

LAX

PROJECT ID:

7102-00-70

COUNTY:

MONROE

WITH: N/A

DECEMBER 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 Plan
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 = 36

Sheets Revised: 3, 5, 7, 24, 26, and 28



Project Location



Subcontractor List

Gerke Excavating Inc.
Hard Rock Sawing & Drilling Specialist CO.
Jewell Associates Engineers, Inc.
Mathy Construction Company
Mattison Contractors, Inc.
Safemark, LLC

DESIGN DESIGNATION

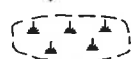
A.A.D.T. 2019	=	125
A.A.D.T. 2039	=	150
D.H.V.	=	<15 (EST.)
D.D.	=	60/40 (EST.)
T.	=	10% (EST.)
DESIGN SPEED	=	35 MPH
ESALS	=	37,000

CONVENTIONAL SYMBOLS

PLAN

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

MARSH AREA

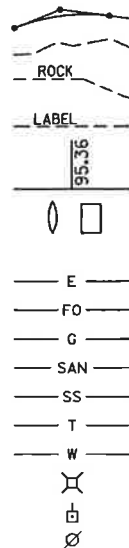


WOODED OR SHRUB AREA

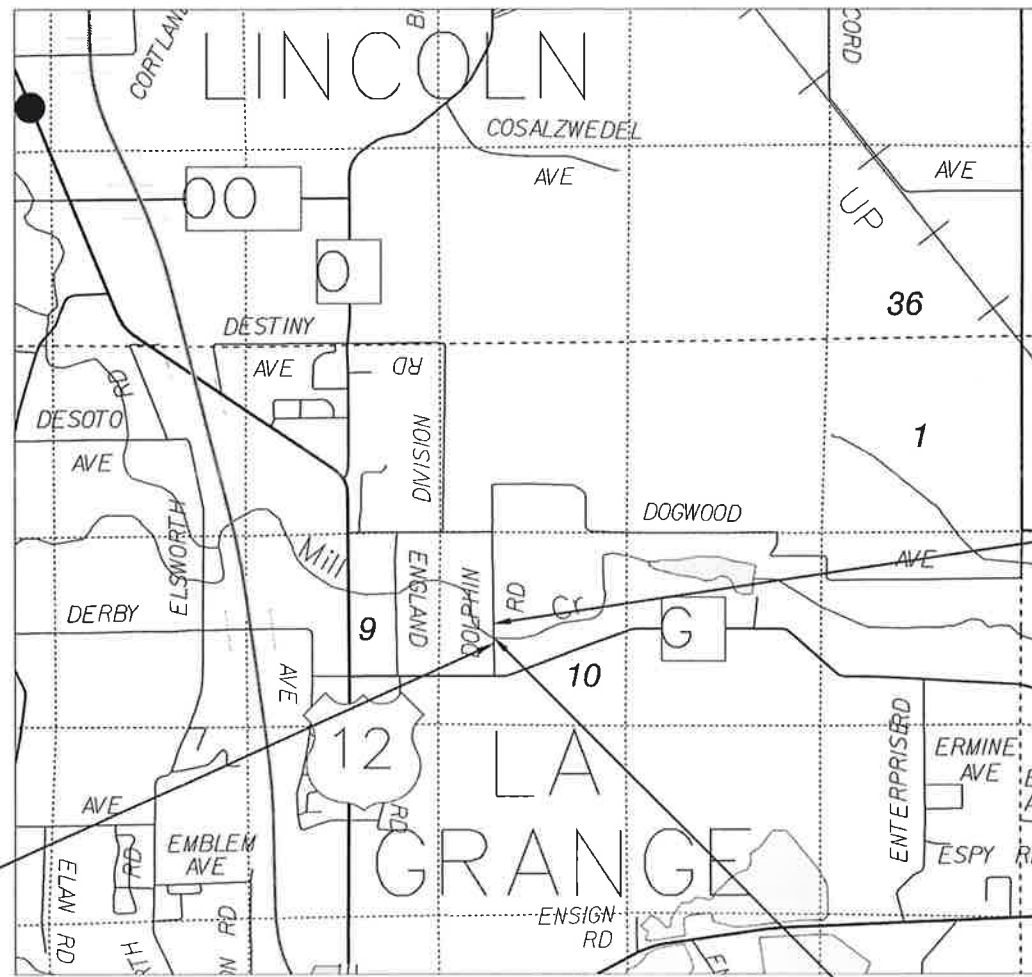


PROFILE

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	



BEGIN PROJECT
STA. 8+75
Y=418,642.13
X=710,863.48



LAYOUT
SCALE 0 1 MILE

TOTAL NET LENGTH OF CENTERLINE = 0.052 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, MONROE COUNTY, NAD83 (2011), IN U.S. SURVEY FEET. VALUES ARE GRID COORDINATES, GRID BEARINGS, AND GRID DISTANCES. GRID DISTANCES MAY BE USED AS GROUND DISTANCES.

STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

TOWN OF LA GRANGE, DOLPHIN ROAD

(MILL CREEK BRIDGE B-41-0312)

LOCAL STREET
MONROE COUNTY

STATE PROJECT NUMBER
7102-00-70

Structure

AS-BUILT PLAN

SUPERVISOR: Jim Savoldelli
PROJECT MANAGER: Brian Meyer
PROJECT LEADER: Matt Palkowski
CONTRACTOR: Radtke Contractors Inc.
CONSTRUCTION STARTED: 04/29/2019
SUBSTANTIALLY COMPLETE: 07/03/2019

STATE PROJECT

7102-00-70

FEDERAL PROJECT

PROJECT

CONTRACT

ACCEPTED FOR
TOWN OF LA GRANGE

5/22/18

ACCEPTED FOR
COUNTY OF MONROE

05/18/2018

ORIGINAL PLANS PREPARED BY

MSA

PROFESSIONAL SERVICES, INC.
1230 South Boulevard, Suite 100, La Grange, WI 53043
608-596-2777 1-800-924-4353 Fax 608-596-7779



DATE: 5/15/18

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY

Surveyor: MSA PROFESSIONAL SERVICES, INC.
Designer: MSA PROFESSIONAL SERVICES, INC.

Management
Consultant

KL ENGINEERING, INC.

APPROVED FOR THE DEPARTMENT

DATE: 7/23/18

NO.	STA./OFFSET	DESCRIPTION	ELEV.
1	9+81.76, 8.7' RT	CHIS SO ON SE WING WALL	958.73
2	8+44.05, 23.4' LT	PK NAIL IN TOP OF 24" CMP	958.86
3	11+86.61, 25.1' RT	2 POLE NAILS IN 12" ELM	956.38

DESIGN DATA

LIVE LOAD:

DESIGN LOADING : HL-93

INVENTORY RATING FACTOR : 1.12

OPERATIONAL RATING FACTOR : 1.45

WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV) = 250 KIPS.

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

TRAFFIC DATA:

A.A.D.T. (2019) = 125

A.A.D.T. (2039) = 150

R.D.S. = 35 MPH

MATERIAL PROPERTIES:

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.

FOUNDATION DATA:

ABUTMENTS TO BE SUPPORTED ON PILING CIP CONCRETE $10\frac{3}{4} \times 0.365$ -INCH DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 100 TONS * PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED PILE LENGTHS ARE 20'-0" AT THE SOUTH ABUTMENT BODY AND WINGS, AND 15'-0" AT THE NORTH ABUTMENT BODY AND 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 MODIFIED GATES TO DETERMINE DRIVEN PILE CAPACITY.

HYDRAULIC DATA:

100 YEAR FREQUENCY

DRAINAGE AREA	19.7 SQ. MI.
Q ₁₀₀	1,270 C.F.S.
VELOCITY	7.4 FT./SEC.
WATERWAY AREA	172 SQ. FT.
SCOUR CRITICAL CODE	8
HIGH WATER 100 ELEVATION	958.06
O ₂ ELEVATION (380 C.F.S.)	955.30
VELOCITY ₂	2.9 FT./SEC.

ROADWAY OVERFLOW DESIGN FREQUENCY

OVERTOPPING FREQUENCY > 100 YEARS

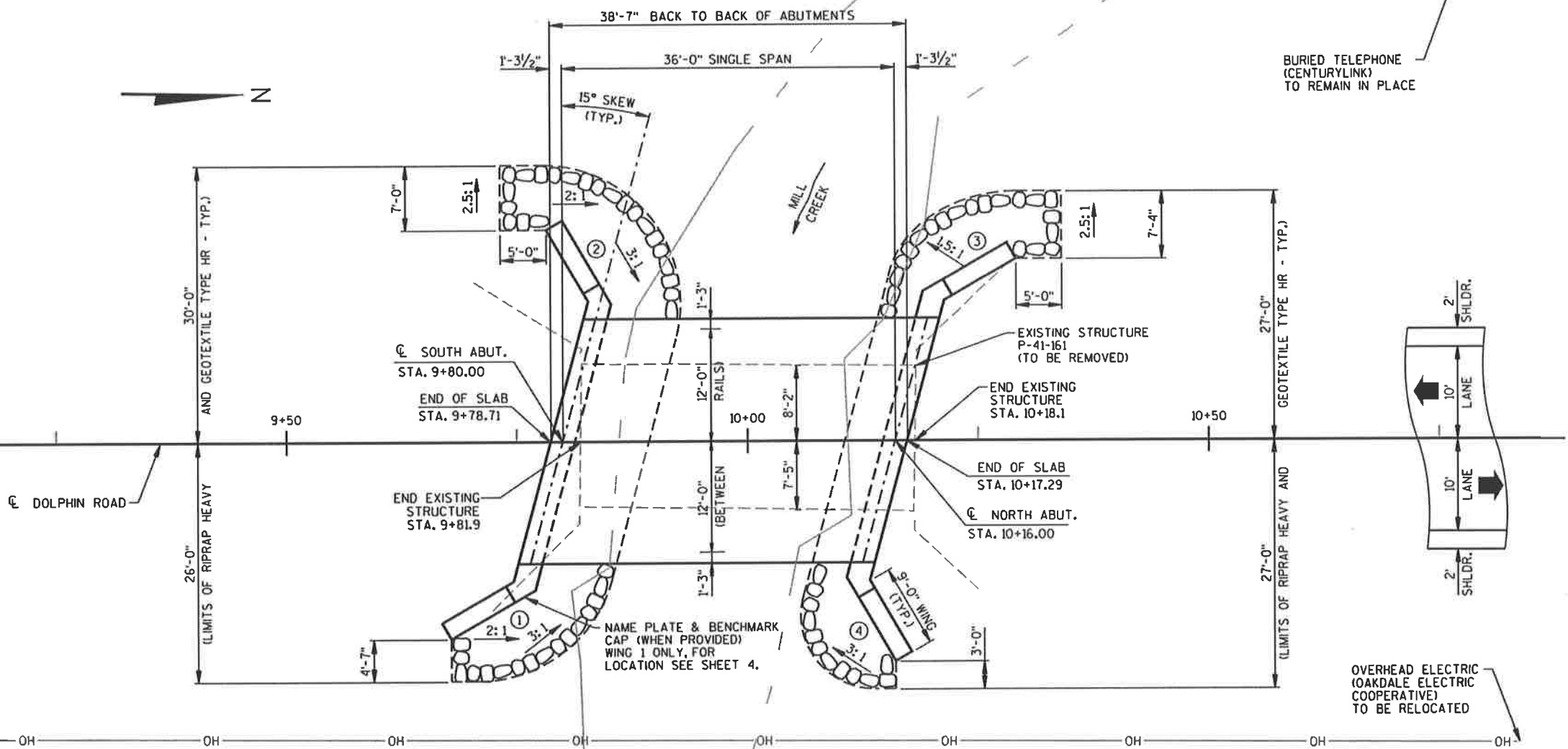
CONSULTANT DESIGN CONTACT:
JOLIE SNYDER
(608) 355-8912BRIDGE OFFICE CONTACT:
WILLIAM DREHER
(608) 266-8489

LIST OF DRAWINGS

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



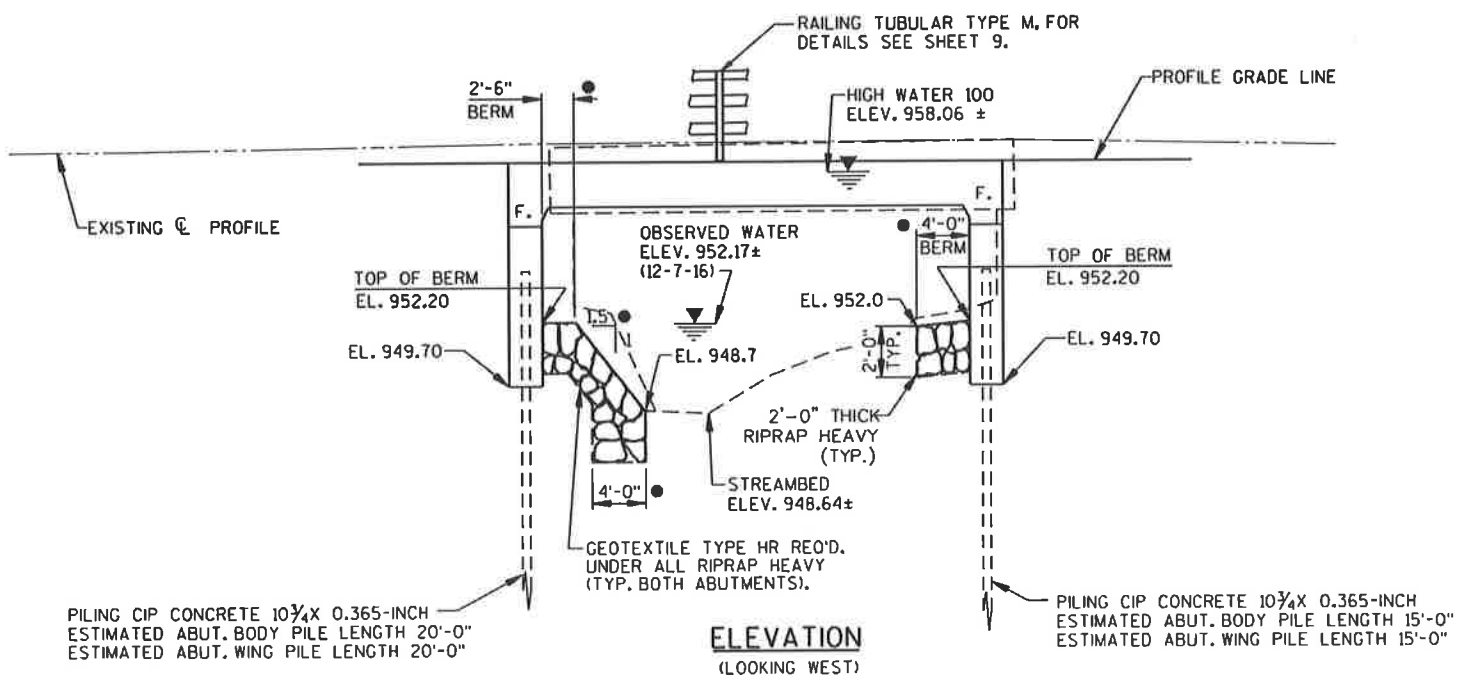
NO.	DATE	REVISION	BY
MSA TRANSPORTATION • MUNICIPAL DEVELOPMENT • ENVIRONMENTAL 1230 South Boulevard Danbury, VT 05813 608-356-2771 1-800-382-4505 Fax: 608-356-2770			
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION ACCEPTED <i>William C. Dreher</i> 08/03/18 CHIEF STRUCTURES DESIGN ENGINEER DATE			
STRUCTURE B-41-312			
DOLPHIN ROAD OVER MILL CREEK			
COUNTY	MONROE	TOWN/CITY/VILLAGE	LA GRANGE
DESIGN SPEC.	AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS		
DESIGNED BY	JAS	CHK'D.	DHW
DRAWN BY	RLR	PLANS	CHK'D. JAS
GENERAL PLAN			SHEET 1 OF 9



PLAN

(SINGLE SPAN FLAT CONCRETE SLAB)

- - INDICATES WING NUMBER
- - NORMAL TO \mathcal{C} OF SUBSTRUCTURE

ELEVATION
(LOOKING WEST)

GENERAL NOTES

DRAWINGS SHALL NOT BE SCALED.

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

THE FIRST DIGIT OF A THREE DIGIT BAR MARK AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR MARK SIGNIFY THE BAR SIZE.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE TYPE HR TO THE LIMITS SHOWN ON SHEET 1 AND ON THE ABUTMENT SHEETS OR AS DIRECTED BY THE ENGINEER.

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

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

THIS STRUCTURE WILL REPLACE THE EXISTING STRUCTURE, P-41-161, A 36.2 FT. LONG, SINGLE SPAN STEEL DECK GIRDER ON FULL RETAINING CONCRETE ABUTMENTS WITH 15.6 FT. CLEAR ROADWAY WIDTH.

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.

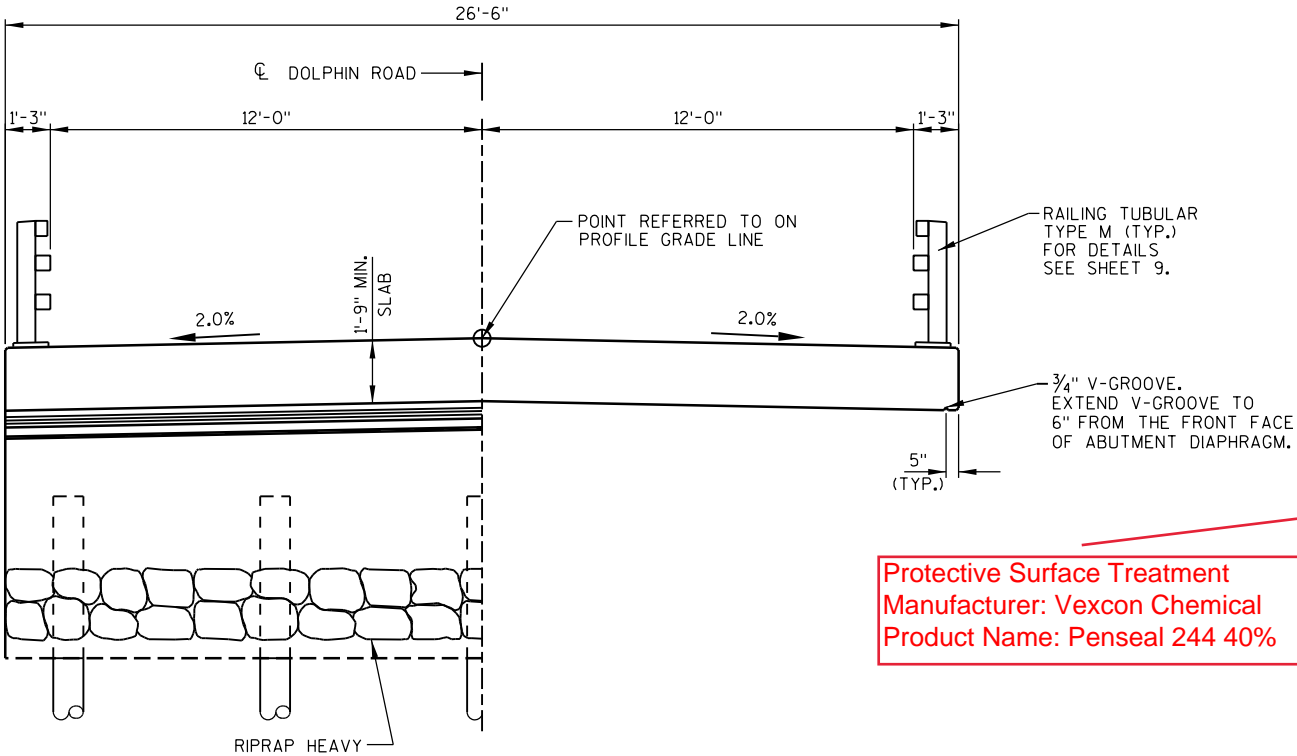
Ⓑ - BACKFILL PAY LIMITS, BACKFILL BEYOND BACKFILL PAY LIMITS SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES. LIMITS OF EXCAVATION SHALL BE DETERMINED BY THE CONTRACTOR.

THE BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACED QUANTITIES. "BACKFILL STRUCTURE TYPE A" REQUIRED DIRECTLY BEHIND ABUTMENTS AND ABUTMENT WINGS FOR 3 FEET. BACKFILL PLACED BEYOND PAY LIMITS OR EXCEEDING PLAN QUANTITIES SHALL BE INCIDENTAL TO EXCAVATION FOR STRUCTURES.

DO NOT PLACE FILL ABOVE 3'-0" FROM THE BOTTOM OF THE ABUTMENT UNTIL THE SUPERSTRUCTURE IS IN PLACE.

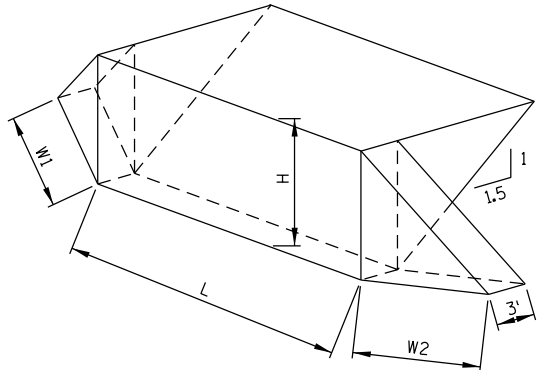
PROTECTIVE SURFACE TREATMENT SHALL BE APPLIED TO THE TOP AND EDGES OF SLAB, TO THE OUTSIDE 1'-0" OF THE UNDERSIDE OF SLAB, TO THE TOPS OF WINGS, TO THE EXPOSED FRONT FACES OF WINGS, AND TO THE EXPOSED ABUTMENT FACES EXTENDING TO 1'-0" IN FROM THE EDGE OF SLAB.

ELEVATIONS SHOWN ON THIS PLAN ARE REFERENCED TO USGS NAVD 88 (2012 ADJUSTED). BENCHMARK REFERENCES AT THE PROJECT SITE WERE SET BY THE CONSULTANT USING GPS TECHNOLOGY.



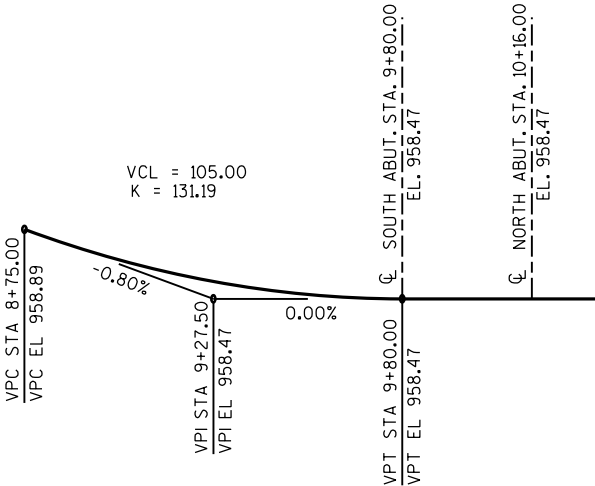
Protective Surface Treatment
Manufacturer: Vexcon Chemical
Product Name: Penseal 244 40%

AT ABUTMENTS IN SPAN
CROSS SECTION THRU BRIDGE
(LOOKING NORTH)



ABUTMENT BACKFILL DIAGRAM

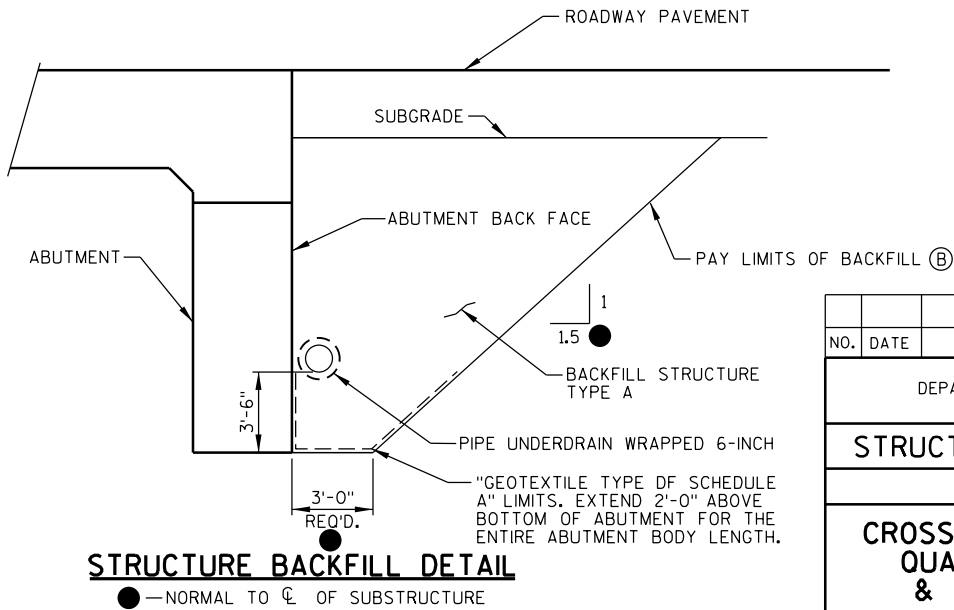
$$V_{CF} = (L)(3.0')(H) + (L)(0.5)(1.5H)(H) + (0.5)(H)(W1 + W2)(3.0')$$
$$V_{TON} = V_{CF}(2.0)/27$$



PROFILE GRADE LINE - DOLPHIN ROAD

TOTAL ESTIMATED QUANTITIES

ITEM NUMBER	BID ITEM	UNIT	SOUTH ABUT.	NORTH ABUT.	SUPER	TOTAL
203.0600.S.01	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STATION 10+00	LS	-	-	-	1
206.1000.01	EXCAVATION FOR STRUCTURES BRIDGES B-41-312	LS	-	-	-	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	135	135	-	270
502.0100	CONCRETE MASONRY BRIDGES	CY	30	30	70	130
502.3200	PROTECTIVE SURFACE TREATMENT	SY	18	18	135	171
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2885	2885	-	5770
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1505	1505	11740	14750
513.4061.01	RAILING TUBULAR TYPE M B-41-312	LF	-	-	81	81
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	6	6	-	12
550.2106	PILING CIP CONCRETE 10 3/4 X 0.365-INCH	LF	140	105	-	245
606.0300	RIPRAP HEAVY	CY	50	30	-	80
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	80	80	-	160
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	30	30	-	60
645.0120	GEOTEXTILE TYPE HR	SY	90	60	-	150
NON-BID ITEMS						
	PREFORMED FILLER	SIZE				1/2" & 3/4"



STRUCTURE BACKFILL DETAIL

● - NORMAL TO CL OF SUBSTRUCTURE

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-41-312			
DRAWN BY RLR		PLANS CK'D. JAS	
CROSS SECTION, QUANTITIES & NOTES		SHEET 2 OF 9	



BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	6-12-2017	418,739.0	710,857.8
2	6-12-2017	418,795.2	710,864.8
BORINGS COMPLETED BY: CHOSEN VALLEY TESTING, INC.			
REPORT COMPLETED BY: CHOSEN VALLEY TESTING, INC.			
ALL COORDINATES REFERENCED TO WCCS NAD 83(2011) MONROE COUNTY			

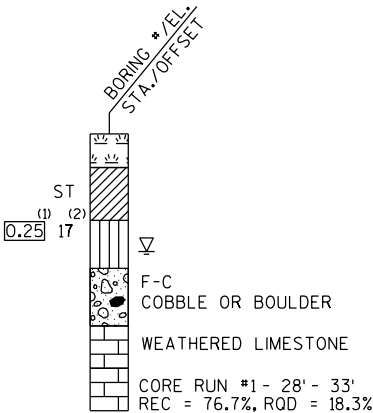
STATE PROJECT NUMBER

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MATERIAL SYMBOLS

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

LEGEND OF BORING



- (1) UNCONFINED STRENGTH, AS DETERMINED BY A POCKET PENETROMETER (TSF)
- (2) UNLESS OTHERWISE, SPECIFIED THE SPT 'N' VALUE IS BASED ON AASHTO T-206, STANDARD PENETRATION TEST. THE SPT 'N' VALUE PRESENTED HAS NOT BEEN CORRECTED FOR OVERBURDEN PRESSURE OR HAMMER EFFICIENCY.

GROUND WATER ELEVATION

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

ABBREVIATIONS

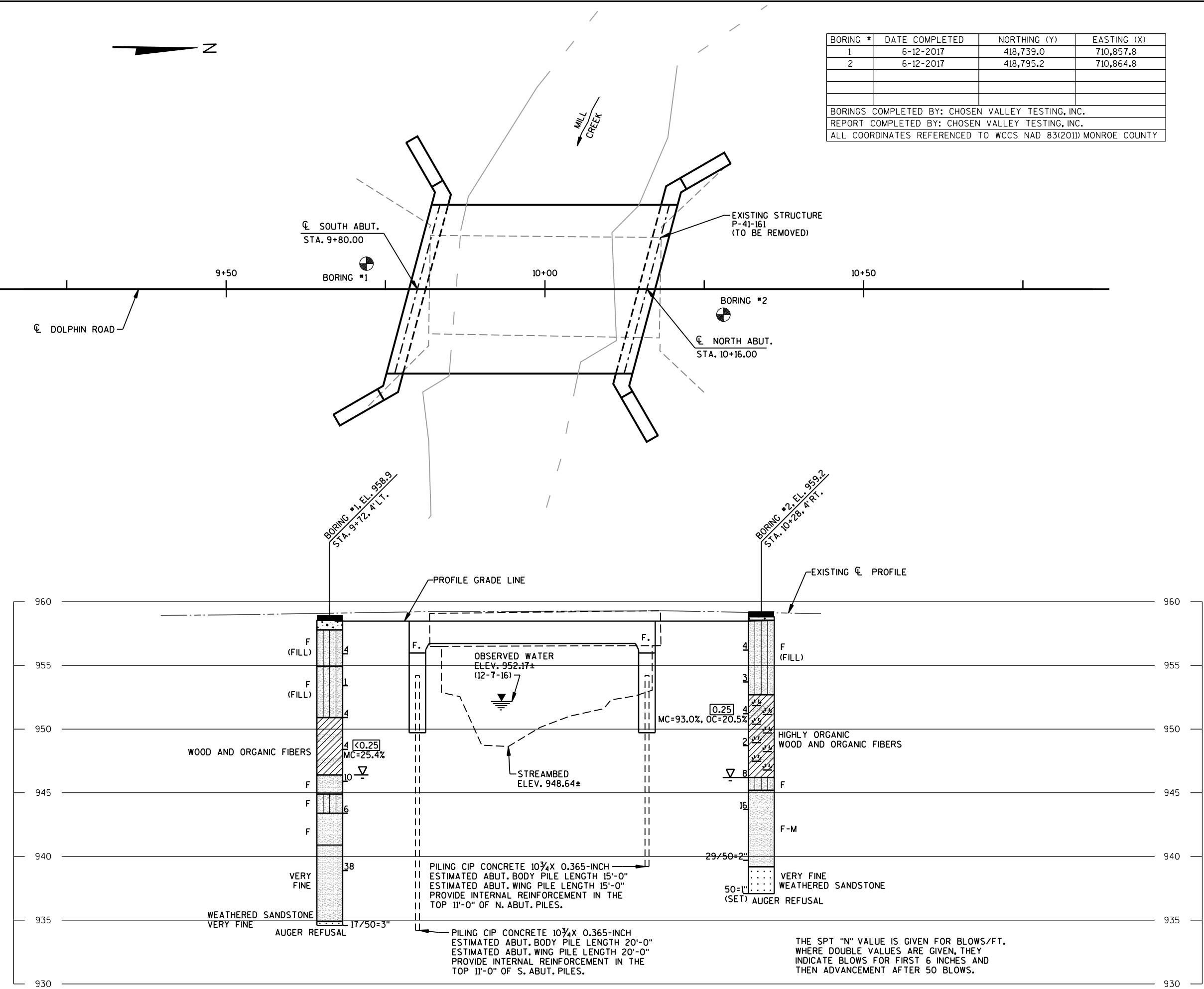
F-FINE M-MEDIUM C-COARSE ST-SHELBY TUBE

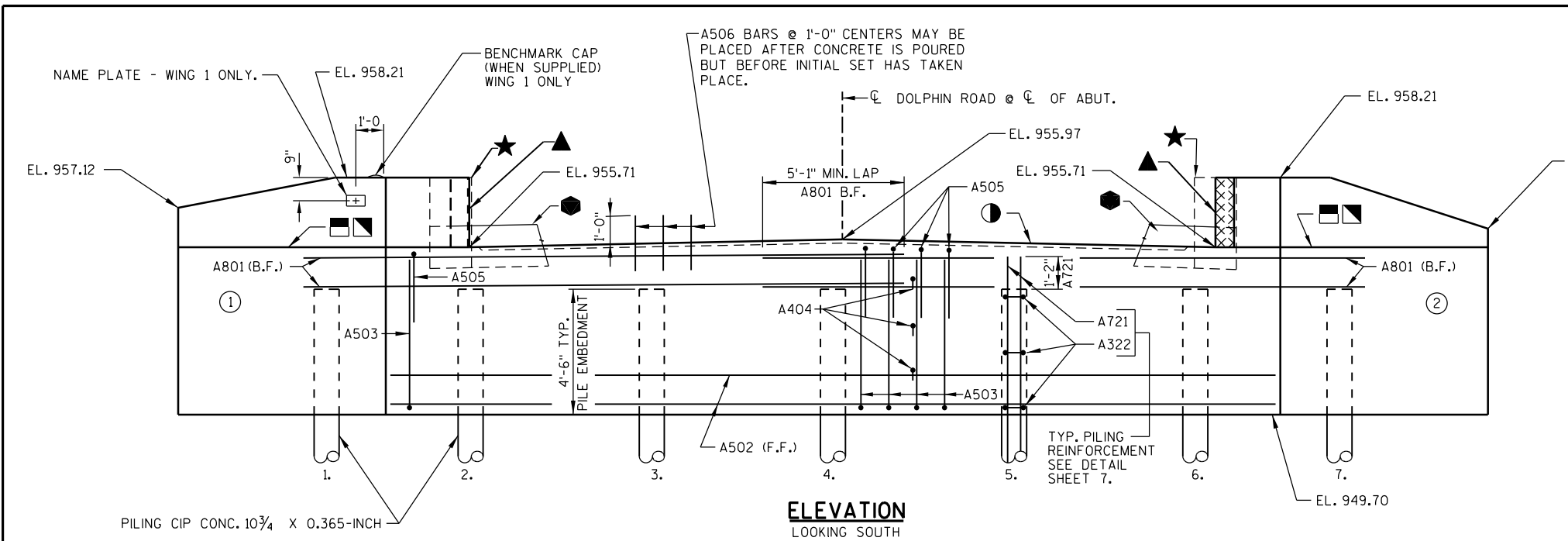
SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN AND BIDDERS INFORMATION

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

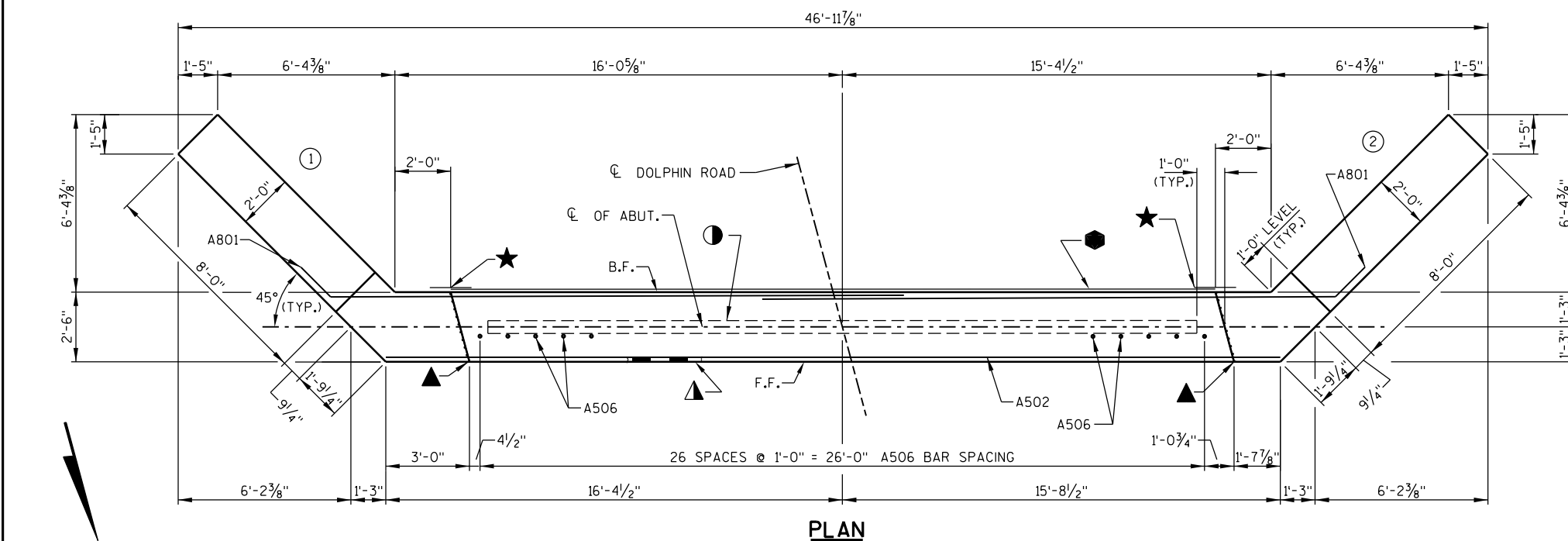
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-41-312	
DRAWN BY		RLR	PLANS CK'D. JAS
SUBSURFACE EXPLORATION		SHEET 3 OF 9	

THE SPT "N" VALUE IS GIVEN FOR BLOWS/FT. WHERE DOUBLE VALUES ARE GIVEN, THEY INDICATE BLOWS FOR FIRST 6 INCHES AND THEN ADVANCEMENT AFTER 50 BLOWS.

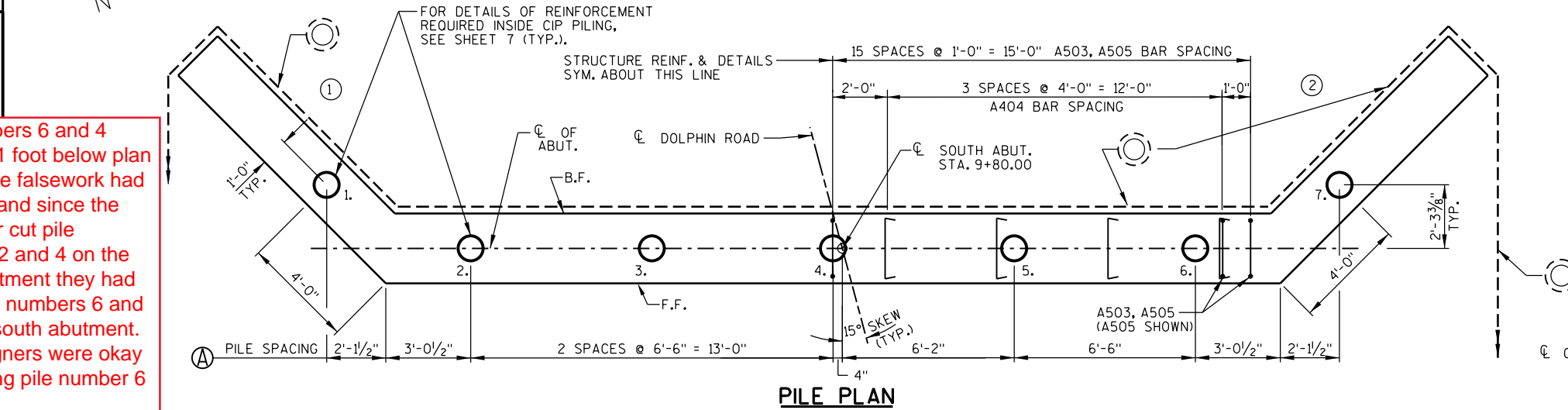




ELEVATION
LOOKING SOUTH



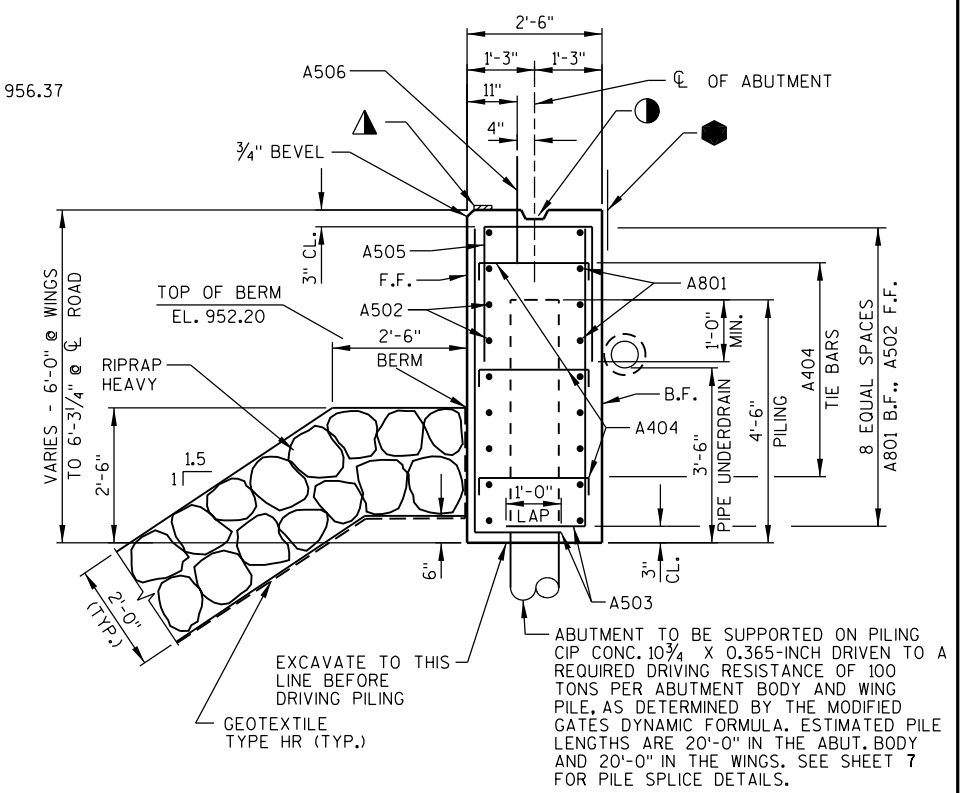
PLAN



PILE PLAN

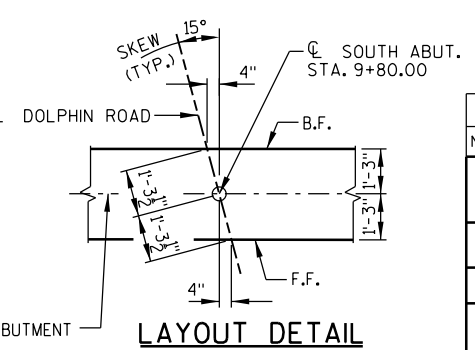
NOTE:
FOR WING DETAILS SEE SHEET 5.

STATE PROJECT NUMBER
7102-00-70



TYPICAL SECTION THRU ABUTMENT

- LEGEND**
- — KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2x6.
 - ▲ — 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).
 - ▲ — 4"x 3/4" FILLER, EXTEND FULL LENGTH OF ABUTMENT BETWEEN EDGES OF SLAB.
 - ★ — VERTICAL 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM 9" BELOW BRIDGE SEAT TO TOP OF WINGS.
 - — HORIZONTAL 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND BETWEEN WINGS.
 - — OPTIONAL KEYED CONST. JOINT ON WING FORMED BY BEVELED 2 X 6. IF JOINT IS USED, PLACE ● ON B.F. OF WING. COST OF ● IS INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES".
 - ◻ — 3/4" "V" GROOVE ON FRONT FACE OF WING WALL, REQUIRED ONLY WHERE CONSTRUCTION JOINT IS USED.
 - — PIPE UNDERDRAIN WRAPPED 6-INCH. EXTEND THRU GEOTEXTILE FABRIC AT FACE OF RIPRAP HEAVY. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. PROVIDE RODENT SHIELD AT ENDS OF PIPE. FOR RODENT DETAILS, SEE SHEET 5.
 - Ⓐ — EXISTING FOUNDATION TYPE IS UNKNOWN. IF EXISTING PILING ARE PRESENT AND THEY CONFLICT WITH THE NEW PILES, ADJUST THE LOCATION OF THE NEW PILES UP TO AN 8'-0" MAXIMUM PILE SPACING. KEEP PILES 2 AND 6 BETWEEN A MINIMUM OF 2'-0" AND A MAXIMUM OF 3'-3" FROM THE ABUTMENT F.F. CORNERS.
 - — INDICATES WING NUMBER F.F.—FRONT FACE B.F.—BACK FACE CL.—CLEAR



LAYOUT DETAIL

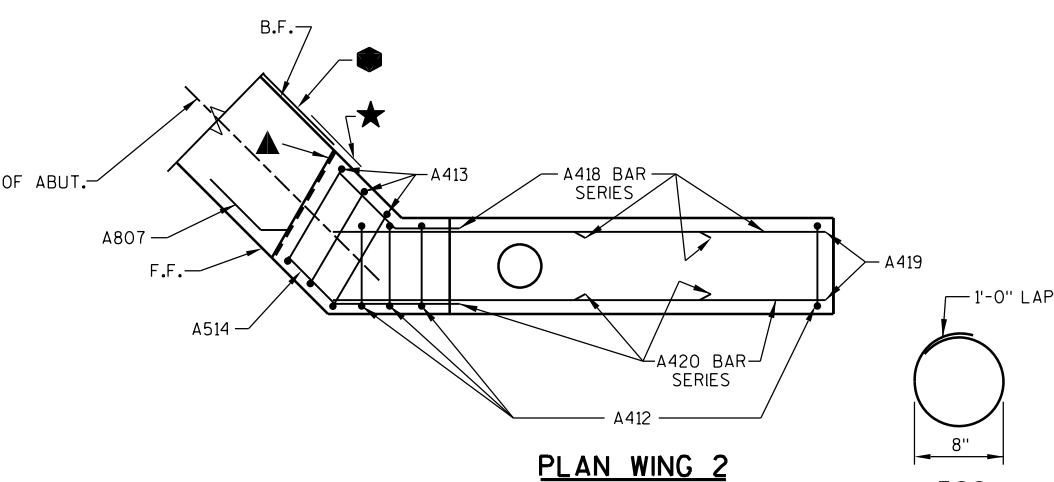
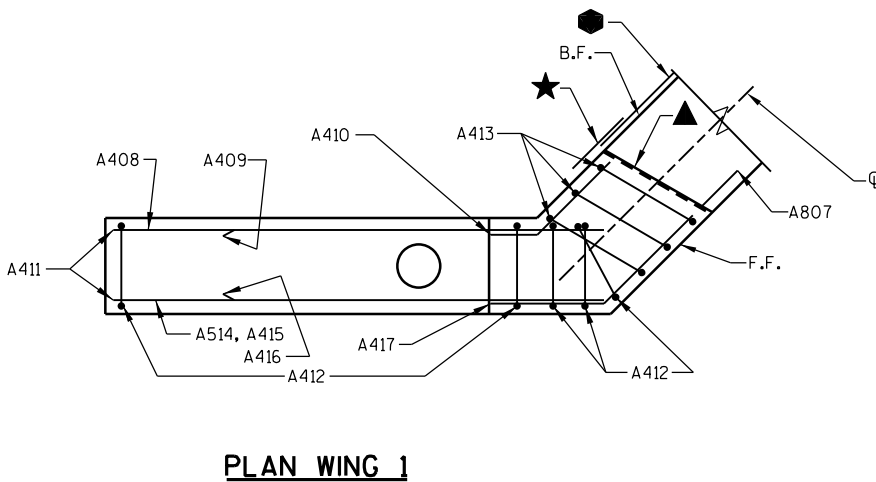
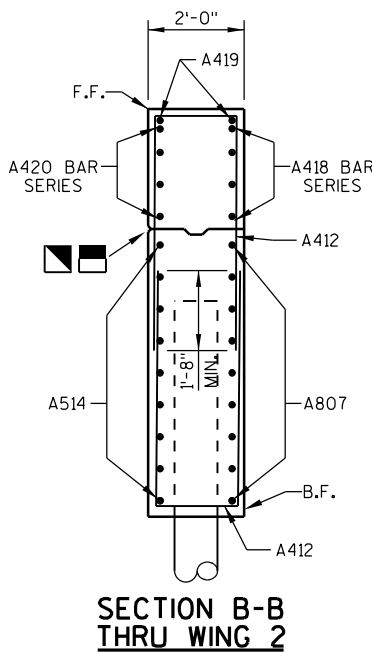
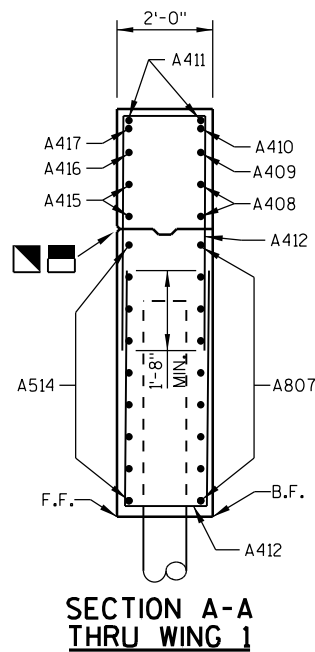
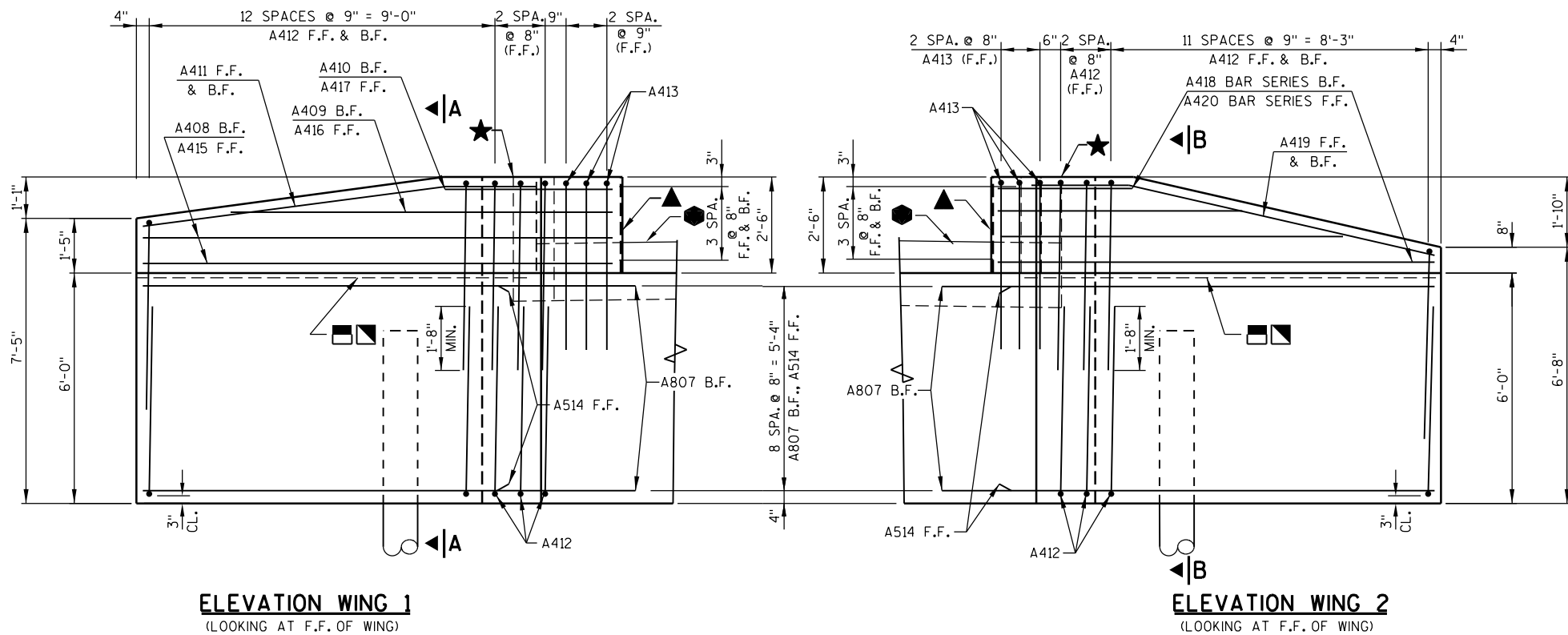
Pile numbers 6 and 4 were cut 1 foot below plan grade. The falsework had to match and since the contractor cut pile numbers 2 and 4 on the north abutment they had to cut pile numbers 6 and 4 on the south abutment. The designers were okay with cutting pile number 6 and 4.

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-41-312	
DRAWN BY		RLR	PLANS CK'D. JAS
SOUTH ABUTMENT		SHEET 4 OF 9	

SEE LEGEND ON SHEET 4 FOR DESCRIPTION OF

STATE PROJECT NUMBER

7102-00-70



COATED 1505 LBS.
UNCOATED 2885 LBS.

BILL OF BARS (SOUTH ABUT.)

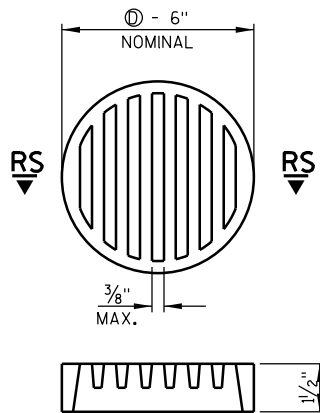
MARK	NUMBER REQUIRED COATED	NUMBER REQUIRED UNCOATED	LENGTH	BENT	BAR SERIES	LOCATION
A801	-	18	22'-0"	X		ABUTMENT BODY - B.F. - HORIZ.
A502	-	9	32'-0"			ABUTMENT BODY - F.F. - HORIZ.
A503	-	62	7'-0"	X		ABUTMENT BODY - F.F. & B.F. - VERT.
A404	-	24	2'-9"	X		ABUTMENT BODY - TIES - HORIZ.
A505	-	31	7'-1"	X		ABUTMENT BODY - TOP - VERT.
A506	27	-	2'-0"			ABUTMENT BODY - TOP DOWEL - VERT.
A807	18	-	13'-2"	X		WINGS - B.F. - HORIZ.
A408	2	-	10'-9"	X		WING 1 - B.F. - HORIZ.
A409	1	-	8'-6"	X		WING 1 - B.F. - HORIZ.
A410	1	-	3'-0"	X		WING 1 - B.F. - HORIZ.
A411	2	-	10'-3"	X		WING 1 - F.F. & B.F. - TOP - HORIZ.
A412	58	-	11'-4"	X		WINGS - F.F. & B.F. - VERT.
A413	6	-	10'-4"	X		WINGS - F.F. & B.F. - TOP - VERT.
A514	18	-	11'-8"	X		WINGS - F.F. - HORIZ.
A415	2	-	12'-9"	X		WING 1 - F.F. - HORIZ.
A416	1	-	10'-6"	X		WING 1 - F.F. - HORIZ.
A417	1	-	4'-11"	X		WING 1 - F.F. - HORIZ.
A418	4	-	6'-11"	X		WING 2 - B.F. - HORIZ.
A419	2	-	10'-6"	X		WING 2 - F.F. & B.F. - TOP - HORIZ.
A420	4	-	7'-9"	X		WING 2 - F.F. - HORIZ.
A721	-	28	13'-0"			PILING 1 - 7 - VERT.
A322	-	49	3'-2"	X		PILING 1 - 7 - TIES - HORIZ.

DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR.

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 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. THE RODENT SHIELD, PIPE COUPLING AND SCREWS, SHALL BE INCLUDED IN THE BID ITEM "PIPE UNDERDRAIN WRAPPED 6-INCH".



RODENT SHIELD

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

MARK	A	B
A801	1'-6"	45°
A807	1'-6"	45°
A514	1'-6"	45°
A408	1'-11"	45°
A409	1'-11"	45°
A410	1'-11"	45°
A411	2'-5"	8°
A415	2'-7"	45°
A416	2'-7"	45°
A417	2'-7"	45°
A418	1'-9"	45°
A419	2'-6"	13°
A420	1'-5"	45°

MARK	C	D
A404	4 1/2"	2'-2"
A505	2'-7"	2'-2"
A412	4'-11"	1'-8"
A413	4'-2"	2'-2"

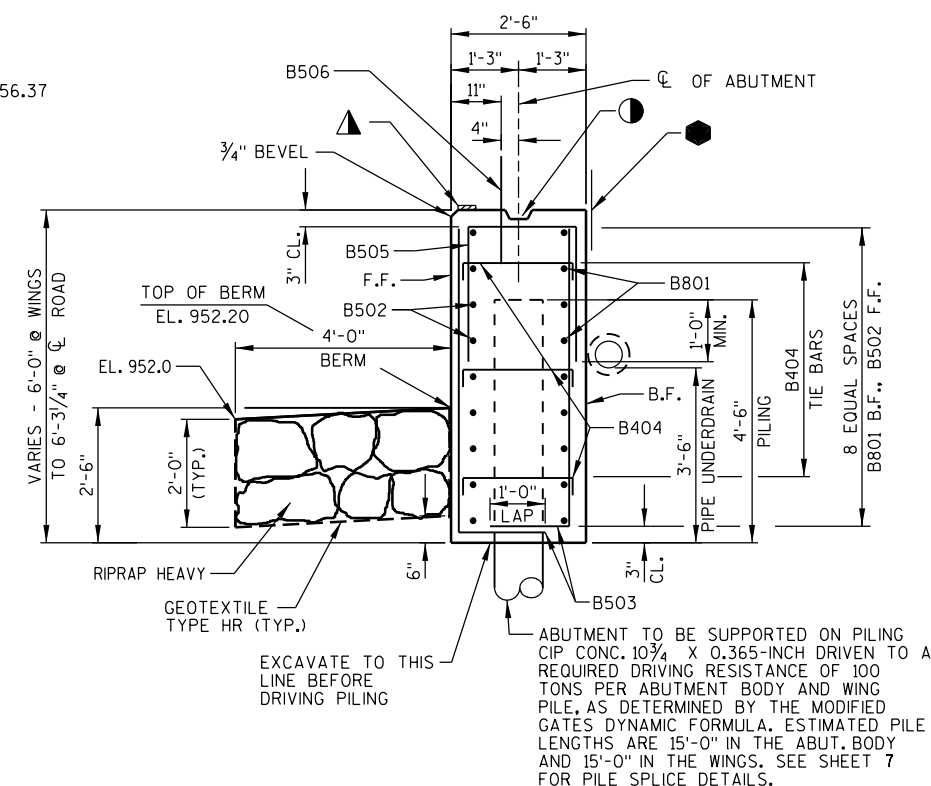
BAR MARK	NO. REQ'D.	LENGTH
A418	1 SERIES OF 4	3'-1" TO 10'-9"
A420	1 SERIES OF 4	3'-11" TO 11'-7"

BAR SERIES TABLE

⬠ - LENGTH SHOWN FOR BAR IS AN AVERAGE AND SHOULD ONLY BE USED FOR BAR WEIGHT CALCULATIONS. SEE BAR SERIES TABLE FOR ACTUAL LENGTHS.
BENT BARS IF USED IN BAR SERIES TABLE SHALL BE BENT AFTER CUTTING.

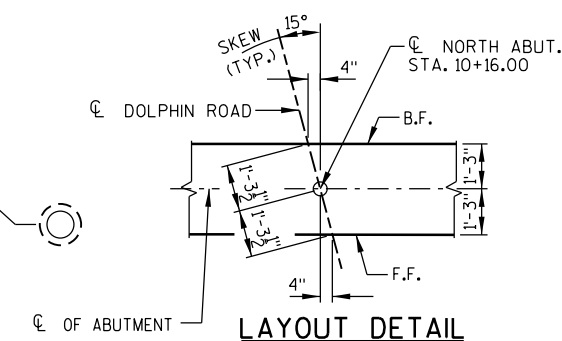
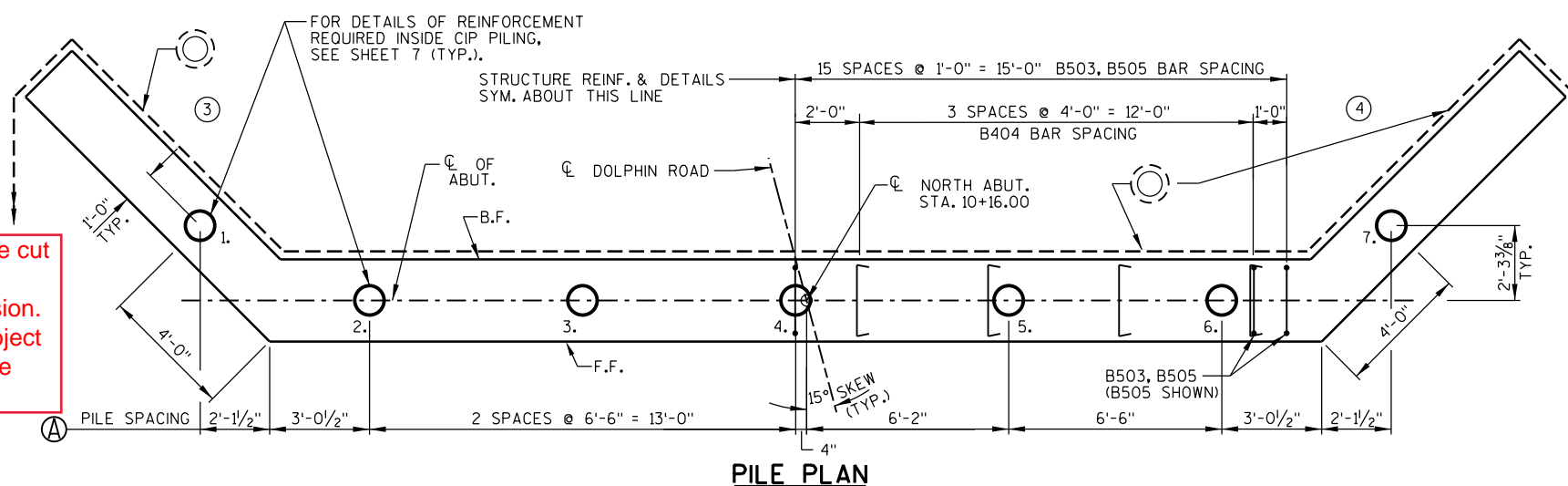
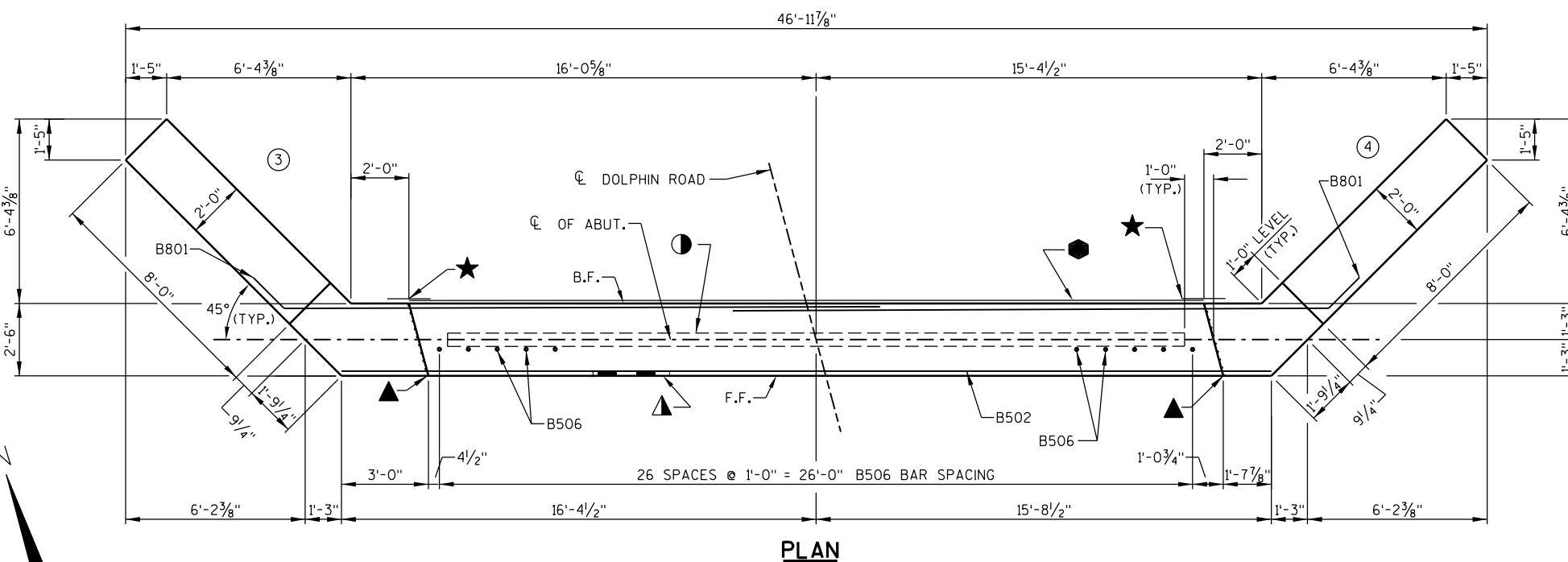
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-41-312			
DRAWN BY RLR		PLANS CK'D. JAS	
SOUTH ABUTMENT DETAILS		SHEET 5 OF 9	

FOR WING DETAILS SEE SHEET 7.



LEGEND

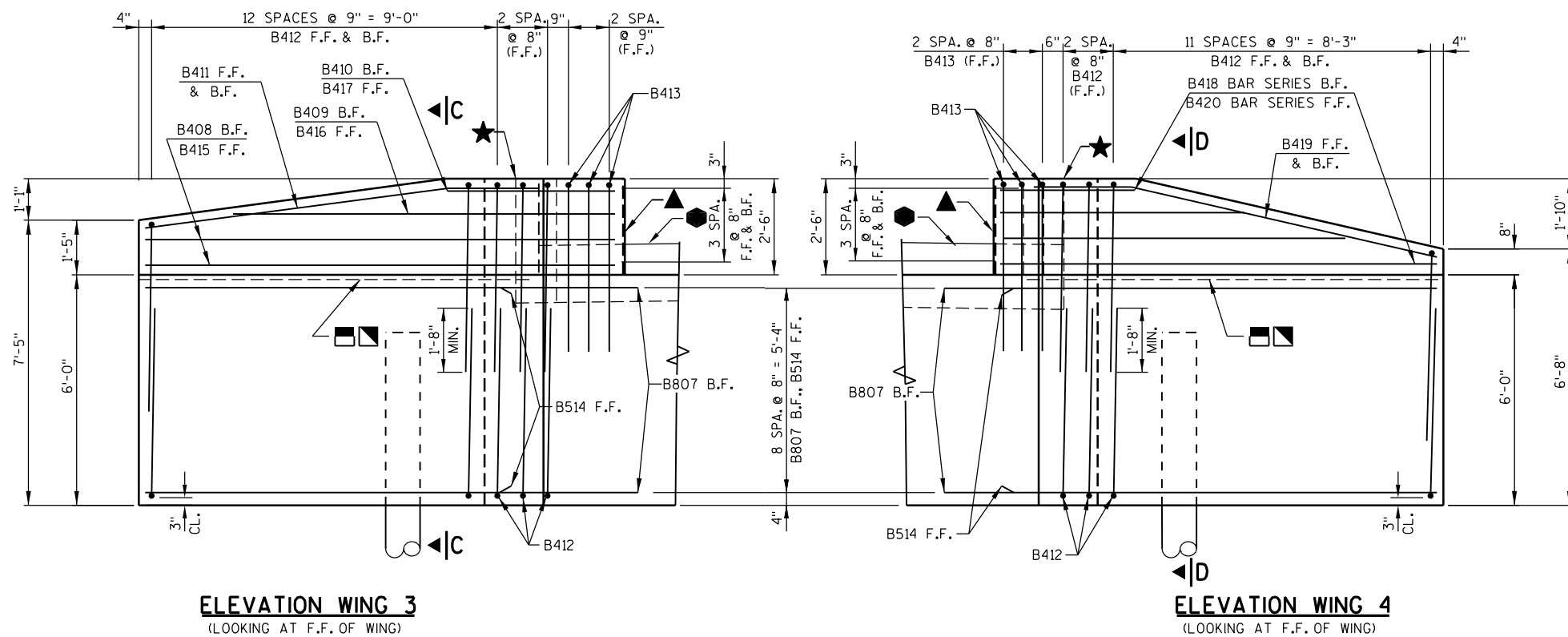
- KEYED CONSTRUCTION JOINT FORMED BY BEVELED 2X6.
- ▲ — 1/2" FILLER EXTEND AS SHOWN. SEAL ALL EXPOSED HORIZ. & VERT. SURFACES OF FILLER WITH NON-STAINING GRAY, NON-BITUMINOUS JOINT SEALER. (1" DEEP & HOLD 1/8" BELOW SURFACE OF CONCRETE).
- ▲ — 4"x 3/4" FILLER, EXTEND FULL LENGTH OF ABUTMENT BETWEEN EDGES OF SLAB.
- ★ — VERTICAL 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND FROM 9" BELOW BRIDGE SEAT TO TOP OF WINGS.
- ◆ — HORIZONTAL 18" WIDE RUBBERIZED MEMBRANE WATERPROOFING. EXTEND BETWEEN WINGS.
- — OPTIONAL KEYED CONST. JOINT ON WING FORMED BY BEVELED 2 X 6, IF JOINT IS USED, PLACE ◆ ON B.F. OF WING. COST OF ◆ IS INCIDENTAL TO BID ITEM "CONCRETE MASONRY BRIDGES".
- ◻ — 3/4" "V" GROOVE ON FRONT FACE OF WING WALL, REQUIRED ONLY WHERE CONSTRUCTION JOINT IS USED.
- ⊙ — PIPE UNDERDRAIN WRAPPED 6-INCH. EXTEND THRU GEOTEXTILE FABRIC AT FACE OF RIPRAP HEAVY. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. PROVIDE RODENT SHIELD AT ENDS OF PIPE. FOR RODENT DETAILS, SEE SHEET 5.
- Ⓐ — EXISTING FOUNDATION TYPE IS UNKNOWN. IF EXISTING PILING ARE PRESENT AND THEY CONFLICT WITH THE NEW PILES, ADJUST THE LOCATION OF THE NEW PILES UP TO AN 8'-0" MAXIMUM PILE SPACING. KEEP PILES 2 AND 6 BETWEEN A MINIMUM OF 2'-0" AND A MAXIMUM OF 3'-3" FROM THE ABUTMENT F.F. CORNERS.
- — INDICATES WING NUMBER F.F.— FRONT FACE B.F.—BACK FACE CL.—CLEAR



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		DRAWN BY	RLR	PLANS CK'D.	JAS
NORTH ABUTMENT			SHEET 6 OF 9		

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DATE= 4/25/2018

Piles number 2 and 4 were cut 2 feet below plan grade without asking for permission. The designers told the project engineer the cut piles were okay to leave alone.

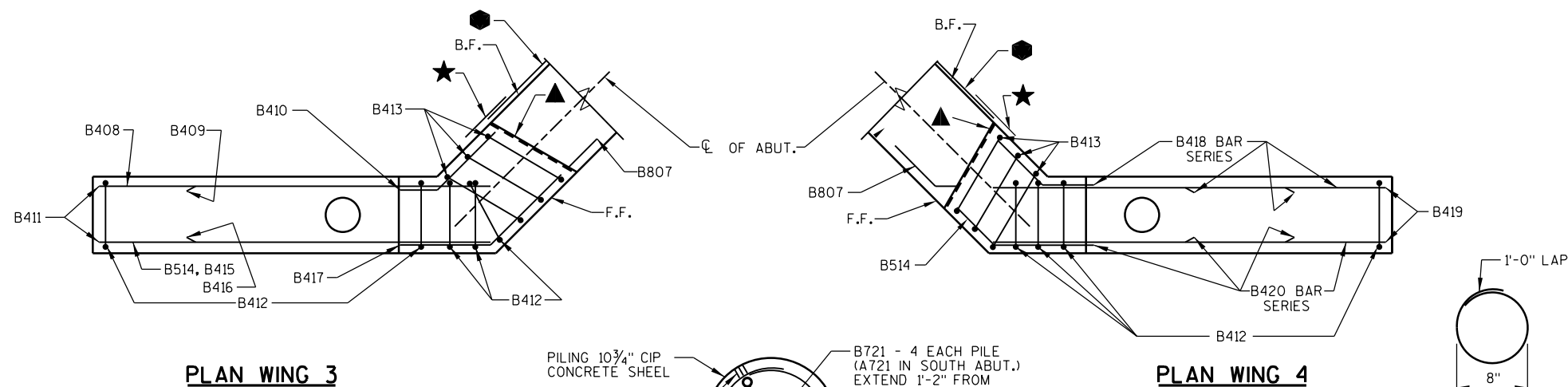
SEE LEGEND ON SHEET
6 FOR DESCRIPTION OF

ELEVATION WING 3

(LOOKING AT F.F. OF WING)

ELEVATION WING 4

(LOOKING AT F.F. OF WING)



PLAN WING 3

GENERAL NOTES

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

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

ALL TRANSVERSE BAR STEEL REINFORCEMENT SHALL BE PLACED ON THE SKEW.

SURVEY TOP OF SLAB ELEVATIONS

LOCATION	SPAN POINT	WEST SLAB EDGE	C/L DOLPHIN ROAD	EAST SLAB EDGE
SOUTH ABUT.	1.0	958.195	958.45	958.2
	1.5	958.22	958.495	958.27
NORTH ABUT.	2.0	958.2	958.42	958.195

PRIOR TO RELEASING SLAB FALSEWORK, TAKE TOP OF SLAB ELEVATIONS AT THE C/L OF ABUTMENTS AND AT THE 0.5 PTS. TO VERIFY CAMBER. TAKE ELEVATIONS ALONG EDGE OF SLAB AND CROWN OR C/L. RECORD THE ELEVATIONS IN THE ABOVE TABLE FOR THE "AS BUILT" PLANS.

TOP OF SLAB ELEVATIONS AND CAMBER VALUES

LOCATION	SPAN POINT	EAST SLAB EDGE	C/L DOLPHIN ROAD	WEST SLAB EDGE	CAMBER VALUE (INCHES)
SOUTH ABUT.	1.0	958.21	958.47	958.21	0.0
	1.1	958.21	958.47	958.21	0.3
	1.2	958.21	958.47	958.21	0.6
	1.3	958.21	958.47	958.21	0.8
	1.4	958.21	958.47	958.21	0.9
	1.5	958.21	958.47	958.21	0.9
	1.6	958.21	958.47	958.21	0.9
	1.7	958.21	958.47	958.21	0.8
	1.8	958.21	958.47	958.21	0.6
NORTH ABUT.	1.9	958.21	958.47	958.21	0.3
	2.0	958.21	958.47	958.21	0.0

BILL OF BARS (COATED) 11,740 LBS.

MARK	NO. REQ'D.	LENGTH	BENT	LOCATION
S501	54	7'-3"	X	DIAPHRAGM @ ABUTS. - LONGIT.
S902	27	38'-2"		SLAB BOTTOM - LONGIT.
S1003	26	30'-5"		SLAB BOTTOM - LONGIT.
S504	94	27'-1"		SLAB TOP & BOTTOM - TRANS.
S405	30	38'-2"		SLAB TOP - LONGIT.
S606	28	12'-0"	X	SLAB TOP @ RAIL POST, 2 PER POST
S607	40	6'-0"		SLAB TOP @ RAIL POST, 4 PER POST
S608	16	6'-0"	X	SLAB TOP @ RAIL END POST AS NOTED

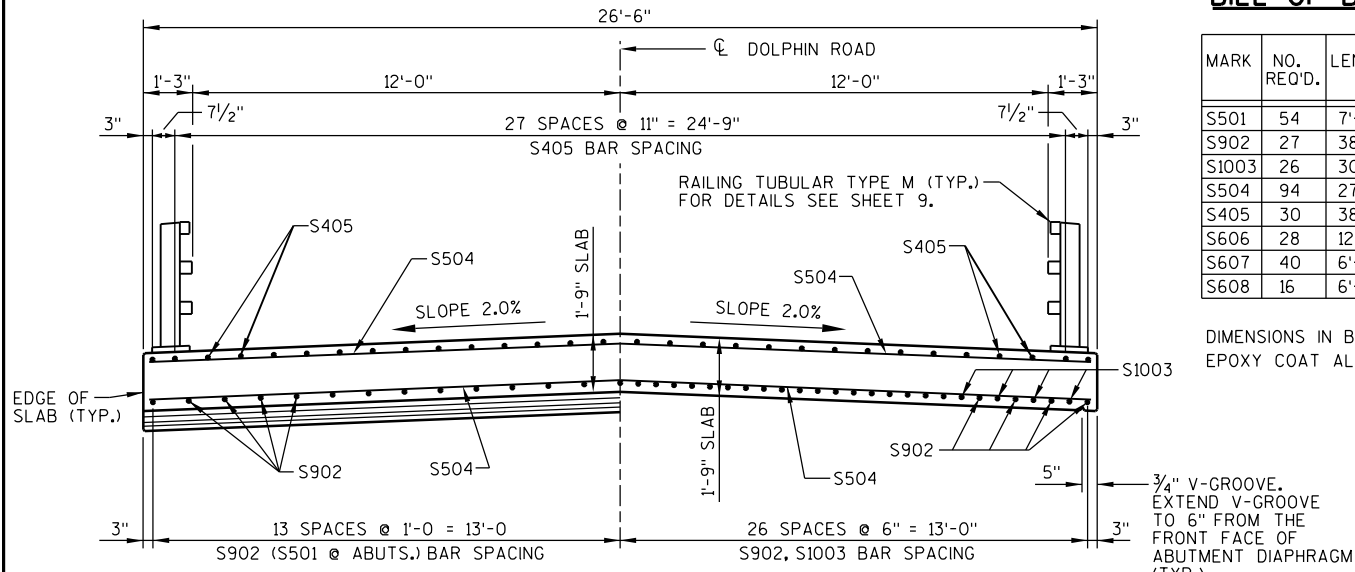
DIMENSIONS IN BENDING DETAILS ARE OUT TO OUT OF BAR. EPOXY COAT ALL SUPERSTRUCTURE BAR STEEL REINFORCEMENT.

CAMBER DIAGRAM

CAMBER SPANS AS SHOWN ABOVE AND IN THE TABLE OF VALUES TO PROVIDE FOR DEAD LOAD DEFLECTION AND FUTURE CREEP. CAMBER DOES NOT INCLUDE ALLOWANCE FOR FORM SETTLEMENT. DEAD LOAD DEFLECTION APPROXIMATES 1/3 OF CAMBER VALUES SHOWN.

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

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

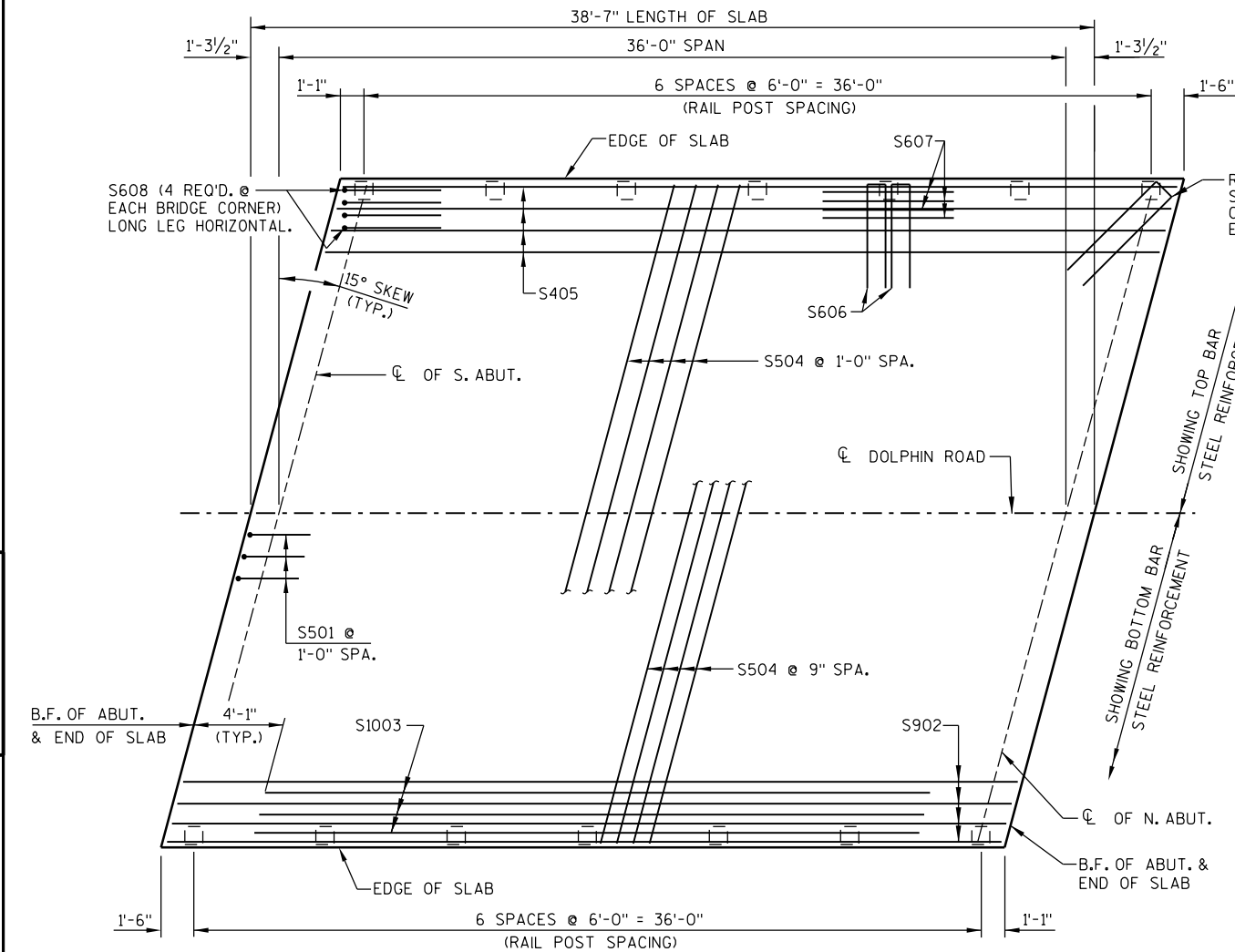


AT ABUTMENTS

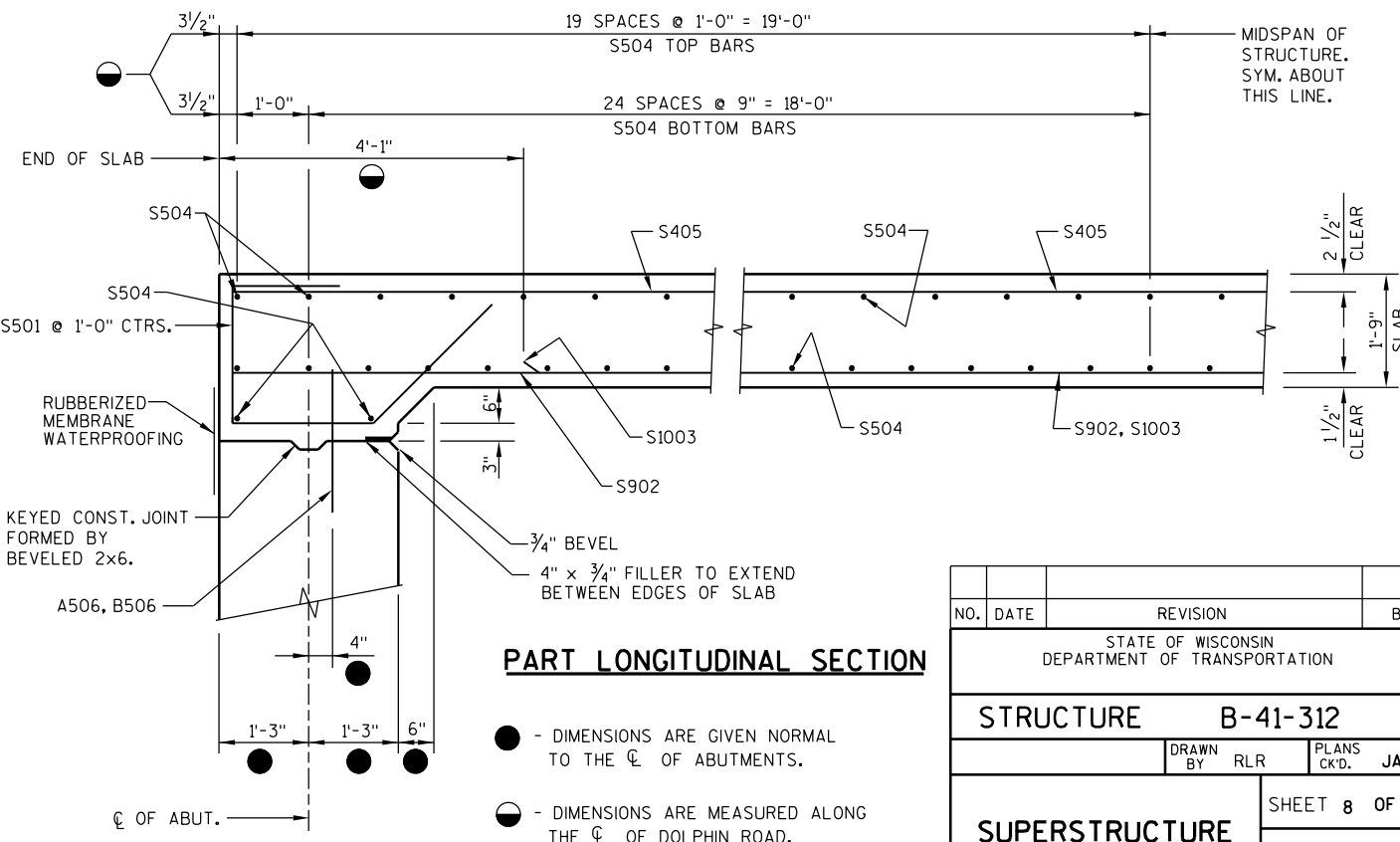
IN SPAN

CROSS SECTION THRU BRIDGE

(LOOKING NORTH)



PLAN



PART LONGITUDINAL SECTION

- - DIMENSIONS ARE GIVEN NORMAL TO THE C/L OF ABUTMENTS.
- - DIMENSIONS ARE MEASURED ALONG THE C/L OF DOLPHIN ROAD.

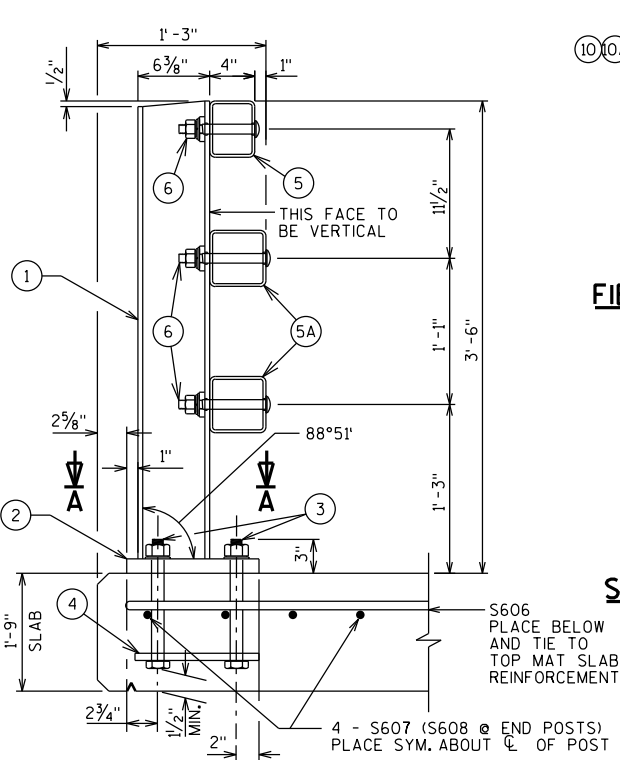
NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE B-41-312			
DRAWN BY RLR		PLANS CK'D. JAS	
SUPERSTRUCTURE			SHEET 8 OF 9

LEGEND

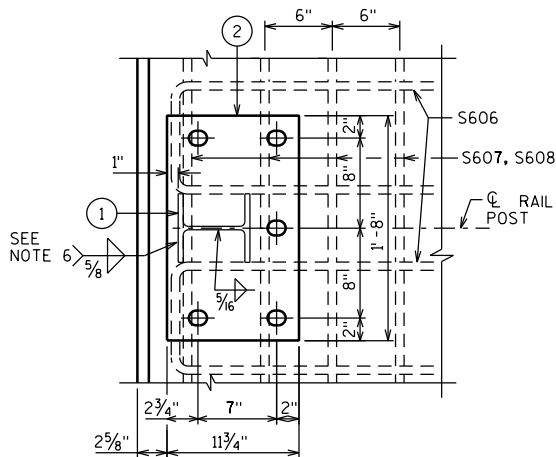
- ① W6 x 25 WITH 1/8" X 1/2" HORIZ. SLOTS ON EACH SIDE OF POST FOR BOLT NO.6. CUT BOTTOM OF POST TO MATCH CROSS SLOPE OF ROADWAY. PLACE POST VERTICAL. PLACE POSTS NORMAL TO GRADE LINE.
- ② PLATE 1/4" X 11 3/4" X 1'-8" WITH 1 5/8" X 1 5/8" SLOTTED HOLES FOR ANCHOR BOLTS NO.3. WELD TO NO.1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF PLATE.
- ③ ASTM A449 - 1/6" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO SLICE TUBE. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-3" LONG.
- ④ 5/8" X 11" X 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1 3/8" 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 5/8" X 1 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 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 5/8" X 2'-4" PLATE. 2 PER RAIL. USED IN NO.5 & 5A.
- ⑩A 3/8" X 2 5/8" X 2'-4" PLATE USED IN NO.5, 3/8" X 3 5/8" X 2'-4" PLATE USED IN NO.5A. 2 PER RAIL.
- ⑪ 7/8" φ A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 1 5/8" X 1 1/4" LONGIT. SLOTTED HOLES AT FIELD JOINTS IN PLATE NO.10A.
- * ⑫ 7/8" DIA. X 1 1/2" LONG THREADED SHOP WELDED STUDS (2 REQ'D).
- * ⑬ 3/8" X 8" X 1'-6" ANCHOR 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 REQUIRED).
- * ⑮ 1" φ 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.

GENERAL NOTES

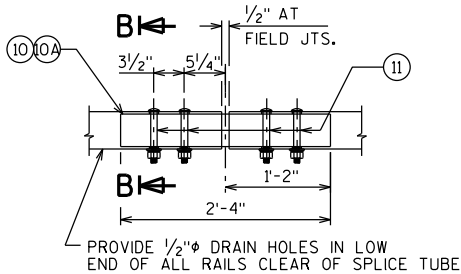
1. BID ITEM SHALL BE "RAILING TUBULAR TYPE M B-41-312" WHICH INCLUDES ALL ITEMS SHOWN.
2. RAIL POST AND BASE PLATES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 GRADE 50. HOLLOW RAILING STRUCTURAL TUBING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE B OR C WITH A CERTIFIED FY = 50 KSI. ANCHOR 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. PAINTING IS NOT REQUIRED.
11. THIS RAILING MEETS NCHRP REPORT 350 EVALUATION CRITERIA FOR TEST LEVEL 4 (TL-4).
- * ⑫. DO NOT FURNISH ITEMS ⑦ ⑧ ⑫ ⑬ ⑭ AND ⑮. THRIE BEAM RAIL ATTACHMENT IS NOT INCLUDED.



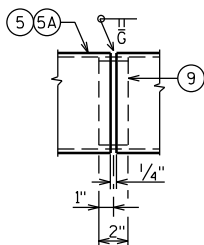
SECTION THRU RAILING ON SLAB



SECTION A-A

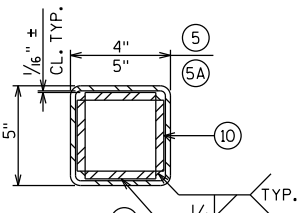


FIELD ERECTION JOINT DETAIL

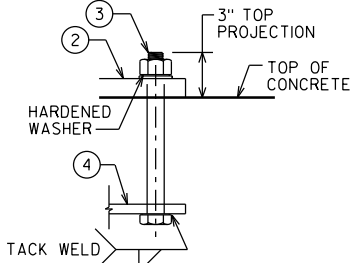


SHOP RAIL SPLICE DETAIL

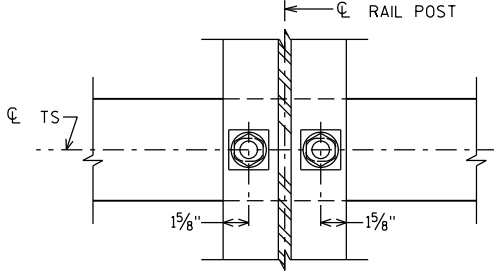
(LOCATION MUST BE SHOWN ON SHOP DRAWINGS)



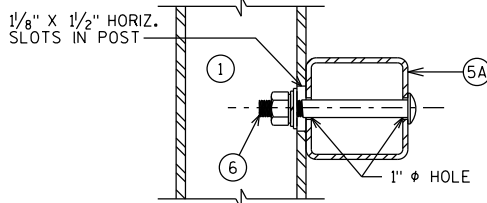
SECTION B-B



ANCHOR BOLTS



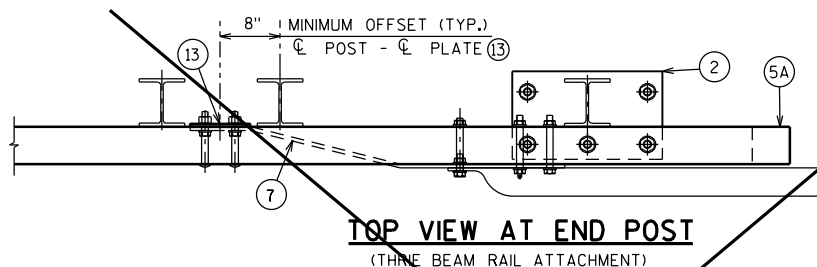
SECTION THRU POST WEB



SECTION THRU RAIL

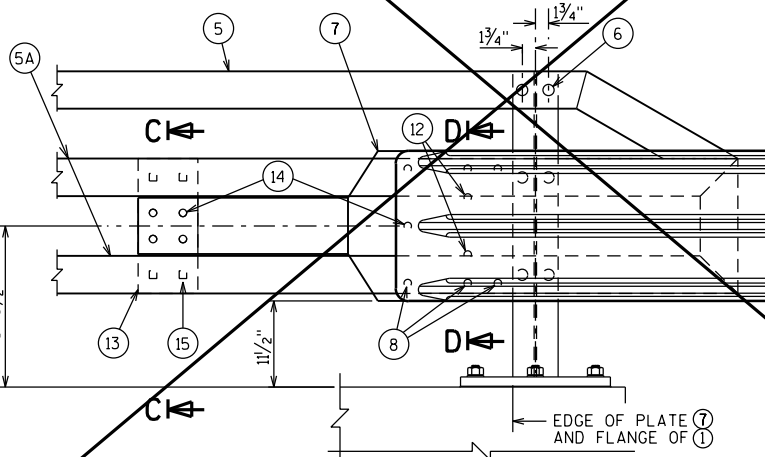
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS

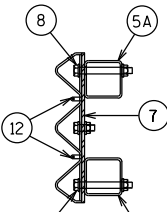


TOP VIEW AT END POST

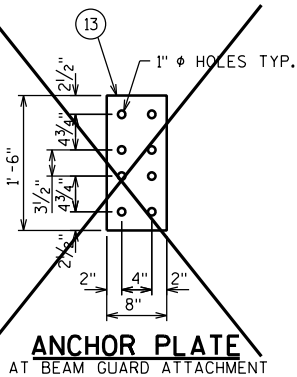
(THRIE BEAM RAIL ATTACHMENT)



SECTION C-C



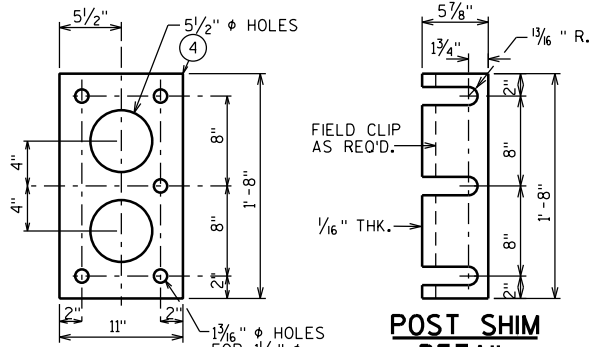
SECTION D-D



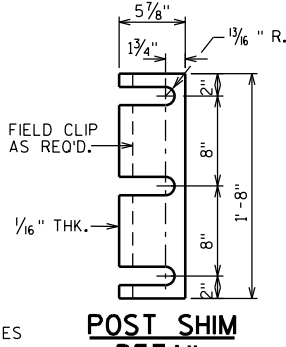
ANCHOR PLATE
AT BEAM GUARD ATTACHMENT

DETAIL AT END POST

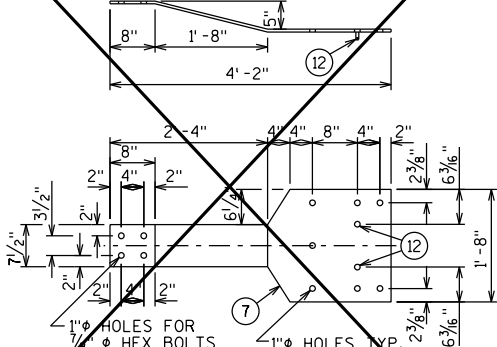
(THRIE BEAM RAIL ATTACHMENT)



ANCHOR PLATE
AT RAIL TO DECK ATTACHMENT

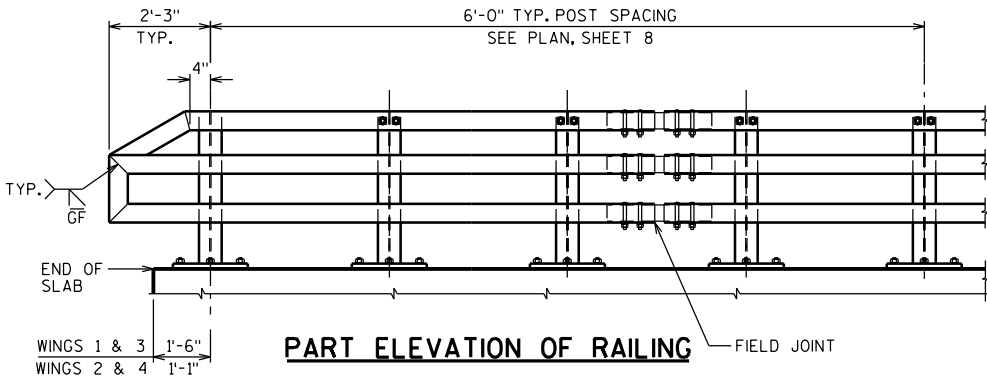


POST SHIM
DETAIL



BACK-UP PLATE DETAIL

AT BEAM GUARD ATTACHMENT



PART ELEVATION OF RAILING

NO.	DATE	REVISION	BY
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION			
STRUCTURE		B-41-312	
DRAWN BY RLR		PLANS CK'D. JAS	
RAILING TUBULAR TYPE M		SHEET 9 OF 9	