GRE

PROJECT ID: 4546-02-71

WITH: NA

COUNTY: BROWN COUNTY

60

FEBRUARY 2019

ORDER OF SHEETS

TOTAL SHEETS = 70

Sheets revised: 1, 3, 5, 9, 11, 38, 48

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PLAN OF PROPOSED IMPROVEMENT

T WRIGHTSTOWN, CTH D

PLUM CREEK BRIDGE

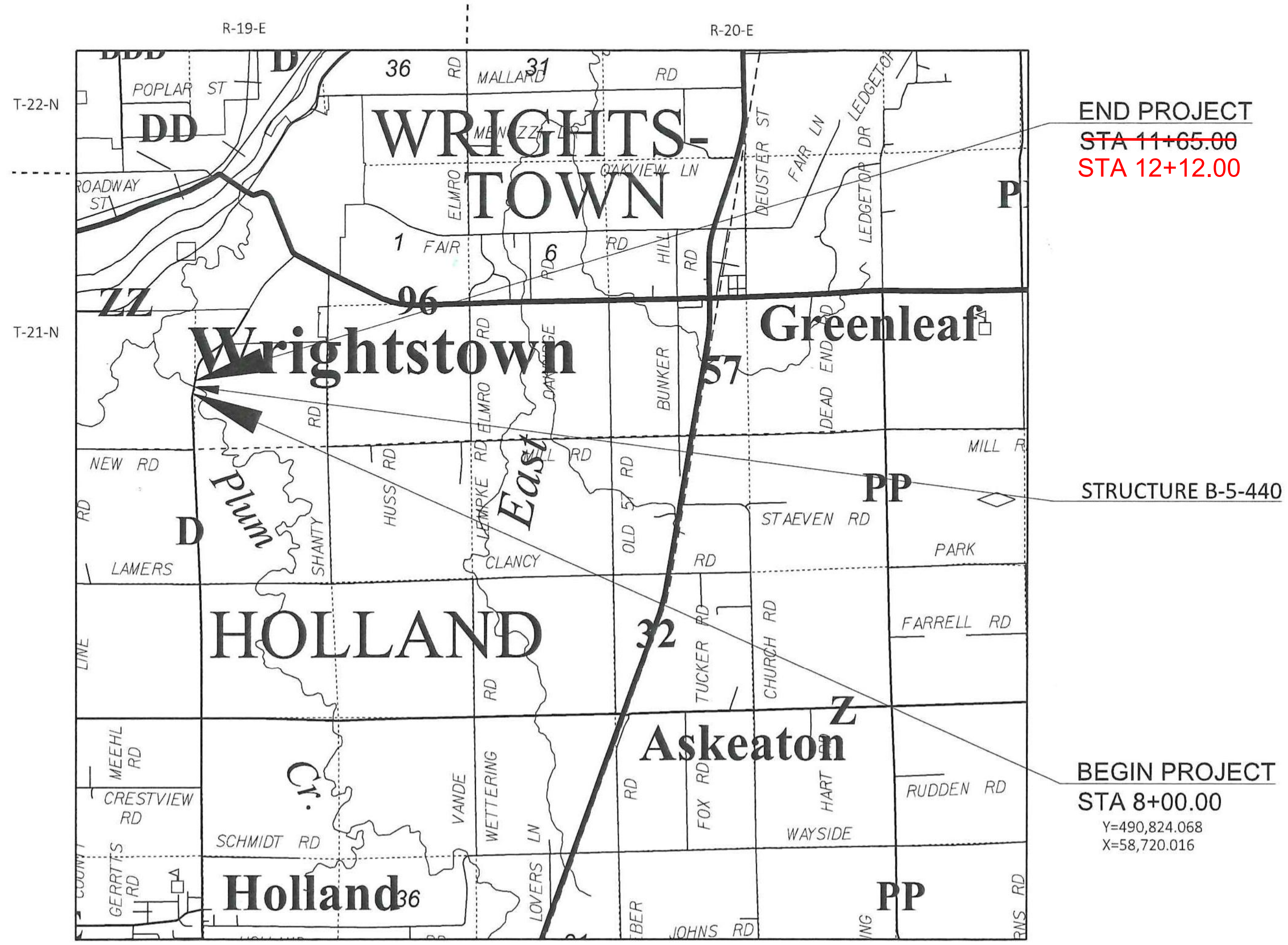
CTH D
BROWN COUNTY

STATE PROJECT NUMBER
4546-02-71

STATE PROJECT	FEDERAL PROJECT	
	PROJECT	CONTRACT
4546-02-71		

AS-BUILT PLAN

SUPERVISOR: Rob Wagner
PROJECT MANAGER: Kyle Treml
PROJECT LEADER: Sam Bremer
CONTRACTOR: Radtke Contractors Inc.
CONSTRUCTION STARTED 07/22/19
SUBSTANTIALLY COMPLETE 10/25/19



LAYOUT

SCALE 0 — 1.0 MI

TOTAL NET LENGTH OF CENTERLINE = 0.069 MI

HORIZONTAL POSITIONS SHOWN ON THIS PLAN ARE WISCONSIN COUNTY COORDINATES, BROWN 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.

DESIGN DESIGNATION

A.A.D.T.	(2019)	=	2,300
A.A.D.T.	(2039)	=	3,300
D.H.V.		=	N/A
D.D.		=	60/40
T.		=	6.0%
DESIGN SPEED		=	50 MPH
ESALS		=	380,000

Subcontractor List
Century Fence Company
Dirty Ducts Cleaning, Environmental, Inc.
G&J Site Solutions, Inc.
Mega Rentals, Inc.
Mid-State Concrete Cutting Co.
Northeast Asphalt
TNT Professional Land Surveyors, Inc.
Vinton Construction Company

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 — E
FIBER OPTIC — FO
GAS — G
SANITARY SEWER — SAN
STORM SEWER — SS
TELEPHONE — T
WATER — W
UTILITY PEDESTAL
POWER POLE
TELEPHONE POLE

ACCEPTED FOR BROWN COUNTY

DATE: 7/25/18 (Signature)

Senior Civil Engineer (Title of Official)

ORIGINAL PLANS PREPARED BY

CORRE

WISCONSIN ERIC T. PRICE E-39027 MADISON WI PROFESSIONAL ENGINEER

DATE: 7/18/18 (Signature)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

PREPARED BY
Surveyor CORRE, INC.
Designer CORRE, INC.

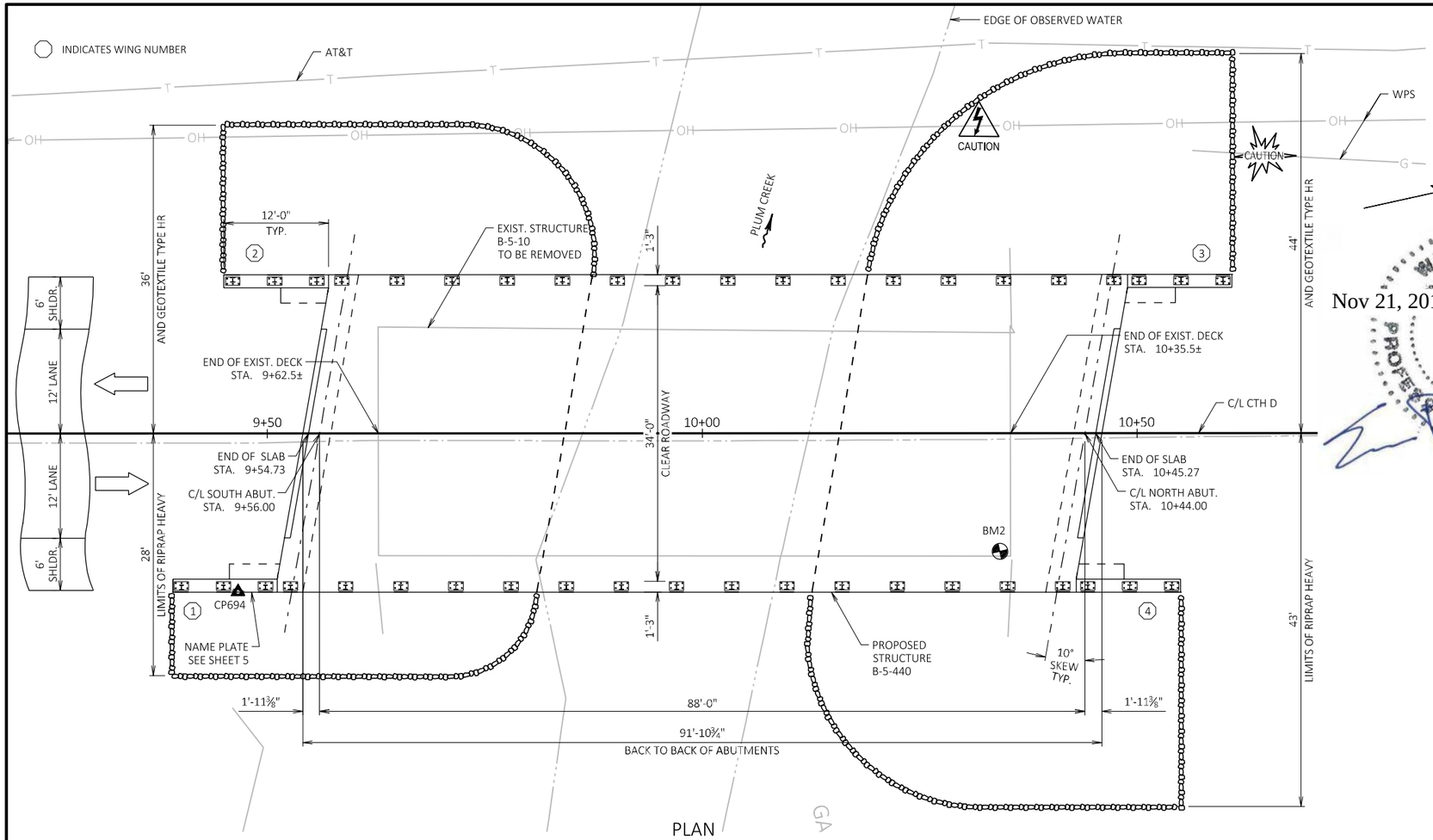
Management Consultant SHORT ELLIOT HENDRICKSON, INC.

APPROVED FOR THE DEPARTMENT

DATE: 7/30/18 MANAGEMENT CONSULTANT SIGNATURE

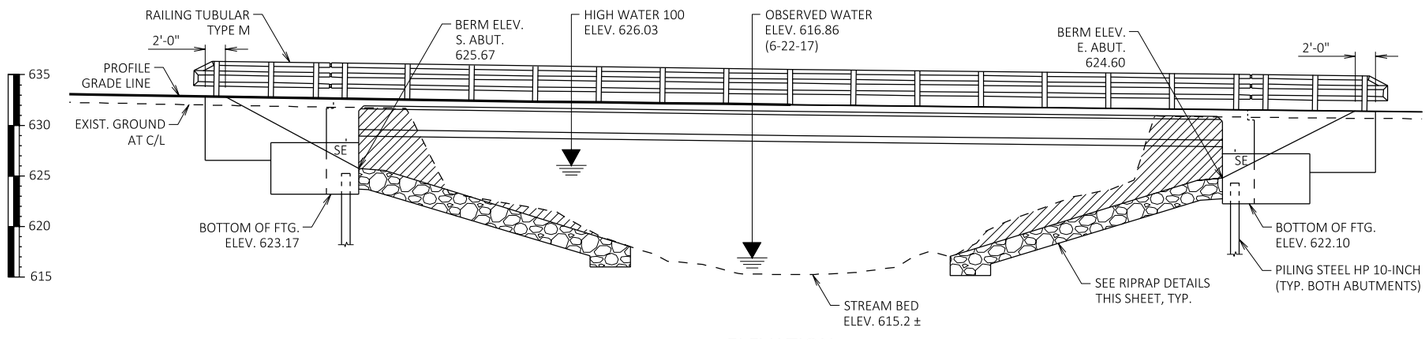
E

FILE NAME : P:\WI - NE REGION\4546-02-00_CTH D_BROWN CO\500_CADD\501_C3D_2016\4546-02-00\SHEETSPLAN\010101-TI.DWG PLOT DATE : 6/15/2018 4:52 PM PLOT BY : BOBBY JONES PLOT NAME :



PLAN

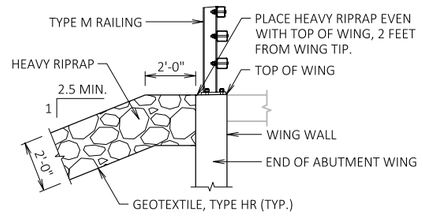
(SINGLE SPAN 36W" PRESTRESSED CONCRETE GIRDERS)



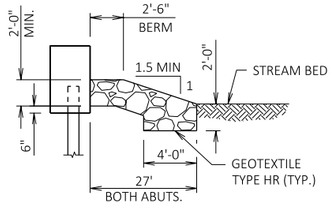
ELEVATION

(LOOKING WEST)

AREA TO EXCAVATE INCLUDED IN "EXCAVATION FOR STRUCTURES BRIDGES B-5-440"



TYPICAL FILL SECTION AT WING TIPS



RIPRAP DETAIL

BENCH MARKS

NO.	STATION	DESCRIPTION	ELEV.
CP694	9+46.5	60D NAIL, 18.3' RT.	631.10
BM2	10+34.3	DISC, 13.9' RT.	631.45
CP	12+32.6	TELE. PED., 37.9' LT.	624.96

STATE PROJECT NUMBER

4546-02-71

DESIGN DATA

DESIGN LOADING	HL-93
INVENTORY RATING FACTOR	1.17
OPERATIONAL RATING FACTOR	1.86
WISCONSIN STANDARD PERMIT VEHICLE (WIS-SPV)	240 KIPS

STRUCTURE IS DESIGNED FOR A FUTURE WEARING SURFACE OF 20 PSF.

MATERIAL PROPERTIES

CONCRETE MASONRY, SLAB	f'c = 4,000 PSI
ALL OTHER	f'c = 3,500 PSI
HIGH STRENGTH BAR STEEL REINFORCEMENT	fy = 60,000 PSI
36W" PRESTRESSED GIRDERS, CONCRETE MASONRY	f'c = 6,000 PSI
STRANDS-0.6" DIA ULTIMATE TENSILE STRENGTH	fu = 270,000 PSI

Nov 21, 2018 ERIC T. PRICE E-39027 MADISON WI PROFESSIONAL ENGINEER WISCONSIN

TRAFFIC DATA

ADT (2019) =	2,300
ADT (2039) =	3,300
DESIGN SPEED =	50 MPH

AVERAGE PILE LENGTH WAS ROUGHLY 72 FEET

FOUNDATION DATA

ABUTMENTS TO BE SUPPORTED ON HP 10-INCH X 42 LB STEEL PILING DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 165* TONS PER PILE AS DETERMINED BY THE MODIFIED GATES DYNAMIC FORMULA. ESTIMATED 90' LONG AT BOTH ABUTMENTS.

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

HYDRAULIC DATA

100 YEAR FREQUENCY

Q_{100} = 3,340 C.F.S.
VEL. = 7.0 F.P.S.
HW_{100} = EL. 626.03
WATERWAY AREA = 475 SQ. FT.
DRAINAGE AREA = 21.2 SQ. MI.
SCOUR CRITICAL CODE = 5

2 YEAR FREQUENCY

Q_2 = 1,220 C.F.S.
VEL. = 5.0 F.P.S.
HW_2 = EL. 622.57

LIST OF DRAWINGS

NO.	DATE	REVISION	BY

CORRE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

ACCEPTED William C. Dreher SDR 11/23/18
CHIEF STRUCTURES DESIGN ENGINEER — DATE

STRUCTURE B-5-440

CTH D OVER PLUM CREEK

COUNTY	TOWN/~~CITY/VILLAGE~~
BROWN	WRIGHTSTOWN

DESIGN SPEC. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

DESIGNED BY	DESIGN CK'D.	DRAWN BY	PLANS CK'D.
ERA	ETP	PKF	ETP

GENERAL PLAN

SHEET 1 OF 13

37

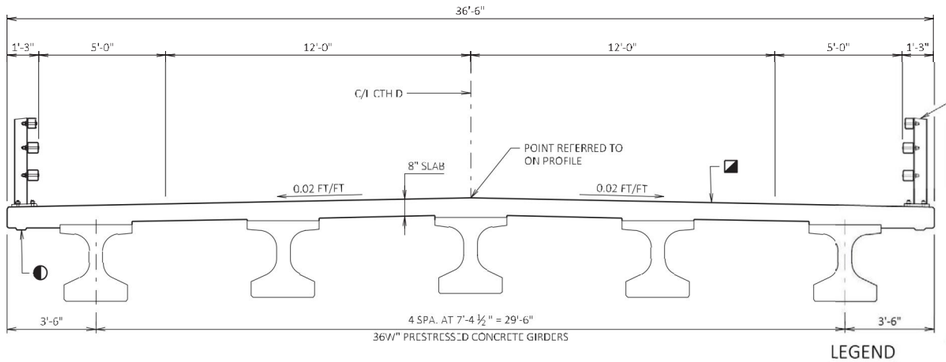
BRIDGE OFFICE CONTACT
BILL DREHER, P.E.
TELEPHONE: (608) 266-8489

CONSULTANT CONTACT
ERIC PRICE, P.E.
TELEPHONE: (608) 826-6146

8

8

STATE PROJECT NUMBER
4546-02-71



CROSS SECTION THRU BRIDGE
(LOOKING NORTH)

LEGEND

◐ SPECIAL DRIP EDGE REQ'D. EXTEND 6" FROM F.F. OF ABUTMENT BODY.

◪ COAT WITH "PROTECTIVE SURFACE TREATMENT" AS PER THE STANDARD SPECIFICATIONS.

WISCONSIN
ERIC T. PRICE
E-39027
MADISON
WI
PROFESSIONAL ENGINEER
January 23, 2019

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 NO. AND THE FIRST TWO DIGITS OF A FOUR DIGIT BAR NO. SIGNIFIES THE BAR SIZE.

JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF AASHTO DESIGNATION M153 TYPE I, II OR II OR AASHTO DESIGNATION M213.

THE SLOPE OF THE FILL IN FRONT OF THE ABUTMENTS SHALL BE COVERED WITH RIPRAP HEAVY AND GEOTEXTILE TYPE HR TO THE EXTENT SHOWN ON THE GENERAL PLAN SHEET AND IN THE ABUTMENT DETAILS, OR AS DIRECTED BY THE ENGINEER.

THE UPPER LIMITS OF "EXCAVATION FOR STRUCTURES BRIDGES B-5-440" SHALL BE THE EXISTING GROUNDLINE.

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.

THE HAUNCH CONCRETE QUANTITY IS BASED ON THE AVERAGE HAUNCH SHOWN ON THE PRESTRESSED GIRDER DETAILS SHEET.

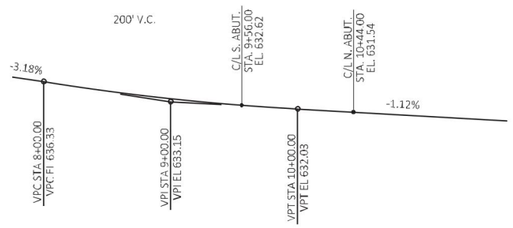
PROTECTIVE SURFACE TREATMENT IS TO BE APPLIED TO THE TOP OF DECK AND WINGS, EXTERIOR EXPOSED FACE OF WINGS, AND THE END 1'-0" OF THE ABUTMENT FRONT FACES.

THE EXISTING STRUCTURE B-5-10, TO BE REMOVED, IS A SINGLE SPAN STEEL DECK GIRDER BRIDGE, 73.0 FT. LONG WITH A 24.0 FT. CLEAR ROADWAY WIDTH.

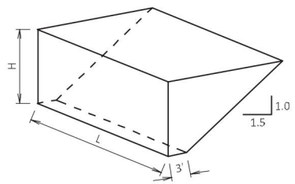
THE ELASTOMERIC BEARING PADS NON-LAMINATED NEED NOT BE INDIVIDUALLY MOLDED PROVIDED THE CUT EDGES ARE SMOOTH AND TRUE.

AT THE BACKFACE OF 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 BACKFILL QUANTITIES ARE BASED ON THE PAY LIMITS SHOWN ON THE PLANS AND MAY NOT REFLECT ACTUAL PLACE 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.



PROFILE GRADE LINE
(CTH D)



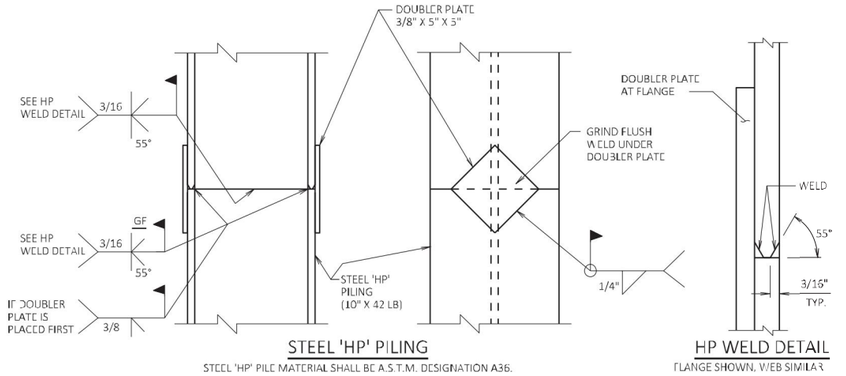
ABUTMENT BACKFILL QUANTITY DIAGRAM

L = OUT TO OUT OF ABUTMENT, INCLUDING WINGS (FT)
H = AVERAGE ABUTMENT FILL HEIGHT (FT)
EF = EXPANSION FACTOR (1.20 FOR CY BID ITEMS AND 1.00 FOR TON BID ITEVS)
V_{CF} = (L)(3.0')(H) + (L)(0.5)(1.5H)(H)
V_{CY} = V_{CF}(EF)/27
V_{TON} = V_{CY}(2.0)

William C. Dreher SDR
01/24/19

TOTAL ESTIMATED QUANTITIES

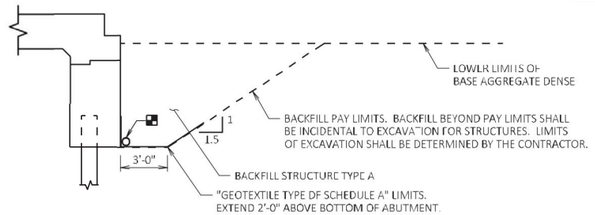
BID NUMBER	BID ITEM	UNIT	SOUTH ABUT.	NORTH ABUT.	SUPER	TOTALS
203.0600.S	REMOVING OLD STRUCTURE OVER WATERWAY WITH MINIMAL DEBRIS STA. 10+00	LS	-----	-----	-----	1
206.1000	EXCAVATION FOR STRUCTURES BRIDGES B-5-440	LS	-----	-----	-----	1
210.1500	BACKFILL STRUCTURE TYPE A	TON	170	170	-----	340
502.0100	CONCRETE MASONRY BRIDGES	CY	36	36	127	340
502.3200	PROTECTIVE SURFACE TREATMENT	SY	12	12	373	397
503.0137	PRESTRESSED GIRDER TYPE I 36W-INCH	LF	-----	-----	445	445
505.0400	BAR STEEL REINFORCEMENT HS STRUCTURES	LB	2,440	2,440	-----	4,880
505.0600	BAR STEEL REINFORCEMENT HS COATED STRUCTURES	LB	1,430	1,420	21,950	24,800
506.2605	BEARING PADS ELASTOMERIC NON-LAMINATED	EACH	5	5	-----	10
506.4000	STEEL DIAPHRAGMS B-5-440	EACH	-----	-----	8	8
513.4061	RAILING TUBULAR TYPE M	LF	26	26	184	236
516.0500	RUBBERIZED MEMBRANE WATERPROOFING	SY	9	9	-----	18
550.0500	PILE POINTS	EACH	9	9	-----	18
550.1100	PILING STEEL HP 10-INCH X 42 LB	LF	810	810	-----	1,620
606.0300	RIPRAP HEAVY	CY	190	265	-----	455
612.0406	PIPE UNDERDRAIN WRAPPED 6-INCH	LF	90	90	-----	180
645.0111	GEOTEXTILE TYPE DF SCHEDULE A	SY	36	36	-----	72
645.0120	GEOTEXTILE TYPE HR	SY	260	360	-----	620
	NON-BID ITEMS					
	FILLER	SIZE	-----	-----	-----	½" & ¼"



STEEL 'HP' PILING
STEEL 'HP' PILE MATERIAL SHALL BE A.S.T.M. DESIGNATION A36.

HP WELD DETAIL
FLANGE SHOWN, WEB SIMILAR

PILE SPLICE DETAILS



STRUCTURE BACKFILL LIMITS

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

ORIGINAL PLAN PREPARED BY
CORRE

NO.	DATE	REVISION	BY
⚠	1/23/19	QUANTITY REVISION	ETP

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CKD. ETP

CROSS SECTION & QUANTITIES

SHEET 2 OF 13

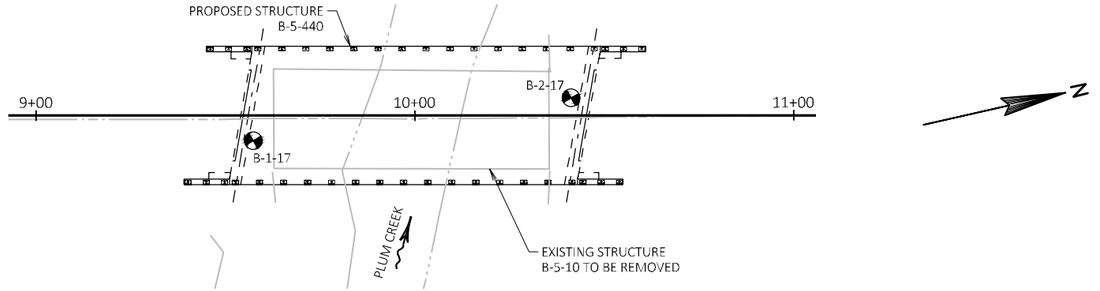
38

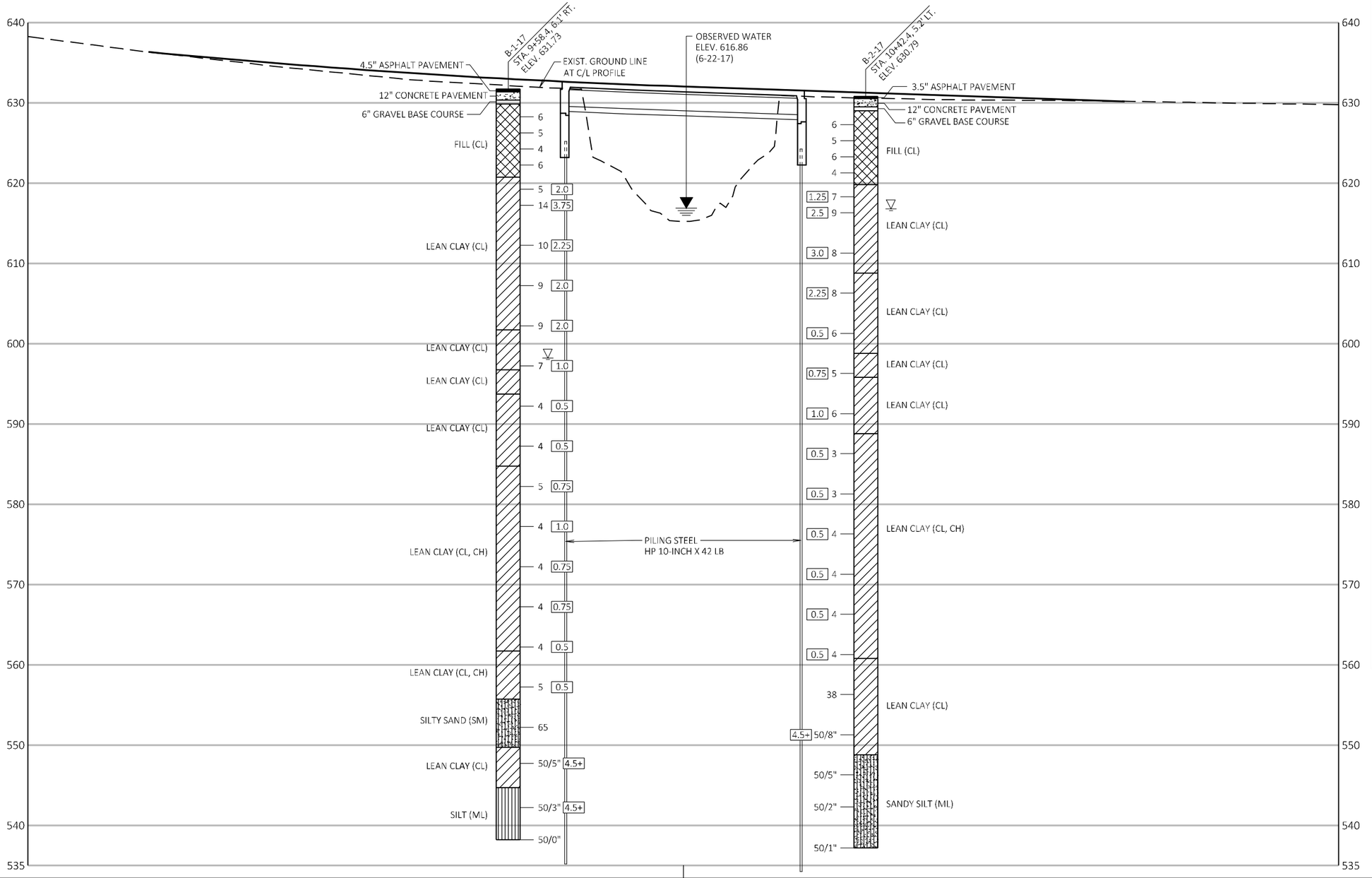
8

8

FILE NAME : P:\WI - NE REGION\4546-02-00_CTH D_BROWN CO\500_CADD\503_STRUCTURES\502.4_FINAL\080201-CS_CTH D.DWG PLOT DATE : 1/23/2019 1:10 PM PLOT BY : NICHOLAS WATHKE

BORING #	DATE COMPLETED	NORTHING (Y)	EASTING (X)
1	JULY 11, 2017	490976.2	58760.96
2	JULY 10, 2017	491060.5	58768.35
BORINGS COMPLETED BY: RIVER VALLEY TESTING CORP.			
REPORT COMPLETED BY: RIVER VALLEY TESTING CORP.			
ALL COORDINATES REFERENCED TO WCCS NAD 83(91) BROWN COUNTY			





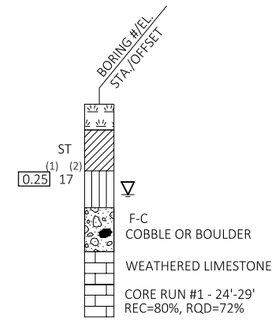
STATE PROJECT NUMBER

4546-02-71

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-5-440

DRAWN BY PKF · PLANS CK'D. ETP

SUBSURFACE EXPLORATION

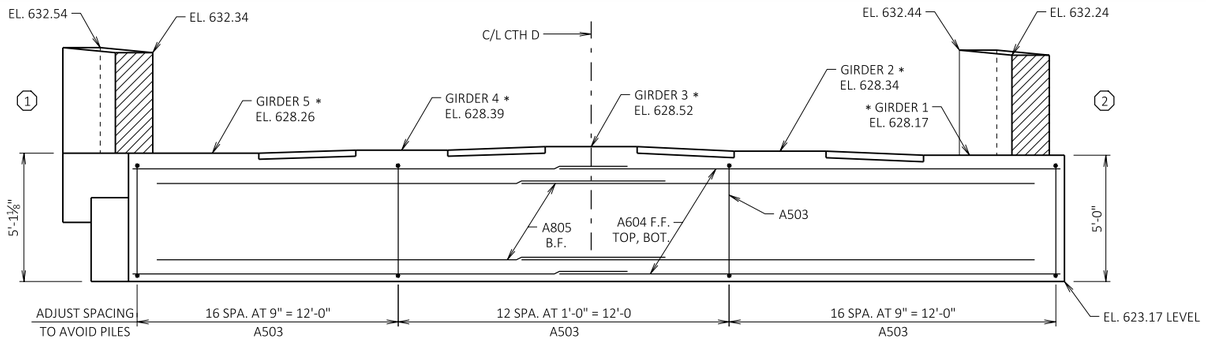
SHEET 3 OF 13

39

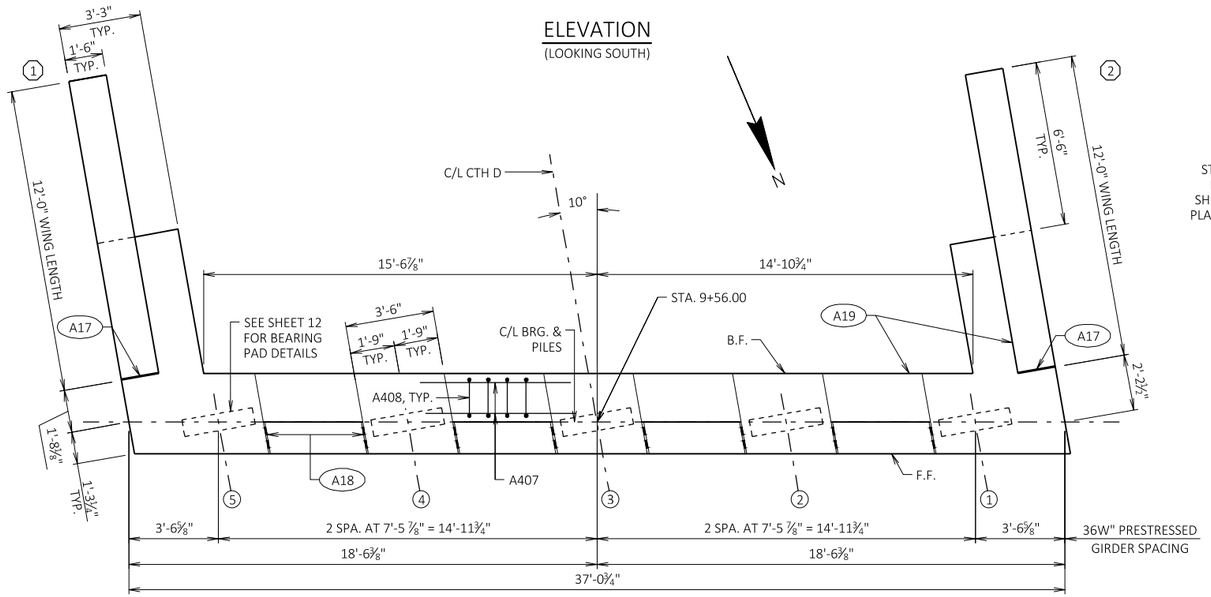
8

8

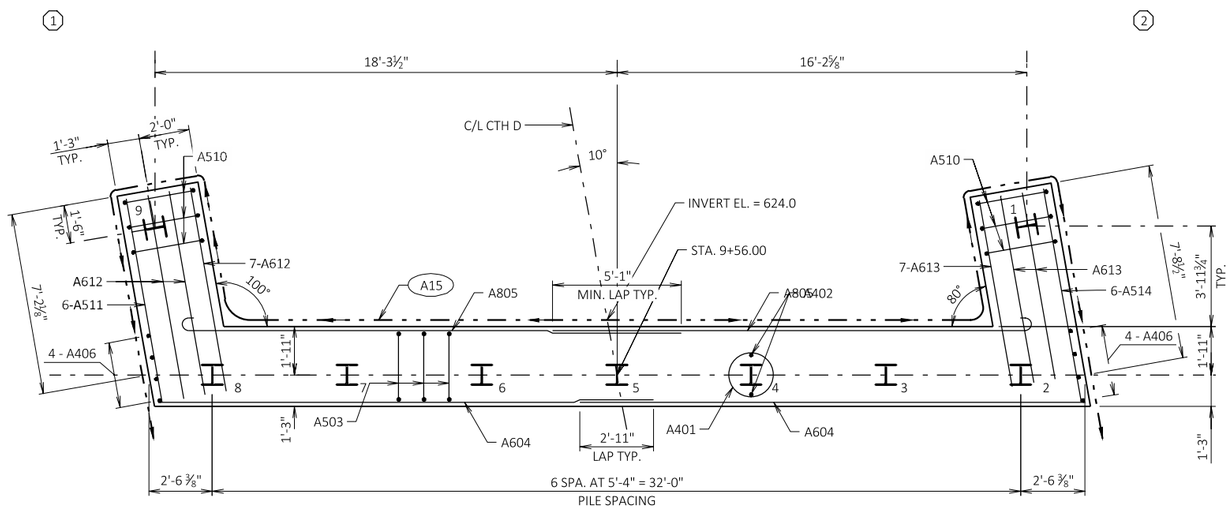
FILE NAME : P:\WI - NE REGION\4546-02-00_CTH D_BROWN CO\500_CADD\503_STRUCTURES\502.4_FINAL\080301-SX_CTH D.DWG PLOT DATE : 8/1/2018 12:23 PM PLOT BY : NICHOLAS WATHKE



ELEVATION
(LOOKING SOUTH)



PLAN



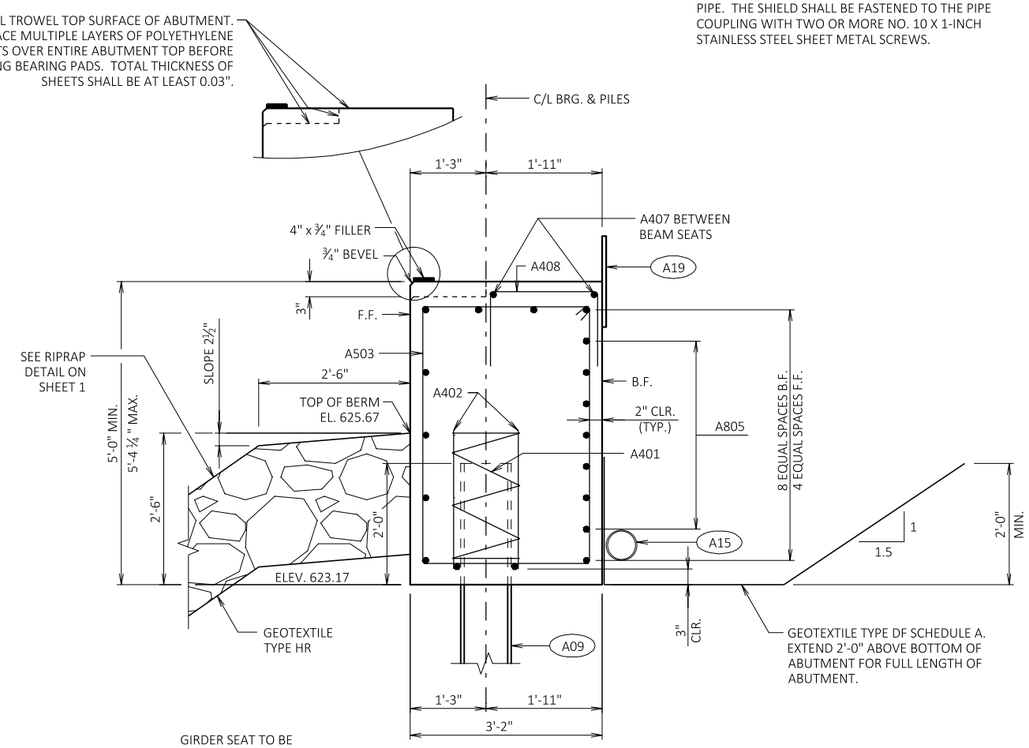
PILE PLAN

LEGEND

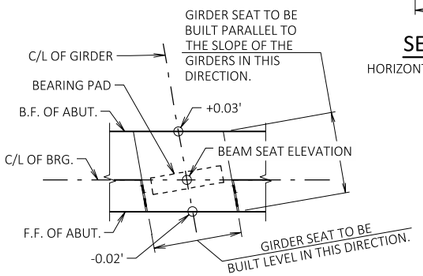
- ◯ INDICATES GIRDER NUMBER
- ⬡ INDICATES WING NUMBER
- * ELEVATION SHOWN AT THE TOP OF CONCRETE AT THE C/L OF BEARING.
- (A09) SUPPORT ABUTMENT ON PILING STEEL HP 10-INCH x 42 LB, ESTIMATED 90 FEET LONG, DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 165 TONS PER PILE. SEE ADDITIONAL FOUNDATION DATA ON SHEET 1 AND PILE SPLICE DETAILS ON SHEET 2.
- (A15) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SCREEN AT ENDS OF PIPE UNDERDRAIN. RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".
- (A17) ½" FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMNOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)
- (A18) ¾" CORK FILLER UP VERT. BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.
- (A19) 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

B.F. DENOTES BACK FACE
F.F. DENOTES FRONT FACE

STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".



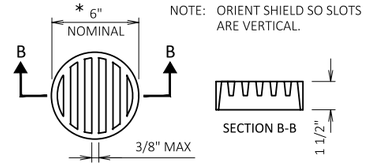
SECTION THRU BODY
HORIZONTAL BARS NOT OTHERWISE IDENTIFIED ARE A604 BARS



GIRDER SEAT DETAIL

STATE PROJECT NUMBER

4546-02-71



NOTE: ORIENT SHIELD SO SLOTS ARE VERTICAL.

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

RODENT SHIELD DETAIL

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 COMMERCIALLY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE OUTFALL PIPE. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CK'D. ETP

ORIGINAL PLAN PREPARED BY
CORRE

SOUTH ABUTMENT

SHEET 4 OF 13

40

8

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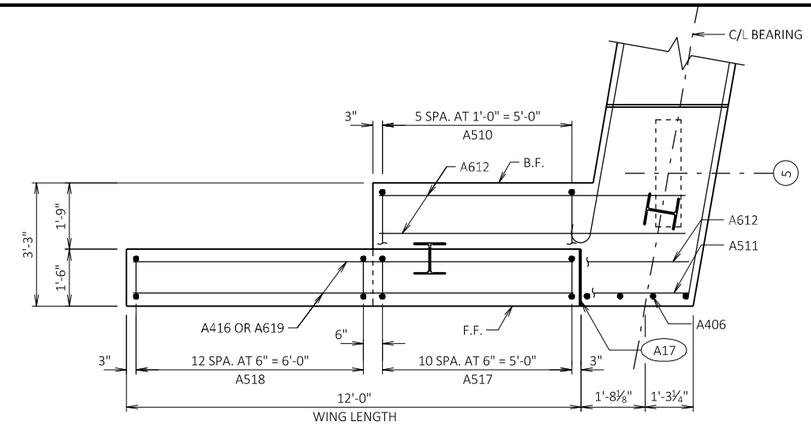
FILE NAME : P:\WI - NE REGION\4546-02-00_CTH D_BROWN CO\500_CADD\503_STRUCTURES\502.4_FINAL\080401-SA_CTH D.DWG

PLOT DATE : 8/1/2018 12:23 PM

PLOT BY : NICHOLAS WATHKE



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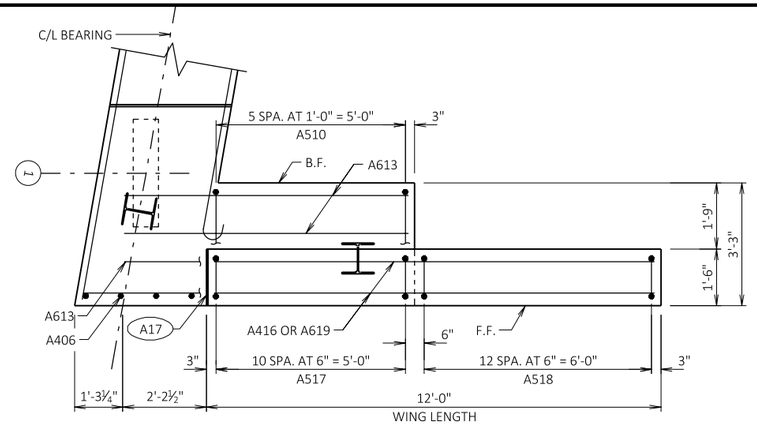

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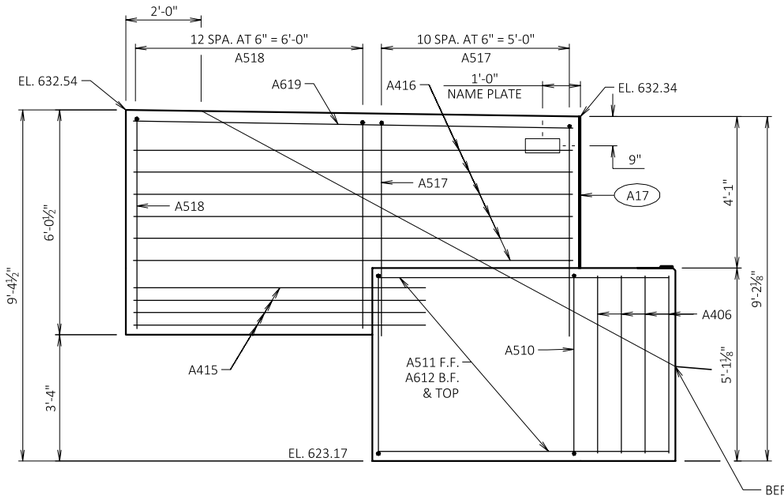

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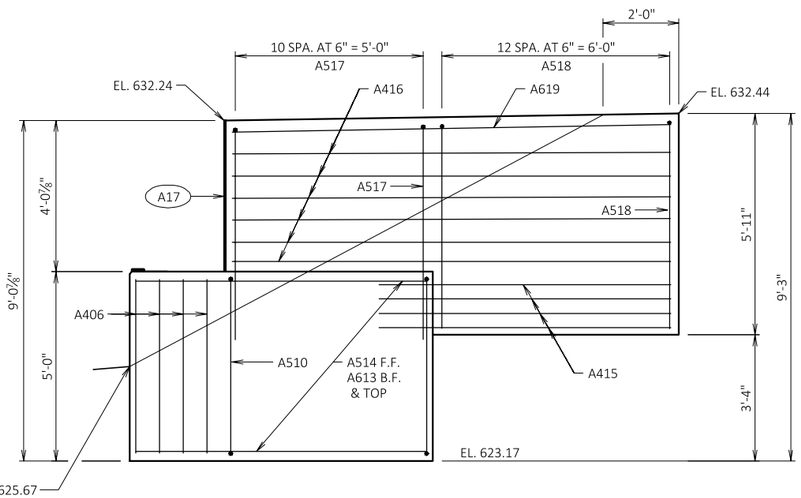

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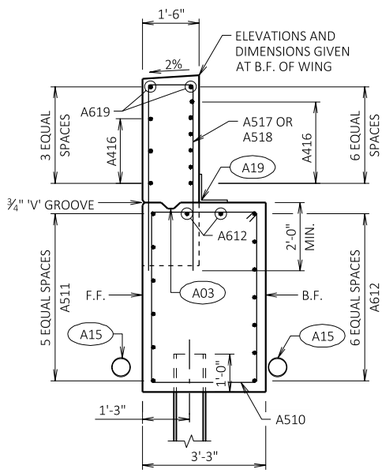

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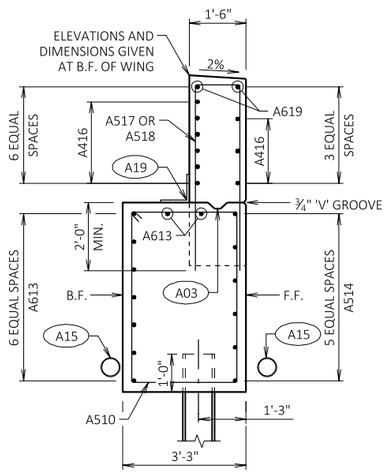

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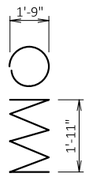

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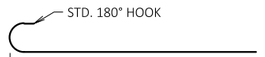

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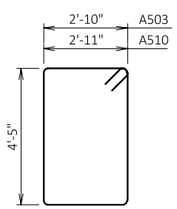
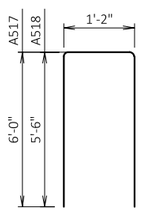
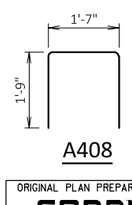


A503, A510



A517, A518



A408

STATE PROJECT NUMBER

4546-02-71

BILL OF BARS - SOUTH ABUTMENT

DIMENSIONS IN BENDING DETAILS ARE OUT-TO-OUT OF BAR.

BAR MARK	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION	
NON-COATED BARS					TOTAL WEIGHT = 2,440 LBS	
A401	9	28'-0"	X		BODY - AT PILES - 1 PER PILE	VERT.
A402	18	2'-3"			BODY - AT PILES - 2 PER PILE	VERT.
A503	45	15'-2"	X		BODY - STIRRUPS	VERT.
A604	22	19'-10"			BODY - B.F. & F.F. & TOP & BTM	HORIZ.
A805	14	20'-4"	X		BODY - B.F.	HORIZ.
A406	8	4'-7"			BODY - ENDS	VERT.
A407	8	6'-0"			BODY - BTWN BEAM SEATS	HORIZ.
A408	16	4'-11"	X		BODY - BTWN BEAM SEATS	VERT.
COATED BARS					TOTAL WEIGHT = 1,430 LBS	
A510	12	15'-4"	X		WINGS 1 & 2 - STIRRUPS	VERT.
A511	6	8'-1"			WING 1 - F.F.	HORIZ.
A612	9	8'-1"			WING 1 - TOP & B.F.	HORIZ.
A613	9	7'-6"			WING 2 - TOP & B.F.	HORIZ.
A514	6	8'-6"			WING 2 - F.F.	HORIZ.
A415	16	7'-9"			WINGS 1 & 2 - OVERHANG	HORIZ.
A416	18	11'-8"			WINGS 1 & 2	HORIZ.
A517	22	12'-11"	X		WINGS 1 & 2	VERT.
A518	26	11'-11"	X		WINGS 1 & 2 - OVERHANG	VERT.
A619	4	11'-8"			WINGS 1 & 2 - TOP	HORIZ.

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

LEGEND

- (A03) OPTIONAL KEYED CONST. JOINT FORMED BY BEVELED 2" x 6" (18" RUBBERIZED MEMBRANE WATERPROOFING AT B.F. & ¾" "V" GROOVE AT F.F. IF JOINT IS USED).
- (A09) SUPPORT ABUTMENT ON PILING STEEL HP 10-INCH x 42 LB, ESTIMATED 90 FEET LONG, DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 165 TONS PER PILE. SEE ADDITIONAL FOUNDATION DATA ON SHEET 1 AND PILE SPLICE DETAILS ON SHEET 2.
- (A15) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SCREEN AT ENDS OF PIPE UNDERDRAIN. RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".
- (A17) ½" FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMNOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)
- (A19) 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

B.F. DENOTES BACK FACE

F.F. DENOTES FRONT FACE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CK'D. ETP

ORIGINAL PLAN PREPARED BY CORRE

SOUTH ABUTMENT DETAILS

SHEET 5 OF 13

41

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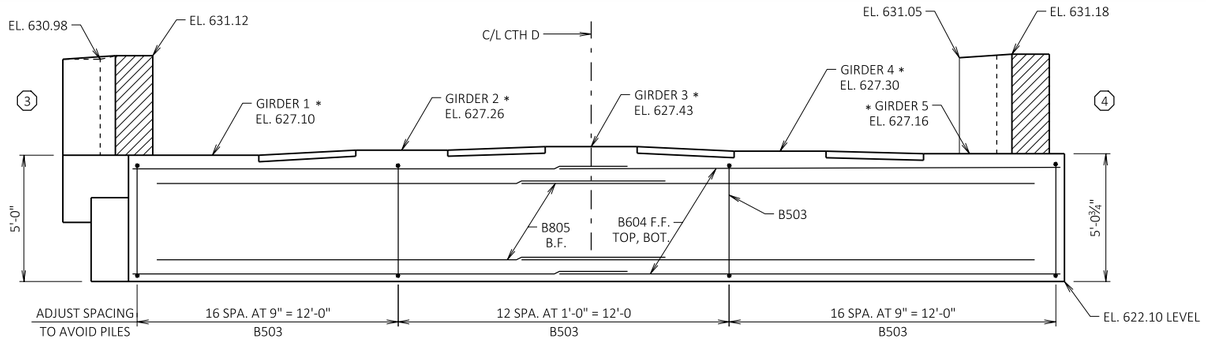
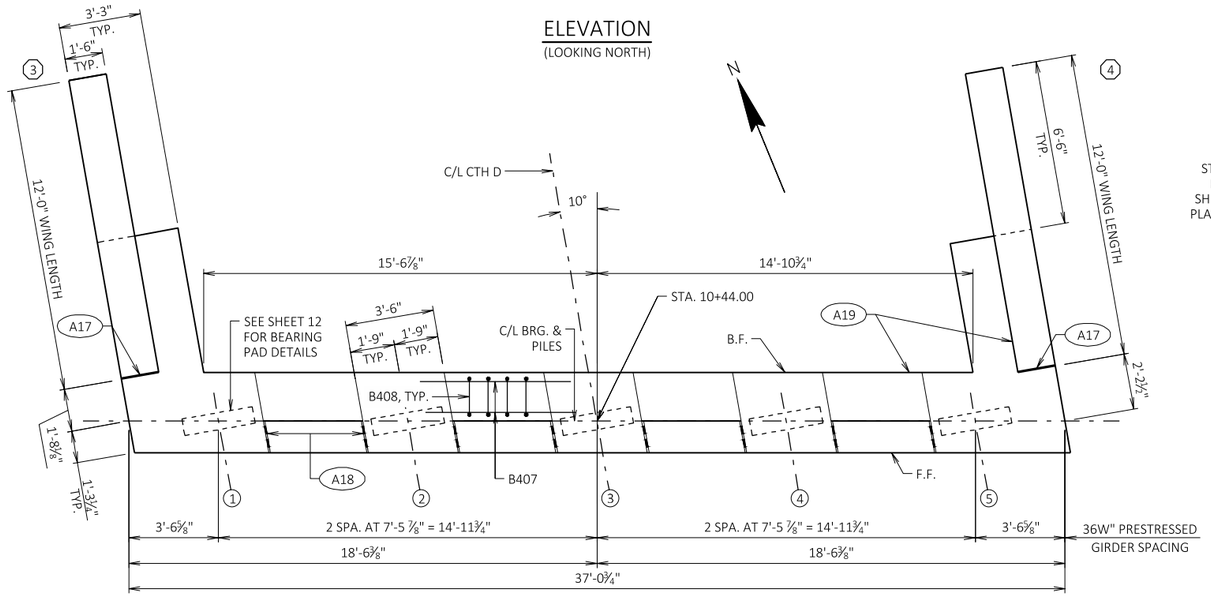
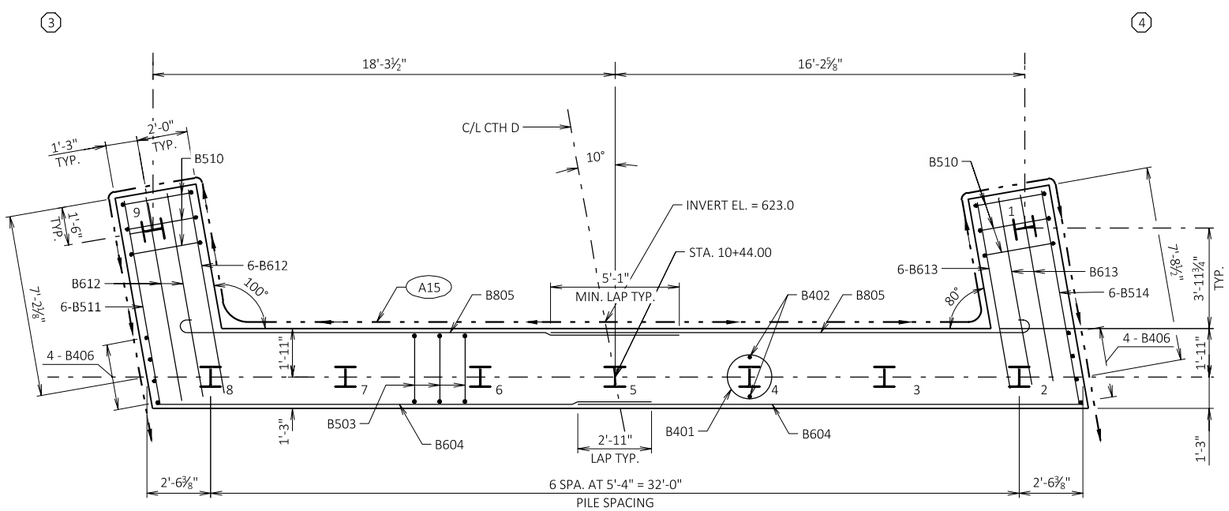


ELEVATION
(LOOKING NORTH)



PLAN



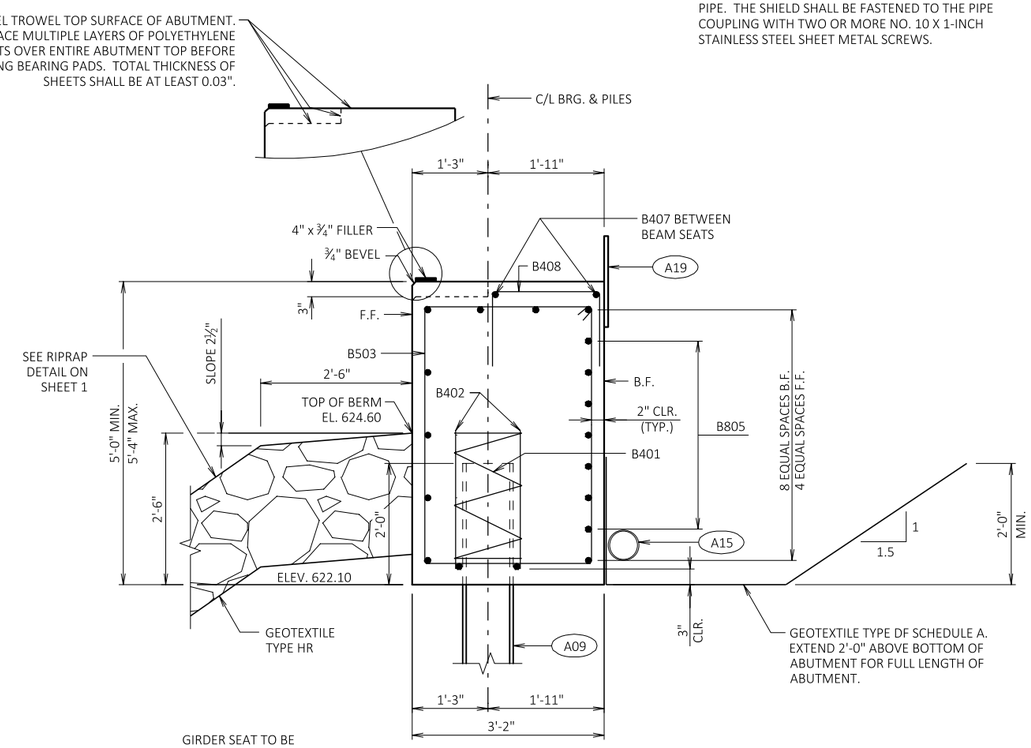
PILE PLAN

LEGEND

- ◯ INDICATES GIRDER NUMBER
- ⬡ INDICATES WING NUMBER
- * ELEVATION SHOWN AT THE TOP OF CONCRETE AT THE C/L OF BEARING.
- (A09) SUPPORT ABUTMENT ON PILING STEEL HP 10-INCH x 42 LB, ESTIMATED 90 FEET LONG, DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 165 TONS PER PILE. SEE ADDITIONAL FOUNDATION DATA ON SHEET 1 AND PILE SPLICE DETAILS ON SHEET 2.
- (A15) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SCREEN AT ENDS OF PIPE UNDERDRAIN. RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".
- (A17) ½" FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMNOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)
- (A18) ¾" CORK FILLER UP VERT. BEAM SEAT FACES THAT RUN PARALLEL WITH GIRDER.
- (A19) 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

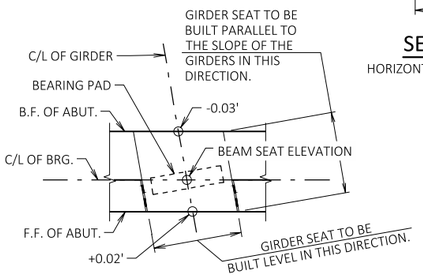
B.F. DENOTES BACK FACE
F.F. DENOTES FRONT FACE

STEEL TROWEL TOP SURFACE OF ABUTMENT. PLACE MULTIPLE LAYERS OF POLYETHYLENE SHEETS OVER ENTIRE ABUTMENT TOP BEFORE PLACING BEARING PADS. TOTAL THICKNESS OF SHEETS SHALL BE AT LEAST 0.03".



SECTION THRU BODY

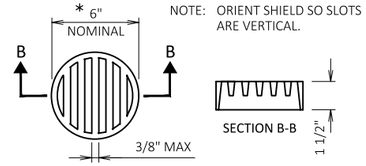
HORIZONTAL BARS NOT OTHERWISE IDENTIFIED ARE B604 BARS



GIRDER SEAT DETAIL

STATE PROJECT NUMBER

4546-02-71



NOTE: ORIENT SHIELD SO SLOTS ARE VERTICAL.

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

RODENT SHIELD DETAIL

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 COMMERCIALLY AVAILABLE AS A FLOOR STRAINER. A PIPE COUPLING IS REQUIRED FOR THE ATTACHMENT OF THIS SHIELD TO THE OUTFALL PIPE. THE SHIELD SHALL BE FASTENED TO THE PIPE COUPLING WITH TWO OR MORE NO. 10 X 1-INCH STAINLESS STEEL SHEET METAL SCREWS.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CK'D. ETP

ORIGINAL PLAN PREPARED BY
CORRE

NORTH ABUTMENT

SHEET 6 OF 13

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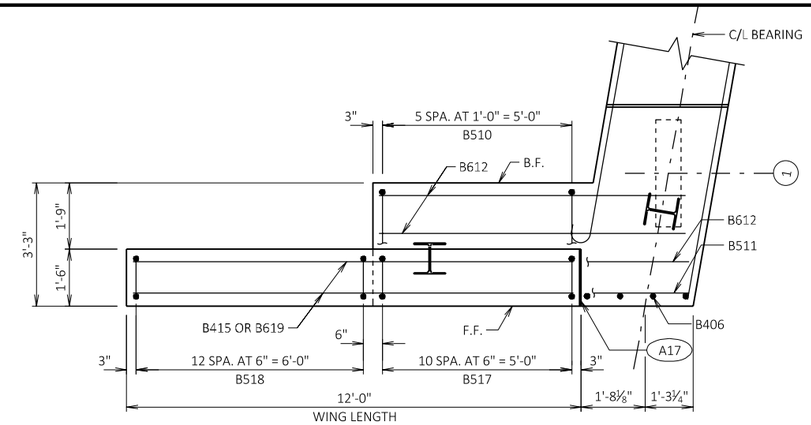
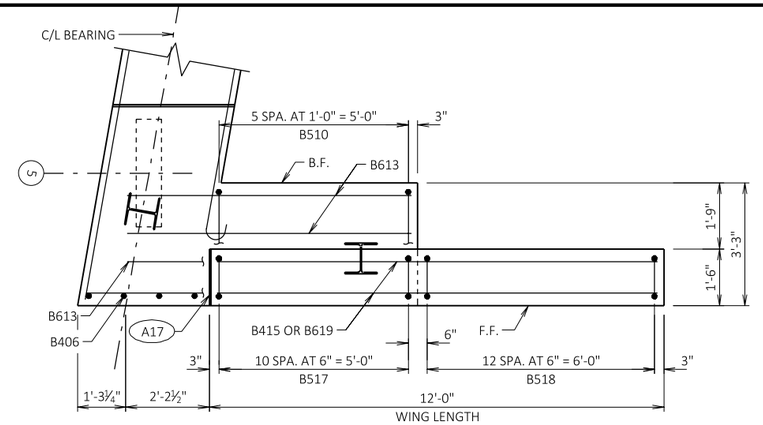
FILE NAME : P:\WI - NE REGION\4546-02-00_CTH D_BROWN CO\500_CADD\503_STRUCTURES\502.4_FINAL\080402-NA_CTH D.DWG

PLOT DATE : 8/1/2018 12:23 PM

PLOT BY : NICHOLAS WATHKE



PLAN WING 3



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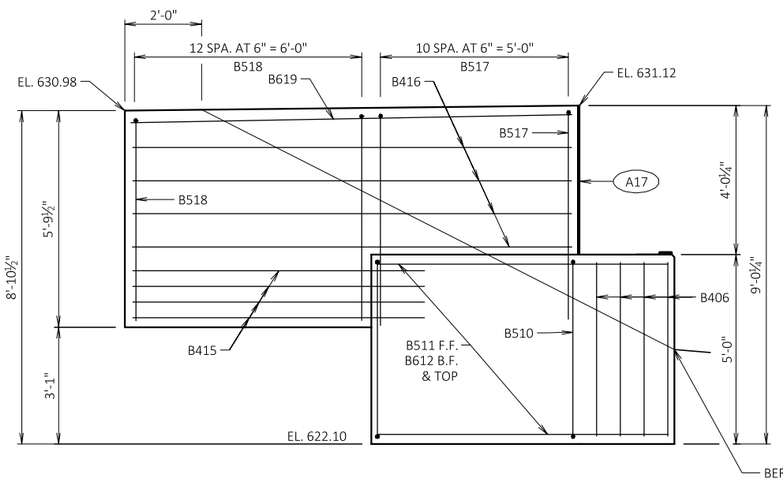

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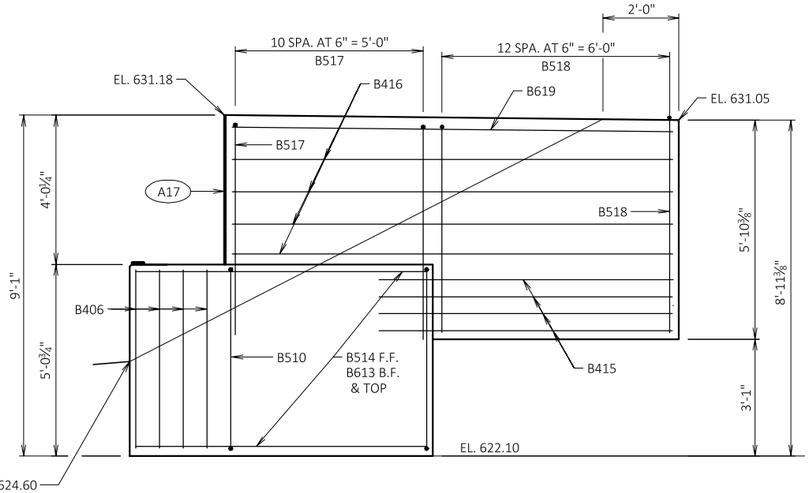

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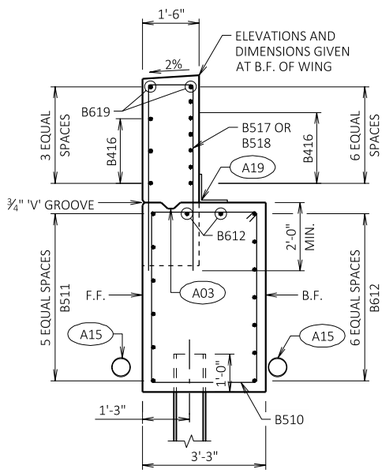
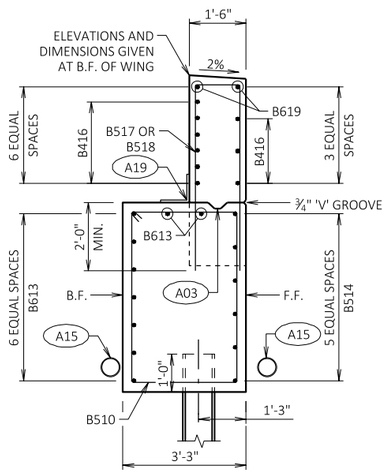


SECTION THRU WING 3



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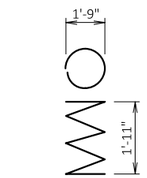

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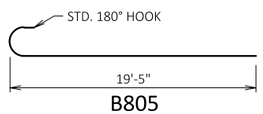

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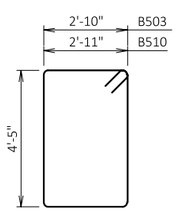

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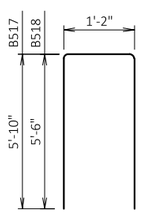

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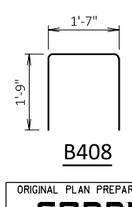

B408

STATE PROJECT NUMBER

4546-02-71

BILL OF BARS - NORTH ABUTMENT

DIMENSIONS IN BENDING DETAILS ARE OUT-TO-OUT OF BAR.

BAR MARK	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION	
NON-COATED BARS					TOTAL WEIGHT = 2,440 LBS	
B401	9	28'-0"	X		BODY - AT PILES - 1 PER PILE	VERT.
B402	18	2'-3"			BODY - AT PILES - 2 PER PILE	VERT.
B503	45	15'-2"	X		BODY - STIRRUPS	VERT.
B604	22	19'-10"			BODY - B.F. & F.F. & TOP & BTM	HORIZ.
B805	14	20'-4"	X		BODY - B.F.	HORIZ.
B406	8	4'-7"			BODY - ENDS	VERT.
B407	8	6'-0"			BODY - BTWN BEAM SEATS	HORIZ.
B408	16	4'-11"	X		BODY - BTWN BEAM SEATS	VERT.
COATED BARS					TOTAL WEIGHT = 1,420 LBS	
B510	12	15'-4"	X		WINGS 3 & 4 - STIRRUPS	VERT.
B511	6	8'-1"			WING 3 - F.F.	HORIZ.
B612	9	8'-1"			WING 3 - TOP & B.F.	HORIZ.
B613	9	7'-6"			WING 4 - TOP & B.F.	HORIZ.
B514	6	8'-6"			WING 4 - F.F.	HORIZ.
B415	16	7'-9"			WINGS 3 & 4 - OVERHANG	HORIZ.
B416	18	11'-8"			WINGS 3 & 4	HORIZ.
B517	22	12'-7"	X		WINGS 3 & 4	VERT.
B518	26	11'-11"	X		WINGS 3 & 4 - OVERHANG	VERT.
B619	4	11'-8"			WINGS 3 & 4 - TOP	HORIZ.

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

LEGEND

(A03) OPTIONAL KEYED CONST. JOINT FORMED BY BEVELED 2" x 6" (18" RUBBERIZED MEMBRANE WATERPROOFING AT B.F. & ¾" "V" GROOVE AT F.F. IF JOINT IS USED).

(A09) SUPPORT ABUTMENT ON PILING STEEL HP 10-INCH x 42 LB, ESTIMATED 90 FEET LONG, DRIVEN TO A REQUIRED DRIVING RESISTANCE OF 165 TONS PER PILE. SEE ADDITIONAL FOUNDATION DATA ON SHEET 1 AND PILE SPLICE DETAILS ON SHEET 2.

(A15) PIPE UNDERDRAIN WRAPPED 6-INCH. SLOPE 0.5% MIN. TO SUITABLE DRAINAGE. ATTACH RODENT SCREEN AT ENDS OF PIPE UNDERDRAIN. RODENT SHIELD TO BE INCLUDED IN BID PRICE OF "PIPE UNDERDRAIN WRAPPED 6-INCH".

(A17) ½" FILLER (INCLUDED IN WING LENGTH): SEAL ALL EXPOSED HORIZONTAL AND VERTICAL SURFACES OF ½" FILLER WITH NON-STAINING GRAY NON-BITUMNOUS JOINT SEALER. (1" DEEP AND HOLD 1/8" BELOW SURFACE OF CONCRETE.)

(A19) 18" RUBBERIZED MEMBRANE WATERPROOFING. SEAL ALL HORIZONTAL AND VERTICAL JOINTS ON BACKFACE.

B.F. DENOTES BACK FACE

F.F. DENOTES FRONT FACE

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CK'D. ETP

ORIGINAL PLAN PREPARED BY CORRE

NORTH ABUTMENT DETAILS

SHEET 7 OF 13

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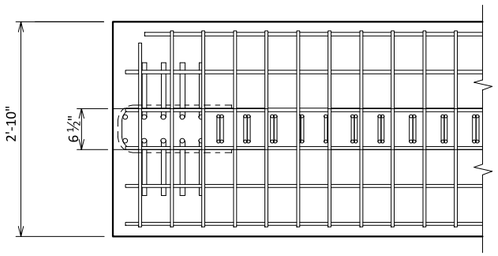
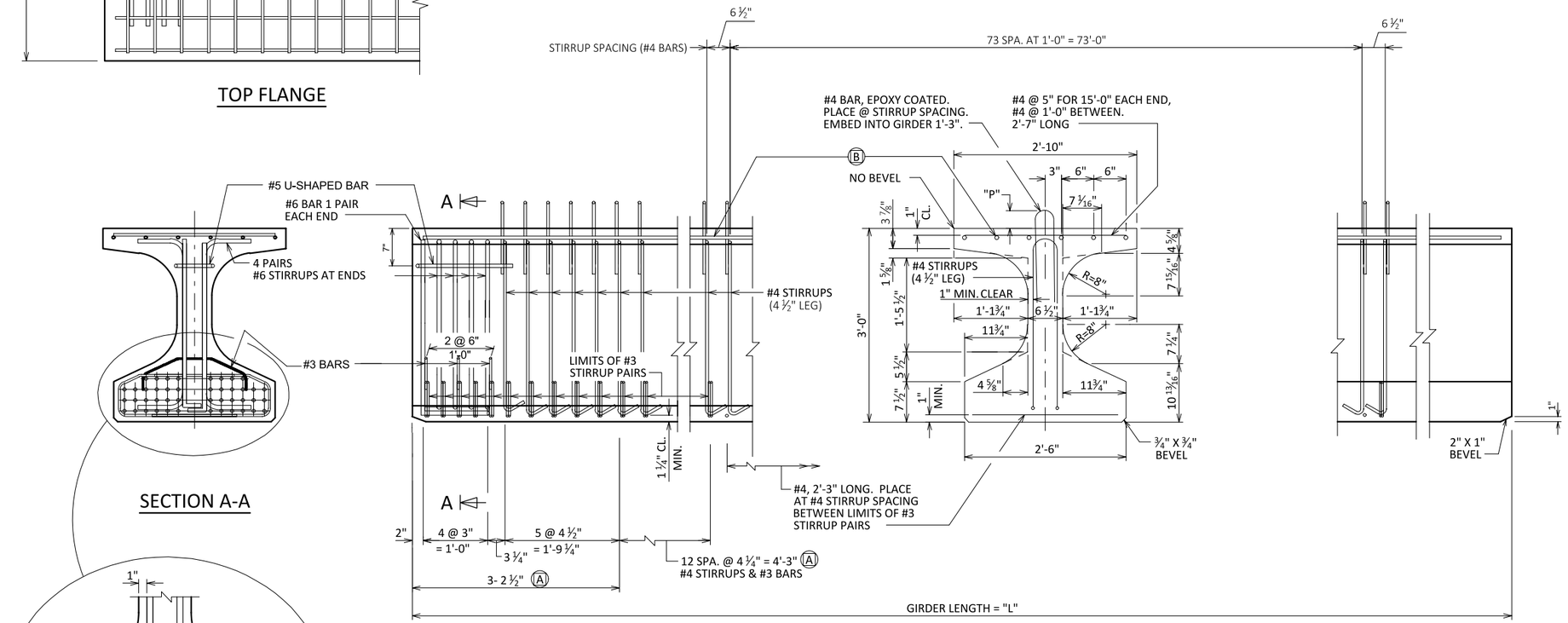
STATE PROJECT NUMBER

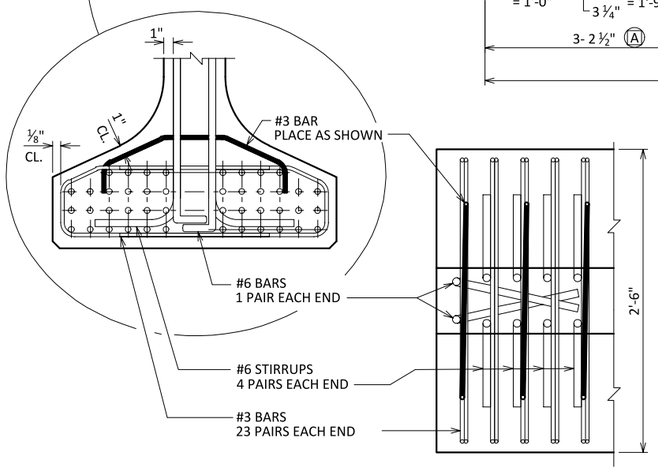
4546-02-71



TOP FLANGE



SECTION A-A



BOTTOM FLANGE

SIDE VIEW & TYPICAL SECTION IN SPAN

(A) DETAIL TYP. AT EACH END

(B) 6 #4 BARS, FULL LENGTH, MIN. LAP = 1'-11"

NOTES

TOP OF GIRDER TO BE ROUGH FLOATED AND BROOMED TRANSVERSELY, EXCEPT THE THE OUTSIDE 8" OF GIRDER, WHICH SHALL RECEIVE A SMOOTH FINISH. AN APPROVED CONCRETE SEALER SHALL BE APPLIED TO ALL SMOOTH SURFACES INCLUDING THE OUTSIDE 8" OF THE TOP FLANGE.

DO NOT APPLY CONCRETE SEALER OR EPOXY TO SURFACES RECEIVING APPLICATION OF CONCRETE STAINING.

THE GIRDERS SHALL BE PROVIDED WITH A SUITABLE LIFTING DEVICE FOR HANDLING AND ERECTING THE GIRDERS. SEE SECT. 503.3.3 OF STANDARD SPECIFICATIONS FOR GUIDANCE.

STRANDS SHALL BE FLUSH WITH END OF GIRDER. FOR GIRDER ENDS EMBEDDED COMPLETELY IN CONCRETE, END OF STRANDS SHALL BE COATED WITH NON-BITUMINOUS JOINT SEALER. FOR GIRDER ENDS THAT ARE FINALLY EXPOSED, COAT THE GIRDER ENDS, EXPOSED STRAND ENDS AND ALL NON-BONDING SURFACES WITHIN 2 FEET OF THE GIRDER ENDS WITH A NON-PIGMENTED EPOXY CONFORMING TO AASHTO M-235 TYPE III, GRADE 2, CLASS B OR C. THE EPOXY SHALL BE APPLIED AT LEAST 3 DAYS AFTER MOIST CURING HAS CEASED AND PRIOR TO THE APPLICATION OF THE SEALER.

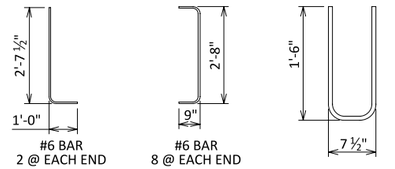
ALL GIRDERS SHALL BE CAST FULL LENGTH AS SHOWN.

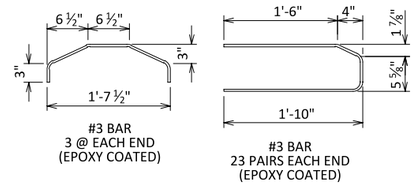
SPACING SHOWN FOR #4 STIRRUPS IS FOR GRADE 60 REINFORCEMENT.

AN ALTERNATE EQUIVALENT OF WELDED WIRE FABRIC (WWF) ASTM A1064 MAY BE SUBSTITUTED FOR THE STIRRUP REINFORCEMENT SHOWN, UPON APPROVAL OF THE STRUCTURES DEVELOPMENT SECTION.

PRESTRESSING STRANDS SHALL BE (0.6" DIA.)-7 WIRE LOW-RELAXATION STRANDS WITH AN ULTIMATE STRENGTH OF 270,000 PSI.

FOR DIAPHRAGM INSERT & CONNECTION DETAILS SEE "STEEL DIAPHRAGM" SHEET.





∗ MINIMUM CYLINDER STRENGTH OF CONCRETE @ TIME OF TRANSFER OF PRESTRESS FORCE.

GIRDER DATA

SPAN	GIRDER	GIRDER LENGTH "L" (FEET)	DEAD LOAD DEFL. (IN.)									CONC. STRGTH. f'c (P.S.I.)	"P" (IN.)			DIA. OF STRAND (IN.)	DRAPED PATTERN					
			1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10		1st 1/3 OF GIRDER	MID 1/3 OF GIRDER	END 1/3 OF GIRDER		TOTAL NO. OF STRANDS	f'ci (P.S.I.) ∗	(IN.) "A"	"B" MIN.	"B" MAX.	"C"
1	1-5	89.00	0.6	1.1	1.6	1.8	1.9	1.8	1.6	1.1	0.6	8,000	7.75	6.25	7.75	0.6	36	6,800	31	11.5	14.5	5

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CK'D. ETP

36W" PRESTRESSED GIRDER DETAILS 1

SHEET 8 OF 13

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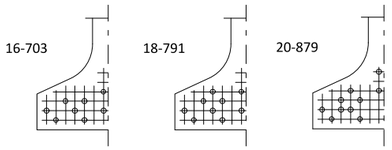
8

8

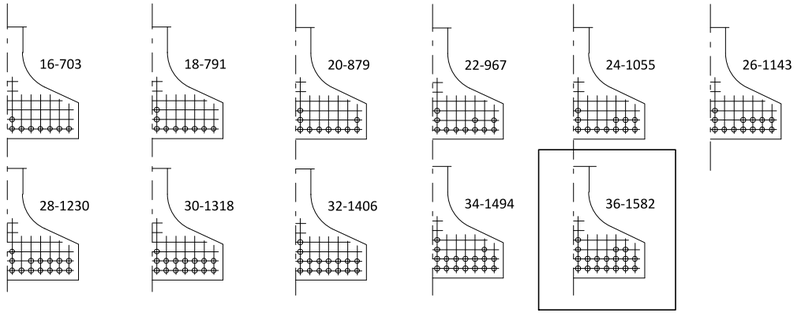
STATE PROJECT NUMBER

4546-02-71



STANDARD ARRANGEMENTS TO RAISE CENTER OF GRAVITY TO AVOID DRAPING OF STRANDS

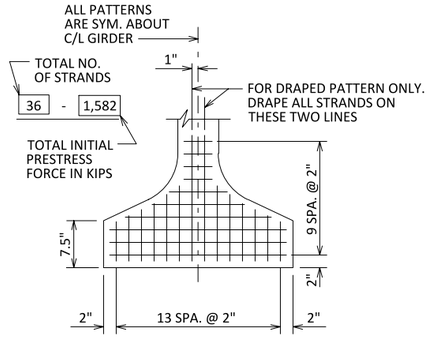
0.6"Ø STRANDS



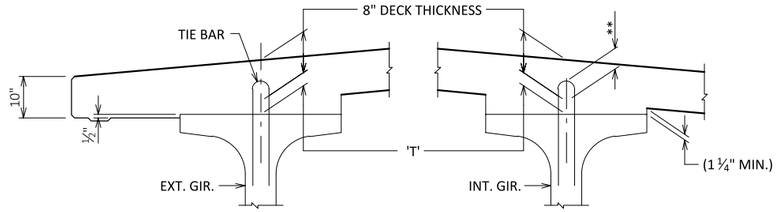
SPAN 1

ARRANGEMENT AT C/L SPAN - FOR GIRDERS WITH DRAPED STRANDS

0.6"Ø STRANDS



TYP. STRAND PATTERN



DECK HAUNCH DETAIL

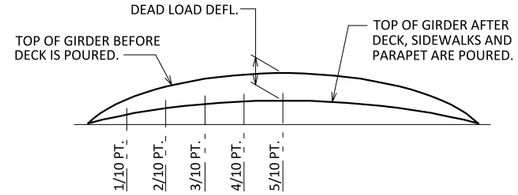
IF 1 1/4" MINIMUM HAUNCH HEIGHT AT EDGE OF GIRDER CANNOT BE MAINTAINED, THE GRADE LINE MAY BE REVISED BY THE ENGINEER AT THE OPTION OF THE CONTRACTOR, THE PLAN DECK THICKNESS SHALL BE HELD. NOTIFY THE STRUCTURES SECTION IF THE GRADE LINE IS RAISED FROM THE PLAN PROFILE BY MORE THAN " OR,

** IF 3" MINIMUM DECK EMBEDMENT OF TIE BAR CANNOT BE OBTAINED.

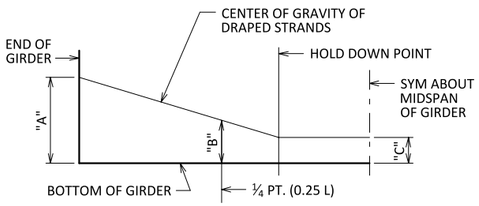
TO DETERMINE 'T', ELEV. OF TOP OF GIR'S. AT C/L OF SUBSTRUCTURE UNITS & AT 1/10 POINTS OF EACH SPAN SHALL BE TAKEN. THEN FOLLOW THIS PROCESS:

TOP OF DECK ELEV. AT FINAL GRADE
- TOP OF GIRDER ELEVATION
+ DEAD LOAD DEFLECTION
- DECK THICKNESS
= HAUNCH HEIGHT 'T'

NOTE: AN AVERAGE HAUNCH ('T') OF 3⅝" WAS USED IN THE QUANTITY "CONCRETE MASONRY BRIDGES".



DEAD LOAD DEFLECTION DIAGRAM



DRAPED STRAND PROFILE

* THE THEORETICAL INITIAL CAMBER VALUE AT THE TIME OF STRAND RELEASE AT MIDSPAN MULTIPLIED BY A FACTOR OF 1.4 TO ACCOUNT FOR CAMBER GROWTH FROM THE TIME OF STRAND RELEASE TO JOBSITE PLACEMENT.

SPAN	CAMBER (IN.) *
1	4 1/8"

THESE VALUES ARE NOT TO BE USED IN DETERMINING 'T', USE ACTUAL GIRDER SHOTS.

THESE VALUES ARE FOR INFORMATIONAL PURPOSES ONLY.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CK'D. ETP

36W" PRESTRESSED GIRDER DETAILS 2

SHEET 9 OF 13

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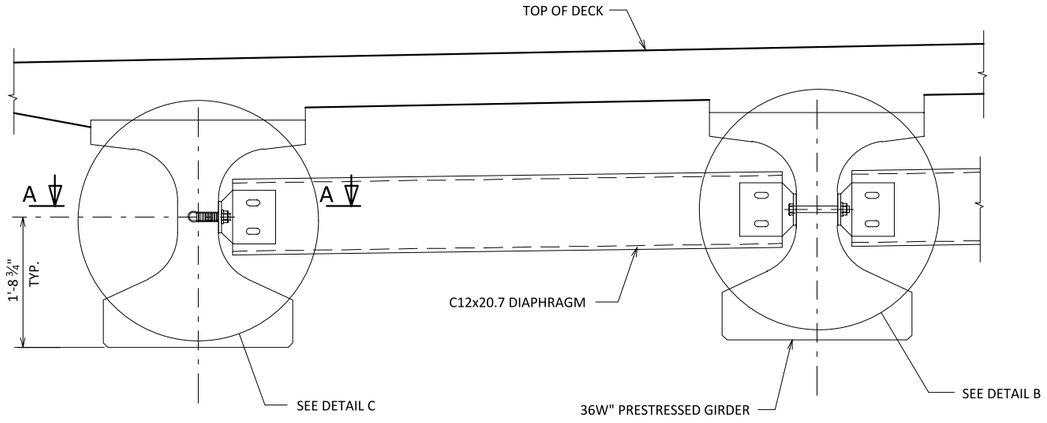
STATE PROJECT NUMBER

4546-02-71



EXTERIOR GIRDER

INTERIOR GIRDER

NOTES

ALL DIAPHRAGM MATERIAL NOT EMBEDDED IN THE CONCRETE GIRDER SHALL BE PAID FOR AT THE UNIT PRICE BID FOR "STEEL DIAPHRAGMS B-5-440", EACH.

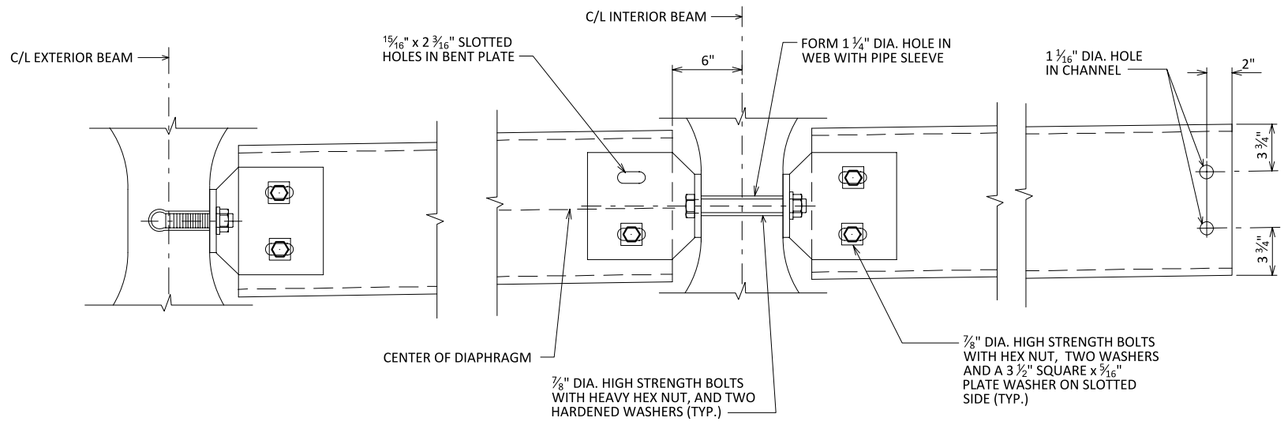
EACH DIAPHRAGM BETWEEN GIRDERS SHALL CONSTITUTE ONE UNIT.

ALL DIAPHRAGM STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 36.

ALL DIAPHRAGM MATERIAL INCLUDING BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION.

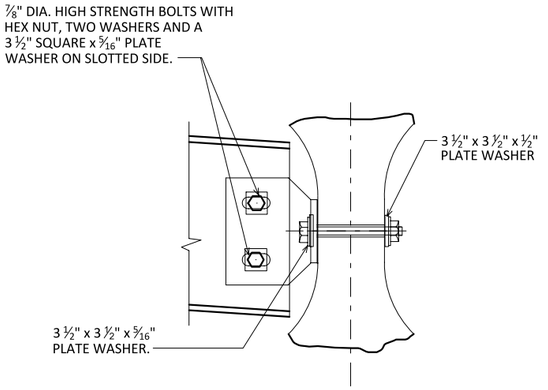
STEEL DIAPHRAGM TO CONCRETE WEB CONNECTION SHALL BE SNUG-TIGHT PLUS , TURN, UNLESS NOTED OTHERWISE. HIGH STRENGTH BOLTS FOR WEB CONNECTION SHALL MEET THE REQUIREMENTS FOR ASTM A325 OR ASTM A449.

PART TRANSVERSE SECTION AT DIAPHRAGM

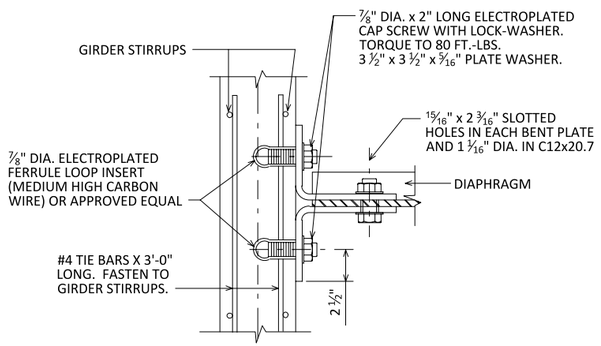


DETAIL C

DETAIL B

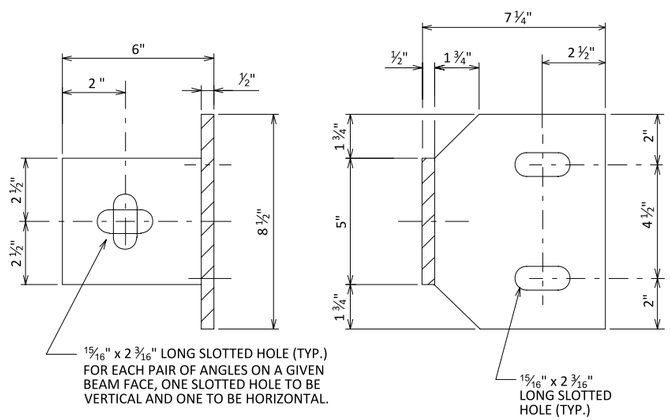


SECTION AT INTERIOR GIRDERS THRU DIAPHRAGM FOR SKEW ANGLES > 10°



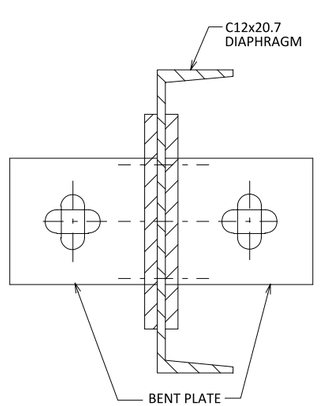
SECTION A-A

(FOR EXTERIOR ATTACHMENT)



BEAM FACE

DIAPHRAGM FACE



ATTACHMENT TO CHANNEL

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CK'D. ETP

ORIGINAL PLAN PREPARED BY CORRE

STEEL DIAPHRAGM

SHEET 10 OF 13

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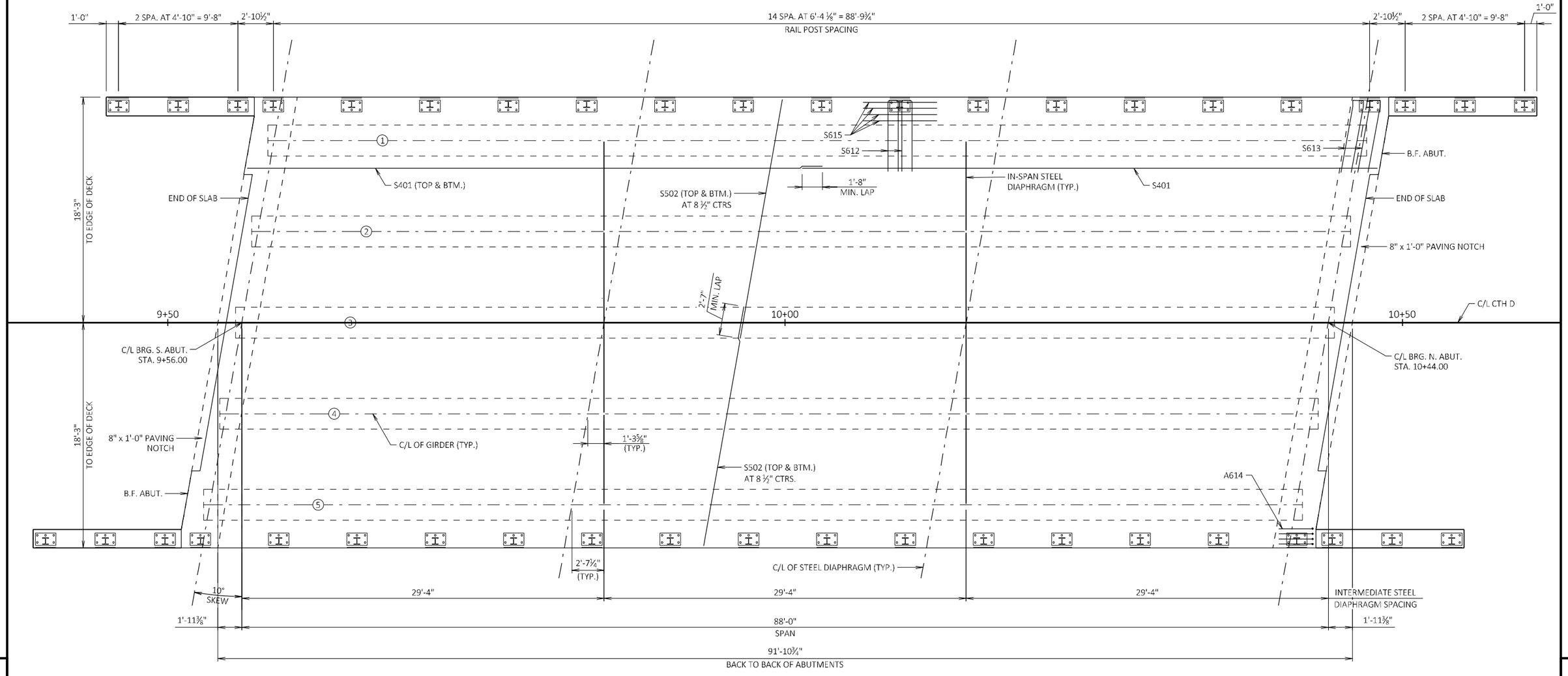
8

8

STATE PROJECT NUMBER

4546-02-71



PLAN

TOP OF DECK ELEVATIONS

	C/L BRG. S. ABUT.	1/10	2/10	3/10	4/10	5/10	6/10	7/10	8/10	9/10	C/L BRG. N. ABUT.
GIRDER 1	632.29	632.15	632.03	631.91	631.81	631.71	631.61	631.51	631.41	631.31	631.21
GIRDER 2	632.45	632.32	632.20	632.08	631.97	631.87	631.77	631.67	631.57	631.47	631.38
GIRDER 3	632.62	632.49	632.36	632.24	632.13	632.03	631.93	631.83	631.73	631.64	631.54
GIRDER 4	632.50	632.36	632.23	632.11	632.00	631.90	631.80	631.70	631.60	631.50	631.40
GIRDER 5	632.37	632.23	632.10	631.98	631.87	631.76	631.67	631.57	631.47	631.37	631.27

NOTES

1. THE TOP LONGITUDINAL BAR STEEL REINFORCEMENT SHALL BE SUPPORTED BY CONTINUOUS BAR CHAIRS IN TRANSVERSE DIRECTION ON 4'-0" CENTERS.
2. THE BOTTOM TRANSVERSE BAR STEEL REINFORCEMENT SHALL BE CONTINUOUS BAR CHAIRS WITH A CENTER TO CENTER SPACING NOT TO EXCEED 4'-0". ONE LINE OF CONTINUOUS BAR CHAIRS SHALL BE PLACED NEAR EACH EDGE OF SLAB TO SUPPORT THE ENDS OF THE BOTTOM TRANSVERSE BAR STEEL.
3. ALL TRANSVERSE BAR STEEL REINFORCEMENT SHALL BE PLACED PARALLEL TO SUBSTRUCTURE UNITS.

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CK'D. ETP

ORIGINAL PLAN PREPARED BY
CORRE

SUPERSTRUCTURE

SHEET 11 OF 13

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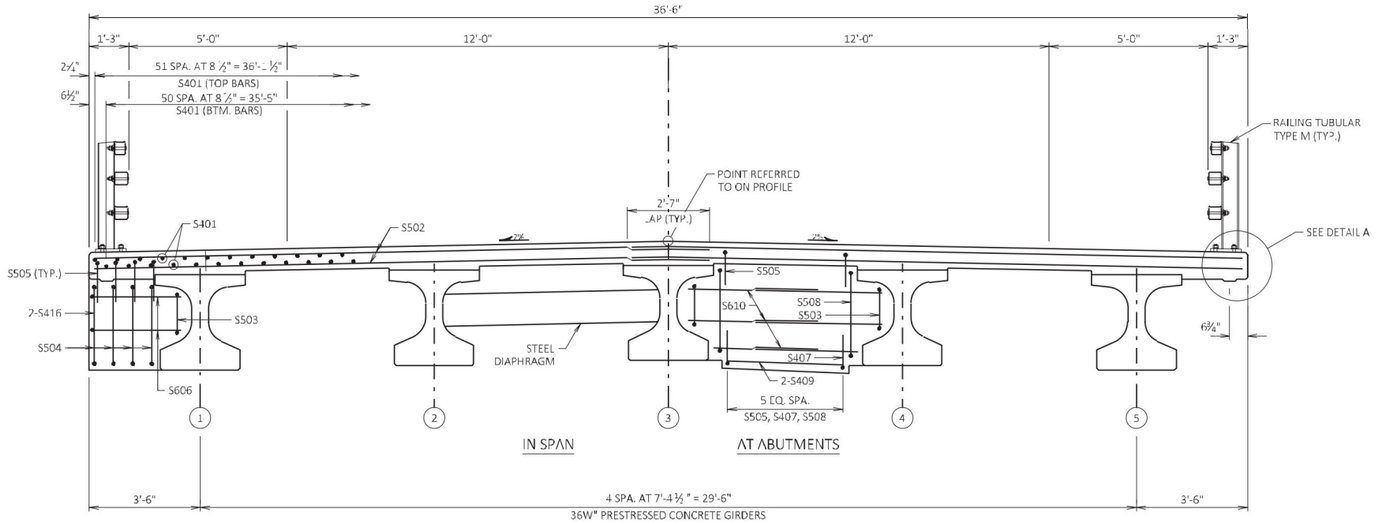
STATE PROJECT NUMBER

4546-02-71



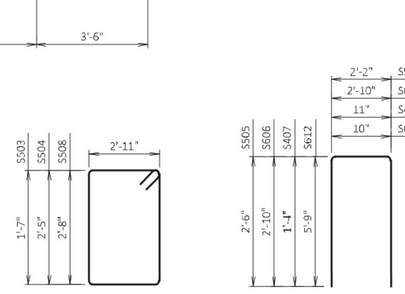
CROSS SECTION THRU ROADWAY

BILL OF BARS - SUPERSTRUCTURE

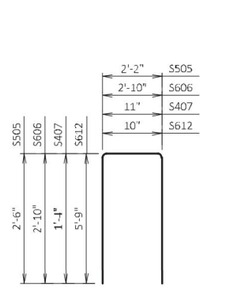
DIMENSIONS IN BENDING DETAILS ARE OUT-TO-OUT OF BAR.

BAR MARK	NO. REQ'D	LENGTH	BENT	BAR SERIES	LOCATION	
COATED BARS					TOTAL WEIGHT = 21,950 LBS	
S401	210	46'-8"			DECK - TOP & BTM	LONGIT.
S502	520	19'-8"			DECK - TOP & BTM	TRANS.
S503	20	9'-8"	X		DIAPHRAGMS - ALL GIRDERS	VERT.
S504	16	11'-4"	X		DIAPHRAGMS - EXT GIRDERS	VERT.
S505	64	6'-11"	X		DIAPHRAGMS - TOP	VERT.
S606	8	8'-2"	X		DIAPHRAGMS - EXT GIRDERS	HOFIZ.
S407	48	3'-5"	X		DIAPHRAGMS - BTM	VERT.
S508	48	11'-10"	X		DIAPHRAGMS - INT GIRDERS	VERT.
S409	16	3'-6"			DIAPHRAGMS - BTM	HOFIZ.
S610	48	4'-3"			DIAPHRAGMS - F.F.	HORIZ
S611	20	19'-5"			DIAPHRAGMS - B.F.	HORIZ.
S612	52	12' 0"	X		DECK INT RAIL POSTS	TRANS.
S613	8	12' 4"	X		DECK - TOP - EXT. RAIL POSTS	TRANS.
S614	16	4'-2"	X		DECK - TOP - EXT. RAIL POSTS	LONGIT.
S615	104	6' 0"			DECK TOP INT. RAIL POSTS	LONGIT.
S416	8	2'-4"			DIAPHRAGMS - EXT GIRDERS	VERT.

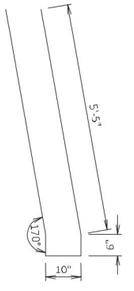
THE FIRST DIGIT OR FIRST TWO DIGITS OF THE BAR MARK SIGNIFIES THE BAR SIZE.



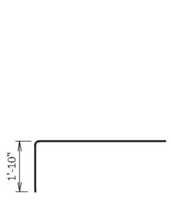
S503, S504, S508



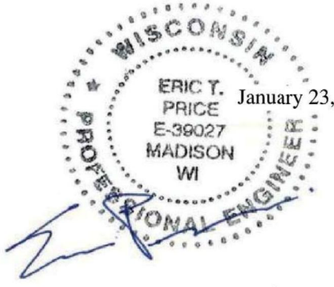
S505, S606, S407, S612



S613



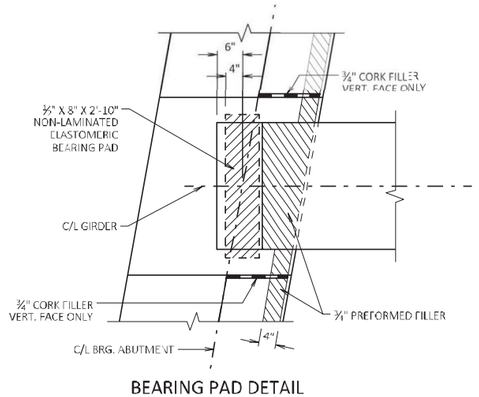
S614



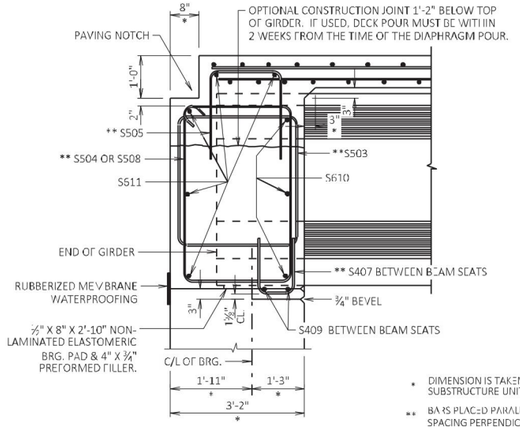
January 23, 2019

William C. Drecher SDR

01/24/19



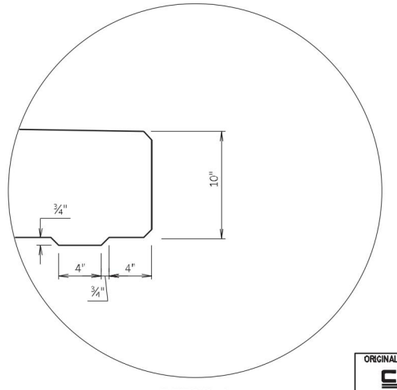
BEARING PAD DETAIL



PART LONGIT. SECTION

* DIMENSION IS TAKEN NORMAL TO C/L SUBSTRUCTURE UNITS.

** BARS PLACED PARALLEL TO GIRDERS SPACING PERPENDICULAR TO C/L GIRDERS



DETAIL A

ORIGINAL PLAN PREPARED BY CORRE

NO.	DATE	REVISION	BY
1	1/23/19	QUANTITY REVISION	ETP

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CKD. ETP

SUPERSTRUCTURE DETAILS

SHEET 12 OF 13

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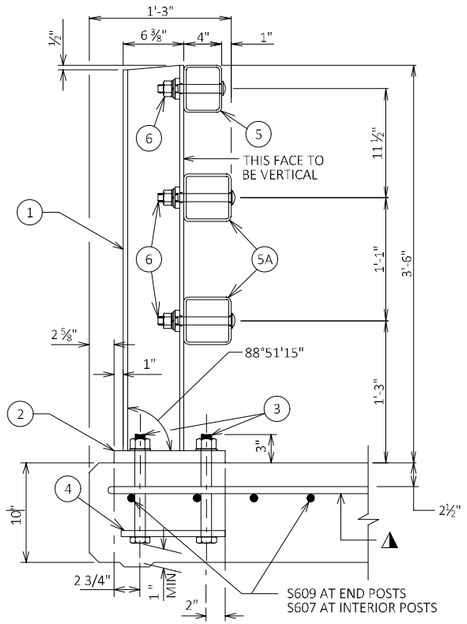
FILE NAME: P:\WI - NE REGION\4546-02-00_CTH D_BROWN CO\500_CADD\503_STRUCTURES\502.4_FINA...\080701-SS_CTH D.DWG

PLOT DATE: 1/23/2019 1:29 PM

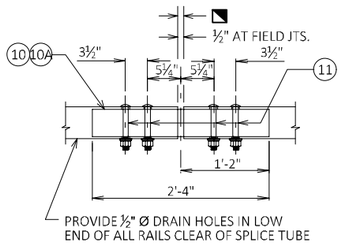
PLOT BY: NICHOLAS WATTKE

STATE PROJECT NUMBER

4546-02-71

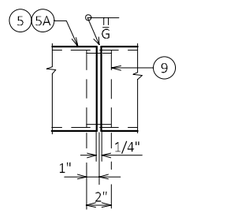


SECTION THRU RAILING ON DECK

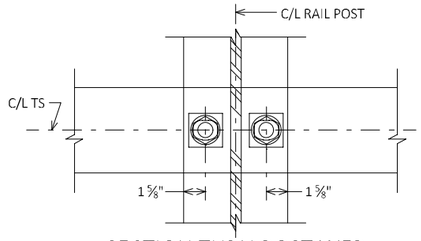


FIELD ERECTION JOINT DETAIL

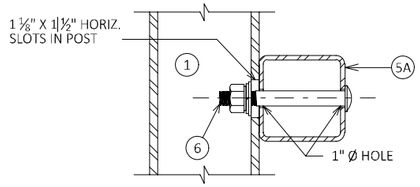
SECTION B-B



ANCHOR BOLTS



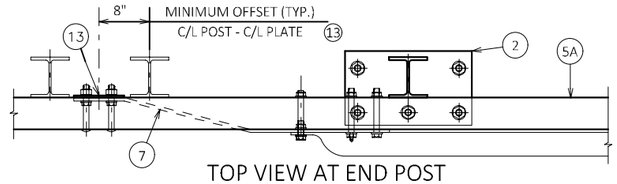
SECTION THRU POST WEB



SECTION THRU RAIL

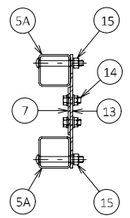
NOTE: CONNECTIONS AT LOWER RAILS SHOWN. CONNECTIONS AT TOP RAIL SIMILAR.

TYPICAL RAIL TO POST CONNECTIONS



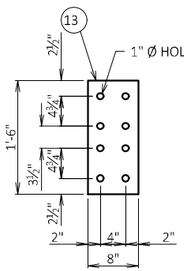
TOP VIEW AT END POST

THRIE BEAM RAIL ATTACHMENT



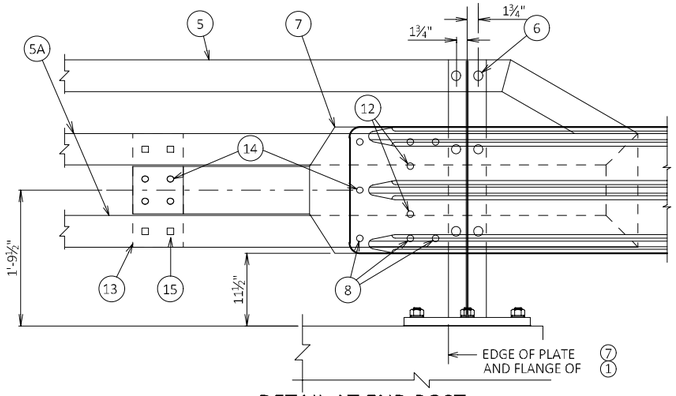
SECTION C-C

SECTION A-A



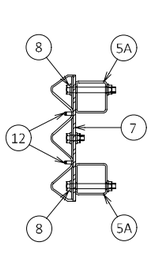
ANCHOR PLATE

AT BEAM GUARD ATTACHMENT

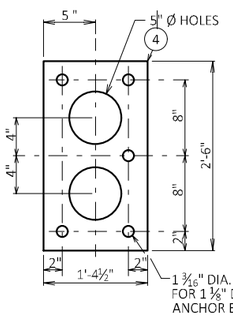


DETAIL AT END POST

THRIE BEAM RAIL ATTACHMENT

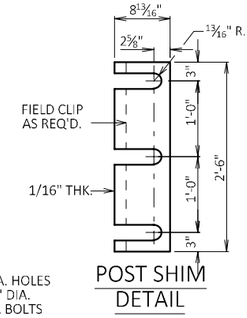


SECTION D-D

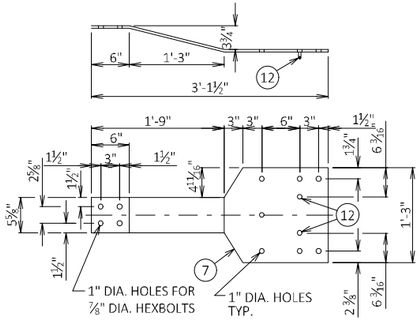


ANCHOR PLATE

AT RAIL TO DECK CONNECTION

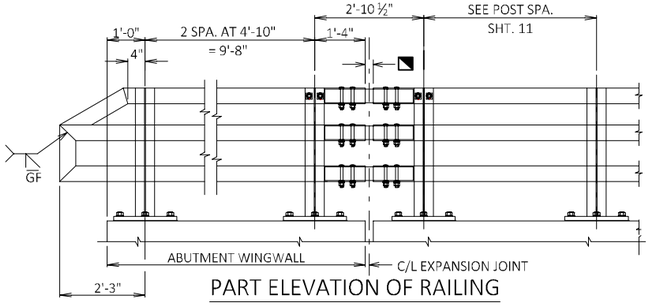


POST SHIM DETAIL



BACK-UP PLATE DETAIL

AT BEAM GUARD ATTACHMENT



PART ELEVATION OF RAILING

LEGEND

(1) W6 X 25 WITH 1 1/8" X 1 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 1/4" X 11 3/4" X 1'-8" WITH 1 5/16" X 1 5/8" SLOTTED HOLES FOR ANCHOR BOLTS NO. 3. WELD TO NO. 1 AS SHOWN. SLOTS PARALLEL TO SHORT SIDE OF

(3) PLATE. ASTM A449 - 1 1/4" DIA. ANCHOR BOLTS WITH NUT AND HARDENED WASHER (ALL GALVANIZED). 5 REQ'D. PER POST. THREAD 3" AND PLACE NORMAL TO PLATE NO. 2. CHAMFER TOP OF BOLTS BEFORE THREADING. USE 1'-9" LONG IN ABUTMENT WINGS. AT POSTS ON CONCRETE SLAB SUPERSTRUCTURES WHERE THE SLAB THICKNESS IS > 16" USE 1'-3" LONG. USE 10 3/4" LONG AT ALL OTHER LOCATIONS. (AN EQUIVALENT THREADED ROD WITH NUTS AND HARDENED WASHERS MAY BE SUBSTITUTED FOR ANCHOR BOLTS IN WINGS IF REQ'D. FOR CONSTRUCTIBILITY.)

(4) 5/8" X 11" X 1'-8" ANCHOR PLATE (GALVANIZED) WITH 1 3/16" DIA. HOLES FOR ANCHOR BOLTS NO. 3

(5) TS 5 X 4 X 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.

(5A) TS 5 X 5 X 0.25 STRUCTURAL TUBING. ATTACH TO NO. 1 WITH NO. 6.

(6) 7/8" DIA. A325 SLOTTED ROUND HEAD BOLT WITH NUT, 3/16" X 1 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" DIA. A325 ROUND HEAD BOLT WITH NUT, WASHER, AND LOCK WASHER. USE 15/16" X 1 1/4" LONGIT. SLOTTED HOLES AT FIELD JOINTS AND 15/16" X 2 1/2" MIN. LONGIT. SLOTTED HOLES AT EXP. 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" 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 1" 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" 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 „ 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.

▲ TIE TO TOP MAT OF STEEL.

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

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

NO.	DATE	REVISION	BY

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

STRUCTURE B-5-440

DRAWN BY PKF | PLANS CK'D. ETP

RAILING TUBULAR TYPE M

SHEET 13 OF 13

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FILE NAME : P:±WI - NE REGION±4546-02-00_CTH D_BROWN CO±500_CADD±503_STRUCTURES±502.4_FINAL±080901-RL_CTH D.DWG
PLOT DATE : 8/1/2018 12:24 PM
PLOT BY : NICHOLAS WATHKE