ISSUE NO.	ISSUE DATE	SHEET NO.	SHEET TITLE
8	05/08/14	4IN-1	INDEX OF SHEETS
2	05/08/14	4B12-1	FRA-670-0457B SITE PLAN (1 OF 2)
2	05/08/14	4B12-2	FRA-670-0457B SITE PLAN (2 OF 2)
2	05/08/14	4B12-3	FRA-670-0457B REFERENCE CHORD DIAGRAM
4	05/08/14	4B12-4	FRA-670-0457B GENERAL NOTES (1 OF 5)
2	05/08/14	4B12-5	FRA-670-0457B GENERAL NOTES (2 OF 5)
2	05/08/14	4B12-6	FRA-670-0457B GENERAL NOTES (3 OF 5)
2	05/08/14	4B12-7	FRA-670-0457B GENERAL NOTES (4 OF 5)
3	05/08/14	4B12-8	FRA-670-0457B GENERAL NOTES (5 OF 5)
2	05/08/14	4B12-8A	FRA-670-0457B AS-BUILTS
6	05/08/14	4B12-9	FRA-670-0457B ESTIMATED QUANTITIES
2	05/08/14	4B12-10	FRA-670-0457B PILE LAYOUT PLAN (1 OF 2)
3	05/08/14	4B12-11	FRA-670-0457B PILE LAYOUT PLAN (2 OF 2)
3	05/08/14	4B12-12	FRA-670-0457B REAR ABUTMENT PLAN AND ELEVATION
3	05/08/14	4B12-13	FRA-670-0457B REAR ABUTMENT SECTIONS (1 OF 2)
3	05/08/14	4B12-13A	FRA-670-0457B REAR ABUTMENT SECTIONS (2 OF 2)
4	05/08/14	4B12-14	FRA-670-0457B FORWARD ABUTMENT PLAN AND ELEVATION
3	05/08/14	4B12-15	FRA-670-0457B FORWARD ABUTMENT SECTIONS (1 OF 2)
4	05/08/14	4B12-15A	FRA-670-0457B FORWARD ABUTMENT WINGWALL AND DETAILS
3	05/08/14	4B12-15B	FRA-670-0457B FORWARD ABUTMENT SECTIONS (2 OF 2)
3	05/08/14	4B12-16	FRA-670-0457B PIER 1 PLAN AND ELEVATION
3	05/08/14	4B12-17	FRA-670-0457B PIER 1 FOOTING AND SECTIONS
4	05/08/14	4B12-18	FRA-670-0457B PIER 2 PLAN AND ELEVATION
3	05/08/14	4B12-19	FRA-670-0457B PIER 2 FOOTING AND SECTIONS
3	05/08/14	4B12-20	FRA-670-0457B PIER 3 PLAN AND ELEVATION
3	05/08/14	4B12-21	FRA-670-0457B PIER 3 FOOTING AND SECTIONS
5	05/08/14	4B12-22	FRA-670-0457B PIER 4 PLAN AND ELEVATION
3	05/08/14	4B12-23	FRA-670-0457B PIER 4 FOOTING AND SECTIONS
2	05/08/14	4B12-24	FRA-670-0457B PIER ARCHITECTURAL DETAILS
2	05/08/14	4B12-25	FRA-670-0457B BEARING DETAILS
2	05/08/14	4B12-26	FRA-670-0457B GIRDER FRAMING PLAN - FIELD PIECES 1 THRU 3
2	05/08/14	4B12-27	FRA-670-0457B GIRDER FRAMING PLAN - FIELD PIECES 4 THRU 6
2	05/08/14	4B12-28	FRA-670-0457B GIRDER FRAMING PLAN - FIELD PIECES 7 THRU 9
3	05/08/14	4B12-29	FRA-670-0457B GIRDER ELEVATION
2	05/08/14	4B12-30	FRA-670-0457B GIRDER ELEVATION TABLES (1 OF 2)
2	05/08/14	4B12-31	FRA-670-0457B GIRDER ELEVATION TABLES (2 OF 2)
3	05/08/14	4B12-32	FRA-670-0457B HAND HOLD ROD AND STIFFENER DETAILS
4	05/08/14	4B12-32A	FRA-670-0457B CROSSFRAME DETAILS
3	05/08/14	4B12-33	FRA-670-0457B FIELD SPLICE DETAILS (1 OF 2)
3	05/08/14	4B12-34	FRA-670-0457B FIELD SPLICE DETAILS (2 OF 2)
2	05/08/14	4B12-35	FRA-670-0457B CAMBER AND DEFLECTIONS - SPAN 1
2	05/08/14	4B12-36	FRA-670-0457B CAMBER AND DEFLECTIONS - SPANS 2 & 3
2	05/08/14	4B12-37	FRA-670-0457B CAMBER AND DEFLECTIONS - SPANS 4 & 5
3	05/08/14	4B12-38	FRA-670-0457B DECK PLAN (1 OF 4) AND DECK POUR SEQUENCE
3	05/08/14	4B12-39	FRA-670-0457B DECK PLAN (2 OF 4)
3	05/08/14	4B12-39A	FRA-670-0457B DECK PLAN (3 OF 4)
3	05/08/14	4B12-39B	FRA-670-0457B DECK PLAN (4 OF 4)
2	05/08/14	4B12-40	FRA-670-0457B PARAPET ELEVATION AND DETAILS
3	05/08/14	4B12-41	FRA-670-0457B MODULAR EXPANSION JOINT PLAN
3	05/08/14	4B12-42	FRA-670-0457B MODULAR EXPANSION JOINT DETAILS
2	05/08/14	4B12-43	FRA-670-0457B TRANSVERSE SECTION (1 OF 2)
2	05/08/14	4B12-44	FRA-670-0457B TRANSVERSE SECTION (2 OF 2)
3	05/08/14	4B12-45	FRA-670-0457B SCREED ELEVATIONS (1 OF 2)
3	05/08/14	4B12-46	FRA-670-0457B SCREED ELEVATIONS (2 OF 2)
3	05/08/14	4B12-47	FRA-670-0457B TOP OF HAUNCH ELEVATIONS (1 OF 2)
3	05/08/14	4B12-48	FRA-670-0457B TOP OF HAUNCH ELEVATIONS (2 OF 2)
2	05/08/14	4B12-49	FRA-670-0457B FINAL DECK SURFACE ELEVATIONS (1 OF 3)
2	05/08/14	4B12-50	FRA-670-0457B FINAL DECK SURFACE ELEVATIONS (2 OF 3)
2	05/08/14	4B12-51	FRA-670-0457B FINAL DECK SURFACE ELEVATIONS (3 OF 3)
2	05/08/14	4B12-52	FRA-670-0457B APPROACH SLAB PLAN
2	05/08/14	4B12-53	FRA-670-0457B APPROACH SLAB PARAPET DETAILS
3	05/08/14	4B12-54	FRA-670-0457B REINFORCING SCHEDULE (1 OF 5)
3	05/08/14	4B12-55	FRA-670-0457B REINFORCING SCHEDULE (2 OF 5)
3	05/08/14	4B12-56	FRA-670-0457B REINFORCING SCHEDULE (3 OF 5)
2	05/08/14	4B12-57	FRA-670-0457B REINFORCING SCHEDULE (4 OF 5)
4	05/08/14	4B12-58	FRA-670-0457B REINFORCING SCHEDULE (5 OF 5)

ENGINEERS SEAL:

STATE OF OHIO
RICHARD E. ROCKICH JR.
E-47365
REGISTERED
PROFESSIONAL ENGINEER

SIGNED: Richard E. Rockich Jr.
DATE: 5-08-2014

NO.	DATE	DESCRIPTION
8	5/08/14	RECORD DRAWINGS
7	7/27/12	RFI 139
6	4/24/12	NDC 022
5	4/16/12	RFI 050
4	3/27/12	NDC 018
3	3/1/12	NDC 016
2	1/23/12	NDC 008
1	1/04/12	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
		ISSUE RECORD

STRUCTURE FILE NUMBER 2506444

INDEX OF SHEETS - BRIDGE FRA-670-0457B

FRA-71-17.76
FRA-670-4.19

4IN-1

2562
2744

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NOTES:

1. EARTHWORK LIMITS SHOWN ARE APPROXIMATE. ACTUAL SLOPES SHALL CONFORM TO PLAN CROSS SECTIONS.
2. SEE ROADWAY PLANS FOR APPROACH ROADWAY TYPICAL SECTIONS.
3. FOR REFERENCE CHORD DIAGRAM, BENCHMARKS, CURVE DATA AND SKEW ANGLES, SEE SHEET 4B12-3.
4. FOR TRAFFIC DATA, LEGEND AND CLEARANCE INFORMATION, SEE SHEET 4B12-2.
5. SPANS AND BRIDGE LIMITS ARE MEASURED ALONG THE ℄ RAMP X4

PROPOSED STRUCTURE

TYPE: NEW COMPOSITE REINFORCED CONCRETE DECK WITH A709 GRADE 50 STEEL PLATE GIRDER STRINGERS ON REINFORCED CONCRETE STUB ABUTMENTS WITH MSE WALLS AND T-TYPE PIERS ON FRICTION PILES

SPAN: 165'-0", 204'-6", 249'-9", 234'-0" AND 178'-0" MEASURED ALONG ℄ RAMP X4

ROADWAY: VARIES (43'-0" TO 45'-3¾")

LOADING: HL93 FWS LOADING: 60 psf

SKEW: RADIAL

APPROACH SLABS: 30'-0" LONG (AS-1-81) (MODIFIED)

ALIGNMENT: 6°30'00" CURVE LEFT WEARING SURFACE: MONOLITHIC CONCRETE

SUPERELEVATION: 0.057 FT/FT

COORDINATES: LATITUDE N39°58'16" LONGITUDE W82°59'08"

BTA TYPE 1 — FIRST GUARDRAIL POST STA. 2408+90.62 — RETAINING WALL RW 5 — ℄ CONST. RAMP X3 — EX. ELECTRIC (TO BE REMOVED) — LOC. (1) OF MINIMUM VERTICAL CLEARANCE — ℄ CONST. RAMP X4, STA. 2410+38.49 — ℄ CONST. RAMP X3, STA. 2320+39.21 — ℄ CONST. RAMP X4, STA. 2412+19.67 — ℄ CONST. RAMP V3, STA. 1212+39.26 — LOC. (2) OF MINIMUM VERTICAL CLEARANCE** — ℄ CONST. RAMP X4 — ℄ CONST. RAMP V3 — LOC. (3) OF MINIMUM VERTICAL CLEARANCE — ℄ CONST. RAMP X4, STA. 2412+30.55 — ℄ CONST. RAMP W3, STA. 1797+69.09 — ℄ CONST. RAMP X4, STA. 2412+51.02 — ℄ CONST. RAMP W1, STA. 1610+80.47 — ℄ CONST. RAMP X4, STA. 2413+83.27 — ℄ CONST. RAMP W2, STA. 1698+46.75 — ℄ CONST. RAMP W3 — ℄ CONST. RAMP W1 — EX. LIGHT POLE TO BE REMOVED — LOC. (4) OF MINIMUM VERTICAL CLEARANCE ** — LOC. (5) OF MINIMUM VERTICAL CLEARANCE — SEE RETAINING WALL RW-5 FOR GRADING — ℄ BRG. REAR ABUT. STA. 2409+28.77 — END APPROACH SLAB STA. 2409+24.77 — ℄ CONST. RAMP X2 — EX. BRIDGE 50'-0" O/O DECK — LIMITS OF EX. BRIDGE FRA-670-0458 (SFN# 2506459) (TO BE REMOVED) — ℄ PIER 1 STA. 2410+93.77 — RETAINING WALL RW 11 — BRIDGE FRA-71-1804A — O/O VARIES — ℄ PIER 2 STA. 2412+98.27 — ℄ CONST. RAMP W2 — RETAINING WALL RW 12 — ℄ CONST. I-71 SB — MATCHLINE ℄ CONSTRUCTION RAMP X4 STA. 2414+53.52

B-309-0 · B-257-0 · B-256-0 · B-311-0 · B-216-8 · B-217-3 · B-217-7-11 · B-217-0 · F-077-0-59

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

ACTUAL MINIMUM VERTICAL CLEARANCE

LOCATION	CLEARANCE
1	22'-11"
2	22'-8"
3	22'-1"
4	17'-0"
5	18'-3"
6	19'-5"
7	17'-11"
8	25'-5"
9	25'-8"

PLAN

PROP. PROFILE GRADE — STA. 2409+24.77 — 30'-0" APPR. SLAB — 150.00' VC — PVI STA. 2409+20 EL. 810.93 — +3.77 % — +4.91 % — EL. 795.75 — EXP. — RETAINING WALL RW 5 — EX. GROUND — EL. 780.50 — FOR MAX. TOP LEVELING PAD ELEV. SEE MSE WALL PLANS — HP12x53 PILES EPL = 50 FT. — EXISTING GRADE — SPAN 1 = 165'-0" — SPAN 2 = 204'-6" — SPAN 3 = 249'-9" — BRIDGE LIMITS = 1039.25' — 700.00' VC, P.V.I. STA. 2416+00.00, EL. 844.30', G1=+4.91%, G2=-2.74% — PROP. PROFILE RAMP X4 — ℄ PIER 1 — ℄ PIER 2 — MIN. VERT. CLR. LOC. (1) — MIN. VERT. CLR. LOC. (3) — MIN. VERT. CLR. LOC. (5) — RAMP X3 — RAMP W3 — RAMP W1 — RAMP V3 — RAMP W2 — I-71 SB — EL. 769.50 — HP14x73 PILES EPL = 30 FT. — EX. ELECTRIC (TO BE REMOVED) — EL. 784.00 — HP14x73 PILES EPL = 20 FT. — MATCHLINE ℄ CONSTRUCTION RAMP X4 STA. 2414+53.52

PROP. PROFILE GRADE	810.29	811.36	812.48	813.64	814.86	816.08	817.31	818.54	819.76	820.99	822.22	823.44	824.67	825.90	827.13	828.32	829.44	830.50	831.49	832.41	833.26	834.04	834.76	PROP. PROFILE GRADE
EXISTING GRADE	779.45	780.52	780.54	777.20	777.36	777.82	778.63	778.48	778.74	779.80	779.08	779.40	780.62	783.88	789.92	795.62	800.55	801.48	801.55	801.53	802.02	800.90	801.45	EXISTING GRADE
	2409								2410								2411							2412								2413								2414	

PROFILE ALONG ℄ CONSTRUCTION RAMP X4

E.L. ROBINSON — one Challenger Line, Suite 310 - Columbus, Ohio 43215 — 1801 Watermark Drive

DESIGNED JDH · DRAWN FIB · CHECKED DFT · REVIEWED RER · DATE 11/08/11 · REVISED · STRUCTURE FILE NUMBER 2506444

FRANKLIN COUNTY
STA. 2409+24.77
STA. 2419+64.02

SITE PLAN (SHEET 1 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-1

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LEGEND:

△ 8'-0" REQUIRED MINIMUM HORIZONTAL CLEARANCE AT REAR ABUTMENT
18'-0" ACTUAL HORIZONTAL CLEARANCE AT REAR ABUTMENT

8'-0" REQUIRED MINIMUM HORIZONTAL CLEARANCE AT FORWARD ABUTMENT
55'-0" ACTUAL HORIZONTAL CLEARANCE AT FORWARD ABUTMENT

* - O/O DECK VARIES FROM 46'-0" TO 48'-3¾"

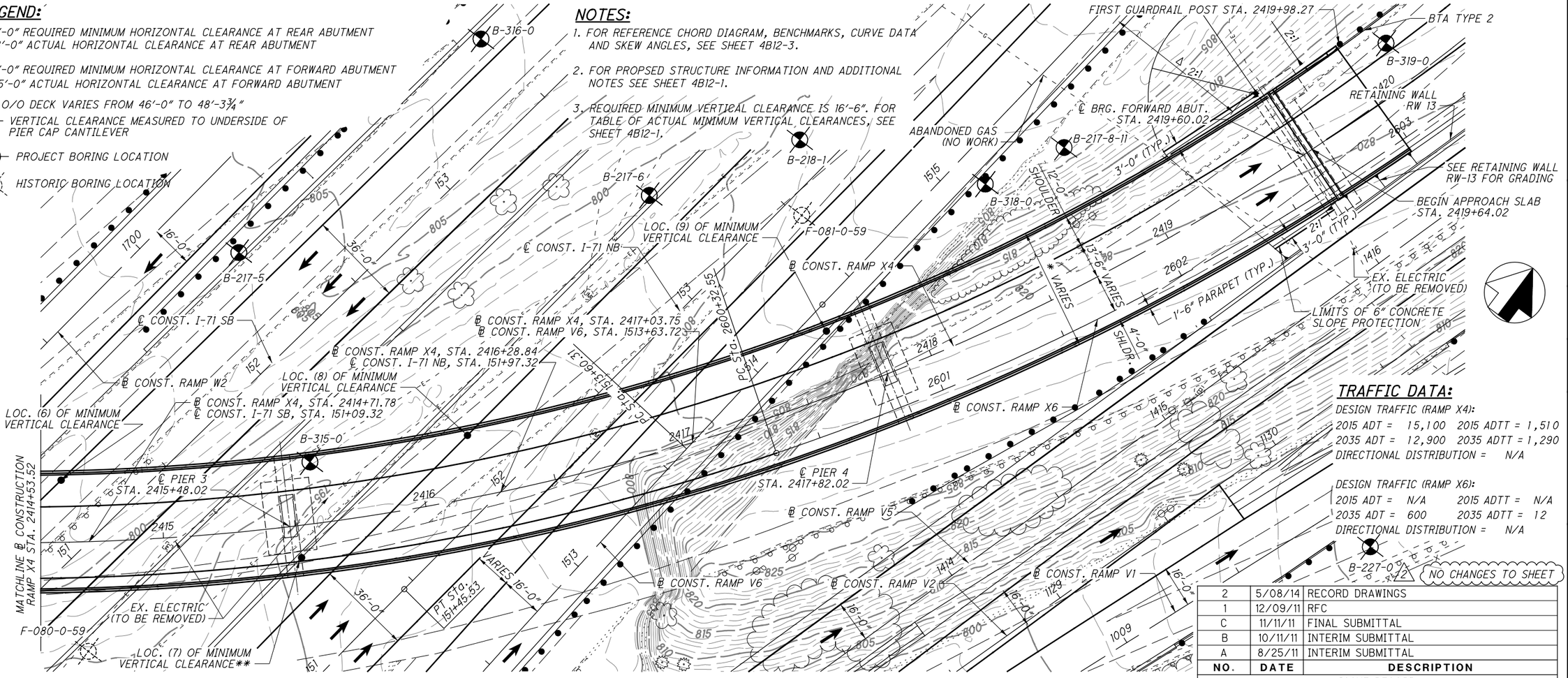
** - VERTICAL CLEARANCE MEASURED TO UNDERSIDE OF PIER CAP CANTILEVER

PROJECT BORING LOCATION

HISTORIC BORING LOCATION

NOTES:

1. FOR REFERENCE CHORD DIAGRAM, BENCHMARKS, CURVE DATA AND SKEW ANGLES, SEE SHEET 4B12-3.
2. FOR PROPSED STRUCTURE INFORMATION AND ADDITIONAL NOTES SEE SHEET 4B12-1.
3. REQUIRED MINIMUM VERTICAL CLEARANCE IS 16'-6". FOR TABLE OF ACTUAL MINIMUM VERTICAL CLEARANCES, SEE SHEET 4B12-1.



PLAN

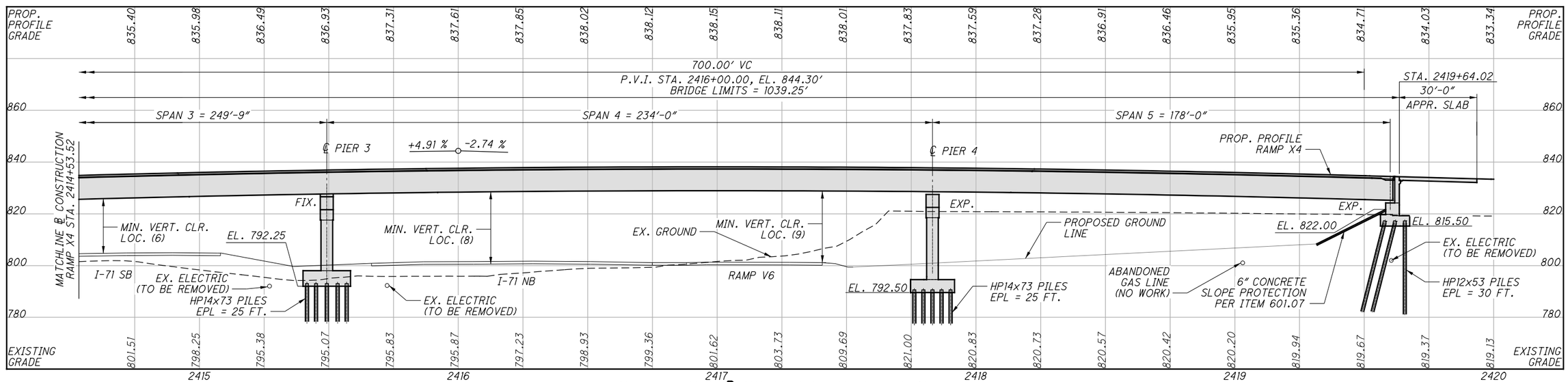
TRAFFIC DATA:

DESIGN TRAFFIC (RAMP X4):
2015 ADT = 15,100 2015 ADTT = 1,510
2035 ADT = 12,900 2035 ADTT = 1,290
DIRECTIONAL DISTRIBUTION = N/A

DESIGN TRAFFIC (RAMP X6):
2015 ADT = N/A 2015 ADTT = N/A
2035 ADT = 600 2035 ADTT = 12
DIRECTIONAL DISTRIBUTION = N/A

NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL
ISSUE RECORD		



PROFILE ALONG ℄ CONSTRUCTION RAMP X4

E.L. ROBINSON
The Challenge to be Your Choice
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	FIB	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT		2506444	

FRANKLIN COUNTY
STA. 2409+24.77
STA. 2419+64.02

SITE PLAN (SHEET 2 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-2

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2744

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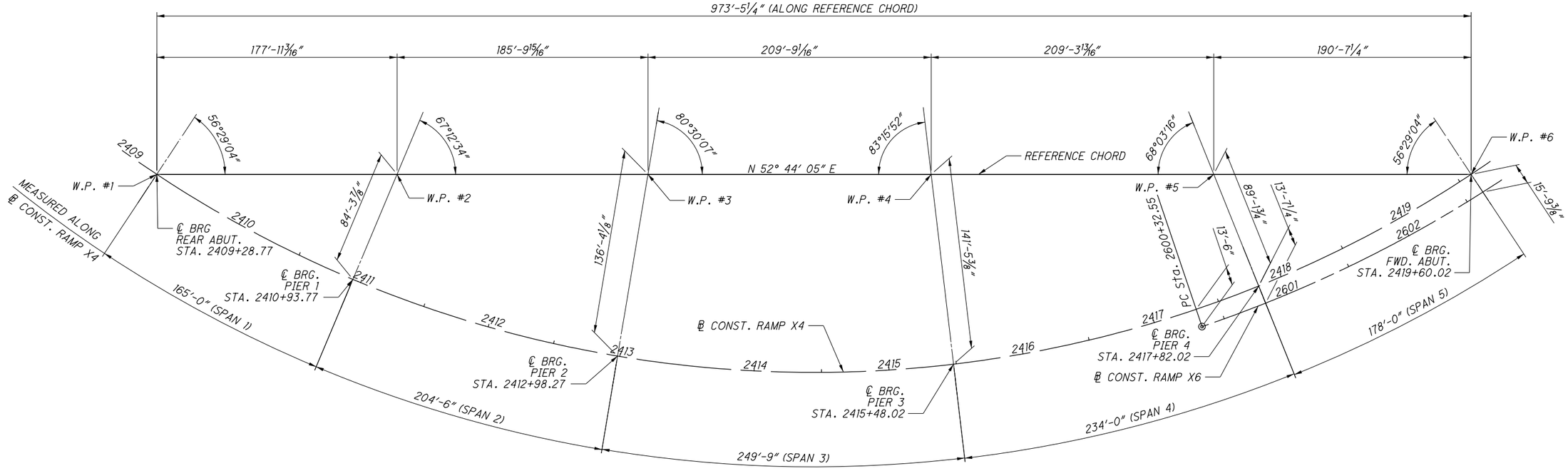

REFERENCE CHORD DIAGRAM

RAMP X4 CURVE DATA

P.I. STA. 2419+17.29
Δ = 102° 49' 51" (LT)
Dc = 6° 30' 00"
R = 881.47'
T = 1,104.81'
L = 1,582.01'
E = 531.89'
PC STA. = 2408+12.48
PT STA. = 2423+94.49
V min. = 45MPH
e max. = 0.057
WIDENING = 3.00'

RAMP X6 CURVE DATA

P.I. STA. 2601+81.16
Δ = 17° 25' 39" (LT)
Dc = 5° 54' 32"
R = 969.64'
T = 148.61'
L = 294.93'
E = 11.32'
PC STA. = 2600+32.55
PCC STA. = 2603+27.48
V min. = 45MPH
e max. = 0.057

BENCHMARK DATA

BM#14	S.E. ANCHOR BOLT ON N.W. SIGN FOUNDATION. ON I-670EB TO I-71NB RAMP. STA. 523+50.83, 283.68' RT (I-670EB), ELEV = 813.08
BM#15	S.W. ANCHOR BOLT ON HIGH MAST LIGHT TOWER #1C. ON RAMP TO I-670EB STA. 156+83.62, 268.65' RT (I-71 NB), ELEV = 809.34

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT		25066444	

REFERENCE CHORD DIAGRAM
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-3

2565
2744

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STRUCTURE GENERAL NOTES

STANDARD DRAWINGS AND SUPPLEMENTAL SPECIFICATIONS:

REFER TO THE FOLLOWING STANDARD DRAWINGS:

AS-1-81	REVISED	07-19-02
HL-50.21	REVISED	01-19-07
SBR-1-99	REVISED	07-19-02
TC-7.65	REVISED	01-21-11
TC-21.10	REVISED	01-19-07

AND TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

800	DATED	1-21-11
840	DATED	10-15-10
898	AS MODIFIED BY APPENDIX ST-01	
SMOOTHNESS REQUIREMENT PER APPENDIX ST-02		

DESIGN SPECIFICATIONS:

THIS STRUCTURE CONFORMS TO THE "LRFD BRIDGE DESIGN SPECIFICATIONS" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 5TH EDITION, INCLUDING THE 2010 INTERIM SPECIFICATIONS AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

SPECIAL DESIGN SPECIFICATIONS:

THIS BRIDGE REQUIRED THE USE OF A TWO DIMENSIONAL MODEL USING THE GRILLAGE DESIGN METHOD TO ANALYZE THE STRUCTURE. THE COMPUTER PROGRAM USED FOR STRUCTURAL ANALYSIS WAS MDX. THE BRIDGE COMPONENTS DESIGNED BY THIS METHOD WERE THE STEEL GIRDERS AND CROSS FRAMES.

DEAD LOAD DISTRIBUTION: THE NON-COMPOSITE DEAD LOAD WAS DISTRIBUTED TO THE GIRDERS BASED ON THE TRIBUTARY WIDTH OF THE GIRDER. THE PARAPET DEAD LOAD WAS DISTRIBUTED EQUALLY TO THE TWO FASCIA GIRDERS.

LIVE LOAD DISTRIBUTION: LIVE LOADS WERE DIRECTLY DISTRIBUTED BY MDX TO THE GIRDERS BY POSITIONING THE TRUCKS OR LANE LOAD ON THE GRID MODEL.

LOAD MODIFIER FOR OPERATIONAL IMPORTANCE:

A LOAD MODIFIER OF 1.0 HAS BEEN ASSUMED FOR THE DESIGN OF THIS STRUCTURE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, ARTICLE 1.3.5 AND THE ODOT BRIDGE DESIGN MANUAL, 2007.

DESIGN LOADING:

DESIGN LOADING: HL-93
FUTURE WEARING SURFACE (FWS) OF 0.060 KIPS/SQ.FT.

DESIGN DATA:

CONCRETE CLASS QC/QA QSC2 - COMPRESSIVE STRENGTH 4.5 KSI (SUPERSTRUCTURE)
CONCRETE CLASS QC/QA QSC1 - COMPRESSIVE STRENGTH 4.0 KSI (SUBSTRUCTURE)
REINFORCING STEEL - MINIMUM YIELD STRENGTH 60 KSI
STRUCTURAL STEEL - ASTM A709 GRADE 50 - YIELD STRENGTH 50 KSI
STEEL H-PILES - ASTM A572 - YIELD STRENGTH 50 KSI

DECK PROTECTION METHOD:

EPOXY COATED REINFORCING STEEL
2½" CONCRETE COVER

MONOLITHIC WEARING SURFACE:

MONOLITHIC WEARING SURFACE IS ASSUMED, FOR DESIGN PURPOSES, TO BE 1 INCH THICK.

ITEM 203 - EMBANKMENT, AS PER PLAN

PLACE AND COMPACT EMBANKMENT MATERIAL IN 6" LIFTS FOR THE CONSTRUCTION OF THE APPROACH EMBANKMENT.

MAINTENANCE OF TRAFFIC

I-71 AND I-670 TRAFFIC WILL BE MAINTAINED AT ALL TIMES. FOR MAINTENANCE OF TRAFFIC NOTES, PERMITTED LANE CLOSURES AND DETAILS, REFER TO ROADWAY PLANS.

PROPRIETARY RETAINING WALL DATA:

THE PROPRIETARY WALL SUPPLIER SHALL DESIGN THE INTERNAL STABILITY OF A MECHANICALLY STABILIZED EARTH (MSE) WALL IN ACCORDANCE WITH SS840 TO SUPPORT THE ABUTMENT AT THE REAR ABUTMENT. THE DESIGN FOR INTERNAL STABILITY SHALL INCLUDE A NOMINAL (I.E. UNFACTORED) HORIZONTAL STRIP LOAD DUE TO FRICTION (FR) FROM THE SUPERSTRUCTURE OF 3.69 K/FT APPLIED PERPENDICULAR TO THE FACE OF WALL AT THE BASE OF THE CONCRETE FOOTING. THIS STRIP LOAD DOES NOT INCLUDE EARTH PRESSURE LOADS FROM THE ABUTMENT BACKFILL. HOWEVER, THE PROPRIETARY WALL SUPPLIER SHALL INCLUDE EARTH PRESSURE LOADS FROM THE ABUTMENT BACKFILL IN THE DESIGN CALCULATIONS.

PILE DESIGN LOADS (ULTIMATE BEARING VALUE):

HP 12X53 REAR ABUTMENT PILES:
14 PILES 55 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEMS
349 KIPS ULTIMATE BEARING VALUE

HP 14X73 PIER 1 PILES:
33 PILES 35 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEMS
439 KIPS ULTIMATE BEARING VALUE

HP 14X73 PIER 2 PILES:
34 PILES 25 FEET LONG, ORDER LENGTH
439 KIPS ULTIMATE BEARING VALUE

HP 14X73 PIER 3 PILES:
36 PILES 30 FEET LONG, ORDER LENGTH
439 KIPS ULTIMATE BEARING VALUE

HP 14X73 PIER 4 PILES:
33 PILES 30 FEET LONG, ORDER LENGTH
439 KIPS ULTIMATE BEARING VALUE

HP 12X53 FORWARD ABUTMENT PILES:
29 PILES 35 FEET LONG, ORDER LENGTH
1 DYNAMIC LOAD TESTING ITEMS
308 KIPS ULTIMATE BEARING VALUE

PILING SHALL BE DRIVEN TO REQUIRED MINIMUM BEARING VALUE AND ALSO BE AT OR BELOW MINIMUM TIP ELEVATION.

NOTIFY DESIGNER IF MINIMUM TIP ELEVATION IS NOT OBTAINED AT REQUIRED BEARING VALUE AND PILE MUST BE OVER DRIVEN TO OBTAIN MINIMUM TIP ELEVATION.

PILE SPLICES

PILE SPLICES: IN LIEU OF USING THE FULL PENETRATION BUTT WELDS SPECIFIED IN CMS 507.09 TO SPLICE STEEL H-PILES, THE CONTRACTOR MAY USE A MANUFACTURED H-PILE SPLICER. FURNISH SPLICERS FROM THE FOLLOWING MANUFACTURER:

ASSOCIATED PILE AND FITTING CORPORATION
8 WOOD HOLLOW RD. PLAZA 1
PARSIPPANY, NEW JERSEY 07054

INSTALL AND WELD THE SPLICER TO THE PILE SECTIONS IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN ASSEMBLY PROCEDURE SUPPLIED TO THE ENGINEER BEFORE THE WELDING IS PERFORMED.

△2

MASS CONCRETE:

MASS CONCRETE PROJECT SCOPE PROVISION 12.2.13 SHALL APPLY TO ANY CONCRETE PLACEMENT FOR WHICH THE LEAST DIMENSION, MEASURED IN ANY DIRECTION, IS FOUR (4) FEET OR GREATER. FOR THIS BRIDGE, THE FOLLOWING ELEMENTS ARE CONSIDERED MASS CONCRETE: PIER FOOTINGS, PIER STEMS & COLUMNS, PIER CAPS.

STRUCTURE GROUNDING:

THE BRIDGE SHALL BE GROUNDED AT PIERS 2, 3, AND 4 PER STANDARD DRAWING HL-50.21. THE ITEMS TO BE GROUNDED INCLUDE: THE STRUCTURAL STEEL GIRDERS AND CROSSFRAMES.

△3

BATTERED PILES:

THE BLOW COUNT FOR BATTERED PILES SHALL BE THE BLOW COUNT DETERMINED FOR VERTICAL PILES OF THE SAME ULTIMATE BEARING VALUE DIVIDED BY AN EFFICIENCY FACTOR (D). COMPUTE THE EFFICIENCY FACTOR (D) AS FOLLOWS:

$D = (1-UG)/(1+G^2)^{1/2}$

U = COEFFICIENT OF FRICTION, WHICH IS ESTIMATED AT 0.05 FOR DOUBLE-ACTING AIR OPERATED OR DIESEL HAMMERS; 0.1 FOR SINGLE-ACTING AIR OPERATED OR DIESEL HAMMERS; AND 0.2 FOR DROP HAMMERS.
G = RATE OF BATTER (⅓, ¼, ETC.)

DECK PLACEMENT DESIGN ASSUMPTIONS

THE FOLLOWING ASSUMPTIONS OF CONSTRUCTION MEANS AND METHODS WERE MADE FOR THE ANALYSIS AND DESIGN OF THE SUPERSTRUCTURE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE FALSEWORK SUPPORT SYSTEM WITHIN THESE PARAMETERS AND WILL ASSUME RESPONSIBILITY FOR SUPERSTRUCTURE ANALYSIS FOR DEVIATION FROM THESE DESIGN ASSUMPTIONS.

AN EIGHT WHEEL FINISHING MACHINE WITH A MAXIMUM WHEEL LOAD OF 1.225 KIPS FOR A TOTAL MACHINE LOAD OF 9.8 KIPS.

A MINIMUM OUT-TO-OUT WHEEL SPACING AT EACH END OF THE MACHINE OF 108".

A MAXIMUM SPACING OF OVERHANG FALSEWORK BRACKETS OF 48 IN. BRACKET WEIGHT = 50 POUNDS EACH.

A MAXIMUM DISTANCE FROM THE CENTERLINE OF THE FASCIA GIRDER TO THE FACE OF THE SAFETY HANDRAIL OF 65".

OVERHANG BRACKETS CONTACT THE GIRDER WEB WITHIN 8" OF THE TOP OF THE BOTTOM FLANGE.

ITEM 512 - SEALING OF CONCRETE SURFACES (EPOXY-URETHANE):

THE URETHANE TOP COAT SHALL BE TINTED TO MEET FEDERAL COLOR # 17778 (LIGHT NEUTRAL).

△4 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
4	5/08/14	RECORD DRAWINGS
3	4/16/12	RFI 050
2	3/1/12	NDC 016
1	01/04/12	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge Has Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	01/03/12
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

GENERAL NOTES (1 OF 5)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-4

2566
2744

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STRUCTURE GENERAL NOTES

ITEM 513 - STRUCTURAL STEEL MEMBERS, SPECIALIZED MULTI ROTATIONAL (SMR) BEARINGS, LEVEL UF, AS PER PLAN:

1.0 DESCRIPTION

1.1 THIS ITEM CONSISTS OF DESIGNING, FABRICATING, TESTING, FURNISHING AND INSTALLING SPECIALIZED MULTI-ROTATIONAL (SMR) BEARINGS IN ACCORDANCE WITH CMS 513 AND THIS SPECIFICATION. SELECT FABRICATORS THAT ARE LISTED BY THE DEPARTMENT BEFORE THE CONTRACT LETTING DATE AS EVALUATED BY THE OFFICE OF MATERIALS MANAGEMENT AND PRE-QUALIFIED AS A UF LEVEL FABRICATOR. THE CONTRACTOR MAY SUPPLY EITHER POT OR DISC TYPE BEARINGS ACCORDING TO THIS SPECIFICATION.

1.2 SUPPLY POT OR DISC BEARINGS CONSISTING OF THE FOLLOWING COMMON PARTS:

A. SOLE PLATE - TOP SIDE BEVELED TO THE SLOPE OF THE GIRDER AND FIELD WELDED TO THE GIRDER FLANGE. BOTTOM SIDE, FOR EXPANSION BEARINGS: LEVEL AND FACED WITH STAINLESS STEEL. BOTTOM SIDE, FOR FIXED POT BEARINGS: LEVEL AND ATTACHED TO OR INTEGRAL WITH THE PISTON. BOTTOM SIDE, FOR FIXED DISC BEARINGS: LEVEL AND RECESSED FOR SHEAR RESTRICTION ELEMENT.

B. GUIDE BAR/BARS (FOR GUIDED EXPANSION BEARINGS) - ATTACHED TO OR INTEGRAL WITH THE SOLE PLATE FOR PURPOSE OF GUIDING EXPANSION BEARINGS AND TRANSMITTING HORIZONTAL FORCES TO THE POT OR UPPER BEARING PLATE. EDGES WITH SLIDING SURFACES FACED WITH STAINLESS STEEL. ALL GUIDE BEARINGS SHALL BE EDGE GUIDED. THE DEPARTMENT WILL NOT ACCEPT CENTER GUIDED BEARINGS.

C. SLIDING SURFACES (FOR EXPANSION BEARINGS) - ACCOMMODATE HORIZONTAL BRIDGE MOVEMENT BY MATED SLIDING SURFACES CONSISTING OF STAINLESS STEEL AND POLYTETRAFLUOROETHYLENE (PTFE).

D. UPPER BEARING PLATE (FOR EXPANSION BEARINGS) - TOP LEVEL AND FACED WITH PTFE. FOR DISC BEARINGS, BOTTOM SIDE LEVEL AND RECESSED FOR SHEAR RESTRICTION ELEMENT. FOR POT BEARINGS, BOTTOM SIDE LEVEL AND ATTACHED TO, OR INTEGRAL WITH, THE PISTON. FOR GUIDED BEARINGS, EDGES WITH SLIDING SURFACES FACED WITH PTFE.

E. MASONRY PLATE - DISTRIBUTE VERTICAL AND HORIZONTAL FORCES FROM THE POT OR DISC TO THE CONCRETE BRIDGE SEAT. MASONRY PLATE SITS ON A PREFORMED BEARING PAD AND IS CONNECTED TO THE BEARING SEAT WITH ANCHOR BOLTS.

F. PREFORMED BEARING PADS - PLACED BETWEEN A CONCRETE BEARING SEAT AND THE MASONRY PLATE, USED TO ACCOMMODATE MINOR SURFACE ROUGHNESS IN THE BEARING SEAT.

G. ANCHOR BOLTS - DISTRIBUTE HORIZONTAL OR UPLIFT FORCES FROM THE BEARING TO THE BEARING SEAT.

1.3 SUPPLY POT BEARINGS WITH COMMON PARTS DEFINED IN 1.2 AND THE PARTS LISTED BELOW:

A. CIRCULAR PISTON - TRANSMITS ROTATION, HORIZONTAL AND VERTICAL FORCES FROM THE SOLE OR UPPER PLATES TO THE POT. ATTACHED TO, OR INTEGRAL WITH, THE UPPER BEARING PLATE FOR EXPANSION BEARINGS. ATTACHED TO, OR INTEGRAL WITH, THE SOLE PLATE FOR FIXED BEARINGS.

B. POT - CONFINES THE ELASTOMERIC DISC AND TRANSMITS VERTICAL AND HORIZONTAL FORCES FROM THE PISTON TO THE MASONRY PLATES. SHOP WELDED TO MASONRY PLATES.

C. ELASTOMERIC DISC - SUPPORTS THE PISTON INSIDE THE CONFINING POT FOR THE PURPOSE OF PROVIDING ROTATION. THE TOP AND BOTTOM SURFACES OF THE ELASTOMERIC DISC ARE LUBRICATED WITH SILICONE GREASE. THE DISC IS PREVENTED FROM EXTRUDING BETWEEN THE PISTON EDGES AND POT WALLS WITH SEALING RINGS.

D. SEALING RINGS - THE SEAL BETWEEN THE POT AND THE PISTON WHICH CONFINES THE ELASTOMERIC DISC.

1.4 SUPPLY DISC BEARINGS WITH COMMON PARTS DEFINED IN 1.2 AND THE PARTS LISTED BELOW:

A. ELASTOMERIC DISC - DISTRIBUTES ROTATION, HORIZONTAL AND VERTICAL FORCES FROM THE SOLE OR UPPER PLATES TO THE MASONRY PLATE. THE DISC IS AN UNCONFINED CIRCULAR ELASTOMER, WITH A CENTERED ROUND HOLE FOR THE SHEAR RESTRICTING ELEMENT.

B. SHEAR RESTRICTING ELEMENT - TRANSMITS HORIZONTAL FORCES AND RESTRAINS VERTICAL UPLIFT IF SPECIFIED FROM THE SOLE OR UPPER BEARING PLATES TO THE MASONRY PLATE WHILE PROVIDING FOR FREE ROTATION.

1.5 BEARING HEIGHT

ADJUST BEAM SEAT ELEVATIONS TO ACCOUNT FOR DIFFERENCES BETWEEN THE BEARING HEIGHT DETAILED IN THE PLANS AND THE BEARING HEIGHT SUPPLIED BY THE FABRICATOR.

AS AN ALTERNATIVE, THE CONTRACTOR MAY INCREASE THE SOLE PLATE THICKNESS, POT BASE THICKNESS, MASONRY PLATE THICKNESS, PISTON THICKNESS OR A COMBINATION THEREOF TO MATCH THE TOTAL BEARING HEIGHT SHOWN IN THE PLANS.

2.0 DESIGN REQUIREMENTS

2.1 APPLICABLE DESIGN STANDARDS

DESIGN BEARINGS ACCORDING TO ALL APPLICABLE SECTIONS OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5TH EDITION, SECTION 14 AND THIS SPECIFICATION. DESIGN BEARINGS TO ACCOMMODATE THE LOADS, FORCES AND MOVEMENTS SPECIFIED IN THE PLANS AND THESE PROVISIONS.

2.2 APPROVAL PROCESS

SUBMIT A DESIGN PLAN AND DESIGN CALCULATIONS AND SHOP DRAWINGS ACCORDING TO THE PROCESS DEFINED IN CMS 501.04 A, WITH THE FOLLOWING ADDITIONAL REQUIREMENTS THAT APPLY TO THE DESIGN PLAN: HAVE AN OHIO REGISTERED ENGINEER CHECK, SIGN, SEAL AND DATE EACH PLAN. HAVE A SECOND OHIO REGISTERED ENGINEER CHECK, SIGN, SEAL AND DATE EACH PLAN. THE PREPARER AND CHECKER SHALL BE TWO DIFFERENT ENGINEERS. INCLUDE THE FOLLOWING STATEMENT ON THE PLANS: "THIS PLAN WAS PREPARED IN COMPLIANCE WITH CONTRACT DOCUMENTS".

2.3 DESIGN REQUIREMENTS

DESIGN SMR BEARINGS IN ACCORDANCE WITH TABLE 1: SMR DESIGN REQUIREMENTS.

TABLE 1. SMR DESIGN REQUIREMENTS:

COMPONENT	AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION	MODIFICATION COMMENTS
SOLE, MASONRY AND UPPER BEARING PLATES	14.8.1 & 14.8.2	A,B
POT BEARING PISTON	14.7.4.7	C
PTFE	14.7.2	D
STAINLESS STEEL	14.7.2	E
POT BEARING ELASTOMERIC DISC	14.7.4.3 & 14.7.4.4	F,G
POT BEARING SEALING RINGS	14.7.5.4	
GUIDE BARS	14.7.9	H,I
POT BEARING POT	14.7.4.6	J
DISC BEARING ELASTOMERIC DISC	14.7.8.3	
DISC BEARING SHEAR RESTRICTING MECHANISM	14.7.8.4	
ANCHORAGE	14.8.3	K,L
PREFORMED BEARING PAD		
METALLIZING WIRE		
SEALER		

MODIFICATION COMMENTS:

A	RECTANGULAR OR SQUARE IN PLAN, WITH BEVELED, LEVEL OR RECESSED SURFACES IN ACCORDANCE TO SECTION 1.0.
B	MINIMUM THICKNESS SHALL BE 0.75 INCHES.
C	THE PISTON SHALL BE MACHINED FROM A SINGLE PIECE OF STRUCTURAL STEEL.
D	THE MATING SURFACE TO PTFE SHALL BE LARGE ENOUGH TO COVER THE PTFE DURING ALL CONDITIONS OF EXPANSION OR CONTRACTION THAT THE BRIDGE WILL UNDERGO PLUS AN ADDITIONAL TWO (2) INCHES.
E	STAINLESS STEEL SURFACE USED AS A MATING SURFACE TO PTFE SHALL BE LARGE ENOUGH TO COVER THE PTFE DURING ALL CONDITIONS OF EXPANSION OR CONTRACTION THAT THE BRIDGE WILL UNDERGO PLUS AN ADDITIONAL TWO (2) INCHES.
F	THE DISC SHALL CONSIST OF ONE SOLID PIECE OF ELASTOMER.
G	THE UPPER EDGE OF THE ELASTOMERIC DISC SHALL BE RECESSED TO RECEIVE THE SEALING RINGS SO THAT THEY SIT FLUSH WITH THE UPPER SURFACE OF THE DISC.
H	THE SLIDE SURFACES OF THE GUIDE BARS SHALL BE FACED WITH STAINLESS STEEL
I	ON GUIDED BEARINGS, THE GUIDE BARS SHALL PROVIDE SUFFICIENT CLEARANCES BETWEEN ROTATING AND NON-ROTATING PARTS TO PREVENT BINDING OF THE BEARING.
J	THE POT SHALL CONSIST OF A SOLID PLATE INTO WHICH A CIRCULAR RECESS HAD BEEN MACHINED.
K	DESIGN CONNECTIONS TO THE SUBSTRUCTURE USING THREADED BOLTS.
L	DESIGN CONNECTIONS TO THE SUPERSTRUCTURE USING FILLET WELDS, 5/16" LEG SIZE IS PREFERRED.

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/9/11	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

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DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT		2506444	

I-71 SB AND I-71 NB

GENERAL NOTES (2 OF 5)

BRIDGE NO. FRA-670-0457B

RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-5

2567
2744

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STRUCTURE GENERAL NOTES

3.0 MATERIALS

SUPPLY MATERIALS IN ACCORDANCE WITH TABLE 2: SMR MATERIAL REQUIREMENTS

TABLE 2. SMR MATERIAL REQUIREMENTS:		
COMPONENT	AASHTO STANDARD SPECIFICATION DIVISION II, ARTICLE, ASTM OR CMS	MODIFICATION COMMENTS
SOLE, MASONRY AND UPPER BEARING PLATES	CMS 711.01	
POT BEARING PISTON	CMS 711.01	
PTFE	AASHTO 18.4.3	G
STAINLESS STEEL	ASTM A167/A264, TYPE 304 WITH #8 MIRROR FINISH	
POT BEARING ELASTOMERIC DISC	AASHTO 18.4.4.1, GRADE 3 REQUIREMENTS	A
POT BEARING SEALING RINGS	AASHTO 18.4.4.3	
GUIDE BARS	CMS 711.01	B
POT BEARING POT	CMS 711.01	C
DISC BEARING ELASTOMERIC DISC	AASHTO 18.4.7	
DISC BEARING SHEAR RESTRICTING MECHANISM	ASTM A240 OR A 276, UNS S21800	
ANCHORAGE	ASTM F1554	D
PREFORMED BEARING PAD	CMS 711.21	
METALLIZING WIRE	ASTM B833	E
SEALER	CMS 708.02D	F

MODIFICATION COMMENTS:	
A	LUBRICATE THE TOP AND BOTTOM SURFACES WITH SILICONE GREASE, SUPPLY GREASE MEETING THE REQUIREMENTS OF MIL-S-8660C.
B	GUIDE BARS MAY BE INTEGRAL BY MACHINING FROM A SOLID SOLE PLATE OR THEY MAY BE ATTACHED TO THE SOLE PLATE BY WELDING. THE SLIDE SURFACES OF THE GUIDE BARS SHALL BE FACED WITH STAINLESS STEEL.
C	MACHINE THE POT FROM A SOLID PLATE INTO WHICH A CIRCULAR RECESS HAS BEEN MACHINED. DO NOT APPLY METALLIZING TO THE INSIDE SURFACES OF POT WALLS AND BASE.
D	THREADED ANCHOR BOLTS MEETING THE MATERIAL REQUIREMENTS OF ASTM F1554. GALVANIZED ANCHOR BOLT ASSEMBLES PER CMS 711.02.
E	ASTM B833 HAVING THE 99.99% ZINC-UNS (Z13005) COMPOSITION. SUPPLY CERTIFIED TEST DATA TO THE ENGINEER. ACCOMPANY ALL CERTIFIED TEST DATA WITH COPIES OF MILL SHIPPING NOTICES OR INVOICES SHOWING THE DIAMETER AND QUANTITY OF WIRE BEING ACCEPTED.
F	SUPPLY A SEALER CONFORMING TO THE CMS 708.02 D, URETHANE FINISH COAT. THIN THE SEALER TO THE MAXIMUM EXTENT PER THE MANUFACTURER'S RECOMMENDATION. THE SEALER COLOR SHALL CLOSELY APPROACH: FEDERAL STANDARD NUMBER FS-595B-16314 MEDIUM GRAY (THE COLOR OF METALLIZING); FS-595B-20045 OR 20059 (THE COLOR OF WEATHERING STEEL) FOR USE WITH WEATHERING STEEL BRIDGES; OR TO MATCH THE SPECIFIED 514 PAINT COLOR.
G	FILLED PTFE IS NOT ALLOWED.

4.0 FABRICATION

4.1 ATTACH SHEET OR FABRIC PTFE TO SUBSTRATE AS FOLLOWS:

A. CONFORM TO AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 17TH EDITION, DIVISION II, ARTICLE 18.5.3

B. CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS FOR: ADHESIVE MATERIAL; MECHANICAL INTERLOCKING; BONDING PROCEDURES; AND SURFACE PREPARATION. SATISFY THE ADHESION STRENGTH REQUIREMENTS OF SECTION 4.5 OF THIS SPECIFICATION.

C. THE DEPARTMENT WILL NOT PERMIT MIGRATION OF EPOXY THROUGH THE PTFE FABRIC.

D. FURNISH PTFE FABRIC FROM A SINGLE PIECE. OVER-SEW OR RECESS EDGES SO THAT NO CUT FABRIC EDGES ARE EXPOSED.

4.2 ATTACHMENT OF SHEET STAINLESS STEEL

ATTACH STAINLESS STEEL TO ITS STEEL SUBSTRATE USING A CONTINUOUS SEAL WELD AROUND ITS ENTIRE PERIMETER. CONFORM TO THE AWS REQUIREMENTS FOR STAINLESS STEEL. PERFORM WELDING USING WELDERS PRE-QUALIFIED BY TEST WELDS PREPARED, WELDED AND TESTED IN ACCORDANCE WITH ANSI/AWS D1.3, STRUCTURAL WELDING CODE - SHEET STEEL ARTICLE 6.7. PROVIDE STAINLESS STEEL SHEET THAT IS FLAT, FREE FROM WRINKLES AND IN CONTINUOUS CONTACT WITH ITS BACKING PLATE AFTER WELDING. CONFORM TO THE REQUIREMENTS OF SECTION 4.3 OF THIS SPECIFICATION AFTER WELDING. THE DEPARTMENT WILL NOT ACCEPT ANY SURFACE ROUGHNESS FROM WELD PROTRUDING ABOVE THE SURFACE OF THE STAINLESS STEEL.

WELD GUIDE BARS TO THE SOLE PLATE BEFORE WELDING THE STAINLESS STEEL TO THE SOLE PLATE OR GUIDE BARS.

4.3 CORROSION PROTECTION

SHOP METALLIZE AND SEAL ALL STEEL SURFACES, EXCEPT PTFE-STAINLESS STEEL SLIDING SURFACES AND THE INSIDE OF THE POT. REFER TO THE SSPC COATING SYSTEM GUIDE CS 23.00 (MARCH 17, 2003) "GUIDE FOR THERMAL SPRAY METALLIC COATING SYSTEMS" AND TABLE 3, SHOP METALLIZING REQUIREMENTS.

TABLE 3. SHOP METALLIZING REQUIREMENTS:	
REQUIREMENT	SPECIFICATION
SURFACE PREPARATION	SSPC-SP5
BLAST MEDIUM	STEEL GRIT
SHARP ANGULAR BLAST ANCHOR PROFILE	ASTM D4417, METHOD C., 2.5 MILS MINIMUM
METALLIZING THICKNESS	SSPC PA-2, 12 MILS
COATING ADHESION	ASTM D-4541, 500 PSI
SEALER	DEVELOP A UNIFORM APPEARANCE, COLOR AND FILL ALL SURFACE ROUGHNESS ASSOCIATED WITH THE METALIZING

4.4 WELDING

PERFORM WELDING ACCORDING TO CMS 513. IF THE CONTRACTOR PROVIDES ACCEPTABLE WELDING PROCEDURES TO RESTRICT THE MAXIMUM TEMPERATURE IN THE PTFE BONDED AREA OR TO SURFACES TOUCHING THE ELASTOMERIC DISC TO LESS THAN 250° F, THE DEPARTMENT WILL PERMIT WELDING TO A STEEL PLATE WHICH HAS A BONDED PTFE SURFACE OR TOUCHES A ELASTOMERIC DISC. REPAIR CORROSION PROTECTIVE COATINGS DAMAGED BY FIELD WELDS ACCORDING TO 7.9.

4.5 TOLERANCES

CHECK ALL BEARINGS FOR TOLERANCES ACCORDING TO AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 17TH EDITION, DIVISION II TABLE 18.5.1.5-1.

TO MEASURE FLATNESS, PLACE A STRAIGHTEDGE, LONGER THAN THE NOMINAL DIMENSION TO BE MEASURED, IN CONTACT WITH THE SURFACE TO BE MEASURED OR AS PARALLEL TO IT AS POSSIBLE. SELECT A FEELER GAUGE HAVING A TOLERANCE OF ±0.001 INCH AND ATTEMPT TO INSERT IT UNDER THE STRAIGHTEDGE (THE SMALLEST NUMBER OF BLADES SHALL BE USED). FLATNESS IS ACCEPTABLE IF THE FEELER DOES NOT PASS UNDER THE STRAIGHTEDGE. THE STRAIGHTEDGE MAY BE LOCATED AT ANY POSITION ON THE SURFACE AND NOT NECESSARILY AT 90 DEGREES TO THE EDGES.

5.0 TESTING

5.1 GENERAL

TEST THE BEARINGS AT A TESTING FACILITY, POSSESSING THE PROPER TESTING EQUIPMENT AND TRAINED PERSONNEL, CAPABLE OF PERFORMING ALL TESTS SPECIFIED IN SECTION 5.3. SUBMIT THE TEST FACILITIES QUALIFICATION WITH THE CMS 501.04 A, SHOP DRAWINGS ACCORDING TO THE PROCESS DEFINED IN CMS 501.04 A. THE TEST FACILITIES QUALIFICATIONS SHALL INCLUDE: CAPACITY AND CAPABILITIES OF EACH TESTING APPARATUS AND QUALIFICATIONS OF ALL PERSONNEL THAT WILL BE PERFORMING TESTS FOR THIS CONTRACT.

SUBMIT A REPORT CONTAINING THE RESULTS OF TESTS SPECIFIED IN 5.3 WITH THE CMS 501.06 A, TEST REPORTS ACCORDING TO THE PROCESS DEFINED IN CMS 501.06 A. PRESENT THE RESULTS OF ALL TESTING IN A REPORT INCLUDING RAW TEST DATA, REDUCED TEST DATA, SAMPLE CALCULATIONS, MEASURED TOLERANCES AND FINAL RESULTS ALONG WITH PHOTOGRAPHS AND CONCLUSIONS.

5.2 SAMPLING

RANDOMLY SELECT ONE GUIDED EXPANSION BEARING AND ONE FIXED BEARING FROM EACH APPLICABLE LOT OF COMPLETED BEARINGS. A LOT IS DEFINED BY AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES 17TH EDITION, DIVISION II ARTICLE 18.7.1.2

5.3 PERFORM TESTS ON COMPLETELY FABRICATED AND RANDOMLY SAMPLED BEARINGS ACCORDING TO TABLE 4: SMR TEST REQUIREMENTS

TABLE 4. SMR MATERIAL REQUIREMENTS:		
COMPONENT	AASHTO STANDARD SPECIFICATION DIVISION II, ARTICLE, ASTM OR CMS	MODIFICATION COMMENTS
MATERIAL CERTIFICATION	CMS 501.06	A, C
POT BEARING ELASTOMERIC DISC	CMS 711.23	
MATERIAL FRICTION TEST	AASHTO 18.7.2.2	B
DIMENSION CHECK	AASHTO 18.7.2.3	C
CLEARANCE CHECK	AASHTO 18.7.2.4	C
SHORT TERM COMPRESSION	AASHTO 18.7.2.5	
LONG TERM COMPRESSION	AASHTO 18.7.2.6	
FRICTION TEST	AASHTO 18.7.2.7	B
LONG TERM DETERIORATION TEST	AASHTO 18.7.2.8	
HORIZONTAL FORCE CAPACITY	AASHTO 18.7.2.9	D

MODIFICATION COMMENTS:	
A	PROCESS FOR CERTIFICATION OF ALL MATERIALS USED IN THE BEARING
B	THE CONTRACTOR MAY PERFORM A FRICTION TEST PER AASHTO 18.7.2.7 WITH 100 CYCLES OF SLIDING INSTEAD OF AASHTO 18.7.2.2
C	TEST ALL BEARINGS
D	GUIDED OR FIXED BEARINGS ONLY.

5.4 VISUALLY EXAMINE THE BEARING DURING ALL TESTS. DISASSEMBLE THE BEARING AFTER COMPLETING THE SPECIFIED TESTS. REJECT THE ENTIRE LOT OF BEARINGS IF A SAMPLED BEARING EXHIBITS VISUAL DEFECTS, SUCH AS: EXTRUDED OR DEFORMED ELASTOMER, POLYETHER URETHANE OR PTFE; DAMAGED SEALS; CRACKED STEEL; AND INTERFERENCE BETWEEN ROTATING AND STATIONARY PARTS.

THE BEARING PLATES AND THE STEEL PISTON SHALL MAINTAIN CONTINUOUS AND UNIFORM CONTACT FOR THE DURATION OF THE SPECIFIED TEST. ANY OBSERVED LIFT-OFF WILL BE CAUSE FOR REJECTION OF THE LOT. THE CONTRACTOR MAY INCORPORATE BEARINGS NOT DAMAGED DURING TESTING INTO THE FINISHED STRUCTURE.

THE MANUFACTURER MAY TEST ALL BEARINGS IN A REJECTED LOT AT HIS EXPENSE TO ESTABLISH ACCEPTANCE OF INDIVIDUAL BEARINGS IN A REJECTED LOT.

6.0 SHIPPING AND PACKING

6.1 SECURELY BAND BEARINGS TOGETHER AS UNITS SO THAT THEY MAY BE SHIPPED TO THE JOB SITE AND STORED WITHOUT RELATIVE MOVEMENT OF THE BEARING PARTS OR DISASSEMBLY AT ANY TIME. WRAP BEARINGS IN MOISTURE PROOF AND DUST PROOF MATERIAL TO PROTECT AGAINST SHIPPING AND JOB SITE CONDITIONS.

6.2 STORE BEARINGS AT THE JOB SITE IN A DRY, SHELTERED AREA FREE FROM DIRT OR DUST UNTIL INSTALLATION.

6.3 MARK THE CENTERLINES ON APPROPRIATE BEARING PARTS FOR CHECKING ALIGNMENT IN THE FIELD. SHOW LOCATIONS OF ALIGNMENT MARKS ON SHOP DRAWINGS.

6.4 PERMANENTLY MARK ALL COMPONENTS OF EACH BEARING WITH A NUMBER UNIQUE TO THAT BEARING. IDENTIFY THE MARK NUMBER AND PLACEMENT LOCATION ON THE SHOP DRAWINGS.

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/9/11	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	MTS	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT		2506444	

GENERAL NOTES (3 OF 5)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-6

2568
2744

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STRUCTURE GENERAL NOTES

7.0 INSTALLATION

7.1 HAVE A REPRESENTATIVE FROM THE BEARING MANUFACTURER ON SITE TO ENSURE PROPER INSTALLATION OF THE BEARINGS.

7.2 LEAVE WRAPPING, BEARING STRAPS OR RETAINING CLAMPS IN PLACE AS LONG AS POSSIBLE TO ENSURE PARTS OF BEARINGS ARE NOT INADVERTENTLY DISPLACED RELATIVE TO EACH OTHER.

7.3 EVENLY SUPPORT EACH BEARING OVER THEIR UPPER AND LOWER SURFACES UNDER ALL ERECTION AND SERVICE CONDITIONS. DO NOT DIS-ASSEMBLE BEARINGS FOR ERECTION PURPOSES.

7.4 THE ENGINEER MAY REQUIRE THE BEARINGS BE SHIPPED BACK TO THE MANUFACTURER, IF THE BEARING HAS BEEN UNWRAPPED OR DIS-ASSEMBLED PRIOR TO ERECTION.

7.5 PREPARE CONCRETE SEAT PER CMS 516.07 EXCEPT THAT SEATS SHALL BE LEVEL WITHIN 1:200.

7.6 INSTALL ANCHOR BOLTS PER CMS 516.07.

7.7 ALIGN THE CENTERLINES OF THE BEARING ASSEMBLY WITH THOSE OF THE SUBSTRUCTURE AND SUPERSTRUCTURE. ON EXPANSION BEARINGS ALIGN THE BEARINGS, TAKING INTO CONSIDERATION THE AMBIENT TEMPERATURE (TO ALLOW FOR THE DESIGN EXPANSION OR CONTRACTION OF THE STRUCTURE). OFFSET UPPER AND LOWER BEARING PARTS TO COMPENSATE FOR AMBIENT TEMPERATURE AND ADDITIONAL DEAD LOAD ROTATION.

7.8 FIELD WELD BEARING SOLE PLATE TO GIRDER FLANGE ACCORDING TO SECTION 4.4 OF THIS SPECIFICATION. PERFORM PERMANENT FIELD WELDING AFTER ALL DEAD LOAD ROTATIONS ARE COMPLETE. TEMPORARY TACK WELDS (5/16" BY 2" LONG MINIMUM), CLAMPING OR BLOCKING MAY BE REQUIRED TO ASSURE STRUCTURAL STABILITY DURING THE APPLICATION OF THE REMAINING DEAD LOAD. TEMPORARY CONNECTIONS MUST BE DEFINED IN THE CONTRACTOR'S CONSTRUCTION PLAN. TEMPORARY CONNECTIONS DO NOT ELIMINATE THE CONTRACT REQUIREMENT TO CHECK AND RE-ALIGN BEARINGS AS NECESSARY TO ACHIEVE THE TEMPERATURE ADJUSTED NEUTRAL POSITION AFTER THE APPLICATION OF ALL DEAD LOAD.

7.9 REPAIR DAMAGED OR FIELD WELDED METALLIZED COATINGS BY METALLIZING AND SEALING IN ACCORDANCE TO THIS SPECIFICATION. FIELD WELDS THAT CONNECT PAINTED AND METALLIZED SURFACES CAN BE REPAIRED ACCORDING TO THE SPECIFIED PAINTING SYSTEM. PROTECT AND MASK NON DAMAGED OR NON FIELD WELDED METALLIZED SURFACES, ELASTOMERIC PARTS, PTFE AND STAINLESS SLIDING SURFACES DURING ALL REPAIRS TO PREVENT DAMAGE OR CONTAMINATION.

7.10 PROTECT BEARINGS FROM CONSTRUCTION SILAGE, PAINTING AND SEALERS BY WRAPPING WITH CLEAR PLASTIC SHEETING 6 MILS THICK SECURED BY STRAPS OR TAPE. PROVIDE THE PROTECTION UNTIL COMPLETION OF ALL CONSTRUCTION ACTIVITIES. DO NOT RESTRICT THE THERMAL OR ROTATIONAL MOVEMENTS OF THE BEARING WITH THE STRAPS OR TAPE.

ITEM 513 - STRUCTURAL STEEL MEMBERS, MODULAR EXPANSION JOINT, LEVEL UF, AS PER PLAN

THE REAR ABUTMENT JOINT SHALL BE A WATSON BOWMAN ACME (WABO) MODULAR D-900, DS BROWN D-240, OR APPROVED ALTERNATE. THE FORWARD ABUTMENT JOINT SHALL BE A WABO D-600, DS BROWN D-160, OR APPROVED ALTERNATE.

THE MANUFACTURER SHALL SUBMIT DESIGN CALCULATIONS SHOWING THAT THE DEVICE CAN MEET THE IMPACT AND FATIGUE DESIGN REQUIREMENTS SET FORTH BY AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5TH EDITION, SECTION 14.4.

A. DESCRIPTION

FURNISH ALL MATERIALS, SERVICES, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY TO DESIGN, FABRICATE, INSPECT, TEST AND INSTALL MODULAR EXPANSION JOINTS IN ACCORDANCE WITH THE PLANS AND THESE NOTES. ALL REQUIREMENTS OF 513, UF LEVEL FABRICATION APPLY, UNLESS MODIFIED BY THESE NOTES.

B. DESIGN

1. PREPARE AND CHECK THE DESIGN UNDER THE AUTHORITY OF AN OHIO REGISTERED PROFESSIONAL ENGINEER. THE REGISTERED ENGINEER SHALL SEAL, SIGN AND DATE THE DESIGN CALCULATIONS AND SHOP DRAWINGS.

2. INCLUDE DESIGN CALCULATIONS WITH THE CONTRACTOR'S SUBMISSION OF SHOP DRAWINGS PER 513.06.

3. PROVIDE A DETAILED INSTALLATION PROCEDURE AND INCLUDE ANY SPECIFIC MANUFACTURER'S NOTES NECESSARY FOR COMPLETION OF THE WORK.

4. DESIGN AND TEST THE MODULAR JOINT COMPONENTS, JOINT ARMOR AND ANCHORAGES ACCORDING TO THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 402 "FATIGUE DESIGN OF MODULAR BRIDGE EXPANSION JOINTS" APPENDIX A AND B.

5. DESIGN TEMPORARY AND FIELD CONNECTIONS TO THE BRIDGE TO ACCOMMODATE ADJUSTMENTS FOR ROADWAY GEOMETRY AND VARYING TEMPERATURE.

6. DESIGN FOR THE PLAN SPECIFIED MOVEMENT PER AASHTO LRFD 3.12.2 FOR A COLD CLIMATE (TEMPERATE RANGE IS FROM -30° F TO +120° F WITH BASE TEMPERATURE SET TO 60° F).

7. SUPPLY SUPPORT BAR BEARINGS TO TRANSFER THE LOAD FROM THE SUPPORT BARS TO THE JOINT ARMOR.

8. FOR DESIGN OF THE DECK JOINT AT ALL LIMIT STATES, THE DYNAMIC LOAD ALLOWANCE (IM) SHALL BE TAKEN AS 125% OF THE STATIC EFFECT OF EITHER THE DESIGN TRUCK OR THE DESIGN TANDEM.

9. SUPPLY EQUALIZATION SPRINGS TO COUNTER THE COMPRESSION FORCES FROM THE SEALING ELEMENTS AND MAINTAIN EQUAL EXPANSION PROPERTIES FOR EACH SEALING ELEMENT ACROSS THE JOINT.

10. SUPPLY CONTROL SPRINGS WHICH WORK LONGITUDINALLY TO MAINTAIN EQUIDISTANT SPACING BETWEEN TRANSVERSE SEPARATION BEAMS.

11. SUPPLY SEPARATION BEAMS/TRANSVERSE DIVIDERS/CENTER BEAMS TO LIMIT TOTAL HORIZONTAL MOVEMENT IN ANY INDIVIDUAL STRIP SEAL.

12. SUPPLY A STRIP SEAL TYPE SEAL CONNECTED TO MATCHING RETAINERS CONNECTED TO THE JOINT ARMOR AND THE SEPARATION BEAMS. DO NOT EXCEED 3.15 INCHES OF TOTAL HORIZONTAL MOVEMENT IN ANY INDIVIDUAL STRIP SEAL.

13. SUPPLY REMOVABLE AND REPLACEABLE NEOPRENE SEALS, SUPPORT BAR BEARINGS AND EQUALIZATION SPRINGS.

14. SET SEALS AND RETAINERS 1/8" LOWER THAN THE ROADWAY SURFACE.

15. DESIGN AND FABRICATE THE MODULAR JOINT AS A CONTINUOUS FULL LENGTH MEMBER WITHOUT FIELD SPLICES.

C. MATERIALS

1. SUPPLY STRUCTURAL STEEL MEETING ASTM A709 GRADE 50. SUPPLY SEPARATION BEAMS/TRANSVERSE DIVIDERS/CENTER BEAMS, EDGE BEAMS AND JOINT ARMOR MEETING CHARPY V NOTCH IMPACT REQUIREMENTS PER ASTM A709 TABLE S1.2 ZONE 2 TEMPERATURE RANGE. SUPPLY TUBE SECTIONS MEETING ASTM A501 OR A500 GRADE B.

2. SUPPLY ASTM A240, TYPE 304 STAINLESS STEEL, 13 GAGE MINIMUM THICKNESSES WITH NO. 8 FINISH FOR SLIDING SURFACES IN CONTACT WITH PTFE.

3. SUPPLY TESTING AND REPORTS BY THE MANUFACTURER OR AN INDEPENDENT TESTING LABORATORY FOR ALL ELASTOMERIC, PTFE, URETHANE AND PREFORMED FABRIC MATERIALS USED IN ALL BEARINGS AND SPRINGS. THE SUBMISSION OF MATERIAL CERTIFICATION AND TESTING DATA SHALL BE PER 513.08. THESE MATERIALS SHALL BE TESTED ACCORDING TO THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 402 APPENDIX A "A GUIDELINE FOR DURABILITY TESTING OF SPRINGS AND BEARINGS FOR MBEJ."

4. SUPPLY STRIP SEALS CONFORMING TO ASTM D5973. SUBMIT CERTIFIED TEST DATA PER 513.08 FROM THE MANUFACTURER OR AN ACCREDITED LABORATORY. D5973 SECTION 8, LOT SIZE IS ONE SAMPLE PER JOINT. A SAMPLE IS A PIECE 4 FEET LONG WITH ALL MANUFACTURES' MARKINGS. THE SEAL AND RETAINER ARE AN INTEGRAL SYSTEM SUPPLIED BY ONE MANUFACTURER.

5. SEAL RETAINERS: EXTRUDE, HOT ROLL OR MACHINE STEEL RETAINERS INTO A SOLID SHAPE. RETAINERS MANUFACTURED FROM BENT PLATE OR BUILT UP PIECES ARE NOT ACCEPTABLE. THE INTERNAL DIMENSIONS OF THE RETAINER SHALL BE SPECIFIED BY THE MANUFACTURER TO ACHIEVE POSITIVE SEAL ANCHORAGE.

6. SEPARATION BEAMS/TRANSVERSE DIVIDERS/CENTER BEAMS SHALL BE A SOLID, NON WELDED MACHINED OR EXTRUDED STEEL SECTION.

7. LUBRICANT - ADHESIVE. ONE PART MOISTURE CURING POLYURETHANE COMPOUND MEETING THE REQUIREMENTS OF ASTM D4070 AND AS SPECIFIED BY THE SEAL MANUFACTURER.

8. HARDWARE SHALL BE ASTM A325 TYPE 1, GALVANIZED, OR A449 GALVANIZED.

D. FABRICATION

1. THE MODULAR JOINTS SHALL BE FABRICATED ACCORDING TO CMS 513.

2. SHOP ASSEMBLE THE MODULAR JOINT WITH ALL COMPONENTS EXCEPT NEOPRENE SEALS, PER 513.24 EXCEPT THAT FULL ASSEMBLY IS REQUIRED WITH PHASED CONSTRUCTION.

3. JOINTS IN STRIP SEALS: NO JOINTS ARE ALLOWED.

4. JOINTS IN RETAINERS: WELDS ARE WATER TIGHT, PARTIAL PENETRATION WELDS AROUND THE OUTER PERIPHERY OF THE ABUTTING SURFACES. MAKE SPLICES ONLY IN COMPRESSION ZONES OF THE JOINT ARMOR. GRIND FLUSH ALL WELDS IN CONTACT WITH THE SEAL AND JOINT ARMOR. DO NOT USE SHORT PIECES OF RETAINERS LESS THAN 6'-0" LONG, UNLESS REQUIRED AT CURBS OR SIDEWALKS. DO NOT PROVIDE ADDITIONAL SPLICES IN RETAINERS AT CURB OR SIDEWALK SECTIONS OTHER THAN REQUIRED FOR GEOMETRY.

5. SHOP OR FIELD WELDS OF CENTER BEAMS AND JOINT ARMOR, SHALL BE COMPLETE PENETRATION WELDS, GROUND TO PROVIDE SMOOTH TRANSITIONS AND BE 100 % ULTRASONICALLY TESTED PER AASHTO/AWS BRIDGE WELDING CODE, WITH TENSION ACCEPTANCE CRITERIA, WITNESSED BY THE DEPARTMENT.

6. THE SEPARATION BEAMS/TRANSVERSE DIVIDERS/CENTER BEAMS TO SUPPORT BAR CONNECTIONS SHALL BE COMPLETE PENETRATION WELDS, GROUND TO PROVIDE SMOOTH TRANSITIONS AND BE 100% ULTRASONICALLY TESTED PER AASHTO/AWS BRIDGE WELDING CODE, WITH TENSION ACCEPTANCE CRITERIA, WITNESSED BY THE DEPARTMENT.

7. TEMPORARY SUPPORTS: FABRICATOR DESIGNED AND INSTALLED SUPPORTS ARE REQUIRED TO SUPPORT SHIPPING, ERECTION AND CONSTRUCTION FORCES WITHOUT DAMAGE TO THE STEEL ARMOR OR COATINGS. THESE SUPPORTS SHALL BE ADJUSTABLE FOR FIELD TEMPERATURE SETTING.

E. COATING

1. GALVANIZE OR METALIZE ALL STEEL SURFACES AND COMPONENTS, EXCEPT AT STAINLESS STEEL AND PTFE SLIDING SURFACES. THESE COATING MAY BE MIXED ON ONE ASSEMBLY, IF ALL SIMILAR COMPONENTS OF THE ASSEMBLY HAVE THE SAME COATING TYPE.

2. PROVIDE A GALVANIZED COATING PER ASTM A123, WITH A MINIMUM THICKNESS OF 4 MILS. CLEAN EXCESSIVE GALVANIZING AS NECESSARY TO ACHIEVE MECHANICAL MOVEMENT AND SEAL INSTALLATION.

3. PROVIDE A METALIZED COATING PER SOCIETY FOR PROTECTIVE COATINGS (SSPC) SPECIFICATION SSPC-CS23.00 (MARCH 17, 2003) FOR THERMAL SPRAY METALLIC COATINGS. THE COATING SHALL BE A MINIMUM OF 8 MILS THICK. THE METALIZING WIRE SHALL BE 100% ZINC. AREAS OF STRUCTURAL STEEL THAT ARE IN CONTACT WITH CAST-IN-PLACE CONCRETE SHALL HAVE AN ADDITIONAL COATING. THE COATING SHALL BE THE EPOXY INTERMEDIATE COAT SPECIFIED IN CMS 514. THE COATING THICKNESS WILL COVER ALL PEAKS, VALLEYS AND SURFACE ROUGHNESS ATTRIBUTED TO METALIZING.

4. COATING REPAIRS: DAMAGED COATINGS SHALL BE REPAIRED BY ASTM A780, ANNEX "A1. REPAIR USING ZINC BASED ALLOYS". THE PROCEDURE SHALL BE AS FOLLOWS: REMOVE SURFACE CONTAMINATES, PREHEAT TO 600 DEGREES F AND APPLY ZINC COATING BY RUBBING WITH A PURE ZINC STICK OR SPRINKLING ZINC POWDER ON THE PREHEATED SURFACE, TO ACHIEVE A MINIMUM COATING THICKNESS OF 6 MILS.

5. THE METALIZED OR GALVANIZED COATINGS SHOULD NOT BE FIELD PAINTED, EXCEPT FOR AREAS DAMAGED BY CONNECTION TO PAINTED SUPERSTRUCTURE STEEL MEMBERS. THESE AREAS SHALL BE PAINTED USING THE SAME SYSTEM SPECIFIED FOR THE SUPERSTRUCTURE.

6. PRIOR TO SHIPPING, RETAINER GROOVES SHALL BE PROTECTED FROM CONSTRUCTION DEBRIS BY THE INSTALLATION OF BACKER RODS OR OTHER EFFECTIVE MASKING TECHNIQUES.

F. INSTALLATION

1. PROVIDE A JOINT MANUFACTURER'S TECHNICAL REPRESENTATIVE TO PHYSICALLY OVERSEE THE FABRICATION, INSTALLATION, ADJUSTMENT AND TESTING DURING ALL OPERATIONS. WHERE SPECIAL INSTRUCTIONS ARE NOT CONTAINED HEREIN OR ELSEWHERE IN THESE NOTES, DIRECTION FOR THE INSTALLATION SHALL BE ACCORDING TO THE RECOMMENDATIONS OF THE TECHNICAL REPRESENTATIVE.

2. COORDINATE AND SCHEDULE THE TECHNICAL REPRESENTATIVE.

3. INSTALL THE SUPERSTRUCTURE SUPPORTING UNITS BEFORE INSTALLING THE MODULAR JOINT. POSITION THE JOINT TO MATCH ROADWAY GEOMETRY, SUPERSTRUCTURE CONNECTIONS AND TEMPERATURE OPENING. TAKE CARE TO MAINTAIN EXACT ALIGNMENT OF ADJACENT ENDS OF THE ARMOR AND SEPARATION BEAMS/TRANSVERSE DIVIDERS/CENTER BEAMS FOR FIELD WELDED UNITS. PROVIDE TEMPORARY SUPPORTS AS DIRECTED BY THE MANUFACTURER TO MAINTAIN THE PROPER POSITIONING. FOR PHASED CONSTRUCTION, THE CONTRACTOR'S METHODS FOR INSTALLATION AND TEMPORARY SUPPORTS SHALL ACHIEVE SEPARATION OF THE PHASES AND UNRESTRICTED TEMPERATURE MOVEMENT.

4. PERFORM CONCRETE PLACEMENT USING VIBRATION AND HAND WORK AS NECESSARY TO ACHIEVE CONSOLIDATION AND ELIMINATE AIR VOIDS.

5. PLACE THE DECK CONCRETE FIRST. CHECK THE ABUTMENT OR ADJACENT SPAN SIDE OF THE MODULAR JOINT FOR ALIGNMENT AND TEMPERATURE ADJUSTMENT. TEMPERATURE SHALL BE MEASURED AT THE UNDERSIDE OF THE CONCRETE DECK AT EACH END AND MID-SPAN TO ACHIEVE THE AVERAGE SUPER STRUCTURE TEMPERATURE. PLACE THE BACKWALL OR ADJACENT SPAN CONCRETE SECOND. THE MANUFACTURER'S REPRESENTATIVE SHALL CHECK THAT TEMPERATURE MOVEMENT HAS NOT CAUSED ANY DAMAGE TO THE BOND BETWEEN THE JOINT AND THE CONCRETE.

6. EXAMINE SEAL RETAINERS FOR SOIL OR DEFECTS THAT CAN DAMAGE THE SEAL. REPAIR ANY DEFECTS AS DIRECTED BY THE MANUFACTURER'S REPRESENTATIVE.

7. SOLVENT CLEAN THE NEOPRENE SEAL ELEMENTS AND THE RETAINER GROOVES TO REMOVE OIL, GREASE OR OTHER SOIL IMMEDIATELY PRIOR TO INSTALLING THE SEALS. INSTALL SEALS USING PROCEDURES AND ADHESIVE SPECIFIED BY THE JOINT MANUFACTURER. KEEP THE BONDING SURFACES CLEAN, DRY AND WARMER THAN 45°F.

8. TEST THE INSTALLED MODULAR JOINT FOR LEAKS. FLOOD THE TOTAL EXPANSION JOINT LENGTH WITH WATER FOR A PERIOD OF NOT LESS THAN ONE HOUR. COVER THE ENTIRE JOINT SYSTEM BY EITHER PONDING OR FLOWING WATER. LOCATE ANY POINTS OF LEAKAGE AND TAKE ANY AND ALL MEASURES NECESSARY TO STOP THE LEAKAGE. PERFORM THIS WORK AT THE CONTRACTOR'S EXPENSE. PERFORM A SECOND WATER TEST AFTER ALL REPAIRS HAVE BEEN MADE.

ITEM 514 - SPECIAL - BRIDGE PAINTING

STRUCTURAL STEEL THAT IS NOT DESIGNATED TO BE ENTIRELY SHOP PAINTED SHALL BE FIELD PAINTED PER THIS ITEM. THIS ITEM SHALL CONSIST OF FURNISHING ALL NECESSARY LABOR, MATERIALS AND EQUIPMENT TO APPLY A THREE-COAT IZEU PAINT SYSTEM TO ITEM 513 STRUCTURAL STEEL IN CONFORMANCE WITH CMS 514. THE FINISHED COAT COLOR FOR ALL PAINTED STRUCTURAL STEEL SHALL BE DARK GREEN, FS-595C-14062.

ITEM 514 - SPECIAL - BRIDGE PAINTING, AS PER PLAN

THIS ITEM SHALL CONSIST OF FURNISHING ALL NECESSARY LABOR, MATERIALS AND EQUIPMENT TO APPLY A THREE-COAT PAINT SYSTEM TO ITEM 513 STRUCTURAL STEEL IN THE SHOP ACCORDING TO ITEM 514, EXCEPT AS NOTED. THE FINISHED COAT COLOR FOR ALL PAINTED STRUCTURAL STEEL SHALL BE DARK GREEN, FS-595C-14062.

THE FOLLOWING STRUCTURAL STEEL, INCLUDING CROSS FRAMES, SHALL BE SHOP PAINTED: FIELD PIECE 6 (SEE SHEET 4B12-27) AND FIELD PIECES 7 THRU 9 (SEE SHEET 4B12-28).

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/9/11	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	MTS	RER	11/08/11
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GENERAL NOTES (4 OF 5)
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RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-7

2569
2744

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STRUCTURE GENERAL NOTES

REPAIR DAMAGE TO THE PAINT SYSTEM DURING STORAGE, TRANSPORTATION, ERECTION, BOLTING, WELDING, FORMING, CONCRETE PLACEMENT AND FORM REMOVAL ACCORDING TO C&MS 514.22. REPAIR DAMAGE TO THE GALVANIZED COATING ON THE NUTS, BOLTS AND WASHERS, DUE TO THE BOLT TIGHTENING OR WELDING.

COATING OF BOLTED FAYING SURFACES: A FAYING SURFACE IS THE PLANE OF CONTACT BETWEEN TWO PLIES OF A JOINT. TREAT THE FAYING SURFACES INDICATED BELOW ACCORDING TO METHOD A:

A. FAYING SURFACES OF MAIN GIRDERS AT BOLTED FIELD SPLICES.

B. OTHER SURFACES AS INDICATED IN THE PLANS

METHOD A

COAT THE FAYING SURFACES OF BOLTED SPLICES WITH INORGANIC ZINC PRIMER IN THE SHOP. AFTER ERECTION IS COMPLETE, APPLY THE FINAL COATINGS OF EPOXY INTERMEDIATE AND URETHANE IN THE FIELD AS SHOWN IN FIGURE 1 AND FIGURE 2.

REMOVE AND DISASSEMBLE ALL SHOP BOLTED CONNECTIONS AND SHOP BOLTED CROSS FRAMES PRIOR TO THE BLASTING AND COATING OF THE GIRDERS. SEPARATELY BLAST AND PRIME ALL PARTS. THEN REASSEMBLE AND TIGHTEN THE BOLTS ACCORDING TO C&MS 513.20. AFTER BOLTING IS COMPLETE, SHOP APPLY THE EPOXY INTERMEDIATE AND URETHANE COATINGS.

SOLVENT CLEAN ALL GALVANIZED NUTS, BOLTS, AND WASHERS AFTER INSTALLATION. REMOVE ANY WAX ON THE NUTS, BOLTS AND WASHERS, PRIOR TO THE APPLICATION OF PAINT. REPAIR DAMAGED GALVANIZED COATING WITH THE APPLICATION OF ORGANIC ZINC BY BRUSH. SHOP APPLY THE EPOXY AND THE URETHANE COATINGS.

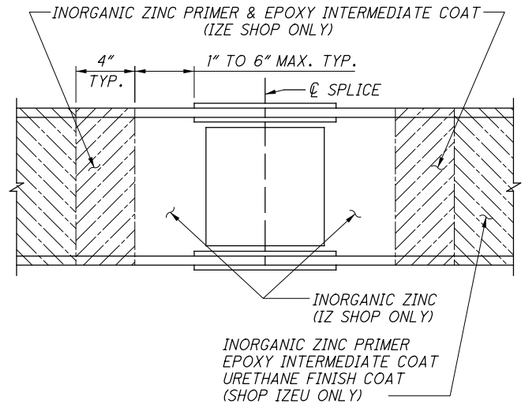

FIGURE-1

(SHOP COATINGS AT BOLTED SPLICE)

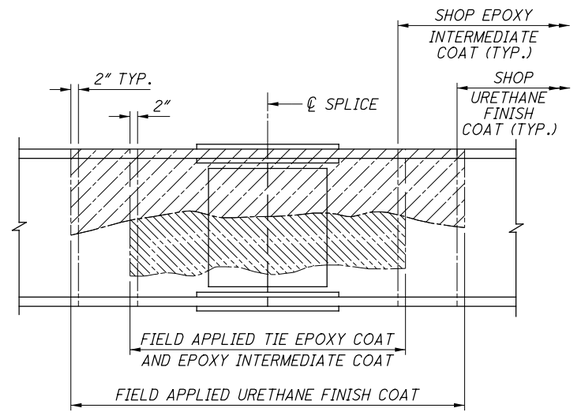

FIGURE-2

(FIELD COATINGS AT BOLTED SPLICE)

REMOVE ERECTION MARKS APPLIED TO THE FINISH COAT AT THE END OF THE PROJECT WITHOUT DAMAGING THE PAINT SYSTEM. ERECTION MARKS MAY BE APPLIED TO THE FAYING SURFACES. THESE MARKS SHALL COMPLY WITH C&MS 514.17.C.

UNLESS OTHERWISE SPECIFIED, SPRAY APPLY ALL COATS.

THE CONTRACTOR FOR FIELD APPLICATION AND THE FABRICATOR FOR SHOP APPLICATION SHALL SUPPLY THE ENGINEER WITH THE PRODUCT DATA SHEETS BEFORE ANY COATING IS APPLIED. THE PRODUCT DATA SHEETS SHALL INDICATE THE MIXING AND THINNING DIRECTIONS; THE RECOMMENDED SPRAY NOZZLES AND PRESSURES; AND THE MINIMUM DRYING TIMES FOR: TESTING THICKNESS, RE-COATING AND HANDLING THE SHOP APPLIED COATS.

FOLLOW THESE PRODUCT DATA SHEETS EXCEPT WHEN THEY CONFLICT WITH THESE SPECIFICATIONS, IN WHICH CASE THE SPECIFICATIONS GOVERN.

ITEM 516 - NYLON REINFORCED NEOPRENE SHEETING, AS PER PLAN:

INSTALL A 3 FOOT WIDE NEOPRENE SHEET AT LOCATIONS SHOWN IN THE PLANS. SECURE THE NEOPRENE SHEETING TO THE CONCRETE WINGWALL WITH 1¼" x #10 GAGE (LENGTH x SHANK DIAMETER) GALVANIZED BUTTON HEAD SPIKES THROUGH A 1 INCH OUTSIDE DIAMETER, #10 GAGE GALVANIZED WASHER. MAXIMUM FASTENER SPACING IS 9 INCHES. USE OF OTHER SIMILAR GALVANIZED DEVICES, WHICH WILL NOT DAMAGE EITHER THE NEOPRENE OR THE CONCRETE WILL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

CENTER THE NEOPRENE STRIPS ON ALL JOINTS. FOR HORIZONTAL JOINTS, SECURE THE HORIZONTAL NEOPRENE STRIP BY USING A SINGLE LINE OF FASTENERS, STARTING AT 6 INCHES ±, FROM THE TOP OF THE NEOPRENE STRIP. FOR THE VERTICAL JOINTS SECURE THE VERTICAL NEOPRENE STRIP BY USING A SINGLE VERTICAL LINE OF FASTENERS, STARTING AT 6 INCHES ±, FROM THE VERTICAL EDGE OF THE NEOPRENE STRIP NEAREST TO THE CENTERLINE OF ROADWAY. FOR VERTICAL JOINTS, INSTALL 2 ADDITIONAL FASTENERS AT 6 INCHES, CENTER TO CENTER, ACROSS THE TOP OF THE NEOPRENE STRIP ON THE SAME SIDE OF THE VERTICAL JOINT AS THE SINGLE VERTICAL ROW OF FASTENERS IS LOCATED.

THE VERTICAL NEOPRENE STRIPS SHALL COMPLETELY OVERLAP THE HORIZONTAL STRIPS. LAP LENGTHS OF THE HORIZONTAL STRIPS THAT ARE NOT VULCANIZED OR ADHESIVE BONDED, SHALL BE AT LEAST 1 FOOT IN LENGTH, OR 6 INCHES IN LENGTH IF THE LAP IS VULCANIZED OR ADHESIVE BONDED. NO LAPS ARE ACCEPTABLE IN VERTICALLY INSTALLED NEOPRENE STRIPS.

THE NEOPRENE SHEETING SHALL BE 3/32" THICK GENERAL PURPOSE, HEAVY-DUTY NEOPRENE SHEET WITH NYLON FABRIC REINFORCEMENT. THE SHEETING SHALL BE "FAIRPRENE NUMBER NN-0003" BY E.I. DUPONT DE NEMOURS AND COMPANY, INC., "WINGPRENE" BY THE GOODYEAR TIRE AND RUBBER COMPANY, OR AN APPROVED ALTERNATE. THE NEOPRENE SHEETING SHALL CONFORM TO THE FOLLOWING:

DESCRIPTION OF TEST	ASTM METHOD	REQUIREMENT
THICKNESS, INCHES	D751	0.094 ± 0.01
BREAKING STRENGTH, GRAB, LBS., MINIMUM (LONG. X TRANS.)	D751	700 x 700
ADHESIVE STRIP 1" WIDE X 2" LONG, LBS. MINIMUM	D751	9
BURST STRENGTH PSI, MINIMUM	D751	1400
HEAT AGING, 70 HOURS, 212°F, 180° BEND WITHOUT CRACKING	D2136	NO CRACKING OF COATING
LOW TEMP. BRITTLENESS, 1 HOUR, -40°F, BEND AROUND ¼" MANDREL	D2136	NO CRACKING OF COATING

ITEM 518 - STRUCTURE DRAINAGE, MISC.: DRAINAGE BOARD:

THIS WORK CONSISTS OF CONSTRUCTING DRAINAGE SYSTEM WITH MIRADRAIN 6000DT OR APPROVED EQUAL. TWO WEEKS BEFORE INSTALLATION, SUBMIT MATERIAL WITH SPECIFICATION AND INSTALLATION PROCEDURE TO DEPARTMENT FOR APPROVAL.

2

ITEM 898 - QC/QA CONCRETE, CLASS QSC2 (T=17"), SUPERSTRUCTURE (APPROACH SLAB), AS PER PLAN:

FURNISH APPROACH SLABS CONFORMING TO CMS 526 EXCEPT CONCRETE SHALL BE IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 898, QC/QA CONCRETE, CLASS QSC2. THE ACCEPTED QUANTITIES SHALL INCLUDE: APPROACH SLAB CONCRETE AND REINFORCING STEEL, JOINT FILLERS, JOINT SEALERS, JOINT SEALS, AND WATERPROOFING.

ITEMS NOT INCLUDED ARE: APPROACH SLAB PARAPET CONCRETE AND REINFORCING STEEL, AND SEALING OF THE APPROACH SLAB PARAPET CONCRETE SURFACES.

ABBREVIATIONS:

& = AND
@ = AT
° = DEGREES
′ = FEET OR MINUTES
″ = INCHES OR SECONDS
± = PLUS OR MINUS

AASHTO = AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ABUT. = ABUTMENT
ADT = AVERAGE DAILY TRAFFIC
ADTT = AVERAGE DAILY TRUCK TRAFFIC
A.P.P. = AS PER PLAN
APPR. = APPROACH
ASTM = AMERICAN SOCIETY OF TESTING AND MATERIALS

℄ = BASELINE
BOT. = BOTTOM
BRG. = BEARING
BTWN = BETWEEN

℄ = CENTERLINE
C/C = CENTER TO CENTER
CFS = CUBIC FEET PER SECOND
CJ = CONSTRUCTION JOINT
CLR. = CLEAR
CONN. = CONNECTION
CONSTR./CONST. = CONSTRUCTION
C.P.P. = CORRUGATED PLASTIC PIPE
CU = CUBIC

ϕ/DIA. = DIAMETER

EA. = EACH
EB = EASTBOUND
E.F. = EACH FACE
EL./ELEV. = ELEVATION
EPL = ESTIMATED PAY LENGTH
EQ. = EQUAL
EST. = ESTIMATED
EX./EXIST. = EXISTING
EXP. = EXPANSION

F = FAHRENHEIT
F.A. = FORWARD ABUTMENT
F.F. = FAR FACE
FIX. = FIXED
F.S. = FIELD SPLICE
FT. = FEET
FT/FT. = FOOT/FOOT
FWD. = FORWARD
FWS = FUTURE WEARING SURFACE

HMWM = HIGH MOLECULAR WEIGHT METHACRYLATE

IN. = INCHES
IZ = INORGANIC ZINC
IZE = INORGANIC ZINC EPOXY
IZEU = INORGANIC ZINC EPOXY URETHANE

LOC. = LOCATION
LONG. = LONGITUDINAL
LT. = LEFT

MAX. = MAXIMUM
MIN. = MINIMUM
MISC. = MISCELLANEOUS

N = NORTH
N/A = NOT APPLICABLE
NB = NORTHBOUND
#/NO. = NUMBER
NPCPP = NON-PERFORATED CORRUGATED PLASTIC PIPE
N.W. = NORTHWEST

O/O = OUT TO OUT
OUT/OUT = OUT TO OUT

PCPP = PERFORATED CORRUGATED PLASTIC PIPE
PEJF = PREFORMED EXPANSION JOINT FILLER
P/PL. = PLATE
PROP. = PROPOSED
PSF = POUND PER SQUARE FOOT
PSI = POUND PER SQUARE INCH
PVI = POINT OF VERTICAL INTERSECTION

R = RADIUS
R.A. = REAR ABUTMENT
RT. = RIGHT

S.B. = SOUTHBOUND
S.E. = SOUTHEAST
SER. = SERIES
SPA. = SPACING
SQ = SQUARE
STA. = STATION
STD. = STANDARD
S.W. = SOUTHWEST

TOE/TOE = TOE TO TOE
TRANS. = TRANSVERSE
TYP. = TYPICAL

VC = VERTICAL CURVE
VERT. = VERTICAL

W.P. = WORKING POINT
WT. = WEIGHT

YD = YARD

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	1/23/12	NDC 008
1	1/4/12	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge Tire Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	MTS	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

GENERAL NOTES (5 OF 5)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-8

2570
2744

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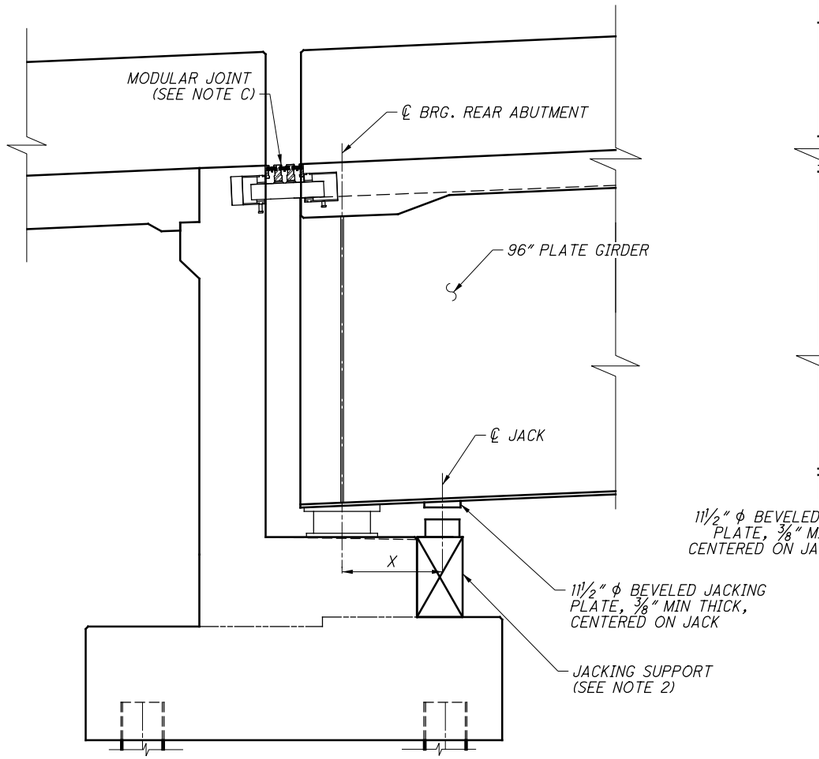
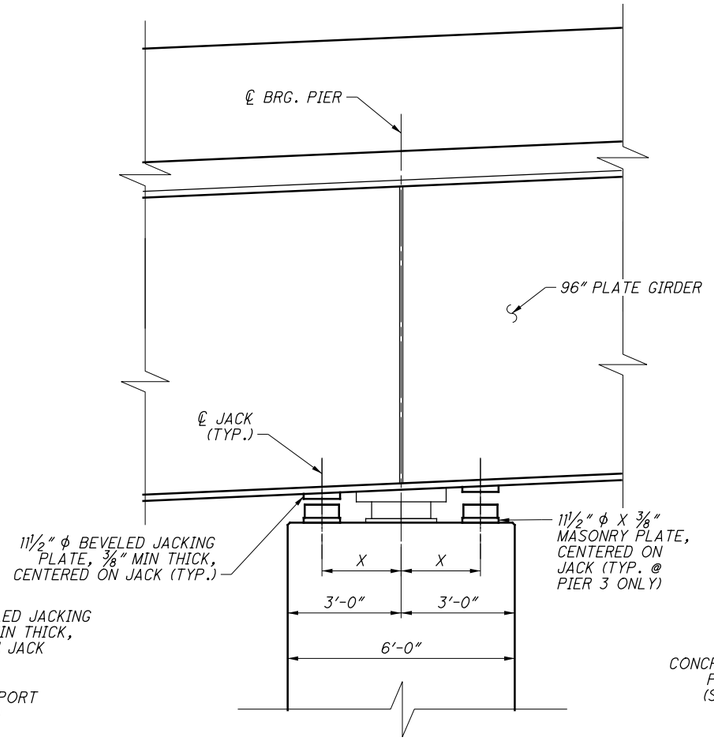
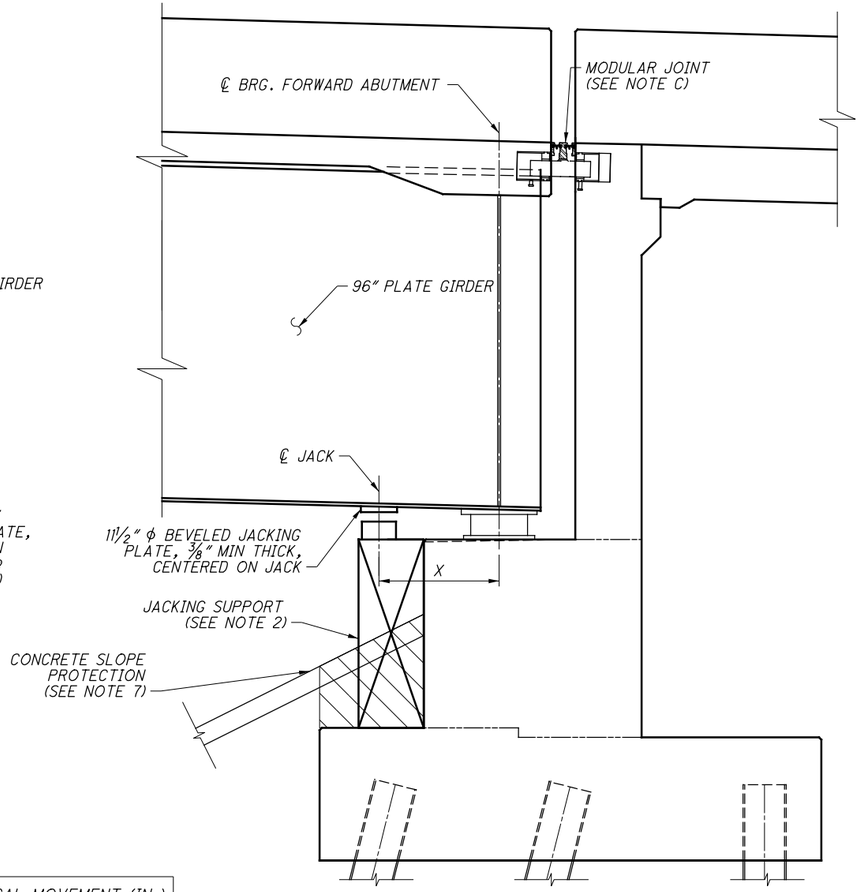


REAR ABUTMENT



PIER (TYPICAL)



FORWARD ABUTMENT

GIRDER JACKING DATA									
		UNFACTORED DEAD LOAD			JACK			BEARING	
LOCATION	GIRDER	LOAD PER GIRDER (KIP)	NO. OF JACKS	LOAD PER JACK (KIP)	LIFTING CAPACITY (TON)	MIN. PISTON DIAMETER (IN)	X	ASS'Y HEIGHT (IN)	MASONRY ℄
REAR ABUT	ALL	200	1	200	250	10.83	2'-10"	6.92	NONE
PIER 1	ALL	530	2	265	250	10.83	1'-11"	8.04	NONE
PIER 2	ALL	670	2	335	250	10.83	1'-9"	8.45	NONE
PIER 3	ALL	730	2	365	250	10.83	1'-7"	7.71	11½"ϕ x ⅜"
PIER 4	ALL	650	2	325	250	10.83	1'-9"	8.45	NONE
FWD ABUT	ALL	210	1	210	250	10.83	2'-10"	6.68	NONE

ALLOWABLE VERTICAL MOVEMENT (IN.)		
TEMPERATURE	REAR ABUT	FWD ABUT
20	1.45	1.06
30	1.40	1.03
40	1.35	1.00
50	1.30	0.96
60	1.25	0.93
70	1.20	0.89
80	1.14	0.86

DESIGN ASSUMPTIONS

A. THESE PLANS ARE PROVIDED TO IDENTIFY JACKING POINTS ON THE GIRDERS THAT MAY BE USED FOR FUTURE BEARING REPLACEMENT. THE FOLLOWING COMPONENTS HAVE BEEN CHECKED FOR A FACTORED DESIGN LOAD EQUAL TO 1.3 TIMES THE DEAD LOAD GIVEN IN TABLE ABOVE, WHICH INCLUDES 60 PSF FOR FUTURE WEARING SURFACE. THE UNSTIFFENED GIRDER WEBS HAVE BEEN CHECKED FOR WEB CRIPPLING AND WEB YIELDING. MASONRY PLATES HAVE BEEN CHECKED FOR FLEXURE AND BEARIING PRESSURE ON CONCRETE. DEVIATIONS FROM THE DIMENSIONS AND ASSUMPTIONS SHOWN IN THESE PLANS WILL REQUIRE A FULL ASSESSMENT OF THE PLATE GIRDERS TO VERIFY THEY CAN SAFELY CARRY JACKING LOADS.

B. THE BRIDGE IS CLOSED TO TRAFFIC DURING JACKING AND NO LIVE LOAD PRESENT.

C. TO AVOID POTENTIAL DAMAGE TO MODULAR DECK JOINT, VERTICAL MOVEMENT (LIFT) IS LIMITED TO THE VALUES SHOWN IN THE ALLOWABLE VERTICAL MOVEMENT TABLE. CONSULT THE JOINT MANUFACTURER FOR MORE INFORMATION.

D. FOR PURPOSES OF ESTIMATING THERMAL OFFSET BETWEEN UPPER AND LOWER BEARING UNITS, THE GIRDER TEMPERATURE IS ASSUMED TO BE BETWEEN 20 DEGREES AND 80 DEGREES F AT THE TIME JACKING TAKES PLACE.

E. BEARING COMPONENT DIMENSIONS ARE BASED ON APPROVED SHOP DRAWINGS AT THE TIME OF ORIGINAL CONSTRUCTION.

GIRDER JACKING NOTES

1. A JACKING PLAN SHALL BE SUBMITTED AND APPROVED PER CMS 501.05.B.5 BEFORE ANY JACKING OPERATIONS COMMENCE. FIELD VERIFY ALL DIMENSIONS AND CLEARANCES BEFORE FABRICATING COMPONENTS.
2. JACING SUPPORTS AT ABUTMENTS ARE TO BE DESIGNED BY THE CONTRACTOR.
3. PROVIDE BEVELED JACKING PLATES, SWIVEL HEADS, OR OTHER MEANS TO GUARANTEE PARALLEL CONTACT BETWEEN JACK AND GIRDER.
4. USE A MANIFOLD OR OTHER MEANS TO ENSURE THAT FORCE APPLIED BY EACH JACK AT A SINGLE GIRDER IS APPROXIMATELY EQUAL.
5. JACKING PLATES AND MASONRY PLATES SHALL BE FABRICATED FROM MINIMUM 50 KSI YIELD MATERIAL.
6. PLACE JACKS SYMMETRICAL ABOUT ℄ BEARING. ALIGN ℄ OF JACK WITH ℄ OF GIRDER WEB.
7. FOR JACKING AT THE FORWARD ABUTMENT, THE CONCRETE SLOPE PROTECTION AND EMBANKMENT SHALL BE REMOVED AND REPLACED IN KIND.

LEGEND:

INDICATES LIMITS OF REMOVAL AND REPLACEMENT OF CONCRETE SLOPE PROTECTION AND EMBANKMENT

△2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	4/16/14	AS-BUILTS
A	9/21/12	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge...the Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
IMF/JOL	DCF/MKG	RER	10/8/12
CHECKED	REVISED	STRUCTURE FILE NUMBER	
JDH/NBR		2506444	

FUTURE JACKING DETAILS
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-8A

2570A
2744

COMPUTED BY : JDH DATE : 1/3/2012
CHECKED BY : DFT DATE : 1/4/2012

ESTIMATED QUANTITIES

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	REAR ABUT.	FORWARD ABUT.	PIERS	SUPERSTRUCTURE	GENERAL	REFERENCE SHEET NO.
202	11002	LUMP		STRUCTURE REMOVED, OVER 20 FOOT SPAN						
202	22900	348	SQ YD	APPROACH SLAB REMOVED	167	181				
503	21100	1107	CU YD	UNCLASSIFIED EXCAVATION		121	986			
505	11100	LUMP		PILE DRIVING EQUIPMENT MOBILIZATION						
507	00200	1785	FT	STEEL PILES HP12X53, FURNISHED	770	1015				
507	00250	1570	FT	STEEL PILES HP12X53, DRIVEN	700	870				
507	00300	4075	FT	STEEL PILES HP14X73, FURNISHED			4075			
507	00350	3395	FT	STEEL PILES HP14X73, DRIVEN			3395			
			4							
509	10000	701965	POUND	EPOXY COATED REINFORCING STEEL	14982	22388 3	199179	462122 4	3294	
512	10100	4232 3	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	177	191	962 3	2902		
			2							
513	10300	2764996	POUND	STRUCTURAL STEEL MEMBERS, LEVEL 5				2764996 2		
513	15001	30	EACH	STRUCTURAL STEEL MEMBERS, SPECIALIZED MULTIROTATIONAL BEARING (SMR), LEVEL UF, AS PER PLAN	5	5	20			4B12-5
513	17001	94	FT	STRUCTURAL STEEL MEMBERS, MODULAR EXPANSION JOINT, LEVEL UF, AS PER PLAN	46	48				4B12-7
513	20000	10149	EACH	WELDED STUD SHEAR CONNECTORS				10059	90	
514	99000	LUMP		SPECIAL - BRIDGE PAINTING						4B12-7
514	99001	LUMP		SPECIAL - BRIDGE PAINTING, AS PER PLAN						4B12-7
516	13600	18	SQ FT	1" PREFORMED EXPANSION JOINT FILLER	9	9				
516	13900	36	SQ FT	2" PREFORMED EXPANSION JOINT FILLER		36				
516	25001	121	SQ FT	NYLON REINFORCED NEOPRENE SHEETING, AS PER PLAN	70	51				4B12-8
518	21200	6	CU YD	POROUS BACKFILL WITH FILTER FABRIC	2	4				
518	40000	122	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	53	69				
518	40010	35	FT	6" NON-PERFORATED CORRUGATED PLASTIC PIPE, INCLUDING SPECIALS	20	15				
518	62600	1488	SQ FT	STRUCTURE DRAINAGE, MISC.: DRAINAGE BOARD	550	938				4B12-8
523	20000	3	EACH	DYNAMIC LOAD TESTING	1	1	1			
601	21000	214	SQ YD	CONCRETE SLOPE PROTECTION		214				
898	10200	1563	CU YD	QC/QA CONCRETE, CLASS QSC2, SUPERSTRUCTURE (DECK)				1563		APPENDIX ST-01
898	10708	314	SQ YD	QC/QA CONCRETE, CLASS QSC2 (T=17") SUPERSTRUCTURE (APPROACH SLAB), AS PER PLAN	153	161				4B12-8; APPENDIX ST-01
898	11200	345	CU YD	QC/QA CONCRETE, CLASS QSC2 6 SUPERSTRUCTURE (PARAPET)				325	20	APPENDIX ST-01
898	20100	580	CU YD	QC/QA CONCRETE, CLASS QSC1, SUBSTRUCTURE (PIER ABOVE FOOTING)			580 3			APPENDIX ST-01
898	20160	374	CU YD	QC/QA CONCRETE, CLASS QSC1, SUBSTRUCTURE (ABUTMENT INCLUDING FOOTING)	150	224				APPENDIX ST-01
898	20300	402 3	CU YD	QC/QA CONCRETE, CLASS QSC1, SUBSTRUCTURE (FOOTING)			402			APPENDIX ST-01

6 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
6	5/08/14	RECORD DRAWINGS
5	4/21/14	RFI 273
4	4/24/12	NDC 022
3	3/27/12	NDC 018
2	1/23/12	NDC 008
1	1/04/12	RFC
B	11/11/11	FINAL SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | CHECKED DFT
DRAWN DCF | REVISED JDH
REVIEWED RER | DATE 01/03/12
STRUCTURE FILE NUMBER 2506444

ESTIMATED QUANTITIES
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-9

2571
2744

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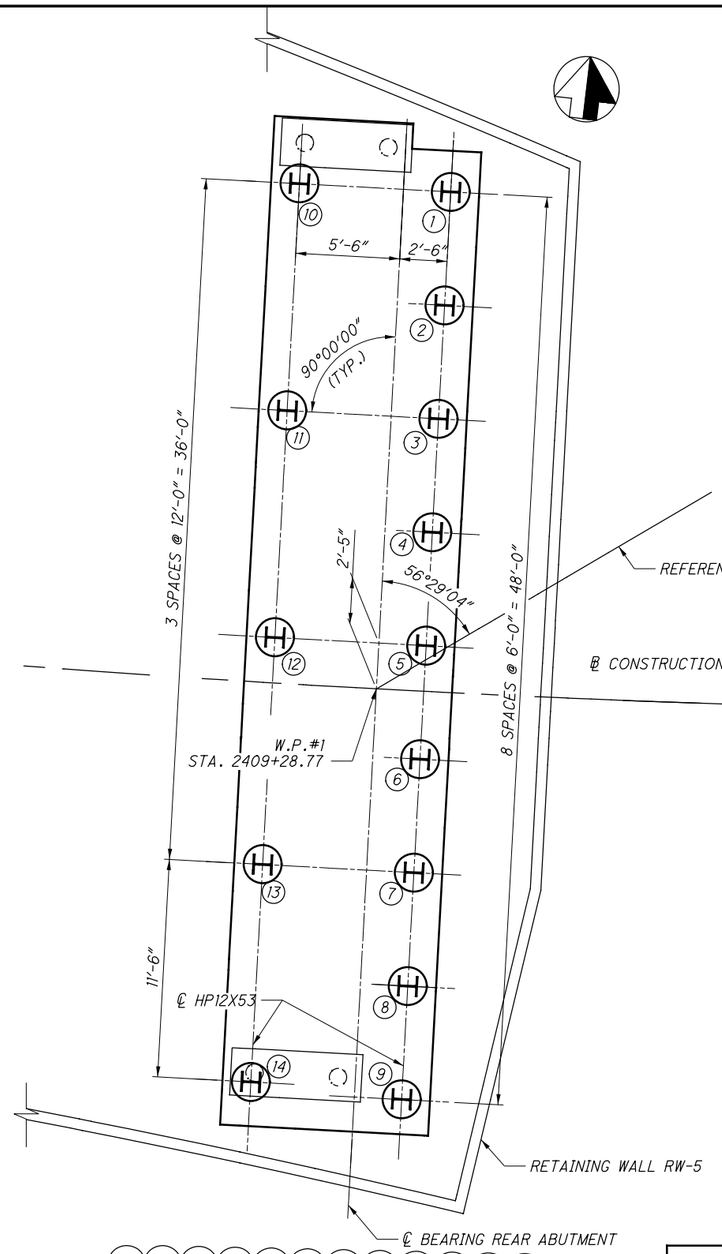

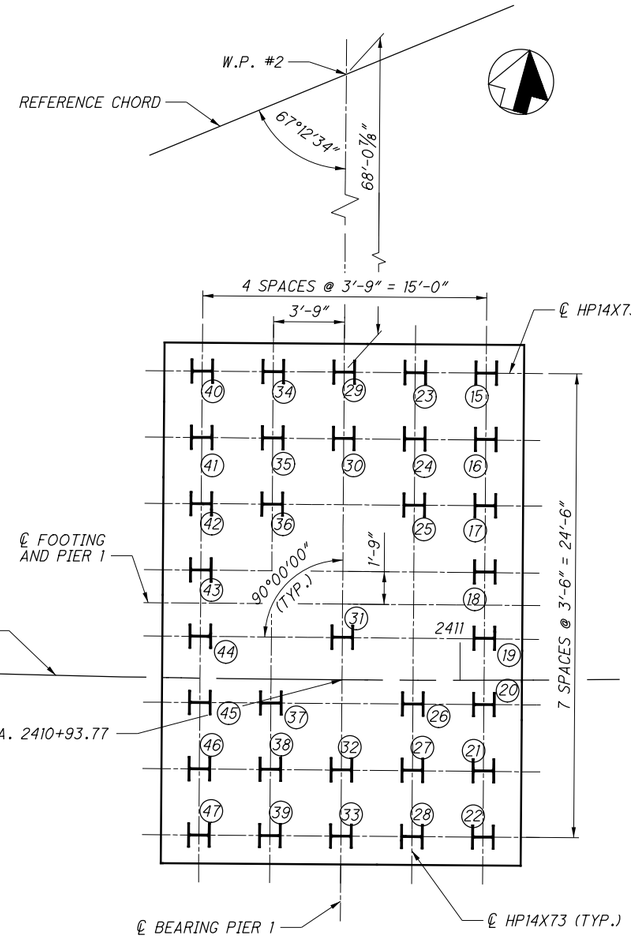

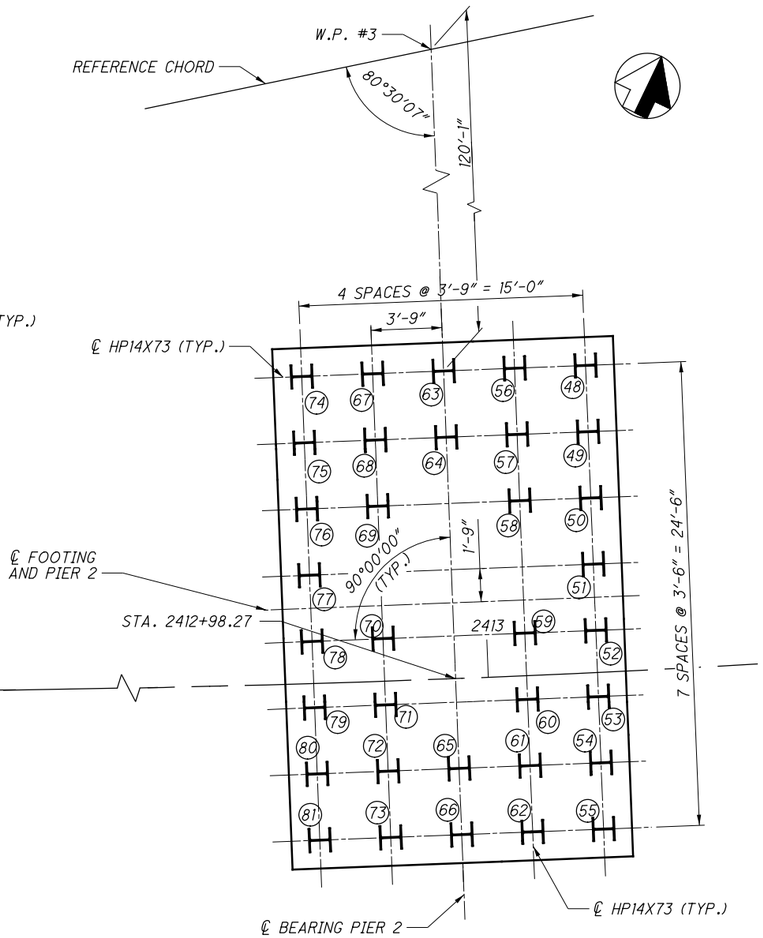

PARTIAL PILE LAYOUT PLAN

LEGEND:

(H) DENOTES VERTICAL HP12X53 PILE WITH PILE SLEEVE

NOTES:

1. ALL SUBSTRUCTURE CENTERLINES ARE RADIAL TO ℄ CONSTRUCTION RAMP X4.
2. PILE SLEEVES SHALL BE PROVIDED FOR ALL PILES AT THE REAR ABUTMENT AND FOR THE PILES INDICATED AT THE FORWARD ABUTMENT, AND SHALL EXTEND FROM THE BOTTOM OF FOOTING. PAYMENT FOR SLEEVES SHALL BE INCLUDED WITH THE MSE WALLS. PILE SLEEVES SHALL BE CORRUGATED POLYETHLENE SMOOTH LINED PIPE CONFORMING TO EITHER 707.33 OR ASTM F 2648, OR PVC CORRUGATED SMOOTH INTERIOR PIPE CONFORMING TO 707.42. FURNISH SLEEVES WITH AN INSIDE DIAMETER AT LEAST 2 INCHES GREATER THAN THE PILE'S DIAGONAL DIMENSION. FILL SLEEVE WITH GRANULAR MATERIAL CONFORMING TO 703.11, STRUCTURAL BACKFILL TYPE 2, EXCEPT 100 PERCENT OF THE MATERIAL SHALL PASS THROUGH A ¾ INCH SLEEVE.
3. FOR PIER DETAILS AND FOOTING PLANS. SEE SHEETS 4B12-16 THRU 4B12-24.
4. MSE WALL STRAPS SHALL BE EMBEDDED INTO THE REAR ABUTMENT FOOTING. FOR REAR ABUTMENT DETAILS AND FOOTING PLAN, SEE SHEETS 4B12-12 AND 4B12-13.
5. FOR FORWARD ABUTMENT DETAILS AND FOOTING PLAN, SEE SHEETS 4B12-14 AND 4B12-15.
6. FOR REFERENCE CHORD DIAGRAM, SEE SHEET 4B12-3.
7. FOR PILE LAYOUT PLAN FOR PIERS 3 AND 4 AND THE FORWARD ABUTMENT, SEE SHEET 4B12-11.

2

MIN./MAX. PILE LENGTHS (FIELD RECORDINGS)

PILE ARRAY	PILE(S)	MIN. LENGTH (FT.)	PILE(S)	MAX. LENGTH (FT.)
REAR ABUTMENT	13	61.13	5	70.86
PIER 1	40, 44	56.00	20	62.00
PIER 2	48-54, 56-73, 78	18.00	55	33.00
PIER 3	110	26.00	85	28.00
PIER 4	119-123, 128-130, 134, 136, 139-141, 145-148	15.00	131, 150	28.00
FORWARD ABUTMENT	162-163, 176-178	17.00	152, 154	30.00

PILE DATA

LOCATION	REAR ABUT.	PIER 1	PIER 2	PIER 3	PIER 4	FWD. ABUT.
PILE NO.	1-14	15-47	48-81	82-117	118-150	151-179
PILE TYPE	HP12X53	HP14X73	HP14X73	HP14X73	HP14X73	HP12X53
CUT-OFF ELEV.	796.75	771.50	786.00	794.25	794.50	817.50
EST. TIP ELEV.	746.75	741.50	766.00	769.25	769.50	787.50
MIN. TIP ELEV.	765.00	741.50	766.00	769.25	769.50	787.50
ESTIMATED LENGTH	50.0'	30.0'	20.0'	25.0'	25.0'	30.0'

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM		2506444	

PILE LAYOUT PLAN (1 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-10

2572
2744

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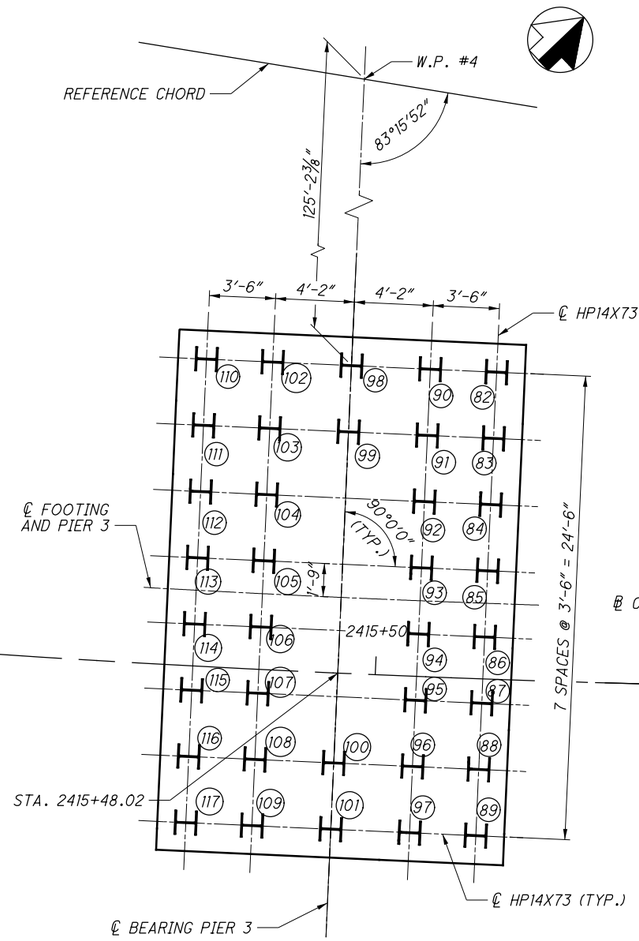
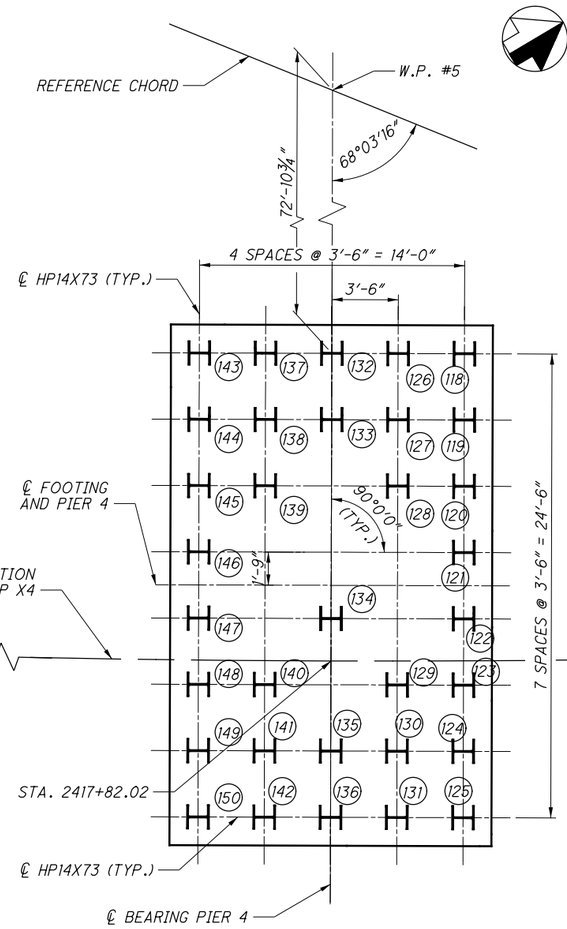
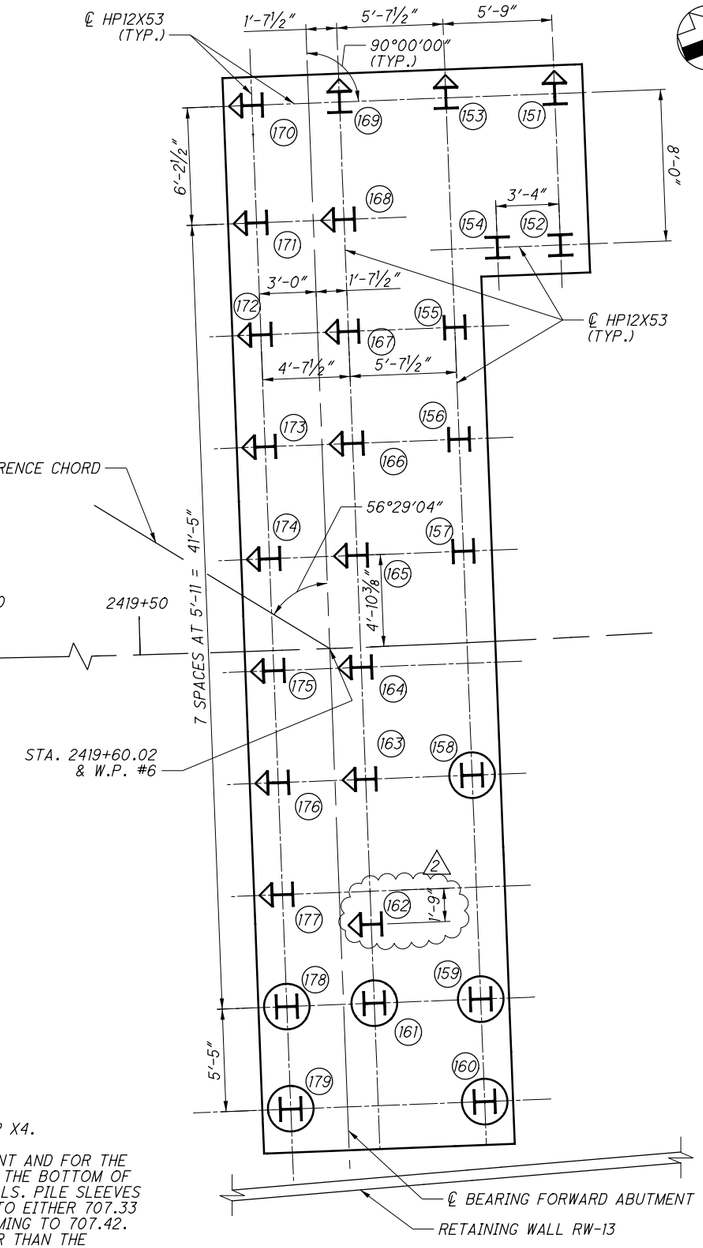




℄ CONSTRUCTION RAMP X4

2418+00

2419+50



PARTIAL PILE LAYOUT PLAN

NOTES:

1. ALL SUBSTRUCTURE CENTERLINES ARE RADIAL TO ℄ CONSTRUCTION RAMP X4.
2. PILE SLEEVES SHALL BE PROVIDED FOR ALL PILES AT THE REAR ABUTMENT AND FOR THE PILES INDICATED AT THE FORWARD ABUTMENT, AND SHALL EXTEND FROM THE BOTTOM OF FOOTING. PAYMENT FOR SLEEVES SHALL BE INCLUDED WITH THE MSE WALLS. PILE SLEEVES SHALL BE CORRUGATED POLYETHLENE SMOOTH LINED PIPE CONFORMING TO EITHER 707.33 OR ASTM F 2648, OR PVC CORRUGATED SMOOTH INTERIOR PIPE CONFORMING TO 707.42. FURNISH SLEEVES WITH AN INSIDE DIAMETER AT LEAST 2 INCHES GREATER THAN THE PILE'S DIAGONAL DIMENSION. FILL SLEEVE WITH GRANULAR MATERIAL CONFORMING TO 703.11, STRUCTURAL BACKFILL TYPE 2, EXCEPT 100 PERCENT OF THE MATERIAL SHALL PASS THROUGH A 3/4 INCH SLEEVE.
3. FOR PIER DETAILS AND FOOTING PLANS. SEE SHEETS 4B12-16 THRU 4B12-24.
4. MSE WALL STRAPS SHALL BE EMBEDDED INTO THE REAR ABUTMENT FOOTING. FOR REAR ABUTMENT DETAILS AND FOOTING PLAN, SEE SHEETS 4B12-12 AND 4B12-13.
5. FOR FORWARD ABUTMENT DETAILS AND FOOTING PLAN, SEE SHEETS 4B12-14 AND 4B12-15.
6. FOR REFERENCE CHORD DIAGRAM, SEE SHEET 4B12-3.
7. FOR PILE LAYOUT PLAN FOR REAR ABUTMENT, PIER 1 AND PIER 2, AND FOR PILE DATA, SEE SHEET 4B12-10

LEGEND:

(H) DENOTES VERTICAL HP12X53 PILE WITH PILE SLEEVE (6 TOTAL AT FORWARD ABUTMENT)

DENOTES PILE BATTERED 3:1 IN THE DIRECTION INDICATED

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	4/24/12	NDC 022
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	ABC	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM	JDH	2506444	

PILE LAYOUT PLAN (2 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-11

2573
2744

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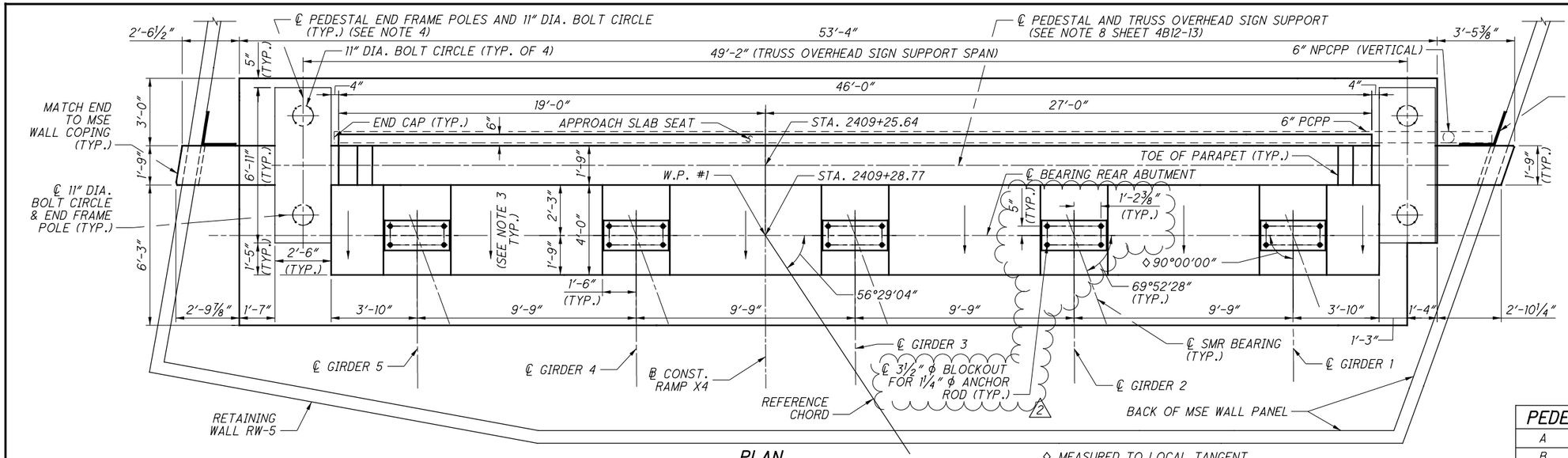
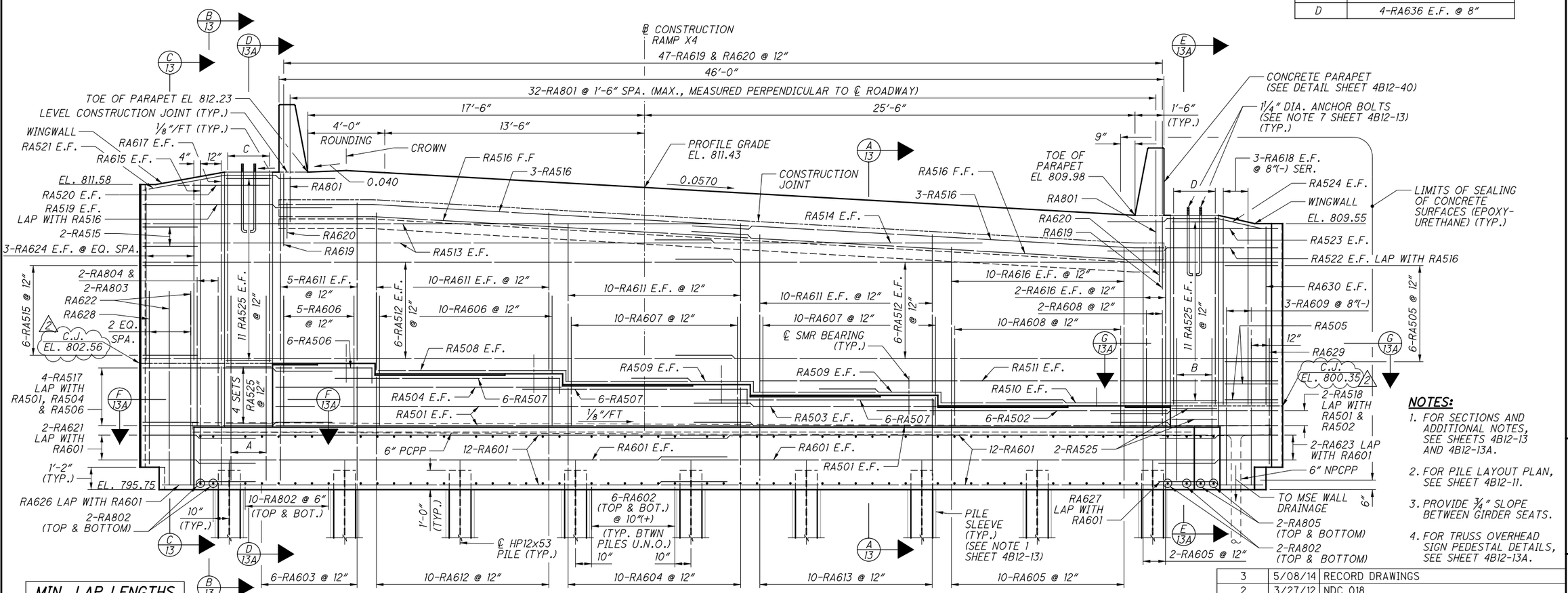


PLAN
(POROUS BACKFILL AND PILING NOT SHOWN)

GIRDER SEAT ELEVATIONS	
GIRDER 1	800.35
GIRDER 2	800.90
GIRDER 3	801.46
GIRDER 4	802.01
GIRDER 5	802.56

2

PEDESTAL REINFORCEMENT	
A	4-RA631 E.F. @ 8"
B	4-RA632 E.F. @ 8"
C	4-RA633 E.F. @ 8"
D	4-RA636 E.F. @ 8"



ELEVATION
(LOOKING DOWN STATION)

MIN. LAP LENGTHS	
BAR	LAP
NO. 5	2'-11"
NO. 6	3'-6"

3 NO CHANGES TO SHEET

NOTES:

1. FOR SECTIONS AND ADDITIONAL NOTES, SEE SHEETS 4B12-13 AND 4B12-13A.
2. FOR PILE LAYOUT PLAN, SEE SHEET 4B12-11.
3. PROVIDE ¾" SLOPE BETWEEN GIRDER SEATS.
4. FOR TRUSS OVERHEAD SIGN PEDESTAL DETAILS, SEE SHEET 4B12-13A.

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
engineering one Challenger Line, Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN DCF/DJC | CHECKED KVB | REVISED JDH | REVIEWED RER | DATE 11/8/11

STRUCTURE FILE NUMBER 2506444

REAR ABUTMENT PLAN AND ELEVATION

BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-12

2574
2744

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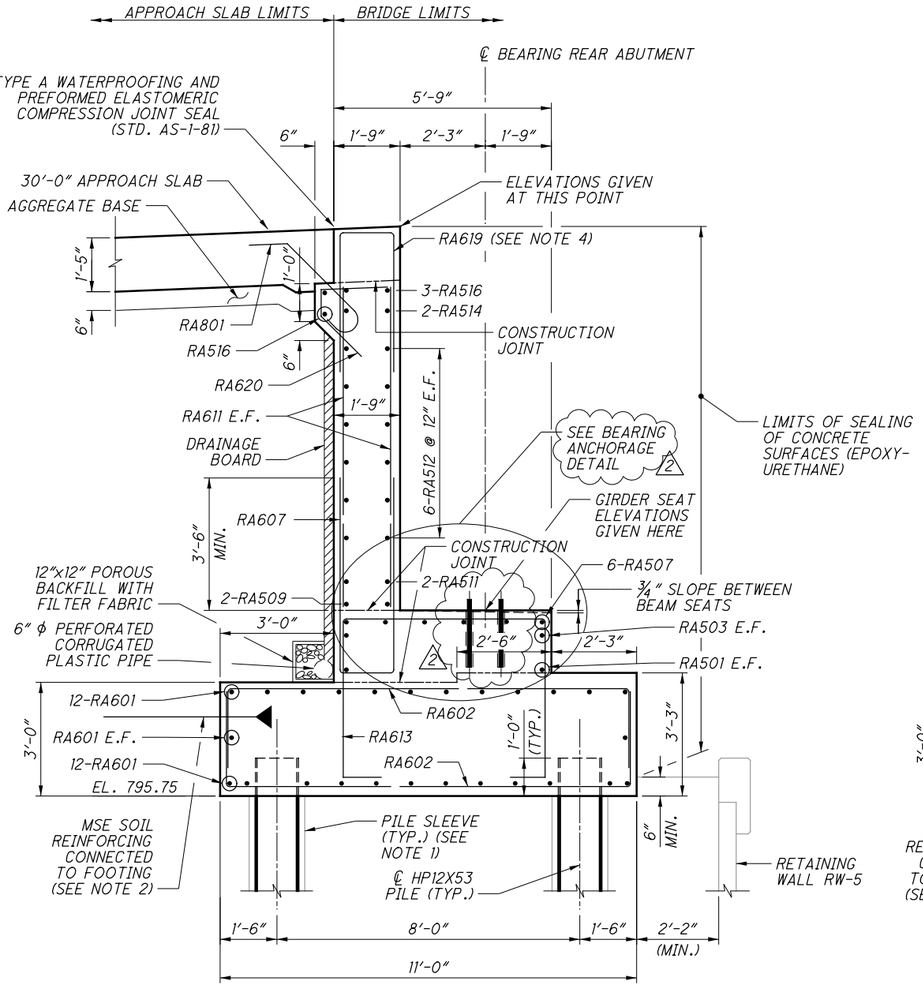
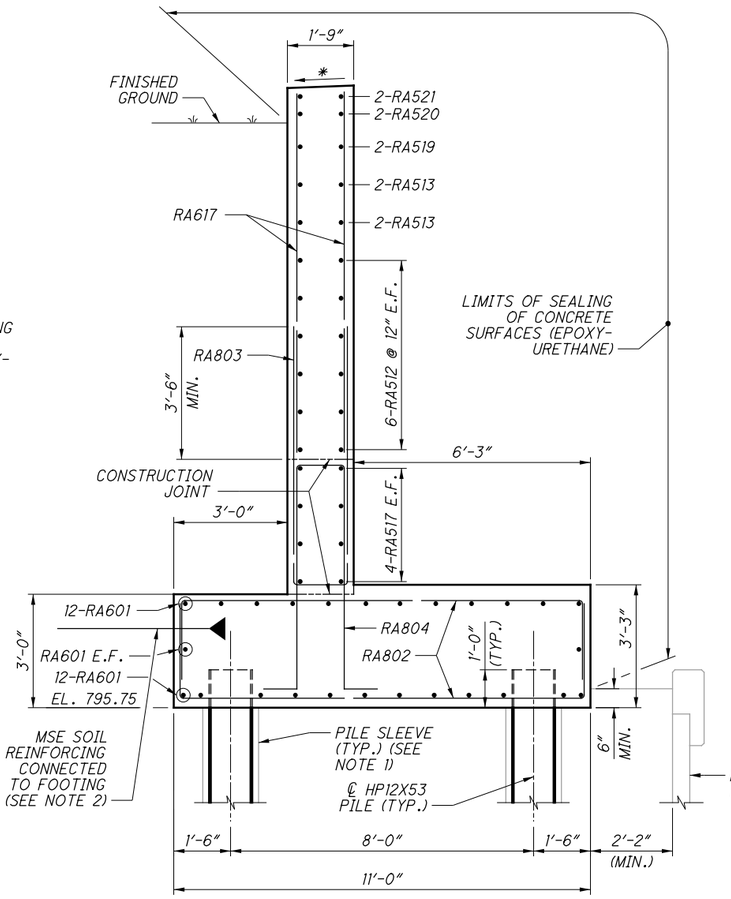
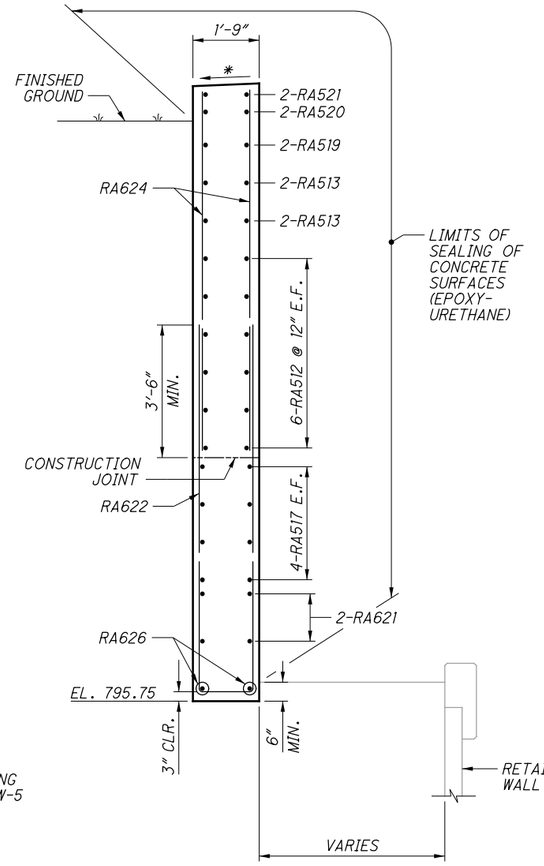


SECTION A-A



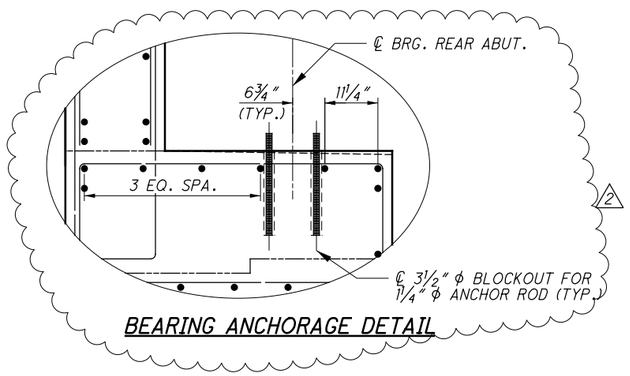
SECTION B-B

* SLOPE TO DRAIN



SECTION C-C

* SLOPE TO DRAIN



BEARING ANCHORAGE DETAIL

NOTES:

1. PILE SLEEVES TO BE PAID FOR WITH MSE WALLS.
2. SOIL REINFORCING SHALL BE CONNECTED TO FOOTING TO RESIST HORIZONTAL FORCES. SEE PROPRIETARY RETAINING WALL DATA NOTE ON SHEET 4B12-4.
3. FOR PLAN AND ELEVATION, SEE SHEET 4B12-12. FOR ADDITIONAL SECTIONS, SEE SHEET 4B12-13A.
4. RA619 BARS SHALL BE SPACED PARALLEL TO AND TO MISS THE MODULAR JOINT SUPPORT BOXES. FOR MODULAR JOINT DETAILS AND ADDITIONAL REINFORCING NOT SHOWN, SEE SHEET 4B12-41 AND 4B12-42.
5. FOR SMR BEARING DETAILS, SEE SHEET 4B12-25.
6. BLOCKOUT FOR MSE WALL COPING. SEE RETAINING WALL RW-5 PLANS FOR 2″ POLYSTYRENE FILLER AROUND BLOCKOUT.
7. ANCHOR BOLTS SHALL BE PER STANDARD CONSTRUCTION DRAWING TC-21.10.
8. TRUSS OVERHEAD SIGN SUPPORT SHALL BE PER STANDARD CONSTRUCTION DRAWING TC-7.65 DESIGN 6. THE SPAN LENGTH MEASURED CENTER TO CENTER OF PEDESTAL ℄ SHALL BE 49′-2″.
9. BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMISSION
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
Engineering One Company
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF/DJC	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KVB	JDH	2506444	

REAR ABUTMENT SECTIONS (1 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-13

2575
2744

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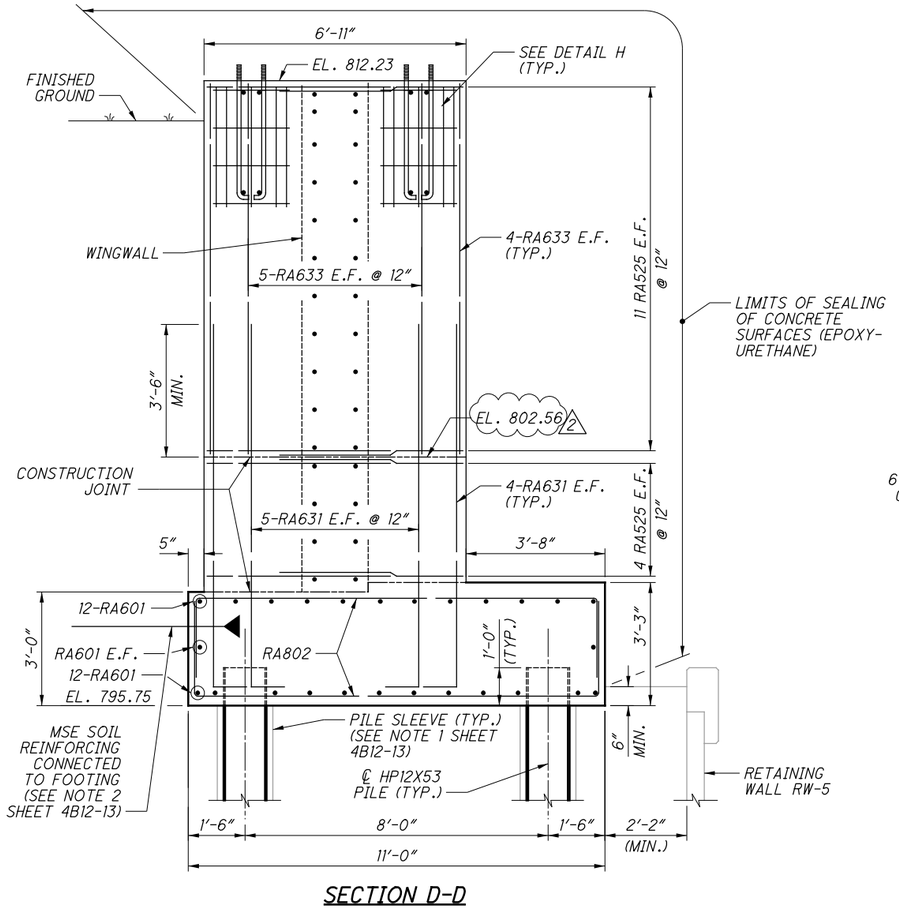
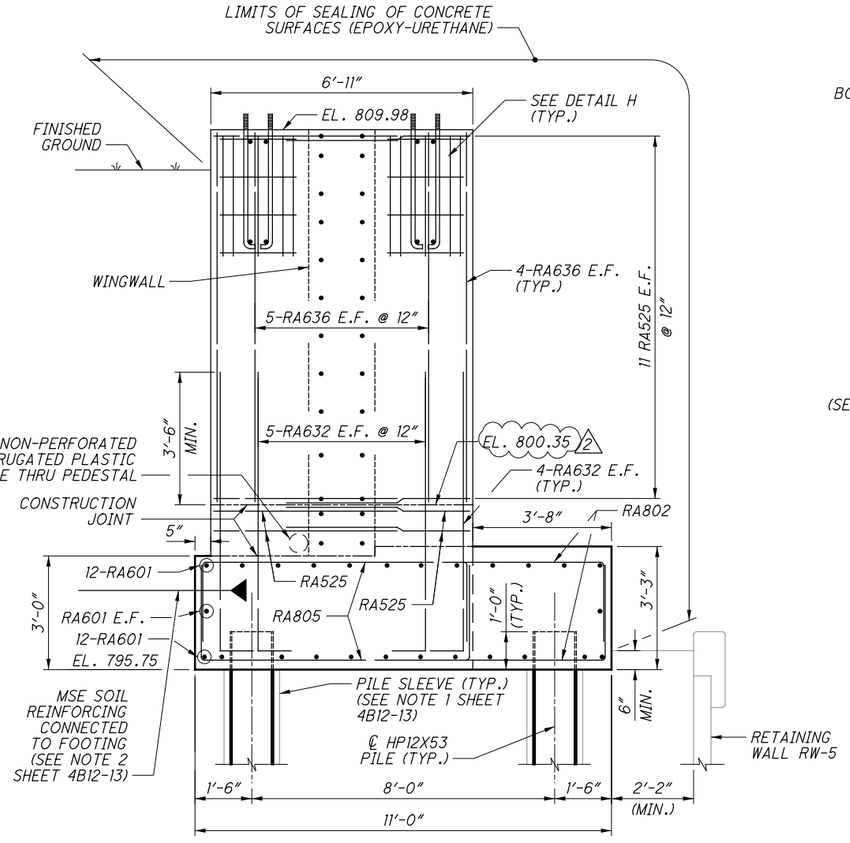
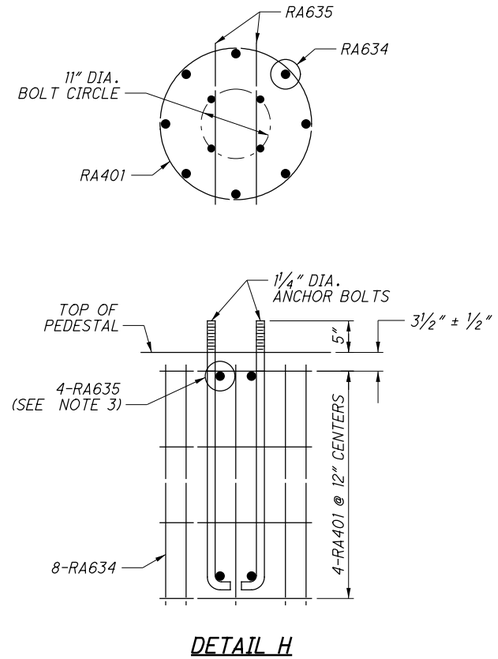


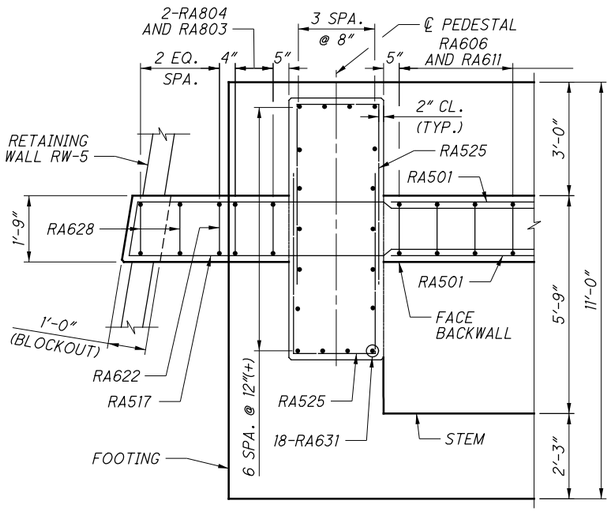
SECTION D-D



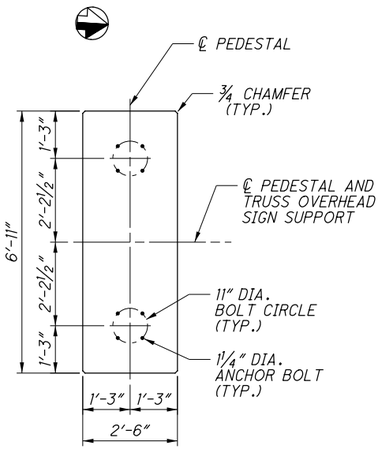
SECTION E-E



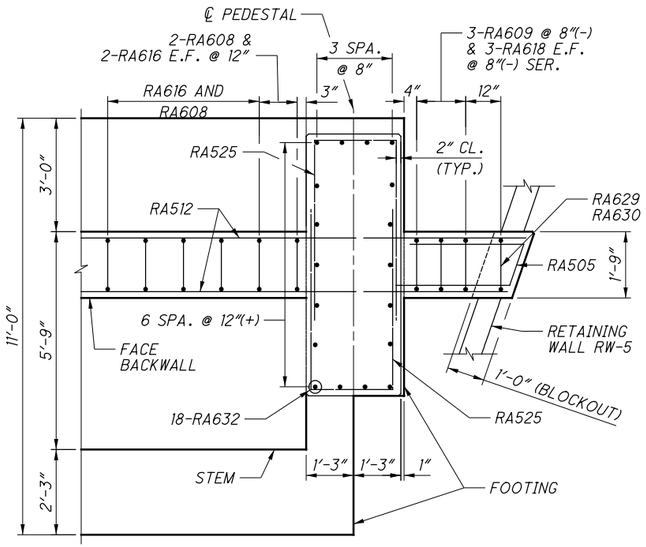
DETAIL H



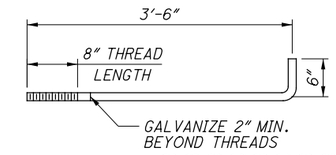
SECTION F-F
(WINGWALL AND PEDESTAL REINFORCING SHOWN)



PEDESTAL PLAN



SECTION G-G
(WINGWALL AND PEDESTAL REINFORCING SHOWN)



ANCHOR BOLTS FOR SIGN TRUSS
(SEE STD. TC-21.10 FOR ALTERNATE DETAIL WITH PLATE INSTEAD OF BEND) 2

NOTES:

1. FOR NOTES AND SECTIONS A-A THRU C-C, SEE SHEET 4B12-13.
2. FOR PLAN AND ELEVATION, SEE SHEET 4B12-12.
3. TIE ANCHOR BOLTS TO REBAR CAGE NEAR THE TOP AND BOTTOM OF THE ANCHOR BOLTS.
4. REFERENCE SHALL BE MADE TO ODOT STANDARD CONSTRUCTION DRAWING TC-21.10 FOR ANCHOR BOLTS.

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	01/04/12	RFC

ISSUE RECORD

E.L. ROBINSON
The Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DJC	RER	01/03/12
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KVB	JDH	2506444	

REAR ABUTMENT SECTIONS (2 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-13A

2576
2744

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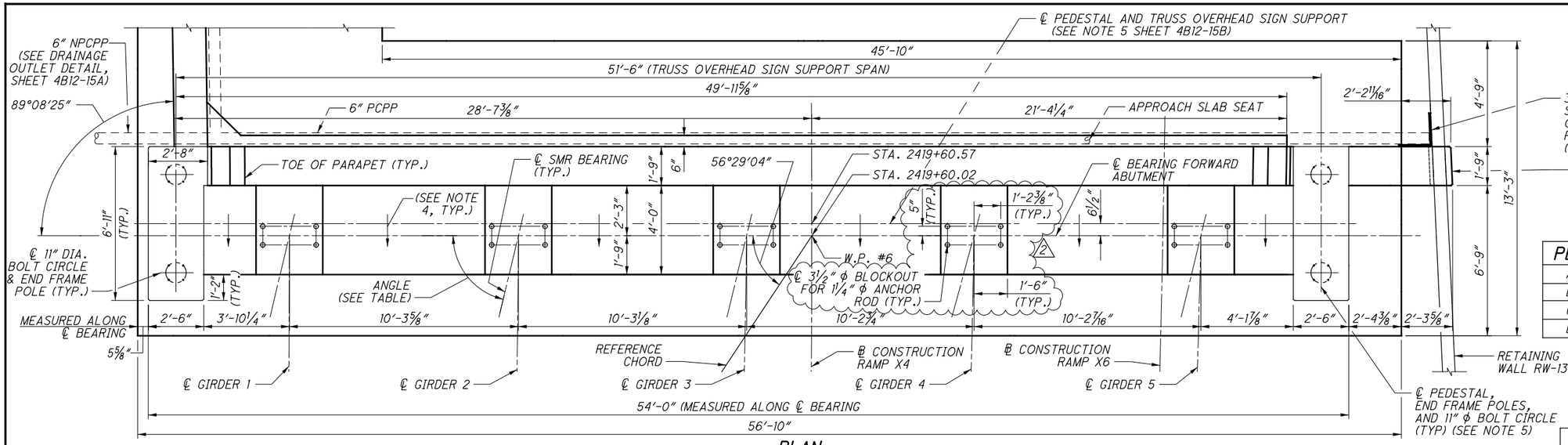
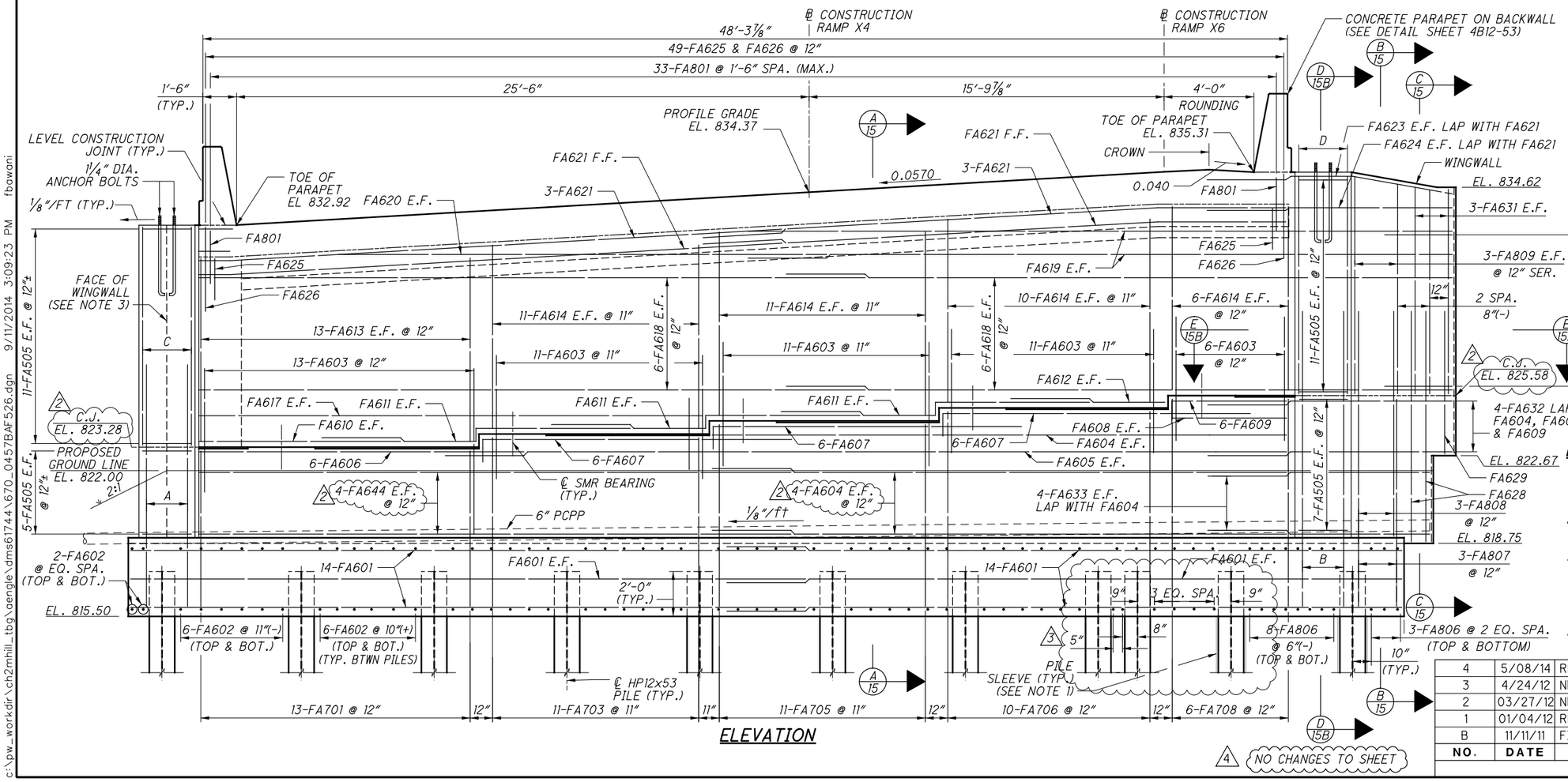


PLAN

(POROUS BACKFILL AND PILING NOT SHOWN)



ELEVATION

PEDESTAL REINFORCEMENT	
A	4-FA645 E.F. @ 8"
B	4-FA646 E.F. @ 8"
C	4-FA647 E.F. @ 8"
D	4-FA648 E.F. @ 8"

GIRDER SEAT ELEVATIONS	
GIRDER 1	823.28
GIRDER 2	823.87
GIRDER 3	824.45
GIRDER 4	825.03
GIRDER 5	825.58

SMR BEARING ANGLES	
GIRDER 1	76°36'36"
GIRDER 2	76°32'01"
GIRDER 3	76°27'52"
GIRDER 4	76°24'58"
GIRDER 5	76°20'33"

MIN. LAP LENGTHS	
BAR	LAP
NO. 5	2'-11"
NO. 6	3'-6"
NO. 7	4'-0"
NO. 8	5'-1"

NOTES:

1. FOR SECTIONS AND ADDITIONAL NOTES, SEE SHEETS 4B12-15A AND 4B12-15B.
2. FOR PILE LAYOUT PLAN, SEE SHEET 4B12-11.
3. FOR LEFT WINGWALL DETAILS, SEE SHEET 4B12-15A.
4. PROVIDE ¾" SLOPE BETWEEN GIRDER SEATS.
5. FOR TRUSS OVERHEAD SIGN PEDESTAL DETAILS, SEE SHEET 4B12-15B.

NO.	DATE	DESCRIPTION
4	5/08/14	RECORD DRAWINGS
3	4/24/12	NDC 022
2	03/27/12	NDC 018
1	01/04/12	RFC
B	11/11/11	FINAL SUBMISSION

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN DCF/DJC | CHECKED DFT | REVISED JDH | REVIEWED RER | DATE 01/03/12 | STRUCTURE FILE NUMBER 2506444

FORWARD ABUTMENT PLAN AND ELEVATION

BRIDGE NO. FRA-670-0457B

RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-14

2577
2744

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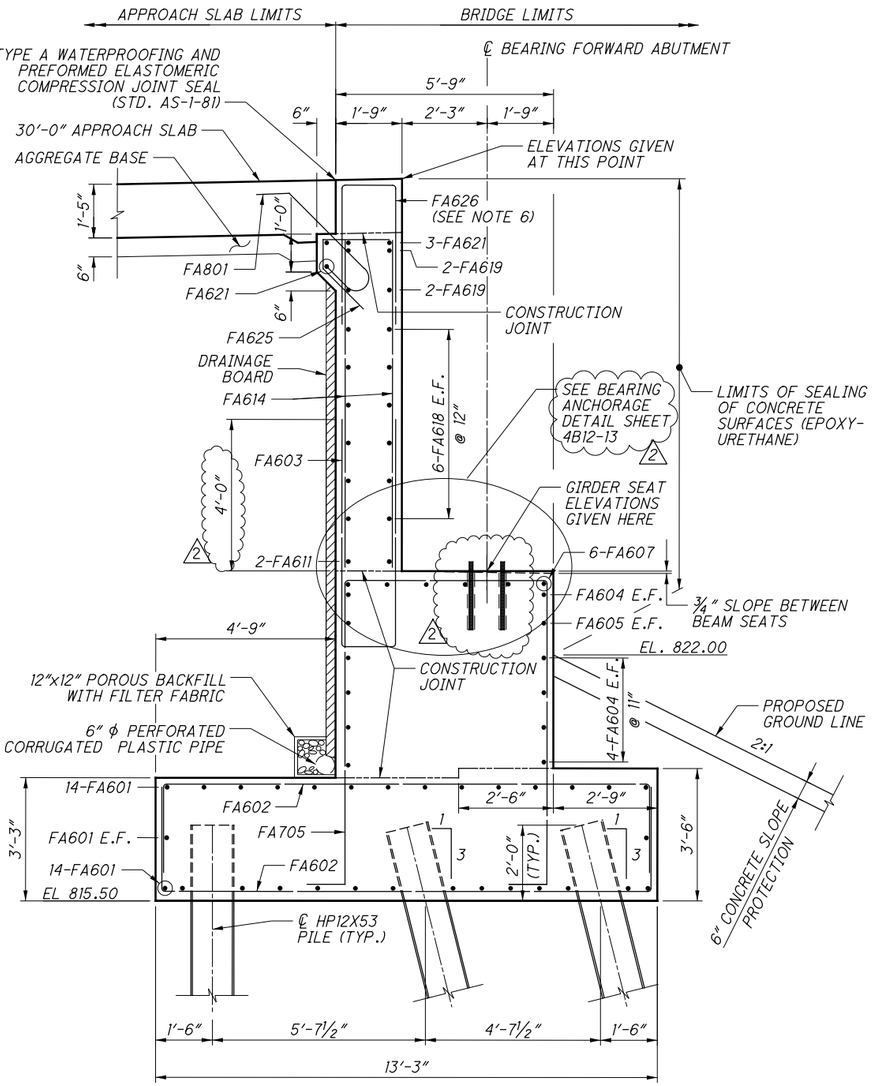
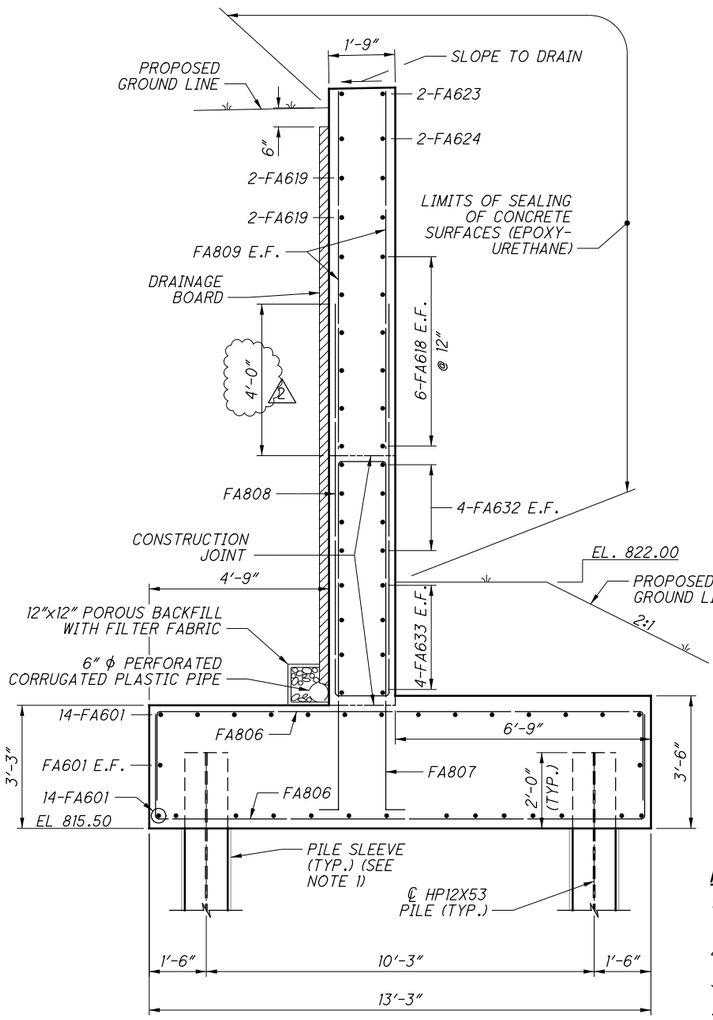
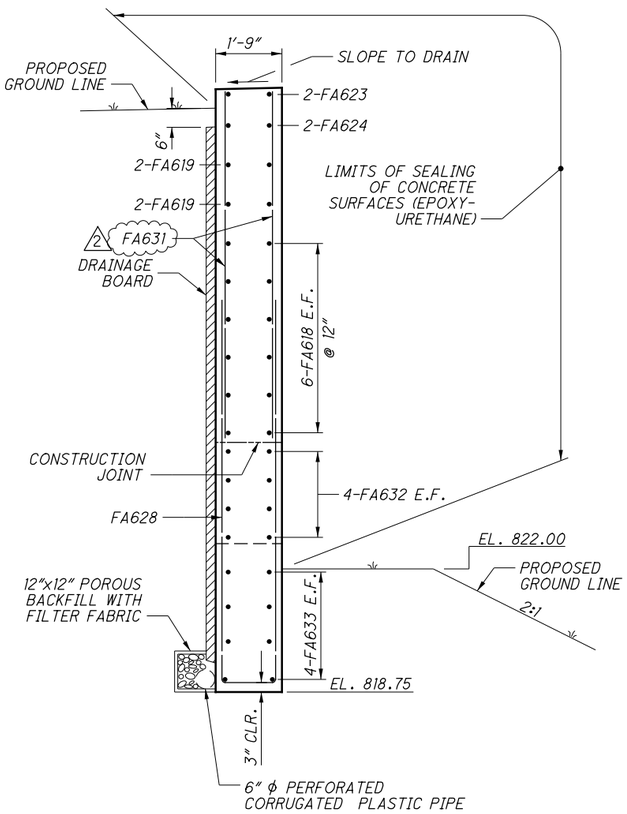


SECTION A-A



SECTION B-B



SECTION C-C

NOTES:

1. PILE SLEEVES ARE ONLY REQUIRED FOR PILES ADJACENT TO RW-13, SEE SHEET 4B12-11 FOR LOCATIONS.
2. PILE SLEEVES TO BE PAID FOR WITH MSE WALLS.
3. FOR FORWARD ABUTMENT PLAN AND ELEVATION, SEE SHEET 4B12-14.
4. FOR WINGWALL DETAILS AND LEFT PEDESTAL PLAN, SEE SHEET 4B12-15A.
5. FOR TRUSS SIGN SUPPORT DETAILS, SEE SHEET 4B12-15B.
6. FOR SMR BEARING DETAILS, SEE SHEET 4B12-25.
7. FA626 BARS SHALL BE PLACED PARALLEL TO AND TO MISS THE MODULAR JOINT SUPPORT BOXES. FOR ADDITIONAL REINFORCING NOT SHOWN, SEE MODULAR JOINT DETAILS, SHEETS 4B12-41 AND 4B12-42.
8. BLOCKOUT IS FOR MSE WALL COPING. SEE RETAINING WALL RW-13 PLANS FOR 2" POLYSTYRENE FILLER AROUND BLOCKOUT, WHICH IS PAID FOR WITH ITEM 898 - QC/QA CONCRETE, CLASS QSC2, SUBSTRUCTURE (ABUTMENT INCLUDING FOOTING).
9. SOIL REINFORCEMENT FOR RETAINING WALL RW-13 WILL BE ATTACHED TO THE EAST END OF THE FOOTING AND STEM. SEE RETAINING WALL RW-13 PLANS FOR LOCATIONS AND NOTES.
10. BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	01/04/12	RFC
B	11/11/11	FINAL SUBMISSION
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
Engineering Company
The Challenge Has a Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF/DJC	RER	01/03/12
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

FORWARD ABUTMENT SECTIONS (1 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-15

2578
2744

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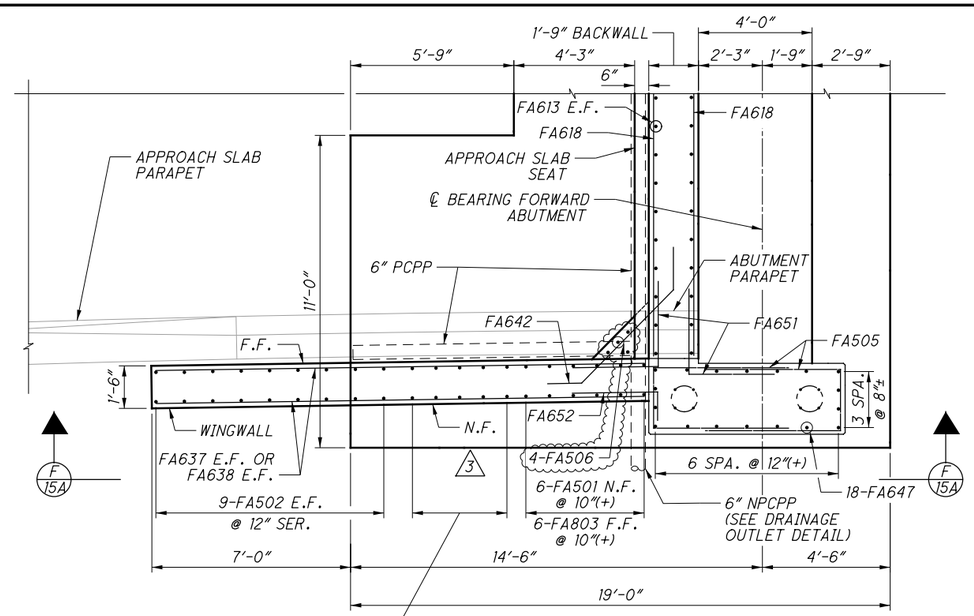
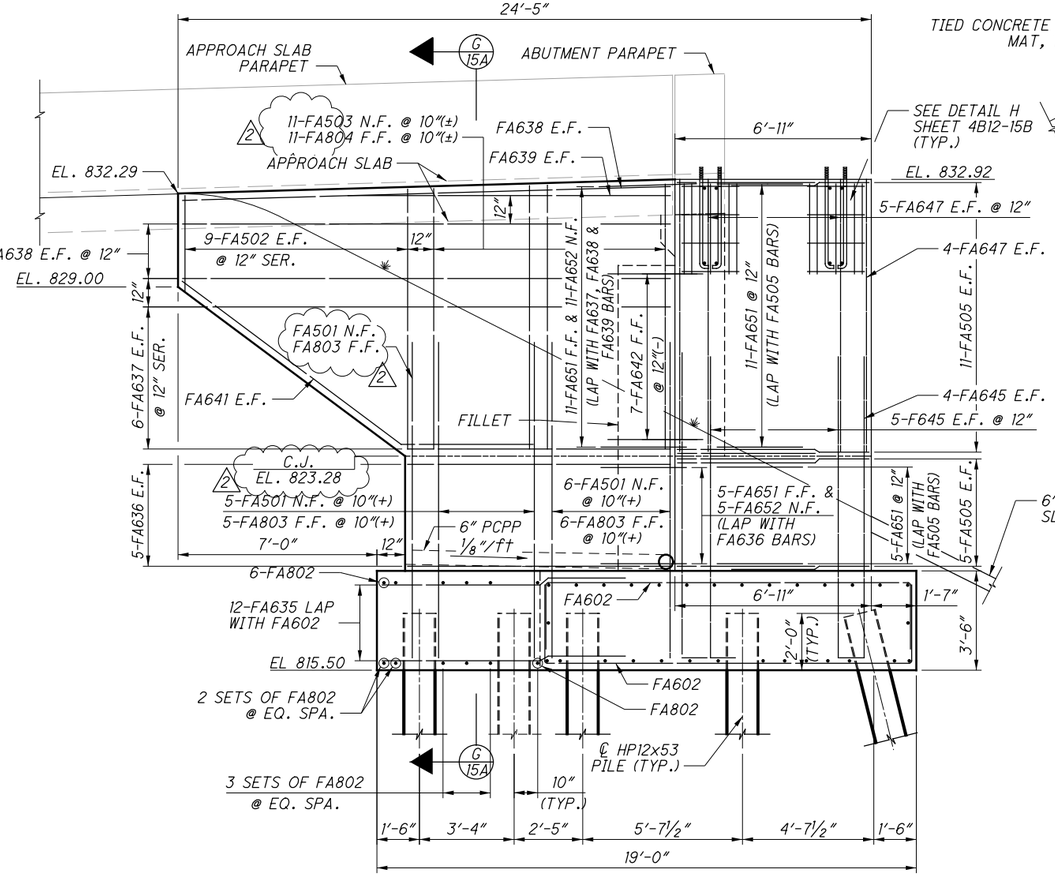
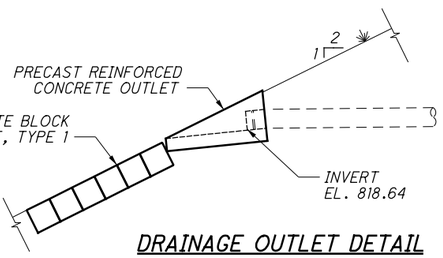


WINGWALL PLAN

(SEE LEFT PEDESTAL PLAN THIS SHEET)

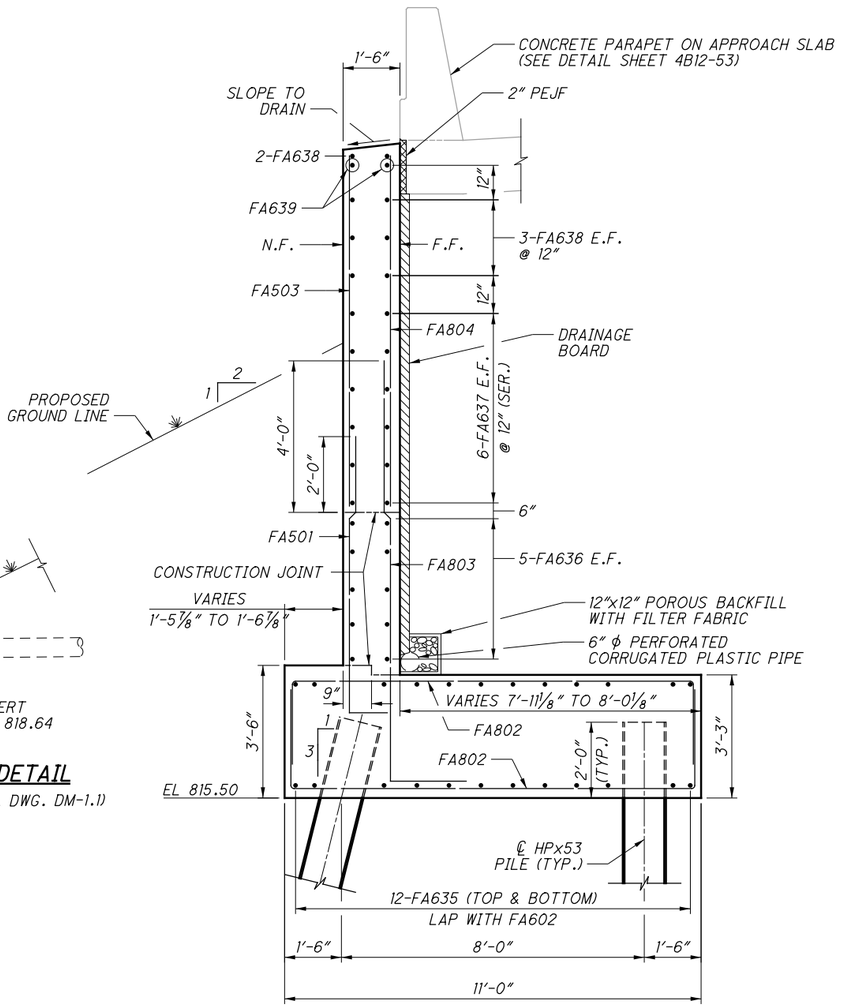


VIEW F-F

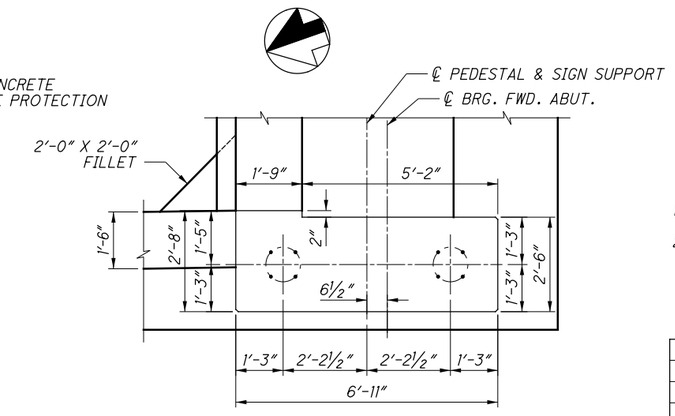


DRAINAGE OUTLET DETAIL

(DRAINAGE OUTLET AS PER STD. DWG. DM-1.1)



SECTION G-G



LEFT PEDESTAL PLAN

NOTES:

1. FOR PLAN AND ELEVATION, SEE SHEET 4B12-14.
2. FOR SECTIONS AND NOTES, SEE SHEETS 4B12-15 & 4B12-15B.

4 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
4	5/08/14	RECORD DRAWINGS
3	4/21/14	RFI 110
2	03/27/12	NDC 018
1	01/04/12	RFC
B	11/11/11	FINAL SUBMISSION
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
Engineering Inc. Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF/DJC	RER	01/03/12
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

FORWARD ABUTMENT WINGWALL AND DETAILS

BRIDGE NO. FRA-670-0457B

RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-15A

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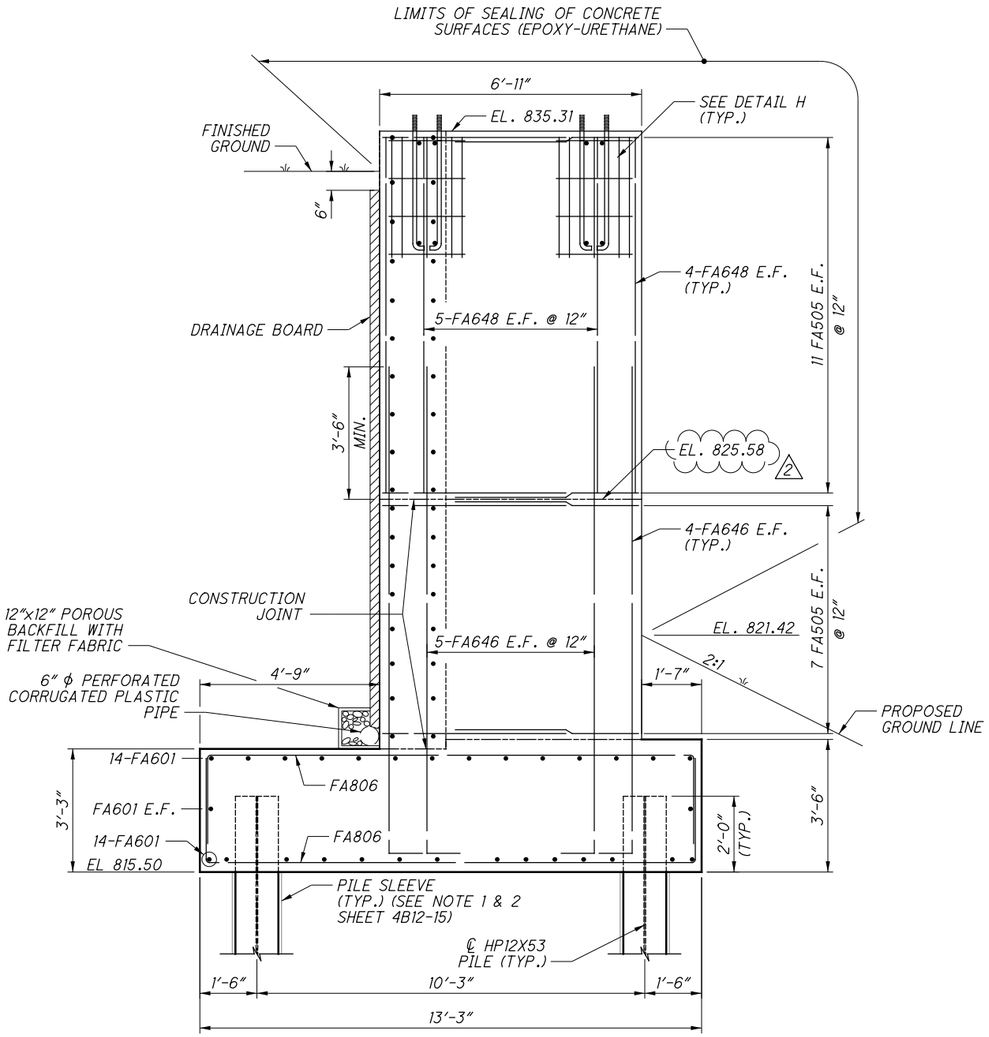
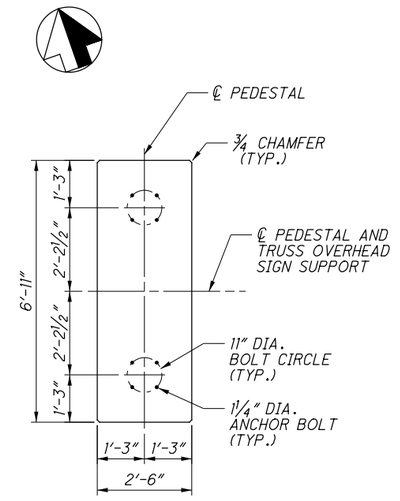
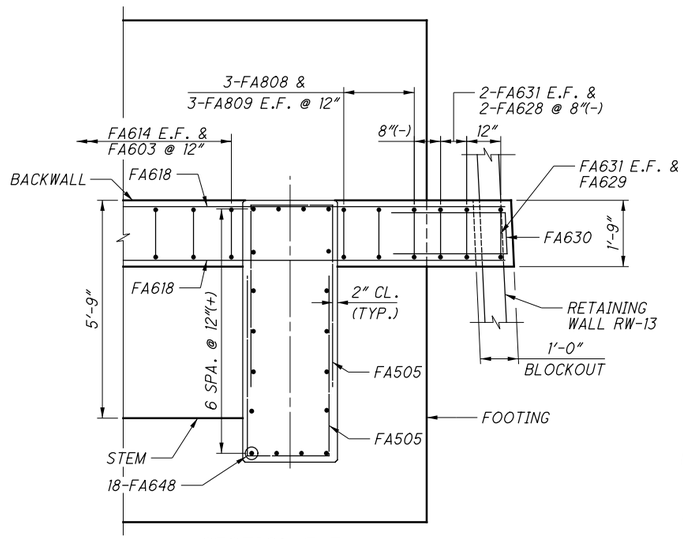


SECTION D-D

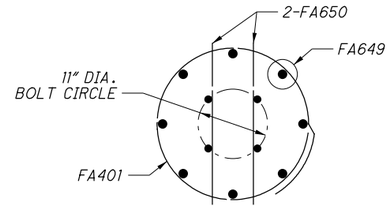


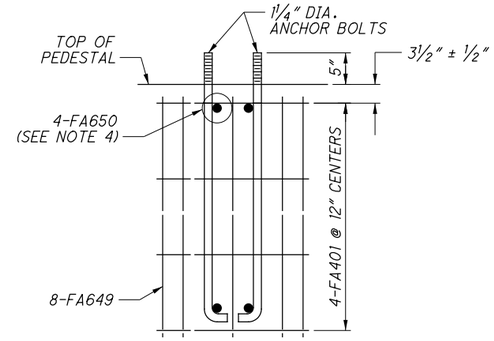
RIGHT PEDESTAL PLAN



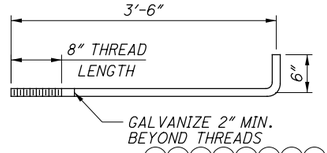
SECTION E-E

(WINGWALL & PEDESTAL REINFORCING SHOWN)
(SEE RIGHT PEDESTAL PLAN THIS SHEET)





DETAIL H



ANCHOR BOLTS FOR SIGN TRUSS

(SEE STD. TC-21.10 FOR ALTERNATE DETAIL WITH PLATE INSTEAD OF BEND) 2

NOTES:

1. FOR NOTES AND SECTIONS A-A THRU C-C, SEE SHEET 4B12-15.
2. FOR PLAN AND ELEVATION, SEE SHEET 4B12-14.
3. FOR WINGWALL DETAILS AND LEFT PEDESTAL PLAN, SEE SHEET 4B12-15A.
4. TIE ANCHOR BOLTS TO REBAR CAGE NEAR THE TOP AND BOTTOM OF THE ANCHOR BOLTS.
5. REFERENCE SHALL BE MADE TO ODOT STANDARD CONSTRUCTION DRAWING TC-21.10 FOR ANCHOR BOLTS.
6. TRUSS OVERHEAD SIGN SUPPORT SHALL BE PER STANDARD CONSTRUCTION DRAWING TC-7.65 DESIGN 6. THE SPAN LENGTH MEASURED CENTER TO CENTER OF PEDESTAL ℄ SHALL BE 51'-6".

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	01/04/12	RFC

ISSUE RECORD

E.L. ROBINSON
The Challenge Is a Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DJC	RER	01/03/12
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

FORWARD ABUTMENT SECTIONS (2 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-15B

2580
2744

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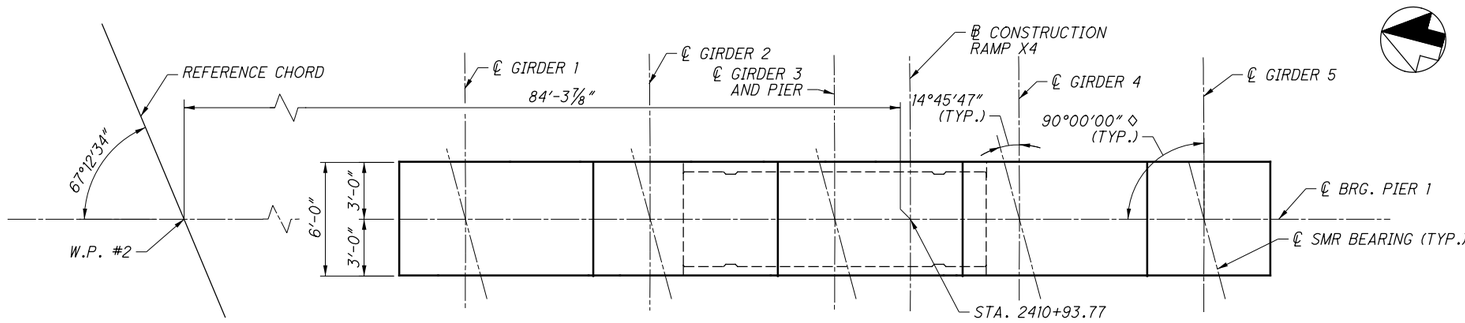
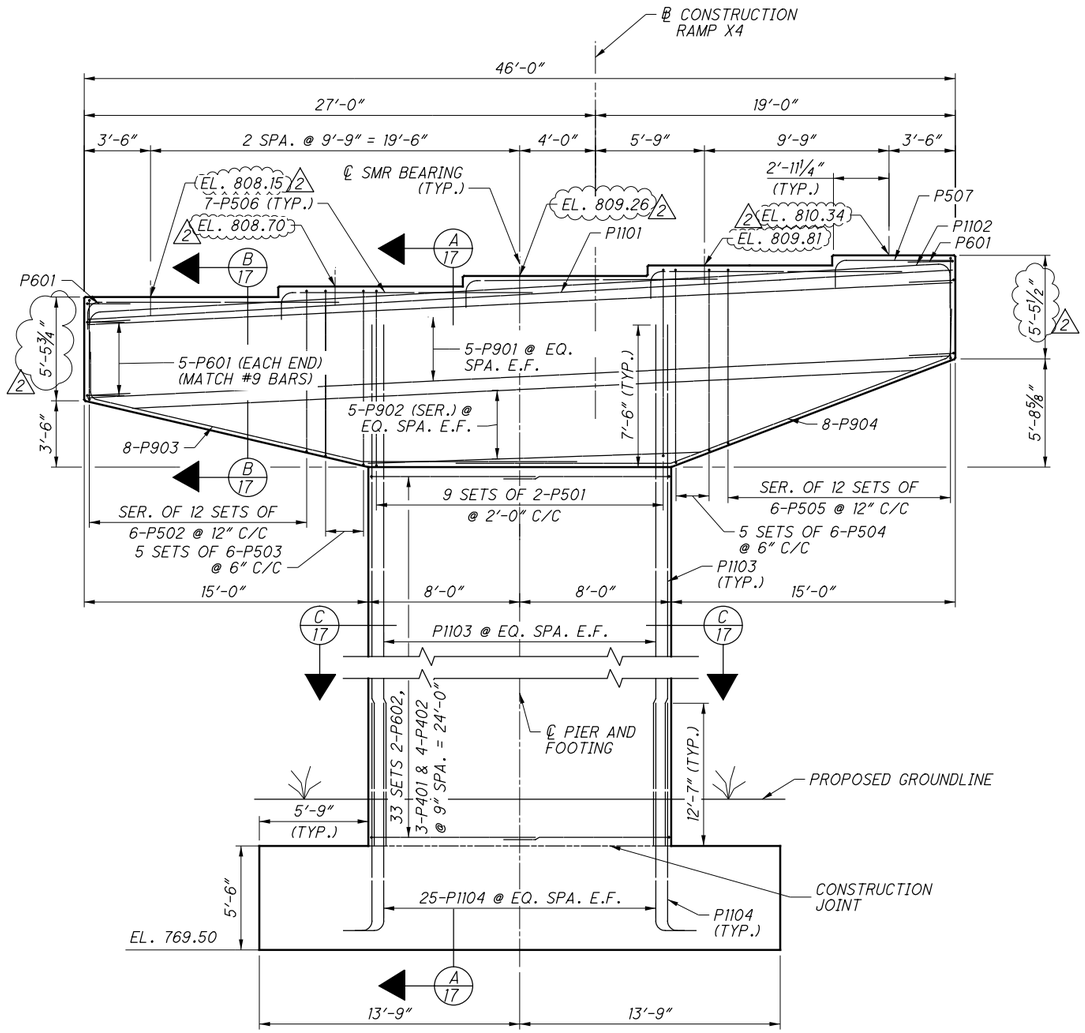


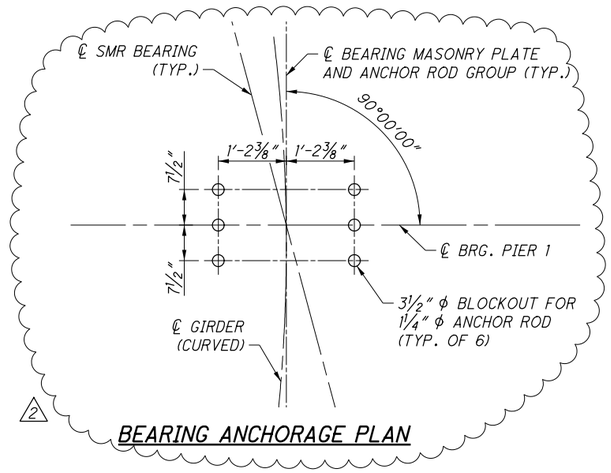
PLAN

◊ MEASURED TO LOCAL TANGENT



ELEVATION

(PILES AND FOOTING REINFORCING NOT SHOWN)



BEARING ANCHORAGE PLAN

LAP SPLICE TABLE

BAR	LAP
NO. 4	1'-8"
NO. 5	(1'-11") 2
NO. 6	3'-0"
NO. 9	6'-6"
NO. 11 (VERT.)	12'-7"
NO. 11 (HORIZ.)	14'-3"

NOTES:

1. FOR PIER ARCHITECTURAL DETAILS, INCLUDING LIMITS OF SEALING OF CONCRETE SURFACES, SEE SHEET 4B12-24.

2. FOR BEARING DETAILS, SEE SHEET 4B12-25.

3. FOR PILE LAYOUT, SEE SHEETS 4B12-10 AND 4B12-11.

4. FOR FOOTING PLAN, SEE SHEET 4B12-17.

5. BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

6. CONCRETE CLEAR COVER OVER REINFORCING STEEL SHALL BE 2" UNLESS NOTED OTHERWISE.

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	JRB/DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM	JDH	2506444	

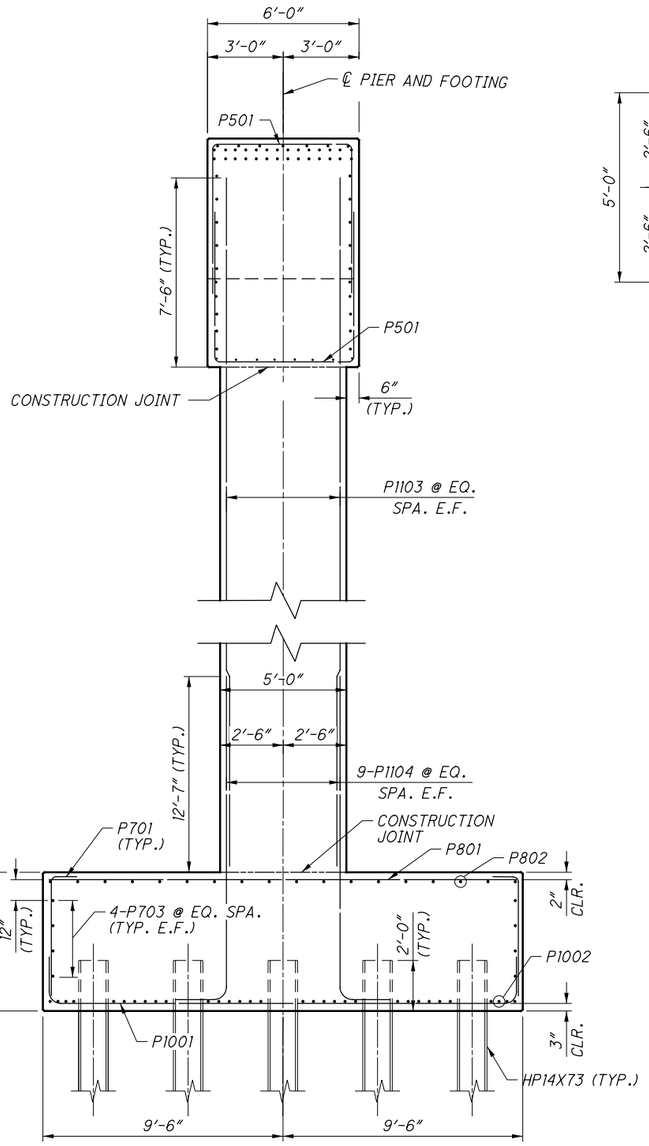
PIER 1 PLAN AND ELEVATION

BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 NB
RAMPS X3, V6, W1, W2 AND I-71 SB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

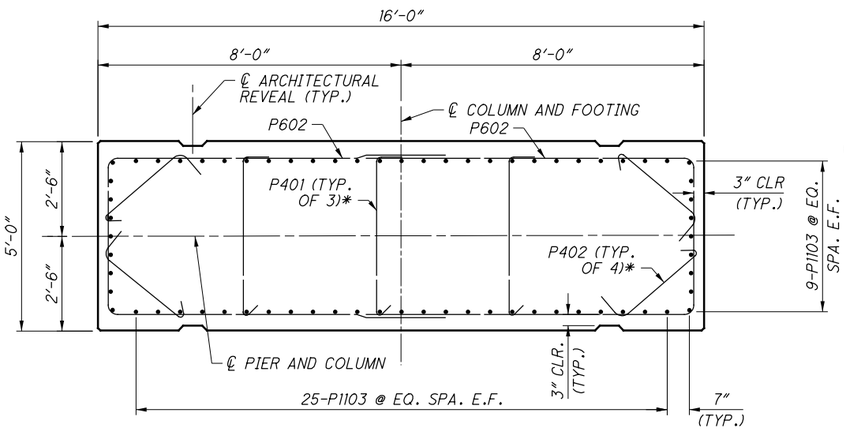
4B12-16

2581
2744



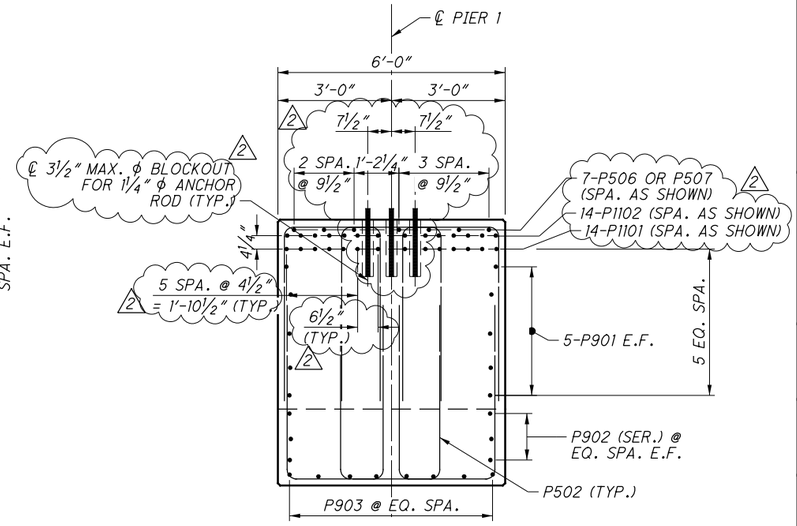
SECTION A-A

(FOR PIER CAP REINFORCING, SEE SECTION B-B)

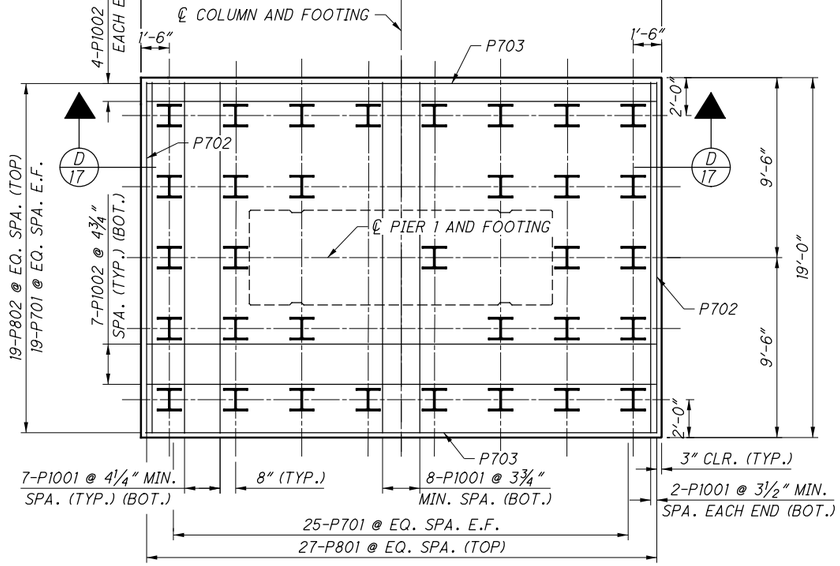


SECTION C-C

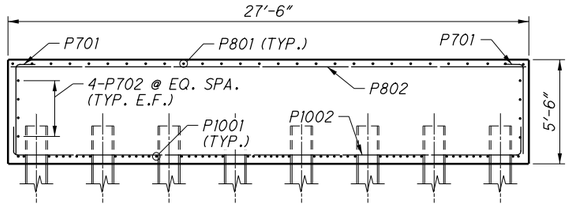
* ALTERNATE HOOKS



SECTION B-B



FOOTING PLAN



SECTION D-D

NOTES:

1. FOR NOTES AND LAP SPLICE TABLE, SEE SHEET 4B12-16.

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Chosen
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

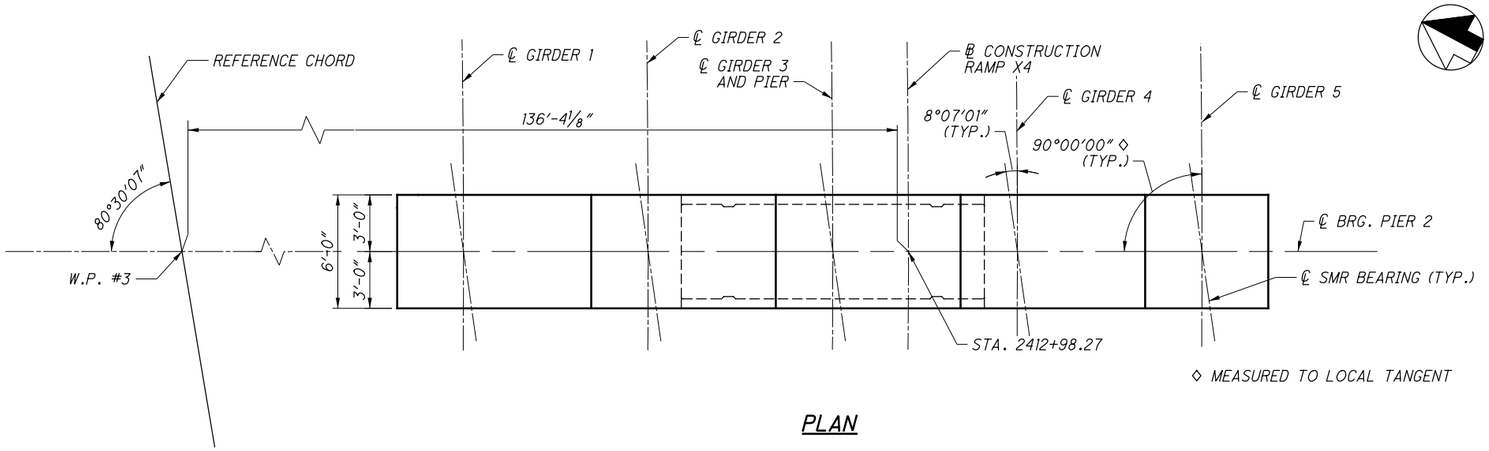
DESIGNED	DRAWN	REVIEWED	DATE
JDH	JRB/DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM	JDH	2506444	

PIER 1 FOOTING AND SECTIONS
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 NB
AND I-71 SB AND I-71 NB

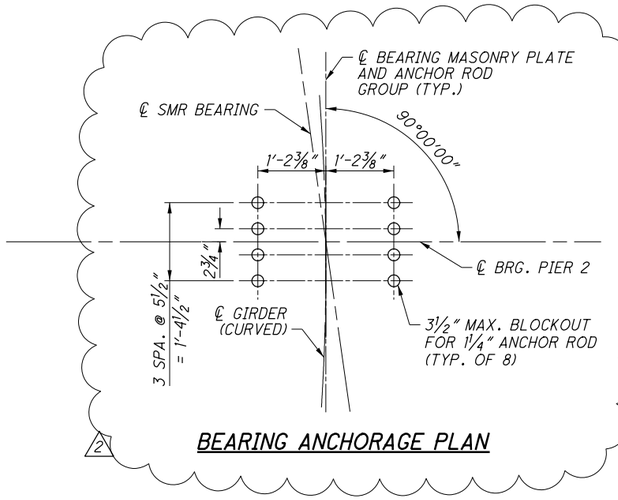
FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-17

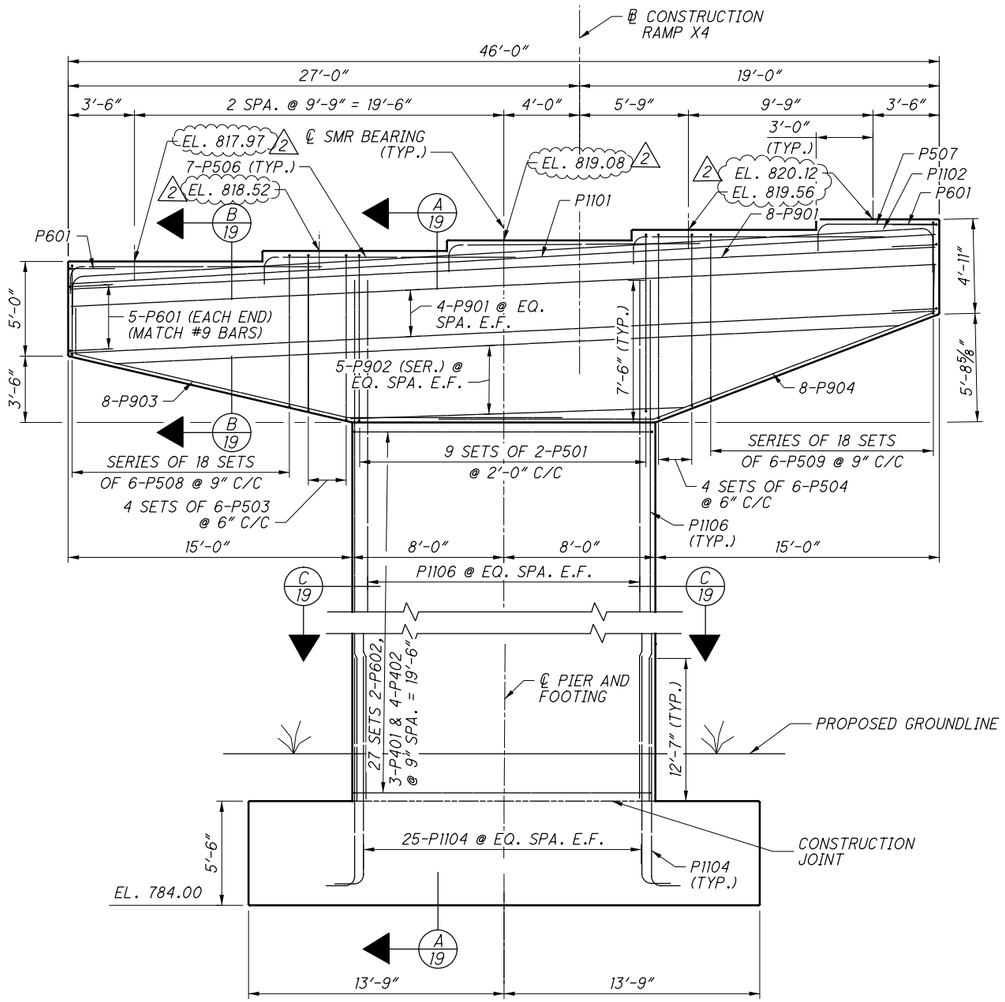
2582
2744



PLAN



BEARING ANCHORAGE PLAN



ELEVATION

LAP SPLICE TABLE	
BAR	LAP
NO. 4	1'-8"
NO. 5	2'-5"
NO. 6	3'-0"
NO. 9	6'-6"
NO.11 (VERT.)	12'-7"
NO. 11 (HORIZ.)	14'-3"

NOTES:

1. FOR PIER ARCHITECTURAL DETAILS, INCLUDING LIMITS OF SEALING OF CONCRETE SURFACES, SEE SHEET 4B12-24.

2. FOR BEARING DETAILS, SEE SHEET 4B12-25.

3. FOR PILE LAYOUT, SEE SHEETS 4B12-10 AND 4B12-11.

4. FOR FOOTING PLAN, SEE SHEET 4B12-19.

5. BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

6. CONCRETE CLEAR COVER OVER REINFORCING SHALL BE 2" UNLESS NOTED OTHERWISE.

7. THE STRUCTURAL STEEL SHALL BE GROUNDED AT PIER 2. SEE STANDARD DRAWING HL-50.21 AND STRUCTURE GROUNDING NOTE ON SHEET 4B12-4. (3)

(4) NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
4	5/08/14	RECORD DRAWINGS
3	4/16/12	RFI 050
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL
ISSUE RECORD		

E.L. ROBINSON
The Challenge Has a Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

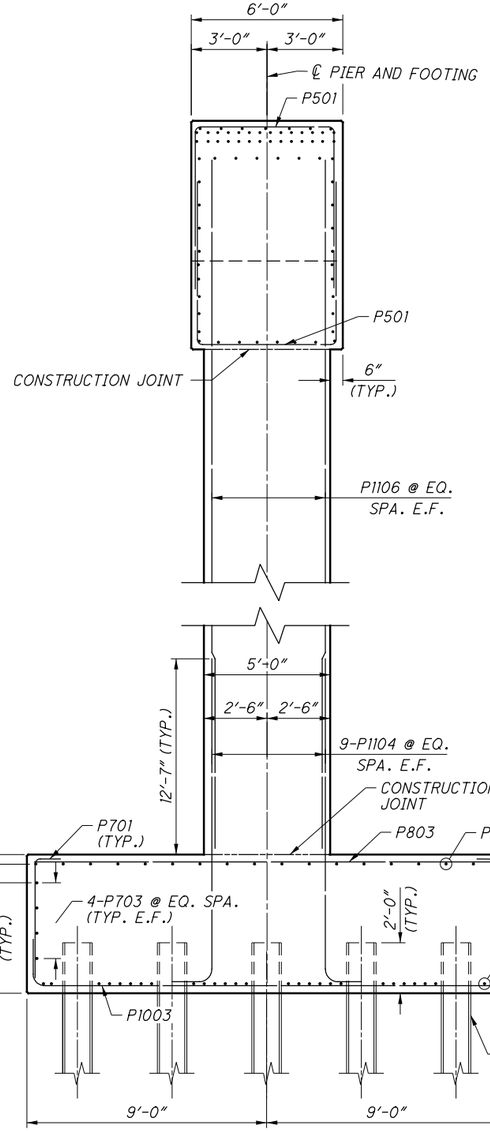
DESIGNED JDH | DRAWN JRB/DCF | CHECKED AJM | REVIEWED RER | DATE 11/08/11 | REVISED JDH | STRUCTURE FILE NUMBER 2506444

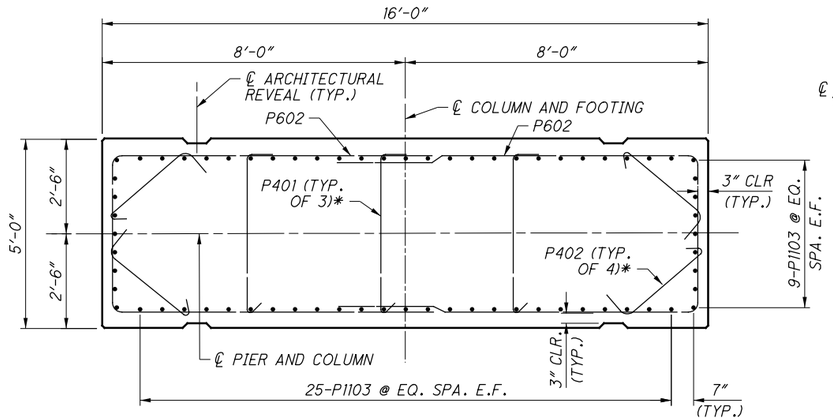
PIER 2 PLAN AND ELEVATION
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1 W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-18

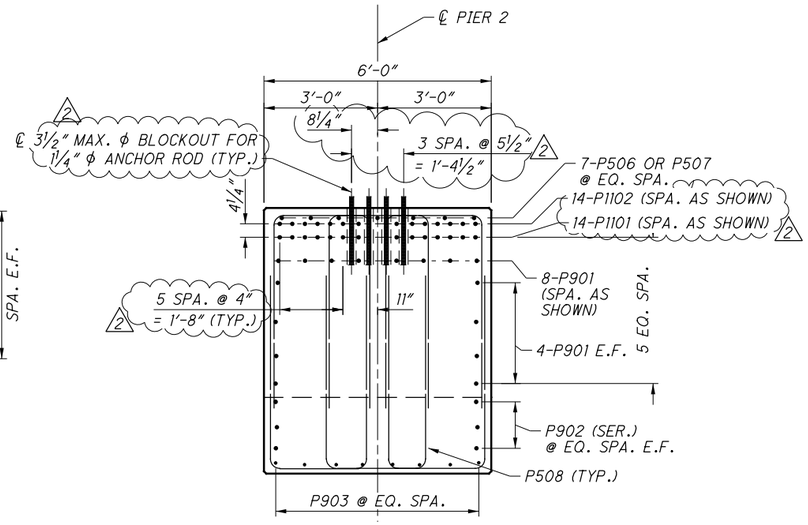
2583
2744





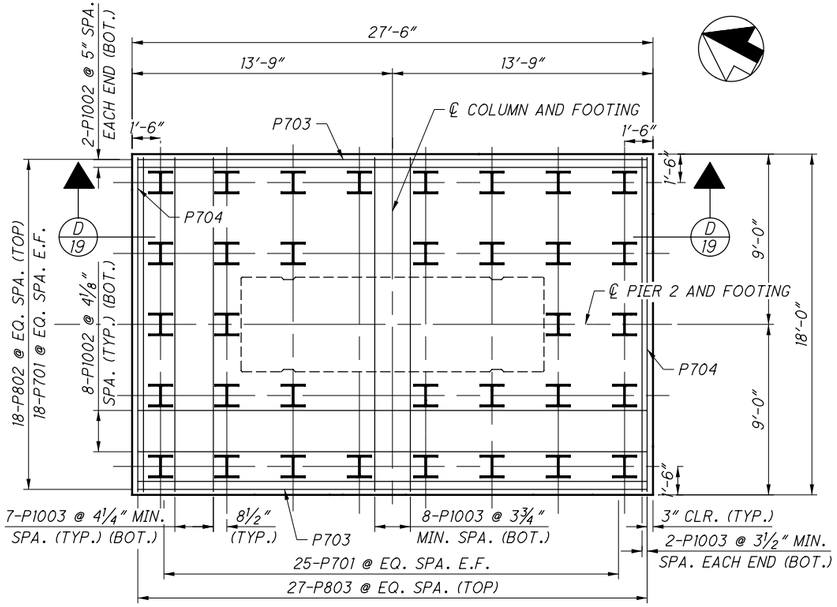
SECTION C-C

* ALTERNATE HOOKS

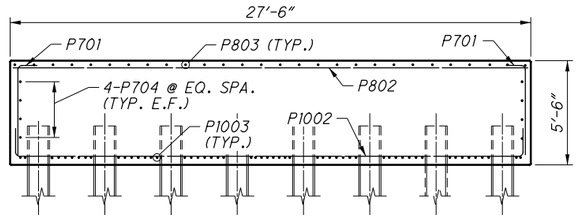


SECTION B-B

SECTION A-A



FOOTING PLAN



SECTION D-D

NOTES:

1. FOR NOTES AND LAP SPLICE TABLE, SEE SHEET 4B12-18.

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

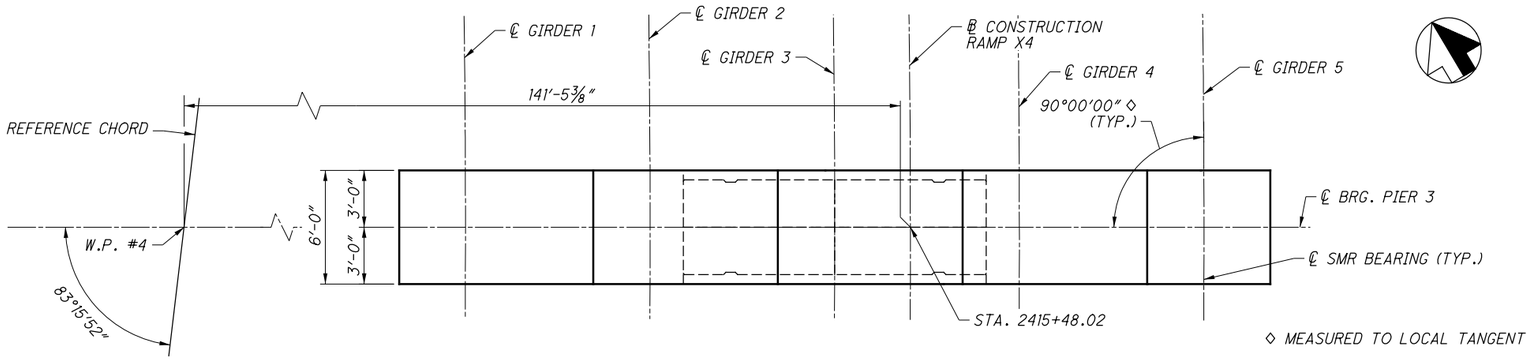
DESIGNED	DRAWN	REVIEWED	DATE
JDH	JRB/DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM	JDH	2506444	

PIER 2 FOOTING AND SECTIONS
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

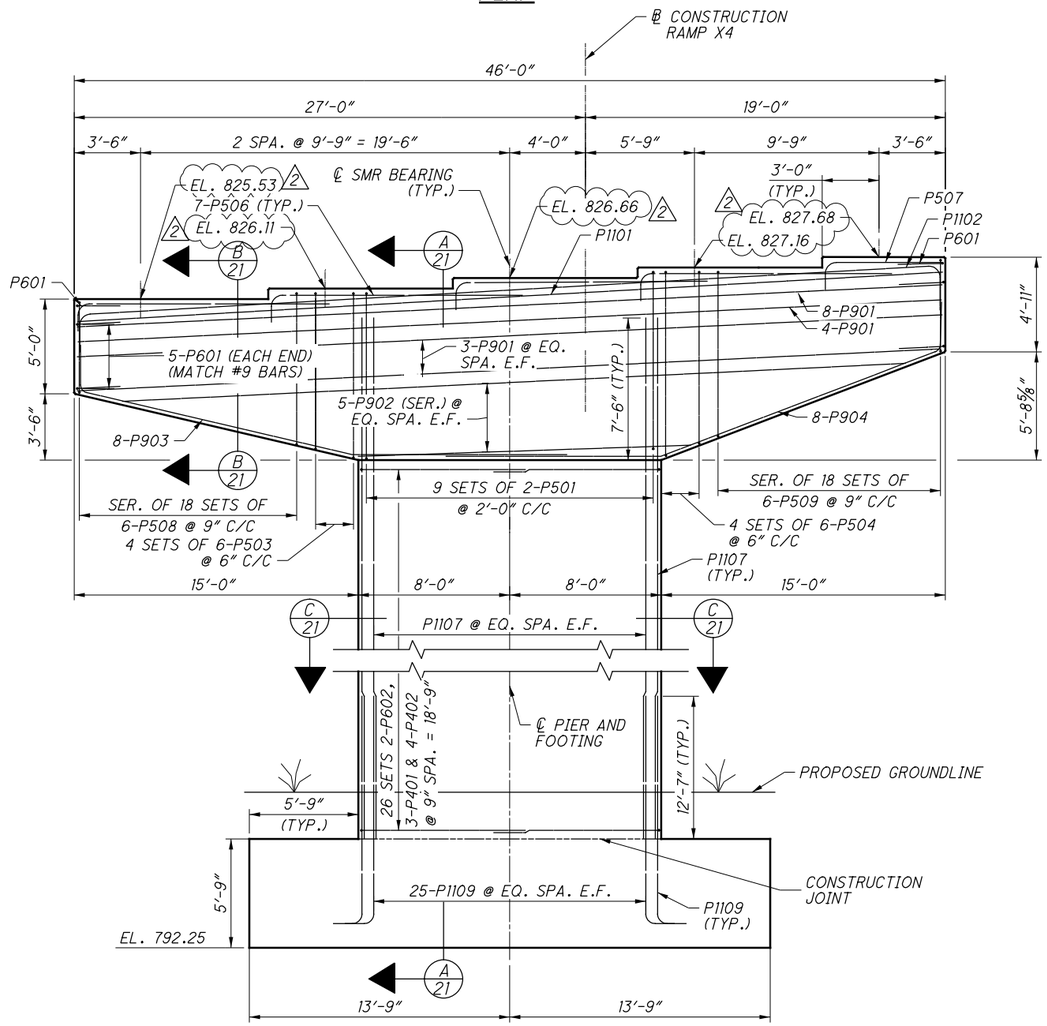
FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-19

2584
2744

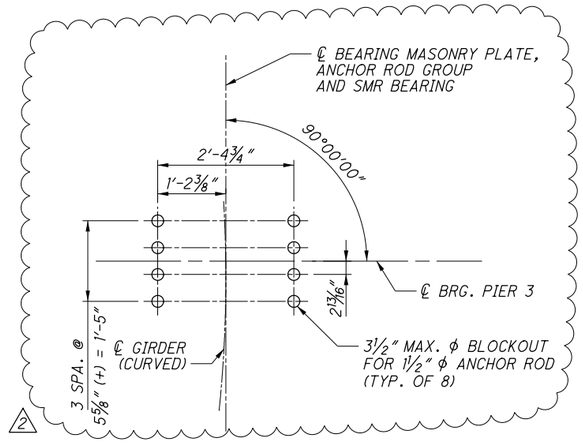


PLAN



ELEVATION

(PILES AND FOOTING REINFORCING NOT SHOWN)



BEARING ANCHORAGE PLAN

LAP SPLICE TABLE	
BAR	LAP
NO. 4	1'-8"
NO. 5	2'-5"
NO. 6	3'-0"
NO. 9	6'-6"
NO.11 (VERT.)	12'-7"
NO. 11 (HORIZ.)	14'-3"

NOTES:

1. FOR PIER ARCHITECTURAL DETAILS, INCLUDING LIMITS OF SEALING OF CONCRETE SURFACES, SEE SHEET 4B12-24.

2. FOR BEARING DETAILS, SEE SHEET 4B12-25.

3. FOR PILE LAYOUT, SEE SHEETS 4B12-10 AND 4B12-11.

4. FOR FOOTING PLAN, SEE SHEET 4B12-21.

5. BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

6. CONCRETE CLEAR COVER OVER REINFORCING STEEL SHALL BE 2" UNLESS NOTED OTHERWISE.

7. THE STRUCTURAL STEEL SHALL BE GROUNDED AT PIER 3. SEE STANDARD DRAWING HL-50.21 AND STRUCTURE GROUNDING NOTE ON SHEET 4B12-4.

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	JRB/DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM	JDH	2506444	

PIER 3 PLAN AND ELEVATION
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-20

2585
2744

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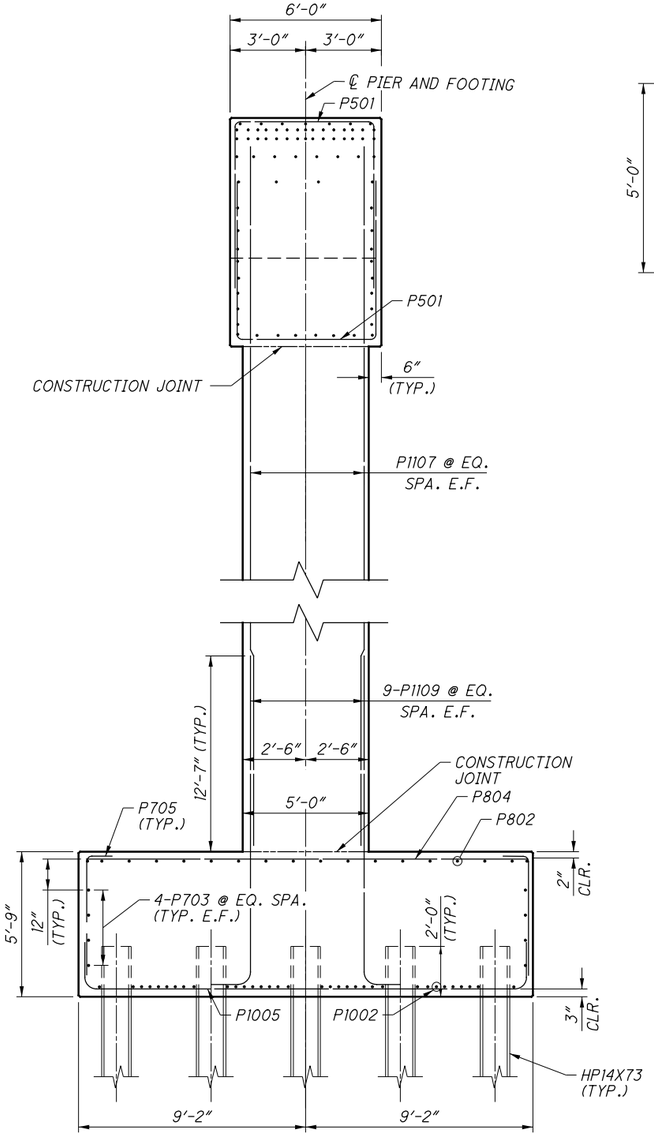
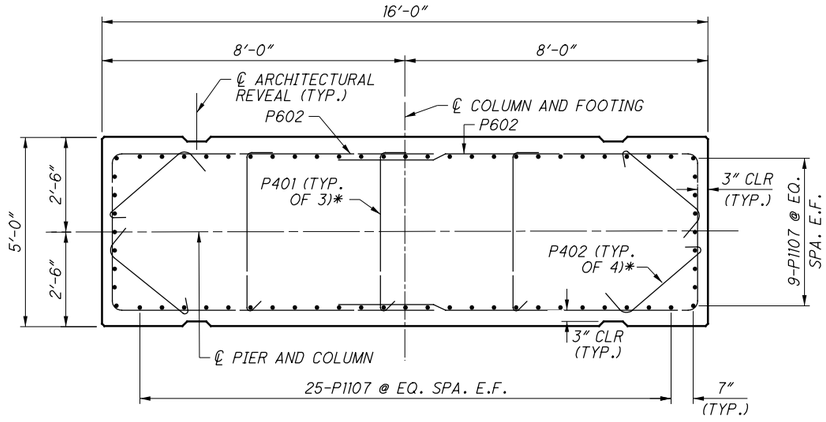
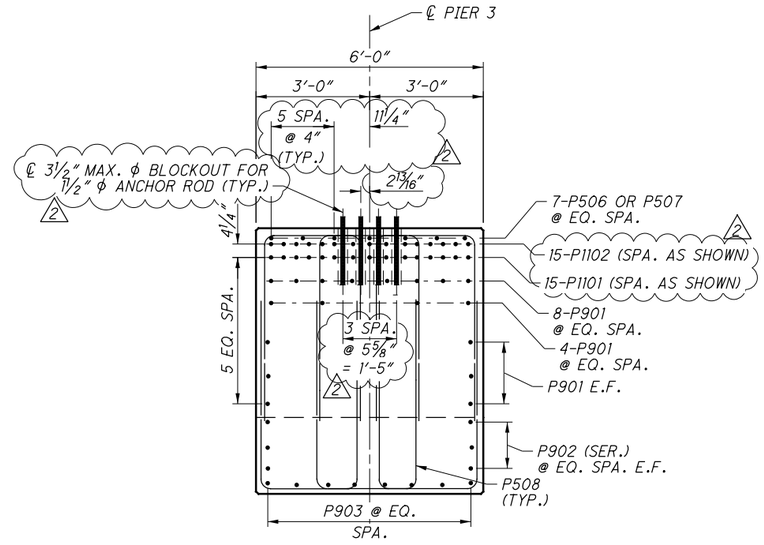


SECTION A-A

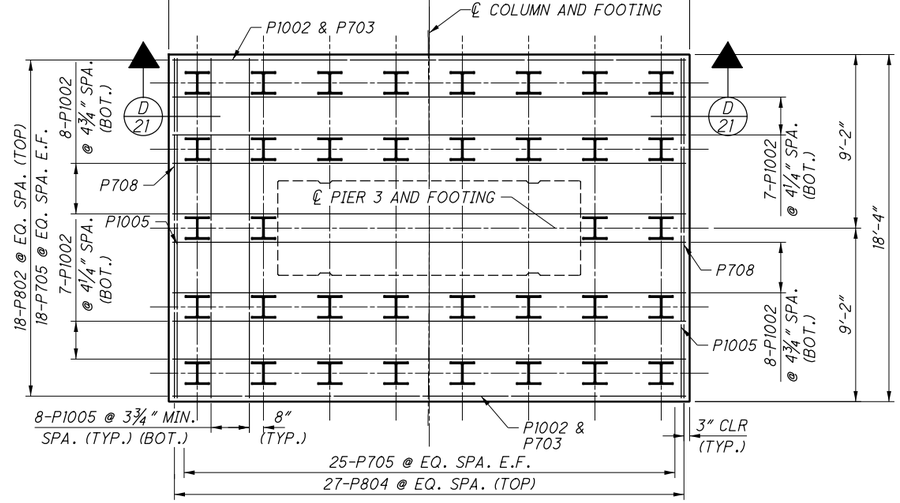


SECTION C-C

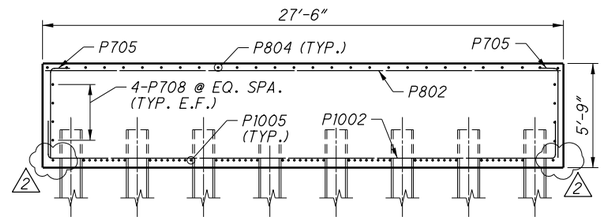
* ALTERNATE TIES



SECTION B-B



FOOTING PLAN



SECTION D-D

NOTES:

1. FOR NOTES AND LAP SPLICE TABLE, SEE SHEET 4B12-20.

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Chosen
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	JRB/DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM	JDH	2506444	

PIER 3 FOOTING AND SECTIONS

BRIDGE NO. FRA-670-0457B

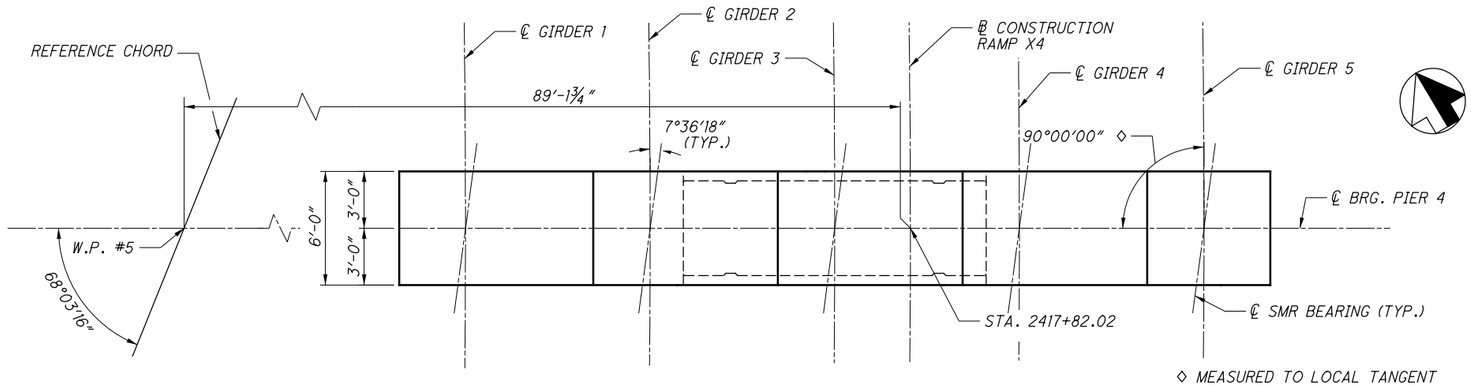
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

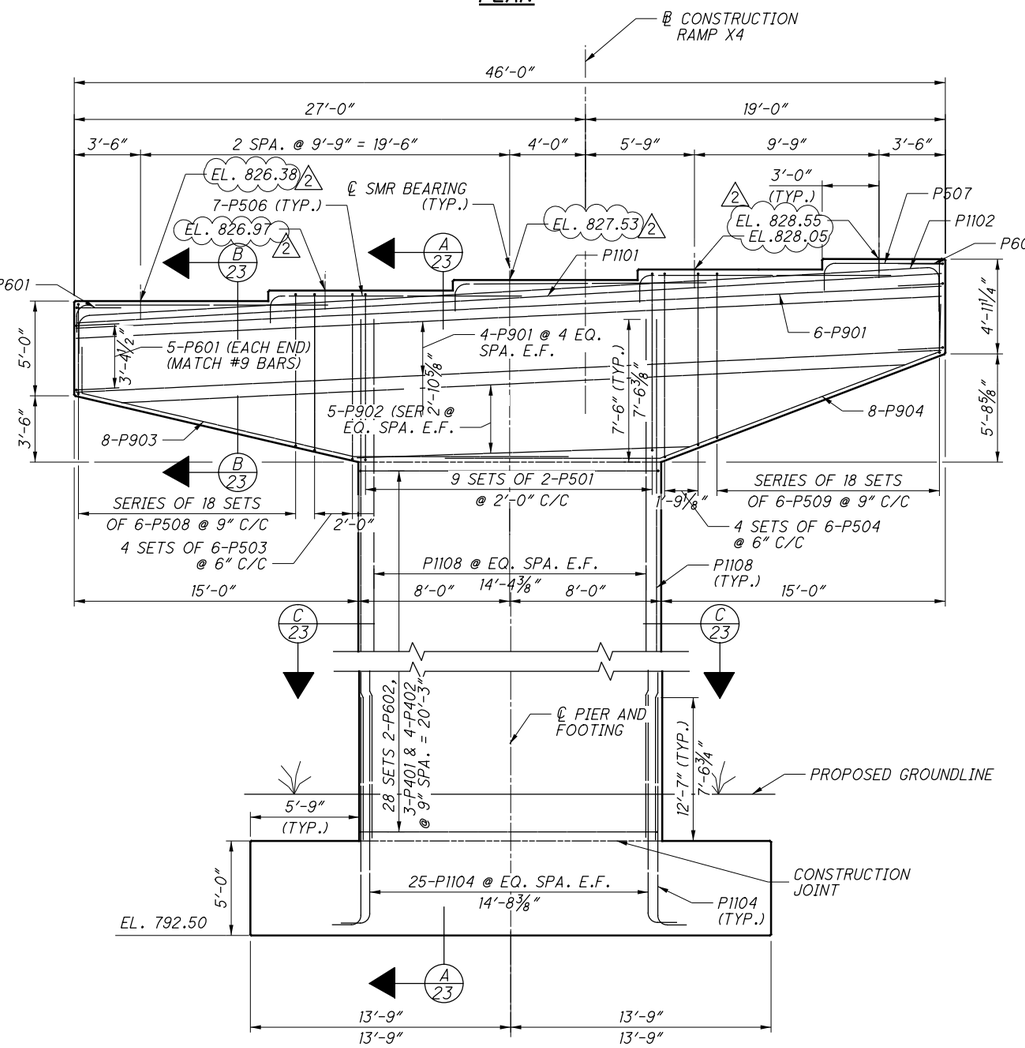
4B12-21

2586
2744

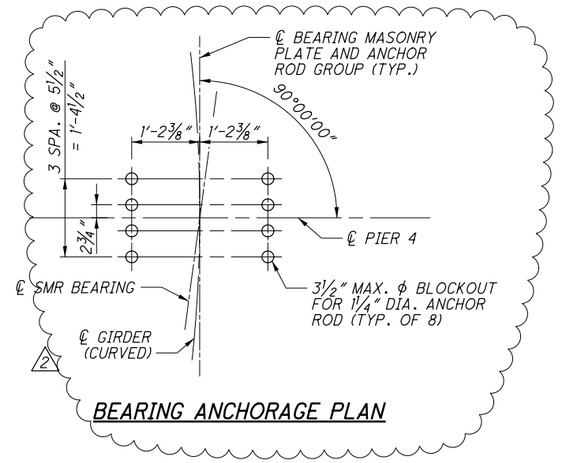
c:\pw_workdir\ch2mhill_tbg\cengle\dms61744\670_0457BPI531.dgn 9/11/2014 3:16:54 PM fbawani



PLAN



ELEVATION



BEARING ANCHORAGE PLAN

LAP SPLICE TABLE

BAR	LAP
NO. 4	1'-8"
NO. 5	2'-5"
NO. 6	3'-0"
NO. 9	6'-6"
NO.11 (VERT.)	12'-7"
NO. 11 (HORIZ.)	14'-3"

NOTES:

1. FOR PIER ARCHITECTURAL DETAILS, INCLUDING LIMITS OF SEALING OF CONCRETE SURFACES, SEE SHEET 4B12-24.

2. FOR BEARING DETAILS, SEE SHEET 4B12-25.

3. FOR PILE LAYOUT, SEE SHEETS 4B12-10 AND 4B12-11.

4. FOR FOOTING PLAN, SEE SHEET 4B12-23.

5. BRIDGE SEAT REINFORCING, SETTING ANCHORS: ACCURATELY PLACE REINFORCING STEEL IN THE VICINITY OF THE BRIDGE SEAT TO AVOID INTERFERENCE WITH THE DRILLING OF ANCHOR BAR HOLES OR THE PRE-SETTING OF BEARING ANCHORS.

6. CONCRETE CLEAR COVER OVER REINFORCING STEEL SHALL BE 2" UNLESS NOTED OTHERWISE.

7. THE STRUCTURAL STEEL SHALL BE GROUNDED AT PIER 4. SEE STANDARD DRAWING HL-50.21 AND STRUCTURE GROUNDING NOTE ON SHEET 4B12-4. (3)

(5) NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
4	5/08/14	RECORD DRAWINGS
3	4/16/12	RFI 050
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
Engineering Co.
The Challenge to be Your Choice
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	JRB/DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM	JDH	2506444	

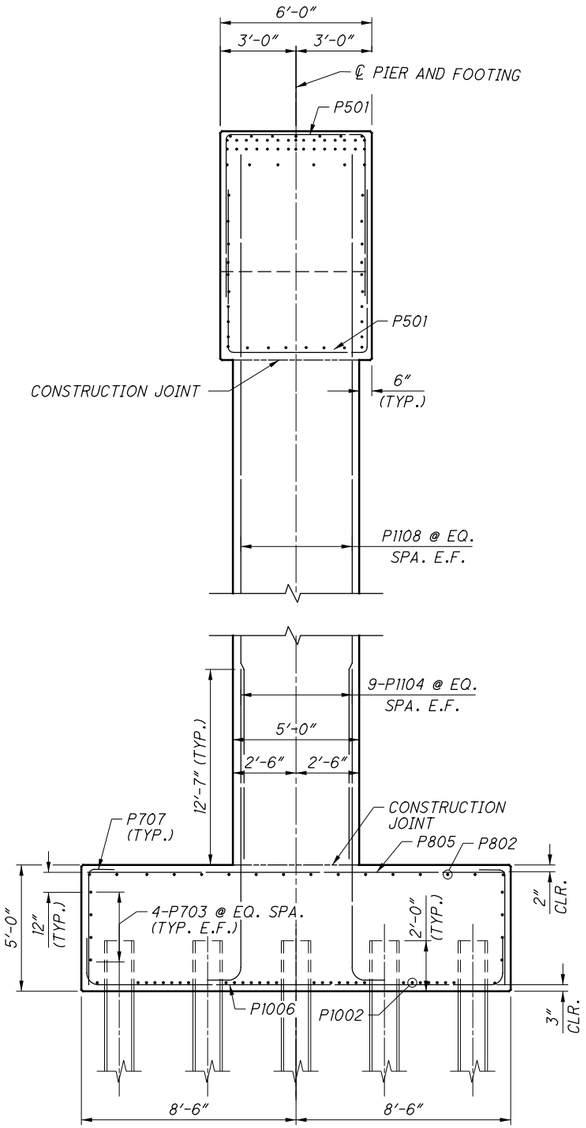
PIER 4 PLAN AND ELEVATION
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

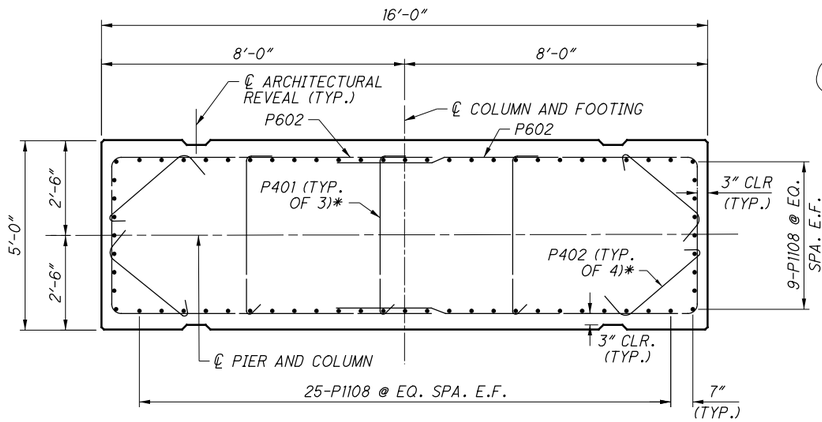
4B12-22

2587
2744

c:\pw_workdir\ch2mhill_tbg\aengle\dms61744\670_0457BPI532.dgn 9/11/2014 3:17:50 PM fbowani

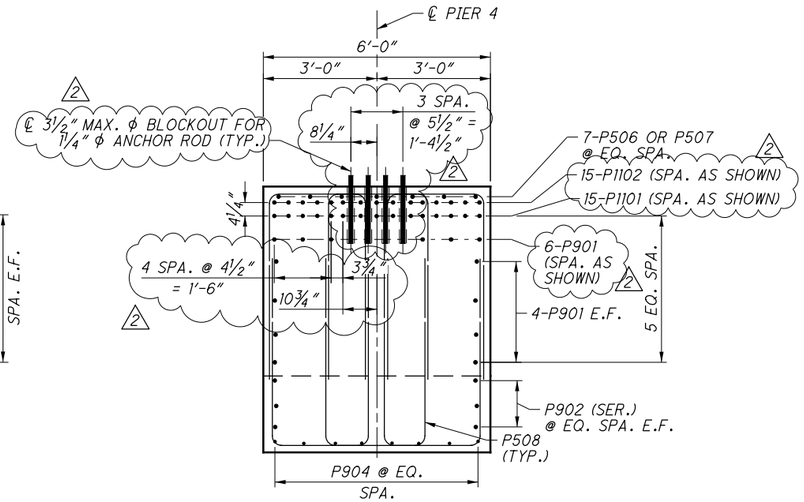


SECTION A-A

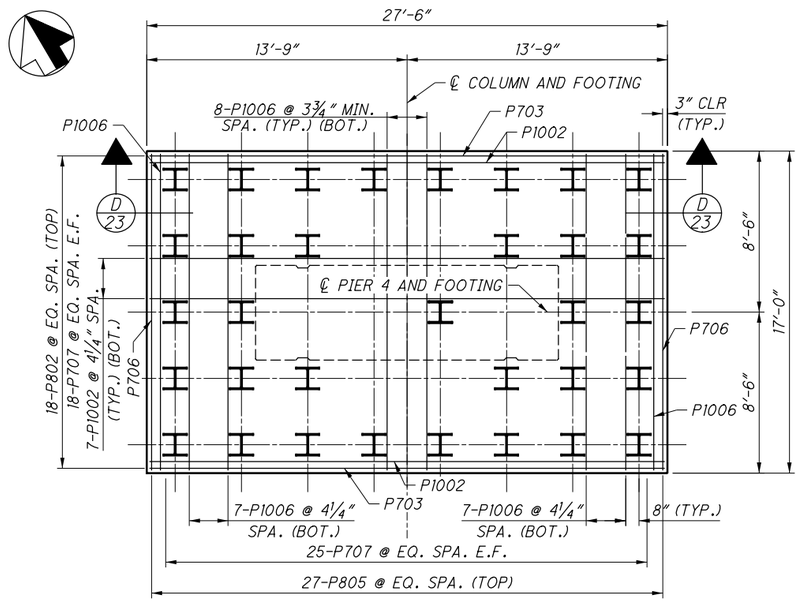


SECTION C-C

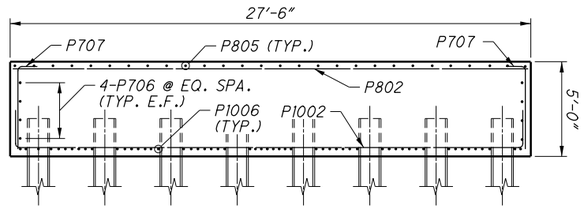
* ALTERNATE TIES



SECTION B-B



FOOTING PLAN



SECTION D-D

NOTES:

1. FOR NOTES AND LAP SPLICE TABLE, SEE SHEET 4B12-22.

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	JRB/DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM	JDH	2506444	

PIER 4 FOOTING AND SECTIONS

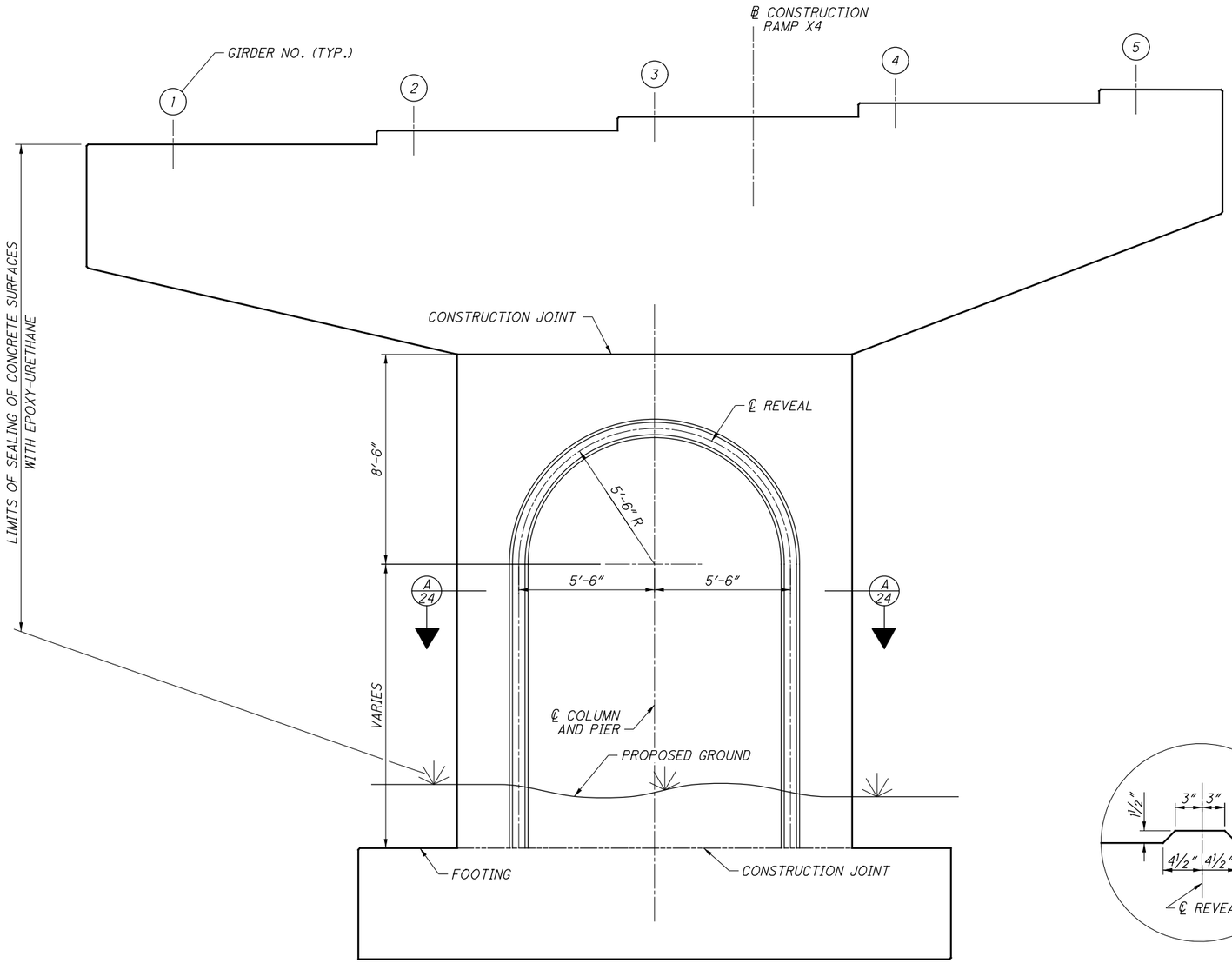
BRIDGE NO. FRA-670-0457B

RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

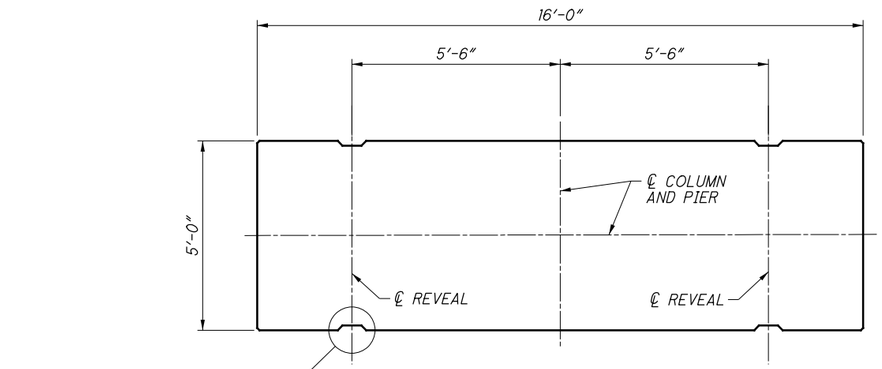
FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-23

2588
2744



TYPICAL PIER ELEVATION



SECTION A-A

(SEAL ALL EXPOSED CONCRETE SURFACES WITH EPOXY-URETHANE)

NOTES:

1. FOR PIER DETAILS, SEE SHEETS 4B12-16 THRU 4B12-23.

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
AJM		2506444	

PIER ARCHITECTURAL DETAILS

BRIDGE NO. FRA-670-0457B

RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-24

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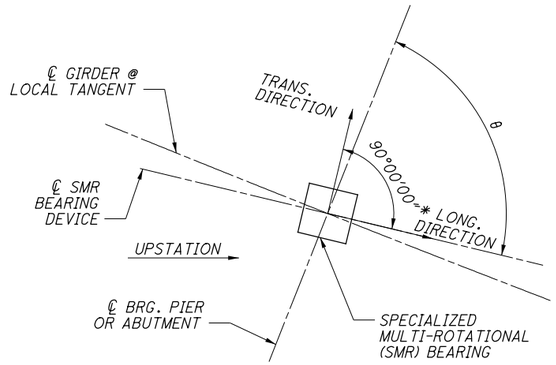
2744

BEARING DATA TABLE

BEARING LOCATION	TYPE (SEE NOTE 7)	QUANTITY	LOAD AND ROTATIONS														MOVEMENT (IN.)		ASSUMED BEARING HEIGHT (IN.)	LOAD PLATE SLOPE (UPSTATION ALONG ℄ GIRDER)
			AT STEEL ERECTION				FINAL CONDITION													
					ROTATION (RADIANS)		VERTICAL LOAD (KIPS)						HORIZONTAL LOAD (KIPS)		ROTATION (RADIANS)		LONG.	TRANS.		
			VERTICAL SERVICE DEAD LOAD (KIPS)	VERTICAL STRENGTH DEAD LOAD (KIPS)	LONG.	TRANS	SERVICE DL	SERVICE LL+IM	TOTAL SERVICE LOAD	STRENGTH DL	STRENGTH LL+IM	TOTAL STRENGTH LOAD	EXT. EVENT LONG.	EXT. EVENT TRAN.	LONG.	TRANS.				
REAR ABUT.	I	5	37	46	0.026	0.022	198	131	329	257	229	487	0	99	0.031	0.024	5.22	0	9.94	4.40%
PIER 1	I	5	98	123	0.022	0.020	526	245	771	685	429	1113	0	231	0.026	0.022	3.83	0	13.81	4.91%
PIER 2	I	5	150	188	0.024	0.021	668	290	958	871	508	1378	0	288	0.029	0.021	2.10	0	14.89	4.37%
PIER 3	II	5	158	197	0.023	0.020	727	287	1014	947	502	1449	304	304	0.027	0.020	0	0	8.66	1.64%
PIER 4	I	5	121	151	0.021	0.020	644	264	908	837	462	1299	0	272	0.025	0.021	1.97	0	14.09	-0.91%
FWD. ABUT.	I	5	36	45	0.027	0.022	205	142	347	268	246	517	0	104	0.033	0.023	3.47	0	9.57	-2.74%

NOTES:

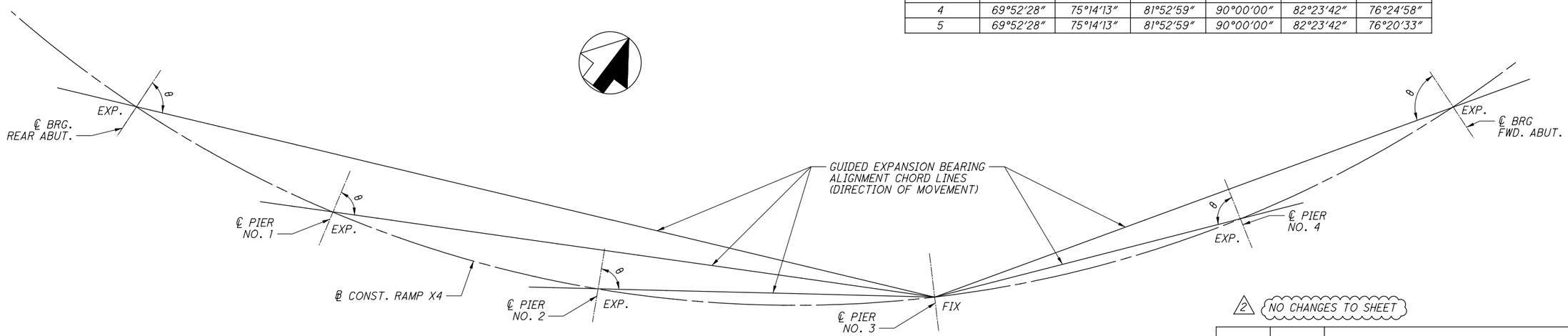
1. BEARINGS ARE SET WITH THEIR LONGITUDINAL DIRECTION ON A CHORD FROM EACH SUPPORT TO FIXED PIER NO. 3 FOR EACH GIRDER LINE. BEARING AT PIER NO. 3 ARE SET ALONG THE LOCAL TANGENT TO EACH GIRDER LINE.
2. THE PIER AND ABUTMENT SEAT ELEVATIONS ARE BASED ON BEARING HEIGHTS PROVIDED IN THE TABLE. IF THE CONTRACTOR'S SELECTED BEARING MANUFACTURER HAS A DESIGN THAT DOES NOT CONFORM TO THE HEIGHTS PROVIDED IN THE TABLE, ADJUST THE BEARING SEAT ELEVATIONS AT NO ADDITIONAL COST TO THE STATE. ADJUST THE LOCATION OF REINFORCING STEEL HORIZONTALLY AS NECESSARY TO AVOID INTERFERENCE WITH THE BEARING ANCHOR BOLTS. MAINTAIN THE MINIMUM CONCRETE COVER AND MINIMUM SPACING REQUIRED BY THE PROJECT PLANS. IF THE REINFORCING STEEL CANNOT BE MOVED TO PROVIDE THE REQUIRED POSITION FOR THE ANCHOR BOLTS, THE CONTRACTOR'S BEARING MANUFACTURER SHALL REDESIGN THE BEARINGS TO ACCOMMODATE AN ACCEPTABLE ANCHOR BOLT CONFIGURATION. THE BEARING MANUFACTURER SHALL BE RESPONSIBLE FOR DESIGNING ANCHOR BOLTS.
3. ANCHOR FOR BEARINGS SHALL BE SET BY USE OF A STEEL TEMPLATE WITH A MINIMUM THICKNESS OF 1/4 INCH.
4. PTFE SLIDING SURFACES SHALL BE UNFILLED OR WOVEN.
5. ROTATIONS INCLUDE FABRICATION/CONSTRUCTION TOLERANCE OF 0.02 RADIANS.
6. THE ASSUMED BEARING HEIGHT IS THE DISTANCE FROM THE BOTTOM OF THE GIRDER FLANGE TO THE SUBSTRUCTURE SEAT ELEVATION.
7. BEARING TYPES ARE AS FOLLOWS:
   TYPE I = GUIDED EXPANSION
   TYPE II = FIXED
8. LONGITUDINAL MOVEMENTS ARE ONE-WAY AND ARE FACTORED.
9. FOR ADDITIONAL NOTES, SEE ITEM 513 - STRUCTURAL STEEL MEMBERS, SPECIALIZED MULTI-ROTATIONAL BEARING (SMR), LEVEL UF, AS PER PLAN, ON SHEET 4B12-5.



BEARING ORIENTATION DETAIL

* DIRECTION OF MOVEMENT FOR GUIDED EXPANSION BEARINGS

GIRDER	BEARING ORIENTATION ANGLE θ					
	REAR ABUT.	PIER 1	PIER 2	PIER 3	PIER 4	FWD. ABUT.
1	69°52'28"	75°14'13"	81°52'59"	90°00'00"	82°23'42"	76°36'36"
2	69°52'28"	75°14'13"	81°52'59"	90°00'00"	82°23'42"	76°32'01"
3	69°52'28"	75°14'13"	81°52'59"	90°00'00"	82°23'42"	76°27'52"
4	69°52'28"	75°14'13"	81°52'59"	90°00'00"	82°23'42"	76°24'58"
5	69°52'28"	75°14'13"	81°52'59"	90°00'00"	82°23'42"	76°20'33"



BEARING ORIENTATION PLAN

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge, the Choice
1301 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN DJC | CHECKED MAB | REVIEWED RER | DATE 11/08/11 | REVISED | STRUCTURE FILE NUMBER 2506444

BEARING DETAILS
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-25

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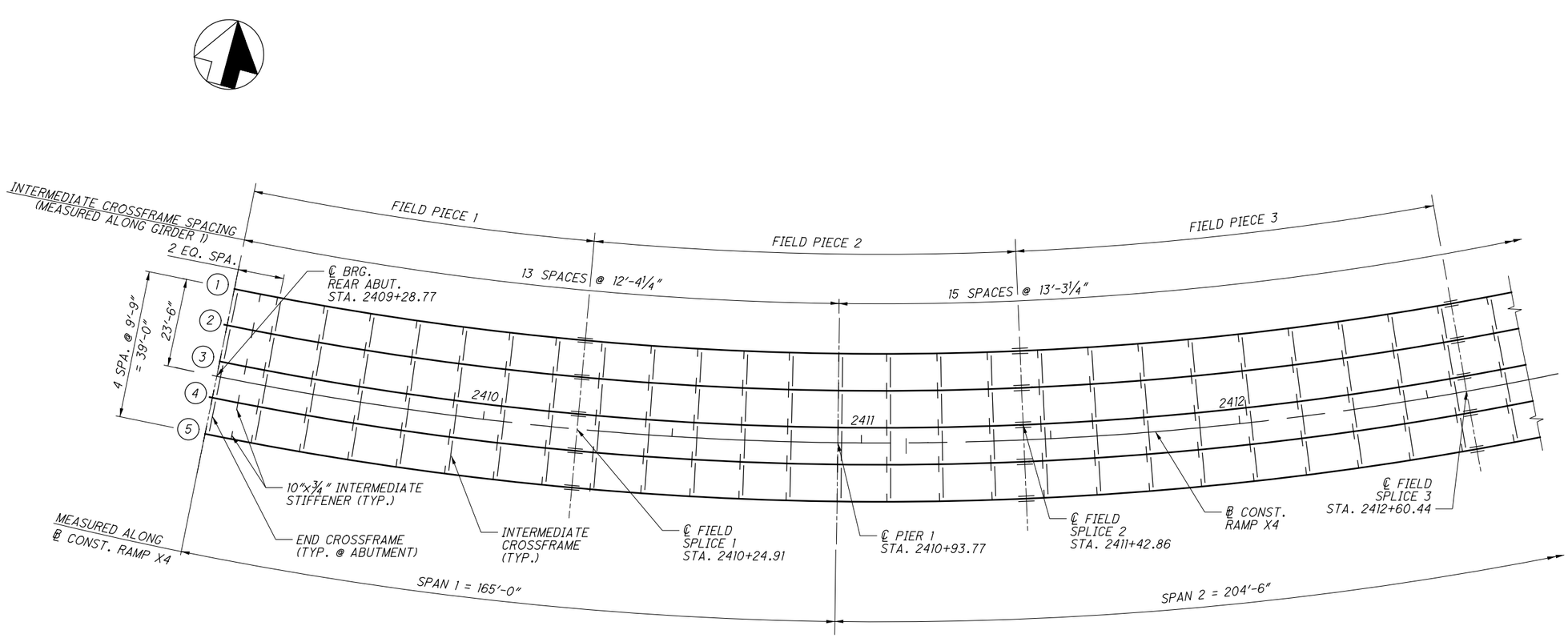

GIRDER FRAMING PLAN - FIELD PIECES 1 THRU 3

CURVED GIRDER RADIUS TABLE					
LOCATION	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BEGIN BRIDGE TO STA. 2417+94.02	857.97'	867.72'	877.47'	887.22'	896.97'
STA. 2417+94.02 TO END OF BRIDGE	857.97'	899.96'	941.95'	983.94'	1025.93'

NOTES:

1. FOR GIRDER ELEVATION AND WELDED STUD SHEAR CONNECTION DETAIL SEE SHEETS 4B12-29 THRU 4B12-31.
2. FOR FIELD SPLICE DETAILS, SEE SHEETS 4B12-33 AND 4B12-34.
3. FOR INTERMEDIATE CROSSFRAME DETAILS, SEE SHEET 4B12-32.
4. FOR END CROSSFRAME DETAILS, SEE SHEET 4B12-32.
5. FOR TRANSVERSE SECTIONS, SEE SHEETS 4B12-43 AND 4B12-44.

△2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/07/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJE		2506444	

GIRDER FRAMING PLAN - FIELD PIECES 1 THRU 3
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-26

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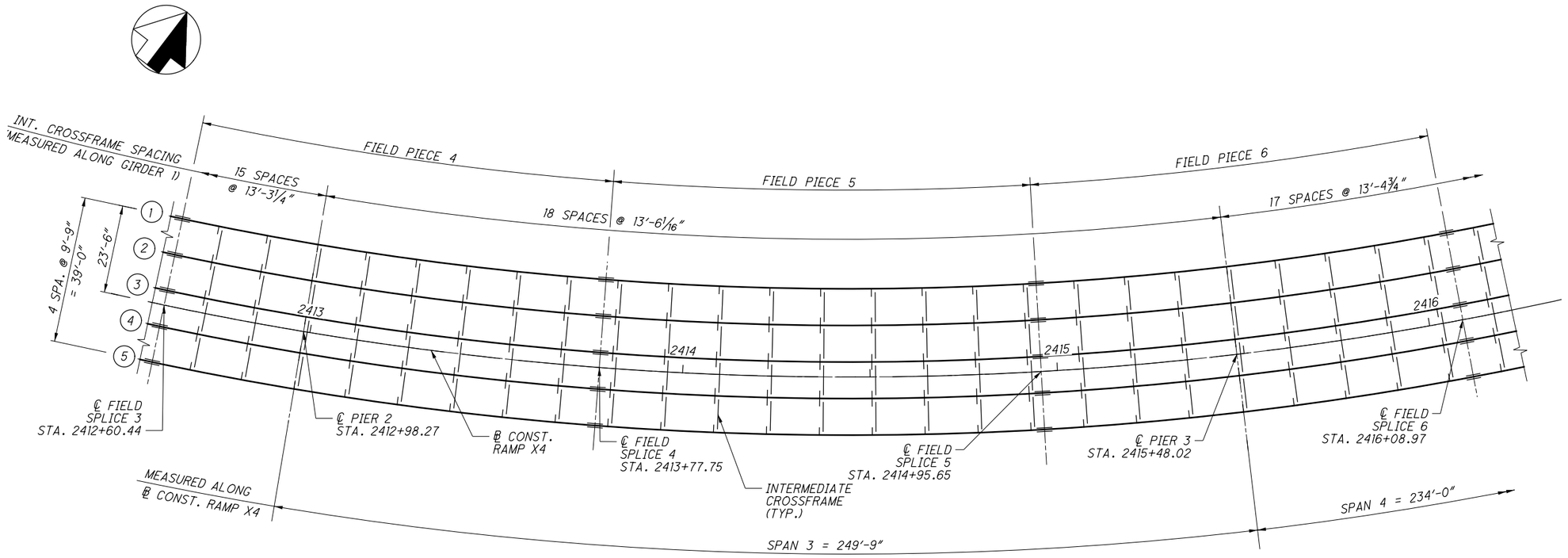

GIRDER FRAMING PLAN - FIELD PIECES 4 THRU 6

CURVED GIRDER RADIUS TABLE					
LOCATION	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BEGIN BRIDGE TO STA. 2417+94.02	857.97'	867.72'	877.47'	887.22'	896.97'
STA. 2417+94.02 TO END OF BRIDGE	857.97'	899.96'	941.95'	983.94'	1025.93'

NOTES:

1. FOR GIRDER ELEVATION AND WELDED STUD SHEAR CONNECTION DETAIL SEE SHEETS 4B12-29 THRU 4B12-31.
2. FOR FIELD SPLICE DETAILS, SEE SHEETS 4B12-33 AND 4B12-34.
3. FOR INTERMEDIATE CROSSFRAME DETAILS, SEE SHEET 4B12-32.
4. FOR END CROSSFRAME DETAILS, SEE SHEET 4B12-32.
5. FOR TRANSVERSE SECTIONS, SEE SHEETS 4B12-43 AND 4B12-44.

△2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge to be Your Choice
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/07/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJE		2506444	

GIRDER FRAMING PLAN - FIELD PIECES 4 THRU 6
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-27

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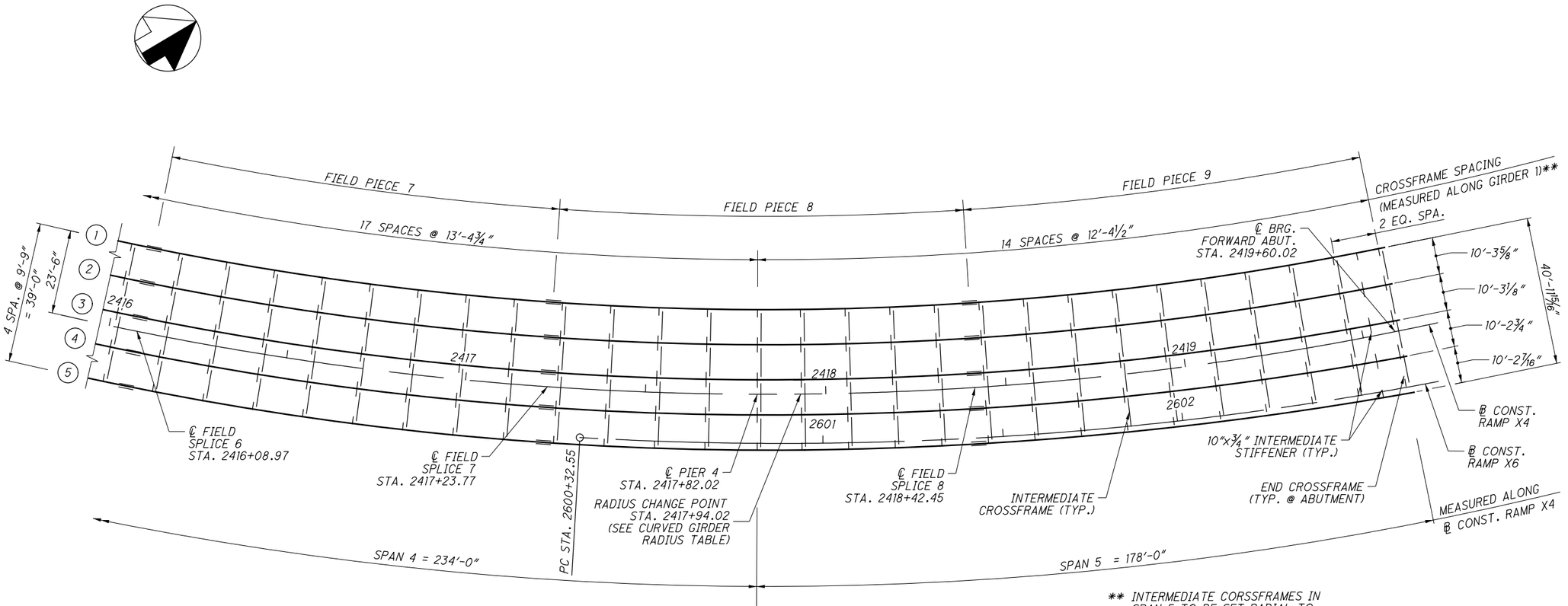

GIRDER FRAMING PLAN - FIELD PIECES 7 THRU 9

** INTERMEDIATE CORSSFRAMES IN SPAN 5 TO BE SET RADIAL TO GIRDER 1.

CURVED GIRDER RADIUS TABLE					
LOCATION	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
BEGIN BRIDGE TO STA. 2417+94.02	857.97'	867.72'	877.47'	887.22'	896.97'
STA. 2417+94.02 TO END OF BRIDGE	857.97'	899.96'	941.95'	983.94'	1025.93'

NOTES:

1. FOR GIRDER ELEVATION AND WELDED STUD SHEAR CONNECTION DETAIL SEE SHEETS 4B12-29 THRU 4B12-31.
2. FOR FIELD SPLICE DETAILS, SEE SHEETS 4B12-33 AND 4B12-34.
3. FOR INTERMEDIATE CROSSFRAME DETAILS, SEE SHEET 4B12-32.
4. FOR END CROSSFRAME DETAILS, SEE SHEET 4B12-32.
5. FOR TRANSVERSE SECTIONS, SEE SHEETS 4B12-43 AND 4B12-44.

△2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
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1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/07/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJE		2506444	

GIRDER FRAMING PLAN - FIELD PIECES 7 THRU 9
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-28

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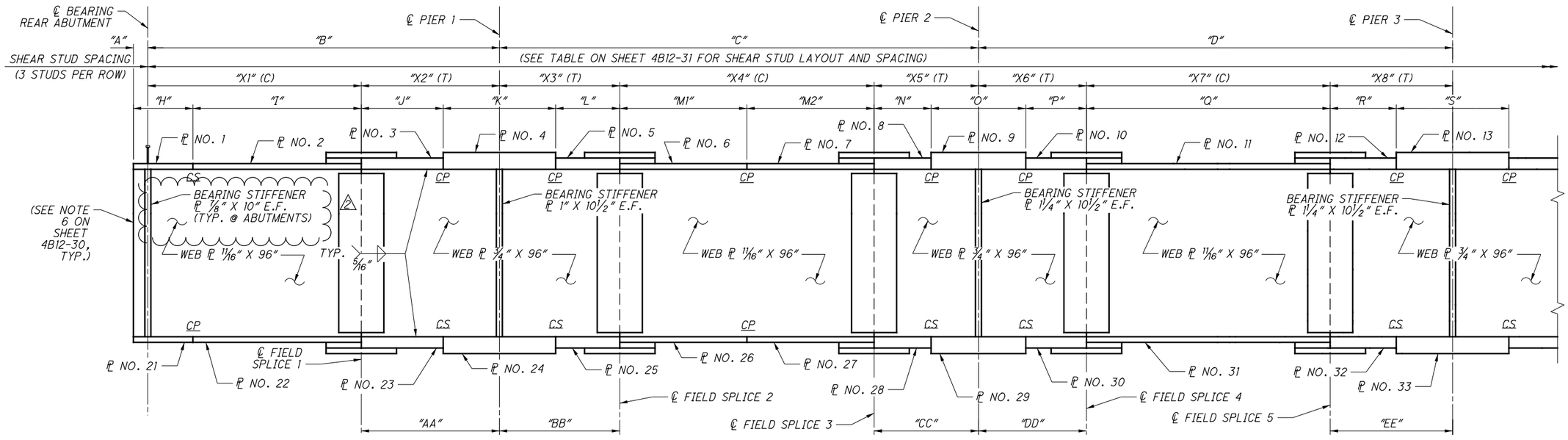
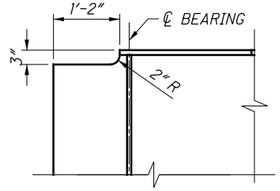


TYPICAL PART GIRDER ELEVATION



GIRDER COPING DETAIL

(FOR MODULAR JOINT INSTALLATION: PROVIDE AT BOTH ENDS OF GIRDERS 1 THRU 5)

LEGEND:

(T) - DENOTES AREA OF TENSION IN THE TOP FLANGE. THE BOTTOM FLANGE IN THESE AREAS IS IN COMPRESSION.

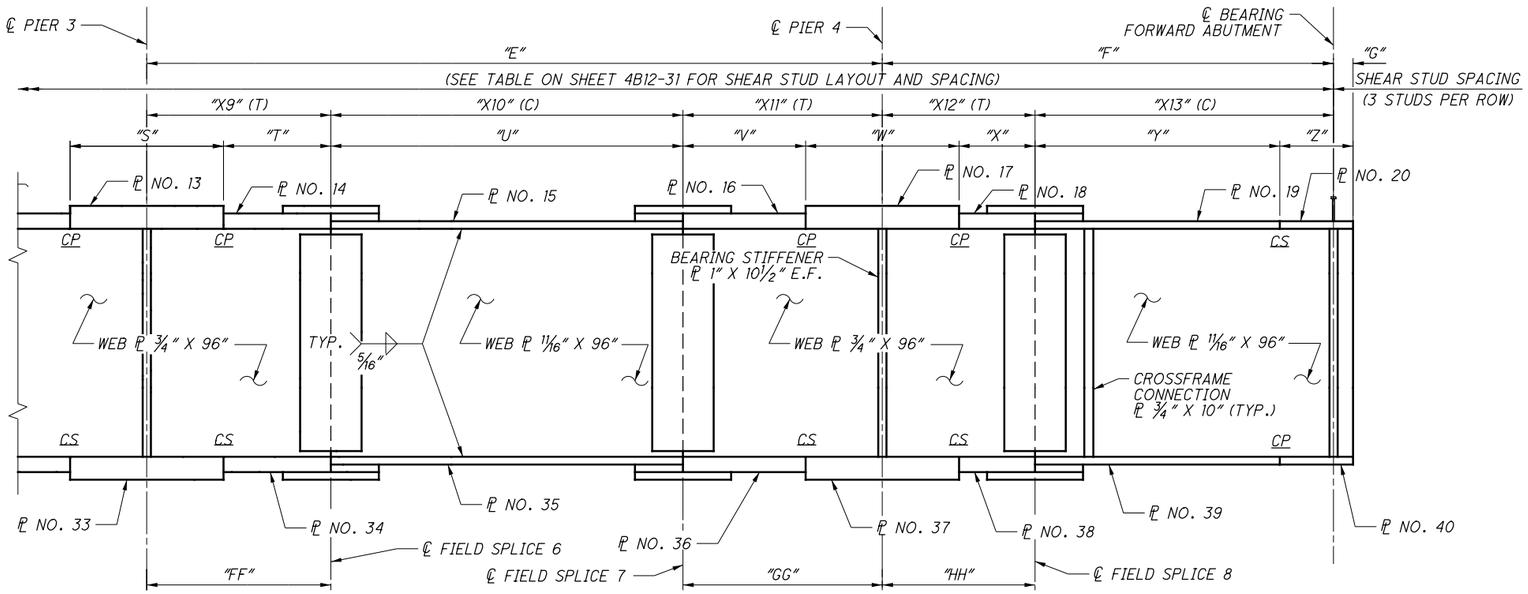
(C) - DENOTES AREA OF COMPRESSION IN THE TOP FLANGE. THE BOTTOM FLANGE IN THESE AREAS IS IN TENSION.

CS - INDICATES BUTT WELD SUBJECT TO COMPRESSIVE STRESS ONLY.

CP - INDICATES COMPLETE JOINT PENETRATION WELD.

NOTES:

1. FOR NOTES & TABULAR DATA, SEE SHEETS 4B12-30 AND 4B12-31.
2. FOR WELDED SHEAR STUD CONNECTION DETAIL, SEE SHEET 4B12-31.
3. FOR BOLTED FIELD SPLICE DETAILS, SEE SHEETS 4B12-33 AND 4B12-34.



TYPICAL PART GIRDER ELEVATION

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	1/23/12	NDC 008
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	08/25/11	INTERIM SUBMITTAL
ISSUE RECORD		

E.L. ROBINSON
the Challenge to be Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	MTS	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJE	JDH	2506444	

GIRDER ELEVATION
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-29

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2744

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TABLE OF DIMENSIONS

DIMENSION	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
"A"	1'-4"	1'-4"	1'-4"	1'-4"	1'-4"
"B"	160'-7 3/16"	162'-5 1/8"	164'-3"	166'-0 15/16"	167'-10 13/16"
"C"	199'-0 9/16"	201'-3 3/4"	203'-6 7/8"	205'-10"	208'-1 1/8"
"D"	243'-1 1/8"	245'-10 1/4"	248'-7 3/8"	251'-4 9/16"	254'-1 11/16"
"E"	227'-9 1/8"	230'-4 3/16"	232'-11 1/4"	235'-6 5/16"	238'-1 3/8"
"F"	173'-3 1/16"	175'-3 1/8"	177'-3 3/16"	179'-3 3/16"	181'-3 1/4"
"G"	1'-4"	1'-4"	1'-4"	1'-4"	1'-4"
"H"	41'-11 13/16"	42'-5 3/8"	42'-10 15/16"	43'-4 7/16"	43'-10"
"I"	52'-11 1/16"	53'-6 1/4"	54'-1 1/2"	54'-8 11/16"	55'-3 15/16"
"J"	43'-1 3/8"	43'-7 1/4"	44'-1 1/8"	44'-7"	45'-0 7/8"
"K"	47'-9 7/8"	48'-4 7/16"	48'-10 15/16"	49'-5 1/2"	50'-0"
"L"	23'-10 5/16"	24'-1 9/16"	24'-4 13/16"	24'-8 1/16"	24'-11 5/16"
"M1"	57'-2 3/4"	57'-10 9/16"	58'-6 3/8"	59'-2 3/16"	59'-9 15/16"
"M2"	57'-2 3/4"	57'-10 9/16"	58'-6 3/8"	59'-2 3/16"	59'-9 15/16"
"N"	16'-8 13/16"	16'-11 1/16"	17'-1 3/8"	17'-3 5/8"	17'-5 15/16"
"O"	47'-9 7/8"	48'-4 7/16"	48'-10 15/16"	49'-5 1/2"	50'-0"
"P"	49'-7 7/16"	50'-2 3/16"	50'-8 15/16"	51'-3 3/4"	51'-10 1/2"
"Q"	114'-9 1/16"	116'-0 11/16"	117'-4 5/16"	118'-8"	119'-11 5/8"
"R"	26'-1 5/16"	26'-4 7/8"	26'-8 7/16"	27'-0"	27'-3 9/16"
"S"	46'-10 7/16"	47'-4 13/16"	47'-11 3/16"	48'-5 5/8"	49'-0"
"T"	37'-3 13/16"	37'-8 7/8"	38'-2"	38'-7 1/16"	39'-0 3/16"
"U"	111'-8 15/16"	113'-0 3/16"	114'-3 7/16"	115'-6 11/16"	116'-9 7/8"
"V"	31'-9 15/16"	32'-2 1/4"	32'-6 5/8"	32'-10 15/16"	33'-3 5/16"
"W"	46'-10 7/16"	47'-4 13/16"	47'-11 3/16"	48'-5 5/8"	49'-0"
"X"	36'-9 3/4"	37'-2 13/16"	37'-7 13/16"	38'-0 13/16"	38'-5 7/8"
"Y"	80'-11 9/16"	81'-10 13/16"	82'-10 1/16"	83'-9 5/16"	84'-8 9/16"
"Z"	34'-9 3/4"	35'-2 1/2"	35'-7 5/16"	36'-0"	36'-4 13/16"

TABLE OF PLATE SIZES

TOP FLANGE

PLATE	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
NO. 1	22" X 1"	22" X 1"	22" X 1"	22" X 1"	22" X 1 1/4"
NO. 2	22" X 1"	22" X 1"	22" X 1"	22" X 1"	22" X 1 1/4"
NO. 3	22" X 1"	22" X 1"	22" X 1"	22" X 1 1/4"	22" X 1 1/2"
NO. 4	22" X 1 1/4"	22" X 1 1/4"	22" X 1 1/4"	22" X 1 5/8"	22" X 2"
NO. 5	22" X 1"	22" X 1"	22" X 1"	22" X 1 1/4"	22" X 1 1/2"
NO. 6	22" X 1"	22" X 1"	22" X 1"	22" X 1"	22" X 1"
NO. 7	22" X 1"	22" X 1"	22" X 1"	22" X 1"	22" X 1 1/2"
NO. 8	22" X 1 1/4"	22" X 1 1/4"	22" X 1 1/4"	22" X 1 1/2"	22" X 1 3/4"
NO. 9	22" X 2 1/2"	22" X 2 1/2"	22" X 2 1/2"	22" X 2 3/4"	22" X 2 3/4"
NO. 10	22" X 1 1/4"	22" X 1 1/4"	22" X 1 1/4"	22" X 1 1/2"	22" X 1 1/2"
NO. 11	22" X 1"	22" X 1"	22" X 1"	22" X 1"	22" X 1 1/8"
NO. 12	22" X 1 1/2"	22" X 1 1/2"	22" X 1 1/2"	22" X 1 1/2"	22" X 2"
NO. 13	22" X 2 3/4"	22" X 2 3/4"	22" X 2 3/4"	22" X 3"	22" X 3 1/2"
NO. 14	22" X 1 1/2"	22" X 1 1/2"	22" X 1 1/2"	22" X 1 1/2"	22" X 2"
NO. 15	22" X 1"	22" X 1"	22" X 1"	22" X 1"	22" X 1"
NO. 16	22" X 1 1/4"	22" X 1 1/4"	22" X 1 1/4"	22" X 1 3/8"	22" X 1 1/2"
NO. 17	22" X 2"	22" X 2"	22" X 2"	22" X 2 1/4"	22" X 2 1/2"
NO. 18	22" X 1 1/4"	22" X 1 1/4"	22" X 1 1/4"	22" X 1 3/8"	22" X 1 1/2"
NO. 19	22" X 1"	22" X 1"	22" X 1"	22" X 1"	22" X 1"
NO. 20	22" X 1"	22" X 1"	22" X 1"	22" X 1"	22" X 1"

TABLE OF PLATE SIZES

BOTTOM FLANGE

PLATE	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
NO. 21	20" X 7/8"	20" X 7/8"	20" X 7/8"	20" X 7/8"	24" X 1"
NO. 22	20" X 7/8"	20" X 7/8"	20" X 7/8"	20" X 7/8"	24" X 1 1/8"
NO. 23	24" X 1"	24" X 1"	24" X 1"	24" X 1 1/8"	24" X 1 1/2"
NO. 24	24" X 1 3/8"	24" X 1 3/8"	24" X 1 3/8"	24" X 1 1/2"	24" X 1 3/4"
NO. 25	24" X 1"	24" X 1"	24" X 1"	24" X 1 1/4"	24" X 1 1/4"
NO. 26	20" X 7/8"	20" X 7/8"	20" X 7/8"	20" X 7/8"	24" X 1"
NO. 27	20" X 7/8"	20" X 7/8"	20" X 7/8"	20" X 7/8"	24" X 1 1/2"
NO. 28	24" X 1 1/2"	24" X 1 1/2"	24" X 1 1/2"	24" X 2"	24" X 2 1/4"
NO. 29	24" X 2 1/8"	24" X 2 1/8"	24" X 2 1/8"	24" X 3"	24" X 3"
NO. 30	24" X 1 1/2"	24" X 1 1/2"	24" X 1 1/2"	24" X 1 3/4"	24" X 1 3/4"
NO. 31	20" X 7/8"	20" X 7/8"	20" X 7/8"	20" X 1 1/8"	24" X 1 7/8"
NO. 32	24" X 1 3/8"	24" X 1 3/8"	24" X 1 3/8"	24" X 1 3/4"	24" X 2 1/2"
NO. 33	24" X 2 1/2"	24" X 2 1/4"	24" X 2 1/4"	24" X 3"	24" X 3 1/2"
NO. 34	24" X 1 3/8"	24" X 1 3/8"	24" X 1 3/8"	24" X 1 3/4"	24" X 2"
NO. 35	20" X 7/8"	20" X 7/8"	20" X 7/8"	20" X 7/8"	24" X 1"
NO. 36	24" X 1 1/4"	24" X 1 1/8"	24" X 1 1/8"	24" X 1 1/2"	24" X 1 3/4"
NO. 37	24" X 2"	24" X 1 5/8"	24" X 1 5/8"	24" X 2"	24" X 2 3/4"
NO. 38	24" X 1 1/4"	24" X 1 1/8"	24" X 1 1/8"	24" X 1 1/2"	24" X 2"
NO. 39	20" X 7/8"	20" X 7/8"	20" X 7/8"	20" X 7/8"	24" X 1 1/2"
NO. 40	20" X 7/8"	20" X 7/8"	20" X 7/8"	20" X 7/8"	24" X 1"

NOTES:

1. ALL DIMENSIONS ARE SHOWN HORIZONTAL.
2. ALL STRUCTURAL STEEL SHALL BE ASTM A709 GRADE 50, YIELD STRENGTH 50,000 PSI, UNLESS NOTED OTHERWISE.
3. ALL FLANGE AND WEB PLATES, INCLUDING FIELD SPLICE PLATES, INTERMEDIATE STIFFENERS, BEARING STIFFENERS, CROSSFRAME MEMBERS, AND CROSSFRAME CONNECTION PLATES SHALL BE DESIGNATED (CVN).
4. WHERE A SHAPE OR PLATE IS DESIGNATED (CVN), FURNISH MATERIAL THAT MEETS THE MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
5. PLATES MAY BE SHOP SPLICED AS REQUIRED BY AVAILABLE PLATE LENGTH. THE LOCATION OF SHOP SPLICES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING OF MATERIAL.
6. WELD ATTACHMENTS OF SUPPORTS FOR CONCRETE FINISHING MACHINE TO AREAS OF THE FASCIA GIRDER FLANGES DESIGNATED "COMPRESSION (C)". DO NOT WELD ATTACHMENTS TO AREAS DESIGNATED "TENSION (T)". FILLET WELDS TO COMPRESSION FLANGES SHALL BE AT LEAST 1" FROM EDGE OF FLANGE, BE NO MORE THAN 2" LONG, AND BE AT LEAST 1/4" FOR THICKNESS UP TO 3/4" OR 5/16" FOR GREATER THAN 3/4" THICK.
7. BUTT WELDS AT SHOP SPLICES SHALL BE COMPLETE PENETRATION WELDS (CP). WELD REINFORCEMENT SHALL BE REMOVED BY GRINDING IN THE DIRECTION OF THE MAIN STRESSES.
8. FABRICATE THE GIRDER ENDS TO BE VERTICAL AFTER ERECTION. A 3" MINIMUM CLEARANCE @ 60° F SHALL BE MAINTAINED BETWEEN THE VERTICAL ENDS OF THE GIRDERS AND THE VERTICAL FACE OF THE BACKWALL.
9. BEARING STIFFENERS SHALL BE VERTICAL UNDER FULL DEAD LOAD. ALL INTERMEDIATE STIFFENERS, INTERMEDIATE CROSSFRAMES, AND FIELD SPLICES MAY BE NORMAL TO GRADE.
10. FOR CROSSFRAME DETAILS, SEE SHEET 4B12-32A.
11. FOR FIELD SPLICE DETAILS, SEE SHEETS 4B12-33 AND 4B12-34.
12. FOR BEARING DETAILS, SEE SHEET 4B12-25.
13. FOR CAMBER AND DEFLECTIONS, SEE SHEETS 4B12-35 THRU 4B12-37.
14. FOR GIRDER ELEVATION, SEE SHEET 4B12-29.
15. FOR FRAMING PLANS, SEE SHEET 4B12-26 THRU 4B12-28.
16. FOR WELDED STUD SHEAR CONNECTION DETAIL AND ADDITIONAL TABLES, SEE SHEET 4B12-31.
17. WELDED STUD SHEAR CONNECTORS COINCIDING WITH FIELD SPLICE BOLTS SHALL BE REPOSITIONED TO A LOCATION MIDWAY BETWEEN BOLT LOCATIONS. STUD SHEAR CONNECTORS COINCIDING WITH WELDED SHOP SPLICES SHALL BE REPOSITIONED TO CLEAR SPLICE LOCATIONS BY 6 INCHES.
18. STRUCTURAL STEEL SHALL BE DETAILED TO FIT UP WITH WEBS IN THE PLUMB POSITION.

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	08/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to a Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

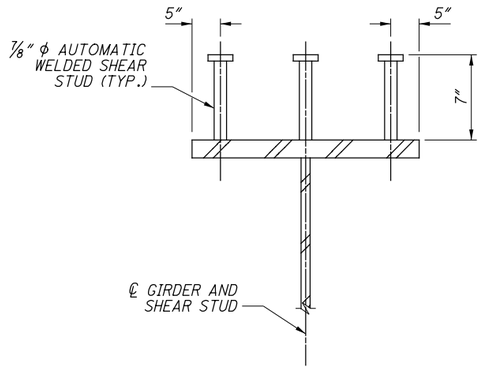
DESIGNED	DRAWN	REVIEWED	DATE
JDH	MTS	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJE		25604444	

GIRDER ELEVATION TABLES (1 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-30

2595
2744



WELDED SHEAR STUD CONNECTION DETAIL

TABLE OF TENSION (T) AND COMPRESSION (C) AREAS					
DIMENSION	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
"X1"	105' - 5 5/8"	106' - 5 3/4"	109' - 1 5/16"	107' - 8 3/8"	105' - 7 3/16"
"X2"	55' - 1 9/16"	55' - 11 3/8"	55' - 1 11/16"	58' - 4 9/16"	62' - 3 5/8"
"X3"	55' - 4 11/16"	60' - 3 3/8"	62' - 7 11/16"	74' - 9 5/8"	104' - 0 9/16"
"X4"	68' - 3 13/16"	61' - 2 1/2"	55' - 0 3/8"	29' - 4 9/16"	0' - 0"
"X5"	75' - 4"	79' - 9 13/16"	85' - 10 13/16"	101' - 7 13/16"	104' - 0 9/16"
"X6"	67' - 11 7/16"	67' - 3"	65' - 6 13/16"	67' - 7 9/16"	70' - 0 5/16"
"X7"	102' - 11 3/4"	105' - 7 13/16"	110' - 7 13/16"	106' - 8 3/8"	101' - 5 5/8"
"X8"	72' - 1 15/16"	72' - 11 7/16"	72' - 4 3/4"	77' - 0 5/8"	82' - 7 3/4"
"X9"	75' - 6 15/16"	80' - 7 7/8"	84' - 4 15/16"	94' - 2 3/8"	106' - 5 11/16"
"X10"	87' - 1 13/16"	83' - 11 1/4"	82' - 2 1/4"	67' - 9 3/4"	49' - 4 7/16"
"X11"	65' - 0 3/8"	65' - 9 1/16"	66' - 4"	73' - 6 3/16"	82' - 3 1/4"
"X12"	67' - 7 5/16"	67' - 5 15/16"	67' - 5 15/16"	73' - 3 7/8"	78' - 11 1/2"
"X13"	105' - 7 13/16"	107' - 9 1/4"	109' - 9 5/16"	105' - 11 5/16"	102' - 3 3/4"

FIELD SPLICE LOCATION TABLE					
DIMENSION	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
"AA"	67'-0 5/16"	67'-9 1/2"	68'-6 9/16"	69'-3 3/4"	70'-0 7/8"
"BB"	47'-9 1/4"	48'-3 3/4"	48'-10 5/16"	49'-4 13/16"	49'-11 5/16"
"CC"	36'-9 13/16"	37'-2 13/16"	37'-7 7/8"	38'-0 15/16"	38'-5 15/16"
"DD"	77'-4 5/16"	78'-2 7/8"	79'-1 3/8"	79'-11 15/16"	80'-10 1/2"
"EE"	50'-11 3/4"	51'-6 11/16"	52'-1 5/8"	52'-8 5/8"	53'-3 9/16"
"FF"	59'-3 13/16"	59'-11 15/16"	60'-8"	61'-4 1/16"	62'-0 3/16"
"GG"	56'-8 3/8"	57'-4 1/8"	57'-11 13/16"	58'-7 9/16"	59'-3 5/16"
"HH"	58'-9 3/4"	59'-5 13/16"	60'-1 13/16"	60'-9 13/16"	61'-5 7/8"

TABLE OF SHEAR STUD SPACING					
DIMENSION	GIRDER 1	GIRDER 2	GIRDER 3	GIRDER 4	GIRDER 5
SPACING 1	23 SPACES @ 1'-5" = 32'-7"	103 SPACES @ 1'-7" = 163'-1"	24 SPACES @ 1'-5" = 34'-0"	34 SPACES @ 1'-6" = 51'-0"	31 SPACES @ 1'-1" = 33'-7"
SPACING 2	54 SPACES @ 1'-9" = 94'-6"	83 SPACES @ 1'8" = 138'-4"	69 SPACES @ 1'-7" = 109'-3"	59 SPACES @ 1'-8" = 98'-4"	28 SPACES @ 1'-9" = 49'-0"
SPACING 3	22 SPACES @ 1'-6" = 33'-0"	26 SPACES @ 1'-7" = 41'-2"	45 SPACES @ 1'-4" = 60'-0"	28 SPACES @ 1'-4" = 37'-4"	34 SPACES @ 1'-6" = 51'-0"
SPACING 4	84 SPACES @ 1'-8" = 140'-0"	44 SPACES @ 1'8" = 73'-4"	61 SPACES @ 1'-8" = 101'-8"	111 SPACES @ 1'-8" = 185'-0"	70 SPACES @ 1'-1" = 75'-10"
SPACING 5	34 SPACES @ 1'-2" = 39'-8"	65 SPACES @ 1'-10" = 119'-2"	59 SPACES @ 1'-6" = 88'-6"	34 SPACES @ 1'-6" = 51'-0"	118 SPACES @ 1-5" = 167'-2"
SPACING 6	52 SPACES @ 1'-4" = 69'-4"	55 SPACES @ 1'-9" = 96'-3"	88 SPACES @ 1'-8" = 146'-8"	68 SPACES @ 1'-10" = 124'-8"	81 SPACES @ 1'-3" = 101'-3"
SPACING 7	123 SPACES @ 1'-9" = 215'-3"	42 SPACES @ 1'-8" = 70'-0"	115 SPACES @ 1'-6" = 172'-6"	182 SPACES @ 1'-7" = 288'-2"	50 SPACES @ 1'-6" = 75'-0"
SPACING 8	72 SPACES @ 1'-7" = 114'-0"	48 SPACES @ 1'-10" = 88'-0"	25 SPACES @ 1'-9" = 43'-9"	30 SPACES @ 1'-5" = 42'-6"	130 SPACES @ 1'-4" = 173'-4"
SPACING 9	46 SPACES 1'-6" = 69'-0"	44 SPACES @ 1'-7" = 69'-8"	60 SPACES @ 1'-7" = 95'-0"	71 SPACES @ 1'-9" = 124'-3"	47 SPACES @ 1'-6" = 70'-6"
SPACING 10	46 SPACES @ 1'-3" = 57'-6"	69 SPACES @ 1'-9" = 120'-9"	26 SPACES @ 1'-4" = 34'-8"	26 SPACES @ 1'-4" = 34'-8"	92 SPACES @ 1'-2" = 107'-4"
SPACING 11	49 SPACES @ 1'-5" = 69'-5"	23 SPACES @ 1'-6" = 34'-6"	72 SPACES @ 1'-6" = 108'-0"	1 SPACE @ 1'-2" = 1'-2"	39 SPACES @ 1'-5" = 55'-3"
SPACING 12	22 SPACES @ 1'-6" = 33'-0"	1 SPACE @ 11 7/16" = 11 7/16"	24 SPACES @ 1'-4" = 32'-0"	N/A	33 SPACES @ 1'-7" = 52'-3"
SPACING 13	36 SPACES @ 1'-0" = 36'-0"	N/A	1 SPACE @ 7 11/16" = 7 11/16"	N/A	37 SPACES @ 1'-0" = 37'-0"
SPACING 14	1 SPACE @ 6 1/16" = 6 1/16"	N/A	N/A	N/A	1 SPACE @ 1'-0 1/4" = 1'-0 1/4"
TOTAL	664 SPACES = 1003'-9 1/16"	603 SPACES = 1015'-2 7/16"	669 SPACES = 1026'-7 11/16"	644 SPACES = 1038'-1"	791 SPACES = 1049'-6 1/4"

NOTES:

1. FOR ADDITIONAL GIRDER ELEVATION TABLES, SEE SHEET 4B12-30.
2. FOR GIRDER ELEVATION AND NOTES, SEE SHEET 4B12-29.

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	08/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN MTS | REVIEWED RER | DATE 11/08/11
CHECKED TJE | REVISED | STRUCTURE FILE NUMBER 2506444

GIRDER ELEVATION TABLES (2 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-31

2596
2744

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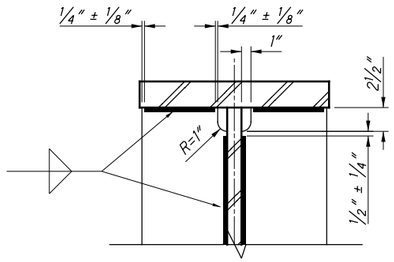
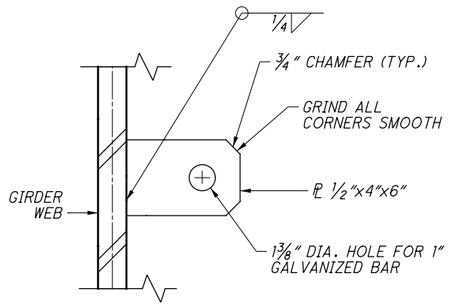
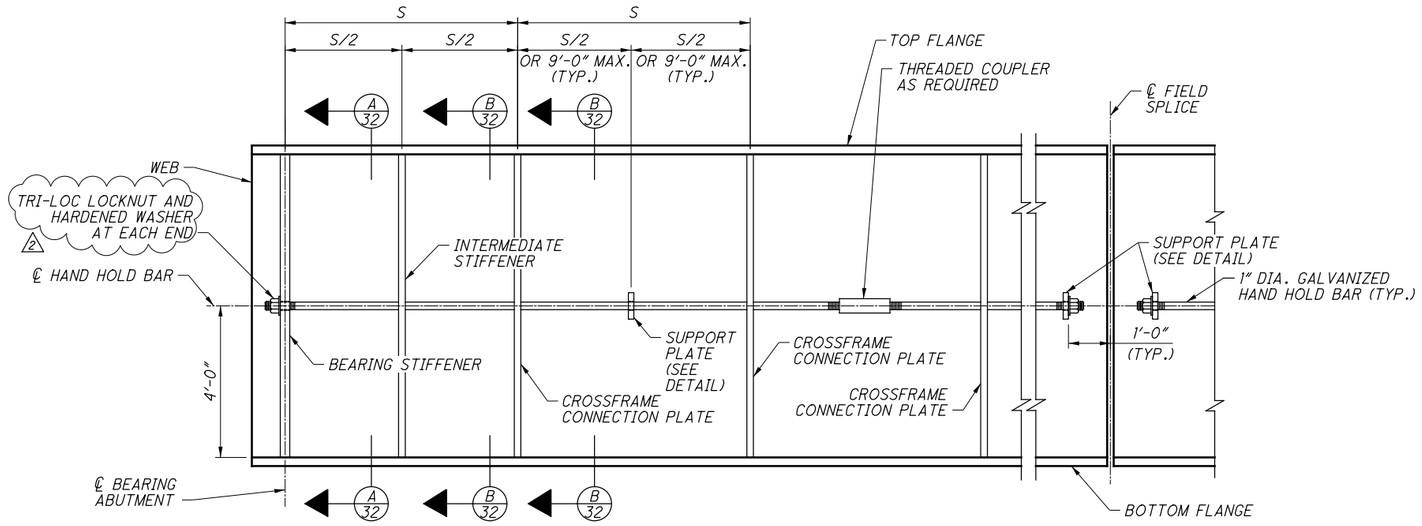


TYPICAL WELD AND CORNER CLIP DETAIL

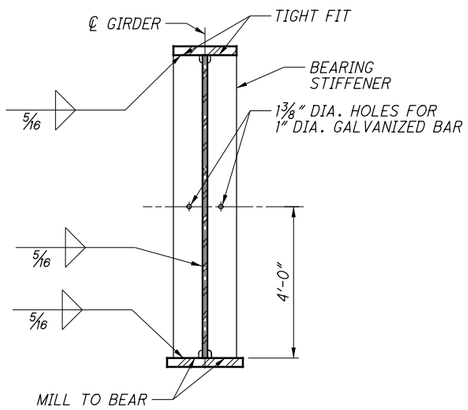


SUPPORT PLATE DETAIL



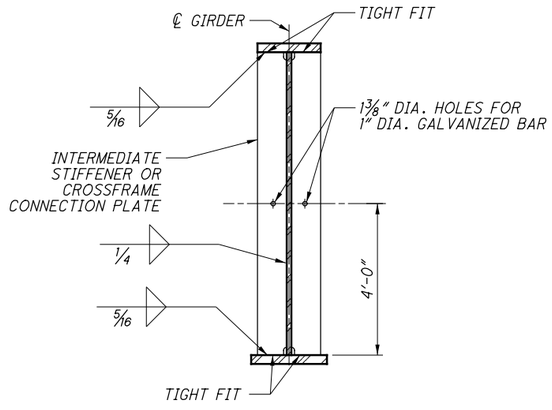
PARTIAL GIRDER ELEVATION (NTS)

(S = TYPICAL SPACING BETWEEN CROSSFRAME CONNECTION PLATES OR BETWEEN BEARING STIFFENERS AND CROSSFRAME CONNECTION PLATES)



SECTION A-A

(BEARING STIFFENER)



SECTION B-B

(INTERMEDIATE STIFFENER OR CROSSFRAME CONNECTION PLATE) (INTERIOR GIRDER SHOWN)

NOTES:

1. HAND HOLD BARS ARE REQUIRED ON BOTH FACES OF THE GIRDER WEB FOR THE INTERIOR GIRDERS AND ON THE INTERIOR FACE OF WEB FOR THE FASCIA GIRDERS.
2. EACH SECTION OF HAND HOLD BAR SHALL BE SUPPORTED IN A MINIMUM OF THREE (3) LOCATIONS.
3. THREAD ONLY THAT PORTION OF THE BAR REQUIRED FOR NUT PLACEMENT.
4. BURR THREADS AFTER SNUG TIGHTENING NUTS.
5. BARS, NUTS AND WASHERS SHALL BE GALVANIZED PER 711.02 AFTER FABRICATION.
6. GALVANIZED COATINGS DAMAGED IN THE SHOP SHALL BE REPAIRED PER ASTM A780 METHOD A3. GALVANIZED COATINGS DAMAGED IN THE FIELD SHALL BE REPAIRED PER ASTM A780 METHOD A1 AS DIRECTED BY THE ENGINEER.
7. FOR FRAMING PLAN, SEE SHEETS 4B12-26 THRU 4B12-28.
8. ALL INTERMEDIATE STIFFENERS AND CROSSFRAME CONNECTION PLATES SHALL BE DESIGNATED (CVN). FOR ADDITIONAL NOTES, SEE SHEET 4B12-30.

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	4/21/14	RFI 3
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	08/25/11	INTERIM SUBMITTAL
ISSUE RECORD		

E.L. ROBINSON
the Challenge to be Chosen
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN MTS | CHECKED TJE | REVIEWED RER | DATE 11/08/11 | REVISED | STRUCTURE FILE NUMBER 2506444

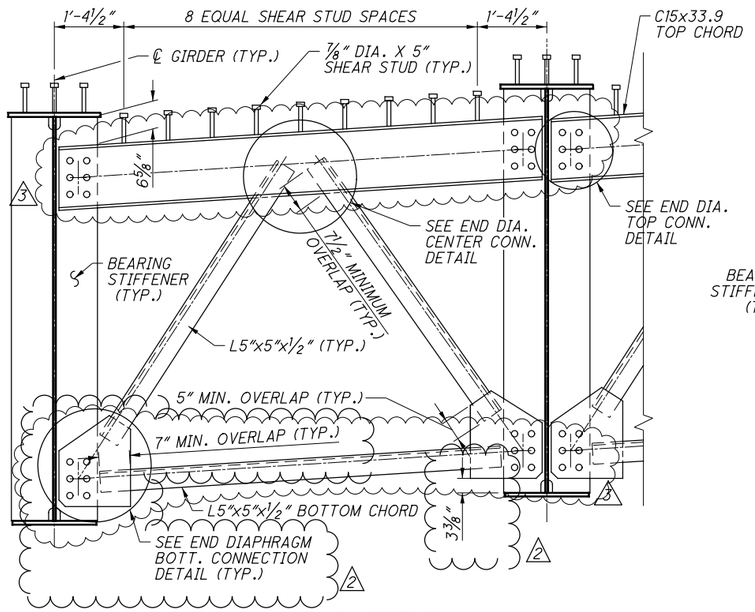
HAND HOLD ROD AND STIFFENER DETAILS

BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

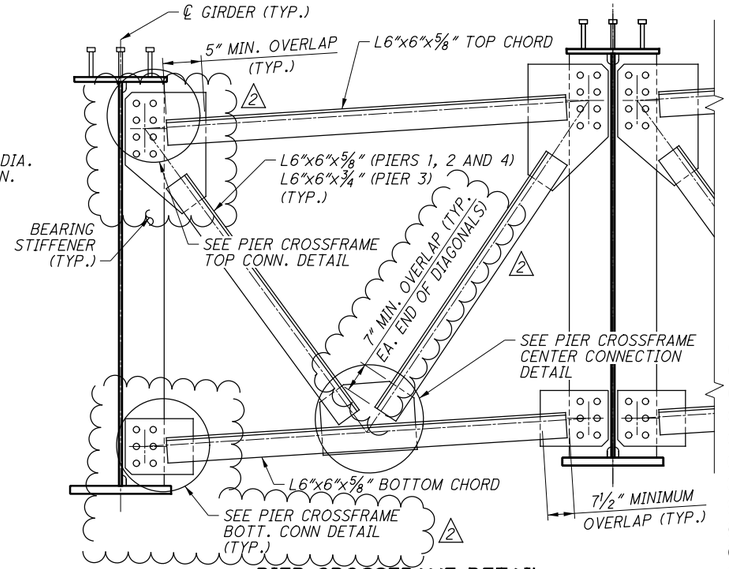
4B12-32

2597
2744



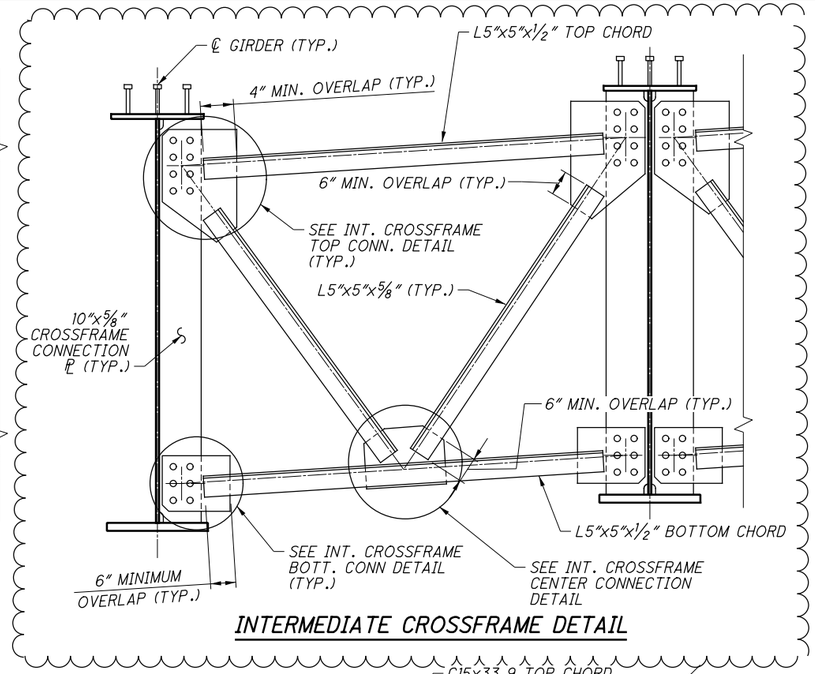
END DIAPHRAGM DETAIL

(TYP. AT ABUTMENTS)

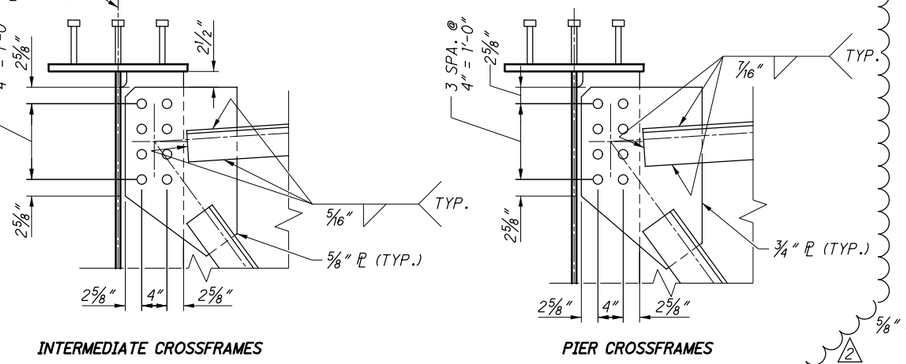


PIER CROSSFRAME DETAIL

(TYP. AT PIERS)



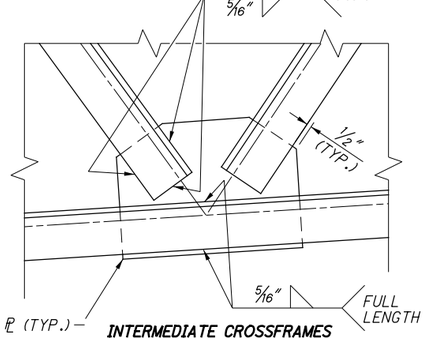
INTERMEDIATE CROSSFRAME DETAIL



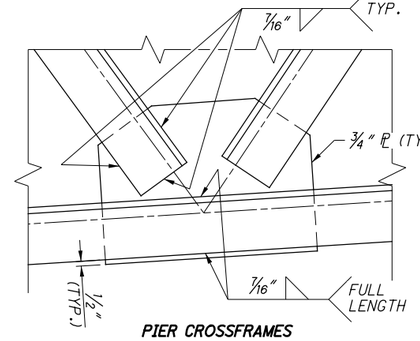
INTERMEDIATE CROSSFRAMES

PIER CROSSFRAMES

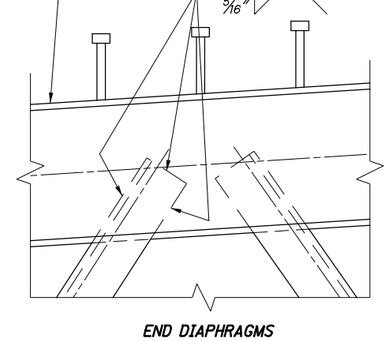
CROSSFRAME TOP CONNECTION DETAIL



INTERMEDIATE CROSSFRAMES

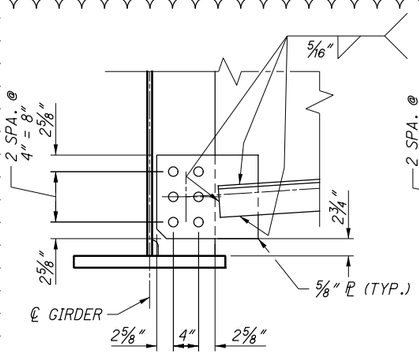


PIER CROSSFRAMES

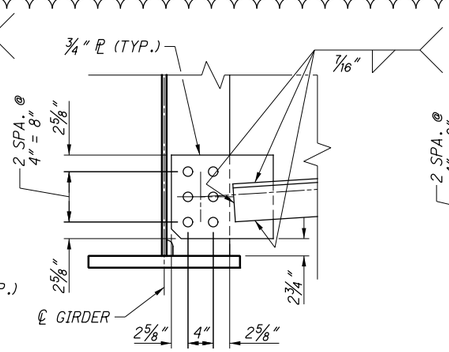


END DIAPHRAGMS

CROSSFRAME & END DIAPHRAGM CENTER CONNECTION DETAILS

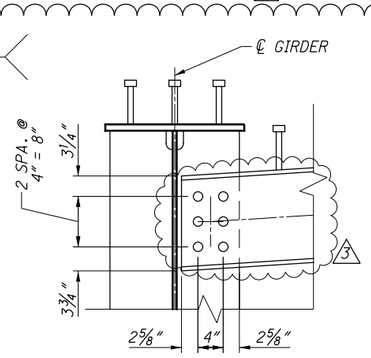


INTERMEDIATE CROSSFRAMES

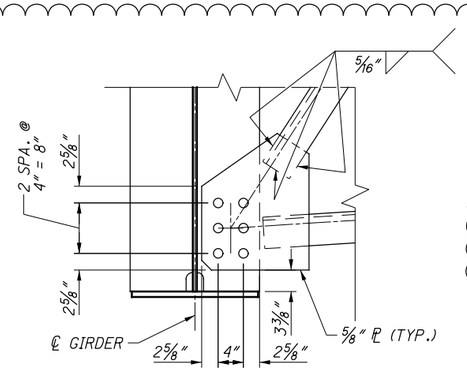


PIER CROSSFRAMES

CROSSFRAME BOTTOM CONNECTION DETAIL



END DIAPHRAGM TOP CONN. DETAIL



END DIAPHRAGM BOTTOM CONN. DETAIL

NOTES:

1. FOR STIFFENER DETAILS, SEE SHEET 4B12-32.
2. FOR FRAMING PLAN, SEE SHEETS 4B12-26 THRU 4B12-28.
3. ALL CROSSFRAME MEMBERS AND GUSSET PLATES SHALL BE GRADE ASTM A709 GRADE 50.
4. ALL BOLTS SHALL BE 1¼" DIAMETER A325 HIGH STRENGTH BOLTS AND SHALL BE GALVANIZED.
5. ALL CROSSFRAME MEMBERS, INCLUDING CONNECTION PLATES, GUSSET PLATES, ANGLES AND CHANNELS SHALL BE DESIGNATED (CVN). FOR ADDITIONAL NOTES, SEE SHEET 4B12-30. 2
6. ALIGN ALL SINGLE-ANGLE MEMBERS AND CHANNELS SUCH THAT THEIR NEUTRAL AXES ALIGN WITH THE CENTERS OF THE BOLT GROUPS.
7. OVERSIZED BOLT HOLES MAY BE USED. THE DIAMETER OF THE OVERSIZED HOLES MAY NOT EXCEED 1½".

4 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
4	5/08/14	RECORD DRAWINGS
3	4/24/12	NDC 022
2	1/23/12	NDC 008
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL
ISSUE RECORD		

E.L. ROBINSON
Engineering Co.
The Challenge Is a Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	ABC	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
KVB	JDH	2506444	

CROSSFRAME DETAILS
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB
I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-32A

2598
2744

TABLE OF BOLTED FIELD SPLICE DIMENSIONS - GIRDER 1

SPLICE NO.	TOP FLANGE SPLICE				WEB SPLICE		BOTTOM FLANGE SPLICE			
	OUTSIDE ℄	INSIDE ℄ (x2)	"A"	FILL ℄	WEB ℄ (x2)	"B"	OUTSIDE ℄	INSIDE ℄ (x2)	"C"	FILL ℄
1	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	NONE	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/8" X 20" X 1'-7"
2	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	NONE	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/8" X 20" X 1'-7"
3	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	5/8" X 20" X 1'-7"
4	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	5/8" X 20" X 1'-7"
5	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/2" X 20" X 1'-7"
6	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/2" X 20" X 1'-7"
7	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	3/8" X 20" X 1'-7"
8	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	3/8" X 20" X 1'-7"

TABLE OF BOLTED FIELD SPLICE DIMENSIONS - GIRDER 2

SPLICE NO.	TOP FLANGE SPLICE				WEB SPLICE		BOTTOM FLANGE SPLICE			
	OUTSIDE ℄	INSIDE ℄ (x2)	"A"	FILL ℄	WEB ℄ (x2)	"B"	OUTSIDE ℄	INSIDE ℄ (x2)	"C"	FILL ℄
1	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	NONE	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/8" X 20" X 1'-7"
2	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	NONE	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/8" X 20" X 1'-7"
3	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	5/8" X 20" X 1'-7"
4	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	5/8" X 20" X 1'-7"
5	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/2" X 20" X 1'-7"
6	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/2" X 20" X 1'-7"
7	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/4" X 20" X 1'-7"
8	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/4" X 20" X 1'-7"

TABLE OF BOLTED FIELD SPLICE DIMENSIONS - GIRDER 3

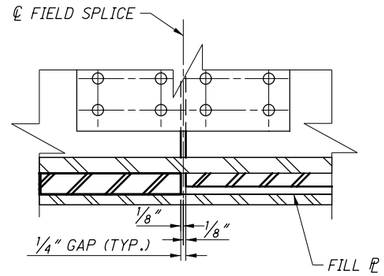
SPLICE NO.	TOP FLANGE SPLICE				WEB SPLICE		BOTTOM FLANGE SPLICE			
	OUTSIDE ℄	INSIDE ℄ (x2)	"A"	FILL ℄	WEB ℄ (x2)	"B"	OUTSIDE ℄	INSIDE ℄ (x2)	"C"	FILL ℄
1	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	NONE	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/8" X 20" X 1'-7"
2	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	NONE	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/8" X 20" X 1'-7"
3	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	5/8" X 20" X 1'-7"
4	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	5/8" X 20" X 1'-7"
5	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/2" X 20" X 1'-7"
6	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/2" X 20" X 1'-7"
7	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/4" X 20" X 1'-7"
8	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/4" X 20" X 1'-7"

TABLE OF BOLTED FIELD SPLICE DIMENSIONS - GIRDER 4

SPLICE NO.	TOP FLANGE SPLICE				WEB SPLICE		BOTTOM FLANGE SPLICE			
	OUTSIDE ℄	INSIDE ℄ (x2)	"A"	FILL ℄	WEB ℄ (x2)	"B"	OUTSIDE ℄	INSIDE ℄ (x2)	"C"	FILL ℄
1	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 26 1/4" X 7'-4"	3 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1/4" X 20" X 1'-7"
2	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	3/8" X 20" X 1'-7"
3	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	1/2" X 26 1/4" X 7'-4"	3 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	1 1/8" X 20" X 1'-7"
4	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 26 1/4" X 7'-4"	3 SPA. @ 3"	3/4" X 20" X 3'-2 1/4"	5/8" X 9" X 3'-2 1/4"	5 SPA. @ 3"	5/8" X 20" X 1'-7"
5	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 4'-2 1/4"	1/2" X 9" X 4'-2 1/4"	7 SPA. @ 3"	5/8" X 20" X 2'-1"
6	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	7/8" X 20" X 1'-7"
7	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	3/8" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	5/8" X 20" X 1'-7"
8	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	3/8" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 20" X 3'-2 1/4"	1/2" X 9" X 3'-2 1/4"	5 SPA. @ 3"	5/8" X 20" X 1'-7"

TABLE OF BOLTED FIELD SPLICE DIMENSIONS - GIRDER 5

SPLICE NO.	TOP FLANGE SPLICE				WEB SPLICE		BOTTOM FLANGE SPLICE			
	OUTSIDE ℄	INSIDE ℄ (x2)	"A"	FILL ℄	WEB ℄ (x2)	"B"	OUTSIDE ℄	INSIDE ℄ (x2)	"C"	FILL ℄
1	3/4" X 22" X 4'-8 1/4"	5/8" X 10" X 4'-8 1/4"	8 SPA. @ 3"	1/4" X 22" X 2'-4"	1/2" X 26 1/4" X 7'-4"	3 SPA. @ 3"	1" X 24" X 4'-8 1/4"	1/2" X 11" X 4'-8 1/4"	8 SPA. @ 3"	3/8" X 24" X 2'-4"
2	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 24" X 4'-2 1/4"	1/2" X 11" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 24" X 2'-1"
3	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/4" X 22" X 2'-1"	1/2" X 26 1/4" X 7'-4"	3 SPA. @ 3"	1" X 24" X 6'-2 1/4"	1" X 11" X 6'-2 1/4"	11 SPA. @ 3"	3/4" X 24" X 3'-1"
4	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	3/8" X 22" X 2'-1"	3/8" X 26 1/4" X 7'-4"	3 SPA. @ 3"	1" X 24" X 6'-2 1/4"	1" X 11" X 6'-2 1/4"	11 SPA. @ 3"	1/8" X 24" X 3'-1"
5	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	7/8" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	1" X 24" X (4'-8 1/4") 2	1" X 11" X (4'-8 1/4")	8 SPA @ 3" 3	(5/8" X 24" X 2'-4") 2
6	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 24" X 4'-2 1/4"	1/2" X 11" X 4'-2 1/4"	7 SPA. @ 3"	1" X 24" X 2'-1"
7	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	5/8" X 24" X 4'-2 1/4"	1/2" X 11" X 4'-2 1/4"	7 SPA. @ 3"	3/4" X 24" X 2'-1"
8	3/4" X 22" X 4'-2 1/4"	5/8" X 10" X 4'-2 1/4"	7 SPA. @ 3"	1/2" X 22" X 2'-1"	3/8" X 20 1/4" X 7'-4"	2 SPA. @ 3"	1" X 24" X 5'-8 1/4"	1" X 11" X 5'-8 1/4"	10 SPA. @ 3"	1/2" X 24" X 2'-10"



DETAIL B

(SEE SHEET 4B12-34 FOR LOCATION)

NOTES:

1. FOR TOP AND BOTTOM FLANGE SPLICE DETAILS, SEE SHEET 4B12-34.
2. FOR LOCATIONS OF FIELD SPLICES, SEE GIRDER ELEVATION SHEET 4B12-29.
3. HIGH STRENGTH BOLTS FOR FIELD SPLICES SHALL BE 1" DIA. ASTM A325 TYPE I GALVANIZED.
4. FOR FRAMING PLAN, SEE SHEETS 4B12-26 THRU 4B12-28.
5. WELDED SHEAR STUD CONNECTORS COINCIDING WITH FIELD SPLICE BOLTS SHALL BE REPOSITIONED TO A LOCATION MIDWAY BETWEEN BOLT LOCATIONS. STUD SHEAR CONNECTORS COINCIDING WITH WELDED SHOP SPLICES SHALL BE REPOSITIONED TO CLEAR SPLICE LOCATIONS BY 6 INCHES.

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	4/30/14	RFI 94
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge...the Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

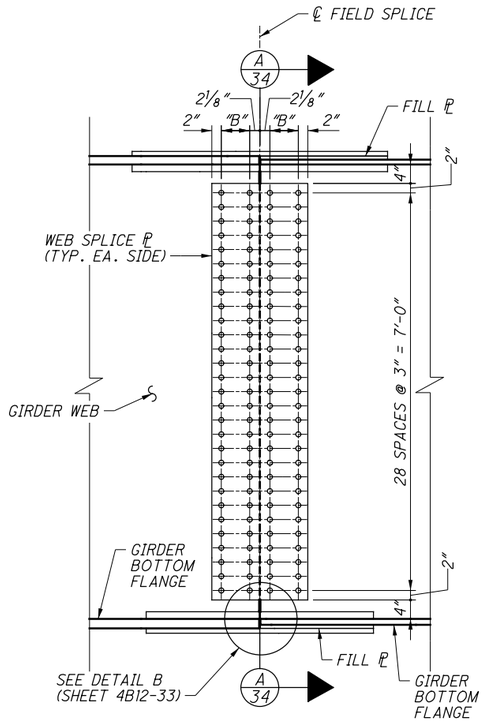
DESIGNED JDH | DRAWN ABC | CHECKED TJE | REVIEWED RER | DATE 11/08/11 | REVISED | STRUCTURE FILE NUMBER 2506444

FIELD SPLICE DETAILS (1 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

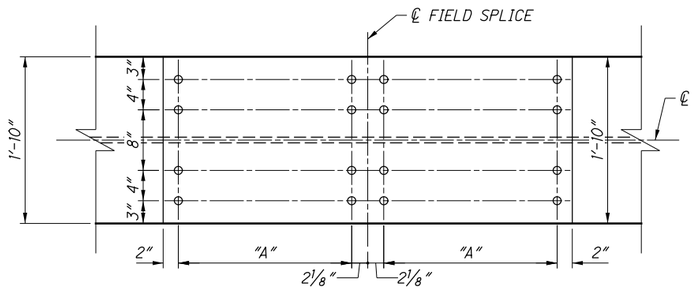
4B12-33

2599
2744



TYPICAL ELEVATION

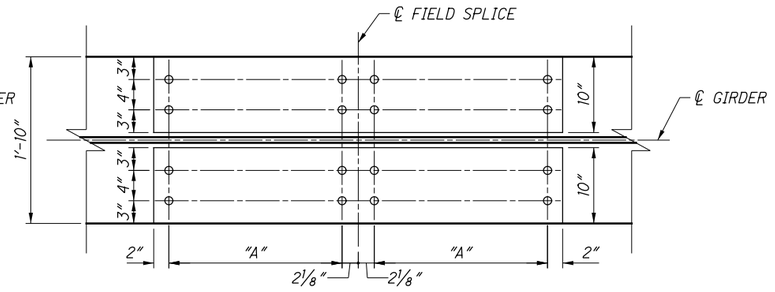
(FLANGE SPLICE BOLTS NOT SHOWN)



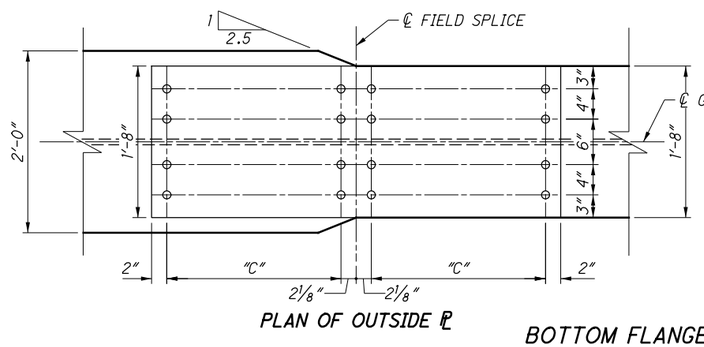
PLAN OF OUTSIDE ℙ

TOP FLANGE SPLICE DETAIL

(TYP. ALL GIRDERS)



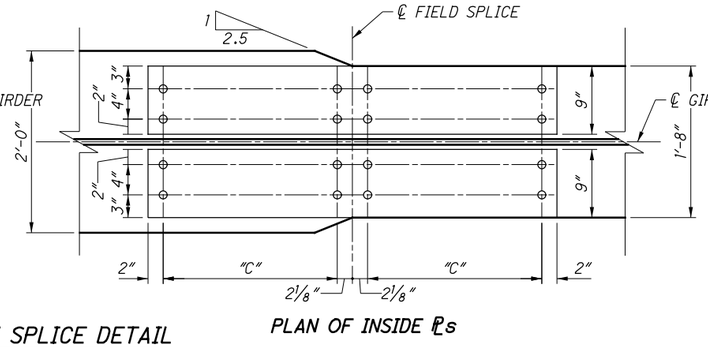
PLAN OF INSIDE ℙs



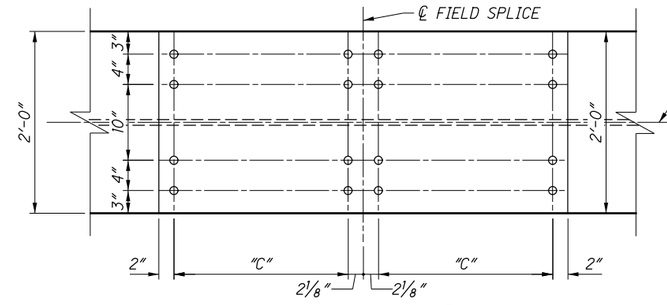
PLAN OF OUTSIDE ℙ

BOTTOM FLANGE SPLICE DETAIL

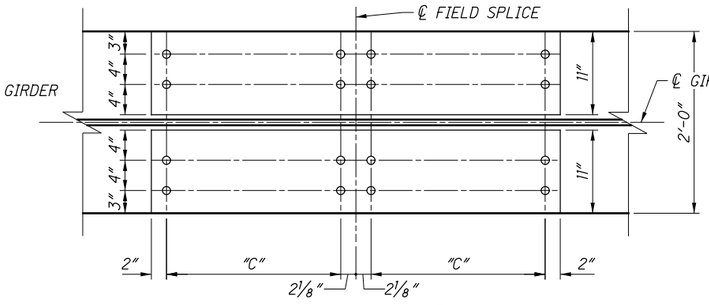
(TYP. GIRDERS 1 THRU 4)



PLAN OF INSIDE ℙs



PLAN OF OUTSIDE ℙ



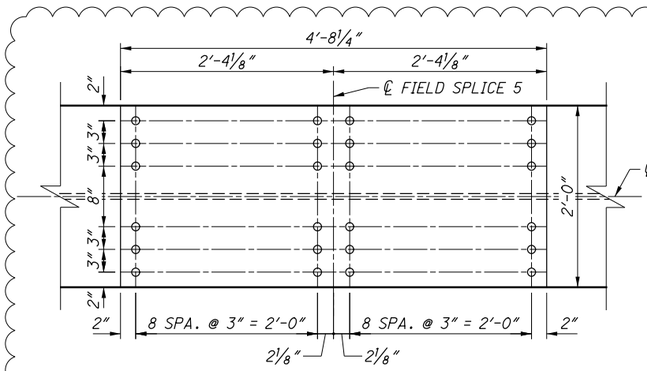
PLAN OF INSIDE ℙs

BOTTOM FLANGE SPLICE DETAIL

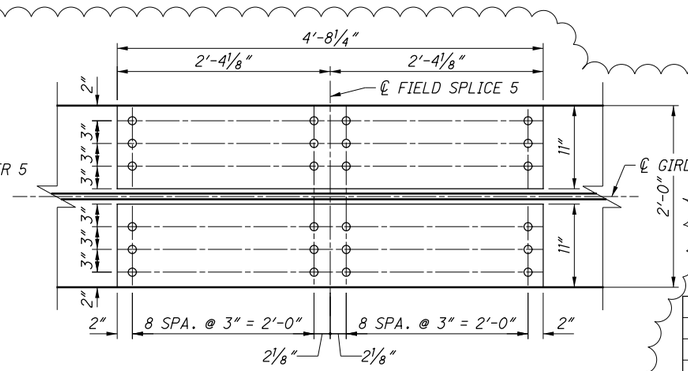
(FOR GIRDER 5 SPLICES 1-4 & 6-8)

SECTION A-A

2



PLAN OF OUTSIDE ℙ



PLAN OF INSIDE ℙs

BOTTOM FLANGE SPLICE DETAIL

(GIRDER 5, FIELD SPLICE NO. 5)

PLATES REQUIRED FOR BOTTOM FLANGE SPLICE:
1 - OUTSIDE ℙ 1" X 24" X 4'-8¼"
2 - INSIDE ℙs 1" X 11" X 4'-8¼"
1 - FILL ℙ ⅝" X 24" X 2'-4"

NOTES:

1. FOR TABULAR DATA AND NOTES SEE SHEET 4B12-33.

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
		ISSUE RECORD
3	5/08/14	RECORD DRAWINGS
2	4/30/14	RFI 94
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

E.L. ROBINSON
the Challenge...the Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	ABC	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
TJE		2506444	

FIELD SPLICE DETAILS (2 OF 2)

BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-34

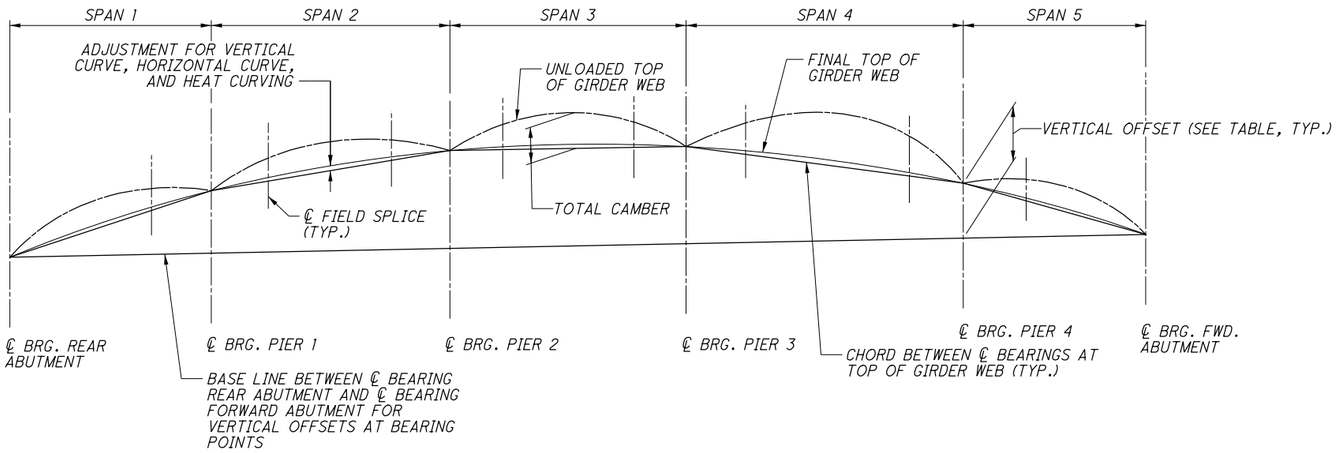
2600
2744

CAMBER AND DEFLECTIONS

GIRDER 1 DEFLECTION/CAMBER		SPAN 1										
	℄ BRG. R.A.	0.1	0.2	0.3	0.4	0.5	℄ F.S.	0.6	0.7	0.8	0.9	℄ PIER 1
DEFLECTION DUE TO WEIGHT OF STEEL	0″	3/16″	3/8″	1/2″	9/16″	9/16″	1/2″	7/16″	5/16″	3/16″	1/16″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	5/8″	1 1/8″	1 1/2″	1 11/16″	1 5/8″	1 3/8″	1 3/8″	1″	9/16″	3/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	- 11/16″	- 1 1/16″	- 1 1/4″	- 1 3/16″	- 1″	- 7/8″	- 13/16″	- 5/8″	- 3/8″	- 3/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	1/8″	7/16″	3/4″	1 1/16″	1 3/16″	1″	1″	11/16″	3/8″	1/16″	0″
GIRDER 2 DEFLECTION/CAMBER		SPAN 1										
	℄ BRG. R.A.	0.1	0.2	0.3	0.4	0.5	℄ F.S.	0.6	0.7	0.8	0.9	℄ PIER 1
DEFLECTION DUE TO WEIGHT OF STEEL	0″	1/4″	7/16″	5/8″	11/16″	5/8″	9/16″	9/16″	7/16″	1/4″	1/8″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	11/16″	1 1/4″	1 11/16″	1 13/16″	1 3/4″	1 9/16″	1 1/2″	1 1/8″	5/8″	1/4″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	- 11/16″	- 1 1/16″	- 1 1/4″	- 1 3/16″	- 1″	- 7/8″	- 13/16″	- 5/8″	- 3/8″	- 3/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	1/4″	5/8″	1 1/16″	1 5/16″	1 3/8″	1 1/4″	1 1/4″	15/16″	1/2″	3/16″	0″
GIRDER 3 DEFLECTION/CAMBER		SPAN 1										
	℄ BRG. R.A.	0.1	0.2	0.3	0.4	0.5	℄ F.S.	0.6	0.7	0.8	0.9	℄ PIER 1
DEFLECTION DUE TO WEIGHT OF STEEL	0″	5/16″	1/2″	11/16″	3/4″	3/4″	11/16″	11/16″	1/2″	5/16″	1/8″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	3/4″	1 7/16″	1 7/8″	2 1/16″	2″	1 3/4″	1 11/16″	1 1/4″	3/4″	5/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	- 11/16″	- 1 1/16″	- 1 1/4″	- 1 3/16″	- 1″	- 7/8″	- 13/16″	- 5/8″	- 3/8″	- 3/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	3/8″	7/8″	1 5/16″	1 5/8″	1 3/4″	1 9/16″	1 9/16″	1 1/8″	11/16″	1/4″	0″
GIRDER 4 DEFLECTION/CAMBER		SPAN 1										
	℄ BRG. R.A.	0.1	0.2	0.3	0.4	0.5	℄ F.S.	0.6	0.7	0.8	0.9	℄ PIER 1
DEFLECTION DUE TO WEIGHT OF STEEL	0″	5/16″	5/8″	13/16″	7/8″	7/8″	13/16″	3/4″	9/16″	3/8″	3/16″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	7/8″	1 9/16″	2 1/16″	2 5/16″	2 1/4″	2″	1 15/16″	1 7/16″	7/8″	5/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	- 11/16″	- 1 1/16″	- 1 1/4″	- 1 3/16″	- 1″	- 7/8″	- 13/16″	- 5/8″	- 3/8″	- 3/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	1/2″	1 1/8″	1 5/8″	2″	2 1/8″	1 15/16″	1 7/8″	1 3/8″	7/8″	5/16″	0″
GIRDER 5 DEFLECTION/CAMBER		SPAN 1										
	℄ BRG. R.A.	0.1	0.2	0.3	0.4	0.5	℄ F.S.	0.6	0.7	0.8	0.9	℄ PIER 1
DEFLECTION DUE TO WEIGHT OF STEEL	0″	3/8″	11/16″	7/8″	1″	1″	7/8″	7/8″	11/16″	7/16″	3/16″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	1″	1 13/16″	2 3/8″	2 5/8″	2 9/16″	2 1/4″	2 3/16″	1 5/8″	1″	3/8″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	- 11/16″	- 1 1/16″	- 1 1/4″	- 1 3/16″	- 1″	- 7/8″	- 13/16″	- 5/8″	- 3/8″	- 3/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	11/16″	1 7/16″	2″	2 7/16″	2 9/16″	2 1/4″	2 1/4″	1 11/16″	1 1/16″	3/8″	0″

VERTICAL OFFSETS AT BEARING POINTS

GIRDER	BEARING			
	PIER 1	PIER 2	PIER 3	PIER 4
GIRDER 1	4′-3 3/16″	9′-7 9/16″	11′-7 3/8″	7′-3 1/2″
GIRDER 2	4′-3 1/8″	9′-7 7/16″	11′-7 3/16″	7′-3 3/16″
GIRDER 3	4′-3 1/16″	9′-7 5/16″	11′-6 15/16″	7′-2 7/8″
GIRDER 4	4′-3″	9′-7 3/16″	11′-6 3/4″	7′-2 5/8″
GIRDER 5	4′-2 15/16″	9′-7 1/16″	11′-6 9/16″	7′-2 3/8″



NOTES:

1. NEGATIVE VALUES FOR DEFLECTIONS AND ADJUSTMENTS INDICATE DEFLECTIONS UPWARD.
2. DEFLECTIONS AND ADJUSTMENT FOR VERTICAL CURVES ARE GIVEN TO THE NEAREST 1/16th INCH.
3. FOR CAMBER AND DEFLECTIONS, SPANS 2 THRU 5, SEE SHEETS 4B12-36 AND 4B12-37.

△2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	08/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to Choice
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN MTS | CHECKED TJE | REVISED | REVIEWED RER | DATE 11/08/11 | STRUCTURE FILE NUMBER 2506444

CAMBER AND DEFLECTIONS - SPAN 1

BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-35

2601
2744

CAMBER AND DEFLECTIONS

GIRDER 1 DEFLECTION/CAMBER		SPAN 2												SPAN 3										
	℄ PIER 1	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	0.8	℄ F.S.	0.9	℄ PIER 2	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 3
DEFLECTION DUE TO WEIGHT OF STEEL	0″	0″	1/8″	3/16″	1/4″	5/16″	5/16″	3/16″	1/8″	0″	- 1/16″	- 1/16″	0″	1/4″	9/16″	15/16″	1″	1 3/16″	1 1/4″	1 3/16″	7/8″	9/16″	1/2″	3/16″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	1/8″	7/16″	5/8″	13/16″	1 1/16″	1 1/8″	7/8″	9/16″	1/8″	1/16″	- 1/16″	0″	5/8″	1 9/16″	2 9/16″	2 11/16″	3 5/16″	3 9/16″	3 5/16″	2 1/2″	1 9/16″	1 1/2″	9/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	1/8″	5/16″	3/8″	7/16″	5/8″	3/4″	15/16″	1 1/16″	1 3/16″	1 3/16″	7/8″	0″	3 11/16″	6 9/16″	8 9/16″	8 7/8″	9 13/16″	10 1/4″	9 13/16″	8 9/16″	6 3/4″	6 9/16″	3 11/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	1/4″	7/8″	1 3/16″	1 1/2″	2″	2 3/16″	2″	1 3/4″	1 5/16″	1 3/16″	3/4″	0″	4 9/16″	8 11/16″	12 1/16″	12 9/16″	14 5/16″	15 1/16″	14 5/16″	11 15/16″	8 7/8″	8 9/16″	4 7/16″	0″
GIRDER 2 DEFLECTION/CAMBER		SPAN 2												SPAN 3										
	℄ PIER 1	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	0.8	℄ F.S.	0.9	℄ PIER 2	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 3
DEFLECTION DUE TO WEIGHT OF STEEL	0″	0″	1/16″	1/16″	1/8″	3/16″	3/16″	1/8″	0″	- 1/8″	- 1/8″	- 1/8″	0″	5/16″	3/4″	1 3/16″	1 1/4″	1 1/2″	1 9/16″	1 7/16″	1 1/8″	3/4″	11/16″	1/4″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	1/16″	3/8″	1/2″	11/16″	7/8″	15/16″	11/16″	5/16″	- 1/16″	- 1/16″	- 3/16″	0″	11/16″	1 3/4″	2 7/8″	3″	3 11/16″	4″	3 11/16″	2 13/16″	1 3/4″	1 11/16″	5/8″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	1/8″	5/16″	3/8″	7/16″	5/8″	3/4″	15/16″	1 1/16″	1 3/16″	1 3/16″	7/8″	0″	3 11/16″	6 9/16″	8 9/16″	8 7/8″	9 13/16″	10 1/4″	9 13/16″	8 9/16″	6 3/4″	6 9/16″	3 11/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	3/16″	3/4″	15/16″	1 1/4″	1 11/16″	1 7/8″	1 3/4″	1 3/8″	1″	1″	9/16″	0″	4 11/16″	9 1/16″	12 5/8″	13 1/8″	15″	15 13/16″	14 15/16″	12 1/2″	9 1/4″	8 15/16″	4 9/16″	0″
GIRDER 3 DEFLECTION/CAMBER		SPAN 2												SPAN 3										
	℄ PIER 1	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	0.8	℄ F.S.	0.9	℄ PIER 2	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 3
DEFLECTION DUE TO WEIGHT OF STEEL	0″	- 1/16″	0″	0″	1/16″	1/8″	1/16″	0″	- 1/8″	- 3/16″	- 3/16″	- 3/16″	0″	3/8″	7/8″	1 3/8″	1 1/2″	1 3/4″	1 7/8″	1 3/4″	1 3/8″	7/8″	13/16″	3/8″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	0″	1/4″	3/8″	9/16″	3/4″	3/4″	1/2″	1/8″	- 3/16″	- 3/16″	- 1/4″	0″	13/16″	2″	3 3/16″	3 3/8″	4 1/8″	4 7/16″	4 1/16″	3 1/8″	2″	1 7/8″	11/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	1/8″	5/16″	3/8″	7/16″	5/8″	3/4″	15/16″	1 1/16″	1 3/16″	1 3/16″	7/8″	0″	3 11/16″	6 9/16″	8 9/16″	8 7/8″	9 13/16″	10 1/4″	9 13/16″	8 9/16″	6 3/4″	6 9/16″	3 11/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	1/16″	9/16″	3/4″	1 1/16″	1 1/2″	1 9/16″	1 7/16″	1 1/16″	13/16″	13/16″	7/16″	0″	4 7/8″	9 7/16″	13 1/8″	13 3/4″	15 11/16″	16 9/16″	15 5/8″	13 1/16″	9 5/8″	9 1/4″	4 3/4″	0″
GIRDER 4 DEFLECTION/CAMBER		SPAN 2												SPAN 3										
	℄ PIER 1	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	0.8	℄ F.S.	0.9	℄ PIER 2	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 3
DEFLECTION DUE TO WEIGHT OF STEEL	0″	- 1/16″	- 1/16″	- 1/16″	0″	0″	- 1/16″	- 1/8″	- 1/4″	- 5/16″	- 5/16″	- 3/16″	0″	1/2″	1 1/16″	1 5/8″	1 3/4″	2 1/16″	2 3/16″	2″	1 9/16″	1 1/16″	1″	7/16″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	- 1/16″	3/16″	1/4″	7/16″	5/8″	5/8″	3/8″	0″	- 5/16″	- 5/16″	- 5/16″	0″	15/16″	2 1/4″	3 5/8″	3 13/16″	4 5/8″	4 15/16″	4 1/2″	3 7/16″	2 3/16″	2 1/16″	13/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	1/8″	5/16″	3/8″	7/16″	5/8″	3/4″	15/16″	1 1/16″	1 3/16″	1 3/16″	7/8″	0″	3 11/16″	6 9/16″	8 9/16″	8 7/8″	9 13/16″	10 1/4″	9 13/16″	8 9/16″	6 3/4″	6 9/16″	3 11/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	0″	7/16″	9/16″	7/8″	1 1/4″	1 5/16″	1 3/16″	13/16″	9/16″	9/16″	3/8″	0″	5 1/8″	9 7/8″	13 13/16″	14 7/16″	16 1/2″	17 3/8″	16 5/16″	13 9/16″	10″	9 5/8″	4 15/16″	0″
GIRDER 5 DEFLECTION/CAMBER		SPAN 2												SPAN 3										
	℄ PIER 1	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	0.8	℄ F.S.	0.9	℄ PIER 2	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 3
DEFLECTION DUE TO WEIGHT OF STEEL	0″	- 1/8″	- 1/8″	- 1/8″	- 1/8″	- 1/8″	- 3/16″	- 1/4″	- 5/16″	- 3/8″	- 3/8″	- 1/4″	0″	9/16″	1 1/4″	1 7/8″	2″	2 3/8″	2 1/2″	2 5/16″	1 13/16″	1 1/4″	1 3/16″	1/2″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	- 1/8″	1/16″	3/16″	3/8″	9/16″	1/2″	1/4″	- 1/8″	- 3/8″	- 7/16″	- 3/8″	0″	1 1/8″	2 9/16″	4 1/16″	4 5/16″	5 1/8″	5 1/2″	5″	3 7/8″	2 1/2″	2 5/16″	15/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	1/8″	5/16″	3/8″	7/16″	5/8″	3/4″	15/16″	1 1/16″	1 3/16″	1 3/16″	7/8″	0″	3 11/16″	6 9/16″	8 9/16″	8 7/8″	9 13/16″	10 1/4″	9 13/16″	8 9/16″	6 3/4″	6 9/16″	3 11/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	- 1/8″	1/4″	7/16″	11/16″	1 1/16″	1 1/16″	15/16″	5/8″	7/16″	3/8″	1/4″	0″	5 3/8″	10 3/8″	14 1/2″	15 3/16″	17 5/16″	18 1/4″	17 1/8″	14 1/4″	10 1/2″	10 1/16″	5 1/8″	0″

NOTES:

1. NEGATIVE VALUES FOR DEFLECTIONS AND ADJUSTMENTS INDICATE DEFLECTIONS UPWARD.
2. DEFLECTIONS AND ADJUSTMENT FOR VERTICAL CURVES ARE GIVEN TO THE NEAREST 1/16th INCH.
3. FOR CAMBER AND DEFLECTIONS, SPAN 1, SEE SHEET 4B12-35.
4. FOR CAMBER AND DEFLECTIONS, SPANS 4 & 5, SEE SHEET 4B12-37.

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/07/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	08/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN ABC | CHECKED TJE | REVIEWED RER | DATE 11/08/11 | REVISED | STRUCTURE FILE NUMBER 2506444

CAMBER AND DEFLECTIONS - SPANS 2 & 3

BRIDGE NO. FRA-670-0457B

RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-36

2602
2744

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CAMBER AND DEFLECTIONS

GIRDER 1 DEFLECTION/CAMBER		SPAN 4												SPAN 5										
	℄ PIER 3	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 4	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG. F.A.
DEFLECTION DUE TO WEIGHT OF STEEL	0″	0″	3/16″	5/16″	7/16″	5/8″	11/16″	11/16″	1/2″	7/16″	5/16″	1/8″	0″	1/16″	3/16″	5/16″	3/8″	7/16″	9/16″	5/8″	9/16″	7/16″	1/4″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	1/16″	5/8″	1 1/16″	1 3/8″	2″	2 1/4″	2 1/8″	1 5/8″	1 5/16″	15/16″	5/16″	0″	1/8″	1/2″	1″	1 3/16″	1 7/16″	1 3/4″	1 7/8″	1 3/4″	1 3/8″	3/4″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	3 1/4″	5 3/4″	6 15/16″	7 9/16″	8 5/8″	9″	8 5/8″	7 9/16″	6 11/16″	5 3/4″	3 1/4″	0″	1 7/8″	3 5/16″	4 5/16″	4 5/8″	4 15/16″	5 3/16″	4 15/16″	4 5/16″	3 1/4″	1 13/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	3 5/16″	6 9/16″	8 5/16″	9 3/8″	11 1/4″	11 15/16″	11 7/16″	9 11/16″	8 7/16″	7″	3 11/16″	0″	2 1/16″	4″	5 5/8″	6 3/16″	6 13/16″	7 1/2″	7 7/16″	6 5/8″	5 1/16″	2 13/16″	0″
GIRDER 2 DEFLECTION/CAMBER		SPAN 4												SPAN 5										
	℄ PIER 3	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 4	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG. F.A.
DEFLECTION DUE TO WEIGHT OF STEEL	0″	- 1/16″	1/16″	1/4″	5/16″	1/2″	5/8″	5/8″	7/16″	3/8″	1/4″	1/16″	0″	1/16″	3/16″	3/8″	1/2″	9/16″	11/16″	3/4″	11/16″	1/2″	1/4″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	0″	1/2″	1″	1 1/4″	1 7/8″	2 3/16″	2 1/8″	1 5/8″	1 1/4″	15/16″	5/16″	0″	1/8″	9/16″	1 1/16″	1 1/4″	1 9/16″	1 15/16″	2 1/16″	1 7/8″	1 7/16″	13/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	3 1/4″	5 3/4″	6 15/16″	7 9/16″	8 5/8″	9″	8 5/8″	7 9/16″	6 11/16″	5 3/4″	3 1/4″	0″	1 13/16″	3 1/4″	4 1/4″	4 9/16″	4 7/8″	5 1/16″	4 13/16″	4 1/4″	3 3/16″	1 3/4″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	3 3/16″	6 5/16″	8 3/16″	9 1/8″	11″	11 13/16″	11 3/8″	9 5/8″	8 5/16″	6 15/16″	3 5/8″	0″	2″	4″	5 11/16″	6 5/16″	7″	7 11/16″	7 5/8″	6 13/16″	5 1/8″	2 13/16″	0″
GIRDER 3 DEFLECTION/CAMBER		SPAN 4												SPAN 5										
	℄ PIER 3	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 4	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG. F.A.
DEFLECTION DUE TO WEIGHT OF STEEL	0″	- 1/8″	0″	1/8″	3/16″	3/8″	1/2″	1/2″	3/8″	5/16″	3/16″	1/16″	0″	1/8″	1/4″	1/2″	9/16″	11/16″	13/16″	7/8″	3/4″	9/16″	5/16″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	- 1/16″	7/16″	7/8″	1 3/16″	1 13/16″	2 3/16″	2 1/16″	1 9/16″	1 1/4″	7/8″	1/4″	0″	3/16″	5/8″	1 3/16″	1 3/8″	1 11/16″	2 1/8″	2 1/4″	2 1/16″	1 9/16″	7/8″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	3 1/4″	5 3/4″	6 15/16″	7 9/16″	8 5/8″	9″	8 5/8″	7 9/16″	6 11/16″	5 3/4″	3 1/4″	0″	1 13/16″	3 3/16″	4 3/16″	4 7/16″	4 3/4″	4 15/16″	4 3/4″	4 1/8″	3 1/8″	1 3/4″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	3 1/16″	6 3/16″	7 15/16″	8 15/16″	10 13/16″	11 11/16″	11 3/16″	9 1/2″	8 1/4″	6 13/16″	3 9/16″	0″	2 1/8″	4 1/16″	5 7/8″	6 3/8″	7 1/8″	7 7/8″	7 7/8″	6 15/16″	5 1/4″	2 15/16″	0″
GIRDER 4 DEFLECTION/CAMBER		SPAN 4												SPAN 5										
	℄ PIER 3	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 4	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG. F.A.
DEFLECTION DUE TO WEIGHT OF STEEL	0″	- 3/16″	- 1/8″	0″	1/16″	1/4″	3/8″	7/16″	5/16″	1/4″	1/8″	0″	0″	1/8″	5/16″	9/16″	5/8″	3/4″	15/16″	15/16″	7/8″	11/16″	3/8″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	- 1/8″	3/8″	13/16″	1 1/8″	1 13/16″	2 3/16″	2 1/8″	1 5/8″	1 1/4″	7/8″	1/4″	0″	3/16″	11/16″	1 5/16″	1 1/2″	1 7/8″	2 5/16″	2 7/16″	2 1/4″	1 3/4″	15/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	3 1/4″	5 3/4″	6 15/16″	7 9/16″	8 5/8″	9″	8 5/8″	7 9/16″	6 11/16″	5 3/4″	3 1/4″	0″	1 3/4″	3 1/8″	4 1/16″	4 3/8″	4 11/16″	4 7/8″	4 11/16″	4 1/16″	3 1/16″	1 11/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	2 15/16″	6″	7 3/4″	8 3/4″	10 11/16″	11 9/16″	11 3/16″	9 1/2″	8 3/16″	6 3/4″	3 1/2″	0″	2 1/16″	4 1/8″	5 15/16″	6 1/2″	7 5/16″	8 1/8″	8 1/16″	7 3/16″	5 1/2″	3″	0″
GIRDER 5 DEFLECTION/CAMBER		SPAN 4												SPAN 5										
	℄ PIER 3	0.1	0.2	℄ F.S.	0.3	0.4	0.5	0.6	0.7	℄ F.S.	0.8	0.9	℄ PIER 4	0.1	0.2	0.3	℄ F.S.	0.4	0.5	0.6	0.7	0.8	0.9	℄ BRG. F.A.
DEFLECTION DUE TO WEIGHT OF STEEL	0″	- 1/4″	- 1/4″	- 1/8″	- 1/16″	1/8″	5/16″	5/16″	1/4″	1/8″	1/16″	0″	0″	1/8″	3/8″	5/8″	3/4″	7/8″	1 1/16″	1 1/16″	1″	3/4″	7/16″	0″
DEFLECTION DUE TO REMAINING DEAD LOAD	0″	- 3/16″	1/4″	3/4″	1 1/16″	1 13/16″	2 1/4″	2 3/16″	1 5/8″	1 1/4″	7/8″	1/4″	0″	1/4″	3/4″	1 7/16″	1 11/16″	2 1/16″	2 9/16″	2 3/4″	2 1/2″	1 15/16″	1 1/16″	0″
ADJUSTMENT REQUIRED FOR VERTICAL CURVE	0″	3 1/4″	5 3/4″	6 15/16″	7 9/16″	8 5/8″	9″	8 5/8″	7 9/16″	6 11/16″	5 3/4″	3 1/4″	0″	1 3/4″	3 1/16″	4″	4 5/16″	4 9/16″	4 3/4″	4 9/16″	4″	3″	1 11/16″	0″
ADJUSTMENT REQUIRED FOR HORIZONTAL CURVE	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
ADJUSTMENT REQUIRED FOR HEAT CURVING	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″	0″
TOTAL CAMBER	0″	2 13/16″	5 3/4″	7 9/16″	8 9/16″	10 9/16″	11 9/16″	11 1/8″	9 7/16″	8 1/16″	6 11/16″	3 1/2″	0″	2 1/8″	4 3/16″	6 1/16″	6 3/4″	7 1/2″	8 3/8″	8 3/8″	7 1/2″	5 11/16″	3 3/16″	0″

NOTES:

1. NEGATIVE VALUES FOR DEFLECTIONS AND ADJUSTMENTS INDICATE DEFLECTIONS UPWARD.
2. DEFLECTIONS AND ADJUSTMENT FOR VERTICAL CURVES ARE GIVEN TO THE NEAREST 1/16th INCH.
3. FOR CAMBER AND DEFLECTIONS, SPANS 1 THRU 3, SEE SHEETS 4B12-35 AND 4B12-36.

△2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	08/25/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN ABC | CHECKED TJE | REVIEWED RER | DATE 11/08/11 | REVISED | STRUCTURE FILE NUMBER 2506444

CAMBER AND DEFLECTIONS - SPANS 4 & 5

BRIDGE NO. FRA-670-0457B

RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-37

2603
2744

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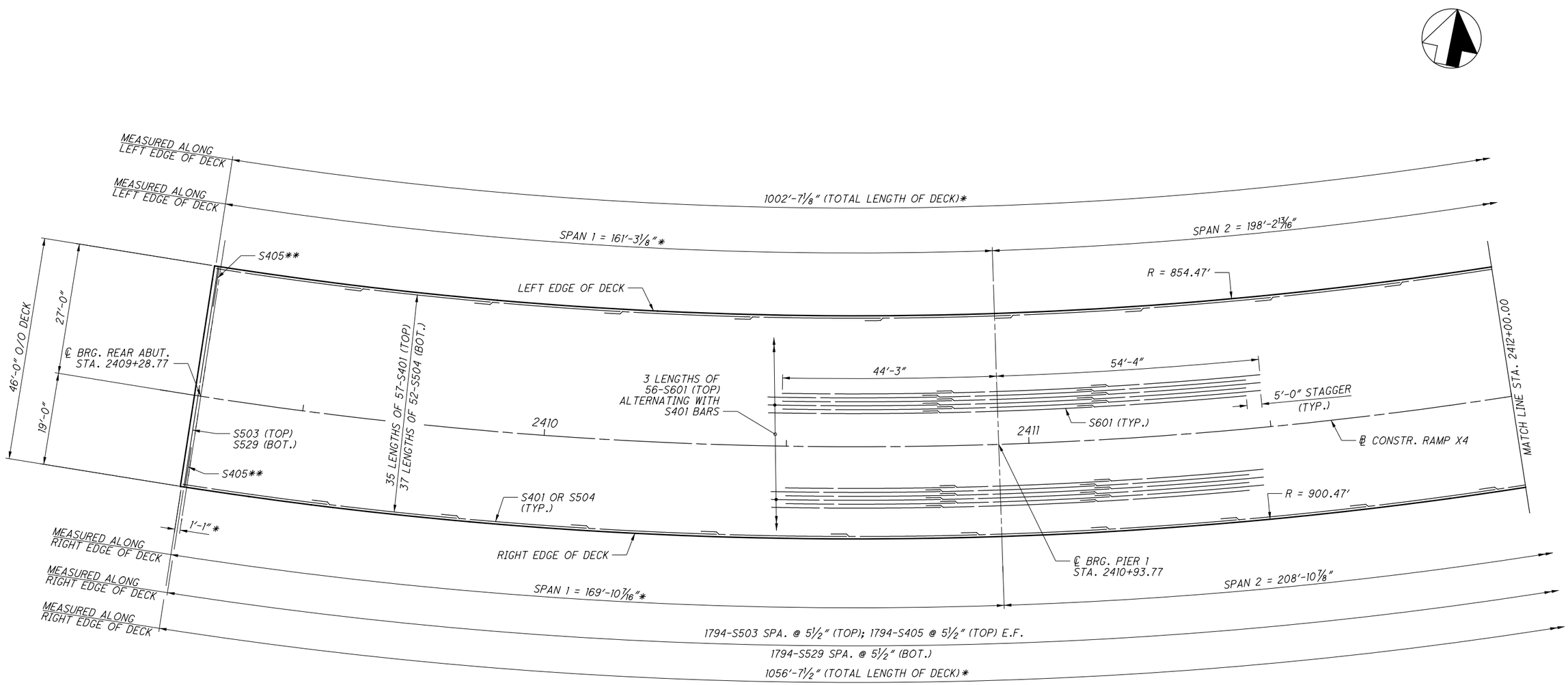
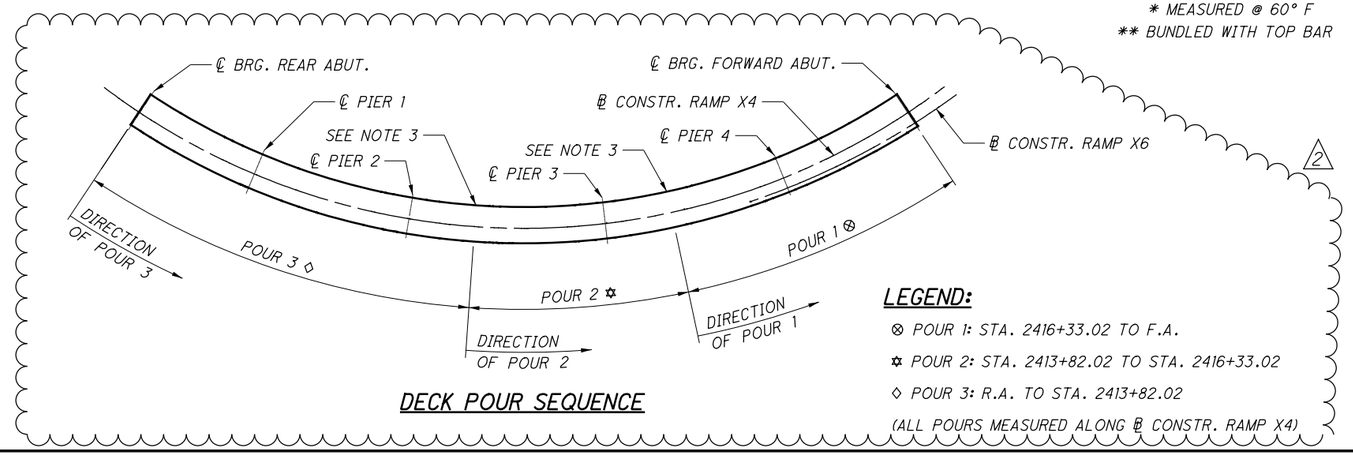


PARTIAL DECK PLAN

* MEASURED @ 60° F

** BUNDLED WITH TOP BAR



DECK POUR SEQUENCE

LEGEND:

⊗ POUR 1: STA. 2416+33.02 TO F.A.

✡ POUR 2: STA. 2413+82.02 TO STA. 2416+33.02

◊ POUR 3: R.A. TO STA. 2413+82.02

(ALL POURS MEASURED ALONG ℄ CONSTR. RAMP X4)

LAP SPLICE TABLE

BAR	LAP
NO. 4	2'-0"
NO. 5	3'-2"
NO. 6	3'-10"

NOTES:

1. FOR TRANSVERSE SECTIONS, SEE SHEETS 4B12-43 AND 4B12-44.
2. FOR PARAPET ELEVATION AND DETAILS, SEE SHEET 4B12-40.
3. SEAL TRANSVERSE CONSTRUCTION JOINT WITH HMWM, 2'-0" WIDE AND CENTERED ABOUT JOINT.
4. FOR EXPANSION JOINT REINFORCING SEE SHEETS 4B12-41 AND 4B12-42.

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	7/27/12	RFI 139
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL
ISSUE RECORD		

E.L. ROBINSON
The Challenge to be Your Choice
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DJC	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

DECK PLAN (1 OF 4) AND DECK POUR SEQUENCE

BRIDGE NO. FRA-670-0457B

RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-38

2604
2744

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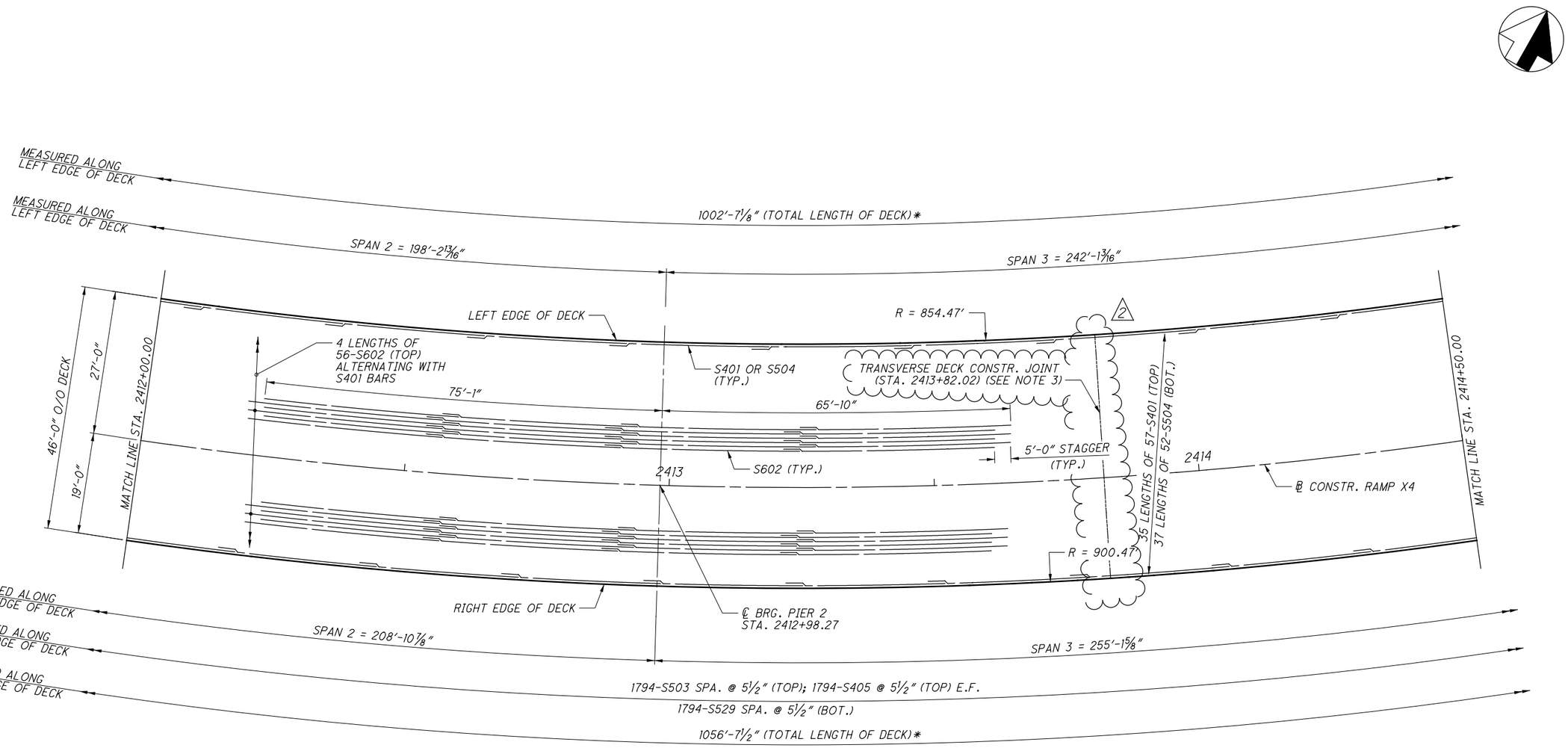

PARTIAL DECK PLAN

* MEASURED @ 60° F

NOTES:

1. FOR TRANSVERSE SECTIONS, SEE SHEETS 4B12-43 AND 4B12-44.
2. FOR PARAPET ELEVATION AND DETAILS, SEE SHEET 4B12-40.
3. FOR DECK POURING SEQUENCE DETAIL, SEE SHEET 4B12-38.

LAP SPLICE TABLE	
BAR	LAP
NO. 4	2'-0"
NO. 5	3'-2"
NO. 6	3'-10"

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	7/27/12	RFI 139
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
Engineering Inc. Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DJC	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

DECK PLAN (2 OF 4)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-39

2605
2744

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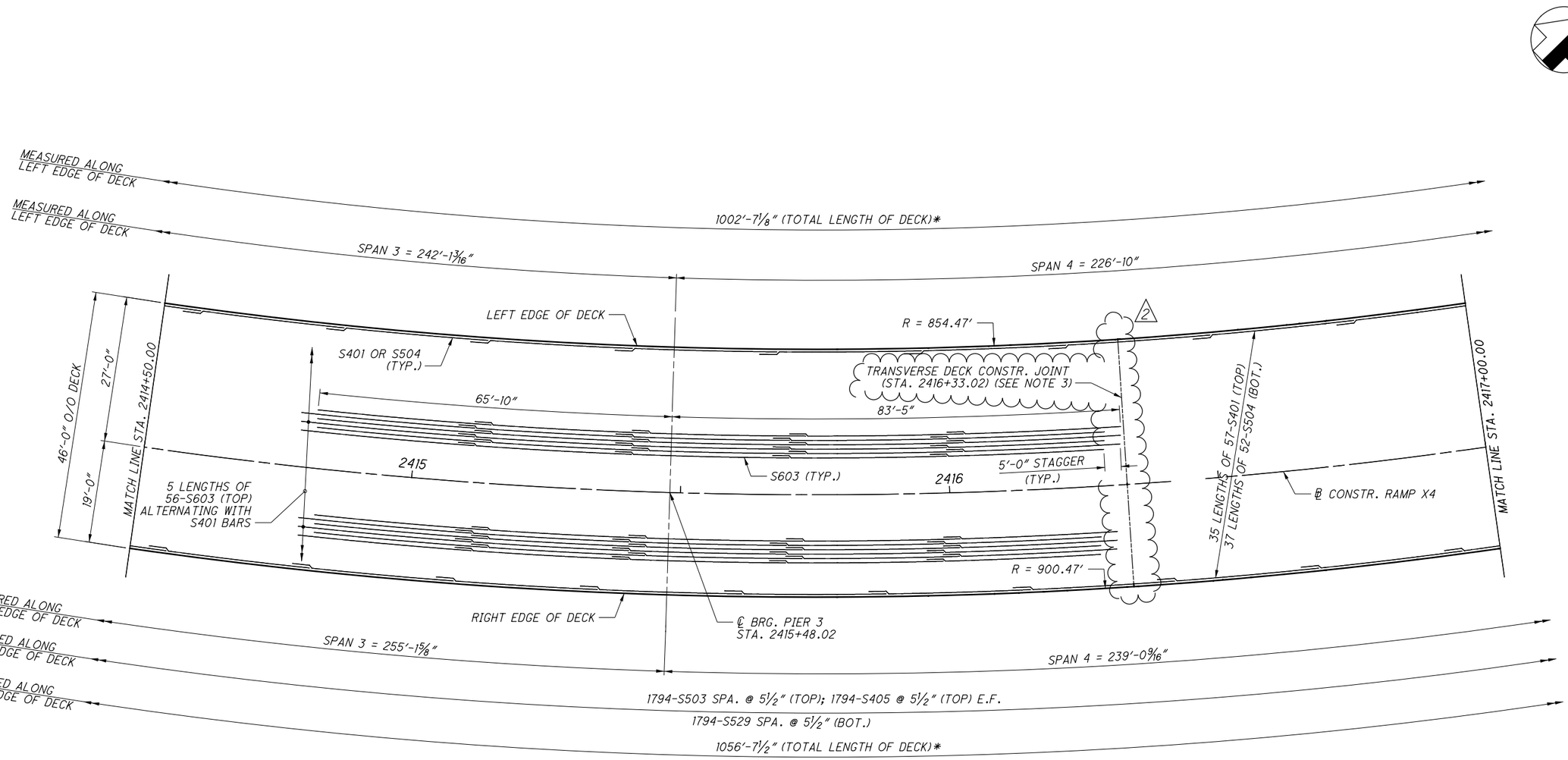

PARTIAL DECK PLAN

* MEASURED @ 60° F

NOTES:

1. FOR TRANSVERSE SECTIONS, SEE SHEETS 4B12-43 AND 4B12-44.
2. FOR PARAPET ELEVATION AND DETAILS, SEE SHEET 4B12-40.
3. FOR DECK POURING SEQUENCE DETAIL, SEE SHEET 4B12-38.

LAP SPLICE TABLE	
BAR	LAP
NO. 4	2'-0"
NO. 5	3'-2"
NO. 6	3'-10"

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	7/27/12	RFI 139
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

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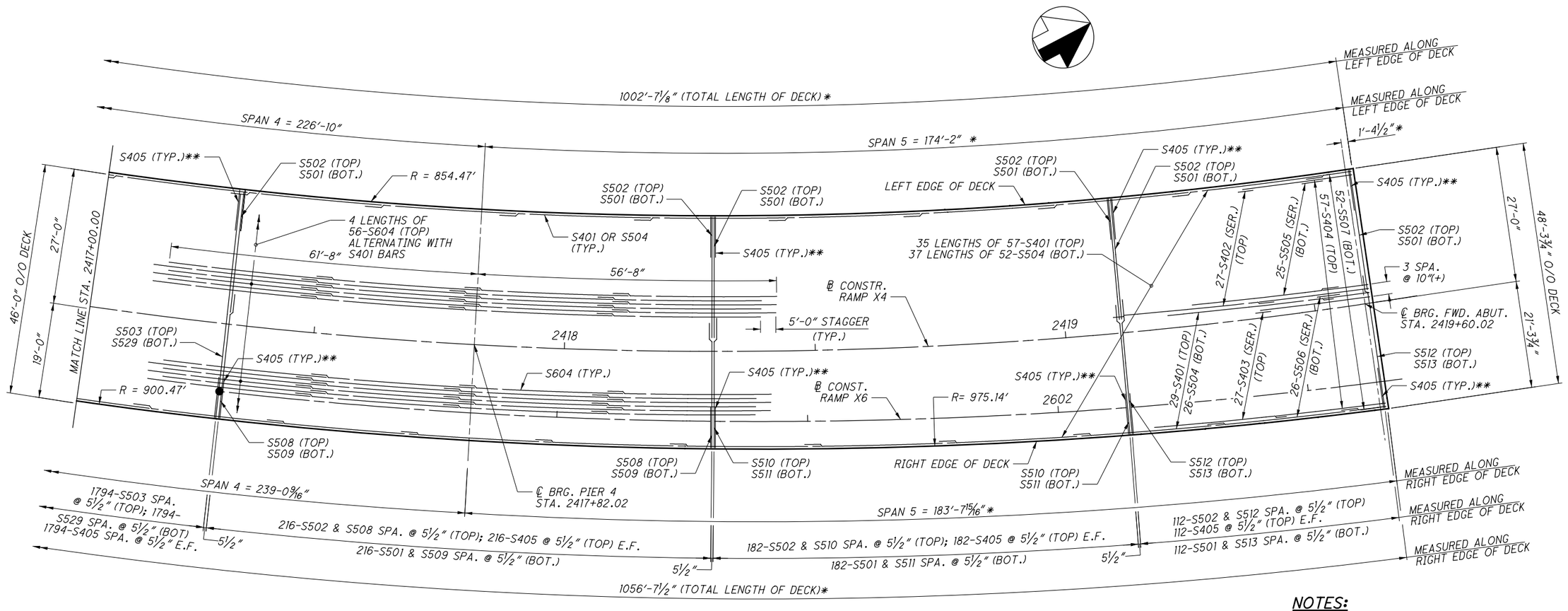
DESIGNED	DRAWN	REVIEWED	DATE
JDH	DJC	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

DECK PLAN (3 OF 4)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

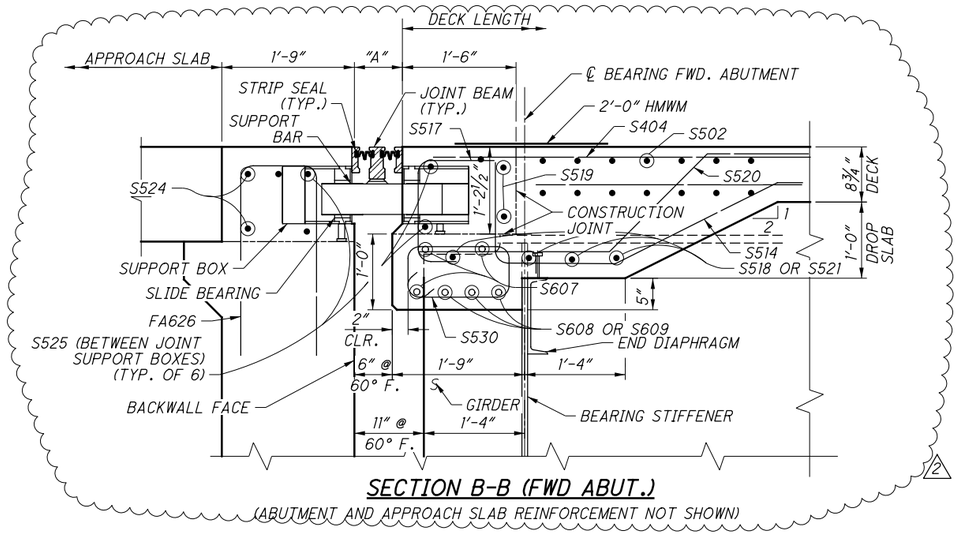
4B12-39A

2606
2744



PARTIAL DECK PLAN

* MEASURED @ 60° F
** BUNDLED WITH TOP BAR



SECTION B-B (FWD ABUT.)

(ABUTMENT AND APPROACH SLAB REINFORCEMENT NOT SHOWN)

LAP SPLICE TABLE	
BAR	LAP
NO. 4	2'-0"
NO. 5	3'-2"
NO. 6	3'-10"

LEGEND:

- PC STATION 2600+32.55 FOR ℄ CONST. RAMP X6

NOTES:

1. FOR TRANSVERSE SECTIONS, SEE SHEETS 4B12-43 AND 4B12-44.
2. FOR PARAPET ELEVATION AND DETAILS, SEE SHEET 4B12-40.
3. FOR DECK POURING SEQUENCE DETAIL, SEE SHEET 4B12-38.
4. LEFT EDGE OF DECK RADIUS IS CONSTANT FOR FULL LENGTH OF BRIDGE AND EQUALS 854.47'. RIGHT EDGE OF DECK RADIUS VARIES. THE TRANSITION FROM R = 900.47' TO 975.14' OCCURS AT ℄ CONST. RAMP X4 STA. 2417+32.54 (EQUALS ℄ CONST. RAMP X6 PC STA. 2600+32.55).
5. FOR EXPANSION JOINT REINFORCING SEE SECTION B-B THIS SHEET AND SHEETS 4B12-41 AND 4B12-42.

(2) 6. FOR LOCATION OF SECTION B-B SEE SHEET 4B12-41. FOR DIMENSION "A" SEE SHEET 4B12-42.

(3) NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	4/24/12	NDC 022
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
Engineering the Challenge, the Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN DJC | REVIEWED RER | DATE 11/08/11
CHECKED DFT | REVISED JDH | STRUCTURE FILE NUMBER 2506444

DECK PLAN (4 OF 4)

BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-39B

2607
2744

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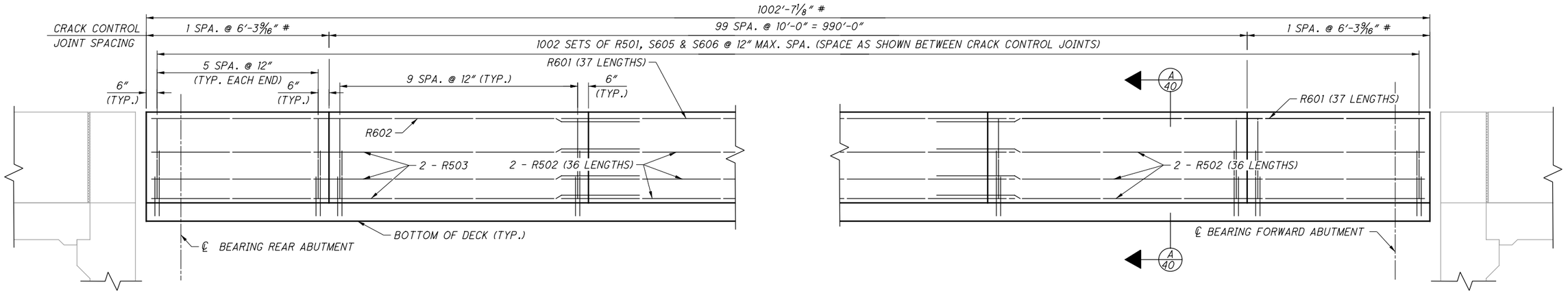
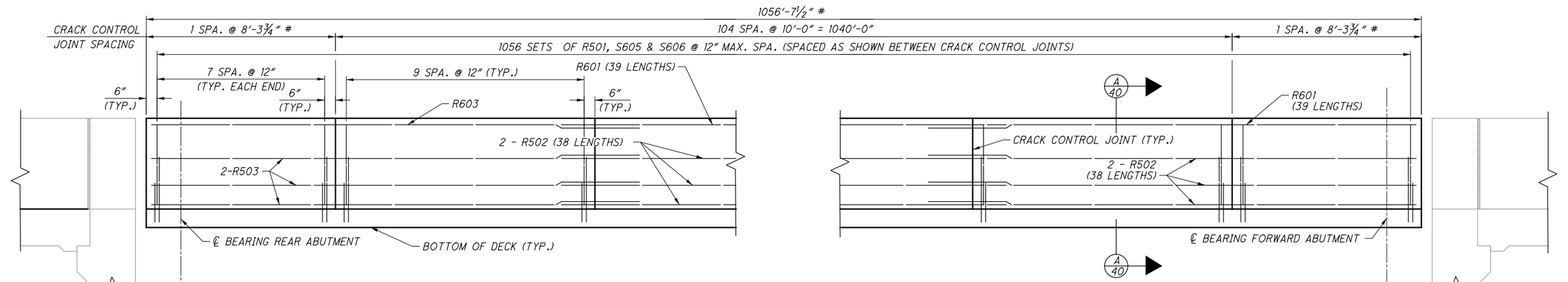


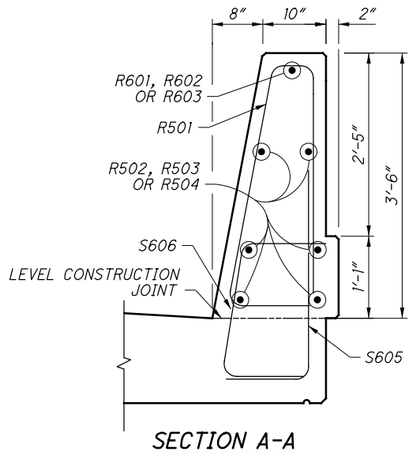
LEFT PARAPET ELEVATION

(DIMENSIONS ALONG BACK FACE OF PARAPET)



RIGHT PARAPET ELEVATION

(DIMENSIONS ALONG BACK FACE OF PARAPET)



SECTION A-A

(DECK REINFORCING NOT SHOWN)

MEASURED AT 60° F

LAP SPLICE TABLE	
BAR	LAP
NO. 5	3'-0"
NO. 6	3'-6"

NOTES:

1. FOR DETAILS NOT SHOWN SEE ODOT STANDARD DRAWING SBR-1-99.
2. FOR DECK PLAN SEE SHEETS 4B12-38, 4B12-39, 4B12-39A AND 4B12-39B.
3. FOR TRANSVERSE SECTIONS SEE SHEETS 4B12-43 AND 4B12-44.
4. ALL REINFORCING STEEL SHALL BE EPOXY COATED, GRADE 60.

△2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	01/04/12	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge to be Choice.
1468 West 9th Street Suite 500 - Cleveland, Ohio 44113

DESIGNED JDH | DRAWN DCF | CHECKED DFT | REVIEWED RER | DATE 01/03/12 | REVISED | STRUCTURE FILE NUMBER 2506444

PARAPET ELEVATIONS AND SECTION

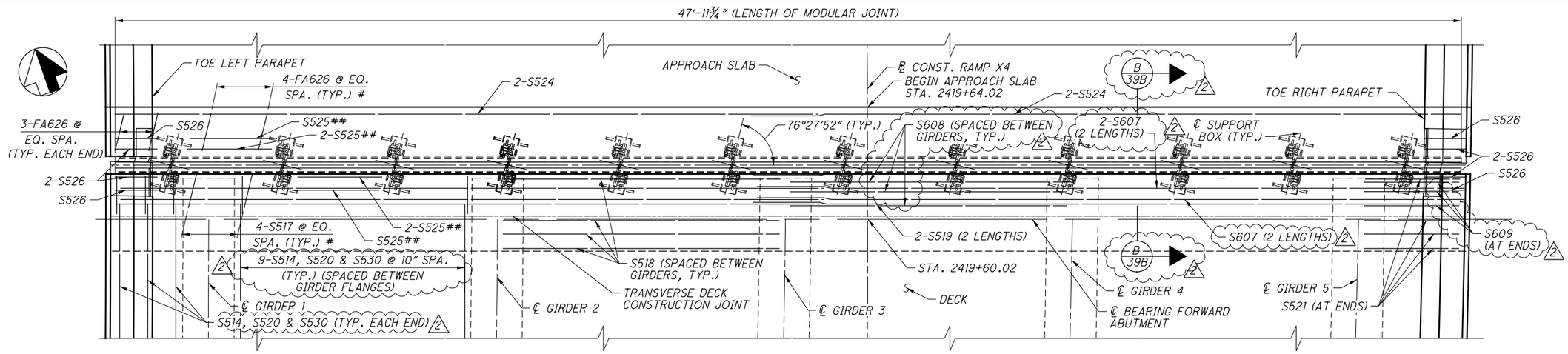
BRIDGE NO. FRA-670-0457B

RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2, AND I-71 SB AND I-71 NB

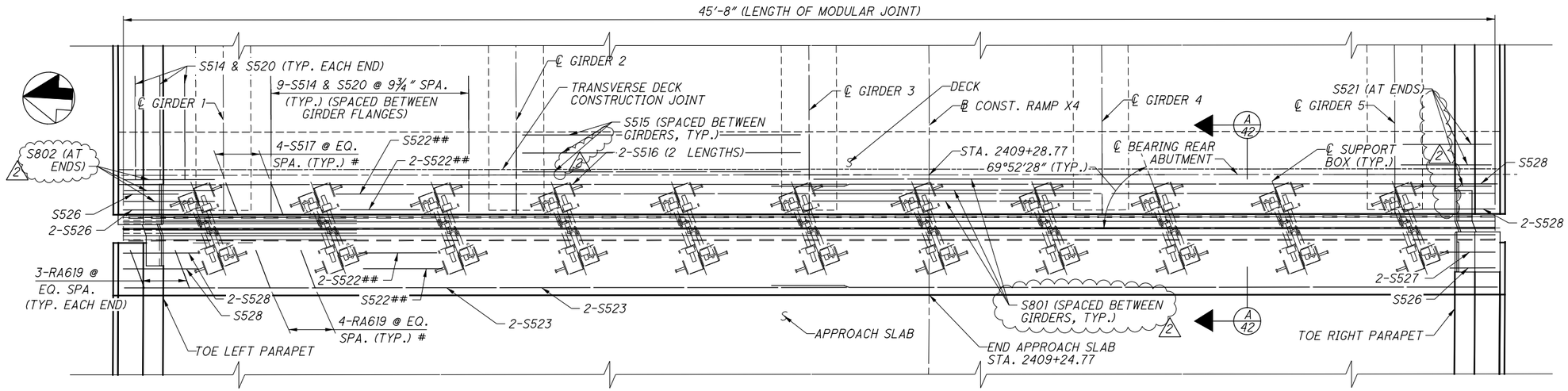
FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-40

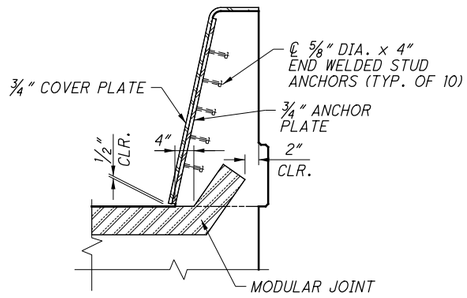
2608
2744



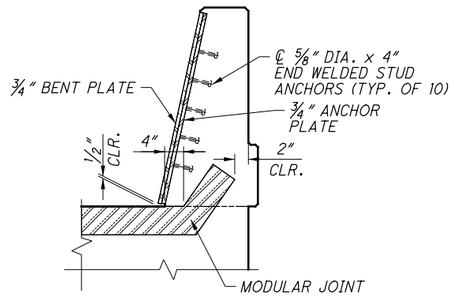
FORWARD ABUTMENT EXPANSION JOINT PLAN



REAR ABUTMENT EXPANSION JOINT PLAN



SECTION D-D



SECTION E-E

\# ORIENT PARALLEL TO SUPPORT BOXES, ASSUMES 4'-0" SUPPORT BOX SPACING

SPACED BETWEEN JOINT SUPPORT BOXES

NOTES:

1. SEAL TRANSVERSE DECK CONSTRUCTION JOINT WITH 2'-0" HMWM, CENTERED ABOUT JOINT.
2. LOCATION AND SPACING OF SUPPORT BEAMS SHALL BE LIMITED TO 3'-0" CENTERS UNDER MAIN LOAD BEARING BEAMS UNLESS FATIGUE TESTING OF THE ACTUAL WELDING CONNECTION DETAILS HAS BEEN PERFORMED TO SHOW THAT A GREATER SPACING IS ACCEPTABLE.
3. FOR GENERAL NOTES, SEE ITEM 513, STRUCTURAL STEEL MEMBERS, MODULAR EXPANSION JOINT, LEVEL UF, AS PER PLAN, ON SHEET 4B12-7.
4. FOR REAR ABUTMENT DETAILS, SEE SHEETS 4B12-12 AND 4B12-13.
5. FOR FORWARD ABUTMENT DETAILS, SEE SHEETS 4B12-14 THRU 4B12-15A.
6. FOR DECK PLANS, SEE SHEETS 4B12-38 THRU 4B12-39B.
7. GIRDERS 1 THRU 5 ARE COPED TO PROVIDE FOR ADDITIONAL ROOM FOR JOINT INSTALLATION. SEE SHEET 4B12-24 FOR DETAIL.

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
		ISSUE RECORD
3	5/08/14	RECORD DRAWINGS
2	4/24/12	NDC 022
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

E.L. ROBINSON
the Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

MODULAR EXPANSION JOINT PLAN
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-41

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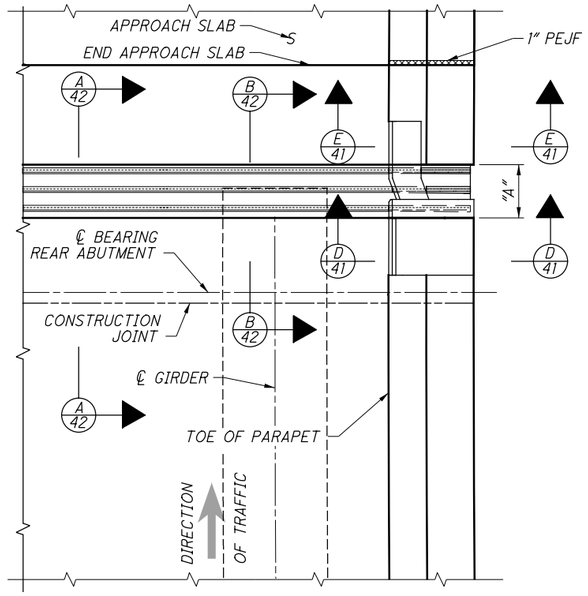
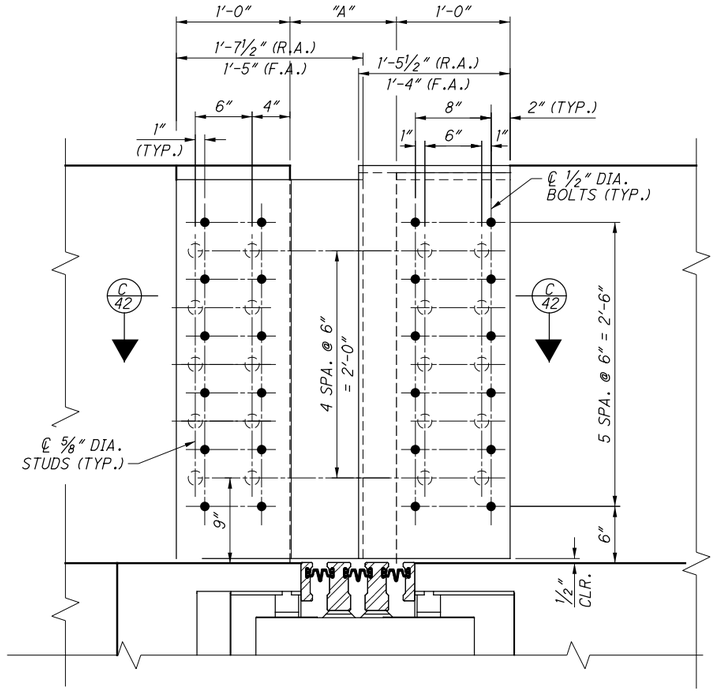
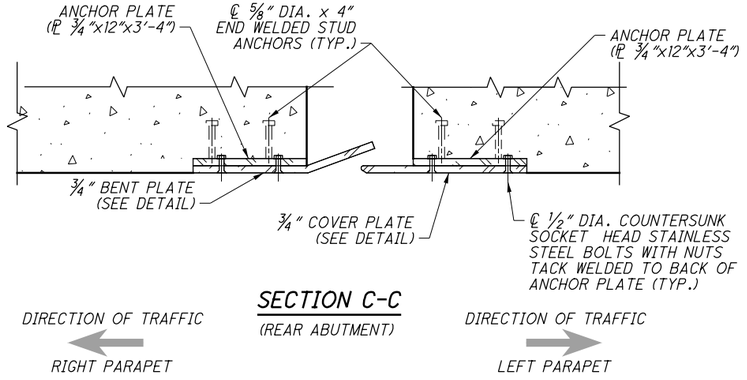


PART PLAN
(REAR ABUTMENT SHOWN)

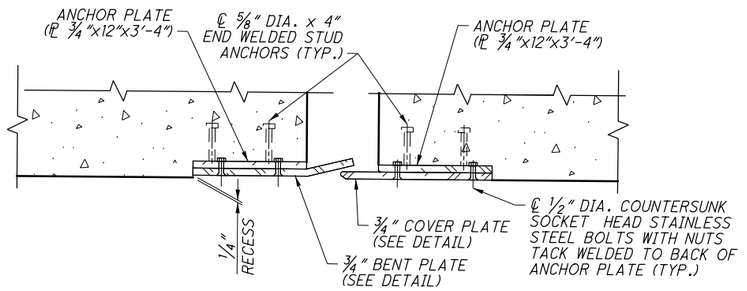


SECTION B-B
(REAR ABUTMENT SHOWN, FORWARD ABUTMENT SIMILAR)



SECTION C-C
(REAR ABUTMENT)

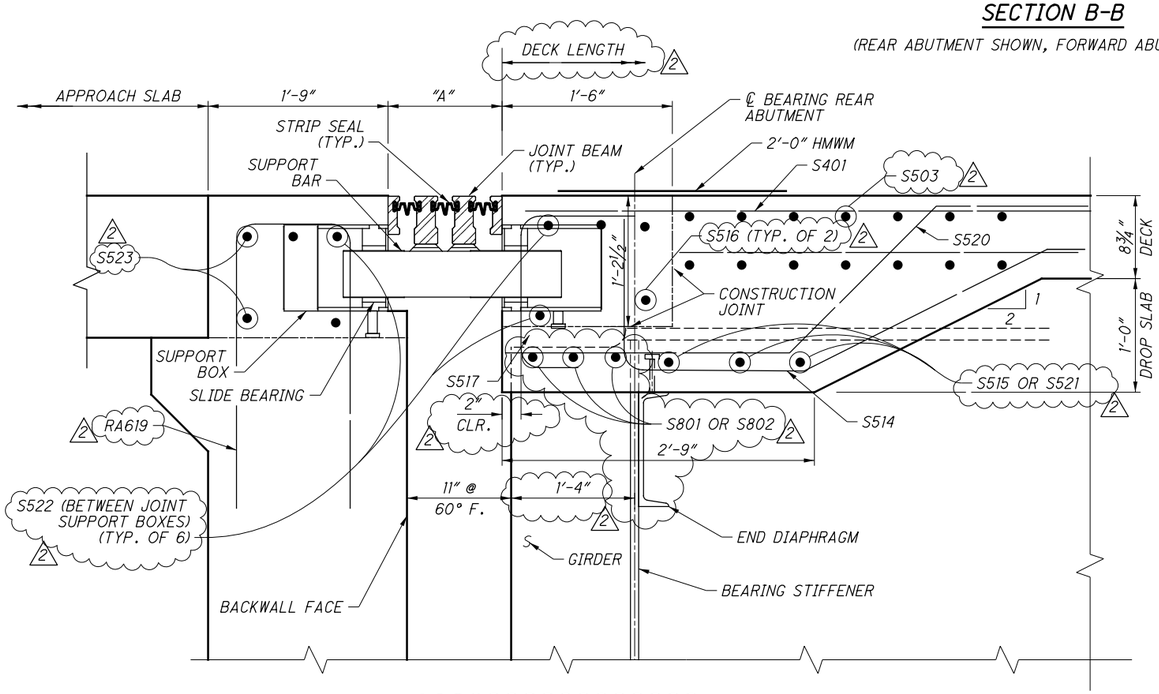
DIRECTION OF TRAFFIC
LEFT PARAPET



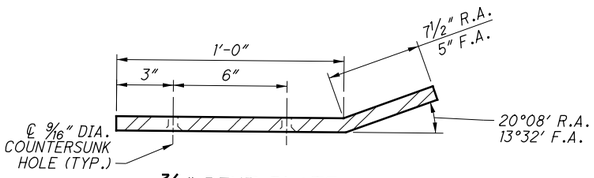
SECTION C-C
(FORWARD ABUTMENT)

DIRECTION OF TRAFFIC
LEFT PARAPET

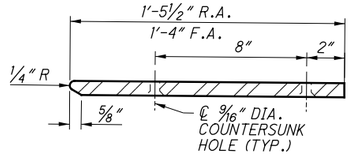
DIRECTION OF TRAFFIC
RIGHT PARAPET



SECTION A-A (REAR ABUTMENT)
(ABUTMENT AND APPROACH SLAB REINFORCING NOT SHOWN)



¾" BENT PLATE



¾" COVER PLATE

MODULAR JOINT SETTING TABLE (DIMENSION "A")

TEMPERATURE °F	REAR ABUTMENT	FORWARD ABUTMENT
30	13"	8¾"
40	12 7/16"	8⅜"
50	11 3/16"	8"
60	11¼"	7⅝"
70	10 11/16"	7 3/16"
80	10 1/16"	6 13/16"
90	9½"	6 7/16"

NOTES:

1. FOR NOTES, SEE SHEET 4B12-41.
2. FOR END DIAPHRAGM DETAILS, SEE SHEET 4B12-32A.
3. DROP SLAB SHALL EXTEND ENTIRE WIDTH OF DECK.
2 4. FOR SECTION B-B SEE SHEET 4B12-39B.
3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	4/24/12	NDC 022
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge Has Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

MODULAR EXPANSION JOINT DETAILS
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-42

2610
2744

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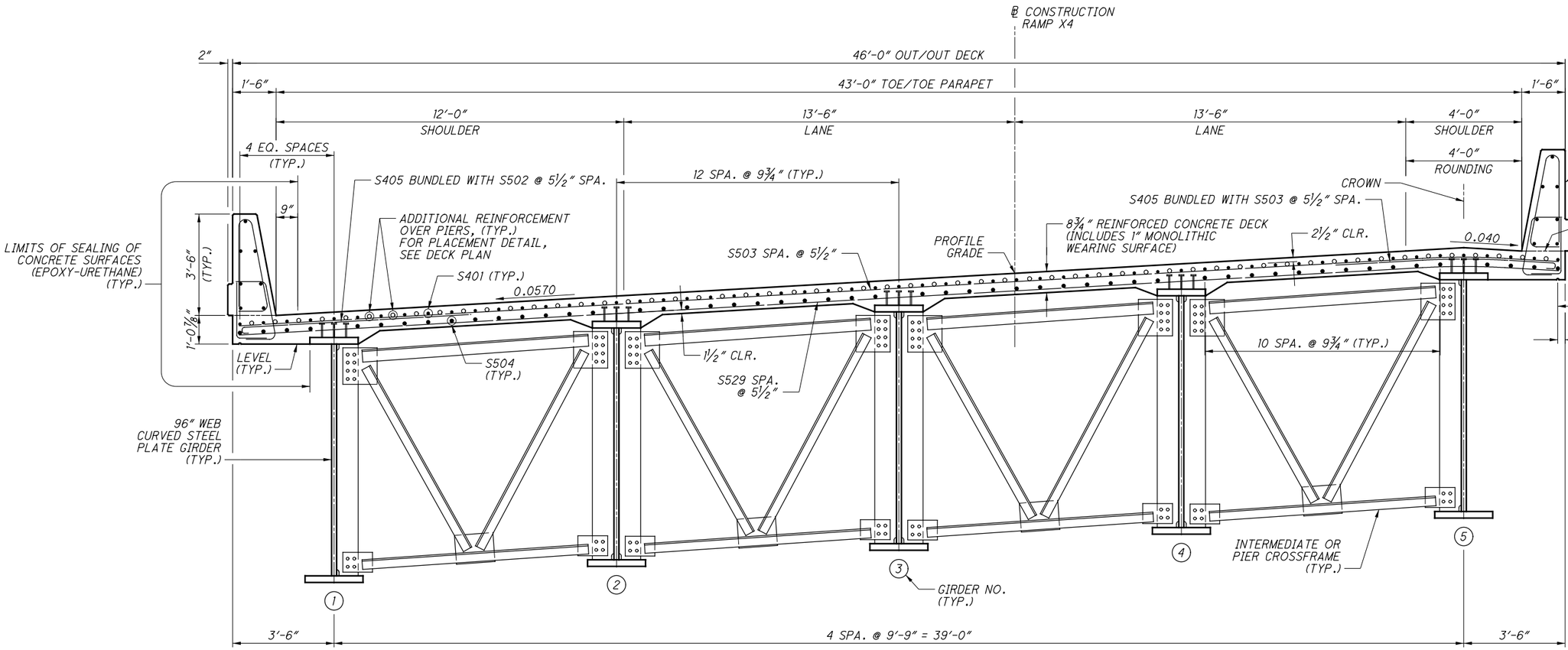

TRANSVERSE SECTION

(STA. 2409+25.27 THRU 2417+32.54)
(HAND HOLD ROD NOT SHOWN)

NOTES:

1. FOR GIRDER FRAMING PLANS, SEE SHEETS 4B12-26 THRU 4B12-28.
2. FOR GIRDER ELEVATION, SEE SHEETS 4B12-29 THRU 4B12-31.
3. FOR SHEAR STUD DETAILS, SEE SHEET 4B12-31.
4. FOR INTERMEDIATE AND PIER CROSSFRAME DETAILS AND INSPECTION HAND HOLD DETAILS, SEE SHEET 4B12-32.
5. FOR DECK PLAN, SEE SHEETS 4B12-38, 4B12-39, 4B12-39A AND 4B12-39B.
6. FOR PARAPET ELEVATION AND REINFORCING DETAILS, SEE SHEET 4B12-40.
7. CONTRACTOR TO FIELD BEND TRANSVERSE DECK REINFORCING AT ROUNDING.

2 NO CHANGES TO SHEET

DECK SLAB CONCRETE QUANTITY:

THE ESTIMATED QUANTITY OF DECK SLAB CONCRETE IS BASED ON THE CONSTANT DECK SLAB THICKNESS, AS SHOWN, PLUS THE QUANTITY OF CONCRETE THAT FORMS EACH GIRDER HAUNCH. THE ESTIMATE ASSUMES A CONSTANT HAUNCH THICKNESS OF 5.5 INCHES AND A CONSTANT HAUNCH WIDTH OUTSIDE THE EDGE OF EACH GIRDER FLANGE OF 9 INCHES. DEVIATE FROM THIS HAUNCH THICKNESS AS NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE. THE ALLOWABLE TOLERANCE FOR THE HAUNCH WIDTH OUTSIDE THE EDGE OF EACH GIRDER FLANGE IS +/- 3 INCHES.

THE HAUNCH THICKNESS WAS MEASURED AT THE CENTERLINE OF THE GIRDER, FROM THE SURFACE OF THE DECK TO THE BOTTOM OF THE TOP FLANGE MINUS THE DECK SLAB THICKNESS. THE AREA OF ALL EMBEDDED STEEL PLATES HAS BEEN DEDUCTED FROM THE HAUNCH QUANTITY IN ACCORDANCE WITH CMS 511.24.

NO.	DATE	DESCRIPTION
		ISSUE RECORD
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
C	11/11/11	FINAL SUBMITTAL
B	10/11/11	INTERIM SUBMITTAL
A	8/25/11	INTERIM SUBMITTAL

E.L. ROBINSON
the Challenge to be Chosen
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN DJC | CHECKED DFT | REVIEWED RER 11/08/11 | REVISED | STRUCTURE FILE NUMBER 2506444

TRANSVERSE SECTION (1 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-43

2611
2744

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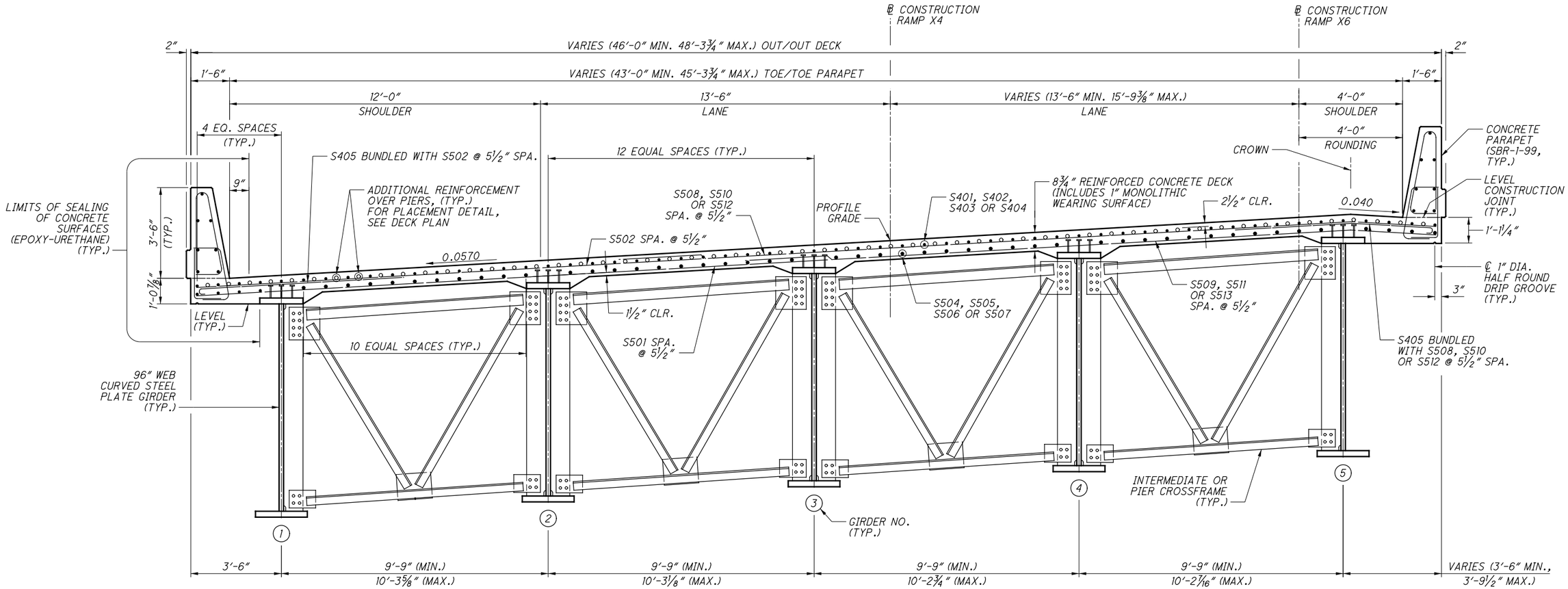

TRANSVERSE SECTION

(STA. 2417+32.54 THRU 2419+63.52)
(HAND HOLD ROD NOT SHOWN)

NOTES:

1. FOR GIRDER FRAMING PLANS, SEE SHEETS 4B12-26 THRU 4B12-28.
2. FOR GIRDER ELEVATION, SEE SHEETS 4B12-29 THRU 4B12-31.
3. FOR SHEAR STUD DETAILS, SEE SHEET 4B12-31.
4. FOR INTERMEDIATE AND PIER CROSSFRAME DETAILS AND INSPECTION HAND HOLD DETAILS, SEE SHEET 4B12-32.
5. FOR DECK PLAN, SEE SHEETS 4B12-38, 4B12-39, 4B12-39A AND 4B12-39B.
6. FOR PARAPET ELEVATION AND REINFORCING DETAILS, SEE SHEET 4B12-40.
7. CONTRACTOR TO FIELD BEND TRANSVERSE DECK REINFORCING AT ROUNDING.

△2 NO CHANGES TO SHEET

DECK SLAB CONCRETE QUANTITY:

THE ESTIMATED QUANTITY OF DECK SLAB CONCRETE IS BASED ON THE CONSTANT DECK SLAB THICKNESS, AS SHOWN, PLUS THE QUANTITY OF CONCRETE THAT FORMS EACH GIRDER HAUNCH. THE ESTIMATE ASSUMES A CONSTANT HAUNCH THICKNESS OF 5.5 INCHES AND A CONSTANT HAUNCH WIDTH OUTSIDE THE EDGE OF EACH GIRDER FLANGE OF 9 INCHES. DEVIATE FROM THIS HAUNCH THICKNESS AS NECESSARY TO PLACE THE DECK SURFACE AT THE FINISHED GRADE. THE ALLOWABLE TOLERANCE FOR THE HAUNCH WIDTH OUTSIDE THE EDGE OF EACH GIRDER FLANGE IS +/- 3 INCHES.

THE HAUNCH THICKNESS WAS MEASURED AT THE CENTERLINE OF THE GIRDER, FROM THE SURFACE OF THE DECK TO THE BOTTOM OF THE TOP FLANGE MINUS THE DECK SLAB THICKNESS. THE AREA OF ALL EMBEDDED STEEL PLATES HAS BEEN DEDUCTED FROM THE HAUNCH QUANTITY IN ACCORDANCE WITH CMS 511.24.

NO.	DATE	DESCRIPTION
		ISSUE RECORD
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

E.L. ROBINSON
Engineering Co.
The Challenge Is a Choice
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DJC	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT		2506444	

TRANSVERSE SECTION (2 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-44

2612
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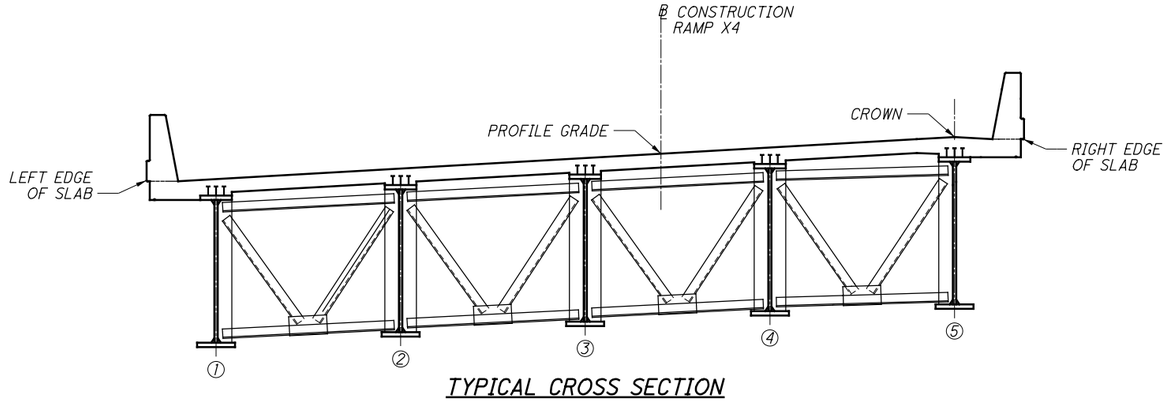
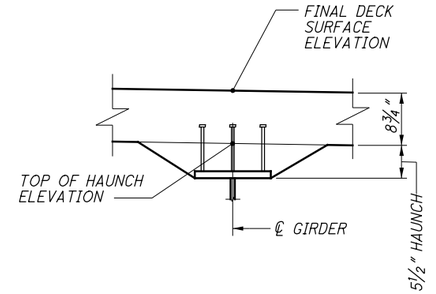


TYPICAL CROSS SECTION



DECK HAUNCH DETAIL

SCREED ELEVATIONS - SPAN 1

LOCATION		℄ BRG. REAR ABUT.	0.1L	0.2L	0.3L	0.4L	0.5L	℄ F.S. 1	0.6L	0.7L	0.8L	0.9L	℄ PIER 1
LEFT EDGE OF SLAB	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	810.07	810.86	811.67	812.48	813.29	814.09	814.75	814.88	815.66	816.43	817.21	818.00
PROFILE GRADE	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	811.53	812.33	813.15	813.96	814.78	815.58	816.23	816.37	817.14	817.90	818.67	819.46
CROWN	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	812.36	813.18	814.01	814.83	815.65	816.46	817.10	817.23	818.00	818.75	819.52	820.29
RIGHT EDGE OF SLAB	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	812.33	813.15	813.98	814.81	815.63	816.43	817.07	817.21	817.97	818.73	819.49	820.26

SCREED ELEVATIONS - SPAN 2

LOCATION		℄ PIER 1	0.1L	0.2L	℄ F.S. 2	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	℄ F.S. 3	0.9L	℄ PIER 2
LEFT EDGE OF SLAB	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	818.00	819.02	820.05	820.47	821.09	822.12	823.12	824.11	825.08	826.04	826.19	826.99	827.91
PROFILE GRADE	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	819.46	820.46	821.48	821.90	822.51	823.53	824.54	825.52	826.49	827.47	827.61	828.42	829.37
CROWN	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	820.29	821.29	822.31	822.72	823.34	824.36	825.36	826.34	827.31	828.29	828.44	829.25	830.20
RIGHT EDGE OF SLAB	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	820.26	821.26	822.28	822.69	823.31	824.33	825.33	826.31	827.28	828.26	828.40	829.22	830.17

△2

NOTES:

1. SCREED ELEVATIONS SHOWN REPRESENT THE THEORETICAL DECK SURFACE LOCATION PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.
2. FOR SCREED ELEVATIONS, SPANS 3 THRU 5, SEE SHEET 4B12-46.
3. FOR TOP OF HAUNCH ELEVATIONS, SEE SHEETS 4B12-47 THRU 4B12-48.
4. FOR FINAL DECK SURFACE ELEVATIONS, SEE SHEETS 4B12-49 THRU 4B12-51.

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	7/27/12	RFI 139
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge Has Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN ABC | CHECKED MRV | REVISED JDH | REVIEWED RER | DATE 11/08/11 | STRUCTURE FILE NUMBER 2506444

SCREED ELEVATIONS (1 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-45

2613
2744

SCREED ELEVATIONS - SPAN 3

LOCATION		℄ PIER 2	0.1L	0.2L	0.3L	℄ F.S. 4	0.4L	0.5L	0.6L	0.7L	℄ F.S. 5	0.8L	0.9L	℄ PIER 3
LEFT EDGE OF SLAB	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	827.91	829.03	830.10	831.11	831.29	832.03	832.84	833.53	834.11	834.56	834.61	835.04	835.45
PROFILE GRADE	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	829.37	830.50	831.59	832.62	832.80	833.55	834.36	835.05	835.61	836.04	836.09	836.51	836.90
CROWN	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	830.20	831.35	832.46	833.50	833.68	834.44	835.26	835.93	836.48	836.90	836.95	837.35	837.73
RIGHT EDGE OF SLAB	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	830.17	831.32	832.43	833.48	833.66	834.42	835.23	835.91	836.46	836.88	836.92	837.32	837.70

SCREED ELEVATIONS - SPAN 4

LOCATION		℄ PIER 3	0.1L	0.2L	℄ F.S. 6	0.3L	0.4L	0.5L	0.6L	0.7L	℄ F.S. 7	0.8L	0.9L	℄ PIER 4
LEFT EDGE OF SLAB	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	835.45	835.82	836.17	836.37	836.48	836.71	836.85	836.90	836.85	836.79	836.72	836.53	836.32
PROFILE GRADE	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	836.90	837.26	837.61	837.81	837.92	838.16	838.31	838.35	838.30	838.24	838.17	837.98	837.77
CROWN	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	837.73	838.09	838.44	838.64	838.75	839.00	839.15	839.20	839.14	839.08	839.00	838.82	838.61
RIGHT EDGE OF SLAB	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	837.70	838.06	838.41	838.61	838.72	838.97	839.13	839.17	839.11	839.04	838.97	838.79	838.58

SCREED ELEVATIONS - SPAN 5

LOCATION		℄ PIER 4	0.1L	0.2L	0.3L	℄ F.S. 8	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	℄ BRG. FWD. ABUT.
LEFT EDGE OF SLAB	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	836.32	836.15	835.97	835.76	835.67	835.52	835.23	834.89	834.49	834.04	833.53	832.98
PROFILE GRADE	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	837.77	837.61	837.43	837.23	837.14	837.00	836.71	836.38	835.98	835.52	835.00	834.44
CROWN	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	838.61	838.46	838.29	838.11	838.03	837.89	837.63	837.30	836.92	836.47	835.96	835.40
RIGHT EDGE OF SLAB	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	838.58	838.43	838.26	838.08	838.00	837.86	837.60	837.28	836.89	836.44	835.93	835.37

NOTES:

1. SCREED ELEVATIONS SHOWN REPRESENT THE THEORETICAL DECK SURFACE LOCATION PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.
2. FOR SCREED ELEVATIONS, SPANS 1 AND 2, SEE SHEET 4B12-45.
3. FOR TOP OF HAUNCH ELEVATIONS, SEE SHEETS 4B12-47 THRU 4B12-48.
4. FOR FINAL DECK SURFACE ELEVATIONS, SEE SHEETS 4B12-49 THRU 4B12-51.

△2

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	7/27/12	RFI 139
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to a Choice
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | CHECKED MRV
DRAWN ABC | REVISED JDH
REVIEWED RER | DATE 11/08/11
STRUCTURE FILE NUMBER 2506444

SCREED ELEVATIONS (2 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-46

2614
2744

TOP OF HAUNCH ELEVATIONS - SPAN 1

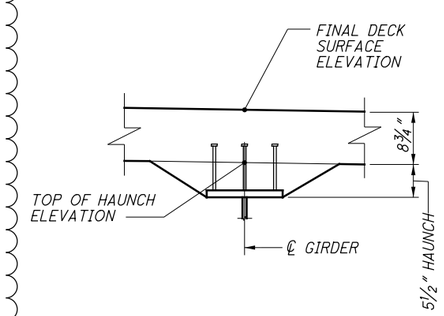
LOCATION		℄ BRG. REAR ABUT.	0.1L	0.2L	0.3L	0.4L	0.5L	℄ F.S. 1	0.6L	0.7L	0.8L	0.9L	℄ PIER 1
GIRDER 1	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	809.46	810.25	811.05	811.86	812.68	813.48	814.13	814.27	815.05	815.82	816.60	817.39
GIRDER 2	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	810.01	810.81	811.62	812.43	813.24	814.05	814.70	814.84	815.61	816.38	817.16	817.95
GIRDER 3	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	810.57	811.37	812.18	813.00	813.82	814.62	815.27	815.40	816.18	816.94	817.72	818.50
GIRDER 4	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	811.13	811.93	812.75	813.57	814.39	815.19	815.84	815.98	816.75	817.51	818.28	819.06
GIRDER 5	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	811.63	812.45	813.28	814.10	814.92	815.73	816.37	816.51	817.27	818.03	818.79	819.56

TOP OF HAUNCH ELEVATIONS - SPAN 2

LOCATION		℄ PIER 1	0.1L	0.2L	℄ F.S. 2	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	℄ F.S. 3	0.9L	℄ PIER 2
GIRDER 1	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	817.39	818.40	819.44	819.85	820.47	821.50	822.50	823.49	824.46	825.42	825.57	826.37	827.30
GIRDER 2	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	817.95	818.95	819.98	820.40	821.01	822.04	823.04	824.03	825.00	825.97	826.11	826.92	827.85
GIRDER 3	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	818.50	819.51	820.53	820.94	821.56	822.58	823.58	824.57	825.54	826.51	826.66	827.47	828.41
GIRDER 4	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	819.06	820.06	821.08	821.49	822.11	823.13	824.13	825.11	826.09	827.06	827.20	828.02	828.97
GIRDER 5	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	819.56	820.56	821.58	821.99	822.61	823.63	824.63	825.61	826.58	827.56	827.71	828.52	829.47

TOP OF HAUNCH ELEVATIONS - SPAN 3

LOCATION		℄ PIER 2	0.1L	0.2L	0.3L	℄ F.S. 4	0.4L	0.5L	0.6L	0.7L	℄ F.S. 5	0.8L	0.9L	℄ PIER 3
GIRDER 1	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	827.30	828.41	829.49	830.50	830.68	831.42	832.23	832.92	833.50	833.95	833.99	834.43	834.83
GIRDER 2	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	827.85	828.98	830.06	831.08	831.25	832.00	832.81	833.50	834.07	834.51	834.56	834.99	835.39
GIRDER 3	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	828.41	829.54	830.63	831.65	831.83	832.58	833.39	834.08	834.65	835.08	835.12	835.55	835.94
GIRDER 4	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	828.97	830.10	831.20	832.23	832.41	833.17	833.98	834.66	835.22	835.65	835.69	836.11	836.50
GIRDER 5	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	829.47	830.62	831.73	832.78	832.95	833.72	834.53	835.20	835.75	836.17	836.22	836.62	837.01



DECK HAUNCH DETAIL

2 3 NO CHANGES TO SHEET

NOTES:

1. TOP OF HAUNCH ELEVATIONS SHOWN REPRESENT THE THEORETICAL LOCATION OF THE BOTTOM OF THE DECK ABOVE THE BEAM/GIRDER HAUNCH PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.
2. FOR TOP OF HAUNCH ELEVATIONS, SPANS 4 AND 5, SEE SHEET 4B12-48.
3. FOR SCREED ELEVATIONS, SEE SHEETS 4B12-45 AND 4B12-46.
4. FOR FINAL DECK SURFACE ELEVATIONS, SEE SHEETS 4B12-49 THRU 4B12-51.

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	7/27/12	RFI 139
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN ABC | REVIEWED RER | DATE 11/08/11
CHECKED MRV | REVISED JDH | STRUCTURE FILE NUMBER 2506444

TOP OF HAUNCH ELEVATIONS (1 OF 2)

BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-47

2615
2744

TOP OF HAUNCH ELEVATIONS - SPAN 4

LOCATION		℄ PIER 3	0.1L	0.2L	℄ F.S. 6	0.3L	0.4L	0.5L	0.6L	0.7L	℄ F.S. 7	0.8L	0.9L	℄ PIER 4
GIRDER 1	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	834.83	835.20	835.55	835.75	835.86	836.10	836.24	836.28	836.23	836.17	836.10	835.92	835.71
GIRDER 2	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	835.39	835.75	836.10	836.30	836.41	836.65	836.79	836.84	836.78	836.73	836.66	836.47	836.26
GIRDER 3	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	835.94	836.30	836.65	836.85	836.96	837.20	837.35	837.39	837.34	837.28	837.21	837.03	836.82
GIRDER 4	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	836.50	836.86	837.21	837.40	837.52	837.76	837.91	837.95	837.90	837.84	837.77	837.58	837.37
GIRDER 5	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	837.01	837.36	837.71	837.91	838.03	838.27	838.43	838.47	838.41	838.35	838.27	838.09	837.88

TOP OF HAUNCH ELEVATIONS - SPAN 5

LOCATION		℄ PIER 4	0.1L	0.2L	0.3L	℄ F.S. 8	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	℄ BRG. FWD. ABUT.
GIRDER 1	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	835.71	835.54	835.35	835.15	835.06	834.91	834.62	834.28	833.88	833.43	832.92	832.37
GIRDER 2	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	836.26	836.09	835.91	835.71	835.62	835.47	835.19	834.85	834.46	834.01	833.50	832.96
GIRDER 3	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	836.82	836.65	836.47	836.27	836.19	836.04	835.76	835.43	835.04	834.59	834.09	833.54
GIRDER 4	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	837.37	837.21	837.03	836.84	836.75	836.61	836.34	836.01	835.62	835.18	834.67	834.13
GIRDER 5	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	837.88	837.72	837.55	837.36	837.28	837.14	836.87	836.55	836.16	835.71	835.21	834.66

△2

NOTES:

1. TOP OF HAUNCH ELEVATIONS SHOWN REPRESENT THE THEORETICAL LOCATION OF THE BOTTOM OF THE DECK ABOVE THE BEAM/GIRDER HAUNCH PRIOR TO DEFLECTIONS CAUSED BY DECK PLACEMENT AND OTHER ANTICIPATED DEAD LOADS.
2. FOR TOP OF HAUNCH ELEVATIONS, SPANS 1 THRU 3, SEE SHEET 4B12-47.
3. FOR SCREED ELEVATIONS, SEE SHEETS 4B12-45 AND 4B12-46.
4. FOR FINAL DECK SURFACE ELEVATIONS, SEE SHEETS 4B12-49 THRU 4B12-51.

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	7/27/12	RFI 139
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

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DESIGNED JDH | DRAWN ABC | REVIEWED RER | DATE 11/08/11
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TOP OF HAUNCH ELEVATIONS (2 OF 2)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-48

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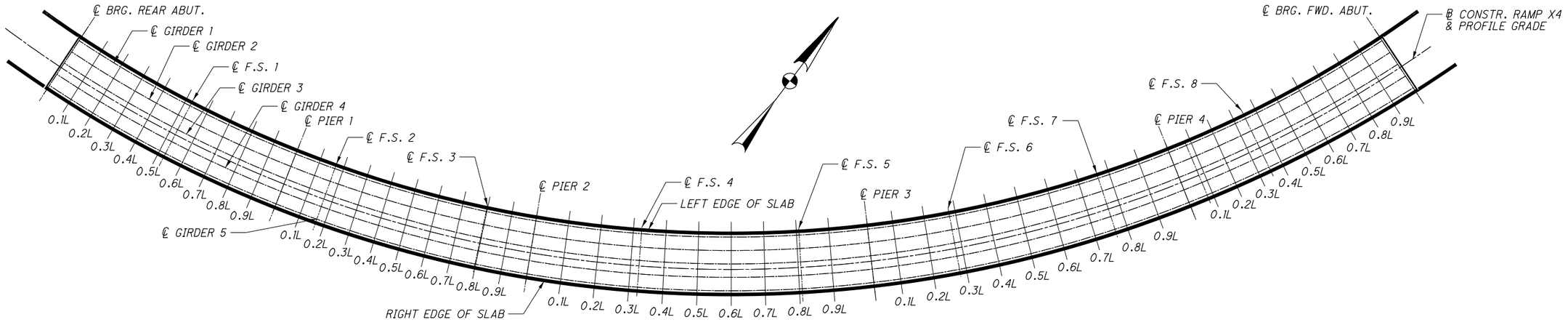
2744



KEY PLAN

FINAL DECK SURFACE ELEVATIONS - SPAN 1

LOCATION		℄ BRG. REAR ABUT.	0.1L	0.2L	0.3L	0.4L	0.5L	℄ F.S. 1	0.6L	0.7L	0.8L	0.9L	℄ PIER 1
LEFT EDGE OF SLAB	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	810.07	810.81	811.57	812.35	813.15	813.96	814.63	814.77	815.58	816.39	817.19	818.00
GIRDER 1	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	810.19	810.92	811.68	812.46	813.26	814.07	814.74	814.88	815.69	816.50	817.31	818.12
GIRDER 2	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	810.74	811.48	812.24	813.02	813.82	814.63	815.29	815.44	816.25	817.05	817.86	818.67
GIRDER 3	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	811.30	812.04	812.79	813.57	814.37	815.18	815.85	815.99	816.80	817.61	818.42	819.23
PROFILE GRADE	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	811.53	812.26	813.02	813.80	814.60	815.41	816.08	816.22	817.03	817.84	818.65	819.46
GIRDER 4	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	811.85	812.59	813.35	814.13	814.93	815.74	816.41	816.55	817.36	818.17	818.98	819.79
GIRDER 5	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	812.36	813.10	813.86	814.64	815.43	816.24	816.91	817.05	817.86	818.67	819.48	820.29
CROWN	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	812.36	813.10	813.86	814.64	815.43	816.24	816.91	817.05	817.86	818.67	819.48	820.29
RIGHT EDGE OF SLAB	STATION	2409+28.77	2409+45.27	2409+61.77	2409+78.27	2409+94.77	2410+11.27	2410+24.91	2410+27.77	2410+44.27	2410+60.77	2410+77.27	2410+93.77
	ELEVATION	812.33	813.07	813.83	814.60	815.40	816.21	816.88	817.02	817.83	818.64	819.45	820.26

NOTES:

1. FINAL DECK SURFACE ELEVATIONS SHOWN REPRESENT THE DECK SURFACE LOCATION AFTER ALL ANTICIPATED DEAD LOAD DEFLECTIONS HAVE OCCURRED.
2. FOR FINAL DECK SURFACE ELEVATIONS, SPANS 2 AND 3, SEE SHEET 4B12-50.
3. FOR FINAL DECK SURFACE ELEVATIONS, SPANS 4 AND 5, SEE SHEET 4B12-51.
4. FOR SCREED ELEVATIONS, SEE SHEETS 4B12-45 AND 4B12-46.
5. FOR TOP OF HAUNCH ELEVATIONS, SEE SHEETS 4B12-47 AND 4B12-48.

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to a Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN ABC | REVIEWED RER | DATE 11/08/11
CHECKED MRV | REVISED | STRUCTURE FILE NUMBER 2506444

FINAL DECK SURFACE ELEVATIONS (1 OF 3)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-49

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2744

FINAL DECK SURFACE ELEVATIONS - SPAN 2

LOCATION		℄ PIER 1	0.1L	0.2L	℄ F.S. 2	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	℄ F.S. 3	0.9L	℄ PIER 2
LEFT EDGE OF SLAB	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	818.00	819.01	820.01	820.41	821.02	822.02	823.02	824.03	825.03	826.03	826.18	826.99	827.91
GIRDER 1	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	818.12	819.12	820.13	820.53	821.13	822.13	823.14	824.14	825.14	826.14	826.29	827.11	828.03
GIRDER 2	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	818.67	819.68	820.68	821.08	821.69	822.69	823.69	824.70	825.70	826.70	826.85	827.66	828.58
GIRDER 3	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	819.23	820.23	821.24	821.64	822.24	823.24	824.25	825.25	826.26	827.26	827.40	828.22	829.14
PROFILE GRADE	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	819.46	820.46	821.47	821.87	822.47	823.47	824.48	825.48	826.48	827.48	827.63	828.45	829.37
GIRDER 4	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	819.79	820.79	821.79	822.20	822.80	823.80	824.80	825.81	826.81	827.81	827.96	828.78	829.69
GIRDER 5	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	820.29	821.30	822.30	822.70	823.30	824.31	825.31	826.31	827.32	828.32	828.47	829.28	830.20
CROWN	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	820.29	821.30	822.30	822.70	823.30	824.31	825.31	826.31	827.32	828.32	828.47	829.28	830.20
RIGHT EDGE OF SLAB	STATION	2410+93.77	2411+14.22	2411+34.67	2411+42.86	2411+55.12	2411+75.57	2411+96.02	2412+16.47	2412+36.92	2412+57.37	2412+60.44	2412+77.82	2412+98.27
	ELEVATION	820.26	821.27	822.27	822.67	823.27	824.28	825.28	826.28	827.29	828.29	828.44	829.25	830.17

FINAL DECK SURFACE ELEVATIONS - SPAN 3

LOCATION		℄ PIER 2	0.1L	0.2L	0.3L	℄ F.S. 4	0.4L	0.5L	0.6L	0.7L	℄ F.S. 5	0.8L	0.9L	℄ PIER 3
LEFT EDGE OF SLAB	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	827.91	828.97	829.97	830.89	831.05	831.74	832.53	833.25	833.90	834.43	834.48	835.00	835.45
GIRDER 1	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	828.03	829.09	830.08	831.00	831.16	831.86	832.65	833.36	834.02	834.55	834.60	835.11	835.56
GIRDER 2	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	828.58	829.64	830.63	831.56	831.72	832.41	833.20	833.92	834.57	835.10	835.15	835.67	836.12
GIRDER 3	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	829.14	830.20	831.19	832.11	832.28	832.97	833.76	834.48	835.13	835.66	835.71	836.23	836.67
PROFILE GRADE	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	829.37	830.43	831.42	832.34	832.50	833.20	833.99	834.70	835.36	835.88	835.94	836.45	836.90
GIRDER 4	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	829.69	830.75	831.75	832.67	832.83	833.53	834.31	835.03	835.68	836.21	836.27	836.78	837.23
GIRDER 5	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	830.20	831.26	832.25	833.18	833.34	834.03	834.82	835.54	836.19	836.72	836.77	837.29	837.73
CROWN	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	830.20	831.26	832.25	833.18	833.34	834.03	834.82	835.54	836.19	836.72	836.77	837.29	837.73
RIGHT EDGE OF SLAB	STATION	2412+98.27	2413+23.25	2413+48.22	2413+73.20	2413+77.75	2413+98.17	2414+23.15	2414+48.12	2414+73.10	2414+95.65	2414+98.07	2415+23.05	2415+48.02
	ELEVATION	830.17	831.23	832.22	833.15	833.31	834.00	834.79	835.51	836.16	836.69	836.74	837.26	837.70

NOTES:

1. FINAL DECK SURFACE ELEVATIONS SHOWN REPRESENT THE DECK SURFACE LOCATION AFTER ALL ANTICIPATED DEAD LOAD DEFLECTIONS HAVE OCCURRED.
2. FOR FINAL DECK SURFACE ELEVATIONS, SPAN 1, SEE SHEET 4B12-49.
3. FOR FINAL DECK SURFACE ELEVATIONS, SPANS 4 AND 5, SEE SHEET 4B12-51.
4. FOR SCREED ELEVATIONS, SEE SHEETS 4B12-45 AND 4B12-46.
5. FOR TOP OF HAUNCH ELEVATIONS, SEE SHEETS 4B12-47 AND 4B12-48.

(2) NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
		ISSUE RECORD
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

E.L. ROBINSON
the Challenge to Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN ABC | REVIEWED RER | DATE 11/08/1
CHECKED MRV | REVISED | STRUCTURE FILE NUMBER 2506444

FINAL DECK SURFACE ELEVATIONS (2 OF 3)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-50

2618
2744

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FINAL DECK SURFACE ELEVATIONS - SPAN 4

LOCATION		℄ PIER 3	0.1L	0.2L	℄ F.S. 6	0.3L	0.4L	0.5L	0.6L	0.7L	℄ F.S. 7	0.8L	0.9L	℄ PIER 4
LEFT EDGE OF SLAB	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	835.45	835.80	836.10	836.25	836.34	836.51	836.63	836.69	836.69	836.66	836.62	836.50	836.32
GIRDER 1	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	835.56	835.92	836.21	836.36	836.45	836.63	836.75	836.80	836.80	836.78	836.74	836.62	836.43
GIRDER 2	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	836.12	836.47	836.77	836.92	837.01	837.18	837.30	837.36	837.36	837.33	837.29	837.17	836.99
GIRDER 3	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	836.67	837.03	837.33	837.48	837.56	837.74	837.86	837.91	837.91	837.89	837.85	837.73	837.55
PROFILE GRADE	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	836.90	837.26	837.55	837.70	837.79	837.97	838.08	838.14	838.14	838.12	838.08	837.96	837.77
GIRDER 4	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	837.23	837.58	837.88	838.03	838.12	838.29	838.41	838.47	838.47	838.44	838.41	838.28	838.10
GIRDER 5	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	837.73	838.09	838.39	838.54	838.63	838.80	838.92	838.98	838.97	838.95	838.91	838.79	838.61
CROWN	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	837.73	838.09	838.39	838.54	838.63	838.80	838.92	838.98	838.97	838.95	838.91	838.79	838.61
RIGHT EDGE OF SLAB	STATION	2415+48.02	2415+71.42	2415+94.82	2416+08.97	2416+18.22	2416+41.62	2416+65.02	2416+88.42	2417+11.82	2417+23.77	2417+35.22	2417+58.62	2417+82.02
	ELEVATION	837.70	838.06	838.36	838.51	838.59	838.77	838.89	838.95	838.94	838.92	838.88	838.76	838.58

FINAL DECK SURFACE ELEVATIONS - SPAN 5

LOCATION		℄ PIER 4	0.1L	0.2L	0.3L	℄ F.S. 8	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	℄ BRG. FWD. ABUT.
LEFT EDGE OF SLAB	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	836.32	836.14	835.93	835.68	835.57	835.40	835.08	834.73	834.35	833.92	833.47	832.98
GIRDER 1	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	836.43	836.26	836.04	835.80	835.69	835.51	835.20	834.85	834.46	834.04	833.58	833.10
GIRDER 2	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	836.99	836.81	836.60	836.35	836.25	836.07	835.76	835.41	835.03	834.61	834.16	833.69
GIRDER 3	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	837.55	837.37	837.16	836.91	836.80	836.63	836.32	835.98	835.60	835.19	834.74	834.27
PROFILE GRADE	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	837.77	837.60	837.38	837.14	837.03	836.85	836.54	836.18	835.80	835.38	834.92	834.44
GIRDER 4	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	838.10	837.92	837.71	837.47	837.36	837.19	836.88	836.54	836.17	835.76	835.32	834.85
GIRDER 5	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	838.61	838.43	838.22	837.98	837.87	837.70	837.40	837.06	836.69	836.28	835.85	835.39
CROWN	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	838.61	838.44	838.24	838.00	837.89	837.72	837.42	837.08	836.71	836.31	835.87	835.40
RIGHT EDGE OF SLAB	STATION	2417+82.02	2417+99.82	2418+17.62	2418+35.42	2418+42.45	2418+53.22	2418+71.02	2418+88.82	2419+06.62	2419+24.42	2419+42.22	2419+60.02
	ELEVATION	838.58	838.41	838.20	837.96	837.86	837.69	837.39	837.05	836.68	836.27	835.84	835.37

NOTES:

1. *FINAL DECK SURFACE ELEVATIONS SHOWN REPRESENT THE DECK SURFACE LOCATION AFTER ALL ANTICIPATED DEAD LOAD DEFLECTIONS HAVE OCCURRED.*
2. *FOR FINAL DECK SURFACE ELEVATIONS, SPAN 1, SEE SHEET 4B12-49.*
3. *FOR FINAL DECK SURFACE ELEVATIONS, SPANS 2 AND 3, SEE SHEET 4B12-50.*
4. *FOR SCREED ELEVATIONS, SEE SHEETS 4B12-45 AND 4B12-46.*
5. *FOR TOP OF HAUNCH ELEVATIONS, SEE SHEETS 4B12-47 AND 4B12-48.*

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
B	11/11/11	FINAL SUBMITTAL
A	10/11/11	INTERIM SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

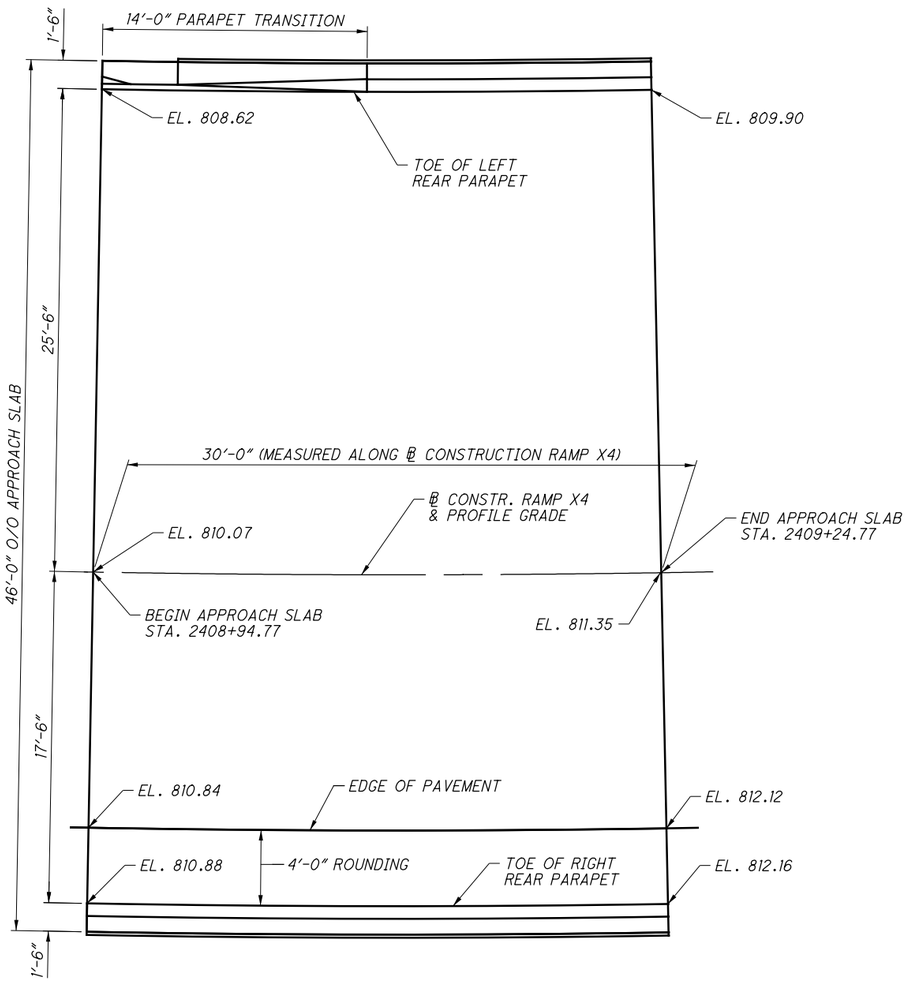
DESIGNED JDH | DRAWN ABC | CHECKED MRV | REVIEWED RER | DATE 11/08/11 | REVISED | STRUCTURE FILE NUMBER 2506444

FINAL DECK SURFACE ELEVATIONS (3 OF 3)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

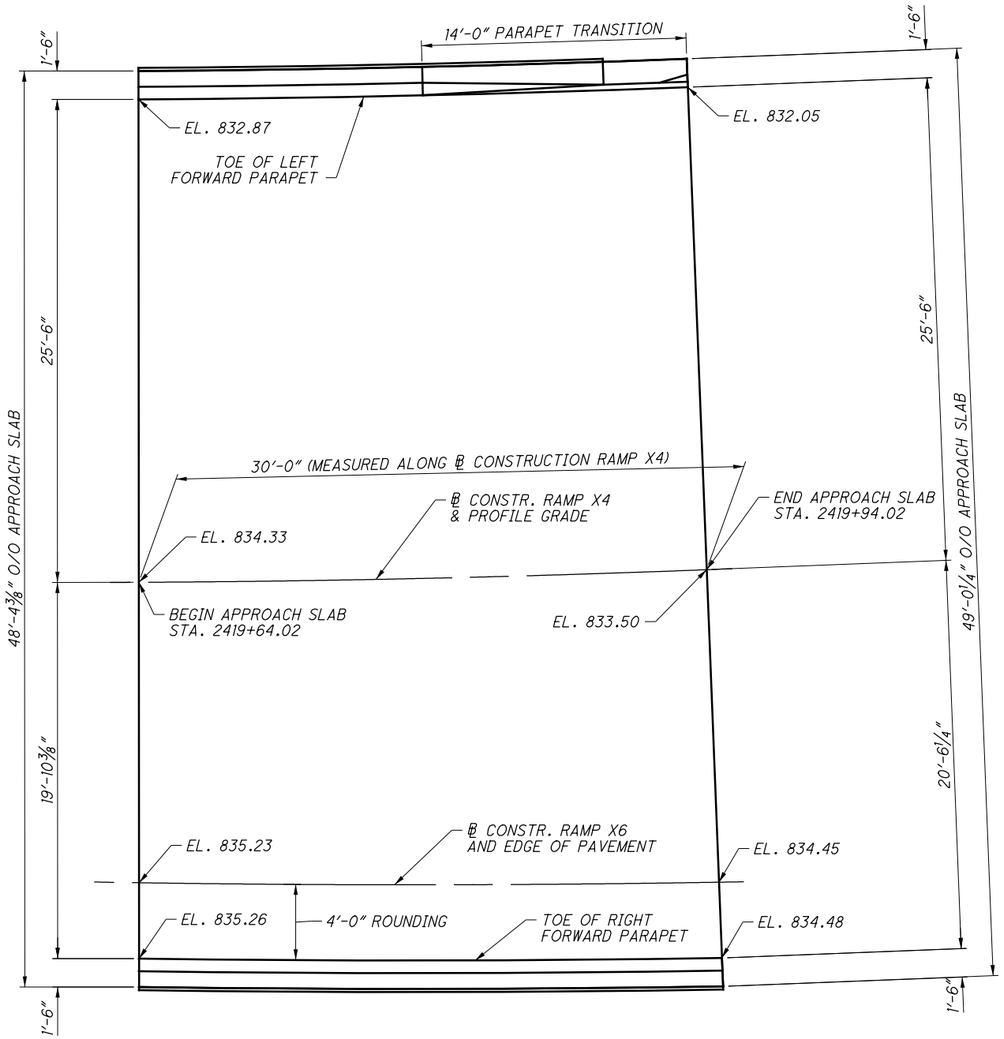
FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-51

2619
2744



PLAN - REAR ABUTMENT



PLAN - FORWARD ABUTMENT

NOTES:

1. FOR NOTES AND PARAPET DETAILS, SEE SHEET 4B12-53.

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
Engineering Company
The Challenge Is Our Choice
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT		2506444	

APPROACH SLAB PLAN
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-52

2620
2744

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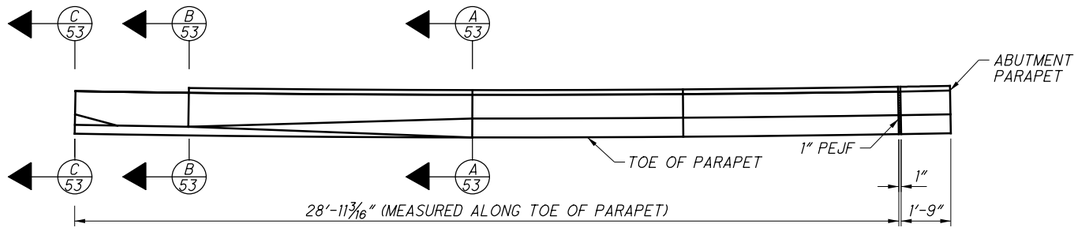
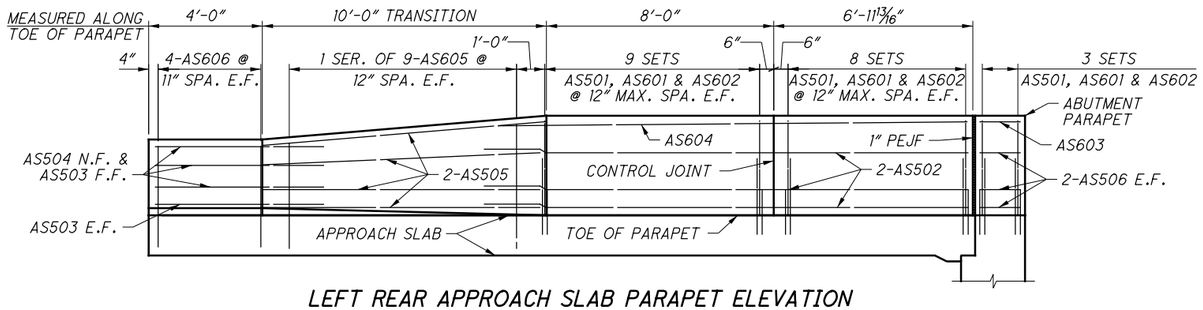
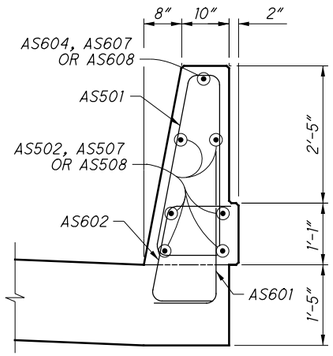


LEFT REAR APPROACH SLAB PARAPET PLAN

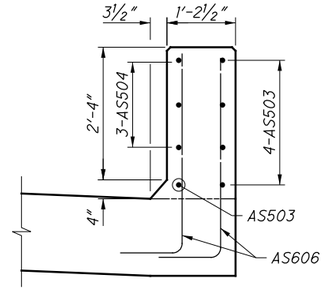


LEFT REAR APPROACH SLAB PARAPET ELEVATION

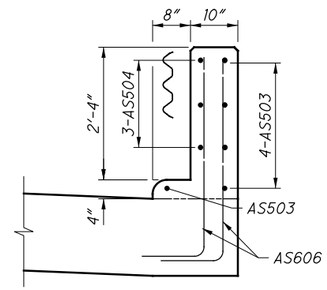
(LEFT FORWARD APPROACH SLAB PARAPET SIMILAR, NOT SHOWN)



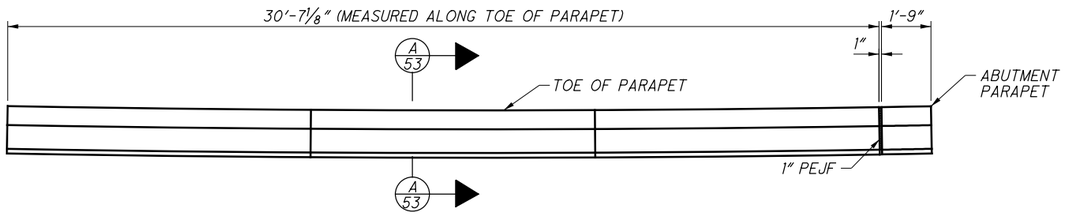
SECTION A-A



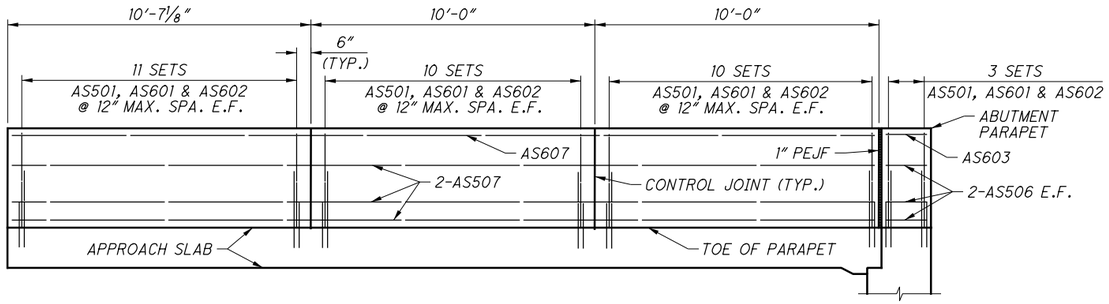
SECTION B-B



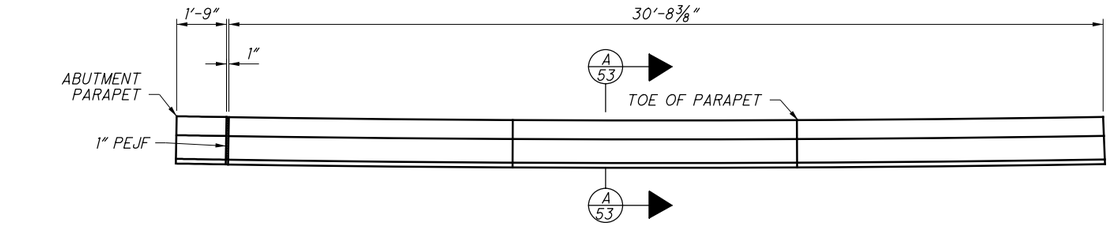
SECTION C-C



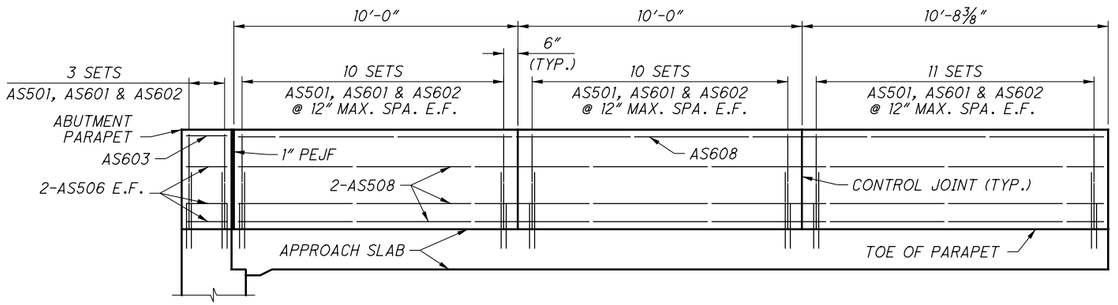
RIGHT REAR APPROACH SLAB PARAPET PLAN



RIGHT REAR APPROACH SLAB PARAPET ELEVATION



RIGHT FORWARD APPROACH SLAB PARAPET PLAN



RIGHT FORWARD APPROACH SLAB PARAPET ELEVATION

NOTES:

1. FOR DETAILS NOT SHOWN SEE STANDARD DRAWINGS AS-1-81 AND SBR-1-99.
2. LAP NO. 5 BARS A MINIMUM OF 2'-0". LAP NO. 6 BARS A MINIMUM OF 3'-3".
3. ALL REINFORCING STEEL SHALL BE EPOXY COATED CONFORMING TO ITEM 509. FOR REINFORCING LIST SEE SHEET 4B12-54.
4. FOR ADDITIONAL NOTES SEE SHEET 4B12-8, ITEM 898 - QC/QA CONCRETE, CLASS QSC2 (T=17"), SUPERSTRUCTURE (APPROACH SLAB), AS PER PLAN.

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DCF/DTA	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT		2506444	

APPROACH SLAB PARAPET DETAILS
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-53

2621
2744

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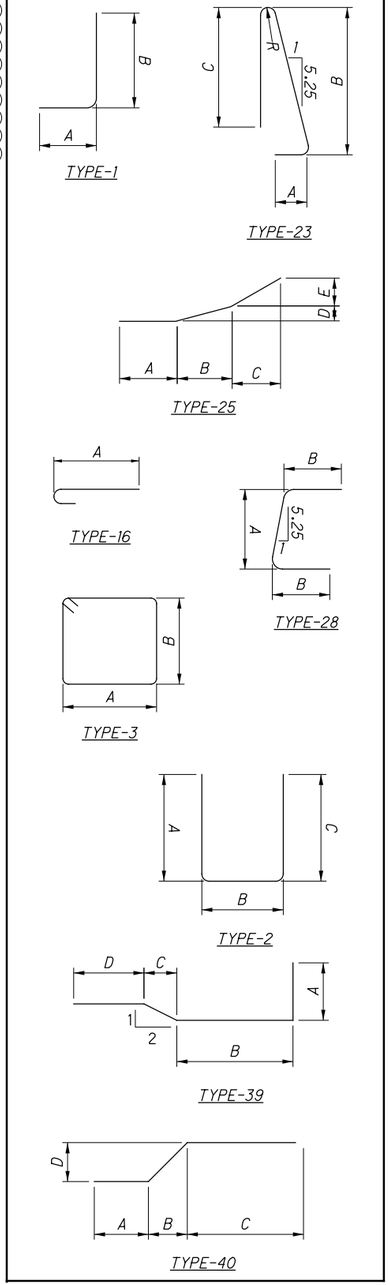
MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
DECK											
S401	2024	30'-0"	40,561	STR							
	1 SER	5'-0"									
S402	OF	TO	316	STR							11½"
	27	30'-0"									
	1 SER	5'-0"									
S403	OF	TO	316	STR							11½"
	27	30'-0"									
S404	57	23'-0"	876	STR							
S405	4608	8'-4"	25,651	16	7'-10"						
S501	510	24'-5"	12,944	STR							
S502	510	19'-6"	10,373	STR							
S503	1794	45'-7"	85,293	STR							
S504	1950	30'-0"	61,016	STR							
	1 SER	7'-0"									1'-0½"
S505	OF	TO	508	STR							
	25	32'-0"									
	1 SER	7'-0"									1'-0"
S506	OF	TO	529	STR							
	26	32'-0"									
S507	52	10'-0"	542	STR							
S508	216	29'-9"	6,702	STR							
S509	216	24'-10"	5,595	STR							
S510	182	30'-9"	5,837	STR							
S511	182	25'-10"	4,904	STR							
S512	112	31'-8"	3,699	STR							
S513	112	26'-8"	3,125	STR	2						
S514	84	7'-8"	672	39	1'-4"	1'-7"	2'-2"	2'-6"			
S515	12	9'-4"	117	STR							
S516	4	24'-3"	101	STR							
S517	84	2'-10"	248	2	1'-0"	1'-4"	6"				
S518	14	9'-10"	164	STR							
S519	4	25'-4"	106	STR	2						
S520	84	6'-10"	599	40	2'-6"	1'-3½"	2'-6"	1'-3½"			
S521	14	3'-3"	47	STR							
S522	60	2'-7"	162	STR							
S523	4	24'-3"	101	STR							
S524	4	25'-4"	106	STR							
S525	60	3'-0"	188	STR							
S526	16	1'-6"	25	STR							
S527	2	1'-10"	4	STR							
S528	6	2'-6"	16	STR							
S529	1794	45'-7"	85,293	STR							
S530	42	4'-10"	212	3	1'-5"	0'-8"	2				
S601	168	35'-5"	8,937	STR							
S602	224	38'-1"	12,813	STR							
S603	280	32'-11"	13,843	STR							
S604	224	32'-6"	10,935	STR							
S605	2056	3'-11"	12,095	1	1'-1"	3'-0"					
S606	2056	3'-11"	12,095	28	2'-1"	1'-1"					
S607	6	25'-9"	232	STR							
S608	12	9'-10"	177	STR	2						
S609	6	3'-3"	29	STR							

MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
DECK (CONTINUED)											
S801	12	9'-4"	299	STR							
S802	6	3'-3"	52	STR							
SUB-TOTAL			428,455	LBS							

MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
PARAPET											
R501	2056	7'-5"	15,904	23	1'-1"	3'-2"	3'-0"			2¾"	
R502	444	30'-0"	13,893	STR							
R503	12	30'-2"	378	STR							
R601	76	30'-0"	3,425	STR							
R602	1	21'-8"	33	STR							
R603	1	22'-8"	34	STR							
SUB-TOTAL			33,667	LBS							

MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
APPROACH SLAB PARAPETS											
AS501	108	7'-5"	835	23	1'-1"	3'-2"	3'-0"			0'-2 ¾"	
AS502	12	17'-0"	213	STR							
AS503	10	6'-0"	63	STR							
AS504	6	6'-0"	38	25	1'-8"	2'-5"	1'-4"	0'-1 ½"	0'-5"		
AS505	16	10'-0"	167	STR							
AS506	24	1'-5"	35	STR							
AS507	6	30'-3"	189	STR							
AS508	6	30'-4"	190	STR							
AS601	108	3'-2"	514	1	1'-1"	2'-3"					
AS602	108	4'-1"	662	28	2'-3"	1'-1"					
AS603	4	1'-5"	9	STR							
AS604	2	18'-3"	55	STR							
	2 SER	4'-3"				3'-4"					
AS605	OF	TO	131	1	1'-1"	TO					0'-1¾"
	9	5'-5"				4'-6"					
AS606	16	4'-3"	102	1	1'-1"	3'-4"					
AS607	1	30'-3"	45	STR							
AS608	1	30'-4"	46	STR							
SUB-TOTAL			3,294	LBS							

BAR BENDING DIAGRAMS



NOTES:

1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGIT WHERE FOUR ARE USED INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, S601:

   S: LOCATION OF THE BARS IN THE STRUCTURE (SUPERSTRUCTURE)
   6: BAR SIZE DIMENSION NO. 6
   01: SEQUENCE NUMBER

2. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE NOTED. "STD." WRITTEN IN PLACE OF A DIMENSION INDICATES A STANDARD BAR BEND AT THE END OF THE BAR. ALL REINFORCING STEEL IS TO BE EPOXY COATED. STRAIGHT ARE INDICATED BY " STR". SERIES BARS ARE INDICATED BY "SER".

3. STANDARD BEND LENGTH SHALL BE PER CMS 509.05.

3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	4/24/12	NDC 022
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DJC	RER	11/08/11
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

REINFORCING SCHEDULE (1 OF 5)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-54

2622
2744

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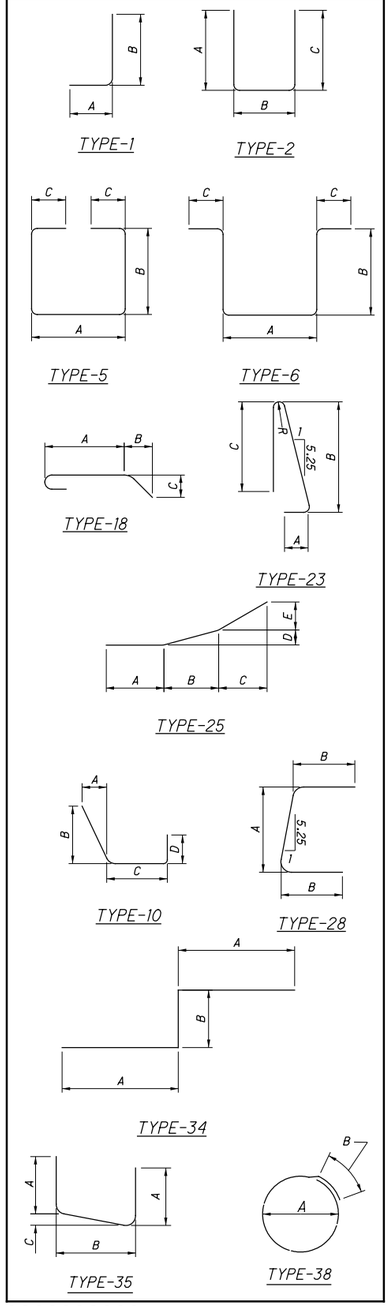
MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
REAR ABUTMENT											
RA401	16	8′-3″	88	38	2′-0″	2′-0″					
RA501	6	24′-8″	155	STR							
RA502	6	15′-1″	94	STR							
RA503	2	12′-6″	26	STR							
RA504	2	14′-10″	31	STR							
RA505	8	6′-6″	54	35	2′-8″	1′-5″	0′-6″				
RA506	6	5′-8″	35	1	0′-10″	5′-0″					
RA507	18	12′-4″	232	1	0′-10″	11′-8″					
RA508	2	16′-4″	34	34	9′-9″	0′-7″	6′-4″				
RA509	4	12′-11″	54	34	6′-4″	0′-7″	6′-4″				
RA510	2	14′-2″	30	STR							
RA511	2	27′-4″	57	STR							
RA512	24	31′-0″	776	STR							
RA513	4	29′-8″	124	STR							
RA514	2	17′-0″	35	STR							
RA515	8	6′-2″	51	35	2′-6″	1′-5″	0′-3″				
*RA516	6	24′-3″	152	STR							
RA517	4	20′-11″	88	35	9′-11″	1′-5″	0′-3″				
RA518	2	18′-11″	40	35	8′-11″	1′-5″	0′-6″				
RA519	2	21′-7″	45	35	10′-3″	1′-5″	0′-3″				
RA520	2	4′-9″	10	STR							
*RA521	2	10′-2″	21	STR							
RA522	2	9′-0″	19	STR							
RA523	2	6′-0″	13	STR							
*RA524	2	9′-1′	19	STR							
RA525	56	11′-5″	667	2	4′-9″	2′-2″	4′-9″				
RA601	52	28′-3″	2376	STR							
RA602	88	15′-6″	2049	2	2′-7″	10′-8″	2′-7″				
RA603	6	19′-5″	175	5	5′-5″	6′-4″	1′-0″				
RA604	10	17′-4″	261	5	5′-5″	5′-3″	1′-0″				
RA605	12	14′-11″	269	5	5′-5″	4′-1″	1′-0″				
RA606	15	14′-11″	336	2	6′-11″	1′-5″	6′-11″				
RA607	20	12′-11″	388	2	5′-11″	1′-5″	5′-11″				
RA608	12	10′-7″	191	2	4′-9″	1′-5″	4′-9″				
RA609	3	16′-7″	74	2	7′-9″	1′-5″	7′-9″				
RA610	NOT USED										
RA611	70	8′-1″	849	STR							
RA612	10	18′-4″	276	5	5′-5″	5′-9″	1′-0″				
RA613	10	15′-11″	239	5	5′-5″	4′-8″	1′-0″				
RA614	NOT USED										
RA615	2	9′-5″	28	STR							
RA616	24	8′-0″	288	STR							
RA617	2	9′-8″	29	STR							
	2 SR	9′-1″									
RA618	OF	TO	84	STR							0′-2″
	3	9′-5″									

MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
REAR ABUTMENT (CONTINUED)											
RA619	47	8′-7″	606	2	3′-9″	1′-5″	3′-9″				
RA620	47	3′-10″	271	10	1′-2″	1′-1″	0′-8″	1′-9″			
RA621	2	13′-11″	42	35	6′-5″	1′-5″	0′-3″				
RA622	2	21′-3″	64	2	10′-1″	1′-5″	10′-1″				
RA623	2	13′-7″	41	35	6′-4″	1′-5″	0′-6″				
RA624	6	8′-8″	78	STR							
RA625	NOT USED										
RA626	1	11′-9″	18	35	5′-4″	1′-5″	0′-3″				
RA627	1	15′-7″	23	35	7′-3″	1′-5″	0′-6″				
RA628	1	18′-11″	30	2	8′-11″	1′-5″	8′-11″				
RA629	1	14′-1″	21	2	6′-6″	1′-5″	6′-6″				
RA630	2	8′-10″	26	STR							
RA631	18	10′-8″	296	1	1′-0″	9′-10″					
RA632	18	8′-6″	230	1	1′-0″	7′-8″					
RA633	18	9′-4″	252	STR							
RA634	32	3′-2″	153	STR							
RA635	16	2′-2″	52	STR							
RA636	18	9′-2″	248	STR							
RA801	32	4′-7″	392	18	2′-10″	0′-8 ½″	0′-8 ½″				
RA802	24	15′-5″	988	2	2′-7″	10′-8″	2′-7″				
RA803	2	14′-10″	80	2	6′-11″	1′-5″	6′-11″				
RA804	2	16′-5″	88	6	1′-5″	6′-8″	1′-6″				
RA805	4	11′-4″	121	2	2′-7″	6′-7″	2′-7″				
SUB-TOTAL		14,982	LBS								

BAR BENDING DIAGRAMS



NOTES:

1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGIT WHERE FOUR ARE USED INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, S601:
   - S: LOCATION OF THE BARS IN THE STRUCTURE (SUPERSTRUCTURE)
   - 6: BAR SIZE DIMENSION NO. 6
   - 01: SEQUENCE NUMBER
2. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE NOTED. "STD." WRITTEN IN PLACE OF A DIMENSION INDICATES A STANDARD BAR BEND AT THE END OF THE BAR. ALL REINFORCING STEEL IS TO BE EPOXY COATED. STRAIGHT ARE INDICATED BY " STR". SERIES BARS ARE INDICATED BY "SR".
3. STANDARD BEND LENGTH SHALL BE PER CMS 509.05.

LEGEND:

* - DENOTES BARS REQUIRING FIELD BEND

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN DTA | CHECKED KVB | REVIEWED RER | REVISED JDH | DATE 11/8/11

STRUCTURE FILE NUMBER 2506444

REINFORCING SCHEDULE (2 OF 5)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-55

2623
2744

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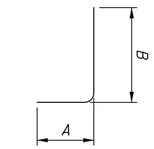
MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
SUBSTRUCTURE (PIER 1)											
P401	99	5'-2"	342	38	4'-3"						
P402	132	3'-6"	309	38	2'-6"						
P501	18	17'-9"	333	2	6'-2"	5'-8"	6'-2"				
	6 SER	9'-6"			3'-7"		3'-7"				
P502	OF	TO	983	2	TO	2'-7"	TO				0'-7 3/4"
	12	16'-8"			7'-2"		7'-2"				
P503	30	13'-6"	422	2	5'-7"	2'-7"	5'-7"				
P504	30	14'-6"	453	2	6'-1"	2'-7"	6'-1"				
	6 SER	9'-6"			3'-7"		3'-7"				
P505	OF	TO	914	2	TO	2'-7"	TO				0'-5 3/4"
	12	14'-10"			6'-3"		6'-3"				
P506	28	12'-10"	375	1	1'-0"	12'-0"					
P507	7	7'-0"	51	1	1'-0"	6'-2"					
P601	12	11'-2"	202	2	3'-0"	5'-6"	3'-0"				
P602	66	22'-5"	2222	2	9'-3"	4'-3"	9'-3"				
P701	88	6'-0"	1080	1	5'-0"	1'-2"					
P702	8	18'-6"	303	STR							
P703	8	27'-0"	442	STR							
P801	27	18'-6"	1334	STR							
P802	19	27'-0"	1370	STR							
P901	10	45'-9"	1555	STR							
	2 SER	18'-6"									
P902	OF	TO	1034	STR							5'-11½"
	5	42'-4"									
P903	8	28'-6"	775	13	11'-3"	14'-9"	3'-5"	2'-5"			
P904	8	29'-7"	805	13	11'-3"	14'-9"	5'-8"	2'-9"			
P1001	54	21'-6"	4995	2	1'-10"	18'-6"	1'-10"				
P1002	36	30'-0"	4647	2	1'-10"	27'-0"	1'-10"				
P1101	14	45'-8"	3397	STR							
P1102	14	48'-11"	3639	37	45'-7"	2'-0"	0'-1⅜"	0'-1⅜"	2'-0"		
P1103	68	31'-8"	11441	STR							
P1104	68	19'-6"	7045	1	2'-0"	17'-10"					
SUB-TOTAL			50,468	LBS							

MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
SUBSTRUCTURE (PIER 2)											
P401	81	5'-2"	280	38	4'-3"						
P402	108	3'-6"	253	38	2'-6"						
P501	18	17'-9"	333	2	6'-2"	5'-8"	6'-2"				
P503	24	13'-6"	338	2	5'-7"	2'-7"	5'-7"				
P504	24	14'-6"	363	2	6'-1"	2'-7"	6'-1"				
P506	28	12'-10"	375	1	1'-0"	12'-0"					
P507	7	7'-0"	51	1	1'-0"	6'-2"					
	6 SER	9'-6"			3'-7"		3'-7"				
P508	OF	TO	1474	2	TO	2'-7"	TO				0'-5 1/16"
	18	16'-8"			7'-2"		7'-2"				
	6 SER	9'-6"			3'-7"		3'-7"				
P509	OF	TO	1371	2	TO	2'-7"	TO				0'-3¾"
	18	14'-10"			6'-3"		6'-3"				
P601	12	11'-2"	202	2	3'-0"	5'-6"	3'-0"				
P602	54	22'-5"	1818	2	9'-3"	4'-3"	9'-3"				
P701	86	6'-0"	1055	1	5'-0"	1'-2"					
P703	8	27'-0"	442	STR							
P704	8	17'-6"	286	STR							
P802	18	27'-0"	1298	STR							
P803	27	17'-6"	1262	STR							
P901	16	45'-9"	2489	STR							
	2 SER	18'-6"									
P902	OF	TO	1034	STR							5'-11½"
	5	42'-4"									
P903	8	28'-6"	775	13	11'-3"	14'-9"	3'-5"	2'-5"			
P904	8	29'-7"	805	13	11'-3"	14'-9"	5'-8"	2'-9"			
P1002	36	30'-0"	4647	2	1'-10"	27'-0"	1'-10"				
P1003	54	20'-6"	4763	2	1'-10"	17'-6"	1'-10"				
P1101	14	45'-8"	3397	STR							
P1102	14	48'-11"	3639	37	45'-7"	2'-0"	0'-1⅜"	0'-1⅜"	2'-0"		
P1104	68	19'-6"	7045	1	2'-0"	17'-10"					
P1106	68	26'-11"	9726	STR							
SUB-TOTAL			49,521	LBS							

BAR BENDING DIAGRAMS



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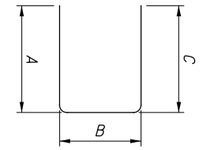

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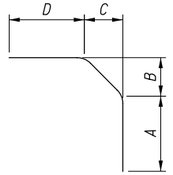

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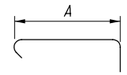
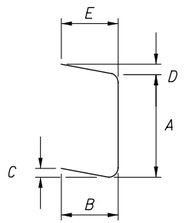


TYPE-38



TYPE-37

NOTES:

1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGIT WHERE FOUR ARE USED INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, S601:
   - S: LOCATION OF THE BARS IN THE STRUCTURE (SUPERSTRUCTURE)
   - 6: BAR SIZE DIMENSION NO. 6
   - 01: SEQUENCE NUMBER
2. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE NOTED. "STD." WRITTEN IN PLACE OF A DIMENSION INDICATES A STANDARD BAR BEND AT THE END OF THE BAR. ALL REINFORCING STEEL IS TO BE EPOXY COATED. STRAIGHT ARE INDICATED BY " STR". SERIES BARS ARE INDICATED BY "SER".
3. STANDARD BEND LENGTHS SHALL BE PER CMS 509.05.

△3 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
3	5/08/14	RECORD DRAWINGS
2	3/27/12	NDC 018
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN DCF | REVIEWED RER | DATE 11/08/11
CHECKED AJM | REVISED JDH | STRUCTURE FILE NUMBER 2506444

REINFORCING SCHEDULE (3 OF 5)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-56

2624
2744

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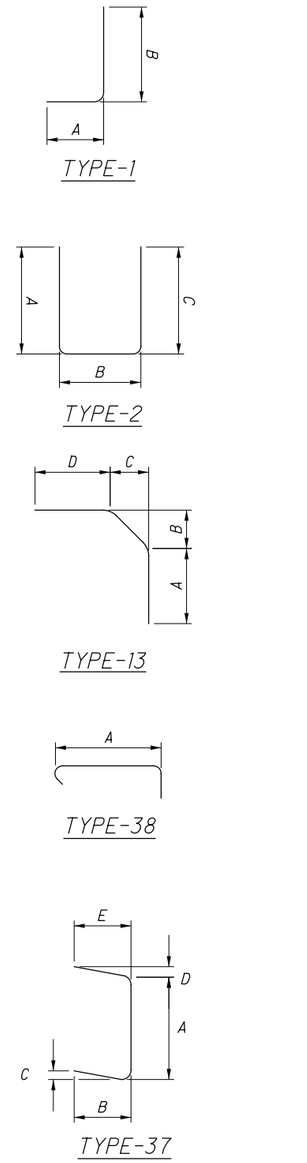
MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
SUBSTRUCTURE (PIER 3)											
P401	78	5'-2"	269	38	4'-3"						
P402	104	3'-6"	243	38	2'-6"						
P501	18	17'-9"	333	2	6'-2"	5'-8"	6'-2"				
P503	24	13'-6"	338	2	5'-7"	2'-7"	5'-7"				
P504	24	14'-6"	363	2	6'-1"	2'-7"	6'-1"				
P506	28	12'-10"	375	1	1'-0"	12'-0"					
P507	7	7'-0"	51	1	1'-0"	6'-2"					
	6 SER	9'-6"			3'-7"		3'-7"				
P508	OF	TO	1474	2	TO	2'-7"	TO				0'-5 1/16"
	18	16'-8"			7'-2"		7'-2"				
	6 SER	9'-6"			3'-7"		3'-7"				
P509	OF	TO	1371	2	TO	2'-7"	TO				0'-3 3/4"
	18	14'-10"			6'-3"		6'-3"				
P601	12	11'-2"	202	2	3'-0"	5'-6"	3'-0"				
P602	52	22'-5"	1751	2	9'-3"	4'-3"	9'-3"				
P703	8	27'-0"	442	STR							
P705	86	6'-3"	1150	1	5'-3"	1'-2"					
P708	8	17'-10"	292	STR							
P802	18	27'-0"	1298	STR							
P804	27	17'-10"	1286	STR							
P901	18	45'-9"	2800	STR							
	2 SER	18'-6"									
P902	OF	TO	1034	STR							5'-11 1/2"
	5	42'-4"									
P903	8	28'-6"	775	13	11'-3"	14'-9"	3'-5"	2'-5"			
P904	8	29'-7"	805	13	11'-3"	14'-9"	5'-8"	2'-9"			
P1002	32	30'-0"	4131	2	1'-10"	27'-0"	1'-10"				
P1005	58	20'-10"	5199	2	1'-10"	17'-10"	1'-10"				
P1101	15	45'-8"	3639	STR							
P1102	15	48'-11"	3898	37	45'-7"	2'-0"	0'-1 3/8"	0'-1 3/8"	2'-0"		
P1107	68	26'-6"	9574	STR							
P1109	68	19'-9"	7135	1	2'-0"	18'-1"					
SUB-TOTAL			50,228	LBS							

MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
SUBSTRUCTURE (PIER 4)											
P401	84	5'-2"	290	38	4'-3"						
P402	112	3'-6"	262	38	2'-6"						
P501	18	17'-9"	333	2	6'-2"	5'-8"	6'-2"				
P503	24	13'-6"	338	2	5'-7"	2'-7"	5'-7"				
P504	24	14'-6"	363	2	6'-1"	2'-7"	6'-1"				
P506	28	12'-10"	375	1	1'-0"	12'-0"					
P507	7	7'-0"	51	1	1'-0"	6'-2"					
	6 SER	9'-6"			3'-7"		3'-7"				
P508	OF	TO	1474	2	TO	2'-7"	TO				0'-5 1/16"
	18	16'-8"			7'-2"		7'-2"				
	6 SER	9'-6"			3'-7"		3'-7"				
P509	OF	TO	1371	2	TO	2'-7"	TO				0'-3 3/4"
	18	14'-10"			6'-3"		6'-3"				
				2							
P601	12	11'-2"	202	2	3'-0"	5'-6"	3'-0"				
P602	56	22'-5"	1886		9'-3"	4'-3"	9'-3"				
				STR							
P703	8	27'-0"	442	STR							
P706	8	16'-6"	270	1							
P707	86	5'-6"	967		4'-6"	1'-2"					
				STR							
P802	18	27'-0"	1298	STR							
P805	27	16'-6"	1189								
				STR							
P901	14	45'-9"	2178								
	2 SER	18'-6"		STR							
P902	OF	TO	1034								5'-11 1/2"
	5	42'-4"		13							
P903	8	28'-6"	775	13	11'-3"	14'-9"	3'-5"	2'-5"			
P904	8	29'-7"	805		11'-3"	14'-9"	5'-8"	2'-9"			
P1002	30	30'-0"	3873	2	1'-10"	27'-0"	1'-10"				
P1006	56	19'-6"	4699	2	1'-10"	16'-6"	1'-10"				
P1101	15	45'-8"	3639	STR							
P1102	15	48'-11"	3898	37	45'-7"	2'-0"	0'-1 3/8"	0'-1 3/8"	2'-0"		
P1104	68	19'-6"	7045	1	2'-0"	17'-10"					
P1108	68	27'-5"	9905	STR							
SUB-TOTAL			48,962	LBS							

BAR BENDING DIAGRAMS



NOTES:

1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGIT WHERE FOUR ARE USED INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, S601:
   - S: LOCATION OF THE BARS IN THE STRUCTURE (SUPERSTRUCTURE)
   - 6: BAR SIZE DIMENSION NO. 6
   - 01: SEQUENCE NUMBER
2. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE NOTED. "STD." WRITTEN IN PLACE OF A DIMENSION INDICATES A STANDARD BAR BEND AT THE END OF THE BAR. ALL REINFORCING STEEL IS TO BE EPOXY COATED. STRAIGHT ARE INDICATED BY " STR". SERIES BARS ARE INDICATED BY "SER".
3. STANDARD BEND LENGTHS SHALL BE PER CMS 509.05.

2 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
2	5/08/14	RECORD DRAWINGS
1	12/09/11	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
the Challenge to be Choice.
1901 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED JDH | DRAWN DCF | CHECKED AJM | REVIEWED RER | DATE 11/08/11 | REVISED | STRUCTURE FILE NUMBER 2506444

REINFORCING SCHEDULE (4 OF 5)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-57

2625
2744

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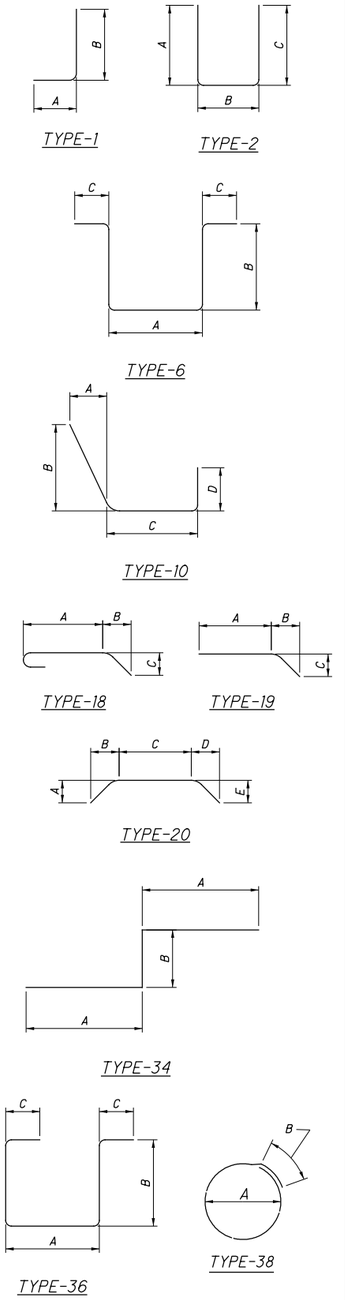
MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
FORWARD ABUTMENT											
FA401	16	8'-3"	88	38	2'-0"	2'-0"					
FA501	12	8'-5"	105	1	1'-0"	7'-7"					
	2 SR	3'-2"									
FA502	OF	TO	113	STR	2					2	0'-8½"
	9	8'-11"									
FA503	11	8'-11"	102	STR							
FA504	NOT USED										
FA505	68	11'-5"	810	2	4'-9"	2'-2"	4'-9"				
FA506	8	6'-9"	57	STR	3						
FA601	60	30'-0"	2704	STR							
FA602	100	18'-3"	2741	2	2'-10"	12'-11"	2'-10"				
FA603	52	13'-1"	1022	2	6'-0"	1'-5"	6'-0"				
FA604	10	25'-5"	382	STR							
FA605	2	37'-4"	112	STR							
FA606	6	15'-9"	142	STR							
FA607	18	14'-7"	394	1	1'-0"	13'-9"					
FA608	2	5'-0"	15	STR							
FA609	6	5'-10"	53	1	1'-0"	5'-0"					
FA610	2	8'-11"	27	STR							
FA611	6	13'-11"	125	34	6'-10"	0'-7"					
FA612	2	7'-0"	21	STR							
FA613	26	7'-10"	306	STR							
FA614	76	7'-11"	903	STR	2						
FA615	NOT USED										
FA616	NOT USED										
FA617	2	22'-6"	68	STR							
FA618	24	29'-7"	1066	STR							
FA619	4	31'-4"	188	STR							
FA620	2	21'-9"	65	STR							
*FA621	8	26'-0"	312	STR							
FA622	NOT USED										
*FA623	2	10'-11"	33	STR							
FA624	2	10'-11"	33	STR							
FA625	49	3'-10"	282	10	1'-2"	1'-1"	0'-8"	1'-9"			
FA626	49	8'-7"	632	2	3'-9"	1'-5"	3'-9"				
FA627	NOT USED										
FA628	2	22'-3"	67	2	10'-7"	1'-5"	10'-7"				
FA629	1	14'-5"	22	2	6'-8"	1'-5"	6'-8"				2
FA630	8	8'-1"	97	2	3'-6"	1'-5"	3'-6"				
FA631	6	8'-8"	78	STR	2						
FA632	4	22'-11"	138	2	10'-11"	1'-5"	10'-11"				
FA633	4	20'-11"	126	2	9'-11"	1'-5"	9'-11"				
FA634	NOT USED										
FA635	24	9'-3"	333	STR							
FA636	10	14'-9"	222	STR							
	2 SR	11'-4"									
FA637	OF	TO	265	STR							1'-4 ¼"
	6	18'-1"									

MARK	NUMBER TOTAL	LENGTH	WEIGHT	TYPE	DIMENSIONS A	B	C	D	E	R	INC
FORWARD ABUTMENT (CONTINUED)											
FA638	8	18'-11"	227	STR							
FA639	2	13'-0"	39	STR							
FA640	NOT USED										
FA641	2	14'-2"	43	19	9'-2"	4'-0"	3'-0"			2	
FA642	1	7'-7"	80	20	1'-0"	1'-1"	4'-8"	1'-1"	1'-0"		
FA643	NOT USED										
FA644	8	27'-8"	332	STR							
FA645	18	11'-8"	316	1	1'-0"	10'-10"					
FA646	18	13'-11"	377	1	1'-0"	13'-1"					
FA647	18	9'-4"	252	STR							
FA648	18	9'-5"	254	STR	2						
FA649	32	3'-2"	152	STR							
FA650	16	2'-2"	52	STR							
FA651	32	5'-10"	280	1	3'-0"	3'-0"					
FA652	16	3'-10"	92	1	1'-0"	3'-0"					
							2				
FA701	13	22'-4"	593	36	5'-5"	7'-4"	1'-2"				
FA702	NOT USED										
FA703	11	23'-6"	528	36	5'-5"	7'-11"	1'-2"				
FA704	NOT USED										
FA705	11	24'-8"	554	36	5'-5"	8'-6"	1'-2"				
FA706	10	25'-10"	528	36	5'-5"	9'-1"	1'-2"				
FA707	NOT USED										
FA708	6	26'-10"	329	36	5'-5"	9'-7"	1'-2"				
										2	
FA801	33	4'-7"	404	18	2'-10"	0'-8 ½"	0'-8 ½"				
FA802	12	15'-11"	510	2	2'-10"	10'-8"	2'-10"				
FA803	12	13'-1"	420	1	2'-0"	11'-4"					
FA804	11	8'-11"	262	STR			2				
FA805	NOT USED										
FA806	22	18'-2"	1067	2	2'-10"	12'-11"	2'-10"				
FA807	3	22'-3"	178	6	1'-5"	9'-6"	1'-4"				
FA808	3	22'-3"	178	2	10'-7"	1'-5"	10'-7"				
	2 SR	9'-0"									
FA809	OF	TO	143	STR							0'-2 ½"
	3	9'-5"			2						
SUB-TOTAL		22,388	LBS								
		2									

BAR BENDING DIAGRAMS



NOTES:

1. THE BAR SIZE NUMBER IS SPECIFIED ON THE PLANS IN THE BAR MARK COLUMN. THE FIRST DIGIT WHERE THREE DIGITS ARE USED, AND THE FIRST TWO DIGIT WHERE FOUR ARE USED INDICATES THE BAR SIZE NUMBER. FOR EXAMPLE, S601:

S: LOCATION OF THE BARS IN THE STRUCTURE (SUPERSTRUCTURE)
6: BAR SIZE DIMENSION NO. 6
01: SEQUENCE NUMBER

2. BAR DIMENSIONS SHOWN ARE OUT TO OUT UNLESS OTHERWISE NOTED. "STD." WRITTEN IN PLACE OF A DIMENSION INDICATES A STANDARD BAR BEND AT THE END OF THE BAR. ALL REINFORCING STEEL IS TO BE EPOXY COATED. STRAIGHT ARE INDICATED BY " STR". SERIES BARS ARE INDICATED BY "SR".

3. STANDARD BEND LENGTHS SHALL BE PER CMS 509.05.

LEGEND:

* - DENOTES BARS REQUIRING FIELD BEND

4 NO CHANGES TO SHEET

NO.	DATE	DESCRIPTION
4	5/08/14	RECORD DRAWINGS
3	4/21/14	RFI 110
2	03/27/12	NDC 018
1	01/04/12	RFC
A	11/11/11	FINAL SUBMITTAL

ISSUE RECORD

E.L. ROBINSON
The Challenge to be Your Choice.
1801 Watermark Drive, Suite 310 - Columbus, Ohio 43215

DESIGNED	DRAWN	REVIEWED	DATE
JDH	DTA	RER	01/03/12
CHECKED	REVISED	STRUCTURE FILE NUMBER	
DFT	JDH	2506444	

REINFORCING SCHEDULE (5 OF 5)
BRIDGE NO. FRA-670-0457B
RAMPS X4 AND X6 OVER RAMPS X3, V3, V6, W1, W2 AND I-71 SB AND I-71 NB

FRA-71-17.76
FRA-670-4.19
PID No. 77369

4B12-58

2626
2744

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