

SWL  
PROJECT ID: 5001-00-70  
WITH: N/A  
COUNTY: CRAWFORD

AUG 2017

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION  
PLAN OF PROPOSED IMPROVEMENT

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
5001-00-70	WISC 2017406	1

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 Plat
Section No.	5	Plan and Profile (Includes Erosion Control Plan)
Section No.	6	Standard Detail Drawings
Section No.	7	Sign Plates
Section No.	8	Structure Plans
Section No.	9	Computer Earthwork Data
Section No.	9	Cross Sections

TOTAL SHEETS = 68

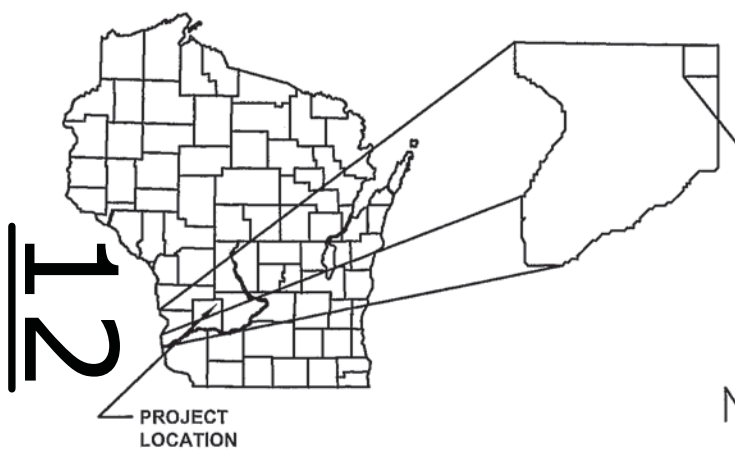
CLAYTON - SOLDIERS GROVE

(JOHNSON CREEK BRIDGE B-12-0181)

CTH C  
CRAWFORD COUNTY

STATE PROJECT NUMBER  
5001-00-70

**STRUCTURE  
AS-BUILT PLAN**  
SUPERVISOR: Joe Gregas  
PROJECT MANAGER: Daniel Kleinertz  
PROJECT LEADER: Nicholas Brey  
CONTRACTOR: Larson Construction Company, Inc.  
WORK STARTED: 10/09/2017  
WORK COMPLETED: 05/31/2018

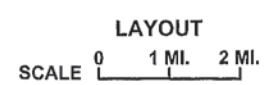
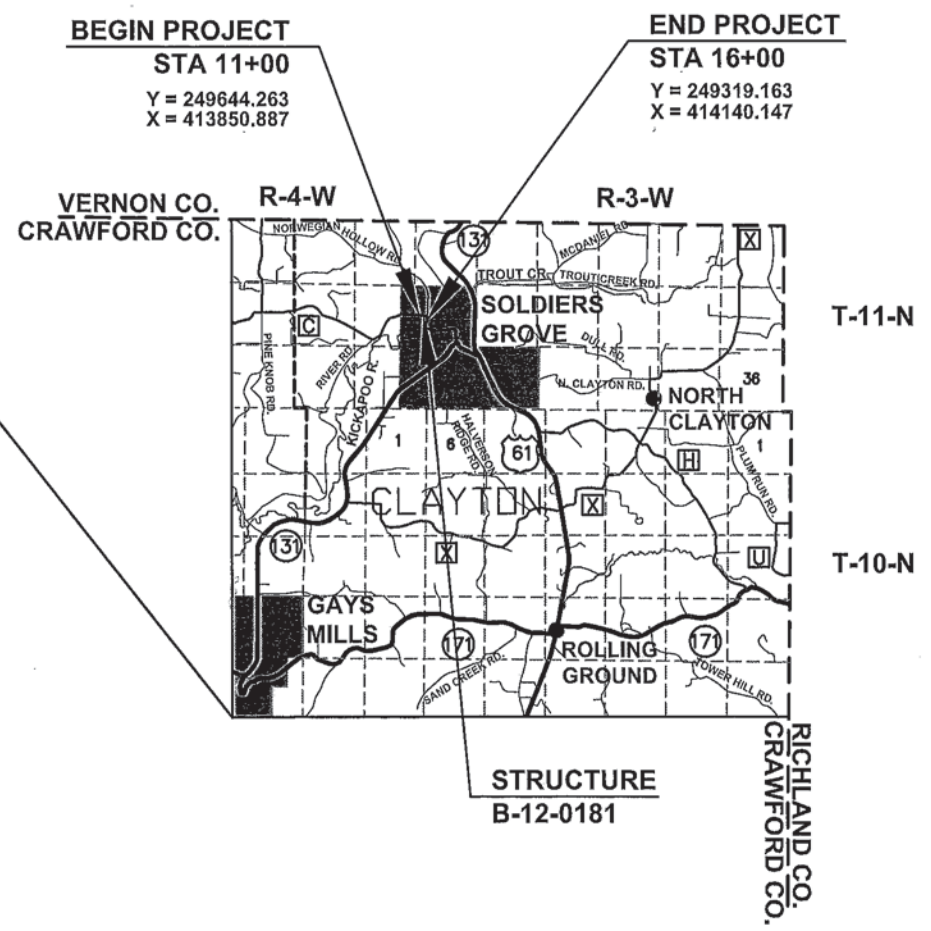


DESIGN DESIGNATION

A.D.T. (2018)	=	380
A.D.T. (2038)	=	450
D.H.V.	=	7.7
D.	=	60/40
T.	=	9.2%
DESIGN SPEED	=	30 MPH
ESALS	=	72,708

CONVENTIONAL SYMBOLS

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



TOTAL NET LENGTH OF CENTERLINE = 0.095 MI.

COORDINATES ON THIS PLAN ARE REFERENCED TO THE WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), CRAWFORD COUNTY.

ACCEPTED FOR  
COUNTY OF CRAWFORD  
19 April 17 (Date) [Signature] HIGHWAY COMMISSIONER

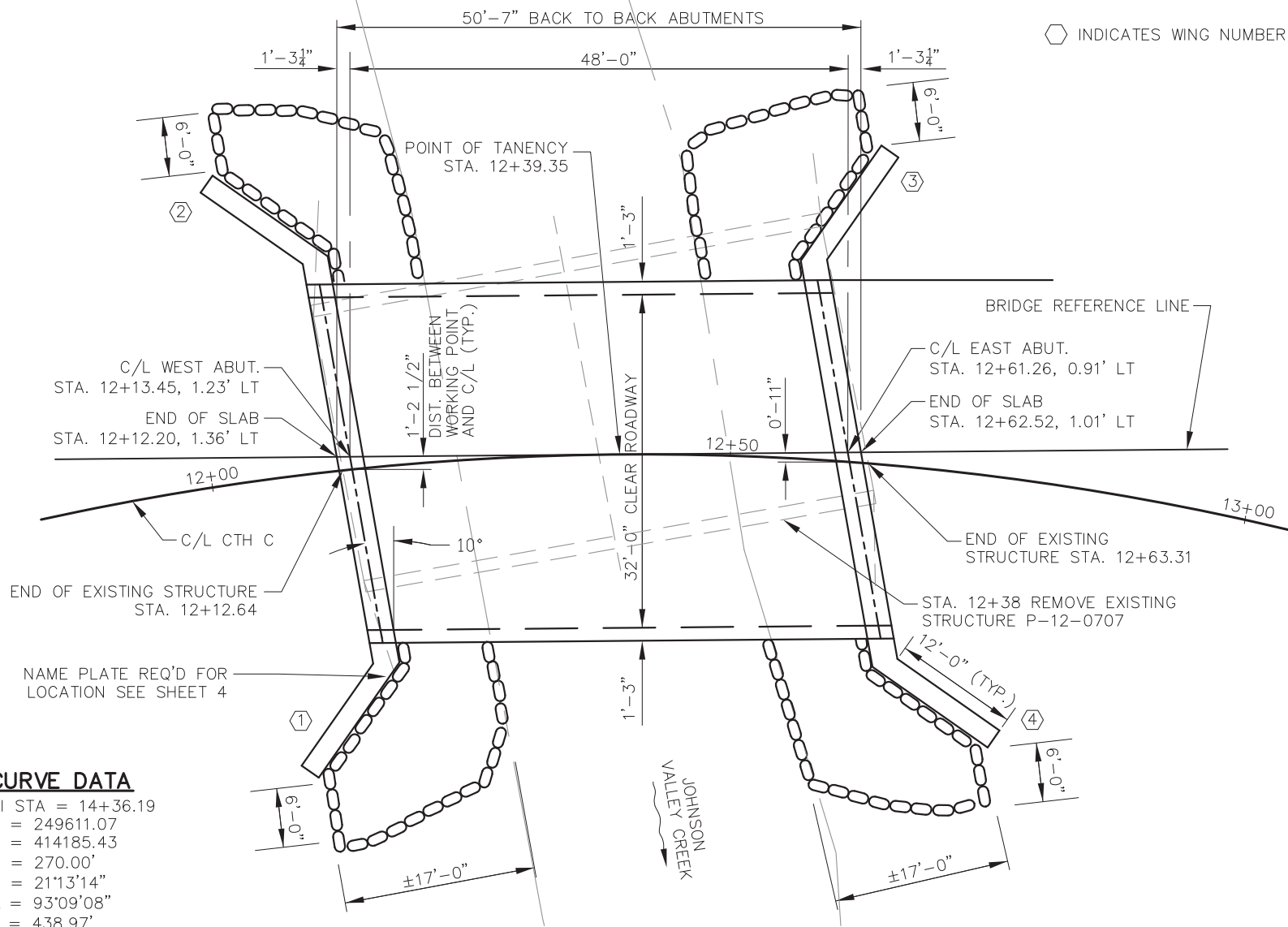
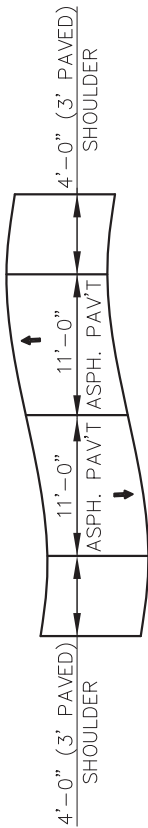
ORIGINAL PLANS PREPARED BY  
**TEAM ENGINEERING**  
Transportation : Environmental : Agricultural : Municipal and Land Surveying

WISCONSIN  
JEREMY F. KRACHEY  
E-37258  
WAUZEKA WIS.  
PROFESSIONAL ENGINEER  
4-14-2017 (Date) [Signature]

STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION

PREPARED BY  
Surveyor: TEAM ENGINEERING  
Designer: TEAM ENGINEERING  
Management Consultant: KL ENGINEERING, INC.

APPROVED FOR THE DEPARTMENT  
4/28/17 (Date) [Signature] (Management Consultant Signature)

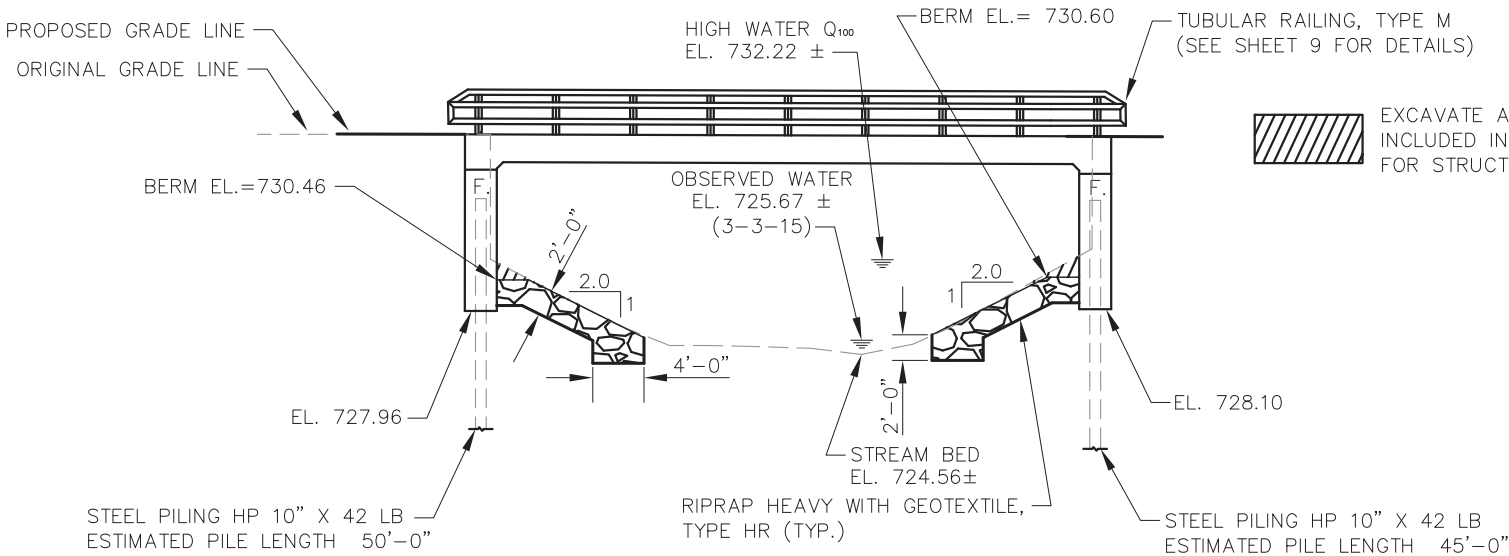


**CURVE DATA**

PI STA = 14+36.19  
Y = 249611.07  
X = 414185.43  
R = 270.00'  
D = 21°13'14"  
Δ = 93°09'08"  
L = 438.97'  
T = 285.28'  
C = 392.20'

**PLAN B-12-181**

(SINGLE SPAN REINFORCED CONCRETE FLAT SLAB)



**ELEVATION**

(NORMAL TO C/L CTH C)

◇ INDICATES WING NUMBER

**DESIGN DATA**

LIVE LOAD: DESIGN LOAD \_\_\_\_\_ HL-93  
INVENTORY RATING FACTOR \_\_\_\_\_ 1.25  
OPERATING RATING FACTOR \_\_\_\_\_ 1.61  
WISCONSIN STANDARD PERMIT VEHICLE RATING \_\_\_\_\_ 250 KIPS

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

**MATERIAL PROPERTIES:**

CONCRETE MASONRY SUPERSTRUCTURE \_\_\_\_\_ f'c = 4,000 p.s.i.  
CONCRETE MASONRY SUBSTRUCTURE \_\_\_\_\_ f'c = 3,500 p.s.i.  
BAR STEEL REINFORCEMENT, GRADE 60 \_\_\_\_\_ fy = 60,000 p.s.i.

**FOUNDATION DATA:**

ABUTMENTS SHALL BE SUPPORTED ON PILING STEEL 10-INCH X 42 LB. PILE DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 140 TONS PER PILE IN THE ABUTMENTS AND 95 TONS IN THE WINGS AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATE 50 FT PILE LENGTHS AT WEST ABUTMENT BODY, 42 FT AT WINGS, AND 45 FT PILE LENGTHS AT EAST ABUTMENT BODY, 37 FT AT WINGS..

\*\*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 THE MODIFIED GATES DYNAMIC FORMULA TO DETERMINE THE DRIVEN PILE CAPACITY.

**TRAFFIC DATA:**

A.A.D.T (2017) \_\_\_\_\_ 360  
A.A.D.T (2037) \_\_\_\_\_ 400  
DESIGN SPEED \_\_\_\_\_ 40 M.P.H.

**HYDRAULIC DATA:**

Q100 \_\_\_\_\_ 1,390 c.f.s.  
Q100 (THRU BRIDGE) \_\_\_\_\_ 1,390 c.f.s.  
Q100 (ROAD) \_\_\_\_\_ N/A c.f.s.  
DRAINAGE AREA \_\_\_\_\_ 4.86 SQ. MI.  
WATERWAY AREA @ Q100 \_\_\_\_\_ 236 SQ. FT.  
VELOCITY \_\_\_\_\_ 5.90 f.p.s.  
HIGH WATER 100 ELEVATION \_\_\_\_\_ 732.22 FT.  
SCOUR CRITICAL CODE \_\_\_\_\_ 8  
Q2 \_\_\_\_\_ 249 c.f.s.  
Q2 ELEVATION \_\_\_\_\_ 728.46 FT.

**LIST OF DRAWINGS**

GENERAL PLAN \_\_\_\_\_ 1.  
CROSS SECTION AND QUANTITIES \_\_\_\_\_ 2.  
SUBSURFACE EXPLORATION \_\_\_\_\_ 3.  
ABUTMENTS \_\_\_\_\_ 4 & 5.  
ABUTMENT DETAILS \_\_\_\_\_ 6 & 7.  
SUPERSTRUCTURE \_\_\_\_\_ 8.  
TUBULAR STEEL RAILING, TYPE M \_\_\_\_\_ 9.

**BRIDGE OFFICE CONTACT:**

WILLIAM DREHER  
(608) 266-8489

**CONSULTANT CONTACT:**

JEREMY KRACHEY, P.E.  
(608) 875-5075



STATE PROJECT NUMBER			
5001-00-70			
NO	DATE	REVISION	BY
ORIGINAL PLANS PREPARED BY: <b>TEAM ENGINEERING</b>			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED	William C. Dreher, SR. 05/17/17		DATE
CHIEF STRUCTURES DESIGN ENGINEER			
STRUCTURE B-12-181			
CTH C OVER JOHNSON VALLEY CREEK			
COUNTY	CRAWFORD	VILLAGE	SOLDIERS GROVE
DESIGN SPEC.	AASHTO LRFD BRIDGE DESIGN SPEC.		
DESIGNED BY	JFK	DESIGN CHECKED	TJK
DRAWN BY	BAS	PLANS CHECKED	JFK
GENERAL PLAN			SHEET 1 OF 9

GENERAL NOTES

DRAWING 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 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 THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH HEAVY RIPRAP AND GEOTEXTILE FABRIC TO THE EXTENT SHOWN ON SHEET 1 AND IN THE ABUTMENT DETAILS.

THE EXISTING GROUND LINE SHALL BE THE UPPER LIMITS OF EXCAVATION FOR SUBSTRUCTURES.

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 BACKFILL STRUCTURE.

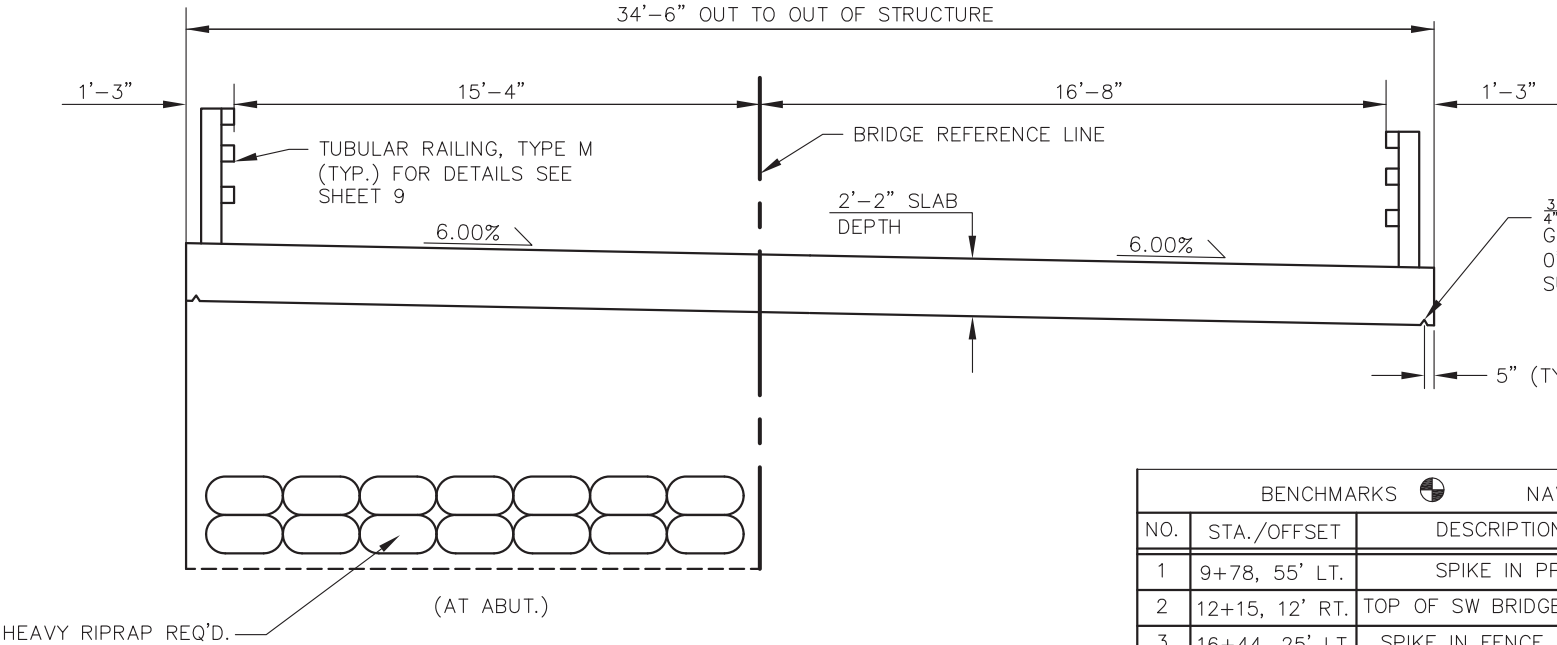
THE EXISTING STRUCTURE (P-12-0707) IS A TWO SPAN CONCRETE DECK, STEEL GIRDER STRUCTURE ON TIMBER ABUTMENTS AND A TIMBER PIER. THE OVERALL LENGTH IS 50.2' AND THE OVERALL WIDTH IS 28'.

ABUTMENTS NOT TO BE BACKFILLED UNTIL SUPERSTRUCTURE IS IN PLACE.

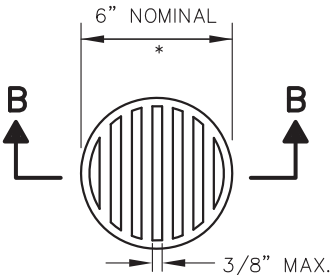
TOTAL ESTIMATED QUANTITIES

BID ITEM NUMBER	BID ITEMS	UNIT	W. ABUT.	E. ABUT.	SUPER.	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 12+38	LS	—	—	—	1
206.1000	EXCAVATION FOR STRUCTURE BRIDGES B-12-181	LS	—	—	—	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	464	464	—	928
502.0100	CONCRETE MASONRY BRIDGES	CY	72	72	147	291
502.3200	PROTECTIVE SURFACE TREATMENT	SY	—	—	226	226
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	3250	3250	—	6500
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	2208	2208	24944	29360
513.4061	RAILING TUBULAR TYPE M (B-12-181)	LF	—	—	106	106
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	8	8	—	16
550.1100	PIILING STEEL HP 10-INCH X 42 LB	LF	468	418	—	886
606.0300	RIPRAP HEAVY	CY	53	57	—	110
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	100	100	—	200
645.0120	GEOTEXTILE TYPE HR	SY	120	130	—	250
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	22	22	—	44
NON-BID ITEMS						
	FILLER	SIZE				½" & ¾"

CROSS SECTION THRU ROADWAY  
(LOOKING EAST)



BENCHMARKS		NAVD 88	
NO.	STA./OFFSET	DESCRIPTION	ELEV.
1	9+78, 55' LT.	SPIKE IN PP	742.77
2	12+15, 12' RT.	TOP OF SW BRIDGE CURB	742.98
3	16+44, 25' LT.	SPIKE IN FENCE POST	749.50



RODENT SHIELD

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

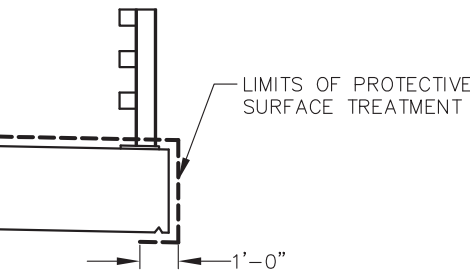
THE RODENT SHIELD, PIPE COUPLING AND SCREWS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH"

THE RODENT SHIELD SHALL BE A PVC GRATE 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 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.

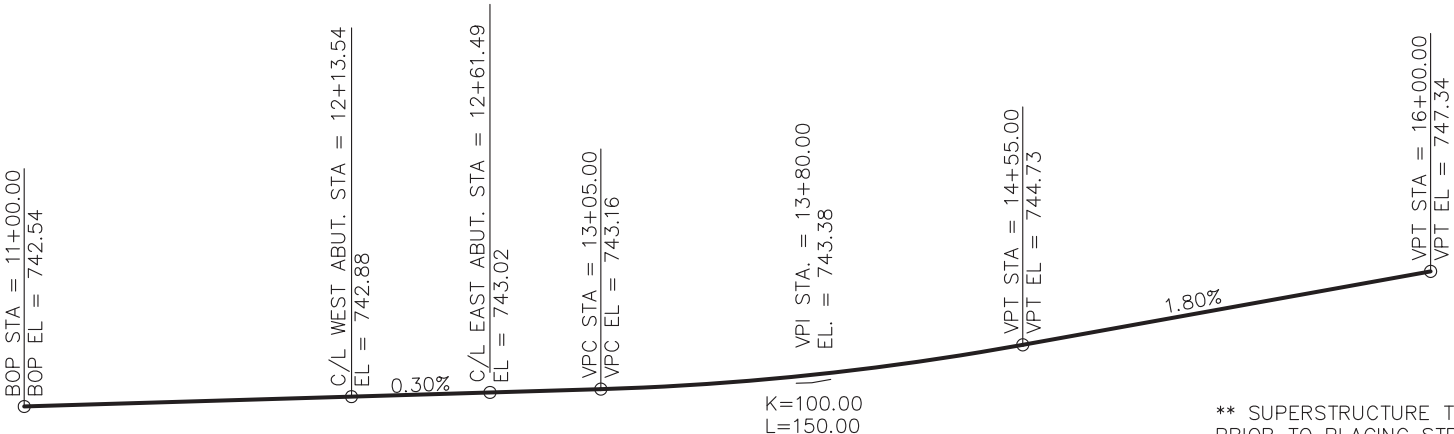
SECTION B-B



PROTECTIVE SURFACE TREATMENT DETAIL

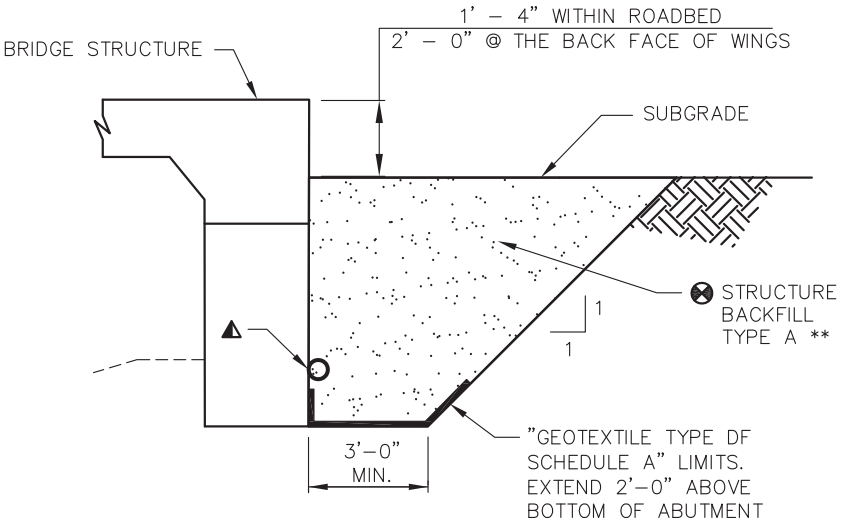


PROFILE GRADE LINE, C/L CTH C



\*\* SUPERSTRUCTURE TO BE IN PLACE PRIOR TO PLACING STRUCTURE BACKFILL TYPE A ABOVE ELEV. 730.60

STRUCTURE BACKFILL DETAIL



▲ PIPE UNDERDRAIN WRAPPED (6-INCH). SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SHIELD AT ENDS OF PIPE UNDERDRAIN.

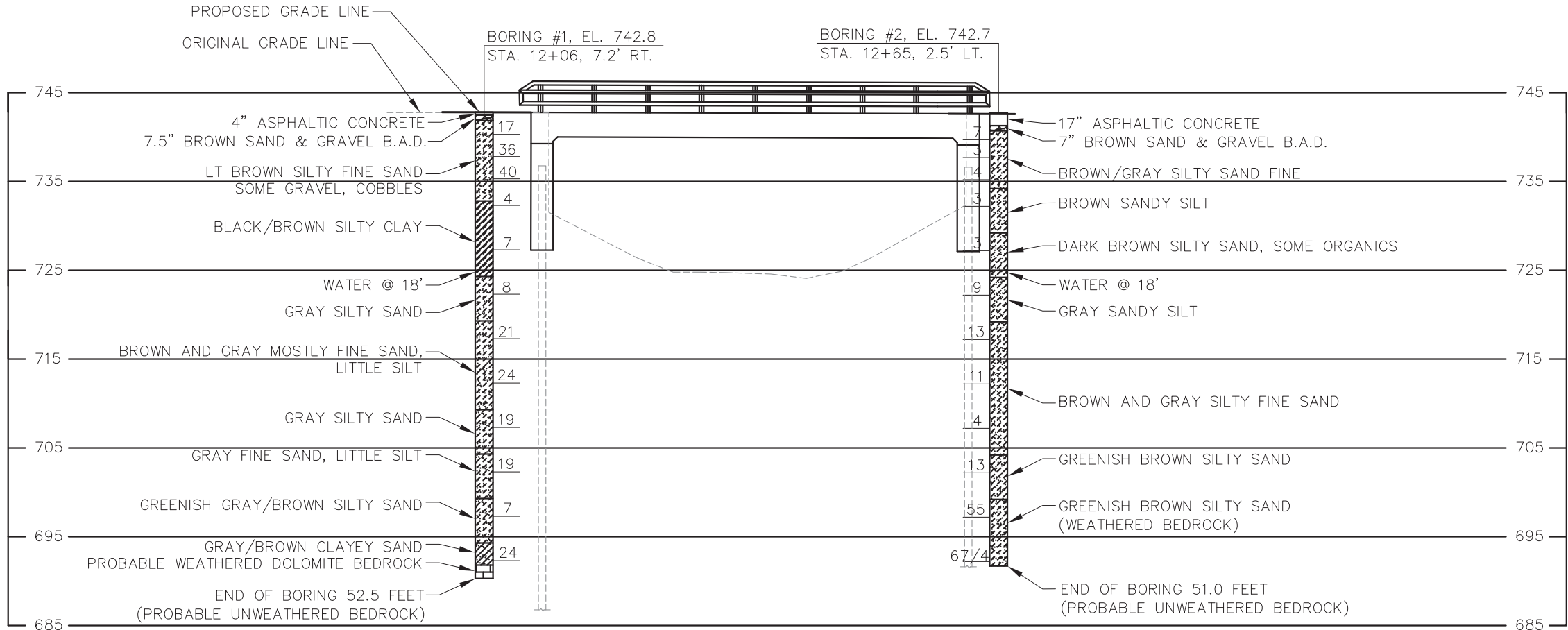
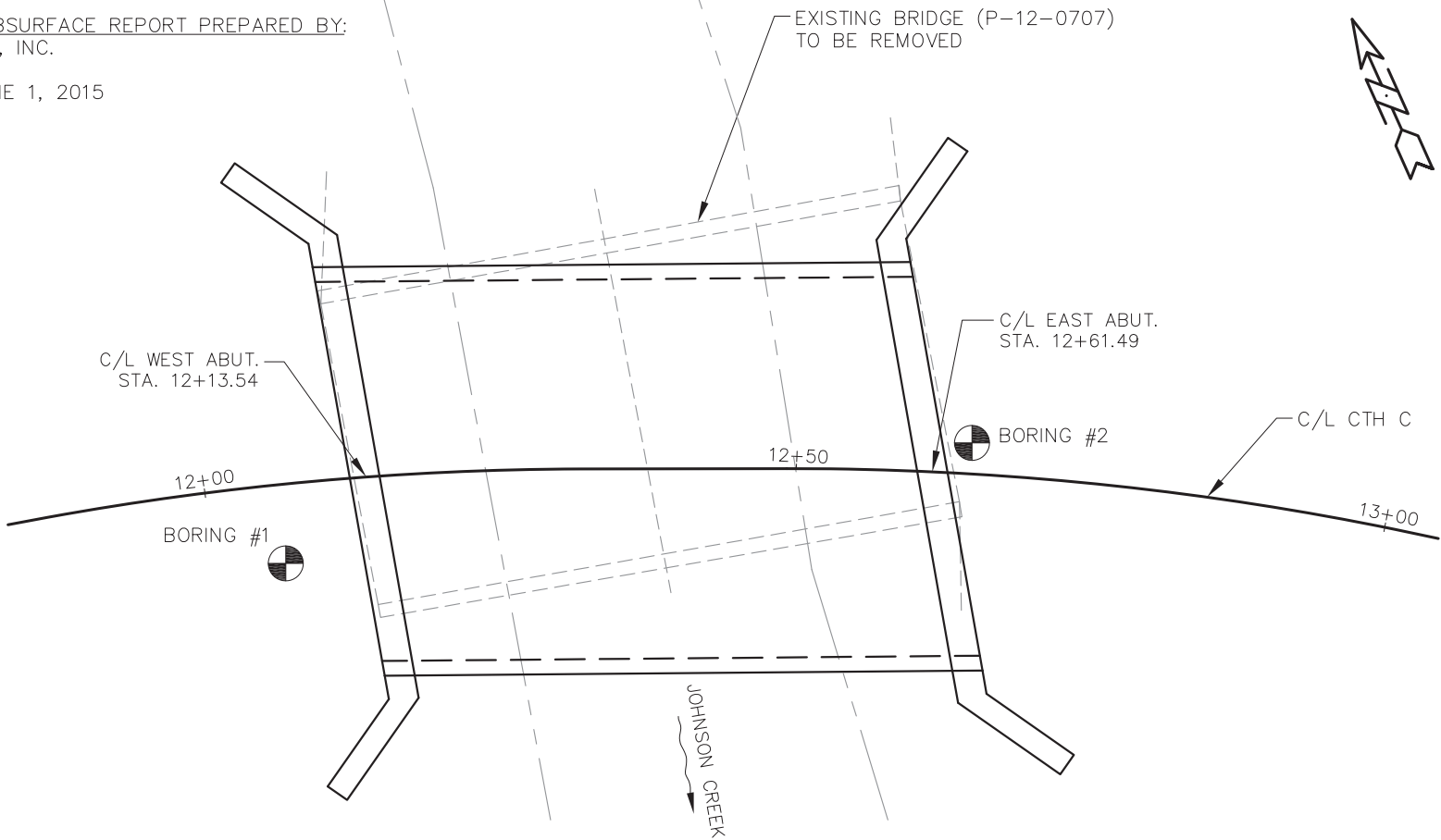
⊗ BACKFILL PAY LIMITS. BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

NO	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-12-181			
DRAWN BY BAS		PLANS CHECKED JFK	
CROSS SECTION & QUANTITIES		SHEET 2 OF 9	



BORINGS PERFORMED BY AND SUBSURFACE REPORT PREPARED BY:  
NUMMELIN TESTING SERVICES, INC.  
WAUNAKEE, WISCONSIN  
BORINGS COMPLETED ON JUNE 1, 2015

PLANS PREPARED BY:  
TEAM ENGINEERING, INC.  
LOGANVILLE, WISCONSIN



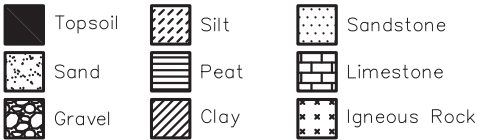
STATE PROJECT NUMBER

5001-00-70

ABBREVIATIONS

VF - Very Fine F - Fine M - Medium C - Coarse  
Ws - Weathered So - Sound

MATERIAL SYMBOLS



LEGEND OF PROBING

Probing No.  
Sta.  
Elevation  
95/6=95 Blows for 6"  
Penetration  
Probing taken with a  
350# wt.  
Falling 18" on a 2"  
O.D. Point.  
7 Average Blows Per Foot  
Refusal 95/6

LEGEND OF BORING

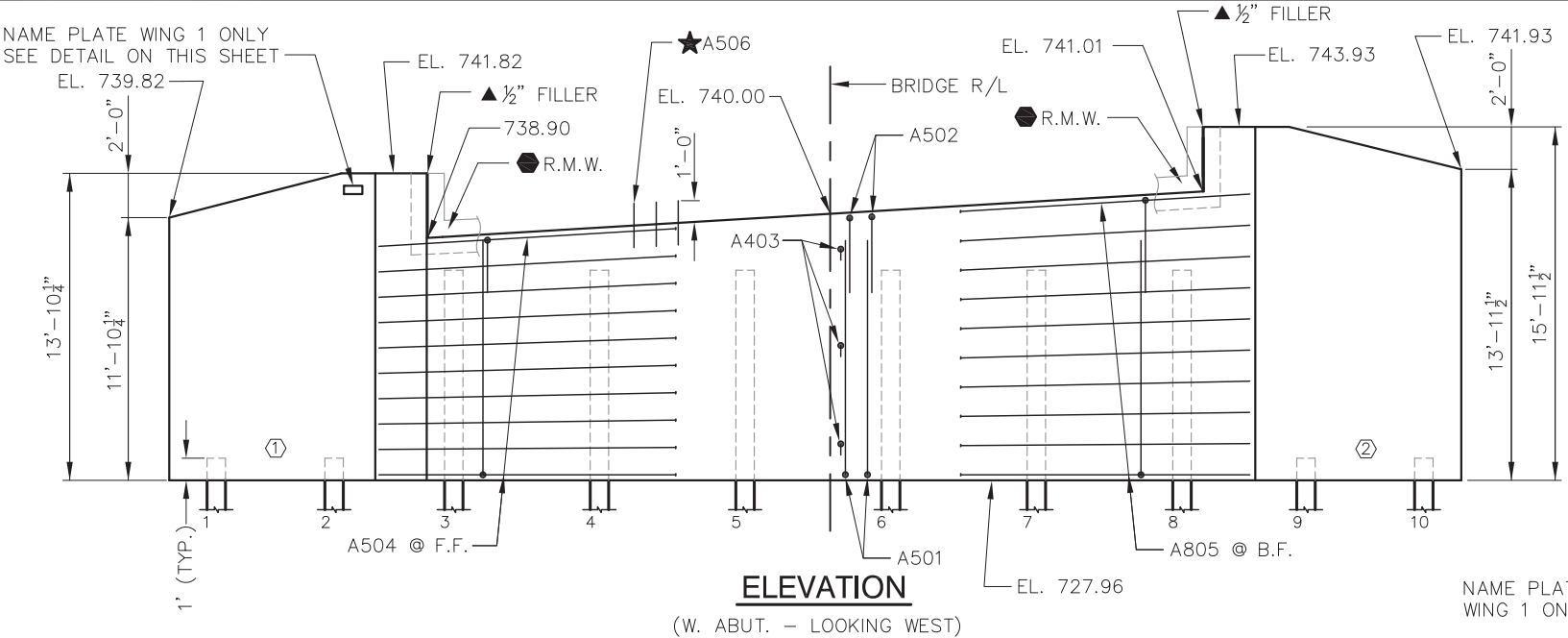
Boring No.  
Sta.  
Elev.  
Unconfined Strength  
Blows Per Ft.  
Using 140# Wt.  
Falling 30"  
Wash Sample  
Shelby Tube S.T.  
Ground Water Elevation  
No Ground Water Observed Above This Elevation  
Sandy Gravel  
F.  
Boulders or Cobbles  
Sand  
Silty Clay  
So.  
Limestone

Unless otherwise specified, the blows per foot at the locations indicated are based on driving a 2" O.D. x 1.4" I.D. split spoon sampler with a 140# hammer having a free fall of 30". The blow count is taken in undisturbed soil immediately below a cased or open hole eliminating side friction on the drive pipe.

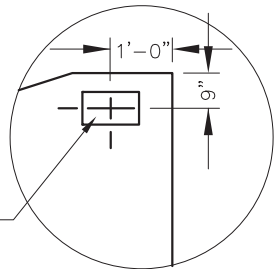
SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

To obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing. The data presented herein represents the findings of the subsurface explorations made. However, because the depths investigated are limited and the area of the borings and/or soundings is very small in relation to the entire area, the Division of Highways does not warrant conditions below the depths investigated or that the classification of material encountered in these investigations is necessarily typical of the entire site.

NO	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-12-181			
DRAWN BY		BAS	PLANS CHECKED JLB
SUBSURFACE EXPLORATION		SHEET 3 OF 9	

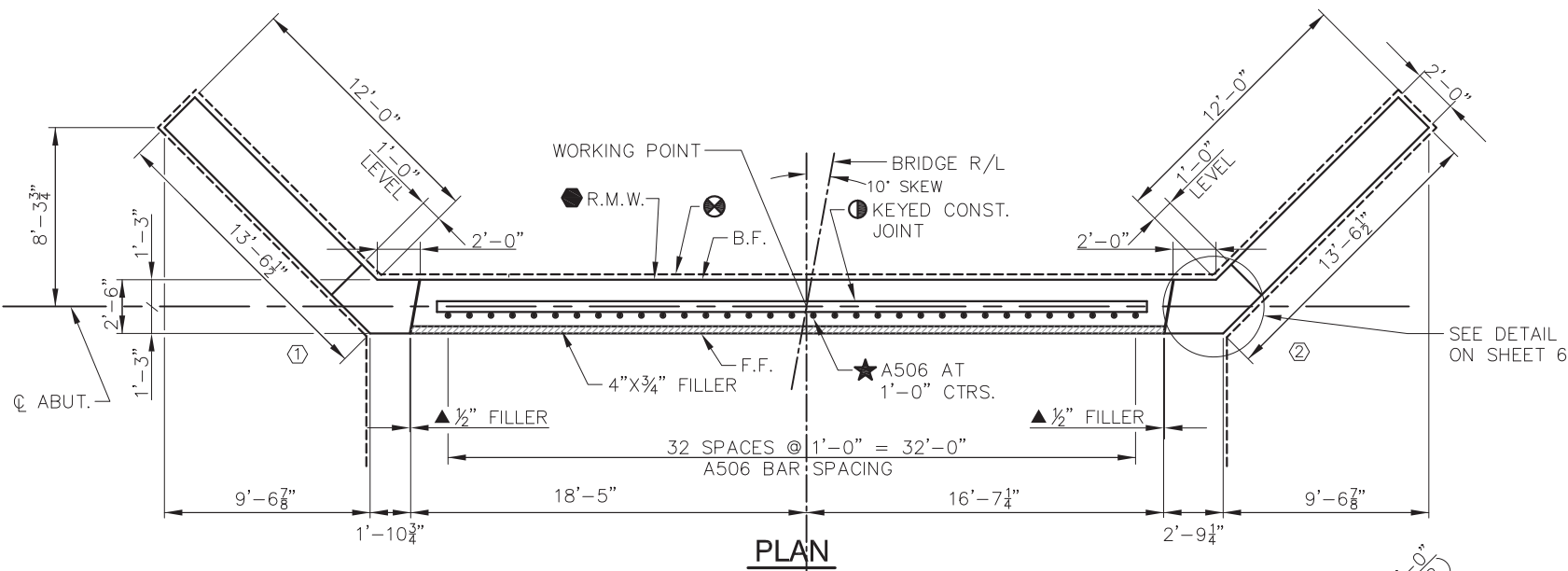


NAME PLATE REQ'D  
WING 1 ONLY.

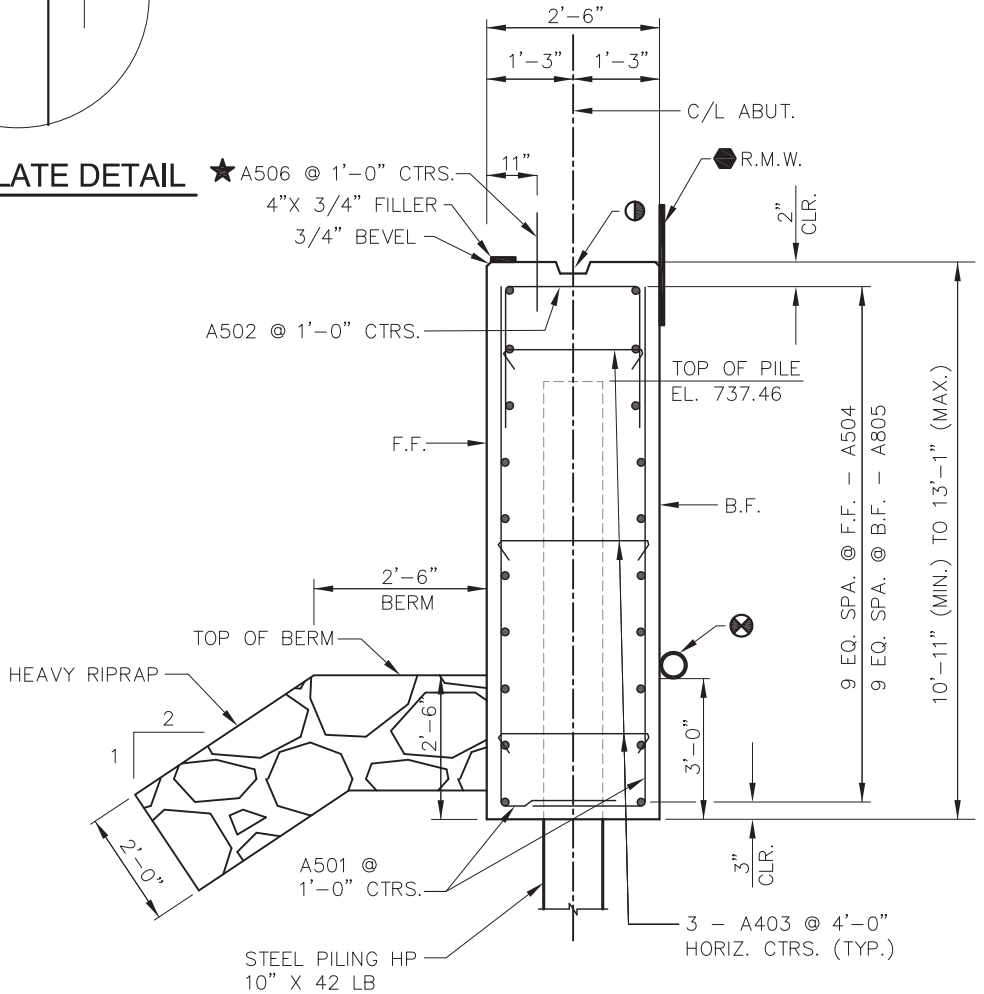
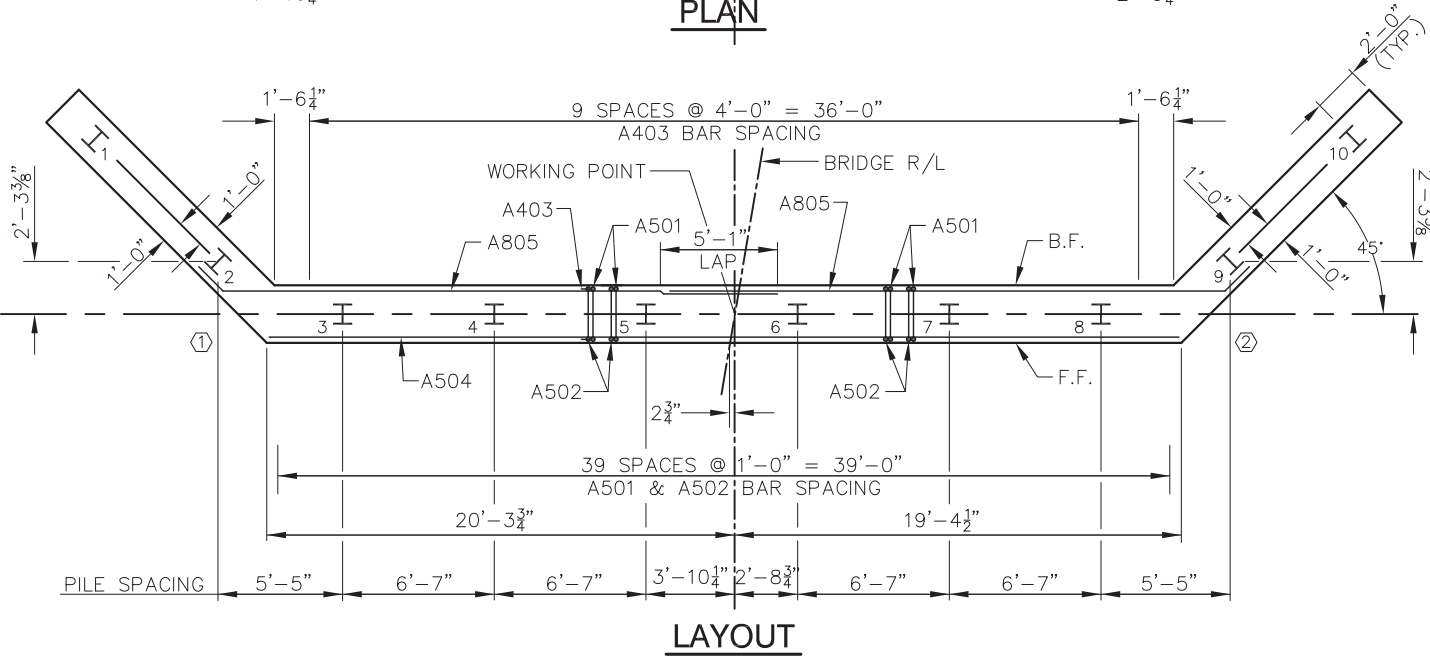


**NAME PLATE DETAIL**

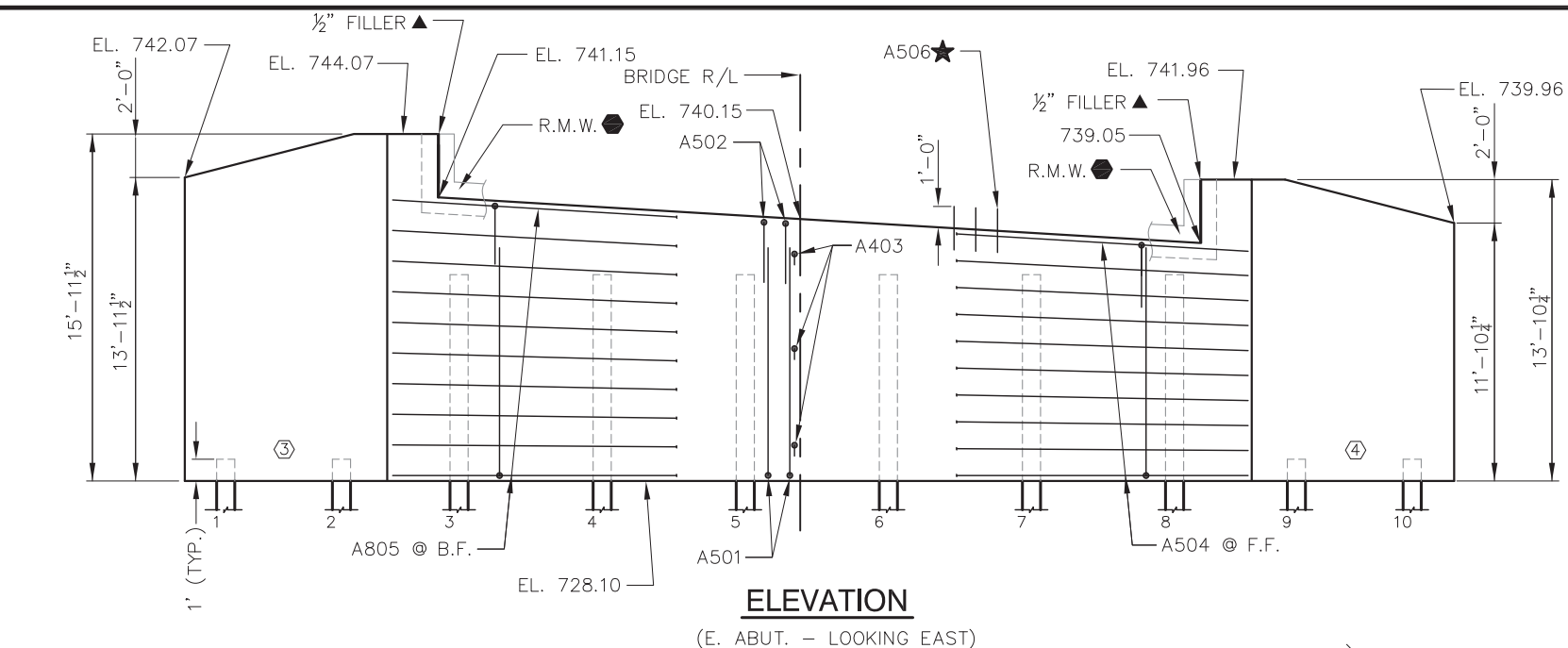
- ★ A506 @ 1'-0" CTRS.
- 4" X 3/4" FILLER
- 3/4" BEVEL



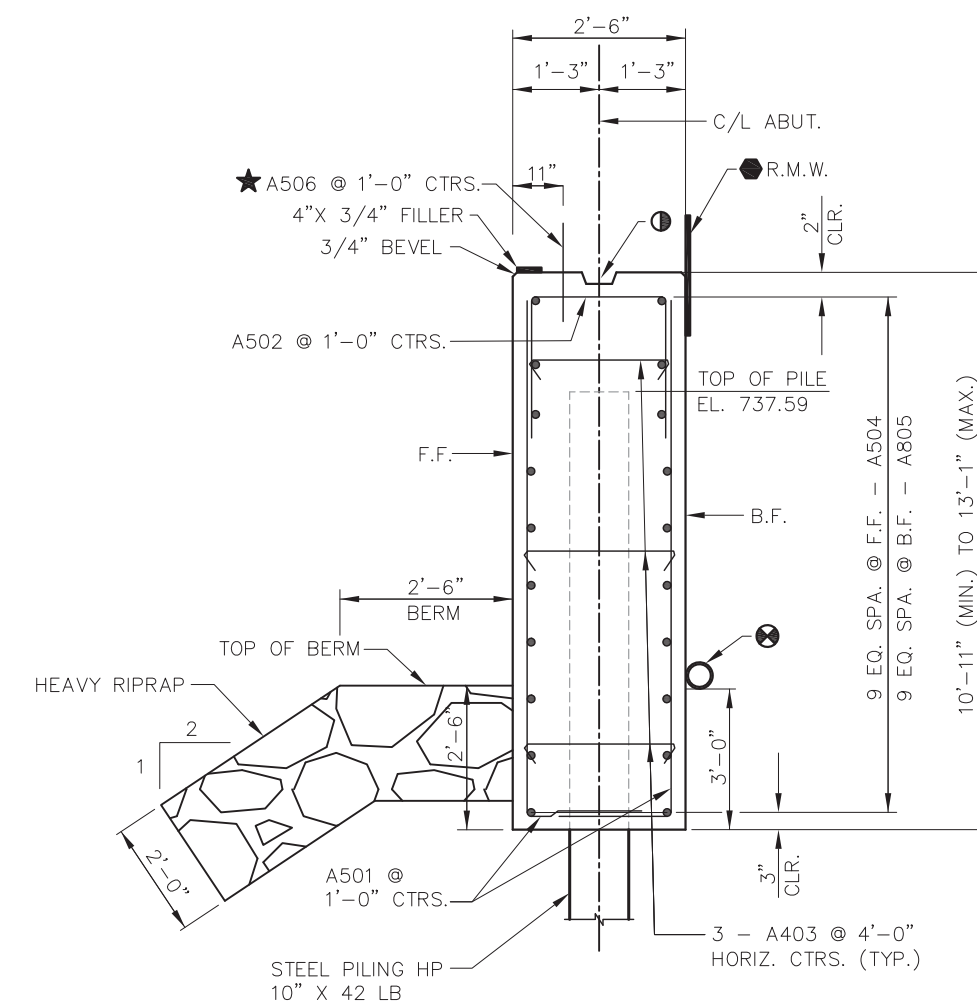
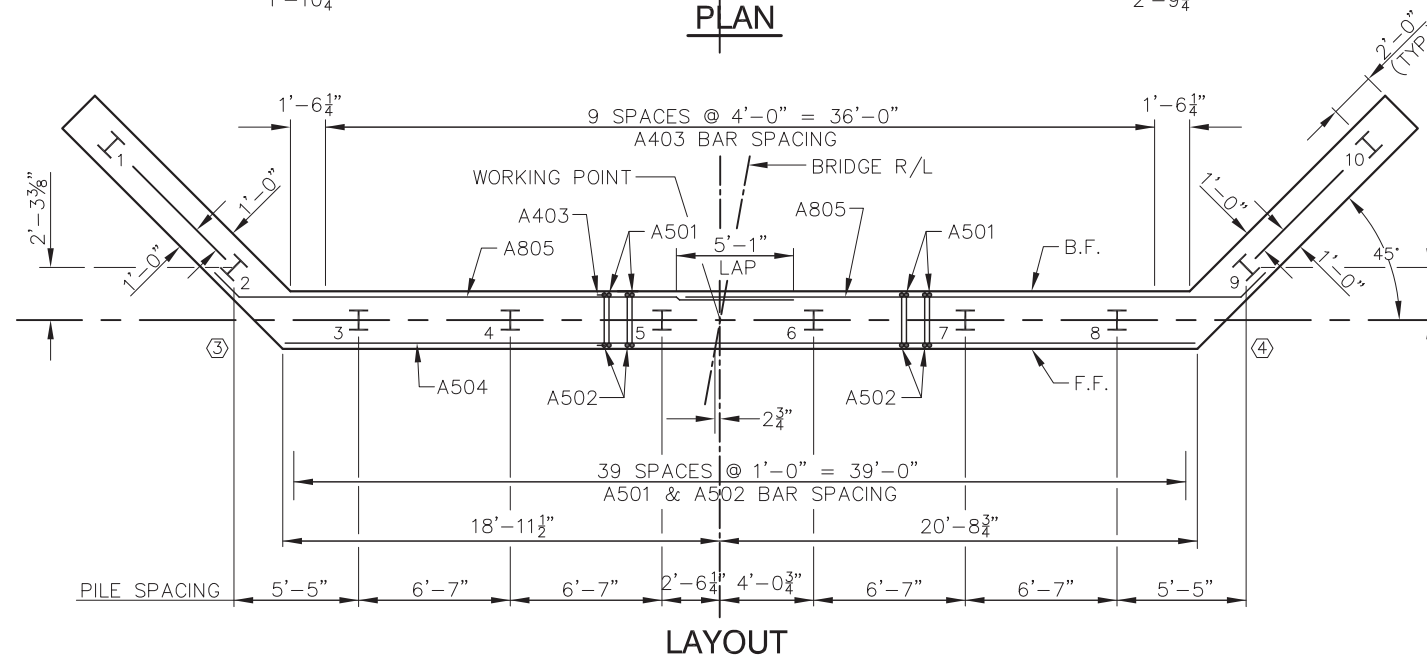
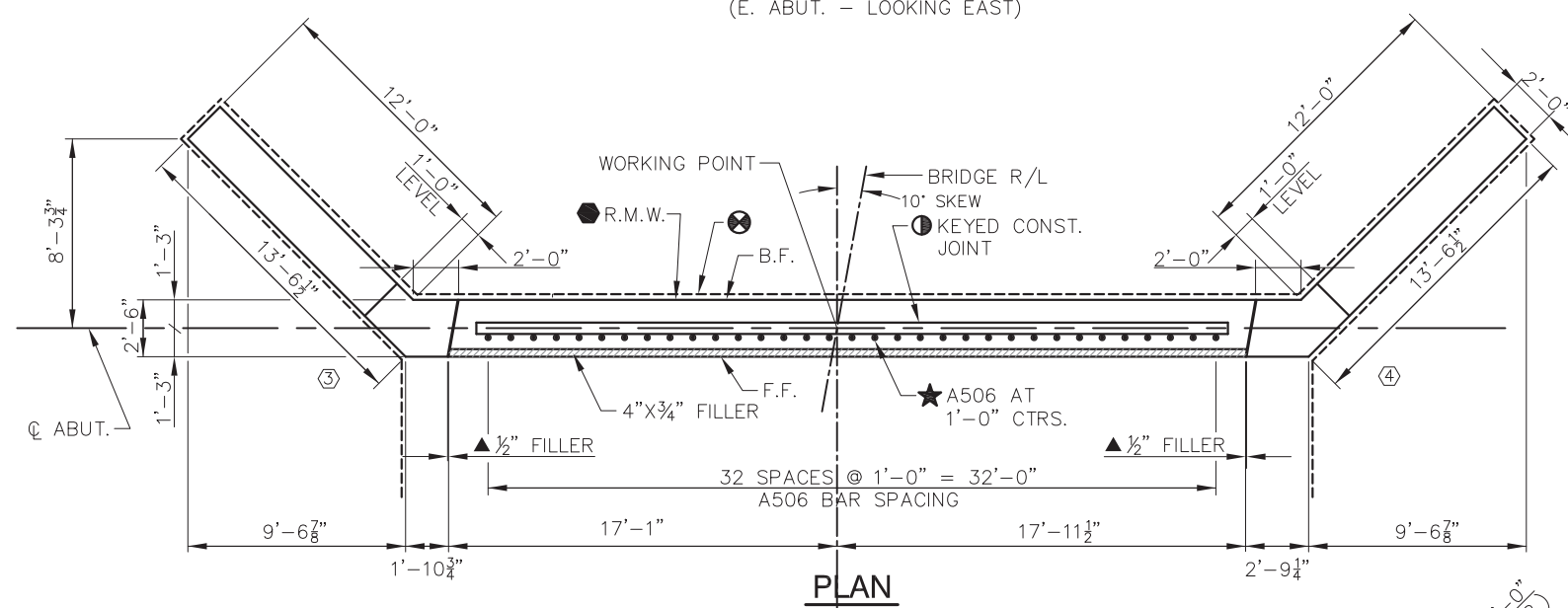
SEE DETAIL  
ON SHEET 6



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-12-181			
DRAWN BY BAS		PLANS CHECKED JFK	
WEST ABUTMENT		SHEET 4 OF 9	



- KEYED CONSTRUCTION JOINT FORMED BY A SURFACED, BEVELED 2"X6"
- 18" RUBBERIZED MEMBRANE WATERPROOFING (HORIZONTAL)
- ▲ 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE)
- ★ A506 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE IT HAS TAKEN ITS INITIAL SET. EMBED BAR 1'-0".
- ⊗ 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.



### TYPICAL SECTION THROUGH ABUTMENT BODY

NO	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION <b>STRUCTURES DESIGN SECTION</b>			
<b>STRUCTURE B-181</b>			
	DRAWN BY	BAS	PLANS CHECKED JFK
EAST ABUTMENT		SHEET 5 OF 9	
		55	



NO	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION <b>STRUCTURES DESIGN SECTION</b>			
<b>STRUCTURE B-12-181</b>			
		DRAWN BY <b>BAS</b>	PLANS CHECKED <b>JFK</b>
<b>ABUTMENT DETAILS</b>		<b>SHEET 6 OF 9</b>	
		56	

THE FIRST DIGIT OF A 3 DIGIT MARK SIGNIFIES THE BAR SIZE  
ALL BAR BEND DIMENSIONS ARE OUT TO OUT OF BAR.

STATE PROJECT NUMBER

5001-00-70

BILL OF BARS  
(ABUTMENTS)

COATED  
UNCOATED

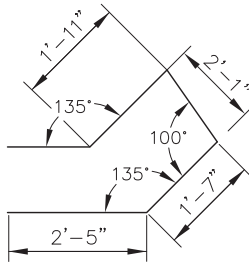
4,416 LBS.  
6,500 LBS.

MARK	NO. REQ'D	COAT	LENGTH	BENT	LENGTH
A501	160		11'-9"	X	BODY F.F. & B.F. - VERT.
A502	80		10'-8"	X	BODY TIES @ TOP. - VERT.
A403	60		2'-9"	X	BODY TIES - HORIZ.
A504	20		39'-5"		BODY F.F. - HORIZ.
A805	40		25'-5"	X	BODY B.F. - HORIZ.
A506	66	X	2'-0"		BODY - F.F. - DOWELS - VERT.
A407	60	X	14'-10"	X	WINGS 1 & 4 - STIRRUPS - VERT.
A408	60	X	16'-10"	X	WINGS 2 & 3 - STIRRUPS - VERT.
A409	8	X	15'-10"	X	WINGS 1 & 4 - F.F. & B.F. - VERT.
A410	8	X	17'-10"	X	WINGS 2 & 3 - F.F. & B.F. - VERT.
A411	8	X	13'-4"		WINGS 1 & 4 - F.F. & B.F. - VERT.
A412	8	X	15'-4"		WINGS 2 & 3 - F.F. & B.F. - VERT.
A513	40	X	14'-8"	X	WINGS 1 THRU 4 - F.F. - HORIZ.
A814	40	X	16'-3"	X	WINGS 1 THRU 4 - B.F. - HORIZ.
A415	8	X	13'-1"		WINGS 1 THRU 4 - F.F. & B.F. - HORIZ.
A416	8	X	10'-6"		WINGS 1 THRU 4 - F.F. & B.F. - HORIZ.
A417	8	X	6'-5"		WINGS 1 THRU 4 - F.F. & B.F. - HORIZ.
A418	8	X	13'-2"	X	WINGS 1 THRU 4 - HORIZ.
A419	8	X	8'-10"	X	WINGS 1 & 3 - HORIZ.
A420	8	X	9'-7"	X	WINGS 2 & 4 - HORIZ.

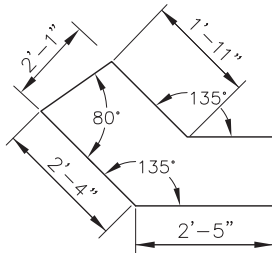
LENGTH SHOWN FOR BAR IS AN AVERAGE LENGTH AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.



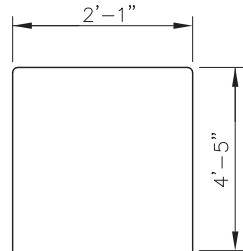
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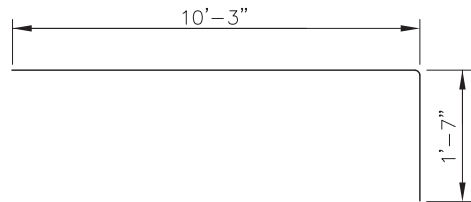
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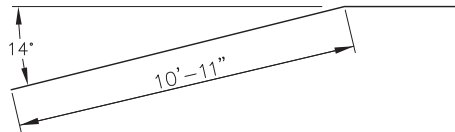
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A502



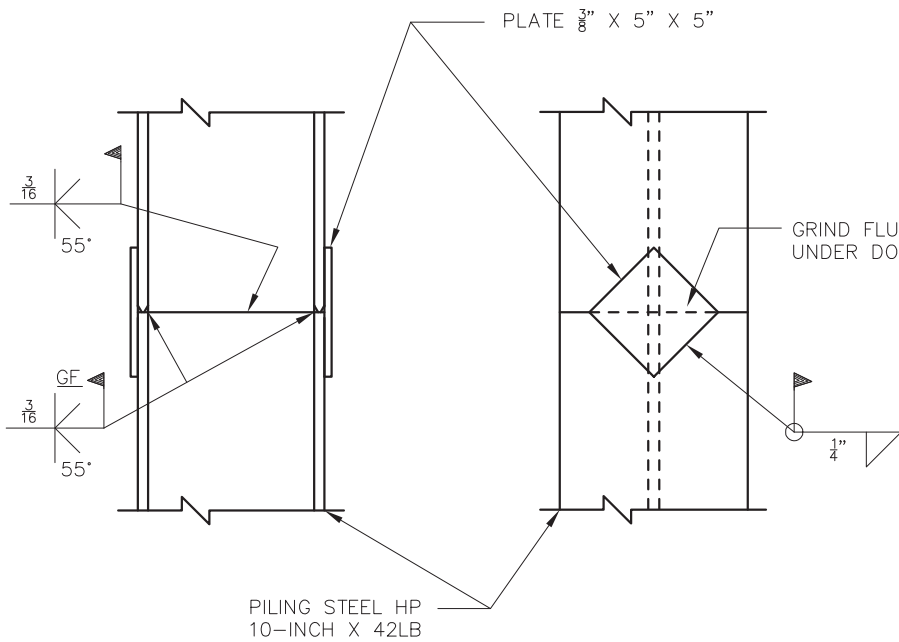
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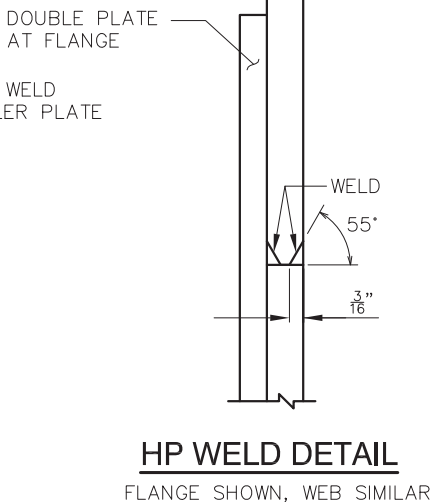
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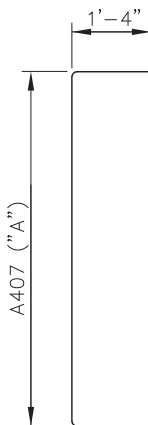
A805, A513, A814



PILE SPLICE DETAIL

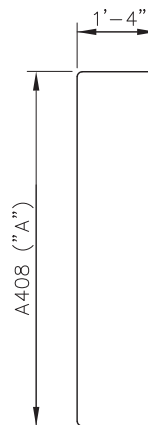


HP WELD DETAIL  
FLANGE SHOWN, WEB SIMILAR



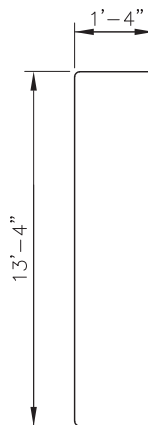
A407

MARK	"A"
A407	11'-4"
	11'-6"
	11'-7"
	11'-9"
	11'-11"
	12'-0"
	12'-2"
	12'-4"
	12'-5"
	12'-7"
	12'-8"
	12'-10"
	13'-0"
	13'-1"
	13'-3"

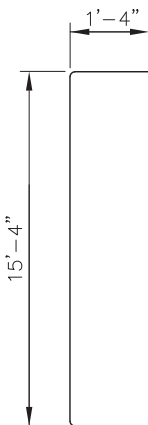


A408

MARK	"A"
A408	13'-4"
	13'-6"
	13'-7"
	13'-9"
	13'-11"
	14'-0"
	14'-2"
	14'-4"
	14'-5"
	14'-7"
	14'-9"
	14'-10"
	15'-1"
	15'-2"
	15'-3"



A409



A410

BAR SERIES TABLE

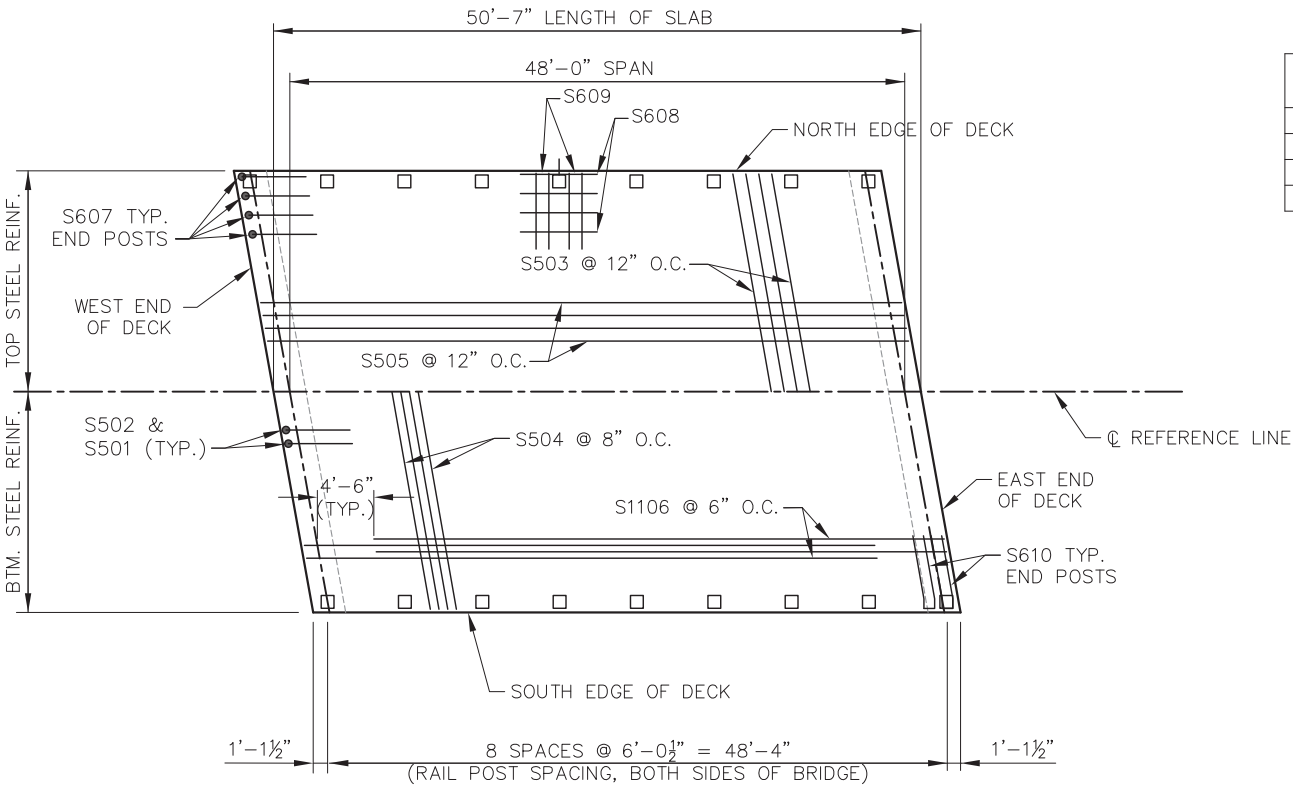
MARK	NO. REQ'D	LENGTH
A407	2 SERIES OF 15	13'-10" TO 15'-9"
A408	2 SERIES OF 15	15'-10" TO 17'-9"

NO	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-12-181			
DRAWN BY BAS		PLANS CHECKED JFK	
ABUTMENT DETAILS		SHEET 7 OF 9	

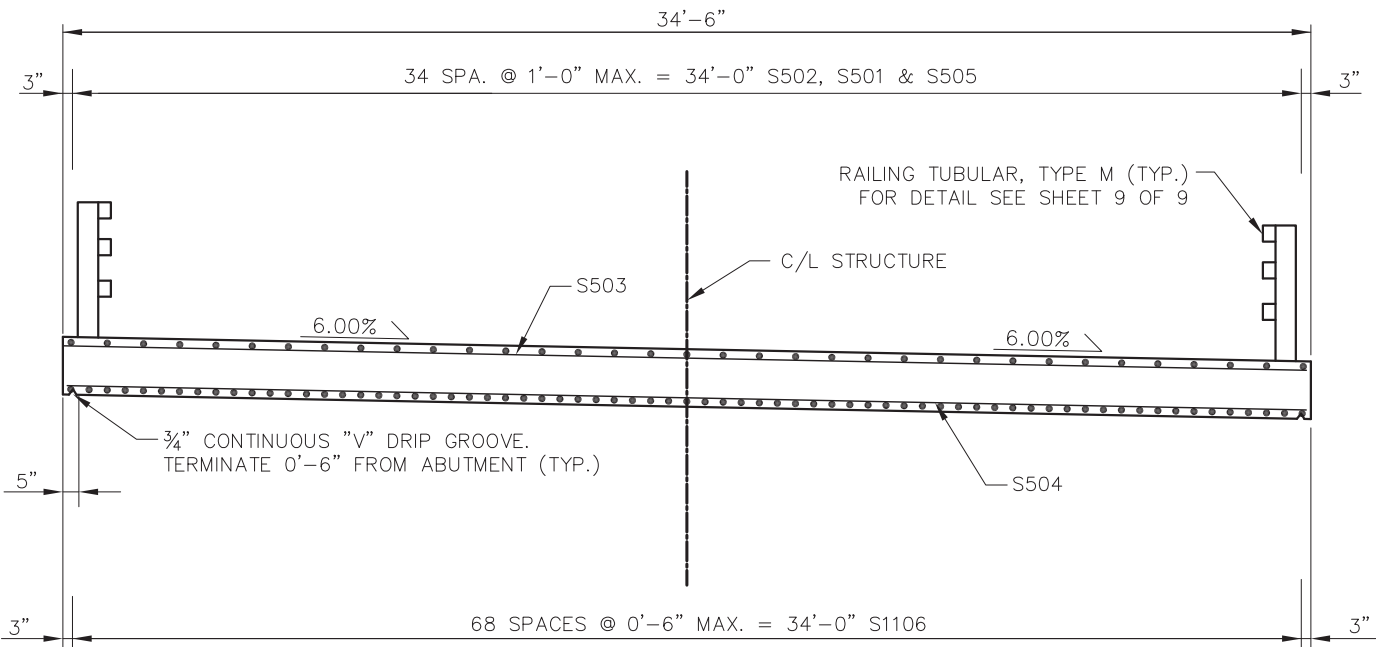


TOP OF DECK ELEVATIONS

	CL BRG. W. ABUT.	0.1 PT.	0.2 PT.	0.3 PT.	0.4 PT.	0.5 PT.	0.6 PT.	0.7 PT.	0.8 PT.	0.9 PT.	CL BRG. E. ABUT.
L/E.O.D.	743.92	743.93	743.95	743.96	743.98	743.99	744.01	744.02	744.04	744.05	744.06
CL CTH C	742.88	742.89	742.91	742.92	742.94	742.95	742.97	742.98	743.00	743.01	743.02
R/E.O.D.	741.84	741.85	741.87	741.88	741.90	741.91	741.93	741.94	741.96	741.97	741.98
CAMBER(IN.)	0	$\frac{5}{8}$ "	1 $\frac{1}{8}$ "	1 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "	1 $\frac{7}{8}$ "	1 $\frac{3}{4}$ "	1 $\frac{1}{2}$ "	1 $\frac{1}{8}$ "	$\frac{5}{8}$ "	0



PLAN



CROSS SECTION THRU ROADWAY

BILL OF BARS  
(SUPERSTRUCTURE) COATED 24,944 LBS.

MARK	NO. REQ'D	LENGTH	BENT	DESCRIPTION
S501	70	4'-5"	X	SLAB AT END OF DECK
S502	70	5'-10"	X	SLAB AT END OF DECK
S503	51	34'-8"		SLAB TOP TRANSVERSE
S504	79	34'-8"		SLAB BOTTOM TRANSVERSE
S505	35	50'-3"		SLAB TOP LONGIT.
S1106	69	44'-7"		SLAB BOTTOM LONGIT.
S607	16	6'-0"	X	AT END RAIL POSTS
S608	56	6'-0"		AT INTERIOR RAIL POSTS
S609	28	12'-4"	X	AT INTERIOR RAIL POSTS
S610	8	12'-4"	X	AT CORNER RAIL POSTS

THE FIRST DIGIT OF A 3 DIGIT MARK OR THE FIRST TWO DIGITS OF A 4 DIGIT MARK SIGNIFIES THE BAR SIZE

ALL BAR BEND DIMENSIONS ARE OUT TO OUT OF BAR.

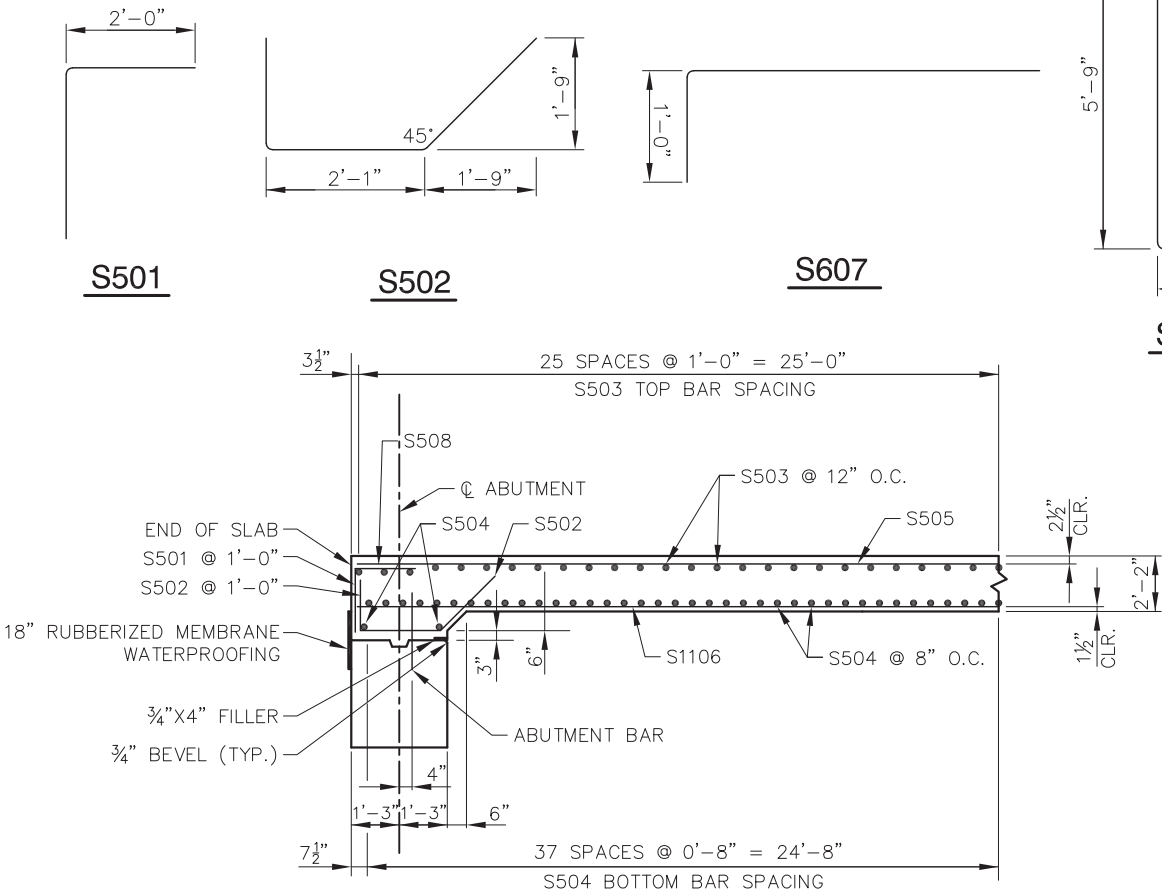
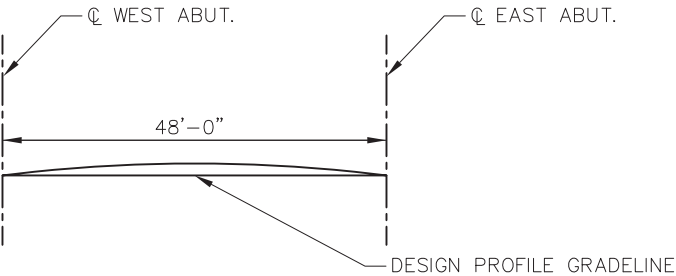
TOP TRANSVERSE BARS IN SLAB SHALL BE SUPPORTED BY INDIVIDUAL BAR CHAIRS AT APPROXIMATELY 3'-0" CENTERS.

BOTTOM LONGITUDINAL BARS SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS AT APPROXIMATELY 4'-0" CENTERS.

ALL SLAB THICKNESS DIMENSIONS ARE MINIMUM ANY TOLERANCES NECESSARY TO CORRECT CONSTRUCTION DISCREPENCES ARE TO BE PLUS (+).

SLAB CAMBER DIAGRAM

CAMBER SPAN AS SHOWN TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.



PARTIAL LONGITUDINAL SECTION

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STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION STRUCTURES DESIGN SECTION			
STRUCTURE B-12-181			
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SUPERSTRUCTURE			SHEET 8 OF 9

LEGEND

- ① W6 x 25 WITH 1½" X 1½" 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 1¼" x 11¾" x 1'-8" WITH 1½" X 1½" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ③ ASTM A449 - 1½" 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 10¾" 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 ⅝" x 11" x 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1½" 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 ⅞" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, ⅝" X 1½" X 1½" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION.)
- ⑦ ½" THK. BACK-UP PLATE WITH 2 - ⅞" X 1½" 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 ⅞" DIA. A325 BOLTS WITH HEX NUTS AND WASHERS. 6 HOLES IN TUBES AND PLATE NO. 7.
- ⑨ SPLICE SLEEVE FABRICATED FROM ¼" PLATE. PROVIDE "SLIDING FIT".
- ⑩ ⅝" X 3⅝" X 2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
- ⑩A ⅝" X 2⅝" X 2'-4" PLATE USED IN NO. 5, ⅝" X 3⅝" X 2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.
- ⑪ ⅞" | A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 1½" X 1½" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND ⅞" X 2¼" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.
- ⑫ ⅞" DIA. X 1½" LONG THREADED SHOP WELDED STUDS (2 REQ'D).
- ⑬ ⅝" 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 ⅞" DIA. X 2" LONG A325 HEX BOLT WITH NUT AND WASHER (5 REQ'D.).
- ⑮ 1" | HOLES IN TUBES NO. 5A FOR ⅞" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

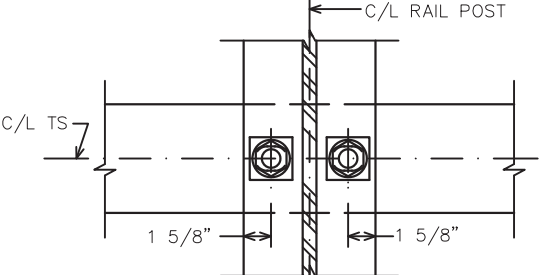
GENERAL NOTES

1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-12-0181" 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 ⅓ 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.
10. WHEN PAINTING IS REQUIRED, ALL MATERIAL EXCEPT ANCHORAGE DETAIL (NO. 3 & 4) SHALL BE PAINTED OVER GALVANIZING WITH APPROVED TIE COAT AND TOP COAT.
11. THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).
12. PLACE FIRST BOTTOM LONGITUDINAL BAR CLEAR OF DRIP GROOVE.

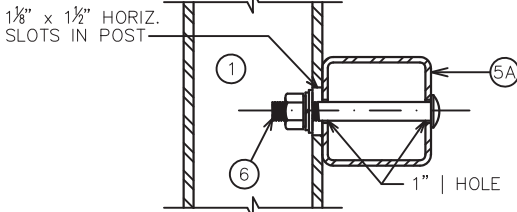
▲ TIE TO TOP MAT OF STEEL.

\* 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 2½" MIN. FOR STRIP SEAL EXP. JOINT & ½" OPENING FOR A1 ABUTMENT.



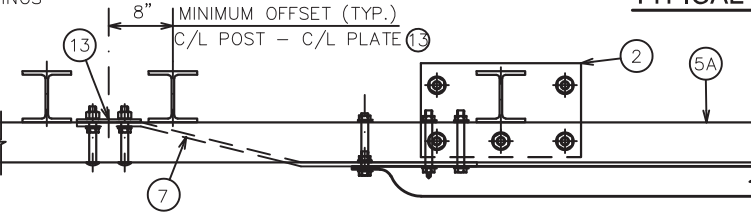
SECTION THRU POST WEB



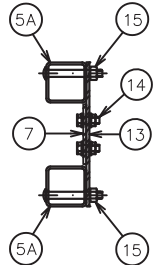
SECTION THRU RAIL

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

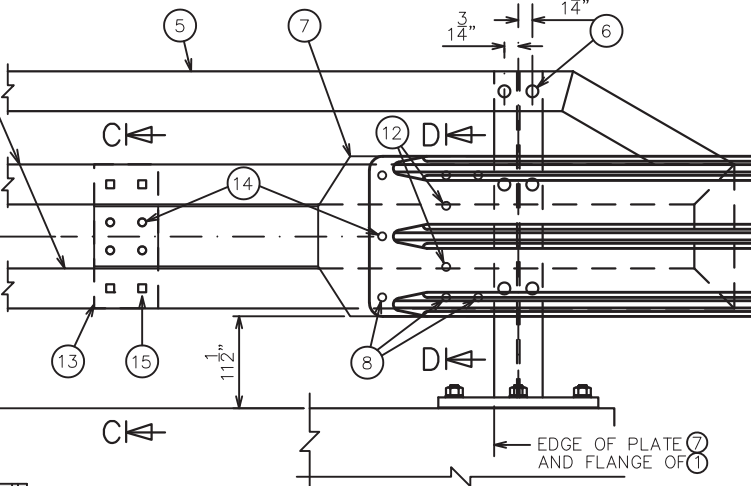
TYPICAL RAIL TO POST CONNECTIONS



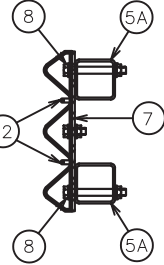
TOP VIEW AT END POST  
THRIE BEAM RAIL ATTACHMENT



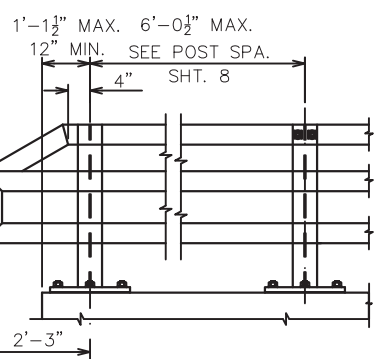
SECTION C-C



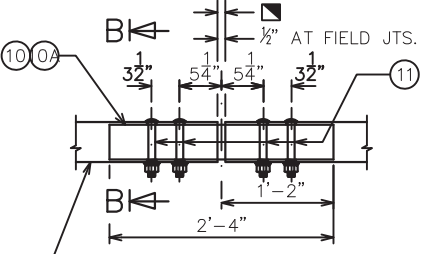
DETAIL AT END POST  
THRIE BEAM RAIL ATTACHMENT



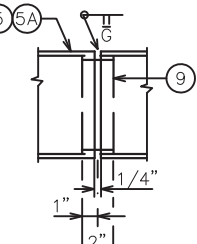
SECTION D-D



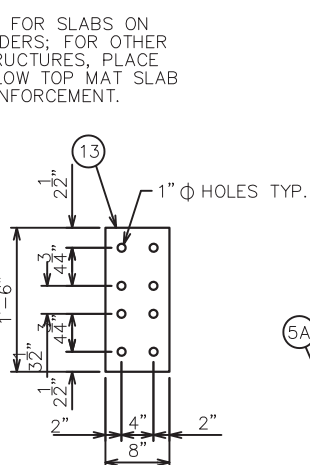
PART ELEVATION OF RAILING



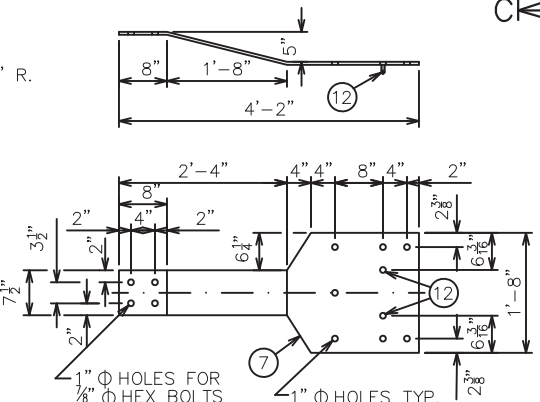
FIELD ERECTION JOINT DETAIL



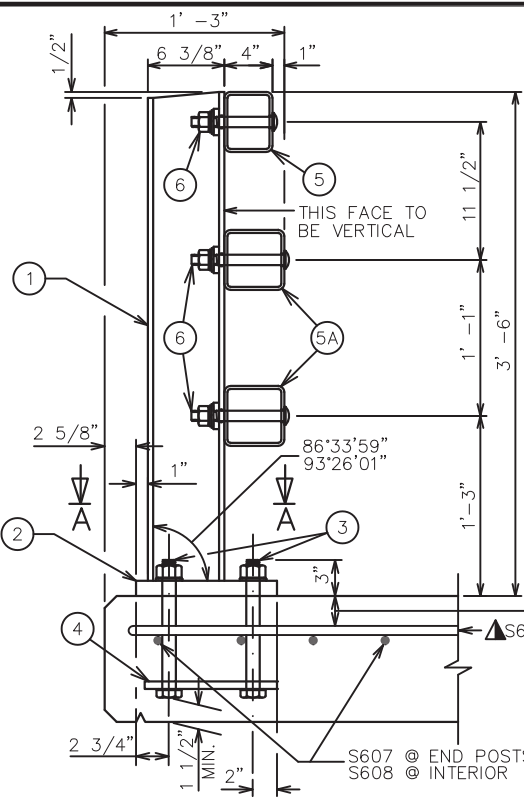
SHOP RAIL SPLICE DETAIL  
LOCATION MUST BE SHOWN ON SHOP DRAWINGS



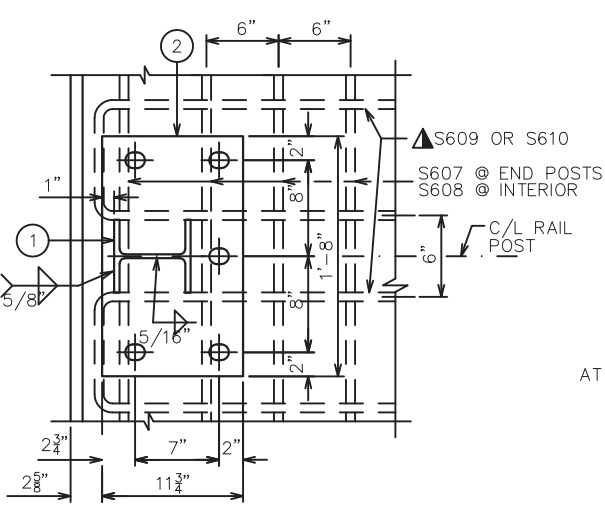
ANCHOR PLATE  
AT BEAM GUARD ATTACHMENT



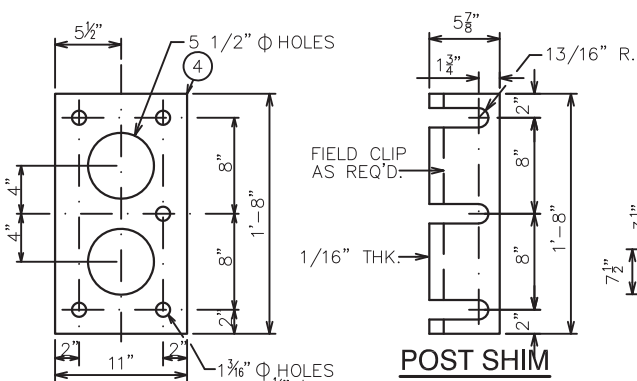
BACK-UP PLATE DETAIL  
AT BEAM GUARD ATTACHMENT



SECTION THRU RAILING ON DECK



SECTION A-A



ANCHOR PLATE  
AT RAIL TO DECK CONNECTION

POST SHIM  
DETAIL

NO.	DATE	REVISION	BY
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STATE OF WISCONSIN  
DEPARTMENT OF TRANSPORTATION  
STRUCTURES DESIGN SECTION

STRUCTURE B-12-181

DRAWN BY	BAS	PLANS CHECKED	JFK
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TUBULAR STEEL  
RAILING TYPE M

SHEET 9 OF 9