NWL

MAY 2017

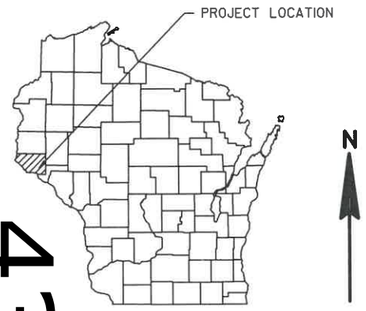
PROJECT ID: 7896-00-70

WITH: N/A

COUNTY: PIERCE

ORDER OF SHEETS

TOTAL SHEETS = 44



43

DESIGN DESIGNATION 7896-00-70

A.A.D.T.	2017	=	220
A.A.D.T.	2037	=	290
D.H.V.		=	29
D.D.		=	50/50
T.		=	10%
DESIGN SPEED		=	40 MPH
ESALS		=	81,000

CONVENTIONAL SYMBOLS

PLAN

- CORPORATE LIMITS
- PROPERTY LINE
- LOT LINE
- LIMITED HIGHWAY EASEMENT
- EXISTING RIGHT OF WAY
- PROPOSED OR NEW R/W LINE
- SLOPE INTERCEPT
- REFERENCE LINE (300'EB')
- EXISTING CULVERT
- PROPOSED CULVERT (Box or Pipe)
- COMBUSTIBLE FLUIDS (CAUTION)
- MARSH AREA
- WOODED OR SHRUB AREA

PROFILE

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

UTILITIES

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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

T SALEM, 400TH STREET

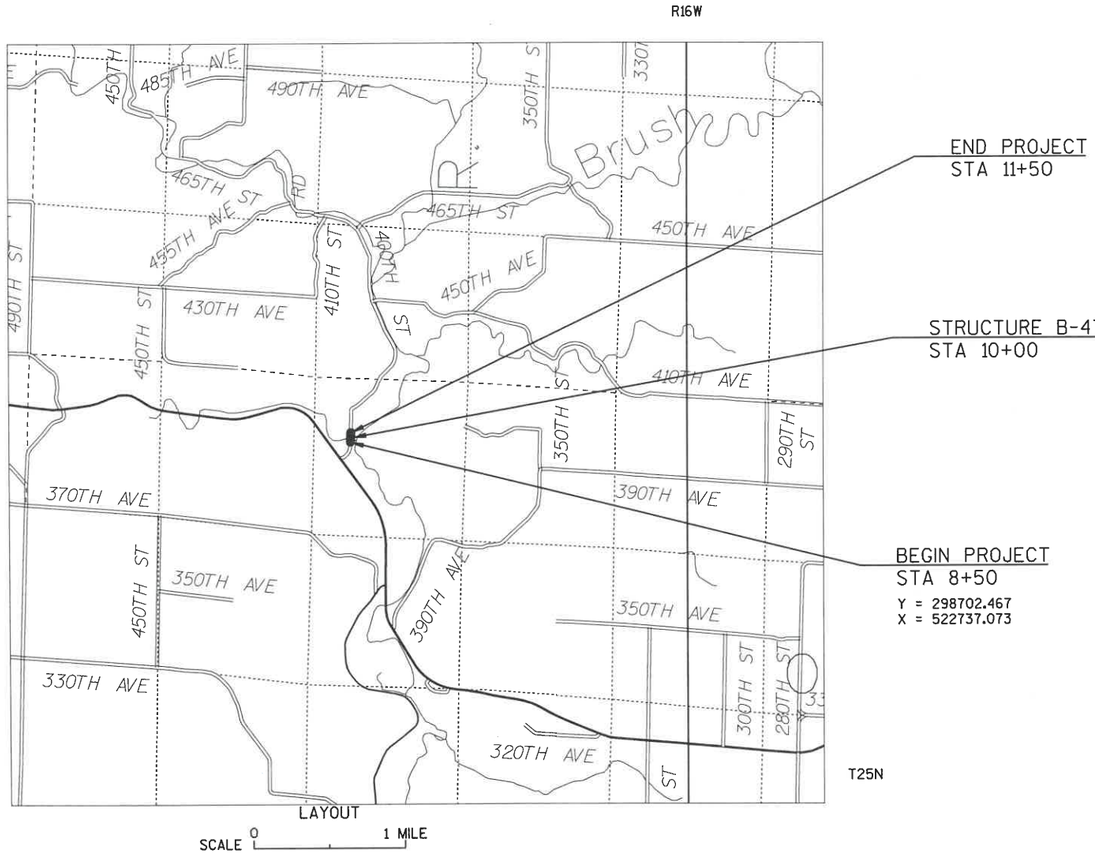
BR RUSH RIVER BRIDGE B-47-0212

LOC STR

PIERCE COUNTY

STATE PROJECT NUMBER
7896-00-70

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
7896-00-70	———	———



TOTAL NET LENGTH OF CENTERLINE = 0.057 MI

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM, PIERCE COUNTY

ACCEPTED FOR

TOWN of SALEM

1-13-17 (Date) Town Chairman

ORIGINAL PLANS PREPARED BY

SEH

WISCONSIN
TARA L. KRISTA
37975
CHIPPEWA FALLS, WI
PROFESSIONAL ENGINEER

1/13/17 (Date) (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor	SEH
Designer	SEH
Managment Consultant	KNIGHT E/A INC.
C.O. Examiner	---

APPROVED FOR THE DEPARTMENT

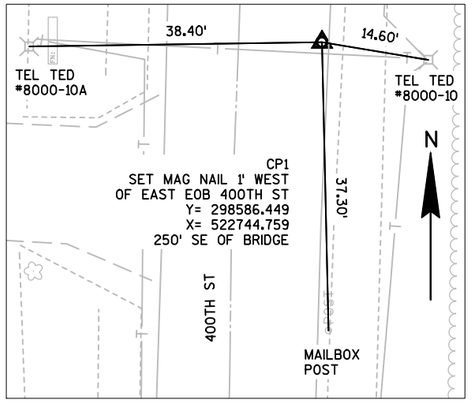
DATE: 1/26/17 (Management Consultant Signature)

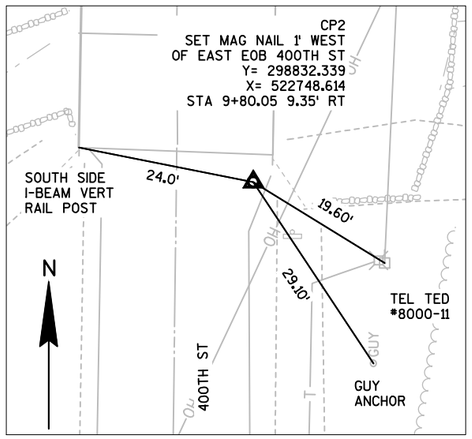
E

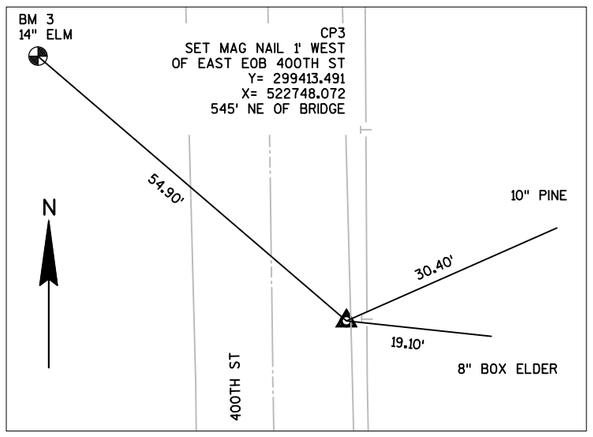
FILE NAME : P:\PT\S\SALEM\133901\CIVIL 3D\SHEETSPLAN\010101-TI.DWG
LAYOUT NAME - 010101-TI - TITLE SHEET 1 IN EQ 0.5 MI

PLOT DATE : 1/13/2017 8:37 AM PLOT BY : SEH PLOT NAME :

WISDOT/CADDS SHEET 10







ALIGNMENT TIES

GENERAL NOTES:

ELEVATIONS SHOWN ON THE PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

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

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

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

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

DISTURBED AREAS WITHIN THE RIGHT-OF-WAY, EXCEPT THE AREAS WITHIN THE FINISHED SHOULDER POINTS, ARE TO BE 4-INCH TOPSOILED, FERTILIZED, SEEDED AND MULCHED.

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

ALL PAVEMENT DIMENSIONS AND STATIONS ARE SHOWN TO THE EDGE OF PAVEMENT UNLESS NOTED OTHERWISE.

A VERTICAL SAWCUT SHALL BE MADE THROUGH EXISTING DRIVEWAYS AND PAVEMENTS AT REMOVAL LIMITS.

SILT FENCE IS TO BE PLACED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER, AND IN PLACE PRIOR TO BRIDGE REMOVAL.

WISDOT MONUMENTS WILL BE SUPPLIED BY THE STATE AND INSTALLED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER.

3.5-INCH ASPHALTIC SURFACE SHALL BE CONSTRUCTED WITH A 1.75-INCH UPPER LAYER AND A 1.75-INCH LOWER LAYER.

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 = 0.15 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.13 ACRES

UTILITY CONTACTS:

CENTURYLINK
20 SOUTH WILSON AVENUE
RICE LAKE, WI 54868
TELEPHONE: 715.234.5573
ATTENTION: KYLE SCHLAMPP
EMAIL: KYLE.SCHLAMPP@CENTURYLINK.COM

PIERCE-PEPIN COOPERATIVE SERVICE
W7725 USH 10
P.O. BOX 420
ELLSWORTH, WI 54011
TELEPHONE: 715.273.2473
ATTENTION: BRAD RISTOW
EMAIL: BRISTOW@PIERCEPEPIN.COM

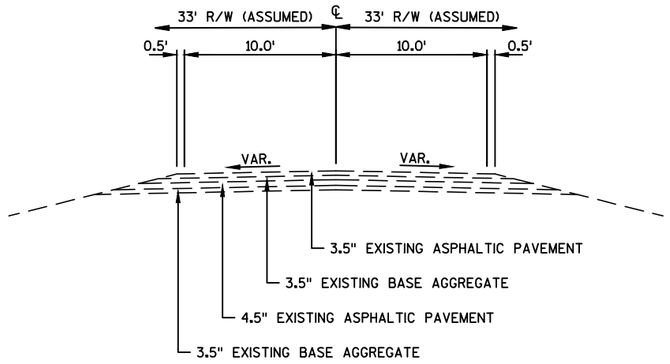
DIGGERS HOTLINE
Dial 811 or (800)242-8511
www.DiggersHotline.com

DESIGN CONTACT
SEH
10 NORTH BRIDGE STREET
CHIPPEWA FALLS, WI 54729
TELEPHONE: 715.720.6291
ATTENTION: TARA KRISTA
EMAIL: TKRISTA@SEHINC.COM

MUNICIPAL CONTACT
TOWN OF SALEM
W3136 350TH AVENUE
MAIDEN ROCK, WI 54750
TELEPHONE: 715.647.5679
ATTENTION: PAUL SHINGLEDECKER
EMAIL: RUTHKAY1964@GMAIL.COM

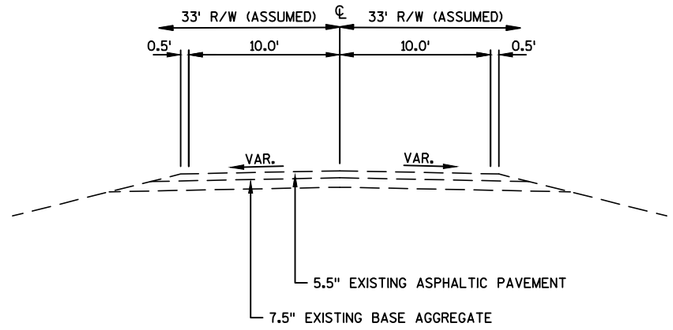
WDNR CONTACT
DNR WEST CENTRAL REGION HQ
1300 WEST CLAIREMONT AVENUE
EAU CLAIRE, WI 54702
TELEPHONE: 715.839.1609
ATTENTION: CHRIS WILLGER
EMAIL: CHRISTOPHERJ.WILLGER@WISCONSIN.GOV

2



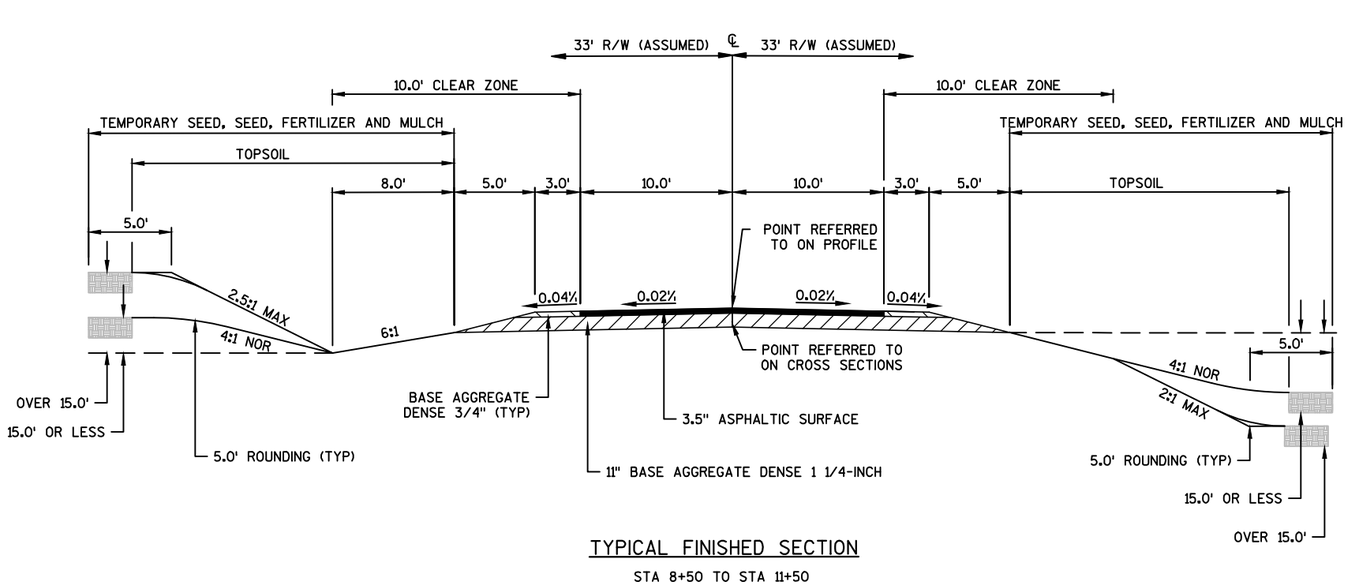
TYPICAL EXISTING SECTION

STA 8+50 TO STA 9+84



TYPICAL EXISTING SECTION

STA 10+15 TO STA 11+50



TYPICAL FINISHED SECTION

STA 8+50 TO STA 11+50

PROJECT NO: 7896-00-70	HWY: 400TH STREET	COUNTY: PIERCE	TYPICAL SECTIONS	SHEET 3	E

7896-00-70

Line	Item	Item Description	Unit	Total	Qty
0010	201.0105	Clearing	STA	3.000	3.000
0020	201.0205	Grubbing	STA	3.000	3.000
0030	203.0500.S	Removing Old Structure Over Waterway (station) 01. Station 10+00	LS	1.000	1.000
0040	205.0100	Excavation Common	CY	310.000	310.000
0050	206.2000	Excavation for Structures Culverts (structure) 01. B-47-0212	LS	1.000	1.000
0060	210.2500	Backfill Structure Type B	TON	850.000	850.000
0070	213.0100	Finishing Roadway (project) 01. 7896-00-70	EACH	1.000	1.000
0080	305.0110	Base Aggregate Dense 3/4-Inch	TON	75.000	75.000
0090	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	775.000	775.000
0100	455.0605	Tack Coat	GAL	55.000	55.000
0110	465.0105	Asphaltic Surface	TON	175.000	175.000
0120	502.3200	Protective Surface Treatment	SY	85.000	85.000
0130	504.0100	Concrete Masonry Culverts	CY	56.000	56.000
0140	505.0400	Bar Steel Reinforcement HS Structures	LB	7,165.000	7,165.000
0150	516.0500	Rubberized Membrane Waterproofing	SY	80.000	80.000
0160	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	1,120.000	1,120.000
0170	606.0300	Riprap Heavy	CY	120.000	120.000
0180	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	220.000	220.000
0190	614.2340	MGS Guardrail 3 L	LF	225.000	225.000
0200	614.2610	MGS Guardrail Terminal EAT	EACH	4.000	4.000
0210	619.1000	Mobilization	EACH	1.000	1.000
0220	624.0100	Water	MGAL	9.000	9.000
0230	625.0100	Topsoil	SY	325.000	325.000
0240	627.0200	Mulching	SY	500.000	500.000
0250	628.1504	Silt Fence	LF	575.000	575.000
0260	628.1520	Silt Fence Maintenance	LF	575.000	575.000
0270	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0280	628.1910	Mobilizations Emergency Erosion Control	EACH	3.000	3.000
0290	628.2008	Erosion Mat Urban Class I Type B	SY	100.000	100.000
0300	629.0205	Fertilizer Type A	CWT	0.300	0.300
0310	630.0120	Seeding Mixture No. 20	LB	10.000	10.000
0320	630.0200	Seeding Temporary	LB	10.000	10.000
0330	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0340	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0350	638.2602	Removing Signs Type II	EACH	6.000	6.000
0360	638.3000	Removing Small Sign Supports	EACH	6.000	6.000
0370	642.5001	Field Office Type B	EACH	1.000	1.000
0380	643.0100	Traffic Control (project) 01. 7896-00-70	EACH	1.000	1.000

7896-00-70

Line	Item	Item Description	Unit	Total	Qty
0390	643.0420	Traffic Control Barricades Type III	DAY	846.000	846.000
0400	643.0705	Traffic Control Warning Lights Type A	DAY	1,692.000	1,692.000
0410	643.0900	Traffic Control Signs	DAY	752.000	752.000
0420	645.0111	Geotextile Type DF Schedule A	SY	10.000	10.000
0430	645.0120	Geotextile Type HR	SY	285.000	285.000
0440	650.4500	Construction Staking Subgrade	LF	300.000	300.000
0450	650.5000	Construction Staking Base	LF	300.000	300.000
0460	650.6500	Construction Staking Structure Layout (structure) 01. B-47-0212	LS	1.000	1.000
0470	650.9910	Construction Staking Supplemental Control (project) 01. 7896-00-70	LS	1.000	1.000
0480	650.9920	Construction Staking Slope Stakes	LF	300.000	300.000
0490	690.0150	Sawing Asphalt	LF	44.000	44.000
0500	715.0502	Incentive Strength Concrete Structures	DOL	500.000	500.000
0510	SPV.0090	Special 01. Three-Sided Precast Concrete Structure B-47-0212	LF	36.000	36.000

3

CLEARING & GRUBBING

STATION - STATION	LOCATION	201.0105 CLEARING STA	201.0205 GRUBBING STA
400TH STREET			
8+50 - 11+50	LT & RT	3	3
ITEM TOTALS		3	3

EXCAVATION

STATION - STATION	LOCATION	205.0100 COMMON CY	AIR FILL CY	EXPAND. FILL CY	WASTE CY
400TH STREET					
8+50 - 9+80.83	LT & RT	162	25	32	130
10+17.17 - 11+50	LT & RT	148	26	33	115
ITEM TOTALS		310	51	65	245

NOTES:
1) SALVAGED/UNUSABLE PAVEMENT MATERIAL IS INCLUDED IN COMMON EXCAVATION.
2) FILL DOES NOT INCLUDE UNUSABLE PAVEMENT EXCAVATION VOLUME.
3) FILL WILL BE BACKFILLED WITH CUT OR BORROW.
4) POSITIVE BORROW INDICATES A SHORTAGE OF MATERIAL.
5) EXPANSION FACTOR = 1.3

FINISHING ROADWAY (7896-00-70)

STATION - STATION	213.0100 EACH
400TH STREET	
8+50 - 11+50	1
ITEM TOTAL	1

BASE AGGREGATE DENSE

STATION - STATION	LOCATION	305.0110 3/4-INCH TON	305.0120 1 1/4-INCH TON	624.0100 WATER MGAL
400TH STREET				
8+50 - 11+50	LT & RT	75	775	9
ITEM TOTALS		75	775	9

ASPHALTIC PAVEMENT ITEMS

STATION - STATION	LT & RT	455.0605 TACK COAT GAL	465.0105 ASHALTIC SURFACE TON
400TH STREET			
8+50 - 11+50	LT & RT	55	175
ITEM TOTALS		55	175

GUARDRAIL ITEMS

STATION	LOCATION	614.2340 MGS GUARDRAIL 3L LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH
400TH STREET			
8+87.54 - 9+40.63	RT	-	1
8+93.79 - 9+46.87	LT	-	1
9+40.63 - 10+53.12	RT	112.5	-
9+46.87 - 10+59.37	LT	112.5	-
10+53.12 - 11+06.21	RT	-	1
10+59.37 - 11+12.46	LT	-	1
ITEM TOTALS		225	4

MOBILIZATION

STATION - STATION	619.1000 EACH
400TH STREET	
CATEGORY 0010	0.25
CATEGORY 0020	0.75
ITEM TOTAL	1

TOPSOIL, MULCHING AND SEEDING

STATION - STATION	LOCATION	625.0100 TOPSOIL SY	627.0200 MULCHING SY	629.0205 FERTILIZER TYPE A CWT	630.0120 SEEDING MIXTURE NO. 20 LB	630.0200 SEEDING TEMPORARY LB
400TH STREET						
8+50 - 11+50	LT & RT	325	500	0.3	10	10
ITEM TOTALS		325	500	0.3	10	10

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER ESTIMATE CATEGORY 0010, UNLESS OTHERWISE NOTED.

3

EROSION CONTROL ITEMS

STATION - STATION	LOCATION	628.1504 SILT FENCE LF	628.1520 SILT FENCE MAINTENANCE LF	628.2008 EROSION MAT URBAN CLASS I TYPE B SY
400TH STREET				
8+50 - 11+50	LT & RT	575	575	100
ITEM TOTALS		575	575	100

TRAFFIC CONTROL

STATION - STATION	643.0100 PROJECT (7896-00-70) EACH	643.0420 BARRICADES TYPE III DAY	643.0705 WARNING LIGHTS TYPE A DAY	643.0900 SIGNS DAY
400TH STREET				
8+50 - 11+50	1	846	1692	752
ITEM TOTAL	1	846	1692	752

3

MOBILIZATIONS EROSION CONTROL

STATION - STATION	628.1905 EROSION CONTROL EACH	628.1910 EMERGENCY EROSION CONTROL EACH
400TH STREET		
8+50 - 11+50	3	3
ITEM TOTALS	3	3

CONSTRUCTION STAKING

STATION - STATION	LOCATION	650.4500 SUBGRADE LF	650.5000 BASE LF	*650.6500 STRUCTURE LAYOUT (B-47-0212) LS	650.9910 SUPPLEMENTAL CONTROL (7896-00-70) LS	650.9920 SLOPE STAKES LF
400TH STREET						
8+50 - 11+50	LT & RT	300	300	1	1	300
ITEM TOTALS		300	300	1	1	300

*CATEGORY 0020

PERMANENT SIGNING

SIGN GROUP CODE	SIGN CODE		TYPE II SIZE	637.2230 SIGNS TYPE II REFLECTIVE F SF	634.0612 POSTS WOOD 4X6-INCH 12-FT EACH	638.2602 REMOVING SIGNS TYPE II EACH	638.3000 REMOVING SMALL SIGN SUPPORTS EACH	REMARKS
400TH STREET								
1-1	W5-52L	CLEARANCE STRIPER	12" X 36"	3	1	1	1	REPLACE
1-2	W5-52R	CLEARANCE STRIPER	12" X 36"	3	1	1	1	REPLACE
1-3		WEIGHT LIMIT 6 TONS		-	-	1	1	REMOVE
1-4		WEIGHT LIMIT 6 TONS		-	-	1	1	REMOVE
1-5	W5-52R	CLEARANCE STRIPER	12" X 36"	3	1	1	1	REPLACE
1-6	W5-52L	CLEARANCE STRIPER	12" X 36"	3	1	1	1	REPLACE
ITEM TOTALS				12	4	6	6	

SAWING ASPHALT

STATION - STATION	LOCATION	690.0150 LF
400TH STREET		
8+50	LT & RT	22
11+50	LT & RT	22
ITEM TOTAL		44

FIELD OFFICE TYPE B

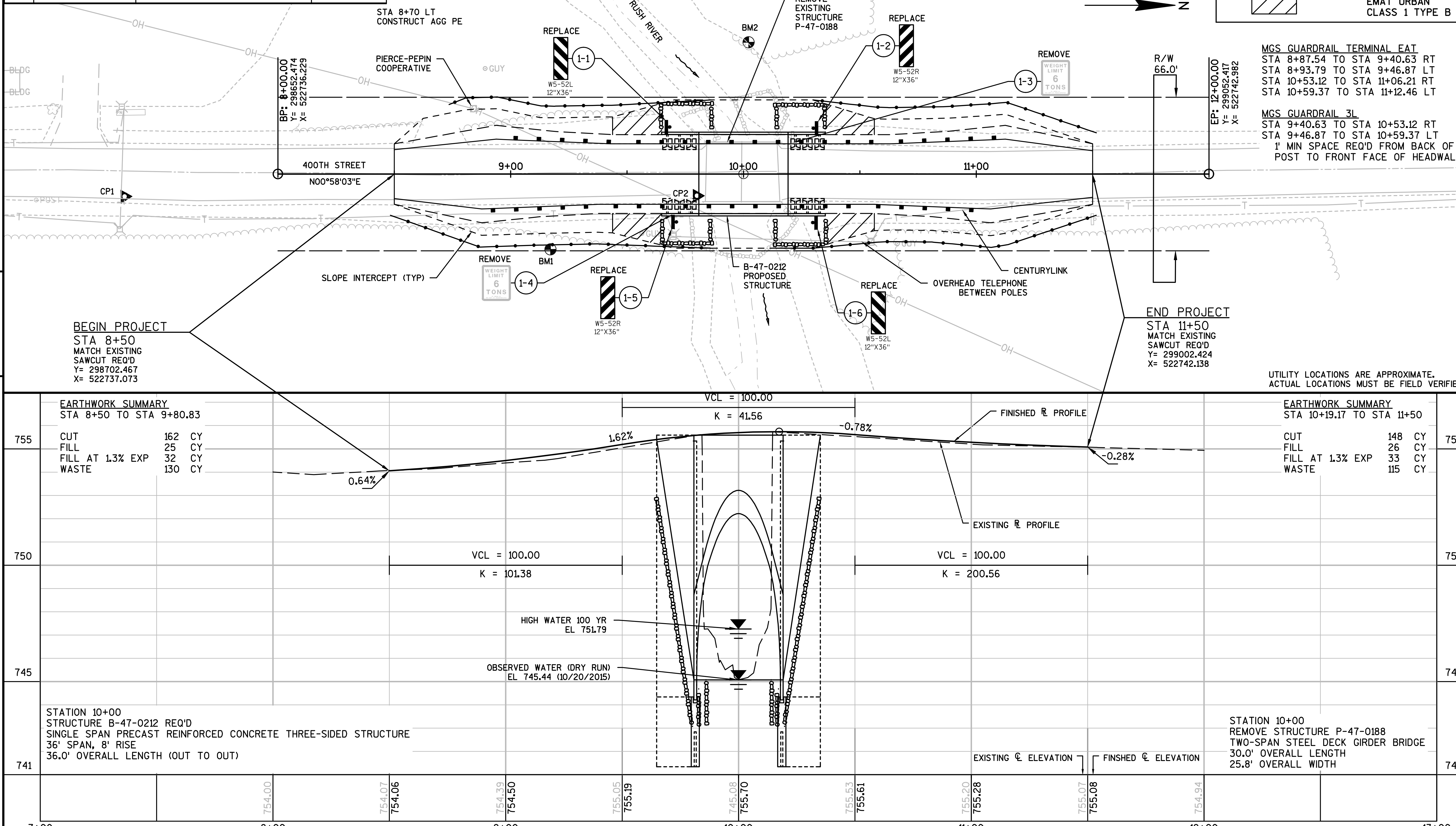
STATION - STATION	642.5001 EACH
400TH STREET	
8+50 - 11+50	1
ITEM TOTAL	1

NOTE: ALL ITEMS AND QUANTITIES ON THIS SHEET ARE FOR ENGINEER ESTIMATE CATEGORY 0010, UNLESS OTHERWISE NOTED.

BENCHMARK TABLE

NO	STATION	DESCRIPTION	ELEVATION
1	9+17.10 32.41' RT	⅜" SPK IN 14" BOX ELDER TREE	753.35
2	10+02.26 56.65' LT	⅜" SPK IN 10" ELM TREE	754.60

NOTE: REPLACE ALL FIELD ENTRANCES LOCATED WITHIN THE PROJECT LIMITS IN-KIND.

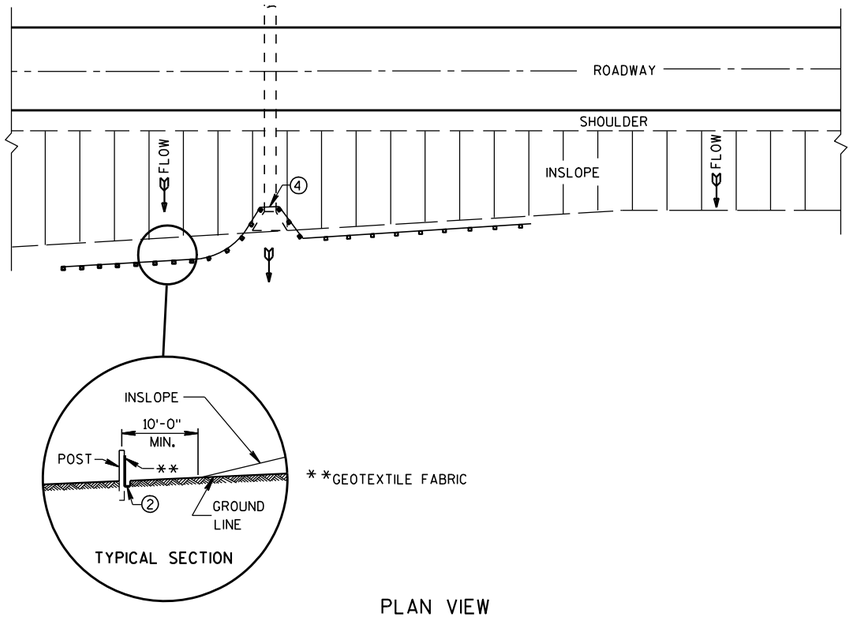


PROJECT NO: 7896-00-70	HWY: 400TH STREET	COUNTY: PIERCE	PLAN AND PROFILE: 400TH STREET	SHEET 8	E

FILE NAME : P:\PT\S\SALEM\133901\CIVIL 3D\SHEETSPLAN\050101-PP.DWG
LAYOUT NAME - 050101-PP - PLANPROF 1 IN 40 FT
PLOT DATE : 1/17/2017 2:32 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:40 FT

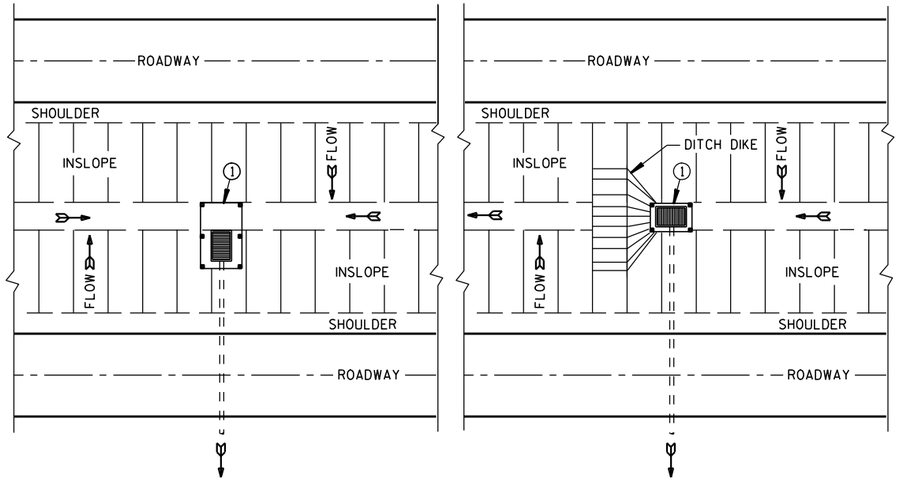
Standard Detail Drawing List

08E09-06	SILT FENCE
12A03-10	NAME PLATE (STRUCTURES)
14B42-04A	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-04B	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B42-04C	MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL
14B43-03A	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B43-03C	MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
14B44-02A	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02B	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
14B44-02C	MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)
15C02-06A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-06B	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C06-08	SIGNING & MARKING FOR TWO LANE BRIDGES



PLAN VIEW

TYPICAL APPLICATION OF SILT FENCE



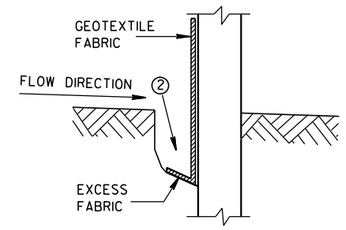
PLAN VIEW

SILT FENCE AT MEDIAN SURFACE DRAINS

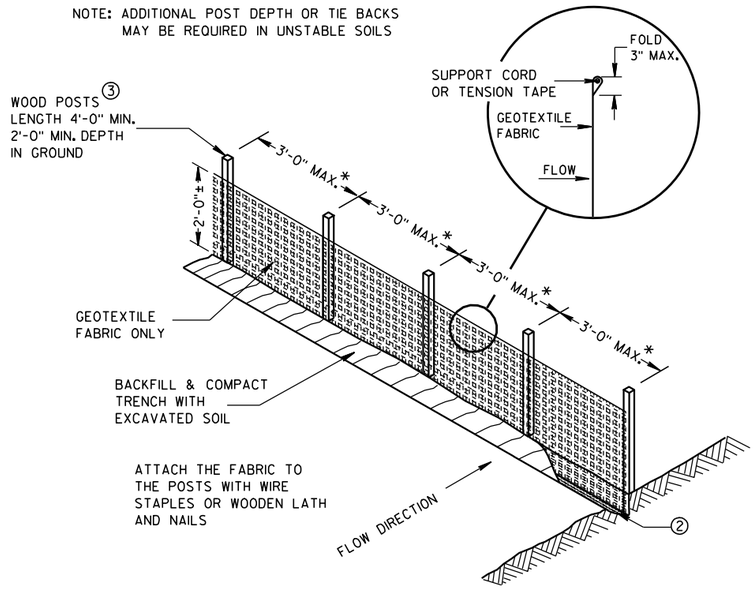
GENERAL NOTES

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

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

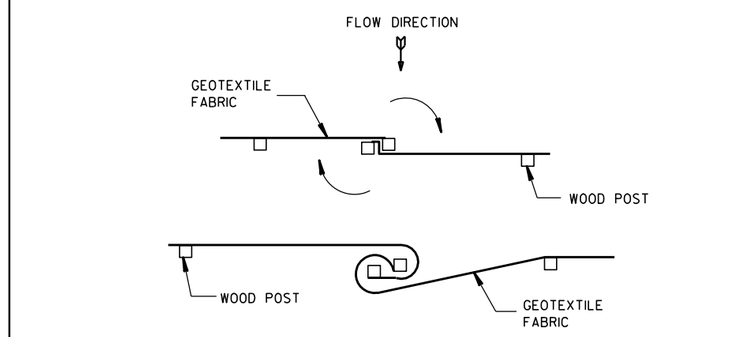


TRENCH DETAIL

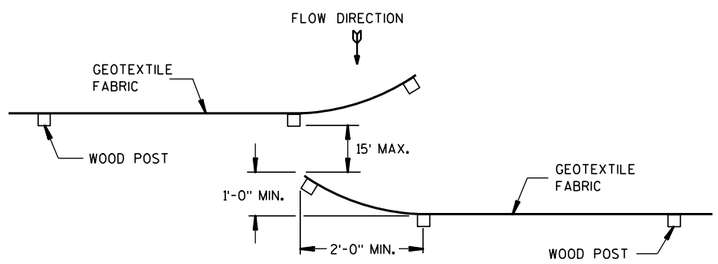


*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

SILT FENCE

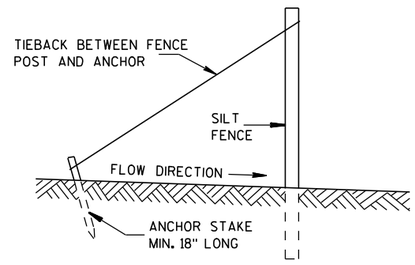


TWIST METHOD



HOOK METHOD

JOINING TWO LENGTHS OF SILT FENCE 5



SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

SILT FENCE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

S.D.D. 8 E 9-6

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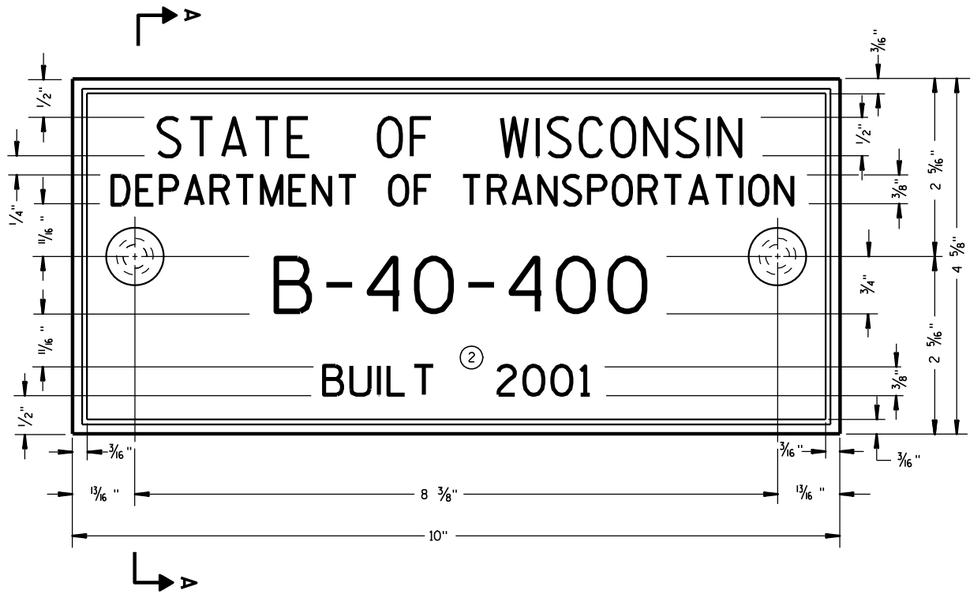
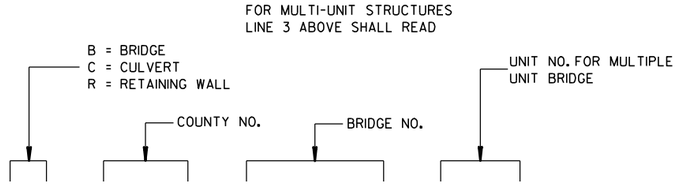
S.D.D. 8 E 9-6



TYPICAL NAME PLATE

(BRIDGES, CULVERTS, AND RETAINING WALLS)



NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES

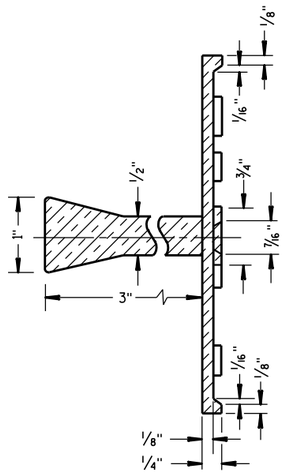
GENERAL NOTES

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

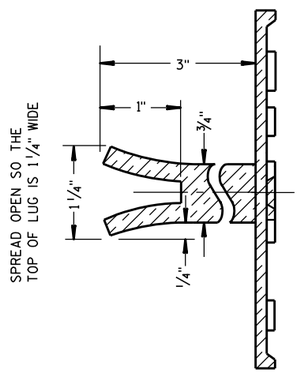
THE BRIDGE NUMBER AND YEAR BUILT SHOWN ON THIS DRAWING ARE EXAMPLES ONLY. SEE CONSTRUCTION PLANS FOR INDIVIDUAL NUMBERING AND YEAR BUILT.

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

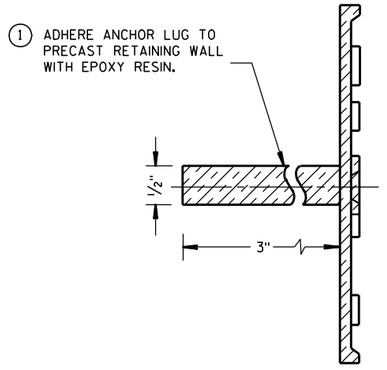
(2) REHABILITATION OF AN EXISTING STRUCTURE SHOULD USE THE DATE OF ORIGINAL STRUCTURE CONSTRUCTION.



SECTION A-A



ALTERNATE LUG



ALTERNATE LUG

(FOR ATTACHMENT TO PRECAST STRUCTURES)

NAME PLATE (STRUCTURES)	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED	
3/26/10 DATE	/S/ Scot Beck -- CHIEF STRUCTURAL DEVELOPMENT ENGINEER
FHWA	

6

S.D.D. 12 A 3-10

6

S.D.D. 12 A 3-10

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

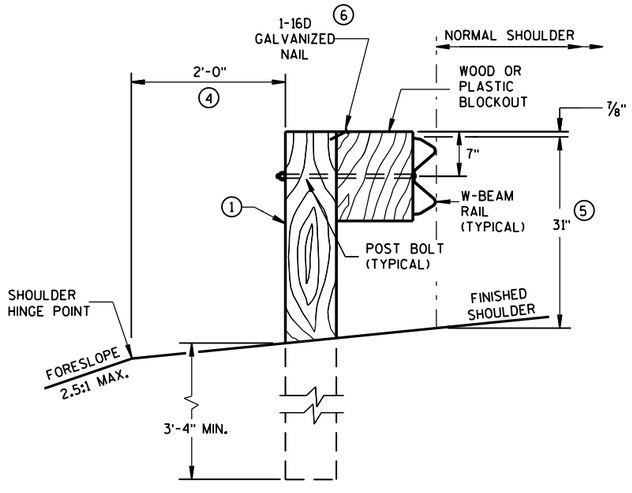
(2) USE WOOD OR APPROVED PLASTIC BLOCKOUTS. WOOD BLOCKOUTS MAY BE CONSTRUCTED OUT OF TWO OR MORE WOOD BLOCKOUTS. SEE ALTERNATE WOOD BLOCKOUT DETAIL. DIMENSIONS OF APPROVED PLASTIC BLOCKOUTS MAY VARY.

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

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

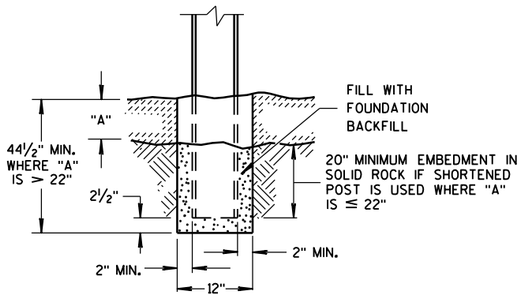
(5) FOR NEW MGS INSTALLATION TOP OF W-BEAM RAIL TOLERANCE IS ± 1". FOR EXISTING MGS INSTALLATION TOP OF W-BEAM IS BETWEEN 27¾" TO 32".

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



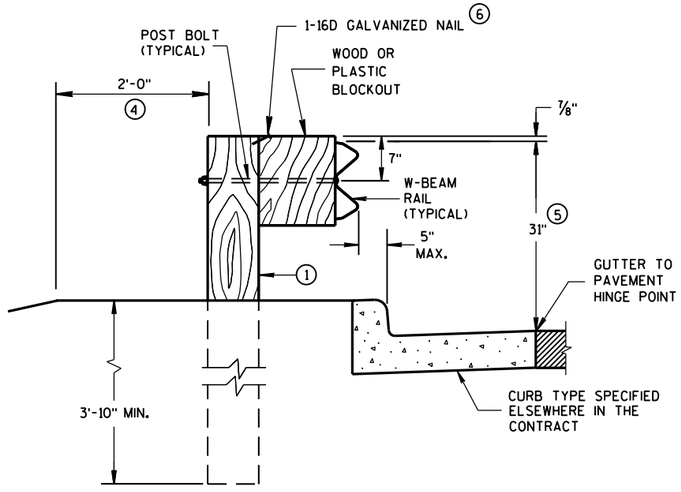
END VIEW

LOCATED ALONG A ROADWAY SHOULDER
STANDARD INSTALLATION



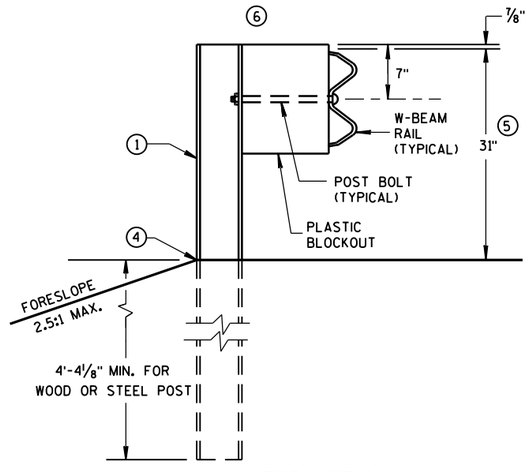
END VIEW

SETTING STEEL OR WOOD POST IN ROCK (3)



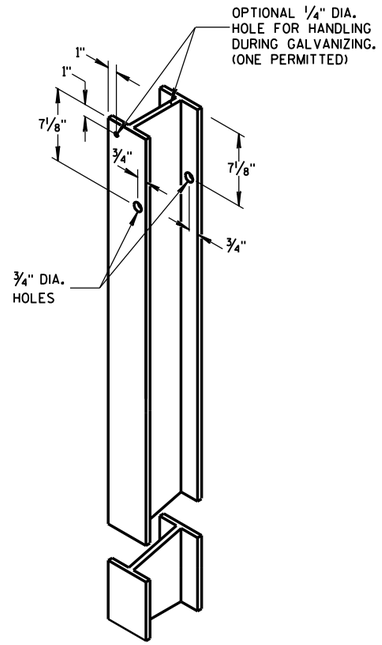
END VIEW

LOCATED ALONG A CURBED ROADWAY

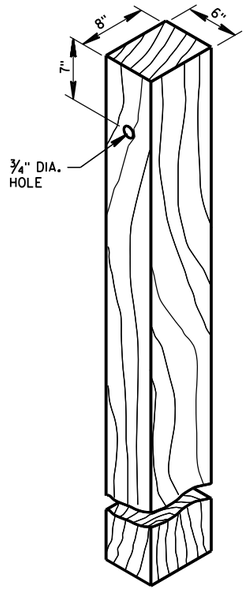


END VIEW

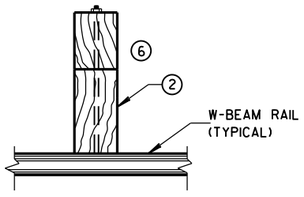
MGS LONGER POST AT HALFPOST SPACING W BEAM (K)



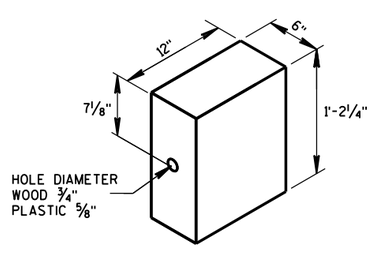
STEEL POST &
HOLE PUNCHING DETAIL
(w6X9) (1)



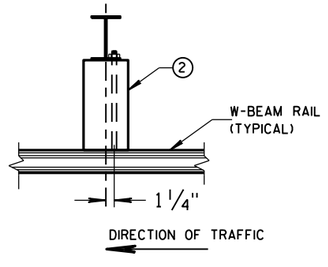
WOOD POST
(6" X 8") NOMINAL (1)



PLAN VIEW
WOOD POST,
BLOCKOUT & BEAM



WOOD OR
PLASTIC BLOCKOUT (2)

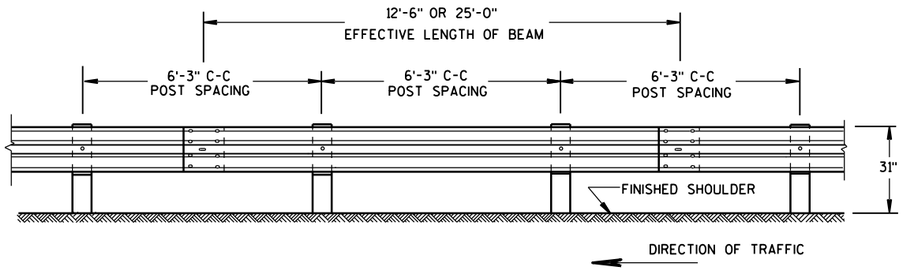


PLAN VIEW
STEEL POST,
PLASTIC BLOCKOUT & BEAM

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

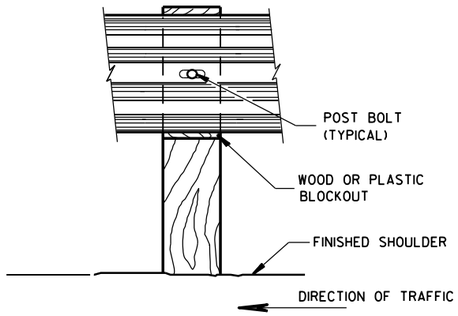
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6
S.D.D. 14 B 42-4a



FRONT VIEW

POST SPACING STANDARD INSTALLATION



FRONT VIEW AT WOOD POST

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

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

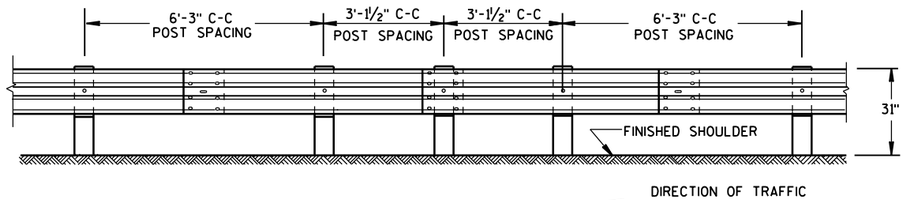
9. REVERSE EVERY OTHER REFLECTOR FOR 2-WAY VISIBILITY. THE CONTRACTOR MAY FURNISH TWO-SIDED REFLECTORS IN LIEU OF ONE-SIDED REFLECTORS.

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

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

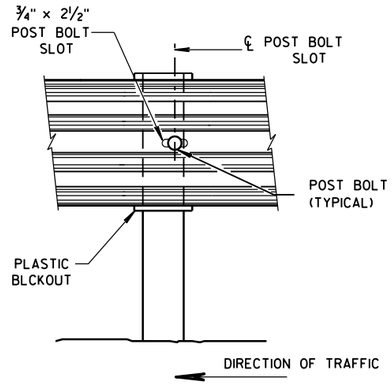
POST BOLTS ARE A 5/8" DIAMETER ASTM A307 GUARDRAIL BOLT. A POST BOLT REQUIRES 5/8" DIAMETER A563A DOUBLE RECESSED (DR) HEAVY HEX NUT AND 5/8" DIAMETER F844 FLAT WASHER. POST BOLTS MAY BE LONGER IF MULTIPLE BLOCKOUTS ARE BEING USED.

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

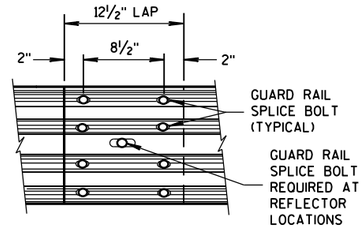


FRONT VIEW

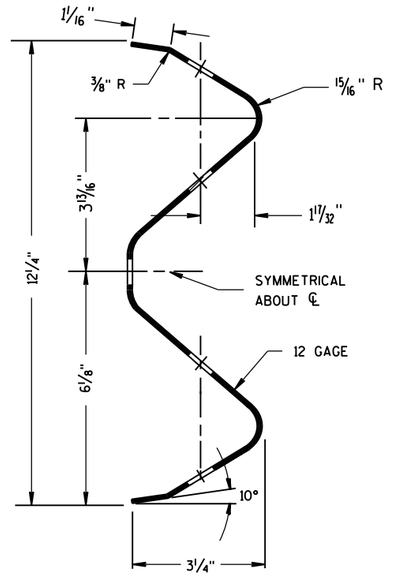
HALF POST SPACING (HS) AND HALF POST SPACING WITH LONGER POSTS (K)



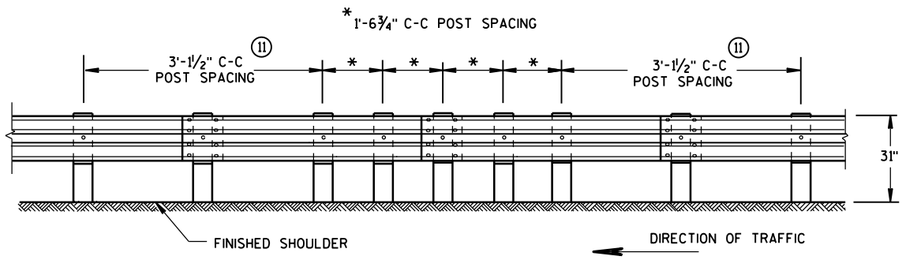
FRONT VIEW AT STEEL POST



FRONT VIEW
MID-SPAN BEAM SPLICE

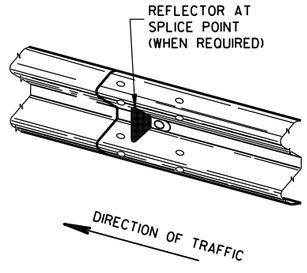


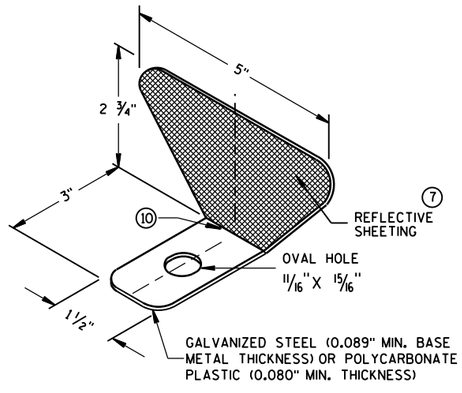
SECTION THRU W-BEAM RAIL



FRONT VIEW

QUARTER POST SPACING (QS)





ONE SIDED REFLECTOR DETAIL AND TYPICAL INSTALLATION (7)

REFLECTOR SPACING (8)

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

MIDWEST GUARDRAIL SYSTEM
(MGS) GUARDRAIL

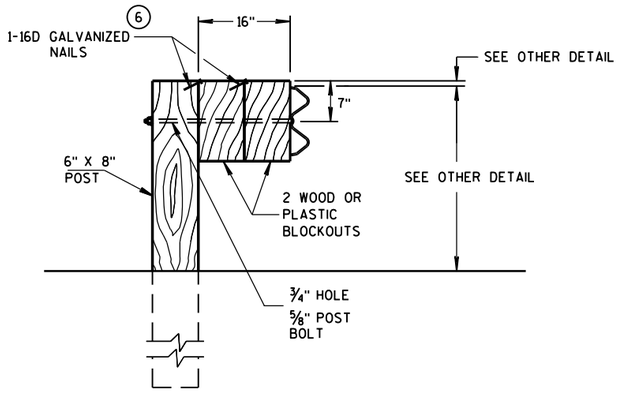
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

S.D.D. 14 B 42-4b

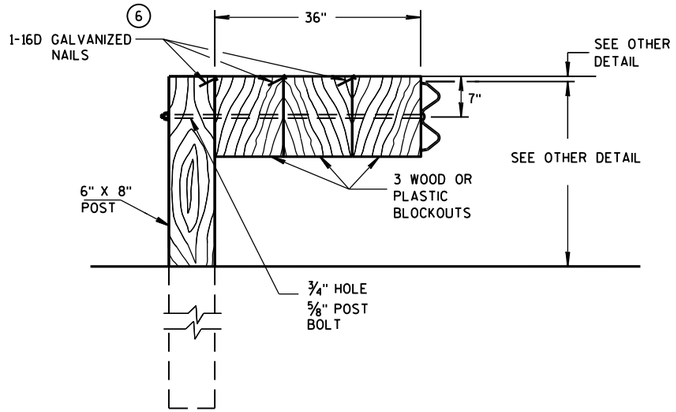
6

S.D.D. 14 B 42-4b



DETAIL FOR 16" BLOCKOUT DEPTH

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

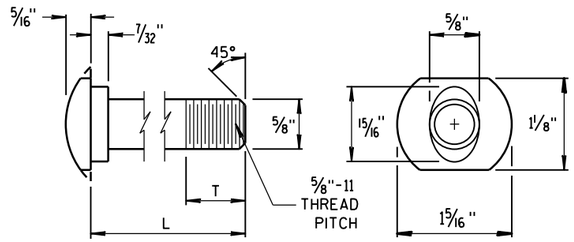


DETAIL FOR 36" BLOCKOUT DEPTH

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

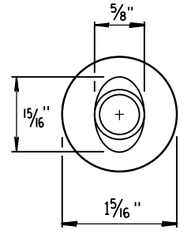
DO NOT USE 16" OR 36" BLOCKOUTS IF IT CAUSES THE POST TO BE DRIVEN BEYOND SHOULDER HINGE POINT OR CAUSES A FIXED OBJECT TO BE WITHIN THE DEFLECTION DISTANCE OF THE BARRIER.

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

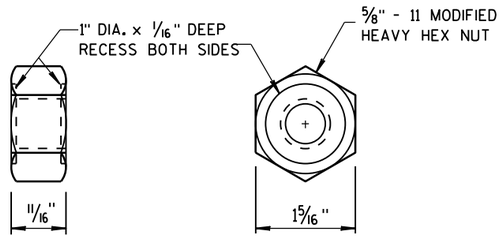


POST BOLT TABLE

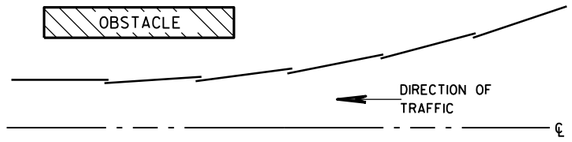
L	T (MIN.)
1 1/4"	1 1/8"
2"	1 3/4"
10"	4"
14"	4 1/16"
18"	4"
21"	4 1/16"
25"	4"



ALTERNATE BOLT HEAD

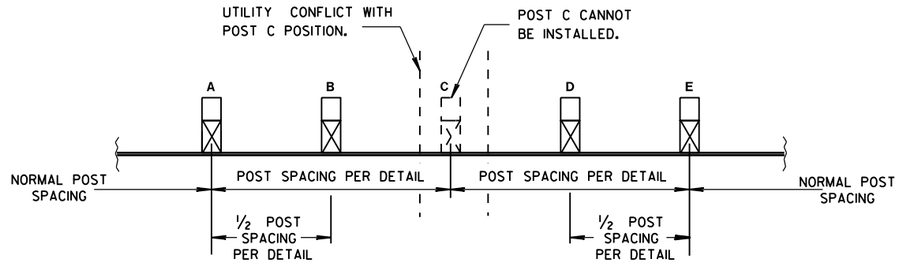


POST BOLT, SPLICE BOLT AND RECESS NUT

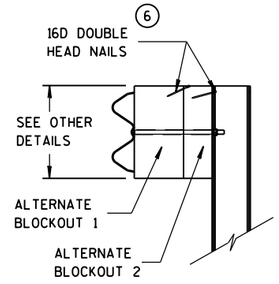


PLAN VIEW

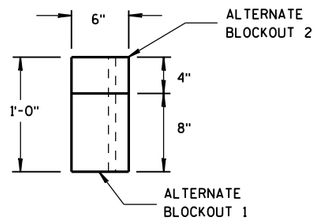
BEAM LAPPING DETAIL



POST DRIVING FOR CONTINUOUS UNDERGROUND OBSTRUCTION



SIDE VIEW



TOP VIEW

ALTERNATE WOOD BLOCKOUT DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) GUARDRAIL

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2016 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS ENGINEER
FHWA

6
S.D.D. 14 B 42-4c

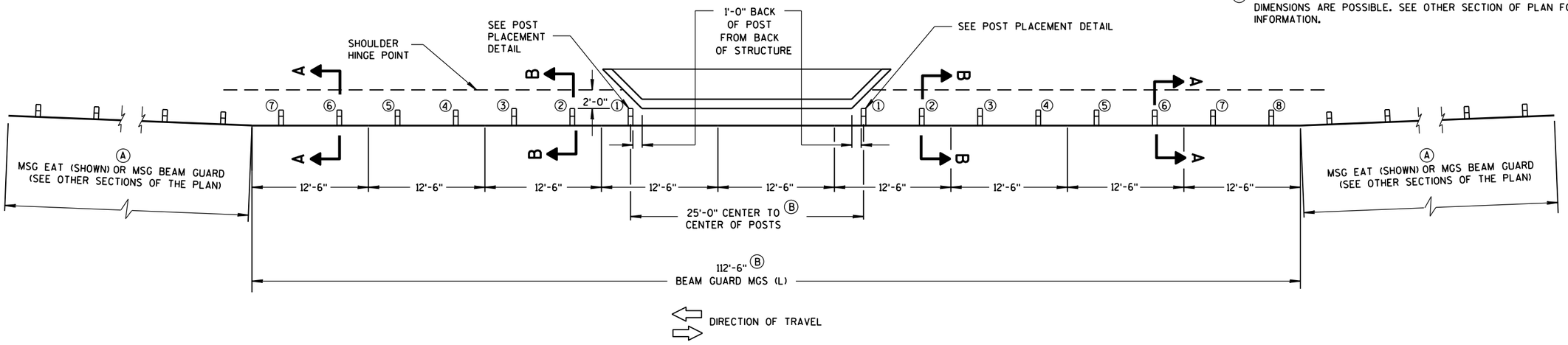
GENERAL NOTES

POSTS 1 THROUGH 3 ARE CRT POSTS.
ALL OTHER POSTS SHALL BE WOOD OR STEEL.

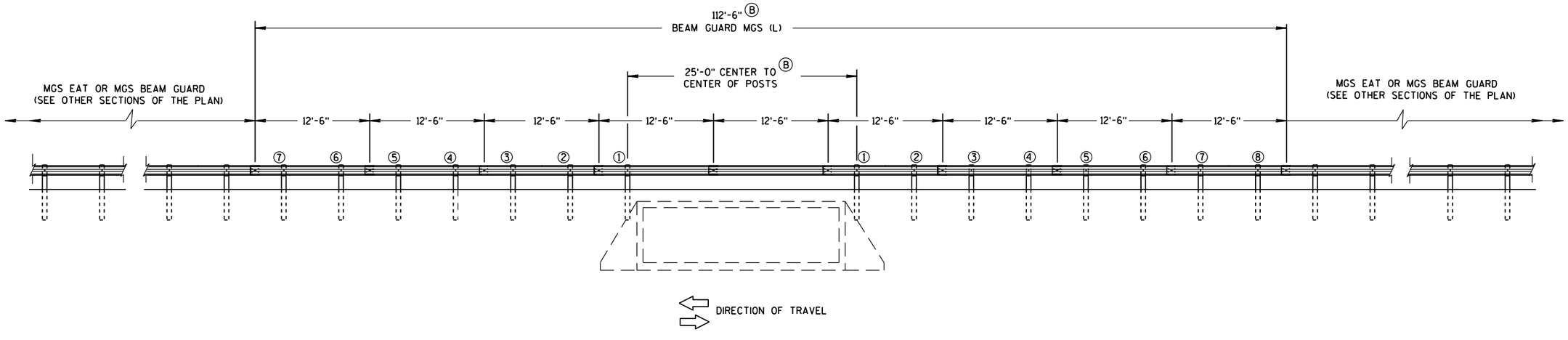
SEE SDD 14 B 42 FOR MORE DETAILS.

(A) FLARE FOR MGS EAT SHOWN. IF INSTALLING MGS NO FLARE NEEDED.

(B) VALUES SHOWN ON DRAWING REPRESENT THE MAXIMUM LENGTH. SHORTER DIMENSIONS ARE POSSIBLE. SEE OTHER SECTION OF PLAN FOR MORE INFORMATION.



PLAN VIEW

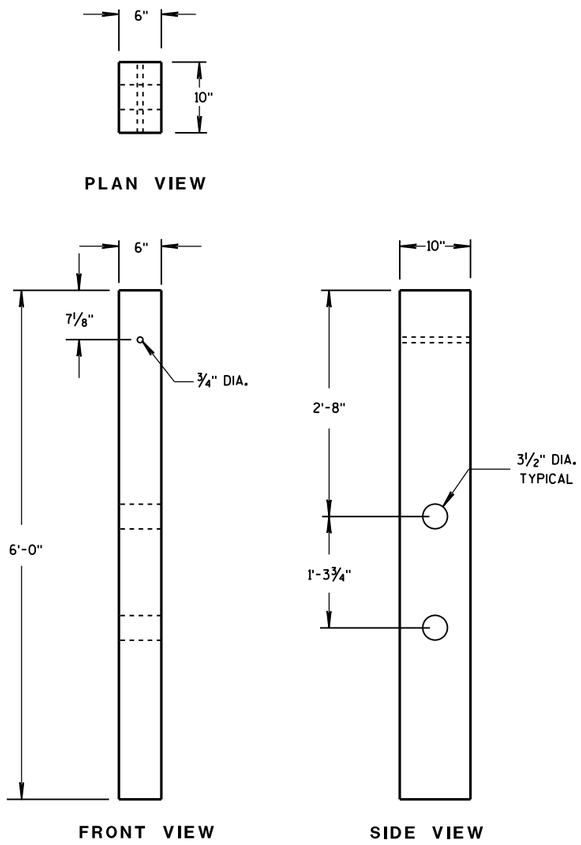


ELEVATION VIEW

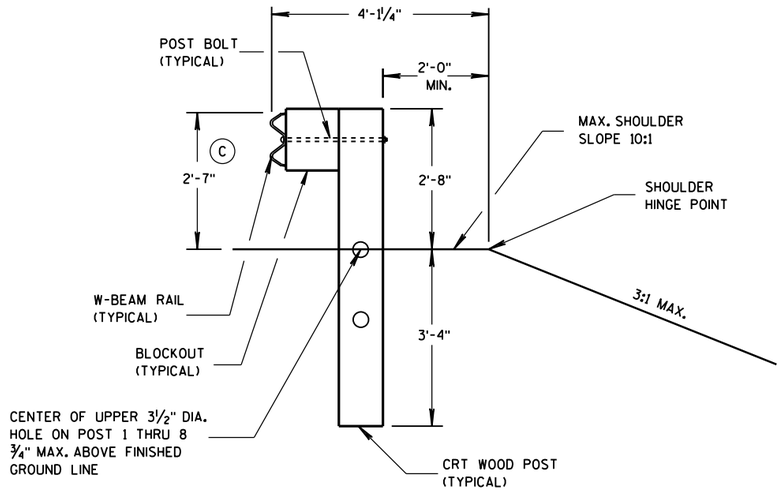
MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L) TWO-WAY TRAFFIC

MIDWEST GUARDRAIL SYSTEM LONG SPAN MGS (L)
STATE OF WISCONSIN DEPARTMENT OF TRANSPOI

6
S.D.D. 14 B 43-3a



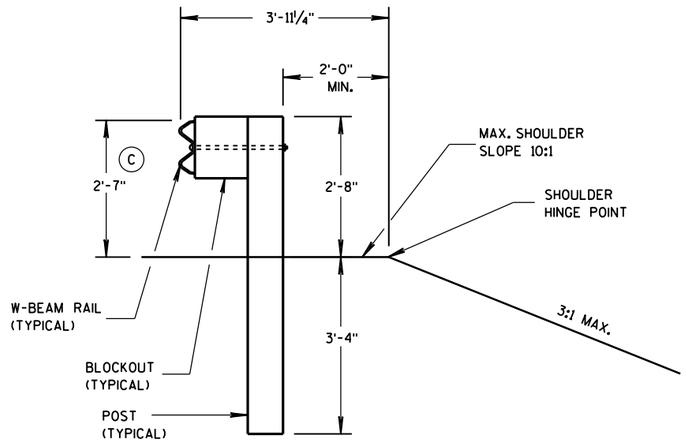
CRT WOOD POST



SECTION B-B

POSTS NO. 1-3

SEE OTHER DETAILS



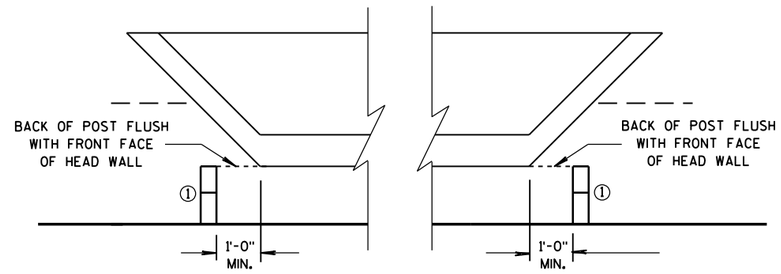
SECTION A-A

POSTS NO. 4-8

SEE OTHER DETAILS

GENERAL NOTES

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



POST PLACEMENT DETAIL

MIDWEST GUARDRAIL SYSTEM
LONG SPAN MGS (L)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

5/10/2013
DATE

/S/ Jerry H. Zogg
ROADWAY STANDARDS ENGINEER

FHWA

6
S.D.D. 14 B 43-3c

GENERAL NOTES

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

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

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

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

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

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

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

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

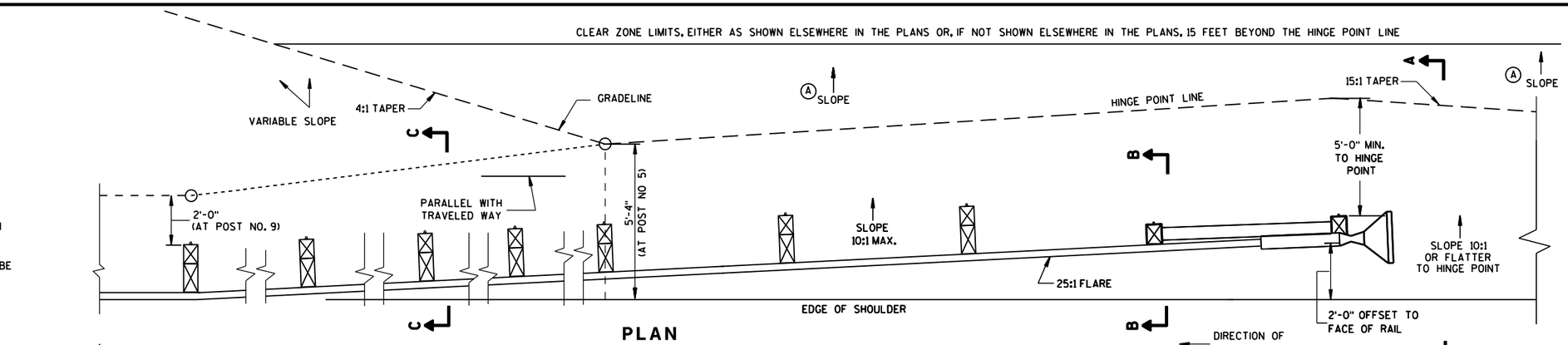
SEE SDD 14B42 FOR MORE INFORMATION.

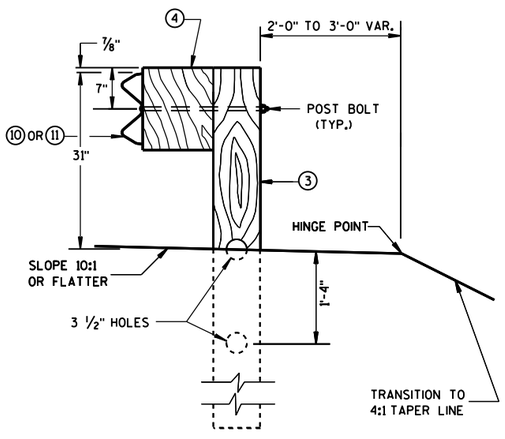
* DO NOT ATTACH BLOCKOUTS TO POSTS 1 AND 2.

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

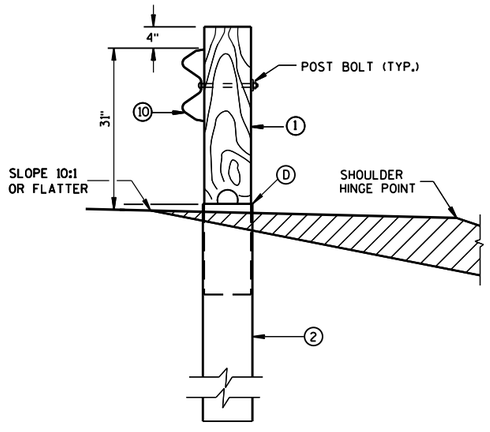
W-BEAM RAIL SPLICES ARE LOCATED AT POST NUMBER 3, AND BETWEEN POST 5 AND 6, BETWEEN POSTS 7 AND 8, AND MIDDLE OF THE SPAN AFTER POST 9.

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

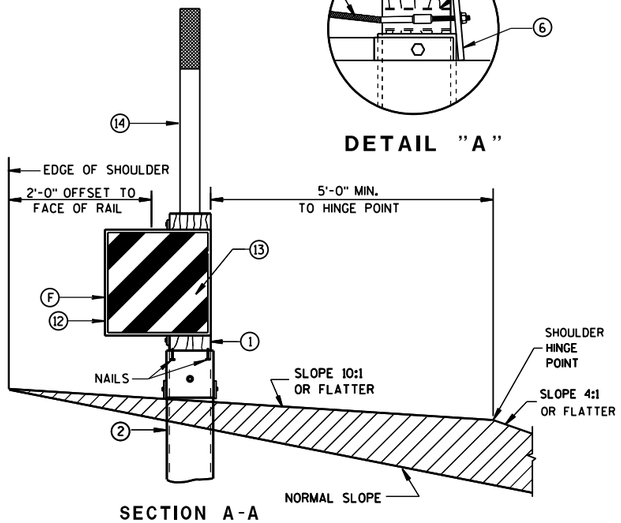




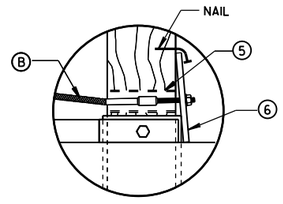
SECTION C-C
TYPICAL AT POST NOS. 3-9



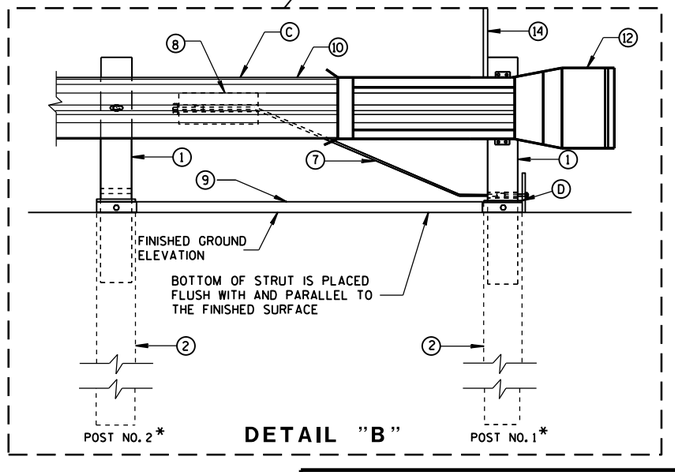
SECTION B-B
TYPICAL AT POST NO. 2*



SECTION A-A
TYPICAL AT POST NO. 1*



DETAIL "A"



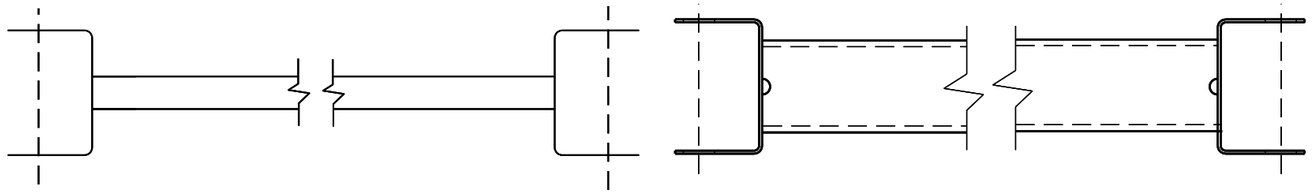
DETAIL "B"

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPO

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

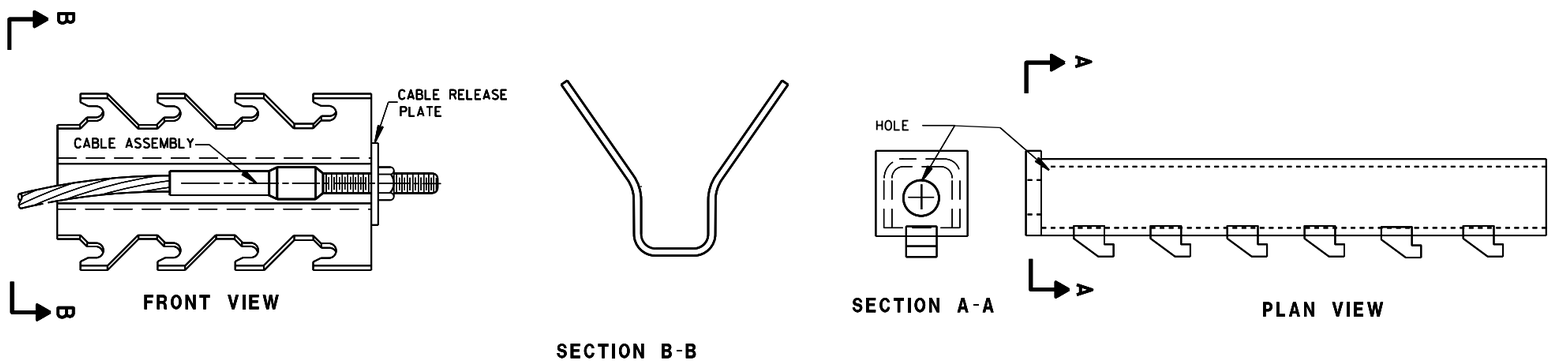
S.D.D. 14 B 44-2a



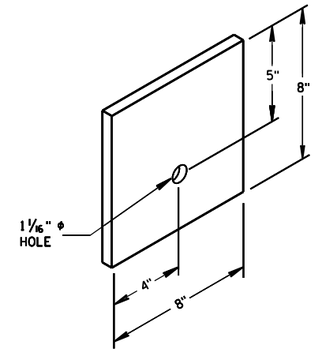
GENERIC GROUND STRUT (9) (H)

BILL OF MATERIALS

PART NO.	DESCRIPTION MATERIALS PROVIDED BY MGS EAT MANUFACTURER. SEE MANUFACTURER'S DETAILS FOR MORE INFORMATION.
(1)	WOOD BREAKAWAY POST
(2)	6" X 8" X 0.188", 6'-0" LONG FOUNDATION TUBE AT POSTS 1 AND 2
(3)	WOOD CRT
(4)	WOOD BLOCKOUT
(5)	PIPE SLEEVE
(6)	BEARING PLATE
(7)	BCT CABLE ASSEMBLY
(8)	ANCHOR CABLE BOX
(9)	GROUND STRUT
(10)	PERFORATED W-BEAM RAIL END PANEL, 12'-6" LONG.
(11)	STANDARD W-BEAM RAIL. MULTIPLE SECTIONS REQUIRED. SECTIONS VARY IN LENGTH.
(12)	END SECTION EAT
(13)	0.040" ALUMINUM SHEET WITH REFLECTIVE SHEETING TYPE F PER SECTION 637 OF THE STANDARD SPECIFICATIONS
(14)	EAT MARKER POST - YELLOW (SEE APPROVED PRODUCTS LIST)



GENERIC ANCHOR CABLE BOX (8) (H)



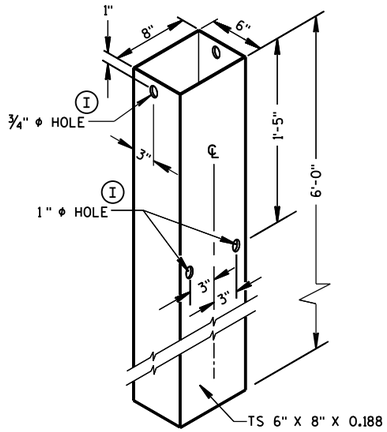
BEARING PLATE (6)

MIDWEST GUARDRAIL SYSTEM
ENERGY ABSORBING TERMINAL
(MGS)

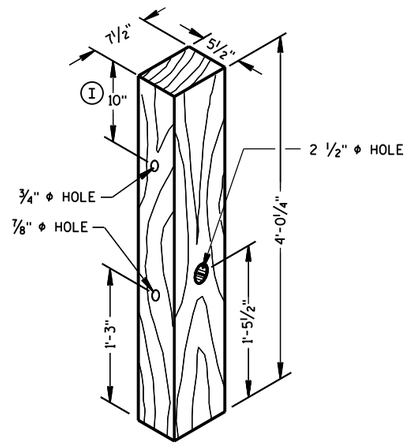
STATE OF WISCONSIN
DEPARTMENT OF TRANSPOI

6

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

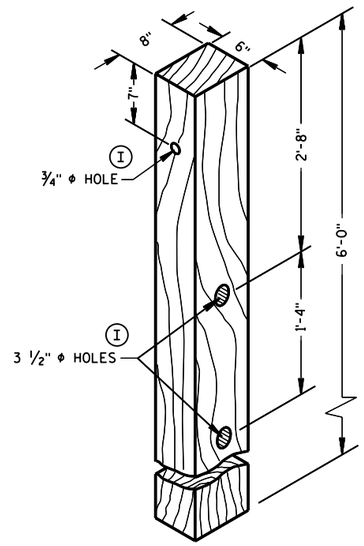


FOUNDATION TUBE (2)



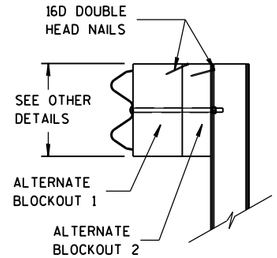
POSTS NUMBER 1 AND 2

WOOD BREAKAWAY POST (1)

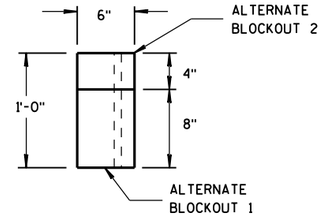


POSTS NUMBER 3-9

WOOD CRT POST (3)

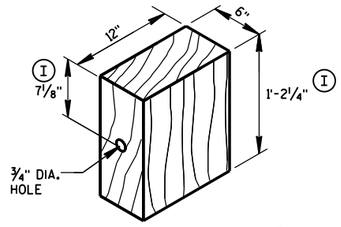


SIDE VIEW



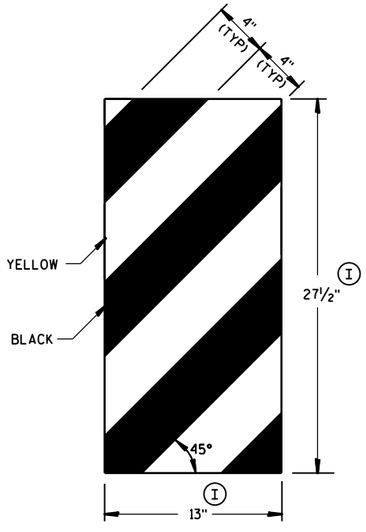
TOP VIEW

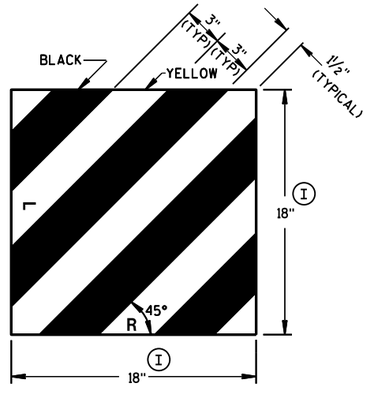
ALTERNATE WOOD BLOCKOUT DETAIL



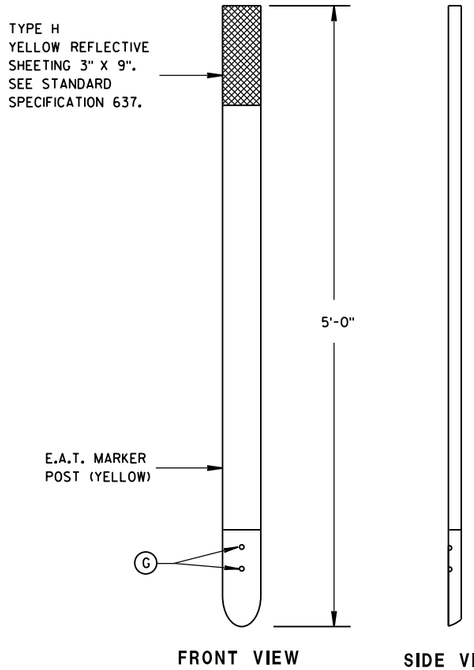
WOOD BLOCKOUT (4)

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





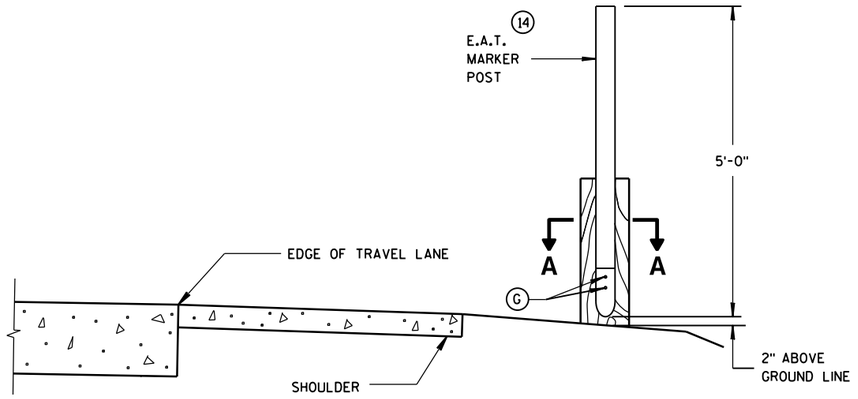
GENERIC REFLECTIVE SHEETING (13) (H)



FRONT VIEW

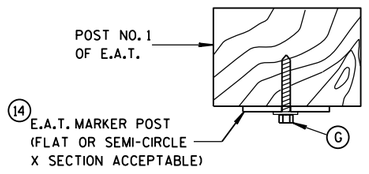
SIDE VIEW

E.A.T. MARKER POST (14)



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

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



SECTION A-A

MIDWEST GUARDRAIL SYSTEM ENERGY ABSORBING TERMINAL (MGS)

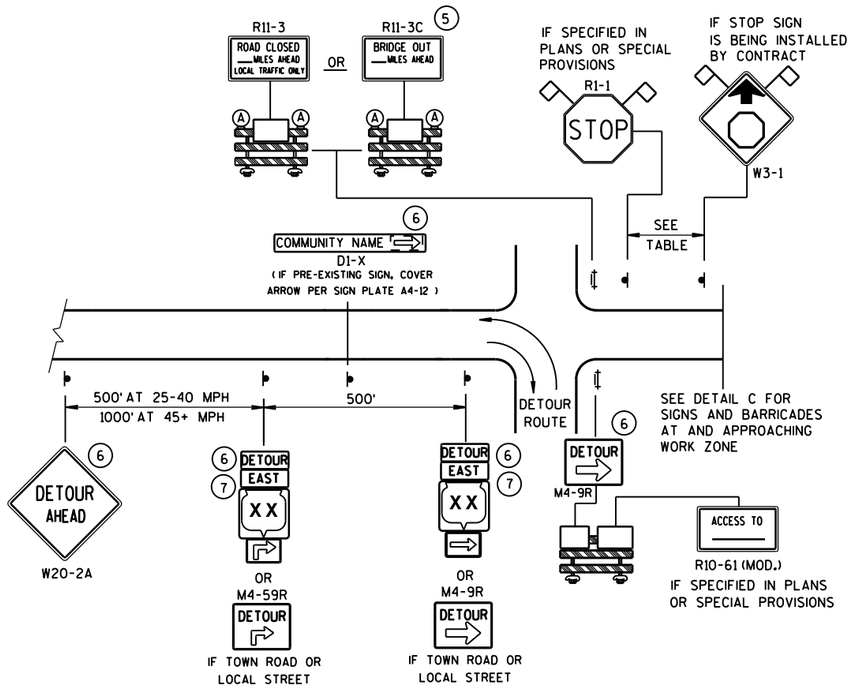
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

FHWA

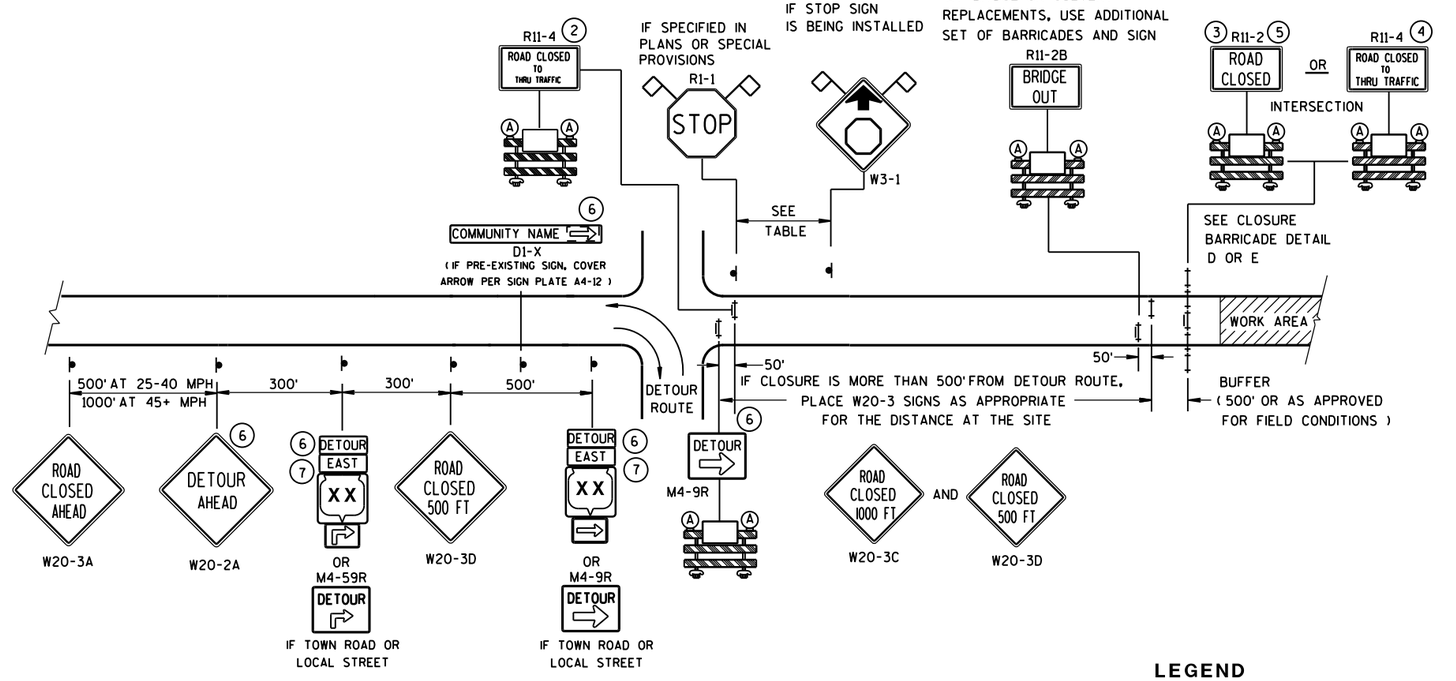
6

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



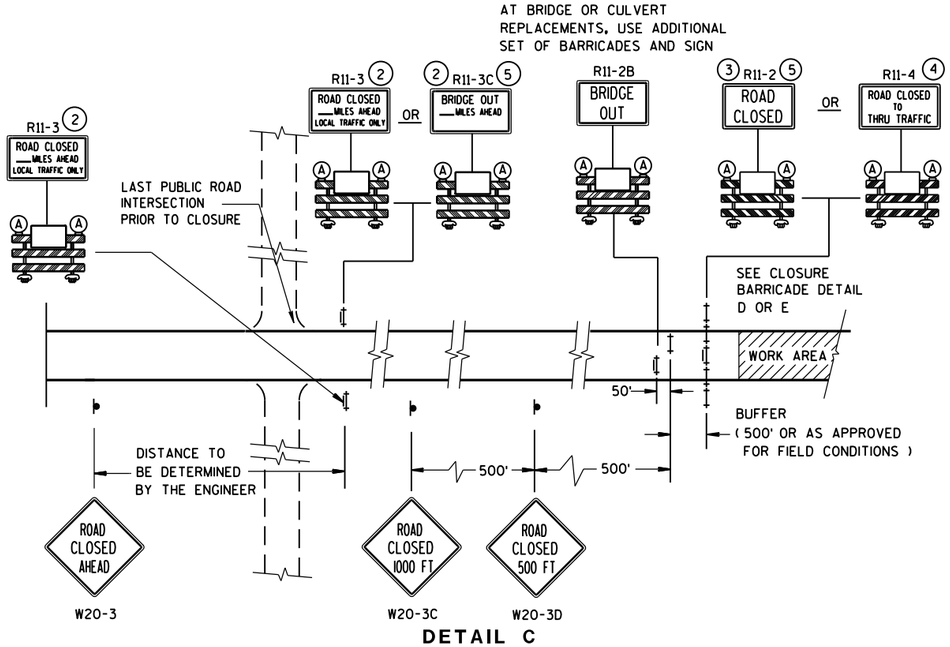
DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR

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



DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR

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



DETAIL C
MAINLINE CLOSURE, NO POSTED DETOUR

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

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

LEGEND

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

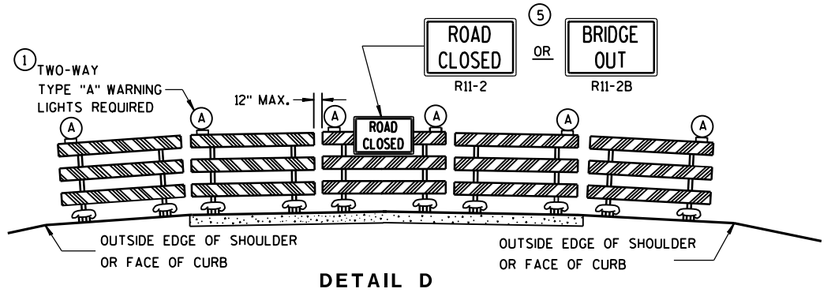
BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

6

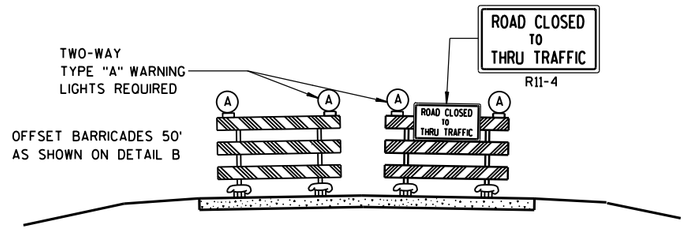
S.D.D. 15 C 2-6a



DETAIL D

ROAD CLOSURE BARRICADE DETAIL

APPROACH VIEW



DETAIL E

LANE CLOSURE BARRICADE DETAIL

APPROACH VIEW

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

Sept. 2015 — DATE

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

FHWA

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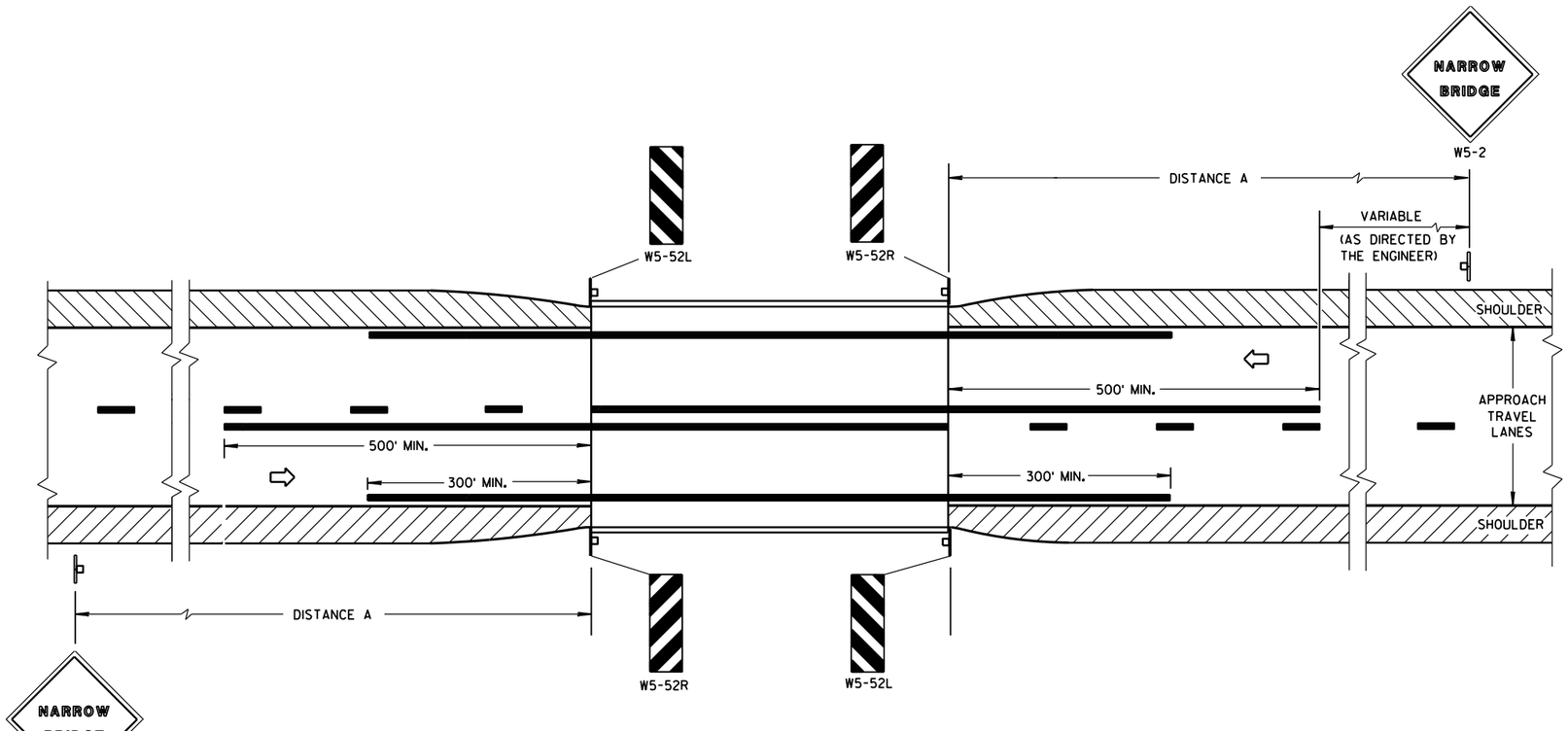
S.D.D. 15 C 2-6b



SITUATION 1

WARRANTING CRITERIA:
BRIDGE WIDTH IS AT LEAST 16 FEET BUT LESS THAN 24 FEET.

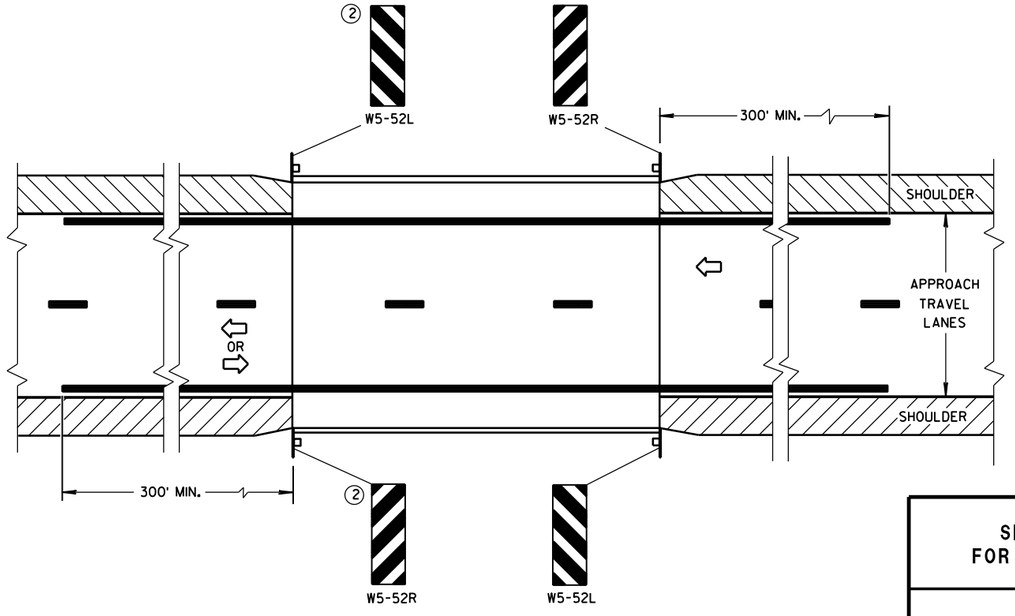
DISTANCE TABLE

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

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.

1. LOCATE W5-52 SIGN POST(S) BEHIND GUARDRAIL WHEN PRESENT.
2. OMIT ON ONE-WAY TRAVELLED WAYS.
3. EDGE OF W5-52 SIGN SHALL BE PLACED IN LINE WITH FACE OF CURB OR PARAPET.



SITUATION 2

WARRANTING CRITERIA:

1. BRIDGE WIDTH IS AT LEAST 24 FEET AND
2. BRIDGE SHOULDER WIDTH IS LESS THAN 6 FEET.

SIGNING & MARKING FOR TWO LANE BRIDGES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4-18-16 — DATE
/S/ Matthew R. Rauch — STATE SIGNING AND MARKING ENGINEER
FHWA

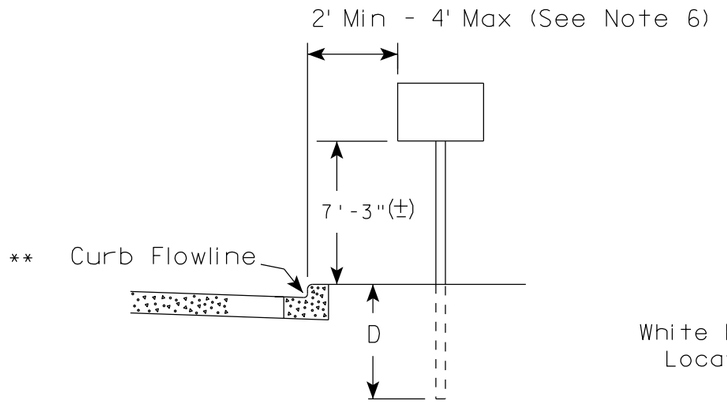
6

S.D.D. 15 C 6-8

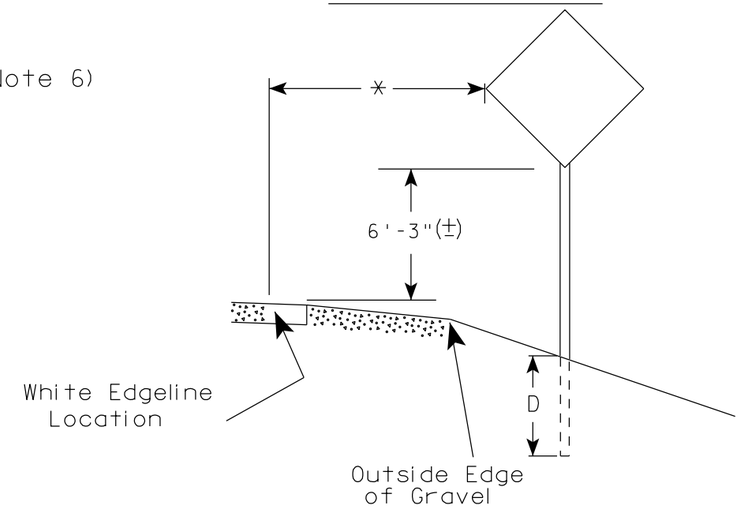
6

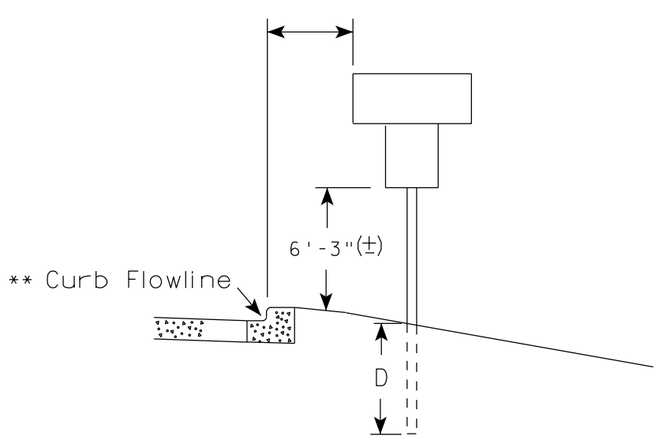
S.D.D. 15 C 6-8

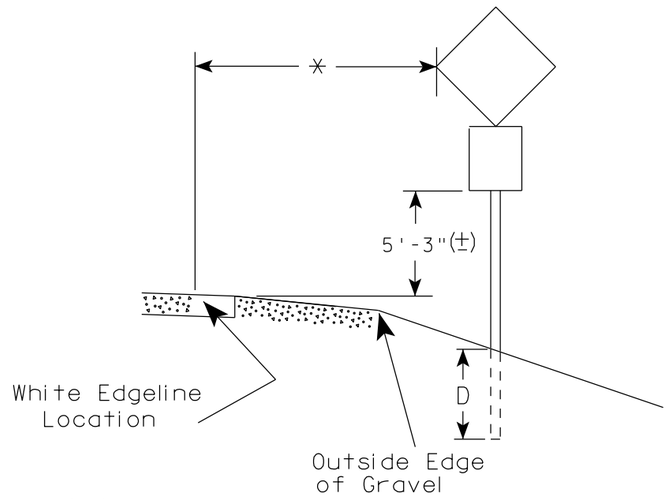
URBAN AREA



RURAL AREA (See Note 2)







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. Minimum mounting height for J assemblies (A2-1S) is 7'-3" (±) or 6'-3" (±) per urban or rural detail respectively.
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'

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

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

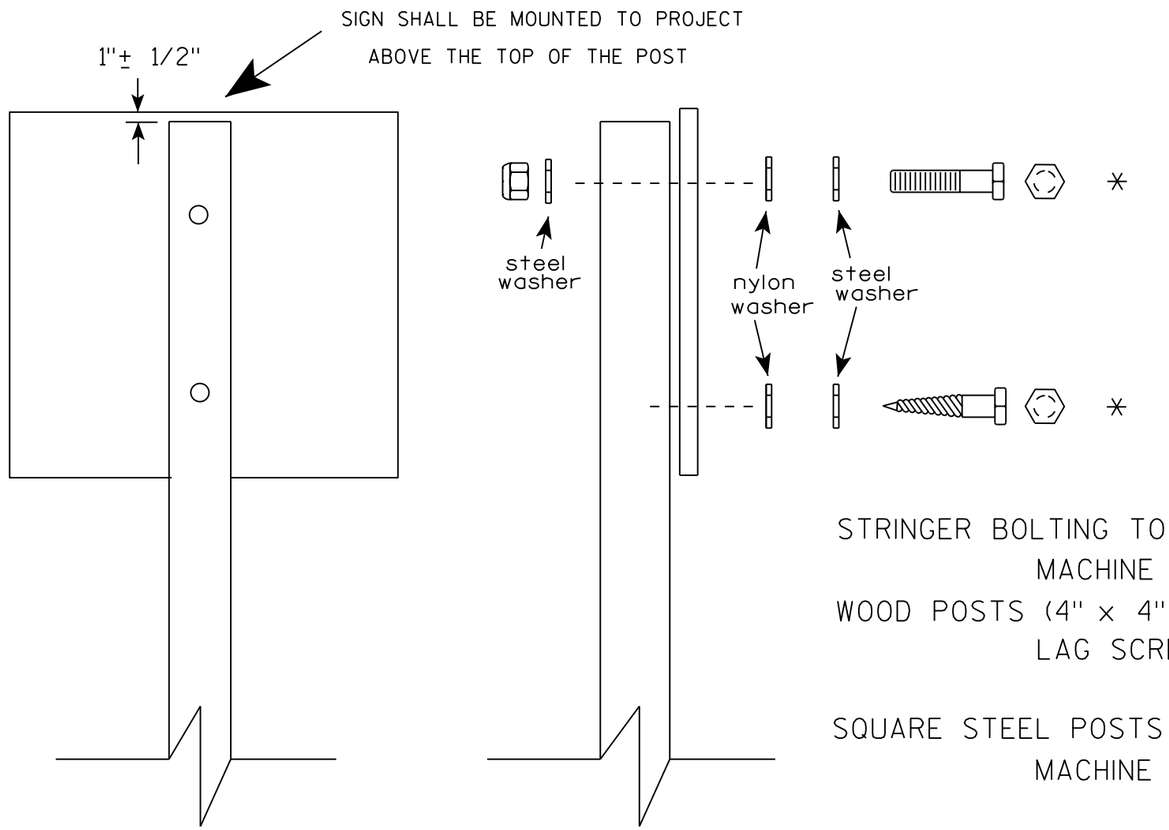
TYPICAL INSTALLATION OF PERMANENT TYPE II SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 7/23/15 PLATE NO. A4-3.20

PROJECT NO:	HWY:	COUNTY:		SHEET NO:	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.

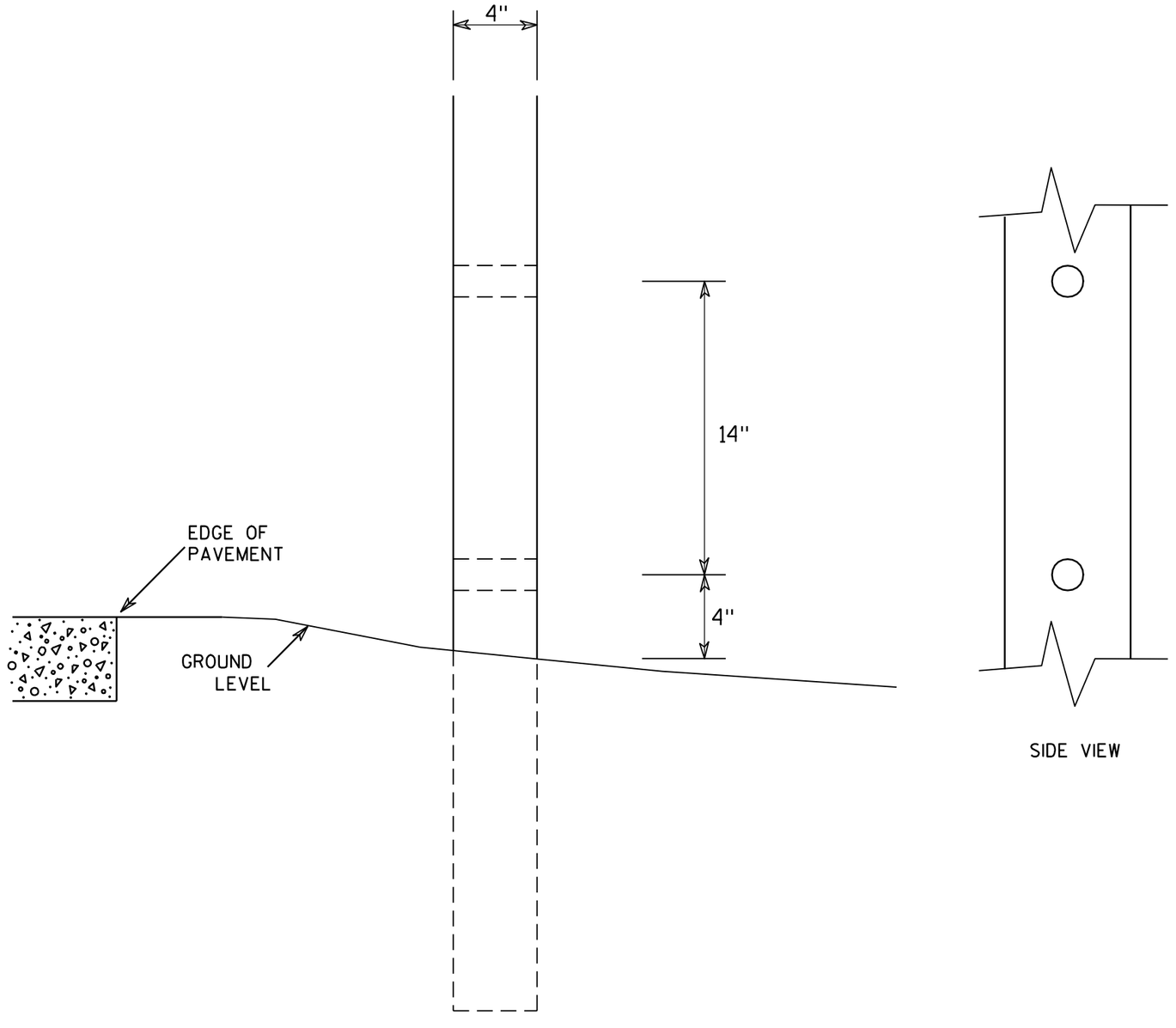
ATTACHMENT OF SIGNS TO POSTS

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.

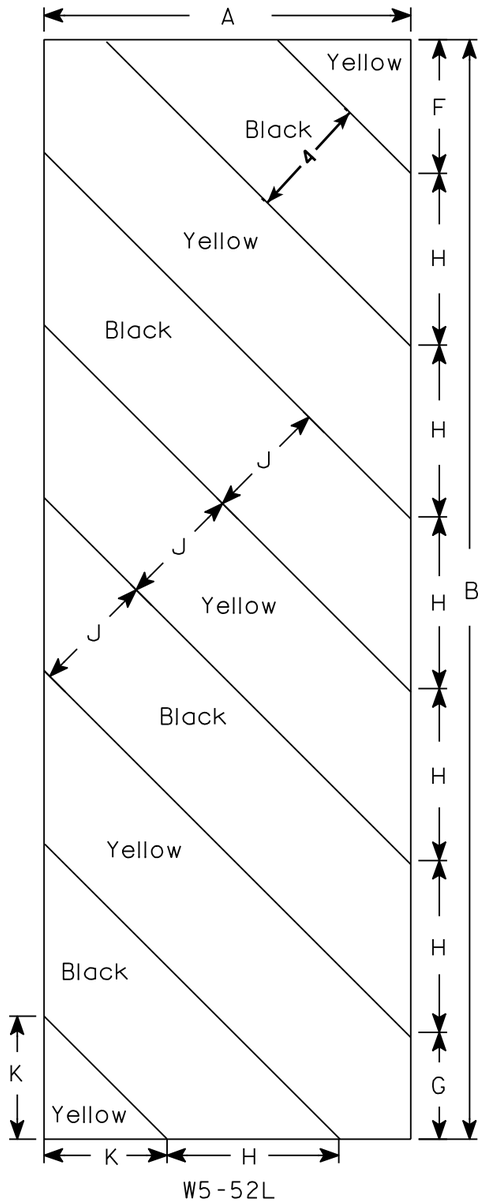
4 X 6 WOOD POST MODIFICATIONS

WISCONSIN DEPT OF TRANSPORTATION

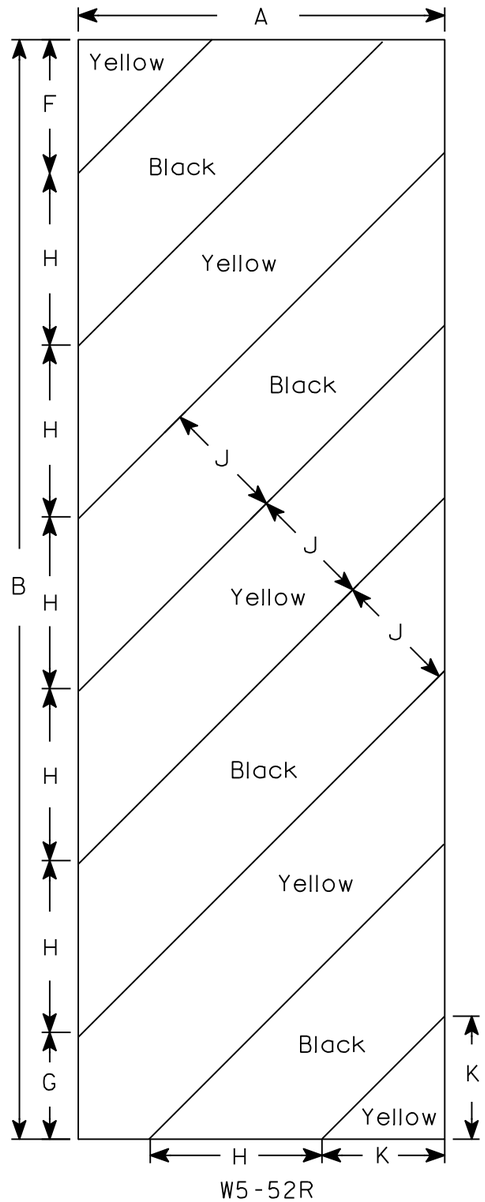
APPROVED Chester J Spang for State Traffic Engineer

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

PROJECT NO:	HWY:	COUNTY:		SHEET NO: 25	E



W5-52L



W5-52R

NOTES

1. Sign is Type II - Type F Reflective - reference WIS DOT Standard Specification for HIGHWAY and STRUCTURE CONSTRUCTION latest edition.
2. Color:
   Background - Yellow
   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.
4. Alternate colors of stripes as shown.

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	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
2M	12	36				4 3/8	3 1/2	5 5/8	45°	4	4																3.0
3	18	54				6	5 1/2	8 1/2	45°	6	6 9/16																6.75
4																											
5																											

STANDARD SIGN

W5-52L & W5-52R

WISCONSIN DEPT OF TRANSPORTATION

APPROVED Matthew R Rauch
for State Traffic Engineer

DATE 5/29/12 PLATE NO. W5-52.9

PROJECT NO: | HWY: | COUNTY: | SHEET NO: 26 | E

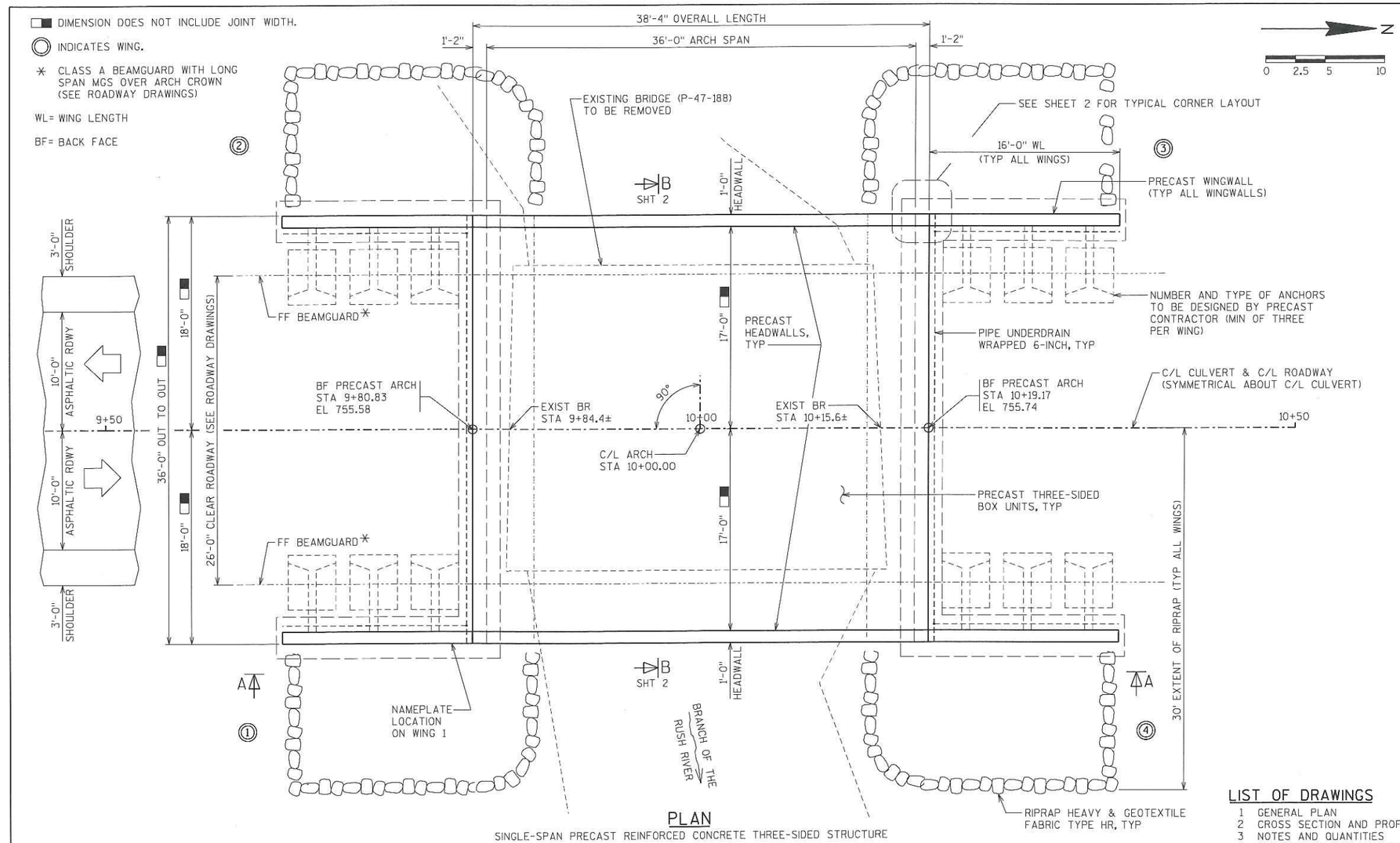
DIMENSION DOES NOT INCLUDE JOINT WIDTH.

INDICATES WING.

* CLASS A BEAMGUARD WITH LONG SPAN MGS OVER ARCH CROWN (SEE ROADWAY DRAWINGS)

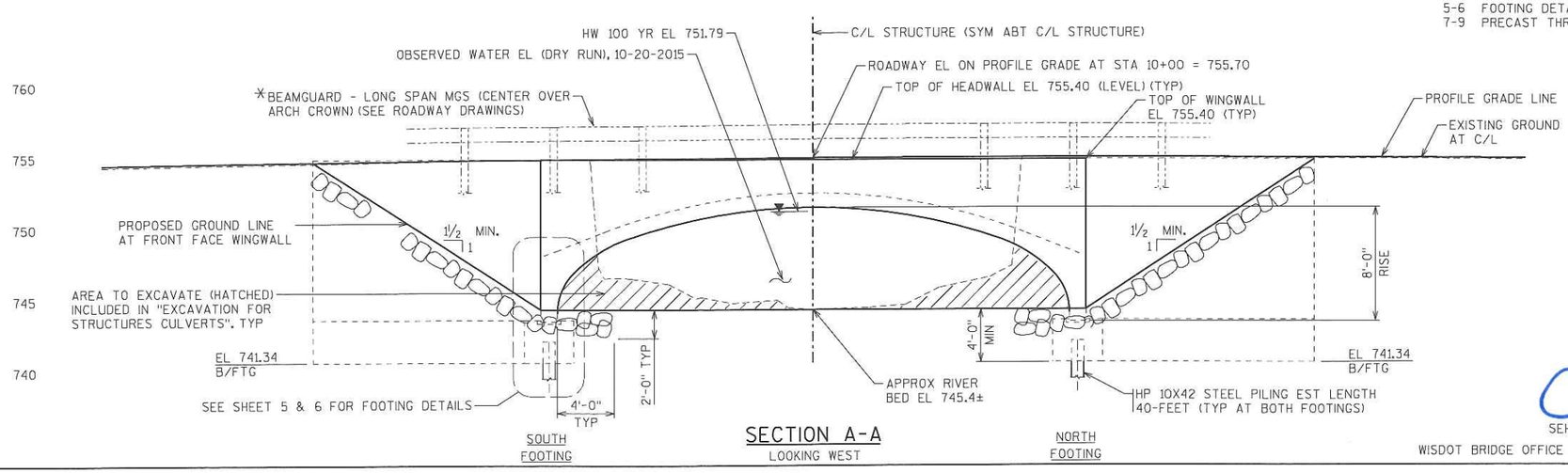
WL= WING LENGTH

BF= BACK FACE



PLAN

SINGLE-SPAN PRECAST REINFORCED CONCRETE THREE-SIDED STRUCTURE



SECTION A-A

LOOKING WEST

STATE PROJECT NUMBER

7896-00-70

DESIGN DATA

LIVE LOAD:

DESIGN METHOD: LOAD RESISTANCE FACTOR DESIGN PER AASHTO LRFD SPECIFICATION.
DESIGN FILL: 2.5 FOOT MINIMUM
DESIGN LOADING: HL-93
HORIZONTAL EARTH PRESSURE: = 125 PCF
VERTICAL EARTH PRESSURE: = 120 PCF
INVENTORY RATING FACTOR: RF = 1.05
OPERATING RATING FACTOR: RF = 1.35
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 255 KIPS

MATERIAL PROPERTIES:

CONCRETE MASONRY FOOTING AND WINGWALLS — f'c = 4,000 psi
CONCRETE MASONRY ARCH — f'c = 6,000 psi
HIGH STRENGTH BAR STEEL REINFORCEMENT AASHTO GRADE 60 — fy = 60,000 psi
STEEL TIE RODS — fy = 75,000 psi
WELDED WIRE FABRIC (IN FLAT SHEET) — fy = 65,000 psi

FOUNDATION DATA

PILLING TO BE ASTM A709 GRADE 50.

ABUTMENTS TO BE SUPPORTED ON HP 10X42 STEEL PILING WITH A REQUIRED DRIVING RESISTANCE OF 180 TONS* PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC EQUATION. ESTIMATED 40-FEET LONG AT BOTH ABUTMENTS.

*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.

HYDRAULIC DATA

100 YEAR FREQUENCY		
Q_{100}	920	CFS
VELOCITY	4.5	FPS
HIGH WATER EL	751.79	FT
WATERWAY AREA	204	SQ FT
DRAINAGE AREA	4.2	SQ MI
2 YEAR FREQUENCY		
Q_2	145	CFS
HIGH WATER EL	748.21	FT
SCOUR CODE	8	

TRAFFIC DATA

ADT (2018) = 220
ADT (2038) = 290
DHV = 29
DD = 50%
T = 10%
DESIGN SPEED = 40 MPH

BENCHMARK (DATUM = NAVD88)

NO	STATION	DESCRIPTION	ELEV
1	9+17.10 32.41' RT	⅜" SPK IN 10" ELM TREE	753.35
2	10+02.26 56.65' LT	⅜" SPK IN 14" BOX ELDER TREE	754.60

LIST OF DRAWINGS

NO.	DATE	REVISION	BY

SEH
SHORT ELLIOTT HENDRICKSON INC.

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 02/21/17
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-47-212

400 TH STREET OVER BRANCH RUSH RIVER

COUNTY	TOWN/~~CITY/VILLAGE~~
PIERCE	SALEM

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
CJB		DLF	CJB

WISCONSIN PROFESSIONAL ENGINEER
CHRISTOPHER J. BLUM
E-33157
MADISON
WI
1.9.17

SEH CONTACT: CHRIS BLUM, PE, 608.620.6192
WISDOT BRIDGE OFFICE CONTACT: BILL DREHER, PE, 608.266.8489

GENERAL PLAN

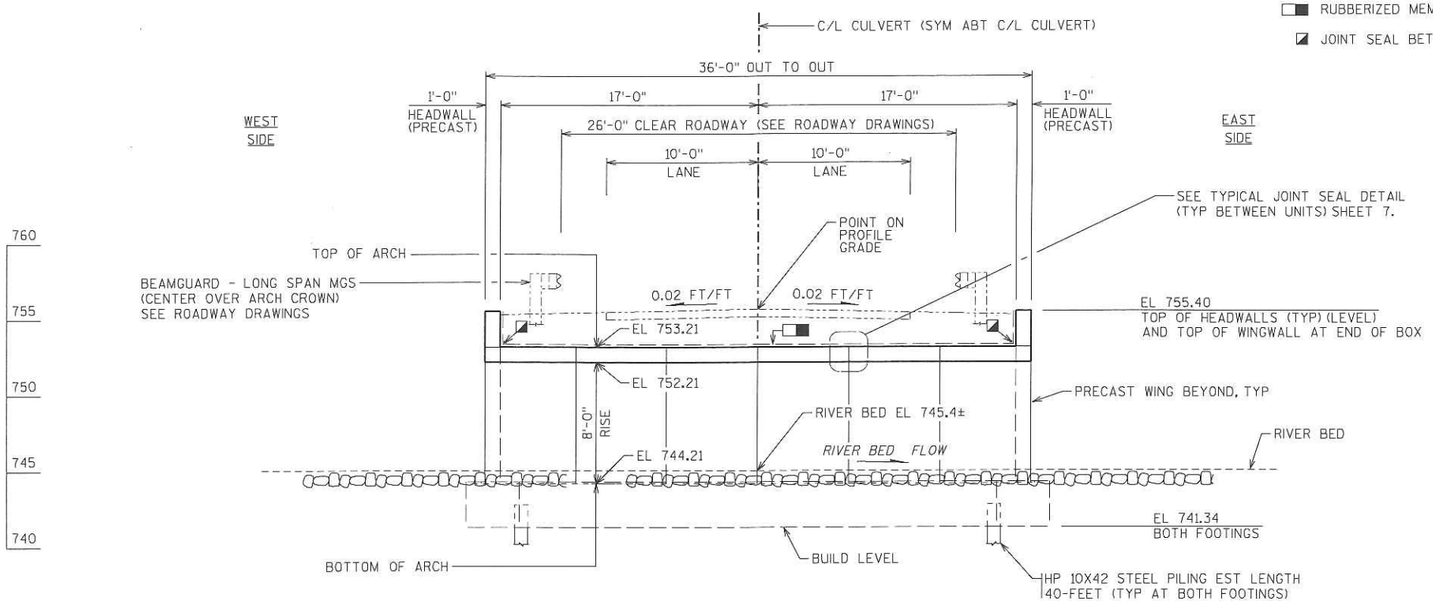
SHEET 1 OF 9
27

PLOT TIME: 1:19:43 PM
PLOT DATE: 1/29/2016
FILE NAME : S:\PTS\SALEM\13390\S-final-dsgn\SI-drawings\20-Struct\bridge\b47212gl.dgn

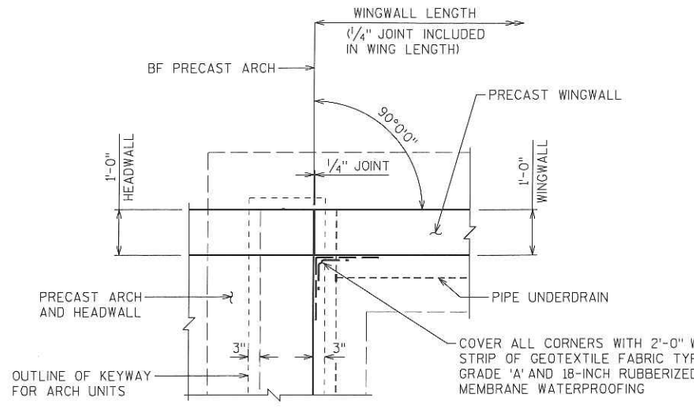
STATE PROJECT NUMBER
7896-00-70

RUBBERIZED MEMBRANE WATERPROOFING

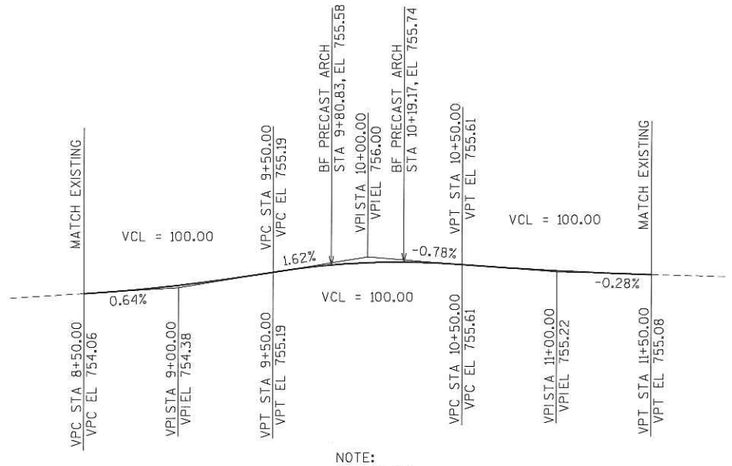
JOINT SEAL BETWEEN END UNIT AND HEADWALL



SECTION B-B
LOOKING NORTH



TYPICAL CORNER LAYOUT
4 CORNERS TYPICAL
WINGWALL ANCHORS NOT SHOWN



NOTE:
STA 10+00
REMOVE EXISTING STRUCTURE (P-47-188)
A SINGLE SPAN BRIDGE, STEEL GIRDER
31.2 FT OVERALL LENGTH x 25.5 FT OVERALL WIDTH.

PROFILE GRADE LINE - 400TH STREET

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-47-212

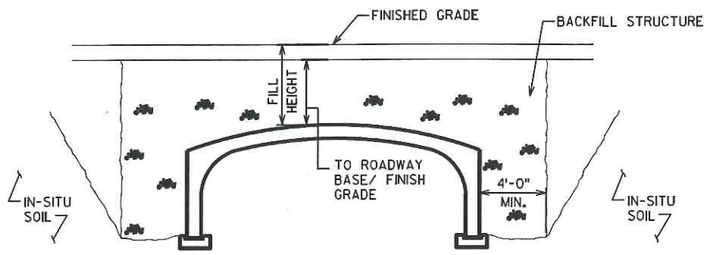
DRAWN BY DLF | PLANS CK'D. CJB

CROSS SECTION AND PROFILE GRADE LINE

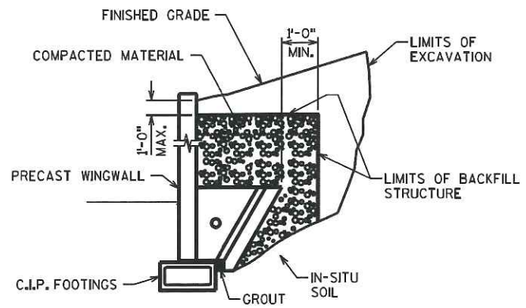
SHEET 2 OF 9
28

8

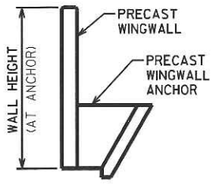
8



BACKFILL REQUIREMENTS



WALL BACKFILL REQUIREMENTS



APPROXIMATE NUMBER OF ANCHORS PER WALL	
LENGTH OF WALL	MINIMUM NO. OF ANCHORS
L = 16'-0"	3

TOTAL ESTIMATED QUANTITIES - B-47-212

	BID ITEM NUMBER	BID ITEMS	UNIT	TOTALS
	203.0500.S	REMOVING OLD STRUCTURE OVER WATERWAY STATION 10+00	LS	1
	206.2000	EXCAVATION FOR STRUCTURES CULVERTS B-47-212	LS	1
(3)	210.2500	BACKFILL STRUCTURE TYPE B	TON	850
	502.3200	PROTECTIVE SURFACE TREATMENT	SY	85
(4)	504.0100	CONCRETE MASONRY CULVERTS	CY	56
(4)	505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	7,165
	516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	80
	550.1100	PILING STEEL HP 10-INCH x 42 LB	LF	1120
	606.0300	RIPRAP HEAVY	CY	120
(1)	612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	220
	645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	10
	645.0120	GEOTEXTILE TYPE HR	SY	285
(2)	SPV.0090.01	THREE-SIDED PRECAST CONCRETE STRUCTURE B-47-212	LF	36
		NON-BID ITEMS		
		FILLER	SIZE	1/4"
		NAMEPLATE	EACH	1

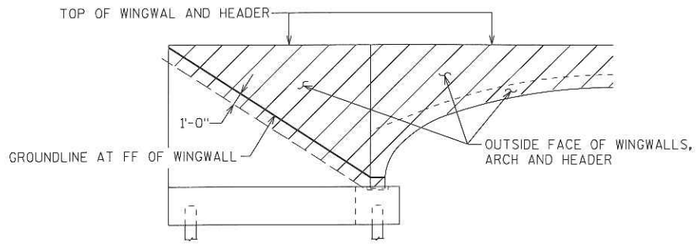
QUANTITIES NOTES:

(1) INCLUDES RODENT SHIELD PER SDD 8F6-4.

(2) (6) UNITS OF 6'-0" WIDE X 36'-0" SPAN.

(3) A FACTOR OF 2.0 WAS USED TO CONVERT CUBIC YARDS TO TONS.

(4) ONLY PERTAINS TO FOOTINGS FOR ARCH AND WINGWALLS.



PROTECTIVE SURFACE TREATMENT LIMITS

OUTSIDE FACE FASCIA ARCH, HEADER & WINGWALLS, AND TOP OF WALLS

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH WISCONSIN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, AND THE CONTRACT SPECIAL PROVISIONS.

DESIGN SPECIFICATIONS: DESIGN STRUCTURE BY CURRENT EDITION AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND AS SUPPLEMENTED BY WISDOT BRIDGE MANUAL.

THE EXISTING GROUNDLINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR STRUCTURES.

WITHIN THE LENGTH OF THE ARCH ALL SPACES EXCAVATED AND NOT OCCUPIED BY THE NEW STRUCTURE SHALL BE BACKFILLED WITH STRUCTURE BACKFILL TO THE ELEVATION AND SECTION EXISTING PRIOR TO EXCAVATION WITHIN THE LENGTH OF THE ARCH.

THE QUANTITY FOR BACKFILL STRUCTURE, BID ITEM 210.2500 IS CALCULATED BASED ON THE APPLICABLE FIGURES 12.6-1 AND 12.6-2 IN THE WISCONSIN DEPARTMENT OF TRANSPORTATION BRIDGE MANUAL AND DETAILS IN THE PLAN.

AT ANY TIME DURING PLACEMENT OF THE BACKFILL, DO NOT PERMIT A DIFFERENCE IN FILL ELEVATION ON THE SIDES OF THE CULVERT BARREL IN EXCESS OF 2'-0", DURING COMPACTION OF THE BACKFILL, DO NOT ALLOW THE WHEELS OF ROLLERS TO COME CLOSER THAN 1'-0" TO THE FACE OF THE STRUCTURE.

PROVIDE DEFORMED REINFORCEMENT STEEL MEETING THE REQUIREMENTS OF ASTM DESIGNATION 615 OR 617, GRADE 60 AS SET FORTH IN THE STANDARD SPECIFICATIONS.

BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2" CLEAR UNLESS OTHERWISE SHOWN OR NOTED. PROVIDE CONCRETE COVER ON REINFORCING BARS AS NOTED HEREIN.

CHAMFER EXPOSED CONCRETE EDGES 3/4" X 3/4" EXCEPT AS NOTED.

THE SLOPE OF THE FILL IN FRONT OF THE FOOTING SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE FABRIC TYPE 'HR' TO THE EXTENT SHOWN ON SHEET 1 AND IN THE FOOTING DETAILS.

USE GRADE A CONCRETE IN FOOTING AND WINGWALLS. F'C = 4 ksi (MIN).

FOR EXISTING STRUCTURE SEE PROFILE GRADE LINE THIS SHEET.

SEE ROADWAY DRAWINGS FOR EXISTING UTILITY LOCATIONS.

CONSTRUCTION NOTES

PRECAST STRUCTURE SYSTEM (INCLUDING THREE-SIDED BOX, WINGWALLS AND HEADWALLS) WILL BE DESIGNED BY THE CONTRACTOR. SUBMIT SHOP DRAWINGS TO WISCONSIN DOT FOR APPROVAL.

THE ABUTMENT ARCH STEM AND WINGWALL CONFIGURATION AND DETAILS SHOWN IN THESE PLANS ARE INTENDED TO REPRESENT PRECAST UNITS FOR THIS CULVERT.

REFER TO STANDARD DETAIL DRAWINGS 36.10 THRU 36.16 OF THE WISCONSIN BRIDGE MANUAL FOR GUIDANCE.

FOR BEAMGUARD REFER TO WISCONSIN FACILITIES DEVELOPMENT MANUAL STANDARD DETAIL DRAWINGS SDD 14 B, FOR GUIDANCE.

BACKFILL AND DRAINAGE NOTES

PROVIDE A SUITABLE DRAINAGE PIPE ALONG THE CULVERT AND WINGWALL TO RELEASE HYDROSTATIC PRESSURE. WHERE SIGNIFICANT SEEPAGE OR RELATIVELY RAPID ACCUMULATION OF WATER IS ANTICIPATED BEHIND THE WALL, INCORPORATE PIPE UNDERDRAIN WRAPPED AS SPECIFIED, INTO THE BACKFILL STRUCTURE, BEHIND THE WALL TO IMPROVE DRAINAGE CONDITIONS. DIRECT SEEPAGE FROM DRAINAGE PIPE TO WEEP HOLES ALONG THE EXTERIOR FACE TO THE WALL OR TO THE STORM WATER CONVEYANCES.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

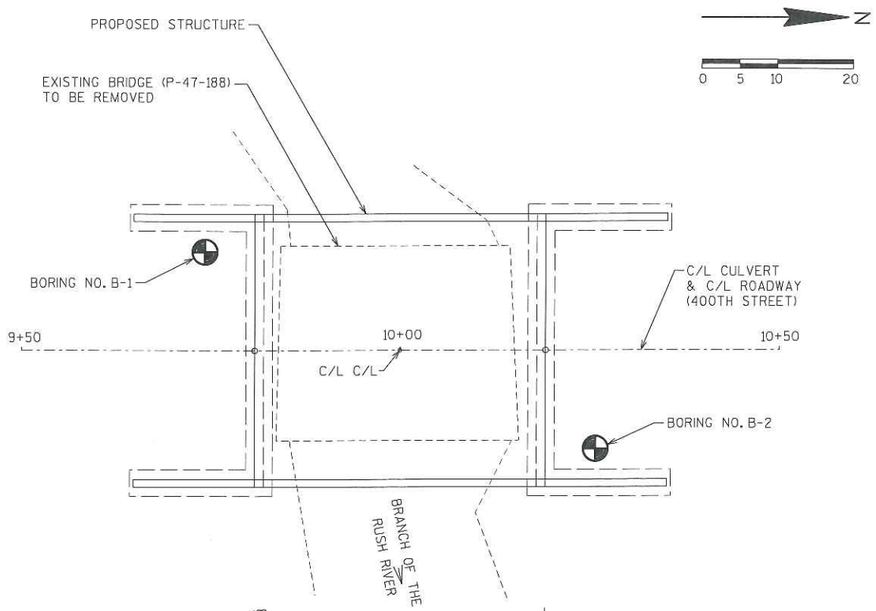
STRUCTURE B-47-212

DRAWN BY DLF | PLANS CK'D. CJB

NOTES AND QUANTITIES

SHEET 3 29 OF 9

8



BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
B-1	12/9/2015	-	-
B-2	12/9/2015	-	-
BORINGS COMPLETED BY:		PROFESSIONAL SERVICE INDUSTRIES, INC	
REPORT COMPLETED BY:		PROFESSIONAL SERVICE INDUSTRIES, INC	

SOIL BORINGS PERFORMED BY:

PROFESSIONAL SERVICE INDUSTRIES, INC
12839 30th AVENUE, SUITE A
CHIPPEWA FALLS, WISCONSIN 54729
PH: (715) 738-2770
FAX: (715) 738-2771

REPORT BY:
JEFFREY A MANNINEN
BRANCH MANAGER

STATE PROJECT NUMBER

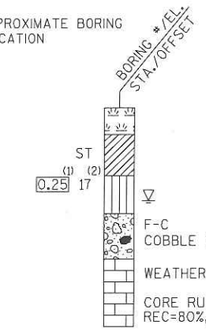
7896-00-70

MATERIAL SYMBOLS

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

LEGEND OF BORING

= APPROXIMATE BORING LOCATION



(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

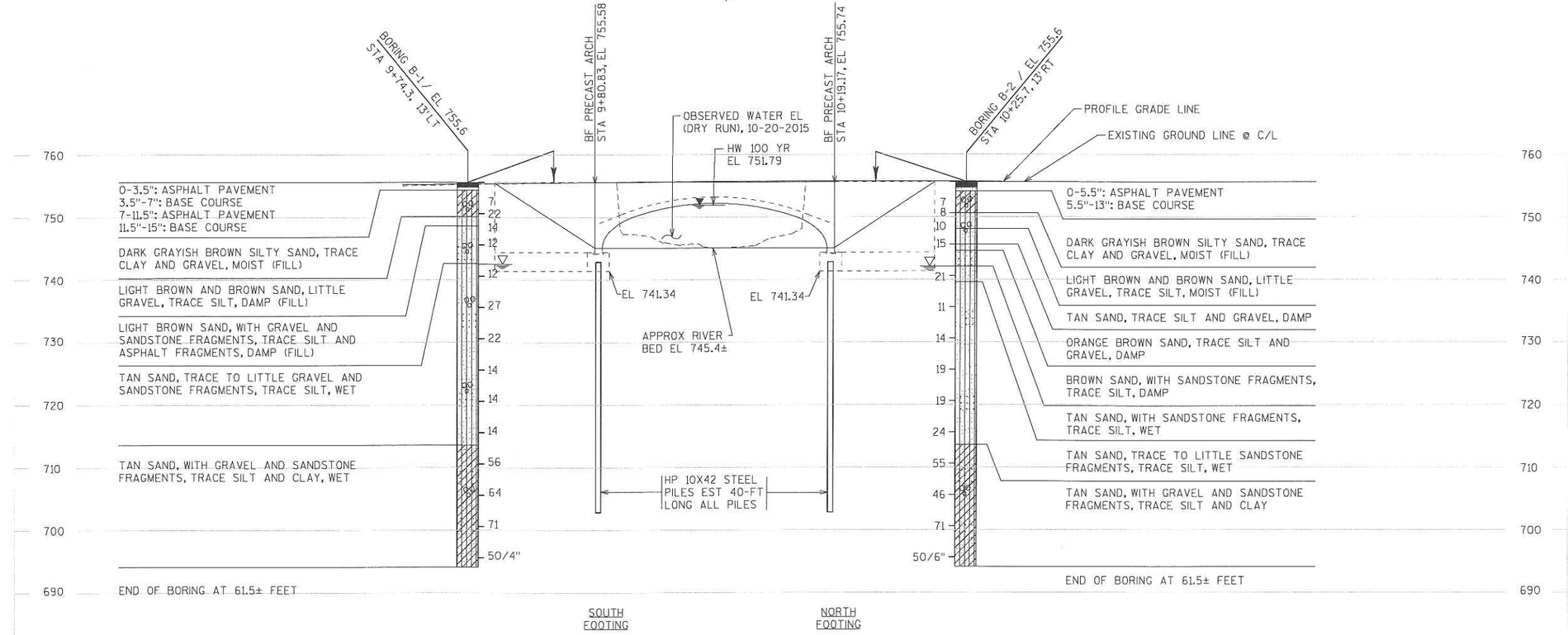
- AT TIME OF DRILLING
- END OF DRILLING
- AFTER DRILLING

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-47-212

DRAWN BY	DLF	PLANS CK'D.	CJB

SUBSURFACE EXPLORATION

SHEET 1 OF 9
30

PLOT DATE: 11/29/2016 PLOT TIME: 1:9:57 PM

FILE NAME : S:\PT\S\SALEM\13390\S-final-dsgn\S1-drawings\20-Struct\bridge\b47212bl.dgn

8

8

PLOT DATE: 11/29/2016 PLOT TIME: 1:19:57 PM
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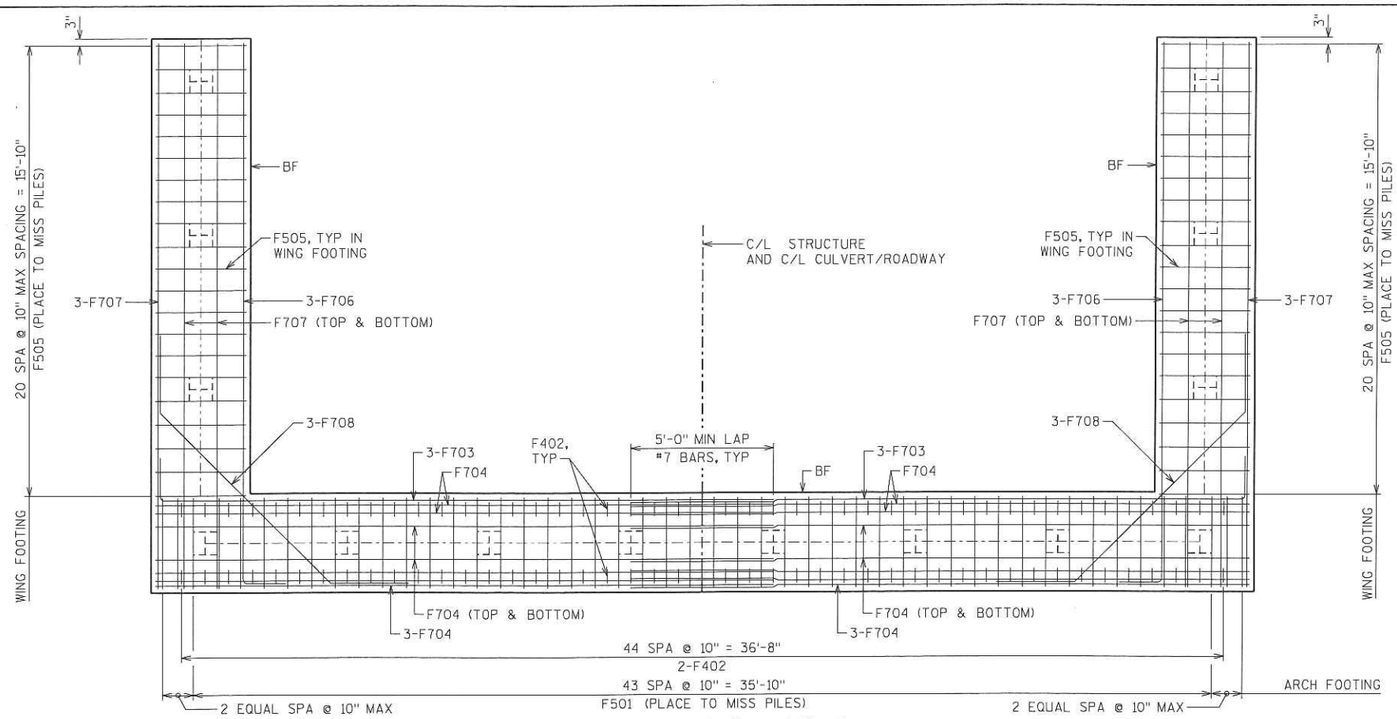
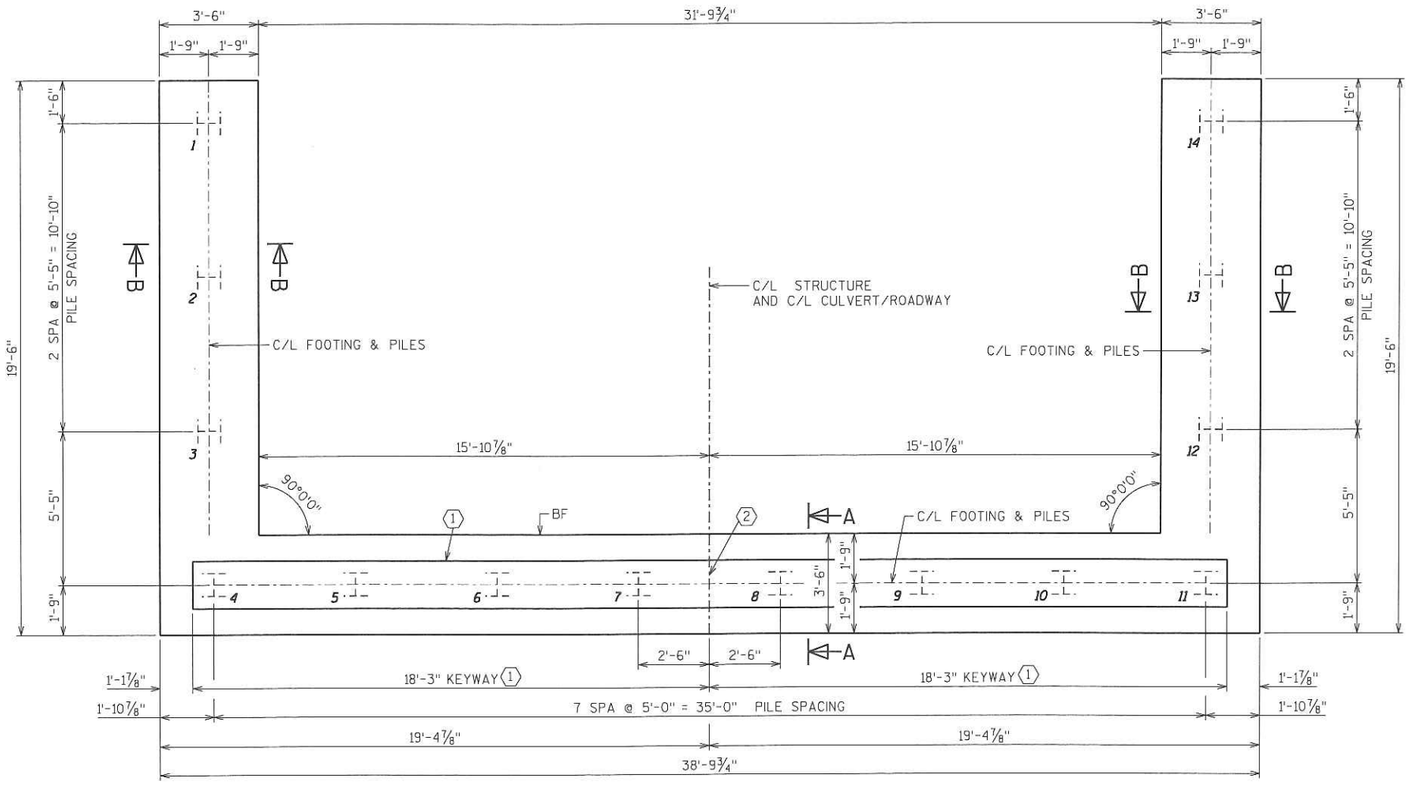
STATE PROJECT NUMBER

7896-00-70



REINFORCEMENT LAYOUT



FOOTING AND PILE LAYOUT

FOOTING NOTES

SOUTH AND NORTH FOOTINGS ARE IDENTICAL.

BILL OF BARS IS FOR 2 FOOTINGS. DIVIDE BY 2 FOR EACH FOOTING.

(1) KEYWAY SIZE AND LOCATION FOR ARCH TO BE VERIFIED BY THE ARCH MANUFACTURER. KEYWAY ONLY LOCATED ON ARCH FOOTING. KEYWAY SHALL NOT BE PLACED ON WING FOOTING.

(2) OPTIONAL VERTICAL CONSTRUCTION JOINT KEYWAY FORMED BY A BEVELED 2" X 10": CONTRACTOR HAS THE OPTION OF PLACING A CONSTRUCTION JOINT IN THE FOOTING. REINFORCEMENT BARS SHALL RUN THROUGH CONSTRUCTION JOINT. PLACE CONSTRUCTION JOINT TO MISS PILING BY A MINIMUM OF 9 INCHES. PLACE CONSTRUCTION JOINT TO MISS PRECAST BOX AND WINGWALL UNITS BY 12 INCHES.

NOTE

SEE SHEET 6 FOR SECTION A & B.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-47-212

DRAWN BY DLF | PLANS CK'D. CJB

FOOTING DETAILS

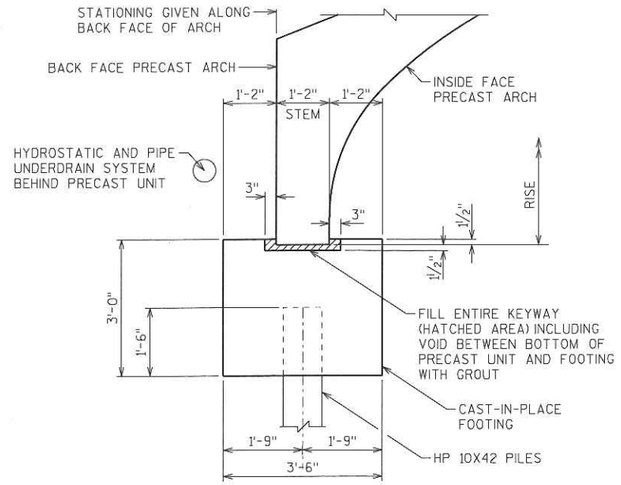
SHEET 31 OF 9

8

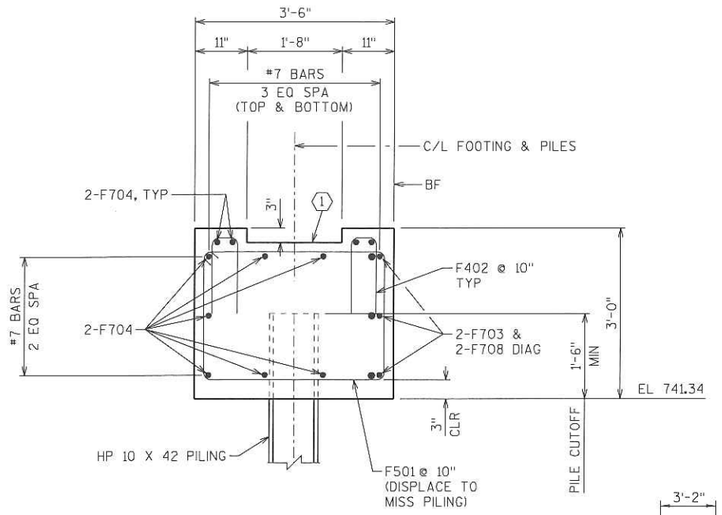
8

STATE PROJECT NUMBER

7896-00-70



TYPICAL FOOTING AT ARCH



SECTION A-A
TYPICAL FOOTING AT ARCH
SHOWING REINFORCEMENT

1 KEYWAY SIZE AND LOCATION FOR ARCH TO BE VERIFIED BY THE ARCH MANUFACTURER.

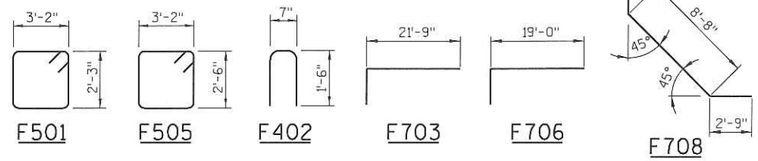
NOTE: THE FIRST DIGIT OF THE BAR MARK SIGNIFIES THE ENGLISH BAR DIAMETER SIZE.

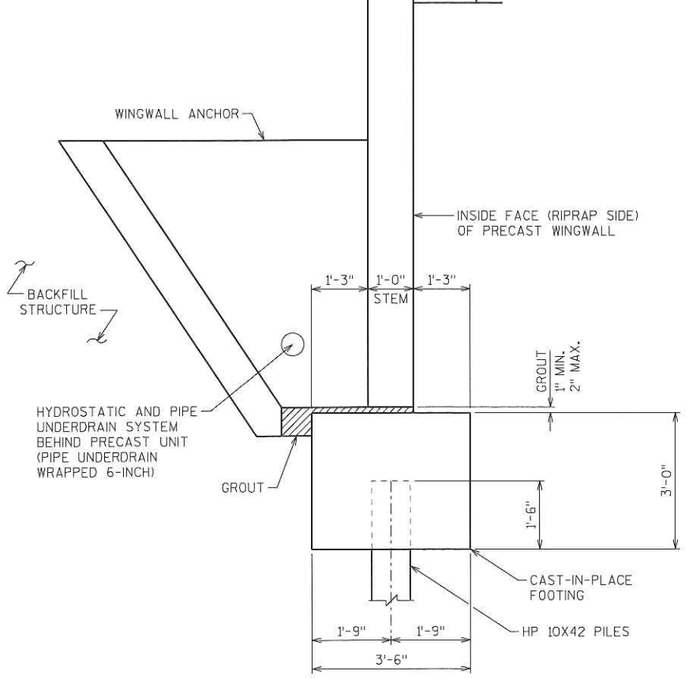
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT.

* NO. REQ'D. IS FOR 2 FOOTINGS. DIVIDE BY 2 FOR EACH FOOTING.

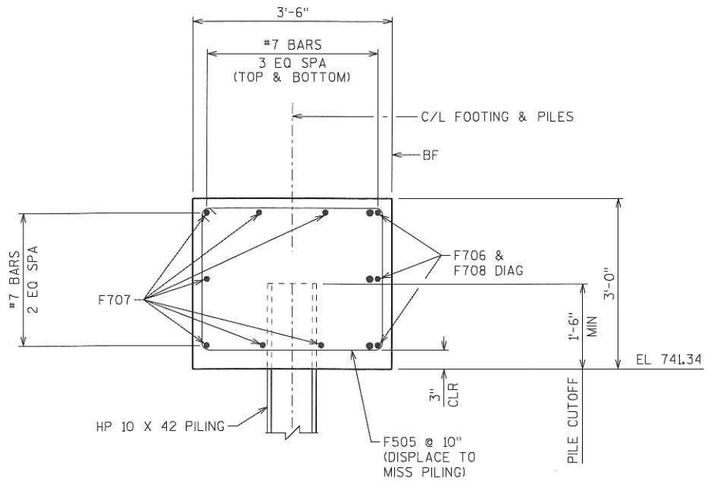
BILL OF BARS — BOTH FOOTINGS

BAR MARK	COAT	NO. * REQ'D.	LENGTH (FT-IN)	BAR SERIES	BENT	LOCATION
F501		96	11 - 5		X	STIRRUPS
F402		180	3 - 5		X	TIES
F703		12	24 - 4		X	HORIZ BF
F704		44	21 - 9			HORIZ TOP & BOT & SIDE
F505		84	12 - 5		X	WING STIRRUP
F706		12	21 - 7		X	WING HORIZ BF
F707		28	19 - 0			WING HORIZ
F708		12	14 - 2		X	WING HORIZ DIAG

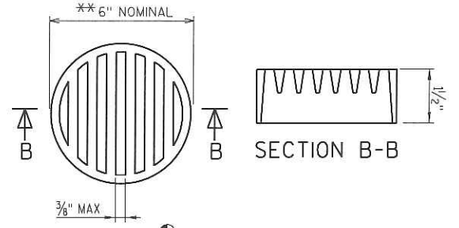




TYPICAL FOOTING AT WINGWALLS



SECTION B-B
TYPICAL FOOTING AT WINGWALLS
SHOWING REINFORCEMENT



RODENT SHEILD

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

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

THE RODENT SHIELD SHALL BE A PVC GRATE SIMLAR 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.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-47-212

DRAWN BY DLF | PLANS CK'D. CJB

FOOTING DETAILS

SHEET 5 OF 9
32

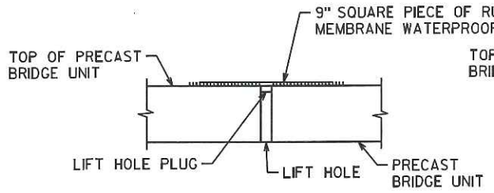
8

8

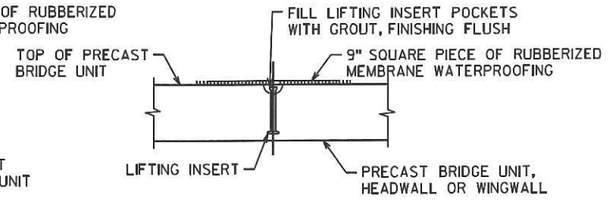
PLOT TIME: 11:19:57 PM

PLOT DATE: 11/29/2016

FILE NAME : S:\PT\S\SALEM\33901\5-final-dsgn\5l-drawings\20-Struct\bridge\b47212ol.dgn

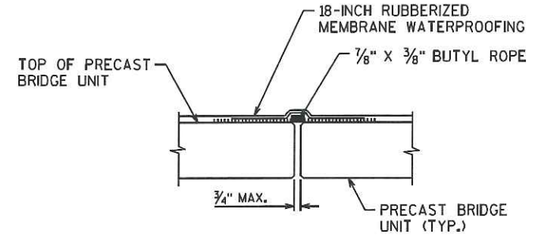


LIFTING HOLES

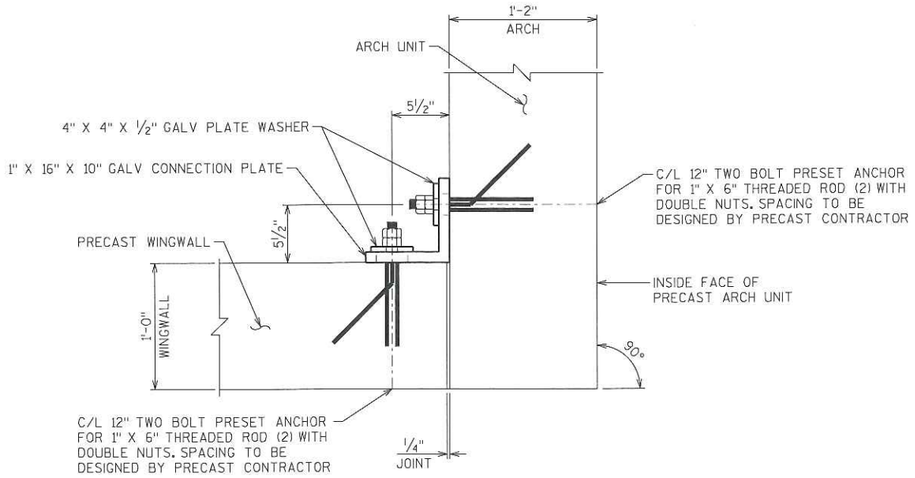


LIFTING INSERTS

TYPICAL LIFT POINT SEALING DETAIL

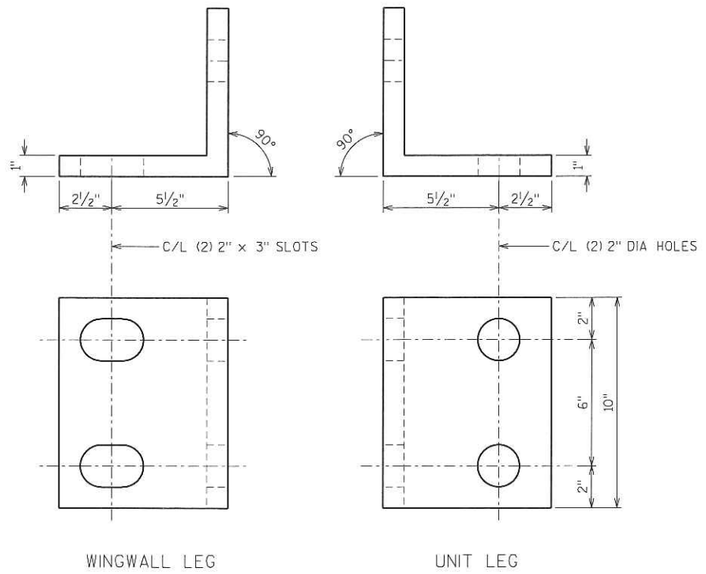


TYPICAL JOINT SEAL DETAIL



ARCH TO WING CONNECTION

NOTE: CONNECTION PLATES MUST BE POSITIONED WITH SMALL DIAMETER HOLES TOWARD PRECAST BRIDGE UNIT



CONNECTION PLATE DETAIL

PLATE, 1" X 16" X 10"

NOTE: PLATE LENGTH AND THICKNESS SHALL BE INCREASED AS REQUIRED BY DESIGN FROM PRECAST CONTRACTOR

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-47-212

DRAWN BY DLF | PLANS CK'D. CJB

PRECAST THREE-SIDED CULVERT DETAILS

SHEET 7 OF 9
33

8

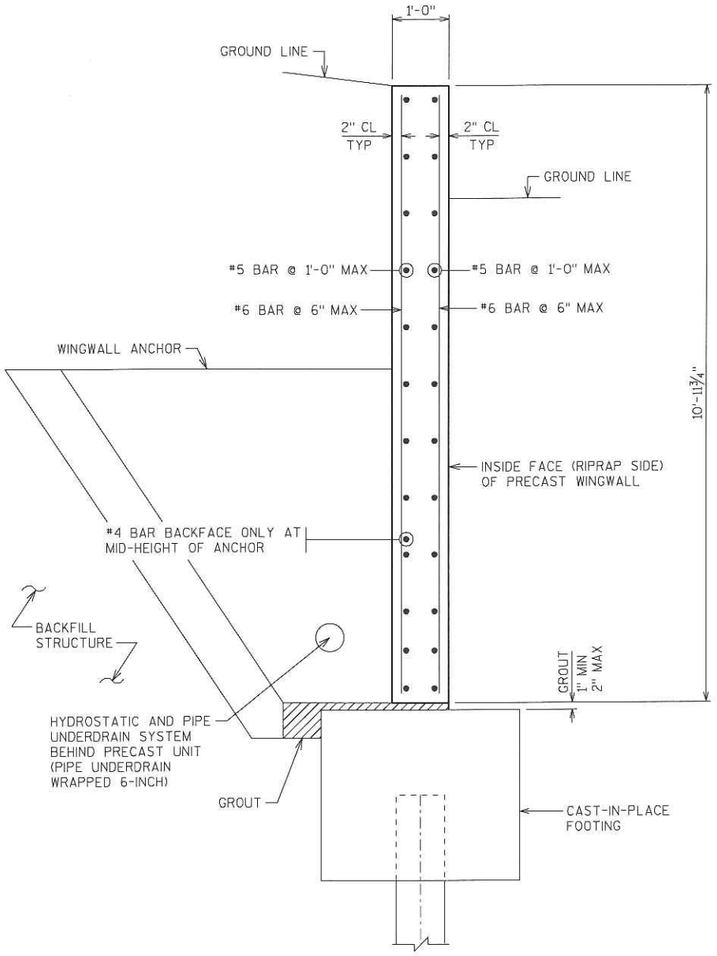
8

PLOT DATE: 11/29/2016 PLOT TIME: 11:19:57 PM

FILE NAME : S:\PT\S\SALEM\13390\S-final-dsgn\SI-drawings\20-Struct\bridge\b47212sdl.dgn

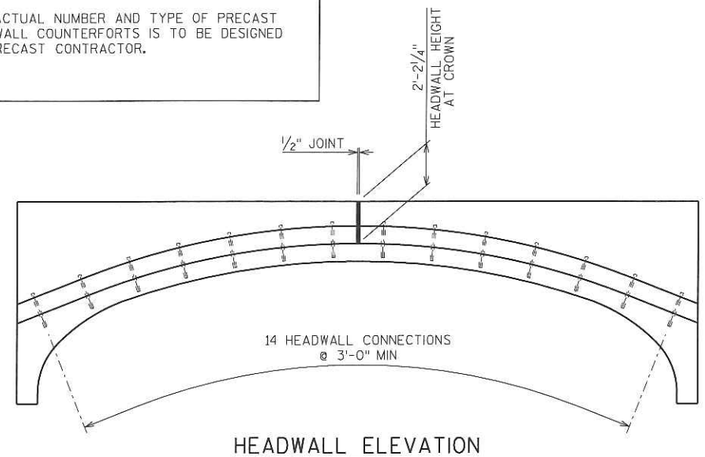
STATE PROJECT NUMBER

7896-00-70

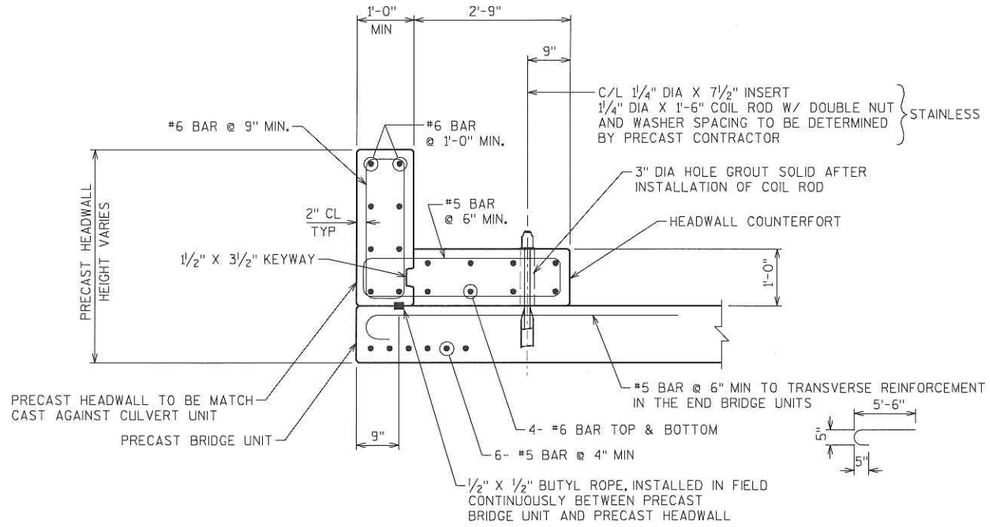


TYPICAL WINGWALL SECTION DETAIL

NOTE:
THE ACTUAL NUMBER AND TYPE OF PRECAST HEADWALL COUNTERFORTS IS TO BE DESIGNED BY PRECAST CONTRACTOR.



HEADWALL ELEVATION



PRECAST HEADWALL COUNTERFORT

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-47-212

DRAWN BY DLF | PLANS CK'D. CJB

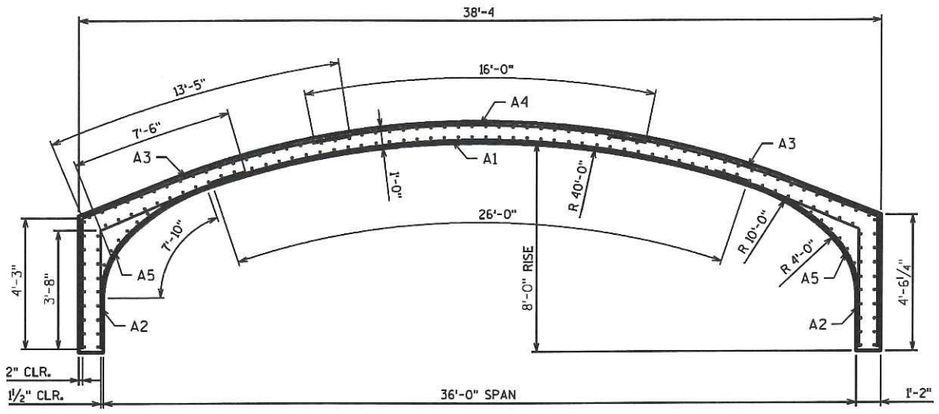
PRECAST THREE-SIDED CULVERT DETAILS

SHEET 8 OF 9
34

8

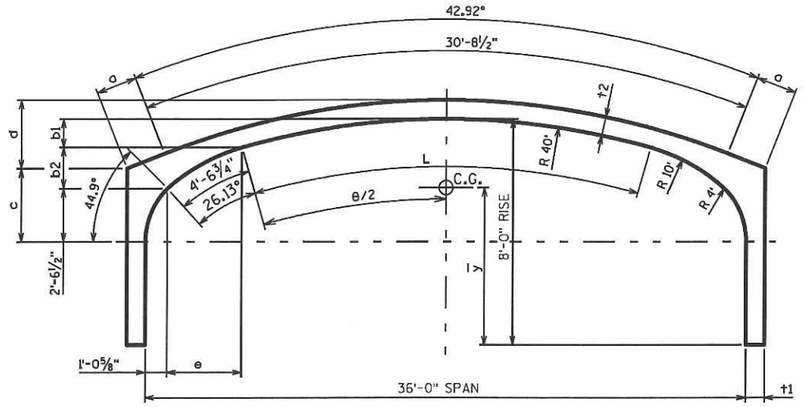
8

STATE PROJECT NUMBER
7896-00-70



SECTION THRU ARCH

ARCH UNIT LONGITUDINAL REINFORCEMENT 36'-0" SPAN		
CURCUMF. AREA REQ'D. SQ. IN/FT	LONGITUDINAL AREA REQ'D. SQ. IN/FT	LENGTH FT
A1 = 1.50	0.13	26'-0"
A2 = 0.36	0.13	11'-2"
A3 = 1.68	0.13	17'-8"
A4 = 0.36	0.13	16'-0"
A5 = 0.24	0.13	7'-10"



ARCH CROSS SECTION

GEOMETRIC PROPERTIES (FT.) (NOT SHOWN ON DRAWING)					
	SPAN - FT				
	~~20~~	~~24~~	~~28~~	36	~~42~~
θ	38.43°	48.29°	25.30°	37.93°	47.86°
L	16.77	21.07	17.66	26.48	33.41
a	2.13	4.25	0.00	4.48	4.48
b	1.39	2.19			
b1			0.97	2.17	3.50
b2			1.96	2.40	2.75
c	2.68	2.75	3.76	3.91	4.31
d	2.29	3.01	2.84	4.48	5.66
e			4.07	3.83	3.63
t1			1.00	1.17	1.17
t2			0.83	1.00	1.00

8

8

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-47-212

DRAWN BY DLF | PLANS CK'D. CJB

PRECAST THREE-SIDED CULVERT DETAILS

SHEET 8 OF 9
35

PLOT DATE: 11/29/2016 PLOT TIME: 1:23:3 PM

FILE NAME : S:\PT\S\SALEM\13900\S-final-dsgn\SI-drawings\20-Struct\bridge\b47212sd3.dgn

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 1.30 Note 3	Note 4
8+49	0	0.0	0.0	0	0	0	0	0
8+50	1	39.6	0.0	1	0	1	0	1
8+87.54	38	38.4	2.8	54	2	55	3	52
8+93.79	6	36.1	3.3	9	1	64	3	60
9+12.52	19	30.7	5.2	23	3	87	7	79
9+18.77	6	29.4	6.3	7	1	94	9	85
9+37.50	19	29.8	7.6	21	5	114	15	99
9+43.75	6	29.8	8.1	7	2	121	18	103
9+80	36	29.9	8.2	40	11	161	32	129
9+80.83	1	0.0	0.0	0	0	162	32	130
10+17.00	36	0.0	0.0	0	0	162	32	130
10+17.17	0	29.9	8.2	0	0	162	32	130
10+56.25	39	26.7	8.2	41	12	203	47	155
10+62.50	6	27.5	7.3	6	2	209	50	159
10+81.23	19	29.5	5.4	20	4	229	55	173
10+87.48	6	29.9	5.0	7	1	236	57	179
11+06.21	19	30.7	4.1	21	3	257	61	196
11+12.46	6	31.6	3.4	7	1	264	62	202
11+50.00	38	34.1	0.0	46	2	310	65	244
11+51	1	0.0	0.0	1	0	310	65	245

Notes:
1) Salvaged/Unusable Pavement Material is included in Cut.
2) Does not include Unusable Pavement Excavation volume.
3) Will be backfilled with Cut or Borrow.
4) Plus quantity indicates an excess of material. Minus indicates a shortage of material.

9

9

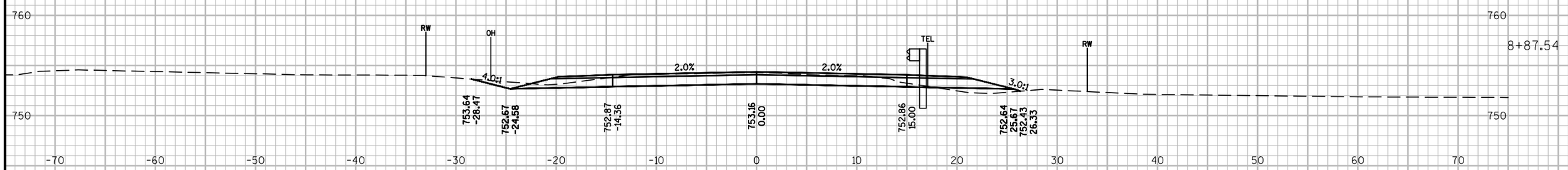
PROJECT NO: 7896-00-70	HWY: 400TH STREET	COUNTY: PIERCE	EARTHWORK TABULATIONS	SHEET 36	E

FILE NAME : P:\PT\S\SALEM\133901\CIVIL 3D\SHEETSPLAN\090101-EW.DWG
LAYOUT NAME - 090101-EW - 090101_EW
PLOT DATE : 1/5/2017 2:12 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:2 FT

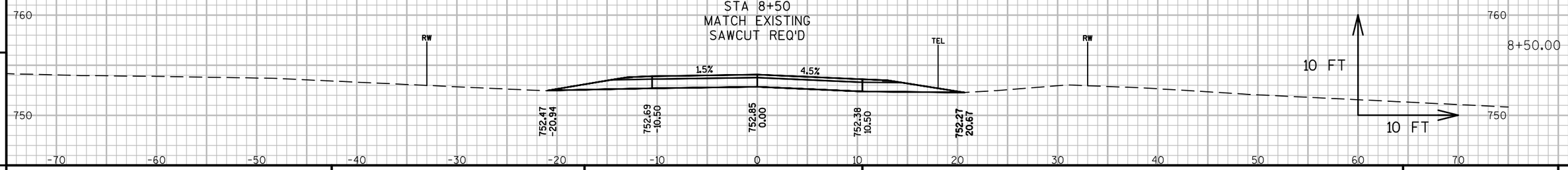
UTILITY LOCATIONS ARE APPROXIMATE.
ACTUAL LOCATIONS MUST BE FIELD VERIFIED.

MGS GUARDRAIL TERMINAL EAT
POST 1 LT

MGS GUARDRAIL TERMINAL EAT
POST 1 RT



BEGIN PROJECT
STA 8+50
MATCH EXISTING
SAWCUT REQ'D



9 9

PROJECT NO: 7896-00-70	HWY: 400TH STREET	COUNTY: PIERCE	CROSS SECTIONS: 400TH STREET	SHEET 37	E

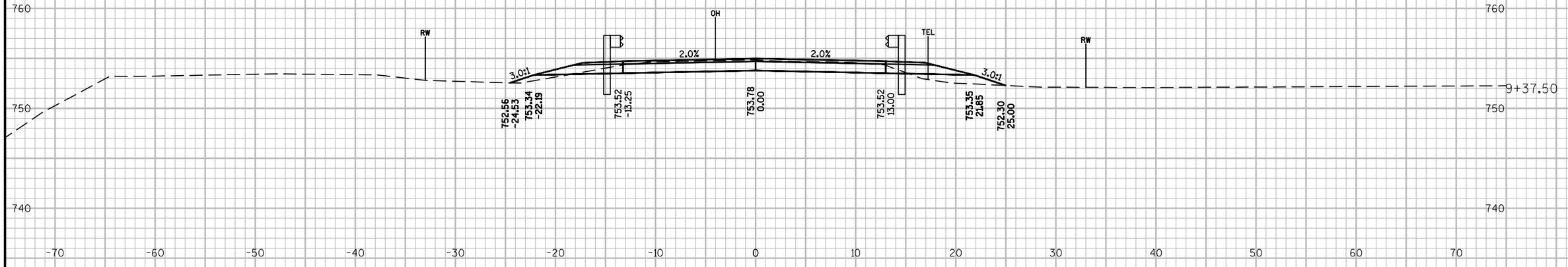
FILE NAME : P:\PT\S\SALEM\133901\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS01

PLOT DATE : 1/5/2017 2:34 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

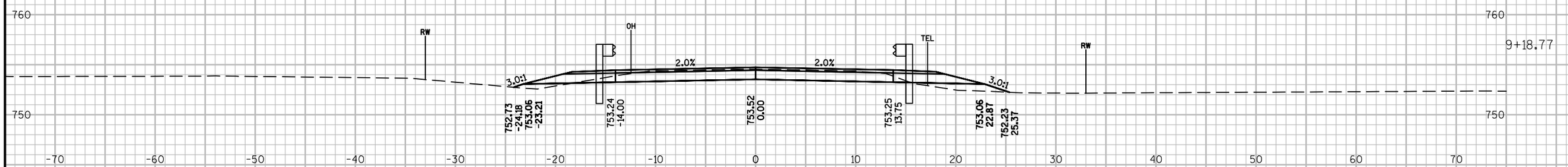
WISDOT/CADDS SHEET 49

UTILITY LOCATIONS ARE APPROXIMATE.
ACTUAL LOCATIONS MUST BE FIELD VERIFIED.

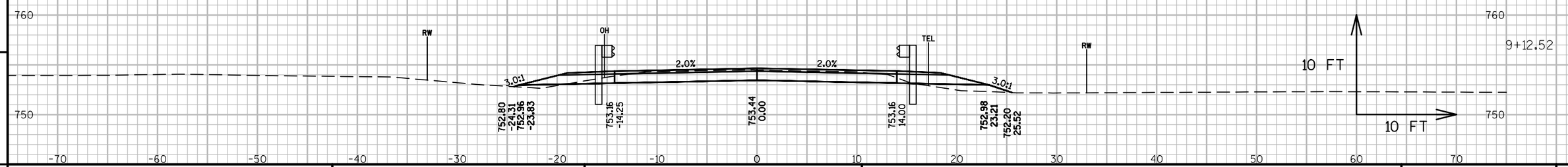
MGS GUARDRAIL TERMINAL EAT
POST 9 RT



MGS GUARDRAIL TERMINAL EAT
POST 5 LT



MGS GUARDRAIL TERMINAL EAT
POST 5 RT



9

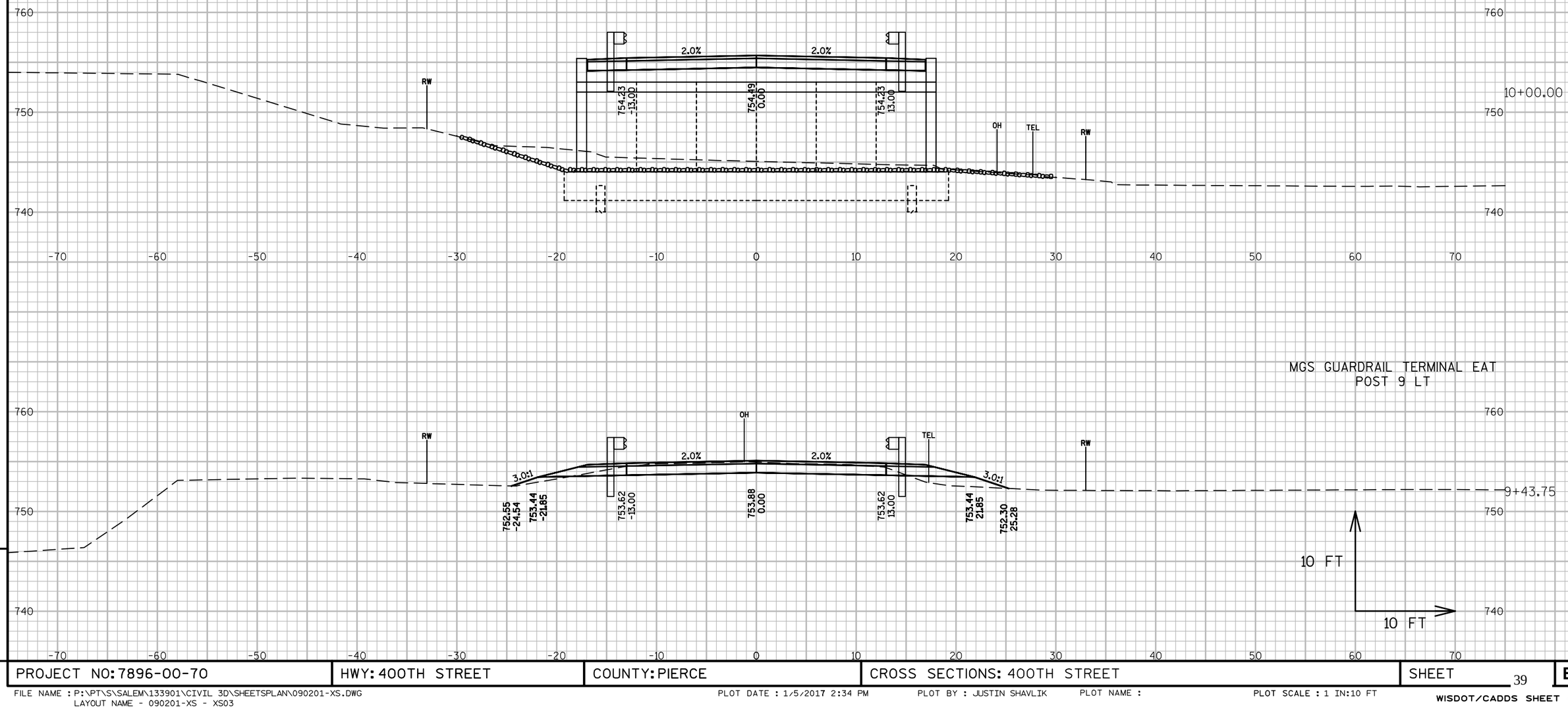
9

PROJECT NO: 7896-00-70	HWY: 400TH STREET	COUNTY: PIERCE	CROSS SECTIONS: 400TH STREET	SHEET 38	E

UTILITY LOCATIONS ARE APPROXIMATE.
ACTUAL LOCATIONS MUST BE FIELD VERIFIED.

MGS LONG SPAN REQ'D
STA 9+40.63 TO STA 10+53.12 RT
STA 9+46.87 TO STA 10+59.37 LT
POSTS NOT NEEDED AT STA 10+00

STRUCTURE B-47-0212
STA 10+00



MGS GUARDRAIL TERMINAL EAT
POST 9 LT

9

9

PROJECT NO: 7896-00-70	HWY: 400TH STREET	COUNTY: PIERCE	CROSS SECTIONS: 400TH STREET	SHEET 39	E

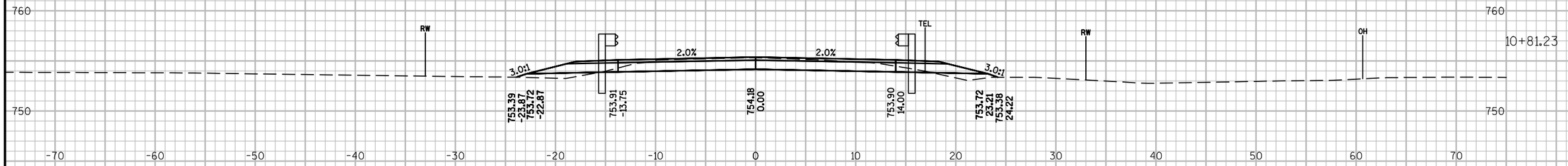
FILE NAME : P:\PT\S\SALEM\133901\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS03

PLOT DATE : 1/5/2017 2:34 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

UTILITY LOCATIONS ARE APPROXIMATE.
ACTUAL LOCATIONS MUST BE FIELD VERIFIED.

MGS GUARDRAIL TERMINAL EAT
POST 5 RT



MGS GUARDRAIL TERMINAL EAT
POST 9 LT

MGS GUARDRAIL TERMINAL EAT
POST 9 RT

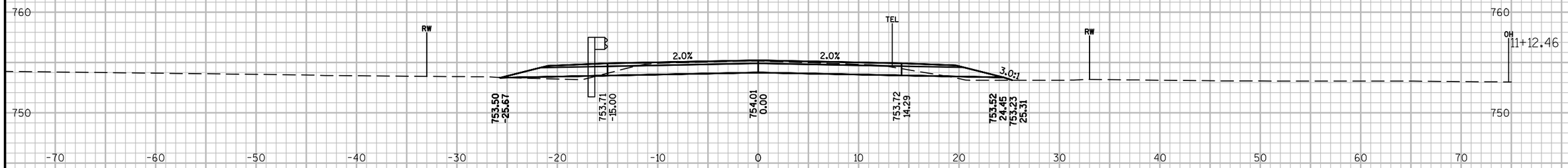
9

9

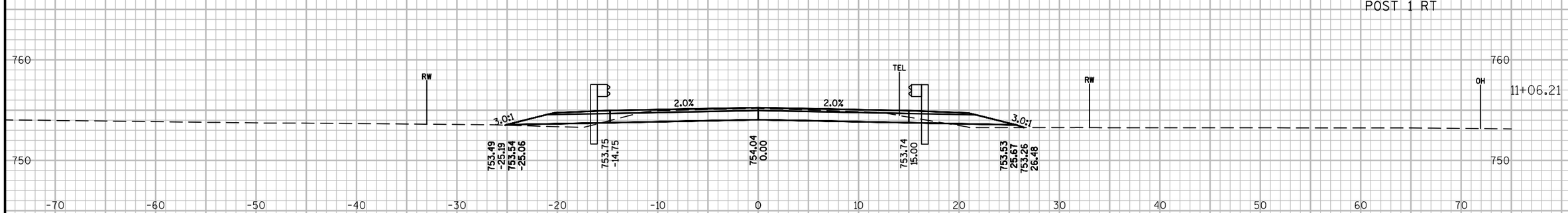
PROJECT NO: 7896-00-70	HWY: 400TH STREET	COUNTY: PIERCE	CROSS SECTIONS: 400TH STREET	SHEET 40	E

UTILITY LOCATIONS ARE APPROXIMATE.
ACTUAL LOCATIONS MUST BE FIELD VERIFIED.

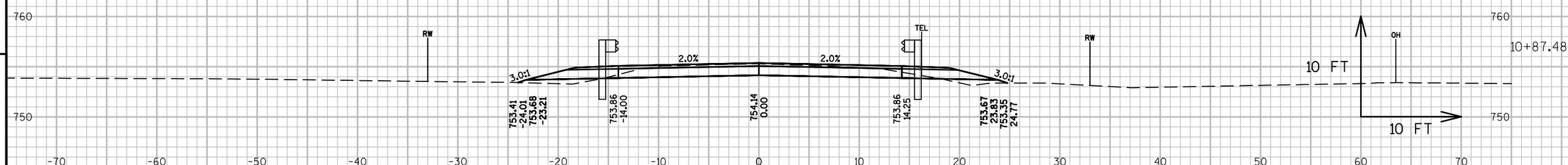
MGS GUARDRAIL TERMINAL EAT
POST 1 LT



MGS GUARDRAIL TERMINAL EAT
POST 1 RT



MGS GUARDRAIL TERMINAL EAT
POST 5 LT



9

9

PROJECT NO: 7896-00-70	HWY: 400TH STREET	COUNTY: PIERCE	CROSS SECTIONS: 400TH STREET	SHEET 41	E

FILE NAME : P:\PT\S\SALEM\133901\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS05

PLOT DATE : 1/5/2017 2:34 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

UTILITY LOCATIONS ARE APPROXIMATE.
ACTUAL LOCATIONS MUST BE FIELD VERIFIED.

END PROJECT
STA 11+50
MATCH EXISTING
SAWCUT REQ'D

9

9

PROJECT NO: 7896-00-70	HWY: 400TH STREET	COUNTY: PIERCE	CROSS SECTIONS: 400TH STREET	SHEET 42	E

FILE NAME : P:\PT\S\SALEM\133901\CIVIL 3D\SHEETSPLAN\090201-XS.DWG
LAYOUT NAME - 090201-XS - XS06

PLOT DATE : 1/5/2017 2:34 PM PLOT BY : JUSTIN SHAVLIK PLOT NAME : PLOT SCALE : 1 IN:10 FT

WISDOT/CADDS SHEET 49

Notes

Wisconsin Department of Transportation

Dedicated people creating transportation solutions
through innovation and exceptional service.

http://www.dot.wisconsin.gov