MAD

APRIL 2018

PROJECT ID: 6707-00-82

WITH: N/A

COUNTY: COLUMBIA

ORDER OF SHEETS

TOTAL SHEETS = 86

05

N

DESIGN DESIGNATION

A.A.D.T.	2018	=	1100
A.A.D.T.	2038	=	1300
D.H.V.		=	157
D.D.		=	60/40
T.		=	32.3%
DESIGN SPEED		=	55 MPH
ESALS		=	1,000,000

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)
- OVERHEAD UTILITY (OH)
- 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

FALL RIVER - CAMBRIA

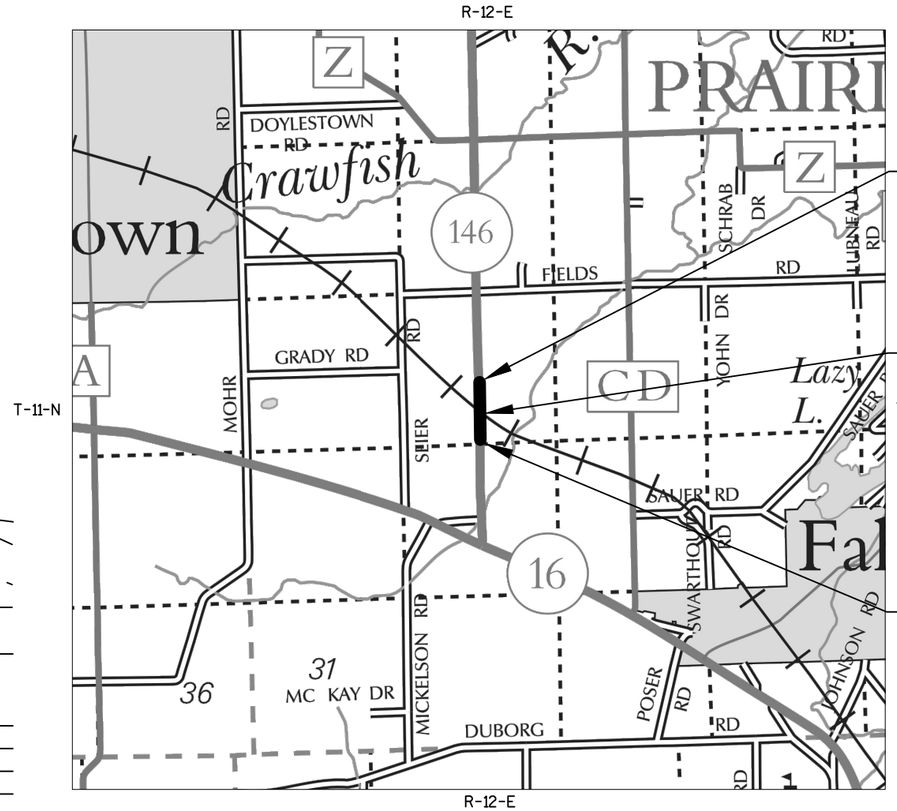
CP RR STRUCTURE B-11-0027

STH 146

COLUMBIA COUNTY

STATE PROJECT NUMBER
6707-00-82

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
6707-00-82	WISC 2018189	1



LAYOUT

SCALE 0 1 MILE

TOTAL NET LENGTH OF CENTERLINE = 0.436 MILES

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, COLUMBIA COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES. VERTICAL DATUM IS NAVD88 (2012)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	SURVEYOR
Designer	MARIAH KRUEGER
Project Manager	LALITHA BALACHANDRAN, P.E.
Regional Examiner	SW REGION
Regional Supervisor	BILL STROBEL, P.E.

APPROVED FOR THE DEPARTMENT

DATE: 10/12/17 William Strobel (Signature)

E

FILE NAME : N:\PDS\C3D\67070002\SHEETSPLAN\010101 TI.DWG
LAYOUT NAME - ****

PLOT DATE : 1/29/2018 8:16 AM

PLOT BY : KRUEGER, MARIAH R PLOT NAME :

WISDOT/CADDS SHEET 10

2

GENERAL NOTES

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

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

CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES.

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

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

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

3.5 INCH HMA PAVEMENT 4 MT 58-28 S SHALL BE CONSTRUCTED WITH TWO 1.75 INCH LAYERS.

APPLY TACK COAT TO THE MILLED SURFACE AT A RATE OF 0.07 GAL/SY AND BETWEEN THE HMA LAYERS AT A RATE OF 0.05 GAL/SY.

PLACE THE LOWER LAYER OF ASPHALT WITHIN 24 HOURS OF MILLING.

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

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

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

TEMPORARY STORAGE OF ANY EXCAVATED MATERIAL WILL NOT BE PERMITTED IN THE WETLANDS. FERTILIZER SHALL NOT BE USED ON WETLANDS.

SILT FENCE IS TO BE PLACED A MINIMUM OF 2' BEYOND THE SLOPE INTERCEPTS.

PLACE SALVAGED TOPSOIL IN ALL GRADED AREAS AS SHOWN ON THE PLANS OR AS DESIGNATED BY THE ENGINEER IMMEDIATELY AFTER GRADING HAS BEEN COMPLETED. APPLY SEED, FERTILIZER, AND EROSION MAT TO AREAS WITHIN 7 CALENDAR DAYS OF SALVAGED TOPSOIL PLACEMENT.

THE CONTRACTOR SHALL PLACE ALL DETOUR AND TRAFFIC CONTROL SIGNS BEFORE BEGINNING ANY WORK ON THE ROADWAY. THESE SIGNS SHALL REMAIN IN PLACE UNTIL ALL WORK IS COMPLETED AND PERMANENT SIGNS AND PAVEMENT MARKING ARE INSTALLED.

STANDARD ABBREVIATIONS

A.D.T.	AVERAGE DAILY TRAFFIC
A.A.D.T.	ANNUAL AVERAGE DAILY TRAFFIC
C/L	CENTER LINE
CT.	COURT
CTH	COUNTY TRUNK HIGHWAY
D.D.	DIRECTIONAL DISTRIBUTION
D.H.V.	DESIGN HOURLY VOLUME
EAT	ENERGY ABSORBING TERMINAL
ESALS	EQUIVALENT SINGLE AXLE LOADS
HMA	HOT MIX ASPHALT
HWY	HIGHWAY
IN	INCH
LB	POUND
LT	LEFT
MAX	MAXIMUM
MGS	MIDWEST GUARDRAIL SYSTEM
MIN	MINIMUM
NOR.	NORMAL
RD.	ROAD
RT	RIGHT
S.D.D.	STANDARD DETAIL DRAWING
STA.	STATION
STH	STATE TRUNK HIGHWAY
SY	SQUARE YARD
T.	PERCENT TRUCKS
TYP	TYPICAL

DESIGN CONTACTS

LALITHA BALCHANDRAN, P.E.
PROJECT MANAGER
WISDOT SW REGION
2101 WRIGHT STREET
MADISON, WI 53704
608-243-3382

MARIAH KRUEGER
PROJECT LEADER
WISDOT SW REGION
2101 WRIGHT STREET
MADISON, WI 53704
608-516-4498

DNR LIAISON

ERIC HEGGELUND
ENVIRONMENTAL ANALYSIS & REVIEW SPECIALIST
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
SOUTH CENTRAL REGION
3911 FISH HATCHERY ROAD
FITCHBURG, WI 53711
608-275-3301

RAILROAD CONTACTS

SCOTT WILLINGER
RAILROAD COORDINATOR
WISDOT SW REGION
3550 MORMON COULEE ROAD
LA CROSSE, WI 54601
608-792-1360

JIM KRIEGER
MANAGER PUBLIC WORKS
CANADIAN PACIFIC RAILWAY
BATTLE CREEK BUILDING
1010 SHOP ROAD
ST. PAUL, MN 55106

UTILITY CONTACTS

ADAMS-COLUMBIA ELECTRIC COOPERATIVE - ELECTRICITY
BILL KEARNS
W6290 HWY 33
PO BOX 216
PARDEEVILLE, WI 53954
608-429-4105
BKEARNS@ACECWI.COM

ALLIANT ENERGY - ELECTRICITY
MIKE BROLIN
SUITE 1000
4902 N BILTMORE LANE
MADISON, WI 53718
608-458-4871
MIKEBROLIN@ALLIANTENERGY.COM

ATC MANAGEMENT, INC. - ELECTRICITY
TONY MARCINIAK
W234 N2000 RIDGEVIEW PARKWAY COURT
PO BOX 47
WAUKESHA, WI 53187
262-506-6814
TMARCINIAK@ATCLLC.COM

CENTURYLINK - COMMUNICATION LINE
KEVIN ZICKERT
224 INDUSTRIAL DRIVE
NORTH PRAIRIE, WI 53153
262-392-5200
KEVIN.ZICKERT@CENTURYLINK.COM

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

RUNOFF COEFFICIENT TABLE

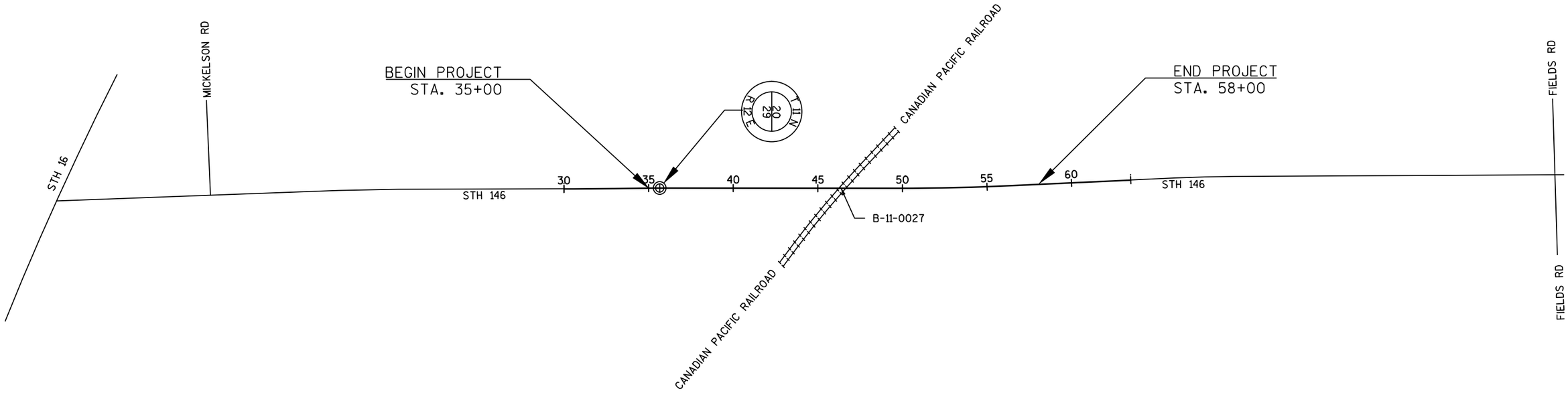
	HYDROLOGIC SOIL GROUP											
	A			B			C			D		
	SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)			SLOPE RANGE (PERCENT)		
LAND USE:	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER	0-2	2-6	6 & OVER
ROW CROPS	.08 .22	.16 .30	.22 .38	.12 .26	.20 .34	.27 .44	.15 .30	.24 .37	.33 .50	.19 .34	.28 .41	.38 .56
MEDIAN STRIP-TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37	.20 .27	.25 .32	.30 .40
SIDE SLOPE-TURF			.25 .32			.27 .34			.28 .36			.30 .38
PAVEMENT:												
ASPHALT	.70 - .95											
CONCRETE	.80 - .95											
BRICK	.70 - .80											
DRIVES, WALKS	.75 - .85											
ROOFS	.75 - .95											
GRAVEL ROADS, SHOULDERS	.40 - .60											

TOTAL PROJECT AREA: 8.4 ACRES

TOTAL AREA DISTURBED BY CONSTRUCTION: 3.1 ACRES

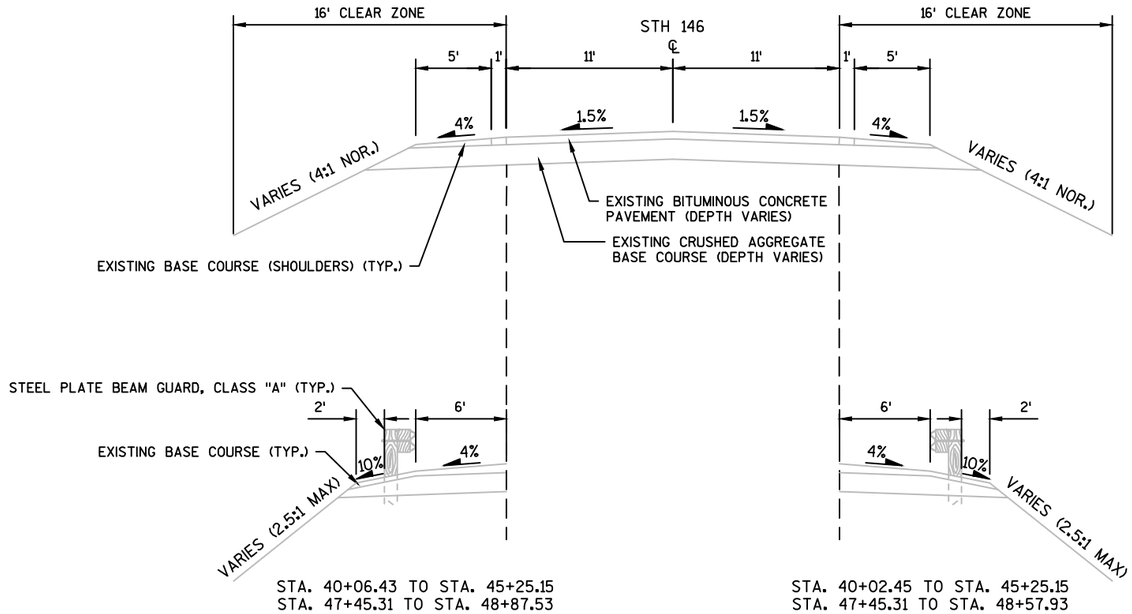
2

N



TOWN OF FOUNTAIN PRAIRIE

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	PROJECT OVERVIEW	SHEET 3	E



STA. 40+06.43 TO STA. 45+25.15
STA. 47+45.31 TO STA. 48+87.53

STA. 40+02.45 TO STA. 45+25.15
STA. 47+45.31 TO STA. 48+57.93

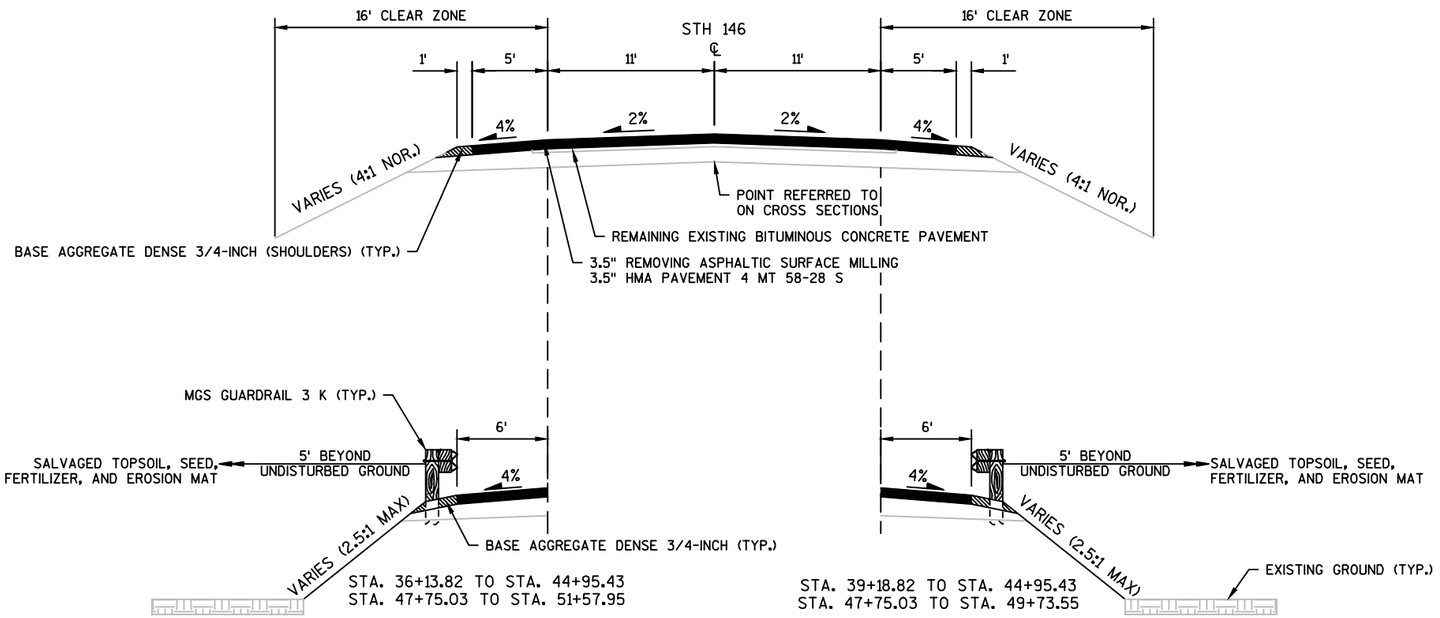
EXISTING TYPICAL SECTION

STA. 35+00.00 TO STA. 45+25.15
STA. 47+45.31 TO STA. 58+00.00

ROADWAY BORING SUMMARY TABLE

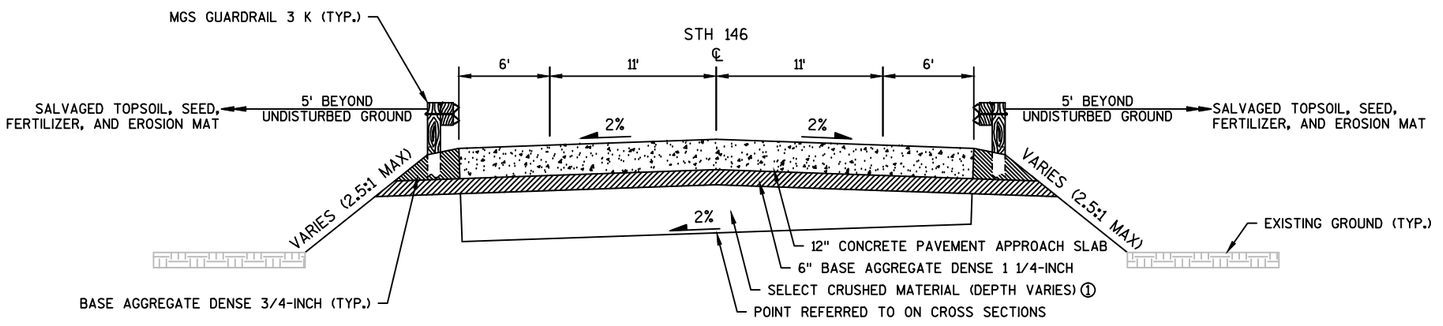
BORING #	STATION	OFFSET	BITUMINOUS DEPTH	BASE DEPTH
1	47+50	6' RT	5	5
2	49+00	6' RT	5	15
3	48+50	16' RT	N/A	N/A
4	48+25	6' LT	6	18
5	45+00	12' LT	4	10
6	43+50	10' RT	6	16

NOTES:
DATE BORINGS TAKEN: 7/27/2015
ALL DEPTHS ARE IN INCHES
FOR REFERENCE PURPOSES ONLY
STATIONS ARE APPROXIMATE
ALL OFFSETS ARE FROM EXISTING CENTERLINE
BORING #3 NOT TAKEN THROUGH THE PAVEMENT



PROPOSED TYPICAL SECTION

STA. 35+00.00 TO STA. 44+95.43
STA. 47+75.03 TO STA. 58+00.00



① SELECT CRUSHED MATERIAL FROM STA. 44+95.43 TO STA. 45+25.15 WILL SLOPE TO THE LEFT.

SELECT CRUSHED MATERIAL FROM STA. 47+45.31 TO STA. 47+75.03 WILL SLOPE TO THE RIGHT.

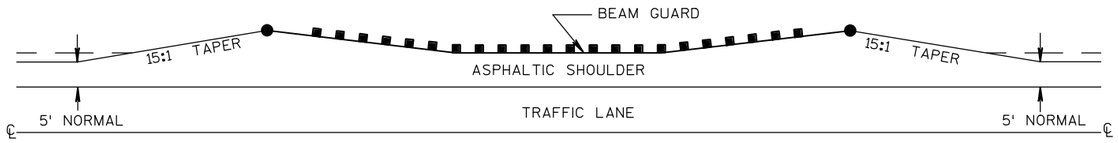
MINIMUM THICKNESS OF THE SELECT CRUSHED MATERIAL LAYER IS 12"

PROPOSED TYPICAL SECTION - APPROACH SLAB

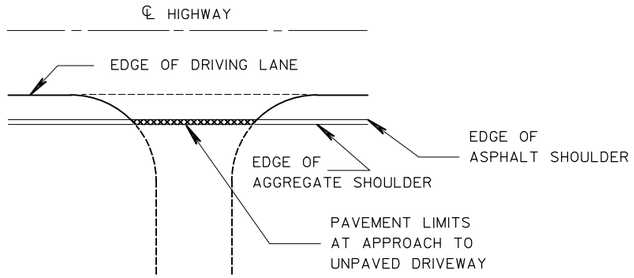
STA. 44+95.43 TO STA. 45+25.15
STA. 47+45.31 TO STA. 47+75.03

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TYPICAL SECTIONS	SHEET 5	E

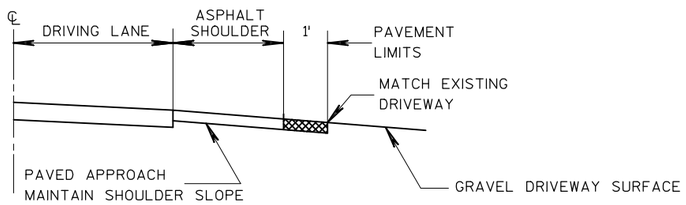
FILE NAME : \\FIWMAD7P3158\N3PUBLIC\PDS\C3D\67070002\SHEETSPLAN\020301 TS.DWG
LAYOUT NAME - ####
PLOT DATE : 10/12/2017 9:54 AM PLOT BY : KRUEGER, MARIAH R PLOT NAME : PLOT SCALE : 1 IN:10 FT
WISDOT/CADDS SHEET 42



DETAIL FOR ASPHALTIC SHOULDER AT BEAM GUARD



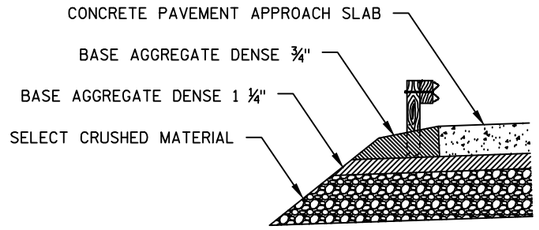
PLAN VIEW



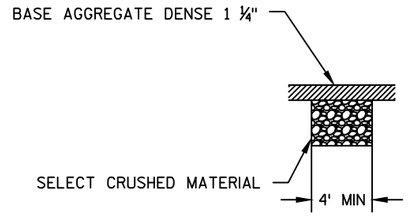
TYPICAL DRIVEWAY PROFILES

RURAL DRIVEWAY INTERSECTION DETAIL

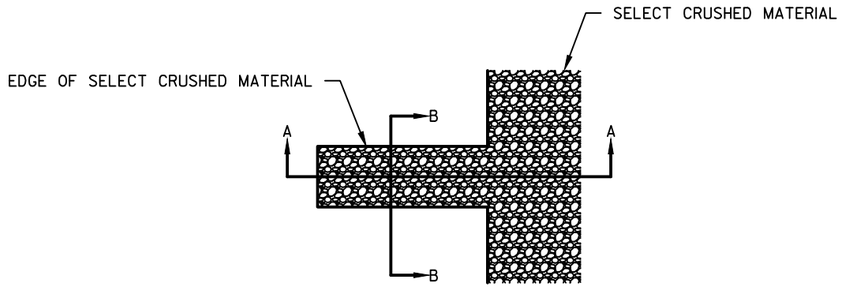
STA. 35+90 LT
STA. 35+90 RT
STA. 50+25 RT
STA. 51+95 LT
STA. 53+85 RT
STA. 56+85 LT



SECTION A-A



SECTION B-B



DETAIL FOR FRENCH DRAINS

STA. 44+97 LT
STA. 47+41 RT

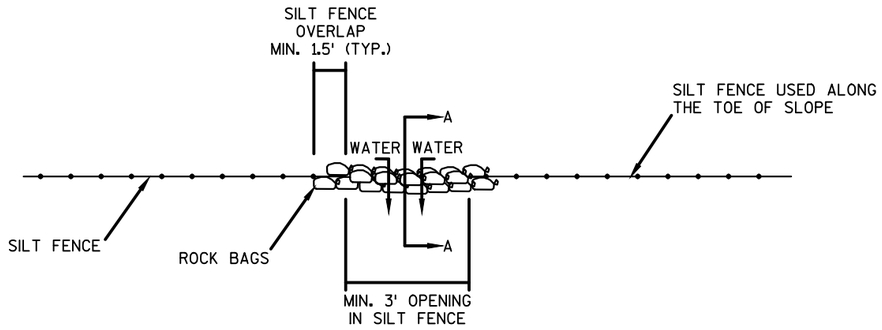
NOTES: PAID FOR AS SELECT CRUSHED MATERIAL

THE FRENCH DRAIN UNDER THE SOUTH APPROACH SHOULD BE CONSTRUCTED WHERE THE CONCRETE PAVEMENT APPROACH SLAB MEETS THE ASPHALT PAVEMENT OR AS DIRECTED BY THE ENGINEER.

THE FRENCH DRAIN UNDER THE NORTH APPROACH SHOULD BE CONSTRUCTED AT THE END OF THE EAST BRIDGE PARAPET OR AS DIRECTED BY THE ENGINEER. BECAUSE THE ROADWAY PROFILE SLOPES TO THE SOUTH, THE SELECT CRUSHED LAYER SOUTH OF THE DRAIN WILL NEED TO BE CONSTRUCTED TO SLOPE TOWARD THE DRAIN.

DO NOT COVER SELECT CRUSHED WITH TOPSOIL.

SECTION A-A

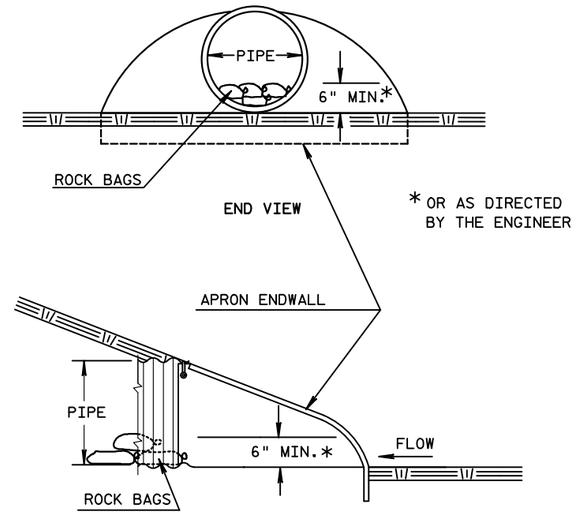


SIDE VIEW

ROCK BAGS USED FOR SILT FENCE RELIEF DETAIL

STA. 39+65 RT

ESTIMATED BAG SIZE = 18" X 12" X 6"	
PIPE SIZE	ESTIMATED NO. OF BAGS
12"	1
15"	2
18"	2
21"	3
14" X 23"	3
24"	3
27"	4
30"	5
19" X 30"	5
36"	7
24" X 38"	8
42"	8
29" X 45"	10
48"	10
34" X 53"	10
38" X 60"	13
60"	13
66"	15
53" X 83"	19

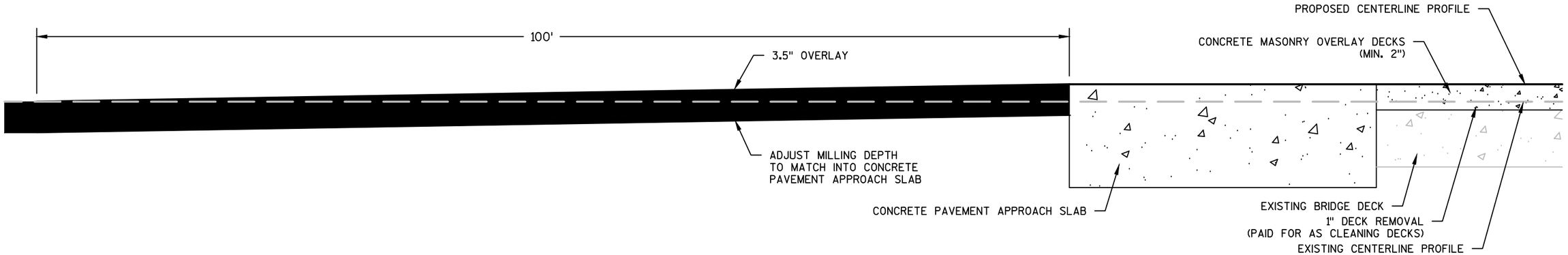


SIDE VIEW

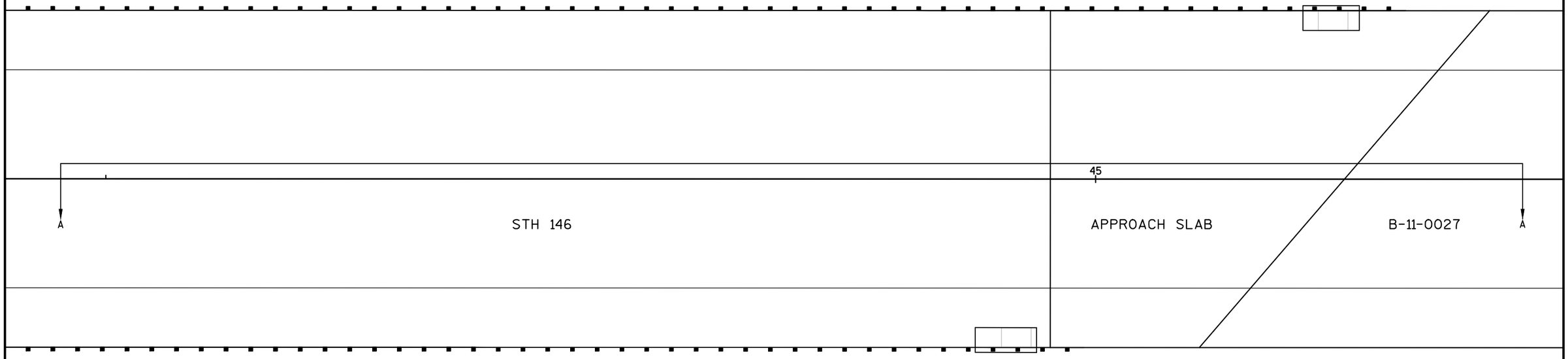
CULVERT PIPE CHECK

STA. 35+75 LT
STA. 37+55 LT

2



SECTION A-A

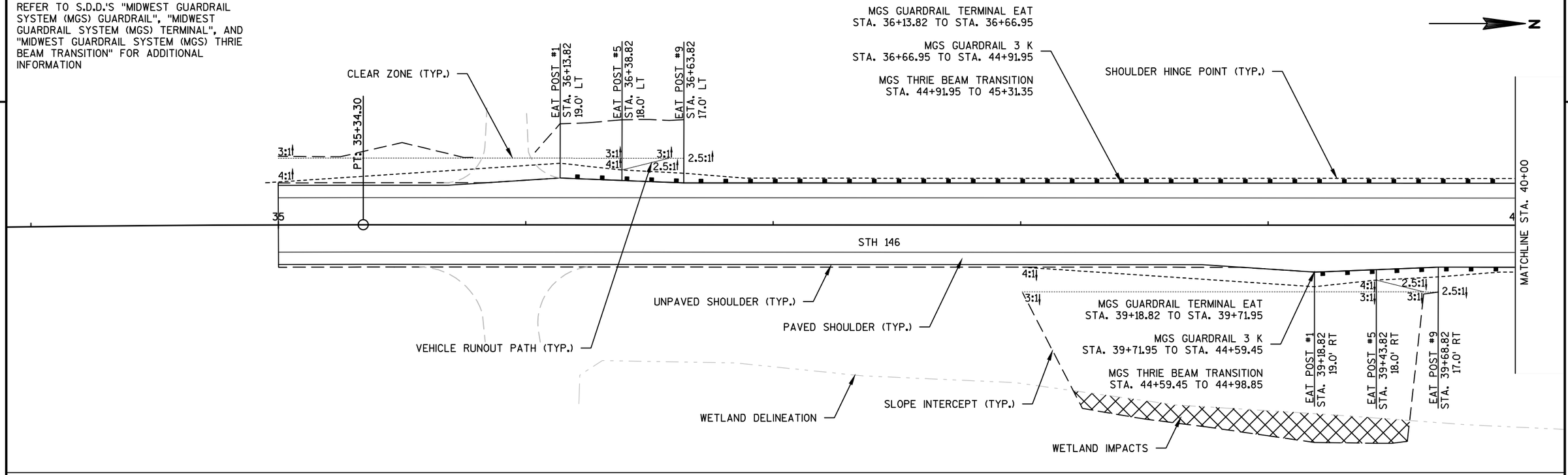


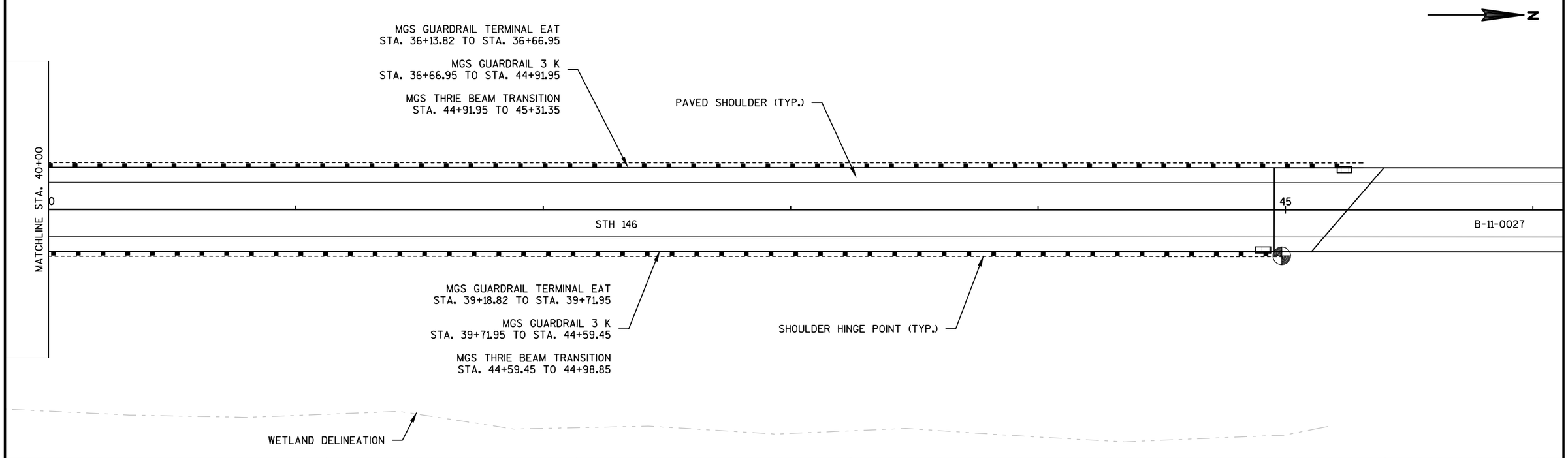
DETAIL FOR TRANSITION FROM BRIDGE TO ROADWAY

NOTE: DETAIL SHOWS TRANSITION AT CENTERLINE ONLY. THE TRANSITION BACK TO EXISTING EDGELINE PROFILE WILL HAPPEN CONCURRENTLY WITH THE CENTERLINE TRANSITION.

DETAIL IS TYPICAL FOR BOTH ENDS OF THE BRIDGE.

REFER TO S.D.D.'S "MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL", "MIDWEST GUARDRAIL SYSTEM (MGS) TERMINAL", AND "MIDWEST GUARDRAIL SYSTEM (MGS) THRIE BEAM TRANSITION" FOR ADDITIONAL INFORMATION



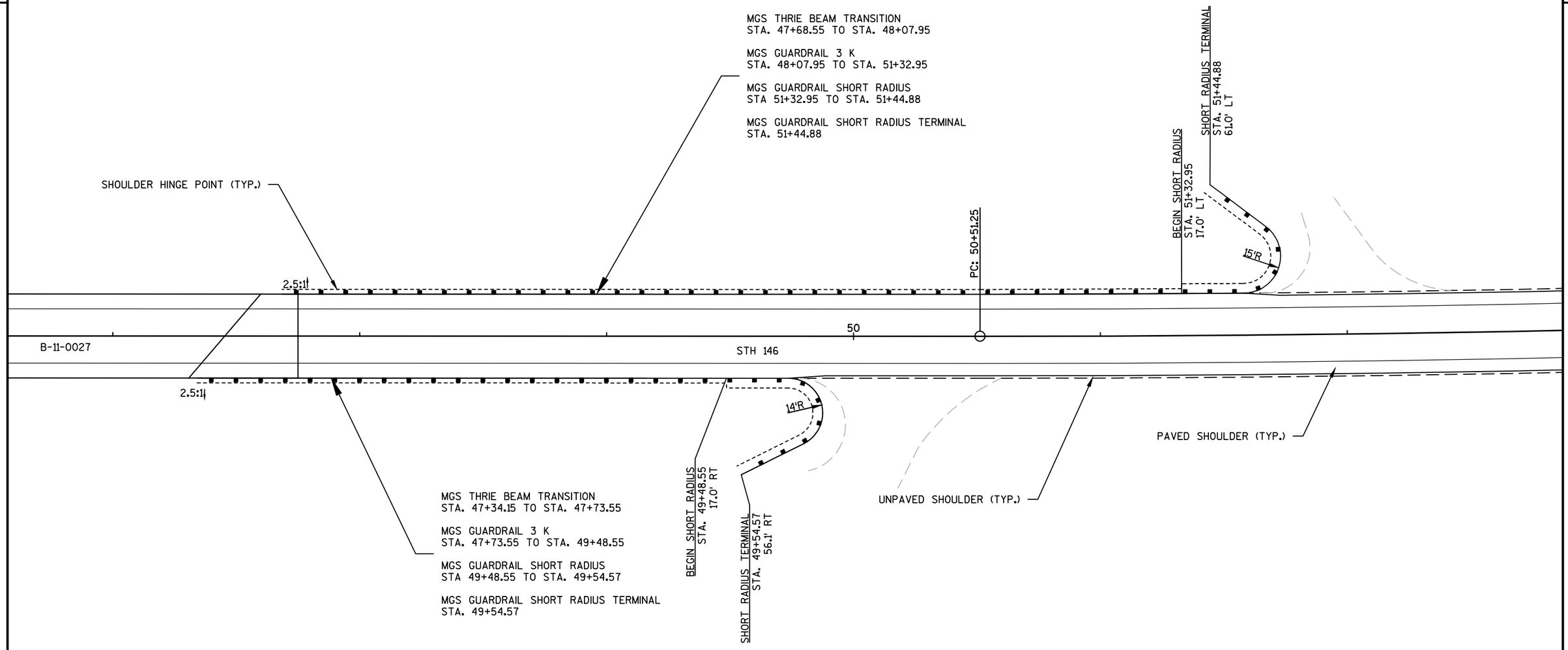


PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	BEAM GUARD DETAILS	SHEET 9	E

2

REFER TO S.D.D.'S "MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL", "MIDWEST GUARDRAIL SYSTEM (MGS) THRIE BEAM TRANSITION", AND "SHORT RADIUS MGS" FOR ADDITIONAL INFORMATION

N

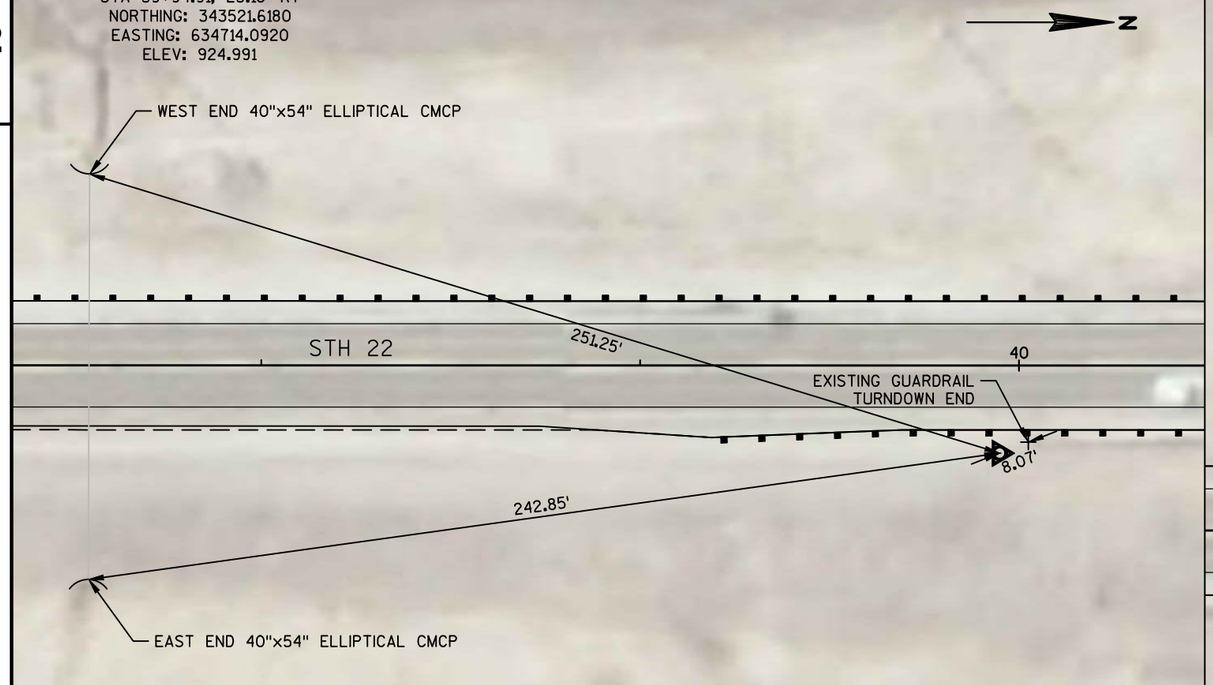


PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	BEAM GUARD DETAILS	SHEET 10	E

2

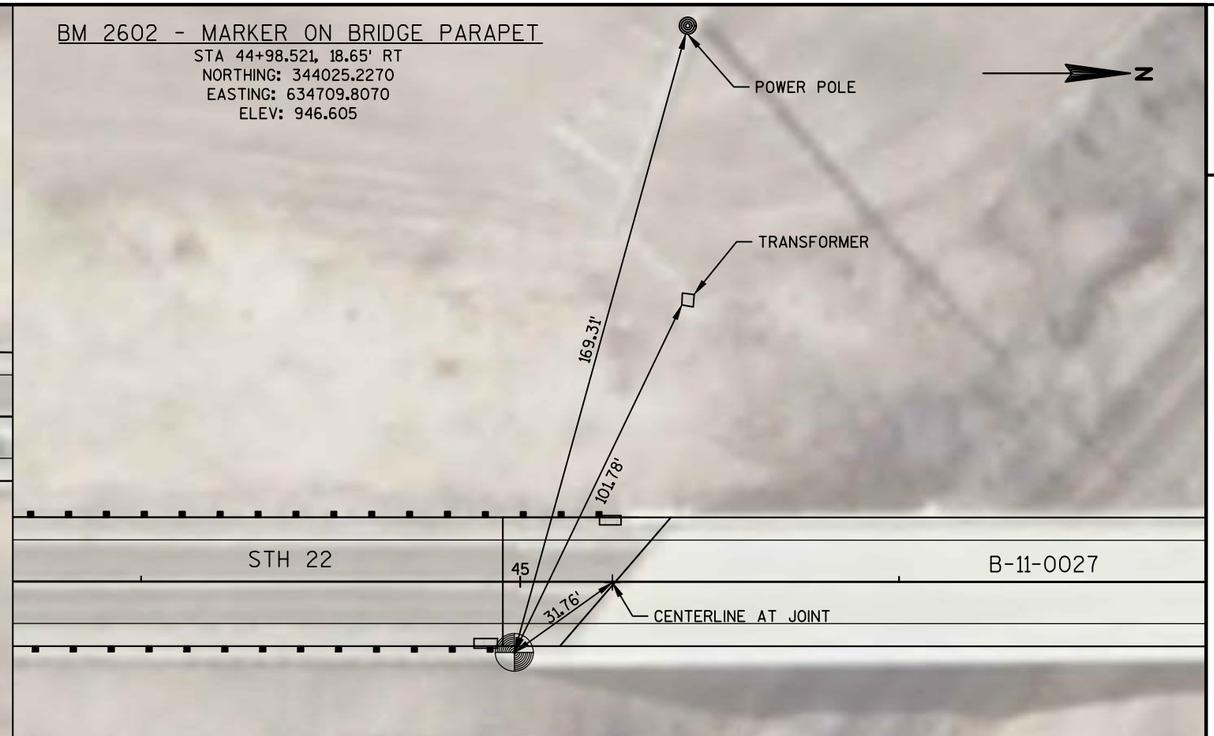
CP 902 - FENO MARKER

STA 39+94.91, 23.10' RT
NORTHING: 343521.6180
EASTING: 634714.0920
ELEV: 924.991



BM 2602 - MARKER ON BRIDGE PARAPET

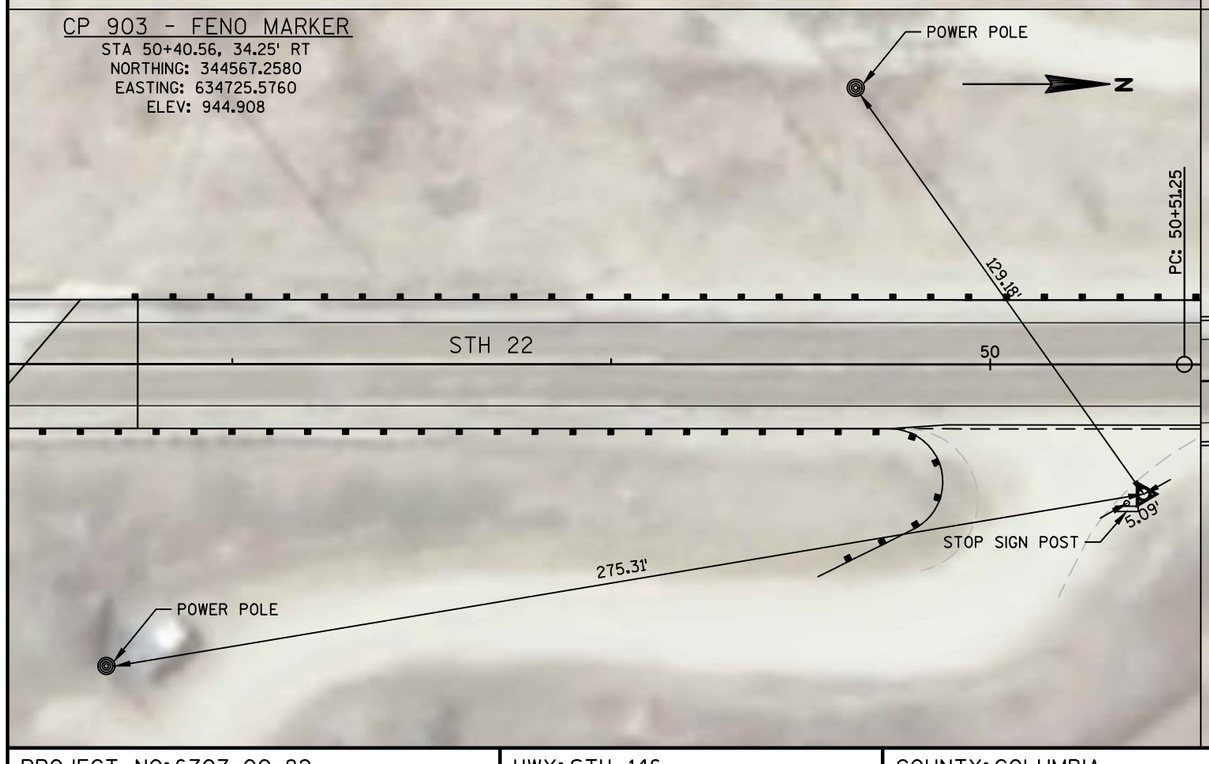
STA 44+98.521, 18.65' RT
NORTHING: 344025.2270
EASTING: 634709.8070
ELEV: 946.605



2

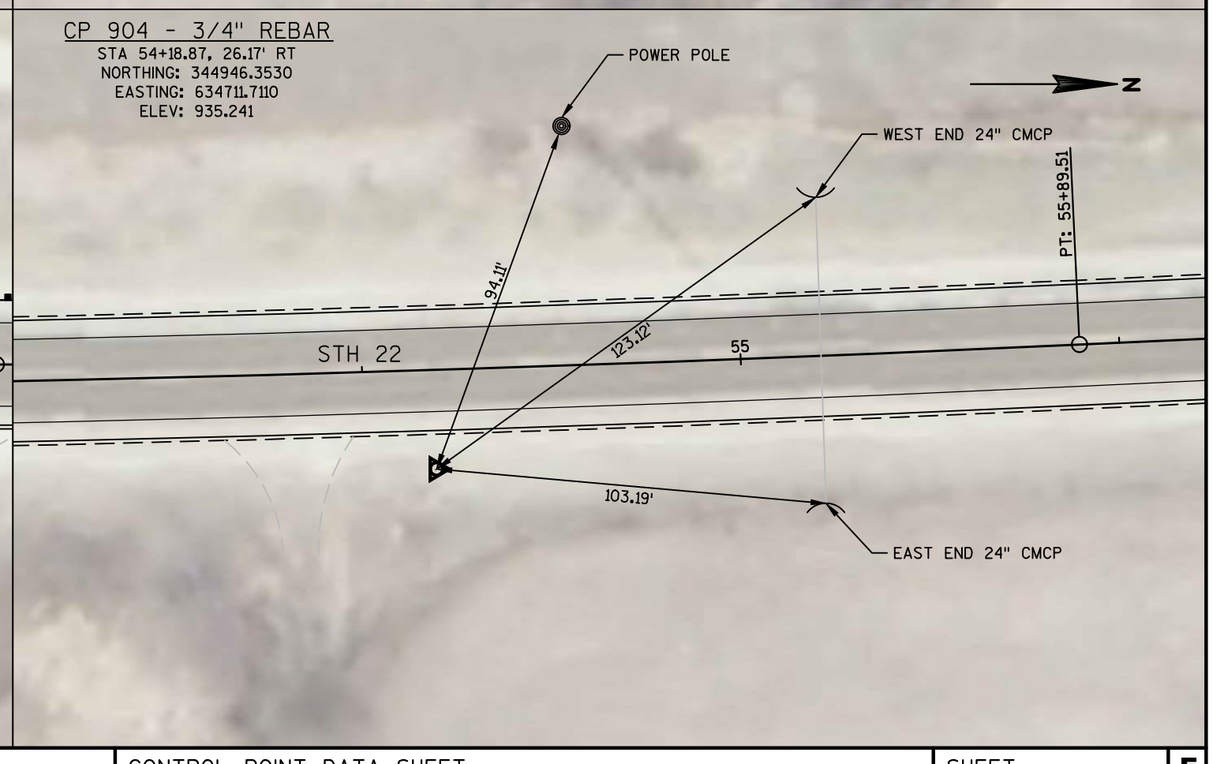
CP 903 - FENO MARKER

STA 50+40.56, 34.25' RT
NORTHING: 344567.2580
EASTING: 634725.5760
ELEV: 944.908



CP 904 - 3/4" REBAR

STA 54+18.87, 26.17' RT
NORTHING: 344946.3530
EASTING: 634711.7110
ELEV: 935.241



PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	CONTROL POINT DATA SHEET	SHEET 11	E

2

N

PT: 35+34.30

R/W

35

40

45

STH 146

BEGIN PROJECT
STA. 35+00.00

WETLAND DELINEATION

SLOPE INTERCEPT (TYP.)

R/W

CANADIAN PACIFIC RAILROAD

N

END PROJECT
STA. 58+00.00

PC: 50+51.25

R/W

PT: 55+89.51

45

50

55

STH 146

R/W

SLOPE INTERCEPT (TYP.)

CANADIAN PACIFIC RAILROAD

LEGEND

- SILT FENCE
- EROSION MAT CLASS I TYPE B
- EROSION MAT CLASS 1 TYPE B (INCIDENTAL TO BARRIER SYSTEM GRADING SHAPING FINISHING)
- EROSION MAT URBAN CLASS 1 TYPE B (INCIDENTAL TO BARRIER SYSTEM GRADING SHAPING FINISHING)
- INLET PROTECTION TYPE C
- CULVERT PIPE CHECK
- ROCK BAGS FOR SILT FENCE RELIEF

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	EROSION CONTROL	SHEET 12	E

2

N

NO PASSING ZONE

EXISTING SIGN TO REMAIN

REMOVE

01-01

REMOVE

01-02

PT: 35+34.30

PC: 50+51.25

PT: 55+89.51

35

40

45

50

55

01-03

REMOVE

01-04

REMOVE

EXISTING SIGN TO REMAIN

STOP

EXISTING SIGN TO REMAIN

NO PASSING ZONE

SIGNING LEGEND

EXISTING SIGN MOUNTED ON POST

XX-XX DENOTES SIGN NUMBER

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	PERMANENT SIGNING	SHEET 13	E

2

2

LEGEND

- SIGN MOUNTED ON POST
- SIGN MOUNTED ON BARRICADE
- BARRICADE WITH WARNING LIGHTS

STAGE 1: STRUCTURE WORK AND INSTALLATION OF CONCRETE PAVEMENT APPROACH SLAB

MICKELSON RD

STH 146

MB

PCMS TO BE INSTALLED
7 DAYS PRIOR TO CLOSURE

MESSAGE TO READ:
STH 146 CLOSED
STARTING XX/XX/XX

ROAD WORK AHEAD
W20-1-A

N

STAGE 1 WORK ZONE

BRIDGE OUT
R11-2-B
48"X30"

ROAD CLOSED 500 FT
W20-3-D

ROAD CLOSED 1000 FT
W20-3-C

STH 146

STH 146

ROAD CLOSED 1000 FT
W20-3-C

ROAD CLOSED 500 FT
W20-3-D

BRIDGE OUT
R11-2-B
48"X30"

STAGE 1 WORK ZONE

N

STH 146

PCMS TO BE INSTALLED
7 DAYS PRIOR TO CLOSURE

MESSAGE TO READ:
STH 146 CLOSED
STARTING XX/XX/XX

MB

ROAD WORK AHEAD
W20-1-A

FIELDS RD

N

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - STAGE 1 CLOSURE	SHEET 14	E

2

2

LEGEND

SIGN MOUNTED ON POST

SIGN MOUNTED ON BARRICADE

BARRICADE WITH WARNING LIGHTS

STAGE 2: MILL AND OVERLAY, BEAM GUARD REPLACEMENT, GRADING, AND PERMANENT SIGNING

MICKELSON RD

STH 146

ROAD WORK AHEAD W20-1-A

ROAD CLOSED 1000 FT W20-3-C

ROAD CLOSED 500 FT W20-3-D

N

STAGE 2 WORK ZONE

STH 146

ROAD CLOSED TO THRU TRAFFIC R11-4 60"X30"

ROAD CLOSED TO THRU TRAFFIC R11-4 60"X30"

STH 146

STAGE 2 WORK ZONE

N

ROAD CLOSED 500 FT W20-3-D

ROAD CLOSED 1000 FT W20-3-C

STH 146

ROAD WORK AHEAD W20-1-A

FIELDS RD

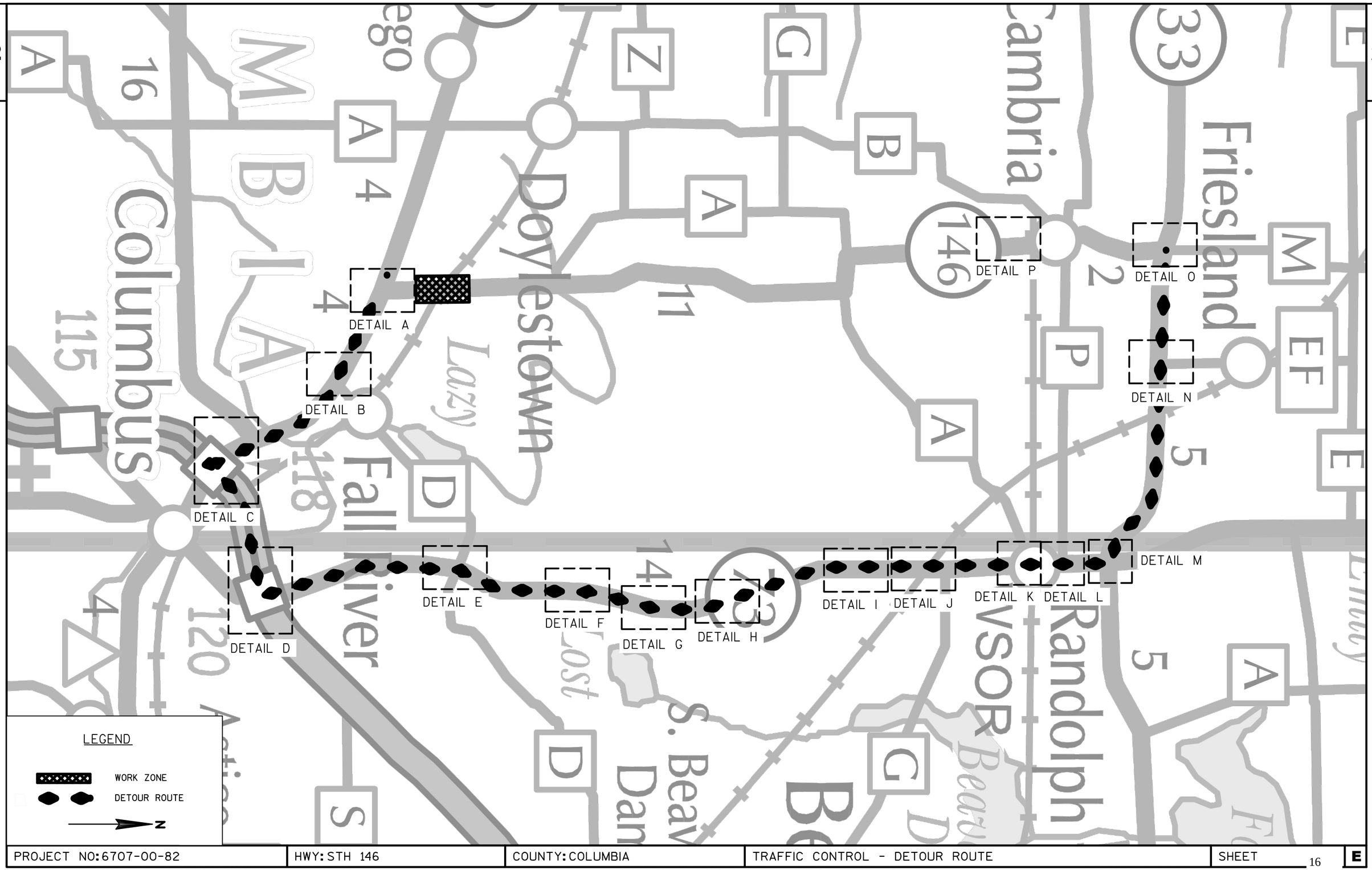
N

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - STAGE 2 CLOSURE	SHEET 15	E

FILE NAME : \\FIWMAD7P3158\N3PUBLIC\PDS\C3D\67070002\SHEETSPLAN\025001 TC.DWG
LAYOUT NAME - ****

PLOT DATE : 10/12/2017 10:11 AM PLOT BY : KRUEGER, MARIAH R PLOT NAME : PLOT SCALE : **********

WISDOT/CADDS SHEET 42



PROJECT NO:6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE	SHEET 16	E

2

2

LEGEND

- DETOUR ROUTE
- EXISTING SIGN MOUNTED ON POST(S)
- PROPOSED SIGN MOUNTED ON POST
- PROPOSED SIGN MOUNTED ON BARRICADE
- BARRICADE
- 146 PROPOSED SIGN
- 146 EXISTING SIGN
- COVER EXISTING SIGN

STH 146

STAGE 1 BRIDGE OUT 1/2 MILES AHEAD LOCAL TRAFFIC ONLY
R11-3-B 60"X30"

STAGE 2 ROAD CLOSED 1/2 MILES AHEAD LOCAL TRAFFIC ONLY
R11-3 60"X30"

MICKELSON RD

DETOUR
M04-9R 30"X24"

STH 16

M3-1 24"X12" NORTH 146
M1-6 24"X24"

DETOUR AHEAD W20-2-A

M4-8 24"X12" DETOUR NORTH EAST 146 16

M06-1 21"X21"

PLACE OVER EXISTING ARROW

Columbus

Portage

END DETOUR M4-8A 24"X18"
WEST NORTH SOUTH M3-3 24"X12"
16 146

PLACE OVER EXISTING CARDINAL DIRECTION SIGN

DETOUR NEXT 26 MILES
G20-51 60"X24"

STH 16

DETOUR NORTH 146
M4-8 24"X12"
M3-1 24"X12"
M1-6 24"X24"

DETOUR NORTH 146
M4-8 24"X12"

M06-1 21"X21"

PLACE OVER EXISTING ARROW

N

DETAIL A: 15 TRAFFIC CONTROL SIGNS

CTH CD

M4-8 24"X12" DETOUR
M3-3 24"X12" SOUTH
M1-6 24"X24" 146

QUALITY CT

STH 16

OLD HWY 16

STEEL RD

CTH D

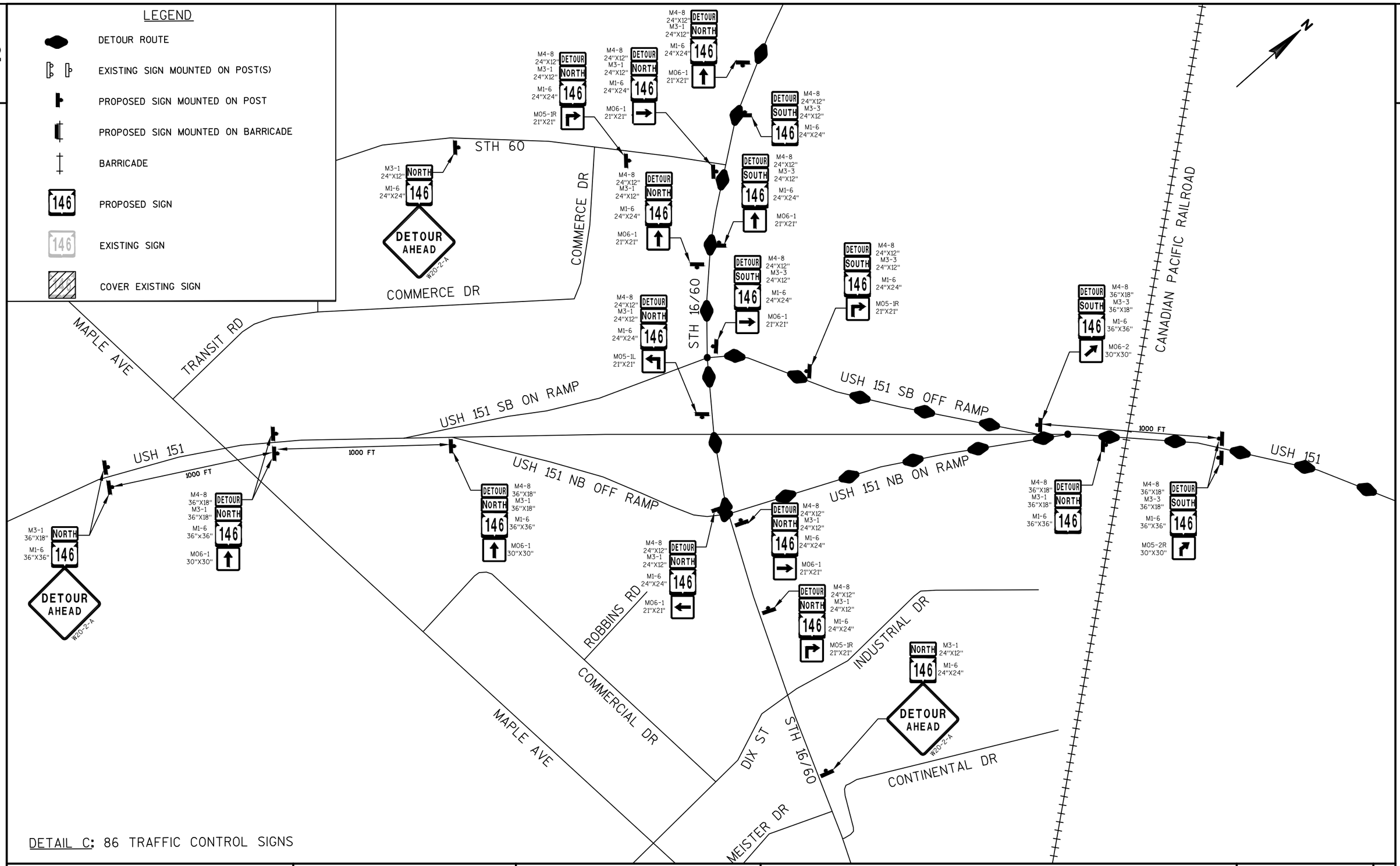
SAVANNA RD

DETOUR NORTH 146
M4-8 24"X12"
M3-1 24"X12"
M1-6 24"X24"

N

DETAIL B: 6 TRAFFIC CONTROL SIGNS

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE DETAILS A & B	SHEET 17	E



DETAIL C: 86 TRAFFIC CONTROL SIGNS

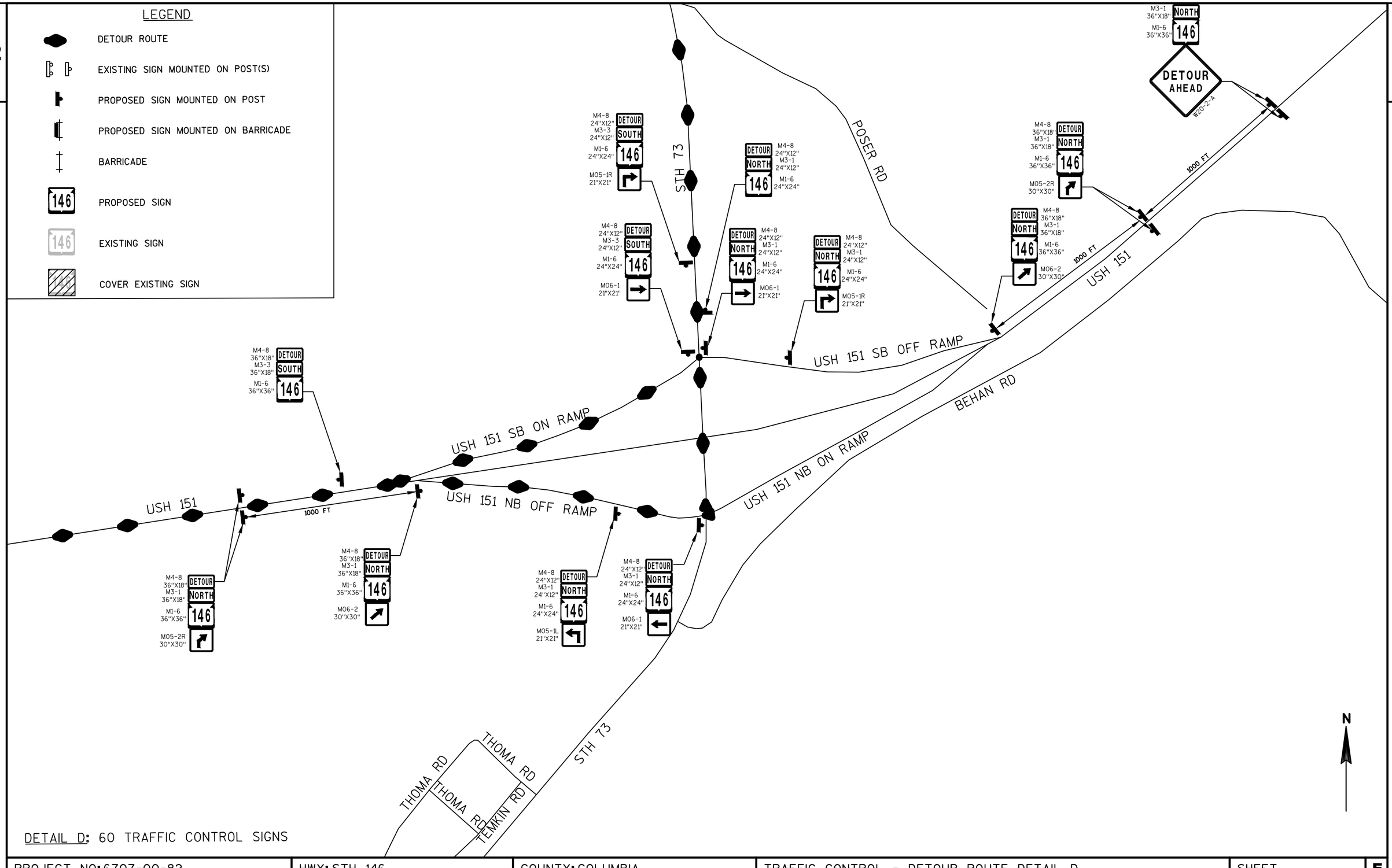
PROJECT NO:6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE DETAIL C	SHEET	E

FILE NAME : \\FIWMAD7P3158\N3PUBLIC\PDS\C3D\67070002\SHEETSPLAN\027002 DT.DWG
LAYOUT NAME - ****
PLOT DATE : 10/12/2017 10:15 AM PLOT BY : KRUEGER, MARIAH R PLOT NAME : PLOT SCALE : 1 IN:500 FT
WISDOT/CADDS SHEET 42

2

LEGEND

- DETOUR ROUTE
- EXISTING SIGN MOUNTED ON POST(S)
- PROPOSED SIGN MOUNTED ON POST
- PROPOSED SIGN MOUNTED ON BARRICADE
- BARRICADE
- 146 PROPOSED SIGN
- 146 EXISTING SIGN
- COVER EXISTING SIGN



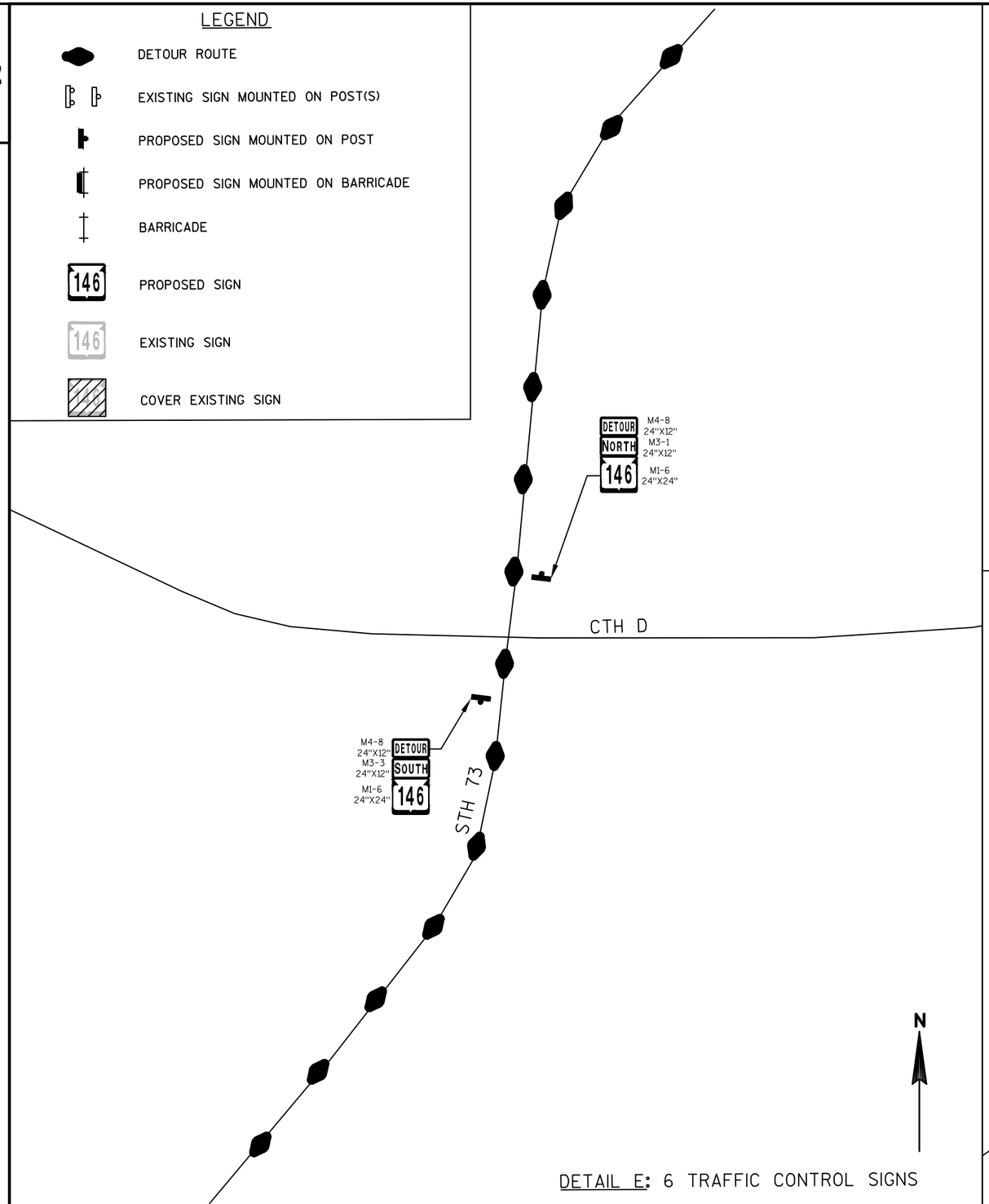
DETAIL D: 60 TRAFFIC CONTROL SIGNS

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE DETAIL D	SHEET 19	E

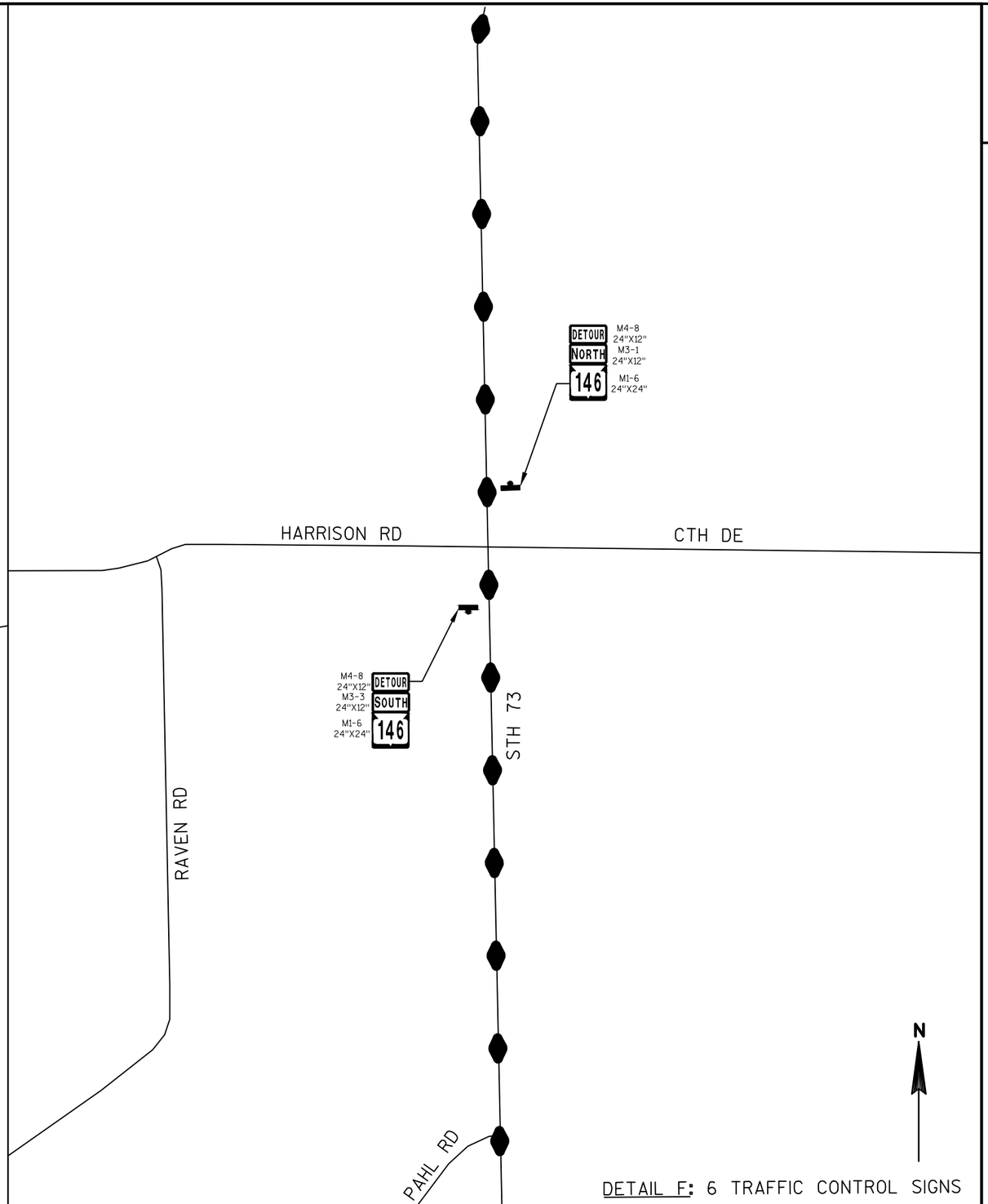
2

LEGEND

- DETOUR ROUTE
- EXISTING SIGN MOUNTED ON POST(S)
- PROPOSED SIGN MOUNTED ON POST
- PROPOSED SIGN MOUNTED ON BARRICADE
- BARRICADE
- PROPOSED SIGN (146)
- EXISTING SIGN (146)
- COVER EXISTING SIGN



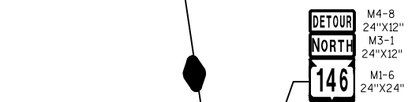
DETAIL E: 6 TRAFFIC CONTROL SIGNS



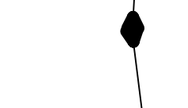
DETAIL F: 6 TRAFFIC CONTROL SIGNS

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE DETAILS E & F	SHEET 20	E

2



CTH FW



STH 73

N

DETAIL G: 6 TRAFFIC CONTROL SIGNS

HYLAND RD

STH 73

CTH CC

N

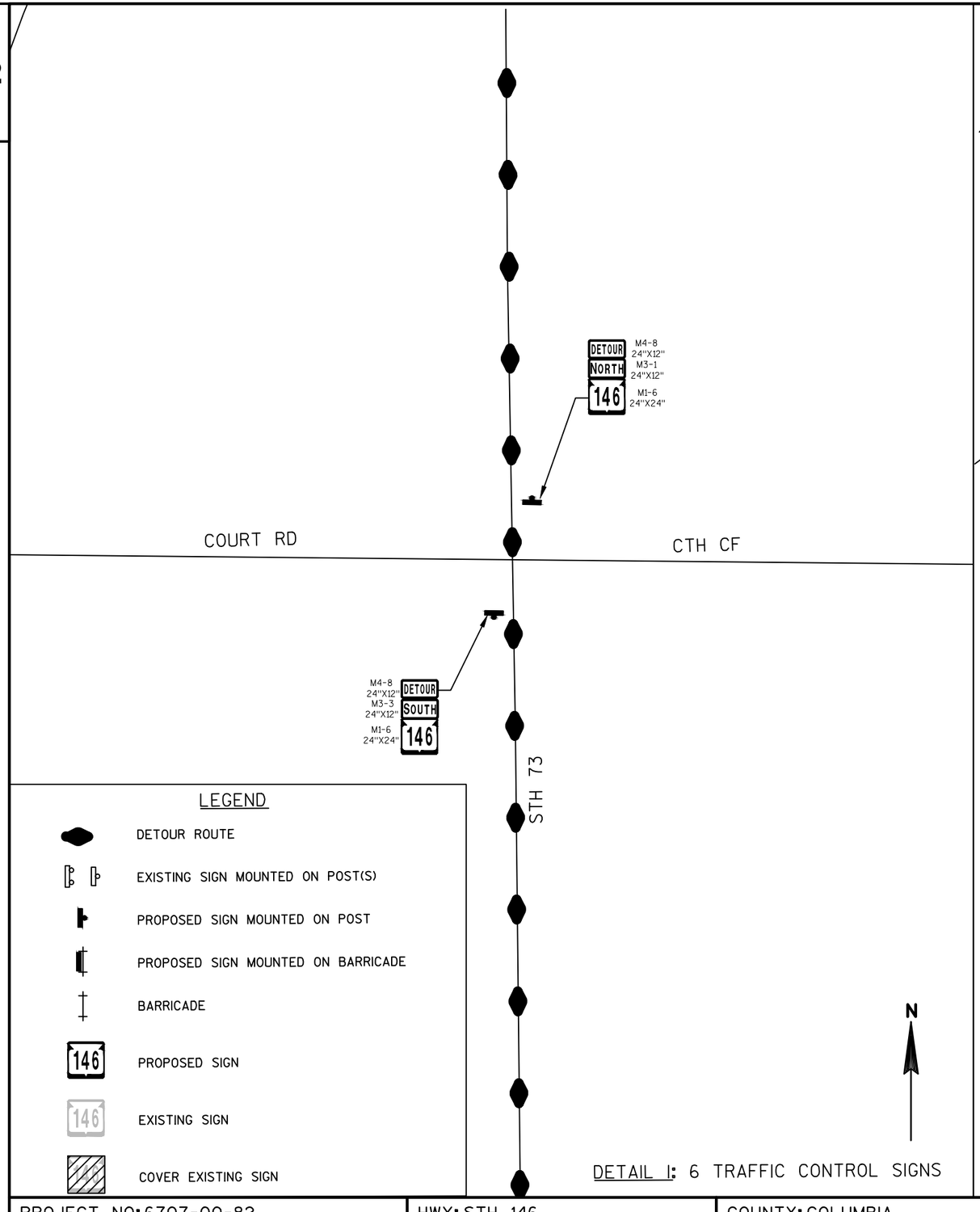
DETAIL H: 6 TRAFFIC CONTROL SIGNS

LEGEND

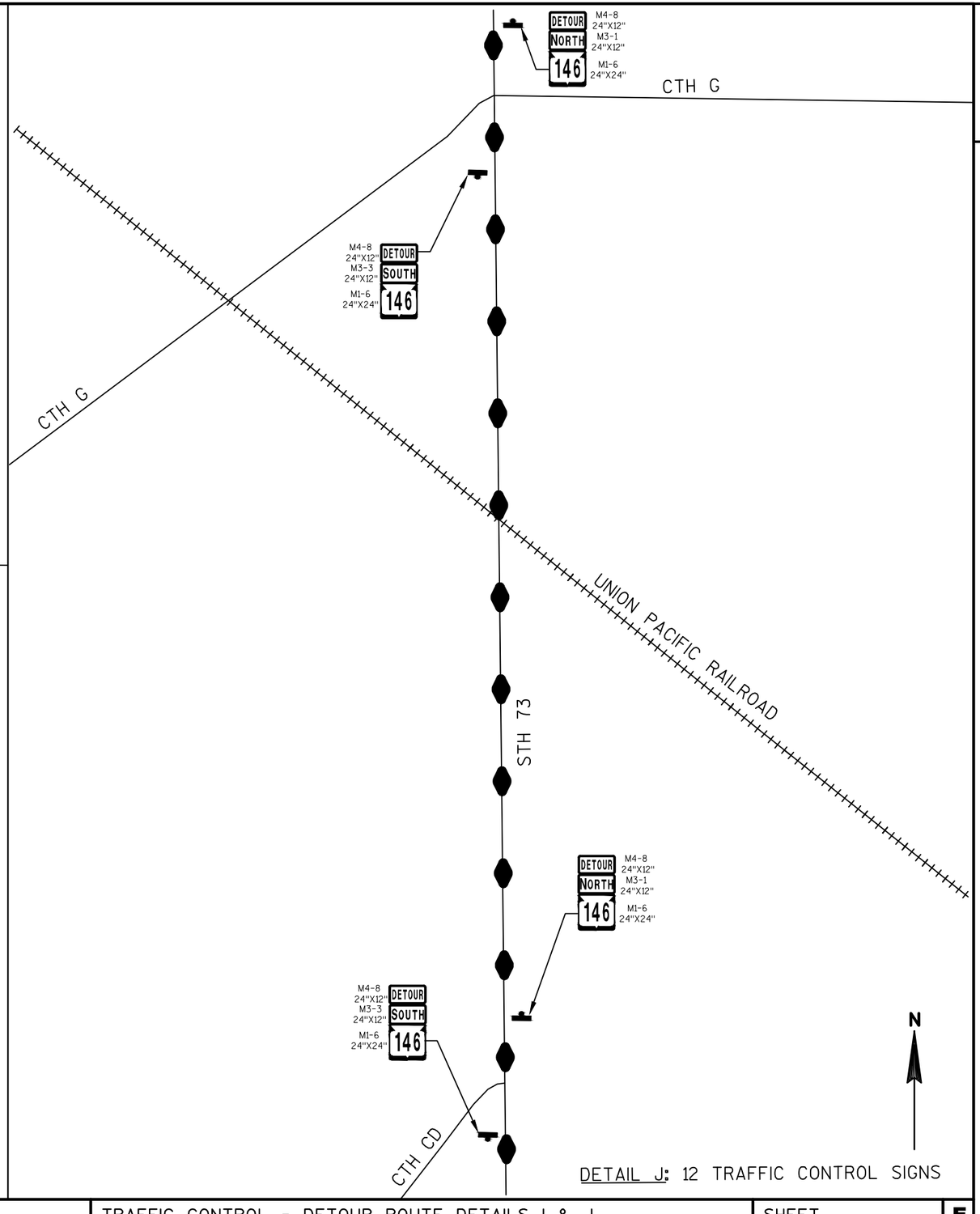
- DETOUR ROUTE
- EXISTING SIGN MOUNTED ON POST(S)
- PROPOSED SIGN MOUNTED ON POST
- PROPOSED SIGN MOUNTED ON BARRICADE
- BARRICADE
- PROPOSED SIGN (146)
- EXISTING SIGN (146)
- COVER EXISTING SIGN (146)

2

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE DETAILS G & H	SHEET 21	E

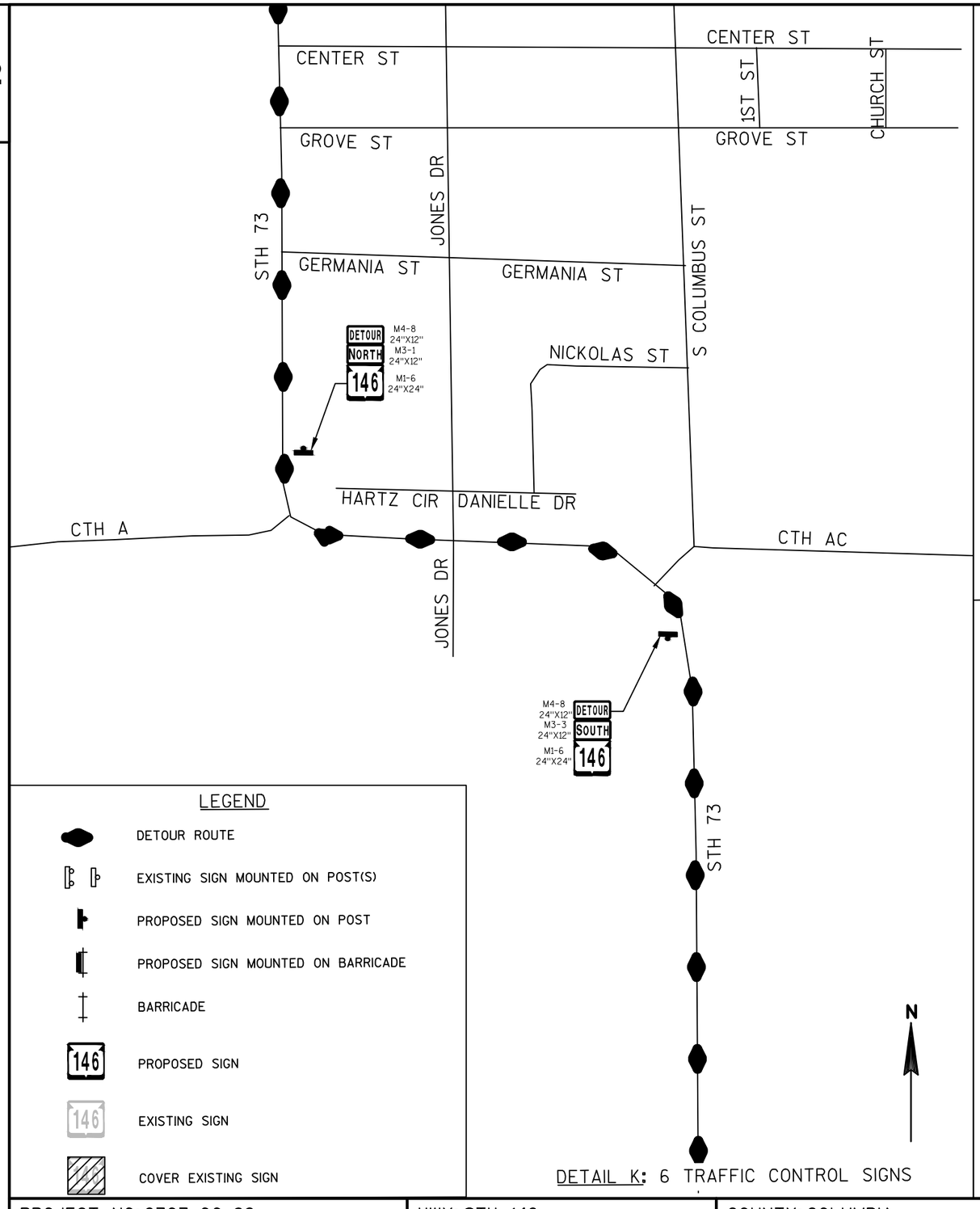


DETAIL I: 6 TRAFFIC CONTROL SIGNS

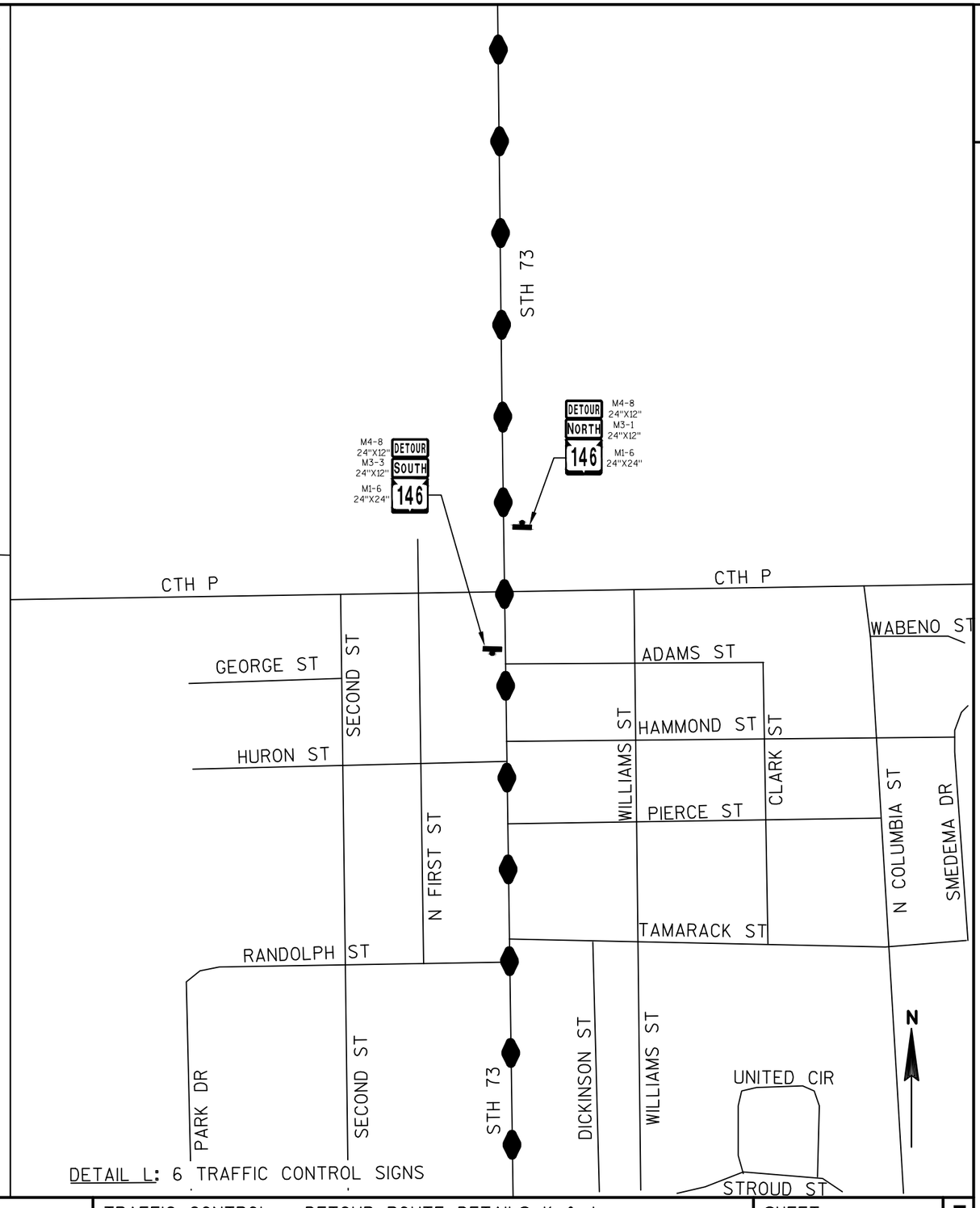


DETAIL J: 12 TRAFFIC CONTROL SIGNS

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE DETAILS I & J	SHEET 22	E

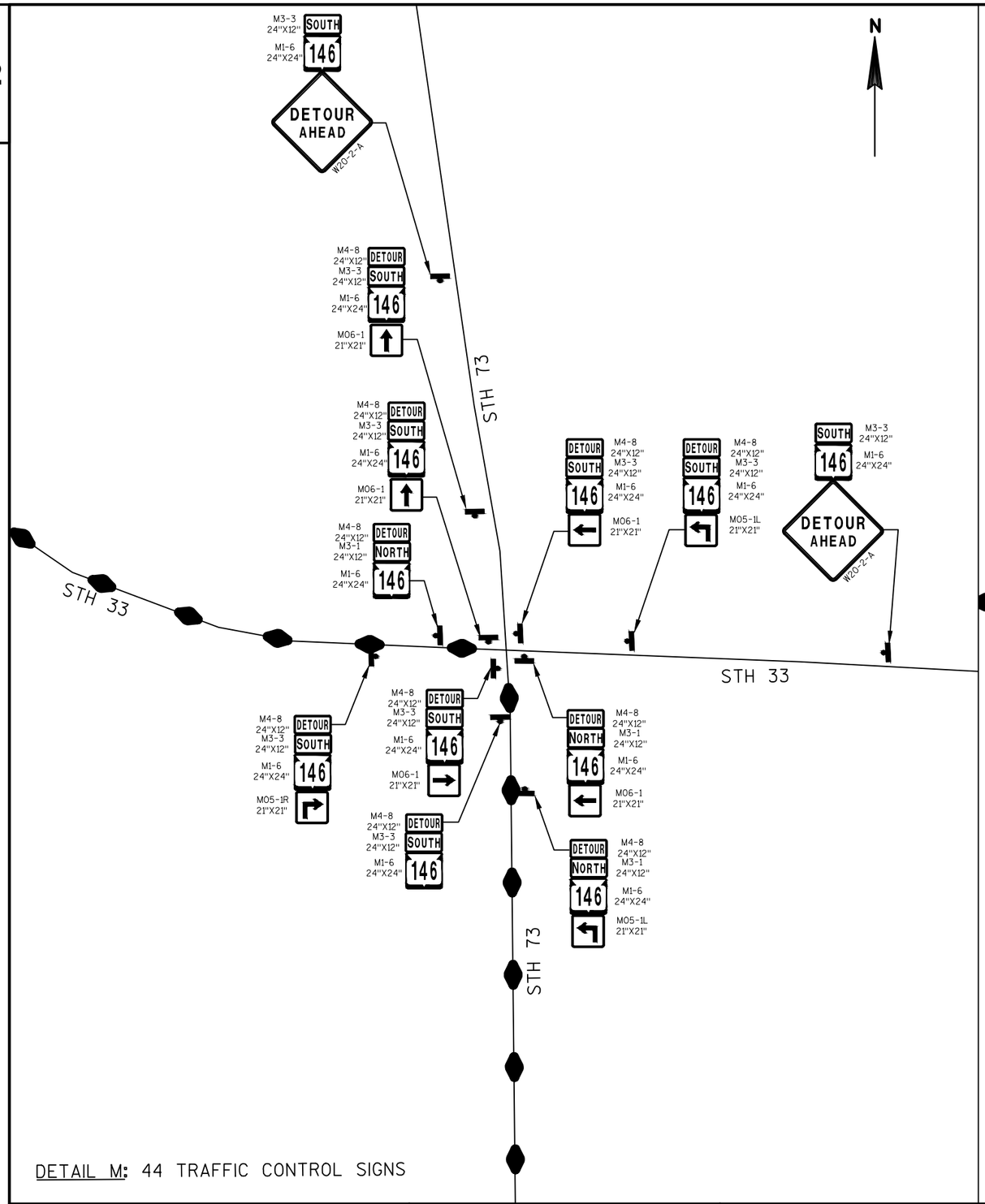


DETAIL K: 6 TRAFFIC CONTROL SIGNS

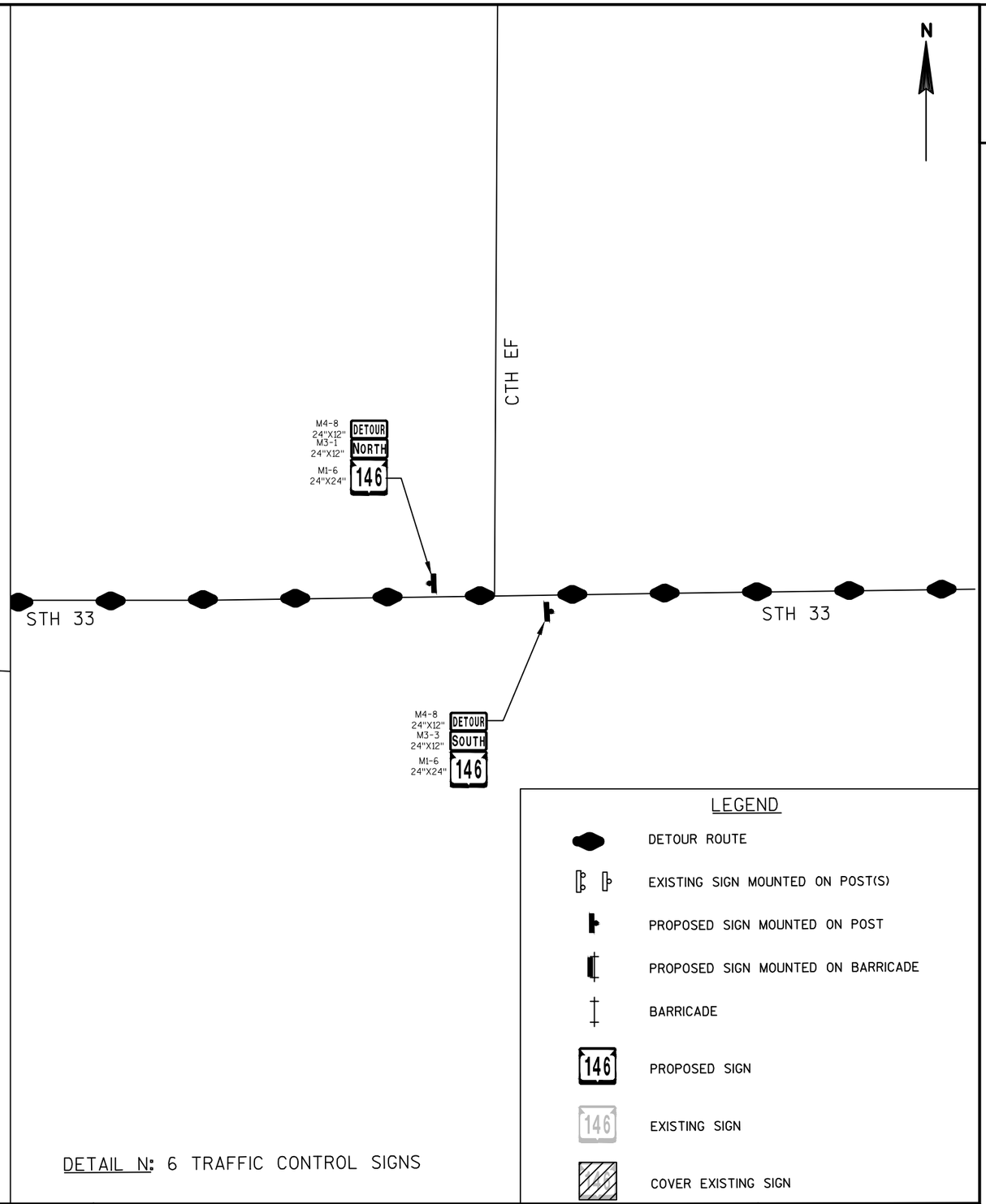


DETAIL L: 6 TRAFFIC CONTROL SIGNS

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE DETAILS K & L	SHEET 23	E



DETAIL M: 44 TRAFFIC CONTROL SIGNS



DETAIL N: 6 TRAFFIC CONTROL SIGNS

PROJECT NO:6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE DETAILS M & N	SHEET 24	E

FILE NAME : \\FIWMAD7P3158\N3PUBLIC\PDS\C3D\67070002\SHEETSPLAN\027002 DT.DWG
LAYOUT NAME - ****
PLOT DATE : 10/12/2017 10:15 AM PLOT BY : KRUEGER, MARIAH R PLOT NAME : PLOT SCALE : 1 IN:500 FT
WISDOT/CADDS SHEET 42

2

N

M3-3 24"X12" SOUTH
M1-6 24"X24" 146
DETOUR AHEAD W20-2-A

CTH M

M4-8 24"X12" DETOUR
M3-3 24"X12" SOUTH
M1-6 24"X24" 146
M06-1 21"X21"

COUNTY M

STH 33

M4-8A 24"X18" END DETOUR
M3-1 24"X12" NORTH
PLACE OVER EXISTING CARDINAL DIRECTION SIGN
SOUTH WEST 146 33

M3-3 24"X12" SOUTH
M1-6 24"X24" 146
DETOUR AHEAD W20-2-A

M4-8 24"X12" DETOUR
EAST SOUTH 33 146

PLACE OVER EXISTING ARROW
M06-1 21"X21"

M4-8 24"X12" DETOUR
COUNTY M SOUTH 146

PLACE OVER EXISTING ARROW
M06-1 21"X21"

STAGE 1
BRIDGE OUT
12 MILES AHEAD
LOCAL TRAFFIC ONLY
R11-3-B 60"X30"

STAGE 2
ROAD CLOSED
12 MILES AHEAD
LOCAL TRAFFIC ONLY
R11-3 60"X30"

DETOUR NEXT 26 MILES
G20-51 60"X24"

DETOUR SOUTH 146
M4-8 24"X12"
M3-3 24"X12"
M1-6 24"X24"

DETOUR
M04-9L 30"X24"

STH 146

DETOUR ROUTE

DETAIL O: 22 TRAFFIC CONTROL SIGNS

N

TOWYN ST
S MADISON ST
JONES ST
W COMMERCE ST
STH 146
WISCONSIN & SOUTHERN RAILROAD
CABBAGE RD

ROAD CLOSED AHEAD W20-3-A
10 MILES AHEAD
W57-52 36"X24"

STH 146

DETAIL P: 2 TRAFFIC CONTROL SIGNS

2

LEGEND

- DETOUR ROUTE
- EXISTING SIGN MOUNTED ON POST(S)
- PROPOSED SIGN MOUNTED ON POST
- PROPOSED SIGN MOUNTED ON BARRICADE
- BARRICADE
- 146 PROPOSED SIGN
- 146 EXISTING SIGN
- 146 COVER EXISTING SIGN

PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	TRAFFIC CONTROL - DETOUR ROUTE DETAILS O & P	SHEET 25	E

6707-00-82

Line	Item	Item Description	Unit	Total	Qty
0002	203.0225.S	Debris Containment (structure) 01. B-11-27	LS	1.000	1.000
0004	204.0120	Removing Asphaltic Surface Milling	SY	5,390.000	5,390.000
0006	204.0150	Removing Curb & Gutter	LF	11.900	11.900
0008	204.0165	Removing Guardrail	LF	1,265.000	1,265.000
0010	205.0100	Excavation Common	CY	230.000	230.000
0012	208.0100	Borrow	CY	78.000	78.000
0014	211.0400	Prepare Foundation for Asphaltic Shoulders	STA	42.000	42.000
0016	213.0100	Finishing Roadway (project) 01. 6707-00-82	EACH	1.000	1.000
0018	305.0110	Base Aggregate Dense 3/4-Inch	TON	430.000	430.000
0020	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	100.000	100.000
0022	312.0110	Select Crushed Material	TON	230.000	230.000
0024	415.0410	Concrete Pavement Approach Slab	SY	230.000	230.000
0026	440.4410	Incentive IRI Ride	DOL	1,530.000	1,530.000
0028	455.0605	Tack Coat	GAL	1,035.000	1,035.000
0030	460.2000	Incentive Density HMA Pavement	DOL	940.000	940.000
0032	460.4110.S	Reheating HMA Pavement Longitudinal Joints	LF	4,040.000	4,040.000
0034	460.6224	HMA Pavement 4 MT 58-28 S	TON	1,463.000	1,463.000
0036	502.3100	Expansion Device (structure) 01. B-11-27	LS	1.000	1.000
0038	502.3200	Protective Surface Treatment	SY	830.000	830.000
0040	502.3210	Pigmented Surface Sealer	SY	10.000	10.000
0042	502.4205	Adhesive Anchors No. 5 Bar	EACH	100.000	100.000
0044	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	3,840.000	3,840.000
0046	509.0301	Preparation Decks Type 1	SY	215.000	215.000
0048	509.0302	Preparation Decks Type 2	SY	150.000	150.000
0050	509.0500	Cleaning Decks	SY	792.000	792.000
0052	509.1000	Joint Repair	SY	44.000	44.000
0054	509.1500	Concrete Surface Repair	SF	10.000	10.000
0056	509.2000	Full-Depth Deck Repair	SY	1.000	1.000
0058	509.2500	Concrete Masonry Overlay Decks	CY	114.000	114.000
0060	601.0411	Concrete Curb & Gutter 30-Inch Type D	LF	11.900	11.900
0062	604.9015.S	Reseal Crushed Aggregate Slope Paving	SY	790.000	790.000
0064	611.8115	Adjusting Inlet Covers	EACH	2.000	2.000
0066	614.0010	Barrier System Grading Shaping Finishing	EACH	2.000	2.000
0068	614.2330	MGS Guardrail 3 K	LF	1,812.500	1,812.500
0070	614.2350	MGS Guardrail Short Radius	LF	181.200	181.200
0072	614.2500	MGS Thrie Beam Transition	LF	157.600	157.600
0074	614.2610	MGS Guardrail Terminal EAT	EACH	2.000	2.000
0076	614.2630	MGS Guardrail Short Radius Terminal	EACH	2.000	2.000
0078	618.0100	Maintenance And Repair of Haul Roads (project) 01. 6707-00-82	EACH	1.000	1.000

6707-00-82

Line	Item	Item Description	Unit	Total	Qty
0080	619.1000	Mobilization	EACH	1.000	1.000
0082	624.0100	Water	MGAL	6.000	6.000
0084	625.0500	Salvaged Topsoil	SY	678.000	678.000
0086	628.1504	Silt Fence	LF	732.000	732.000
0088	628.1520	Silt Fence Maintenance	LF	1,464.000	1,464.000
0090	628.1905	Mobilizations Erosion Control	EACH	1.000	1.000
0092	628.1910	Mobilizations Emergency Erosion Control	EACH	1.000	1.000
0094	628.2004	Erosion Mat Class I Type B	SY	678.000	678.000
0096	628.7015	Inlet Protection Type C	EACH	2.000	2.000
0098	628.7555	Culvert Pipe Checks	EACH	1.000	1.000
0100	628.7570	Rock Bags	EACH	20.000	20.000
0102	629.0210	Fertilizer Type B	CWT	0.500	0.500
0104	630.0120	Seeding Mixture No. 20	LB	18.000	18.000
0106	638.2602	Removing Signs Type II	EACH	4.000	4.000
0108	638.3000	Removing Small Sign Supports	EACH	4.000	4.000
0110	642.5001	Field Office Type B	EACH	1.000	1.000
0112	643.0420	Traffic Control Barricades Type III	DAY	510.000	510.000
0114	643.0705	Traffic Control Warning Lights Type A	DAY	1,020.000	1,020.000
0116	643.0900	Traffic Control Signs	DAY	12,726.000	12,726.000
0118	643.0920	Traffic Control Covering Signs Type II	EACH	7.000	7.000
0120	643.1050	Traffic Control Signs PCMS	DAY	14.000	14.000
0122	643.5000	Traffic Control	EACH	1.000	1.000
0124	646.1020	Marking Line Epoxy 4-Inch	LF	7,638.000	7,638.000
0126	650.8000	Construction Staking Resurfacing Reference	LF	2,080.000	2,080.000
0128	650.9910	Construction Staking Supplemental Control (project) 01. 6707-00-82	LS	1.000	1.000
0130	650.9920	Construction Staking Slope Stakes	LF	440.000	440.000
0132	690.0150	Sawing Asphalt	LF	48.000	48.000
0134	715.0415	Incentive Strength Concrete Pavement	DOL	500.000	500.000
0136	801.0117	Railroad Flagging Reimbursment	DOL	20,000.000	20,000.000
0138	ASP.1T0A	On-the-Job Training Apprentice at $5.00/HR	HRS	250.000	250.000
0140	ASP.1T0G	On-the-Job Training Graduate at $5.00/HR	HRS	200.000	200.000
0142	SPV.0060	Special 01. Cleaning Inlets	EACH	2.000	2.000
0144	SPV.0060	Special 02. Landmark Reference Monuments Special	EACH	1.000	1.000

3

ASPHALT ITEMS

STATION	TO	STATION	LOCATION	204.0120 REMOVING ASPHALTIC SURFACE MILLING SY	211.0400 PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS STA	455.0605 TACK COAT GAL	460.4110.S REHEATING HMA PAVEMENT LONGITUDINAL JOINTS LF	460.6224 HMA PAVEMENT 4 MT 58-28 S TON	690.0150 SAWING ASPHALT LF	REMARKS
		35+00	BEGIN PROJECT	-	-	-	-	-	24	
		58+00	END PROJECT	-	-	-	-	-	24	
35+00	-	44+95	LT & RT	2655	20	510	1990	715	-	
47+75	-	58+00	LT & RT	2735	22	525	2050	740	-	
35+00	-	38+00	DRIVEWAYS	-	-	-	-	8	-	SHOULDER AT DRIVEWAYS
			TOTAL	5390	42	1035	4040	1463	48	

BASE AGGREGATE DENSE 3/4" ITEM

STATION	TO	STATION	LOCATION	305.0110 BASE AGGREGATE DENSE 3/4" TON
35+00	-	45+25	RT & LT	150
47+45	-	58+00	RT & LT	130
35+00	-	58+00	DRIVEWAYS	150
			TOTAL	430

3

EARTHWORK ITEMS

STATION	TO	STATION	LOCATION	205.0100 EXCAVATION COMMON CY	208.0100 BORROW CY	625.0500 SALVAGED TOPSOIL SY	REMARKS
51+00	-	52+00	RT	-	65	565	SLOPE GRADING
44+95	-	45+25	MAINLINE	115	-	-	APPROACH SLAB; ASSUMES ALL EXCAVATED MATERIAL WILL BE UNUSABLE FOR FILL
47+45	-	47+75	MAINLINE	115	-	-	APPROACH SLAB; ASSUMES ALL EXCAVATED MATERIAL WILL BE UNUSABLE FOR FILL
			UNDISTRIBUTED	-	13	113	
			TOTAL	230	78	678	

WATER ITEM

STATION	TO	STATION	LOCATION	624.0100 WATER MGAL
35+00	-	45+25	RT & LT	2
47+45	-	58+00	RT & LT	2
35+00	-	58+00	DRIVEWAYS	2
			TOTAL	6

CURB & GUTTER ITEMS

STATION		STATION	LOCATION	204.0150 REMOVING CURB & GUTTER LF	601.0411 CONCRETE CURB & GUTTER 30-INCH TYPE D LF
44+88	-	44+94	RT	6.2	6.2
45+21	-	45+27	LT	5.7	5.7
			TOTAL	11.9	11.9

CONCRETE PAVEMENT APPROACH ITEMS

STATION	TO	STATION	LOCATION	305.0120 BASE AGGREGATE DENSE 1 1/4" TON	312.0110 SELECT CRUSHED MATERIAL TON	415.0410 CONCRETE PAVEMENT APPROACH SLAB SY
44+95	-	45+25	MAINLINE	50	115	115
47+45	-	47+75	MAINLINE	50	115	115
			TOTAL	100	230	230

3

GUARDRAIL ITEMS

STATION	TO	STATION	LOCATION	204.0165 REMOVING GUARDRAIL LF	614.2330 MGS GUARDRAIL 3 K LF	614.2350 MGS GUARDRAIL SHORT RADIUS LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH	214.2630 MGS GUARDRAIL SHORT RADIUS TERMINAL EACH	REMARKS
39+18	-	44+99	RT	500	487.5	-	39.4	1	-	SEE BEAM GUARD DETAILS AND STANDARD DETAILS FOR EXACT STATIONING AND LAYOUTS FOR BEAM GUARD ITEMS
36+14	-	45+31	LT	525	825	-	39.4	1	-	
47+34	-	49+88	RT	120	175	90.6	39.4	-	1	
47+69	-	51+74	LT	120	325	90.6	39.4	-	1	
			TOTAL	1265	1812.5	181.2	157.6	2	2	

BARRIER SYSTEM GRADING SHAPING FINISHING ITEM

STATION	TO	STATION	LOCATION	614.0010 BARRIER SYSTEM GRADING SHAPING FINISHING EACH	* BORROW CY	* SALVAGED TOPSOIL SY	* EROSION MAT CLASS I TYPE B SY	* EROSION MAT URBAN CLASS I TYPE B SY	* FERTILIZER TYPE B CWT	* SEEDING MIXTURE NO. 20 LB	REMARKS
35+00	-	36+67	LT	1	30	300	300	-	0.2	8	*INCIDENTAL TO ITEM #614.0010. ITEMS ARE LISTED FOR INFORMATIONAL PURPOSES ONLY
38+00	-	39+72	RT	1	400	1150	980	170	0.7	31	
			TOTAL	2	430	1450	1280	170	0.9	39	

EROSION CONTROL ITEMS

STATION	TO	STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.2004 EROSION MAT CLASS I TYPE B SY	628.7015 INLET PROTECTION TYPE C EACH	628.7555 CULVERT PIPE CHECKS EACH	628.7570 ROCK BAGS EACH	629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING MISTURE NO. 20 LB
35+00	-	35+80	LT	80	160	-	-	-	-	-	-
36+00	-	36+80	LT	100	200	-	-	-	-	-	-
37+90	-	39+80	RT	250	500	-	-	-	-	-	-
50+70	-	52+30	RT	180	360	565	-	-	-	0.4	15
		35+75	LT	-	-	-	-	1	-	-	-
		39+65	RT	-	-	-	-	-	20	-	-
		44+92	RT	-	-	-	1	-	-	-	-
		45+24	LT	-	-	-	1	-	-	-	-
		UNDISTRIBUTED		122	244	113	-	-	-	0.1	3
			TOTAL	732	1464	678	2	1	20	0.5	18

TRAFFIC CONTROL ITEMS

TRAFFIC CONTROL OPERATIONS	DURATION (DAYS)	643.0420 TRAFFIC CONTROL BARRICADES TYPE III		643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A		643.0900 TRAFFIC CONTROL SIGNS		643.0920 TRAFFIC CONTROL COVERING SIGNS TYPE II*	643.1050 TRAFFIC CONTROL SIGNS PCMS	
		EACH	DAY	EACH	DAY	EACH	DAY	EACH		DAY
PHASE 1	29	10	290	20	580	8	232	-	-	-
PHASE 2	13	4	52	8	104	8	104	-	-	-
DETOUR	42	4	168	8	336	295	12390	7	-	-
PRE-WARNING	7	-	-	-	-	-	-	-	2	14
TOTAL			510		1020		12726	7		14

*ONE CYCLE REQUIRED FOR TRAFFIC CONTROL COVERING SIGNS TYPE II

INLET ITEMS

STATION	LOCATION	611.8115 ADJUSTING INLET COVERS EACH	SPV.0060.01 SPECIAL 01. CLEANING INLETS EACH
44+92	RT	1	1
45+24	LT	1	1
	TOTAL	2	2

PAVEMENT MARKING ITEMS

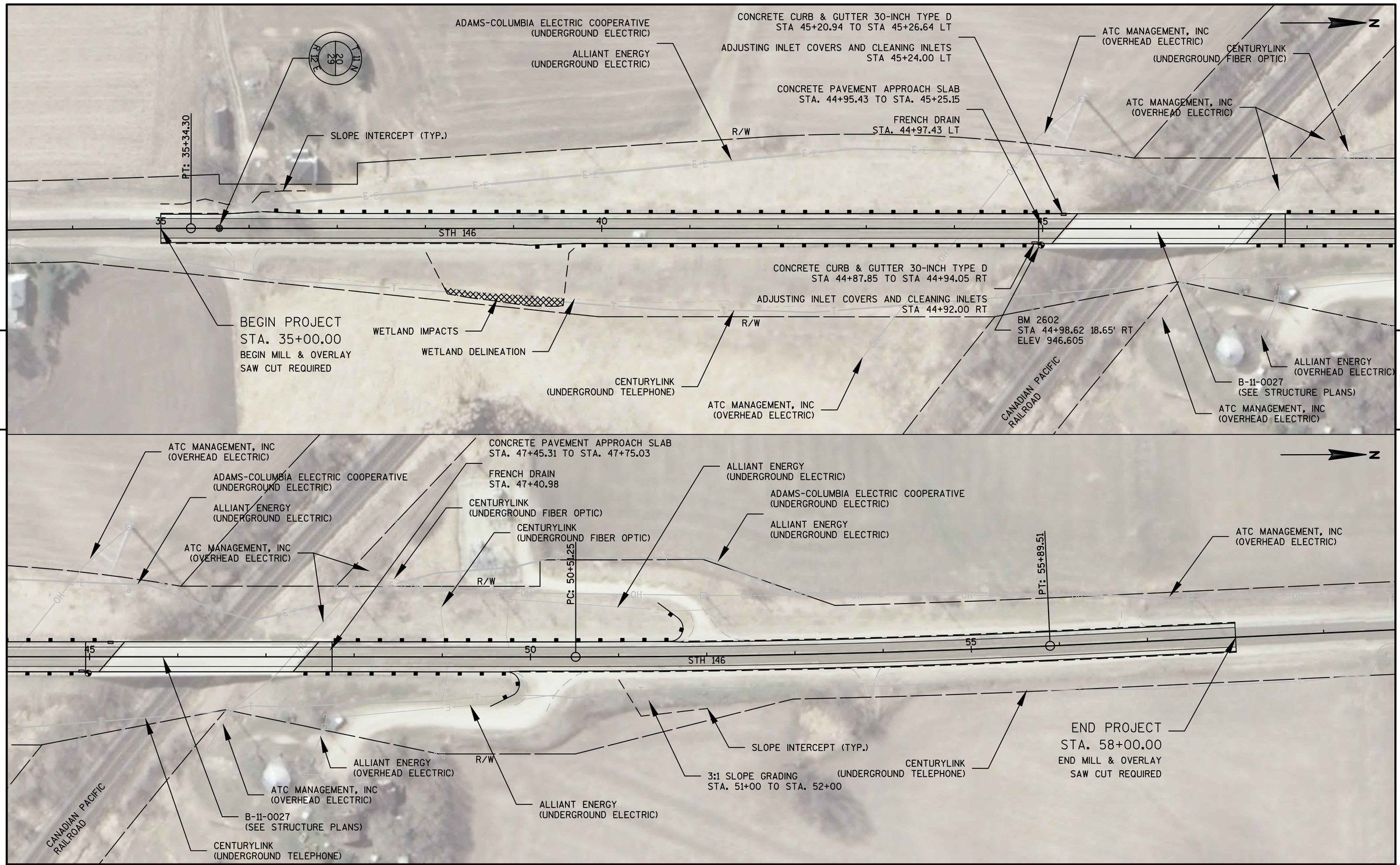
STATION	TO	STATION	LOCATION	646.1020 MARKING LINE EPOXY 4-INCH (YELLOW) LF	(WHITE) LF	REMARKS
35+00	-	36+75	MAINLINE	50	350	YELLOW CENTERLINE SKIPS; WHITE EDGELINES
36+75	-	43+55	MAINLINE	855	1360	YELLOW CENTERLINE SKIPS + SOLID; WHITE EDGELINES
43+55	-	48+85	MAINLINE	1060	1060	YELLOW CENTERLINE DOUBLE SOLID; WHITE EDGELINES
48+85	-	57+20	MAINLINE	1048	1670	YELLOW CENTERLINE SKIPS + SOLID; WHITE EDGELINES
57+20	-	58+00	MAINLINE	25	160	YELLOW CENTERLINE SKIPS; WHITE EDGELINES
			TOTAL	7638		

PERMANENT SIGNING ITEMS

STATION	LOCATION	SIGN NO.	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH	REMARKS
45+30	LT	01-01	1	1	W5-52L
47+65	LT	01-02	1	1	W5-52R
45+00	RT	01-03	1	1	W5-52R
47+35	RT	01-04	1	1	W5-52L
		TOTAL	4	4	

CONSTRUCTION STAKING ITEMS

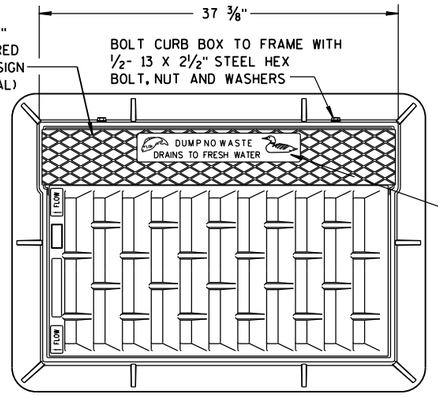
STATION	TO	STATION	LOCATION	650.8000 CONSTRUCTION STAKING RESURFACING REFERENCE LF	650.9910 CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (6707-00-82) LS	650.9920 CONSTRUCTION STAKING SLOPE STAKES LF
35+00	-	45+25	MAINLINE	1025	-	340
47+45	-	58+00	MAINLINE	1055	-	100
			PROJECT	-	1	-
			TOTAL	2080	1	440



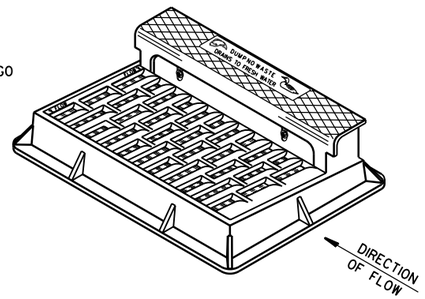
PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	PLAN SHEETS	SHEET 31	E

Standard Detail Drawing List

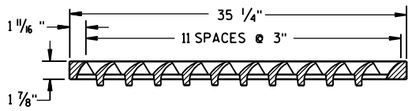
08A05-19A	INLET COVERS TYPE A, H, A-S, H-S & Z
08D01-20A	CONCRETE CURB & GUTTER
08D01-20B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D22-01	DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL
08E09-06	SILT FENCE
08E10-02	INLET PROTECTION TYPE A, B, C AND D
12A03-10	NAME PLATE (STRUCTURES)
13A03-06	CONCRETE PAVEMENT SHOULDERS
13B02-08A	CONCRETE PAVEMENT APPROACH SLAB
13B02-08B	STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB
14B42-05A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-05D	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B44-03A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-03C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B45-04A	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04B	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04C	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B53-01A	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01B	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01C	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01D	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01E	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01F	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01G	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01H	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
14B53-01I	SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06C	DETOUR SIGNING FOR MAINLINE CLOSURES
15C04-03	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C08-18A	LONGITUDINAL MARKING (MAINLINE)
15C35-01A	PAVEMENT MARKING (INTERSECTIONS)

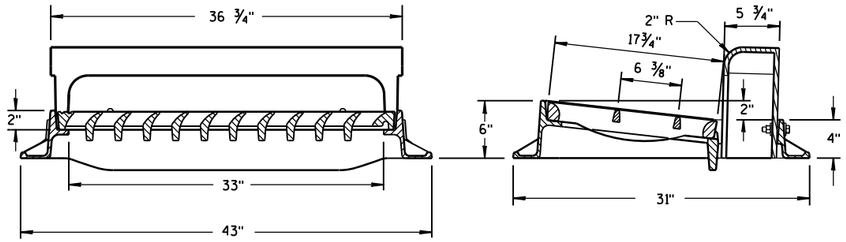


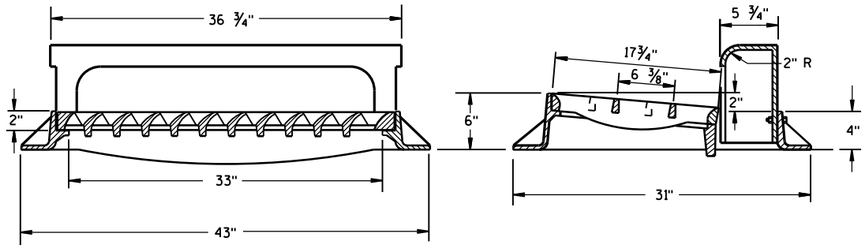
NOTE:
GRATE IS REVERSIBLE.



NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

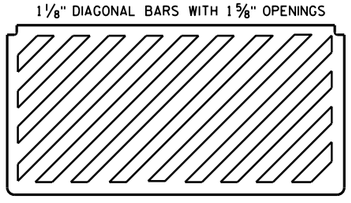






TYPE "H"

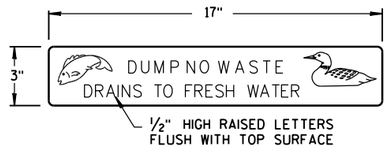
NOTE: EITHER CASTING IS ACCEPTABLE



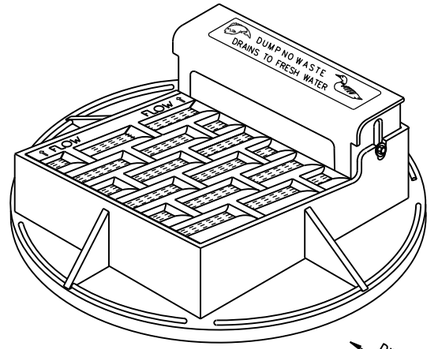
SPECIAL GRATE FOR TYPE "H" COVER

(MEASURES 35 1/4" X 17 3/4" X 2")

(NOTED AS TYPE H-S ON DRAINAGE TABLE)



LOGO DETAIL



NOTE: CURB BOX ADJUSTABLE 4" TO 9"

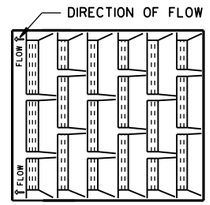
NOTE:
GRATE IS REVERSIBLE.

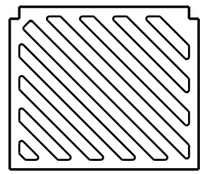
GENERAL NOTES

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 CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.

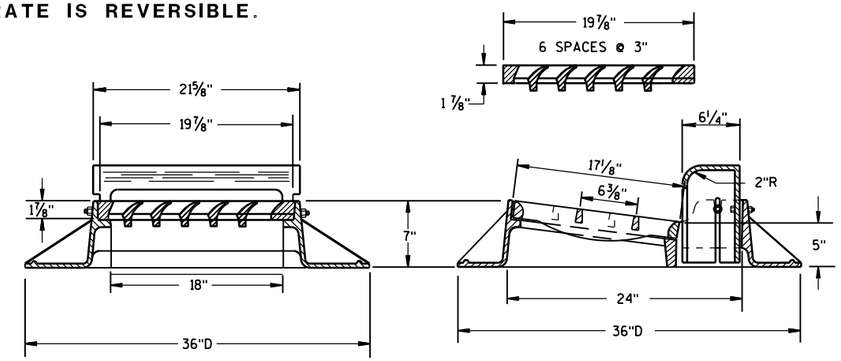




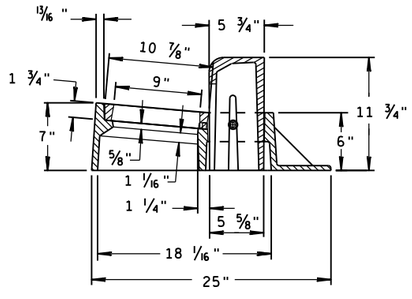
SPECIAL GRATE FOR TYPE "A" COVER

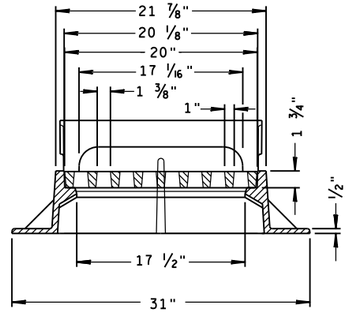
(MEASURES 19 3/4" X 17" X 1 7/8")

(NOTED AS TYPE A-S ON DRAINAGE TABLE)

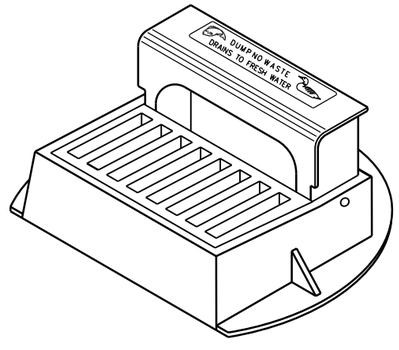


TYPE "A"





TYPE "Z"



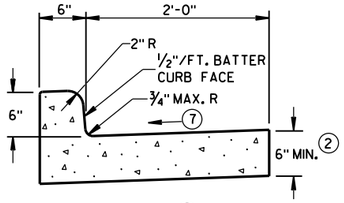
INLET COVERS
TYPE A, H, A-S, H-S & Z

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

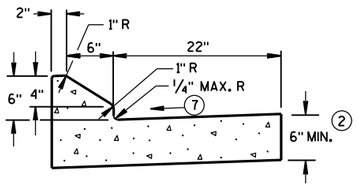
APPROVED
11-27-13 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

6

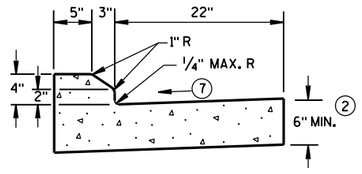
S.D.D. 8 A 5-19a



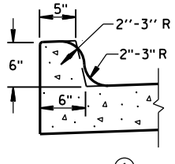
TYPES A (1) & D



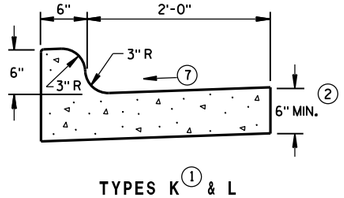
6" SLOPED CURB TYPES G (1) & J



4" SLOPED CURB TYPES G (1) & J

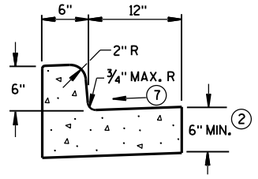


TYPES K (1) & L
(OPTIONAL CURB SHAPE)



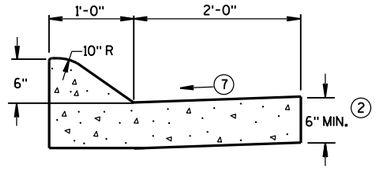
TYPES K (1) & L

CONCRETE CURB & GUTTER 30"

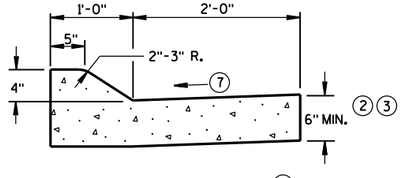


TYPES A (1) & D

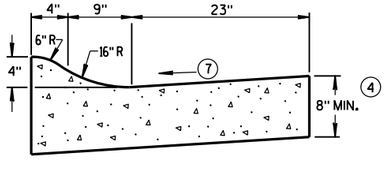
CONCRETE CURB & GUTTER 18"



6" SLOPED CURB TYPES A (1) & D

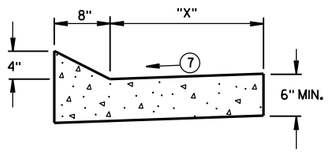


4" SLOPED CURB TYPES A (1) & D



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"

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.

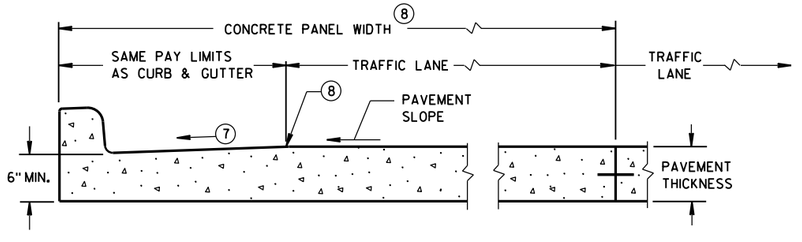
(6) WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.

(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.

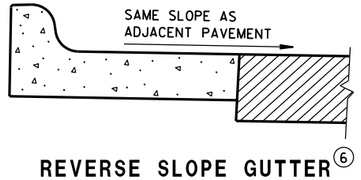
PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

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



PARTIAL SECTION OF PAVEMENT * WITH INTEGRAL CURB & GUTTER

* BIKE LANE IS NOT SHOWN.

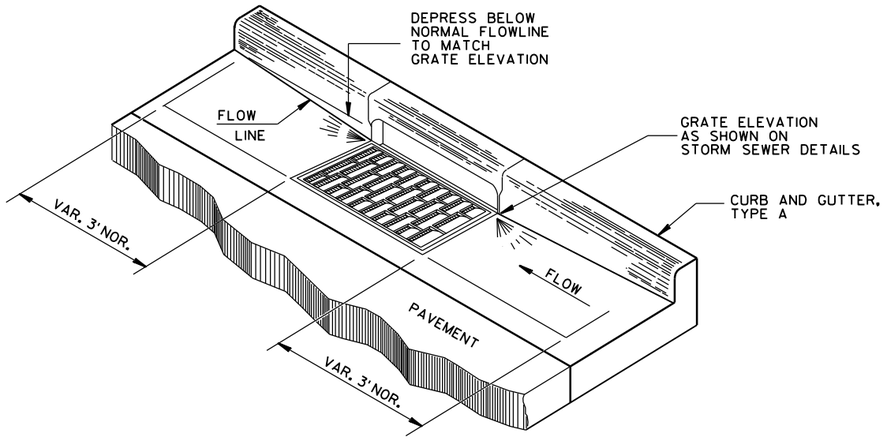


REVERSE SLOPE GUTTER (6)
(TYPICAL FOR ALL CURB & GUTTER TYPES)

CONCRETE CURB & GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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



DETAIL OF CURB AND GUTTER AT INLETS

(TYPE H INLET COVER SHOWN)

GENERAL NOTES

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

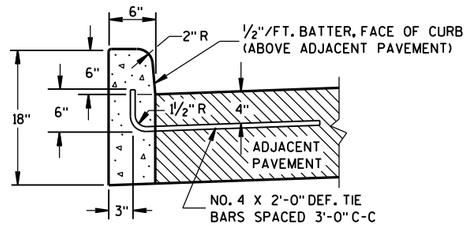
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

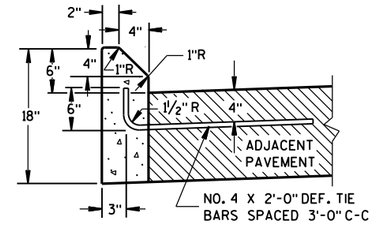
(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K, R AND TBTT.

(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.

(9) REFER TO SDD 8D18 AND SDD 8D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.

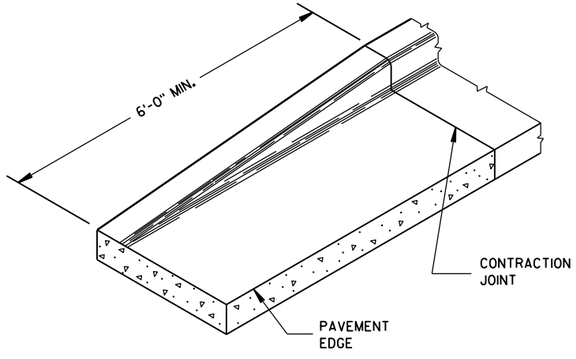


TYPES A(1) & D

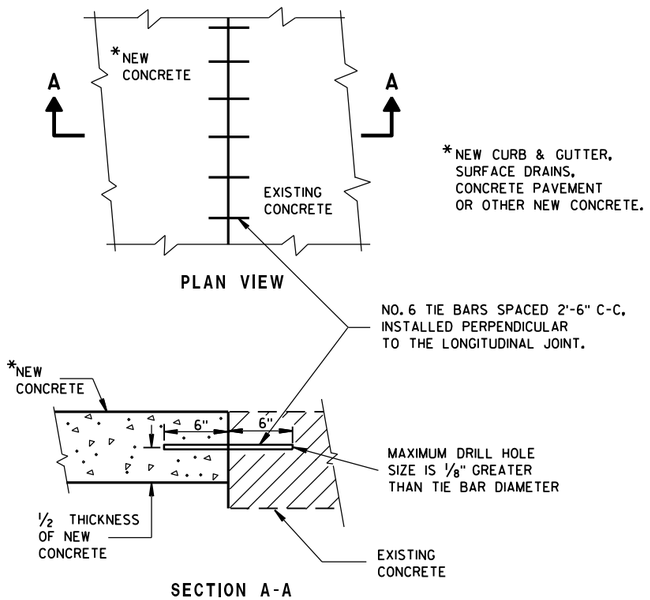


TYPES G(1) & J

CONCRETE CURB



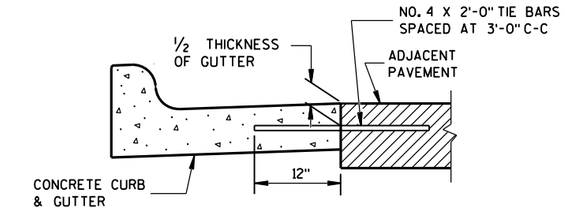
END SECTION CURB & GUTTER



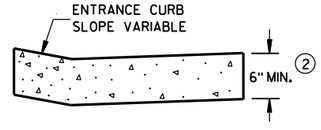
PLAN VIEW

SECTION A-A

TIE BARS DRILLED INTO EXISTING PAVEMENT



TYPICAL TIE BAR LOCATION (1)



DRIVEWAY ENTRANCE CURB (9)

(WHEN DIRECTED BY THE ENGINEER)

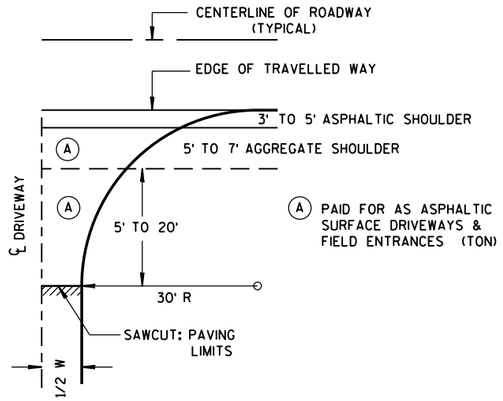
CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2017 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS UNIT SUPERVISOR
35 — ENT
FHWA

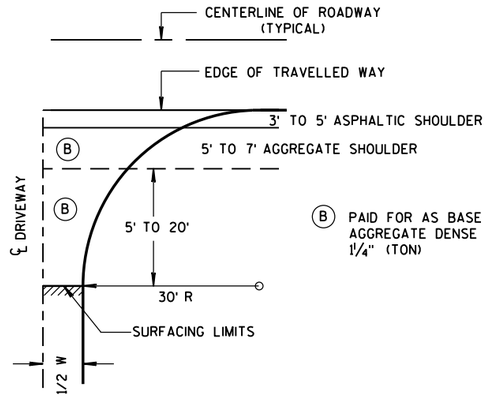
6

S.D.D. 8 D 1-20b



W MIN. = 16'
W MAX. = 24'

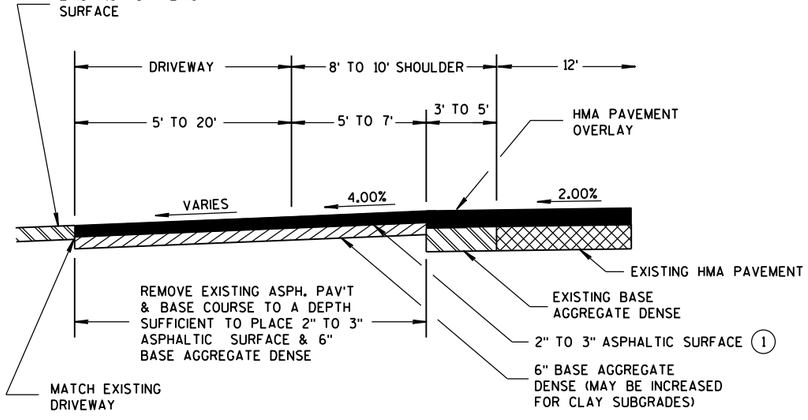
PLAN VIEW
HALF SECTION



PLAN VIEW
HALF SECTION

GENERAL NOTES

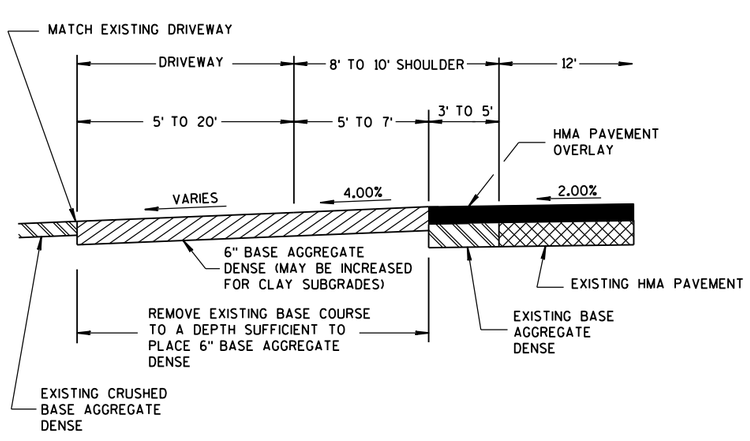
(1) DESIGN WILL DETERMINE FINAL DRIVEWAY ASPHALTIC THICKNESS BASED ON TYPE OF USAGE AND LOADINGS.



PROFILE VIEW

RURAL ENTRANCE WITH ASPHALTIC SURFACE

RESURFACING PROJECTS



PROFILE VIEW

RURAL ENTRANCE WITH AGGREGATE SURFACE

6" BASE AGGREGATE DENSE
RESURFACING PROJECTS

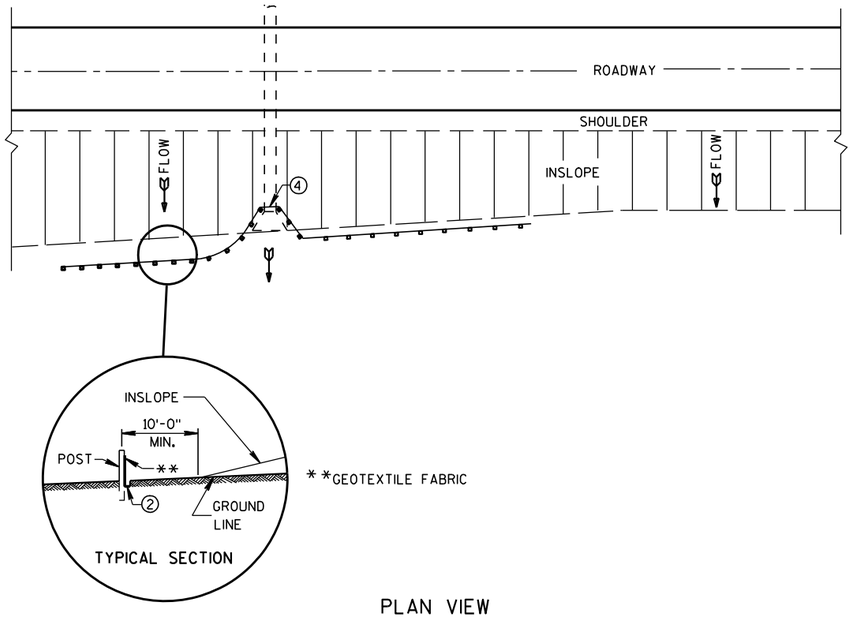
DRIVEWAYS WITHOUT CURB & GUTTER RESURFACING PROJECTS RURAL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
December, 2016 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS UNIT SUPERV
ENT
FHWA

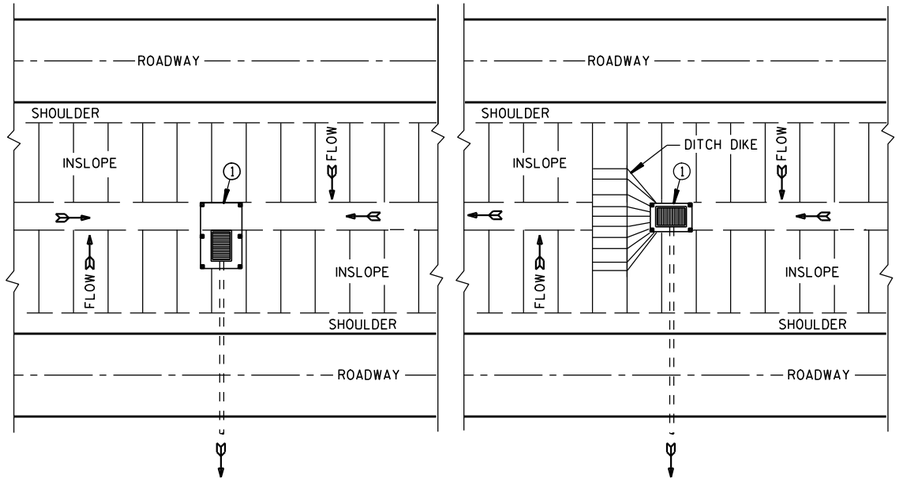
6

S.D.D. 8 D 22-1



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



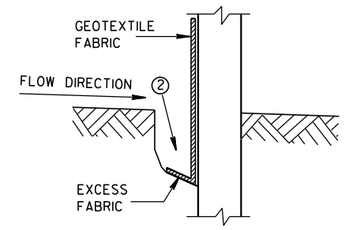
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

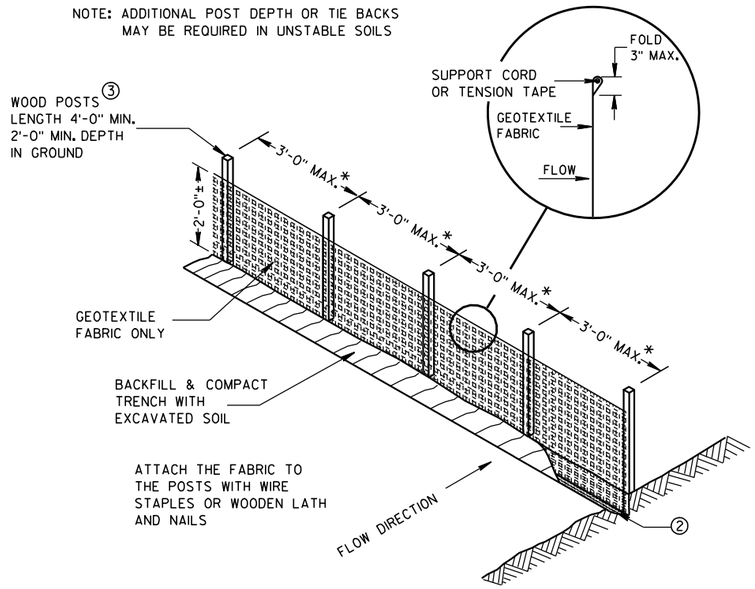
GENERAL NOTES

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

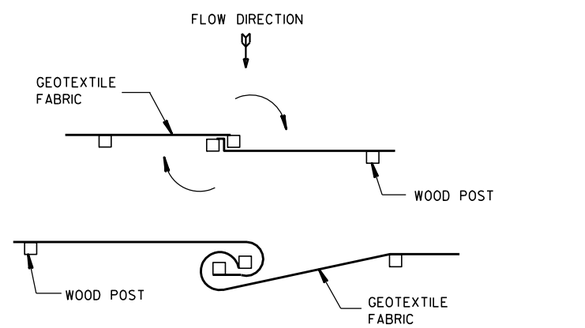
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL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



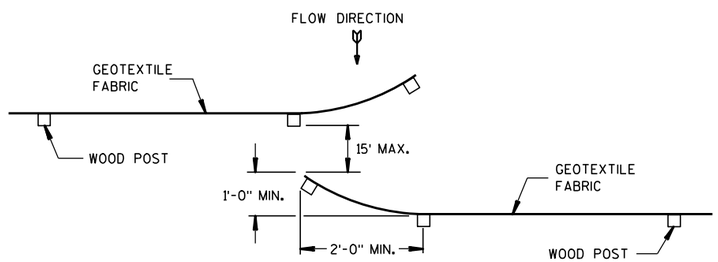
TRENCH DETAIL



SILT FENCE

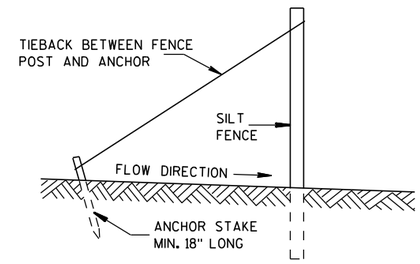


TWIST METHOD



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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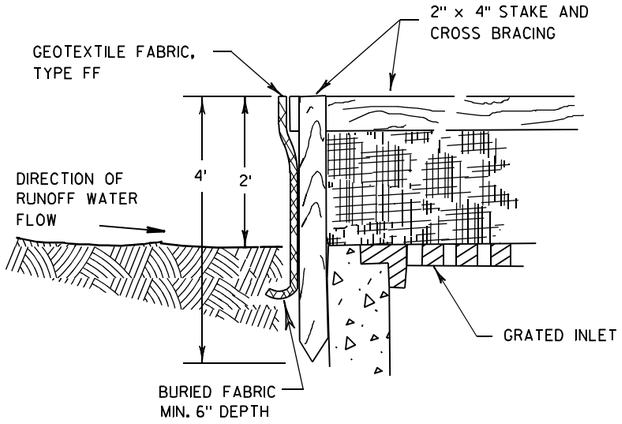
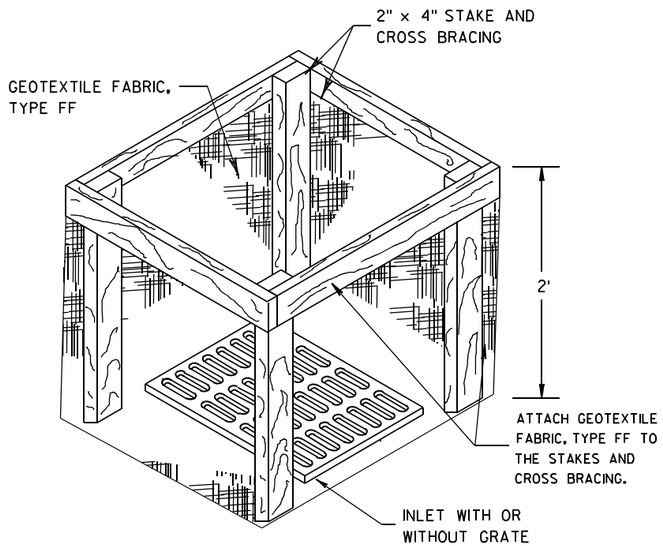
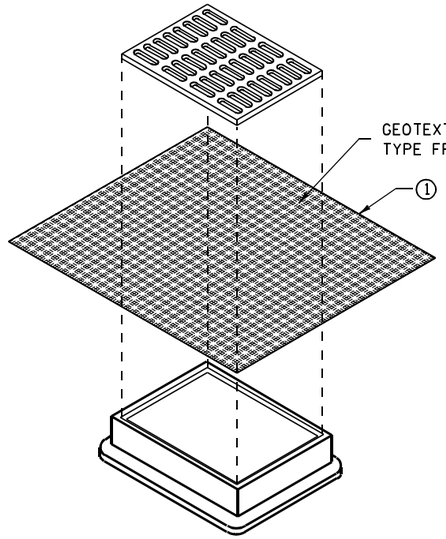
S.D.D. 8 E 9-6



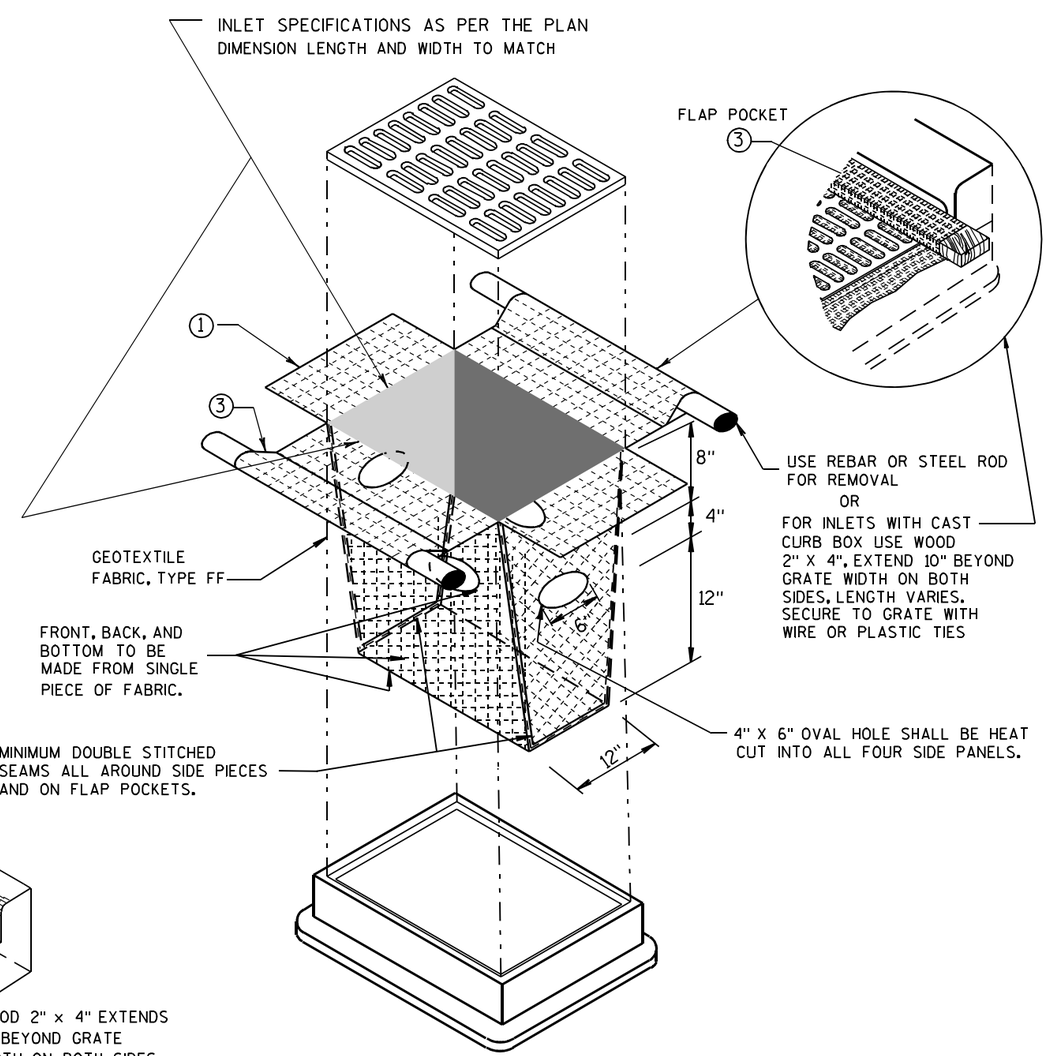


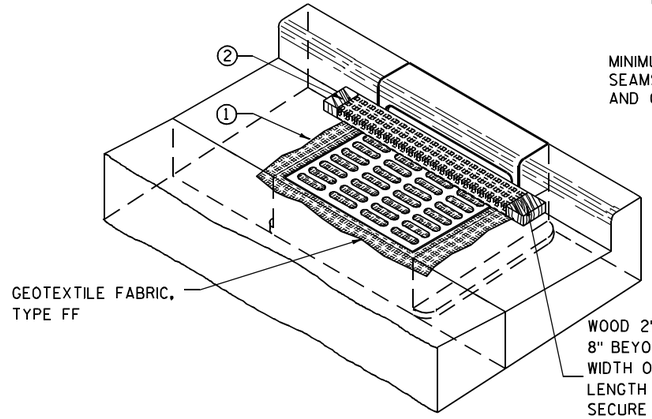
INLET PROTECTION, TYPE A



INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)

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





INLET PROTECTION, TYPE C (WITH CURB BOX)

INLET PROTECTION, TYPE D

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

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

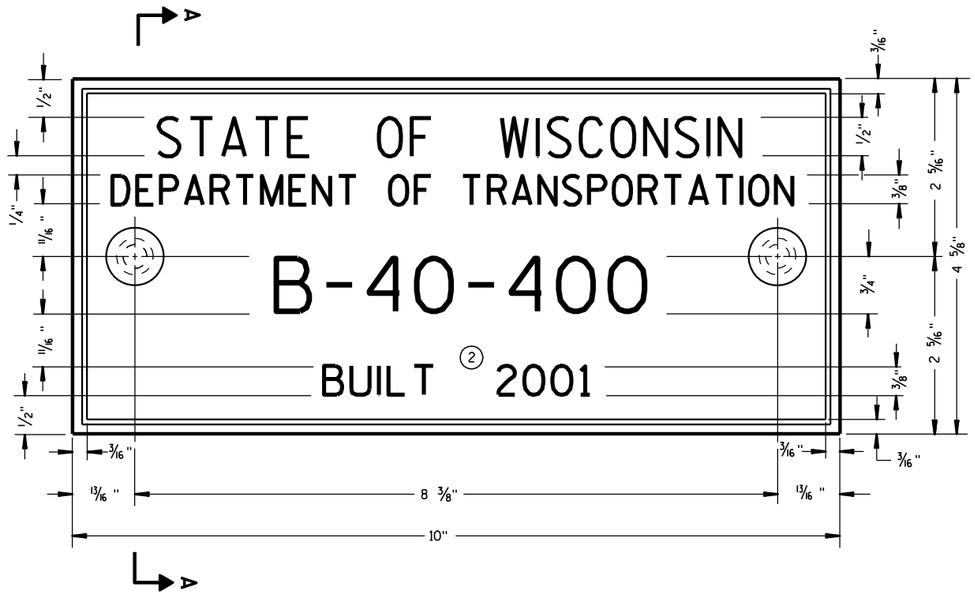
10/16/02
DATE

/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

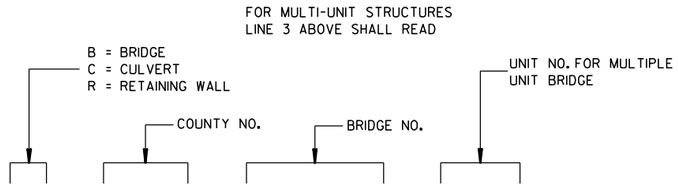
6

S.D.D. 8 E 10-2



TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)



NUMBERING DESIGNATION MULTI-UNIT STRUCTURES

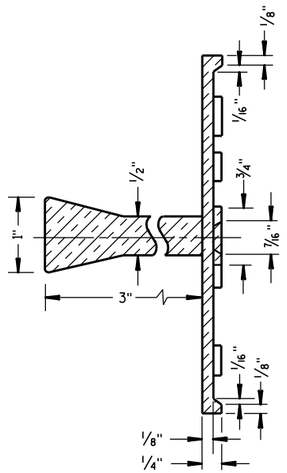
GENERAL NOTES

NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

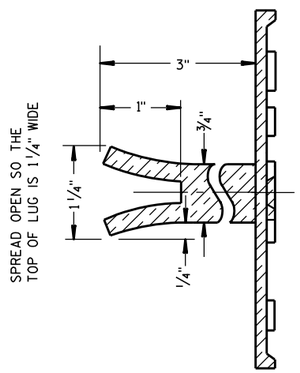
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

(1) EPOXY RESIN SHALL BE FROM AN APPROVED MANUFACTURER AND USED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

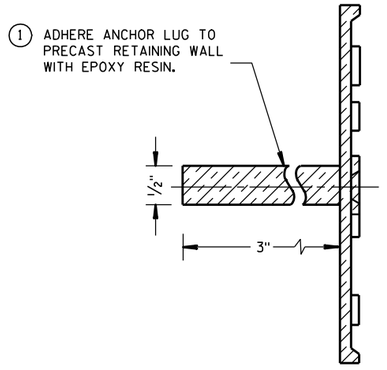
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG

(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

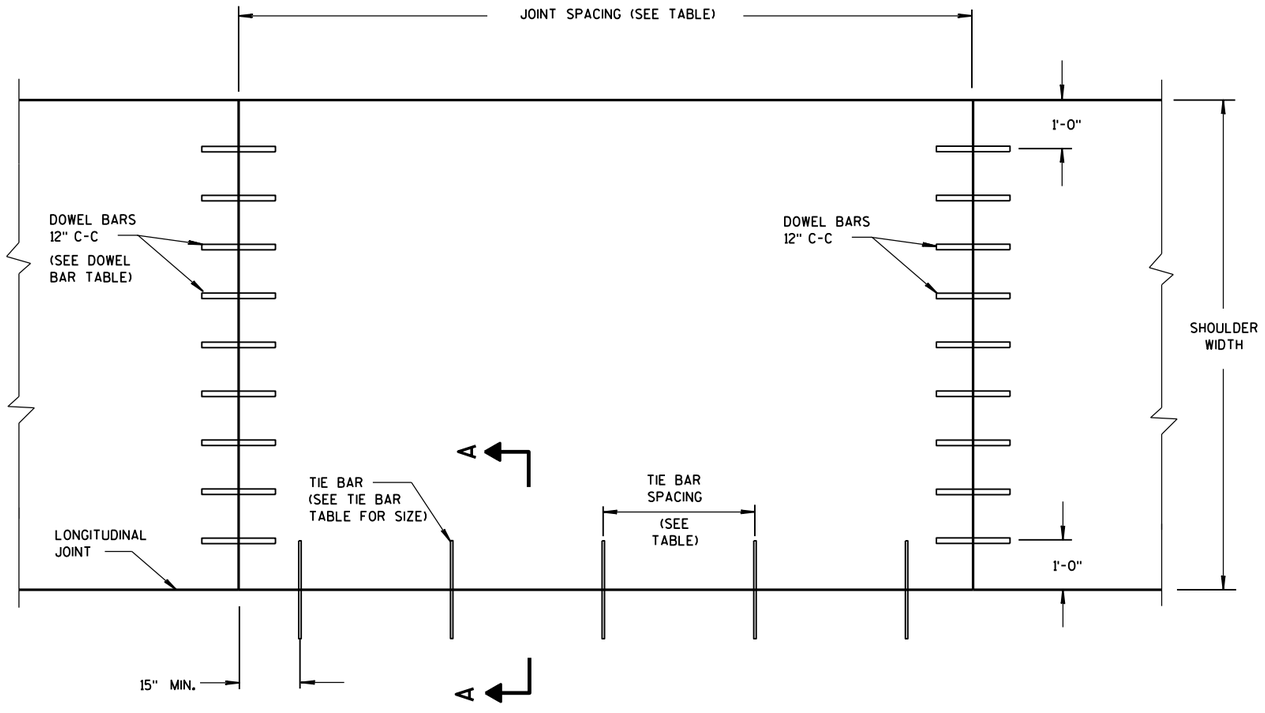
3/26/10 DATE

/S/ Scot Beck-- CHIEF STRUCTURAL DEVELOP ENGINEER

FHWA

6

S.D.D. 12 A 3-10



PLAN VIEW

CONCRETE PAVEMENT SHOULDER

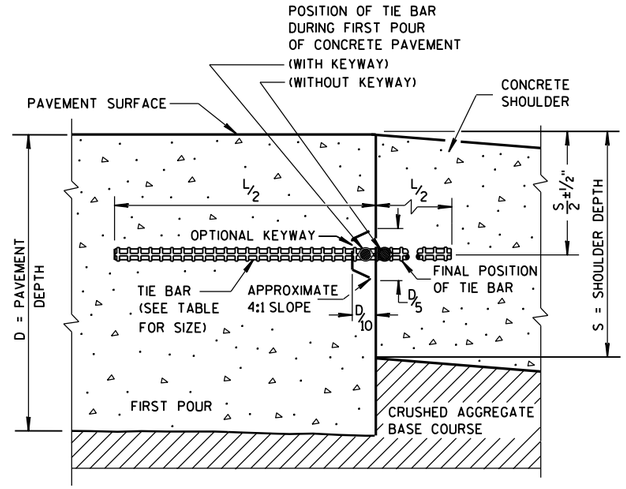
GENERAL NOTES

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.

TRANSVERSE JOINT DETAILS ARE SHOWN ELSEWHERE IN THE PLAN.

FINISH THE SHOULDER PAVEMENT CONFORMING TO SUBSECTION 415.3.8 OF THE STANDARD SPECIFICATIONS.

TIE BARS SHALL CONFORM TO SUBSECTION 505.2.4 OF THE STANDARD SPECIFICATIONS.



SECTION A-A

LONGITUDINAL CONSTRUCTION JOINT

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 ½"	NO. 4	30"	36"
≥ 10 ½"	NO. 5	36"	36"
	NO. 4*	30"	24"**

* SUBSTITUTE BENT BARS AT LONGITUDINAL JOINTS WHEN EQUIPMENT LIMITATIONS DURING CONSTRUCTION WARRANT (e.g. AUXILIARY LANES OR TURN LANES)

** CONFORM TO 15" MINUMUM SPACING FROM TRANSVERSE JOINTS; SPACING BETWEEN TIE BARS WILL BE 30" AT TRANSVERSE JOINTS.

PAVEMENT DEPTH, DOWEL BAR SIZE AND JOINT SPACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER***	CONTRACTION JOINT SPACING
5 ½", 6", 6 ½"	NONE	12'
7", 7 ½"	1"	14'
8", 8 ½"	1 ¼"	15'
9", 9 ½"	1 ¼"	15'
10" & ABOVE	1 ½"	15'

*** FOR DOWELED CONCRETE SHOULDERS WITH TRAPEZOIDAL CROSS SECTIONS, CHOSE THE APPROPRIATE DOWEL BAR DIAMETER BASED ON THE SMALLER PAVEMENT DEPTH (LIKELY THE OUTSIDE EDGE OF THE SHOULDER). IF USING BASKETS, USE BASKETS FOR THE AVERAGE THICKNESS OF THE CROSS SECTION.

CONCRETE PAVEMENT SHOULDERS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Peter Kemp, P.E. — PAVEMENT SUPEF
FHWA

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S.D.D. 13 A 3-6

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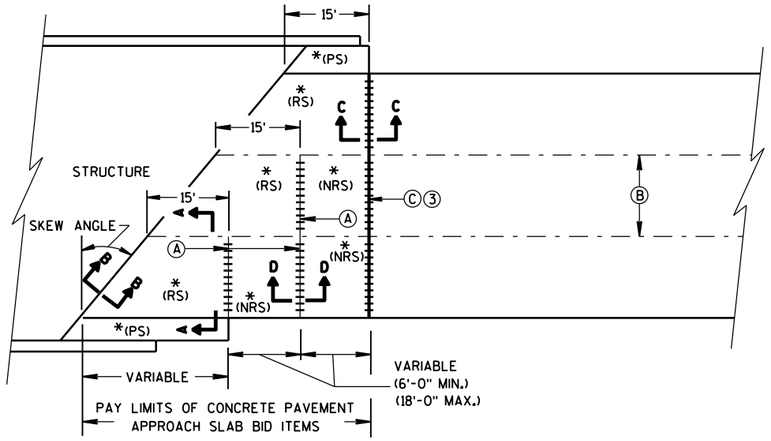
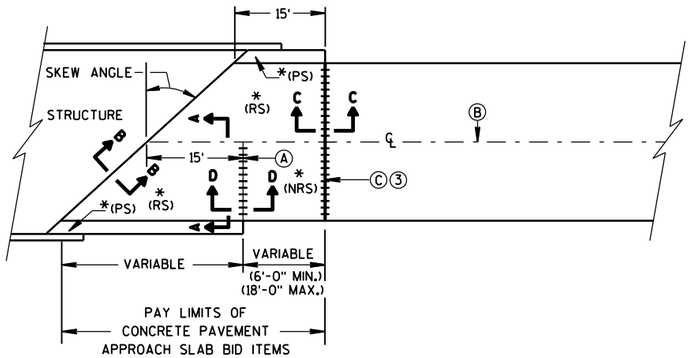
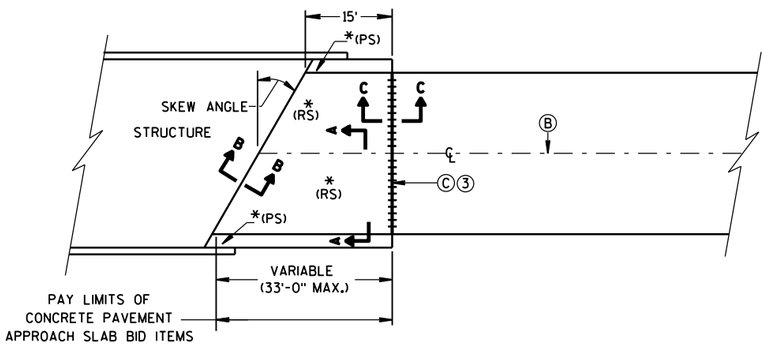
S.D.D. 13 A 3-6



SKEWED APPROACH
(PAVEMENT MORE THAN 2 LANES)



SKEWS >20°
(PAVEMENT WIDTH ≤30')



SKEWS ≤20°
(PAVEMENT WIDTH ≤30')

APPROACH SLAB AND ADJACENT PAVEMENT

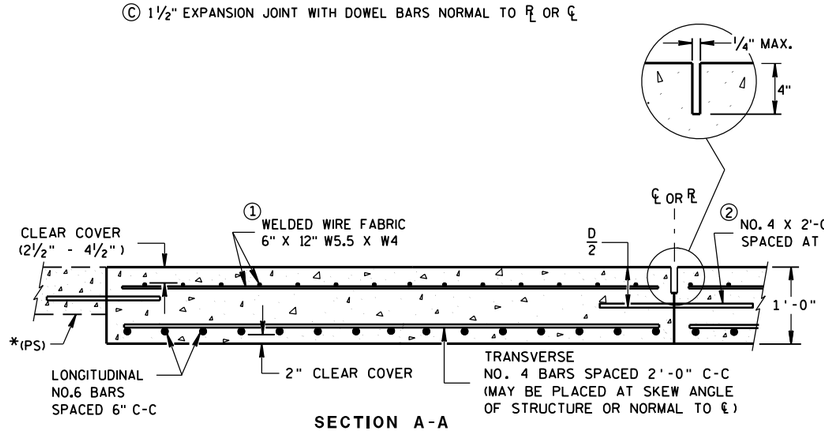
*(RS) = REINFORCED CONCRETE SLAB
*(PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
(SEE DETAILS ELSEWHERE IN THE PLAN)
*(NRS) = NON-REINFORCED CONCRETE SLAB

***STANDARD DOWEL BAR DIAMETER
(SEE SDD 13C11, & SDD 13C13)

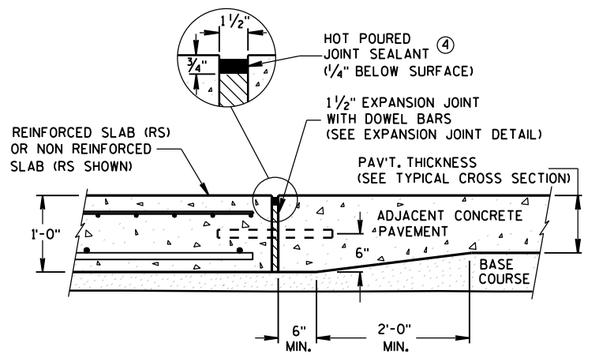
Ⓐ STANDARD CONTRACTION JOINT NORMAL TO ℄ OR ℄

Ⓑ STANDARD LONGITUDINAL JOINT WITH TIE BARS.

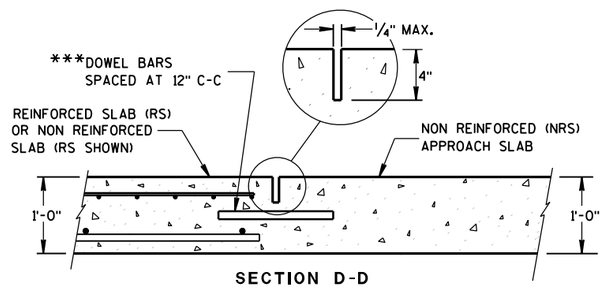
Ⓒ 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO ℄ OR ℄



SECTION A-A
REINFORCEMENT POSITIONING DETAIL



SECTION C-C
TRANSITION DETAIL
APPROACH SLAB TO ADJACENT PAVEMENT



SECTION D-D
CONTRACTION JOINT

GENERAL NOTES

THE CONTRACTOR MAY SPLICE NO. 6 BARS IN THE APPROACH SLAB FOR SKEWED STRUCTURES ONLY. STAGGER SPLICES WITH A MAXIMUM OF ONE SPLICE PER BAR. THE LENGTH OF LAP IS 20 INCHES.

TACK WELD DOWEL BARS TO THE BASKETS ON ALTERNATE ENDS.

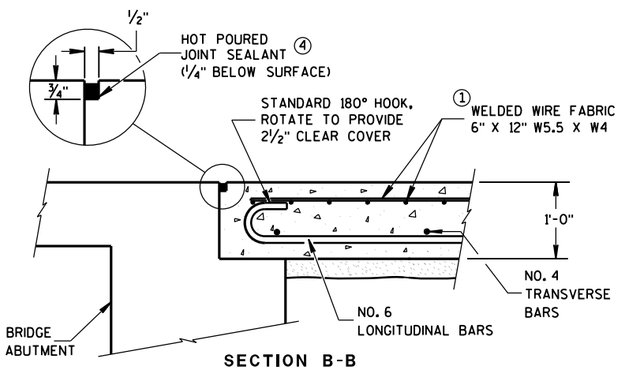
① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2'-0" C-C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.

② THE CONTRACTOR MAY OMIT TIE BARS BETWEEN REINFORCED SLABS WHERE SLAB REINFORCEMENT BARS EXTEND ACROSS THE CENTERLINE OR REFERENCE LINE.

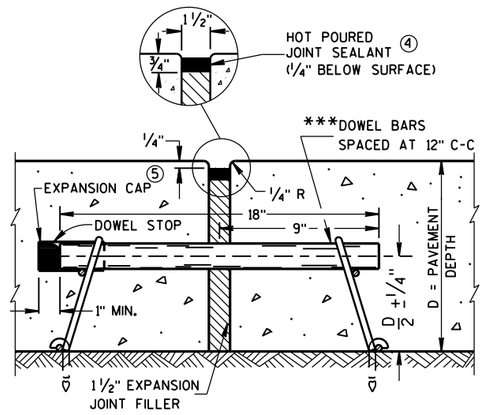
③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.

④ USE A JOINT SEALANT MEETING THE REQUIREMENTS OF ASTM D6690.

⑤ PLACE EXPANSION CAP ON THE END OF THE DOWEL THAT IS NOT TACK WELDED TO THE BASKET. DO NOT FORCE DOWEL BAR PAST THE DOWEL STOP.



SECTION B-B
BEND DETAIL
BOTTOM REINFORCEMENT



EXPANSION JOINT DETAIL

CONCRETE PAVEMENT APPROACH SLAB

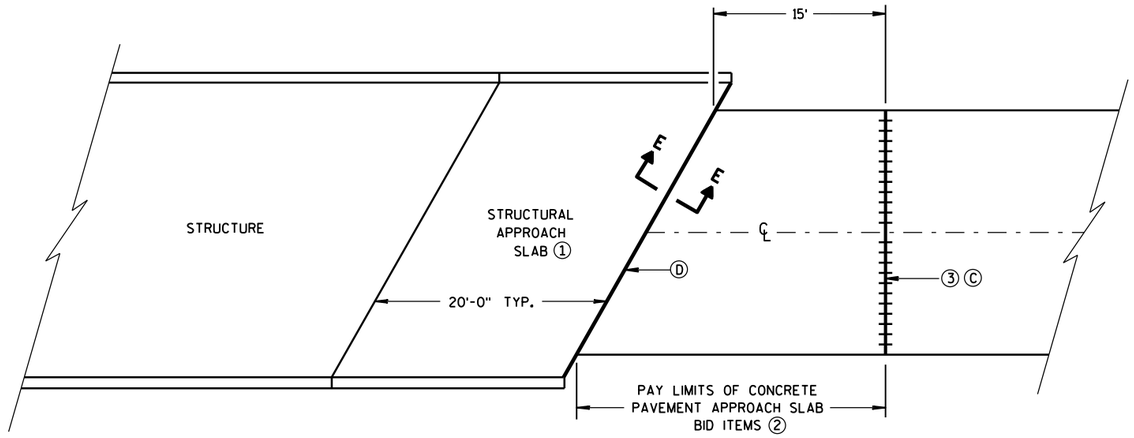
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE
/S/ Peter Kemp, P.E.
PAVEMENT SUPER
FHWA

6

S.D.D. 13 B 2-8a

BRIDGE APPROACHES



GENERAL NOTES

ALL PROJECTS THAT INVOLVE A STRUCTURAL APPROACH SLAB WILL ALSO HAVE A CONCRETE PAVEMENT APPROACH SLAB.

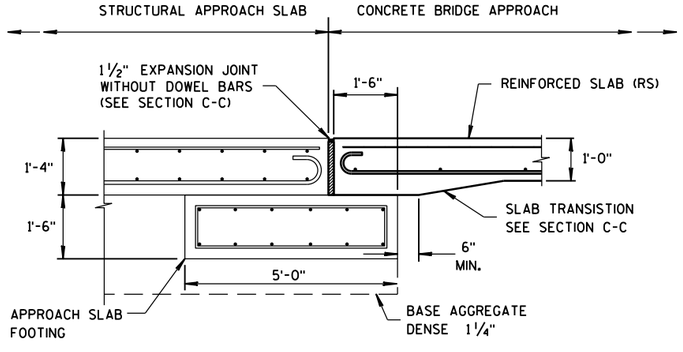
① SEE BRIDGE PLAN.

② CONFORM TO SHEET 13 B 2(A) FOR CONCRETE PAVEMENT APPROACH SLAB DETAILS.

③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.

Ⓒ 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO ℄ OR ℄

Ⓓ 1½" EXPANSION JOINT (NO DOWELS)



SECTION E-E

FOOTING DETAIL

STRUCTURAL APPROACH SLAB TO CONCRETE BRIDGE APPROACH

STRUCTURAL APPROACH SLAB AND CONCRETE PAVEMENT APPROACH SLAB

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Peter Kemp, P.E. — PAVEMENT SUPERV
FHWA

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S.D.D. 13 B 2-8b

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

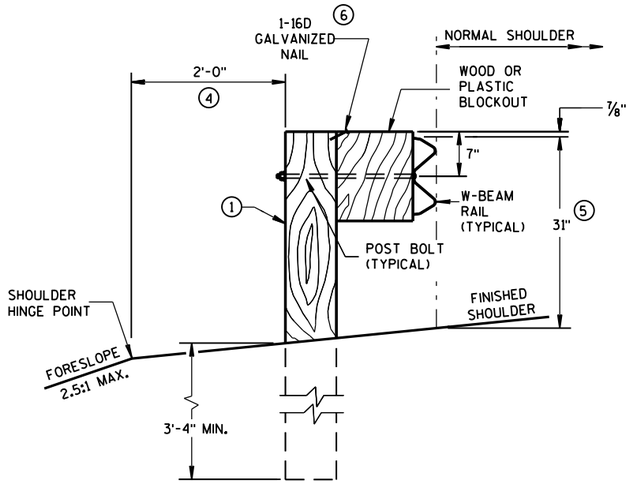
(2) USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

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

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

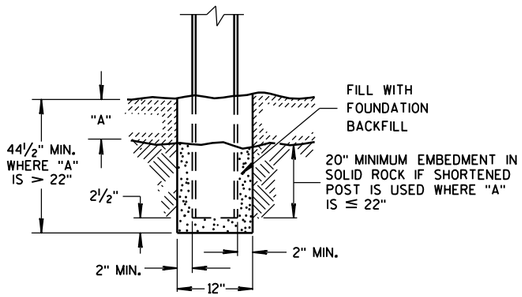
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

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



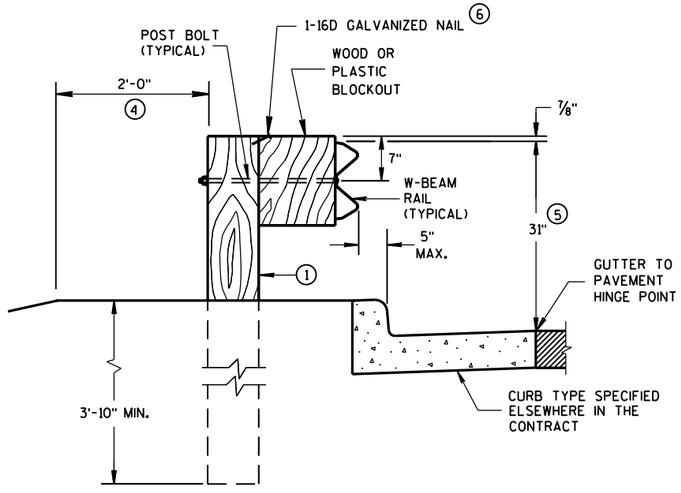
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



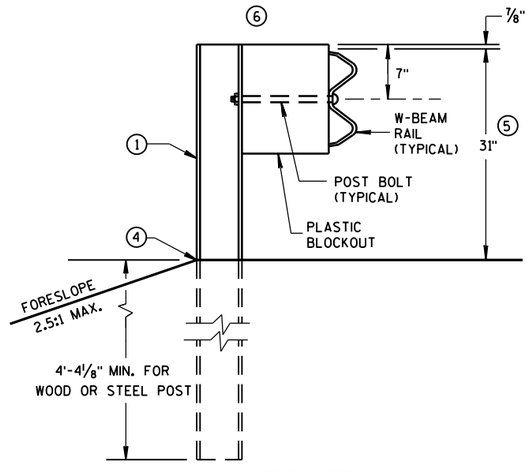
END VIEW

SETTING STEEL OR WOOD POST IN ROCK (3)



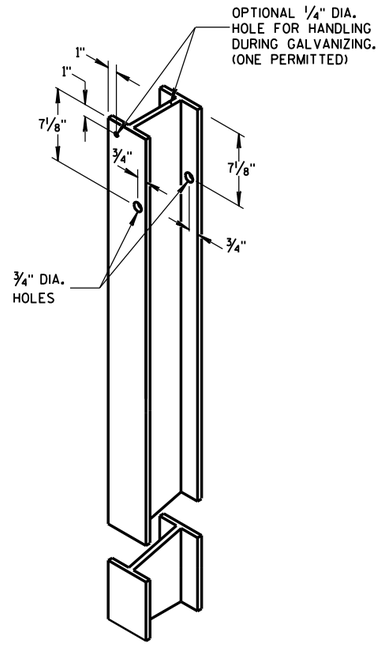
END VIEW

LOCATED ALONG A CURBED ROADWAY

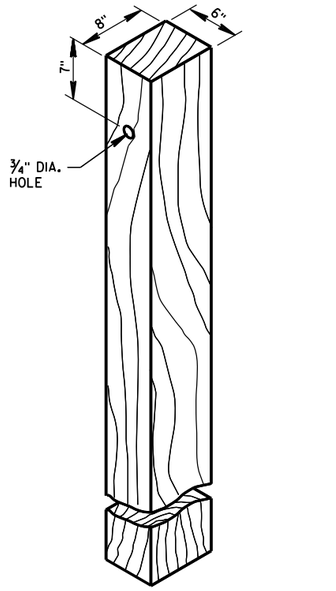


END VIEW

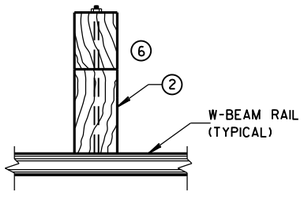
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



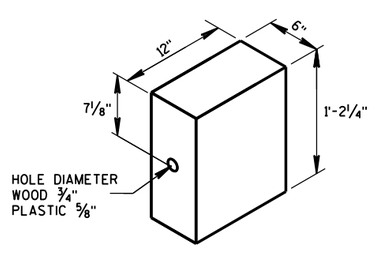
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) (1)



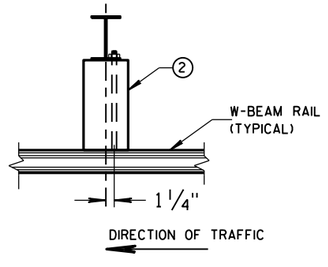
WOOD POST
(6" X 8") NOMINAL (1)



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT (2)

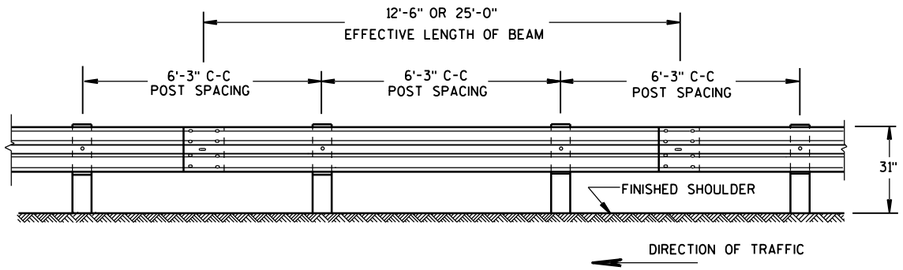


PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

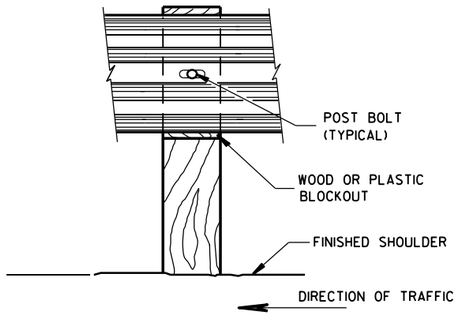
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6
S.D.D. 14 B 42-5a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



FRONT VIEW AT WOOD POST

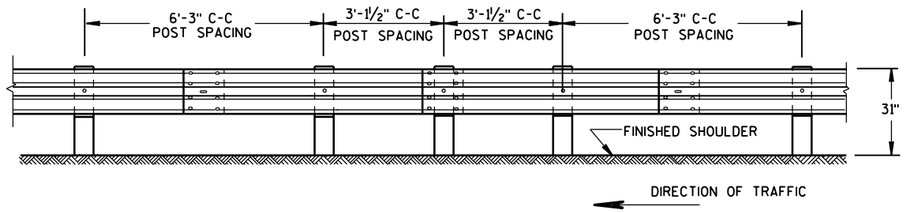
GENERAL NOTES

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

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

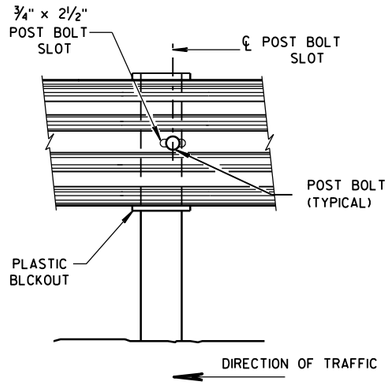
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

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

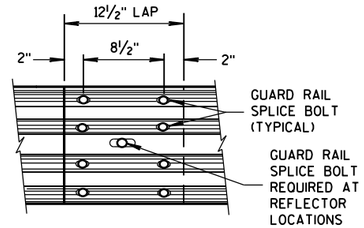


FRONT VIEW

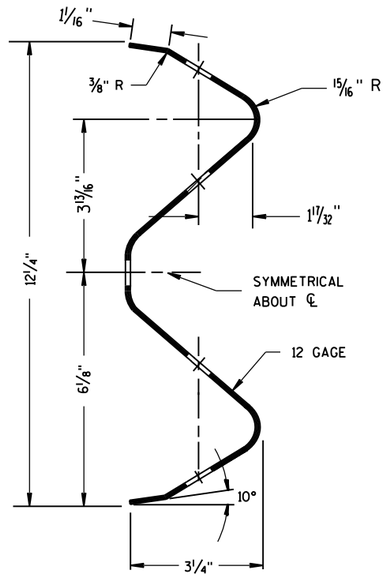
HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)



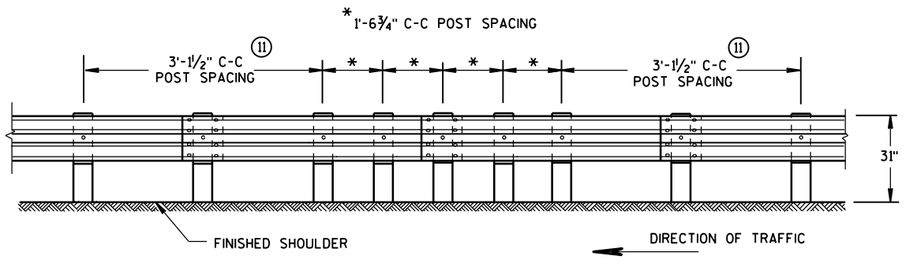
FRONT VIEW AT STEEL POST



FRONT VIEW
MID-SPAN BEAM SPLICE

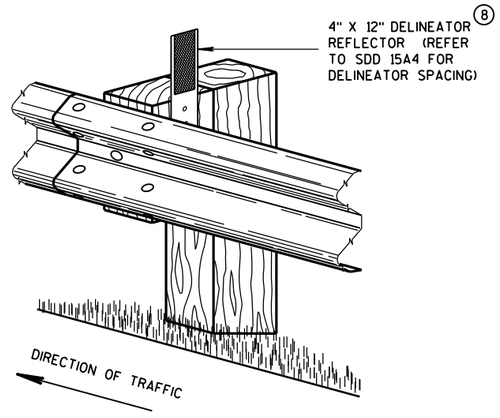


SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

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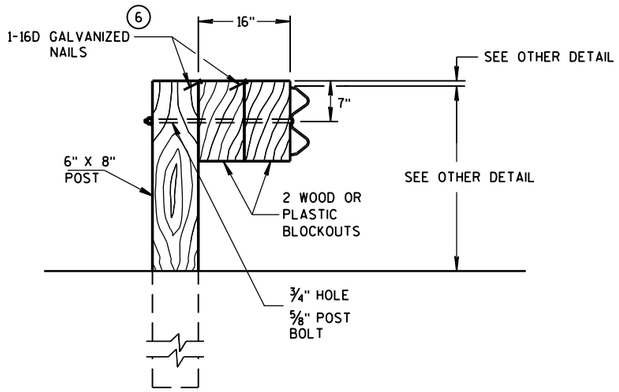
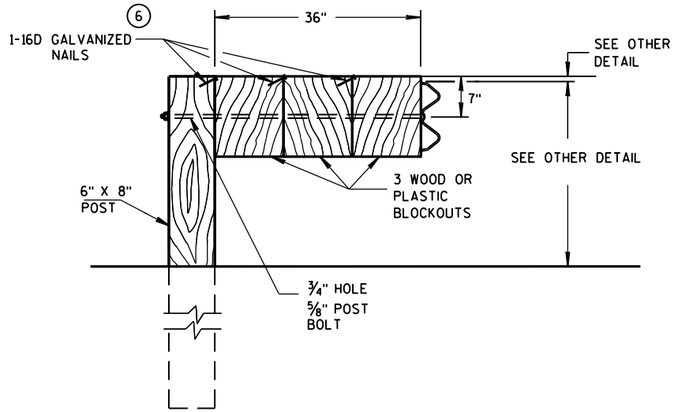
S.D.D. 14 B 42-5b



DETAIL FOR 16" BLOCKOUT DEPTH

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

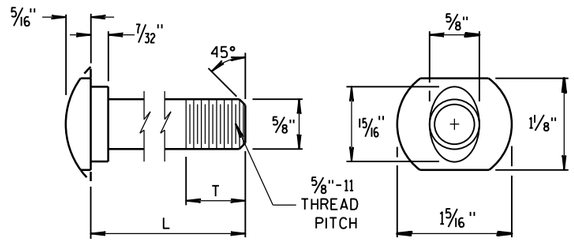


DETAIL FOR 36" BLOCKOUT DEPTH

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

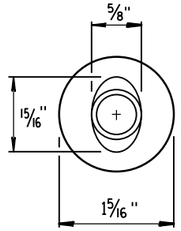
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

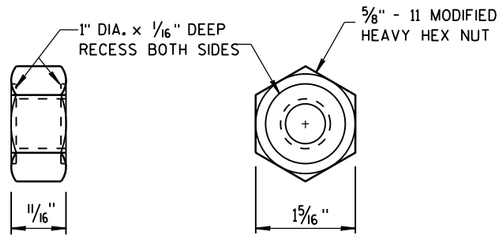


POST BOLT TABLE

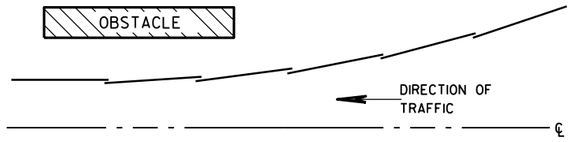
L	T (MIN.)
1¼"	1⅛"
2"	1¾"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

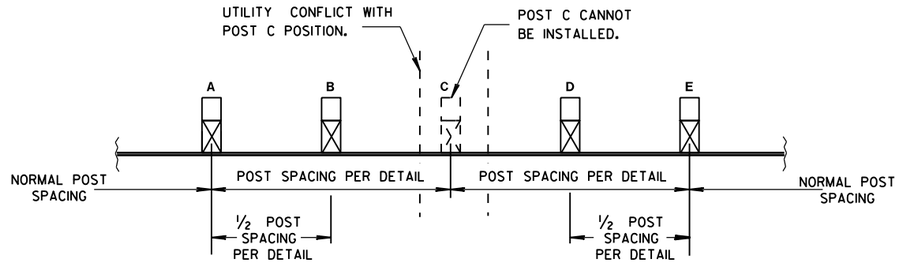


POST BOLT, SPLICE BOLT AND RECESS NUT

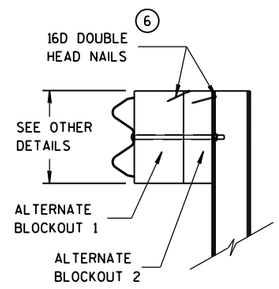


PLAN VIEW

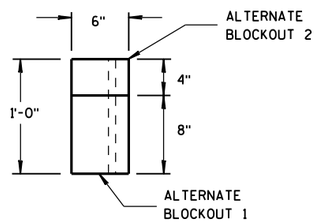
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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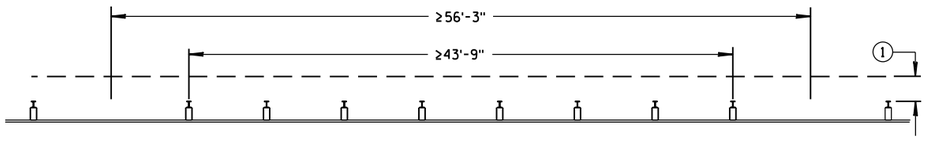
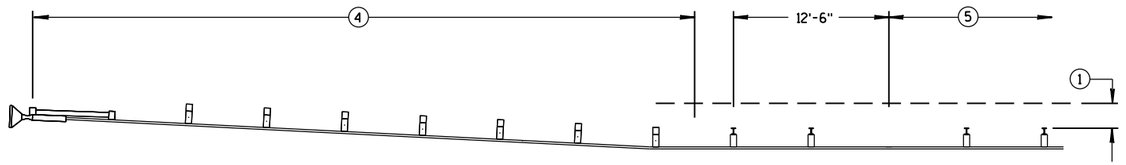
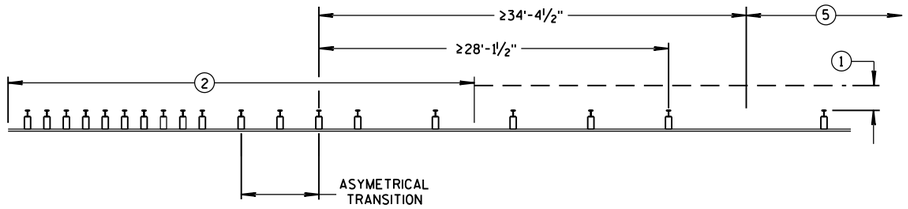
S.D.D. 14 B 42-5c



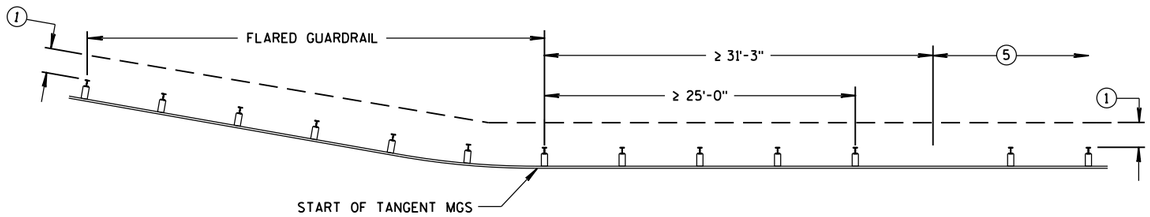
MISSING POST IN NORMAL BEAM GUARD RUN



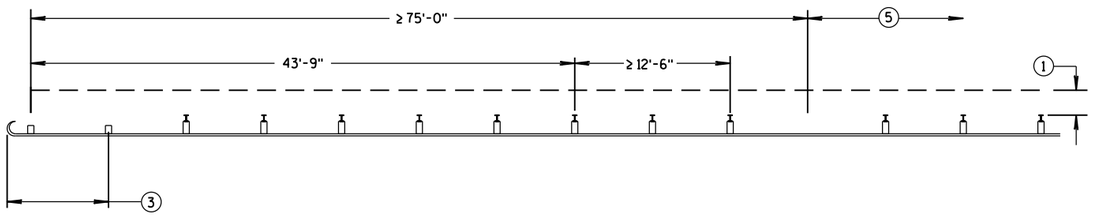
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



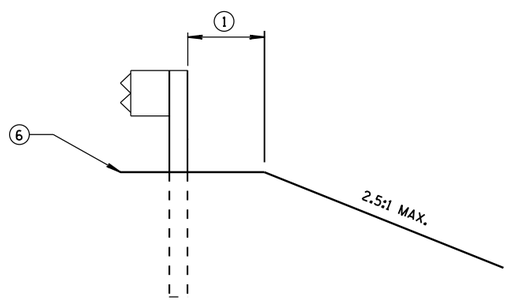
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



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

June 2017
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

FHWA

6

S.D.D. 14 B 42-5d

6

S.D.D. 14 B 42-5d

GENERAL NOTES

(A) THE SLOPE IN THE AREA BOUNDED BY THE GRADELINE, THE HINGE POINT LINE (HPL), AND THE CLEAR ZONE LIMITS (CZL) SHALL BE 4:1 OR FLATTER.

(B) AFTER FINAL ASSEMBLY, RECHECK CABLE TO BE SURE IT IS TAUT AND HAS NOT RELAXED.

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

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

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

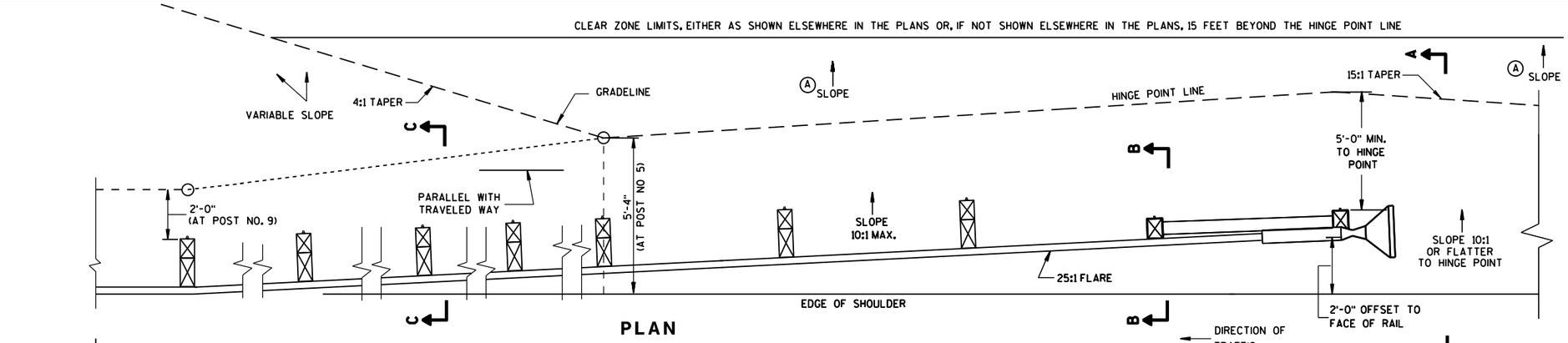
SEE SDD 14B42 FOR MORE INFORMATION.

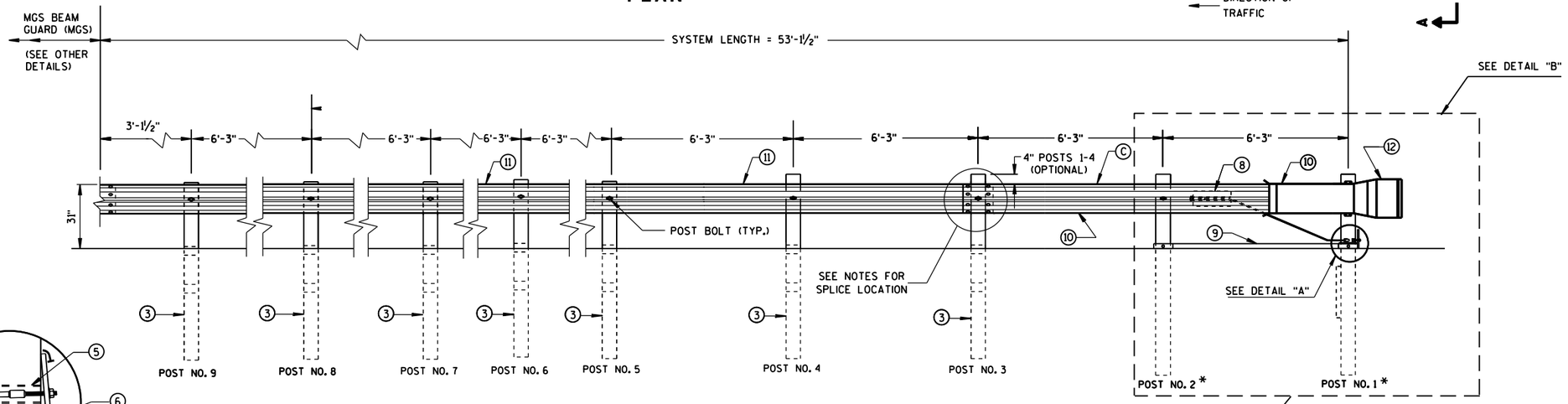
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

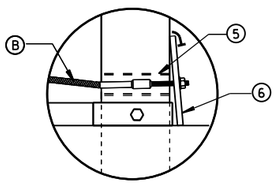
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

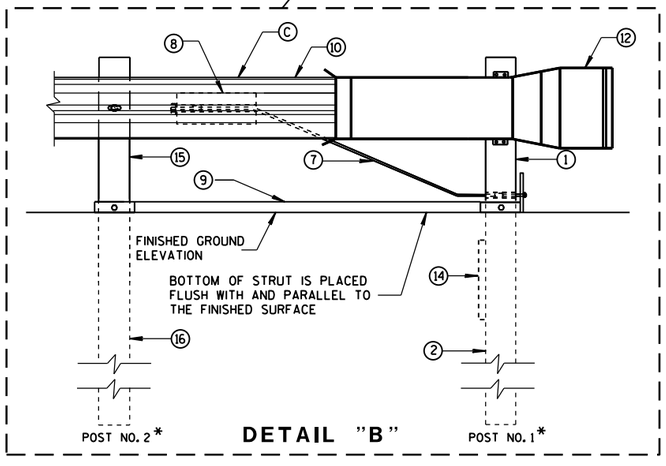
SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

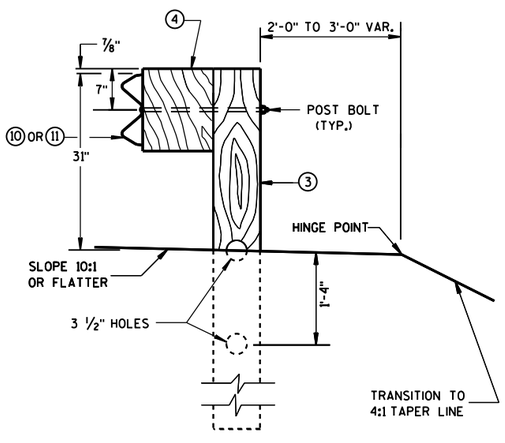
THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.

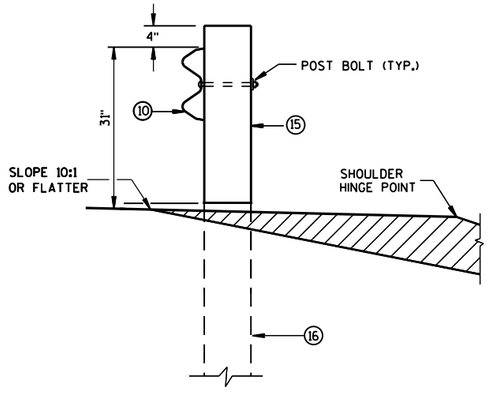


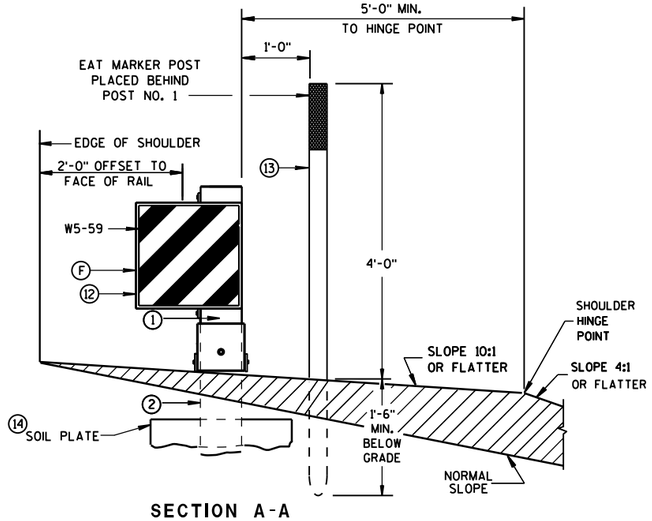












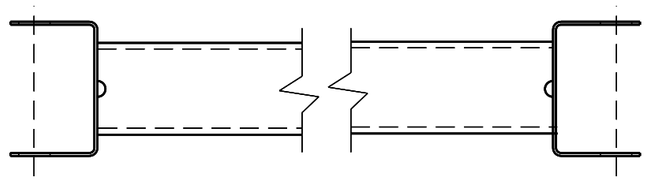
MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPO	47

6

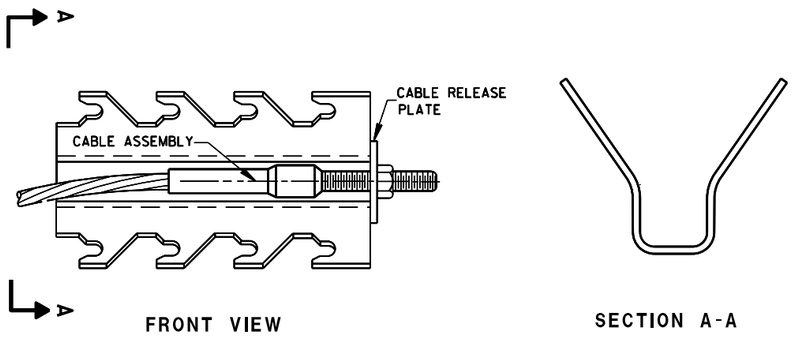
S.D.D. 14 B 44-3a

6

S.D.D. 14 B 44-3a



GENERIC GROUND STRUT (9) (H)



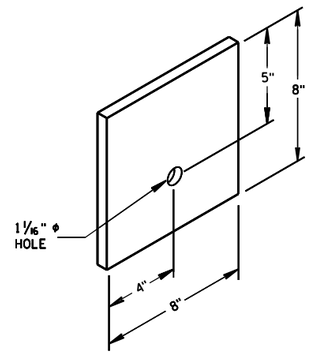
FRONT VIEW

SECTION A-A

GENERIC ANCHOR CABLE BOX (8) (H)

BILL OF MATERIALS

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



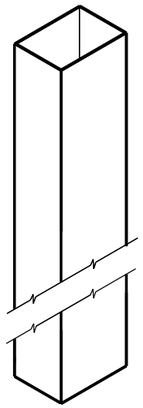
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

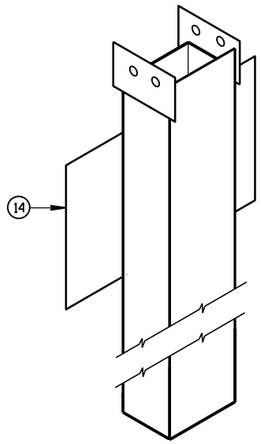
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

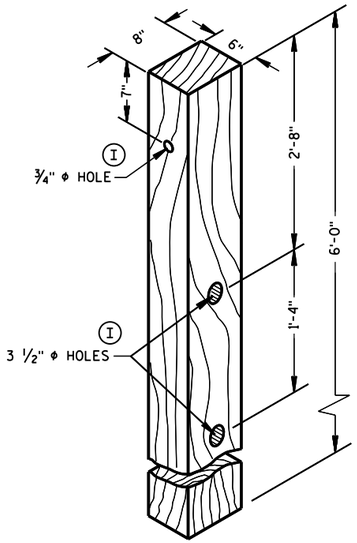
S.D.D. 14 B 44-3b



UPPER POST NO. 1 (1)

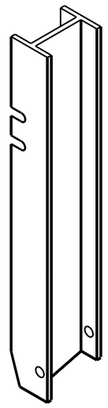


LOWER POST NO. 1 (2)

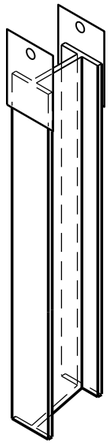


POSTS NUMBER 3-9

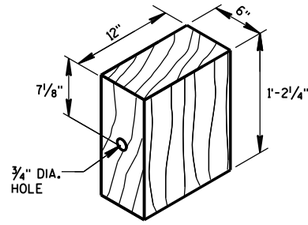
WOOD CRT POST (3)



UPPER POST NO. 2 (15)

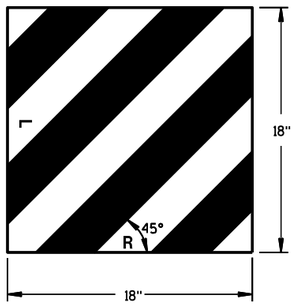


LOWER POST NO. 2 (16)



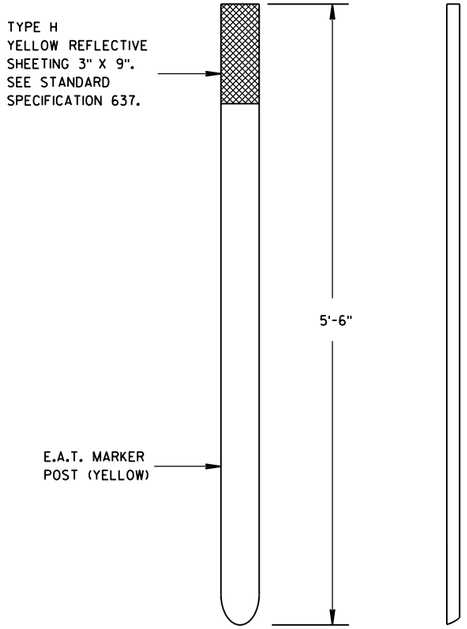
WOOD BLOCKOUT (4)

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



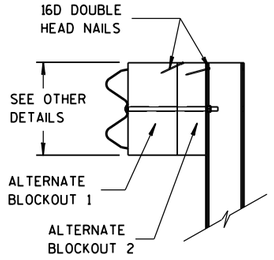
W5-59

REFLECTIVE SHEETING DETAIL (H)

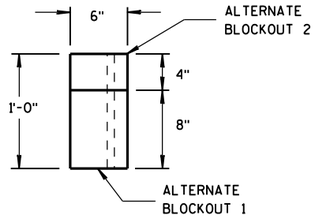


FRONT VIEW SIDE VIEW

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

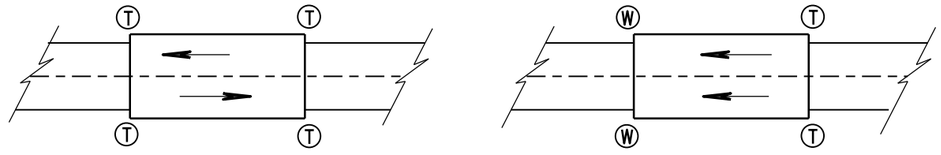
June 2017
DATE

/S/ Rodney Taylor
ROADWAY STANDARDS
UNIT SUPERVISOR

FHWA

6

S.D.D. 14 B 44-3c



TWO WAY TRAFFIC

ONE WAY TRAFFIC

Ⓣ THRIE BEAM CONNECTION

Ⓦ W-BEAM CONNECTION WHEN REQUIRED

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

GENERAL NOTES

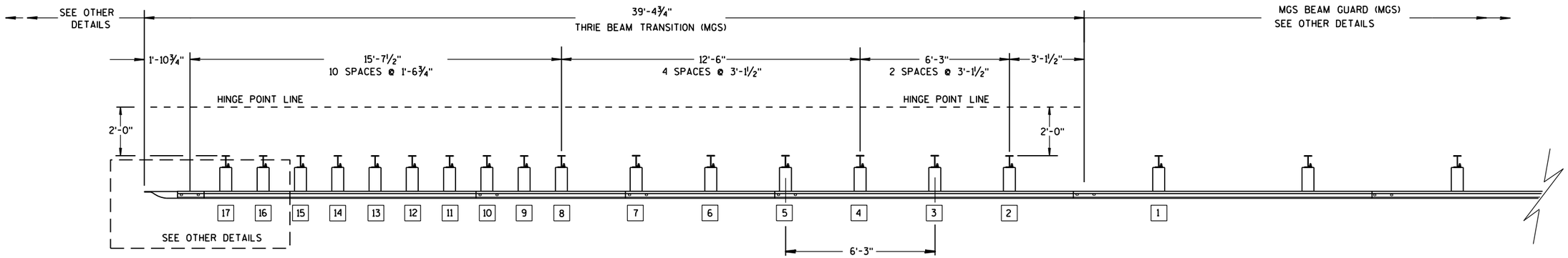
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

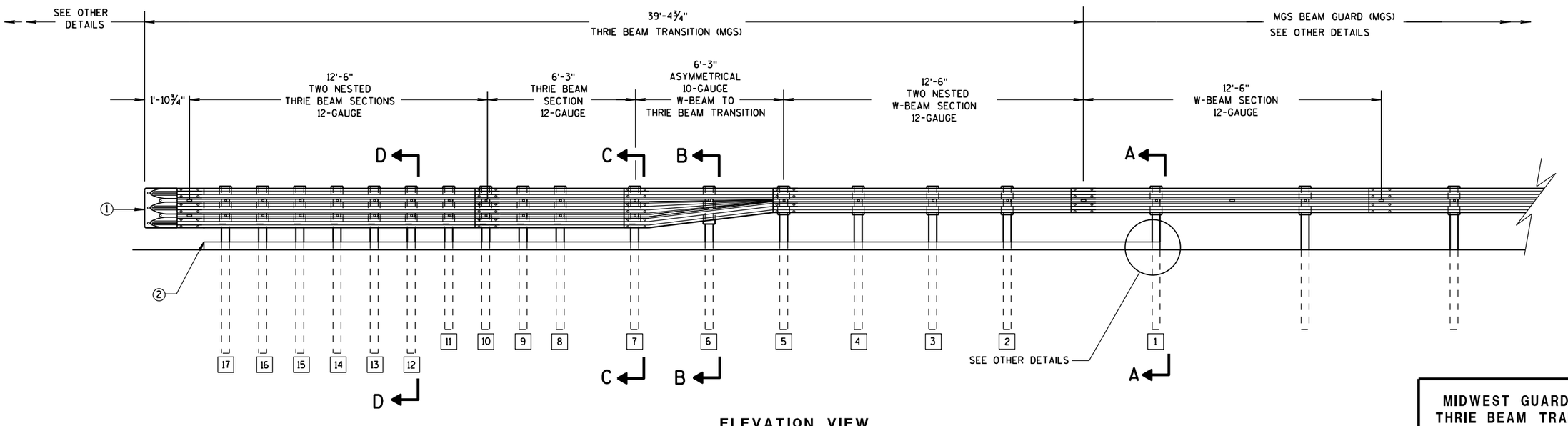
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

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



PLAN VIEW



ELEVATION VIEW

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

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

6

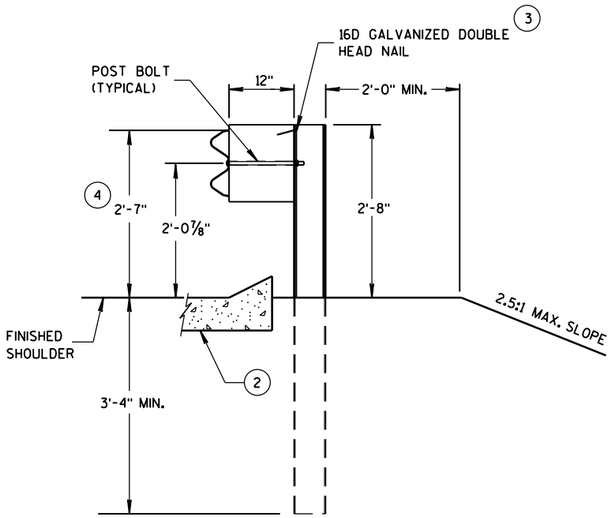
S.D.D. 14 B 45-4a

GENERAL NOTES

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

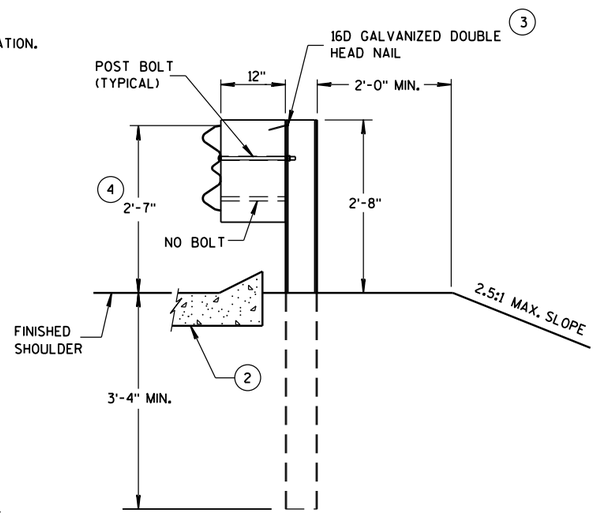
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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



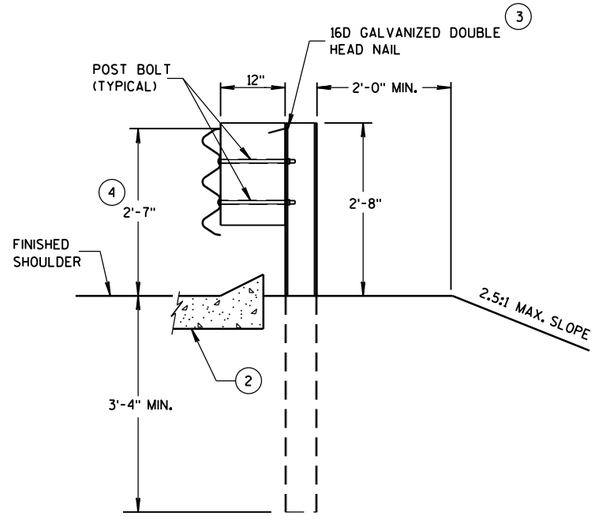
SECTION A-A

POSTS 1-5



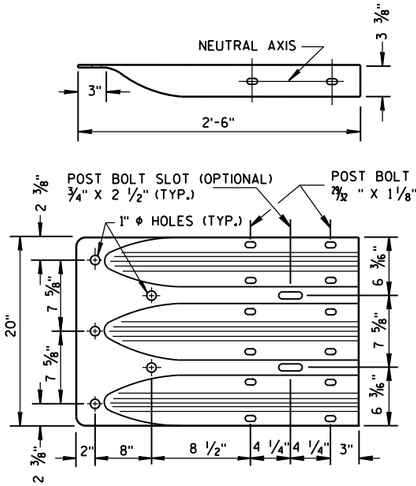
SECTION B-B

POST 6



SECTION C-C

POSTS 7-11



THRIE BEAM TERMINAL CONNECTOR

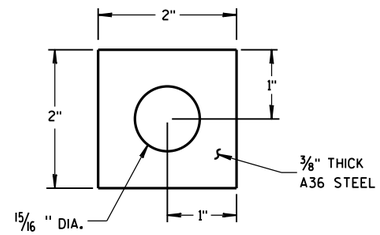
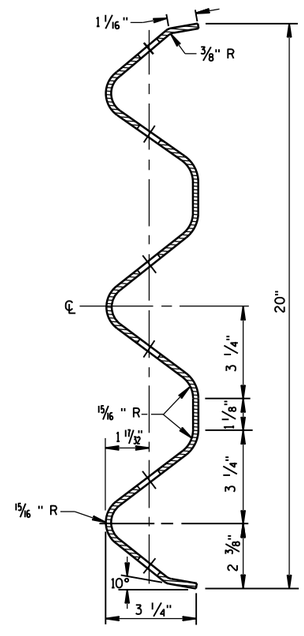
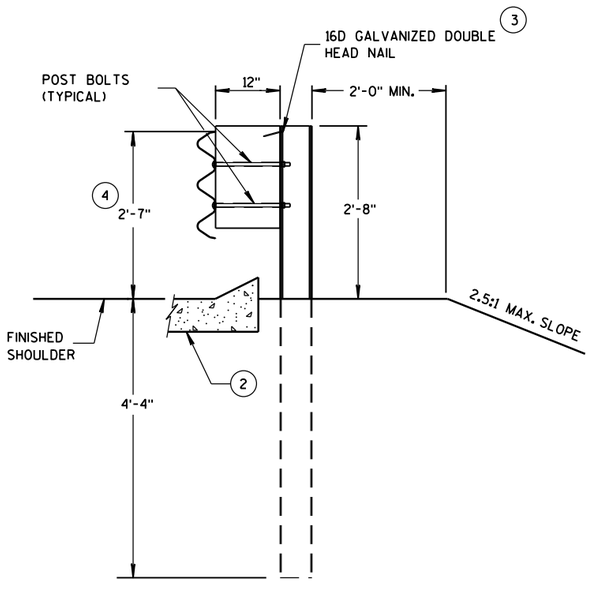


PLATE WASHER DETAIL

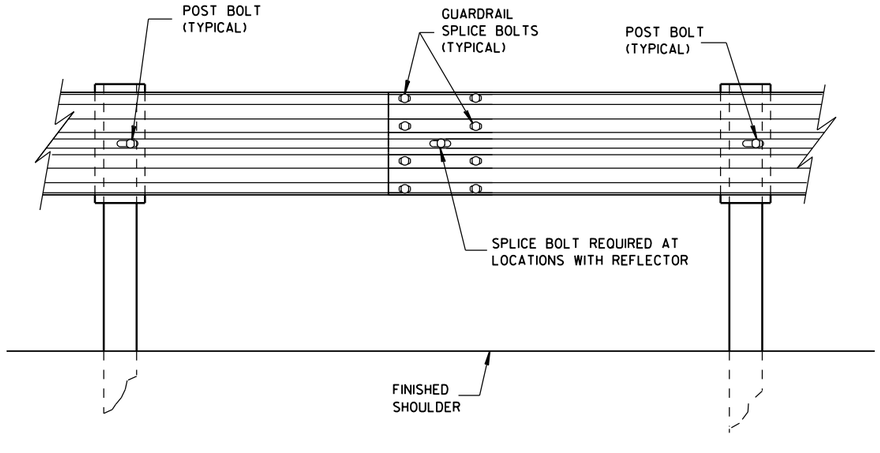


SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION D-D

POSTS 12-17



SPLICE DETAIL

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

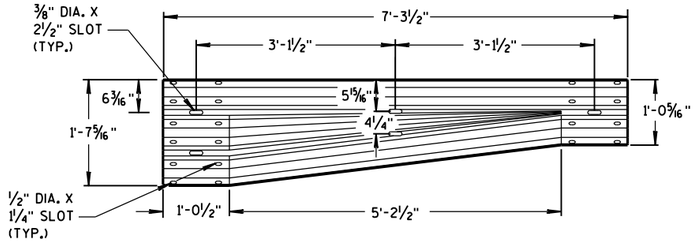
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

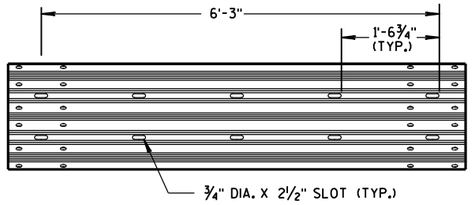
S.D.D. 14 B 45-4b

6

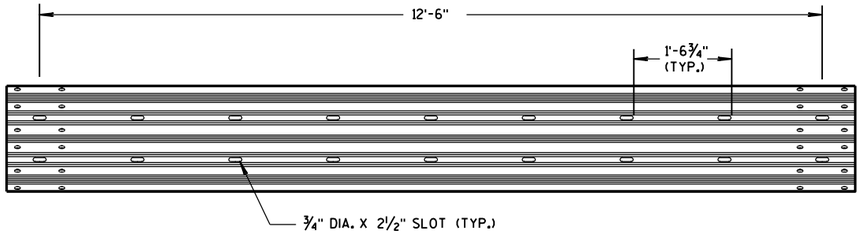
S.D.D. 14 B 45-4b



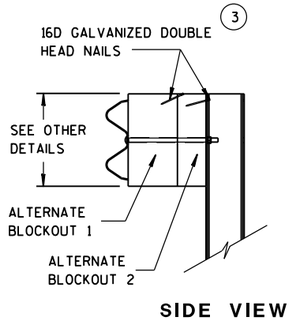
W-BEAM TO THRIE BEAM TRANSITION SECTION



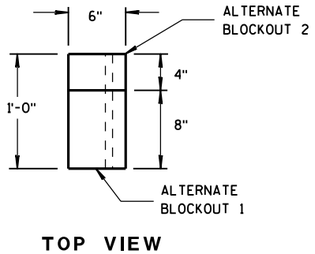
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

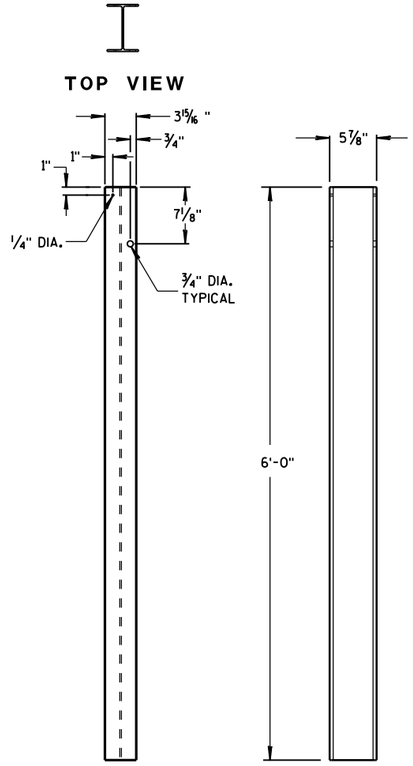


SIDE VIEW

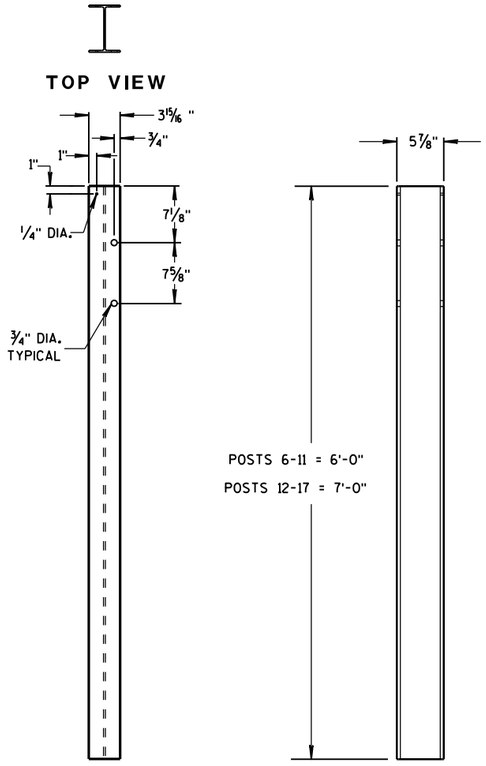


TOP VIEW

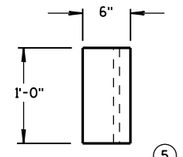
ALTERNATE WOOD BLOCKOUT DETAIL



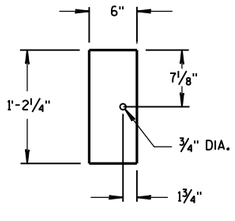
STEEL POSTS 1-5



STEEL POSTS 6-17

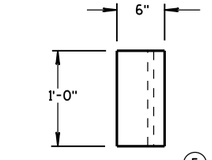


TOP VIEW

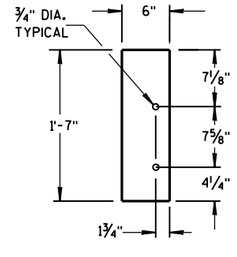


FRONT VIEW

BLOCKOUT POSTS 1-5



TOP VIEW



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

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

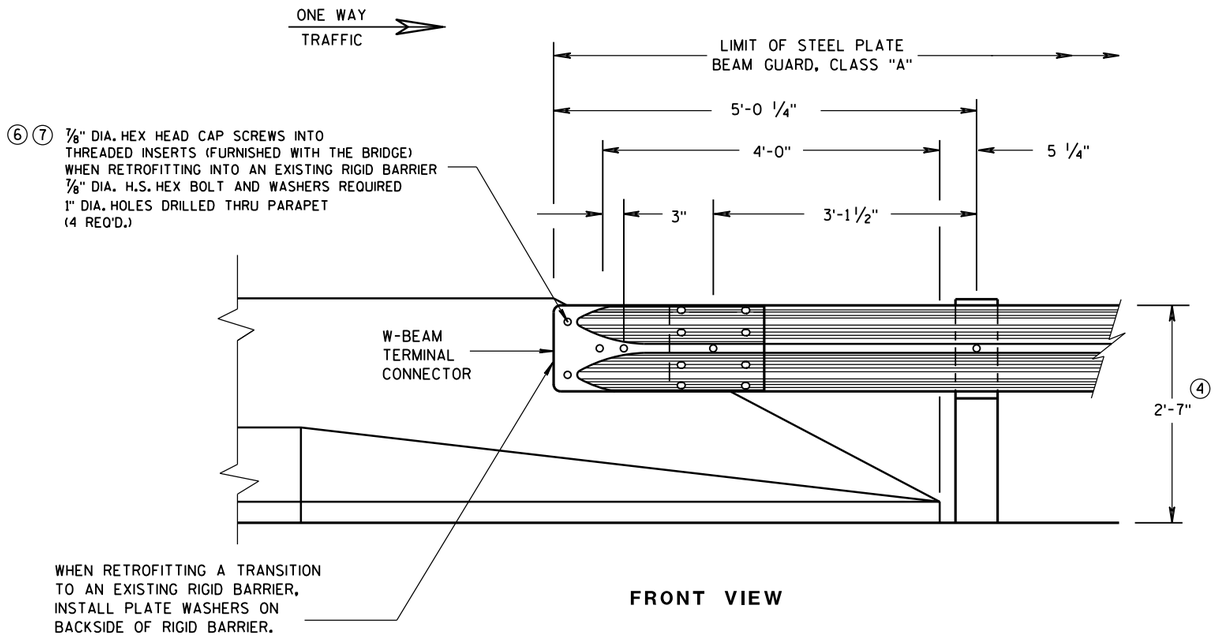
(5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

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



FRONT VIEW

W BEAM CONNECTION TO PARAPETS WITH SLOPED ENDS

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

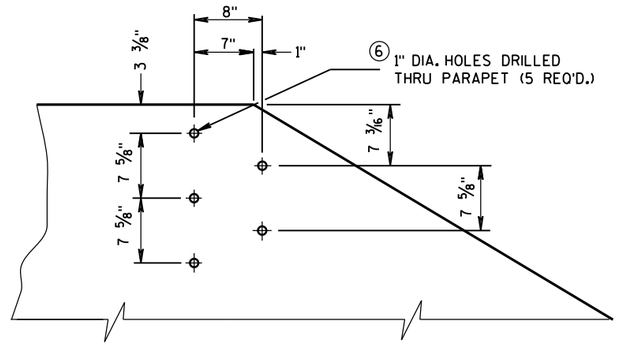
GENERAL NOTES

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

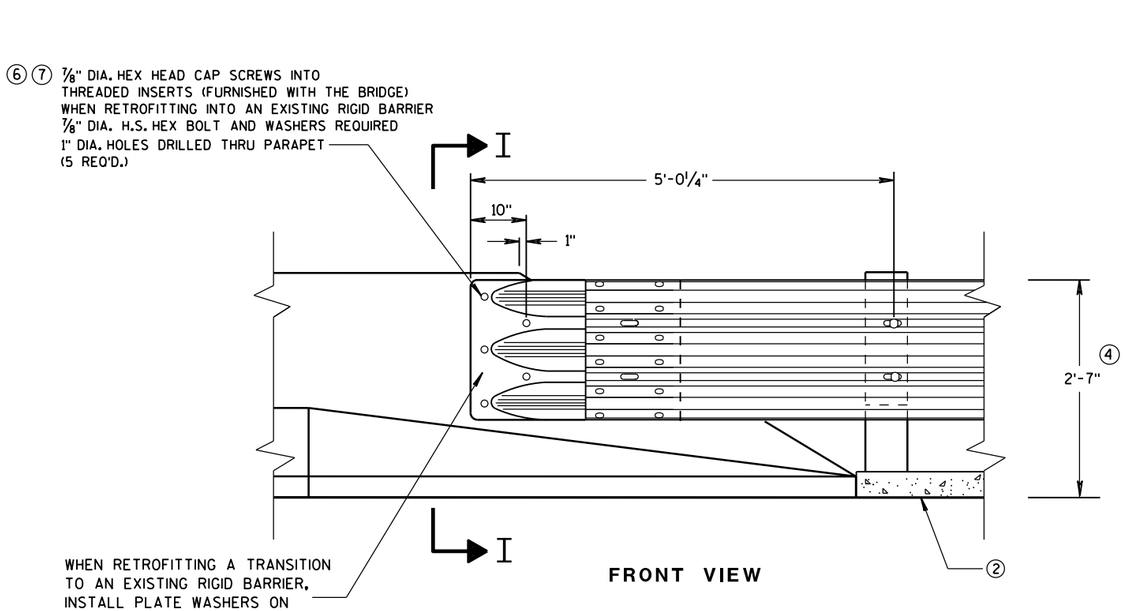
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

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

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

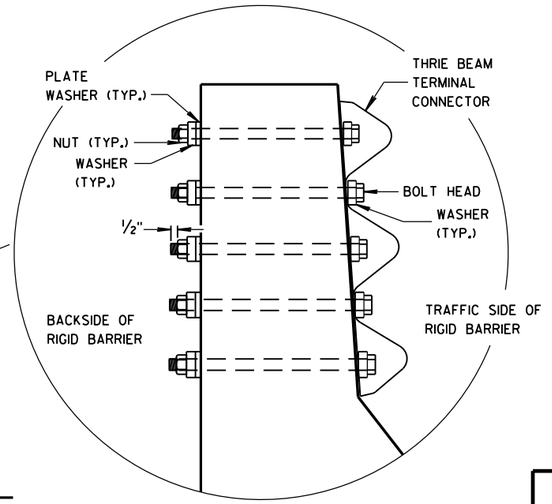


DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION



FRONT VIEW

SECTION I-I



THRIE BEAM CONNECTION TO BRIDGE PARAPETS WITH SLOPED ENDS

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

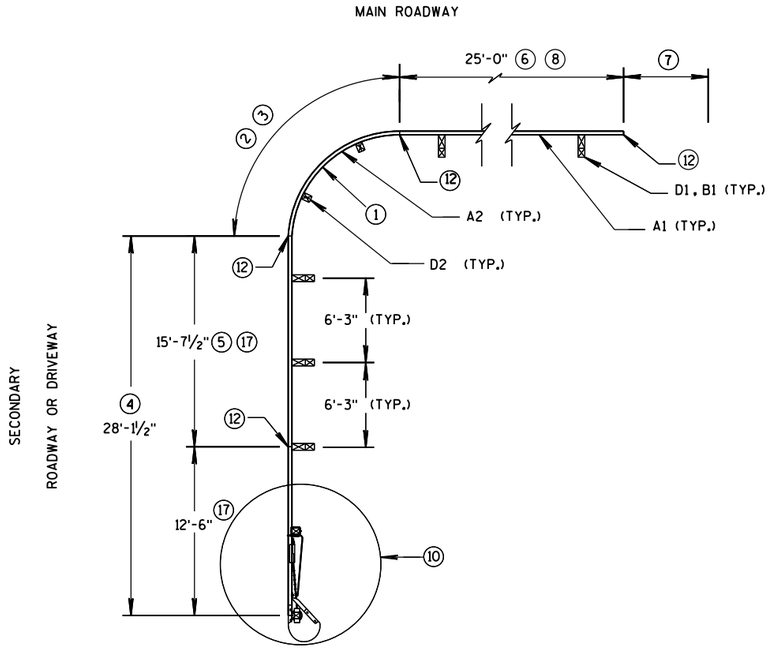
APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

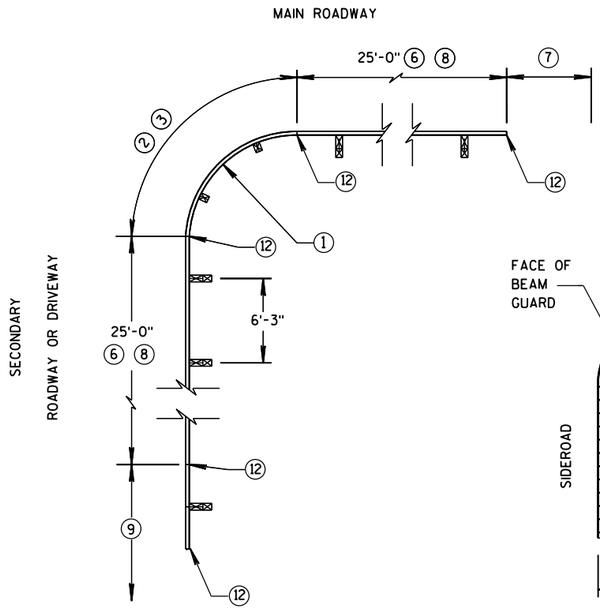
S.D.D. 14 B 45-4f

6

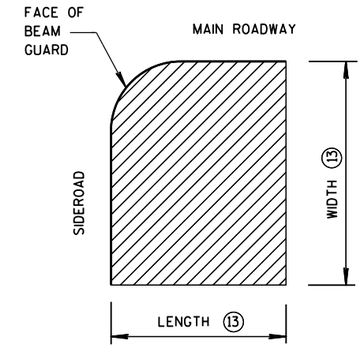
S.D.D. 14 B 45-4f



SHORT RADIUS BEAM GUARD WITH SHORT RADIUS TERMINAL ON SECONDARY ROAD OR DRIVEWAY PLAN VIEW



SHORT RADIUS BEAM GUARD WITH EAT, ADDITIONAL BEAM GUARD OR TRANSITION TO RIGID BARRIER ON SECONDARY ROAD OR DRIVEWAY PLAN VIEW



AREA FREE OF FIXED OBJECTS FOR RADIUS 32' AND LESS 16

TABLE FOR RADIUS OF 32' AND LESS

RADIUS FT	LENGTH FT	WIDTH FT
8	25	15
16	30	15
24	40	20
32	50	30

GENERAL NOTES

SEE PLANS FOR OTHER BARRIER SYSTEM AND LOCATION SPECIFICS.

SEE 14B42 FOR MORE INFORMATION ON BEAM GUARD INSTALLATION, PARTS, MATERIALS, AND INSTALLATION INFORMATION.

GALVANIZE PARTS AFTER FABRICATION.

WELDING IS TO FOLLOW CURRENT REQUIREMENTS OF THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE ANSI/AWS D1.1

UNLESS NOTED OTHERWISE, ALL PLATES ARE FLAT AND FREE OF WARP.

UNLESS NOTED OTHERWISE, ALL EDGES ARE SMOOTH, STRAIGHT AND VERITCAL.

ALL CUTS AND HOLES, EXCEPT IN BEAM GUARD RAIL ARE TO BE MACHINED OR MACHINE FLAME CUTS.

UNLESS NOTED OTHERWISE CUT OR PROVIDE BOLTS THAT ARE ¼" TO ½" BEYOND THE NUT

DRAWINGS ARE NOT TO SCALE.

(1) RADIUS MEASURE FROM INSIDE OF RAIL. LENGTH OF BEAM GUARD SHORT RADIUS GUARD MEASURED ALONG TRAFFIC SIDE OF RAIL. RADIUS BETWEEN 8 FEET TO 150 FEET. SEE PLAN FOR REQUIRED RADIUS. BEAM GUARD RAIL IN RADIUS IS SHOP BENT. ODD RAIL LENGTH OR FIELD CUTS MAY BE REQUIRED.

(2) CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE USED IN THE RADIUS. CONTROLLED RELEASE TERMINAL (CRT) POSTS ARE SPACED 6'-3". SEE PLAN FOR NUMBER OF CONTROLLED RELEASE TERMINAL (CRT) POSTS.

(3) WITHIN RADIUS BEAM GUARD RAILS ARE NOT BOLTED TO POSTS. BEAM GUARD RAILS RESTED ON TOP OF LAG SCREW.

(4) MINIMUM LENGTH OF BEAM GUARD ALONG SIDE ROAD OR DRIVEWAY TO INSTALL SHORT RADIUS TERMINAL. BEAM GUARD IS PAID FOR WITH BEAM GUARD ITEM.

(5) ODD LENGTH OF BEAM GUARD REQUIRED TO INSTALL SHORT RADIUS TERMINAL.

(6) MINIMUM AMOUNT OF BEAM GUARD TO BE INSTALLED PRIOR TRANSITION TO RIGID BARRIER, ADDITIONAL BEAM GUARD, OR EAT. BEAM GUARD PAID FOR WITH BEAM GUARD ITEM. SEE PLANS FOR MORE DETAIL.

(7) BEAM GUARD, EAT OR TRANSITION TO RIGID BARRIER. SEE PLAN.

(8) TOP OF BEAM GUARD BY THE RADIUS IS 27". HEIGHT OF BEAM GUARD IS 31" BY TRANSITION TO RIGID BARRIER, ADDITIONAL BEAM GUARD OR EAT.

(9) ADDITIONAL BEAM GUARD, EAT OR TRANSITION TO RIGID BARRIER. BEAM GUARD SHOWN. SEE PLAN FOR DETAILS.

(10) SHORT RADIUS TERMINAL (SEE OTHER DETAILS)

(11) HEIGHT VARIES. SEE NOTE (8) AND (17).

(12) BEAM GUARD RAIL SPLICE LOCATION. SPLICE LOCATION REQUIRE PART F1 AND F2. SEE SDD 14B42 FOR DETAILS.

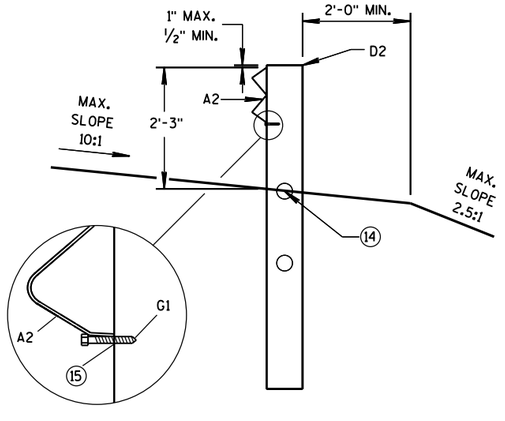
(13) SEE TABLE FOR VALUES.

(14) MAXIMUM HEIGHT FOR CENTER OF HOLE IS ¾" ABOVE FINISHED GROUND ±1".

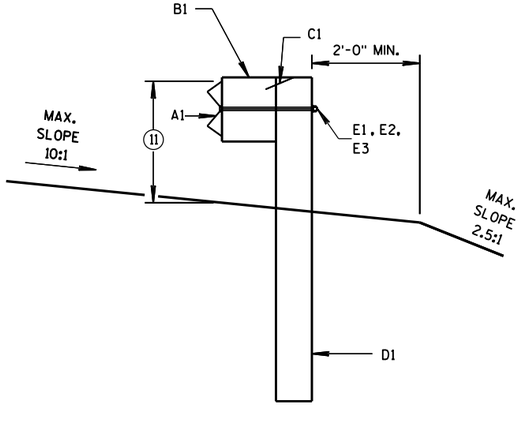
(15) DRILL 15/64" DIA. PILOT HOLE. DO NOT HAMMER LAG SCREW INTO POST.

(16) SMALL SIGNS ON BREAKAWAY HARDWARE ARE ACCEPTABLE.

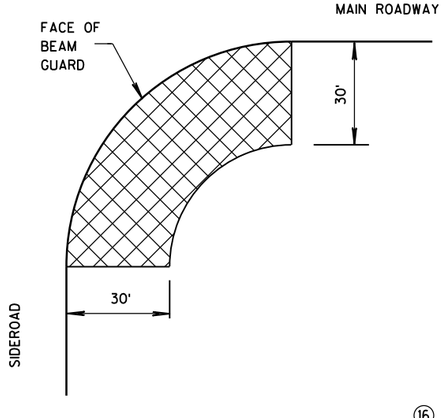
(17) TOP OF RAIL HEIGHT IS 27" WHEN USING A SHORT RADIUS TERMINAL.



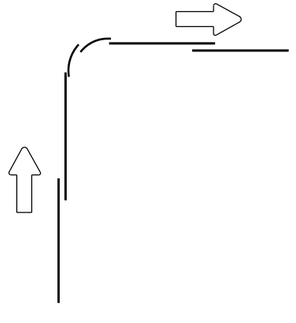
CONTROLLED RELEASE TERMINAL POST (CRT) IN RADIUS



BEAM GUARD POSTS IN HEIGHT TRANSITION



AREA FREE OF FIXED OBJECTS 16 RADIUS GREATER THAN 32'



LAP SPLICE DETAIL

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

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DEPARTMENT OF TRANSPOR 54

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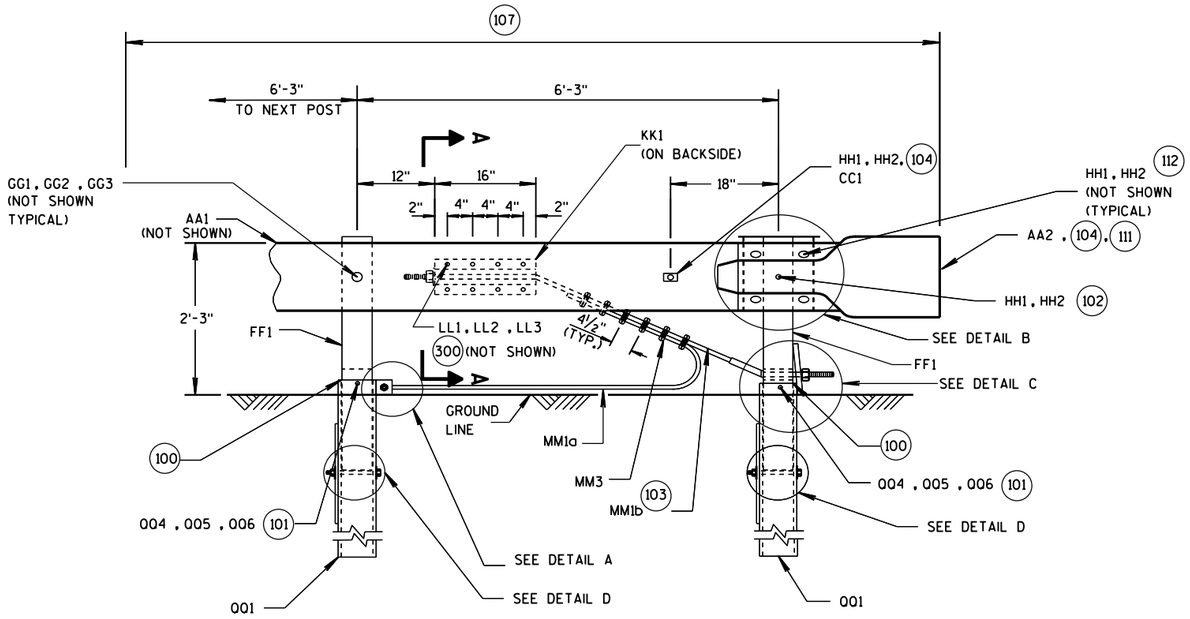
S.D.D. 14 B 53-1a



100 TOP OF FOUNDATION TUBE 2 INCHES MAXIMUM ABOVE FINISHED GROUND.

101 WASHERS REQUIRED BETWEEN BOLT HEAD AND FOUNDATION TUBE AND BETWEEN NUT AND FOUNDATION TUBE.

102 SPLICE BOLT AND NUT CONNECTS BEAM GUARD RAIL, W-BEAM END SECTION BUFFER, AND STEEL PIPE ASSEMBLY. NO WASHER REQUIRED. SEE DETAIL B.

103 CABLE IS TAUT.

104 ADJUST AA2 AND BB1 TO FIT.

105 BREAK POINT OF SHOULDER.

106 TACK WELD CABLE CONNECTOR TUBE PLATE TO CABLE CONNECTION TUBE. SEE DETAIL A PROFILE VIEW.

107 PAY LIMIT FOR BEAM GUARD.

108 SQUARE WASHER BETWEEN HEAD OF BOLT AND TRAFFIC FACE OF BEAM GUARD. ROUND WASHER REQUIRED BETWEEN NUT AND BB1.

109 CUT OR PROVIDE THREADED STUD THAT IS FLUSH WITH FACE OF BEAM GUARD RAIL KK1 (PLUS OR MINUS 1/2" TOLERANCE). DEBURR AFTER CUTTING.

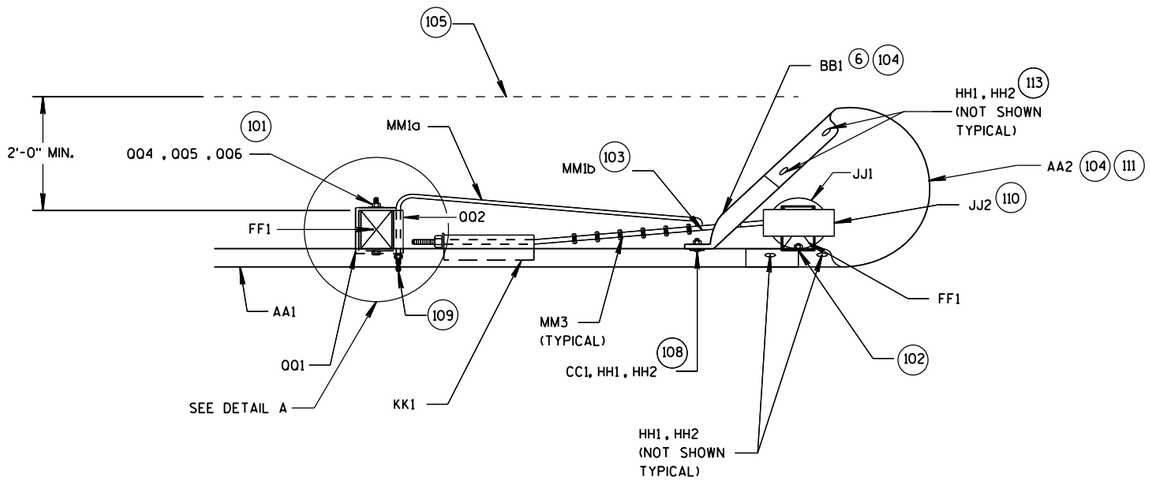
110 SEE STEEL PIPE ASSEMBLY DETAILS.

111 ATTACH UU2 WITH UU3. SHOP APPLY UU1 TO UU2.

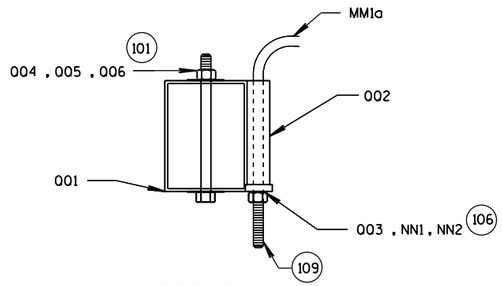
112 FOUR HH1 AND HH2 REQUIRED TO ATTACH AA1 TO AA2.

113 FOUR HH1 AND HH2 REQUIRED TO ATTACH AA2 TO BB1.

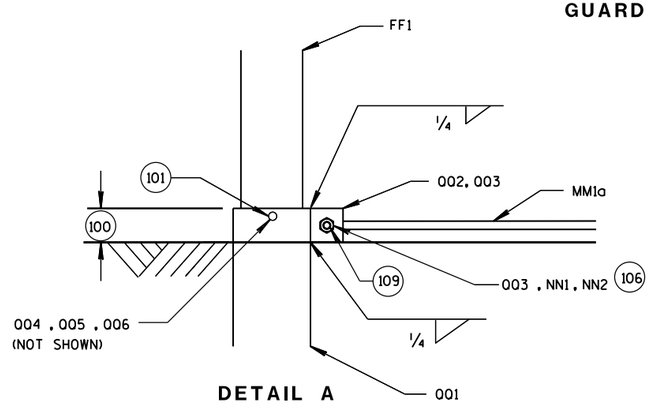
SHORT RADIUS TERMINAL
PROFILE VIEW



SHORT RADIUS TERMINAL
TOP VIEW



DETAIL A
TOP VIEW
(WOOD BREAKAWAY AND BEAM GUARD RAIL POSTS NOT SHOWN)



DETAIL A
PROFILE VIEW

STEEL PLATE BEAM GUARD
SHORT RADIUS TERMINAL
MGS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

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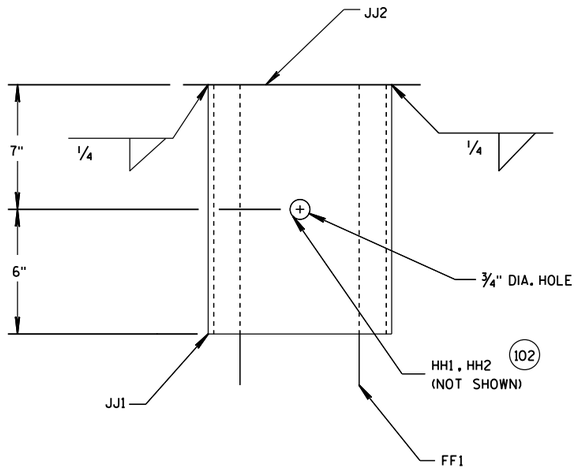
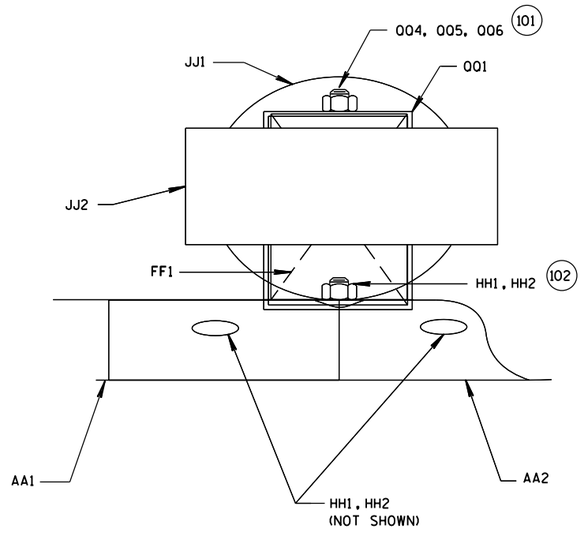
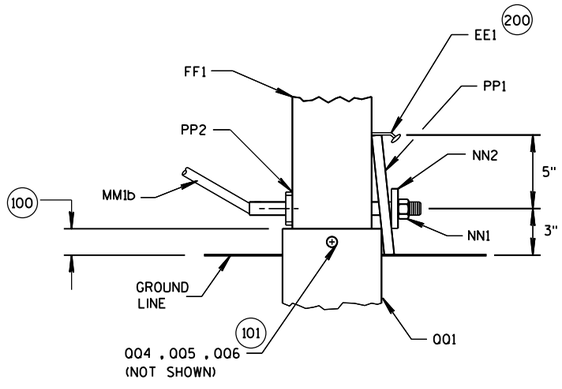


DETAIL B
PROFILE VIEW OF STEEL PIPE ASSEMBLY
(BEAM GUARD AND W-BEAM
END SECTION NOT SHOWN)

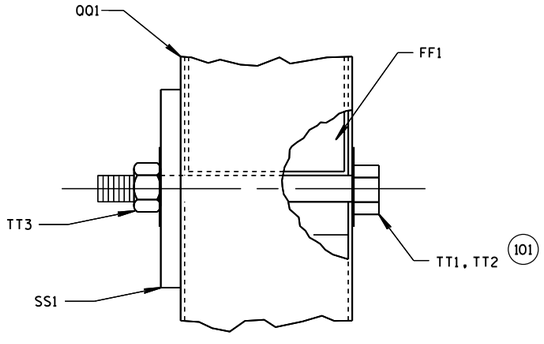


DETAIL B
PLAN VIEW OF STEEL PIPE ASSEMBLY

200 2 NAILS SPACED 4 INCHES CENTER TO CENTER.



DETAIL C
PROFILE VIEW



DETAIL D
PROFILE VIEW

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

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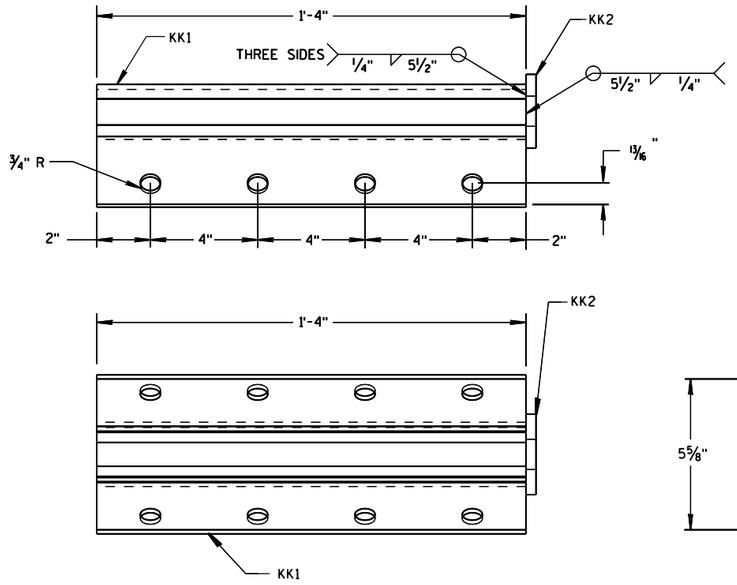
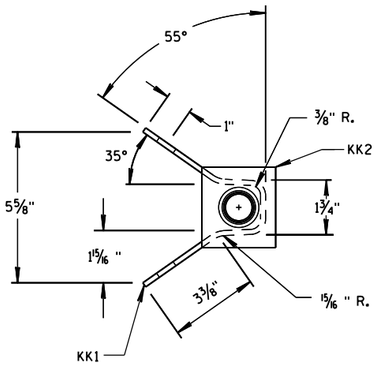
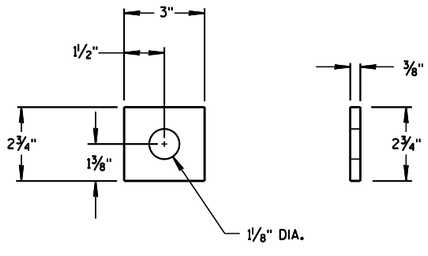
(300) WASHERS REQUIRED BETWEEN BOLT HEAD AND BEAM GUARD RAIL AND BETWEEN NUT AND ANCHOR BRACKET. EIGHT LL1 AND LL3 REQUIRED. SIXTEEN LL2 REQUIRED.

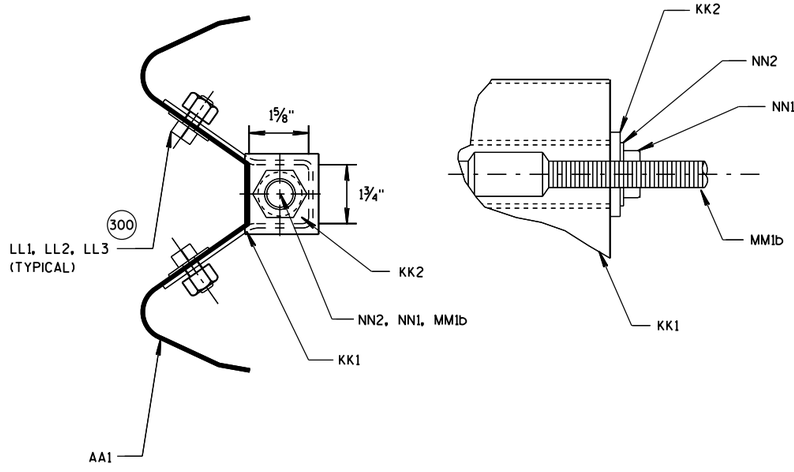




ANCHOR BRACKET (KK1, KK2)



ANCHOR BRACKET BEARING PLATE (KK2)



SECTION A-A

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

STATE OF WISCONSIN
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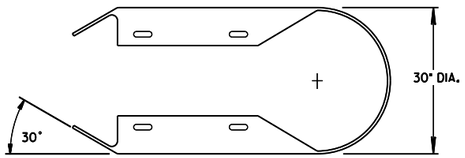
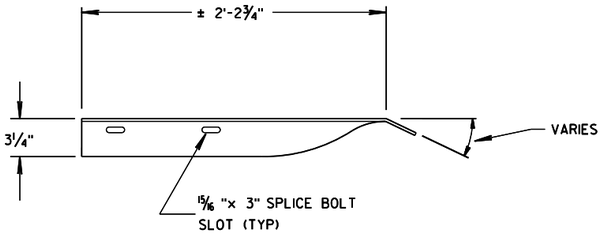


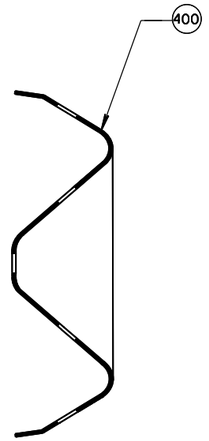
TOP VIEW



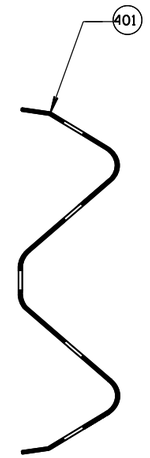
TOP VIEW

(400) CROSS SECTON OF PART IS TO FIT OVER AA1.

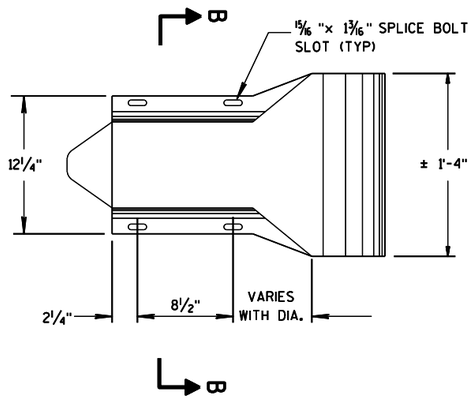
(401) CROSS SECTON OF PART IS TO FIT OVER OR UNDER AA1.



SECTION B-B

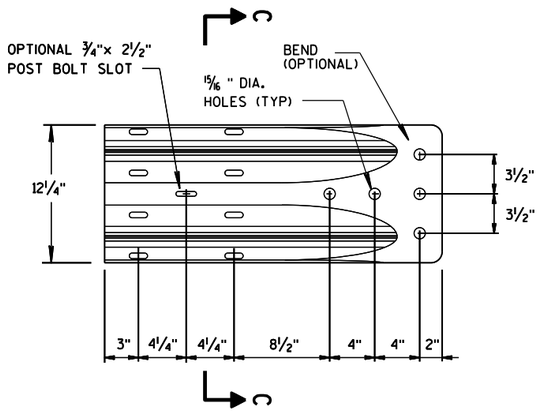


SECTION C-C



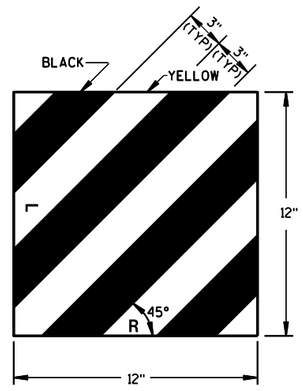
W-BEAM
END SECTION BUFFER (AA2)

PROFILE VIEW



W-BEAM
TERMINAL CONNECTOR (BB1)

PROFILE VIEW



REFLECTIVE SHEETING
(UU1, UU2)

SHORT RADIUS BEAM GUARD
(MGS) SHORT RADIUS
TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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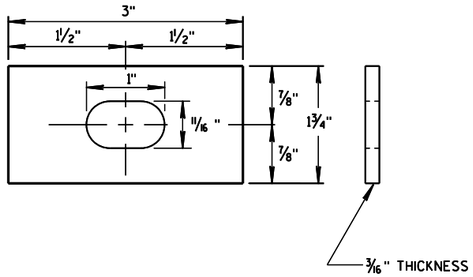
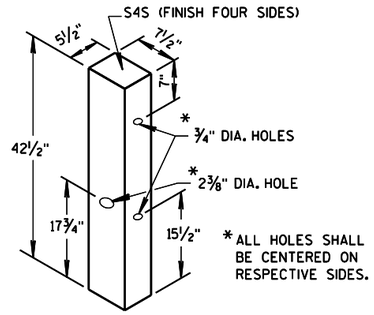
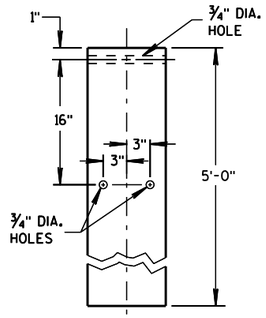


RECTANGULAR PLATE WASHER (CC1)



WOOD BREAKAWAY POST (FF1)



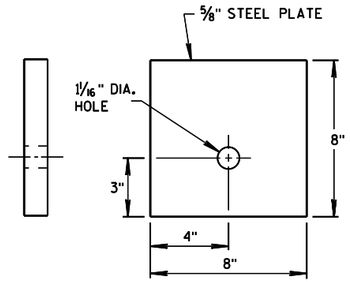
FOUNDATION TUBE (QQ1) (500)

(500) SEE DETAIL "D" FOR LOCATION AND ATTACHING SS1.

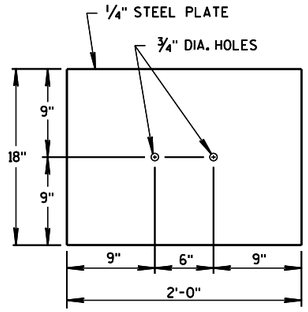
(501) FOR MM1a THREADED STUD ONLY REQUIRED ON ONE END. SWAGED FITTING REQUIRED.

(502) LOCATE HOLES ON THE CENTERLINE OF THE SIDE OF THE POST.

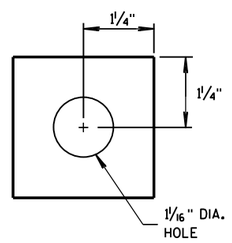
(503) MM1a MAY HAVE ONE THREADED STUD 4 INCHES LONG. SEE NOTE (109).



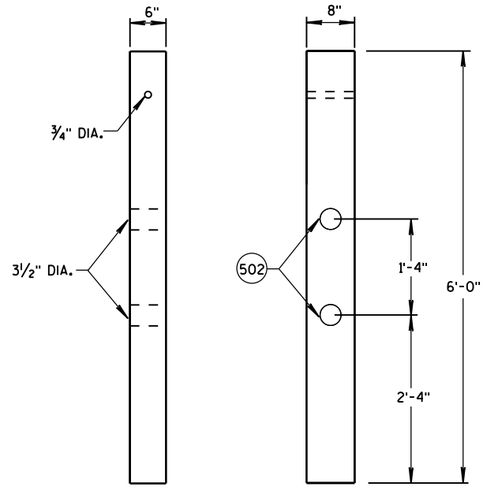
BEARING PLATE (PP1)



SOIL PLATE (SS1)

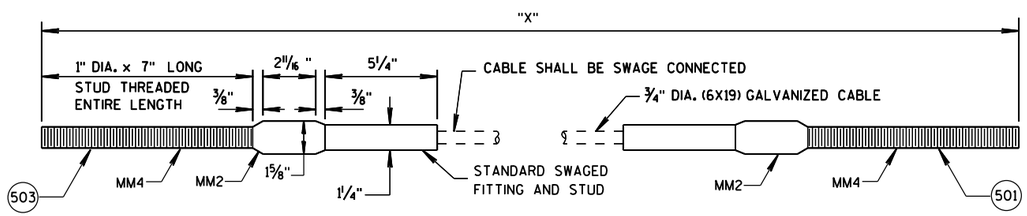


TUBE END PLATE (QQ3)



FRONT VIEW SIDE VIEW

CONTROLLED RELEASE TERMINAL POST (CRT) (D2)



"X" LENGTH

MM1a	9'-0"
MM1b	6'-8"

CABLE ASSEMBLY (MM1a , MM1b)

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

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BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
A1	BEAM GUARD RAIL	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
A2	BEAM GUARD RAIL - SHOP BENT	INDICATE ON BACK OF RAIL RADIUS THAT RAIL WAS BENT TO. SHOP BEND RADIUS IS TO THE NEAREST FOOT. FOLLOW AASHTO M180 ON HOW TO MARK RADIUS INFORMATION.	
		AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
B1	BLOCK - WOOD	WISDOT SPEC. 614	SEE SDD 14B42
C1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEAD)	
D1	POST-STRONG POST-WOOD	WISDOT SPEC. 614	SEE SDD 14B42
D2	POST-CRT-WOOD	WISDOT SPEC. 614	
E1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	5/8" DIA. SEE SDD 14B42 FOR BOLT GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
E2	POST BOLT-WASHER	ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	5/8" DIA.
		GALV. AASHTO M111/ASTM A 123 OR GALV. HOT DIP. TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329	
E3	POST BOLT - NUT		5/8" DIA. SEE SDD 14B42 FOR GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
F1	SPLICE BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		ASTM A307 GRADE A OR SAE J429 GRADE 2	5/8" DIA. SEE SDD 14B42 FOR GEOMETRY AND OTHER INFORMATION
		UNC	
		AASHTO M180	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
F2	SPLICE BOLT - NUT	ASTM A563 GRADE A	5/8" DIA. SEE SDD 14B42 FOR GEOMETRY
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C/ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
G1	LAG SCREW	ASTM A308 GRADE A ASTM A153 CLASS D	3/8" DIA. 3" LONG
H1	DELINEATOR - BEAM GUARD		SEE SDD 14B42 FOR MORE INFORMATION
H2	DELINEATION - SHEETING	YELLOW OR WHITE	
		WISDOT SPEC 637 TYPE SH	
		APPROVED PRODUCT LIST	
J1	FOUNDATION BACKFILL	STANDARD SPEC. 614	
AA1	BEAM GUARD RAIL - PUNCHED	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
AA2	BEAM GUARD RAIL - END SECTION BUFFER	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
BB1	BEAM GUARD RAIL - TERMINAL CONNECTOR MODIFIED	AASHTO M180, CLASS A, TYPE 2	
		APPROVED PRODUCER	
CC1	SHORT RADIUS - SQUARE WASHER	AASHTO M180	
		GALV. AASHTO M111 / ASTM A123	
EE1	NAIL	ASTM A153 HOT DIP CLASS D	
		ASTM F1667 TYPE 1 STYLE 12 (16 DOUBLE HEADED)	
FF1	POST - BCT - WOOD	S4S FINISH ON 4 SIDES	
		WISDOT SPEC. 614	
GG1	POST BOLT	ASTM A307 GRADE A OR SAE J429 GRADE 2	3/8" DIA. SEE SDD 14B42 FOR GEOMETRY
		AASHTO M180	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
GG2	POST BOLT - WASHER	ASTM F436 TYPE 1 (HARDEN TYPICALLY USED WITH STEEL) OR ASTM F844 (UNHARDENED TYPICALLY WITH WOOD)	3/8" DIA.
		GALV. AASHTO M111 / ASTM A123 OR5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI 60

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S.D.D. 14 B 53-1g

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
GG3	POST BOLT - NUT	ASTM A563 GRADE A	3/8" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	SEE 14B42 FOR GEOMETRY
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		ASTM A563 GRADE A HEAVY HEX HEAD	
HH1	SPLICE BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	3/8" DIA. SEE 14B42 FOR GEOMETRY
		ASTM A307 GRADE A OR SAE J429 GRADE 2	
		UNC	
		AASHTO M180 HEAD GEOMETRY	
HH2	SPLICE BOLT - NUT	ASTM A563 GRADE A	3/8" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	SEE 14B42 FOR GEOMETRY
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		UNC	
JJ1	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	10" O.D.
JJ2	TOP PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS 3/8" X 4" X 1'-0"
		GALV. AASHTO M111 / ASTM A123	
KK1	ANCHOR BRACKET	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
KK2	ANCHOR BRACKET - BEARING PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
LL1	ANCHOR BRACKET - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	5/8" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
LL2	ANCHOR BRACKET - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	5/8" DIA.
		GALV. AASHTO M111 / ASTM A123 OR5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
LL3	ANCHOR BRACKET - NUT	ASTM A563 GRADE A	5/8" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A563	
		UNC	

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
MM1a	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIc CLASS C ZINC COATED	
MM1b	ANCHOR CABLE	AASHTO M30 / ASTM A741 INDEPENDENT WIRE CORE (IWRC) OR WIRE STRAND CORE (WCS), IMPROVED PLOW STEEL (IPS), 6X19, TYPE II OR IIc CLASS C ZINC COATED	
MM2	ANCHOR CABLE - SWAGE FITTING	ASTM A576 GRADE 1035	
		SWAGE FITTINGS ARE TO BE FACTORY SWEDGED. WITH A BREAKING STRENGTH 40,000 LBS.	
		GALV. AASHTO M111 / ASTM A123	
		ASME B30.26 FORGED, CAST, OR DIE STAMPED WITH THE FOLLOWING INTO CONNECTION: NAME OF MANUFACTURER OR TRADEMARK OF CONNECTION'S MANUFACTURER, SIZE OR RATED LOAD, GRADE.	
MM3	WIRE ROPE CABLE CLAMPS	FF-C-450D TYPE 1 CLASS 1	3/4"
		ASTM A153 HOT DIP CLASS D	
MM4	ANCHOR CABLE - SWAGE FITTING - STUD	ASTM F3125 GRADE A325 TYPE 1 OR SAE GRADE 5 OR ASTM A449 TYPE 1 HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
NN1	ANCHOR CABLE - NUT	ASTM A563 GRADE A	1" DIA.
		AASHTO M180 DOUBLE RECESSED HEAVY HEX HEAD	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		OVER TAPPED NUTS OVER-SIZE AS SPECIFIED IN AASHTO 291 / ASTM A563	
		UNC	
NN2	ANCHOR CABLE - NUT - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	1" DIA.
		GALV. AASHTO M111 / ASTM A123 OR5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
PP1	BEARING PLATE AT POST	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
PP2	PIPE - STEEL	ASTM A53 GALVANIZED GRADE B SCHEDULE 40	2" DIA. x 6" LONG
QQ1	FOUNDATION TUBE	ASTM A500 GRADE B	8" X 6" X 3/16"
		GALV. AASHTO M111 / ASTM A123	
QQ2	SHORT RADIUS - FOUNDATION TUBE - ANCHOR CABLE - TUBE	ASTM A500 GRADE B	DIMENSIONS 2 1/2" X 2 1/4" X 1/4" X 8"
		GALV. AASHTO M111 / ASTM A123	

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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S.D.D. 14 B 53-1h

BILL OF MATERIALS - SHORT RADIUS BEAM GUARD (MGS)

PART	DESCRIPTION	MATERIALS SPECIFICATIONS	NOTES
003	SHORT RADIUS - SOIL TUBE - ANCHOR CABLE - TUBE - END PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	DIMENSIONS 2½" X 2½" X ¼"
		GALV. AASHTO M111 / ASTM A123	
004	GROUND STRUT AND YOKE - BOLT	GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	⅝" DIA.
		ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	
		UNC	
005	GROUND PLATE AND YOKE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	⅝" DIA.
		GALV. AASHTO M111 / ASTM A123 OR5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
006	GROUND STRUT AND YOKE - NUT	HEAVY HEX	⅝" DIA.
		UNC	
		ASTM A563 GRADE A	
		OVER TAPPED NUTS AS SPECIFIED IN AASHTO 291 / ASTM A 563	
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	
SS1	SOIL PLATE	ASTM A36 MIN STRENGTH 36 KSI, OR ASTM A529 MAX. STRENGTH 50 KSI, OR ASTM A572 MAX STRENGTH 50 KSI OR ASTM A709 MAX STRENGTH 50 KSI OR ASTM A992 MAX STRENGTH 50 KSI	
		GALV. AASHTO M111 / ASTM A123	
TT1	SOIL PLATE - BOLT	ASTM A307 GRADE B HEAVY HEX HEAD OR SAE J429 GRADE 2 HEAVY HEX HEAD	⅝" DIA.
		GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1/ASTM B695 CLASS 50, TYPE 1	
		UNC	
TT2	SOIL PLATE - WASHER	ASTM F436 TYPE 1 (HARDEN WASHER ONLY)	⅝" DIA.
		GALV. AASHTO M111 / ASTM A123 OR5 GALV. HOT DIP TO AASHTO M232 CLASS C / ASTM A153 CLASS C / ASTM F2329	
TT3	SOIL PLATE - NUT	GALV. HOT DIP TO AASHTO M232 CLASS C/ASTM A153 CLASS C / ASTM F2329 OR GALV. MECHANICALLY TO AASHTO M298 CLASS 50, TYPE 1 / ASTM B695 CLASS 50, TYPE 1	⅝" DIA.
UU1	OBJECT MARKER - SHEETING	MUTCD / WISDOT OBJECT MARKER TYPE 3	PATTERN AND COLOR FOR SHEETING SHEETING TYPE FOR MARKER
		WISDOT SPEC 637 TYPE F	
		APPROVED PRODUCT LIST	
UU2	OBJECT MARKER - ALUMINUM PLATE	WISDOT SPEC 637 ALUMINUM PLATE	MATERIAL AND THICKNESS OF MATERIALS
UU3	OBJECT MARKER - SCREWS	STAINLESS SELF-TAPPING SCREWS	
VV1	FOUNDATION BACKFILL	WISDOT SPEC 614	

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S.D.D. 14 B 53-1i

SHORT RADIUS BEAM GUARD (MGS) SHORT RADIUS TERMINAL (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS D UNIT SUPERVI
NT
FHWA

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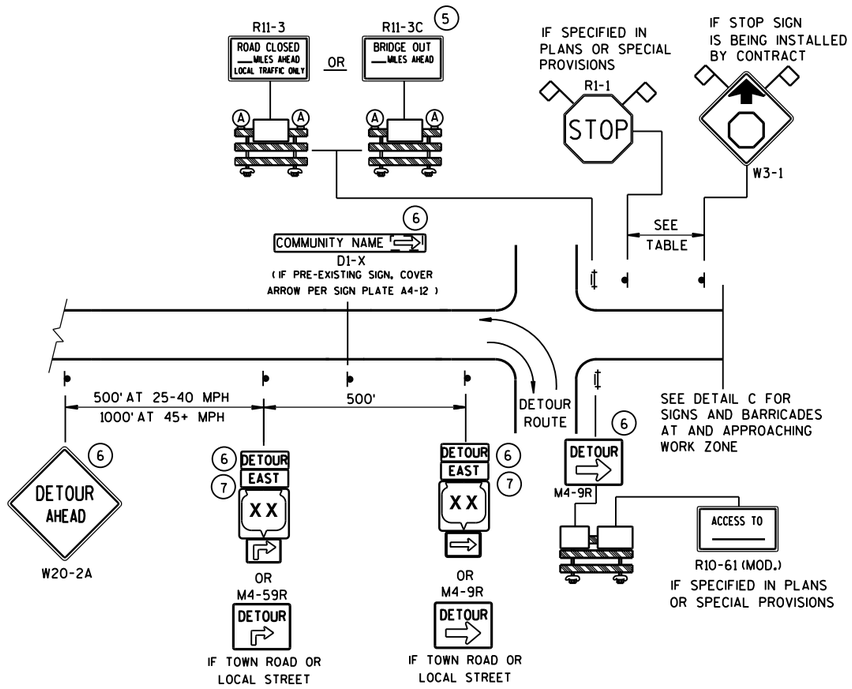
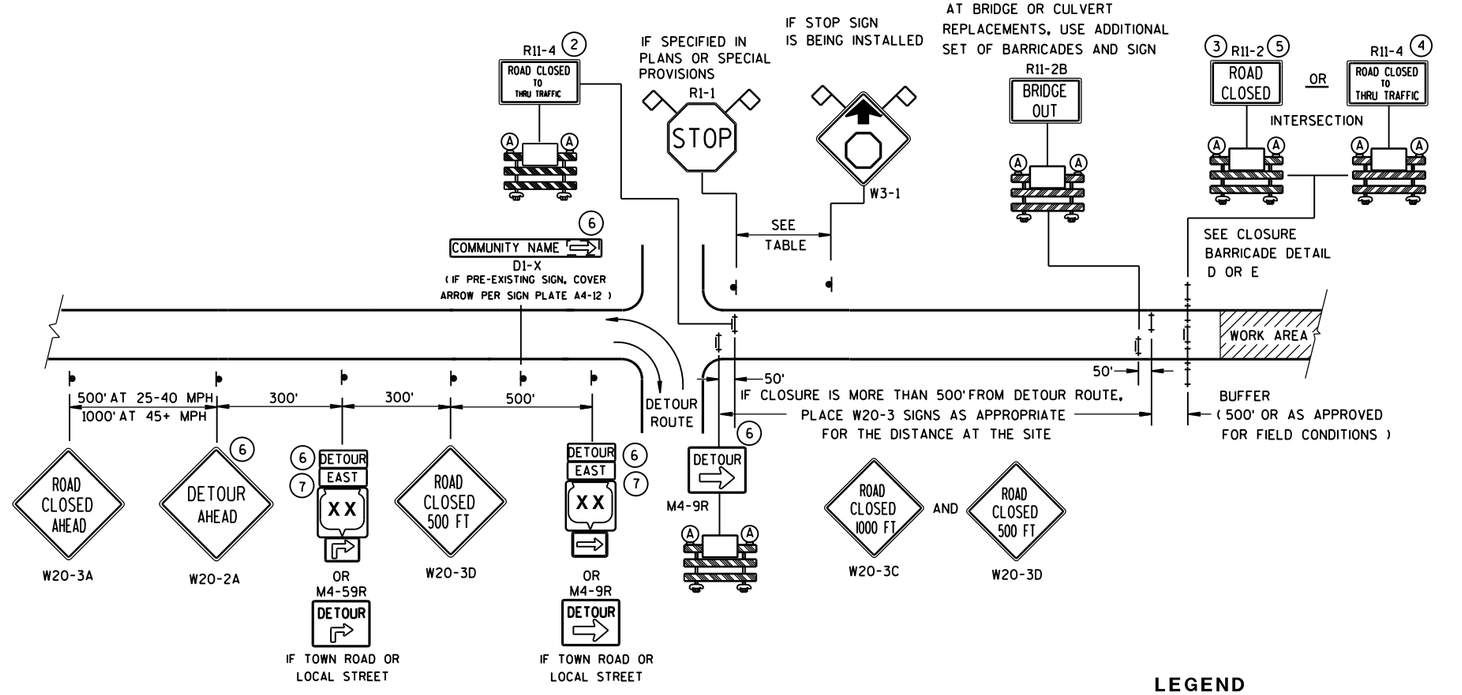
S.D.D. 14 B 53-1i



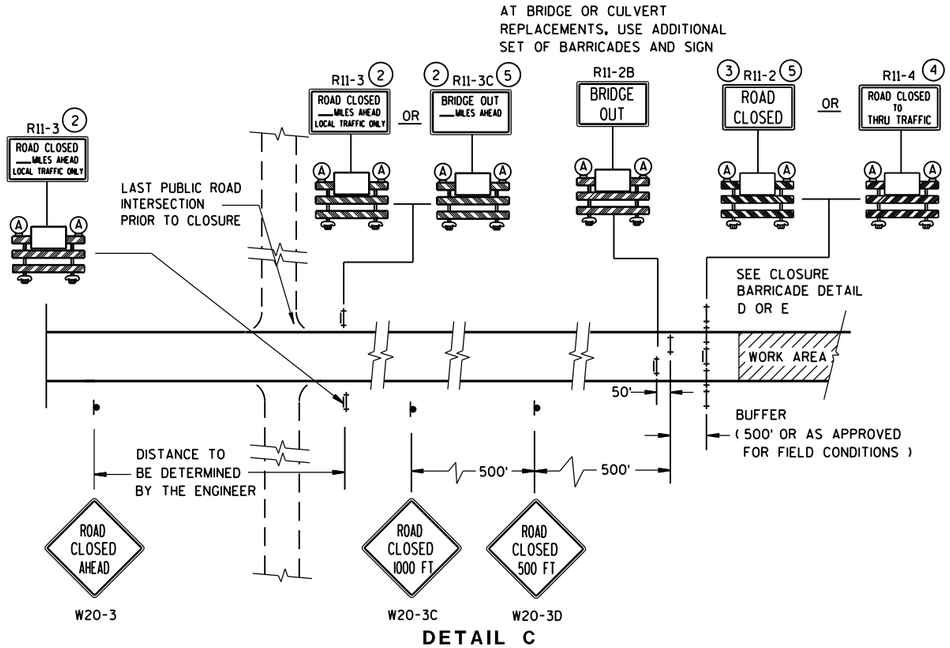
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE GREATER THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

WORK ZONE LESS THAN ½ MILE FROM DETOUR ROUTE (1000 FEET IF URBAN)



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

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

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- (A) TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- DETOUR / EAST — M4-8 / M3-X
- XX — M1-4; COUNTY XX — M1-5A; XX — M1-6
- M05-1 OR M06-1
- FLAGS, 16" X 16" MIN., (ORANGE)

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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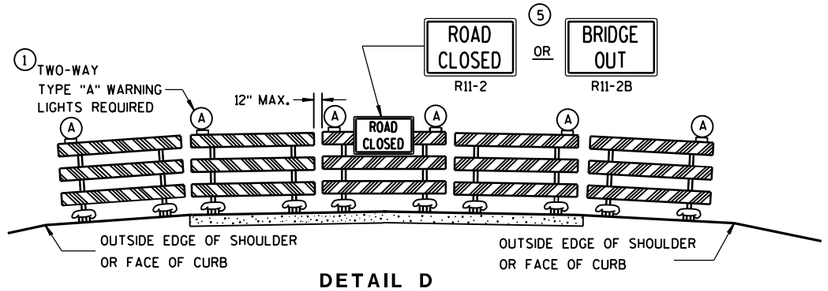
S.D.D. 15 C 2-6a

6

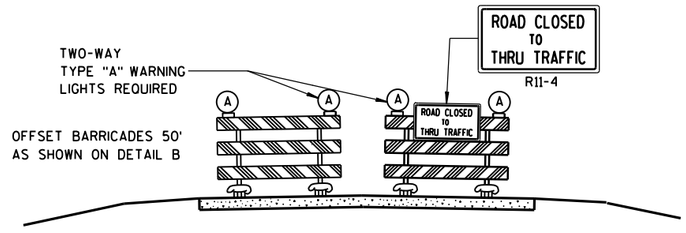
S.D.D. 15 C 2-6a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

SEE SDD 15C2-SHEET "**a**" FOR LEGEND

GENERAL NOTES

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

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

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

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

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

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

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

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

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

ALL SIGNS SHALL BE 48" X 48" UNLESS OTHERWISE NOTED BELOW:
- R11-2 SHALL BE 48" X 30".
- R11-3, R11-4 AND R10-61 SHALL BE 60" X 30".
- M4-9 SHALL BE 30" X 24".
- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- M05-1 AND M06-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.
- R1-1 SHALL BE 36" X 36".

(1) TWO WARNING LIGHTS SHALL BE PROVIDED ON THE CENTER BARRICADE AND A MINIMUM OF ONE WARNING LIGHT SHALL BE PROVIDED ON EACH OF THE OTHER BARRICADES WITHIN THE ROADWAY LIMITS. SPACING OF THE WARNING LIGHTS SHALL BE UNIFORM TO THE EDGE OF ROADWAY AS SHOWN (APPROX. 8-FOOT LIGHT SPACING).

(2) THESE SIGNS AND BARRICADES ARE NOT REQUIRED IF ROAD CLOSURE BEGINS AT INTERSECTION.

(3) FOR ROAD CLOSURE WITHOUT LOCAL ACCESS TO PROJECT, SEE ROAD CLOSURE BARRICADE DETAIL D.

(4) FOR ROAD CLOSURE WITH LOCAL ACCESS TO PROJECT, SEE LANE CLOSURE BARRICADE DETAIL E.

(5) FOR BRIDGE OR CULVERT REPLACEMENTS, SUBSTITUTE "BRIDGE OUT" INSTEAD OF "ROAD CLOSED" ON R11-2 AND R11-3 SIGNS.

(6) INSTALL DETOUR AND COMMUNITY GUIDE SIGNS AND ARROWS ONLY IF SPECIFIED IN THE CONTRACT. IF THERE ARE EXISTING ROUTE MARKER ASSEMBLIES THAT WILL REMAIN IN PLACE, ADJUST THE LOCATION OF THE DETOUR ROUTE SIGNS TO CORRESPOND WITH THE EXISTING ASSEMBLIES. MODIFY EXISTING SIGNS WHERE POSSIBLE. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS. IF DETOUR SIGNS ARE BEING INSTALLED BY OTHERS, PLACE THE CONTRACTED TRAFFIC CONTROL SIGNS TO ALLOW FOR PLACEMENT OF ALL WARNING, DETOUR AND GUIDE SIGNS AS SHOWN.

(7) "EAST" CARDINAL DIRECTION MARKERS AND RIGHT TURN ARROWS ARE SHOWN. USE OTHER CARDINAL DIRECTIONS AND ARROWS AS APPROPRIATE.

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 — DATE

/S/ Peter Amakobe Atepe
STATEWIDE WORK ZO... SAFETY ENGI... — FHWA

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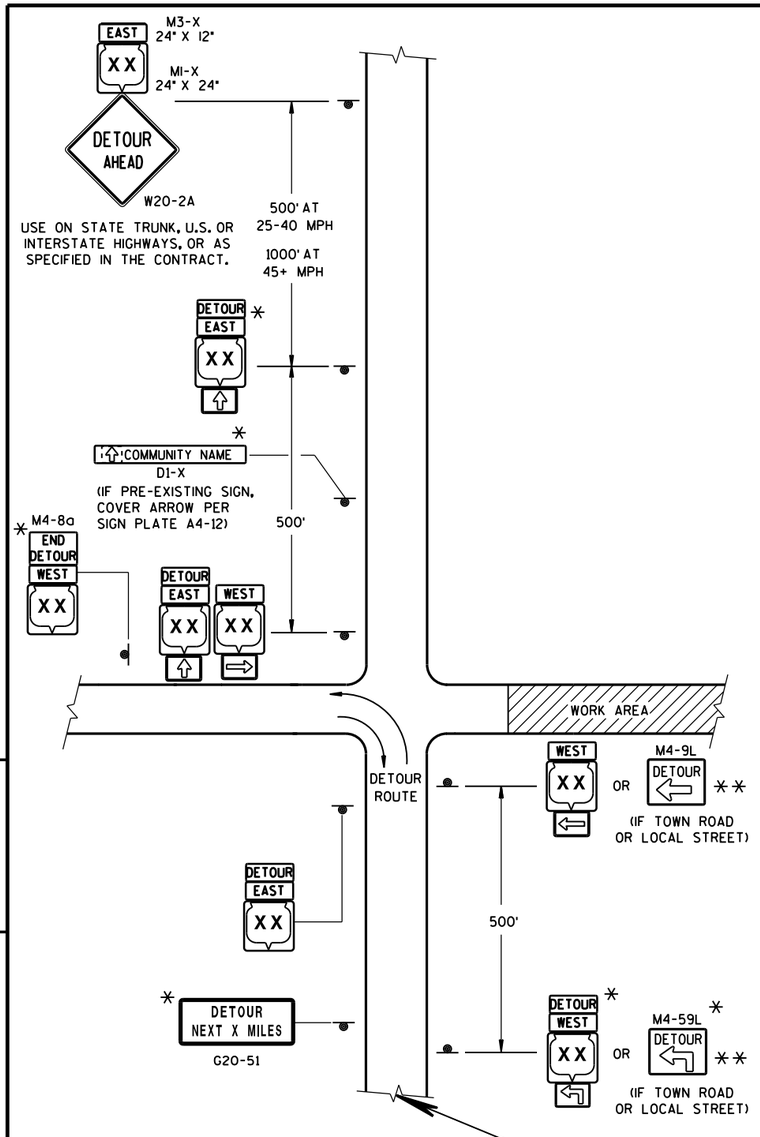
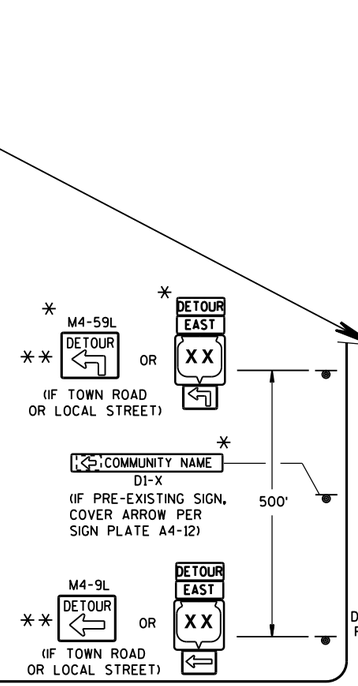
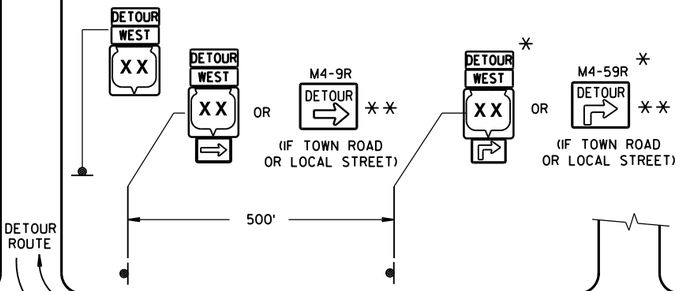
S.D.D. 15 C 2-6b

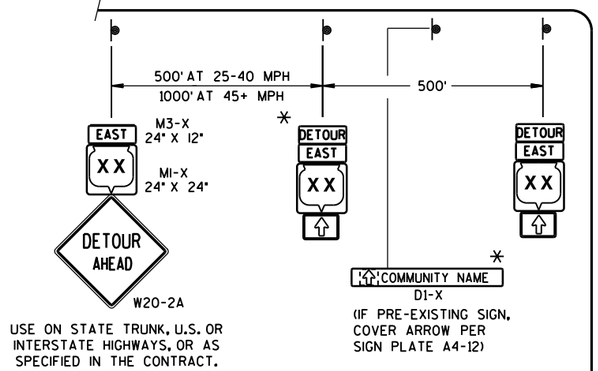
THIS DRAWING PROVIDES GENERAL GUIDANCE ON TYPICAL DETOUR SIGN LAYOUT AND SPACING. SEE PROJECT DETOUR SIGNING SHEETS FOR SPECIFIC DETAILS FOR EACH PROJECT.

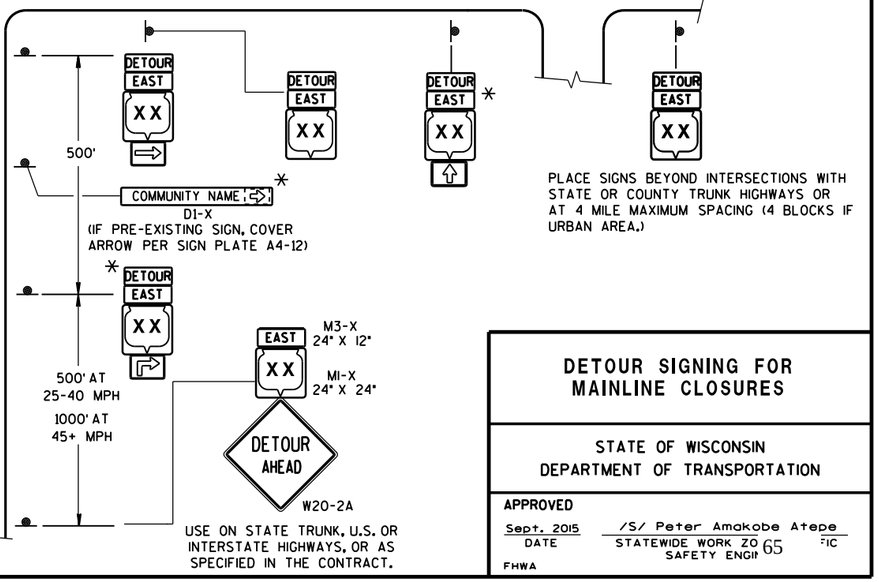


MATCH POINT









GENERAL NOTES

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

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

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

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

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

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

SIGN SIZES SHALL BE AS FOLLOWS:

- M3-X SHALL BE 24" X 12". (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-8 SHALL BE 24" X 12". (30" X 15" IF NEEDED TO MATCH EXISTING SIGNS.)
- M1-4, M1-5A, AND M1-6 SHALL BE 24" X 24". (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS.)
- MO5-1 AND MO6-1 SHALL BE 21" X 21". (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS.)
- M4-9 SHALL BE 30" X 24".
- M4-8a SHALL BE 24" X 18".
- G20-51 SHALL BE 60" X 24".
- W20-2 SHALL BE 48" X 48".
- D1-X SHALL BE AS SHOWN ON SPECIFIC PROJECT SIGNING DETAIL SHEETS.

* OPTIONAL SIGNS. SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS.

** FOR A TOWN ROAD OR LOCAL STREET DETOURED ONTO A STATE TRUNK HIGHWAY, PLACE A ROAD NAME PLAQUE ABOVE THE M4-9 SIGN AS SPECIFIED IN THE CONTRACT.

LEGEND

- SIGN ON PERMANENT SUPPORT
- WORK AREA
- DETOUR EAST — M4-8 / M3-X
- XX OR COUNTY XX OR XX — M1-4 / M1-5A / M1-6
- MO5-1 OR MO6-1 OR MO6-1

SEE SPECIFIC PROJECT DETOUR SIGNING DETAIL SHEETS AND DETAIL A OR B ON SDD 15C2-SHEET "a"

DETAIL F

DETOUR SIGNING

DETOUR SIGNING FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2015 — DATE

/S/ Peter Amakobe Atepe — STATEWIDE WORK ZO[illegible] SAFETY ENGI[illegible]

FHWA

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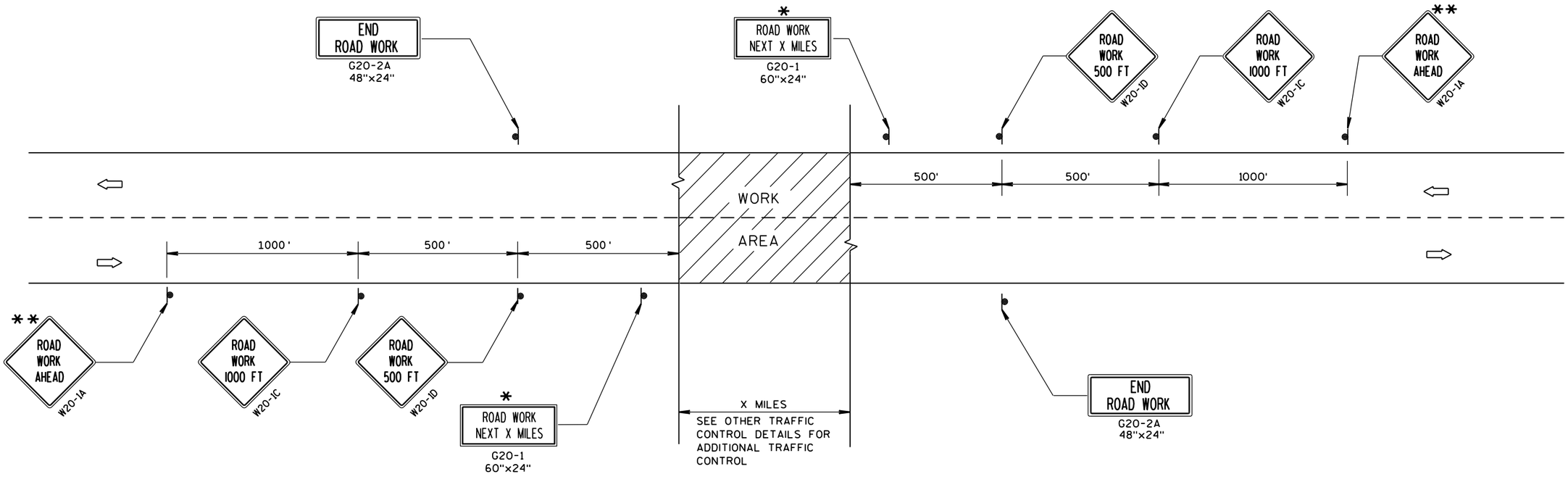
S.D.D. 15 C 2-6c



TYPICAL SIDEROAD APPROACH WARNING SIGN DETAIL

GENERAL NOTES

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

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

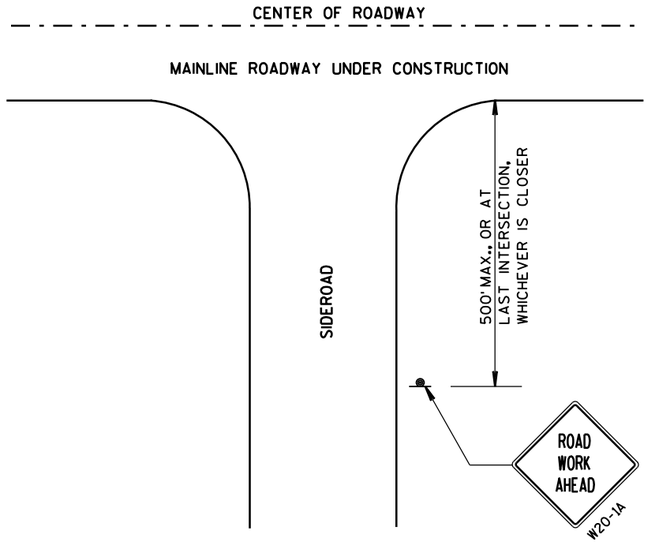
ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED.

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

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

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

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



LEGEND

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

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

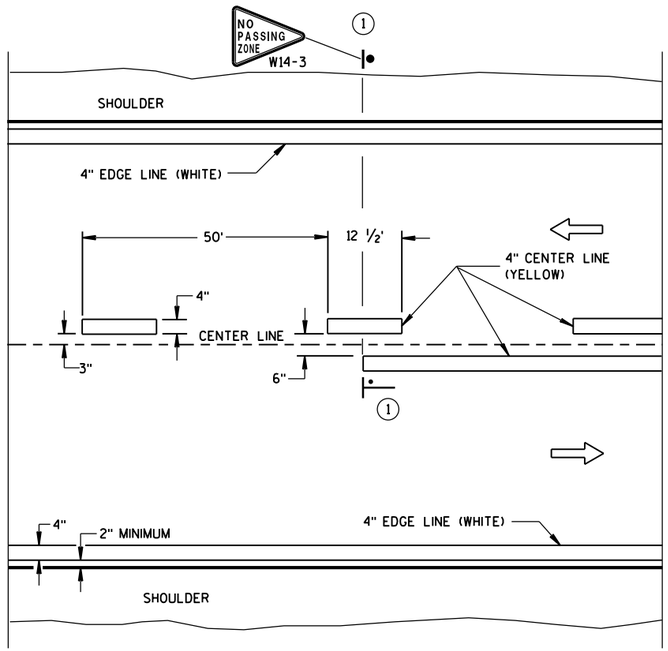
FHWA

6

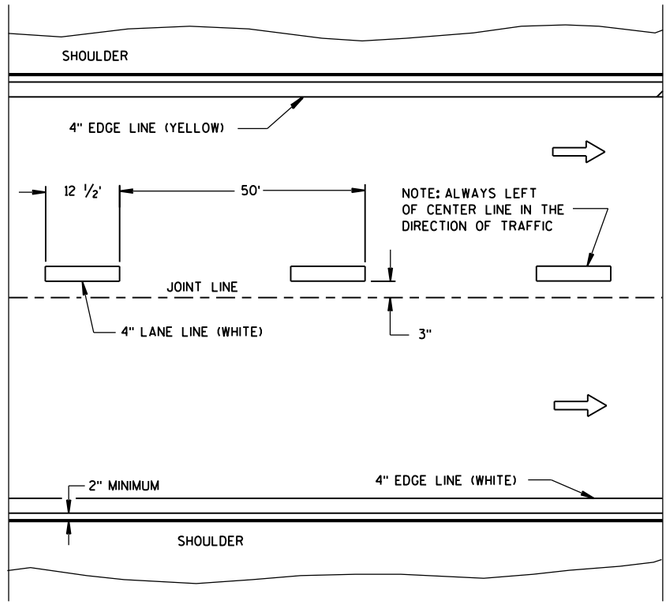
S.D.D. 15 C 4-3

6

S.D.D. 15 C 4-3



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.

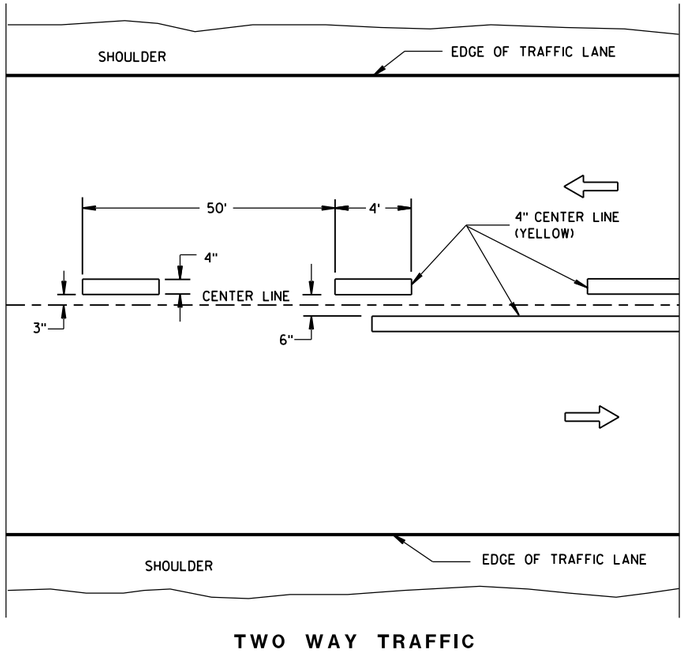
NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

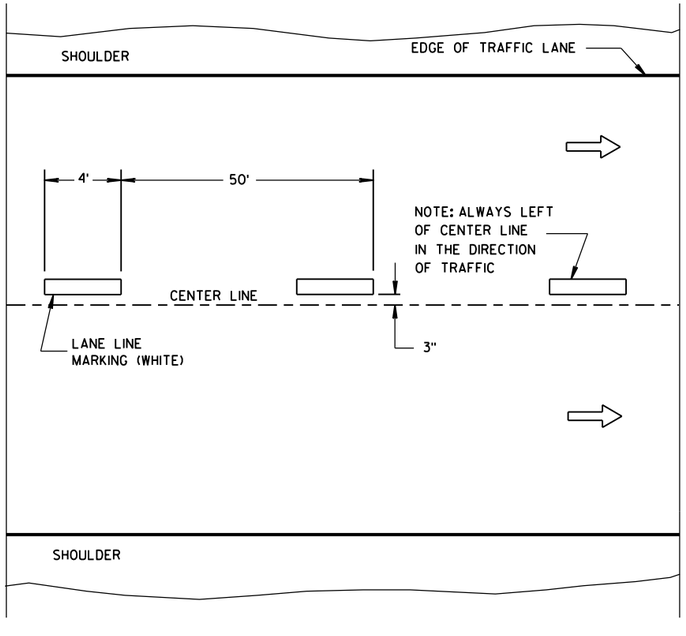
LEGEND

"T" MARKING

POST MOUNTED SIGN



TWO WAY TRAFFIC



ONE WAY TRAFFIC

TEMPORARY PAVEMENT MARKING

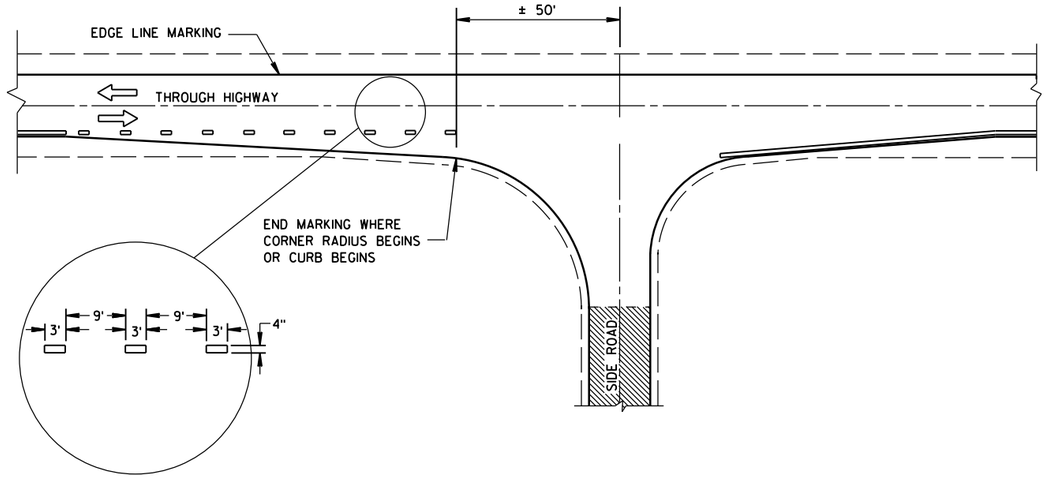
LONGITUDINAL MARKING (MAINLINE)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED June 2017 DATE	/S/ Matthew R. Rauch STATE SIGNING AND MAR[illegible]INEER
FHWA	

6

S.D.D. 15 C 8-18a

6

S.D.D. 15 C 8-18a



MINOR INTERSECTION WITHOUT CURBS

GENERAL NOTES

EDGE LINES SHALL BE OMITTED THROUGH INTERSECTIONS. EDGE LINES SHALL BE CONTINUED THROUGH DRIVEWAYS.

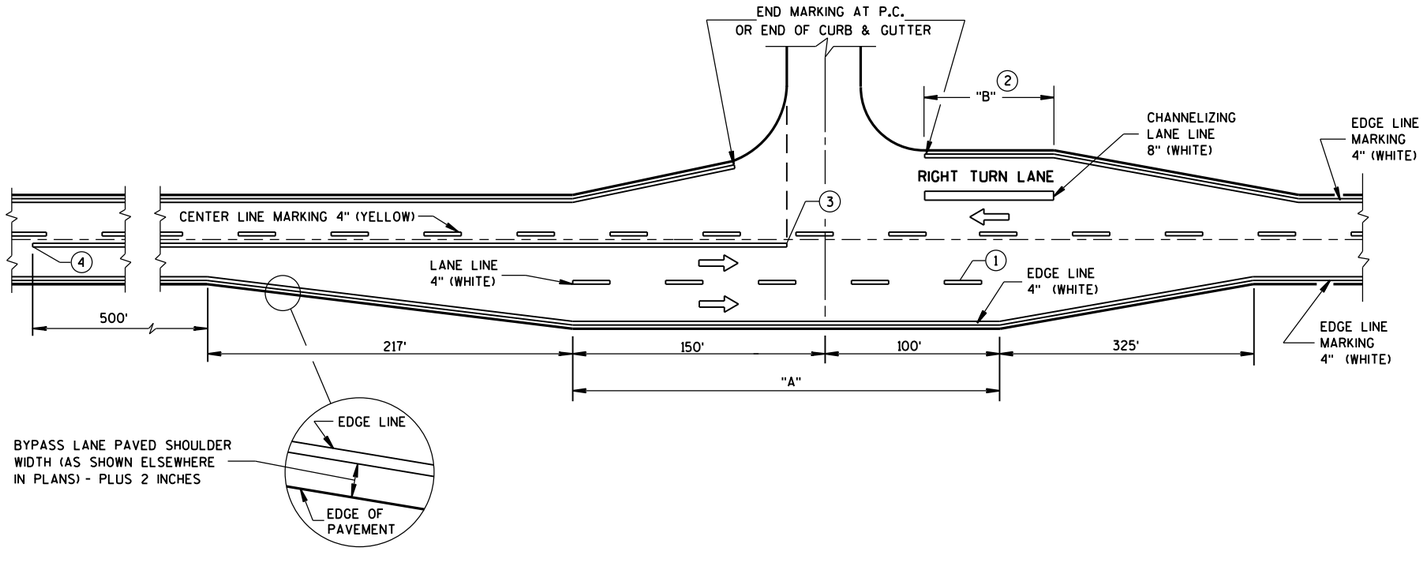
(1) WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.

(2) WHEN DISTANCE "B" IS LESS THAN 100 FEET, OMIT CHANNELIZING LANE LINE.

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

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

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL



MAJOR INTERSECTIONS

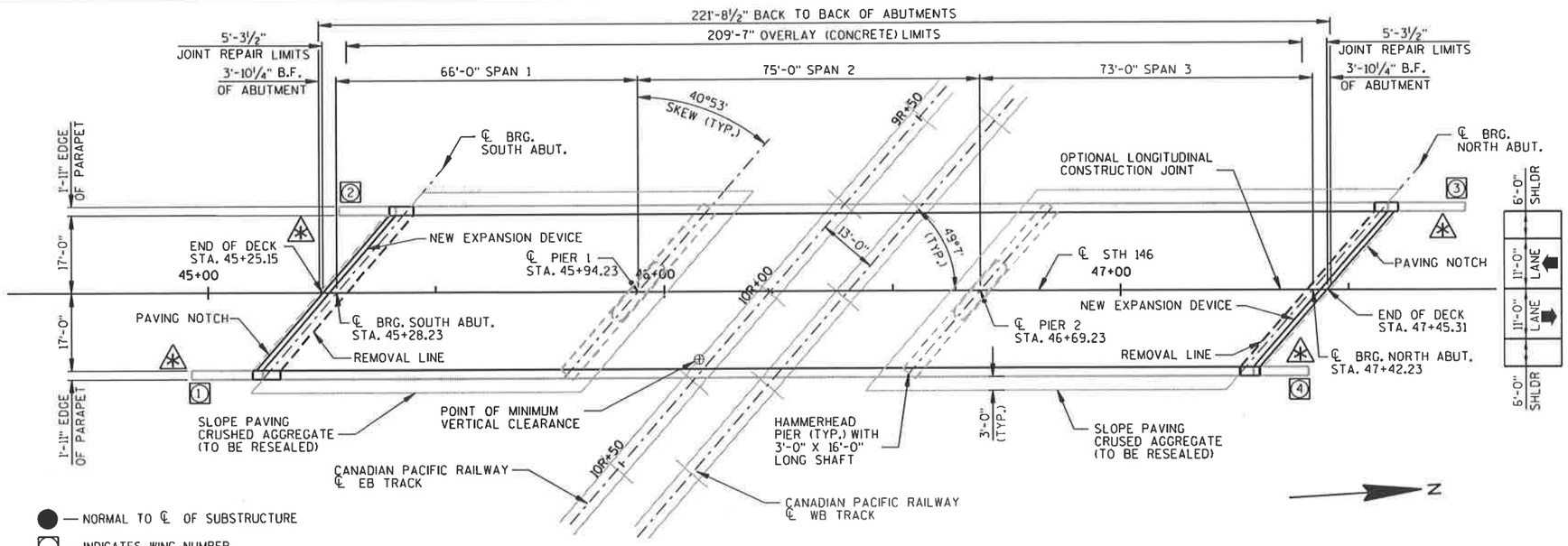
(INTERSECTION WITH FULL RIGHT TURN LANE OR BYPASS LANES)

PAVEMENT MARKING
(INTERSECTIONS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 15 C 35-1a



● — NORMAL TO ℄ OF SUBSTRUCTURE

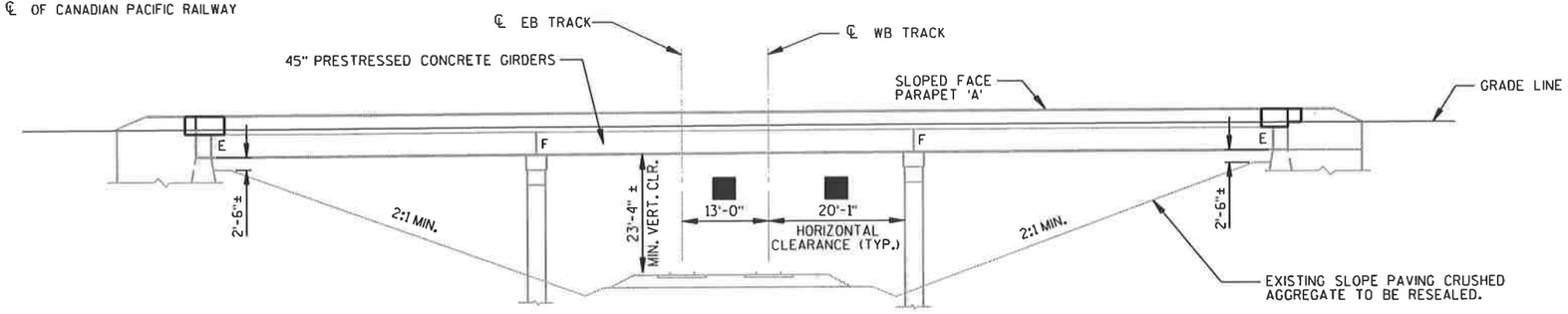
○ — INDICATES WING NUMBER

✱ — INDICATES LOCATION OF PROVISION FOR THRIE BEAM GUARD ATTACHMENT. UPDATE BEAM GUARD ANCHORAGES IN ACCORDANCE WITH SDD 14B45-4F.

■ — NORMAL TO ℄ OF CANADIAN PACIFIC RAILWAY

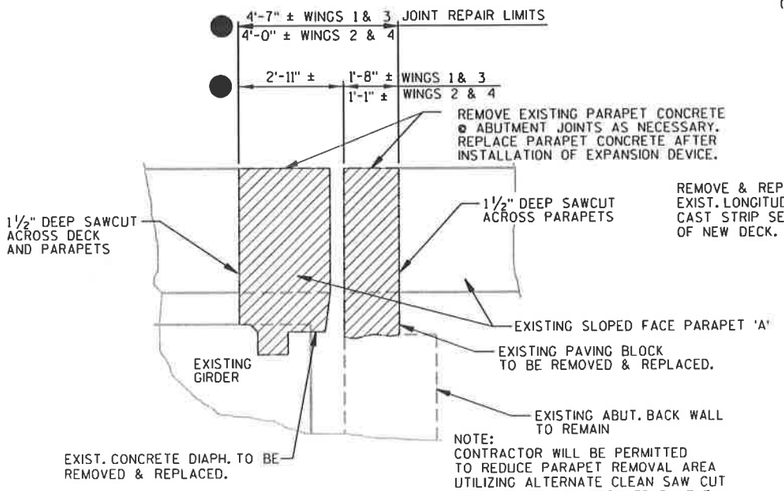
PLAN

(REHAB - CONCRETE OVERLAY ON EXISTING THREE SPAN PRESTRESSED CONCRETE GIRDER)

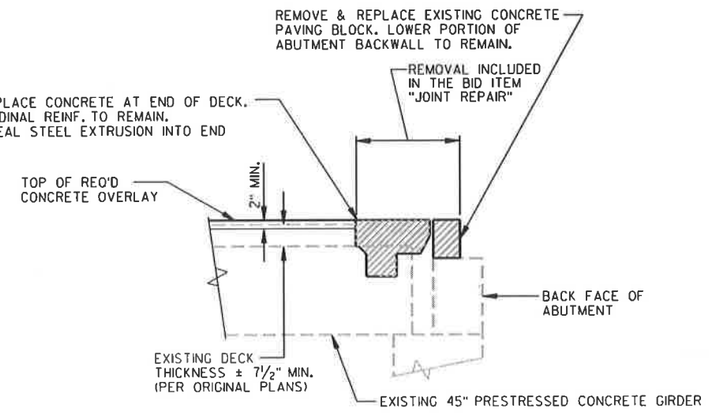


ELEVATION

(LOOKING WEST)



REMOVAL DETAIL



PART LONGITUDINAL SECTION

STATE PROJECT NUMBER
6707-00-82

BENCHMARK ⌖ NAVD 88

NO.	DESCRIPTION	ELEV.
1	DISK ON SE WING WALL	946.61

DESIGN DATA

LIVE LOAD:

DESIGN LOADING: HS-20
INVENTORY RATING : HS-18
OPERATIONAL RATING : HS-31
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV): 190 KIPS

TRAFFIC DATA:

A.A.D.T. (2018) = 1,100
A.A.D.T. (2038) = 1,300
R.D.S. = 60 MPH

MATERIAL PROPERTIES:

CONCRETE MASONRY OVERLAY DECKS — f'c = 4,000 P.S.I.
CONCRETE MASONRY ALL OTHER — f'c = 4,000 P.S.I.

HIGH-STRENGTH BAR STEEL REINFORCEMENT, GRADE 60 — fy = 60,000 P.S.I.

LIST OF DRAWINGS

WISCONSIN
JOLIE A. SNYDER
E-45364
LODI
WI
PROFESSIONAL ENGINEER
8-29-17

DESIGN CONTACT:
JOLIE SNYDER
(608) 355-8912

BRIDGE OFFICE CONTACT:
WILLIAM DREHER
(608) 266-8489

NO.	DATE	REVISION	BY

MSA PROFESSIONAL SERVICES
TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL
1230 South Boulevard Baraboo, WI 53913
608-356-2771 1-800-362-4565 Fax: 608-356-2770

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
ACCEPTED William C. Dreher SDR 11/10/17
CHIEF STRUCTURES DESIGN ENGINEER DATE

STRUCTURE B-11-27

STH 146 OVER THE CANADIAN PACIFIC RAILWAY

COUNTY	TOWN/~~CITY/VILLAGE~~
COLUMBIA	FOUNTAIN PRAIRIE

DESIGN SPEC.
REHABILITATION - N/A

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
JAS	DHW	RLR	JAS

OVERLAY PLAN

SHEET 1 OF 7
69

FILE= 93351_B-11-27_01.DGN
DATE= 8/28/2017

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STATE PROJECT NUMBER
6707-00-82

TOTAL ESTIMATED QUANTITIES

	ITEM NUMBER	BID ITEM	UNIT	TOTAL
	203.0225.S.01	DEBRIS CONTAINMENT B-11-27	LS	1
	502.3100.01	EXPANSION DEVICE B-11-27	LS	1
	502.3200	PROTECTIVE SURFACE TREATMENT	SY	830
	502.3210	PIGMENTED SURFACE SEALER	SY	10
	502.4205	ADHESIVE ANCHORS NO. 5 BAR	EACH	100
	505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	3840
*	509.0301	PREPARATION DECKS TYPE 1	SY	215
*	509.0302	PREPARATION DECKS TYPE 2	SY	150
	509.0500	CLEANING DECKS	SY	792
	509.1000	JOINT REPAIR	SY	44
**	509.1500	CONCRETE SURFACE REPAIR	SF	10
*	509.2000	FULL-DEPTH DECK REPAIR	SY	1
	509.2500	CONCRETE MASONRY OVERLAY DECKS	CY	114
	604.9015.S.01	RESEAL CRUSHED AGGREGATE SLOPE PAVING	SY	790

** - CONCRETE SURFACE REPAIR SHALL BE USED FOR NEEDED REPAIRS. LOCATIONS AND LIMITS OF REPAIR SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.

* - QUANTITY LISTED IS AN ESTIMATE BASED ON THE CONDITION MAPS AND QUANTITY ESTIMATES FOR DECK REPAIRS PROVIDED BY AECOM., INC. THE CONTRACTOR SHALL COORDINATE THE FIELD IDENTIFICATION OF ALL DECK REPAIR LOCATIONS WITH THE ENGINEER.

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

THE FIRST DIGIT OF A THREE DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

DIMENSIONS SHOWN ARE BASED ON THE ORIGINAL STRUCTURE PLANS.

ALL CONCRETE REMOVAL NOT COVERED WITH A CONCRETE OVERLAY SHALL BE DEFINED BY A 1 INCH DEEP SAW CUT.

UTILIZE EXISTING BAR STEEL REINFORCEMENT WHERE SHOWN AND EXTEND 24 BAR DIAMETERS INTO NEW WORK, UNLESS SPECIFIED OTHERWISE.

VERTICAL CLEARANCE TO RAILWAY TAKEN FROM HSI ON 6/13/2016.

THE LOCATIONS OF EXISTING AND PROPOSED UTILITY INSTALLATIONS ARE NOT SHOWN.

IMPROVEMENTS INCLUDE A CONCRETE OVERLAY OF THE BRIDGE DECK, EXPANSION JOINT REPLACEMENT, AND RESEALING CRUSHED AGGREGATE SLOPE PAVING.

THIS PROJECT WILL REHABILITATE EXISTING STRUCTURE B-11-27. A THREE SPAN 221.71' LONG PRESTRESSED CONCRETE GIRDER BRIDGE SET ON CONCRETE SILL ABUTMENTS AND HAMMERHEAD PIERS.

PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE ENTIRE TOP SURFACE OF THE NEW CONCRETE OVERLAY AND TO THE TOP OF THE NEW PAVING BLOCKS.

PIGMENTED SURFACE SEALER SHALL BE APPLIED TO THE INSIDE AND TOP FACES OF THE REPLACED SECTION OF PARAPETS ADJACENT TO THE EXPANSION JOINTS.

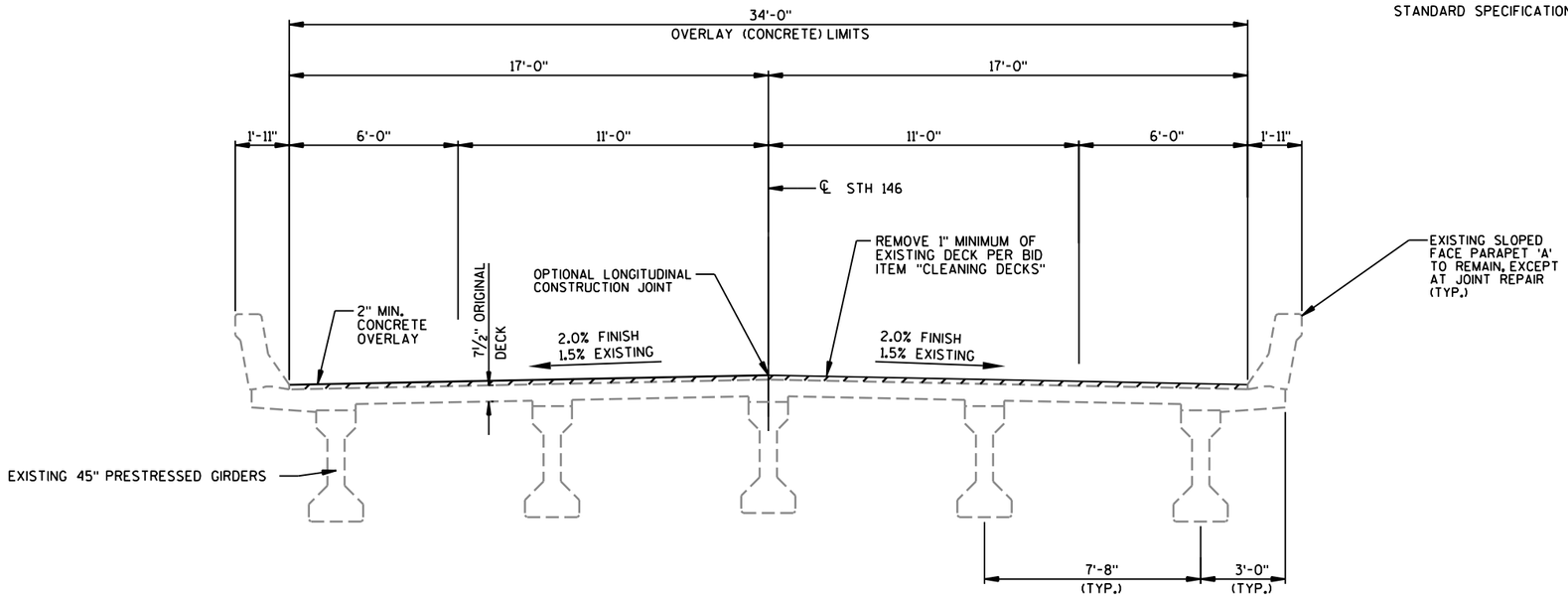
A MINIMUM OF 1" CONCRETE SHALL BE REMOVED FROM THE BRIDGE DECK AREA SHOWN UNDER THE BID ITEM "CLEANING DECKS".

PROFILE GRADE LINE SHALL BE DETERMINED IN THE FIELD BASED ON A MINIMUM OVERLAY THICKNESS OF 2" PLACED ABOVE THE DECK SURFACE AFTER CLEANING DECKS AND SURFACE PREPARATION. EXPECTED AVERAGE OVERLAY THICKNESS IS 2½". IF EXPECTED AVERAGE OVERLAY THICKNESS IS EXCEEDED BY MORE THAN ½", CONTACT THE STRUCTURES DESIGN SECTION.

PREPARATION DECKS TYPE 1, PREPARATION DECKS TYPE 2 AND FULL-DEPTH DECK REPAIR AREAS ARE BASED ON THE INFRARED SURVEY REPORT RESULTS SHOWN ON SHEET 7, AND AS DETERMINED BY THE ENGINEER. A COPY OF THE INFRARED SURVEY REPORT IS AVAILABLE FROM THE DEPARTMENT UPON REQUEST. DECK PREPARATION AND FULL-DEPTH DECK REPAIRS SHALL BE FILLED WITH "CONCRETE MASONRY OVERLAY DECKS".

ANY EXCAVATION REQUIRED TO COMPLETE THE OVERLAY OR JOINT REPAIRS AT THE ABUTMENTS IS TO BE CONSIDERED INCIDENTAL TO THE BID ITEM "CONCRETE MASONRY OVERLAY DECKS".

IF OPTIONAL LONGITUDINAL CONSTRUCTION JOINT IS USED, SEAL JOINT WITH CRACK SEALER PER STANDARD SPECIFICATION 502.



CROSS SECTION THRU ROADWAY

(LOOKING NORTH)

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-11-27

DRAWN BY RLR | PLANS CK'D. JAS

CROSS SECTION, QUANTITIES & NOTES

SHEET 2 OF 7

70

FILE= 93521_B-11-27_02.DGN
DATE= 8/29/2017

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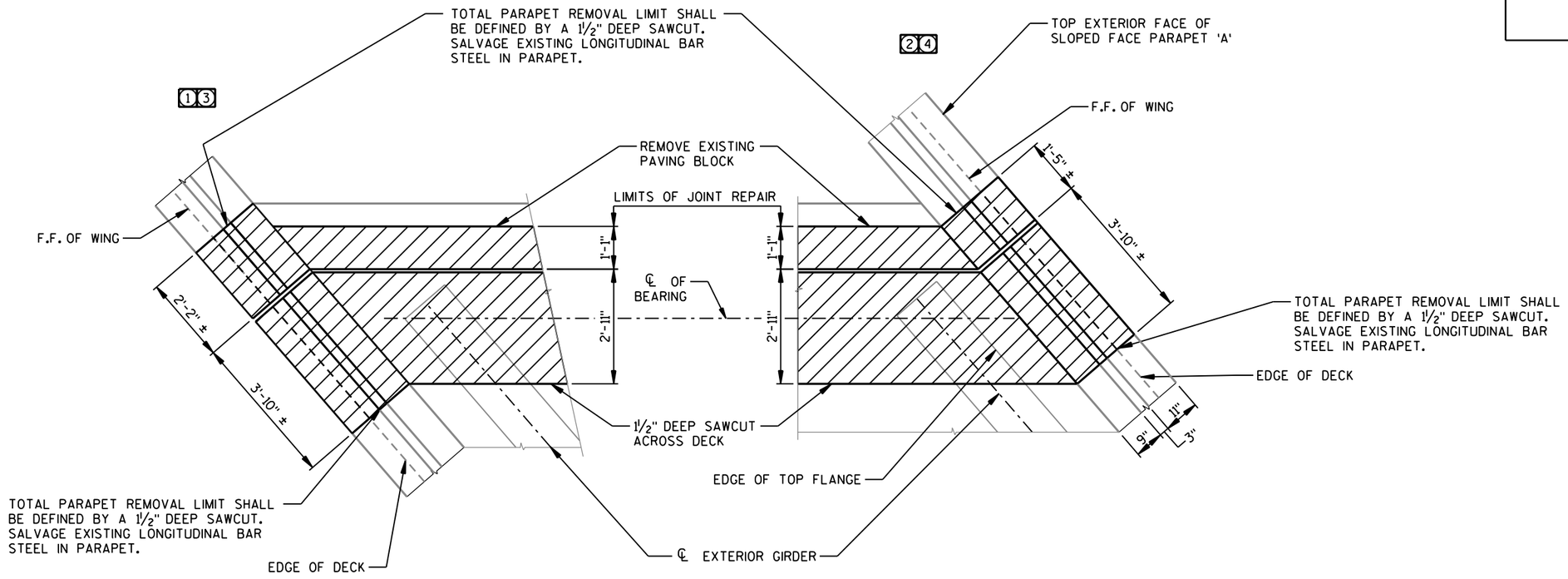
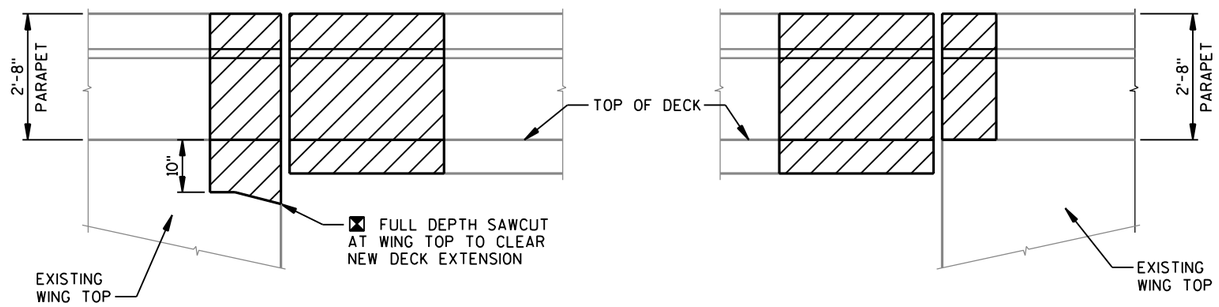
STATE PROJECT NUMBER

6707-00-82



TYPICAL PLAN DETAILS



WINGS 1 & 3

WINGS 2 & 4

PARAPET ELEVATION

(LOOKING AT OUTSIDE FACE OF PARAPET)

LEGEND

F.F. - FRONT FACE

- INDICATES WING NUMBER

- COAT EXPOSED BAR STEEL WITH EPOXY IN ACCORDANCE WITH SUBSECTION 505.2.4.2 OF THE STANDARD SPECIFICATIONS.

- MINIMUM REMOVAL LIMITS AT JOINT REPAIR

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-11-27

DRAWN BY RLR | PLANS CK'D. JAS

PARAPET & DECK REMOVAL DETAILS

SHEET 7 OF 7

71

FILE= 93351_B-11-27_03.DGN
DATE= 8/16/2017

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STATE PROJECT NUMBER
6707-00-82

NOTES:

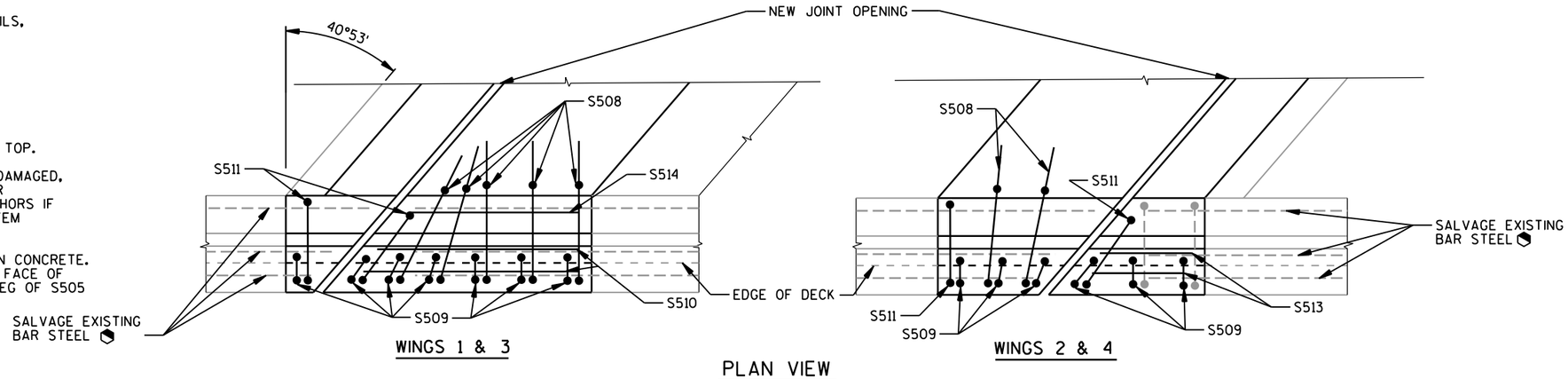
SEE SHEET 5 FOR BILL OF BARS, BAR BEND DETAILS, AND OTHER DETAILS OF JOINTS AND DIAPHRAGMS AT ENDS OF DECK.

LEGEND

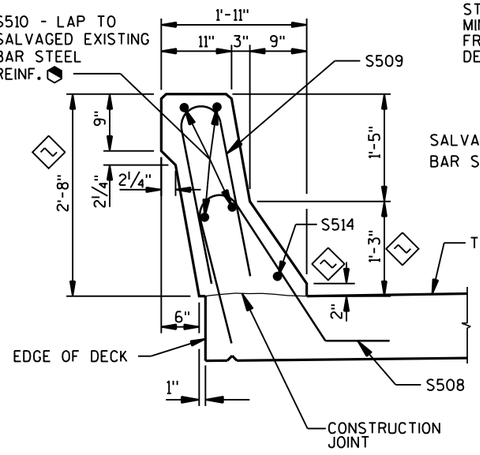
◇2 — REDUCE DIMENSION AS REQUIRED TO MATCH NEW PARAPET TOP WITH EXISTING PARAPET TOP.

⬔ — IF EXISTING BAR STEEL REINFORCEMENT IS DAMAGED, INSTALL ADHESIVE ANCHORS NO. 5 BAR NEAR LOCATON OF DAMAGED BARS. ADHESIVE ANCHORS IF REQUIRED SHALL BE INCLUDED IN THE BID ITEM "JOINT REPAIR".◑

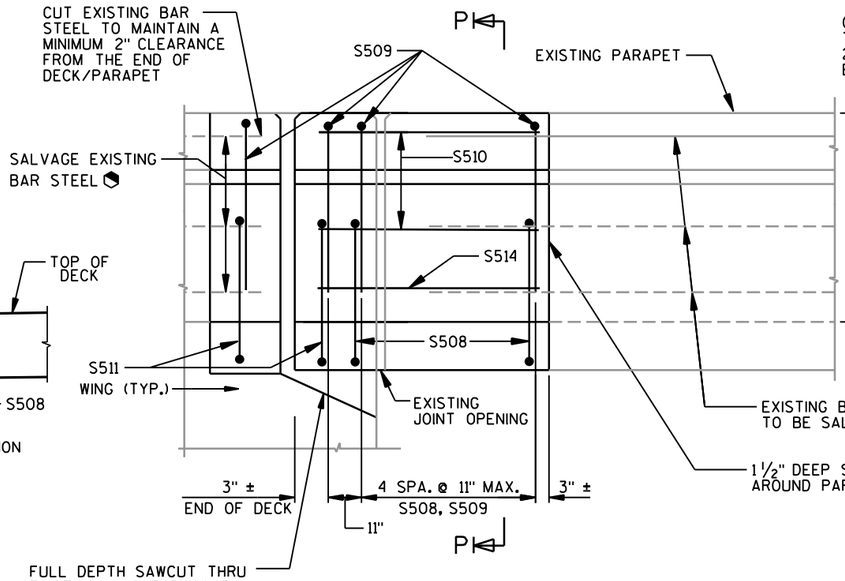
◑ — ADHESIVE ANCHORS NO. 5 BAR. EMBED 1'-6" IN CONCRETE. ANCHOR HOLES SHALL BE 4" CLEAR MIN. TO FACE OF EXISTING CONCRETE. TURN 10" HORIZONTAL LEG OF S505 BARS AS NECESSARY TO FIT.



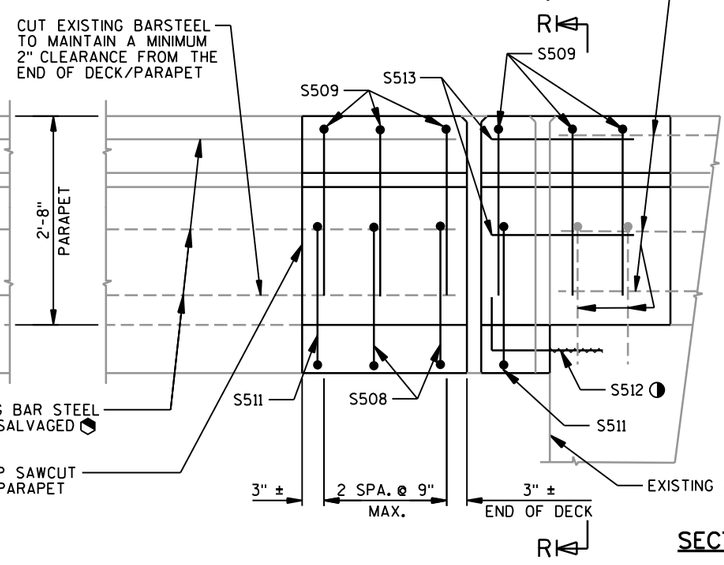
PLAN VIEW



SECTION P–P THRU PARAPET



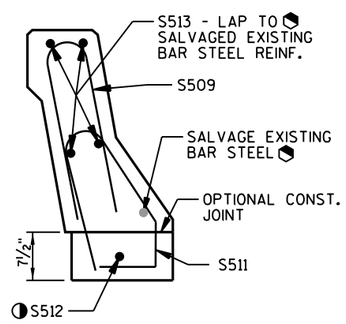
WINGS 1 & 3



PARAPET ELEVATION

(LOOKING AT OUTSIDE FACE OF PARAPET)

WINGS 2 & 4



SECTION R–R THRU PARAPET

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-11-27

DRAWN BY RLR | PLANS CK'D. JAS

PARAPET DETAILS

SHEET 4 OF 7
72

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DATE= 8/16/2017

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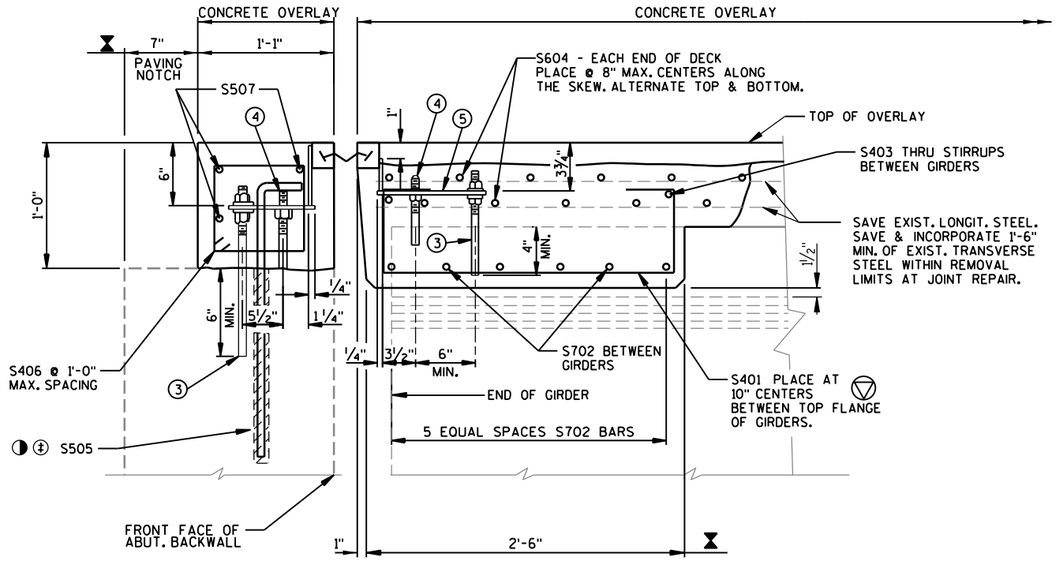
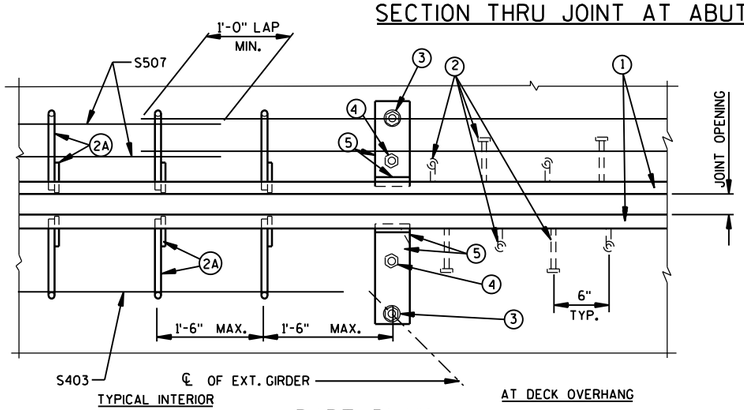
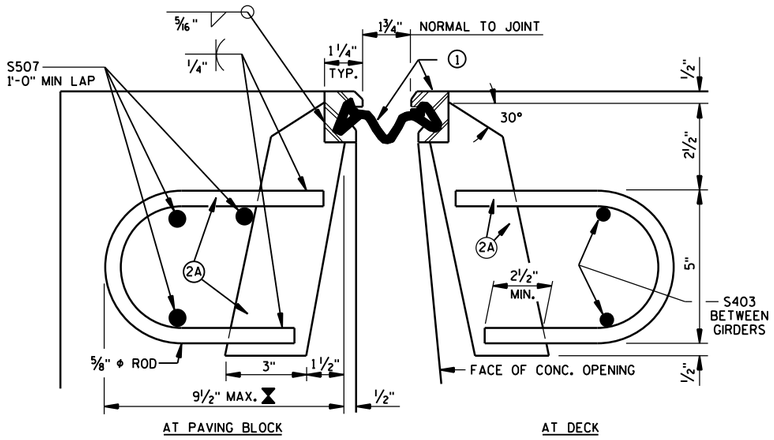
STATE PROJECT NUMBER
6707-00-82



SECTION THRU JOINT AT ABUTMENTS

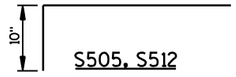


PART PLAN

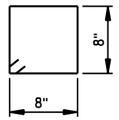


SECTION THRU JOINT

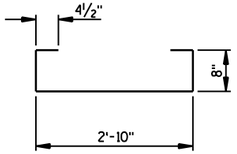
AT INTERIOR BAYS BETWEEN EXTERIOR GIRDERS.



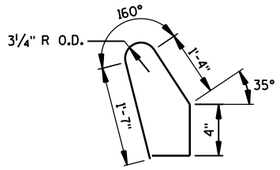
S505, S512



S406



S401



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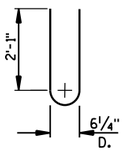

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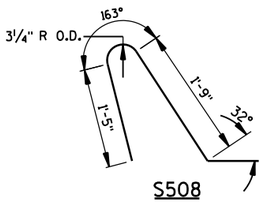
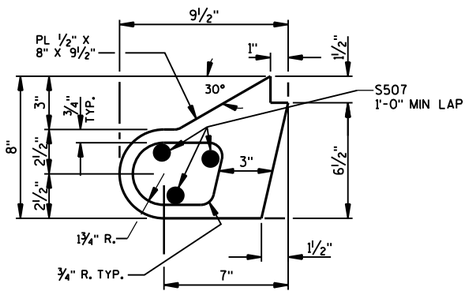


S508



ALTERNATE STRIP SEAL ANCHOR

AT INTERIOR BAYS BETWEEN EXTERIOR GIRDERS.

BILL OF BARS (COATED) 3840 LBS.

MARK	NO. REQ'D	LENGTH	BENT	LOCATION
S401	64	4'-7"	X	DIAPH @ ABUT. - STIRRUP - VERT.
S702	48	8'-0"		DIAPH @ ABUT. - BETWEEN GIRDERS - TRANS.
S403	24	8'-0"		DECK ENDS BETWEEN GIRDERS - THRU STRIP SEAL & STIRRUPS - TRANS.
S604	22	48'-0"		DECK ENDS - ABOVE DIAPHRAGM - TRANS.
S505	98	2'-11"	X	ABUTMENT BACKWALL TOP - RESIN ANCHOR - VERT.
S406	98	3'-2"	X	ABUTMENT BACKWALL TOP - VERT. STIRRUP
S507	42	7'-9"		ABUTMENT BACKWALL TOP - TRANS.
S508	14	4'-9"	X	PARAPET @ WINGS - LOWER STIRRUP - VERT.
S509	26	5'-0"	X	PARAPET - UPPER STIRRUP - VERT.
S510	8	3'-10"		PARAPET @ WINGS 1 & 3 - LONGIT.
S511	8	4'-5"	X	PARAPET @ WINGS - LOWER STIRRUP - VERT.
S512	2	2'-6"	X	WINGS 2 & 4 UNDER PARAPET - RESIN ANCHOR - LONGIT.
S513	8	1'-10"		PARAPET @ WINGS 2 & 4 - LONGIT.
S514	2	3'-3"		PARAPET @ WINGS 1& 3 - LONGIT.

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

EPOXY COAT ALL BARSTEEL REINFORCEMENT.

LEGEND

- ‡ · REMOVE EXISTING VERTICAL REINFORCING BARS DURING REMOVAL OF PAVING BLOCK. REPLACE WITH "ADHESIVE ANCHORS NO. 5 BAR" SPACED AT 1'-0".
- ◑ · ADHESIVE ANCHORS NO. 5 BAR EMBED 1'-6" IN CONCRETE. ANCHOR HOLES SHALL BE 4" CLEAR MIN. TO FACE OF EXISTING CONCRETE. TURN 10" HORIZONTAL LEG OF S505 BARS AS NECESSARY TO FIT.
- ▽ · DIMENSION IS GIVEN NORMAL TO ℄ OF GIRDER.
- ⧗ · DIMENSION IS GIVEN NORMAL TO THE ℄ OF ABUTMENT.
- (1) NEOPRENE STRIP SEAL (4 - INCH) AND STEEL EXTRUSIONS. SET JOINT OPENING AT 1¾". JOINT OPENING GIVEN NORMAL TO JOINT.
- (2) STUDS ⅝" ϕ X 6⅜" LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS & BEND AS SHOWN AFTER WELDING. SEE SHEET 6.
- (2A) ½" THICK ANCHOR PLATE WITH ⅝"ϕ ROD OR ALTERNATE STRIP SEAL ANCHOR. WELD ROD TO ANCHOR PLATE, WELD ANCHOR PLATE TO NO. 1 AT 1'-6" CTRS. MAX. BETWEEN GIRDERS.
- (3) ¾" ϕ THREADED ROD WITH 2 NUTS AND PLATE WASHERS. GROUT THREADED RODS INTO FIELD DRILLED HOLES IN ABUTMENT BACKWALL AS SHOWN AND ON ℄ OF GIRDERS.
- (4) ¾"ϕ THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.
- (5) FABRICATE SUPPORT FROM 3" X ½" BAR AS SHOWN OR EQUIVALENT. ONE PER GIRDER PER SIDE. FIELD OR SHOP WELD TO NO. 1. IF FIELD WELDED, COVER WELDED AREAS WITH EPOXY-COATING MATERIAL. PROVIDE 1½" ϕ HOLE FOR NO. 3 & 1" ϕ HOLE FOR NO. 4.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-11-27

DRAWN BY RLR | PLANS CK'D. JAS

STRIP SEAL EXPANSION JOINT

SHEET 5 OF 7
73

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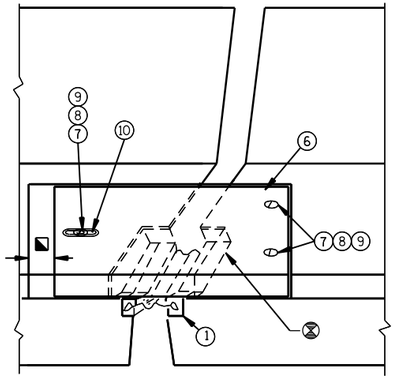
FILE= 93351_B-11-27_05.DGN
DATE=8/29/2017

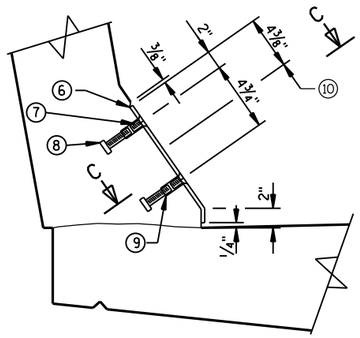
93351_B-11-27_05.dgn 8/29/2017 7:55:39 AM jsnyder

STATE PROJECT NUMBER

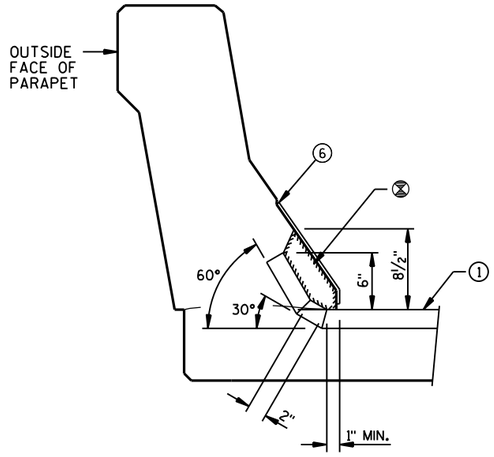
6707-00-82



VIEW OF PARAPET PLATES FROM ROADWAY



SECTION A-A



SECTION B-B

LEGEND

(1) NEOPRENE STRIP SEAL (4 - INCH) AND STEEL EXTRUSIONS. SET JOINT OPENING AT 1 ¾". JOINT OPENING GIVEN NORMAL TO JOINT.

(2) STUDS ⅝" Φ X 6⅜" LONG AT 6" ALTERNATE CENTERS. WELD TO EXTRUSIONS & BEND AS SHOWN AFTER WELDING.

(2A) ½" THICK ANCHOR PLATE WITH ⅝"Φ ROD OR ALTERNATE STRIP SEAL ANCHOR. WELD ROD TO ANCHOR PLATE. WELD ANCHOR PLATE TO NO. 1 AT 1'-6" CTRS. BETWEEN GIRDERS.

(3) ¾" Φ THREADED ROD WITH 2 NUTS AND PLATE WASHERS. FIELD WELD THREADED ROD TO TOP FLANGE OR ATTACH BY BOLTING THRU FLANGE. ON ABUTMENT SIDE, GROUT THREADED ROD INTO FIELD DRILLED HOLES IN ABUTMENT BACKWALL AS SHOWN.

(4) ¾"Φ THREADED ROD WITH NUT. TACK WELD NUT TO NO. 5.

(5) FABRICATE SUPPORT FROM 3" X ½" BAR AS SHOWN OR EQUIVALENT, ONE PER GIRDER PER SIDE. FIELD OR SHOP WELD TO NO. 1. IF FIELD WELDED, COVER WELDED AREAS WITH EPOXY-COATING MATERIAL. PROVIDE 1½" Φ HOLE FOR NO. 3 & 1" Φ HOLE FOR NO. 4.

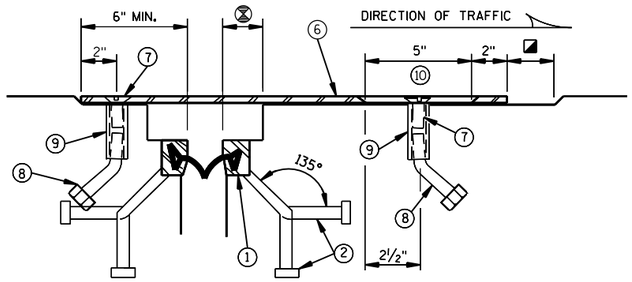
(6) GALVANIZED PLATE ⅜" x 12" x 2'-2" LONG WITH HOLES FOR NO. 7. BEND AS SHOWN.

(7) ¾" Φ x 1½" STAINLESS STEEL SOCKET FLAT HEAD SCREWS WITH ANTI-SEIZE LUBRICANT. PLACE IN COUNTERSUNK HOLE. RECESS 1/16" BELOW PLATE SURFACE.

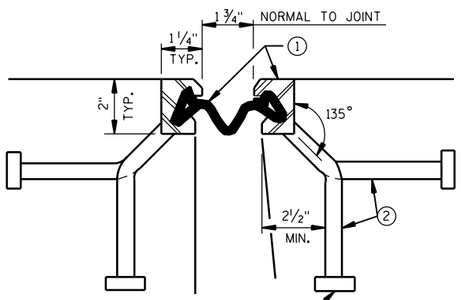
(8) ¾" Φ x 4" GALV. HEX HEAD BOLT. BEND 45°.

(9) ¾" Φ x 2¼" GALV. THREADED COUPLING.

(10) 1" x 5" SLOTTED COUNTERSUNK HOLE FOR NO. 7. PLACE SLOT PARALLEL TO DIRECTION OF MOVEMENT.



SECTION C-C

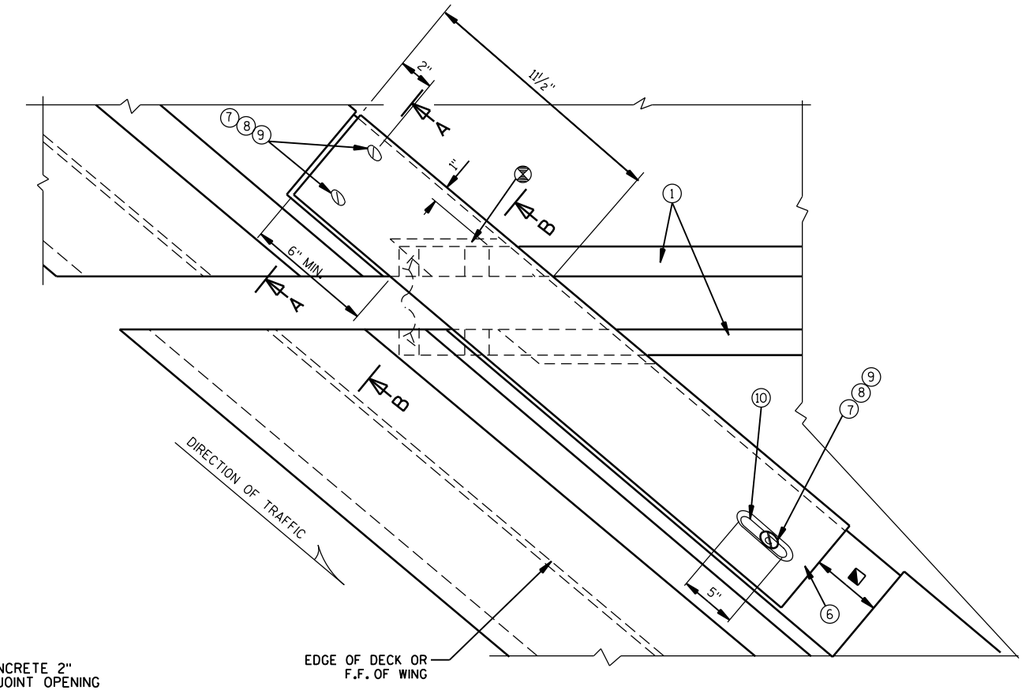


SECTION THRU JOINT

EXTERIOR GIRDER TO EDGE OF DECK & AT PARAPETS

⊗ — BLOCK OUT CONCRETE 2" EACH SIDE OF JOINT OPENING

◪ — JOINT OPENING DIMENSION ALONG SKEW PLUS ½"



PLAN AT PARAPET

NOTES

ONE FIELD SPLICE PERMITTED IN STEEL EXTRUSIONS, UNLESS MORE ARE NEEDED FOR STAGED CONSTRUCTION. IF SPLICE IS USED, DETAILS SHALL BE SUBMITTED FOR APPROVAL. NO SPLICING PERMITTED IN NEOPRENE STRIP SEAL.

AFTER FABRICATION, BUT BEFORE SHIPMENT, STRAIGHTEN STEEL EXTRUSIONS SUCH THAT THEY SHALL BE FREE FROM WARP, TWIST & SWEEP.

FABRICATOR SHALL PROVIDE MEANS OF KEEPING GALVANIZED EXTRUSIONS CLEAN & SMOOTH DURING SHIPMENT AND PRIOR TO APPLYING LUBRICANT ADHESIVE FOR NEOPRENE GLAND INSTALLATION.

SANDBLAST PLATES & EXTRUSIONS AFTER FABRICATION IN ACCORDANCE WITH SSPC SP. #6 "COMMERCIAL BLAST CLEANING". AFTER BLAST CLEANING, THE PLATES & EXTRUSIONS SHALL BE HOT DIPPED GALVANIZED.

ANCHOR SYSTEM NO. 8 & NO. 9 SHALL CONFORM TO ASTM A307 & SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 CLASS C & D.

STRIP SEAL EXPANSION JOINT ASSEMBLY, INCLUDING PARAPET PLATES, ANCHOR STUDS & HARDWARE, CONNECTIONS AND FIELD DRILLING, WILL BE PAID FOR AT THE LUMP SUM PRICE BID FOR "EXPANSION DEVICE B-11-27".

ALL NEW TRANSVERSE STEEL SHALL BE PLACED PARALLEL TO THE JOINT.

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NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-11-27

DRAWN BY RLR | PLANS CK'D. JAS

STRIP SEAL EXPANSION JOINT DETAILS

SHEET 6 OF 7
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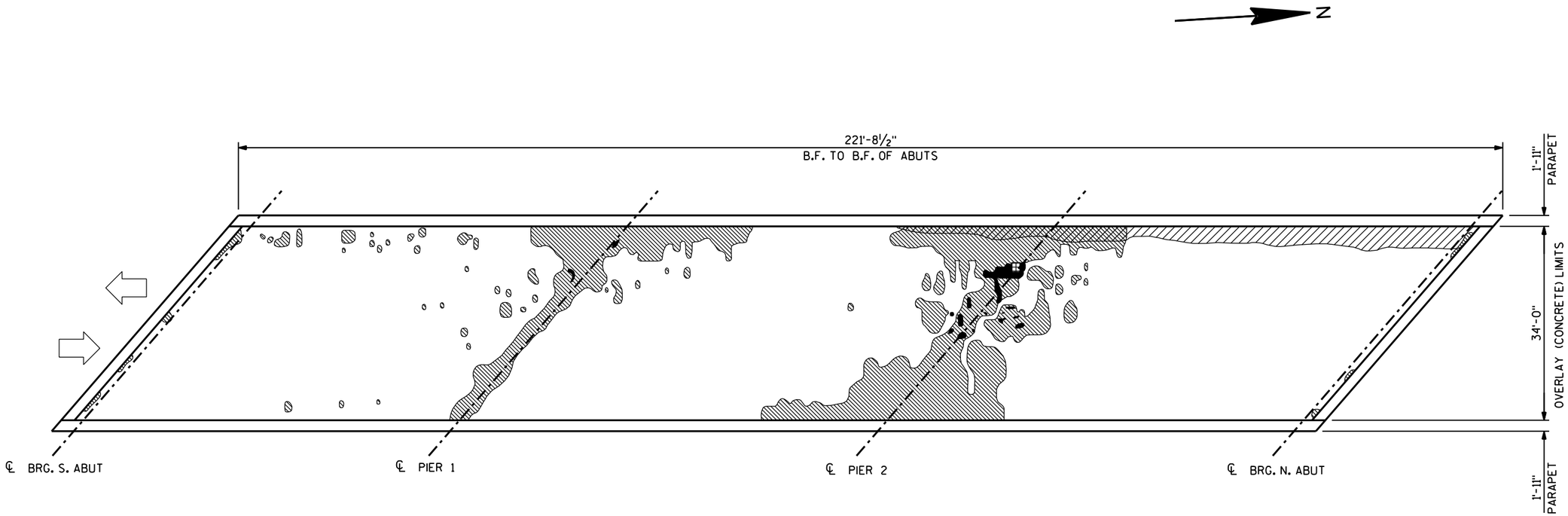
FILE= 93351_B-11-27_06.DGN
DATE= 8/29/2017

93351_B-11-27_06.dgn 8/29/2017 8:00:13 AM jsnyder

STATE PROJECT NUMBER
6707-00-82

FOR REFERENCE ONLY



PLAN

INFRARED DECK INSPECTION RESULTS

INFRARED INSPECTION DATE: 7/15/15

FIELD OBSERVATIONS SUMMARY		STRUCTURE NO. B-11-27	
ITEM	UNIT	QUANT.	%
TOTAL AREA	ft^2	7487	
SHADE/DEBRIS	ft^2	271	
DELAMINATION	ft^2	1102	15.3
SPALL/SEALANT	ft^2	29	0.4
DEBOND	ft^2	N/A	N/A
ASPHALT PATCH	ft^2	2	<0.1
CONCRETE PATCH	ft^2	0	0

LEGEND

- SHADE/DEBRIS
- DELAMINATION
- SPALL/SEALANT
- DEBOND
- ASPHALT PATCH
- CONCRETE PATCH

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-11-27

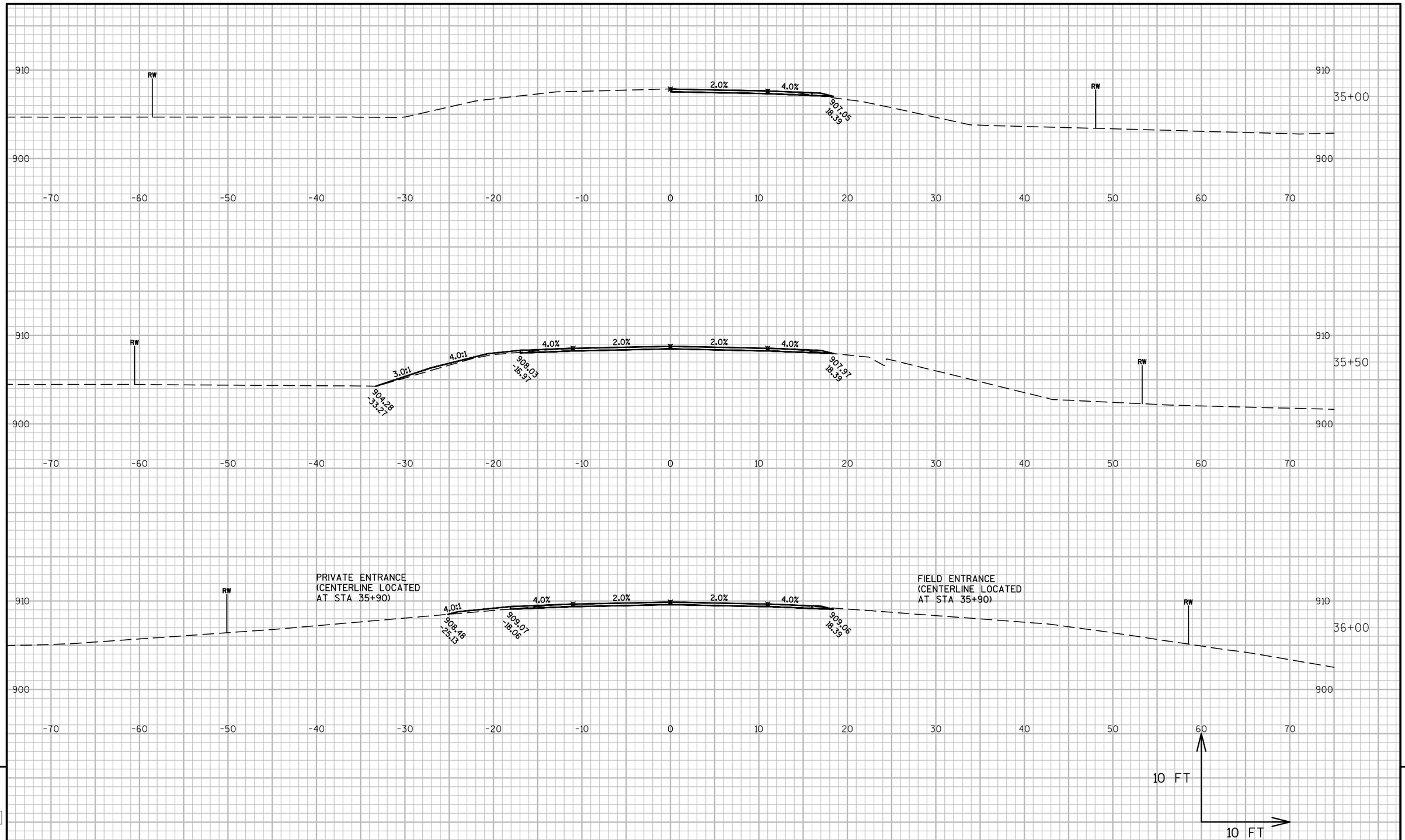
DRAWN BY JAS | PLANS CK'D. DHW

DECK PREPARATION DETAILS

SHEET 7 OF 7
75

FILE= 93351_B-11-27_07.DGN
DATE= 8/29/2017

93351_B-11-27_07.dgn 8/29/2017 8:02:27 AM jsnyder



PROJECT NO: 6707-00-82	HWY: STH 146	COUNTY: COLUMBIA	CROSS SECTIONS: STH 146	SHEET 76	E

FILE NAME : \\FIWMAD7P3158\N3PUBLIC\PDS\C3D\67070002\SHEETSPLAN\090201 XS.DWG
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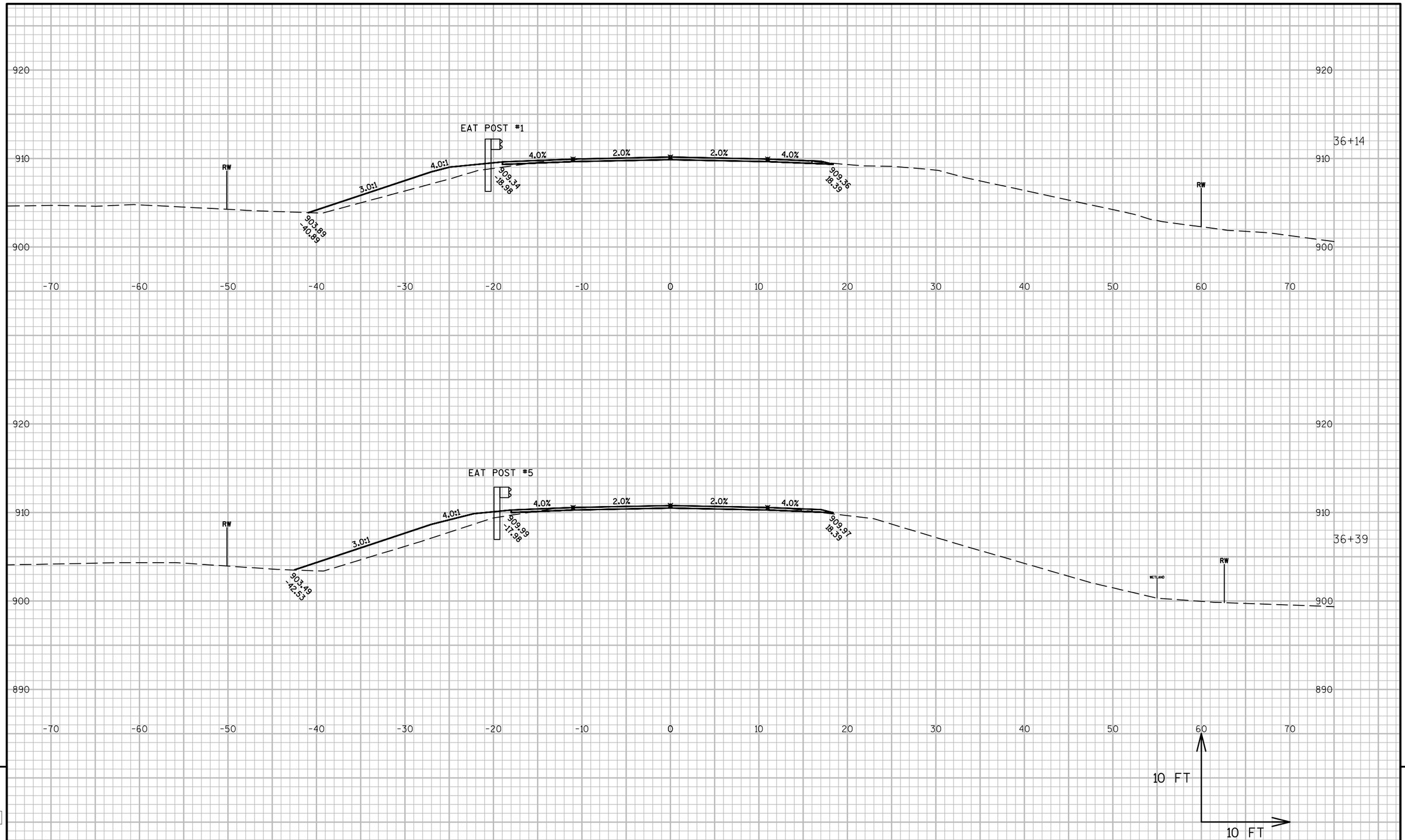
PLOT DATE : 10/12/2017 10:21 AM PLOT BY : KRUEGER, MARIAH R PLOT NAME : PLOT SCALE : 1 IN:10 FT



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LAYOUT NAME - SECTION SHEET - (100)
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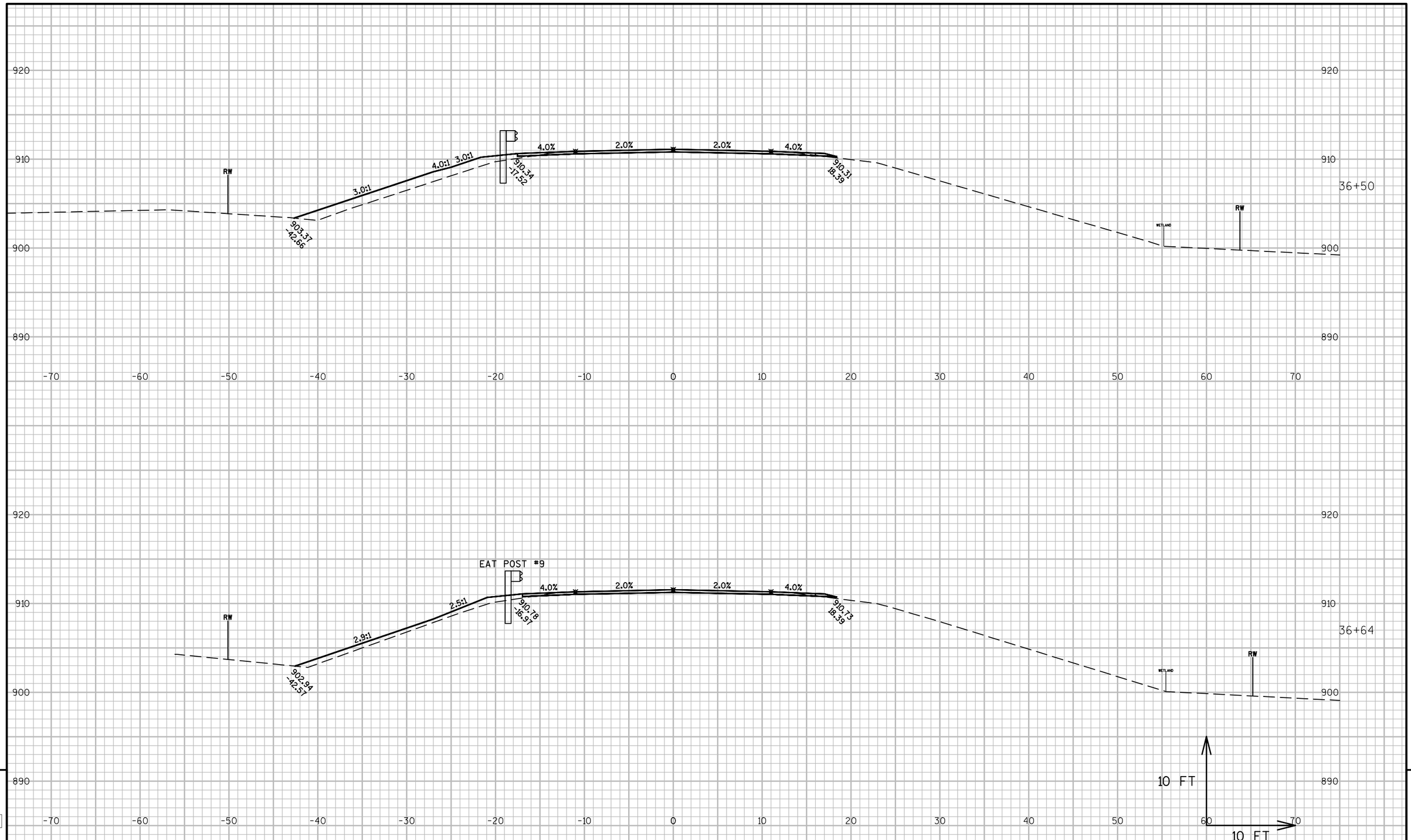
WISDOT/CADDS SHEET 49



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LAYOUT NAME - SECTION SHEET - (101)
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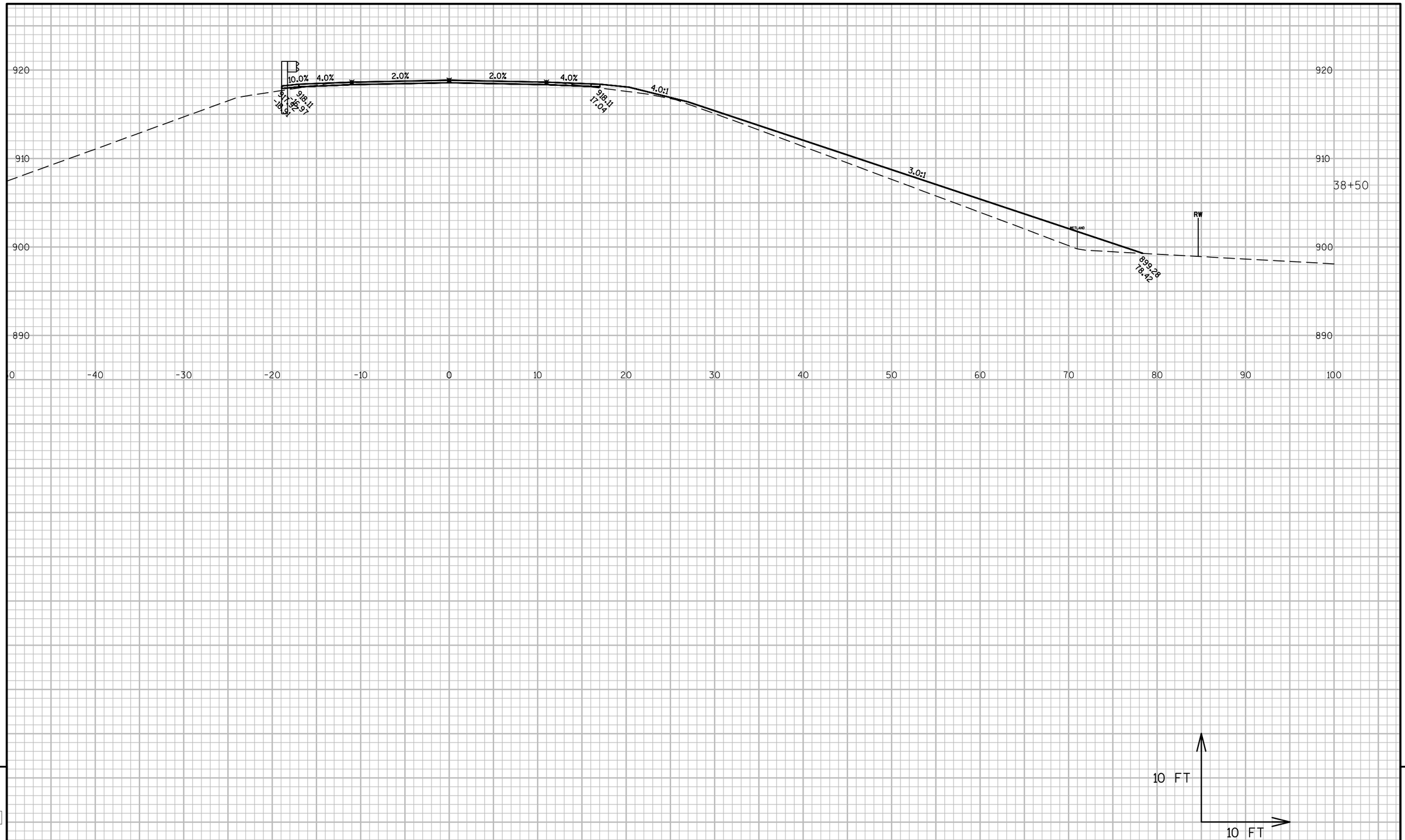
WISDOT/CADDS SHEET 49



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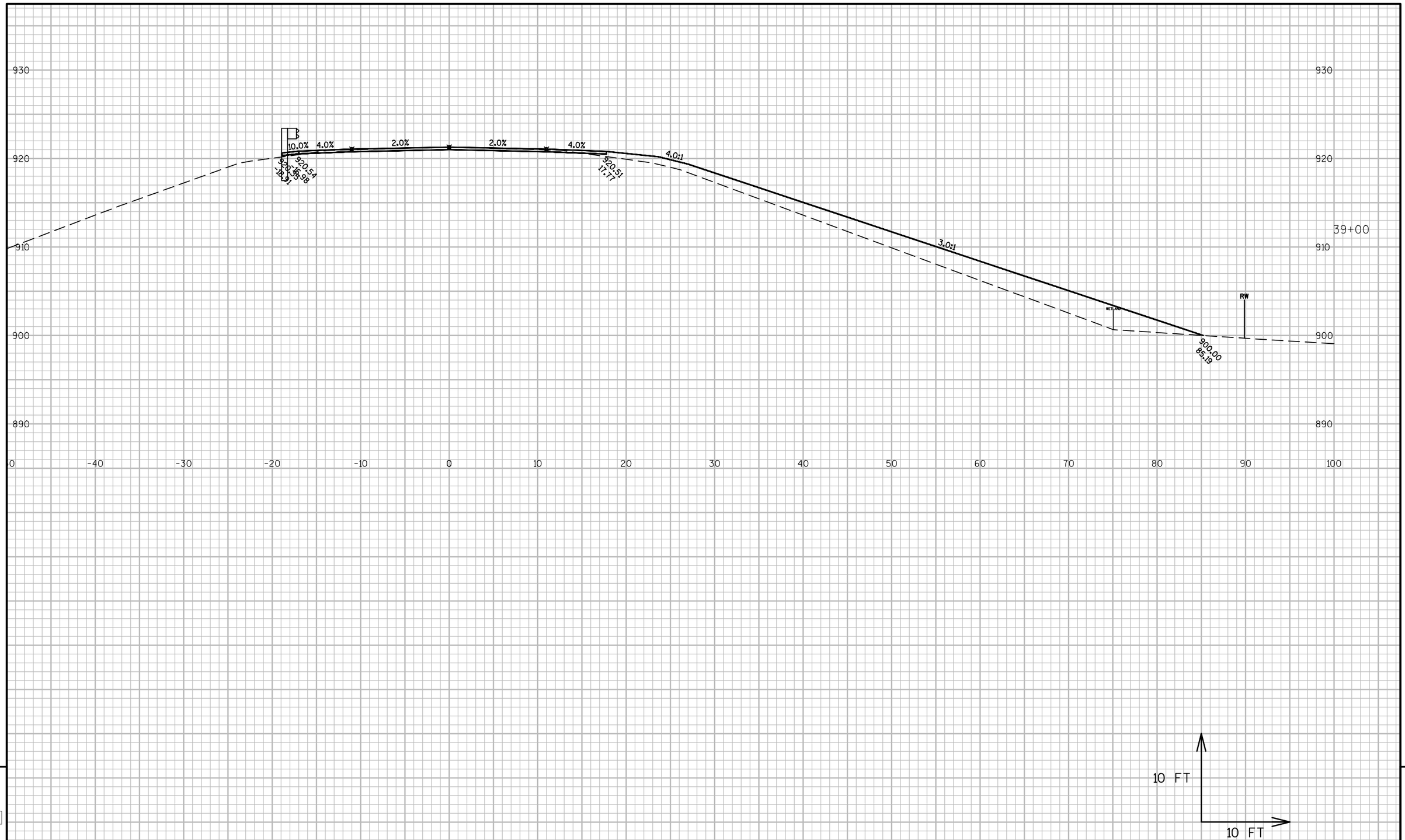

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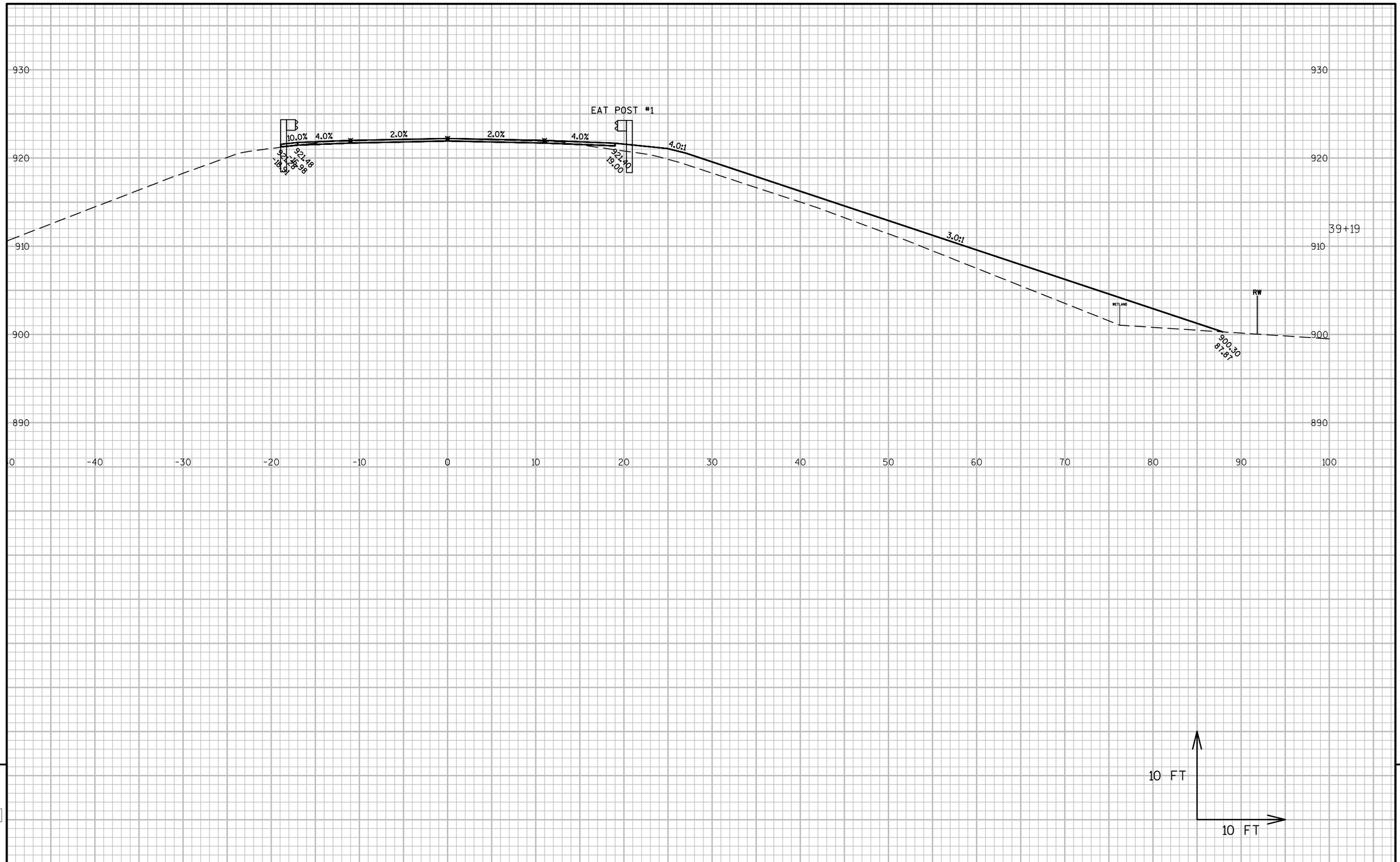

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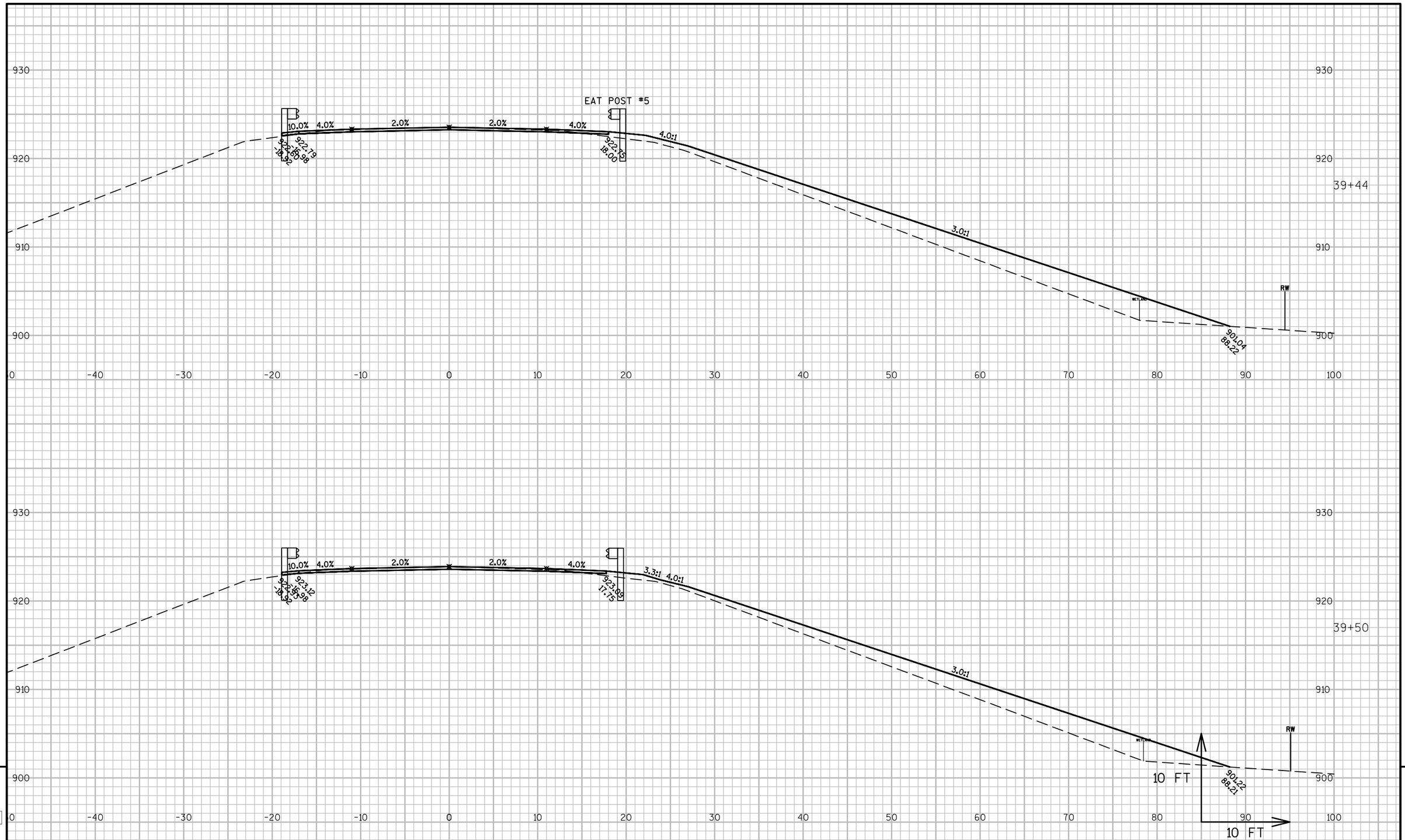

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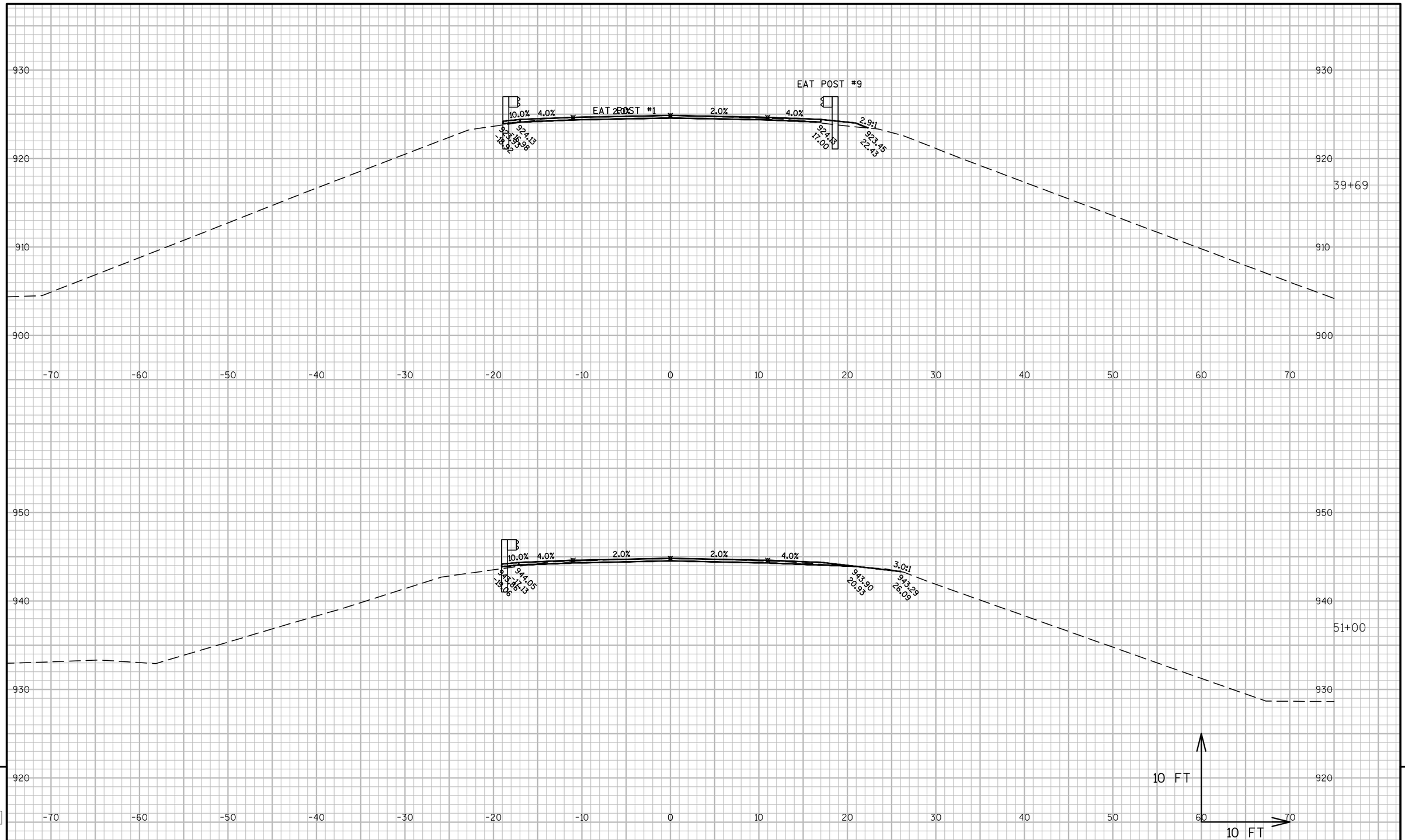

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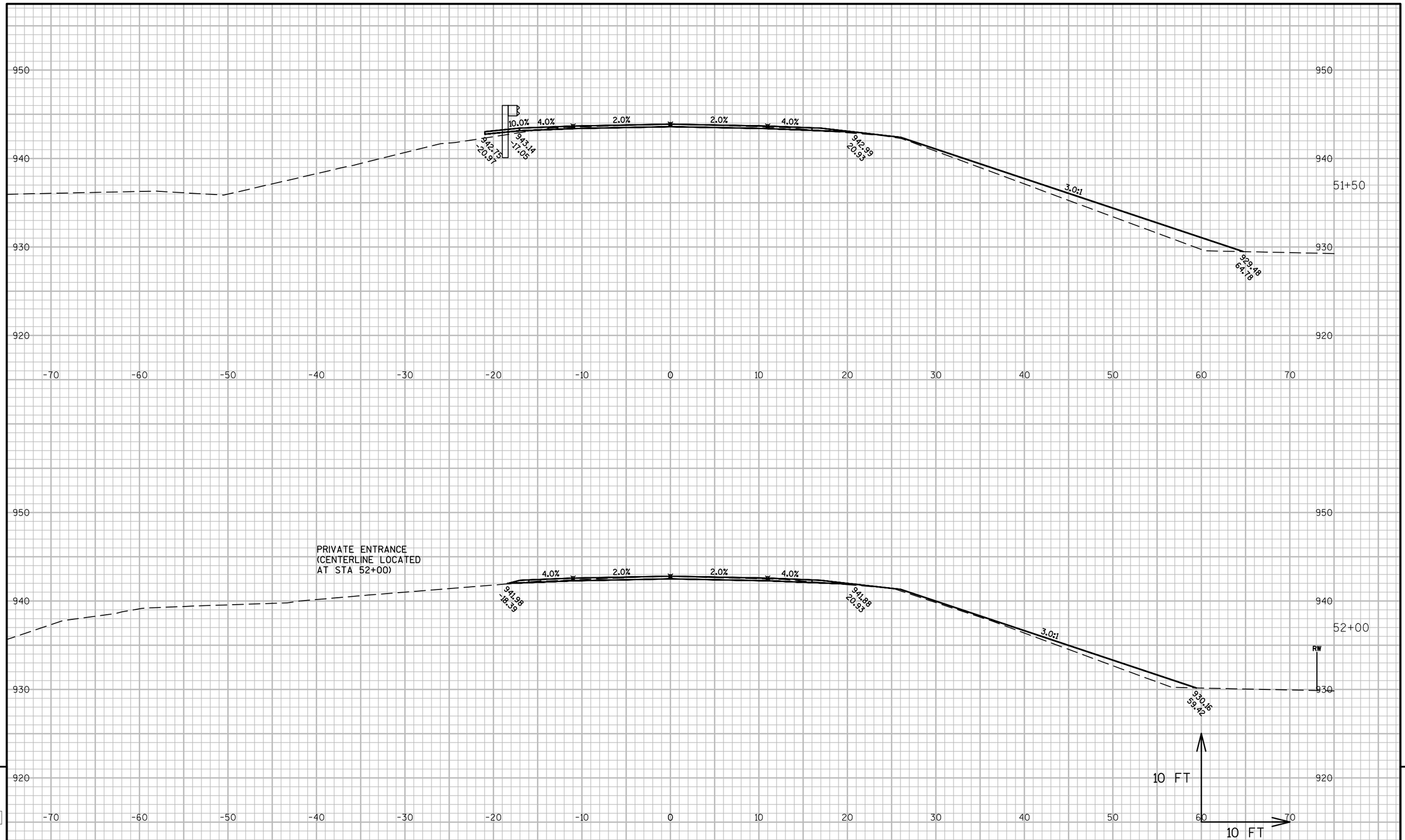

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LAYOUT NAME - SECTION SHEET - (107)

PLOT DATE : 10/12/2017 10:21 AM PLOT BY : KRUEGER, MARIAH R PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

Notes

Wisconsin Department of Transportation

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