SUP

PROJECT ID: 1180-49-71

WITH: N/A

COUNTY: BAYFIELD

JANUARY 2018

ORDER OF SHEETS

TOTAL SHEETS = 140

24

N

DESIGN DESIGNATION

A.A.D.T.	2018	= 5,510
A.A.D.T.	2038	= 6,150
D.H.V.		= 820
D.D.		= 61/39
T.		= 9.3%
DESIGN SPEED		= 60 MPH
ESALS		= 1,500,000

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
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

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

UTILITIES

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

STATE OF WISCONSIN

DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

BRULE - INO

IRON RIVER BRIDGE B-04-0116

USH 2

BAYFIELD COUNTY

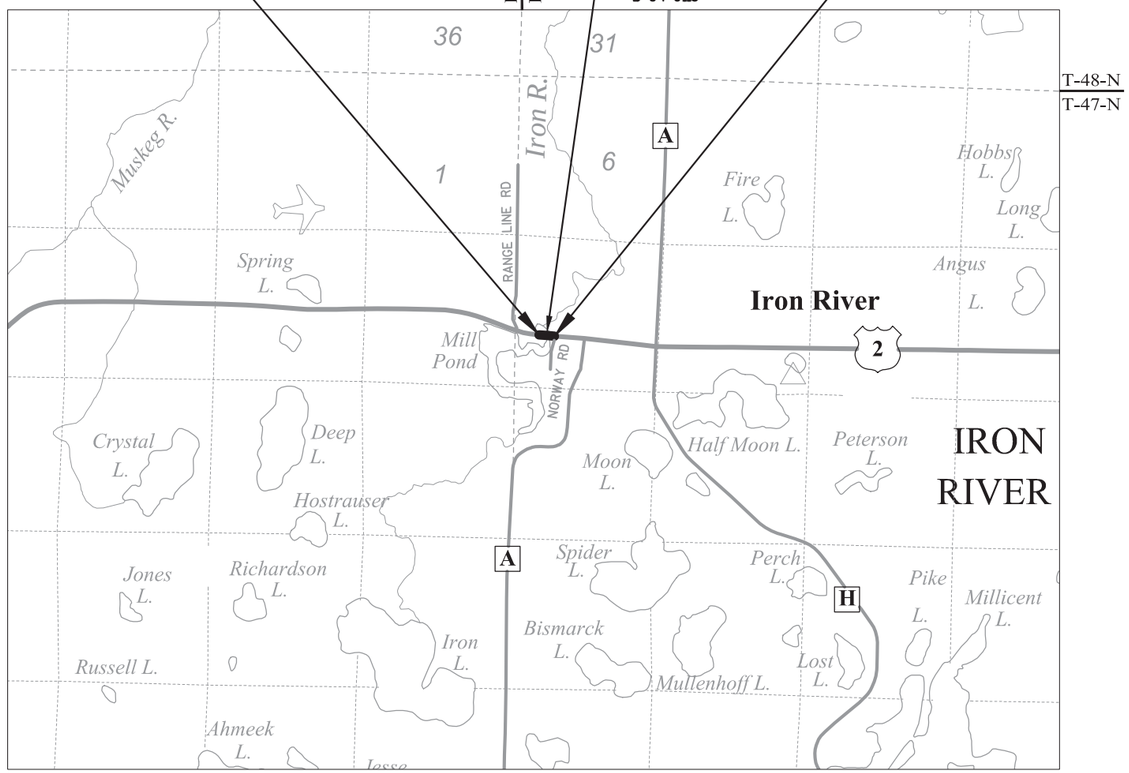
STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
1180-49-71	WISC 2018057	1

STATE PROJECT NUMBER
1180-49-71

BEGIN PROJECT
STA 1564+80
Y=449,495.25
X=681,815.27

END PROJECT
STA 1567+85

PROPOSED STRUCTURE
B-04-0116



LAYOUT
SCALE 0 1 MILE

TOTAL NET LENGTH OF CENTERLINE = 0.058

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), BAYFIELD COUNTY (NAD 83) 2011 ADJUSTMENT.

ALL ELEVATIONS ON THIS PROJECT ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), 2012 ADJUSTMENT.

emcs inc
500 North 17th Avenue
Wausau, WI 54401
715.845.1081 Fax 715.845.1099

WISCONSIN
STEPHANIE G. CHRISTENSEN
E-39800
WAUSAU, WI
PROFESSIONAL ENGINEER

6/27/17 (Date) Stephanie G. Christensen (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	EMCS, INC.
Designer	EMCS, INC.
Project Manager	PHILIP KEPPERS
Regional Examiner	TOU YANG
Regional Supervisor	DAVID OSTROWSKI

APPROVED FOR THE DEPARTMENT

DATE: 6/28/2017 Philip L. Keppers (Signature)

E

2

GENERAL NOTES

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

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

EXISTING RIGHT-OF-WAY IS APPROXIMATE AND IS BASED ON AVAILABLE RIGHT-OF-WAY PLATS. NO WORK SHALL OCCUR OUTSIDE OF EXISTING RIGHT-OF-WAY.

AS-BUILTS USED FOR PLAN DEVELOPMENT

PROJECT NO: F022-1(39) , CONSTRUCTION YEAR: 1960
PROJECT NO: 1189-2-71 , CONSTRUCTION YEAR: 1979
PROJECT NO: 1180-02-71 , CONSTRUCTION YEAR: 1981
PROJECT NO: 1180-05-71 , CONSTRUCTION YEAR: 1983
PROJECT NO: 0004-44-13 , CONSTRUCTION YEAR: 1985
PROJECT NO: 1180-34-60, CONSTRUCTION YEAR: 1998
PROJECT NO: 1180-36-71, CONSTRUCTION YEAR: 2002
PROJECT NO: 1180-03-65, CONSTRUCTION YEAR: 2007

ORDER OF SECTION 2 SHEETS

TYPICAL SECTIONS

CONSTRUCTION DETAILS

EROSION CONTROL

TRAFFIC CONTROL

UTILITIES

DAHLBERG LIGHT AND POWER COMPANY
(ELECTRIC)
JAMES DAHLBERG
9221 E MAIN STREET
PO BOX 300
SOLON SPRINGS, WI 54873-0300
(715) 378-2205
JIMDAHLBERG@DAHLBERGLIGHTANDPOWER.COM

IRON RIVER SANITARY DISTRICT #1
(WATER)
MIKE MIDDLEMAN
8185 USH 2
IRON RIVER, WI 54847-4655
(715) 372-4710
MIKE@IRONRIVERSANITARY.COM

MERIT NETWORK, INC
(COMMUNICATIONS)
CARLOS RAMOS
1000 OAKBROOK DR, SUITE 200
ANN ARBOR, MI 48104
(715) 527-5767
CRAMOSJR@MERIT.EDU

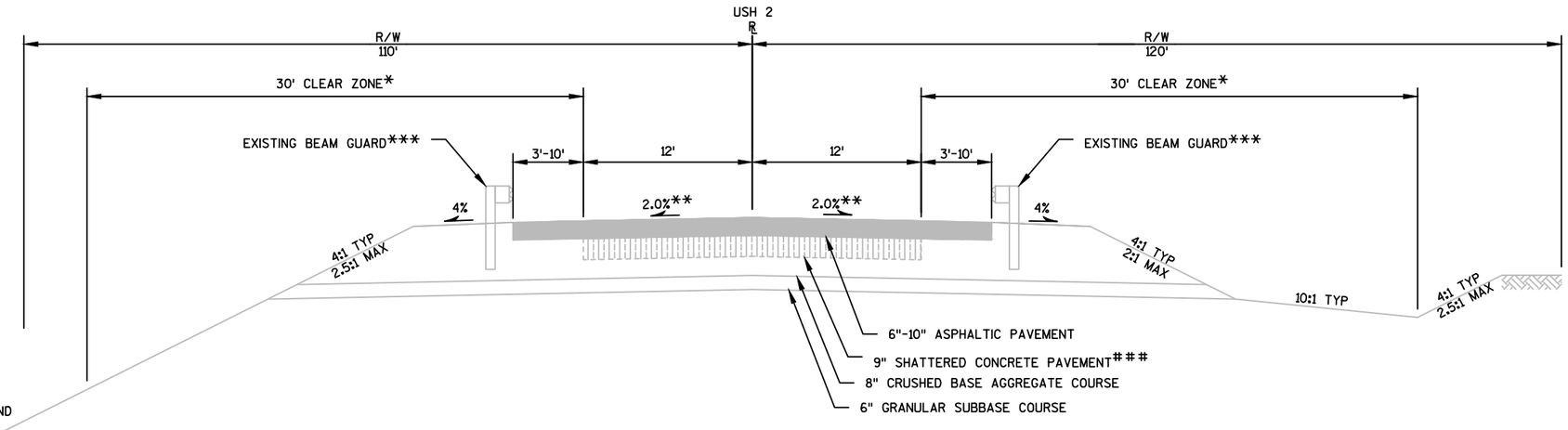
DIGGERS HOTLINE
Dial 811 or (800)242-8511
www.DiggersHotline.com

OTHER CONTACTS

DNR LIAISON
SHAWN HASELEU
810 W MAPLE ST
SPOONER, WI 54801
(715) 635-4228
SHAWN.HASELEU@WISCONSIN.GOV

US ARMY CORPS OF ENGINEERS
WILLIAM SANDE
US ARMY CORPS OF ENGINEERS
15945 RIVERS EDGE DRIVE, SUITE 240
HAYWARD, WI 54843
(715) 934-2170
WILLIAM.M.SANDE@USACE.ARMY.MIL

2



TYPICAL EXISTING SECTION
USH 2

STA 1559+92 - STA 1565+90 (B-04-0015)
STA 1566+84 (B-04-0015) - STA 1570+16

BORING LOG DATA

BORING	LOCATION	OFFSET	ASPHALTIC PAVEMENT	CONCRETE PAVEMENT
B-1	STA 1566+99	9' LT	6"	24"
B-2	STA 1565+72	9' RT	10"	--

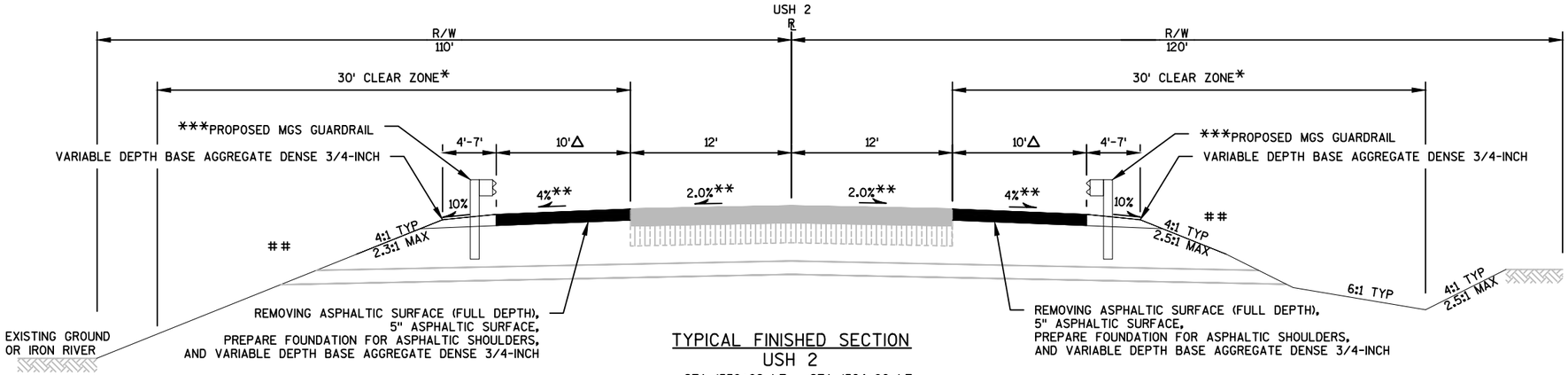
NOTES

* 30' CLEAR ZONE IN LOCATIONS WHERE BEAM GUARD IS NOT PRESENT.

** CROSS SLOPE VARIES DUE TO SUPERELEVATION. SEE SECTION 5 PLAN SHEETS FOR ADDITIONAL INFORMATION.

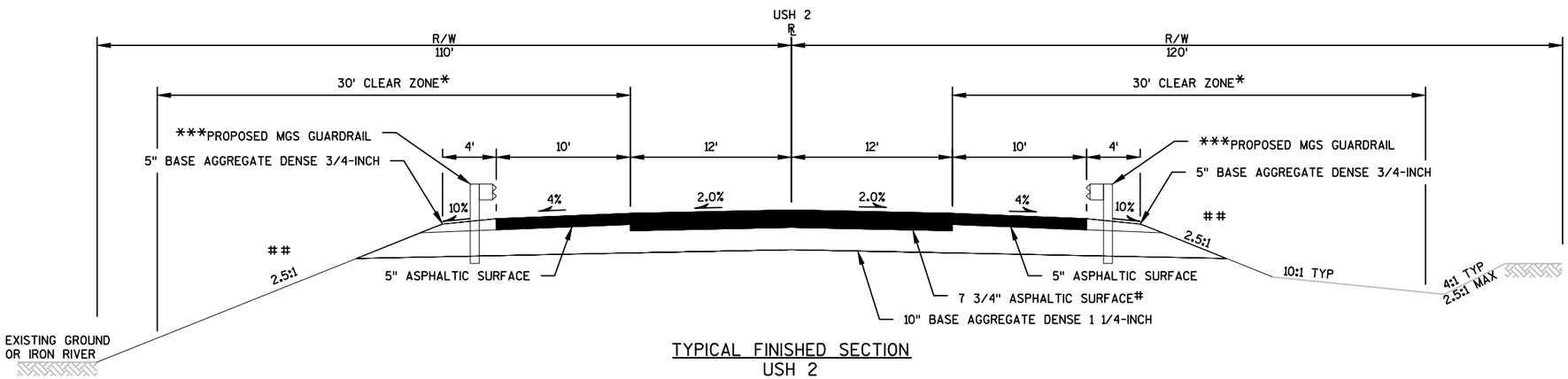
*** SEE SECTION 5 PLAN SHEET FOR LIMITS OF EXISTING BEAM GUARD, PROPOSED GUARDRAIL, AND GRADING.

EXISTING CONCRETE PAVEMENT MAY BE PRESENT WITHIN PROJECT LIMITS PER EXISTING AS-BUILT DATA, SEE BORING LOG TABLE FOR ADDITIONAL INFORMATION.



TYPICAL FINISHED SECTION
USH 2

STA 1559+92 LT - STA 1564+80 LT
STA 1562+48 RT - STA 1564+80 RT
STA 1567+85 LT - STA 1570+16 LT
STA 1567+85 RT - STA 1568+85 RT



TYPICAL FINISHED SECTION
USH 2

STA 1564+80 - STA 1565+65 (B-04-0116)
STA 1567+08 (B-04-0116) - STA 1567+85

NOTES

* 30' CLEAR ZONE IN LOCATIONS WHERE GUARDRAIL IS NOT PRESENT.

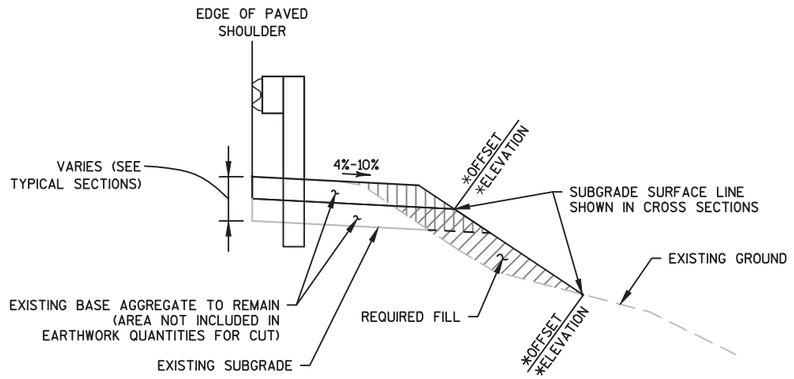
** CROSS SLOPE VARIES DUE TO SUPERELEVATION. SEE SECTION 5 PLAN SHEETS FOR ADDITIONAL INFORMATION.

*** SEE SECTION 5 PLAN SHEET FOR LIMITS OF EXISTING BEAM GUARD, PROPOSED GUARDRAIL, AND GRADING.

SEE SECTION 5 PLAN SHEET AND SDD "CONCRETE BRIDGE APPROACH" FOR CONCRETE PAVEMENT APPROACH SLAB LIMITS AND ADDITIONAL INFORMATION.

TOPSOIL, SEED, FERTILIZER AND EROSION MAT OR RIPRAP. SEE EROSION CONTROL PLANS. SEE SECTION 5 PLAN AND STRUCTURE PLANS FOR RIPRAP LOCATIONS.

△ PAVED SHOULDER TAPERS FROM 3' TO 10' TO MATCH EXISTING PAVED WIDTH. SEE SECTION 5 SHEETS FOR LOCATIONS. PAVED SHOULDER WIDTH MATCHES FACE OF RAIL, SEE CONSTRUCTION DETAIL.



SHOULDER WIDENING EARTHWORK & BASE AGGREGATE FOR GUARDRAIL DETAIL

NOTES

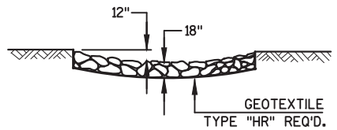
BENCH FILL AS REQUIRED PER STANDARD SPECIFICATION 205.3.2(4).

* OFFSET AND ELEVATION PROVIDED TO THESE POINTS ON THE CROSS SECTIONS.

LEGEND

NEW BASE AGGREGATE DENSE 3/4-INCH

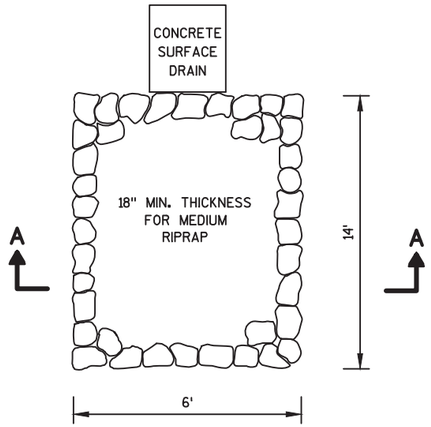
CUT AND FILL SHOWN IN MISCELLANEOUS QUANTITIES



SECTION A-A

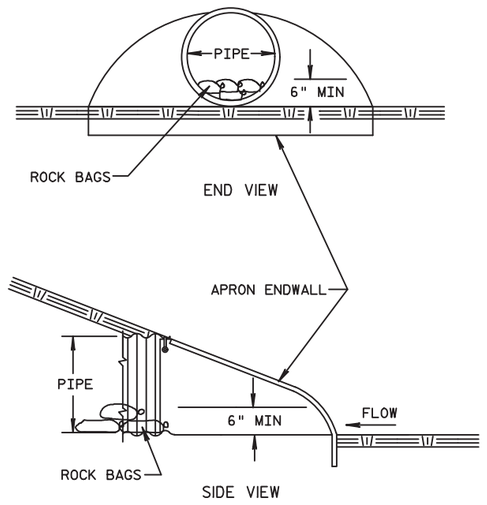
NOTE

VERIFY PROPOSED GUARDRAIL POST LOCATIONS PRIOR TO INSTALLING CONCRETE SURFACE DRAIN.



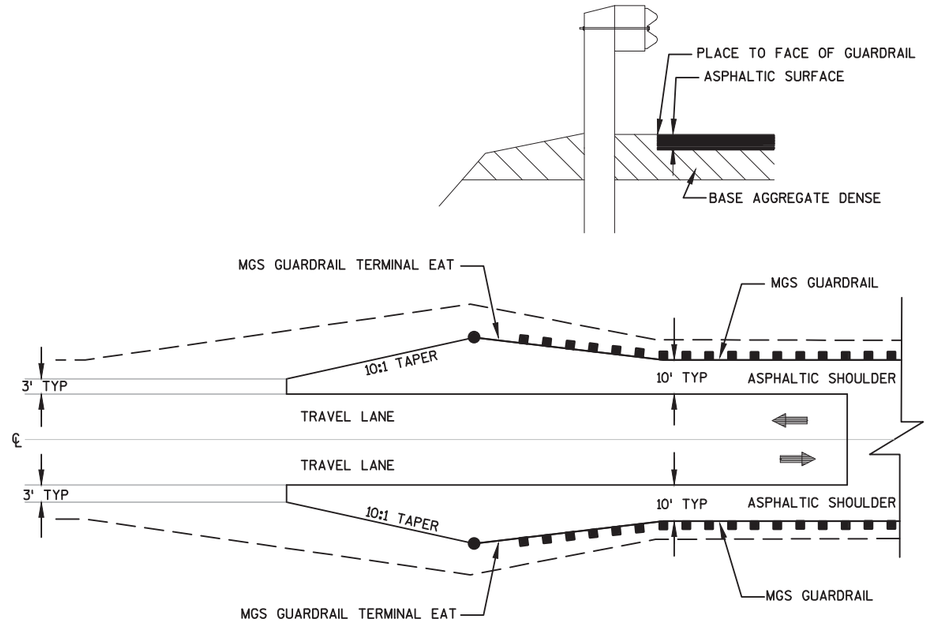
RIPRAP MEDIUM TREATMENT DETAIL AT CONCRETE SURFACE DRAINS

STA 1565+49, LT & RT



CULVERT PIPE CHECKS DETAIL

INSTALL ON INLET END
EACH ROCK BAG PAID AS CULVERT PIPE CHECKS



PAVED SHOULDER AT GUARDRAIL DETAIL

NOTE

SEE PLAN SHEETS AND SDD "MIDWEST GUARDRAIL SYSTEM (MGS) EAT" FOR ADDITIONAL INFORMATION.

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 = 5.61 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 1.44 ACRES

2

LEGEND

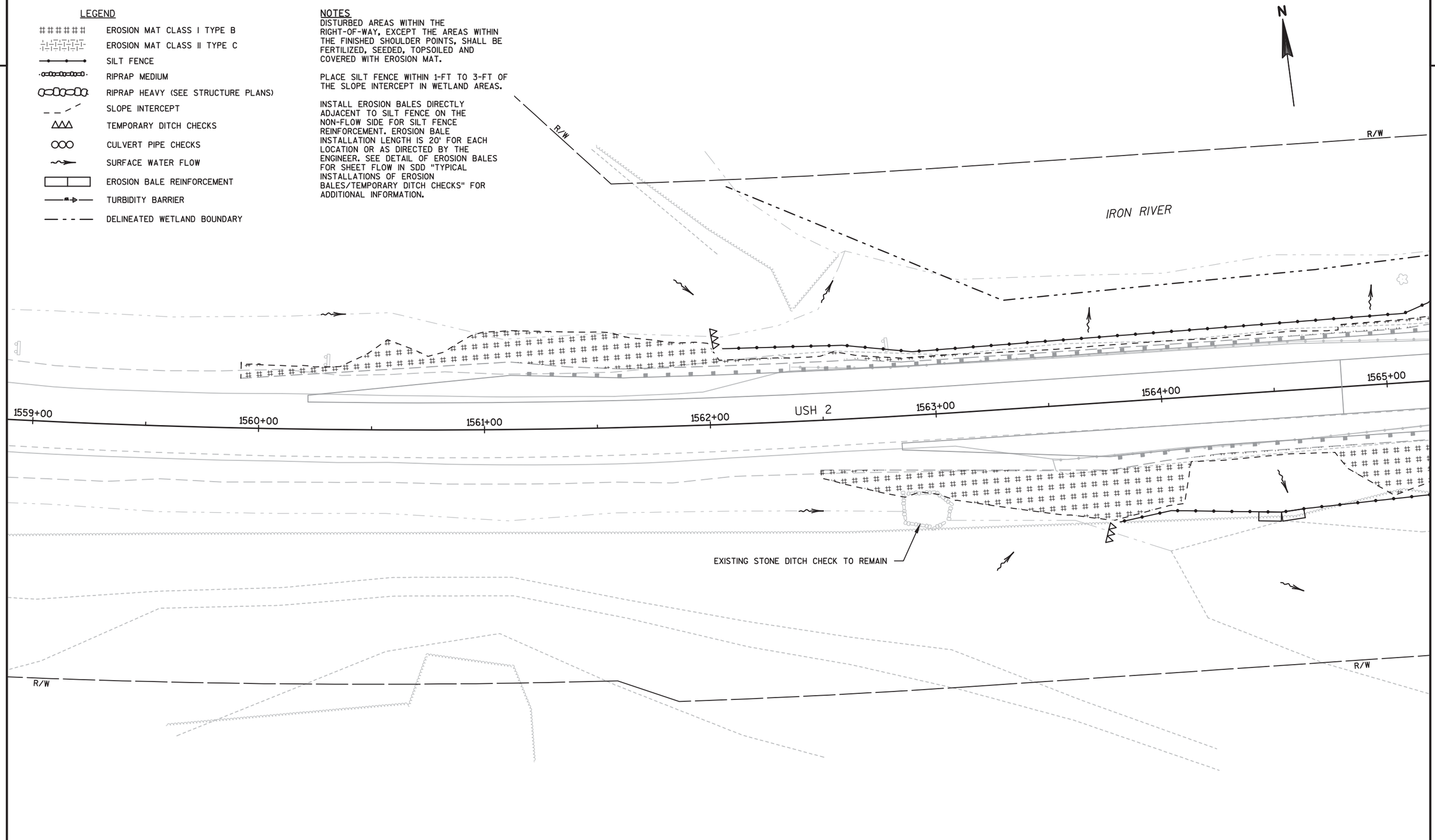
- ###### EROSION MAT CLASS I TYPE B
- EROSION MAT CLASS II TYPE C
- SILT FENCE
- RIPRAP MEDIUM
- RIPRAP HEAVY (SEE STRUCTURE PLANS)
- SLOPE INTERCEPT
- TEMPORARY DITCH CHECKS
- CULVERT PIPE CHECKS
- SURFACE WATER FLOW
- EROSION BALE REINFORCEMENT
- TURBIDITY BARRIER
- DELINEATED WETLAND BOUNDARY

NOTES

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE FERTILIZED, SEEDED, TOPSOILED AND COVERED WITH EROSION MAT.

PLACE SILT FENCE WITHIN 1-FT TO 3-FT OF THE SLOPE INTERCEPT IN WETLAND AREAS.

INSTALL EROSION BALES DIRECTLY ADJACENT TO SILT FENCE ON THE NON-FLOW SIDE FOR SILT FENCE REINFORCEMENT. EROSION BALE INSTALLATION LENGTH IS 20' FOR EACH LOCATION OR AS DIRECTED BY THE ENGINEER. SEE DETAIL OF EROSION BALES FOR SHEET FLOW IN SDD "TYPICAL INSTALLATIONS OF EROSION BALES/TEMPORARY DITCH CHECKS" FOR ADDITIONAL INFORMATION.



2

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	EROSION CONTROL	SHEET 6	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\022001-EC.DWG
LAYOUT NAME - ****

PLOT DATE : 10/20/2017 10:31 AM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:40 FT

2

2

N

LEGEND

- EROSION MAT CLASS I TYPE B
- EROSION MAT CLASS II TYPE C
- SILT FENCE
- RIPRAP MEDIUM
- RIPRAP HEAVY (SEE STRUCTURE PLANS)
- SLOPE INTERCEPT
- TEMPORARY DITCH CHECKS
- CULVERT PIPE CHECKS
- SURFACE WATER FLOW
- EROSION BALE REINFORCEMENT
- TURBIDITY BARRIER
- DELINEATED WETLAND BOUNDARY

NOTES

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, SHALL BE FERTILIZED, SEEDED, TOPSOILED AND COVERED WITH EROSION MAT.

PLACE SILT FENCE WITHIN 1-FT TO 3-FT OF THE SLOPE INTERCEPT IN WETLAND AREAS.

INSTALL EROSION BALES DIRECTLY ADJACENT TO SILT FENCE ON THE NON-FLOW SIDE FOR SILT FENCE REINFORCEMENT. EROSION BALE INSTALLATION LENGTH IS 20' FOR EACH LOCATION OR AS DIRECTED BY THE ENGINEER. SEE DETAIL OF EROSION BALES FOR SHEET FLOW IN SDD "TYPICAL INSTALLATIONS OF EROSION BALES/TEMPORARY DITCH CHECKS" FOR ADDITIONAL INFORMATION.

R/W

RIPRAP MEDIUM AND GEOTEXTILE TYPE HR 6'X14'X1.5' (SEE CONSTRUCTION DETAILS)

1565+00 1566+00 1567+00 1568+00 1569+00 1570+00 1571+00

USH 2

EXISTING B-04-0015
PROPOSED B-04-0116

IRON RIVER

NORWAY RD

RIPRAP MEDIUM AND GEOTEXTILE TYPE HR 6'X14'X1.5' (SEE CONSTRUCTION DETAILS)

R/W

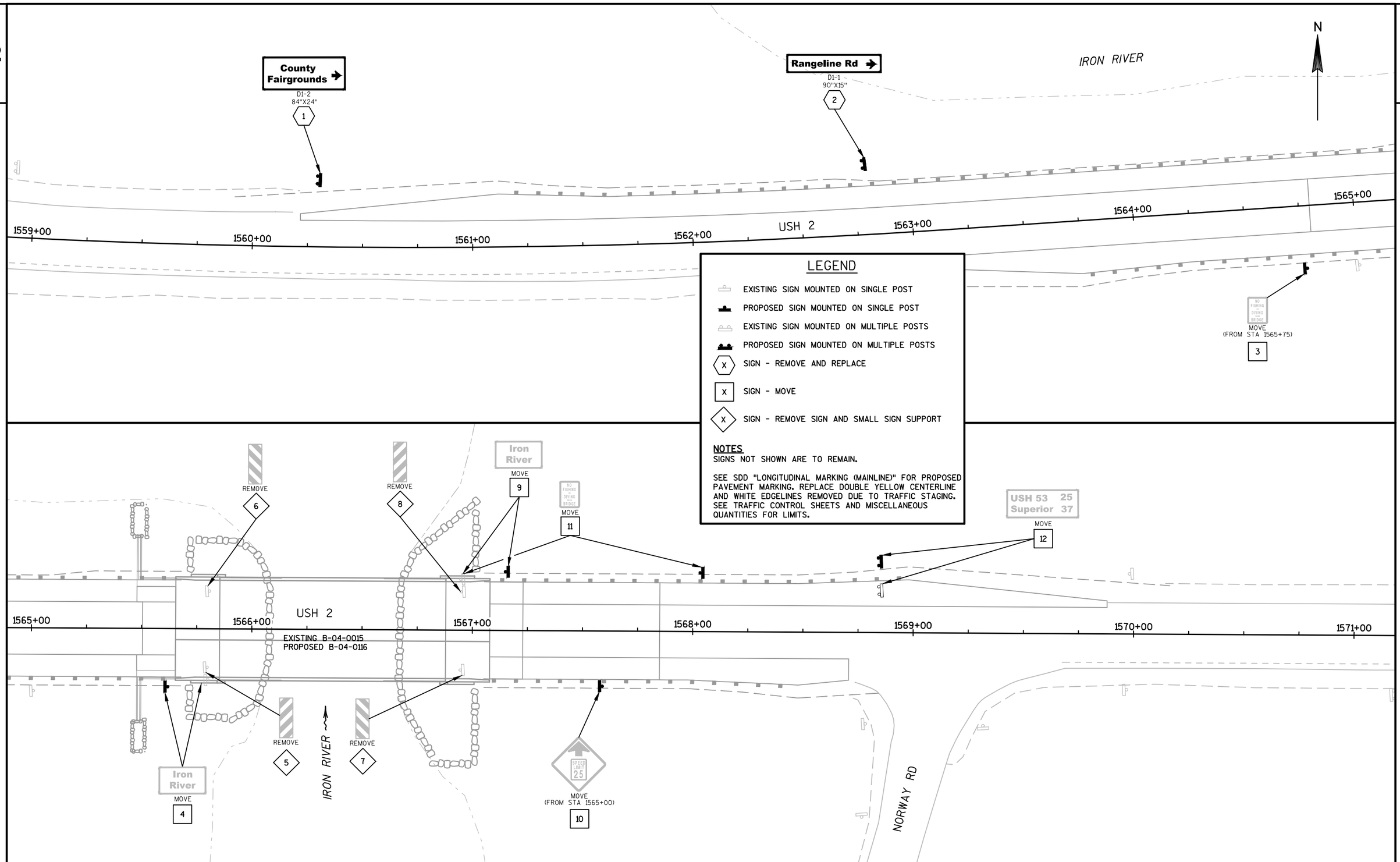
R/W

R/W

R/W

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	EROSION CONTROL	SHEET 7	E

2



LEGEND

- EXISTING SIGN MOUNTED ON SINGLE POST
- PROPOSED SIGN MOUNTED ON SINGLE POST
- EXISTING SIGN MOUNTED ON MULTIPLE POSTS
- PROPOSED SIGN MOUNTED ON MULTIPLE POSTS
- (X) SIGN - REMOVE AND REPLACE
- [X] SIGN - MOVE
- ◇X◇ SIGN - REMOVE SIGN AND SMALL SIGN SUPPORT

NOTES

SIGNS NOT SHOWN ARE TO REMAIN.

SEE SDD "LONGITUDINAL MARKING (MAINLINE)" FOR PROPOSED PAVEMENT MARKING. REPLACE DOUBLE YELLOW CENTERLINE AND WHITE EDGELINES REMOVED DUE TO TRAFFIC STAGING. SEE TRAFFIC CONTROL SHEETS AND MISCELLANEOUS QUANTITIES FOR LIMITS.

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	PERMANENT SIGNING	SHEET 8	E

2

TRAFFIC CONTROL GENERAL NOTES

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

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

3. ALL TYPE III BARRICADES SHALL BE EQUIPPED WITH TYPE "A" (LOW INTENSITY FLASHING) LIGHTS PER SDDS.

NOTES

POST THE WIDTH RESTRICTION ADVANCED WARNING SIGNS AT THE LOCATIONS PROVIDED DURING STAGES 1 AND 2.

\# ADJUST TRAFFIC CONTROL PCMS MESSAGE AS NEEDED BASED ON CONSTRUCTION SCHEDULE.

CONSIDER GEOMETRICS WHEN LOCATING MESSAGE BOARDS SO THE DRIVER HAS A CLEAR VIEW OF THE BOARD FOR A MINIMUM OF 1,000 FEET IN FRONT OF THE MESSAGE BOARD. PLACE MESSAGE BOARDS AS FAR AWAY FROM LIVE TRAFFIC LANES AS POSSIBLE WITHOUT HAMPERING VISIBILITY.

PLACE TRAFFIC CONTROL SIGNS PCMS AND DISPLAY THE MESSAGE 7 DAYS PRIOR TO THE EXPECTED START OF THE PROPOSED WORK. ADJUST THE MESSAGE DATE ACCORDINGLY.

* PLACE SIGN M1-4 AND SIGN M3-2 OR M3-4 WHEN ASSEMBLY IS MOUNTED ON ALL ROADWAYS OTHER THAN USH 2.

** PLACE SIGN M3-2 ON THE FOLLOWING ASSEMBLIES: (1) (2) (5) (8) (9)

*** PLACE SIGN M3-4 ON THE FOLLOWING ASSEMBLIES: (11) (13) (14) (17)

DO NOT INSTALL TRAFFIC CONTROL OR DETOUR SIGNS WITHIN 50-FEET OF THE RAILROAD RIGHT-OF-WAY.

LEGEND

MB — TRAFFIC CONTROL SIGN PCMS

WORK ZONE

N

ADVANCED WARNING FOR LANE WIDTH RESTRICTIONS

IN ADDITION TO THE W12-52 SIGNS SHOWN ON SDD "TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS" PLACE THE FOLLOWING ADVANCED WARNING SIGNS AT THE FOLLOWING LOCATIONS DURING STAGES 1 AND 2.

** EAST — M3-2 24"X12"

*** WEST — M3-4 24"X12"

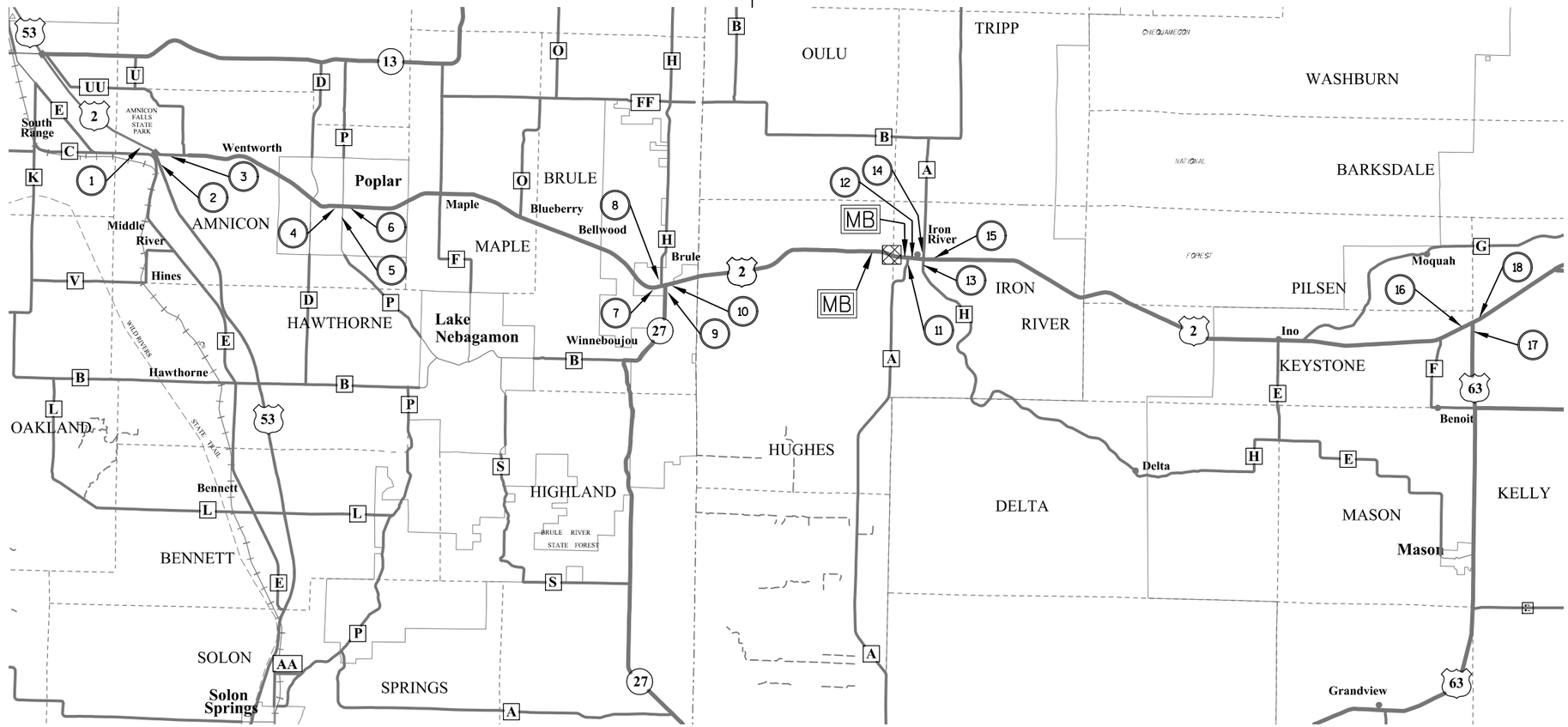
* 2 — M1-4 24"X24"

MAX. 13.5 WIDTH — W12-52 48"X48"

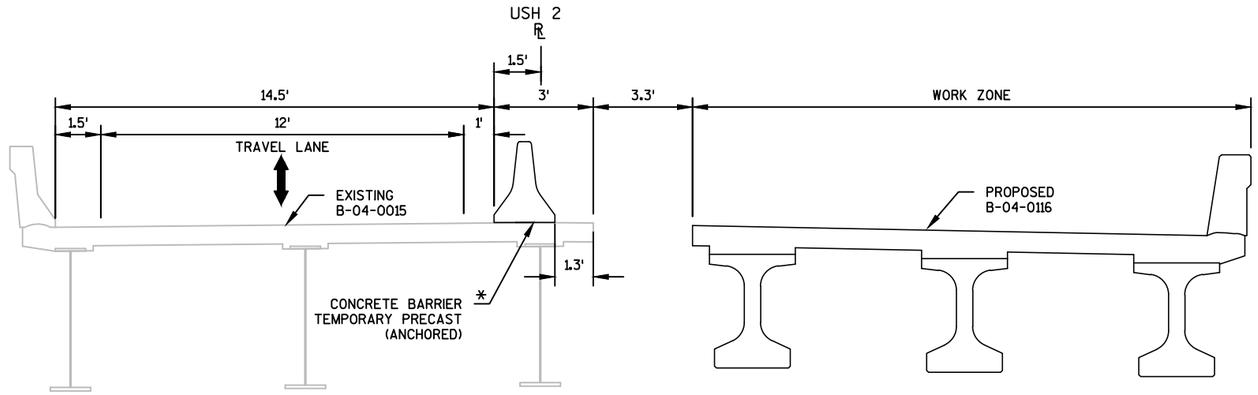
XX MILES AHEAD — W057-52 48"X36"

(1) USH 2 EB/USH 53 SB - 25 MILES
(2) USH 53 NB - 25 MILES
(3) USH 2 EB - 24¼ MILES
(4) USH 2 EB - 18½ MILES
(5) CTH P NB - 18¼ MILES
(6) USH 2 EB - 18 MILES
(7) USH 2 EB - 7¾ MILES
(8) CTH H SB - 7½ MILES
(9) STH 27 NB - 7½ MILES
(10) USH 2 EB - 7½ MILES
(11) CTH A NB - ¼ MILE
(12) USH 2 WB - ¾ MILES
(13) CTH H NB - ¾ MILES
(14) CTH A SB - ¾ MILES
(15) USH 2 WB - ¾ MILES
(16) USH 2 WB - 18¼ MILES
(17) USH 63 NB - 18½ MILES
(18) USH 2 WB - 18½ MILES

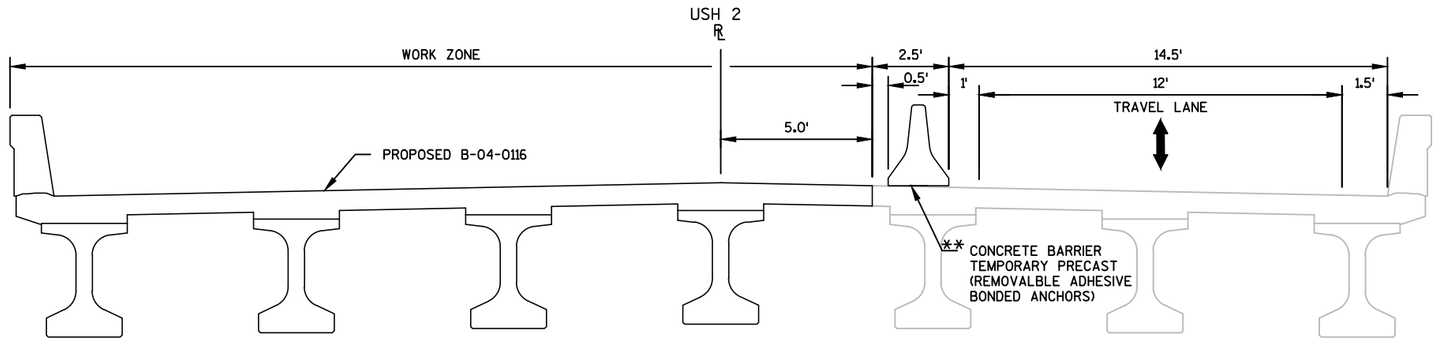
TRAFFIC CONTROL SIGNS PCMS MESSAGES				
		PRIOR TO CONSTRUCTION	DURING CONSTRUCTION	
	PCMS SIGN LOCATION	PHASE 1 (2 SEC)	PHASE 2 (2 SEC)	PHASE 1 (2 SEC)	PHASE 2 (2 SEC)
#	USH 2 EB 0.1 MILE EAST OF REDWINE RD	BRIDGE WORK STARTS	STARTING DATE	TRAFFIC SIGNAL AHEAD	BE PREPARED TO STOP
#	USH 2 WB 0.1 MILES WEST CTH A	BRIDGE WORK STARTS	STARTING DATE	TRAFFIC SIGNAL AHEAD	BE PREPARED TO STOP



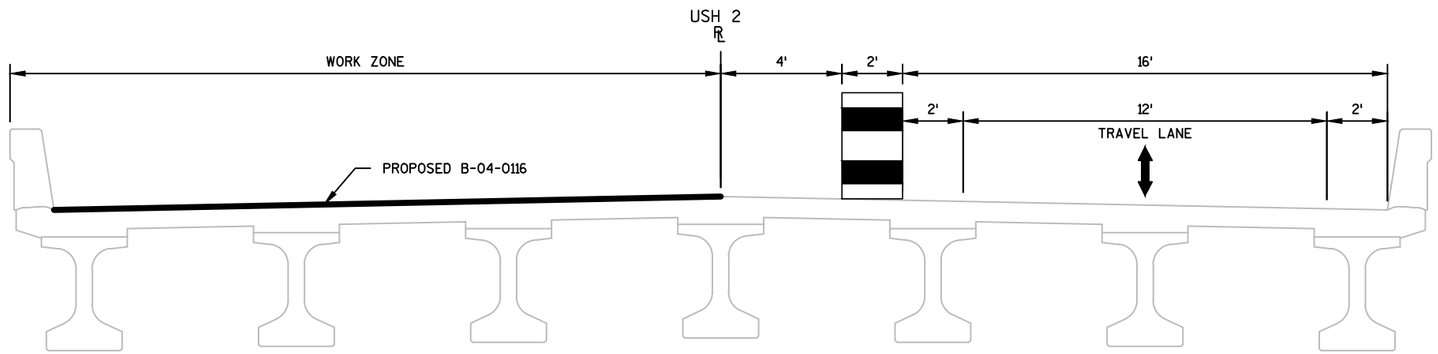
PROJECT NO:1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	TRAFFIC CONTROL - WIDTH RESTRICTIONS AND PCMS OVERVIEW	SHEET 9	E



TRAFFIC CONTROL TYPICAL SECTION - STAGE 1
USH 2
CONSTRUCT RIGHT SIDE B-04-0116 AND APPROACHES



TRAFFIC CONTROL TYPICAL SECTION - STAGE 2
USH 2
CONSTRUCT LEFT SIDE B-04-0116 AND APPROACHES



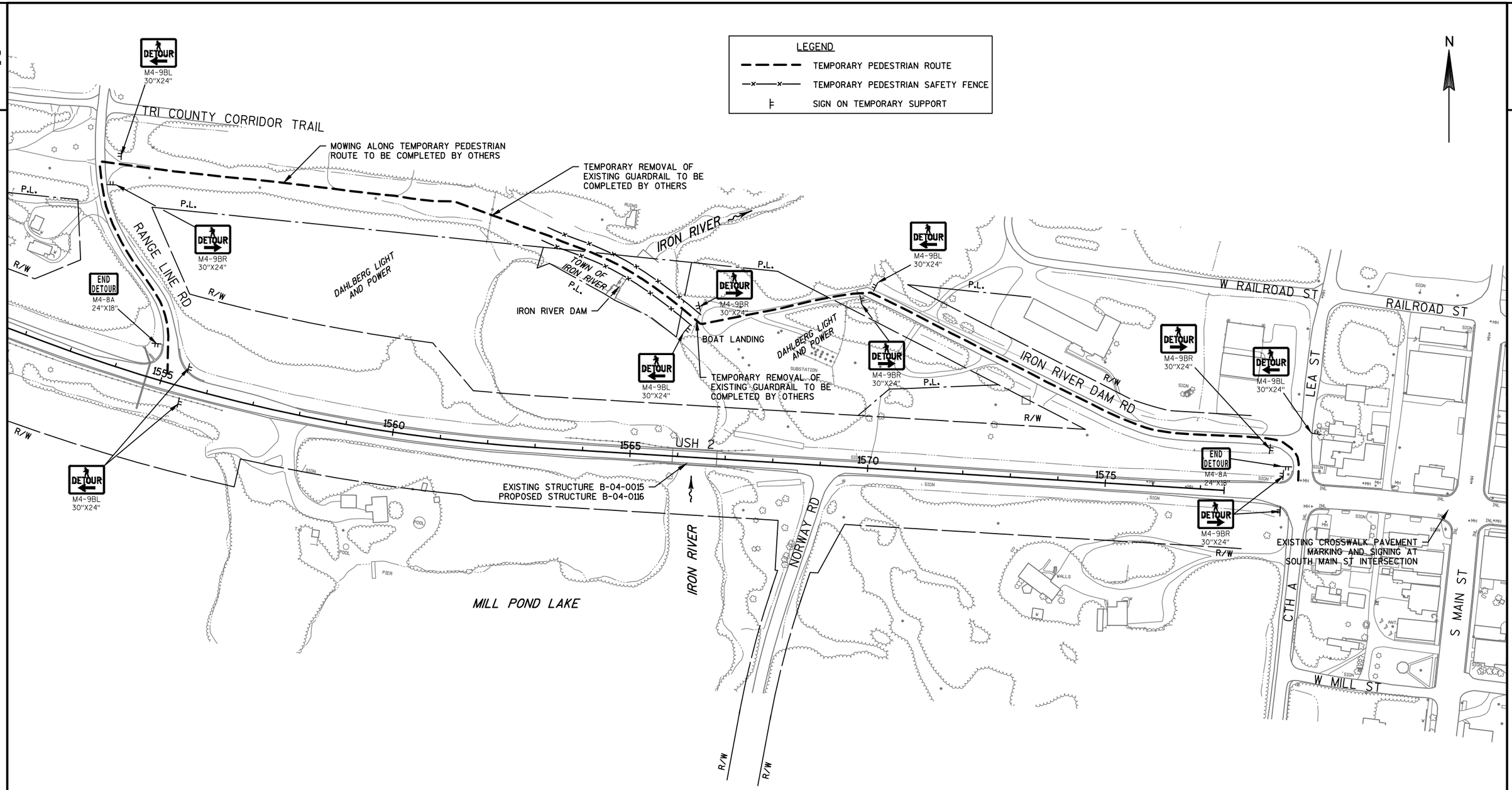
TRAFFIC CONTROL TYPICAL SECTION - STAGE 3A
USH 2
MIRROR FOR STAGE 3B (NOT SHOWN)
CONSTRUCT POLYMER OVERLAY

NOTES
SEE TRAFFIC CONTROL PLAN SHEETS FOR PROPOSED WORK AND ADDITIONAL INFORMATION.

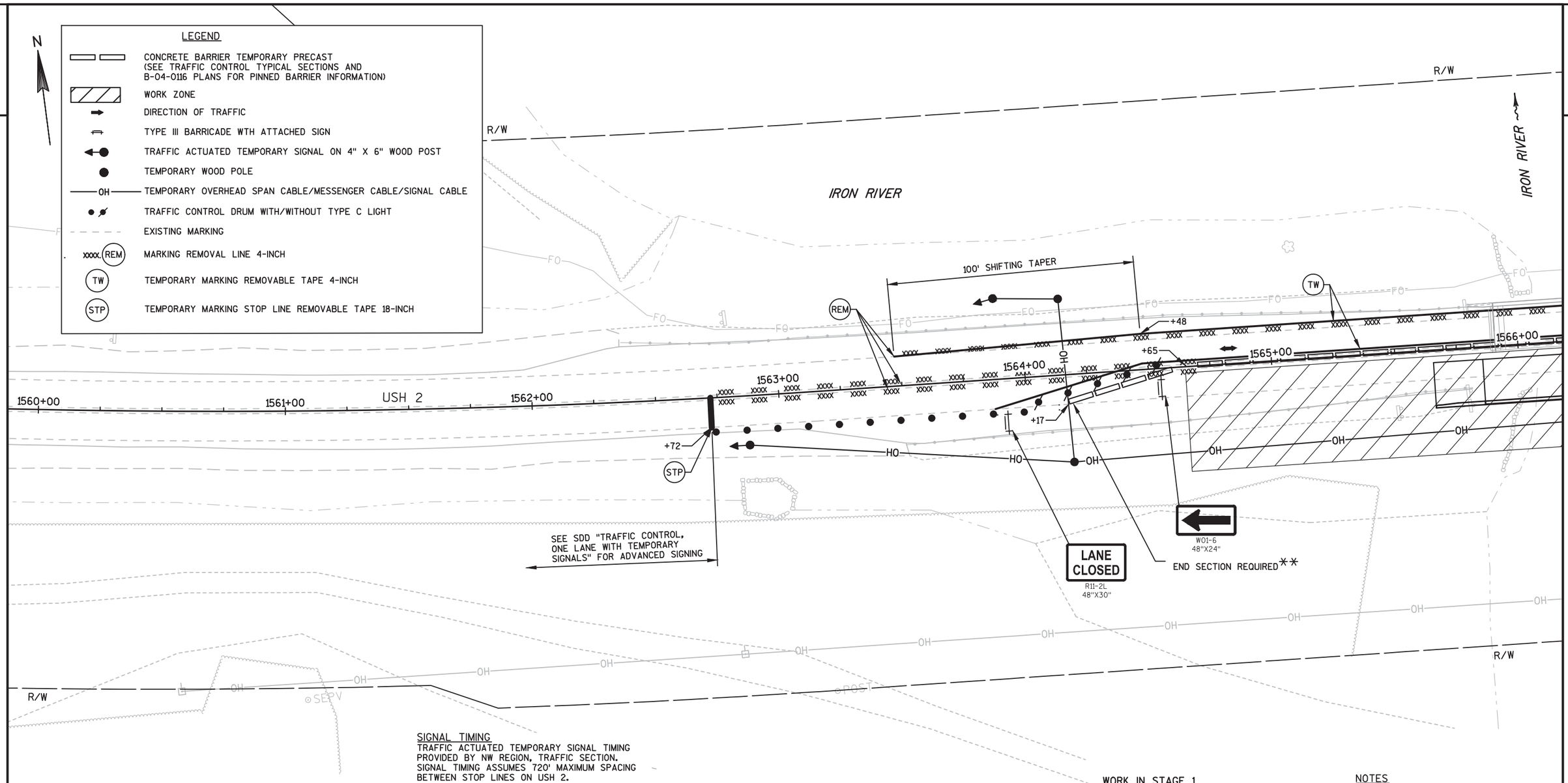
SEE SDD "TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION".

* CONCRETE BARRIER TEMPORARY PRECAST OFFSET LOCATION SELECTED TO AVOID ANCHORING CONFLICT WITH EXISTING GIRDER.

** PLACE CONCRETE BARRIER TEMPORARY PRECAST LONGITUDINALLY TO AVOID CONFLICTS BETWEEN ADHESIVE BONDED ANCHORS AND DECK REINFORCING STEEL. SEE B-04-0116 PLANS FOR DETAILS.



PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	TRAFFIC CONTROL - TEMPORARY PEDESTRIAN ROUTE	SHEET 11	E



SIGNAL TIMING
TRAFFIC ACTUATED TEMPORARY SIGNAL TIMING PROVIDED BY NW REGION, TRAFFIC SECTION. SIGNAL TIMING ASSUMES 720' MAXIMUM SPACING BETWEEN STOP LINES ON USH 2.

ACTUATED SIGNAL TIMING (SECONDS)			
PHASE 1 USH 2 EB	PHASE 2 USH 2 WB	PHASE 3 NORWAY RD	PROGRAMMING TYPE
10	10	5	MINIMUM GREEN TIME
5	5	5	MAXIMUM PASSAGE DURING GREEN PHASE
3	3	--	MINIMUM PASSAGE DURING GREEN PHASE
15	15	--	START OF REDUCTION OF PASSAGE FROM MAXIMUM TO MINIMUM DURING GREEN PHASE
0	0	--	TIME TO REDUCE PASSAGE FROM MAXIMUM TO MINIMUM DURING GREEN PHASE
40	40	5	MAXIMUM GREEN TIME
4	4	4	YELLOW
27	1	27	ALL-RED
MIN.	MIN.	MIN.	RECALL MODE

PHASE 3 SHALL COME AFTER PHASE 2.
THE CONTRACTOR SHALL REVIEW SIGNALS AFTER PROGRAMMING TO ENSURE THERE ARE NOT CONFLICTING MOVEMENTS.
IF THERE ARE QUESTIONS REGARDING THE TIMINGS, CONTACT THE NWR TRAFFIC ENGINEER.

WORK IN STAGE 1
COMPLETE WORK ON EASTBOUND USH 2: REMOVE AND CONSTRUCT RT SIDE OF BRIDGE AND CONCRETE APPROACHES, COMPLETE GRADING, REMOVING AND REPLACING GUARDRAIL, ASPHALTIC APPROACH PAVING, FINISHING AND EROSION CONTROL.

STAGE 1 TRAFFIC
ONE-LANE BI-DIRECTIONAL USH 2 TRAFFIC LOCATED PARTIALLY ON EXISTING PAVED SHOULDER AND THE EXISTING WEST BOUND USH 2 TRAVEL LANE, CONTROLLED BY TEMPORARY SIGNALS AT BRIDGE.

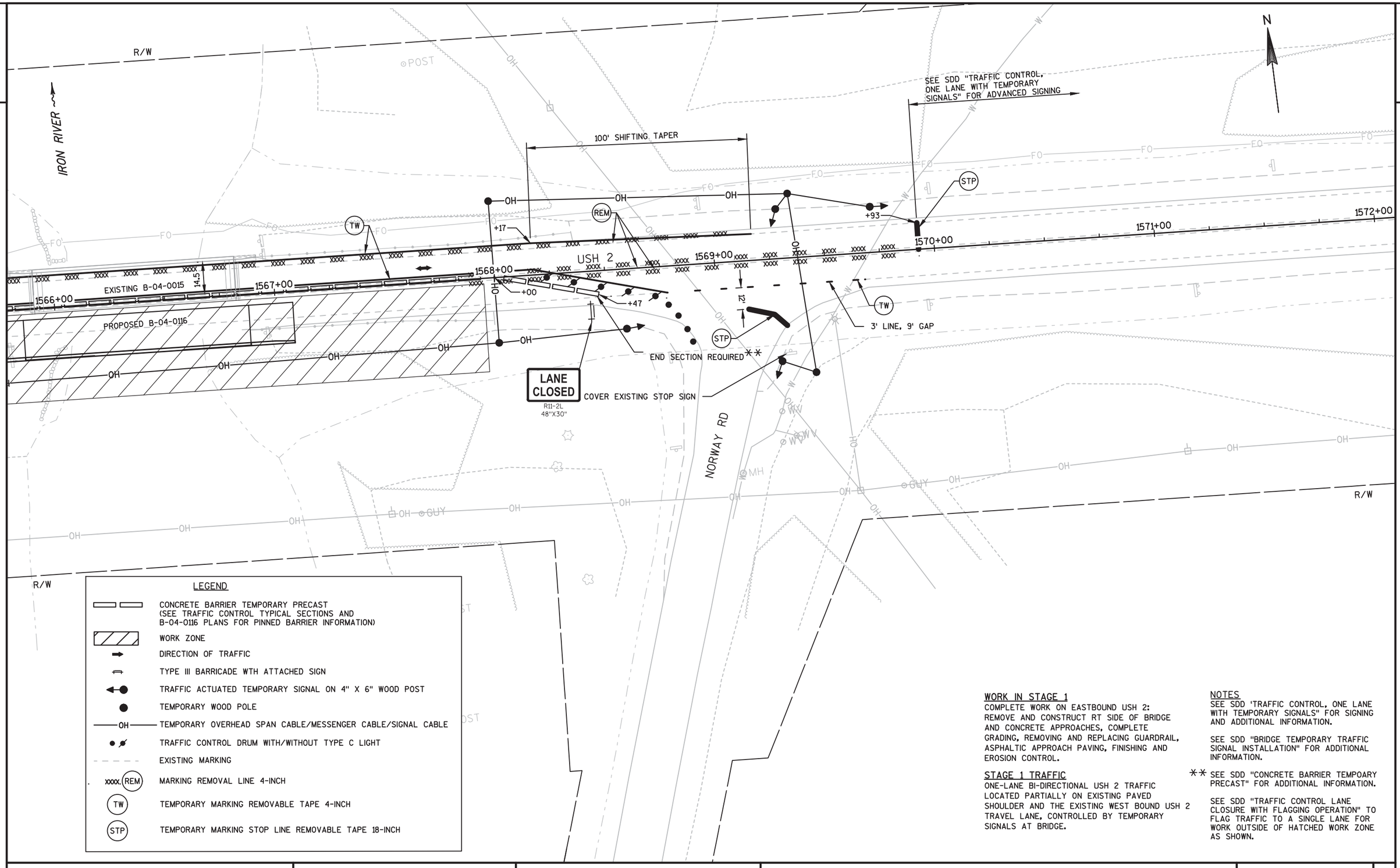
NOTES
SEE SDD 'TRAFFIC CONTROL, ONE LANE WITH TEMPORARY SIGNALS" FOR SIGNING AND ADDITIONAL INFORMATION.

SEE SDD "BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION" FOR ADDITIONAL INFORMATION.

** SEE SDD "CONCRETE BARRIER TEMPOARY PRECAST" FOR ADDITIONAL INFORMATION.

SEE SDD "TRAFFIC CONTROL LANE CLOSURE WITH FLAGGING OPERATION" TO FLAG TRAFFIC TO A SINGLE LANE FOR WORK OUTSIDE OF HATCHED WORK ZONE AS SHOWN.

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	TRAFFIC CONTROL - STAGE 1	SHEET 12	E



LEGEND

- CONCRETE BARRIER TEMPORARY PRECAST (SEE TRAFFIC CONTROL TYPICAL SECTIONS AND B-04-0116 PLANS FOR PINNED BARRIER INFORMATION)
- WORK ZONE
- DIRECTION OF TRAFFIC
- TYPE III BARRICADE WTH ATTACHED SIGN
- TRAFFIC ACTUATED TEMPORARY SIGNAL ON 4" X 6" WOOD POST
- TEMPORARY WOOD POLE
- OH — TEMPORARY OVERHEAD SPAN CABLE/MESSENGER CABLE/SIGNAL CABLE
- TRAFFIC CONTROL DRUM WITH/WITHOUT TYPE C LIGHT
- EXISTING MARKING
- XXXX (REM) MARKING REMOVAL LINE 4-INCH
- (TW) TEMPORARY MARKING REMOVABLE TAPE 4-INCH
- (STP) TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18-INCH

WORK IN STAGE 1

COMPLETE WORK ON EASTBOUND USH 2: REMOVE AND CONSTRUCT RT SIDE OF BRIDGE AND CONCRETE APPROACHES, COMPLETE GRADING, REMOVING AND REPLACING GUARDRAIL, ASPHALTIC APPROACH PAVING, FINISHING AND EROSION CONTROL.

STAGE 1 TRAFFIC

ONE-LANE BI-DIRECTIONAL USH 2 TRAFFIC LOCATED PARTIALLY ON EXISTING PAVED SHOULDER AND THE EXISTING WEST BOUND USH 2 TRAVEL LANE, CONTROLLED BY TEMPORARY SIGNALS AT BRIDGE.

NOTES

SEE SDD 'TRAFFIC CONTROL, ONE LANE WITH TEMPORARY SIGNALS" FOR SIGNING AND ADDITIONAL INFORMATION.

SEE SDD "BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION" FOR ADDITIONAL INFORMATION.

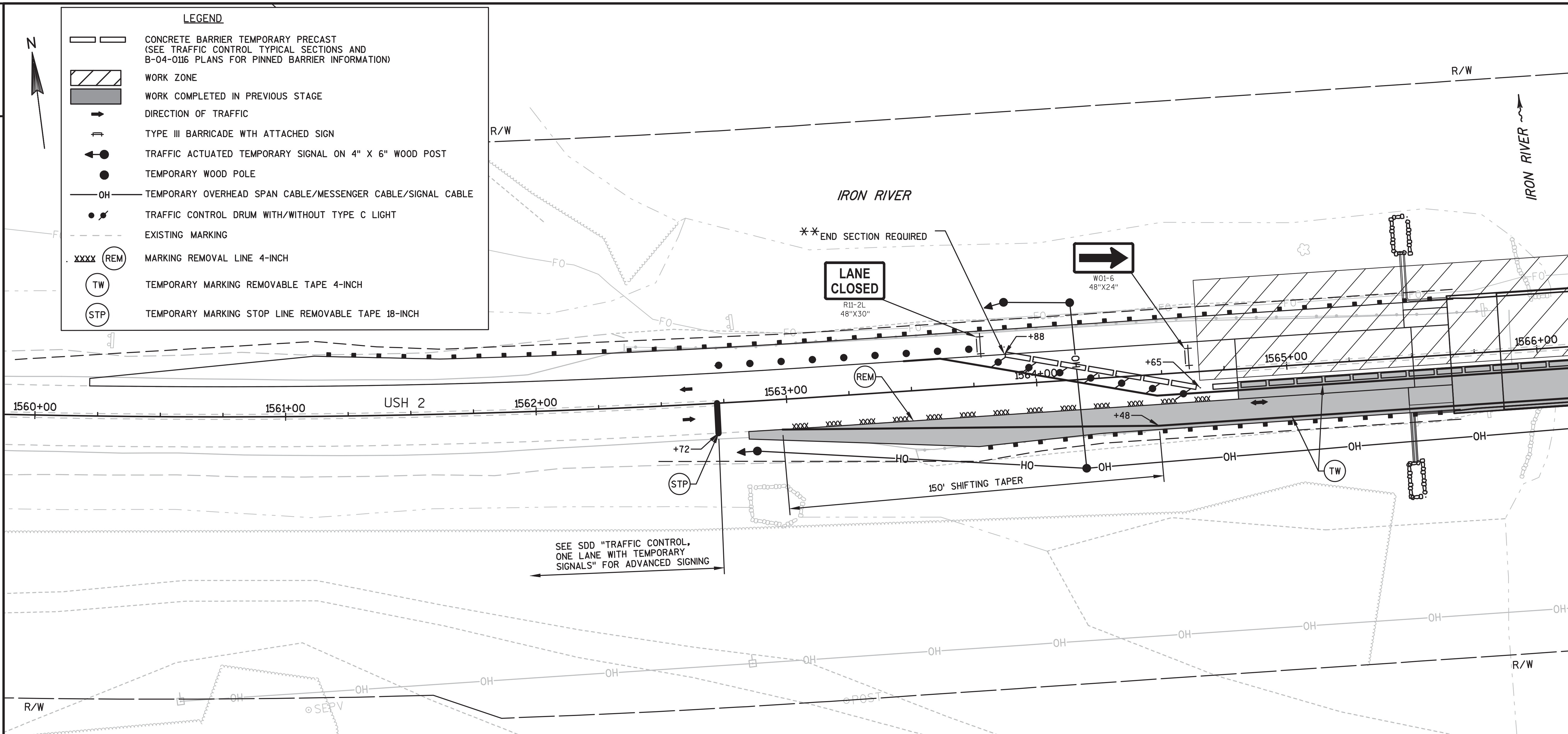
** SEE SDD "CONCRETE BARRIER TEMPOARY PRECAST" FOR ADDITIONAL INFORMATION.

SEE SDD "TRAFFIC CONTROL LANE CLOSURE WITH FLAGGING OPERATION" TO FLAG TRAFFIC TO A SINGLE LANE FOR WORK OUTSIDE OF HATCHED WORK ZONE AS SHOWN.

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	TRAFFIC CONTROL - STAGE 1	SHEET 13	E

LEGEND

- CONCRETE BARRIER TEMPORARY PRECAST (SEE TRAFFIC CONTROL TYPICAL SECTIONS AND B-04-0116 PLANS FOR PINNED BARRIER INFORMATION)
- WORK ZONE
- WORK COMPLETED IN PREVIOUS STAGE
- DIRECTION OF TRAFFIC
- TYPE III BARRICADE WTH ATTACHED SIGN
- TRAFFIC ACTUATED TEMPORARY SIGNAL ON 4" X 6" WOOD POST
- TEMPORARY WOOD POLE
- OH — TEMPORARY OVERHEAD SPAN CABLE/MESSENGER CABLE/SIGNAL CABLE
- TRAFFIC CONTROL DRUM WITH/WITHOUT TYPE C LIGHT
- EXISTING MARKING
- XXXX (REM) MARKING REMOVAL LINE 4-INCH
- (TW) TEMPORARY MARKING REMOVABLE TAPE 4-INCH
- (STP) TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18-INCH



SIGNAL TIMING

TRAFFIC ACTUATED TEMPORARY SIGNAL TIMING PROVIDED BY NW REGION, TRAFFIC SECTION. SIGNAL TIMING ASSUMES 720' MAXIMUM SPACING BETWEEN STOP LINES ON USH 2.

ACTUATED SIGNAL TIMING (SECONDS)

PHASE 1 USH 2 EB	PHASE 2 USH 2 WB	PHASE 3 NORWAY RD	PROGRAMMING TYPE
10	10	5	MINIMUM GREEN TIME
5	5	5	MAXIMUM PASSAGE DURING GREEN PHASE
3	3	--	MINIMUM PASSAGE DURING GREEN PHASE
15	15	--	START OF REDUCTION OF PASSAGE FROM MAXIMUM TO MINIMUM DURING GREEN PHASE
0	0	--	TIME TO REDUCE PASSAGE FROM MAXIMUM TO MINIMUM DURING GREEN PHASE
40	40	5	MAXIMUM GREEN TIME
4	4	4	YELLOW
27	1	27	ALL-RED
MIN.	MIN.	MIN.	RECALL MODE

PHASE 3 SHALL COME AFTER PHASE 2.
THE CONTRACTOR SHALL REVIEW SIGNALS AFTER PROGRAMMING TO ASSURE THERE ARE NOT CONFLICTING MOVEMENTS.
IF THERE ARE QUESTIONS REGARDING THE TIMINGS, CONTACT THE NWR TRAFFIC ENGINEER.

WORK IN STAGE 2

COMPLETE WORK ON WESTBOUND USH 2: REMOVE AND CONSTRUCT LT SIDE OF BRIDGE AND CONCRETE APPROACHES, COMPLETE GRADING, REMOVING AND REPLACING GUARDRAIL, ASPHALTIC APPROACH PAVING, FINISHING AND EROSION CONTROL.

STAGE 2 TRAFFIC

ONE-LANE BI-DIRECTIONAL USH 2 TRAFFIC LOCATED PARTIALLY ON THE PROPOSED PAVED SHOULDER AND EAST BOUND USH 2 TRAVEL LANE, CONTROLLED BY TEMPORARY SIGNALS AT BRIDGE.

WORK IN STAGE 3 (NOT SHOWN)

COMPLETE POLYMER OVERLAY ON B-4-16 BRIDGE DECK HALF AT A TIME.

STAGE 3 TRAFFIC (NOT SHOWN)

ALTERNATE TRAFFIC SIDE WITH ONE-LANE BI-DIRECTIONAL USH 2 TRAFFIC LOCATED PARTIALLY ON THE PROPOSED PAVED SHOULDER AND USH 2 TRAVEL LANE, CONTROLLED BY TEMPORARY SIGNALS AT BRIDGE. UTILIZE TRAFFIC CONTROL DRUMS IN PLACE OF CONCRETE BARRIER TEMPORARY PRECAST AND RE-INSTALL STOP BARS IN THE SAME LOCATIONS AS STAGES 1 AND 2. FLAGGING MAY BE UTILIZED IN PLACE OF TEMPORARY TRAFFIC SIGNALS TO COMPLETE THE POLYMER OVERLAY HALF AT A TIME.

NOTES

SEE SDD 'TRAFFIC CONTROL, ONE LANE WITH TEMPORARY SIGNALS" FOR SIGNING AND ADDITIONAL INFORMATION.

SEE SDD "BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION" FOR ADDITIONAL INFORMATION.

** SEE SDD "CONCRETE BARRIER TEMPOARY PRECAST" FOR ADDITIONAL INFORMATION.

SEE SDD "TRAFFIC CONTROL LANE CLOSURE WITH FLAGGING OPERATION" TO FLAG TRAFFIC TO A SINGLE LANE FOR WORK OUTSIDE OF HATCHED WORK ZONE AS SHOWN.

LEGEND

- CONCRETE BARRIER TEMPORARY PRECAST (SEE TRAFFIC CONTROL TYPICAL SECTIONS AND B-04-0116 PLANS FOR PINNED BARRIER INFORMATION)
- WORK ZONE
- WORK COMPLETED IN PREVIOUS STAGE
- DIRECTION OF TRAFFIC
- TYPE III BARRICADE WTH ATTACHED SIGN
- TRAFFIC ACTUATED TEMPORARY SIGNAL ON 4" X 6" WOOD POST
- TEMPORARY WOOD POLE
- OH — TEMPORARY OVERHEAD SPAN CABLE/MESSENGER CABLE/SIGNAL CABLE
- TRAFFIC CONTROL DRUM WITH/WITHOUT TYPE C LIGHT
- EXISTING MARKING
- xxxx (REM) MARKING REMOVAL LINE 4-INCH
- (TW) TEMPORARY MARKING REMOVABLE TAPE 4-INCH
- (STP) TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18-INCH

NOTES

SEE SDD 'TRAFFIC CONTROL, ONE LANE WITH TEMPORARY SIGNALS" FOR SIGNING AND ADDITIONAL INFORMATION.

SEE SDD "BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION" FOR ADDITIONAL INFORMATION.

** SEE SDD "CONCRETE BARRIER TEMPOARY PRECAST" FOR ADDITIONAL INFORMATION.

SEE SDD "TRAFFIC CONTROL LANE CLOSURE WITH FLAGGING OPERATION" TO FLAG TRAFFIC TO A SINGLE LANE FOR WORK OUTSIDE OF HATCHED WORK ZONE AS SHOWN.

WORK IN STAGE 2

COMPLETE WORK ON WESTBOUND USH 2: REMOVE AND CONSTRUCT LT SIDE OF BRIDGE AND CONCRETE APPROACHES, COMPLETE GRADING, REMOVING AND REPLACING GUARDRAIL, ASPHALTIC APPROACH PAVING, FINISHING AND EROSION CONTROL.

STAGE 2 TRAFFIC

ONE-LANE BI-DIRECTIONAL USH 2 TRAFFIC LOCATED PARTIALLY ON THE PROPOSED PAVED SHOULDER AND EAST BOUND USH 2 TRAVEL LANE, CONTROLLED BY TEMPORARY SIGNALS AT BRIDGE.

WORK IN STAGE 3 (NOT SHOWN)

COMPLETE POLYMER OVERLAY ON B-4-16 BRIDGE DECK HALF AT A TIME.

STAGE 3 TRAFFIC (NOT SHOWN)

ALTERNATE TRAFFIC SIDE WITH ONE-LANE BI-DIRECTIONAL USH 2 TRAFFIC LOCATED PARTIALLY ON THE PROPOSED PAVED SHOULDER AND USH 2 TRAVEL LANE, CONTROLLED BY TEMPORARY SIGNALS AT BRIDGE. UTILIZE TRAFFIC CONTROL DRUMS IN PLACE OF CONCRETE BARRIER TEMPORARY PRECAST AND RE-INSTALL STOP BARS IN THE SAME LOCATIONS AS STAGES 1 AND 2. FLAGGING MAY BE UTILIZED IN PLACE OF TEMPORARY TRAFFIC SIGNALS TO COMPLETE THE POLYMER OVERLAY HALF AT A TIME.

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	TRAFFIC CONTROL - STAGE 2	SHEET 15	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\025013-TC.DWG
LAYOUT NAME - ****
PLOT DATE : 10/20/2017 11:19 AM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : **********
WISDOT/CADDS SHEET 42

1180-49-71

Line	Item	Item Description	Unit	Total	Qty
0002	201.0105	Clearing	STA	4.000	4.000
0004	201.0205	Grubbing	STA	4.000	4.000
0006	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) 01. Sta 1565+85	LS	1.000	1.000
0008	204.0100	Removing Pavement	SY	280.000	280.000
0010	204.0110	Removing Asphaltic Surface	SY	620.000	620.000
0012	204.0165	Removing Guardrail	LF	850.000	850.000
0014	205.0100	Excavation Common	CY	1,256.000	1,256.000
0016	206.1000	Excavation for Structures Bridges (structure) 01. B-4-116	LS	1.000	1.000
0018	210.1500	Backfill Structure Type A	TON	295.000	295.000
0020	211.0400	Prepare Foundation for Asphaltic Shoulders	STA	10.000	10.000
0022	213.0100	Finishing Roadway (project) 01. 1180-49-71	EACH	1.000	1.000
0024	305.0110	Base Aggregate Dense 3/4-Inch	TON	430.000	430.000
0026	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	1,020.000	1,020.000
0028	415.0070	Concrete Pavement 7-Inch	SY	62.000	62.000
0030	415.0410	Concrete Pavement Approach Slab	SY	82.000	82.000
0032	416.1010	Concrete Surface Drains	CY	6.000	6.000
0034	455.0605	Tack Coat	GAL	100.000	100.000
0036	465.0105	Asphaltic Surface	TON	505.000	505.000
0038	502.0100	Concrete Masonry Bridges	CY	435.000	435.000
0040	502.3200	Protective Surface Treatment	SY	26.000	26.000
0042	502.3210	Pigmented Surface Sealer	SY	141.000	141.000
0044	503.0146	Prestressed Girder Type I 45W-Inch	LF	707.000	707.000
0046	505.0400	Bar Steel Reinforcement HS Structures	LB	5,760.000	5,760.000
0048	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	58,630.000	58,630.000
0050	505.0800.S	Bar Steel Reinforcement HS Stainless Structures	LB	1,600.000	1,600.000
0052	505.0908	Bar Couplers No. 8	EACH	24.000	24.000
0054	506.2605	Bearing Pads Elastomeric Non-Laminated	EACH	14.000	14.000
0056	506.4000	Steel Diaphragms (structure) 01. B-4-116	EACH	12.000	12.000
0058	509.5100.S	Polymer Overlay	SY	698.000	698.000
0060	511.1200	Temporary Shoring (structure) 01. B-4-116	SF	305.000	305.000
0062	516.0500	Rubberized Membrane Waterproofing	SY	28.000	28.000
0064	550.2146	Piling CIP Concrete 14 X 0.375-Inch	LF	2,450.000	2,450.000
0066	603.8000	Concrete Barrier Temporary Precast Delivered	LF	500.000	500.000
0068	603.8125	Concrete Barrier Temporary Precast Installed	LF	950.000	950.000
0070	603.8505	Anchoring Concrete Barrier on Bridge Decks	LF	500.000	500.000
0072	606.0200	Riprap Medium	CY	10.000	10.000
0074	606.0300	Riprap Heavy	CY	365.000	365.000
0076	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	170.000	170.000

1180-49-71

Line	Item	Item Description	Unit	Total	Qty
0078	614.0150	Anchor Assemblies for Steel Plate Beam Guard	EACH	4.000	4.000
0080	614.2300	MGS Guardrail 3	LF	350.000	350.000
0082	614.2330	MGS Guardrail 3 K	LF	263.000	263.000
0084	614.2500	MGS Thrie Beam Transition	LF	158.000	158.000
0086	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0088	616.0700.S	Fence Safety	LF	750.000	750.000
0090	618.0100	Maintenance And Repair of Haul Roads (project) 01. 1180-49-71	EACH	1.000	1.000
0092	619.1000	Mobilization	EACH	1.000	1.000
0094	624.0100	Water	MGAL	30.000	30.000
0096	625.0100	Topsoil	SY	3,620.000	3,620.000
0098	628.1104	Erosion Bales	EACH	24.000	24.000
0100	628.1504	Silt Fence	LF	810.000	810.000
0102	628.1520	Silt Fence Maintenance	LF	810.000	810.000
0104	628.1905	Mobilizations Erosion Control	EACH	6.000	6.000
0106	628.1910	Mobilizations Emergency Erosion Control	EACH	4.000	4.000
0108	628.2004	Erosion Mat Class I Type B	SY	3,230.000	3,230.000
0110	628.2027	Erosion Mat Class II Type C	SY	390.000	390.000
0112	628.6005	Turbidity Barriers	SY	1,030.000	1,030.000
0114	628.7504	Temporary Ditch Checks	LF	165.000	165.000
0116	628.7555	Culvert Pipe Checks	EACH	5.000	5.000
0118	628.7570	Rock Bags	EACH	30.000	30.000
0120	629.0210	Fertilizer Type B	CWT	2.000	2.000
0122	630.0120	Seeding Mixture No. 20	LB	50.000	50.000
0124	630.0130	Seeding Mixture No. 30	LB	40.000	40.000
0126	634.0614	Posts Wood 4x6-Inch X 14-FT	EACH	5.000	5.000
0128	634.0616	Posts Wood 4x6-Inch X 16-FT	EACH	6.000	6.000
0130	637.2210	Signs Type II Reflective H	SF	23.380	23.380
0132	638.2102	Moving Signs Type II	EACH	6.000	6.000
0134	638.2602	Removing Signs Type II	EACH	6.000	6.000
0136	638.3000	Removing Small Sign Supports	EACH	13.000	13.000
0138	642.5001	Field Office Type B	EACH	1.000	1.000
0140	643.0300	Traffic Control Drums	DAY	2,745.000	2,745.000
0142	643.0310.S	Temporary Portable Rumble Strips	LS	1.000	1.000
0144	643.0420	Traffic Control Barricades Type III	DAY	335.000	335.000
0146	643.0705	Traffic Control Warning Lights Type A	DAY	670.000	670.000
0148	643.0715	Traffic Control Warning Lights Type C	DAY	1,150.000	1,150.000
0150	643.0900	Traffic Control Signs	DAY	8,410.000	8,410.000
0152	643.1050	Traffic Control Signs PCMS	DAY	204.000	204.000
0154	643.5000	Traffic Control	EACH	1.000	1.000

1180-49-71

Line	Item	Item Description	Unit	Total	Qty
0156	645.0111	Geotextile Type DF Schedule A	SY	110.000	110.000
0158	645.0120	Geotextile Type HR	SY	512.000	512.000
0160	646.1020	Marking Line Epoxy 4-Inch	LF	3,870.000	3,870.000
0162	646.9000	Marking Removal Line 4-Inch	LF	1,670.000	1,670.000
0164	649.0150	Temporary Marking Line Removable Tape 4-Inch	LF	2,260.000	2,260.000
0166	649.0850	Temporary Marking Stop Line Removable Tape 18-Inch	LF	88.000	88.000
0168	650.4500	Construction Staking Subgrade	LF	162.000	162.000
0170	650.5000	Construction Staking Base	LF	132.000	132.000
0172	650.6500	Construction Staking Structure Layout (structure) 01. B-4-116	LS	1.000	1.000
0174	650.7000	Construction Staking Concrete Pavement	LF	30.000	30.000
0176	650.9910	Construction Staking Supplemental Control (project) 01. 1180-49-71	LS	1.000	1.000
0178	650.9920	Construction Staking Slope Stakes	LF	1,024.000	1,024.000
0180	661.0100	Temporary Traffic Signals for Bridges (structure) 01. B-4-116	LS	1.000	1.000
0182	690.0150	Sawing Asphalt	LF	1,050.000	1,050.000
0184	690.0250	Sawing Concrete	LF	100.000	100.000
0186	715.0415	Incentive Strength Concrete Pavement	DOL	500.000	500.000
0188	715.0502	Incentive Strength Concrete Structures	DOL	2,592.000	2,592.000
0190	ASP.1T0A	On-the-Job Training Apprentice at $5.00/HR	HRS	1,200.000	1,200.000
0192	ASP.1T0G	On-the-Job Training Graduate at $5.00/HR	HRS	300.000	300.000

3

CLEARING AND GRUBBING ITEMS

CATEGORY	STAGE	STATION	TO	STATION	OFFSET	201.0105 CLEARING STA	201.0205 GRUBBING STA
0010							
	1 & 2	1566+00	-	1570+00	LT & RT	4	4
TOTALS						4	4

REMOVAL ITEMS

CATEGORY	STAGE	STATION	TO	STATION	OFFSET	204.0100 REMOVING PAVEMENT SY	204.0110 REMOVING ASPHALTIC SURFACE SY
0010							
	1	1562+84	-	1564+80	RT	--	200
	1	1566+84	-	1567+85	RT	90	--
	1	1567+85	-	1568+71	RT	--	30
	2	1560+21	-	1564+80	LT	--	330
	2	1566+84	-	1567+85	LT & RT	190	--
	2	1567+85	-	1569+88	LT	--	60
TOTALS						280	620

3

EARTHWORK SUMMARY

DIVISION	LOCATION	EXCAVATION COMMON (NOTE 1) (ITEM #205.0100)	SALVAGED / UNUSEABLE PAVEMENT MATERIAL (NOTE 2)	AVAILABLE MATERIAL (NOTE 3)	UNEXPANDED FILL	EXPANDED FILL (NOTE 4)	MASS ORDINATE +/- (NOTE 5)
						FACTOR 1.25	
USH 2							
1	USH 2 - WEST OF IRON RIVER	475	174	301	123	154	147
2	USH 2 - EAST OF IRON RIVER	781	149	632	335	419	213
TOTALS		1,256	323	933	458	573	360

1) SALVAGED/UNSUABLE PAVEMENT MATERIAL IS INCLUDED IN CUT
2) SALVAGED/UNUSABLE PAVEMENT MATERIAL = (AREA OF PROJECT PAVEMENT) * (TYPICAL DEPTH)
3) AVAILABLE MATERIAL = CUT - SALVAGED/UNUSABLE PAVEMENT MATERIAL
4) EXPANDED FILL FACTOR = (UNEXPANDED FILL) * (FILL FACTOR)
5) MASS ORDINATE = AVAILABLE MATERIAL - (EXPANDED FILL); POSITIVE INDICATES AN EXCESS OF MATERIAL

3

PREPARE FOUNDATION ITEMS

CATEGORY	STAGE	STATION	TO	STATION	OFFSET	211.0400 PREPARE FOUNDATION FOR ASPHALTIC SHOULDERS STA
0010						
	1	1562+84	-	1564+80	RT	2
	1	1567+85	-	1568+71	RT	1
	2	1560+22	-	1564+80	LT	5
	2	1567+85	-	1569+88	LT	2
TOTAL						10

BASE AGGREGATE ITEMS

CATEGORY	STAGE	STATION	TO	STATION	OFFSET	305.0110 BASE AGGREGATE DENSE 3/4-INCH TON	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH TON
0010							
	1	1562+48	-	1565+65	RT	99	150
	1	1567+08	-	1568+85	RT	50	149
	2	1559+92	-	1565+65	LT & RT	185	213
	2	1567+08	-	1570+16	LT & RT	96	198
TOTALS						430	710

CONCRETE PAVEMENT ITEMS

CATEGORY	STAGE	STATION	TO	STATION	OFFSET	415.0070 CONCRETE PAVEMENT 7-INCH SY	415.0410 CONCRETE PAVEMENT APPROACH SLAB SY
0010							
	1	1565+48	-	1565+65	RT	14	12
	1	1567+08	-	1567+23	RT	17	12
	2	1565+48	-	1565+65	LT & RT	14	29
	2	1567+08	-	1567+23	LT & RT	17	29
TOTALS						62	82

CONCRETE SURFACE DRAINS

CATEGORY	STAGE	STATION	TO	STATION	OFFSET	416.1010 CONCRETE SURFACE DRAINS CY
0010						
	1	1565+48	-	1565+65	RT	3
	2	1565+48	-	1565+65	LT	3
TOTAL						6

ASPHALTIC ITEMS

CATEGORY	STAGE	STATION	TO	STATION	OFFSET	455.0605 TACK COAT GAL	465.0105 ASPHALTIC SURFACE TON
0010							
	1	1562+84	-	1565+50	RT	19	98
	1	1567+23	-	1568+71	RT	13	68
	2	1560+22	-	1565+50	LT & RT	42	213
	2	1567+23	-	1569+88	LT & RT	26	127
TOTALS						100	505

TEMPORARY BARRIER ITEMS

CATEGORY	STAGE	LOCATION	603.8000 CONCRETE BARRIER TEMPORARY PRECAST DELIVERED LF	603.8125 CONCRETE BARRIER TEMPORARY PRECAST INSTALLED LF	603.8505 ANCHORING CONCRETE BARRIER ON BRIDGE DECKS LF
0010					
	1	PROJECT	450	450	250
	2	PROJECT	50	500	250
TOTALS			500	950	500

EROSION CONTROL ITEMS

CATEGORY	STAGE	STATION		TO STATION	OFFSET	628.1104 EROSION BALES EACH	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.2004 EROSION MAT CLASS I TYPE B SY	628.2027 EROSION MAT CLASS II TYPE C SY	628.6005 TURBIDITY BARRIERS SY	628.7504 TEMPORARY DITCH CHECKS LF	628.7555 CULVERT PIPE CHECKS EACH	628.7570 ROCK BAGS EACH
0010														
	1	1562+48	-	1565+72	RT	–	200	200	520	–	180	12	–	–
	1	1567+01	-	1568+85	RT	–	40	40	640	200	160	36	4	–
	2	1559+92	-	1565+72	LT	16	350	350	300	110	280	12	–	–
	2	1567+01	-	1570+16	LT	–	50	50	1,120	–	200	72	–	–
		UNDISTRIBUTED			–	8	170	170	650	80	210	33	1	30
TOTALS						24	810	810	3,230	390	1,030	165	5	30

RESTORATION ITEMS

CATEGORY	STAGE	STATION		TO STATION	OFFSET	625.0100 TOPSOIL SY	629.0210 FERTILIZER TYPE B CWT	630.0120 SEEDING MIXTURE NO. 20 LB	630.0130 SEEDING MIXTURE NO. 30 LB
0010									
	1	1562+48	-	1565+72	RT	520	0.3	4	8
	1	1567+01	-	1568+85	RT	840	0.5	15	6
	2	1559+92	-	1565+72	LT	410	0.3	2	7
	2	1567+01	-	1570+16	LT	1,120	0.7	17	10
		UNDISTRIBUTED			--	730	0.5	12	9
TOTALS						3,620	2	50	40

EROSION CONTROL MOBILIZATION ITEMS

CATEGORY	LOCATION	628.1905 MOBILIZATIONS EROSION CONTROL EACH	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL EACH
0010			
	PROJECT	6	4
TOTALS		6	4

RIPRAP ITEMS

CATEGORY	STAGE	STATION	OFFSET	606.0200 RIPRAP MEDIUM CY	645.0120 GEOTEXTILE TYPE HR SY
0010					
	1	1565+49	RT	5	16
	2	1565+49	LT	5	16
TOTALS				10	32

GUARDRAIL ITEMS

CATEGORY	STAGE	STATION		TO STATION	OFFSET	204.0165 REMOVING GUARDRAIL LF	614.2300 MGS GUARDRAIL 3 LF	614.2330 MGS GUARDRAIL 3 K LF	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
0010										
	1	1563+75	-	1565+68	RT	240	100.0	–	39.4	1
	1	1565+07	-	1568+48	RT	110	50.0	–	39.4	1
	2	1561+12	-	1565+68	LT	350	100.0	262.5	39.4	1
	2	1565+07	-	1568+98	LT	150	100.0	–	39.4	1
TOTALS						850	350	263	158	4

TYPE II SIGNS AND SUPPORTS

CATEGORY	SIGN NUMBER	SIGN CODE	SIGN DIMENSION W	X	H	634.0614 POSTS WOOD 4X6-INCH X 14-FT EACH	634.0616 POSTS WOOD 4X6-INCH X 16-FT EACH	637.2210 SIGNS TYPE II REFLECTIVE H SF	638.2102 MOVING SIGNS TYPE II EACH	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH	COMMENTS
0010												
	1	D1-2	84	X	24	2	–	14.00	--	1	2	
	2	D1-1	90	X	15	1	1	9.38	--	1	2	
	3	--	--	X	–	–	1	–	1	–	–	NO FISHING OR DIVING FROM BRIDGE
	4	--	--	X	–	–	1	–	1	–	1	IRON RIVER
	5	--	--	X	–	–	–	–	--	1	1	
	6	--	--	X	–	–	–	–	--	1	1	
	7	--	--	X	–	–	–	–	--	1	1	
	8	--	--	X	–	–	–	–	--	1	1	
	9	--	--	X	–	–	1	–	1	–	1	IRON RIVER
	10	--	--	X	–	–	1	–	1	–	1	REDUCED SPEED AHEAD
	11	--	--	X	–	–	1	–	1	–	–	NO FISHING OR DIVING FROM BRIDGE
	12	--	--	X	–	2	–	–	1	–	2	USH 53/SUPERIOR
TOTALS						5	6	23.38	6	6	13	

TEMPORARY FENCING ITEMS

CATEGORY	LOCATION	616.0700.S FENCE SAFETY LF	COMMENTS
0010			
	OLD USH 2	750	OVER IRON RIVER DAM
TOTAL		750	

WATER

CATEGORY	LOCATION	624.0100 MGAL	COMMENTS
0010			
	PROJECT	25	BASE COMPACTION
	PROJECT	5	COMMON EXCAVATION
TOTAL		30	

MARKING ITEMS

CATEGORY	STATION	TO	STATION	OFFSET	646.1020 MARKING LINE EPOXY 4-INCH YELLOW LF	646.1020 MARKING LINE EPOXY 4-INCH WHITE LF
0010						
	1560+21	-	1569+88	LT & RT	1,935	1,935
TOTAL					1,935	1,935
					3,870	

TRAFFIC CONTROL ITEMS

CATEGORY	STAGE	STAGE DURATION	643.0300 TRAFFIC CONTROL DRUMS NO.	643.0300 TRAFFIC CONTROL DRUMS DAY	643.0420 TRAFFIC CONTROL BARRICADES TYPE III NO.	643.0420 TRAFFIC CONTROL BARRICADES TYPE III DAY	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A NO.	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A DAY	643.0715 TRAFFIC CONTROL WARNING LIGHTS TYPE C NO.	643.0715 TRAFFIC CONTROL WARNING LIGHTS TYPE C DAY	643.0900 TRAFFIC CONTROL SIGNS NO.	643.0900 TRAFFIC CONTROL SIGNS DAY	643.1050 TRAFFIC CONTROL SIGNS PCMS NO.	643.1050 TRAFFIC CONTROL SIGNS PCMS DAY	COMMENTS
		DAYS													
0010															
	PRIOR TO STAGE 1	7	–	–	–	--	--	–	–	–	–	--	2	14	ROADWAY
	STAGE 1	45	25	1,125	3	135	6	270	10	450	21	945	2	90	ROADWAY
	STAGE 1 & 2	90	–	–	–	--	--	–	–	–	14	1,260	--	--	PEDESTRIAN ROUTE
	STAGE 1 & 2	90	–	–	–	--	--	–	–	–	54	4,860	--	--	WIDTH RESTRICTION
	STAGE 2	45	31	1,395	4	180	8	360	14	630	22	990	2	90	ROADWAY
	STAGE 3	5	45	225	4	20	8	40	14	70	71	355	2	10	ROADWAY
TOTALS				2,745		335		670		1,150		8,410		204	

TEMPORARY PORTABLE RUMBLE STRIPS

CATEGORY	LOCATION	643.0310.S LS
0010	PROJECT	1
TOTAL		1

TRAFFIC CONTROL

CATEGORY	LOCATION	643.5000 EACH
0010	PROJECT	1
TOTAL		1

TEMPORARY MARKING ITEMS

CATEGORY	STAGE	STATION	TO	STATION	OFFSET	646.9000 MARKING REMOVAL LINE 4-INCH LF	649.0150 TEMPORARY MARKING LINE REMOVABLE TAPE 4-INCH WHITE LF	649.0850 TEMPORARY MARKING STOP LINE REMOVABLE TAPE 18-INCH LF
0010								
	1	1562+72	-	1569+93	LT & RT	1,400	1,090	44
	2	1562+72	-	1569+93	LT & RT	270	1,170	–
	3	1562+72	-	1569+93	LT & RT	--	–	44
TOTALS						1,670	2,260	88

CONSTRUCTION STAKING ITEMS

CATEGORY	STATION	TO	STATION	OFFSET	650.4500 CONSTRUCTION STAKING SUBGRADE LF	650.5000 CONSTRUCTION STAKING BASE LF	650.6500 CONSTRUCTION STAKING STRUCTURE LAYOUT (B-04-0116) LS	650.7000 CONSTRUCTION STAKING CONCRETE PAVEMENT LF	650.9910 CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (1180-49-71) LS	650.9920 CONSTRUCTION STAKING SLOPE STAKES LF
0010										
	1559+92	-	1570+16	LT & RT	–	--	–	–	--	1,024
	1564+80	-	1565+65	LT & RT	85	70	–	15	--	–
	1567+08	-	1567+85	LT & RT	77	62	–	15	--	–
	PROJECT			–	–	--	1	–	1	–
TOTALS					162	132	1	30	1	1,024

TEMPORARY TRAFFIC SIGNALS FOR BRIDGES

CATEGORY	LOCATION	661.0100 TEMPORARY TRAFFIC SIGNALS FOR BRIDGES (B-04-0116) LS
0010		
	PROJECT	1
TOTAL		1

SAWING ASPHALT

CATEGORY	STAGE	STATION	TO	STATION	OFFSET	690.0150 SAWING ASPHALT LF	690.0250 SAWING CONCRETE LF
0010							
	1	1562+84	-	1564+80	RT	243	--
	1	1564+80	-	1565+85	RT	–	100
	1	1565+85	-	1568+71	RT	103	--
	2	1560+22	-	1564+80	LT & RT	480	--
	2	1565+85	-	1569+88	LT & RT	224	--
TOTALS						1,050	100

CURVE 1
PI STA = 1557+82.09
Y = 449539.03
X = 681110.76
PC STA = 1552+40.98
Y = 449729.11
X = 680604.13
PT STA = 1563+15.25
Y = 449505.4689
X = 681650.83
DELTA = 17°00'33"
D = 1°35'00"
T = 541.12'
L = 1074.27'
R = 3618.68'
SE = 4.8%
SE TRANSITION (T) = 181'
RO (RUNOFF) = 128'

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
600	1562+25,LT	BM RR SPIKE IN 20" ELM	1079.80

BM 600

BEGIN CONSTRUCTION
1559+92, LT

MERIT NETWORK, INC.
(COMMUNICATIONS)

IRON RIVER

BEGIN PROJECT
STA 1564+80
Y = 449495.25
X = 681815.27

PT: 1563+15.25
Y: 449505.47
X: 681650.83

+66
20'
+62
+12
+22
+84
+75
+25

S86° 26' 39"E

1559+00 1560+00 1561+00 1562+00 1563+00 1564+00 1565+00

CURVE 1

USH 2

BEGIN CONSTRUCTION
1562+48, RT

CONTROL POINT 507
Y = 449484.13
X = 681529.48
0.75" IRON ROD FOUND
W/WISDOT CAP (CP230)

EXISTING STONE DITCH CHECK TO REMAIN,
MINOR ADJUSTMENTS TO EXISTING STONE
INCIDENTAL TO COMMON EXCAVATION

MGS THRIE BEAM TRANSITION,
MGS GUARDRAIL 3 &
MGS GUARDRAIL TERMINAL EAT;
STA 1563+75 TO 1565+68, RT

DAHLBERG LIGHT AND POWER COMPANY
(ELECTRIC)

MGS THRIE BEAM TRANSITION
STA 1565+29 TO 1565+68, LT
MGS GUARDRAIL 3 K
STA 1562+66 TO 1565+29
MGS GUARDRAIL 3 &
MGS GUARDRAIL TERMINAL EAT;
STA 1561+12 TO 1562+66, LT

LEGEND
- CONCRETE PAVEMENT APPROACH SLAB AND CONCRETE PAVEMENT 7" FOR SHOULDERS
- 7 3/4-INCH ASPHALTIC SURFACE
- 5-INCH ASPHALTIC SURFACE
- XXXX SAWING
- DELINEATED WETLAND BOUNDARY
- SLOPE INTERCEPT
- X CLEARING AND GRUBBING
- REMOVING GUARDRAIL (1)
- RIPRAP HEAVY (SEE STRUCTURE PLANS) (2)
- RIPRAP MEDIUM (3)
- CONCRETE SURFACE DRAIN (INSTALL BETWEEN POST 8 AND 7)
- PERMITTED WETLAND IMPACTS

NOTES
SEE TYPICAL SECTIONS FOR APPROXIMATE RIGHT-OF-WAY LOCATIONS.

SEE EROSION CONTROL PLANS FOR RIPRAP LAYOUT INFORMATION.

VCL = 200.00
K = 160.15

EXISTING GROUND

STA 1563+00.00
EL 1083.25

STA 1563+48.67
EL 1083.05

-0.41%

FINISHED PROFILE

BEGIN PROJECT
STA 1564+80

VPI STA 1564+48.67
VPI EL 1082.59

VPT STA 1565+48.67
VPT EL 1083.38

GRAPHICAL PROFILE
FOR INFORMATION ONLY

FINISHED PROFILE ELEVATION AT ℄
EXISTING GROUND ELEVATION ℄

1096 1092 1088 1084 1080 1076 1072 1068

1084.89 1084.87 1084.75 1084.59 1084.48 1084.26 1084.21 1084.05 1083.98 1083.80 1083.67 1083.59 1083.52 1083.40 1083.25 1083.14 1083.06 1082.97 1082.88 1082.89 1082.93 1082.98 1083.03 1083.07 1083.08 1083.21 1083.12 1083.39

1559+50 1559+75 1560+00 1560+25 1560+50 1560+75 1561+00 1561+25 1561+50 1561+75 1562+00 1562+25 1562+50 1562+75 1563+00 1563+25 1563+50 1563+75 1564+00 1564+25 1564+50 1564+75 1565+00 1565+25 1565+50

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	PLAN AND PROFILE	SHEET 25	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\050101-PP.DWG
LAYOUT NAME - ****
PLOT DATE : 7/18/2017 7:44 AM PLOT BY : MICHAEL HIGGINS PLOT NAME : PLOT SCALE : 1 IN:40 FT

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
601	1565+86,RT	CUT "X" ON SW PARAPET	1085.96
602	1569+34,RT	HYD TOP FLANGE NE BURY TAG BOLT	1088.07
603	1566+82,LT	FOUND BRASS CAP NE STRUCT DECK CORNER	1083.85

N

CONTROL POINT
Y = 449498.01
X = 682201.56
0.75" X 24" IRON REBAR
W/BLUE EMCS CONTROL CAP

END PROJECT
STA 1567+85

END CONSTRUCTION
1570+16, LT

MERIT NETWORK, INC.
(COMMUNICATIONS)

BM 603

BM 601

USH 2 S86° 26' 39"E

EXISTING B-04-0015
PROPOSED B-04-0116

IRON RIVER

END CONSTRUCTION
1568+85, RT

STA 1570+50
Y = 449459.90
X = 682384.17

IRON RIVER SANITARY DISTRICT #1
(WATER)

MGS THRIE BEAM TRANSITION,
MGS GAURDRAIL 3 &
MGS GUARDRAIL TERMINAL EAT;
STA 1565+07 TO 1568+48, RT
STA 1565+07 TO 1568+98, LT

NORWAY RD

BM 602

DAHLBERG LIGHT AND POWER COMPANY
(ELECTRIC)

FINISHED PROFILE

STA 1566+37
REMOVE STRUCTURE B-04-0015
1 SPAN 54" STEEL GIRDER CONCRETE DECK
94' OVERALL LENGTH
35' OVERALL WIDTH

STA 1566+37
STRUCTURE B-04-0116
1 SPAN 45W" PRESTRESSED CONCRETE GIRDER
44' CLEAR ROADWAY WIDTH
0° RHF

0.79%

VPC STA 1566+98.53
VPC EL 1084.56

END PROJECT
STA 1567+85

VPI STA 1567+98.53
VPI EL 1085.35

GRAPHICAL PROFILE
FOR INFORMATION ONLY

VPT STA 1568+98.53
VPT EL 1087.32

VCL = 200.00
K = 168.98

1.97%

STA 1570+00.00
EL 1089.32

EXISTING GROUND

GRAPHICAL PROFILE
FOR INFORMATION ONLY

EXISTING GROUND ELEVATION
FINISHED PROFILE ELEVATION AT

NOTES
SEE SDD "PAVEMENT MARKING (MAINLINE)" FOR PROPOSED PAVEMENT MARKING.
SEE TYPICAL SECTIONS FOR APPROXIMATE RIGHT-OF-WAY LOCATIONS.
SEE EROSION CONTROL PLANS FOR RIPRAP LAYOUT INFORMATION.
SEE B-04-0116 PLANS FOR WATER SURFACE ELEVATION.

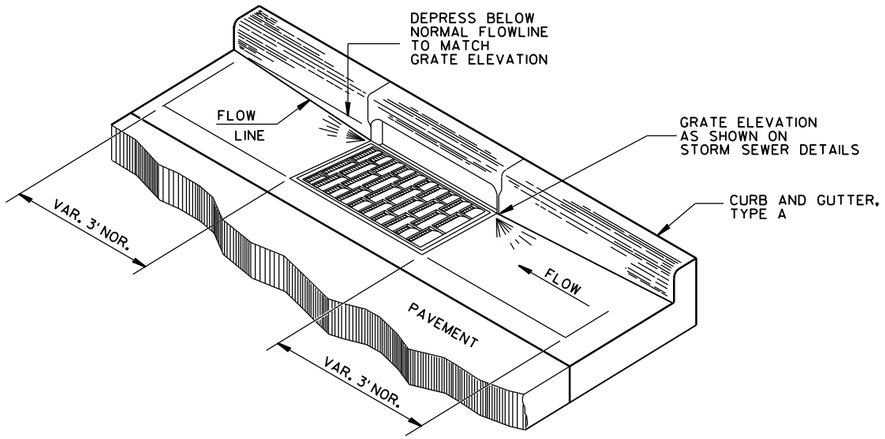
LEGEND
- CONCRETE PAVEMENT APPROACH SLAB AND CONCRETE PAVEMENT 7" FOR SHOULDERS
- 7 3/4-INCH ASPHALTIC SURFACE
- 5-INCH ASPHALTIC SURFACE
- XXXX SAWING
- DELINEATED WETLAND BOUNDARY
- SLOPE INTERCEPT
- X CLEARING AND GRUBBING
- REMOVING GUARDRAIL (1)
- RIPRAP HEAVY (SEE STRUCTURE PLANS) (2)
- RIPRAP MEDIUM (3)
- CONCRETE SURFACE DRAIN (INSTALL BETWEEN POST 8 AND 7)
- PERMITTED WETLAND IMPACTS

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	PLAN AND PROFILE	SHEET 26	E

Standard Detail Drawing List

08D01-20B	CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS
08D02-06	CONCRETE SURFACE DRAINS FLUME TYPE AT STRUCTURES
08E08-03	TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
09G02-04A	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-04B	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
09G02-04C	BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION
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
13C01-18	CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES
13C11-11A	RURAL DOWELED CONCRETE PAVEMENT
13C11-11B	RURAL DOWELED CONCRETE PAVEMENT
14B07-15A	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-15B	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-15C	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-15D	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-15E	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-15F	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-15G	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-15H	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
14B07-15I	CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
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)
14B45-04D	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04E	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04F	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04G	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04H	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04I	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04J	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04K	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
14B45-04L	MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)
15C04-03	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 45 M.P.H. OR GREATER TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC
15C05-03	TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS
15C08-18A	LONGITUDINAL MARKING (MAINLINE)
15C12-06	TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION
15C33-02	STOP LINE AND CROSSWALK PAVEMENT MARKING
15C35-01A	PAVEMENT MARKING (INTERSECTIONS)
15D28-03	TRAFFIC CONTROL, WORK ON SHOULDER OR PARKING LANE, UNDIVIDED ROADWAY
15D33-04	TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS

6



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.

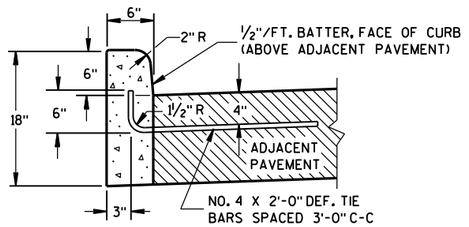
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

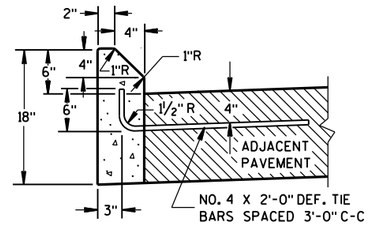
(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, C, K, R AND TBTT.

(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.

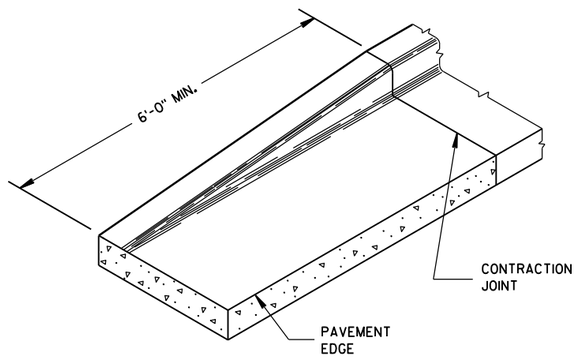


(1)
TYPES A & D

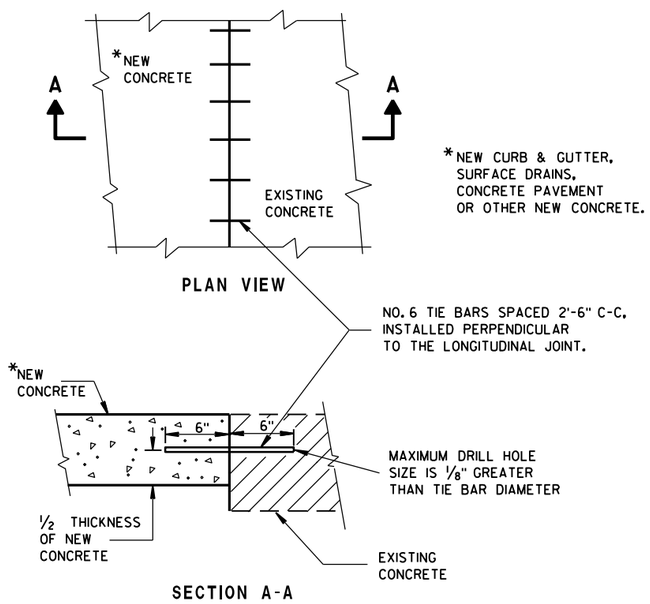


(1)
TYPES G & J

CONCRETE CURB



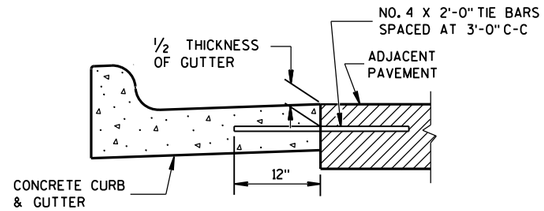
END SECTION CURB & GUTTER



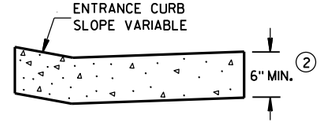
PLAN VIEW

SECTION A-A

TIE BARS DRILLED INTO EXISTING PAVEMENT



TYPICAL TIE BAR LOCATION (1)



DRIVEWAY ENTRANCE CURB (9)

(WHEN DIRECTED BY THE ENGINEER)

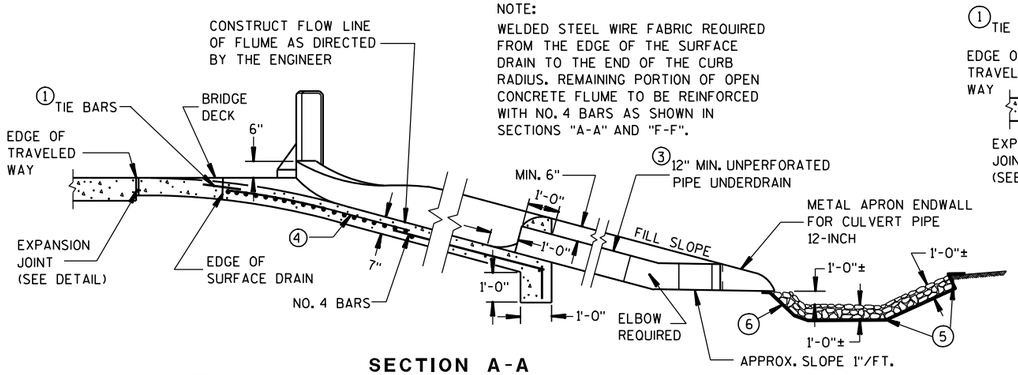
CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

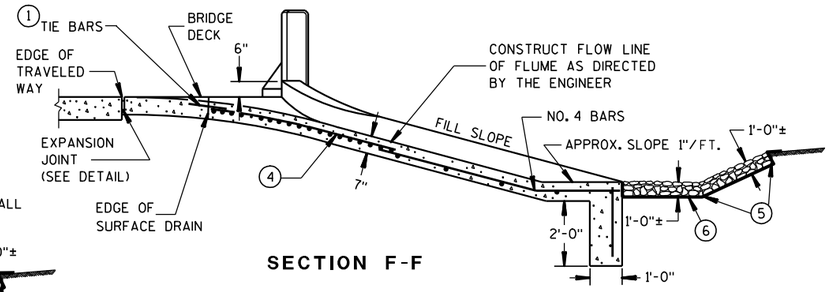
APPROVED
June, 2017
DATE
/S/ Rodney Taylor
ROADWAY STANDARDS D
UNIT SUPERVI
FHWA

6

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



SECTION A-A



SECTION F-F

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.

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

(1) NO. 4 X 2'-0" TIE BARS SPACED AT 3'-0" CENTERS TO BE USED ONLY WHEN ADJACENT TO P.C. CONCRETE.

(2) NO. 4 X 2'-0" TIE BARS SPACED AT 12" CENTERS TO BE PLACED BY BRIDGE CONTRACTOR, OR DRILLED TIE BARS PLACED AS DIRECTED BY THE ENGINEER.

(3) PIPE UNDERDRAIN MAY BE ANY OF THE MATERIALS LISTED IN SECTION 612.2 OF THE STANDARD SPECIFICATIONS EXCEPT DRAIN TILE.

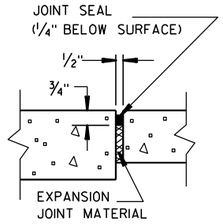
(4) MINIMUM REINFORCEMENT SHALL BE 6" X 6" - W4.0 X W4.0 OR NO. 3 BARS LONGITUDINAL AND TRANSVERSE SPACING 12" C-C.

(5) LIMITS OF ADDITIONAL RIPRAP WHEN SPECIAL DITCH IS REQUIRED.

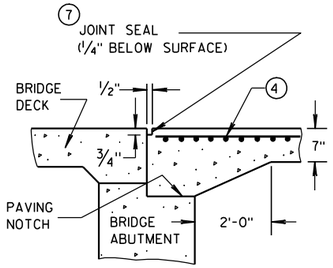
(6) GEOTEXTILE FABRIC, TYPE 'R"

(7) HOT POURED SEALANT UNLESS OTHERWISE SPECIFIED.

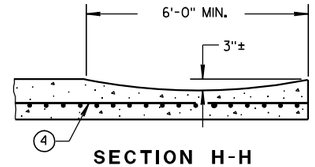
(8) THIS DIMENSION MAY VARY DEPENDING ON THE SPACING OF POSTS FOR THE STEEL PLATE BEAM GUARD. THE TYPICAL LOCATION FOR THE SURFACE DRAIN IS WHERE THE POST SPACING WIDENS TO 3'-1½".



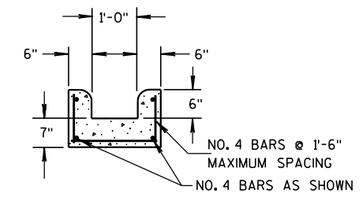
EXPANSION JOINT DETAIL



SECTION D-D



SECTION H-H



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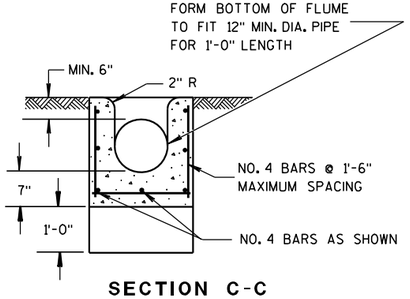
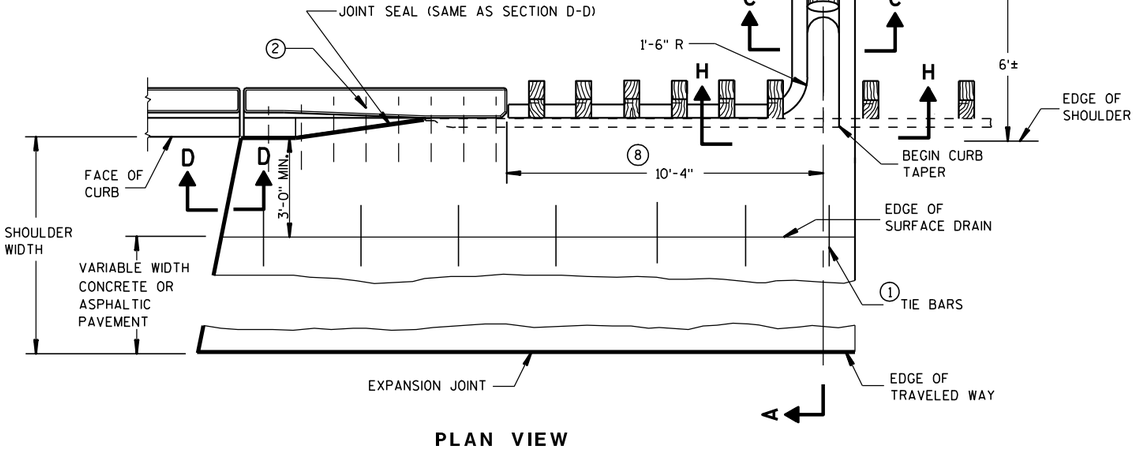
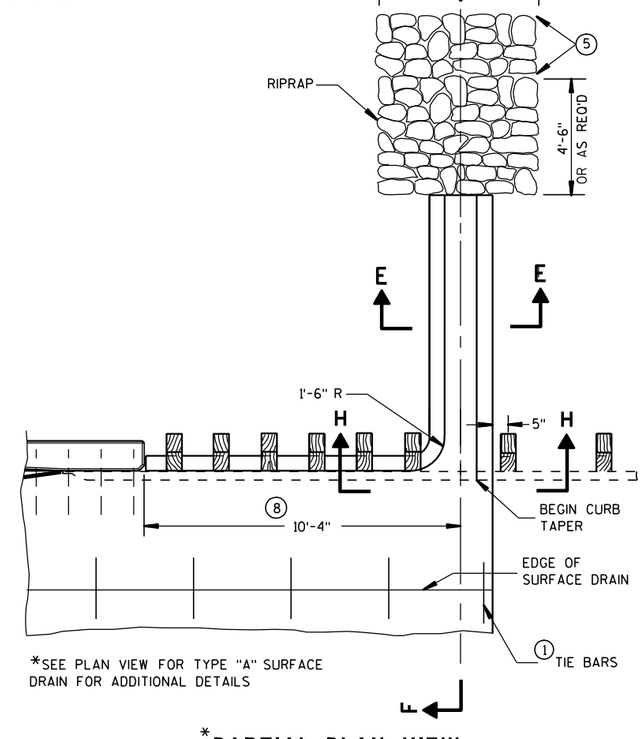


SECTION C-C

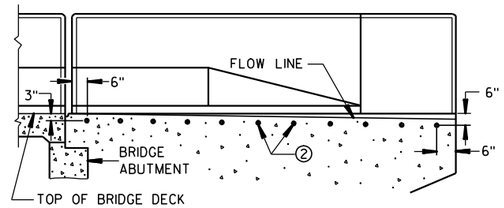


PLAN VIEW
SURFACE DRAIN WITH PIPE
TYPE "A"



*SEE PLAN VIEW FOR TYPE "A" SURFACE DRAIN FOR ADDITIONAL DETAILS

*PARTIAL PLAN VIEW
SURFACE DRAIN WITHOUT PIPE
TYPE "B"

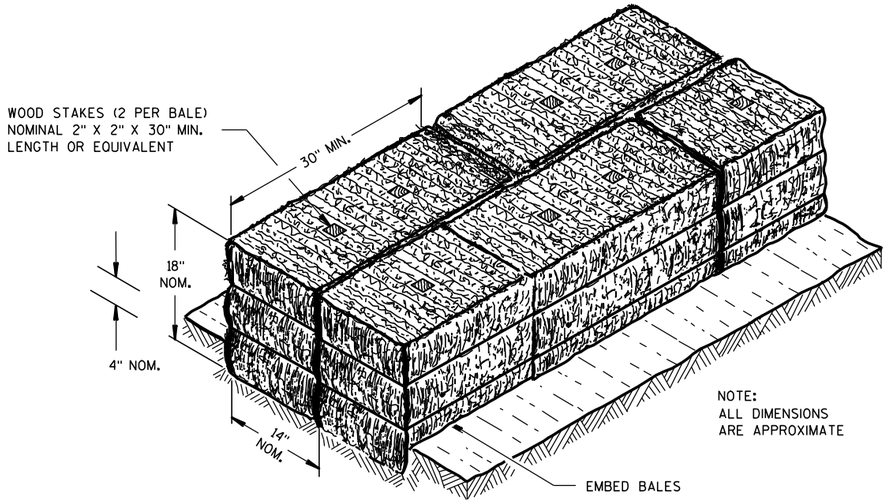


LOCATION OF
TIE BARS IN WINGWALL

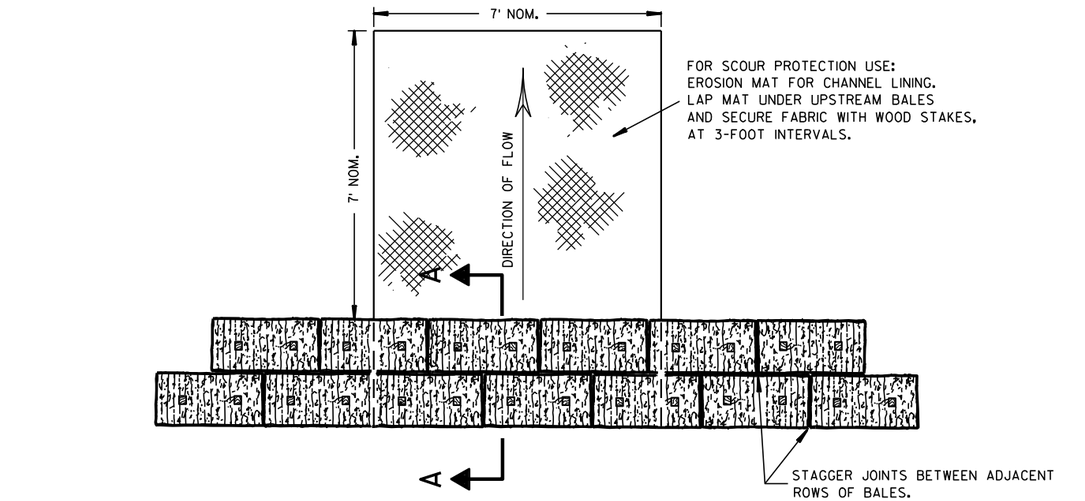
CONCRETE SURFACE DRAINS
FLUME TYPE
AT STRUCTURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

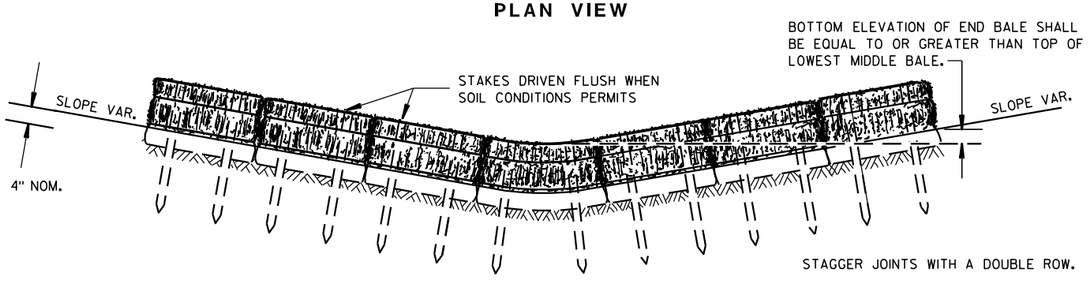
APPROVED
9/4/08
DATE
/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER
FHWA



SECTION A-A



PLAN VIEW



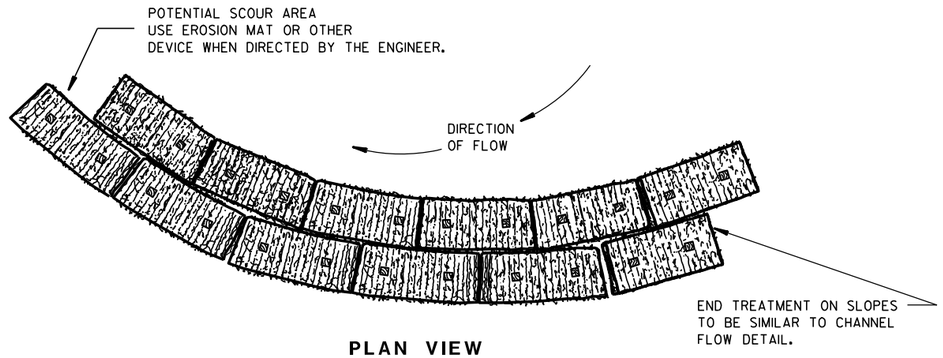
FRONT ELEVATION

TEMPORARY DITCH CHECK USING EROSION BALES ①

GENERAL NOTES

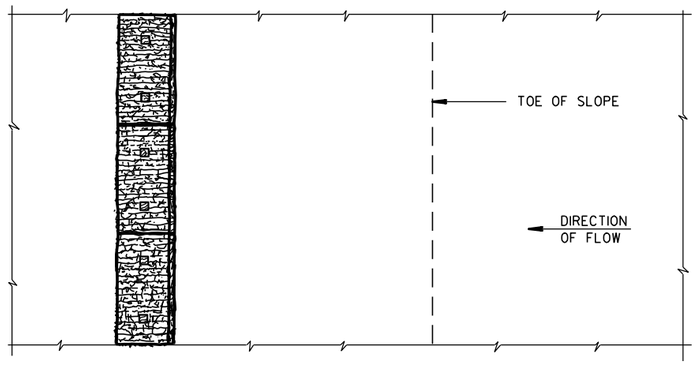
DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

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

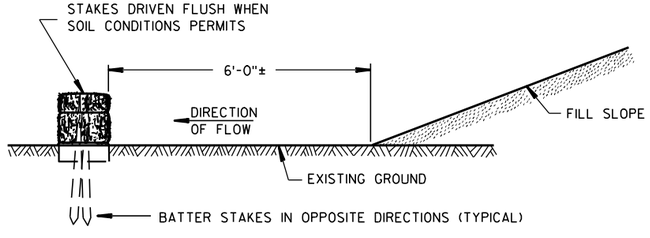


PLAN VIEW

WHEN ALTERING THE DIRECTION OF FLOW



PLAN VIEW



FRONT ELEVATION

WHEN EXISTING GROUND SLOPES AWAY FROM FILL SLOPE

EROSION BALES FOR SHEET FLOW

TYPICAL INSTALLATIONS OF EROSION BALES / TEMPORARY DITCH CHECKS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/04/02 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 E 8-3

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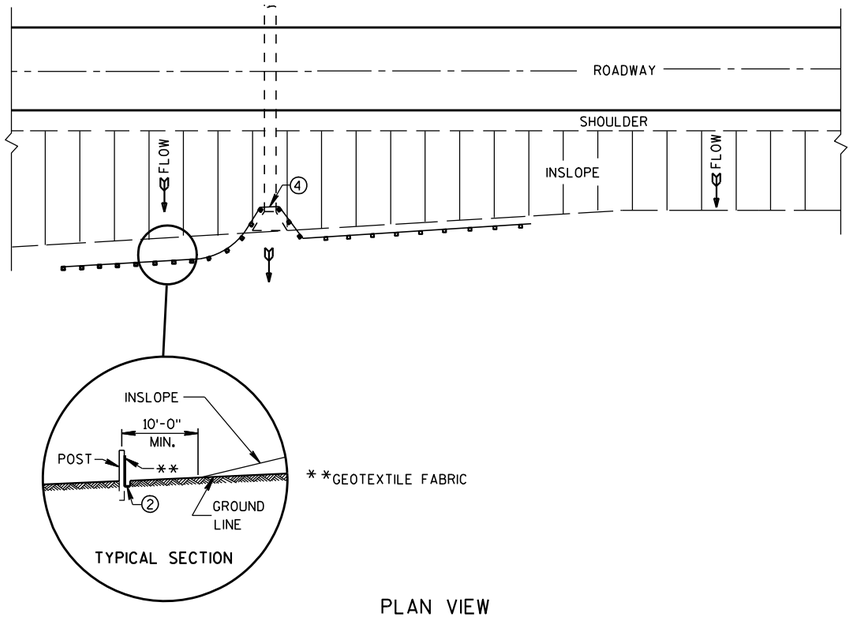
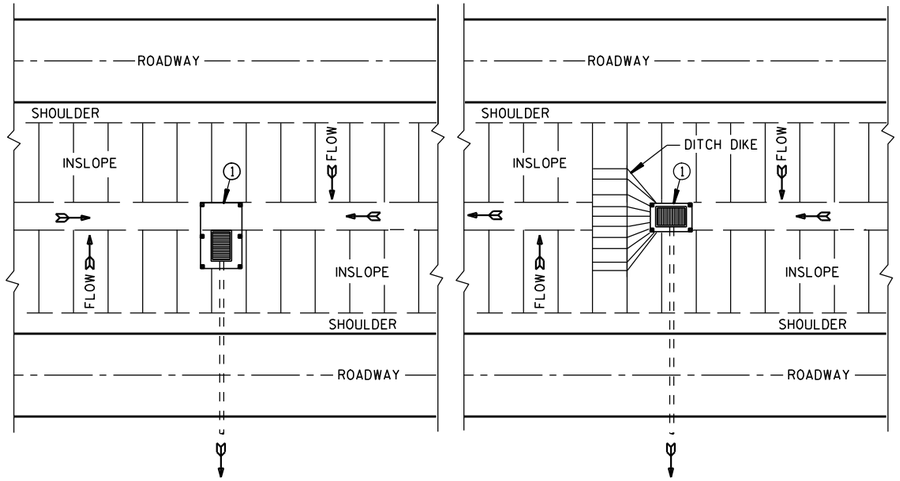
S.D.D. 8 E 8-3



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



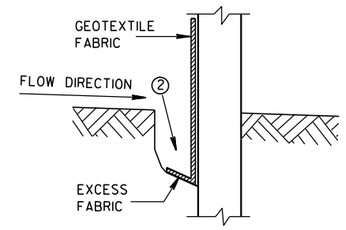
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

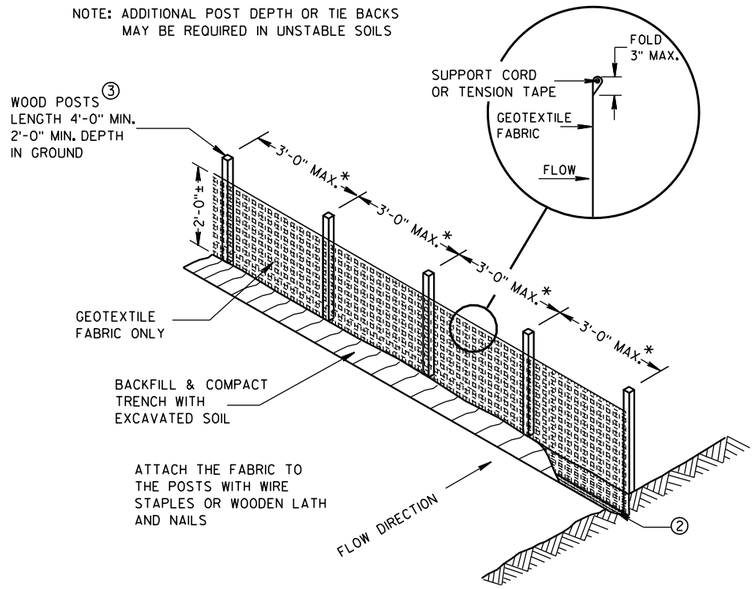
GENERAL NOTES

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

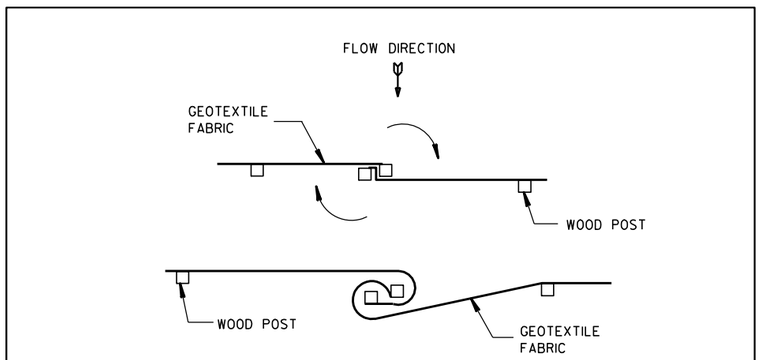
1. HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.
2. FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1⅛" X 1⅛" OF OAK OR HICKORY.
4. SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.
5. CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS; A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.



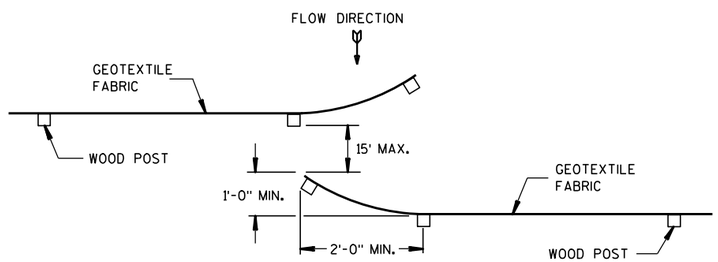
TRENCH DETAIL



SILT FENCE

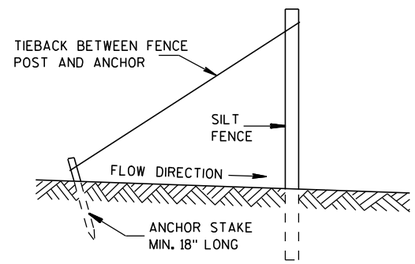


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

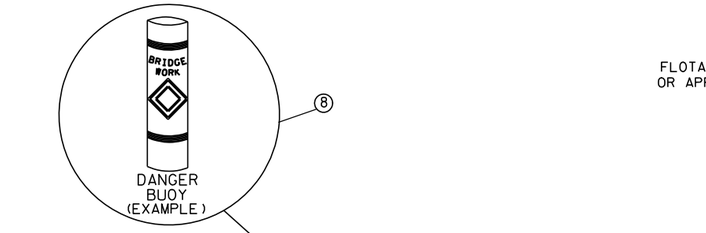
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

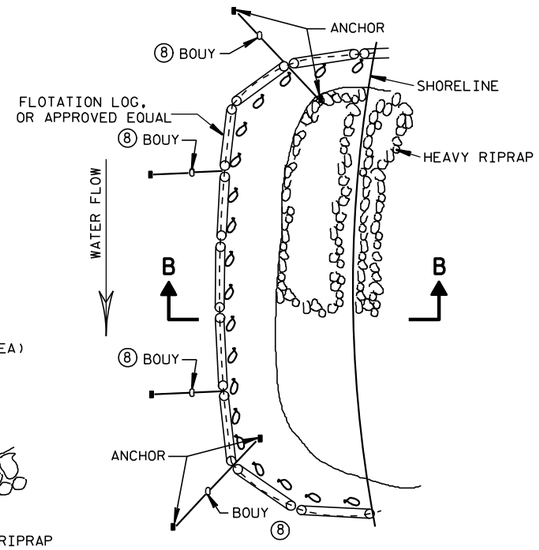
S.D.D. 8 E 9-6

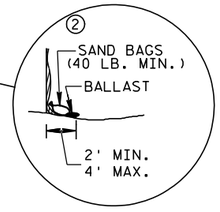
6

S.D.D. 8 E 9-6

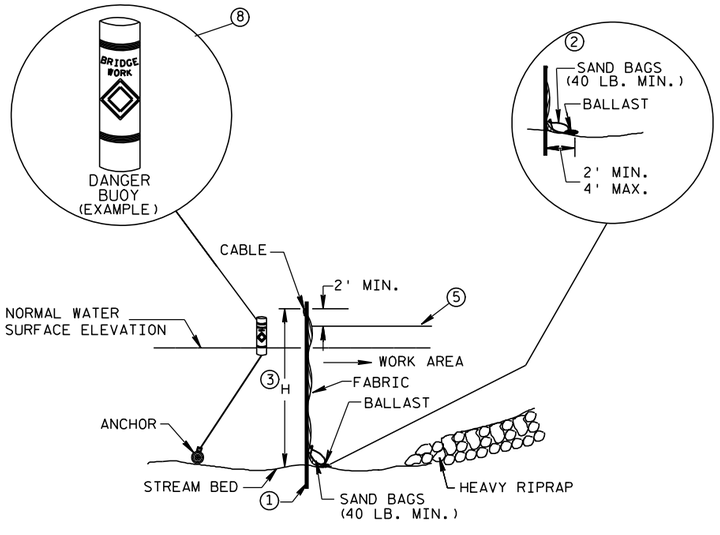


SECTION B-B

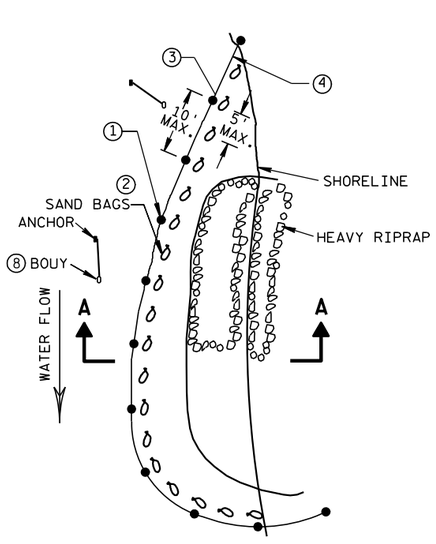




TURBIDITY BARRIER FLOAT ALTERNATIVE
CAUTION - SEE NOTE 6



SECTION A-A



PLAN VIEW

TURBIDITY BARRIER STANDARD POST INSTALLATION

TURBIDITY BARRIER PLACEMENT DETAILS

GENERAL NOTES

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

TURBIDITY BARRIER MAY BE REMOVED AT THE ENGINEERS DISCRETION, WHEN PERMANENT EROSION CONTROL MEASURES HAVE BEEN ESTABLISHED.

① DRIVEN STEEL POSTS, PIPES, OR CHANNELS. LENGTH SHALL BE SUFFICIENT TO SECURELY SUPPORT BARRIER AT HIGH WATER ELEVATIONS.

② SANDBAGS TO BE USED AS ADDITIONAL BALLAST WHEN ORDERED BY THE ENGINEER TO MEET ADVERSE FIELD CONDITIONS. SPACE AS APPROPRIATE FOR SITE CONDITIONS.

③ WHEN BARRIER HEIGHT, H, EXCEEDS 8 FT., POST SPACING MAY NEED TO BE DECREASED.

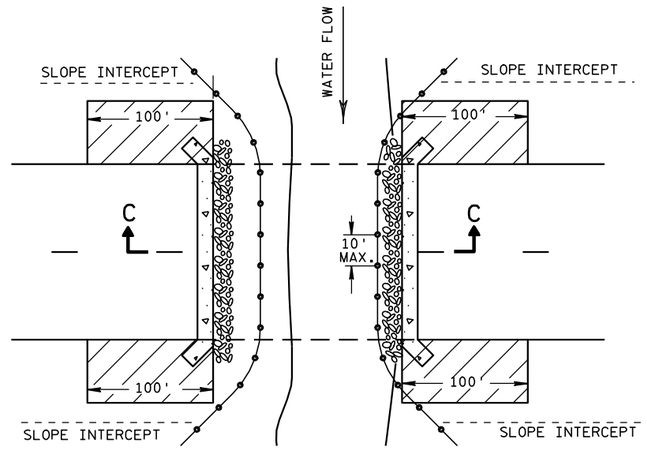
④ IN WATERWAYS SUBJECT TO FLUCTUATING WATER ELEVATIONS, PROVISIONS SHOULD BE MADE TO ALLOW THE WATER TO EQUALIZE ON EACH SIDE OF THE BARRIER. THIS MAY BE ACCOMPLISHED BY LEAVING A PORTION OF THE BARRIER OPEN ON THE UPSTREAM END.

⑤ ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION PERIOD. MIMIMUM BARRIER HEIGHT SHALL BE 2'GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WICHEVER IS GREATER.

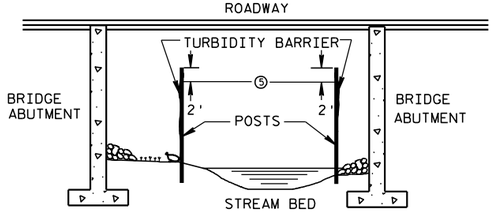
⑥ FLOAT ALTERNATIVE WILL ONLY BE ALLOWED WITH WRITTEN APPROVAL OF THE ENGINEER, AND IS MEANT FOR LOCATIONS WHERE BED ROCK PREVENTS THE INSTALLATION OF POSTS.

⑦ ALLOW SUFFICIENT SLACK VERTICALLY AND HORIZONTALLY SO THAT SEDIMENT BUILD UP WILL NOT SEPARATE OR LOWER THE TURBIDITY BARRIER.

⑧ USE AS DIRECTED BY COAST GUARD OR DNR PERMIT WHEN WORKING IN NAVIGABLE WATERWAYS.



PLAN VIEW



SECTION C-C

TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
6/04/02 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 E 11-2

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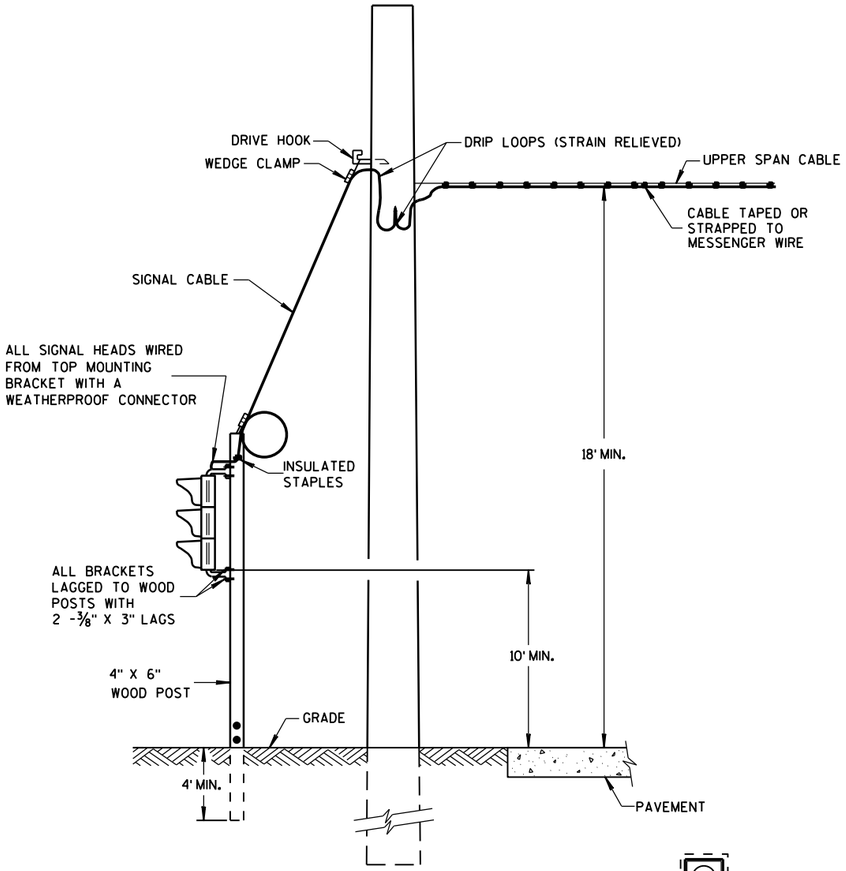
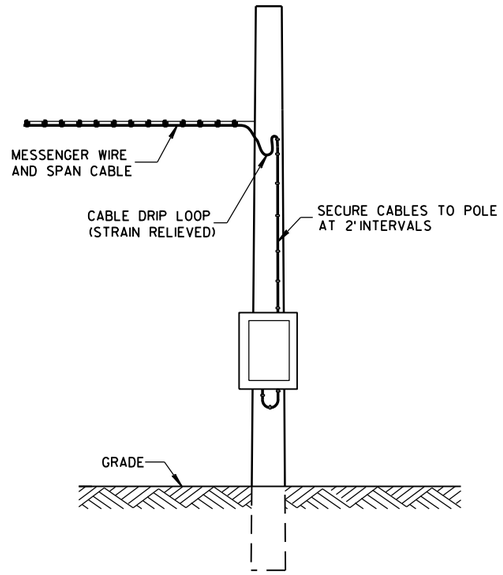
S.D.D. 8 E 11-2



TYPICAL DROP TO TRAFFIC SIGNAL FACE



POLE MOUNT CABINET INSTALLATION

GENERAL NOTES

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

POLE MOUNTED TRAFFIC SIGNAL CONTROL CABINET MAYBE MOUNTED ON THE SERVICE POLE IF THE ELECTRICAL UTILITY ALLOWS THE INSTALLATION.

WHEN UTILITY POLES ARE USED TO SPAN THE TEMPORARY OVERHEAD CABLE, WRITTEN PERMISSION MUST BE OBTAINED FROM THE OWNER OF THE POLES AND GIVEN TO THE PROJECT MANAGER. ALL PERTINENT UTILITY AND CODE CLEARANCES SHALL BE MAINTAINED.

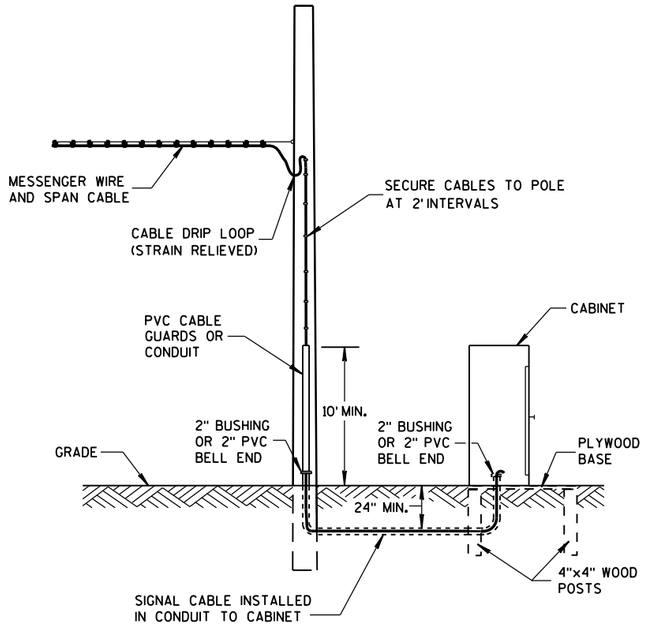
WOOD POLES (NONBREAKAWAY) SHALL BE NO CLOSER TO EDGE OF PAVEMENT THAN OFFSET DISTANCE CHART ALLOWS OR 4 FEET BEHIND PROTECTIVE BARRIER (BEAM GUARD, ETC.).

WOOD POSTS (BREAKAWAY) SHALL BE NO CLOSER THAN 2 FEET OUTSIDE OF SHOULDER.

VERTICAL CLEARANCE ETC. PER NEC.

TRAFFIC SIGNAL FACES SHALL BE TYPICALLY PLACED 12 FEET FROM EDGE OF PAVEMENT.

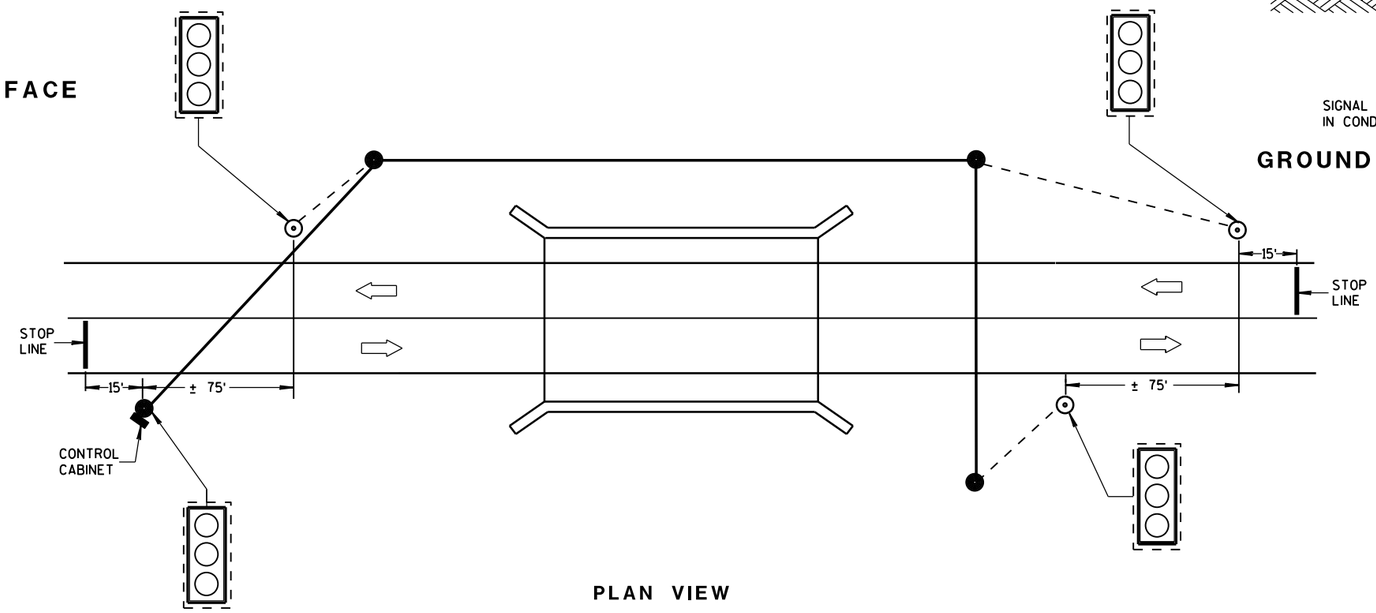
EACH TRAFFIC SIGNAL FACE SHALL HAVE A BACKPLATE.



GROUND MOUNT CABINET INSTALLATION

OFFSET DISTANCES FOR TEMPORARY NON-BREAKAWAY POLES	
SPEED LIMIT	OFFSET DISTANCE**
GREATER THAN 45 MPH	18 FT
45 MPH OR LESS	12 FT
45 MPH OR LESS W/ CURBS	2 FT

**NOTE: OFFSET MEASURED FROM OUTER EDGE OF OUTSIDE THRU LANE.



PLAN VIEW

TYPICAL BRIDGE TEMPORARY TRAFFIC SIGNAL LOCATION

LEGEND

- WOOD POLE (NON-BREAKAWAY)
- WOOD POST (BREAKAWAY)
- SIGNAL CABLE
- SIGNAL CABLE W/MESSENGER
- LED TRAFFIC SIGNAL FACE WITH BACKPLATE (3-12")
- DIRECTION OF TRAFFIC

MINIMUM POLE LENGTHS	CLASS	MINIMUM BURIAL DEPTHS
25 FEET	V	5 FEET
30 FEET	V	6 FEET
35 FEET	IV	7 FEET
40 FEET	IV	8 FEET
45 FEET	IV	9 FEET

BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016 (DATE)
/S/ Ahmet Demirbilek (STATE ELECTRICAL)
FHWA

6

S.D.D. 9 G 2-4a

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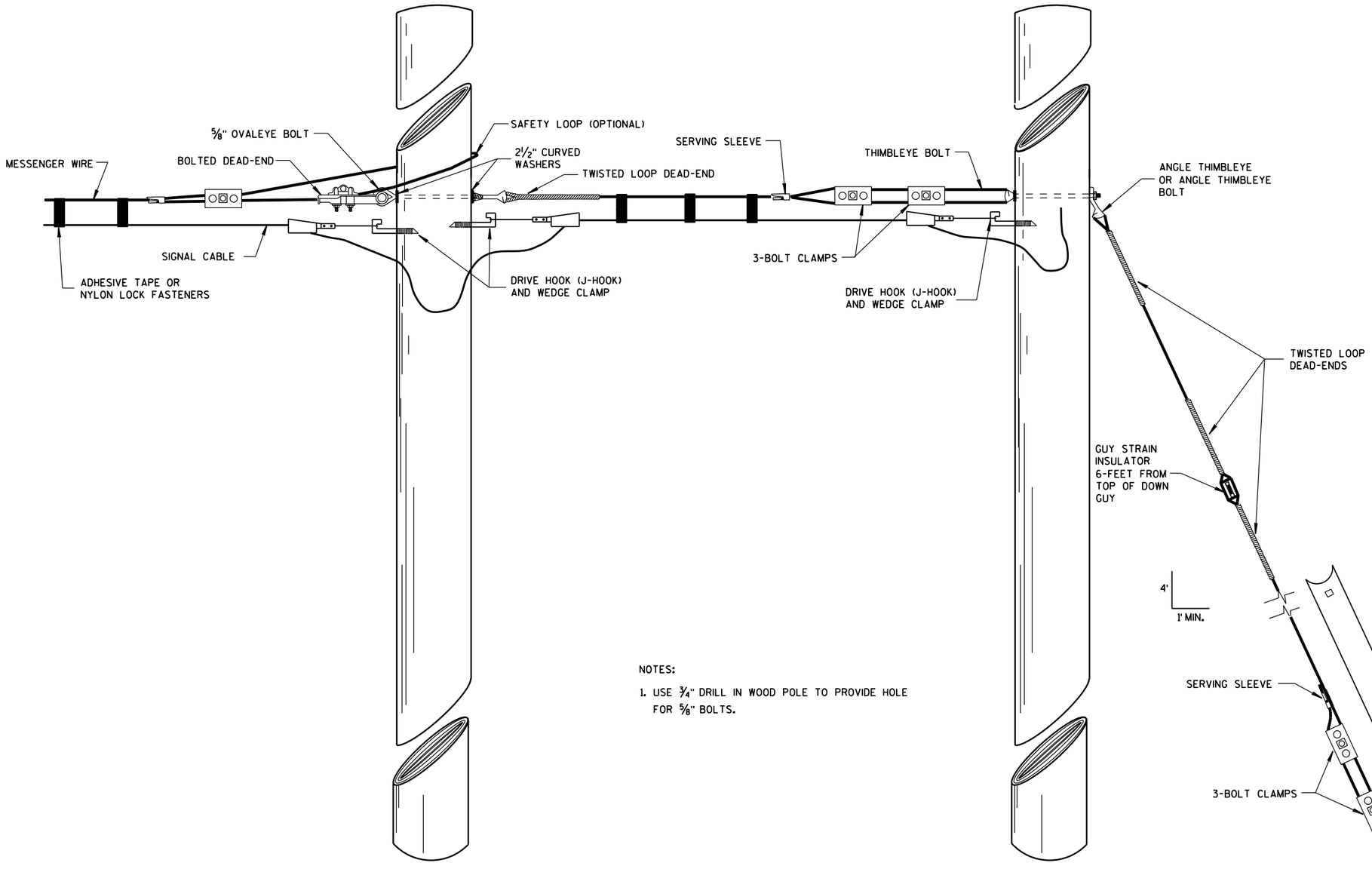
S.D.D. 9 G 2-4a



SPAN WIRE POLE

GUY POLE

NOTES:

1. USE 3/4" DRILL IN WOOD POLE TO PROVIDE HOLE FOR 5/8" BOLTS.

TYPICAL DEAD-ENDINGS OR GUYING

BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

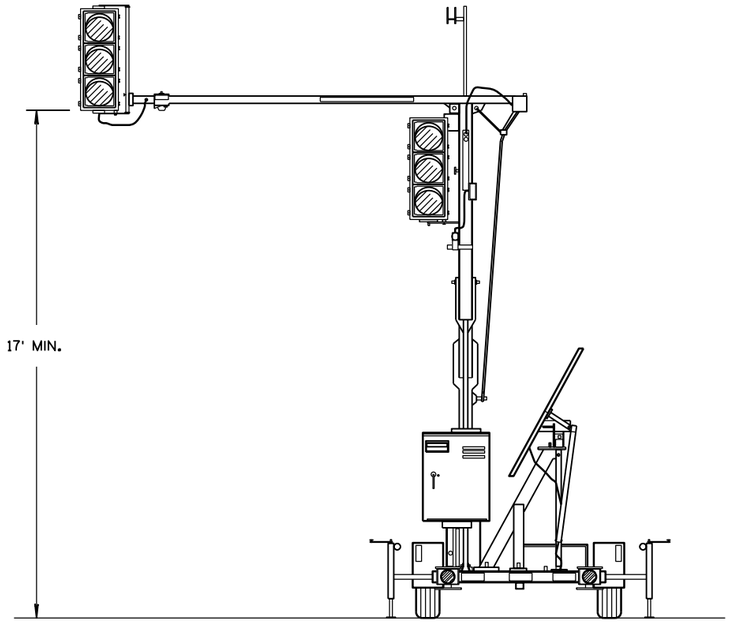
Sept., 2016
DATE

/S/ Ahmet Demirbilek
STATE ELECTRICAL

FHWA

6

S.D.D. 9 G 2-4b

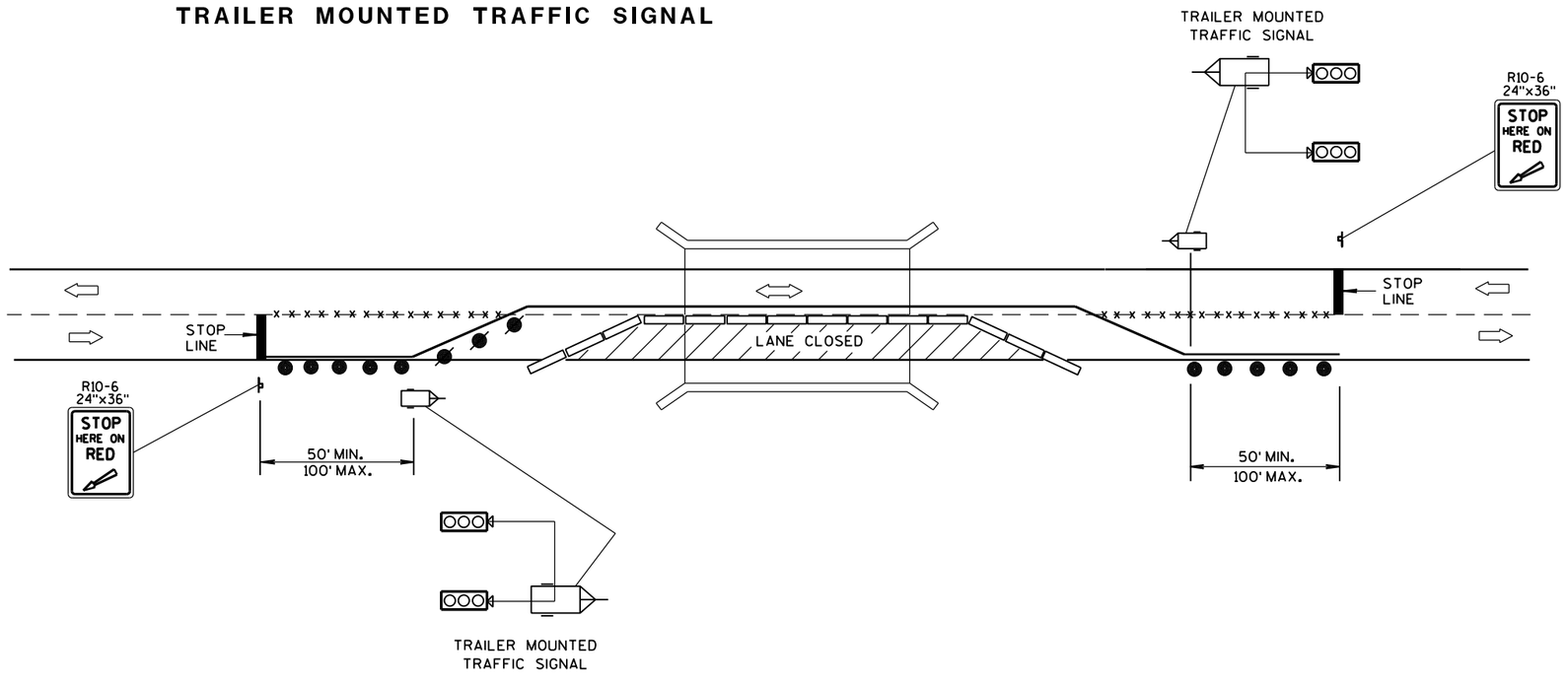


TRAILER MOUNTED TRAFFIC SIGNAL

GENERAL NOTES

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

SIGNING, PAVEMENT MARKING AND LANE CONTROL REQUIREMENTS SHALL CONFORM TO STANDARD DETAIL DRAWING 15 D 33.



TYPICAL TRAILER MOUNTED TRAFFIC SIGNAL LOCATION

LEGEND

- POST MOUNTED SIGN
- REMOVING PAVEMENT MARKING
- DRUM WITH/WITHOUT WARNING LIGHT, TYPE C (STEADY-BURN)
- TEMPORARY PRECAST CONCRETE BARRIER
- TRAILER MOUNTED TRAFFIC SIGNAL
- DIRECTION OF TRAFFIC FLOW

BRIDGE TEMPORARY TRAFFIC SIGNAL INSTALLATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016 — DATE
/S/ Ahmet Demirbilek — STATE ELECTRICAL
FHWA

6

S.D.D. 9 G 2-4c

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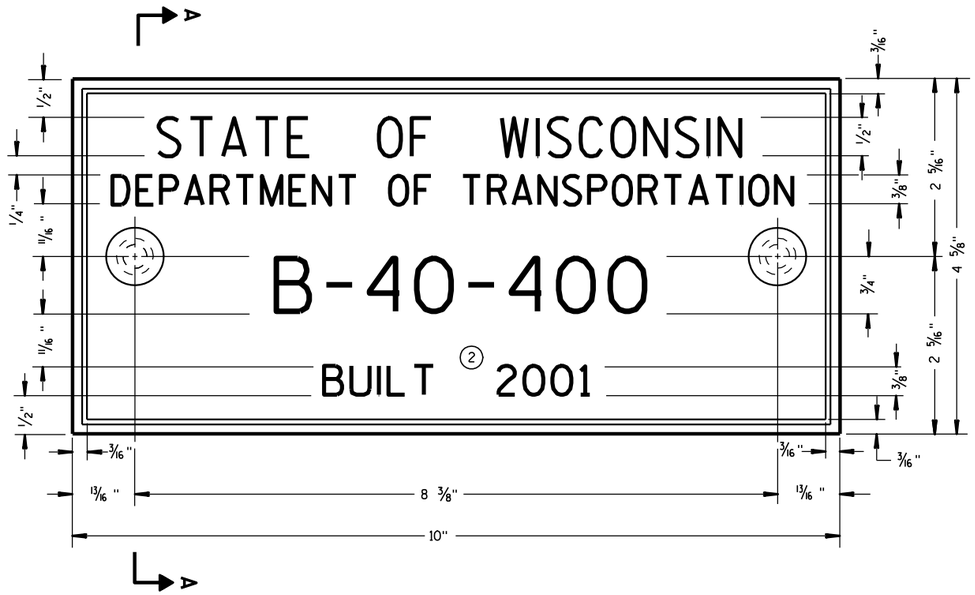
S.D.D. 9 G 2-4c



TYPICAL NAME PLATE
(BRIDGES, CULVERTS, AND RETAINING WALLS)

FOR MULTI-UNIT STRUCTURES
LINE 3 ABOVE SHALL READ

B = BRIDGE
C = CULVERT
R = RETAINING WALL

COUNTY NO.

BRIDGE NO.

UNIT NO. FOR MULTIPLE UNIT BRIDGE

B-40-400-1A

NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

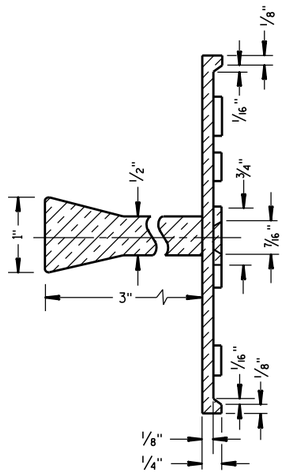
GENERAL NOTES

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.

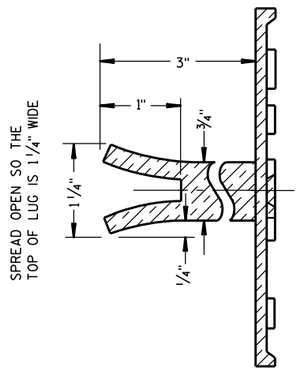
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

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

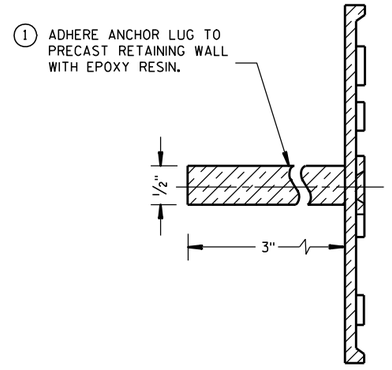
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



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 DEVELOPMENT ENGINEER

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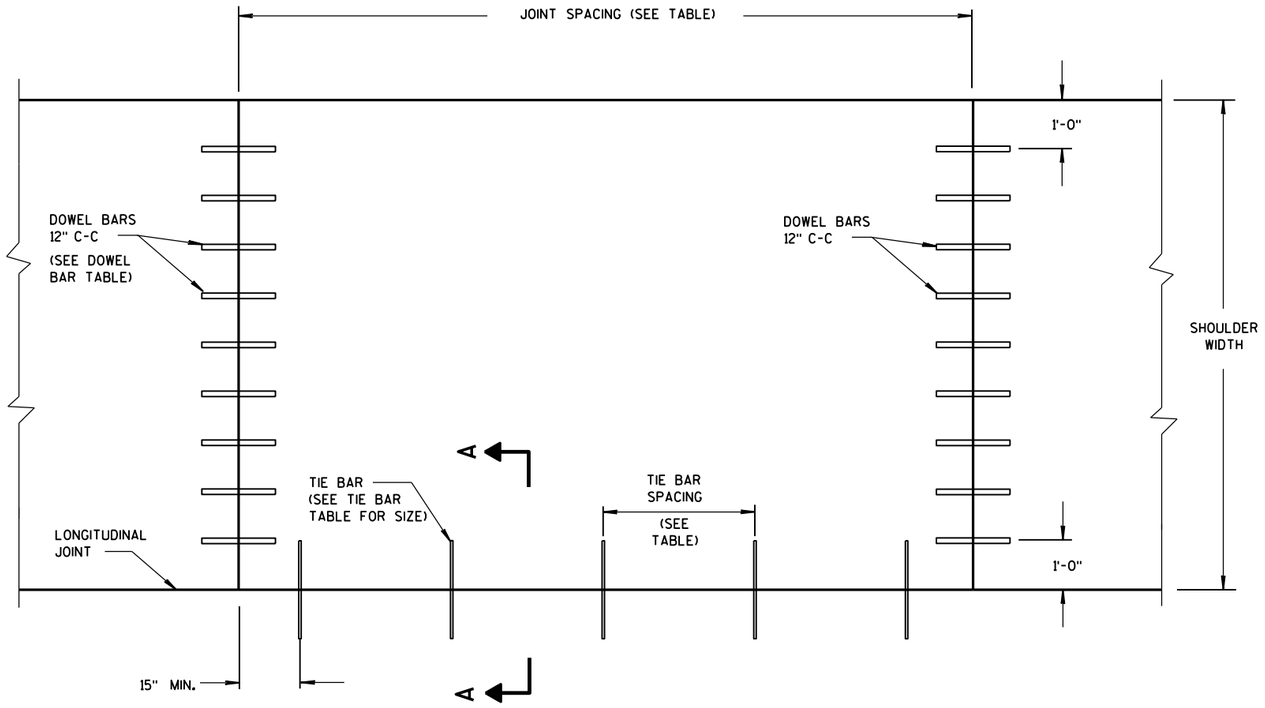
S.D.D. 12 A 3-10



PLAN VIEW

CONCRETE PAVEMENT SHOULDER

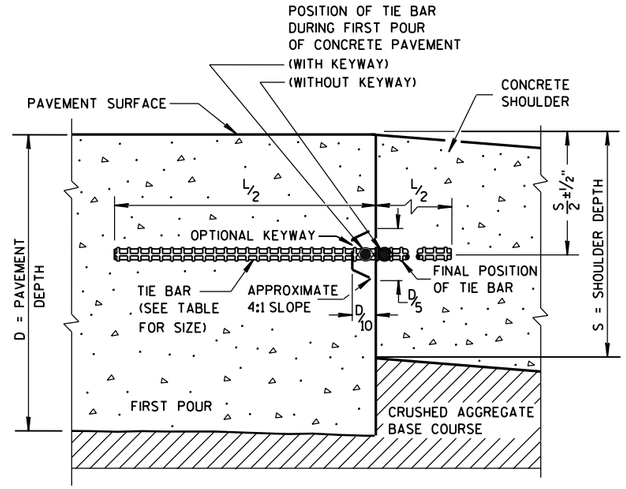
GENERAL NOTES

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 SUPER
FHWA

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S.D.D. 13 A 3-6

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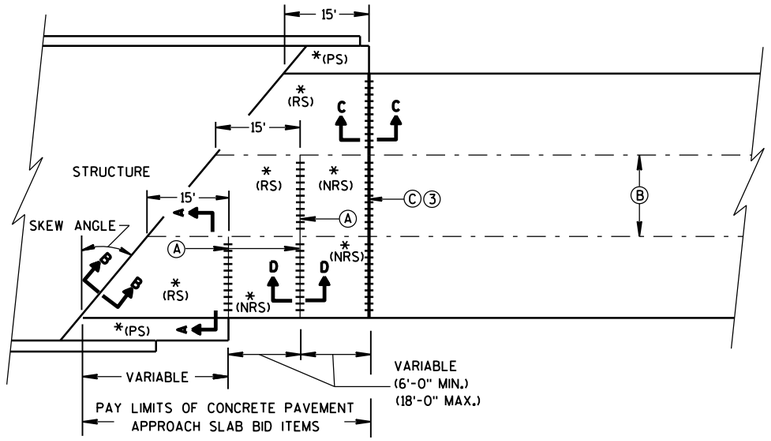
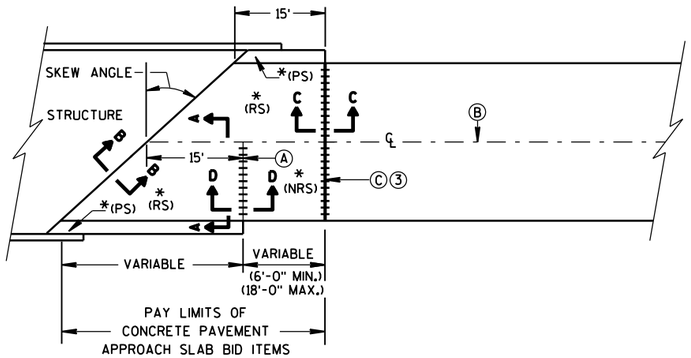
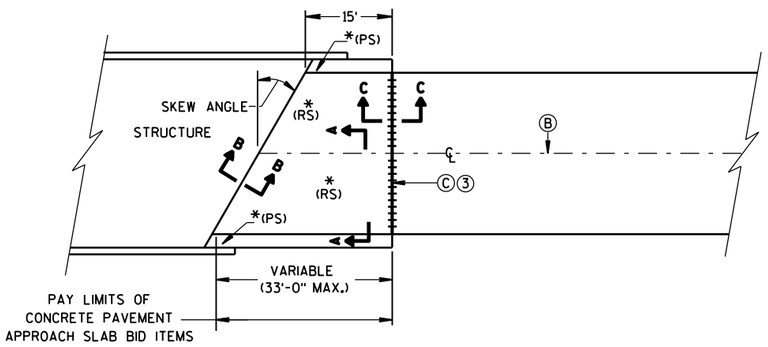
S.D.D. 13 A 3-6



SKEWED APPROACH
(PAVEMENT MORE THAN 2 LANES)



SKEWS >20°
(PAVEMENT WIDTH ≤30')



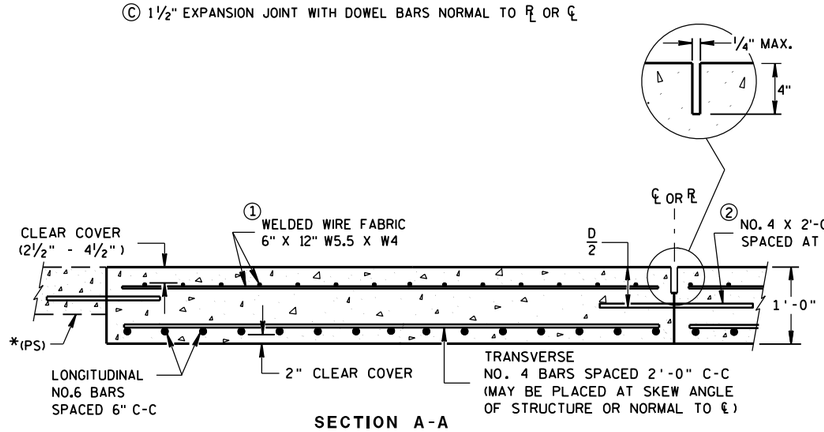
SKEWS ≤20°
(PAVEMENT WIDTH ≤30')

APPROACH SLAB AND ADJACENT PAVEMENT

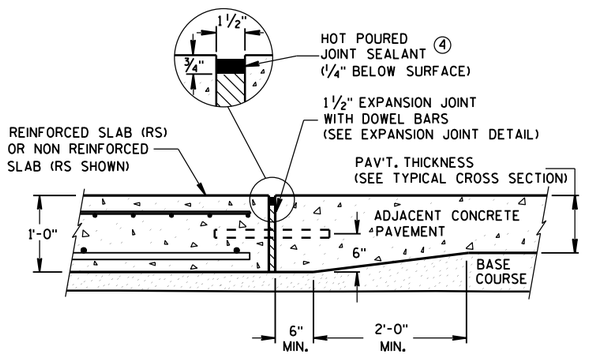
*(RS) = REINFORCED CONCRETE SLAB
*(PS) = PAVED CONCRETE SHOULDER OR CONCRETE DRAINAGE SLAB
(SEE DETAILS ELSEWHERE IN THE PLAN)
*(NRS) = NON-REINFORCED CONCRETE SLAB

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

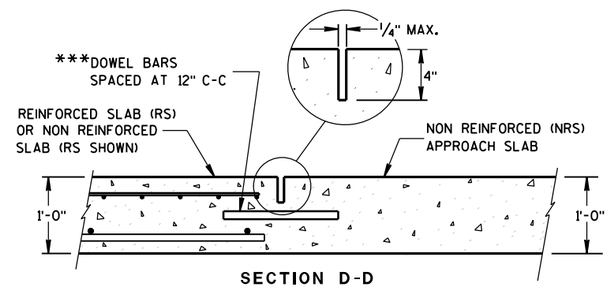
Ⓐ STANDARD CONTRACTION JOINT NORMAL TO ℄ OR ℄
Ⓑ STANDARD LONGITUDINAL JOINT WITH TIE BARS.
Ⓒ 1½" EXPANSION JOINT WITH DOWEL BARS NORMAL TO ℄ OR ℄



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.

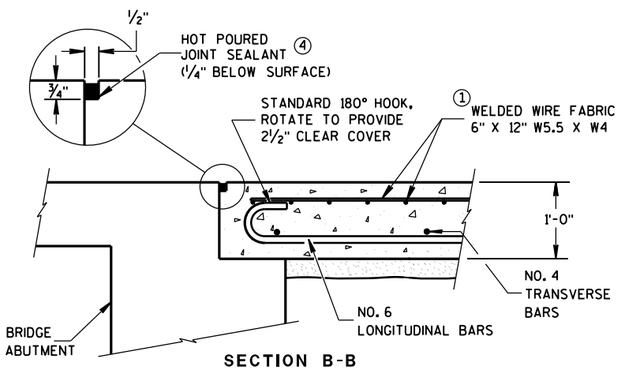
① THE CONTRACTOR MAY USE NO. 4 BARS SPACED AT 2'-0" C-C IN BOTH THE LONGITUDINAL AND TRANSVERSE DIRECTIONS FOR TOP REINFORCEMENT AS AN ALTERNATIVE TO THE WELDED WIRE FABRIC.

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

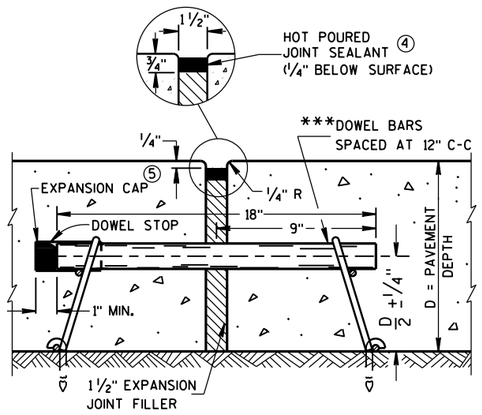
③ DO NOT CONSTRUCT AN EXPANSION JOINT OR INSTALL DOWEL BARS WHEN ABUTTING AN HMA PAVEMENT.

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

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

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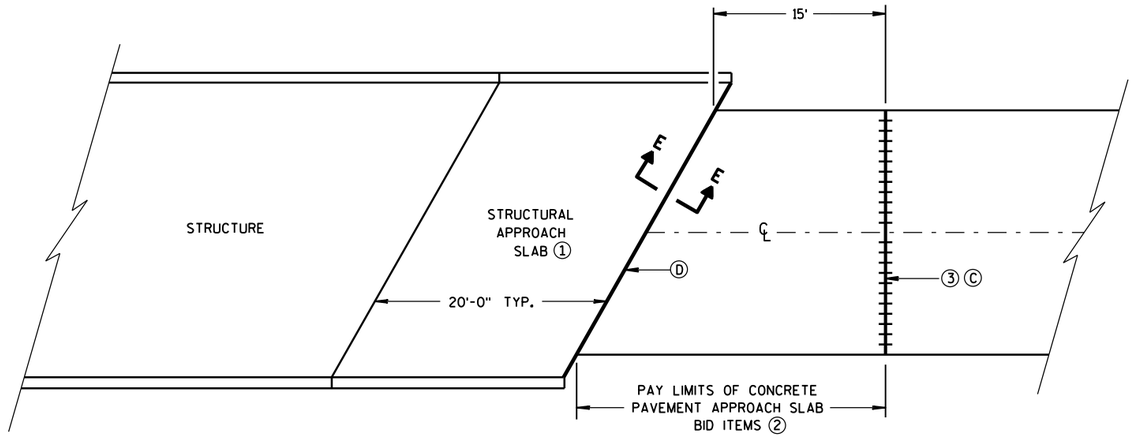
S.D.D. 13 B 2-8a

BRIDGE APPROACHES



GENERAL NOTES

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

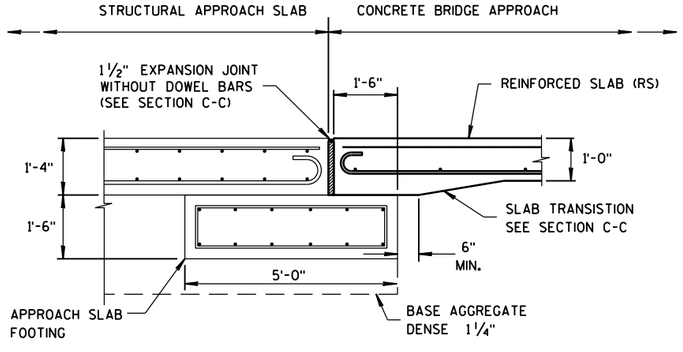
① SEE BRIDGE PLAN.

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

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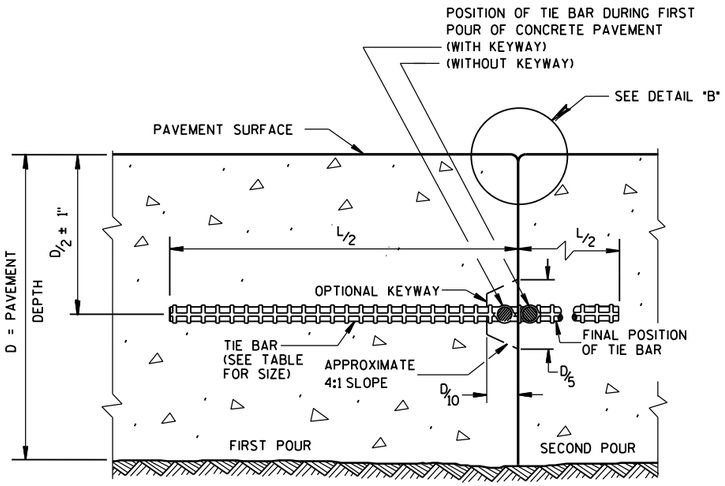
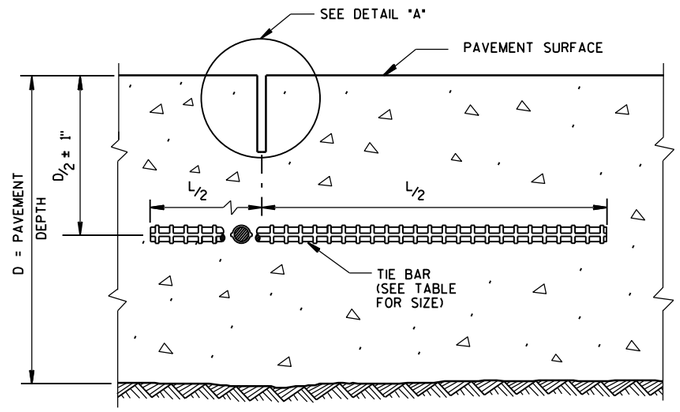
S.D.D. 13 B 2-8b



CONSTRUCTION JOINT



SAWED JOINT

GENERAL NOTES

DO NOT SEAL OR FILL LONGITUDINAL JOINTS.

CREATE A LONGITUDINAL JOINT FOR PAVEMENT WIDTHS GREATER THAN 15 FEET.

CORRELATE LONGITUDINAL JOINTS WITH LANE LINES WHEN POSSIBLE.

(1) ANCHOR TIE BARS INTO DRILLED HOLES WITH AN EPOXY.

(2) PAVEMENT THAT WAS IN PLACE PRIOR TO THE CONTRACT.

PLAN VIEW

SECTION A-A

LONGITUDINAL CONSTRUCTION JOINT TIE BARS ANCHORED INTO EXISTING PAVEMENT

DETAIL "A"

DETAIL "B"

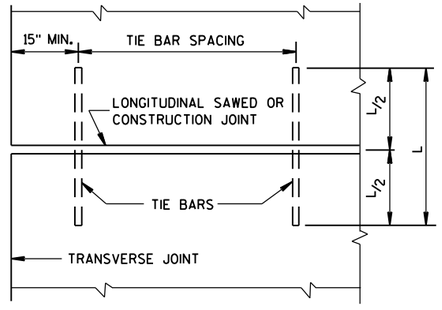
DETAIL "C"

TIE BAR TABLE

PAVEMENT DEPTH (D)	TIE BAR SIZE	TIE BAR LENGTH (L)	MAX. TIE BAR SPACING
< 10 1/2"	NO. 4	30"	36"
≥ 10 1/2"	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.



PLAN VIEW
SHOWING LOCATION OF TIE BARS

CONCRETE PAVEMENT LONGITUDINAL JOINTS AND TIES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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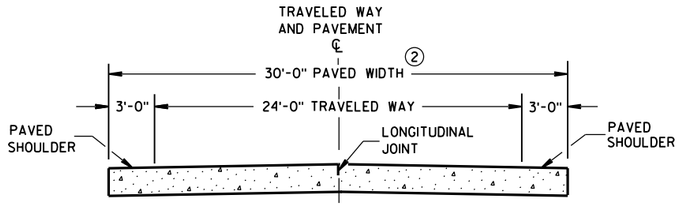
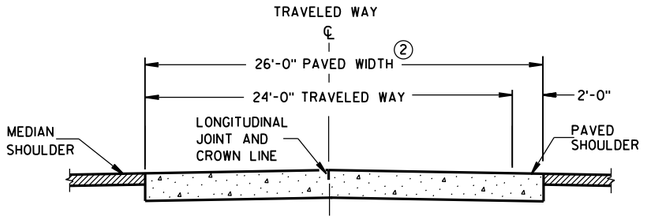
S.D.D. 13 C 1-18

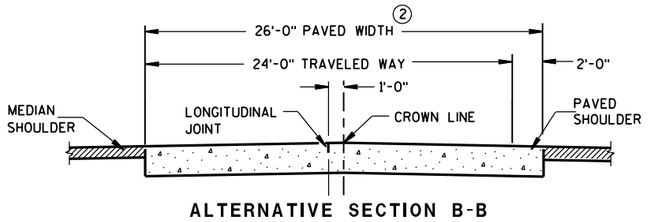


SECTION A-A ①

TWO-LANE TWO-WAY HIGHWAY



SECTION B-B



ALTERNATIVE SECTION B-B ①

DIVIDED HIGHWAY

GENERAL NOTES

CONTRACTION JOINTS

CONSTRUCT TRANSVERSE CONTRACTION JOINTS NORMAL TO THE CENTERLINE. SHOW THE LOCATION OF CONTRACTION JOINTS THROUGH INTERSECTIONS ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT SEAL OR FILL CONTRACTION JOINTS.

INSTALL DOWEL BARS PARALLEL TO THE PAVEMENT CENTERLINE AND PAVEMENT SURFACE.

FOR PAVEMENT SLABS OF VARYING WIDTHS, LOCATE THE OUTER MOST DOWEL BAR SO THAT THE CENTER OF THE BAR IS A MINIMUM OF 6 INCHES AND A MAXIMUM OF 18 INCHES FROM THE FREE EDGE OF PAVEMENT.

CONSTRUCTION JOINTS

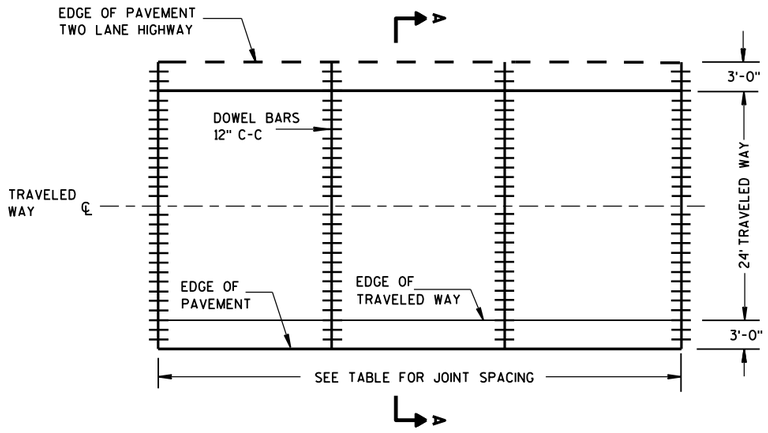
LOCATE CONSTRUCTION JOINTS A MINIMUM OF 6 FEET FROM THE NEAREST CONTRACTION JOINT AND ALIGN PARALLEL TO CONTRACTION JOINTS.

① REFER TO TYPICAL CROSS SECTIONS FOR ADDITIONAL DETAILS.

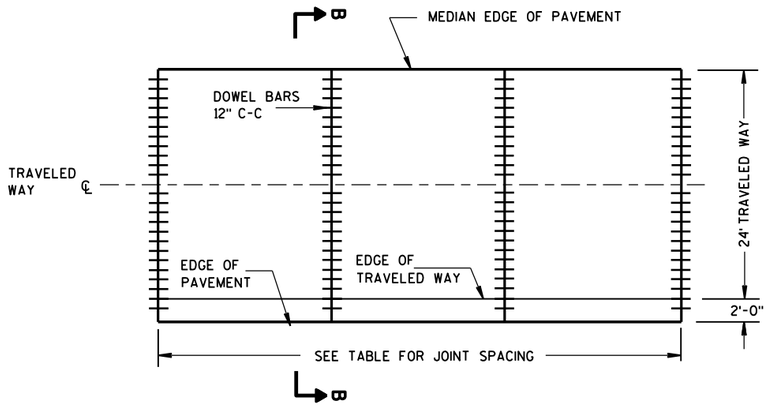
② MEASURE THE ENTIRE PAVED WIDTH INCLUDING THE PORTION(S) LABELED PAVED SHOULDER AS CONCRETE PAVEMENT.

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'



CONTRACTION JOINT LAYOUT
FOR TWO-LANE TWO-WAY HIGHWAY



CONTRACTION JOINT LAYOUT
FOR DIVIDED HIGHWAY

RURAL DOWELED
CONCRETE PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

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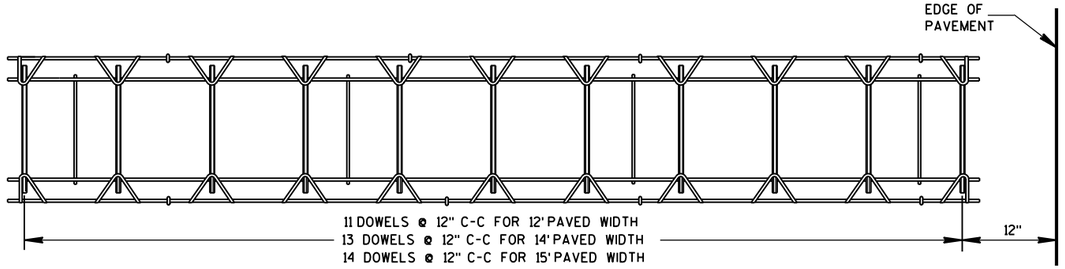
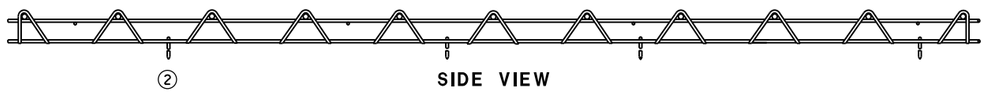
S.D.D. 13 C 11-11a



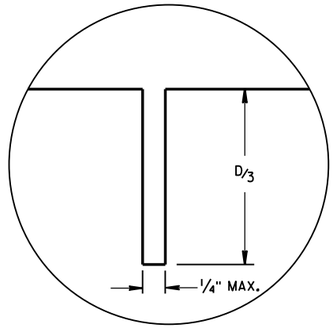
PLAN VIEW



SIDE VIEW

(NORMAL TO CENTERLINE)

CONTRACTION JOINT DOWEL ASSEMBLY ①



JOINT DETAIL

GENERAL NOTES

① OBTAIN THE ENGINEER'S APPROVAL FOR THE USE OF ALTERNATIVE DESIGNS OF THE DOWEL ASSEMBLY. USE MECHANICAL DOWEL BAR INSERTERS OR DOWEL ASSEMBLIES WHEN CONSTRUCTING CONTRACTION JOINTS.

② SECURE BASKETS WITH ANCHORS TO HOLD DOWEL BARS IN THE CORRECT POSITION AND ALIGNMENT. TYPE, LOCATION, NUMBER AND LENGTH OF ANCHORS ARE DEPENDENT UPON FIELD CONDITIONS.

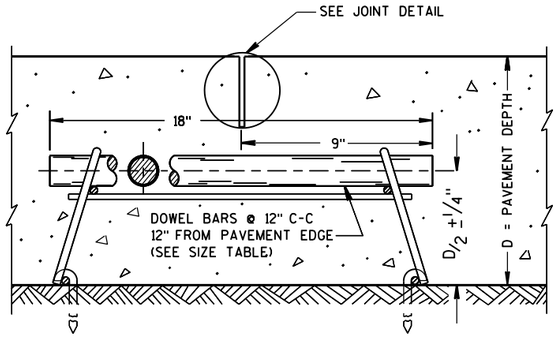
③ FORM OR SAW CONSTRUCTION JOINTS. PROVIDE A 1/4-INCH RADIUS AT FORMED JOINTS.

④ PROVIDE A SMOOTH VERTICAL FACE FOR THE ENTIRE DEPTH OF THE PAVEMENT WHEN FORMING CONSTRUCTION JOINTS.

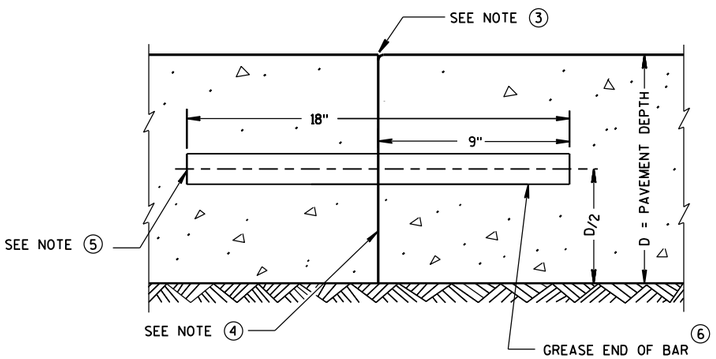
⑤ INSTALL DOWEL BARS AT CONSTRUCTION JOINTS BY FORMING OR DRILLING. INSTALL FORMED DOWEL BARS 12 INCHES C-C AND 12 INCHES FROM PAVEMENT EDGE. REMOVE EXCESS CONCRETE FROM THE FREE END OF THE DOWEL BAR IF DOWEL BARS ARE FORMED THROUGH A HEADER BOARD. INSTALL DRILLED DOWEL BARS ACCORDING TO *DRILLED DOWEL BAR CONSTRUCTION JOINT* DETAIL.

⑥ APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF DOWEL BARS TO PREVENT BONDING.

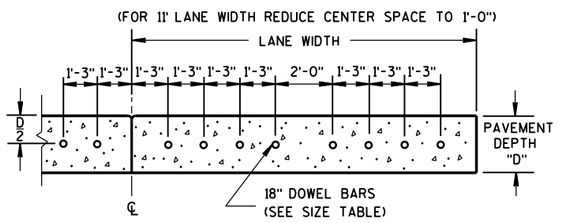
⑦ ANCHOR DOWEL BARS INTO DRILLED HOLES WITH AN EPOXY. MAXIMUM DRILLED HOLE SIZE IS 1/8-INCH GREATER THAN DOWEL BAR DIAMETER, 9 INCHES IN LENGTH.



DOWELED CONTRACTION JOINT



TRANSVERSE CONSTRUCTION JOINT



DRILLED DOWEL BAR CONSTRUCTION JOINT ⑦

RURAL DOWELED CONCRETE PAVEMENT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
5/3/2013 DATE
/S/ Deb Bischoff PAVEMENT POLICY & DE ENGINEER
FHWA

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S.D.D. 13 C 11-11b

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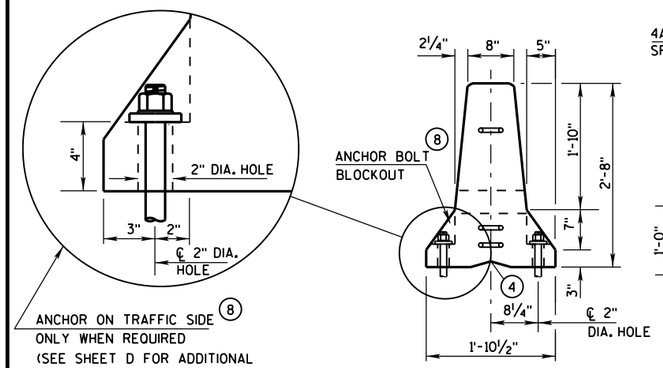
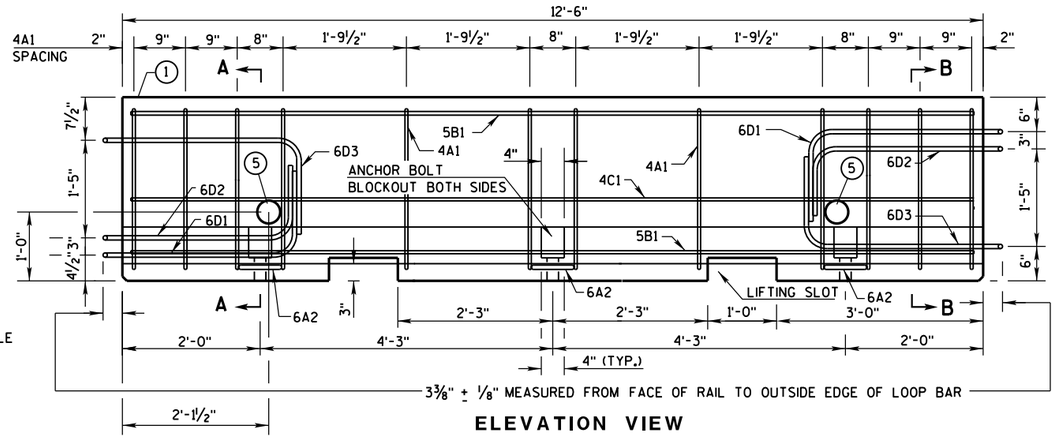
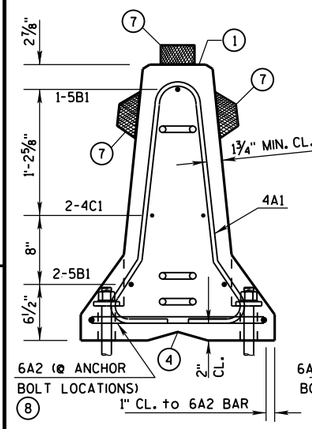
S.D.D. 13 C 11-11b



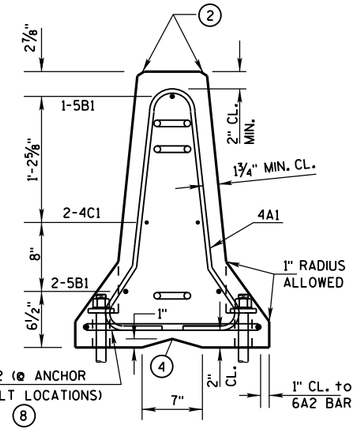
END VIEW



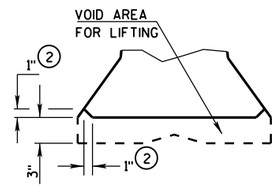
ELEVATION VIEW



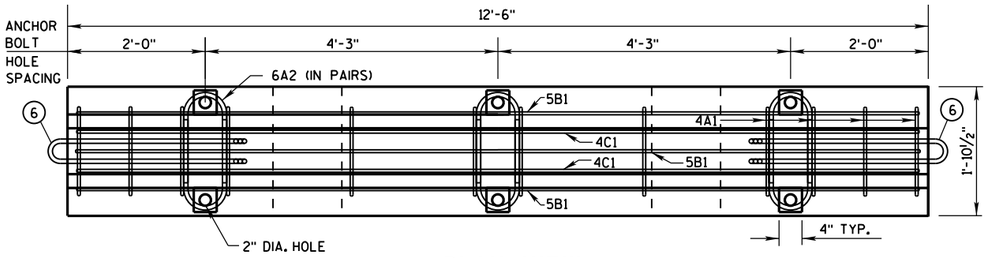
SECTION A-A
(STIRRUP PLACEMENT)



SECTION B-B
(STIRRUP PLACEMENT)

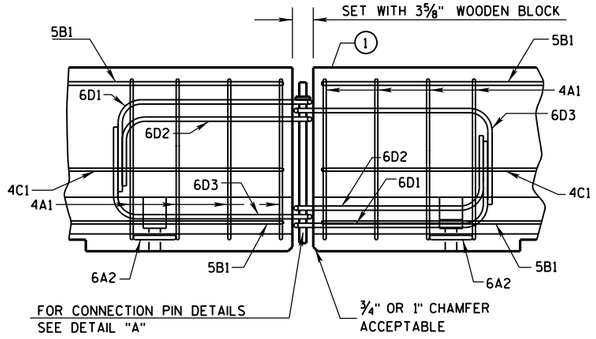


DETAIL "B"
LIFTING SLOT DETAIL

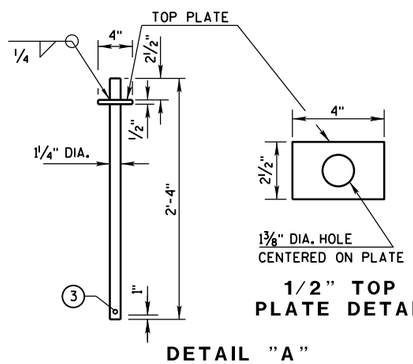


PLAN VIEW

DETAILS OF BARRIER SECTION

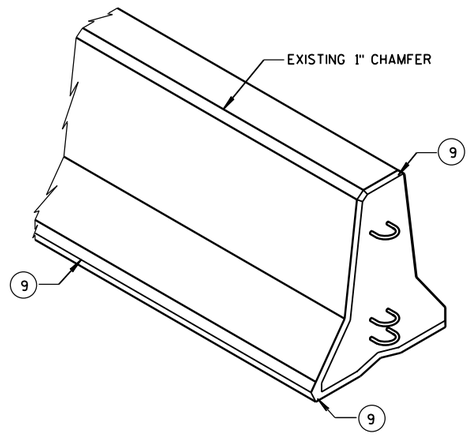


DETAILS OF BARRIER CONNECTION



1/2" TOP
PLATE DETAIL

DETAIL "A"
CONNECTION PIN
(A36 STEEL (10.9 LB EACH))



GENERAL NOTES

THESE GENERAL NOTES APPLY TO SHEETS 14B7-15(a) THRU 14B7-15(i).

DO NOT INTERMIX CONCRETE BARRIER TEMPORARY PRCAST, 12'-6" (CBTP12.5) WITH OTHER TEMPORARY CONCRETE BARRIERS.

USE ASTM A-615, GRADE 60, DEFORMED STEEL BARS FOR BARS 4A1, 6A2, 5B1 AND 4C1 IN THE BARRIER SECTION AND FOR 4V1, 4V2, 4V3, 4V4, 4V5, 4V6, 4F1, 4F2 AND 5F3 IN THE BARRIER TAPER SECTION.

LOOP BARS 6D1, 6D2 AND 6D3 SHALL BE ¾" SMOOTH STEEL BARS WITH A MINIMUM YIELD STRENGTH OF 60 KSI, A TENSILE STRENGTH OF NOT LESS THAN 1.25 TIMES THE YIELD STRENGTH BUT A MINIMUM OF 80 KSI, A MINIMUM 14% ELONGATION IN 8 INCHES AND PASSING A 180 DEGREE BEND TEST USING A 3-½" PIN BEND DIAMETER FOR BEND TESTS. THE LOOPS SHALL BE INSTALLED WITHIN ⅛" OF THE PLAN DIMENSION.

CONSTRUCT LIFTING SLOTS AS SPECIFIED ON THE PLANS TO FACILITATE THE DRAINAGE OF WATER AFTER INSTALLATION.

PLACE BARRIER ON A PAVED SURFACE. REMOVE ALL LOOSE DIRT AND SAND FROM THE ROADWAY SURFACE PRIOR TO PLACEMENT OF THE BARRIER.

INSTALL MECHANICAL OR ADHESIVE ANCHORS PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE MANUFACTURER'S INFORMATION TO PROJECT ENGINEER.

(1) MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
- a. TYPE: WI CBTP
- b. MANUFACTURER
- c. DATE MANUFACTURED (MONTH AND YEAR)

(2) 1" CHAMFER TO PREVENT SPALLING.

(3) A ⅜" HOLE IN THE CONNECTION PIN, AT THE LOCATION SHOWN, IS ACCEPTABLE, BUT NOT REQUIRED..

(4) "V" NOTCH IS OPTIONAL.

(5) THE 4" DIAMETER, 11 GAUGE STEEL, ROUND MECHANICAL TUBING SLEEVE FOR LIFTING (OPTIONAL).

(6) NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.

(7) USE DELINEATORS CONFORMING TO SECTION 633 OF THE STANDARD SPECIFICATIONS. CONTRACTOR MAY USE ALTERNATE SHAPES AND HOUSING. INSTALL DELINEATORS ACCORDING TO MANUFACTURES INSTRUCTION. INSTALL YELLOW REFLECTORS WHEN BARRIER IS LOCATED TO THE LEFT OF TRAFFIC AND WHITE REFLECTORS WHEN BARRIER IS LOCATED TO THE RIGHT OF TRAFFIC. SPACE DELINEATORS A MAXIMUM OF 25 FEET APART. PROVIDE TOP MOUNTED DELINEATORS IN ADDITION TO THE SIDE MOUNTED DELINEATORS ON ALL BARRIER INSTALLATIONS LOCATED ON A CURVED ALIGNMENT LONGER THAN 200 FEET AND ON BARRIERS USED TO SEPARATE OPPOSING TRAFFIC.

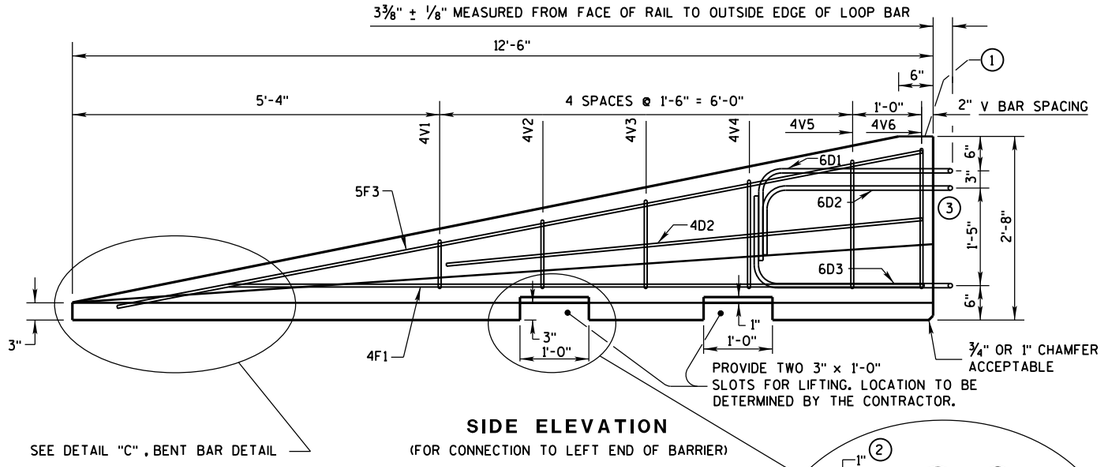
(8) SEE SHEET D FOR HOW TO ANCHOR BARRIER. SEE SHEET E FOR WHEN TO ANCHOR BARRIER.

(9) 1" CHAMFER OPTIONAL.

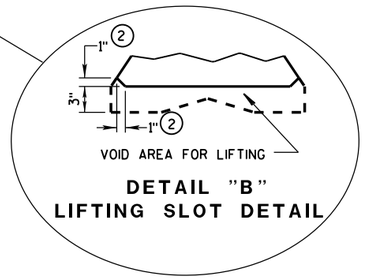
f'c = 4,000 psi

CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"

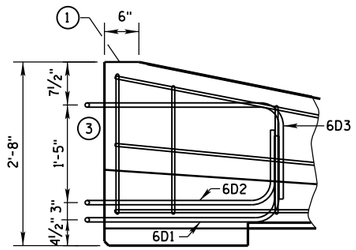
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR 43



SIDE ELEVATION
(FOR CONNECTION TO LEFT END OF BARRIER)



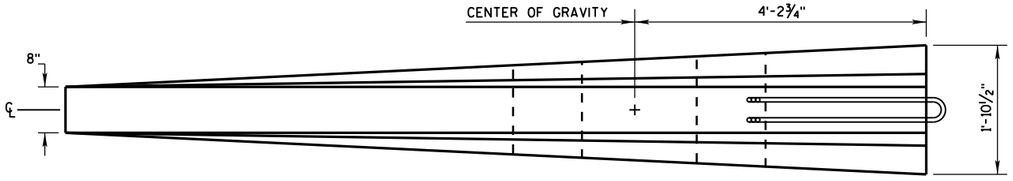
DETAIL "B"
LIFTING SLOT DETAIL



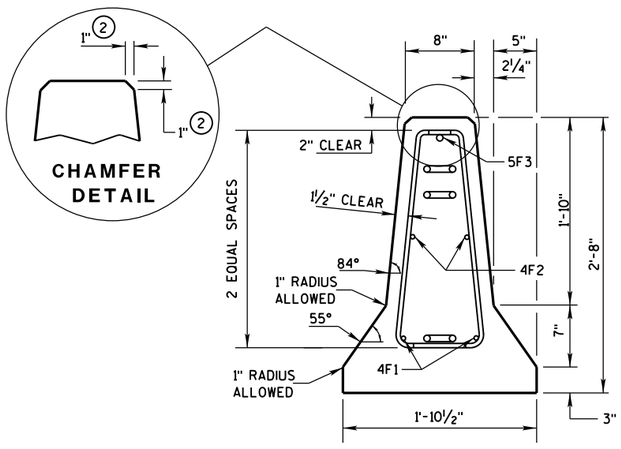
SIDE ELEVATION
LOOP BAR ASSEMBLY INVERTED
FOR OPPOSITE END.
(FOR CONNECTION TO RIGHT END OF BARRIER)

GENERAL NOTES

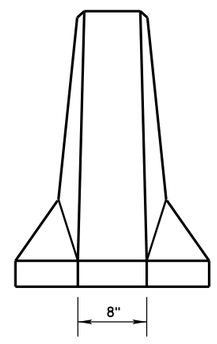
1. MARK ONE END OF EACH BARRIER PERMANENTLY BY FORMING INTO THE BARRIER THE FOLLOWING INFORMATION:
   a. TYPE WICBTP
   b. MANUFACTURER
   c. DATE MANUFACTURED (MONTH AND YEAR)
2. 1" CHAMFER TO PREVENT SPALLING.
3. NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.



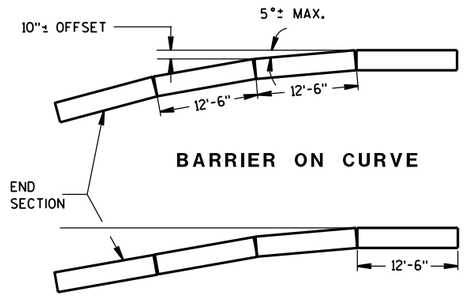
PLAN VIEW



END SECTION



FRONT ELEVATION



BARRIER ON CURVE

FLARE AT BARRIER END

POSTED SPEED, (MPH)	FLARE RATE
40 OR LESS	6:1
45 OR GREATER	8:1

DETAILS OF BARRIER TAPER SECTION

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

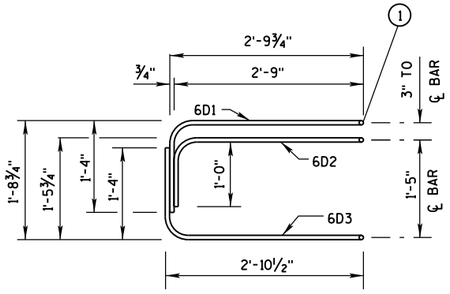
6

S.D.D. 14 B 7-15b

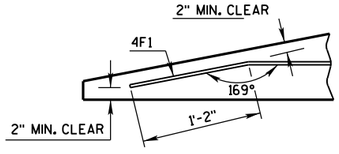
BARRIER TAPER SECTION BILL OF MATERIALS

(PER 12'-6" BARRIER TAPER SECTION)

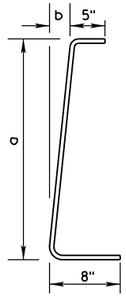
BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
4V1	4	2	1'-11"
4V2	4	2	2'-2"
4V3	4	2	2'-6"
4V4	4	2	2'-9"
4V5	4	2	3'-2"
4V6	4	2	3'-4"
4F1	4	2	12'-0"
4F2	4	2	7'-6"
5F3	5	1	11'-9"
LOOP ASSEMBLY			
6D1	6	1	8'-5"
6D2	6	1	7'-7"
6D3	6	1	8'-6"



ELEVATION
LOOP BAR ASSEMBLY



DETAIL "C"
BENT BAR DETAIL



BAR	a	b
V1	10"	1"
V2	1'-1"	1¼"
V3	1'-5"	1⅝"
V4	1'-8"	1⅞"
V5	2'-0½"	2⅜"
V6	2'-3"	2¾"

4V BARS
2 AT EACH SIZE REQUIRED
FOR STIRRUP ASSEMBLY

TAPER BARRIER SECTION

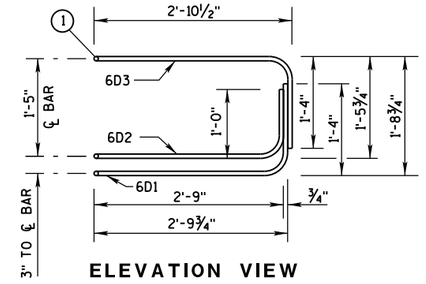
GENERAL NOTES

(1) NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.

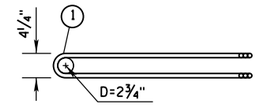
BARRIER SECTION BILL OF MATERIALS

(PER 12'-6" BARRIER SECTION)

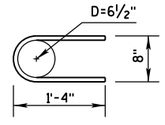
BAR	BAR SIZE	NO. OF BARS	LENGTH FT.
4A1	4	12	6'-0"
6A2	6	6	2'-11"
5B1	5	3	12'-2"
4C1	4	2	12'-2"
LOOP ASSEMBLY			
6D1	6	2	8'-5"
6D2	6	2	7'-7"
6D3	6	2	8'-6"



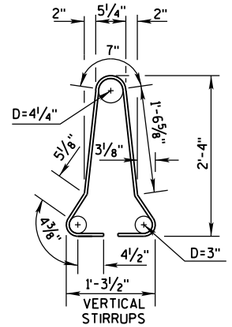
ELEVATION VIEW



PLAN VIEW
LOOP BAR ASSEMBLY
(MARKED END SHOWN, INVERT FOR OTHER END)



6A2



4A1

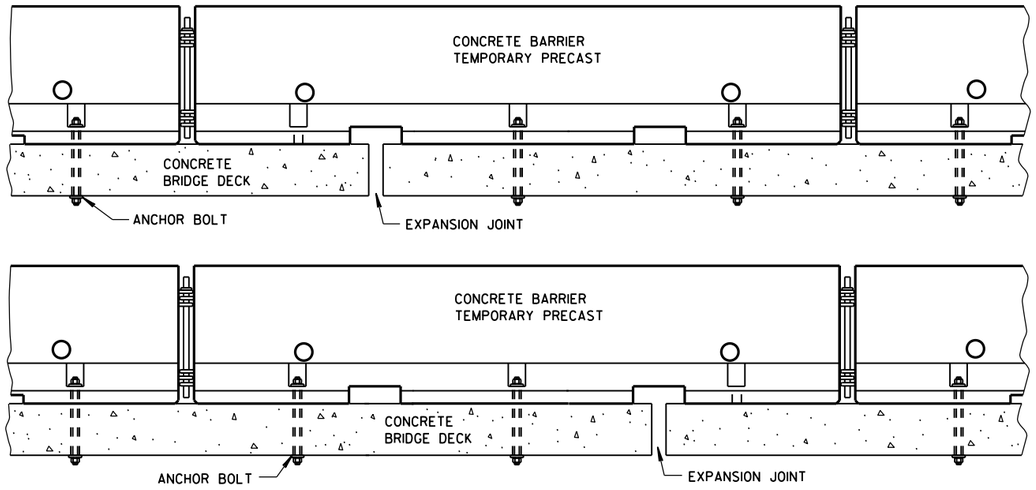
BARRIER SECTION

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

S.D.D. 14 B 7-15c



TREATMENT AT BRIDGE DECK EXPANSION JOINTS

(NO SINGLE CONCRETE BARRIER SECTION SHALL BE ANCHORED TO BOTH THE BRIDGE DECK AND THE APPROACH SLAB. ALL ANCHOR BOLT LOCATIONS SHALL BE ANCHORED TO THE DECK IN ACCORDANCE WITH THE DETAIL. NO MORE THAN ONE ANCHOR BOLT SHALL BE ELIMINATED FROM A BARRIER SECTION WHEN SPANNING AN EXPANSION JOINT.)

GENERAL NOTES

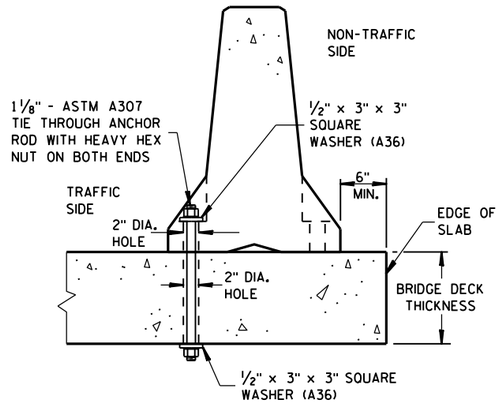
SEE SHEET E FOR WHEN TO ANCHOR. OTHER PARTS OF THE PLAN MAY SHOW ADDITIONAL LOCATIONS REQUIRING ANCHORING.

REMOVE ALL ANCHORS WHEN NO LONGER NEEDED. FILL CONCRETE PAVEMENTS, DECKS AND APPROACH SLABS WITH NON-SHRINK COMMERICAL GROUT FROM THE APPROVED PRODUCT LIST. FILL ASPHALT PAVEMENTS WITH ASTM D6690 TYPE II RUBBERIZED CRACK FILLER.

(1) 1⅛" DIAMENTER A307 THREADED ROD. ½" X 3" X 3" SQUARE PLATE WASHER WITH ASTM A36 STEEL. ASTM A563A HEAVY HEX NUT.

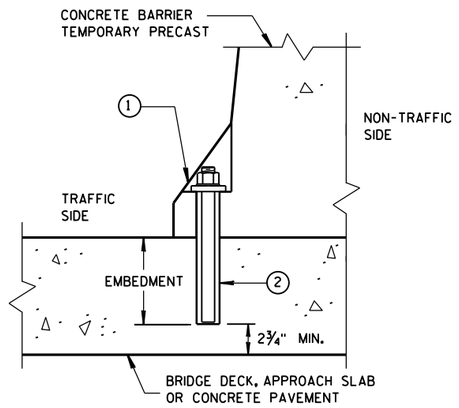
(2) ADHESIVE ANCHORS WITH A MINIMUM BOND STRENGTH OF 1,800 PSI AND 5¼" EMBEDMENT. SEE 603.2 AND 603.3.1.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.

(3) ASPHALT SURFACE SHOWN. CONTRACTOR MAY DRILL THROUGH CONCRETE PAVEMENT AND THAN DRIVE ASPHALT ANCHOR PIN.



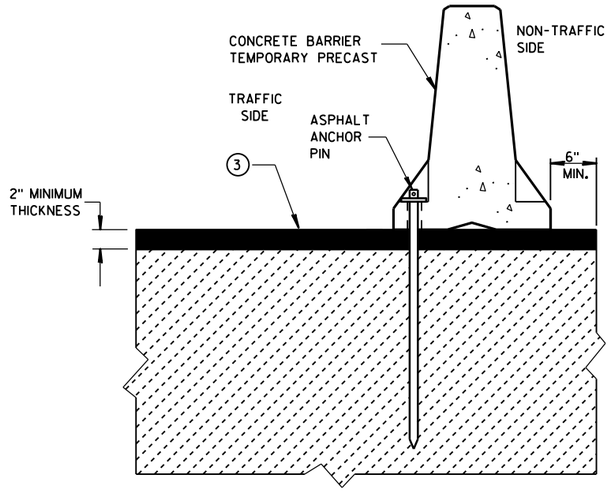
THROUGH BOLTED ANCHOR INSTALLATION ON BRIDGE DECK

(DO NOTUSE ON CONCRETE BRIDGE DECK WITH ASPHALT OVERLAY)

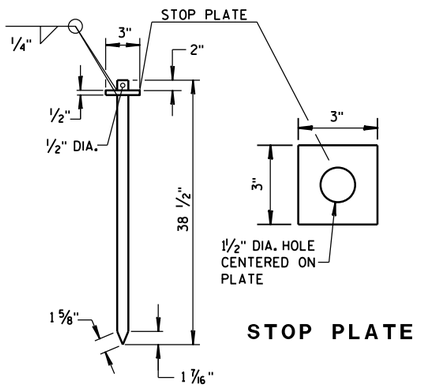


REMOVABLE ADHESIVE ANCHOR INSTALLATION ON CONCRETE BRIDGE DECK, CONCRETE APPROACH SLAB, OR CONCRETE PAVEMENT

(DO NOT USE ON CONCRETE WITH AN ASPHALTIC OVERLAY)



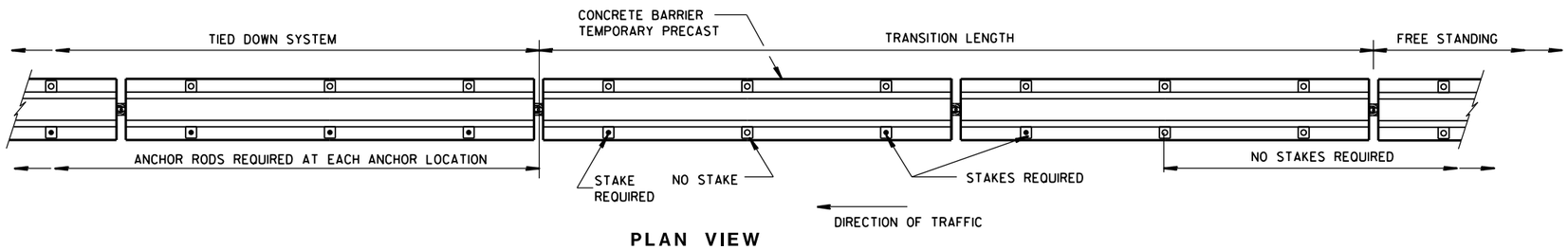
STAKE DOWN INSTALLATION FOR ASPHALTIC SURFACE



STOP PLATE

ASPHALT ANCHOR PIN

(ASTM A36 STEEL)



PLAN VIEW

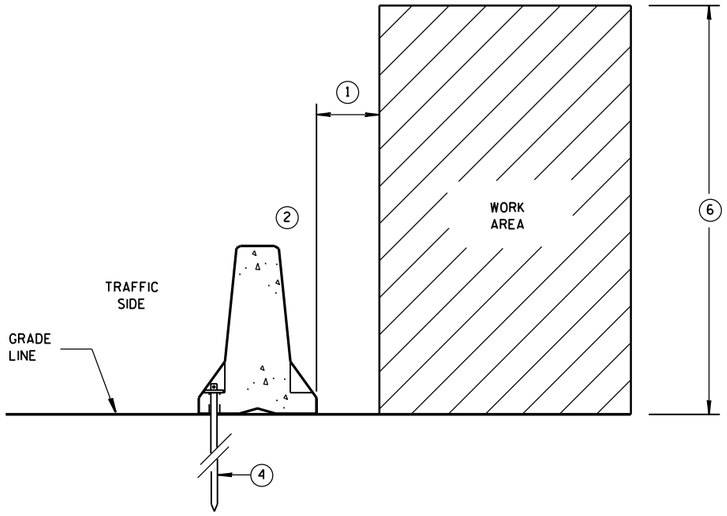
FREE STANDING TRANSITION TO TIED-DOWN SYSTEM

(PLACE TRANSITION IN A TANGENT SECTION OF BARRIER PARALLEL TO THE ROADWAY. IF TRANSITION OCCURS ON STRUCTURAL SLAB, ANCHOR AS SHOWN.)

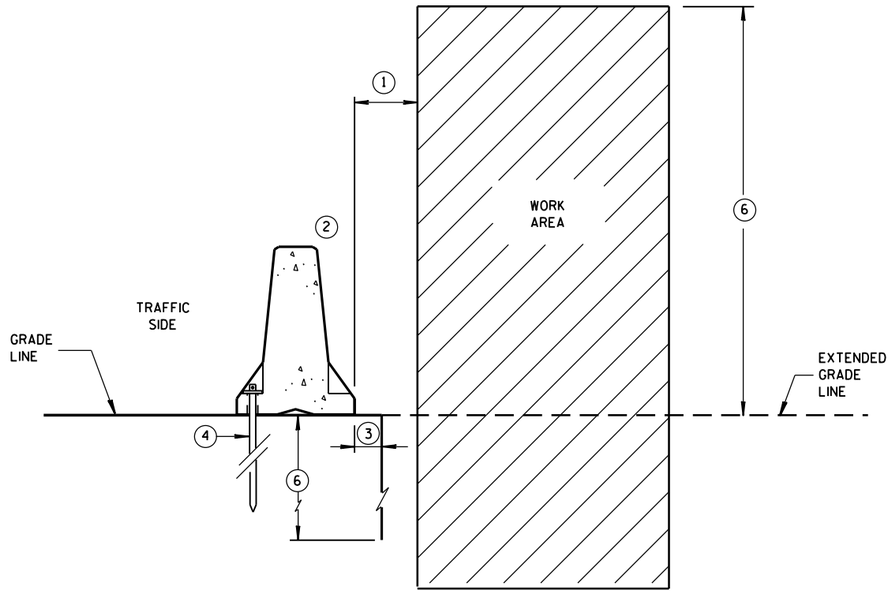
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6
S.D.D. 14 B 7-15d



ANCHORED BARRIER SPACE REQUIREMENTS FOR HAZARDS EXTENDED ABOVE THE GRADE LINE

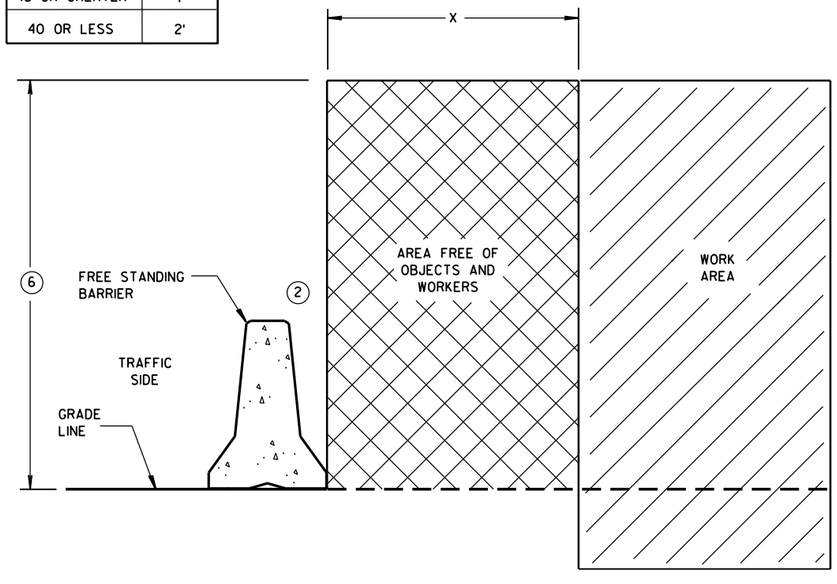


ANCHORED BARRIER SPACE REQUIREMENTS ON VERTICAL DROP OFFS

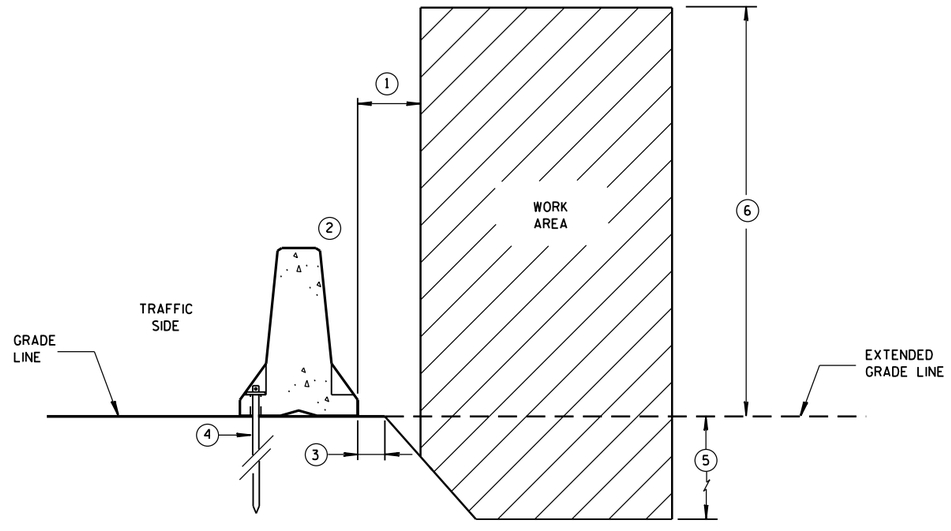
GENERAL NOTES

1. WHEN OBJECTS EXTEND ABOVE THE GRADE, A MINIMUM OF 1 FOOT IS REQUIRED FROM BACK OF BARRIER TO OBJECT. SEE OTHER DETAILS FOR FOR THE MINIMUM OFFSET FROM BACK OF BARRIER TO SLOPES OR VERTICAL DROPS.
2. OBJECTS ARE NOT TO BE PLACED ON, MOUNTED TO, OR LEANED AGAINST THE BARRIER WITHOUT PERMISSION OF THE PROJECT ENGINEER.
3. SEE OTHER DETAIL ON SHEET "D" FOR SPACE REQUIREMENTS.
4. SEE BOLT THROUGH DECK, REMOVABLE ADHESIVE ANCHOR, OR A STAKE DOWN FOR ASPHALTIC SURFACE TREATMENT DETAILS. ASPHALTIC ANCHOR SHOWN.
5. DEPTH OF 3 FEET OR MORE.
6. Y = 6'-6".

POSTED SPEED MPH	X
45 OR GREATER	4'
40 OR LESS	2'



FREE STANDING BARRIER SPACE REQUIREMENTS



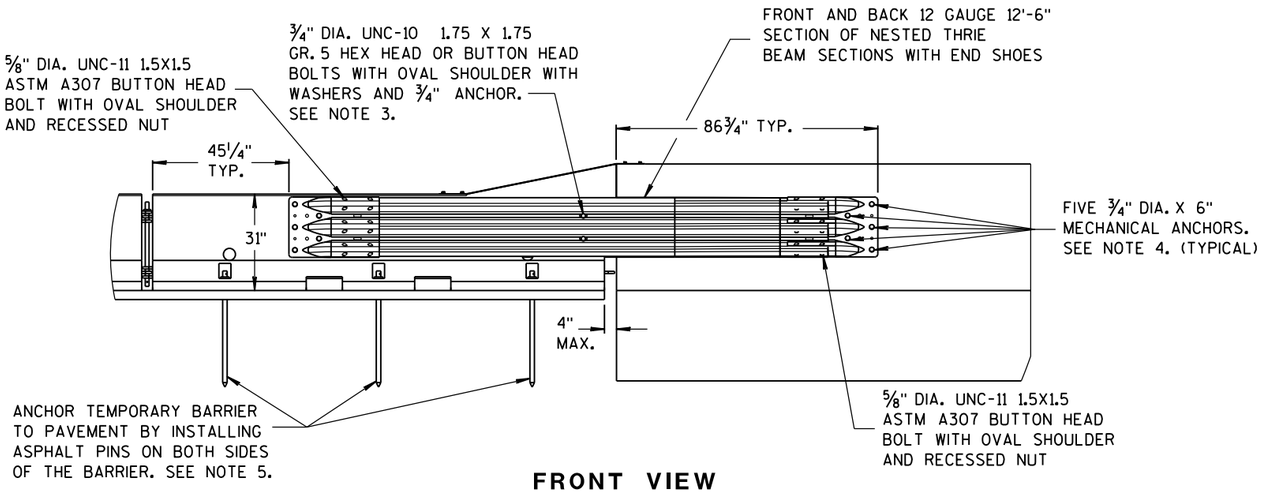
ANCHORED BARRIER SPACE REQUIREMENTS ON SLOPES

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 14 B 7-15e

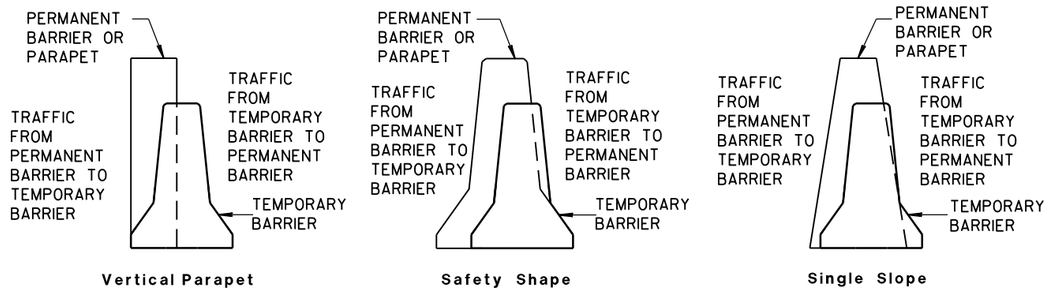


FRONT VIEW

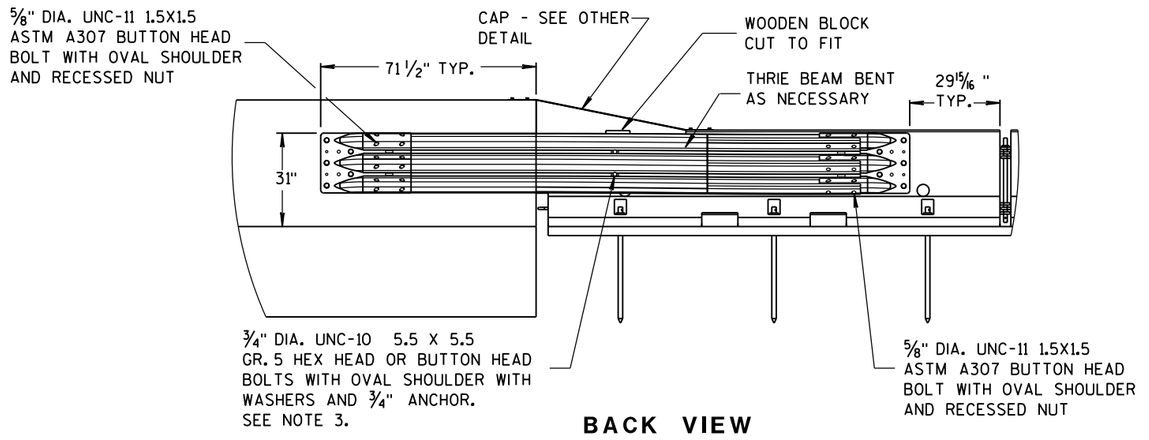
NOTES

NESTED THRIE BEAM IS REQUIRED ON BOTH SIDES OF THE TEMPORARY BARRIER FOR ALL INSTALLATIONS REGARDLESS OF TRAFFIC.

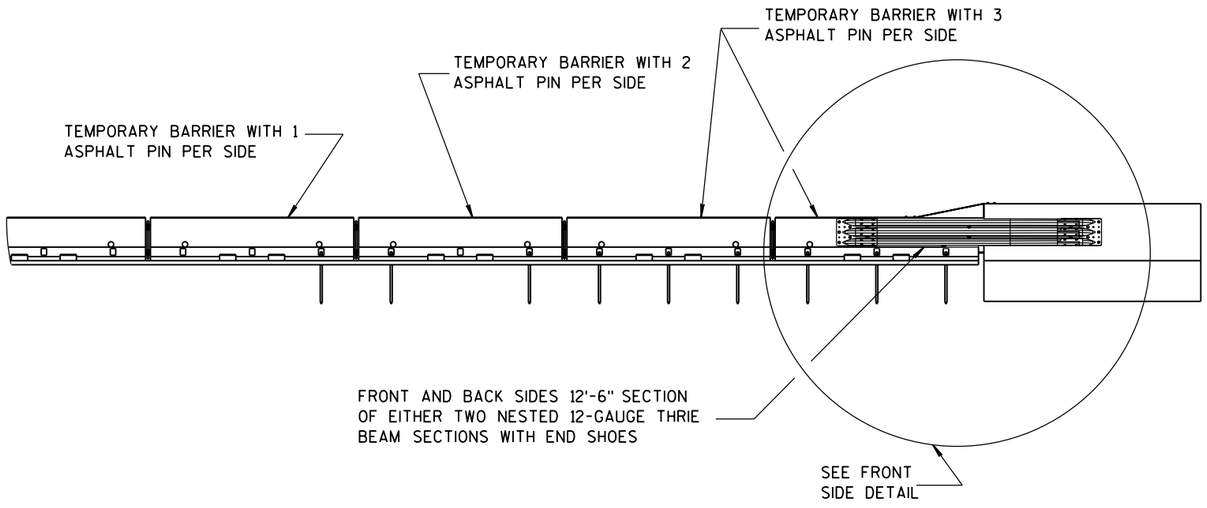
1. CAP END PLATE PLACED FLUSH WITH UPSTREAM END OF PERMANENT BARRIER OR PARAPET.
2. THRIE BEAM PIECES ARE OFFSET 15 1/4" TO PREVENT INTERFERENCE FROM THE ANCHORS ON OPPOSING SIDES.
3. MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 9.48 KIPS AND ULTIMATE SHEAR LOAD 10.48 KIPS.
4. MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 17.9 KIPS AND ULTIMATE SHEAR LOAD 21.96 KIPS.
5. MAY BE USED ON CONCRETE OR ASPHALT PAVEMENTS. ASPHALT OPTION SHOWN. FOR CONCRETE OPTION SEE OTHER DETAILS.
6. MINIMUM MECHANICAL OR ADHESIVE ANCHOR STRENGTH REQUIREMENTS: ULTIMATE TENSILE LOAD 12.14 KIPS AND ULTIMATE SHEAR LOAD 17.5 KIPS.



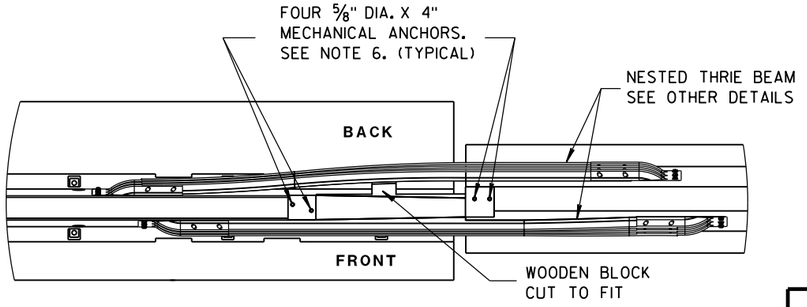
TEMPORARY BARRIER PLACEMENT FOR BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM



BACK VIEW



FRONT VIEW



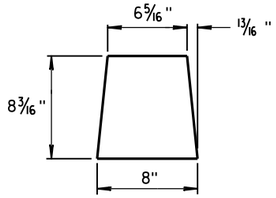
PLAN VIEW

BI-DIRECTIONAL TRANSITION TO TIED-DOWN SYSTEM

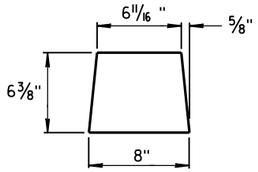
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

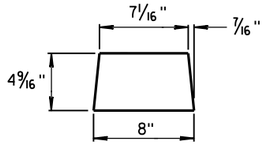
6
S.D.D. 14 B 7-15f



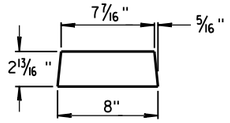
GUSSET 1



GUSSET 2

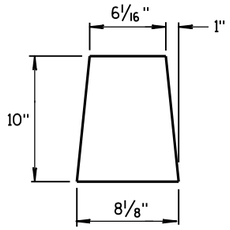


GUSSET 3

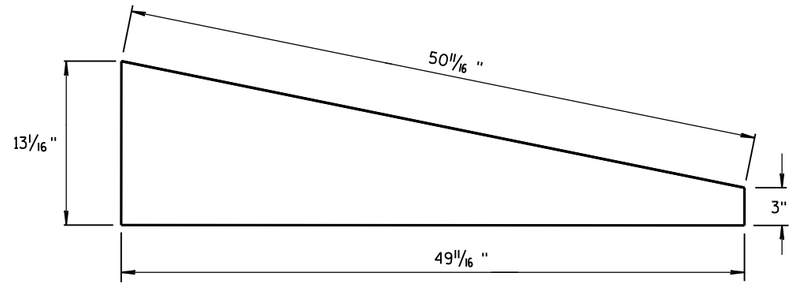


GUSSET 4

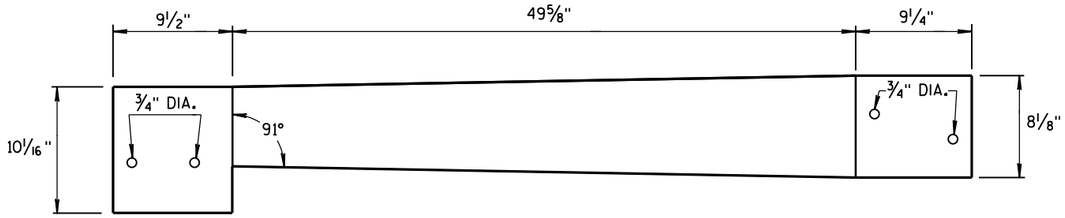
GUSSETS

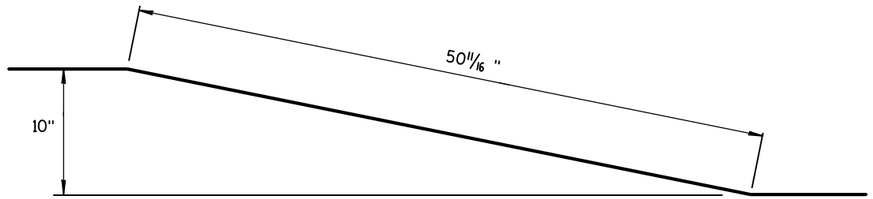


END PLATE



SIDE PLATE

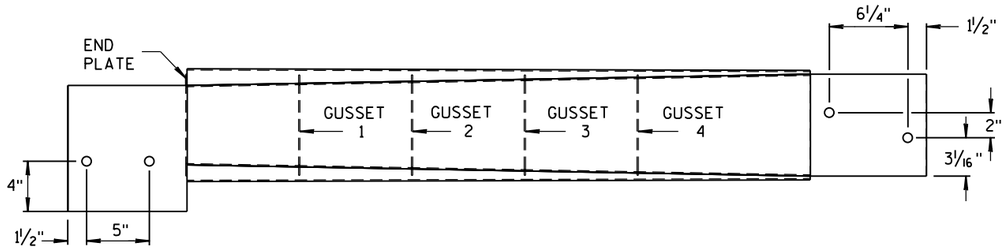


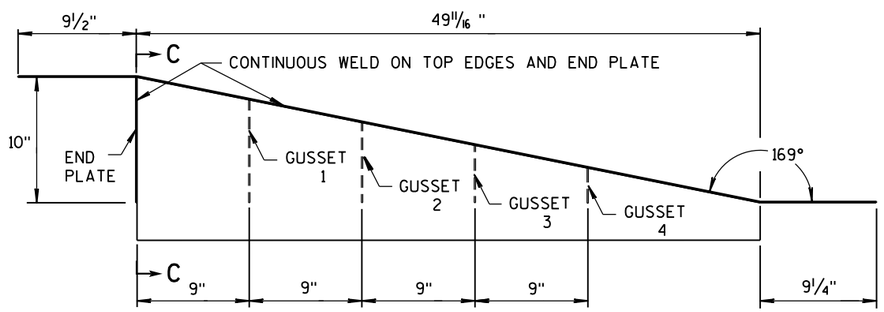


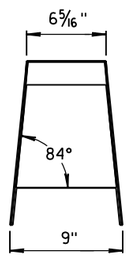
TOP PLATE

SIDE, TOP AND END PLATES FOR CAP FROM TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 GALVANIZED STEEL.







SECTION C-C

NOTES

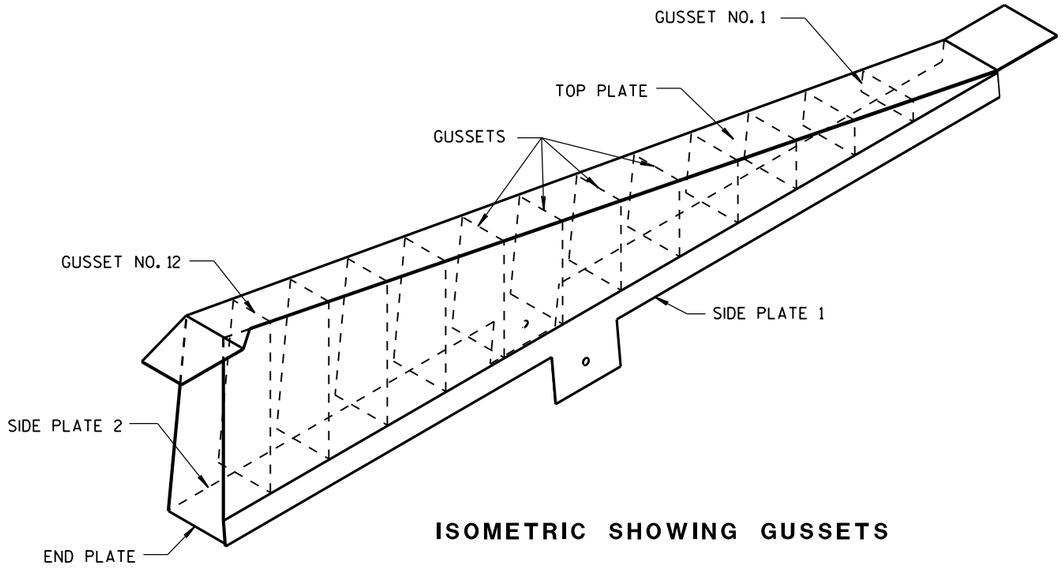
1. FOUR GUSSETS AND END PLATE ARE STITCH WELDED ON THREE SIDES.
2. TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE, AND GUSSETS.

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

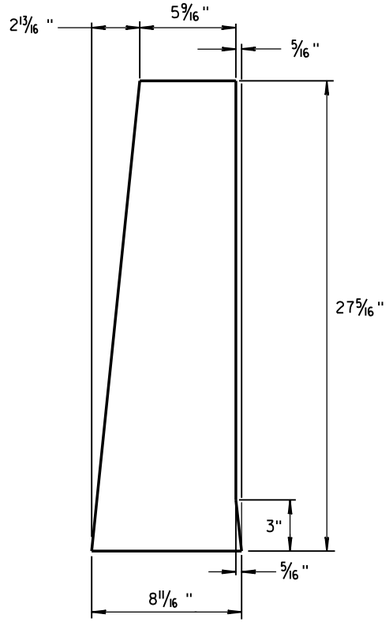
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6
S.D.D. 14 B 7-15g

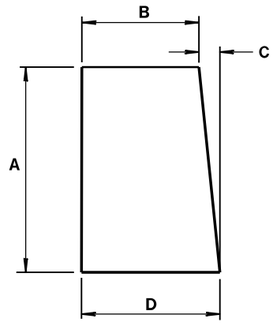


ISOMETRIC SHOWING GUSSETS



END PLATE

1/8" STEEL PLATE



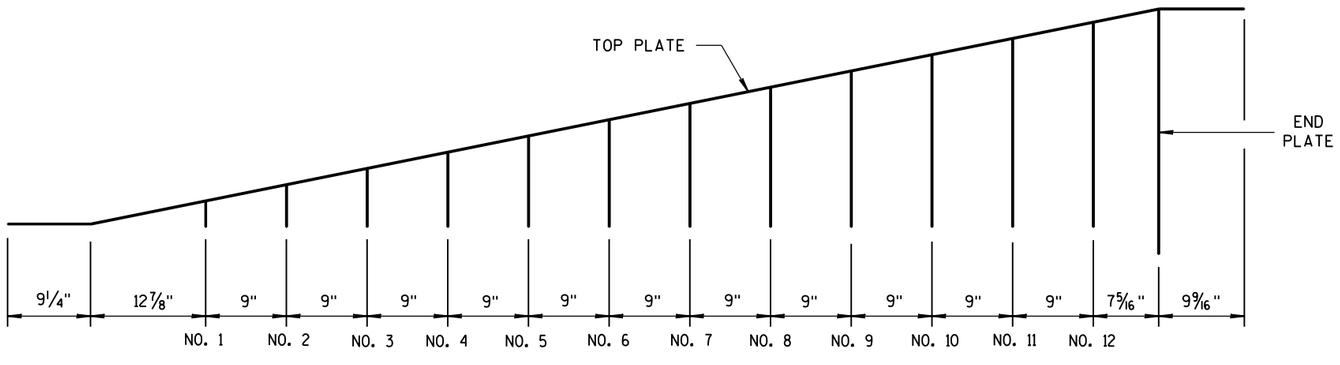
GUSSETS 1 - 12

ALL GUSSETS 1/8" STEEL PLATE

GUSSET DIMENSIONS				
GUSSET NO.	A	B	C	D
1	2 7/8"	7 3/4"	1/4"	8
2	4 11/16 "	7 9/16 "	1/2"	8
3	6 1/2"	7 3/8"	11/16 "	8 1/16 "
4	8 5/16 "	7 3/16 "	7/8"	8 1/16 "
5	10 1/8"	7"	1 1/16 "	8 1/16 "
6	11 15/16 "	6 13/16 "	1 1/4"	8 1/16 "
7	13 3/4"	6 5/8"	1 7/16 "	8 1/16 "
8	15 9/16 "	6 7/16 "	1 9/16 "	8 1/16 "
9	17 3/8"	6 1/4"	1 13/16 "	8 1/16 "
10	19 3/16 "	6 1/16 "	1 15/16 "	8 1/16 "
11	21"	5 7/8"	2 3/16 "	8 1/16 "
12	22 13/16 "	5 11/16 "	2 5/16 "	8 1/16 "

SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 STEEL AND GALVANIZED.

GUSSETS AND END PLATE ARE STITCH WELDED ON 3 SIDES. TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE AND GUSSETS.



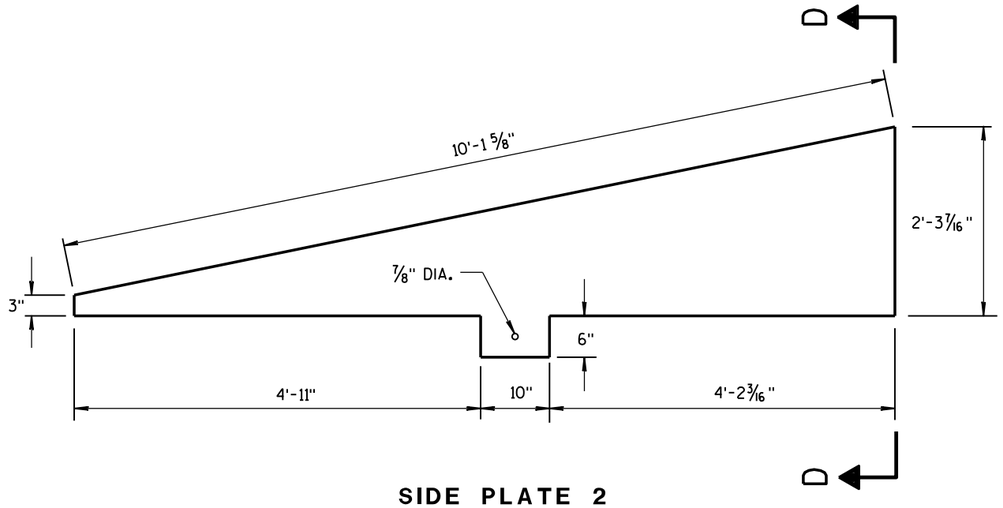
GUSSET LOCATION

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 56" PERMANENT CONCRETE BARRIER

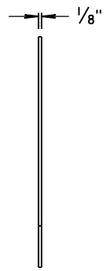
CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

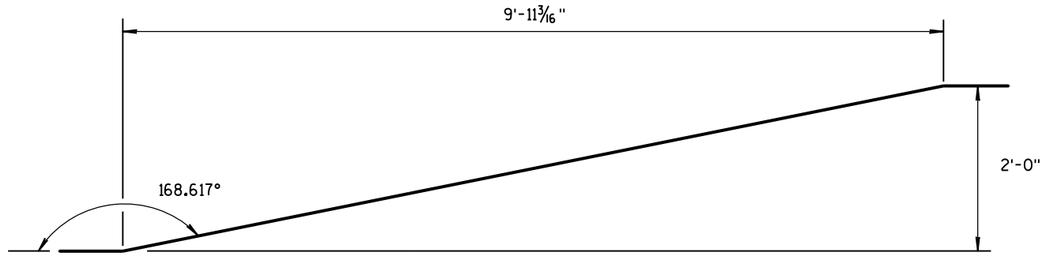
6
S.D.D. 14 B 7-15h



SIDE PLATE 2

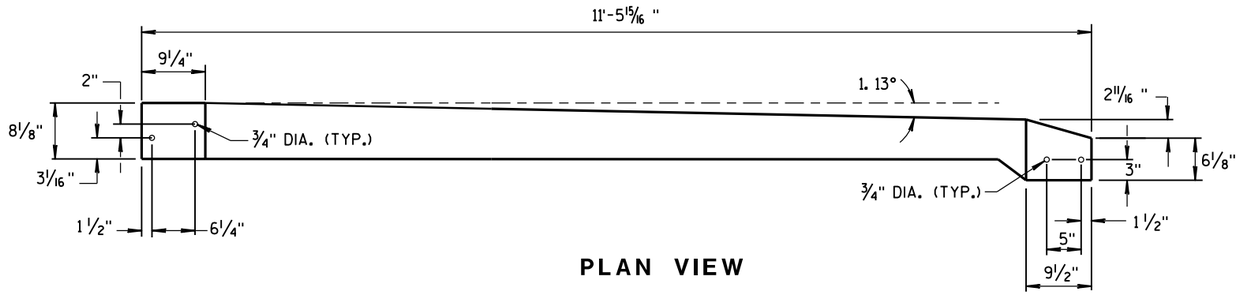


END VIEW



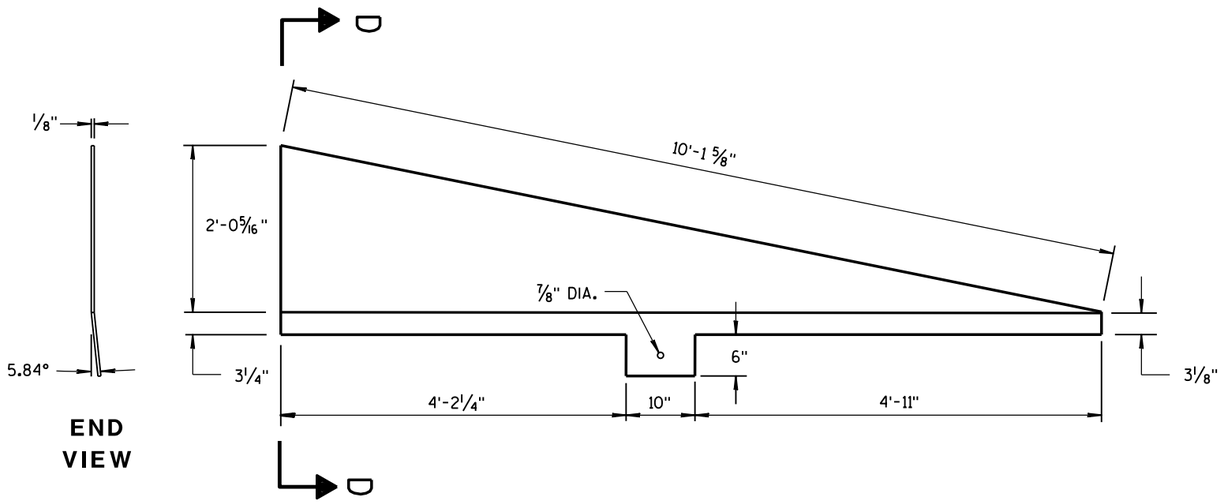
SIDE VIEW

TOP PLATE



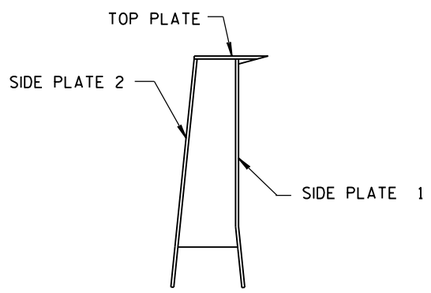
PLAN VIEW

TOP PLATE



END VIEW

SIDE PLATE 1



SECTION D-D

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 56" PERMANENT CONCRETE BARRIER

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS UNIT SUPERV
FHWA

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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.

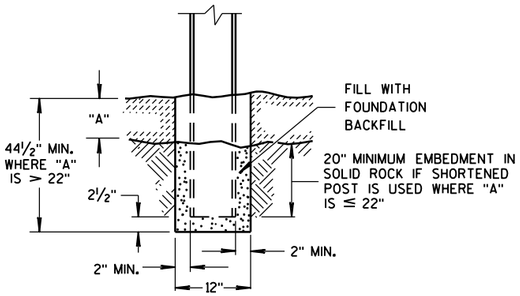
② USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

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.

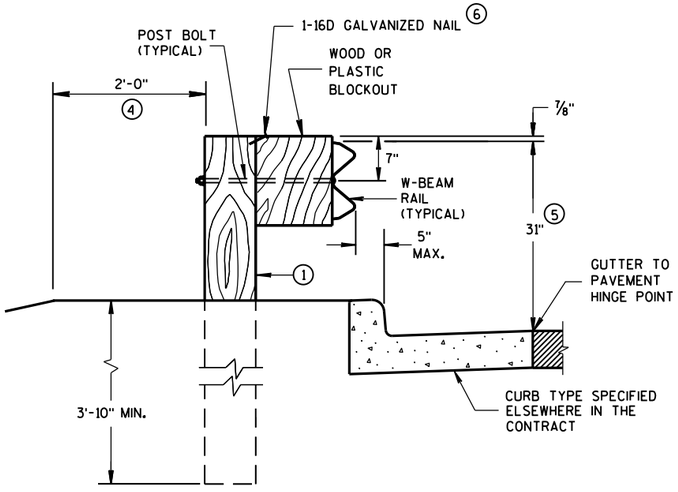
④ WHEN THE DISTANCE FROM BACK OF POST TO SHOULDER HINGE POINT IS LESS THAN 2 FEET INSTALL LONGER POST AT HALF POST SPACING (K).

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".

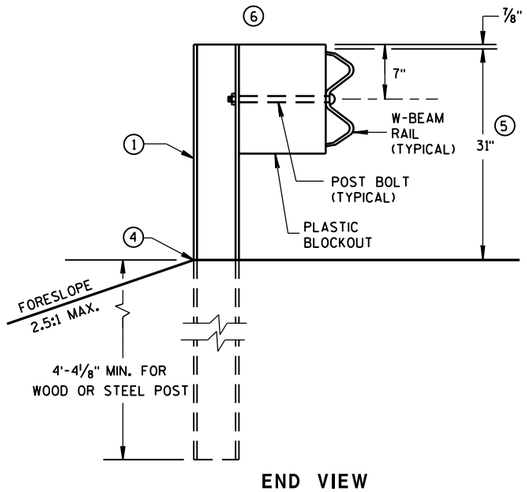
⑥ WHEN USING STEEL POST AND WOOD BLOCKOUTS INSTALL FOUR 16D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.



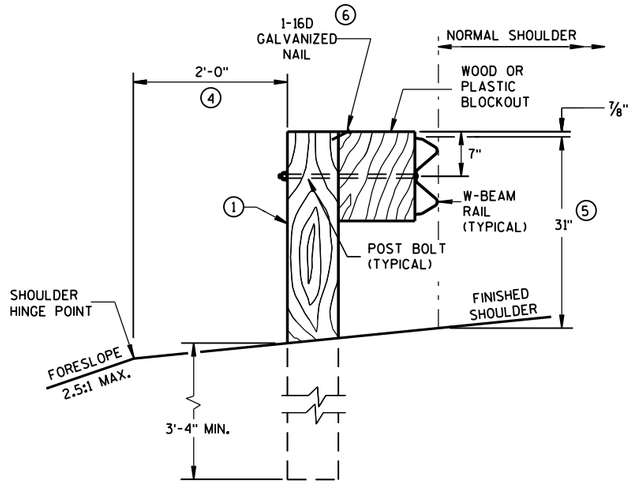
END VIEW
SETTING STEEL OR WOOD POST IN ROCK ③



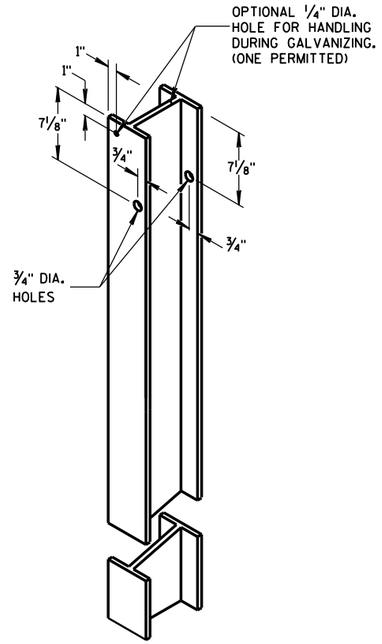
END VIEW
LOCATED ALONG A CURBED ROADWAY



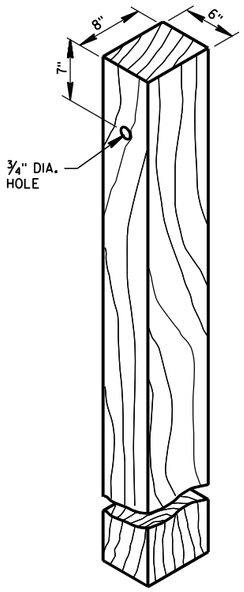
END VIEW
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



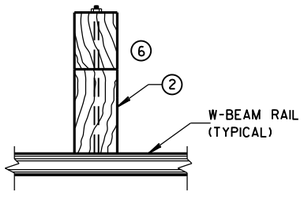
END VIEW
LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



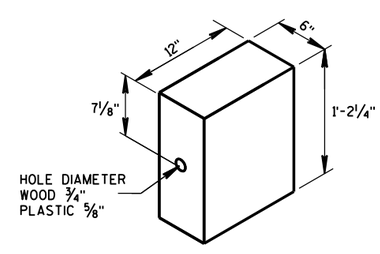
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) ①



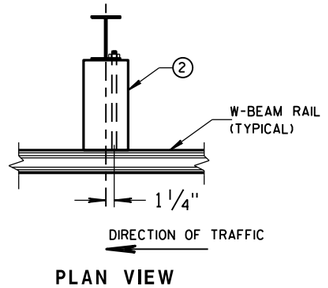
WOOD POST
(6" X 8") NOMINAL ①



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

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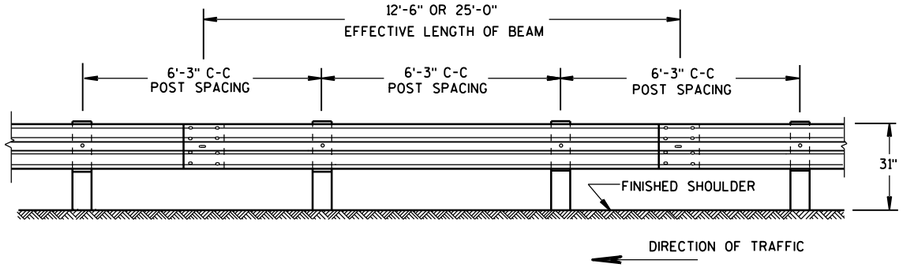
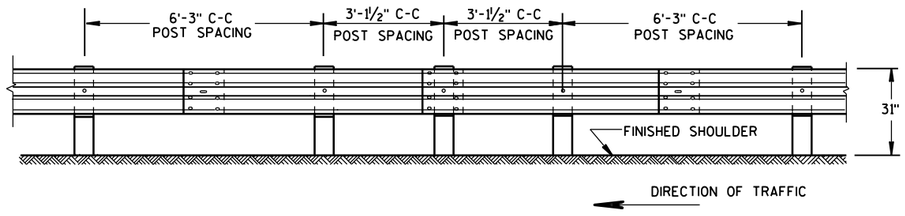


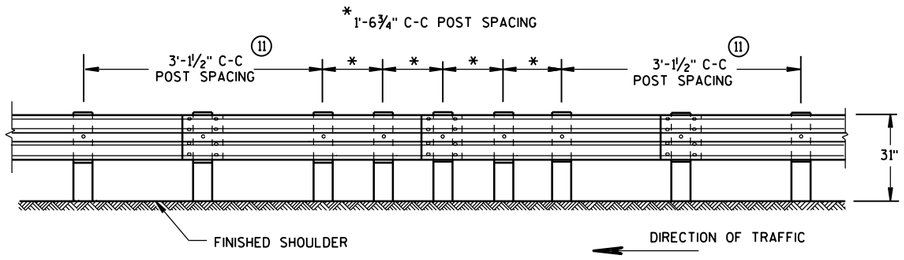
FRONT VIEW

POST SPACING STANDARD INSTALLATION



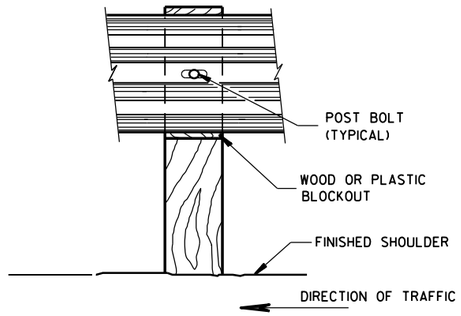
FRONT VIEW

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

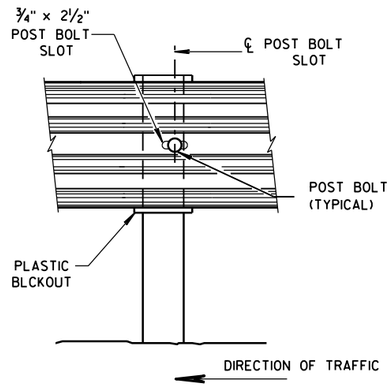


FRONT VIEW

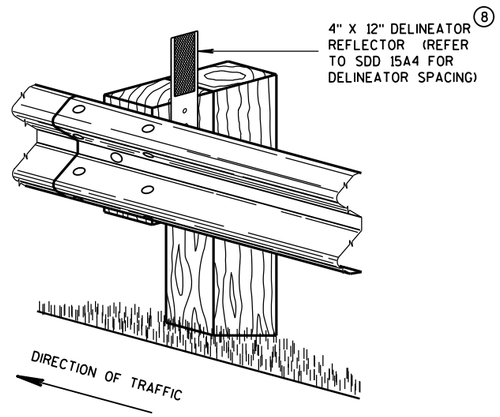
QUARTER POST SPACING (QS)



FRONT VIEW AT WOOD POST



FRONT VIEW AT STEEL POST



ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION

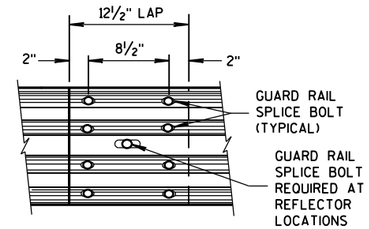
GENERAL NOTES

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

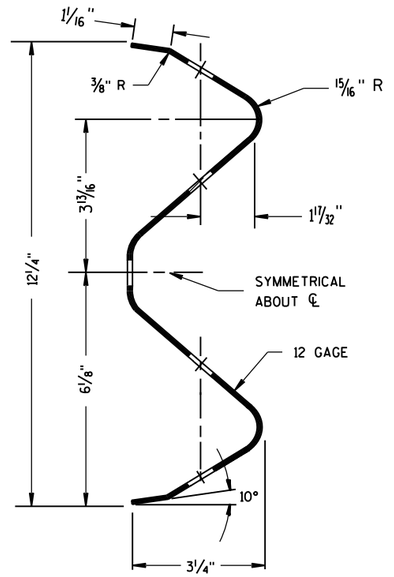
(11) 25 FEET OF HALF POST SPACING IS REQUIRED ON APPROACH AND DEPARTURE ENDS OF QUARTER POST SPACING.

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

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



FRONT VIEW
MID-SPAN BEAM SPLICE



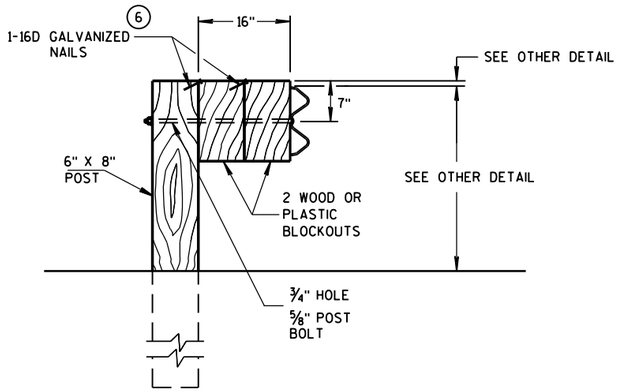
SECTION THRU W-BEAM RAIL

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

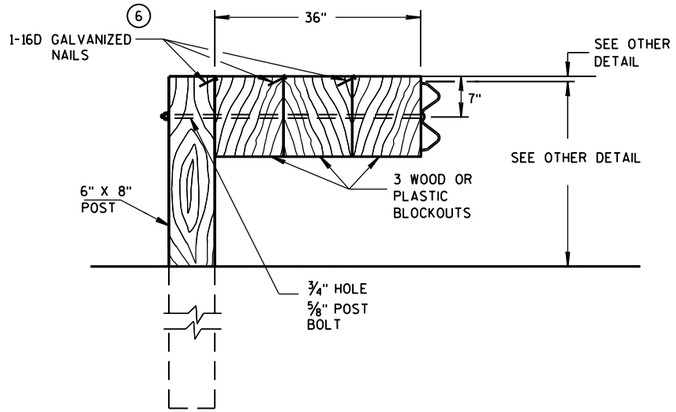
6

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.

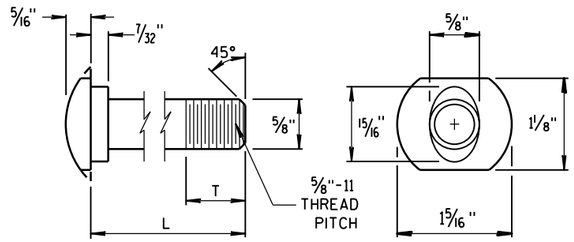


DETAIL FOR 36" BLOCKOUT DEPTH

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.

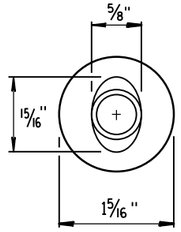
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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.

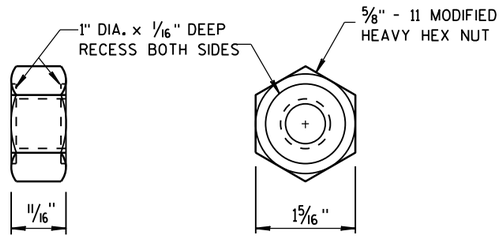


POST BOLT TABLE

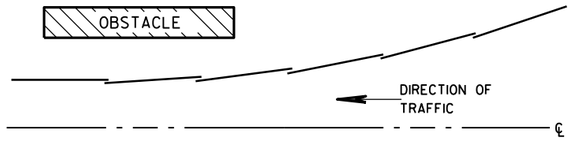
L	T (MIN.)
1¼"	1⅛"
2"	1¾"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

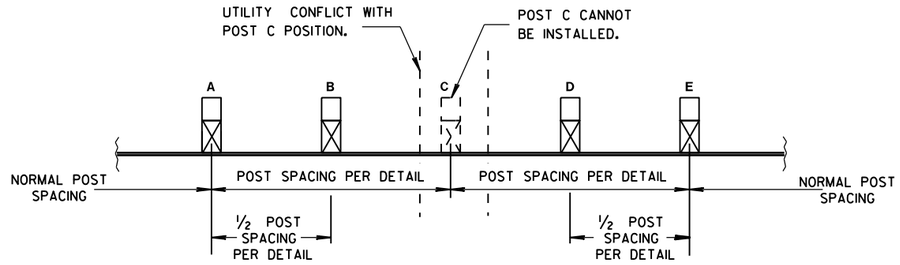


POST BOLT, SPLICE BOLT AND RECESS NUT

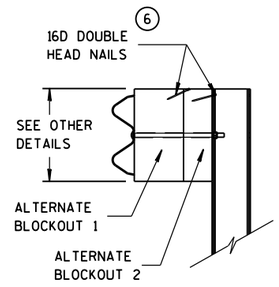


PLAN VIEW

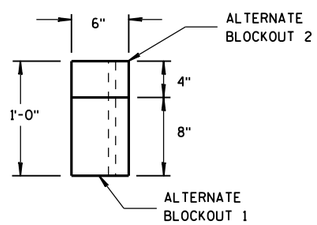
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

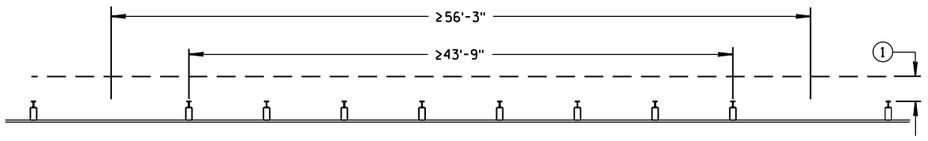
ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

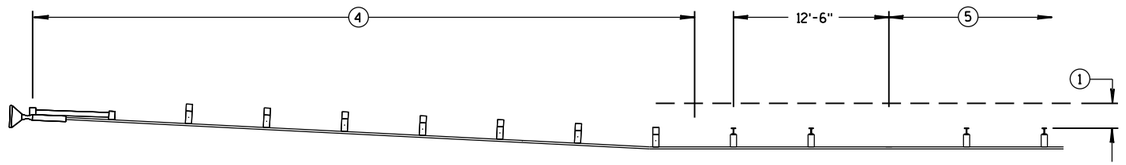
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

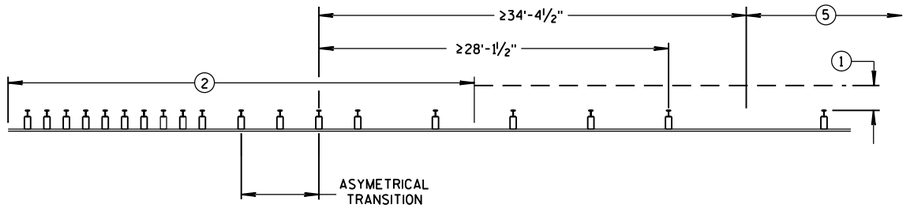
S.D.D. 14 B 42-5c



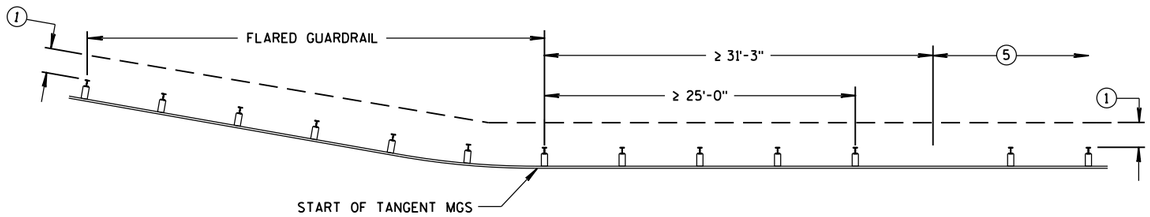
MISSING POST IN NORMAL BEAM GUARD RUN



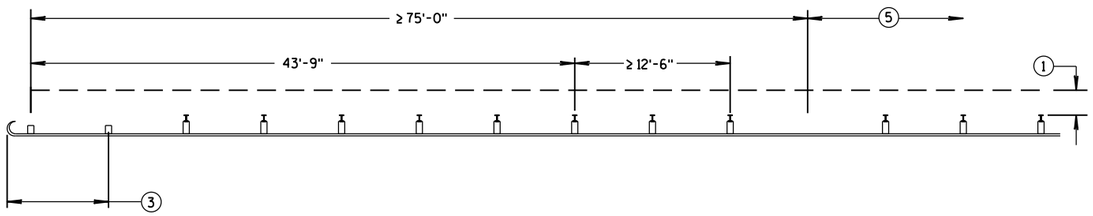
MISSING POST IN NORMAL BEAM GUARD RUN NEAR EAT



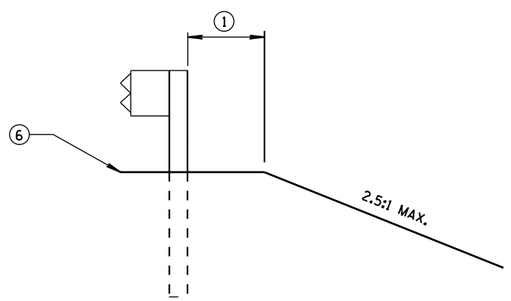
MISSING POST NEAR APPROACH THRIE BEAM TRANSITION



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
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT
UNIT SUPERVISOR

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.

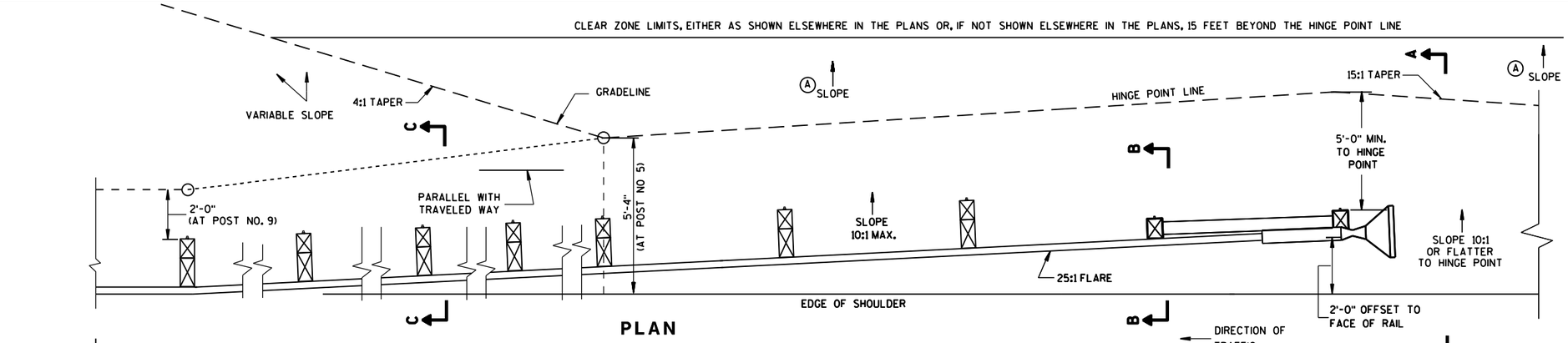
SEE SDD 14B42 FOR MORE INFORMATION.

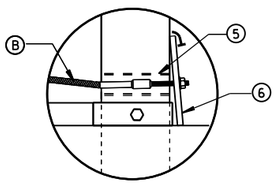
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

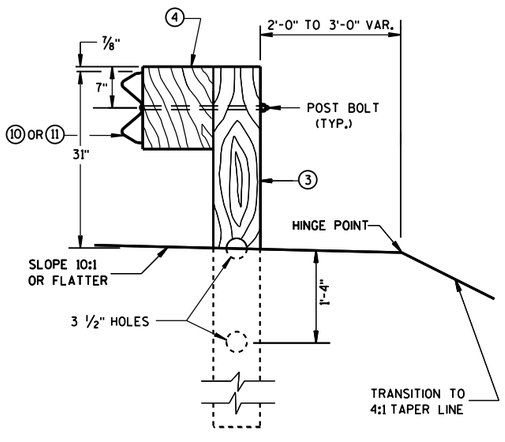
DO NOT INSTALL REFLECTORS ON THE FIRST 50 FEET OF THE APPROACH END OF THE ENERGY ABSORBING TERMINAL.

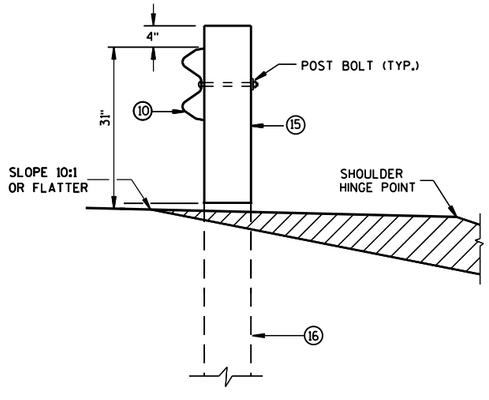
SEE MANUFACTURER'S DRAWING FOR SPLICE LOCATION, HARDWARE DIMENSIONS AND INSTALLATION INSTRUCTIONS.

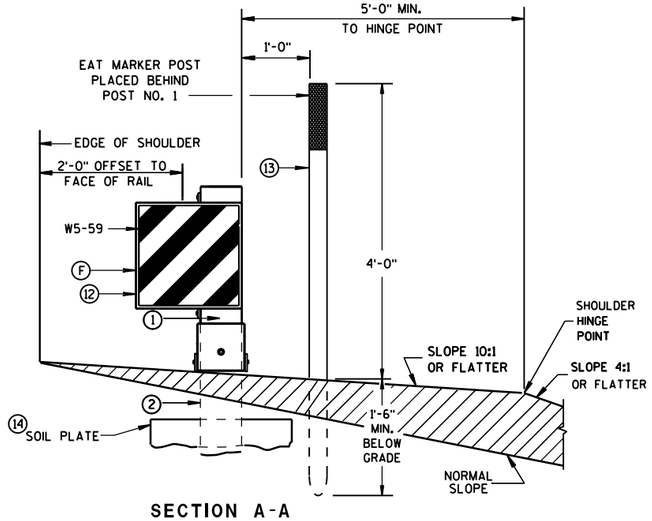
THE CENTER OF THE UPPER 3½" DIAMETER HOLE ON POST NUMBER 3 THROUGH POST 9 IS TO BE FLUSH WITH THE GROUND LINE UP TO A MAXIMUM OF 2" ABOVE GROUND LINE.

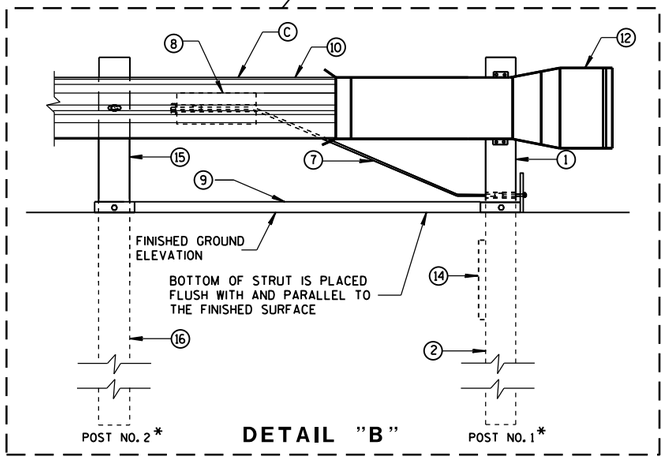








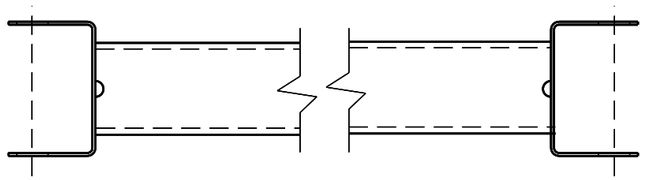




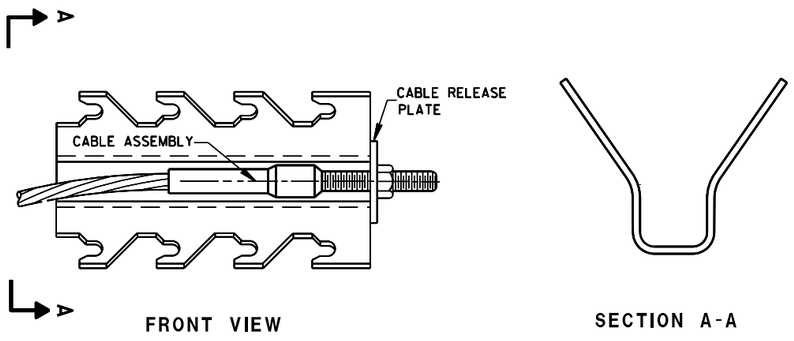
MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

6
S.D.D. 14 B 44-3a



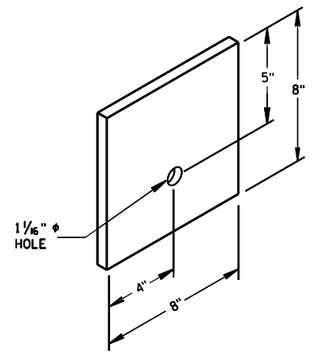
GENERIC GROUND STRUT (9) (H)



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



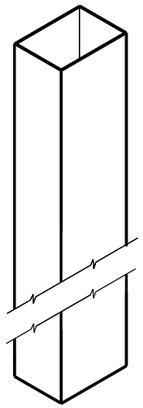
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

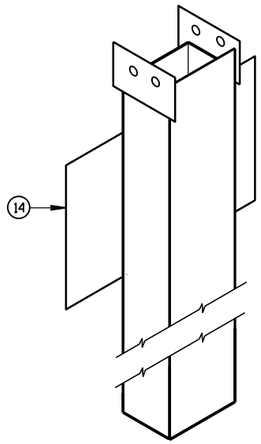
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

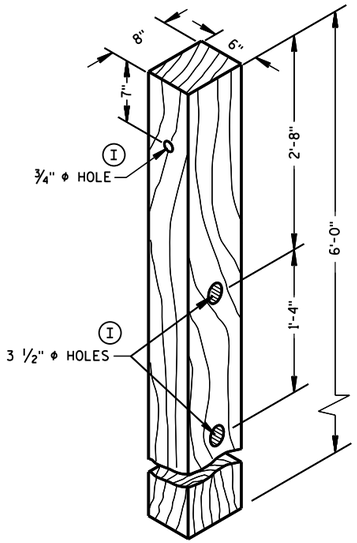
S.D.D. 14 B 44-3b



UPPER POST NO. 1 (1)

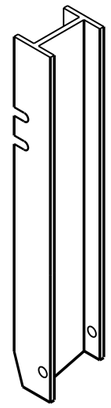


LOWER POST NO. 1 (2)

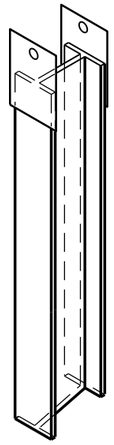


POSTS NUMBER 3-9

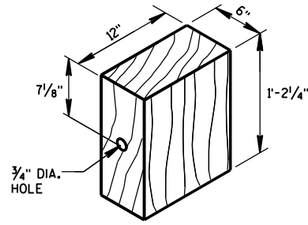
WOOD CRT POST (3)



UPPER POST NO. 2 (15)

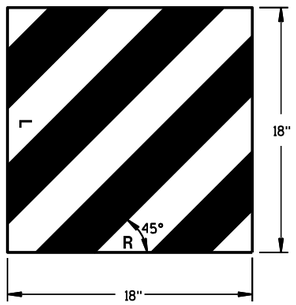


LOWER POST NO. 2 (16)



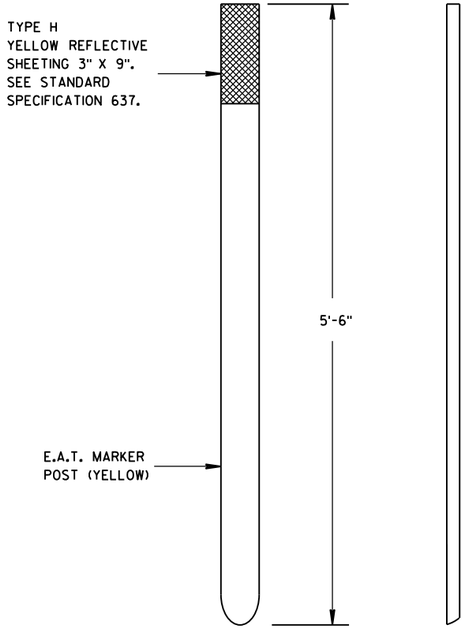
WOOD BLOCKOUT (4)

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



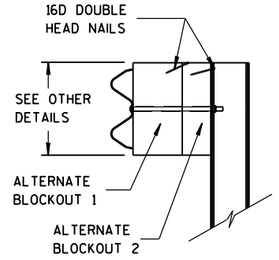
W5-59

REFLECTIVE SHEETING DETAIL (H)

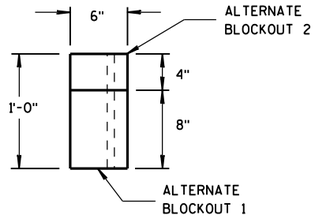


FRONT VIEW SIDE VIEW

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

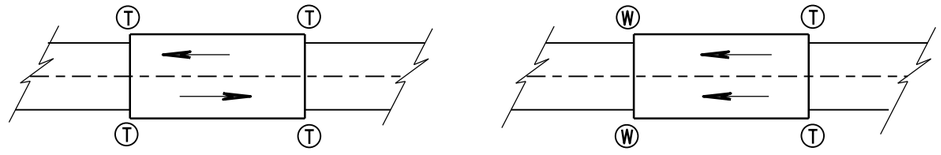
June 2017
DATE

/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

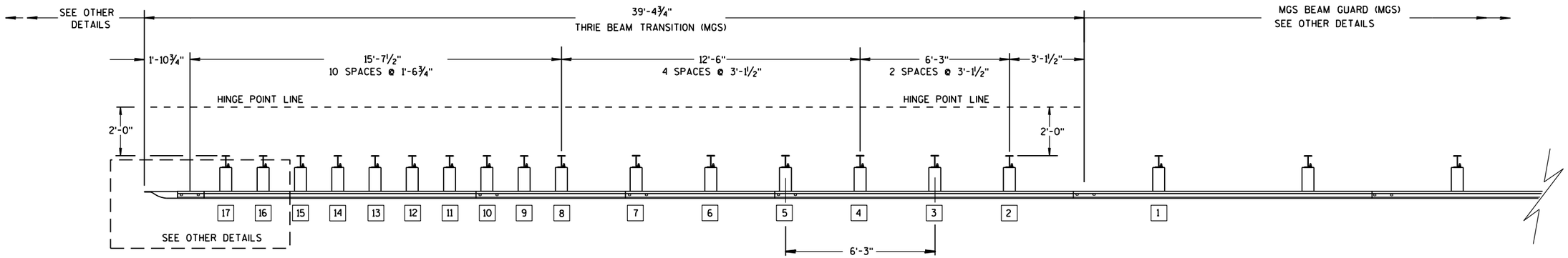
IF ROCK IS ENCOUNTERED, REMOVE ROCK TO FULL DEPTH OF POST PLUS 2½", AND 12" DIAMETER AROUND POST. SEE 14B42 FOR MORE DETAILS.

TRANSITION USES STEEL POSTS ONLY.

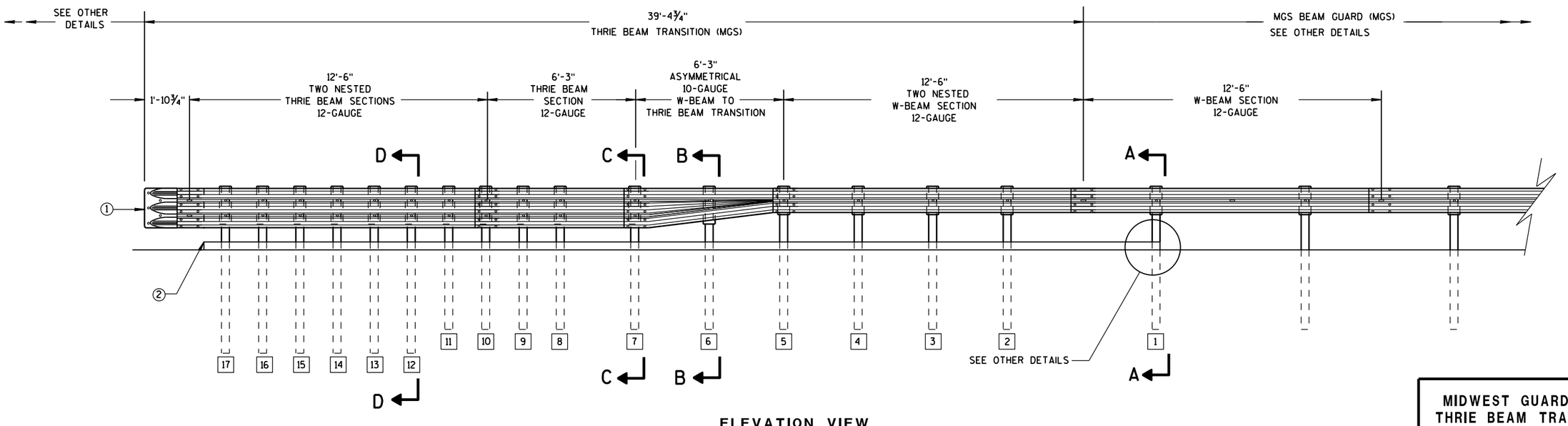
SEE STANDARD DETAIL DRAWING 14 B 42 FOR MORE INFORMATION.

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

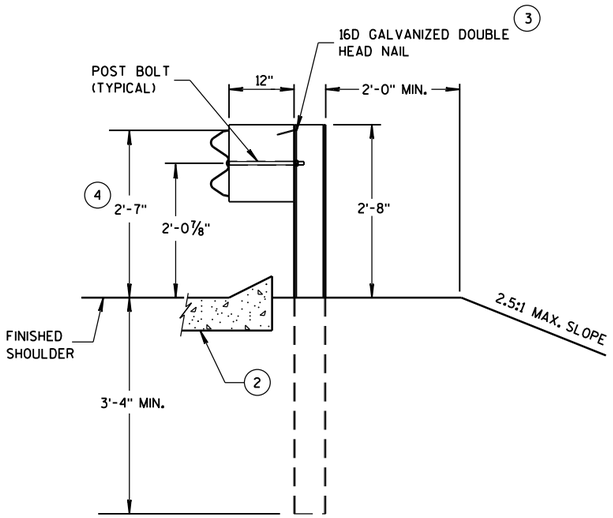
S.D.D. 14 B 45-4a

GENERAL NOTES

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

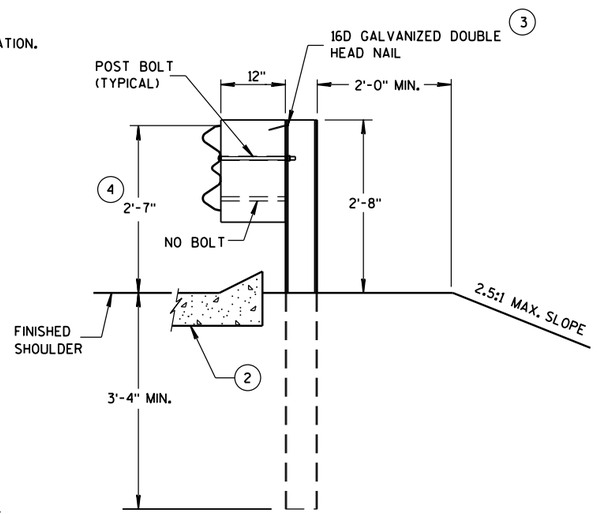
(3) WHEN USING STEEL POSTS AND WOOD BLOCKOUTS INSTALL FOUR 10D GALVANIZED NAILS. INSTALL NAILS AT THE BACK CORNERS OF THE BLOCK AND BEND THE NAILS OVER THE FLANGE OF THE STEEL POST.

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



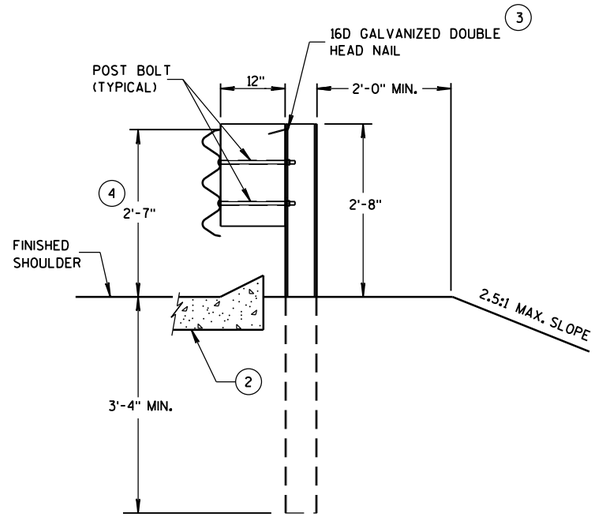
SECTION A-A

POSTS 1-5



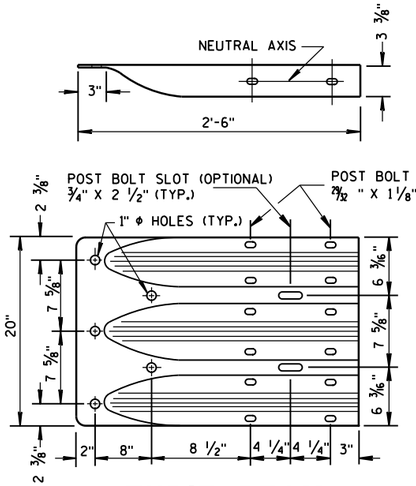
SECTION B-B

POST 6



SECTION C-C

POSTS 7-11



THRIE BEAM TERMINAL CONNECTOR

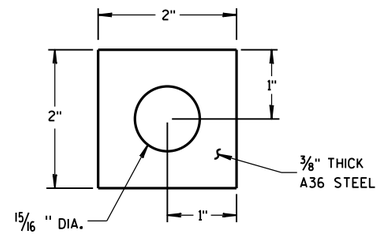
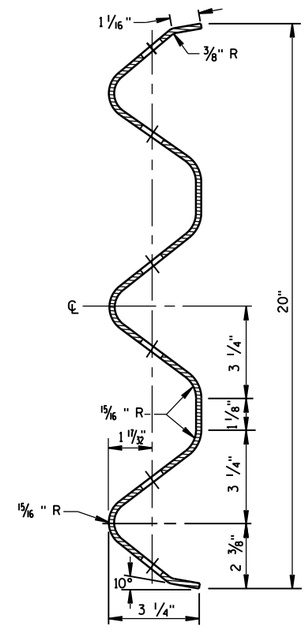
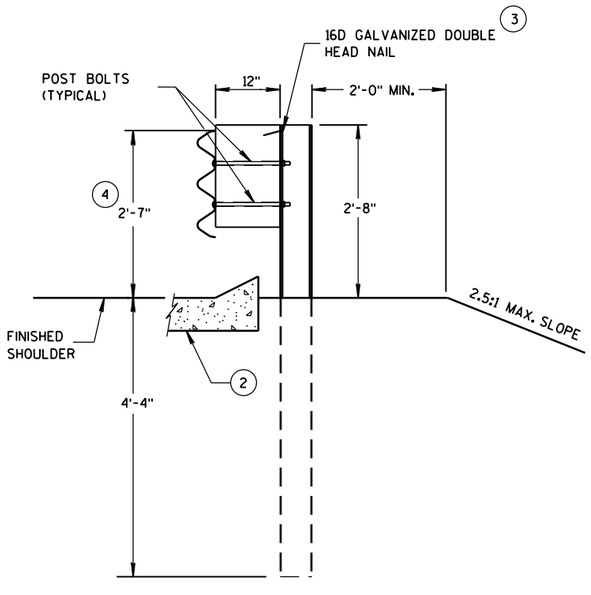


PLATE WASHER DETAIL

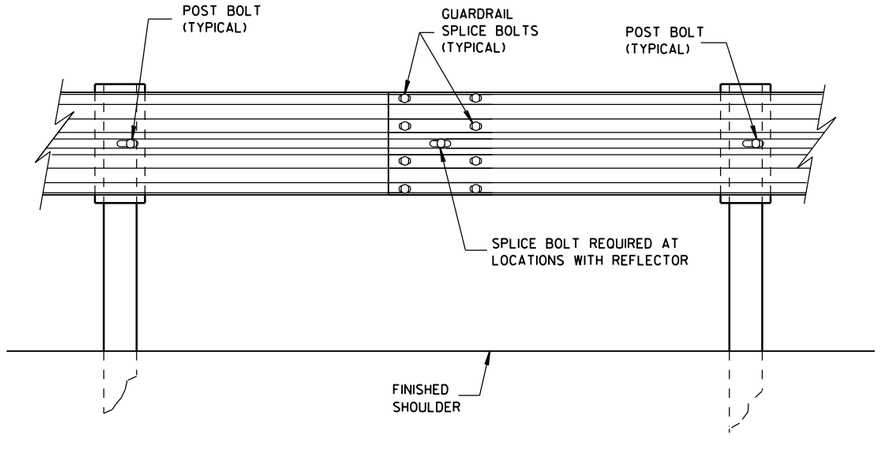


SECTION THRU THRIE BEAM RAIL ELEMENT



SECTION D-D

POSTS 12-17



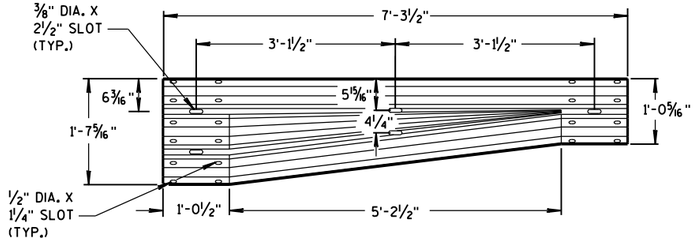
SPLICE DETAIL

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

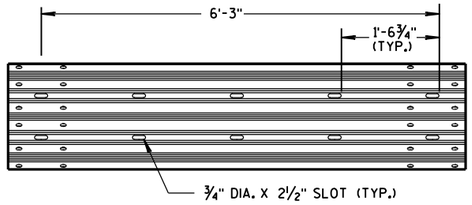
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

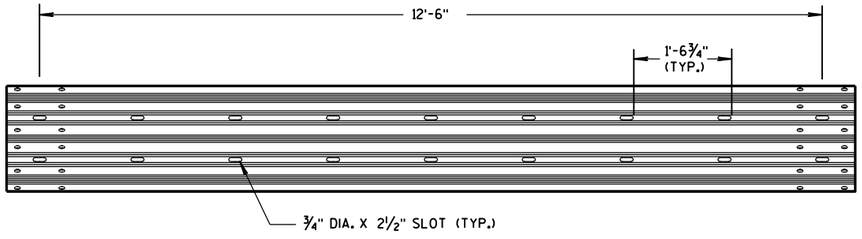
S.D.D. 14 B 45-4b



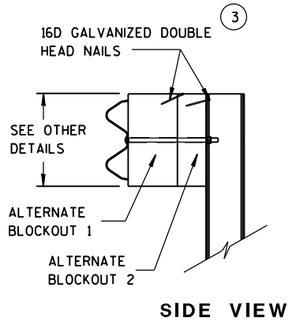
W-BEAM TO THRIE BEAM TRANSITION SECTION



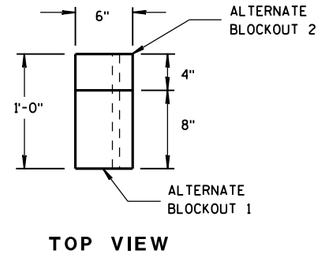
6'-3" THRIE BEAM SECTION



12'-6" THRIE BEAM SECTION

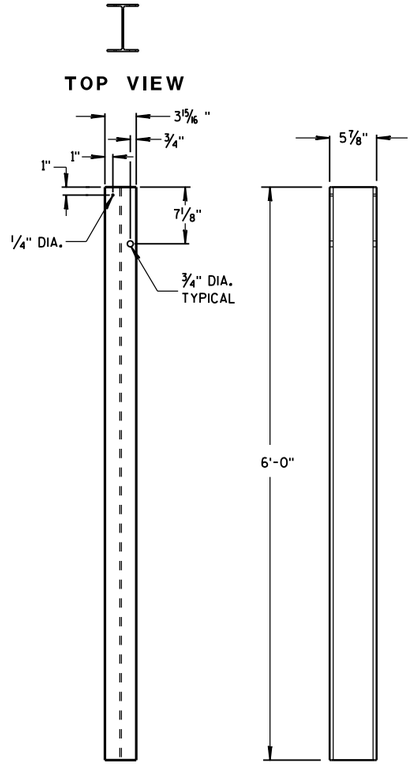


SIDE VIEW

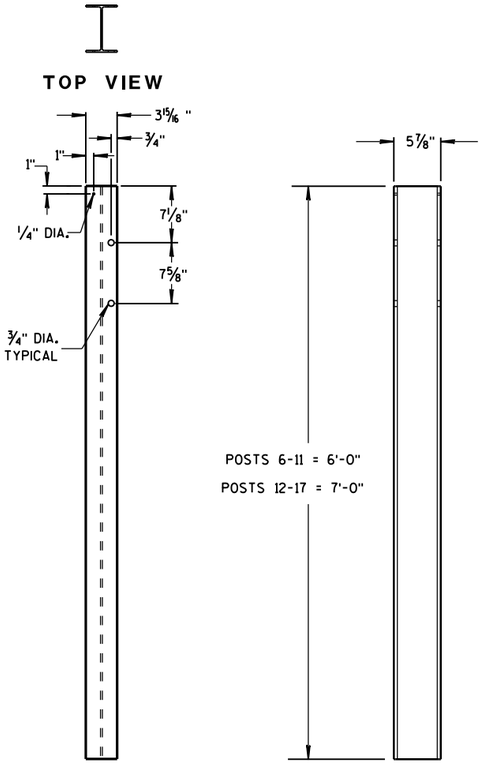


TOP VIEW

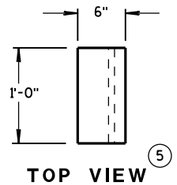
ALTERNATE WOOD BLOCKOUT DETAIL



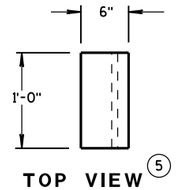
STEEL POSTS 1-5



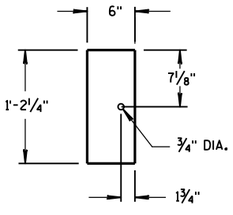
STEEL POSTS 6-17



TOP VIEW (5)

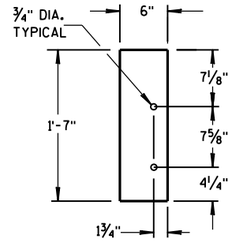


TOP VIEW (5)



FRONT VIEW

BLOCKOUT POSTS 1-5



FRONT VIEW

BLOCKOUT POSTS 6-17

GENERAL NOTES

STEEL POSTS ARE W6X9 OR W6X8.5.

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

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

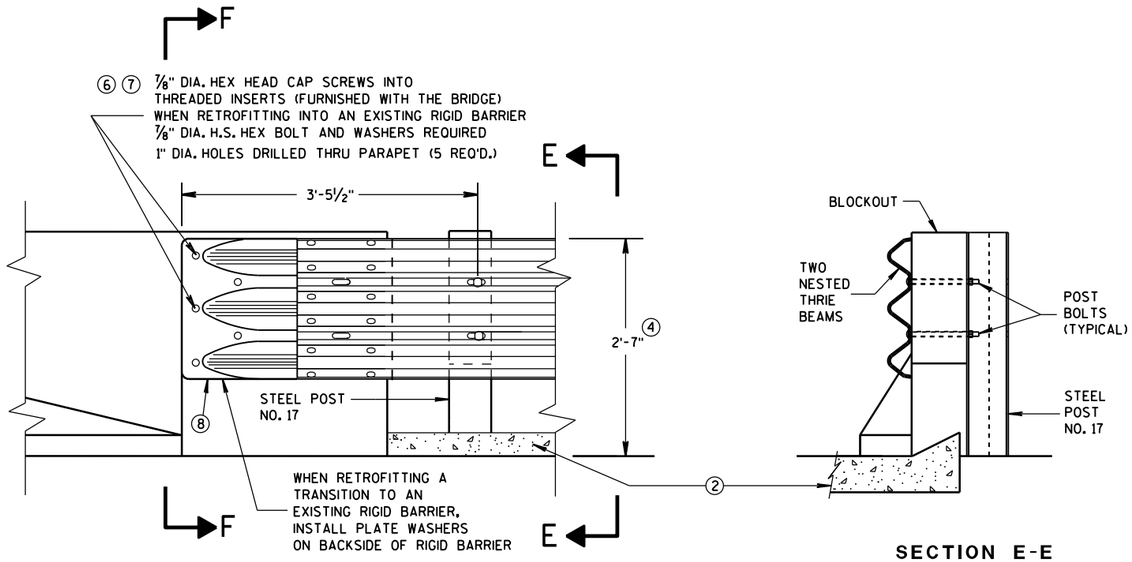
(5) WOOD BLOCKS MAY BE CONSTRUCTED OUT OF 2 WOOD BLOCKS. SEE ALTERNATE WOOD BLOCK DETAIL.

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPOR

6

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



FRONT VIEW

SECTION E-E

THRIE BEAM CONNECTION TO BRIDGE PARAPET WITH SQUARE ENDS

GENERAL NOTES

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

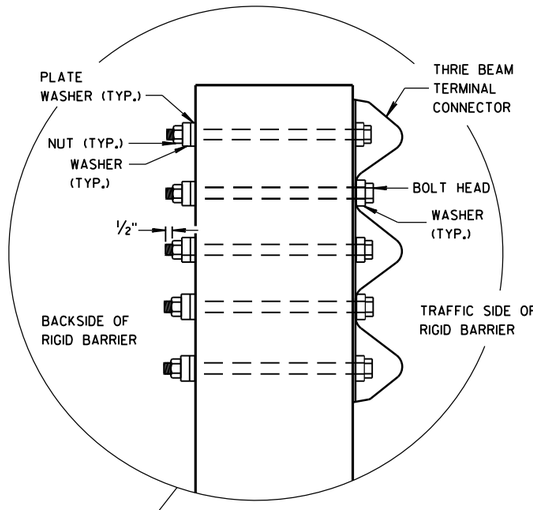
② OPTIONAL CURB AND GUTTER OR DRAINAGE FEATURE SEE PLAN FOR INFORMATION.

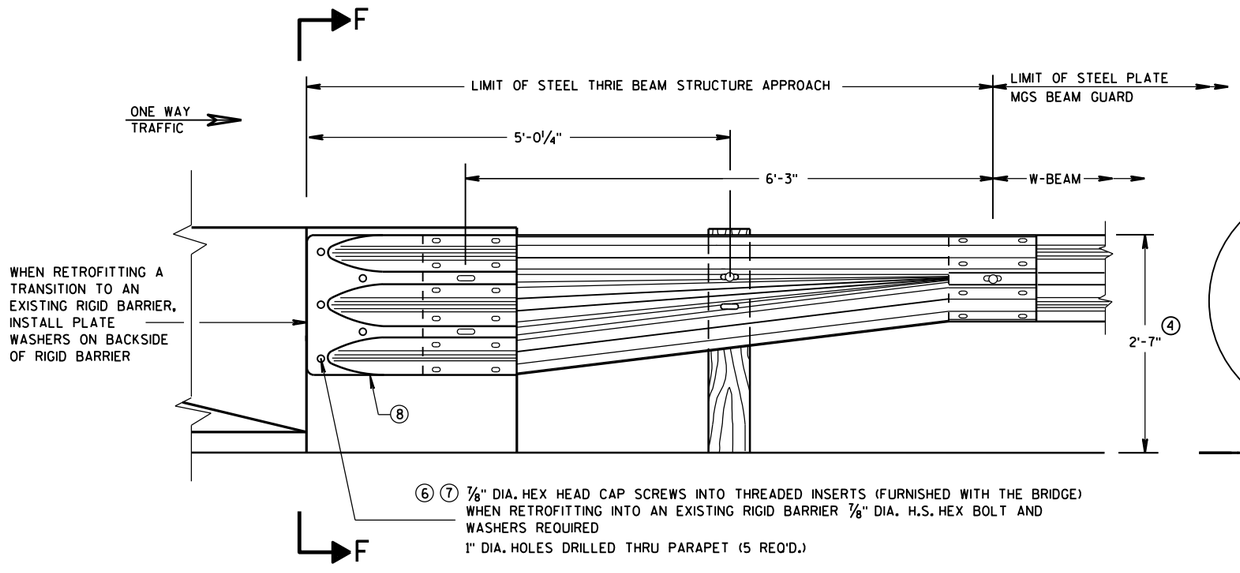
④ TOLERANCE FOR TOP OF BEAM IS ± 1".

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

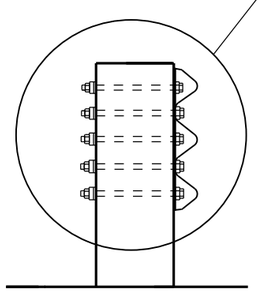
⑦ BOLTS MAY BE A325 BOLTS OR A449 BOLTS. BOLT LENGTH AND THREADING LENGTH ARE TO ALLOW FOR A TIGHT CONNECTION BETWEEN RIGID BARRIER AND THRIE BEAM CONNECTION PLATE. CONTRACTOR IS TO FIELD VERIFY BOLT LENGTH AND THREAD LENGTH. ONE ROUND WASHER REQUIRED BETWEEN BOLT HEAD AND THRIE BEAM CONNECTOR PLATE.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

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

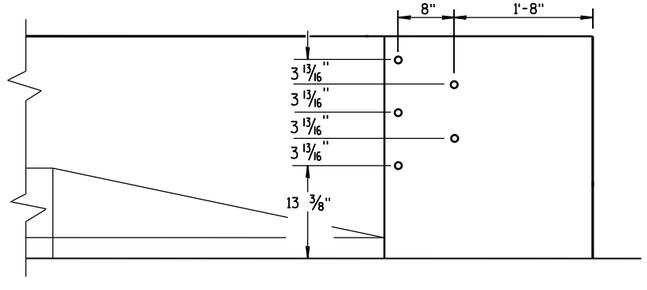




FRONT VIEW



SECTION F-F



DRILL HOLE LOCATION

W BEAM TRANSITION AND CONNECTION TO BRIDGE PARAPETS WITH SQUARE ENDS

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
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6

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6

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GENERAL NOTES

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

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

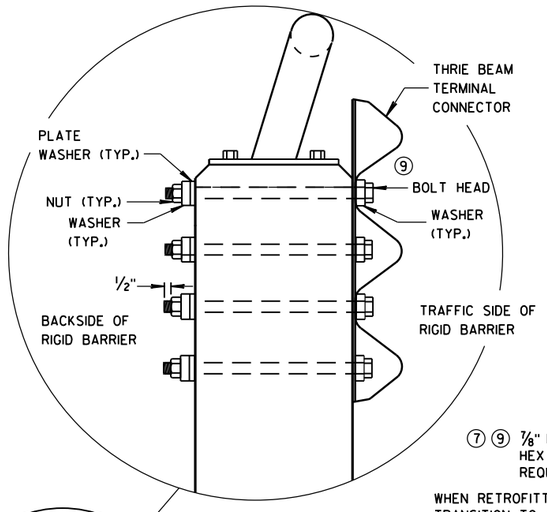
(4) TOLERANCE FOR TOP OF BEAM IS ± 1".

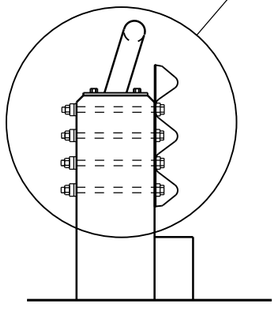
(6) DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

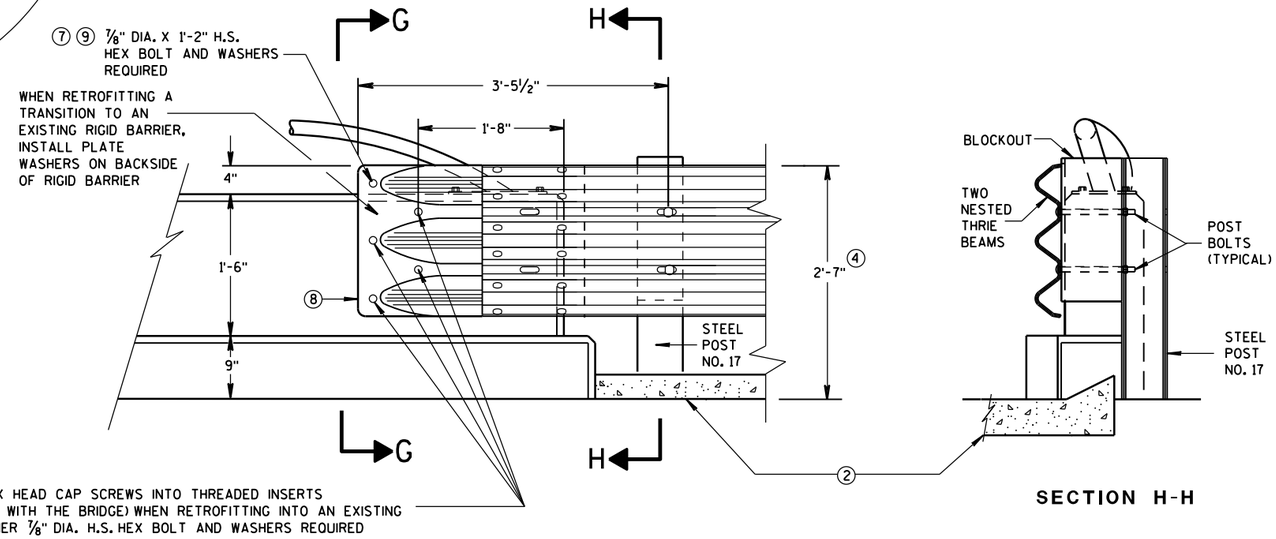
(8) THE RECESS FOR A W-BEAM CONNECTION, WHICH EXISTS ON SOME PARAPETS OF THIS TYPE, SHALL BE FILLED WITH A TREATED TIMBER BLOCKOUT. BLOCKOUT SIZE IS 1'-6" X 2'-0" X 3 1/2".

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





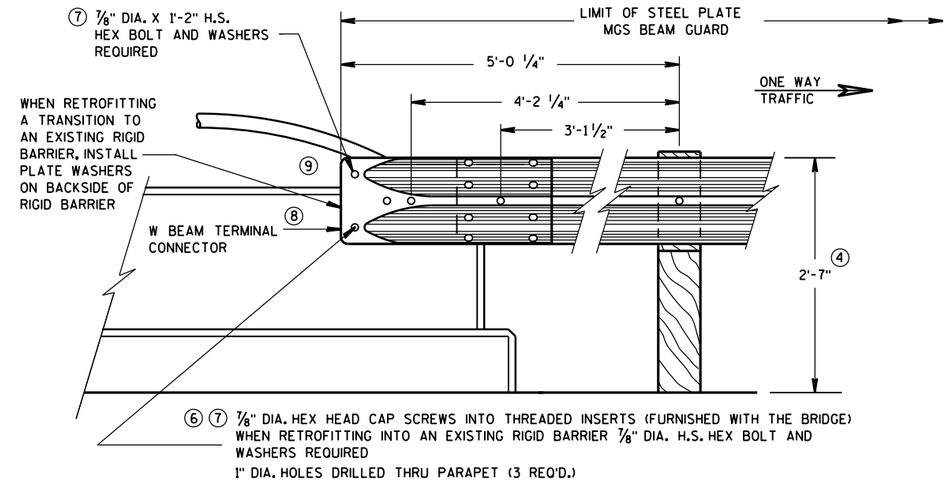
SECTION G-G



FRONT VIEW

SECTION H-H

THRIE BEAM CONNECTION TO VERTICAL FACED PARAPETS



FRONT VIEW

W BEAM CONNECTION TO VERTICAL FACE PARAPET

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
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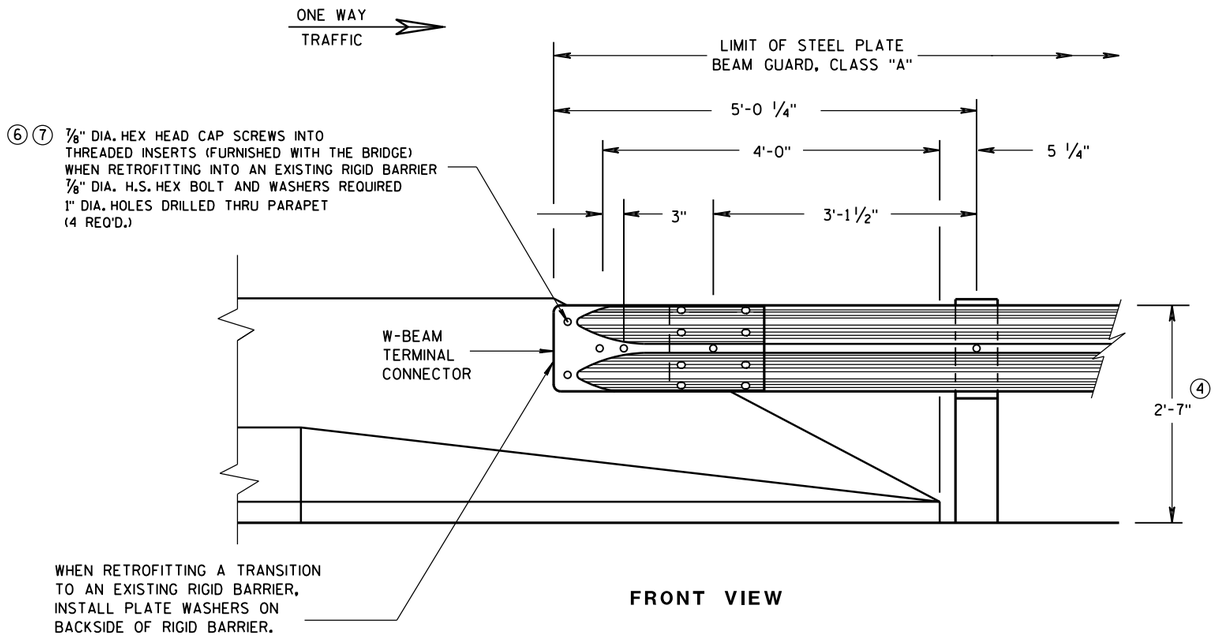

FRONT VIEW

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.

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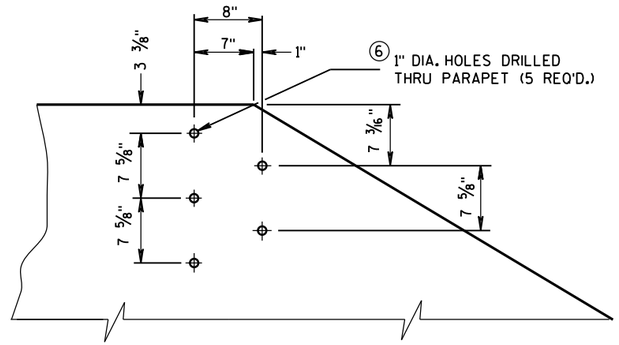
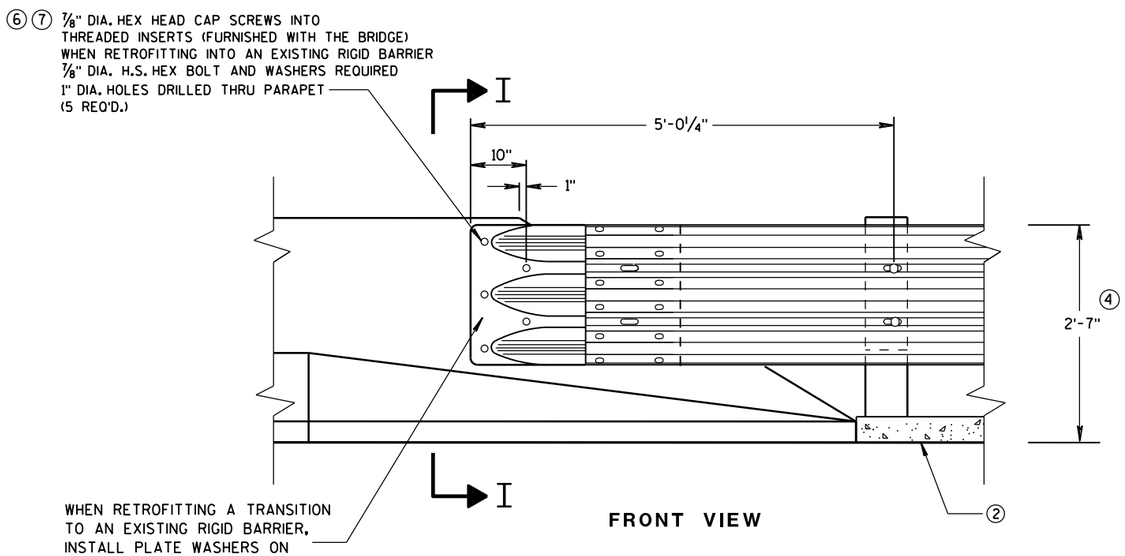
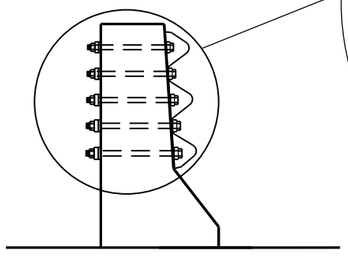


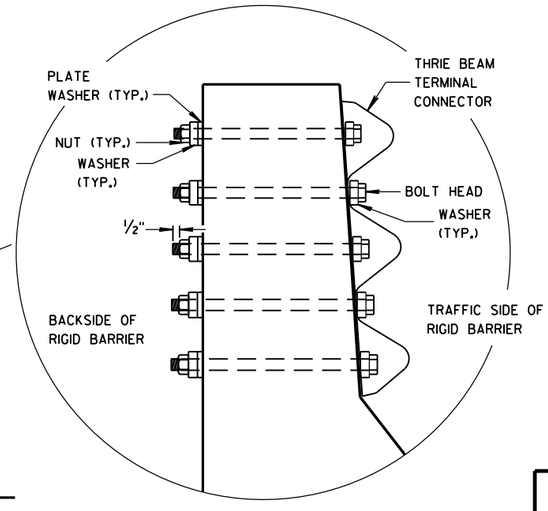
DRILL HOLE LOCATION AND PATTERN
FOR THRIE BEAM CONNECTION



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

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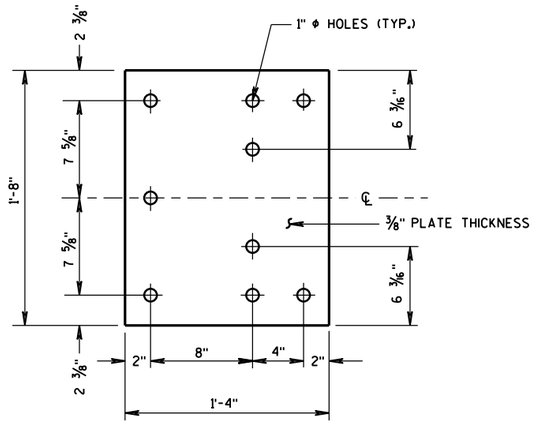
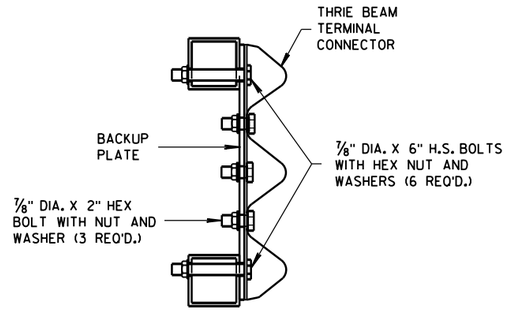
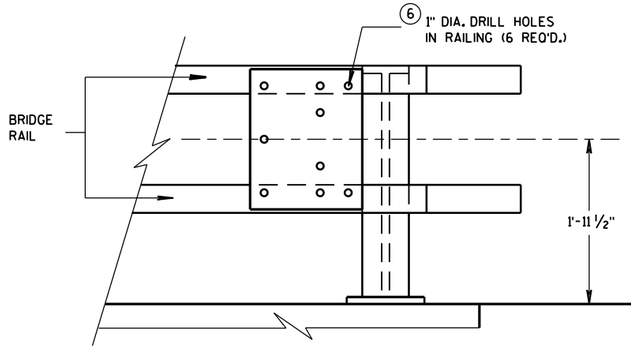


BACK-UP PLATE DETAIL



SECTION J-J

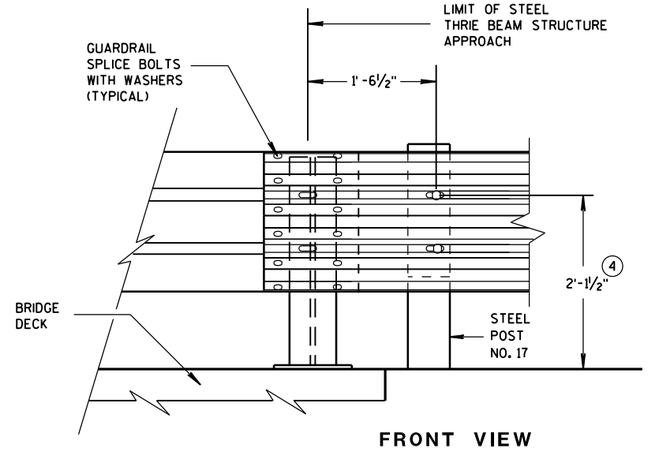


BACK-UP PLATE MOUNTING ONTO BRIDGE RAILING

GENERAL NOTES

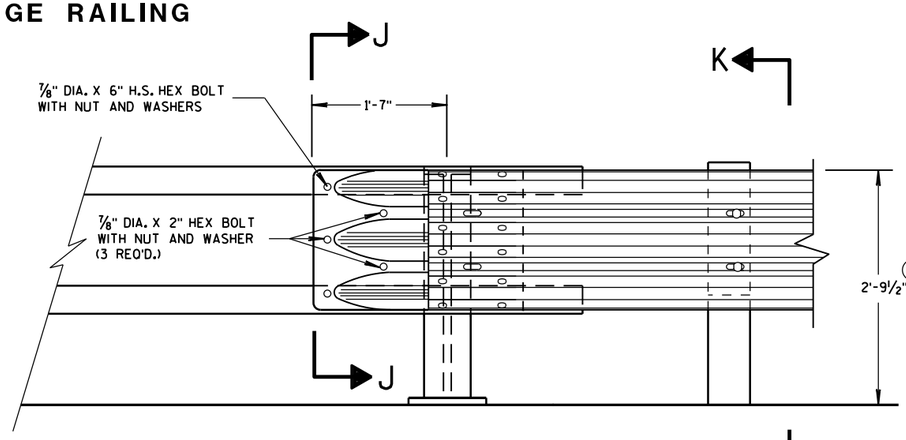
4 TOLERANCE FOR TOP OF BEAM IS ± 1".

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

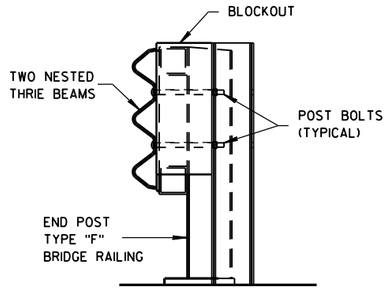


FRONT VIEW

THRIE BEAM CONNECTION TO STEEL RAILING TYPE "W"



FRONT VIEW



SECTION K-K

THRIE BEAM CONNECTION TO TUBULAR RAILING TYPE "F"

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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June, 2015 — DATE
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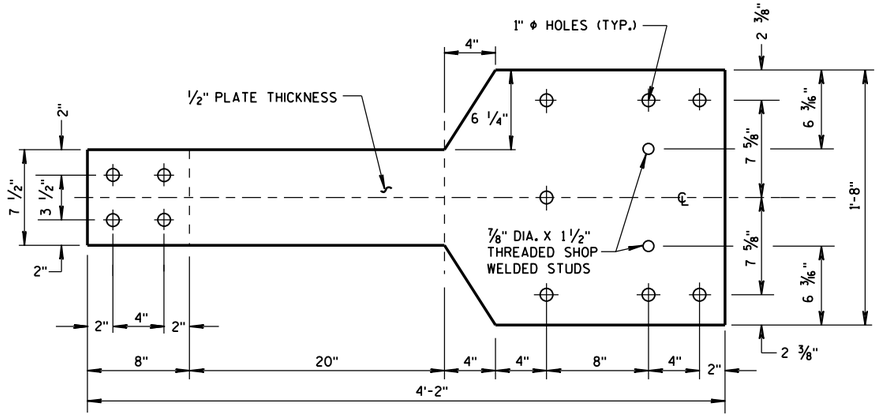
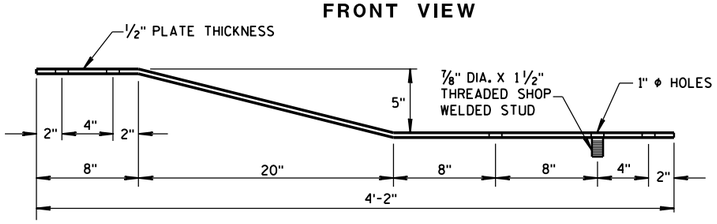
GENERAL NOTES

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

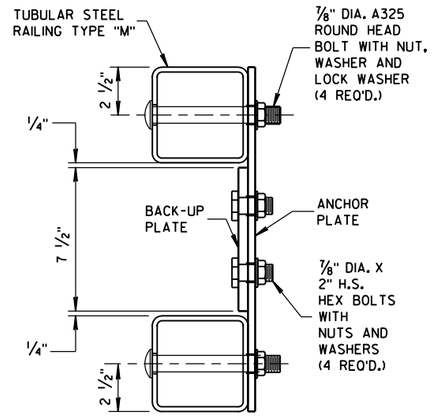


FRONT VIEW

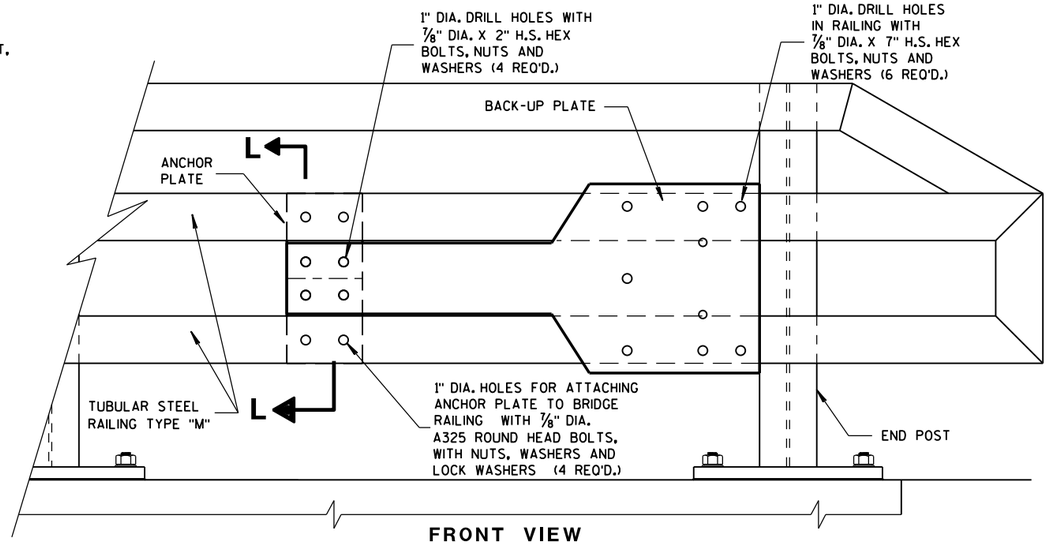


PLAN VIEW

BACK-UP PLATE DETAIL, TYPE "M"

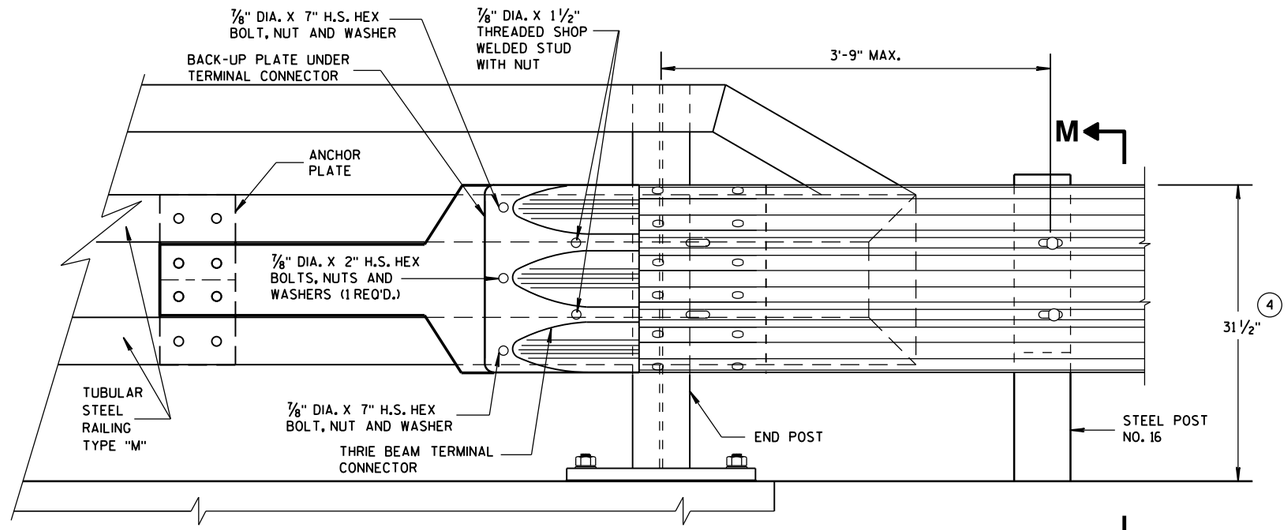


SECTION L-L

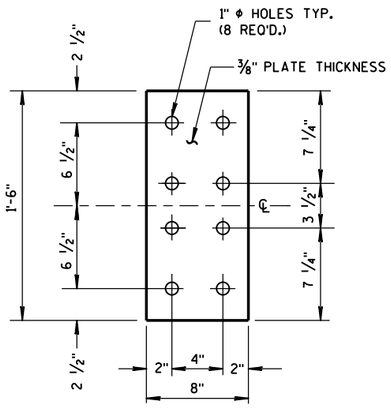


FRONT VIEW

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

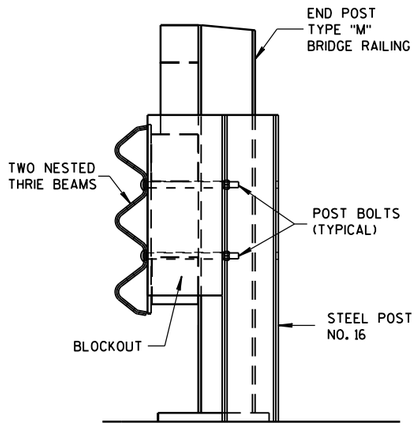


FRONT VIEW

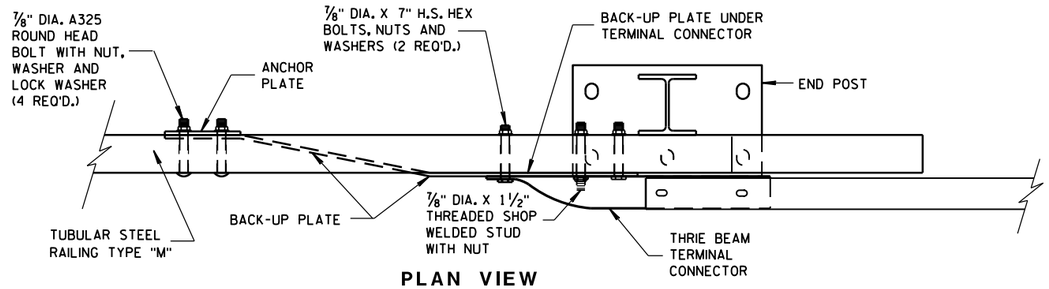


FRONT VIEW

ANCHOR PLATE DETAIL, TYPE "M"



SECTION M-M



PLAN VIEW

THRIE BEAM CONNECTION TO TUBULAR RAILING, TYPE "M"

MIDWEST GUARDRAIL SYSTEM THRIE BEAM TRANSITION (MGS)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
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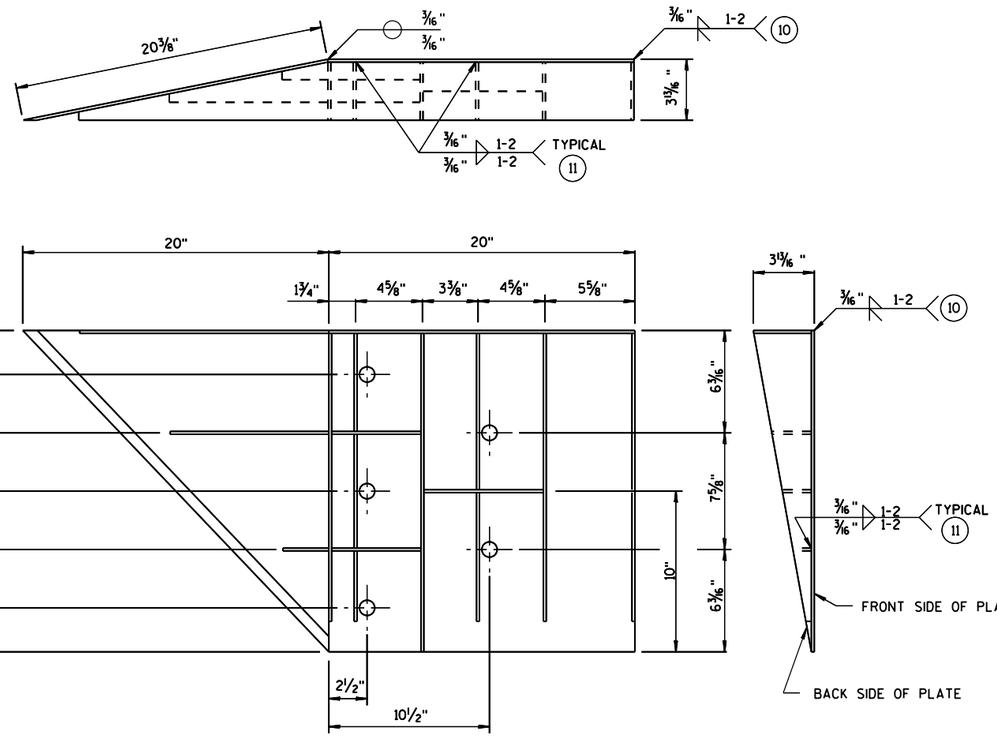

WELDING INSTRUCTION

(VIEWED FROM BACK SIDE OF PLATE)

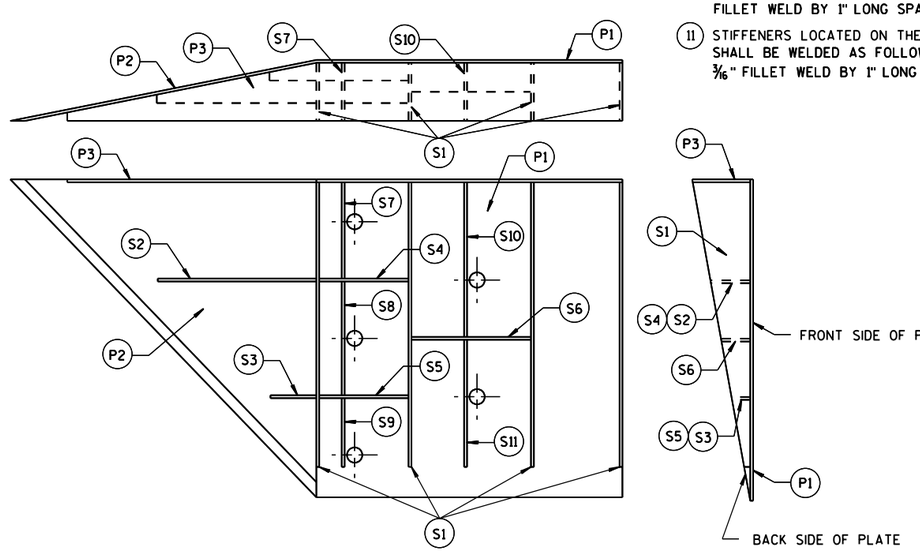

PLATE AND STIFFENER IDENTIFICATION

(VIEWED FROM BACK SIDE OF PLATE)

GENERAL NOTES

COVER PLATE PANELS ARE 3/16" THICK.

ALL STIFFENERS ARE 1/4" THICK.

CONNECTOR PLATE SHALL BE FABRICATED FROM ASTM GRADE A36 STEEL AND GALVANIZED.

FOR GALVANIZED REQUIREMENTS, SEE SECTION 614 OF THE STANDARD SPECIFICATIONS.

ALL HOLE DIAMETERS SHALL BE 1".

FOR OPPOSITE SIDE INSTALLATION MIRROR DRAWINGS.

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

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

CONNECTOR PLATE DIMENSION (PER ASSEMBLY)

PLATE	QUANTITY	SHAPE	SIZE (A x B x C x D)	THICKNESS
P1	1		20" x 20"	3/16"
P2	1		20" x 20" x 28 9/16"	3/16"
P3	1		39" x 3 5/8" x 20" x 19 5/16"	3/16"
S1	4		18 7/16" x 3 3/8" x 18 3/4"	1/4"
S2	1		10 1/4" x 2 7/16" x 10 3/8" x 1/2"	1/4"
S3	1		3" x 1 1/16" x 3 1/8" x 1/2"	1/4"
S4	1		6 1/8" x 2 7/16"	1/4"
S5	1		6 1/8" x 1 1/16"	1/4"
S6	1		7 3/4" x 1 3/4"	1/4"
S7	1		2 9/16" x 6" x 3 5/8" x 5 7/8"	1/4"
S8	1		1 5/32" x 7 1/2" x 2 1/2" x 7 3/8"	1/4"
S9	1		6 1/16" x 6 3/16" x 1 1/32"	1/4"
S10	1		1 7/8" x 9 7/8" x 3 5/8" x 9 11/16"	1/4"
S11	1		8 1/2" x 8 3/4" x 1 13/16"	1/4"

SINGLE SLOPE CONNECTION PLATE

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

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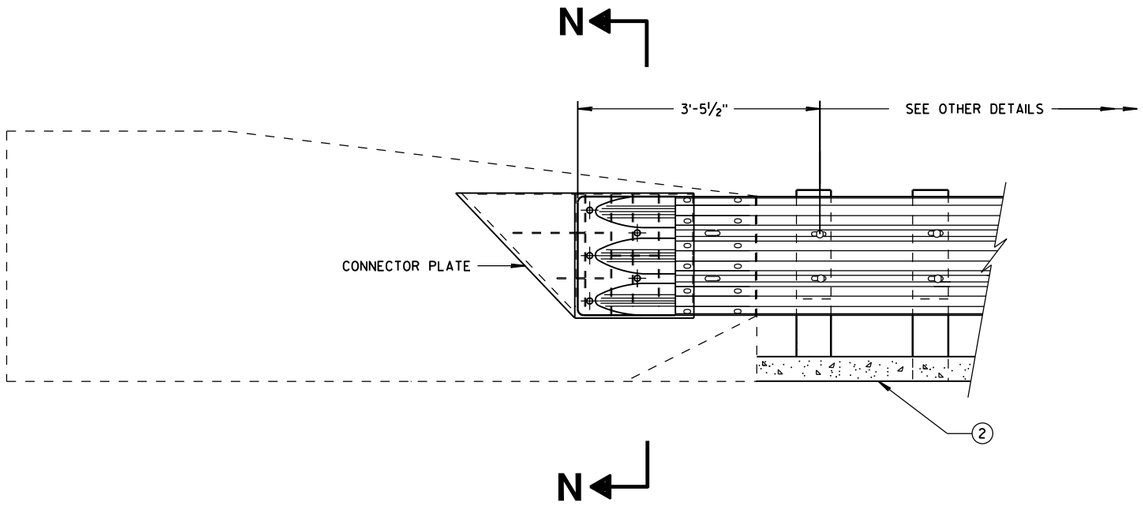
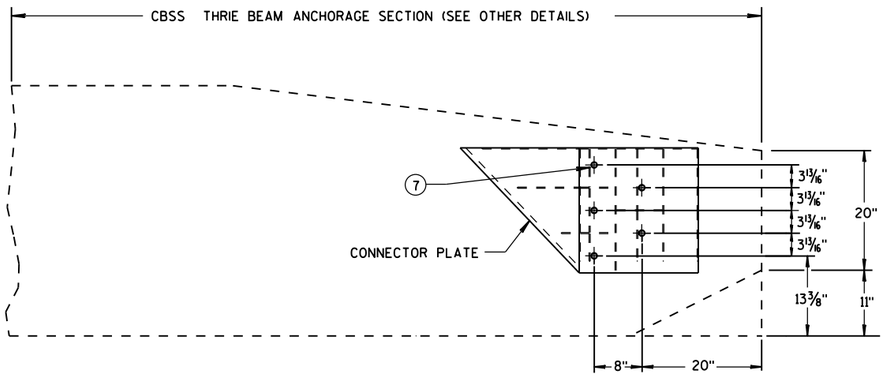


THRIE BEAM CONNECTION TO SINGLE SLOPE BARRIER



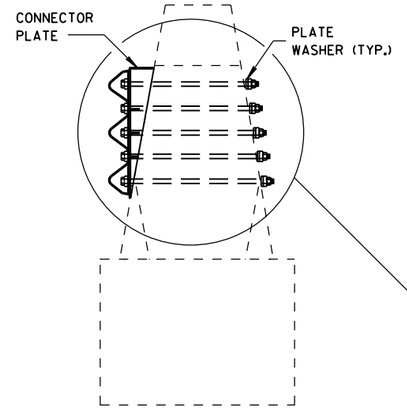
SINGLE SLOPE CONNECTION PLATE PLACEMENT

GENERAL NOTES

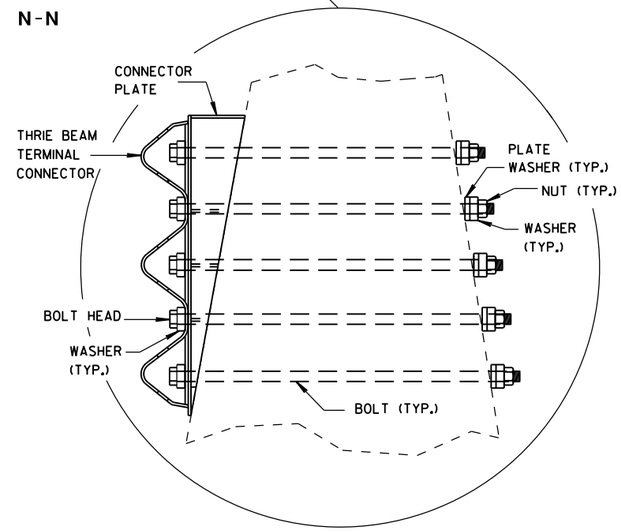
CONNECTOR PLATE, DRILLING BOLT HOLES THROUGH THE PARAPET, BOLTS, NUTS, WASHERS AND REPAIRING DAMAGED CONCRETE ARE INCIDENTAL TO THE CONTRACT.

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

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



SECTION N-N



MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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

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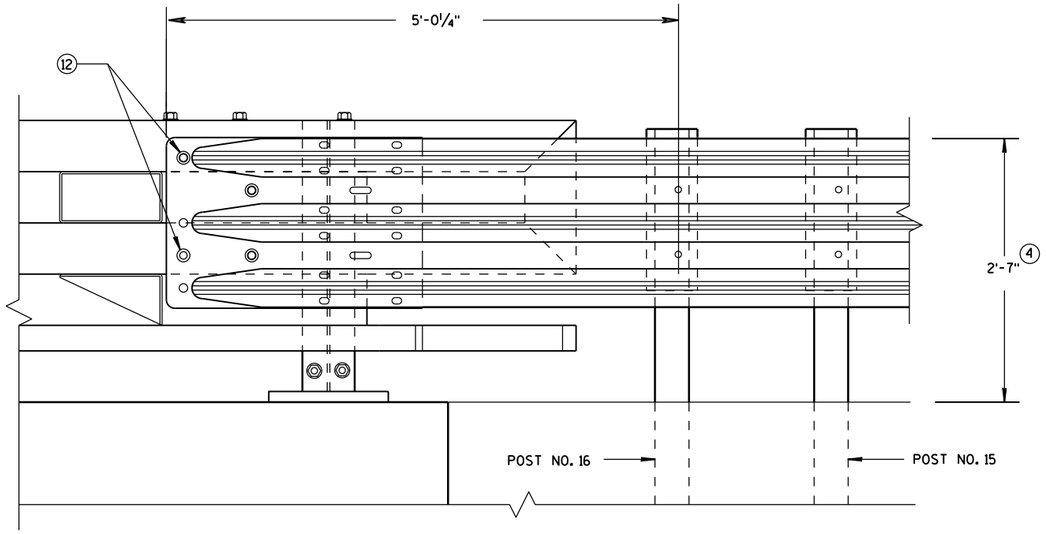
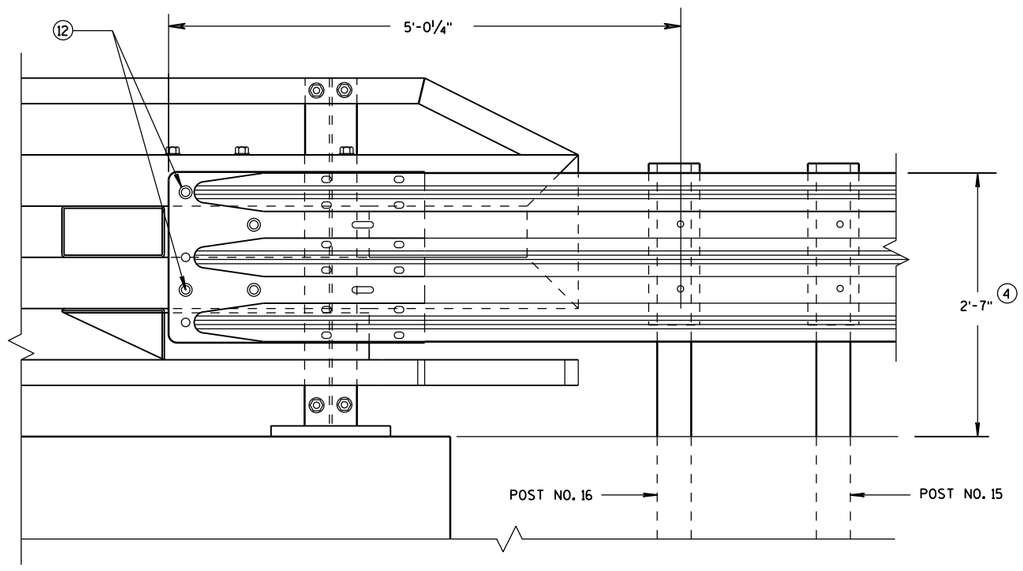
S.D.D. 14 B 45-4j



ELEVATION OF DETAIL AT NY3 END POST

THRIE BEAM RAIL ATTACHMENT



ELEVATION OF DETAIL AT NY4 END POST

THRIE BEAM RAIL ATTACHMENT

GENERAL NOTES

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

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2015
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS D 69 NT
ENGINEER

FHWA

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

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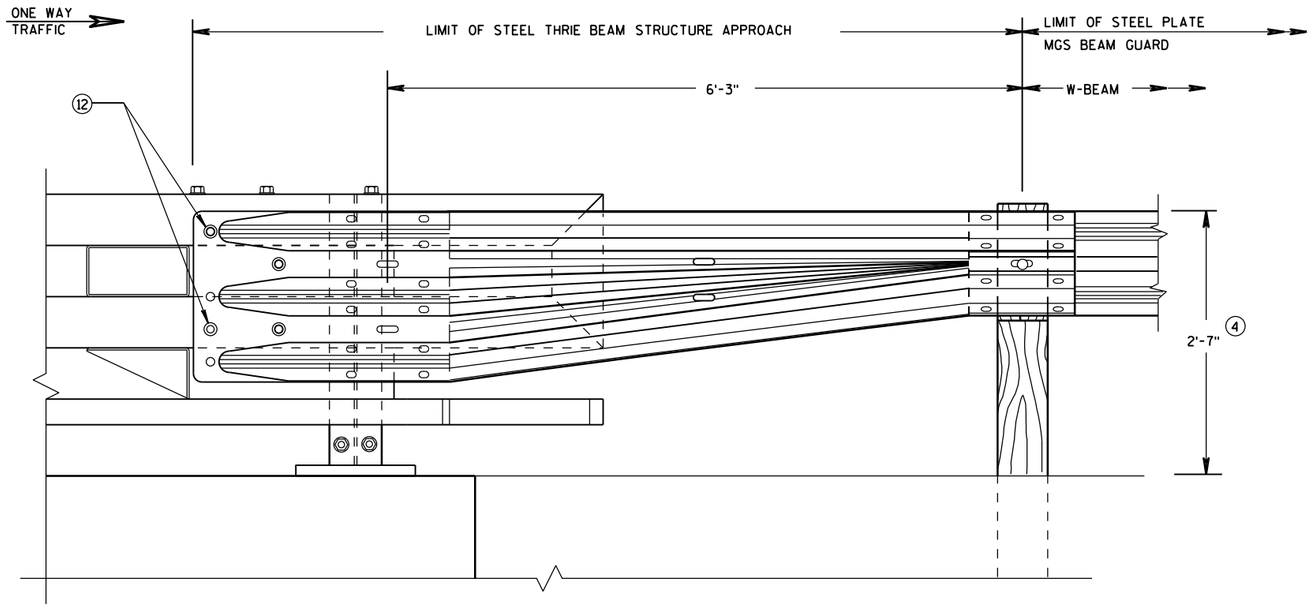
S.D.D. 14 B 45-4k



FRONT VIEW

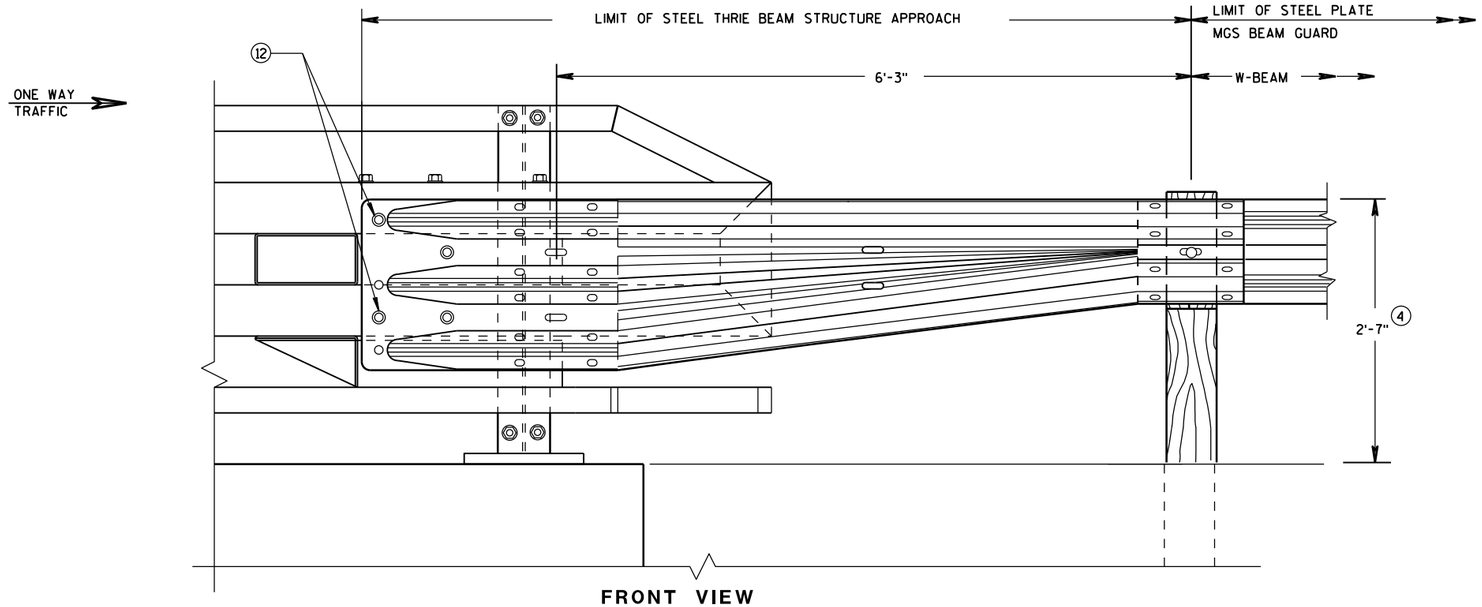
W BEAM TRANSITION AND CONNECTION TO BRIDGE RAILING TYPE "NY3"

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

GENERAL NOTES

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

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



FRONT VIEW

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

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

MIDWEST GUARDRAIL SYSTEM
THRIE BEAM TRANSITION (MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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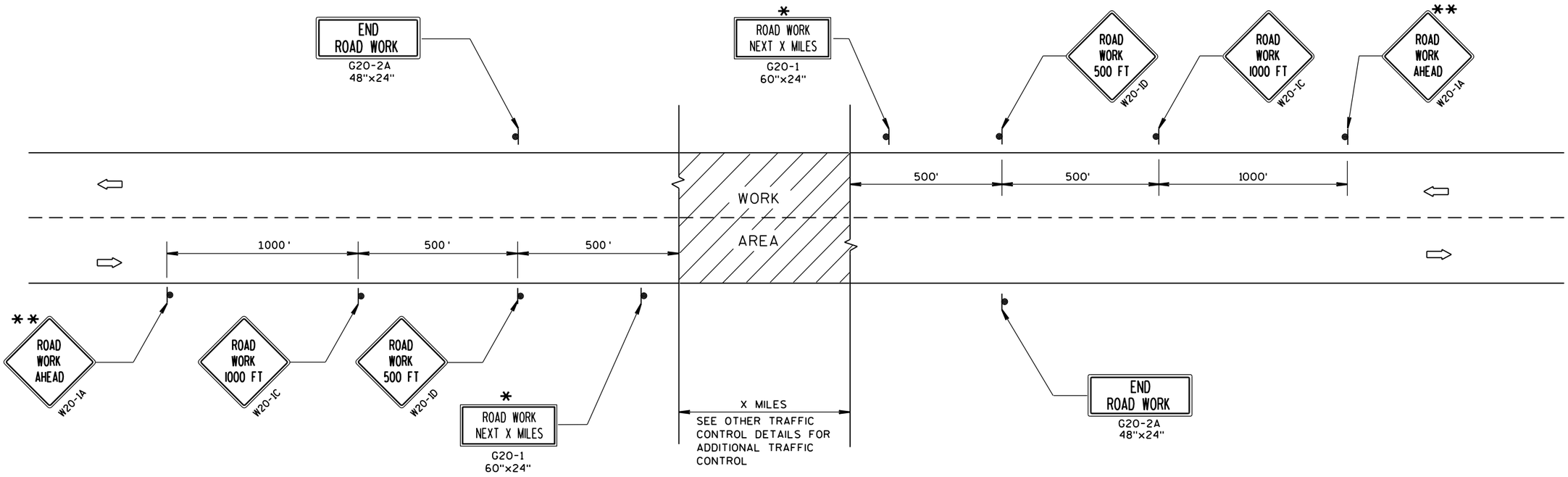
S.D.D. 14 B 45-4L



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.

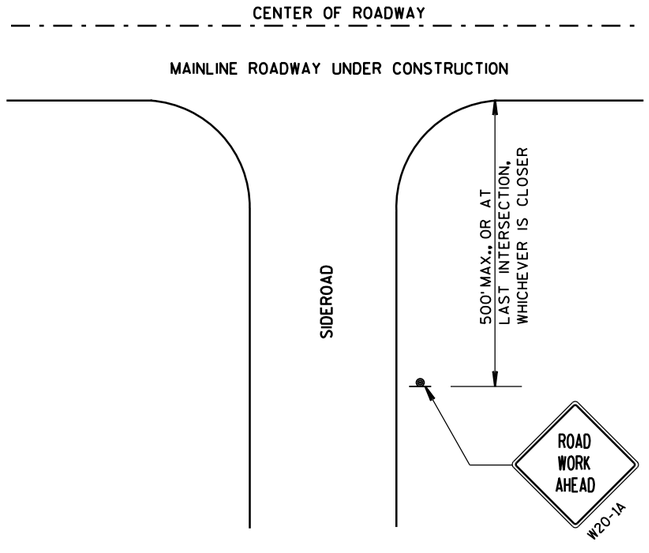
ALL SIGNS ARE 48"×48" UNLESS OTHERWISE NOTED.

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 — DATE

/S/ Peter Amakobe Atepe — STATEWIDE WORK ZONE SAFETY ENGINEER

FHWA

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S.D.D. 15 C 4-3

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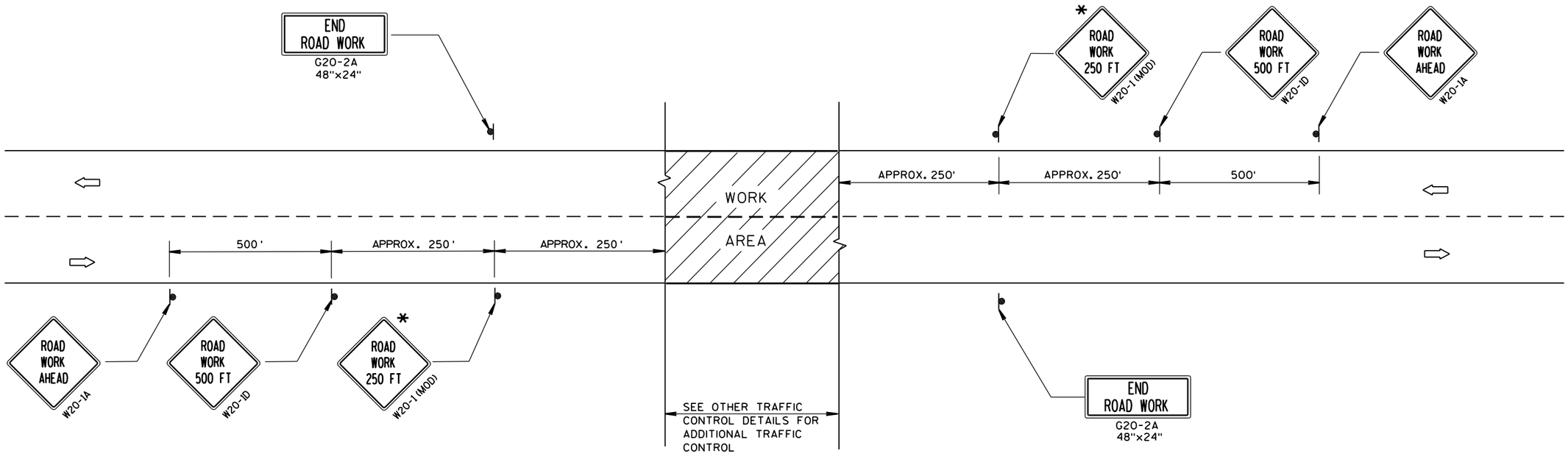
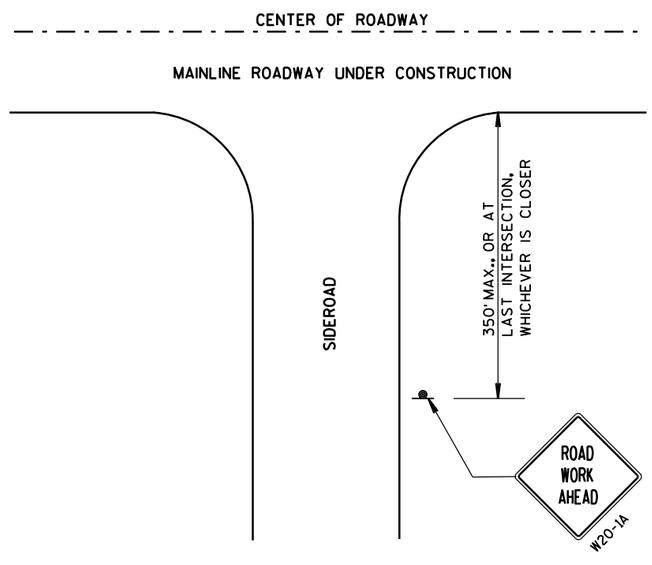
S.D.D. 15 C 4-3



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 DESIRABLE MINIMUM OF 200 FEET CLEARANCE TO EXISTING SIGNS THAT WILL REMAIN IN PLACE.

ALL SIGNS ARE 48"x48" UNLESS OTHERWISE NOTED. IF NECESSARY DUE TO SPACE CONSTRAINTS, 36"x36" SIGNS MAY BE USED INSTEAD OF 48"x48" SIGNS.

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.

* THE THIRD W20-1 SIGN IS REQUIRED ONLY IF THERE IS AN INTERSECTION BETWEEN THE "ROAD WORK 500 FT" SIGN AND THE WORK ZONE. ADJUST THE PLACEMENT OF THIS SIGN BASED ON INTERSECTION LOCATION AND OTHER FIELD CONDITIONS.

LEGEND

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

TRAFFIC CONTROL, ADVANCE WARNING SIGNS 40 M.P.H. OR LESS TWO-WAY UNDIVIDED ROAD OPEN TO TRAFFIC

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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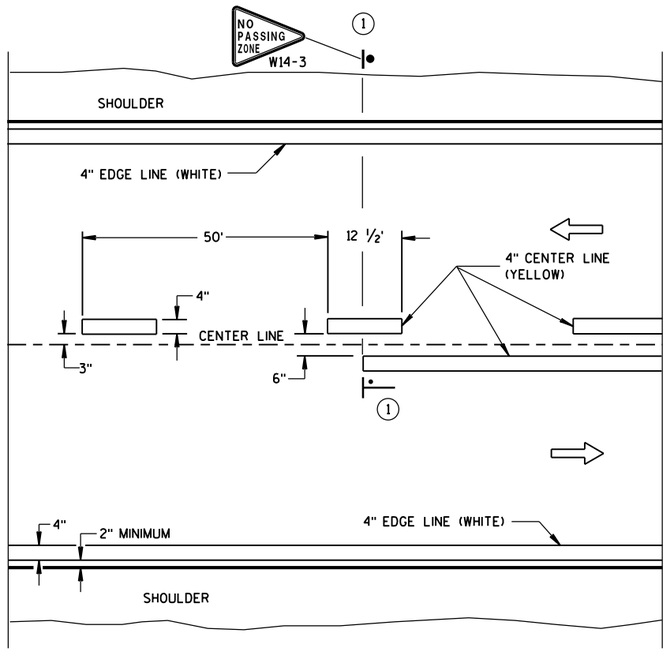
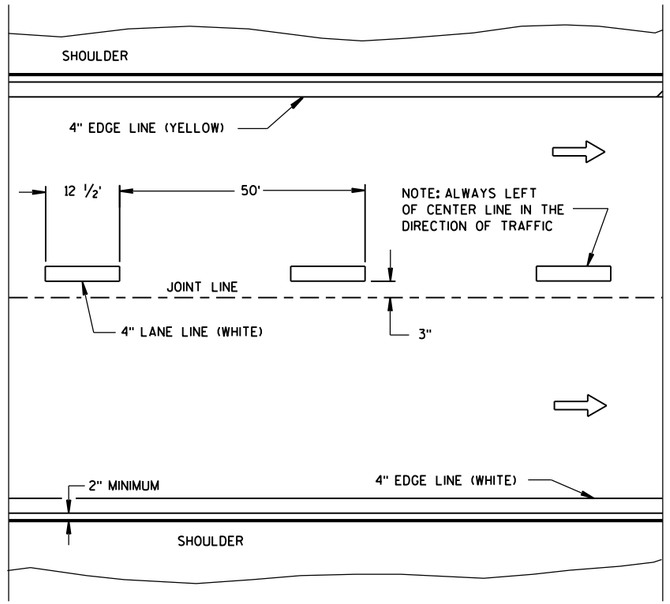
S.D.D. 15 C 5-3



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.

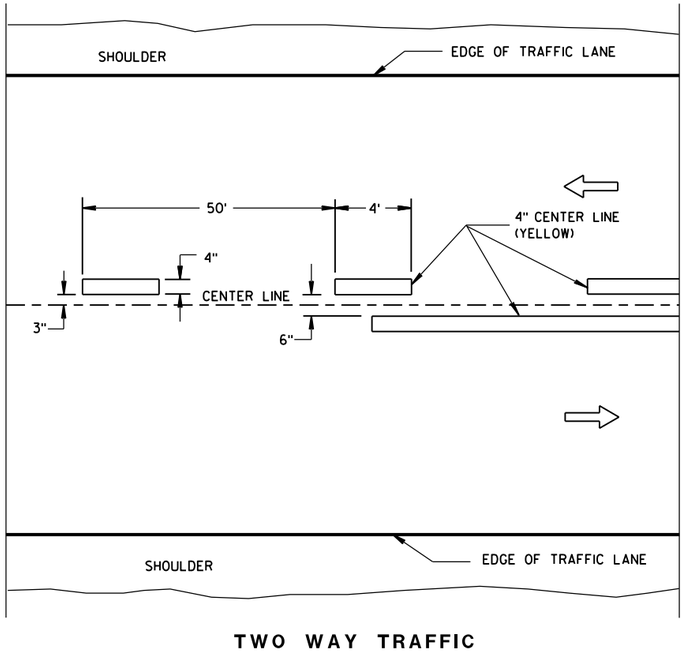
NOTE

ARROW SYMBOL (⇨) SHOWS DIRECTION OF TRAVEL

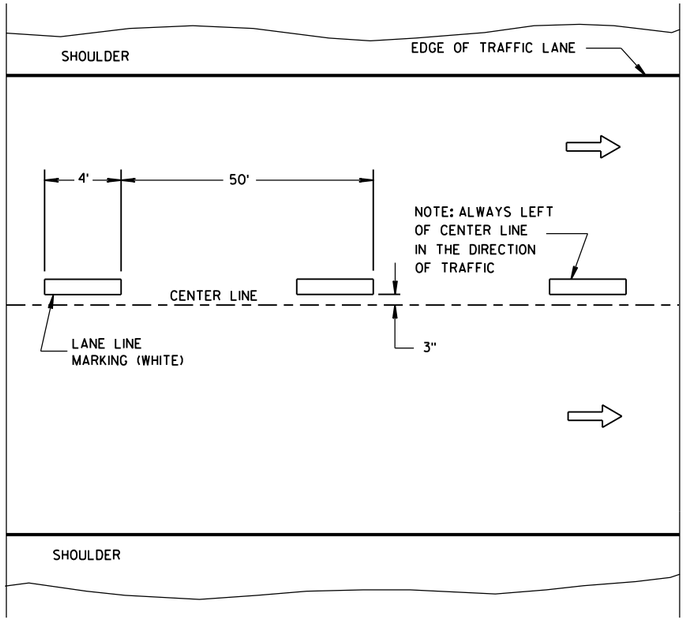
LEGEND

"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 ENGINEER
FHWA	

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

LEGEND

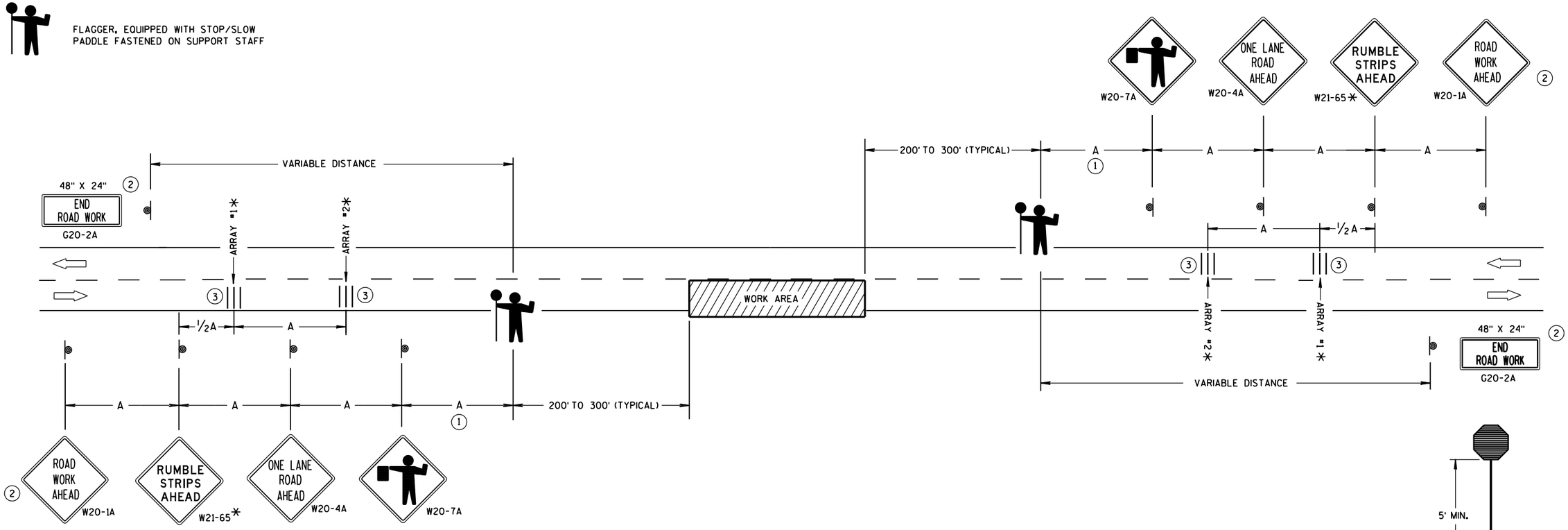
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- DIRECTION OF TRAFFIC
- WORK AREA
- FLAGGER, EQUIPPED WITH STOP/SLOW PADDLE FASTENED ON SUPPORT STAFF

SIGN AND TEMPORARY RUMBLE STRIP ARRAY SPACING TABLE

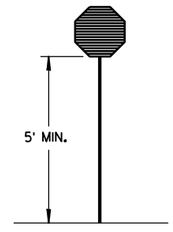
SPEED LIMIT	SPACING A
25-35 MPH	200'
35-40 MPH	350'
45-55 MPH	500'

W03-4

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



TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION



STOP/SLOW PADDLE ON SUPPORT STAFF

GENERAL NOTES

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

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

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

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

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

INSTALL TEMPORARY RUMBLE STRIPS PER MANUFACTURER'S RECOMMENDATIONS.

PLACE ADVANCE SIGNING PRIOR TO INSTALLING TEMPORARY RUMBLE STRIPS.

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

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

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

(1) FOR A MOVING WORK OPERATION, SIGNING AND TEMPORARY RUMBLE STRIPS (IF USED) SHALL BE REESTABLISHED (AS SIMULTANEOUSLY AS PRACTICAL) AT APPROXIMATELY 3,500 FOOT INTERVALS IN THE MOVING WORK OPERATION OR AS APPROVED BY THE ENGINEER.

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

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

TRAFFIC CONTROL FOR LANE CLOSURE WITH FLAGGING OPERATION

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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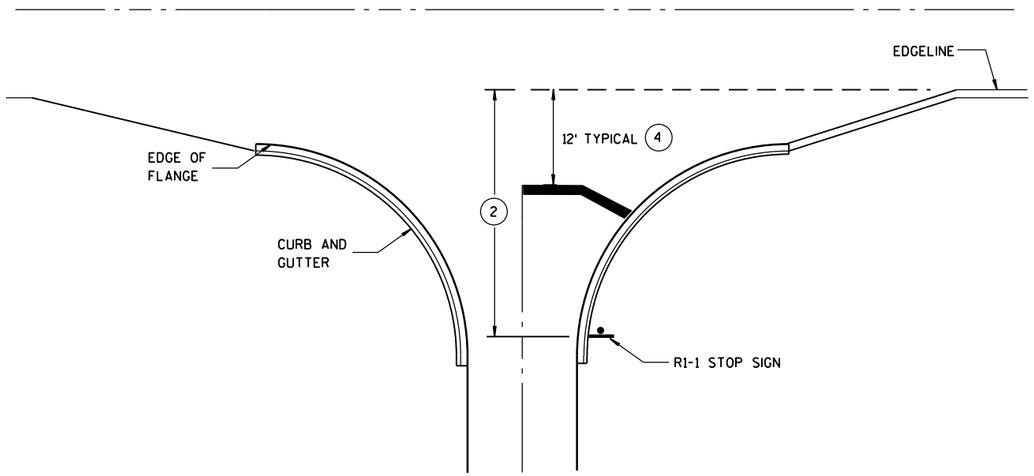
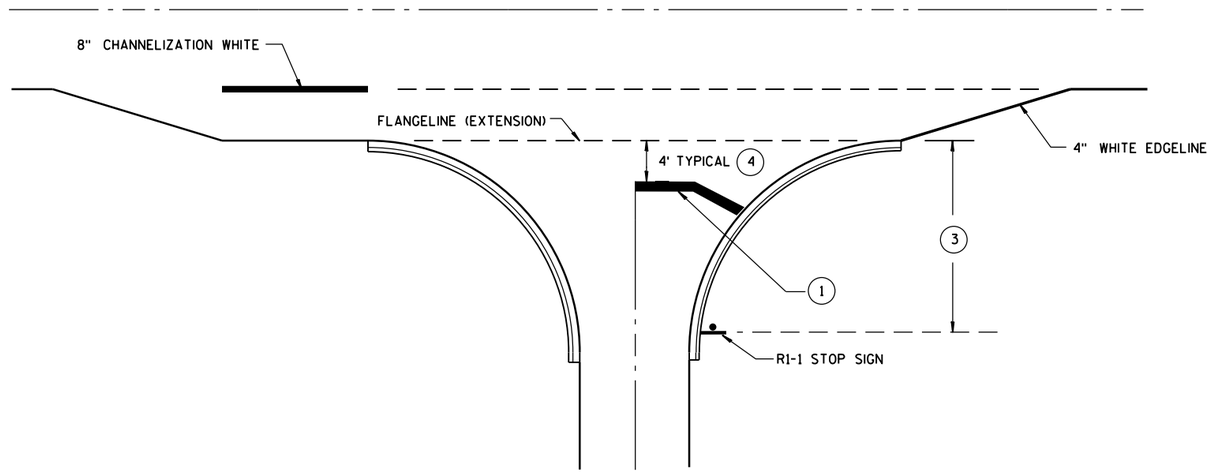
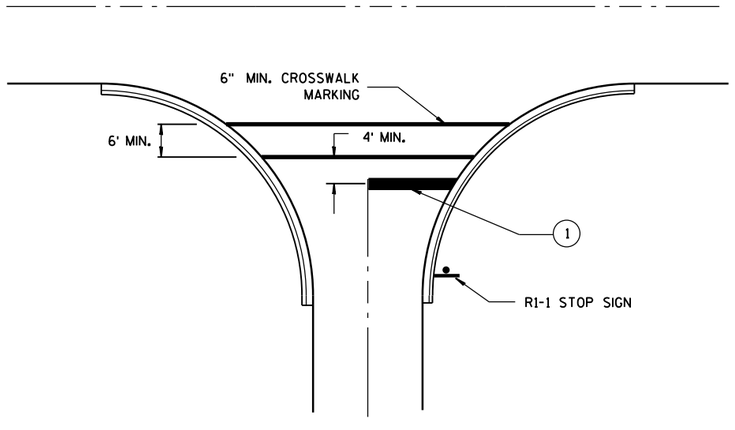


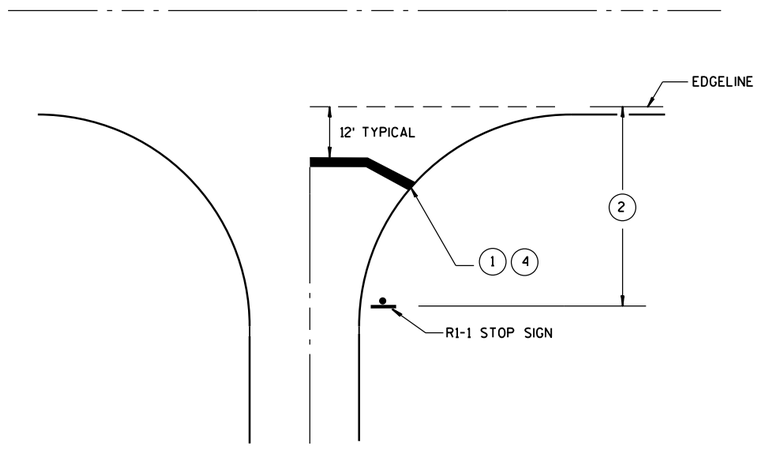
TYPICAL STOP LINE PAVEMENT MARKING WITH CURB AND GUTTER



TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH RIGHT TURN LANE



TYPICAL STOP LINE PAVEMENT MARKING FOR SIDEROADS WITH CROSSWALK MARKING



TYPICAL STOP LINE PAVEMENT MARKING WITHOUT CURB AND GUTTER

GENERAL NOTES

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

STOP LINE AND CROSSWALK PAVEMENT MARKING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

4-18-2016
DATE

/S/ Matthew R. Rauch
STATE SIGNING AND MAR

NEER

FHWA

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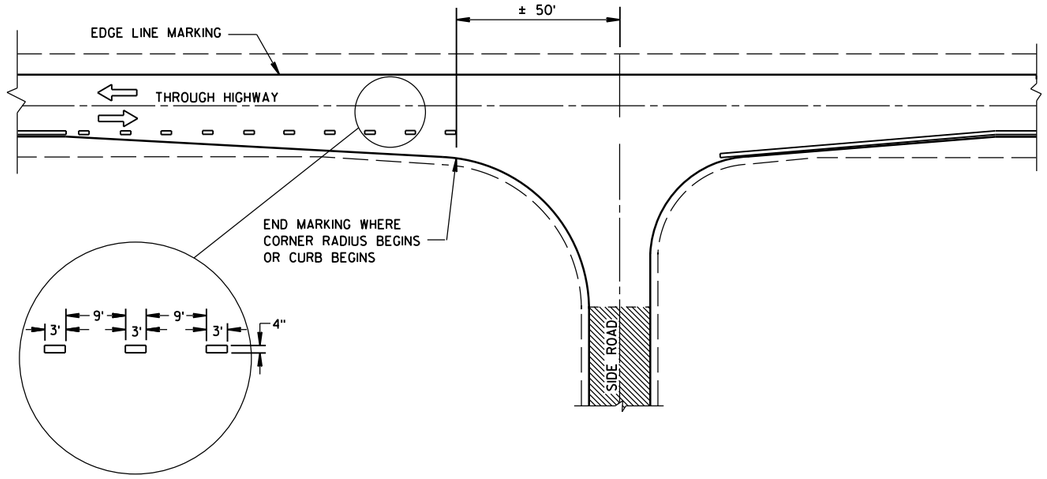
S.D.D. 15 C 33-2



MINOR INTERSECTION WITHOUT CURBS

GENERAL NOTES

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

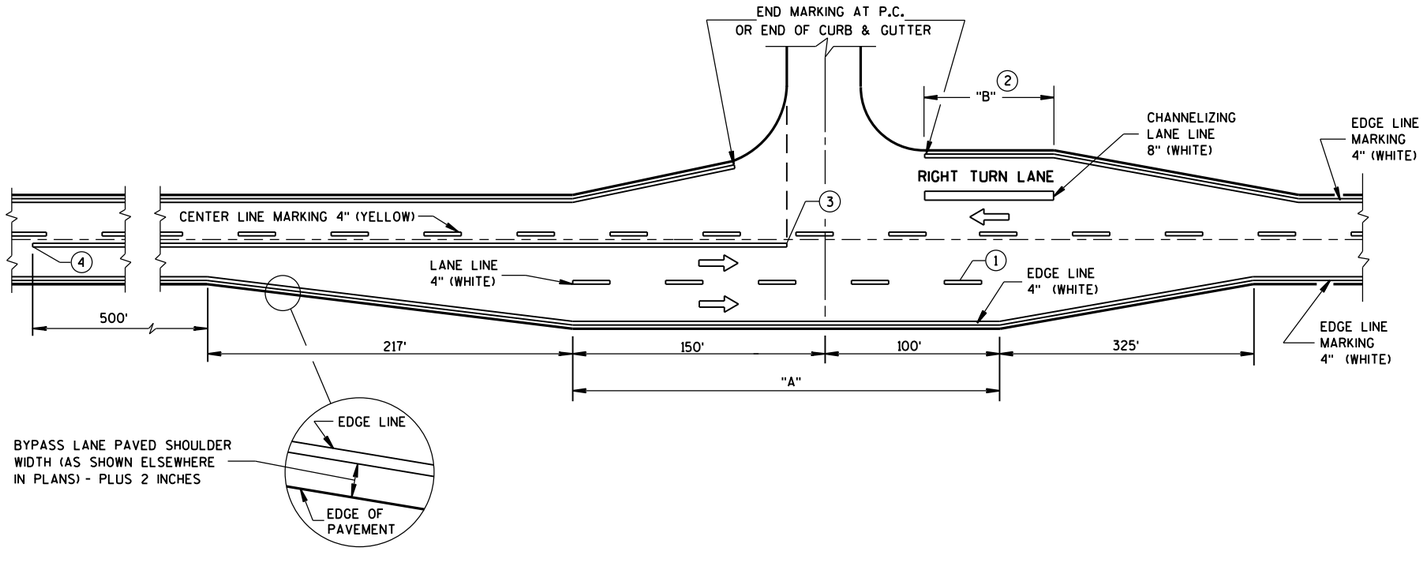
(1) WHEN DISTANCE "A" IS LESS THAN 250 FEET, OMIT LANE LINE.

(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 TRANSPOR

6

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

GENERAL NOTES

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

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

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

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

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

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

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

TABLE A

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

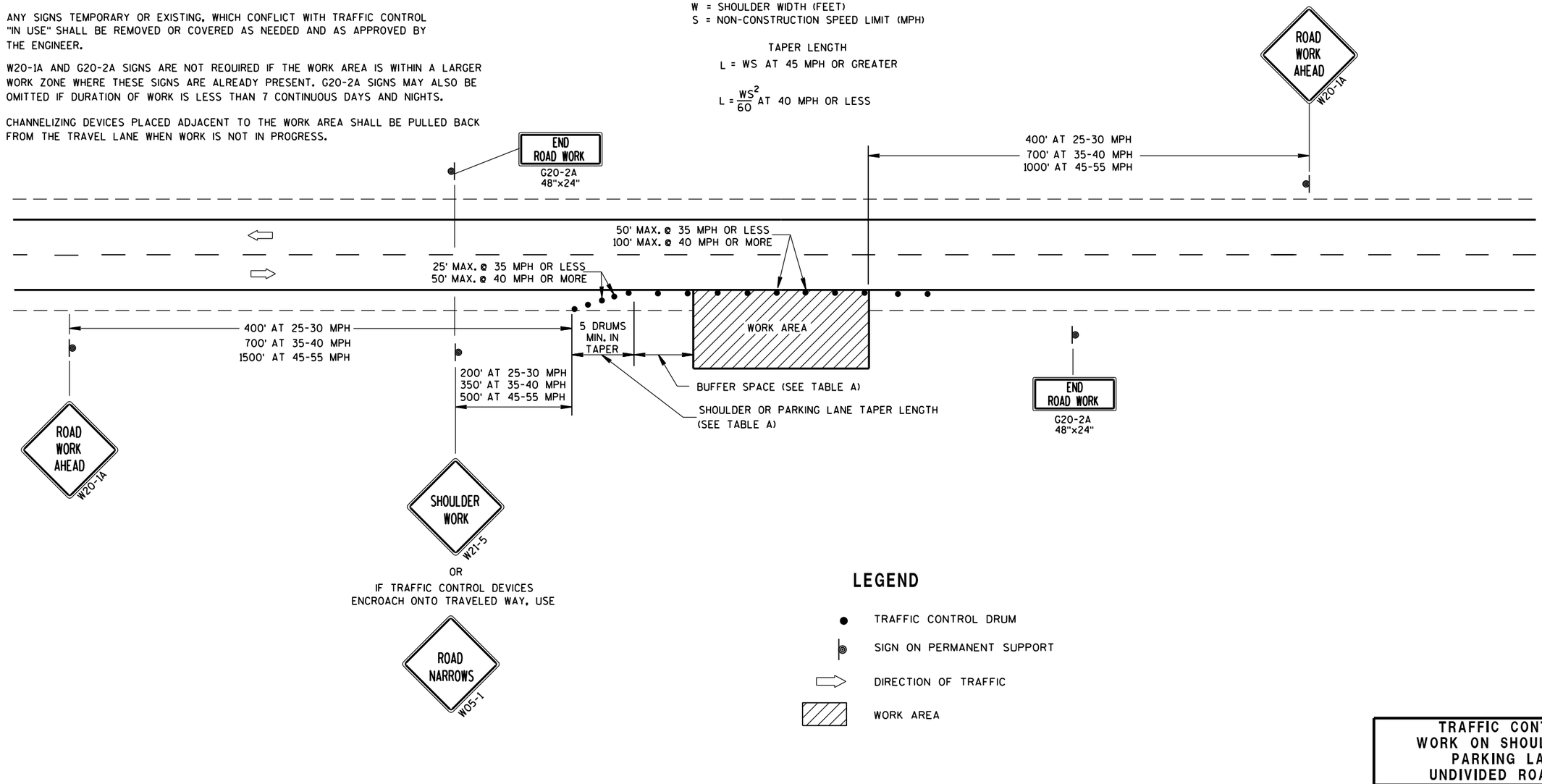
W = SHOULDER WIDTH (FEET)
S = NON-CONSTRUCTION SPEED LIMIT (MPH)

TAPER LENGTH

L = WS AT 45 MPH OR GREATER

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

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



LEGEND

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

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

July 14, 2015 — DATE

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

FHWA

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S.D.D. 15 D 28-3

LEGEND

- SIGN ON PERMANENT SUPPORT
- REMOVING PAVEMENT MARKING
- TYPE III BARRICADE WITH ATTACHED SIGN
- CONCRETE BARRIER TEMPORARY PRECAST
- FLAGS, 16" x 16" MIN., (ORANGE)
- TRAFFIC CONTROL DRUM
- TRAFFIC CONTROL DRUM WITH TYPE "C" STEADY BURN LIGHT
- ASPHALTIC PAVEMENT WIDENING
- DIRECTION OF TRAFFIC
- 4" X 6" WOOD POST
- TEMPORARY SIGNAL WITH BACKPLATE AND 12-INCH LENSES ON BREAKAWAY POLE

INSTALL ON EACH APPROACH AT THE CLOSEST INTERSECTION WITH A STATE OR COUNTY TRUNK HIGHWAY, OR AS DIRECTED BY THE ENGINEER. WIDTH ON SIGN TO BE APPROX. 1-FOOT LESS THAN AVAILABLE WIDTH. (OMIT IF AVAILABLE WIDTH IS MORE THAN 16 FEET.)

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.

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

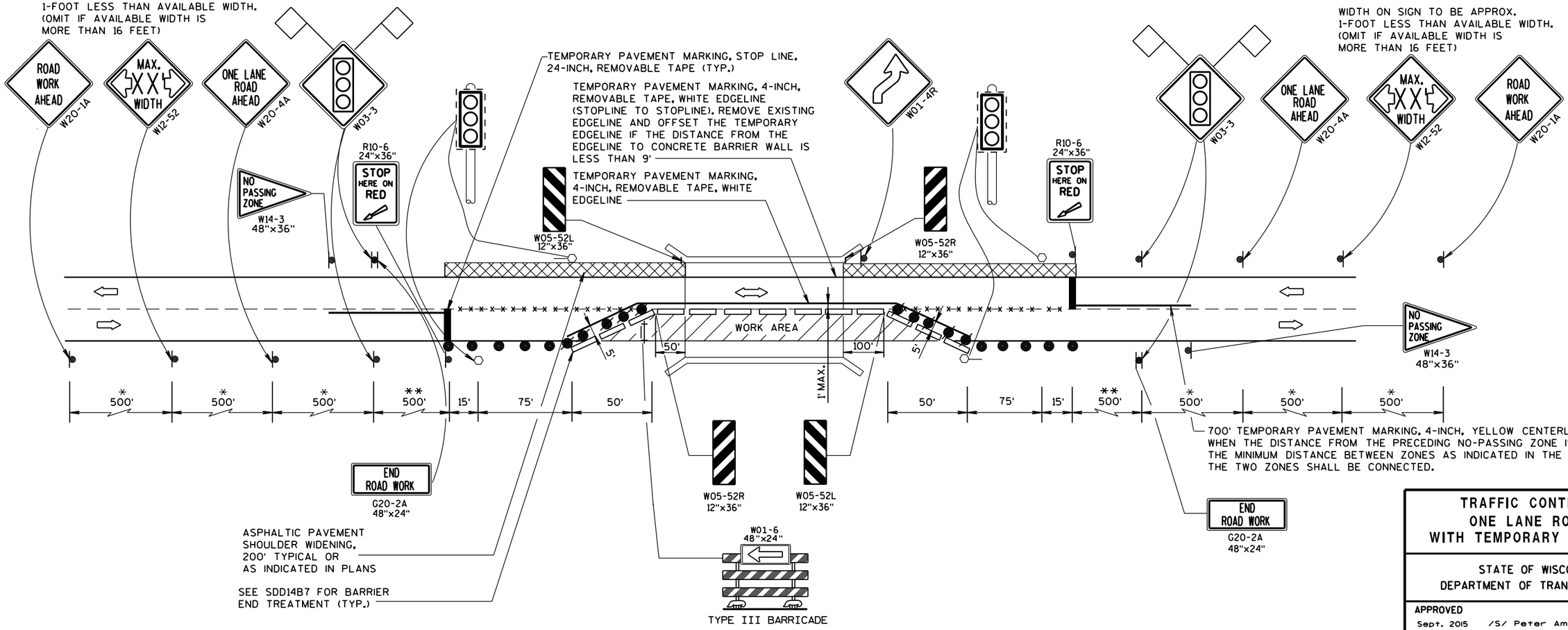
SIGN LAYOUTS SHALL BE IN ACCORDANCE WITH THE FHWA'S MANUAL OF STANDARD HIGHWAY SIGNS OR THE WISCONSIN STANDARD SIGN PLATES.

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.

PLACE TEMPORARY PAVEMENT MARKING EDGELINE AND CENTERLINE, AND REMOVE EXISTING PAVEMENT MARKINGS IF LANE CLOSURE IS TO BE IN PLACE FOR 4 OR MORE CONTINUOUS DAYS AND NIGHTS OR AS NOTED ON DETAIL.

* 500-FOOT SPACING SHOWN IS FOR ROADWAYS WITH A PRE-CONSTRUCTION REGULATORY SPEED LIMIT OF 45 MPH OR MORE. FOR 35-40 MPH, USE 350-FOOT TYPICAL SPACING. FOR 25-30 MPH, USE 200-FOOT TYPICAL SPACING.

** USE 300' SPACING IF PRE-CONSTRUCTION REGULATORY SPEED LIMIT IS 35 MPH OR LESS.



TRAFFIC CONTROL, ONE LANE ROAD WITH TEMPORARY SIGNALS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

Sept. 2015 — DATE

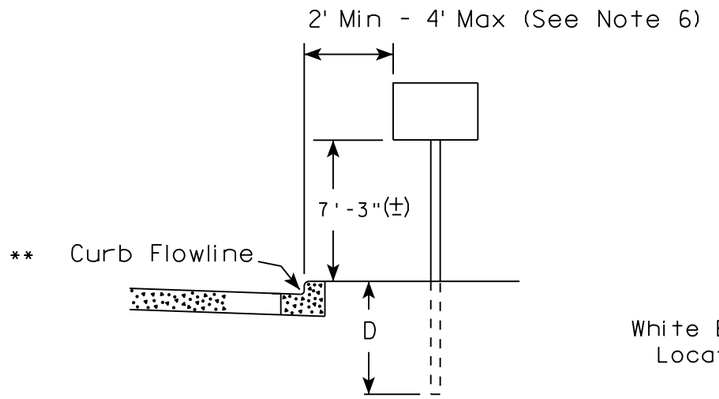
/S/ Peter Amakobe Atepe — STATEWIDE WORK ZONE SAFETY ENGINEER

FHWA

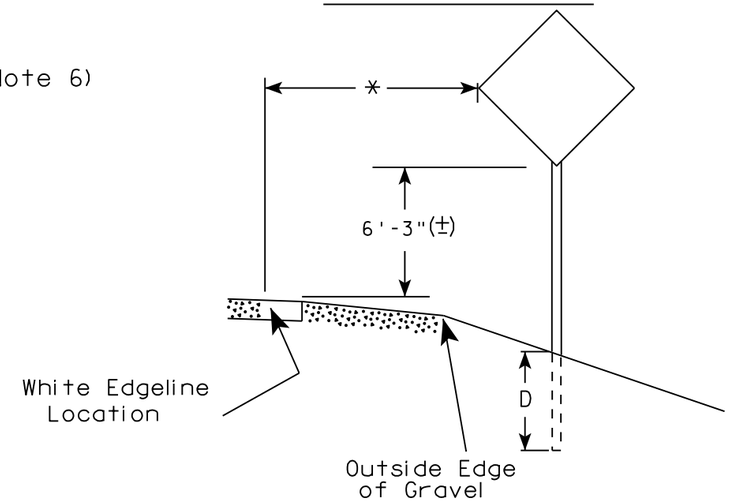
6

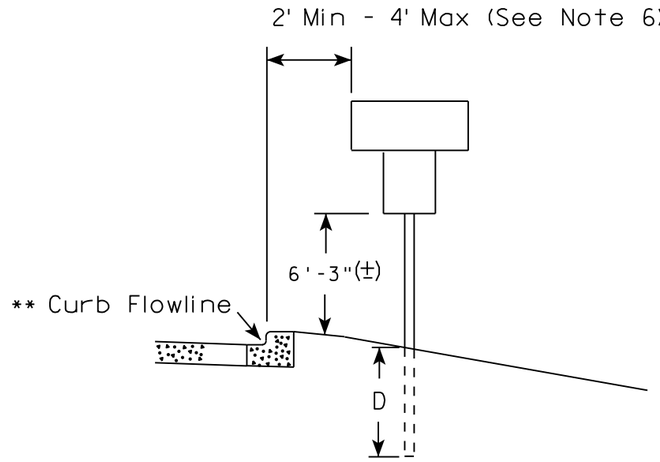
S.D.D. 15 D 33-4

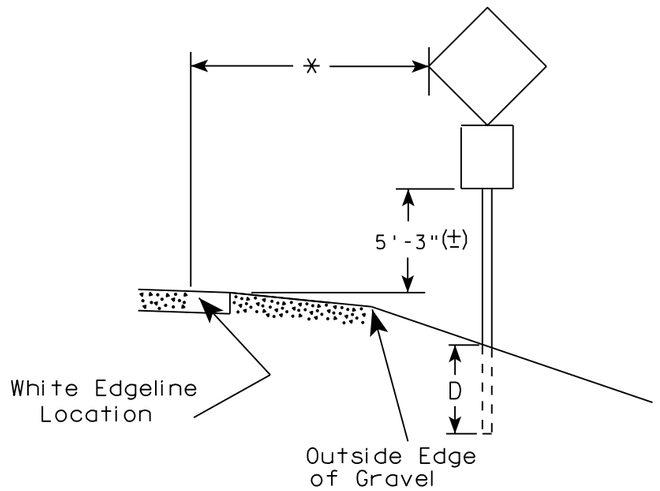
URBAN AREA



RURAL AREA (See Note 2)







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

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

GENERAL NOTES

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

POST EMBEDMENT DEPTH

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

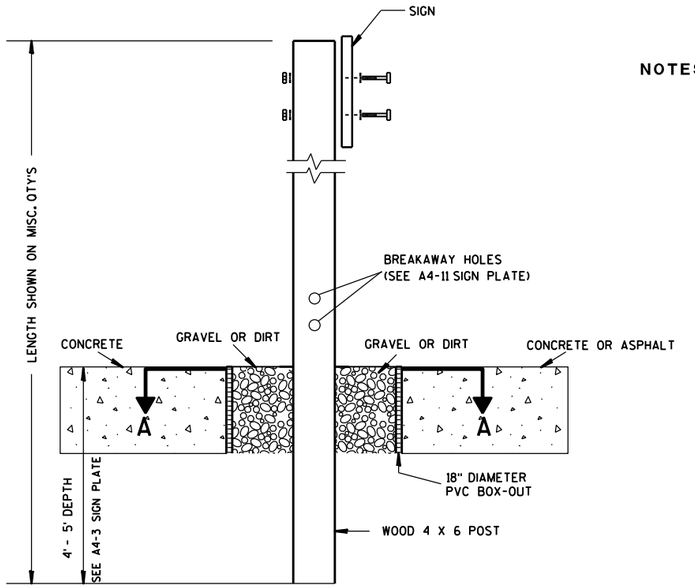
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-3.21

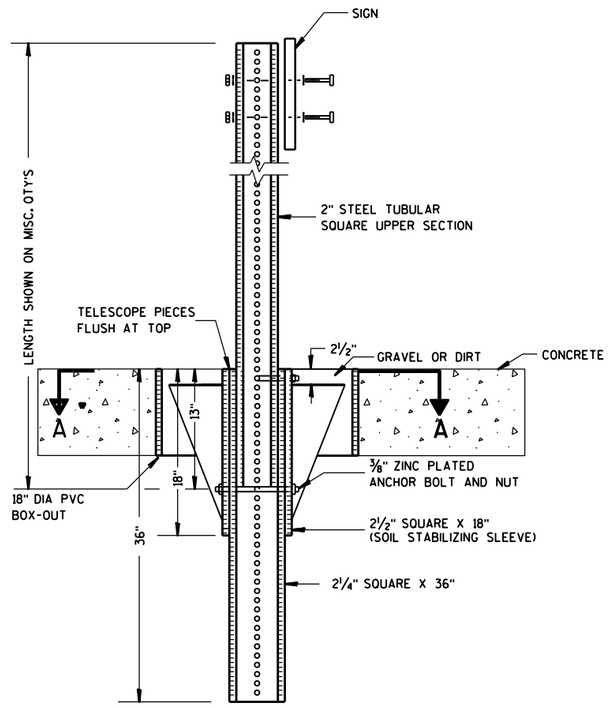
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 79	E



ELEVATION VIEW

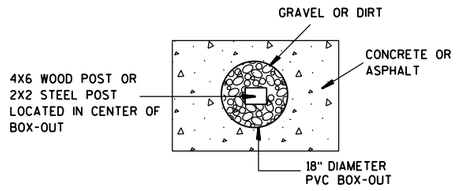
DETAIL OF WOOD 4 X 6 SIGN POST IN BOX-OUT

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



ELEVATION VIEW

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



PLAN VIEW

FOR NEW CONCRETE/ASPHALT INSTALLATIONS

SIGN POST BOX-OUTS A4-3B

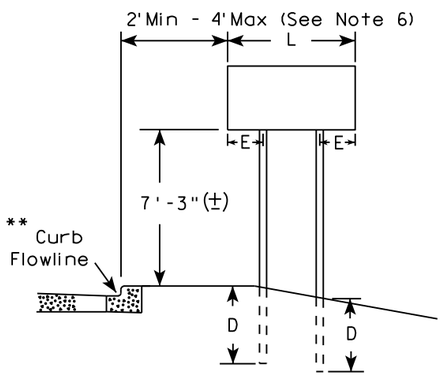
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

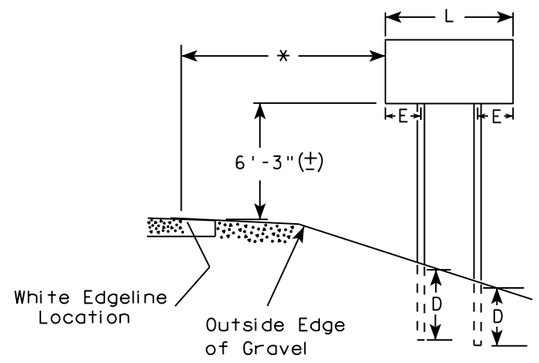
DATE 1/27/14 PLATE NO. A4-3B.1

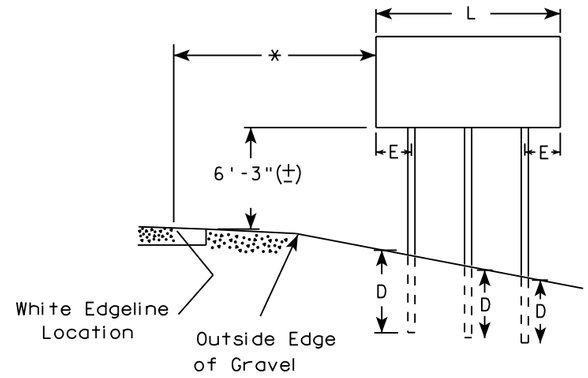
PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

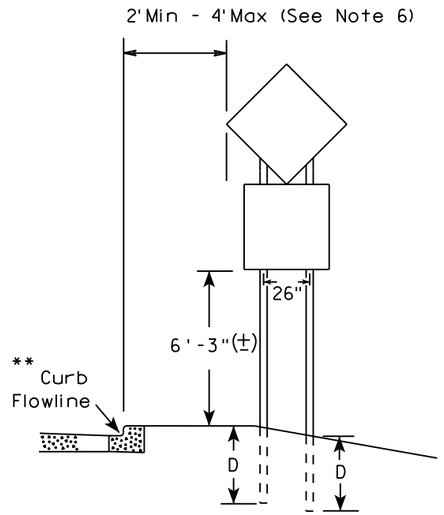
URBAN AREA



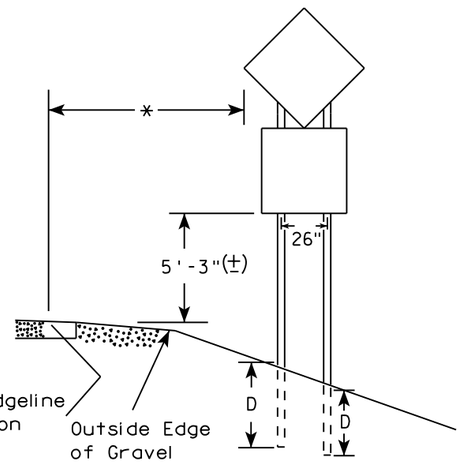
RURAL AREA (See Note 3)







48" DIAMOND WARNING SIGN



48" DIAMOND WARNING SIGN

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

***

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

GENERAL NOTES

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

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

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

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

POST EMBEDMENT DEPTH

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

TYPICAL INSTALLATION OF TYPE II SIGNS ON MULTIPLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

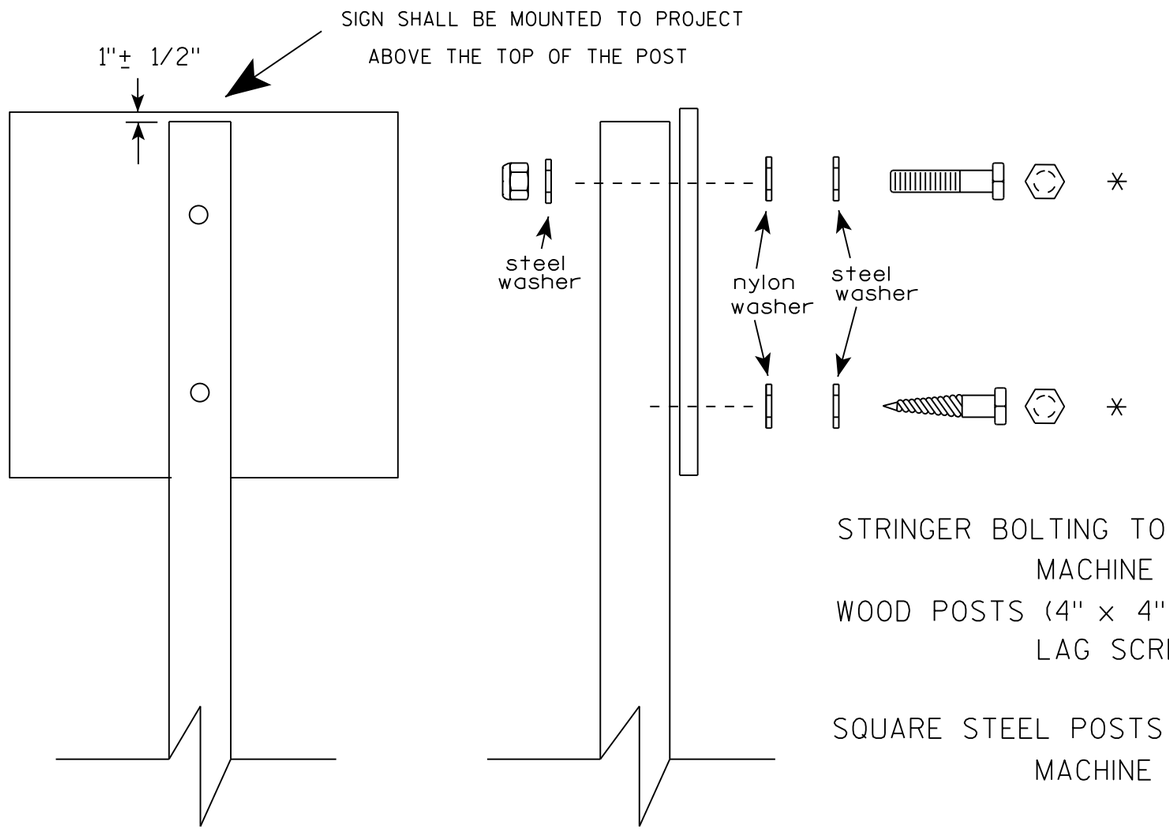
APPROVED Matthew R Rauch
For State Traffic Engineer

DATE 8/21/17 PLATE NO. A4-4.15

7

7

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 81 | E



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

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

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

STRINGER BOLTING TO ALUMINUM SIGNS (SEE SIGN PLATE A4-18)

MACHINE BOLTS - 5/16" X 1-3/4" Length w/ lock nuts

WOOD POSTS (4" x 4" or 4" x 6")

LAG SCREWS - 3/8" X 3" (NO STRINGERS ON BACK OF SIGN)
3/8" X 4" (STRINGERS ON BACK OF SIGN)

SQUARE STEEL POSTS (2" x 2")

MACHINE BOLTS - 3/8" X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
3/8" X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)

RIVETS - 9/32 " (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM BODY/MANDREL
O.D. FLANGE .720-.765 INCH, GRIP RANGE .042-.375 INCH

WASHERS (ALL POSTS) -

1-1/4" O.D. X 3/8" I.D. X 1/16" STEEL
1-1/4" O.D. X 3/8" I.D. X .080 NYLON

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

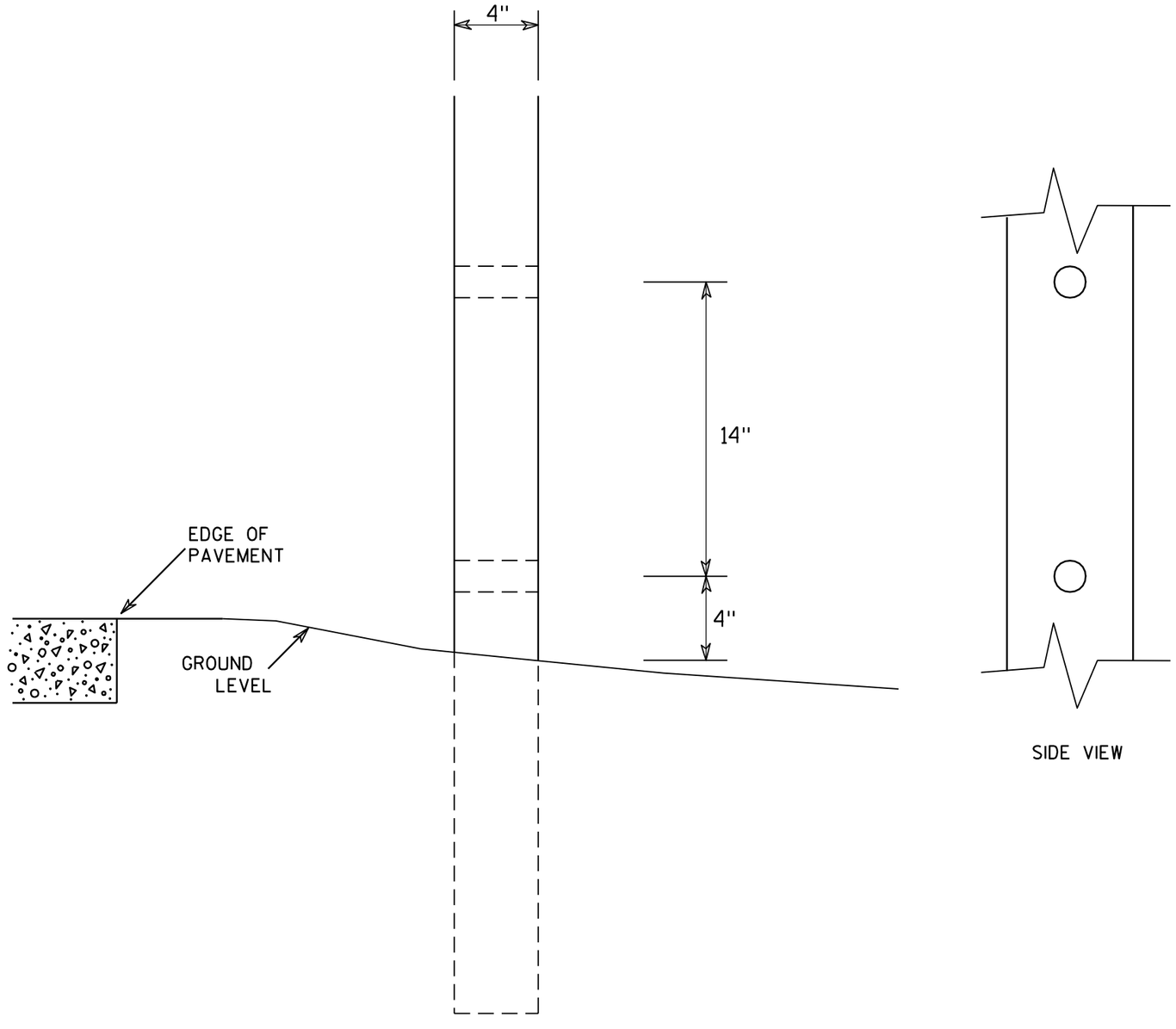
ATTACHMENT OF SIGNS TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
For State Traffic Engineer

DATE 8/11/16 PLATE NO. A4-8.8

PROJECT NO: SHEET NO: E



SIDE VIEW

GENERAL NOTES

1. All 4 x 6 Wood Posts shall be modified by having two 1½" diameter holes drilled perpendicular to the roadway centerline.

7

7

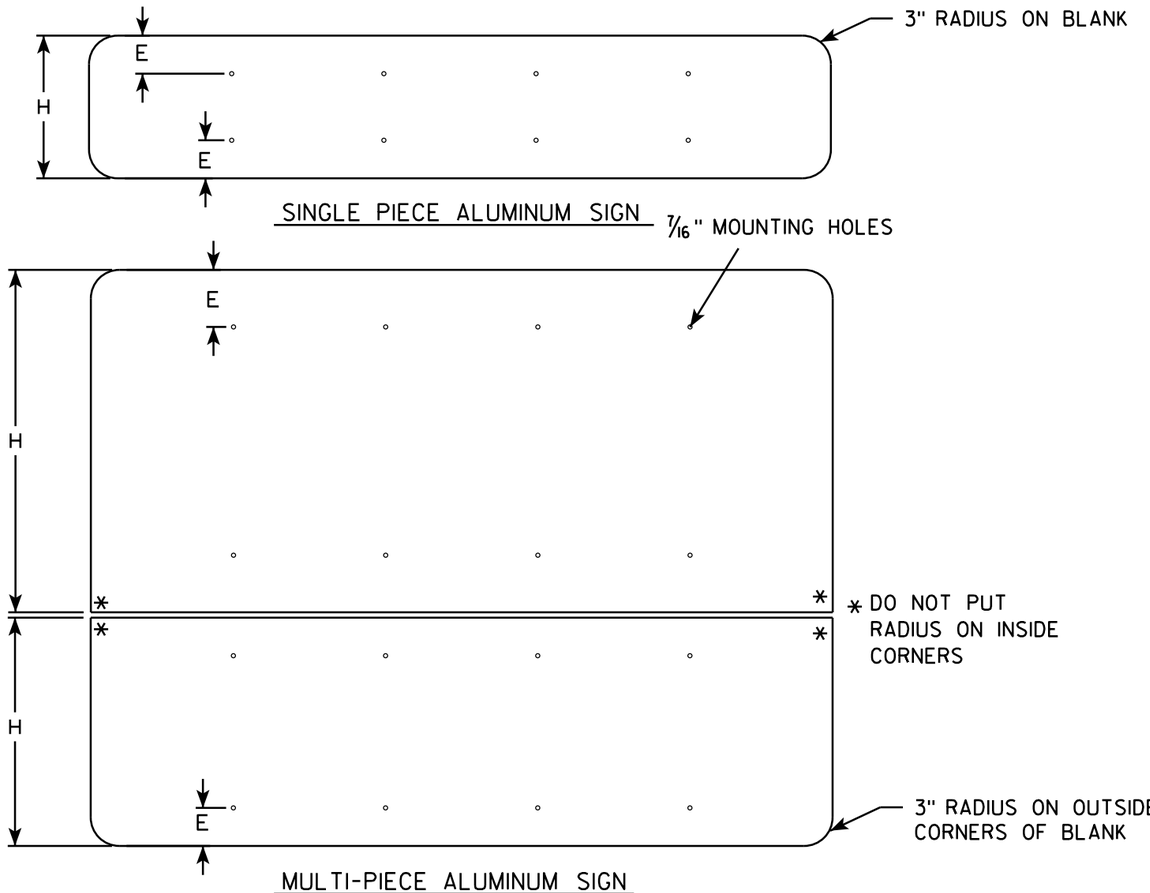
4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Chester J Spang for State Traffic Engineer

DATE 3/27/97 PLATE NO. A4-11.2

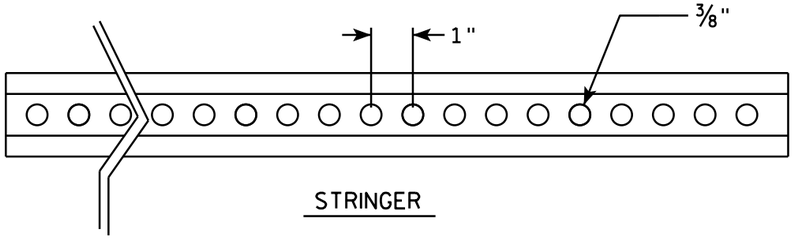
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 83	E



GENERAL NOTES

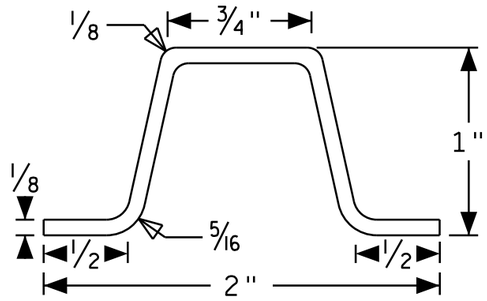
- ALL SIGNS OVER 60" IN WIDTH SHALL HAVE A 3" RADIUS ON THE OUTSIDE CORNERS OF THE ALUMINUM BLANK.
- MOUNTING HOLES SHALL BE 7/16" DIAMETER.
- SEE CHART FOR HOLE SPACING REQUIREMENTS
- FOR SIGN PANELS WITH DIMENSION (H) 36" AND OVER, DIMENSION E SHALL BE 6"
- FOR SIGN PANELS WITH DIMENSION (H) UNDER 36", DIMENSION E SHALL BE 4"
- SIGN STRINGER MATERIAL SHALL CONSIST OF STEEL CHANNEL POST SECTIONS, WEIGHING 1.12 LBS/FT IN ACCORDANCE WITH SECTION 633.2.1 OF THE STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION.
- SEE SIGN PLATE A4-8 FOR SIGN STRINGER BOLTING REQUIREMENTS.

SIGN WIDTH	STRINGER WIDTH	POSTS	HOLE SPACING	MOUNTING HOLES
78"	72"	2	16"	15" 31" 47" 63"
84"	72"	2	17"	16½" 33½" 50½" 67½"
90"	72"	2	18"	18" 36" 54" 72"
96"	90"	2	19"	19½" 38½" 57½" 76½"
102"	90"	2	20"	21" 41" 61" 81"
108"	90"	2	21"	22½" 43½" 64½" 85½"
114"	108"	3	15"	12" 27" 42" 57" 72" 87" 102"
120"	108"	3	16"	12" 28" 44" 60" 76" 92" 108"
126"	108"	3	17"	12" 29" 46" 63" 80" 97" 114"
132"	126"	3	18"	12" 30" 48" 66" 84" 102" 120"
138"	126"	3	19"	12" 31" 50" 69" 88" 107" 126"
144"	126"	3	20"	12" 32" 52" 72" 92" 112" 132"

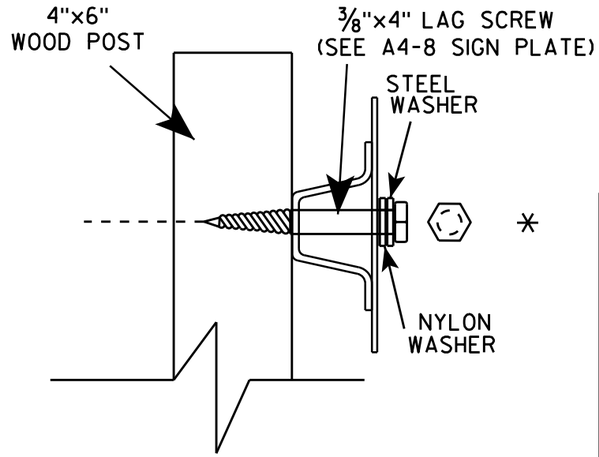


STRINGER

CROSS SECTION VIEW OF CHANNEL



POST MOUNTING



SIGN STRINGER MOUNTING REQUIREMENTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch

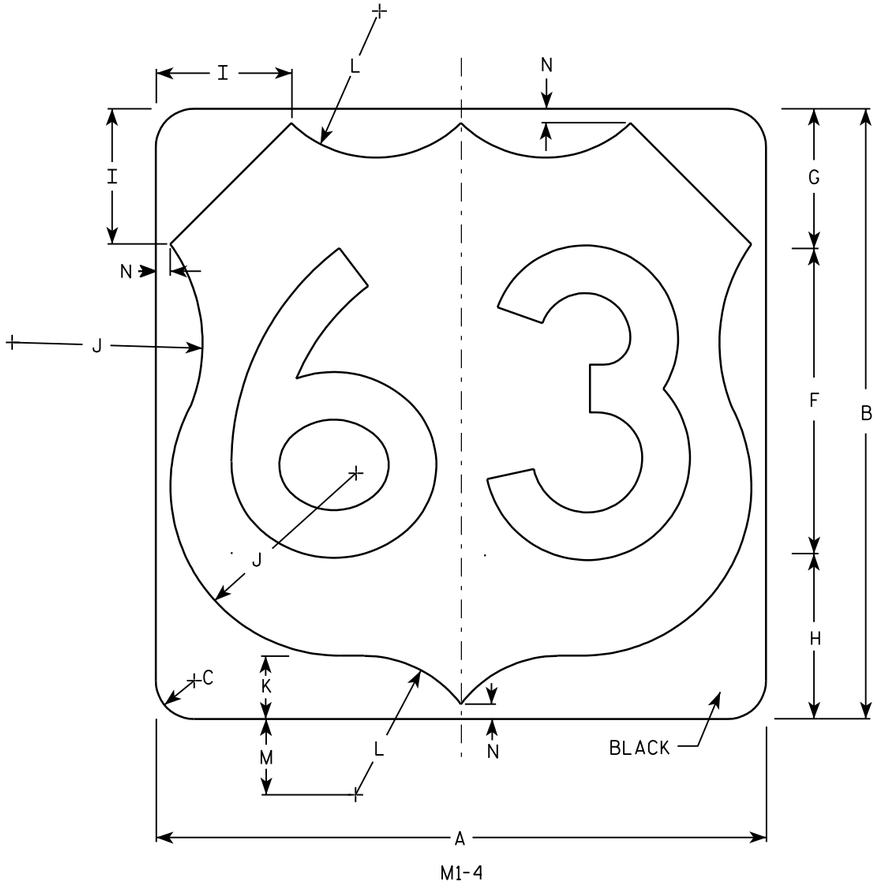
for State Traffic Engineer

DATE 4/26/16 PLATE NO A4-18.1

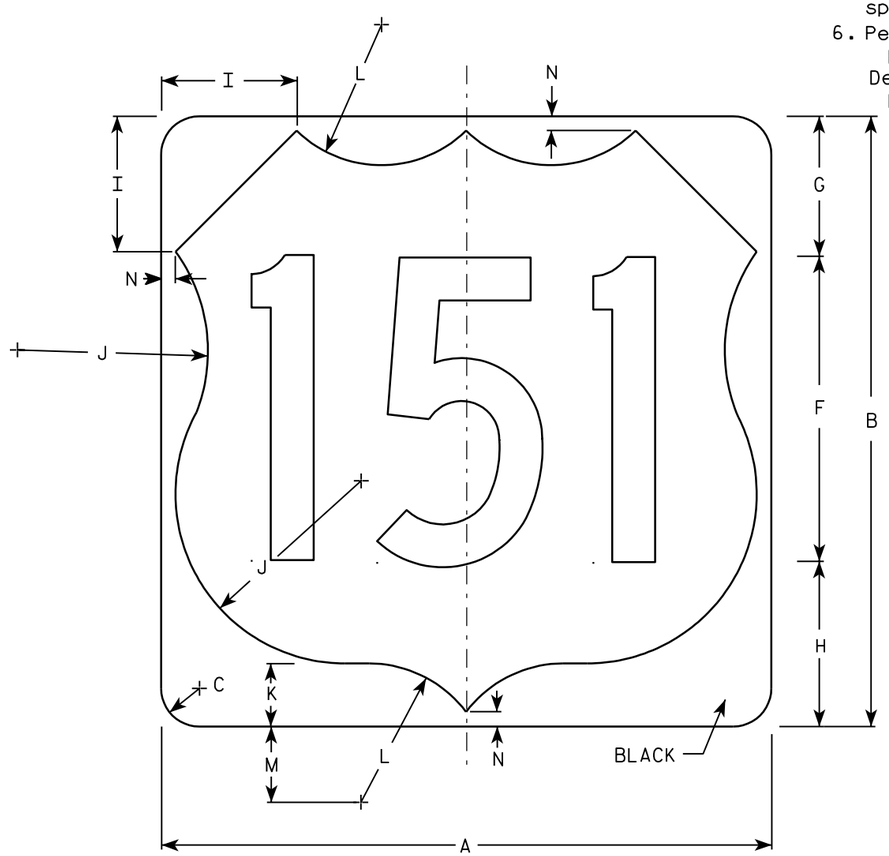
PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

NOTES

1. Sign is Type II - See Note 6 - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White & Black - See Note 6
   Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Substitute appropriate numerals and adjust spacing as per Plate A10-1.
6. Permanent Signs
   Background - Type H Reflective
   Detour or other temporary signs
   Background - Reflective



M1-4



M1-4

Metric equivalent for this sign is:

SIZE	
1	
2	600 mm X 600 mm
3	900 mm X 900 mm
4	900 mm X 900 mm
5	900 mm X 900 mm

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.	Area m2
1																												
2	24	24	1 1/2			12	5 1/2	6 1/2	5	7 1/2	2 1/2	5 1/2	3	1/2													4.0	.36
3	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0	.81
4	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0	.81
5	36	36	2 1/4			18	8 1/4	9 1/4	7 1/4	11 1/4	3 3/4	8 1/4	4 1/2	3/4													9.0	.81

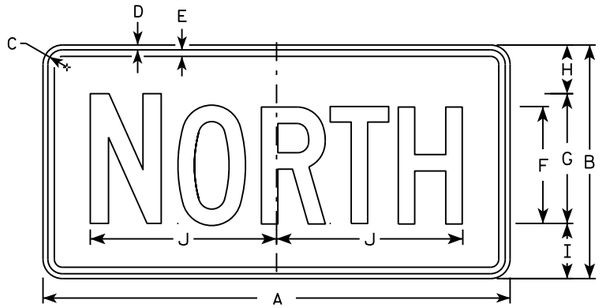
USH MARKER
M1-4 FOR ASSEMBLIES

WISCONSIN DEPT OF TRANSPORTATION

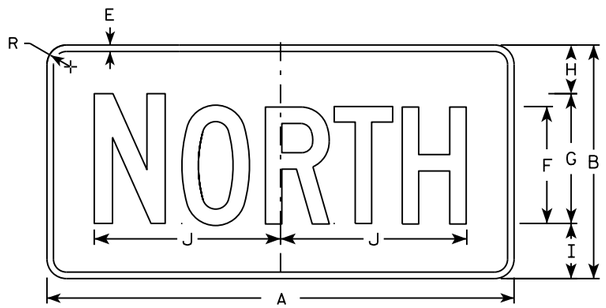
APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 08/25/05 PLATE NO. M1-4.9

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 85 | E



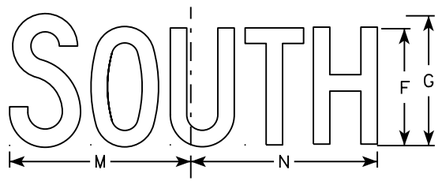
M3-1
MM3-1
MP3-1



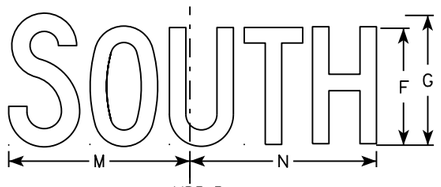
MB3-1
MK3-1
MN3-1

M3-2
MM3-2
MP3-2

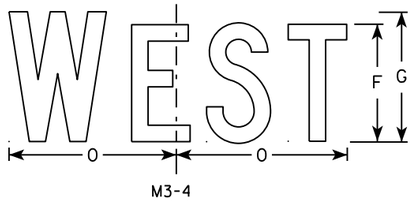
MB3-2
MK3-2
MN3-2



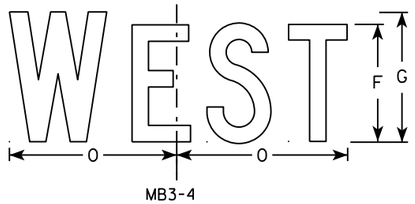
M3-3
MM3-3
MP3-3



MB3-3
MK3-3
MN3-3



M3-4
MM3-4
MP3-4



MB3-4
MK3-4
MN3-4

NOTES

1. All Signs Type II - Type H
2. Color:
   Background - See note 5
   Message - See note 5
3. Message Series - C
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M3-1 thru M3-4 Background - White
   Message - Black
   MB3-1 thru MB3-4 Background - Blue
   Message - White
   MK3-1 thru MK3-4 Background - Green
   Message - White
   MM3-1 thru MM3-4 Background - White
   Message - Green
   MN3-1 thru MN3-4 Background - Brown
   Message - White
   MP3-1 thru MP3-4 Background - White
   Message - Blue
6. Note the first letter of each direction is larger than the remainder of the message.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	12	1 1/8	3/8	3/8	6	7	2 1/4	2 3/4	10 1/4	7 7/8	8 3/8	10 1/4	9 3/4	8 3/4			1 1/2									2.00
3	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
4	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5
5	36	18	1 1/8	3/8	1/2	9	10	3 3/4	4 1/4	14 3/8	12	12 1/8	14	14 1/8	13			1 1/2									4.5

STANDARD SIGNS
M3-1 thur M3-4
SERIES

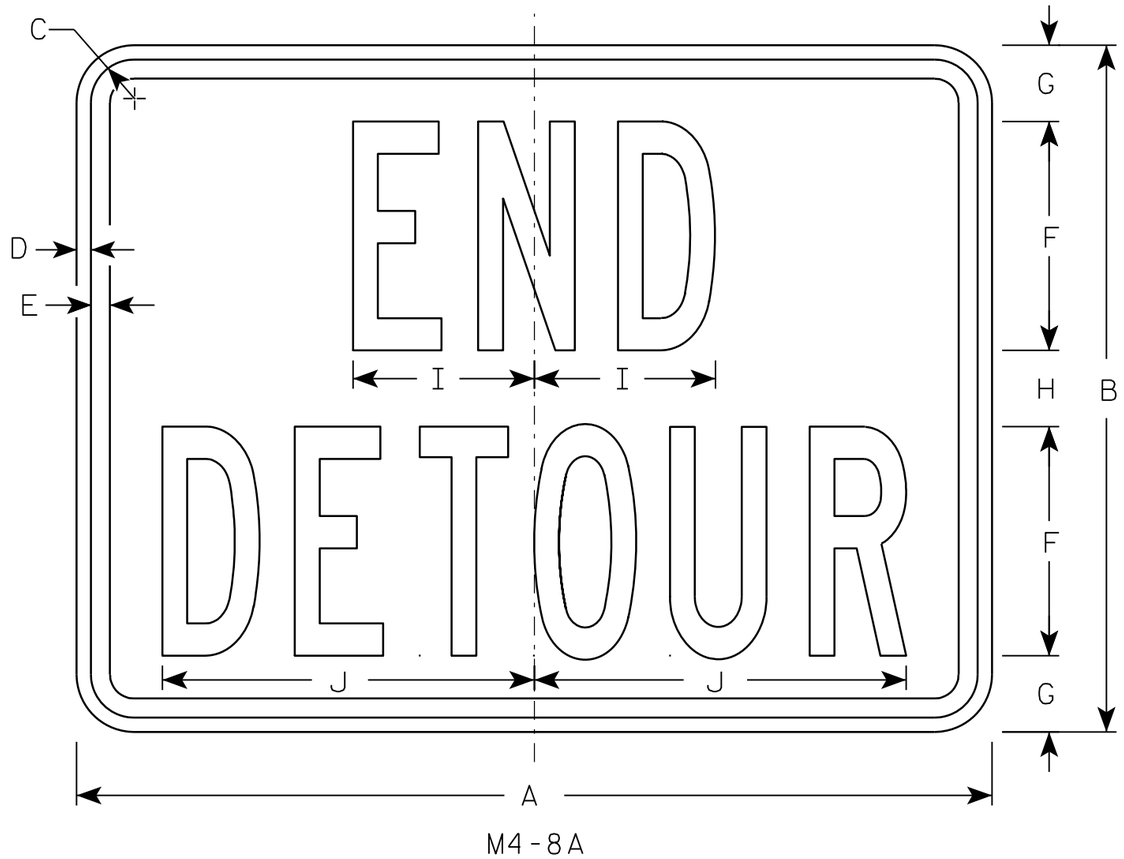
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew P Rauch for State Traffic Engineer

DATE 10/15/15 PLATE NO M3-1.14

PROJECT NO: | HWY: | COUNTY: | SHEET NO: E

FILE NAME : C:\CAEfiles\Projects\tr_stdplate\M31.DGN PLOT DATE : 01-DEC-2015 17:54 PLOT BY : $$ plotuser $$ PLOT NAME : PLOT SCALE : 11.675051:1.000000



M4-8A

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Orange
   Message - Black
3. Message Series - B
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	24	18	1 1/8	3/8	1/2	6	2	2	4 3/4	9 3/4																	3.0
3	30	24	1 1/8	3/8	1/2	8	2 1/2	3	6 3/4	13																	5.0
4																											
5																											

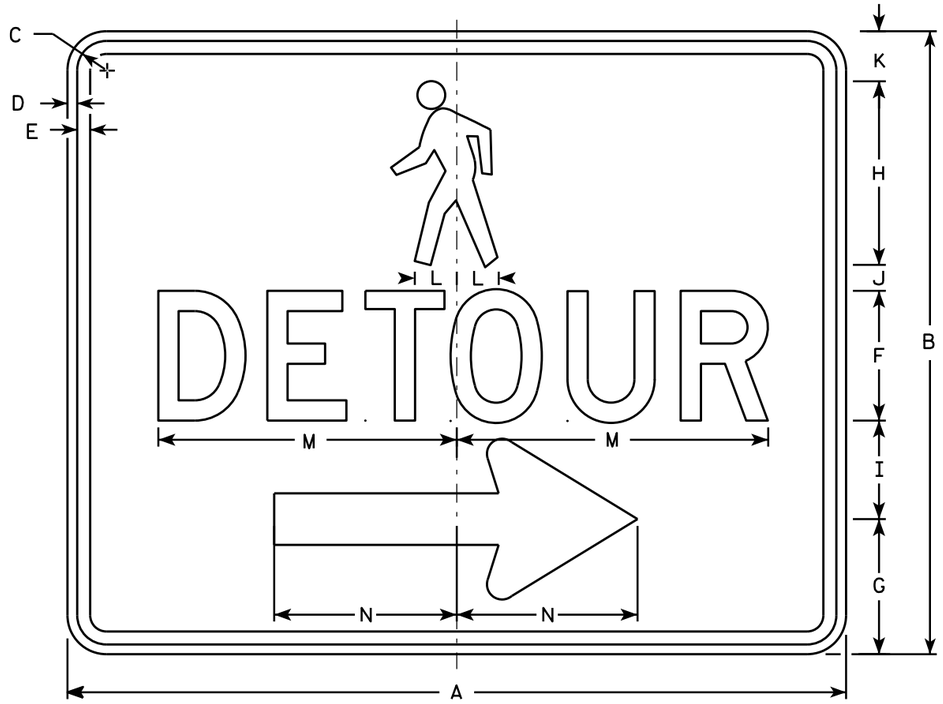
STANDARD SIGN
M4-8A

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/9/11 PLATE NO. M4-8A.2

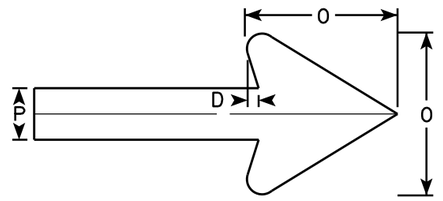
PROJECT NO:	HWY:	COUNTY:		SHEET NO: 87	E



M4-9BR

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Orange
   Message - Black
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. M4-9BL is the same as M4-9BR except the arrow is reversed.



Arrow Detail

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2	30	24	1 1/8	3/8	1/2	5	5 1/4	7 1/8	3 3/4	1	1 1/8	1 5/8	11 3/4	7	6	2											5.00
3																											
4																											
5																											

STANDARD SIGN
M4-9B L&R

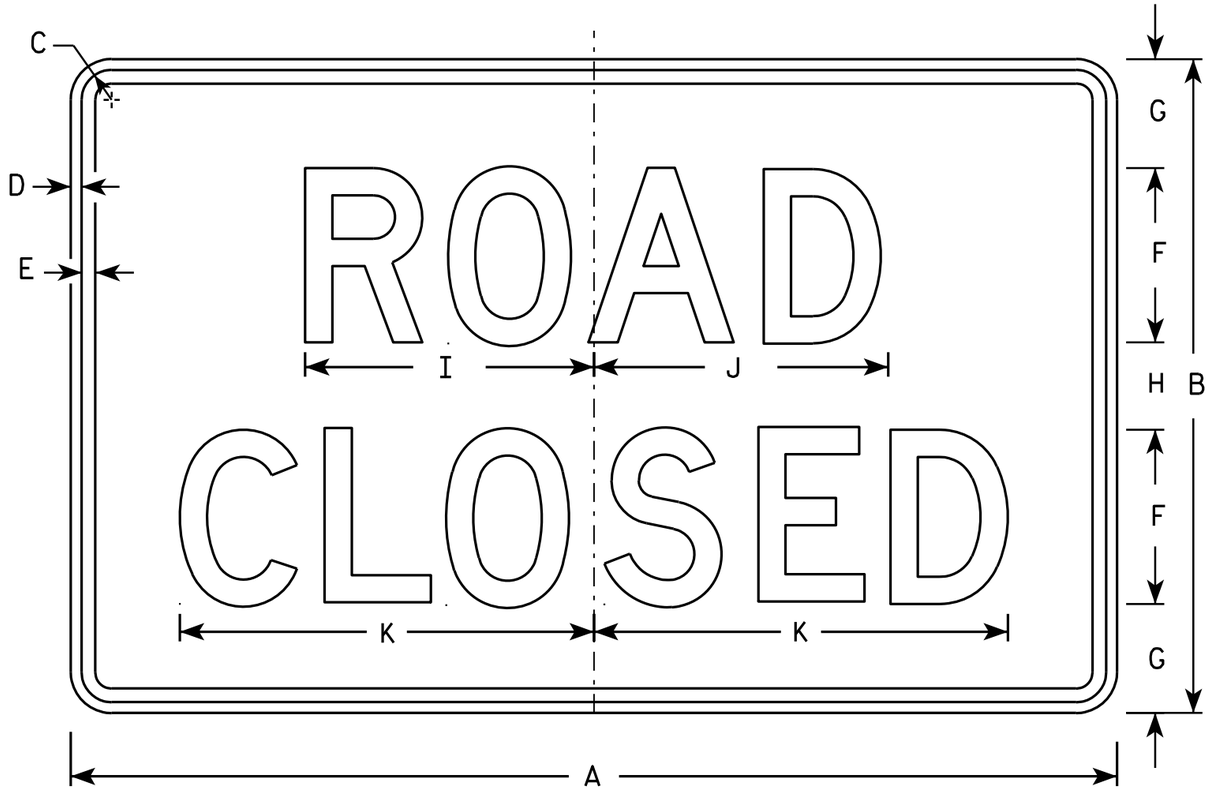
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 9/30/13 PLATE M4-9B.1

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	E

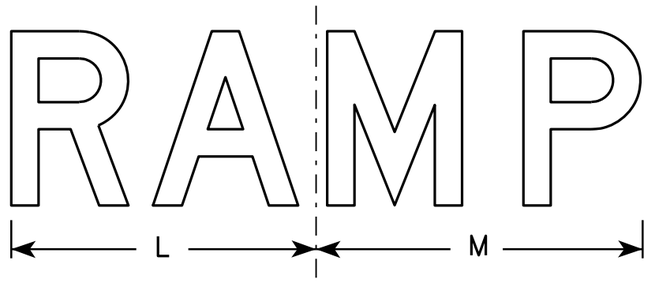
FILE NAME : C:\CAEfiles\Projects\tr_stdplate\M49B.DGN PLOT DATE : 01-OCT-2013 13:44 PLOT BY : mscj9h PLOT NAME : PLOT SCALE : 5.837526:1.000000 WISDOT/CADDS SHEET 42



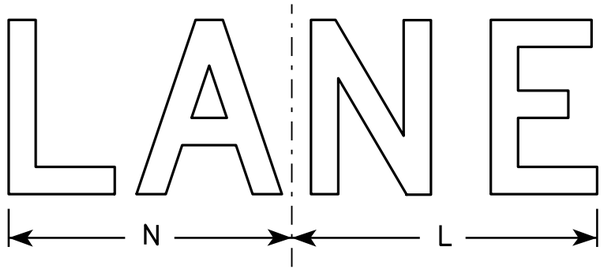
R11-2

NOTES

1. Sign is Type II - Type H Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - White
   Message - Black
3. Message Series - D
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. Modify the message as required.



R11-2R



R11-2L

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0
2M	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0
3	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0
4	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0
5	48	30	1 3/8	1/2	5/8	8	5	4	13 1/4	13 1/2	19	14	15	13													10.0

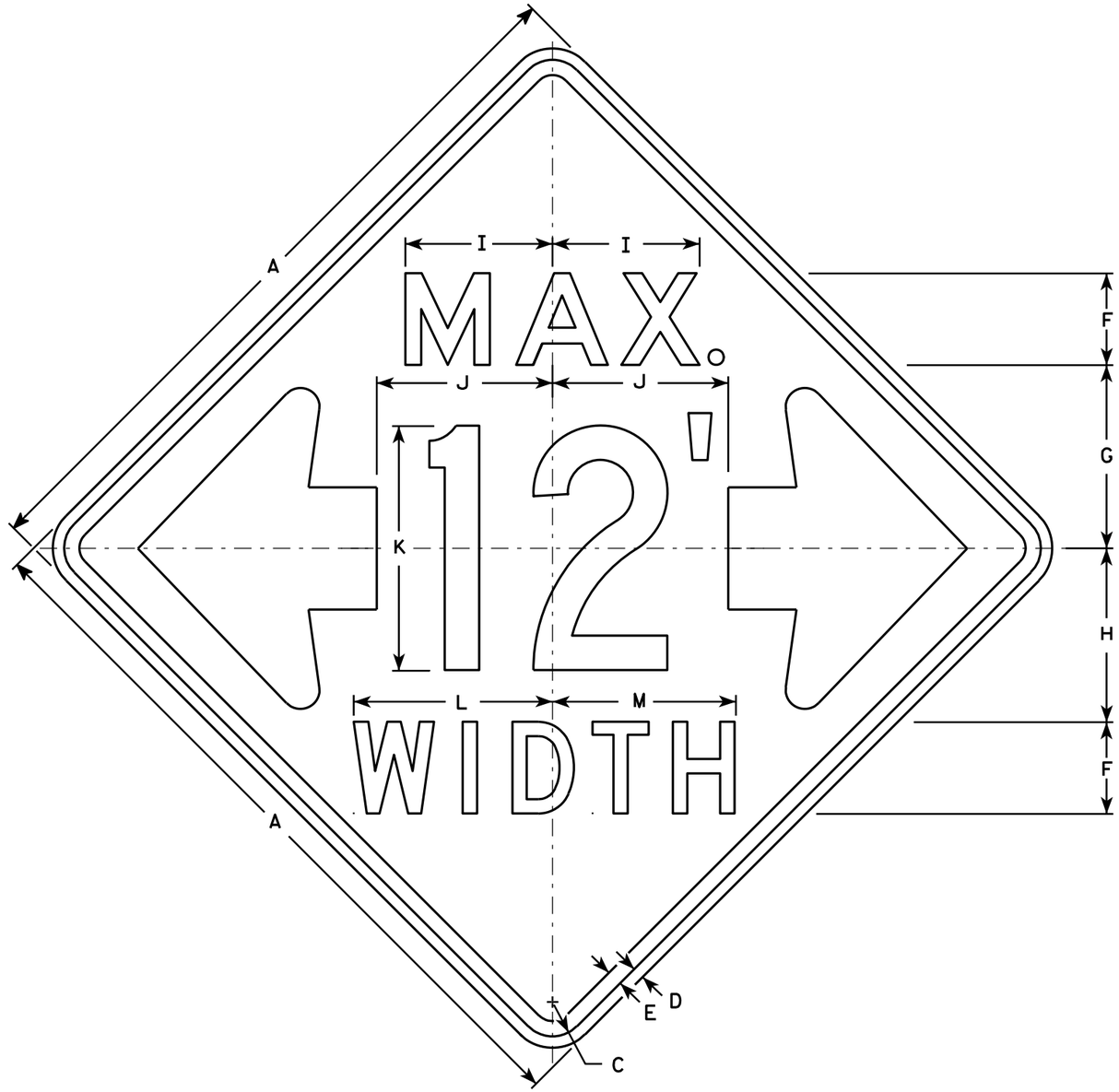
STANDARD SIGN
R11-2

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 4/1/11 PLATE NO. R11-2.10

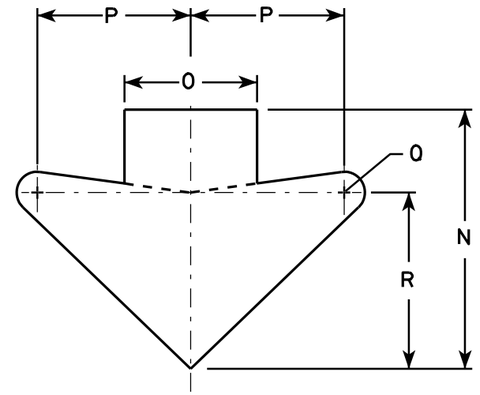
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 89 | E



W12-52

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Orange
   Message - Black
3. Message Series - See note 5
4. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.
5. The top line is series E, the numerals are series C, and the bottom line is series D.
6. Substitute appropriate numerals and adjust spacing as required.



ARROW DETAIL

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48		2 1/4	3/4	1	6	12	11 3/8	9 5/8	11 1/2	16	13	12	15 5/8	8	9 1/4	1 1/4	10 5/8									16.0
2M	48		2 1/4	3/4	1	6	12	11 3/8	9 5/8	11 1/2	16	13	12	15 5/8	8	9 1/4	1 1/4	10 5/8									16.0
3																											
4																											
5																											

STANDARD SIGN
W12-52

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 3/16/11 PLATE NO. W12-52.7

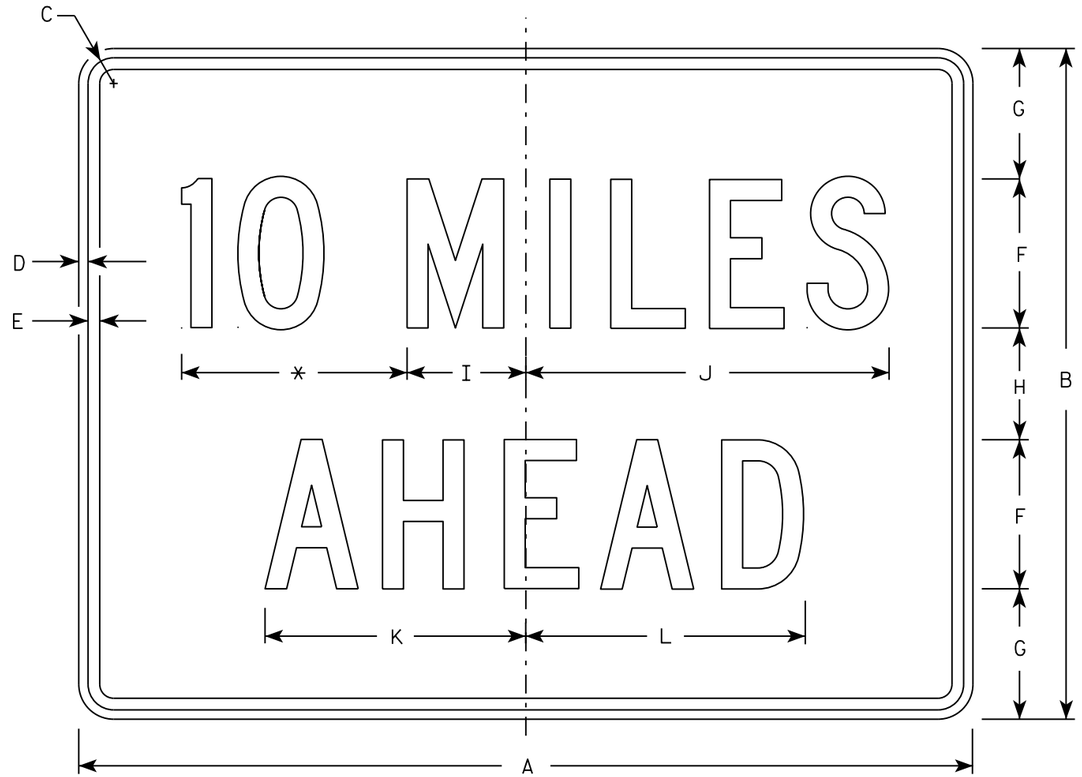
PROJECT NO: | HWY: | COUNTY: | SHEET NO: 90 | E

FILE NAME : C:\Users\PROJECTS\tr_stdplate\W1252.DGN PLOT DATE : 16-MAR-2011 14:45 PLOT BY : mscj9h PLOT NAME : PLOT SCALE : 9.137199:1.000000

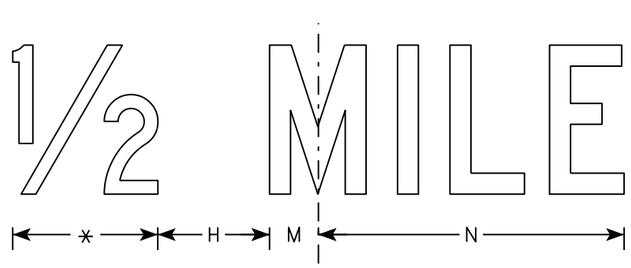
WISDOT/CADDS SHEET 42

7

7



W57-52



NOTES

1. Sign is Type II - Type F Reflective
2. Color:
   Background - Yellow
   Message - Black
3. Message Series - C
4. Corners and borders shall be rounded.
5. Substitute appropriate numerals to the nearest quarter mile and optically adjust spacing to achieve proper balance.

* See note 5

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1	24	18	1 1/8	3/8	1/2	4	3 1/2	3	3 1/8	9 3/4	7	7 1/2	1 3/8	8 1/4													3.0
2S	36	24	1 1/8	3/8	1/2	6	4 1/2	3	4 3/4	14 5/8	10 5/8	11 3/8	2	12													6.0
2M	36	24	1 1/8	3/8	1/2	6	4 1/2	3	4 3/4	14 5/8	10 5/8	11 3/8	2	12													6.0
3	36	24	1 1/8	3/8	1/2	6	4 1/2	3	4 3/4	14 5/8	10 5/8	11 3/8	2	12													6.0
4	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0
5	48	36	1 3/8	1/2	5/8	8	7	6	6 3/8	19 1/2	14	15	2 3/4	16 3/8													12.0

STANDARD SIGN
W57-52

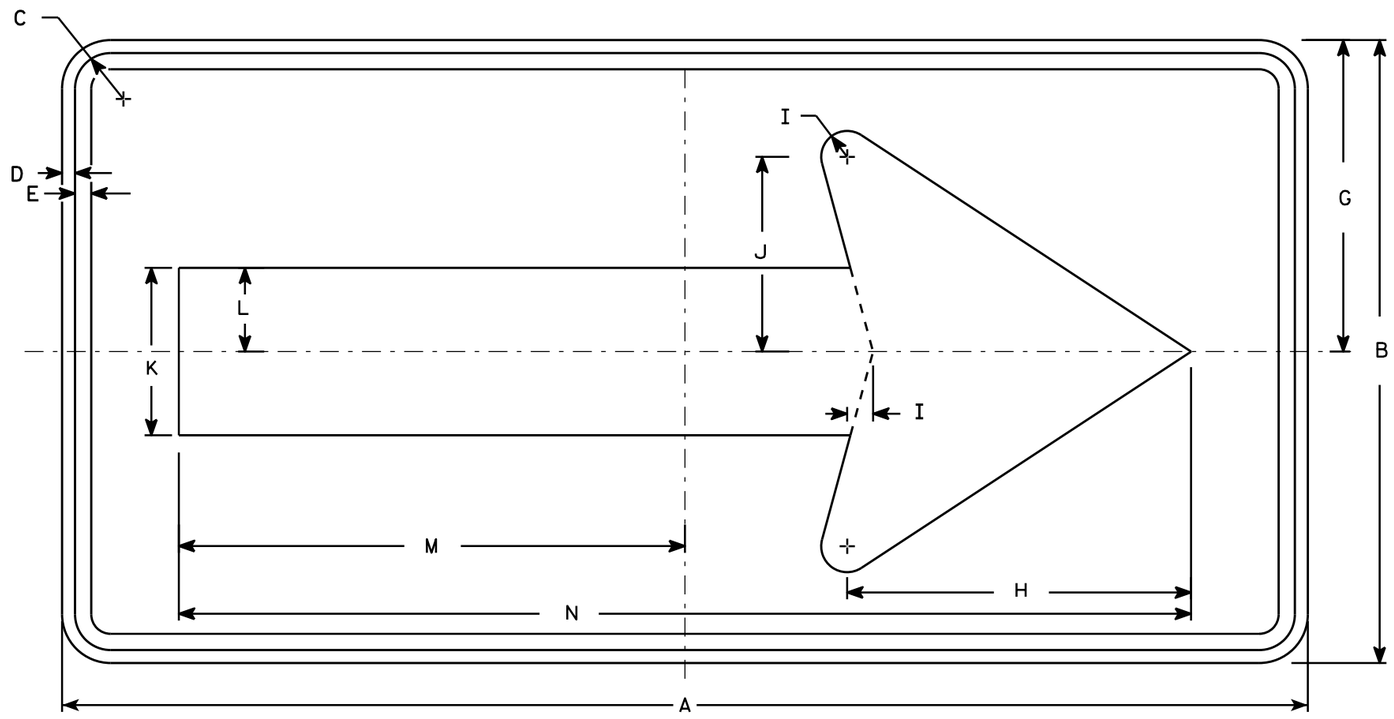
WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch for State Traffic Engineer

DATE 3/21/17 PLATE NO. W57-52.8

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 91 | E

FILE NAME : C:\CAEfiles\Projects\tr_stdplate\W5752.DGN PLOT DATE : 21-MAR-2017 08:50 PLOT BY : $$...plotuser...$$ PLOT NAME : PLOT SCALE : 8.131582:1.000000 WISDOT/CADDS SHEET 42



W01-6

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Orange
   Message - Black
3. Corners may be square or rounded when base material is plywood but borders shall be rounded as shown. When base material is metal, the corners and borders shall be rounded.

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	Area sq. ft.
1																											
2S	48	24	1 3/8	1/2	5/8		12	13 1/4	1	7 1/2	6 1/2	3 1/4	19 1/2	39													8.0
2M	48	24	1 3/8	1/2	5/8		12	13 1/4	1	7 1/2	6 1/2	3 1/4	19 1/2	39													8.0
3	60	30	1 3/8	1/2	5/8		15	16 1/4	1 1/4	9 1/4	8	4	24 3/8	48 3/4													12.5
4	60	30	1 3/8	1/2	5/8		15	16 1/4	1 1/4	9 1/4	8	4	24 3/8	48 3/4													12.5
5	60	30	1 3/8	1/2	5/8		15	16 1/4	1 1/4	9 1/4	8	4	24 3/8	48 3/4													12.5

STANDARD SIGN
W01-6

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

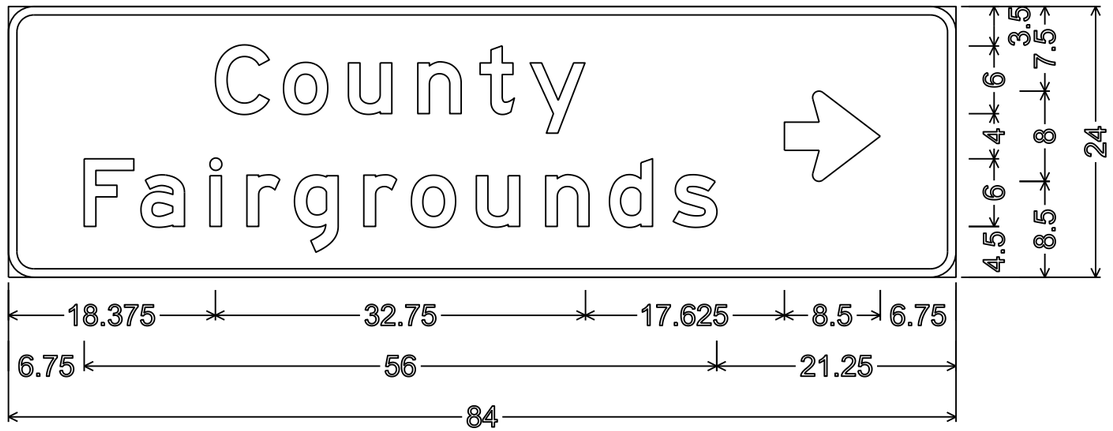
DATE 11/18/13 PLATE NO W01-6.1

PROJECT NO: | HWY: | COUNTY: | SHEET NO: E

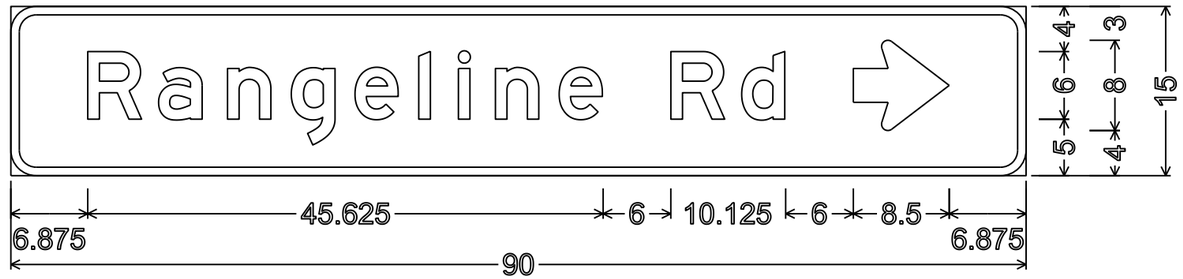
FILE NAME : C:\CAEfiles\Projects\tr_stdplate\W016.DGN PLOT DATE : 28-FEB-2014 11:37 PLOT BY : mscj9h PLOT NAME : PLOT SCALE : 5.837526:1.000000 WISDOT/CADDS SHEET 42

NOTES

1. All Signs Type II - Type H Reflective
2. Color:
   Background - Green
   Message - White
3. Message Series - E



D1-2; 2.250" Radius, 0.750" Border

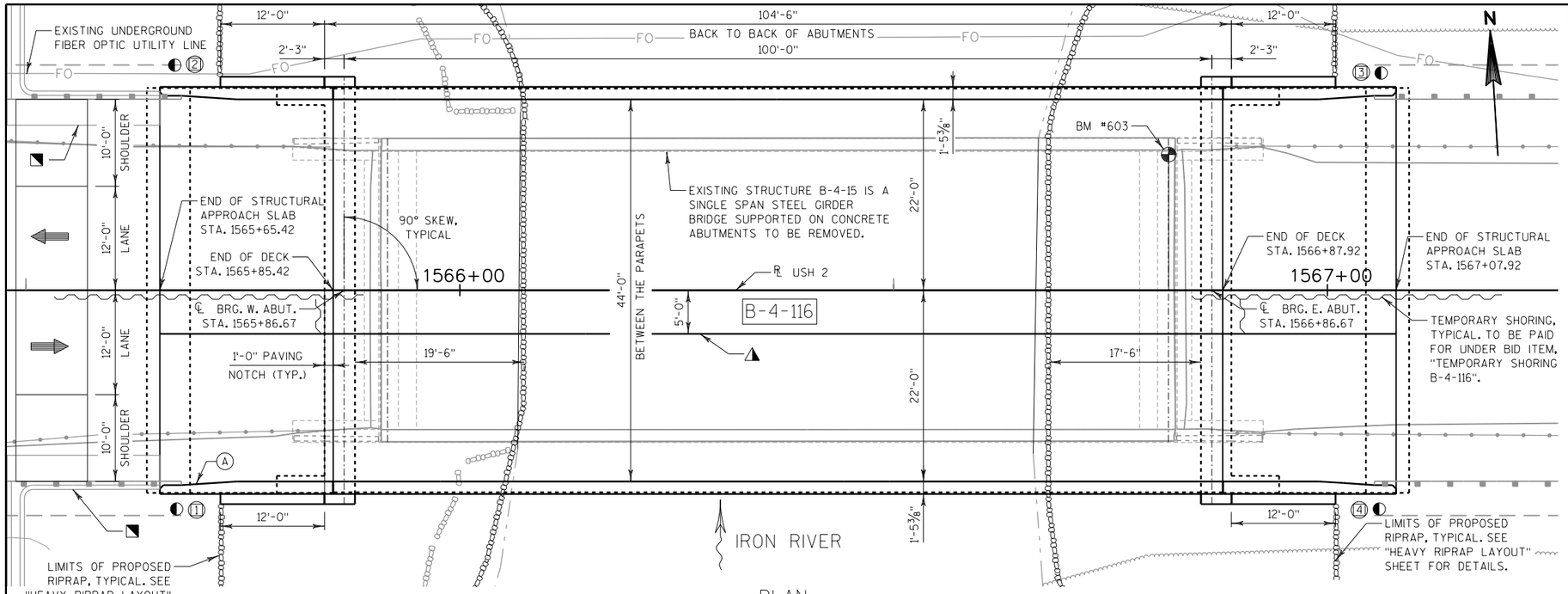


D1-1; 2.250" Radius, 0.750" Border

7

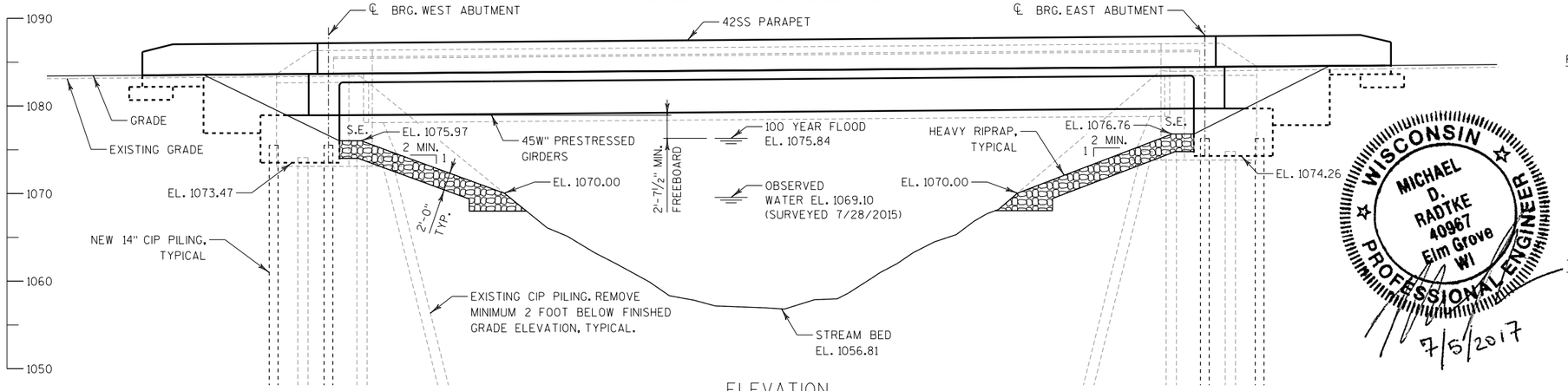
7

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	PERMANENT SIGNING	SHEET NO: 93	E



PLAN

SINGLE SPAN 45W" PRESTRESSED GIRDERS

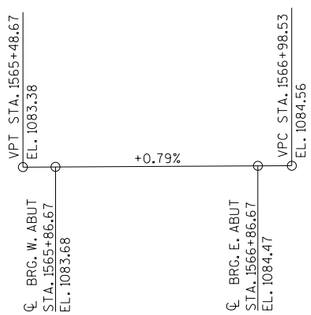


ELEVATION

(LOOKING DOWNSTREAM)

NOTES

- (A) NAME PLATE LOCATION
- (11) DENOTES WING NUMBER
- ANCHOR ASSEMBLY FOR THRIE BEAM TYPE GUARDRAIL
- CONCRETE SURFACE DRAIN PROVIDED FOR DRAINAGE. SEE ROADWAY SHEETS FOR DETAILS.
- LONGITUDINAL CONSTRUCTION JOINT. SEE "CONSTRUCTION STAGING" SHEET FOR LONGITUDINAL CONSTRUCTION JOINT DETAIL.



PROFILE GRADE LINE - USH 2

STRUCTURE DESIGN CONTACTS

BRIDGE OFFICE: WILLIAM DREHER (608) 266-8489
CONSULTANT: MIKE RADTKE (414) 347-1607

BENCH MARK

NO.	STATION	DESCRIPTION	ELEV.
603	1566+82 (LT)	BRASS CAP IN CONCRETE DECK	1083.85

DESIGN DATA

STATE PROJECT NUMBER: 1180-49-71

LIVE LOAD:

DESIGN LOADING: HL-93
INVENTORY RATING: RF = 1.36
OPERATING RATING: RF = 2.20
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV): 250 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 P.S.F.

MATERIAL PROPERTIES:

CONCRETE MASONRY
SUPERSTRUCTURE ..... f'c = 4,000 psi
ALL OTHER ..... f'c = 3,500 psi

BAR STEEL REINFORCEMENT, HIGH STRENGTH, GRADE 60 ..... fy = 60,000 psi

45W-INCH PRESTRESSED GIRDERS, CONCRETE MASONRY ..... f'c = 8,000 psi
..... f'ci = 6,800 psi

0.6" DIA. PRESTRESSING STRANDS .... f's = 270,000 psi

HYDRAULIC DATA:

100 YEAR FREQUENCY:
Q(100) = 460 C.F.S.
VELOCITY = 0.5 F.P.S.
HIGH WATER (100) EL. = 1075.84
DRAINAGE AREA = 12.3 SQ. MI.
WATERWAY AREA = 896 SQ. FT.
ROADWAY OVERTOPPING FREQUENCY = N/A
SCOUR CRITICAL CODE = 8

2 YEAR FREQUENCY:
Q(2) = 132 C.F.S.
VELOCITY = 0.2 F.P.S.
HIGH WATER (2) EL. = 1072.62

FOUNDATION DATA:

ABUTMENTS TO BE SUPPORTED ON CIP 14 X .375-INCH PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 200 TONS * PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC EQUATION. ESTIMATED 100 FEET LONG AT EAST ABUTMENT AND 100 FEET LONG AT WEST ABUTMENT.

* THE FACTORED AXIAL RESISTANCE OF PILES IN COMPRESSION USED FOR DESIGN IS THE REQUIRED DRIVING RESISTANCE MULTIPLIED BY A RESISTANCE FACTOR OF 0.5 USING MODIFIED GATES TO DETERMINE DRIVEN PILE CAPACITY.

TRAFFIC DATA:

USH 2:
ADT = 5,510 (2018)
ADT = 6,150 (2038)
RDS = 60 MPH

WISCONSIN PROFESSIONAL ENGINEER MICHAEL D. RADTKE 40967 Elm Grove WI
7/5/2017

LIST OF DRAWINGS

NO.	DATE	REVISION	BY

emcs LLC
1300 W. Canal Street, Suite 200
Milwaukee, WI 53233
414.347.1607 Fax 414.347.1347

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
ACCEPTED William C. Dreher SDR — 08/09/17
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-4-116

USH 2 OVER IRON RIVER

COUNTY	TOWN
BAYFIELD	IRON RIVER

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
AJC	MDR	AJC	MDR

GENERAL PLAN & ELEVATION

SHEET 1 OF 21
94

8

8

FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080101_gp.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

STATE PROJECT NUMBER

1180-49-71

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

ALL DIMENSIONS ARE IN FEET AND INCHES UNLESS OTHERWISE NOTED.

ALL STATIONS AND ALL ELEVATIONS ARE IN FEET. ELEVATIONS ARE REFERENCED TO THE NAVD 88 DATUM.

ELASTOMERIC BEARING PADS NEED NOT BE INDIVIDUALLY MOLDED PROVIDED THE CUT EDGES ARE SMOOTH AND TRUE.

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

ALL REINFORCING BARS ARE ENGLISH DESIGNATION AND THE FIRST DIGIT OF A 3-DIGIT BAR MARK OR FIRST TWO DIGITS OF A 4-DIGIT BAR MARK SIGNIFY THE BAR SIZE.

BEVEL EXPOSED EDGES OF CONCRETE ¾" UNLESS OTHERWISE NOTED.

THE EXISTING GROUNDLINE SHALL BE THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES B-4-116".

AT THE BACKFACE OF THE ABUTMENTS, ALL VOLUME WHICH CANNOT BE PLACED BEFORE ABUTMENT CONSTRUCTION AND IS NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL.

THE HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE PRESTRESSED GIRDER DETAILS SHEET.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE TYPE 'HR' TO THE EXTENT SHOWN ON SHEET 21 AND IN THE ABUTMENT DETAILS.

EXISTING BRIDGE B-4-15 IS A SINGLE SPAN STEEL GIRDER BRIDGE WITH AN OVERALL WIDTH OF 35'-0" AND AN OVERALL LENGTH OF 94'-0" AND IS TO BE REMOVED PRIOR TO CONSTRUCTION OF NEW STRUCTURE.

APPLY PIGMENTED SURFACE SEALER TO THE TOP AND INSIDE FACES OF PARAPETS.

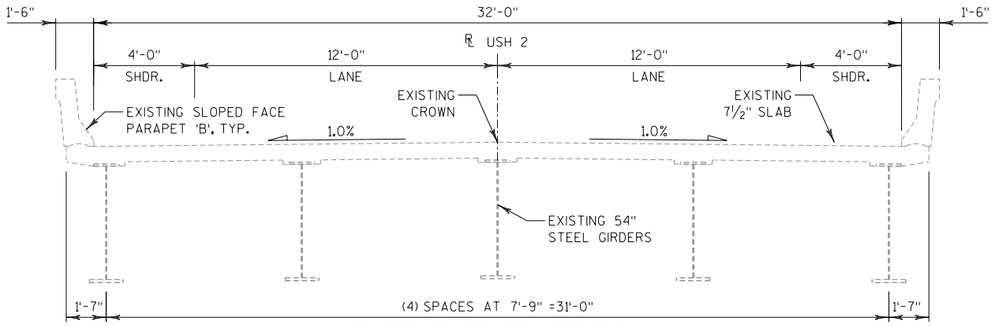
POLYMER OVERLAY TO BE APPLIED TO DECK SURFACE AFTER ENTIRE BRIDGE DECK IS COMPLETE. POLYMER OVERLAY WILL BE APPLIED IN HALF DECK WIDTH APPLICATIONS AFTER DECK HAS AGED A MINIMUM OF 28 DAYS.

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

EXCAVATION BELOW THE ABUTMENT AND ABUTMENT BEDDING MATERIALS REQUIRES ENGINEER APPROVAL. GEOTEXTILE SHALL BE SET AT THE BOTTOM OF EXCAVATION AND EXTEND 2'-0" ABOVE BOTTOM OF ABUTMENT.

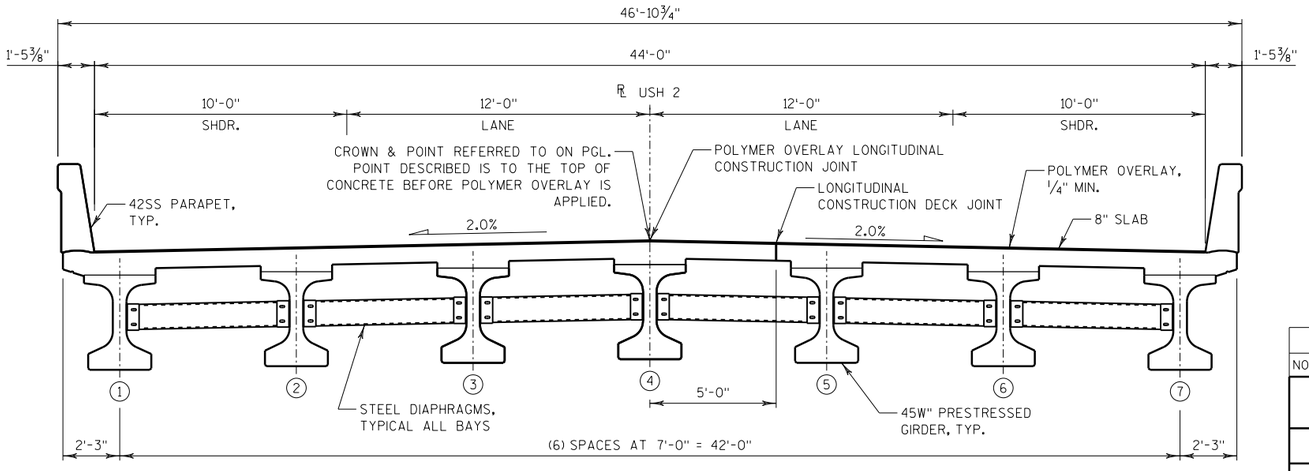
TOTAL ESTIMATED QUANTITIES

BID ITEM NO.	BID ITEMS	UNIT	W. APPR. APRON	WEST ABUT.	EAST ABUT.	E. APPR. APRON	SUPER	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS 1565+85	LS	-	-	-	-	-	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-4-116	LS	-	-	-	-	-	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	-	145	150	-	-	295
305.0120	BASE AGGREGATE DENSE 1 1/4-INCH	TON	-	155	155	-	-	310
502.0100	CONCRETE MASONRY BRIDGES	CY	65	47	47	65	211	435
502.3200	PROTECTIVE SURFACE TREATMENT	SY	-	-	-	-	26	26
502.3210	PIGMENTED SURFACE SEALER	SY	20	-	-	20	101	141
503.0146	PRESTRESSED GIRDER TYPE I 45W-INCH	LF	-	-	-	-	707	707
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	-	2880	2880	-	-	5760
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	11000	1200	1180	11000	34250	58630
505.0800.S	BAR STEEL REINFORCEMENT HS STAINLESS STRUCTURES	LB	800	-	-	800	-	1600
505.0908	BAR COUPLERS NO. 8	EACH	12	-	-	12	-	24
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	-	7	7	-	-	14
506.4000	STEEL DIAPHRAGMS B-4-116	EACH	-	-	-	-	12	12
509.5100.S	POLYMER OVERLAY	SY	98	-	-	98	502	698
511.1200	TEMPORARY SHORING B-4-116	SF	-	150	155	-	-	305
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	-	14	14	-	-	28
550.2146	PILING CIP CONCRETE 14 X 0.375-INCH	LF	-	1225	1225	-	-	2450
606.0300	RIPRAP HEAVY	CY	-	160	205	-	-	365
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	-	85	85	-	-	170
614.0150	ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	EACH	2	-	-	2	-	4
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	-	55	55	-	-	110
645.0120	GEOTEXTILE TYPE HR	SY	-	205	275	-	-	480
	NON-BID ITEMS							
	FILLER	SIZE		-	-	-	-	1/2", 3/4", 1 1/2"



EXISTING CROSS SECTION

(LOOKING EAST)



CROSS SECTION

(LOOKING EAST)

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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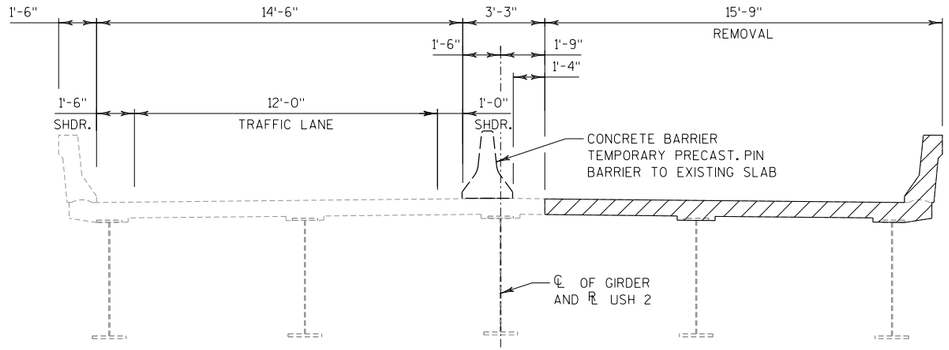
CROSS SECTION AND QUANTITIES

SHEET 2 OF 21
95

STATE PROJECT NUMBER

1180-49-71



STAGE 1 REMOVAL

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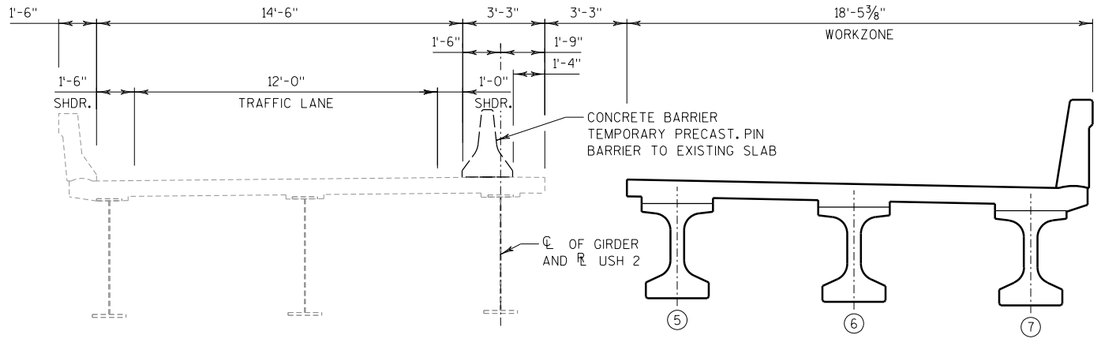
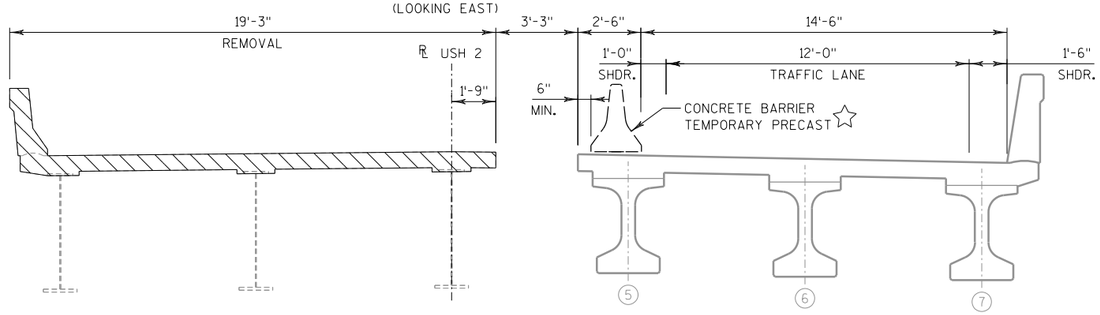


STAGE 1 CONSTRUCTION

(LOOKING EAST)



STAGE 2 REMOVAL

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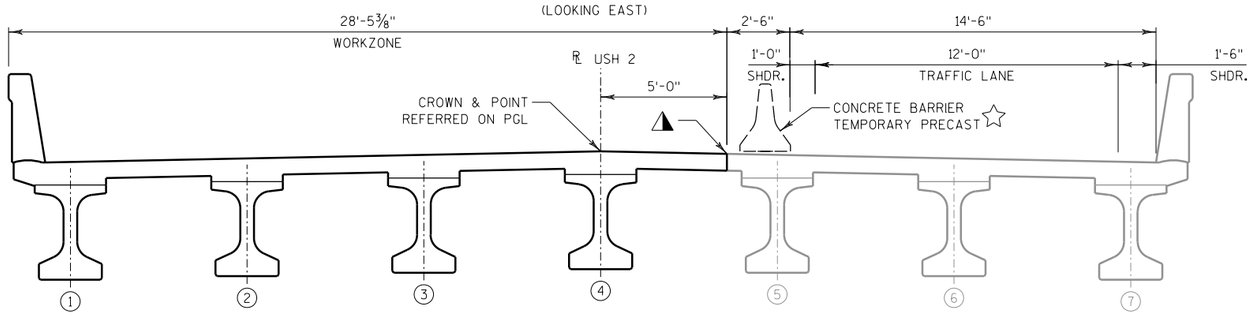
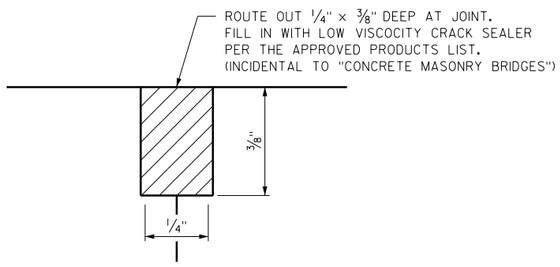


STAGE 2 CONSTRUCTION

(LOOKING EAST)



◭ LONGITUDINAL CONSTRUCTION JOINT DETAIL

LEGEND

▨ PORTION OF DECK TO BE REMOVED DURING CONSTRUCTION STAGE.

◭ LONGITUDINAL JOINT. PROVIDE PROPER BAR SPLICE AT JOINT. SEE LONGITUDINAL CONSTRUCTION JOINT DETAIL BELOW FOR DETAILS.

☆ PIN BARRIER TO NEW SLAB WITH REMOVABLE ADHESIVE ANCHORS PER STANDARD DETAIL "CONCRETE BARRIER TEMPORARY PRECAST". SEE ROADWAY PLANS FOR DETAIL. SPACE ANCHORS TO AVOID ANY DECK, APPROACH SLAB, AND GIRDER STEEL. LOCATE STEEL IN APPROACH SLAB AND DECK AT POTENTIAL ANCHOR LOCATIONS PRIOR TO INSTALLATION OF ANCHORS. USE DRILL BITS THAT MINIMIZE AND AVOID DAMAGE TO STEEL. ADHESIVE ANCHOR, INSTALLATION, AND REMOVAL TO BE INCLUDED IN ROADWAY BID ITEM, "CONCRETE BARRIER TEMPORARY PRECAST INSTALLED".

FOR ABUTMENT AND SUPERSTRUCTURE DIAPHRAGM STAGE JOINT LOCATION AND DETAILS SEE SHEETS 5, 8 AND 16.

POLYMER OVERLAY TO BE APPLIED TO DECK SURFACE AFTER BRIDGE DECK IS COMPLETE. STAGING FOR POLYMER OVERLAY NOT SHOWN FOR CLARITY. POLYMER OVERLAY WILL BE APPLIED IN HALF DECK WIDTH APPLICATIONS.

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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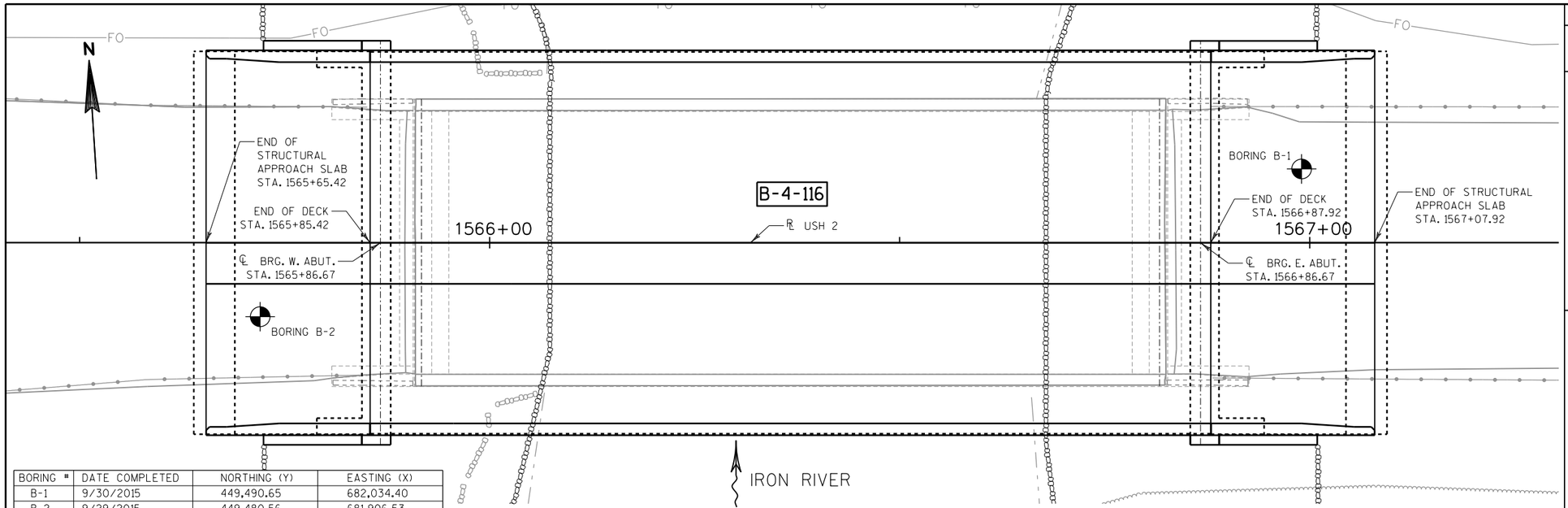
CONSTRUCTION STAGING

SHEET 3 OF 21
96



BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B-1	9/30/2015	449,490.65	682,034.40
B-2	9/29/2015	449,480.56	681,906.53
BORINGS COMPLETED BY: GESTRA			
REPORT COMPLETED BY: GESTRA			
ALL COORDINATES REFERENCED TO WCCS NAD 83 (2011) BAYFIELD COUNTY			

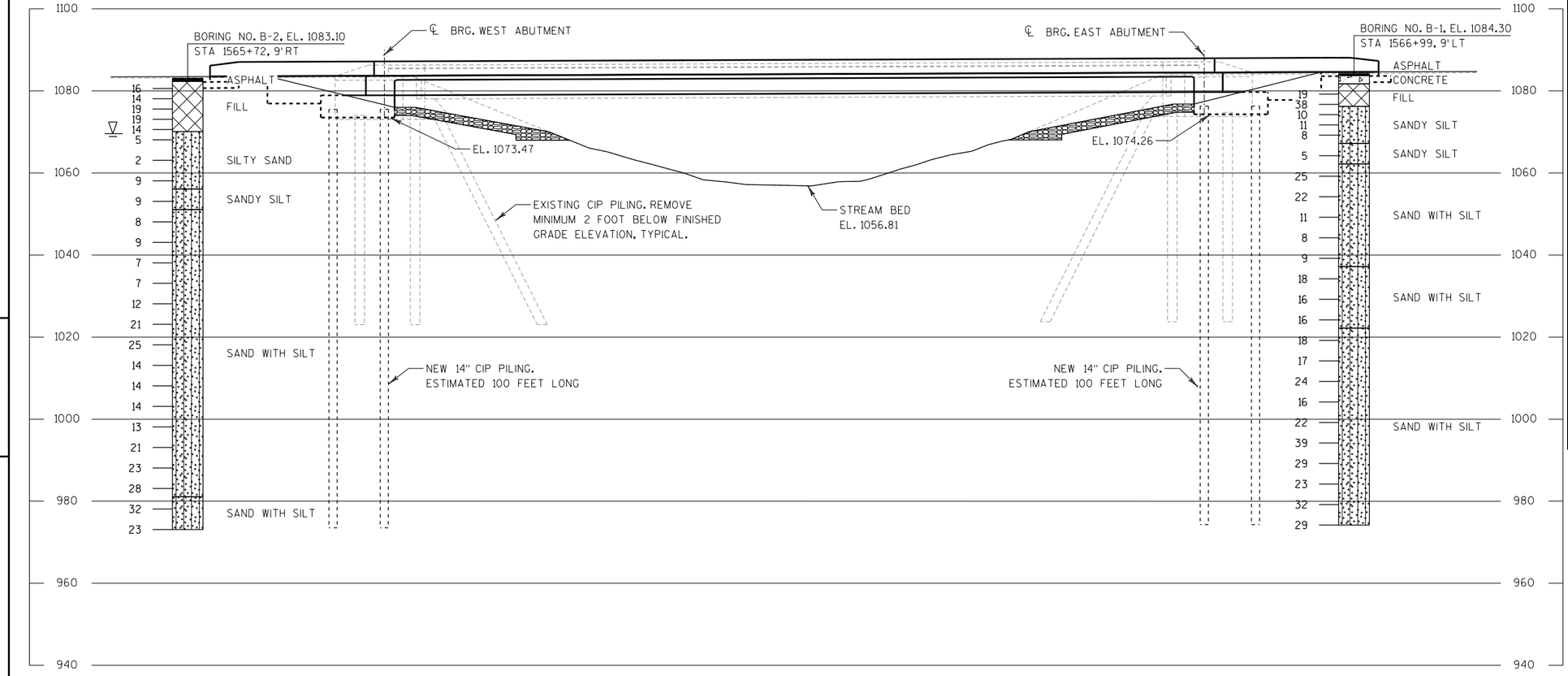
PLAN

SINGLE SPAN 45W" PRESTRESSED GIRDERS

SOIL BORINGS:

BORING STATIONS AND OFFSETS ARE BASED ON ℄ USH 2.

DENOTES SOIL BORING LOCATION



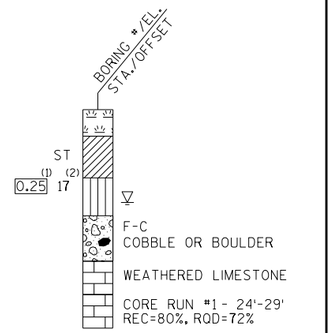
STATE PROJECT NUMBER

1180-49-71

MATERIAL SYMBOLS

ASPHALT, TOPSOIL, PEAT, CONCRETE, FILL, GRAVEL, SAND, CLAY, SILT, BOULDERS OR COBBLES, LIMESTONE, BEDROCK (UNKNOWN), SHALE, SANDSTONE, IGNEOUS/META

LEGEND OF BORING



(1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)

(2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

GROUND WATER ELEVATION

- AT TIME OF DRILLING
- END OF DRILLING
- AFTER DRILLING

ABBREVIATIONS

F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

BORINGS WERE COMPLETED AT POINTS APPROXIMATELY AS INDICATED ON THIS DRAWING TO OBTAIN INFORMATION CONCERNING THE CHARACTER OF SUBSURFACE MATERIALS FOUND AT THE SITE. BECAUSE THE INVESTIGATED DEPTHS ARE LIMITED AND THE AREA OF THE BORINGS IS VERY SMALL IN RELATION TO THE ENTIRE SITE, THE WISCONSIN DEPARTMENT OF TRANSPORTATION DOES NOT WARRANT SIMILAR SUBSURFACE CONDITIONS BELOW, BETWEEN, OR BEYOND THESE BORINGS. VARIATIONS IN SOIL CONDITIONS SHOULD BE EXPECTED AND FLUCTUATIONS IN GROUNDWATER LEVELS MAY OCCUR.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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SUBSURFACE EXPLORATION

SHEET 4 OF 21
97

8

8

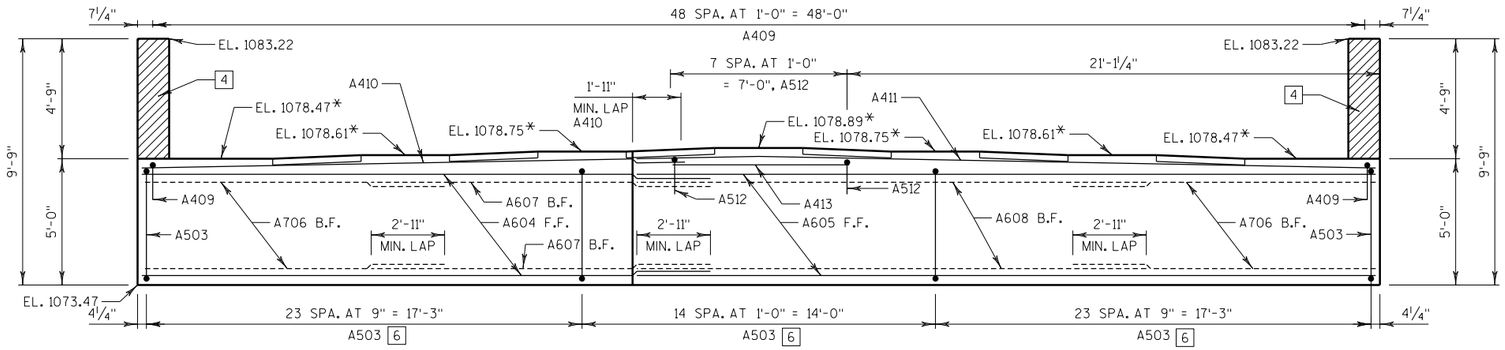
FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080104_se.dgn

PLOT DATE : 7/5/2017

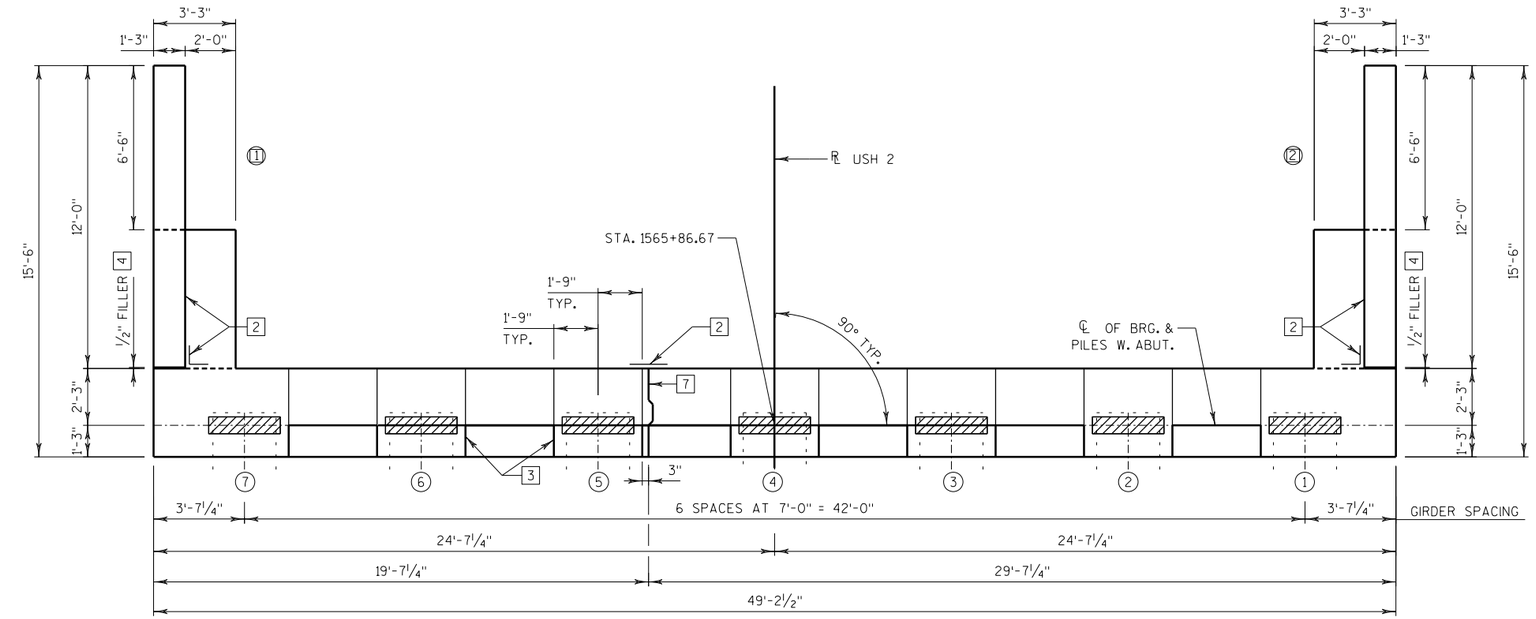
PLOT BY : mdr

STATE PROJECT NUMBER

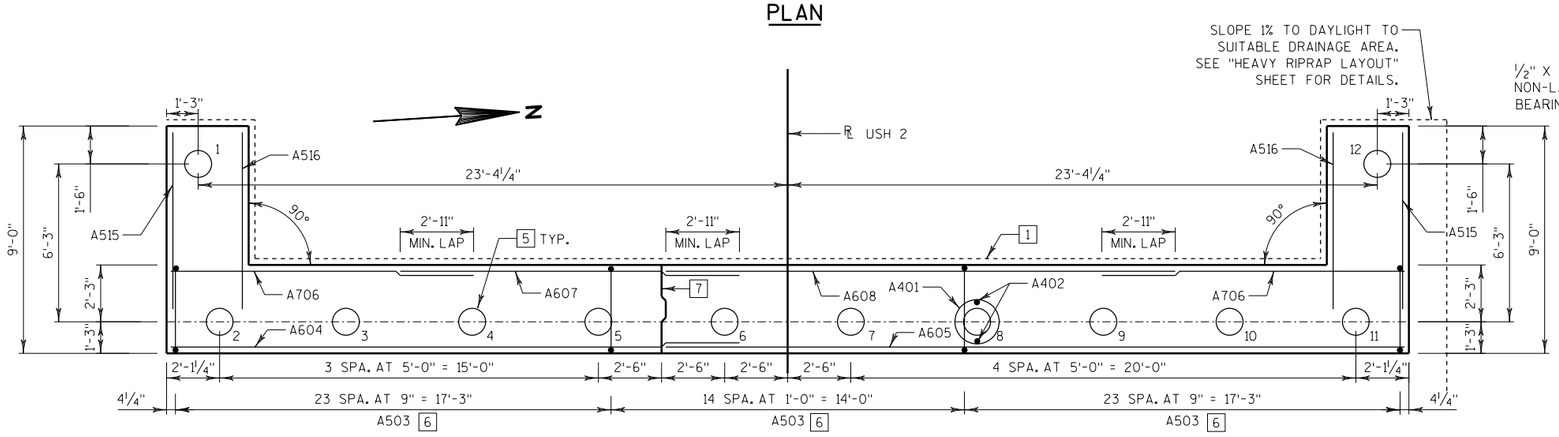
1180-49-71



ELEVATION



PLAN



PILE PLAN

GENERAL NOTES

SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE.)

F.F. DENOTES FRONT FACE.

B.F. DENOTES BACK FACE.

SEE SHEET 7 FOR TYPCIAL SECTION OF ABUTMENT.

FOR PILE SPLICE DETAIL SEE SHEET 7.

(X) INDICATES GIRDER NUMBER.

(X) INDICATES WINGWALL NUMBER.

1 INDICATES PILE NUMBER

[1] PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 1% MIN. TO SUITABLE DRAINAGE AS DIRECTED BY THE ENGINEER. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 7. RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH". CAP END AS SHOWN.

[2] 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL VERTICAL AND HORIZONTAL JOINTS ON BACK FACE.

[3] ¾" CORK FILLER ON VERTICAL BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.

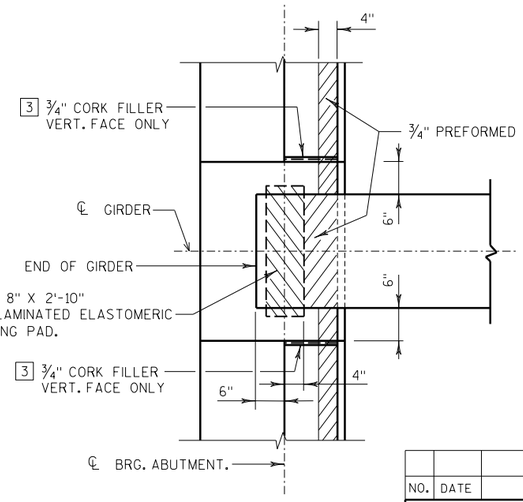
[4] ½" FILLER - EXTEND FROM BEAM SEAT TO TOP OF CONCRETE PARAPET. INCLUDED IN WINGWALL LENGTH.

[5] SUPPORT ABUTMENT ON CIP 14 X .375-INCH PILING, ESTIMATED 100'-0" LONG WITH A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

[6] SPACE TO MISS PILES.

[7] VERTICAL CONSTRUCTION JOINT. KEYWAY FORMED BY A SURFACED BEVELED 2"X8". BEVELED EXPOSED EDGES ¾".

* ELEVATIONS AND DIMENSIONS TAKEN AT ℄ OF BRG. & PILES W. ABUT.



BEARING PAD DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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WEST ABUTMENT

SHEET 5 OF 21
98

8

8

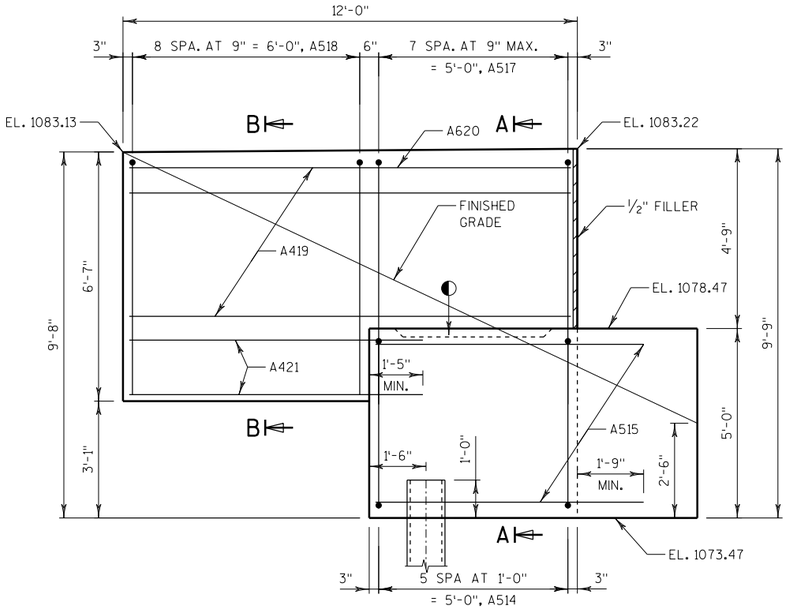
FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080105_wa.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

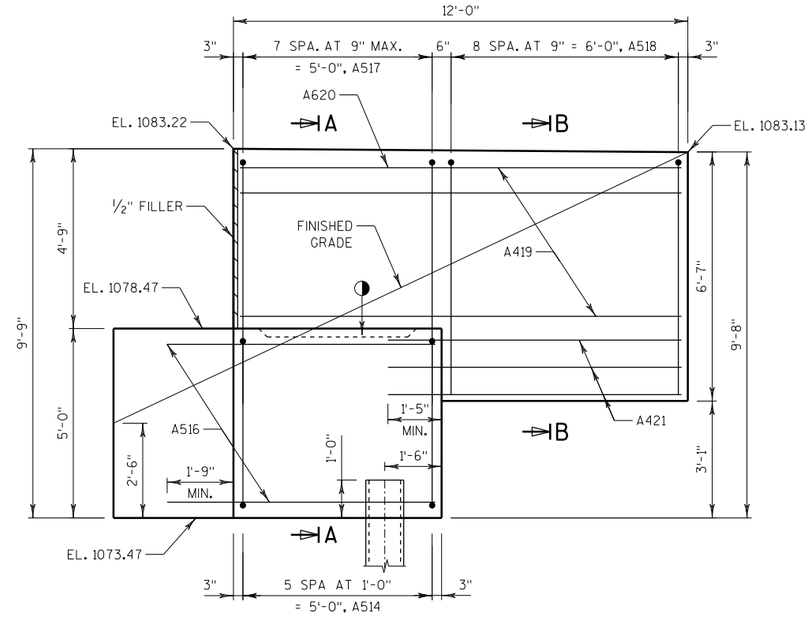
STATE PROJECT NUMBER

1180-49-71



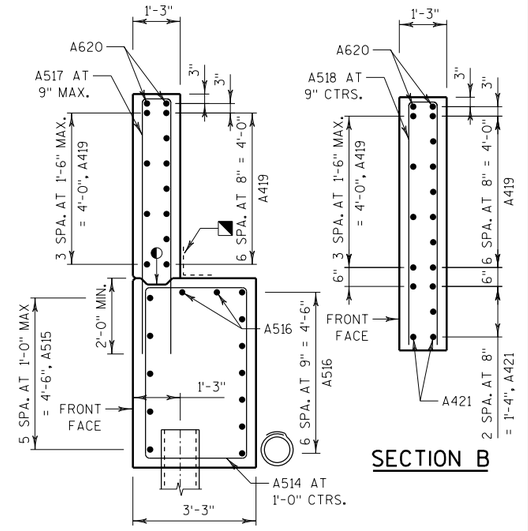
WING 1 ELEVATION

(FRONT FACE)



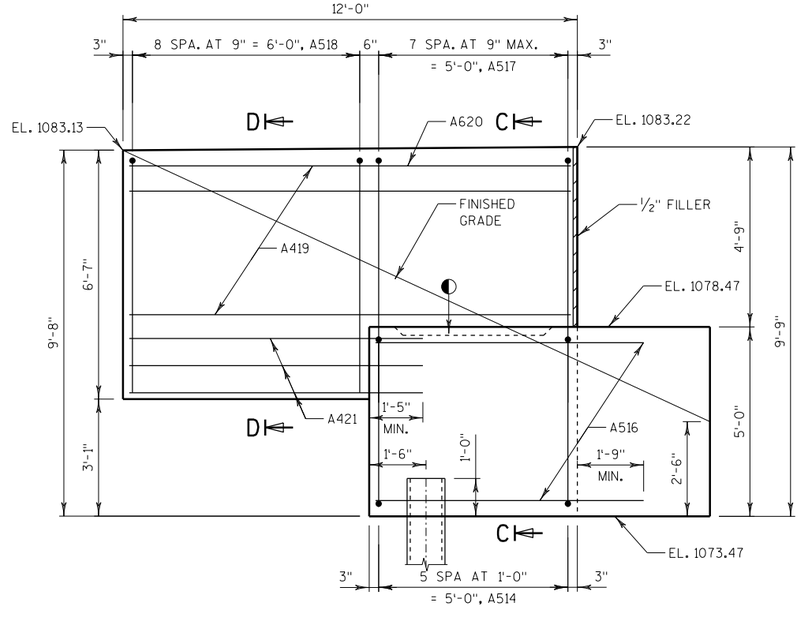
WING 1 ELEVATION

(BACK FACE)



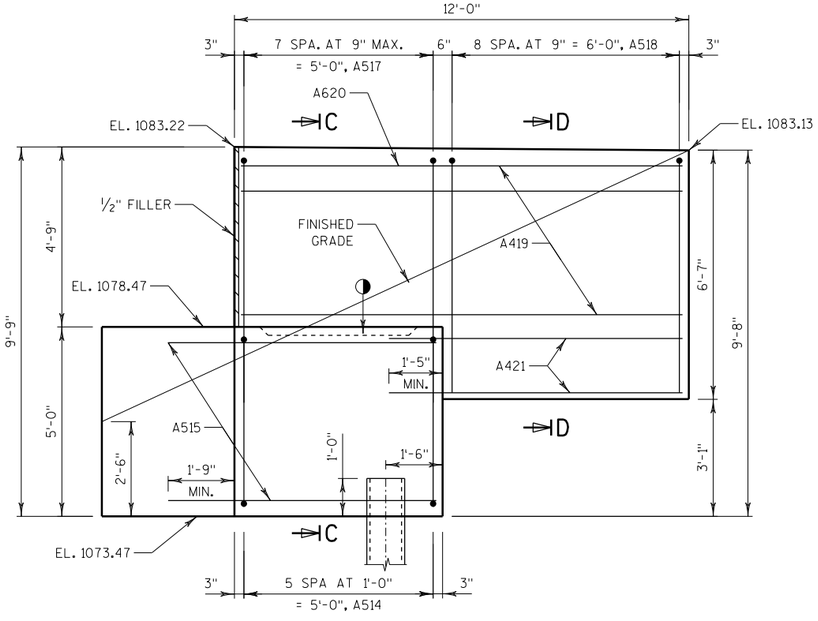
SECTION B

SECTION A



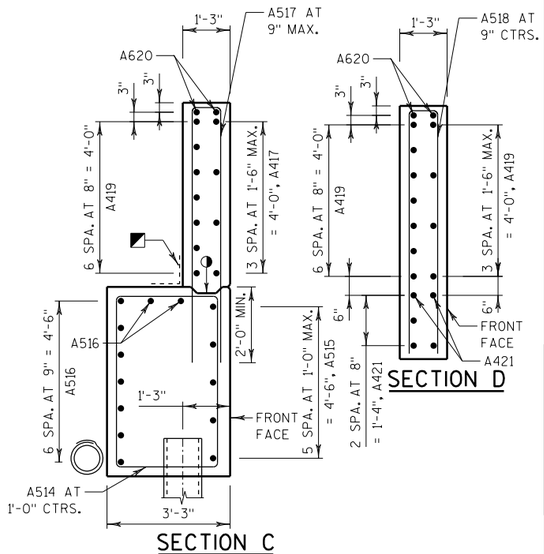
WING 2 ELEVATION

(BACK FACE)



WING 2 ELEVATION

(FRONT FACE)



SECTION D

SECTION C

◐ OPTIONAL KEYED CONST. JOINT - FORMED BY A SURFACE BEVELED 2"x6.

◥ 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. AND VERT. JOINTS ON BACKFACE OF ABUTMENT

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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WEST ABUTMENT WING DETAILS

SHEET 6 OF 21

99

8

8

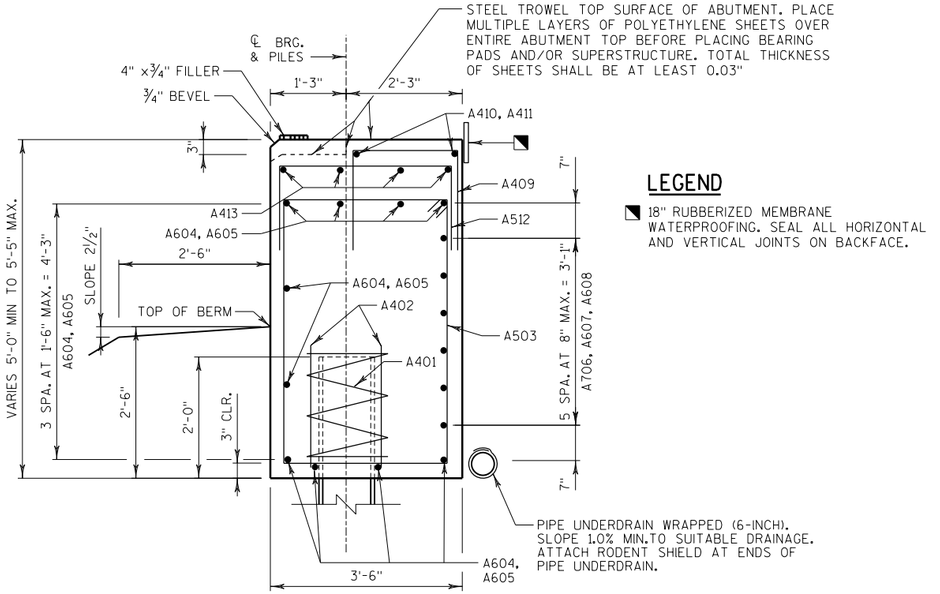
FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080106_ww.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

STATE PROJECT NUMBER

1180-49-71



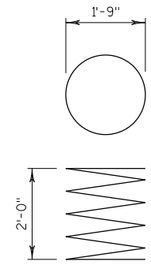
TYPICAL SECTION AT ABUTMENT

LEGEND

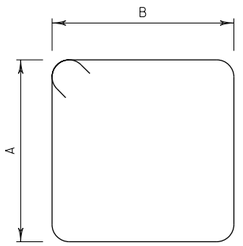
18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

WEST ABUTMENT BILL OF BARS

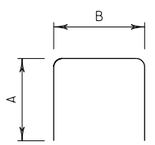
BAR MARK	COAT	NO.	LENGTH	BENT	LOCATION
A401		10	28'-0"	X	ABUT. BODY AT PILES
A402		20	2'-3"		ABUT. BODY AT PILES
A503		61	15'-8"	X	ABUT. BODY VERT.
A604		10	22'-7"		ABUT. BODY HORIZ. STAGE 1
A605		10	29'-3"		ABUT. BODY HORIZ. STAGE 2
A706		12	12'-0"		ABUT. BODY HORIZ. B.F. AT WINGS
A607		6	13'-5"		ABUT. BODY HORIZ. B.F. STAGE 1
A608		6	20'-4"		ABUT. BODY HORIZ. B.F. STAGE 2
A409		49	4'-7"	X	ABUT. BODY VERT.
A410		2	21'-7"		ABUT. BODY HORIZ. STAGE 1
A411		2	29'-3"		ABUT. BODY HORIZ. STAGE 2
A512		8	5'-9"	X	ABUT. BODY VERT.
A413		4	7'-0"		ABUT. BODY HORIZ.
A514	X	12	15'-5"	X	WING 1 & 2 VERT.
A515	X	12	7'-3"		WING 1 & 2 HORIZ. F.F.
A516	X	18	7'-3"		WING 1 & 2 HORIZ. B.F.
A517	X	16	13'-10"	X	WING 1 & 2 VERT.
A518	X	18	13'-2"	X	WING 1 & 2 VERT.
A419	X	22	11'-8"		WING 1 & 2 HORIZ.
A620	X	4	11'-8"		WING 1 & 2 HORIZ.
A421	X	10	7'-11"		WING 1 & 2 HORIZ.



A401

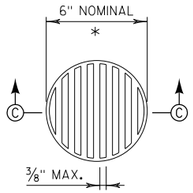


A503
A514

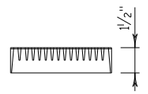


A409, A512,
A517, A518

BAR MARK	A	B
A503	4'-4"	3'-2"
A409	1'-5"	1'-11"
A512	1'-5"	3'-2"
A514	4'-6"	2'-11"
A517	6'-7"	11"
A518	6'-3"	11"



RODENT SHIELD



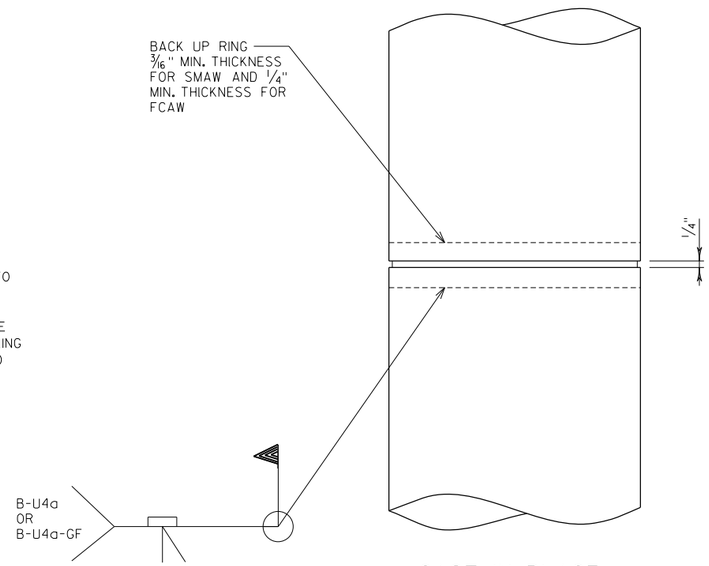
SECTION C-C

NOTES:

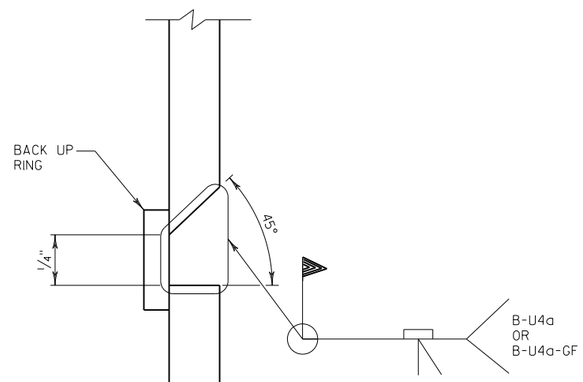
*DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING. ORIENT SHIELD SO SLOTS ARE VERTICAL.

THE RODENT SCREEN, PIPE COUPLING AND SCREWS SHALL BE INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH"

THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALLY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE EXPOSED END OF THE PIPE UNDERDRAIN. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.



CAST-IN-PLACE
'PILE PIPE'



CP WELD
DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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WEST ABUTMENT DETAILS

SHEET 7 OF 21
100

8

8

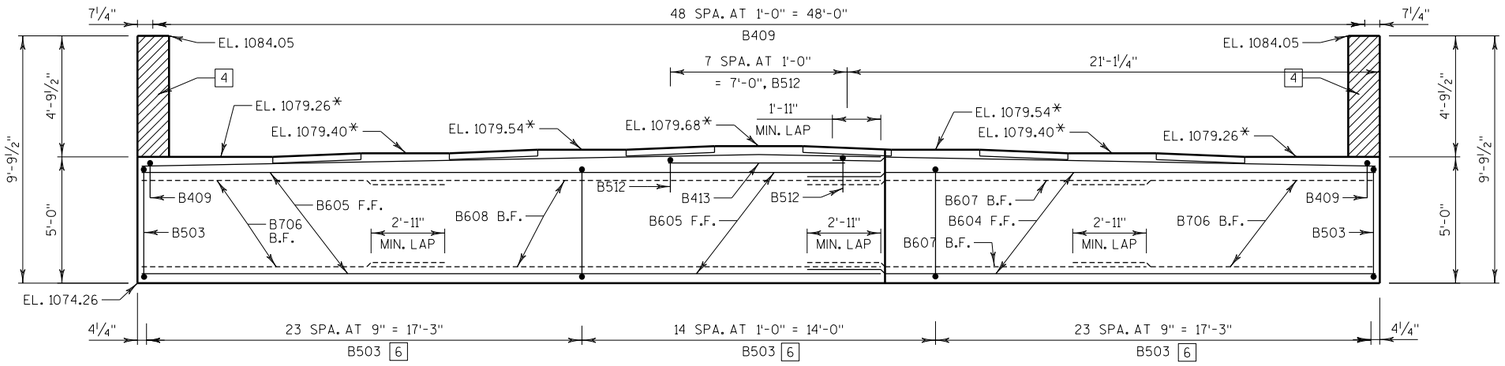
FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080107_wd.dgn

PLOT DATE : 7/5/2017

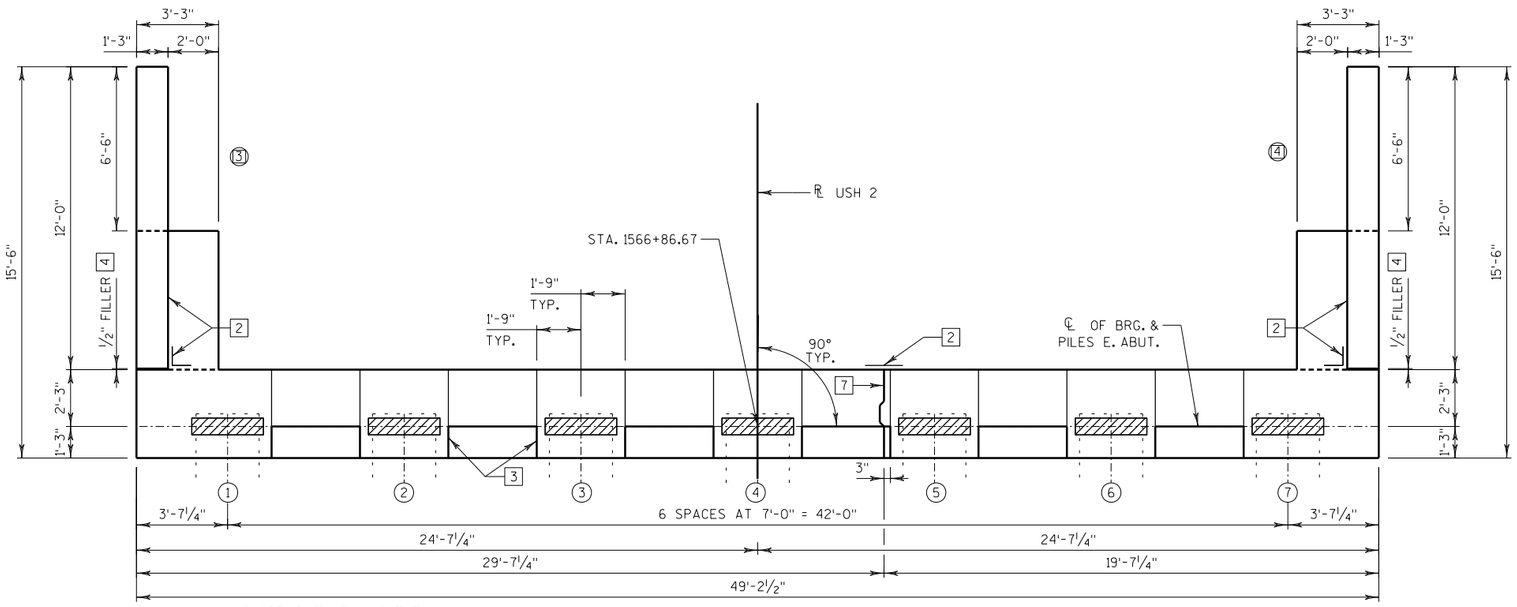
PLOT BY : mdr

STATE PROJECT NUMBER

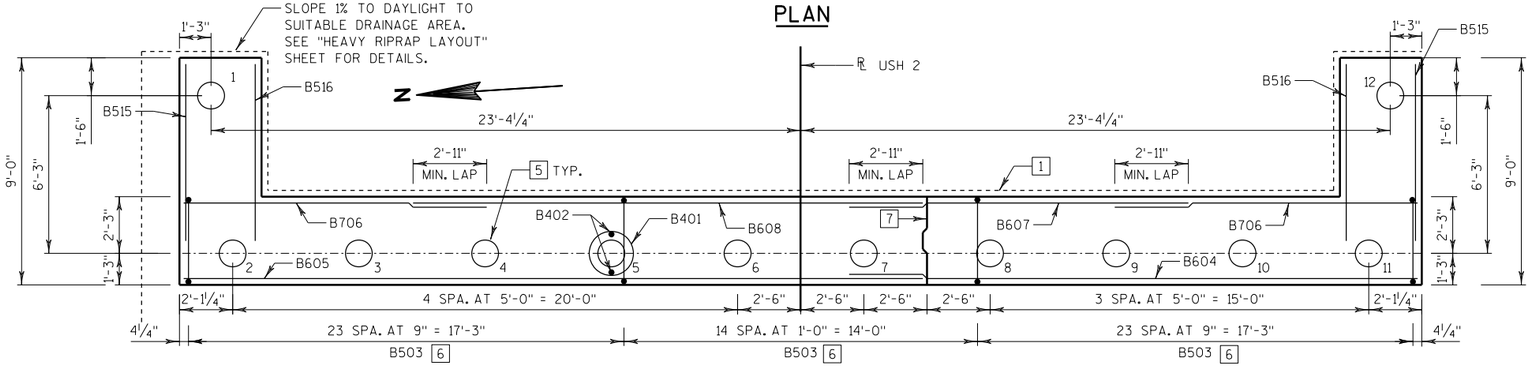
1180-49-71



ELEVATION



PLAN



PILE PLAN

GENERAL NOTES

SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE.)

F.F. DENOTES FRONT FACE.

B.F. DENOTES BACK FACE.

SEE SHEET 10 FOR TYPCIAL SECTION OF ABUTMENT.

FOR PILE SPLICE DETAIL SEE SHEET 7.

(X) INDICATES GIRDER NUMBER.

(XI) INDICATES WINGWALL NUMBER.

1 INDICATES PILE NUMBER

[1] PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 1% MIN. TO SUITABLE DRAINAGE AS DIRECTED BY THE ENGINEER. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 7. RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH". CAP END AS SHOWN.

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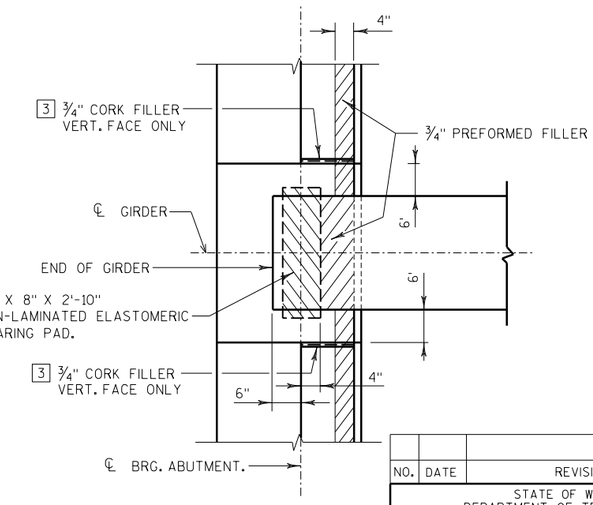
[6] SPACE TO MISS PILES.

[7] VERTICAL CONSTRUCTION JOINT. KEYWAY FORMED BY A SURFACED BEVELED 2"X8". BEVELED EXPOSED EDGES ¾".

* ELEVATIONS AND DIMENSIONS TAKEN AT ℄ OF BRG. & PILES EAST ABUT.



BEARING PAD DETAIL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

DRAWN BY PLR | PLANS CK'D. AJC

EAST ABUTMENT

SHEET 8 OF 21
101

8

8

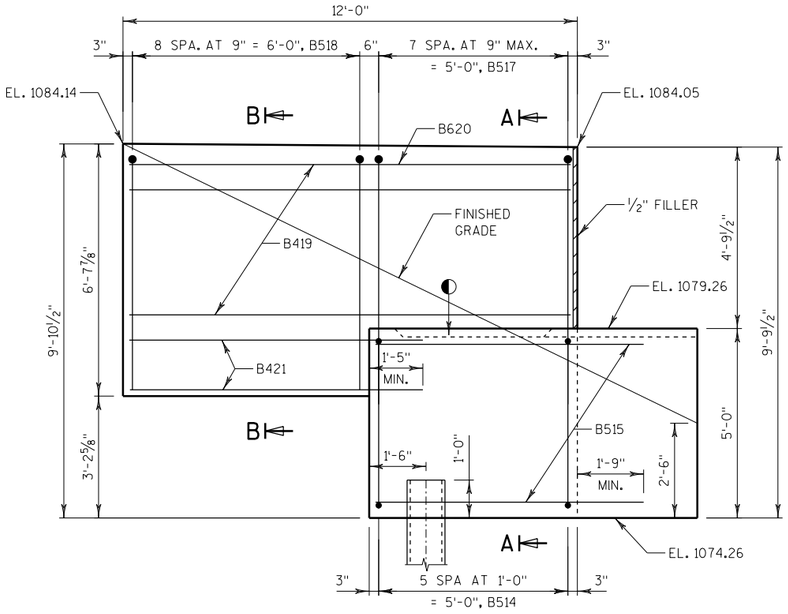
FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080108_ea.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

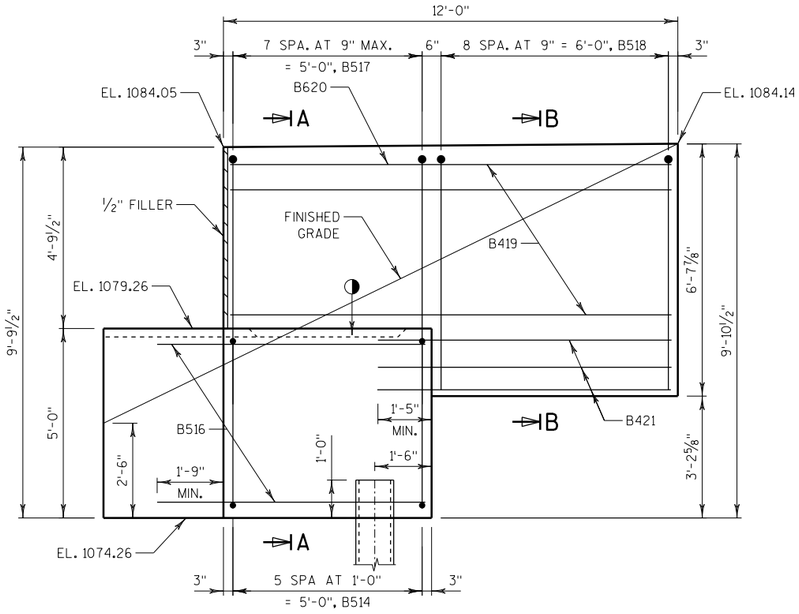
STATE PROJECT NUMBER

1180-49-71



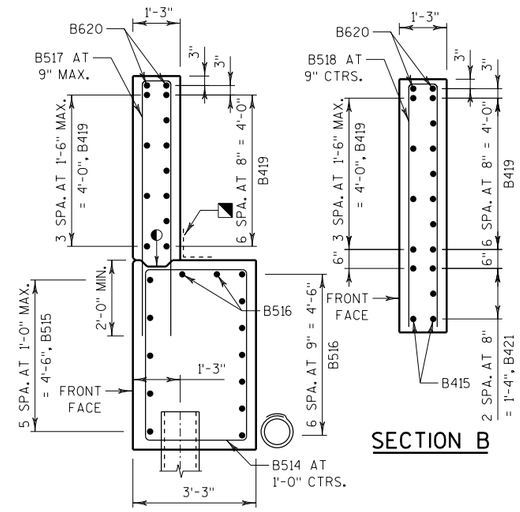
WING 3 ELEVATION

(FRONT FACE)



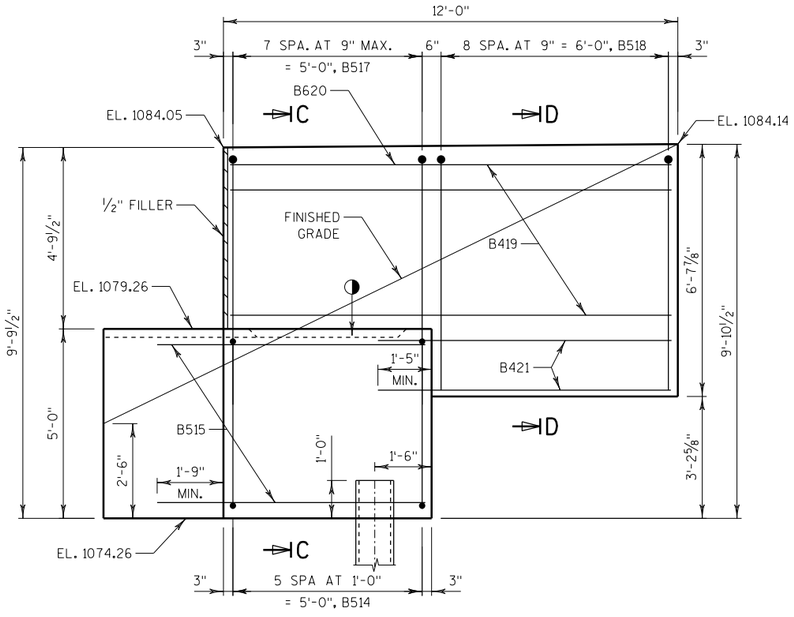
WING 3 ELEVATION

(BACK FACE)



SECTION B

SECTION A



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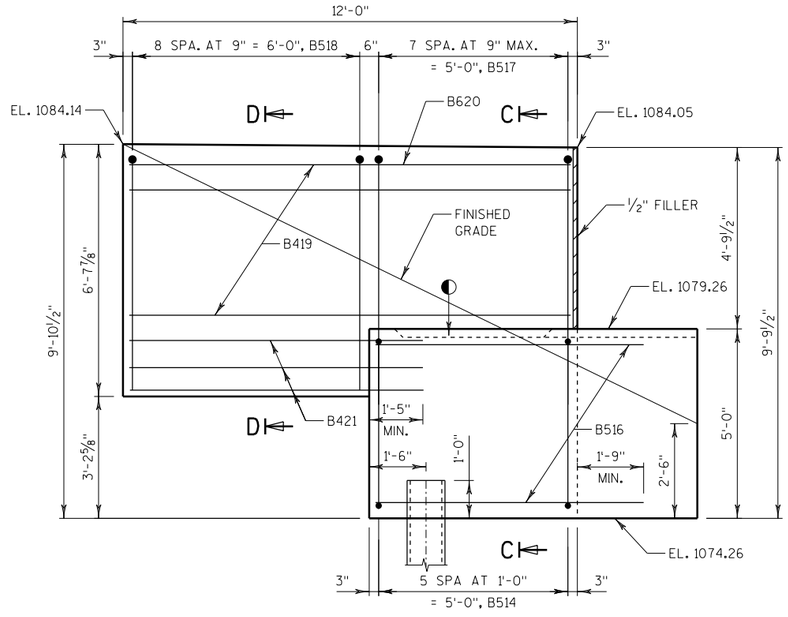
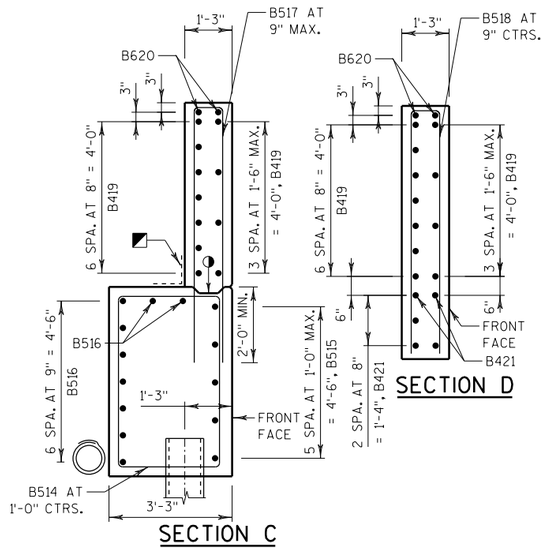
(FRONT FACE)



WING 4 ELEVATION

(BACK FACE)



SECTION D

SECTION C

- ◐ OPTIONAL KEYED CONST. JOINT - FORMED BY A SURFACE BEVELED 2"x6.
- ◥ 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZ. AND VERT. JOINTS ON BACKFACE OF ABUTMENT

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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EAST ABUTMENT WING DETAILS

SHEET 9 OF 21

102

8

8

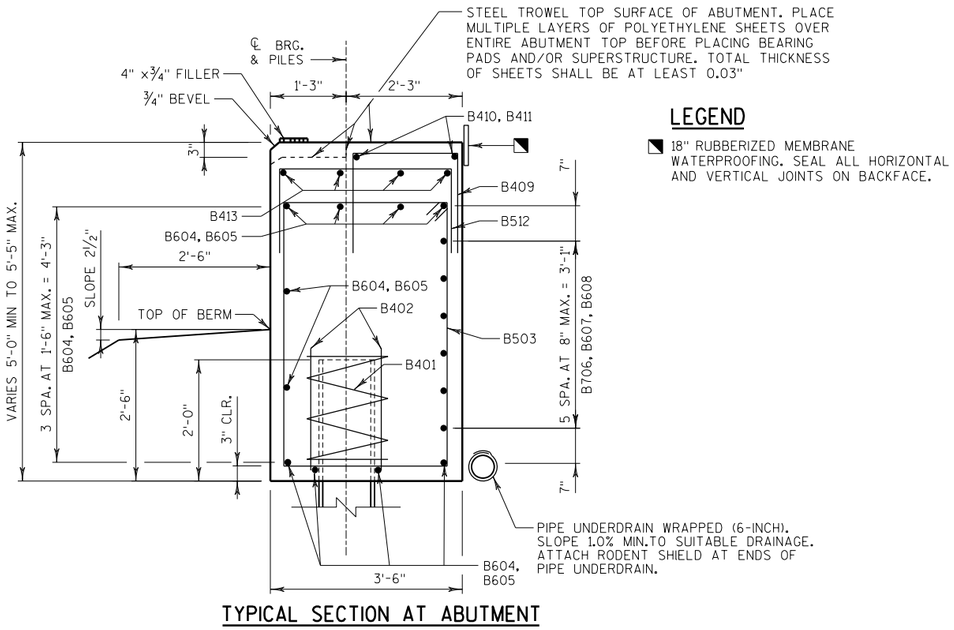
FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080109_ew.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

STATE PROJECT NUMBER

1180-49-71



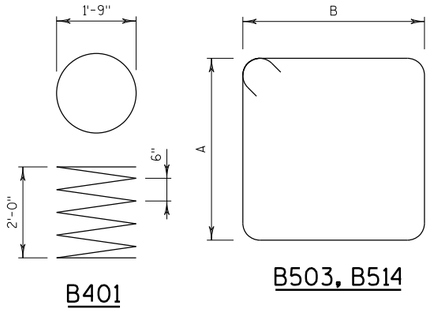
TYPICAL SECTION AT ABUTMENT

LEGEND

18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

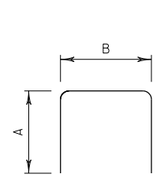
EAST ABUTMENT BILL OF BARS

BAR MARK	COAT	NO.	LENGTH	BENT	LOCATION
B401		10	28'-0"	X	ABUT. BODY AT PILES
B402		20	2'-3"		ABUT. BODY AT PILES
B503		61	15'-8"	X	ABUT. BODY VERT.
B604		10	22'-7"		ABUT. BODY HORIZ. STAGE 1
B605		10	29'-3"		ABUT. BODY HORIZ. STAGE 2
B706		12	12'-0"		ABUT. BODY HORIZ. B.F. AT WINGS
B607		6	13'-6"		ABUT. BODY HORIZ. B.F. STAGE 1
B608		6	20'-4"		ABUT. BODY HORIZ. B.F. STAGE 2
B409		49	4'-7"	X	ABUT. BODY VERT.
B410		2	21'-7"		ABUT. BODY HORIZ. STAGE 1
B411		2	29'-3"		ABUT. BODY HORIZ. STAGE 2
B512		8	5'-9"	X	ABUT. BODY VERT.
B413		4	7'-0"		ABUT. BODY HORIZ.
B514	X	12	15'-6"	X	WING 3 & 4 VERT.
B515	X	12	7'-3"		WING 3 & 4 HORIZ. F.F.
B516	X	18	7'-3"		WING 3 & 4 HORIZ. B.F.
B517	X	16	13'-10"	X	WING 3 & 4 VERT.
B518	X	18	13'-2"	X	WING 3 & 4 VERT.
B419	X	20	11'-8"		WING 3 & 4 HORIZ.
B620	X	4	11'-8"		WING 3 & 4 HORIZ.
B421	X	10	7'-11"		WING 3 & 4 HORIZ.



B401

B503, B514



B409, B512, B517, B518

BAR MARK	A	B
B503	4'-4"	3'-2"
B409	1'-5"	1'-11"
B512	1'-5"	3'-2"
B514	4'-6"	2'-11"
B517	6'-7"	11"
B518	6'-3"	11"

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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EAST ABUTMENT DETAILS

SHEET 10 OF 21
103

FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080110_ed.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

STATE PROJECT NUMBER

1180-49-71

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE.

DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECTION 503.3.3 OF STANDARD SPECIFICATION FOR GUIDANCE.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

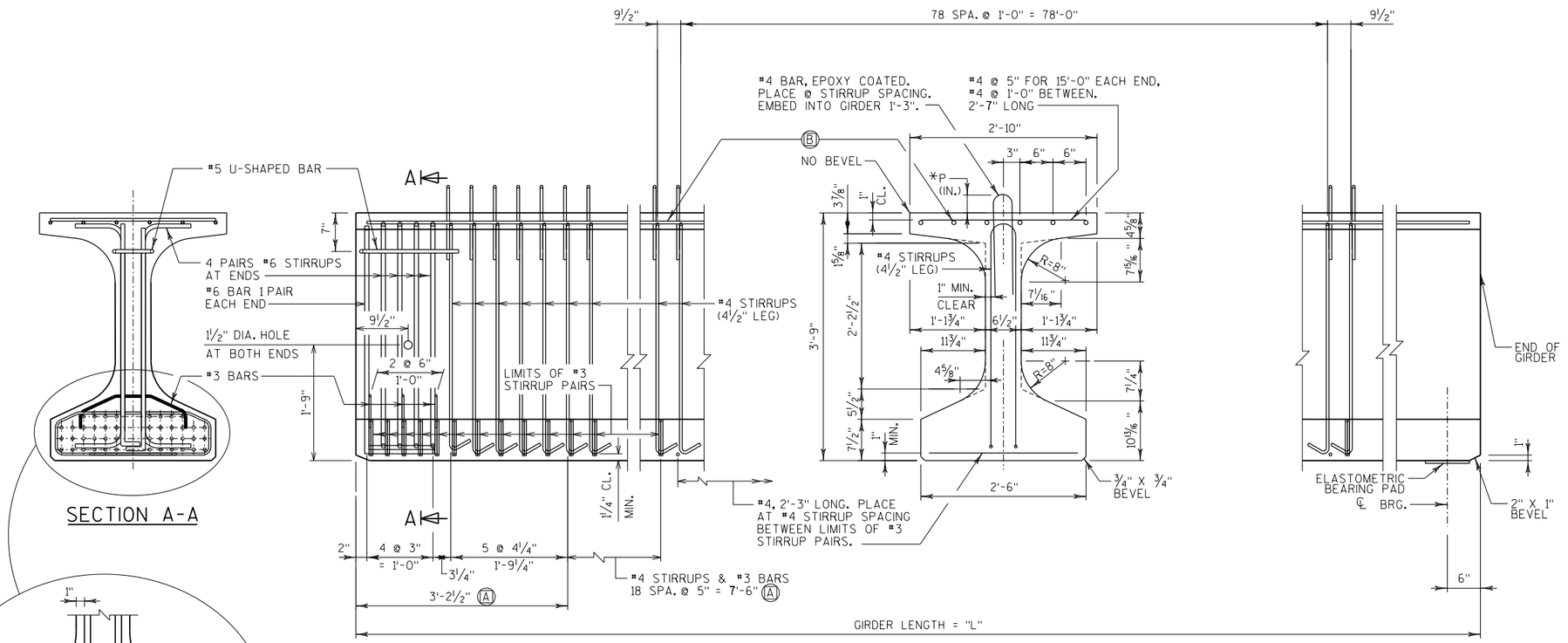
SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

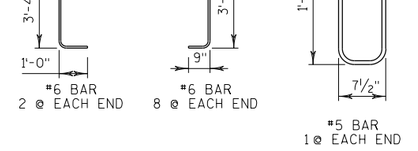
AN ALTERNATE EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A497 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES DEVELOPMENT SECTION.

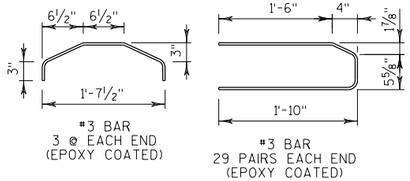
PRESTRESSING STRANDS SHALL BE (0.6" DIA.)-7 WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

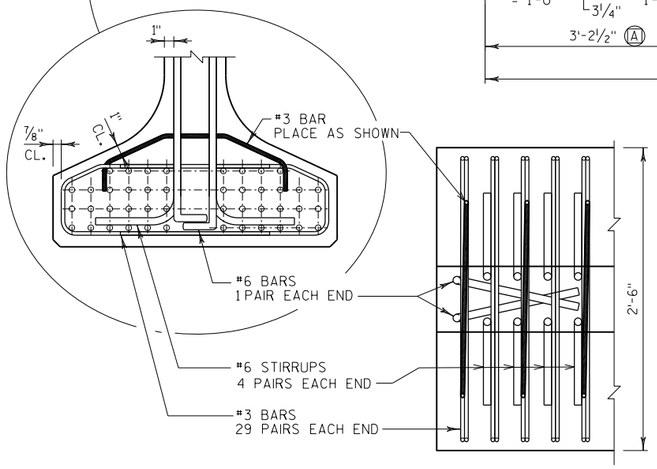
FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE "STEEL DIAPHRAGM" SHEET.

*SEE SHEET 12 FOR "P" VALUES.







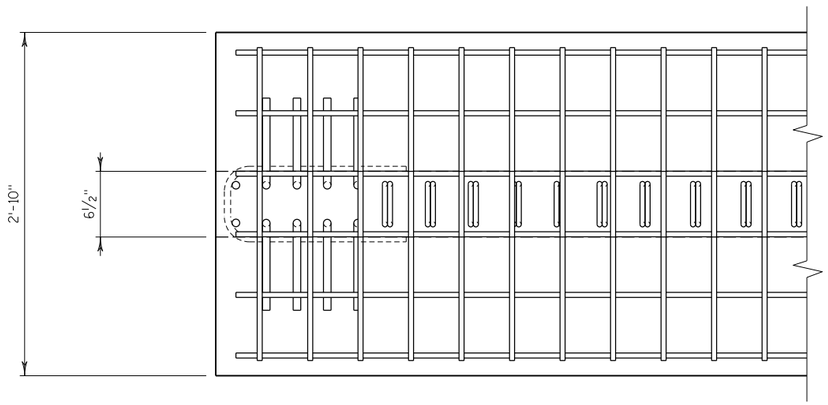


BOTTOM FLANGE

SIDE VIEW & TYPICAL SECTION IN SPAN

(A) DETAIL TYP. AT EACH END

(B) 6-#4 BARS, FULL LENGTH, MIN. LAP = 2'-11"



TOP FLANGE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

DRAWN BY PLR | PLANS CK'D. AJC

45W" PRESTRESSED GIRDER

SHEET 11 OF 21

104

8

8

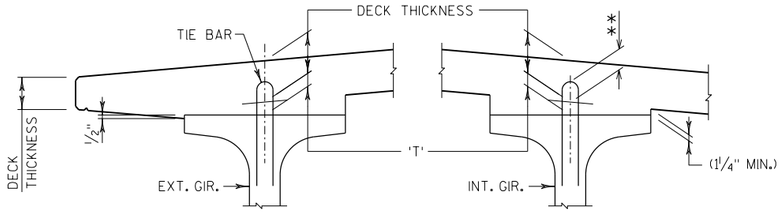
FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080111_gi.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

STATE PROJECT NUMBER

1180-49-71



DECK HAUNCH DETAIL

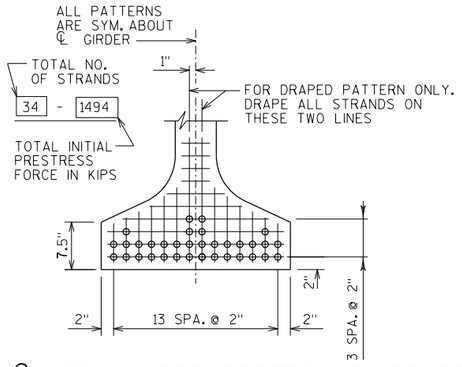
IF 1¼" MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR. THE PLAN DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN ½" OR,

** IF 3" MINIMUM DECK EMBEDMENT OF TIE BAR CANNOT BE OBTAINED.

TO DETERMINE 'T', ELEV. OF TOP OF GIRDERS. AT ℄ OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

TOP OF DECK ELEV. AT FINAL GRADE
\- TOP OF GIRDER ELEVATION
\+ DEAD LOAD DEFLECTION
\- DECK THICKNESS
= HAUNCH HEIGHT 'T'

NOTE: AN AVERAGE HAUNCH ('T') OF 3" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".

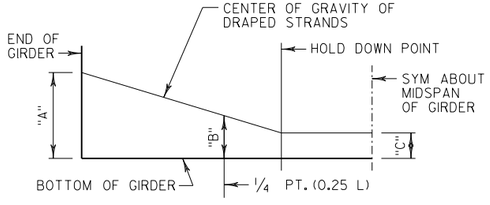


ARRANGEMENT AT ℄ SPAN - FOR GIRDERS WITH DRAPED STRANDS

0.6"Φ STRANDS

GIRDER DATA																						
SPAN	GIRDER	GIRDER LENGTH "L"	DEAD LOAD DEFL. (IN)									CONC. STRGTH. f'c (psi)	"P" FIRST 1/3 OF GIRDER	"P" MID 1/3 OF GIRDER	"P" END 1/3 OF GIRDER	DIA. OF STRAND (IN.)	DRAPED PATTERN					
			1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10						TOTAL NO. OF STRANDS	f'ci (psi) ☆	(IN.) "A"	"B" MIN.	"B" MAX"	"C"
1	1,7	101'-0"	0.5	0.9	1.3	1.5	1.6	1.5	1.3	0.9	0.5	8,000	7.00	7.00	7.00	0.6	34	6,800	40	14	17	5
1	2-6	101'-0"	0.5	1.0	1.4	1.7	1.8	1.7	1.4	1.0	0.5	8,000	7.00	7.00	7.00	0.6	34	6,800	40	14	17	5

☆ MINIMUM CYLINDER STRENGTH OF CONCRETE @ TIME OF TRANSFER OF PRESTRESS FORCE.



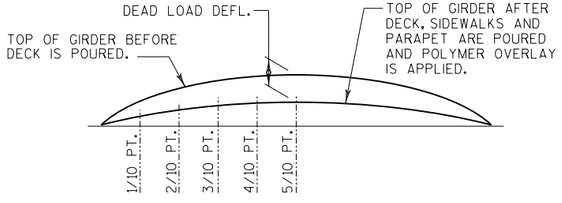
DRAPED STRAND PROFILE

*THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN MULTIPLIED BY A FACTOR OF 1.4 TO ACCOUNT FOR CAMBER GROWTH FROM THE TIME OF STRAND RELEASE TO JOBSITE PLACEMENT.

SPAN	CAMBER (IN.) *
1	3.50"

THESE VALUES ARE NOT TO BE USED IN DETERMINING 'T', USE ACTUAL GIRDER SHOTS.

THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.



DEAD LOAD DEFLECTION DIAGRAM

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

DRAWN BY PLR | PLANS CK'D. AJC

45W" PRESTRESSED GIRDER DETAILS

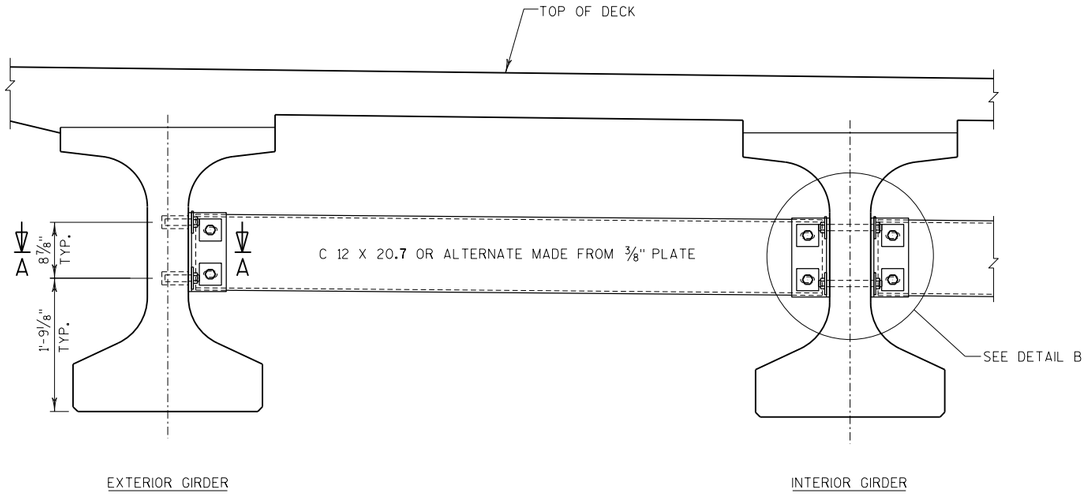
SHEET 12 OF 21
105

8

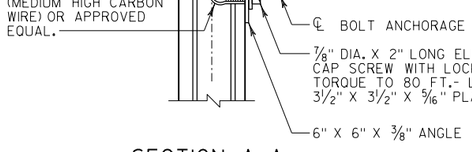
8

STATE PROJECT NUMBER

1180-49-71

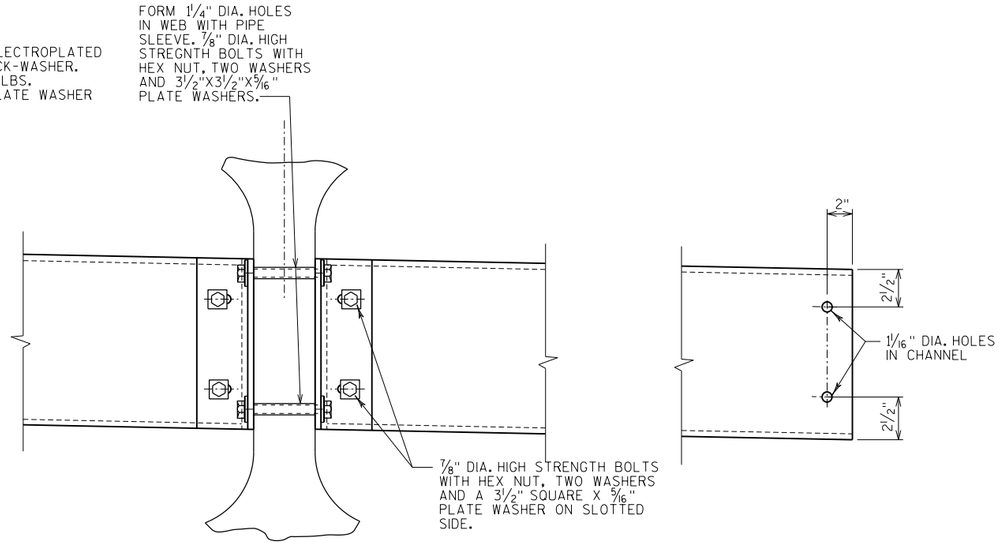


PART TRANSVERSE SECTION AT DIAPHRAGM



SECTION A-A

(FOR EXTERIOR ATTACHMENT)



DETAIL B

NOTES

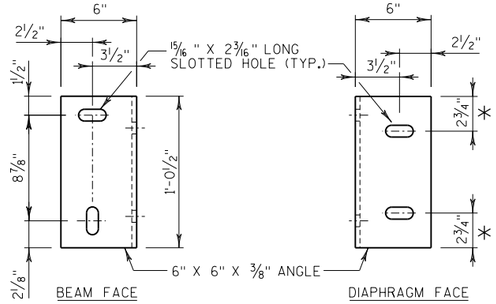
ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-4-116", EACH.

EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

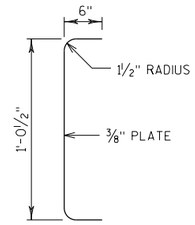
ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS ¼ TURN, UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.



DIAPHRAGM SUPPORT

* 2½" FOR ALTERNATE PLATE DIAPHRAGM



SECTION THRU ALTERNATE DIAPHRAGM

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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STEEL DIAPHRAGM

SHEET 13 OF 21

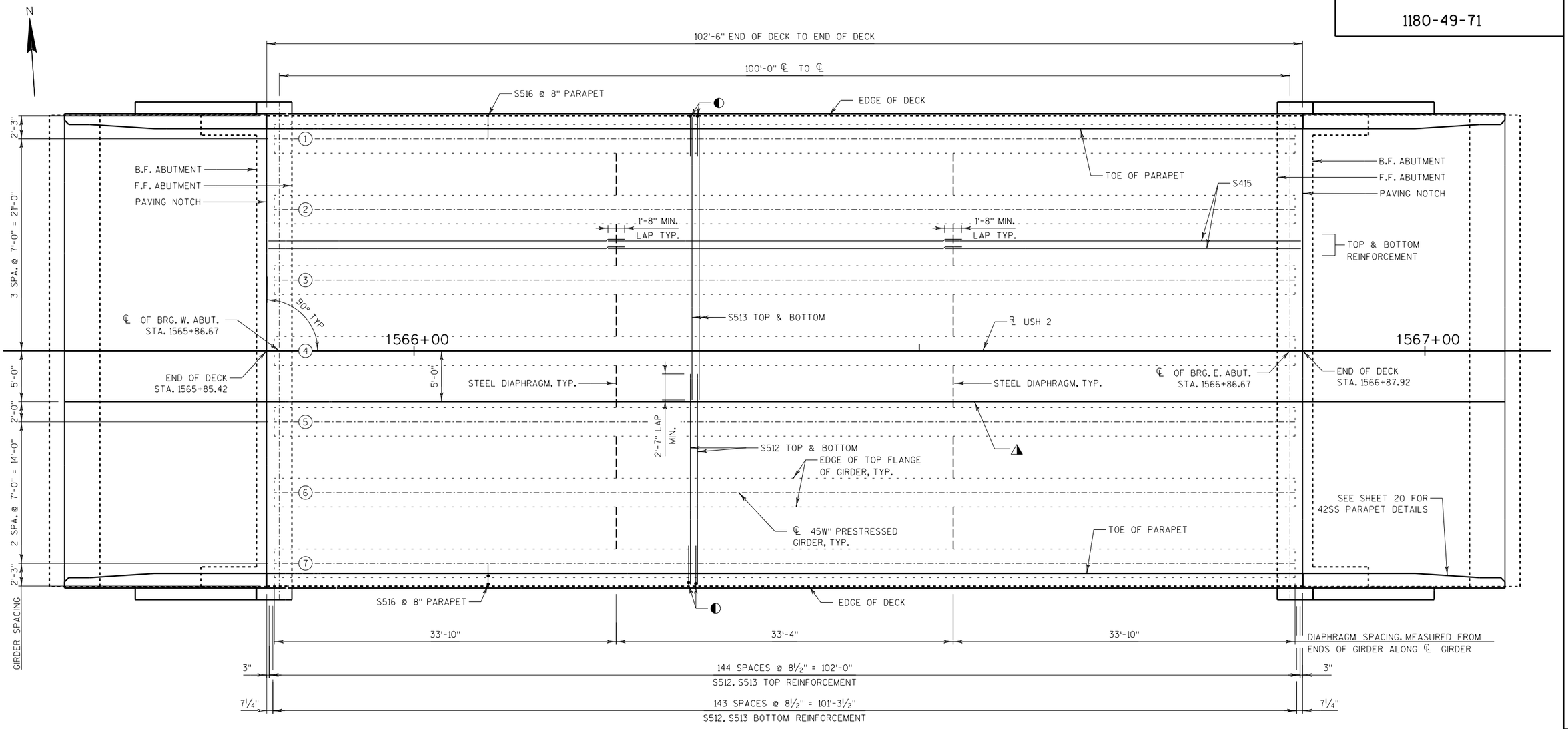
106

8

8

STATE PROJECT NUMBER

1180-49-71



PLAN

TOP OF DECK ELEVATIONS

LOCATION	CL BRG. W. ABUT.	0.1 PT	0.2 PT	0.3 PT	0.4 PT	0.5 PT	0.6 PT	0.7 PT	0.8 PT	0.9 PT	CL BRG. E. ABUT.
N. EDGE DECK	1083.24	1083.32	1083.40	1083.48	1083.56	1083.64	1083.71	1083.79	1083.87	1083.95	1084.03
GIRDER 1	1083.26	1083.34	1083.42	1083.50	1083.58	1083.66	1083.73	1083.81	1083.89	1083.97	1084.05
GIRDER 2	1083.40	1083.48	1083.56	1083.64	1083.72	1083.80	1083.87	1083.95	1084.03	1084.11	1084.19
GIRDER 3	1083.54	1083.62	1083.70	1083.78	1083.86	1083.94	1084.01	1084.09	1084.17	1084.25	1084.33
GIRDER 4	1083.68	1083.76	1083.84	1083.92	1084.00	1084.08	1084.15	1084.23	1084.31	1084.39	1084.47
GIRDER 5	1083.54	1083.62	1083.70	1083.78	1083.86	1083.94	1084.01	1084.09	1084.17	1084.25	1084.33
GIRDER 6	1083.40	1083.48	1083.56	1083.64	1083.72	1083.80	1083.87	1083.95	1084.03	1084.11	1084.19
GIRDER 7	1083.26	1083.34	1083.42	1083.50	1083.58	1083.66	1083.73	1083.81	1083.89	1083.97	1084.05
S. EDGE DECK	1083.24	1083.32	1083.40	1083.48	1083.56	1083.64	1083.71	1083.79	1083.87	1083.95	1084.03

LEGEND:

◐ LAP S514 ONTO EVERY TRANSVERSE BAR IN THE TOP MAT AS SHOWN.

◭ LONGITUDINAL JOINT. SEE "CONSTRUCTION STAGING" SHEET FOR LONGITUDINAL CONSTRUCTION JOINT DETAIL.

Ⓧ GIRDER NUMBER

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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SUPERSTRUCTURE PLAN

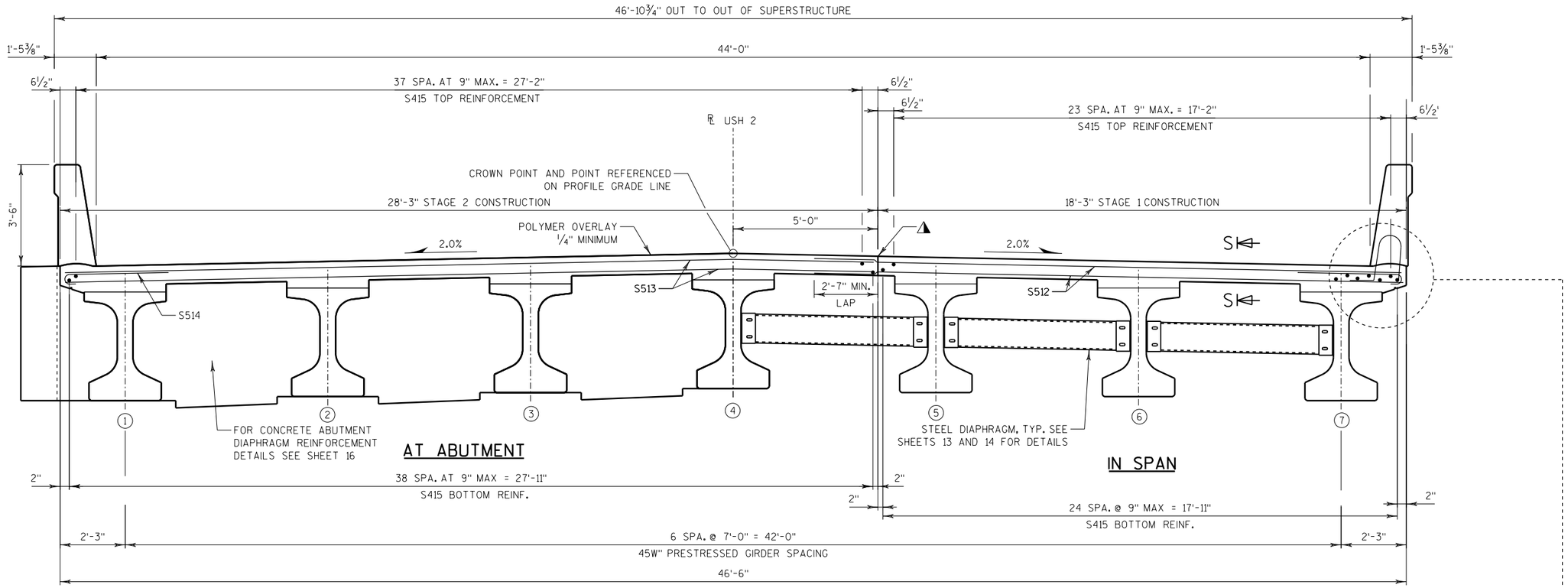
SHEET 14 OF 21
107

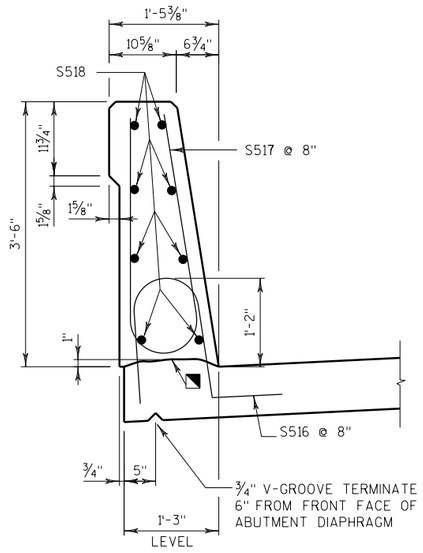
8

8

STATE PROJECT NUMBER

1180-49-71

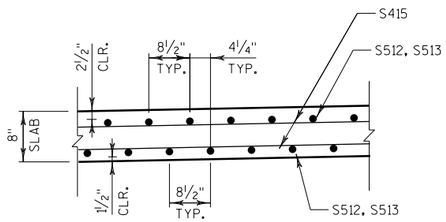




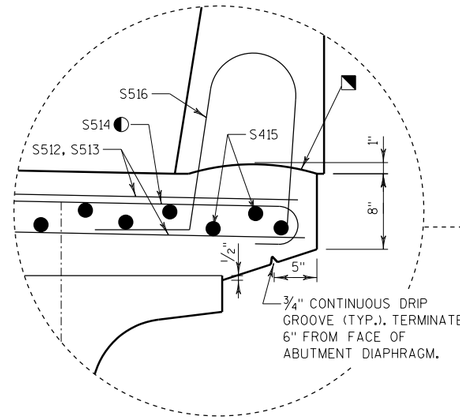
SECTION THRU PARAPET ON BRIDGE

TYPICAL CROSS SECTION THRU DECK

(LOOKING EAST)



SECTION S-S



LEGEND:

◐ LAP S514 ONTO EVERY TRANSVERSE BAR IN THE TOP MAT AS SHOWN.

◥ CONST. JOINT - STRIKE OFF AS SHOWN.

◭ LONGITUDINAL JOINT, SEE "CONSTRUCTION STAGING" SHEET.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

DRAWN BY PLR | PLANS CK'D. AJC

SUPERSTRUCTURE CROSS SECTION

SHEET 15 OF 21

108

8

8

FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080115_ss.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

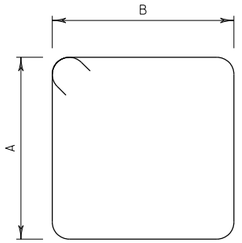
STATE PROJECT NUMBER

1180-49-71

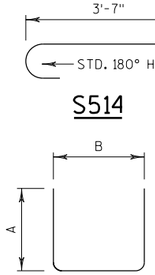
SUPERSTRUCTURE BILL OF BARS

BAR MARK	COAT	NO.	LENGTH	BENT	BAR SERIES	LOCATION
S401	X	48	3'-1"	X		ABUT. DIAPHRAGM VERT.
S402	X	24	3'-2"			ABUT. DIAPHRAGM HORIZ.
S503	X	28	11'-4"	X		ABUT. DIAPHRAGM STIRRUP
S504	X	88	13'-2"	X		ABUT. DIAPHRAGM STIRRUP
S605	X	12	21'-9"			ABUT. DIAPHRAGM HORIZ. STAGE 1
S606	X	12	29'-3"			ABUT. DIAPHRAGM HORIZ. STAGE 2
S607	X	96	4'-2"			ABUT. DIAPHRAGM HORIZ. F.F.
S608	X	12	8'-11"	X		ABUT. DIAPHRAGM HORIZ.
S609	X	8	2'-0"			ABUT. DIAPHRAGM HORIZ.
S510	X	88	6'-5"	X		ABUT. DIAPHRAGM VERT.
S511	X	28	6'-0"			ABUT. DIAPH. HORIZ. THRU GIRDERS
S512	X	289	20'-10"			SLAB TRANS. TOP & BOT. STAGE 1
S513	X	289	27'-11"			SLAB TRANS. TOP & BOT. STAGE 2
S514	X	290	4'-1"	X		SLAB TRANS. TOP AT OVERHANGS
S415	X	378	35'-2"			SLAB LONG. TOP AND BOT.
S516	X	306	4'-5"	X		PARAPET VERT.
S517	X	306	6'-8"	X		PARAPET HORIZ.
S518	X	32	52'-0"			PARAPET HORIZ.

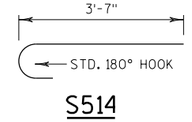
BAR MARK	A	B
S401	1'-2"	11"
S503	2'-2"	3'-2"
S504	3'-1"	3'-2"
S608	3'-0"	3'-2"
S510	2'-3"	2'-2"



S503, S504



S401, S608, S510



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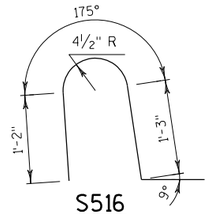

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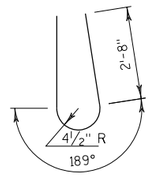

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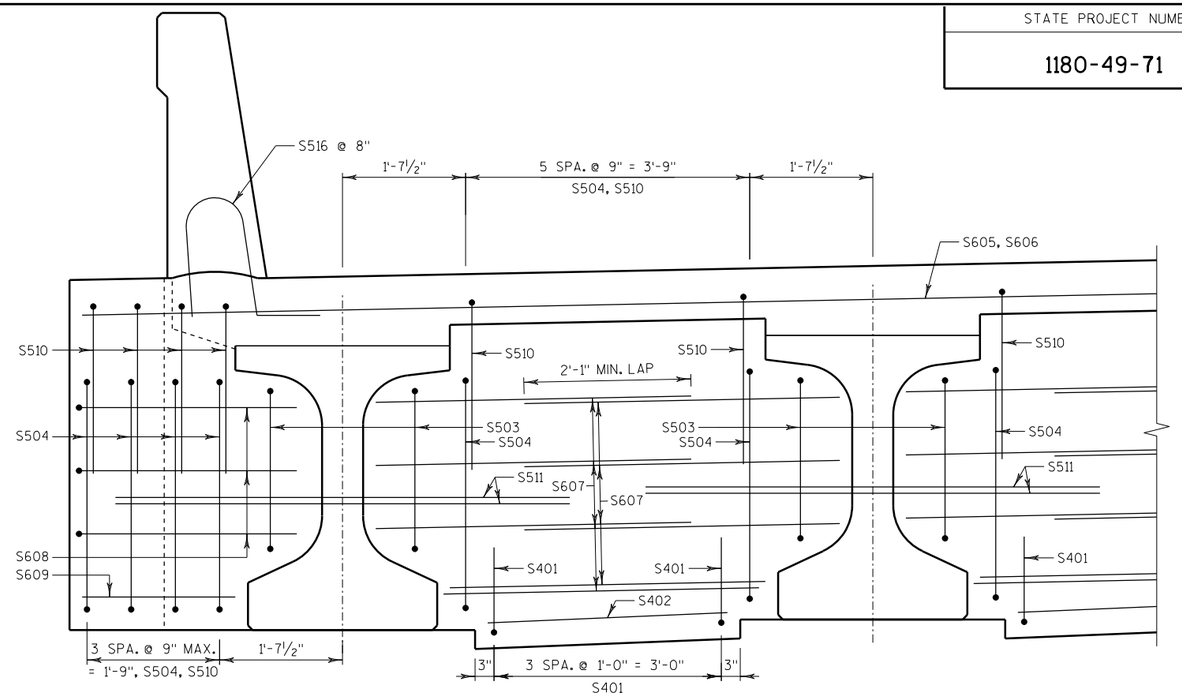
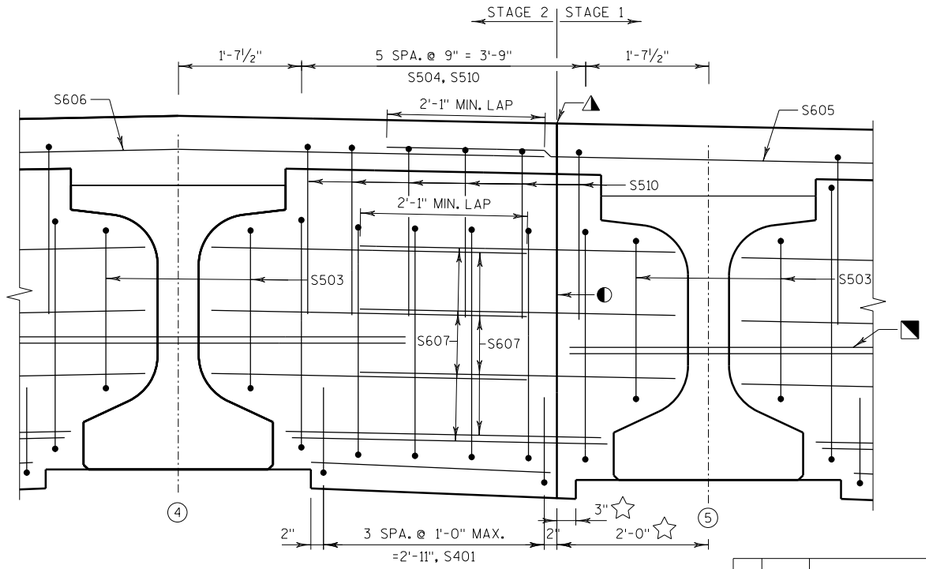
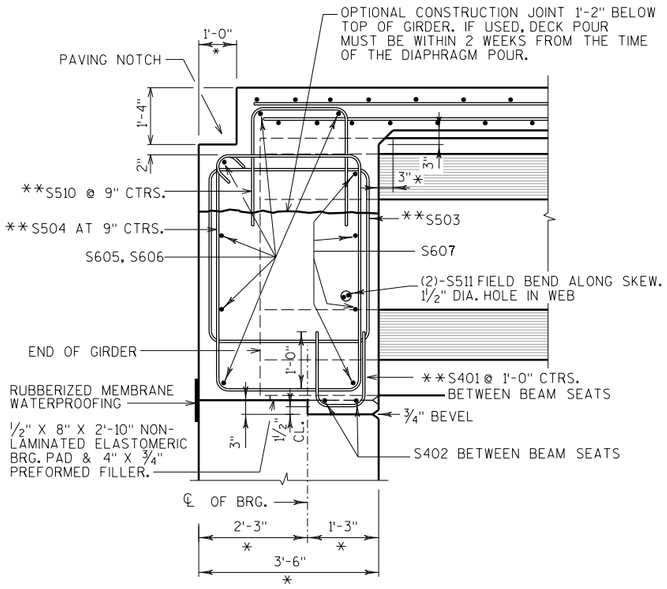


PARTIAL TRANSVERSE SECTION AT ABUTMENT DIAPHRAGM



PARTIAL TRANSVERSE SECTION AT EAST ABUTMENT CONSTRUCTION JOINT

(WEST ABUTMENT SIMILAR)



PART LONGIT. SECTION

- ◐ VERTICAL CONSTRUCTION JOINT. ALIGN WITH ABUTMENT VERTICAL CONSTRUCTION JOINT BELOW. RUN REINFORCEMENT THRU THE JOINT. FIELD BEND AS REQUIRED TO CLEAR STAGE 1 TRAFFIC. JOINT PERPENDICULAR TO THE ℄ OF ABUTMENT.
- ◭ LONGITUDINAL JOINT. SEE CONSTRUCTION STAGING SHEET FOR LONGITUDINAL CONSTRUCTION JOINT DETAIL.
- ◥ SHIFT BARS S511 AS NECESSARY TO AVOID INTERFERENCE WITH CONSTRUCTION JOINT.
- ☆ MEASURED ALONG ℄ BEARING OF ABUTMENT.
- * DIMENSION IS TAKEN NORMAL TO ℄ SUBSTRUCTURE UNITS.
- ** BARS PLACED PARALLEL TO GIRDERS. SPACING IS PERPENDICULAR TO ℄ GIRDERS.
- (X) INDICATES GIRDER NUMBER.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

DRAWN BY PLR | PLANS CK'D. AJC

SUPERSTRUCTURE DETAILS

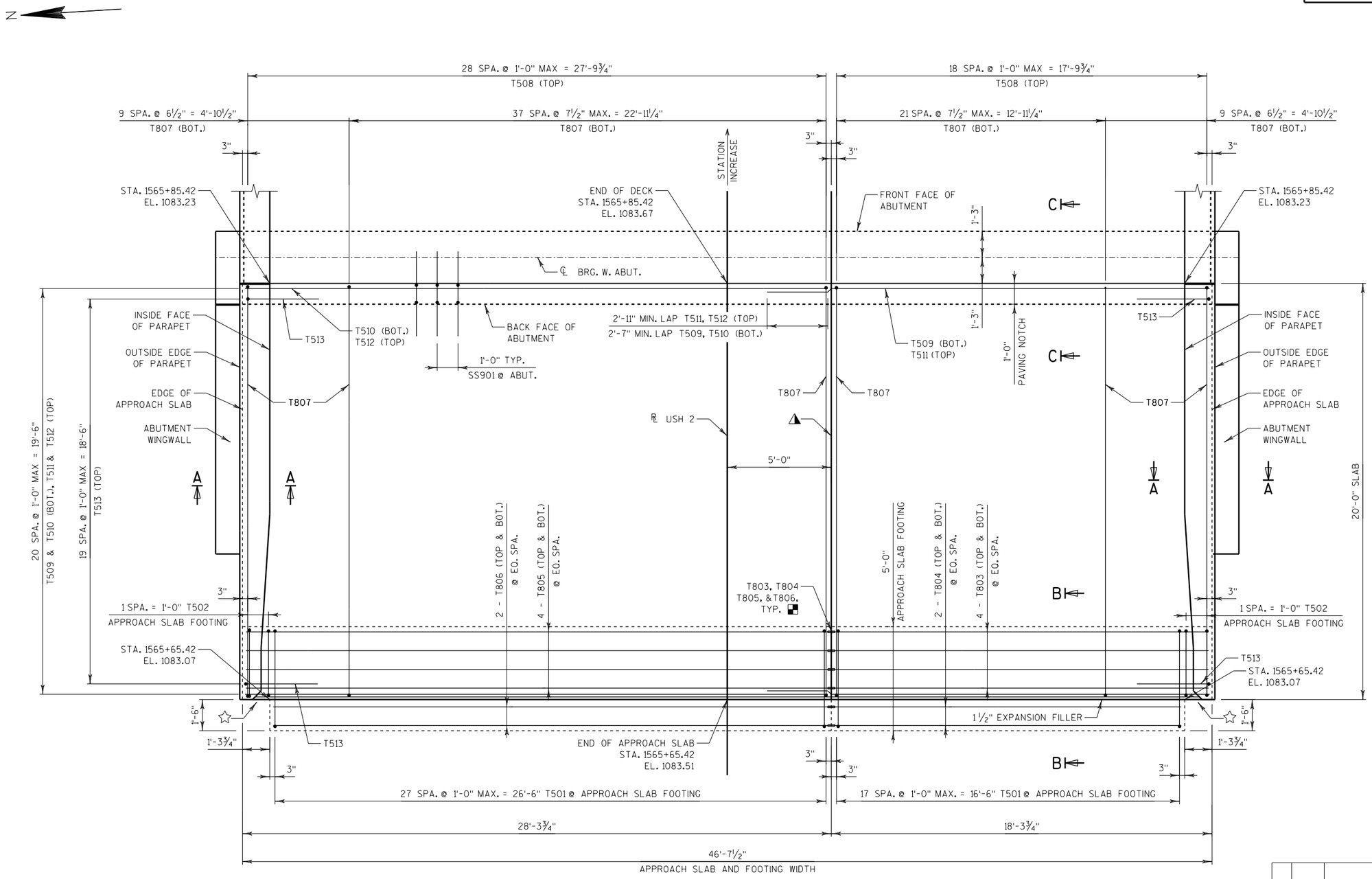
SHEET 16 OF 21
109

8

8

STATE PROJECT NUMBER

1180-49-71



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NOTES

⚠ LONGITUDINAL CONSTRUCTION JOINT. SEE "CONSTRUCTION STAGING" SHEET FOR LONGITUDINAL CONSTRUCTION JOINT DETAIL.

☆ NOTCH APPROACH SLAB FOOTING TO ALLOW FOR THRIE BEAM POST INSTALLATION. (ADJUST BAR STEEL AS NECESSARY)

◪ BAR COUPLER USED. BAR LENGTH COMPUTED TO ℄ OF LONGITUDINAL CONSTRUCTION JOINT AND SHALL BE MODIFIED TO THE BAR COUPLER MANUFACTURERS RECOMMENDATIONS.

FOR LOCATIONS OF SECTIONS A, B AND C, SEE SHEET 19.

PLAN

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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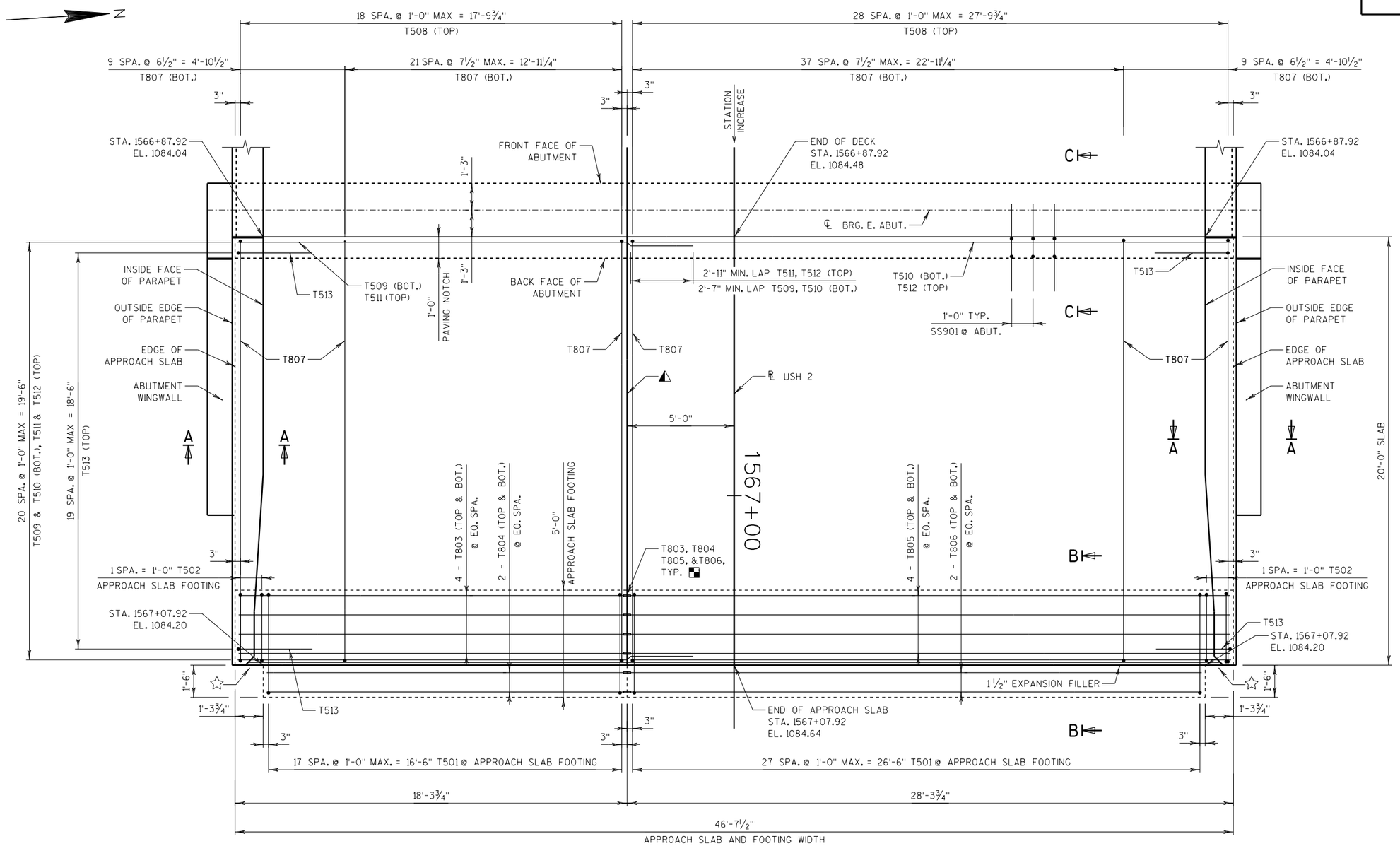
WEST STRUCTURAL APPROACH SLAB

SHEET 17 OF 21
110

STATE PROJECT NUMBER

1180-49-71



PLAN

NOTES

⚠ LONGITUDINAL CONSTRUCTION JOINT. SEE "CONSTRUCTION STAGING" SHEET FOR LONGITUDINAL CONSTRUCTION JOINT DETAIL.

☆ NOTCH APPROACH SLAB FOOTING TO ALLOW FOR THRIE BEAM POST INSTALLATION. (ADJUST BAR STEEL AS NECESSARY)

◪ BAR COUPLER USED. BAR LENGTH COMPUTED TO ℄ OF LONGITUDINAL CONSTRUCTION JOINT AND SHALL BE MODIFIED TO THE BAR COUPLER MANUFACTURERS RECOMMENDATIONS.

FOR LOCATIONS OF SECTIONS A, B AND C, SEE SHEET 19.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

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EAST STRUCTURAL APPROACH SLAB

SHEET 18 OF 21
111

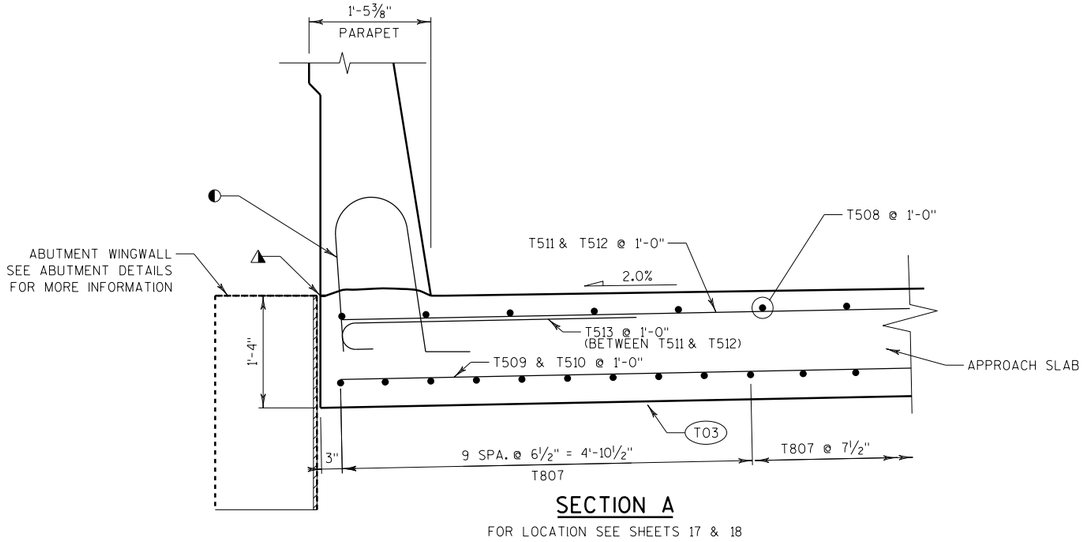
8

8

FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080118_ae.dgn

STATE PROJECT NUMBER

1180-49-71



SECTION A

FOR LOCATION SEE SHEETS 17 & 18

STRUCTURAL APPROACH BILL OF BARS

BAR MARK	COAT	NO. W. APPR.	NO. E. APPR.	LENGTH	BENT	LOCATION
SS901	SS	47	47	5'-0"	X	CONC. ABUT. DIAPH. TO APPROACH SLAB
T501	X	46	46	12'-2"	X	APPR. SLAB FTG. STIRRUP
T502	X	4	4	9'-2"	X	APPR. SLAB FTG. STIRRUP @ BLOCKOUT
T803	X	8	8	18'-1"		APPR. SLAB FTG. TRANS. STAGE 1
T804	X	4	4	16'-10"		APPR. SLAB FTG. TRANS. STAGE 1 @ BLOCKOUT
T805	X	8	8	28'-1"		APPR. SLAB FTG. TRANS. STAGE 2
T806	X	4	4	26'-10"		APPR. SLAB FTG. TRANS. STAGE 2 @ BLOCKOUT
T807	X	78	78	21'-6"	X	APPROACH SLAB LONG. BOT.
T508	X	48	48	19'-8"		APPROACH SLAB LONG. TOP
T509	X	21	21	20'-11"		APPROACH SLAB TRANS. BOT. STAGE 1
T510	X	21	21	27'-9"		APPROACH SLAB TRANS. BOT. STAGE 2
T511	X	21	21	21'-3"		APPROACH SLAB TRANS. TOP STAGE 1
T512	X	21	21	27'-9"		APPROACH SLAB TRANS. TOP STAGE 2
T513	X	40	40	4'-1"	X	APPROACH SLAB TRANS. TOP.

LEGEND

(T02) STEEL TROWEL TOP SURFACE OF FOOTING AND PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP OF FOOTING.

(T03) PLACE MULTIPLE LAYERS (0.03" MIN. TOTAL THK.) OF POLYETHYLENE SHEETS OVER THE ENTIRE TOP SUBGRADE BENEATH SLAB.

◭ SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD ⅛" BELOW SURFACE OF CONCRETE".)

◐ SEE PARAPET STANDARD DETAILS FOR REINFORCEMENT. LOCATION OF NAME PLATE AND BENCH MARK WITH RESPECT TO THE END OF PARAPET, ETC.

◨ CONCRETE PAVEMENT APPROACH SLAB. SEE ROADWAY PLANS FOR DETAILS.

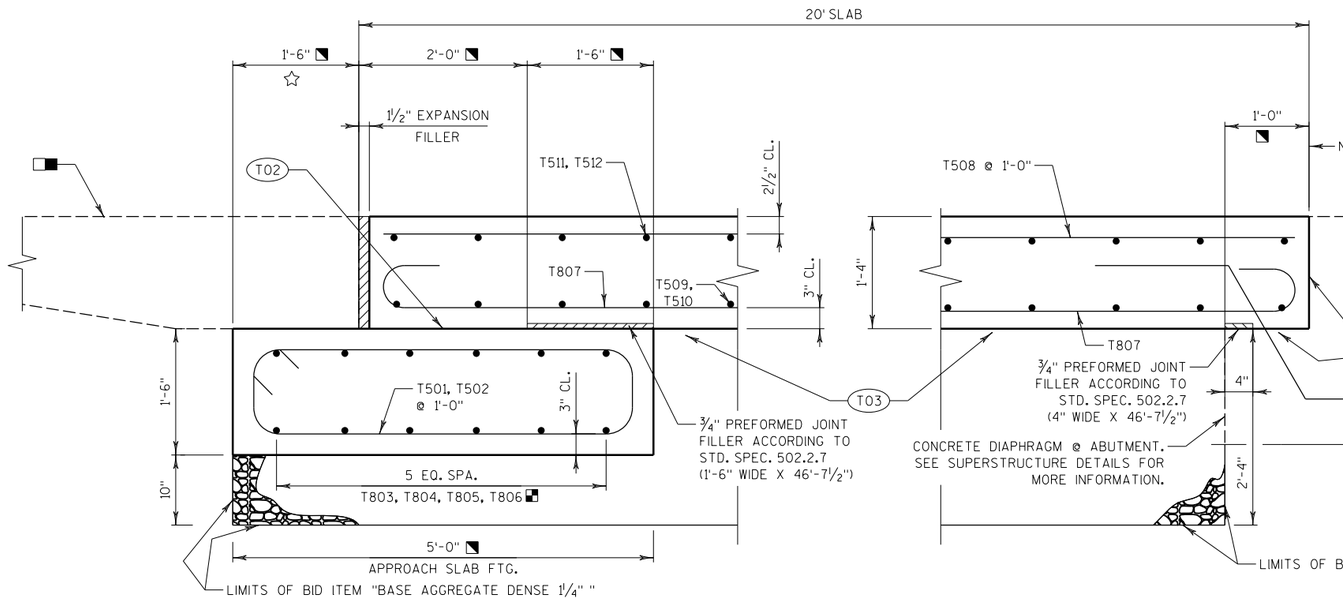
◹ MEASURED NORMAL TO THE ABUTMENT.

◪ BAR COUPLER USED. BAR LENGTH COMPUTED TO ℄ OF LONGITUDINAL CONSTRUCTION JOINT AND SHALL BE MODIFIED TO THE BAR COUPLER MANUFACTURERS RECOMMENDATIONS.

☆ NOTCH APPROACH SLAB FOOTING TO ALLOW FOR THRIE BEAM POST INSTALLATION. SEE SHEETS 17 AND 18 FOR LOCATIONS.

NOTE

PREFORMED JOINT FILLER AND POLYETHYLENE SHEETS ARE INCLUDED IN THE COST OF CONCRETE MASONRY BRIDGES.



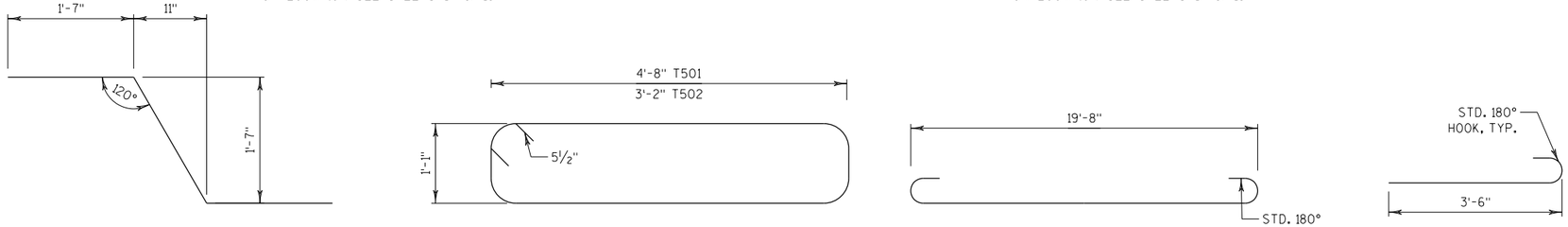
SECTION B

FOR LOCATION SEE SHEETS 17 & 18

SECTION THRU APPROACH SLAB

SECTION C

FOR LOCATION SEE SHEETS 17 & 18



SS901

T501, T502

T807

T513

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

DRAWN BY PLR | PLANS CK'D. AJC

STRUCTURAL APPROACH SLAB DETAILS

SHEET 19 OF 21
112

8

8

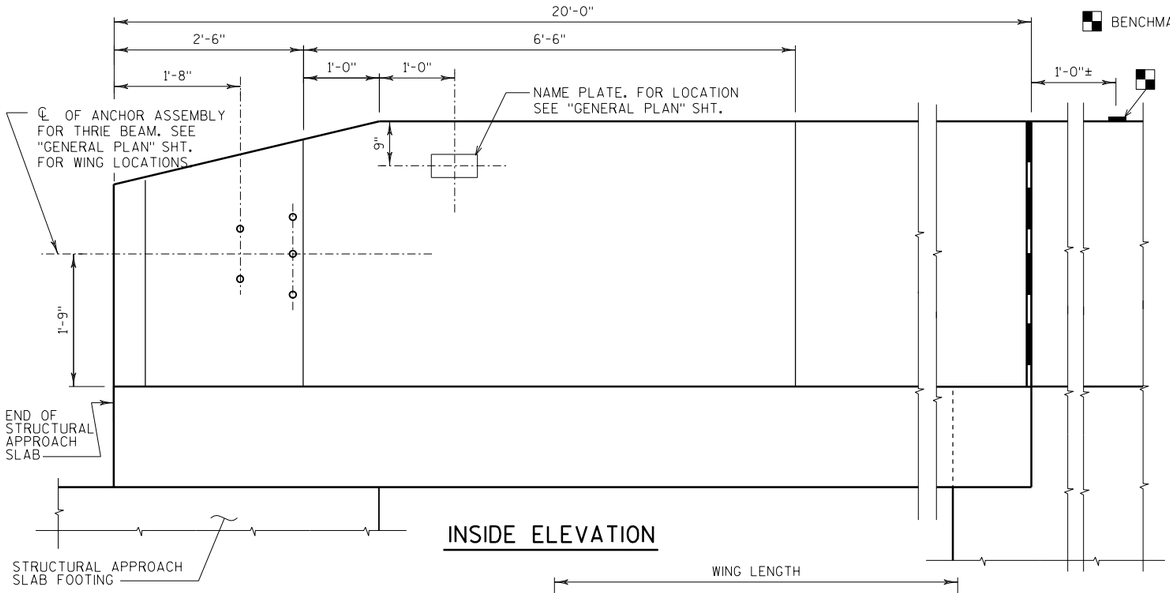
FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080119_ad.dgn

PLOT DATE : 7/5/2017

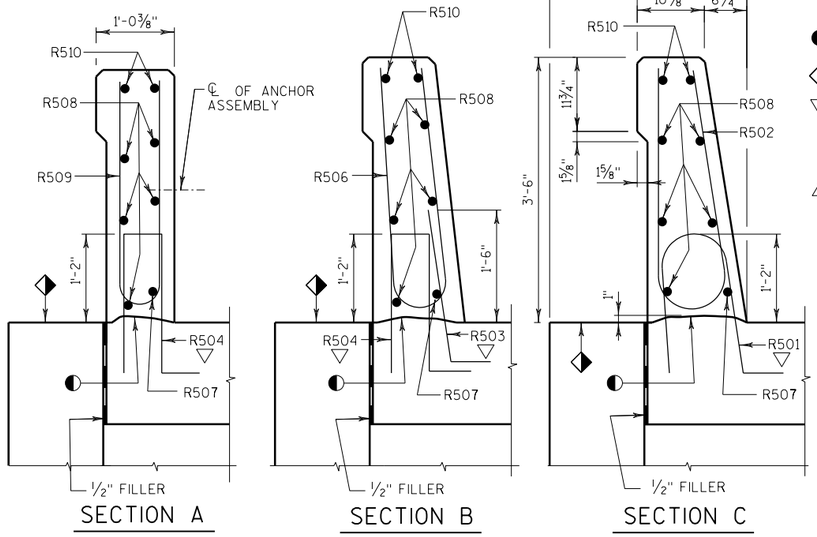
PLOT BY : mdr

STATE PROJECT NUMBER

1180-49-71



INSIDE ELEVATION

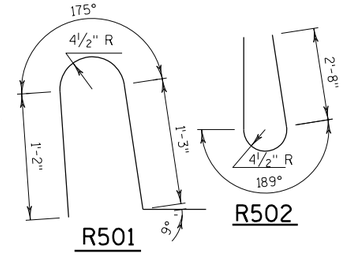


SECTION A

SECTION B

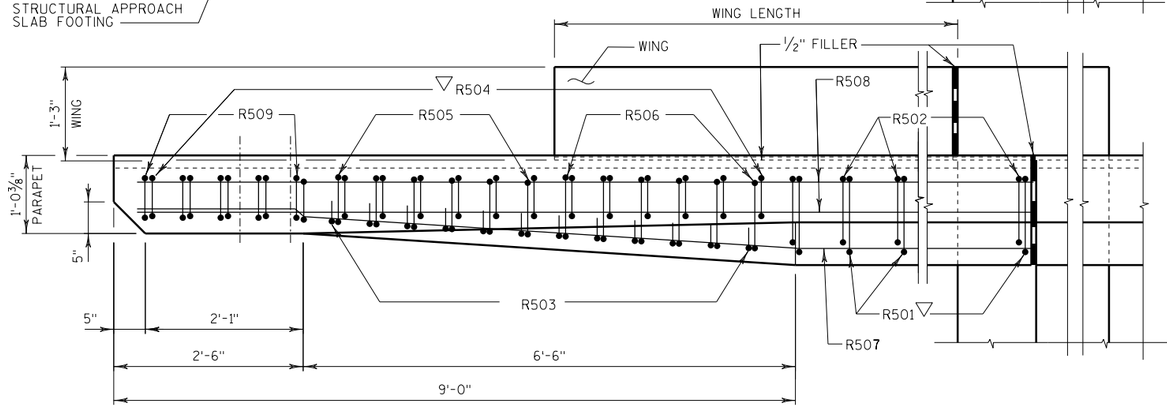
SECTION C

- CONST. JOINT - STRIKE OFF AS SHOWN.
- SLOPE FOR DRAINAGE
- ▽ R501, R504, AND R503 BARS TO BE TIED TO STRUCTURAL APPROACH SLAB STEEL BEFORE STRUCTURAL APPROACH SLAB IS POURED.
- ◭ LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS

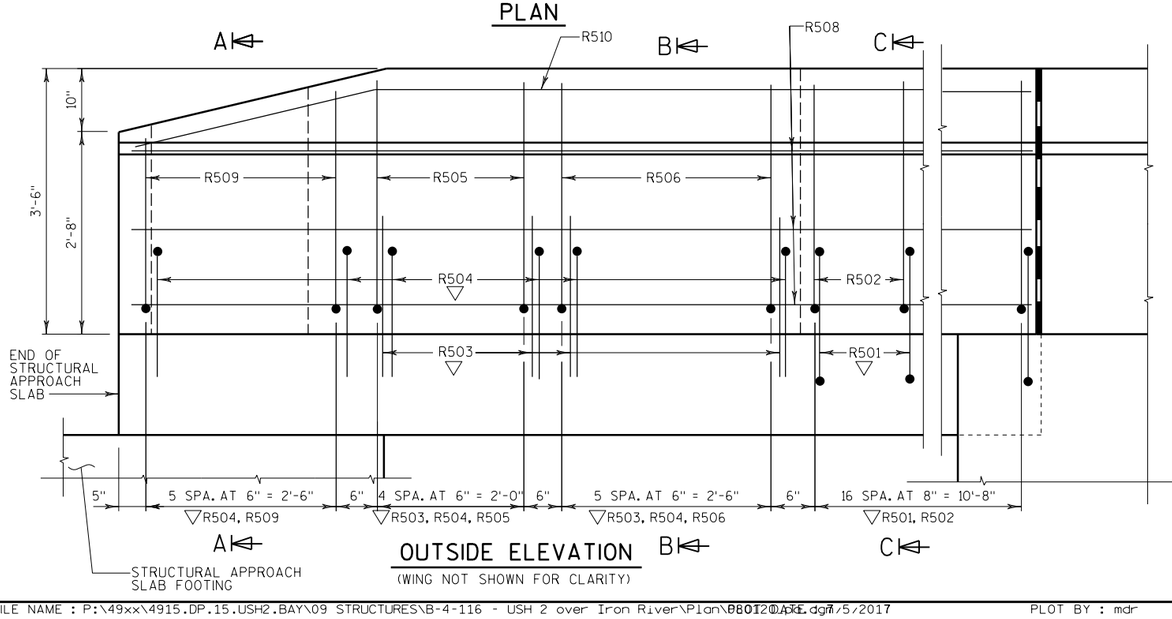


R501

R502

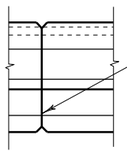


PLAN



OUTSIDE ELEVATION

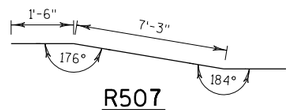
(WING NOT SHOWN FOR CLARITY)



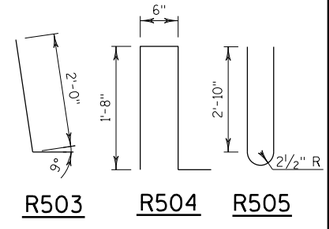
OPTIONAL CONSTRUCTION JOINTS IN THE PARAPETS MAY BE USED. RUN BAR REINF. THRU THE JOINT. LAP LONGIT. BARS A MIN. OF 1'-9". MIN. JOINT SPACING OF 80'-0". DEFINE CONST. JOINT WITH A ¾" - 'V' GROOVE.

BAR SERIES TABLE

BAR MARK	NO, REQUIRED		LENGTH		
R509	4	SERIES OF 6	4'-9"	TO	6'-1"



R507



R503

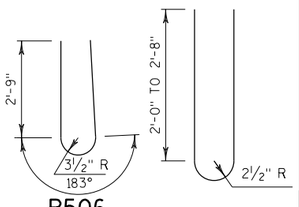
R504

R505

BILL OF BARS

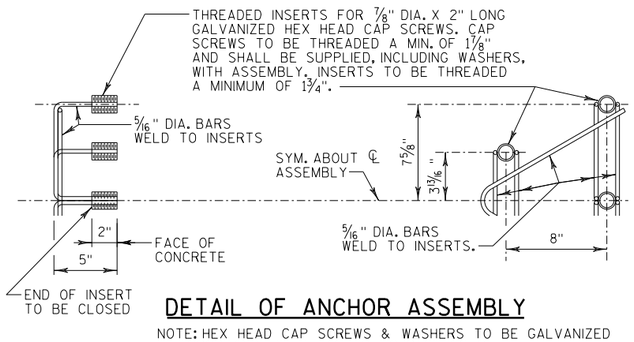
FOR STRUCTURAL APPROACH SLAB PARAPETS

BAR MARK	COAT	NO. W. ABUT.	NO. E. ABUT.	LENGTH	BENT	BAR SERIES	LOCATION
R501	X	34	34	4'-5"	X		APPROACH SLAB PARAPET - VERT.
R502	X	34	34	6'-8"	X		APPROACH SLAB PARAPET - VERT.
R503	X	22	22	2'-9"	X		APPROACH SLAB PARAPET - VERT.
R504	X	34	34	4'-4"	X		APPROACH SLAB PARAPET - VERT.
R505	X	10	10	6'-5"	X		APPROACH SLAB PARAPET - VERT.
R506	X	12	12	6'-6"	X		APPROACH SLAB PARAPET - VERT.
R507	X	2	2	19'-6"	X		APPROACH SLAB PARAPET - HORIZ.
R508	X	10	10	19'-6"			APPROACH SLAB PARAPET - HORIZ.
R509	X	12	12	5'-5"	X	◭	APPROACH SLAB PARAPET - VERT.
R510	X	4	4	19'-6"	X		APPROACH SLAB PARAPET - HORIZ.



R506

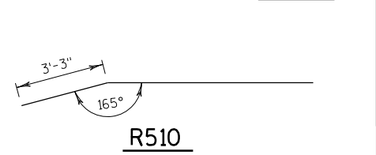
R509



DETAIL OF ANCHOR ASSEMBLY

NOTE: HEX HEAD CAP SCREWS & WASHERS TO BE GALVANIZED IN ACCORDANCE WITH AASHTO M232 CLASS C.

ASSEMBLY SHALL BE BID ITEM "ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD", EACH.



R510

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

DRAWN BY AJC | PLANS CK'D. MDR

SINGLE SLOPE PARAPET 42SS

SHEET 20 OF 21

113

8

8

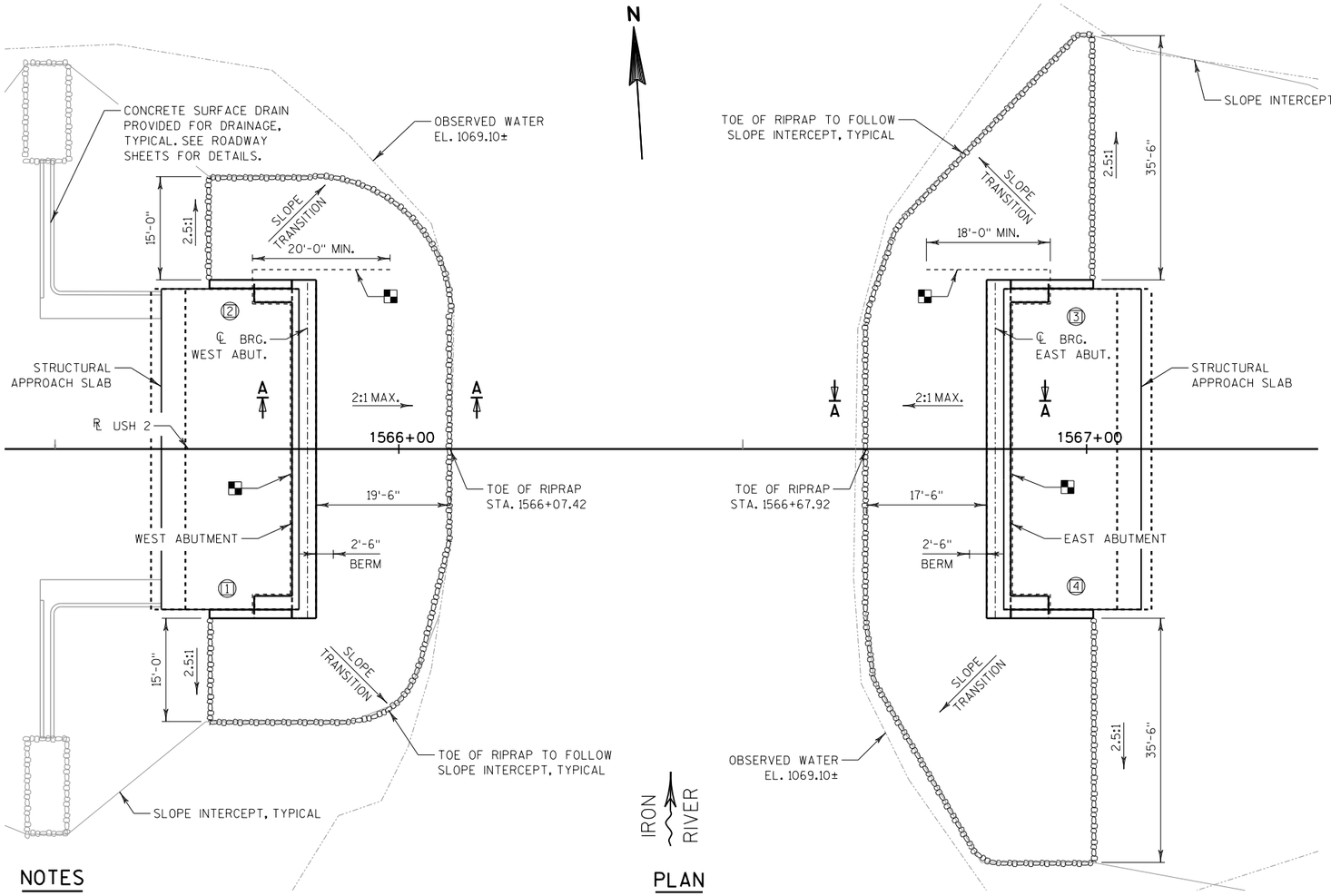
FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\B401201.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

STATE PROJECT NUMBER

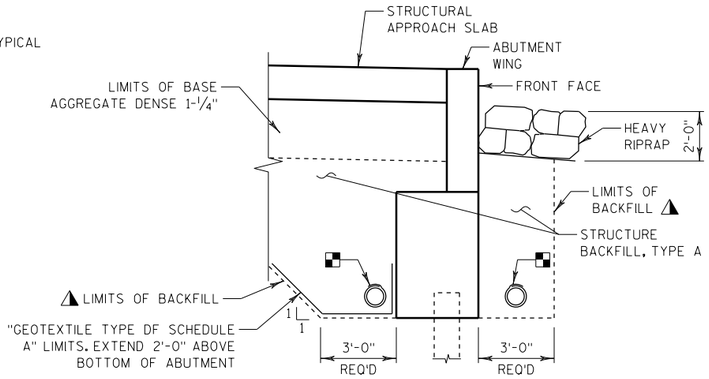
1180-49-71



NOTES

(11) DENOTES WING NUMBER

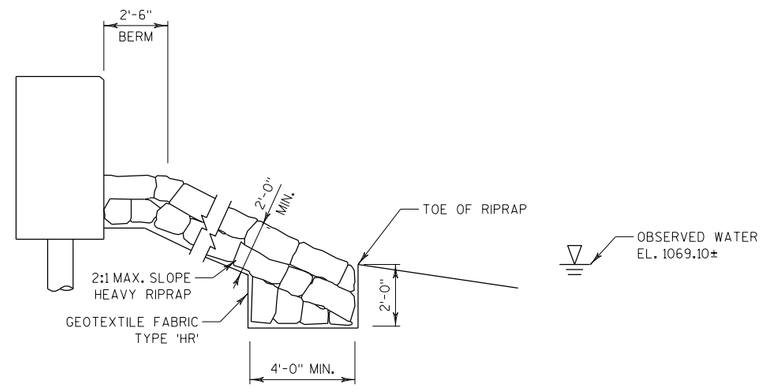
PLAN



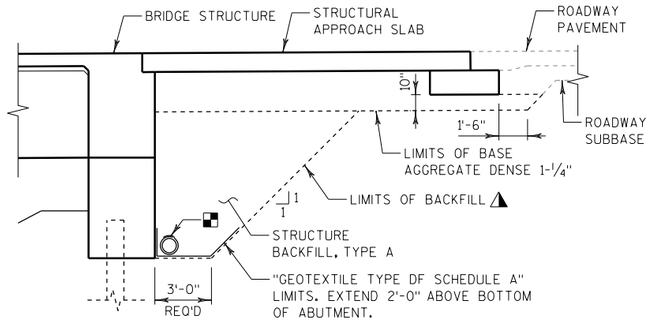
TYPICAL SECTION THROUGH WING

⚠ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCLUDED IN BID ITEM "EXCAVATION FOR STRUCTURES BRIDGES B-4-116". LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

▪ PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 1% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. (SEE SHEET 7 FOR DETAILS). SEE "TYPICAL SECTION THRU WING" AND "ABUTMENT PLAN AT WING" DETAILS FOR MORE DETAILS.



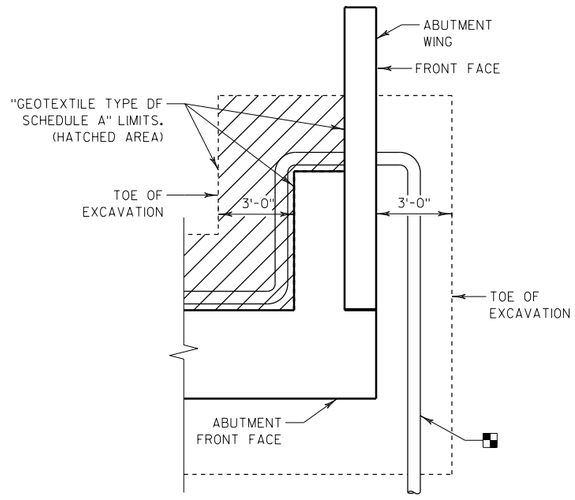
SECTION A-A



TYPICAL SECTION THROUGH ABUTMENT

⚠ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCLUDED IN BID ITEM "EXCAVATION FOR STRUCTURES BRIDGES B-4-116". LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

▪ PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 1.0% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN. (SEE SHEET 7 FOR DETAILS)



ABUTMENT PLAN AT WING

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-4-116

DRAWN BY PLR | PLANS CK'D. AJC

HEAVY RIPRAP LAYOUT

SHEET 21 OF 21
114

8

8

FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\09 STRUCTURES\B-4-116 - USH 2 over Iron River\Plan\080121_rr.dgn

PLOT DATE : 7/5/2017

PLOT BY : mdr

USH 2 - WEST OF IRON RIVER

STATION	DISTANCE	AREA (SF)		INCREMENTAL VOL (CY)(UNADJUSTED)		CUMULATIVE VOL (CY)		MASS ORDINATE
		CUT	FILL	CUT NOTE 1	FILL NOTE 2	CUT 1.00 NOTE 1	EXPANDED FILL 1.25 NOTE 3	NOTE 4
1559+92	0	0	0	0	0	0	0	0
1560+00	8	7	0	1	0	1	0	1
1560+21	21	7	0	5	0	6	0	6
1560+50	29	6	2	7	2	13	3	10
1561+00	50	6	10	10	12	23	18	5
1561+12	12	5	15	3	6	26	25	1
1561+37	25	4	9	4	12	30	40	-10
1561+50	13	4	7	2	4	32	45	-13
1561+62	12	5	4	2	3	34	49	-15
1562+00	38	5	0	7	3	41	53	-12
1562+48	48	7	0	10	0	51	53	-2
1562+50	2	9	1	1	1	52	54	-2
1562+66	16	10	3	6	2	58	57	1
1562+84	19	9	4	7	3	65	60	5
1562+86	2	9	4	1	1	66	62	4
1563+00	14	10	3	5	2	71	64	7
1563+50	50	11	6	19	9	90	75	15
1563+75	25	12	17	11	11	101	89	12
1564+00	25	13	8	12	12	113	104	9
1564+25	25	14	0	12	4	125	109	16
1564+50	25	13	1	12	1	137	110	27
1564+80	30	78	1	51	2	188	113	75
1565+00	20	81	3	59	2	247	115	132
1565+09	9	81	1	26	1	273	117	156
1565+29	20	76	1	58	1	331	118	213
1565+50	21	68	1	58	1	389	119	270
1565+65	15	54	32	35	10	424	132	292
1565+87	22	74	13	51	18	475	154	321
			COLUMN TOTALS	475	123			

NOTES:	
1 - CUT	CUT INCLUDES SALVAGED/UNUSABLE PAVEMENT MATERIAL. SALVAGED/UNUSABLE PAVEMENT MATERIAL IS CALCULATED ON THE SUMMARY SHEET.
2 - FILL	DOES NOT INCLUDE UNUSABLE PAVEMENT EXC VOLUME. SALVAGED/UNUSABLE PAVEMENT MATERIAL IS CALCULATED ON THE SUMMARY SHEET.
3 - EXPANDED FILL	(UNEXPANDED FILL)*(FILL FACTOR)
4 - MASS ORDINATE	CUT - (EXPANDED FILL); PLUS INDICATES AN EXCESS OF MATERIAL

9

9

FILE NAME : P:\49xx\4915.DP.15.USH2.BAY\CADDS\11804900\SheetsPlan\090101_ew.dgn PLOT DATE : 7/19/2017 PLOT BY : emo PLOT NAME : PLOT SCALE : 1:200
WISDOT/CADDS SHEET 49

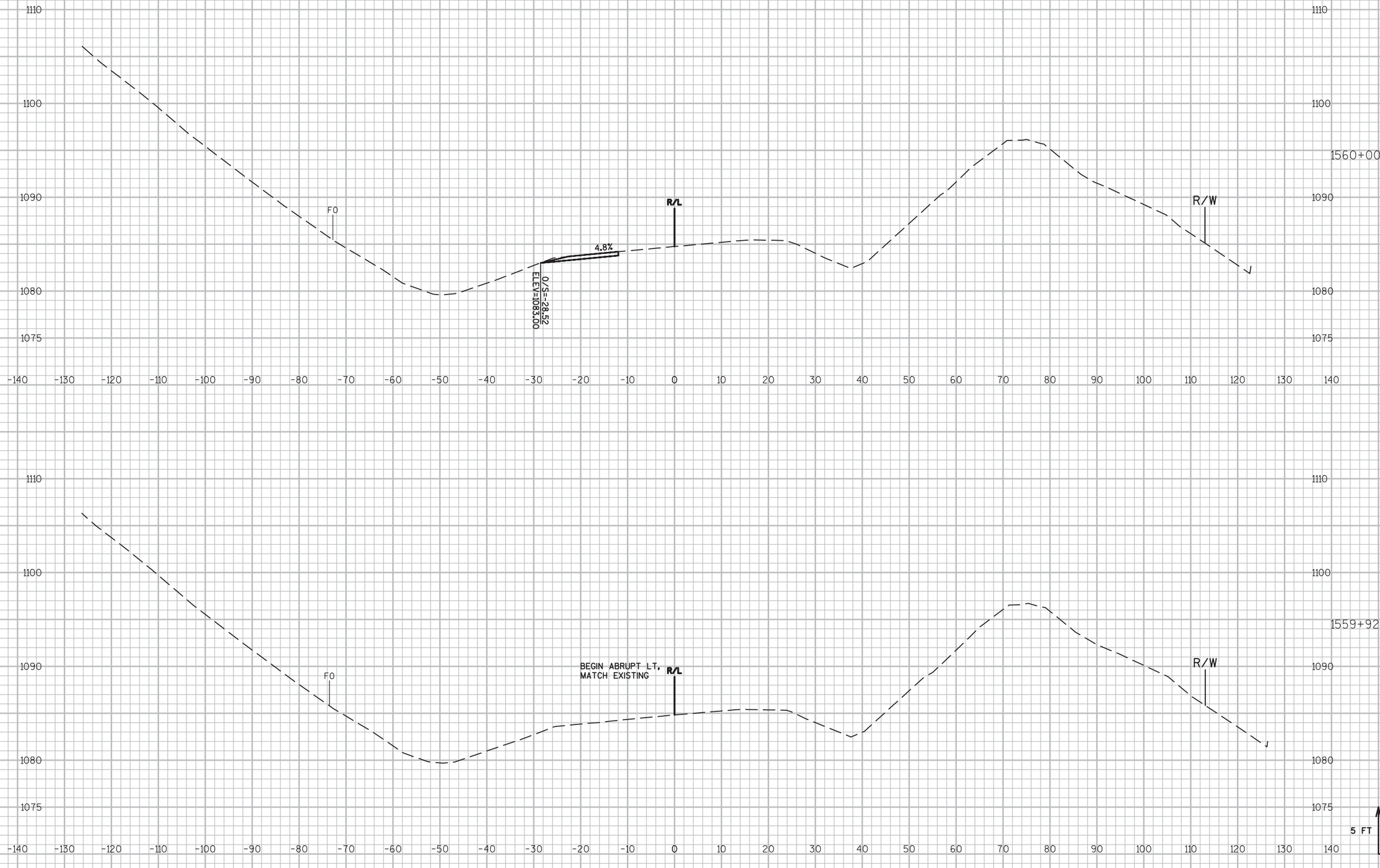
USH 2 - EAST OF IRON RIVER

STATION	DISTANCE	AREA (SF)		INCREMENTAL VOL (CY)(UNADJUSTED)		CUMULATIVE VOL (CY)		MASS ORDINATE
		CUT	FILL	CUT NOTE 1	FILL NOTE 2	CUT 1.00 NOTE 1	EXPANDED FILL 1.25 NOTE 3	NOTE 4
1566+87	0	42	120	0	0	0	0	0
1567+08	21	51	101	36	86	36	108	-72
1567+50	42	72	25	96	99	132	232	-100
1567+85	35	106	12	115	24	247	262	-15
1567+98	13	50	22	38	9	285	273	12
1568+00	2	41	18	4	2	289	275	14
1568+23	23	46	26	37	19	326	299	27
1568+48	25	60	30	49	26	375	332	43
1568+50	2	59	29	5	3	380	335	45
1568+73	23	104	10	69	17	449	357	92
1568+85	12	125	12	50	5	499	363	136
1568+98	13	135	14	64	7	563	372	191
1569+00	2	133	14	11	2	574	374	200
1569+50	50	42	10	162	23	736	403	333
1570+00	50	4	2	43	12	779	418	361
1570+16	16	0	0	2	1	781	419	362
			COLUMN TOTALS	781	335			

NOTES:	
1 - CUT	CUT INCLUDES SALVAGED/UNUSABLE PAVEMENT MATERIAL. SALVAGED/UNUSABLE PAVEMENT MATERIAL IS CALCULATED ON THE SUMMARY SHEET.
2 - FILL	DOES NOT INCLUDE UNUSABLE PAVEMENT EXC VOLUME. SALVAGED/UNUSABLE PAVEMENT MATERIAL IS CALCULATED ON THE SUMMARY SHEET.
3 - EXPANDED FILL	(UNEXPANDED FILL)*(FILL FACTOR)
4 - MASS ORDINATE	CUT - (EXPANDED FILL); PLUS INDICATES AN EXCESS OF MATERIAL

9

9



9

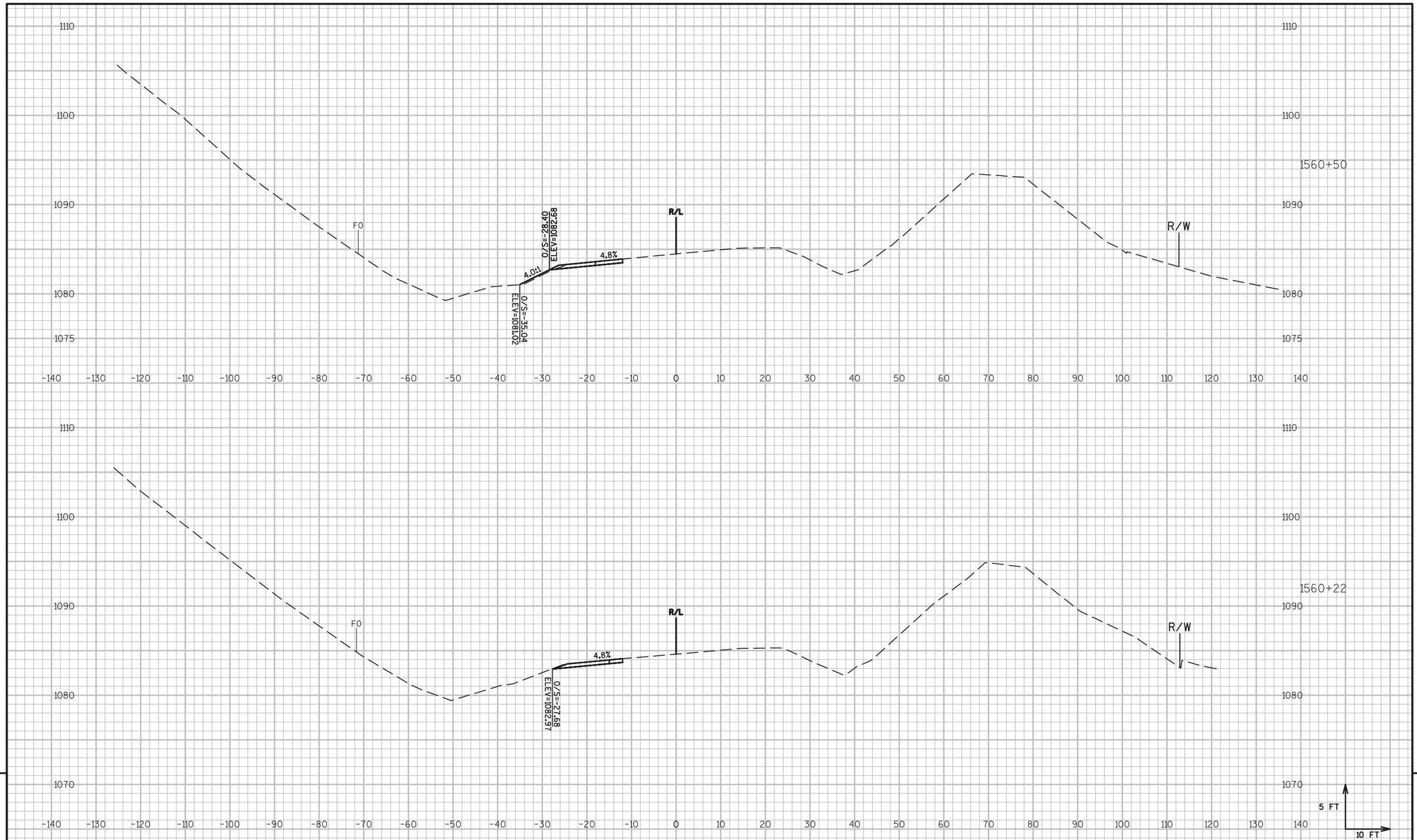
9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 117	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 09021-XS

PLOT DATE : 10/20/2017 12:07 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

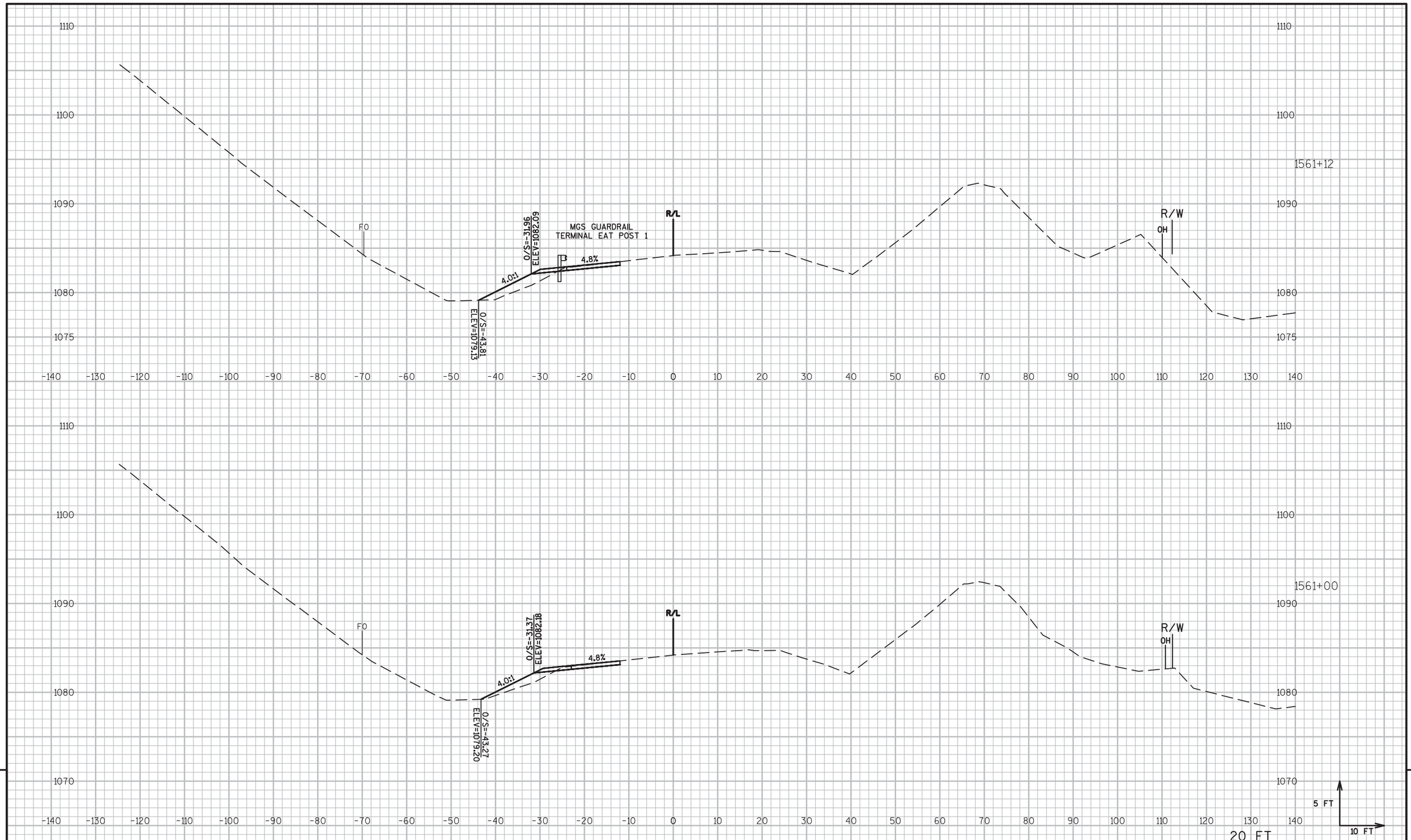


PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 118	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 09022-XS

PLOT DATE : 10/20/2017 12:07 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

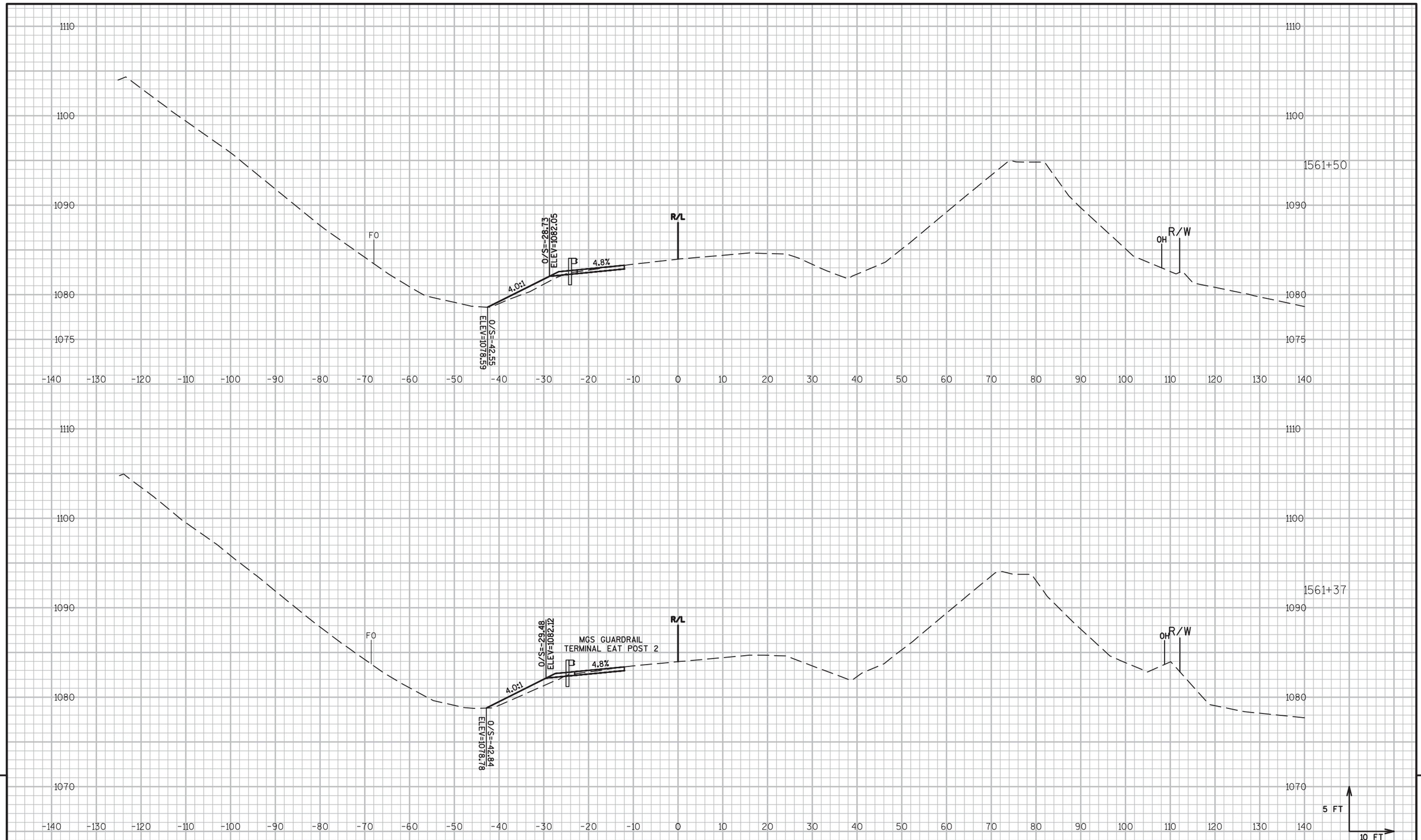


9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 119	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 09023-XS

PLOT DATE : 10/20/2017 12:07 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

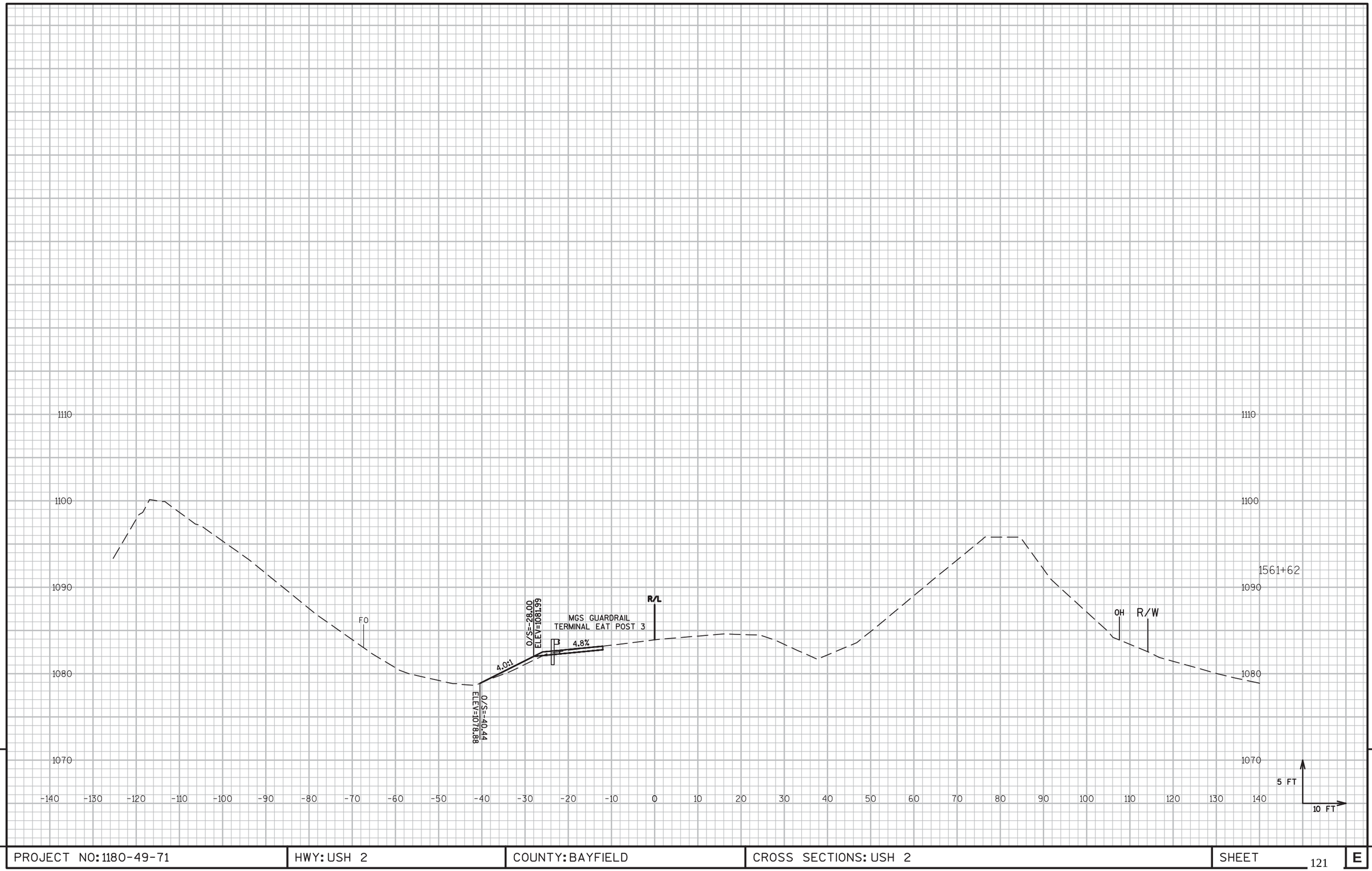


PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 120	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 09024-XS

PLOT DATE : 10/20/2017 12:07 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

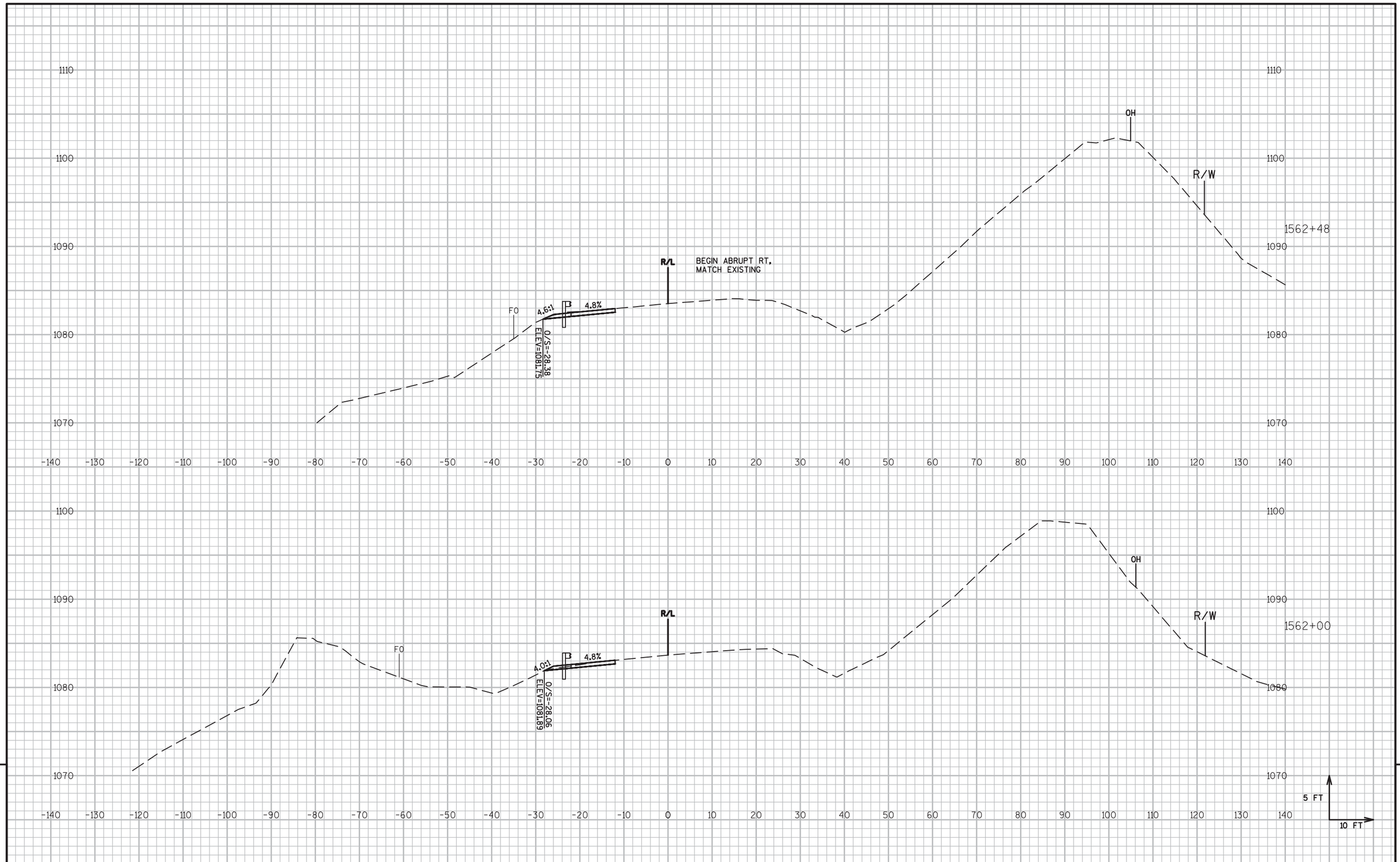


9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 121	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 09025-XS

PLOT DATE : 10/20/2017 12:07 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT



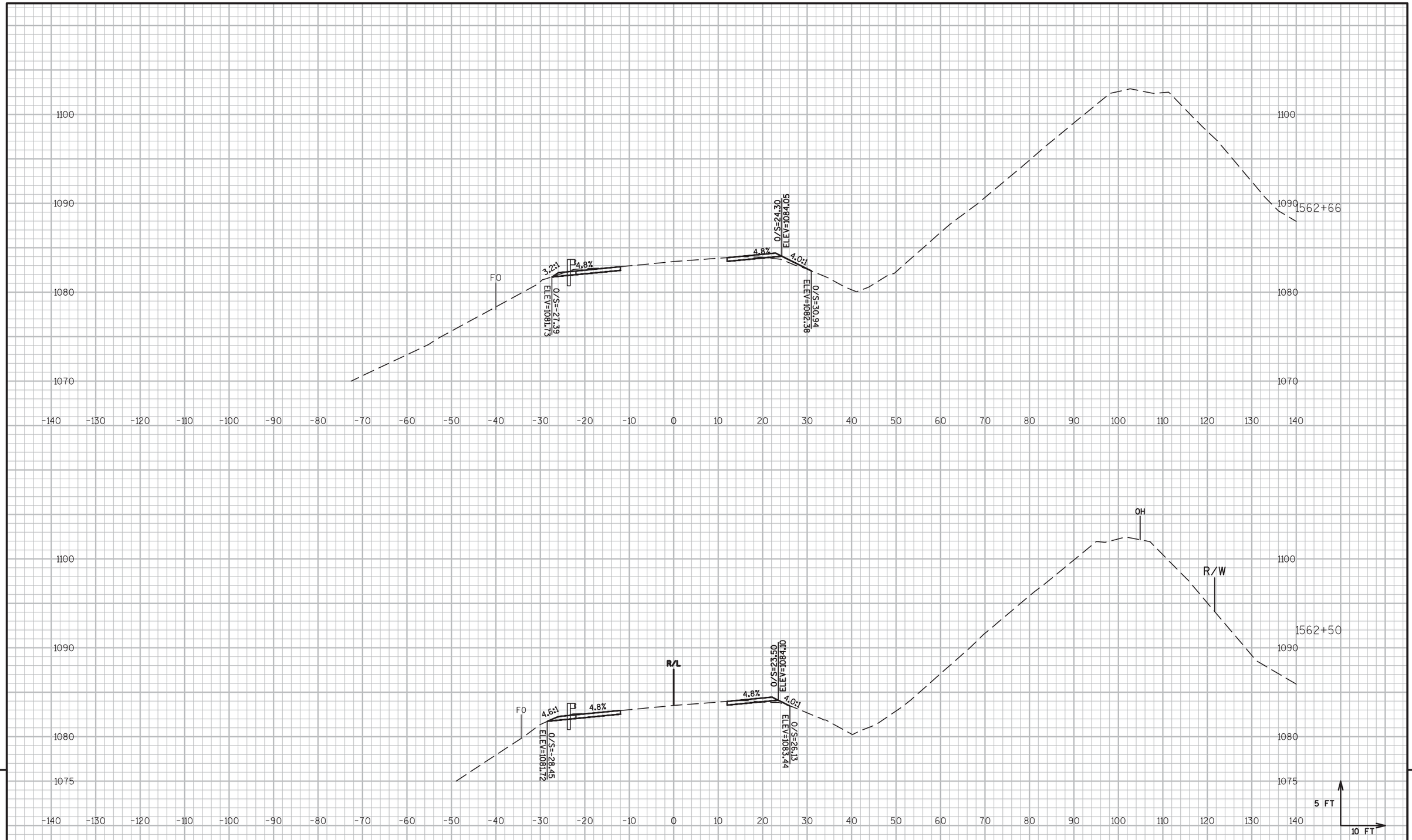
9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 122	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 09026-XS

PLOT DATE : 10/20/2017 12:07 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

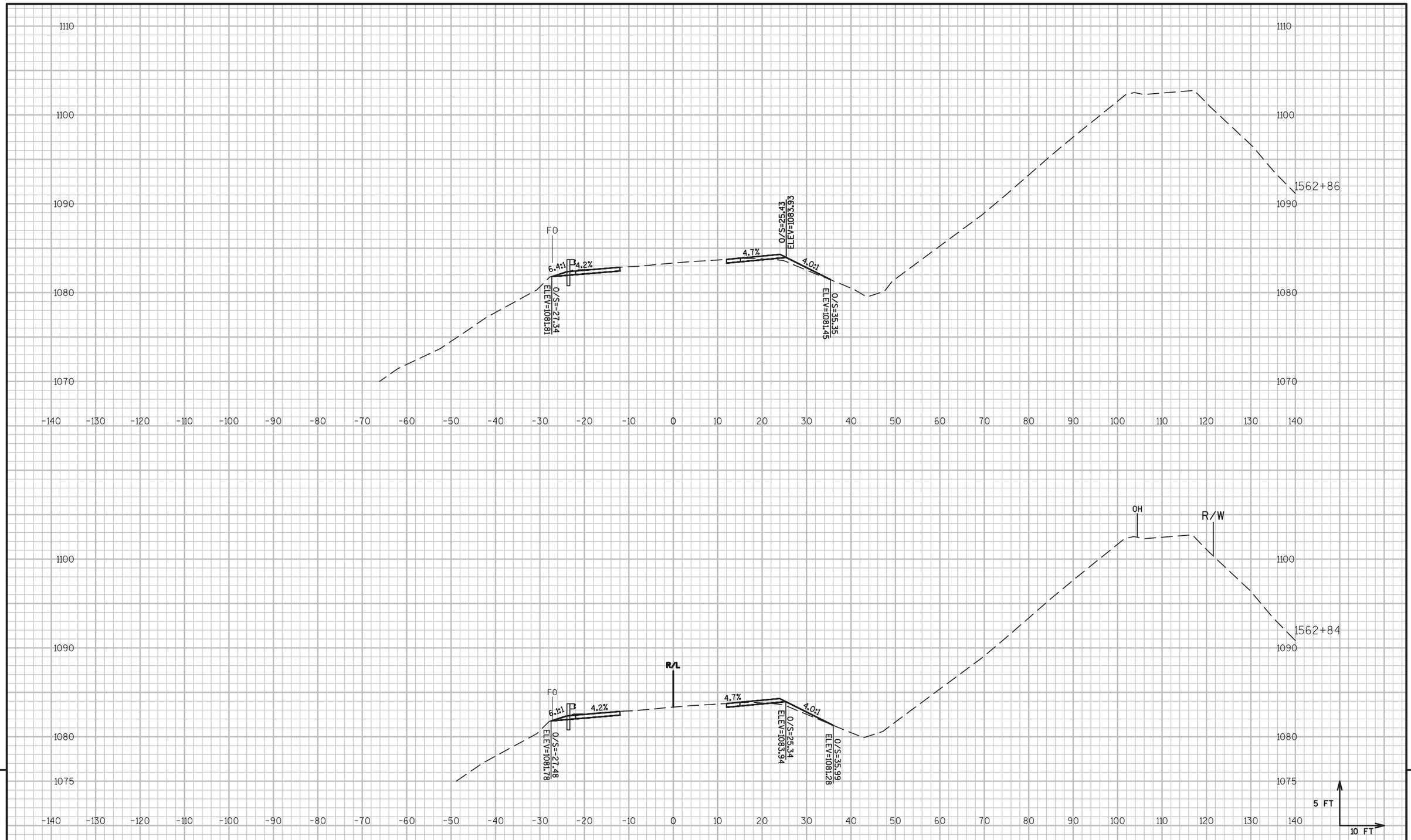


9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 123	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 09027-XS

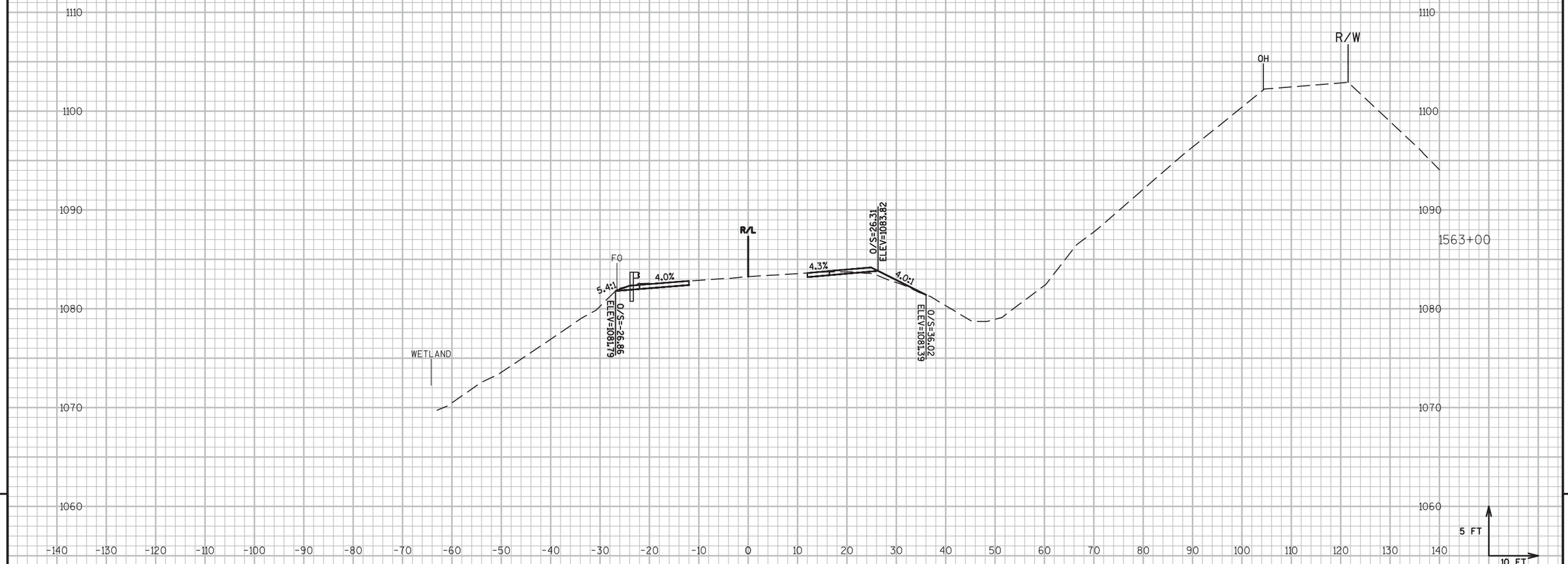
PLOT DATE : 10/20/2017 12:07 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT



PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 124	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 09028-XS

PLOT DATE : 10/20/2017 12:07 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT



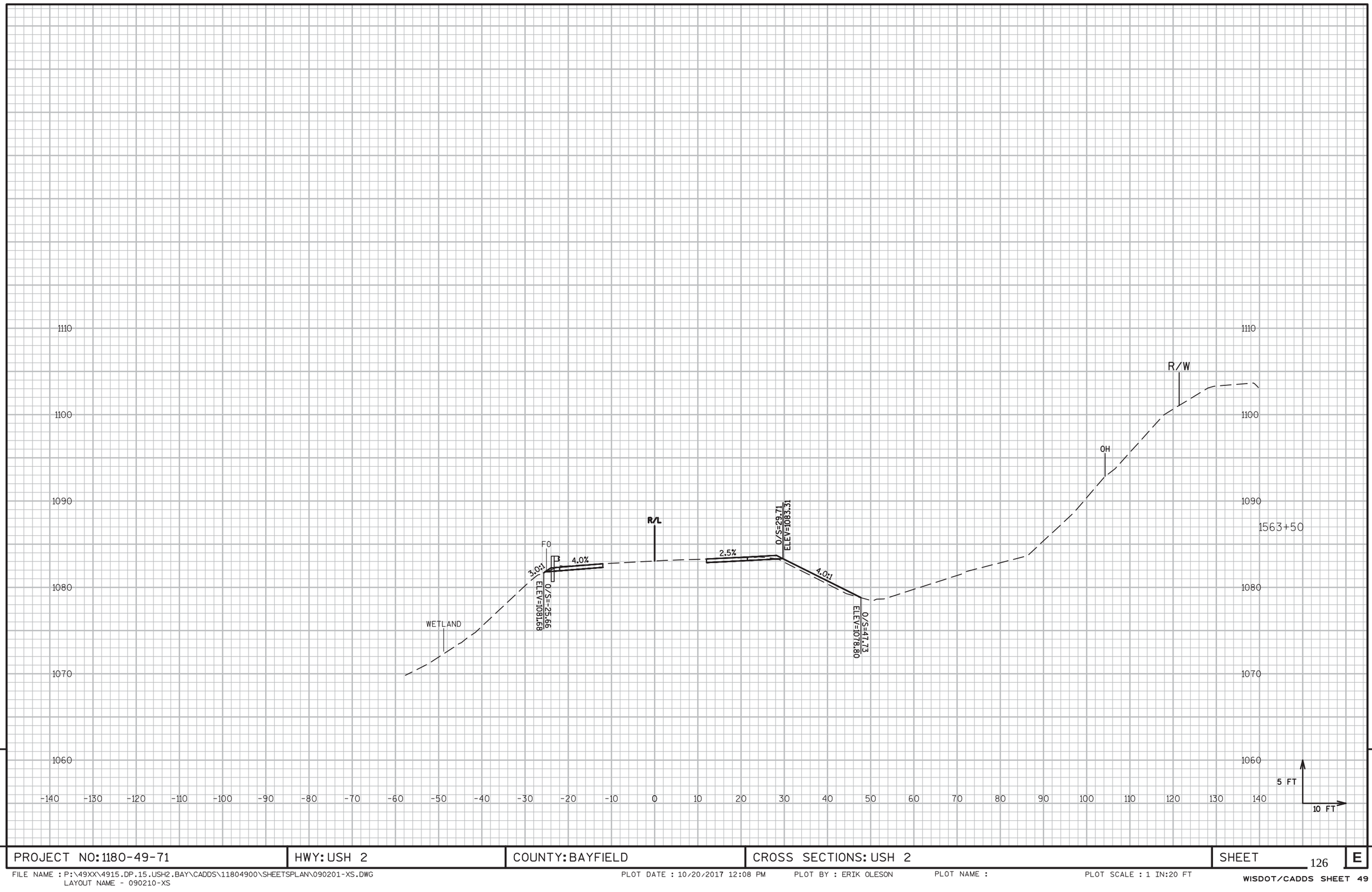
9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 125	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 09029-XS

PLOT DATE : 10/20/2017 12:07 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

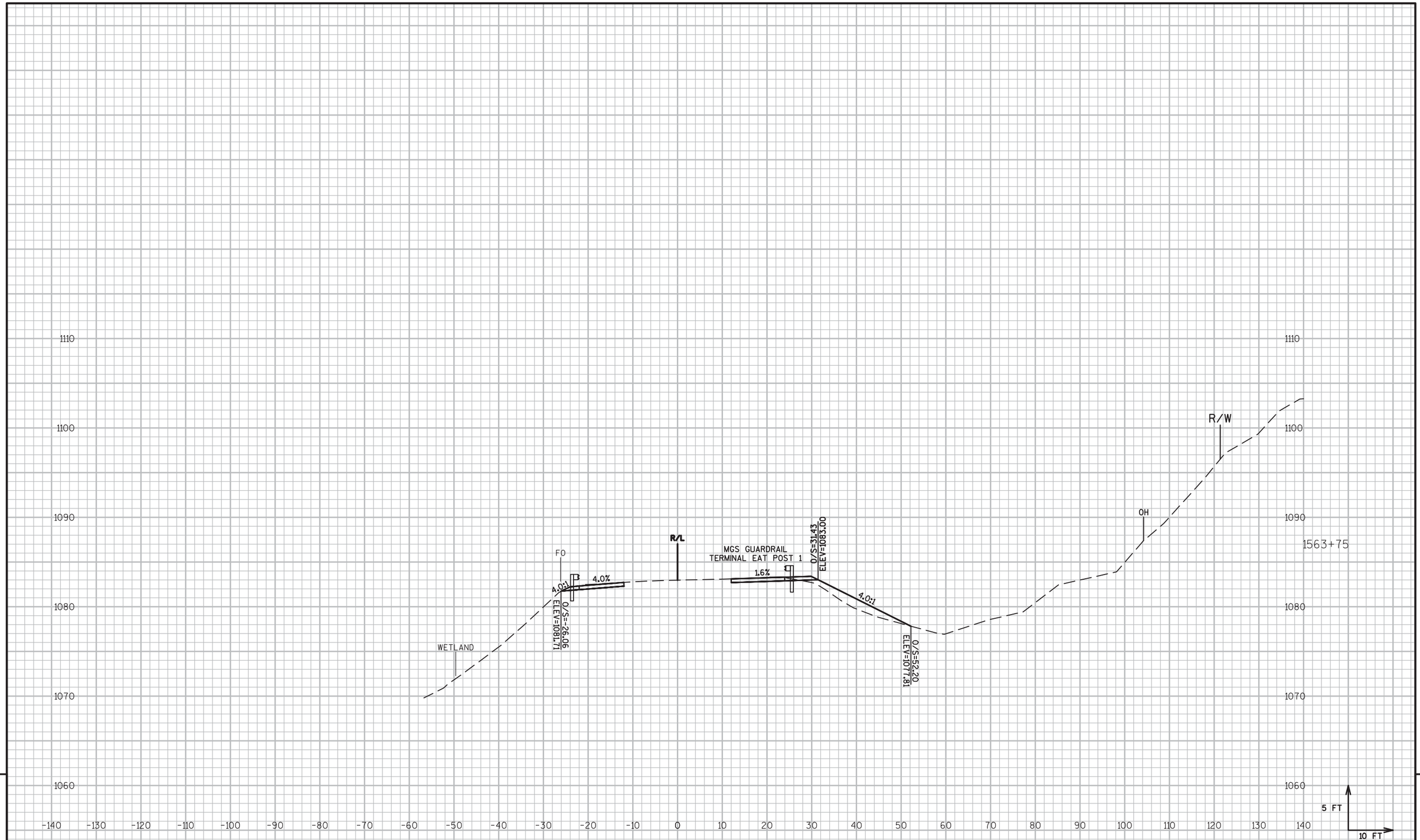


9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 126	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090210-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

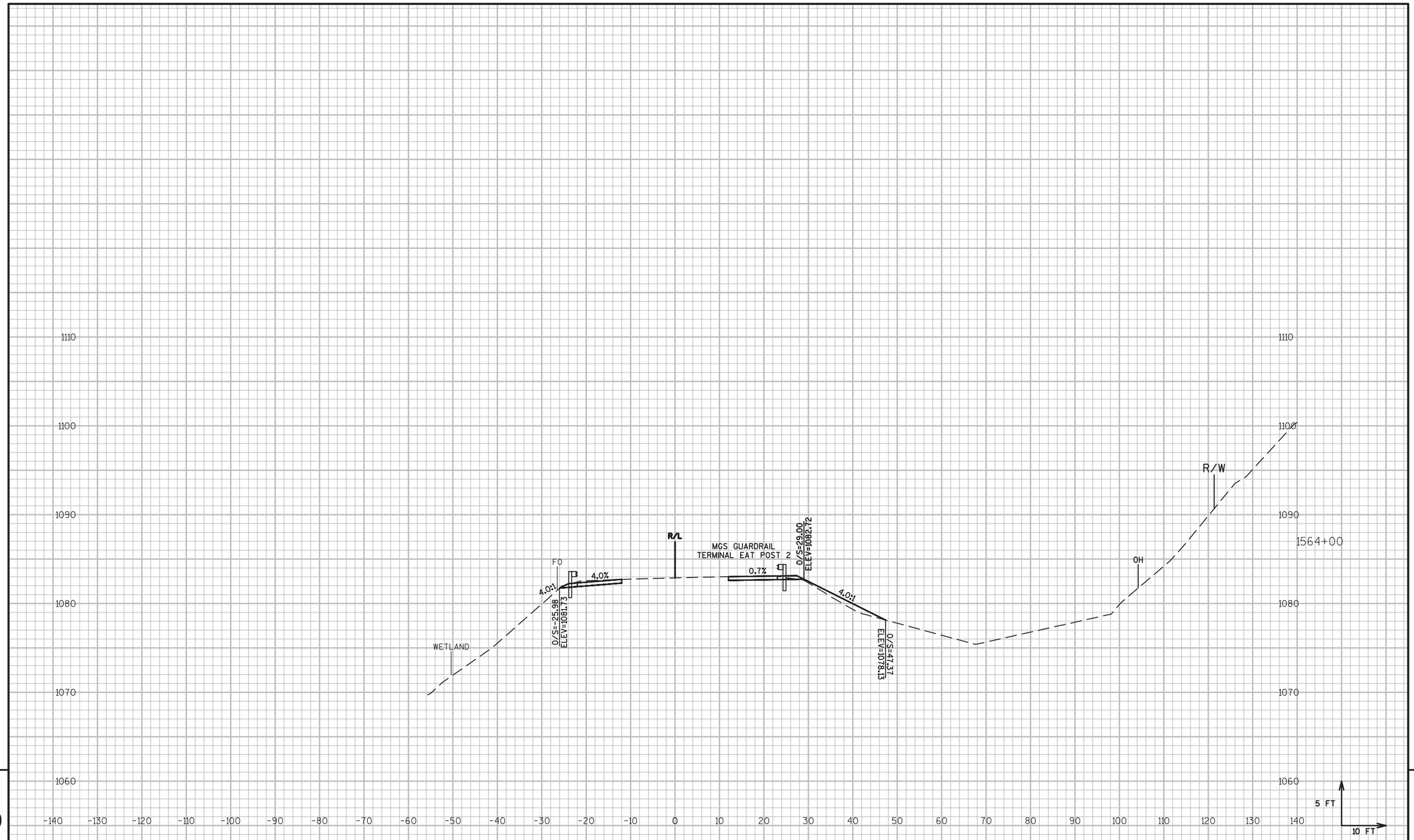


PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 127	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090211-XS

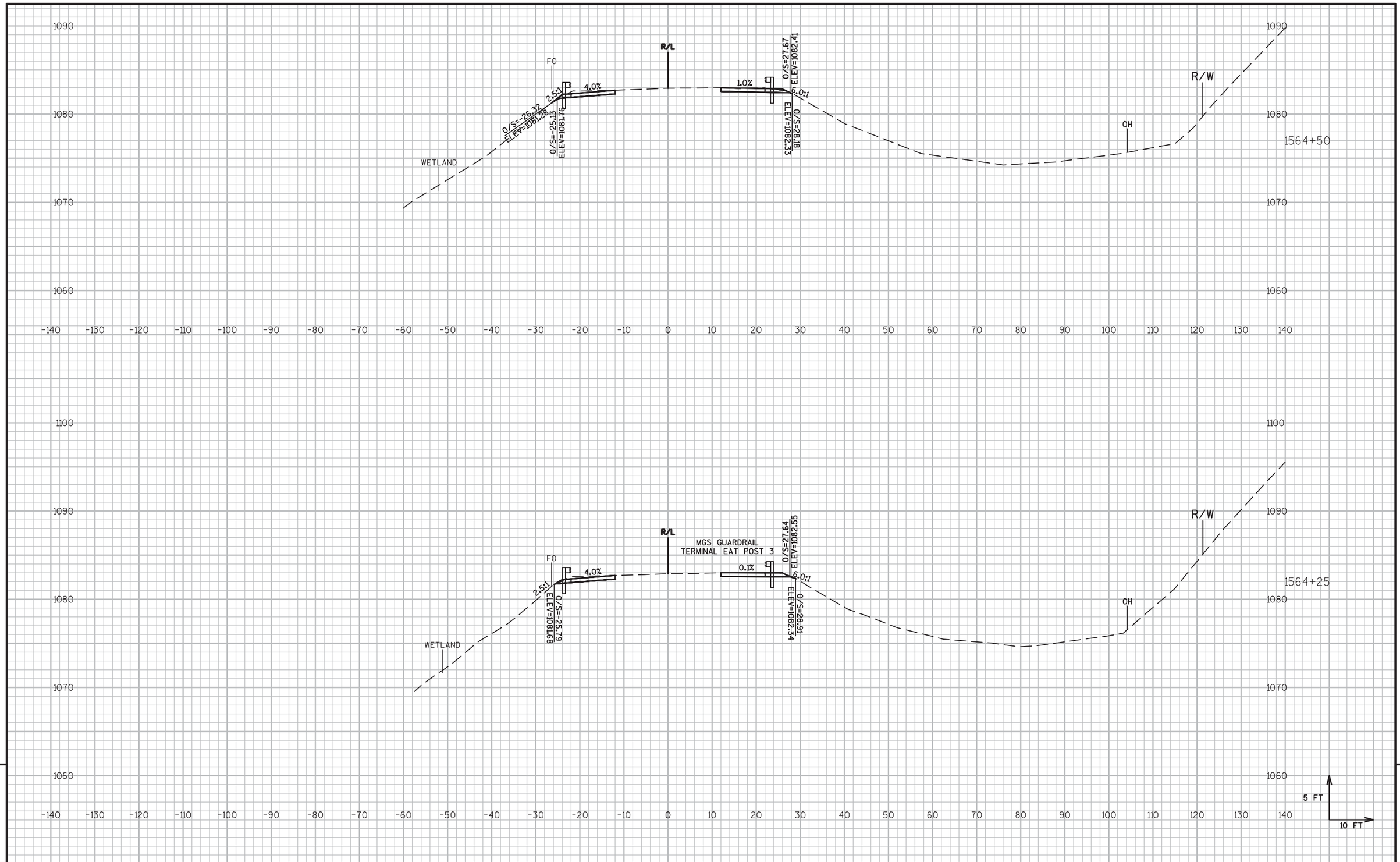
PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49



9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 128	E

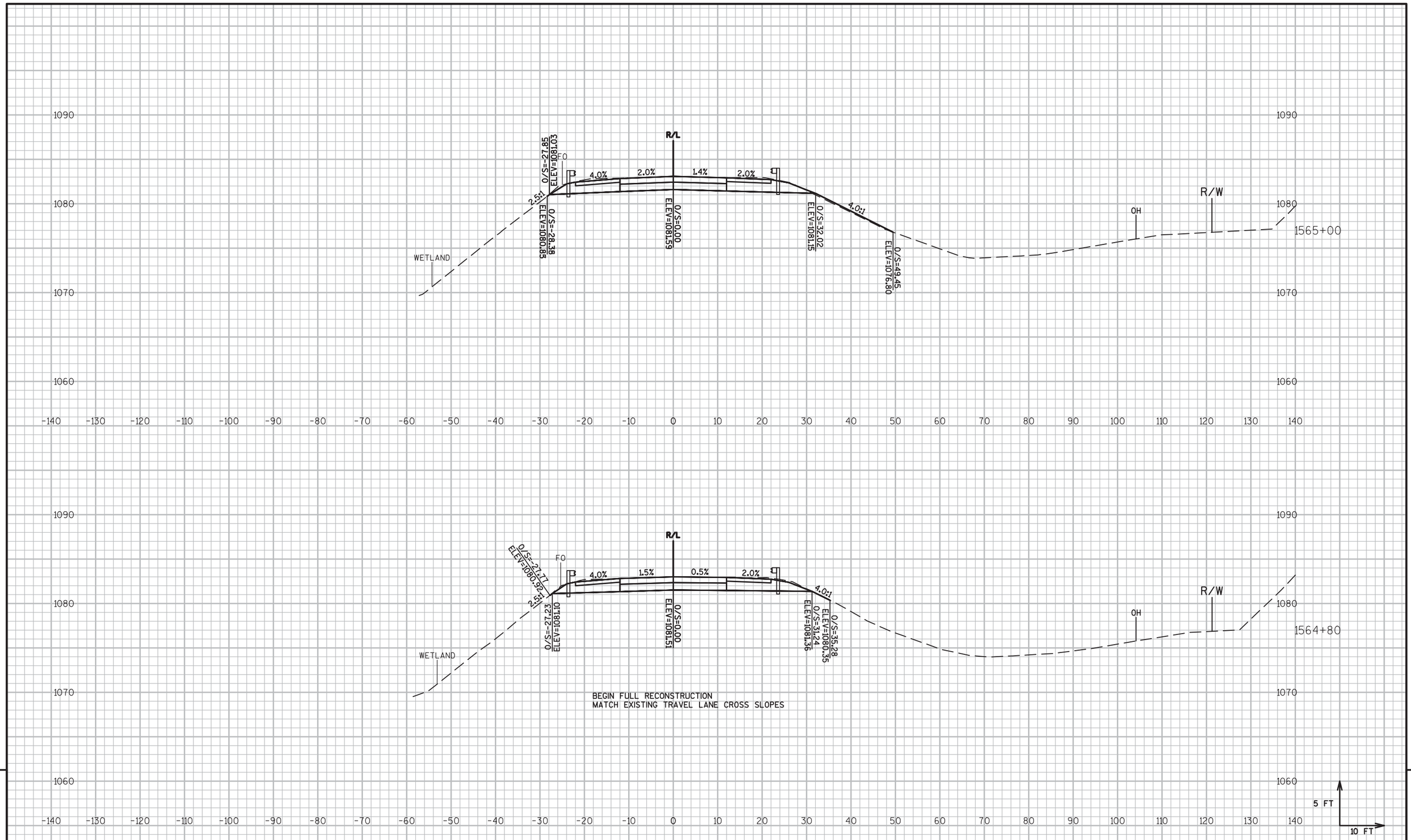


PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 129	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090213-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

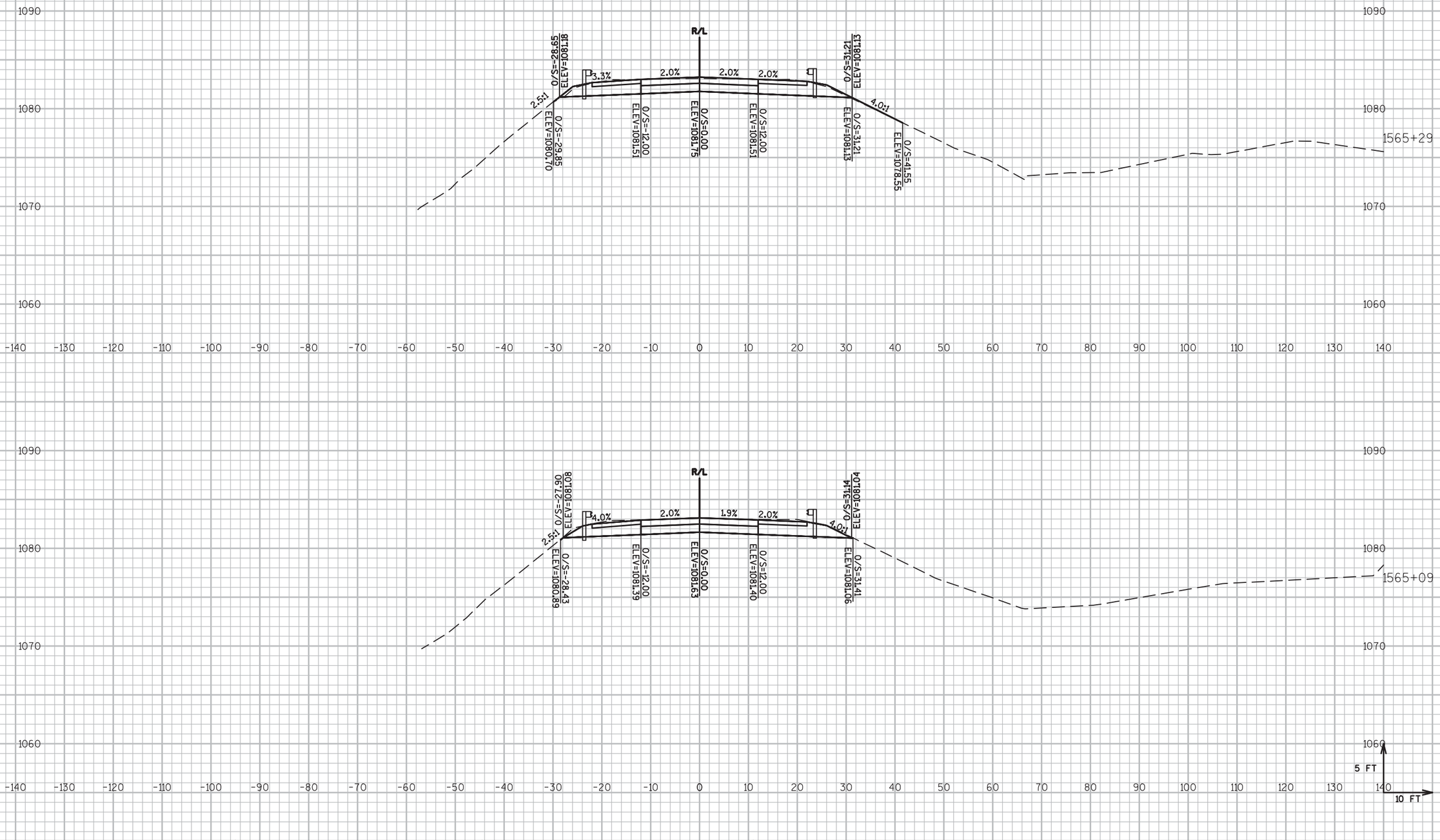


9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 130	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090214-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT



9

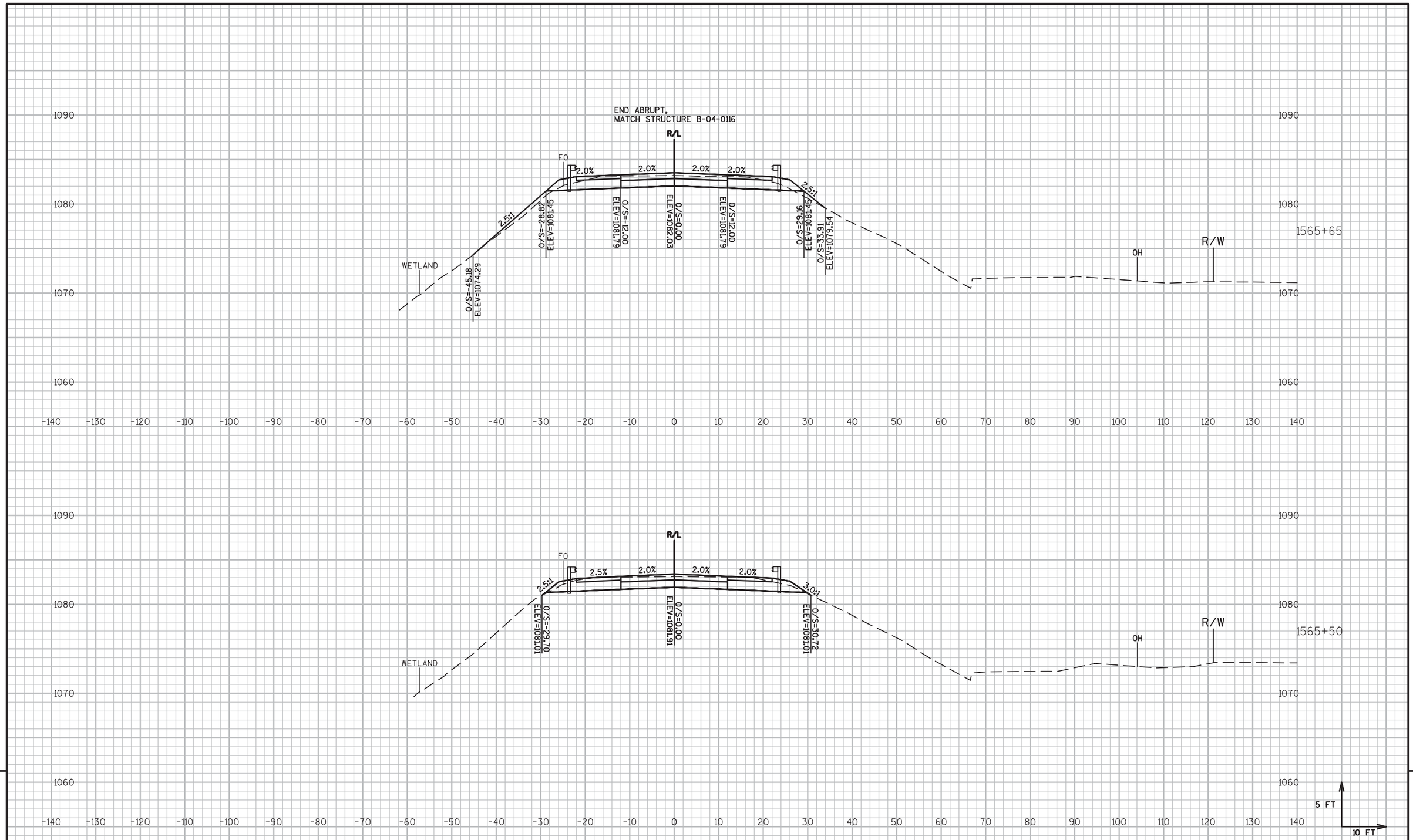
9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 131	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090215-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

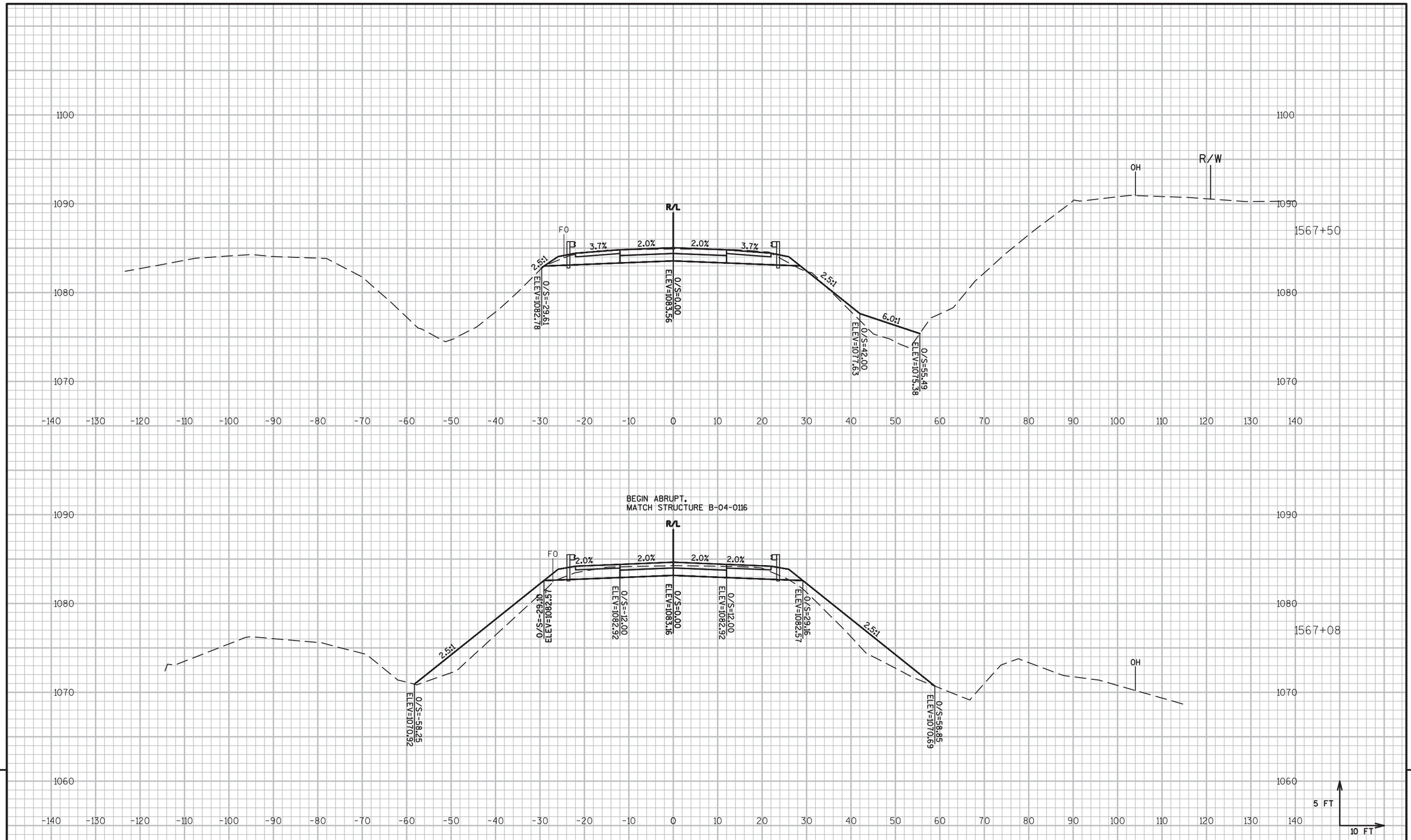


9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 132	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090216-XS

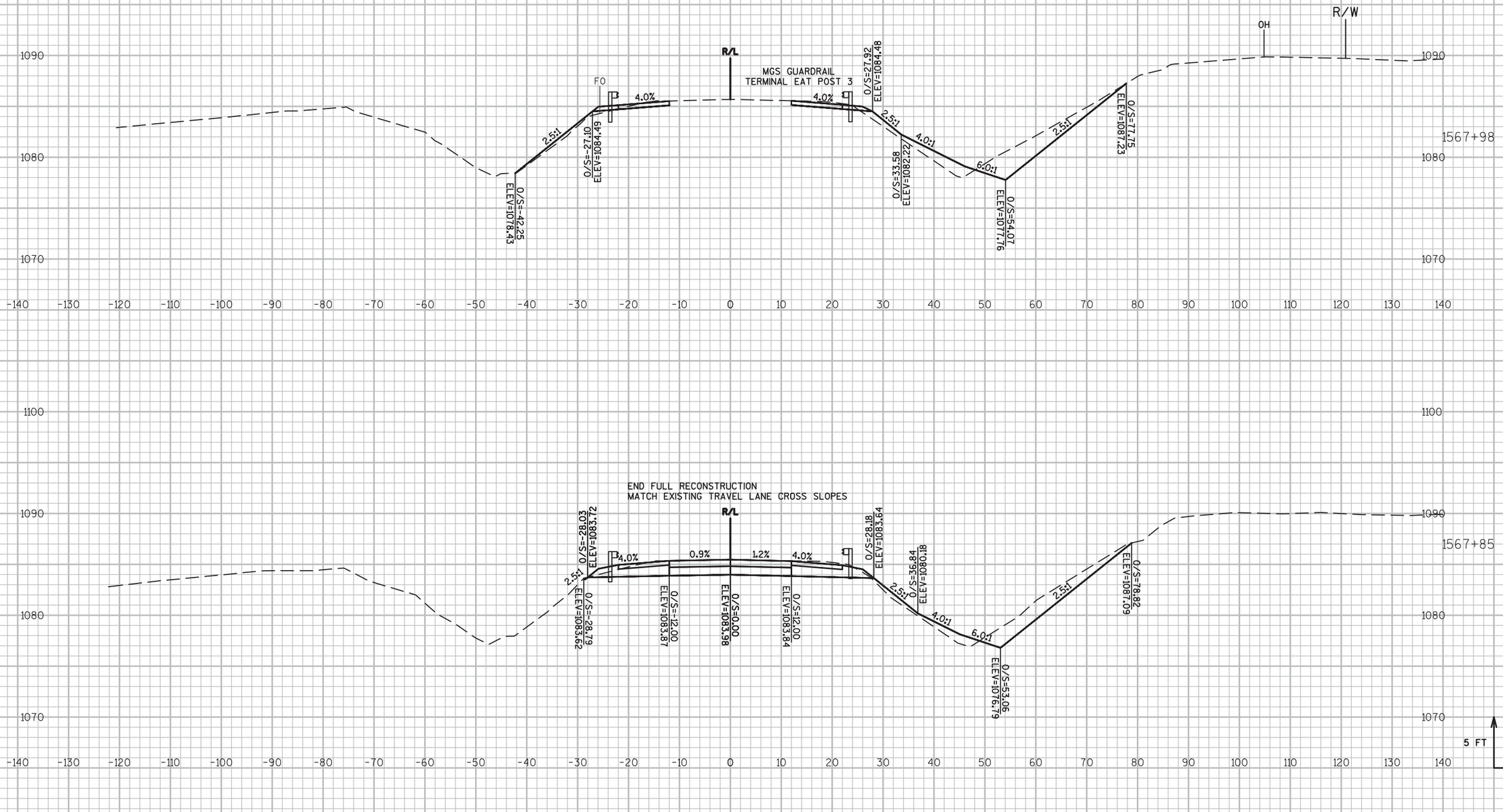
PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT



PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 133	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090217-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

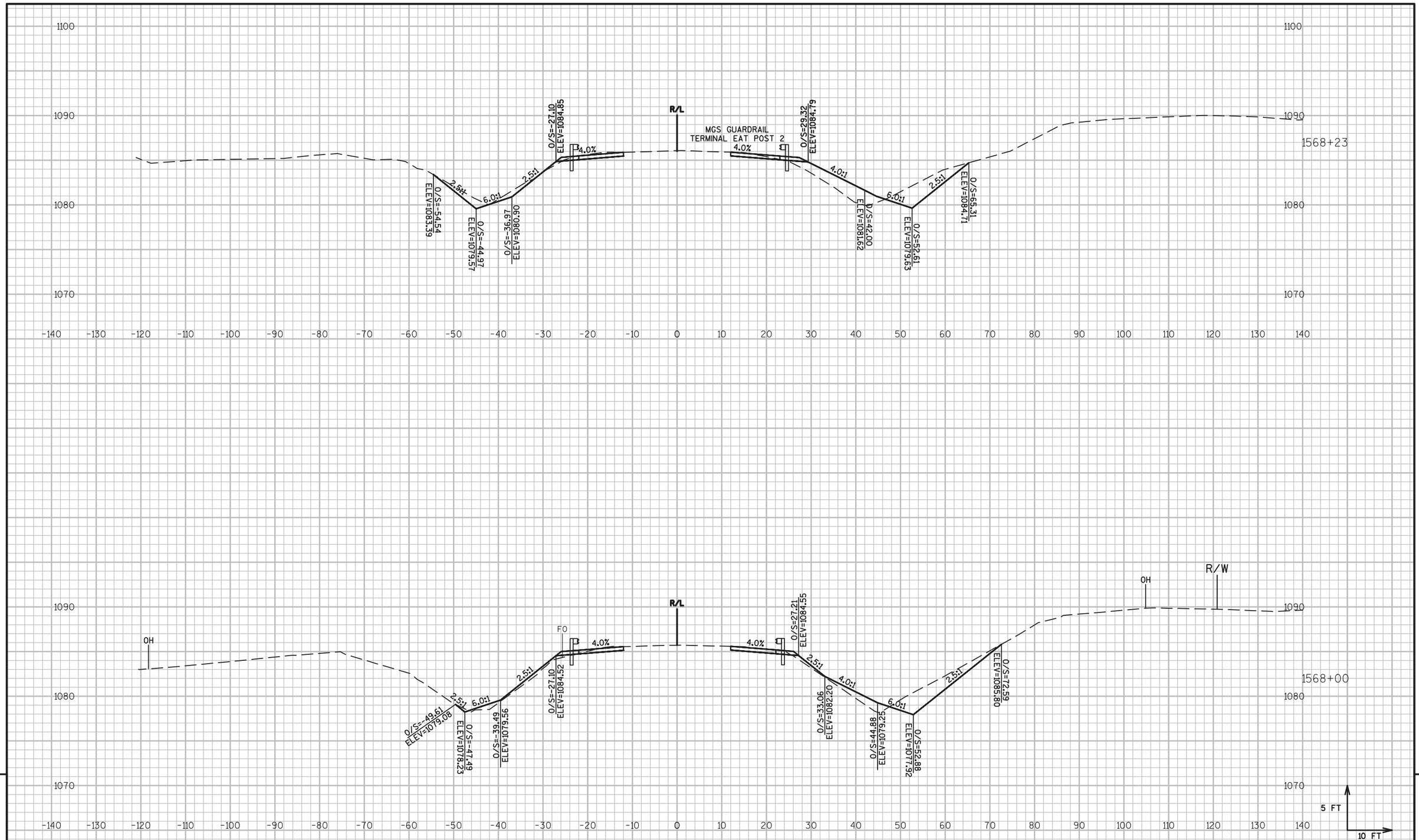


9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 134	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090218-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

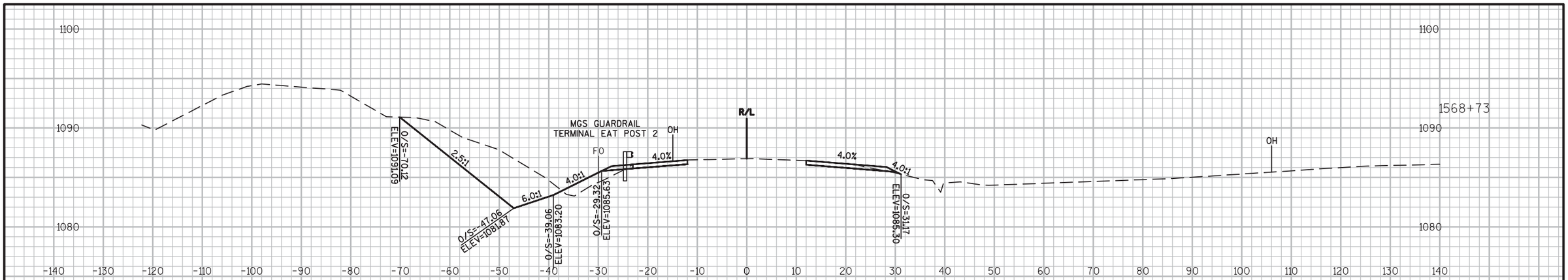


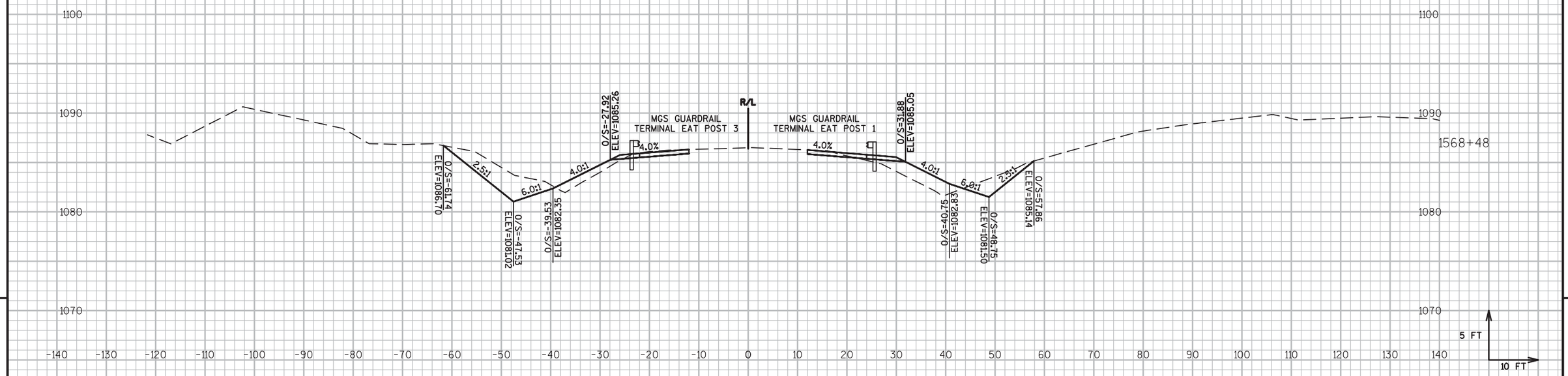
9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 135	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090219-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT





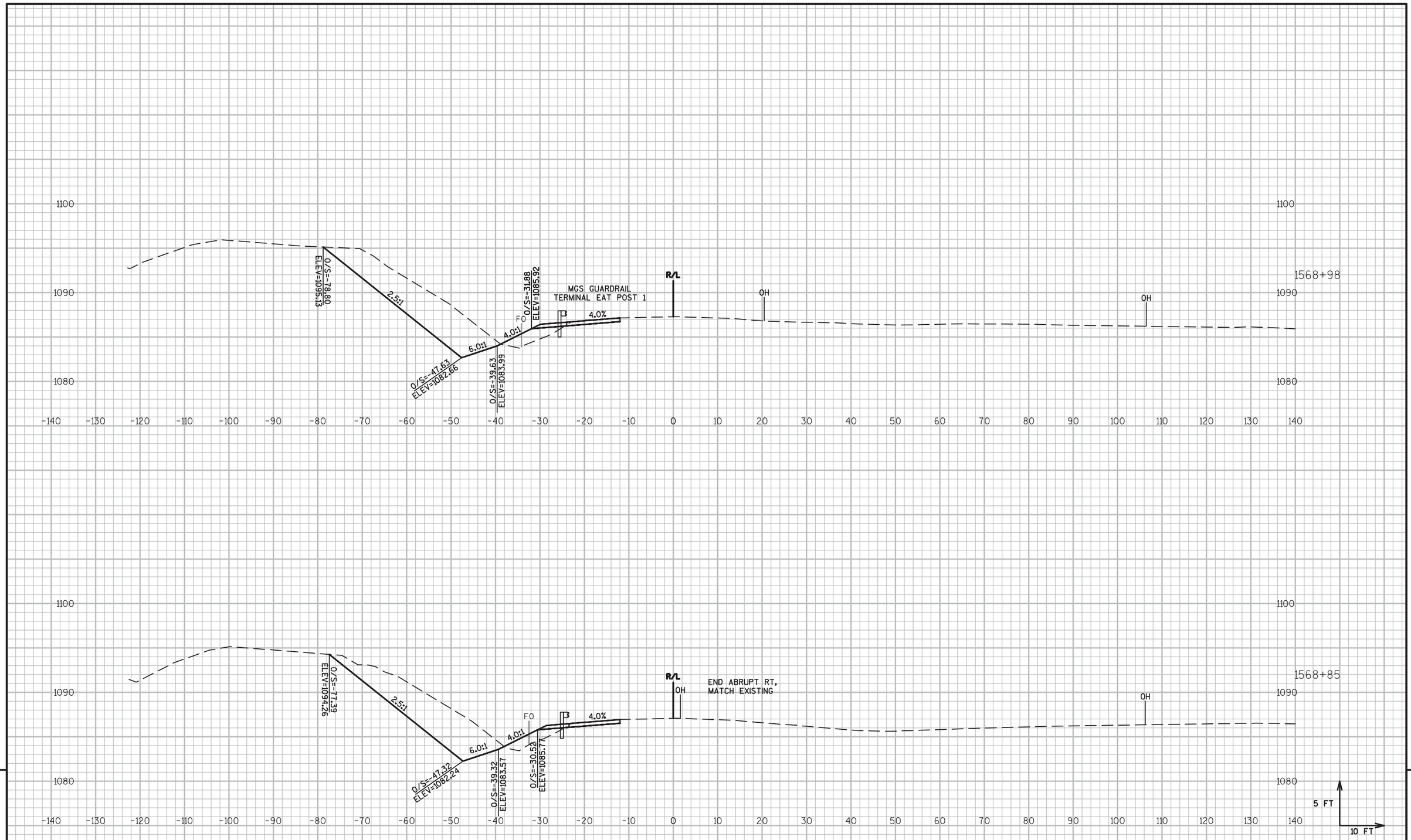
9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 136	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090220-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49

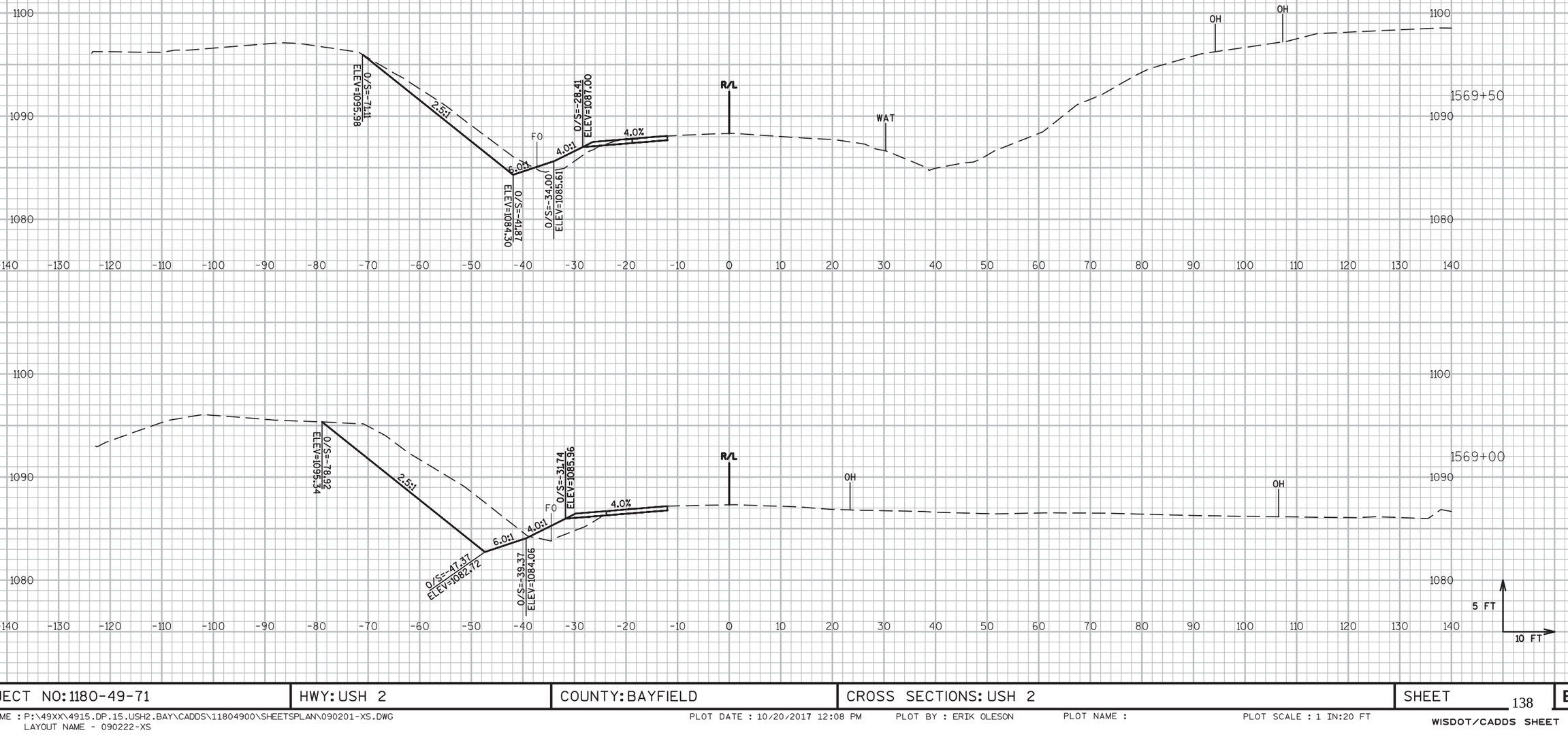


9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 137	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090221-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT



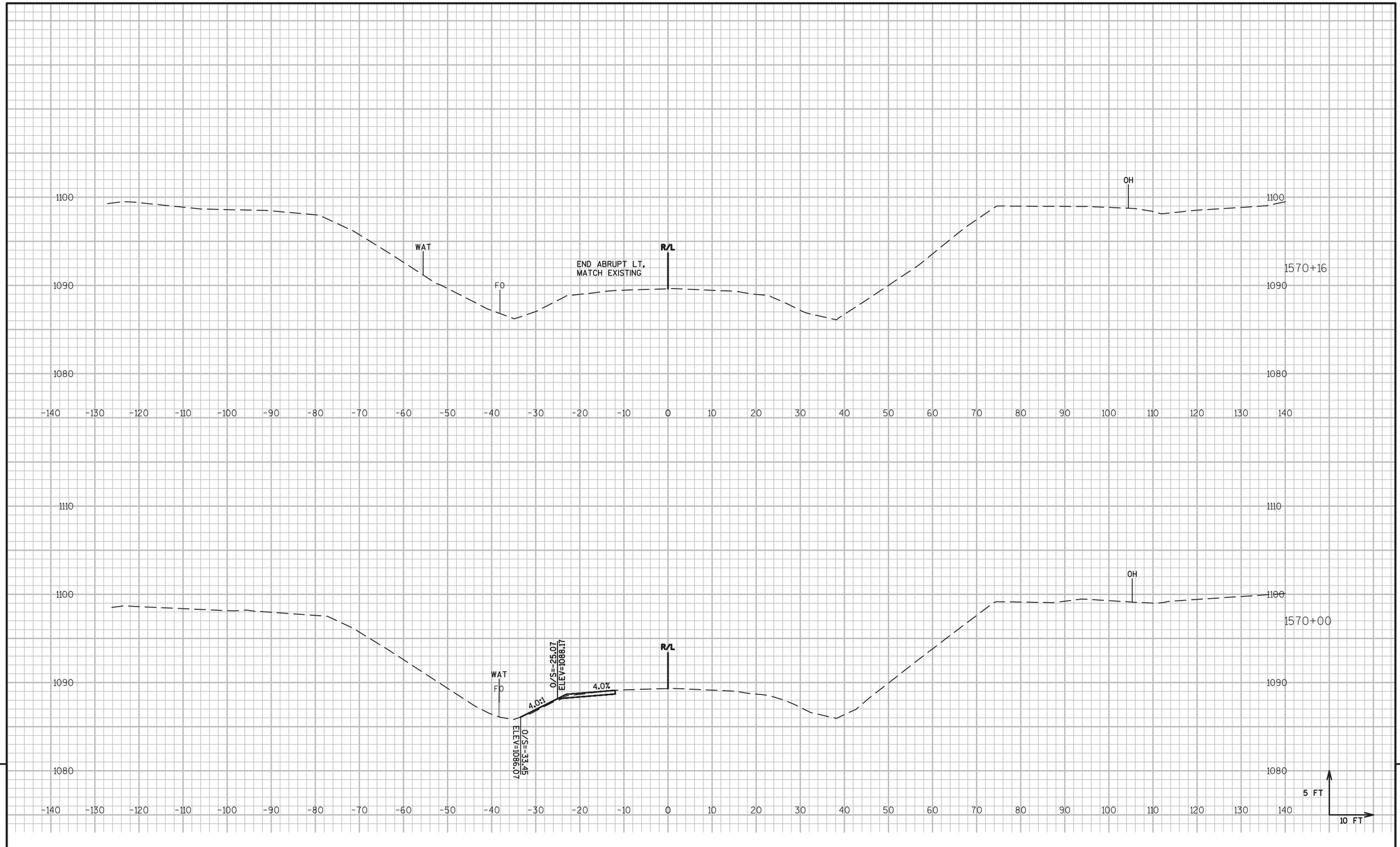
9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 138	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090222-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

WISDOT/CADDS SHEET 49



9 9

PROJECT NO: 1180-49-71	HWY: USH 2	COUNTY: BAYFIELD	CROSS SECTIONS: USH 2	SHEET 139	E

FILE NAME : P:\49XX\4915.DP.15.USH2.BAY\CADDS\11804900\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090222-XS

PLOT DATE : 10/20/2017 12:08 PM PLOT BY : ERIK OLESON PLOT NAME : PLOT SCALE : 1 IN:20 FT

Wisconsin Department of Transportation

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