING OPERATION OCCURS WITHIN A SIGNED ROAD WORK ZONE AREA.

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

## TEMPORARY PORTABLE RUMBLE STRIPS

UTILIZE TEMPORARY PORTABLE RUMBLE STRIPS ON ALL FLAGGING OPERATIONS.

(3) EACH TEMPORARY PORTABLE RUMBLE STRIP ARRAY CONSISTS OF THREE RUMBLE STRIPS SPACED ACCORDING TO MANUFACTURER'S RECOMMENDATION, PLACED TRANSVERSE ACROSS THE LANE AT LOCATIONS SHOWN.

ONLY USE TEMPORARY PORTABLE RUMBLE STRIPS FOR THE APPROVED PRODUCTS LIST.

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

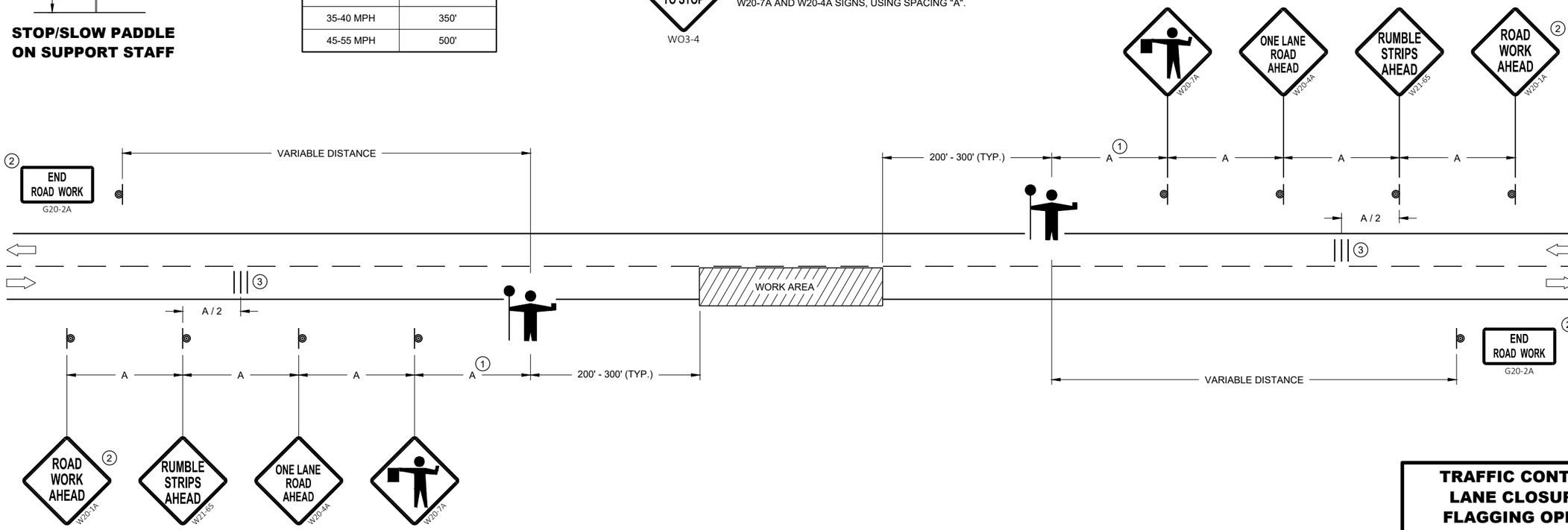
DO NOT INSTALL TEMPORARY PORTABLE RUMBLE STRIPS ON GRAVEL, MILLED SURFACES, OR ASPHALT THAT HAS BEEN PAVED LESS THAN 12 HOURS.

## SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

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


WO3-4

USE OF WO3-4 SIGN IS OPTIONAL. WHEN USED, THIS SIGN SHALL BE LOCATED BETWEEN THE W20-7A AND W20-4A SIGNS, USING SPACING "A".




**TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION**

**TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
May 2019
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEE

FHWA





6

SDD 15C12 - 07

## LEGEND

V1 LEAD VEHICLE

V2 MARKING VEHICLE

V3 SHADOW VEHICLE

TRUCK MOUNTED ATTENUATOR (TMA)

SIGN ON TEMPORARY SUPPORT

DIRECTION OF TRAFFIC

FLASHING ARROW PANEL (CAUTION)

## 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 OPERATING IN CAUTION MODE. SIGNS PLACED ON VEHICLES MUST NOT OBSCURE THE ARROW PANEL.

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

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 AND HORIZONTAL CURVES THAT RESTRICT SIGHT DISTANCE.

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

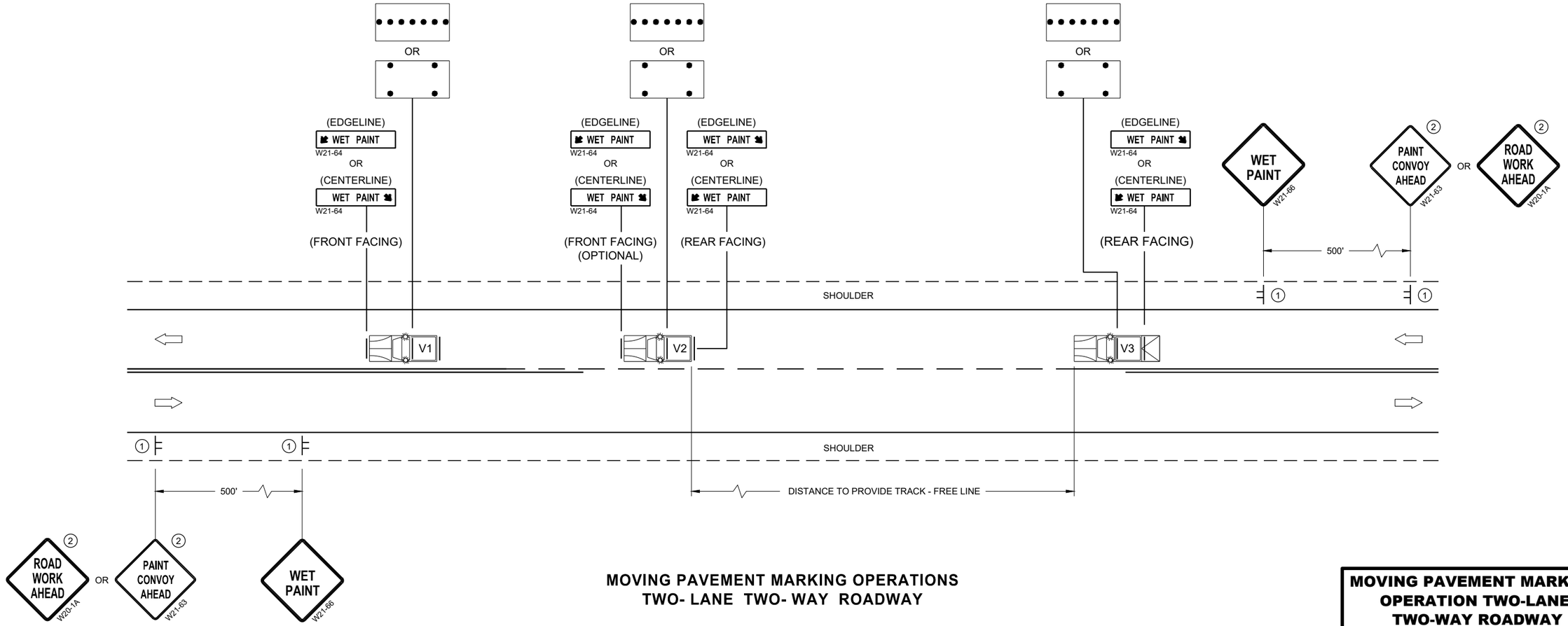
WHEN NO WORK ACTIVITY IS TAKING PLACE, REMOVE OR LAY STATIONARY SIGNS AND SUPPORTS FLAT ON THE GRADE WITH UPRIGHTS ORIENTED PARALLEL TO AND DOWNSTREAM FROM TRAFFIC.

CONES SHOULD BE USED BETWEEN THE MARKING AND SHADOW VEHICLE AT 100 FOOT SPACING. CONES MAY BE OMITTED ON PAINTED LINE IF APPROVED BY THE ENGINEER. CONSIDER PAVEMENT MARKING DRY OR CURE TIMES AND TRAFFIC VOLUME.

CONES SHALL BE A MINIMUM OF 18" FOR WET PAVEMENT MARKING .

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

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




## MOVING PAVEMENT MARKING OPERATIONS TWO- LANE TWO- WAY ROADWAY

**MOVING PAVEMENT MARKING OPERATION TWO-LANE TWO-WAY ROADWAY**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2019
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA



SDD 15C19 - 06a

SDD 15C19 - 06a

## GENERAL NOTES

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

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

THIS LANE CLOSURE IS TYPICAL FOR CLOSING RIGHT LANE - REVERSE FOR CLOSING LEFT LANE.

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

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

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

FOR A LANE CLOSURE THAT IS IN PLACE LESS THAN 7 CONTINUOUS DAYS AND NIGHTS, THE ADVANCED WARNING SIGNS MAY BE MOUNTED ON PORTABLE SUPPORTS.

REMOVE PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE 4 OR MORE CONTINUOUS DAYS AND NIGHTS.

IF THE HORIZONTAL ALIGNMENT IS SUCH THAT A CURVE MAY REQUIRE ADDITIONAL DELINEATION, THE DEVICE SPACING MAY BE DECREASED TO 50 FEET.

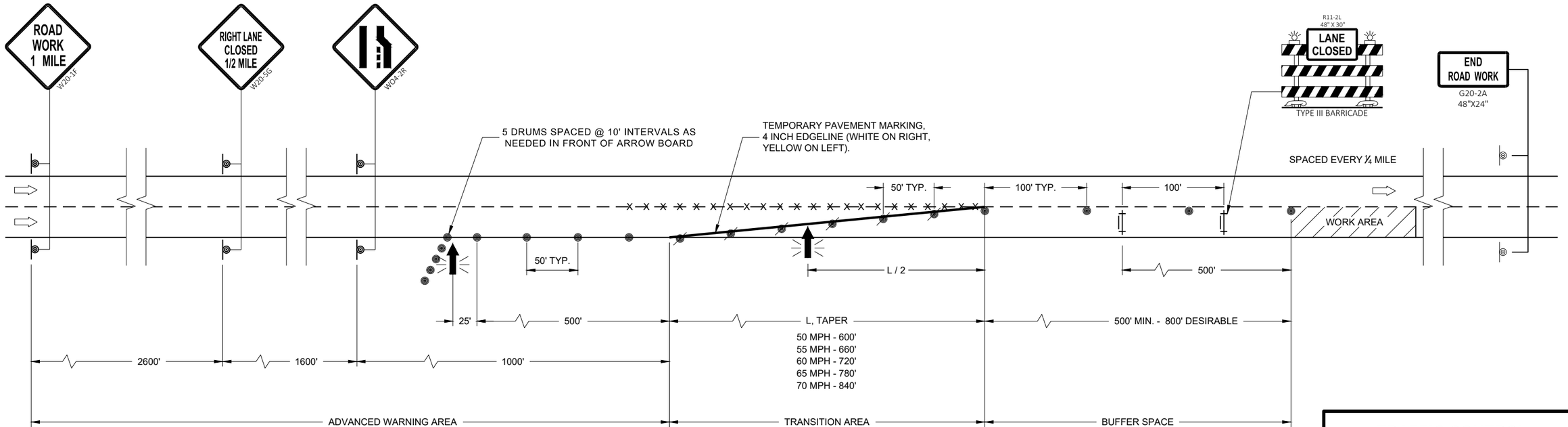
WARNING LIGHTS ARE NOT REQUIRED IF THE LANE CLOSURE IS A DAYTIME ONLY OPERATION.

ADJUSTMENTS IN BUFFER SPACE NEED TO BE INCORPORATED WHEN THE LANE CLOSURE OCCURS NEAR AN INTERCHANGE EXIT OR ENTRANCE RAMP OR INTERSECTION. THE LANE CLOSURE MUST TAKE PLACE FAR ENOUGH IN ADVANCE OF AN EXIT OR ENTRANCE RAMP TO STILL ALLOW FOR ADEQUATE BUFFER SPACE. THE MINIMUM LENGTH OF THE BUFFER SPACE BEFORE AN EXIT RAMP SHOULD BE ONE HALF THE LENGTH OF THE TRANSITION AREA. THE ENTRANCE RAMP SHOULD BE FOLLOWED BY THE ORIGINAL BUFFER SPACE LENGTH OF 800 FEET DESIRABLE PRIOR TO ANOTHER TRAFFIC CONTROL CHANGE SUCH AS A CROSSOVER MANEUVER.

CONSIDER ROADWAY GEOMETRICS WHEN LOCATING SIGNS AND ARROW BOARD SO THE DRIVER HAS A CLEAR VIEW OF THE ARROW BOARD AND LANE CLOSURE DRUMS.

## LEGEND

- TYPE III BARRICADE WITH ATTACHED SIGN
- SIGN ON PERMANENT SUPPORT
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- TRAFFIC CONTROL DRUM
- TYPE "A" WARNING LIGHT (FLASHING)
- REMOVING PAVEMENT MARKING
- DIRECTION OF TRAFFIC
- WORK AREA
- FLASHING ARROW BOARD




**TRAFFIC CONTROL LANE CLOSURE**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
November 2018
DATE

/S/ Andrew Heidtke
WORK ZONE ENGINEER

FHWA



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SDD 15D12 - 07a

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SDD 15D12 - 07a

## LEGEND

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

## TABLE A

| S \ W | 4 | 6 | 8 | 10 | BUFFER SPACE (FEET) |
|---|---|---|---|---|---|
| | SHOULDER TAPER LENGTH (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 = WS² / 60 AT 40 MPH OR LESS

SHOULDER TAPER LENGTH = 1/3L

## GENERAL NOTES

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

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

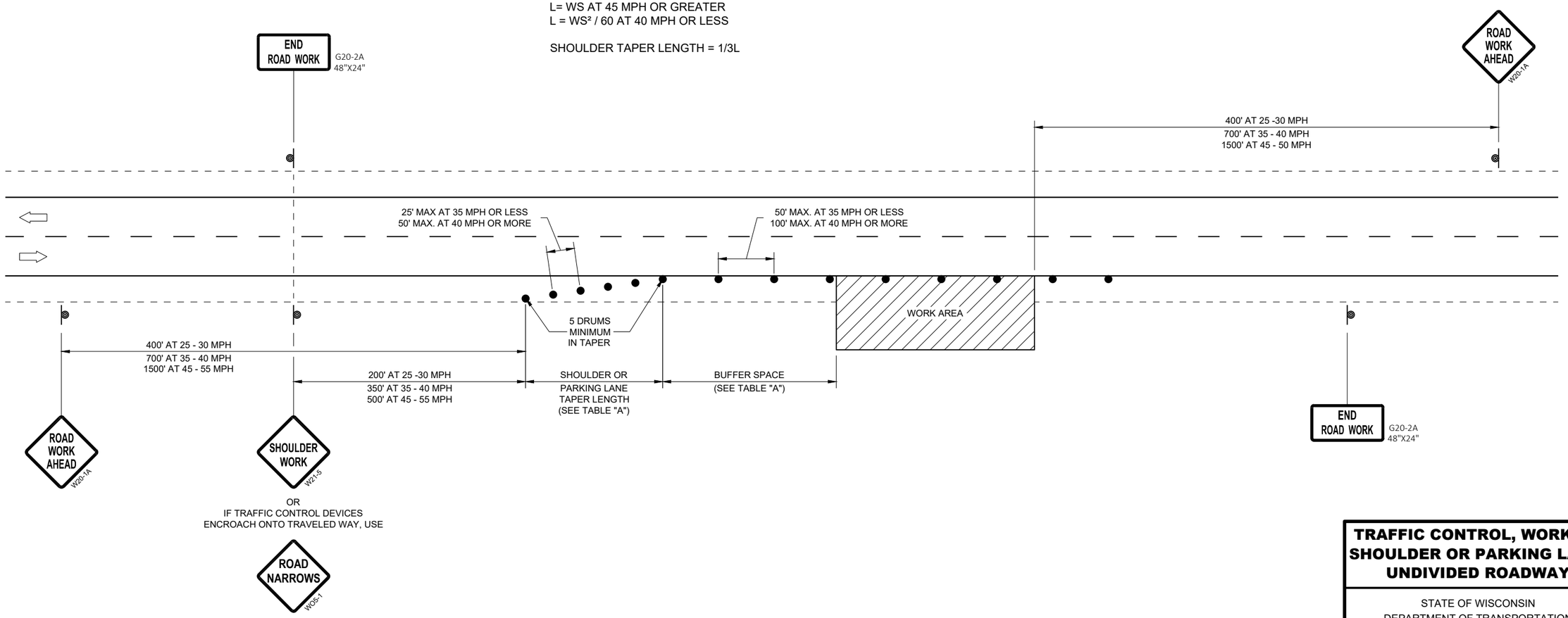
ANY SIGNS TEMPORARY OR EXISTING, WHICH CONFLICT WITH THE TRAFFIC CONTROL "IN USE" SHALL BE REMOVED OR COVERED AS NEEDED AND AS APPROVED BY THE ENGINEER.

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

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

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

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




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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
August 2019
DATE

/S/ Andrew Heidtke
STATEWIDE WORK ZONE T SAFETY ENGINEER

FHWA

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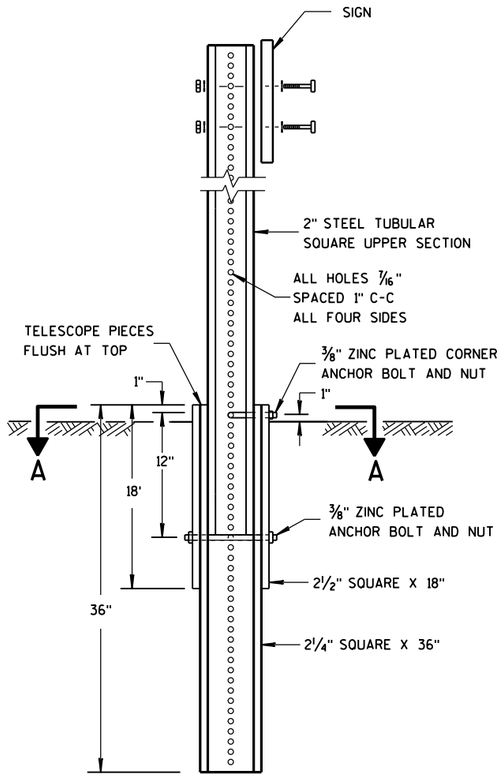
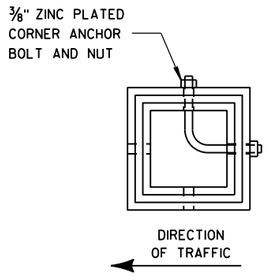
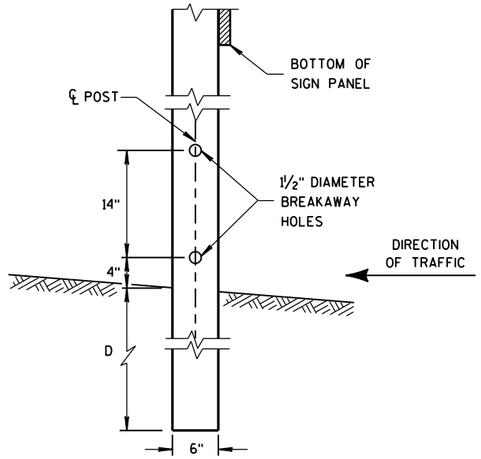
SDD 15D28 - 03




## DETAIL OF TUBULAR STEEL SIGN POST




## SECTION A-A



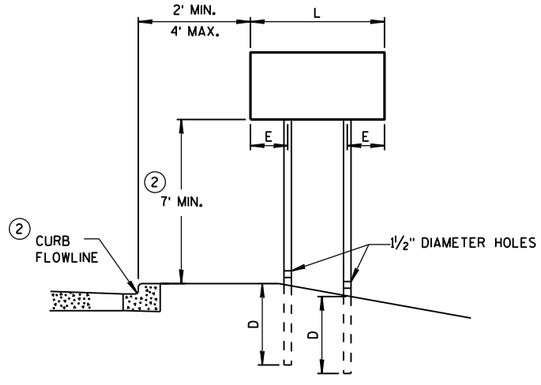

## 4"x6" WOOD POST MODIFICATION

## GENERAL NOTES

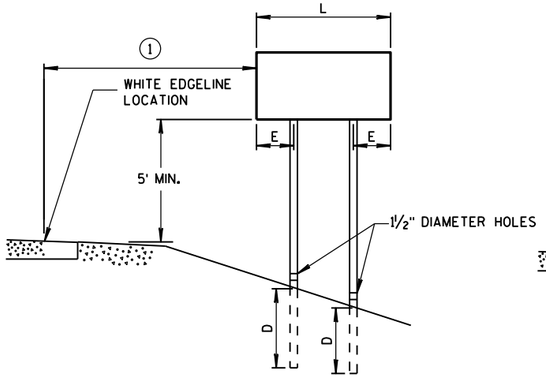
(1) 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.

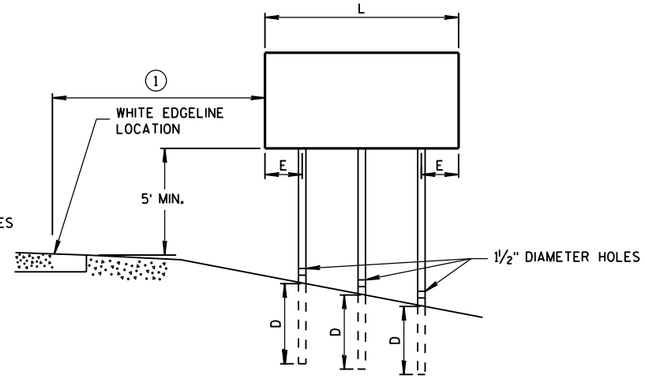
(2) THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK AND NO PARKING, VERTICAL CLEARANCE MAY BE REDUCED TO 5 FOOT MINIMUM. OFFSET OF SIGNS IS MEASURED FROM THE CURB FLOWLINE.

(3) FOR SIGNS REQUIRING 4 POSTS, SPACE INTERMEDIATE POSTS EVENLY.




## URBAN AREA




## RURAL AREA

## POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

### TUBULAR STEEL POSTS

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

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

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

### WOOD POST EMBEDMENT DEPTH

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

### 4" X 6" WOOD POST

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

SEE NOTE (3)

TEMPORARY TRAFFIC CONTROL SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

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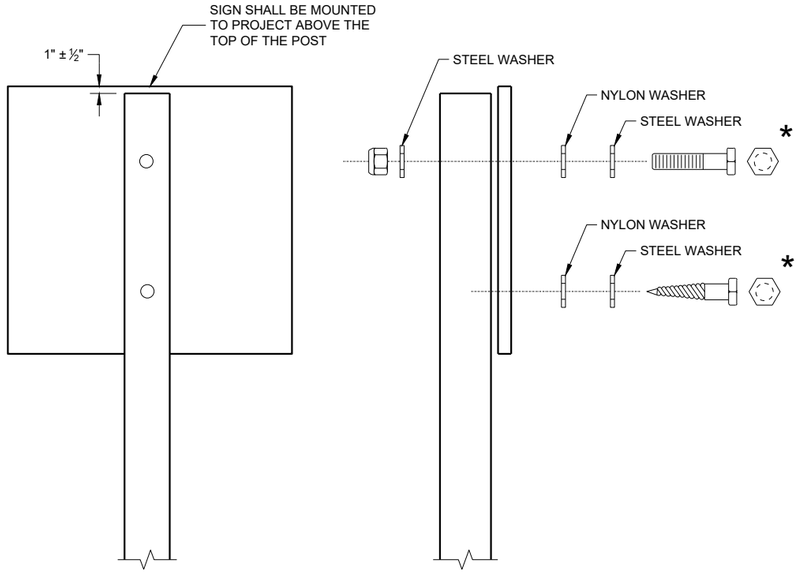
S.D.D. 15 D 38-2a




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

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

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

WOOD POST (4" x 6")
LAG SCREWS - ⅜" x 3"
MACHINE BOLTS - 5/16" x 6 ½" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")
MACHINE BOLTS - ⅜" x 3 ¼" LENGTH W/NUTS
RIVETS - 9/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH, GRIP RANGE 0.042 - 0.375 INCH

WASHERS (ALL POSTS) -
1 ¼" O.D. x ⅜" I.D. x 1/16" STEEL
1 ¼" O.D. x ⅜" I.D. x 0.080 NYLON

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

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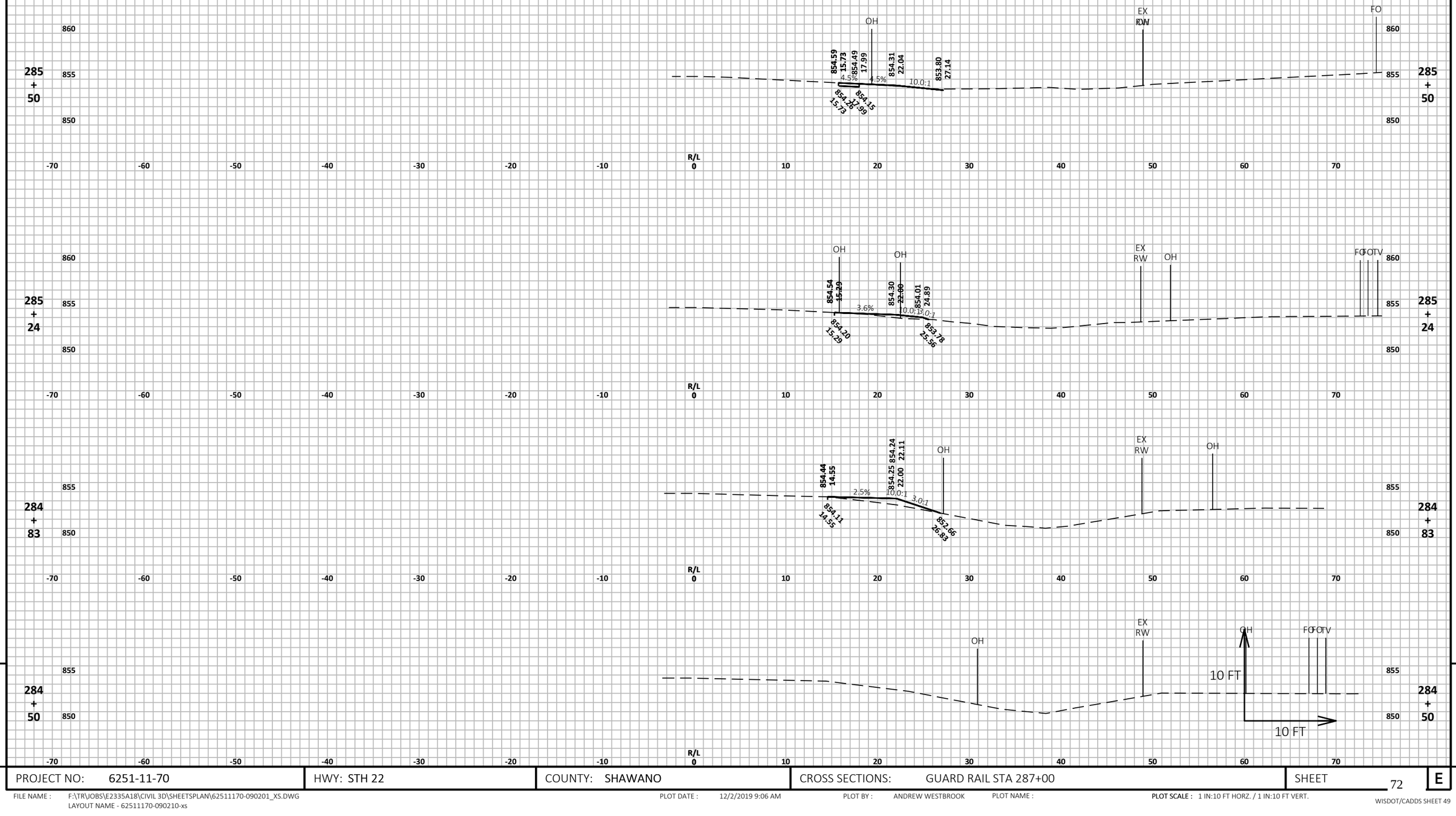
SDD 15D38 - 02b

SDD15D38 - 02b

**ATTACHMENT OF SIGNS TO POSTS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017
DATE
/S/ Andrew Heidtke
WORK ZONE ENGINEE
FHWA

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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 287+00 | SHEET 72 | E |
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LAYOUT NAME - 62511170-090210-xs

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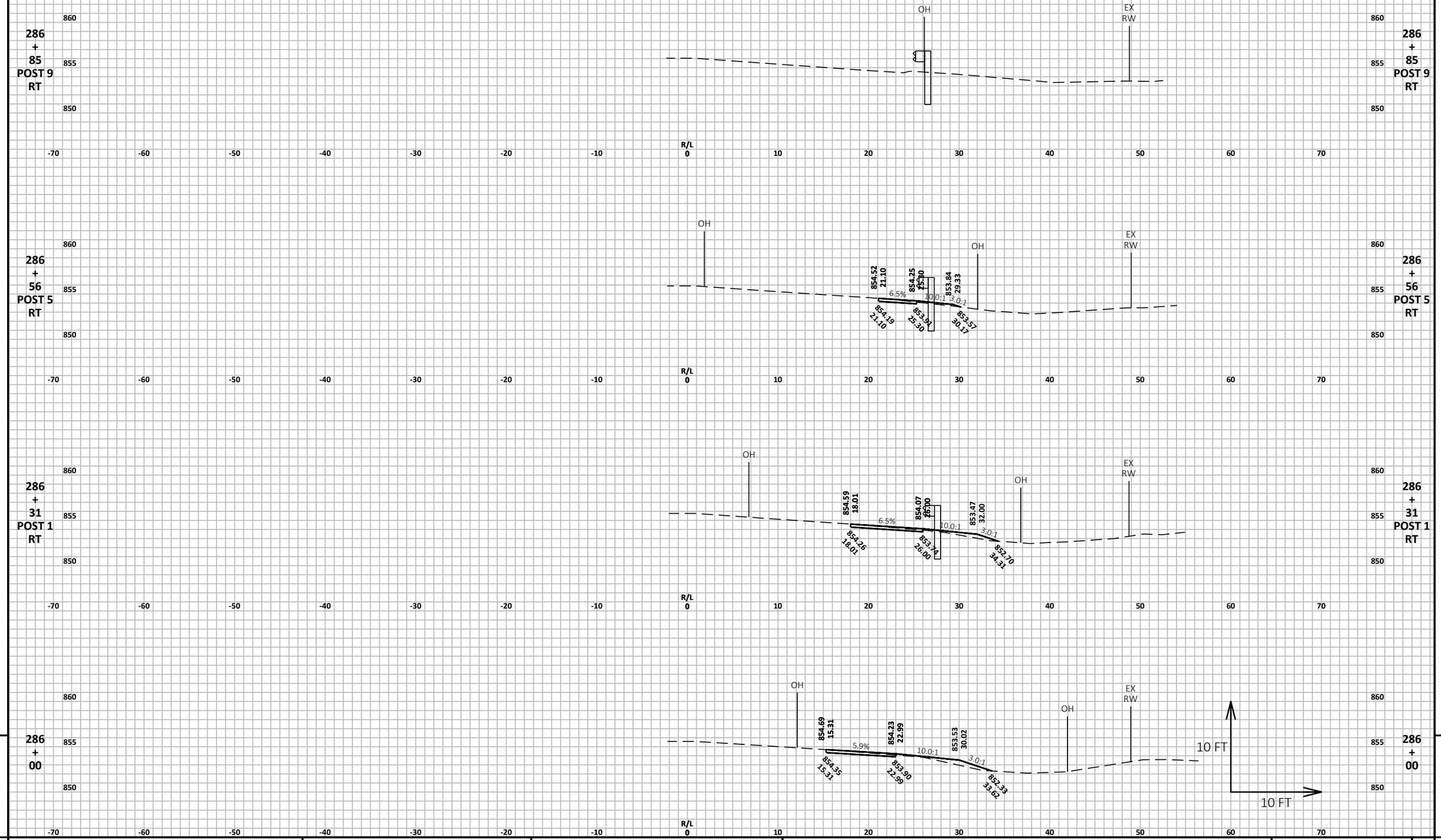


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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 287+00 | SHEET 73 | E |
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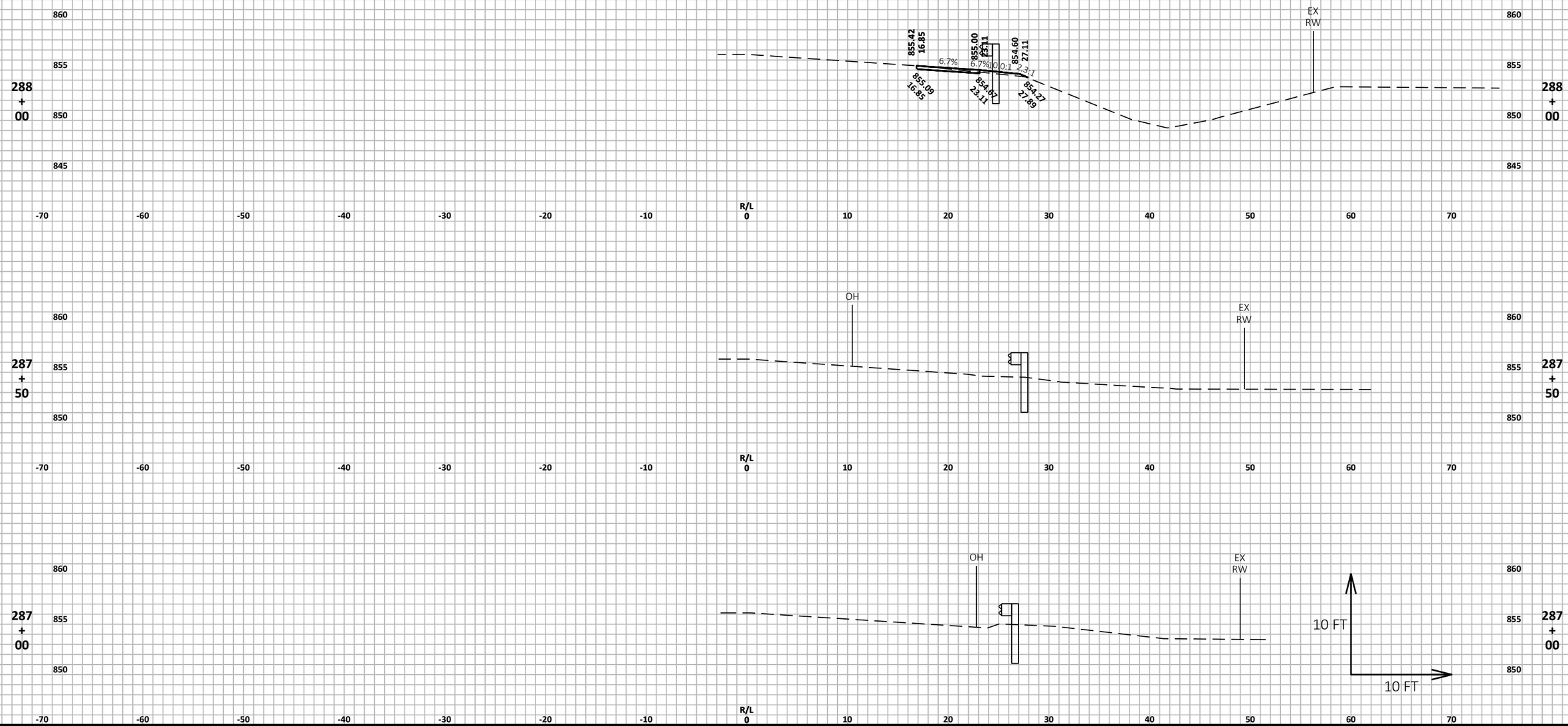
LAYOUT NAME - 62511170-090211-xs

PLOT DATE : 12/2/2019 9:06 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49




| | | | | | |
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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 287+00 | SHEET 74 | E |

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LAYOUT NAME - 62511170-090212-xs

PLOT DATE : 12/2/2019 9:06 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49

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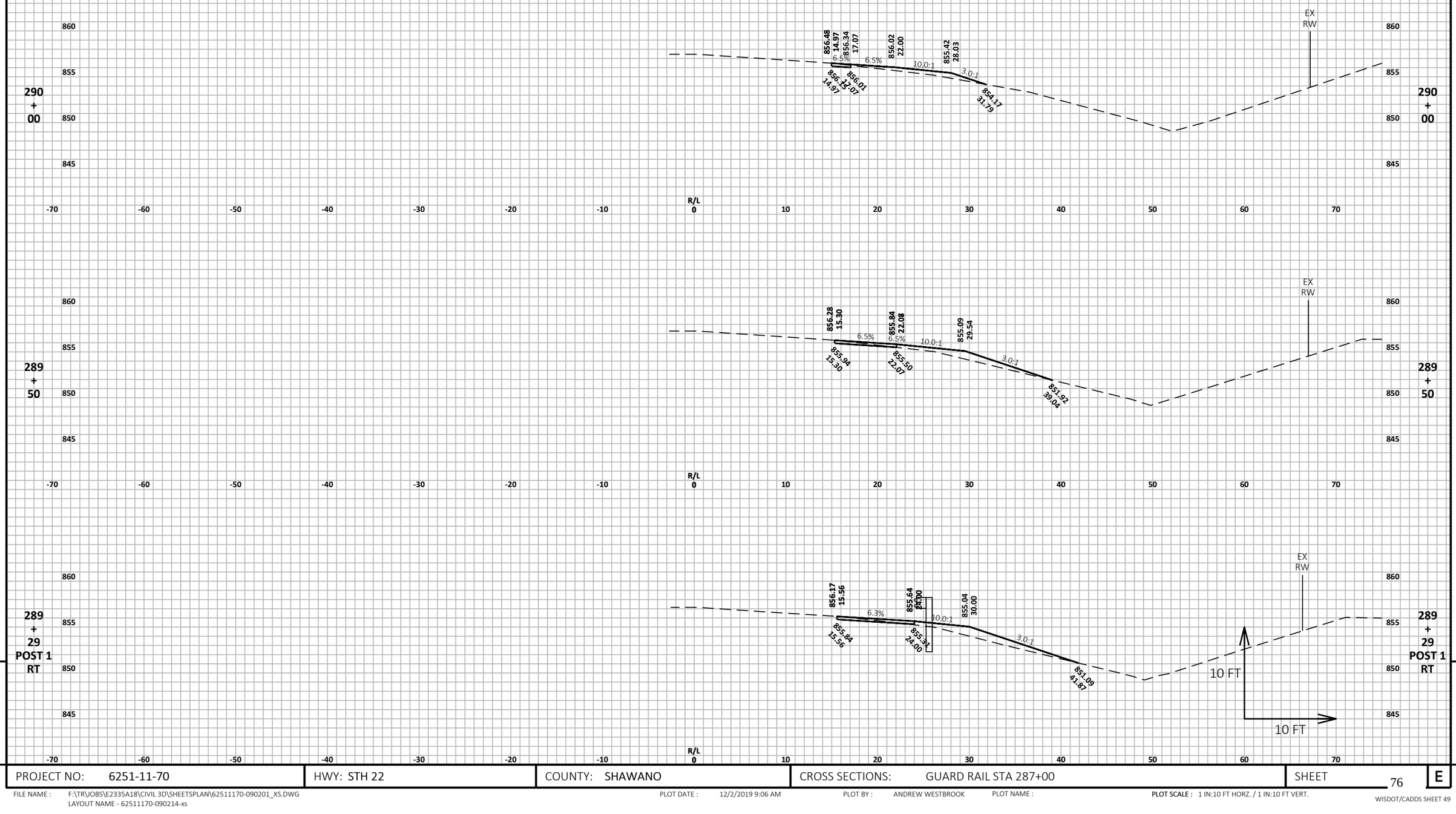
| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 287+00 | SHEET 75 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-090201_XS.DWG
LAYOUT NAME - 62511170-090213-xs

PLOT DATE : 12/2/2019 9:06 AM PLOT BY : ANDREW WESTBROOK PLOT NAME :

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

WISDOT/CADDS SHEET 49

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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 287+00 | SHEET 76 | E |
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LAYOUT NAME - 62511170-090214-xs

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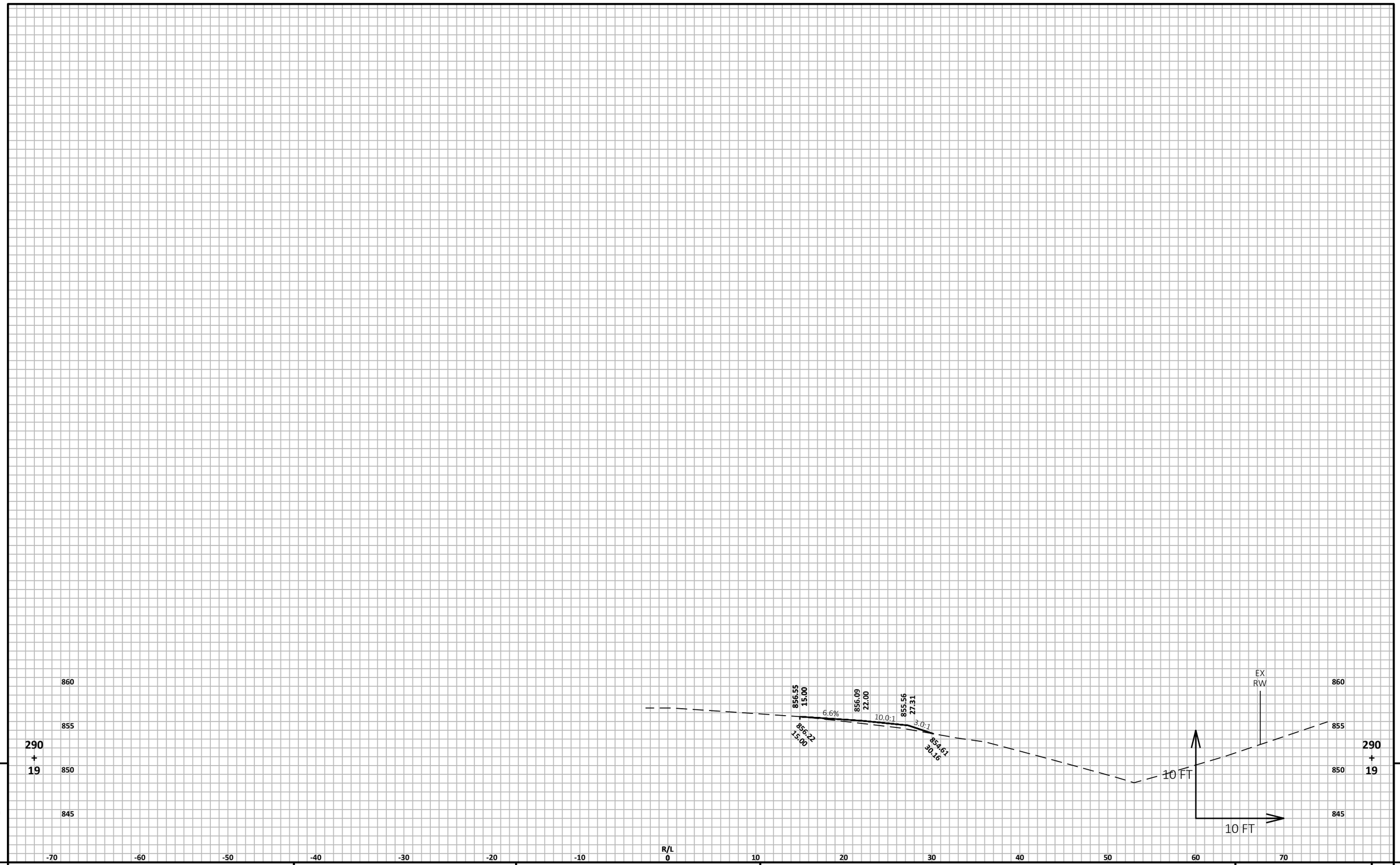
WISDOT/CADDS SHEET 49

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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 287+00 | SHEET 77 | E |
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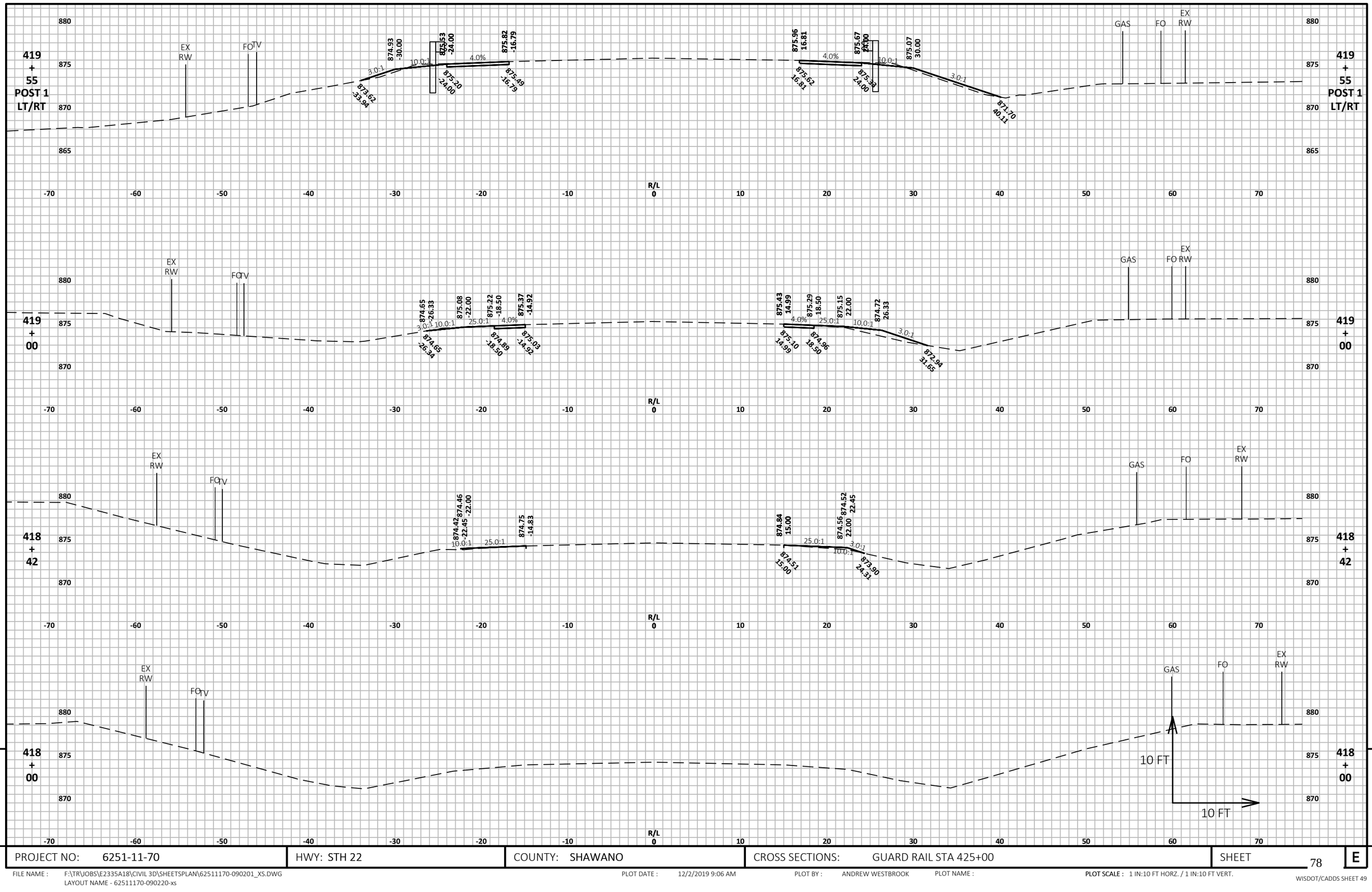
LAYOUT NAME - 62511170-090215-xs

PLOT DATE : 12/2/2019 9:06 AM PLOT BY : ANDREW WESTBROOK PLOT NAME :

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

WISDOT/CADDS SHEET 49

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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 78 | E |
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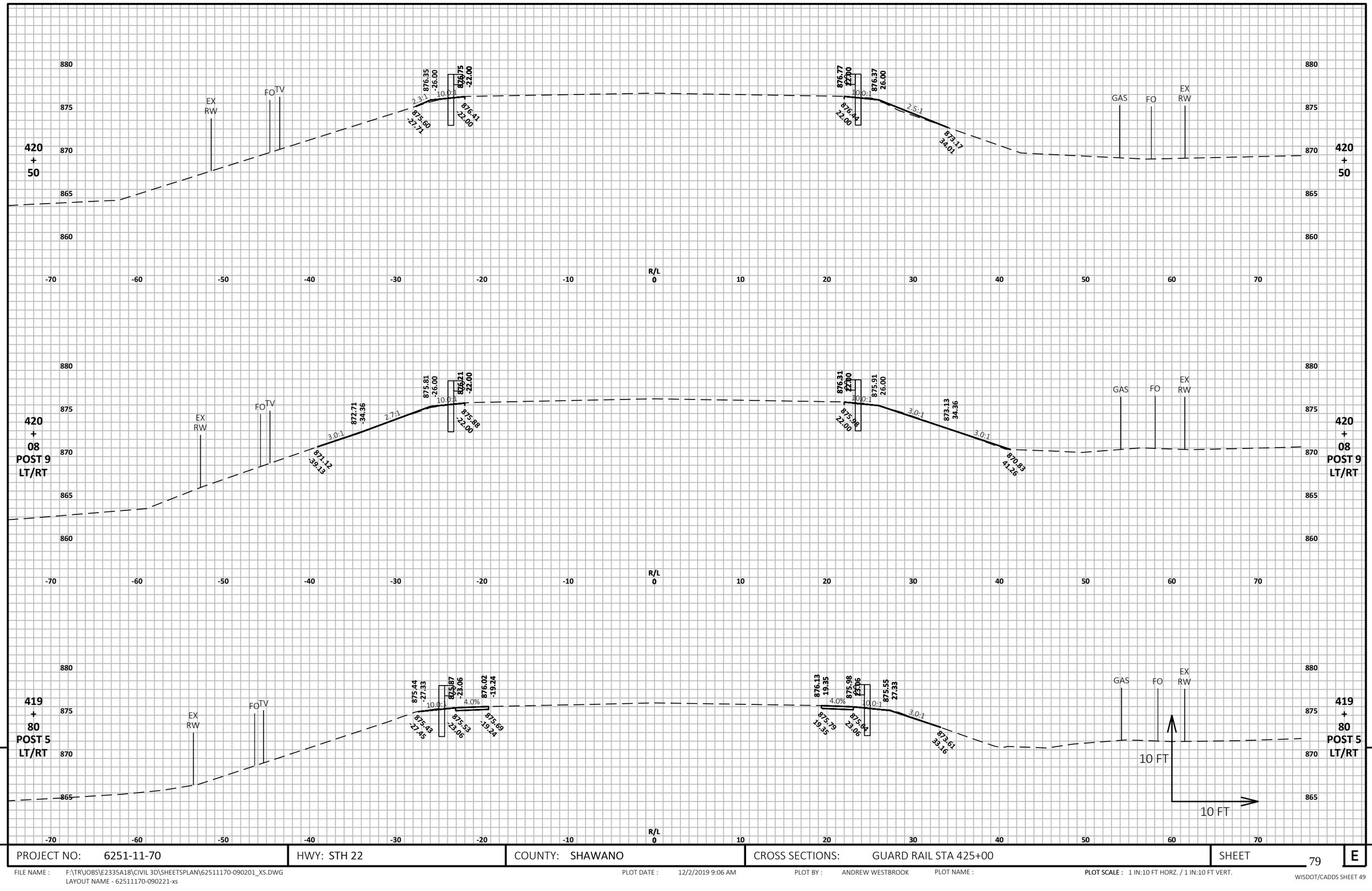
LAYOUT NAME - 62511170-090220-xs

PLOT DATE : 12/2/2019 9:06 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49

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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 79 | E |
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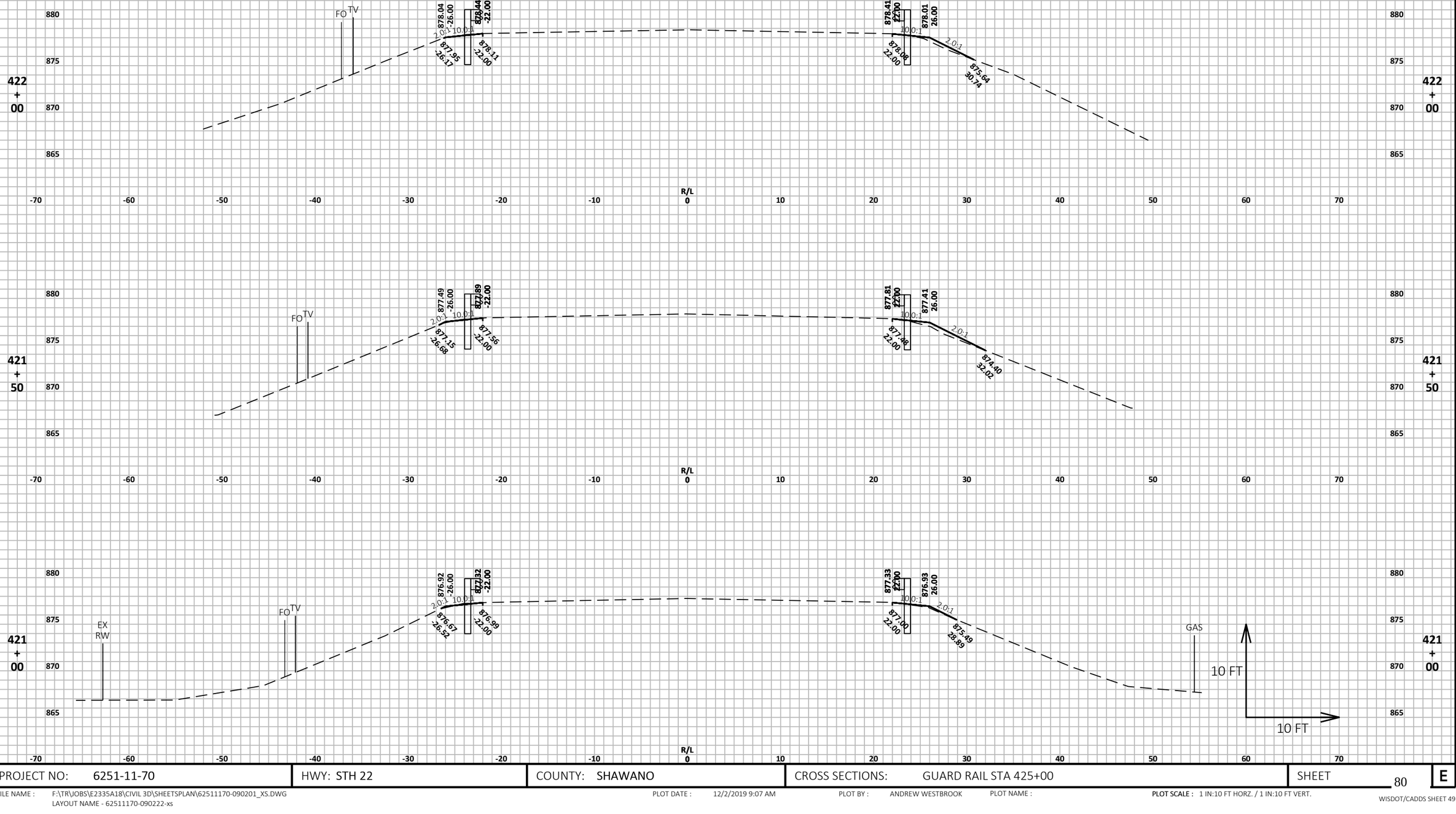
LAYOUT NAME - 62511170-090221-xs

PLOT DATE : 12/2/2019 9:06 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49

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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 80 | E |
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LAYOUT NAME - 62511170-090222-xs

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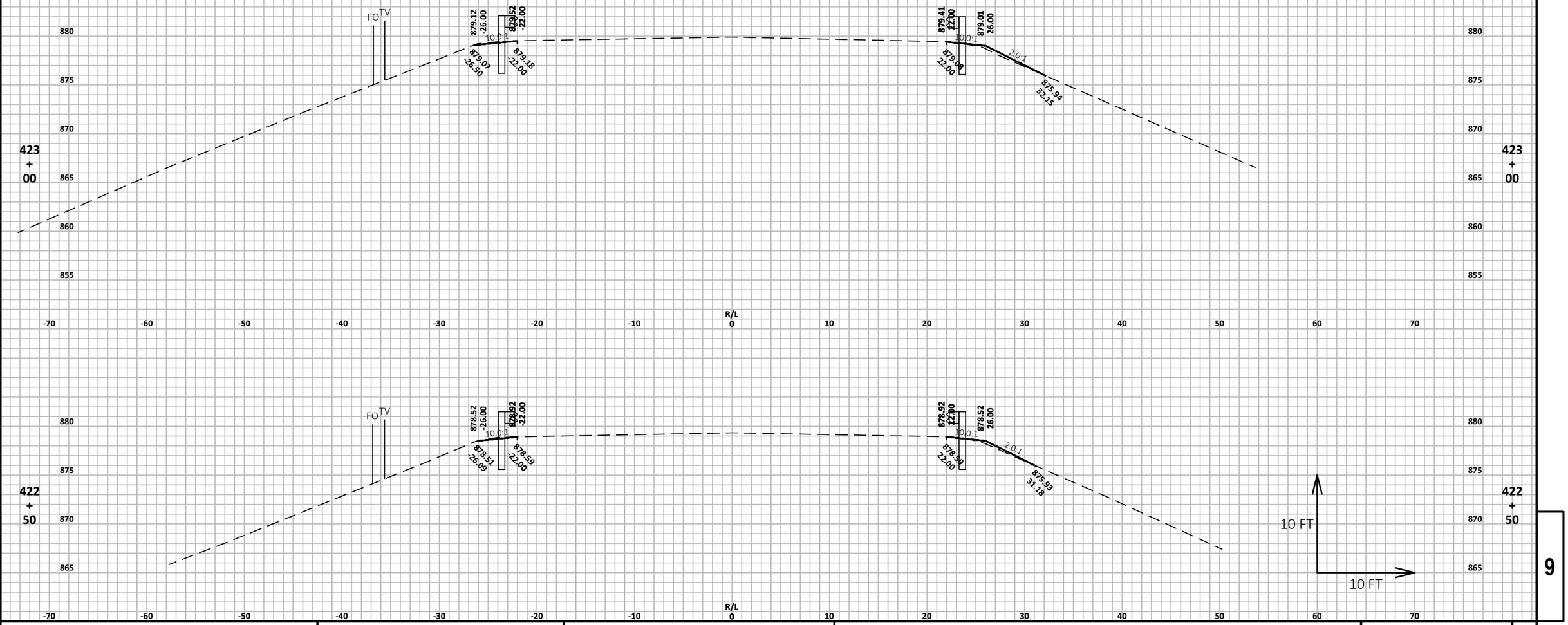


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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 81 | E |
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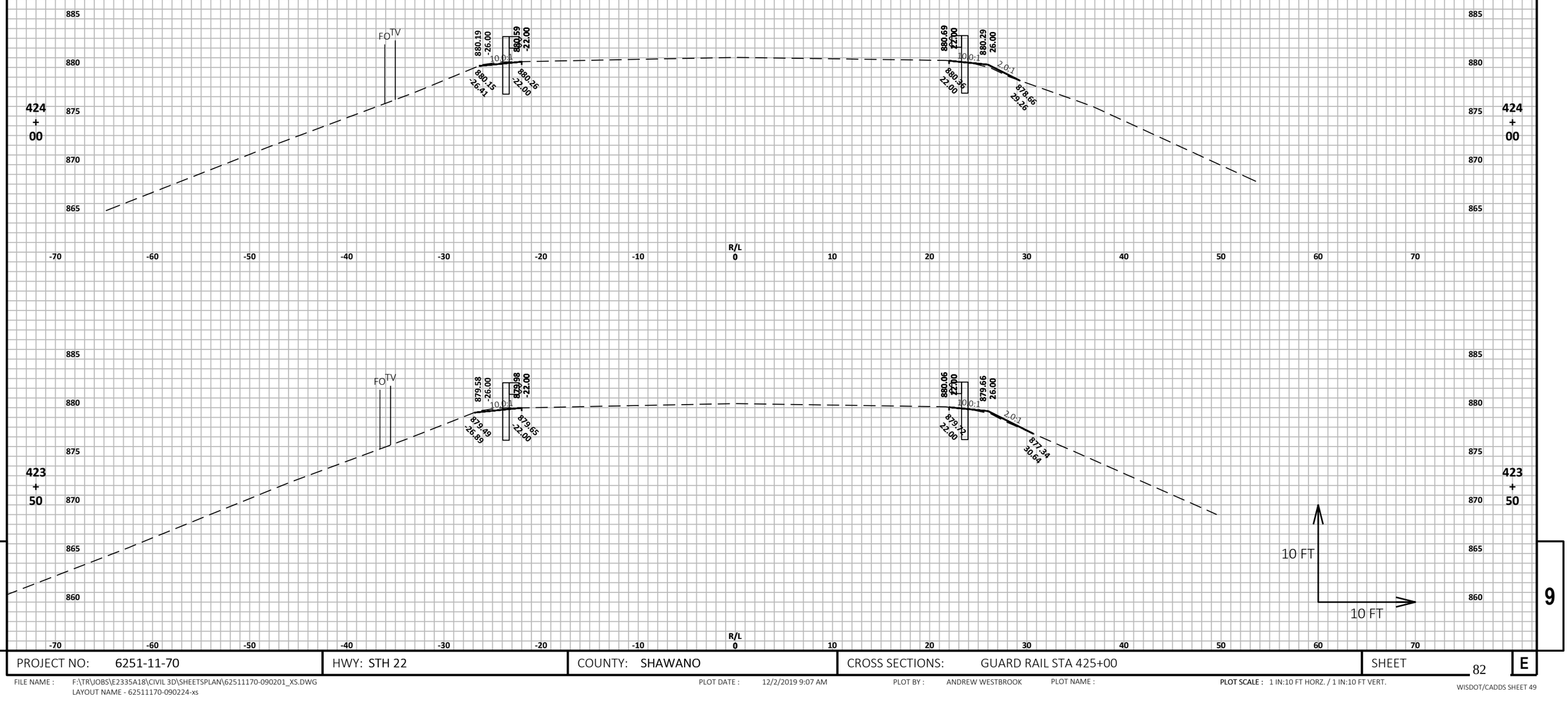


| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 82 E |
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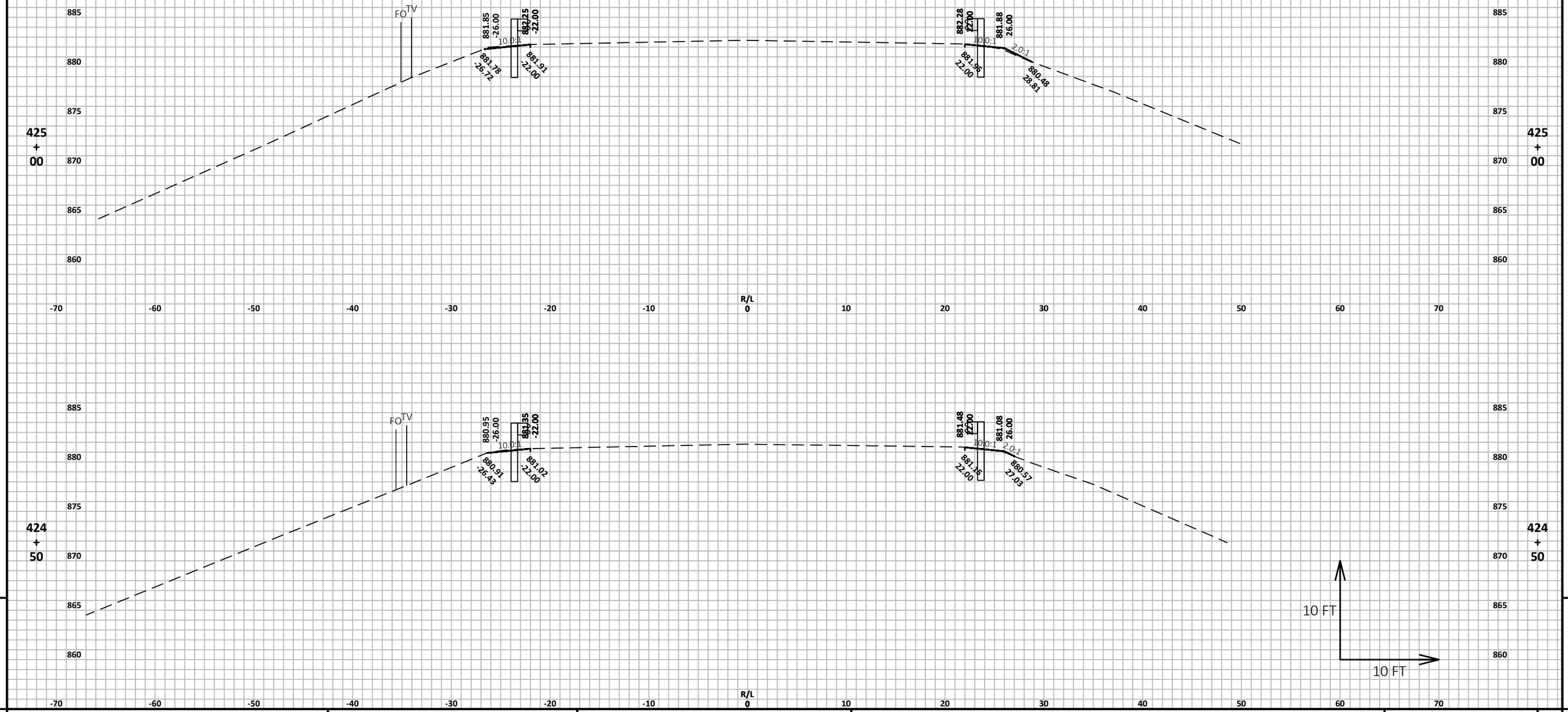
LAYOUT NAME - 62511170-090224-xs

PLOT DATE : 12/2/2019 9:07 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49

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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 83 | E |
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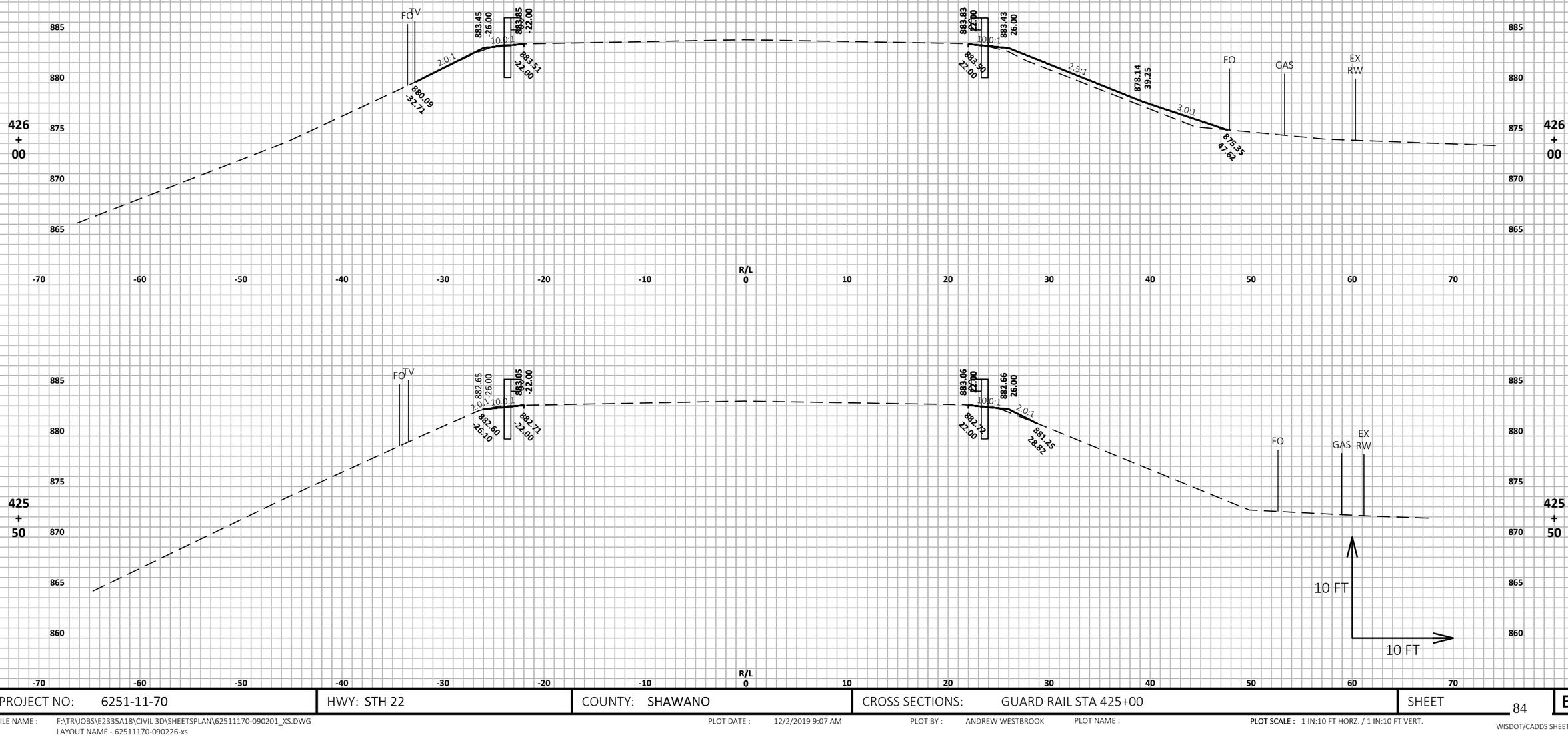
LAYOUT NAME - 62511170-090225-xs

PLOT DATE : 12/2/2019 9:07 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49

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| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 84 | E |
|---|---|---|---|---|---|

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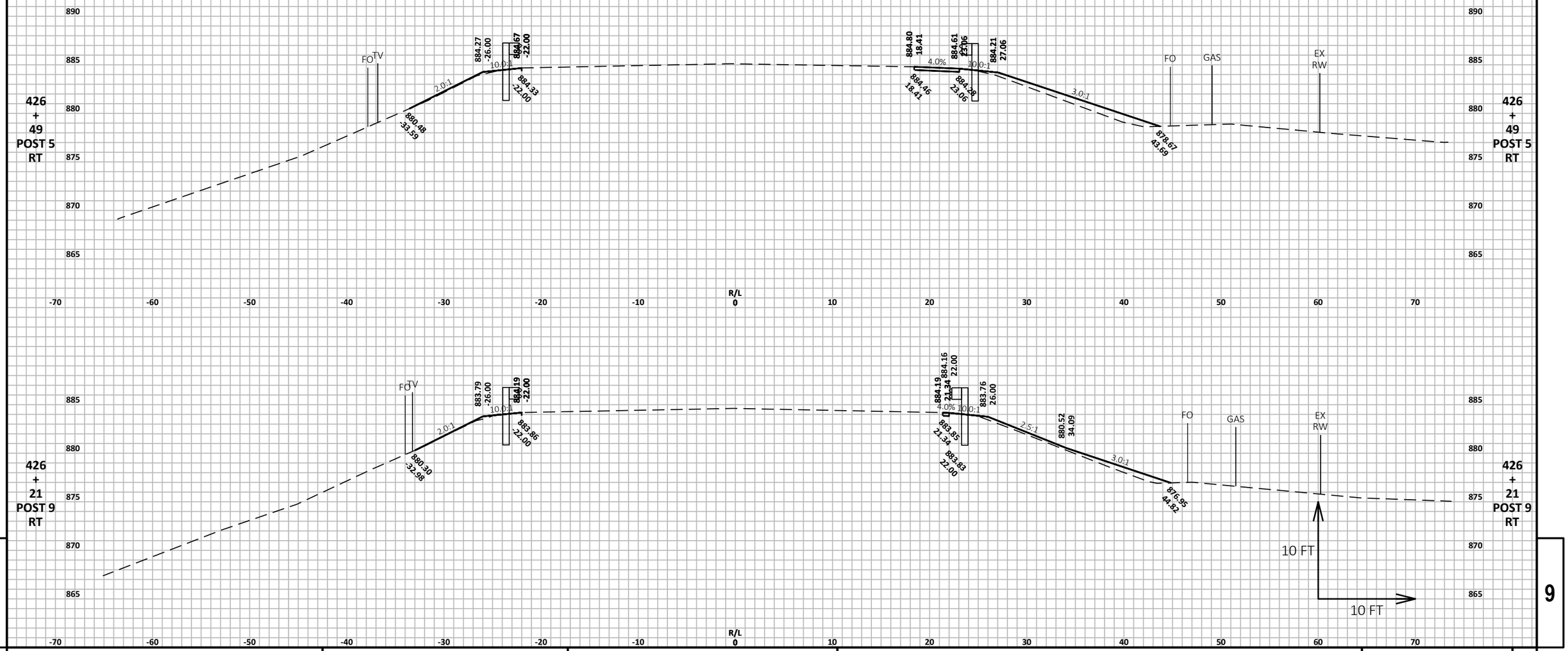
LAYOUT NAME - 62511170-090226-xs

PLOT DATE : 12/2/2019 9:07 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49




| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 85 | E |
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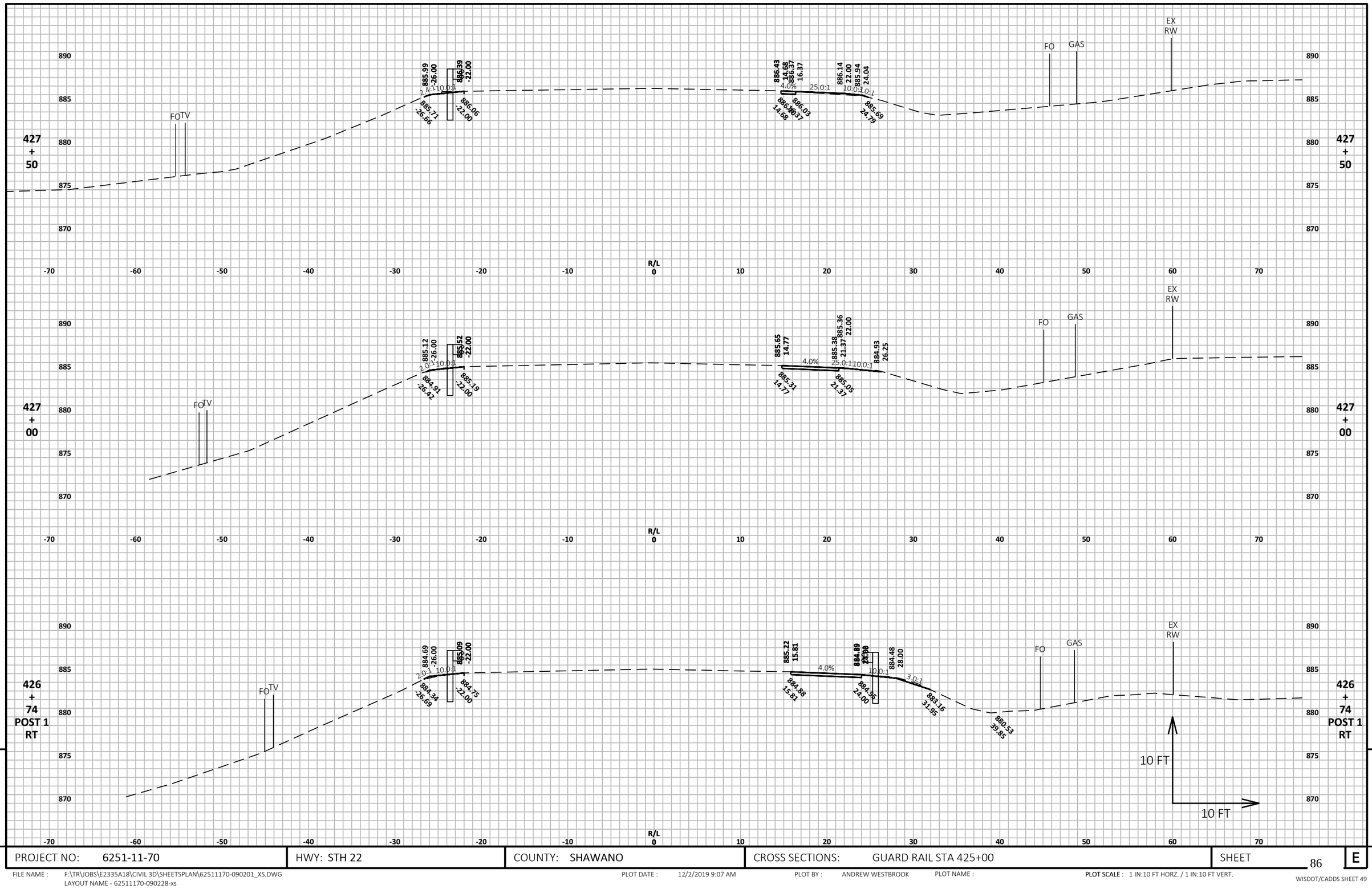
LAYOUT NAME - 62511170-090227-xs

PLOT DATE : 12/2/2019 9:07 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49

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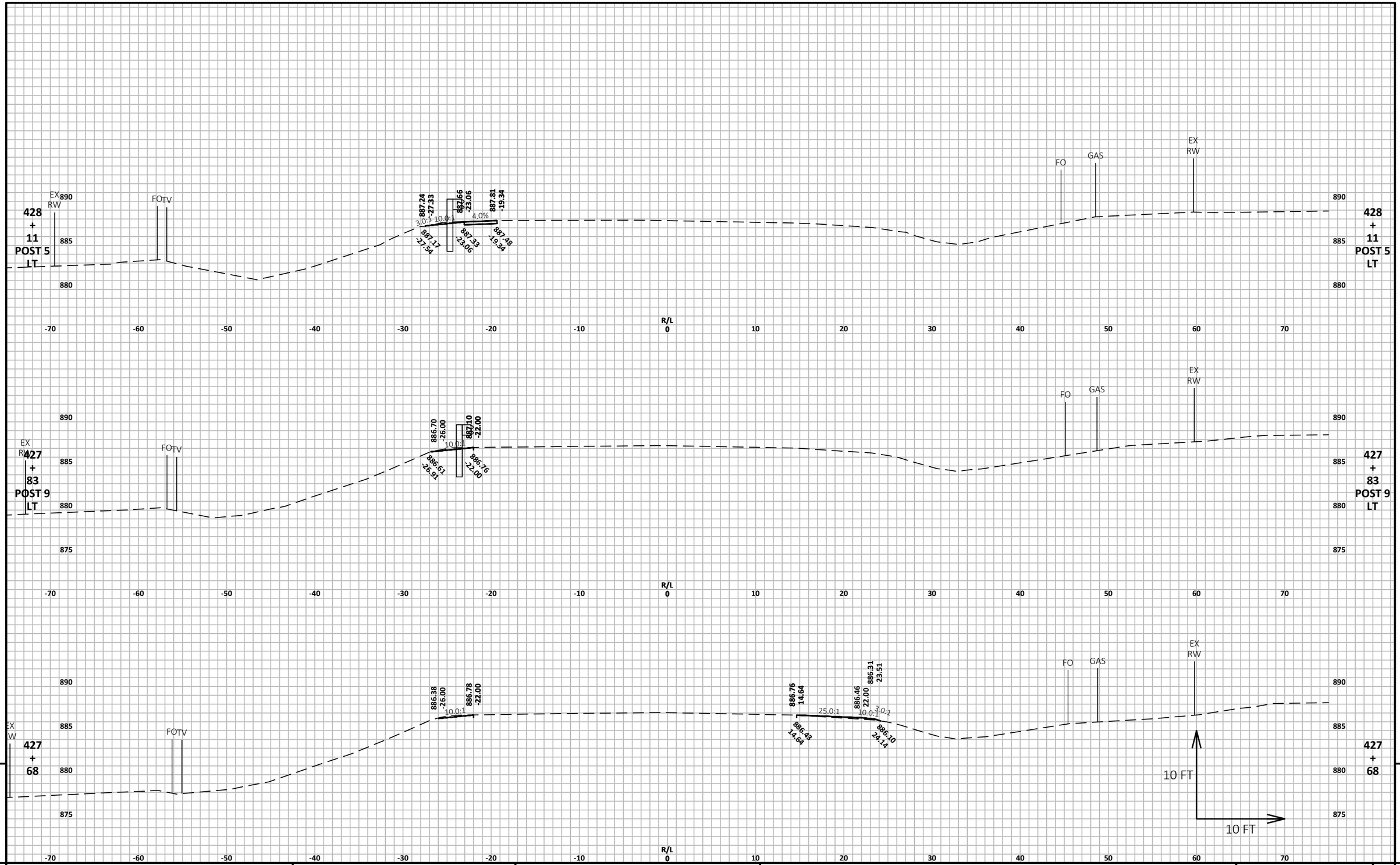
| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 86 | E |
|---|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-090201_XS.DWG
LAYOUT NAME - 62511170-090228-xs

PLOT DATE : 12/2/2019 9:07 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : **PLOT SCALE :** 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49

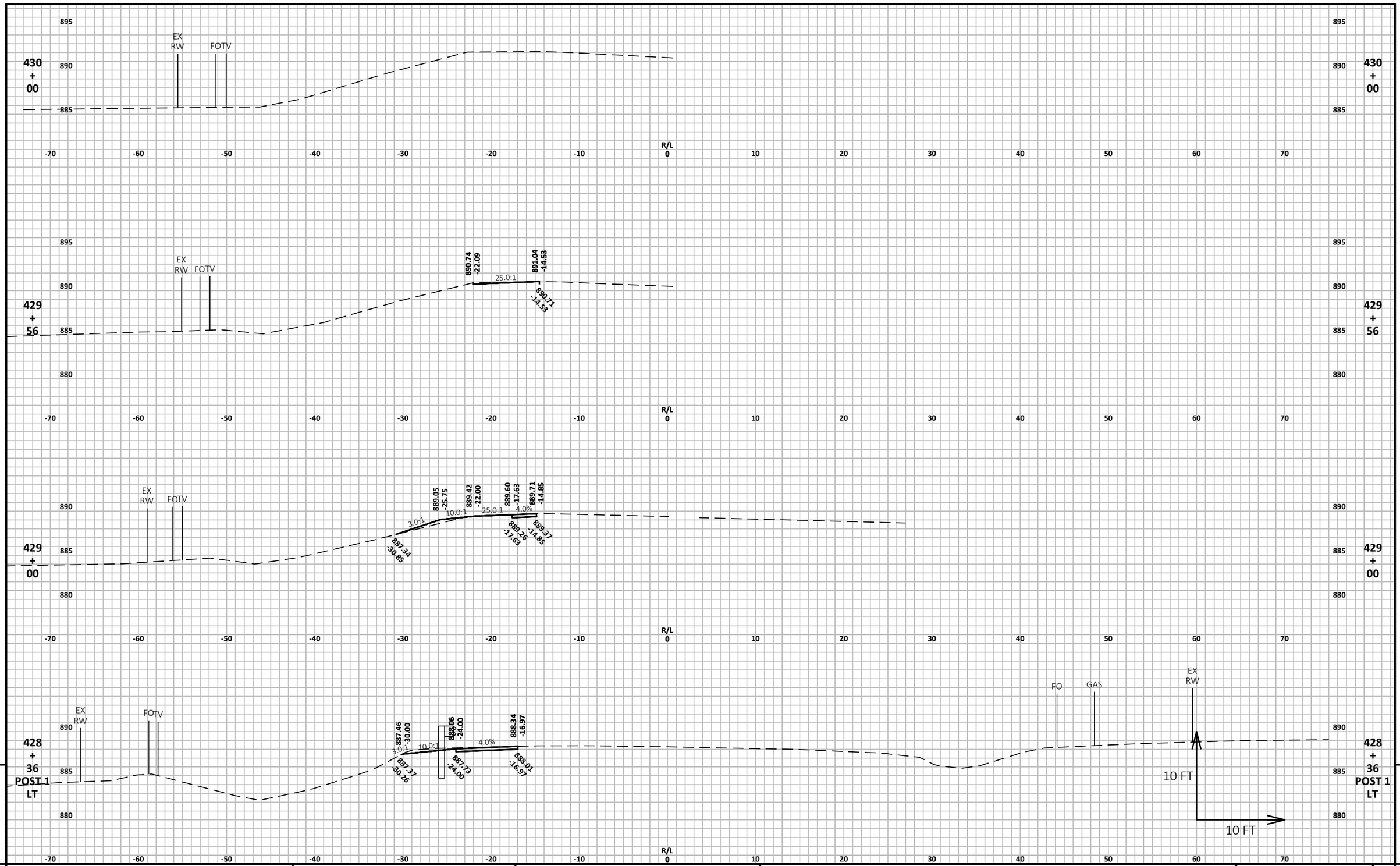



| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 87 E |
|---|---|---|---|---|

FILE NAME : F:\TR\JOBS\E2335A18\CIVIL 3D\SHEETSPLAN\62511170-090201_XS.DWG
LAYOUT NAME - 62511170-090229-xs

PLOT DATE : 12/2/2019 9:07 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49




| PROJECT NO: 6251-11-70 | HWY: STH 22 | COUNTY: SHAWANO | CROSS SECTIONS: GUARD RAIL STA 425+00 | SHEET 88 | E |
|---|---|---|---|---|---|

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LAYOUT NAME - 62511170-090230-xs

PLOT DATE : 12/2/2019 9:07 AM PLOT BY : ANDREW WESTBROOK PLOT NAME : PLOT SCALE : 1 IN:10 FT HORZ. / 1 IN:10 FT VERT.

WISDOT/CADDS SHEET 49

Notes

*Wisconsin Department of Transportation*

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