

LAX
PROJECT ID: 5056-00-70
WITH: N/A
COUNTY: RICHLAND

NOVEMBER 2018
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 = 48



DESIGN DESIGNATION

A.A.D.T. (2019)	= 45
A.A.D.T. (2039)	= 65
D.H.V. (2039)	= 6
D.D.	= 60/40
T.	= 10% (ASSUMED)
DESIGN SPEED	= 35 MPH
ESALS	= 40,150

CONVENTIONAL SYMBOLS

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

PROFILE	
GRADE LINE	---
ORIGINAL GROUND	---
MARSH OR ROCK PROFILE (To be noted as such)	---
SPECIAL DITCH	---
GRADE ELEVATION	---
CULVERT (Profile View)	---
UTILITIES	
ELECTRIC	---
FIBER OPTIC	---
GAS	---
SANITARY SEWER	---
STORM SEWER	---
TELEPHONE	---
WATER	---
UTILITY PEDESTAL	---
POWER POLE	---
TELEPHONE POLE	---

STRUCTURE
AS-BUILT PLAN

SUPERVISOR: Joe Gregas
PROJECT MANAGER: Dan Kleinertz
PROJECT LEADER: Brad Schroeder
CONTRACTOR: Concrete Structures
CONSTRUCTION STARTED 5/22/2019
SUBSTANTIALLY COMPLETE 7/16/2019

Subcontractor List
DL Gasser Construction
Safemark, LLC.
Bob Ewers Contracting
SJK Engineering

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

TOWN OF ITHACA, SPIRAL ROAD

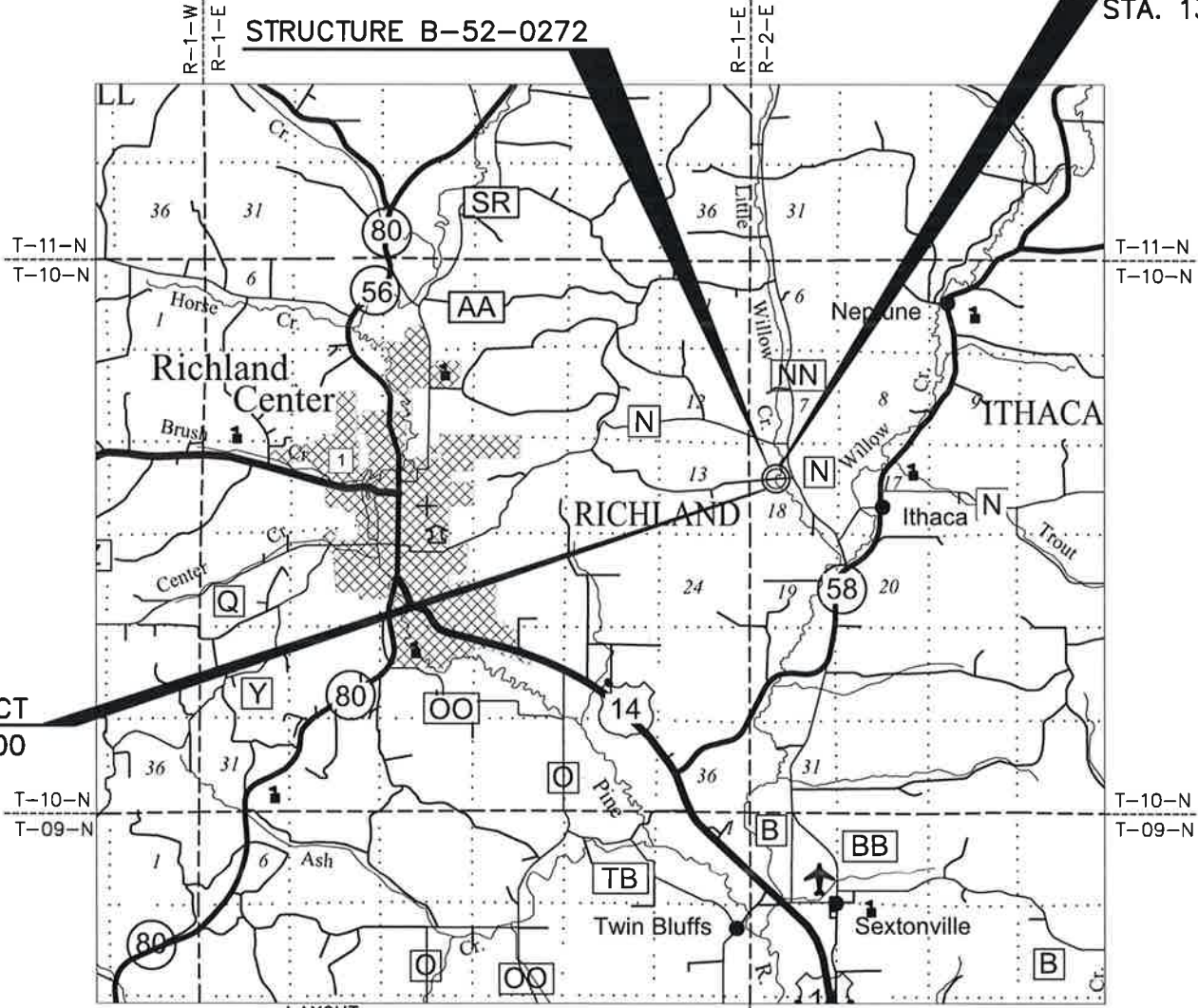
(LITTLE WILLOW CREEK BRIDGE B-52-0272)

LOCAL STREET
RICHLAND COUNTY

STATE PROJECT NUMBER
5056-00-70

BEGIN PROJECT
STA. 11+00
Y = 448,884.24
X = 697,354.40

END PROJECT
STA. 13+00



TOTAL NET LENGTH OF CENTERLINE = 0.038

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

"ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)."

STATE PROJECT	FEDERAL PROJECT	
5056-00-70	PROJECT	CONTRACT

ACCEPTED FOR
COUNTY of RICHLAND
4-23-18 (Date) Bill Condon (Highway Commissioner)

ACCEPTED FOR
TOWN of ITHACA
4-18-2018 (Date) Dan Kleinertz (Town Chairman)

ORIGINAL PLANS PREPARED BY
JEWELL
associates engineers, inc.
Engineers - Architects - Surveyors

WISCONSIN
ELLERY A. SCHAFFER
E-41742-6
SPRING GREEN, WI
PROFESSIONAL ENGINEER

4/11/2018 (Date) [Signature]

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY
Surveyor: JEWELL ASSOCIATES ENGINEERS, INC.
Designer: JEWELL ASSOCIATES ENGINEERS, INC.
Management Consultant: KL ENGINEERING, INC.

APPROVED FOR THE DEPARTMENT
DATE: 4/27/18
[Signature]
Management Consultant Signature

E

LIVE LOAD:

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

CONCRETE MASONRY, SLAB _____	$f'c = 4,000$ P.S.I.
ALL OTHER _____	$f'c = 3,500$ P.S.I.
HIGH-STRENGTH BAR STEEL _____	
REINFORCEMENT, GRADE 60 _____	$f_y = 60,000$ P.S.I.

ABUTMENTS TO BE SUPPORTED ON PILING STEEL HP 10-INCH X 42 LB DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 140 TONS** PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATE 45 FT PILE LENGTHS AT THE WEST ABUTMENT AND 35 FT AT THE EAST ABUTMENT.

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

A.D.T. (2019)	45
A.D.T. (2039)	65
DESIGN SPEED	35 M.P.H.

100 YEAR FREQUENCY	
DRAINAGE AREA _____	12.0 SQ. MI.
Q ₁₀₀ TOTAL _____	2,170 C.F.S.
THROUGH STRUCTURE _____	1,759 C.F.S.
OVERTOPPING ROADWAY _____	375
VELOCITY - THROUGH STRUCTURE _____	8.4 F.P.S.
WATERWAY AREA - THROUGH STRUCTURE _____	215 SQ. FT.
HIGH WATER ₁₀₀ ELEVATION _____	746.35
SCOUR CRITICAL CODE _____	5

DESIGN ROADWAY OVERFLOW	
ROADWAY OVERTOPPING FREQUENCY _____	20 YRS.
Q _{OVERTOPPING} _____	1,340 C.F.S.
OVERTOPPING ELEVATION _____	745.43

EROSION CONTROL

Q ₂ _____	400 C.F.S.
HIGH WATER ₂ ELEVATION _____	738.87
VELOCITY ₂ _____	8.8 F.P.S.

GENERAL PLAN	1.
CROSS SECTION AND QUANTITIES	2.
SUBSURFACE EXPLORATION	3.
ABUTMENTS	4.
ABUTMENT DETAILS	5.
SUPERSTRUCTURE	6.
RAILING TUBULAR TYPE M	7.



RIPRAP HEAVY LAYOUT

POINT	STATION	OFFSET
A	11+96	30' LT.
B	12+19	30' LT.
C	12+25	31' LT.
D	12+43	31' LT.
E	12+43	30' RT.
F	12+26	30' RT.
G	12+10	40' RT.
H	11+96	40' RT.

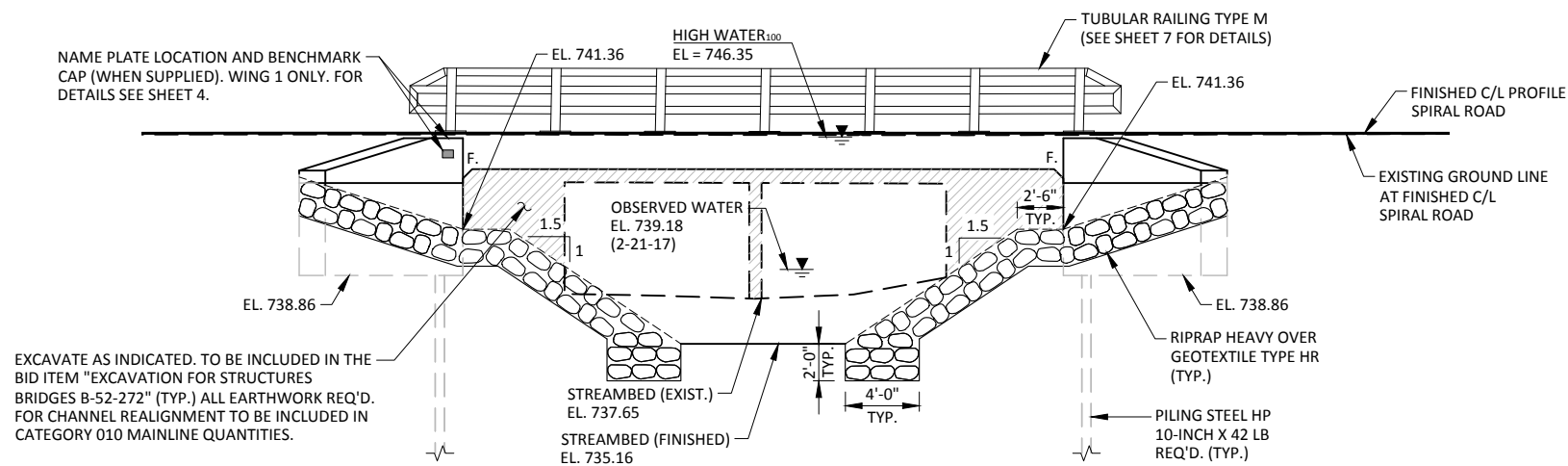
BENCH MARKS

NO.	STA.	DESCRIPTION	ELEV.
1	10+49	3/4" IRON ROD FOUND, 33.7' RT	743.38
2	12+59	3/4" IRON ROD FOUND, 14.9' LT	745.16
3	14+21	3/4" IRON ROD FOUND, 11.8' RT	745.64
4	11+57	STAR SPIKE IN PPOL, 24.4' LT	746.17

ALUMINUM CAP SW WING, ELEV 746.29

PLAN B-52-272

(SINGLE-SPAN REINFORCED CONCRETE FLAT SLAB)



ELEVATION

(NORMAL TO LITTLE WILLOW CREEK)

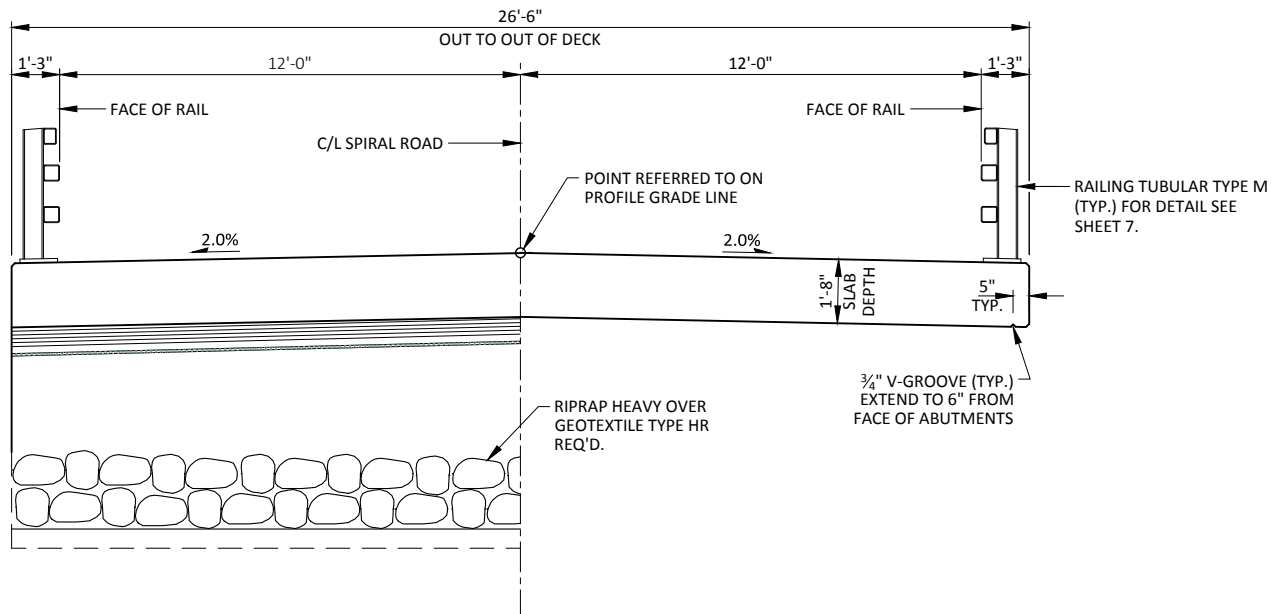
**DESIGN CONSULTANT**

PATRICK BOLAND, PE
(608) 588-7484

BRIDGE OFFICE CONTACT

WILLIAM DREHER, PE
(608) 266-8489

NO.	DATE	REVISION	BY
JEWELL associates engineers, inc. <i>Engineers - Architects - Surveyors</i>		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> R E D R E E <input type="checkbox"/> <input type="checkbox"/> R E E E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3 <input type="checkbox"/> <input type="checkbox"/> E <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 3	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
ACCEPTED	<i>William C. Diehn</i> SDR CHIEF STRUCTURES DESIGN ENGINEER		05/25/18 DATE
STRUCTURE B-52-272			
SPIRAL ROAD OVER LITTLE WILLOW CREEK			
COUNTY	RICHLAND	TOWN/CITY/VILLAGE	ITHACA
DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS			
DESIGNED BY PTB	DESIGN CK'D.	DRAWN BY RBH	PUBLISHED BY PTB RBH
GENERAL PLAN		SHEET 1 OF 7	

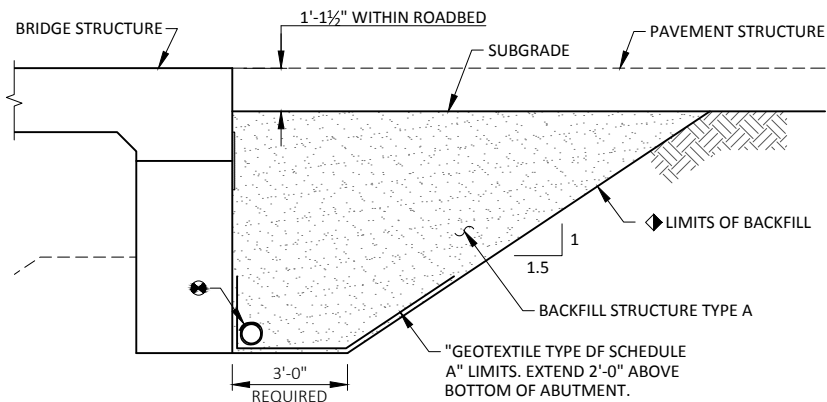


AT ABUTMENT

IN SPAN

PROPOSED CROSS-SECTION THROUGH ROADWAY

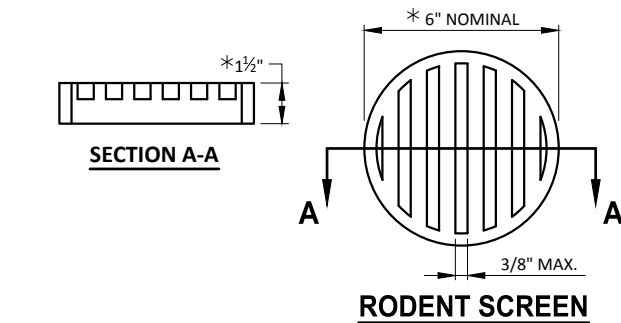
LOOKING EAST

**BACKFILL STRUCTURE DETAIL**

ABUTMENT BODY SHOWN - WINGWALLS SIMILAR (TYPICAL AT BOTH ABUTMENTS)

◆ BACKFILL STRUCTURE TYPE A PAY LIMITS. BACKFILL BEYOND PAY LIMITS SHALL BE INCIDENTAL TO THE BID ITEM "EXCAVATION FOR STRUCTURES B-52-272". LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

⚙ PIPE UNDERDRAIN WRAPPED (6-INCH), SLOPED 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SCREEN AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON THIS SHEET. RODENT SCREEN TO BE INCLUDED IN THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH."



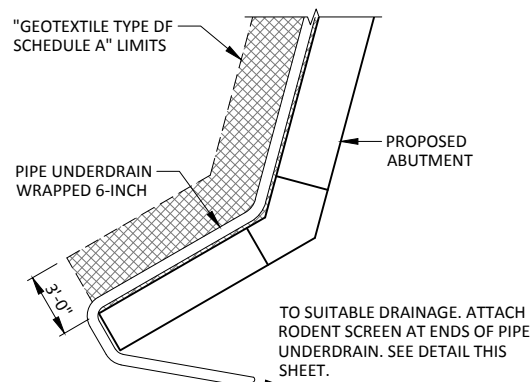
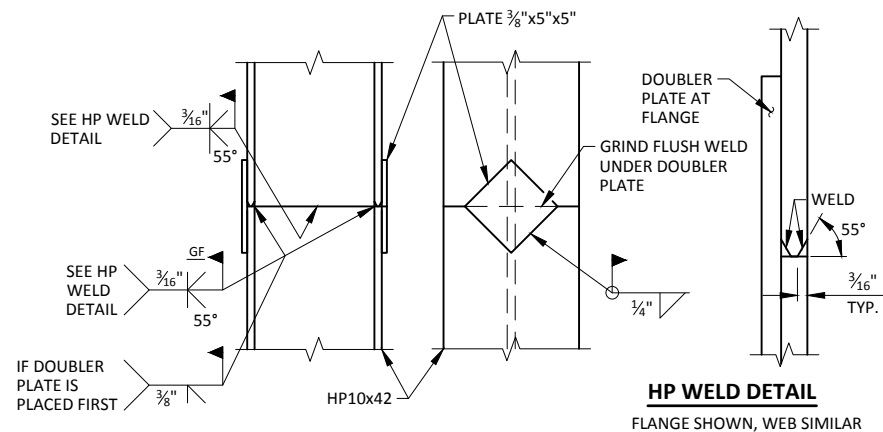
NOTES:

* DIMENSIONS ARE APPROXIMATE. THE GRATE IS SIZED TO FIT INTO A PIPE COUPLING.

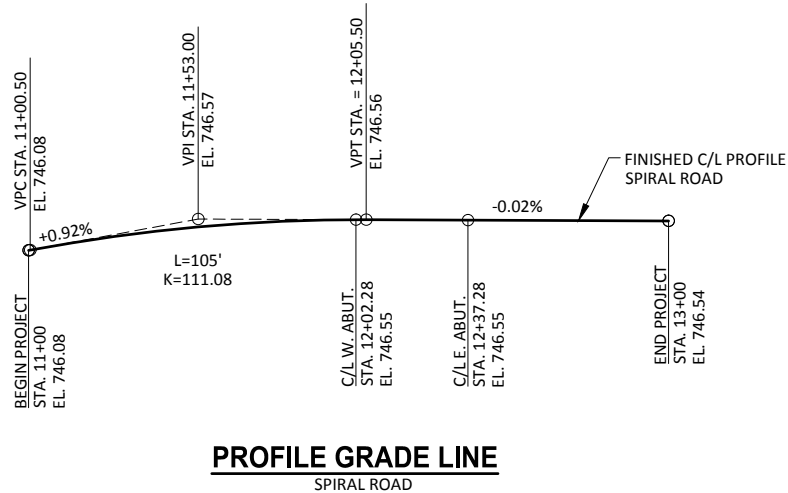
ORIENT SCREEN SO SLOTS ARE VERTICAL.

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

THE RODENT SCREEN 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 SCREEN TO THE EXPOSED ENDS OF THE PIPE UNDERDRAIN. THE SCREEN SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

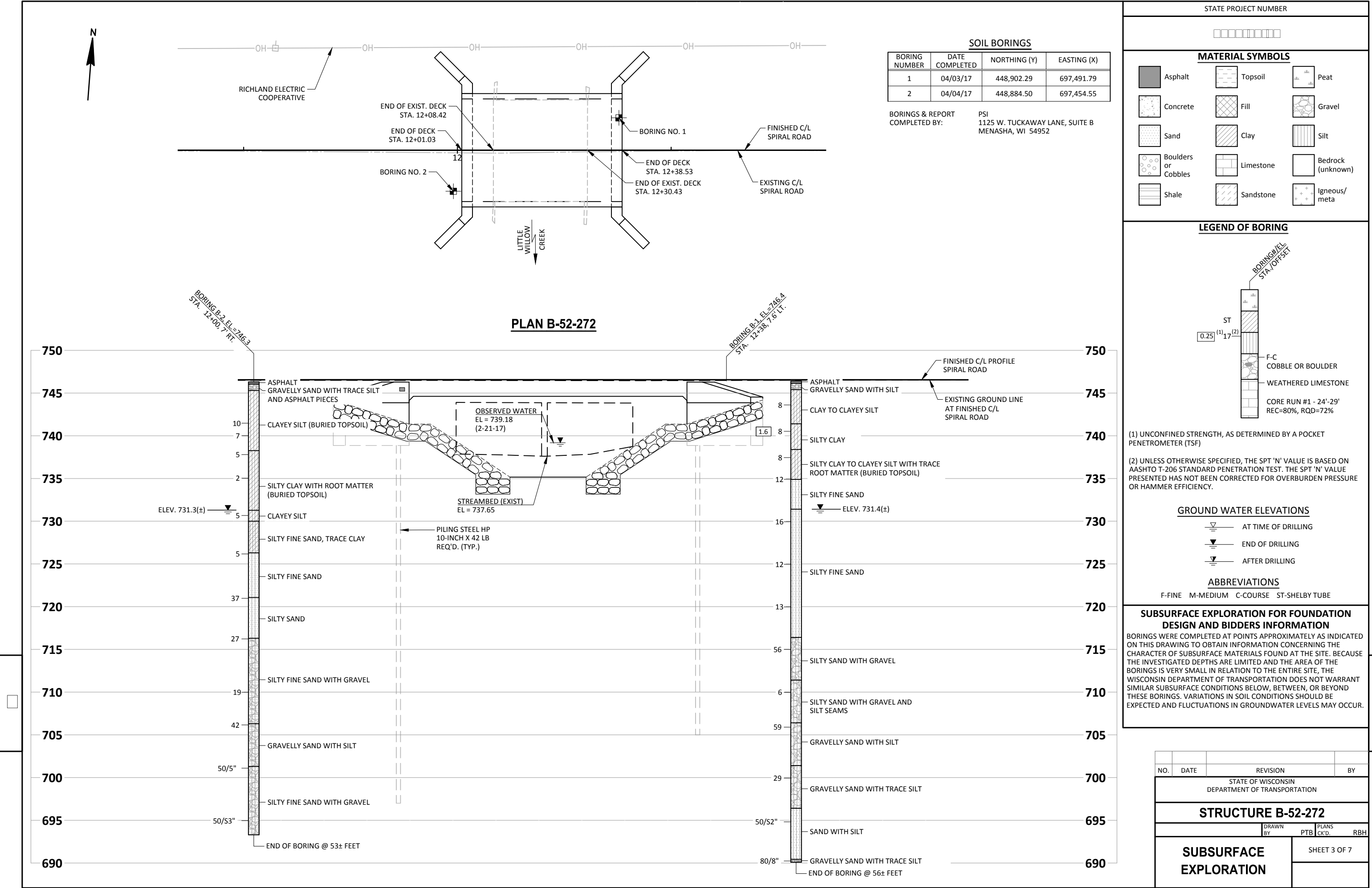
**PIPE UNDERDRAIN DETAIL****PILE SPlice DETAIL**

STEEL "HP" PILE MATERIAL SHALL BE ASTM A 572 GRADE 50.

**TOTAL ESTIMATED QUANTITIES**

ITEM NUMBER	ITEM DESCRIPTION	UNIT	W. ABUT.	SUPER	E. ABUT.	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA. 12+19	LS	--	--	--	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-52-272	LS	--	--	--	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	140	--	140	280
502.0100	CONCRETE MASONRY BRIDGES	CY	25	65	25	115
502.3200	PROTECTIVE SURFACE TREATMENT	SY	--	130	--	130
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2,025	--	2,025	4,050
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,345	11,880	1,345	14,570
513.4061	RAILING TUBULAR TYPE M B-52-272	LF	--	79	--	79
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	6	--	6	12
550.1100	PIILING STEEL HP 10-INCH X 42 LB	LF	270	--	220	490
606.0300	RIPRAP HEAVY	CY	100	--	85	185
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	80	--	80	160
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	45	--	45	90
645.0120	GEOTEXTILE TYPE HR	SY	170	--	140	310
NON-BID ITEMS						
FILLER		SIZE				1/2" & 3/4"
NAME PLATE						

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-52-272			
DRAWN BY		PTB	PLANS CK'D. RBH
CROSS SECTIONS AND QUANTITIES			SHEET 2 OF 7



NOTES

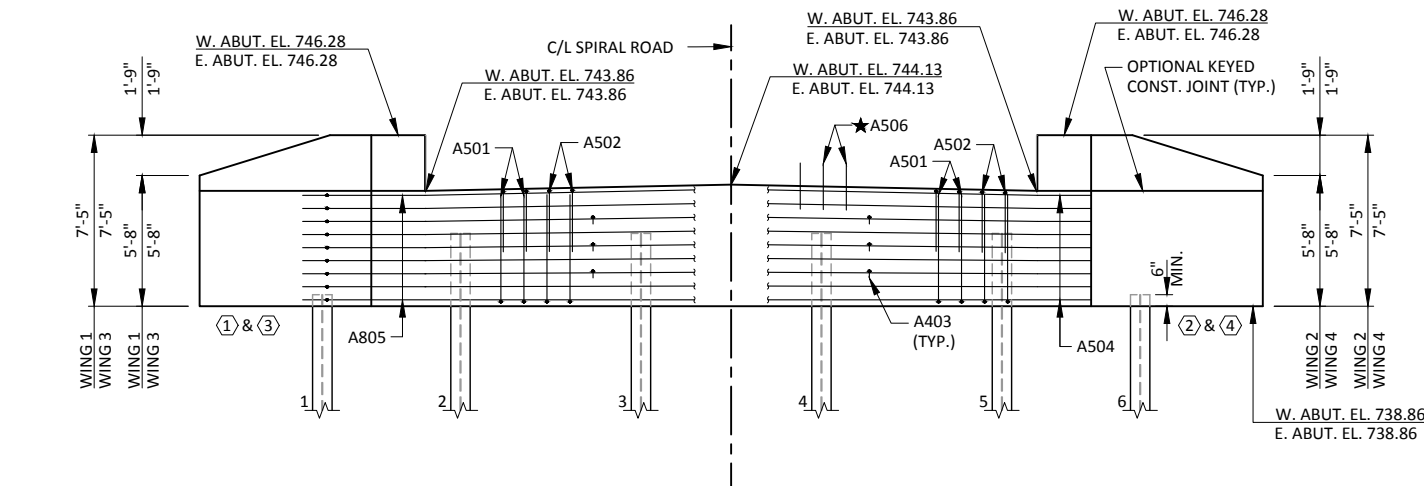
SOME BARS HAVE BEEN OMITTED FOR CLARITY. SEE SHEET 5 FOR BILL OF BARS.

DO NOT PLACE FILL HIGHER THAN 3 FEET FROM BOTTOM OF ABUTMENT UNTIL SUPERSTRUCTURE IS IN PLACE.

SPACE REINFORCEMENT TO MISS PILING

F.F. - FRONT FACE

B.F. - BACK FACE

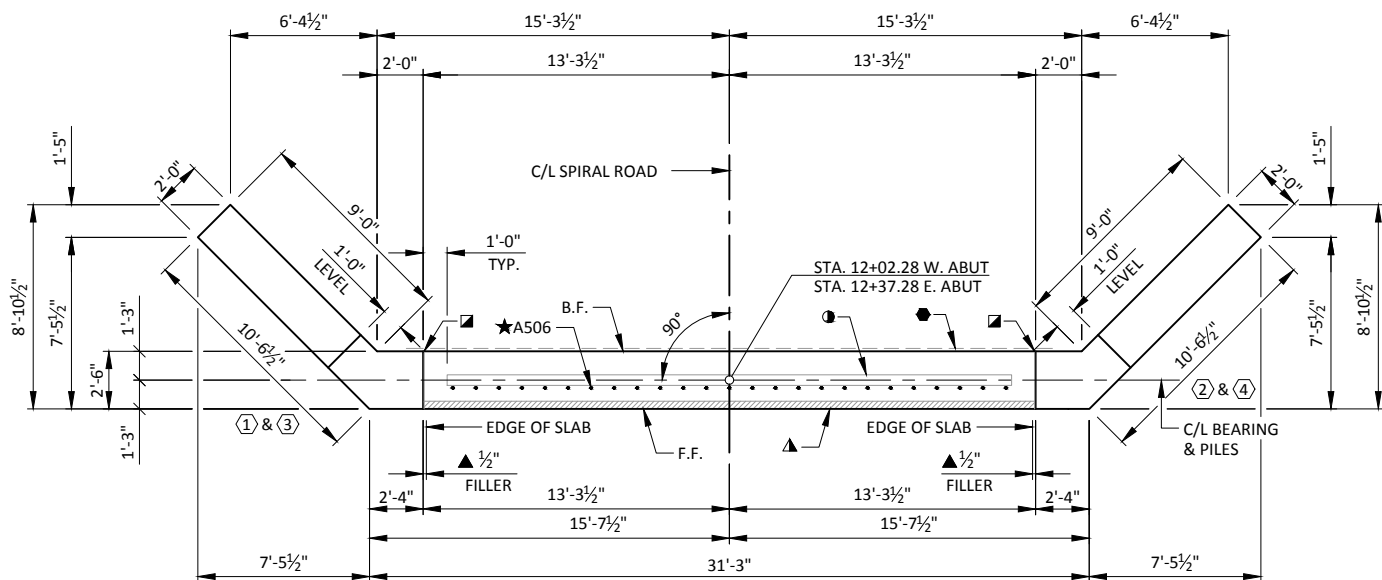


BACK FACE BAR STEEL REINF.

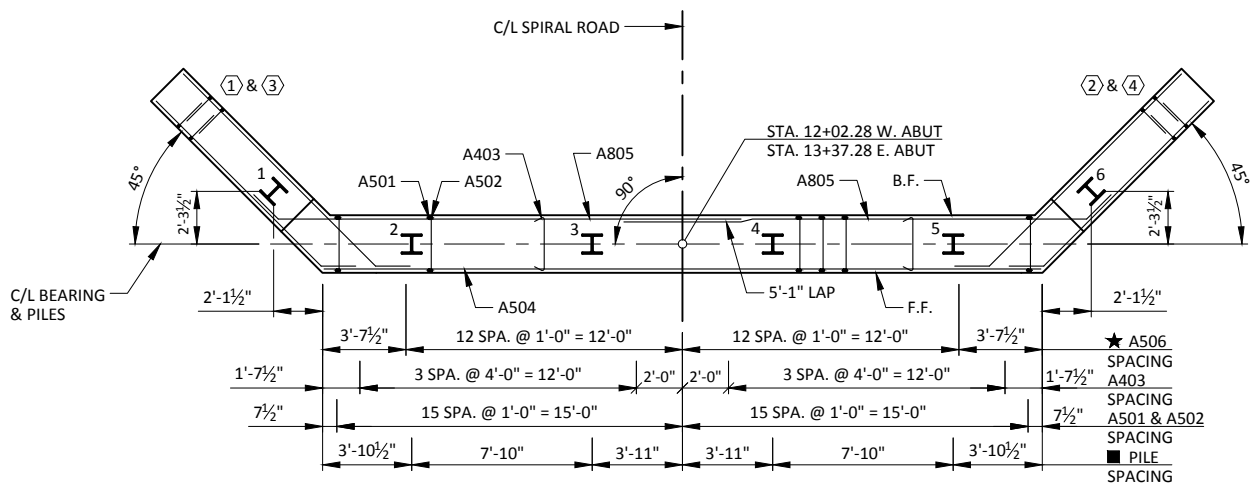
ELEVATION

(WEST ABUTMENT LOOKING WEST)
(EAST ABUTMENT LOOKING EAST)

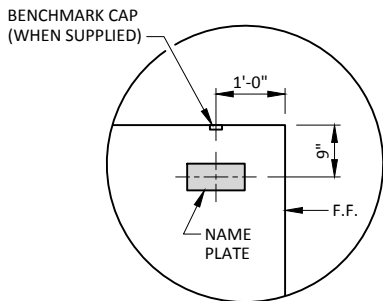
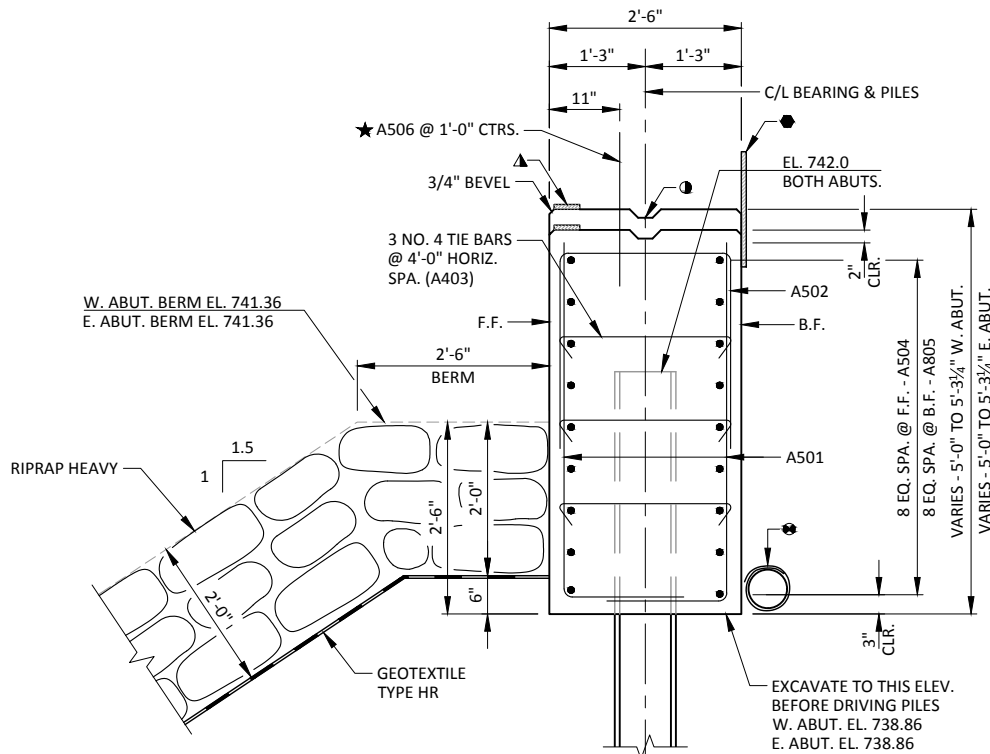
FRONT FACE BAR STEEL REINF.



PLAN



LAYOUT

NAME PLATE AND
BENCHMARK CAP DETAIL

TYPICAL SECTION THROUGH ABUTMENT BODY

LEGEND

① KEYED CONSTRUCTION JOINT FORMED BY SURFACED & BEVELED 2x6.

■ VERTICAL 18" RUBBERIZED MEMBRANE WATERPROOFING EXTEND FROM 9" BELOW BRIDGE SEAT TO 1" BELOW TOP OF WINGS.

● 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 1/2" BELOW SURFACE OF CONCRETE)

▲ 3/4" x 4" PREFORMED FILLER, EXTEND FULL LENGTH OF ABUTMENTS BETWEEN EDGES OF SLAB.

★ A506 BARS MAY BE PLACED AFTER CONCRETE IS POURED BUT BEFORE IT HAS TAKEN ITS INITIAL SET. EMBED BAR 1'-0".

■ PILE SPACING MEASURED AT BASE OF ABUTMENT BODY.

● PIPE UNDERDRAIN WRAPPED (6-INCH), SLOPED 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SCREEN AT ENDS OF PIPE UNDERDRAIN AS DETAILED ON SHEET 2. RODENT SCREEN TO BE INCLUDED IN THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH."

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-52-272			
DRAWN BY		PTB	PLANS CK'D. RBH
ABUTMENTS			SHEET 4 OF 7

BILL OF BARS
TWO ABUTMENTS SHOWN

2,690 LB (COATED)
4,050 LB (UNCOATED)

BAR MARK	NO. REQ'D.	LENGTH	BENT	COAT	BAR SERIES	LOCATION
A501	124	6-1	X			BODY - VERT. - F.F & B.F.
A502	62	7-11	X			BODY - VERT. - TOP
A403	48	2-8	X			TIE BARS
A504	18	31-0				BODY - HORIZ. - F.F.
A805	36	21-8	X			BODY - HORIZ. - B.F.
A506	50	2-0		X		BODY - VERT. - DOWELS
A407	88	8-7	X	X	✱	WINGS - VERT. - F.F. & B.F.
A408	32	7-0		X		WINGS - VERT.
A409	4	3-0		X		WINGS - VERT. - TOP
A510	36	11-9	X	X		WINGS - HORIZ. - F.F.
A811	36	13-5	X	X		WINGS - HORIZ. - B.F.
A412	8	8-0		X		WINGS - HORIZ. - F.F. & B.F.
A413	8	4-6		X		WINGS - HORIZ. - F.F. & B.F.
A414	8	9-0		X		WINGS - HORIZ. - F.F. & B.F. - TOP
A415	12	9-6	X	X		WINGS - HORIZ. - TOP

NOTES: THE FIRST DIGIT OF A BAR MARK SIGNIFIES THE BAR SIZE.

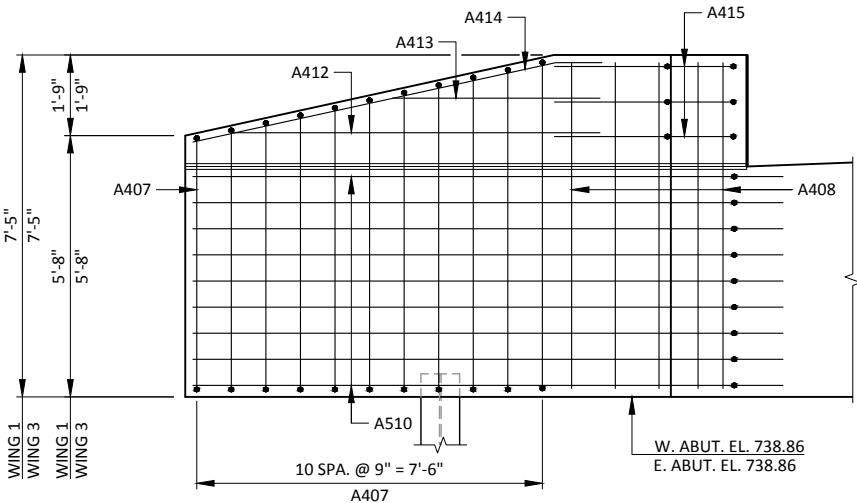
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

✱ LENGTH SHOWN IS AN AVERAGE LENGTH ONLY. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.

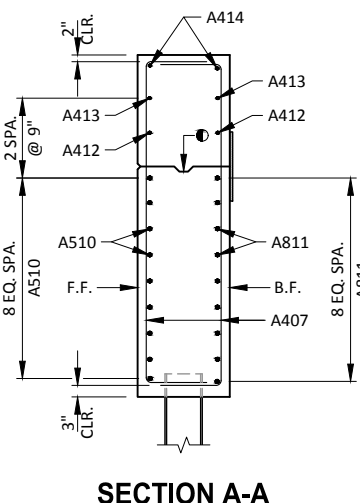
BAR SERIES TABLE

BAR MARK	NO. REQ'D.	LENGTH
A407	8 SERIES OF 11	9-5 TO 7-9

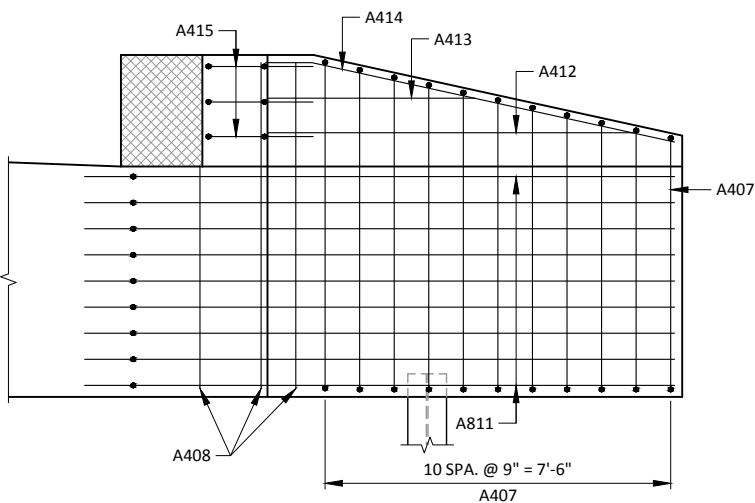
BUNDLE AND TAG EACH SERIES SEPARATELY.



F.F. ELEVATION - WINGS 1 & 3
WINGS 1 & 3 SHOWN. WINGS 2 & 4 SIMILAR



SECTION A-A



B.F. ELEVATION - WINGS 1 & 3
WINGS 1 & 3 SHOWN. WINGS 2 & 4 SIMILAR

LEGEND

OPTIONAL KEYED CONSTRUCTION JOINT FORMED BY SURFACED & BEVELED 2x6. 3/4" "V" GROOVE AT FRONT FACE OF WING WALL AND HORIZONTAL 18" RUBBERIZED MEMBRANE WATERPROOFING AT BACK FACE IF CONSTRUCTION JOINT IS USED. COST IS INCIDENTAL TO THE BID ITEM "CONCRETE MASONRY BRIDGES".

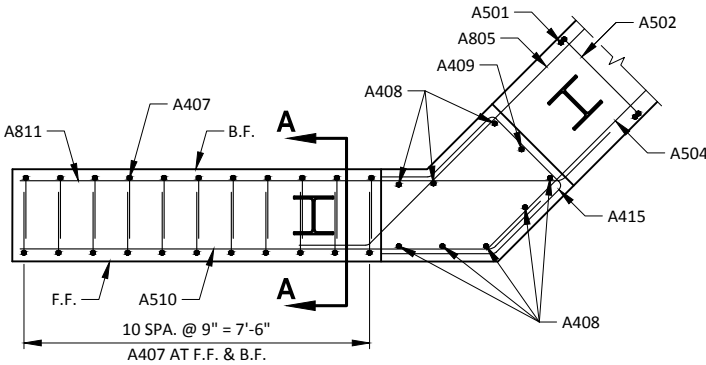
NOTES

SOME BARS HAVE BEEN OMITTED FOR CLARITY. SEE THIS SHEET FOR BILL OF BARS.

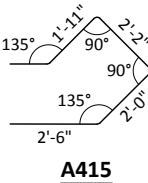
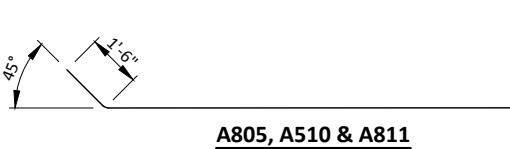
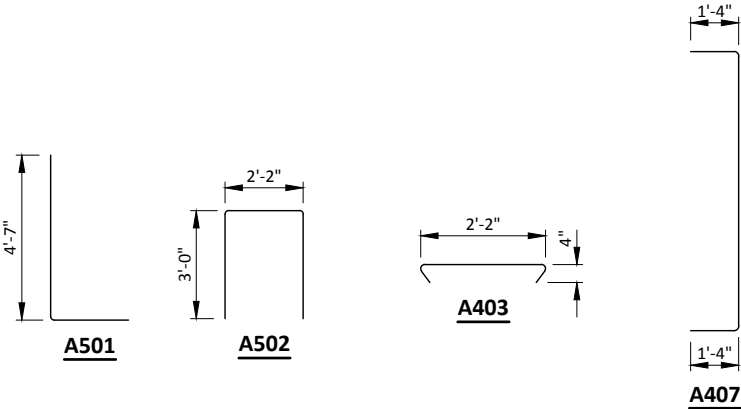
SPACE REINFORCEMENT TO MISS PILING

F.F. - FRONT FACE

B.F. - BACK FACE



PLAN VIEW - WINGS 1 & 3
WINGS 1 & 3 SHOWN. WINGS 2 & 4 SIMILAR



NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-52-272			
DRAWN BY PTB		PLANS CK'D. RBH	
ABUTMENT DETAILS			SHEET 5 OF 7

BILL OF BARS
SUPERSTRUCTURE

11,880 LB (COATED)

BAR MARK	NO. REQ'D.	LENGTH	BENT	COAT	LOCATION
S501	54	7-0	X	X	END OF DECK
S502	19	37-2		X	SLAB - TOP - LONGIT.
S503	44	26-2		X	SLAB - TOP - TRANS.
S504	43	26-2		X	SLAB - BOTTOM - TRANS.
S1005	51	32-1		X	SLAB - BOTTOM - LONGIT.
S1006	2	37-2		X	SLAB - BOTTOM - LONGIT. - EDGES
S607	40	6-0		X	RAIL POSTS - INTERIOR
S608	16	6-0	X	X	RAIL POSTS - ENDS
S609	28	12-0	X	X	RAIL POSTS

NOTES: THE FIRST DIGIT OF A THREE DIGIT BAR MARK AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR MARK SIGNIFIES THE BAR SIZE.

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

SOME BARS HAVE BEEN OMITTED FOR CLARITY.

SURVEY TOP OF DECK ELEVATIONS

	W. ABUT.	0.50 PT.	E. ABUT.
NORTH EDGE OF DECK			
CENTER LINE			
SOUTH EDGE OF DECK			

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF DECK ELEVATIONS AT THE C/L OF THE ABUTMENTS AND AT 0.50 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG THE EDGE OF DECK AND CENTER LINE. RECORD THE ELEVATIONS IN THE ABOVE TABLE FOR THE "AS BUILT" PLANS.

NOTES

SUPPORT ALTERNATE TOP TRANSVERSE BARS IN SLAB BY INDIVIDUAL BAR CHAIRS AT APPROX. 3'-0" CENTERS. SUPPORT BOTTOM LONGITUDINAL BARS BY CONTINUOUS BAR CHAIRS AT APPROX. 4'-0" CENTERS.

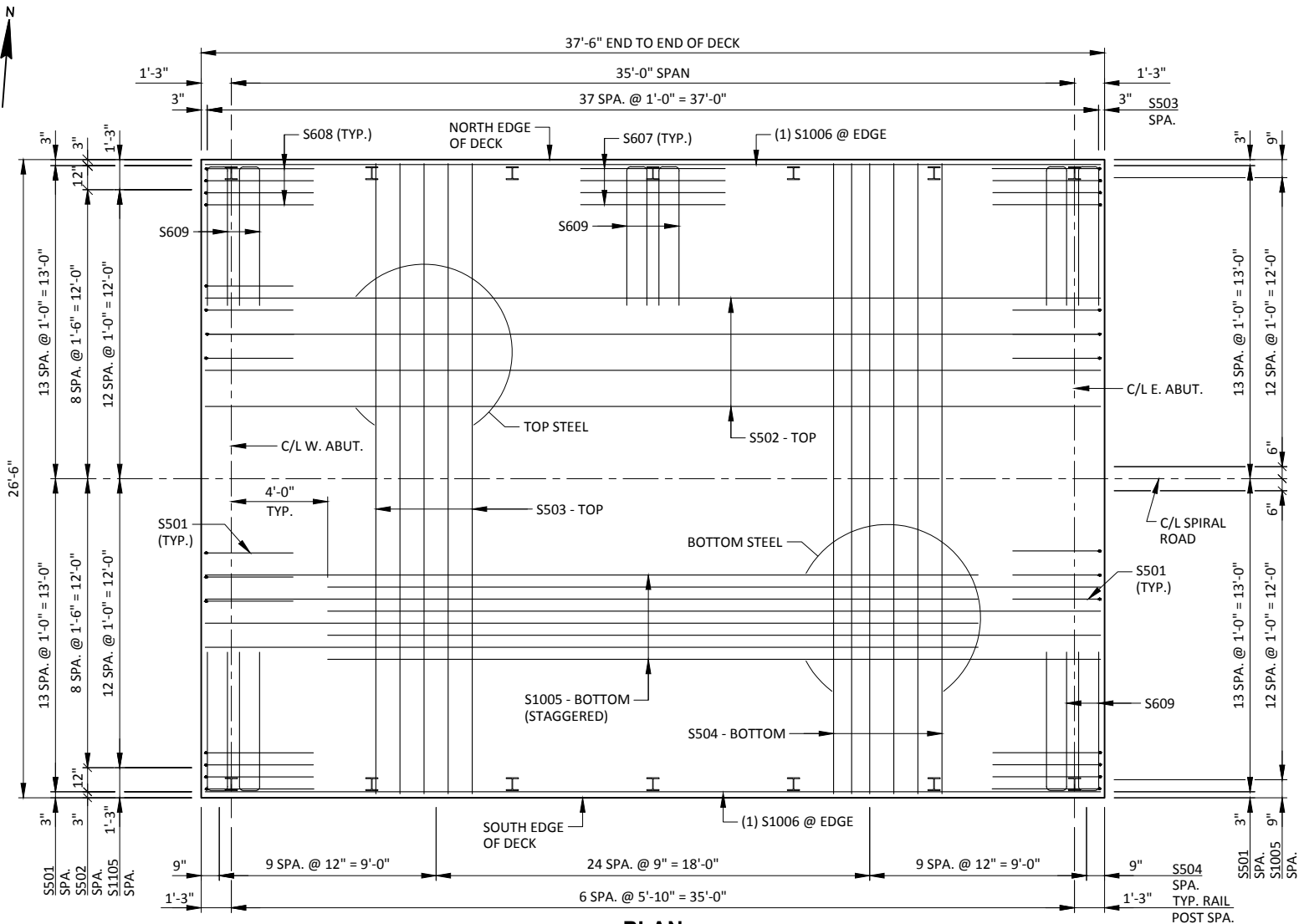
PLACE TRANSVERSE BARS PARALLEL TO THE CENTERLINE OF SUBSTRUCTURE UNITS.

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

LEGEND

- 18" RUBBERIZED MEMBRANE WATERPROOFING. (HORIZONTAL)
- 3/4" x 4" PREFORMED FILLER, EXTEND FULL LENGTH OF ABUTMENTS BETWEEN EDGES OF SLAB.
- DIMENSION IS NORMAL TO THE C/L OF SUBSTRUCTURE UNITS.
- SEE SHEET 4 FOR PLACEMENT OF A506 BARS.

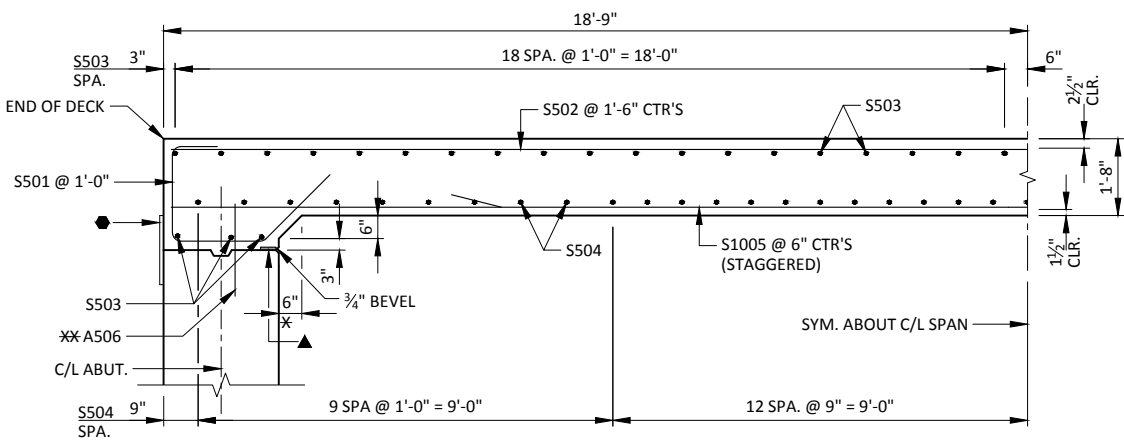
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-52-272			
DRAWN BY		PTB	PLANS CK'D. RBH
SUPERSTRUCTURE			SHEET 6 OF 7



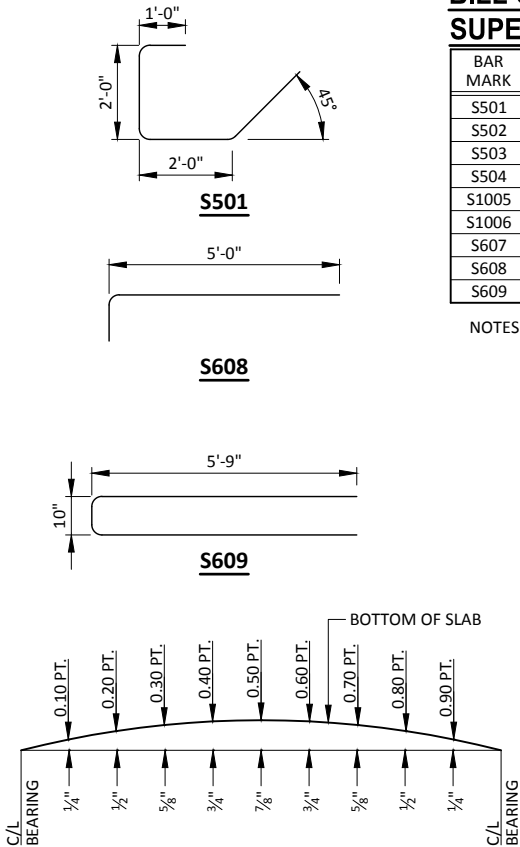
PLAN

TOP OF DECK ELEVATIONS

	C/L W. ABUT.	0.10 PNT.	0.20 PNT.	0.30 PNT.	0.40 PNT.	0.50 PNT.	0.60 PNT.	0.70 PNT.	0.80 PNT.	0.90 PNT.	C/L E. ABUT.
N. EDGE	746.28	746.29	746.29	746.29	746.29	746.29	746.29	746.29	746.28	746.28	746.28
C/L	746.55	746.56	746.56	746.56	746.56	746.56	746.56	746.56	746.55	746.55	746.55
S. EDGE	746.28	746.29	746.29	746.29	746.29	746.29	746.29	746.29	746.28	746.28	746.28



PARTIAL LONGITUDINAL SECTION THROUGH ROADWAY

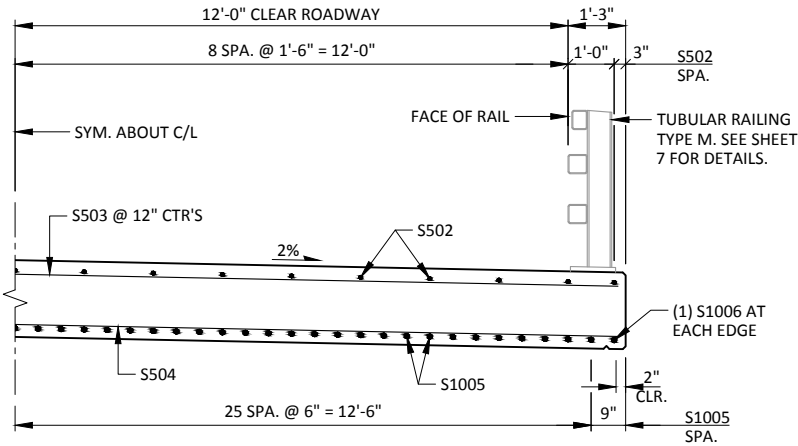


CAMBER DIAGRAM

CAMBER SHOWN IS BASED ON 3 TIMES DEAD LOAD DEFLECTIONS. CAMBER SPAN AS SHOWN TO PROVIDE FOR THEORETICAL DEADLOAD DEFLECTION AND FUTURE PLASTIC FLOW. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT.

TO DETERMINE FALSEWORK ELEVATION AT EDGE OF SLAB OR CENTER LINE FOLLOW THIS PROCEDURE:

- TOP OF SLAB ELEVATION AT FINAL GRADE
- SLAB THICKNESS
- +CAMBER
- +FORM SETTLEMENT/DEFLECTION DUE TO PLACEMENT OF SLAB CONCRETE (COMPUTED BY CONTRACTOR)
- =TOP OF SLAB FALSEWORK ELEVATION.



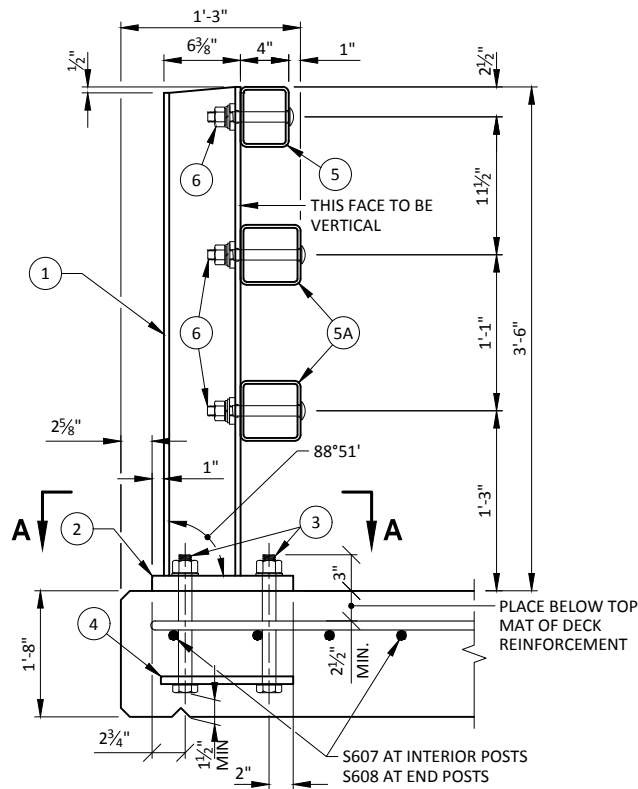
PARTIAL CROSS SECTION THROUGH ROADWAY

LEGEND

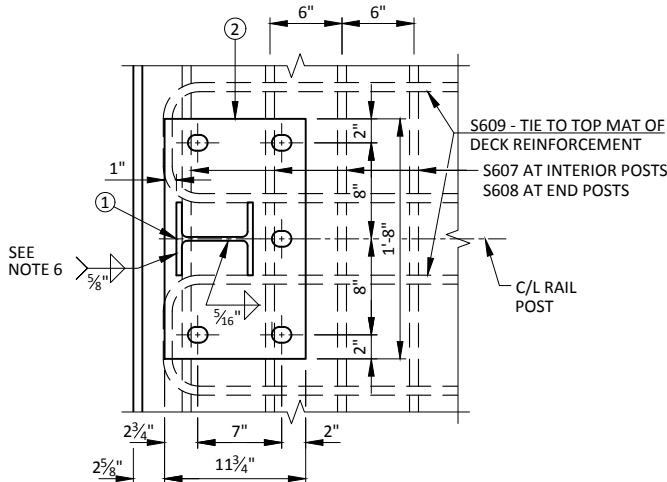
- ① W6x25 WITH 11/8" x 11/2" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO. 6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- ② PLATE 11/4"x113/4"x1'-8" WITH 15/16"x15/8" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ③ ASTM A449 - 11/8" 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. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE 103/4" LONG AT ALL OTHER LOCATIONS.
- ④ 5/8"x11"x1'-8" ANCHOR PLATE (GALVANIZED) WITH 13/16" DIA. HOLES FOR ANCHOR BOLTS NO. 3
- ⑤ TSS 5x4x1/4 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- ⑤A TSS 5x5x1/4 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.
- ⑥ 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/16"x15/8"x15/8" WASHER, AND LOCK WASHER (2 REQ'D. AT EACH RAIL TO POST LOCATION).
- ⑦ 1/2" THK. BACK-UP PLATE WITH 2 - 7/8"x11/2" 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"x35/8"x2'-4" PLATE. 2 PER RAIL. USED IN NO. 5 & 5A.
- ⑩A 3/8"x25/8"x2'-4" PLATE USED IN NO. 5, 3/8"x35/8"x2'-4" PLATE USED IN NO. 5A. 2 PER RAIL.
- ⑪ 7/8" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 15/16"x11/4" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND 15/16"x21/4" MIN. LONGIT. SLOTTED HOLES AT EXP. JOINTS IN PLATE NO. 10A.
- ⑫ 7/8" DIA. BY 11/2" LONG THREADED SHOP WELDED STUDS (2 REQ'D).
- ⑬ 3/8"x8"x1'-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" A325 ROUND HEAD BOLT WITH NUT, WASHER AND LOCK WASHER (4 REQ'D.). 4 HOLES IN TUBES.

GENERAL NOTES

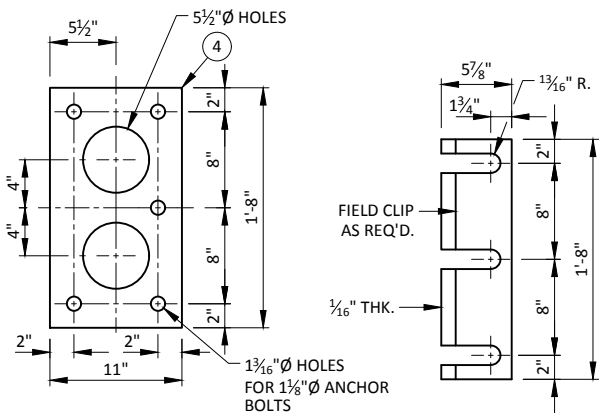
1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-52-272" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY=50 KSI. ANCHOR 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 1/8 TURN.
4. RAILS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE (3) POSTS WITHOUT SPLICES WHERE POSSIBLE.
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 S.S.P.C. SPECIFICATIONS.
10. THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).



SECTION THROUGH RAILING ON DECK



SECTION A-A



ANCHOR PLATE AT RAIL TO DECK CONNECTION

POST SHIM DETAIL

