

ORDER OF SHEETS

Section No.	1	Title
Section No.	2	Typical Sections and Details
Section No.	3	Estimate of Quantities
Section No.	3	Miscellaneous Quantities
Section No.	4	Right of Way Plan
Section No.	5	Plan and Profile
Section No.	6	Standard Detail Drawings
Section No.	7	Sign Plates
Section No.	8	Structure Plans
Section No.	9	Cross Sections

TOTAL SHEETS = 34



DESIGN DESIGNATION

A.A.D.T.	2015	=	101
A.A.D.T.	2035	=	111
D.H.V.		=	N/A
D.D.		=	50/50
T.		=	10% MAX
DESIGN SPEED		=	45 MPH
ESALS		=	37,000

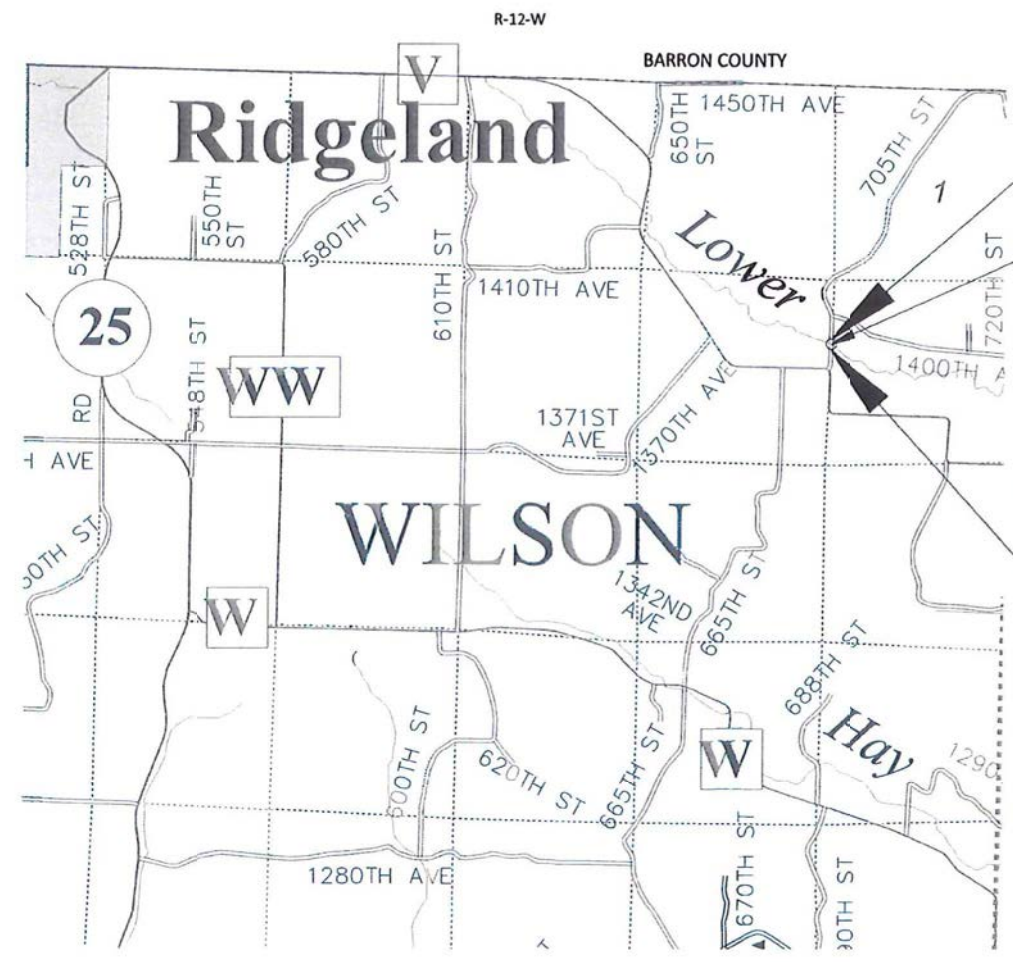
CONVENTIONAL SYMBOLS

PLAN	PROFILE
CORPORATE LIMITS	GRADE LINE
PROPERTY LINE	ORIGINAL GROUND
LOT LINE	MARSH OR ROCK PROFILE (To be noted as such)
LIMITED HIGHWAY EASEMENT	SPECIAL DITCH
EXISTING RIGHT OF WAY	GRADE ELEVATION
PROPOSED OR NEW R/W LINE	CULVERT (Profile View)
SLOPE INTERCEPT	UTILITIES
REFERENCE LINE	ELECTRIC
EXISTING CULVERT	FIBER OPTIC
PROPOSED CULVERT (Box or Pipe)	GAS
COMBUSTIBLE FLUIDS	SANITARY SEWER
MARSH AREA	STORM SEWER
WOODED OR SHRUB AREA	TELEPHONE
	WATER
	UTILITY PEDESTAL
	POWER POLE
	TELEPHONE POLE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
PLAN OF PROPOSED IMPROVEMENT

T WILSON, 705TH STREET
PINE CREEK BRIDGE B-17-0231
LOCAL STR
DUNN COUNTY

STATE PROJECT NUMBER
8931-00-70



END PROJECT
STA 10+75
Y = 284,302.55
X = 191,925.85

STRUCTURE B-17-0231
STA 9+78.25 - 10+21.75

BEGIN PROJECT
STA 9+25
Y = 284,152.55
X = 191,924.43

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

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
8931-00-70		

ACCEPTED FOR
DUNN COUNTY

Date: 10/19/2020
HIGHWAY COMMISSIONER

ORIGINAL PLANS PREPARED BY
JACOB A. FRIBERG
E-43328
RICE LAKE
WI
PROFESSIONAL ENGINEER

DATE: 10/19/2020
(Professional Engineer Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY
Surveyor: COOPER ENGINEERING
Designer: COOPER ENGINEERING
Project Manager: MATTHEW THORSEN, PE
Regional Supervisor: ANDREW STENSLAND, PE
Regional Examiner: TONY YANG, PE

APPROVED FOR THE DEPARTMENT
DATE: 10/20/2020
(Signature)

E

LIST OF STANDARD ABBREVIATIONS

ABUT	ABUTMENT	LT.	LEFT
AC	ACRES	LS	LUMP SUM
AGG	AGGREGATE	MH	MANHOLE
AH	AHEAD	N	NORTH
ADT	AVERAGE DAILY TRAFFIC	NC	NORMAL CROWN
		PAVT	PAVEMENT
AVG.	AVERAGE	PC	POINT OF CURVATURE
ASPH	ASPHALTIC	PE	PRIVATE ENTRANCE
BK.	BACK	PI	POINT OF INTERSECTION
BM	BENCHMARK	PL	PROPERTY LINE
Δ	CENTRAL ANGLE OR DELTA	PP	POWER POLE
℄ , C/L	CENTERLINE	PT	POINT OF TANGENCY
C & G	CURB AND GUTTER	R	RANGE , RADIUS
CABC	CRUSHED AGGREGATE	RCCP	REINFORCED CONCRETE
	BASE COURSE		CULVERT PIPE
CONC.	CONCRETE	RD	ROAD
		REBAR	REINFORCEMENT BAR
COR	CORNER	REQD	REQUIRED
CORR	CORRUGATED	RDWY	ROADWAY
CSCP	CORRUGATED STEEL	RHF	RIGHT HAND FORWARD
	CULVERT PIPE	RL, R/L	REFERENCE LINE
CSPA	CORRUGATED STEEL	RR	RAILROAD
	PIPE ARCH	RT.	RIGHT
CTH	COUNTY TRUNK HIGHWAY	R/W	RIGHT-OF-WAY
CP.	CULVERT PIPE	S	SOUTH
CY	CUBIC YARD	SAN S	SANITARY SEWER
CWT.	HUNDREDWEIGHT	SDD	STANDARD DETAIL DRAWING
DIA	DIAMETER	SE	SUPER ELEVATION
D	DEGREE OF CURVE	SF.	SQUARE FEET
DHV	DESIGN HOURLY VOLUME	SHLDR	SHOULDER
DWY	DRIVEWAY	SPECS	SPECIFICATIONS
EBS	EXC. BELOW SUB GRADE	SQ.	SQUARE
ELEV., EL	ELEVATION	SS.	STORM SEWER
ELEC.	ELECTRIC	SY.	SQUARE YARD
EXC	EXCAVATION	STH	STATE TRUNK HIGHWAY
EXIST	EXISTING	ST.	STREET
E	EAST	STA.	STATION
FE	FIELD ENTRANCE	SW	SIDEWALK
FF.	FACE TO FACE	T	TANGENT
FL, F/L	FLOW LINE	TC	TOP OF CURB
FS	FULL SUPERELEVATION	℄ , T/L	TRANSIT LINE
G	GARAGE	TEL	TELEPHONE
GN	GRID NORTH	TEMP	TEMPORARY
H	HOUSE	TLE	TEMPORARY LIMITED EASEMENT
		TYP	TYPICAL
HYD	HYDRANT	USH	UNITED STATES HIGHWAY
I	INTERSECTION ANGLE	UG	UNDERGROUND
INTERS	INTERSECTION	V	DESIGN SPEED
INV.	INVERT	VAR.	VARIABLE
IP	IRON PIN OR PIPE	VERT	VERTICAL
LC	LONG CHORD OF CURVE	YD	YARD
LF	LINEAR FOOT		
LHF	LEFT HAND FORWARD		
L	LENGTH OF CURVE		

UTILITY CONTACTS

ELECTRIC

DUNN ENERGY COOP
MIKE ANDRASCHKO
P.O. BOX 220
MENOMONIE, WI 54751
PHONE: (715) 232-6240
EMAIL: mandra@dunnenergy.com

COMMUNICATIONS

MOSAIC TELECOM
JACE SINCLAR
P.O. BOX 664
CAMERON, WI 54822
PHONE: (715) 458-5400
EMAIL: ctcjace@mosaictelecom.com

ALL UTILITIES LISTED ARE MEMBERS OF DIGGERS HOTLINE

DIGGERSHOTLINE

Dial 811 or (800)242-8511

www.DiggersHotline.com

OTHER CONTACTS

DESIGN CONSULTANT

COOPER ENGINEERING
JACOB FRIBERG
2600 COLLEGE DRIVE
RICE LAKE, WI 54868
PHONE: (715) 234-7008
EMAIL: jfriberg@cooperengineering.net

DUNN COUNTY

PUBLIC WORKS DIRECTOR
JOHN SWORSKI
3303 HIGHWAY 12 EAST
MENOMONIE, WI
PHONE: (715) 232-2181
EMAIL: jsworski@co.dunn.wi.us

ENGINEER/SUPERINTENDENT
DUSTIN BINDER
3303 HIGHWAY 12 EAST
MENOMONIE, WI
PHONE: (715) 232-2181
EMAIL: dbinder@co.dunn.wi.us

WDNR REGIONAL CONTACT

WDNR/WISDOT LIAISON
AMY LESIK
1300 WEST CLAIREMONT AVENUE
EAU CLAIRE, WI 54701
PHONE: (715) 836-6571
EMAIL: AmyL.Lesik@Wisconsin.gov

GENERAL NOTES:

NO TREES OR SHRUBS SHALL BE REMOVED UNLESS SUCH TREES OR SHRUBS HAVE BEEN DESIGNATED FOR REMOVAL BY THE ENGINEER.

ACCESS TO ALL RESIDENCES & SIDE ROADS SHALL BE MAINTAINED DURING CONSTRUCTION.

THE LOCATION 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.

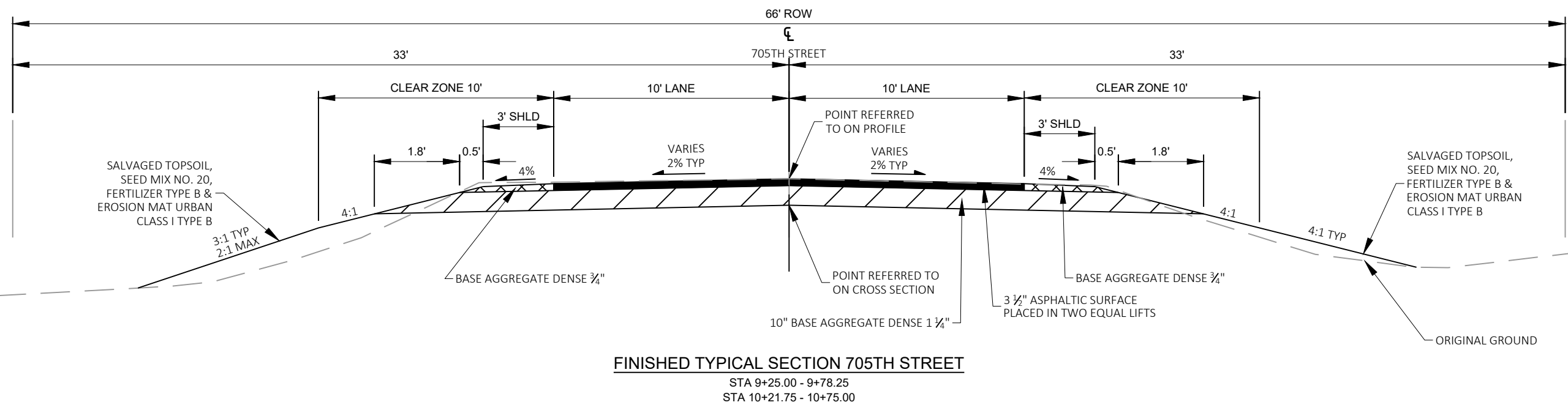
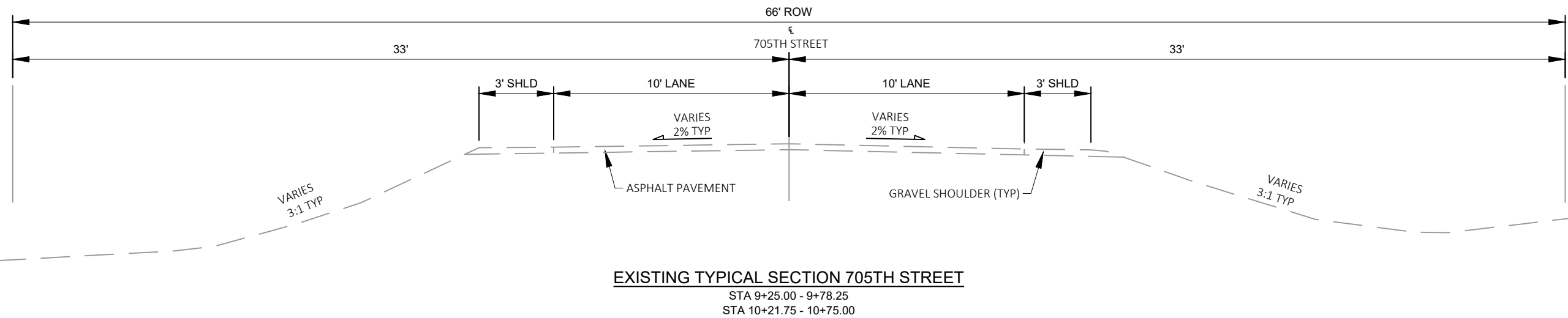
THE CONTRACTOR SHALL NOTIFY DIGGERS HOTLINE AND AFFECTED UTILITIES PRIOR TO THE START OF WORK. ANY UTILITY WHICH IS NOT A MEMBER OF THE DIGGERS HOTLINE MUST BE CONTACTED SEPARATELY.

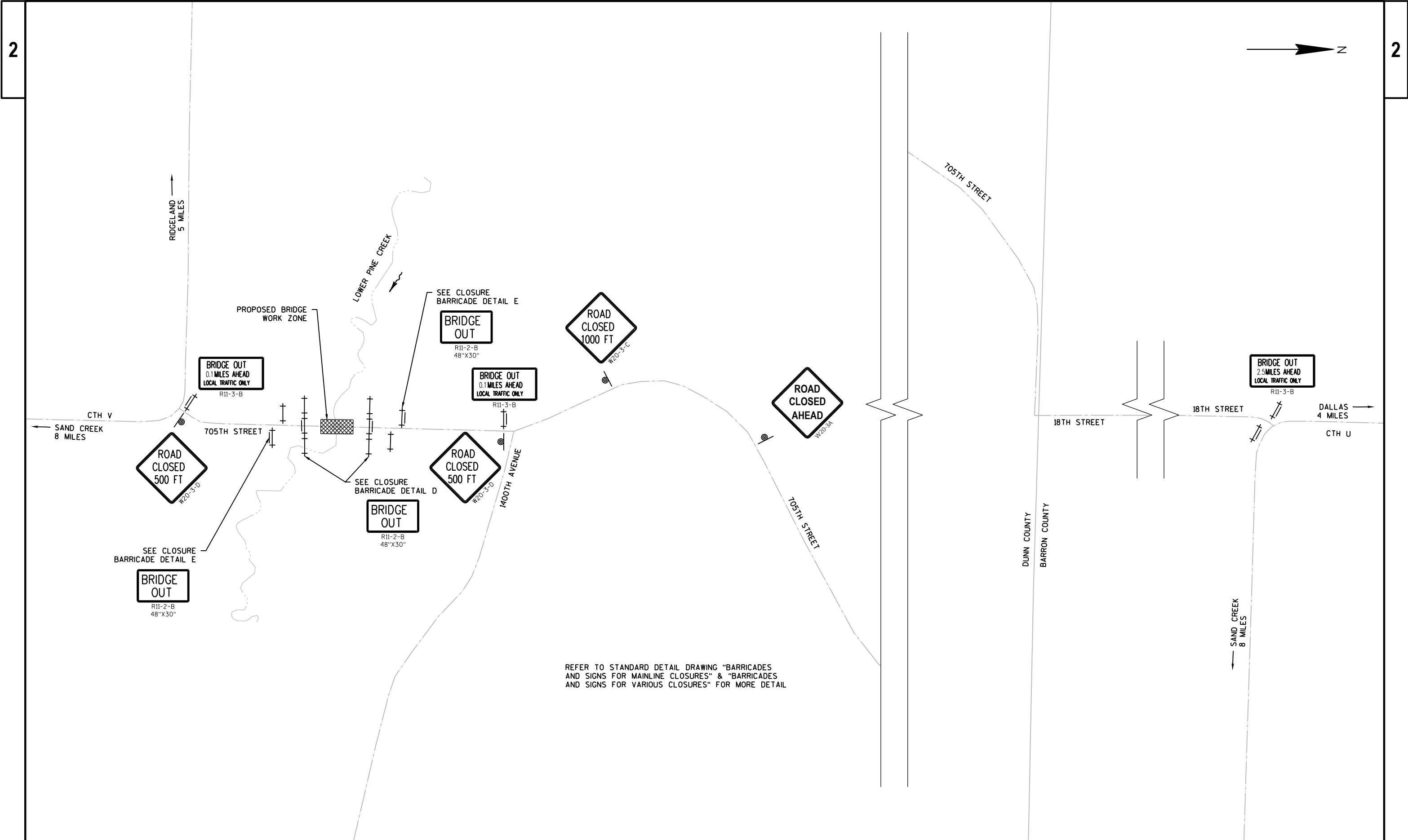
705TH STREET WILL BE CLOSED DURING CONSTRUCTION AND NO DETOUR ROUTE WILL BE MARKED.

RUNOFF COEFFICIENT TABLE

	HYDROLOGIC SOIL GROUP								
	A			B			C		
	SLOPE RANGE (%)			SLOPE RANGE (%)			SLOPE RANGE (%)		
LAND USE:	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
MEDIAN STRIP-TURF	.19 .24	.20 .26	.24 .30	.19 .25	.22 .28	.26 .33	.20 .26	.23 .30	.30 .37
SIDE SLOPE-TURF			.25 .32			.27 .34			.28 .36
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 = 0.23 ACRES
TOTAL AREA EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.15 ACRES





REFER TO STANDARD DETAIL DRAWING "BARRICADES AND SIGNS FOR MAINLINE CLOSURES" & "BARRICADES AND SIGNS FOR VARIOUS CLOSURES" FOR MORE DETAIL

Estimate Of Quantities

8931-00-70					
Line	Item	Item Description	Unit	Total	Qty
0002	203.0600.S	Removing Old Structure Over Waterway With Minimal Debris (station) STA 10+00	LS	1.000	1.000
0004	205.0100	Excavation Common	CY	135.000	135.000
0006	206.1000	Excavation for Structures Bridges (structure) B-17-231	LS	1.000	1.000
0008	210.1500	Backfill Structure Type A	TON	230.000	230.000
0010	213.0100	Finishing Roadway (project) 8931-00-70	EACH	1.000	1.000
0012	305.0110	Base Aggregate Dense 3/4-Inch	TON	20.000	20.000
0014	305.0120	Base Aggregate Dense 1 1/4-Inch	TON	200.000	200.000
0016	455.0605	Tack Coat	GAL	20.000	20.000
0018	465.0105	Asphaltic Surface	TON	60.000	60.000
0020	502.0100	Concrete Masonry Bridges	CY	148.000	148.000
0022	502.3200	Protective Surface Treatment	SY	175.000	175.000
0024	505.0400	Bar Steel Reinforcement HS Structures	LB	3,260.000	3,260.000
0026	505.0600	Bar Steel Reinforcement HS Coated Structures	LB	19,040.000	19,040.000
0028	513.4061	Railing Tubular Type M	LF	131.500	131.500
0030	516.0500	Rubberized Membrane Waterproofing	SY	10.000	10.000
0032	550.1100	Piling Steel HP 10-Inch X 42 Lb	LF	520.000	520.000
0034	606.0300	Riprap Heavy	CY	110.000	110.000
0036	612.0406	Pipe Underdrain Wrapped 6-Inch	LF	180.000	180.000
0038	618.0100	Maintenance And Repair of Haul Roads (project) 8931-00-70	EACH	1.000	1.000
0040	619.1000	Mobilization	EACH	1.000	1.000
0042	624.0100	Water	MGAL	4.000	4.000
0044	625.0500	Salvaged Topsoil	SY	300.000	300.000
0046	628.1504	Silt Fence	LF	310.000	310.000
0048	628.1520	Silt Fence Maintenance	LF	310.000	310.000
0050	628.1905	Mobilizations Erosion Control	EACH	3.000	3.000
0052	628.1910	Mobilizations Emergency Erosion Control	EACH	2.000	2.000
0054	628.2008	Erosion Mat Urban Class I Type B	SY	300.000	300.000
0056	628.6005	Turbidity Barriers	SY	95.000	95.000
0058	629.0210	Fertilizer Type B	CWT	0.200	0.200
0060	630.0120	Seeding Mixture No. 20	LB	10.000	10.000
0062	630.0500	Seed Water	MGAL	10.000	10.000
0064	634.0612	Posts Wood 4x6-Inch X 12-FT	EACH	4.000	4.000
0066	637.2230	Signs Type II Reflective F	SF	12.000	12.000
0068	638.2602	Removing Signs Type II	EACH	6.000	6.000
0070	638.3000	Removing Small Sign Supports	EACH	6.000	6.000
0072	642.5001	Field Office Type B	EACH	1.000	1.000
0074	643.0420	Traffic Control Barricades Type III	DAY	840.000	840.000
0076	643.0705	Traffic Control Warning Lights Type A	DAY	1,440.000	1,440.000

Estimate Of Quantities

8931-00-70					
Line	Item	Item Description	Unit	Total	Qty
0078	643.0900	Traffic Control Signs	DAY	720.000	720.000
0080	643.5000	Traffic Control	EACH	1.000	1.000
0082	645.0111	Geotextile Type DF Schedule A	SY	50.000	50.000
0084	645.0120	Geotextile Type HR	SY	170.000	170.000
0086	650.4500	Construction Staking Subgrade	LF	86.000	86.000
0088	650.5000	Construction Staking Base	LF	86.000	86.000
0090	650.6500	Construction Staking Structure Layout (structure) B-17-231	LS	1.000	1.000
0092	650.9910	Construction Staking Supplemental Control (project) 8931-00-70	LS	1.000	1.000
0094	650.9920	Construction Staking Slope Stakes	LF	86.000	86.000
0096	690.0150	Sawing Asphalt	LF	40.000	40.000
0098	715.0502	Incentive Strength Concrete Structures	DOL	1,480.000	1,480.000
0100	SPV.0090	Special .01 Flashing Stainless Steel	LF	87.000	87.000

						SALVAGED/ UNUSEABLE		EXPANDED FILL		MASS ORDINATE	
		EXCAVATION COMMON		PAVEMENT MATERIAL		AVAILABLE MATERIAL		UNEXPANDED FILL		(FACTOR = 1.25)	
		205.0100									
CATEGORY	STATION TO STATION	SIDE	CY	CY	CY	CY	CY	CY	CY	CY	CY
0010	9+25 - 9+78	LT/RT	65	10	55	40	50	5			
0010	10+22 - 10+75	LT/RT	70	10	60	35	44	16			
TOTAL 0010			135	20	115	75	94	21			

		EROSION MAT							
		SALVAGED RIPRAP HEAVY		URBAN CLASS I TOPSOIL		FERTILIZER TYPE B		SEEDING MIX NO. 20	
		606.0300		625.0500		628.2008		629.0210	
CATEGORY	LOCATION	CY	SY	SY	CWT	LB	MGAL	SY	GEOTEXTILE TYPE HR
0010	B-17-231 SE	-	65	65	0.05	2	2	-	
0010	B-17-231 SW	-	75	75	0.05	3	3	-	
0010	B-17-231 NE	-	60	60	0.04	2	2	-	
0010	B-17-231 NW	10	40	40	0.03	2	2	20	
0010	UNDISTRIBUTED	-	60	60	0.03	1	1	-	
TOTAL 0010		10	300	300	0.2	10	10	20	

		TURBIDITY BARRIER	
		628.6005	
CATEGORY	LOCATION	SY	REMARKS
0010	B-17-231 SOUTH	40	80' LONG X 4.5' HIGH
0010	B-17-231 NORTH	55	110' LONG X 4.5' HIGH
TOTAL 0010		95	

		TRAFFIC CONTROL BARRICADES		TRAFFIC CONTROL WARNING LIGHTS		TRAFFIC CONTROL SIGNS			
		TYPE III		TYPE A					
		643.0420		643.0705		643.0900			
CATEGORY	DAYS	#	DAYS	#	DAYS	#	DAYS	REMARKS	
0010	60	3	180	4	240	1	60	ROAD CLOSED DETAIL D SOUTH SIDE	
0010	60	3	180	4	240	1	60	ROAD CLOSED DETAIL D NORTH SIDE	
0010	60	3	180	6	360	3	180	ADVANCED ROAD CLOSED DETAIL C SOUTH SIDE	
0010	60	5	300	10	600	7	420	ADVANCED ROAD CLOSED DETAIL C NORTH SIDE	
TOTAL 0010		840	1,440	720					

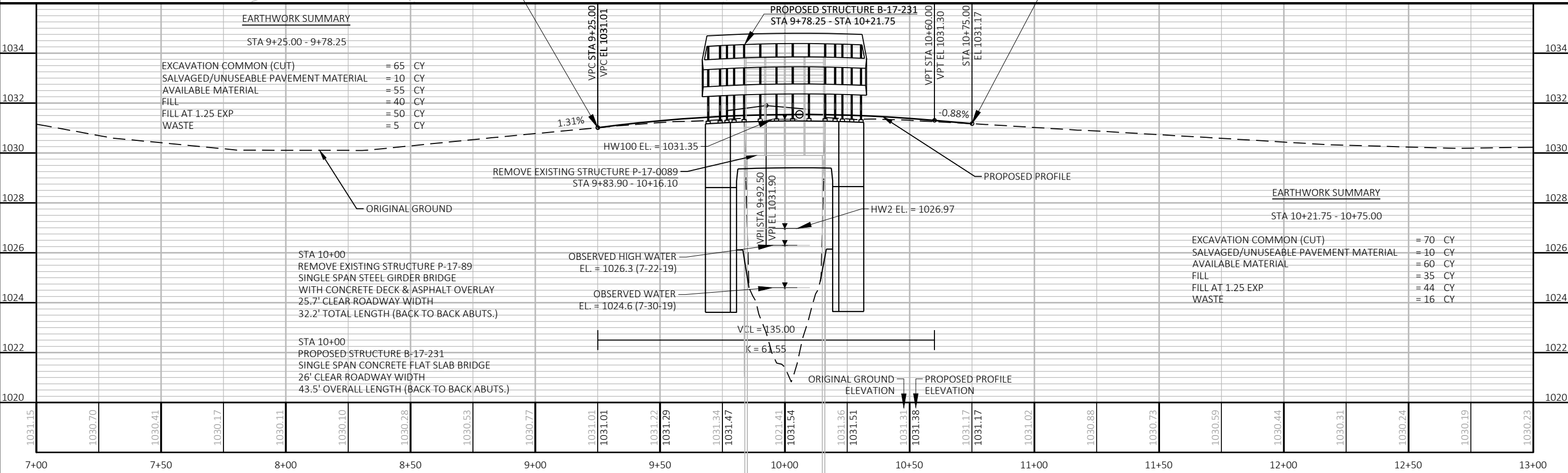
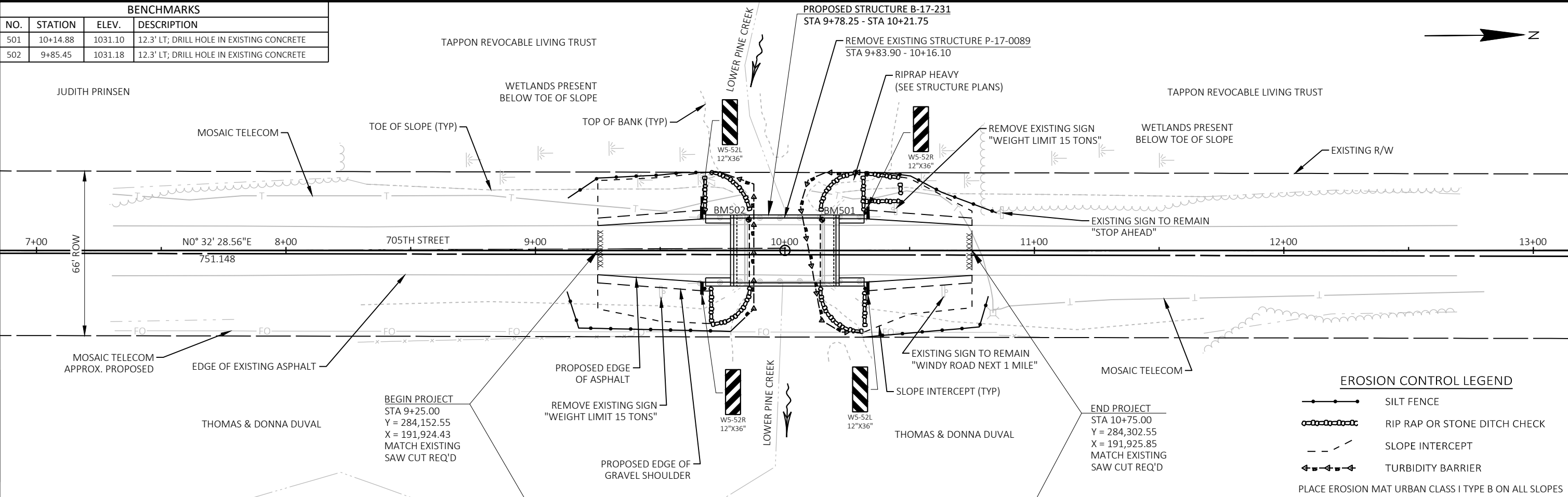
		BASE AGGREGATE DENSE		BASE AGGREGATE DENSE		ASPHALTIC TACK COAT		SAWING SURFACE		WATER	
		3/4-INCH		1 1/4-INCH		455.0605		465.0105		624.0100	
		305.0110		305.0120						690.0150	
CATEGORY	STATION TO STATION	SIDE	AVERAGE ASPHALT THICKNESS (IN)	LAYERS	TON	TON	GAL	TON	MGAL	LF	
0010	9+25 - 9+78	LT/RT	3.5	2	10	100	10	30	2	20	
0010	10+22 - 10+75	LT/RT	3.5	2	10	100	10	30	2	20	
TOTAL 0010					20	200	20	60	4	40	

		SILT FENCE SILT FENCE		MAINTENANCE	
		628.1504		628.1520	
CATEGORY	LOCATION	LF	LF		
0010	B-17-231 SE	75	75		
0010	B-17-231 SW	65	65		
0010	B-17-231 NE	60	60		
0010	B-17-231 NW	50	50		
0010	UNDISTRIBUTED	60	60		
TOTAL 0010		310	310		

			POSTS	SIGNS			
			WOOD	TYPE II	REMOVING	REMOVING	
			4x6-INCH	REFLECTIVE	SIGNS	SMALL SIGN	
			x 12 FT	F	TYPE II	SUPPORTS	
			634.0612	637.2230	638.2602	638.3000	
CATEGORY	STATION	SIDE	EA	SF	EA	EA	REMARKS
0010	9+51	RT	-	-	1	1	15 TONS
0010	9+68	LT	1	3	1	1	W5-52L
0010	9+68	RT	1	3	1	1	W5-52R
0010	10+32	LT	1	3	1	1	W5-52L
0010	10+32	RT	1	3	1	1	W5-52R
0010	10+43	LT	-	-	1	1	15 TONS
TOTAL 0010			4	12	6	6	

		CONSTRUCTION STAKING		CONSTRUCTION STAKING		CONSTRUCTION STAKING	
		SUBGRADE		BASE		SLOPE STAKES	
		650.4500		650.5000		650.9920	
CATEGORY	STATION TO STATION	LF	LF	LF	LF	LF	
0010	9+25 - 9+68	43	43	43			
0010	10+32 - 10+75	43	43	43			
TOTAL 0010		86	86	86			

BENCHMARKS			
NO.	STATION	ELEV.	DESCRIPTION
501	10+14.88	1031.10	12.3' LT; DRILL HOLE IN EXISTING CONCRETE
502	9+85.45	1031.18	12.3' LT; DRILL HOLE IN EXISTING CONCRETE



PROJECT NO:	8931-00-70	HWY:	705TH STREET	COUNTY:	DUNN	PLAN AND PROFILE:	705TH STREET	SHEET	E
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Standard Detail Drawing List

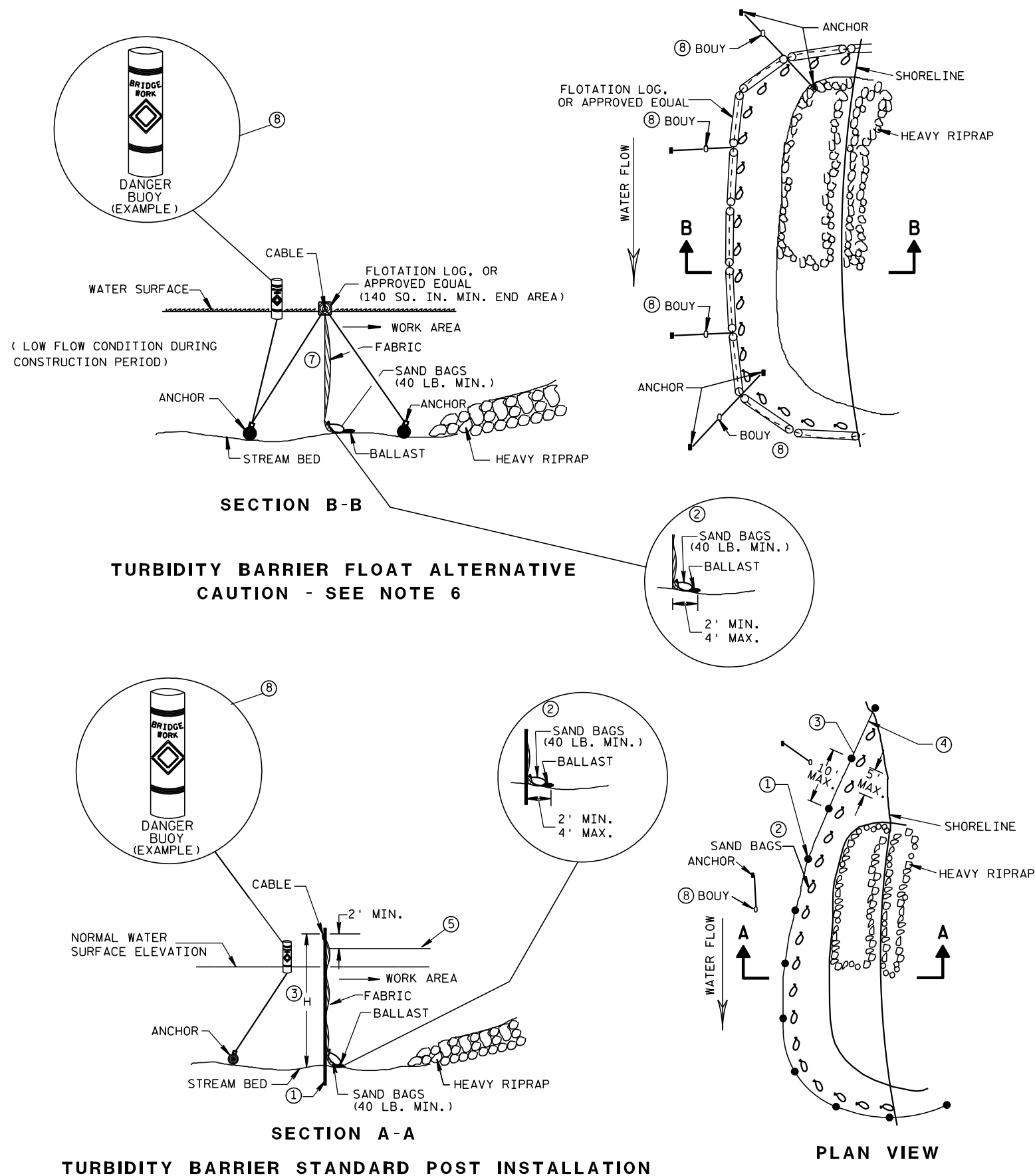
08E09-06	SILT FENCE
08E11-02	TURBIDITY BARRIER
12A03-10	NAME PLATE (STRUCTURES)
15C02-08A	BARRICADES AND SIGNS FOR MAINLINE CLOSURES
15C02-08B	BARRICADES AND SIGNS FOR VARIOUS CLOSURES
15C06-09	SIGNING & MARKING FOR TWO LANE BRIDGES
15C11-07B	CHANNELIZING DEVICES DRUMS, CONES, BARRICADES AND VERTICAL PANELS
15D38-02A	TEMPORARY TRAFFIC CONTROL SIGN MOUNTING
15D38-02B	ATTACHMENT OF SIGNS TO POSTS



- 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 1 1/8" X 1 1/8" 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.



<p>SILT FENCE</p>	
<p>STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION</p>	
<p>APPROVED 4-29-05 DATE</p>	<p>/s/ Beth Cannestra CHIEF ROADWAY DEVELOPMENT ENGINEER</p>

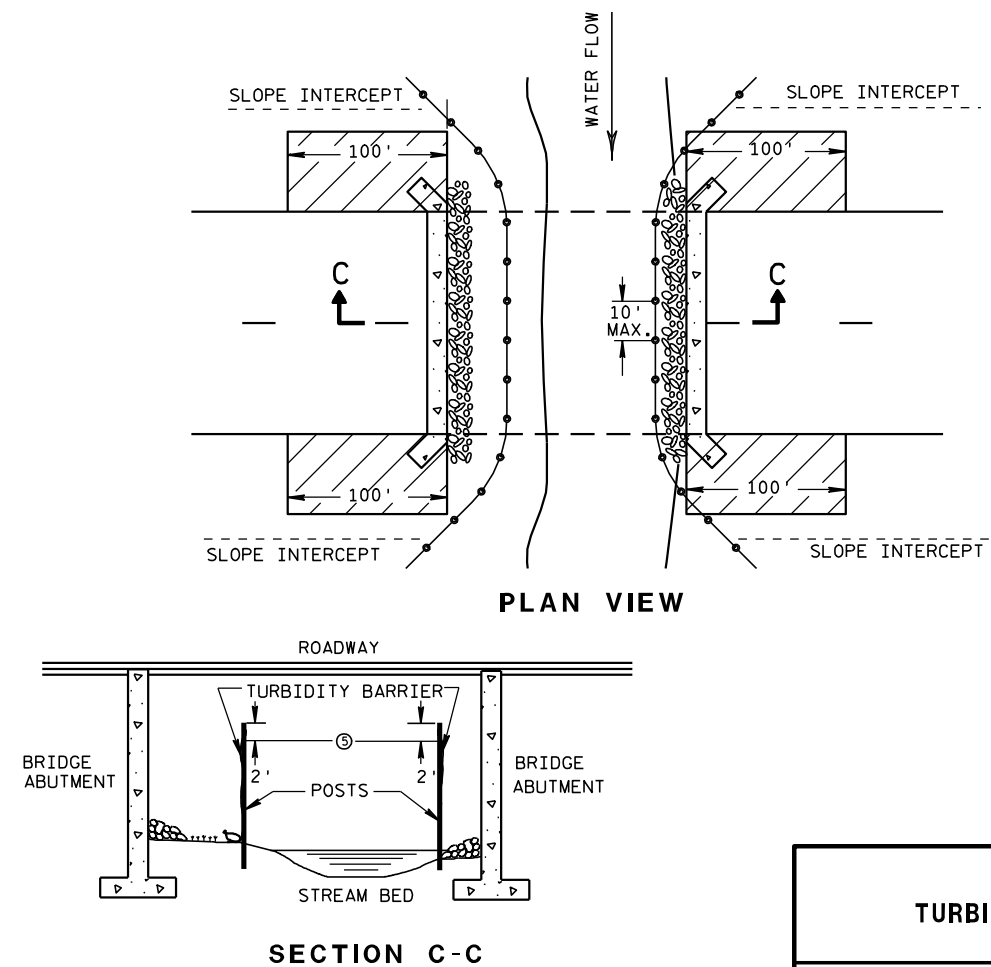


GENERAL NOTES

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. MINIMUM BARRIER HEIGHT SHALL BE 2' GREATER THAN EITHER THE 02 ELEVATION OR THE ESTIMATED HIGH WATER ELEVATION DURING CONSTRUCTION, WHICHEVER 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.



TURBIDITY BARRIER DETAIL SHOWING TYPICAL PLACEMENT AT STRUCTURES

TURBIDITY BARRIER

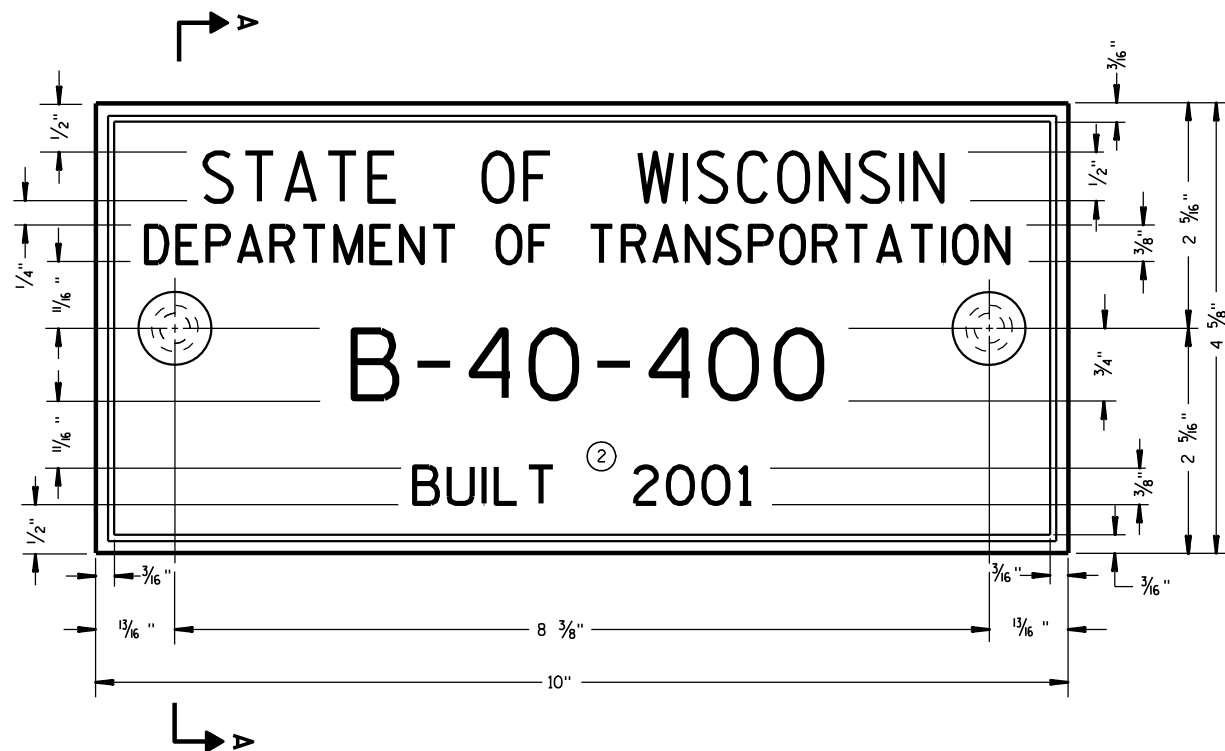
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

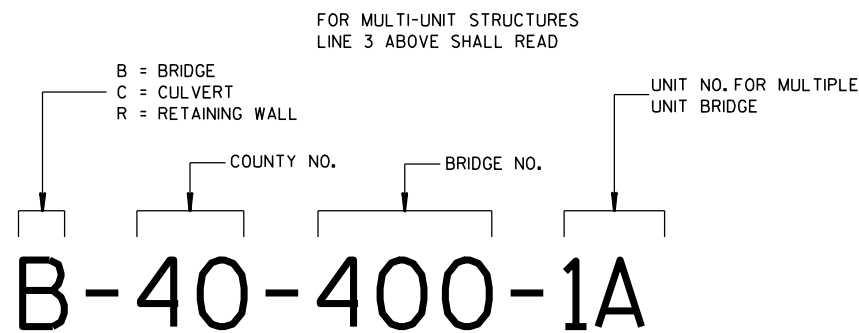
6/04/02
DATE

FHWA

/S/ Beth Canestra
CHIEF ROADWAY DEVELOPMENT ENGINEER



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



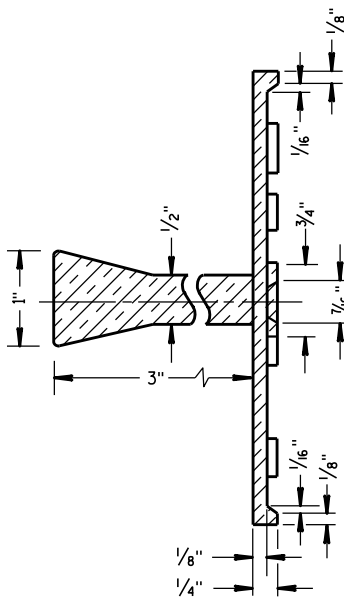
**NUMBERING DESIGNATION
MULTI-UNIT STRUCTURES**

GENERAL NOTES

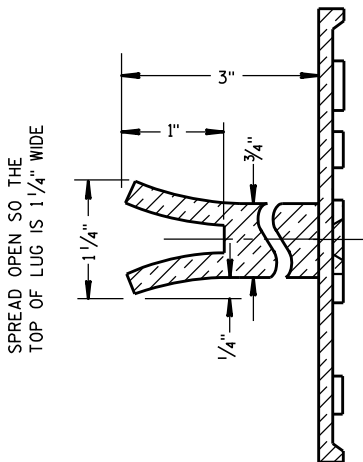
NAME PLATES TO BE INSTALLED ON BRIDGES, CULVERTS, AND RETAINING WALLS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS.

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.

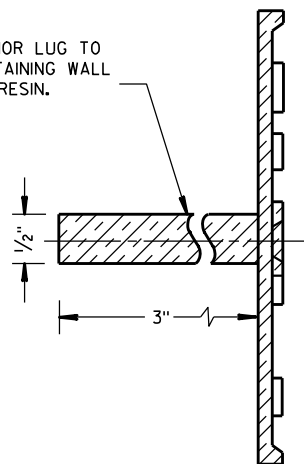


SECTION A-A



ALTERNATE LUG

- ① ADHERE ANCHOR LUG TO PRECAST RETAINING WALL WITH EPOXY RESIN.

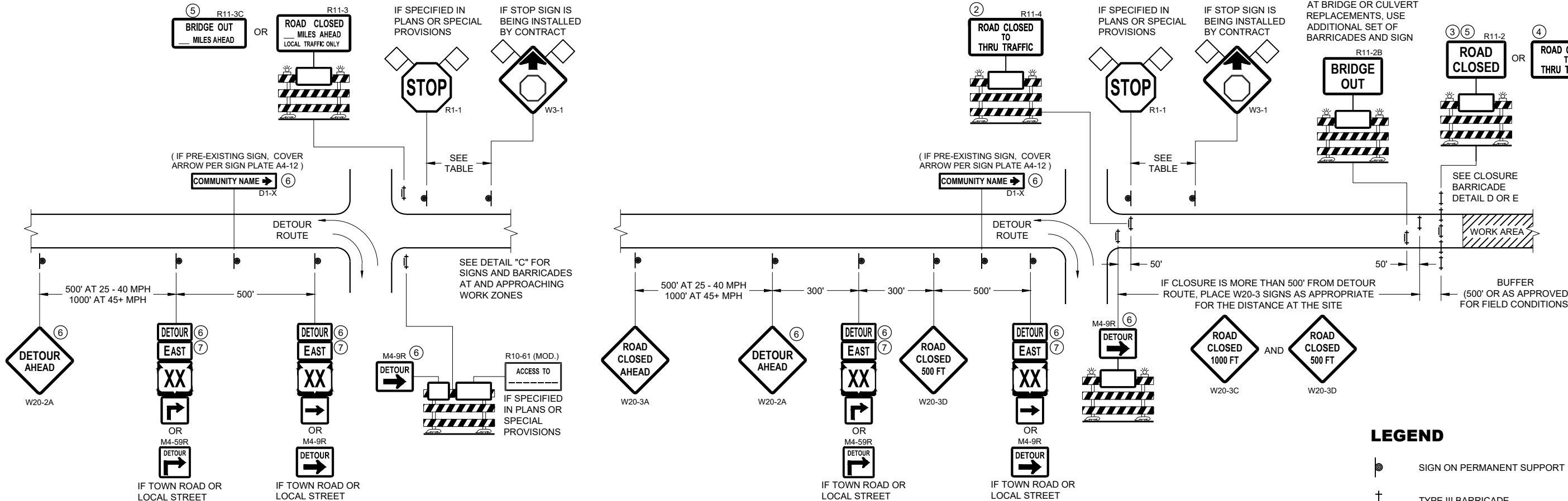


ALTERNATE LUG
(FOR ATTACHMENT TO PRECAST STRUCTURES)

**NAME PLATE
(STRUCTURES)**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
3/26/10
DATE
/S/ Scot Becker
CHIEF STRUCTURAL DEVELOPMENT ENGINEER
FHWA



DETAIL A
MAINLINE CLOSURE WITH POSTED DETOUR
WORK ZONE GREATER THAN OR EQUAL TO 1/2 MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

DETAIL B
MAINLINE CLOSURE WITH POSTED DETOUR
WORK ZONE LESS THAN 1/2 MILE FROM
DETOUR ROUTE (1000 FEET IF URBAN)

LEGEND

- SIGN ON PERMANENT SUPPORT
- TYPE III BARRICADE
- TYPE III BARRICADE WITH ATTACHED SIGN
- TYPE "A" WARNING LIGHT (FLASHING)
- WORK AREA
- FLAGS, 16" X 16" MIN. (ORANGE)

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

BARRICADES AND SIGNS FOR MAINLINE CLOSURES

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
February 2020 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA



GENERAL NOTES

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.

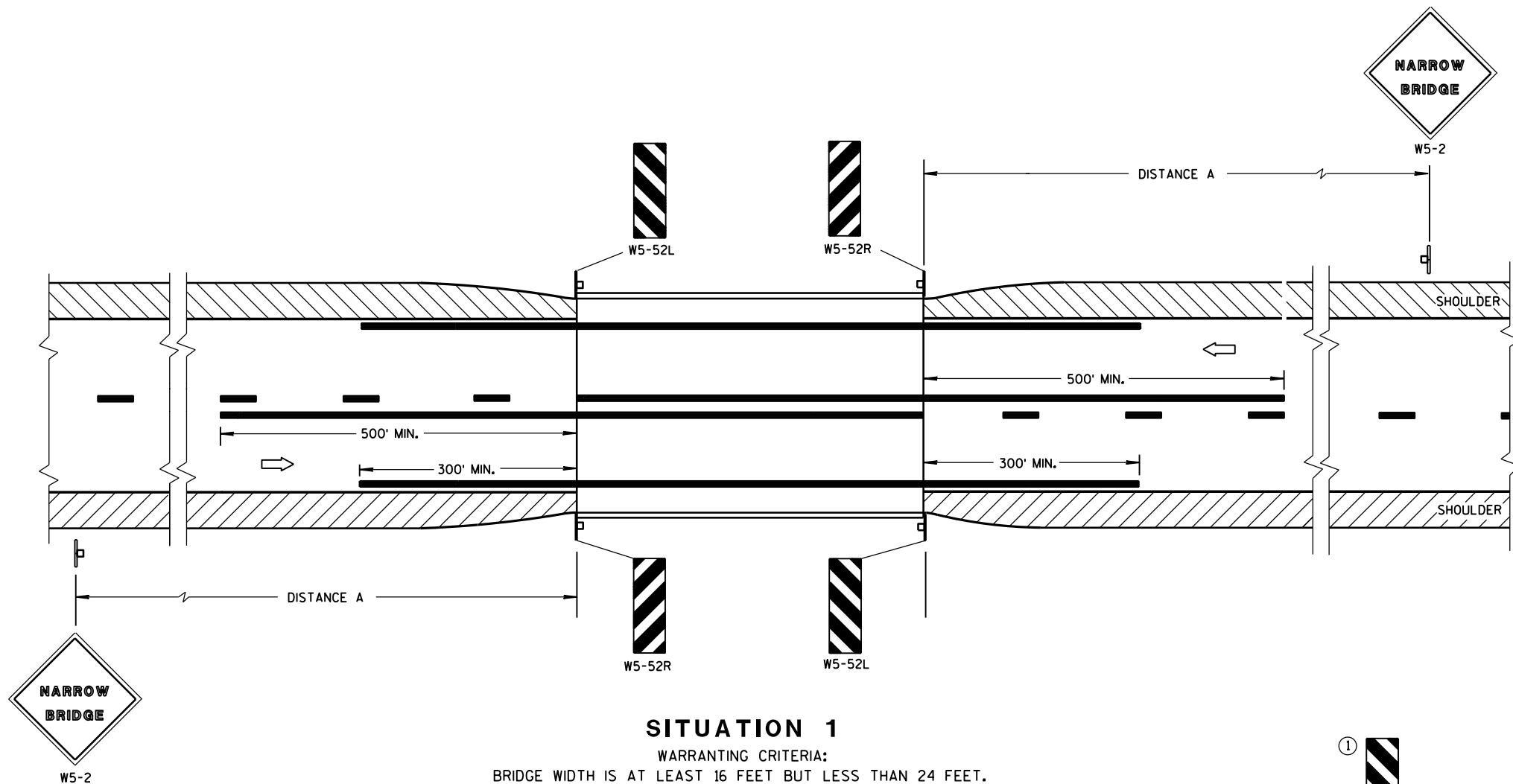
THE R11 - 2, R11 - 3, M4 - 9, R11 - 4, AND R10 - 61 SIGNS PLACED ON THE BARRICADES SHALL COVER NO MORE THAN THE TOP RAIL. THE SIGNS SHALL NOT COVER ANY PORTION OF THE MIDDLE RAIL OR BOTTOM RAILS.

"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 SHALL, 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" (36" X 18" IF NEEDED TO MATCH EXISTING SIGNS)
M1 - 4, M1 - 5A AND M1 - 6 SHALL BE 24" X 24" (36" X 36" IF NEEDED TO MATCH EXISTING SIGNS)
MO5 - 1 AND MO6 - 1 SHALL BE 21" X 21" (30" X 30" IF NEEDED TO MATCH EXISTING SIGNS)
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 AN 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 ROAD 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.



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

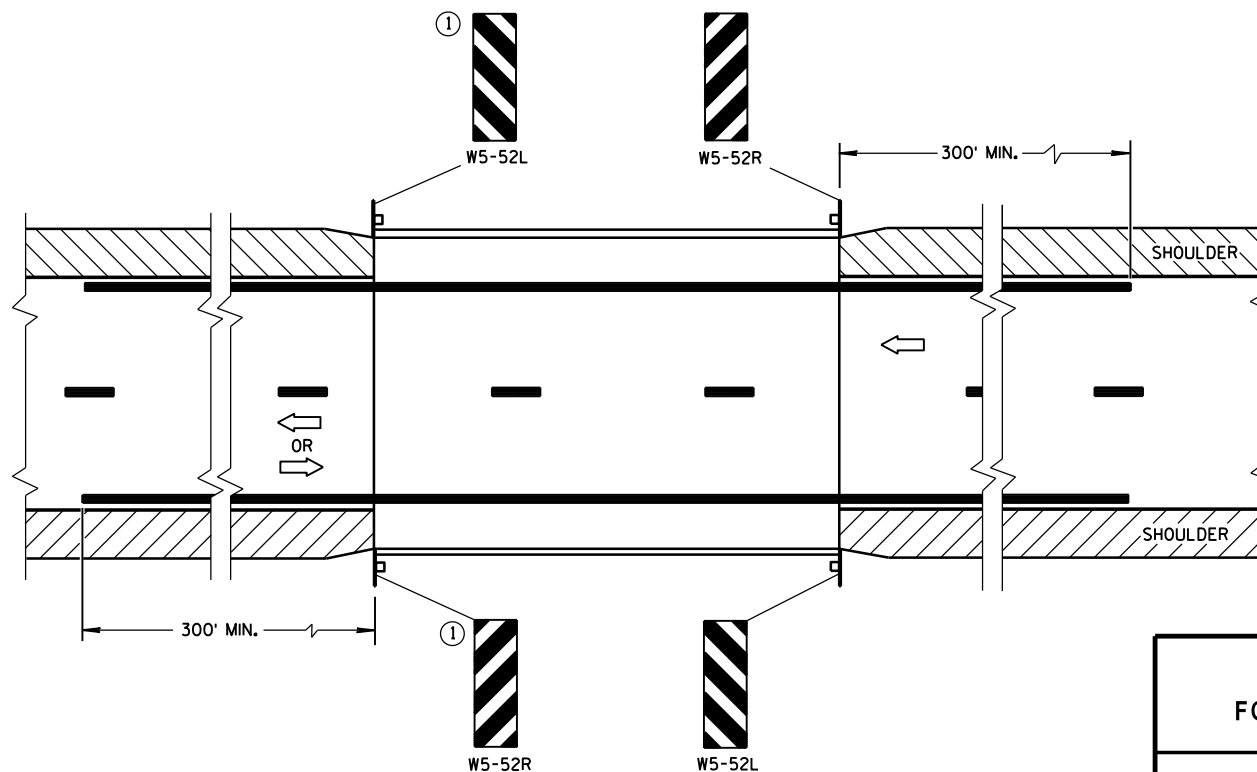
DETAILS OF TRAFFIC CONTROL DEVICES AND INSTALLATION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

LOCATE W5-52 SIGN POST(S) BEHIND GUARDRAIL WHEN PRESENT.

PLACE THE EDGE OF THE W5-52 SIGN IN LINE WITH FACE OF CURB OR PARAPET.

① OMIT ON ONE-WAY TRAVELLED WAYS.

➡ DIRECTION OF TRAFFIC



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

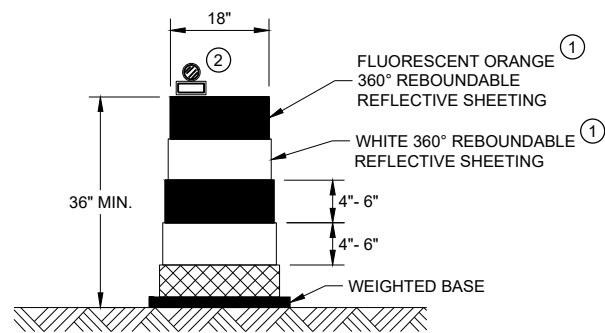
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED

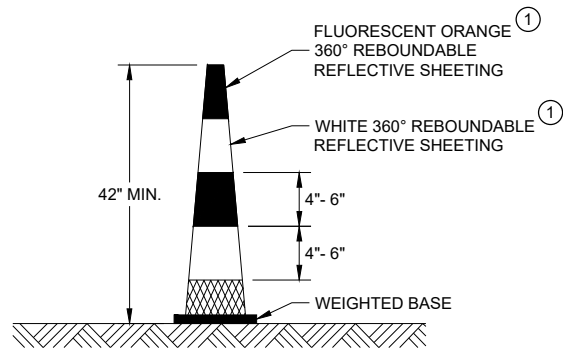
June 2017
DATE

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

FHWA

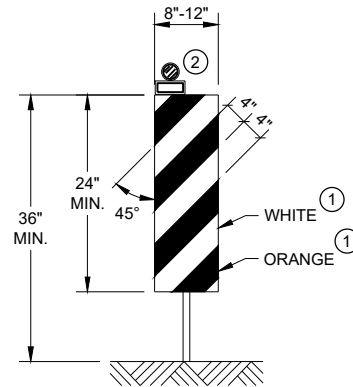


DRUM



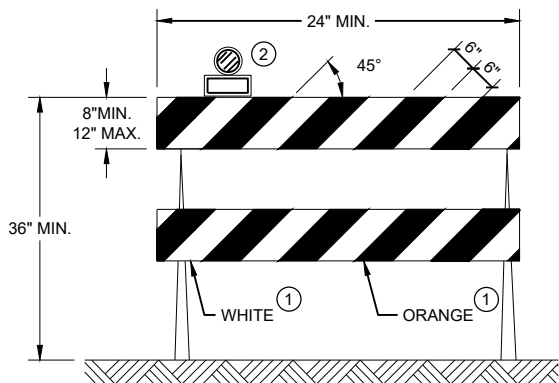
42" CONE

DO NOT USE IN TAPERS
½ SPACING OF DRUMS



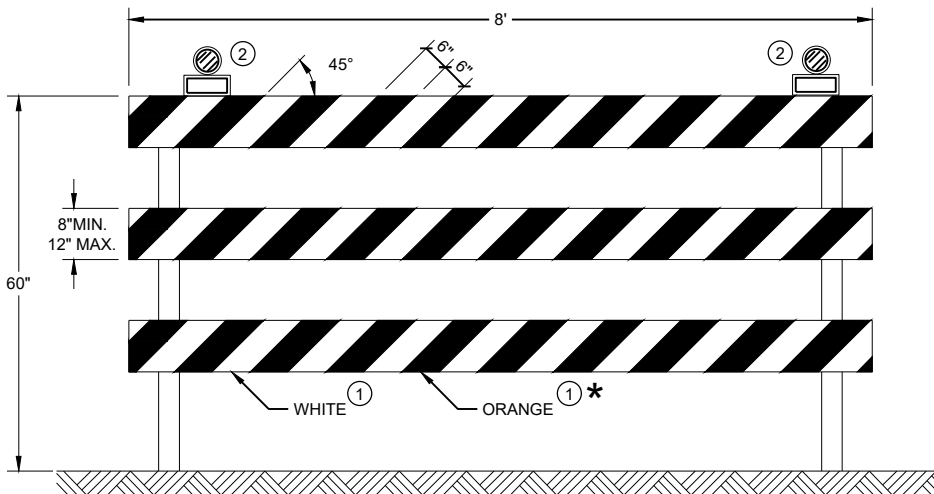
VERTICAL PANEL

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



TYPE II BARRICADE

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



TYPE III BARRICADE

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

* IF USED FOR A PERMANENT APPLICATION USE RED SHEETING.

GENERAL NOTES

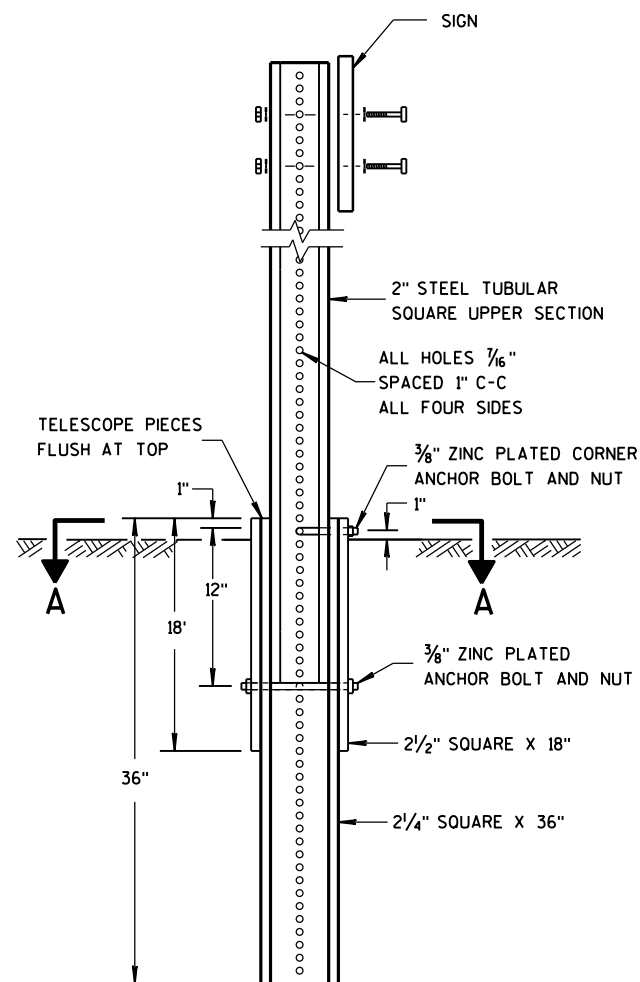
- ① REFLECTIVE SHEETING SHALL FOLLOW THE REQUIREMENTS IN THE APPROVED PRODUCTS LISTING FOR SIGN SHEETING.
- ② LOCATION OF WARNING LIGHTS WHEN SHOWN ON THE PLAN.

CHANNELIZING DEVICES
DRUMS, CONES, BARRICADES
AND VERTICAL PANELS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA



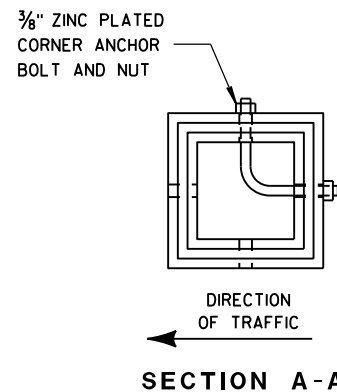
DETAIL OF TUBULAR
STEEL SIGN POST

TUBULAR STEEL POSTS

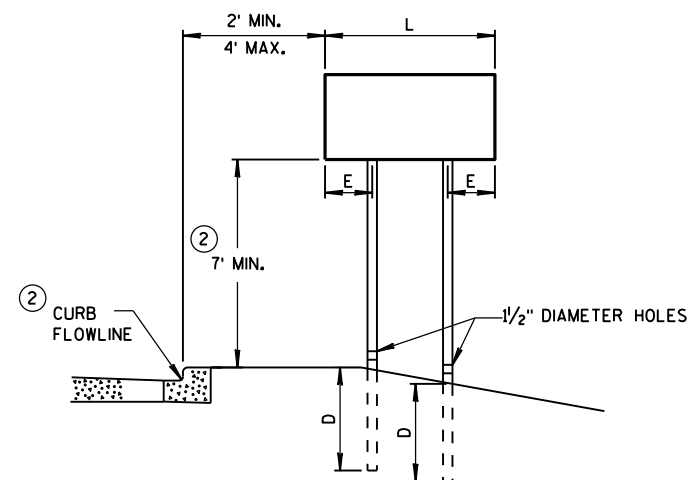
AREA OF SIGN INSTALLATION (SQ. FT.)	NUMBER OF REQUIRED TUBULAR STEEL POSTS
9 OR LESS	1
GREATER THAN 9 LESS THAN OR EQUAL TO 18	2
GREATER THAN 18 LESS THAN OR EQUAL TO 27	3

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

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



SECTION A-A

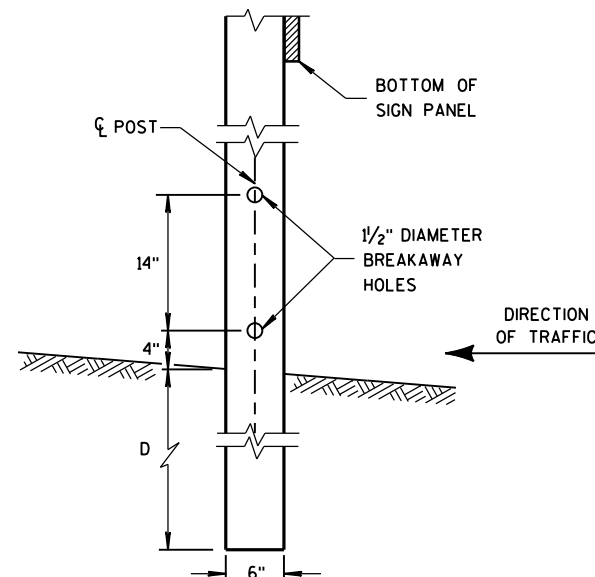


URBAN AREA

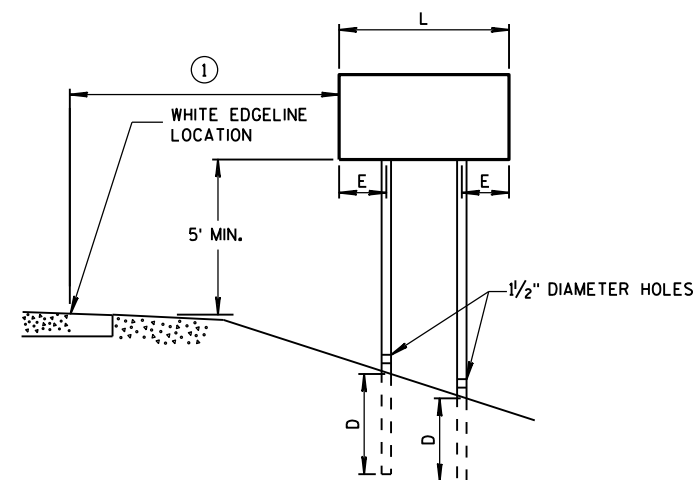
POST MOUNTING DETAIL FOR TEMPORARY TRAFFIC CONTROL FIXED MESSAGE SIGNS

WOOD POST
EMBEDMENT DEPTH

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



4 "x6 " WOOD POST
MODIFICATION



RURAL AREA

4 " X 6 " WOOD POST

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

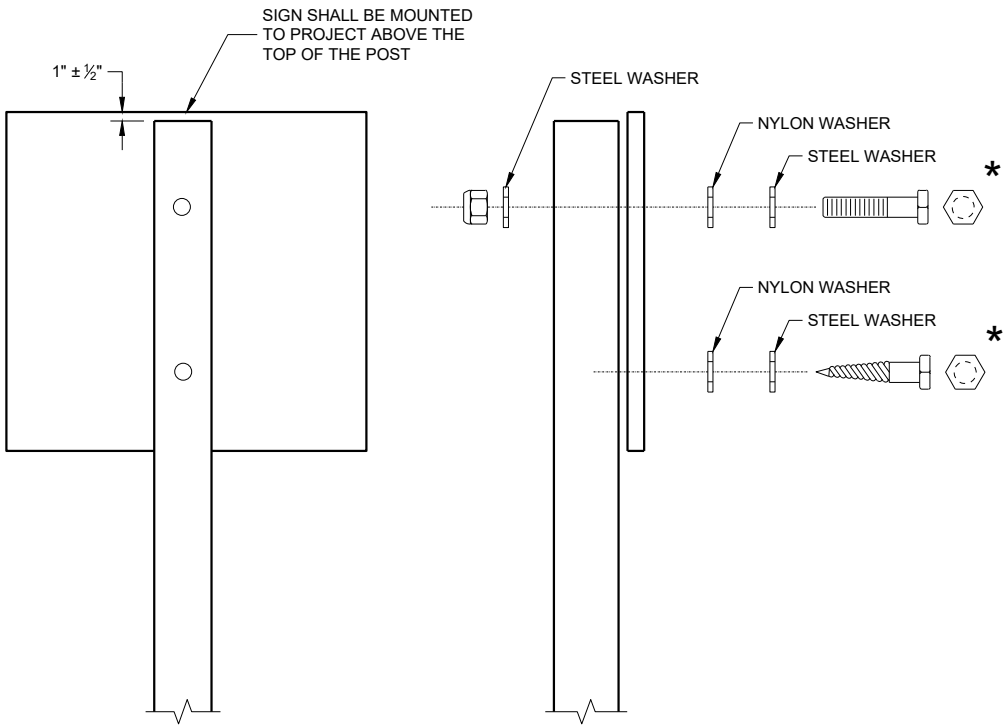
SEE NOTE ③

GENERAL NOTES

- ① 6 FEET FROM THE EDGE OF PAVEMENT (EDGE LINE LOCATION) UNLESS OTHERWISE DIRECTED BY THE PROJECT ENGINEER. LATERAL OFFSET SHOULD BE ADJUSTED TO AVOID THE DITCH FLOWLINE.
- ② THE EXISTENCE OF CURB AND GUTTER DOES NOT IN ITSELF MANDATE THE VERTICAL CLEARANCE ILLUSTRATED. THAT HEIGHT IS TYPICALLY MEASURED WHERE THERE IS SIDEWALK ADJACENT TO THE ROADWAY OR PARKING IS PERMITTED. IN THE ABSENCE OF SIDEWALK, VERTICAL CLEARANCE IS MEASURED FROM THE TOP OF THE CURB. IF NO SIDEWALK AND NO PARKING, VERTICAL CLEARANCE MAY BE REDUCED TO 5 FOOT MINIMUM. OFFSET OF SIGNS IS MEASURED FROM THE CURB FLOWLINE.
- ③ FOR SIGNS REQUIRING 4 POSTS, SPACE INTERMEDIATE POSTS EVENLY.

TEMPORARY TRAFFIC CONTROL
SIGN MOUNTING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION



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

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

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

WOOD POST (4" x 6")
LAG SCREWS - 3/8" x 3"
MACHINE BOLTS - 5/16" x 6 1/2" OR 7" LENGTH W/NUTS

SQUARE STEEL POST (2" x 2")
MACHINE BOLTS - 3/8" x 3 1/4" LENGTH W/NUTS
RIVETS - 3/32" (6605-9-6) BULB-TITE, TRI-FOLD, ALUMINUM
BODY/MANDREL O.D. FLANGE 0.720 - 0.765 INCH,
GRIP RANGE 0.042 - 0.375 INCH

WASHERS (ALL POSTS) -
1 1/4" O.D. x 3/8" I.D. x 1/16" STEEL
1 1/4" O.D. x 3/8" I.D. x 0.080 NYLON

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

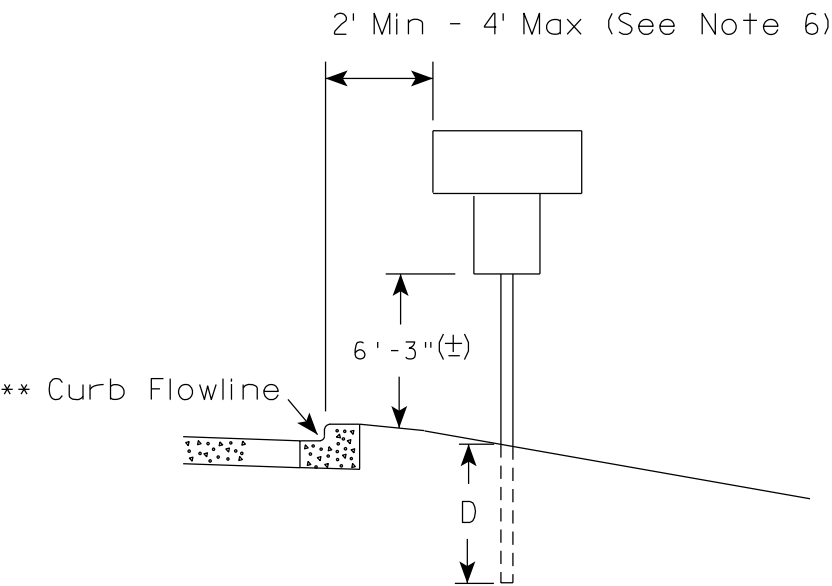
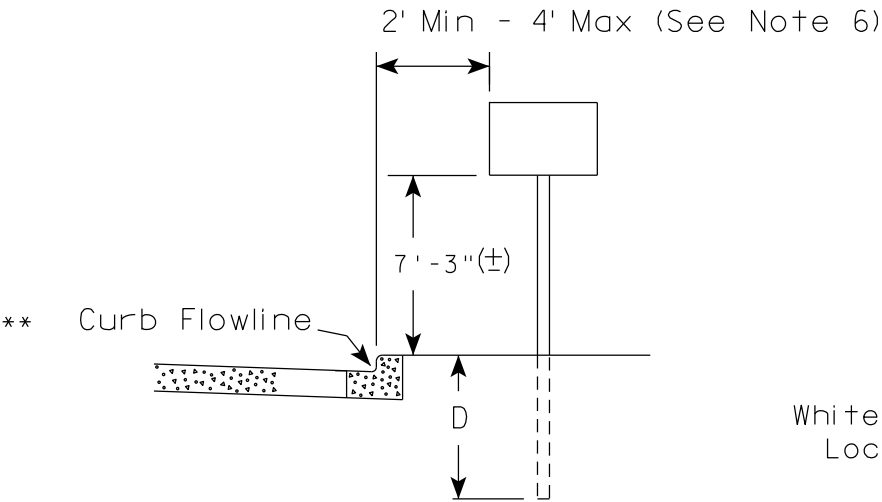
ATTACHMENT OF SIGNS
TO POSTS

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

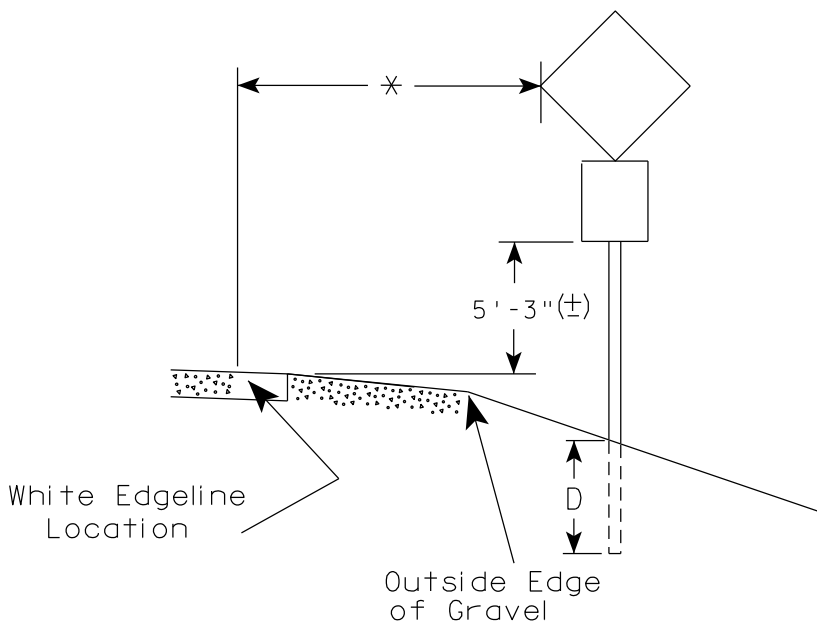
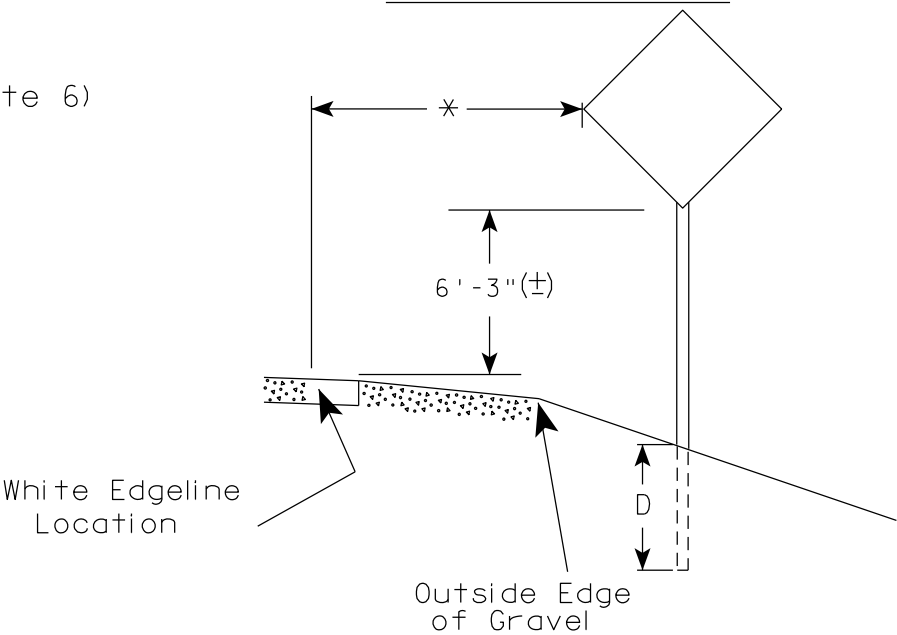
APPROVED
June 2017 /S/ Andrew Heidtke
DATE WORK ZONE ENGINEER

FHWA

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 or behind barrier wall, see A4-10 sign plate.
The Double Arrow sign (W12-1D) 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" (±).
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 signs mounted on traffic signal poles is 5'- 3" (±).
5. Offset distance shall be consistent with existing signs or consistent throughout length of project.
6. The (±) tolerance for mounting height is 3 inches.
7. Folding signs shall be mounted at a height of 5'-3" (±) or as directed by the 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.

* 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.

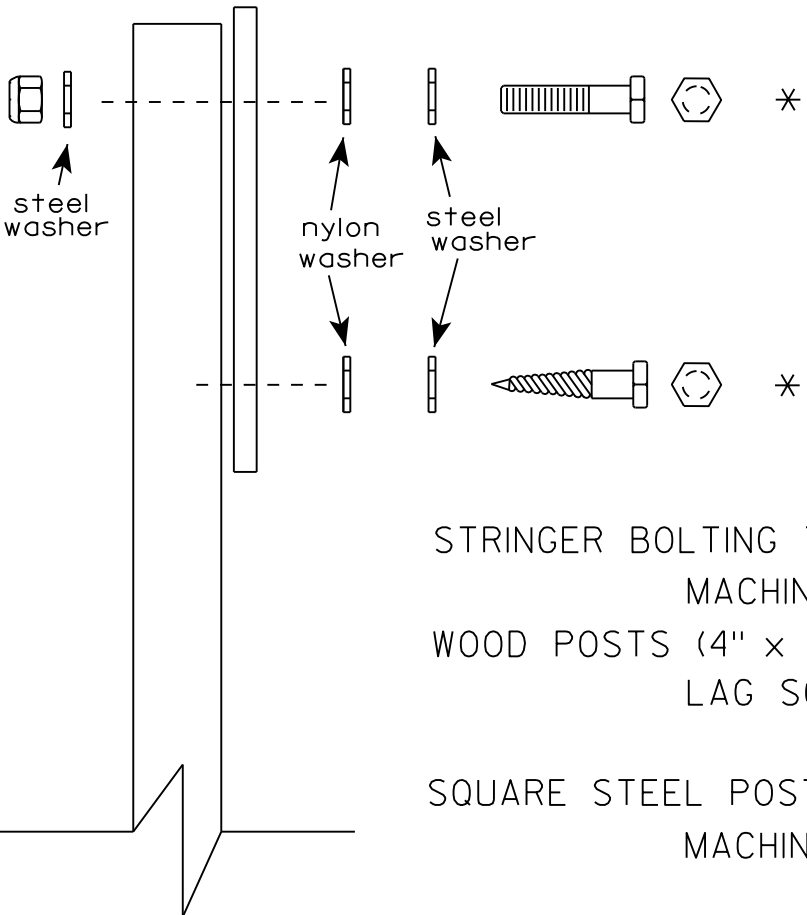
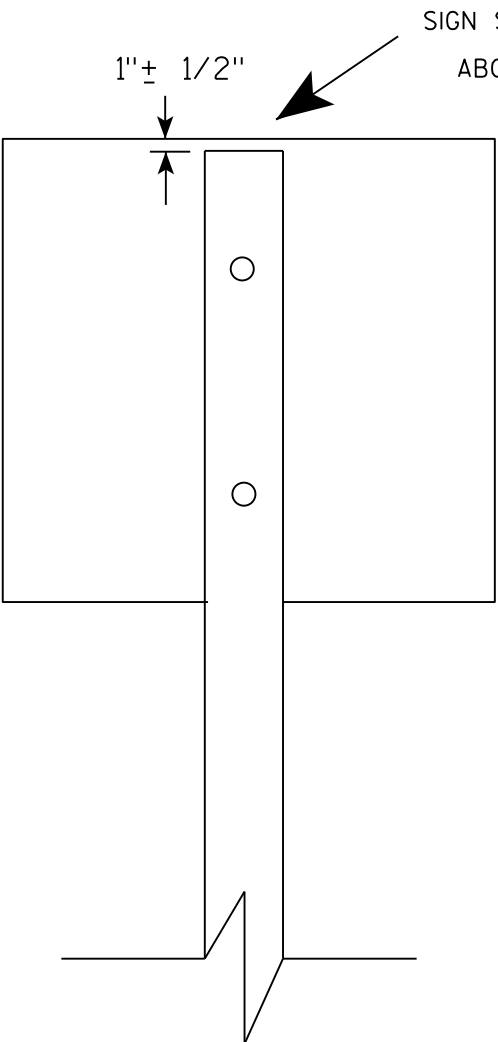
POST EMBEDMENT DEPTH	
Area of Sign Installation (Sq.Ft.)	D (Min)
20 or Less	4'
Greater than 20	5'

TYPICAL INSTALLATION
OF PERMANENT TYPE II
SIGNS ON SINGLE POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
for State Traffic Engineer

DATE 5/13/2020 PLATE NO. A4-3.22



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 - $\frac{5}{16}$ " X 1-3/4" Length w/ lock nuts
- WOOD POSTS (4" x 4" or 4" x 6")
- LAG SCREWS - $\frac{3}{8}$ " X 3" (NO STRINGERS ON BACK OF SIGN)
 - $\frac{3}{8}$ " X 4" (STRINGERS ON BACK OF SIGN)
- SQUARE STEEL POSTS (2" x 2")
- MACHINE BOLTS - $\frac{3}{8}$ " X 3-1/4" Length w/ nuts (NO STRINGER ON BACK OF SIGN)
 - $\frac{3}{8}$ " X 5" Length w/ nuts (STRINGERS ON BACK OF SIGN)
- RIVETS - $\frac{9}{32}$ " (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 $\frac{3}{8}$ " I.D. X $\frac{1}{16}$ " STEEL
 - 1-1/4" O.D. X $\frac{3}{8}$ " 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.

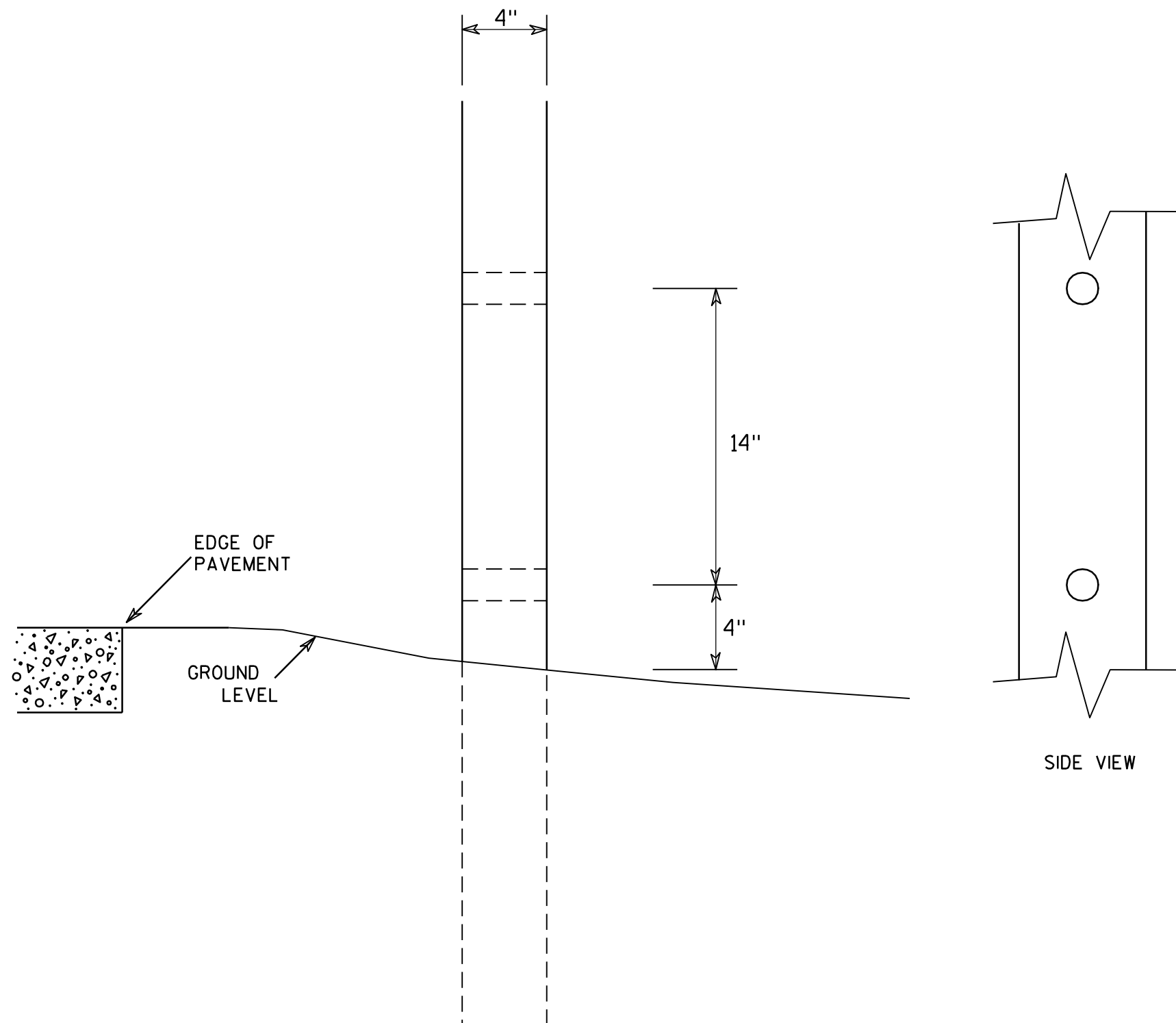
ATTACHMENT OF SIGNS
TO POSTS

WISCONSIN DEPT OF TRANSPORTATION

APPROVED *Matthew R. Rauch*
For State Traffic Engineer

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

7



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

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:

E

LIVE LOADS:
DESIGN LOADING = HL-93
INVENTORY RATING FACTOR = 1.06
OPERATING RATING FACTOR = 1.38
MAX. STD. PERMIT VEHICLE LOAD = 250 KIPS

STRUCTURE IS DESIGNED FOR FUTURE WEARING SURFACE
OF 20 POUNDS PER SQUARE FOOT

MATERIAL PROPERTIES:

CONCRETE MASONRY SLAB & PARAPETS-----	F'C = 4,000 PSI
BAR STEEL REINFORCEMENT (GRADE 60) -----	FY = 60,000 PSI
CONCRETE MASONRY OTHER -----	F'C = 3,500 PSI

ABUTMENTS TO BE SUPPORTED ON HP 10 X 42 STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 160 TONS* (MIN) PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED 65'-0" LONG.

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

A.D.T. (2015) = 101
A.D.T. (2035) = 111
R.D.S. = 45 MPH

HYDRAULIC DATA
100 YEAR FREQUENCY
Q100 = 2370 CFS
VEL. = 5.0 FPS
HW100 ELEV. = 1031.35
WATERWAY AREA = 216 SF
DRAINAGE AREA = 41.1 SQ.MI.
SCOUR CODE = 5



Q2 = 710 CFS
VEL. = 4.7 FPS
HW2 ELEV. = 1026.97

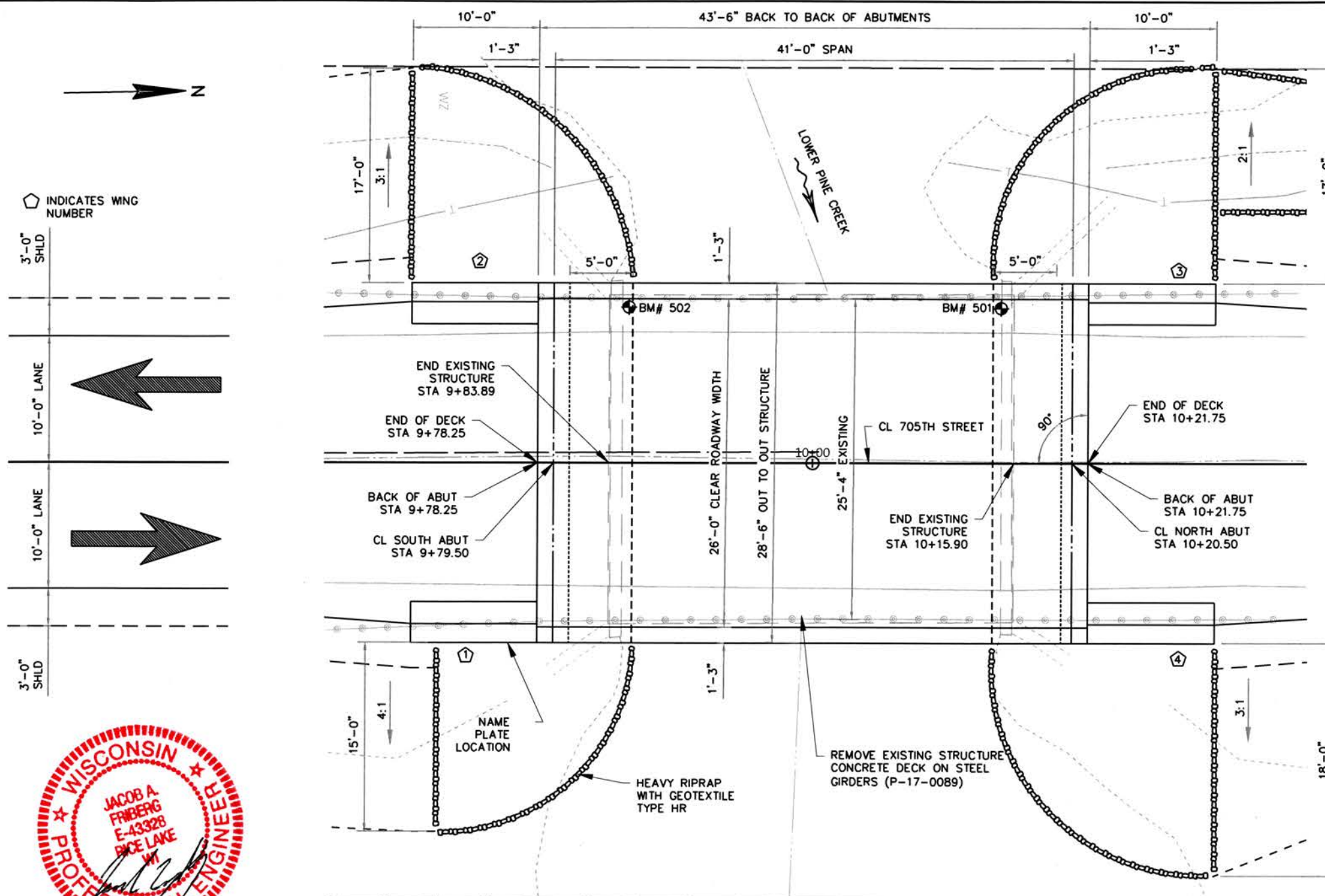
FREQUENCY = 10 YEARS
Q10 = 1420 CFS
HW10 ELEV. = 1030.30

CONTACTS
BRIDGE OFFICE:
CONTACT: AARON BONK
PHONE: (608) 261-0261

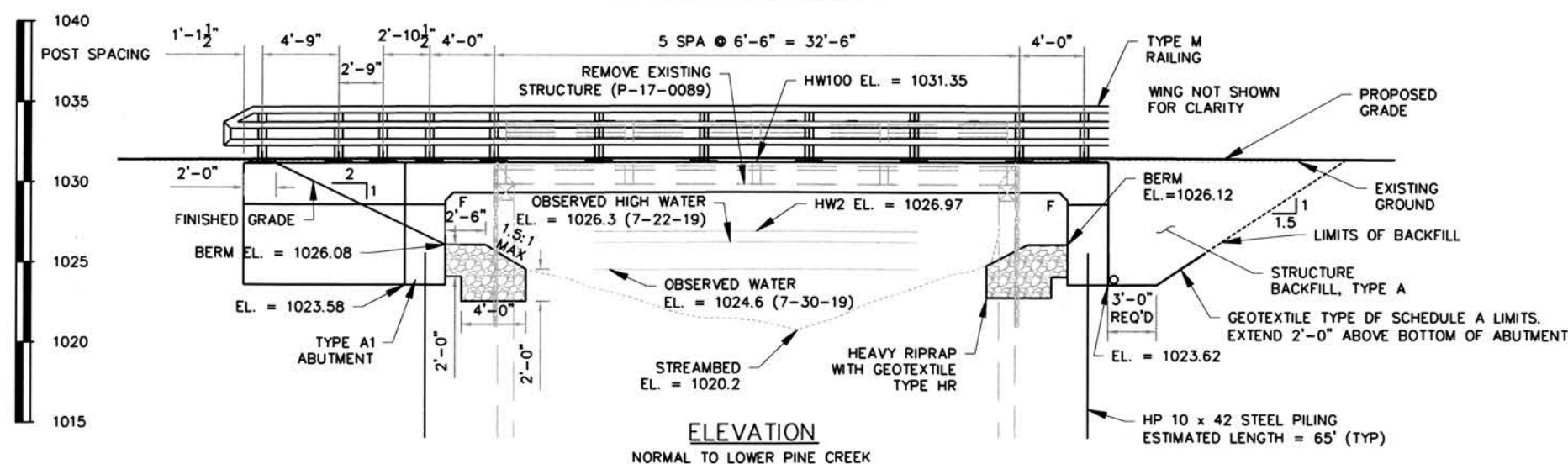
CONTACT: COOPER ENGINEERING
PHONE: (715) 234-7008

BENCHMARKS			
NO.	STATION	ELEV.	DESCRIPTION
501	10+14.88	1031.10	12.3' LT; DRILL HOLE IN EXISTING CONCRETE
502	9+85.45	1031.18	12.3' LT; DRILL HOLE IN EXISTING CONCRETE

NO.	DATE	REVISION	BY
 COOPER ENGINEERING		2600 COLLEGE DRIVE, P.O. BOX RICE LAKE, WISCONSIN 54868- TELEPHONE (715) 234-7008 FAX (715) 234-1025	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED	 SDR		11/20/20
CHIEF STRUCTURES DESIGN ENGINEER		DATE	
STRUCTURE B-17-231			
705TH STREET OVER LOWER PINE CREEK			
COUNTY	DUNN	TOWN/CITY/VILLAGE	WISCONSIN
DESIGN SPEC.			
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY	JF	CK'D.	SP
DRAWN BY	JF	PLANS CK'D.	S
GENERAL PLAN		SHEET 1 OF 1	



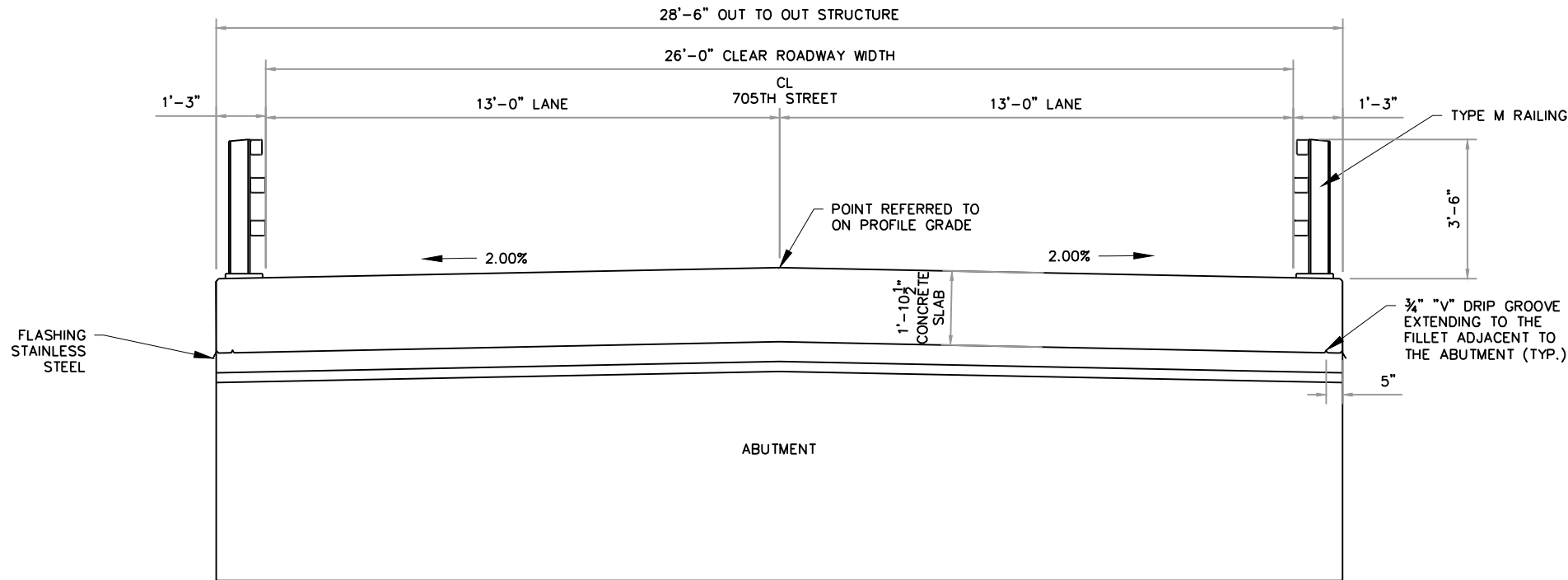
PLAN B-17-231
SINGLE SPAN CONCRETE FLAB SLAB



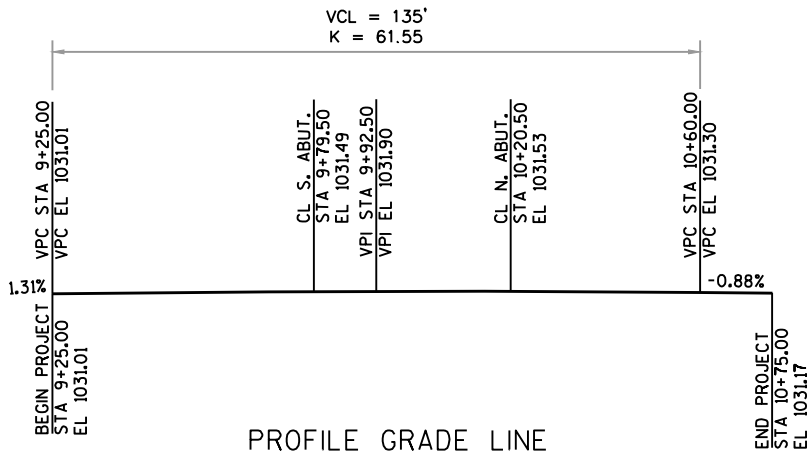
LIST OF DRAWINGS

1. GENERAL PLAN
2. CROSS SECTION & QUANTITIES
3. SUBSURFACE EXPLORATION
4. SOUTH ABUTMENT
5. SOUTH ABUTMENT WING DETAILS
6. NORTH ABUTMENT
7. NORTH ABUTMENT WING DETAILS
8. SUPERSTRUCTURE
9. TUBULAR STEEL RAILING TYPE "M"

9-31-2020



PROPOSED CROSS SECTION THRU BRIDGE



PROFILE GRADE LINE

TOTAL ESTIMATED QUANTITIES

BID ITEM NO.	BID ITEMS	UNIT	S. ABUT.	N. ABUT.	SUPER.	TOTAL
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS (STA 10+00)	LS	-	-	-	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES (B-17-231)	LS	-	-	-	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	115	115	-	230
502.0100	CONCRETE MASONRY BRIDGES	CY	29	29	90	148
502.3200	PROTECTIVE SURFACE TREATMENT	SY	6	6	163	175
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	1,630	1,630	-	3,260
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,320	1,320	16,400	19,040
513.4061	RAILING TUBULAR TYPE M (B-17-231)	LF			131.5	131.5
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	5	5	-	10
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	260	260	-	520
606.0300	RIPRAP HEAVY	CY	50	50	-	100
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	90	90	-	180
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	25	25	-	50
645.0120	GEOTEXTILE TYPE HR	SY	75	75	-	150
SPV.0090.01	FLASHING STAINLESS STEEL	LF	-	-	87	87
NON-BID ITEM	4" X 3/4" PERFORMED JOINT FILLER	LF	28.5	28.5	-	57

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

SLAB FALSEWORK SHALL BE SUPPORTED ON PILES OR THE SUBSTRUCTURE, UNLESS AN ALTERNATE METHOD IS APPROVED BY THE ENGINEER.

THE FIRST OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.

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

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-17-0231" SHALL BE THE EXISTING GROUNDLINE.

BACKFILL PAY LIMITS. BACKFILL BEYOND PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

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

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.

PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE TOP SURFACE OF THE SLAB, THE EXTERIOR EDGE OF THE SLAB, AND THE FIRST 1'-0" OF THE UNDERSIDE OF THE SLAB.

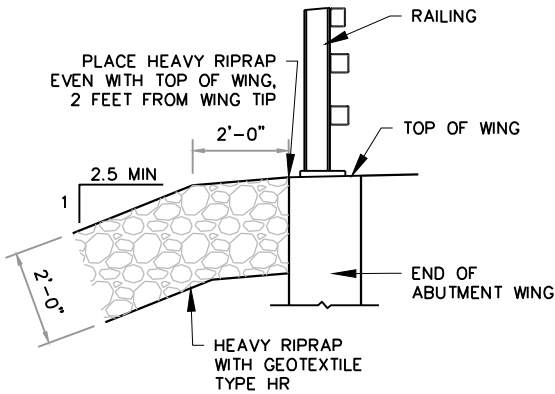
PROTECTIVE SURFACE TREATMENT TO BE APPLIED TO THE TOP AND EXTERIOR EXPOSED FACE OF THE WINGS, AND THE END 1'-0" OF THE FRONT FACE OF ABUTMENT.

THE CONTRACTOR SHALL SUPPLY A NEW NAME PLATE IN ACCORDANCE WITH SECTION 502.3.11 OF THE STANDARD SPECIFICATIONS AND THE STANDARD DETAIL DRAWINGS. NAME PLATE TO SHOW NEW BRIDGE AND CURRENT CONSTRUCTION YEAR.

ALL STATIONS AND ELEVATIONS ARE IN FEET.

ELEVATIONS SHOWN ON THE PLANS ARE REFERENCES TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).

THE COORDINATE SYSTEM FOR THIS PROJECT IS WISCONSIN COUNTY COORDINATE SYSTEM (WCCS) - DUNN COUNTY.



TYPICAL FILL SECTION AT WING TIPS

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-17-231			
DRAWN BY JF		PLANS CK'D. SP	
CROSS SECTION & QUANTITIES			SHEET 2 OF 9

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	SEPTEMBER 5, 2019	284207.9528	191917.2045
2	SEPTEMBER 6, 2019	284247.0690	191933.0747
BORINGS COMPLETED BY: PROFESSIONAL SERVICE INDUSTRIES, INC.			
REPORT COMPLETED BY: PROFESSIONAL SERVICE INDUSTRIES, INC.			
ALL COORDINATES REFERENCED TO WCCS NAD 83(2011) DUNN COUNTY			

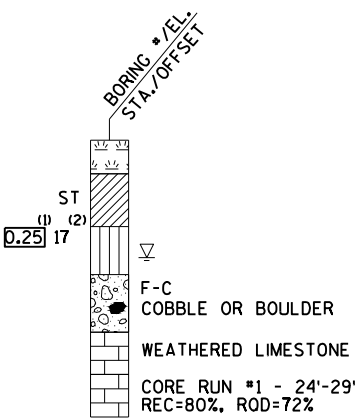
STATE PROJECT NUMBER

8931-00-70

MATERIAL SYMBOLS

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

LEGEND OF BORING



(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, WE DO 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
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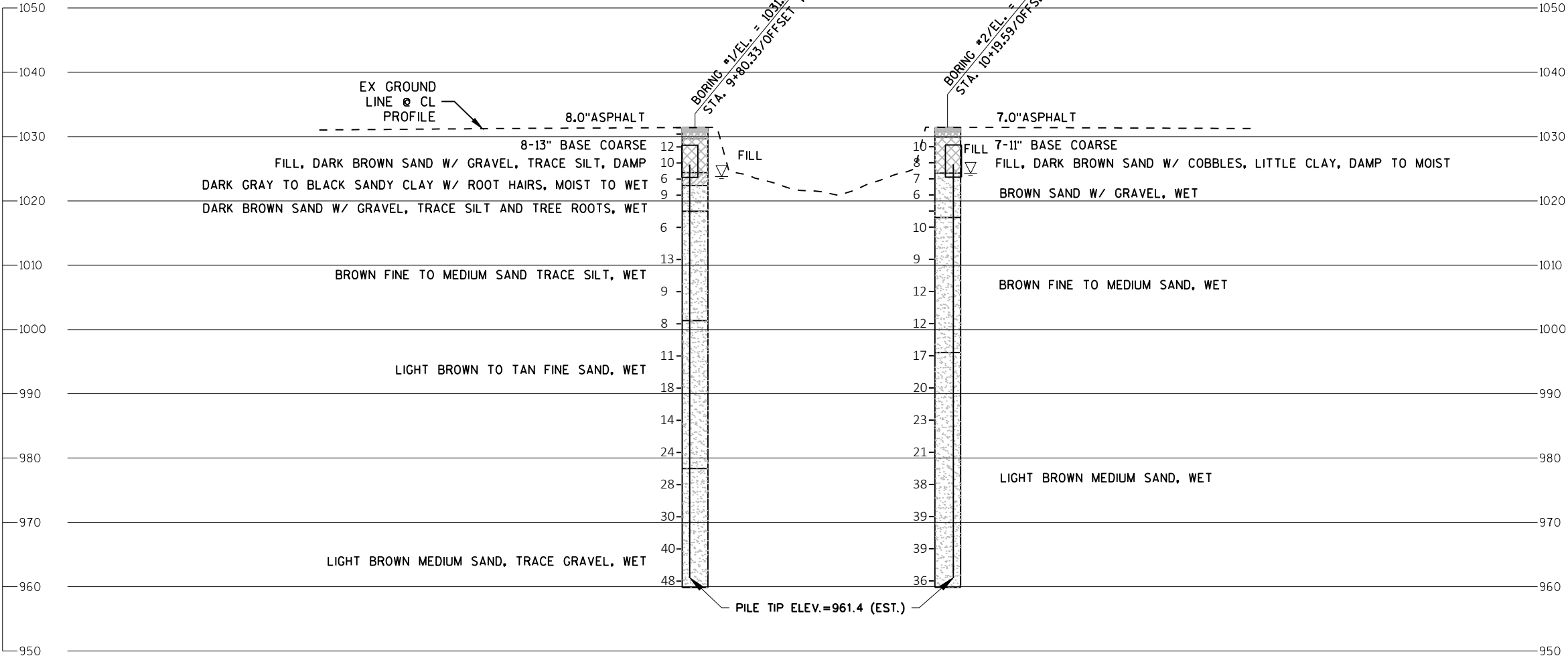
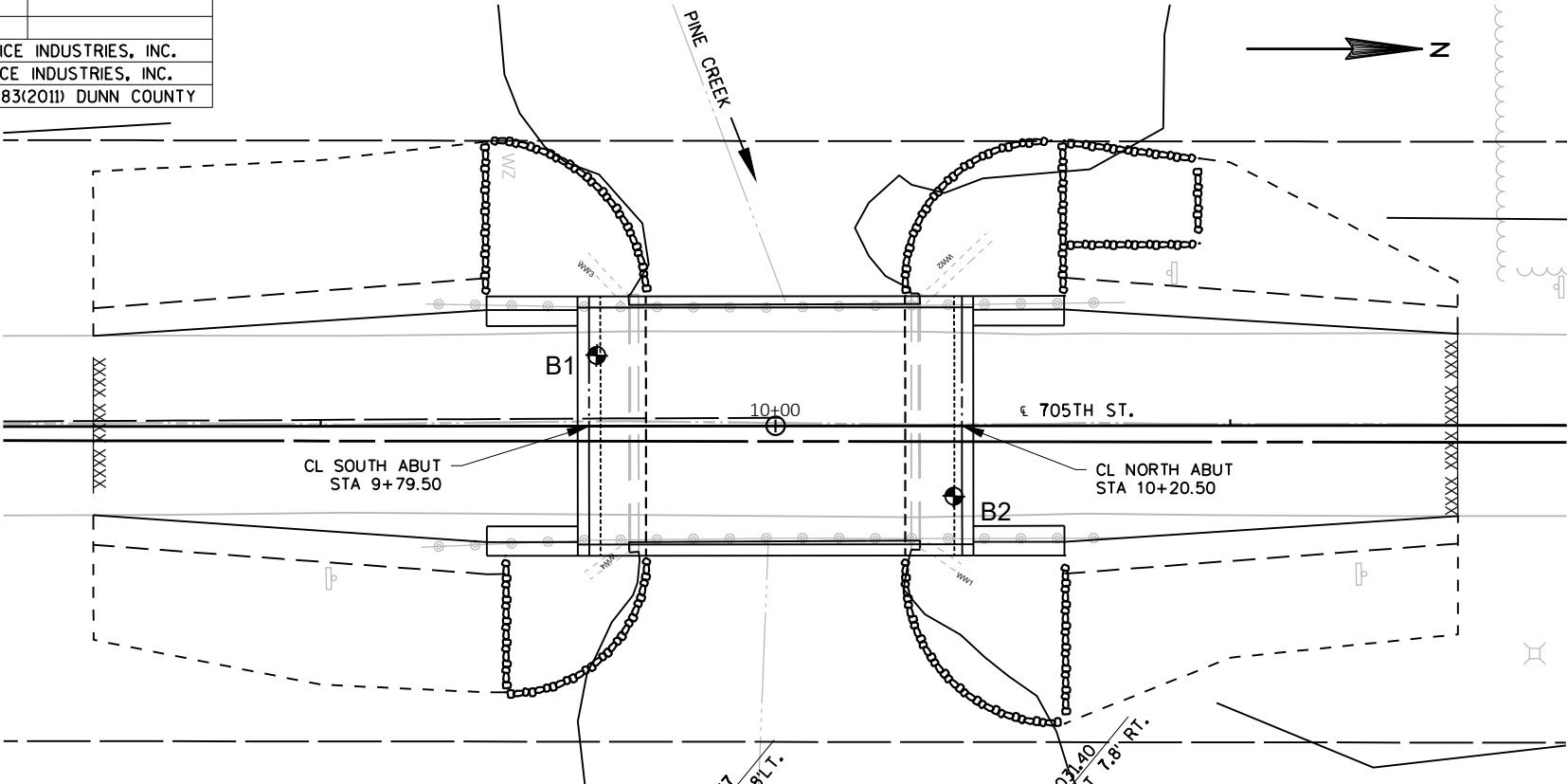
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

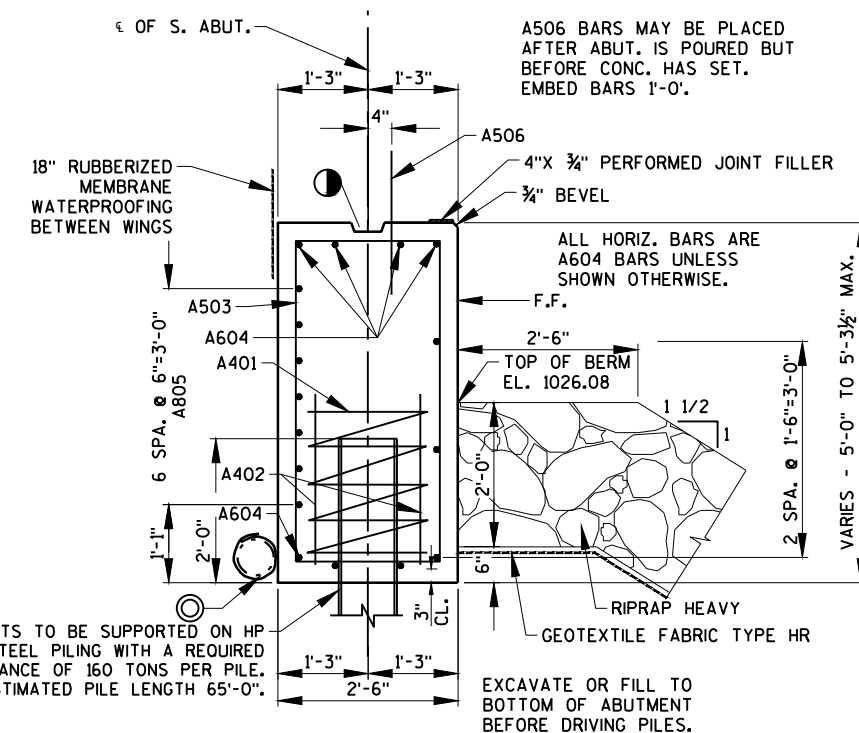
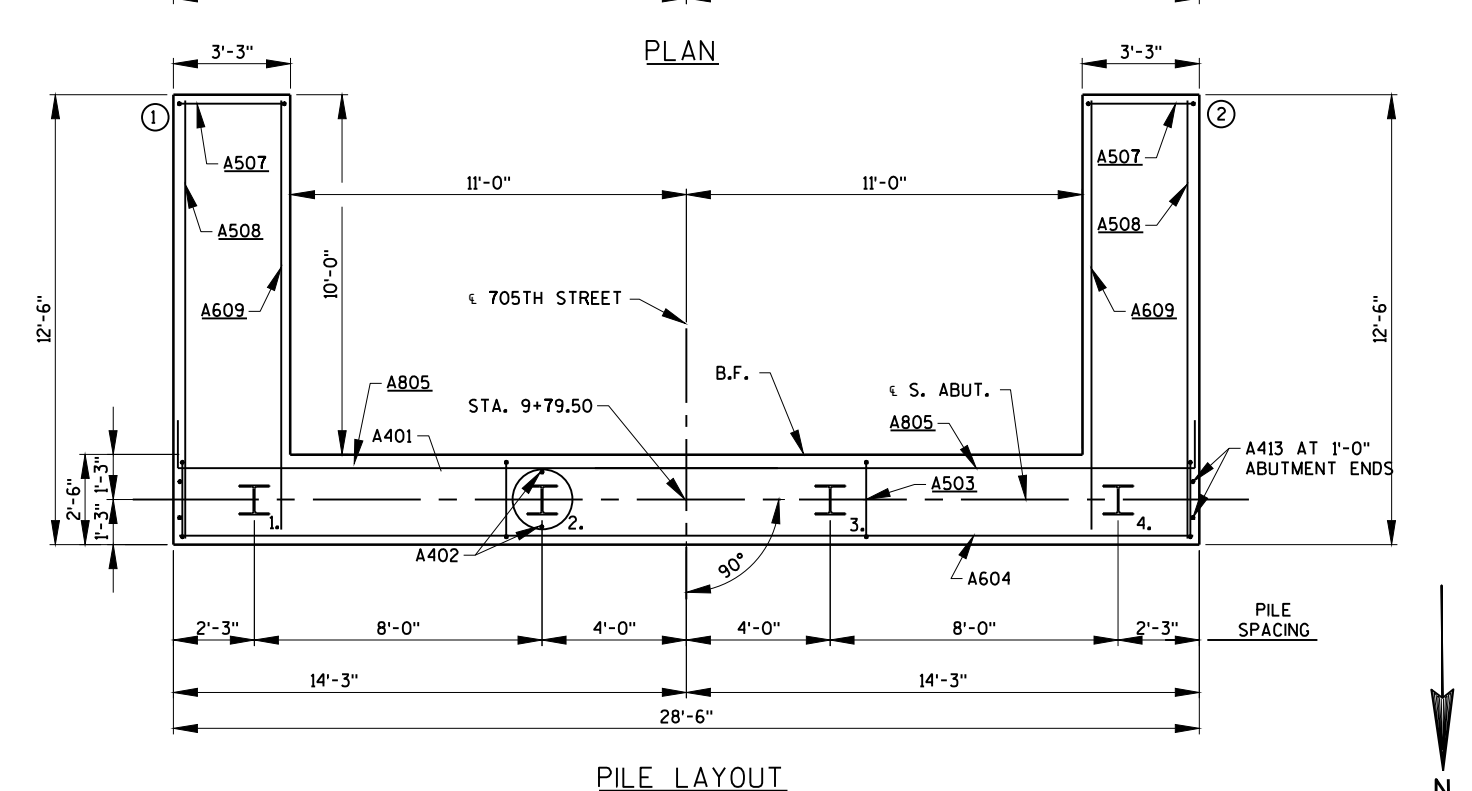
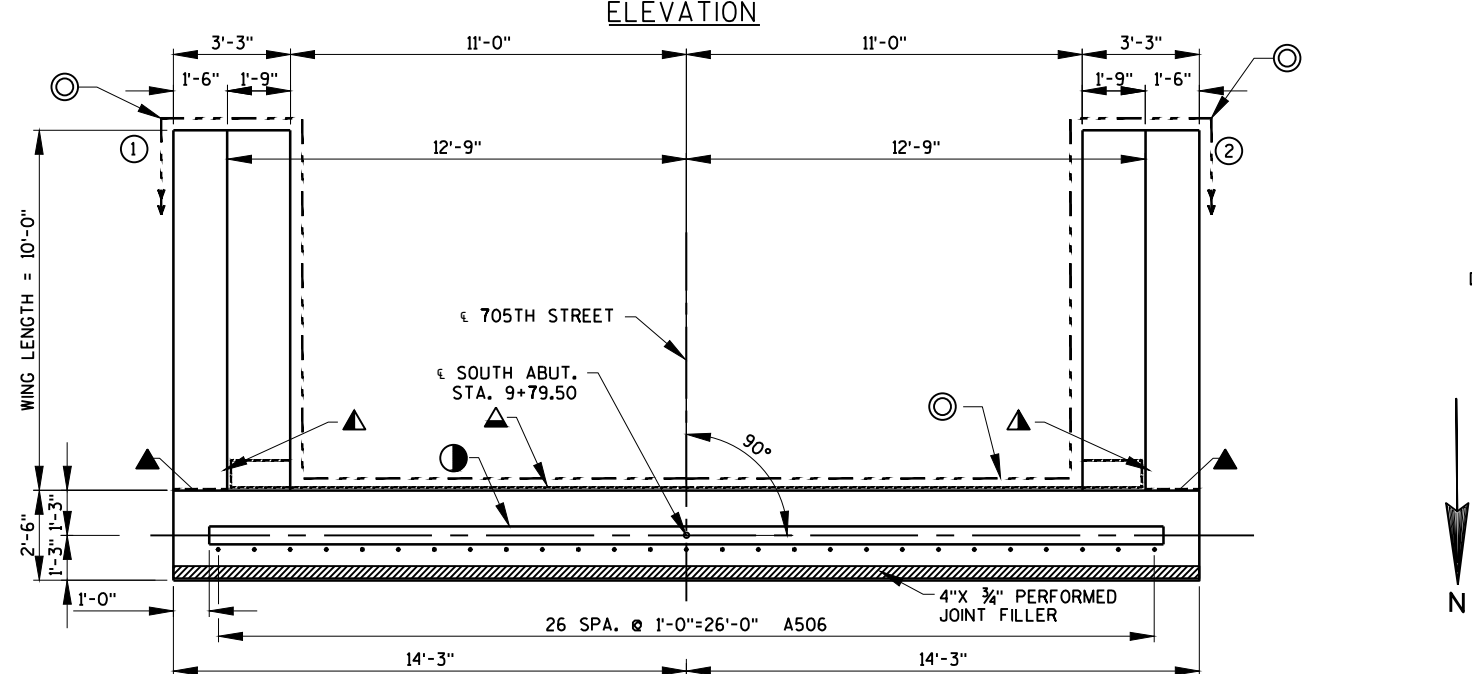
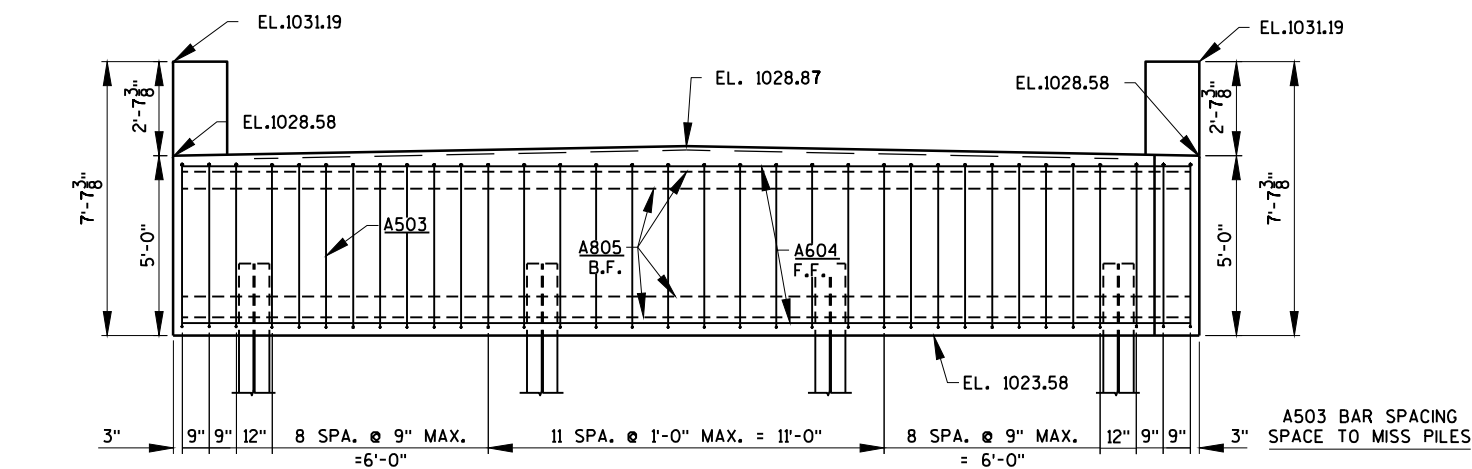
STRUCTURE B-17-231

DRAWN BY JM PLANS CK'D. JF

SUBSURFACE
EXPLORATION

SHEET 3 OF 9





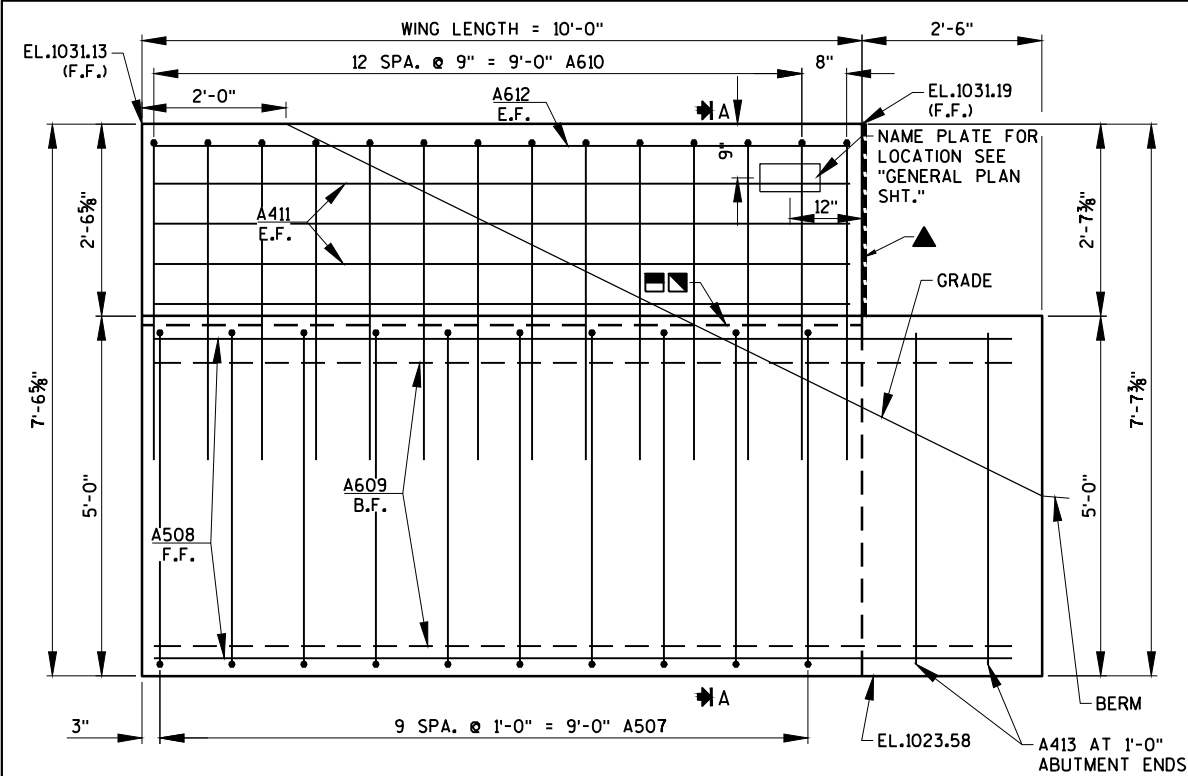
TYP. SECTION THRU ABUTMENT BODY

LEGEND

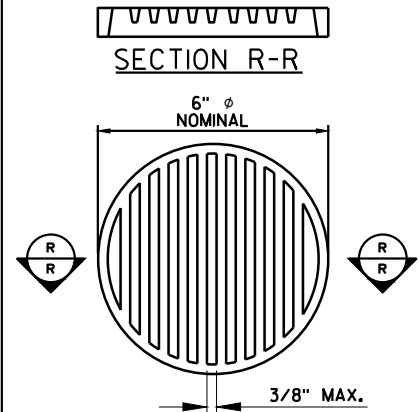
- ① INDICATES WING NUMBER
- KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2X6.
- ⊙ PIPE UNDERDRAIN WRAPPED 6-INCH. EXTEND THRU GEOTEXTILE FABRIC AT FACE OF RIPRAP HEAVY. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. PROVIDE RODENT PROTECTION AT ENDS OF PIPE.
- ▲ 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. AND VERT. SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.
- ▲ VERT. 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING (RMW), EXTEND FROM 9" BELOW BRIDGE SEAT TO TOP OF WINGS.
- ▲ HORIZ. 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING (RMW), EXTEND BETWEEN WINGS.
- OPTIONAL KEYED CONST. JOINT ON WING FORMED BY BEVELED 2X6. IF JOINT IS USED, POUR CONCRETE ABOVE JOINT AFTER DECK IS IN PLACE AND PLACE 18" RMW ON BACK FACE OF WING. COST OF RMW INCLUDED IN BID ITEM "CONCRETE MASONRY BRIDGES".
- 3/4" "V" GROOVE ON FRONT FACE OF WING WALL, REQUIRED ONLY WHERE CONSTRUCTION JOINT IS USED.

F.F. = FRONT FACE B.F. = BACK FACE CL. = CLEAR

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-17-231			
DRAWN BY DAN		PLANS CK'D. JAF	
SOUTH ABUTMENT		SHEET 4 OF 9	



ELEVATION WING 1
WING 2 SIMILAR



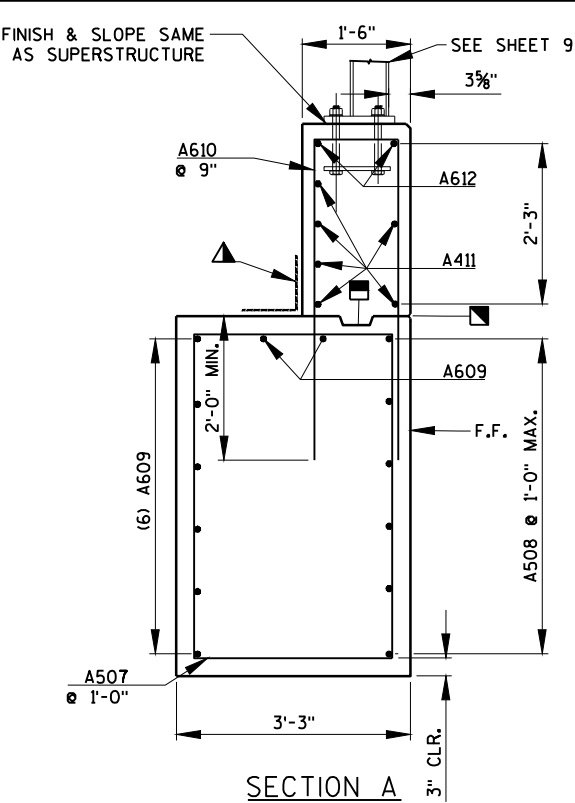
RODENT SHIELD

DIMENSIONS ARE APPROX.. THE GRATE IS SIZED TO FIT INTO PIPE COUPLING.

RODENT SHIELD NOTES:

ORIENT SHIELD SO SLOTS ARE VERTICAL.

THE RODENT SHIELD SHALL BE A PVC GRATE SIMILAR TO THIS DETAIL. THE GRATE IS COMMERCIALY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO 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. THE RODENT SHIELD SHALL BE INCLUDED IN THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".



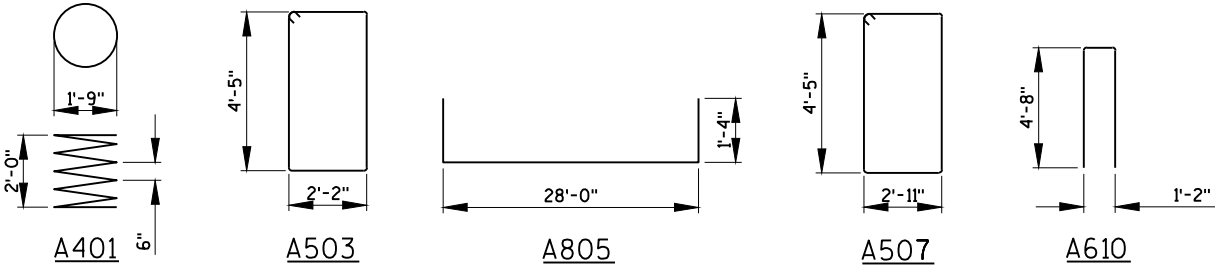
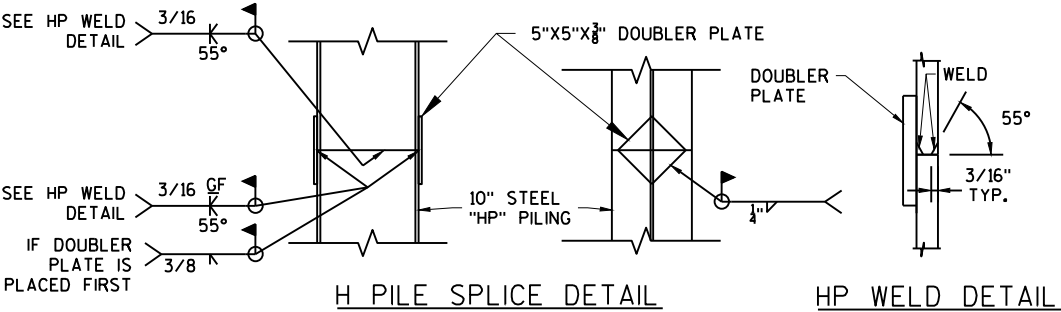
BILL OF BARS

BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
A401		4	28'-0"	X		ABUT. BODY @ PILES
A402		8	2'-3"			ABUT. BODY @ PILES
A503		34	13'-10"	X		ABUT. BODY VERT.
A604		10	28'-0"			ABUT. BODY HORIZ.
A805		7	30'-3"	X		ABUT. BODY HORIZ. B.F.
A506		27	2'-0"			ABUT. BODY DOWELS
A507	X	20	15'-4"	X		WINGS VERT.
A508	X	12	12'-0"			WINGS HORIZ. F.F.
A609	X	16	12'-0"			WINGS HORIZ. B.F.
A610	X	28	10'-2"	X		WINGS VERT.
A411	X	12	9'-8"			WINGS HORIZ. E.F.
A612	X	4	9'-8"			WINGS HORIZ. E.F. TOP
A413		4	4'-5"			ABUT. BODY VERT. ENDS

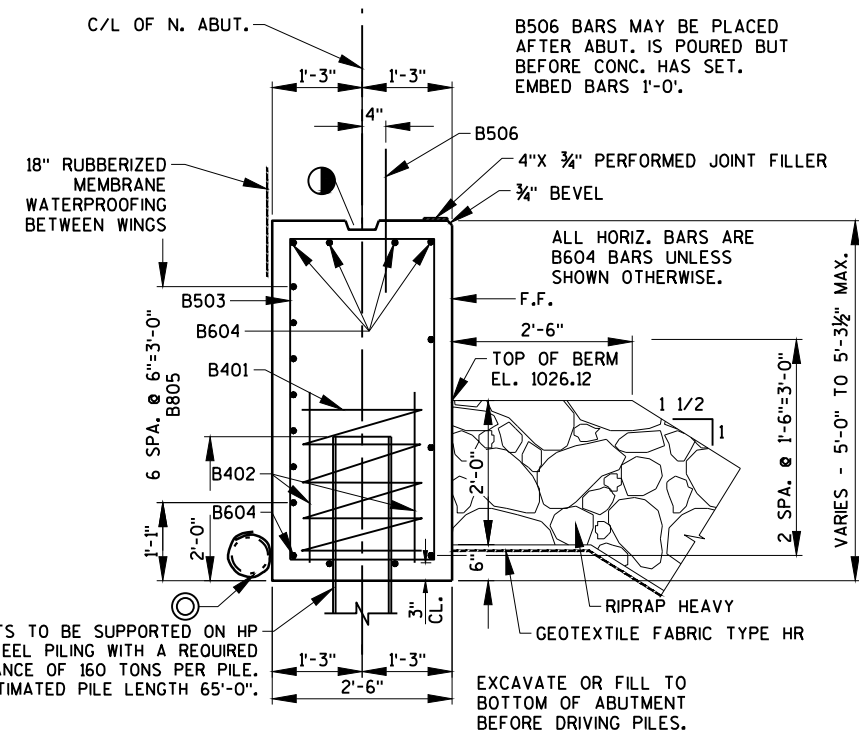
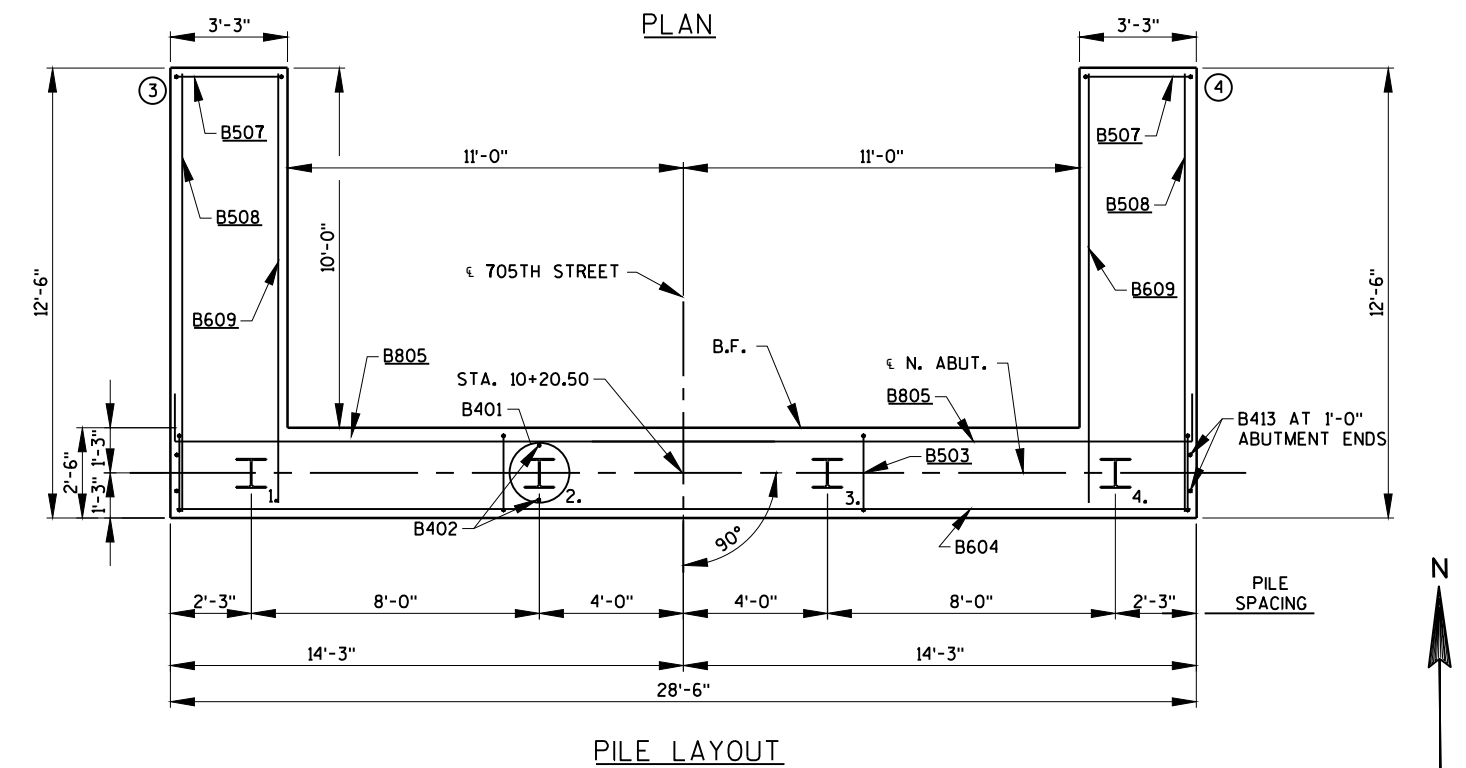
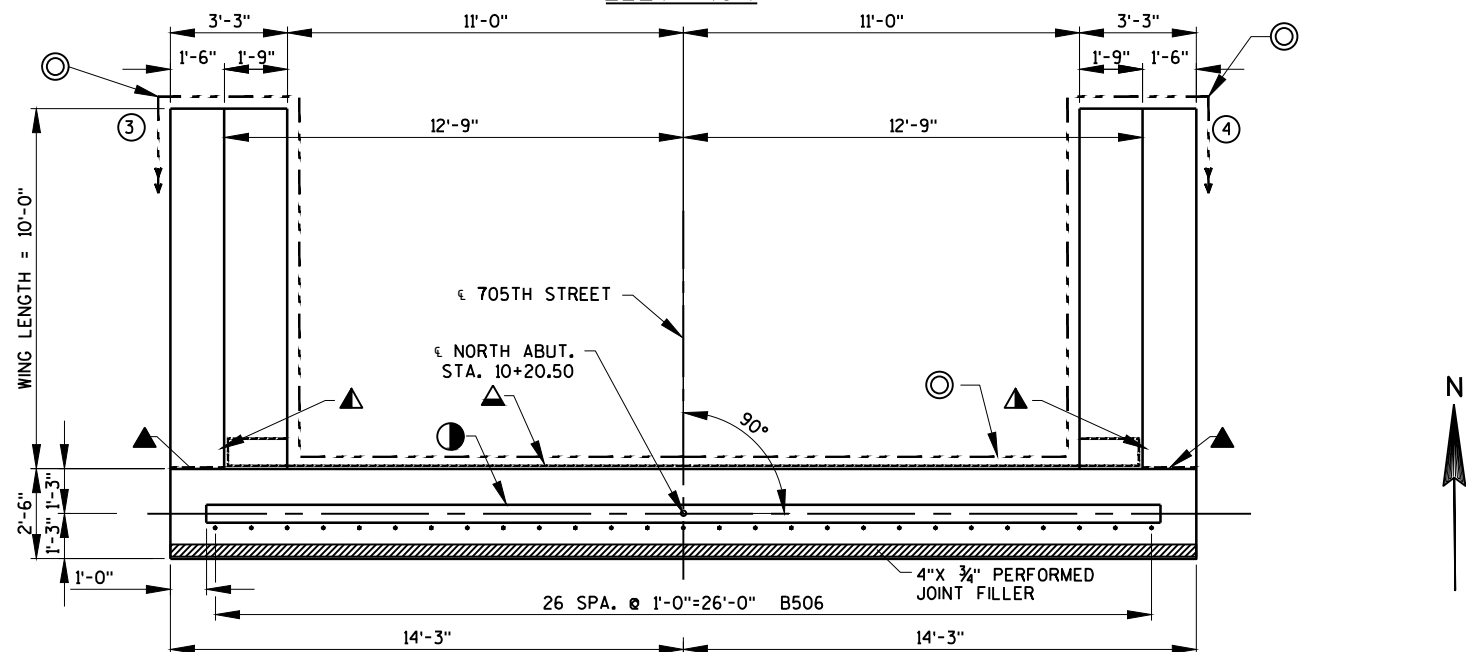
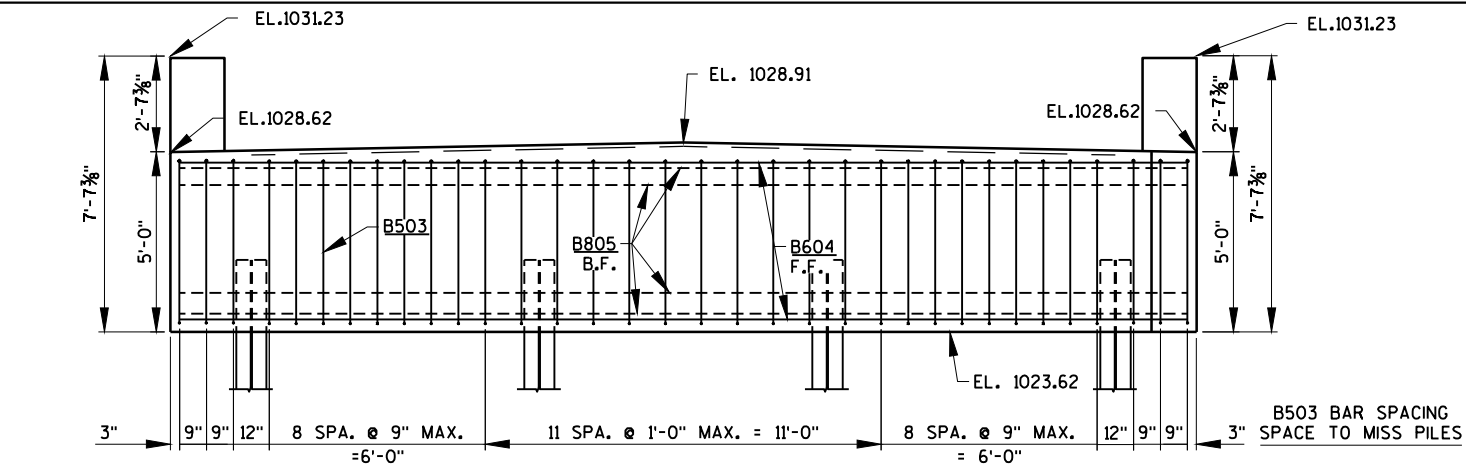
NOTES:
1. BAR TABLE APPLIES TO SOUTH ABUTMENT ONLY.
2. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE.
BAR DIMENSIONS ARE OUT TO OUT OF BAR.

LEGEND

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- ▲ HORIZ. 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING (RMW), EXTEND BETWEEN WINGS.
- OPTIONAL KEYED CONST. JOINT ON WING FORMED BY BEVELED 2X6. IF JOINT IS USED, POUR CONCRETE ABOVE JOINT AFTER DECK IS IN PLACE AND PLACE 18" RMW ON BACK FACE OF WING. COST OF RMW INCLUDED IN BID ITEM "CONCRETE MASONRY BRIDGES".
- 3/4" "V" GROOVE ON FRONT FACE OF WING WALL, REQUIRED ONLY WHERE CONSTRUCTION JOINT IS USED.
- F.F. = FRONT FACE B.F. = BACK FACE CL. = CLEAR



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-17-231			
DRAWN BY DAN		PLANS CK'D. JAF	
SOUTH ABUTMENT WING DETAILS			SHEET 5 OF 9

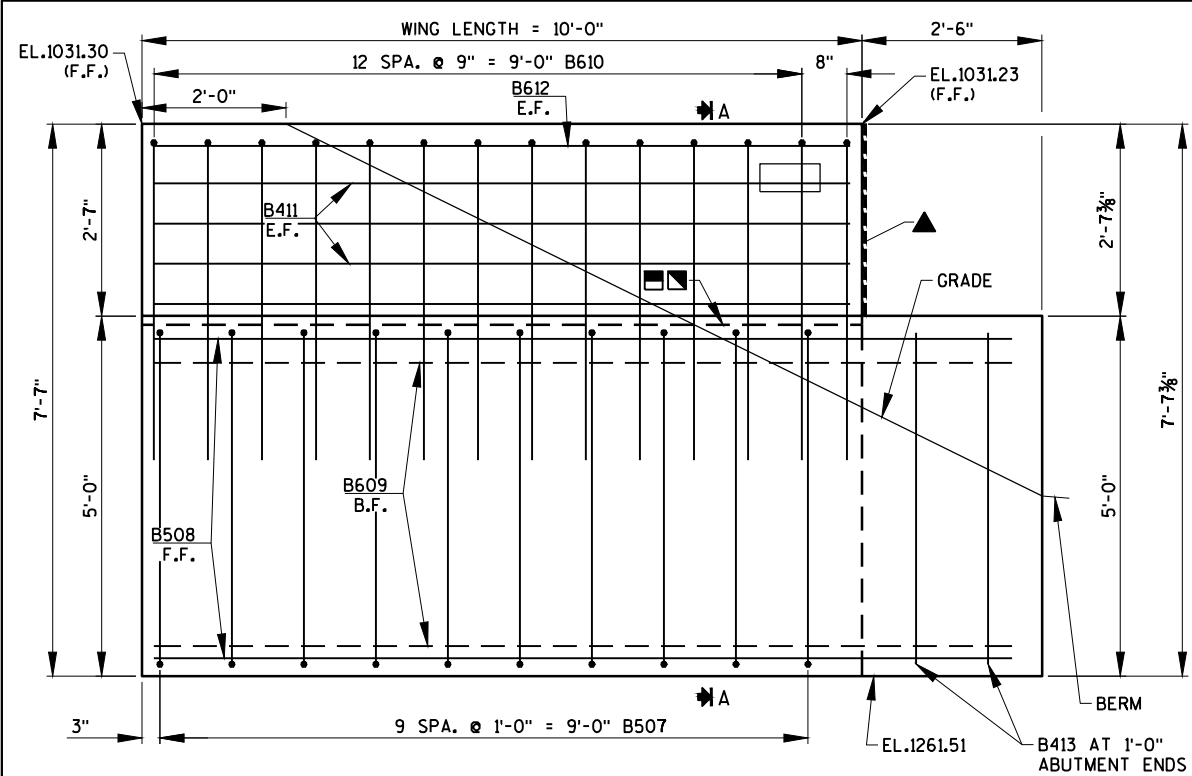


LEGEND

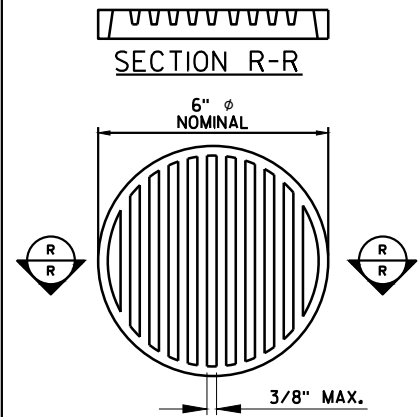
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NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-17-231			
DRAWN BY DAN		PLANS CK'D. JAF	
NORTH ABUTMENT		SHEET 6 OF 9	



ELEVATION WING 3
WING 4 SIMILAR



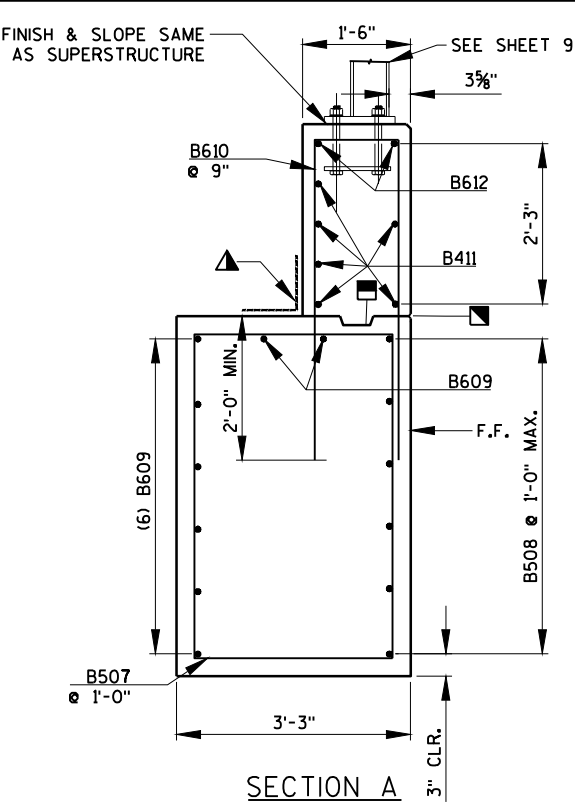
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SECTION A

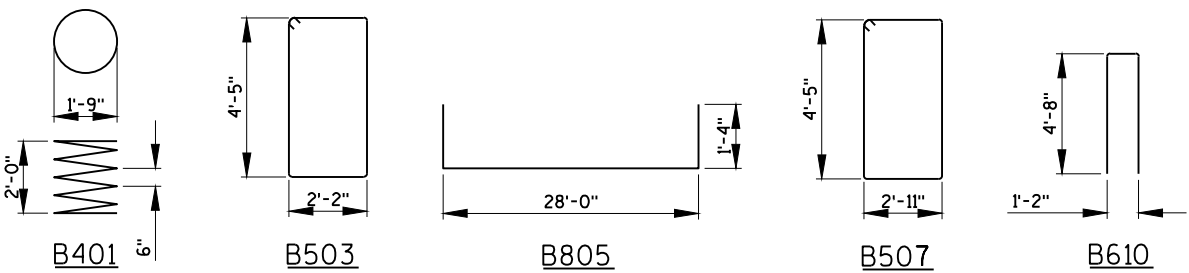
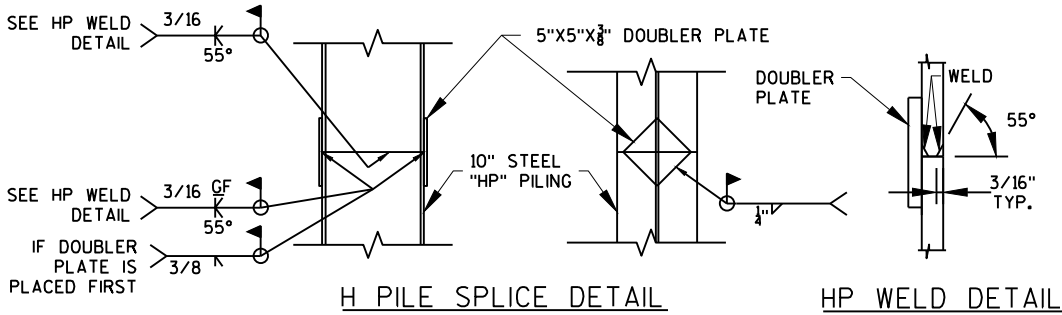
BILL OF BARS

BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION
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B402		8	2'-3"			ABUT. BODY @ PILES
B503		34	13'-10"	X		ABUT. BODY VERT.
B604		10	28'-0"			ABUT. BODY HORIZ.
B805		7	30'-3"	X		ABUT. BODY HORIZ. B.F.
B506		27	2'-0"			ABUT. BODY DOWELS
B507	X	20	15'-4"	X		WINGS VERT.
B508	X	12	12'-0"			WINGS HORIZ. F.F.
B609	X	16	12'-0"			WINGS HORIZ. B.F.
B610	X	28	10'-2"	X		WINGS VERT.
B411	X	12	9'-8"			WINGS HORIZ. E.F.
B612	X	4	9'-8"			WINGS HORIZ. E.F. TOP
B413		4	4'-5"			ABUT. BODY VERT. ENDS

NOTES:
1. BAR TABLE APPLIES TO NORTH ABUTMENT ONLY.
2. THE FIRST OR FIRST TWO DIGITS OF A BAR MARK SIGNIFIES THE BAR SIZE.
BAR DIMENSIONS ARE OUT TO OUT OF BAR.

LEGEND

- ① INDICATES WING NUMBER
 - KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2X6.
 - ⊙ PIPE UNDERDRAIN WRAPPED 6-INCH. EXTEND THRU GEOTEXTILE FABRIC AT FACE OF RIPRAP HEAVY. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. PROVIDE RODENT PROTECTION AT ENDS OF PIPE.
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- F.F. = FRONT FACE B.F. = BACK FACE CL. = CLEAR



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-17-231			
DRAWN BY DAN		PLANS CK'D. JAF	
NORTH ABUTMENT WING DETAILS			SHEET 7 OF 9

NOTES

THE BID ITEM "FLASHING STAINLESS STEEL" SHALL INCLUDE PROVIDING AND INSTALLING THE STAINLESS STEEL FLASHING, SILICONE CAULK, AND 3/16" CONCRETE SCREWS.

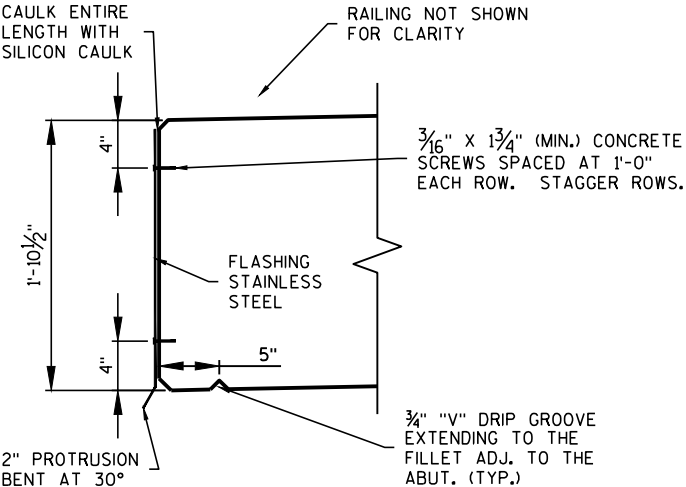
FLASHING TO BE INSTALLED AFTER PROTECTIVE SURFACE TREATMENT APPLICATION.

CONCRETE SCREWS SHALL BE 410 STAINLESS STEEL.

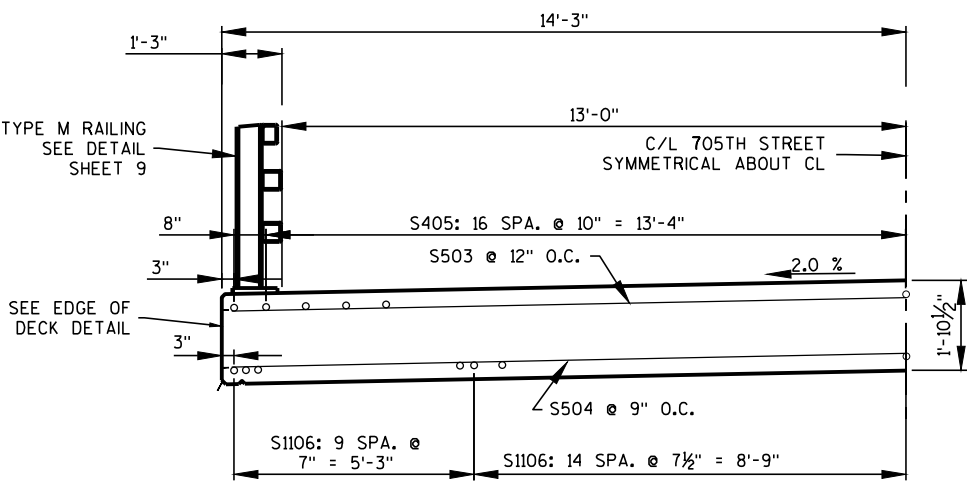
EXTEND FLASHING TO B.F. ABUTMENT DIAPHRAGM.

TOP OF FLASHING TO BEGIN APPROX. 1-INCH BELOW TOP OF DECK/SLAB SURFACE.

THE FLASHING IS TO BE CONSTANT HEIGHT BASED ON THE THINNEST SLAB DEPTH OVER THE BRIDGE LENGTH.



EDGE OF DECK DETAIL



CROSS SECTION THRU BRIDGE
LOOKING NORTH

GENERAL NOTES

TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" %. BOTTOM LONGITUDINAL BARS SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'-0" %.

TRANSVERSE BARS SHALL BE PLACED PARALLEL TO THE % OF SUBSTRUCTURE UNITS.

THE SLAB THICKNESS DIMENSION IS MINIMUM. ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPANCIES ARE TO BE PLUS (+).

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE C/L OF ABUTMENTS, AND AT 5/10 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG GUTTER LINES AND C/L.

STATE PROJECT NUMBER

8931-00-70

TOP OF DECK ELEVATIONS

	C/L BRG. S. ABUT.	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	C/L BRG. N. ABUT.
W. EDGE OF DECK	1031.20	31.22	1031.23	1031.24	1031.25	1031.26	1031.26	1031.26	1031.25	1031.25	1031.24
CROWN OR CL	1031.49	31.50	1031.52	1031.53	1031.53	1031.54	1031.54	1031.54	1031.54	1031.53	1031.53
E. EDGE OF DECK	1031.20	31.22	1031.23	1031.24	1031.25	1031.26	1031.26	1031.26	1031.25	1031.25	1031.24

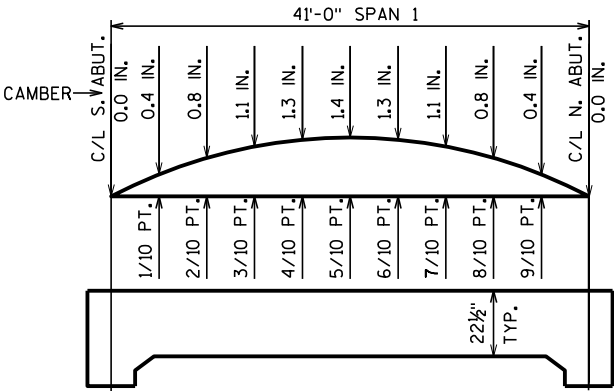
TO DETERMINE FALSEWORK ELEVATION AT EDGE OF SLAB, CROWN OR REFERENCE LINE FOLLOW THIS PROCEDURE:

TOP OF SLAB ELEVATION AT FINAL GRADE
LESS SLAB THICKNESS
PLUS CAMBER
PLUS FORM SETTLEMENT/DEFLECTION DUE TO PLACEMENT OF SLAB CONC. (TO BE COMPUTED BY THE CONTRACTOR)
EQUALS TOP OF SLAB FALSEWORK ELEVATION.

BILL OF BARS

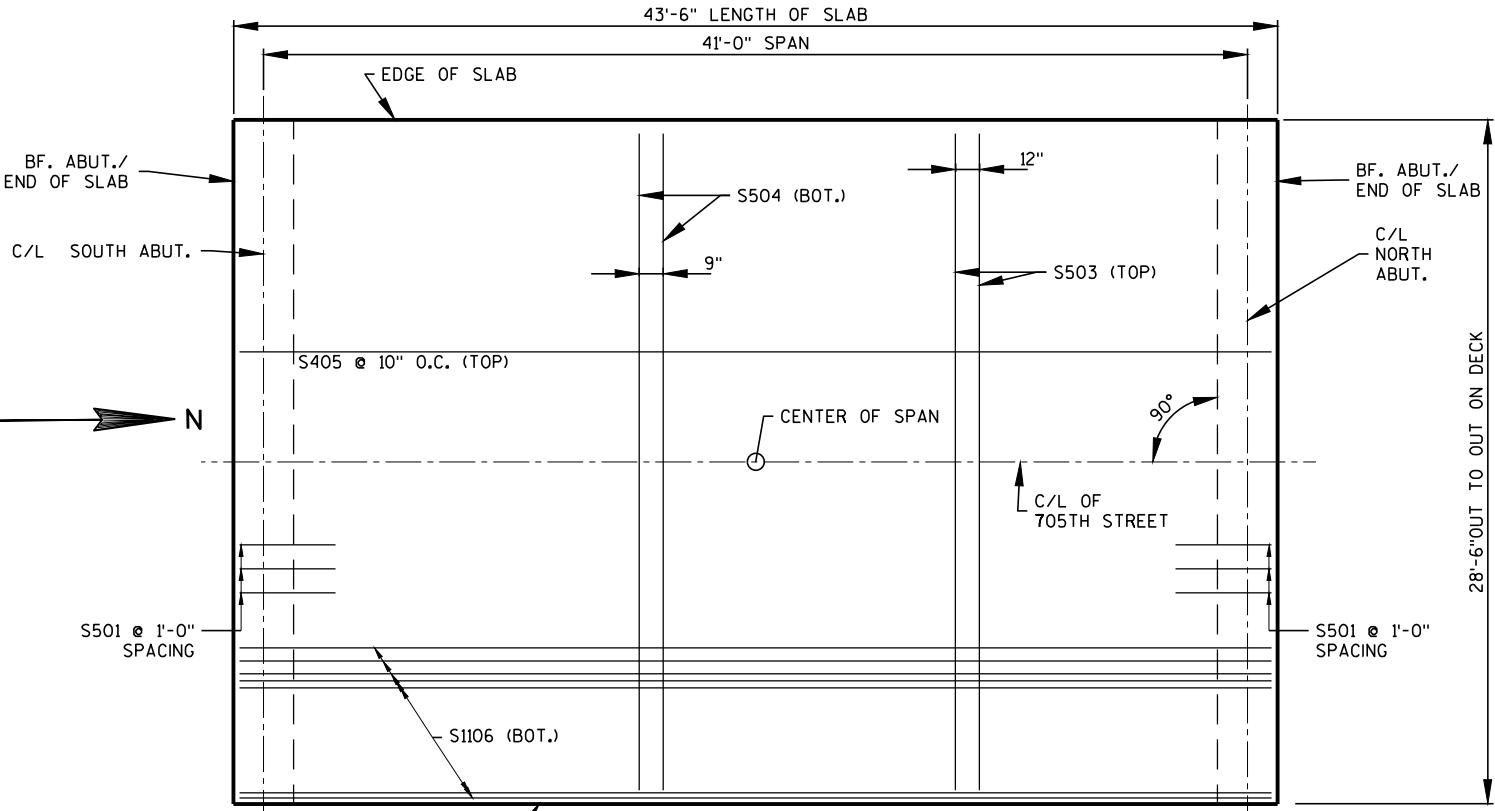
BAR MARK	COAT	NO. REQ'D	LENGTH	BENT	LOCATION
S501	X	58	7'-3"	X	DIAPHRAGM @ ABUTS. - LONGIT.
S502	X	4	28'-0"		DIAPHRAGM @ ABUTS. - TRANS.
S503	X	44	28'-0"		SLAB, TOP, TRANSVERSE
S504	X	57	28'-0"		SLAB, BOTTOM, TRANSVERSE
S405	X	35	43'-0"		SLAB, TOP, LONGIT.
S1106	X	47	43'-0"		SLAB, BOTTOM, LONGIT.
S607	X	32	12'-0"	X	SLAB, TRANS., 2 PER RAIL POST
S608	X	64	6'-0"		SLAB, LONG., 4 PER RAIL POST

NOTES:
-THE FIRST OR FIRST TWO DIGITS THE OF A BAR MARK SIGNIFIES BAR SIZE.
-DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.
-EPOXY COAT ALL SUPERSTRUCTURE BAR STEEL REINFORCEMENT.

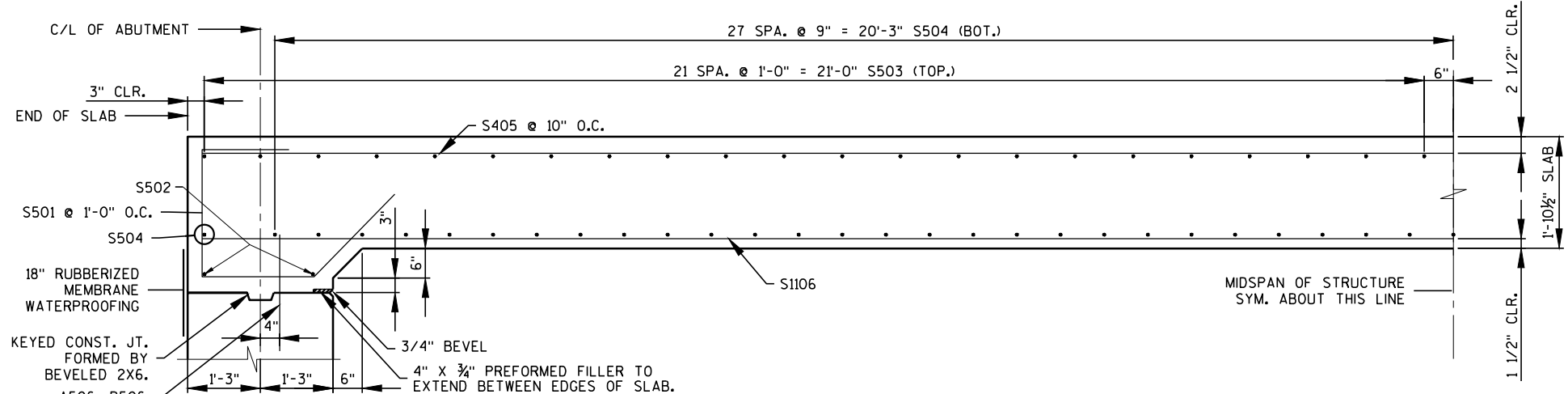


CAMBER AND SLAB THICKNESS DIAGRAM

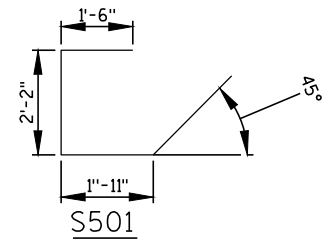
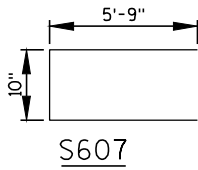
CAMBER SHOWN IS BASED ON 3 TIMES DEAD LOAD DEFLECTIONS. CAMBER SPANS AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT. PARAPETS, SIDEWALKS AND MEDIANS PLACED ON TOP OF THE SLAB SHALL BE POURED AFTER FALSEWORK HAS BEEN RELEASED.



PLAN



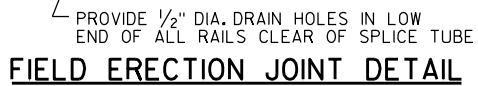
PART LONGITUDINAL SECTION



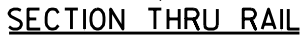
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-17-231			
DRAWN BY DAN		PLANS CK'D. JAF	
SUPERSTRUCTURE		SHEET 8 OF 9	

- ① W6 x 25 WITH $1/8$ " x $1/2$ " HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- ② PLATE $1/4$ " x $11\frac{3}{4}$ " x 1'-8" WITH $1\frac{5}{16}$ " x $1\frac{5}{8}$ " SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ③ ASTM A449 - $1/8$ " DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16 " USE 1'-3" LONG. USE $10\frac{3}{4}$ " LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)
- ④ $5/8$ " x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH $1\frac{1}{16}$ " DIA. HOLES FOR ANCHOR BOLTS NO. 3
- ⑤ TS 5 x 4 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- ⑤A TS 5 x 5 x 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- ⑥ $7/8$ " DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, $3/16$ " x $1\frac{5}{8}$ " x $1\frac{5}{8}$ " WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
- ⑦ $1/2$ " THK. BACK-UP PLATE WITH 2 - $7/8$ " x $1/2$ " THREADED SHOP WELDED STUDS (NO. 12). BOLT TO RAIL AS SHOWN IN DETAIL. REQUIRED AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYMMETRICALLY ABOUT TUBES NO. 5A.
- ⑧ 1" DIA. HOLES IN PLATE NO. 7 & TUBES NO. 5A FOR $7/8$ " DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.
- ⑨ SPLICE SLEEVE FABRICATED FROM $1/4$ " PLATE. PROVIDE "SLIDING FIT".
- ⑩ $3/8$ " x $3\frac{5}{8}$ " x 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
- ⑩A $3/8$ " x $2\frac{5}{8}$ " x 2'-4" PLATE USED IN NO. 5, $3/8$ " x $3\frac{5}{8}$ " x 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.
- ⑪ $7/8$ " DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE $1\frac{5}{8}$ " x $1\frac{1}{4}$ " LONG IT. SLOTTED HOLES AT FIELD JOINTS AND $1\frac{5}{8}$ " x $2\frac{1}{4}$ " MIN. LONG IT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.
- ⑫ $7/8$ " DIA. x $1\frac{1}{2}$ " LONG THREADED SHOP WELDED STUDS (2 REQ'D.).
- ⑬ $3/8$ " x 8" x 1'-6" PLATE. BOLT TO RAIL AS SHOWN IN DETAIL. REQ'D. AT THRIE BEAM GUARD RAIL ATTACHMENTS ONLY. PLACE SYM. ABOUT TUBES NO. 5A.
- ⑭ $7/8$ " DIA. x 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).
- ⑮ 1" DIA. HOLES IN TUBES NO. 5A FOR $7/8$ " DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR PLATES, AND SPLICE TUBE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 36.
3. THE NUT SECURING THE POST BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL $\frac{1}{8}$ TURN.
4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE. RAILS SHALL BE SPLICED IN A PANEL OVER EXPANSION JOINTS.
5. ENDS OF TUBE SECTIONS SHALL BE SAWED. GRIND SMOOTH EXPOSED EDGES. ALL CUT ENDS SHALL BE TRUE AND SMOOTH.
6. WELD IS THE SAME ON BOTH FLANGES. FLANGE WELD DOES NOT REQUIRE MAGNETIC PARTICLE TESTING.
7. FILL BOLT SLOT OPENINGS IN POST SHIMS AND PLATE NO. 2 AND CAULK AROUND PERIMETER OF PLATE NO. 2 WITH NON-STAINING GRAY NON-BITUMINOUS JOINT SEALER. STEEL POST SHIMS MAY BE USED UNDER POSTS WHERE REQ'D. FOR ALIGNMENT.
8. POST BASE PLATES SHALL BE FLAT WITH ALL SURFACES SMOOTH AND FREE FROM WARP AND ALL EDGES SMOOTH, STRAIGHT AND VERTICAL. ALL PLATE CUTS SHALL BE MACHINE OR MACHINE FLAME CUT.
9. ALL MATERIAL SHALL BE GALVANIZED AFTER FABRICATION. PRIOR TO GALVANIZING, ALL STEEL RAILING POSTS & STEEL TUBING SHALL BE GIVEN A NO. 6 BLAST CLEANING BY SSPC SPECIFICATIONS.



LOCATION MUST BE
SHOWN ON SHOP DRAWINGS



NOTE: CONNECTIONS AT LOWER RAILS SHOWN.
CONNECTIONS AT TOP RAIL SIMILAR.



THREE BEAM RAIL ATTACHMENT



THREE BEAM RAIL ATTACHMENT



AT BEAM GUARD ATTACHMENT

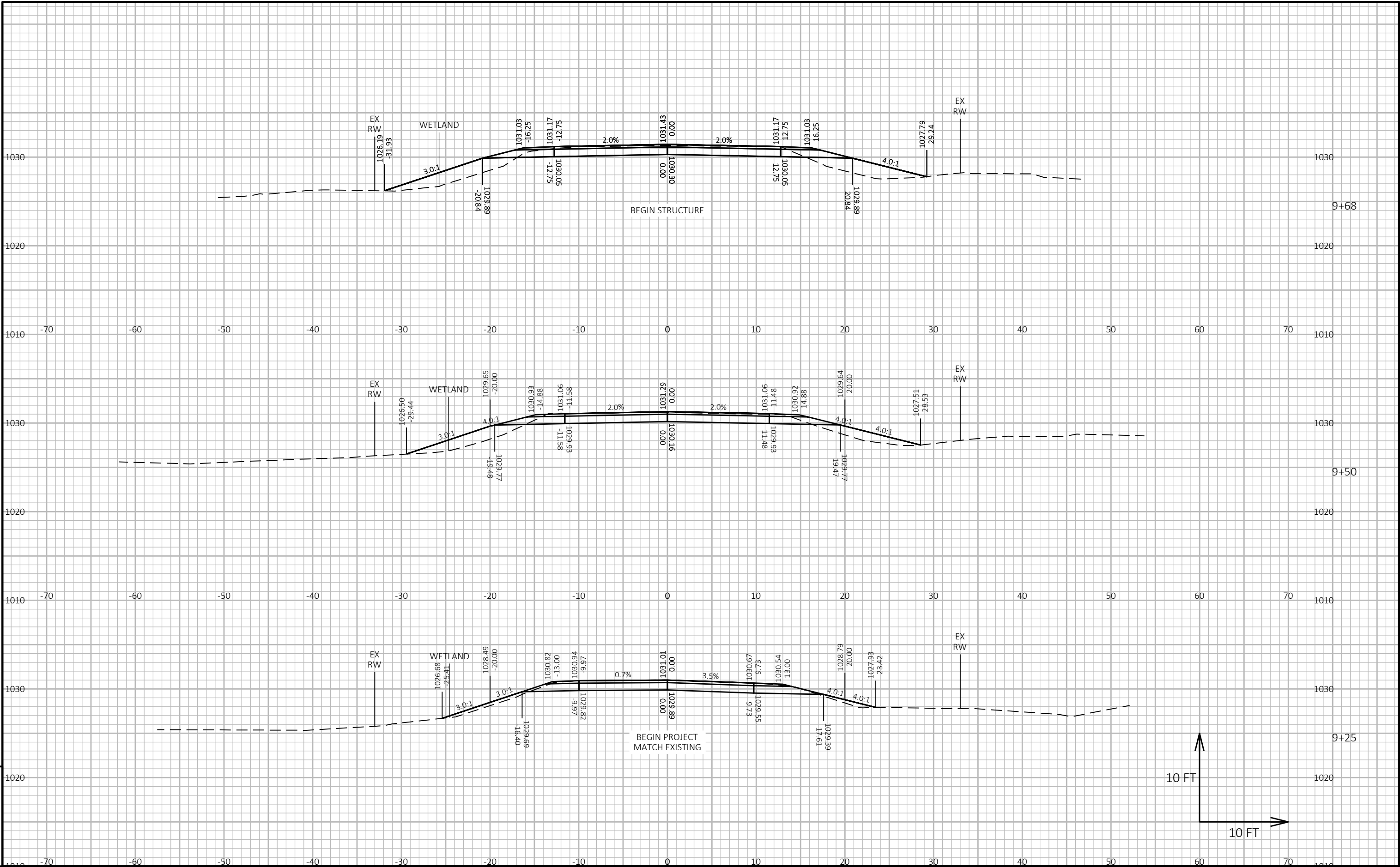


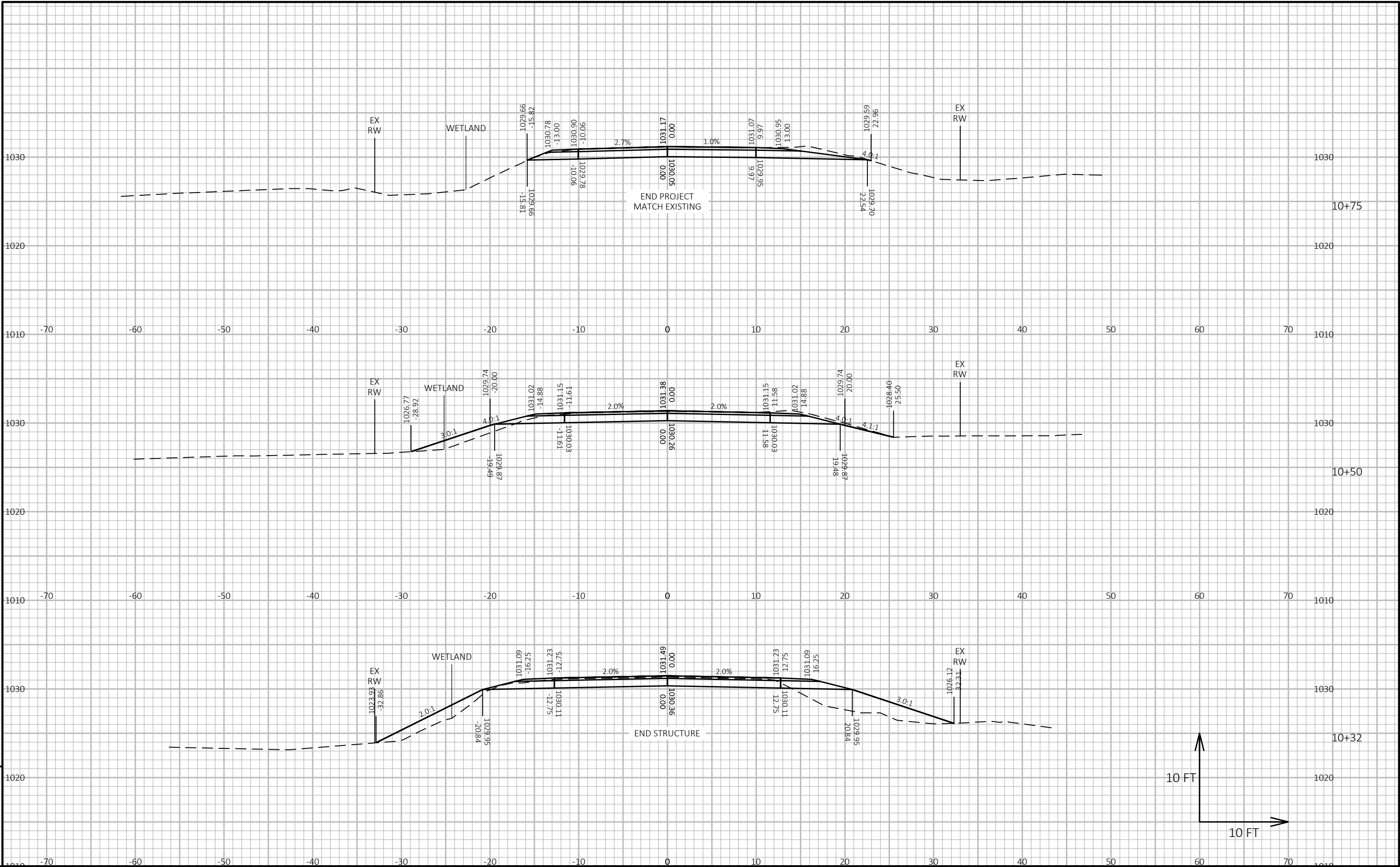
 TIE TO TOP MAT OF STEEL.

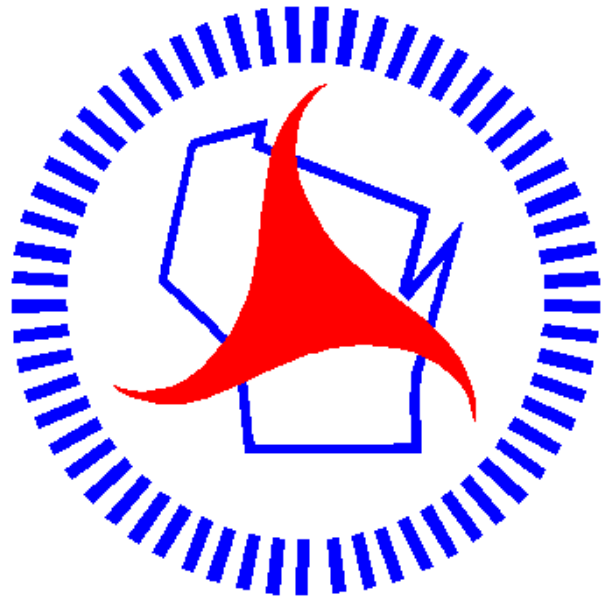
* FOR ANCHOR BOLTS IN WINGS, TACK WELD MAY BE USED IN FIELD AFTER ANCHOR PLATE IS IN POSITION IF REQ'D. FOR CONSTRUCTIBILITY.

RDWY. OPENING OR 2 1/2" MIN. FOR STRIP SEAL
EXP. JOINT & 1/2" OPENING FOR A1 ABUTMENT.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-17-231			
DRAWN BY JAF		PLANS CK'D. SKP	
TUBULAR STEEL RAILING TYPE 'M'		SHEET 9 OF 9	







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