



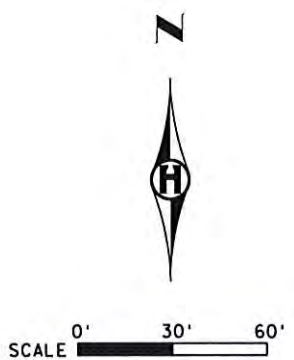
SPECIFIC NOTE:
 ① NON-ANCHORED PORTABLE PRECAST CONCRETE BARRIER WITH FENCE.

GENERAL NOTE:
 SEE BRIDGE SHEETS B9-B13 FOR CONSTRUCTION STAGING SEQUENCE

LEGEND

	AREA CLOSED TO TRAFFIC/WORK AREA
	TEMPORARY CONSTRUCTION AREA/TEMPORARY BIT. PAVEMENT

ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO AND BE PLACED OR CONSTRUCTED IN ACCORDANCE WITH THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD) AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.

Michael E. Kotila
 MICHAEL E. KOTILA, PROFESSIONAL ENGINEER

19254 8/13/2014
 LICENSE NO. DATE

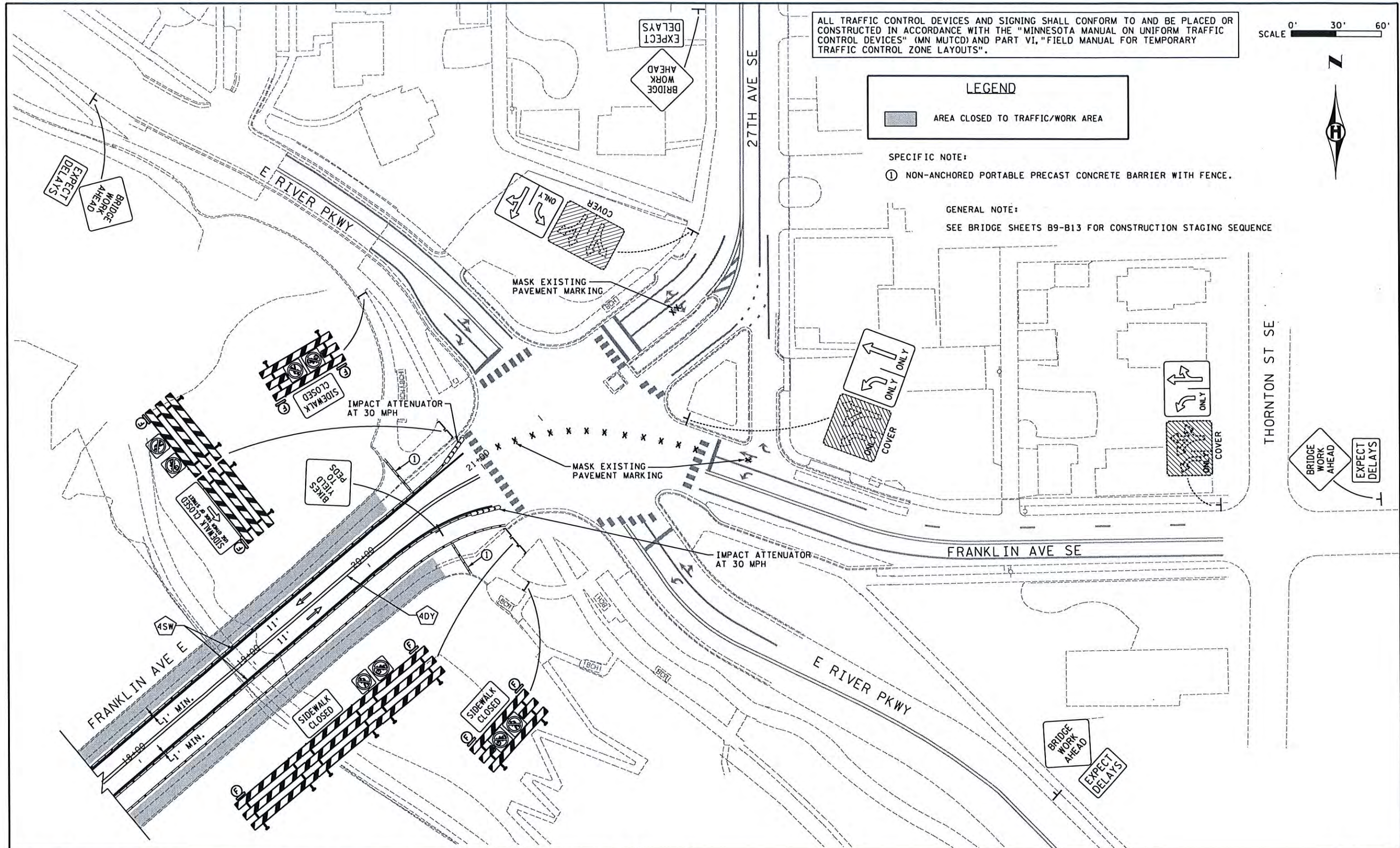
DESIGN BY: CMJ
 CAD BY: MTT
 CHECKED BY: MEK
 LAST REVISION:

TRAFFIC CONTROL - PHASE 1

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET

TC10
 TC20



ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO AND BE PLACED OR CONSTRUCTED IN ACCORDANCE WITH THE "MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MN MUTCD) AND PART VI, "FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS".

SCALE 0' 30' 60'



LEGEND

AREA CLOSED TO TRAFFIC/WORK AREA

SPECIFIC NOTE:
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GENERAL NOTE:
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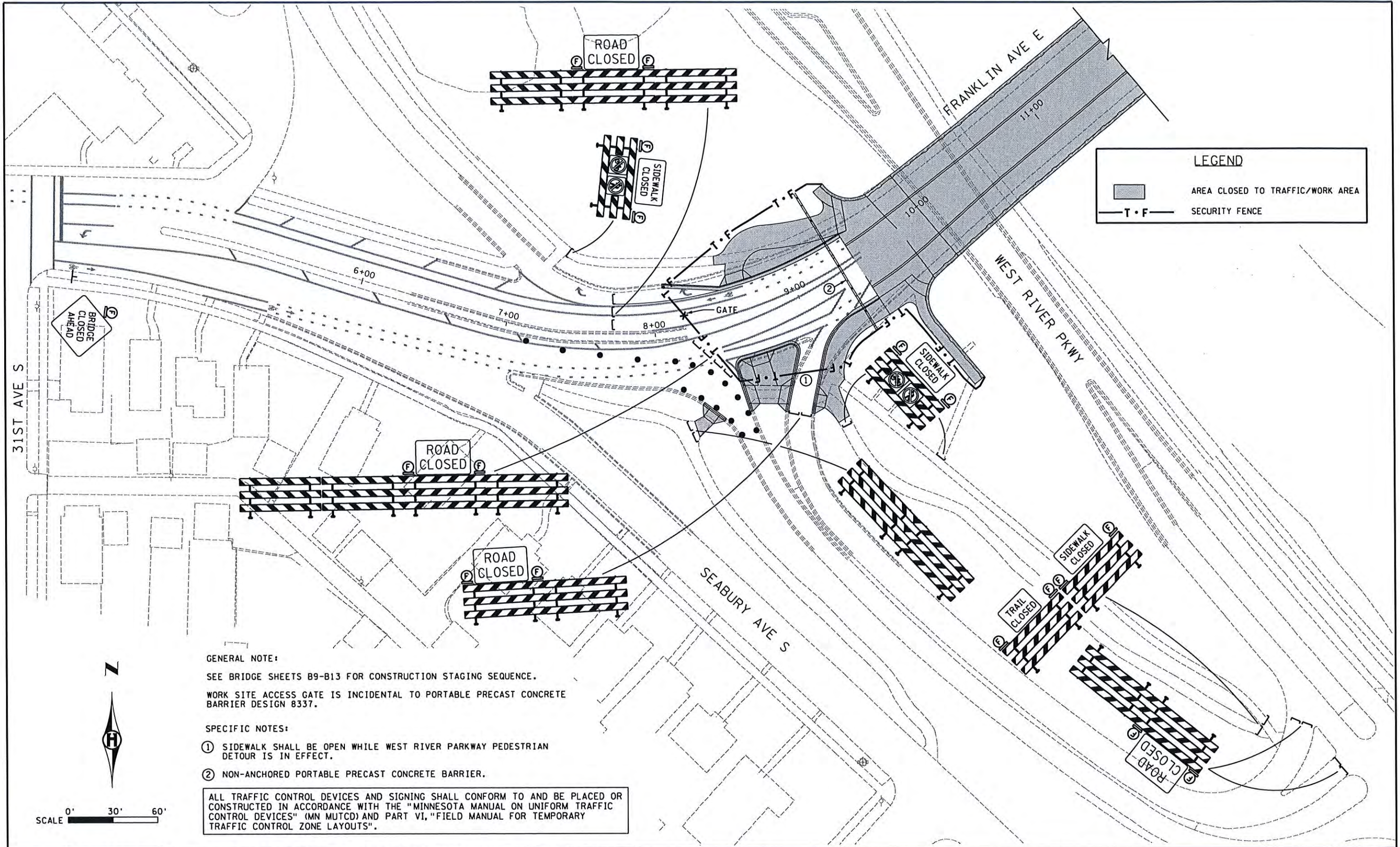
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TRAFFIC CONTROL - PHASE 1

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
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SHEET
 TC11
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LEGEND

 AREA CLOSED TO TRAFFIC/WORK AREA
 SECURITY FENCE

GENERAL NOTE:
 SEE BRIDGE SHEETS B9-B13 FOR CONSTRUCTION STAGING SEQUENCE.
 WORK SITE ACCESS GATE IS INCIDENTAL TO PORTABLE PRECAST CONCRETE BARRIER DESIGN 8337.


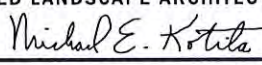
SPECIFIC NOTES:

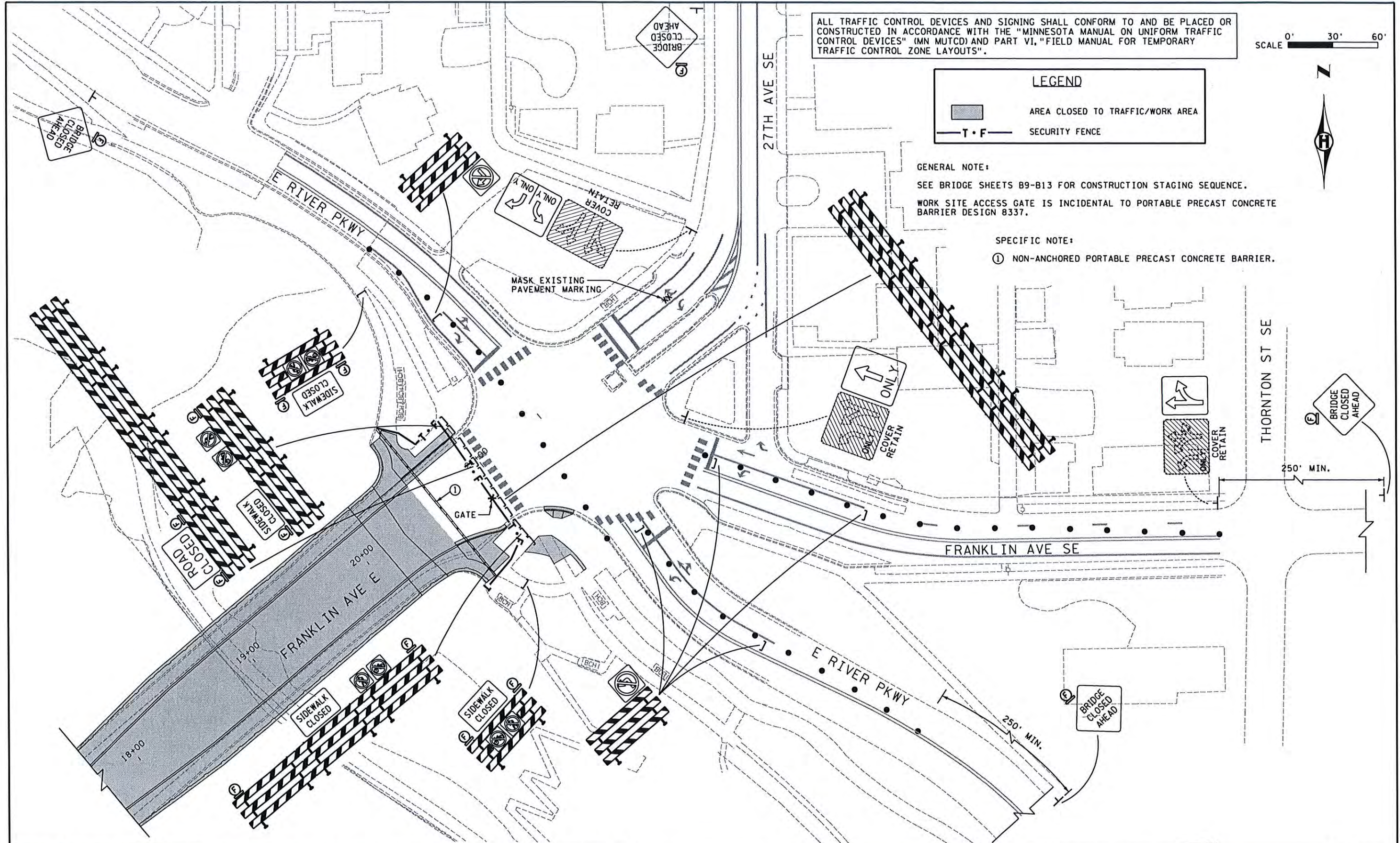
① SIDEWALK SHALL BE OPEN WHILE WEST RIVER PARKWAY PEDESTRIAN DETOUR IS IN EFFECT.
 ② NON-ANCHORED PORTABLE PRECAST CONCRETE BARRIER.

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SCALE 0' 30' 60'

	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MINNESOTA.			DESIGN BY: <u>CMJ</u> CAD BY: <u>MTT</u> CHECKED BY: <u>MEK</u> LAST REVISION: _____	TRAFFIC CONTROL - PHASE 2	SHEET
	 MICHAEL E. KOTILA, PROFESSIONAL ENGINEER	<u>19254</u> LICENSE NO.	<u>8/13/2014</u> DATE	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029		TC12 TC20



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SCALE 0' 30' 60'



LEGEND

AREA CLOSED TO TRAFFIC/WORK AREA

SECURITY FENCE

GENERAL NOTE:
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SPECIFIC NOTE:
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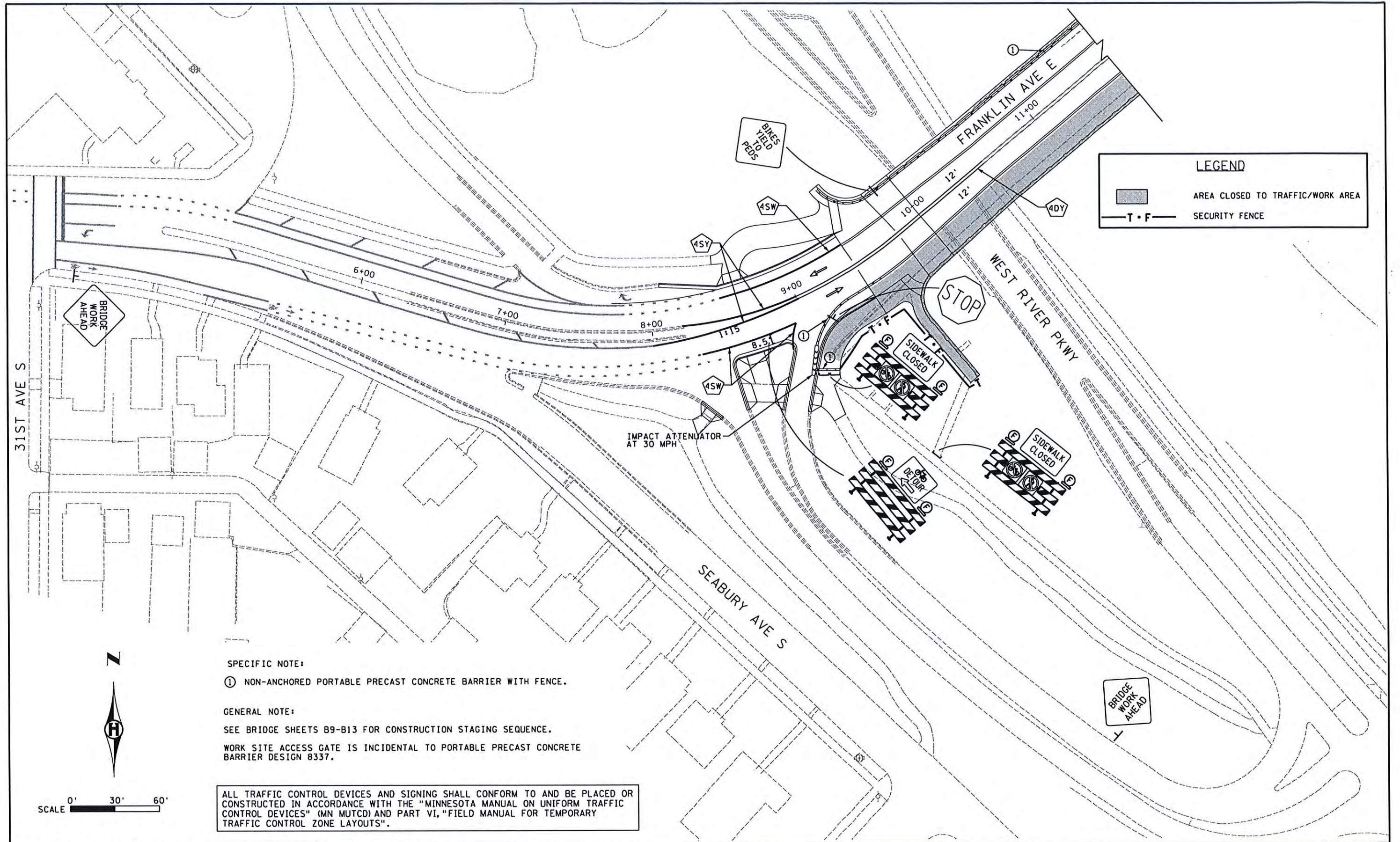
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TRAFFIC CONTROL - PHASE 2

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 TC13
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SPECIFIC NOTE:
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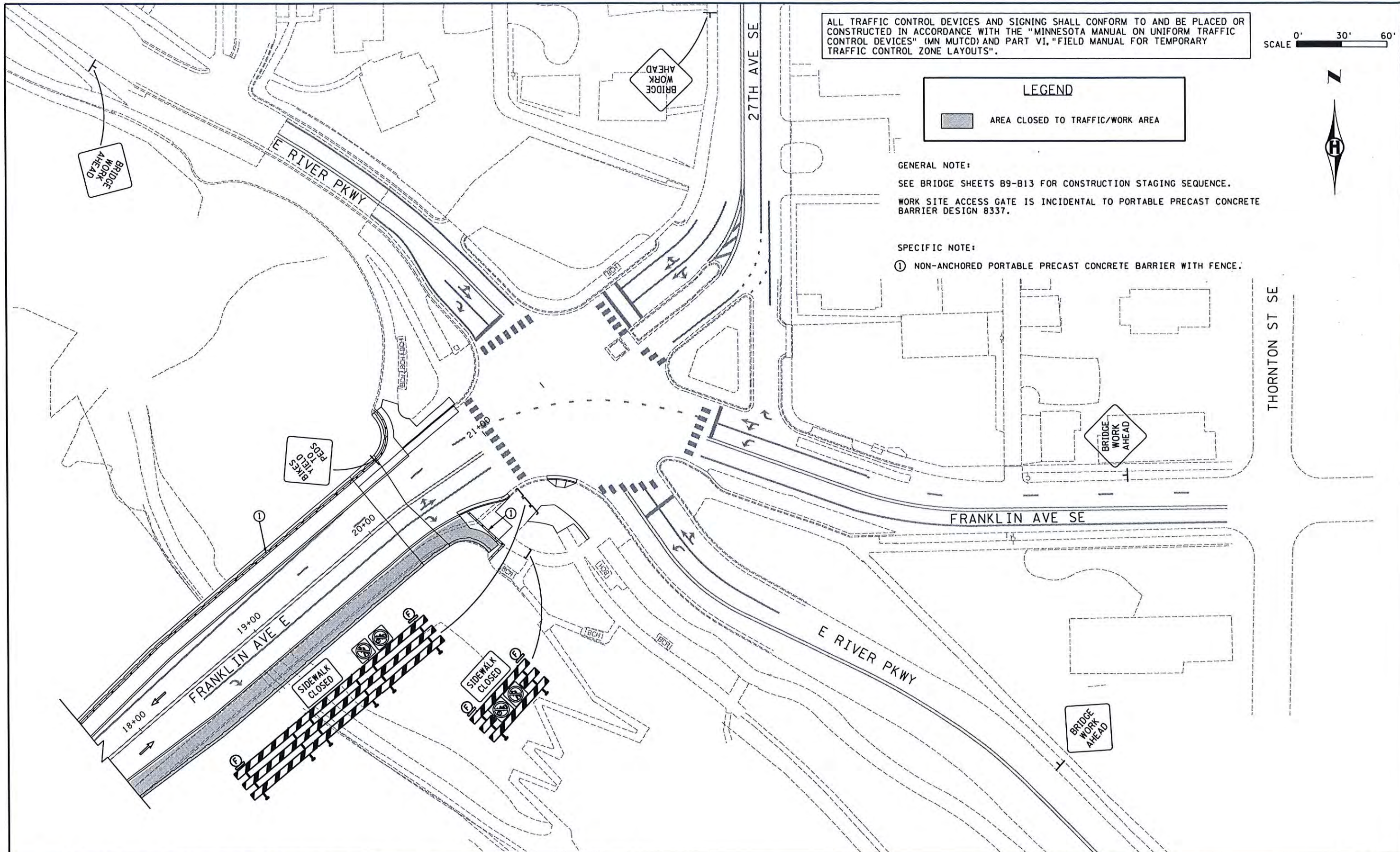
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TRAFFIC CONTROL - PHASE 3

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 BRIDGE 2441 S.P. 027-605-029

SHEET
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LEGEND

■ AREA CLOSED TO TRAFFIC/WORK AREA

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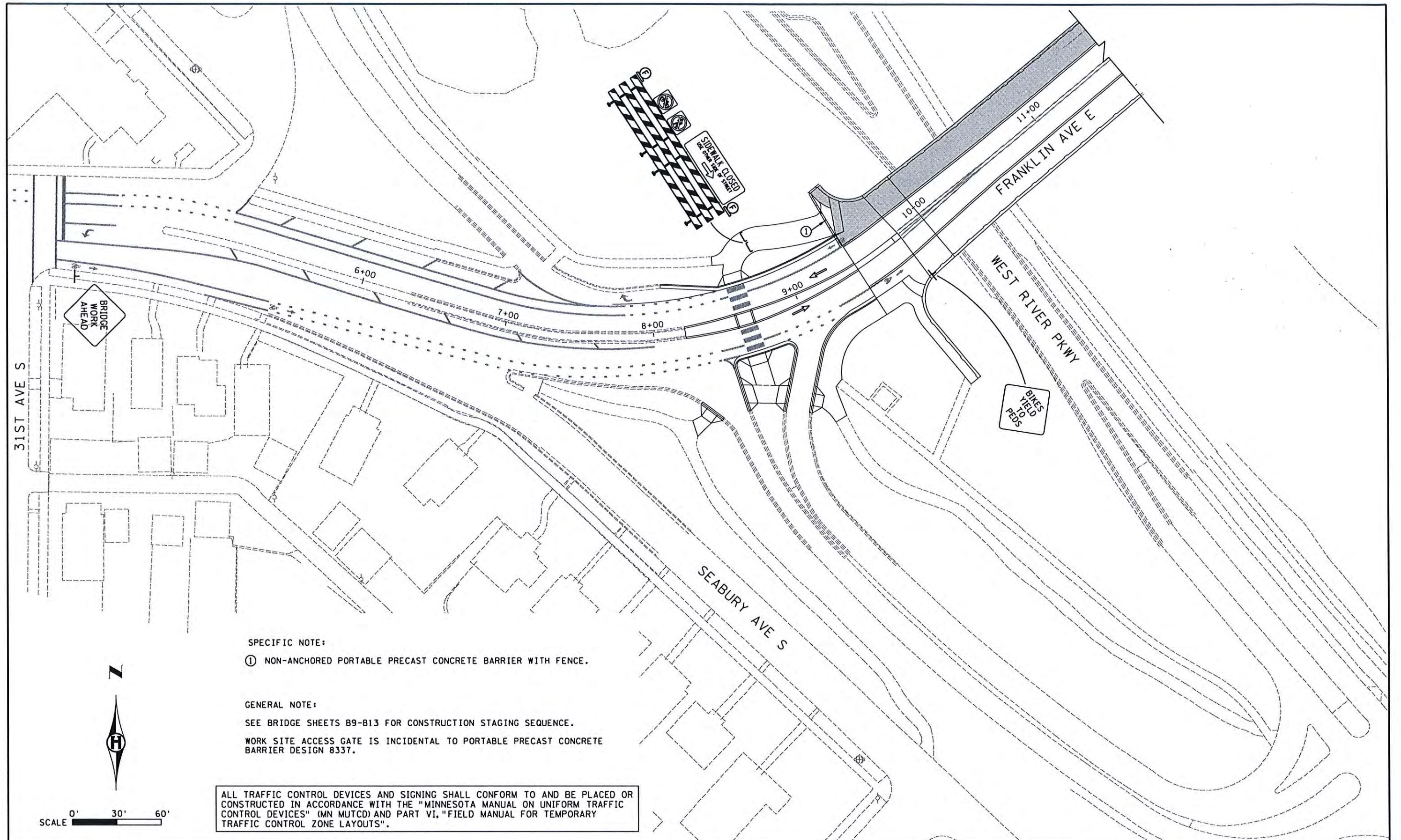
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TRAFFIC CONTROL - PHASE 3

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

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TC15
 TC20



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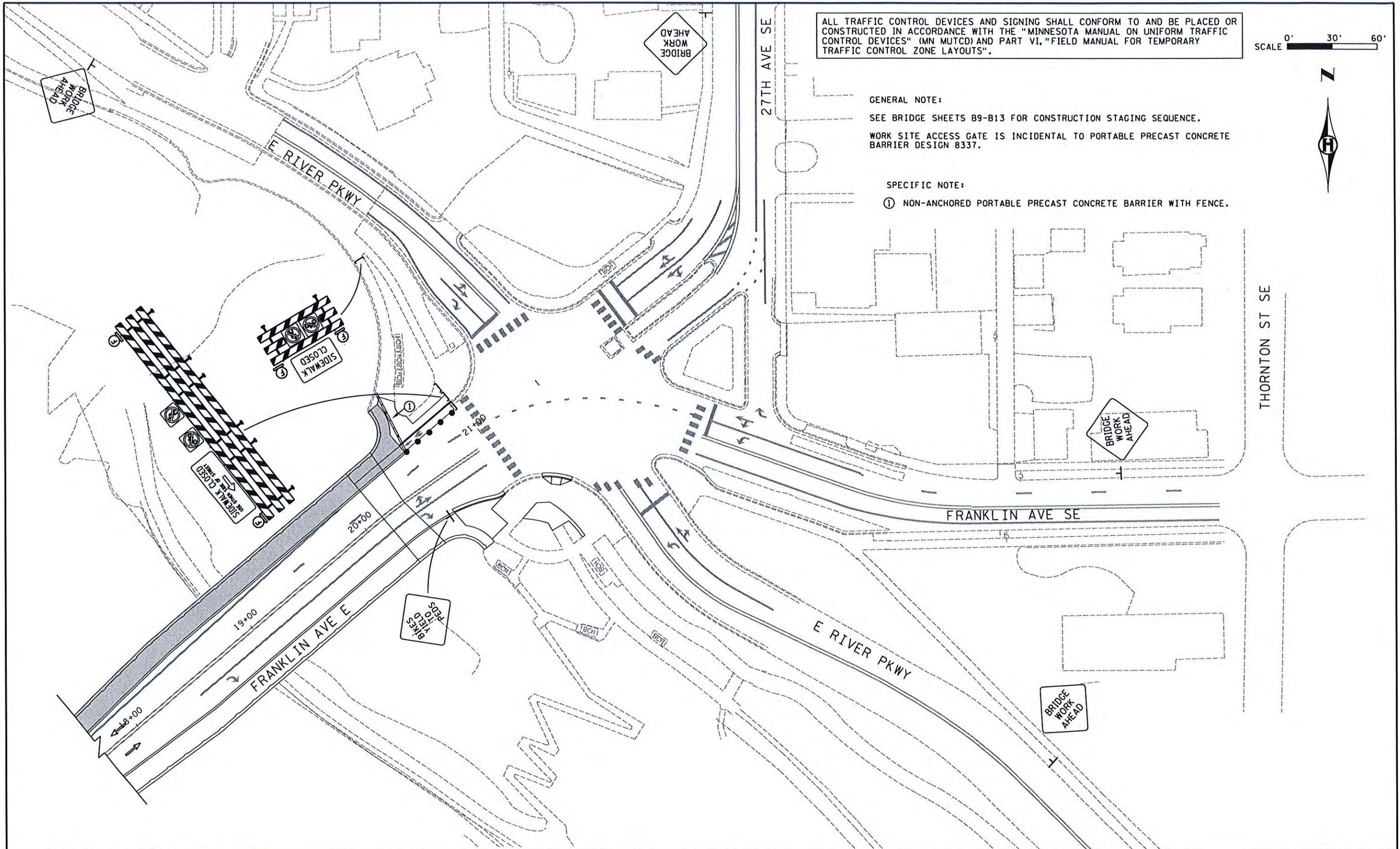
TRAFFIC CONTROL - PHASE 4

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 BRIDGE 2441 S.P. 027-605-029

SHEET

TC16

TC20



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SCALE 0' 30' 60'



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SPECIFIC NOTE:
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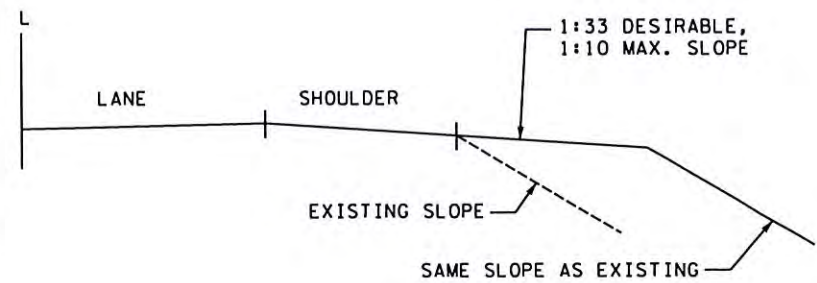
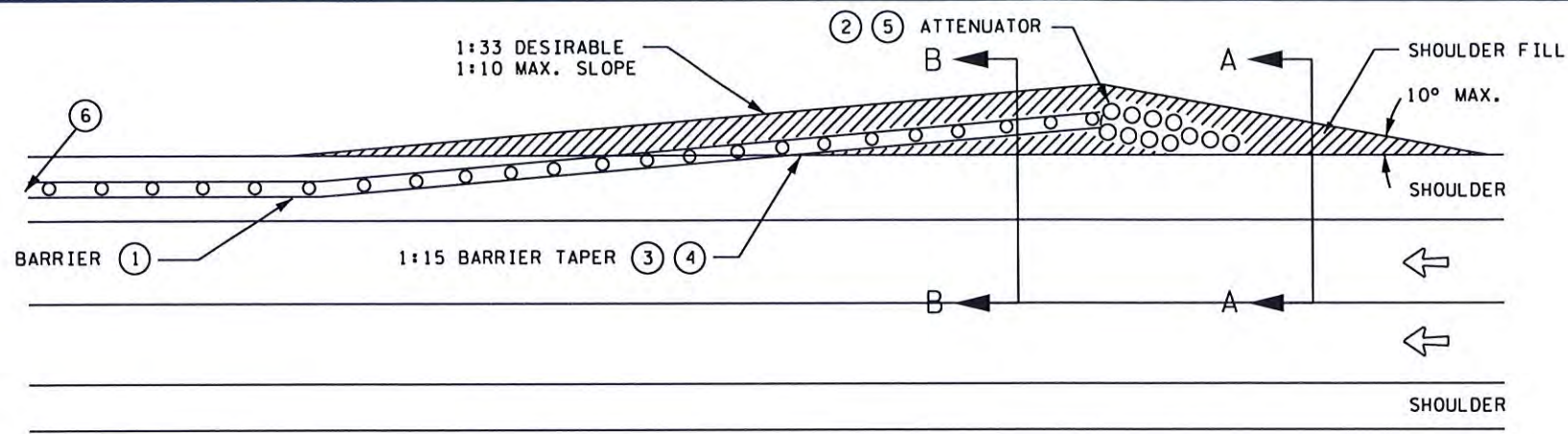
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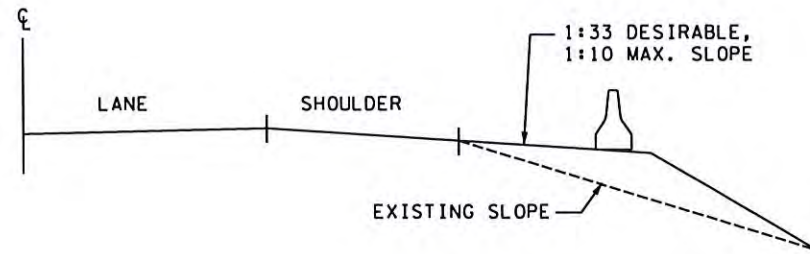
TRAFFIC CONTROL - PHASE 4

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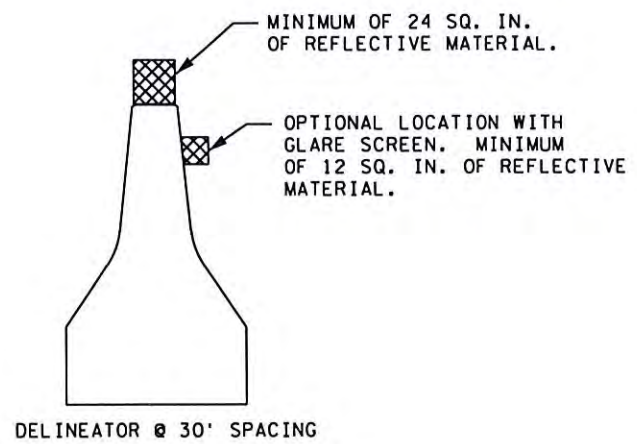
SECTION A-A



SECTION B-B

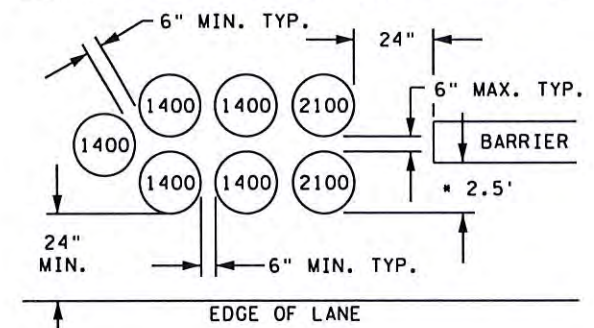
- ① IT IS DESIRABLE TO MAINTAIN FULL SHOULDER WIDTH WHENEVER POSSIBLE. IF NOT POSSIBLE, MINIMUM DESIRABLE LATERAL OFFSETS ARE BASED ON THE FOLLOWING POSTED SPEEDS:
 70 MPH - 12.0 FEET
 60 MPH - 8.0 FEET
 50 MPH - 6.5 FEET
 40 MPH - 5.0 FEET
 FOR RESTRICTED CONDITIONS, LESSER OFFSETS MAY BE USED. THE OFFSETS SHOULD BE A MINIMUM OF 2 FEET UNLESS THE CONDITIONS ARE EXTREME. LATERAL OFFSETS ARE MEASURED TO THE BOTTOM OF THE BARRIER. BARRIER OFFSET FROM EDGE OF THRU LANE SHOULD NOT EXCEED 15 FEET.
 - ② DESIRABLE TREATMENTS FOR EXPOSED BARRIER ENDS ARE; A CONNECTION TO EXISTING BARRIER; IMPACT ATTENUATOR; TAPER AWAY TO THE EDGE OF THE CLEAR ZONE; AND EXTENDING THROUGH A PLATE BEAM GUARDRAIL BY REMOVING A PANEL.
 - ③ A 1:10 TAPER MAY BE USED WHEN POSTED SPEED LIMIT IS 35 MPH OR LESS.
 - ④ IF THE BARRIER IS TO BE EXTENDED BEYOND THE SHOULDER, ADDITIONAL FILL WILL BE NEEDED IN ORDER TO PROVIDE A FLAT (1:33) APPROACH AREA TO THE BARRIER. FILL WILL BE INCIDENTAL TO BARRIER AND/OR IMPACT ATTENUATOR.
 - ⑤ THE IMPACT ATTENUATOR SHOULD BE OFFSET A MINIMUM OF 2 FT. FROM THE EDGE OF THE THRU LANE (SEE SAND BARREL OFFSET DETAIL). THE IMPACT ATTENUATOR SHOULD BE ORIENTED TO ACCOMMODATE THE PROBABLE IMPACT ANGLE OF AN ENCROACHING VEHICLE. FOR MOST ROADSIDE CONDITIONS, AN ANGLE APPROXIMATELY 10 DEGREES, AS MEASURED BETWEEN THE HIGHWAY AND THE IMPACT ATTENUATOR LONGITUDINAL CENTERLINE, IS CONSIDERED APPROPRIATE.
 - ⑥ FOR TWO LANE, TWO WAY TRAFFIC BOTH ENDS OF THE BARRIER SHOULD BE TREATED IN THE SAME MANNER AS DESCRIBED IN ②.
- NOTE:
 AT THE DIRECTION OF THE ENGINEER, OTHER APPROVED IMPACT ATTENUATORS CAN BE SUBSTITUTED IN LIEU OF THE SAND BARRELS ESPECIALLY WHERE REDIRECTION IS DESIRED OR AT WIDTH RESTRICTED AREAS.

NOTE: PORTABLE CONCRETE BARRIERS SHALL HAVE INTEGRAL SAFETY FENCE - SEE SPECIAL PROVISION.

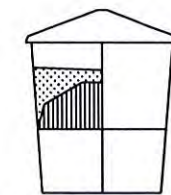


DELINEATOR @ 30' SPACING

SAND FILLED BARREL OFFSET



NOTE:
 * DISTANCE MAY BE REDUCED TO MINIMUM OF 15 IN. THIS IS ACCEPTABLE ONLY WHERE A GREATER OFFSET WOULD CAUSE UNACCEPTABLE INTERFERENCE WITH TRAFFIC.



SEE MANUFACTURER INFORMATION FOR PROPER PROCEDURE TO FILL BARRELS WITH SAND.

PORTABLE CONCRETE BARRIER PLACEMENT AND END TREATMENT

1/23/08 LAYOUT 19.DGN

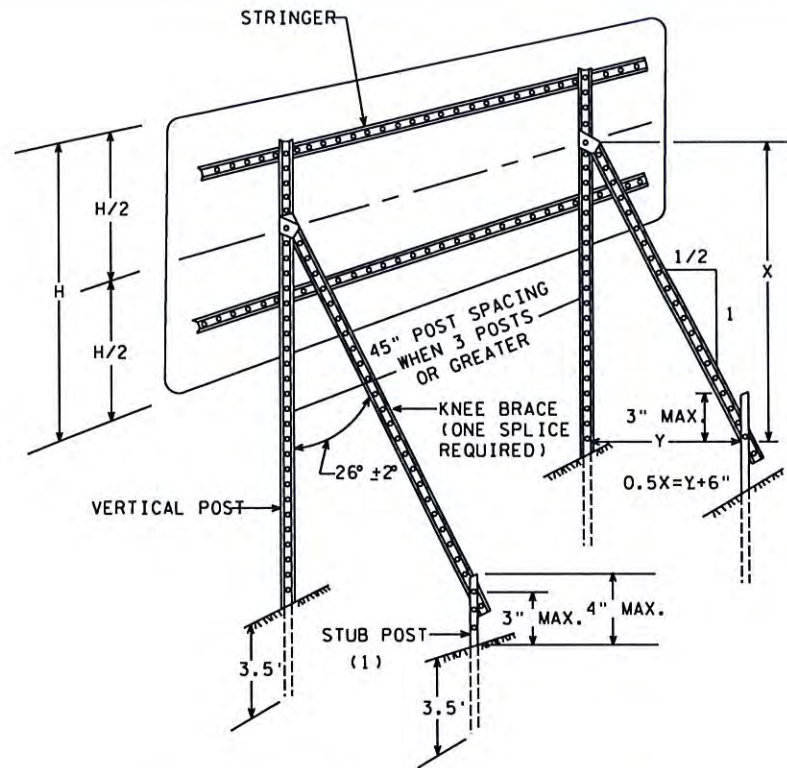


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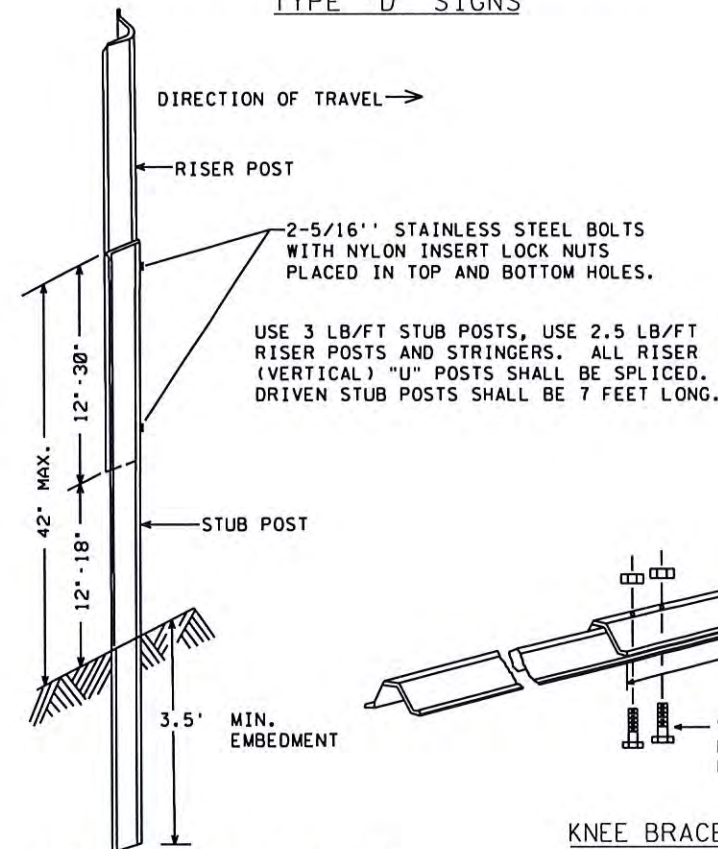
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TRAFFIC CONTROL DETAILS
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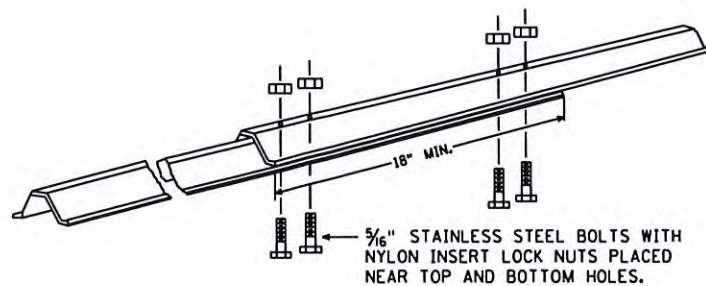
SHEET
 TC18
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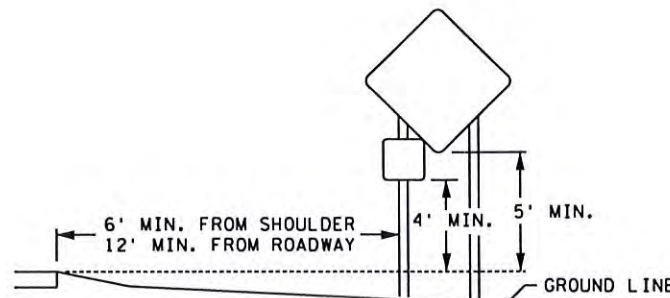
TYPICAL "A-FRAME" INSTALLATION
TYPE "D" SIGNS



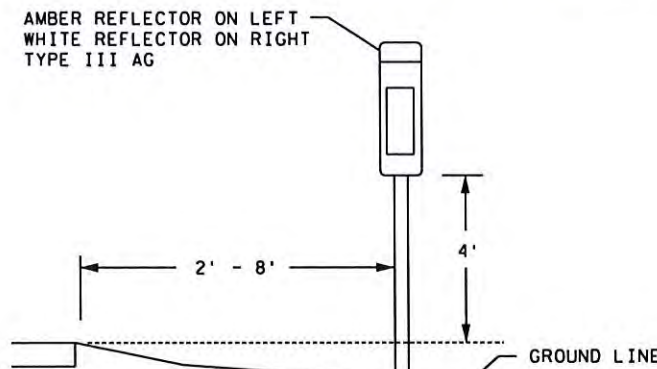
"U" POST BREAKAWAY SPLICE



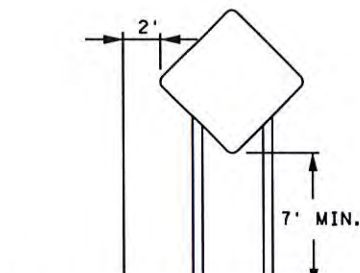
KNEE BRACE STRUCTURAL SPLICE



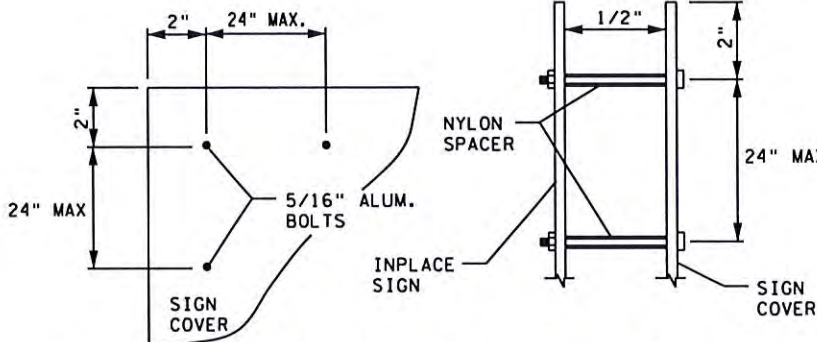
TYPICAL RURAL DESIGN



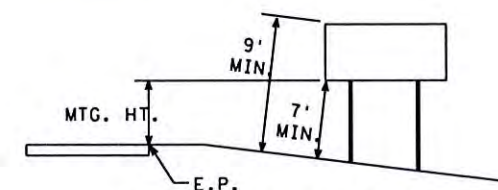
DELINEATION MOUNTING



TYPICAL URBAN DESIGN



SIGN PANEL OVERLAY



TYPICAL MOUNTING

(1) OFFSET STUB POST 1' TOWARD ROADWAY
RELATIVE TO VERTICAL POST.

SIGN DATA

SIGNS TO BE INSTALLED ON DRIVEN U-POSTS SHALL BE INSTALLED IN ACCORDANCE WITH TABLE 1 OR TABLE 2 BELOW. SIGN PANELS SHALL BE INSTALLED ON SIGN STRUCTURES TO MEET THE MINIMUM 5 FEET DEPICTED ON THE TYPICAL RURAL DESIGN DETAIL, THE 7 FEET DEPICTED ON THE TYPICAL URBAN DESIGN DETAIL, OR MINIMUM 7 AND 9 FEET DEPICTED ON THE TYPICAL MOUNTING DETAIL ON THIS SHEET.

TABLE 1

STANDARD CONSTRUCTION SIGNS IN MN/DOT STANDARD SIGNS MANUAL

PANEL SIZE (IN.)	POSTS			
	NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
24 x 24	2-U	18		13
30 x 24	2-U	18		13
36 x 30	2-U	24		13
36 x 36	2-U	18		14
42 x 36	2-U	30		14
48 x 48	2-U	30		15
60 x 60	2-U	42	1	16
72 x 72	2-U	42	2	17
96 x 54	2-U	54	2	16
168 x 132	4-U	48	4	20

GENERAL NOTES:
1. POST LENGTHS ARE APPROXIMATE AND INCLUDE EMBEDMENT, BUT DO NOT INCLUDE ADDITIONAL LENGTH REQUIRED FOR SPLICE.
2. SEE STANDARD SIGNS MANUAL FOR PUNCHING HOLES.

TABLE 2

SPECIAL DESIGN CONSTRUCTION SIGNS

LENGTH (IN.)	HEIGHT (IN.)	POSTS			
		NO. & TYPE	SPACING (IN.)	KNEE BRACES QUANT.	LENGTH (FT.)
54 - 96	78	2-U	42	2	20
102 - 138	78	3-U	45	3	20
144 - 180	78	4-U	45	4	20

DESIGNER NOTE:

INCLUDE SPECIAL SIGN DETAILS IN THE TRAFFIC CONTROL PLAN IN TABLE TWO.

NOTES:

FOR TEMPORARY CONSTRUCTION SIGN FRAMING, THE CONTRACTOR MAY USE GRADE 5 ZINC PLATED BOLTS FOR ALL BOLTED CONNECTIONS, EXCEPT FOR THE KNEE BRACE CONNECTION TO THE REAR STUB POST, WHICH SHALL UTILIZE A 5/16 INCH STAINLESS STEEL BOLT AND NYLON INSERT LOCK NUT. ADDITIONAL SIGN FRAMING DETAILS CAN BE FOUND IN THE TRAFFIC ENGINEERING MANUAL PART 6.

IF THE CONTRACTOR ELECTS TO USE SOME OTHER TYPE OF SIGN SUPPORT (OTHER THAN U-CHANNEL SIGN POSTS) FOR MOUNTING CONSTRUCTION SIGNS, DETAILS OF THE PROPOSED SIGN STRUCTURE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING THE SIGN STRUCTURE COMPONENTS. ANY SIGN STRUCTURE TO BE SUBMITTED TO THE ENGINEER SHALL BE AN FHWA ACCEPTED BREAKAWAY SIGN SUPPORT. SIGN STRUCTURE SHALL ALSO BE APPROVED FOR 90 MPH WIND LOAD.

GUIDE SIGNS SHOWN TO BE COVERED SHALL BE COVERED WITH THE SAME COLOR AS THE SIGN BACKGROUND. THE CONTRACTOR SHALL INSTALL COVERS OR ADDITIONAL SIGNS USING A MINIMUM 1/2" NYLON SPACER BETWEEN THE INPLACE SIGN AND THE COVERING MATERIAL. HOLES WILL BE DRILLED IN THE COVER AND THE INPLACE SIGN AND SHALL BE INSTALLED IN ACCORDANCE TO THE SIGN PANEL DETAIL. SPACERS ARE REQUIRED. MID-PANEL SPACING SHALL BE NO GREATER THAN 24".

TYPICAL TEMPORARY SIGN FRAMING AND INSTALLATION DETAILS

REVISED: 5-16-13



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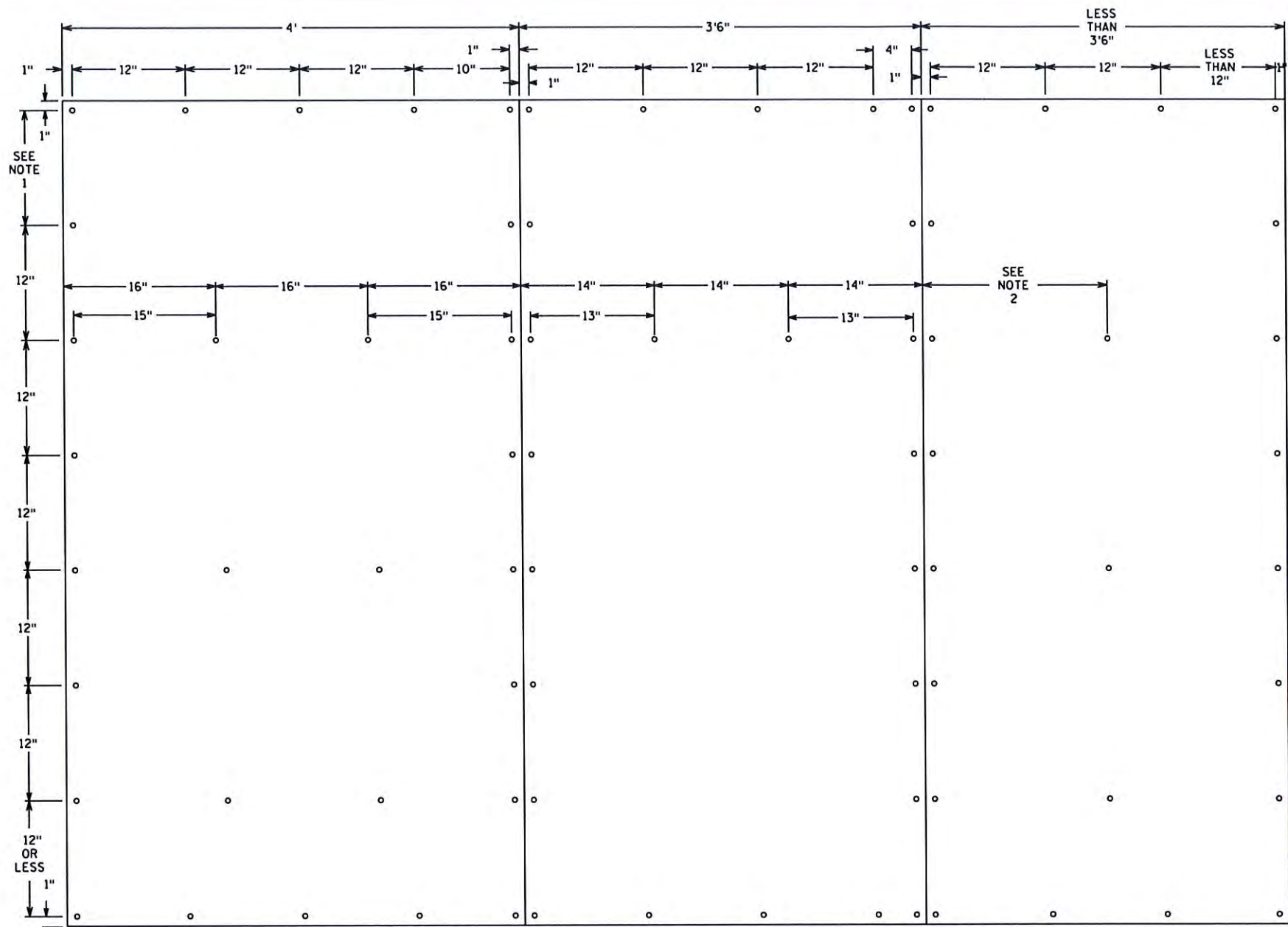
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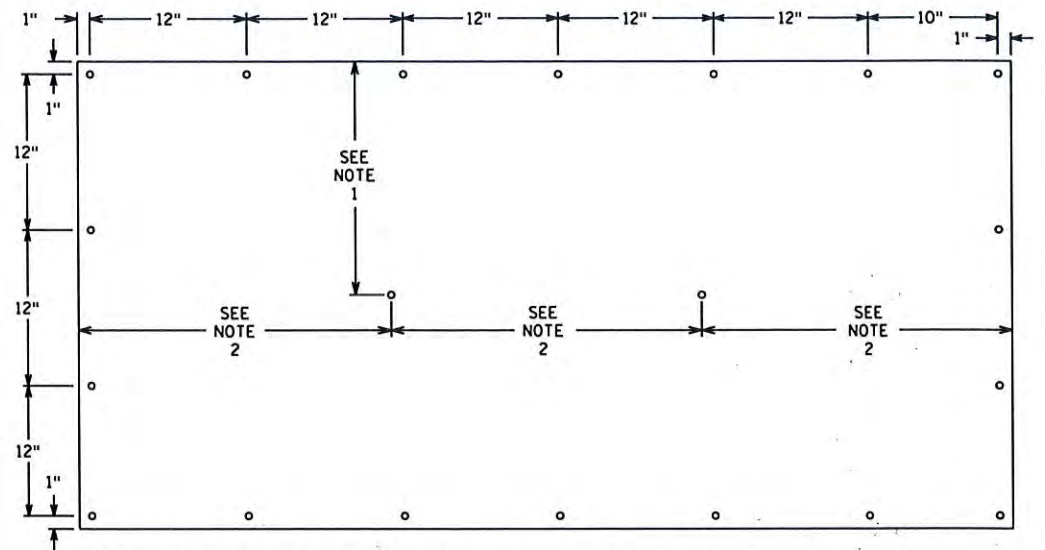
TEMPORARY CONSTRUCTION SIGN PANEL OVERLAY COVERING A COMPLETE SIGN PANEL

OVERLAY ASSEMBLY STEPS:

1. DRILL 13/64" HOLES ON THE SHEET ALUMINUM OVERLAYS IN ACCORDANCE WITH HOLE SPACING ON DIAGRAM. OUTSIDE HOLES SHALL NOT BE SPACED MORE THAN 12" APART.
2. ATTACH ONE PLASTIC WASHER (1/8" THICK, 3/8" I.D. AND 7/8" O.D.), WITH DOUBLE FACED TAPE, CENTERED BEHIND EACH DRILLED HOLE.
3. POSITION THE FAR LEFT SHEET ALUMINUM OVERLAY PANEL WITH THE BOTTOM FLUSH WITH THE INPLACE SIGN PANEL AND THE LOWER LEFT EDGE OF THE OVERLAY PANEL LINED UP WITH THE LOWER LEFT EDGE OF THE BOTTOM INPLACE PANEL SECTION.
4. DRILL ALL OUTSIDE HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH OVERLAY PANEL WITH 3/16" POP RIVETS MEETING THE REQUIREMENTS ON Mn/DOT 3352.A7a
5. DRILL THE INNER HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH WITH RIVETS AS SPECIFIED IN STEP 4.
6. ABUT THE NEXT OVERLAY PANEL TO THE FIRST ATTACHED OVERLAY PANEL AND PERFORM THE SAME WORK AS SPECIFIED IN STEPS 4 AND 5.
7. INSTALL EACH ADDITIONAL OVERLAY PANEL AS SPECIFIED IN STEP 6.

NOTES:

1. IF TOP PANEL IS 6" HIGH, THIS VERTICAL SPACE IS 6"; IF TOP PANEL IS 12" HIGH, THIS VERTICAL SPACE IS 12".
2. SHEET ALUMINUM PANEL RIVET SPACING SHALL BE 1/2 THE PANEL'S WIDTH.



TEMPORARY CONSTRUCTION SIGN PANEL OVERLAY COVERING A PORTION OF A SIGN PANEL

OVERLAY ASSEMBLY STEPS:

1. DRILL 13/64" HOLES ON THE SHEET ALUMINUM OVERLAYS IN ACCORDANCE WITH HOLE SPACING ON DIAGRAM. OUTSIDE HOLES SHALL NOT BE SPACED MORE THAN 12" APART.
2. ATTACH ONE PLASTIC WASHER (1/8" THICK, 3/8" I.D., AND 7/8" O.D.), WITH DOUBLE FACED TAPE, CENTERED BEHIND EACH DRILLED HOLE.
3. POSITION THE OVERLAY PANEL, ON THE INPLACE SIGN PANEL, MAKING SURE THE MOUNTING HOLES ON THE OVERLAY PANEL DO NOT LINE UP WITH ANY HORIZONTAL ALUMINUM PANEL JOINTS.
4. DRILL ALL OUTSIDE HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH OVERLAY PANEL WITH 3/16" POP RIVETS MEETING THE REQUIREMENTS ON Mn/DOT 3352.A7a.
5. DRILL THE INNER HOLES THROUGH THE INPLACE SIGN PANEL AND ATTACH WITH THE SAME RIVETS AS SPECIFIED IN STEP 4.

NOTES:

1. VERTICAL SPACING FOR INNER MOUNTING HOLES IS 1/2 THE PANEL HEIGHT. IF THE PANEL IS LESS THAN 24" HIGH, THERE SHALL BE NO INNER HOLES.
2. HORIZONTAL SPACING FOR INNER MOUNTING HOLES SHALL NOT BE LESS THAN 15", NOR MORE THAN 24".

TEMPORARY CONSTRUCTION SIGN PANEL OVERLAY COVERING OF A SIGN PANEL TYPICAL



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Michael E. Kotila
 MICHAEL E. KOTILA, PROFESSIONAL ENGINEER

19254 LICENSE NO. 8/13/2014 DATE

DESIGN BY: CMJ
 CAD BY: MTT
 CHECKED BY: MEK
 LAST REVISION:

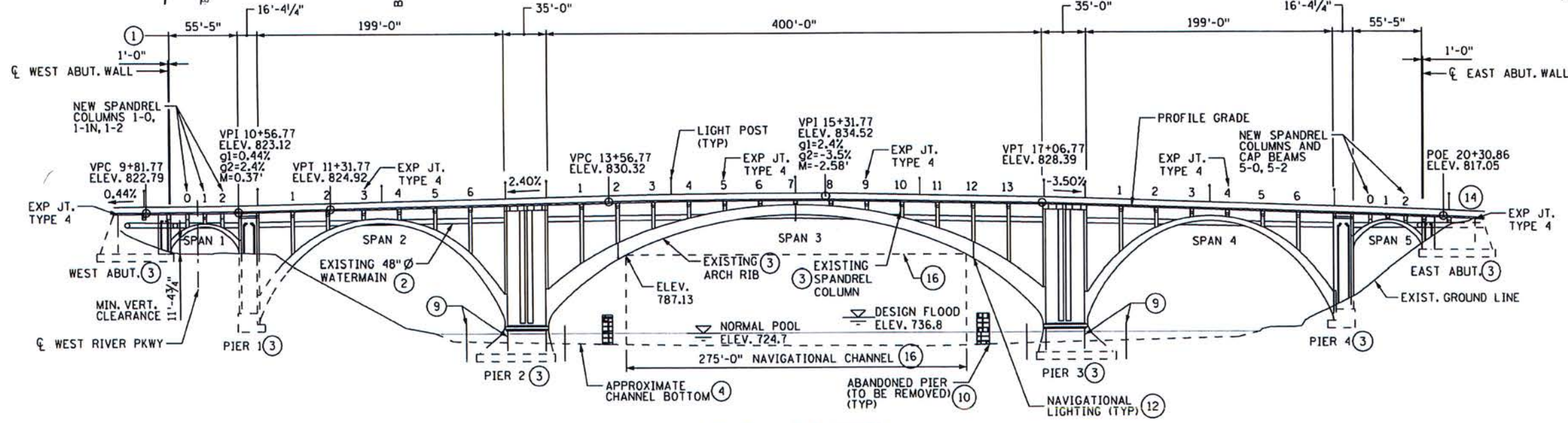
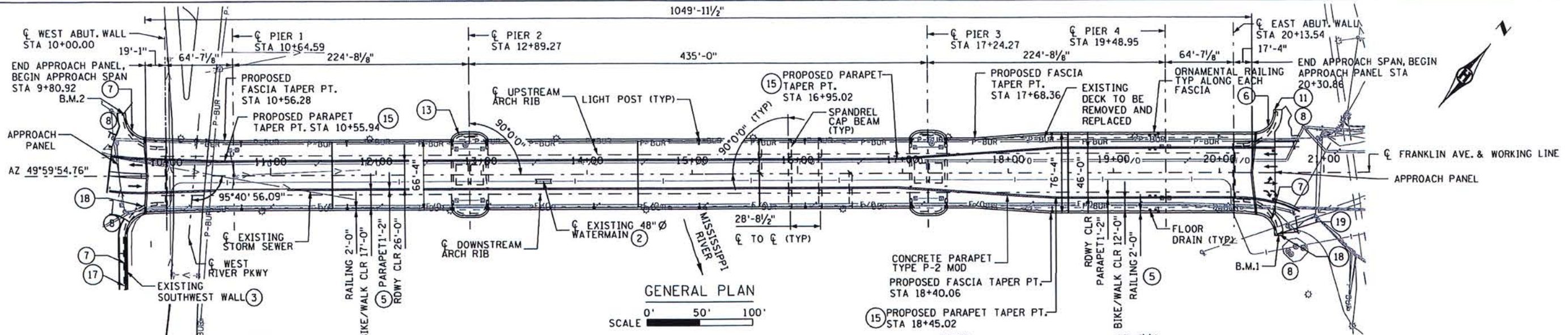
TRAFFIC CONTROL DETAILS		SHEET
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029		TC20
		TC20

File: p:\hntb\255\hntb\org\green_lakes\Documents\Minnesota Projects\45799 Franklin Bridge Design\CADD\BRIDGE\CD\CB9241_1512801.dgn

Model: SHEET

Plotted Date: 8/13/2014

Plotted by: mtravere



DESIGN DATA

2012 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

LOAD AND RESISTANCE FACTOR DESIGN METHOD

HL 93 LIVE LOAD

DEAD LOAD INCLUDES 20 p.s.f. ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS

MATERIAL DESIGN PROPERTIES:

REINFORCED CONCRETE DECK:
f'c = 6 ksi n = 6.6

Fy = 60 ksi FOR REINFORCEMENT

REINFORCED CONCRETE
f'c = 4 ksi n = 8.0

Fy = 60 ksi FOR REINFORCEMENT

ADDITIONAL MATERIAL DESIGN PROPERTIES:
SEE GENERAL NOTES

DECK AREA = 72,940 SQ. FT.

13,200 PROJECTED ADT FOR YEAR 2035

DESIGN SPEED = 35 MILES PER HOUR

HL93 LRFR BRIDGE OPERATING RATING FACTOR 1.39

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNED *Daniel F. Enser* DATE 8/14/2014
LICENSED PROFESSIONAL ENGINEER

NAME: DANIEL F. ENSER LIC NO. 41308

MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 2441

FRANKLIN AVE. (C.S.A.H. 5) OVER THE MISSISSIPPI RIVER AND WEST RIVER PKWY BETWEEN EAST RIVER PKWY AND SEABURY AVE.

DECK AND CAP BEAM REPLACEMENT, CONCRETE REHABILITATION, TYPE P-2 MOD INTERIOR BARRIER, HISTORIC RAILING

IDENTIFICATION NO. 112
GENERAL PLAN AND ELEVATION
SEC. 30 T 29 N R 23 W
CITY OF MINNEAPOLIS HENNEPIN COUNTY

APPROVED *James N. Stuber*
HENNEPIN COUNTY DIRECTOR
DEPARTMENT OF TRANSPORTATION
AND COUNTY ENGINEER

DATE 8/14/14

APPROVED *Nancy Daubinger*
STATE BRIDGE ENGINEER

DATE 8/14/2014

DES. AMK	DR. RAM	2441
CHK. DFE	CHK. AMK	

- ① SPAN LENGTHS ARE BASED ON DIMENSION AT SPRINGLINE OF ARCH.
- ② PRESERVE AND PROTECT.
- ③ REHABILITATE CONCRETE SURFACES, SEE CONCRETE REPAIR DETAILS ON SHEETS B66-B74.
- ④ CONTRACTOR TO FIELD VERIFY.
- ⑤ CROSS-SECTION DIMENSIONS AND TAPER POINTS ARE SYMMETRIC ABOUT CL OF BRIDGE.
- ⑥ REPLACE EXISTING RAILING WITH PRECAST ORNAMENTAL RAILING FROM END OF BRIDGE TO CORNER POST OF BRIDAL VEIL FALLS RAILING POST.
- ⑦ REPLACE EXISTING RAILING WITH PRECAST ORNAMENTAL RAILING FROM END OF BRIDGE TO END OF WALL.
- ⑧ REPLACE SIDEWALK, CURB AND CUTTER, MEDIAN, AND PAVEMENT TO TIE INTO EXISTING. SEE ROADWAY PLANS.
- ⑨ INSTALL COFFERDAM AND REHABILITATE PIER, SEE CONCRETE REPAIR DETAILS, SHEET B74 AND SPECIAL PROVISIONS
- ⑩ REMOVE, SEE SPECIAL PROVISIONS
- ⑪ INSTALL NEW MODIFIED-A NAME PLATE, SEE SHEET B174.
- ⑫ CONTRACTOR TO TEMPORARILY SUPPORT AND KEEP OPERATIONAL AS REQUIRED TO PROVIDE NAVIGATION LIGHTING THROUGHOUT CONSTRUCTION.
- ⑬ EXTEND LOOKOUT AT PIERS 2 AND 3, SEE PIER MODIFICATION DETAILS, SHEETS B102 TO B105.
- ⑭ SPANDREL COLUMN AND CAP BEAM NOMENCLATURE:
SPAN 3-4N
NORTH (N) OR SOUTH (S), IF PROVIDED
SPANDREL NUMBERED FROM WEST
- ⑮ STATIONING PROVIDED IS ON THE ROADWAY SIDE OF THE PARAPET.
- ⑯ NAVIGATION ENVELOPE, MAINTAIN NAVIGATION CHANNEL DURING CONSTRUCTION, SEE SPECIAL PROVISIONS.
- ⑰ REMOVE EXISTING NAME PLATE AND DELIVER TO JAMES ARCHER. INSTALL NEW MODIFIED-B NAME PLATE, SEE SHEET B174.
- ⑱ PROVIDE NEW BENCHMARK IN PROPOSED SIDEWALK, COST IS INCIDENTAL TO OTHER PAY ITEMS.
- ⑲ REMOVE EXISTING NAME PLATE AND DELIVER TO JAMES ARCHER AT 1600 PRAIRIE DR., MEDINA, MN 55340, 612.596.0372

NOTES:

SEE BRIDGE LAYOUT, SHEET B6, FOR WORKING POINT AND CONTROL POINT LOCATIONS.

ALL EXISTING SPANDREL AND PIER CAP BEAMS TO BE REMOVED AND REPLACED.

EXISTING BENCHMARK DATA (MNSL NGVD 1929):
B.M.1 ELEV: 816.128 X: 541959.784 Y: 163264.003
B.M.2 ELEV: 823.162 X: 541046.333 Y: 162651.413
STA: 9+59.78 OFFSET: 58.21

EXPANSION BEARINGS: 1-0, 1-1, 1-2, 2-2, 2-3, 2-4, 2-5, 3-3, 3-4, 3-5, 3-6, 3-8, 3-9, 3-10, 3-11, 4-2, 4-3, 4-4, 4-5, 5-0, 5-1, 5-2, AND ALL ABUTMENT AND APPROACH CAP BEAMS, SEE SHEET B7.

FIXED BEARINGS: 2-1, 2-6, 3-1, 3-2, 3-7, 3-12, 3-13, 4-1, 4-6, AND ALL PIER CAP BEAMS, SEE SHEET B7.

SEE DECK DETAILS (1 OF 2), SHEET B139, FOR BEARING DETAILS.

HNTB HNTB Corporation
The HNTB Companies
Engineers Architects Planners

5500 Wayzata Blvd., Suite 450
Minneapolis, Minnesota 55416
(763) 852-2100

Olson & Nesvold Engineers, P.S.C.
7825 Washington Ave. S., Suite 100
Bloomington, MN 55439-2431

HENNEPIN COUNTY
BRIDGE NO. 2441

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B5	GENERAL NOTES (2 OF 2)
B6	BRIDGE LAYOUT
B7	JOINT LOCATIONS AND BEARING CONDITIONS
B8	AS-BUILT - TYPICAL CROSS SECTIONS
B9	CONSTRUCTION STAGING NOTES (1 OF 2)
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B20	REPAIR LOCATIONS - PIER 1 (4 OF 4)
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B49	REPAIR LOCATIONS - ARCH - SPAN 3 (7 OF 12)
B50	REPAIR LOCATIONS - ARCH - SPAN 3 (8 OF 12)
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B70	CONCRETE SURFACE REPAIR DETAILS (5 OF 9)
B71	CONCRETE SURFACE REPAIR DETAILS (6 OF 9)
B72	CONCRETE SURFACE REPAIR DETAILS (7 OF 9)
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B88	WEST ABUTMENT REMOVAL DETAILS
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B93	AS-BUILT - ABUTMENT CAP BEAM DETAILS
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B107	SPANDREL COLUMN DETAILS (2 OF 2)
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B109	SPANDREL CAP BEAM REMOVAL
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B110A	SPANDREL CAP BEAM PLACEMENT DATA
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B120	AS-BUILT - DECK PLAN (2 OF 4)
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B122B	AS-BUILT - DECK PLAN - POST CONTRACTOR SURVEY (1 OF 4) *
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B133	DECK PANEL DETAILS - TYPES S AND T
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B141	AS-BUILT - DECK ELEVATION TABLE (1 OF 2)
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B152	AS-BUILT - ORNAMENTAL RAILING DETAILS (1 OF 11)
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B176	BRIDGE SURVEY

* NEW PLAN SHEET ADDED AS PART OF AS-BUILT DRAWINGS.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER
 41308 8/14/2014
 LICENSE NO. DATE

DESIGN BY: AJN
CAD BY: AMI
CHECKED BY: DFE
LAST REVISION: 05/23/2016

AS-BUILT - INDEX OF SHEETS
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B2R3
 B176

SCHEDULE OF QUANTITIES - BRIDGE NO. 2441

ITEM NO.	ITEM	UNIT	QUANTITY
2021.501	MOBILIZATION	LUMP SUM	1
⑦ 2401.501	STRUCTURAL CONCRETE (3Y43)	(P) CU YD	315
⑥ 2401.501	STRUCTURAL CONCRETE (3Y46)	(P) CU YD	67
⑧ 2401.513	TYPE MOD P-2 RAILING CONCRETE (3Y46)	LIN FT	1,454
⑭ ⑨ 2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	105,982
2401.541	REINFORCEMENT BARS (STAINLESS STEEL)	(P) POUND	610
⑩ 2401.601	STRUCTURE EXCAVATION	LUMP SUM	1
③ 2401.601	FOUNDATION PREPARATION PIER 2	LUMP SUM	1
③ 2401.601	FOUNDATION PREPARATION PIER 3	LUMP SUM	1
⑮ 2402.521	STRUCTURAL STEEL (3310)	(P) POUND	6,110
⑤ 2402.521	STRUCTURAL STEEL (3361)	(P) POUND	17,005
⑫ 2402.584	STRUCTURAL TUBE RAILING DESIGN T-1	(P) LIN FT	2,235
2402.591	EXPANSION JOINT DEVICES TYPE 4	(P) LIN FT	425
2402.601	DRAINAGE SYSTEM BRIDGE DECK	LUMP SUM	1
2404.618	PREMIXED POLYMER CONCRETE (PPC) WEARING COURSE	(P) SQ FT	70,199
2405.601	PRECAST ELEMENT ERECTION EQUIPMENT	LUMP SUM	1
2405.601	PRECAST DECK PANELS	LUMP SUM	1
⑭ ⑰ 2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 1	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 2	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 3	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 4	(P) EACH	19
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 5	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 6	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 7	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 8	(P) EACH	3
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 9	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 10	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 11	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 12	(P) EACH	1
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 13	(P) EACH	2
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 14	(P) EACH	2
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 15	(P) EACH	4
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 16	(P) EACH	2
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 17	(P) EACH	4
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 18	(P) EACH	2
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 19	(P) EACH	2
2405.602	PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 20	(P) EACH	1
2405.603	PRECAST CONCRETE ORNAMENTAL RAILING	(P) LIN FT	2,117
2405.603	PRECAST TYPE MODIFIED P-2 RAILING CONCRETE (3Y46)	LIN FT	764
⑱ 2406.553	BRIDGE APPROACH PANELS	(P) SQ YD	253
② 2433.502	REMOVE CONCRETE	CU YD	1,474
2433.505	REMOVE CONCRETE BRIDGE DECK	(P) SQ FT	69,897
⑰ 2433.506	REMOVE CONCRETE SIDEWALK	(P) LIN FT	2,102
⑬ 2433.506	REMOVE BRIDGE RAIL	(P) LIN FT	2,291
① 2433.516	ANCHORAGES TYPE 1	(P) EACH	129
① ⑩ 2433.516	ANCHORAGES TYPE 2	EACH	2,562
① 2433.516	ANCHORAGES TYPE 3	(P) EACH	12
① 2433.516	ANCHORAGES TYPE 4	(P) EACH	464
2433.601	MOCK-UPS - CONCRETE SURFACE REPAIRS	LUMP SUM	1
2433.601	MOCK-UPS - EMBEDDED GALVANIC ANODES	LUMP SUM	1
2433.601	MOCK-UPS - ROUT AND SEAL CRACK REPAIR	LUMP SUM	1
2433.601	MOCK-UPS - CONCRETE COATING	LUMP SUM	1
2433.601	TEMPORARY STRUCTURAL SUPPORT	LUMP SUM	1
2433.602	CONCRETE SURFACE REPAIR TYPE E	EACH	2
2433.603	CONCRETE SURFACE REPAIR TYPE F	LIN FT	4,238
2433.603	CONCRETE SURFACE REPAIR TYPE L	LIN FT	4,221
2433.603	ARCHITECTURAL CONCRETE TEXTURE (ARCH CORNER BOARD FORM)	LIN FT	259
2433.603	ARCHITECTURAL CONCRETE TEXTURE (ANODE BOARD FORM)	LIN FT	191
2433.603	ROUT AND SEAL CRACKS	LIN FT	2,642
2433.618	CONCRETE SURFACE REPAIR TYPE A	SQ FT	6,000
2433.618	CONCRETE SURFACE REPAIR TYPE B	SQ FT	1,448
2433.618	CONCRETE SURFACE REPAIR TYPE C	SQ FT	759
2433.618	CONCRETE SURFACE REPAIR TYPE D	SQ FT	631

1,427 1,440
107,458 107,286 107,582

6,997 8,850
16,978

2,205 2,221

2,122

SCHEDULE OF QUANTITIES - BRIDGE NO. 2441

ITEM NO.	ITEM	UNIT	QUANTITY
2433.618	CONCRETE SURFACE REPAIR TYPE G	SQ FT	5,882
2433.618	CONCRETE SURFACE REPAIR TYPE H	SQ FT	544
2433.618	CONCRETE SURFACE REPAIR TYPE J	SQ FT	292
2433.618	CONCRETE SURFACE REPAIR TYPE K	SQ FT	292
2433.618	CONCRETE SURFACE REPAIR TYPE M	SQ FT	296
2433.618	CONCRETE SURFACE REPAIR TYPE N	SQ FT	1,178
2433.618	ARCHITECTURAL CONCRETE TEXTURE (BOARD FORM)	SQ FT	1,311
2433.618	HISTORIC CONCRETE SURFACE TREATMENT	(P) SQ FT	329,731
2504.601	WATERMAIN HANGER SYSTEM	LUMP SUM	1
⑯ 2506.602	PLUG & ABANDON DRAINAGE STRUCTURE	EACH	1
2545.509	CONDUIT SYSTEM (SIGNALS)	LUMP SUM	1
2545.553	HANDHOLE	EACH	4

SCHEDULE OF QUANTITIES NOTES

SEE CONCRETE SURFACE REPAIR SPECIAL PROVISIONS AND DETAIL SHEETS B66-B74 FOR REPAIR TYPE DEFINITIONS & DETAILS.

- ① SIZE OF BAR PER ANCHORAGE PAY ITEM IS AS FOLLOWS:
ANCHORAGES TYPE 1 - #5 BARS
ANCHORAGES TYPE 2 - #7 BARS
ANCHORAGES TYPE 3 - #4 BARS
ANCHORAGES TYPE 4 - #9 BARS
- ② INCLUDES REMOVAL OF THE FOLLOWING ELEMENTS:
CAP BEAMS (SPANDREL, ABUTMENTS AND APPROACH) 923 CU YD
PIER CAPS AND MISC AT PIERS 401 CU YD
MISC AT SPANDREL COLUMNS 23 CU YD
APPROACH WALK SLAB/SIDEWALKS 126 CU YD
MISC CONCRETE AT BRIDAL VEIL FALLS RAILING CONNECTION 1 CU YD
- ③ INCLUDES DESIGN, CONSTRUCTION & REMOVAL OF COFFERDAMS AS NECESSARY TO PERFORM PIER REPAIRS AND REMOVAL OF REMNANT PIERS FROM 1889 BRIDGE.
- ④ TOTAL PROPOSED DECK AREA OF DECK PANELS IS 66,694 SQUARE FEET. PROPOSED AREA OF ULTRA-HIGH-PERFORMANCE-CONCRETE IS 6,246 SQUARE FEET.
- ⑤ INCLUDES STEEL POSTS AT ORNAMENTAL RAILING.
- ⑥ INCLUDES CAST-IN-PLACE CONCRETE FOR ORNAMENTAL RAILING PILASTERS AND CONNECTION TO BRIDAL VEIL FALLS RAILING.
- ⑦ INCLUDES CAST-IN-PLACE CONCRETE FOR APPROACH WALK SLAB/SIDEWALK AT APPROACH WALLS, APPROACH CAP BEAMS AND SPAN 1 COLUMNS.
- ⑧ INCLUDES CAST-IN-PLACE CONCRETE FOR INTERIOR PARAPET TYPE P-2 MODIFIED (TL-2).
- ⑨ QUANTITY INCLUDES 12,289 LBS OF REINFORCEMENT BARS FOR SUPPLEMENTAL REINFORCEMENT TO REPLACE EXISTING REINFORCEMENT THAT HAS SECTION LOSS. SEE SPECIAL PROVISIONS. SUPPLEMENTAL REINFORCEMENT SHALL NOT BE INSTALLED WITHOUT PRIOR APPROVAL FROM THE ENGINEER. SEE SHEET B72 AND THE SPECIAL PROVISIONS.
- ⑩ QUANTITY INCLUDES 1879 ANCHORAGES FOR SUPPLEMENTAL DOWEL BAR ANCHORAGES THAT MAY BE NEEDED TO ADDRESS SECTION LOSS IN EXISTING REINFORCEMENT. SEE SPECIAL PROVISIONS. SUPPLEMENTAL REINFORCEMENT ANCHORAGES SHALL NOT BE INSTALLED WITHOUT PRIOR APPROVAL OF THE ENGINEER. SEE SHEET B72 AND THE SPECIAL PROVISIONS.
- ⑪ INCLUDES SELECT GRANULAR MATERIAL AND POLYETHYLENE SHEET, SEE SPECIAL PROVISIONS.
- ⑫ INCLUDES DUPLEX COATING OF TUBE RAILING, SEE SPECIAL PROVISIONS.
- ⑬ INCLUDES REMOVAL OF CONCRETE AND METAL PORTIONS OF EXISTING RAILING.
- ⑭ DOES NOT INCLUDE REINFORCEMENT BARS CAST IN PRECAST ELEMENTS. REINFORCEMENT BARS CAST IN PRECAST ELEMENTS ARE PAID FOR WITH THE PRECAST ELEMENT.
- ⑮ INCLUDES STEEL ANGLES, PLATES AND CHANNELS FOR ORNAMENTAL RAILING.
- ⑯ INCLUDES ABANDONING DRAIN STRUCTURE AT PIER 1.
- ⑰ INCLUDES REMOVAL OF SIDEWALK ON BRIDGE DECK.
- ⑱ CONCRETE 3A42.
- ⑲ FOR PRECAST CONCRETE SUBSTRUCTURE CAP BEAMS, SEE FOLLOWING:
SHEET B108 TYPES 1-11
SHEET B95 TYPES 12,20
SHEET B100 TYPES 13,14,18,19
SHEET B105 TYPES 15-17



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
LICENSE NO. DATE

DESIGN BY: AMK
CAD BY: AMI
CHECKED BY: DFE
LAST REVISION: 05/23/2016

SCHEDULE OF QUANTITIES
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B3R4
B176

GENERAL:

1. THE GENERAL NOTES CONTAINED HEREIN ARE INTENDED TO FEATURE BROAD REQUIREMENTS OF THE CONSTRUCTION AND ARE NOT COMPREHENSIVE. ADDITIONAL DETAIL AND REQUIREMENTS ARE CONTAINED THROUGHOUT THE PLANS AND SPECIAL PROVISIONS.
2. ALL DIMENSIONS ARE SHOWN IN FEET AND INCHES UNLESS NOTED OTHERWISE.
3. ALL ELEVATIONS ARE SHOWN IN FEET (NGVD 1929).
4. ALL DIMENSIONS, HORIZONTAL AND VERTICAL, ARE FOR THE STRUCTURE AT 65°F UNLESS OTHERWISE NOTED.
5. STATIONS, WORKING POINTS, AND DIMENSIONS FOR NEW CONSTRUCTION ARE BASED ON ORIGINAL CONSTRUCTION PLANS DATED 1923, REHABILITATION PLANS DATED 1970, AND BRIDGE RESURFACING PLANS DATED 1984. FIELD VERIFY ALL DIMENSIONS.
6. PLAN SETS OF ORIGINAL CONSTRUCTION 1923, REHABILITATION 1970, BRIDGE RESURFACING 1984, EXISTING WATER MAIN AND COAL FLATS RETAINING WALL 2002 ARE AVAILABLE FROM HENNEPIN COUNTY.

SPECIFICATIONS:

1. MNDOT LRFD BRIDGE DESIGN MANUAL, CURRENT VERSION.
2. MNDOT BRIDGE DETAILS MANUAL, PARTS I AND II, CURRENT VERSION.
3. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 6TH EDITION, 2012 AND CURRENT INTERIMS.
4. AASHTO MANUAL FOR BRIDGE EVALUATION 2ND EDITION, 2011 AND CURRENT INTERIMS.
5. MNDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2014 EDITION AND MNDOT MATERIAL LAB SUPPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION, 2014 EDITION, AND SPECIAL PROVISIONS.
6. CURRENT VERSIONS AS OF MAY 2014.

LOAD MODIFIERS:

1. DUCTILITY, $\eta_D = 1.00$
2. REDUNDANCY, $\eta_R = 1.05$ FOR CAP BEAMS AND SPANDREL COLUMNS, 1.00 FOR ALL OTHER ELEMENTS
3. IMPORTANCE, $\eta_I = 1.05$

DESIGN LOADS:

1. DEAD LOADS
 - A. UNIT WEIGHT OF CONCRETE = 150 PCF
 - B. UNIT WEIGHT OF DECK OVERLAY = 150 PCF
 - C. UNIT WEIGHT OF STRUCTURAL STEEL = 490 PCF
 - D. CONCRETE PARAPET TYPE P-2 MODIFIED = 326 PLF
 - E. ORNAMENTAL CONCRETE RAIL = 500 PLF
 - F. WATERMAIN AND HANGER SYSTEM = 1320 PLF
 - G. FUTURE WEARING COURSE ALLOWANCE = 20 PSF
 - H. OTHER UTILITIES = 300 PLF

DESIGN LOADS (CONT'D):

2. LIVE LOADS
 - A. HL-93 HIGHWAY LIVE LOAD WITH IMPACT, POSITION ON DESIGN LANES WITHIN THE PROPOSED ROADWAY.
 - B. PEDESTRIAN LOADING OF 75 PSF ON SHARED USE PATH.
 - C. MULTIPLE PRESENCE FACTORS PER AASHTO LRFD ARTICLE 3.6.
 - D. SPECIAL CASE SIDEWALK LOADING: HL-93 ON ROADWAY LANES COMBINED WITH HS-20 VEHICLE ON SHARED USE PATH REPRESENTING A SNOOPER TRUCK OR MAINTENANCE VEHICLE. APPLY MULTIPLE PRESENCE FACTORS AS FOR PEDESTRIAN LOADS PER AASHTO C3.6.1.1.2.
 - E. PERMIT LOADS TO BE CONSIDERED FOR STRENGTH II ARE PERMIT TRUCKS INDICATED IN THE PERMIT VEHICLE DIAGRAMS AS SHOWN IN THESE PLANS AND ARE IN COMBINATION WITH THE DESIGN LANE LOAD OF 0.200 KLF ON ANY ONE LANE OF THE BRIDGE.
 - F. MULTIPLE PRESENCE FACTOR OF 1.00 FOR DESIGN PERMIT VEHICLE AND DESIGN LANE LOAD, AND PER AASHTO LRFD FOR HL-93 BASED ON NUMBER OF LANE LOADS APPLIED.
 - G. SPECIAL EVENT LOADING: CROWD LOADING OF 90 PSF ON FULL DECK WIDTH BETWEEN ORNAMENTAL RAILINGS.
3. WIND LOADS
 - A. BASE DESIGN WIND SPEED SHALL BE 100 MPH AND APPLIED IN ACCORDANCE WITH AASHTO LRFD ARTICLE 3.8.
 - B. SUBURBAN SURFACE CONDITIONS
4. THERMAL FORCES
 - A. BASE CONSTRUCTION TEMPERATURE = 65°F
 - B. COEFFICIENT OF THERMAL EXPANSION = 0.000006/°F (CONCRETE)
 - C. TEMPERATURE RANGE
 - I. 150°F FOR ALL NEW ELEMENTS
 - II. 80°F FOR EXISTING ELEMENTS
 - D. MOVEMENT FACTORS FOR JOINTS AND BEARINGS = 1.2
5. CONSTRUCTION LOADS
 - A. USE 1.5 LOAD FACTOR FOR CONSTRUCTION LIVE LOADS AND 1.25 LOAD FACTOR FOR DEAD LOADS (INCLUDING FORMWORK AND FALSEWORK).
 - B. TOTAL FACTORED COMBINED CONSTRUCTION DEAD AND LIVE LOAD ASSUMED TO BE 37.5 PSF TIMES DECK AREA.
 - C. SEE CONSTRUCTION STAGING NOTES FOR SUGGESTED SEQUENCE.
6. LOAD COMBINATIONS
 - A. PER AASHTO LRFD EXCEPT AS NOTED
 - B. STR IV MODIFIED 1.4DL+1.4LL
 - C. SPECIAL SHARED USE PATH LOADING FOR MAINTENANCE VEHICLE EVALUATED UNDER STRENGTH II
 - D. SPECIAL EVENT LOADING EVALUATED UNDER STRENGTH II
7. ERECTION STRESSES

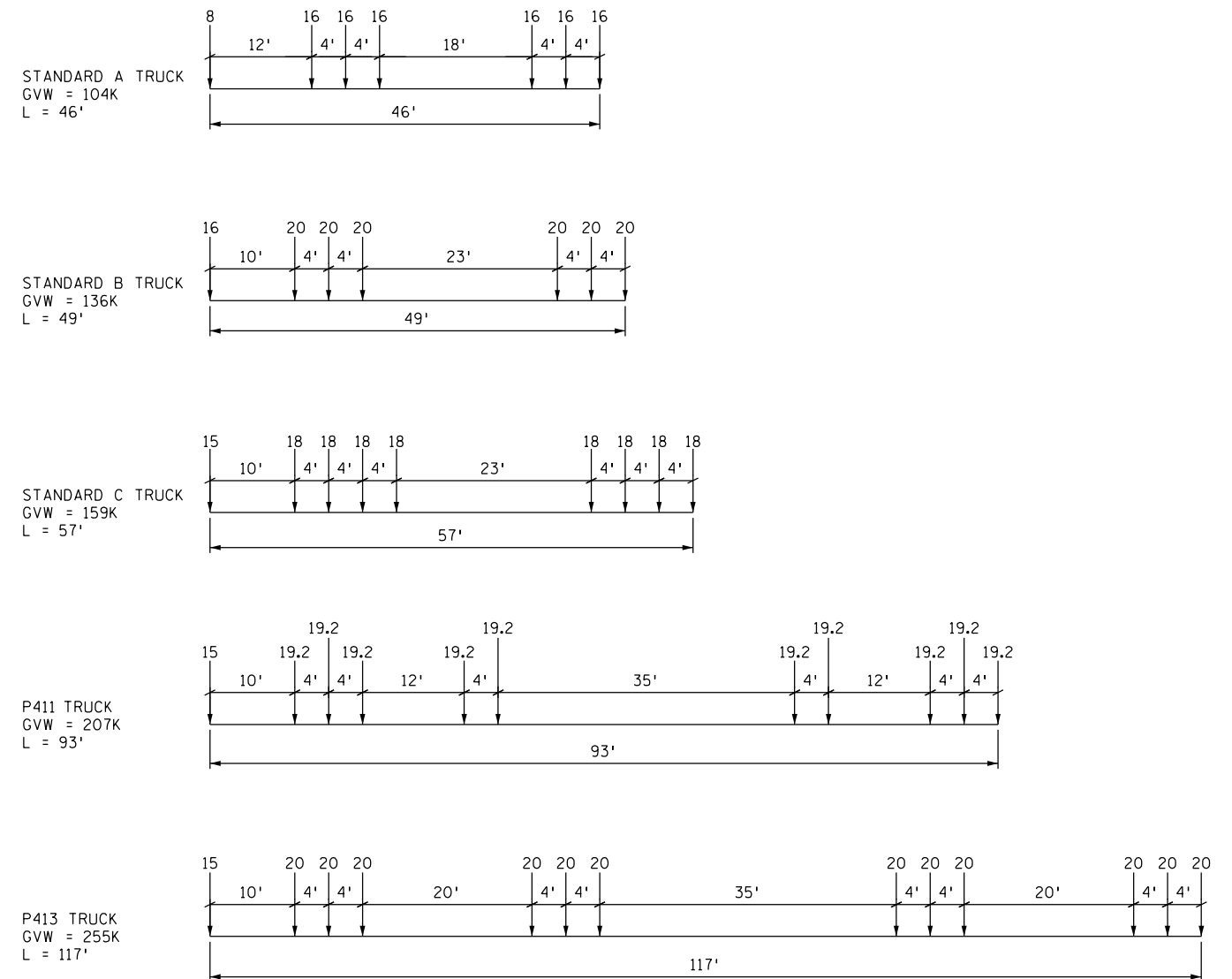
ALL PRECAST COMPONENT STRESSES DURING HANDLING AND ERECTION SHALL NOT EXCEED THE MODULUS OF RUPTURE $f_r = 7.5\sqrt{f'_c}, f'_c$ IN PSI, DIVIDED BY A SAFETY FACTOR OF 1.5. ALL DEAD LOADS SHALL BE MULTIPLIED BY A FACTOR = 1.25. f'_c EQUALS CORE STRENGTH AT THE TIME OF ERECTION.
8. VESSEL COLLISION LOADING

IN ACCORDANCE WITH U.S. COAST GUARD/MARINE EXCHANGE RECOMMENDATIONS, AASHTO LRFD & AASHTO GUIDE SPECIFICATION & COMMENTARY FOR VESSEL COLLISION DESIGN OF HIGHWAY BRIDGES.

DESIGN VESSEL:

BARGE TOW LENGTH = 2 BARGES	TOTAL VESSEL DWT = 4,300 TONS
BARGE DWT = 1,900 TONS/BARGE	VESSEL IMPACT VELOCITY = 7 KNOTS
MOTOR VESSEL DWT = 500 TONS	EQUIVALENT STATIC BARGE IMPACT FORCE = 2,749

MINNESOTA STANDARD PERMIT TRUCKS



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47097 8/14/2014
LICENSE NO. DATE

DESIGN BY: AMK
CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

GENERAL NOTES (1 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B4
B176

MATERIALS:

1. CONCRETE (28 DAY STRENGTH AS NOTED):
 - A. SUPERSTRUCTURE-CAP BEAMS (TYPE 3Y46) f'c = 4000 PSI
 - B. SUPERSTRUCTURE-SPANDREL COLUMNS (3Y43) f'c = 4000 PSI
 - C. SUPERSTRUCTURE-DECK (TYPE 3JM, SEE SPECIAL PROVISIONS) f'c = 6000 PSI
 - D. ULTRA HIGH PERFORMANCE CONCRETE f'c = 22000 PSI
 - E. SUPERSTRUCTURE-BARRIERS (3Y46) f'c = 4000 PSI
 - F. CONCRETE REPAIRS IN ACCORDANCE WITH SPECIAL PROVISIONS
2. REINFORCING STEEL
 - A. ALL REINFORCING STEEL SHALL BE GRADE 60 CONFORMING TO MNDOT SPEC 3301
 - B. ALL REINFORCING STEEL SHALL BE EPOXY COATED, UNLESS NOTED OTHERWISE.
 - C. CONCRETE COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:
 - I. TOP OF DECK (AND OVERLAY) 3 INCHES
 - II. BOTTOM OF DECK 1 1/2 INCH
 - III. ALL OTHER LOCATIONS 2 INCHES (UNO)
3. POLYESTER POLYMER CONCRETE OVERLAY IN ACCORDANCE WITH SPECIAL PROVISIONS

CONSTRUCTION NOTES:

1. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL C. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."
2. THE CONTRACTOR SHALL MAKE FIELD MEASUREMENTS AS NECESSARY PRIOR TO CONSTRUCTION AND FABRICATION TO ESTABLISH DIMENSIONS AND ELEVATIONS OF EXISTING ELEMENTS TO ENSURE THE DIMENSIONS AND POSITION OF FINAL WORK.
3. ALL REMOVAL OF EXISTING CONCRETE SHALL BE DONE BY SAWCUTTING THROUGH THE ENTIRE SECTION. CARE SHALL BE TAKEN TO NOT DAMAGE PORTIONS OF THE STRUCTURE TO REMAIN. CUT SURFACE SHALL BE LOCATED AS SHOWN IN THE PLANS WITHIN ± 1". IF CONTRACTOR CANNOT FULLY REMOVE MINOR AREAS BY SAWCUTTING, CONTRACTOR SHALL SUBMIT THE REMOVAL METHOD TO THE ENGINEER FOR ACCEPTANCE.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL A DEBRIS PROTECTIVE SYSTEM OVER ROADS, RIVER AND FACILITIES BENEATH THE BRIDGE ACCEPTABLE TO THE ENGINEER WHILE DECK AND STRUCTURE MEMBERS ARE REMOVED OR REPAIRED. DEBRIS PROTECTIVE SYSTEM SHALL EXTEND BEYOND THE AREA OF WORK A SUFFICIENT DISTANCE TO PREVENT DEBRIS FROM FALLING OR BEING PROJECTED FROM THE WORK AREA. NO DEBRIS OR SLURRY FROM SAWCUTTING WILL BE ALLOWED TO ACCUMULATE UNDER THE BRIDGE NOR FALL INTO THE RIVER. DUST FROM ALL CONSTRUCTION ACTIVITIES SHALL BE CONTAINED AND CONTROLLED. SEE SPECIAL PROVISIONS.
5. ALTERNATE SITE CASTING:
 - A. THE CONTRACTOR IS PERMITTED TO SELF-PERFORM THE PRECAST ELEMENTS AT AN ALTERNATE SITE IN LIEU OF A PRECAST PLANT. IF THE CONTRACTOR ELECTS TO PRECAST CAP BEAMS AND DECK PANELS AT A TEMPORARY CASTING FACILITY, ALL PRECAST CONCRETE MATERIAL AND CONSTRUCTION SHALL ADHERE TO THE REQUIREMENTS OF THE SELF-PERFORMING SECTION OF THE SPECIAL PROVISIONS.
 - B. THE CONTRACTOR SHALL SUBMIT THE LOCATION OF THE ALTERNATE CASTING SITE TO THE ENGINEER FOR ACCEPTANCE.
 - C. IF THE CONTRACTOR CHOOSES TO SELF-PERFORM THE PRECAST ELEMENTS, THE CONTRACTOR SHALL FABRICATE ALL REQUIRED MOCK-UP UNITS AT THE ALTERNATE SITE AND IN ACCORDANCE WITH THE SPECIAL PROVISIONS. THE MOCK-UP UNITS MUST MEET SPECIFIED TOLERANCE REQUIREMENTS AND MUST BE ACCEPTED BY THE ENGINEER BEFORE THE CONTRACTOR MAY COMMENCE ALTERNATE SITE PRECAST CONSTRUCTION ACTIVITIES.

CONSTRUCTION NOTES, CONT.:

6. PRECAST ELEMENT FABRICATION AND ERECTION TOLERANCES:
 - A. PRECAST CAP BEAMS SHALL MEET THE FOLLOWING TOLERANCES FOR PLANT CAST AND SITE CAST ELEMENTS, UNLESS OTHERWISE SHOWN IN THESE PLANS:
 - I. LENGTH: ±1/4"
 - II. WIDTH: ±1/4"
 - III. DEPTH: ±1/4"
 - IV. SWEEP: ±3/8"
 - V. CAMBER VARIATION FROM DESIGN CAMBER: ±1/4"
 - VI. LOCAL SMOOTHNESS OF ANY SURFACE: ±1/4" IN 10 FT
 - VII. DEVIATION FROM SPECIFIED LOCATION: ±1/4"
 - VIII. DEVIATION FROM SPECIFIED ELEVATION: ±1/8"
 - IX. ENSURE BEAM SEAT BEARING AREAS ARE FLAT, TRUE AND PERPENDICULAR TRANSVERSELY TO THE VERTICAL AXIS OF THE BEAM.
 - B. PRECAST DECK PANELS SHALL MEET THE FOLLOWING TOLERANCES, UNLESS OTHERWISE SHOWN IN THESE PLANS FOR PLANT CAST AND SITE CAST ELEMENTS:
 - I. LENGTH: ±1/8"
 - II. WIDTH: ±1/8"
 - III. DEPTH: ±1/8"
 - IV. VARIATION FROM SPECIFIED SKEW: ±1/4"
 - V. SWEEP: ±3/8"
 - VI. CAMBER VARIATION FROM DESIGN CAMBER: ±1/4"
 - VII. DIFFERENTIAL CAMBER BETWEEN ADJACENT DECK PANELS: ±1/8"
 - VIII. LOCAL SMOOTHNESS OF ANY SURFACE: ±1/4" IN 10 FT
 - IX. COMBINED ADJACENT LONGITUDINAL PANEL PLACEMENT DEVIATION FROM SPECIFIED PANEL PLACEMENT: ±1/2"
 - X. COMBINED ADJACENT TRANSVERSE PANEL PLACEMENT DEVIATION FROM SPECIFIED PANEL PLACEMENT: ±1/4"
 - XI. DEVIATION FROM SPECIFIED ELEVATION: ±1/8"
 - XII. AMPLITUDE OF JOINTS WITH UHPC CLOSURE POURS PER SPECIAL PROVISIONS.

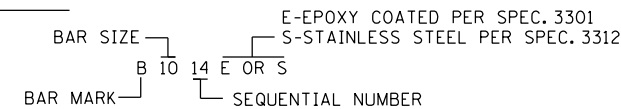
REHABILITATION NOTES:

1. THE FRANKLIN AVENUE BRIDGE IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES AND IS A CITY OF MINNEAPOLIS HISTORIC LANDMARK. CONTRACTOR SHALL PRESERVE AND PROTECT ALL ELEMENTS OF THE BRIDGE TO REMAIN.
2. NO REMOVAL IS PERMITTED UNTIL THE REMOVAL LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. REMOVAL AND RECONSTRUCTION SHALL CONFORM TO SPEC 2433 AND THE SPECIAL PROVISIONS.
3. FOR REPAIR DETAILS, QUANTITIES AND ADDITIONAL REPAIR NOTES AND REQUIREMENTS SEE THE CONCRETE SURFACE REPAIR DETAIL SHEETS B66-B74.
4. APPLY FILM FORMING COATING PER THE SPECIAL PROVISIONS, PAID FOR UNDER "HISTORIC CONCRETE SURFACE TREATMENT".
5. ALL EXISTING NON-ADHERING PROTECTIVE COATINGS SHALL BE REMOVED PRIOR TO COMPLETING CONCRETE REPAIR AND COATING, SEE SPECIAL PROVISIONS.
6. CONCRETE REHABILITATION ON THE FOLLOWING SURFACES SHALL RECEIVE A BOARD-FORM FINISH:
 - A. NORTH, SOUTH AND WEST SURFACES OF PIER 1
 - B. SPAN 1 ARCH RIBS
 - C. WEST ABUTMENT AND WALLS
7. CONCRETE REPAIRS TO ARCH RIBS OF SPANS 1 AND 5 SHALL BE COMPLETED DURING THE ABC CLOSURE PERIOD (STAGING PHASE 2, SEE CONSTRUCTION STAGING SHEET). THE REMAINING REPAIRS IN SPANS 1 AND 5 MAY BE COMPLETED WITH TRAFFIC ON THE BRIDGE DECK.
8. CONCRETE REPAIRS IN SPANS 2, 3 AND 4 MAY BE COMPLETED WITH TRAFFIC ON THE BRIDGE DECK AS LONG AS AT NO TIME SHALL THE AREA OF CONCRETE REMOVED IN AN ARCH RIB EXCEED THE FOLLOWING MAXIMUM ALLOWED REMOVAL AREA OF CONCRETE PER ARCH RIB CROSS SECTION WITHOUT PRIOR ACCEPTANCE OF THE ENGINEER:
 - A. SPAN 2 AND 4: 8 SQ. FT.
 - B. SPAN 3: 12 SQ. FT.
9. EXISTING UTILITIES WILL BE MOVED FROM THEIR EXISTING LOCATION TO A UTILITY SUPPORT SYSTEM BELOW THE BRIDGE. THIS INFORMATION IS NOT INCLUDED ON PLAN SHEETS B14 THROUGH B74. SEE UTILITY SUPPORT SHEETS U1 THROUGH U4 FOR ADDITIONAL INFORMATION. CONTRACTOR SHALL REPAIR AND COAT ALL REQUIRED SURFACES AND ACCOUNT FOR SITUATIONS WHERE THE UTILITY SYSTEM OR CONDUITS COVER, OR ARE IN CLOSE PROXIMITY, TO REPAIRED OR COATED SURFACES.

NAVIGATION NOTES:

1. THE MISSISSIPPI RIVER IS CLASSIFIED AS A NAVIGABLE RIVER UPSTREAM AND DOWNSTREAM OF THE FRANKLIN AVENUE BRIDGE.
2. THE CONTRACTOR SHALL COORDINATE WITH AGENCIES SUCH AS THE U.S. COAST GUARD AND ARMY CORPS OF ENGINEERS TO ENSURE ADEQUATE NAVIGABILITY. SEE SPECIAL PROVISIONS FOR COORDINATION REQUIREMENTS AND CONDITIONS SET BY THE U.S. COAST GUARD.
3. NAVIGATION LIGHTS ON BRIDGE SHALL BE MAINTAINED DURING CONSTRUCTION IN THEIR EXISTING LOCATION AND REMAIN OPERATIONAL.

BAR DESIGNATION



ABBREVIATIONS

ABC	ACCELERATED BRIDGE CONSTRUCTION	NF	NEAR FACE
ABT.	ABOUT	NIC	NOT IN CONTRACT
ABUT.	ABUTMENT	NO	NUMBER
AH	AHEAD	NS	NEAR SIDE
AZ	AZIMUTH	NTS	NOT TO SCALE
BF	BACK FACE	NW	NORTHWEST
BK	BACK	OD	OUTSIDE DIAMETER
B.M.	BENCHMARK	OF	OUTSIDE FACE
BOT	BOTTOM	OPNG	OPENING
BR	BRIDGE	OPP	OPPOSITE FACE
BRG	BEARING	PGL	PROFILE GRADE LINE
CC	CENTER OF CURVE	PCF	POUNDS PER CUBIC FOOT
CIP	CAST IN PLACE	PI	POINT OF INTERSECTION
CJ	CONSTRUCTION JOINT	PKWY	PARKWAY
CLR	CLEARANCE	PT.	POINT
COV.	COVER	PTFE	POLYTETRAFLUOROETHYLENE
DIA	DIAMETER	RD	ROAD
DS	DOWN STATION	RDWY	ROADWAY
E	EPOXY	REF.	REFERENCE
EA	EACH	REM	REMOVE
EB	EASTBOUND	REQ'D	REQUIRED
EF	EACH FACE	RT	RIGHT
EJ	EXPANSION JOINT	ROW	RIGHT OF WAY
ELEV.	ELEVATION	S	SOUTH
OL	EDGE OF LANE	SB	SOUTHBOUND
EOP	EDGE OF PAVEMENT	SC	SPANDREL COLUMN
EQ	EQUAL	SHLD	SHOULDER
ES	EACH SIDE	SQ. FT.	SQUARE FEET
EW	EACH WAY	SPA	SPACED
EXIST	EXISTING	SPEC	SPECIFICATION
EXP	EXPANSION	S.S.	STAINLESS STEEL
EXT.	EXTERIOR	SSD	SATURATED SURFACE DRY
EW	EACH WALL	STA	STATION
FB	FIELD BEND	STD	STANDARD
FF	FRONT FACE	STRUCT.	STRUCTURAL
FIX	FIXED BEARING	SYMM	SYMMETRICAL
FS	FAR SIDE	TBD	TO BE DETERMINED
FT.	FEET	T.H.	TRUNK HIGHWAY
FTG	FOOTING	TYP	TYPICAL
GALV.	GALVANIZED	UHPC	ULTRA HIGH PERFORMANCE CONCRETE
GDR	GIRDER	UNO	UNLESS NOTED OTHERWISE
GND	GROUND	VC	VERTICAL CURVE
HORIZ	HORIZONTAL	VERT	VERTICAL CLEARANCE
HSS	HOLLOW STRUCTURAL SECTION	VPC	VERTICAL POINT OF CURVATURE
IN.	INCH	VPI	VERTICAL POINT OF INTERSECTION
INT.	INTERIOR	VPT	VERTICAL POINT OF TANGENCY
JT.	JOINT	W	WEST
LBS.	POUND	WB	WESTBOUND
L.F.	LINEAR FEET	WP	WORK POINT
LONG	LONGITUDINAL	W.W.	WINGWALL
LT	LEFT	W.W.F.	WELDED WIRE FABRIC
M	MIDDLE ORDINATE	W/	WITH
MAX	MAXIMUM		
MIN	MINIMUM		
MISC	MISCELLANEOUS		
MVC	MINIMUM VERTICAL CLEARANCE		
N	NORTH		
NA	NOT APPLICABLE		
NAV.	NAVIGATION		
NB	NORTHBOUND		
NE	NORTHEAST		



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
 ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47097 8/14/2014
 LICENSE NO. DATE

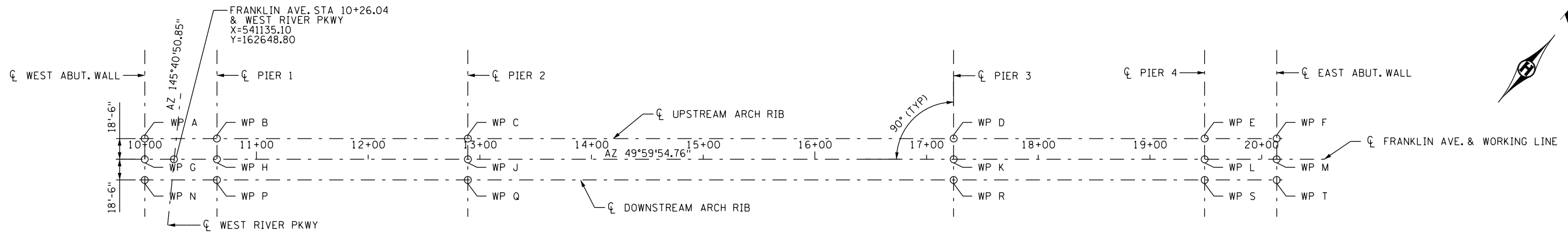
DESIGN BY: AMK
 CAD BY: RAM
 CHECKED BY: DJE
 LAST REVISION: 7/14/2015

GENERAL NOTES (2 OF 2)

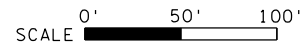
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET

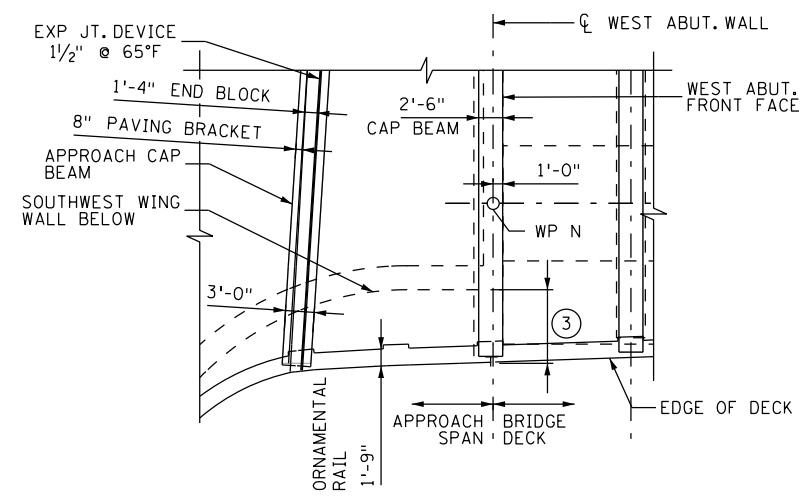
B5R2
 B176



WORKING POINTS LAYOUT



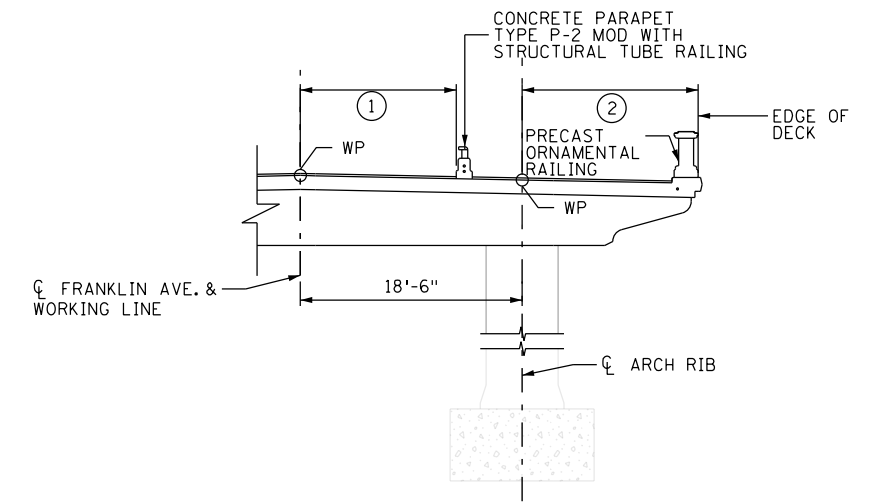
DIMENSIONS BETWEEN WORKING POINTS																					ELEVATION (4)		
POINT	STATION	Y (NORTHING)	X (EASTING)	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	POINT	
A	10+00.00	162646.213	541103.206		64.594					18.500	67.191						74.440	291.628				822.52	A
B	10+64.59	162687.734	541152.687			224.677					18.500	225.437				74.440	74.440	227.703	660.714			823.23	B
C	12+89.27	162832.158	541324.796				435.000					18.500	435.393			291.628	227.703	436.571	436.571	660.714		828.33	C
D	17+24.27	163111.780	541658.018					224.677					18.500	225.437			660.714	436.571		227.703	291.628	827.41	D
E	19+48.95	163256.204	541830.127						64.594					18.500	67.191			660.714	227.703		74.440	819.54	E
F	20+13.54	163297.725	541879.608											18.500				291.628	74.440			817.28	F
G	10+00.00	162632.041	541115.098							64.594					18.500				291.628	74.440		822.89	G
H	10+64.59	162673.563	541164.579								224.677					18.500	225.437					823.60	H
J	12+89.27	162817.987	541336.688									435.000						18.500	435.393			828.70	J
K	17+24.27	163097.608	541669.910										224.677					18.500	225.437			827.78	K
L	19+48.95	163242.032	541842.019											64.594					18.500	67.191		819.91	L
M	20+13.54	163283.553	541891.500																	18.500		817.65	M
N	10+00.00	162617.870	541126.990												64.594							822.52	N
P	10+64.59	162659.391	541176.471														224.677					823.23	P
Q	12+89.27	162803.815	541348.580															435.000				828.33	Q
R	17+24.27	163083.437	541681.802																224.677			827.41	R
S	19+48.95	163227.861	541853.911																	64.594		819.54	S
T	20+13.54	163269.382	541903.392																			817.28	T



ABUTMENT CORNER DETAIL

SW CORNER SHOWN, OTHERS SIMILAR

- ① VARIES 14'-10³/₈" TO 13'-0" STA 10+00.00 TO STA 10+55.94.
13'-0" STA 10+55.94 TO STA 16+95.02.
VARIES 13'-0" TO 23'-0" STA 16+95.02 TO STA 18+45.02.
23'-0" STA 18+45.02 TO STA 20+13.54.
(MEASURED INSIDE FACE OF PARAPET)
- ② VARIES 16'-6¹/₂" TO 14'-8" STA 10+00.00 TO STA 10+56.28.
14'-8" STA 10+56.28 TO STA 17+68.36.
VARIES 14'-8" TO 19'-8" STA 17+68.36 TO STA 18+40.06.
19'-8" STA 18+40.06 TO STA 20+13.54.
- ③ WEST ABT. 7'-6¹/₂"
EAST ABT. 10'-8"
- ④ WORKING POINT ELEVATIONS ARE AT TOP OF OVERLAY.



WORKING POINT LOCATION

SCALE: 1/8" = 1'-0"



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

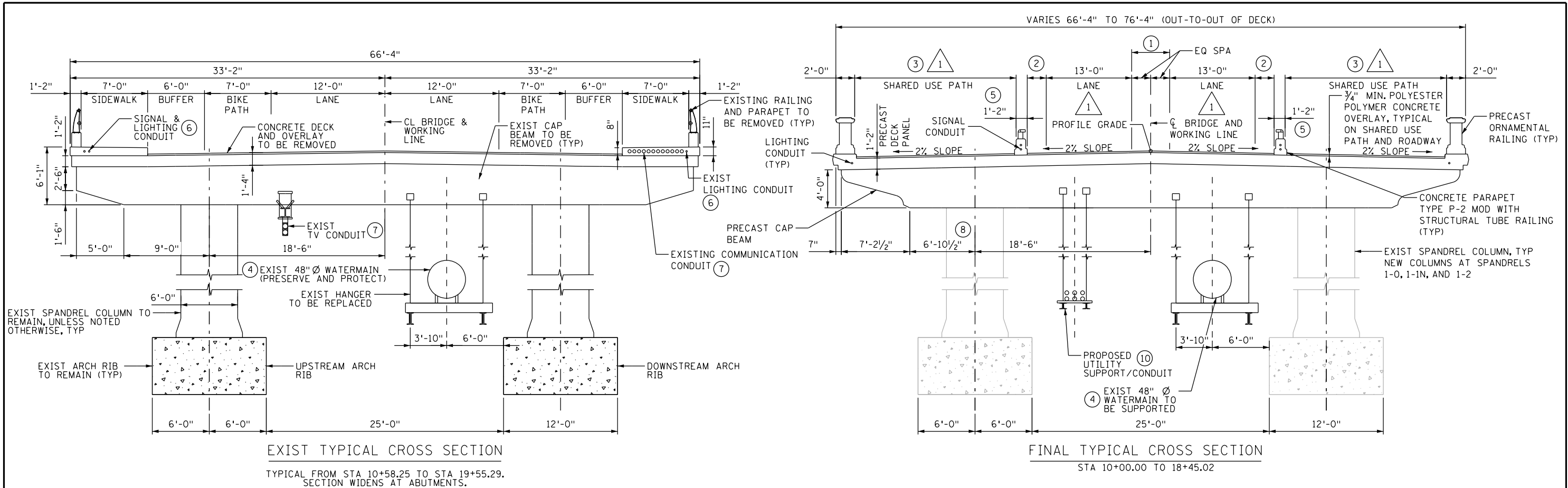
Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47097 8/14/2014
LICENSE NO. DATE

DESIGN BY: AMK
CAD BY: RAM
CHECKED BY: DFE
LAST REVISION: 11/24/2015

BRIDGE LAYOUT
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
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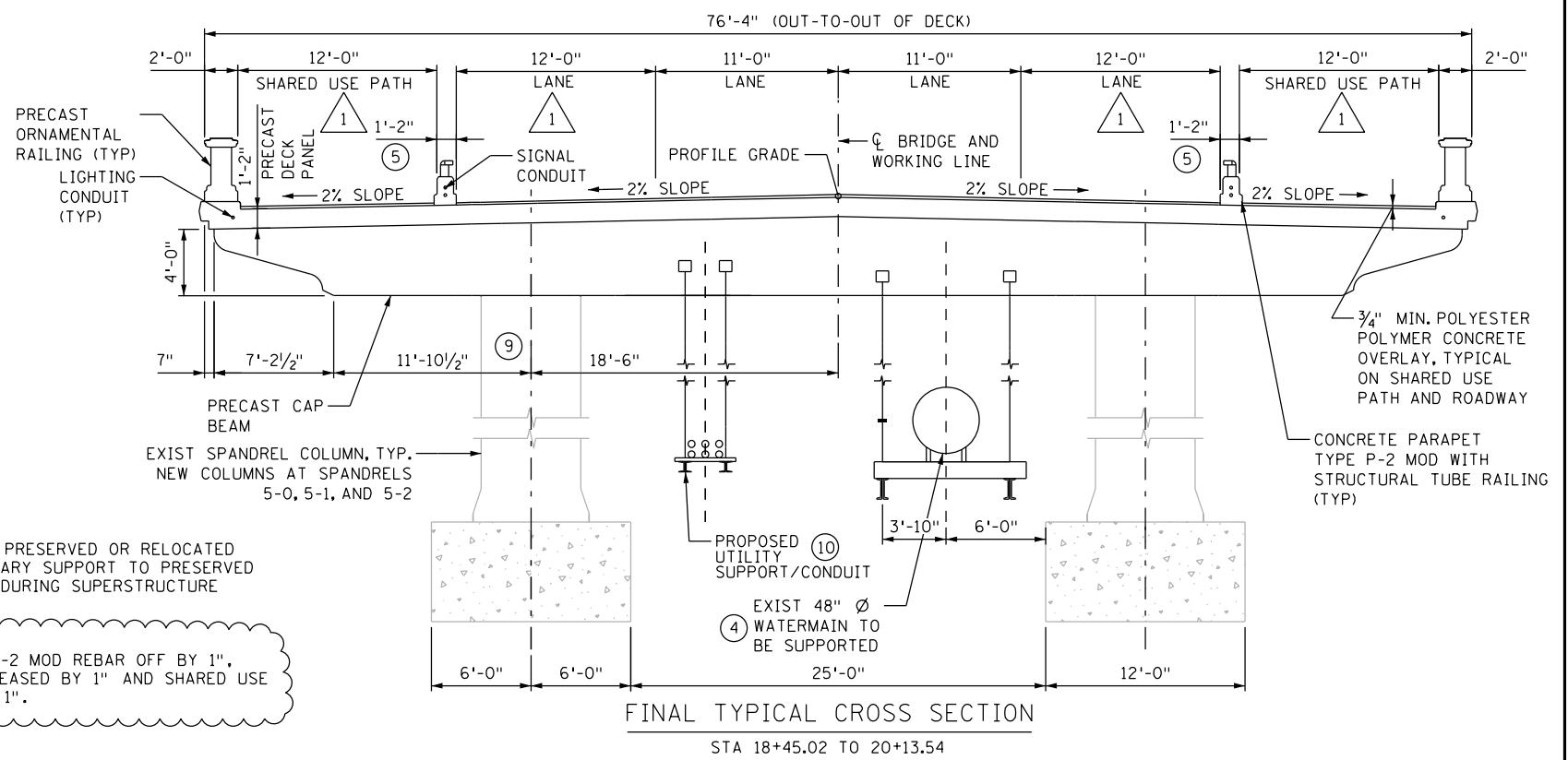


- ① VARIES 3'-8 1/2" TO 0'-0" STA 10+00.00 TO STA 10+55.73, 0'-0" STA 10+55.73 TO STA 18+45.02
- ② 0'-0" STA 10+00.00 TO STA 16+95.02, VARIES 0'-0" TO 10'-0" STA 16+95.02 TO STA 18+45.02
- ③ 17'-0" STA 10+00.00 TO STA 16+95.02 VARIES 17'-0" TO 12'-0" STA 16+95.02 TO STA 18+45.02
- ④ PRESERVE AND PROTECT 48" Ø WATERMAIN AND EXISTING WALKWAYS AT ALL TIMES WHEN SUPPORTED BY EXISTING OR NEW CAP BEAMS AND WHEN ON TEMPORARY SUPPORT.
- ⑤ SLOPE DECK PANELS 2% UNDER PARAPET
- ⑥ TO BE RELOCATED IN THIS PROJECT
- ⑦ TO BE RELOCATED BY OTHERS.
- ⑧ DIMENSION SHOW IS FOR PRECAST CAP BEAM TYPE 4. SEE SHEET B110 FOR ADDITIONAL INFORMATION.
- ⑨ DIMENSION SHOWN IS FOR PRECAST CAP BEAM TYPES 8, 9, 10, AND 11. SEE SHEET B110 FOR ADDITIONAL INFORMATION.
- ⑩ PROTECT CONDUITS AND UTILITY SUPPORT AFTER IT IS INSTALLED.

NOTES:

1. EXISTING UTILITIES TO BE PRESERVED OR RELOCATED AS SHOWN. PROVIDE TEMPORARY SUPPORT TO PRESERVED AND RELOCATED UTILITIES DURING SUPERSTRUCTURE REPLACEMENT.

1. CONCRETE PARAPET TYPE P-2 MOD REBAR OFF BY 1". ROADWAY LANE WIDTH DECREASED BY 1" AND SHARED USE PATH WIDTH INCREASED BY 1".



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	DESIGN BY: AMK CAD BY: RAM CHECKED BY: DFE LAST REVISION: 7/14/2015	AS-BUILT - TYPICAL CROSS SECTIONS	SHEET
	 DANIEL F. ENSER, PROFESSIONAL ENGINEER LICENSE NO. 41308 DATE 8/14/2014	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029		B8R B176

CONSTRUCTION NOTES:

- SEE CONSTRUCTION STAGING SHEETS B11 TO B13 FOR SUGGESTED CONSTRUCTION SEQUENCE.
- THE CONSTRUCTION SEQUENCE SHOWN ON THESE PLANS IS A SUGGESTED SEQUENCE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ERECTION SEQUENCE IN ITS ENTIRETY. THE CONTRACTOR'S BID SHALL BE BASED SOLELY UPON THE ERECTION SEQUENCE PROPOSED BY THE CONTRACTOR THAT MEETS THE BRIDGE CLOSURE SCHEDULE AND REQUIREMENTS PROVIDED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL SUBMIT ERECTION PLANS TO THE ENGINEER FOR REVIEW.
- THE CONSTRUCTION SEQUENCE SHOWN ON THESE PLANS WAS CHOSEN TO MINIMIZE THE POTENTIAL FOR CRACKING IN THE EXISTING ARCH RIBS AND COLUMNS DURING ALL PHASES OF DEMOLITION AND NEW CONSTRUCTION. IF THE CONTRACTOR CHOOSES TO DEVIATE FROM THE SUGGESTED CONSTRUCTION SEQUENCE INDICATED ON THE PLANS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING ERECTION PLANS AND CALCULATIONS TO THE ENGINEER FOR REVIEW. NO RELATED WORK MAY BE PROGRESSED BY THE CONTRACTOR UNTIL WRITTEN ACCEPTANCE OF THE ALTERNATE PLAN IS RECEIVED FROM THE ENGINEER. ENGINEER WILL NOT ACCEPT PLANS WHICH INCREASE THE PROBABILITY OF DEFLECTION CRACKING.
- IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND ADVISE THE ENGINEER OF THE TYPE, SIZE, WEIGHT, AND LOCATION OF ALL CONSTRUCTION LOADS INCLUDING ANY TEMPORARY SUPPORTS OR BRACING THE CONTRACTOR INTENDS TO PLACE ON THE STRUCTURE DURING THE PROJECT. CONSTRUCTION LIMITS SHALL BE WITHIN LIMITS REQUIRED BY THE CONTRACT DOCUMENTS. THIS INFORMATION SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER EMPLOYED BY THE CONTRACTOR AND LICENSED IN THE STATE OF MINNESOTA AND SHALL BE SUBMITTED TO THE ENGINEER, AND ACCEPTED, PRIOR TO LOADING THE STRUCTURE. ALL RESTRICTIONS SHALL BE NOTED AND STRICTLY ADHERED TO.

IN THE EVENT THAT THE CONTRACTOR/SUBCONTRACTOR FAILS TO COMPLY WITH THE INSTRUCTIONS OF THE PROFESSIONAL ENGINEER, WORK SHALL BE IMMEDIATELY SUSPENDED UNTIL CORRECTIVE PROCEDURES, SATISFACTORY TO THE PROFESSIONAL ENGINEER AND HENNEPIN COUNTY, ARE EMPLOYED.

COST OF ALL DAMAGE TO PORTIONS OF THE BRIDGE TO RAMIN, DIRECT OR INDIRECT, SHALL BE BORNE AND SUSTAINED BY THE CONTRACTOR.

- TO PREVENT CRACKING OF THE EXISTING STRUCTURE TO REMAIN, THE CONTRACTOR SHALL STRICTLY ADHERE TO THE REQUIREMENTS NOTED IN THE CONTRACT DOCUMENTS, IF THE CONTRACTOR ELECTS TO FOLLOW THE SUGGESTED CONSTRUCTION SEQUENCE PROVIDED. IF THE CONTRACTOR ELECTS TO FOLLOW A DIFFERENT SEQUENCE, THE CONTRACTOR SHALL STRICTLY ADHERE TO THE ACCEPTED ERECTION SEQUENCE. THE CONTRACTOR SHALL BEAR SOLE RESPONSIBILITY FOR THE STABILITY OF THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.
- THE CONTRACTOR SHALL PREVENT FULL UNLOADING OF THE STRUCTURE DURING DEMOLITION OPERATIONS. FOR ADDITIONAL REMOVAL REQUIREMENTS, SEE SHEET B10 CONSTRUCTION STAGING NOTES (2 OF 2).

GENERAL CONSTRUCTION PROCEDURE:

- REMOVE EXISTING DECK, RAILINGS, RAILING APPURTENANCES, SIDEWALKS, AND CAP BEAMS TO THE ELEVATIONS NOTED ON THE PLANS.
- SURVEY THE TOP ELEVATION OF THE SPANDREL COLUMNS, ESTABLISH WORKING POINTS, WORKING LINES, AND BENCHMARK ELEVATIONS PRIOR TO ERECTING PRECAST ELEMENTS.
- LIFT AND ERECT PRECAST CAP BEAMS USING LIFTING DEVICES AS SHOWN ON THE ACCEPTED SHOP DRAWINGS.
- SET THE CAP BEAMS IN THE PROPER LOCATION. SURVEY THE TOP ELEVATION OF THE PRECAST CAP BEAMS TO VERIFY PROPER PLACEMENT. ADJUST SHIMS AS NECESSARY.

- BRACE ALL ERECTED CAP BEAMS AS NECESSARY FOR STABILITY AND TO RESIST WIND OR OTHER LOADS UNTIL THEY ARE PERMANENTLY SECURED TO THE STRUCTURE. SUPPORT, ANCHOR, AND BRACE ALL CAP BEAMS AS DETAILED IN THE ACCEPTED SHOP DRAWINGS. PLACE DOWELS AND GROUT.
- LIFT AND ERECT PRECAST DECK PANELS USING LIFTING DEVICES AS SHOWN ON THE ACCEPTED SHOP DRAWINGS.
- SET THE PRECAST DECK PANELS IN THE PROPER LOCATION. SURVEY THE TOP ELEVATION OF THE PRECAST PANELS. VERIFY PROPER LINE AND GRADE WITHIN SPECIFIED TOLERANCES.
- BRACE ALL ERECTED DECK PANELS AS NECESSARY FOR STABILITY AND TO RESIST WIND OR OTHER LOADS UNTIL THEY ARE PERMANENTLY SECURED TO THE STRUCTURE.
- DIFFERENCES IN CAMBER BETWEEN ADJACENT DECK PANELS SHIPPED TO THE SITE SHALL NOT EXCEED THE PRESCRIBED LIMITS.
- FORM, CAST, AND CURE ULTRA-HIGH PERFORMANCE CONCRETE (UHPC) CLOSURE POURS, AS DETAILED IN THE PLANS AND SPECIFICATIONS. COMPLETE ALL CLOSURE POURS IN A BAY PRIOR TO MOVING TO THE NEXT BAY. FOLLOW ACCEPTED PROCEDURE FOR PLACING CLOSURE POURS.
- COMPLETE CONCRETE PARAPET CLOSURE POURS.
- PLACE OVERLAY.
- PLACE ORNAMENTAL RAILING.

GENERAL CONSTRUCTION SEQUENCE

- FOLLOWING IS THE ANTICIPATED ACCELERATED BRIDGE CONSTRUCTION (ABC) SEQUENCE FOR PRE-ABC, ABC, AND POST-ABC ACTIVITIES.
- THE BRIDGE WILL BE ALLOWED TO BE CLOSED FOR THE ABC PERIOD FROM 1 AM JUNE 8, 2016 TO 5 AM AUGUST 31, 2016 TO ALLOW FOR THE RAPID DEMOLITION OF THE EXISTING DECK AND CAP BEAMS AND PLACEMENT OF THE PROPOSED CAP BEAMS AND SUPERSTRUCTURE.
- CONTRACTOR SHALL PROVIDE A CRITICAL PATH METHOD (CPM) SCHEDULE FOR ALL PRE-ABC, ABC, AND POST-ABC ACTIVITIES SHOWING HOW THE ACTIVITIES WILL BE MANAGED ON THE CONSTRUCTION SITE.
- UTILITY RELOCATION PHASE:
INSTALL UTILITY SUPPORT SYSTEM AND CONDUIT.

REROUTE EXISTING COMMUNICATION CONDUIT (BY OTHERS).

TEMPORARILY SUPPORT EXISTING WATERMAIN, UTILITY SUPPORT SYSTEM AND CONDUIT.
- PRE-ABC STAGING (PHASE 1 - STAGE 1):

PLACE TEMPORARY BARRIERS.

DEMOLISH EXISTING RAILINGS, PARAPETS, AND SIDEWALKS AND PARTIALLY DEMOLISH EXISTING DECK.
- ABC STAGING (ABC PERIOD) (PHASE 2 - STAGES 1 TO 4): ③

CLOSE FRANKLIN AVENUE BRIDGE AND DIVERT TRAFFIC FROM STRUCTURE ONTO DETOUR.

REMOVE TEMPORARY BARRIERS.

DEMOLISH REMAINING PORTION OF EXISTING DECK AND REMOVE EXISTING CAP BEAMS.

PLACE PRECAST CAP BEAMS.

PLACE ROADWAY AND NORTH SHARED USE PATH PRECAST DECK PANELS.

FORM AND POUR LONGITUDINAL AND TRANSVERSE CLOSURE JOINTS.

FORM AND POUR TYPE P-2 MODIFIED CONCRETE PARAPETS NOT PRECAST ON DECK PANELS.

PLACE STRUCTURAL TUBE RAILING ON TYPE P-2 NORTH MODIFIED CONCRETE PARAPET. PLACE TEMPORARY PEDESTRIAN FENCE ON SOUTH TYPE P-2 MODIFIED CONCRETE PARAPET.

INSTALL EXPANSION JOINTS.

OVERLAY ROADWAY AND NORTH SHARED USE PATH. ①.

PLACE TEMPORARY BARRIER WITH PEDESTRIAN FENCING ALONG NORTH FASCIA.

REROUTE VEHICULAR TRAFFIC ONTO THE STRUCTURE AND PEDESTRIAN AND BICYCLE TRAFFIC ONTO THE NORTH SHARED USE PATH.

7. POST-ABC STAGING (PHASE 3 - STAGES 1 AND 2):

PLACE SOUTH SHARED USE PATH PRECAST DECK PANELS.

FORM AND POUR LONGITUDINAL AND TRANSVERSE CLOSURE JOINTS FOR SOUTH SHARED USE PATH.

PLACE ORNAMENTAL RAILING ON SOUTH FASCIA.

INSTALL EXPANSION JOINTS.

OVERLAY SOUTH SHARED USE PATH.

REMOVE TEMPORARY PEDESTRIAN FENCE AND PLACE STRUCTURAL TUBE RAILING ON SOUTH TYPE P-2 MODIFIED CONCRETE PARAPET.

REROUTE PEDESTRIAN AND BICYCLE TRAFFIC ONTO THE SOUTH SHARED USE PATH.

8. POST-ABC STAGING (PHASE 4 - STAGE 1):

PLACE ORNAMENTAL RAILING ON NORTH FASCIA.

REMOVE TEMPORARY BARRIER WITH PEDESTRIAN FENCING ALONG NORTH FASCIA.

OPEN NORTH SHARED USE PATH TO PEDESTRIAN AND BICYCLE TRAFFIC.

9. POST-ABC STAGING (PHASE 5 - STAGE 1):

SUPPORT WATER MAIN, UTILITY SUPPORT SYSTEM AND CONDUIT FROM PROPOSED CAP BEAMS.

NOTES:

- IF THE CONTRACTOR ELECTS TO OVERLAY THE NORTH SIDEWALK AFTER THE COMPLETION OF PHASE 2, THE CONTRACTOR SHALL DIAMOND GRIND THE CLOSURE POURS ON THE NORTH SIDEWALK TO BE FLUSH WITH THE TOP OF THE DECK PANELS PRIOR TO OPENING THE SIDEWALK TO PEDESTRIAN TRAFFIC IN PHASE 3 OF CONSTRUCTION.
- FOR AN APPROXIMATE TIME FRAME OF ANTICIPATED ABC ACTIVITIES AND FOR CONSTRUCTION STAGING NOTES, SEE SHEET B10 (CONSTRUCTION STAGING NOTES 2 OF 2).
- DURING THE ABC PERIOD, THE CONTRACTOR SHALL COMPLETE THE ROADWAY AND APPROACH WORK.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER
41308 **8/14/2014**
LICENSE NO. DATE

DESIGN BY: CB
CAD BY: CB
CHECKED BY: BS
LAST REVISION: 7/14/2015

CONSTRUCTION STAGING NOTES (1 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

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B176

CONSTRUCTION STAGING NOTES:

1. THE FOLLOWING DEMOLITION AND ERECTION SEQUENCE FOR PHASE 2 OF THE STAGED CONSTRUCTION IS A SUGGESTION ONLY. THE CONTRACTOR SHALL VERIFY THROUGH ANALYSIS THAT ANY DEVIATION FROM THE SUGGESTED SEQUENCE MEETS ALL REQUIREMENTS OF THE PCI DESIGN HANDBOOK, 6TH ED FOR LIMITING STRESSES IN THE EXISTING AND NEW STRUCTURAL ELEMENTS.
2. PHASE 2 REMOVALS AND ERECTION MAY BE PERFORMED IN MULTIPLE ARCH SPANS SIMULTANEOUSLY.
3. CONTRACTOR TO PROVIDE BRACING TO COLUMNS AS NECESSARY TO PREVENT TENSILE STRESSES FROM EXCEEDING LIMITING STRESSES SPECIFIED BY THE PCI DESIGN HANDBOOK, 6TH ED.
4. BRACING IS REQUIRED TO PREVENT MOVEMENT AT EXISTING COLUMNS WITH TRANSVERSE HINGES.
5. ACTIVITIES THAT PUT TORSION INTO ARCH RIBS ARE NOT ALLOWED UNLESS SHOWN TO BE WITHIN ALLOWABLE LIMITS THROUGH ANALYSIS. LOADING FROM CONTRACTOR'S ACTIVITIES SUCH AS TEMPORARY BRACING OR FALSE WORK SHALL LOAD THE ARCH RIB SYMMETRICALLY.
6. DECK REMOVAL SHALL BE SYMMETRICAL ABOUT CENTERLINE OF BRIDGE.

SPAN 1 AND SPAN 5

1. REMOVE APPROACH SPAN AT WEST ABUTMENT AND DECK AT PIER 1. REMOVE SPAN 1 DECK.
2. REMOVE CAP BEAMS AT WEST APPROACH, WEST ABUTMENT, SPANDREL 1-1 AND WEST CAP AT PIER 1.
3. CONSTRUCT NEW WEST APPROACH CAP BEAM.
4. CONSTRUCT NEW SPANDREL COLUMNS IN SPAN 1. (COULD BE CAST EARLIER)
5. PLACE NEW CAP BEAMS AT WEST ABUTMENT, SPANDREL 1-0, 1-1, 1-2 AND WEST CAP AT PIER 1.
6. PLACE NEW DECK PANELS BETWEEN SPANDRELS 1-0 AND 1-2.
7. PLACE NEW DECK PANELS BETWEEN WEST ABUTMENT AND SPANDREL 1-0, AND BETWEEN SPANDREL 1-2 AND PIER 1.
8. PLACE NEW DECK PANELS BETWEEN WEST APPROACH AND WEST ABUTMENT.
9. PERFORM STEPS 1-8 SIMILARLY FOR SPAN 5.

SPAN 2

1. REMOVE DECK OVER WEST HALF OF PIER 2. REMOVE DECK BETWEEN PIER 1 AND SPANDREL 2-2, AND BETWEEN SPANDREL 2-5 AND PIER 2.
2. REMOVE EAST CAP BEAMS AT PIER 1 AND WEST CAP BEAM AT PIER 2. REMOVE CAP BEAMS AT SPANDRELS 2-1 AND 2-6.
3. PLACE NEW EAST CAP BEAM AND COPINGS AT PIER 1 AND NEW WEST CAP BEAM AND COPINGS AT PIER 2 (PIER 2 COPING COULD BE PLACED WITH SPAN 3). PLACE NEW CAP BEAMS AT SPANDRELS 2-1 AND 2-6.
4. PLACE NEW DECK PANELS BETWEEN PIER 1 AND SPANDREL 2-1, AND BETWEEN SPANDREL 2-6 AND PIER 2.
5. REMOVE DECK BETWEEN SPANDRELS 2-4 AND 2-5. REMOVE CAP BEAM AT SPANDREL 2-5.
6. REMOVE DECK BETWEEN SPANDRELS 2-2 AND 2-3. REMOVE CAP BEAM AT SPANDREL 2-2.
7. PLACE NEW CAP BEAM AT SPANDREL 2-2. PLACE NEW DECK PANELS BETWEEN SPANDREL 2-1 AND 2-2.
8. PLACE NEW CAP BEAM AT SPANDREL 2-5. PLACE NEW DECK PANELS BETWEEN SPANDRELS 2-5 AND 2-6.
9. REMOVE DECK BETWEEN SPANDRELS 2-3 AND 2-4. REMOVE CAP BEAMS AT SPANDRELS 2-3 AND 2-4.
10. PLACE NEW CAP BEAMS AT SPANDRELS 2-3 AND 2-4. PLACE NEW DECK PANELS BETWEEN SPANDRELS 2-2 AND 2-5.

CONSTRUCTION STAGING NOTES, CONT.:

SPAN 3

1. REMOVE DECK OVER EAST HALF OF PIER 2 AND WEST HALF OF PIER 3. REMOVE DECK BETWEEN PIER 2 AND SPANDREL 3-4, AND BETWEEN SPANDREL 3-10 AND PIER 3.
2. REMOVE CENTER AND EAST CAP BEAMS AT PIER 2 AND CENTER AND WEST CAP BEAMS AT PIER 3. REMOVE CAP BEAMS AT SPANDRELS 3-1, 3-2, 3-3, 3-11, 3-12, 3-13.
3. PLACE NEW CENTER AND EAST CAP BEAMS AND COPINGS AT PIER 2 (PIER 2 COPINGS COULD BE PLACED WITH SPAN 2) AND NEW CENTER AND WEST CAP BEAMS AND COPINGS AT PIER 3 (PIER 3 COPINGS COULD BE PLACED WITH SPAN 4). PLACE NEW CAP BEAMS AT SPANDRELS 3-1 AND 3-13.
4. PLACE NEW DECK PANELS OVER PIER 2, BETWEEN PIER 2 AND SPANDREL 3-1, BETWEEN SPANDREL 3-13 AND PIER 3, AND OVER WEST HALF OF PIER 3.
5. REMOVE DECK BETWEEN SPANDRELS 3-4 AND 3-5, AND BETWEEN 3-9 AND 3-10. REMOVE CAP BEAMS AT SPANDRELS 3-4 AND 3-10.
6. PLACE NEW CAP BEAMS AT SPANDRELS 3-2 AND 3-12. PLACE NEW DECK PANELS BETWEEN SPANDRELS 3-1 AND 3-2, AND BETWEEN SPANDRELS 3-12 AND 3-13.
7. REMOVE DECK BETWEEN SPANDRELS 3-5 AND 3-6, AND BETWEEN SPANDRELS 3-8 AND 3-9. REMOVE CAP BEAMS AT SPANDRELS 3-5 AND 3-9.
8. PLACE NEW CAP BEAMS AT SPANDRELS 3-3 AND 3-11. PLACE NEW DECK PANELS BETWEEN SPANDRELS 3-2 AND 3-3, AND BETWEEN SPANDRELS 3-11 AND 3-12.
9. REMOVE DECK PANELS BETWEEN SPANDRELS 3-6 AND 3-8.
10. REMOVE CAP BEAMS AT SPANDRELS 3-6, 3-7 AND 3-8.
11. PLACE NEW CAP BEAMS AT SPANDRELS 3-4 AND 3-10. PLACE NEW DECK PANELS BETWEEN SPANDRELS 3-3 AND 3-4, AND BETWEEN SPANDRELS 3-10 AND 3-11.
12. PLACE NEW CAP BEAMS AT SPANDRELS 3-5 AND 3-9. PLACE NEW DECK PANELS BETWEEN SPANDRELS 3-4 AND 3-5, AND BETWEEN SPANDRELS 3-9 AND 3-10.
13. PLACE NEW CAP BEAMS AT SPANDRELS 3-6, 3-7 AND 3-8. PLACE NEW DECK PANELS BETWEEN SPANDRELS 3-5 AND 3-9.

SPAN 4

1. REMOVE DECK OVER EAST HALF OF PIER 3. REMOVE DECK BETWEEN PIER 3 AND SPANDREL 4-2, AND BETWEEN SPANDREL 4-5 AND PIER 4.
2. REMOVE EAST CAP BEAMS AT PIER 3 AND WEST CAP BEAM AT PIER 4. REMOVE CAP BEAMS AT SPANDRELS 4-1 AND 4-6.
3. PLACE NEW EAST CAP BEAM AND COPINGS AT PIER 3 (PIER 3 COPINGS COULD BE PLACED WITH SPAN 3) AND NEW WEST CAP BEAM AND COPINGS AT PIER 4. PLACE NEW CAP BEAMS AT SPANDRELS 4-1 AND 4-6.
4. PLACE NEW DECK PANELS BETWEEN PIER 3 AND SPANDREL 4-1, AND BETWEEN SPANDREL 4-6 AND PIER 4. PLACE DECK PANELS OVER PIER 4 AND EAST HALF OF PIER 3.
5. REMOVE DECK BETWEEN SPANDRELS 4-2 AND 4-3. REMOVE CAP BEAM AT SPANDREL 4-2.
6. REMOVE DECK BETWEEN SPANDRELS 4-4 AND 4-5. REMOVE CAP BEAM AT SPANDREL 4-5.
7. PLACE NEW CAP BEAM AT SPANDREL 4-5. PLACE NEW DECK PANELS BETWEEN SPANDREL 4-5 AND 4-6.
8. PLACE NEW CAP BEAM AT SPANDREL 4-2. PLACE NEW DECK PANELS BETWEEN SPANDRELS 4-1 AND 4-2.
9. REMOVE DECK BETWEEN SPANDRELS 4-3 AND 4-4. REMOVE CAP BEAMS AT SPANDRELS 4-3 AND 4-4.
10. PLACE NEW CAP BEAMS AT SPANDRELS 4-3 AND 4-4. PLACE NEW DECK PANELS BETWEEN SPANDRELS 4-2 AND 4-5.

APPROXIMATE ABC TIME FRAME

1. THE ABC TIME FRAME IS CONSIDERED TO BEGIN WITH THE CLOSURE OF THE EXISTING CROSSING AND TO END WHEN VEHICULAR TRAFFIC IS REROUTED OVER THE BRIDGE IN ITS FINAL LOCATION AND WHEN ONE SIDE OF THE BRIDGE IS OPENED TO PEDESTRIANS AND BICYCLISTS (WITHOUT OVERLAY).
2. THE ANTICIPATED ABC TIME FRAME FOR THE DECK AND CAP BEAM REPLACEMENT OF THE FRANKLIN AVENUE BRIDGE OVER THE MISSISSIPPI RIVER IS BASED ON THE FOLLOWING. TIME DURATION FOR INDIVIDUAL ACTIVITIES MAY VARY. HOWEVER, TOTAL ABC DURATION SHALL NOT EXCEED 90 DAYS.

BRIDGE ACTIVITY	MAXIMUM ANTICIPATED DURATION (DAYS)
REMOVE DECK BAYS	9
REMOVE CAP BEAMS	10
PLACE CAP BEAMS	12
PLACE DECK PANELS	8
PLACE CLOSURE POURS	7
FORM/POUR PARAPET	7
PARAPET CURE TIME	28
81 TOTAL DAYS	
PLACE JOINTS	3 (CONCURRENT W/ PARAPET CURE)
PLACE OVERLAY	4 (CONCURRENT W/ PARAPET CURE)

1 ABC BEGIN MAY 8, 2016 W/ BRIDGE CLOSURE.
ABC END AUGUST 31, 2016 W/ BRIDGE REOPENING.

3. ASSUMPTIONS:
 CALENDAR DAYS ACCOUNT FOR 6 DAY WORK WEEK
 10 HOUR WORK DAYS
 6 CRANES TOTAL, 1 PER SPAN PLUS ANOTHER IN SPAN 3
 REMOVAL RATES:
 * 1 SPANDREL BAY PER DAY PER CRANE
 * 1 CAP BEAM PER DAY PER CRANE
 PLACEMENT RATES:
 * 1 PANEL PER HOUR PER CRANE
 * 1 CAP BEAM PER DAY PER CRANE



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
 ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47079 8/14/2014
 LICENSE NO. DATE

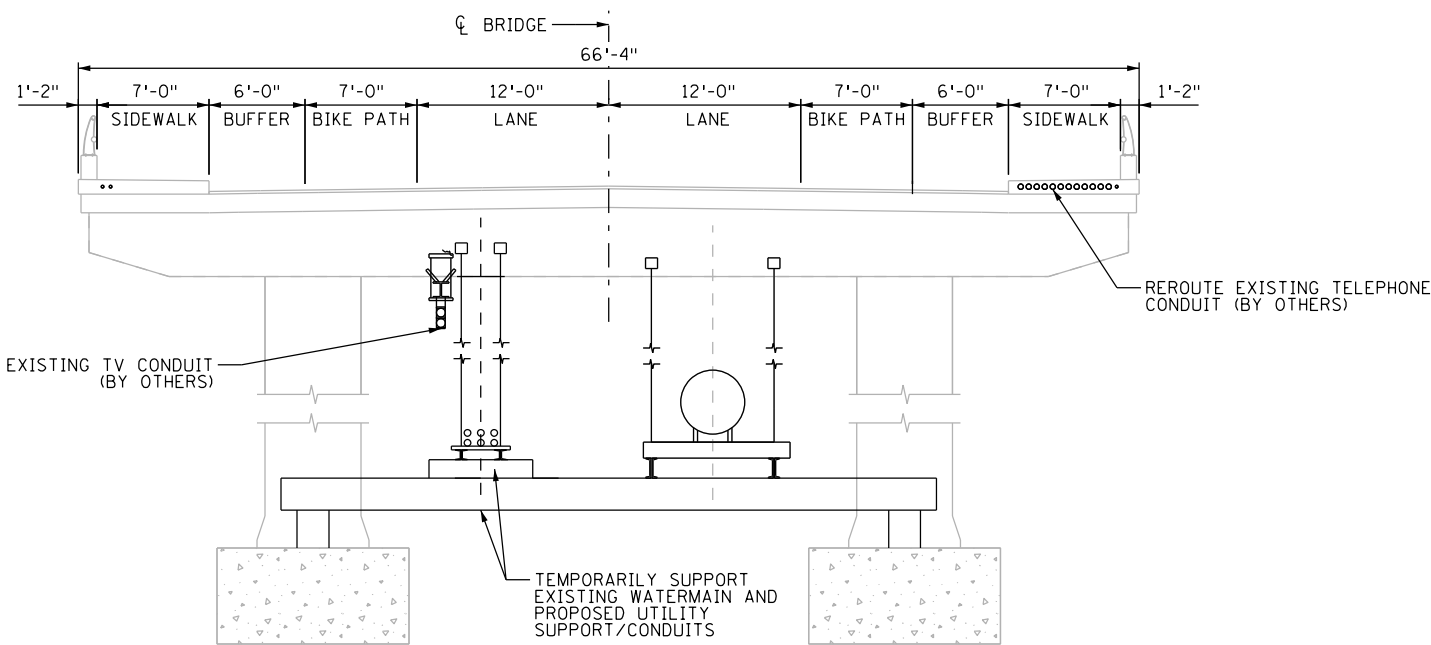
DESIGN BY: AMK
 CAD BY: RAM
 CHECKED BY: DFE
 LAST REVISION:

AS-BUILT - CONSTRUCTION STAGING NOTES (2 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET

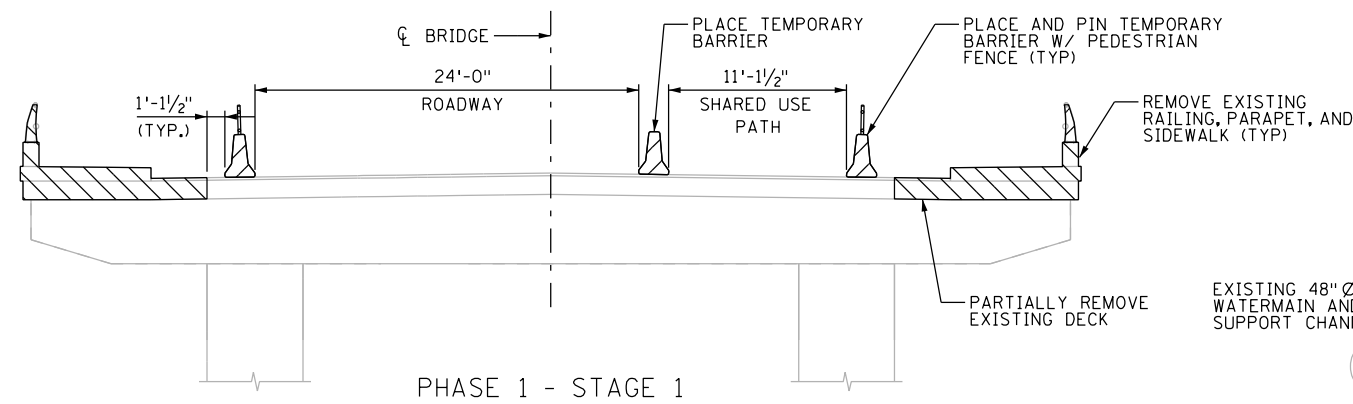
B10
 B176



UTILITY RELOCATION PHASE

STAGE NOTES:

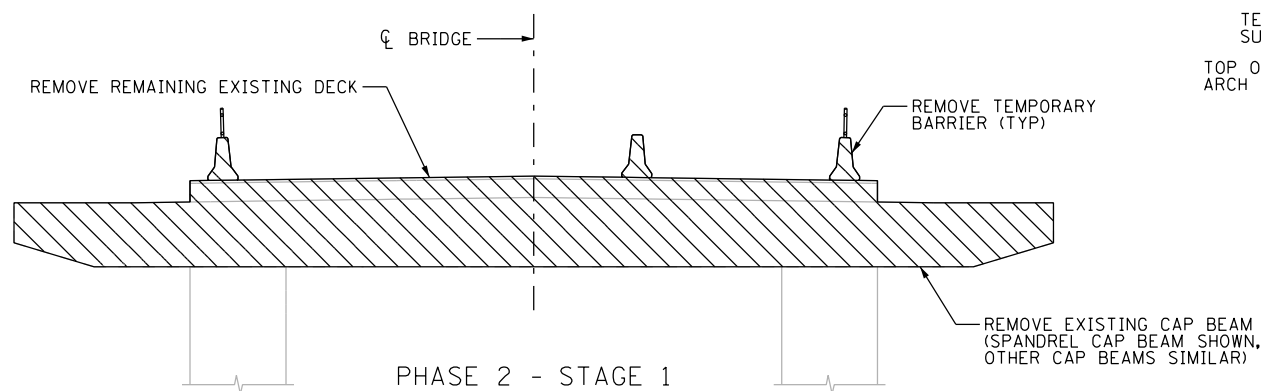
1. TEMPORARILY SUPPORT EXISTING WATERMAIN AND PROPOSED UTILITY SUPPORT/CONDUITS.
2. REROUTE EXISTING COMMUNICATION CONDUIT (BY OTHERS).



PHASE 1 - STAGE 1

STAGE NOTES:

1. PLACE TEMPORARY BARRIERS.
2. DEMOLISH EXISTING RAILING, PARAPET, AND SIDEWALK.
3. PARTIALLY REMOVE EXISTING DECK.



PHASE 2 - STAGE 1

START OF ABC PERIOD

STAGE NOTES:

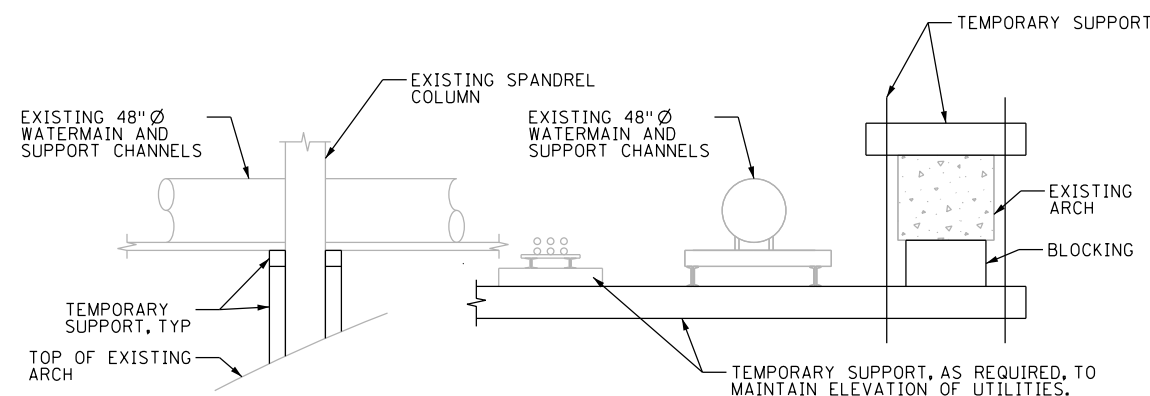
1. CLOSE BRIDGE TO ALL VEHICULAR, PEDESTRIAN, AND BICYCLE TRAFFIC.
2. REMOVE TEMPORARY BARRIERS.
3. DEMOLISH REMAINING DECK.
4. DEMOLISH EXISTING CAP BEAMS.

LEGEND:

- INDICATES REMOVAL
- INDICATES PLACEMENT/MODIFICATION

NOTES:

1. SECTIONS ARE SHOWN LOOKING UPSTATION.
2. FOR ADDITIONAL INFORMATION, REQUIREMENTS, AND NOTES, SEE CONSTRUCTION STAGING NOTES, SHEETS B9 AND B10.
3. CONSTRUCTION STAGING SECTIONS SHOWN APPLY TO THE TYPICAL SECTIONS IN SPANS 1 THROUGH 5, APPROACH SPAN AND PIER CONSTRUCTION STAGING SIMILAR. FOR FURTHER DETAILS OF ABUTMENT CONSTRUCTION STAGING, SEE EAST AND WEST ABUTMENT MODIFICATION DETAILS, SHEETS B89 AND B91. FOR FURTHER DETAILS OF PIER CONSTRUCTION STAGING, SEE PIER 1 AND 4 AND PIER 2 AND 3 MODIFICATION DETAILS, SHEETS B97 TO B100 AND B102 TO B105.
4. IN SPANS 1 AND 5, NEW SPANDREL COLUMNS MUST BE CONSTRUCTED PRIOR TO THE PLACEMENT OF SPANDREL CAP BEAMS IN SPANS 1 AND 5. CONTRACTOR MAY ELECT TO CONSTRUCT NEW CAST-IN-PLACE SPANDREL COLUMNS PRIOR TO DEMOLITION ACTIVITIES. CONTRACTOR SHALL PROTECT NEW SPANDREL COLUMNS SIMILARLY TO EXISTING STRUCTURE THAT IS TO REMAIN. FOR SPANDREL COLUMN DETAILS IN SPANS 1 AND 5, SEE SPANDREL COLUMN DETAILS, SHEETS B106 AND B107.



END VIEW

SECTION AT CENTER SPAN

TEMPORARY STRUCTURAL SUPPORT CONCEPT

THIS IS A CONCEPT ONLY. CONTRACTOR SHALL DESIGN AND DETAIL TEMPORARY STRUCTURAL SUPPORT TO SUPPORT EXISTING WATERMAIN, PROPOSED UTILITY SUPPORT SYSTEM AND PROPOSED CONDUITS. CALCULATIONS, PLANS AND SPECIFICATIONS SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER LICENSE IN THE STATE OF MINNESOTA AND SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW, SEE SPECIAL PROVISION.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
LICENSE NO. DATE

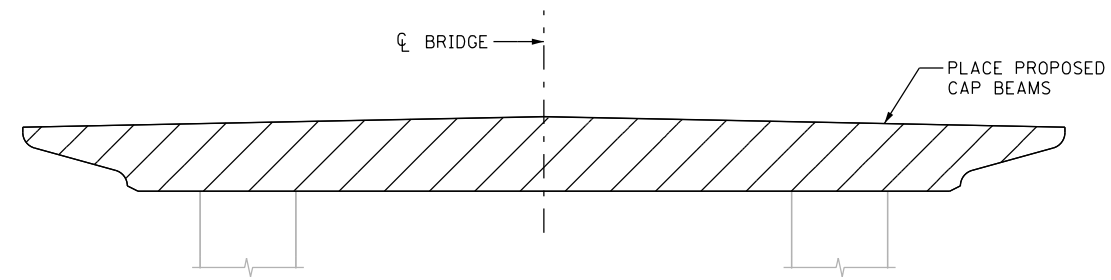
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CAD BY: CB
CHECKED BY: BS
LAST REVISION: 7/14/2015

CONSTRUCTION STAGING (1 OF 3)

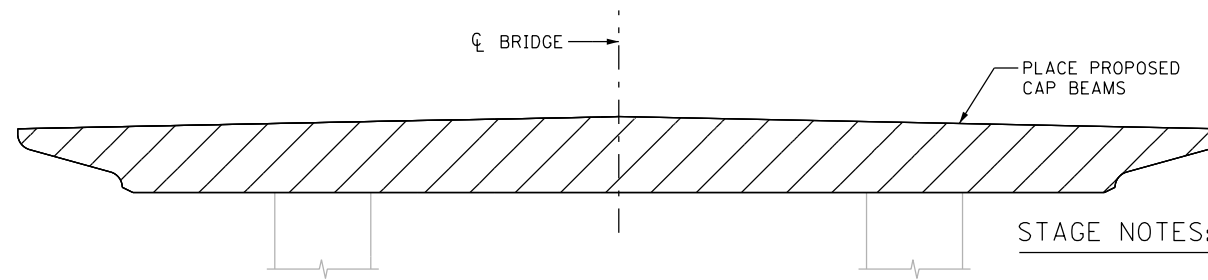
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

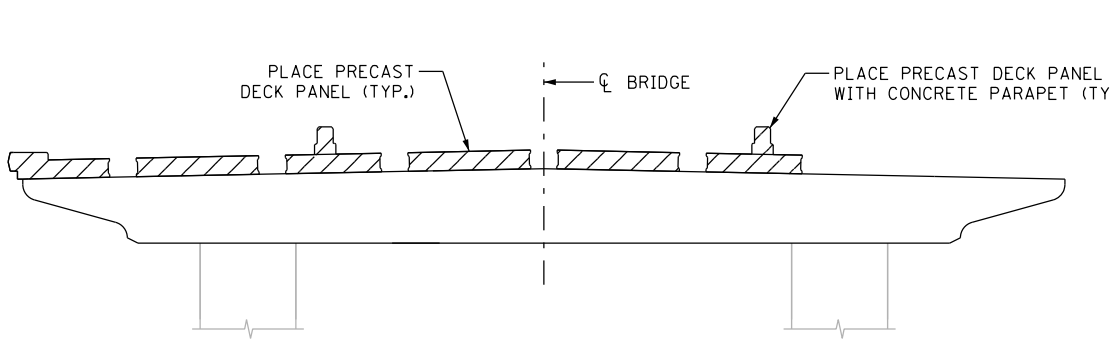
B11R
B176



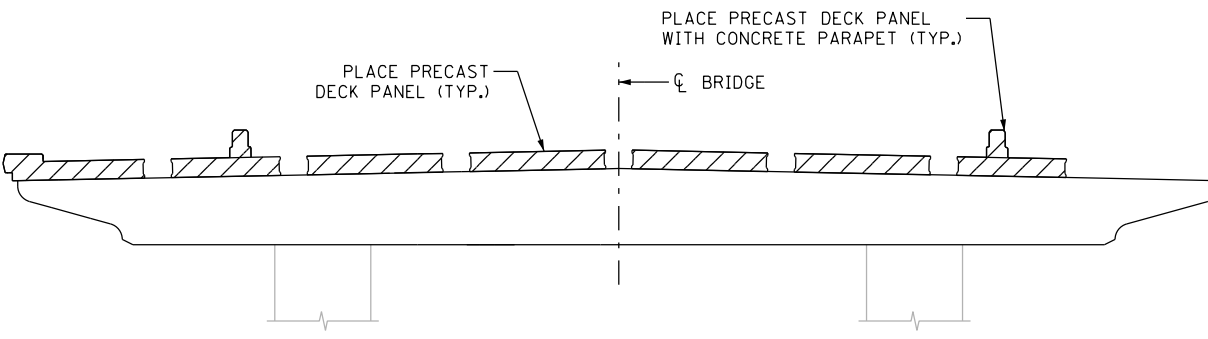
PHASE 2 - STAGE 2: SECTION A-A



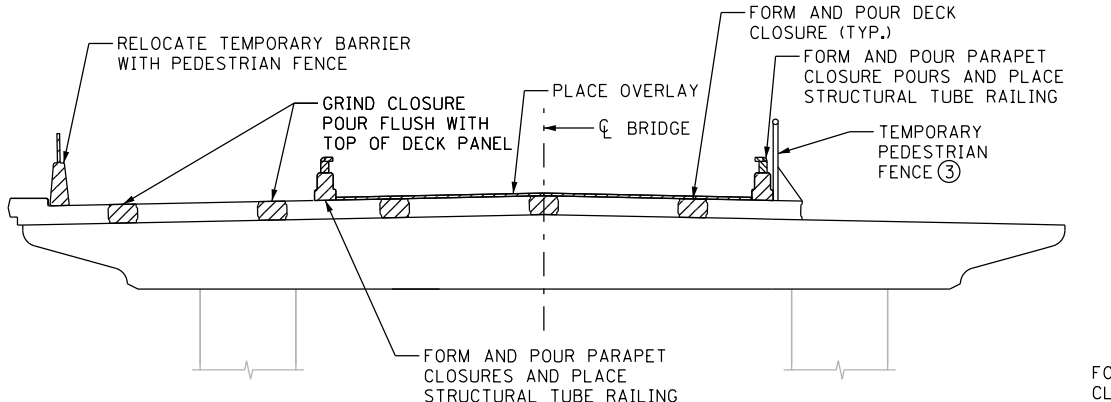
PHASE 2 - STAGE 2: SECTION B-B



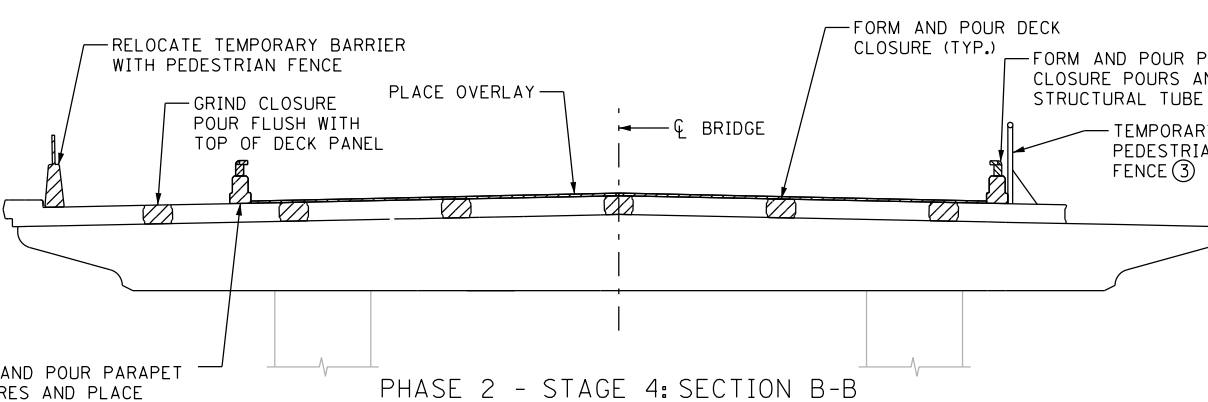
PHASE 2 - STAGE 3: SECTION A-A



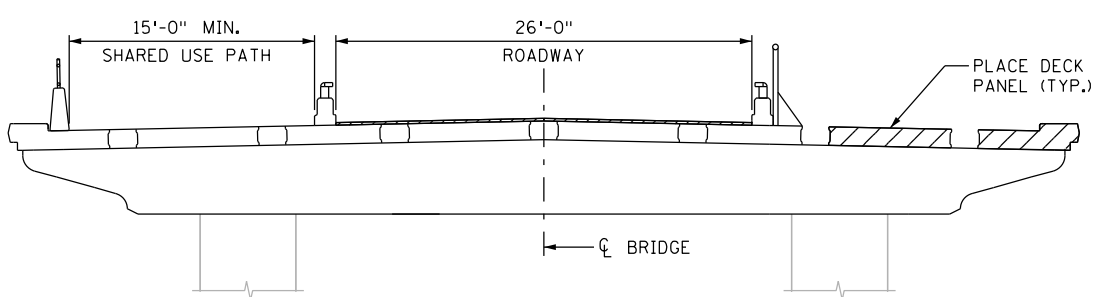
PHASE 2 - STAGE 3: SECTION B-B



PHASE 2 - STAGE 4: SECTION A-A

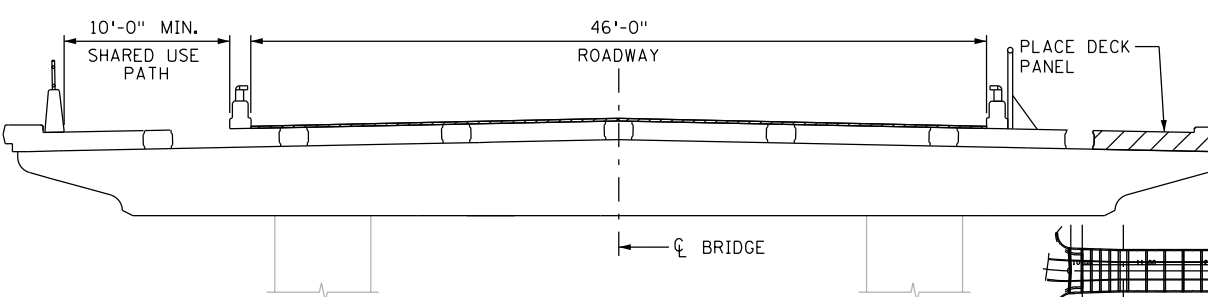


PHASE 2 - STAGE 4: SECTION B-B



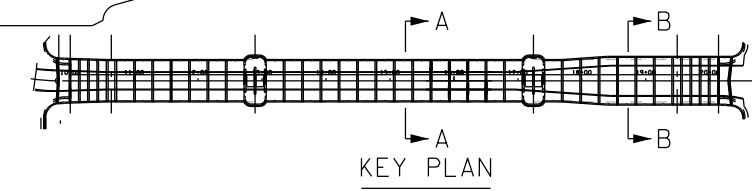
PHASE 3 - STAGE 1: SECTION A-A

END OF ABC PERIOD



PHASE 3 - STAGE 1: SECTION B-B

END OF ABC PERIOD



KEY PLAN

NOTES:

1. SECTIONS ARE SHOWN LOOKING UPSTATION.
2. FOR ADDITIONAL NOTES, SEE CONSTRUCTION STAGING NOTES, SHEETS B9 AND B10 AND CONSTRUCTION STAGING (1 OF 3), SHEET B11.
3. CONTRACTOR SHALL PROVIDE PLANS AND DESIGNS FOR THE TEMPORARY PEDESTRIAN FENCE. PLANS AND DESIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. TEMPORARY PEDESTRIAN FENCE CONNECTIONS SHALL NOT DRILL INTO ANY PERMANENT STRUCTURE. PERMANENT STRUCTURES SHALL BE PROTECTED FROM DAMAGE FROM PROPOSED TEMPORARY PEDESTRIAN FENCE CONNECTIONS. COST FOR ALL MATERIAL AND LABOR FOR THE TEMPORARY PEDESTRIAN FENCE SHALL BE INCLUDED IN THE BID PRICE FOR "PRECAST DECK PANELS" ITEM NUMBER 2405.601.

1 SEE ABC ERECTION PLAN, SUBMITTAL 151 FOR DETAILED ERECTION SEQUENCE.

LEGEND:

INDICATES PLACEMENT/MODIFICATION

STAGE NOTES:

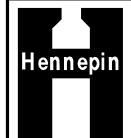
1. PLACE PRECAST DECK PANELS FOR ROADWAY AND NORTH SHARED USE PATH.

STAGE NOTES:

1. FORM AND POUR DECK AND PARAPET CLOSURE POURS.
2. PLACE STRUCTURAL TUBE RAILING ON CONCRETE PARAPET AND PLACE TEMPORARY PEDESTRIAN FENCE (AS INDICATED).
3. OVERLAY ROADWAY.
4. GRIND CLOSURE POURS IN NORTH SHARED USE PATH FLUSH WITH TOP OF PRECAST DECK PANELS.
5. RELOCATE TEMPORARY BARRIER WITH PEDESTRIAN FENCE ALONG NORTH FASCIA.

STAGE NOTES:

1. OPEN BRIDGE TO TRAFFIC.
2. PLACE SOUTH SHARED USE PATH DECK PANELS.



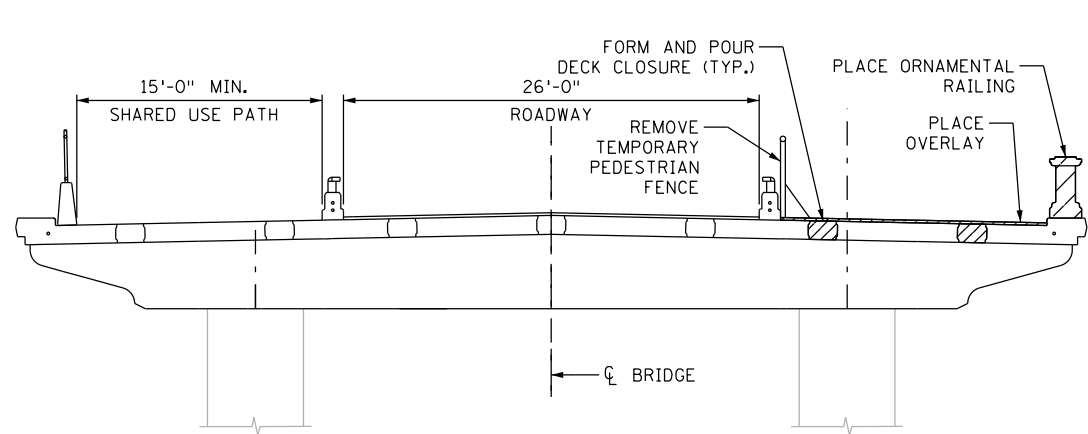
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER
 41308 LICENSE NO. 8/14/2014 DATE

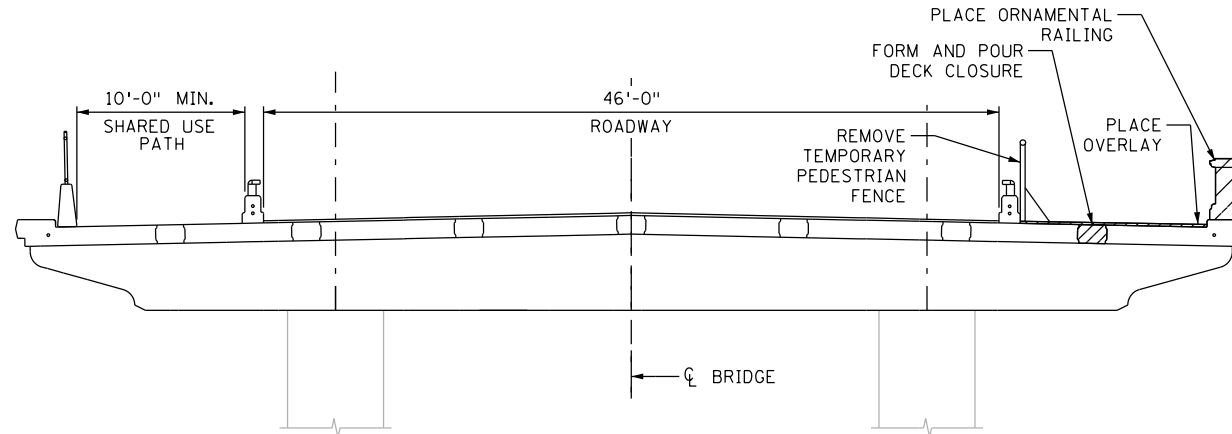
DESIGN BY: CB
CAD BY: BS
CHECKED BY: BS
LAST REVISION:

AS-BUILT - CONSTRUCTION STAGING (2 OF 3)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B12
 B176

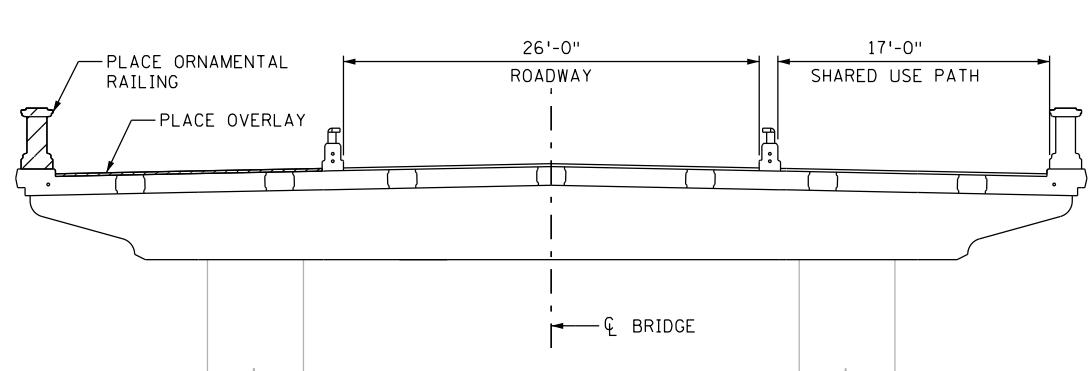


PHASE 3 - STAGE 2: SECTION A-A

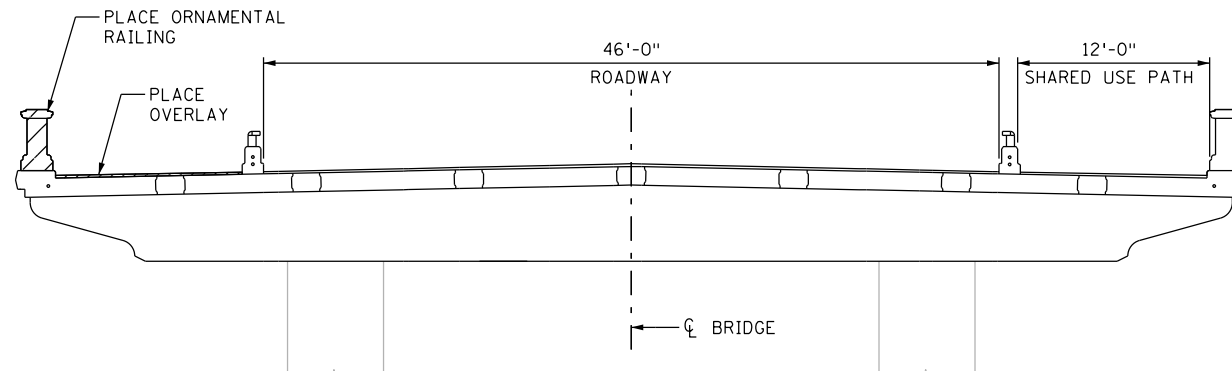


PHASE 3 - STAGE 2: SECTION B-B

- STAGE NOTES:**
1. FORM AND POUR DECK CLOSURE POURS.
 2. PLACE SOUTH ORNAMENTAL RAILING.
 3. REMOVE TEMPORARY FENCE FROM SHARED USE PATH.
 4. OVERLAY SOUTH SHARED USE PATH.

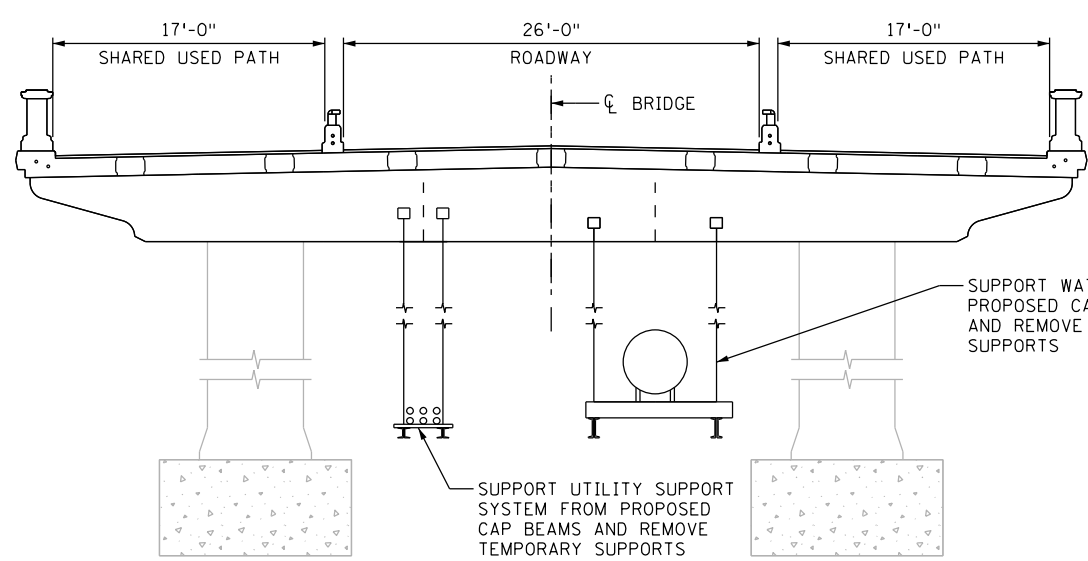


PHASE 4 - STAGE 1: SECTION A-A

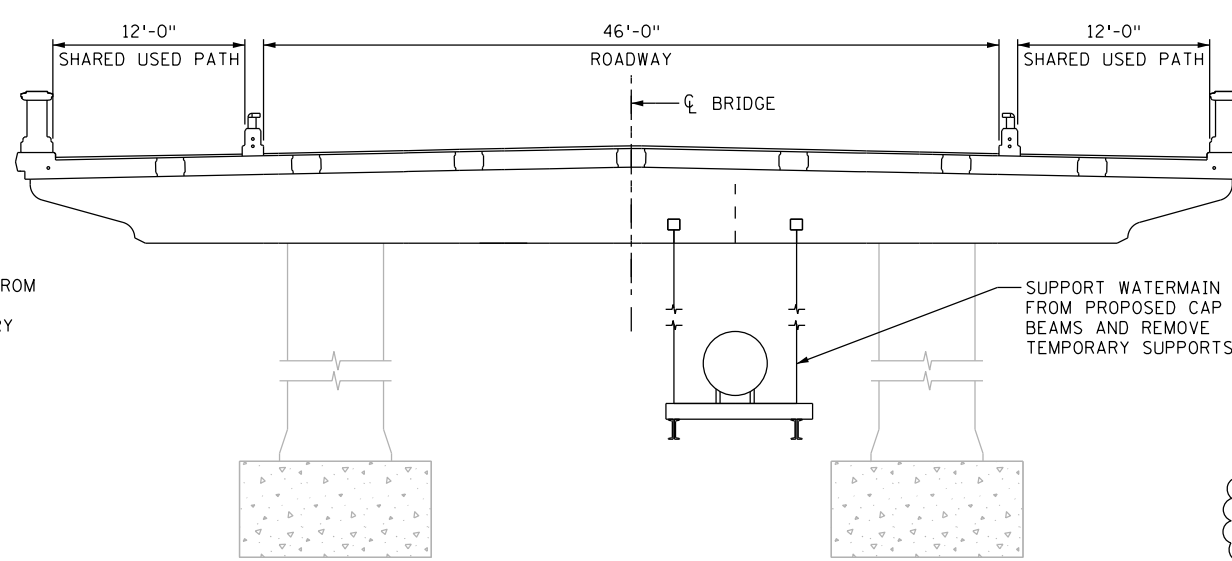


PHASE 4 - STAGE 1: SECTION B-B

- STAGE NOTES:**
1. REROUTE PEDESTRIAN TRAFFIC TO SOUTH SHARED USE PATH.
 2. PLACE NORTH ORNAMENTAL RAILING.
 3. REMOVE TEMPORARY BARRIER ALONG NORTH FASCIA AND PLACE NORTH ORNAMENTAL RAILING.
 4. OVERLAY NORTH SHARED USE PATH.



PHASE 5 - STAGE 1: SECTION A-A



PHASE 5 - STAGE 1: SECTION B-B

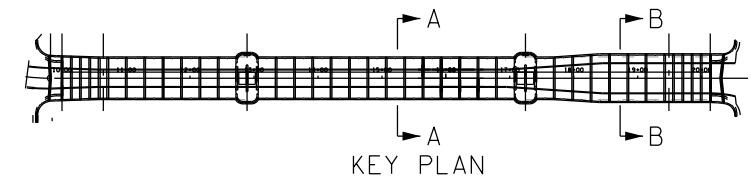
- STAGE NOTES:**
1. OPEN NORTH SHARED USE PATH TO PEDESTRIAN TRAFFIC.
 2. SUPPORT EXISTING WATERMAIN AND PROPOSED UTILITY SYSTEM FROM PROPOSED CAP BEAMS.
 3. REMOVE TEMPORARY SUPPORTS.

- NOTES:**
1. SECTIONS ARE SHOWN LOOKING UPSTATION.
 2. FOR ADDITIONAL NOTES, SEE CONSTRUCTION STAGING NOTES, SHEETS B9 AND B10 AND CONSTRUCTION STAGING SHEET (1 OF 3), SHEET B11.

LEGEND:

INDICATES PLACEMENT/MODIFICATION

SEE ABC ERECTION PLAN SUBMITTAL 151 FOR DETAILED ERECTION SEQUENCE.



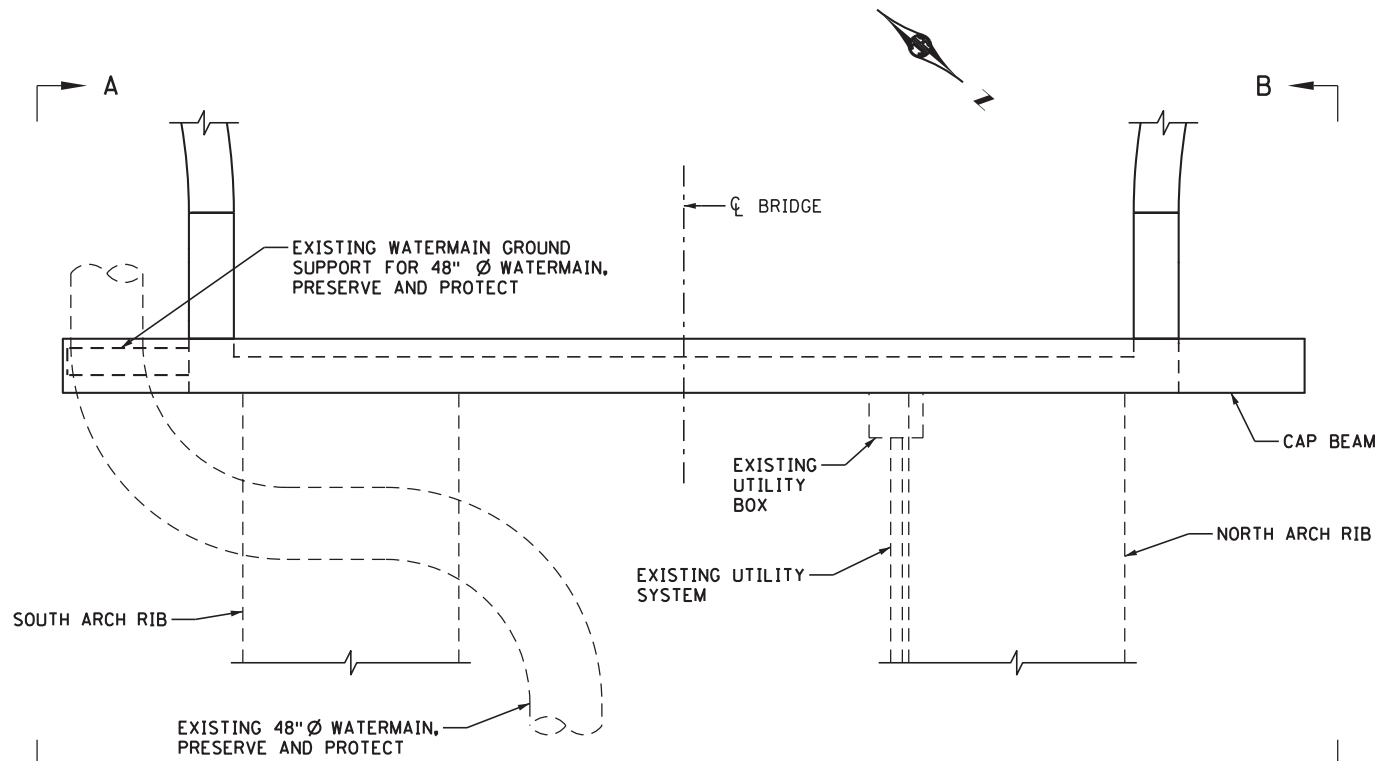
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER
 41308 LICENSE NO. 8/14/2014 DATE

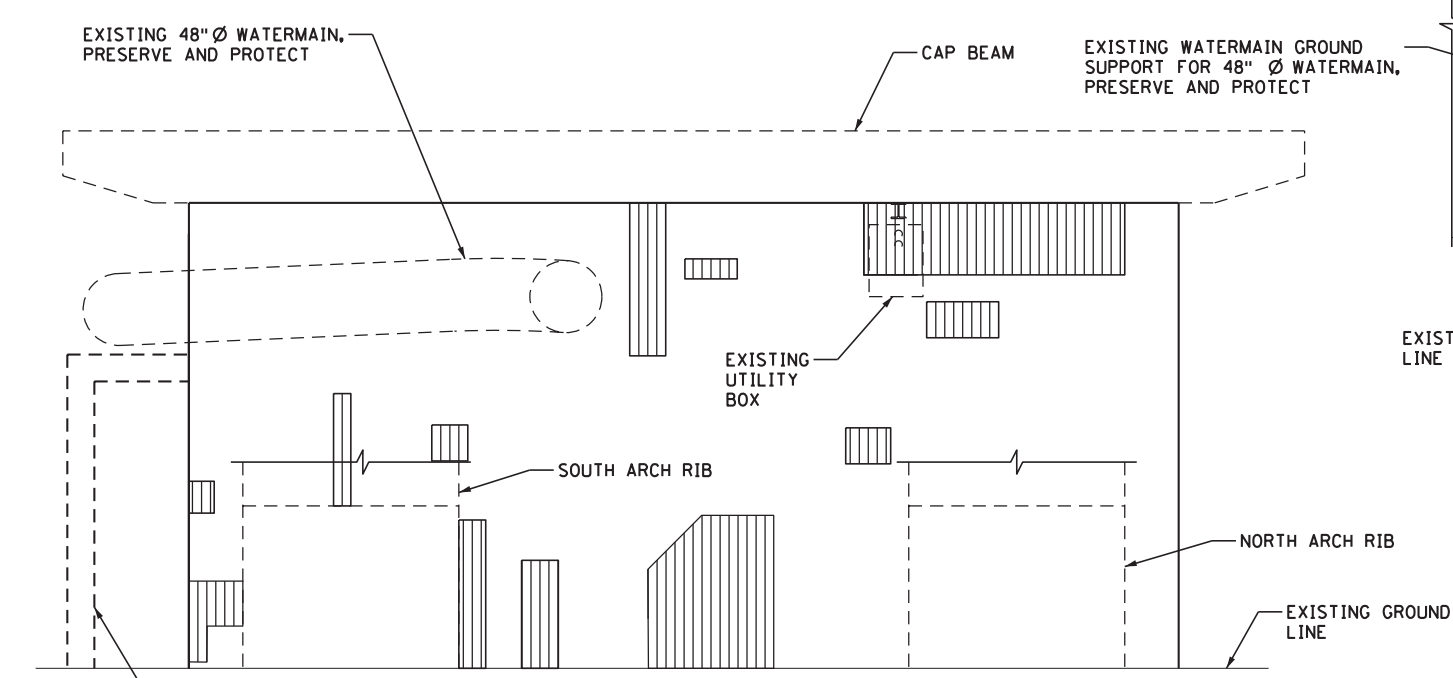
DESIGN BY: CB
CAD BY: BS
CHECKED BY: BS
LAST REVISION: 7/14/2015

AS-BUILT - CONSTRUCTION STAGING (3 OF 3)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

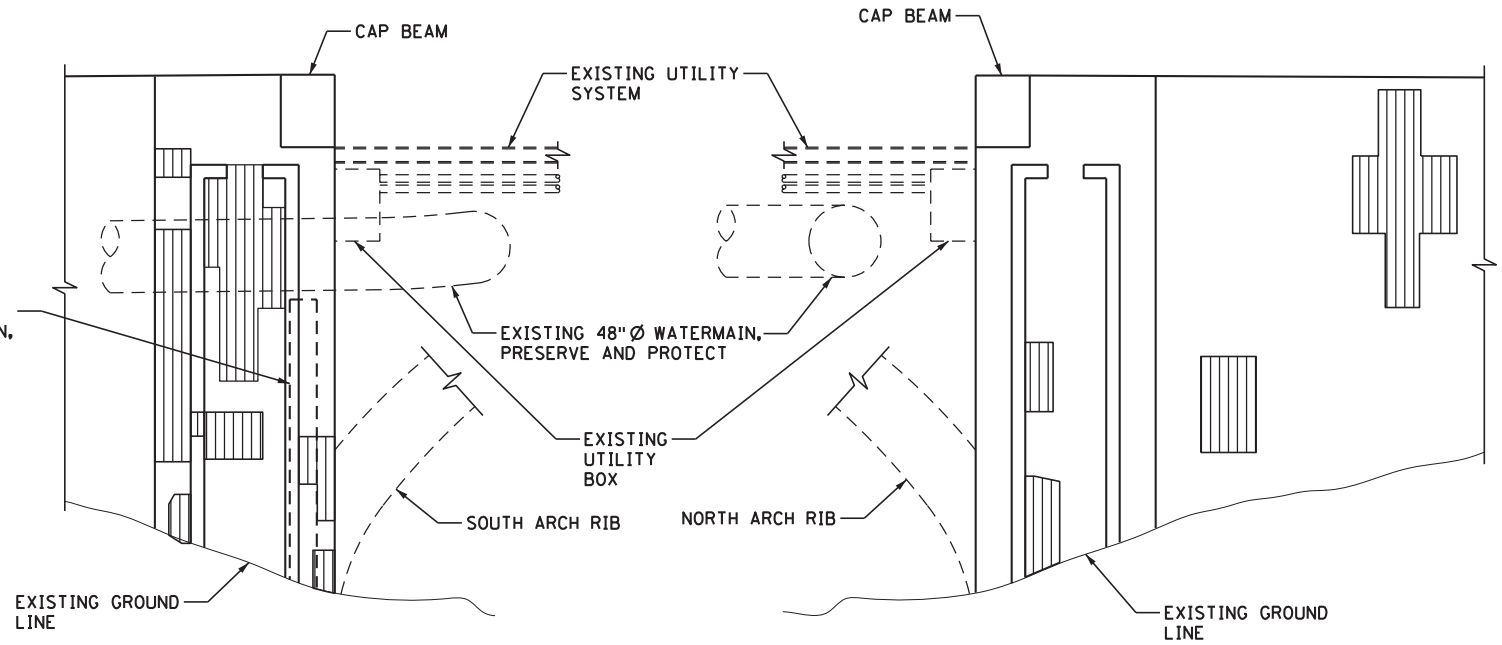
SHEET
 B13R
 B176



PLAN
WEST ABUTMENT

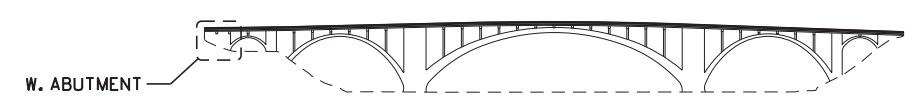


ELEVATION
WEST ABUTMENT



VIEW A-A

VIEW B-B



LOCATION KEY

NOTES:

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

CAP BEAM SHOWN FOR INFORMATION ONLY, WILL BE REMOVED AND REPLACED DURING THIS PROJECT.

LEGEND:

DENOTES REPAIR TYPE A/P-1 OR TYPE A/P-2. SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

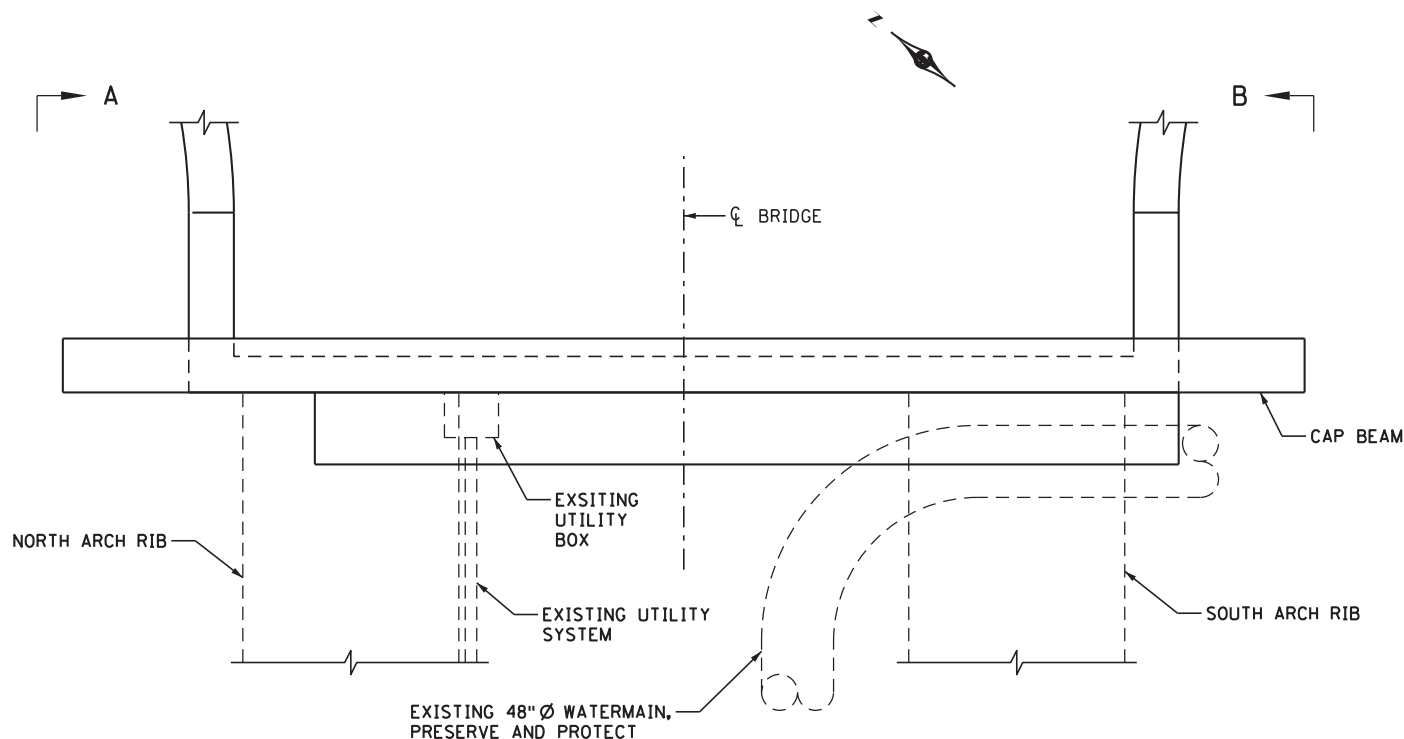
21838 8/13/2014
 LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPS
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - WEST ABUTMENT

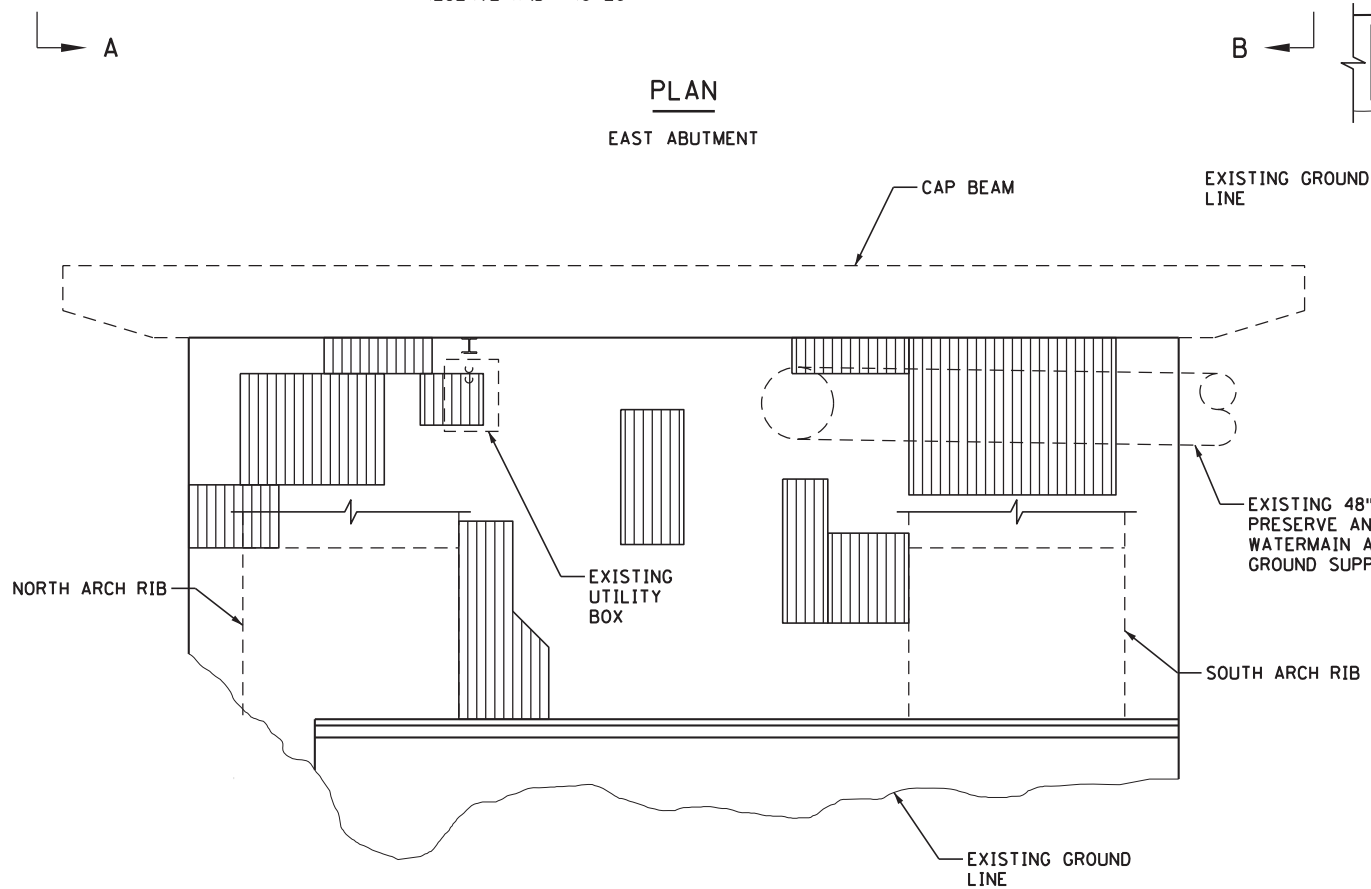
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B14
 B176

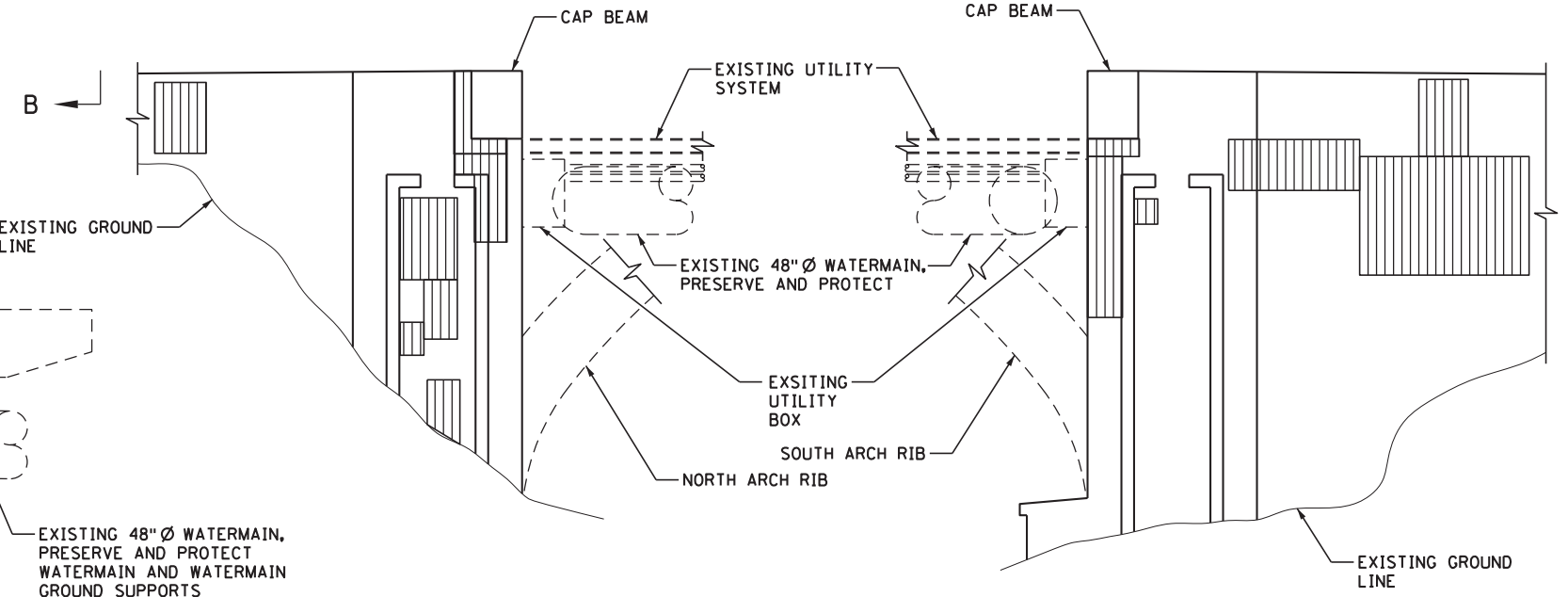


EXISTING 48" Ø WATERMAIN, PRESERVE AND PROTECT

PLAN
EAST ABUTMENT

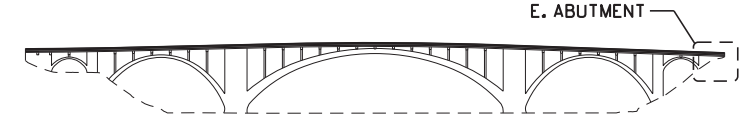


ELEVATION
EAST ABUTMENT



VIEW A-A

VIEW B-B




LOCATION KEY

NOTES:

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

CAP BEAM SHOWN FOR INFORMATION ONLY, WILL BE REMOVED AND REPLACED DURING THIS PROJECT.

LEGEND:

 DENOTES REPAIR TYPE A/P-1 OR TYPE A/P-2. SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
 STEVE A. OLSON, PROFESSIONAL ENGINEER

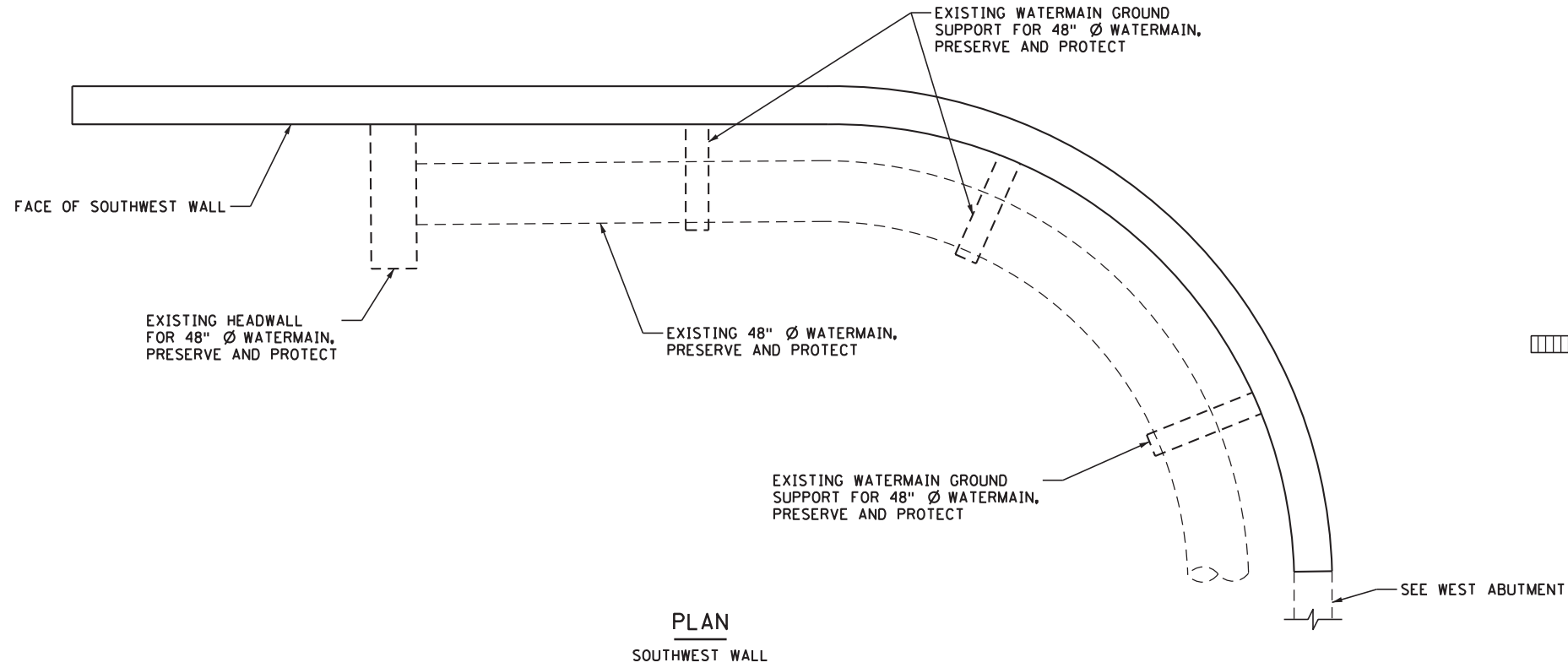
21838 8/13/2014
 LICENSE NO. DATE

DESIGN BY: APJ
 CAD BY: DPS
 CHECKED BY: SAO
 LAST REVISION:

REPAIR LOCATIONS - EAST ABUTMENT

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029


SHEET
 B15
 B176

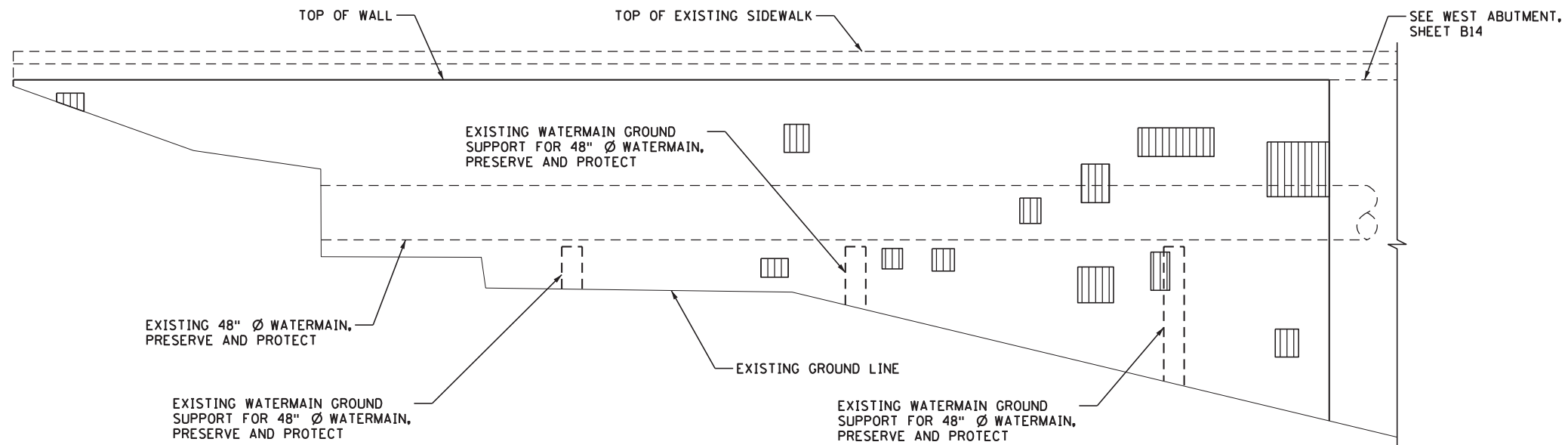


NOTES:

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

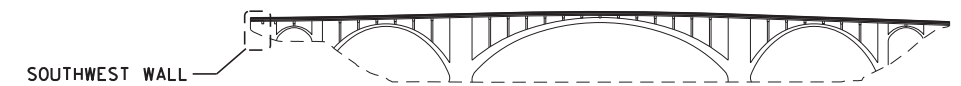
LEGEND:

 DENOTES REPAIR TYPE A/P-1 OR TYPE A/P-2. SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.



ELEVATION

SOUTHWEST WALL, EXISTING RAILING NOT SHOWN FOR CLARITY



LOCATION KEY



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

21838 8/13/2014
LICENSE NO. DATE

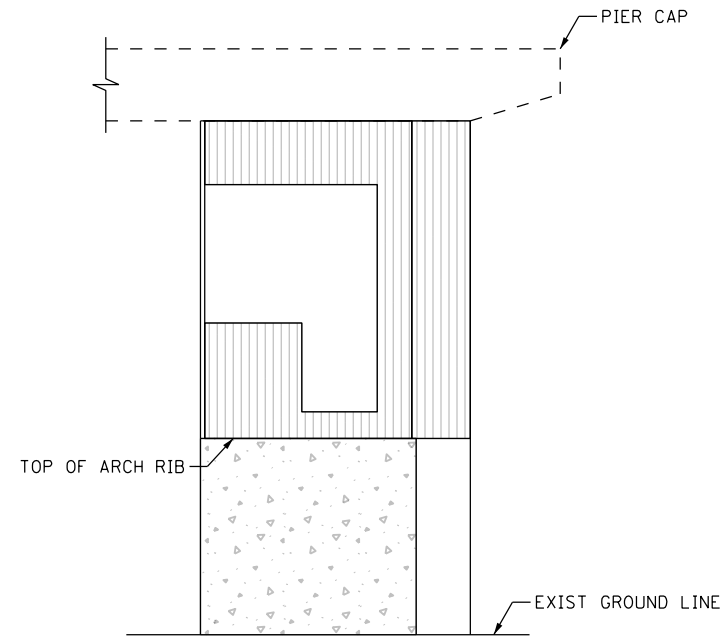
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CAD BY: DPS
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATION - SOUTHWEST WALL

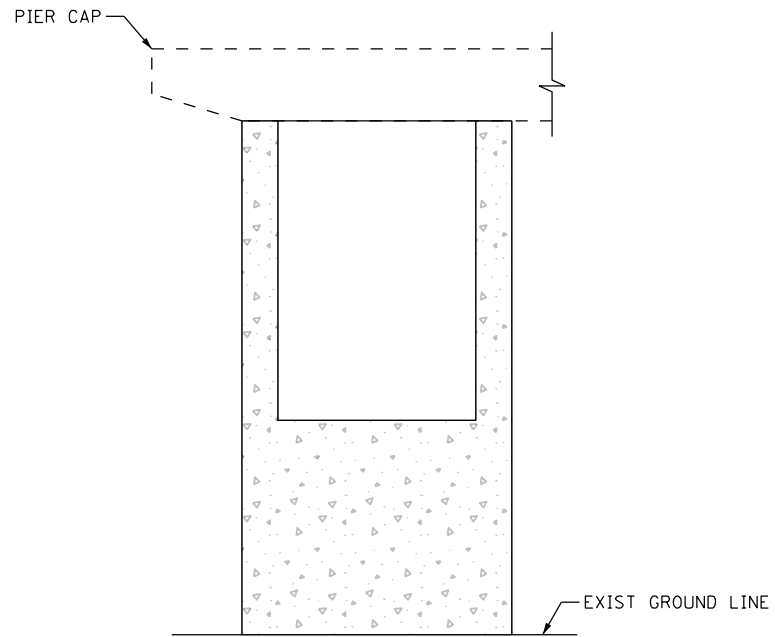
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

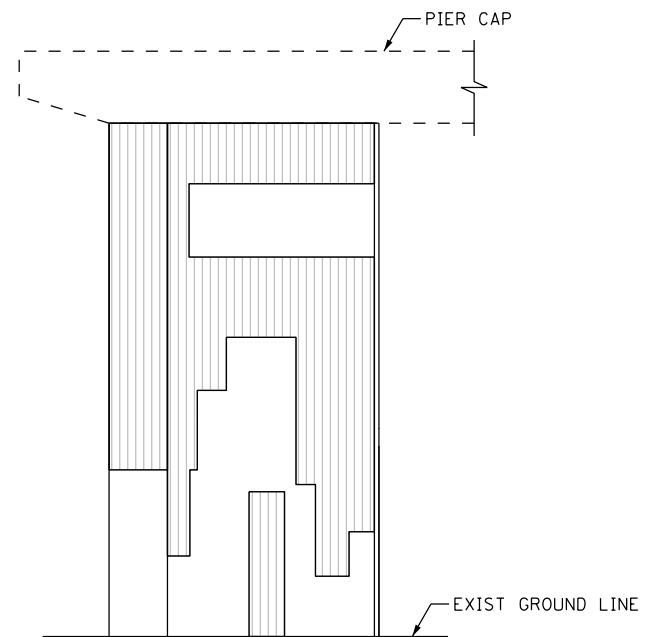
B16
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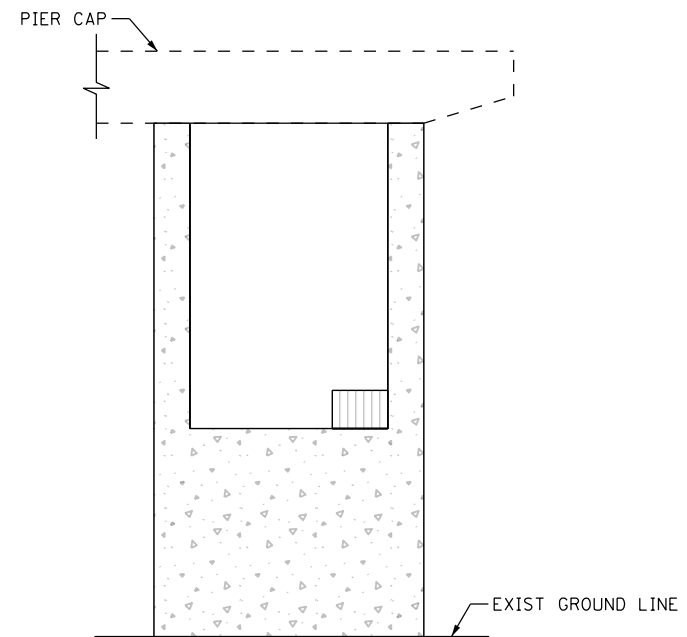
(A) SOUTH COLUMN
WEST EXTERIOR



(B) SOUTH COLUMN
WEST INTERIOR



(G) SOUTH COLUMN
EAST EXTERIOR



(H) SOUTH COLUMN
EAST INTERIOR

NOTES:

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PIER CAP SHOWN FOR INFORMATION ONLY, WILL BE REMOVED AND REPLACED DURING THIS PROJECT.

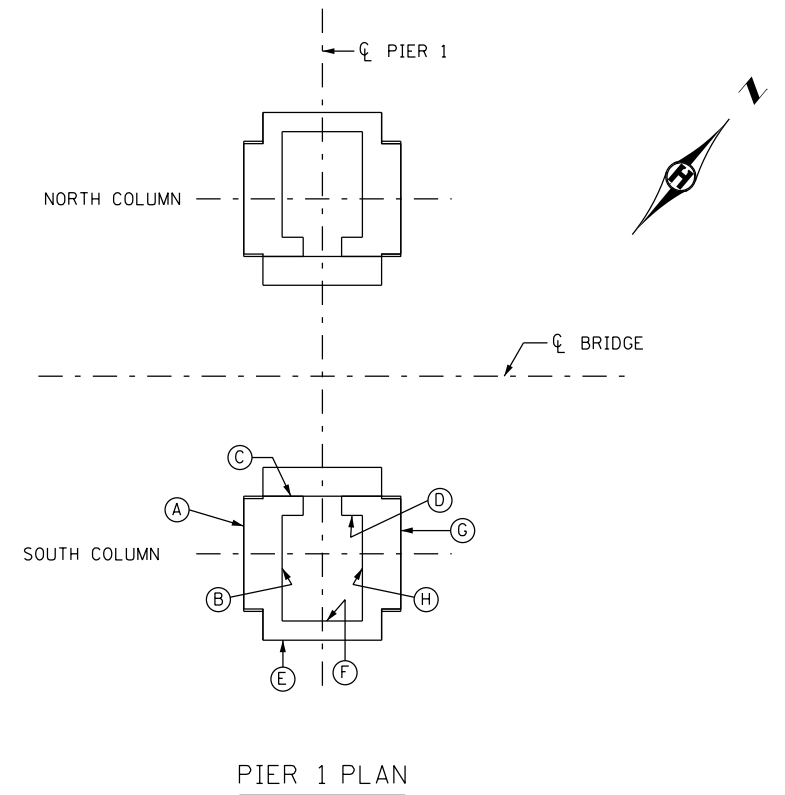
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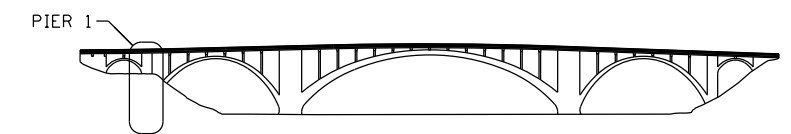
DENOTES REPAIR TYPE A/P-1 OR A/P-2 SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.



DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



PIER 1 PLAN



LOCATION KEY



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

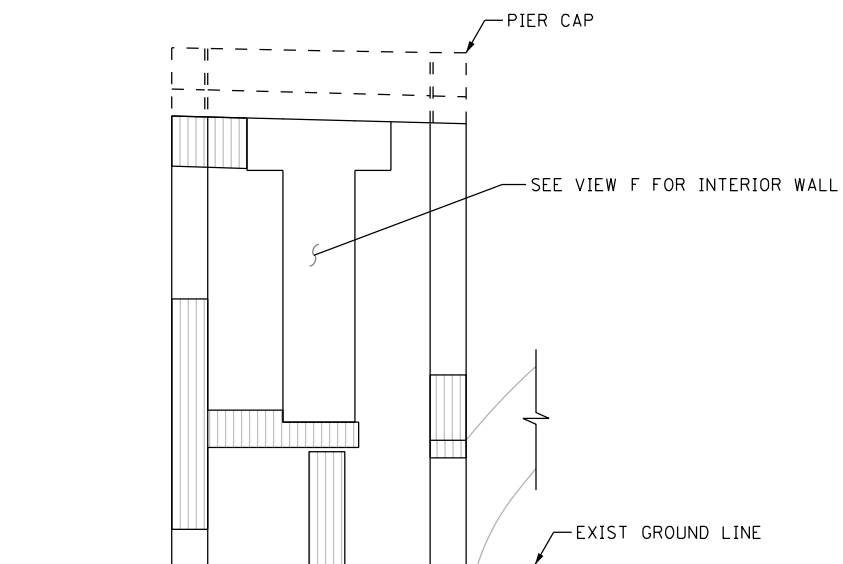
Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
LICENSE NO. DATE

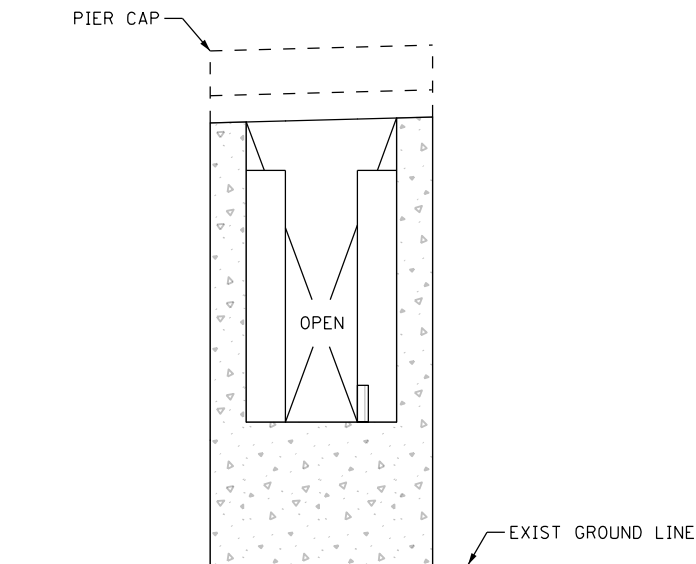
DESIGN BY: APJ
CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

REPAIR LOCATIONS - PIER 1 (1 OF 4)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

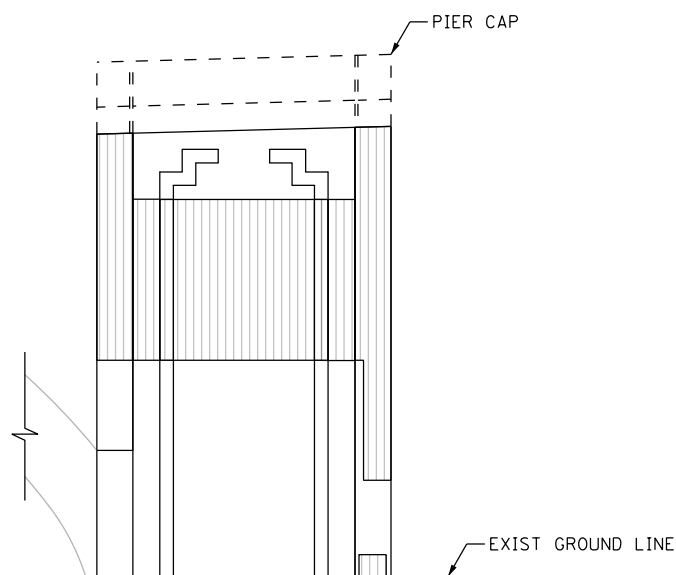
SHEET
B17
B176



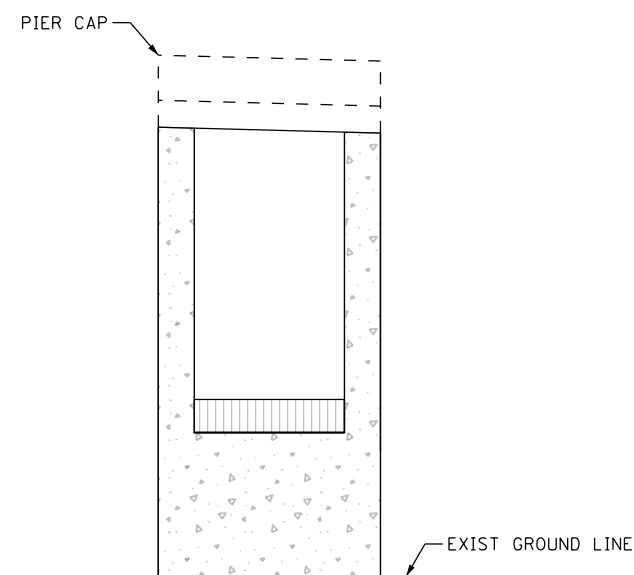
C SOUTH COLUMN
NORTH EXTERIOR



D SOUTH COLUMN
NORTH INTERIOR



E SOUTH COLUMN
SOUTH EXTERIOR



F SOUTH COLUMN
SOUTH INTERIOR

NOTES:

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PIER CAP SHOWN FOR INFORMATION ONLY, WILL BE REMOVED AND REPLACED DURING THIS PROJECT.

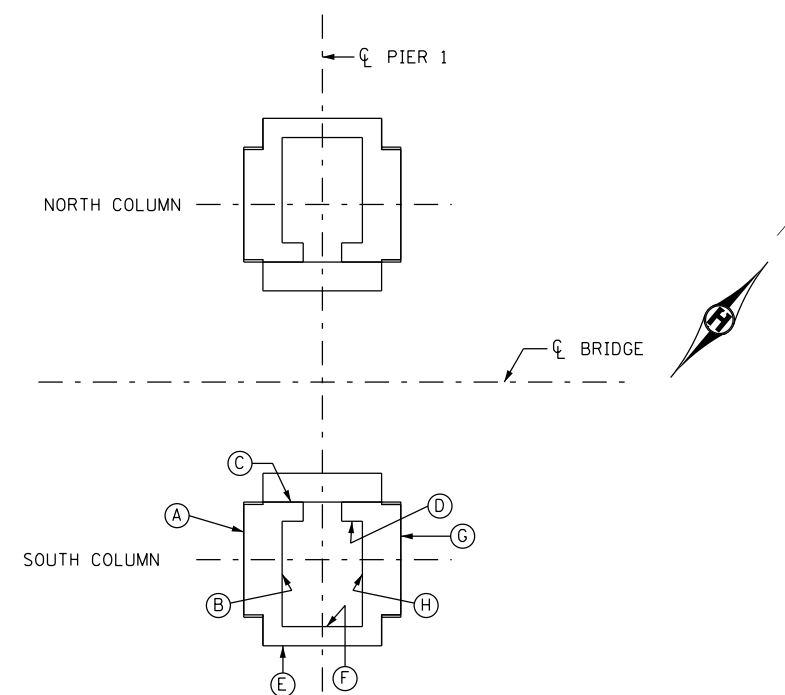
LEGEND:



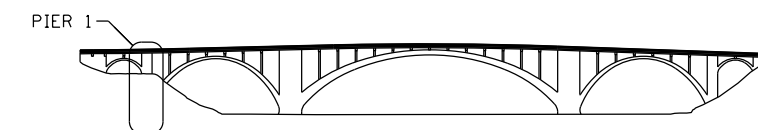
DENOTES REPAIR TYPE A/P-1 OR A/P-2
SEE CONCRETE SURFACE REPAIR DETAILS,
SHEETS B68 AND B69.



DENOTES AREAS WHERE VIEW IS CUT THROUGH
EXISTING CONCRETE.



PIER 1 PLAN



LOCATION KEY



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser

DANIEL F. ENSER, PROFESSIONAL ENGINEER

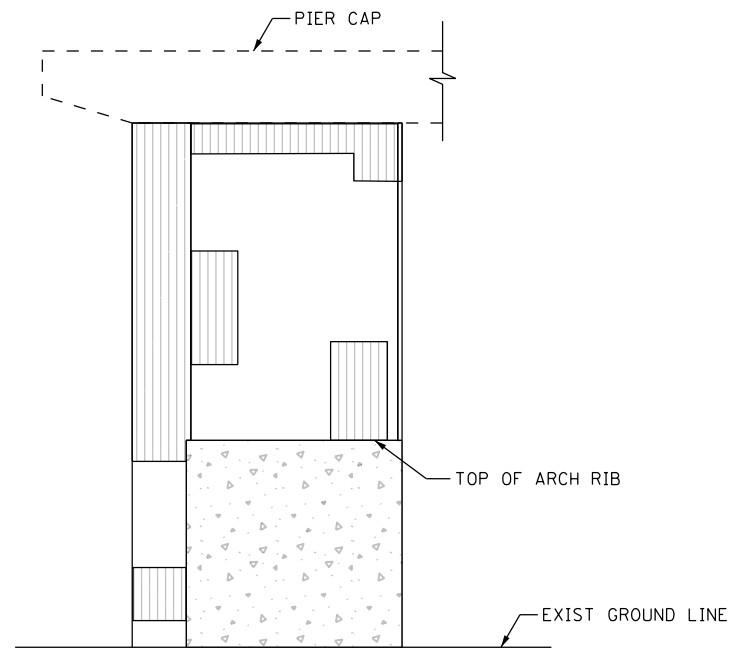
41308
LICENSE NO.

8/14/2014
DATE

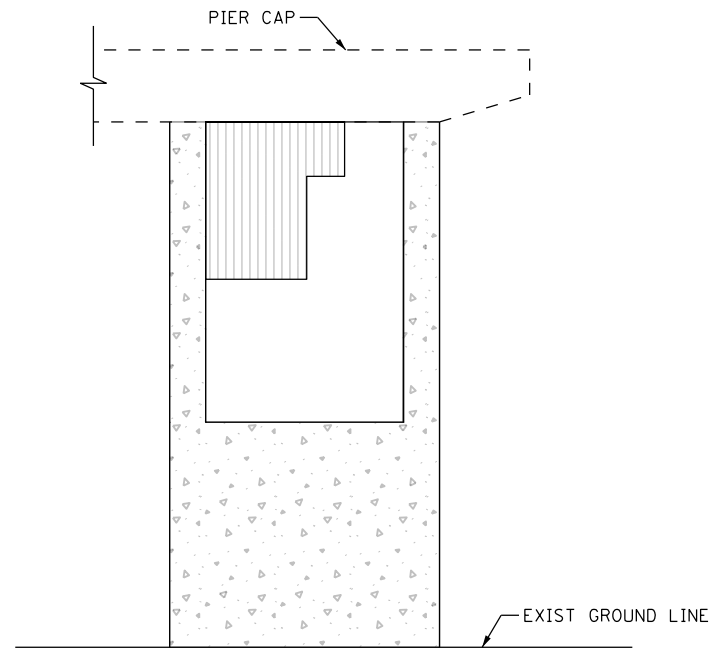
DESIGN BY: APJ
CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

REPAIR LOCATIONS - PIER 1 (2 OF 4)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

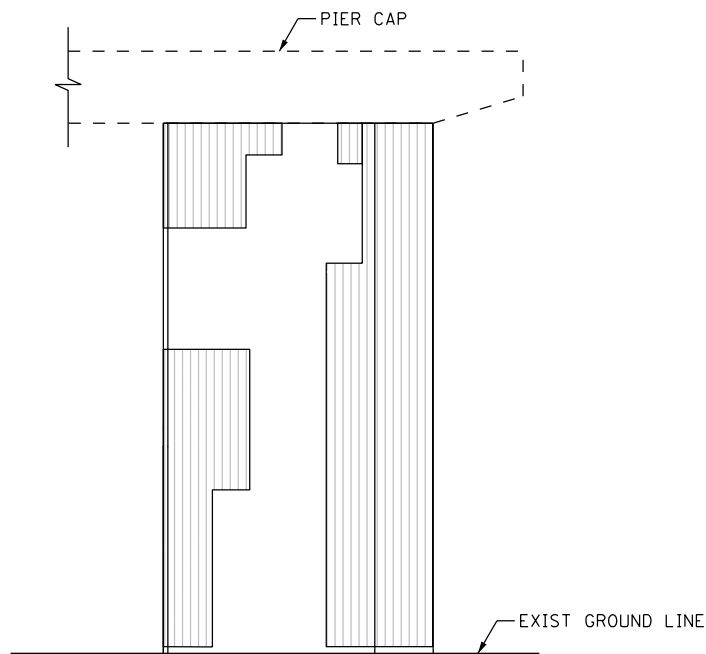
SHEET
B18
B176



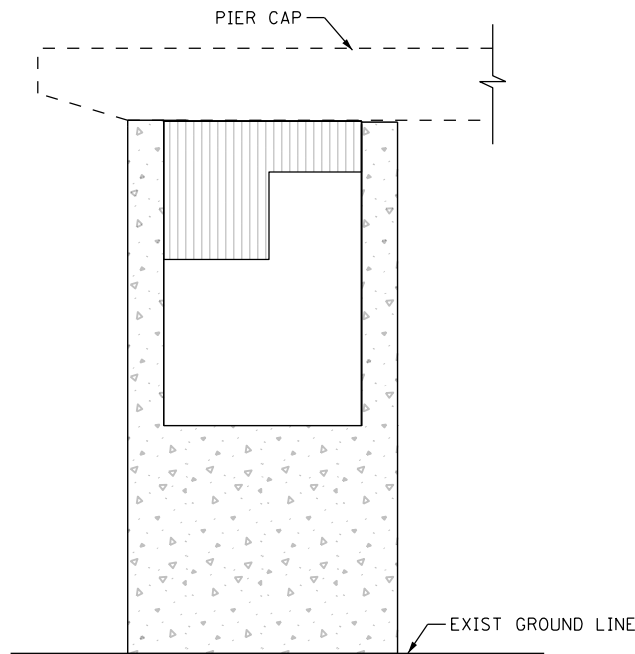
(A) NORTH COLUMN
WEST EXTERIOR



(B) NORTH COLUMN
WEST INTERIOR



(C) NORTH COLUMN
EAST EXTERIOR



(H) NORTH COLUMN
EAST INTERIOR

NOTES:

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY TAKEN BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

PIER CAP SHOWN FOR INFORMATION ONLY, WILL BE REMOVED AND REPLACED DURING THIS PROJECT.

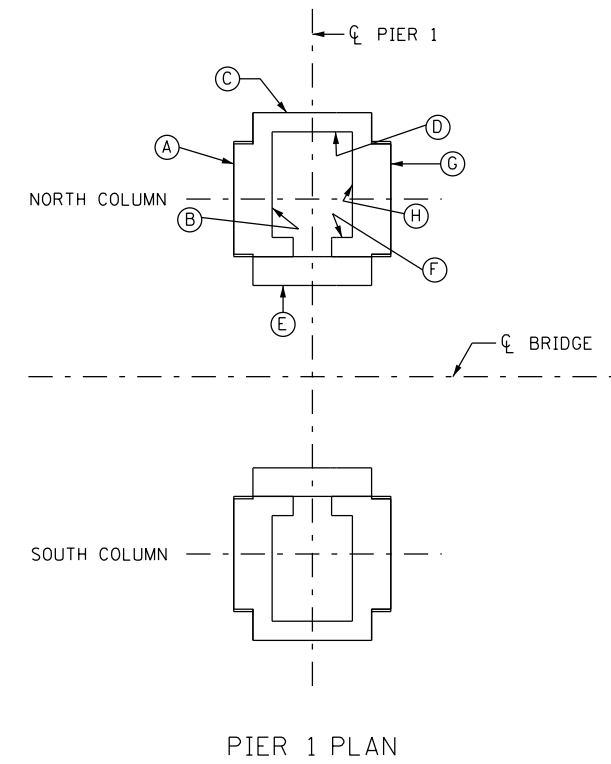
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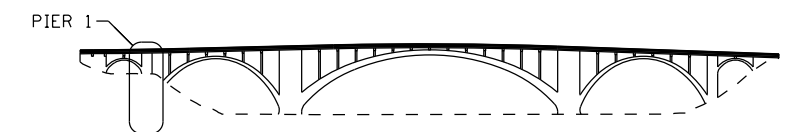
DENOTES REPAIR TYPE A/P-1 OR A/P-2 SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.



DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



PIER 1 PLAN



LOCATION KEY



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

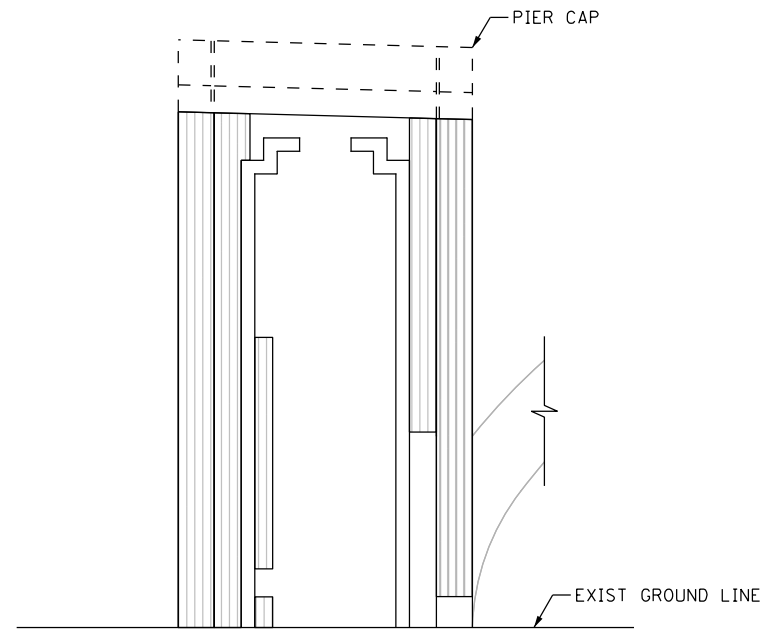
Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
LICENSE NO. DATE

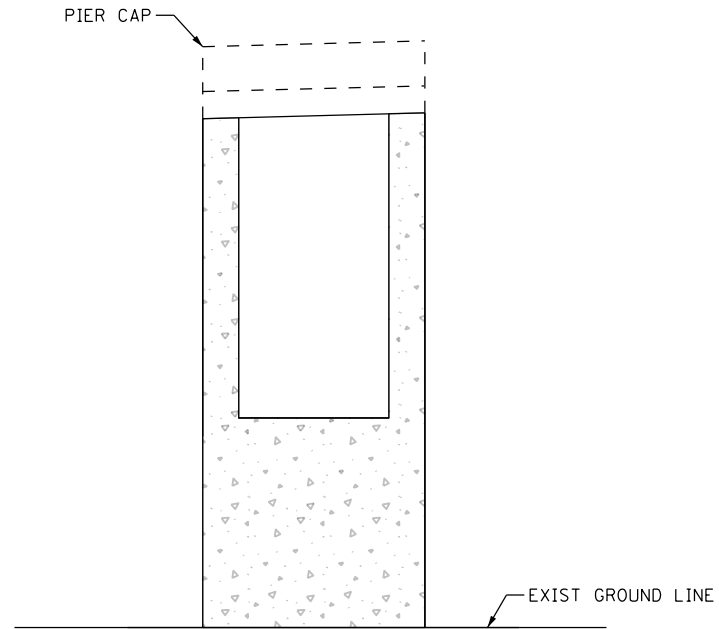
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CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

REPAIR LOCATIONS - PIER 1 (3 OF 4)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

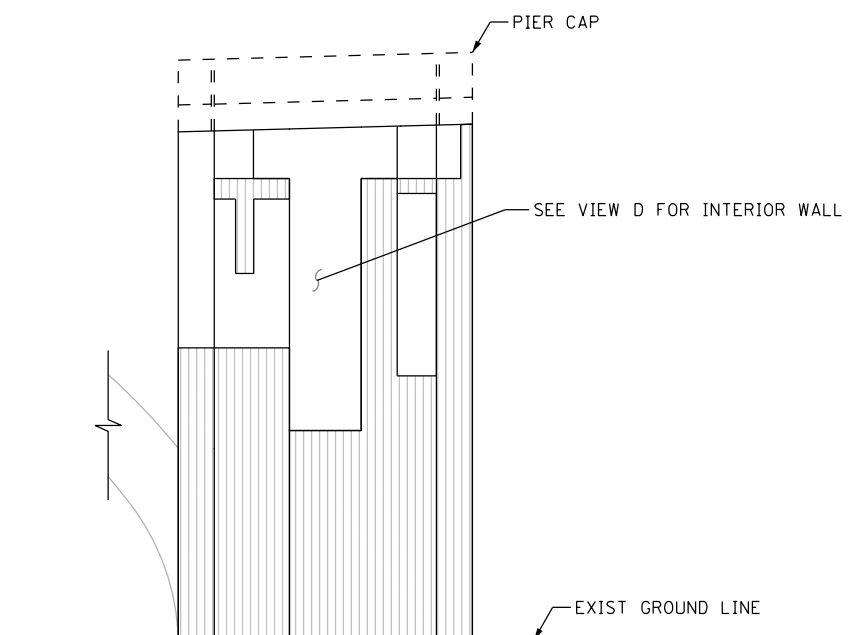
SHEET
B19
B176



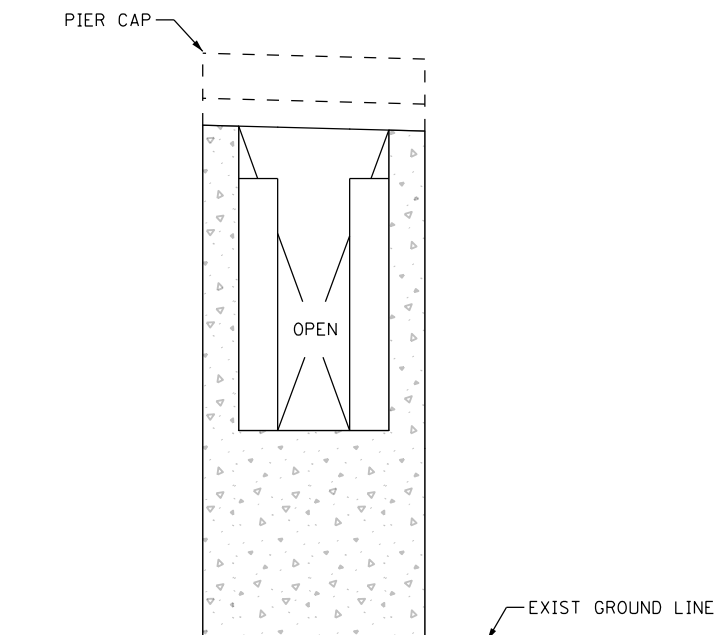
C NORTH COLUMN
NORTH EXTERIOR



D NORTH COLUMN
NORTH INTERIOR



E NORTH COLUMN
SOUTH EXTERIOR



F NORTH COLUMN
SOUTH INTERIOR

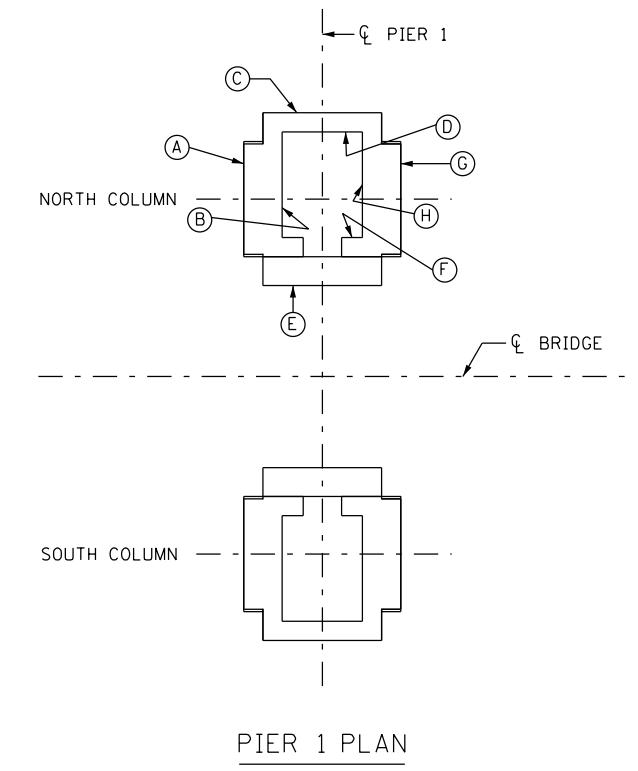
NOTES:

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY TAKEN BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

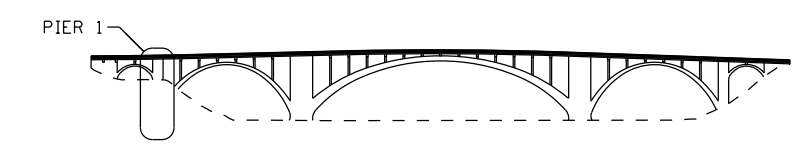
PIER CAP SHOWN FOR INFORMATION ONLY, WILL BE REMOVED AND REPLACED DURING THIS PROJECT.

LEGEND:

- DENOTES REPAIR TYPE A/P-1 OR A/P-2. SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.
- DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



PIER 1 PLAN



LOCATION KEY

	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	DESIGN BY: APJ CAD BY: RAM CHECKED BY: DFE LAST REVISION:	REPAIR LOCATIONS - PIER 1 (4 OF 4) C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	SHEET B20 B176
	DANIEL F. ENSER, PROFESSIONAL ENGINEER	41308 8/14/2014 LICENSE NO. DATE		




NOTES:

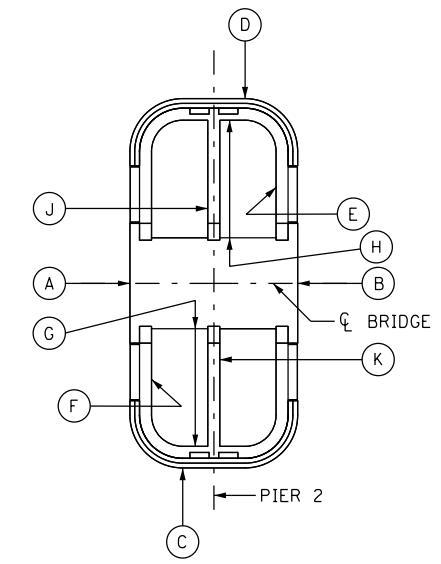
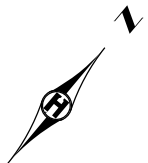
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DEWATERING TO COMPLETE TYPE P-1 REPAIRS TO BE PAID FOR AS "FOUNDATION PREPARATION PIER 2", SEE SPECIAL PROVISIONS.

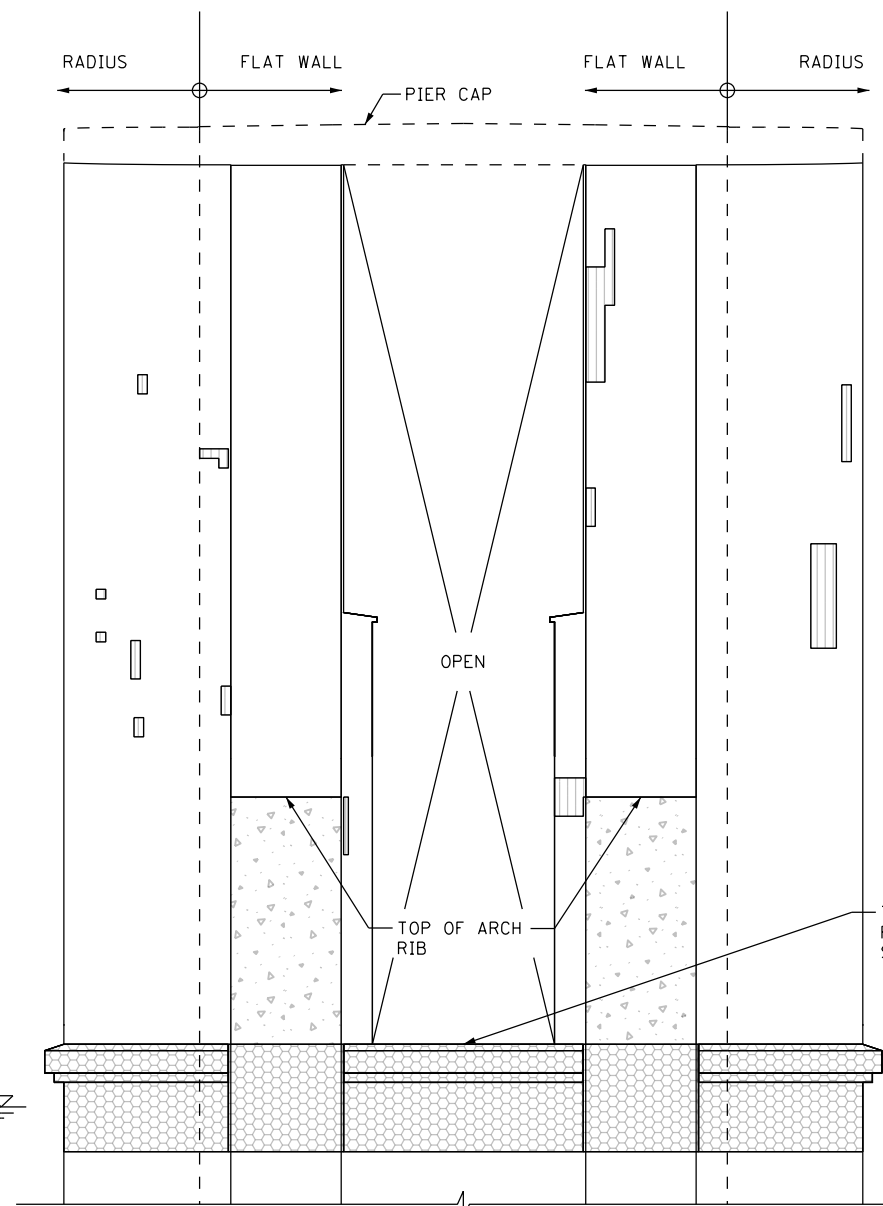
LEGEND:

-  DENOTES REPAIR TYPE A/P-1 OR A/P-2, SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.
-  DENOTES REPAIR TYPE P-1, SEE CONCRETE SURFACE REPAIR DETAILS, SHEET B74.
-  DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.

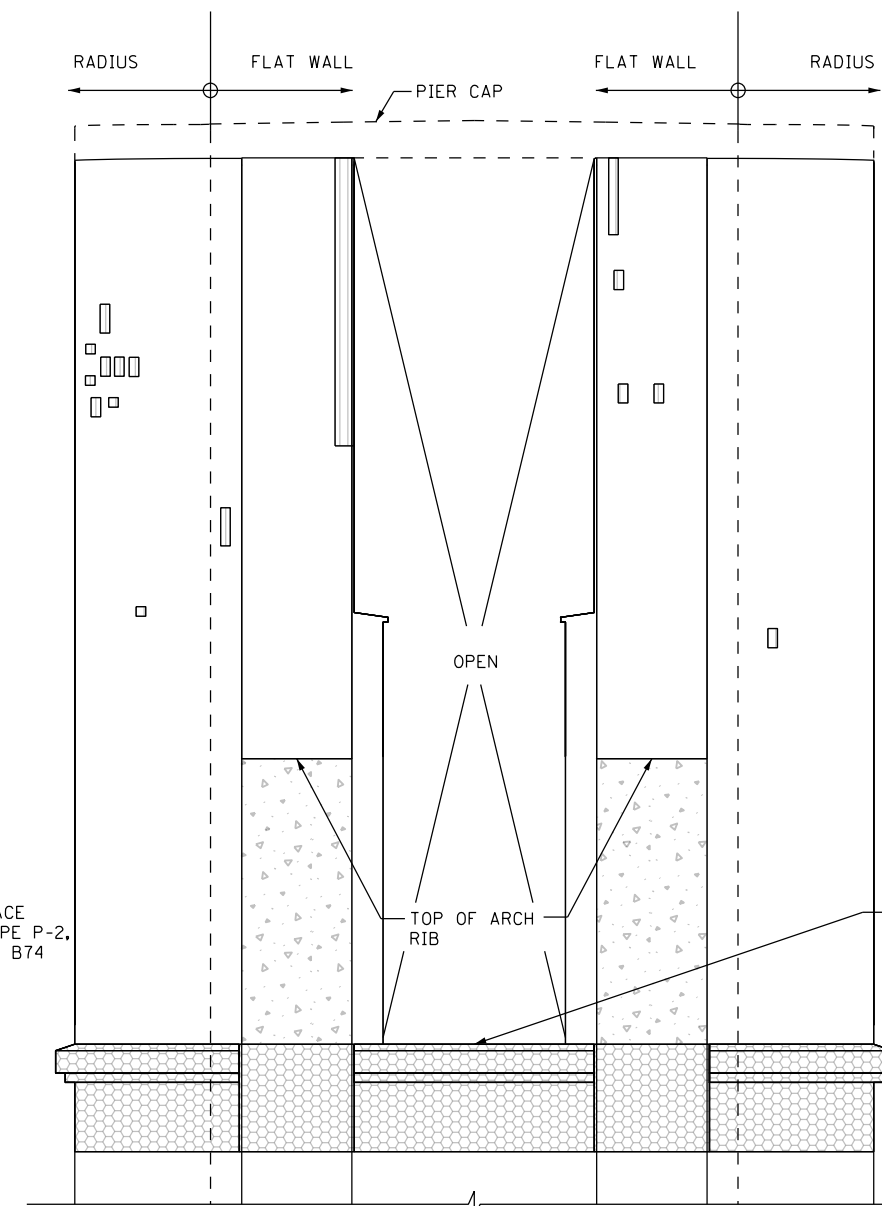


PIER 2 - PLAN

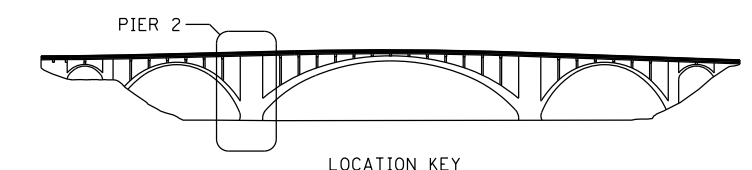
NORMAL POOL ELEV. 724.7



(A) WEST ELEVATION EXTERIOR



(B) EAST ELEVATION EXTERIOR



LOCATION KEY



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
 DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
 LICENSE NO. DATE

DESIGN BY: APJ
 CAD BY: RAM
 CHECKED BY: DFE
 LAST REVISION:

REPAIR LOCATIONS - PIER 2 (1 OF 5)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B21
 B176




NOTES:

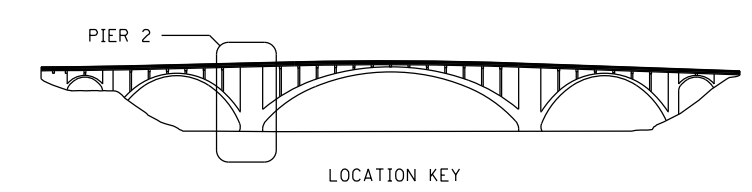
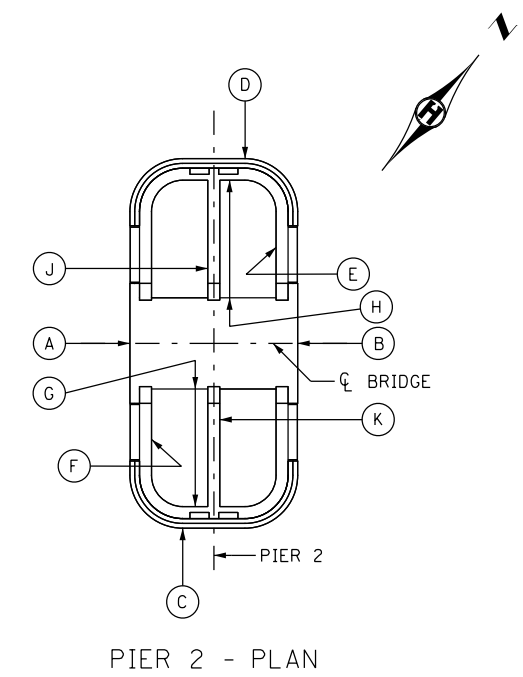
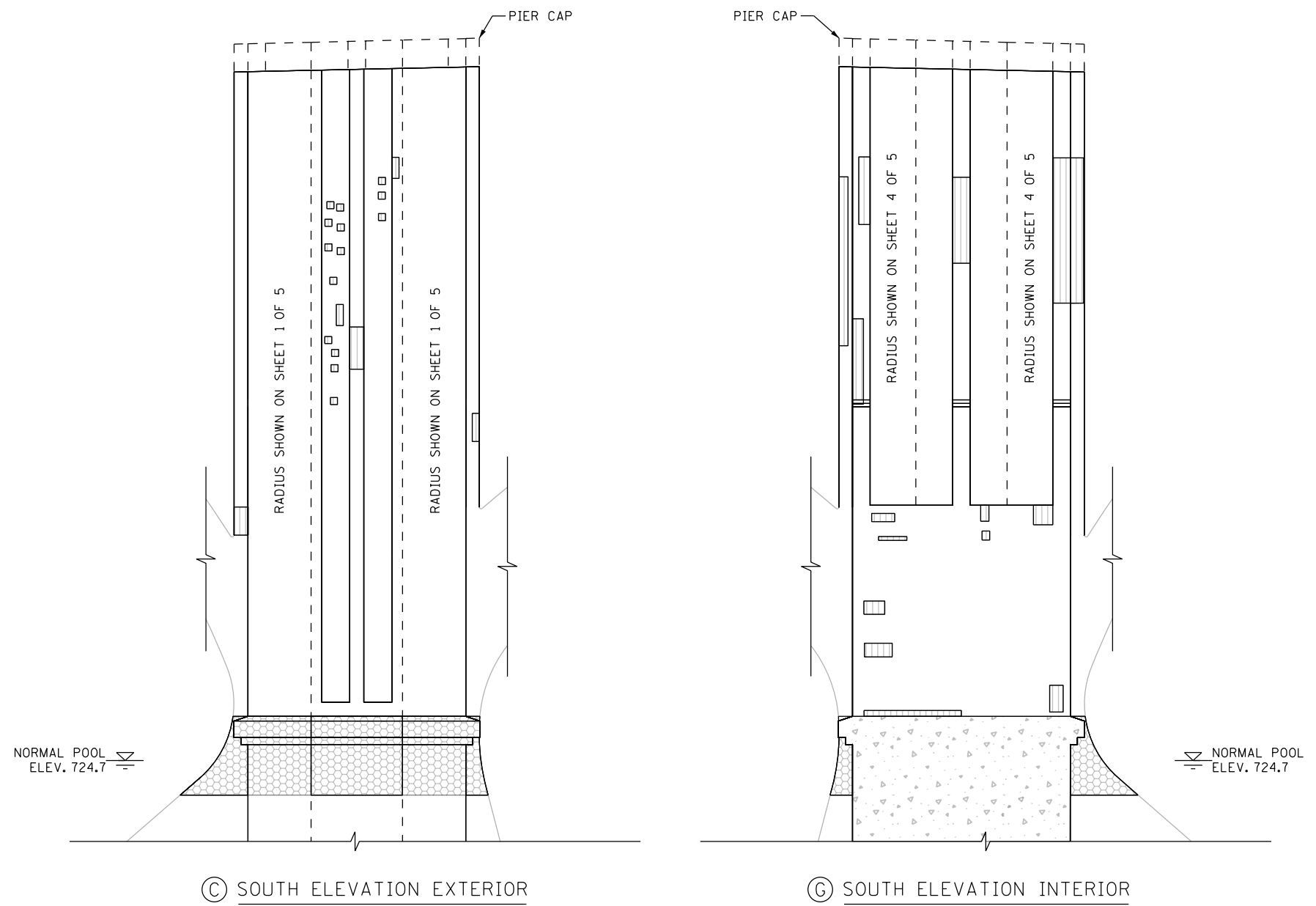
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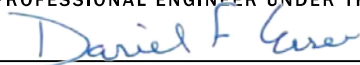
PIER CAP SHOWN FOR INFORMATION ONLY, WILL BE REMOVED AND REPLACED DURING THIS PROJECT.

DEWATERING TO COMPLETE TYPE P-1 REPAIRS TO BE PAID FOR AS "FOUNDATION PREPARATION PIER 2", SEE SPECIAL PROVISIONS.

LEGEND:

-  DENOTES REPAIR TYPE A/P-1 OR A/P-2, SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.
-  DENOTES REPAIR TYPE P-1, SEE CONCRETE SURFACE REPAIR DETAILS, SHEET B74.
-  DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



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	 DANIEL F. ENSER, PROFESSIONAL ENGINEER	41308 8/14/2014 LICENSE NO. DATE	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	B22 B176




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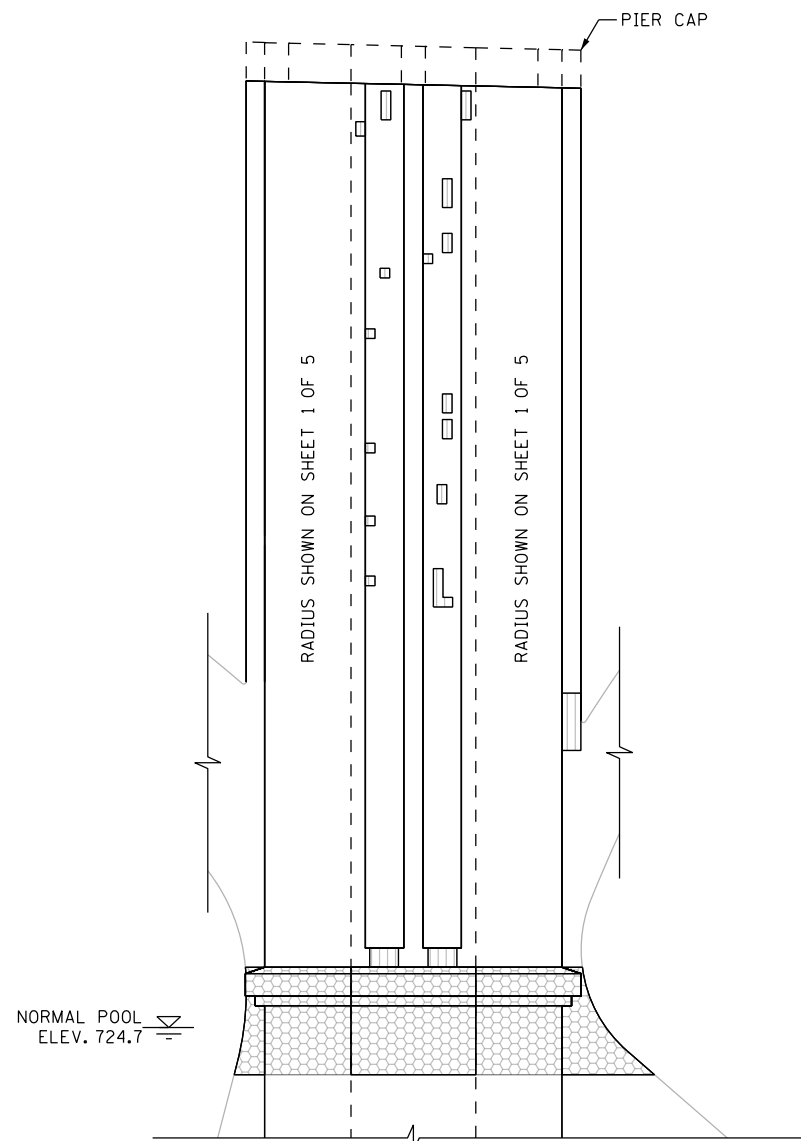
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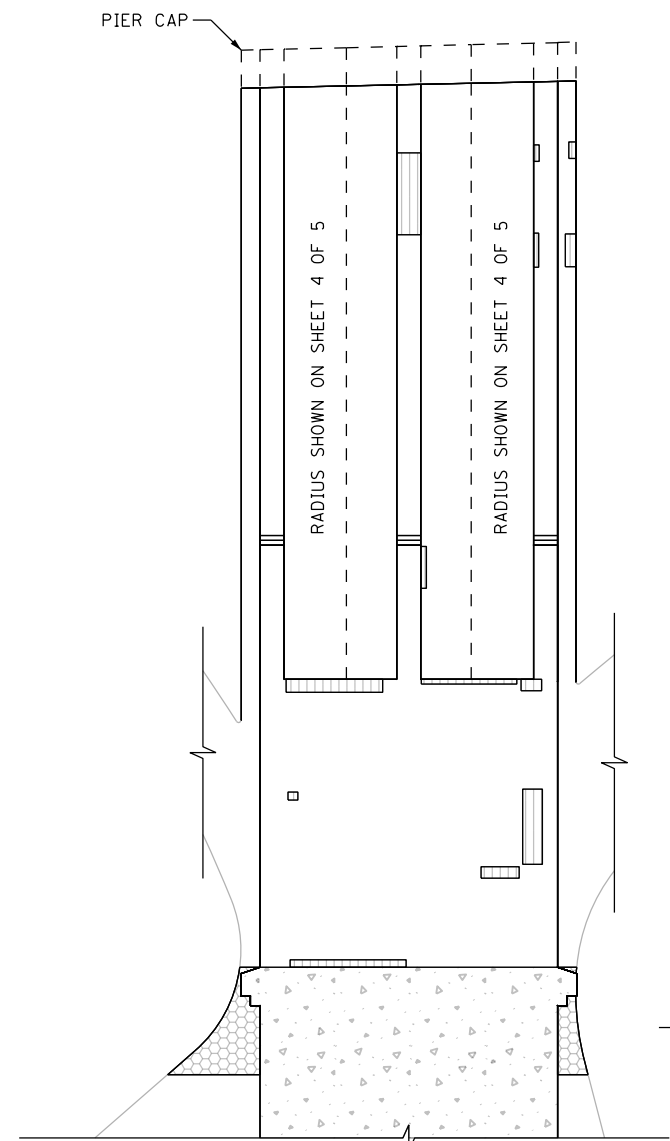
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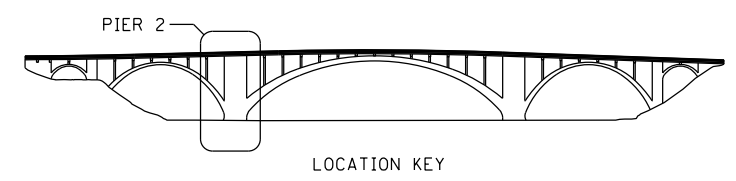
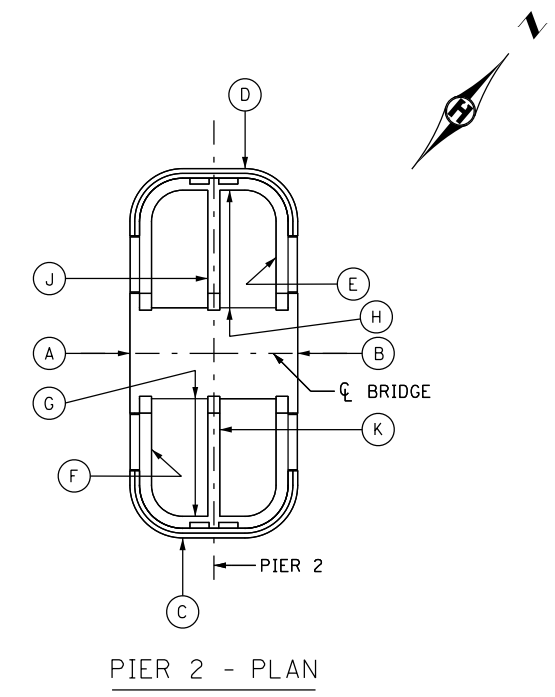
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-  DENOTES REPAIR TYPE P-1, SEE CONCRETE SURFACE REPAIR DETAILS, SHEET B74.
-  DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.


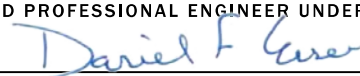


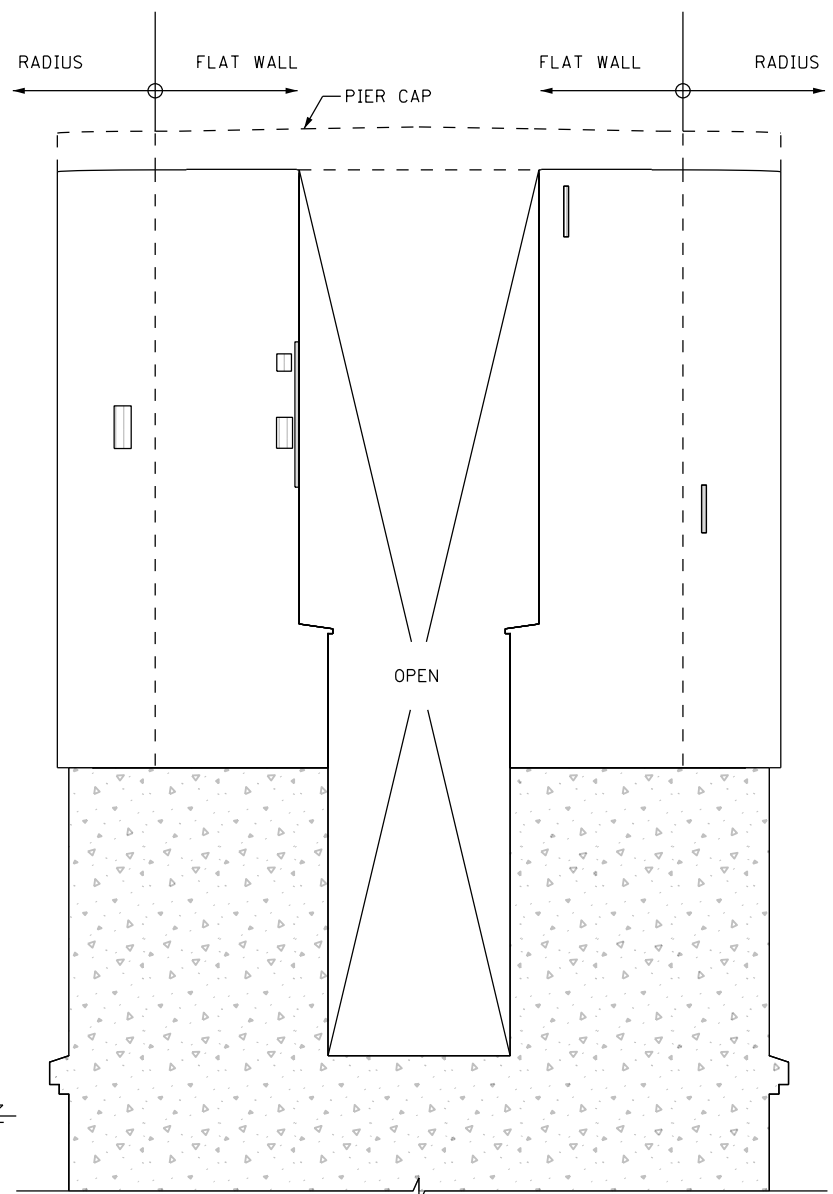
Ⓓ NORTH ELEVATION EXTERIOR



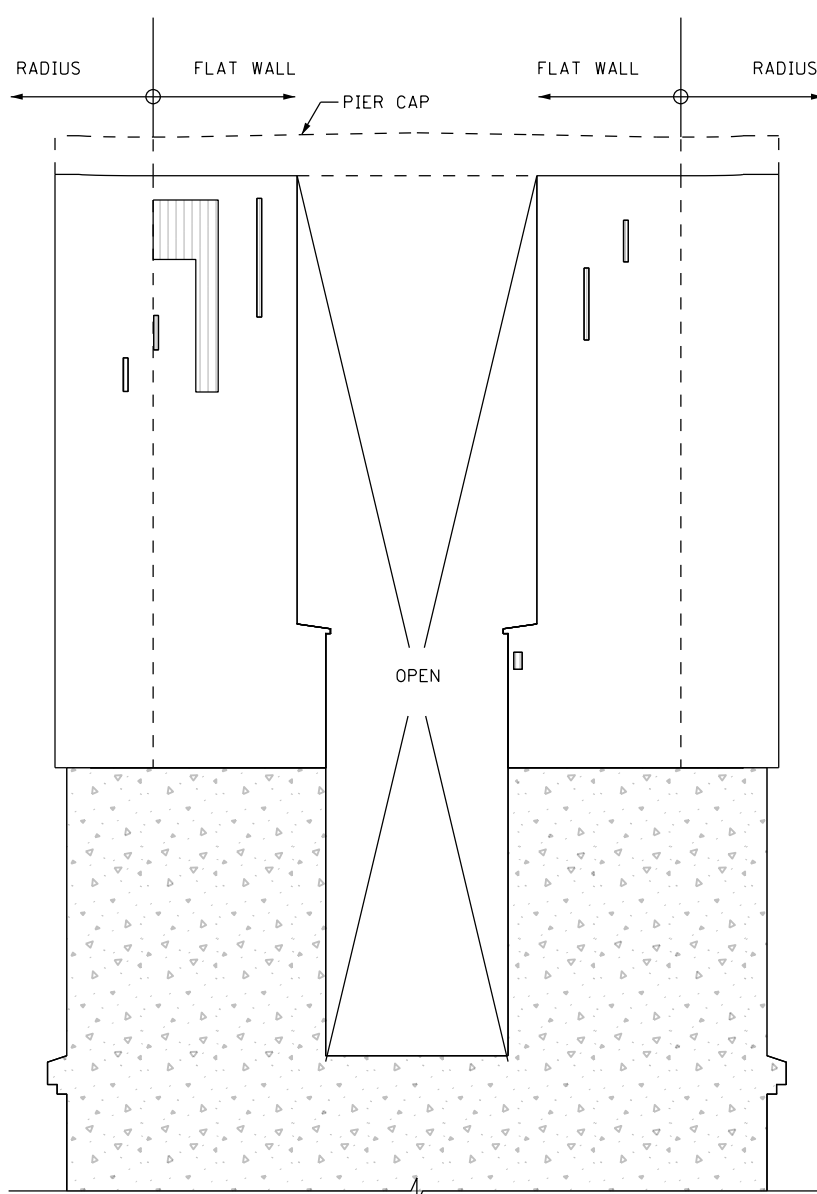
Ⓗ NORTH ELEVATION INTERIOR



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	DESIGN BY: APJ CAD BY: RAM CHECKED BY: DFE LAST REVISION:	REPAIR LOCATIONS - PIER 2 (3 OF 5) C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	SHEET B23 B176
	 DANIEL F. ENSER, PROFESSIONAL ENGINEER	41308 8/14/2014 LICENSE NO. DATE		





(F) WEST ELEVATION INTERIOR

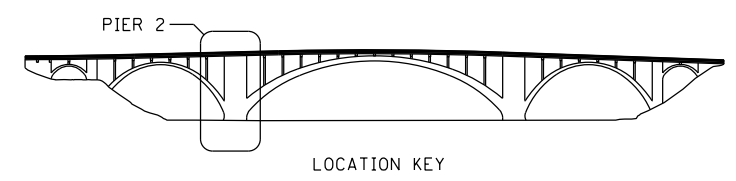
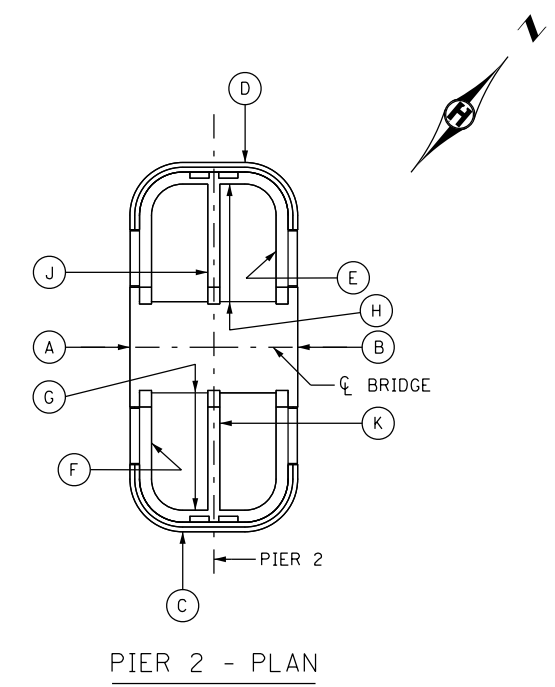



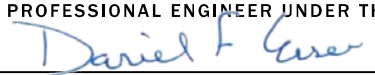
(E) EAST ELEVATION INTERIOR

NOTES:
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- LEGEND:**
-  DENOTES REPAIR TYPE A/P-1 OR A/P-2 SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.
 -  DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



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	Plotted by: mrotaraj Plotted Date: 8/13/2014 Model: SHEET File: pw:\hntb\356\hntb.org\Project\Great.Lakes\Documents\Minneapolis Projects\49799 Franklin Bridge\Design\CADD-BRIDGE\CD\CBR2441.PIR204.dgn					

NOTES:

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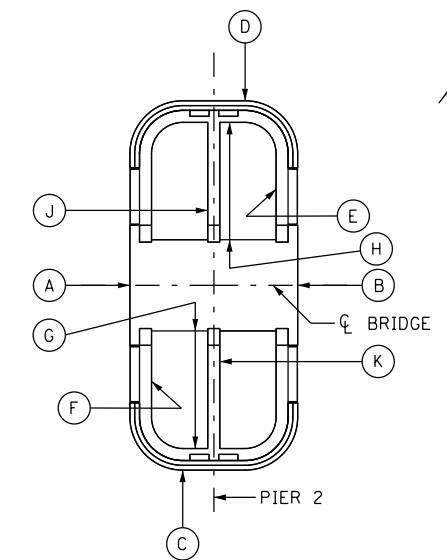
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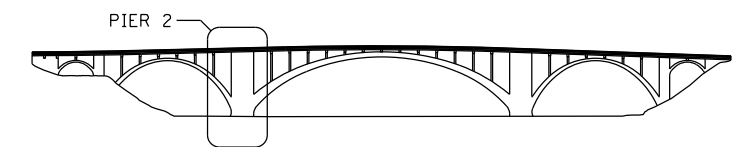
DENOTES REPAIR TYPE A/P-1 OR A/P-2 SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.



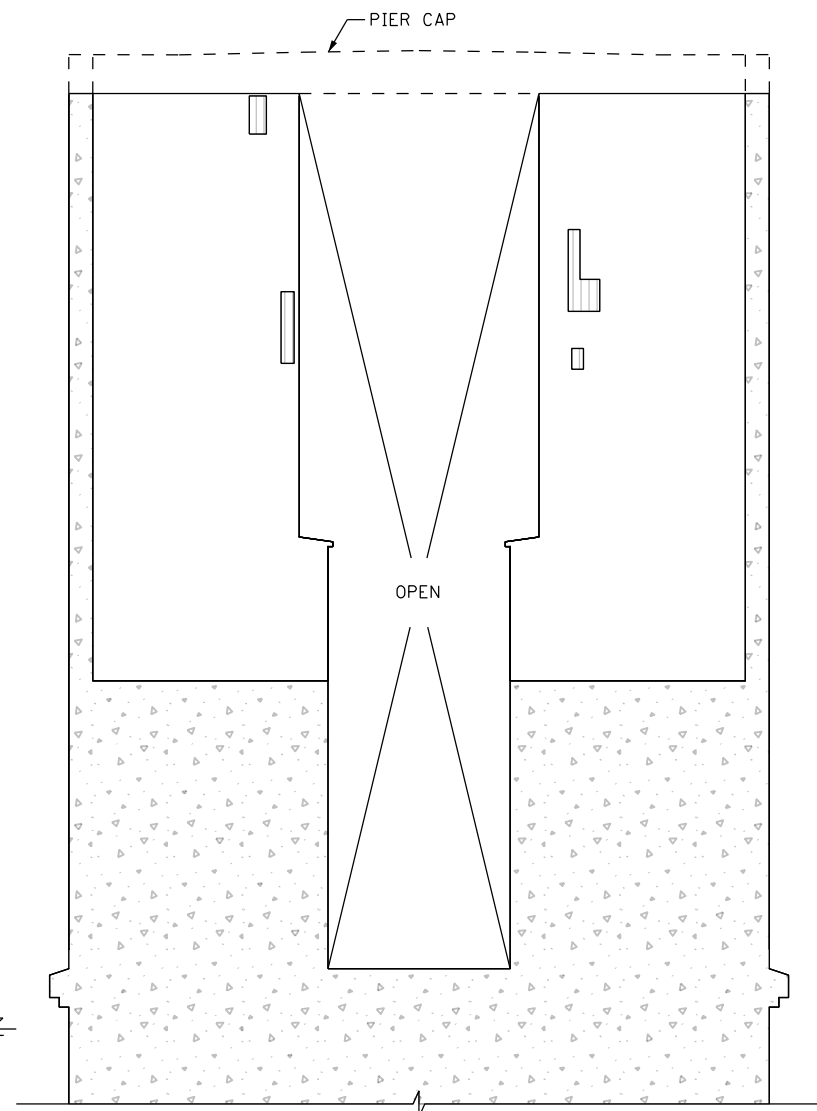
DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



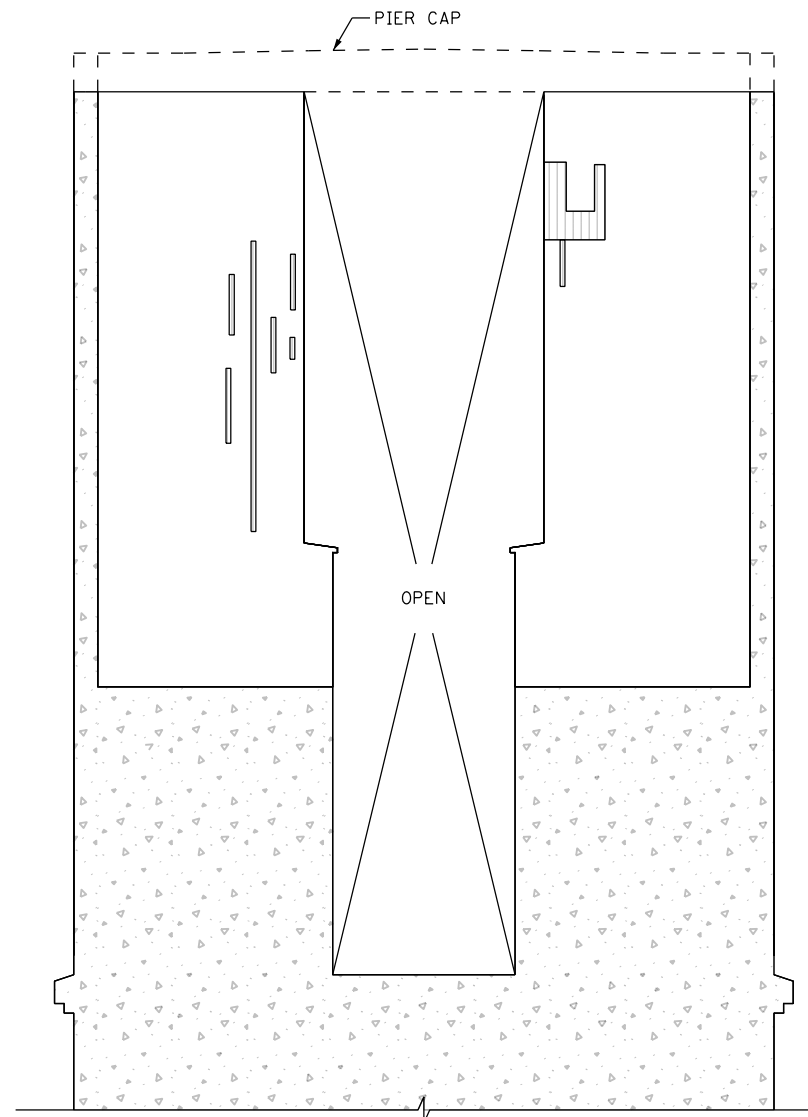
PIER 2 - PLAN



LOCATION KEY



(J) WEST ELEVATION MIDDLE WALL



(K) EAST ELEVATION MIDDLE WALL

NORMAL POOL ELEV. 724.7

NORMAL POOL ELEV. 724.7



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Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

REPAIR LOCATIONS - PIER 2 (5 OF 5)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B25
B176




NOTES:

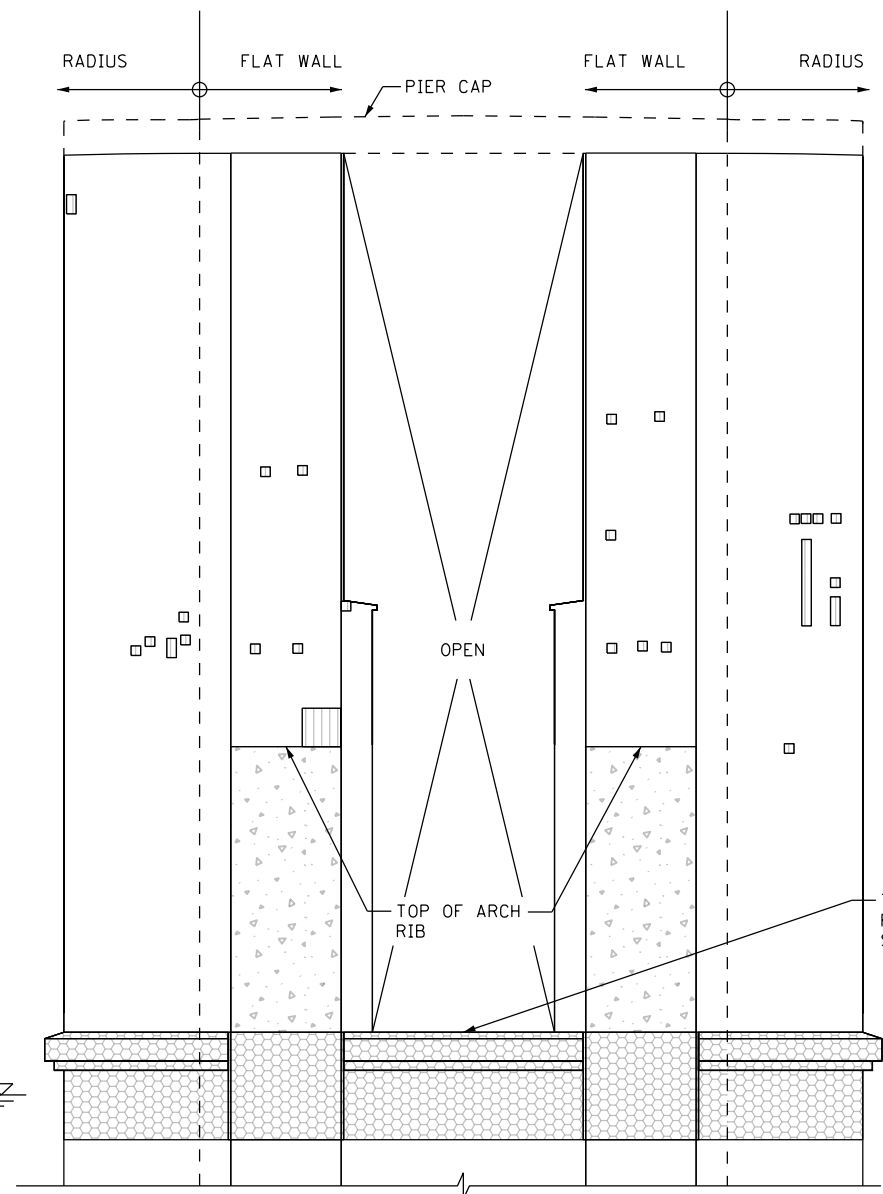
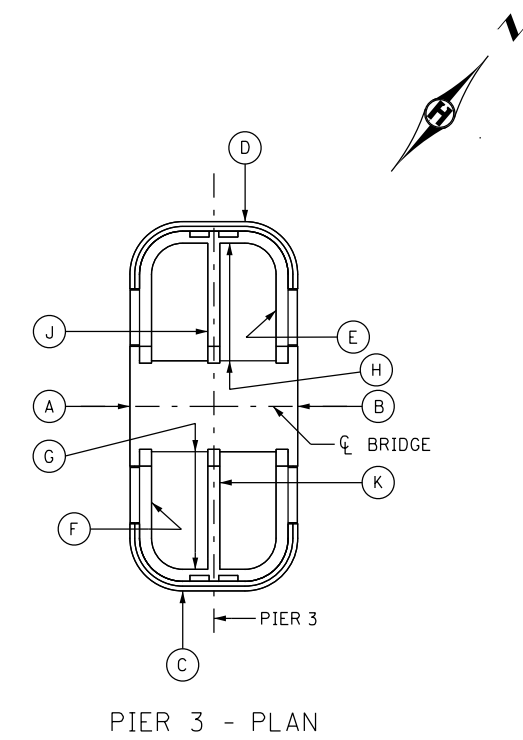
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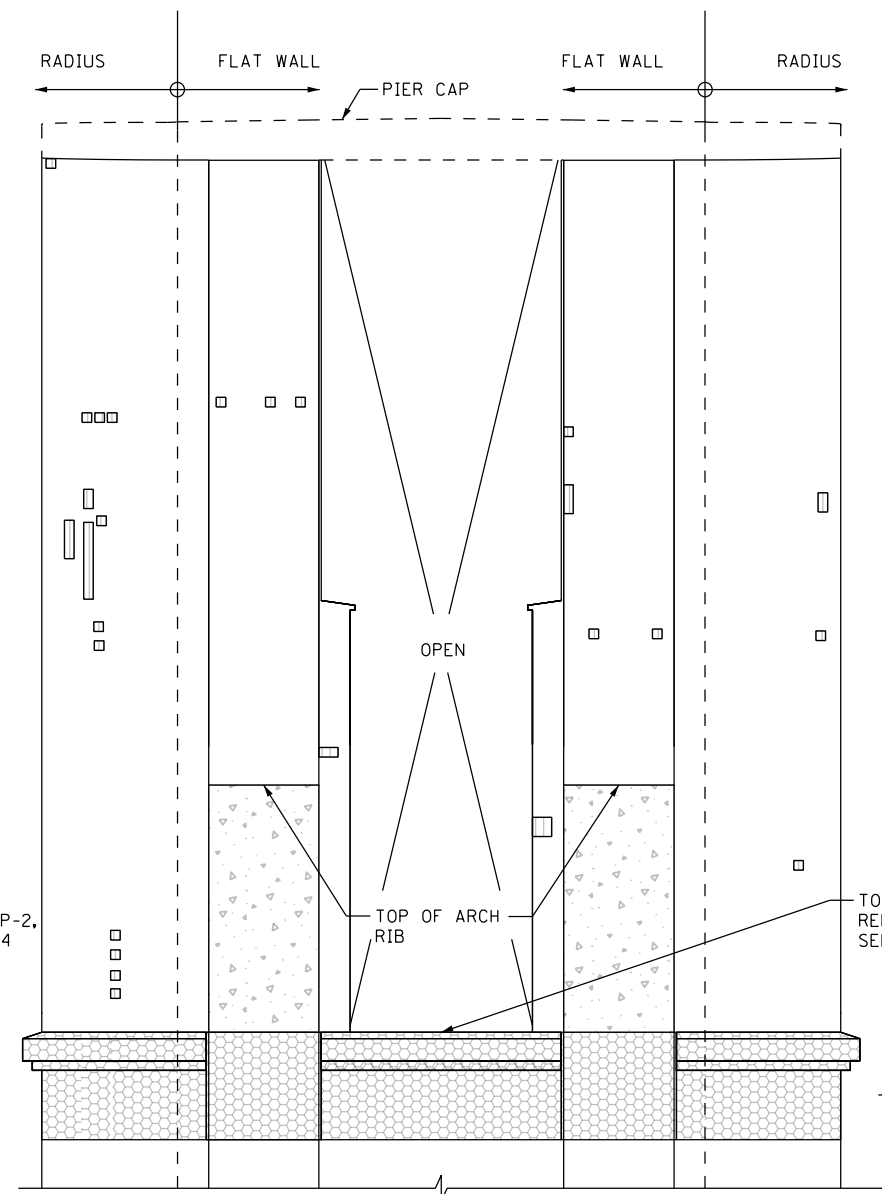
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LEGEND:

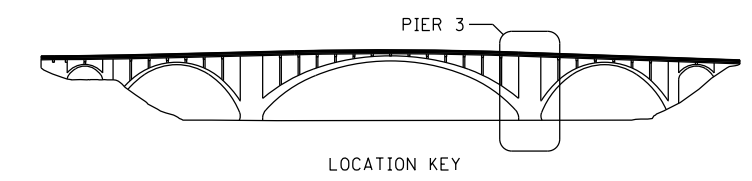
-  DENOTES REPAIR TYPE A/P-1 OR A/P-2, SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.
-  DENOTES REPAIR TYPE P-1, SEE CONCRETE SURFACE REPAIR DETAILS, SHEET B74.
-  DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.


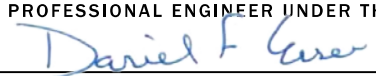


(A) WEST ELEVATION EXTERIOR



(B) EAST ELEVATION EXTERIOR



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  DANIEL F. ENSER, PROFESSIONAL ENGINEER	41308 LICENSE NO.	8/14/2014 DATE	DESIGN BY: APJ CAD BY: RAM CHECKED BY: DFE LAST REVISION:	REPAIR LOCATIONS - PIER 3 (1 OF 5) C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	SHEET B26 B176
	Plotted by: mrotaraj Plotted Date: 8/13/2014 Model: SHEET				File: pw:\hntbw356\hntb.org\Great.Lakes\Documents\Minneapolis Projects\49799 Frank\In Bridge\Design\CADD-BRIDGE\CD\CBR2441.PIR301.dgn	




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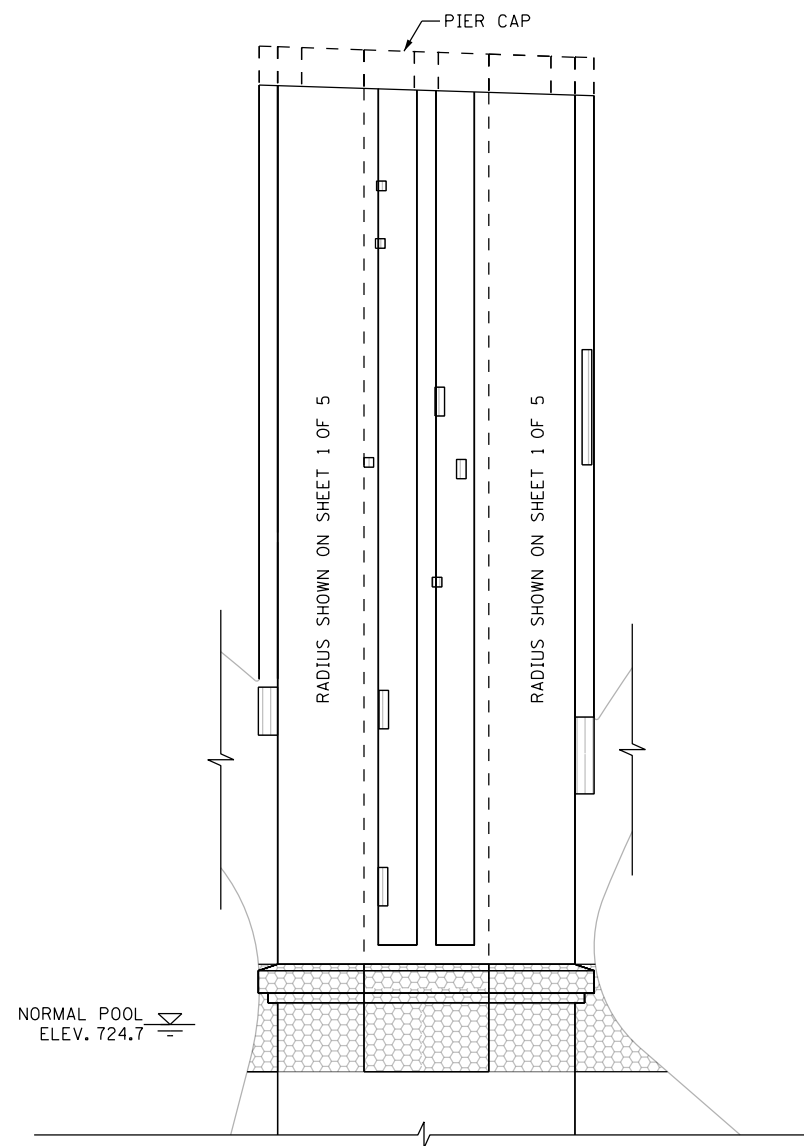
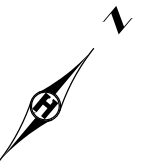
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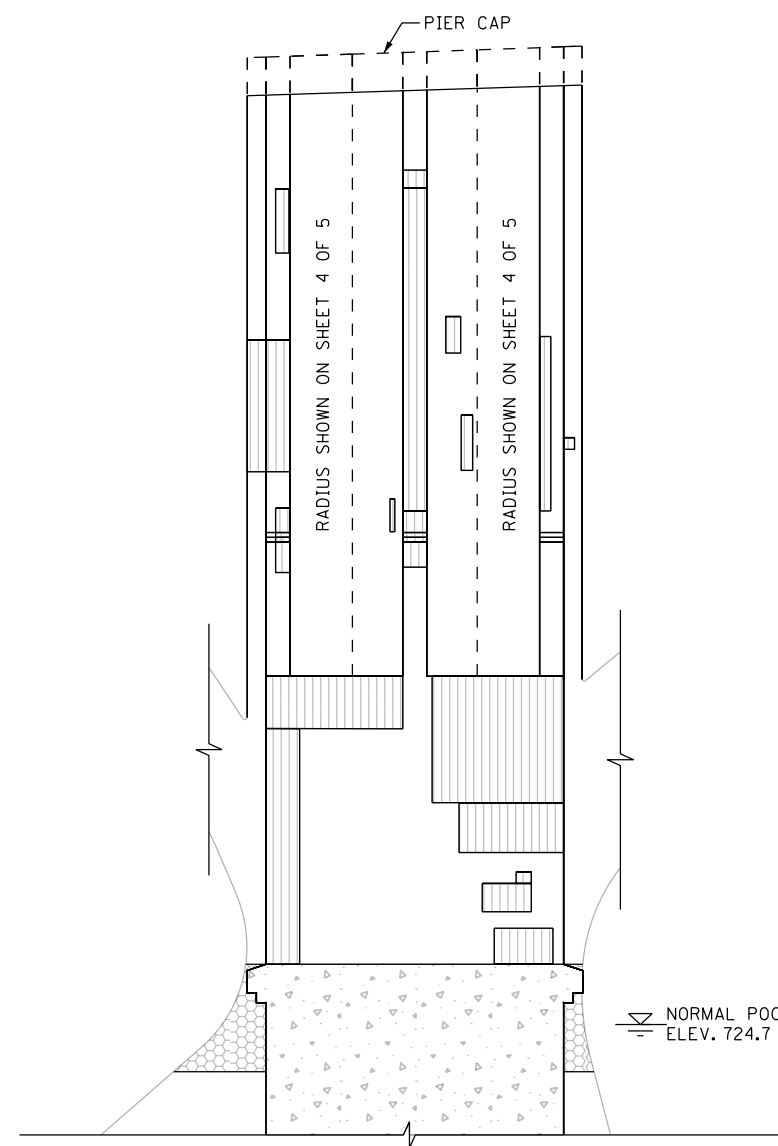
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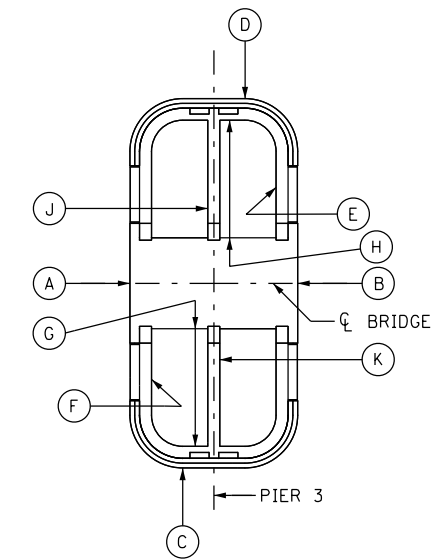
-  DENOTES REPAIR TYPE A/P-1 OR A/P-2, SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.
-  DENOTES REPAIR TYPE P-1, SEE CONCRETE SURFACE REPAIR DETAILS, SHEET B74.
-  DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



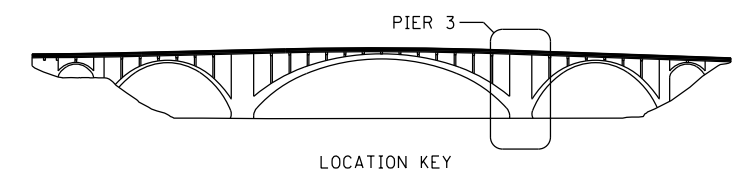
© SOUTH ELEVATION EXTERIOR



© SOUTH ELEVATION INTERIOR



PIER 3 - PLAN



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser

DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

REPAIR LOCATIONS - PIER 3 (2 OF 5)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B27
B176




NOTES:

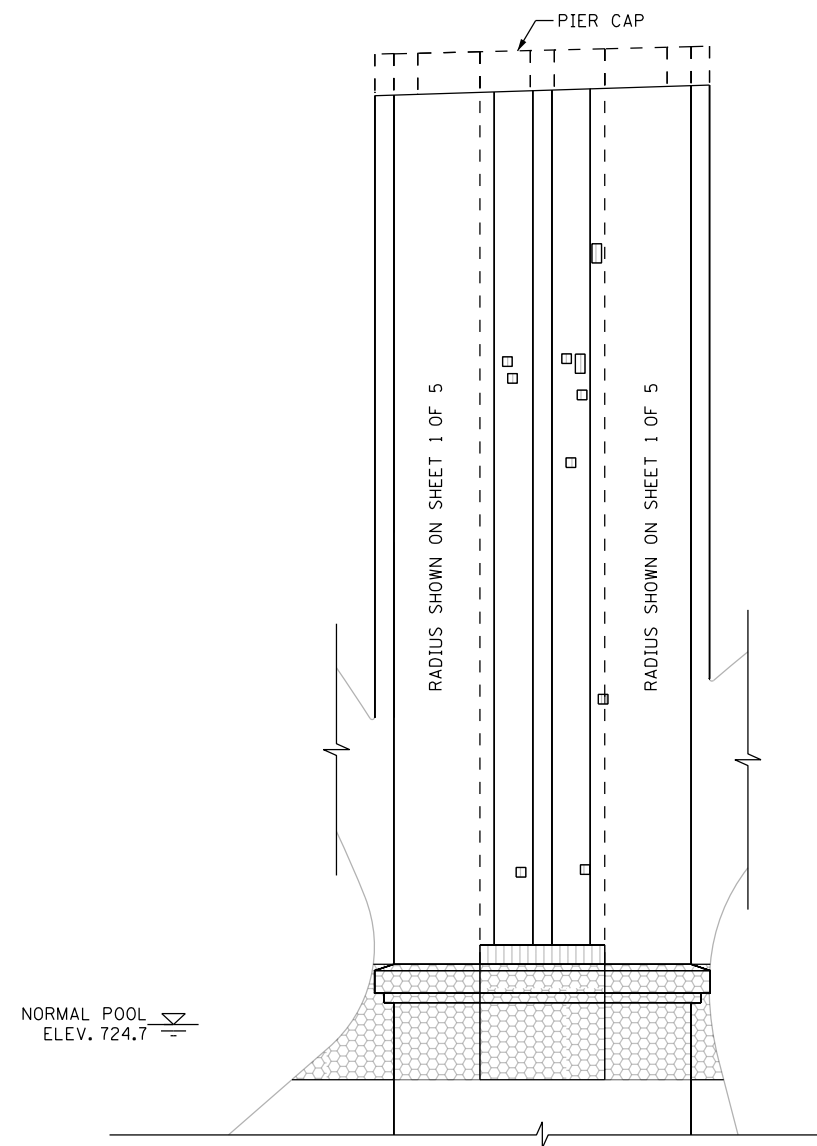
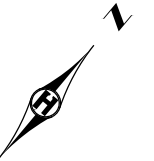
POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY TAKEN BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

PIER CAP SHOWN FOR INFORMATION ONLY, WILL BE REMOVED AND REPLACED DURING THIS PROJECT.

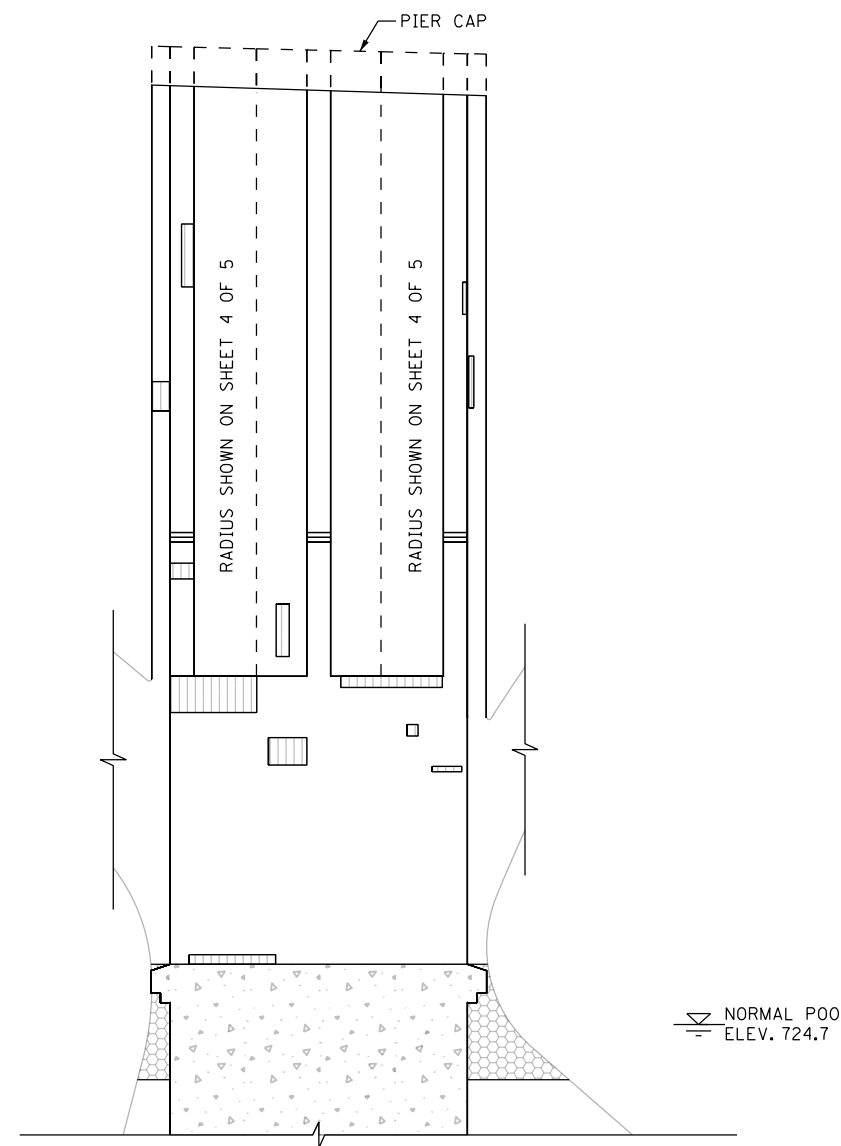
DEWATERING TO COMPLETE TYPE P-1 REPAIRS TO BE PAID FOR AS "FOUNDATION PREPARATION PIER 2", SEE SPECIAL PROVISIONS.

LEGEND:

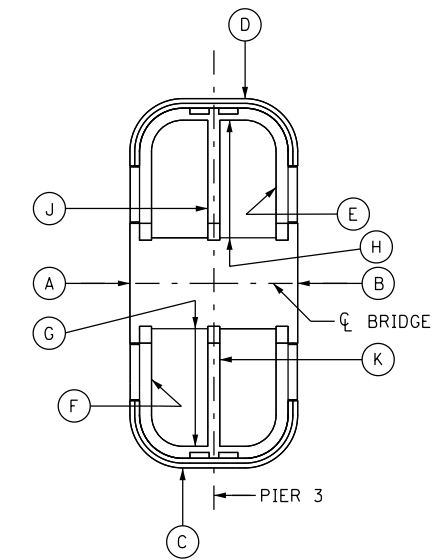
-  DENOTES REPAIR TYPE A/P-1 OR A/P-2, SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.
-  DENOTES REPAIR TYPE P-1, SEE CONCRETE SURFACE REPAIR DETAILS, SHEET B74.
-  DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



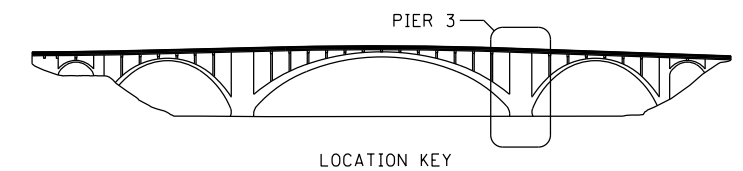
Ⓓ NORTH ELEVATION EXTERIOR



Ⓗ NORTH ELEVATION INTERIOR



PIER 3 - PLAN



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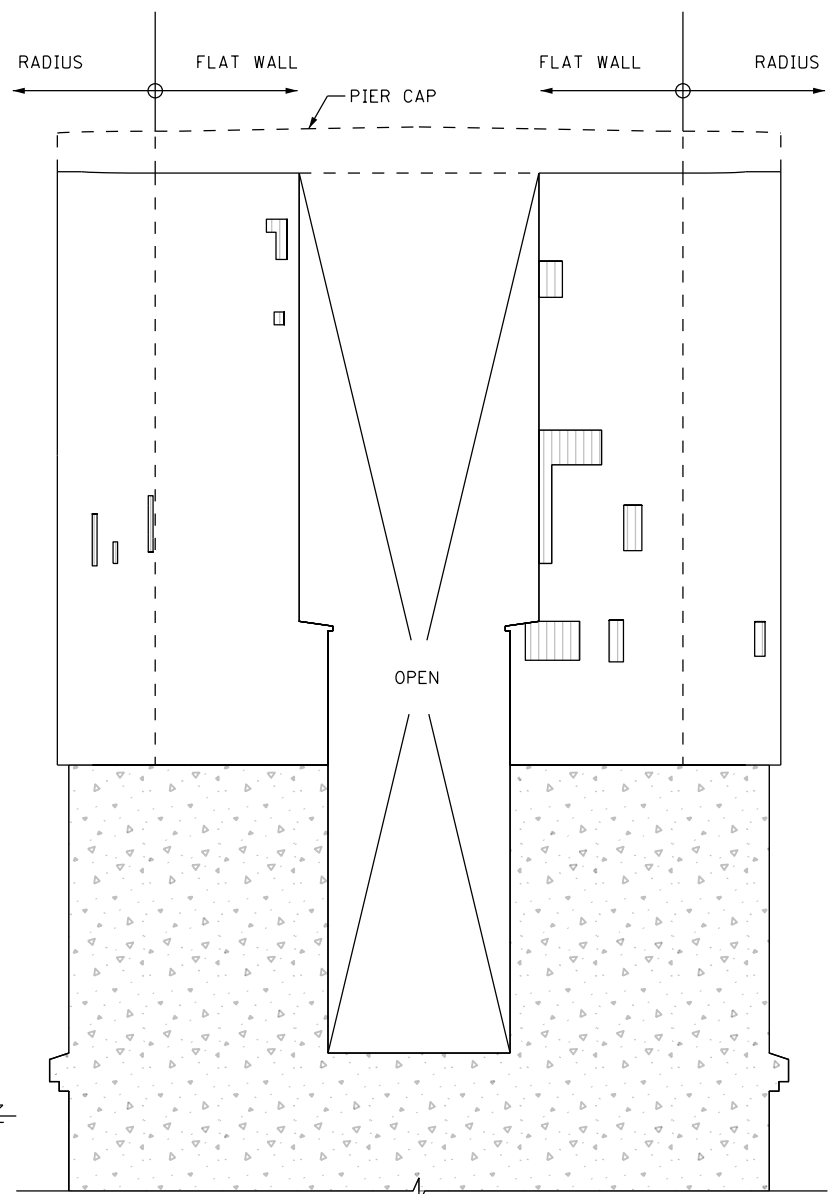
Daniel F. Enser
 DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
 LICENSE NO. DATE

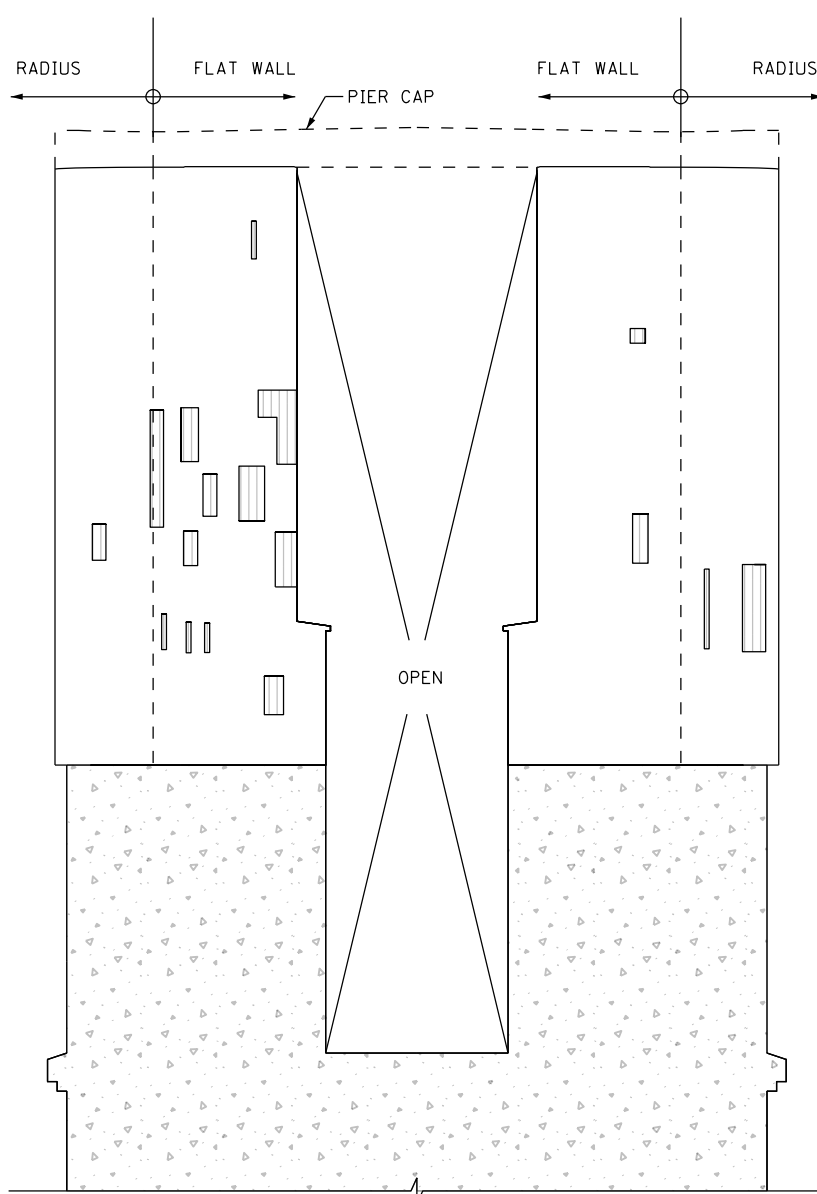
DESIGN BY: APJ
 CAD BY: RAM
 CHECKED BY: DFE
 LAST REVISION:

REPAIR LOCATIONS - PIER 3 (3 OF 5)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B28
 B176





(E) EAST ELEVATION INTERIOR

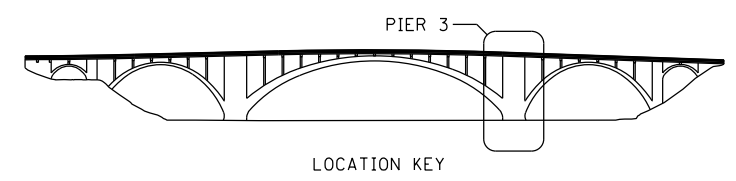
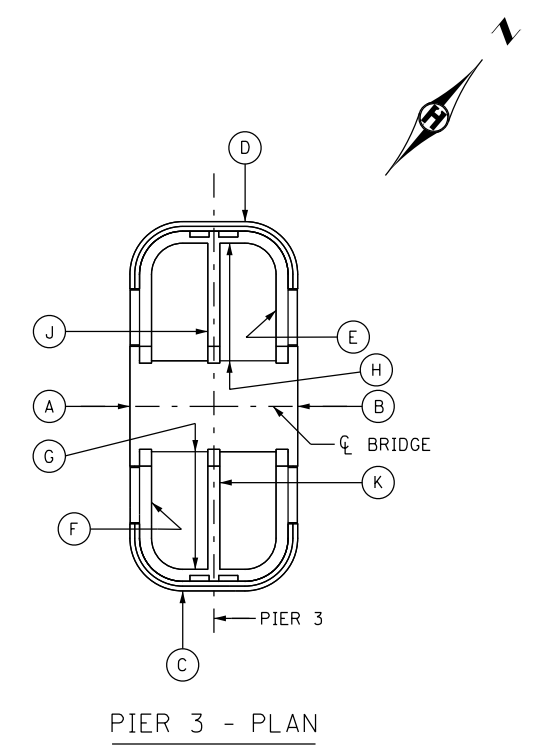



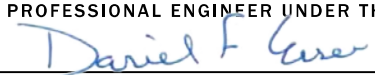
(F) WEST ELEVATION INTERIOR

NOTES:
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- LEGEND:**
-  DENOTES REPAIR TYPE A/P-1 OR A/P-2 SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.
 -  DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.		DESIGN BY: APJ CAD BY: RAM CHECKED BY: DFE LAST REVISION:	REPAIR LOCATIONS - PIER 3 (4 OF 5)	SHEET
	 DANIEL F. ENSER, PROFESSIONAL ENGINEER		41308 8/14/2014 LICENSE NO. DATE	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	B29 B176

NOTES:

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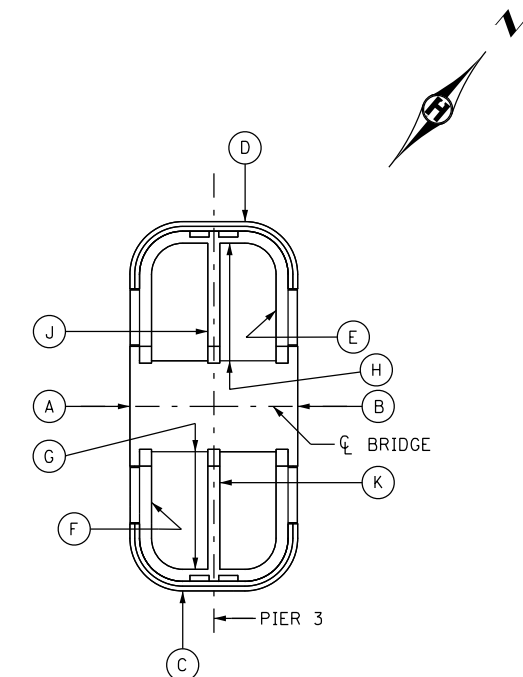
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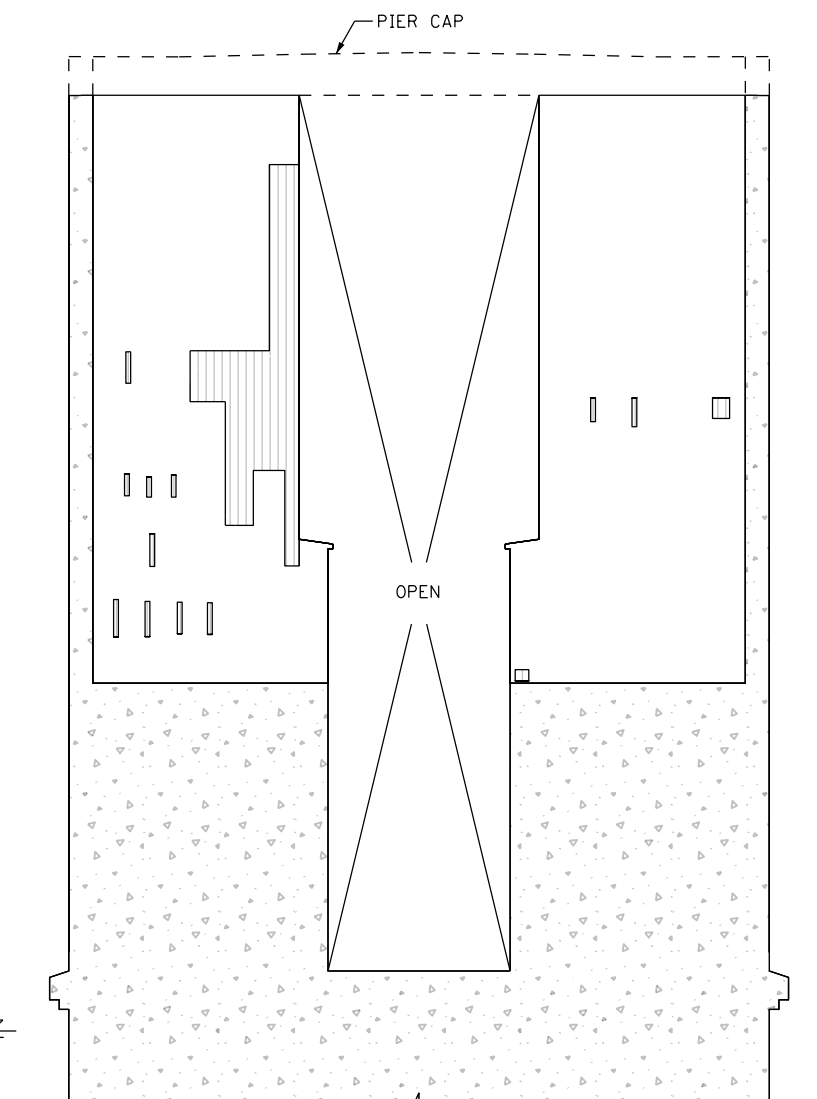
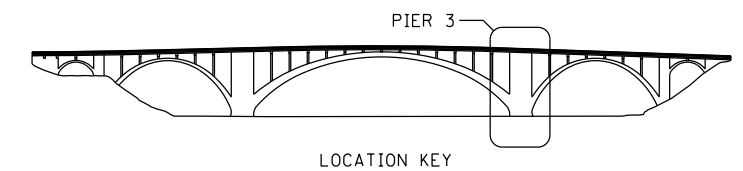
DENOTES REPAIR TYPE A/P-1 OR A/P-2 SEE CONCRETE SURFACE REPAIR DETAILS, SHEETS B68 AND B69.



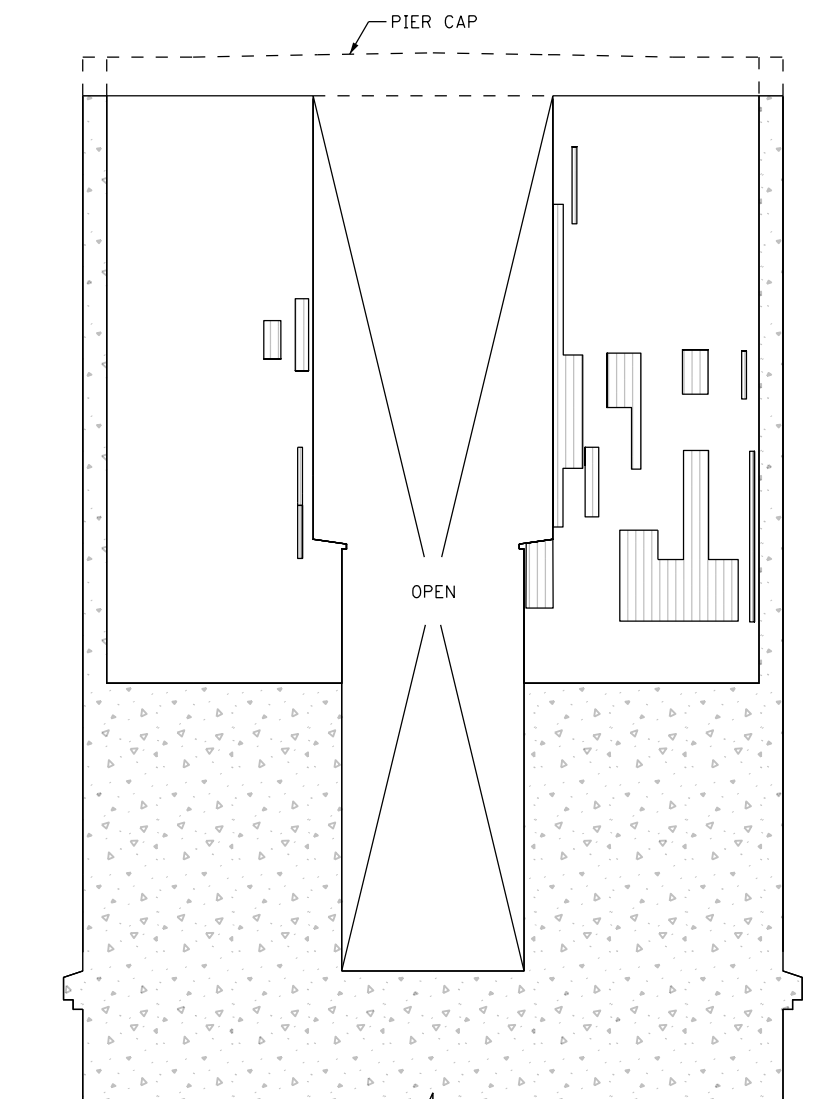
DENOTES AREAS WHERE VIEW IS CUT THROUGH EXISTING CONCRETE.



PIER 3 - PLAN



(K) EAST ELEVATION MIDDLE WALL



(J) WEST ELEVATION MIDDLE WALL

NORMAL POOL ELEV. 724.7

NORMAL POOL ELEV. 724.7



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Daniel F. Enser

DANIEL F. ENSER, PROFESSIONAL ENGINEER

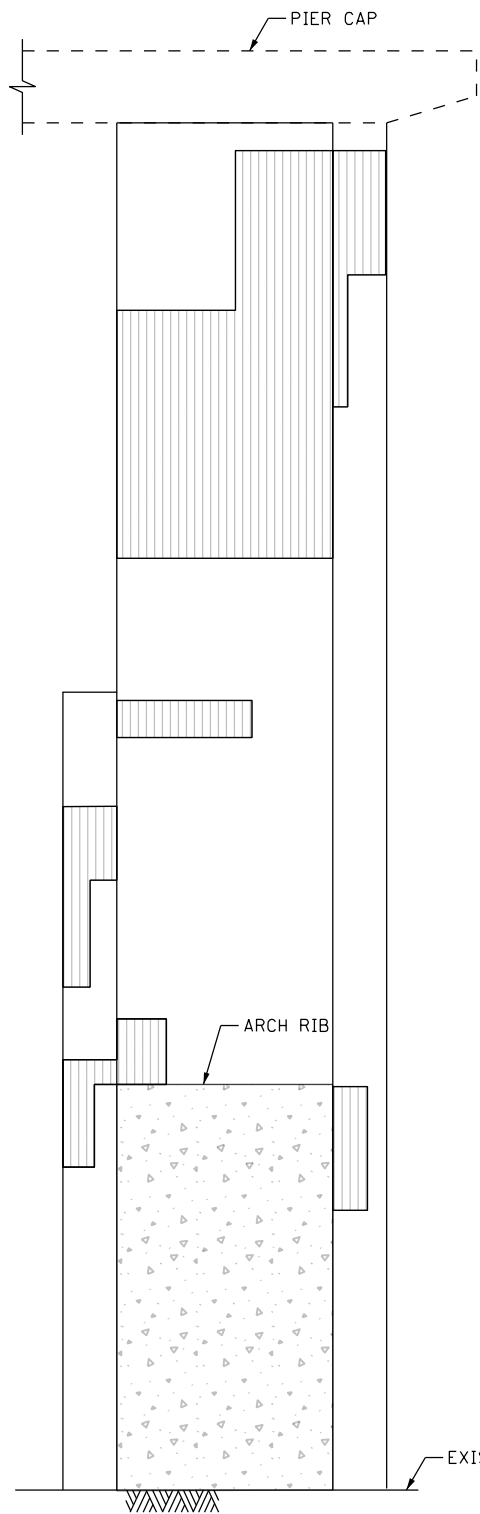
41308
LICENSE NO.

8/14/2014
DATE

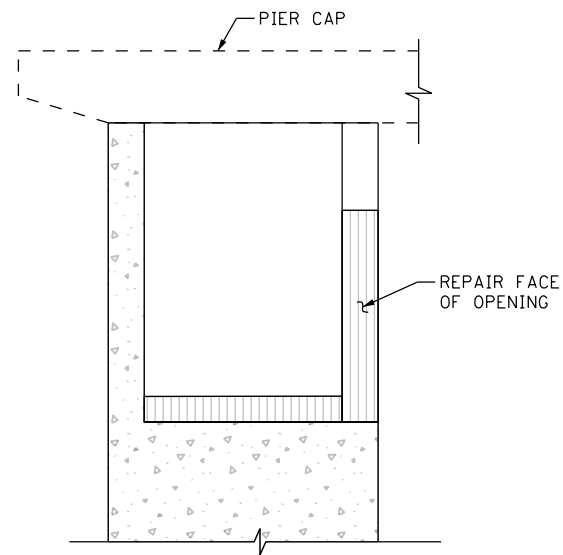
DESIGN BY: APJ
CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

REPAIR LOCATIONS - PIER 3 (5 OF 5)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

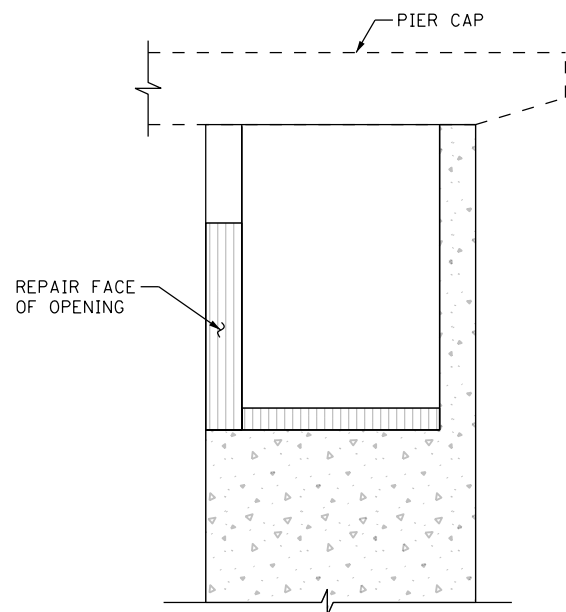
SHEET
B30
B176



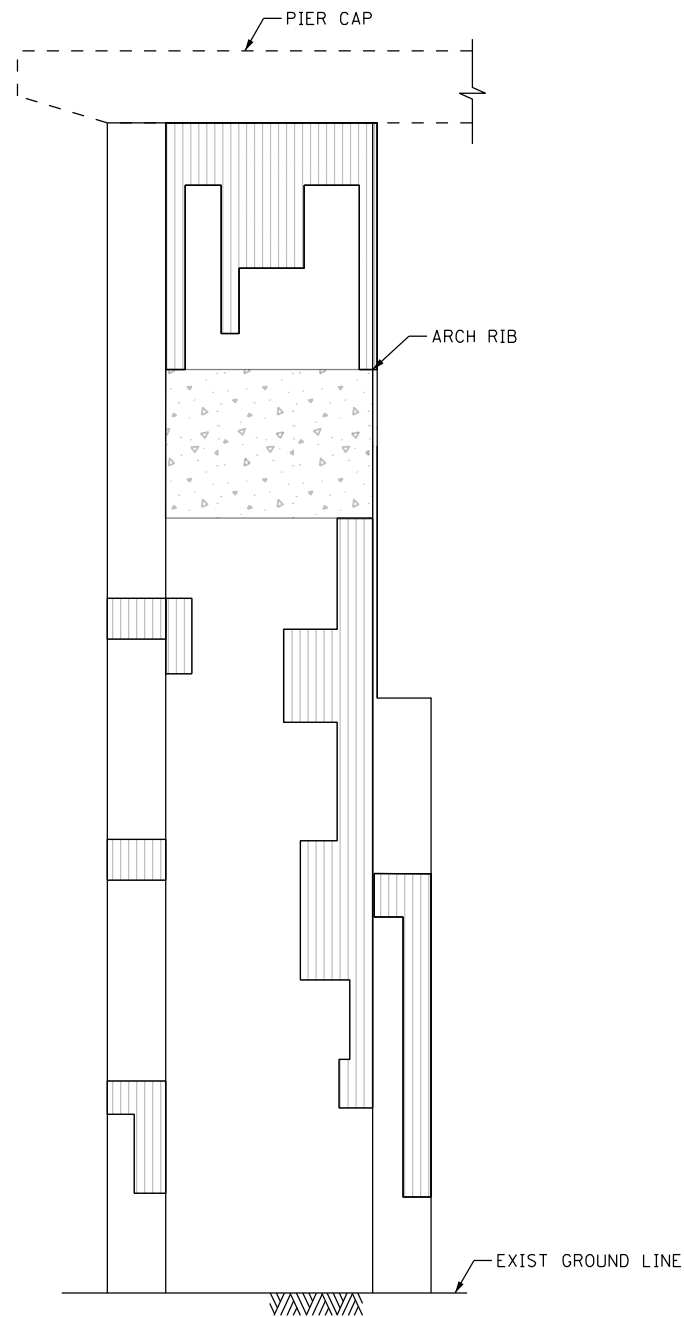
(A) SOUTH COLUMN WEST EXTERIOR



(B) SOUTH COLUMN WEST INTERIOR



(H) SOUTH COLUMN EAST INTERIOR



(G) SOUTH COLUMN EAST EXTERIOR

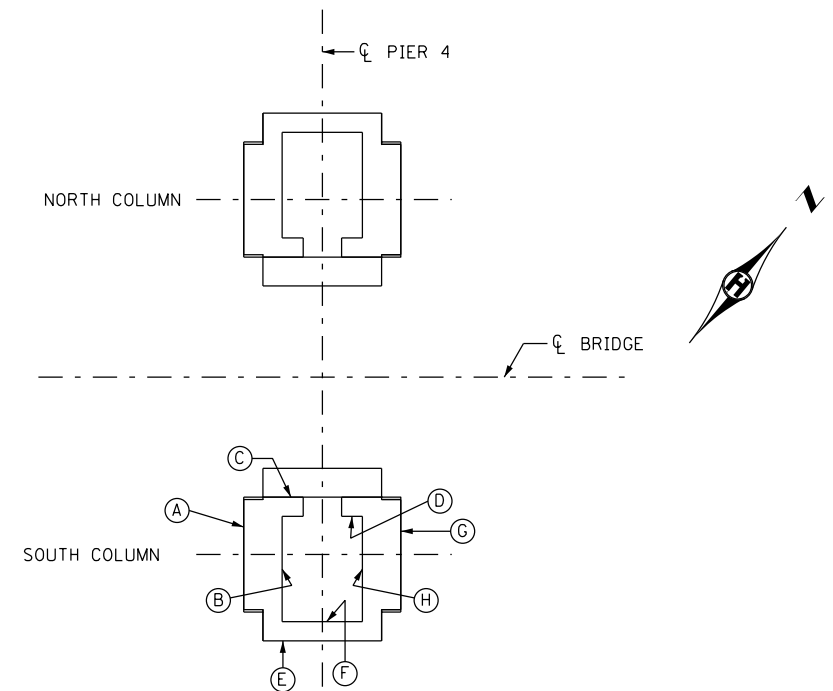
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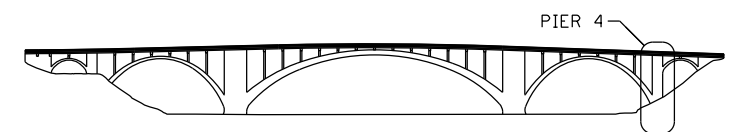
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PIER 4 PLAN



LOCATION KEY



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Daniel F. Enser

DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308

LICENSE NO.

8/14/2014

DATE

DESIGN BY:

APJ

CAD BY:

RAM

CHECKED BY:

DFE

LAST REVISION:

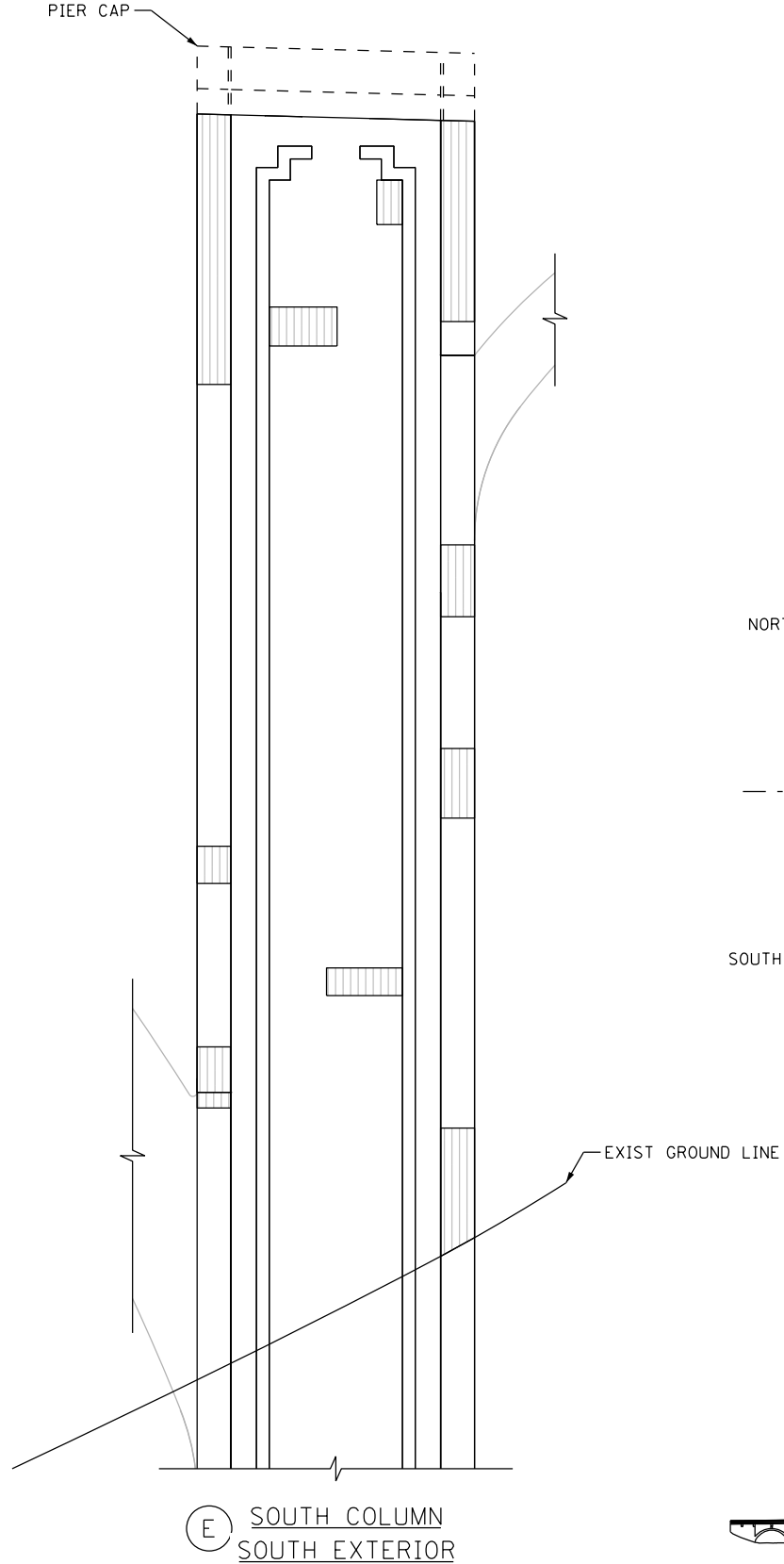
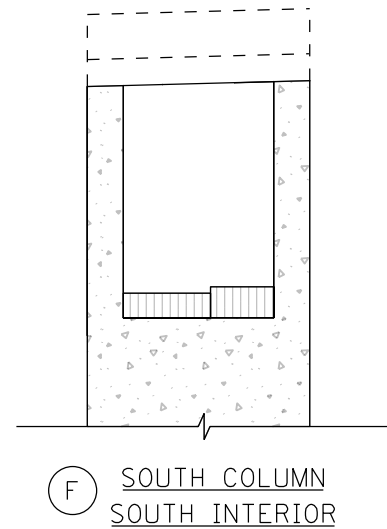
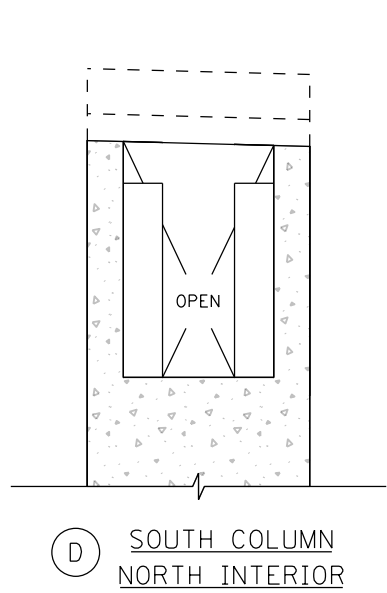
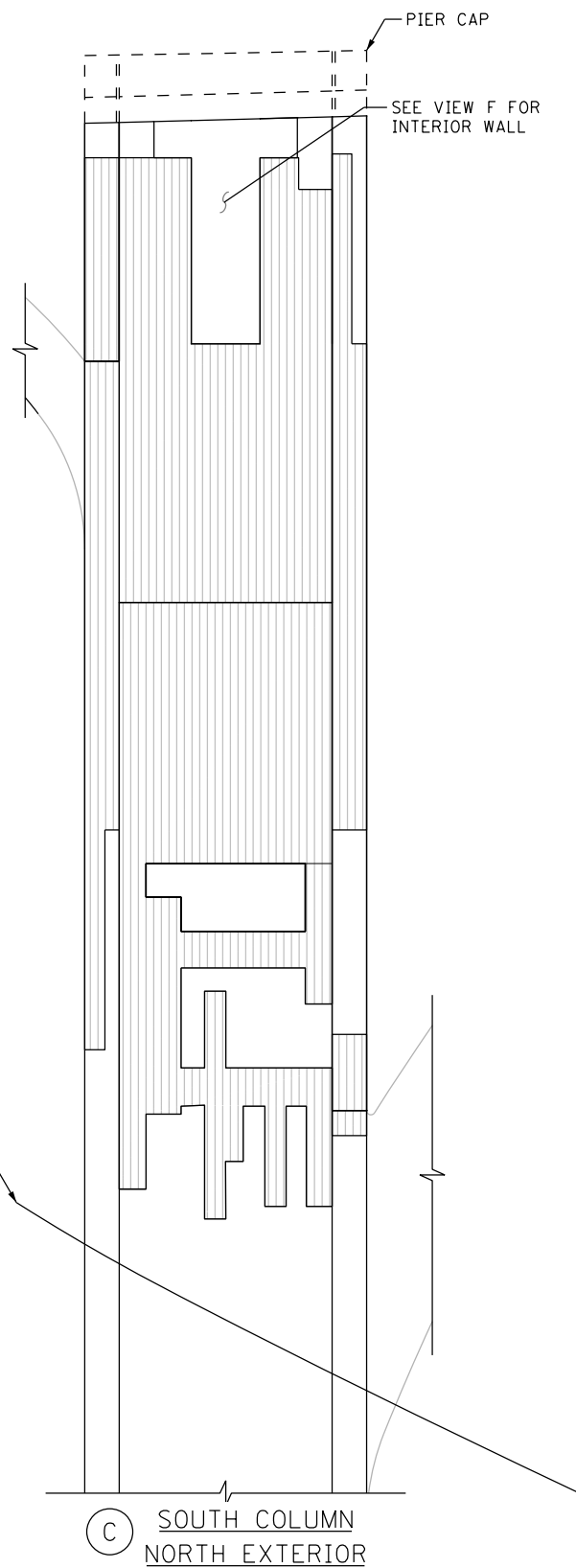
REPAIR LOCATIONS - PIER 4 (1 OF 4)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

B31

B176





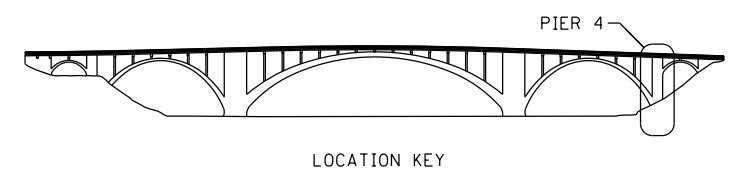
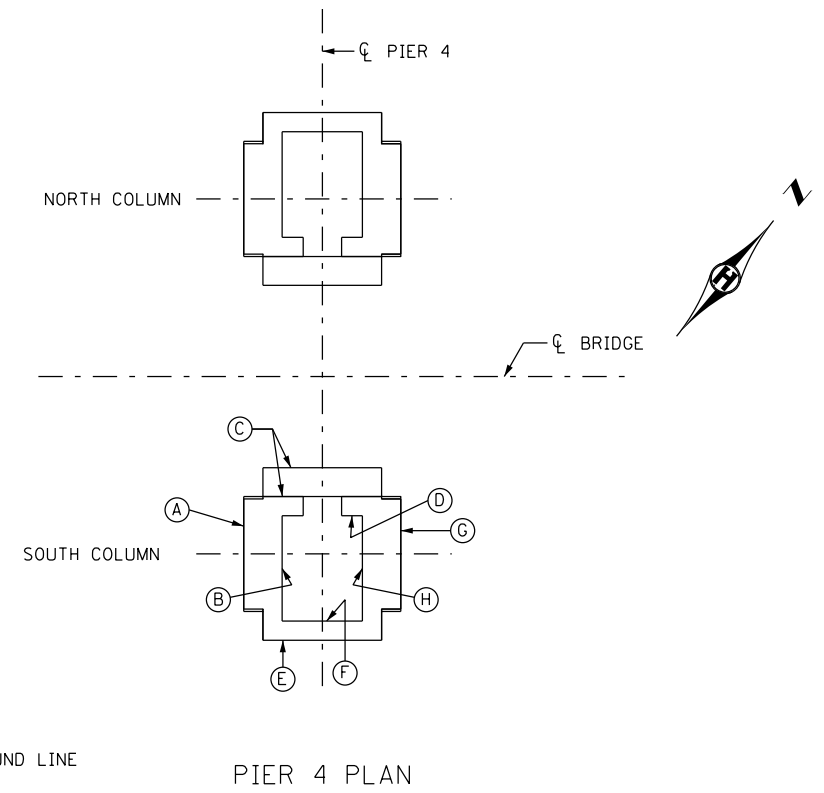
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Daniel F. Enser
 DANIEL F. ENSER, PROFESSIONAL ENGINEER

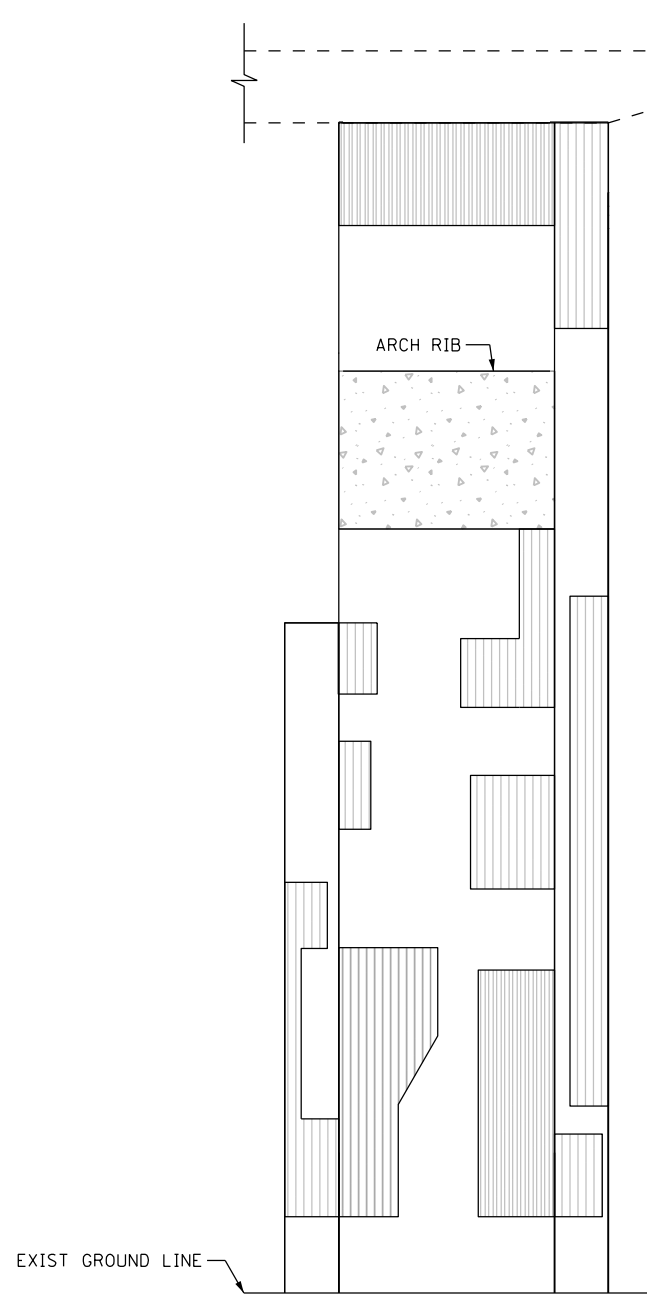
41308 8/14/2014
 LICENSE NO. DATE

DESIGN BY: APJ
 CAD BY: RAM
 CHECKED BY: DFE
 LAST REVISION:

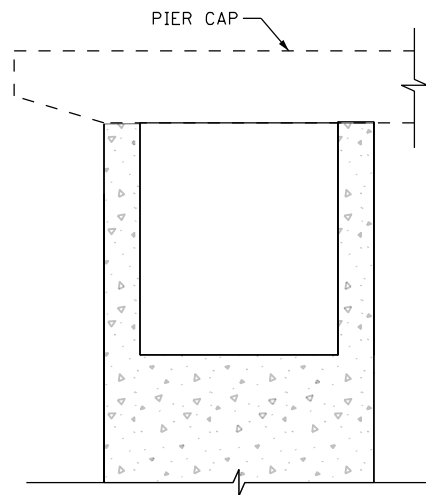
REPAIR LOCATIONS - PIER 4 (2 OF 4)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

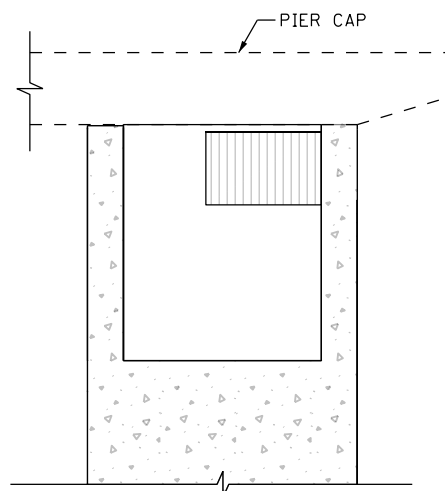
SHEET
 B32
 B176



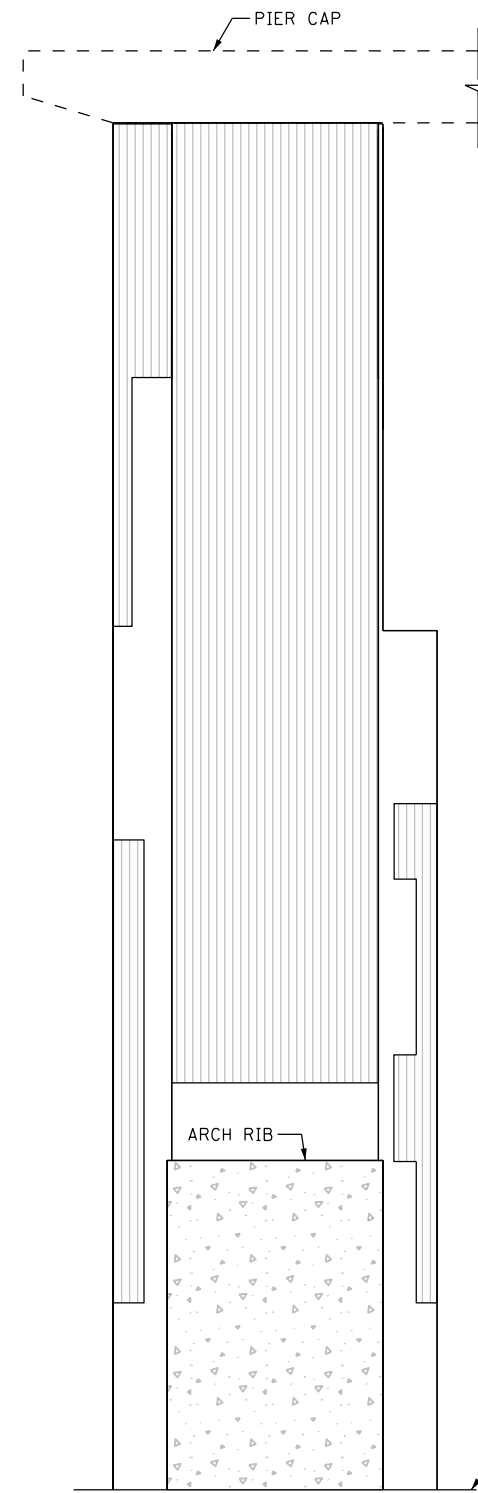
(G) NORTH COLUMN
EAST EXTERIOR



(H) NORTH COLUMN
EAST INTERIOR



(B) NORTH COLUMN
WEST INTERIOR



(A) NORTH COLUMN
WEST EXTERIOR

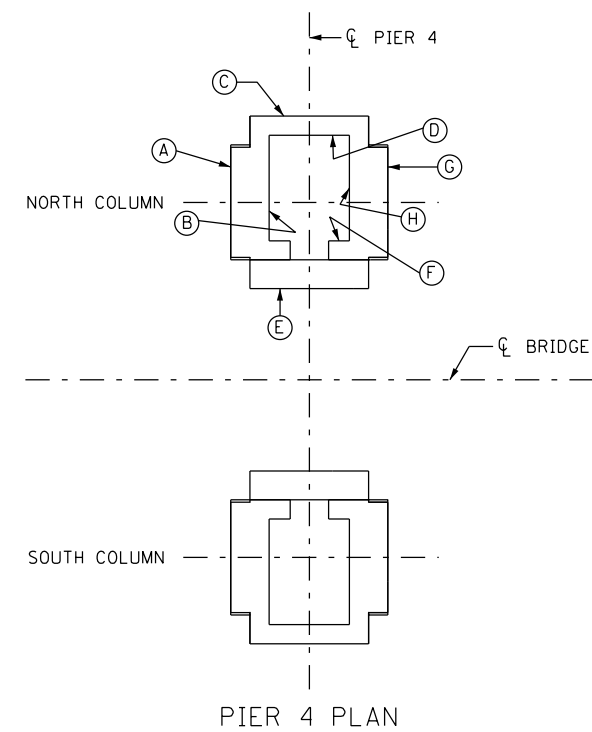
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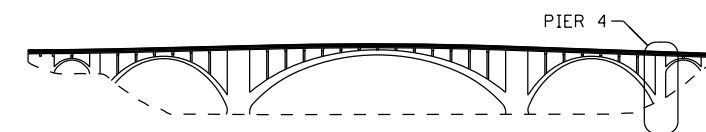
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PIER 4 PLAN



LOCATION KEY



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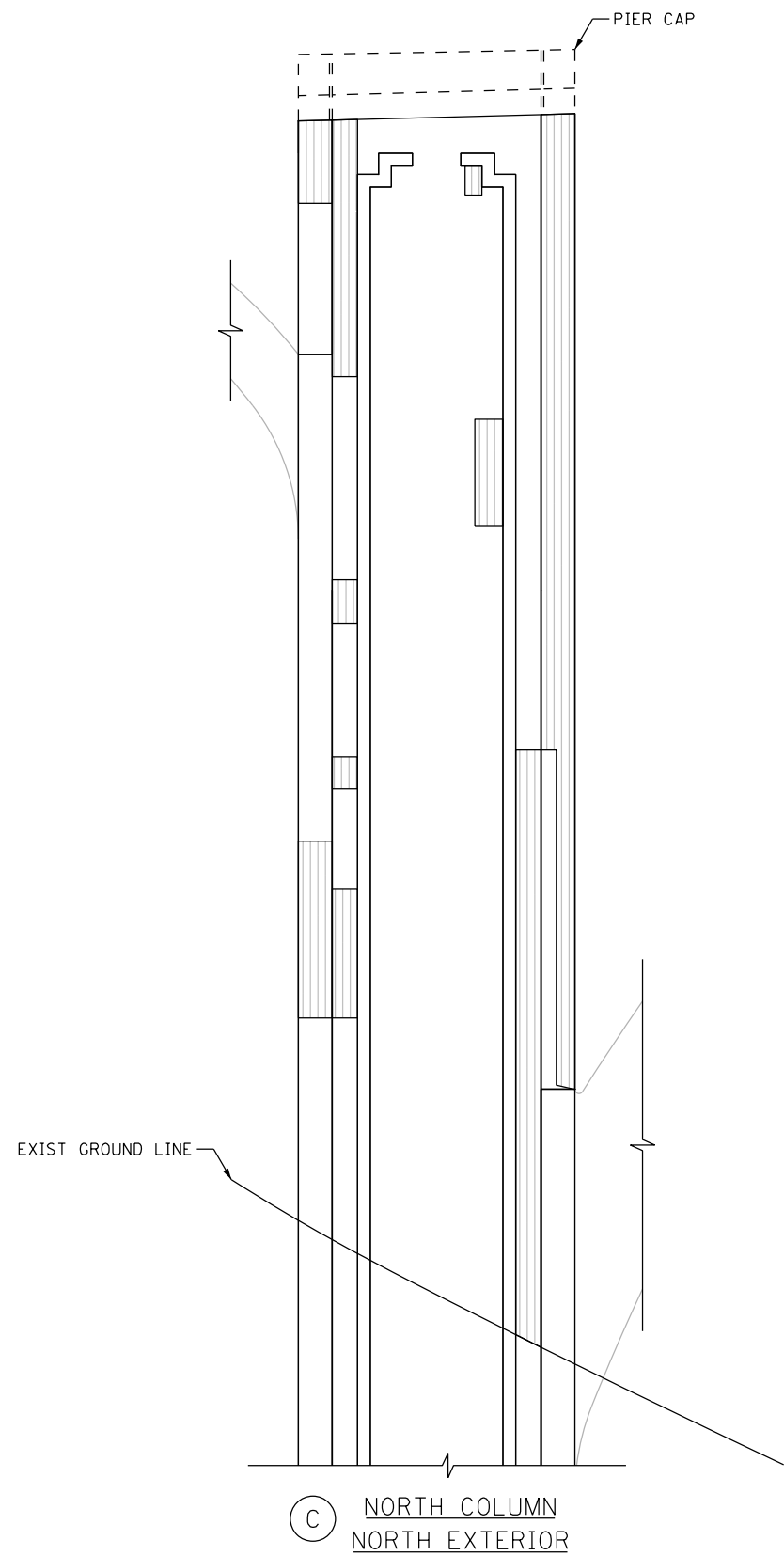
Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
LICENSE NO. DATE

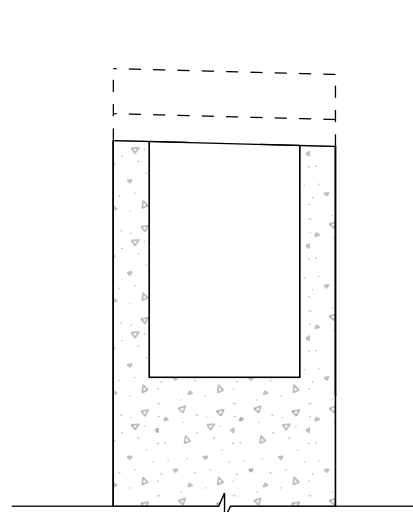
DESIGN BY: APJ
CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

REPAIR LOCATIONS - PIER 4 (3 OF 4)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

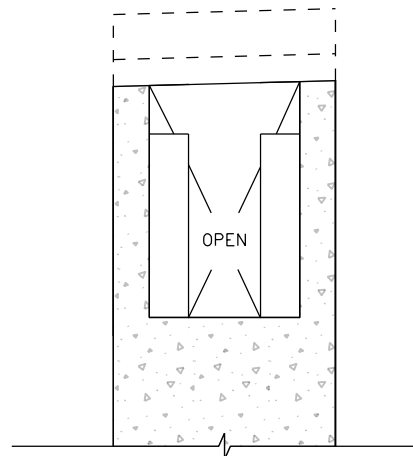
SHEET
B33
B176



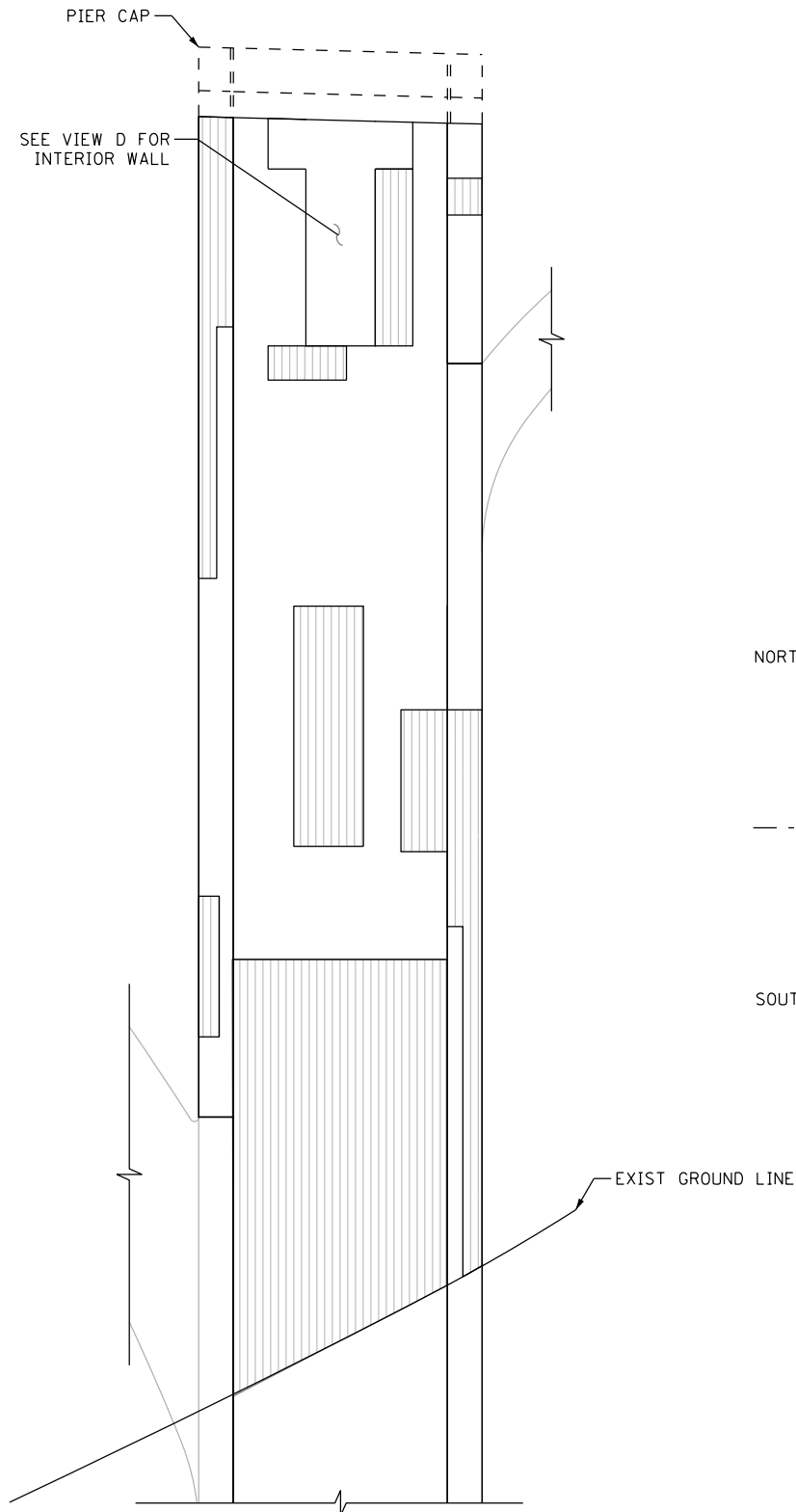
C NORTH COLUMN
NORTH EXTERIOR



D NORTH COLUMN
NORTH INTERIOR



F NORTH COLUMN
SOUTH INTERIOR





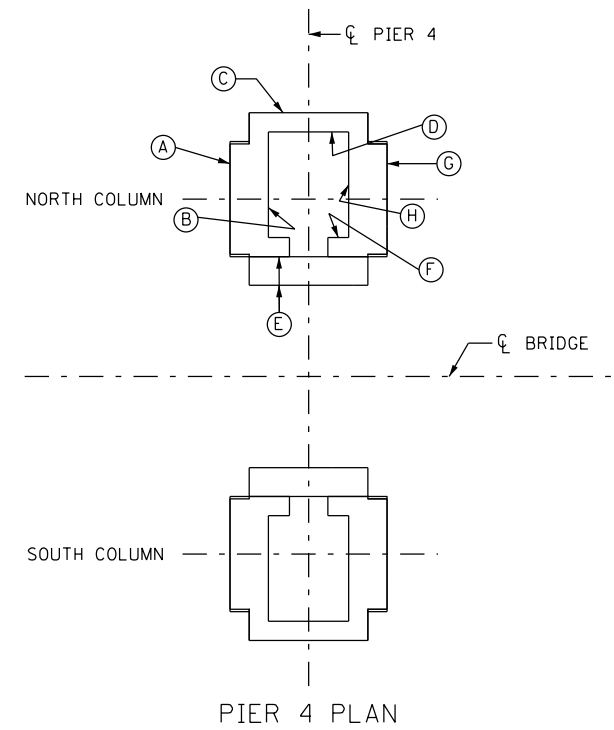
E NORTH COLUMN
SOUTH EXTERIOR

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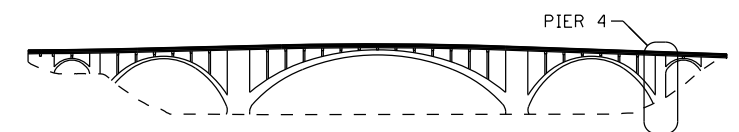
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PIER 4 PLAN



LOCATION KEY



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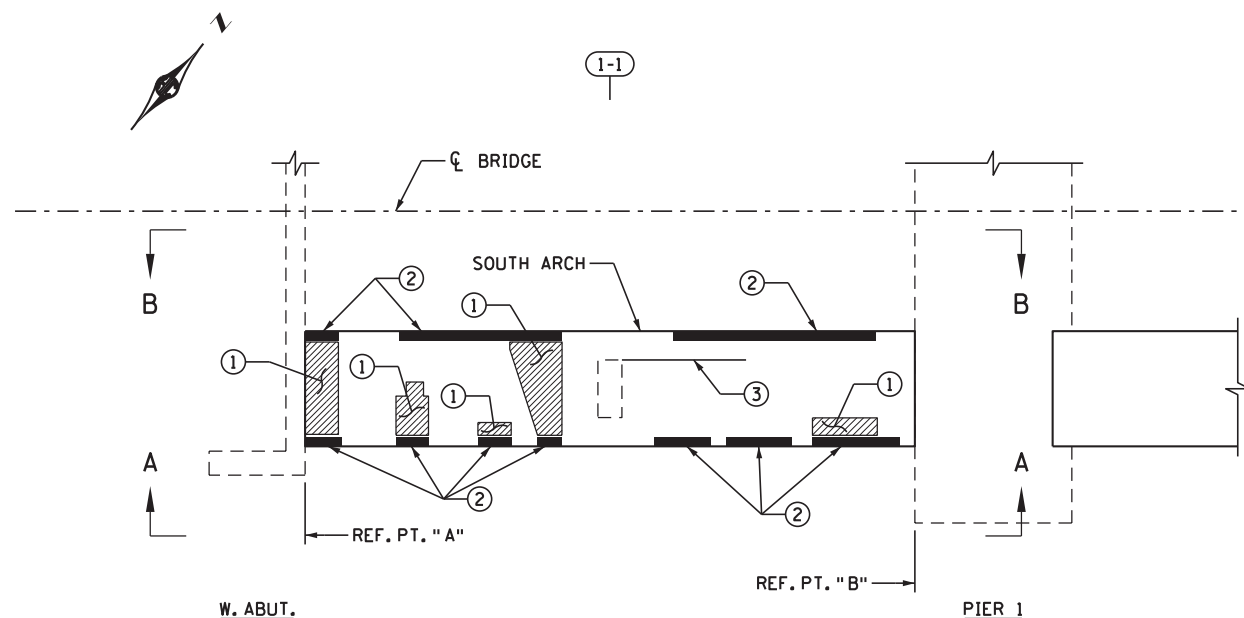
Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 8/14/2014
LICENSE NO. DATE

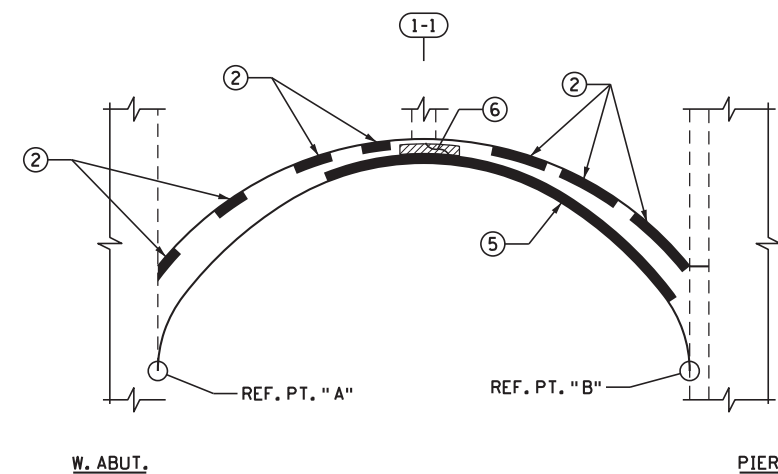
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CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

REPAIR LOCATIONS - PIER 4 (4 OF 4)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

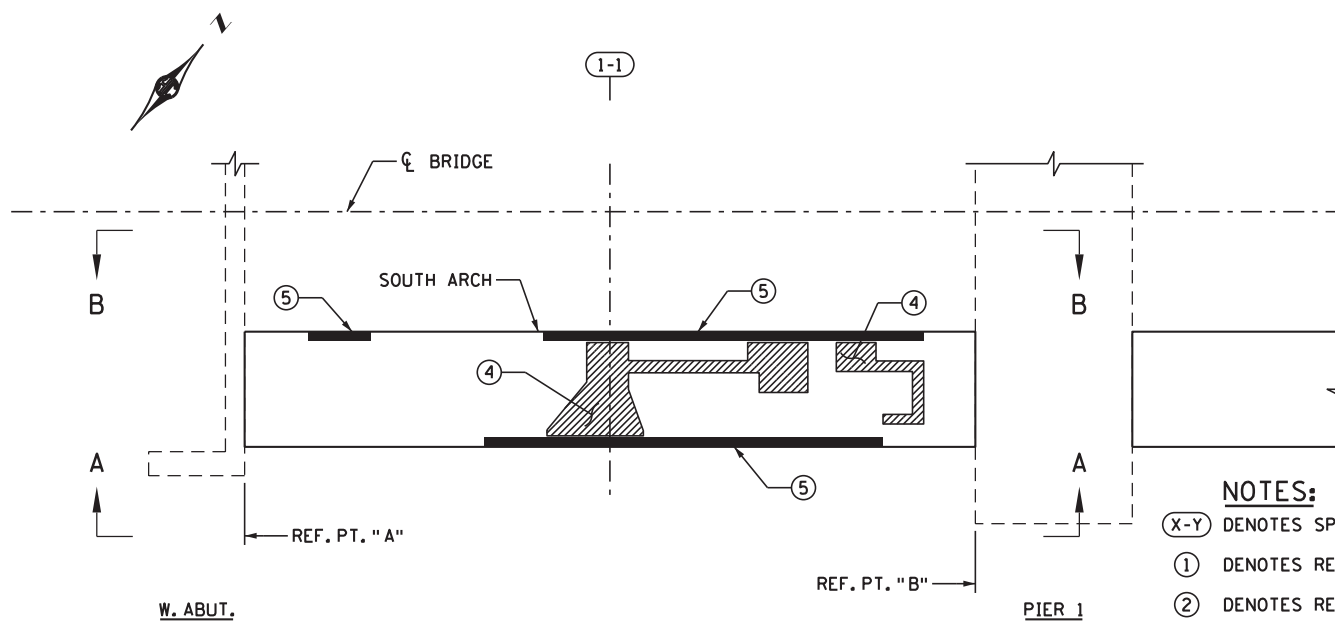
SHEET
B34
B176



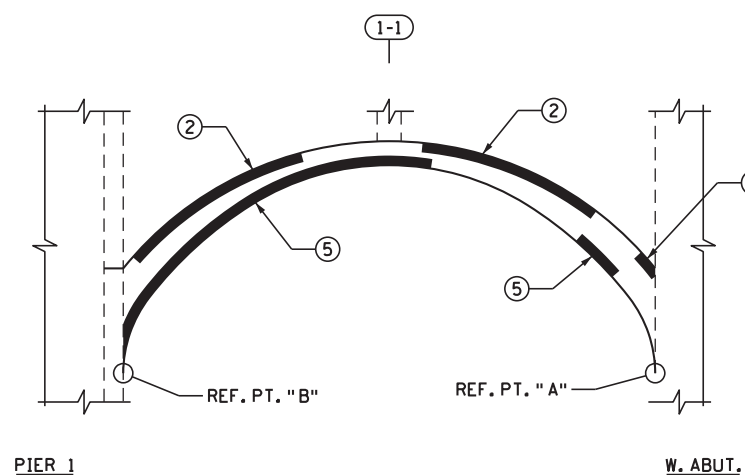
TOP PLAN
SOUTH ARCH RIB



ELEVATION A-A



BOTTOM PLAN
SOUTH ARCH RIB



ELEVATION B-B

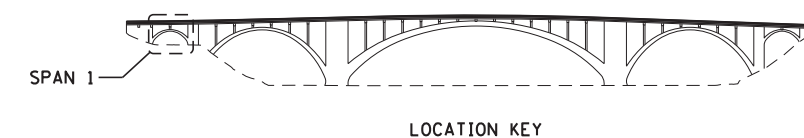
NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- ① DENOTES REPAIR TYPE AR-T OR AR-D(T).
- ② DENOTES REPAIR TYPE AR-CT.
- ③ DENOTES REPAIR TYPE AR-C.
- ④ DENOTES REPAIR TYPE AR-U OR AR-D(U).
- ⑤ DENOTES REPAIR TYPE AR-CU.
- ⑥ DENOTES REPAIR TYPE AR-V OR AR-D(V).

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

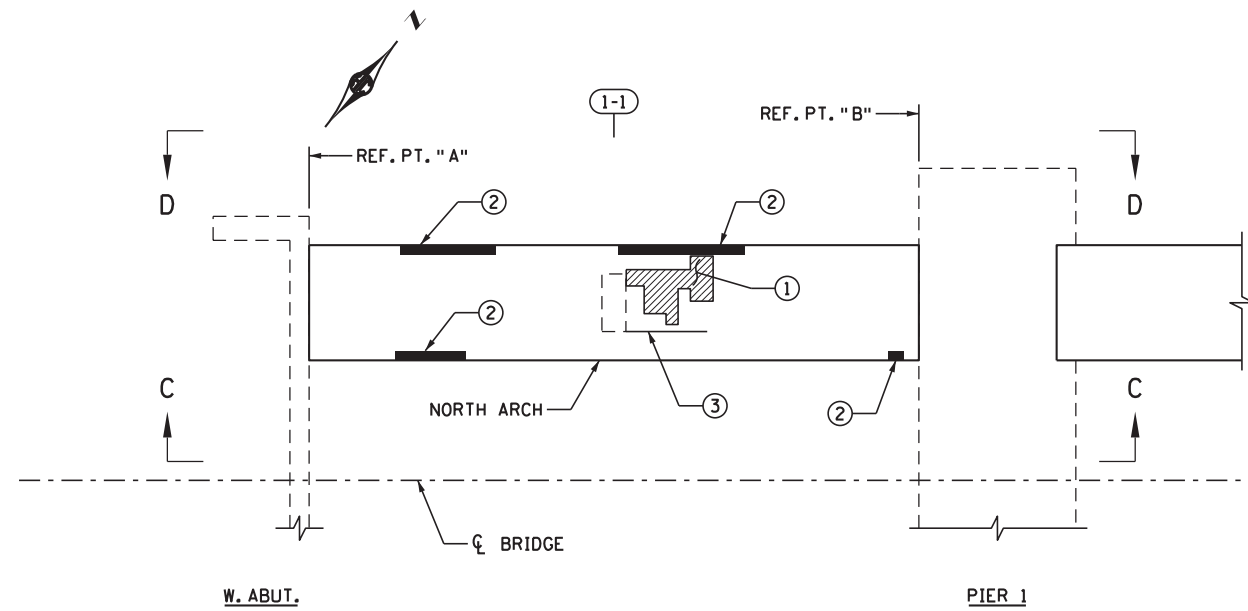
21838 8/13/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

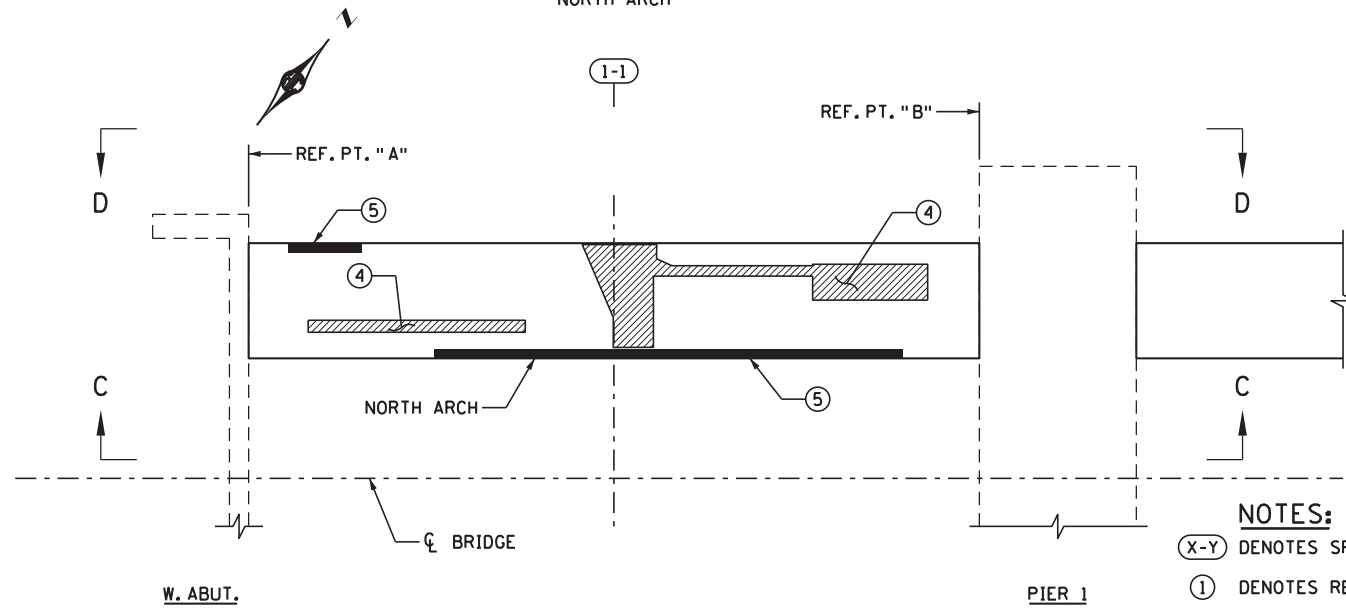
REPAIR LOCATIONS - ARCH - SPAN 1 (1 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B35
B176



TOP PLAN
NORTH ARCH



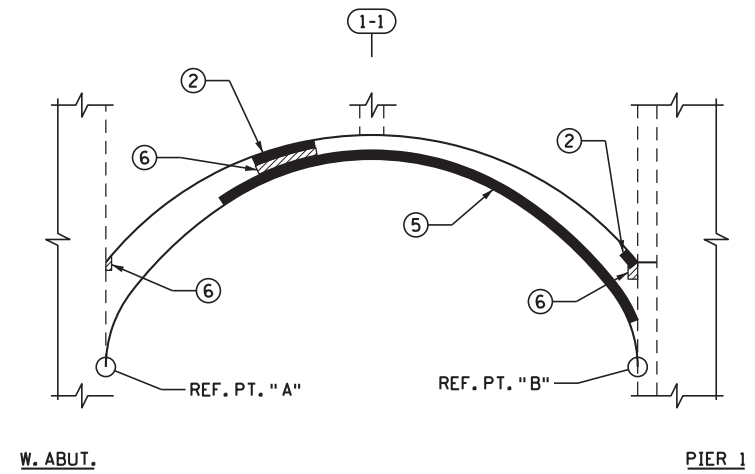
BOTTOM PLAN
NORTH ARCH

- NOTES:**
- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
 - ① DENOTES REPAIR TYPE AR-T OR AR-D(T).
 - ② DENOTES REPAIR TYPE AR-CT.
 - ③ DENOTES REPAIR TYPE AR-C.
 - ④ DENOTES REPAIR TYPE AR-U OR AR-D(U).
 - ⑤ DENOTES REPAIR TYPE AR-CU.
 - ⑥ DENOTES REPAIR TYPE AR-V OR AR-D(V).

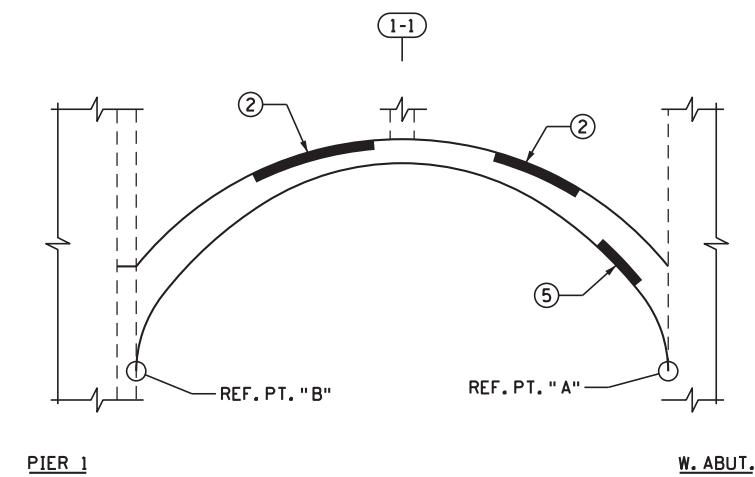
REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

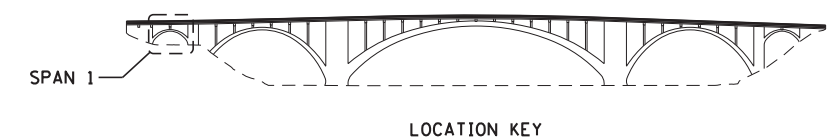
POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.



ELEVATION C-C



ELEVATION D-D



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

21838 8/13/2014
LICENSE NO. DATE

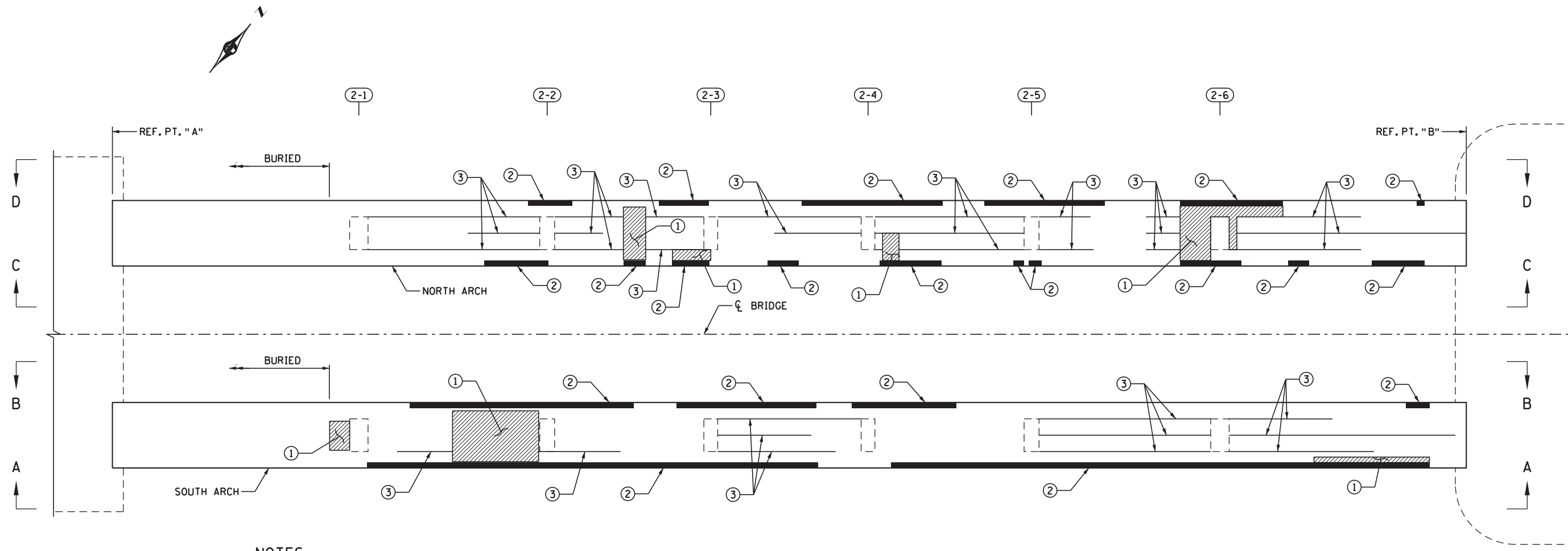
DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 1 (2 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

B36
B176



NOTES:

(X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).

① DENOTES REPAIR TYPE AR-T OR AR-D(T).

② DENOTES REPAIR TYPE AR-CT.

③ DENOTES REPAIR TYPE AR-C.

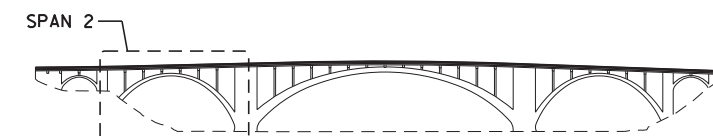
REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

SEE REPAIR LOCATIONS - ARCH - SPAN 2 (3 OF 6 THRU 6 OF 6) SHEETS FOR ELEVATIONS A-A, B-B, C-C AND D-D.

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

TOP PLAN
SPAN 2



LOCATION KEY



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

21838 8/13/2014
LICENSE NO. DATE

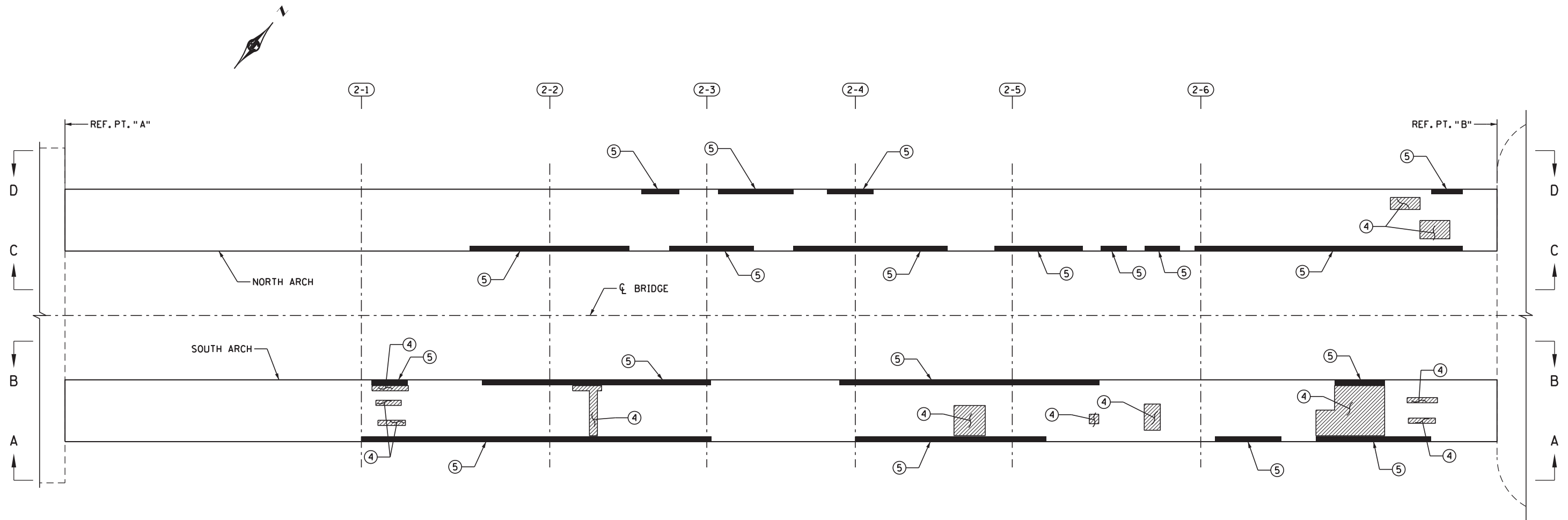
DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 2 (1 OF 6)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

B37
B176



PIER 1

PIER 2

NOTES:

(X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).

(4) DENOTES REPAIR TYPE AR-U OR AR-D(U).

(5) DENOTES REPAIR TYPE AR-CU.

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

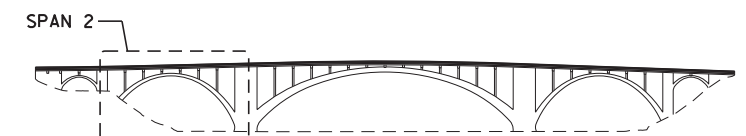
SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

SEE REPAIR LOCATIONS - ARCH - SPAN 2 (3 OF 6 THRU 6 OF 6) SHEETS FOR ELEVATIONS A-A, B-B, C-C AND D-D.

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BOTTOM PLAN

SPAN 2



LOCATION KEY



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
 STEVE A. OLSON, PROFESSIONAL ENGINEER

21838 8/13/2014
 LICENSE NO. DATE

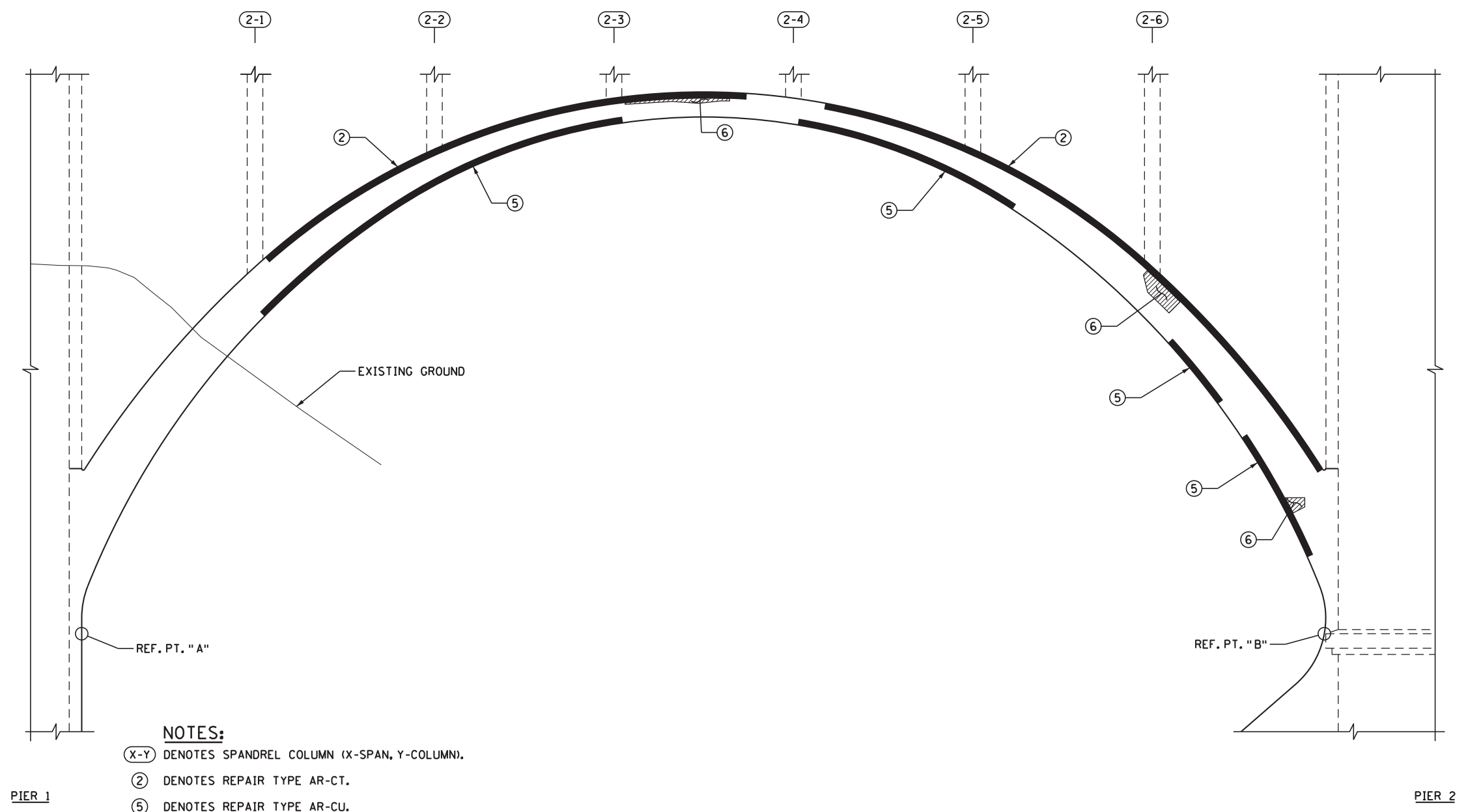
DESIGN BY: APJ
 CAD BY: DPC
 CHECKED BY: SAO
 LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 2 (2 OF 6)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET

B38
 B176



NOTES:

(X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).

(2) DENOTES REPAIR TYPE AR-CT.

(5) DENOTES REPAIR TYPE AR-CU.

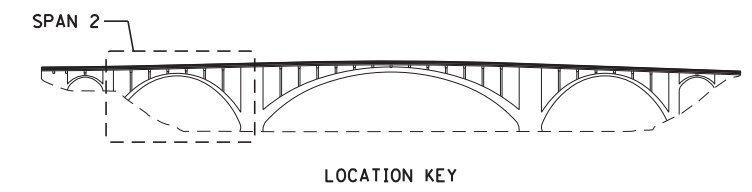
(6) DENOTES REPAIR TYPE AR-V OR AR-D(V).



REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

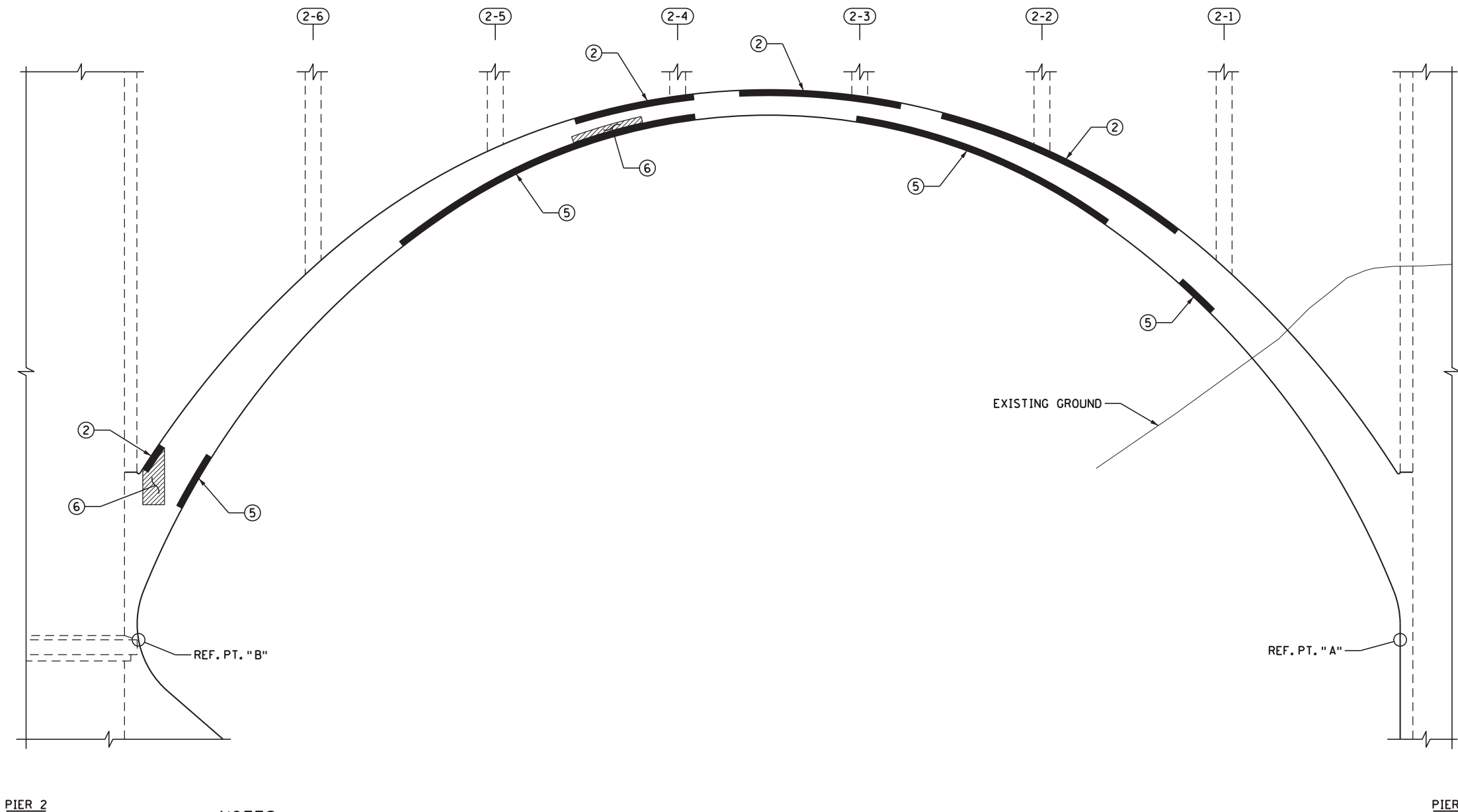
SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

ELEVATION A-A
SOUTH ARCH RIB, LOOKING NORTH



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.		DESIGN BY: APJ	REPAIR LOCATIONS - ARCH - SPAN 2 (3 OF 6)		SHEET B39 B176
	 STEVE A. OLSON, PROFESSIONAL ENGINEER		CAD BY: DPC			
	21838	8/13/2014	CHECKED BY: SAO			
	LICENSE NO.	DATE	LAST REVISION:			



NOTES:

(X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).

② DENOTES REPAIR TYPE AR-CT.

⑤ DENOTES REPAIR TYPE AR-CU.

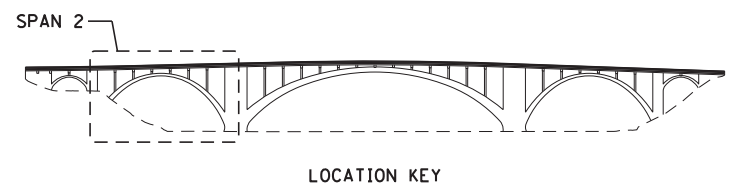
⑥ DENOTES REPAIR TYPE AR-V OR AR-D(V).

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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ELEVATION B-B
SOUTH ARCH RIB, LOOKING SOUTH



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

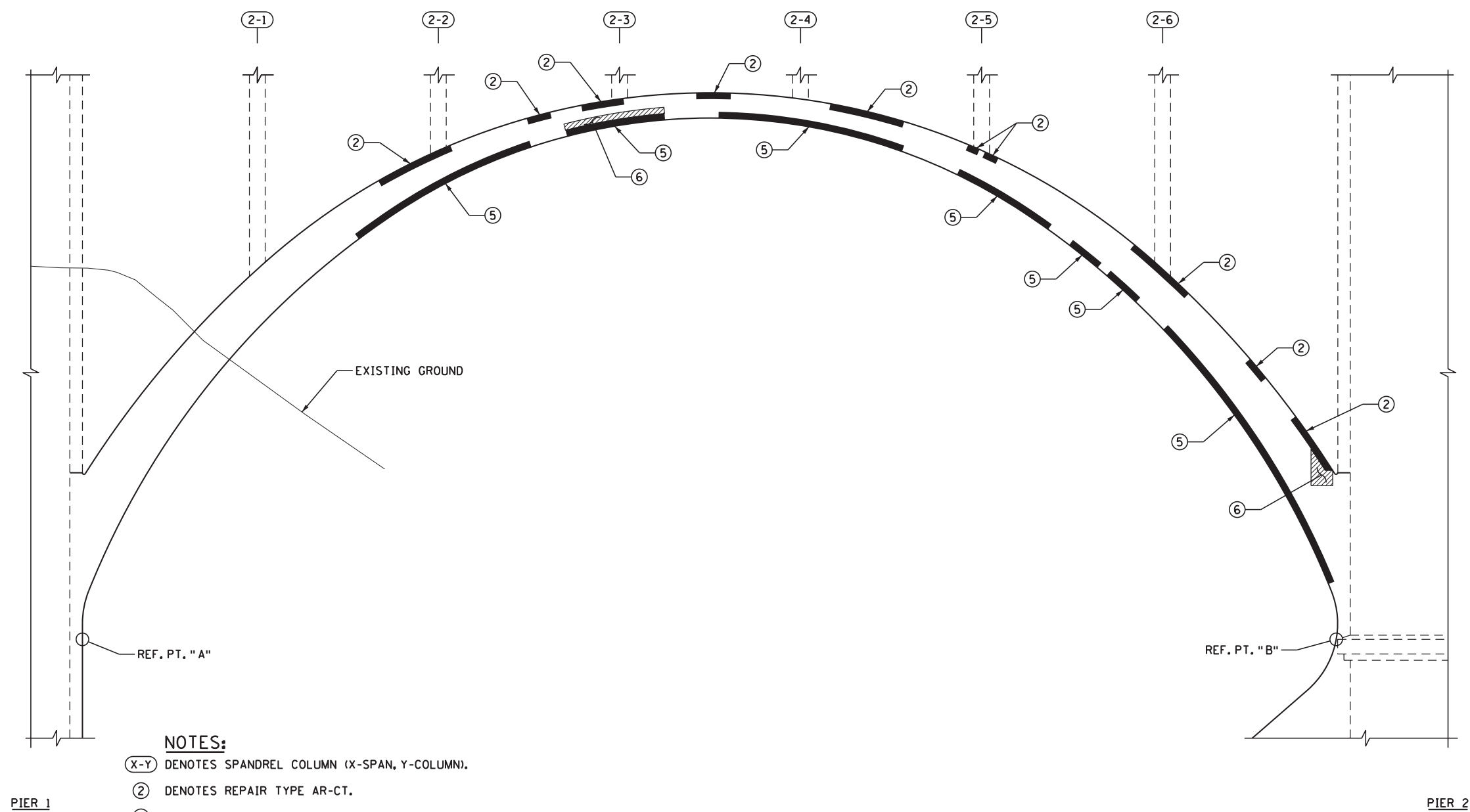
21838 8/13/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 2 (4 OF 6)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B40
B176



NOTES:

(X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).

② DENOTES REPAIR TYPE AR-CT.

⑤ DENOTES REPAIR TYPE AR-CU.

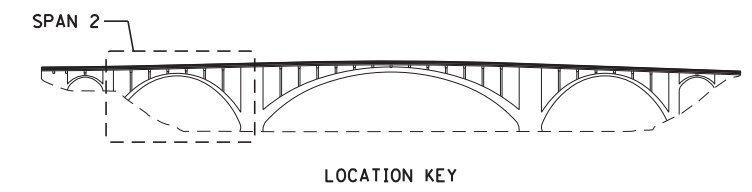
⑥ DENOTES REPAIR TYPE AR-V OR AR-D(V).

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

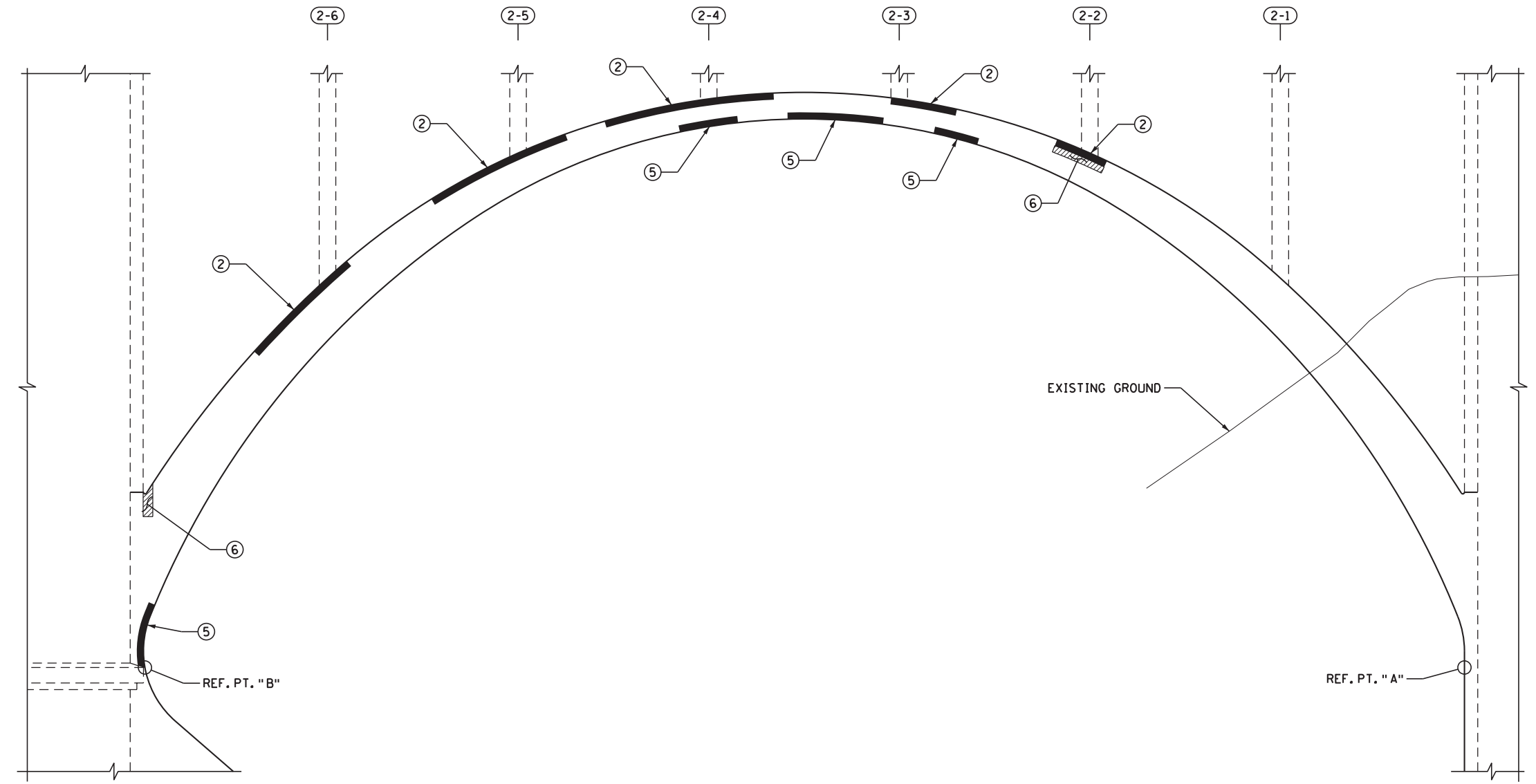
SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

ELEVATION C-C
NORTH ARCH RIB, LOOKING NORTH



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. STEVE A. OLSON, PROFESSIONAL ENGINEER	21838 LICENSE NO.	8/13/2014 DATE	DESIGN BY: APJ CAD BY: DPC CHECKED BY: SAO LAST REVISION:	REPAIR LOCATIONS - ARCH - SPAN 2 (5 OF 6) C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	SHEET B41 B176
	Plotted by: don.streeter Plotted Date: 8/13/2014 Model: Sheet 1		File: pw:\hntb\356.hntb.org\PGreat.Lakes\Documents\Minneapolis Projects\49799 FranklIn Bridge\Design\CADD-BRIDGE\CD\CBR2441.ARC008.dgn			



PIER 2

PIER 1

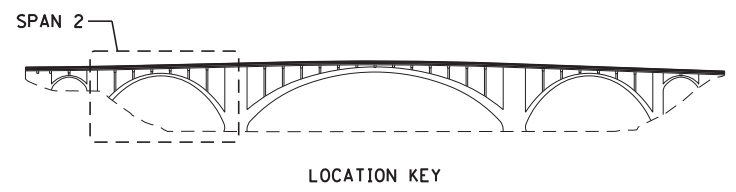
- NOTES:**
- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
 - ② DENOTES REPAIR TYPE AR-CT.
 - ⑤ DENOTES REPAIR TYPE AR-CU.
 - ⑥ DENOTES REPAIR TYPE AR-V OR AR-D(V).

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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ELEVATION D-D
NORTH ARCH RIB, LOOKING SOUTH



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

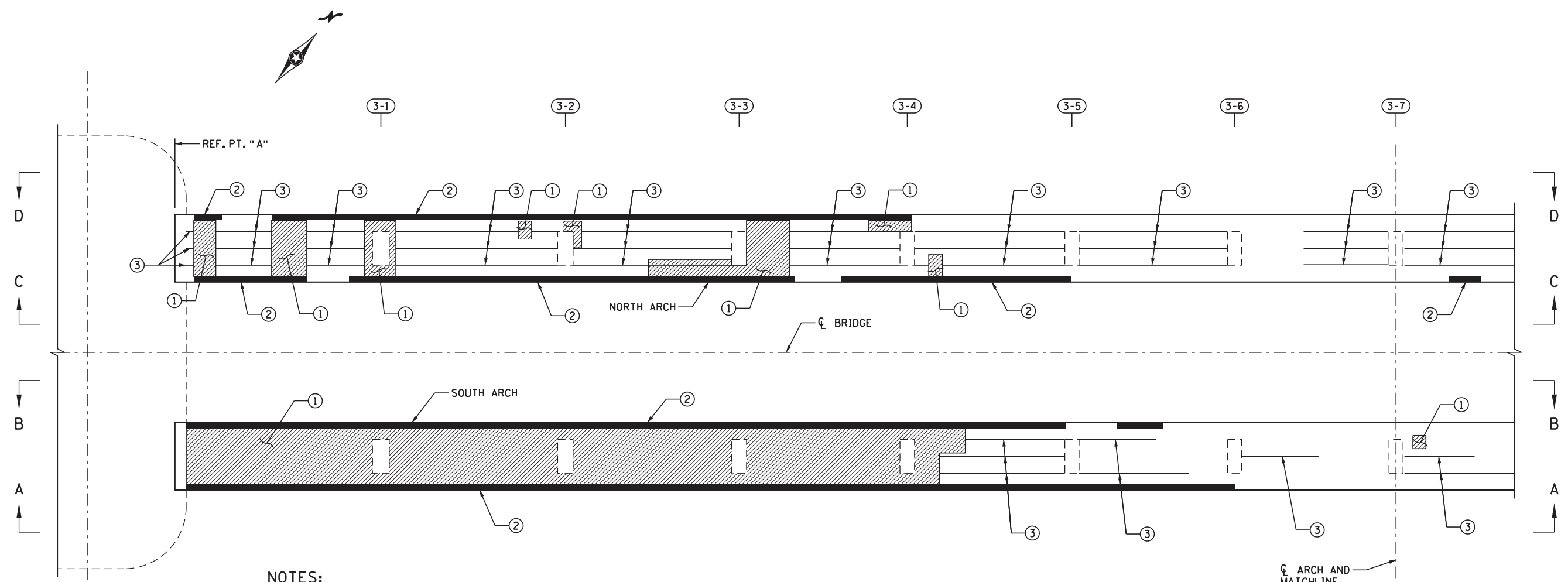
21838 8/13/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 2 (6 OF 6)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

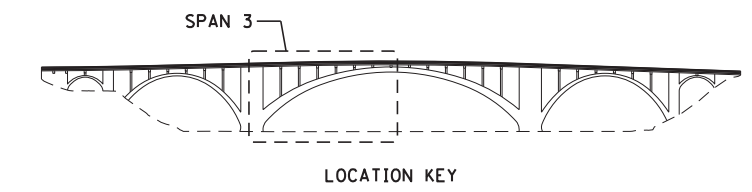
SHEET
B42
B176



NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
 - ① DENOTES REPAIR TYPE AR-T OR AR-D(T).
 - ② DENOTES REPAIR TYPE AR-CT.
 - ③ DENOTES REPAIR TYPE AR-C.
- REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.
- SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.
- SEE REPAIR LOCATIONS - ARCH - SPAN 3 (3 OF 12 THRU 6 OF 12) SHEETS FOR ELEVATIONS A-A, B-B, C-C AND D-D.
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TOP WEST HALF-PLAN
SPAN 3



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

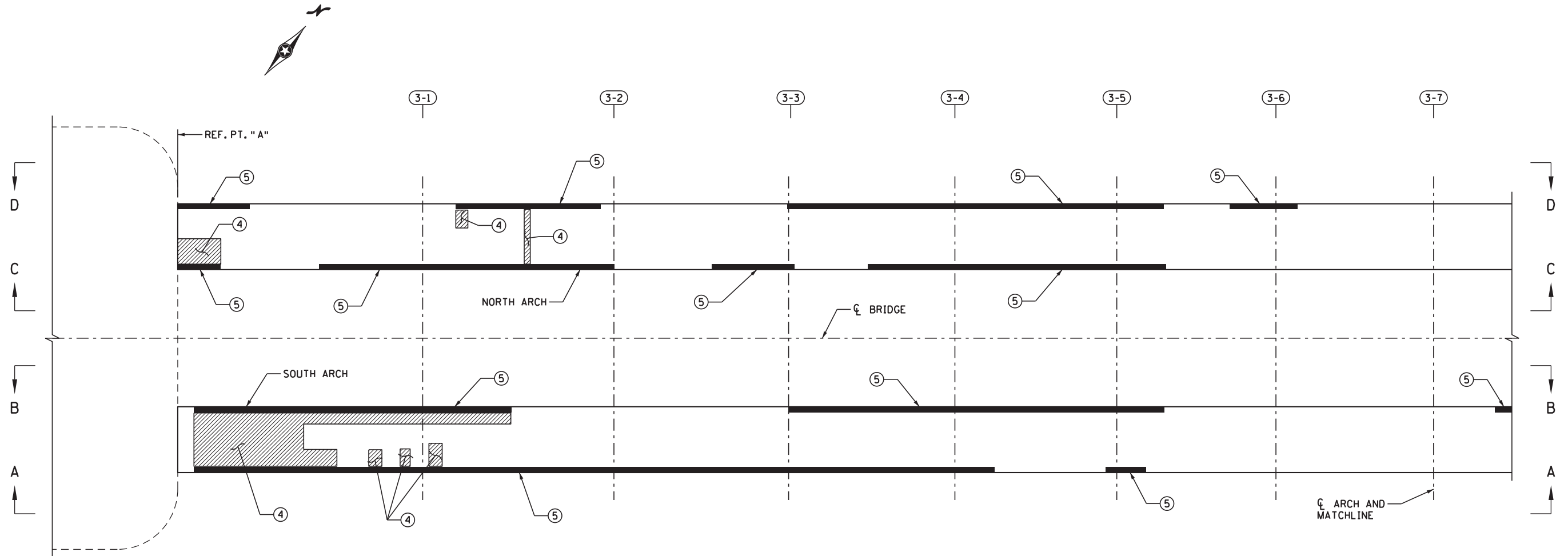
21838 8/13/2014
 LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (1 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

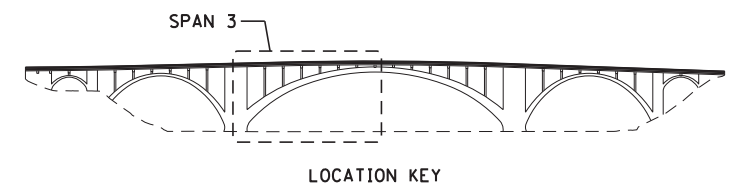
SHEET
 B43
 B176



NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
 - (4) DENOTES REPAIR TYPE AR-T OR AR-D(T).
 - (5) DENOTES REPAIR TYPE AR-CT.
- REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.
- SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.
- SEE REPAIR LOCATIONS - ARCH - SPAN 3 (3 OF 12 THRU 6 OF 12) SHEETS FOR ELEVATIONS A-A, B-B, C-C AND D-D.
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BOTTOM WEST HALF-PLAN
SPAN 3



PIER 2

MID-SPAN



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

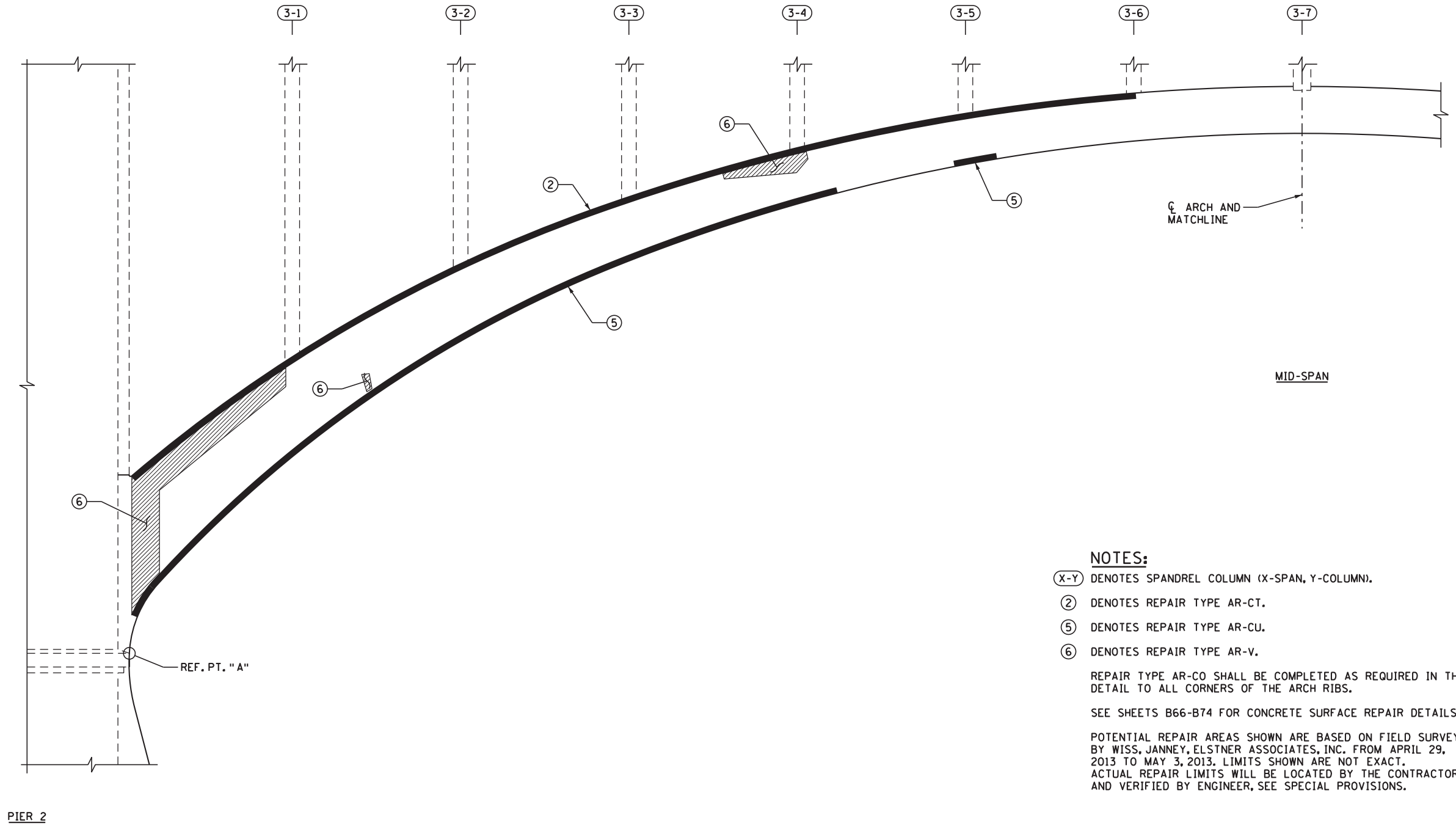
21838 8/13/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (2 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B44
B176



ELEVATION A-A
SOUTH ARCH RIB, LOOKING NORTH

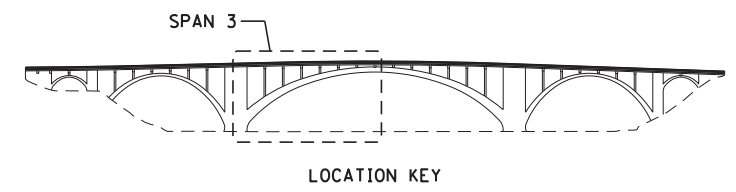
NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- (2) DENOTES REPAIR TYPE AR-CT.
- (5) DENOTES REPAIR TYPE AR-CU.
- (6) DENOTES REPAIR TYPE AR-V.

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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Steve A. Olson
 STEVE A. OLSON, PROFESSIONAL ENGINEER

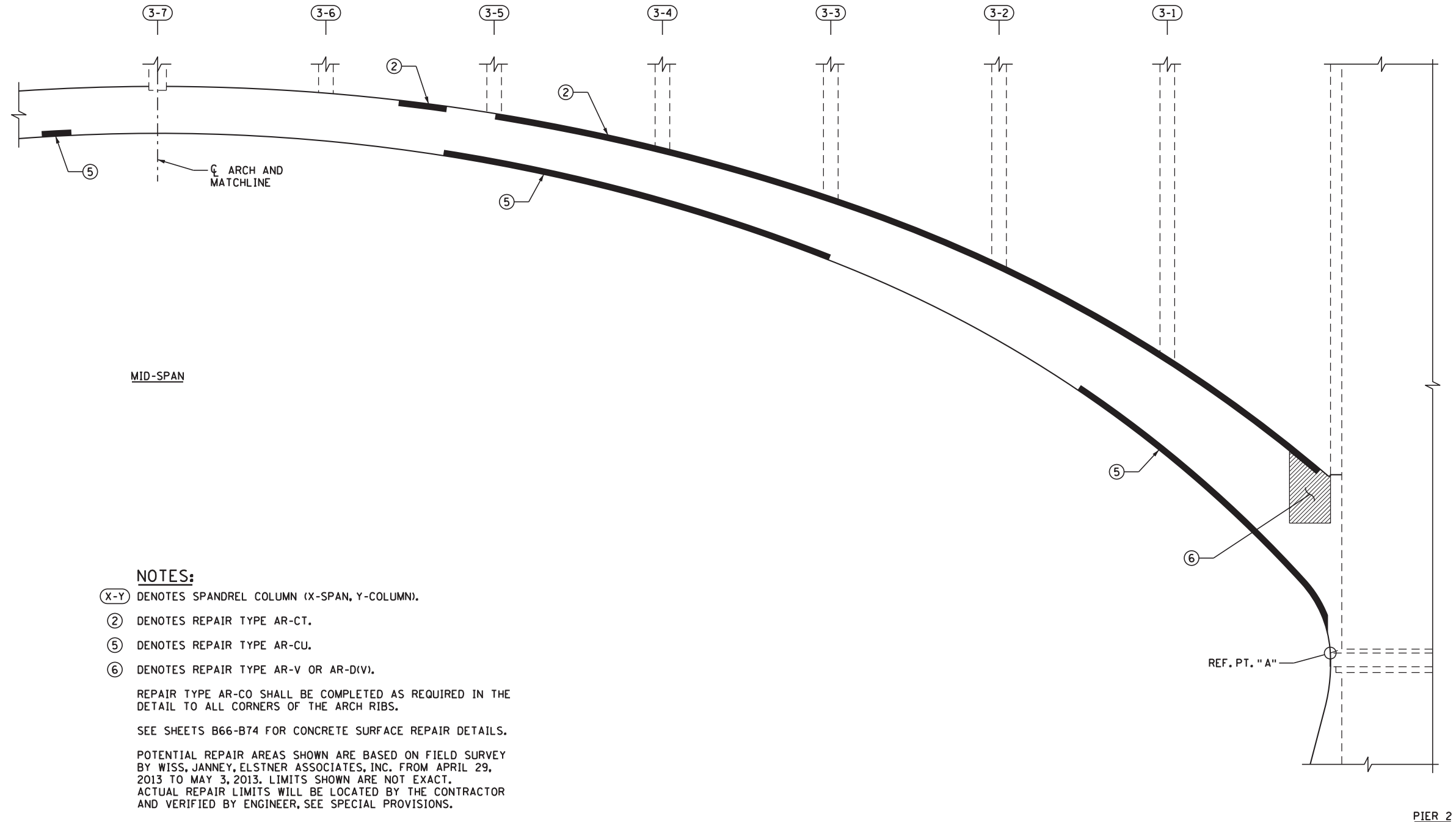
21838 8/13/2014
 LICENSE NO. DATE

DESIGN BY: APJ
 CAD BY: DPC
 CHECKED BY: SAO
 LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (3 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

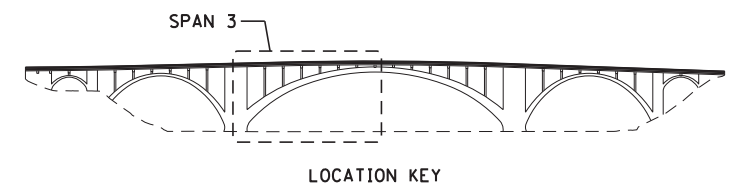
SHEET
 B45
 B176



NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
 - (2) DENOTES REPAIR TYPE AR-CT.
 - (5) DENOTES REPAIR TYPE AR-CU.
 - (6) DENOTES REPAIR TYPE AR-V OR AR-DIV).
- REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.
- SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.
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ELEVATION B-B
SOUTH ARCH RIB, LOOKING SOUTH



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Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

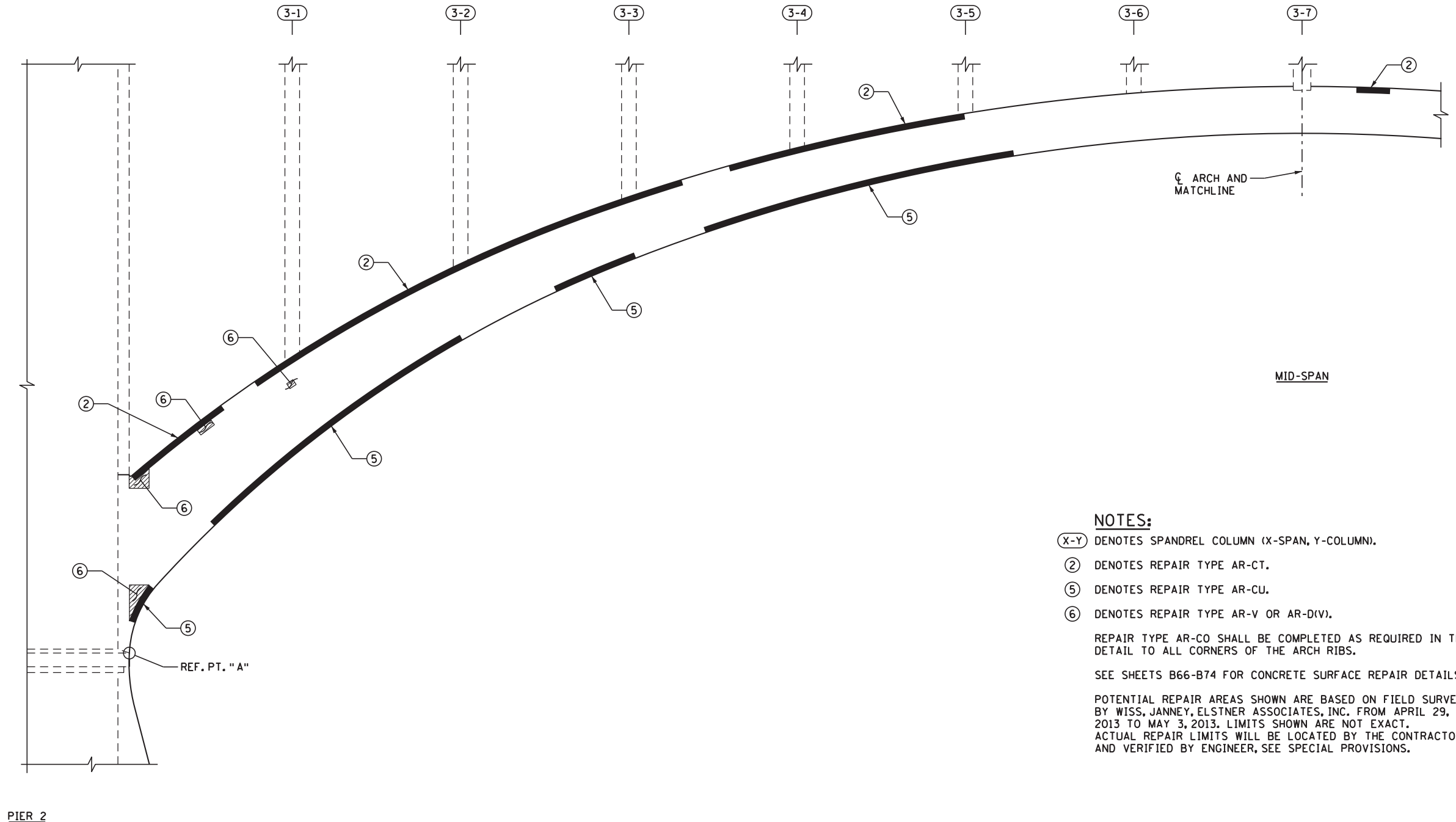
21838 8/13/2014
 LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (4 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B46
 B176



ELEVATION C-C
NORTH ARCH RIB, LOOKING NORTH

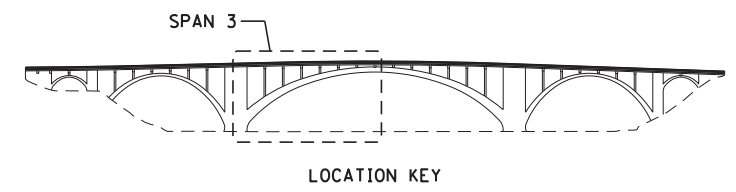
NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- (2) DENOTES REPAIR TYPE AR-CT.
- (5) DENOTES REPAIR TYPE AR-CU.
- (6) DENOTES REPAIR TYPE AR-V OR AR-DIV.

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Steve A. Olson
 STEVE A. OLSON, PROFESSIONAL ENGINEER

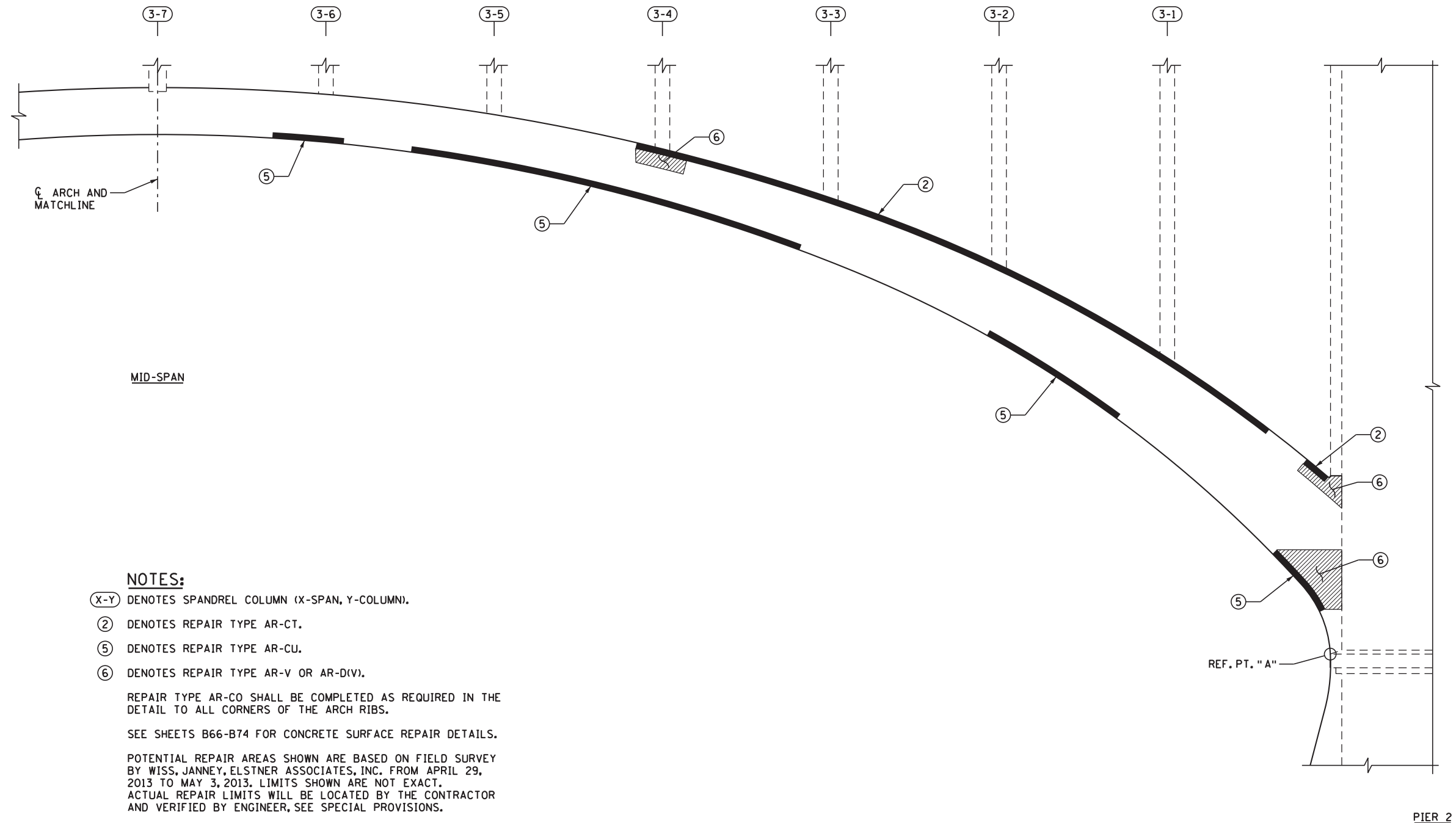
21838 8/13/2014
 LICENSE NO. DATE

DESIGN BY: APJ
 CAD BY: DPC
 CHECKED BY: SAO
 LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (5 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B47
 B176



NOTES:

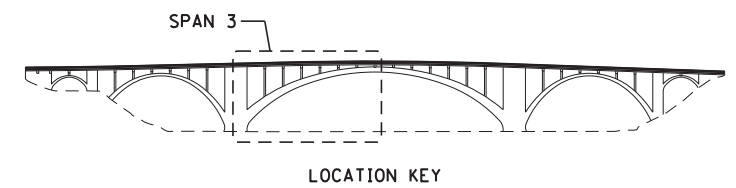
- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- (2) DENOTES REPAIR TYPE AR-CT.
- (5) DENOTES REPAIR TYPE AR-CU.
- (6) DENOTES REPAIR TYPE AR-V OR AR-D(V).

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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ELEVATION D-D
NORTH ARCH RIB, LOOKING SOUTH



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

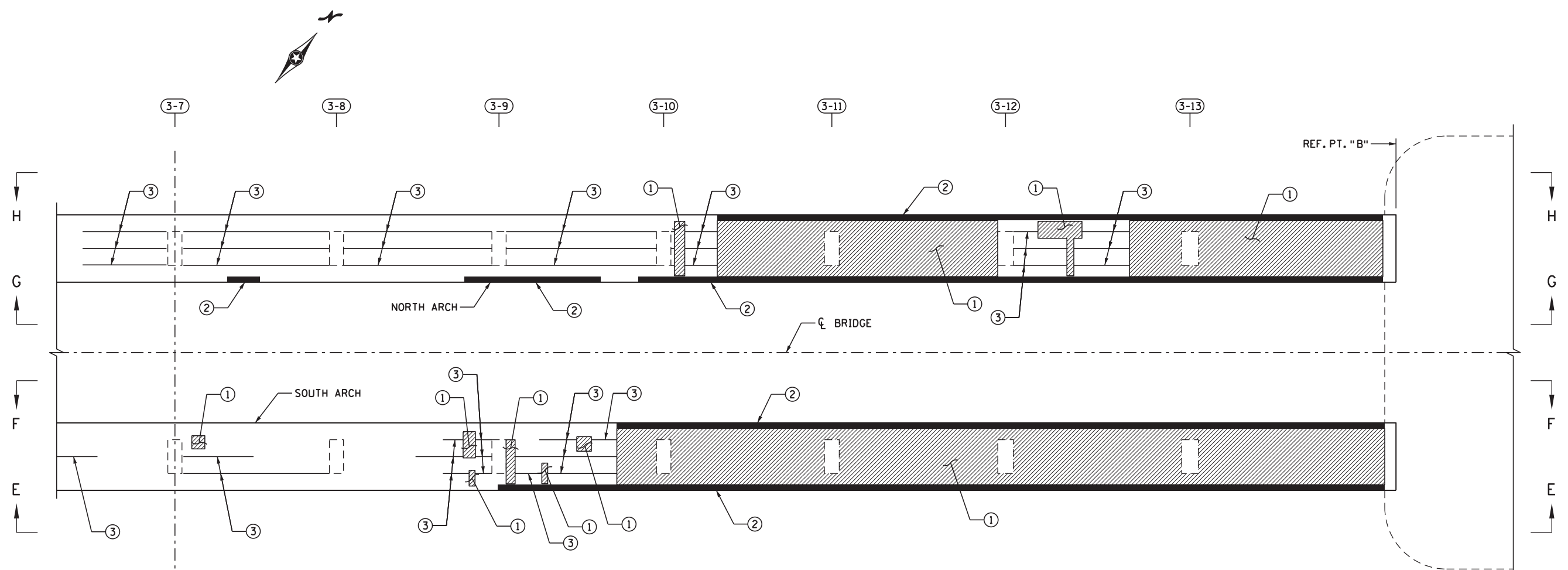
21838 8/13/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (6 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B48
B176



☒ ARCH AND MATCHLINE
MID-SPAN

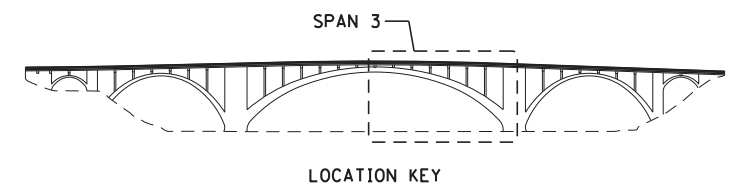
NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- ① DENOTES REPAIR TYPE AR-T OR AR-D(T).
- ② DENOTES REPAIR TYPE AR-CT.
- ③ DENOTES REPAIR TYPE AR-C.

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.
SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.
SEE REPAIR LOCATIONS - ARCH - SPAN 3 (9 OF 12) THRU 12 OF 12) SHEETS FOR ELEVATIONS A-A, B-B, C-C AND D-D.
POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

TOP EAST HALF-PLAN
SPAN 3

PIER 3

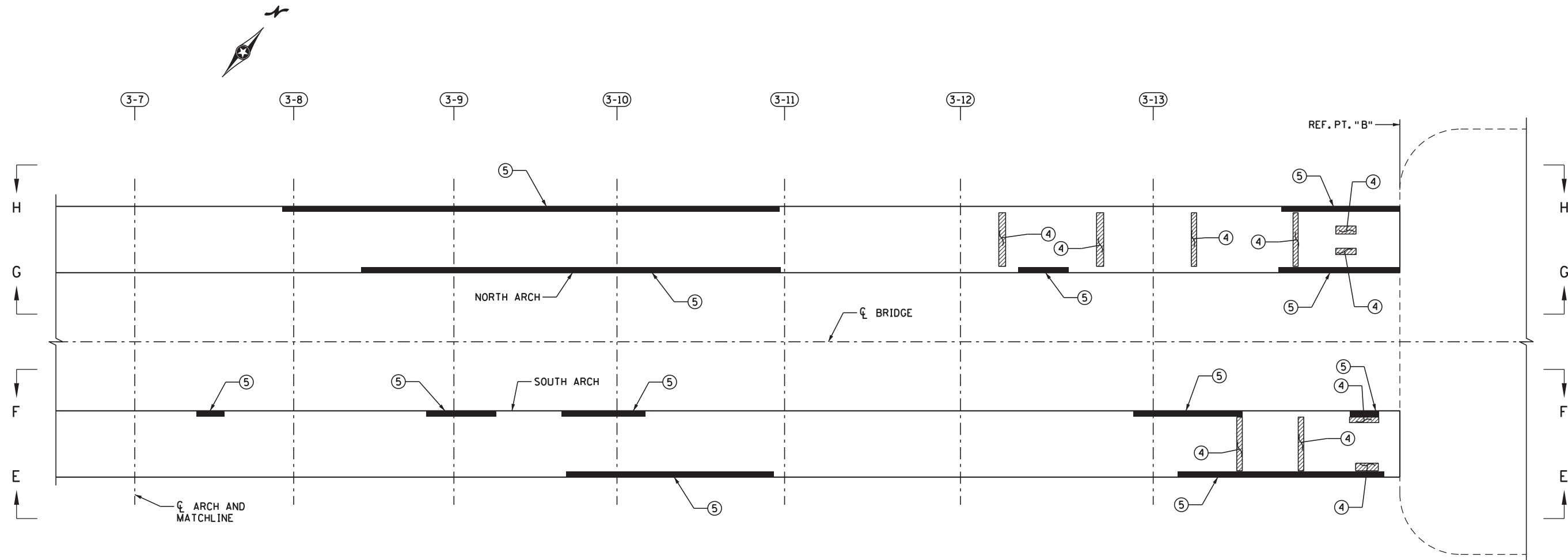


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Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER
21838 8/13/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
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REPAIR LOCATIONS - ARCH - SPAN 3 (7 OF 12)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B49
B176



MID-SPAN

NOTES:

(X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).

(4) DENOTES REPAIR TYPE AR-U OR AR-D(U).

(5) DENOTES REPAIR TYPE AR-CU.

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

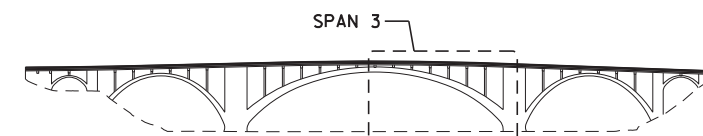
SEE REPAIR LOCATIONS - ARCH - SPAN 3 (9 OF 12 THRU 12 OF 12) SHEETS FOR ELEVATIONS A-A, B-B, C-C AND D-D.

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

BOTTOM EAST HALF-PLAN

SPAN 3

PIER 3



LOCATION KEY



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Steve A. Olson
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21838 8/13/2014
 LICENSE NO. DATE

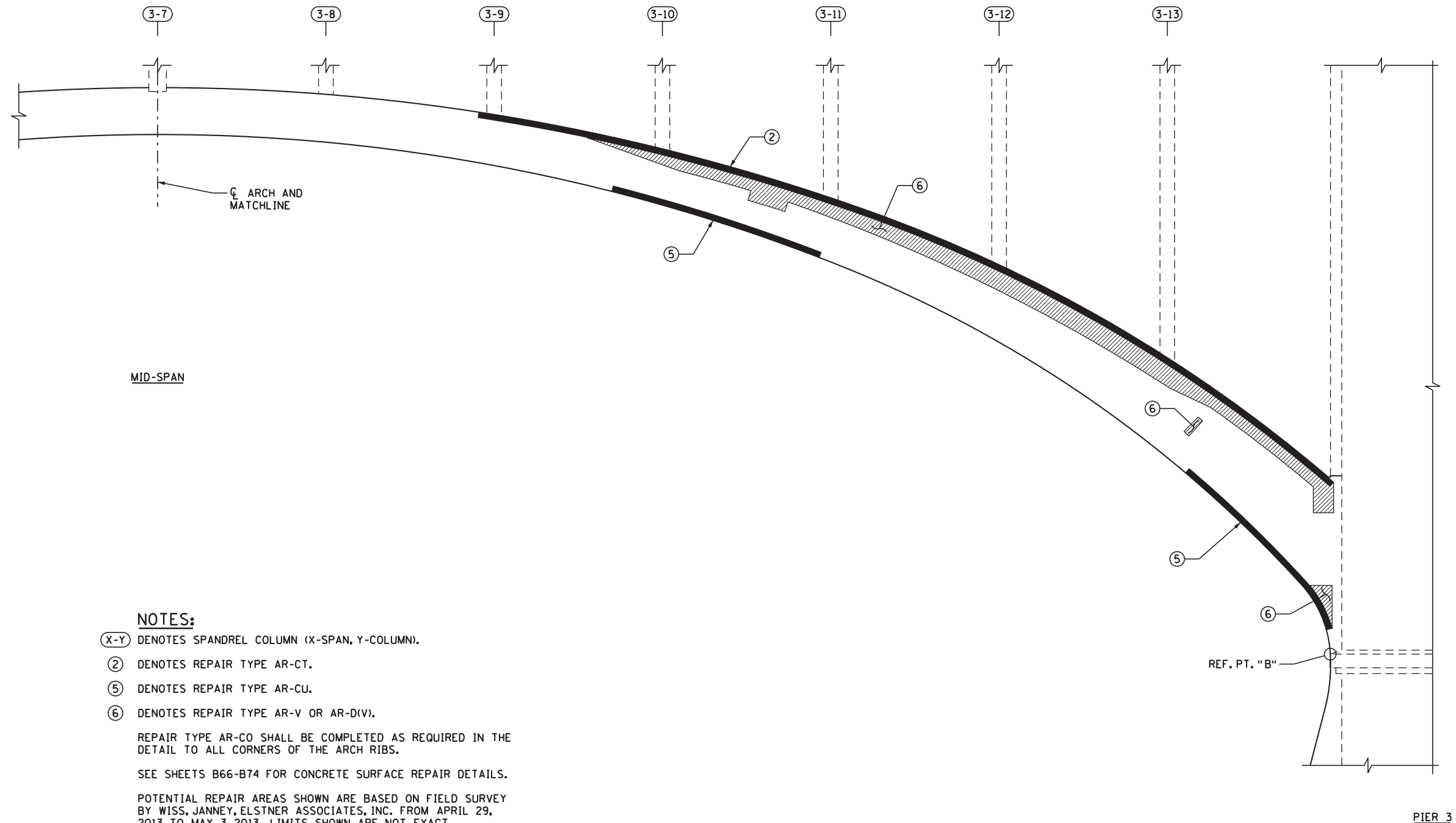
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 CHECKED BY: SAO
 LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (8 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET

B50
 B176



NOTES:

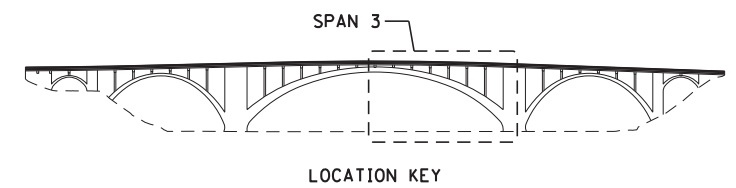
- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- (2) DENOTES REPAIR TYPE AR-CT.
- (5) DENOTES REPAIR TYPE AR-CU.
- (6) DENOTES REPAIR TYPE AR-V OR AR-D(V).

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SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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ELEVATION E-E
SOUTH ARCH RIB, LOOKING NORTH



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Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

21838 8/13/2014
LICENSE NO. DATE

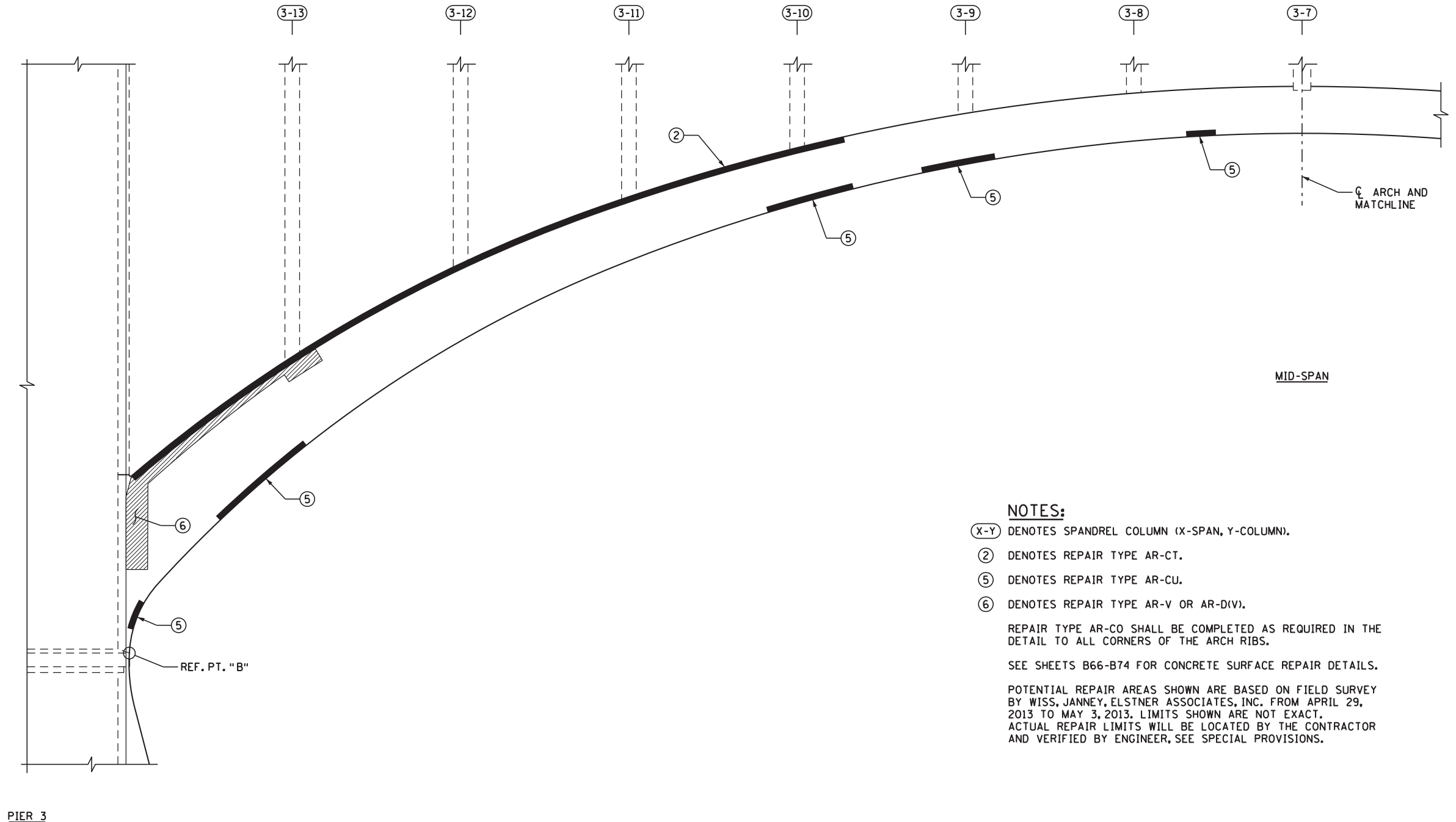
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CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (9 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

B51
B176



ELEVATION F-F
SOUTH ARCH RIB, LOOKING SOUTH

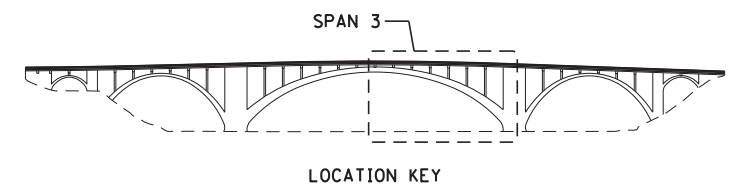
NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- (2) DENOTES REPAIR TYPE AR-CT.
- (5) DENOTES REPAIR TYPE AR-CU.
- (6) DENOTES REPAIR TYPE AR-V OR AR-D(V).

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

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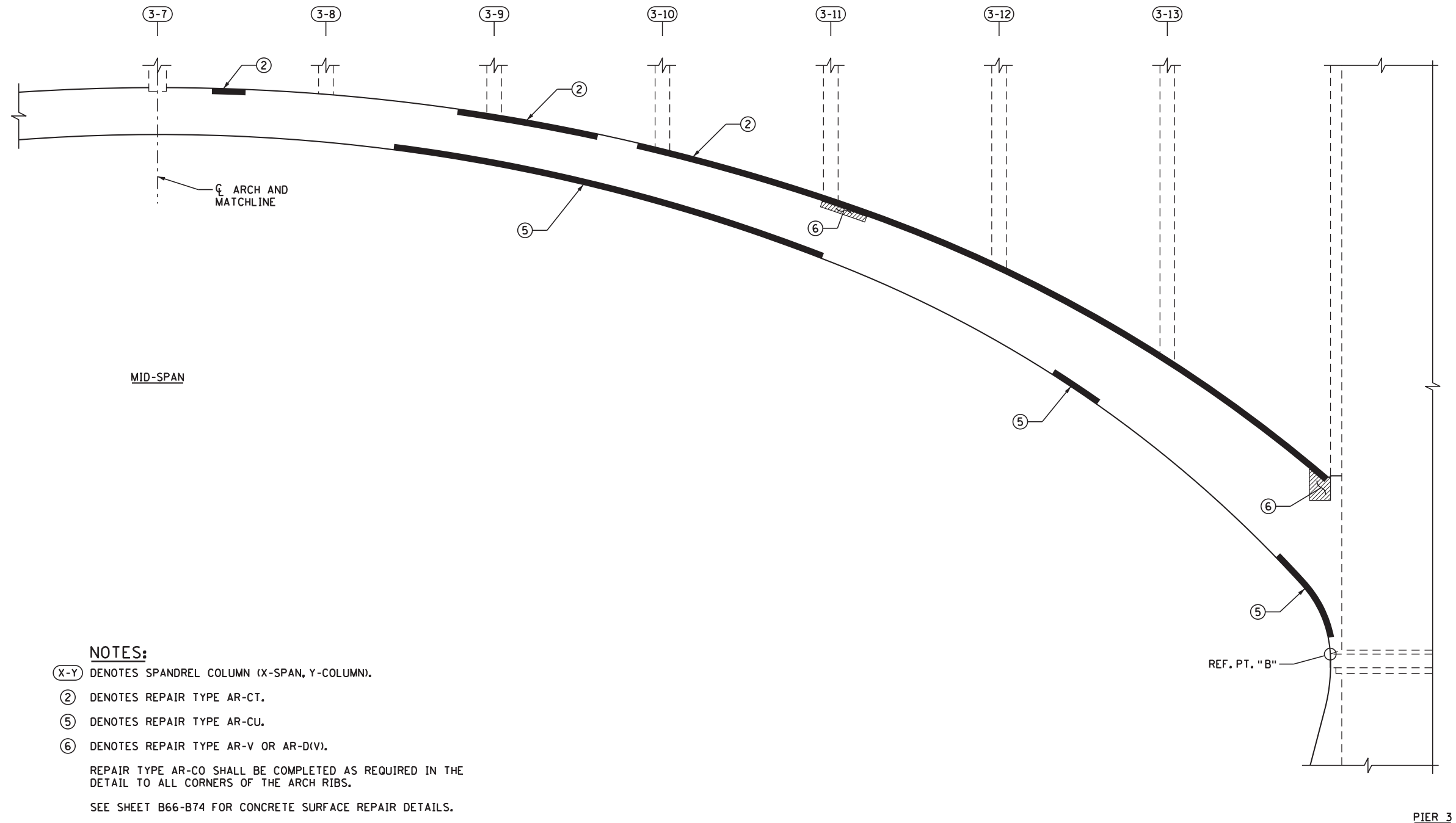
21838 8/13/2014
 LICENSE NO. DATE

DESIGN BY: APJ
 CAD BY: DPC
 CHECKED BY: SAO
 LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (10 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B52
 B176



NOTES:

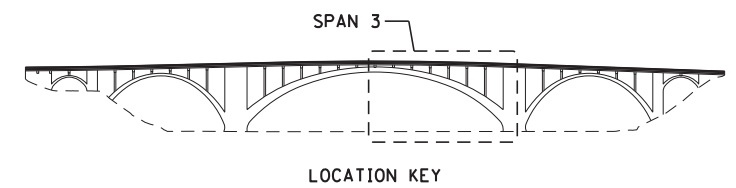
- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- (2) DENOTES REPAIR TYPE AR-CT.
- (5) DENOTES REPAIR TYPE AR-CU.
- (6) DENOTES REPAIR TYPE AR-V OR AR-DIV.

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SEE SHEET B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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ELEVATION G-G
NORTH ARCH RIB, LOOKING NORTH



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Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

21838 8/13/2014
LICENSE NO. DATE

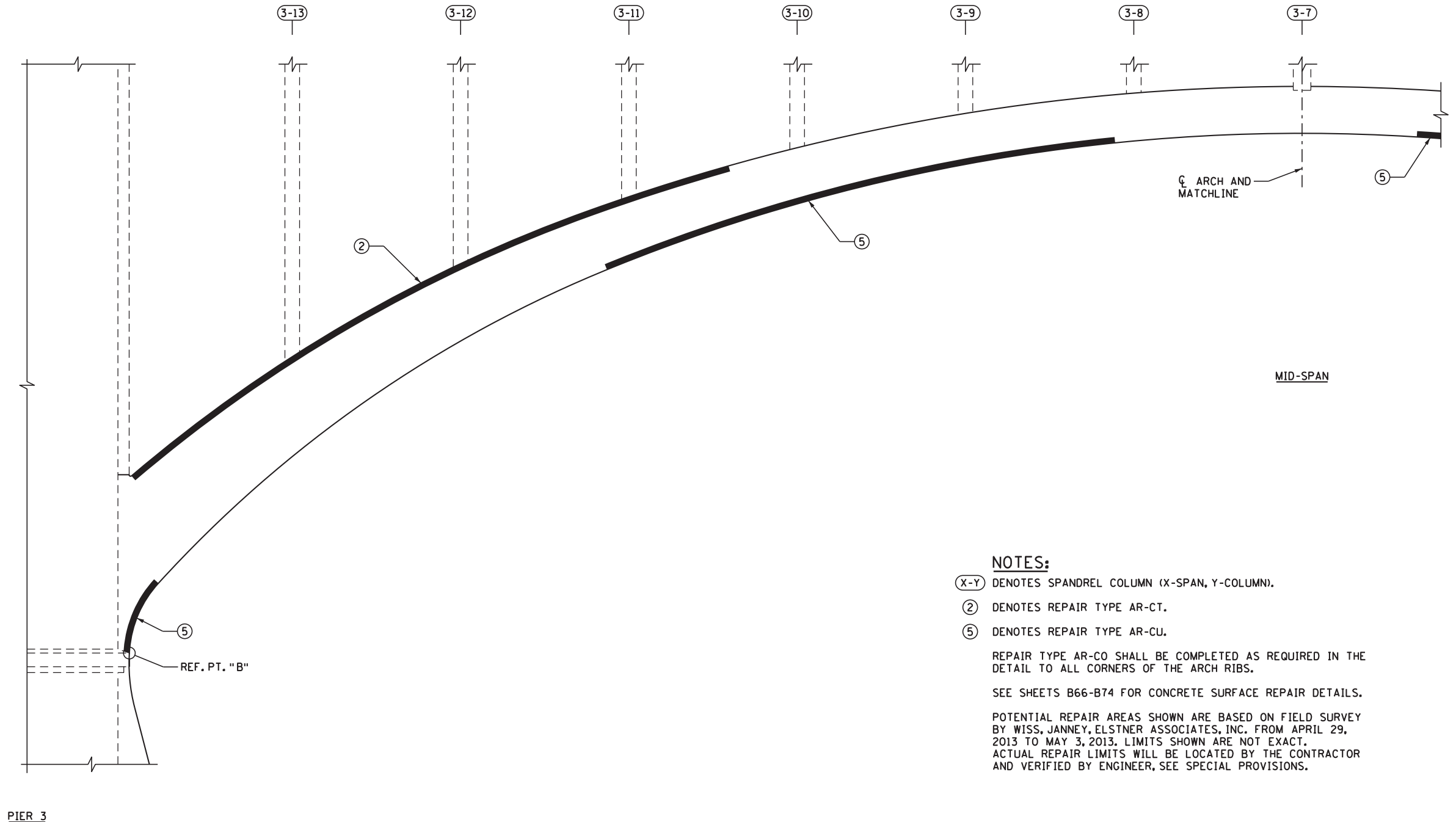
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CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (11 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

B53
B176



ELEVATION H-H
NORTH ARCH RIB, LOOKING SOUTH

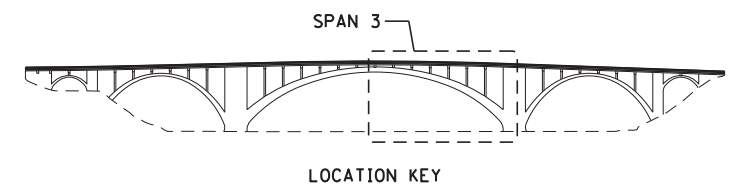
NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- ② DENOTES REPAIR TYPE AR-CT.
- ⑤ DENOTES REPAIR TYPE AR-CU.

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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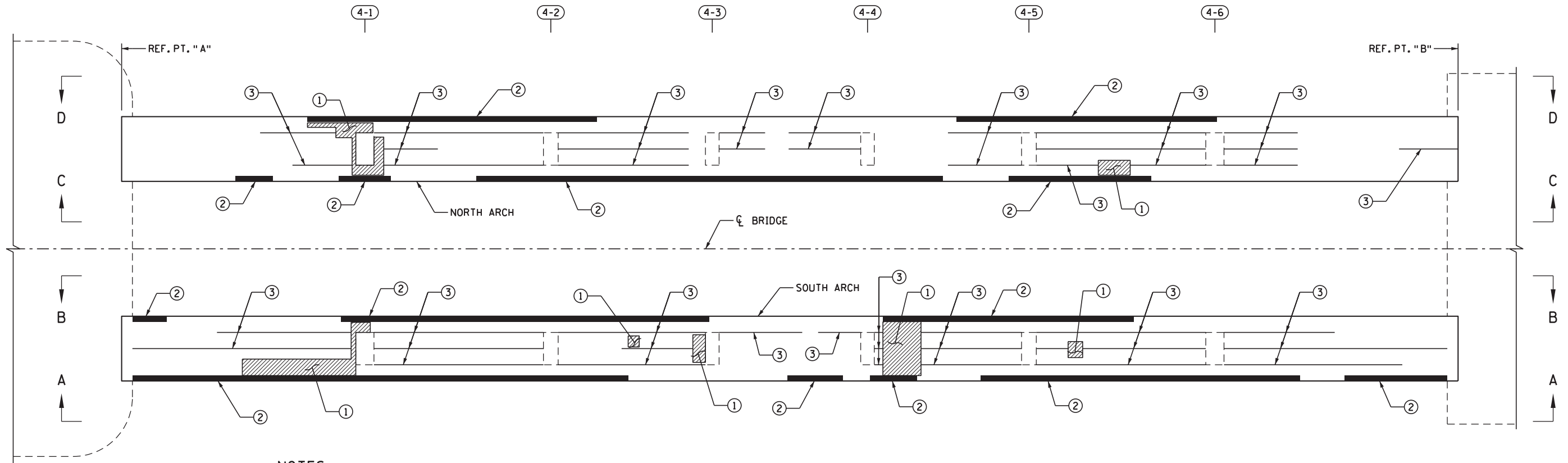
21838 8/13/2014
 LICENSE NO. DATE

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 CHECKED BY: SAO
 LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 3 (12 OF 12)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B54
 B176



NOTES:

(X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).

① DENOTES REPAIR TYPE AR-T OR AR-D(T).

② DENOTES REPAIR TYPE AR-CT.

③ DENOTES REPAIR TYPE AR-C.

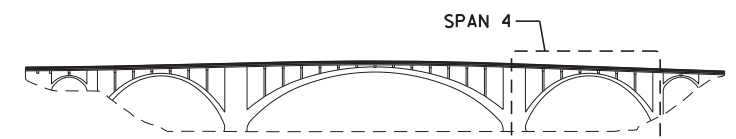
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SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

SEE REPAIR LOCATIONS - ARCH - SPAN 4 (3 OF 6 THRU 6 OF 6) SHEETS FOR ELEVATIONS A-A, B-B, C-C AND D-D.

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TOP PLAN
SPAN 4



LOCATION KEY

PIER 3

PIER 4



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Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

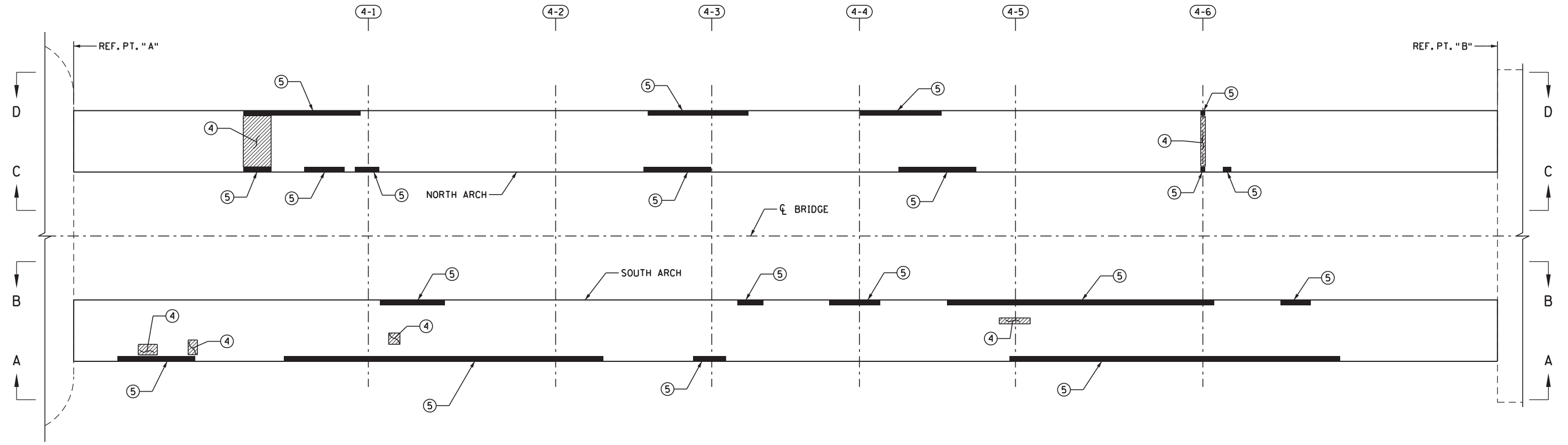
21838 8/13/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 4 (1 OF 6)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B55
B176



NOTES:

- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- (4) DENOTES REPAIR TYPE AR-U OR AR-D(U).
- (5) DENOTES REPAIR TYPE AR-CU.

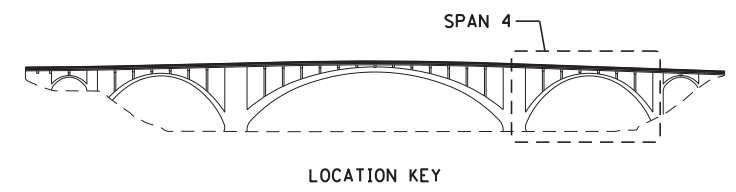
REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

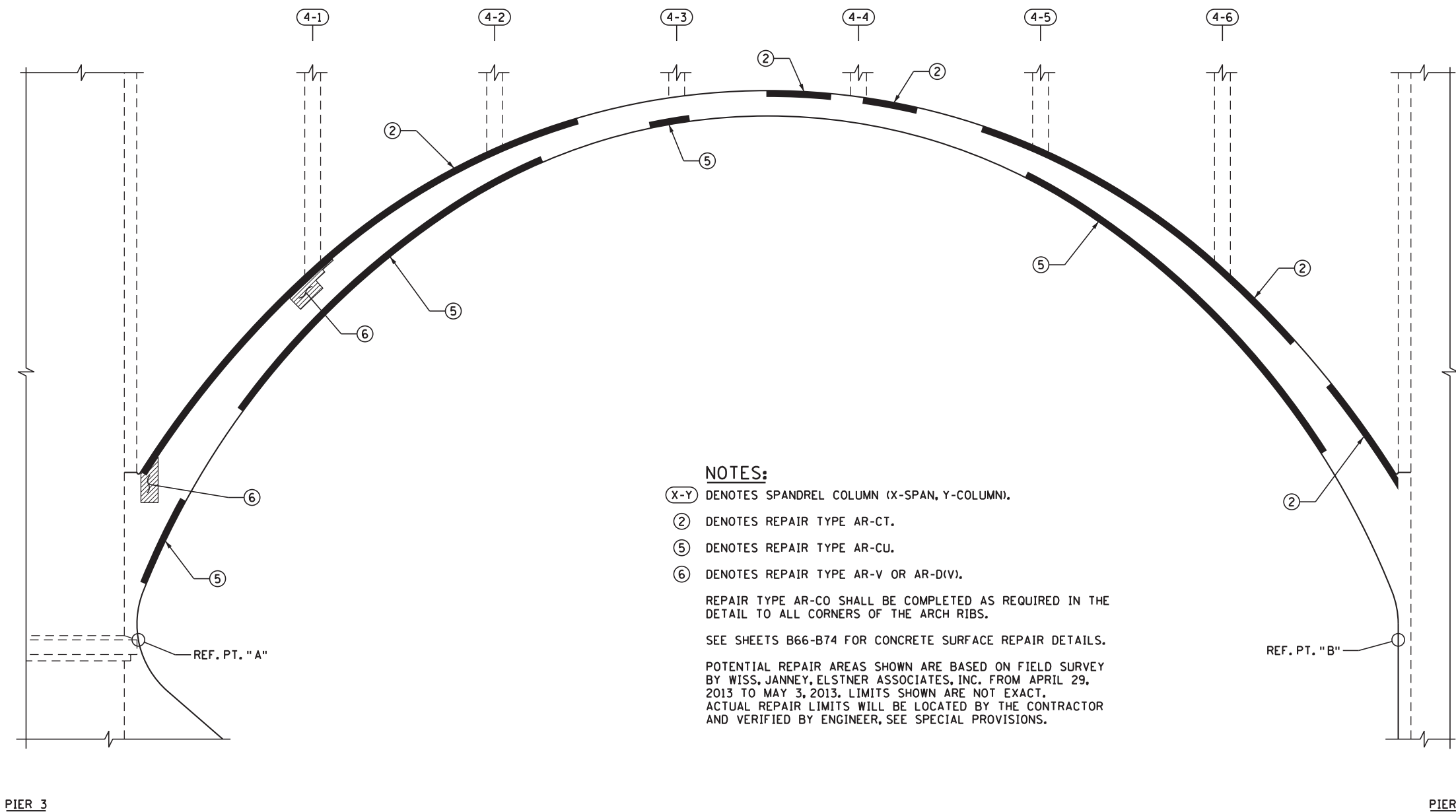
SEE REPAIR LOCATIONS - ARCH - SPAN 4 (3 OF 6 THRU 6 OF 6) SHEETS FOR ELEVATIONS A-A, B-B, C-C AND D-D.

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BOTTOM PLAN
SPAN 4



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. STEVE A. OLSON, PROFESSIONAL ENGINEER	21838 LICENSE NO.	8/13/2014 DATE	DESIGN BY: APJ CAD BY: DPC CHECKED BY: SAO LAST REVISION:	REPAIR LOCATIONS - ARCH - SPAN 4 (2 OF 6) C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	SHEET B56 B176
	Plotted by: dan.streeter Plotted Date: 8/13/2014 Model: Sheet 1 File: pw:\hntb\356.hntb.org\PWGreat.Lakes\Documents\Minneapolis Projects\49799 FranklIn Bridge\Design\CADD-BRIDGE\CD\CBR2441.ARC025.dgn					



NOTES:

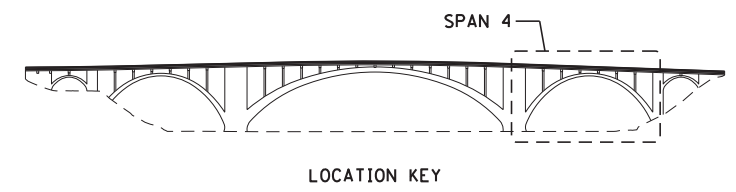
- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
- (2) DENOTES REPAIR TYPE AR-CT.
- (5) DENOTES REPAIR TYPE AR-CU.
- (6) DENOTES REPAIR TYPE AR-V OR AR-D(V).

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

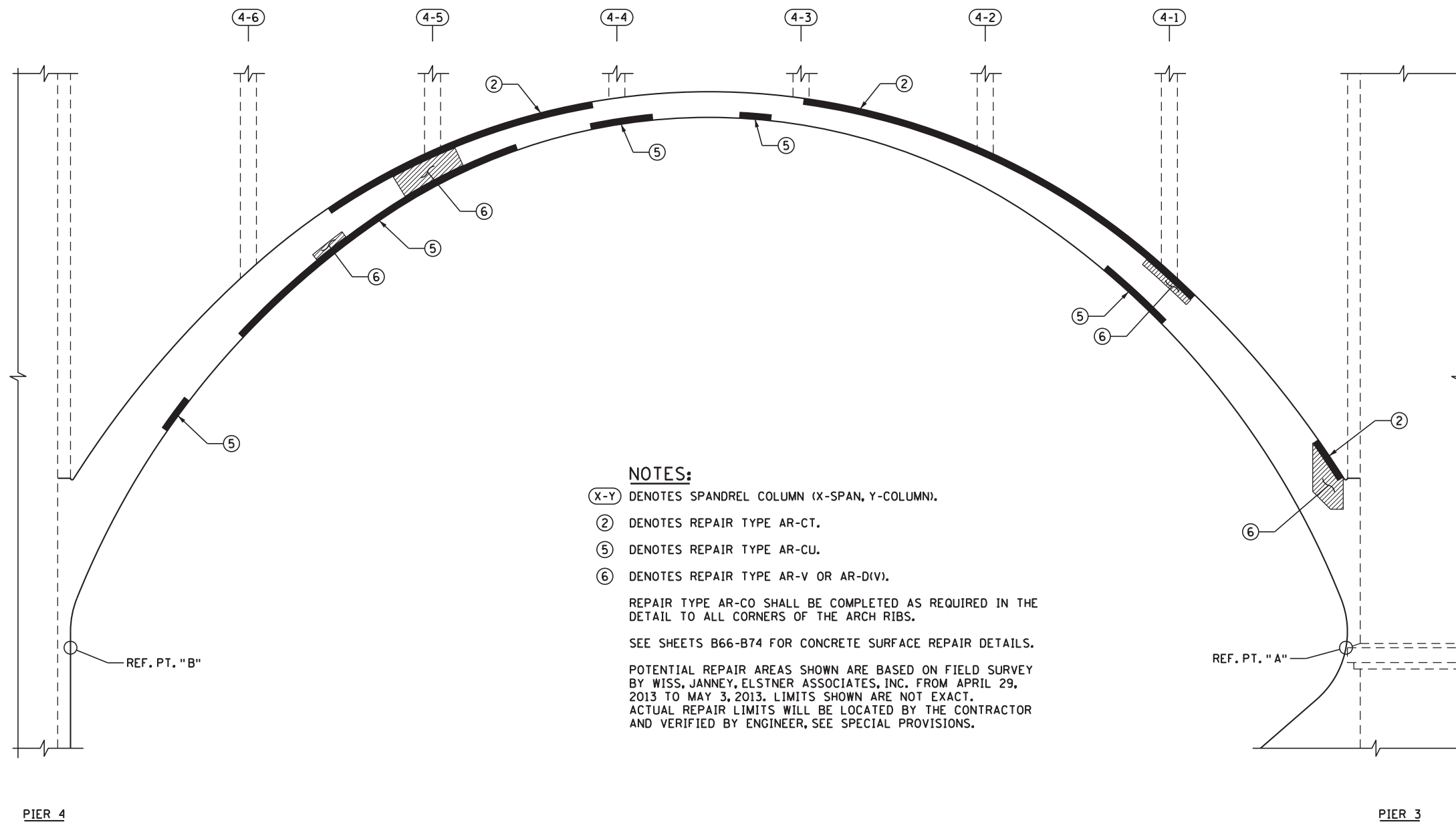
SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.

ELEVATION A-A
SOUTH ARCH RIB, LOOKING NORTH



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	DESIGN BY: APJ CAD BY: DPC CHECKED BY: SAO LAST REVISION:	REPAIR LOCATIONS - ARCH - SPAN 4 (3 OF 6)	SHEET
	 STEVE A. OLSON, PROFESSIONAL ENGINEER	21838 8/13/2014 <small>LICENSE NO. DATE</small>	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	B57 B176



NOTES:

(X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).

② DENOTES REPAIR TYPE AR-CT.

⑤ DENOTES REPAIR TYPE AR-CU.

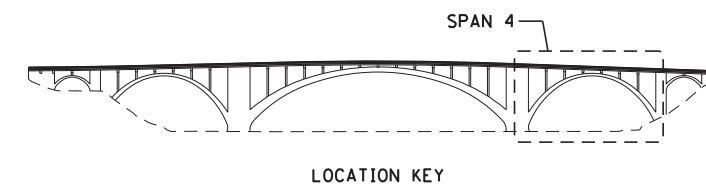
⑥ DENOTES REPAIR TYPE AR-V OR AR-D(V).

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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ELEVATION B-B
SOUTH ARCH RIB, LOOKING SOUTH



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Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

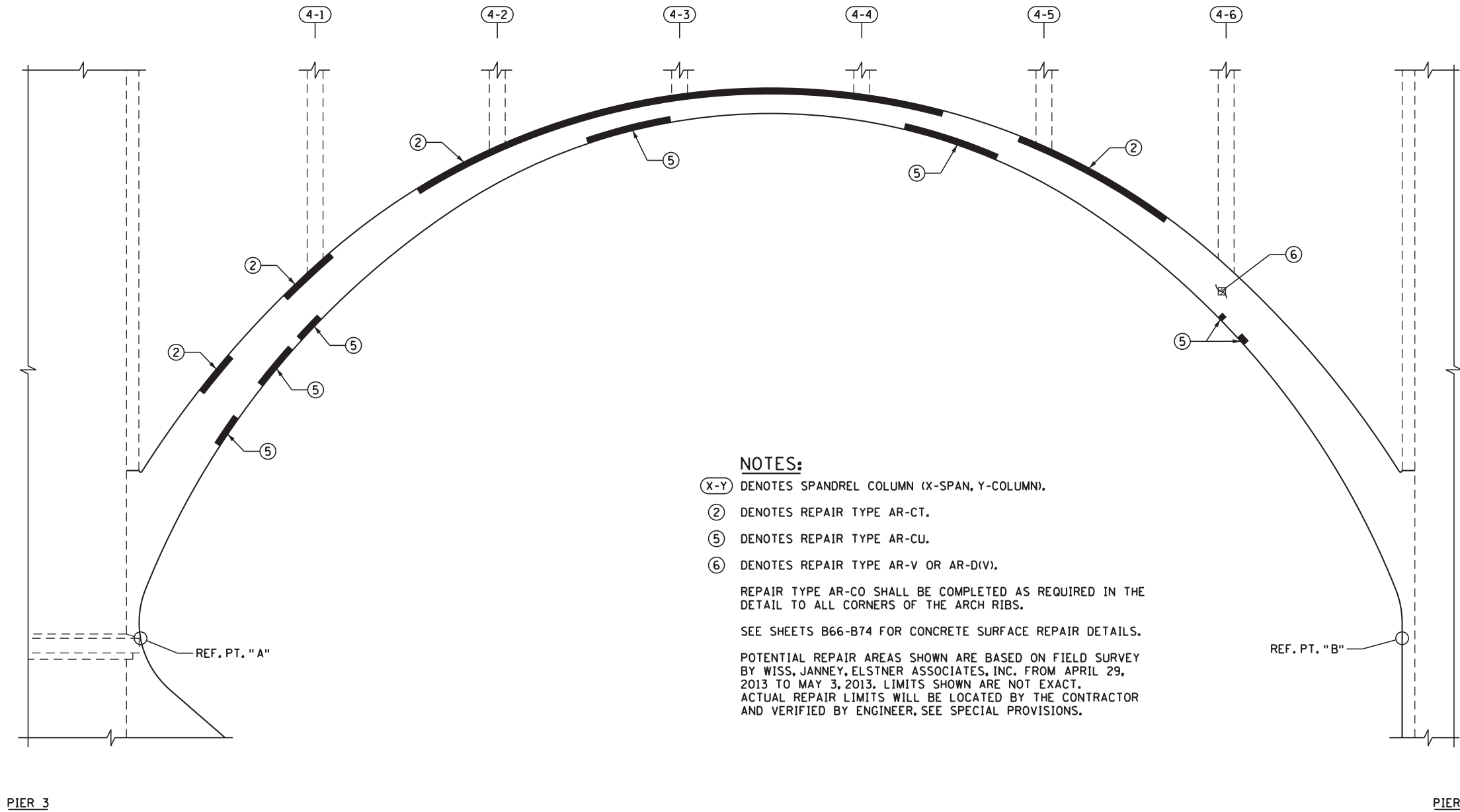
21838 8/13/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 4 (4 OF 6)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B58
B176



NOTES:

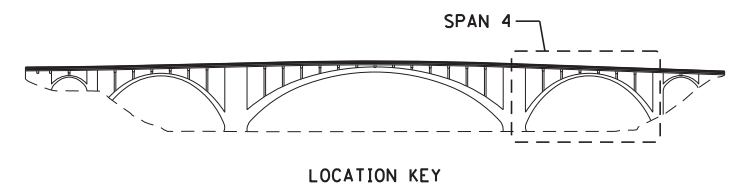
- (X-Y) DENOTES SPANDEL COLUMN (X-SPAN, Y-COLUMN).
- (2) DENOTES REPAIR TYPE AR-CT.
- (5) DENOTES REPAIR TYPE AR-CU.
- (6) DENOTES REPAIR TYPE AR-V OR AR-D(V).

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ELEVATION C-C
NORTH ARCH RIB, LOOKING NORTH



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Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

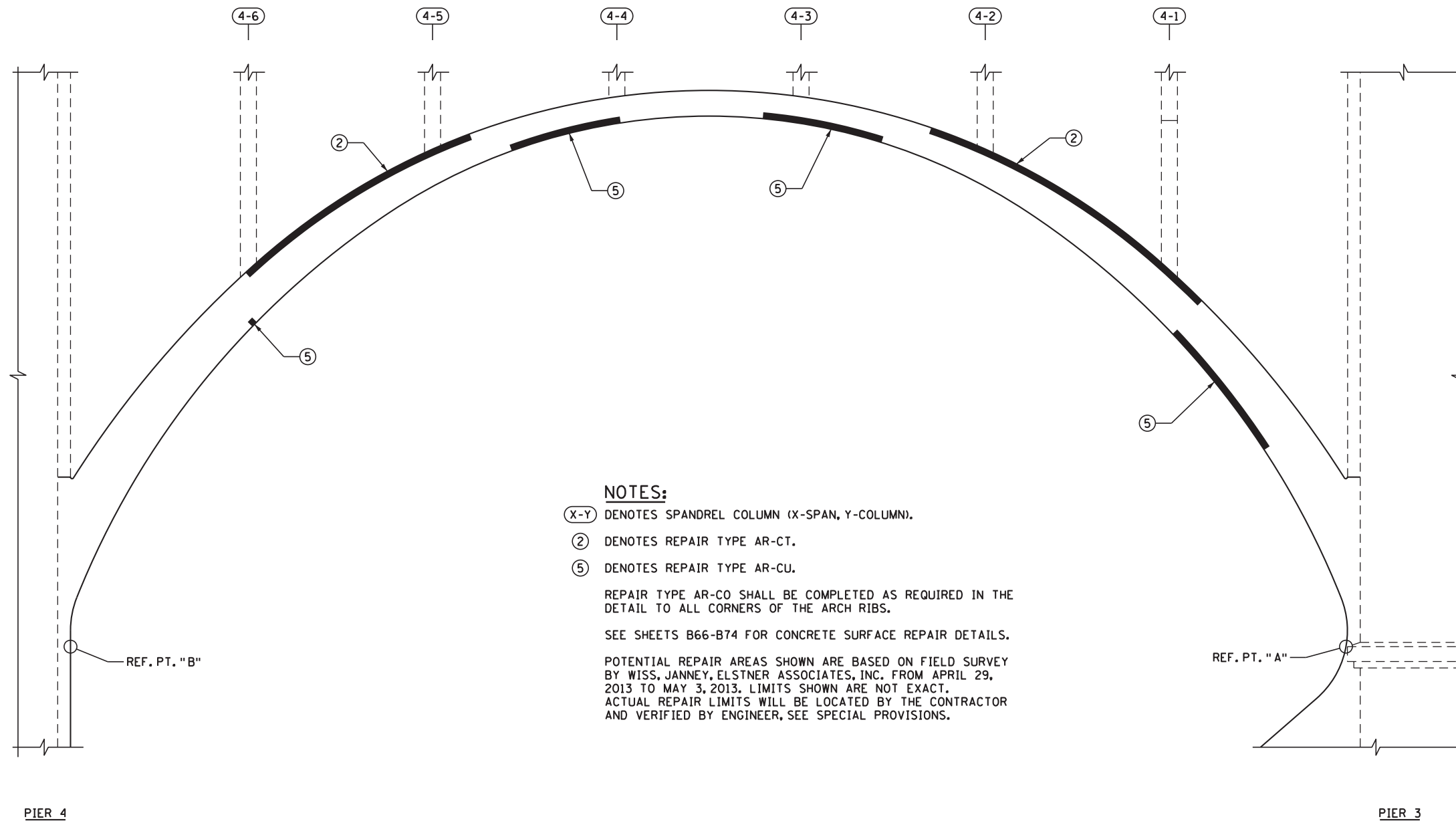
21838 8/13/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: DPC
CHECKED BY: SAO
LAST REVISION:

REPAIR LOCATIONS - ARCH - SPAN 4 (5 OF 6)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B59
B176



NOTES:

(X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).

(2) DENOTES REPAIR TYPE AR-CT.

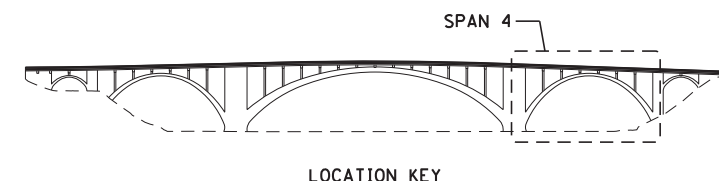
(5) DENOTES REPAIR TYPE AR-CU.



REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

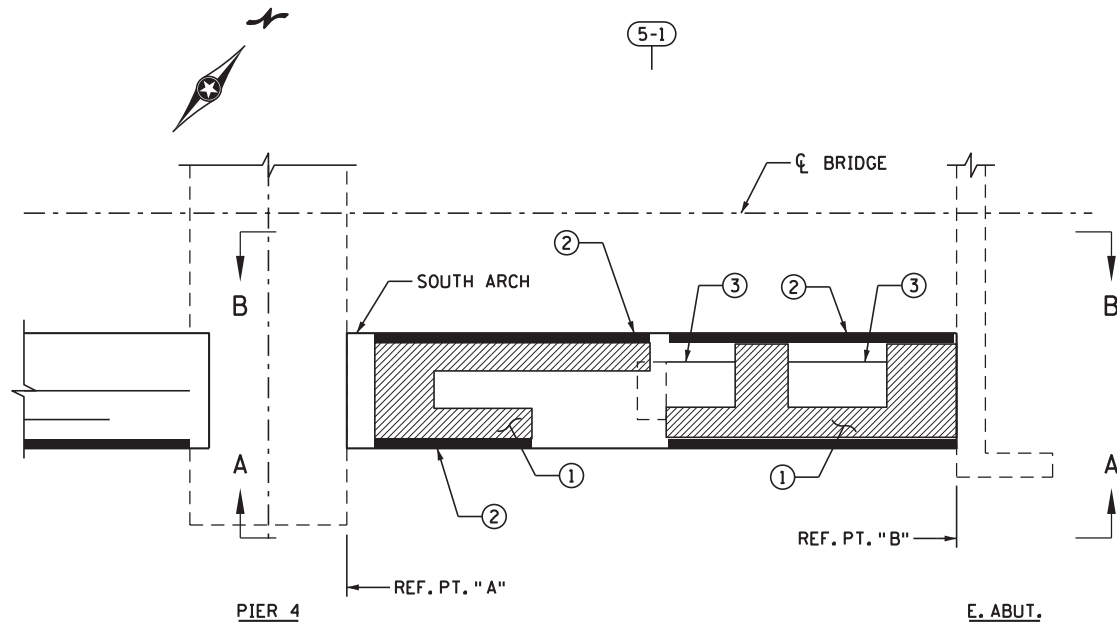
SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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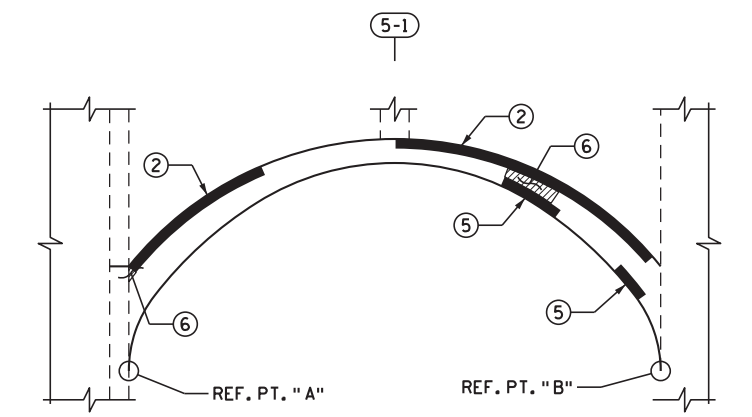
ELEVATION D-D
NORTH ARCH RIB, LOOKING SOUTH



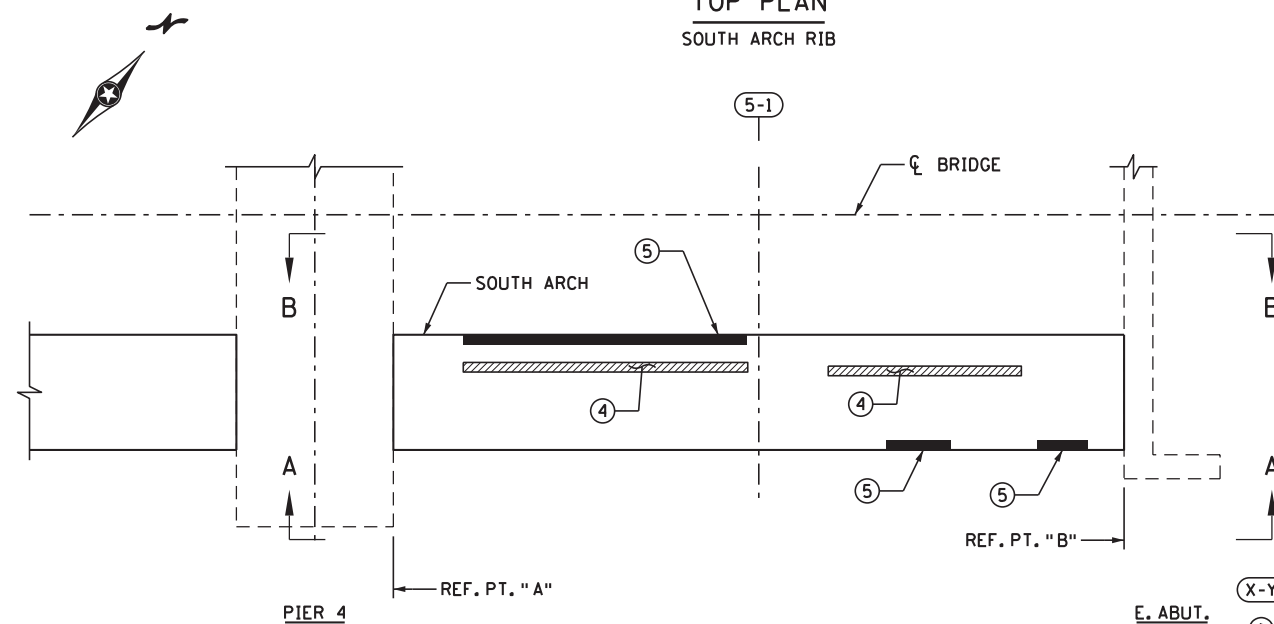
	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.		DESIGN BY: APJ CAD BY: DPC CHECKED BY: SAO LAST REVISION:	REPAIR LOCATIONS - ARCH - SPAN 4 (6 OF 6) C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	SHEET B60
	 STEVE A. OLSON, PROFESSIONAL ENGINEER	21838 8/13/2014 LICENSE NO. DATE	B176		



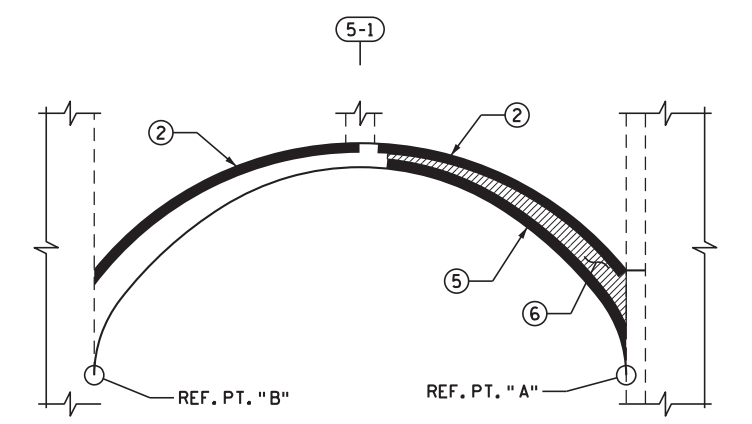
TOP PLAN
SOUTH ARCH RIB



ELEVATION A-A
LOOKING NORTH



BOTTOM PLAN
SOUTH ARCH RIB



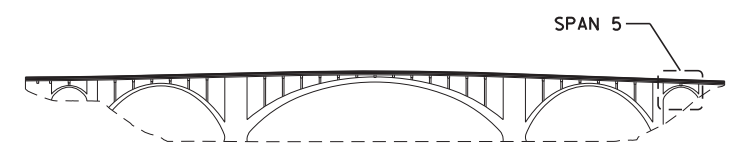
ELEVATION B-B
LOOKING SOUTH

- NOTES:**
- (X-Y) DENOTES SPANDREL COLUMN (X-SPAN, Y-COLUMN).
 - ① DENOTES REPAIR TYPE AR-T OR AR-D(T).
 - ② DENOTES REPAIR TYPE AR-CT.
 - ③ DENOTES REPAIR TYPE AR-C.
 - ④ DENOTES REPAIR TYPE AR-U OR AR-D(U).
 - ⑤ DENOTES REPAIR TYPE AR-CU.
 - ⑥ DENOTES REPAIR TYPE AR-V OR AR-D(V).

REPAIR TYPE AR-CO SHALL BE COMPLETED AS REQUIRED IN THE DETAIL TO ALL CORNERS OF THE ARCH RIBS.

SEE SHEET B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

POTENTIAL REPAIR AREAS SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29, 2013 TO MAY 3, 2013. LIMITS SHOWN ARE NOT EXACT. ACTUAL REPAIR LIMITS WILL BE LOCATED BY THE CONTRACTOR AND VERIFIED BY ENGINEER, SEE SPECIAL PROVISIONS.



LOCATION KEY



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Steve A. Olson
STEVE A. OLSON, PROFESSIONAL ENGINEER

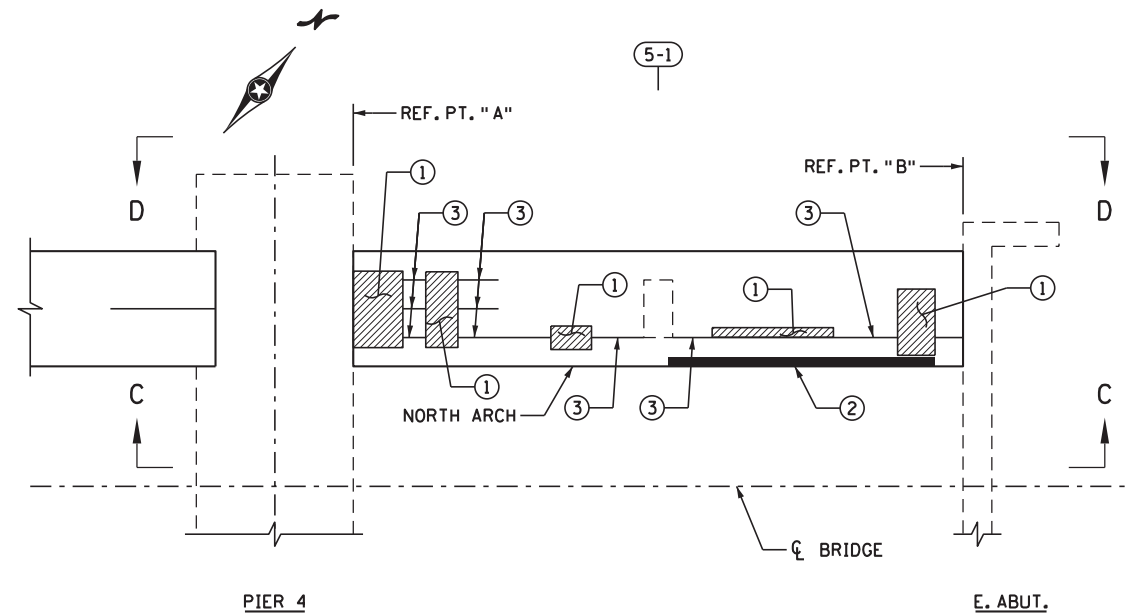
21838 8/13/2014
LICENSE NO. DATE

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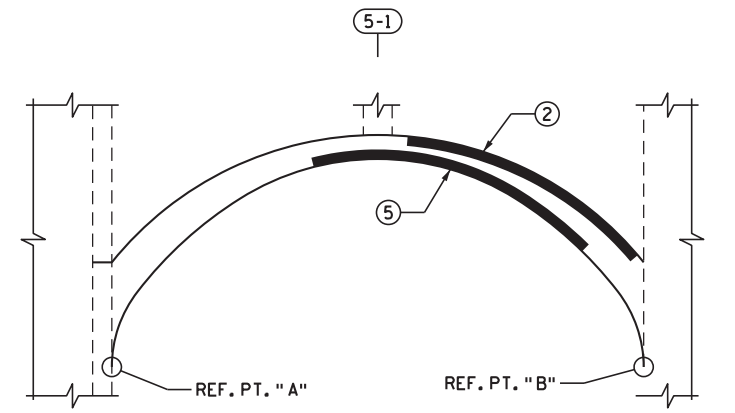
REPAIR LOCATIONS - ARCH - SPAN 5 (1 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

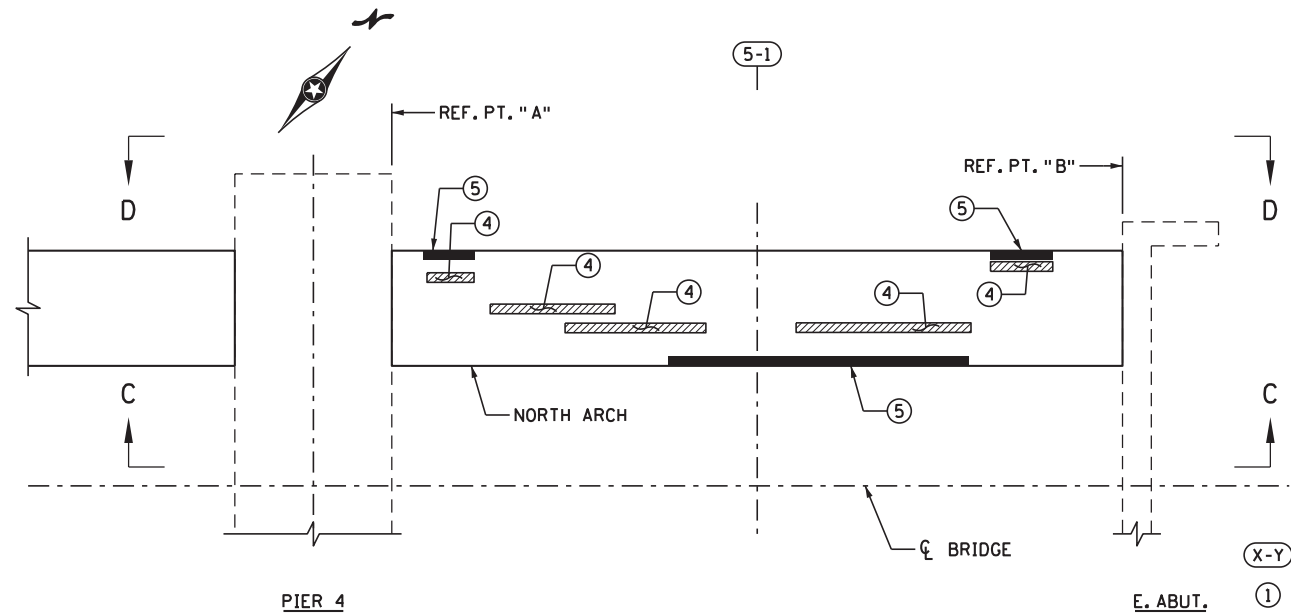
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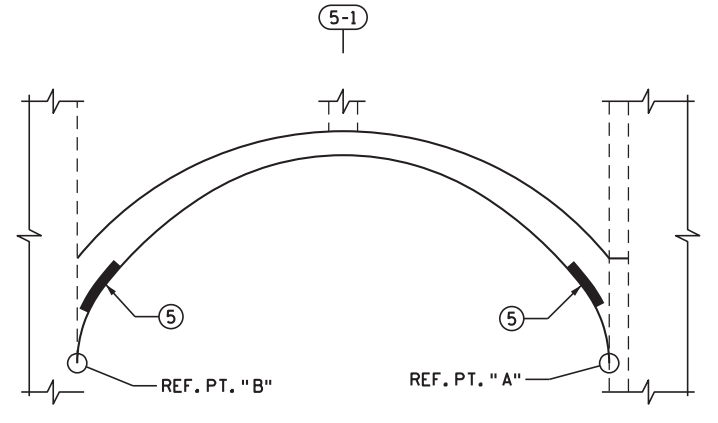
TOP PLAN
NORTH ARCH RIB



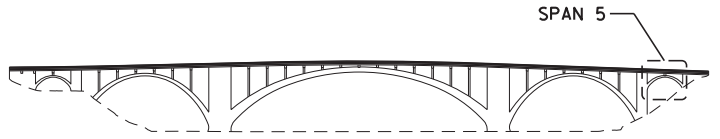
ELEVATION C-C
LOOKING NORTH



BOTTOM PLAN
NORTH ARCH RIB



ELEVATION D-D
LOOKING SOUTH



LOCATION KEY

NOTES:

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SEE SHEETS B66-B74 FOR CONCRETE SURFACE REPAIR DETAILS.

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Steve A. Olson
 STEVE A. OLSON, PROFESSIONAL ENGINEER

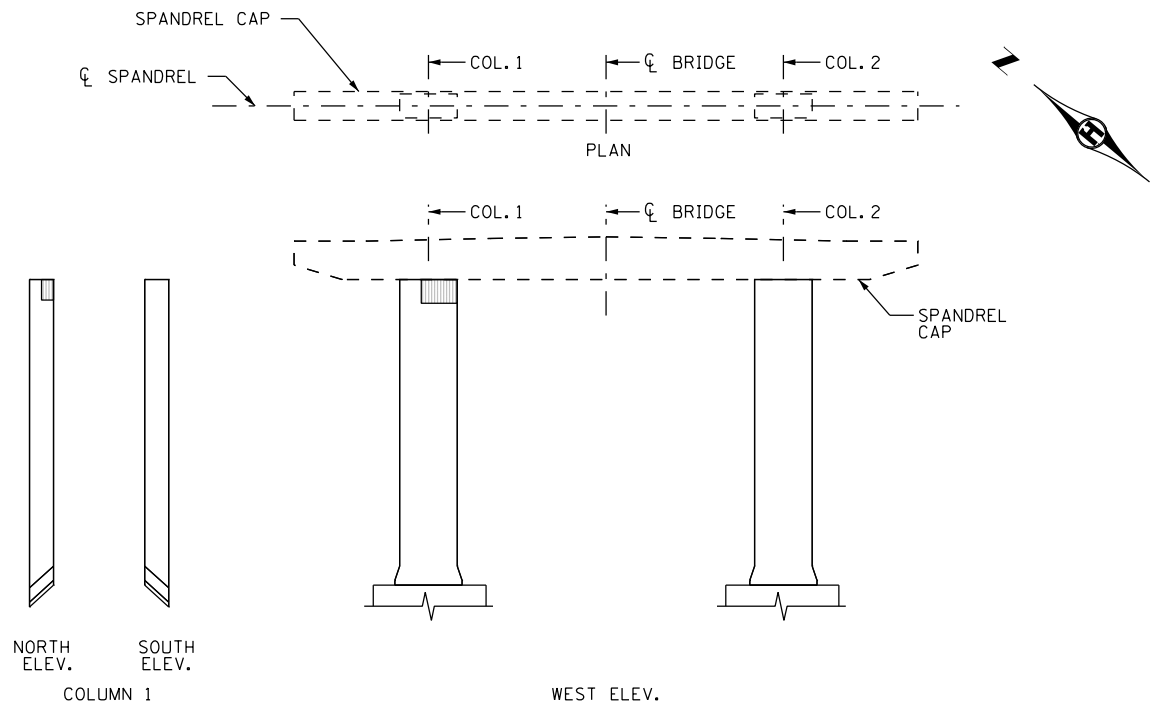
21838 8/13/2014
 LICENSE NO. DATE

DESIGN BY: APJ
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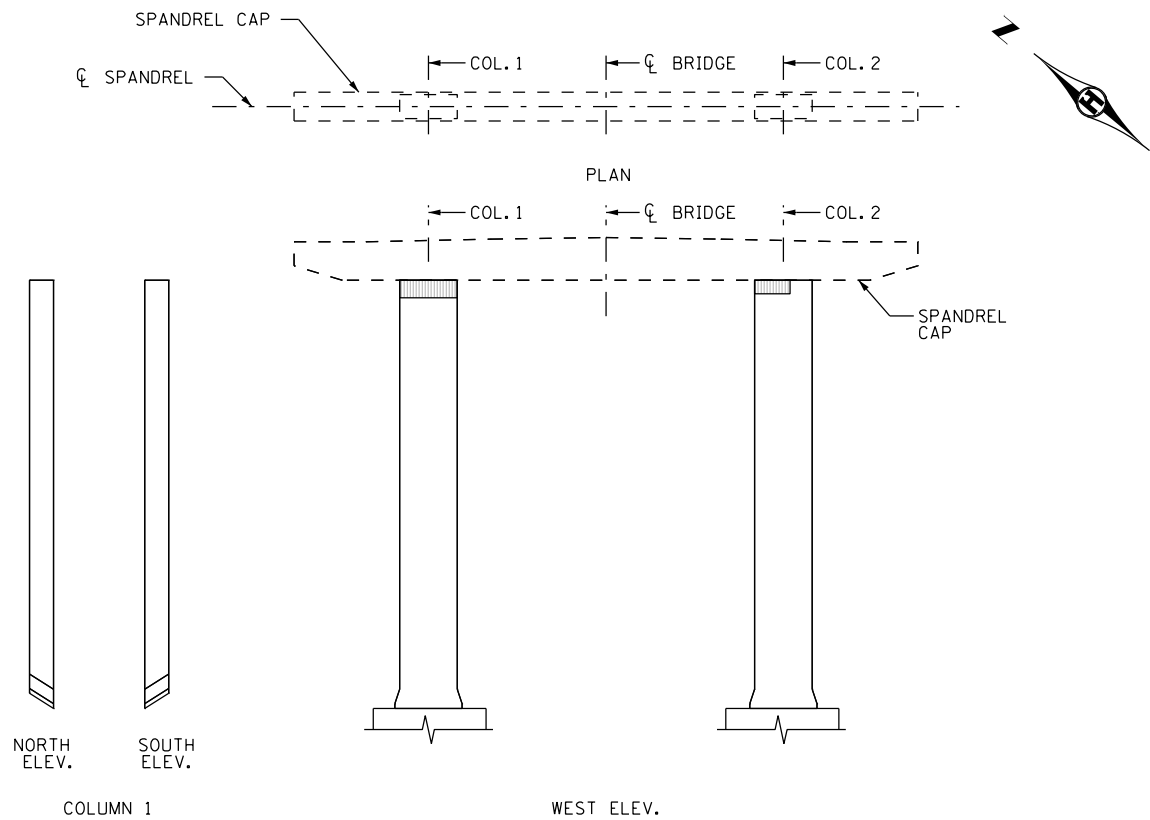
REPAIR LOCATIONS - ARCH - SPAN 5 (2 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

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SPANDREL 2-6



SPANDREL 3-1


NOTES:

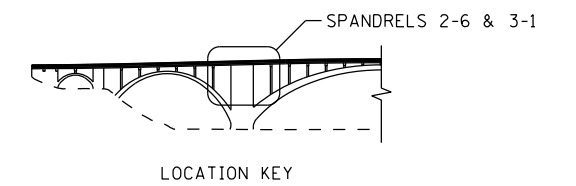
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SPANDREL CAP SHOWN FOR INFORMATION ONLY, WILL BE REMOVED AND REPLACED DURING THIS PROJECT.

CONTRACTOR WILL NOT BE COMPENSATED FOR COMPLETING REPAIRS THAT ARE LATER REMOVED AS PART OF THE PROJECT.

LEGEND:

 DENOTES REPAIR TYPE SC-1, SEE CONCRETE SURFACE REPAIR DETAILS, SHEET B71



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Daniel F. Enser

DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308
LICENSE NO.

8/14/2014
DATE

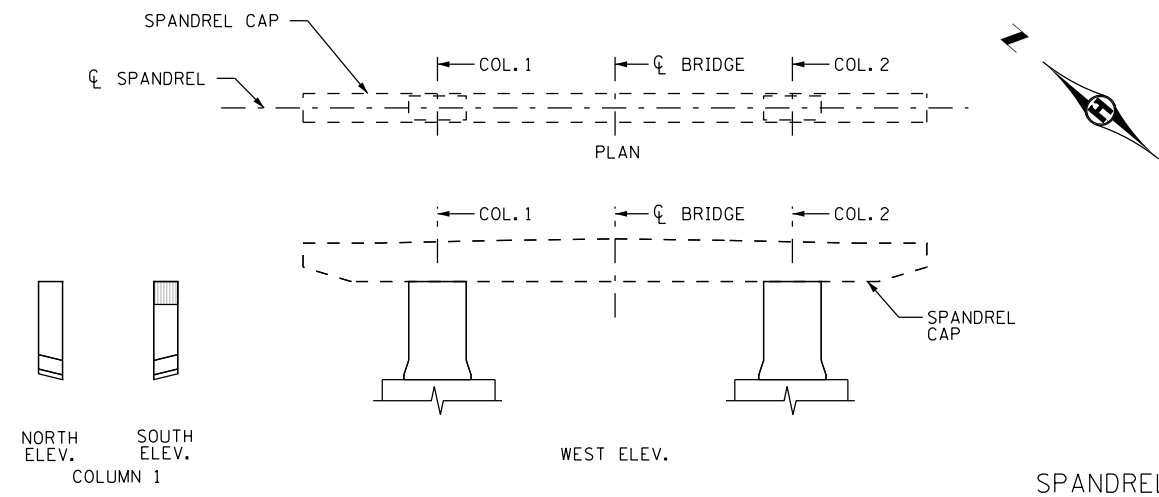
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CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

REPAIR LOCATIONS - SPANDREL (1 OF 3)

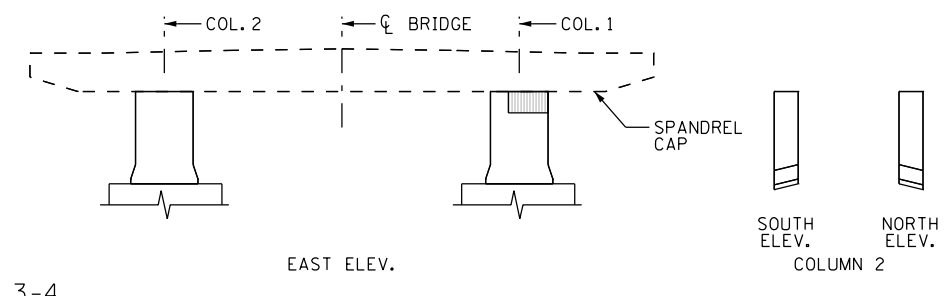
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

B63
B176



SPANDREL 3-4

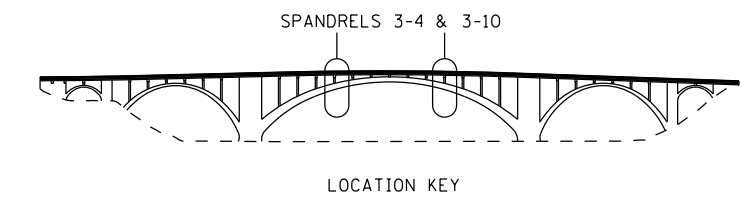
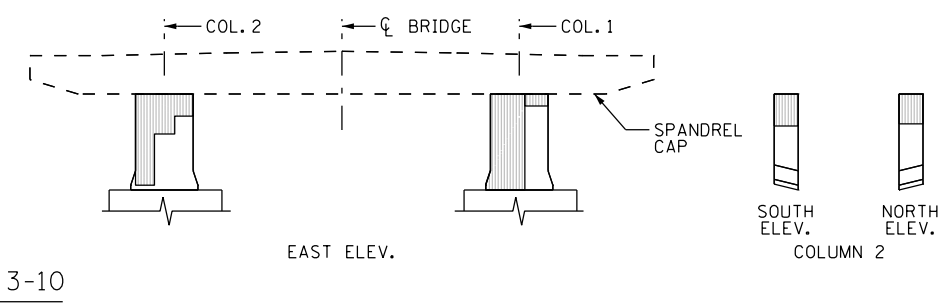
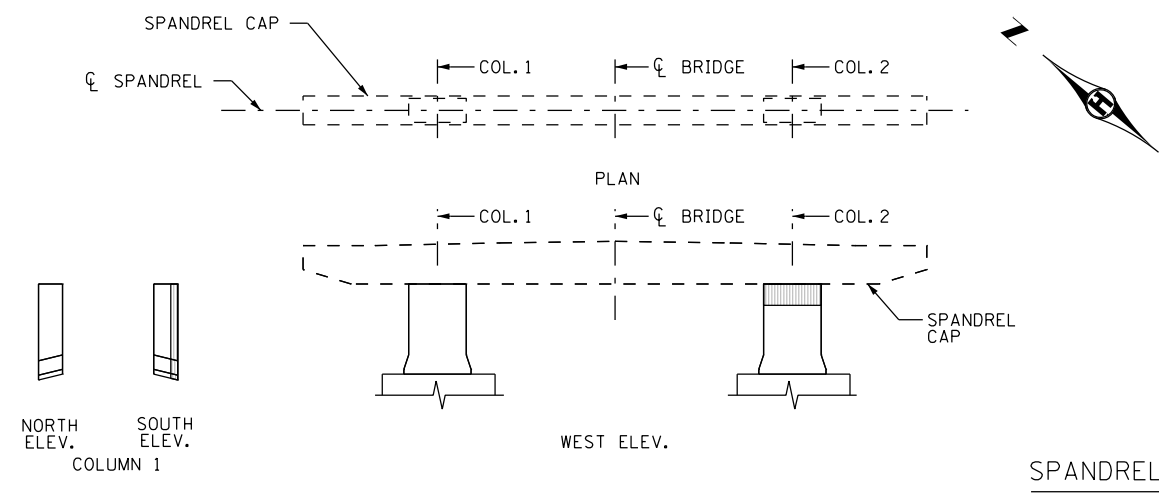


SPANDREL 3-10

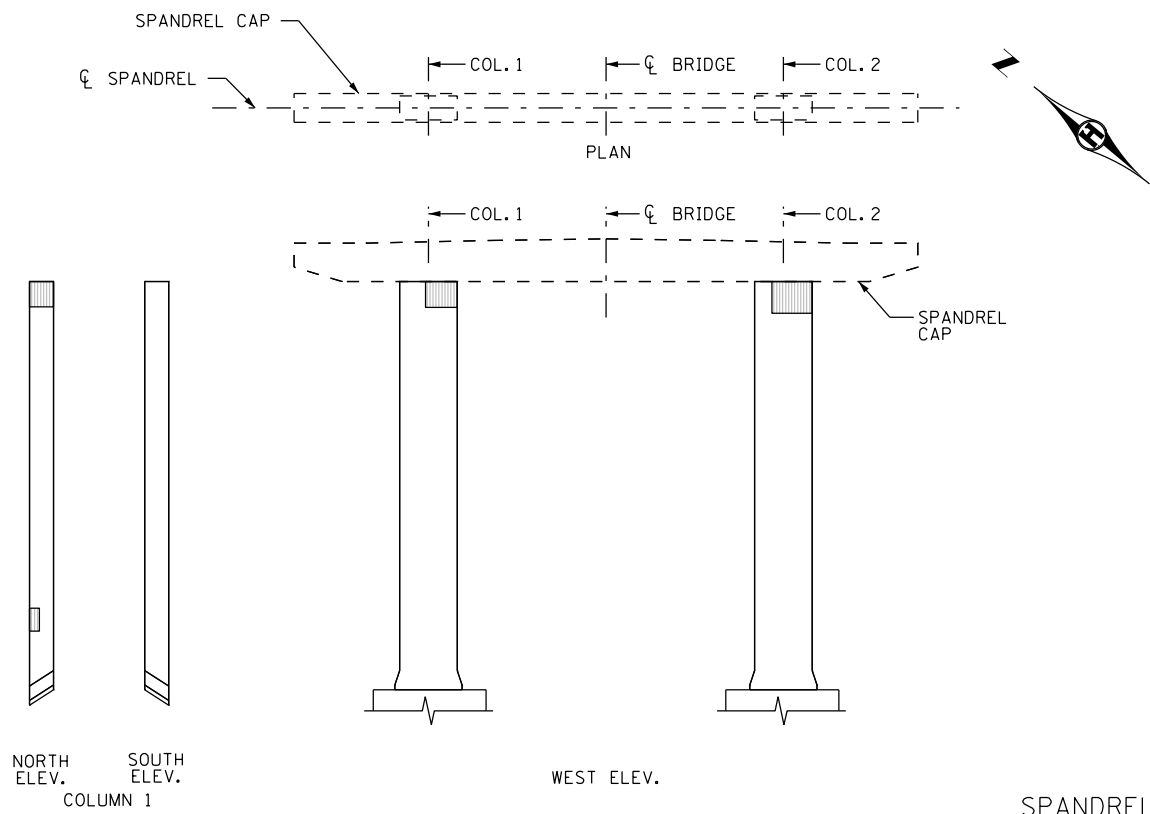
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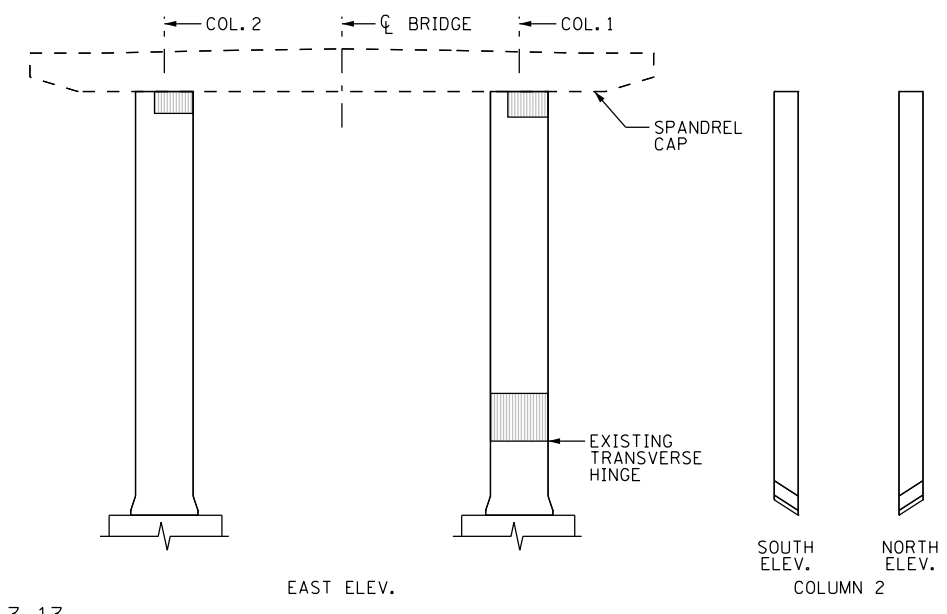
LEGEND:
 DENOTES REPAIR TYPE SC-1, SEE CONCRETE SURFACE REPAIR DETAILS, SHEET B71



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. DANIEL F. ENSER, PROFESSIONAL ENGINEER		41308 LICENSE NO.	8/14/2014 DATE	DESIGN BY: APJ CAD BY: RAM CHECKED BY: DFE LAST REVISION:	REPAIR LOCATIONS - SPANDREL (2 OF 3) C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	SHEET B64 B176
	Plotted by: mrotaraj Plotted Date: 8/13/2014 Model: SHEET File: p:\hntb\356\hntb.org\Great.Lakes\Documents\Minneapolis Projects\49799 FrankLin Bridge\Design\CADD-BRIDGE\CD\CBR2441.COL002.dgn						




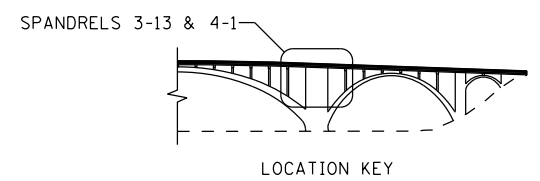
SPANDREL 3-13



SPANDREL 4-1

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 DANIEL F. ENSER, PROFESSIONAL ENGINEER
 41308 LICENSE NO.
 8/14/2014 DATE

DESIGN BY: APJ
 CAD BY: RAM
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 LAST REVISION:

REPAIR LOCATIONS - SPANDREL (3 OF 3)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B65
 B176

CONCRETE GENERAL REPAIR NOTES

REFERENCE SPECIAL PROVISIONS SECTIONS

1. CONCRETE SURFACE REPAIR -SB-17.2
2. MOCK- UPS -SB-17.3
3. CONCRETE FORMWORK FOR BOARD FORM FINISH -SB-17.4
4. CONCRETE REPAIR MATERIALS -SB-17.5
5. SHOTCRETE -SB-17.6
6. REINFORCING STEEL -SB-17.7
7. REINFORCING BAR ANCHORAGE (POST-INSTALLED) -SB-17.8
8. EMBEDDED GALVANIC ANODES -SB-17.9
9. COATING FOR EMBEDDED STRUCTURAL STEEL MEMBERS -SB-17.10
10. ROUT AND SEAL CRACKS -SB-17.11
11. CONCRETE COATING -SB-17.13

GENERAL REPAIR PROCEDURE

1. SURVEY AND DEMOLITION

- A. THE CONTRACTOR SHALL IDENTIFY AND MARK AREAS TO BE REPAIRED.
- B. THE CONTRACTOR SHALL PERFORM VISUAL INSPECTION AND SOUNDING OF ALL CONCRETE SURFACES TO CONFIRM REPAIR AREAS SHOWN ON THE PLANS AND TO IDENTIFY ANY OTHER AREAS OF UNSOUND CONCRETE THAT NEED REPAIR. REVIEW PROPOSED ADDITIONAL REPAIR AREAS WITH THE ENGINEER. THE ENGINEER WILL REVIEW AND ACCEPT THE FINAL REPAIR LOCATIONS. DO NOT START CONCRETE REMOVAL UNTIL THE REPAIR AREA LOCATIONS HAVE BEEN APPROVED BY THE ENGINEER.
- C. SAWCUT PATCH PERIMETER AND REMOVE UNSOUND AND FREEZE-THAW DAMAGED CONCRETE. SOUND CONCRETE SURFACES SHALL HAVE AGGREGATE FRACTURED AND EMBEDDED IN THE SURROUNDING PASTE.
- D. LEGALLY DISPOSE OF DEMOLISHED MATERIALS.

2. CONCRETE SURFACE PREPARATION.

- A. ABRASIVE-BLAST CAVITY AND SAWCUTS, TO REMOVE DELETERIOUS MATERIALS.
- B. CAVITY SURFACES SHALL CONFORM TO ICRI CSP 7 WITH MINIMUM PEAK-TO-VALLEY SURFACE ROUGHNESS OF 1/4 INCH.
- C. BLOW CAVITY CLEAN WITH OIL FREE COMPRESSED AIR TO REMOVE LOOSE PARTICLES.

3. REINFORCEMENT AND STEEL PREPARATION

- A. CLEAN ALL EXPOSED EXISTING REINFORCEMENT AND ALL EXPOSED EXISTING STEEL TO MEET SSPC-SP 6 / NACE NO. 3, COMMERCIAL BLAST CLEANING. EXPOSED ELEMENTS ARE THOSE ELEMENTS IN A REPAIR AREA THAT ARE NOT EMBEDDED IN SOUND CONCRETE.
- B. COAT EXPOSED EXISTING REINFORCEMENT AND EXPOSED STEEL WITH TWO COATS OF CORROSION-INHIBITING PRIMER.
- C. INSTALL ADDITIONAL REINFORCING STEEL (EPOXY COATED) AS SHOWN IN THE DRAWINGS FOR CONCRETE SURFACE REPAIRS. ADDITIONAL REINFORCING STEEL (EPOXY COATED) IS INCIDENTAL TO THE CONCRETE SURFACE REPAIR TYPE THAT THE BARS WILL BE INSTALLED IN.
- D. INSTALL SUPPLEMENTAL REINFORCING STEEL (EPOXY- COATED) AS SHOWN ON THE DRAWINGS AND AS DIRECTED BY ENGINEER TO REPLACE EXISTING REINFORCEMENT THAT IS CORRODED, SEE SHEET B72.
- E. CLEAR COVER TO NEW REINFORCEMENT; 2" MINIMUM, OR SAME AS EXISTING REINFORCEMENT, WHICHEVER IS GREATER. CLEAR COVER TO EXISTING REINFORCEMENT; WHERE POSSIBLE, ADJUST EXISTING REINFORCEMENT DEPTH TO PROVIDE 2" MINIMUM COVER.
- F. MIN LAP SPLICE AND STANDARD 90 DEGREE BEND LENGTH FOR NEW EPOXY BARS PLACED IN CONCRETE SURFACE REPAIRS SHALL BE DETERMINED USING TABLE BELOW.

MIN LAP SPLICE		STANDARD 90° BEND LENGTH
BAR SIZE	SPLICE OR LAP LENGTH	
4	1'-3"	8"
5	1'-7"	10"
6	2'-5"	1'-0"
7	3'-0"	1'-2"

4. GALVANIC ANODES

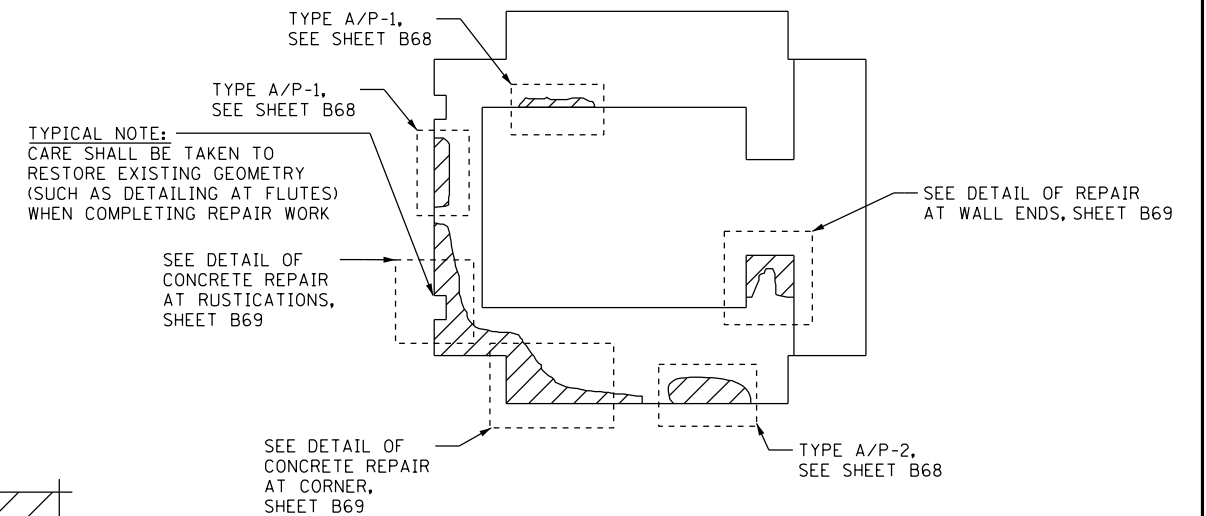
- A. INSTALL CONTINUOUS GALVANIC ANODES AT ALL FOUR CORNERS AT ARCH RIB LOCATIONS OUTSIDE OF CONCRETE REPAIR AREAS, SEE SHEET B73.

5. CONCRETE PLACEMENT, CURING, AND FINISH

- A. SATURATE CONCRETE SURFACES WITH WATER PRIOR TO PLACEMENT TO OBTAIN SSD CONDITIONS. REMOVE STANDING WATER FROM SURFACES.
 - B. PLACE REPAIR CONCRETE TO SHAPE AND FINISH TO MATCH SURROUNDING CONCRETE.
SPECIAL CONCRETE FINISH:
 * AT WEST ABUTMENT, SPAN 1 ARCH RIBS, AND PIER 1 AS PROVIDED IN THE SPECIAL PROVISIONS, PROVIDE MATCHING CONCRETE TEXTURE CONSISTENT WITH ADJACENT FORM BOARD LINES.
 * AT OTHER LOCATIONS, MATCHING TEXTURE IS NOT REQUIRED.
 - C. CURE CONCRETE REPAIR WITH MOISTURE-RETAINING COVER OR IN FORMWORK.
 - D. PERFORM TOUCH-UP PATCHING AND GRINDING OF REPAIR AREAS FOR A SMOOTH TRANSITION BETWEEN REPAIR AND ADJACENT CONCRETE.
 - E. TREAT SURFACES WITH FILM FORMING COATING, SEE SPECIAL PROVISION FOR LOCATIONS OF APPLICATION.
 - F. SEE SPECIAL PROVISIONS.
6. MEASUREMENT AND PAYMENT:
- A. MEASURE AND DOCUMENT REPAIR QUANTITIES. BASIS OF MEASUREMENT AND PAYMENT IS SHOWN IN THE REPAIR DETAILS AND SPECIAL PROVISIONS.
 - B. REVIEW WITH ENGINEER ON-SITE. SCHEDULE REVIEW OF MARKED AREAS AND PRELIMINARY QUANTITIES BEFORE DEMOLITION. REVIEW OF FINAL QUANTITIES PER PATCH TO OCCUR PRIOR TO PLACEMENT OF CONCRETE REPAIR MATERIAL.

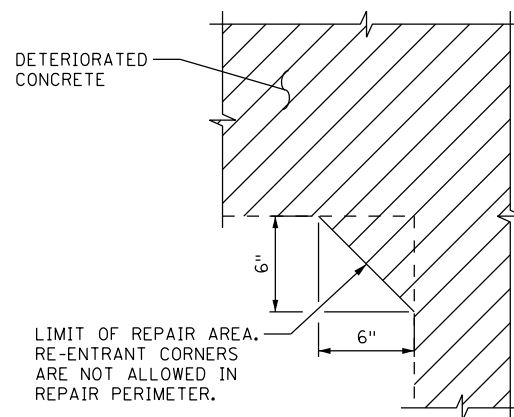
REHABILITATION NOTES:

1. THE FRANKLIN AVENUE BRIDGE IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES AND IS A CITY OF MINNEAPOLIS HISTORIC LANDMARK. CONTRACTOR SHALL PRESERVE AND PROTECT ALL ELEMENTS OF THE BRIDGE TO REMAIN.
2. NO REMOVAL IS PERMITTED UNTIL THE REMOVAL LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. REMOVAL AND RECONSTRUCTION SHALL CONFORM TO SPEC 2433 AND THE SPECIAL PROVISIONS.
3. APPLY FILM FORMING COATING PER THE SPECIAL PROVISIONS, PAID FOR UNDER "HISTORIC CONCRETE SURFACE TREATMENT".
4. ALL EXISTING NON-ADHERING PROTECTIVE COATINGS SHALL BE REMOVED PRIOR TO COMPLETING CONCRETE REPAIR AND COATING, SEE SPECIAL PROVISIONS.

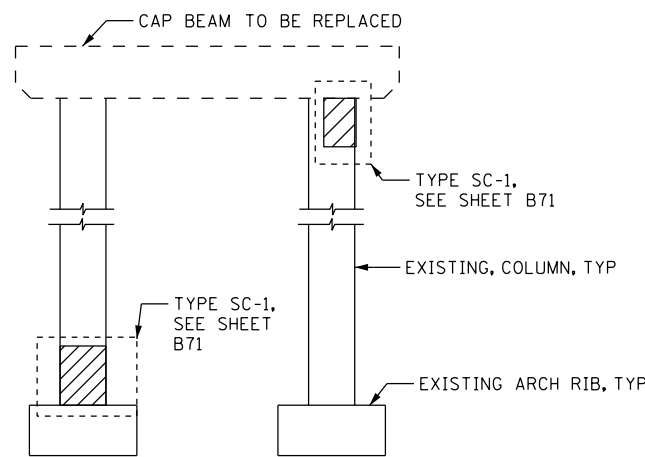


ABUTMENTS/PIERS - REPRESENTATIVE CONCRETE REPAIR TYPES

LOOKING DOWN AT SECTION THROUGH COLUMN OF PIER 1 OR 4 SHOWN, ABUTMENT REPAIRS AND REPAIRS AT PIER 2 AND 3 ARE SIMILAR, SEE SHEET B67 FOR REPAIR DESCRIPTION AND QUANTITY

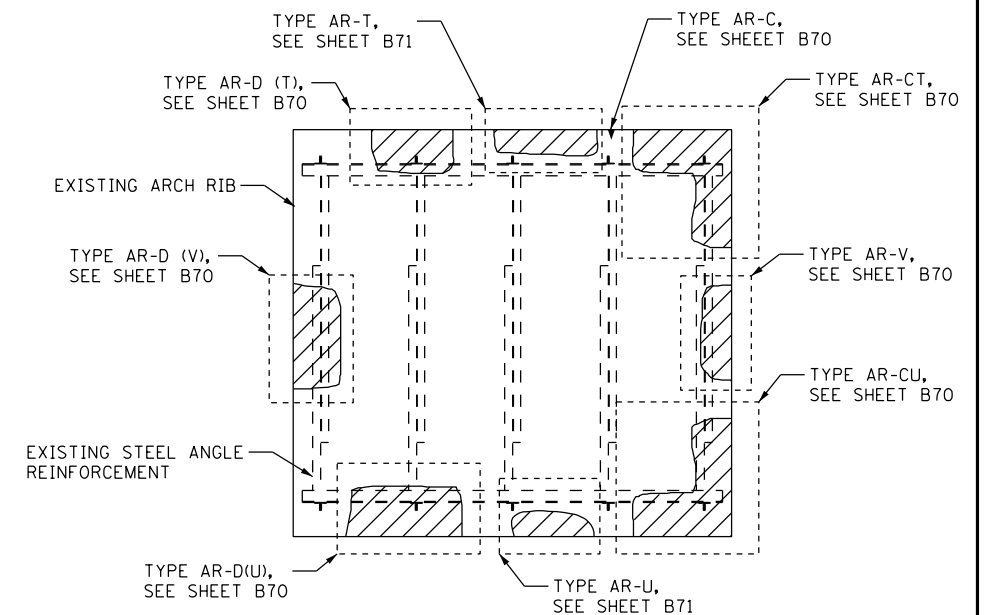


PROPOSED RE-ENTRANT CORNER DETAIL



SPANDREL COLUMNS-REPRESENTATIVE CONCRETE REPAIR TYPES

SEE SHEET B67 FOR REPAIR DESCRIPTION AND QUANTITY



ARCH RIB-REPRESENTATIVE CONCRETE REPAIR TYPES

SEE SHEET B67 FOR REPAIR DESCRIPTION AND QUANTITY



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Daniel F. Enser
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41308 8/14/2014
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DESIGN BY: APJ
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 LAST REVISION:

CONCRETE SURFACE REPAIR DETAILS (1 OF 9)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B66
 B176

SCHEDULE OF ABUMENT/PIER REPAIR QUANTITIES

PAY ITEM TYPE ⑤	REPAIR TYPE ①	DESCRIPTION	UNIT	TOTAL	WEST ABUTMENT AND WALLS	EAST ABUTMENT AND WALLS	PIER 1- EXTERIOR	PIER 1- INTERIOR	PIER 2- EXTERIOR	PIER 2- INTERIOR	PIER 3- EXTERIOR	PIER 3- INTERIOR	PIER 4- EXTERIOR	PIER 4- INTERIOR
A	TYPE A/P-1	TYPICAL VERTICAL SURFACE REPAIR	SF	6000	464	564	942	69	269	372	322	1065	1899	34
B	TYPE A/P-2 @ 8"	TYPICAL DEEP SURFACE REPAIR (8" DEPTH)	SF	1448	26	31	314	35	15	80	18	228	633	68
C	TYPE A/P-2 @ 10"	TYPICAL DEEP SURFACE REPAIR (10" DEPTH) ⑥	SF	759	15	19	157	21	9	53	11	152	316	6
D	TYPE A/P-2 @ 12"	TYPICAL DEEP SURFACE REPAIR (12" DEPTH)	SF	631	10	13	157	13	6	26	7	76	317	6
E	TYPE P-1	TYPICAL REINFORCED RIVER PIER JACKET	EACH	2	0	0	0	0	1	0	1	0	0	0
N ④	TYPE P-2	TYPICAL RIVER PIER TOP SURFACE REPAIR	SF	1178	0	0	0	0	589	0	589	0	0	0

SCHEDULE OF ARCH RIB REPAIR QUANTITIES

PAY ITEM TYPE ⑤	REPAIR TYPE ①	DESCRIPTION	UNIT	TOTAL	SPAN 1- NORTH RIB	SPAN 1- SOUTH RIB	SPAN 2- NORTH RIB	SPAN 2- SOUTH RIB	SPAN 3- NORTH RIB	SPAN 3- SOUTH RIB	SPAN 4- NORTH RIB	SPAN 4- SOUTH RIB	SPAN 5- NORTH RIB	SPAN 5- SOUTH RIB
F	TYPE AR-CT	ARCH RIB CORNER REPAIR	LF	2345	31	82	155	273	544	648	218	259	29	106
F	TYPE AR-CU	ARCH RIB UNDERSIDE CORNER REPAIR	LF	1893	57	89	193	251	459	410	113	236	43	42
G	TYPE AR-T	TYPICAL ARCH TOPSIDE SURFACE REPAIR	SF	4034	27	97	127	147	1008	2074	62	131	100	261
H	TYPE AR-D(T) @ 8"	TYPICAL ARCH DEEP TOPSIDE SURFACE REPAIR (8" DEPTH)	SF	504	3	12	16	18	126	259	8	16	13	33
J	TYPE AR-D(T) @ 10"	TYPICAL ARCH DEEP TOPSIDE SURFACE REPAIR (10" DEPTH) ⑥	SF	252	2	6	8	9	63	130	4	8	6	16
K	TYPE AR-D(T) @ 12"	TYPICAL ARCH DEEP TOPSIDE SURFACE REPAIR (12" DEPTH)	SF	252	2	6	8	9	63	130	4	8	6	16
G	TYPE AR-U	TYPICAL ARCH UNDERSIDE SURFACE REPAIR	SF	1065	133	120	32	196	100	305	56	23	53	47
H	TYPE AR-D(U) @ 8"	TYPICAL ARCH DEEP UNDERSIDE SURFACE REPAIR (8" DEPTH)	SF	23	3	3	1	4	2	7	1	0	1	1
J	TYPE AR-D(U) @ 10"	TYPICAL ARCH DEEP UNDERSIDE SURFACE REPAIR (10" DEPTH) ⑥	SF	23	3	3	1	4	2	7	1	0	1	1
K	TYPE AR-D(U) @ 12"	TYPICAL ARCH DEEP UNDERSIDE SURFACE REPAIR (12" DEPTH)	SF	23	3	3	1	4	2	7	1	0	1	1
G	TYPE AR-V	TYPICAL ARCH VERTICAL SURFACE REPAIR	SF	783	2	0	29	40	96	541	2	71	0	2
H	TYPE AR-D(V) @ 8"	TYPICAL ARCH DEEP VERTICAL SURFACE REPAIR (8" DEPTH)	SF	17	0	0	1	1	1	12	0	2	0	0
J	TYPE AR-D(V) @ 10"	TYPICAL ARCH DEEP VERTICAL SURFACE REPAIR (10" DEPTH) ⑥	SF	17	0	0	1	1	1	12	0	2	0	0
K	TYPE AR-D(V) @ 12"	TYPICAL ARCH DEEP VERTICAL SURFACE REPAIR (12" DEPTH)	SF	17	0	0	1	1	1	12	0	2	0	0
②	TYPE AR-C	ROUT AND SEAL CRACKS	LF	2642	8	13	374	297	785	222	382	498	45	18
L ③	TYPE AR-CO	ARCH RIB CORNER CATHODIC PROTECTION	LF	4221	191	108	521	345	768	714	700	536	207	131

SCHEDULE OF SPANDREL COLUMN REPAIR QUANTITIES

PAY ITEM TYPE ⑤	REPAIR TYPE ①	DESCRIPTION	UNIT	TOTAL	SPAN 1- NORTH COLUMNS	SPAN 1- SOUTH COLUMNS	SPAN 2- NORTH COLUMNS	SPAN 2- SOUTH COLUMNS	SPAN 3- NORTH COLUMNS	SPAN 3- SOUTH COLUMNS	SPAN 4- NORTH COLUMNS	SPAN 4- SOUTH COLUMNS	SPAN 5- NORTH COLUMNS	SPAN 5- SOUTH COLUMNS
M	TYPE SC-1	TYPICAL COLUMN SURFACE REPAIR	SF	296	0	0	23	22	126	87	0	38	0	0

① NOMENCLATURE DEFINITIONS

A=ABUTMENT
P=PIER
AR=ARCH
SC=SPANDREL COLUMNS

② TO BE PAID FOR BY LINEAR FOOT AS "ROUT AND SEAL CRACKS"

③ COST FOR CATHODIC PROTECTION INCLUDES ANODES AND ALL OTHER ELEMENTS THAT MAKE UP THE CATHODIC PROTECTION SYSTEM, SEE SPECIAL PROVISIONS. TO BE PAID FOR BY LINEAR FOOT AS "CONCRETE SURFACE REPAIR TYPE L"

④ ESTIMATED QUANTITY FOR TYPE P-2 REPAIRS IS BASED ON THE LENGTH = 31'-0" AND THE WIDTH = 19'-0", 6" REPAIR DEPTH = 530 SF (EACH RIVER PIER) AND 12" REPAIR DEPTH = 59 SF (EACH RIVER PIER).

⑤ CONCRETE SURFACE REPAIRS AND CATHODIC PROTECTION ARE PAID FOR BY CONCRETE SURFACE REPAIR TYPE NOTED, SEE SPECIAL PROVISIONS.

⑥ IF SOUND CONCRETE IS NOT ACHIEVED WITHIN A DEPTH OF 6", CONTRACTOR SHALL OBTAIN ENGINEER'S ACCEPTANCE TO REMOVE CONCRETE TO A DEPTH OF 8". SIMILARLY, OBTAIN ENGINEER'S APPROVAL TO REMOVE CONCRETE FROM 8" TO 10" AND 10" TO 12". ENGINEER'S ACCEPTANCE IS REQUIRED PRIOR TO REMOVING CONCRETE TO THE NEXT DEPTH INTERVAL.

NOTES:

REPAIR QUANTITY ESTIMATES SHOWN ARE BASED ON FIELD SURVEY BY WISS, JANNEY, ELSTNER ASSOCIATES, INC. FROM APRIL 29TH, 2013 TO MAY 3, 2013 FIELD SURVEY. QUANTITY ESTIMATES SHOWN DO NOT INCLUDE ANY INCREASE FOR POTENTIAL COMBINING OF ADJACENT REPAIR AREAS IF ACCEPTED BY ENGINEER, SEE SPECIAL PROVISIONS.

SEE SHEET B69 FOR REPAIR MEASUREMENT INFORMATION.

SEE SPECIAL PROVISIONS.

REHABILITATION NOTES:

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2. NO REMOVAL IS PERMITTED UNTIL THE REMOVAL LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. REMOVAL AND RECONSTRUCTION SHALL CONFORM TO SPEC 2433 AND THE SPECIAL PROVISIONS.
3. APPLY FILM FORMING COATING PER THE SPECIAL PROVISIONS, PAID FOR UNDER "HISTORIC CONCRETE SURFACE TREATMENT".
4. ALL EXISTING NON-ADHERING PROTECTIVE COATINGS SHALL BE REMOVED PRIOR TO COMPLETING CONCRETE REPAIR AND COATING, SEE SPECIAL PROVISIONS.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser

DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308

LICENSE NO.

8/14/2014

DATE

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APJ

CAD BY:

RAM

CHECKED BY:

DFE

LAST REVISION:

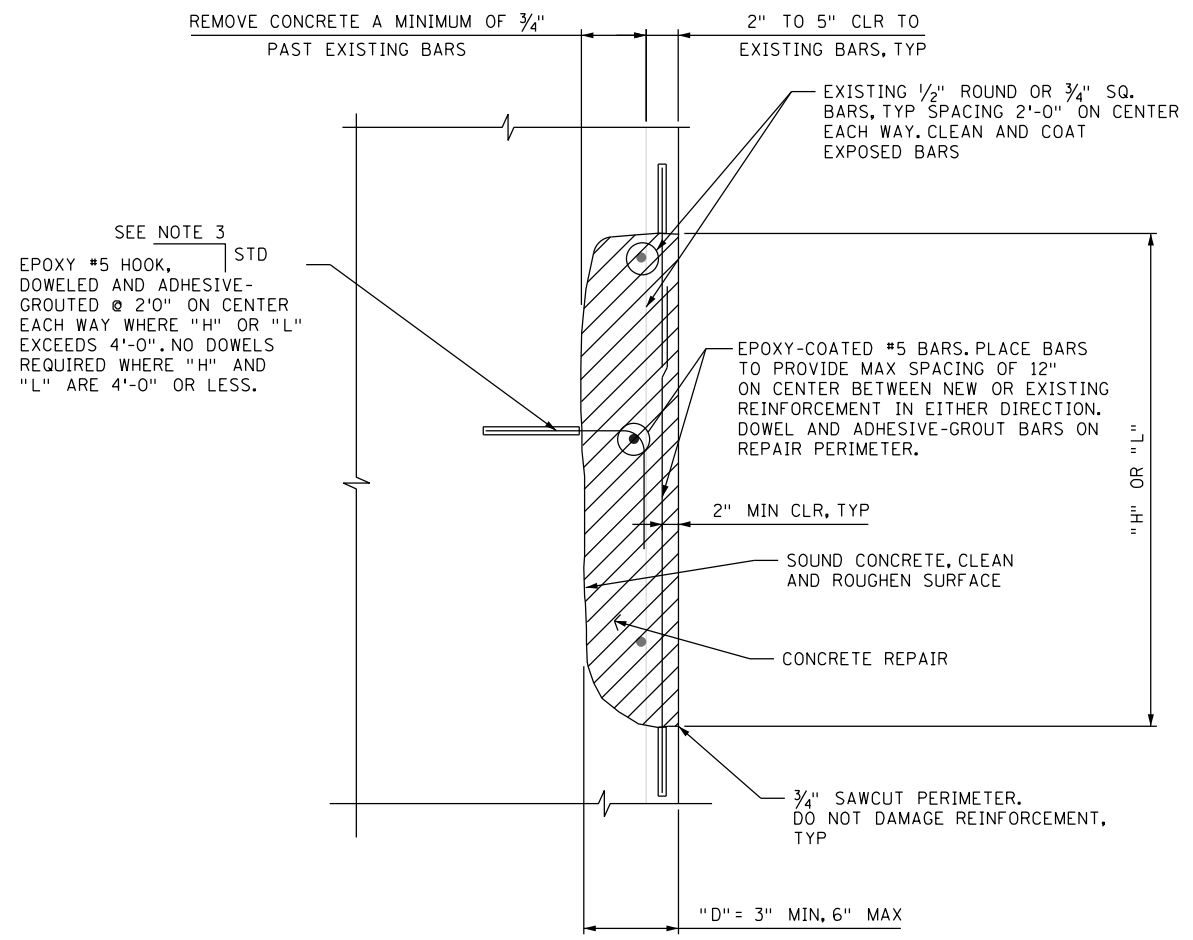
CONCRETE SURFACE REPAIR DETAILS (2 OF 9)

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SHEET

B67

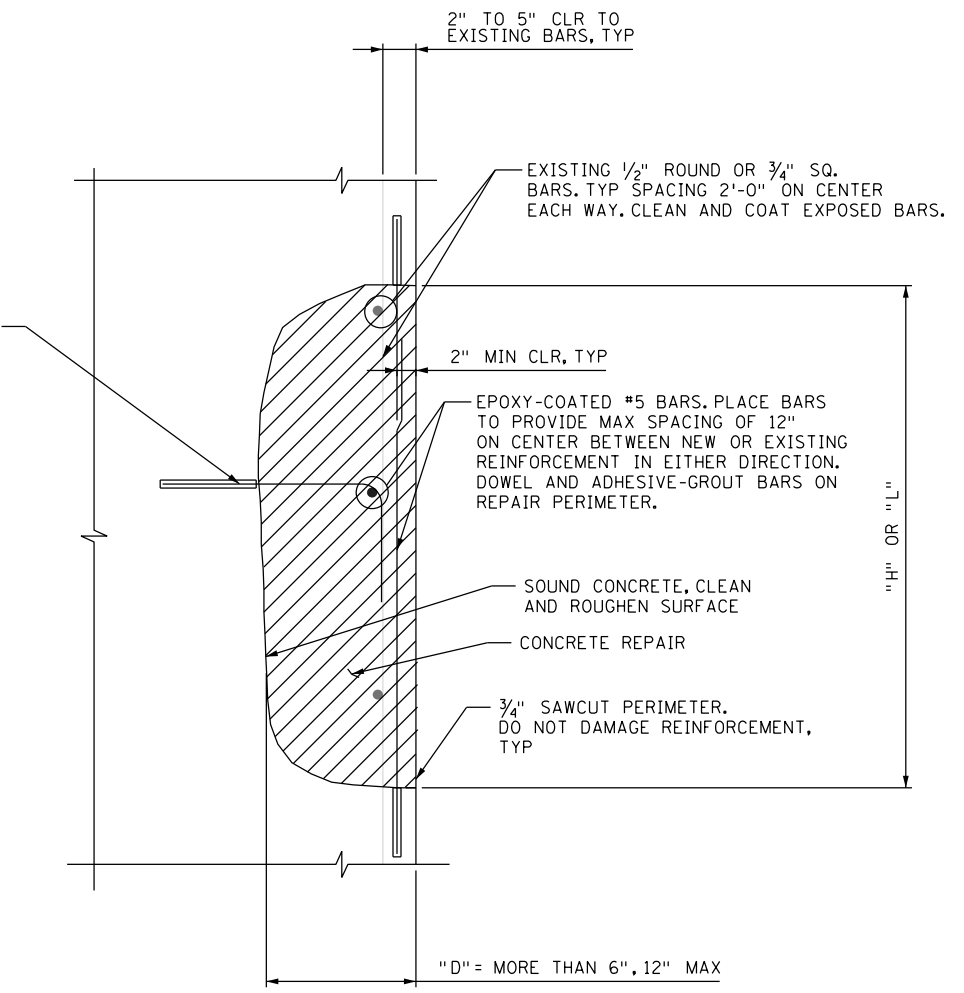
B176



SEE NOTE 3
EPOXY #5 HOOK,
DOWELED AND ADHESIVE-
GROUTED @ 2'-0" ON CENTER
EACH WAY WHERE "H" OR "L"
EXCEEDS 4'-0". NO DOWELS
REQUIRED WHERE "H" AND
"L" ARE 4'-0" OR LESS.

SEE NOTE 4
EPOXY #5 HOOK,
DOWELED AND ADHESIVE-
GROUTED @ 2'-0" ON CENTER
EACH WAY WHERE "H" OR "L"
EXCEEDS 4'-0". NO DOWELS
REQUIRED WHERE "H" AND
"L" ARE 4'-0" OR LESS.

TYPE A/P-1 TYPICAL VERTICAL SURFACE REPAIR



TYPE A/P-2 TYPICAL DEEP VERTICAL SURFACE REPAIR

- NOTES:
1. SEE TYP A/P-2 IF "D" EXCEEDS 6".
 2. CONTACT ENGINEER IF REPAIR DEPTH EXCEEDS 1'-0".
 3. DETERMINE LENGTH OF BAR IN THE FIELD TO MEET CLEARANCE REQUIREMENTS AND A MINIMUM EMBEDMENT INTO SOUND CONCRETE OF 6". ENDS OF CUTS BARS SHALL BE COATED PER MNDOT 2472.

- NOTES:
1. REMOVE DETERIORATED OR FREEZE-THAW DAMAGED CONCRETE.
 2. CONTACT ENGINEER IF REPAIR DEPTH EXCEEDS 1'-0".
 3. "D" = 8", 10" OR 12" BASED ON AVERAGE DEPTH ROUNDED UP TO NEAREST INCREMENT, PAID AT ASSOCIATED UNIT PRICE.
 4. DETERMINE LENGTH OF BAR IN THE FIELD TO MEET CLEARANCE REQUIREMENTS AND A MINIMUM EMBEDMENT INTO SOUND CONCRETE OF 6". ENDS OF CUT BARS SHALL BE COATED PER MNDOT 2472.

- REHABILITATION NOTES:
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 3. APPLY FILM FORMING COATING PER THE SPECIAL PROVISIONS, PAID FOR UNDER "HISTORIC CONCRETE SURFACE TREATMENT".
 4. ALL EXISTING NON-ADHERING PROTECTIVE COATINGS SHALL BE REMOVED PRIOR TO COMPLETING CONCRETE REPAIR AND COATING, SEE SPECIAL PROVISIONS.

- NOTES:
1. COAT ALL CUT ENDS OF REINFORCEMENT WITH TWO COATS OF CORROSION-INHIBITING PRIMER.
 2. FOR ADHESIVE-GROUTED DOWELS SEE TYPICAL ADHESIVE-GROUTED DOWEL OR BAR DETAIL ON SHEET B72.
 3. SEE CONCRETE SURFACE REPAIR DETAILS (1 OF 9) FOR MINIMUM LAP SPLICE LENGTH AND LENGTH OF STANDARD HOOKS, SEE SHEET B66.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER

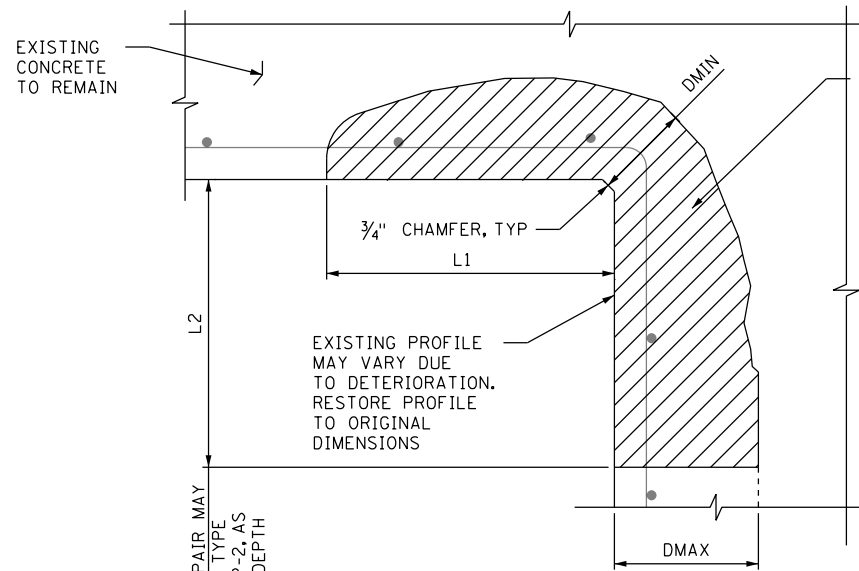
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CONCRETE SURFACE REPAIR DETAILS (3 OF 9)

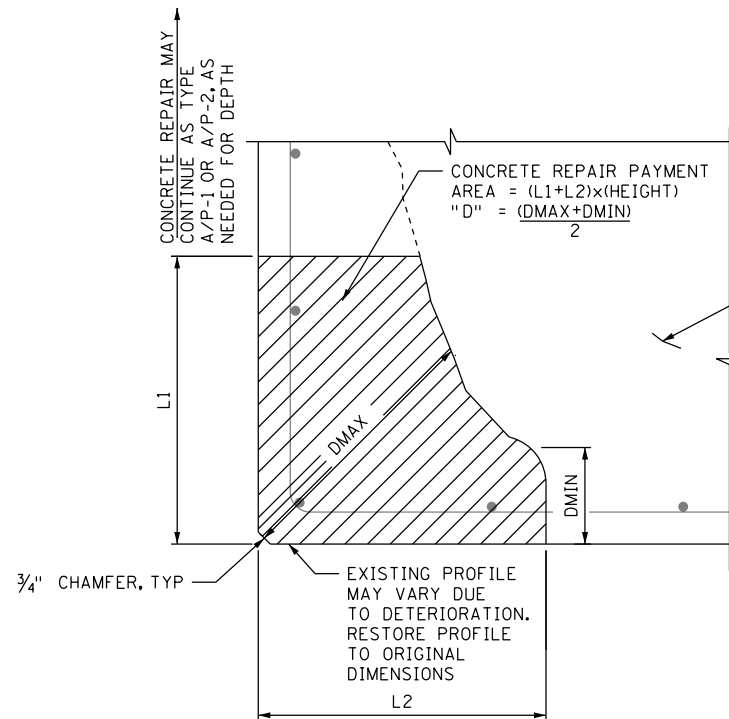
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SHEET
B68
B176



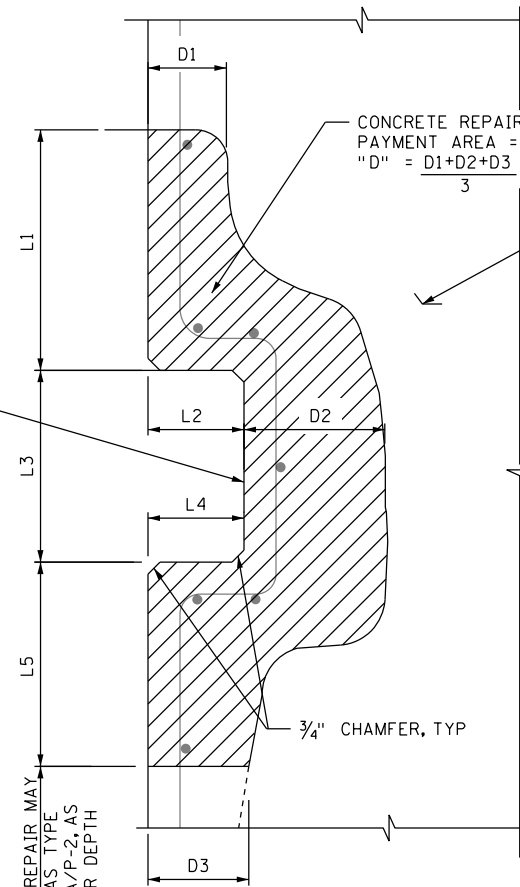
CONCRETE REPAIR PAYMENT AREA = $(L1+L2) \times (\text{HEIGHT})$
 "D" = $\frac{(DMAX+DMIN)}{2}$

PAYMENT OF CONCRETE REPAIR AT INSIDE CORNERS OF ABUTMENTS OR PIERS



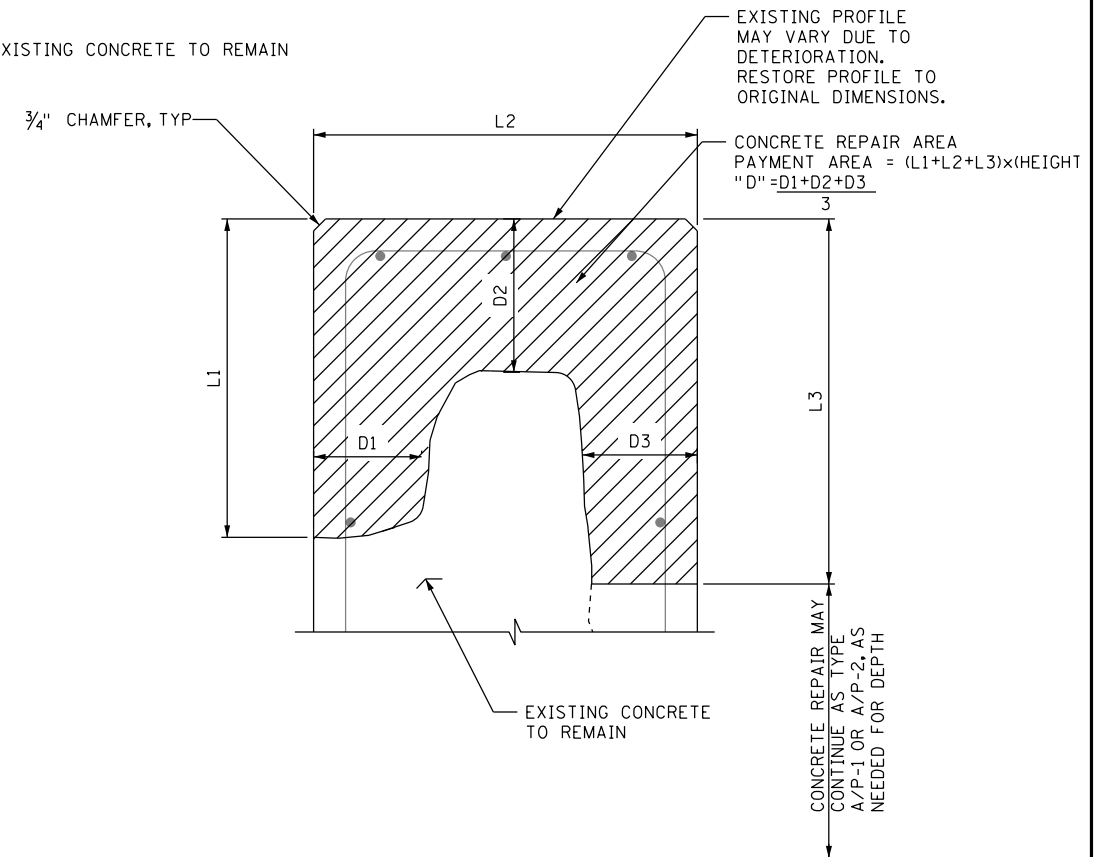
CONCRETE REPAIR PAYMENT AREA = $(L1+L2) \times (\text{HEIGHT})$
 "D" = $\frac{(DMAX+DMIN)}{2}$

PAYMENT OF CONCRETE REPAIR AT OUTSIDE CORNERS OF ABUTMENTS OR PIERS



CONCRETE REPAIR AREA PAYMENT AREA = $(L1+L2+L3+L4+L5) \times (\text{HEIGHT})$
 "D" = $\frac{D1+D2+D3}{3}$

PAYMENT OF CONCRETE REPAIR AT RUSTICATIONS IN ABUTMENTS OR PIERS



CONCRETE REPAIR AREA PAYMENT AREA = $(L1+L2+L3) \times (\text{HEIGHT})$
 "D" = $\frac{D1+D2+D3}{3}$

PAYMENT OF CONCRETE REPAIR AT WALL ENDS

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4. ALL EXISTING NON-ADHERING PROTECTIVE COATINGS SHALL BE REMOVED PRIOR TO COMPLETING CONCRETE REPAIR AND COATING, SEE SPECIAL PROVISIONS.

NOTES:

1. SEE DETAILS OF TYPE A/P-1 OR A/P-2 ON SHEET B68 FOR ADDITIONAL REQUIREMENTS.
2. IF "D" LESS THAN 6", PAY FOR AS TYPE A/P-1. IF "D" MORE THAN 6", PAY FOR AS TYPE A/P-2.
3. DMAX AND DMIN ARE THE MAXIMUM AND MINIMUM REPAIR DEPTHS WHEREVER FOUND WITHIN AREA.
4. MAXIMUM LENGTH OF L1, L2, L3, L4, OR L5 SHALL BE MEASURED AS 1'-6".
5. REINFORCEMENT SHOWN ON THIS SHEET IS EXISTING AND APPROXIMATELY LOCATED.
6. DEPTH MEASUREMENTS SHALL BE AVERAGED OVER REPAIR HEIGHT, AT MAXIMUM 4'-0" SPACING.
7. HEIGHT MEASUREMENT SHALL BE AVERAGED OVER REPAIR LENGTH, AT MAXIMUM 4'-0" SPACING.
8. SEE INDIVIDUAL REPAIR DETAILS FOR ADDITIONAL INFORMATION ON FIELD MEASUREMENT OF HEIGHT (H) OR LENGTH (L).



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Daniel F. Enser

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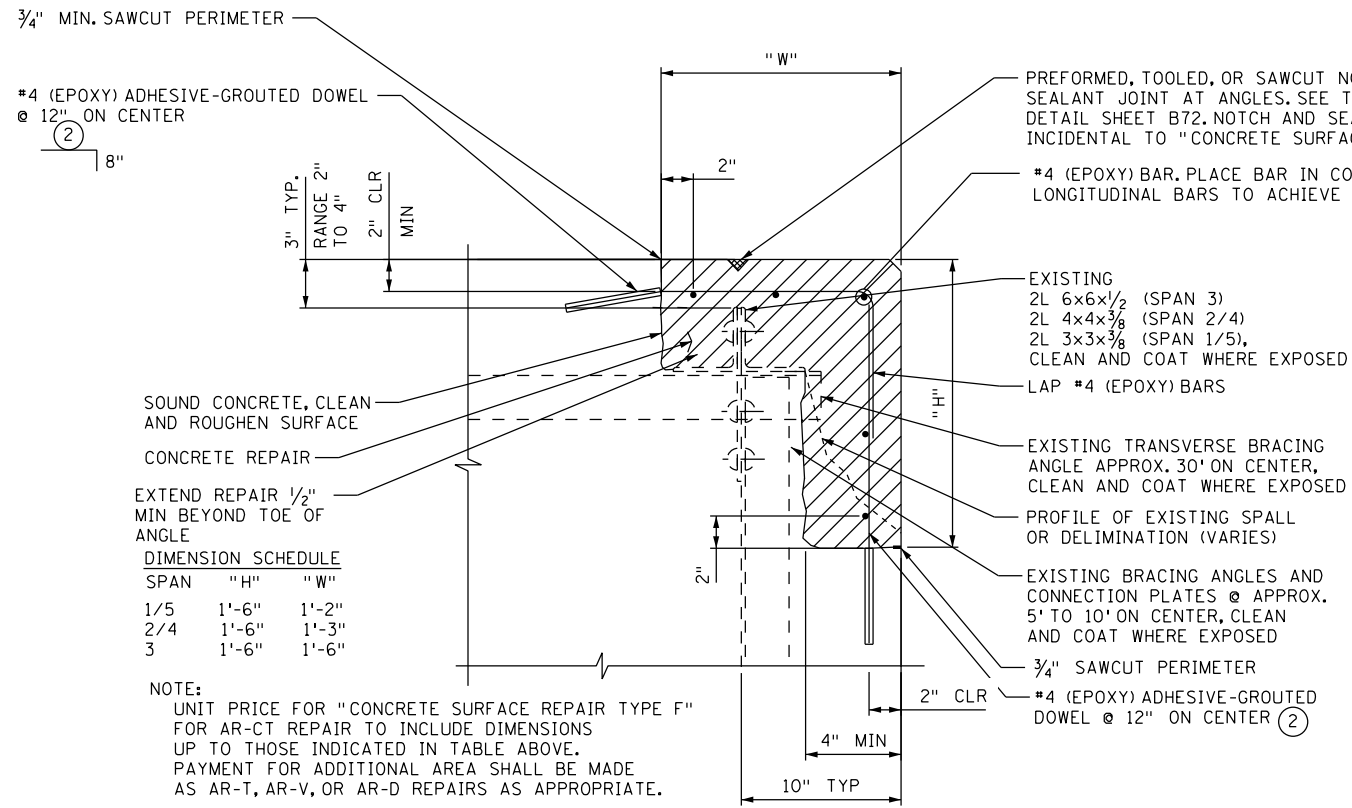
CONCRETE SURFACE REPAIR DETAILS (4 OF 9)

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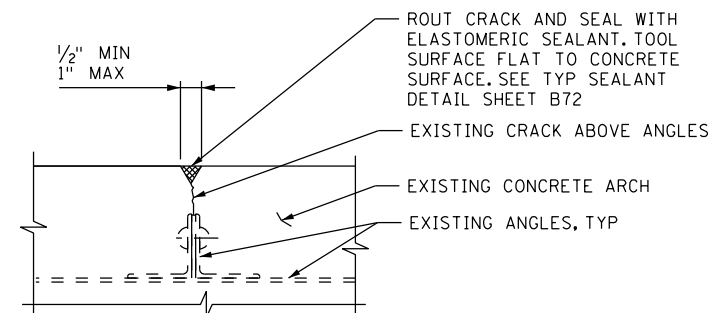
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B69

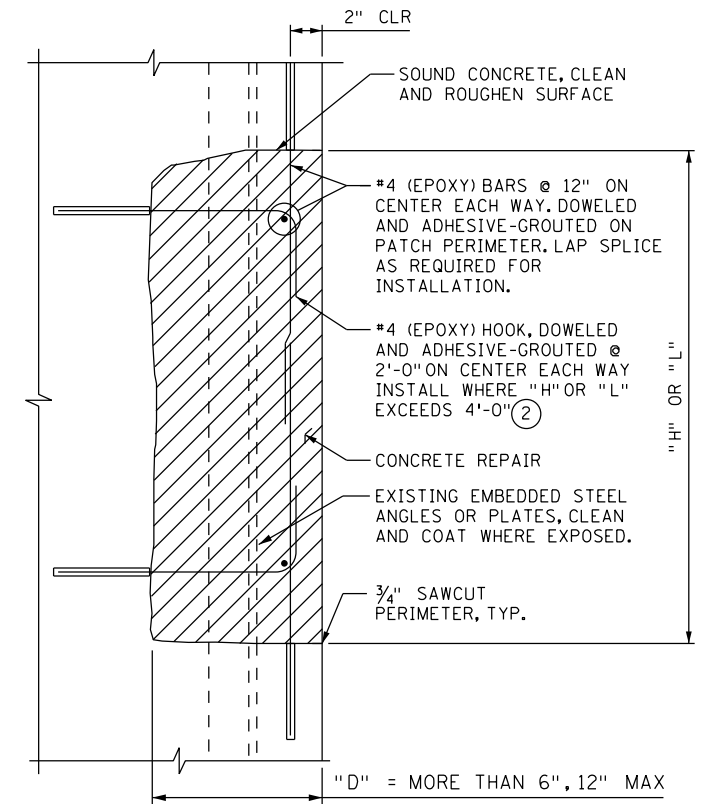
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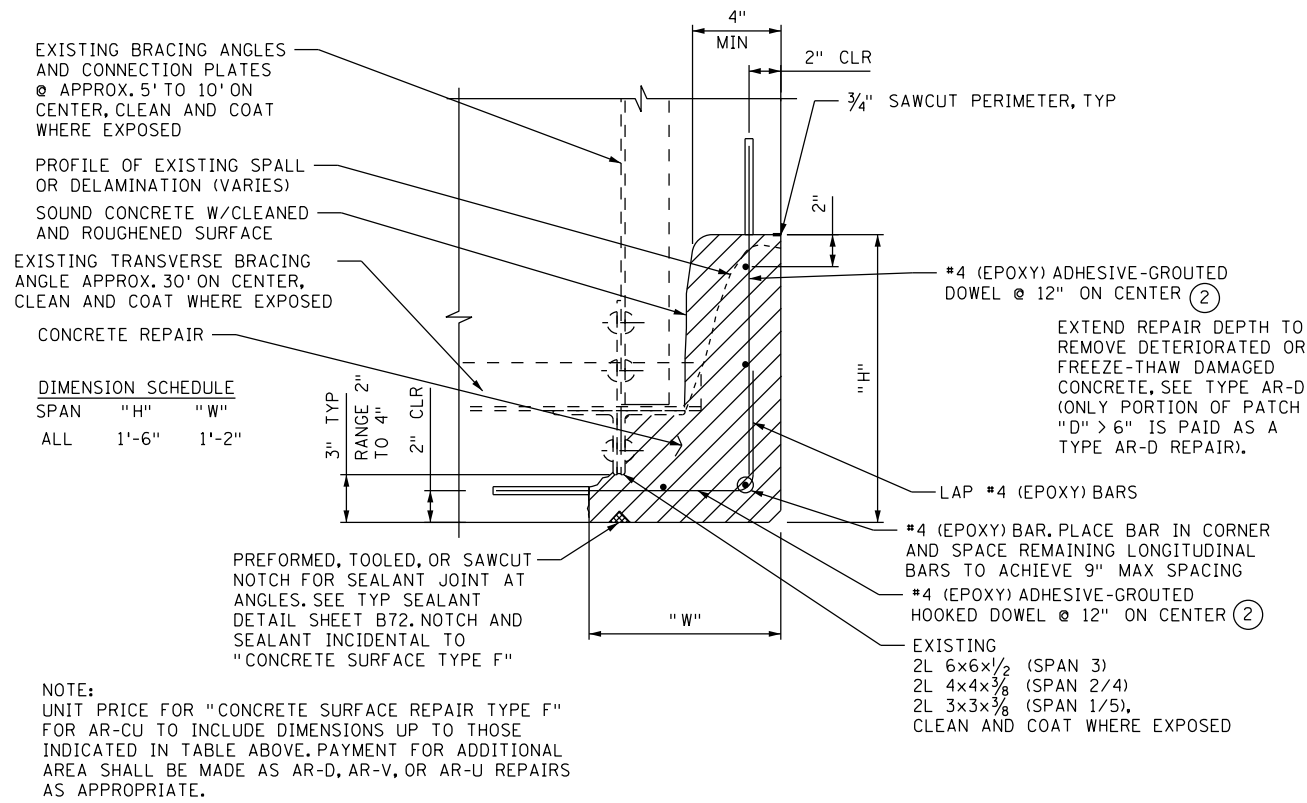
TYPE AR-CT ARCH RIB TOP CORNER REPAIR



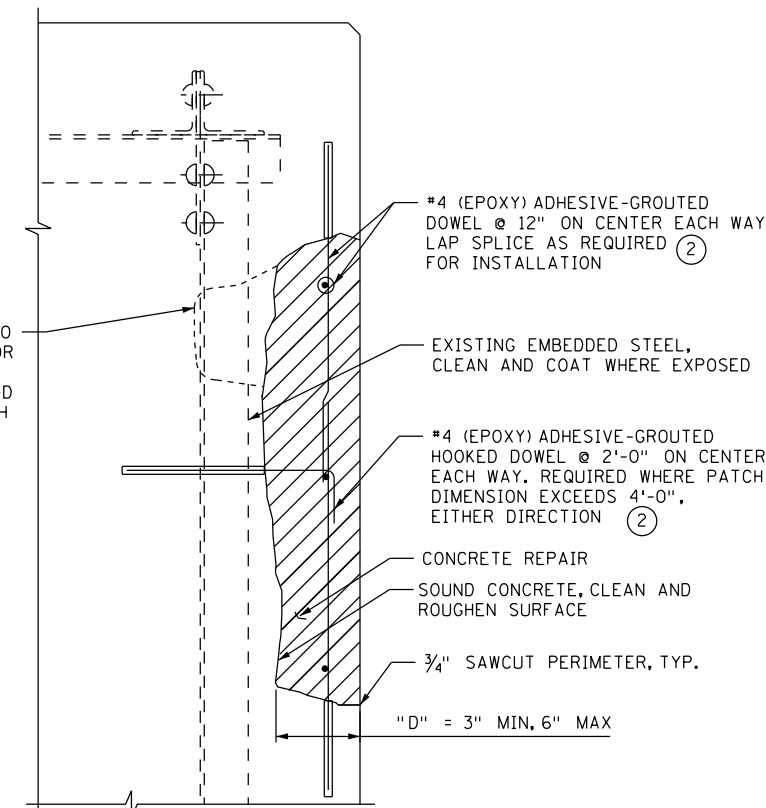
TYPE AR-C LONGITUDINAL CRACK REPAIR



TYPE AR-D(T)(U)(V) TYPICAL DEEP ARCH RIB SURFACE REPAIR



TYPE AR-CU ARCH RIB UNDERSIDE CORNER REPAIR



TYPE AR-V TYPICAL ARCH RIB SURFACE REPAIR - VERTICAL

- NOTES:
1. VERTICAL ORIENTATION OF DEEP REPAIR SHOWN, OTHERS SIMILAR. SEE TYPE AR-T, AR-V, OR AR-U (DEPENDING ON ORIENTATION) FOR ADDITIONAL REQUIREMENTS.
 2. REMOVE DETERIORATED OR FREEZE-THAW DAMAGED CONCRETE TO MAXIMUM DEPTH OF 12". CONTACT ENGINEER IF DAMAGED CONCRETE EXTENDS FURTHER THAN 12".
 3. "D" = 8", 10", OR 12" BASED ON AVERAGE DEPTH, ACROSS PATCH AREA, ROUNDED UP TO NEAREST INCREMENT.

- NOTES:
1. SEE CONCRETE SURFACE REPAIR DETAILS (1 OF 9) FOR MIN LAP SPLICE LENGTHS AND LENGTHS OF STANDARD HOOKS, SHEET B66.
 - (2) DETERMINE LENGTH OF ADHESIVE-GROUTED DOWELS IN THE FIELD TO MEET CLEARANCE REQUIREMENTS AND A MINIMUM EMBEDMENT INTO SOUND CONCRETE OF 6". ENDS OF CUT BARS SHALL BE COATED PER MNDOT 2472.

- REHABILITATION NOTES:
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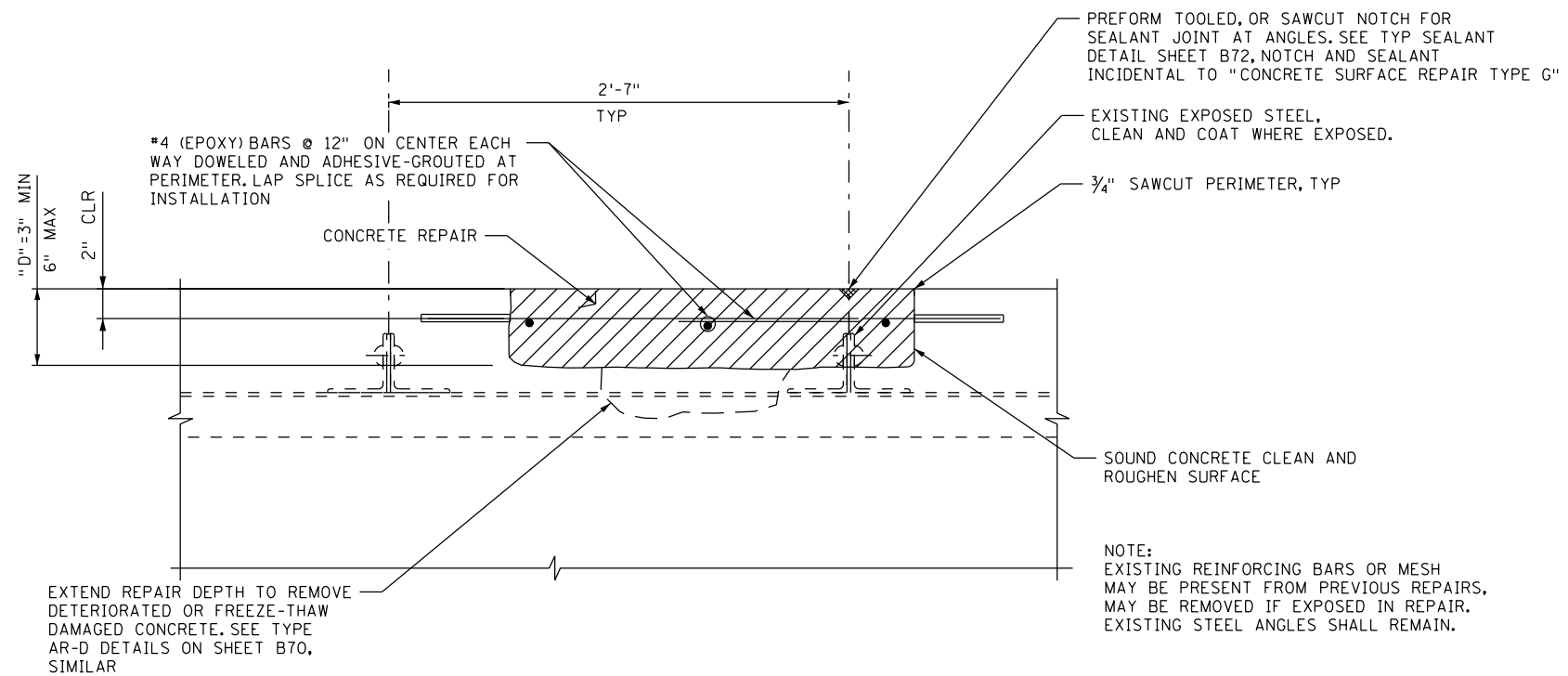
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CONCRETE SURFACE REPAIR DETAILS (5 OF 9)

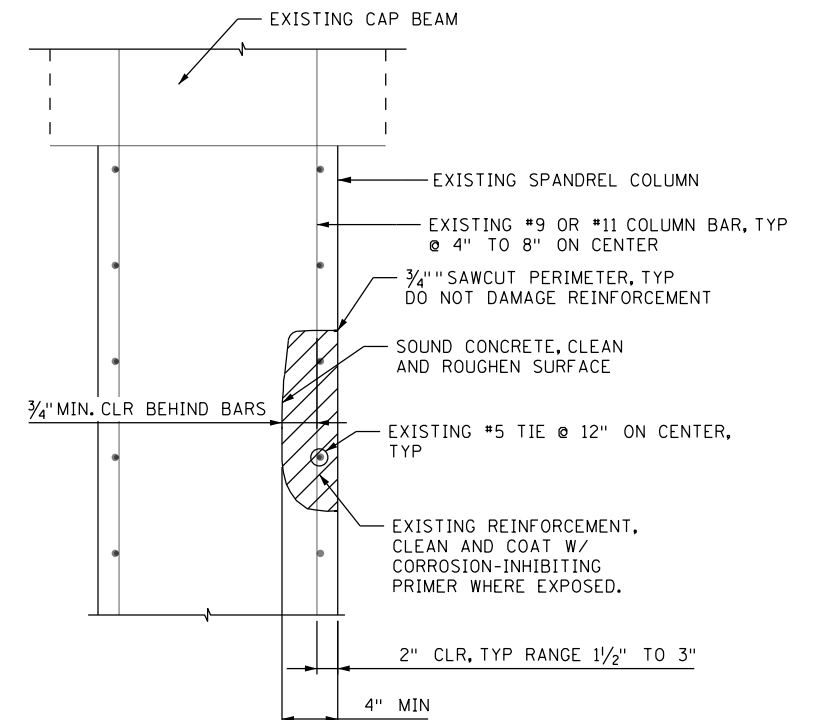
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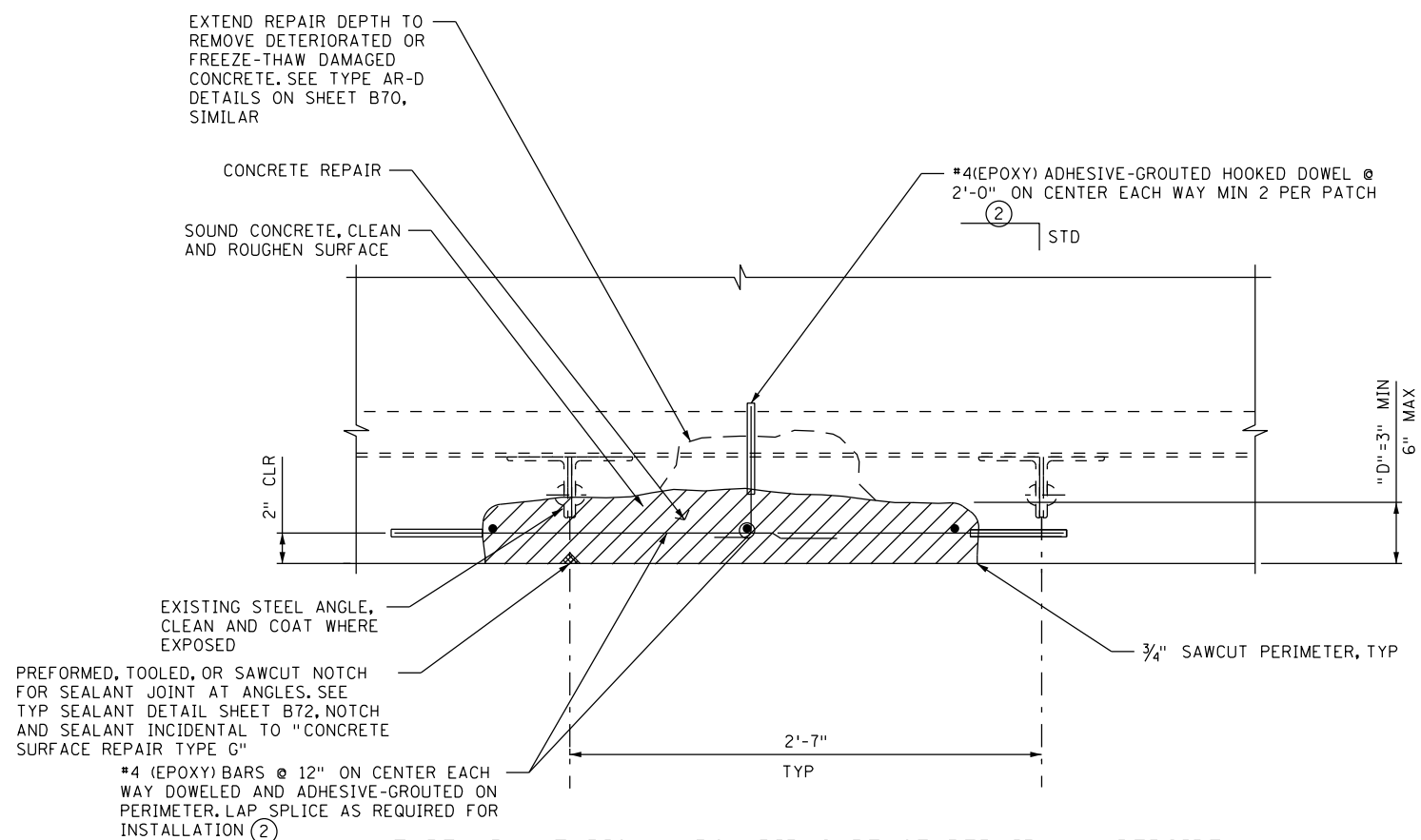
B70
B176



TYPE AR-T TYPICAL ARCH RIB SURFACE REPAIR - TOP SIDE



TYPE SC-1 TYPICAL REPAIR AT SPANDREL COLUMN



TYPE AR-U TYPICAL ARCH RIB SURFACE REPAIR - UNDERSIDE

NOTES:
1. SEE CONCRETE SURFACE REPAIR DETAILS (1 OF 9) FOR MIN LAP SPLICE LENGTHS AND LENGTHS OF STANDARD HOOKS, SHEET B66.

② DETERMINE LENGTH OF ADHESIVE-GROUTED DOWELS IN THE FIELD TO MEET CLEARANCE REQUIREMENTS AND A MINIMUM EMBEDMENT INTO SOUND CONCRETE OF 6". ENDS OF CUT BARS SHALL BE COATED PER MNDOT 2472.

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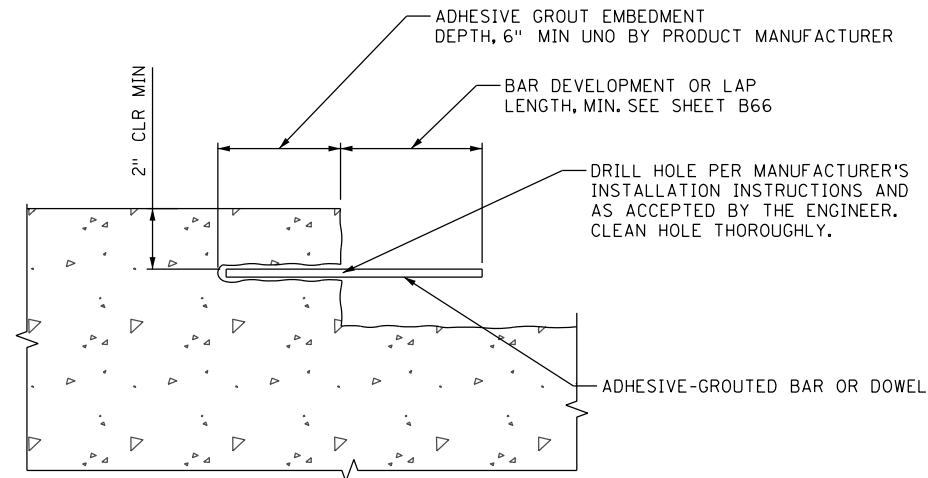
CONCRETE SURFACE REPAIR DETAILS (6 OF 9)

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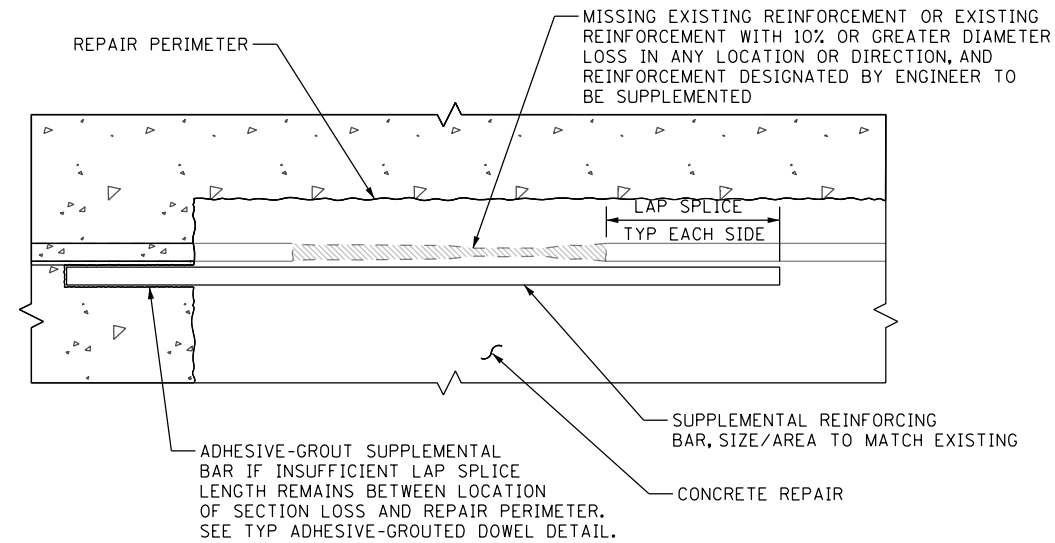
B71

B176



- NOTES:
1. INSTALL AT LOCATIONS DESIGNATED BY TYPICAL REPAIR DETAIL OR AS DIRECTED BY ENGINEER
 2. CLEAN ALL MACHINING OIL, RESIDUE, OR OTHER SURFACE CONTAMINATIONS FROM DOWEL THAT MAY INHIBIT BOND WITH ADHESIVE.
 3. INSTALL ADHESIVE AND DOWEL INTO DRILLED HOLE PER MANUFACTURER'S INSTRUCTIONS. COMPLETELY FILL ANNULAR SPACE WITH EPOXY WITHOUT EXCESS ONTO CONCRETE SURFACE.

TYPICAL ADHESIVE-GROUTED DOWEL OR BAR

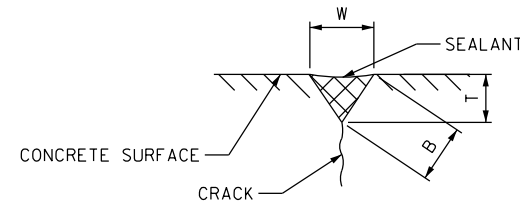


- NOTES:
1. PROVIDE #7 BARS TO SUPPLEMENT $\frac{3}{4}$ " x $\frac{3}{4}$ " SQ. BARS
 2. LOCATIONS OF SUPPLEMENTAL REINFORCEMENT SHALL BE REVIEWED AND ACCEPTED IN ADVANCE BY ENGINEER; ADDITIONAL BARS INSTALLED WITHOUT PERMISSION OF ENGINEER WILL NOT INCREASE PAYMENT

TYPICAL SUPPLEMENTAL REINFORCEMENT DETAILS

SEALANT CHART		
W	T	B
$\frac{1}{2}$ " TO 1"	W/2	$\frac{3}{8}$ " MIN.

W: SEALANT WIDTH
T: SEALANT THICKNESS
B: BOND SURFACE



TYPICAL V-GROOVE SEALANT DETAIL

- NOTES:
1. GRIND SURFACES AS SHOWN AND TO COMPLETELY REMOVE ANY EXISTING RESIDUE.
 2. CLEAN AND PRIME SURFACES WITH APPROPRIATE PRIMER AS RECOMMENDED BY SEALANT MANUFACTURER.
 3. INSTALL SEALANT PER MANUFACTURER'S INSTRUCTIONS.

- NOTES:
1. SEE CONCRETE SURFACE REPAIR DETAILS (1 OF 9) FOR MIN LAP SPLICE LENGTHS, SHEET B66.

- REHABILITATION NOTES:
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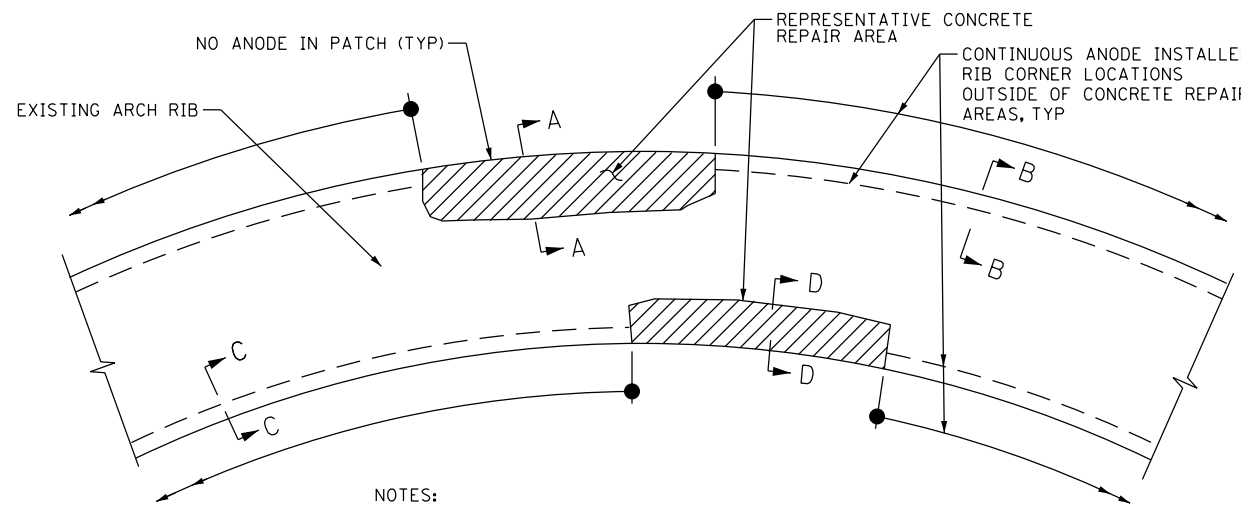
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CONCRETE SURFACE REPAIR DETAILS (7 OF 9)

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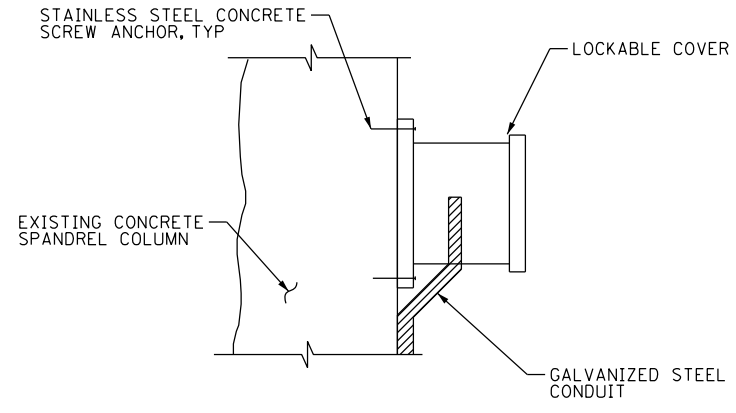
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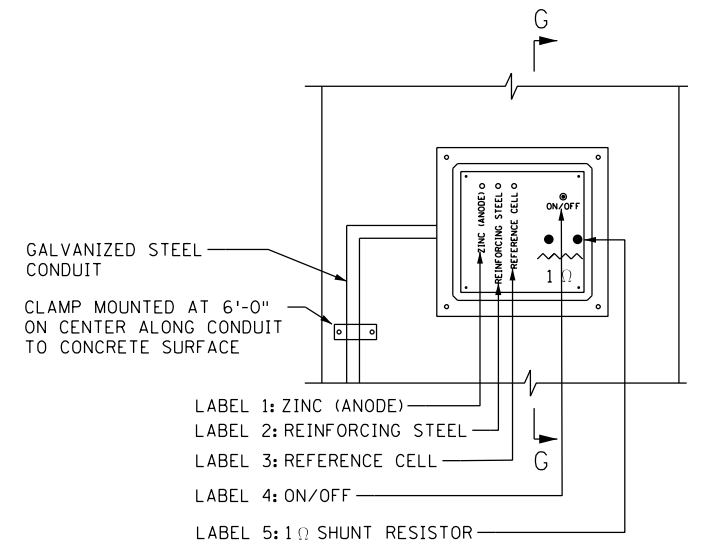


NOTES:
 1. FOR SECTION A-A, SEE TYPE AR-CT ON SHEET B70.
 2. FOR SECTION D-D, SEE TYPE AR-CU ON SHEET B70.

REPRESENTATIVE ARCH ELEVATION OF TYPE AR-CO



SECTION G-G

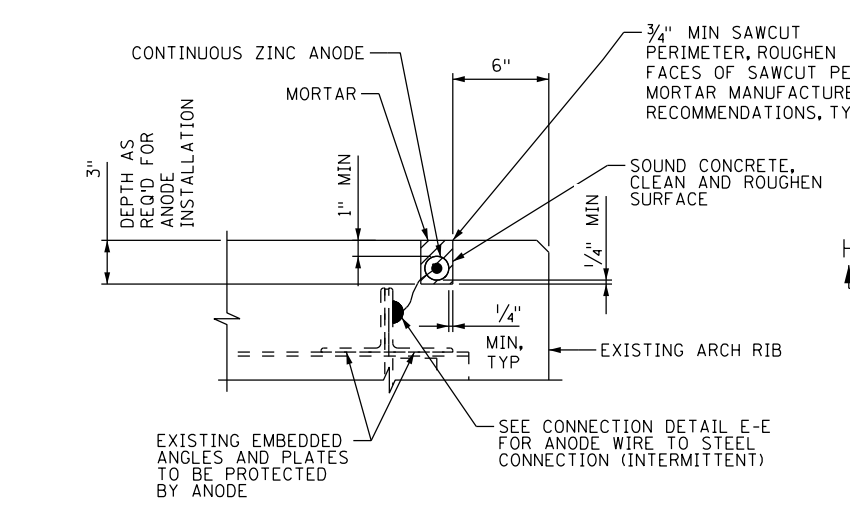


ELEVATION

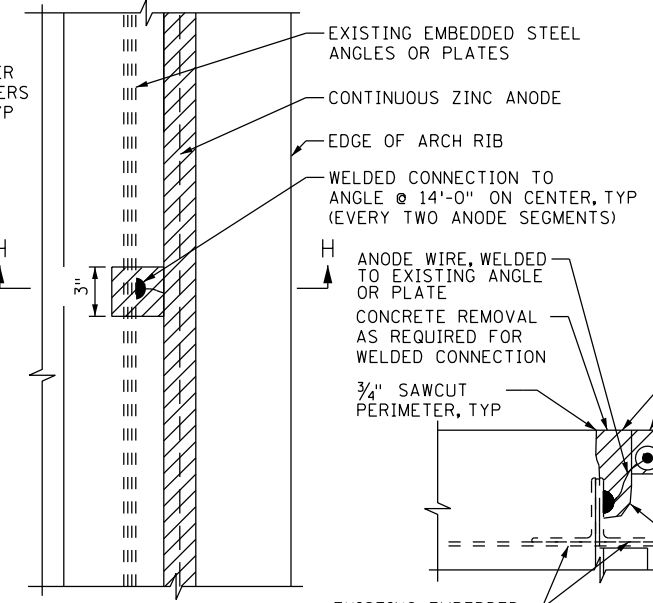
LABEL 1: ZINC (ANODE)
 LABEL 2: REINFORCING STEEL
 LABEL 3: REFERENCE CELL
 LABEL 4: ON/OFF
 LABEL 5: 1 Ω SHUNT RESISTOR

NOTES:
 1. REPAIR TYPE AR-CO AND ASSOCIATED TEST BOXES, WIRING AND CONNECTIONS ARE PAID FOR AS "CONCRETE SURFACE REPAIR TYPE L" AS A COMPLETE SYSTEM, SEE SPECIAL PROVISION.

TEST BOX DETAIL



SECTION B-B CONTINUOUS ANODE AT TOP OF ARCH RIB

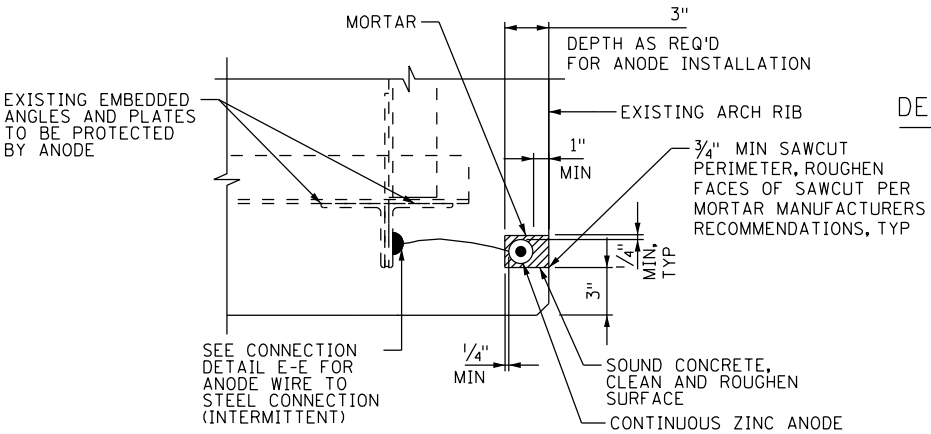


PLAN VIEW

SECTION H-H

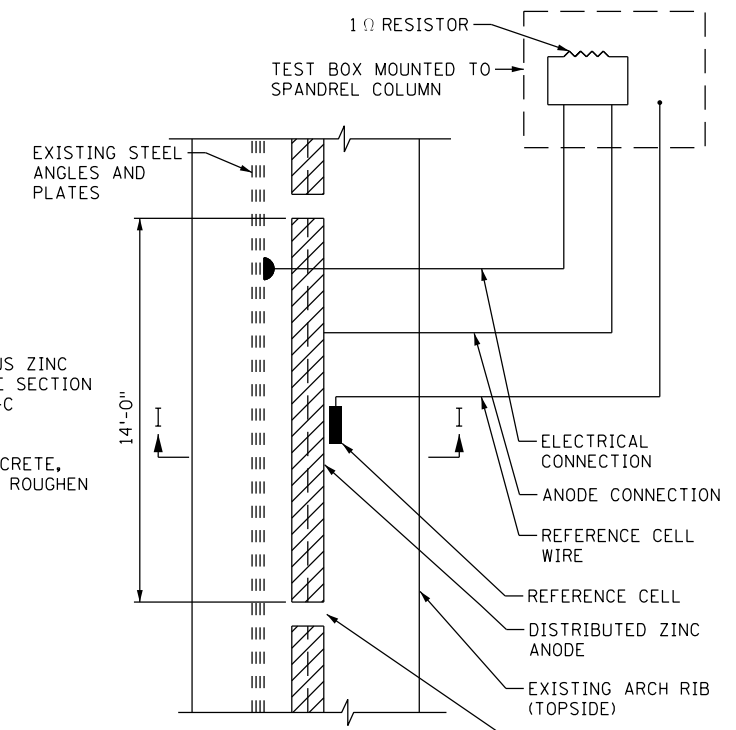
DETAIL E-E INTERMITTENT ELECTRICAL CONNECTION

NOTE: TOPSIDE CONFIGURATION SHOWN, UNDERSIDE SIMILAR

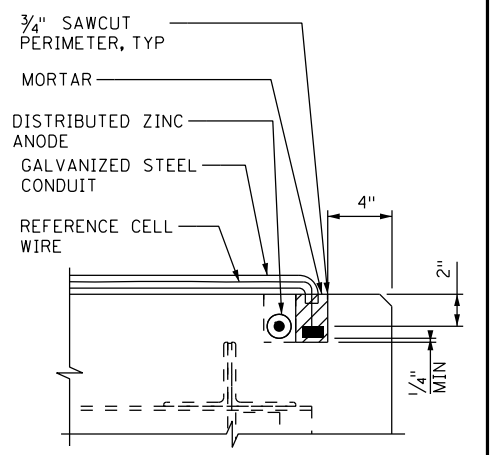


SECTION C-C CONTINUOUS ANODE AT BOTTOM OF ARCH RIB

REHABILITATION NOTES:
 1. THE FRANKLIN AVENUE BRIDGE IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES AND IS A CITY OF MINNEAPOLIS HISTORIC LANDMARK. CONTRACTOR SHALL PRESERVE AND PROTECT ALL ELEMENTS OF THE BRIDGE TO REMAIN.
 2. NO REMOVAL IS PERMITTED UNTIL THE REMOVAL LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. REMOVAL AND RECONSTRUCTION SHALL CONFORM TO SPEC 2433 AND THE SPECIAL PROVISIONS.
 3. APPLY FILM FORMING COATING PER THE SPECIAL PROVISIONS, PAID FOR UNDER "HISTORIC CONCRETE SURFACE TREATMENT".
 4. ALL EXISTING NON-ADHERING PROTECTIVE COATINGS SHALL BE REMOVED PRIOR TO COMPLETING CONCRETE REPAIR AND COATING, SEE SPECIAL PROVISIONS.



PLAN VIEW



SECTION I-I

NOTES:
 1. ALL CONNECTIONS AND WIRING SHALL BE IN A NEMA 4X STEEL JUNCTION BOX AND GALVANIZED STEEL CONDUIT, RESPECTIVELY.
 2. TEST BOX WILL BE LOCATED BY ENGINEER, (2 TOTAL FOR PROJECT)
 3. AN IDENTIFICATION TAG SHALL BE AFFIXED TO THE END OF THE CONDUIT INDICATING THE REFERENCE ELECTRODE LOCATION AND NUMBER.

INSTRUMENTED ZONE SCHEMATIC

NOTE: TOPSIDE ONLY



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
 DANIEL F. ENSER, PROFESSIONAL ENGINEER

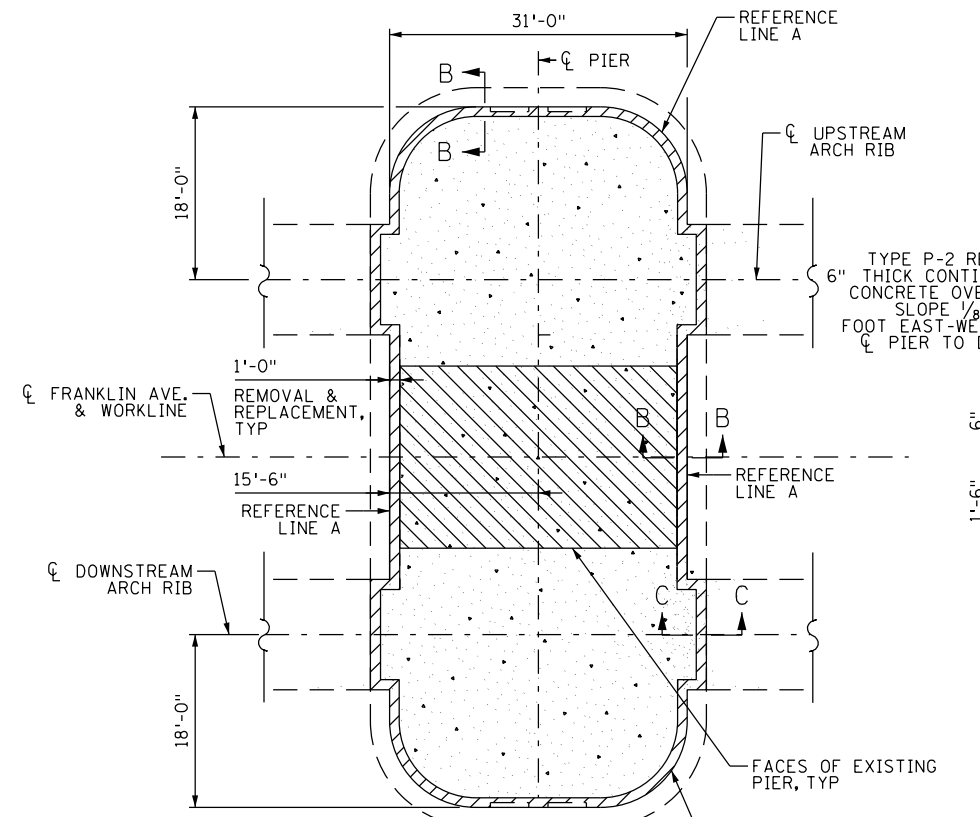
41308 8/14/2014
 LICENSE NO. DATE

DESIGN BY: APJ
 CAD BY: IMG
 CHECKED BY: DFE
 LAST REVISION:

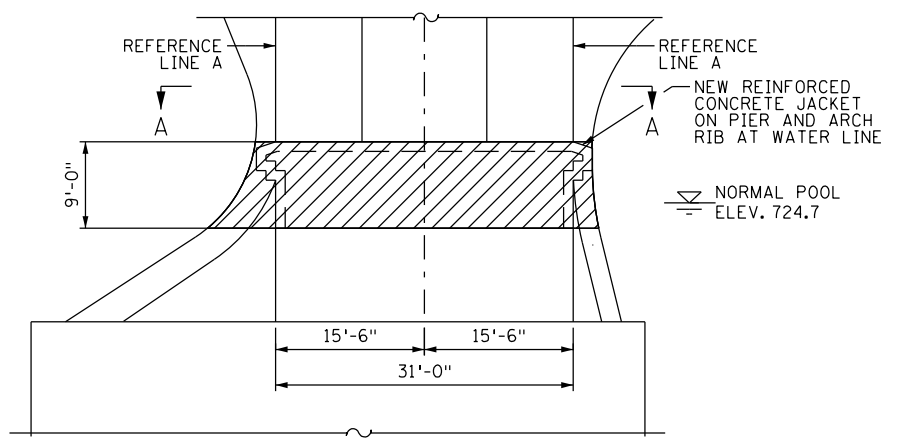
CONCRETE SURFACE REPAIR DETAILS (8 OF 9)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B73
 B176



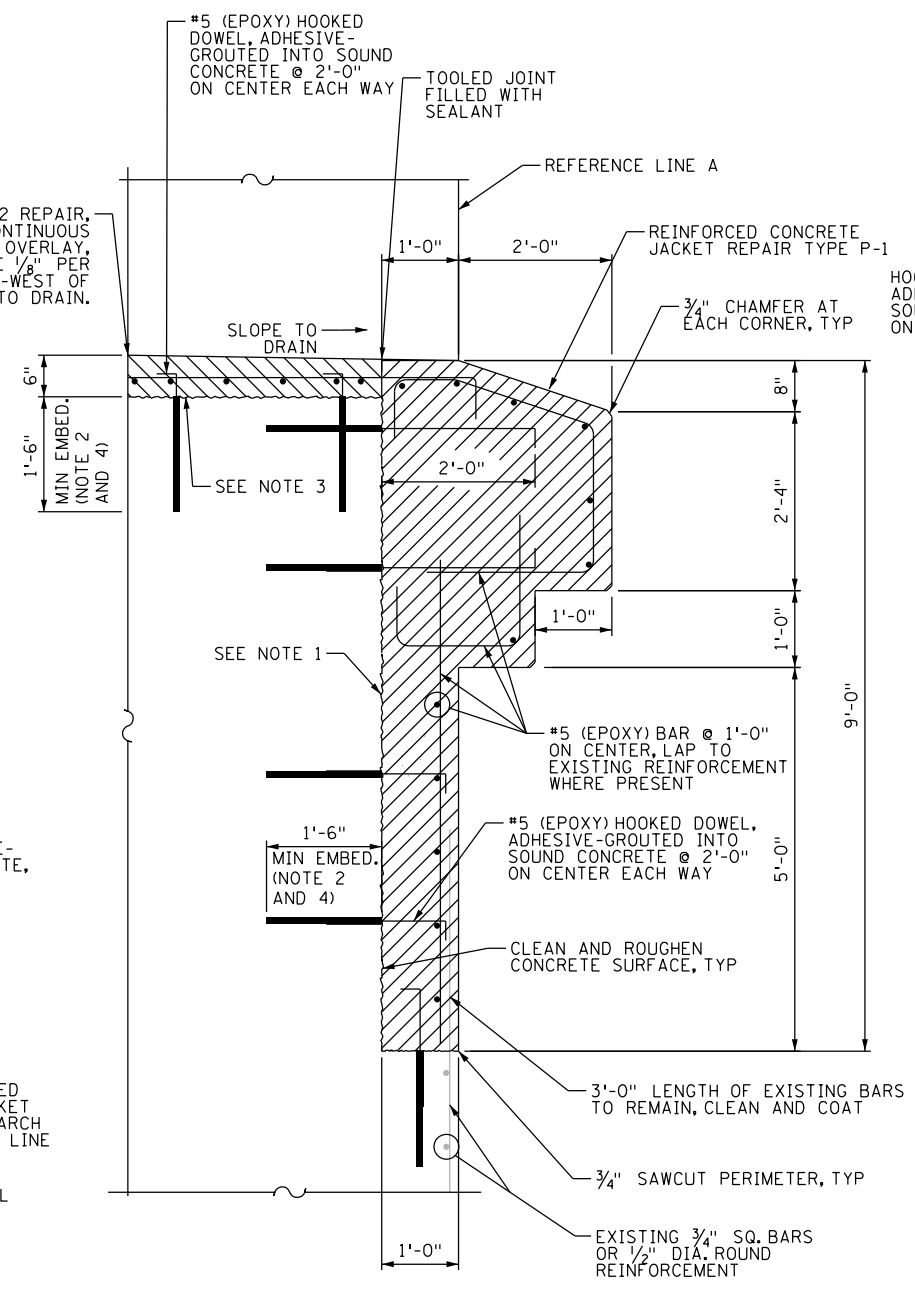
SECTION A-A
PIER 2 & 3 PLAN



TYPE P-1 PIER 2 & 3 PARTIAL ELEVATION

- NOTES:
1. NOTIFY ENGINEER IF SEVERELY FREEZE-THAW-DAMAGED CONCRETE IS ENCOUNTERED BEYOND REMOVAL LIMITS TO DETERMINE IF ADDITIONAL REMOVAL IS NEEDED.
 2. EMBEDMENT SHALL INCLUDE MINIMUM ANCHORAGE INTO UNDAMAGED SOUND CONCRETE AS SPECIFIED IN MANUFACTURERS ANCHORAGE REQUIREMENTS. NOTIFY ENGINEER IF SPECIFIED ANCHORAGE CANNOT BE ACHIEVED AT ANY DOWEL LOCATION.

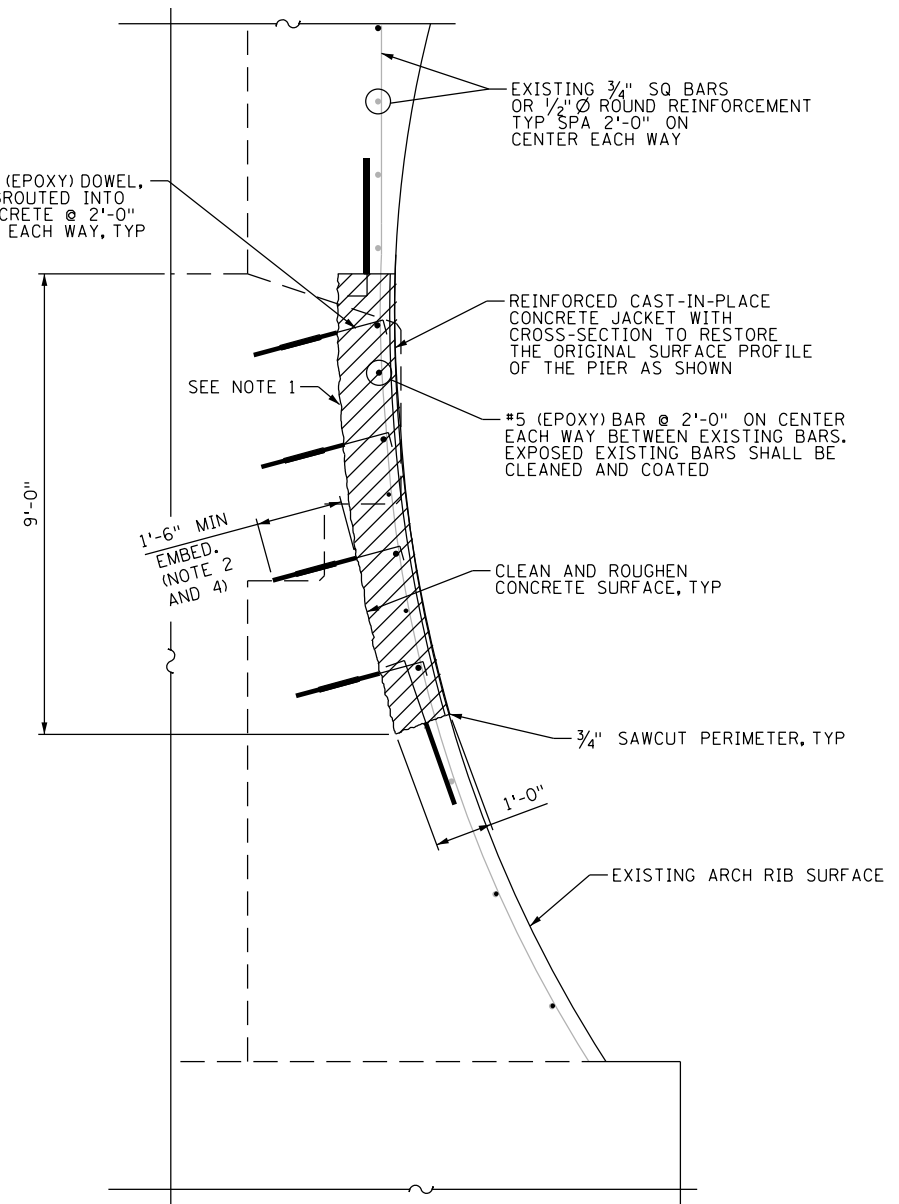
3. ON HORIZONTAL SURFACE OF PIER, REMOVE CONCRETE TO PROVIDE FOR 6" BONDED OVERLAY CAP. CLEAN AND REMOVE LOOSE MATERIAL AT BONDING SURFACE. NOTE THAT FREEZE-THAW DAMAGED CONCRETE MAY REMAIN AT AND BELOW BONDING SURFACE, WHERE SURFACE IS ERODED (MISSING) DEEPER THAN 6", FILL IN DEEPER AREA WITH REPAIR MATERIAL (ASSUME 12" MAXIMUM DEPTH OVER NO MORE THAN 10% OF HORIZONTAL SURFACE).



NOTE:
2" CLEAR COVER, TYP

SECTION B-B

- LEGEND:
- REPAIR TYPE P-1, THIS SHEET ONLY
 - REPAIR TYPE P-2, THIS SHEET ONLY



NOTE:
2" CLEAR COVER, TYP

SECTION C-C

FACE OF ARCH RIB SHOWN, SIDE OF ARCH SIMILAR

- REHABILITATION NOTES:
1. THE FRANKLIN AVENUE BRIDGE IS LISTED ON THE NATIONAL REGISTER OF HISTORIC PLACES AND IS A CITY OF MINNEAPOLIS HISTORIC LANDMARK. CONTRACTOR SHALL PRESERVE AND PROTECT ALL ELEMENTS OF THE BRIDGE TO REMAIN.
 2. NO REMOVAL IS PERMITTED UNTIL THE REMOVAL LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND ACCEPTED BY THE ENGINEER. REMOVAL AND RECONSTRUCTION SHALL CONFORM TO SPEC 2433 AND THE SPECIAL PROVISIONS.
 3. APPLY FILM FORMING COATING PER THE SPECIAL PROVISIONS, PAID FOR UNDER "HISTORIC CONCRETE SURFACE TREATMENT".
 4. ALL EXISTING NON-ADHERING PROTECTIVE COATINGS SHALL BE REMOVED PRIOR TO COMPLETING CONCRETE REPAIR AND COATING. SEE SPECIAL PROVISIONS.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER

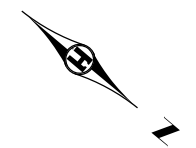
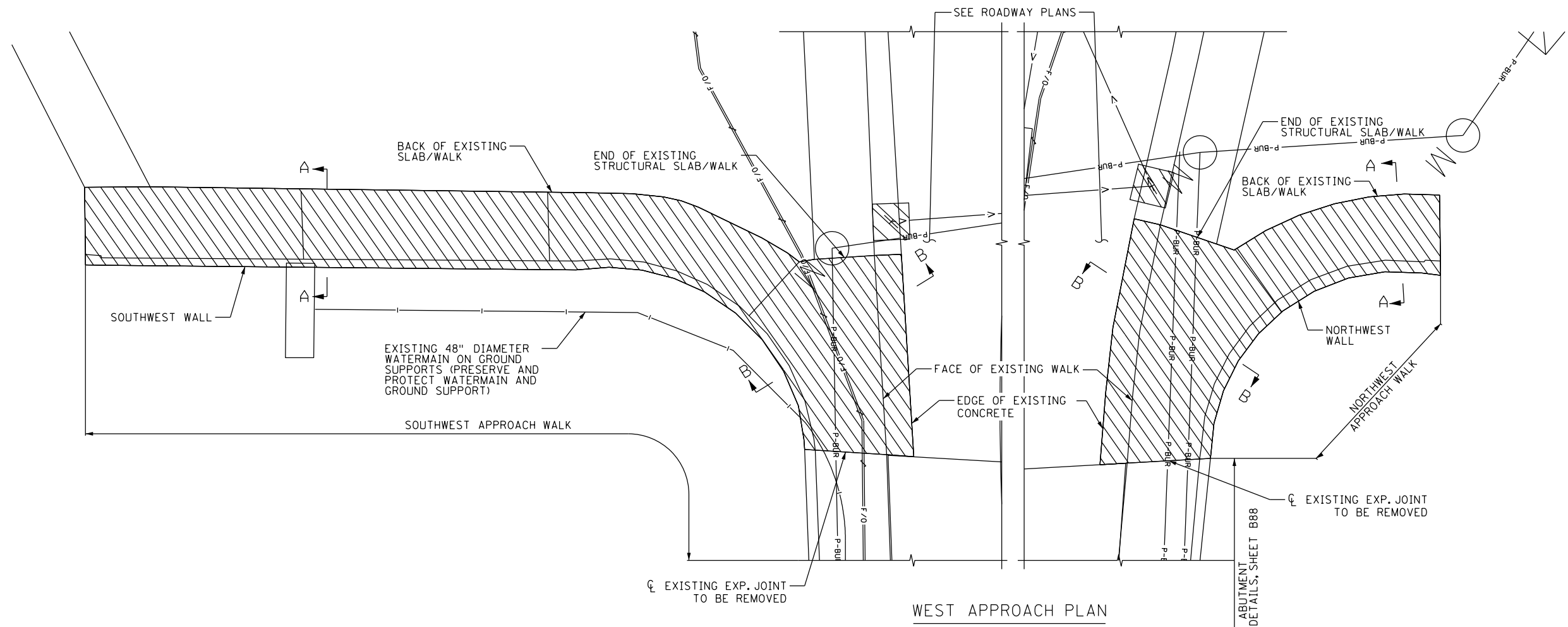
41308 8/14/2014
LICENSE NO. DATE

DESIGN BY: APJ
CAD BY: RAM
CHECKED BY: DFE
LAST REVISION:

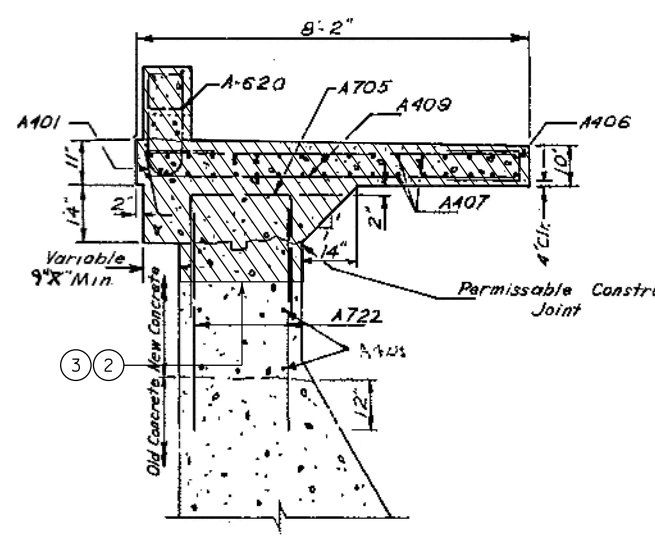
CONCRETE SURFACE REPAIR DETAILS (9 OF 9)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

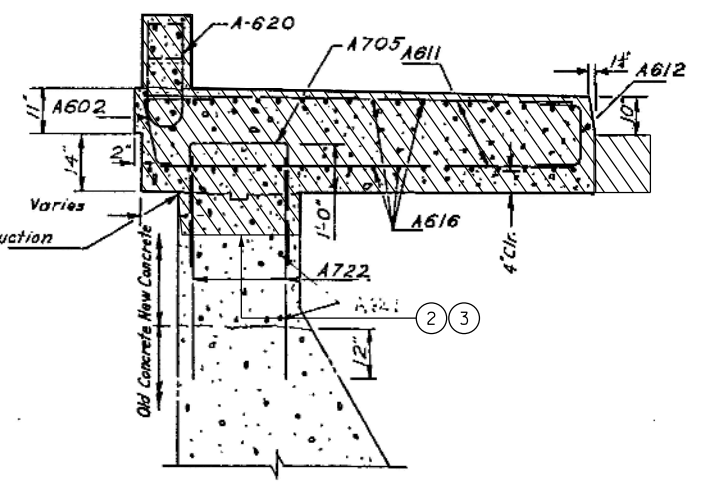
SHEET
B74
B176



WEST APPROACH PLAN



SECTION A-A
NOT TO SCALE
BARS SHOWN ARE EXISTING



SECTION B-B
NOT TO SCALE
BARS SHOWN ARE EXISTING

LEGEND
 REMOVE CONCRETE

- NOTES:
1. REMOVE EXISTING APPROACH WALK SLAB TO TOP OF EXISTING WALL.
 2. REMOVE EXISTING WALL AS NEEDED TO PROVIDE 2'-1" MOMENT SLAB OVER WALL AND PROPOSED SLAB ELEVATIONS SHOWN ON SHEET B76.
 3. REMOVAL LIMIT ON WALL SHALL BE UNIFORM AND AT A CONSTANT DEPTH FROM TOP OF PROPOSED SLAB.



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Daniel F. Enser
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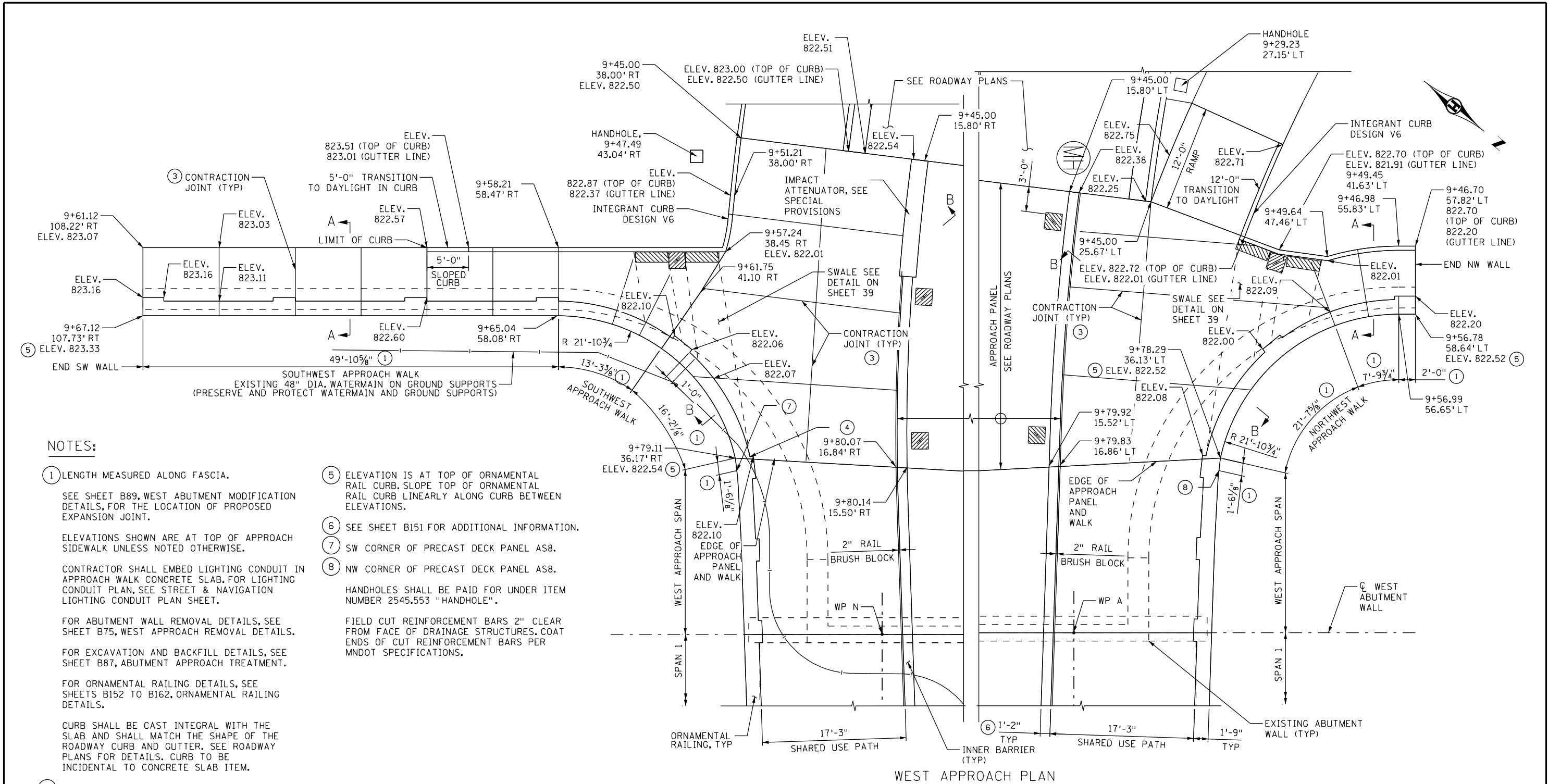
41308 8/14/2014
 LICENSE NO. DATE

DESIGN BY: AJN
 CAD BY: SJL
 CHECKED BY: AMK
 LAST REVISION:

WEST APPROACH REMOVAL DETAILS

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B75
 B176

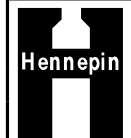


NOTES:

- ① LENGTH MEASURED ALONG FASCIA.
SEE SHEET B89, WEST ABUTMENT MODIFICATION DETAILS, FOR THE LOCATION OF PROPOSED EXPANSION JOINT.
ELEVATIONS SHOWN ARE AT TOP OF APPROACH SIDEWALK UNLESS NOTED OTHERWISE.
CONTRACTOR SHALL EMBED LIGHTING CONDUIT IN APPROACH WALK CONCRETE SLAB, FOR LIGHTING CONDUIT PLAN, SEE STREET & NAVIGATION LIGHTING CONDUIT PLAN SHEET.
FOR ABUTMENT WALL REMOVAL DETAILS, SEE SHEET B75, WEST APPROACH REMOVAL DETAILS.
FOR EXCAVATION AND BACKFILL DETAILS, SEE SHEET B87, ABUTMENT APPROACH TREATMENT.
FOR ORNAMENTAL RAILING DETAILS, SEE SHEETS B152 TO B162, ORNAMENTAL RAILING DETAILS.
CURB SHALL BE CAST INTEGRAL WITH THE SLAB AND SHALL MATCH THE SHAPE OF THE ROADWAY CURB AND GUTTER. SEE ROADWAY PLANS FOR DETAILS. CURB TO BE INCIDENTAL TO CONCRETE SLAB ITEM.
- ② NOT USED
- ③ CONTRACTION JOINT MAY BE FORMED OR SAWED. FORM CONTRACTION JOINTS TO PRODUCE APPROXIMATELY SQUARE PANELS AS SHOWN. FORM OR SAW VERTICAL FACE OF CURB FASCIA AT CONTRACTION JOINTS
- ④ PROVIDE NEW BENCHMARK IN PROPOSED SIDEWALK, COST INCIDENTAL TO OTHER PAY ITEMS. ADJUST NEW BENCHMARK AS REQUIRED FOR FINAL GRADE.

- ⑤ ELEVATION IS AT TOP OF ORNAMENTAL RAIL CURB, SLOPE TOP OF ORNAMENTAL RAIL CURB LINEARLY ALONG CURB BETWEEN ELEVATIONS.
- ⑥ SEE SHEET B151 FOR ADDITIONAL INFORMATION.
- ⑦ SW CORNER OF PRECAST DECK PANEL AS8.
- ⑧ NW CORNER OF PRECAST DECK PANEL AS8.
HANDHOLES SHALL BE PAID FOR UNDER ITEM NUMBER 2545.553 "HANDHOLE".
FIELD CUT REINFORCEMENT BARS 2" CLEAR FROM FACE OF DRAINAGE STRUCTURES. COAT ENDS OF CUT REINFORCEMENT BARS PER MNDOT SPECIFICATIONS.

WEST APPROACH PLAN



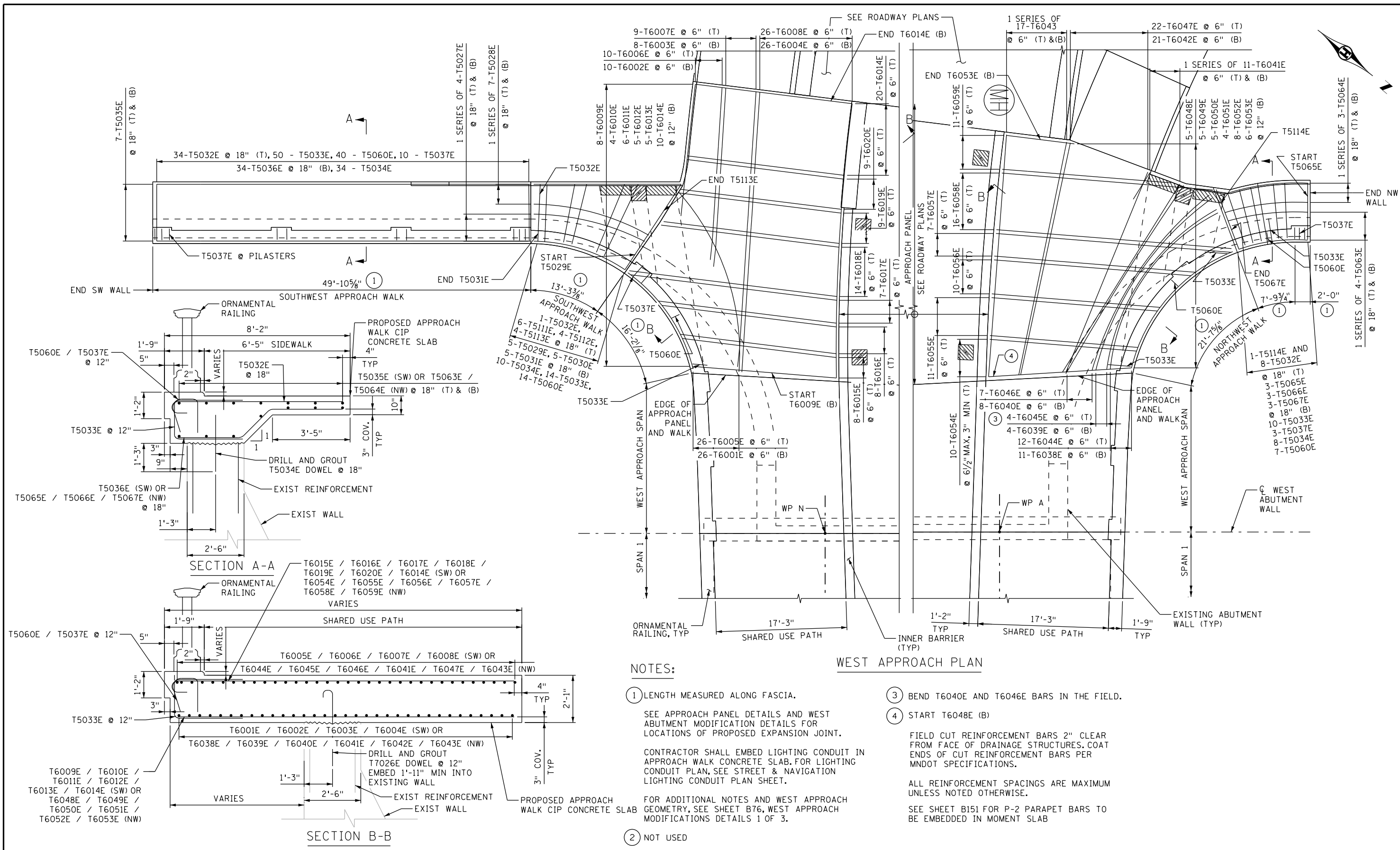
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER
 41308 LICENSE NO. 11/24/2015 DATE

DESIGN BY: CB
CAD BY: CB
CHECKED BY: EBR
LAST REVISION: 03/10/2016

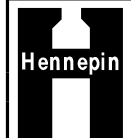
WEST APPROACH MODIFICATIONS DETAILS (1 OF 3)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B76R3
 B176



NOTES:

- (1) LENGTH MEASURED ALONG FASCIA.
 - (2) NOT USED
 - (3) BEND T6040E AND T6046E BARS IN THE FIELD.
 - (4) START T6048E (B)
- SEE APPROACH PANEL DETAILS AND WEST ABUTMENT MODIFICATION DETAILS FOR LOCATIONS OF PROPOSED EXPANSION JOINT.
- CONTRACTOR SHALL EMBED LIGHTING CONDUIT IN APPROACH WALK CONCRETE SLAB. FOR LIGHTING CONDUIT PLAN, SEE STREET & NAVIGATION LIGHTING CONDUIT PLAN SHEET.
- FOR ADDITIONAL NOTES AND WEST APPROACH GEOMETRY, SEE SHEET B76, WEST APPROACH MODIFICATIONS DETAILS 1 OF 3.
- FIELD CUT REINFORCEMENT BARS 2" CLEAR FROM FACE OF DRAINAGE STRUCTURES. COAT ENDS OF CUT REINFORCEMENT BARS PER MNDOT SPECIFICATIONS.
- ALL REINFORCEMENT SPACINGS ARE MAXIMUM UNLESS NOTED OTHERWISE.
- SEE SHEET B151 FOR P-2 PARAPET BARS TO BE EMBEDDED IN MOMENT SLAB



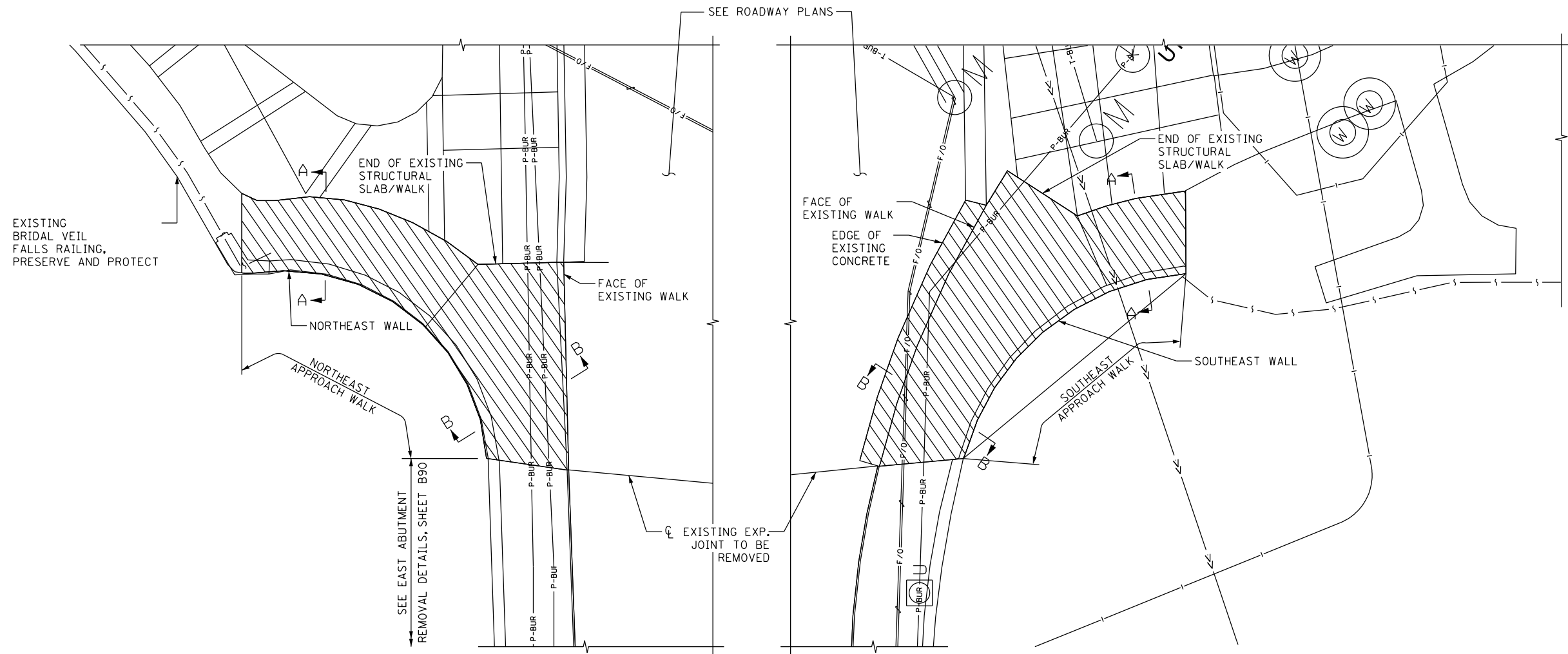
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Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER
 LICENSE NO. **41308** DATE **11/24/2015**

DESIGN BY: CB
CAD BY: CB
CHECKED BY: EBR
LAST REVISION: 03/10/2016

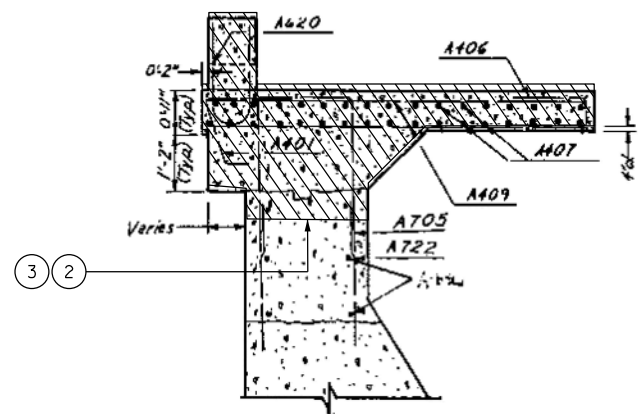
WEST APPROACH MODIFICATIONS DETAILS (2 OF 3)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B77R2
B176

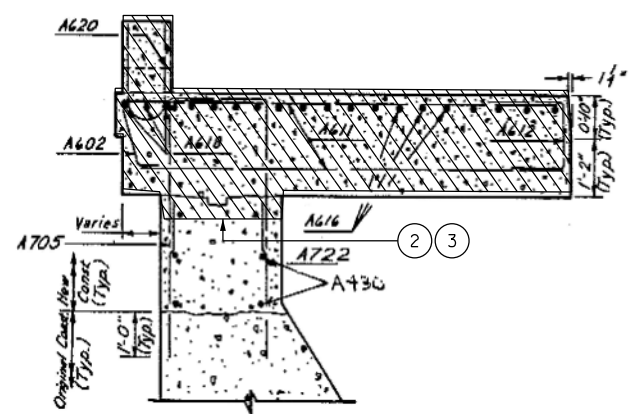


EAST APPROACH PLAN

LEGEND:



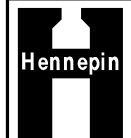
SECTION A-A
NOT TO SCALE
BARS SHOWN ARE EXISTING



SECTION B-B
NOT TO SCALE
BARS SHOWN ARE EXISTING

NOTES:

1. REMOVE EXISTING APPROACH WALKS TO TOP OF EXISTING WALL.
2. REMOVE EXISTING WALL AS NEEDED TO PROVIDE FOR 2'-1" SLAB OVER WALL AND PROPOSED TOP OF SLAB ELEVATIONS SHOWN ON SHEET B80.
3. REMOVAL LIMIT ON WALL SHALL BE UNIFORM AND AT A CONSTANT DEPTH FROM TOP OF PROPOSED SLAB.



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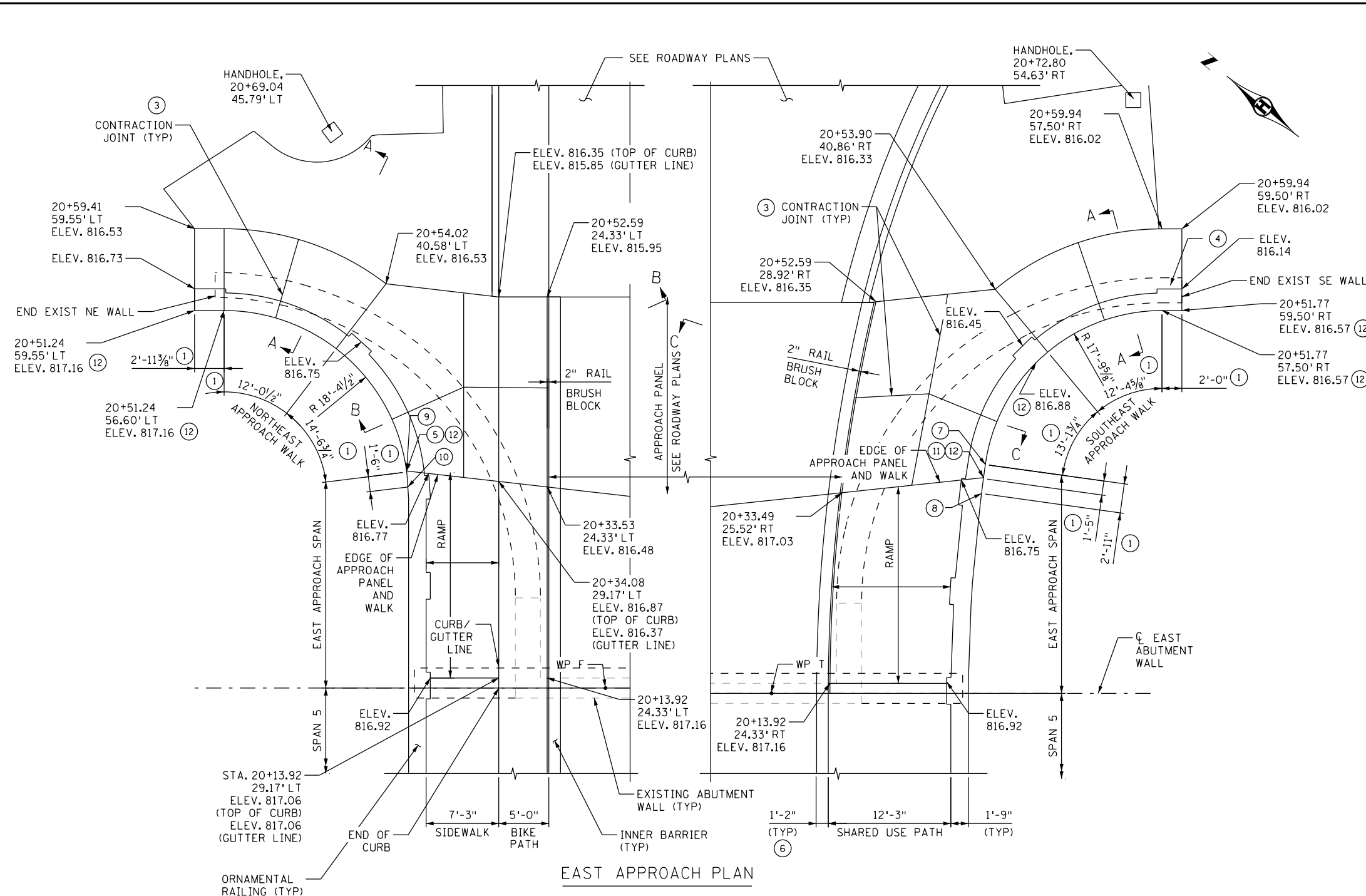
Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER
 41308 8/14/2014
 LICENSE NO. DATE

DESIGN BY: AJN
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EAST APPROACH REMOVAL DETAILS

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B79
 B176



- NOTES:**
- ① LENGTH MEASURED ALONG FASCIA.
SEE SHEET B91, EAST ABUTMENT MODIFICATION DETAILS, FOR THE LOCATION OF PROPOSED EXPANSION JOINT.
ELEVATIONS SHOWN ARE AT TOP OF APPROACH SIDEWALK UNLESS NOTED OTHERWISE.
CONTRACTOR SHALL EMBED LIGHTING CONDUIT IN APPROACH WALK CONCRETE SLAB. FOR LIGHTING CONDUIT PLAN, SEE STREET & NAVIGATION LIGHTING CONDUIT PLAN SHEET.
FOR ABUTMENT WALL REMOVAL DETAILS, SEE SHEET B79, EAST APPROACH REMOVAL DETAILS.
FOR EXCAVATION AND BACKFILL DETAILS, SEE SHEET B87, ABUTMENT APPROACH TREATMENT.
FOR ORNAMENTAL RAILING DETAILS, SEE SHEETS B152 TO B162, ORNAMENTAL RAILING DETAILS.
CURB SHALL BE CAST INTEGRAL WITH THE SLAB AND SHALL MATCH THE SHAPE OF THE ROADWAY CURB AND GUTTER. SEE ROADWAY PLANS FOR DETAILS. CURB TO BE INCIDENTAL TO CONCRETE SLAB ITEM.
 - ② NOT USED
 - ③ CONTRACTION JOINT MAY BE FORMED OR SAWED. FORM CONTRACTION JOINTS TO PRODUCE APPROXIMATELY SQUARE PANELS AS SHOWN. FORM OR SAW VERTICAL FACE OF CURB FASCIA AT CONTRACTION JOINTS.
 - ④ FOR SECTIONS A-A, B-B, AND C-C, SEE SHEET B81 (EAST APPROACH MODIFICATION DETAILS 2 OF 3).
PROVIDE NEW BENCHMARK IN PROPOSED SIDEWALK, COST INCIDENTAL TO OTHER PAY ITEMS. ADJUST AS REQUIRED FOR FINAL GRADE.
 - ⑤ TOP CURB ELEV 817.16
 - ⑥ SEE SHEET B151 FOR ADDITIONAL INFORMATION.
 - ⑦ STA. 20+36.40 OFFSET 39.86' RT
 - ⑧ SE CORNER OF PRECAST DECK PANEL AS10.
 - ⑨ STA. 20+35.12 OFFSET 38.37' LT
 - ⑩ NE CORNER OF PRECAST DECK PANEL AS9.
 - ⑪ TOP CURB ELEV = 816.92
 - ⑫ ELEVATION IS AT TOP OF ORNAMENTAL RAIL CURB AT ϕ PILASTER, UNLESS NOTED OTHERWISE. SLOPE TOP OF ORNAMENTAL RAIL CURB LINEARLY ALONG CURB BETWEEN ELEVATIONS.
HANDHOLES SHALL BE PAID FOR UNDER ITEM NUMBER 2545.553 "HANDHOLE"

EAST APPROACH PLAN



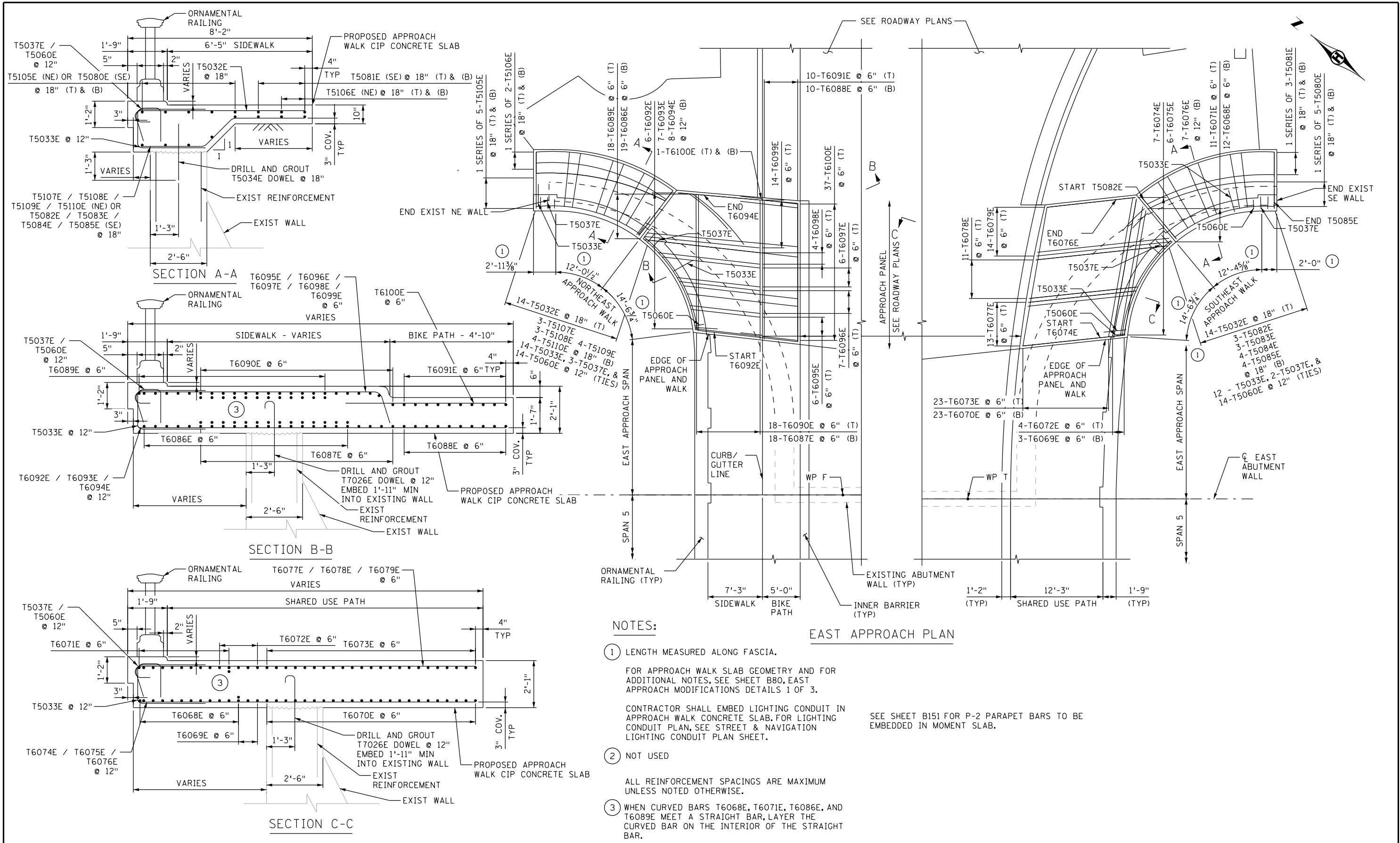
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser
 DANIEL F. ENSER, PROFESSIONAL ENGINEER
 41308 LICENSE NO. 11/24/2015 DATE

DESIGN BY: CB
 CAD BY: CB
 CHECKED BY: EBR
 LAST REVISION: 05/23/2016

EAST APPROACH MODIFICATIONS DETAILS (1 OF 3)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B80R4
 B176



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Daniel F. Enser

DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 11/24/2015

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EAST APPROACH MODIFICATIONS DETAILS (2 OF 3)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705

BRIDGE 2441 S.P. 027-605-029

SHEET

B81R3

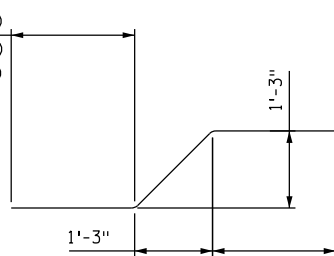
B176

BILL OF REINFORCEMENT SOUTHEAST WALK							
POUR	BAR MARK	NO	LENGTH	SHAPE	LOCATION		
END APPROACH PANEL TO APPROACH WALK EXPANSION JOINT					NOT USED		
					NOT USED		
		T7026E	25	4'-2"	BENT	DOWEL	
		T5033E	15	7'-7"	BENT	TIE	
		T5037E	2	4'-9"	BENT	TIE	
		T5060E	13	4'-4"	BENT	TIE	
		T6068E	12	9'-4"	BENT	L (B) SERIES	
		T6069E	3	17'-11 1/2"	STR	L (B) SERIES	
		T6070E	23	18'-10 1/2"	STR	L (B)	
		T6071E	11	8'-7"	BENT	L (T) SERIES	
		T6072E	4	17'-8"	STR	L (T) SERIES	
		T6073E	23	18'-10 1/2"	STR	L (T)	
		T6074E	7	13'-8 1/2"	STR	T (B) SERIES	
		T6075E	6	15'-9"	STR	T (B) SERIES	
		T6076E	7	14'-8 1/2"	STR	T (B) SERIES	
		T6077E	13	14'-8 1/2"	BENT	T (T) SERIES	
		T6078E	11	16'-9"	BENT	T (T) SERIES	
		T6079E	14	15'-7"	BENT	T (T) SERIES	
	APPROACH WALK EXPANSION JOINT TO END OF WALL		T5032E	14	8'-1"	BENT	T (T)
			T5033E	14	7'-7"	BENT	TIE
		T5034E	13	2'-6"	STR	DOWEL	
		T5037E	2	4'-9"	BENT	TIE	
		T5060E	12	4'-4"	BENT	TIE	
		T5080E	SER OF 2 5	15'-6 1/2"	BENT	L (B) & L (T) SERIES	
		T5081E	SER OF 2 3	18'-6 5/8"	BENT	L (B) & L (T) SERIES	
		T5082E	3	7'-11"	BENT	T (B) SERIES	
		T5083E	3	7'-11"	BENT	T (B) SERIES	
		T5084E	4	7'-11"	BENT	T (B) SERIES	
	T5085E	4	7'-11"	BENT	T (B)		

BILL OF REINFORCEMENT NORTHEAST WALK						
POUR	BAR MARK	NO	LENGTH	SHAPE	LOCATION	
END APPROACH PANEL TO APPROACH WALK EXPANSION JOINT					NOT USED	
					NOT USED	
		T7026E	24	4'-2"	BENT	DOWEL
		T5033E	18	7'-7"	BENT	TIE
		T5037E	2	4'-9"	BENT	TIE
		T5060E	16	4'-4"	BENT	TIE
		T6086E	19	10'-0 1/2"	BENT	L (B) SERIES
		T6087E	18	18'-8 1/8"	STR	L (B) SERIES
		T6088E	10	18'-3 1/2"	STR	L (B) SERIES
		T6089E	18	9'-10 1/8"	BENT	L (T) SERIES
		T6090E	18	18'-0 3/4"	STR	L (T) SERIES
		T6091E	10	18'-3 1/4"	STR	L (T) SERIES
		T6092E	6	14'-0"	STR	T (B) SERIES
		T6093E	7	17'-6 1/2"	STR	T (B) SERIES
		T6094E	8	18'-2 1/2"	STR	T (B) SERIES
		T6095E	6	11'-1 5/8"	BENT	T (T) SERIES
		T6096E	7	12'-2 3/4"	BENT	T (T) SERIES
		T6097E	6	14'-2"	BENT	T (T) SERIES
		T6098E	4	16'-6 3/8"	BENT	T (T) SERIES
	APPROACH WALK EXPANSION JOINT TO END OF WALL		T6099E	14	15'-5"	BENT
		T6100E	39	7'-8"	STR	T (T)
						NOT USED
						NOT USED
						NOT USED
						NOT USED
		T5032E	14	8'-1"	BENT	T (T)
		T5033E	17	7'-7"	BENT	TIE
		T5034E	12	2'-6"	STR	DOWEL
		T5037E	3	4'-9"	BENT	TIE
	T5060E	14	4'-4"	BENT	TIE	
	T5105E	SER OF 2 5	16'-1 1/2"	BENT	L (B) & L (T) SERIES	
	T5106E	SER OF 2 2	18'-9 1/2"	BENT	L (B) & L (T) SERIES	
	T5107E	3	7'-11"	BENT	T (B) SERIES	
	T5108E	3	7'-11"	BENT	T (B) SERIES	
	T5109E	4	7'-11 1/4"	BENT	T (B) SERIES	
	T5110E	4	7'-11 1/4"	BENT	T (B)	

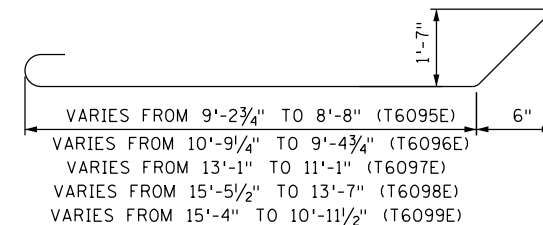
SUMMARY OF QUANTITIES FOR EAST APPROACH		
ITEM	UNIT	QUANTITY TOTAL
REINFORCEMENT BARS (EPOXY COATED)	LB	9,262
STRUCTURAL CONCRETE (3Y43)	CY	56
ANCHORAGES TYPE 1	EA	23
ANCHORAGES TYPE 2	EA	43

VARIES FROM 4'-3 1/4" TO 3'-8 1/2" (T5082E)
 VARIES FROM 3'-5 5/8" TO 3'-0 3/4" (T5083E)
 VARIES FROM 2'-10 7/8" TO 2'-7 1/4" (T5084E)
 2'-6 1/2" (T5085E)
 VARIES FROM 4'-1 1/8" TO 3'-8 1/4" (T5107E)
 VARIES FROM 3'-6 1/4" TO 3'-3" (T5108E)
 VARIES FROM 3'-1 7/8" TO 3'-0 3/8" (T5109E)
 3'-0" (T5110E)

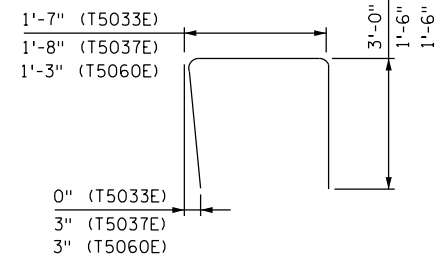


VARIES FROM 1'-10 3/4" TO 2'-5 1/2" (T5082E)
 VARIES FROM 2'-8 3/8" TO 3'-1 1/4" (T5083E)
 VARIES FROM 3'-3 3/8" TO 3'-7 1/4" (T5084E)
 3'-7 3/4" (T5085E)
 VARIES FROM 2'-0 5/8" TO 2'-5 5/8" (T5107E)
 VARIES FROM 2'-7 3/4" TO 2'-10 7/8" (T5108E)
 VARIES FROM 3'-0 1/8" TO 3'-1 7/8" (T5109E)
 3'-2" (T5110E)

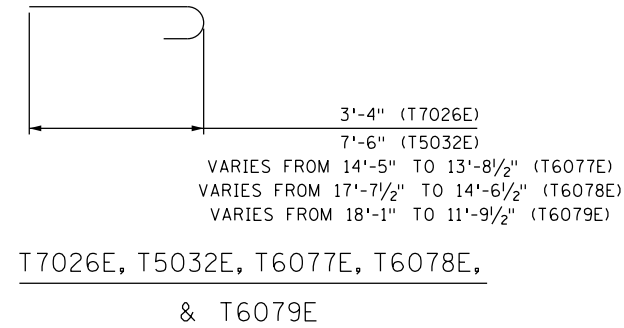
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T6095E, T6096E, T6097E, T6098E & T6099E



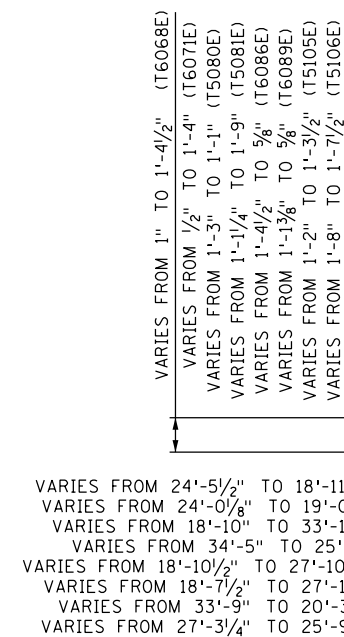
T5033E, T5037E, & T5060E



T7026E, T5032E, T6077E, T6078E,
& T6079E

NOTES:

"L" = BAR APPROXIMATELY LONGITUDINAL WITH BRIDGE CL.
 "T" = BAR APPROXIMATELY TRANSVERSE TO BRIDGE CL.
 LENGTH SHOWN IN BILL OF REINFORCEMENT FOR SERIES BARS IS THE AVERAGE LENGTH OF BARS IN THE SERIES.



VARIES FROM 24'-5 1/2" TO 18'-11 1/2" (T6068E)
 VARIES FROM 24'-0 1/8" TO 19'-0 1/8" (T6071E)
 VARIES FROM 18'-10" TO 33'-1 1/2" (T5080E)
 VARIES FROM 34'-5" TO 25'-11" (T5081E)
 VARIES FROM 18'-10 1/2" TO 27'-10 1/2" (T6086E)
 VARIES FROM 18'-7 1/2" TO 27'-1 1/2" (T6089E)
 VARIES FROM 33'-9" TO 20'-3 1/2" (T5105E)
 VARIES FROM 27'-3 1/4" TO 25'-9 1/2" (T5106E)

T6068E, T6071E, T5080E, T5081E, T6086E, T6089E,

T5105E, & T5106E

T6069E, T6072E, T6074E, T6075E, T6076E,
 T6087E, T6088E, T6090E, T6091E, T6092E,
 T6093E, & T6094E

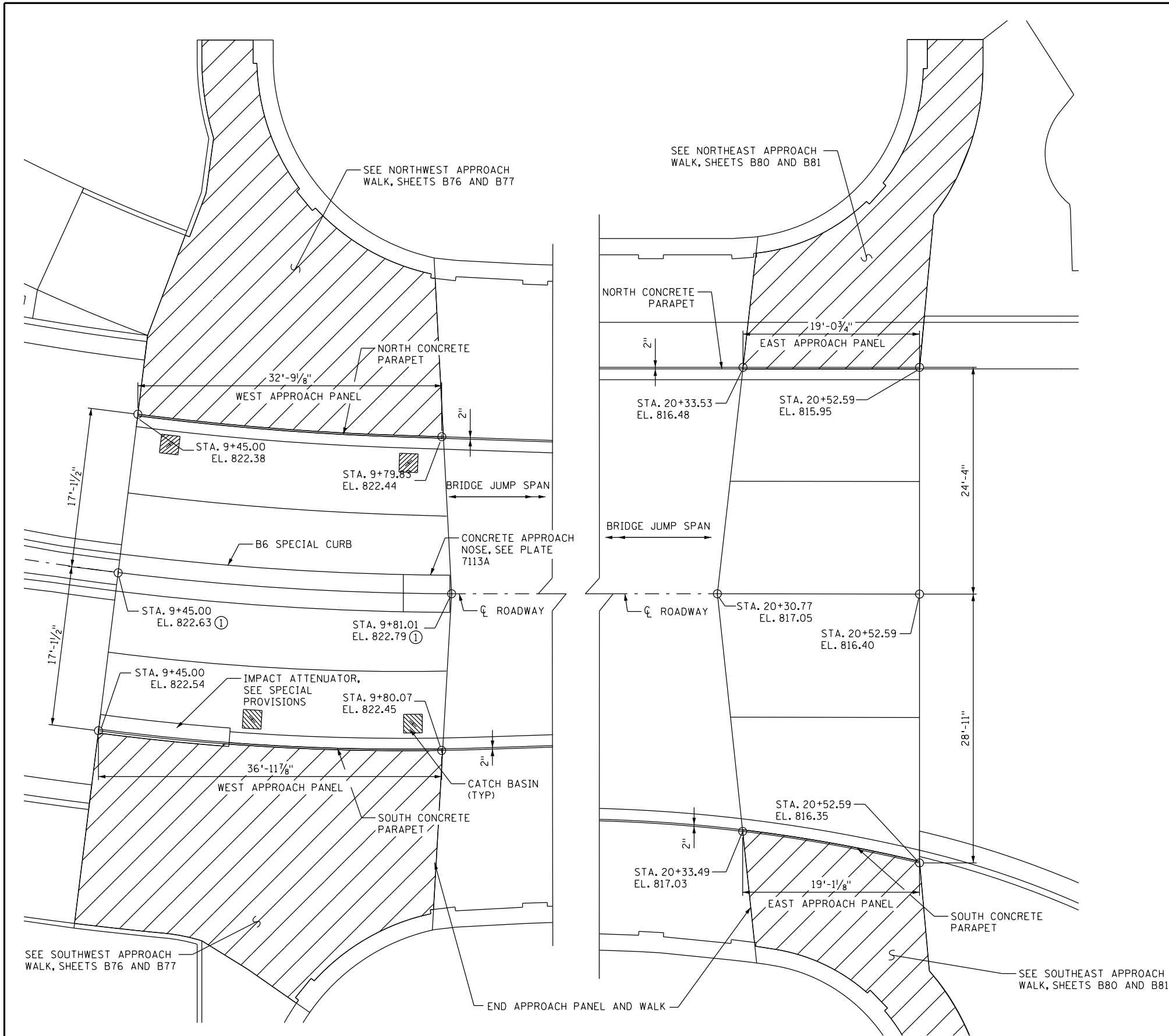


I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 Daniel F. Enser
 DANIEL F. ENSER, PROFESSIONAL ENGINEER
 41308 11/24/2015
 LICENSE NO. DATE

DESIGN BY: EBR
 CAD BY: EBR
 CHECKED BY: CB
 LAST REVISION: 03/10/2016

EAST APPROACH MODIFICATIONS DETAILS (3 OF 3)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B82R2
 B176



NOTES:

SEE ABUTMENT APPROACH TREATMENT FOR DRAINAGE DETAILS AND ADDITIONAL REQUIREMENTS.

SEE ROADWAY CONSTRUCTION PLANS FOR PAVEMENT AND SHOULDER WIDTHS AND CONFIGURATION.

PANEL SIZE AND REQUIREMENTS FOR TRANSVERSE AND LONGITUDINAL JOINTS ARE SHOWN ON BRIDGE APPROACH PANEL JOINT LAYOUT SHEET AND STANDARD PLAN 5-297.229.

GENERAL NOTES:

GENERAL DRAINAGE DETAILS ARE SHOWN ON BRIDGE APPROACH PANEL DRAINAGE DETAILS, STANDARD PLAN 5-297.231. ADDITIONAL CATCH BASIN DETAILS ARE SHOWN ON DRAINAGE PLAN SHEETS.

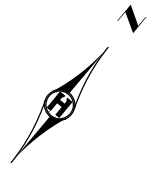
CONCRETE MIX SHALL BE 3A42 FOR APPROACH PANEL AND APPROACH NOSE.

REMOVE NOTE 6 ON STANDARD PLATE 7113A AND REPLACE AS FOLLOWS: ALL MATERIAL AND LABOR FOR THE CONCRETE APPROACH NOSE SHALL BE INCLUDED IN THE BID PRICE FOR ITEM NO. 2406.553 "BRIDGE APPROACH PANELS"

SEE ROADWAY SHEET 39 FOR CATCH BASIN LOCATIONS. ADJUST AND ADD REINFORCEMENT IN APPROACH PANEL AND INTERIOR BARRIER FOR HANDHOLES AND CATCH BASINS. COST FOR ADDITIONAL REINFORCEMENT SHALL BE INCIDENTAL.

THE PAY ITEM "BRIDGE APPROACH PANELS" INCLUDES THE WEST APPROACH PANEL QUANTITY OF 120 SQUARE YARDS AND THE EAST APPROACH PANEL QUANTITY OF 133 SQUARE YARDS.

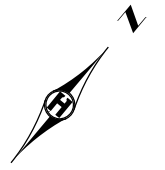
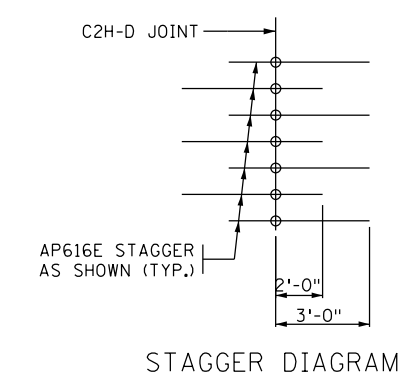
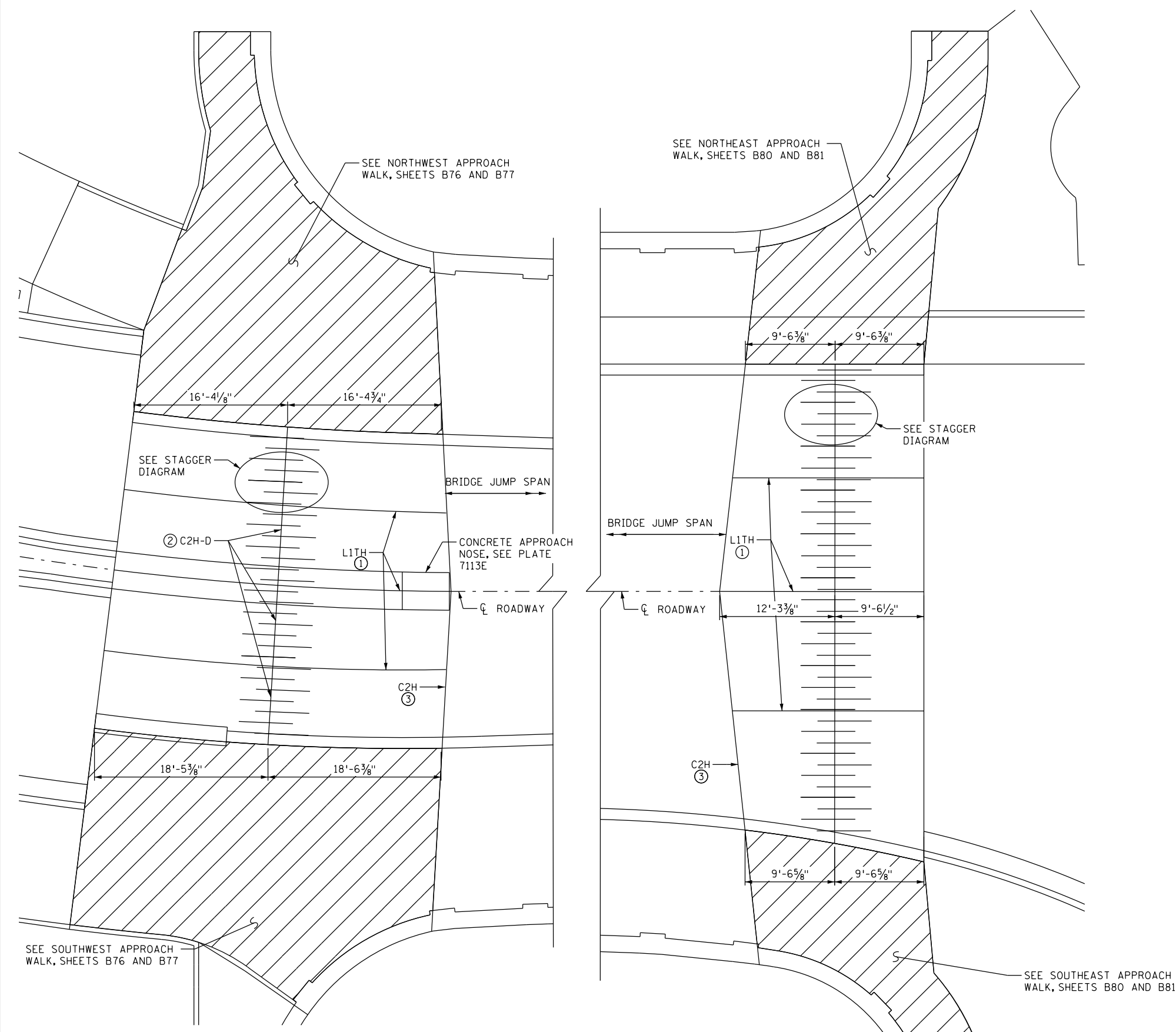
① ELEVATION DOES NOT INCLUDE B6 SPECIAL CURB.



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	DESIGN BY: AJN CAD BY: NTT CHECKED BY: DFE LAST REVISION: 05/23/2016	APPROACH PANEL LAYOUT	SHEET
	 DANIEL F. ENSER, PROFESSIONAL ENGINEER	41308 11/24/2015 LICENSE NO. DATE	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	B83R4 B176

NOTES:

- ① L1TH LONGITUDINAL JOINT. SEE STANDARD PLAN 5-297.229 FOR REINFORCEMENT LAP LENGTH REQUIREMENTS FOR STAGED CONSTRUCTION.
- ② PERMISSIBLE CONSTRUCTION JOINT. USE JOINT TYPE C2H-D WITH AP616E BARS AT 12-INCH SPACING AT MID DEPTH OF THE SLAB, PARALLEL TO THE CENTERLINE OF THE ROADWAY. AP616E BARS ARE 5'-0" LONG. PLACE THE BAR WITH 2'-0" ON ONE SIDE OF THE JOINT AND 3'-0" ON THE OPPOSITE SIDE OF THE JOINT. ALTERNATE THE 2'-0" AND 3'-0" DIMENSIONS AS SHOWN ON THE PLAN. THE C2H-D JOINT AND AP616E BARS ARE REQUIRED ON ALL PANELS WITH A SKEW OVER 10 DEGREES.
- ③ C2H CONTRACTION JOINT.
- ④ ALL JOINTS SHALL BE SAWCUT. SAWCUTS SHALL BE MADE WHILE THE CONCRETE IS STILL GREEN. WHEN A CONCRETE WEARING COURSE IS SPECIFIED, THE JOINTS SHALL BE SAWN THROUGH BOTH THE WEARING COURSE AND THE UNDERLYING APPROACH SLAB IN A SINGLE OPERATION.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser

DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308 11/24/2015

LICENSE NO. DATE

DESIGN BY: AJN

CAD BY: NTT

CHECKED BY: DFE

LAST REVISION: 05/23/2016

APPROACH PANEL JOINT LAYOUT

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705

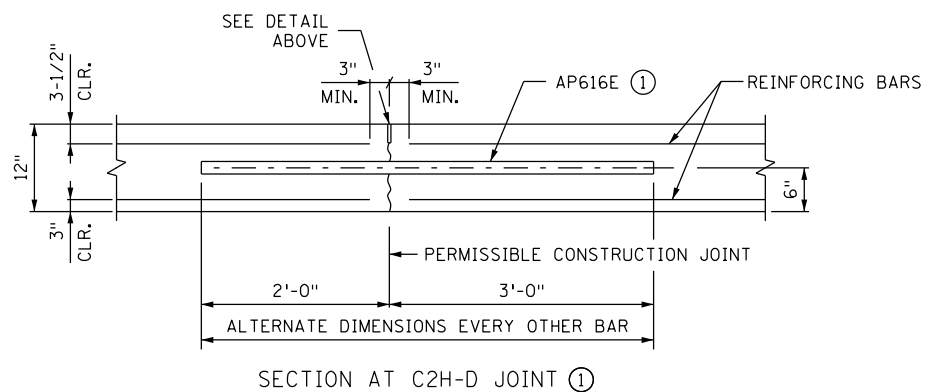
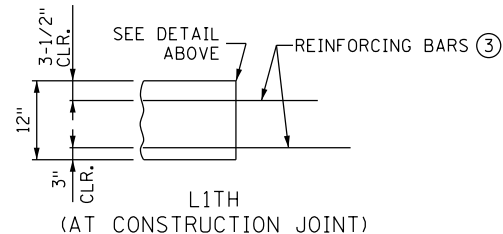
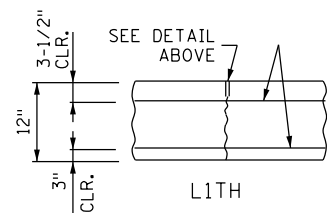
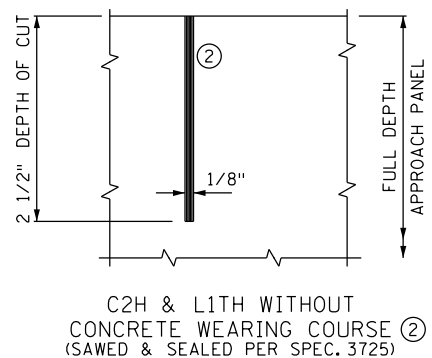
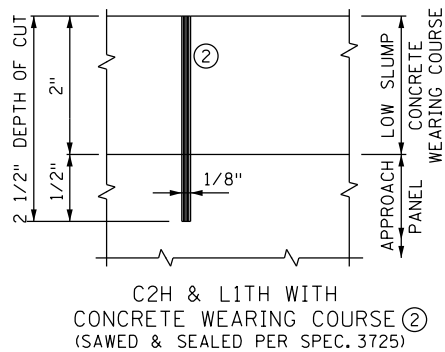
BRIDGE 2441 S.P. 027-605-029

SHEET

B84R3

B176

JOINT DETAILS



JOINT NOTES:

- ① PERMISSIBLE CONSTRUCTION JOINT. AP616E BARS AT 12-INCH SPACING AT MID DEPTH OF SLAB, PARALLEL TO THE CENTERLINE OF THE ROADWAY. AP616E BARS ARE 5'-0" LONG. PLACE THE BAR WITH 2'-0" ON ONE SIDE OF THE JOINT AND 3'-0" ON THE OPPOSITE SIDE OF THE JOINT. ALTERNATE THE 2'-0" AND 3'-0" DIMENSION AS SHOWN ON THE PLAN.
- ② CLEAN AND DRY FULLY CURED JOINT FACES BY SANDBLASTING PRIOR TO SEALING THE JOINT.
- ③ WHEN CONSTRUCTING A L1TH JOINT UNDER STAGED CONSTRUCTION, EXTEND NO. 4 BARS 1'-8" AND NO. 5 BARS 2'-1" PAST THE EDGE OF THE FIRST CONCRETE POUR. CONSTRUCT L1TH JOINT ACCORDING TO DETAIL SHOWN AFTER ADJACENT POUR IS COMPLETE.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER, UNDER THE LAWS OF THE STATE OF MINNESOTA.

Aaron J. Nelson

AARON J. NELSON, PROFESSIONAL ENGINEER

43101
LICENSE NO.

8/14/2014
DATE

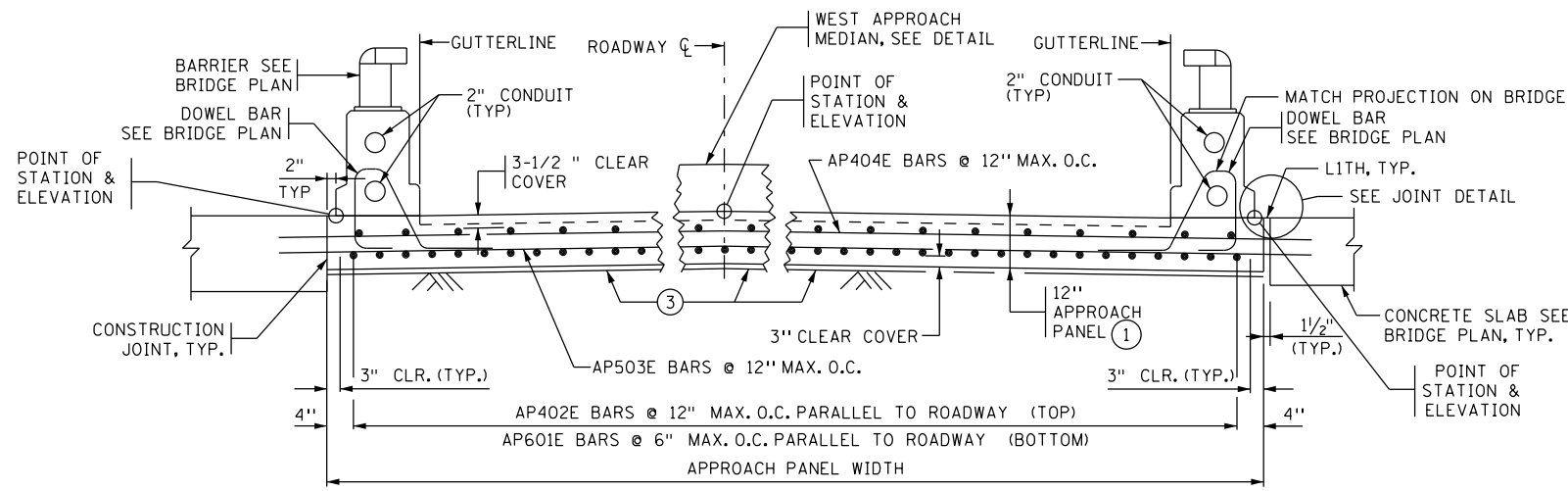
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APPROACH PANEL JOINT DETAILS

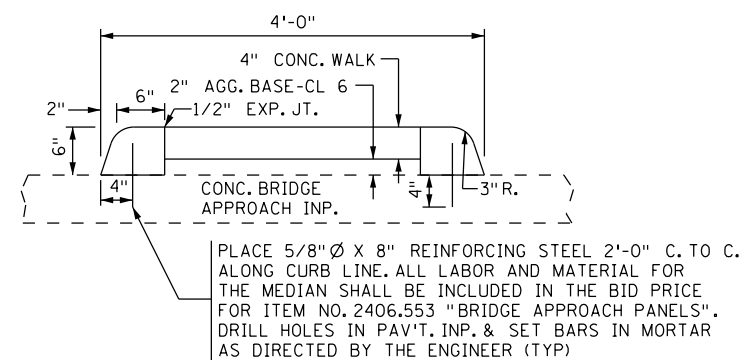
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

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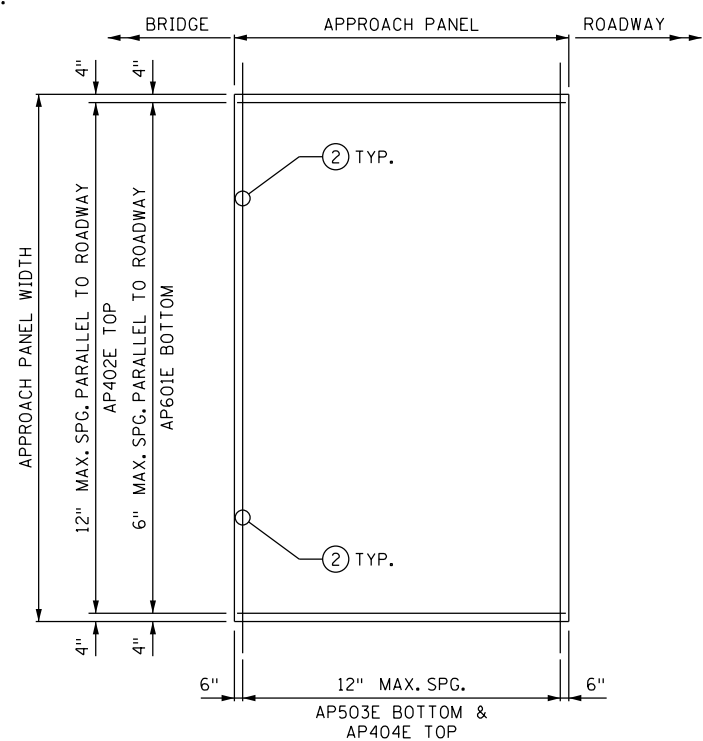
B85
B176



TRANSVERSE SECTION B-B
FROM STANDARD PLAN 5-297.224
CONCRETE BARRIERS ARE SHOWN, BUT MAY NOT BE PRESENT.
REFER TO BRIDGE PLANS FOR END OF BARRIER LOCATIONS.



MEDIAN SECTION
SHOWING B6 SPECIAL CURB
ON BRIDGE APPROACH
(WEST SIDE OF BRIDGE)



APPROACH PANEL REINFORCEMENT
SQUARE TO 10° SKEWS

ESTIMATED REINFORCEMENT QUANTITY FOR BRIDGE APPROACH PANELS		
TYPE	LOCATION	ESTIMATED WEIGHT
PANEL (SQ. TO 10°)	BRIDGE TO END OF APPROACH PANEL	48.5 LB./SQ. YD.
PANEL SEGMENT (OVER 10°) ①	BRIDGE TO CONTRACTION JOINT	48.5 LB./SQ. YD.
PANEL SEGMENT (OVER 10°) ②	CONTRACTION JOINT TO END OF APPROACH PANEL	35.0 LBS/SQ. YD.
CURB	7.0 FT. CURB TRANSITION	19.0 LBS/EACH
SILL	SILL (IF REQUIRED)	14.0 LBS/LIN FT.

NOTES:
TRANSVERSE BARS IN BOTH PANEL SEGMENTS ARE PERPENDICULAR TO ROADWAY CENTERLINE EXCEPT AP407E ARE PARALLEL TO SKEW IN SEGMENT ① AND AP415E ARE PARALLEL TO SKEW IN SEGMENT ②.
LONGITUDINAL BARS IN BOTH PANEL SEGMENTS ARE PARALLEL TO ROADWAY CENTERLINE.

① SEE SHOP DRAWING 169 FOR APPROACH PANEL BILL OF REINFORCEMENT.

BILL OF REINFORCEMENT FOR BRIDGE APPROACH PANELS ①				
CONTRACTOR IS REQUIRED TO COMPLETE THE BILL OF REINFORCEMENT TABLE AND PREPARE SHOP DRAWINGS AND SUBMIT THEM TO THE PROJECT ENGINEER AT LEAST 3 WEEKS BEFORE REBAR FABRICATION.				
BAR	NO.	LENGTH	SHAPE	LOCATION
AP601E		'-	—	BOTTOM LONGITUDINAL
AP402E		'-	—	TOP LONGITUDINAL
AP503E		'-	—	BOTTOM TRANSVERSE
AP404E		'-	—	TOP TRANSVERSE
AP505E	SER. OF	'- TO	—	BOTTOM TRANSVERSE
AP406E	SER. OF	'- TO	—	TOP TRANSVERSE
AP407E		'-	—	TOP & BOTTOM EDGE
AP508E		8'-0	—	TOP CORNER - FAN
AP509E		'-	—	BOTTOM TRANSVERSE
AP410E		'-	—	TOP TRANSVERSE
AP511E	SER. OF	'- TO	—	BOTTOM TRANSVERSE
AP412E	SER. OF	'- TO	—	TOP TRANSVERSE
AP613E	SER. OF	'- TO	—	BOTTOM LONGITUDINAL
AP414E	SER. OF	'- TO	—	TOP LONGITUDINAL
AP415E		'-	—	TOP & BOTTOM EDGE
AP616E		5'-0	—	C2H-D JOINT

GENERAL NOTES:

- AS PER MNDOT SPEC. 3301, USE EPOXY COATED GRADE 60 REINFORCEMENT BARS IN APPROACH PANEL, CONCRETE SILL AND CURB TRANSITION.
- BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH MNDOT SPEC. 3301.
- FOR VARIABLE ROADWAY WIDTHS, VARY THE LAP LENGTH OF THE REINFORCEMENT.
- MINIMUM REINFORCEMENT LAP LENGTHS ARE AS FOLLOWS: NO. 4 BAR = 1'-8", NO. 5 BAR = 2'-1", NO. 6 BAR = 2'-6".
- ALL LAP SPLICES SHALL BE STAGGERED SUCH THAT NO MORE THAN 50% OF REBAR IS SPLICED AT THE SAME LOCATION.
- ① APPROACH SLAB THICKNESS IS 10" SLAB + 2" MAXIMUM PPC WEARING COURSE. CHECK BRIDGE PLANS FOR CONCRETE WEARING COURSE, WHICH IS INCLUDED IN BRIDGE PLAN QUANTITIES.
- ② REINFORCEMENT MUST EXTEND INTO CURB AS SHOWN IN TRANSVERSE SECTIONS B-B.
- ③ IF THE APPROACH PANEL IS TIED TO THE BRIDGE ABUTMENT WITH REINFORCEMENT BARS, PLACE 12 MIL POLYETHYLENE SHEETING (OR 2 LAYERS OF 6 MIL) UNDER THE LIMITS OF THE APPROACH PANEL TO ALLOW THE PANEL TO MOVE LONGITUDINALLY ON THE GRADE. SHEETING IS INCLUDED IN THE APPROACH PANEL PAY ITEM.
- ④ SEAL WITH SELF-LEVELING SILICONE PER MNDOT 3722.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Aaron J. Nelson
AARON J. NELSON, PROFESSIONAL ENGINEER

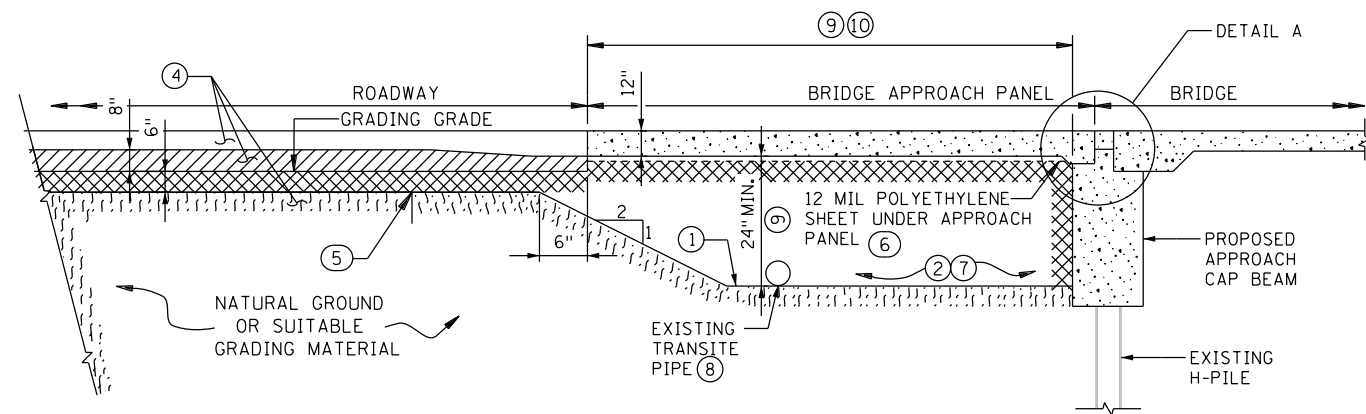
43101 8/14/2014
LICENSE NO. DATE

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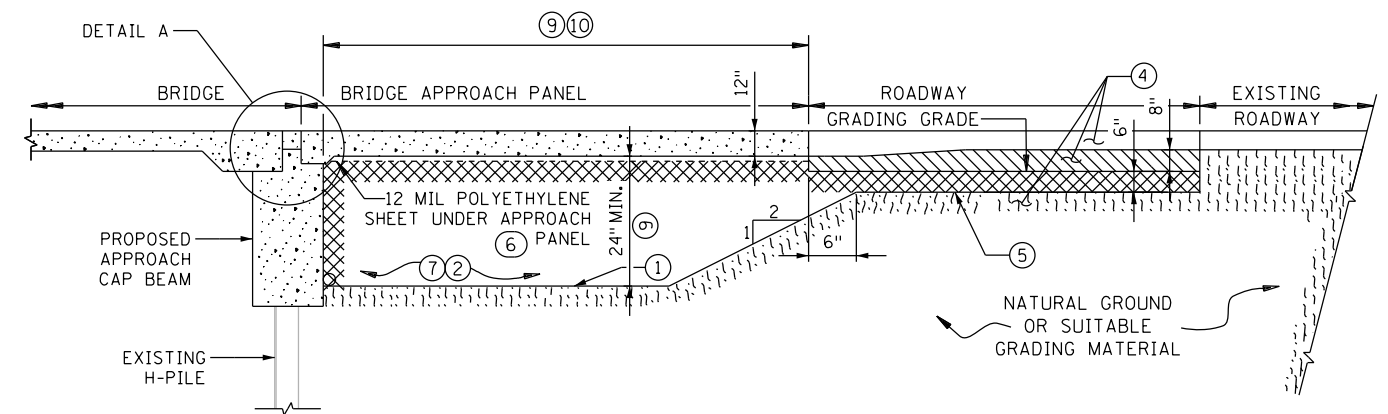
AS-BUILT - APPROACH PANEL REINFORCEMENT DETAIL

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BRIDGE 2441 S.P. 027-605-029

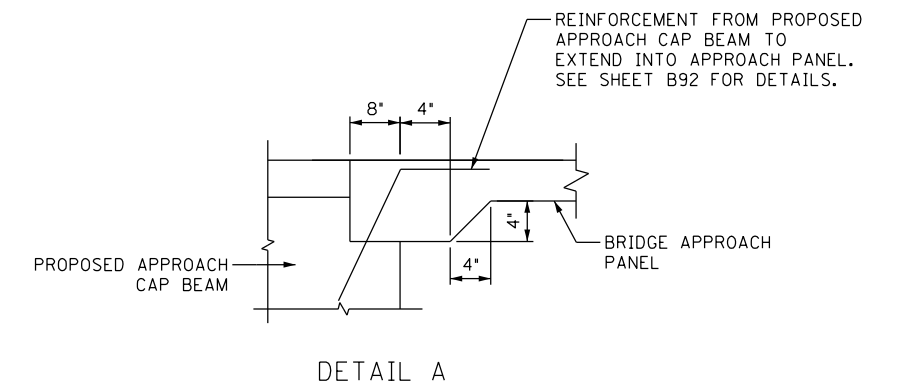
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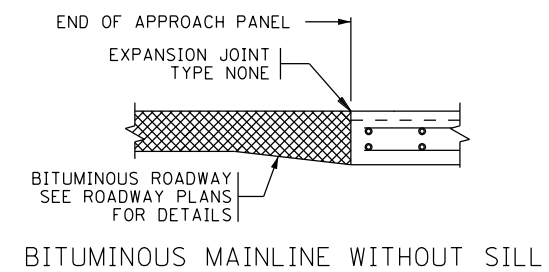
FINISHED GRADING SECTION - WEST APPROACH
NOT TO SCALE



FINISHED GRADING SECTION - EAST APPROACH
NOT TO SCALE



DETAIL A



BITUMINOUS MAINLINE WITHOUT SILL

NOTES:

- ① CONTRACTOR SHALL GRADE TRANSVERSE AWAY FROM THE CENTERLINE OF THE ROADWAY A MINIMUM OF 2%.
- ② SELECT GRANULAR MATERIAL MODIFIED 10% SHALL COMPLY WITH SPEC. 3149.2B2, MODIFIED TO 10% OR LESS PASSING THE NUMBER 200 SIEVE. SELECT GRANULAR MATERIAL SHALL BE INCLUDED IN THE COST FOR STRUCTURE EXCAVATION. IF THE CONTRACTOR CHOOSES TO INCREASE DIMENSIONS IN ORDER TO FACILITATE CONSTRUCTION OPERATIONS, ANY QUANTITY INCREASES SHALL BE CONSIDERED INCIDENTAL.
- ③ PLACE ABUTMENT APPROACH SURCHARGE MATERIAL PRIOR TO ABUTMENT CONSTRUCTION. AFTER COMPLETION OF SURCHARGE WAITING PERIOD, REMOVE SURCHARGE AND EXISTING NATURAL GROUND OR SUITABLE GRADING MATERIAL TO THE LIMITS SHOWN IN "ROUGH GRADING SECTION" ABOVE, PRIOR TO ABUTMENT CONSTRUCTION. SEE BRIDGE PLANS AND SPECIAL PROVISIONS FOR ABUTMENT APPROACH SURCHARGE REQUIREMENT AND PAYMENTS.
- ④ SEE TYPICAL SECTION ROADWAY SHEET 08 PLANS FOR TYPE OF MATERIAL.
- ⑤ TOP OF 1V:8H SLOPE.
- ⑥ IF THE APPROACH PANEL IS TIED TO THE ABUTMENT WITH REINFORCEMENT BARS, PLACE 12 MIL POLYETHYLENE SHEETING (OR TWO LAYERS OF 6 MIL) UNDER THE LIMITS OF THE APPROACH PANEL TO ALLOW THE PANEL TO MOVE LONGITUDINALLY ON THE GRADE. SHEETING IS INCIDENTAL.
- ⑦ SUITABLE GRADING MATERIAL SHALL HAVE SUITABLE MOISTURE CONTENT DURING PLACEMENT AND SHALL BE COMPACTED PER SPEC. 2105.
- ⑧ CONTRACTOR SHALL REMOVE EXISTING TRANSITE PIPE PRIOR TO PLACEMENT OF APPROACH MATERIAL. TRANSITE PIPE AND EXISTING MATERIAL AROUND TRANSITE PIPE ARE CONSIDERED HAZARDOUS WASTE. EXISTING MATERIAL AROUND EXISTING TRANSITE PIPE SHALL BE REMOVED PER RECOMMENDATIONS OF SOILS ENGINEER. SEE SPECIAL PROVISIONS FOR TREATMENT OF HAZARDOUS WASTE.
- ⑨ LIMITS OF STRUCTURAL EXCAVATION.
- ⑩ CARRY EXCAVATION AND BACKFILL ALONG APPROACH WALLS AND BELOW ALL APPROACH WALKS, SEE SHEETS B76 AND B80 FOR APPROACH WALK INFORMATION. LIMITS SHALL EXTEND FROM EDGE OF WALL TO EDGE OF APPROACHES. 2H:1V END GRADE SHALL EXTEND 2'-0" BEYOND EDGE OF APPROACHES.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

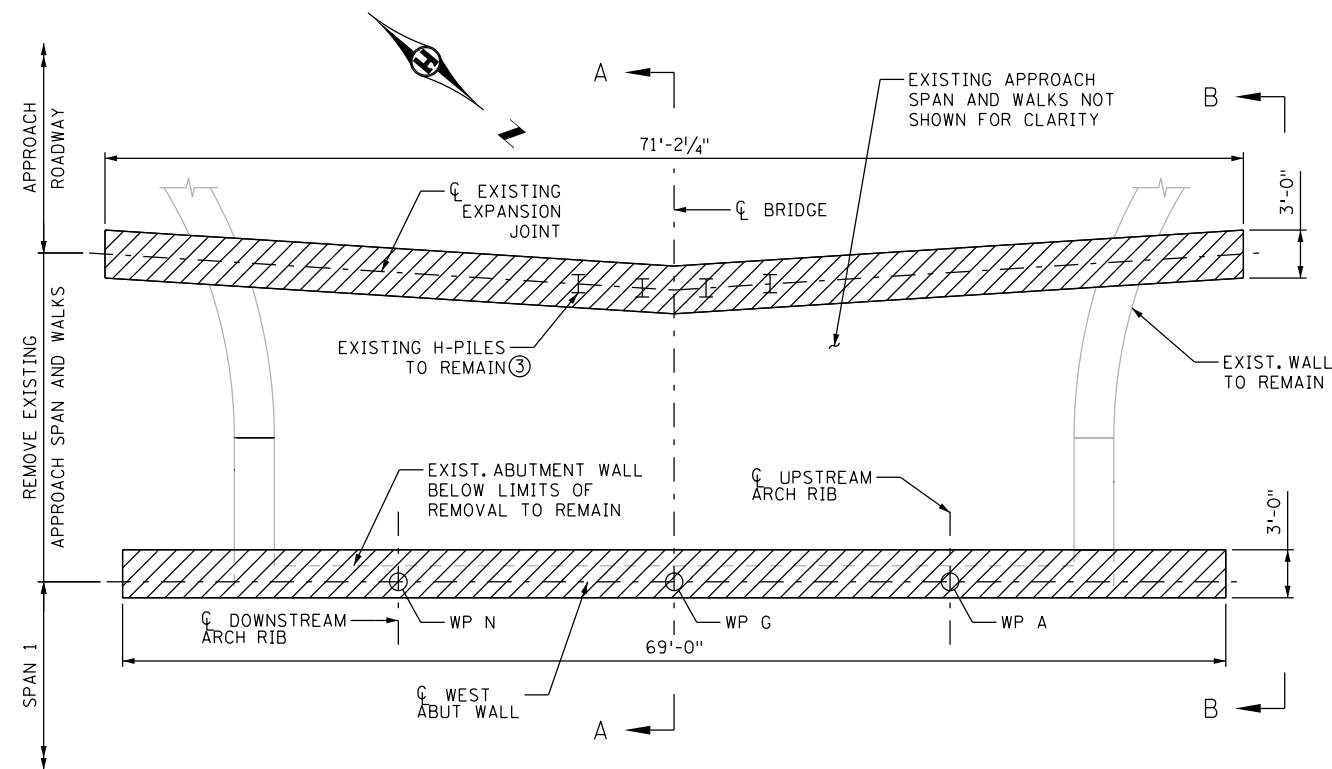
Aaron J. Nelson
AARON J. NELSON, PROFESSIONAL ENGINEER

43101 8/14/2014
LICENSE NO. DATE

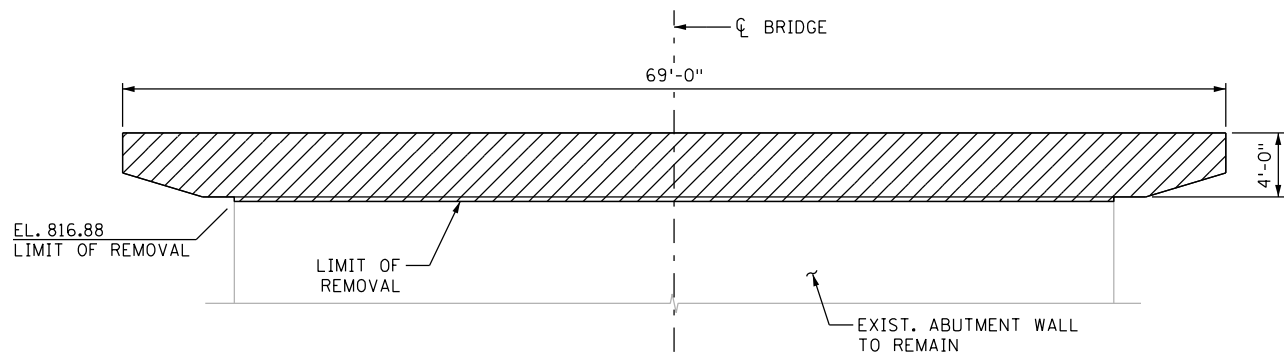
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ABUTMENT APPROACH TREATMENT
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

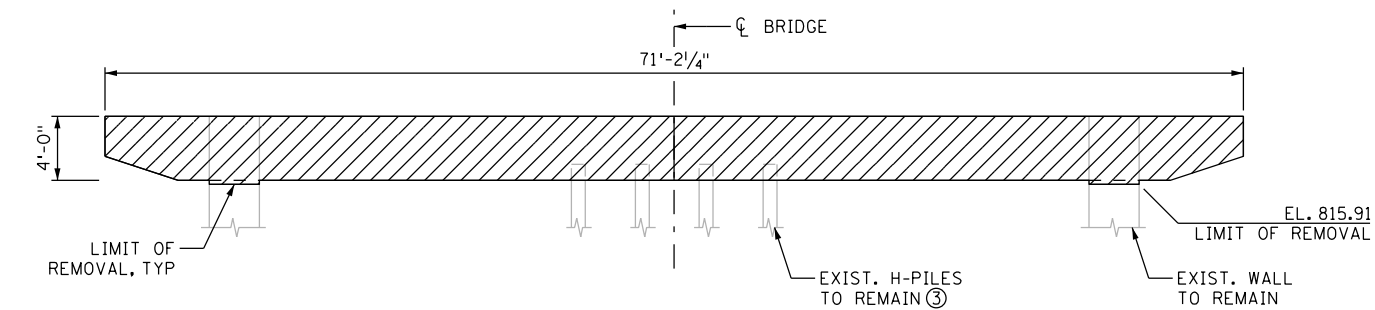
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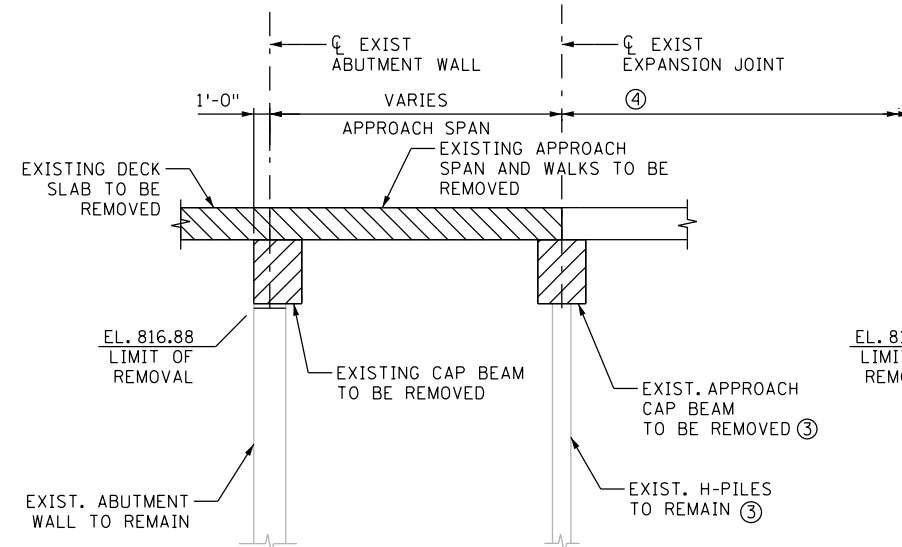
WEST ABUTMENT AND APPROACH PLAN



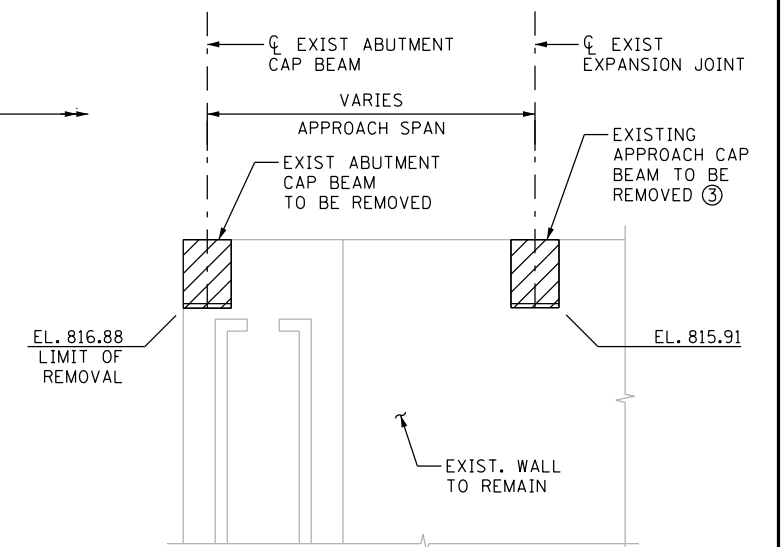
WEST ABUTMENT ELEVATION



WEST APPROACH ELEVATION



SECTION A-A



SECTION B-B

LEGEND:

- SUBSTRUCTURE REMOVAL
- SUPERSTRUCTURE REMOVAL

NOTES:

1. FOR WEST ABUTMENT REPAIRS AND WALL REPAIRS, SEE REPAIR LOCATION SHEETS B14 AND B16.
2. SEE WEST ABUTMENT MODIFICATION DETAILS FOR PROPOSED WORK, SHEET B89.
- ③ CARE SHALL BE TAKEN IN REMOVING THE EXISTING APPROACH CAP BEAM, EXISTING H-PILES AND EXISTING WALL SHALL NOT BE DAMAGED. REMOVE EXISTING CONCRETE FROM EXISTING H-PILES.
- ④ SEE ROADWAY PLANS FOR REMOVAL LIMITS. SEE WEST APPROACH REMOVAL DETAILS, SHEET B75, FOR APPROACH WALK REMOVALS.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Daniel F. Enser

DANIEL F. ENSER, PROFESSIONAL ENGINEER

41308

LICENSE NO.

8/14/2014

DATE

DESIGN BY: CB
 CAD BY: PRE
 CHECKED BY: AMK
 LAST REVISION: 12/03/2015

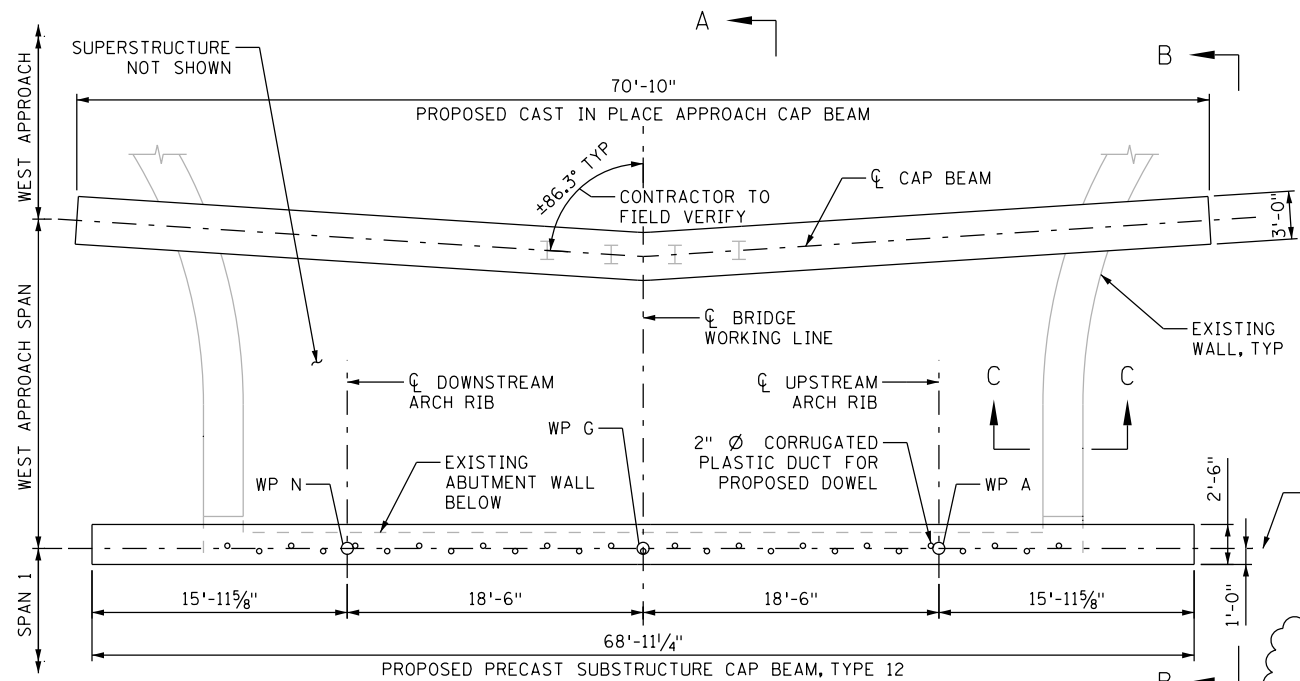
WEST ABUTMENT REMOVAL DETAILS

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

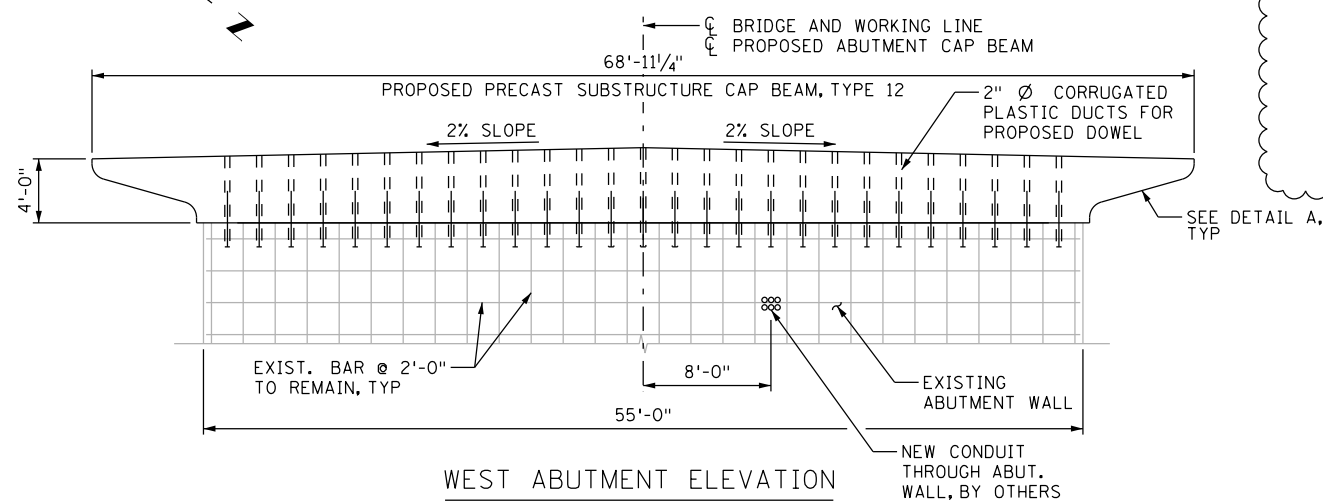
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B88R

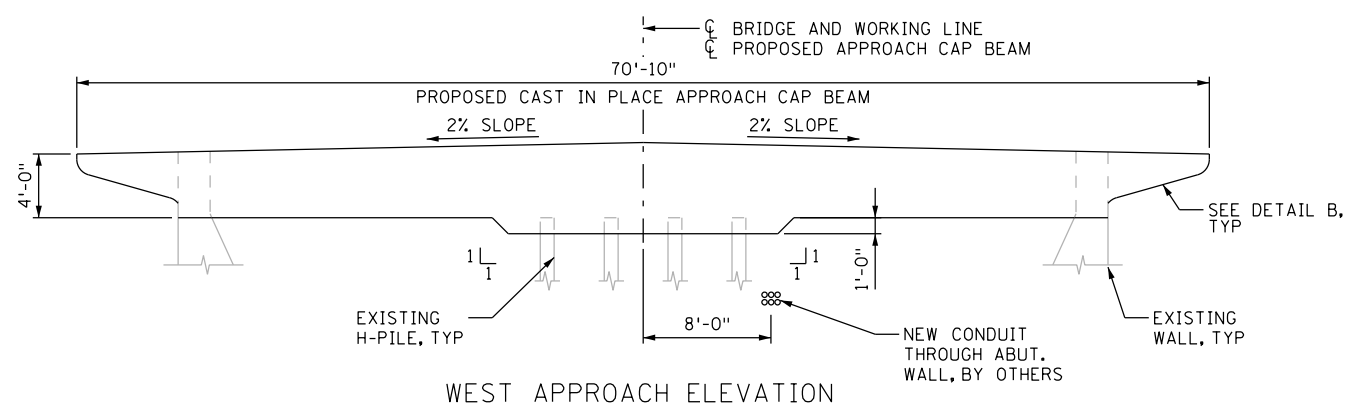
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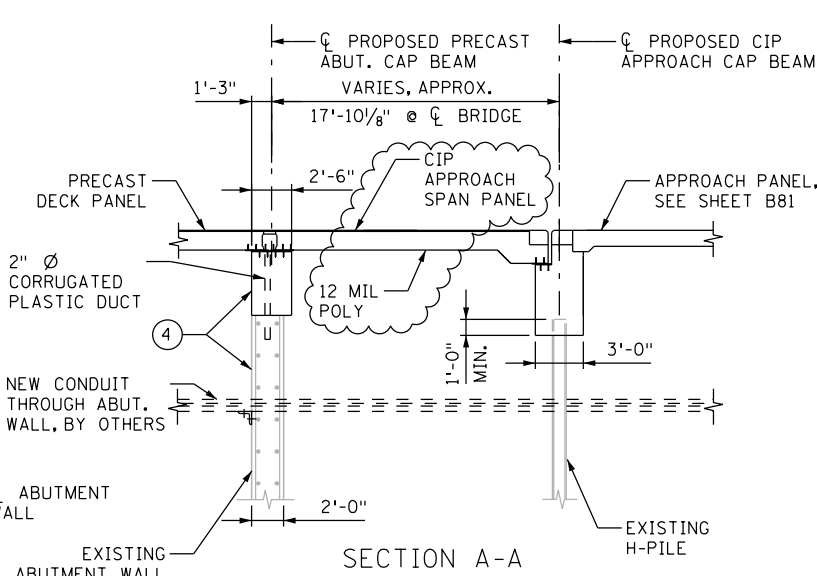
WEST ABUTMENT AND APPROACH PLAN



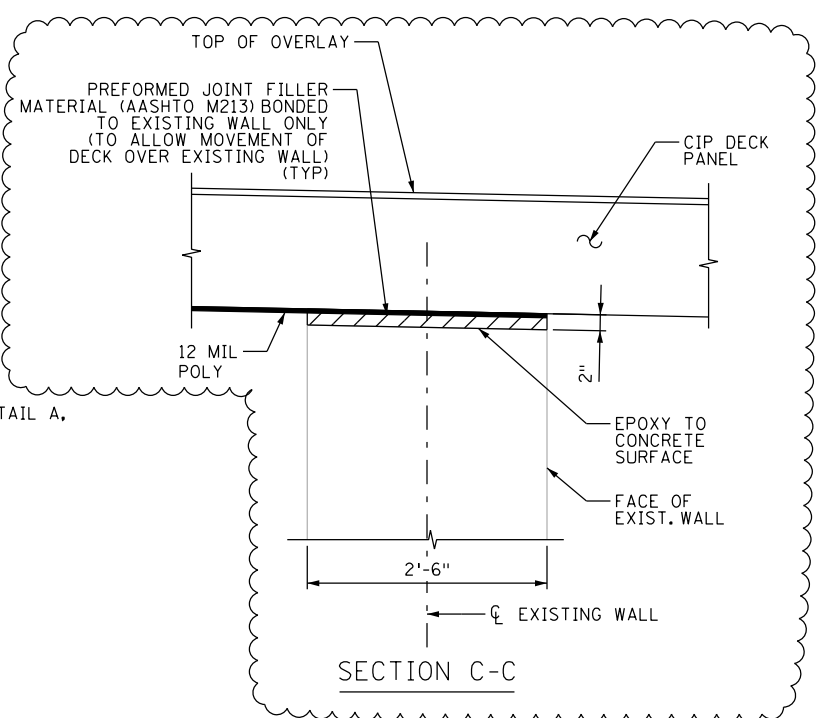
WEST ABUTMENT ELEVATION



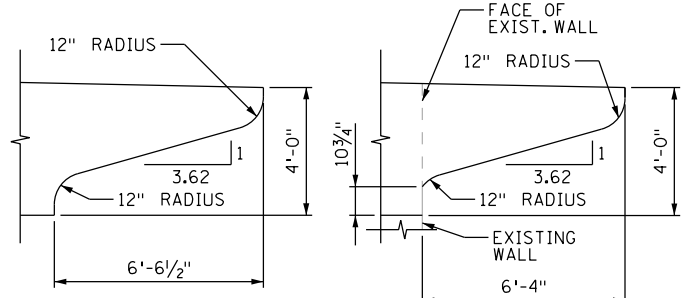
WEST APPROACH ELEVATION



SECTION A-A

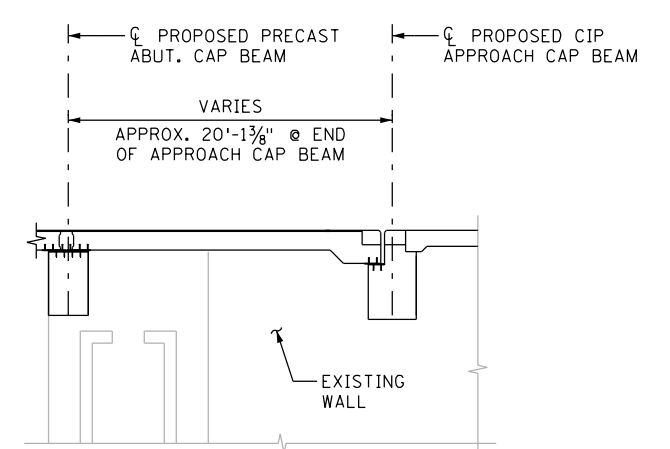


SECTION C-C



DETAIL A

DETAIL B



VIEW B-B

SUGGESTED CONSTRUCTION SEQUENCE:

1. SURVEY TOP OF EXISTING ABUTMENT WALLS AFTER REMOVAL (SEE SHEET B88 - WEST ABUTMENT REMOVAL DETAILS) TO DETERMINE ELEVATIONS AND REQUIRED SHIM HEIGHTS.
2. CREATE A TEMPLATE USING DUCT LOCATIONS IN PRECAST CAP BEAM.
3. USING TEMPLATE, CORE DOWEL HOLES IN EXISTING ABUTMENT.
4. SET SHIMS (KOROLATH SHIMS, SEE RFI 51 FOR DETAILS) ON TOP OF EXISTING ABUTMENT WALLS SO THAT THE TOP OF SHIM PACKS ARE AT THE PRECISE ELEVATIONS AND GRADES REQUIRED ON THE PLANS. ALLOW A MINIMUM THICKNESS OF 1 INCH FOR THE SHIMS TO ACHIEVE ELEVATION ADJUSTMENTS.
5. GLUE FORM-BEAD AROUND PERIMETER OF ABUTMENT WALL TO CONTAIN GROUT. THEN SET NEW PRECAST CAP BEAM SEATED ON SHIMS.
6. DOUBLE CHECK (SURVEY) FINISHED ELEVATIONS AND GRADES AT THE TOP OF CAP BEAM.
7. PLACE THE DOWELS THROUGH THE DUCTS AND INTO DOWEL HOLES; SECURE DOWELS.
8. PLACE GROUT FROM THE TOP OF DUCTS TO FILL DOWEL HOLES, DUCTS, AND THE GAP CREATED BY THE SHIMS. USE A FLOWABLE, NON-SHRINK GROUT.

NOTES:

1. FOR APPROACH SPAN DECK PANEL LAYOUT, SEE SHEET B119 (DECK PLAN 1 OF 4).
2. ACTUAL LOCATION OF EXISTING PILES IS NOT KNOWN. CONTRACTOR TO LOCATE H-PILES AND TO DETERMINE THEIR CROSS SECTIONAL DIMENSIONS AND TO SUBMIT TO ENGINEER FOR REVIEW. CONTRACTOR IS NOT TO PLACE APPROACH CAP BEAM UNTIL NOTIFIED BY ENGINEER THAT DETAILS IN THESE PLANS ARE ADEQUATE.
3. PROPOSED CAST IN PLACE APPROACH CAP BEAM SHALL BE CENTERED ON THE EXISTING H-PILES ALONG THE CENTERLINE OF BRIDGE DIRECTION AND SHALL EXTEND THROUGH SLOTS IN EXISTING WALLS.
4. DENOTES SURFACES OR FACES OF THE STRUCTURE WHERE THE FACE OF THE PRECAST ELEMENT IS TO BE INSTALLED FLUSH, OR IN LINE, WITH THE ADJACENT EXISTING SURFACE OR FACE.
5. FOR APPROACH CAP BEAM REINFORCEMENT DETAILS, SEE SHEET B92 (APPROACH CAP BEAM DETAILS).
6. FOR ABUTMENT CAP BEAM REINFORCEMENT DETAILS, SEE SHEET B93 (ABUTMENT CAP BEAM DETAILS).
7. FOR DECK REINFORCEMENT AND UHPC CLOSURE POUR DETAILS, SEE SHEETS B119 TO B140 (DECK PLANS AND DECK DETAILS).
8. CONTRACTOR MAY ELECT TO CAST IN PLACE ABUTMENT CAP BEAM PROVIDED HIS CONSTRUCTION SCHEDULE DEMONSTRATES COMPLETION OF ABC ACTIVITIES WITHIN THE PERMITTED CLOSURE.



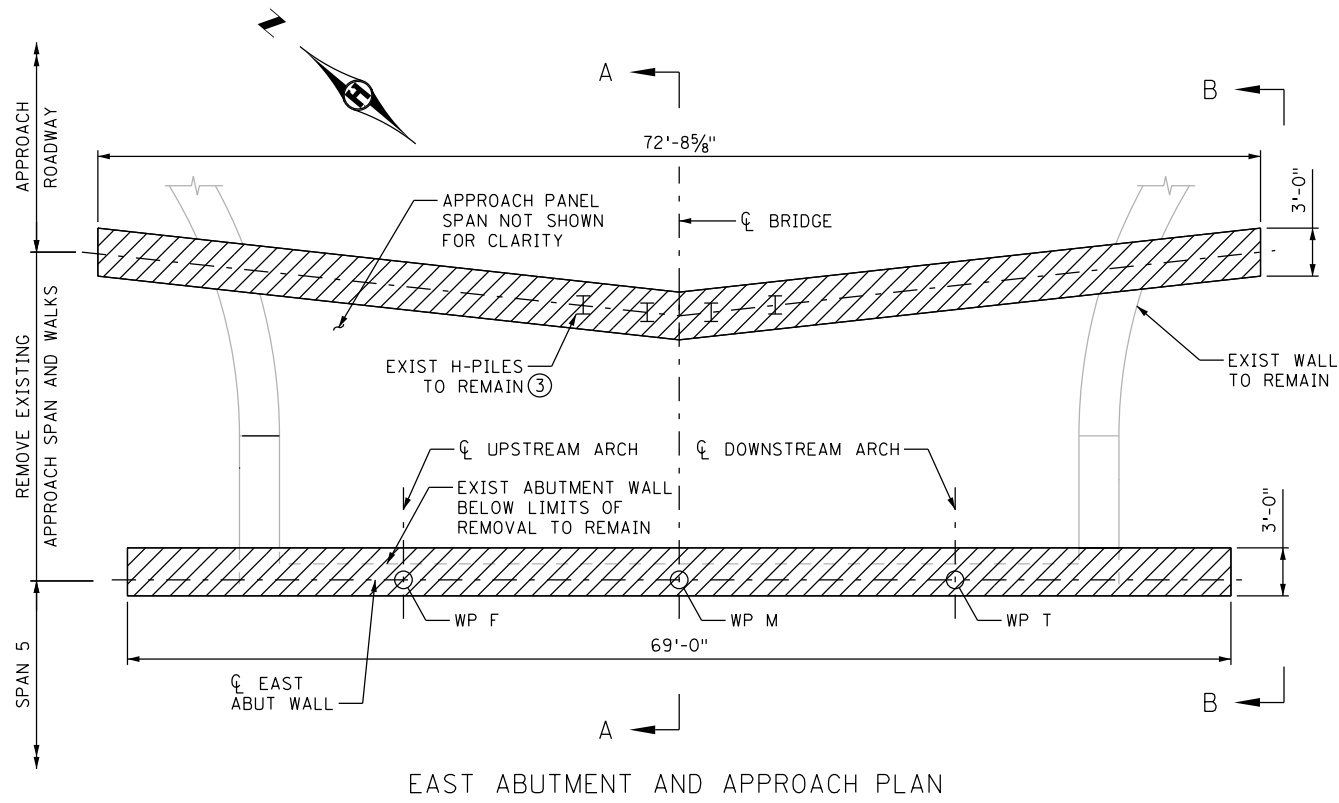
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
 ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER
 47079 LICENSE NO. 8/14/2014 DATE

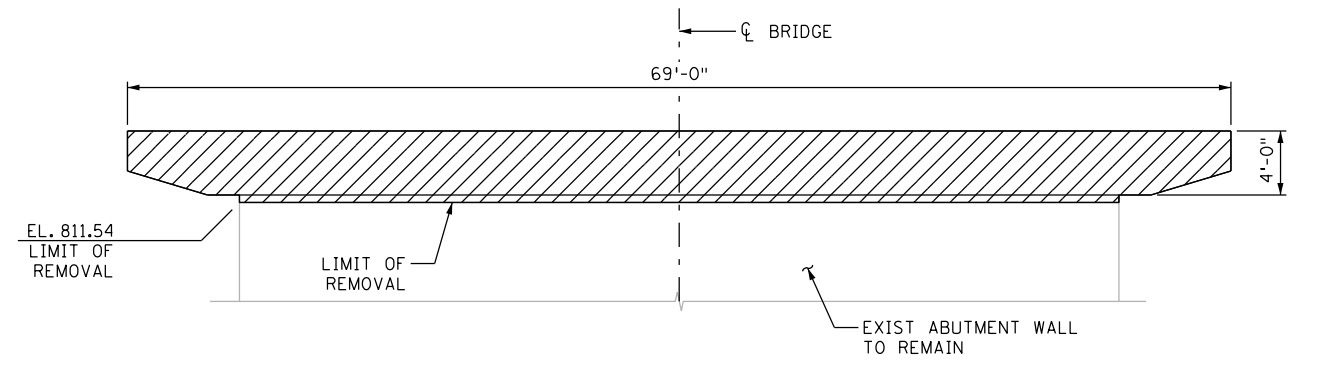
DESIGN BY: CB
 CAD BY: CB
 CHECKED BY: FP
 LAST REVISION: 11/24/2015

AS-BUILT - WEST ABUTMENT MODIFICATION DETAILS
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

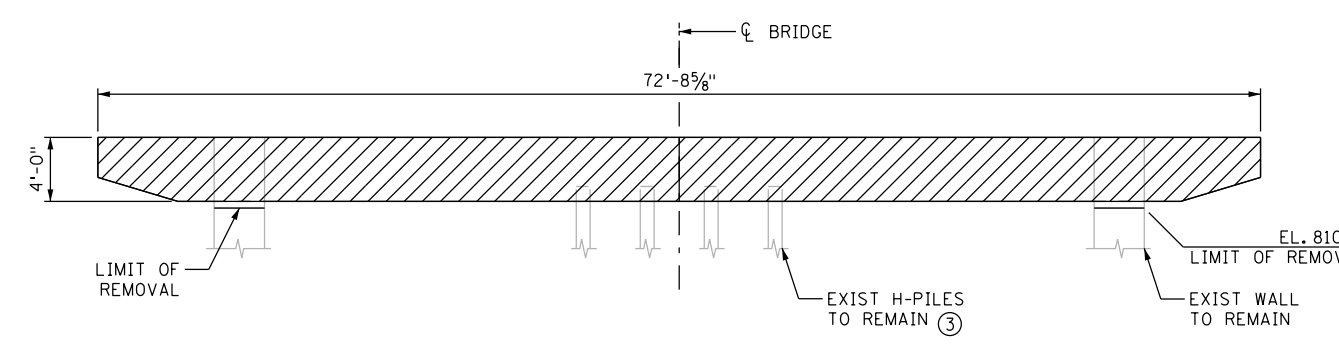
SHEET
 B89R2
 B176



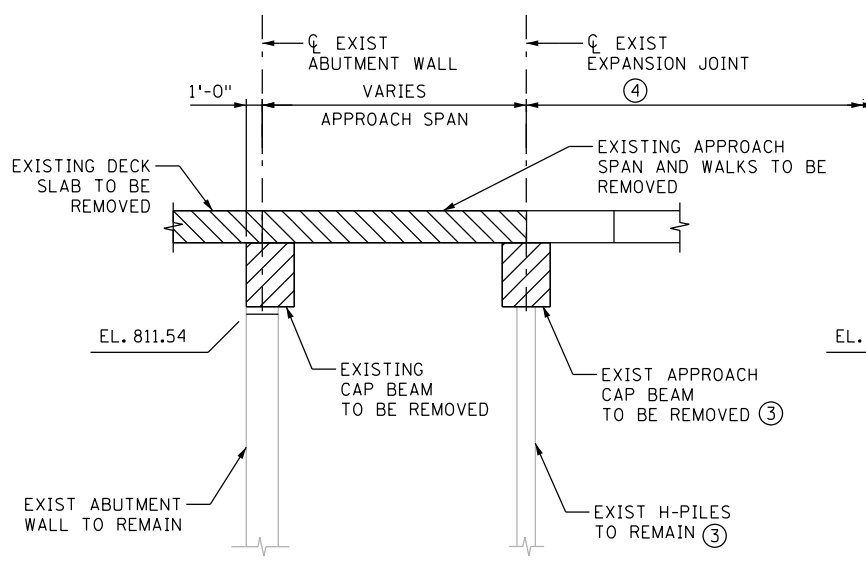
EAST ABUTMENT AND APPROACH PLAN



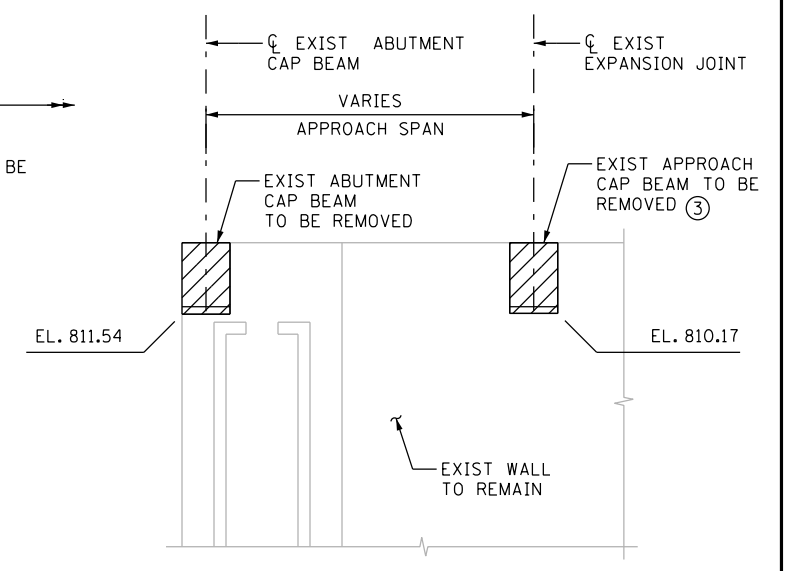
EAST ABUTMENT ELEVATION



EAST APPROACH ELEVATION



SECTION A-A



SECTION B-B

LEGEND:

- SUBSTRUCTURE REMOVAL
- SUPERSTRUCTURE REMOVAL

NOTES:

1. FOR EAST ABUTMENT REPAIRS AND WALL REPAIRS, SEE REPAIR LOCATIONS SHEET B15.
2. SEE EAST ABUTMENT MODIFICATION DETAILS, SHEET B91, FOR PROPOSED WORK.
- ③ CARE SHALL BE TAKEN IN REMOVING THE EXISTING APPROACH CAP BEAM. EXISTING H-PILES AND EXISTING WALL SHALL NOT BE DAMAGED. REMOVE EXISTING CONCRETE FROM EXISTING H-PILES.
- ④ SEE ROADWAY PLANS FOR REMOVAL LIMITS. SEE EAST APPROACH REMOVAL DETAILS, SHEET B79, FOR APPROACH WALK REMOVALS.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

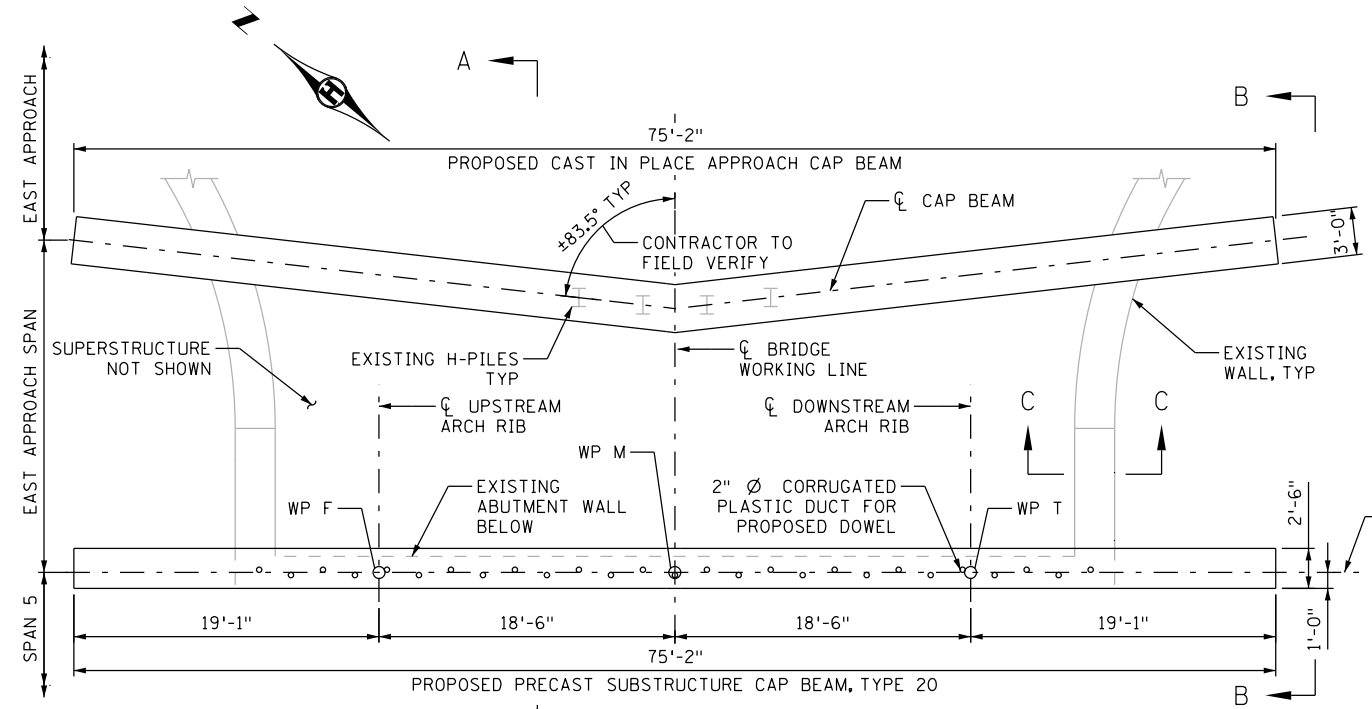
Daniel F. Enser
DANIEL F. ENSER, PROFESSIONAL ENGINEER
 41308 LICENSE NO. 8/14/2014 DATE

DESIGN BY: CB
 CAD BY: PRE
 CHECKED BY: AMK
 LAST REVISION: 12/03/2015

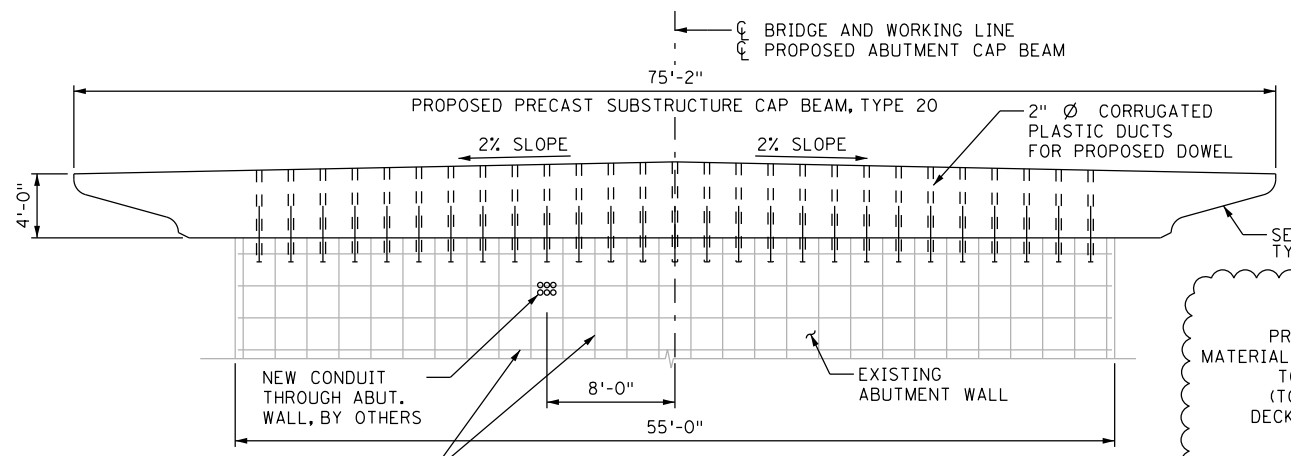
EAST ABUTMENT REMOVAL DETAILS

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

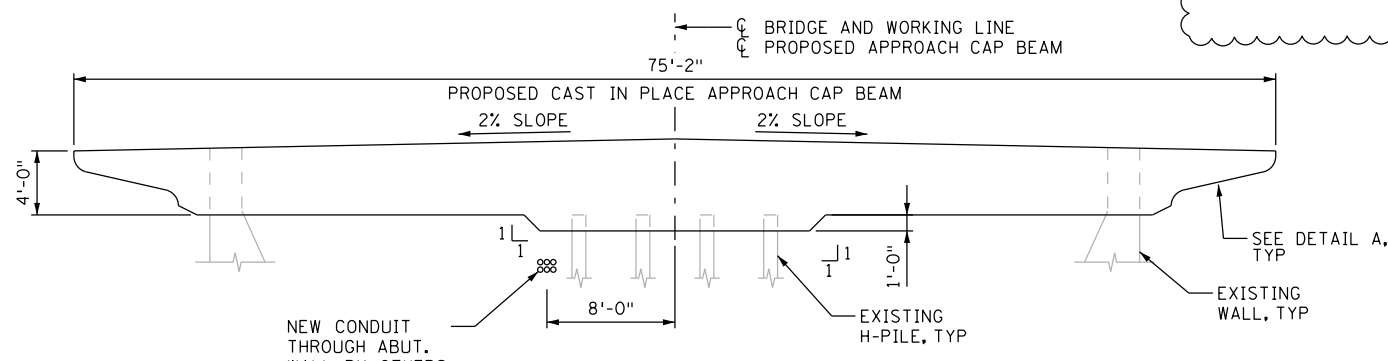
SHEET
 B90R
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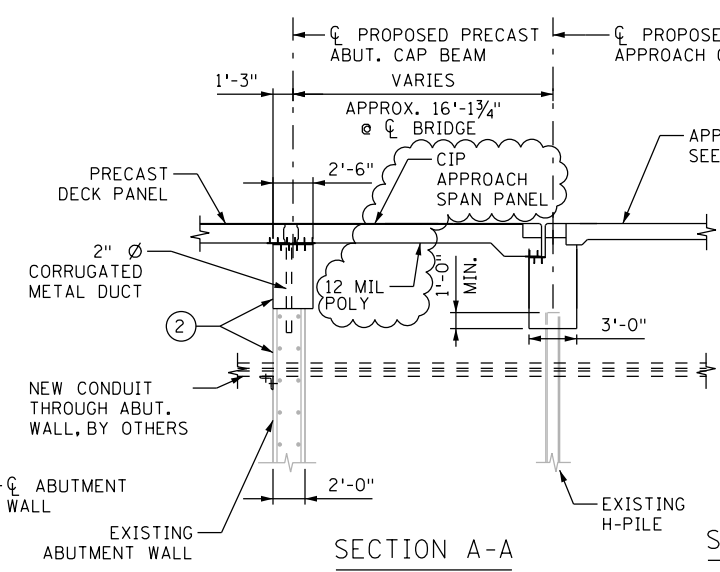
EAST ABUTMENT AND APPROACH PLAN



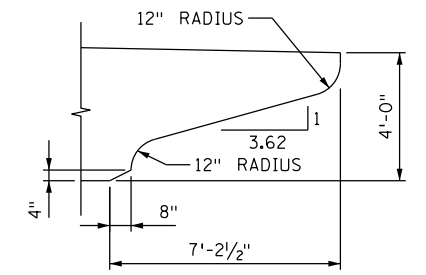
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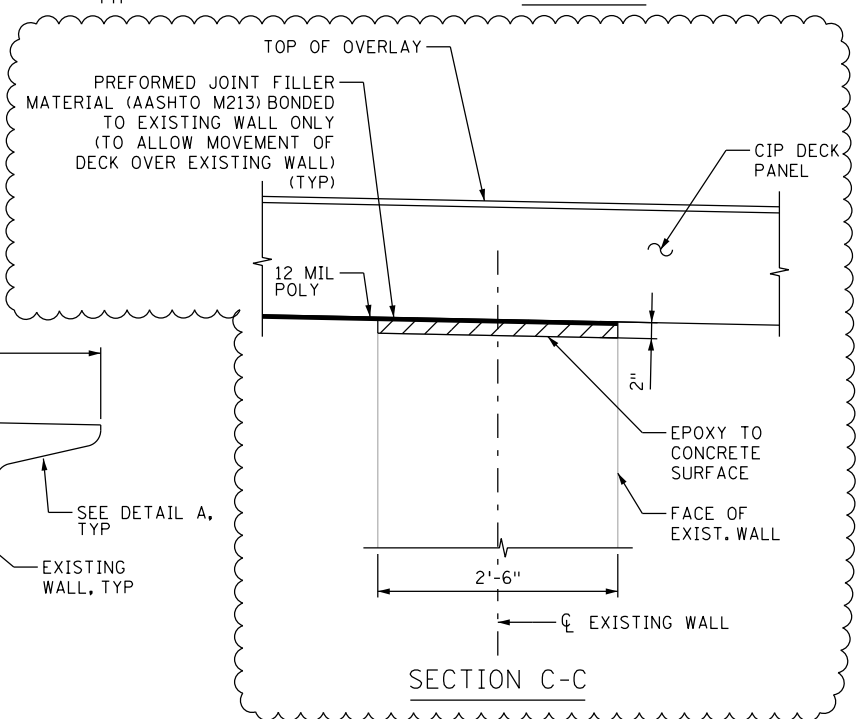
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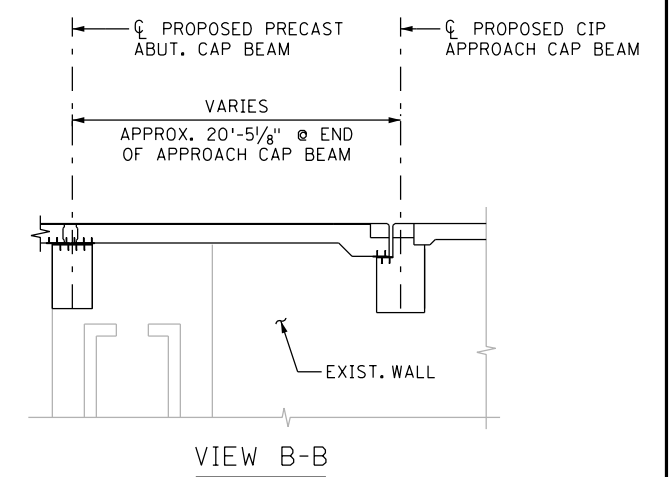
SECTION A-A



DETAIL A



SECTION C-C



VIEW B-B

SUGGESTED CONSTRUCTION SEQUENCES:

1. SURVEY TOP OF EXISTING ABUTMENT WALLS AFTER REMOVAL (SEE SHEET B90 - EAST ABUTMENT REMOVAL DETAILS) TO DETERMINE ELEVATIONS AND REQUIRED SHIM HEIGHTS.
2. CREATE A TEMPLATE USING DUCT LOCATIONS IN PRECAST CAP BEAM.
3. USING TEMPLATE, CORE DOWEL HOLES IN EXISTING ABUTMENT.
4. SET SHIMS ON TOP OF EXISTING ABUTMENT WALLS SO THAT THE TOP OF SHIM (KORALATH SHIMS, SEE RFI 51 FOR DETAILS) PACKS ARE AT THE PRECISE ELEVATIONS AND GRADES REQUIRED ON THE PLANS. ALLOW A MINIMUM THICKNESS OF 1 INCH FOR THE SHIMS TO ACHIEVE ELEVATION ADJUSTMENTS.
5. GLUE FORM-BEAD AROUND PERIMETER OF ABUTMENT WALL TO CONTAIN GROUT. THEN SET NEW PRECAST CAP BEAM SEATED ON SHIMS.
6. DOUBLE CHECK (SURVEY) FINISHED ELEVATIONS AND GRADES AT THE TOP OF CAP BEAM.
7. PLACE THE DOWELS THROUGH THE DUCTS AND INTO DOWEL HOLES; SECURE DOWELS.
8. PLACE GROUT FROM THE TOP OF DUCTS TO FILL DOWEL HOLES, DUCTS, AND THE GAP CREATED BY THE SHIMS. USE A FLOWABLE, NON-SHRINK GROUT.

NOTES:

1. FOR APPROACH SPAN DECK PANEL LAYOUT, SEE SHEET B122 (DECK PLAN 4 OF 4).
2. DENOTES SURFACES OR FACES OF THE STRUCTURE WHERE THE FACE OF THE PRECAST ELEMENT IS TO BE INSTALLED FLUSH, OR IN LINE, WITH THE ADJACENT EXISTING SURFACE OR FACE.
3. ACTUAL LOCATION OF EXISTING PILES IS NOT KNOWN. CONTRACTOR TO LOCATE H-PILES AND TO DETERMINE THEIR CROSS SECTIONAL DIMENSIONS AND TO SUBMIT TO ENGINEER FOR REVIEW. CONTRACTOR IS NOT TO PLACE APPROACH CAP BEAM UNTIL NOTIFIED BY ENGINEER THAT DETAILS IN THESE PLANS ARE ADEQUATE.
4. PROPOSED CAST IN PLACE APPROACH CAP BEAM SHALL BE CENTERED ON THE EXISTING H-PILES ALONG THE CENTERLINE OF BRIDGE DIRECTION AND SHALL EXTEND THROUGH SLOTS IN EXISTING WALLS.
5. FOR DECK REINFORCEMENT AND UHPC CLOSURE POUR DETAILS, SEE SHEETS B119 TO B140 (DECK PLANS AND DECK DETAILS).
6. FOR APPROACH CAP BEAM REINFORCEMENT DETAILS, SEE SHEET B92 (APPROACH CAP BEAM DETAILS).
7. FOR ABUTMENT CAP BEAM REINFORCEMENT DETAILS, SEE SHEET B93 (ABUTMENT CAP BEAM DETAILS).
8. CONTRACTOR MAY ELECT TO CAST IN PLACE ABUTMENT CAP BEAM PROVIDED HIS CONSTRUCTION SCHEDULE DEMONSTRATES COMPLETION OF ABC ACTIVITIES WITHIN THE PERMITTED CLOSURE.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

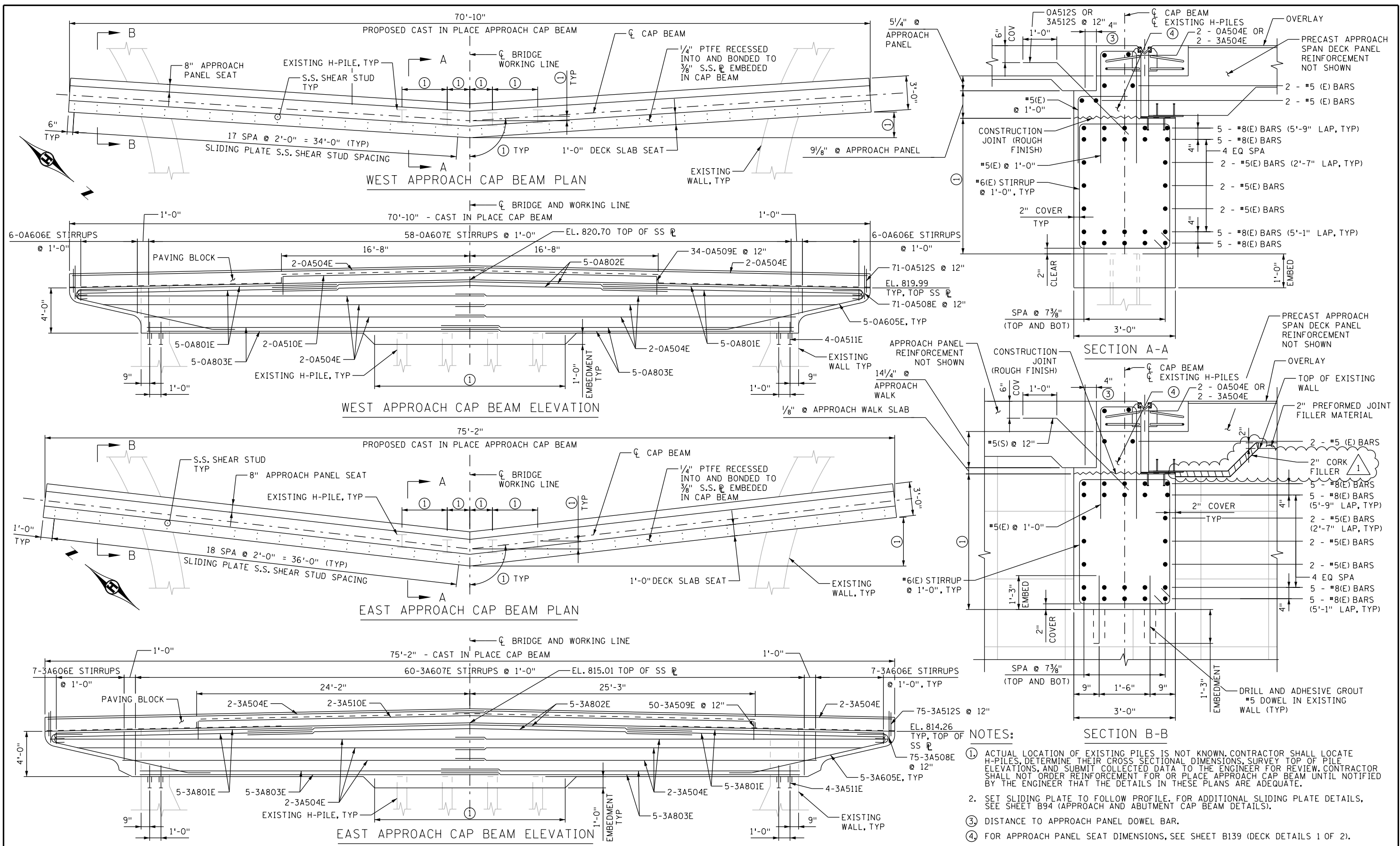
Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER
 47079 LICENSE NO. 8/14/2014 DATE

DESIGN BY: CB
 CAD BY: CB
 CHECKED BY: FP
 LAST REVISION: 11/24/2015

AS-BUILT - EAST ABUTMENT MODIFICATION DETAILS

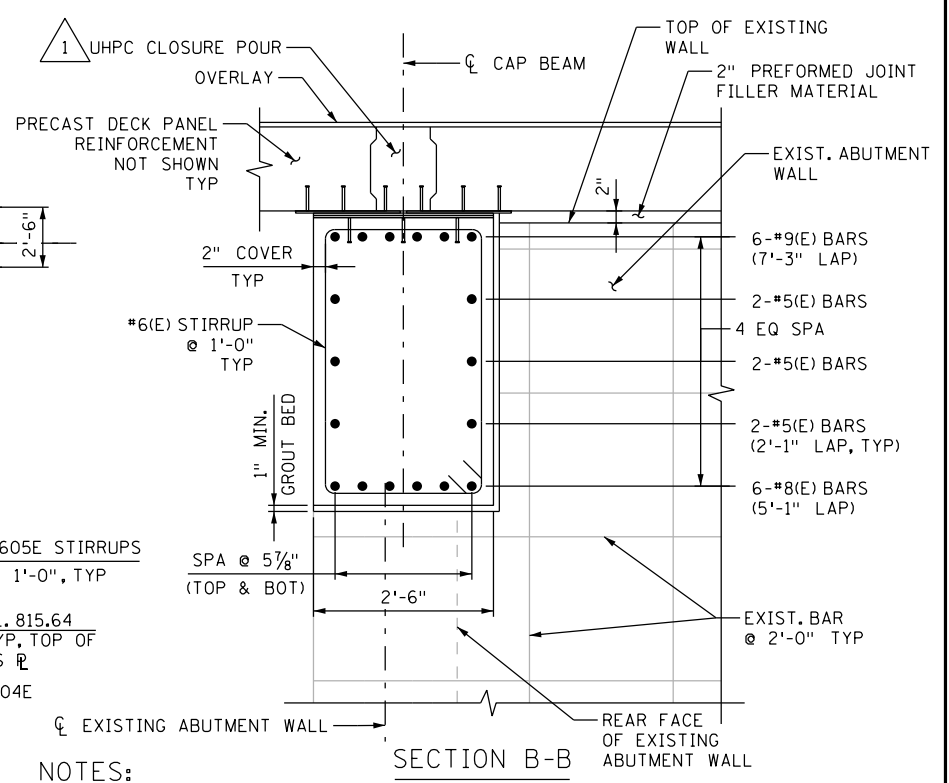
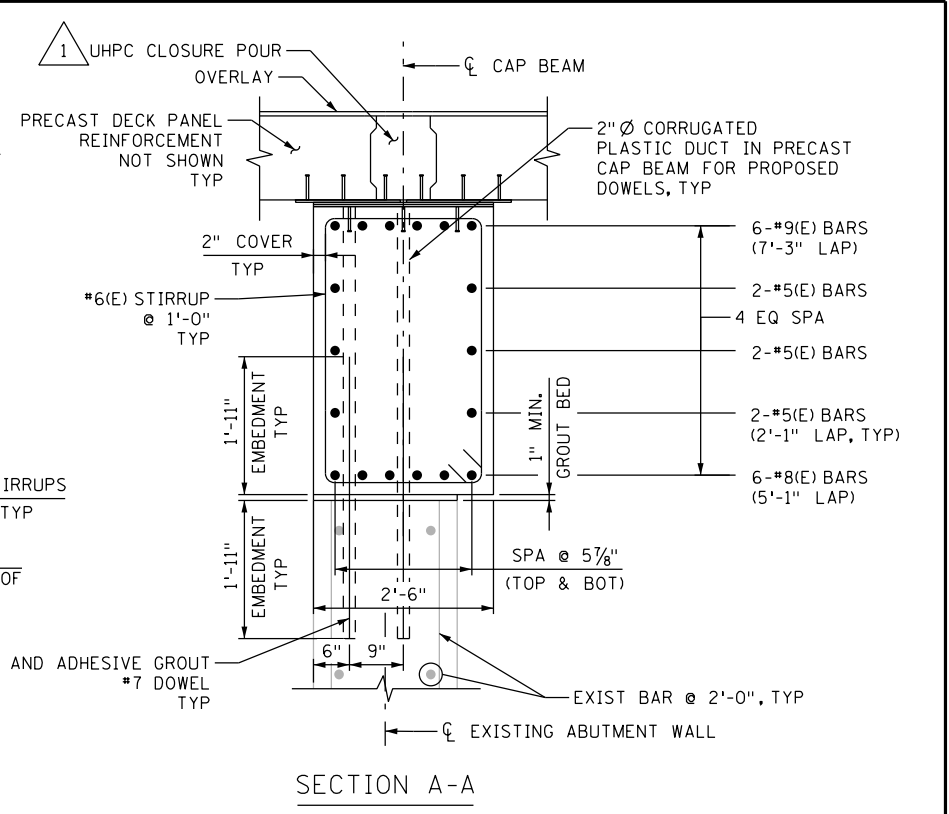
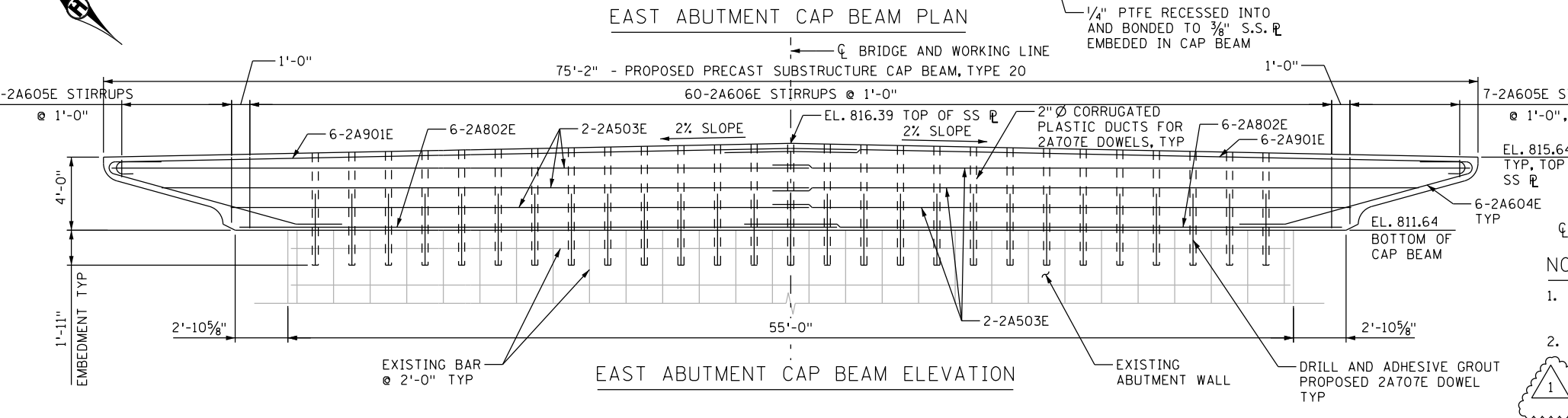
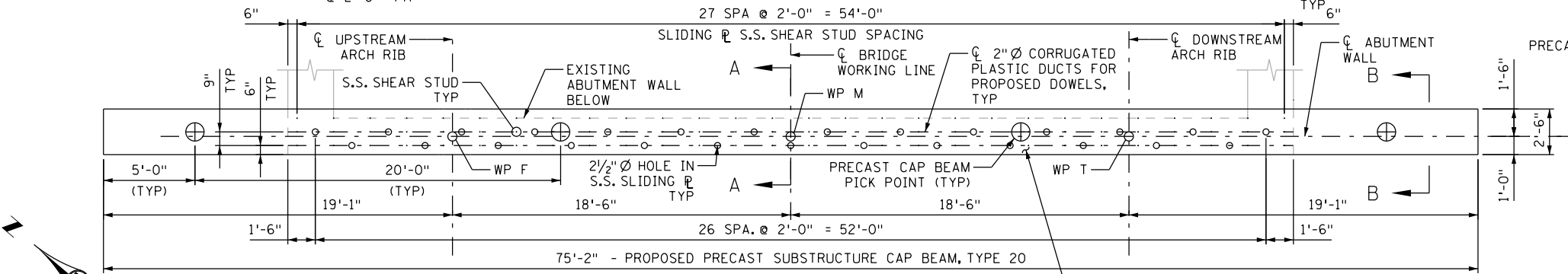
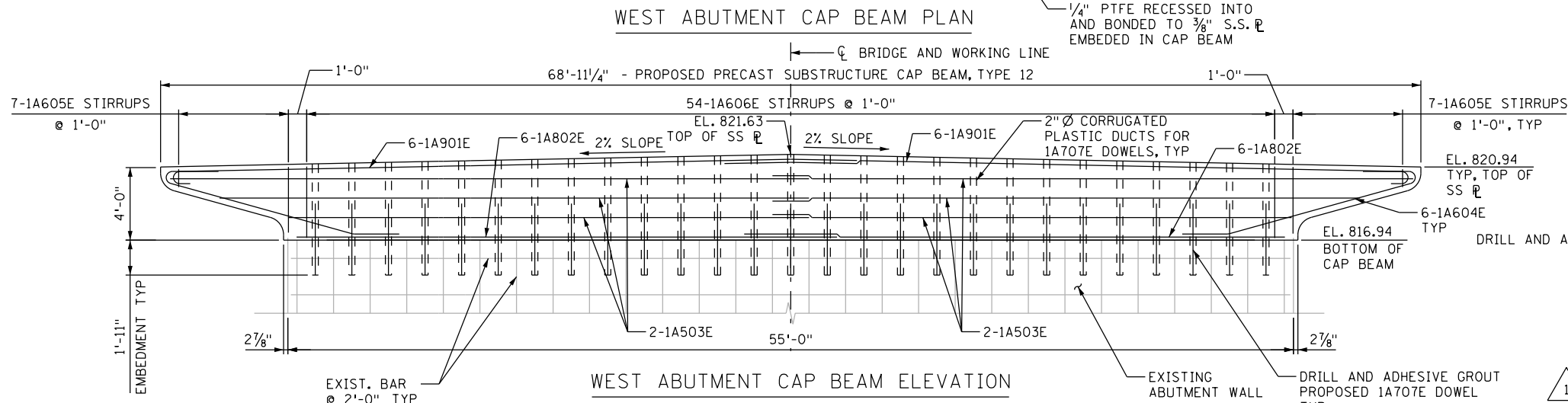
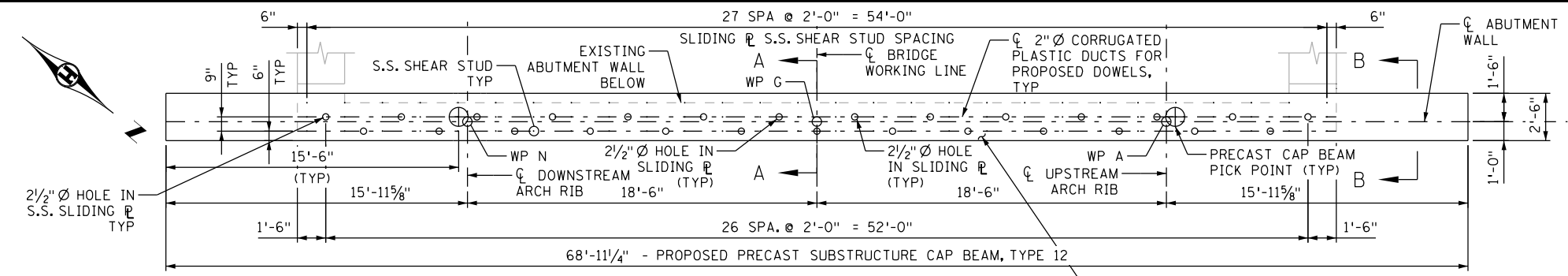
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B91R2
 B176



- NOTES:**
- ACTUAL LOCATION OF EXISTING PILES IS NOT KNOWN. CONTRACTOR SHALL LOCATE H-PILES, DETERMINE THEIR CROSS SECTIONAL DIMENSIONS, SURVEY TOP OF PILE ELEVATIONS, AND SUBMIT COLLECTED DATA TO THE ENGINEER FOR REVIEW. CONTRACTOR SHALL NOT ORDER REINFORCEMENT FOR OR PLACE APPROACH CAP BEAM UNTIL NOTIFIED BY THE ENGINEER THAT THE DETAILS IN THESE PLANS ARE ADEQUATE.
 - SET SLIDING PLATE TO FOLLOW PROFILE. FOR ADDITIONAL SLIDING PLATE DETAILS, SEE SHEET B94 (APPROACH AND ABUTMENT CAP BEAM DETAILS).
 - DISTANCE TO APPROACH PANEL DOWEL BAR.
 - FOR APPROACH PANEL SEAT DIMENSIONS, SEE SHEET B139 (DECK DETAILS 1 OF 2).

	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.		DESIGN BY: CB	AS-BUILT - APPROACH CAP BEAM DETAILS	SHEET
	 ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER		CAD BY: PRE	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705	B92R2
47079 8/14/2014		CHECKED BY: FP	LAST REVISION: 02/08/2016	BRIDGE 2441 S.P. 027-605-029	B176



NOTES:

- SET SLIDING PLATE TO FOLLOW PROFILE. FOR ADDITIONAL SLIDING PLATE DETAILS, SEE SHEET B94 (APPROACH AND ABUTMENT CAP BEAM DETAILS).
- SEE SHEETS B89 AND B91 (WEST AND EAST ABUTMENTS MODIFICATION DETAILS) FOR SUGGESTED CONSTRUCTION SEQUENCE.

1 TRANSVERSE UHPC CLOSURE POUR JOINT WAS ELIMINATED. MECHANICAL COUPLERS WERE USED. SEE RFI 68 FOR DETAILS.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley

ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47079 LICENSE NO.

8/14/2014 DATE

DESIGN BY: FP

CAD BY: PRE

CHECKED BY: CB

LAST REVISION: 11/24/2015

AS-BUILT - ABUTMENT CAP BEAM DETAILS

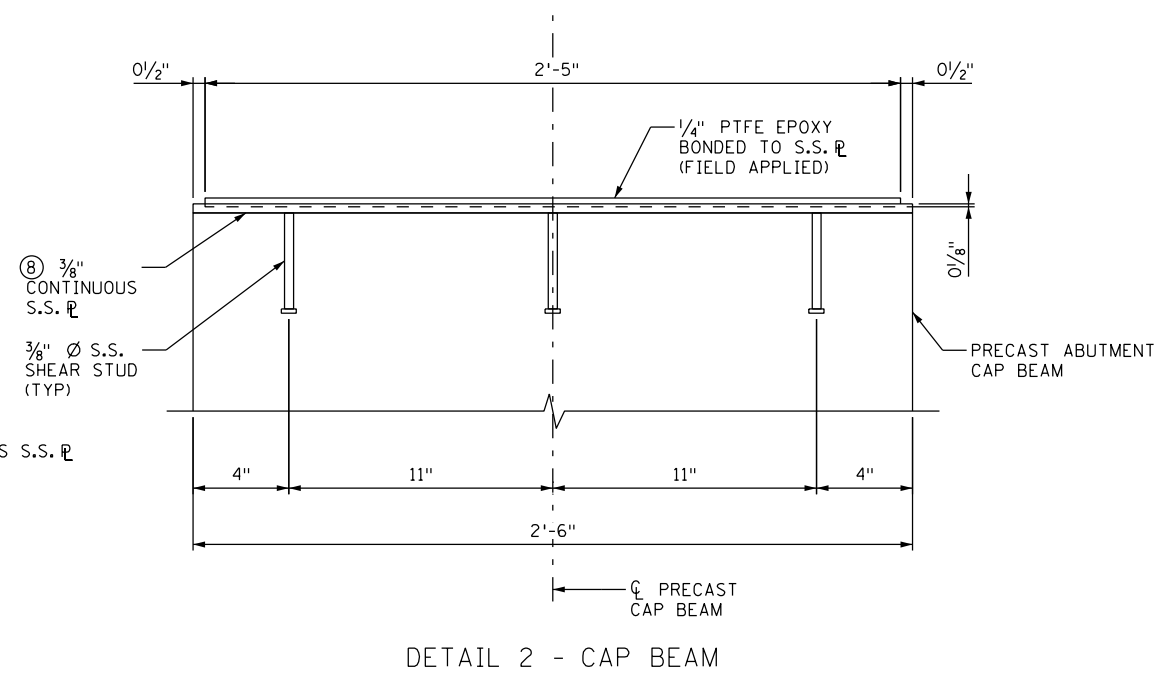
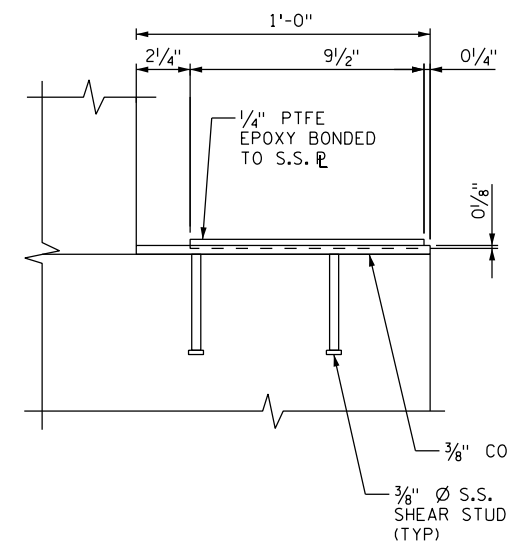
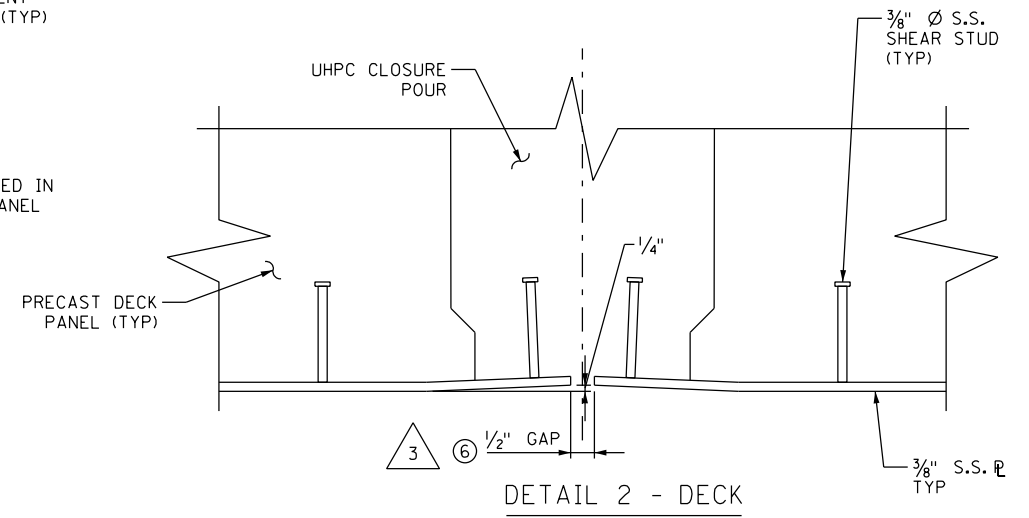
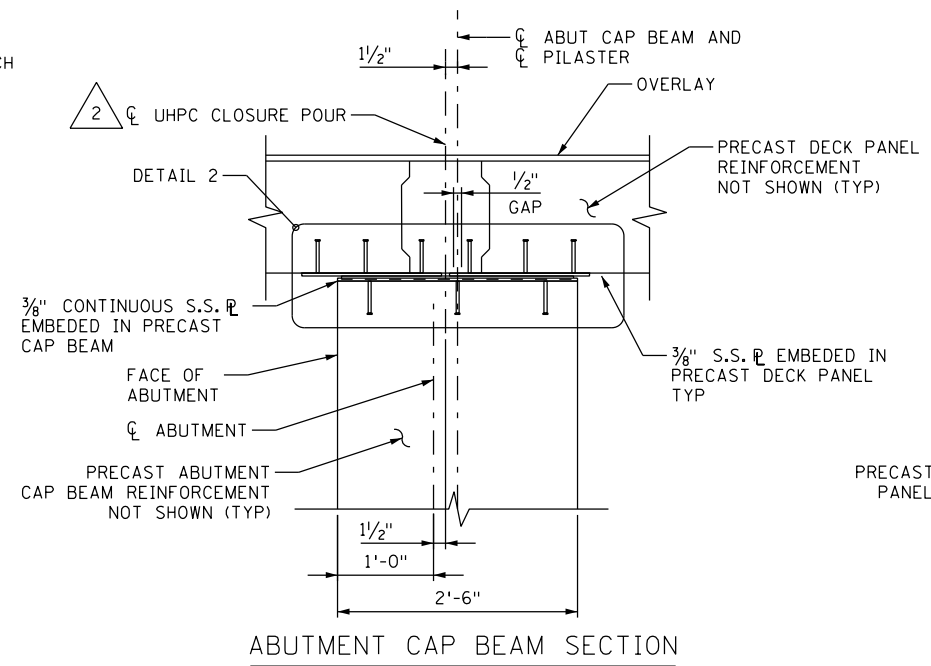
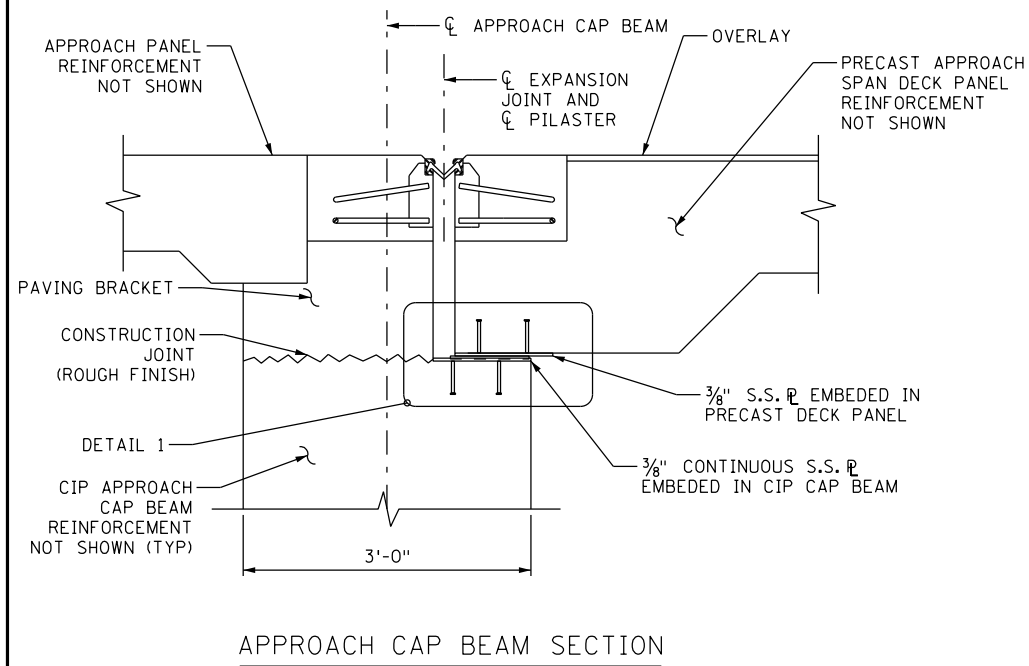
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705

BRIDGE 2441 S.P. 027-605-029

SHEET

B93R

B176



NOTES:

- CONTRACTOR IS ALERTED THAT PROPER TOP OF CAP BEAM ELEVATIONS MUST BE ACHIEVED TO ENSURE PROPER SLIDING OF THE DECK AT SLIDING JOINT LOCATIONS.
- EMBED SLIDING PLATES IN CAP BEAMS SO THAT THE TOP SURFACE OF THE SLIDING PLATE AND PTFE FOLLOW THE BRIDGE PROFILE WHEN THE CAP BEAM IS IN ITS FINAL POSITION.
- CONTRACTOR IS PERMITTED TO PROVIDE THE STAINLESS STEEL PLATE EMBEDDED IN THE CAP BEAMS IN MULTIPLE SEGMENTS, AS APPROVED BY THE ENGINEER. CONTRACTOR SHALL WELD ADJACENT SEGMENTS AND GRIND SMOOTH ALL WELDS TO FORM A CONTINUOUS SURFACE.
- CONTRACTOR SHALL PLACE PTFE SHEETING ON PRECAST CAP BEAM AFTER COMPLETION OF GROUTING OF CAP BEAM.
- FOR EXPANSION JOINT DETAILS, SEE SHEET B166 (EXPANSION JOINT DETAILS).
- SEAL OR FORM GAP PRIOR TO PLACING UHP CLOSURE POUR.
- FOR CLOSURE POUR DETAILS, SEE SHEET B139 (DECK DETAILS).
- PROVIDE 2 1/2" DIAMETER HOLES IN STAINLESS STEEL PLATE AT CORRUGATED PLASTIC DUCT LOCATIONS IN CAP BEAM.
- FOR ADDITIONAL DETAILS FOR STAINLESS STEEL PLATES EMBEDDED IN APPROACH AND ABUTMENT CAP BEAMS, SEE SHEETS B92 AND B93.

- 1 MODIFIED PER RFI 15 & 59. GAPS PROVIDED BETWEEN STAINLESS STEEL PLATE SEGMENTS FOR RELIEF FROM SHRINKAGE. SEE RFI 59 FOR DETAILS.
- 2 TRANSVERSE UHP CLOSURE POUR JOINT WAS ELIMINATED. MECHANICAL COUPLERS WERE USED. SEE RFI 68 FOR DETAILS.
- 3 COMPRESSIBLE MATERIAL (BACKER ROD AND SILL SEAL).



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley

ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47079 8/14/2014

LICENSE NO. DATE

DESIGN BY: CB

CAD BY: PRE

CHECKED BY: FP

LAST REVISION: 11/24/2015

AS-BUILT - APPROACH AND ABUTMENT CAP BEAM DETAILS (1 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705

BRIDGE 2441 S.P. 027-605-029

SHEET

B94R

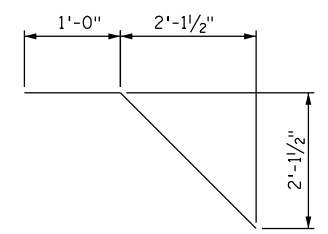
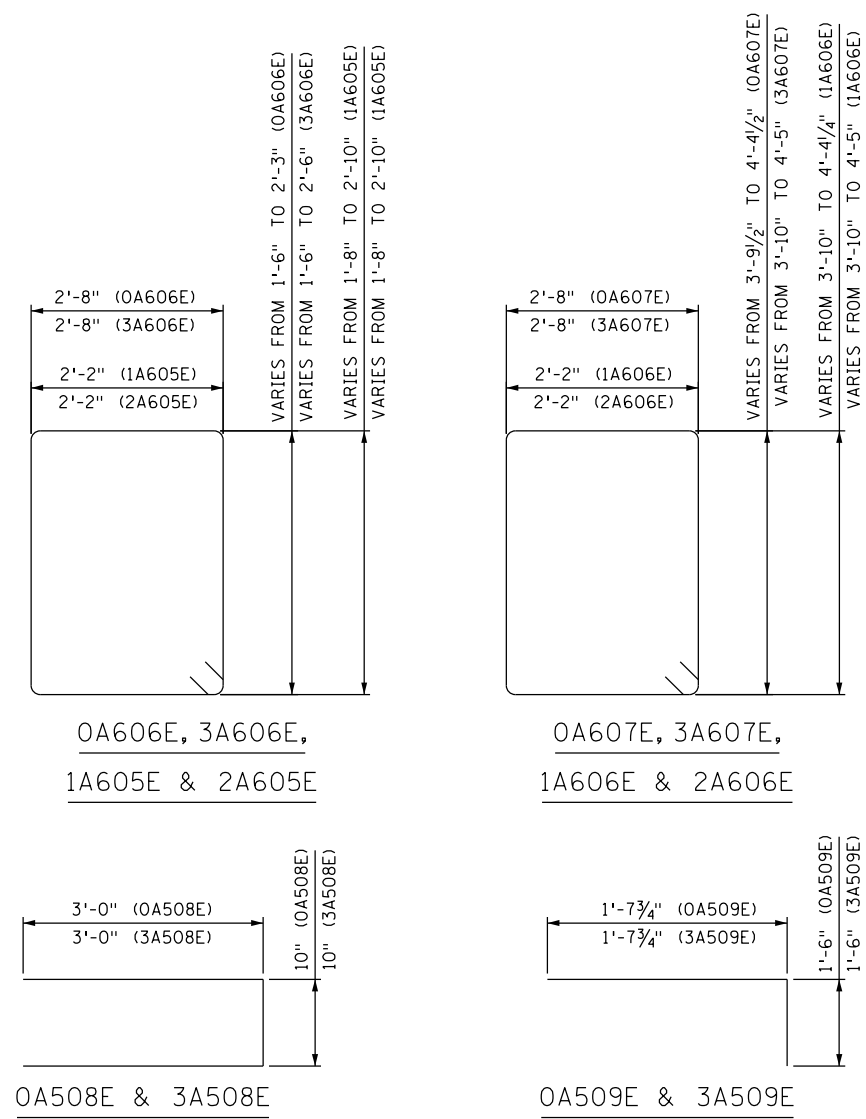
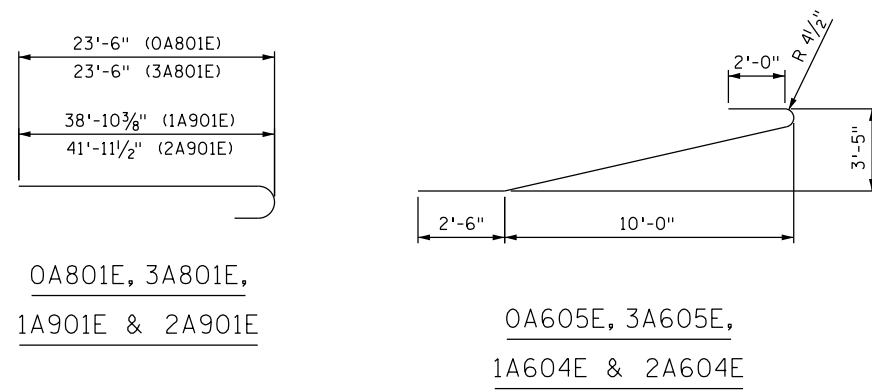
B176

BILL OF REINFORCEMENT APPROACH AND ABUTMENT CAP BEAMS					
CAP BEAM TYPE	BAR MARK	NO	LENGTH	SHAPE	LOCATION
WEST APPROACH	0A801E	20	24'-5"	BENT	LONGITUDINAL (TOP BARS)
	0A802E	10	35'-2"	STR	LONGITUDINAL (TOP BARS)
	0A803E	20	31'-6"	STR	LONGITUDINAL (BOTTOM BARS)
	0A504E	20	36'-4 1/2"	STR	SKIN REINFORCEMENT
	0A605E	10	15'-9"	BENT	OVERHANG
	0A606E	12	10'-5"	BENT	OVERHANG STIRRUPS
	0A607E	58	14'-10"	BENT	STIRRUPS
	0A508E	71	6'-10"	BENT	PAVING BLOCK
	0A509E	34	3'-1 3/4"	BENT	PAVING BLOCK
	0A510E	2	33'-0"	STR	LONGITUDINAL (PAVING BLOCK)
	0A511E	8	2'-7"	STR	DOWELS
	0A512S	71	4'-0"	BENT	CONNECTION TO APPROACH SPAN
EAST APPROACH	3A801E	20	24'-5"	BENT	LONGITUDINAL (TOP BARS)
	3A802E	10	39'-10"	STR	LONGITUDINAL (TOP BARS)
	3A803E	20	32'-5 1/2"	STR	LONGITUDINAL (BOTTOM BARS)
	3A504E	20	38'-8 1/2"	STR	SKIN REINFORCEMENT
	3A605E	10	15'-9"	BENT	OVERHANG
	3A606E	14	10'-8"	BENT	OVERHANG STIRRUPS
	3A607E	60	14'-11"	BENT	STIRRUPS
	3A508E	75	6'-10"	BENT	PAVING BLOCK
	3A509E	50	3'-1 3/4"	BENT	PAVING BLOCK
	3A510E	2	49'-1"	STR	LONGITUDINAL (PAVING BLOCK)
	3A511E	8	2'-7"	STR	DOWELS
	3A512S	75	4'-0"	BENT	CONNECTION TO APPROACH SPAN
WEST ABUTMENT (TYPE 12)	1A901E	12	40'-1 3/8"	BENT	LONGITUDINAL (TOP BARS)
	1A802E	12	30'-8 7/8"	STR	LONGITUDINAL (BOTTOM BARS)
	1A503E	12	35'-0"	STR	SKIN REINFORCEMENT
	1A604E	12	15'-9"	BENT	OVERHANG
	1A605E	14	10'-2"	BENT	OVERHANG STIRRUPS
	1A707E	27	3'-11"	STR	DOWELS
EAST ABUTMENT (TYPE 20)	2A901E	12	43'-2 1/2"	BENT	LONGITUDINAL (TOP BARS)
	2A802E	12	33'-4 5/8"	STR	LONGITUDINAL (BOTTOM BARS)
	2A503E	8	38'-1 1/2"	STR	SKIN REINFORCEMENT
	2A604E	12	15'-9"	BENT	OVERHANG
	2A605E	10	10'-2"	BENT	OVERHANG STIRRUPS
	2A606E	60	13'-11"	BENT	STIRRUPS
	2A707E	27	3'-11"	STR	DOWELS

ITEM	UNIT	QUANTITY TOTAL
REINFORCEMENT BARS (EPOXY COATED)	POUND	14,292
REINFORCEMENT BARS (STAINLESS STEEL)	POUND	610
STRUCTURAL CONCRETE (3Y43)	CU YD	79
STAINLESS STEEL PLATE ①	POUND	2,298
STAINLESS STEEL SHEAR STUDS ①	EACH	148
PTFE SHEETING ①	SQ FT	150
ANCHORAGES TYPE 1	EACH	16
ANCHORAGES TYPE 2	EACH	54
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 12	EACH	1
STRUCTURAL CONCRETE ②	CU YD	25.3
REINFORCEMENT BARS (EPOXY COATED) ②	POUND	4,901
STAINLESS STEEL PLATE ②	POUND	2,106
STAINLESS STEEL SHEAR STUDS ②	EACH	84
PTFE SHEETING ②	SQ FT	137.5
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 20	EACH	1
STRUCTURAL CONCRETE ②	CU YD	28.0
REINFORCEMENT BARS (EPOXY COATED) ②	POUND	5,062
STAINLESS STEEL PLATE ②	POUND	2,106
STAINLESS STEEL SHEAR STUDS ②	EACH	84
PTFE SHEETING ②	SQ FT	137.5

14,658

- ① INCLUDED IN THE BID PRICE FOR STRUCTURAL CONCRETE (3Y43).
- ② INCLUDED IN THE BID PRICE FOR THE PRECAST STRUCTURAL CAP BEAM THE MATERIAL WILL BE FABRICATED WITH OR INSTALLED IN.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

AM Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

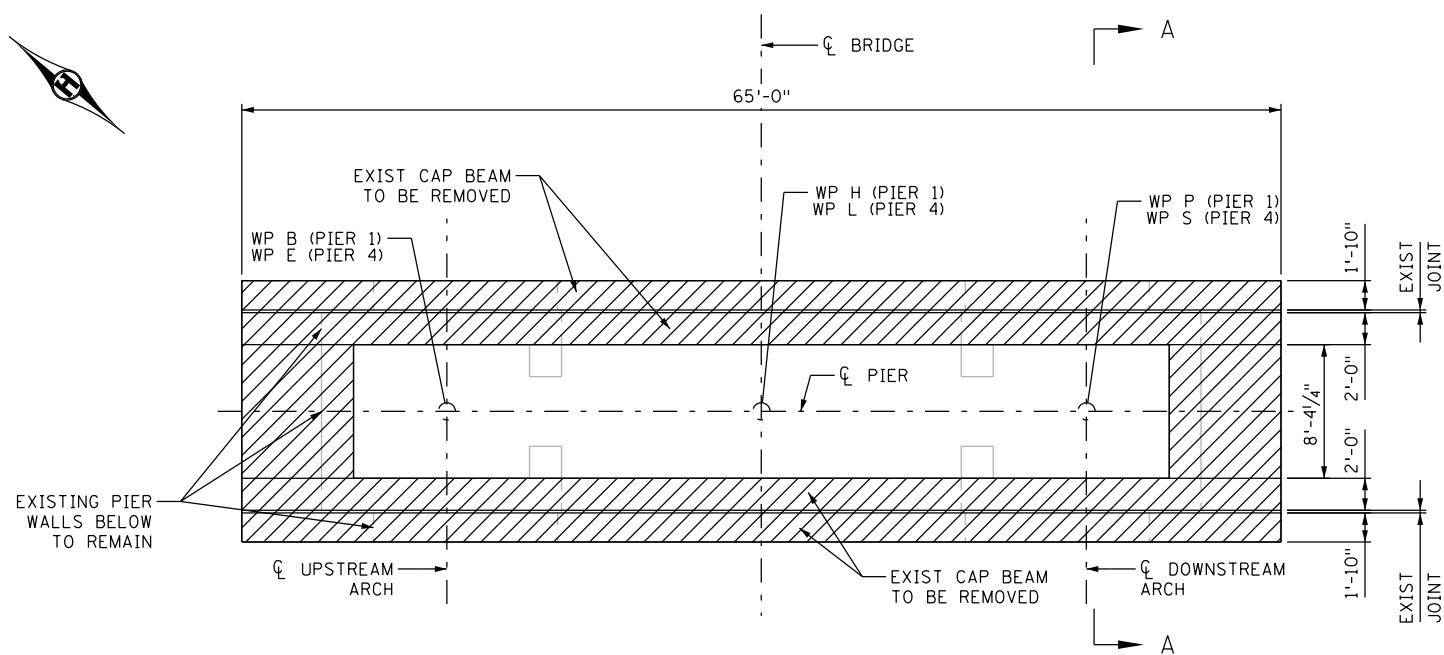
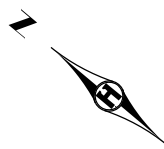
47079 8/14/2014
LICENSE NO. DATE

DESIGN BY: CB
CAD BY: PRE
CHECKED BY: FP
LAST REVISION: 02/08/2016

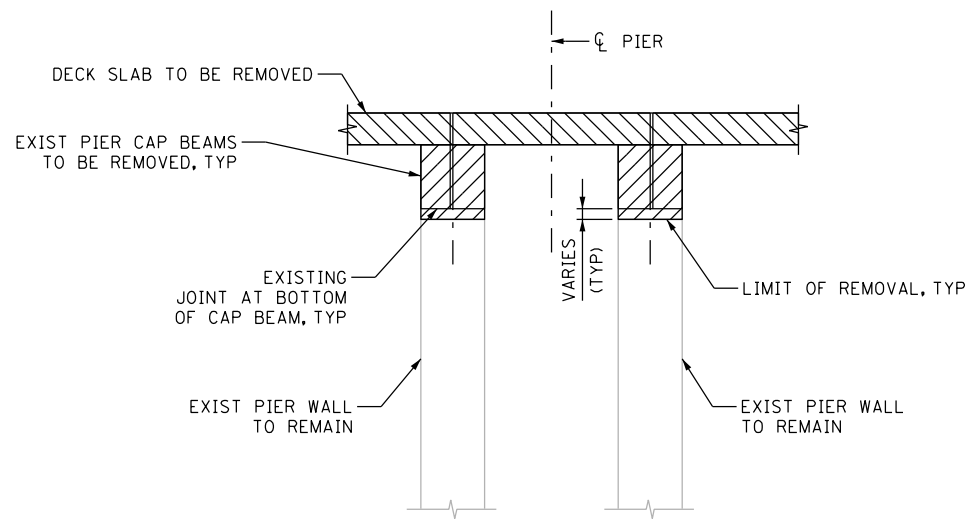
APPROACH AND ABUTMENT CAP BEAM DETAILS (2 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

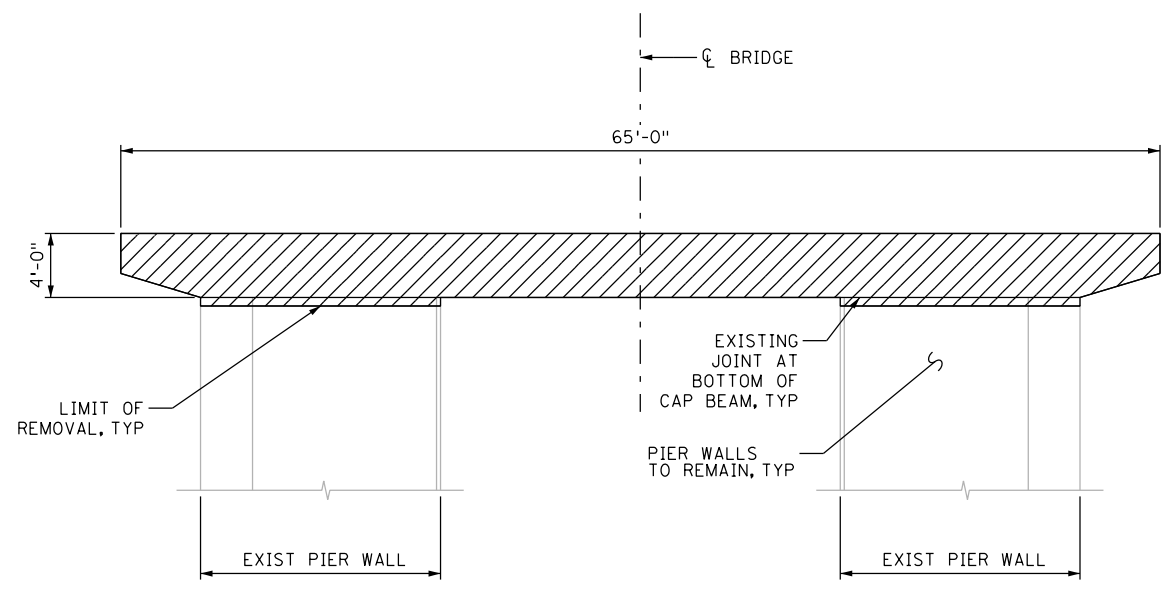
SHEET
B95R2
B176



PIER 1 PLAN
(PIER 4 SIMILAR. DECK NOT SHOWN FOR CLARITY)



SECTION A-A



PIER 1 ELEVATION
(PIER 4 SIMILAR. DECK NOT SHOWN FOR CLARITY)

PIER REMOVAL LIMIT ELEVATIONS	
LOCATION	ELEV (FT)
PIER 1 WEST CAP BEAM	817.45
PIER 1 EAST CAP BEAM	817.65
PIER 4 WEST CAP BEAM	814.01
PIER 4 EAST CAP BEAM	813.53

- LEGEND:
- SUBSTRUCTURE REMOVAL
 - SUPERSTRUCTURE REMOVAL

- NOTES:
1. FOR PIER REPAIRS, SEE REPAIR LOCATION SHEETS B17 TO B20 AND B31 TO B34.
 2. SEE PIER 1 AND 4 MODIFICATION DETAILS, SHEETS B97 TO B100, FOR PROPOSED WORK.
 3. REMOVE BY SAWCUTTING.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

AM Kingsley
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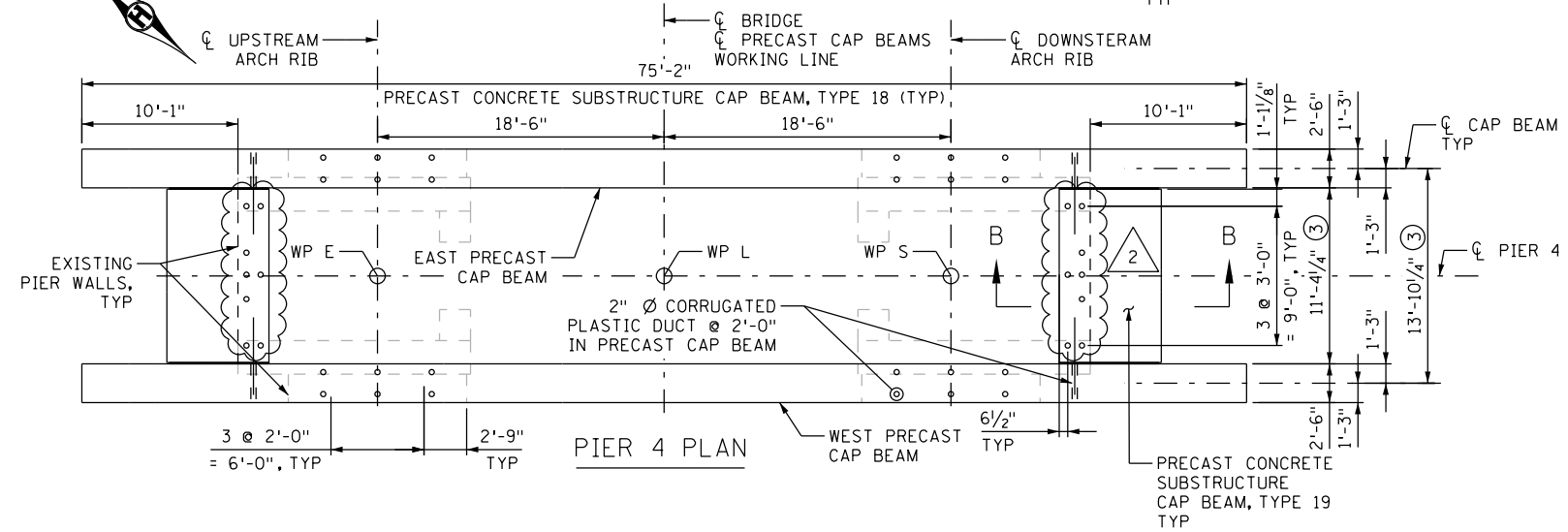
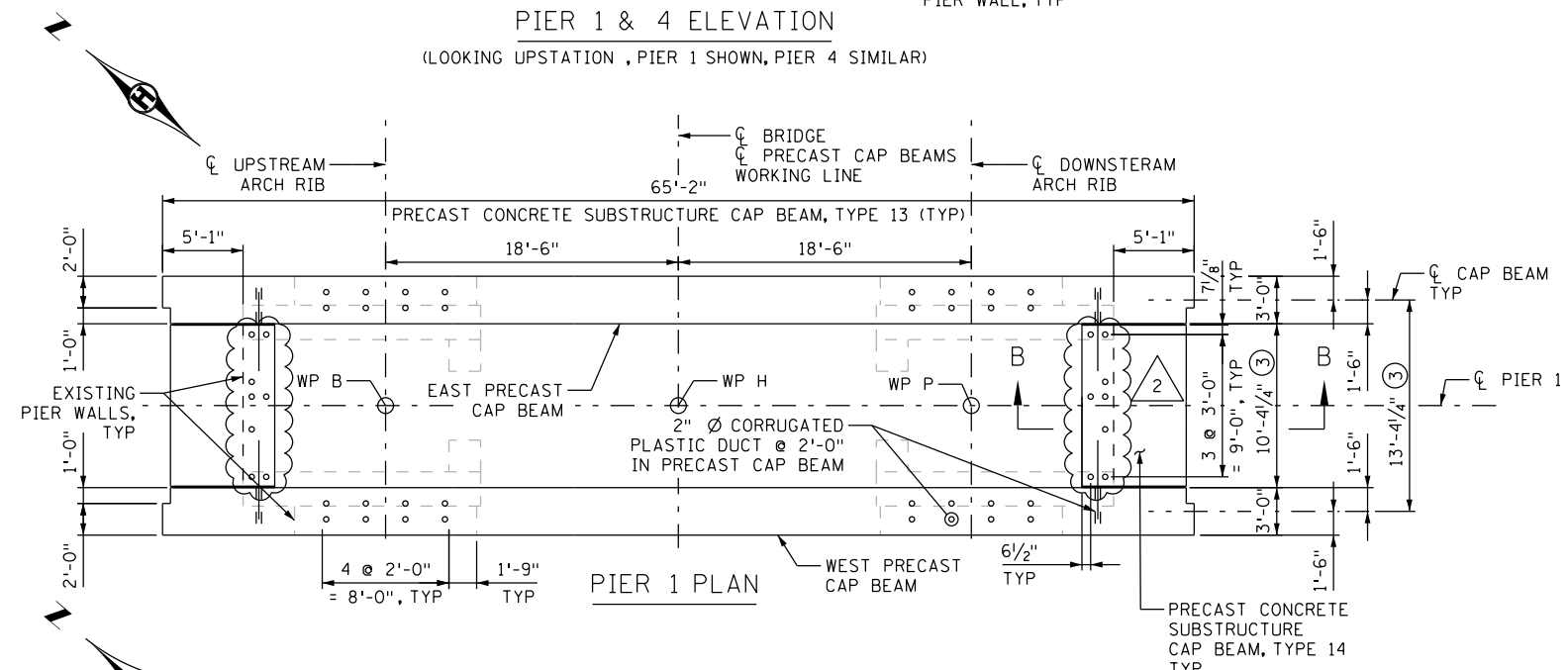
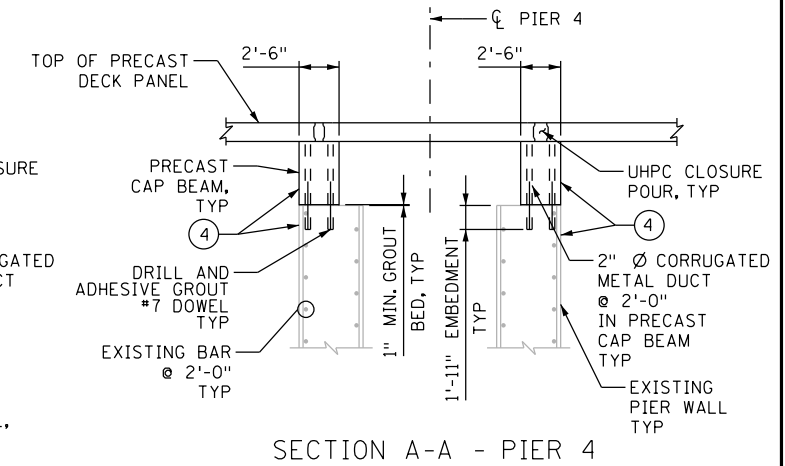
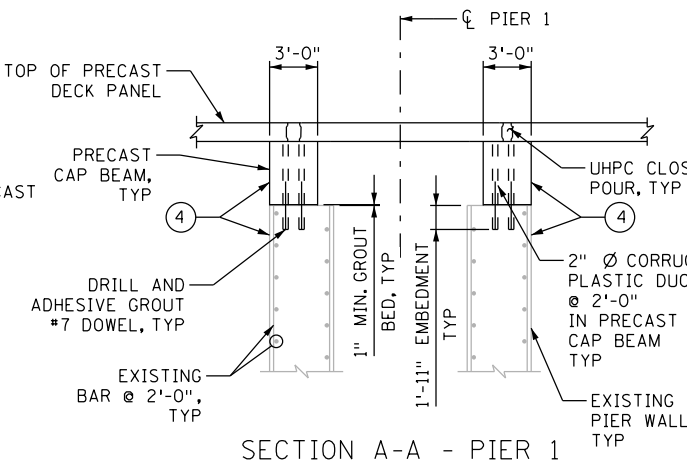
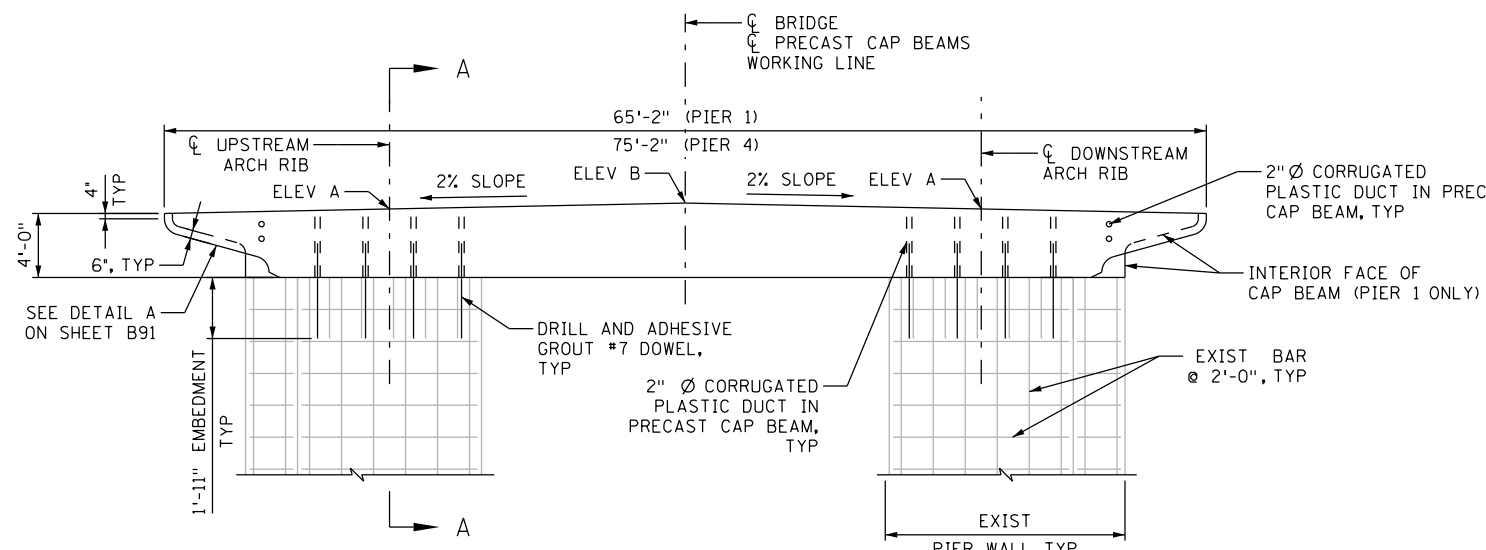
47079 8/14/2014
LICENSE NO. DATE

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 LAST REVISION: 12/03/2015

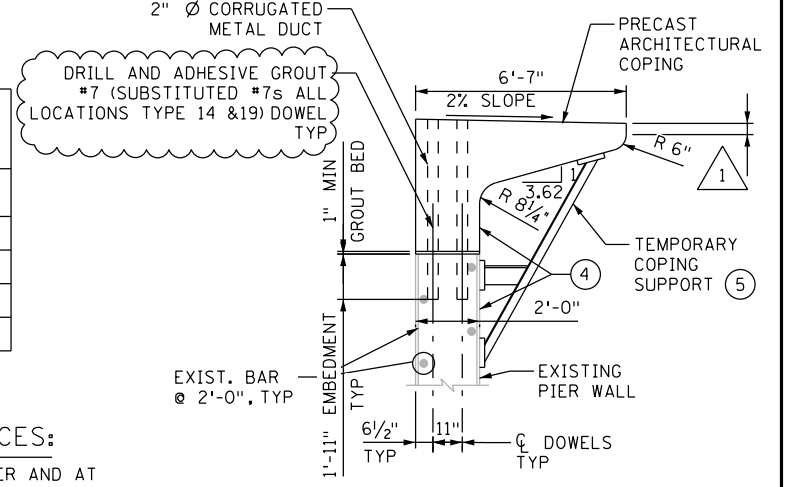
PIER 1 AND 4 REMOVAL DETAILS

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 BRIDGE 2441 S.P. 027-605-029

SHEET
 B96R
 B176



BEAM	ELEV A	ELEV B
PIER 1 WEST (TYPE 13)	821.82	822.19
PIER 1 EAST (TYPE 13)	822.02	822.39
PIER 4 WEST (TYPE 18)	818.48	818.85
PIER 4 EAST (TYPE 18)	817.99	818.36



SUGGESTED CONSTRUCTION SEQUENCES:

1. SURVEY TOPS OF EXISTING PIER AT EACH CORNER AND AT CENTER AFTER REMOVAL (SEE SHEET B96 - PIER 1 AND 4 REMOVAL DETAILS) TO DETERMINE ELEVATIONS AND REQUIRED SHIM HEIGHTS.
2. CREATE A TEMPLATE USING DUCT LOCATIONS IN PRECAST CAP BEAMS AND COPINGS.
3. USING TEMPLATES, CORE DOWEL HOLES IN EXISTING PIERS.
4. SET SHIMS (KOROLATH SHIMS, SEE RFI 51 FOR DETAILS) ON TOP OF EXISTING PIERS SO THAT THE TOP OF SHIM PACKS ARE AT THE PRECISE ELEVATIONS AND GRADES REQUIRED AS SHOWN ON THE PLANS. ALLOW A MINIMUM THICKNESS OF 1 INCH FOR THE SHIMS TO ACHIEVE ELEVATION ADJUSTMENTS.
5. GROUT, THEN SET NEW PRECAST CAP BEAMS SEATED ON SHIMS. TEMPORARILY SUPPORT COPING CAP BEAM.
6. DOUBLE CHECK (SURVEY) FINISHED ELEVATIONS AND GRADES AT THE TOP OF CAP BEAM. ADJUST SHIMS AS NEEDED.
7. PLACE THE DOWELS THROUGH THE DUCTS AND INTO DOWEL HOLES; SECURE DOWELS.
8. PLACE GROUT FROM THE TOP OF DUCTS TO FILL DOWEL HOLES, DUCTS AND THE GAP CREATED BY THE SHIMS. USE A FLOWABLE GROUT. CONTINUE UNTIL ALL HOLES AND GAPS ARE FILLED.
9. DRILL HOLES IN COPING CAP BEAM FOR HORIZONTAL DOWELS THROUGH CORRUGATED PLASTIC DUCTS IN EAST AND WEST CAP BEAMS.
10. PLACE THE DOWELS THROUGH THE DUCTS AND SECURE DOWELS.
11. PLACE GROUT TO FILL DOWEL HOLES AND DUCTS.

NOTES:

1. FOR REMOVAL DETAILS, SEE SHEET B96 (PIER 1 AND 4 REMOVAL DETAILS).
 2. FOR DECK PANEL REINFORCEMENT DETAILS AND CLOSURE POUR DETAILS, SEE SHEETS B119 TO B140 (DECK PLANS AND DECK DETAILS).
 3. CONTRACTOR TO FIELD VERIFY BASED ON PLACING PRECAST CAP BEAMS FLUSH WITH EXISTING SURFACES.
 4. DENOTES SURFACES OR FACES OF STRUCTURE WHERE THE FACE OF A PRECAST ELEMENT IS TO BE INSTALLED FLUSH, OR IN LINE, WITH THE ADJACENT EXISTING SURFACE OR FACE.
 5. CONTRACTOR SHALL DESIGN AND DETAIL TEMPORARY SUPPORTS, AS NEEDED, TO SUPPORT COPING UNTIL COPING ANCHORAGES HAVE SET. ALL CALCULATIONS AND DRAWINGS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MINNESOTA AND SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
- 1 TYPE 14, VARIES FROM 4 5/8" TO 4" (W TO E)
TYPE 19, VARIES FROM 5" TO 6" (W TO E)
SEE SHOP DRAWING 152 FOR DETAILS.
- 2 DOWELLED BAR REPLACEMENT IN PRE-CAST CONCRETE SUBSTRUCTURE CAP BEAM TYPE 14 & 19, REVISED AS SHOWN TO AVOID UNDERLYING RELIEF DETAIL IN PIER WALL.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

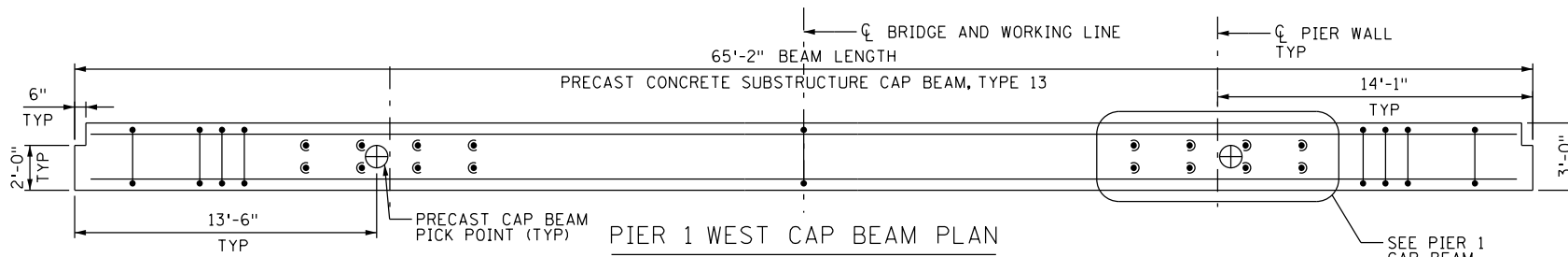
47079 8/14/2014
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LAST REVISION: 03/07/2016

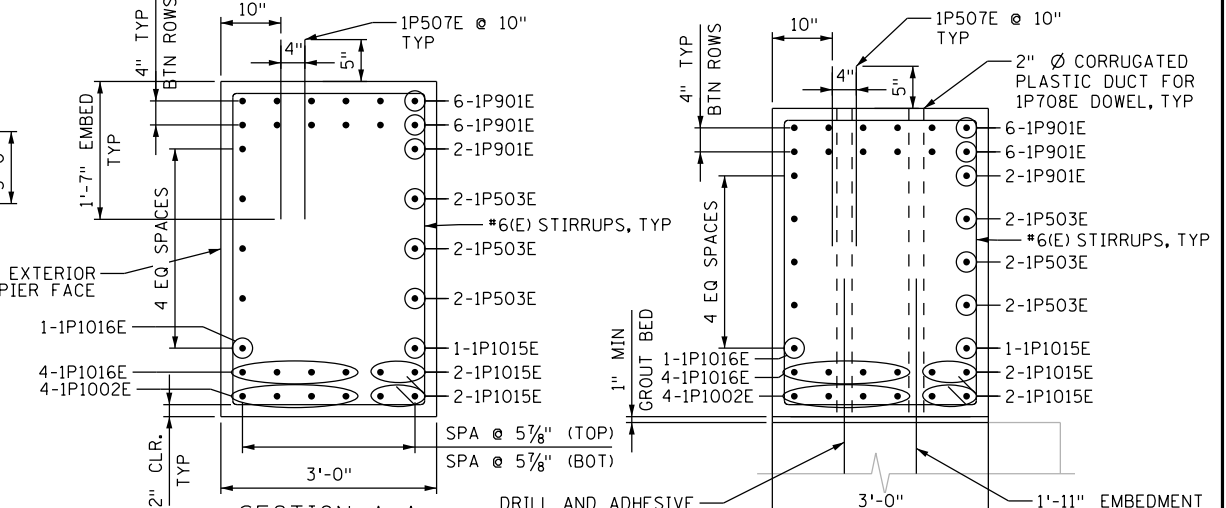
AS-BUILT - PIER 1 AND 4 MODIFICATION DETAILS (1 OF 4)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B97R2
B176

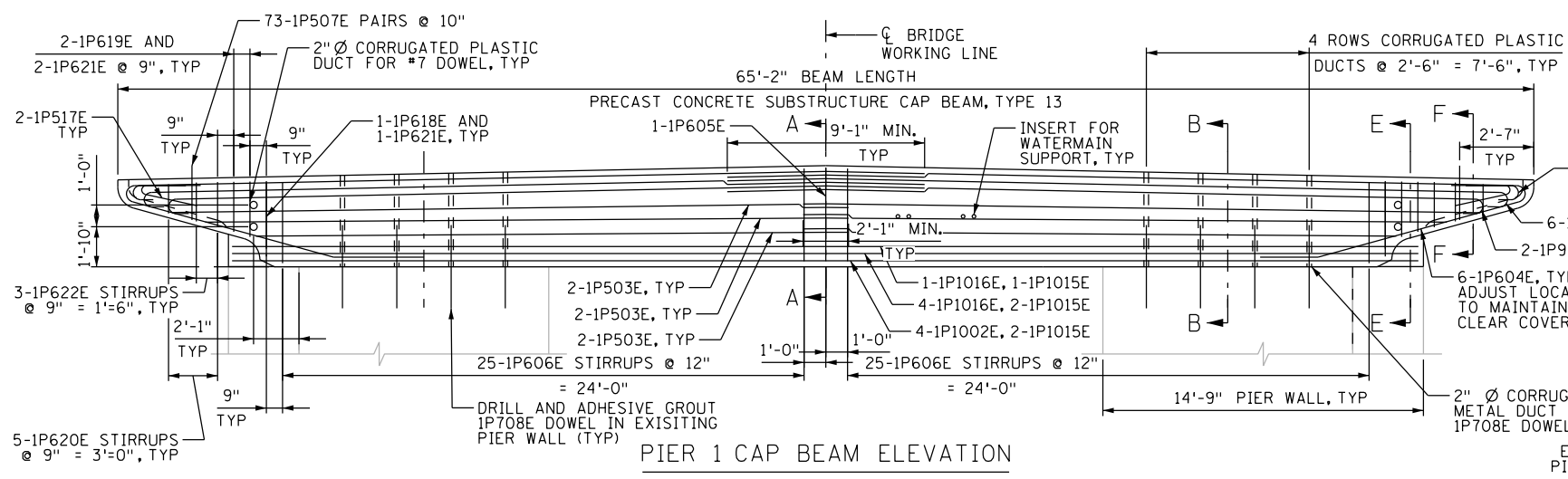


PIER 1 WEST CAP BEAM PLAN
(PIER 1 EAST CAP BEAM SYMMETRICAL ABOUT LONGITUDINAL CAP BEAM AXIS)

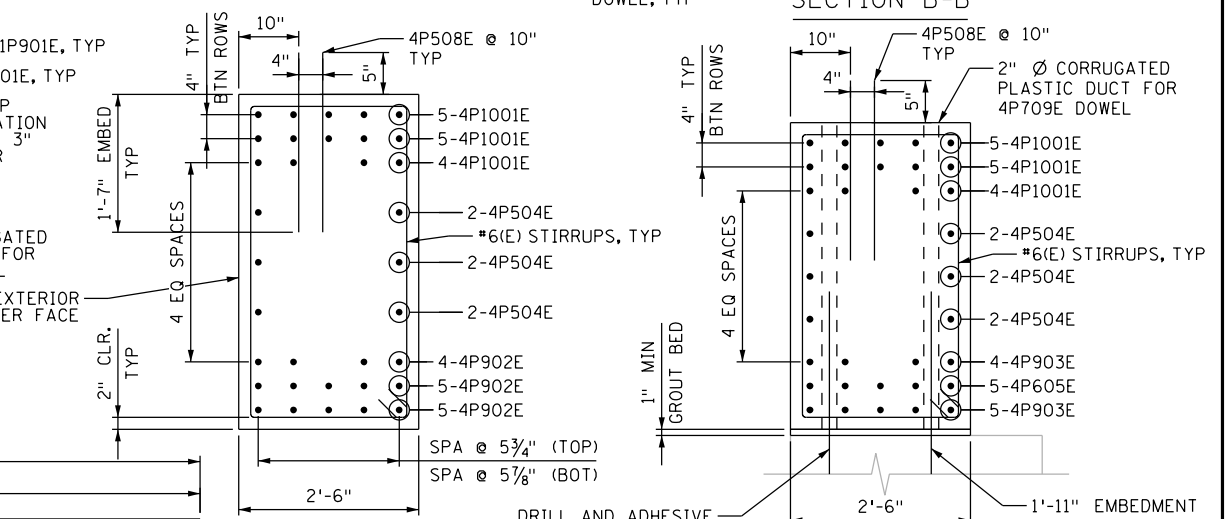


SECTION A-A

SECTION B-B

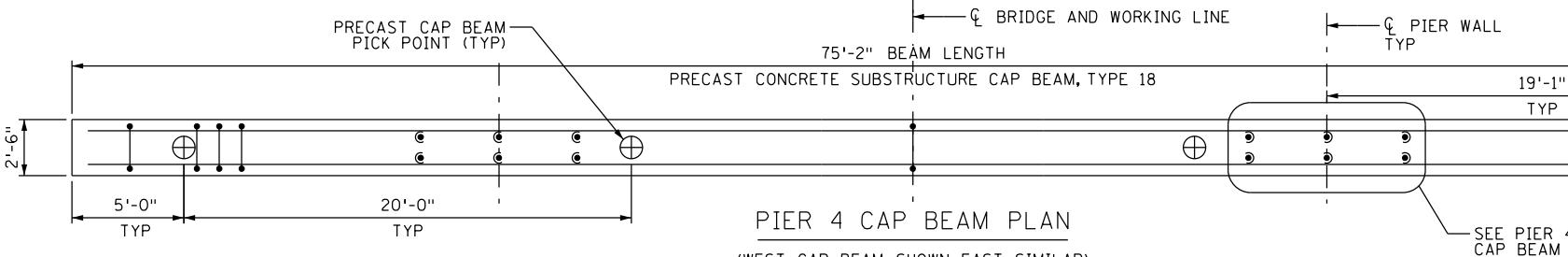


PIER 1 CAP BEAM ELEVATION

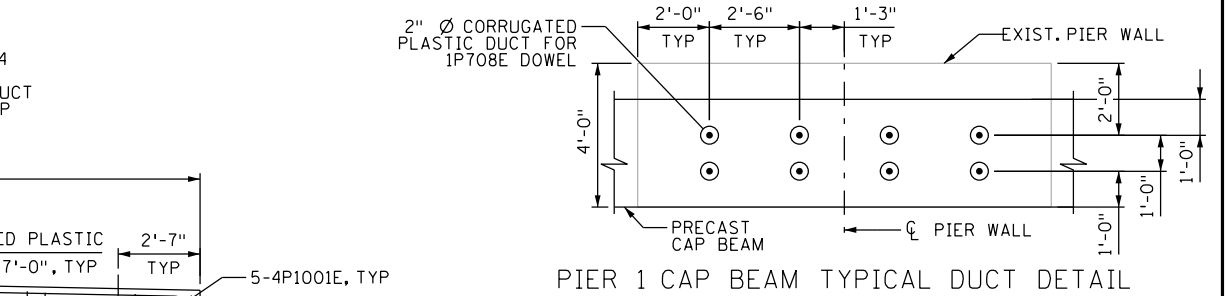


SECTION C-C

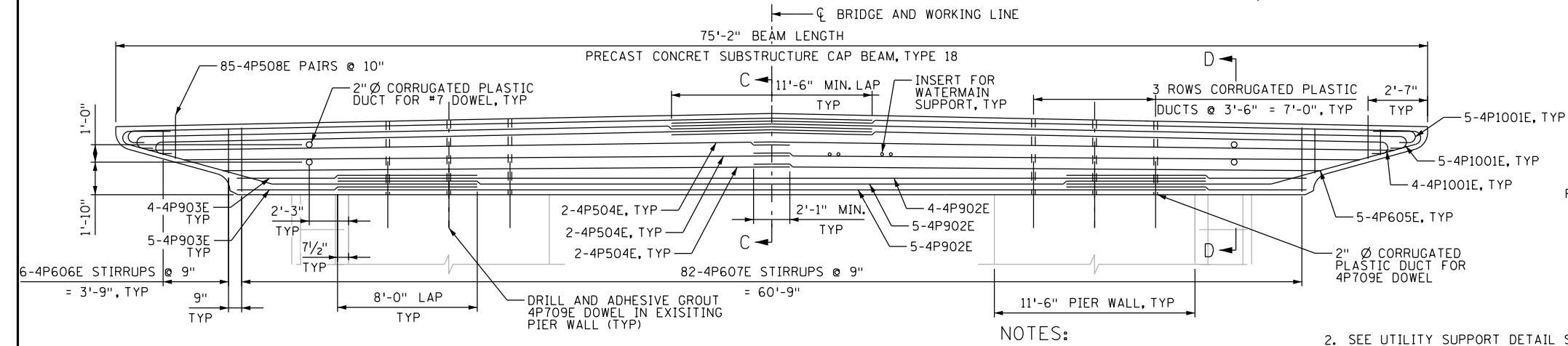
SECTION D-D



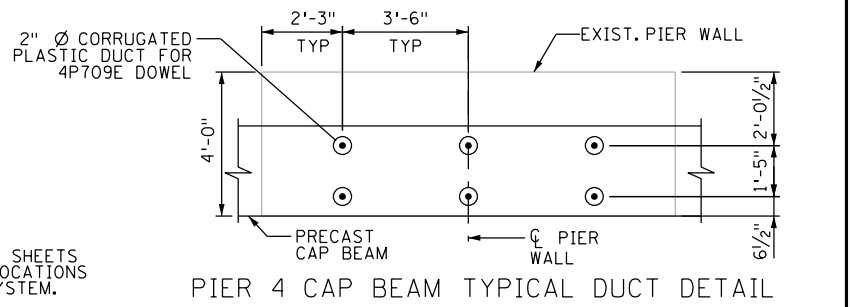
PIER 4 CAP BEAM PLAN
(WEST CAP BEAM SHOWN; EAST SIMILAR)



PIER 1 CAP BEAM TYPICAL DUCT DETAIL



PIER 4 CAP BEAM ELEVATION



PIER 4 CAP BEAM TYPICAL DUCT DETAIL

NOTES:

- FOR INSERTS LOCATIONS FOR WATERMAIN SUPPORTS, SEE SHEETS B172 AND B173 (WATERMAIN SUPPORT DETAILS).
- SEE UTILITY SUPPORT DETAIL SHEETS U1 THROUGH U4 FOR INSERT LOCATIONS FOR THE UTILITY SUPPORT SYSTEM.
- SEE SHEET B100 FOR SECTIONS E-E AND F-F



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

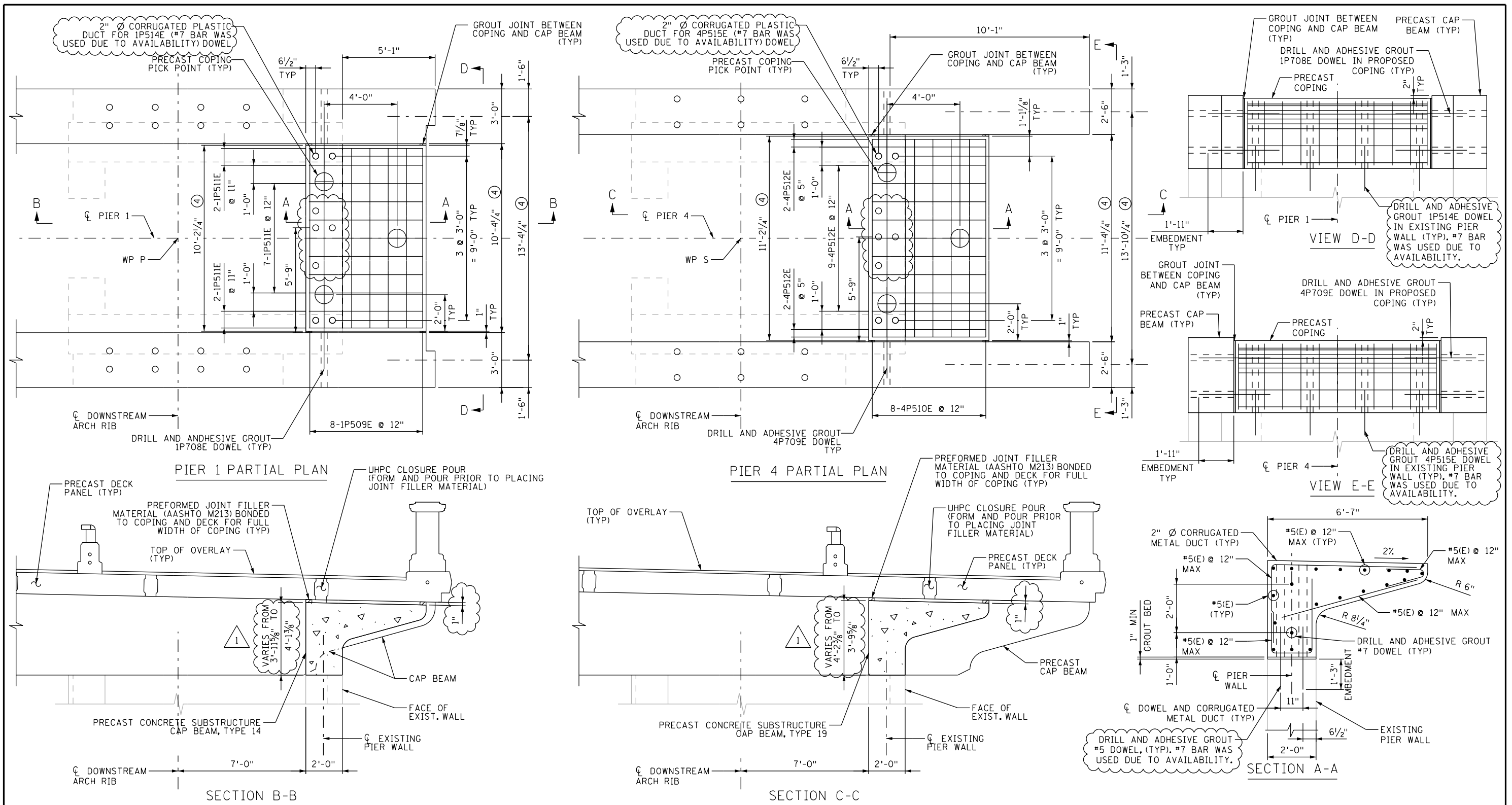
47079 8/14/2014
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PIER 1 AND 4 MODIFICATION DETAILS (2 OF 4)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B98R3
B176



NOTES:

- 1. FOR DECK REINFORCEMENT AND UHPC CLOSURE POUR DETAILS, SEE SHEETS B117 TO B138 (DECK PLANS AND DECK DETAILS).
- 2. FOR CAP BEAM REINFORCEMENT DETAILS, SEE SHEET B98 (PIER 1 AND 4 MODIFICATION DETAILS 2 OF 4).
- 3. FOR SUGGESTED CONSTRUCTION SEQUENCE, SEE SHEET B97 (PIER 1 AND 4 MODIFICATION DETAILS 1 OF 4).
- 4. CONTRACTOR TO FIELD VERIFY BASED ON PLACING PRECAST CAP BEAMS FLUSH WITH EXISTING SURFACES.

1 SEE SHOP DRAWING 152 FOR ADDITIONAL TYPE 14 & 19 INFORMATION.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER
 47079 8/14/2014
 LICENSE NO. DATE

DESIGN BY: FP
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LAST REVISION:

AS-BUILT - PIER 1 AND 4 MODIFICATION DETAILS (3 OF 4)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

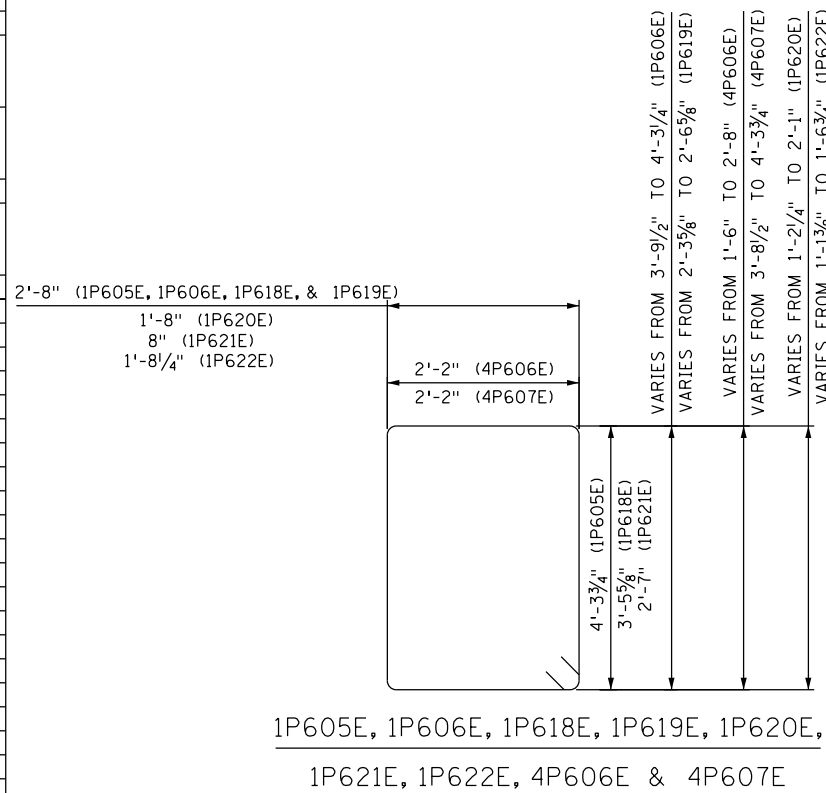
SHEET
B99
B176

BILL OF REINFORCEMENT PIER 1 AND 4 CAP BEAMS						
CAP BEAM TYPE	BAR MARK	NO	LENGTH	SHAPE	LOCATION	
PIER 1 TYPE 13	1P901E	28	38'-2 1/2"	BENT	LONGITUDINAL (TOP BARS)	
	1P1002E	4	50'-9"	STR	LONGITUDINAL (BOTTOM BARS)	
	1P503E	12	31'-5"	STR	SKIN REINFORCEMENT	
	1P604E	12	15'-9"	BENT	OVERHANG	
	1P605E	1	15'-3 1/2"	BENT	STIRRUP	
	1P606E	SER OF 25	15'-2 1/2" TO 14'-3"	BENT	STIRRUPS	
	1P507E	146	2'-0"	STR	CONNECTION TO DECK	
	1P708E	16	3'-11"	STR	DOWELS	
	1P1015E	5	54'-6"	STR	LONGITUDINAL (BOTTOM BARS)	
	1P1016E	5	51'-8"	STR	LONGITUDINAL (BOTTOM BARS)	
	1P517E	4	5'-7"	BENT	OVERHANG TIP	
	1P618E	2	13'-7 1/4"	BENT	STIRRUPS	
	1P619E	SER OF 2	11'-3 1/4" TO 11'-9 1/4"	BENT	STIRRUPS	
	1P620E	SER OF 5	7'-0 1/2" TO 8'-10"	BENT	STIRRUPS	
	1P621E	6	7'-10"	BENT	STIRRUPS	
	1P622E	SER OF 3	6'-11 1/4" TO 7'-10"	BENT	STIRRUPS	
	PIER 1 TYPE 14	1P708E	4	3'-11"	STR	CONNECTION TO CAP BEAM
		1P509E	18	9'-10 1/4"	STR	LONGITUDINAL
		1P510E	11	6'-5"	BENT	BOTTOM TRANSVERSE BARS
		1P511E	11	9'-11"	BENT	TOP TRANSVERSE BARS
1P512E		11	5'-10"	STR	OVERHANG TRANSVERSE BARS	
1P513E		11	4'-2"	BENT	OVERHANG TIP	
PIER 4 TYPE 18	4P1001E	28	44'-7"	BENT	LONGITUDINAL (TOP BARS)	
	4P902E	14	49'-9"	STR	LONGITUDINAL (BOTTOM BARS)	
	4P903E	18	13'-9"	STR	LONGITUDINAL (BOTTOM BARS)	
	4P504E	12	36'-8 1/2"	STR	SKIN REINFORCEMENT	
	4P605E	10	25'-0"	BENT	OVERHANG	
	4P606E	12	9'-10"	BENT	OVERHANG STIRRUPS	
	4P607E	82	13'-8 1/4"	BENT	STIRRUPS	
	4P709E	12	3'-11"	STR	DOWELS	
PIER 4 TYPE 19	4P709E	4	3'-11"	STR	CONNECTION TO CAP BEAM	
	4P510E	18	10'-10 1/4"	STR	LONGITUDINAL	
	4P511E	13	6'-5"	BENT	BOTTOM TRANSVERSE BARS	
	4P512E	13	9'-11"	BENT	TOP TRANSVERSE BARS	
	4P513E	13	5'-10"	STR	OVERHANG TRANSVERSE BARS	
	4P514E	13	4'-2"	BENT	OVERHANG TIP	
4P515E	8	2'-7"	STR	DOWELS		

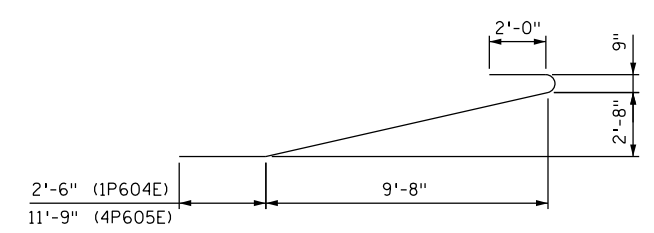
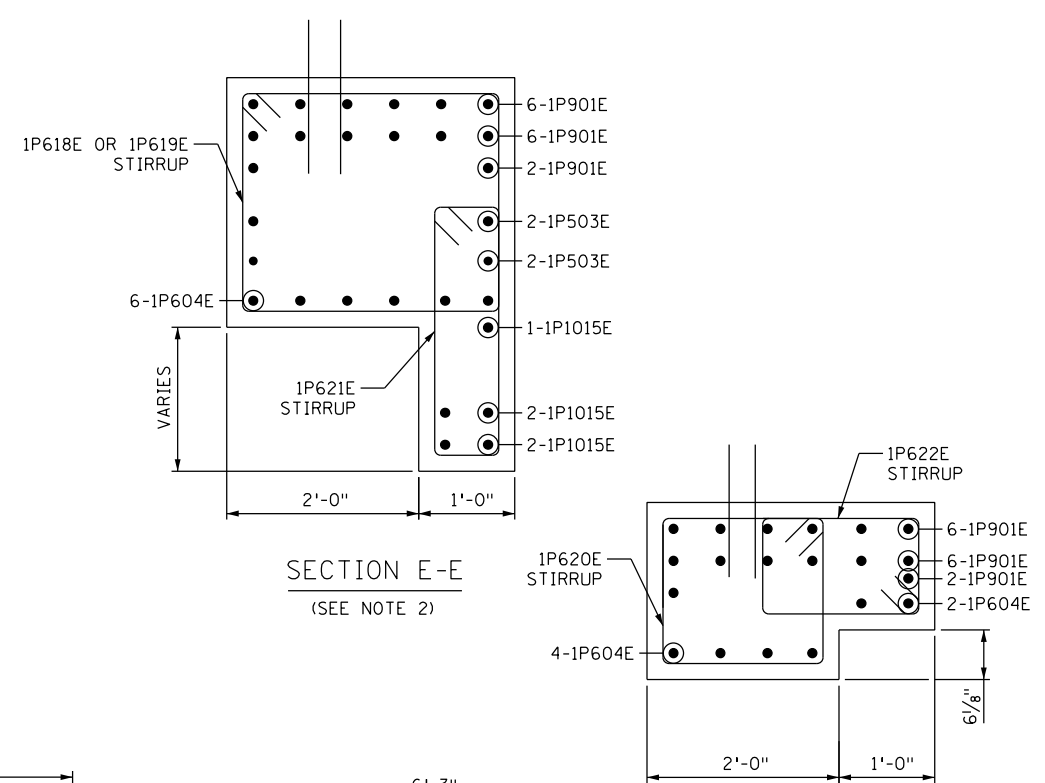
SUMMARY OF QUANTITIES FOR PIER 1 AND 4 CAP BEAMS		
ITEM	UNIT	QUANTITY TOTAL
ANCHORAGES TYPE 1	EACH	32
ANCHORAGES TYPE 2	EACH	72
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 13	EACH	2
STRUCTURAL CONCRETE (1)	CU YD	28.2
REINFORCEMENT BARS (EPOXY COATED) (1)	POUND	10,302
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 14	EACH	2
STRUCTURAL CONCRETE (1)	CU YD	5.4
REINFORCEMENT BARS (EPOXY COATED) (1)	POUND	544
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 18	EACH	2
STRUCTURAL CONCRETE (1)	CU YD	27.5
REINFORCEMENT BARS (EPOXY COATED) (1)	POUND	13,043
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 19	EACH	2
STRUCTURAL CONCRETE (1)	CU YD	6.0
REINFORCEMENT BARS (EPOXY COATED) (1)	POUND	619

9,443

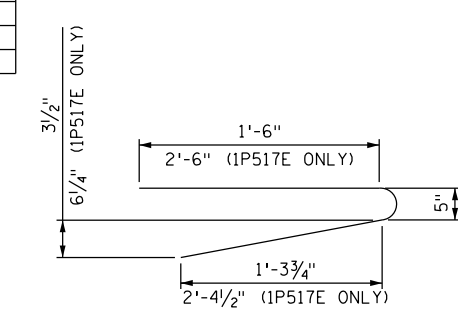
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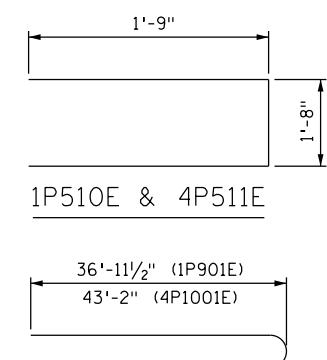
(1) INCLUDED IN THE BID PRICE FOR ALL PRECAST STRUCTURAL CAP BEAMS.



1P604E & 4P605E



1P513E, 1P517E & 4P514E



1P901E & 4P1001E

- NOTES:
- FOR THE LOCATION OF SECTIONS E-E AND F-F, SEE SHEET B98.
 - FOR NOTES AND REINFORCEMENT DETAILS NOT SHOWN, SEE SECTION A-A ON SHEET B98.



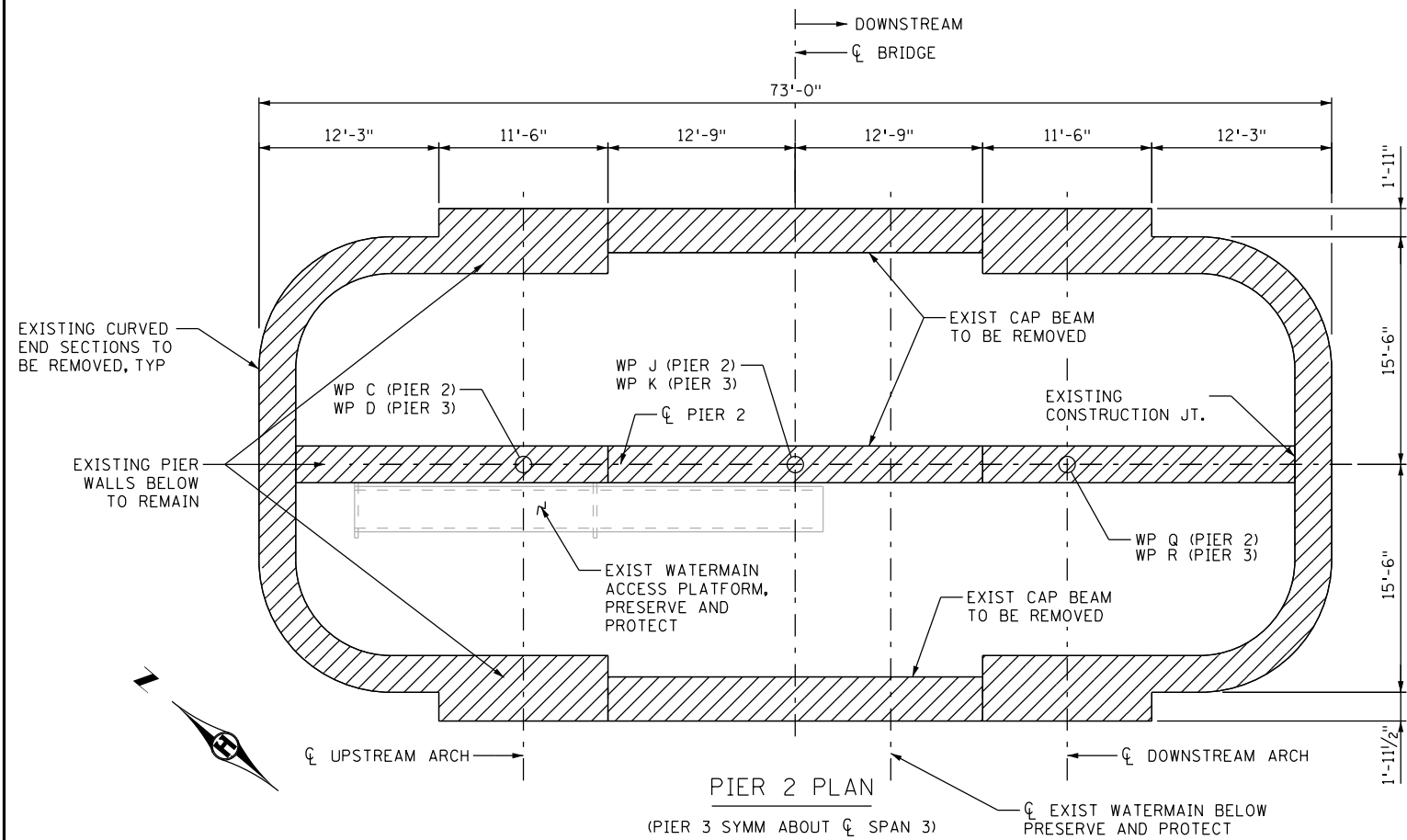
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER
 47079 LICENSE NO. 8/14/2014 DATE

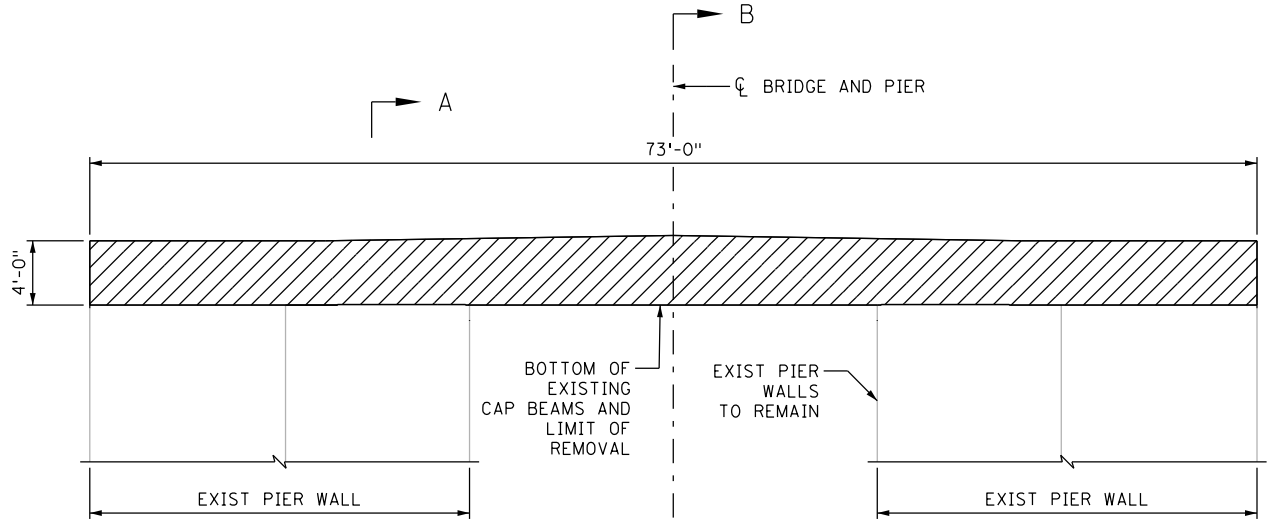
DESIGN BY: CB
 CAD BY: PRE
 CHECKED BY: FP
 LAST REVISION: 03/29/2016

PIER 1 AND 4 MODIFICATION DETAILS (4 OF 4)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

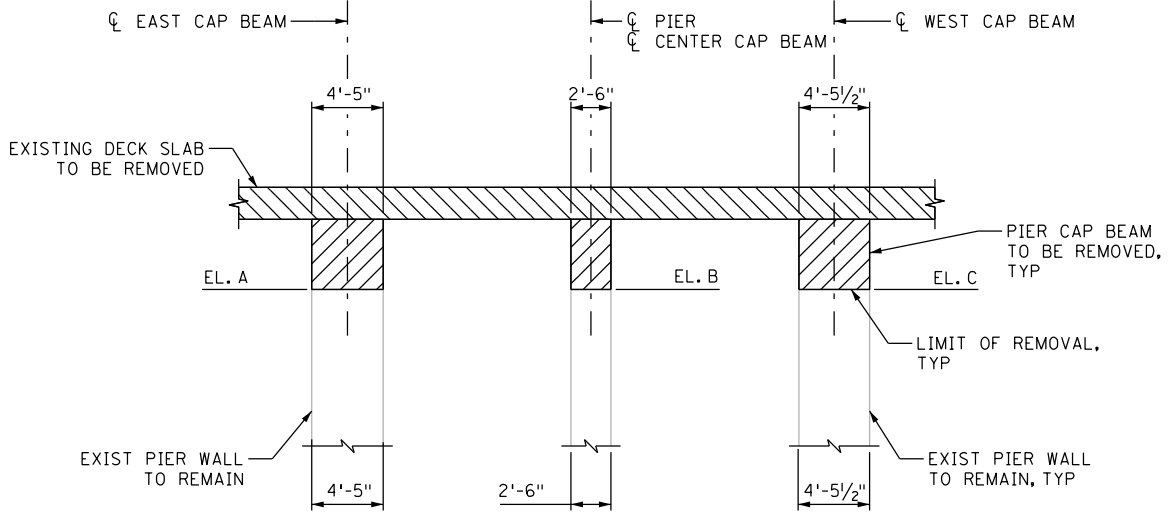
SHEET
 B100R5
 B176



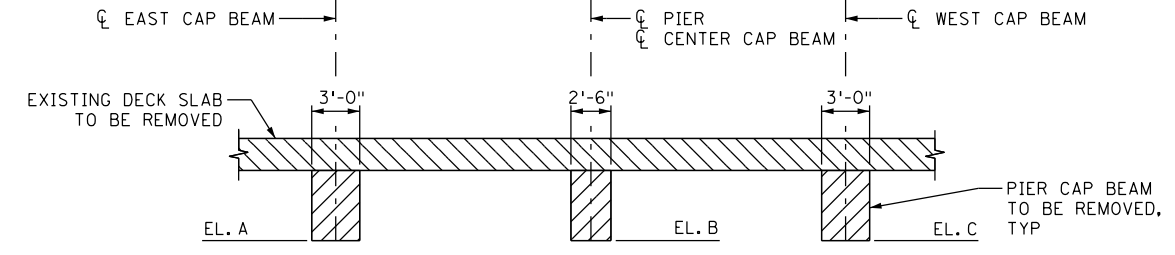
PIER 2 PLAN
(PIER 3 SYMM ABOUT CL SPAN 3)
CL EXIST WATERMAIN BELOW PRESERVE AND PROTECT



PIER 2 ELEVATION
(PIER 3 SIMILAR)



SECTION A-A



SECTION B-B

LEGEND:

	SUBSTRUCTURE REMOVAL
	SUPERSTRUCTURE REMOVAL

ELEVATION TABLE		
LOCATION	PIER 2	PIER 3
A	823.02	821.16
B	822.64	821.72
C	822.25	822.28

- NOTES:
- FOR PIER 2 AND 3 REPAIRS, SEE REPAIR LOCATION SHEETS B21 TO B30.
 - SEE PIER 2 AND 3 MODIFICATION DETAILS, SHEETS B102 TO B105, FOR PROPOSED WORK.
 - REMOVE BY SAWCUTTING.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

AM Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

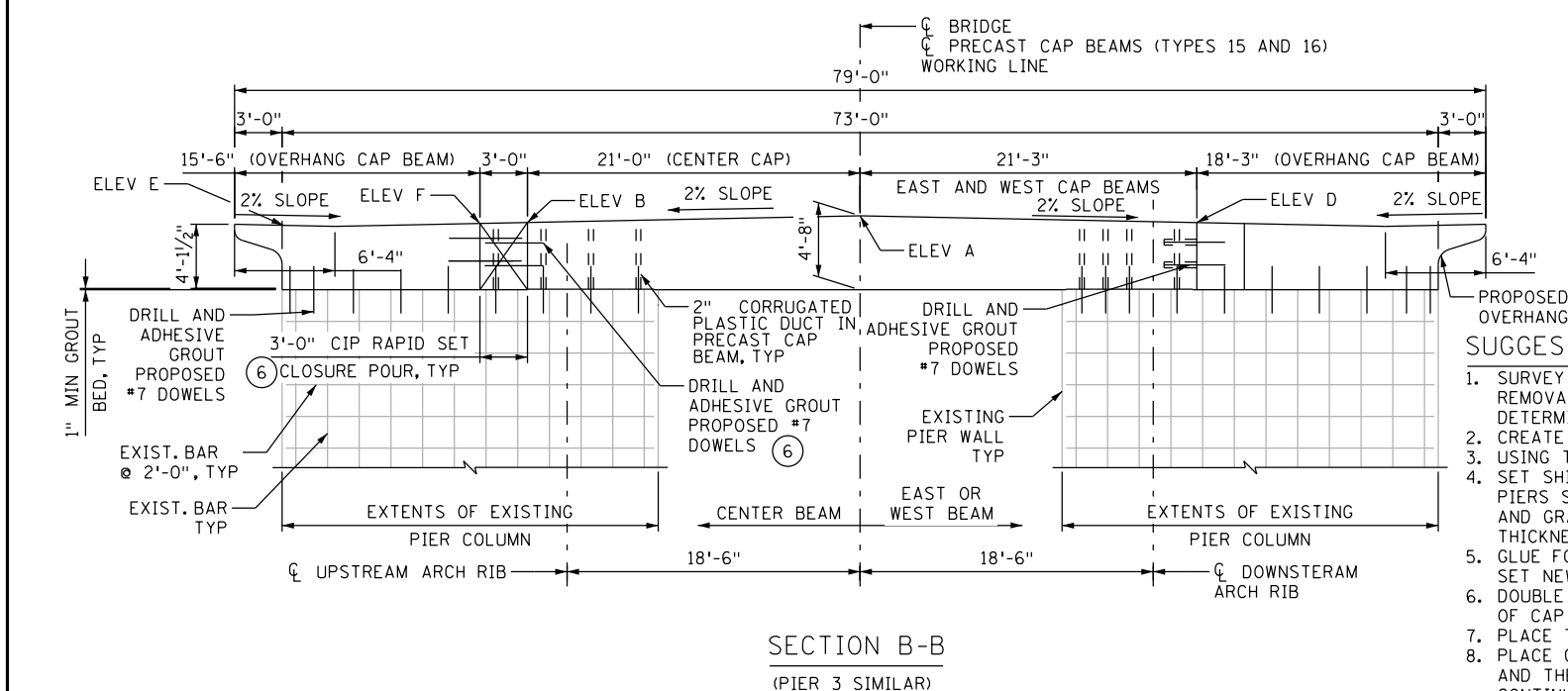
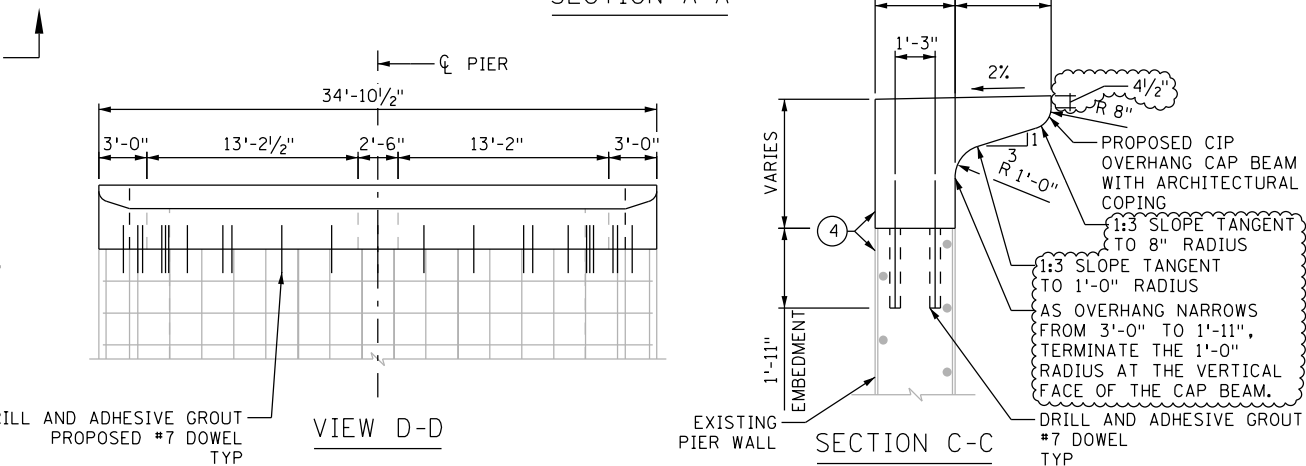
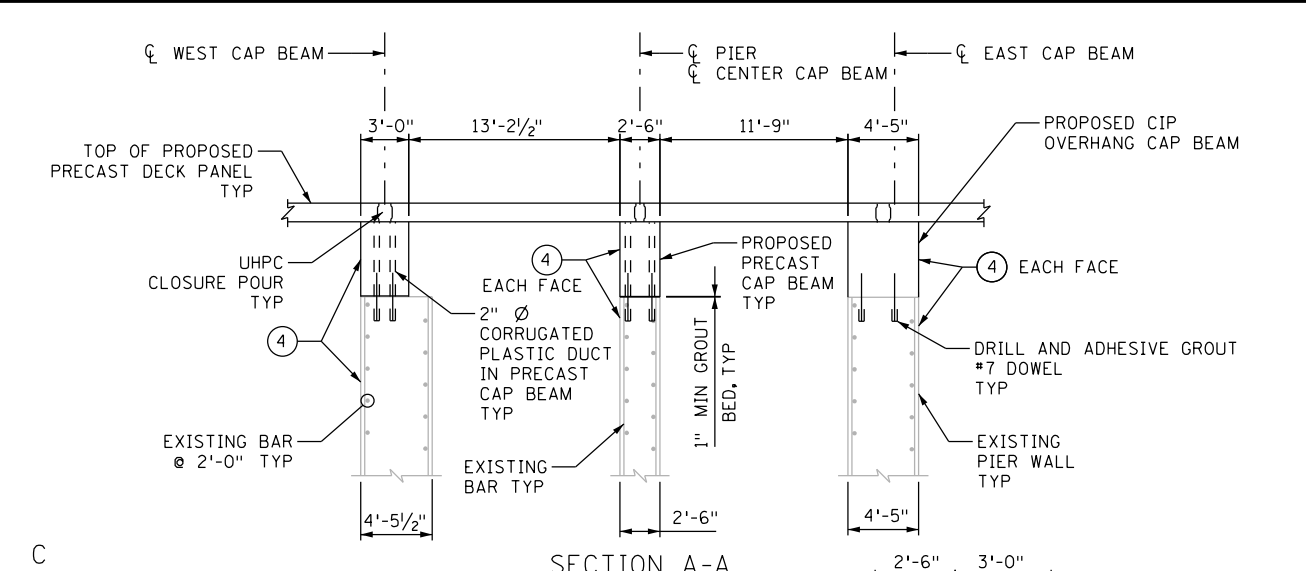
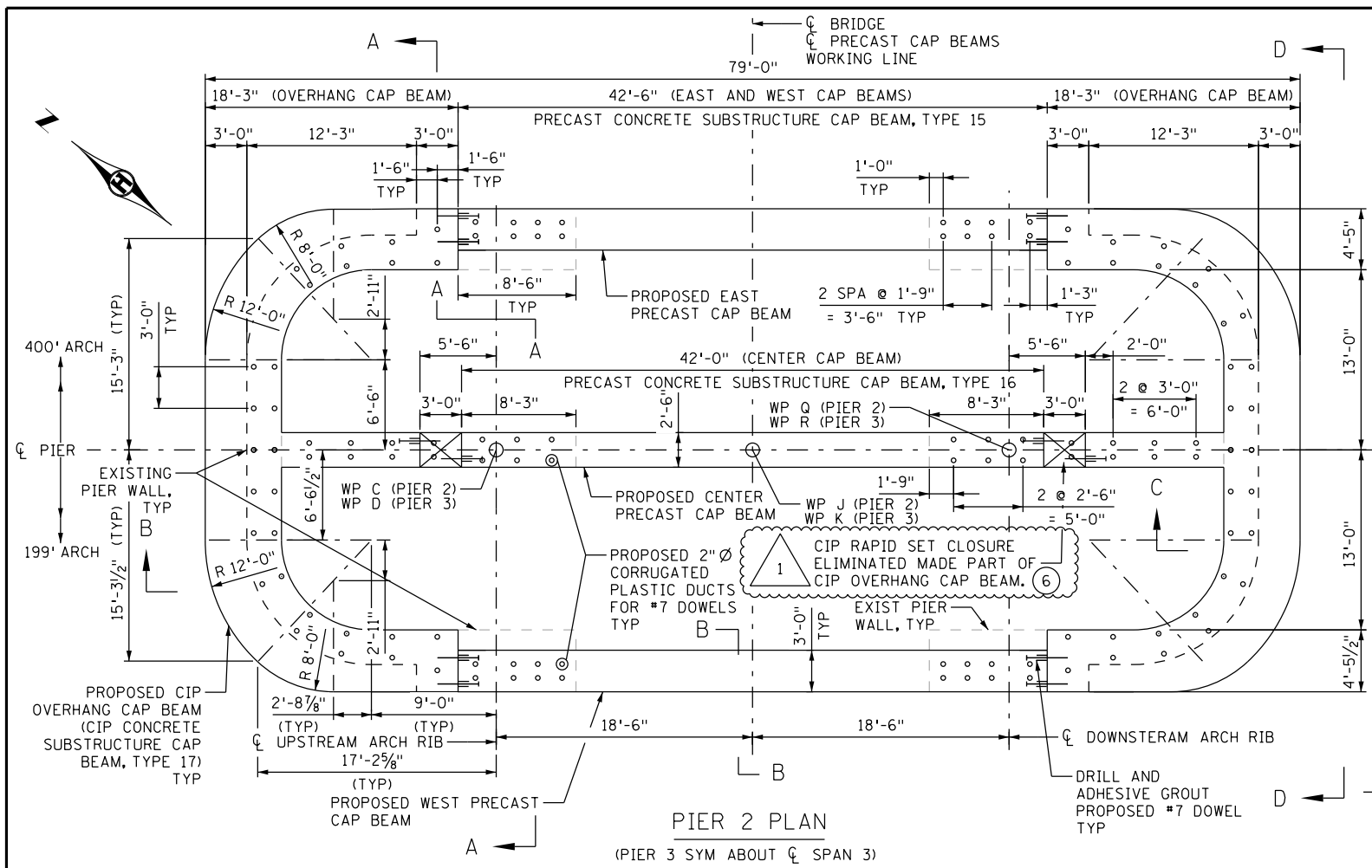
47097 8/14/2014
LICENSE NO. DATE

DESIGN BY: CB
CAD BY: PRE
CHECKED BY: AMK
LAST REVISION: 12/03/2015

PIER 2 AND 3 REMOVAL DETAILS

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BRIDGE 2441 S.P. 027-605-029

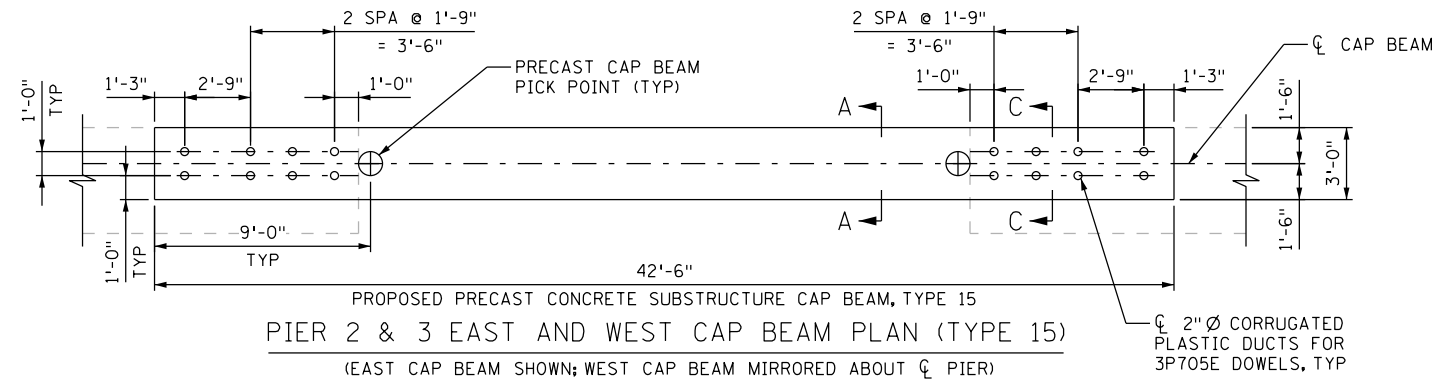
SHEET
B101R
B176



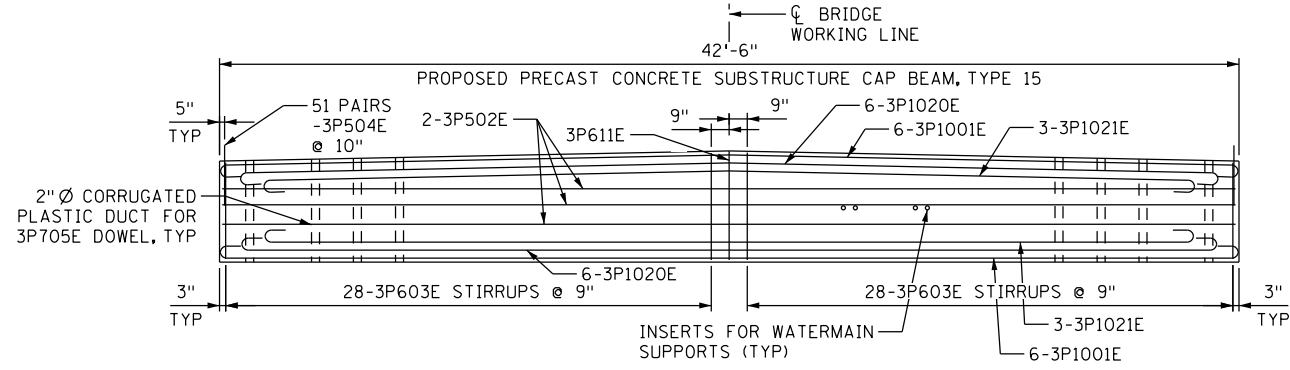
TOP OF PRECAST CAP BEAM ELEVATIONS						
PIER	BEAM	ELEV A	ELEV B	ELEV D	ELEV E	ELEV F
2	EAST (TYPES 15 & 17)	827.77		827.35		
2	CENTER (TYPES 16 & 17)	827.39	826.97		826.79	826.91
2	WEST (TYPES 15 & 17)	827.00		826.58		
3	EAST (TYPES 15 & 17)	825.91		825.49		
3	CENTER (TYPES 16 & 17)	826.47	826.05		825.87	825.99
3	WEST (TYPES 15 & 17)	827.03		826.61		

- NOTES:**
- FOR REMOVAL DETAILS, SEE SHEET B101 (PIER 2 AND 3 REMOVAL DETAILS).
 - FOR CAP BEAM REINFORCEMENT DETAILS, SEE SHEETS B103 AND B104 (PIER 2 AND 3 MODIFICATION DETAILS 2 AND 3 OF 4).
 - FOR PRECAST OVERHANG CAP BEAM REINFORCEMENT DETAILS, SEE SHEET B104 (PIER 2 AND 3 MODIFICATION DETAILS 3 OF 4).
 - Ⓞ DENOTES SURFACES OR FACES OF THE STRUCTURE WHERE THE FACE OF A PRECAST ELEMENT IS TO BE INSTALLED FLUSH, OR IN LINE, WITH THE ADJACENT EXISTING SURFACE OR FACE.
 - PRECAST OVERHANG CAP BEAM SHALL BE FORMED TO FOLLOW PROFILE AND CROSS SLOPE. CONTRACTOR SHALL PROVIDE GROUT BED BETWEEN PRECAST OVERHANG CAP BEAM AND OVERLYING DECK PANELS.
 - Ⓢ CLOSURE POUR MAY BE CAST WITH CIP OVERHANG CAP BEAM. EXTEND CIP BEAM LONGITUDINAL REINFORCEMENT INTO CLOSURE POUR.
- SUGGESTED CONSTRUCTION SEQUENCES:**
- SURVEY TOPS OF EXISTING PIER AT EACH CORNER AND AT CENTER AFTER REMOVAL (SEE SHEET B101 - PIER 2 AND 3 REMOVAL DETAILS) TO DETERMINE ELEVATIONS AND REQUIRED SHIM HEIGHTS.
 - CREATE A TEMPLATE USING DUCT LOCATIONS IN PRECAST CAP BEAMS.
 - USING TEMPLATE, CORE DOWEL HOLES IN EXISTING PIERS.
 - SET SHIMS (KOROLATH SHIMS, SEE REF 51 FOR DETAILS) ON TOP OF EXISTING PIERS SO THAT THE TOP OF SHIM PACKS ARE AT THE PRECISE ELEVATIONS AND GRADES REQUIRED AS SHOWN ON THE PLANS. ALLOW A MINIMUM THICKNESS OF 1 INCH FOR THE SHIMS TO ACHIEVE ELEVATION ADJUSTMENTS.
 - GLUE FORM-BEAD AROUND PERIMETER OF PIER TO CONTAIN GROUT. THEN SET NEW PRECAST CAP BEAM SEATED ON SHIMS.
 - DOUBLE CHECK (SURVEY) FINISHED ELEVATIONS AND GRADES AT THE TOP OF CAP BEAM. ADJUST SHIMS AS NEEDED.
 - PLACE THE DOWELS THROUGH THE DUCTS AND SECURE DOWELS.
 - PLACE GROUT FROM THE TOP OF DUCTS TO FILL DOWEL HOLES, DUCTS, AND THE GAP CREATED BY THE SHIMS. USE A FLOWABLE GROUT. CONTINUE UNTIL ALL HOLES AND GAPS ARE FILLED.
 - POUR RAPID SET CONCRETE CLOSURES BETWEEN PRECAST CAP BEAMS AND PRECAST OVERHANG CAP BEAM.

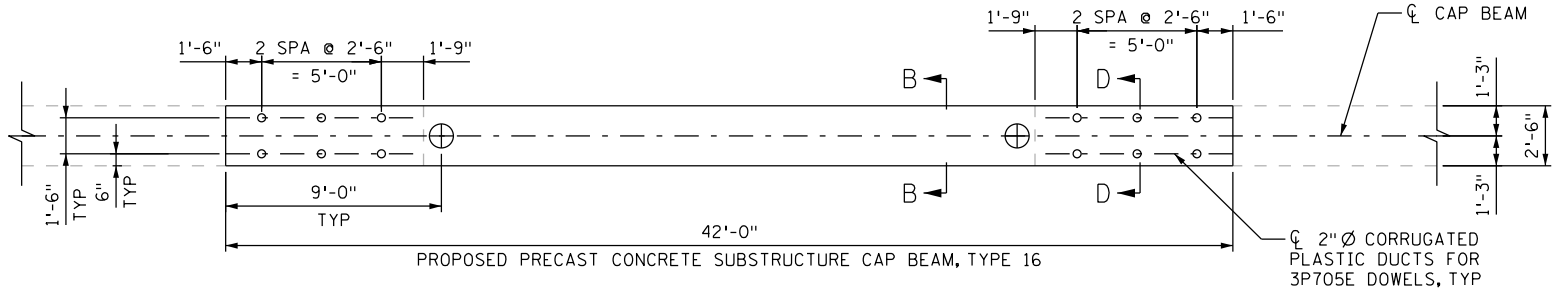
	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	DESIGN BY: FP CAD BY: FP CHECKED BY: EBR LAST REVISION: 04/15/2016	AS-BUILT - PIER 2 AND 3 MODIFICATION DETAILS (1 OF 4)	SHEET
	 ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER	47079 8/14/2014 LICENSE NO. DATE	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	B102R4 B176



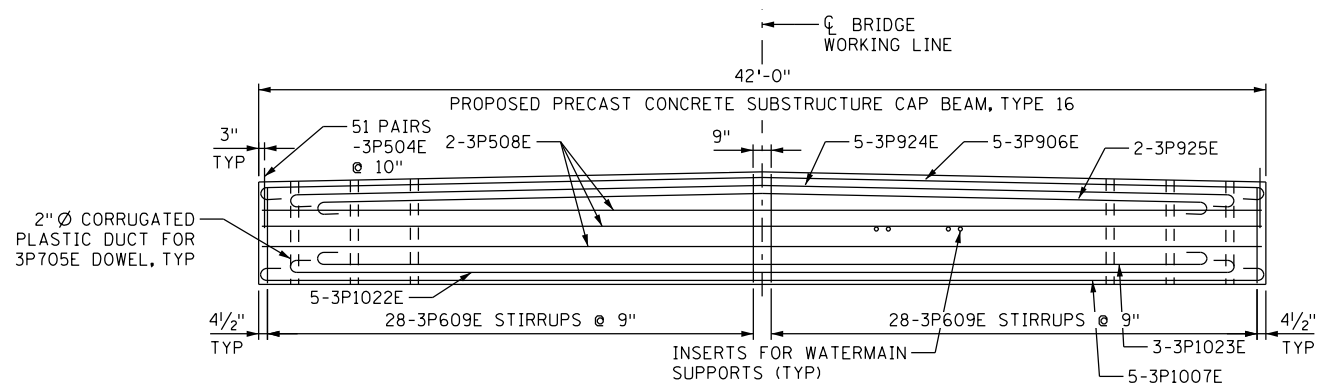
PIER 2 & 3 EAST AND WEST CAP BEAM PLAN (TYPE 15)
(EAST CAP BEAM SHOWN; WEST CAP BEAM MIRRORED ABOUT CL PIER)



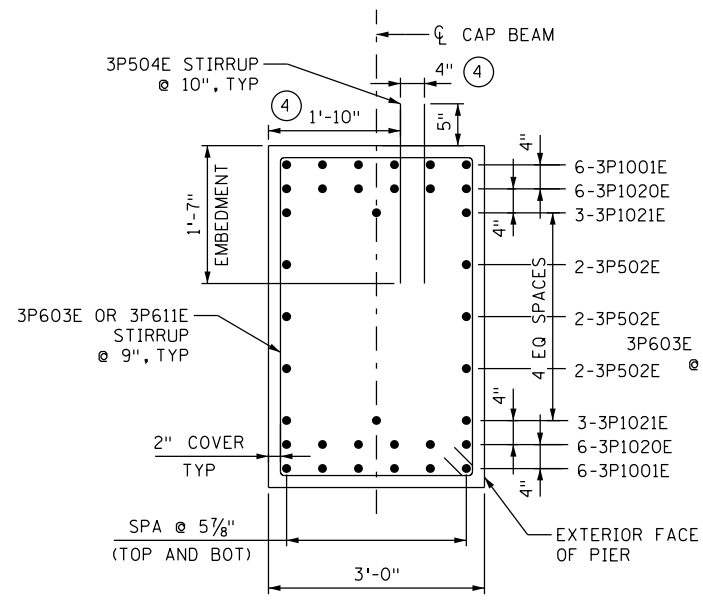
PIER 2 & 3 EAST AND WEST CAP BEAM ELEVATION (TYPE 15)



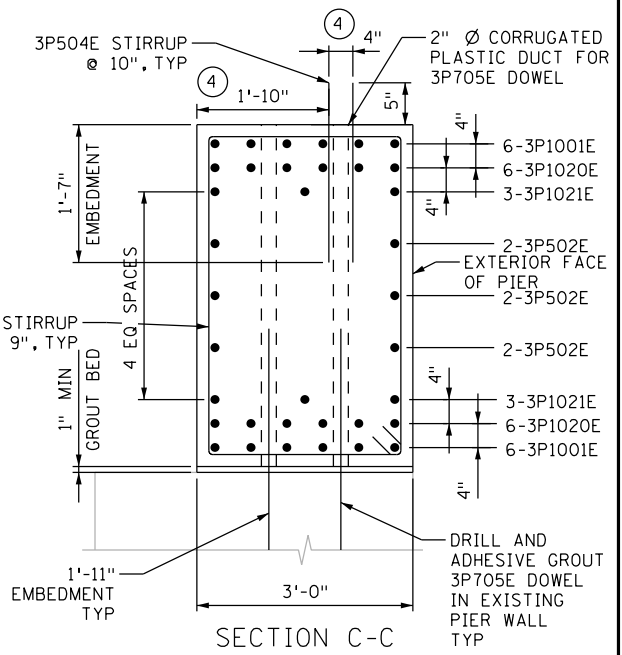
PIER 2 & 3 CENTER CAP BEAM PLAN (TYPE 16)



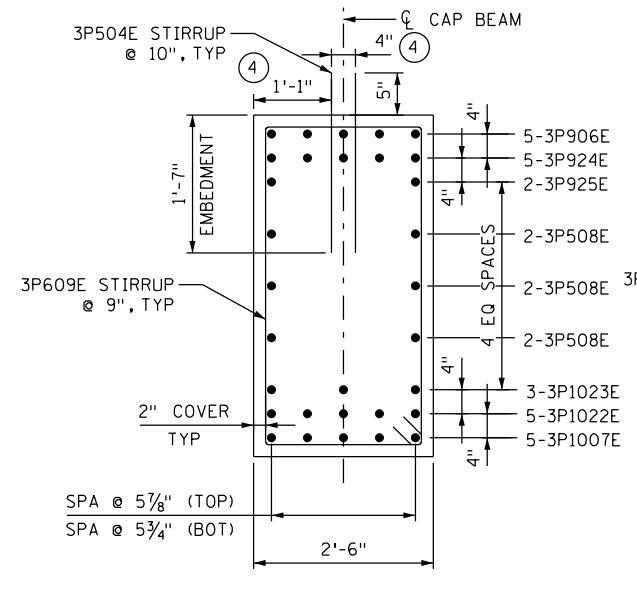
PIER 2 & 3 CENTER CAP BEAM ELEVATION (TYPE 16)



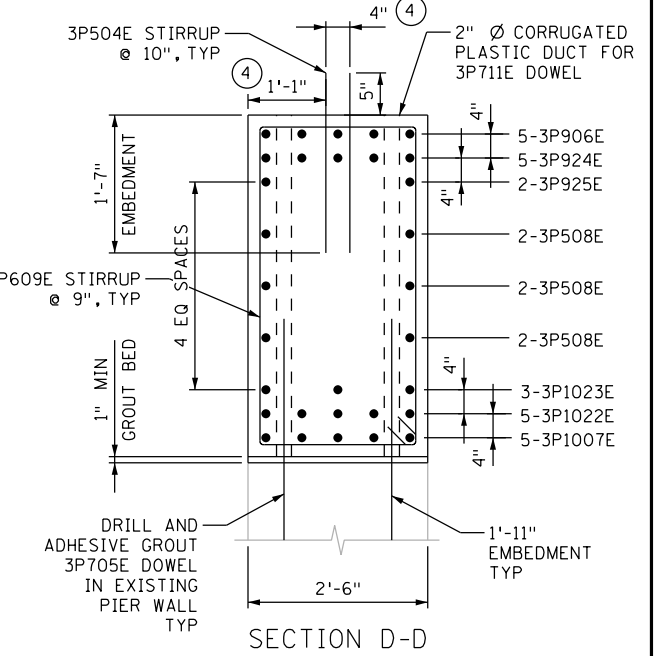
SECTION A-A



SECTION C-C



SECTION B-B



SECTION D-D

NOTES:

1. FOR INSERT LOCATIONS FOR WATERMAIN SUPPORTS, SEE SHEETS B172 AND B173 (WATERMAIN SUPPORT DETAILS).
2. SEE UTILITY SUPPORT DETAIL SHEETS U1 THROUGH U4 FOR INSERT LOCATIONS FOR THE UTILITY SUPPORT SYSTEM.
3. PIER 3 BAR MARKS SHOWN. PIER 2 SIMILAR.
4. CONTRACTOR TO VERIFY LOCATION TO ACHIEVE 2" CLEAR BETWEEN STIRRUPS AND FACE OF DECK PANELS.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

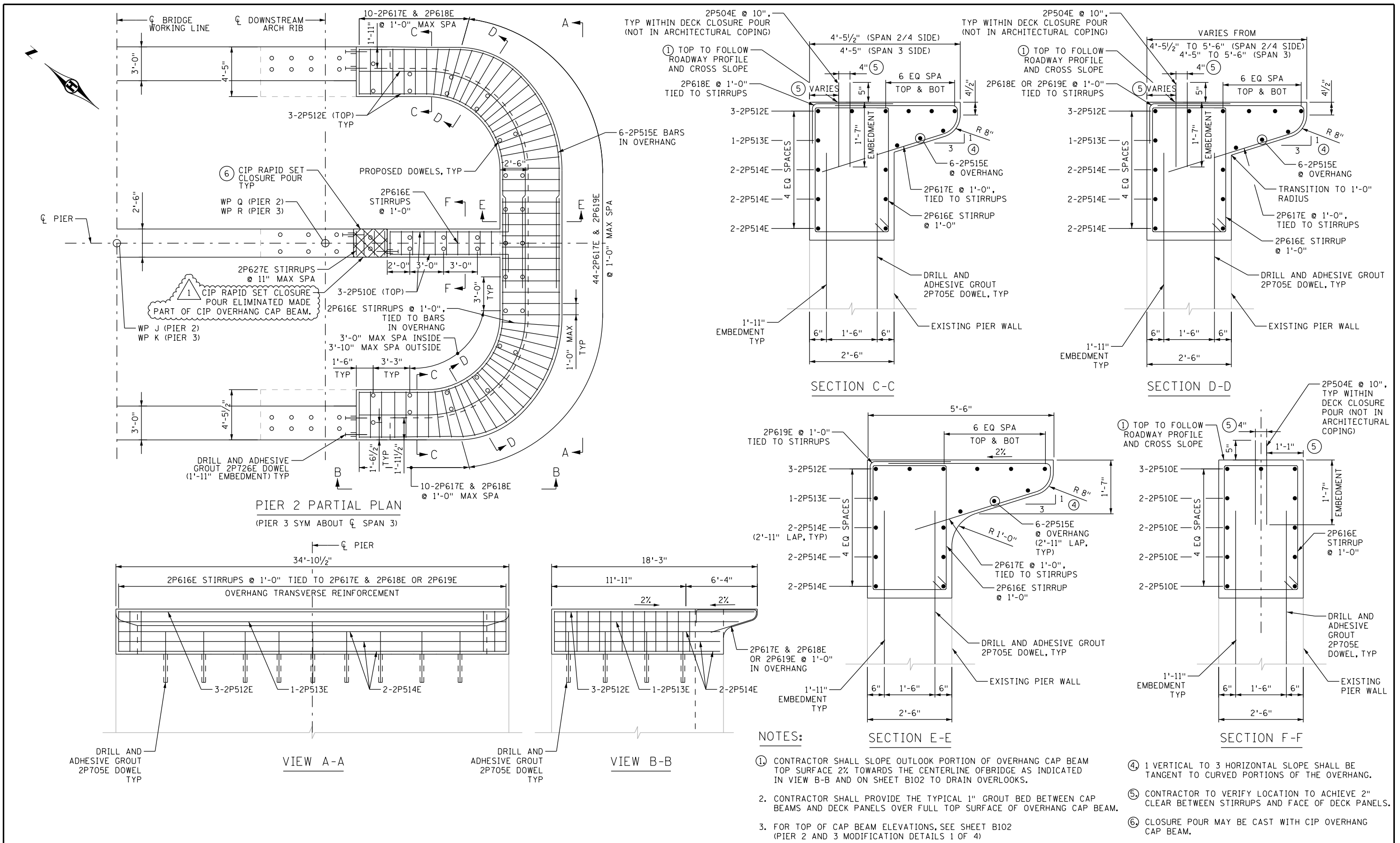
47079 8/14/2014
LICENSE NO. DATE

DESIGN BY: FP
CAD BY: FP
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LAST REVISION: 04/15/2016

PIER 2 AND 3 MODIFICATION DETAILS (2 OF 4)

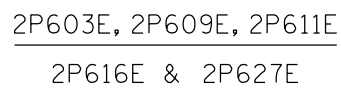
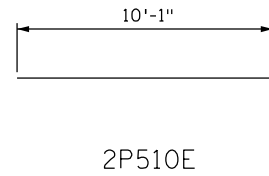
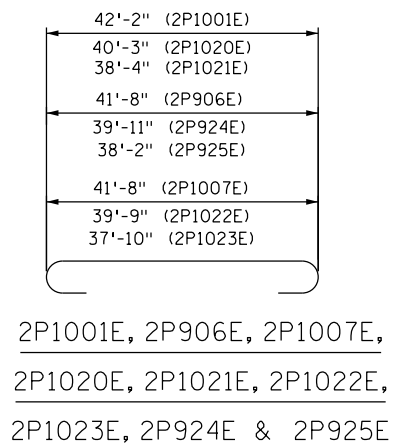
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SHEET
B103R5
B176



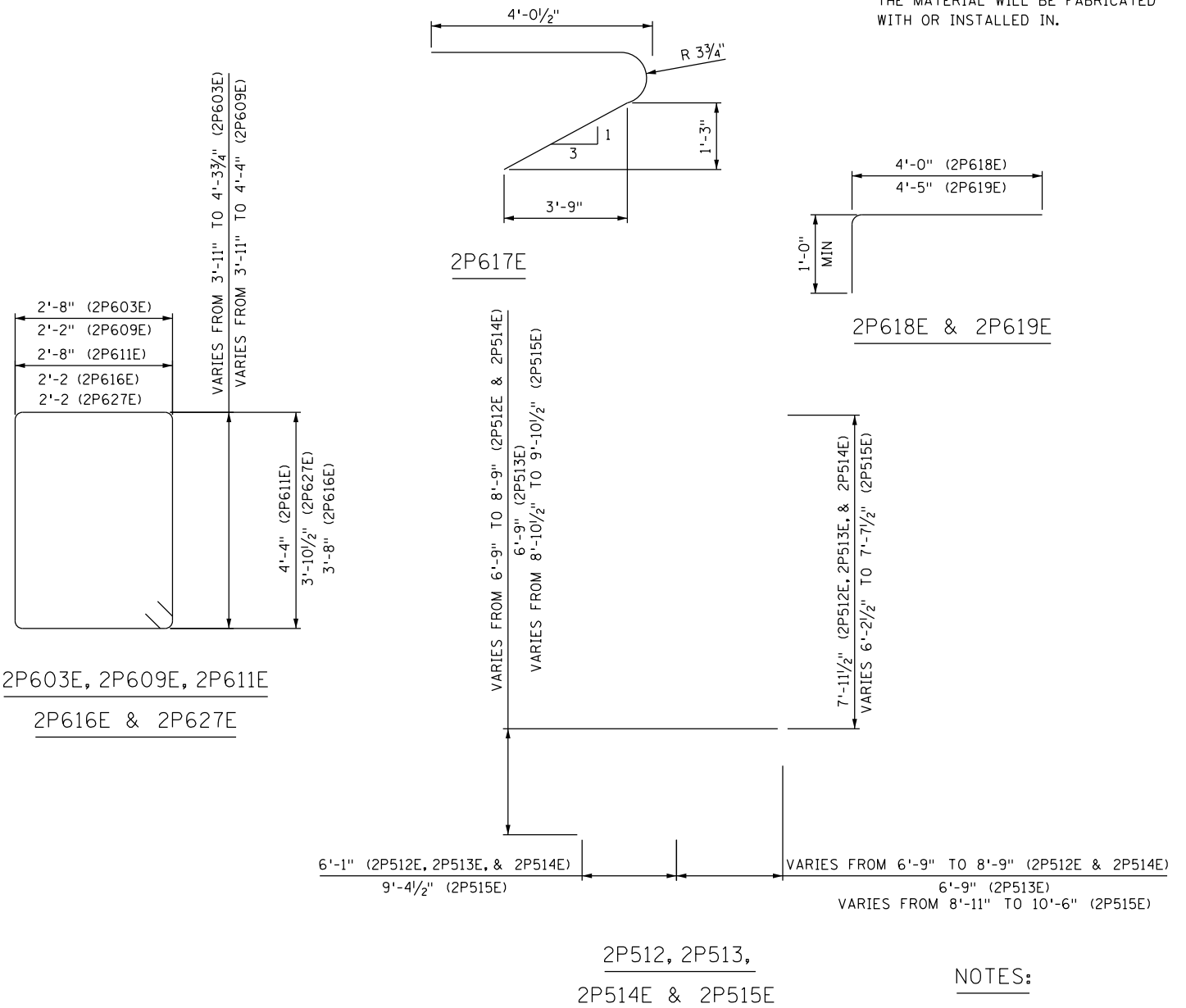
	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. 	DESIGN BY: FP CAD BY: FP CHECKED BY: EBR LAST REVISION: 04/15/2016	AS-BUILT - PIER 2 AND 3 MODIFICATION DETAILS (3 OF 4) C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	SHEET B104R5 B176
	ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER 47079 LICENSE NO.	8/14/2014 DATE		

BILL OF REINFORCEMENT PIER 2 AND 3 CAP BEAMS						
CAP BEAM TYPE	BAR MARK	NO	LENGTH	SHAPE	LOCATION	
TYPE 15	2P1001E	12	45'-0"	BENT	LONGITUDINAL (TOP AND BOTTOM)	
	2P502E	6	42'-2"	STR	SKIN REINFORCEMENT	
	2P603E	SER OF 28	2	14'-6"	BENT	CAP STIRRUPS
			TO 15'-3 1/2"			
	2P504E	102	2'-0"	STR	CONNECTION TO DECK	
	2P705E	16	3'-11"	STR	DOWELS	
	2P611E	1	15'-4"	BENT	CAP STIRRUP	
	2P1020E	12	43'-1"	BENT	LONGITUDINAL (TOP AND BOTTOM)	
	2P1021E	6	41'-2"	BENT	LONGITUDINAL (TOP AND BOTTOM)	
	2P504E	102	2'-0"	STR	CONNECTION TO DECK	
2P705E	12	3'-11"	STR	DOWELS		
TYPE 16	2P906E	5	44'-2"	BENT	LONGITUDINAL (TOP)	
	2P1007E	5	44'-6"	BENT	LONGITUDINAL (BOTTOM)	
	2P508E	6	41'-8"	STR	SKIN REINFORCEMENT	
	2P609E	SER OF 28	2	13'-6"	BENT	CAP STIRRUPS
			TO 14'-4"			
	2P1022E	5	42'-7"	BENT	LONGITUDINAL (BOTTOM)	
	2P1023E	3	40'-8"	BENT	LONGITUDINAL (BOTTOM)	
	2P924E	5	42'-5"	BENT	LONGITUDINAL (TOP)	
	2P925E	2	40'-8"	BENT	LONGITUDINAL (TOP)	
	2P627E	8	13'-5"	BENT	CLOSURE STIRRUP	
2P504E	92	2'-0"	STR	CAP CONNECTION TO DECK		
2P705E	36	3'-11"	STR	CAP DOWELS		
2P510E	11	10'-11"	BENT	LONGITUDINAL (CENTER BEAM)		
TYPE 17	2P512E	SER OF 3	2	24'-9 1/2"	BENT	LONGITUDINAL (TOP)
			TO 27'-8"			
	2P513E	2	24'-9 1/2"	BENT	SKIN REINFORCEMENT	
	2P514E	SER OF 6	2	24'-9 1/2"	BENT	SKIN REINFORCEMENT
			TO 27'-8"			
	2P515E	SER OF 6	2	29'-7"	BENT	LONGITUDINAL (OVERHANG, ALTERNATE BARS TOP AND BOTTOM)
			TO 33'-1"			
	2P616E	74	13'-0"	BENT	CAP STIRRUPS	
	2P617E	64	8'-9"	BENT	OVERHANG TRANSVERSE	
	2P618E	20	5'-0"	BENT	OVERHANG TRANSVERSE	
2P619E	44	5'-5"	BENT	OVERHANG TRANSVERSE		
2P726E	12	3'-10"	STR	HORIZONTAL DOWELS		



SUMMARY OF QUANTITIES FOR PIER 2 AND 3 CAP BEAMS			
ITEM	UNIT	QUANTITY	TOTAL
ANCHORAGES TYPE 2	EACH	288	
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 15	EACH	4	
STRUCTURAL CONCRETE ①	CU YD	18.1	21.0
REINFORCEMENT BARS (EPOXY COATED) ①	POUND	7,347	7,503
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 16	EACH	2	
STRUCTURAL CONCRETE ①	CU YD	17.4	
REINFORCEMENT BARS (EPOXY COATED) ①	POUND	6,858	6,734- 6254
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 17	EACH	4	
STRUCTURAL CONCRETE ①	CU YD	30.1	
REINFORCEMENT BARS (EPOXY COATED) ①	POUND	9,516	4,436
CIP RAPID SET CLOSURE POUR ①	CU YD	4.0	

① INCLUDED IN THE BID PRICE FOR THE PRECAST STRUCTURAL CAP BEAM THE MATERIAL WILL BE FABRICATED WITH OR INSTALLED IN.



NOTES:

1. BAR MARKS USED IN BILL OF REINFORCEMENT ARE PER BEAM AT PIER 2. PIER 3 SIMILAR.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

AM Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47079 8/14/2014
LICENSE NO. DATE

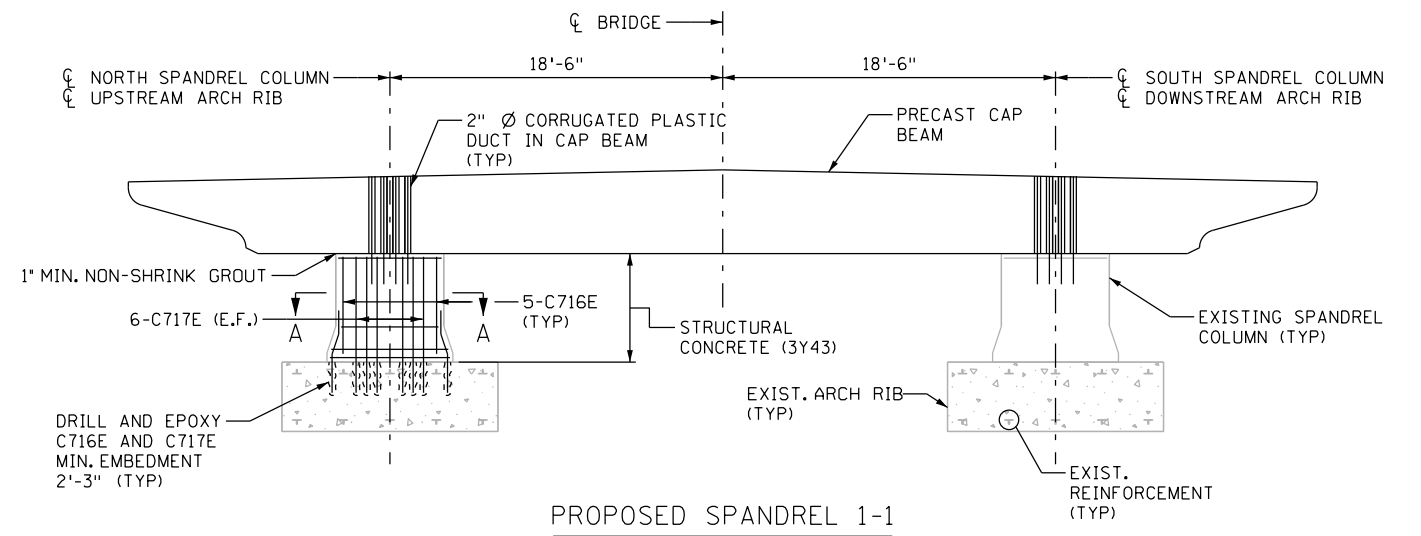
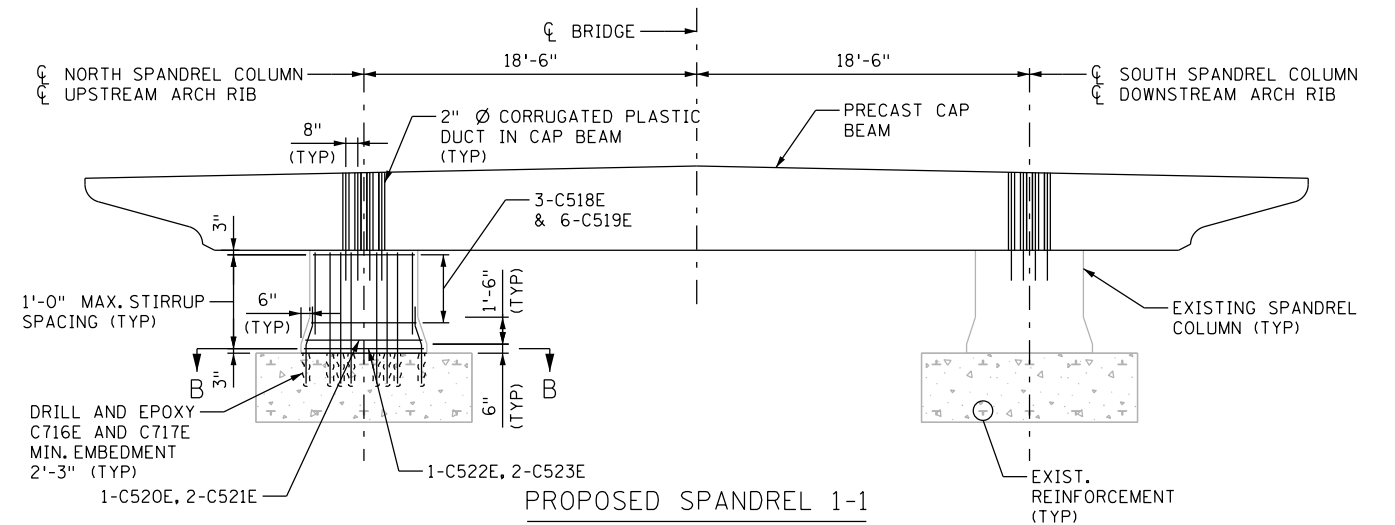
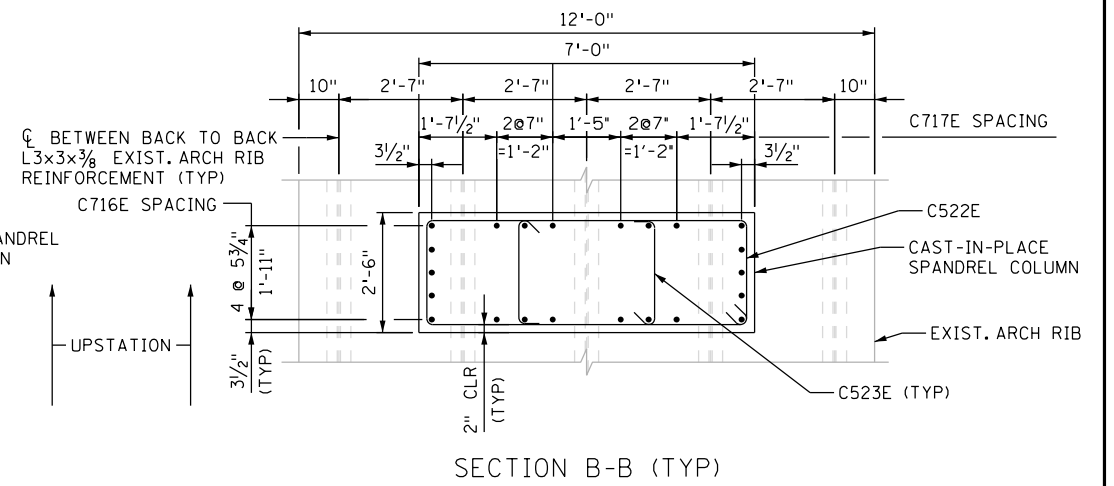
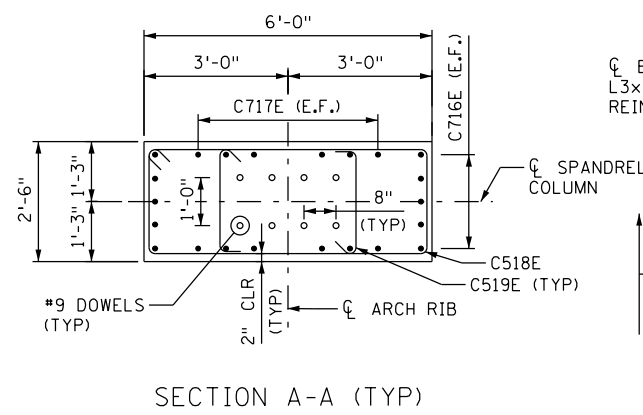
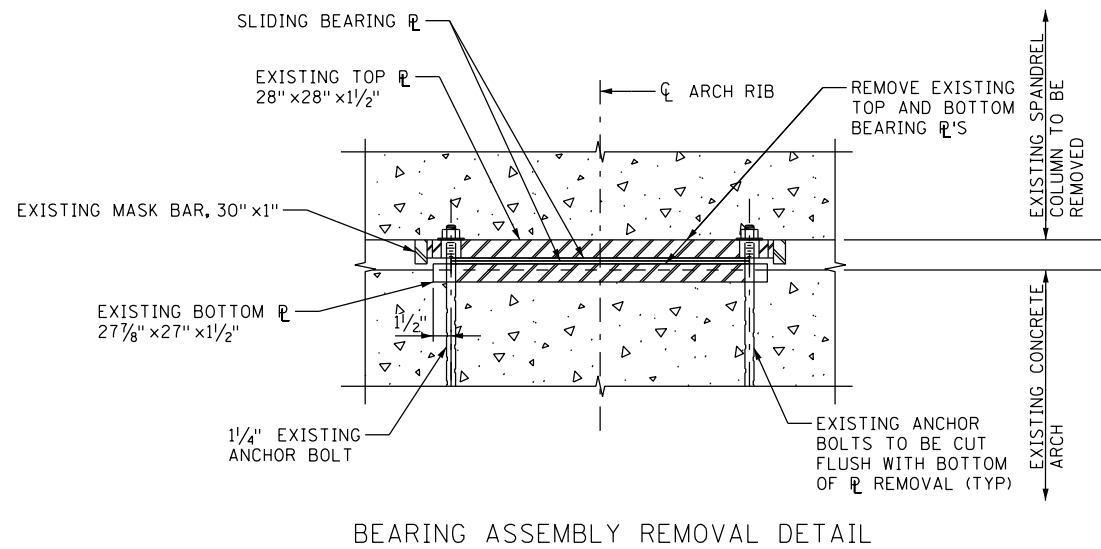
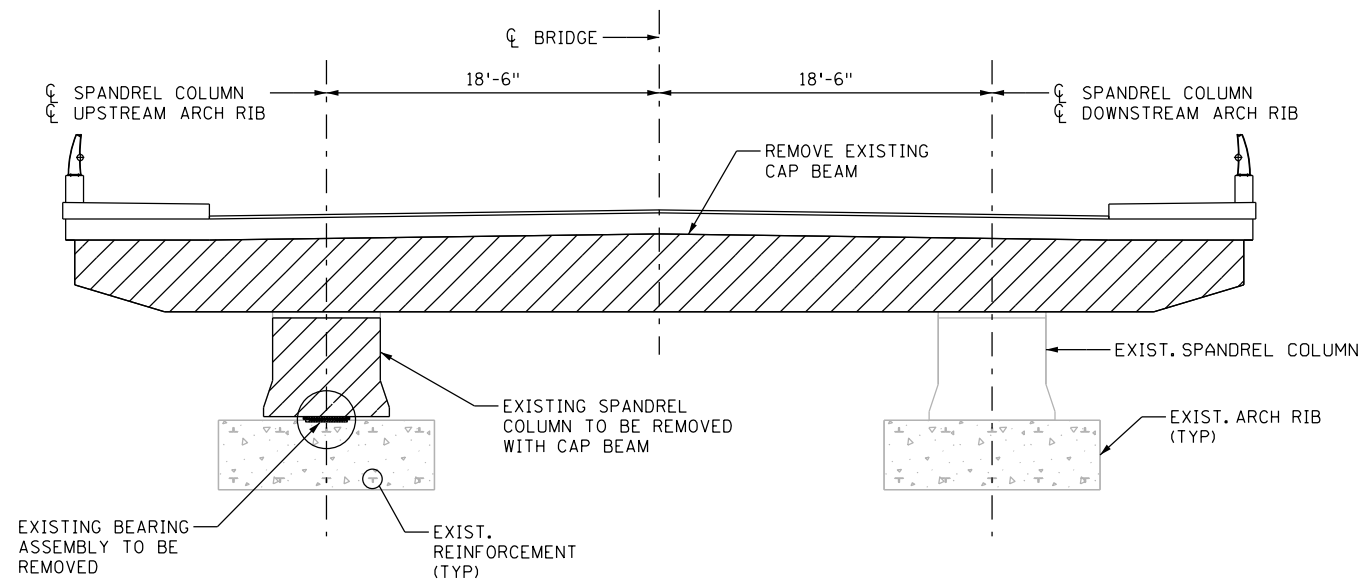
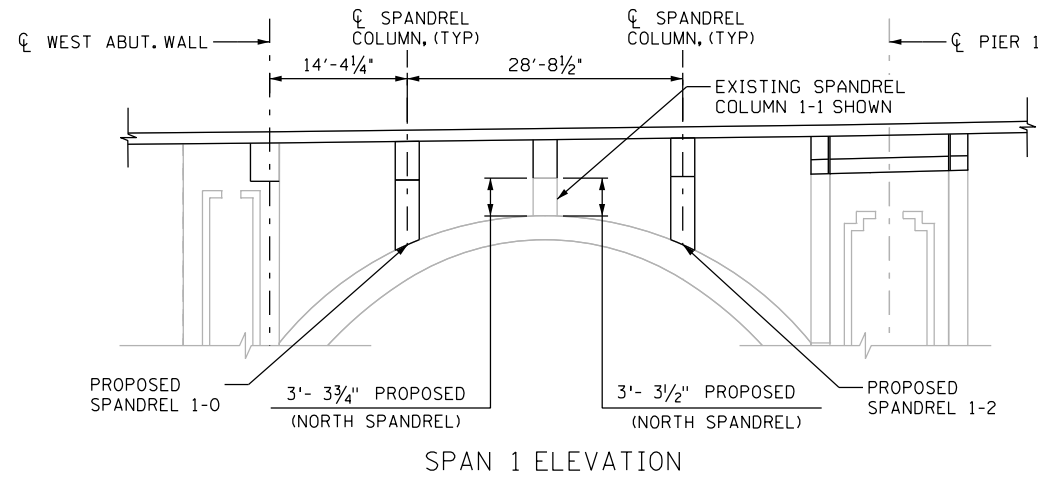
DESIGN BY: CB
CAD BY: PRE
CHECKED BY: FP
LAST REVISION: 04/15/2016

PIER 2 AND 3 MODIFICATION DETAILS (4 OF 4)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

B105R5
B176



NOTES:
1. CROSS SECTIONS ARE SHOWN LOOKING UPSTATION.



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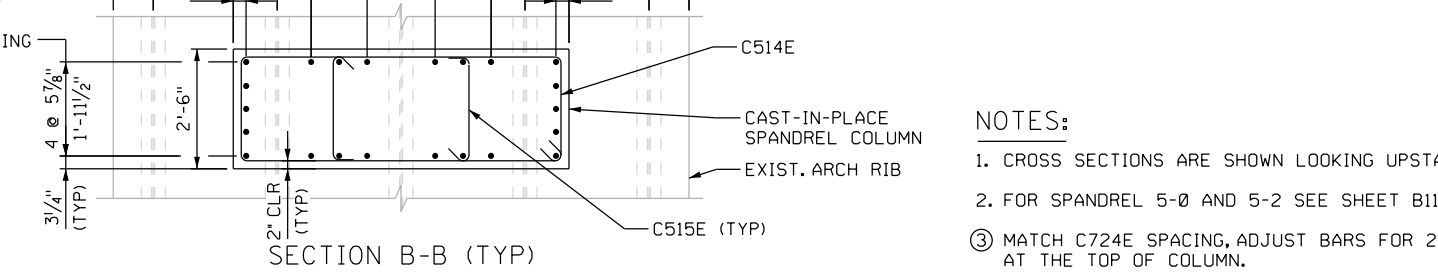
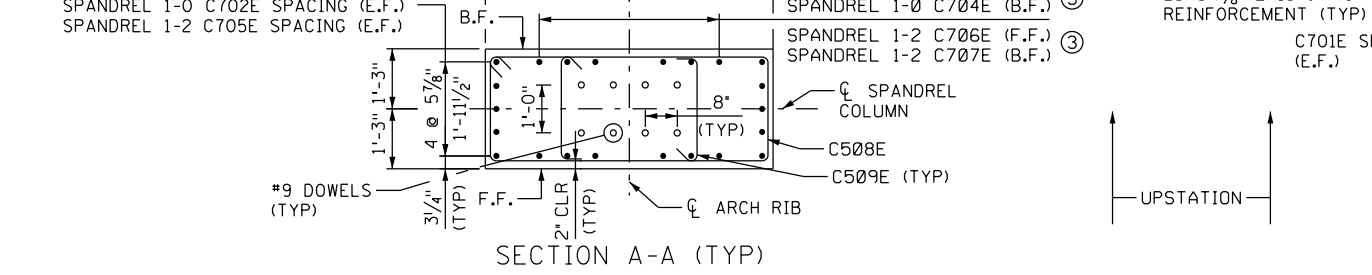
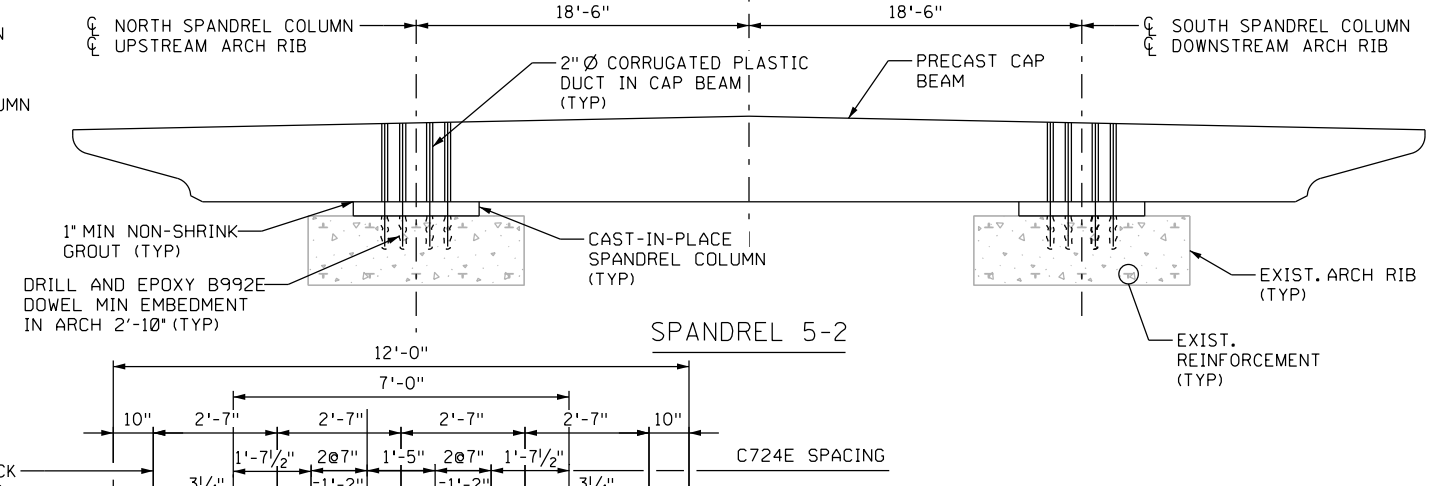
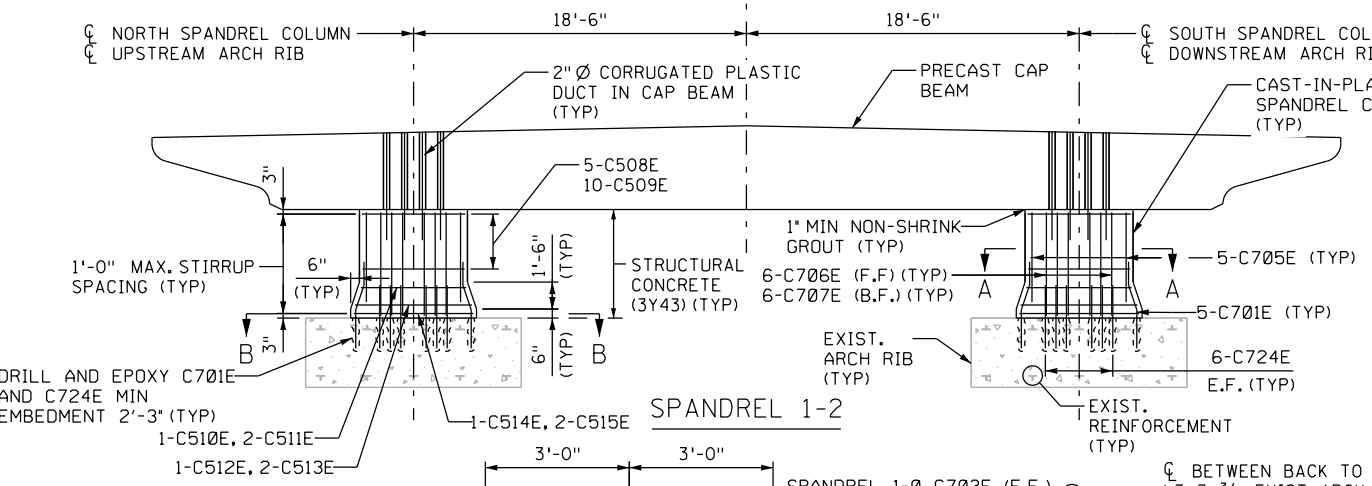
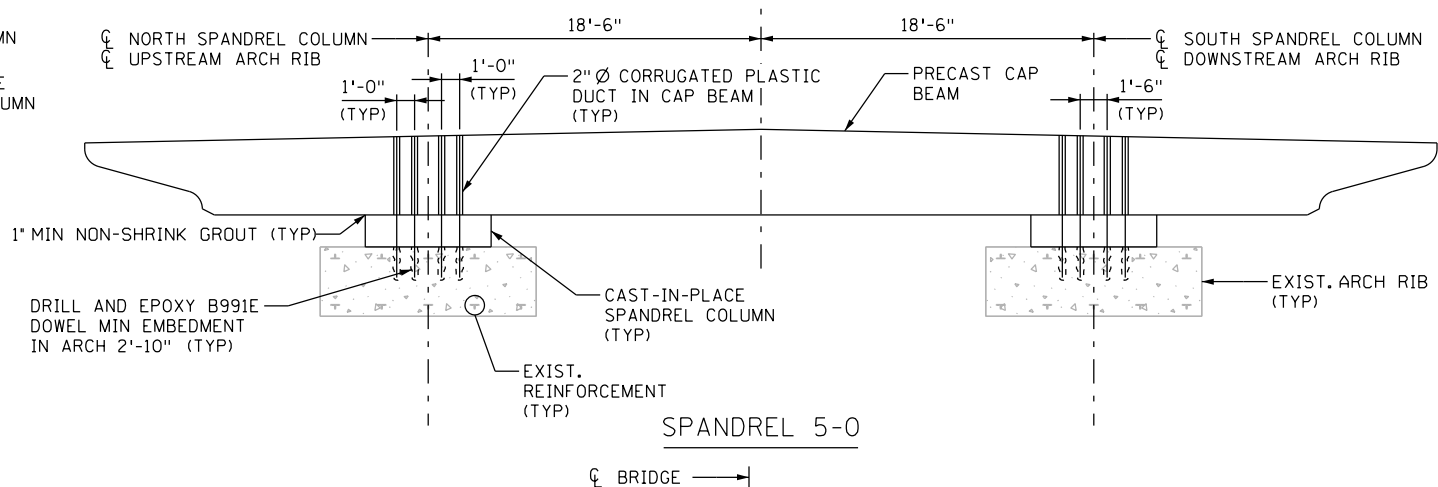
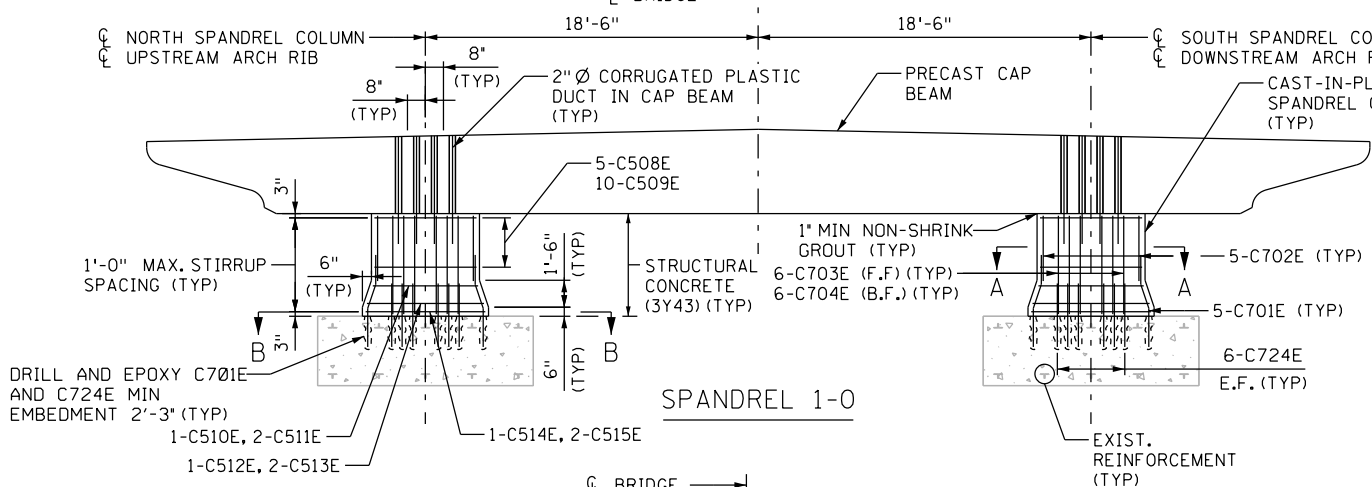
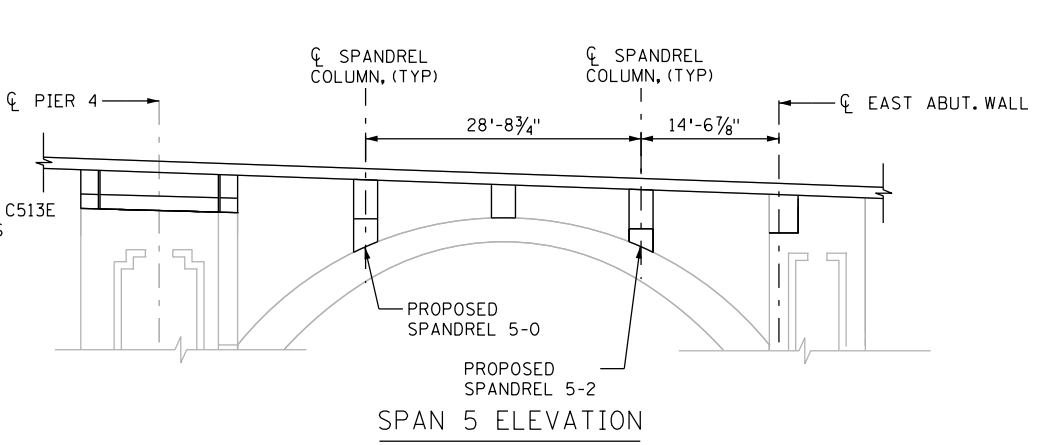
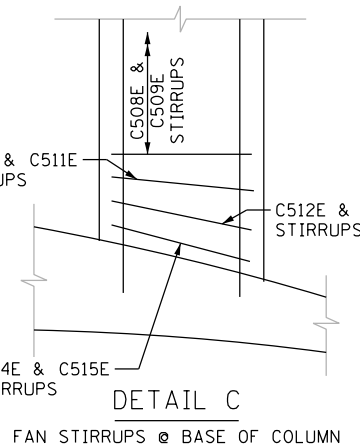
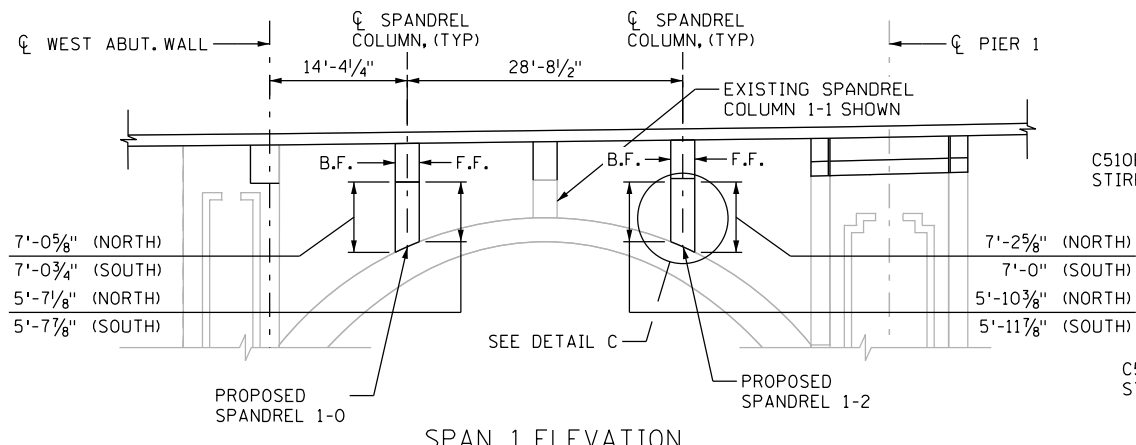
Aaron J. Nelson
AARON J. NELSON, PROFESSIONAL ENGINEER

43101 **8/14/2014**
LICENSE NO. DATE

DESIGN BY: AJN
CAD BY: RAM
CHECKED BY: AMK
LAST REVISION:

SPANDREL COLUMN DETAILS (1 OF 2)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B106
B176



NOTES:

- CROSS SECTIONS ARE SHOWN LOOKING UPSTATION.
- FOR SPANDREL 5-0 AND 5-2 SEE SHEET B115A.
- MATCH C724E SPACING, ADJUST BARS FOR 2" CLEAR AT THE TOP OF COLUMN.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Aaron J. Nelson

AARON J. NELSON, PROFESSIONAL ENGINEER

43101 LICENSE NO. 8/14/2014 DATE

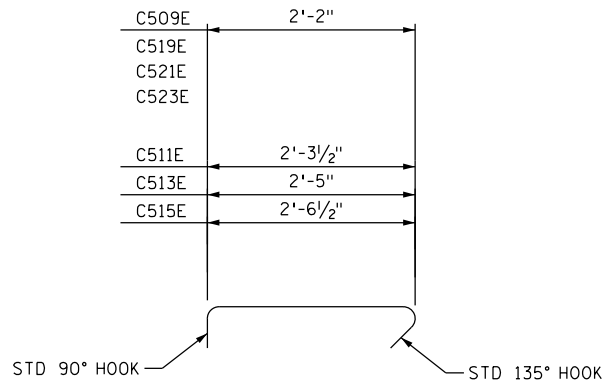
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SPANDREL COLUMN DETAILS (2 OF 2)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

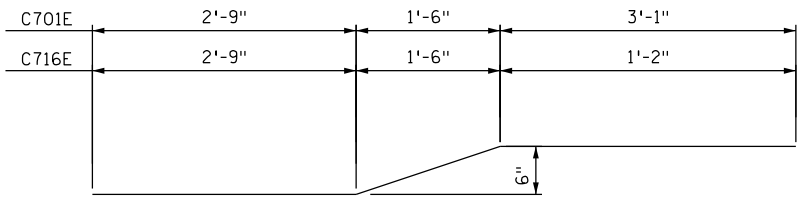
SHEET
 B107R2
 B176

BILL OF REINFORCEMENT SPANDREL COLUMN 1-0 (2 COLUMNS, 2 SETS REQUIRED)				
BAR MARK	NO	LENGTH	SHAPE	LOCATION
C701E	20	7'-5"	BENT	VERTICAL, INTO ARCH
C702E	20	6'-9"	STR	VERTICAL
C703E	12	5'-5"	STR	VERTICAL, FF
C704E	12	6'-10"	STR	VERTICAL, BF
C508E	10	16'-7"	BENT	STIRRUP
C509E	20	3'-1 1/2'	BENT	TIE
C510E	2	17'-4"	BENT	STIRRUP
C511E	4	3'-3"	BENT	TIE
C512E	2	18'-9"	BENT	STIRRUP
C513E	4	3'-4 1/2"	BENT	TIE
C514E	2	19'-4"	BENT	STIRRUP
C515E	4	3'-6"	BENT	TIE
C724E	24	5'-4"	STR	VERTICAL, INTO ARCH

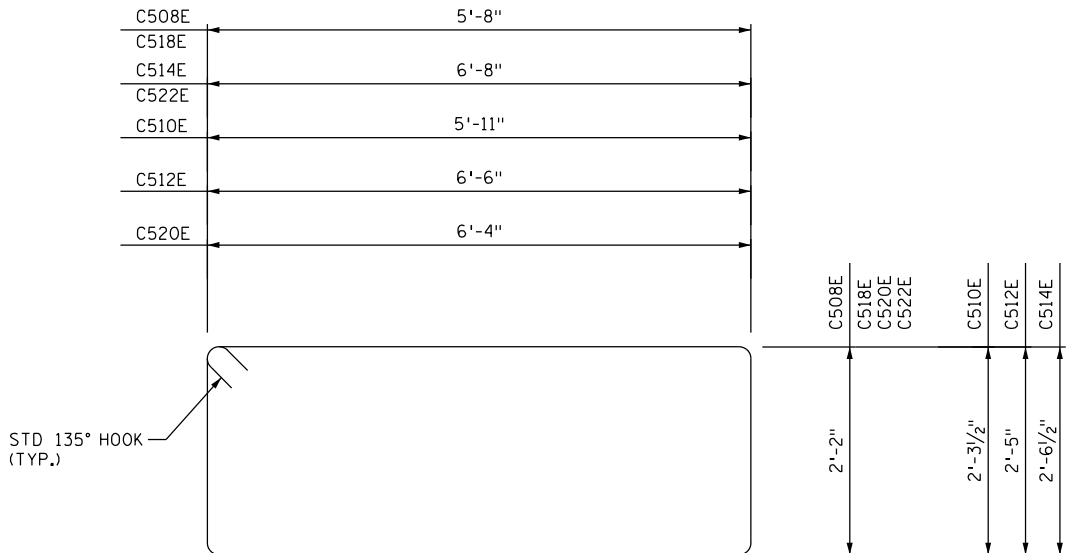


SUMMARY OF QUANTITIES SPANDREL COLUMNS		
ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE (3Y43)	CY	29
REINFORCEMENT BARS (EPOXY-COATED)	LBS	3460
ANCHORAGE TYPE 2	EA	110

BILL OF REINFORCEMENT SPANDREL COLUMN 1-2 (2 COLUMNS, 2 SETS REQUIRED)				
BAR MARK	NO	LENGTH	SHAPE	LOCATION
C701E	20	7'-5"	BENT	VERTICAL, INTO ARCH
C705E	20	6'-11"	STR	VERTICAL
C706E	12	6'-10"	STR	VERTICAL, FF
C707E	12	5'-8"	STR	VERTICAL, BF
C508E	10	16'-7"	BENT	STIRRUP
C509E	20	3'-1 1/2"	BENT	TIE
C510E	2	17'-4"	BENT	STIRRUP
C511E	4	3'-3"	BENT	TIE
C512E	2	18'-9"	BENT	STIRRUP
C513E	4	3'-4 1/2"	BENT	TIE
C514E	2	19'-4"	BENT	STIRRUP
C515E	4	3'-6"	BENT	TIE
C724E	24	5'-4"	STR	VERTICAL, INTO ARCH



BILL OF REINFORCEMENT SPANDREL COLUMN 1-1 N (1 COLUMN, 1 SET REQUIRED)				
BAR MARK	NO	LENGTH	SHAPE	LOCATION
C716E	10	5'-6"	BENT	VERTICAL, INTO ARCH
C717E	12	5'-5"	STR	VERTICAL, INTO ARCH
C518E	3	16'-7"	BENT	STIRRUP
C519E	6	3'-1 1/2"	BENT	TIE
C520E	1	17'-11"	BENT	STIRRUP
C521E	2	3'-1 1/2"	BENT	TIE
C522E	1	18'-7"	BENT	STIRRUP
C523E	2	3'-1 1/2"	BENT	TIE



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Aaron J. Nelson
AARON J. NELSON, PROFESSIONAL ENGINEER

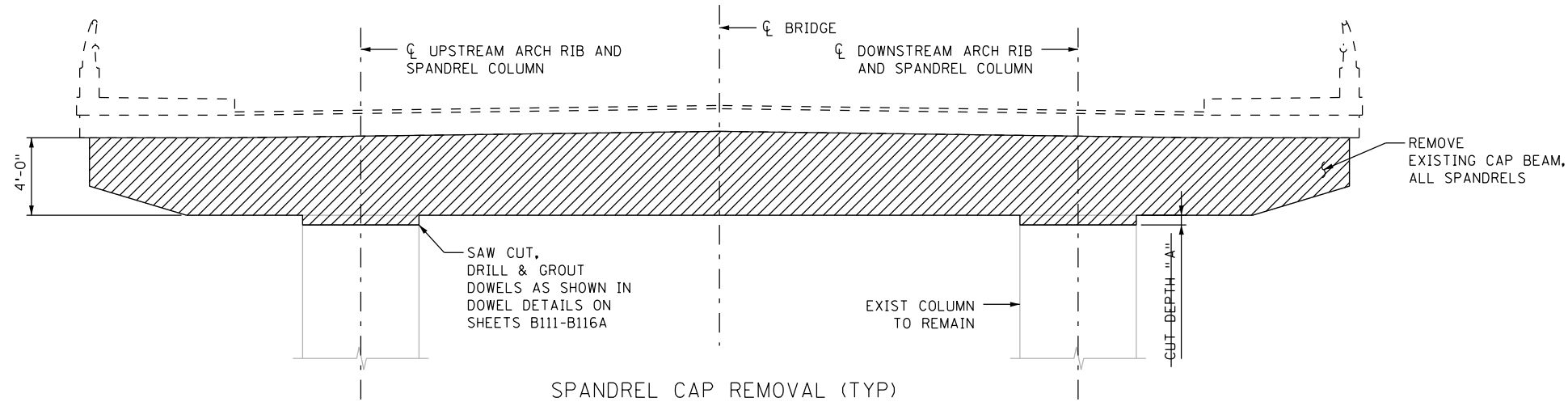
43101 8/14/2014
LICENSE NO. DATE

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CAD BY: RAM
CHECKED BY: AMK
LAST REVISION:

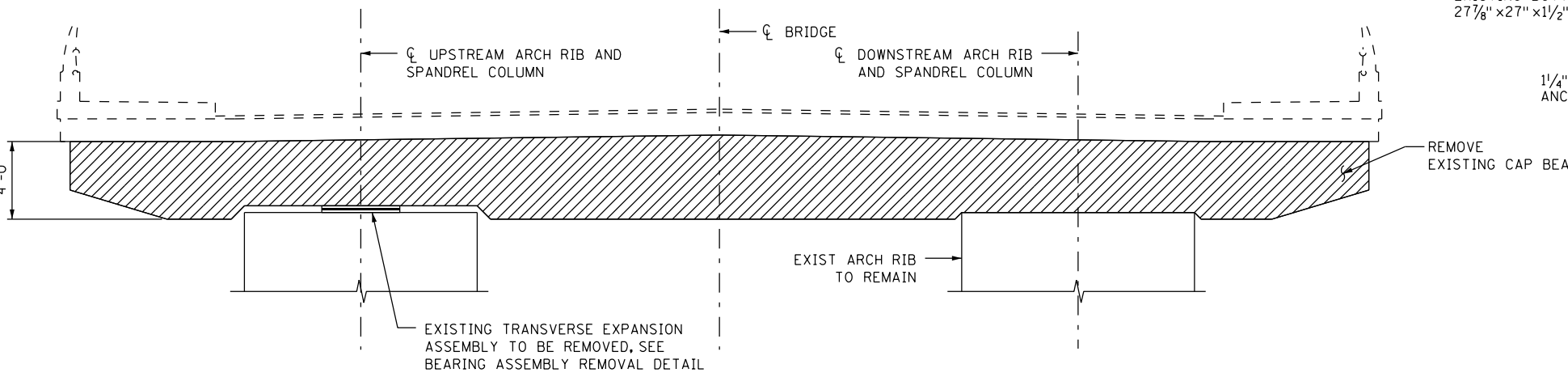
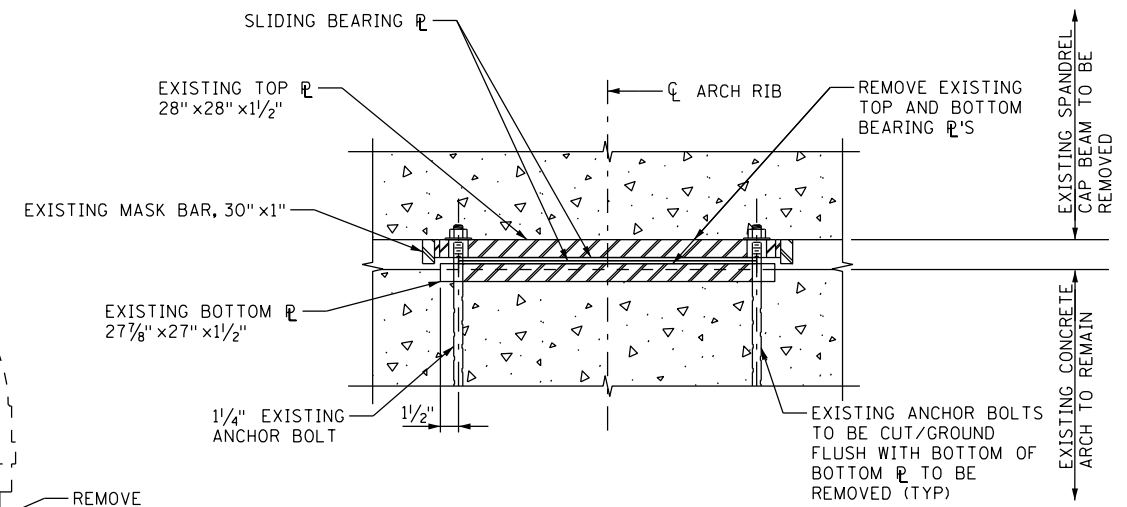
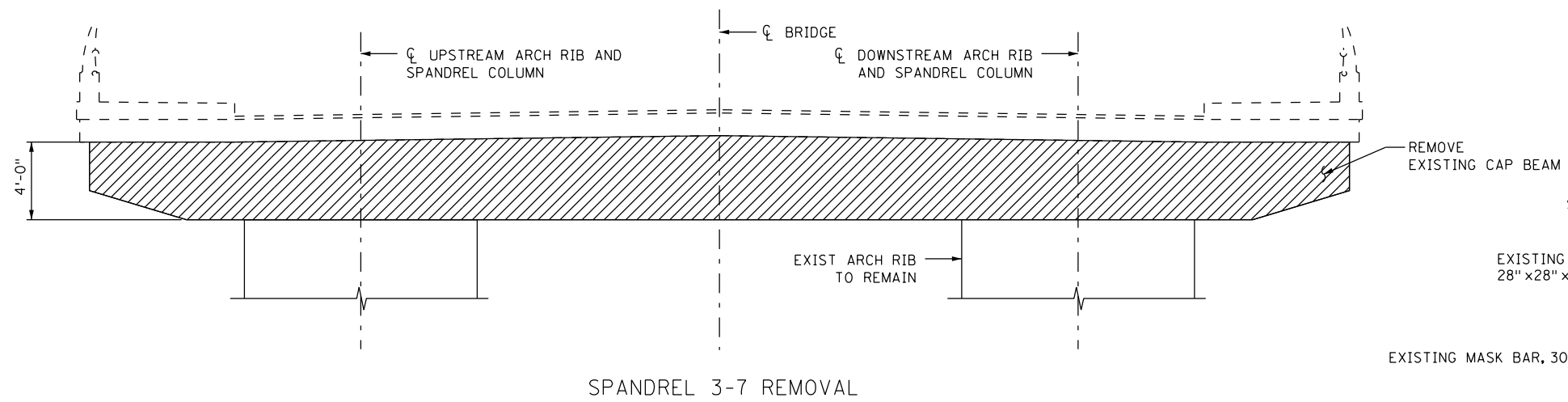
SPANDREL COLUMN BAR LIST AND QUANTITIES

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B108
B176



CAP BEAM REMOVAL	
SPANDREL	A
1-1 AND 3-6	7"
2-1, 2-2	8"
2-4 TO 2-6	
3-1 TO 3-3	
3-8	
3-10 TO 3-13	9"
4-2	
3-4, 4-3	10"
4-5, 4-6	
4-1	1'-6"
2-3, 3-5	
3-9	
4-4	1'-7"



FILL VOID IN TOP OF ARCH AFTER REMOVAL OF EXISTING BOTTOM BASE PLATE WITH GROUT FOR EVEN BEARING OF PROPOSED CAP BEAM/COLUMN ON ARCH RIB.

NOTES:

- SEE SHEET B110A FOR CUT OFF ELEVATIONS. CUT OFF ELEVATIONS ASSUME FULL DEAD LOAD OF THE DECK AND OVERLAY ACTING ON THE ARCH. TEMPERATURE ASSUMED TO BE AT 65°F. CUT OFF ELEVATIONS ASSUME A 1" GROUT BED BETWEEN THE CAP BEAM AND TOP OF SPANDREL COLUMN.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47097 **8/14/2014**
 LICENSE NO. DATE

DESIGN BY: AMK
CAD BY: RAM
CHECKED BY: AJN
LAST REVISION: 04/05/2016

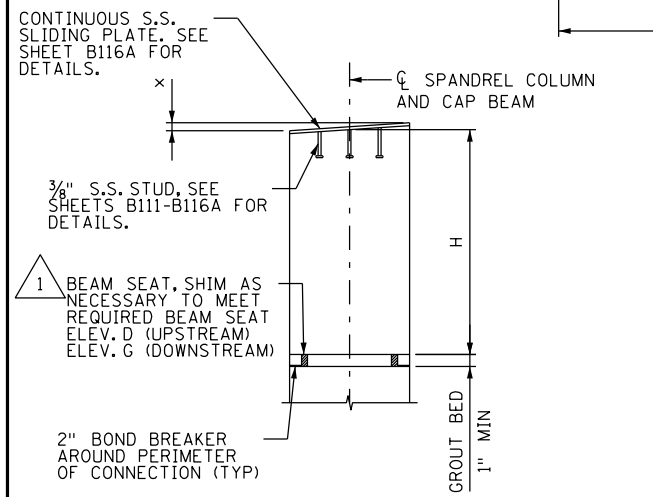
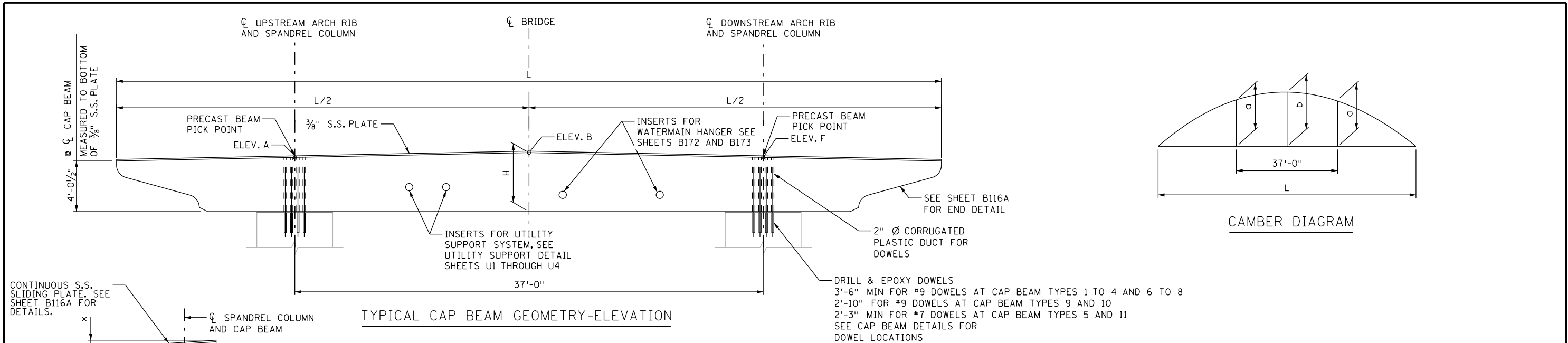
SPANDREL CAP BEAM REMOVAL

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BRIDGE 2441 S.P. 027-605-029

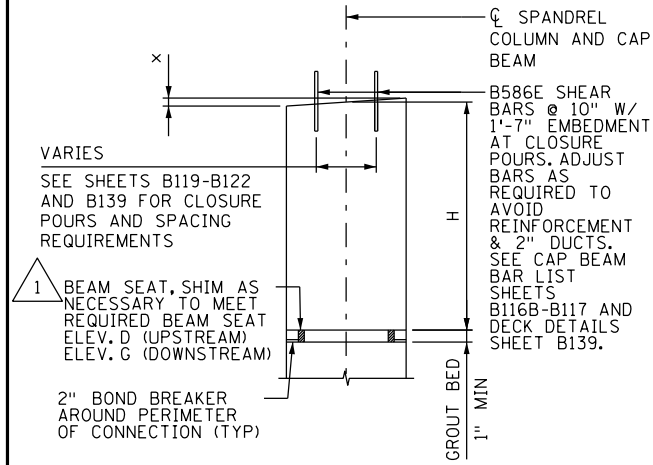
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B176



TYPICAL CAP BEAM GEOMETRY - SECTION AT SLIDING PLATE DECK-CAP BEAM CONNECTIONS, LOOKING UPSTREAM



CAP BEAM GEOMETRY - SECTION FOR 2-1, 2-6, 3-1, 3-2, 3-7, 3-12, 3-13, 4-1, AND 4-6 AT FIXED DECK-CAP BEAM CONNECTIONS, LOOKING UPSTREAM

TYPICAL CAP BEAM GEOMETRY-ELEVATION

SPANDREL CAP BEAM GEOMETRY							
SPANDREL	PRECAST BEAM TYPE	L	BEAM-DECK CONNECTION	H	x	CAMBER	
						a	b
1-0	1	68'-0"	EXP.	4'-8 5/8"	1/4"	1/8"	1/4"
1-1	2	67'-0"	EXP.	4'-8 1/2"	3/8"	1/8"	1/4"
1-2	3	66'-1"	EXP.	4'-8 3/8"	3/8"	1/8"	1/4"
2-1	4	65'-2"	FIX	4'-8 3/8"	5/8"	1/8"	3/8"
2-2	4	65'-2"	EXP.	4'-8 3/8"	3/4"	1/8"	1/2"
2-3	4	65'-2"	EXP.	4'-8 3/8"	3/4"	1/8"	1/2"
2-4	4	65'-2"	EXP.	4'-8 3/8"	3/4"	1/8"	1/2"
2-5	4	65'-2"	EXP.	4'-8 3/8"	3/4"	1/8"	1/2"
2-6	4	65'-2"	FIX	4'-8 3/8"	3/4"	1/8"	3/8"
3-1	4	65'-2"	FIX	4'-8 3/8"	3/4"	1/8"	3/8"
3-2	4	65'-2"	FIX	4'-8 3/8"	5/8"	1/8"	3/8"
3-3	4	65'-2"	EXP.	4'-8 3/8"	1/2"	1/8"	1/2"
3-4	4	65'-2"	EXP.	4'-8 3/8"	3/8"	1/8"	1/2"
3-5	4	65'-2"	EXP.	4'-8 3/8"	1/4"	1/4"	1/2"
3-6	4	65'-2"	EXP.	4'-8 3/8"	1/8"	1/4"	1/2"
3-7	5	65'-2"	FIX	4'-8 3/8"	0"	1/8"	1/4"
3-8	4	65'-2"	EXP.	4'-8 3/8"	-1/8"	1/4"	1/2"
3-9	4	65'-2"	EXP.	4'-8 3/8"	-3/8"	1/4"	1/2"
3-10	4	65'-2"	EXP.	4'-8 3/8"	-1/2"	1/8"	1/2"
3-11	4	65'-2"	EXP.	4'-8 3/8"	-5/8"	1/8"	1/2"
3-12	4	65'-2"	FIX	4'-8 3/8"	-3/4"	1/8"	3/8"
3-13	4	65'-2"	FIX	4'-8 3/8"	-7/8"	1/8"	3/8"
4-1	4	65'-2"	FIX	4'-8 3/8"	-1"	1/8"	3/8"
4-2	6	69'-4"	EXP.	4'-8 3/8"	-1"	0"	1/4"
4-3	7	73'-4"	EXP.	4'-9 1/4"	-1"	-1/4"	-1/8"
4-4	8	75'-2"	EXP.	4'-9 1/2"	-1"	-3/8"	-3/8"
4-5	8	75'-2"	EXP.	4'-9 1/2"	-1"	-1/2"	-3/8"
4-6	8	75'-2"	FIX	4'-9 1/2"	-1"	-3/8"	-1/4"
5-0	9	75'-2"	EXP.	4'-9 1/2"	-1"	-1/4"	-1/4"
5-1	11	75'-2"	EXP.	4'-9 1/2"	-1"	-1/4"	-1/4"
5-2 S	10	75'-2"	EXP.	4'-9 1/2"	-1"	-1/4"	-1/4"
5-2 N	10	75'-2"	EXP.	4'-9 1/2"	-1"	-1/4"	-1/4"

5-2S INDICATES SOUTHERN SPANDREL COLUMN
5-2N INDICATES NORTHERN SPANDREL COLUMN

x = REQUIRED FOR ROADWAY PROFILE GRADE. A NEGATIVE NUMBER INDICATES SECTION SHOULD BE MIRRORED ABOUT CL CAP BEAM.

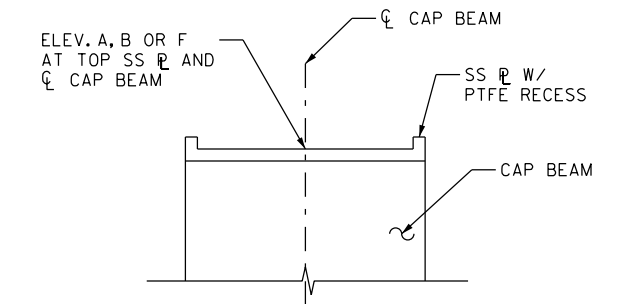
- NOTES:
- CALCULATED SETTING ELEVATIONS AND DEFLECTOINS ARE BASED ON THE SUGGESTED SUPERSTRUCTURE CONSTRUCTION SEQUENCE. THE CONTRACTOR SHALL VERIFY THROUGH ANALYSIS THE REQUIRED SETTING DIMENSIONS FOR ANY DEVIATIONS FROM THE SUGGESTED SEQUENCE.
 - ALL ELEVATIONS ARE IN FEET.
 - ALL DIMENSIONS AND ELEVATIONS TAKEN AT CL SPANDREL.
 - PICK POINTS SHOWN ARE FOR ERECTION PURPOSES ONLY. ALTERNATE LIFT LOCATIONS AND CONFIGURATIONS MAY BE PROPOSED BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT LIFT CONFIGURATION DESIGN AND CALCULATIONS TO THE ENGINEER FOR ACCEPTANCE.
 - CAP BEAMS SHALL NOT BE LIFTED UNTIL DESIGN COMPRESSIVE STRENGTH IS REACHED. HIGHER STRENGTH MIX DESIGN TO ALLOW EARLIER LIFTING MAY BE PROPOSED BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT MIX DESIGN TO THE ENGINEER FOR ACCEPTANCE. CONTRACTOR MAY PLACE CAP BEAM PRIOR TO DRILLING COLUMNS FOR DOWELS. PLASTIC DUCTS IN CAP BEAM MAY BE USED AS TEMPLATE FOR DRILLING. USE FLOWABLE GROUT TO FILL GROUT BED AND PLASTIC DUCT. SEE SPECIAL PROVISIONS.
 - THE CONTRACTOR SHALL SUBMIT LIFTING ANCHOR DETAILS FOR ACCEPTANCE BY THE ENGINEER PRIOR TO USE. THE TOP OF THE LIFTING ANCHOR SHALL BE RECESSED 1/2" MINIMUM FROM THE SURFACE OF THE BEAM. LIFTING ANCHORS SHALL BE HOT DIPPED GALVANIZED.
 - CONTRACTOR IS ALERTED THAT PROPER TOP OF CAP BEAM ELEVATION MUST BE ACHIEVED TO ENSURE PROPER SLIDING OF THE DECK AT SLIDING JOINT LOCATIONS.
 - SEE SHEET B110A FOR CUT OFF AND SETTING ELEVATIONS.

- 1 KOROLATH SHIMS. SEE RFI 51 FOR DETAILS.
- 2 SEE PRECAST CAP BEAM SHOP DRAWING 129 FOR DETAILS.
- 3 SEE SHEET B118A FOR AS-BUILT CONNECTION DETAILS.

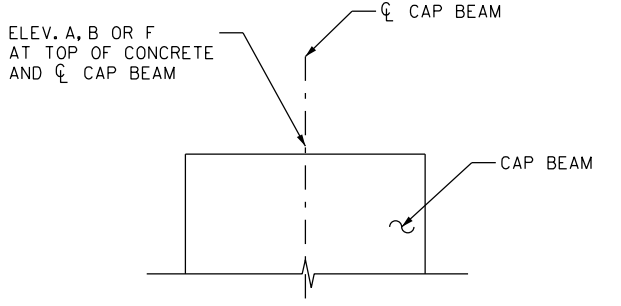
	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER	47097 LICENSE NO.	8/14/2014 DATE	DESIGN BY: AMK CAD BY: RAM CHECKED BY: AJN LAST REVISION: 04/05/2016	AS-BUILT - SPANDREL CAP BEAM GEOMETRY	SHEET B110R5 B176
	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029					

SPANDREL CAP BEAM PLACEMENT DATA

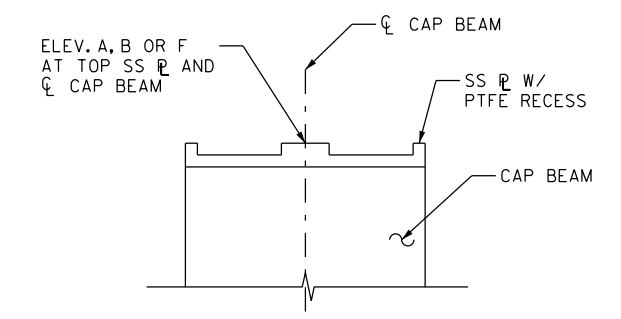
UPSTREAM ARCH RIB							AT \bar{C} BRIDGE			DOWNSTREAM ARCH RIB						VERTICAL MOVEMENT FOR 10°F UNIFORM THERMAL CHANGE FT	
SPANDREL	AS BUILT \bar{C} STATION	CUT OFF ELEVATION	SETTING ELEVATIONS				SPANDREL	STATION AT \bar{C} BRIDGE	SETTING ELEVATION B	SPANDREL	AS BUILT \bar{C} STATION	CUT OFF ELEVATION	SETTING ELEVATIONS				
			A	C	D	E							F	C	G		E
1-0	10+14.30	816.91	821.38		817.00		1-0	10+14.30	821.77	1-0	10+14.30	816.91	821.38		817.00		0.003
1-1	10+28.71	817.06	821.52		817.15		1-1	10+28.73	821.90	1-1	10+28.75	817.06	821.52		817.15		0.006
1-2	10+43.06	817.24	821.68		817.32		1-2	10+43.06	822.06	1-2	10+43.06	817.24	821.68		817.32		0.003
2-1	11+00.69	818.12	822.55		818.21		2-1	11+00.73	822.94	2-1	11+00.77	818.12	822.55		818.21		0.007
2-2	11+28.90	818.77	823.22		818.87		2-2	11+29.03	823.62	2-2	11+29.16	818.78	823.23		818.87		0.012
2-3	11+57.82	818.65	823.12		818.75		2-3	11+57.83	823.51	2-3	11+57.83	818.65	823.12		818.75		0.015
2-4	11+86.37	820.16	824.63		820.26		2-4	11+86.47	825.02	2-4	11+86.57	820.17	824.63		820.27		0.013
2-5	12+15.30	820.86	825.31		820.95		2-5	12+15.28	825.71	2-5	12+15.25	820.86	825.31		820.95		0.010
2-6	12+43.84	821.51	825.93		821.59		2-6	12+43.94	826.32	2-6	12+44.03	821.51	825.93		821.60		0.006
3-1	13+34.28	823.68	828.10		823.76		3-1	13+34.24	828.49	3-1	13+34.20	823.68	828.10		823.76		0.008
3-2	13+63.09	824.37	828.80		824.46		3-2	13+63.00	829.18	3-2	13+62.92	824.36	828.79		824.45		0.013
3-3	13+91.72	824.99	829.45		825.08		3-3	13+91.70	829.84	3-3	13+91.68	824.99	829.45		825.08		0.019
3-4	14+20.55	825.44	829.90		825.55		3-4	14+20.56	830.30	3-4	14+20.58	825.44	829.90		825.55		0.026
3-5	14+49.13	824.92	829.41		825.03		3-5	14+49.20	829.80	3-5	14+49.26	824.92	829.41		825.04		0.033
3-6	14+78.03	825.93	830.42		826.06		3-6	14+77.99	830.81	3-6	14+77.94	825.93	830.42		826.06		0.038
3-7	15+06.75	826.59	830.38	*	826.73		3-7	15+06.69	830.76	3-7	15+06.63	826.59	830.38	*	826.74		0.039
3-8	15+35.45	825.85	830.34		825.98		3-8	15+35.39	830.74	3-8	15+35.34	825.85	830.34		825.99		0.038
3-9	15+64.19	824.77	829.27		824.89		3-9	15+64.17	829.67	3-9	15+64.15	824.77	829.27		824.89		0.033
3-10	15+92.88	825.22	829.69		825.32		3-10	15+92.84	830.09	3-10	15+92.80	825.22	829.69		825.32		0.026
3-11	16+21.67	824.70	829.15		824.80		3-11	16+21.60	829.55	3-11	16+21.54	824.70	829.16		824.80		0.019
3-12	16+50.36	824.00	828.43		824.09		3-12	16+50.30	828.82	3-12	16+50.25	824.00	828.43		824.10		0.013
3-13	16+79.13	823.20	827.62		823.28		3-13	16+79.19	828.01	3-13	16+79.26	823.19	827.62		823.28		0.008
4-1	17+69.32	820.10	824.52		820.19		4-1	17+69.30	824.91	4-1	17+69.29	820.10	824.52		820.19		0.006
4-2	17+98.14	819.09	823.58		819.19		4-2	17+98.15	823.96	4-2	17+98.17	819.09	823.58		819.19		0.009
4-3	18+26.76	818.05	822.58		818.15		4-3	18+26.75	822.94	4-3	18+26.75	818.05	822.59		818.15		0.013
4-4	18+55.33	816.19	820.76		816.29		4-4	18+55.39	821.11	4-4	18+55.46	816.19	820.76		816.29		0.015
4-5	18+84.20	816.01	820.56		816.10		4-5	18+84.13	820.91	4-5	18+84.06	816.02	820.57		816.11		0.012
4-6	19+12.81	814.97	819.50		815.07		4-6	19+12.81	819.86	4-6	19+12.82	814.97	819.50		815.07		0.007
5-0	19+70.24	813.01	817.54		813.10		5-0	19+70.24	817.90	5-0	19+70.24	813.01	817.54		813.10		0.003
5-1	19+84.52	813.72	817.05	*	813.81		5-1	19+84.52	817.41	5-1	19+84.52	813.72	817.05	*	813.81		0.006
5-2	19+98.97	812.01	816.54		812.09		5-2	19+98.97	816.90	5-2	19+98.97	812.01	816.54		812.09		0.003



EXPANSION \bar{C} ELEVATION LOCATION (3)
FOR SPANDRELS 1-0 TO 1-2, 2-2, 2-4, 2-5, 3-3, 3-4, 3-6, 3-8, 3-10, 3-11, 4-2, 4-3, 4-5 AND 5-0 TO 5-2



FIXED JOINT ELEVATION LOCATION (3)
FOR SPANDRELS 2-1, 2-6, 3-1, 3-2, 3-7, 3-12, 3-13, 4-1 AND 4-6



EXPANSION \bar{C} ELEVATION LOCATION (3)
FOR SPANDRELS 2-3, 3-5, 3-9 AND 4-4

- A & F= REQUIRED BEAM ELEVATION AT \bar{C} ARCH RIB WORKING LINES PRIOR TO DECK PANEL PLACEMENT.
- B= REQUIRED BEAM ELEVATION AT \bar{C} BRIDGE WORKING LINES PRIOR TO DECK PANEL PLACEMENT.
- C= FIELD MEASURED TOP OF COLUMN ELEVATION PRIOR TO BEAM PLACEMENT.
* MEASURE TOP OF ARCH RIB ELEVATION AT TRANSVERSE CENTERLINE.
- D & G= REQUIRED BEAM SEAT ELEVATION PRIOR TO BEAM PLACEMENT
- E= REQUIRED GROUT BED THICKNESS = D OR G - C FIELD CALCULATE

NOTES:

1. SEE NOTES ON SHEET B110
2. SPANDREL CAP \bar{C} STATIONS AND SETTING ELEVATION INFORMATION REVISED TO MATCH GEOMETRY INFORMATION PROVIDED BY CONTRACTOR WITH RFI 21.
- (3) LONGITUDINAL PROFILE GRADE AT TOP OF CAP BEAM NOT SHOWN FOR CLARITY, DETAILS NOT TO SCALE.
4. LISTED ELEVATIONS ARE COORELATED TO THE 65°F DESIGN TEMPERATURE.
5. VERTICAL CORRECTION DUE TO THERMAL MOVEMENTS ARE BASED ON THEORETICAL ARCH RESPONSE TO UNIFORM TEMPERATURE CHANGES. APPLICATION OF THE TEMPERATURE CORRECTION IS BASED ON THE PROCEEDING THREE DAY AVERAGE TEMPERATURE.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

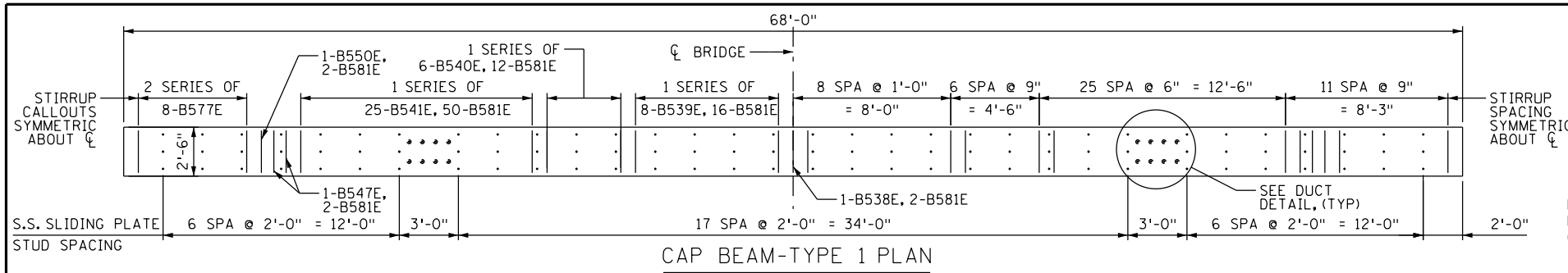
47097 04/05/2016
LICENSE NO. DATE

DESIGN BY: AMK
CAD BY: MGR
CHECKED BY: TFK
LAST REVISION: 5/14/2016

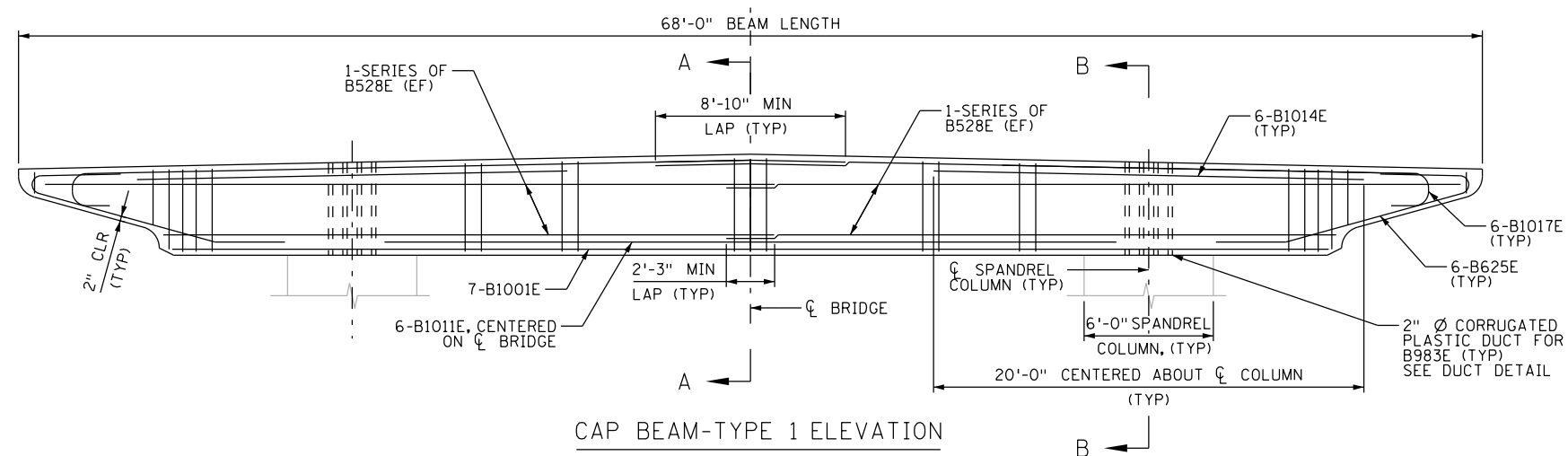
SPANDREL CAP BEAM PLACEMENT DATA

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BRIDGE 2441 S.P. 027-605-029

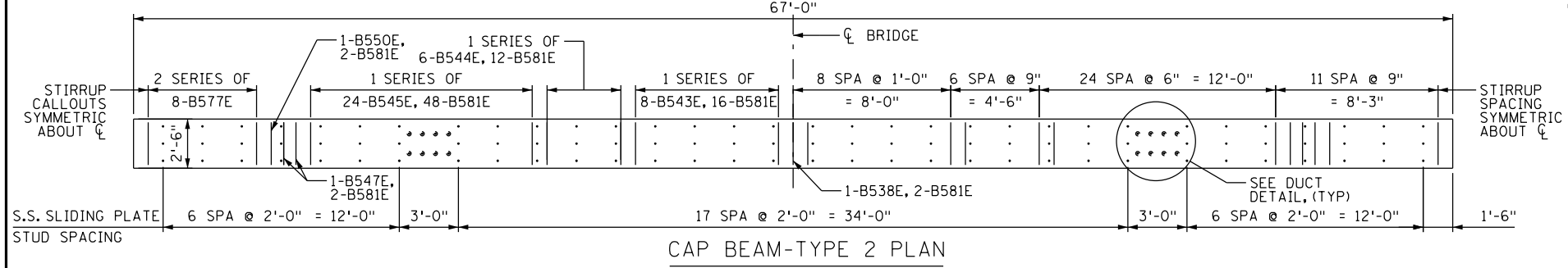
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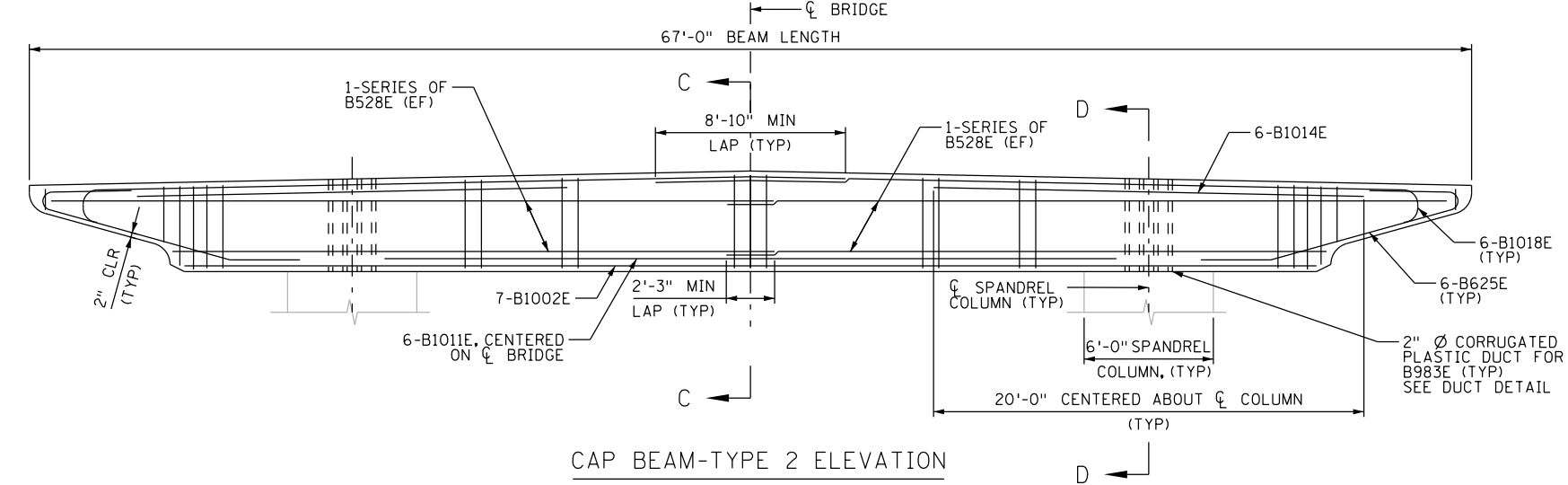
CAP BEAM-TYPE 1 PLAN



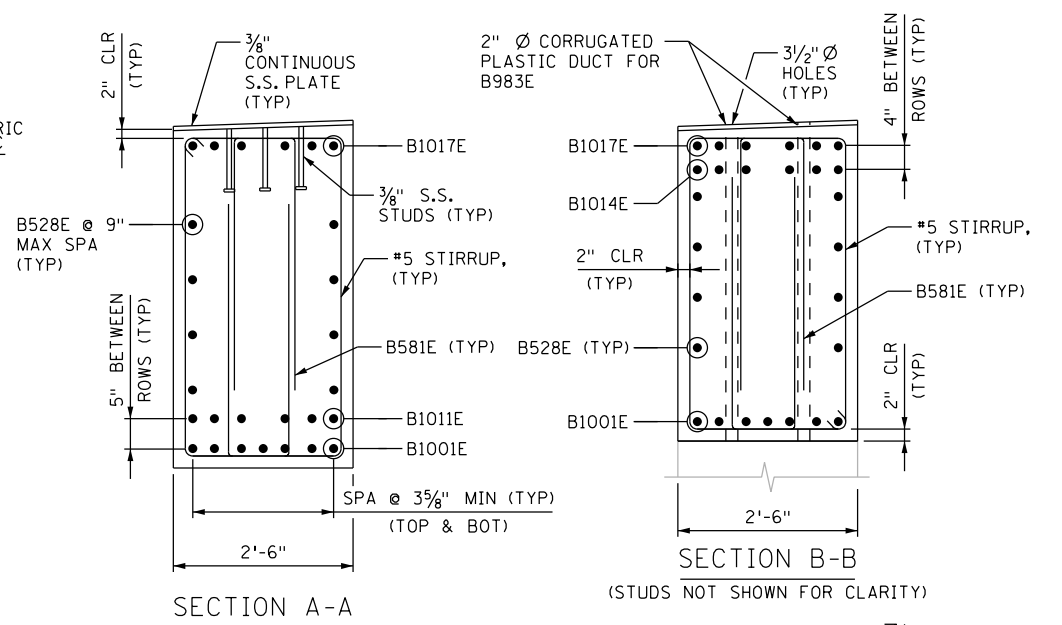
CAP BEAM-TYPE 1 ELEVATION



CAP BEAM-TYPE 2 PLAN

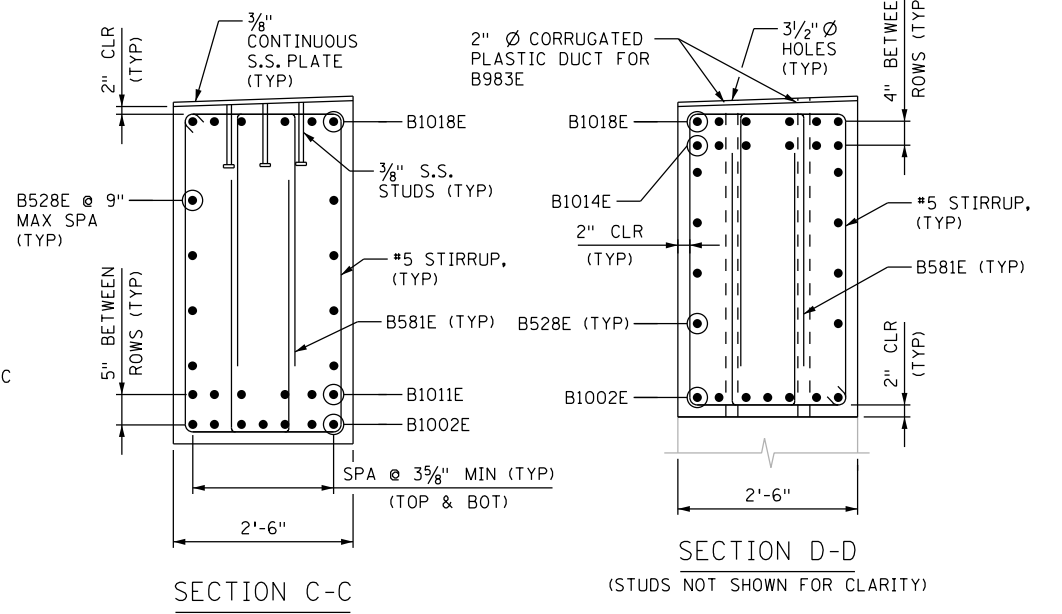


CAP BEAM-TYPE 2 ELEVATION



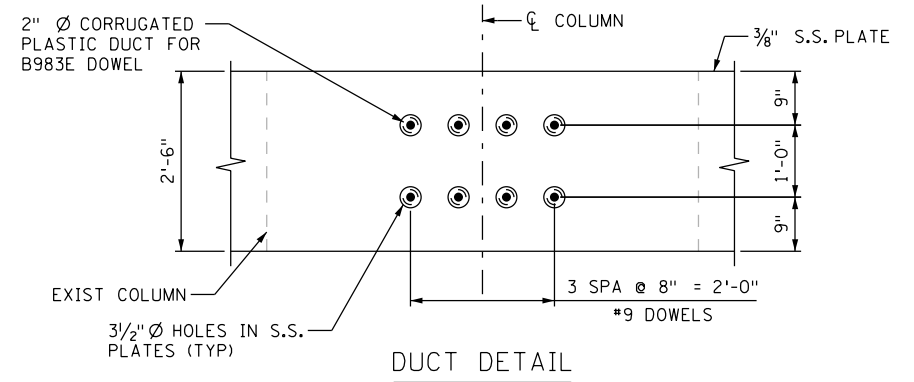
SECTION A-A

SECTION B-B



SECTION C-C

SECTION D-D



DUCT DETAIL

NOTE:
ADJUST STIRRUPS AND LONGITUDINAL BARS TO AVOID 2" DUCTS AND S.S. PLATE STUDS.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

AM Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

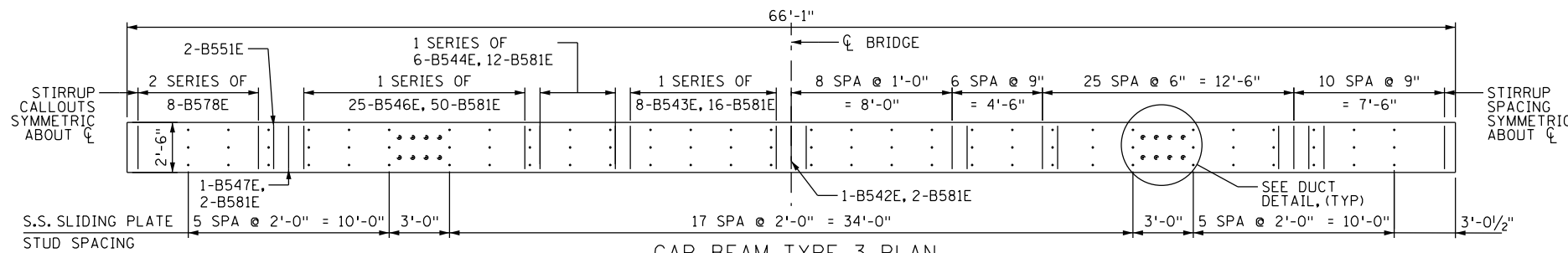
47097 8/14/2014
LICENSE NO. DATE

DESIGN BY: AMK
CAD BY: PRE
CHECKED BY: AJN
LAST REVISION: 10/02/2015

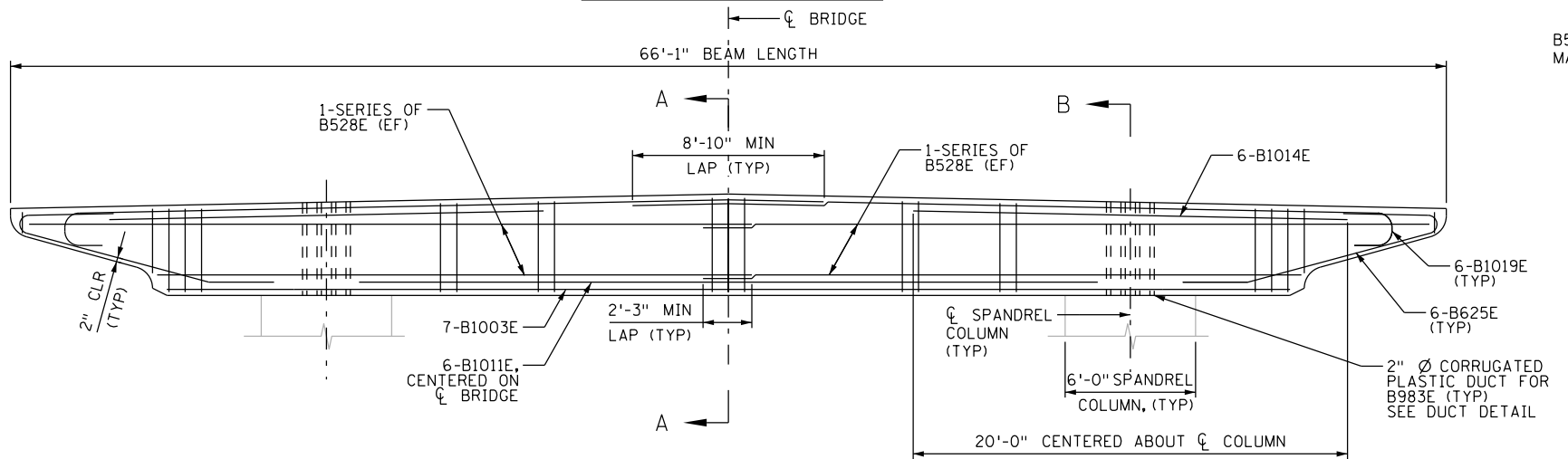
SPANDREL CAP BEAM DETAILS (1 OF 7)

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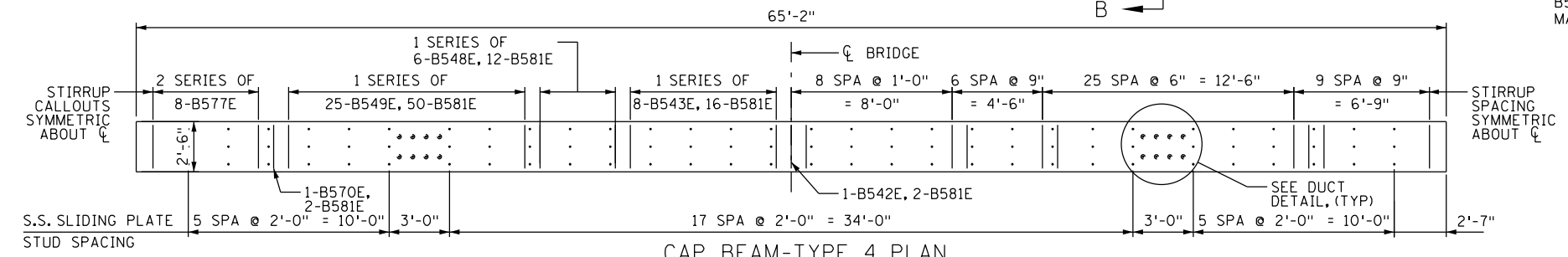
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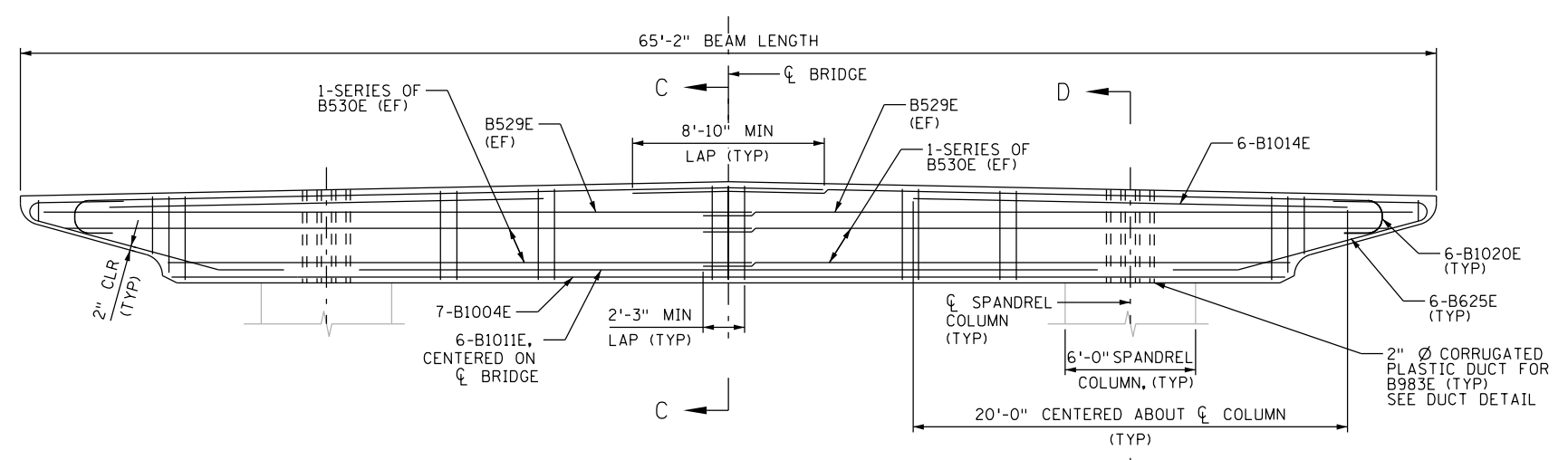
CAP BEAM-TYPE 3 PLAN



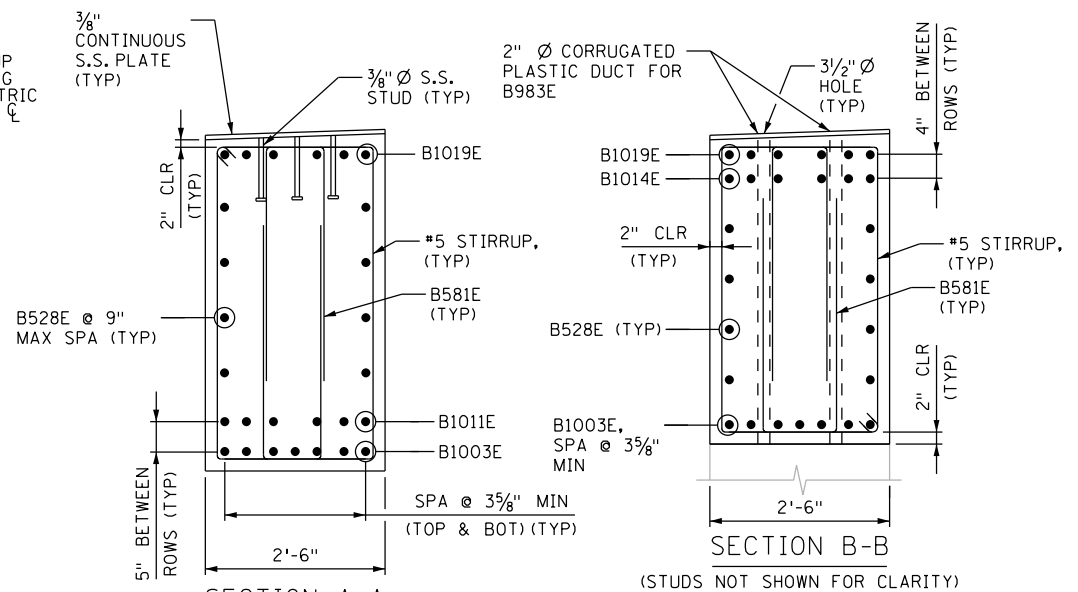
CAP BEAM-TYPE 3 ELEVATION



CAP BEAM-TYPE 4 PLAN

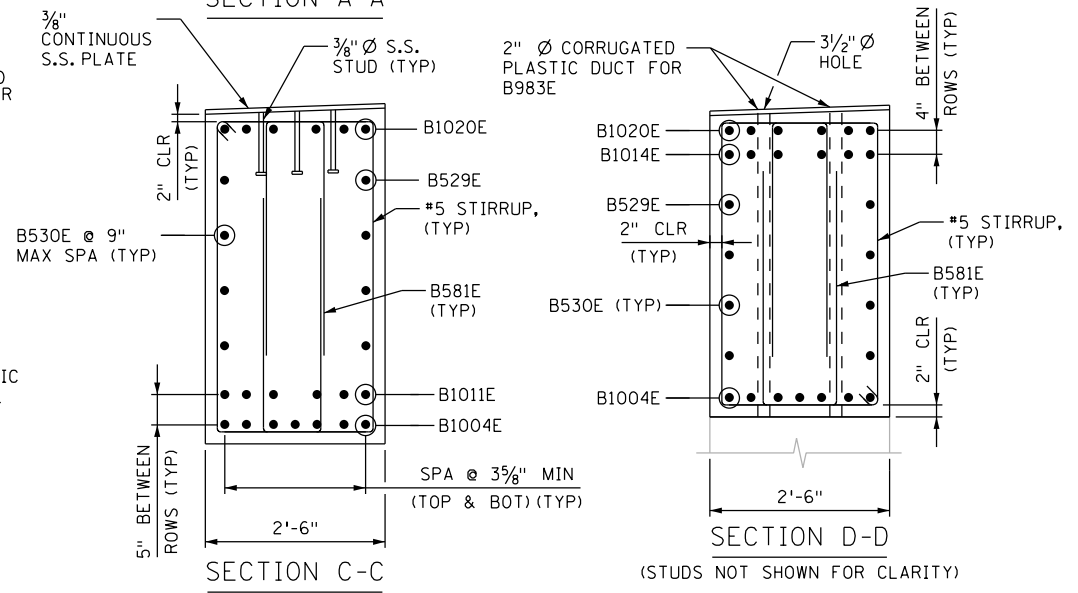


CAP BEAM-TYPE 4 ELEVATION



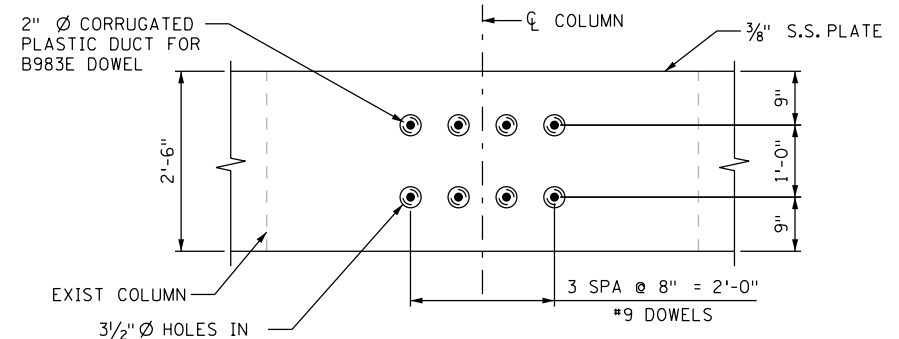
SECTION A-A

SECTION B-B



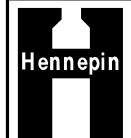
SECTION C-C

SECTION D-D



DUCT DETAIL

NOTE:
 CAP BEAM TYPE 4 AT SPANDRELS 2-1, 2-6, 3-1, 3-2, 3-12, 3-13, AND 4-1 DO NOT HAVE S.S. PLATES OR STUDS. SEE SHEET B110 FOR FIXED CONNECTION DETAILS.
 ADJUST STIRRUPS AND LONGITUDINAL BARS TO AVOID 2" DUCTS AND S.S. PLATE STUDS.

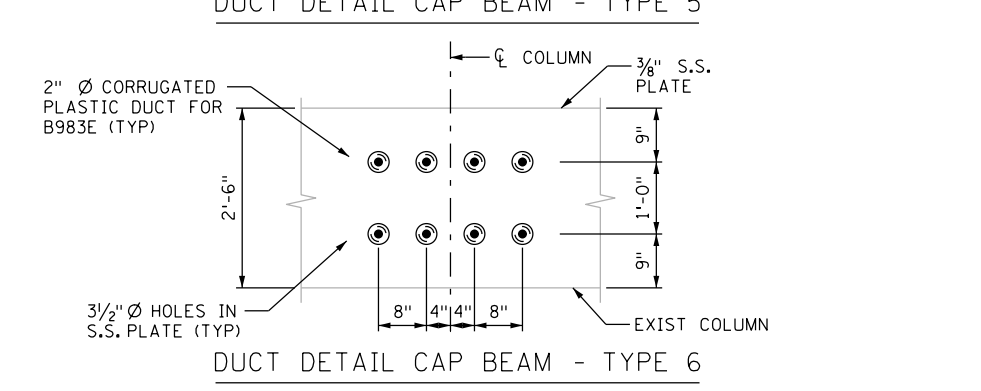
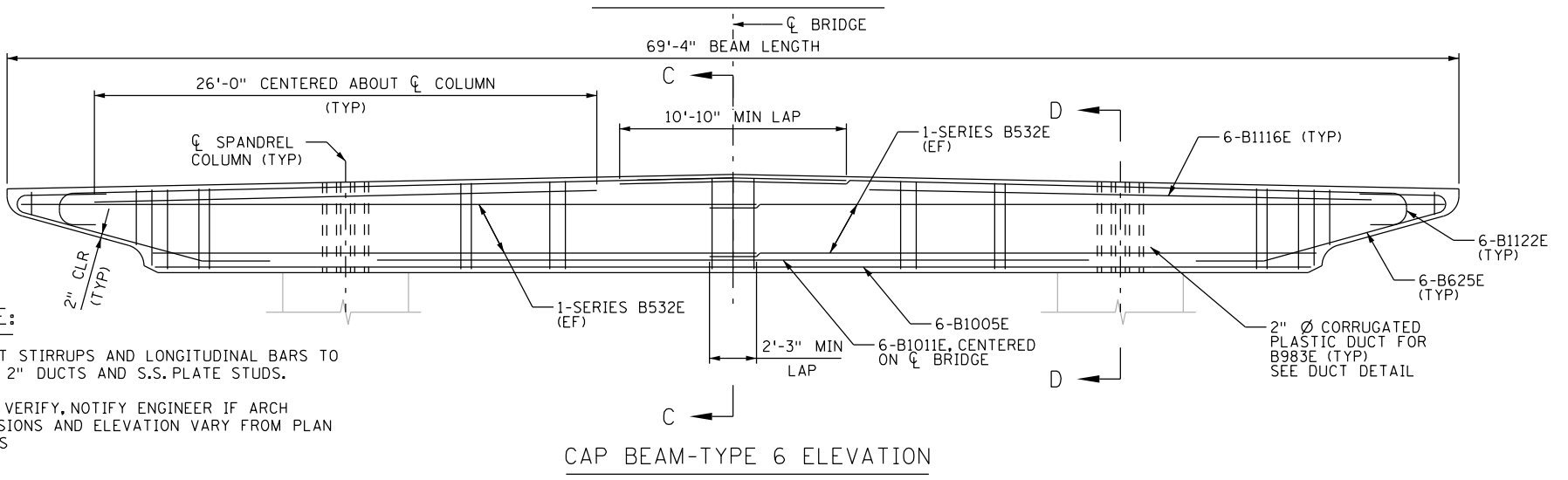
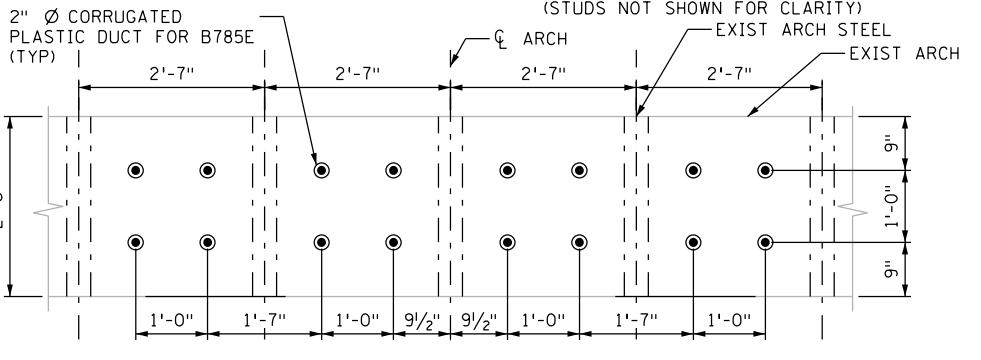
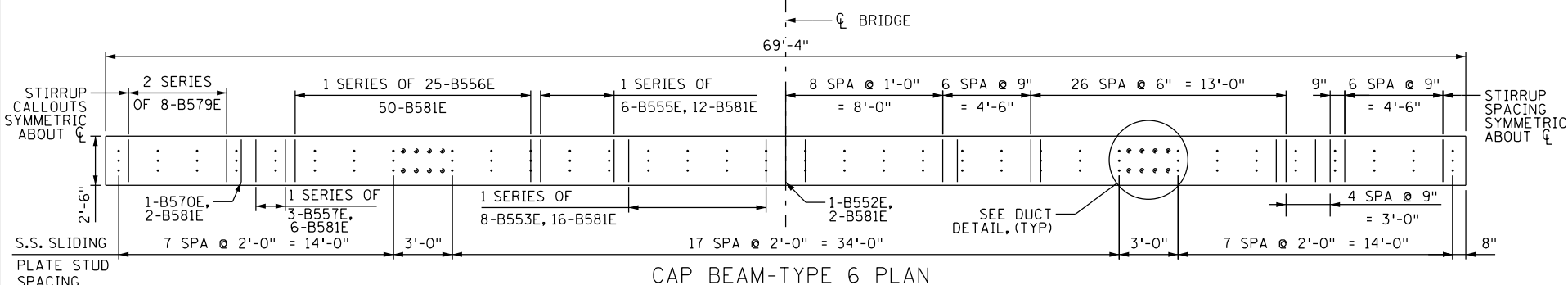
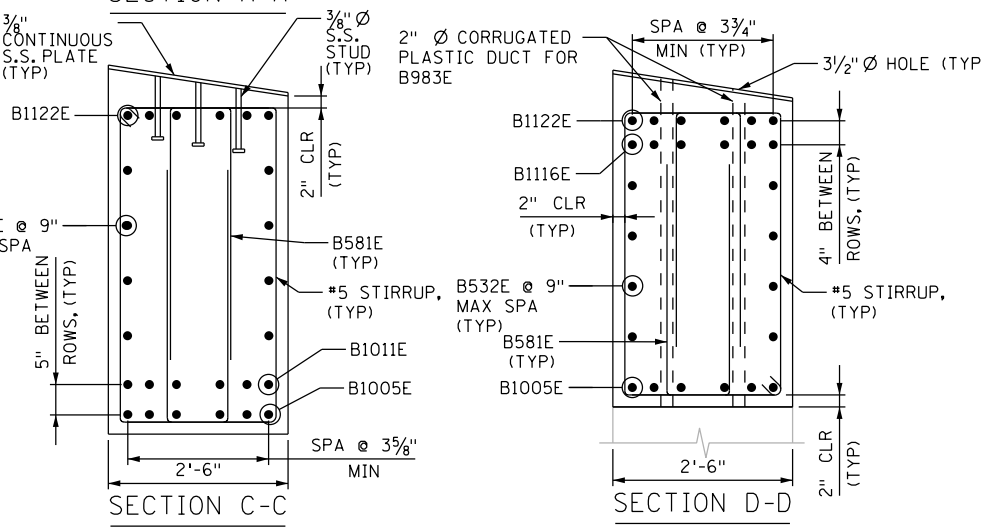
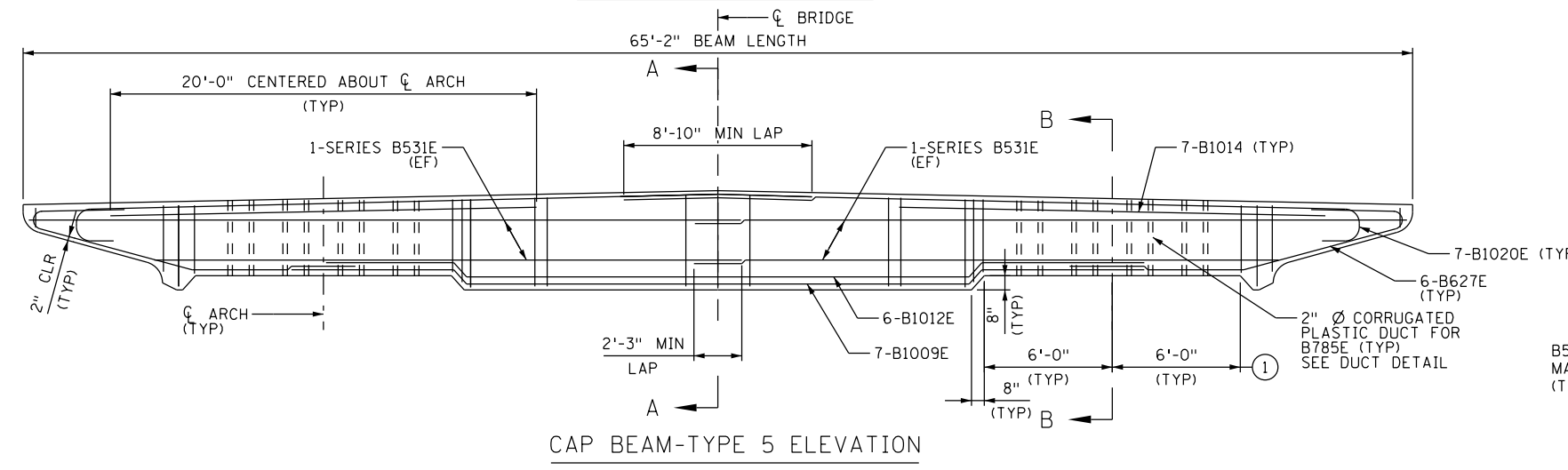
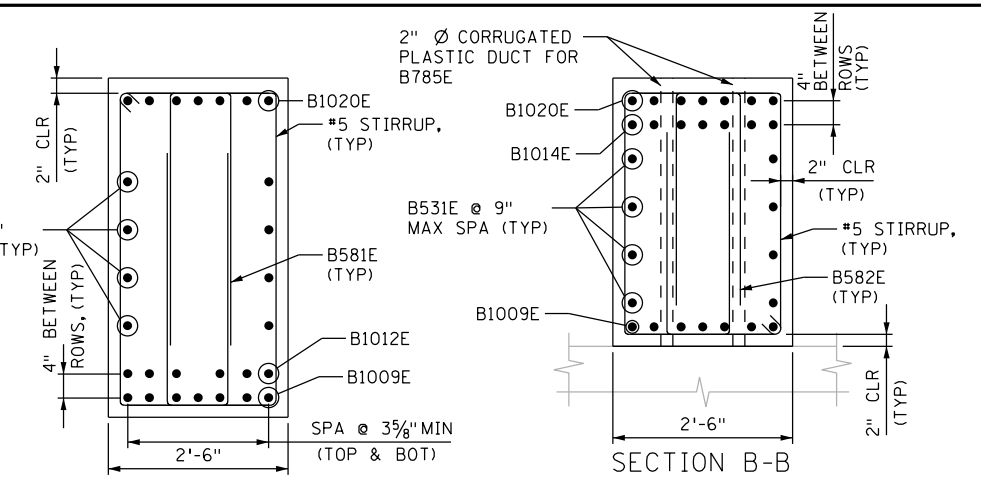
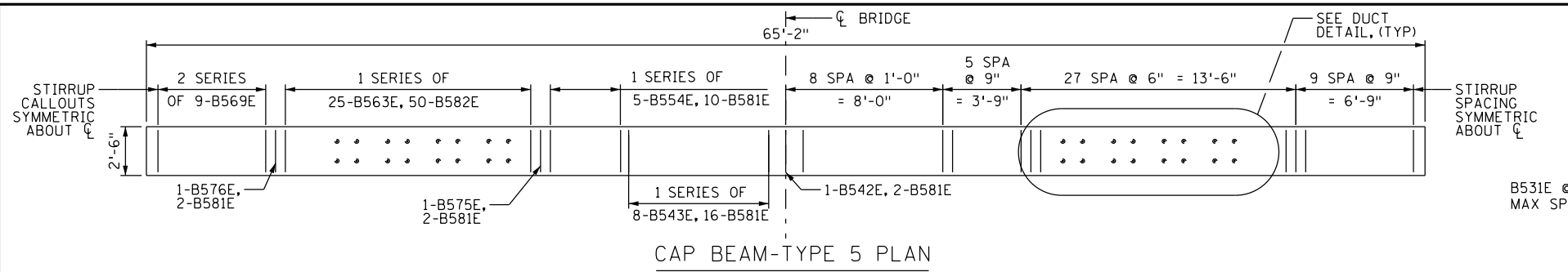


I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER
 47097 LICENSE NO.
 8/14/2014 DATE

DESIGN BY: AMK
CAD BY: PRE
CHECKED BY: AJN
LAST REVISION: 10/02/2015

SPANDREL CAP BEAM DETAILS (2 OF 7)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B112R
 B176



NOTE:
ADJUST STIRRUPS AND LONGITUDINAL BARS TO AVOID 2" DUCTS AND S.S. PLATE STUDS.
① FIELD VERIFY, NOTIFY ENGINEER IF ARCH DIMENSIONS AND ELEVATION VARY FROM PLAN VALUES

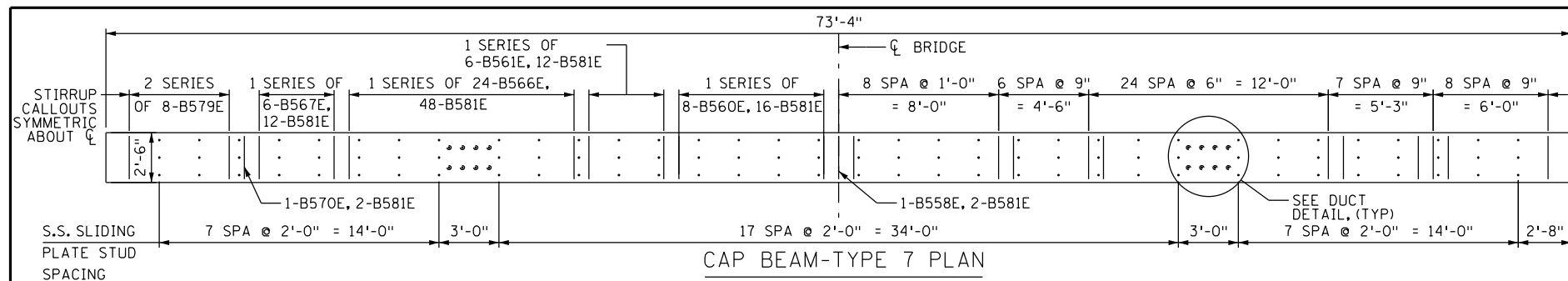


I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER
47097
8/14/2014
LICENSE NO. DATE

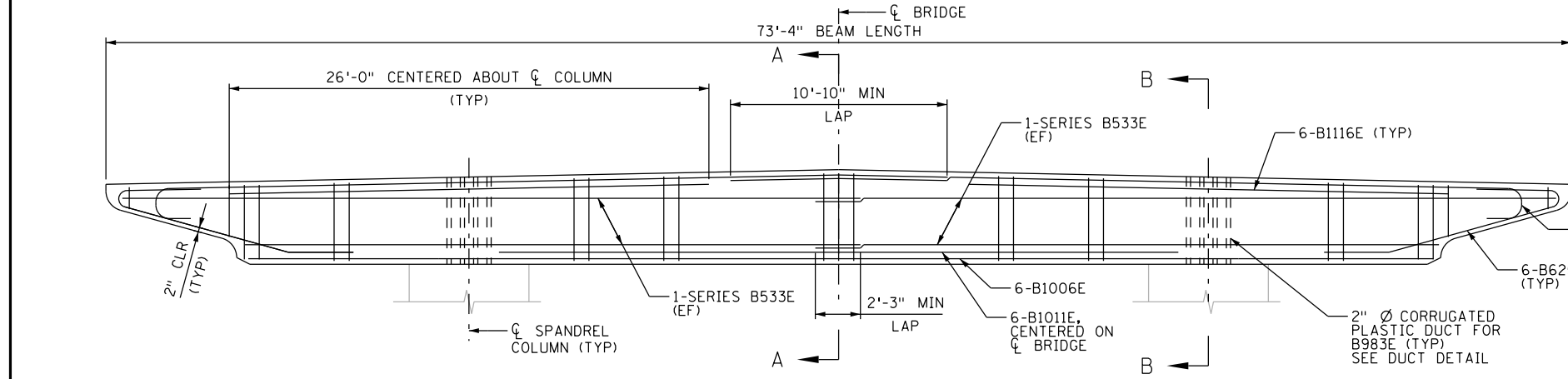
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CAD BY: PRE
CHECKED BY: AJN
LAST REVISION: 10/02/2015

SPANDREL CAP BEAM DETAILS (3 OF 7)
C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

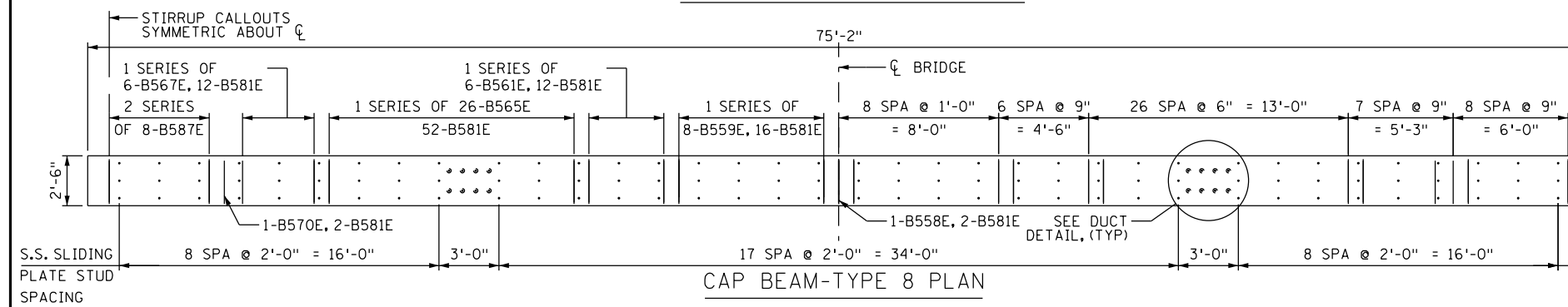
SHEET
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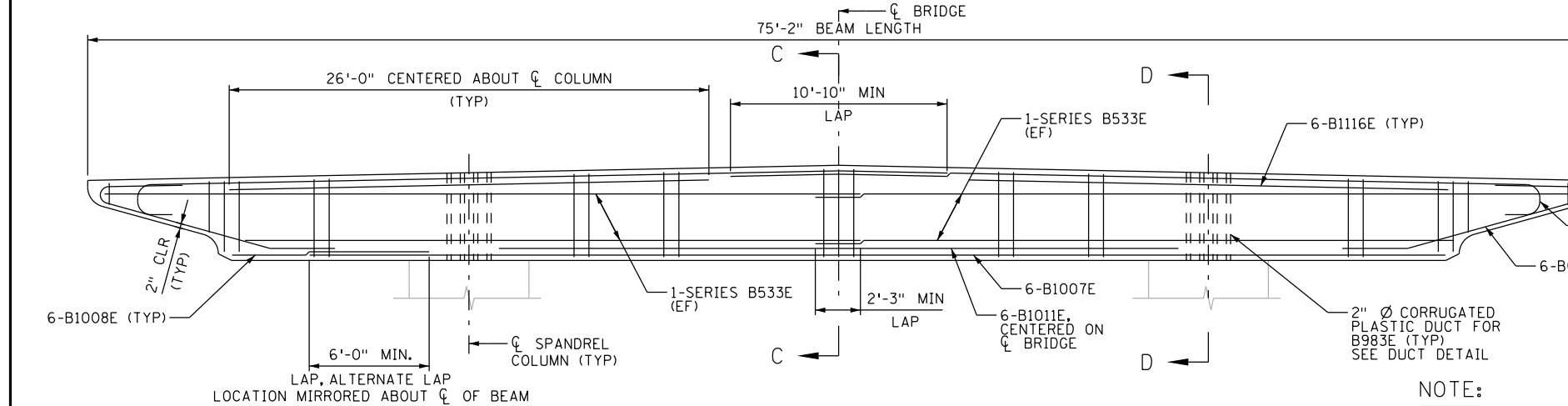
CAP BEAM-TYPE 7 PLAN



CAP BEAM-TYPE 7 ELEVATION

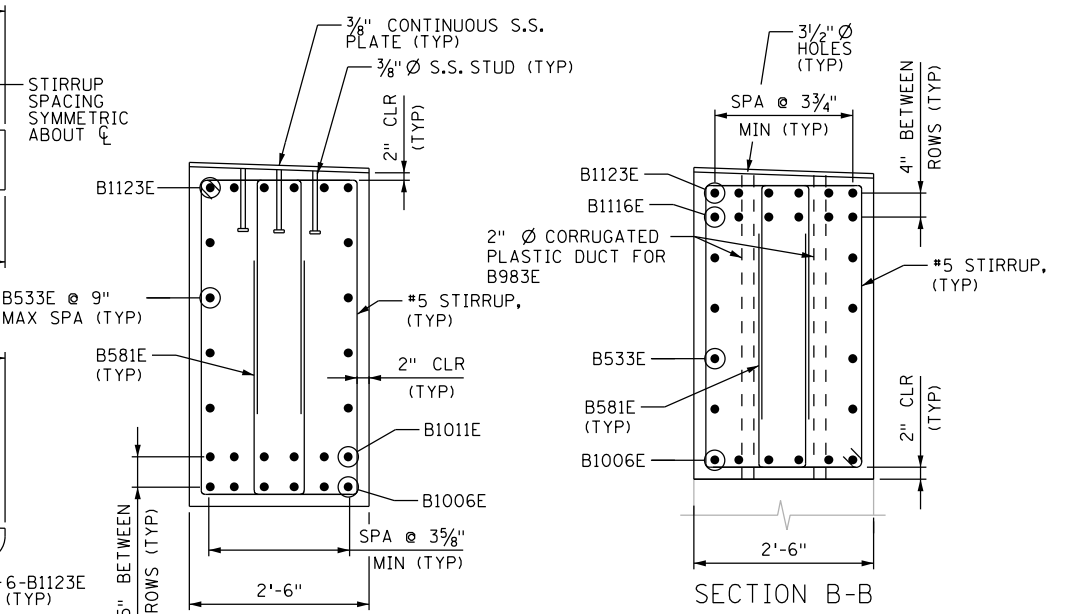


CAP BEAM-TYPE 8 PLAN



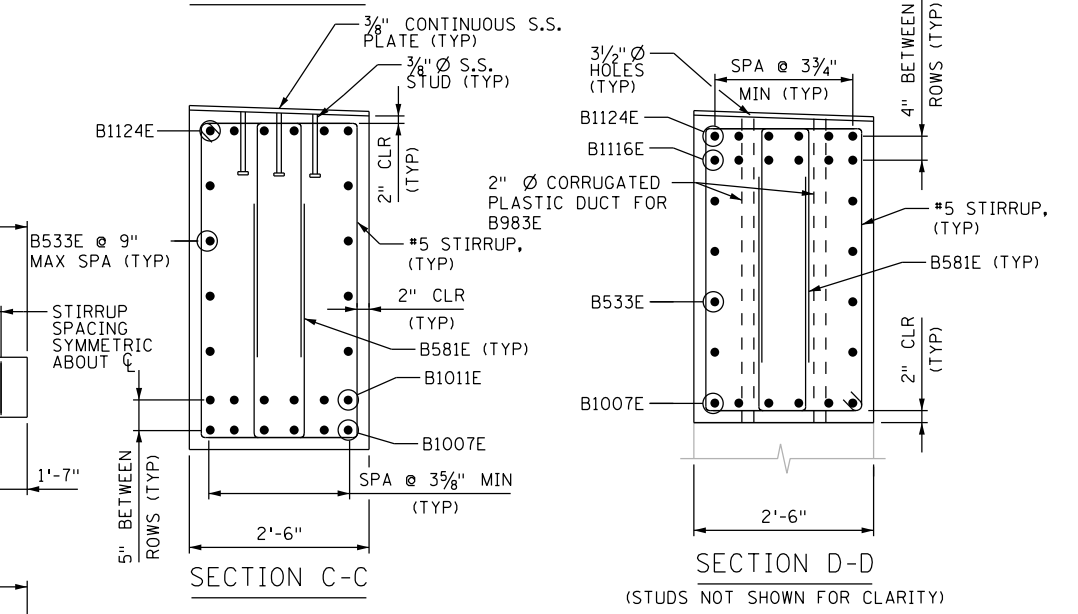
CAP BEAM-TYPE 8 ELEVATION

CAP BEAM AT SPANDREL 4-6 DOES NOT HAVE S.S. PLATE OR STUDS. SEE SHEET B110 FOR FIXED CONNECTION DETAILS.



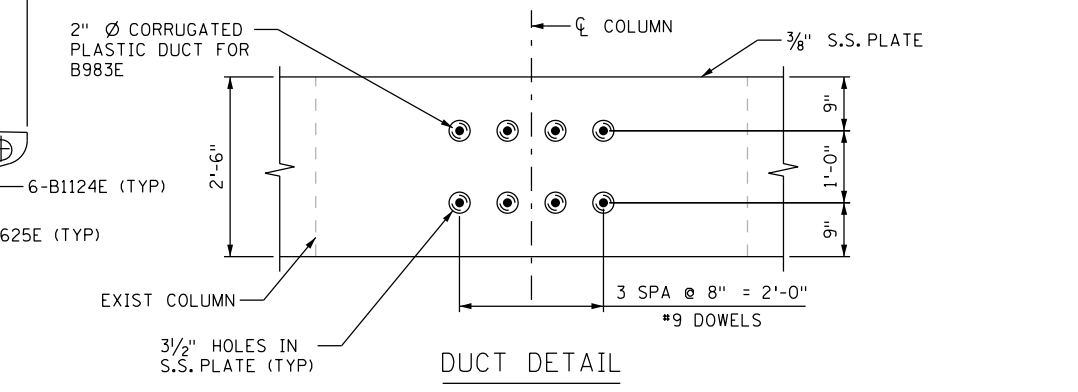
SECTION A-A

SECTION B-B



SECTION C-C

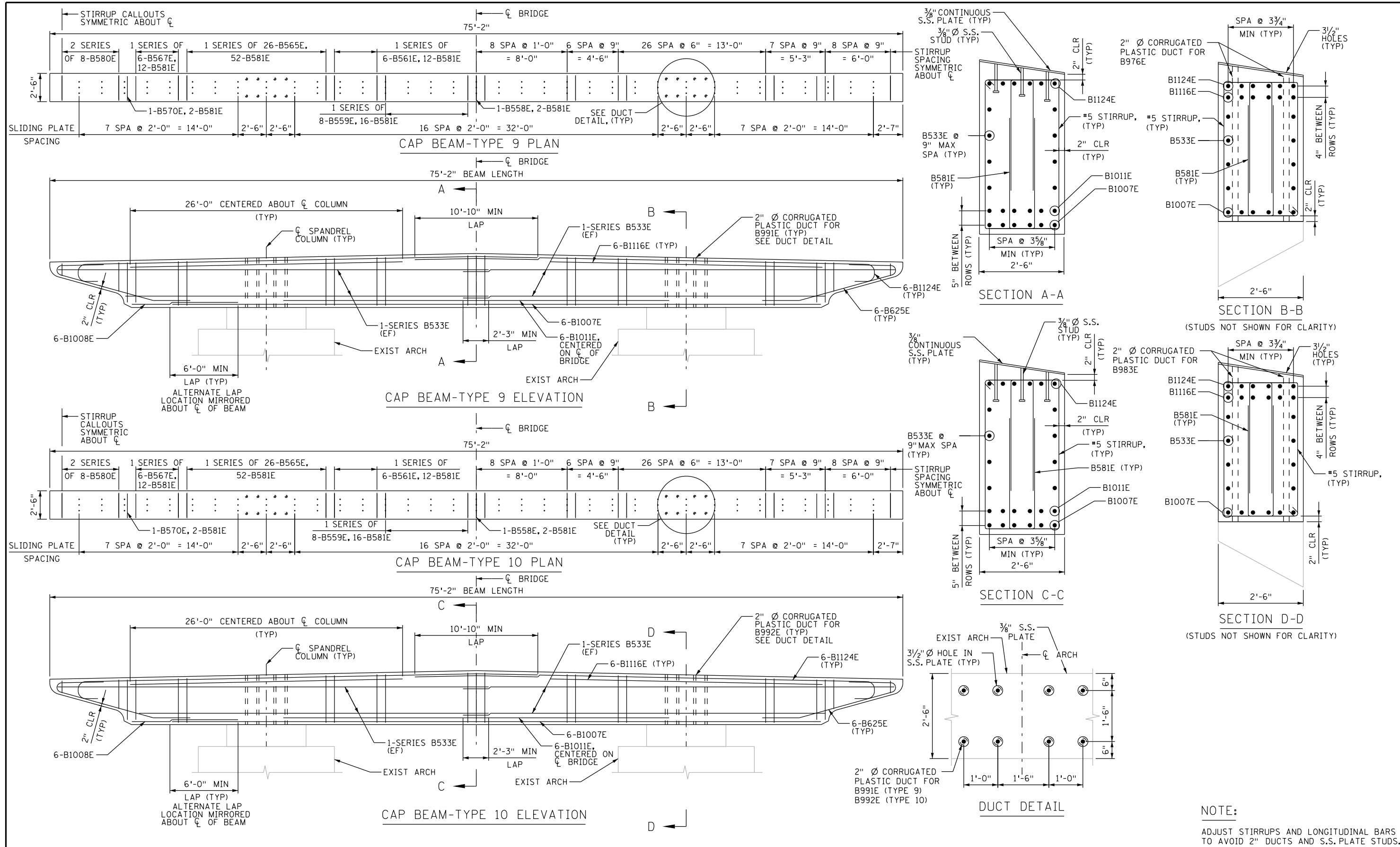
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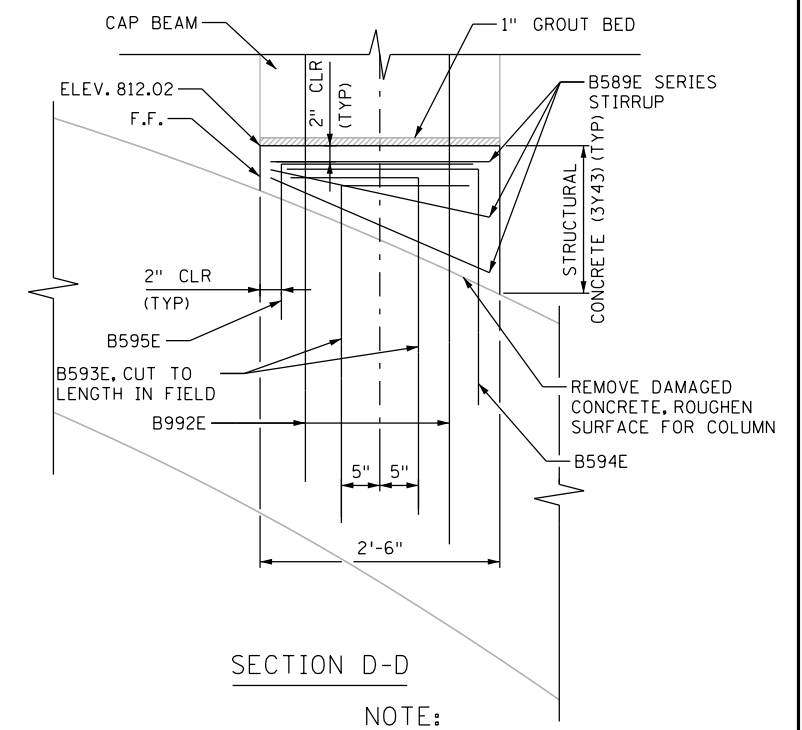
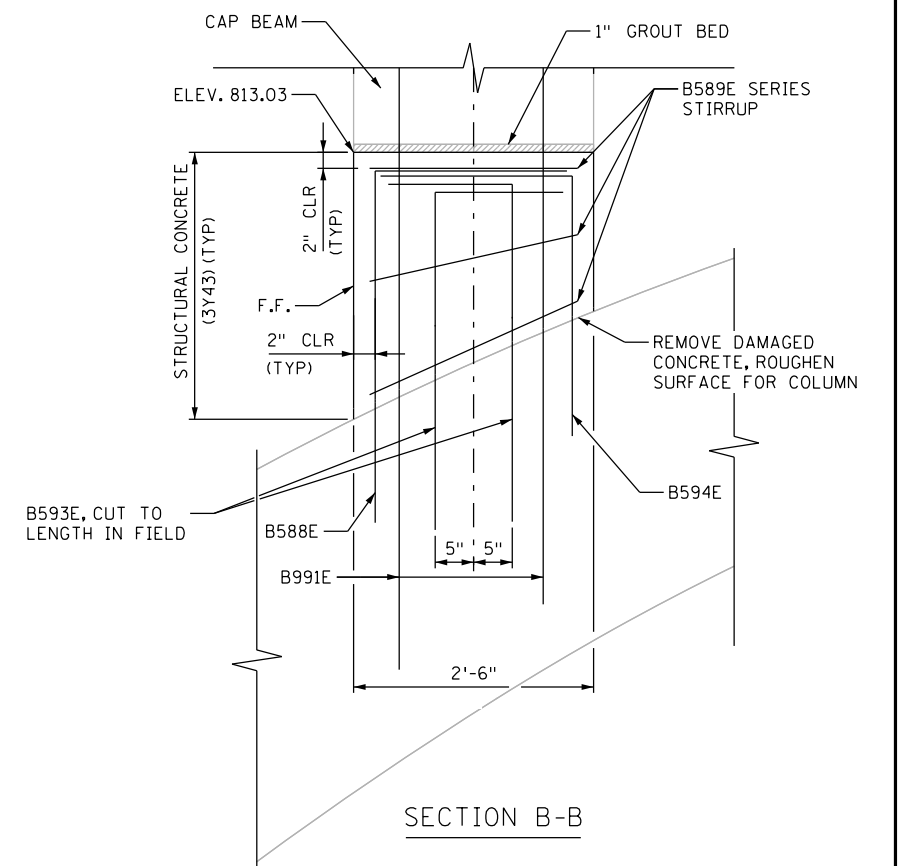
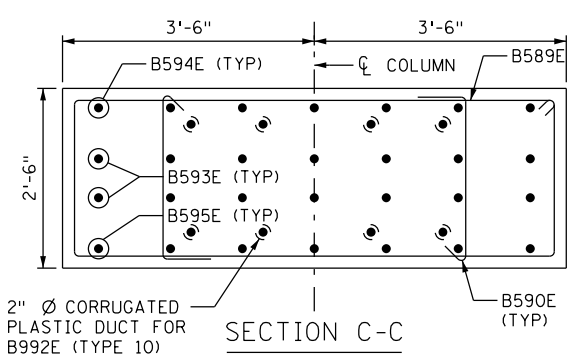
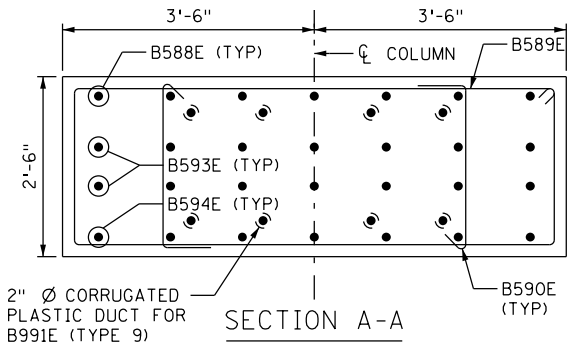
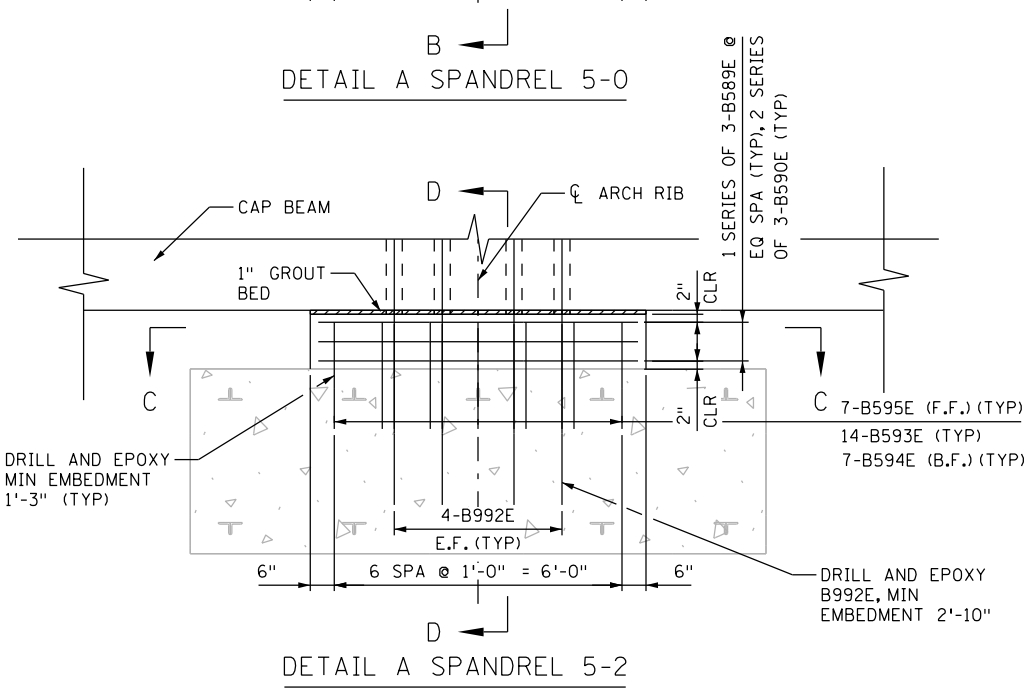
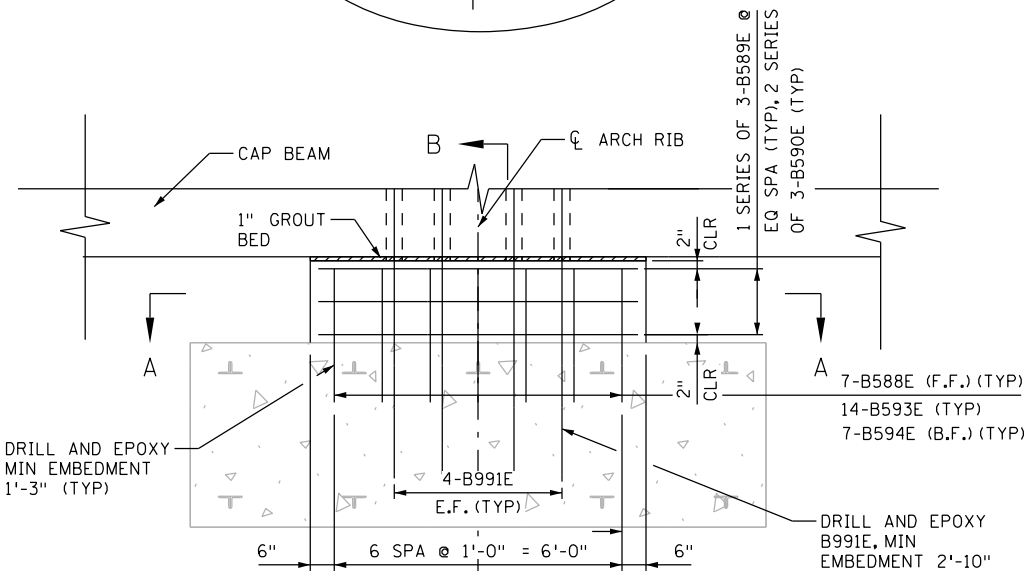
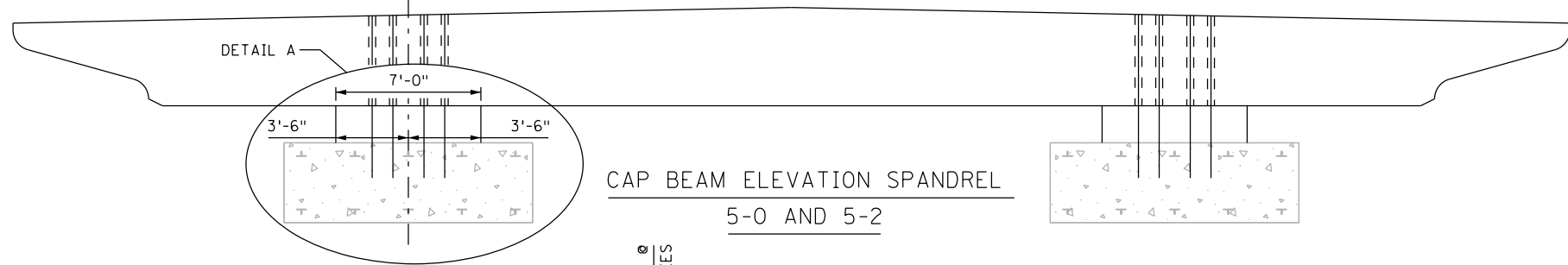
DUCT DETAIL

NOTE:
ADJUST STIRRUPS AND LONGITUDINAL BARS TO AVOID 2" DUCTS AND S.S. PLATE STUDS.

	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.	DESIGN BY: AMK CAD BY: PRE CHECKED BY: AJN LAST REVISION: 10/02/2015	SPANDREL CAP BEAM DETAILS (4 OF 7)		SHEET
	 ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER	47097 8/14/2014 LICENSE NO. DATE	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029		B114R B176



	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. 	DESIGN BY: AMK CAD BY: PRE CHECKED BY: AJN LAST REVISION: 01/27/2016	SPANDREL CAP BEAM DETAILS (5 OF 7)	SHEET
	ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER 47097 8/14/2014 LICENSE NO. DATE	C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	B115R3 B176	



NOTE:
 ADJUST STIRRUPS AND LONGITUDINAL BARS TO AVOID 2" DUCTS AND S.S. PLATE STUDS.
 ADJUST VERTICAL BARS IN COLUMN TO AVOID EXISTING ARCH RIB REINFORCEMENT



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Travis F. Konda
 TRAVIS F. KONDA, PROFESSIONAL ENGINEER

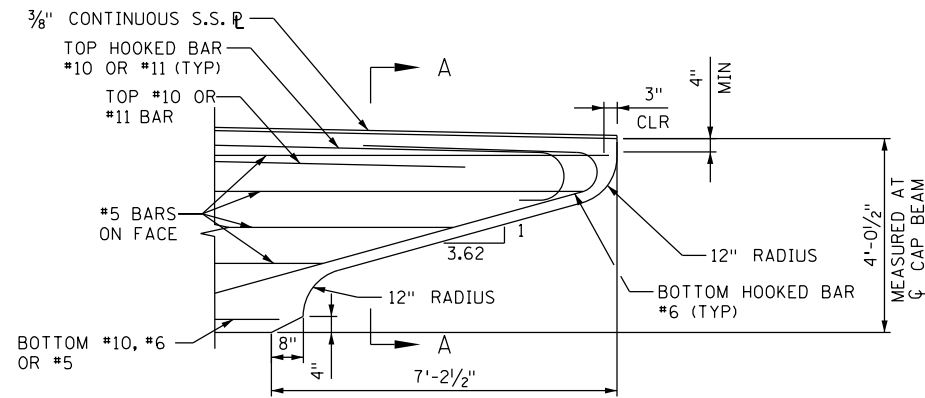
48851 1/27/2016
 LICENSE NO. DATE

DESIGN BY: TFK
 CAD BY: CTW
 CHECKED BY: TFK
 LAST REVISION:

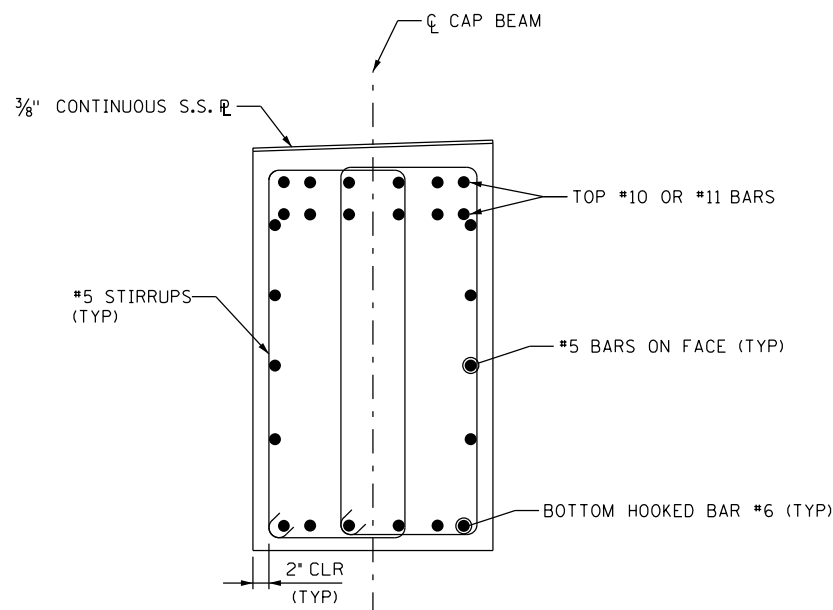
SPANDREL CAP BEAM DETAILS (5A OF 7)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

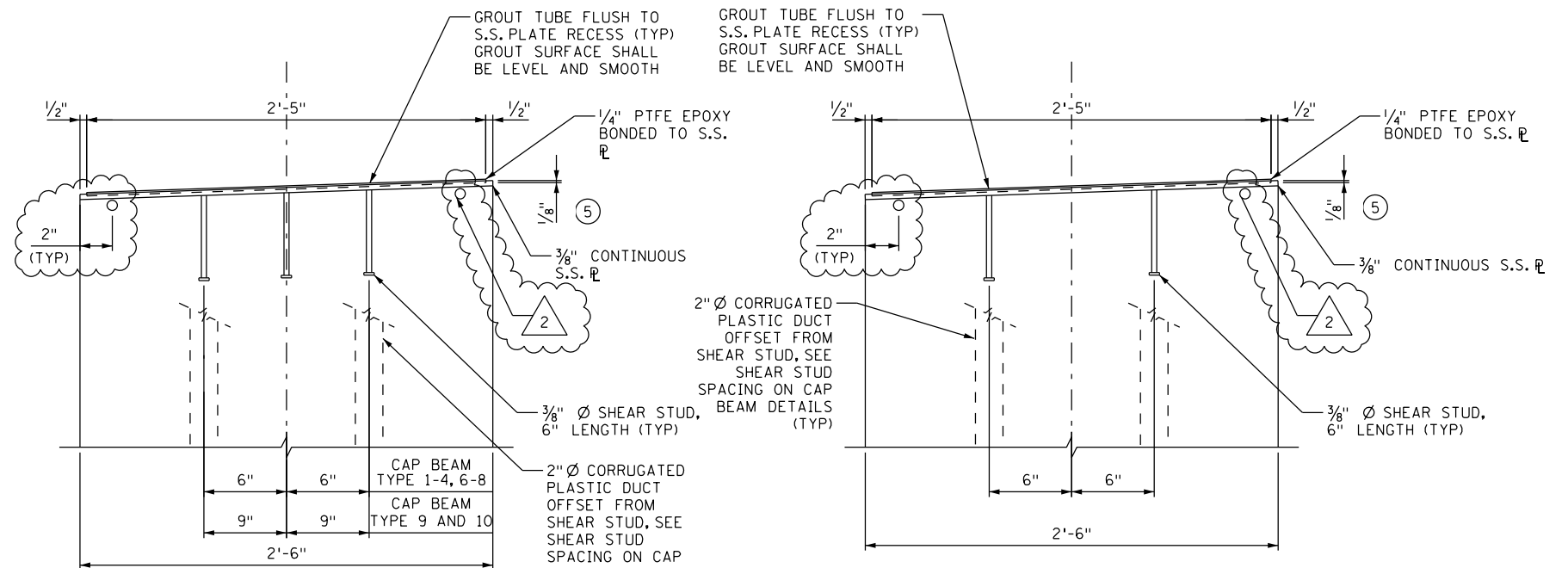
SHEET
 B115A
 B176



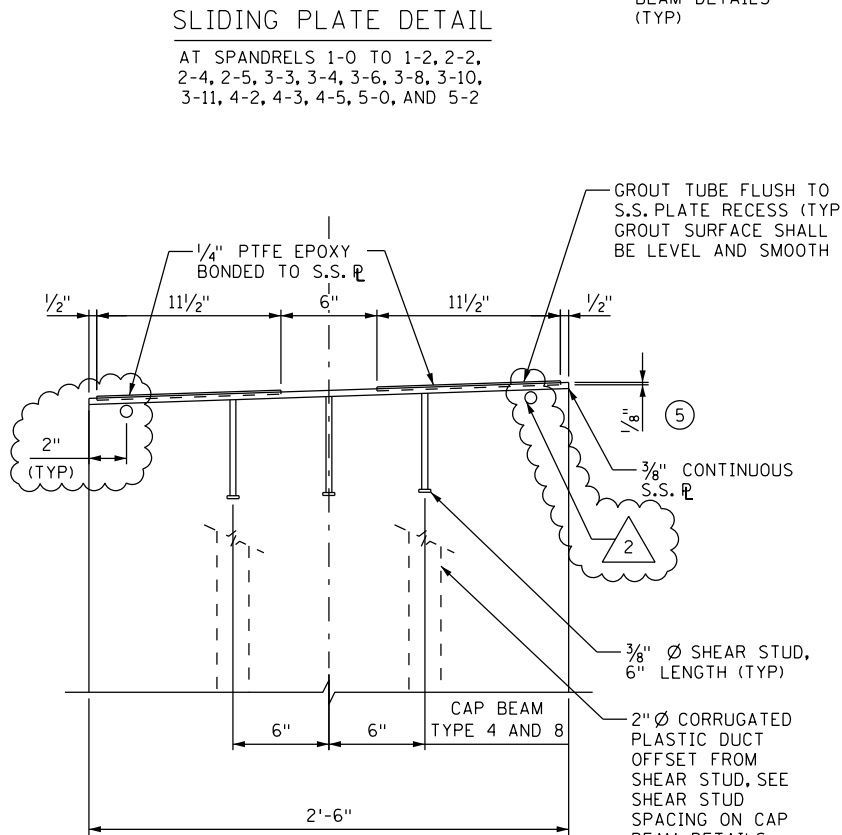
BEAM END DETAIL
SEE SHEET B110 FOR CROSS-SLOPE DETAILS



SECTION A-A
SIX LONGITUDINAL BARS SHOWN,
SEVEN LONGITUDINAL BARS SIMILAR,
SEE CAP BEAM DETAILS



SLIDING PLATE DETAIL
AT SPANDREL 5-1



SLIDING PLATE DETAIL
AT EXPANSION JOINTS
SPANDRELS 2-3, 3-5,
3-9 AND 4-4

NOTES:

- EMBED SLIDING PLATES IN CAP BEAMS SO THAT THE TOP SURFACE OF THE SLIDING PLATE AND PTFE FOLLOW THE BRIDGE PROFILE WHEN THE CAP BEAM IS IN ITS FINAL POSITION.
- CONTRACTOR IS PERMITTED TO PROVIDE THE STAINLESS STEEL PLATE EMBEDDED IN THE CAP BEAMS IN MULTIPLE SEGMENTS, AS APPROVED BY THE ENGINEER. CONTRACTOR SHALL WELD ADJACENT SEGMENTS AND GRIND SMOOTH ALL WELDS TO FORM A CONTINUOUS SURFACE.
- CONTRACTOR SHALL PLACE PTFE SHEETING ON PRECAST CAP BEAM AFTER COMPLETION OF GROUTING OF CAP BEAM.
- PTFE SHEET SHALL FILL THE RECESS IN THE S.S. PLATE AND EXTEND TO LIMITS OF RECESS.
- RECESS IN S.S. PLATE FOR PTFE SHEET.
- CAP BEAMS AT SPANDRELS 2-1, 2-6, 3-1, 3-2, 3-7, 3-12, 3-13, 4-1 AND 4-6 DO NOT HAVE A TOP S.S. PLATE. SEE SHEET B110 AND B139 FOR ADDITIONAL INFORMATION ON FIXED TRANSVERSE CLOSURE POURS.

- 1 MODIFIED PER RFI 15 & 59.
- 2 3/8" - 3/4" Ø SS BARS WELDED @ 12" O.C. AROUND THE PERIMETER. SEE RFI 59 FOR DETAILS.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Angela M. Kingsley
ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47097 8/14/2014
LICENSE NO. DATE

DESIGN BY: AMK
CAD BY: DPS
CHECKED BY: AJN
LAST REVISION: 10/02/2015

AS-BUILT - SPANDREL CAP BEAM DETAILS (7 OF 7)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET
B116AR2
B176

**BILL OF REINFORCEMENT
CAP BEAM TYPE 1 (1 BEAM,
1 SET REQUIRED)**

BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1001E	7	53'-5"	STR	BOTTOM
B1011E	6	34'-0"	STR	BOTTOM
B1014E	12	20'-0"	STR	TOP, OVER COLUMN
B1017E	12	39'-2"	BENT	TOP
B625E	12	18'-9"	BENT	END
B528E	4	37'-4"	STR	MIDDLE
	SER OF TO			
	4	29'-4"		
B538E	1	14'-0"	BENT	STIRRUP
B539E	2	14'-0"	BENT	STIRRUP
	SER OF TO			
	8	13'-8"		
B540E	2	13'-8"	BENT	STIRRUP
	SER OF TO			
	6	13'-6"		
B541E	2	13'-6"	BENT	STIRRUP
	SER OF TO			
	25	13'-0"		
B547E	4	12'-11"	BENT	STIRRUP
B550E	2	12'-5"	BENT	STIRRUP
B577E	4	9'-3"	BENT	STIRRUP
	SER OF TO			
	8	6'-1"		
B581E	170	7'-5"	BENT	STIRRUP
B983E	16	7'-0"	STR	DOWEL

**BILL OF REINFORCEMENT
CAP BEAM TYPE 2 (1 BEAM,
1 SET REQUIRED)**

BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1002E	7	52'-5"	STR	BOTTOM, ENDS
B1011E	6	34'-0"	STR	BOTTOM
B1014E	12	20'-0"	STR	TOP, OVER COLUMN
B1018E	12	38'-9"	BENT	TOP
B625E	12	18'-9"	BENT	END
B528E	4	37'-4"	STR	MIDDLE
	SER OF TO			
	4	29'-4"		
B538E	1	14'-0"	BENT	STIRRUP
B543E	2	13'-11"	BENT	STIRRUP
	SER OF TO			
	8	13'-7"		
B544E	2	13'-7"	BENT	STIRRUP
	SER OF TO			
	6	13'-6"		
B545E	2	13'-5"	BENT	STIRRUP
	SER OF TO			
	24	13'-0"		
B547E	4	12'-11"	BENT	STIRRUP
B550E	2	12'-5"	BENT	STIRRUP
B577E	4	9'-3"	BENT	STIRRUP
	SER OF TO			
	8	6'-1"		
B581E	166	7'-5"	BENT	STIRRUP
B983E	16	7'-0"	STR	DOWEL

**BILL OF REINFORCEMENT
CAP BEAM TYPE 3 (1 BEAM,
1 SET REQUIRED)**

BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1003E	7	51'-6"	STR	BOTTOM
B1011E	6	34'-0"	STR	BOTTOM
B1014E	12	20'-0"	STR	TOP, OVER COLUMN
B1019E	12	38'-3'	BENT	TOP
B625E	12	18'-9"	BENT	END
B528E	4	37'-4"	STR	MIDDLE
	SER OF TO			
	4	29'-4"		
B542E	1	13'-11"	BENT	STIRRUP
B543E	2	13'-11"	BENT	STIRRUP
	SER OF TO			
	8	13'-7"		
B544E	2	13'-7"	BENT	STIRRUP
	SER OF TO			
	6	13'-6"		
B546E	2	13'-5"	BENT	STIRRUP
	SER OF TO			
	25	13'-0"		
B547E	2	12'-11"	BENT	STIRRUP
B551E	4	10'-3"	BENT	STIRRUP
B578E	4	9'-1"	BENT	STIRRUP
	SER OF TO			
	8	6'-0"		
B581E	162	7'-5"	BENT	STIRRUP
B983E	16	7'-0"	STR	DOWEL

**BILL OF REINFORCEMENT
CAP BEAM TYPE 4 (19 BEAMS,
19 SETS REQUIRED)**

BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1004E	7	50'-7"	STR	BOTTOM
B1011E	6	34'-0"	STR	BOTTOM
B1014E	12	20'-0"	STR	TOP, OVER COLUMN
B1020E	12	37'-5"	BENT	TOP
B625E	12	18'-9"	BENT	END
B529E	4	33'-6"	STR	MIDDLE
B530E	4	33'-3"	STR	MIDDLE
	SER OF TO			
	3	27'-11"		
B542E	1	13'-11"	BENT	STIRRUP
B543E	2	13'-11"	BENT	STIRRUP
	SER OF TO			
	8	13'-7"		
B548E	2	13'-7"	BENT	STIRRUP
	SER OF TO			
	6	13'-5"		
B549E	2	13'-5"	BENT	STIRRUP
	SER OF TO			
	25	12'-11"		
B570E	2	12'-6"	BENT	STIRRUP
B577E	4	9'-3"	BENT	STIRRUP
	SER OF TO			
	8	6'-1"		
B581E	162	7'-5"	BENT	STIRRUP
B983E	16	7'-0"	STR	DOWEL
B586E	160	2'-2"	STR	FIXED JOINT

**BILL OF REINFORCEMENT
CAP BEAM TYPE 5 (1 BEAM,
1 SET REQUIRED)**

BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1009E	7	41'-8"	BENT	BOTTOM
B1012E	6	37'-6"	BENT	BOTTOM
B1014E	14	20'-0"	STR	TOP, OVER COLUMN
B1020E	14	37'-5"	BENT	TOP
B627E	12	21'-6"	BENT	END
B531E	4	35'-8"	STR	MIDDLE
	SER OF TO			
	4	27'-6"		
B542E	1	13'-11"	BENT	STIRRUP
B543E	2	13'-11"	BENT	STIRRUP
	SER OF TO			
	8	13'-7"		
B544E	2	13'-8"	BENT	STIRRUP
	SER OF TO			
	5	13'-6"		
B563E	2	12'-2"	BENT	STIRRUP
	SER OF TO			
	25	11'-8"		
B569E	4	9'-8"	BENT	STIRRUP
	SER OF TO			
	9	6'-0"		
B575E	2	12'-7"	BENT	STIRRUP
B576E	2	13'-0"	BENT	STIRRUP
B581E	62	7'-5"	BENT	STIRRUP
B582E	100	6'-4"	BENT	STIRRUP
B785E	32	5'-6"	STR	DOWEL

**BILL OF REINFORCEMENT
CAP BEAM TYPE 6 (1 BEAM,
1 SET REQUIRED)**

BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1005E	6	55'-3"	STR	BOTTOM
B1011E	6	34'-0"	STR	BOTTOM
B1116E	12	26'-0"	STR	TOP, OVER COLUMN
B1122E	12	40'-8"	BENT	TOP
B625E	12	18'-9"	BENT	END
B532E	4	38'-0"	STR	MIDDLE
	SER OF TO			
	4	29'-11"		
B552E	1	14'-0"	BENT	STIRRUP
B553E	2	14'-0"	BENT	STIRRUP
	SER OF TO			
	8	13'-8"		
B555E	2	13'-8"	BENT	STIRRUP
	SER OF TO			
	6	13'-6"		
B556E	2	13'-6"	BENT	STIRRUP
	SER OF TO			
	25	13'-0"		
B557E	2	13'-0"	BENT	STIRRUP
	SER OF TO			
	3	12'-11"		
B570E	2	12'-6"	BENT	STIRRUP
B579E	4	9'-5"	BENT	STIRRUP
	SER OF TO			
	8	6'-2"		
B581E	174	7'-5"	BENT	STIRRUP
B983E	16	7'-0"	STR	DOWEL

NOTES:

REINFORCEMENT IS INCLUDED IN THE BID PRICE FOR THE PRECAST SUBSTRUCTURE CAP BEAM THE REINFORCEMENT IS INSTALLED IN.

① BAR B586E APPLIES ONLY TO THE TYPE 4 CAP BEAMS LOCATED @ SPANDRELS 2-1, 2-6, 3-1, 3-2, 3-12, 3-13, AND 4-1

①



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

AM Kingsley

ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER

47097 8/14/2014

LICENSE NO. DATE

DESIGN BY: AMK

CAD BY: RAM

CHECKED BY: AJN

LAST REVISION: 10/02/2015

SPANDREL CAP BEAM BAR LIST AND QUANTITIES (1 OF 3)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
BRIDGE 2441 S.P. 027-605-029

SHEET

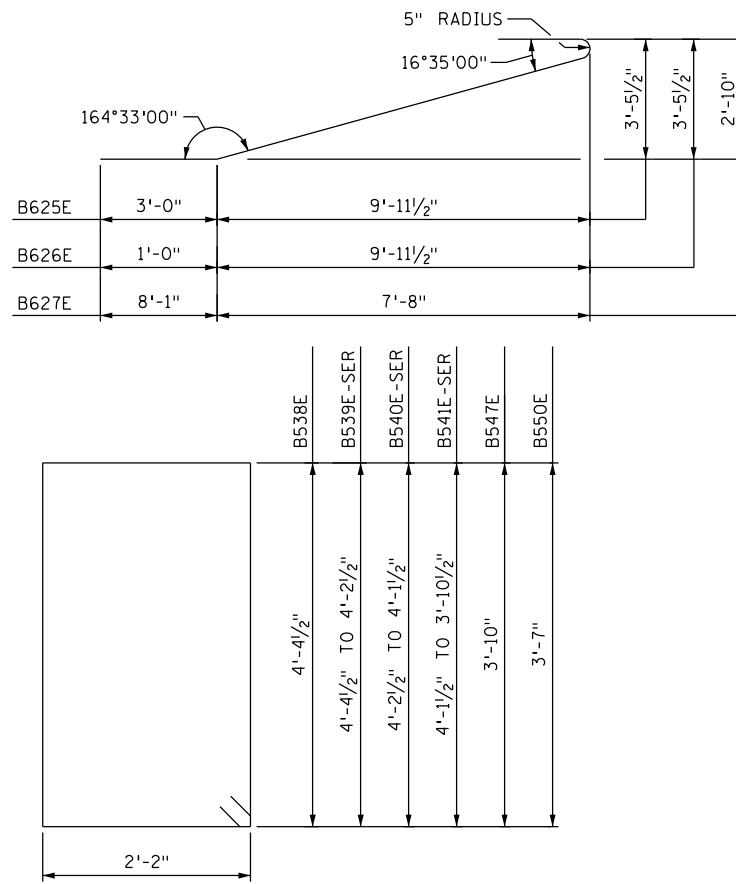
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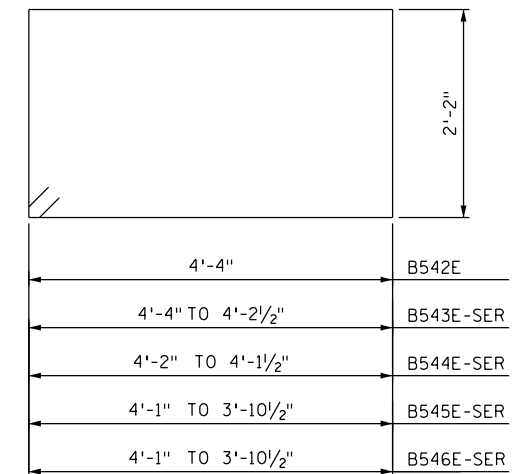
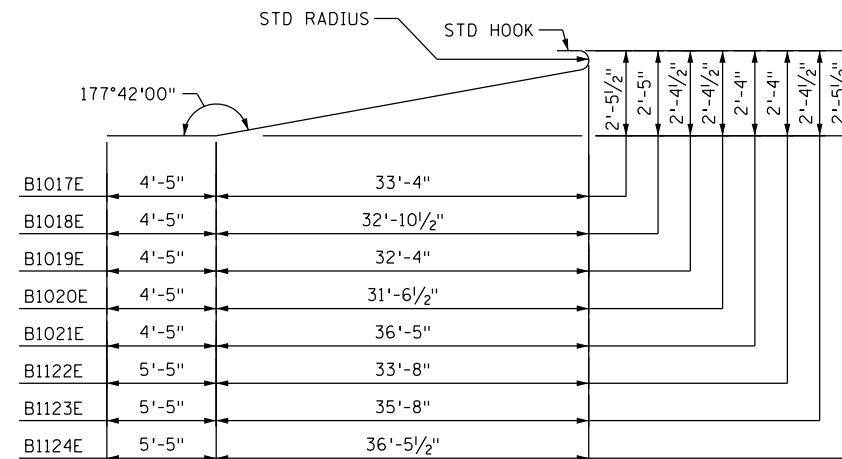
BILL OF REINFORCEMENT CAP BEAM TYPE 7 (1 BEAM, 1 SET REQUIRED)				
BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1006E	6	59'-3"	STR	BOTTOM
B1011E	6	34'-0"	STR	BOTTOM
B1116E	12	26'-0"	STR	TOP, OVER COLUMN
B1123E	12	42'-8"	BENT	TOP
B625E	12	18'-9"	BENT	END
B533E	4	40'-11"	STR	MIDDLE
	SER OF TO			
B558E	4	32'-10"	BENT	STIRRUP
	SER OF TO			
B560E	1	14'-1"	BENT	STIRRUP
	SER OF TO			
B561E	8	13'-9"	BENT	STIRRUP
	SER OF TO			
B561E	2	13'-9"	BENT	STIRRUP
	SER OF TO			
B566E	6	13'-7"	BENT	STIRRUP
	SER OF TO			
B566E	24	13'-1"	BENT	STIRRUP
	SER OF TO			
B567E	2	13'-1"	BENT	STIRRUP
	SER OF TO			
B570E	6	12'-11"	BENT	STIRRUP
	SER OF TO			
B579E	4	9'-5"	BENT	STIRRUP
	SER OF TO			
B581E	8	6'-2"	BENT	STIRRUP
	SER OF TO			
B581E	182	7'-5"	BENT	STIRRUP
B983E	16	7'-0"	STR	DOWEL

BILL OF REINFORCEMENT CAP BEAM TYPE 11 (1 SET, 1 SET REQUIRED)				
BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1010E	6	40'-6"	BENT	BOTTOM
B1013E	6	37'-10"	BENT	BOTTOM
B1015E	14	26'-0"	STR	TOP, OVER COLUMN
B1021E	14	42'-5"	BENT	TOP
B626E	12	16'-9"	BENT	END
B534E	4	8'-2"	STR	MIDDLE
B535E	12	17'-9"	BENT	BOTTOM
B536E	2	23'-4"	STR	MIDDLE
B537E	4	40'-9"	STR	MIDDLE
	SER OF TO			
B558E	3	35'-3"	BENT	STIRRUP
	SER OF TO			
B559E	1	14'-1"	BENT	STIRRUP
	SER OF TO			
B562E	8	13'-10"	BENT	STIRRUP
	SER OF TO			
B562E	2	13'-9"	BENT	STIRRUP
	SER OF TO			
B564E	4	13'-8"	BENT	STIRRUP
	SER OF TO			
B564E	24	10'-9"	BENT	STIRRUP
	SER OF TO			
B567E	2	13'-1"	BENT	STIRRUP
	SER OF TO			
B568E	6	12'-11"	BENT	STIRRUP
	SER OF TO			
B571E	4	9'-3"	BENT	STIRRUP
	SER OF TO			
B572E	8	6'-1"	BENT	STIRRUP
	SER OF TO			
B571E	4	12'-7"	BENT	STIRRUP
B572E	2	11'-7"	BENT	STIRRUP
B573E	2	11'-1"	BENT	STIRRUP
B574E	2	12'-4"	BENT	STIRRUP
B581E	86	7'-5"	BENT	STIRRUP
B582E	104	6'-4"	BENT	STIRRUP
B784E	32	5'-1"	STR	DOWEL

BILL OF REINFORCEMENT CAP BEAM TYPE 8 (3 BEAMS, 3 SETS REQUIRED)				
BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1007E	6	56'-9"	STR	BOTTOM
B1008E	6	10'-1"	STR	BOTTOM, ENDS
B1011E	6	34'-0"	STR	BOTTOM
B1116E	12	26'-0"	STR	TOP, OVER COLUMN
B1124E	12	43'-7"	BENT	TOP
B625E	12	18'-9"	BENT	END
B533E	4	40'-11"	STR	MIDDLE
	SER OF TO			
B558E	4	32'-10"	BENT	STIRRUP
	SER OF TO			
B559E	1	14'-1"	BENT	STIRRUP
	SER OF TO			
B561E	8	13'-10"	BENT	STIRRUP
	SER OF TO			
B561E	2	13'-9"	BENT	STIRRUP
	SER OF TO			
B565E	6	13'-7"	BENT	STIRRUP
	SER OF TO			
B565E	26	13'-1"	BENT	STIRRUP
	SER OF TO			
B567E	2	13'-1"	BENT	STIRRUP
	SER OF TO			
B570E	6	12'-11"	BENT	STIRRUP
	SER OF TO			
B570E	2	12'-6"	BENT	STIRRUP
B581E	190	7'-5"	BENT	STIRRUP
B983E	16	7'-0"	STR	DOWEL
B586E	184	2'-2"	STR	FIXED JOINT
B587E	4	9'-3"	BENT	STIRRUP
	SER OF TO			
B587E	8	6'-1"	BENT	STIRRUP
	SER OF TO			



BILL OF REINFORCEMENT CAP BEAM TYPE 9 (1 BEAM, 1 SET REQUIRED)				
BAR MARK	NO	LENGTH	SHAPE	LOCATION
B1007E	6	56'-9"	STR	BOTTOM
B1008E	6	10'-1"	STR	BOTTOM, ENDS
B1011E	6	34'-0"	STR	BOTTOM
B1116E	12	26'-0"	STR	TOP, OVER COLUMN
B1124E	12	43'-7"	BENT	TOP
B625E	12	18'-9"	BENT	END
B533E	4	40'-11"	STR	MIDDLE
	SER OF TO			
B558E	4	32'-10"	BENT	STIRRUP
	SER OF TO			
B559E	1	14'-1"	BENT	STIRRUP
	SER OF TO			
B561E	8	13'-10"	BENT	STIRRUP
	SER OF TO			
B561E	2	13'-9"	BENT	STIRRUP
	SER OF TO			
B565E	6	13'-7"	BENT	STIRRUP
	SER OF TO			
B565E	26	13'-1"	BENT	STIRRUP
	SER OF TO			
B567E	2	13'-1"	BENT	STIRRUP
	SER OF TO			
B570E	6	12'-11"	BENT	STIRRUP
	SER OF TO			
B570E	2	12'-6"	BENT	STIRRUP
B580E	4	9'-3"	BENT	STIRRUP
	SER OF TO			
B581E	8	6'-1"	BENT	STIRRUP
	SER OF TO			
B581E	190	7'-5"	BENT	STIRRUP
B588E	14	5'-10"	BENT	COLUMN
B589E	2	18'-7"	BENT	COLUMN STIRRUP
	SER OF TO			
B589E	3	19'-2"	BENT	COLUMN TIE
	SER OF TO			
B590E	4	3'-2"	BENT	COLUMN TIE
	SER OF TO			
B590E	3	3'-5"	BENT	COLUMN TIE
	SER OF TO			
B991E	16	8'-8"	STR	DOWEL
B593E	28	5'-1"	BENT	COLUMN
B594E	14	4'-11"	BENT	COLUMN



NOTE:
 REINFORCEMENT IS INCLUDED IN THE BID PRICE FOR THE PRECAST CONCRETE SUBSTRUCTURE CAP BEAM THE REINFORCEMENT IS INSTALLED IN. (1) BAR B586E APPLIES ONLY TO THE TYPE 8 CAP BEAM LOCATED @ SPANDREL 4-6
 "SER" INDICATES A SERIES BAR

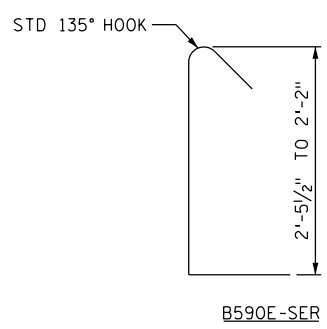
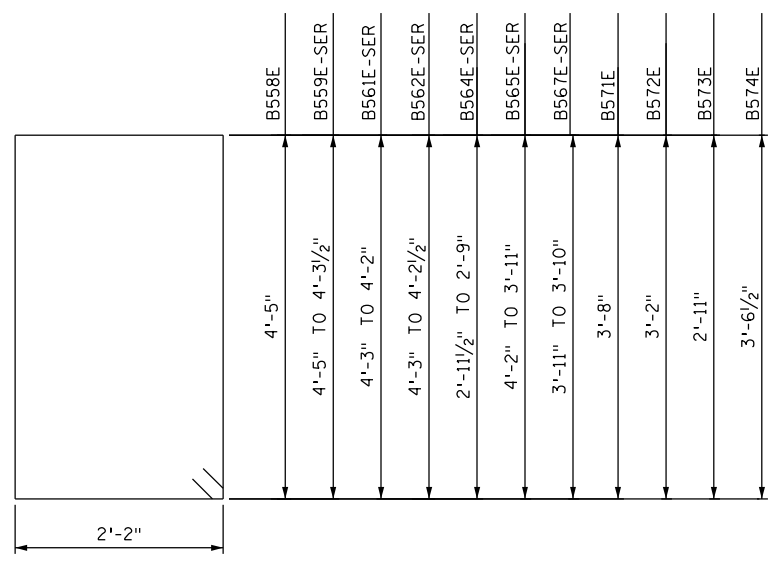
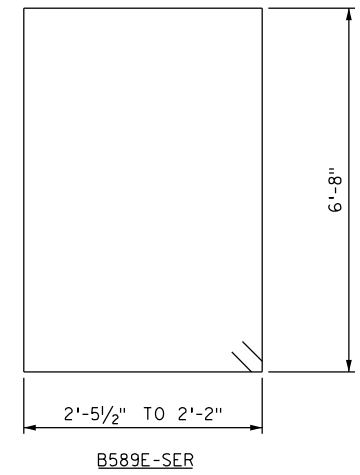
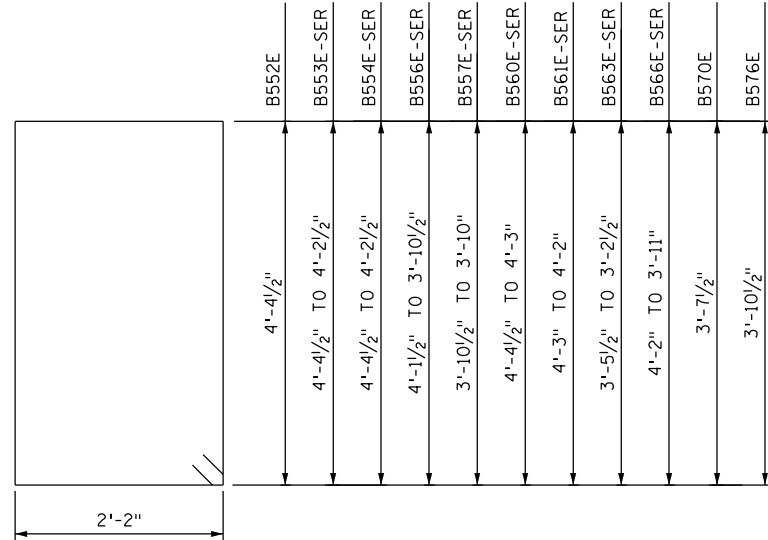
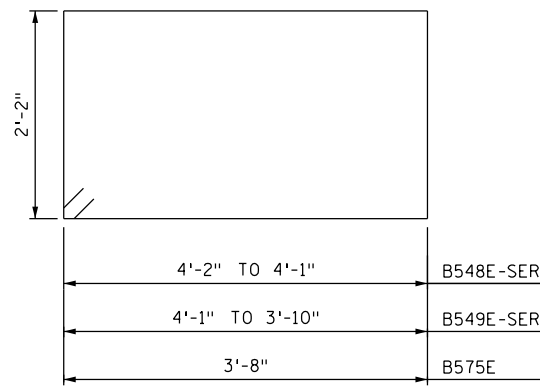


I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
 ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER
 47097 LICENSE NO.
 8/14/2014 DATE

DESIGN BY: AMK
 CAD BY: RAM
 CHECKED BY: AJN
 LAST REVISION: 01/27/2016

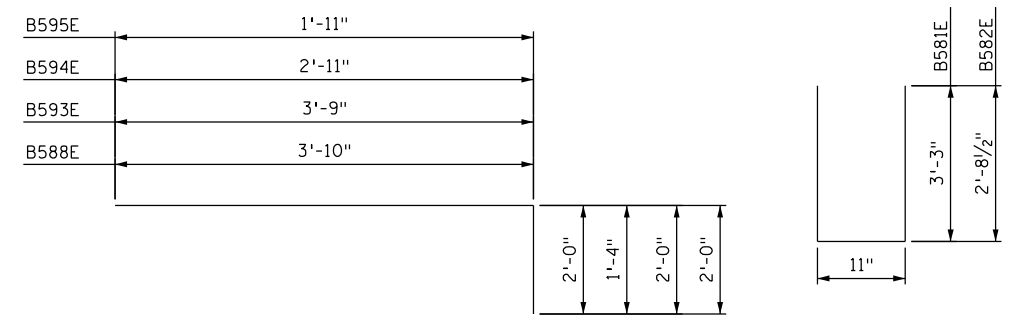
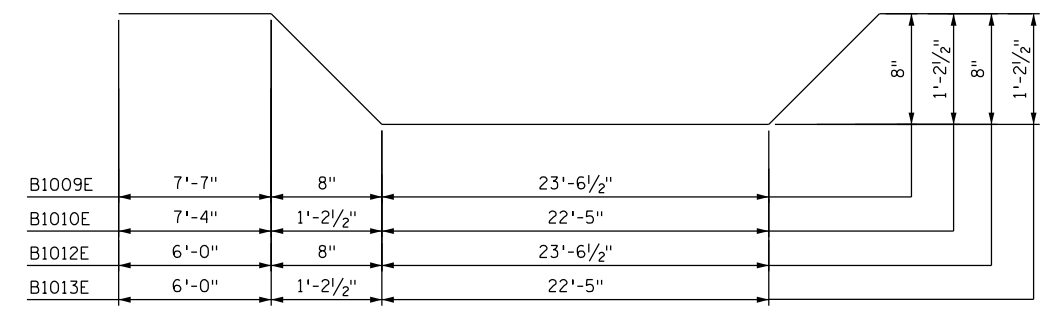
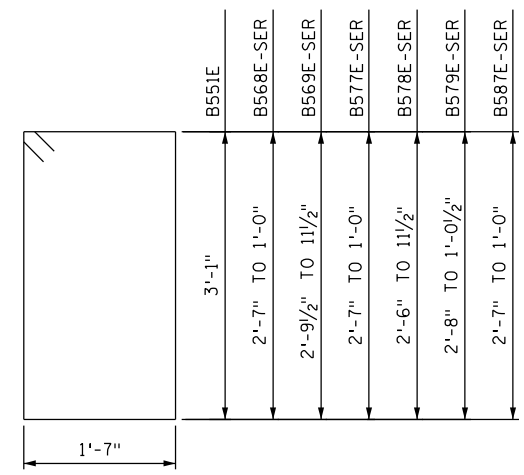
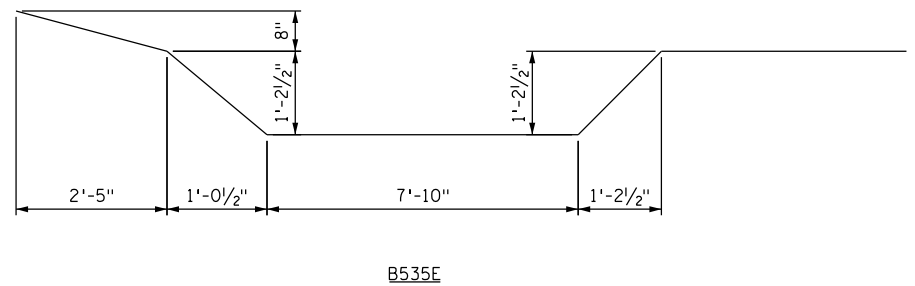
SPANDREL CAP BEAM BAR LIST AND QUANTITIES (2 OF 3)
 C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

SHEET
 B117R2
 B176



SUMMARY OF QUANTITIES CAP BEAMS		
ITEM	UNIT	QUANTITY
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 1	EA	1
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 2	EA	1
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 3	EA	1
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 4	EA	19
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 5	EA	1
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 6	EA	1
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 7	EA	1
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 8	EA	3
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 9	EA	1
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 10	EA	1
PRECAST CONCRETE SUBSTRUCTURE CAP BEAM, TYPE 11	EA	1
② REINFORCEMENT BARS (EPOXY-COATED)	LBS	311,050
ANCHORAGE TYPE 2	EA	64
ANCHORAGE TYPE 4	EA	464
② 2" Ø CORRUGATED PLASTIC DUCT	LF	2240
② POLYTETRAFLUOROETHYLENE (PTFE) SHEETING	SF	5065
② SHEAR STUDS	EA	2906
② S.S. PLATE	LBS	80,330

311,040



- NOTES:
- "SER" INDICATES A SERIES BAR
 - ITEM IS INCLUDED IN THE BID PRICE FOR THE PRECAST CONCRETE SUBSTRUCTURE CAP BEAM THE MATERIAL IS FABRICATED IN OR INSTALLED WITH.



I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

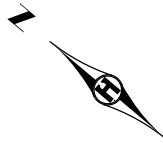
AM Kingsley
 ANGELA M. KINGSLEY, PROFESSIONAL ENGINEER
 47097 LICENSE NO.
 8/14/2014 DATE

DESIGN BY: AMK
 CAD BY: RAM
 CHECKED BY: AJN
 LAST REVISION: 01/27/2016

SPANDREL CAP BEAM BAR LIST AND QUANTITIES (3 OF 3)

C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705
 BRIDGE 2441 S.P. 027-605-029

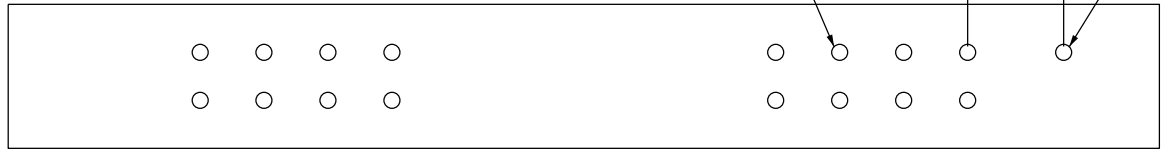
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#7 DOWEL CUT FLUSH WITH TOP OF CAP BEAM. APPROX. 1'-8" EMBEDMENT

1'-0"

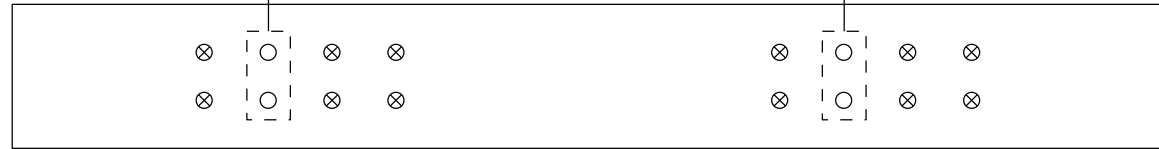
#8 DOWEL, 3'-6" EMBEDMENT



CAP BEAM - 3-1 PLAN

#9 DOWEL, 10³/₈" EMBEDMENT

#9 DOWEL, 6⁵/₈" EMBEDMENT



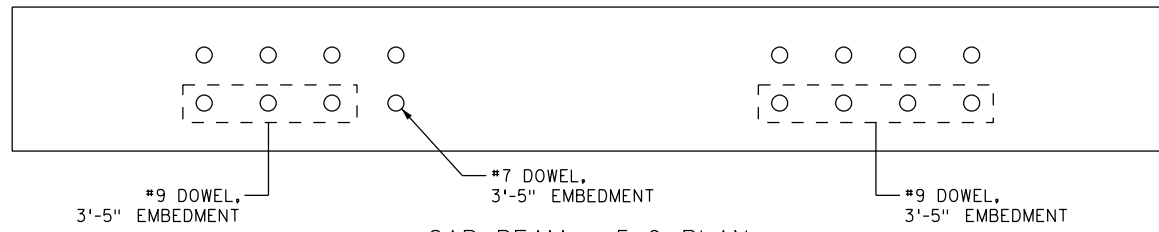
CAP BEAM - 4-4 PLAN

#9 DOWEL, 1'-3¹/₄" EMBEDMENT

#9 DOWEL, 1'-3¹/₄" EMBEDMENT

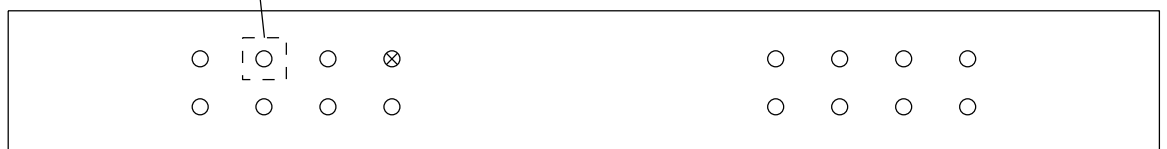


CAP BEAM - 3-8 PLAN



CAP BEAM - 5-0 PLAN

#9 DOWEL, 2'-8" EMBEDMENT



CAP BEAM - 3-9 PLAN

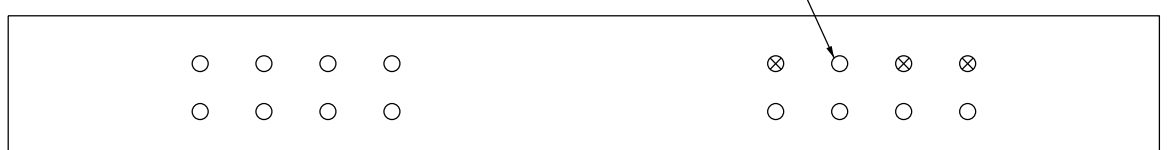
#6 DOWEL, 1'-5¹/₂" EMBEDMENT

#6 DOWEL, 1'-4" EMBEDMENT



CAP BEAM - 5-1 PLAN

DRILL BIT GOT STUCK. CUT FLUSH, 2'-9¹/₂" EMBEDMENT



CAP BEAM - 3-13 PLAN

#9 DOWEL, 3'-2" EMBEDMENT

#9 DOWEL, 3'-2" EMBEDMENT

#7 DOWEL, 3'-10" EMBEDMENT



CAP BEAM - 5-2 PLAN

NOTES:

- ⊗ 1" Ø GRADE 105 HIGH STRENGTH DYWIDAG THREADED REBAR, 3'-6" EMBEDMENT.
- #9 DOWEL W/ DESIGN EMBEDMENT, UNO

NOT TO SCALE.



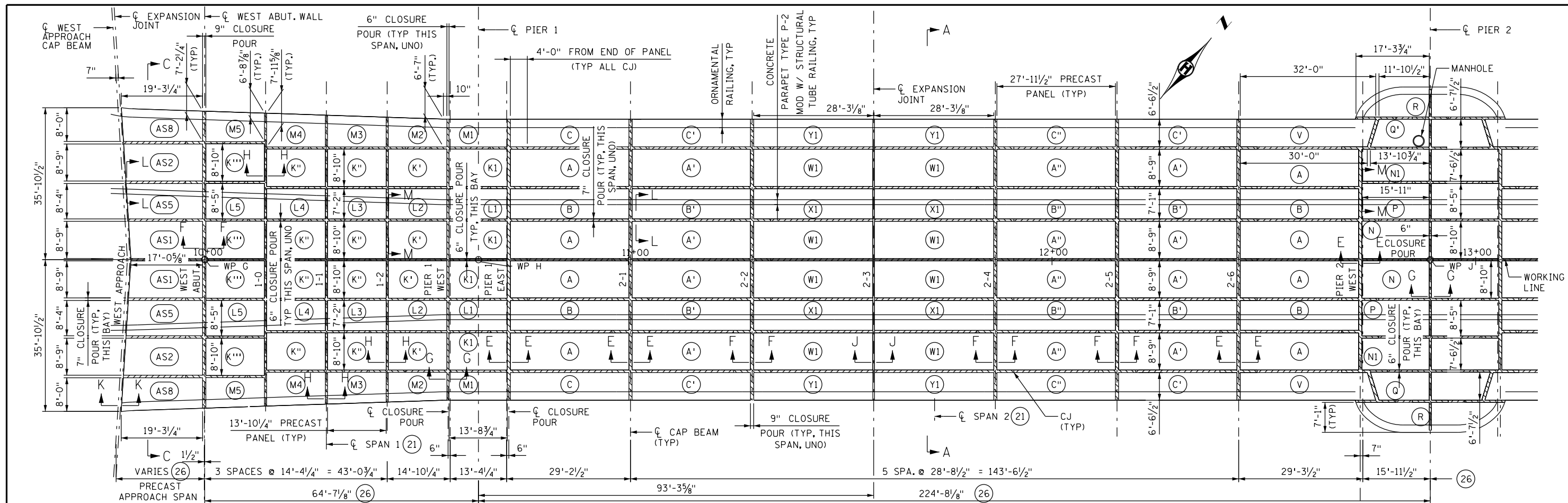
AS-BUILT - CAP BEAM TO COLUMN DOWEL CONNECTION

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BRIDGE 2441 S.P. 027-605-029

SHEET

B118A

B176



NOTES:

- FOR SECTIONS A-A AND C-C, SEE SHEETS B123 AND B124 (DECK SECTIONS).
- FOR PANEL DETAILS, SEE SHEETS B125 TO B138 (DECK PANEL DETAILS).
- TRANSVERSE CLOSURE POURS ARE CENTERED OVER SPANDREL CAP BEAMS, UNLESS NOTED OTHERWISE.
- ORNAMENTAL RAILINGS SHALL BE PRECAST SEPARATELY FROM THE DECK PANELS AND ARE ASSUMED TO BE PLACED OUTSIDE OF THE ABC CLOSURE PERIOD.
- PORTIONS OF THE CONCRETE PARAPET TYPE P-2 MODIFIED ARE ASSUMED TO BE PRECAST WITH THE DECK PANELS AS SHOWN IN THE DECK PANEL DETAILS AND PARAPET DETAILS. IF THE CONTRACTOR CHOOSES TO MODIFY THE LENGTH OF PRECAST PARAPET INTEGRAL WITH THE DECK PANEL, THE CONTRACTOR SHALL SUBMIT REVISED CALCULATED DECK PANEL CAMBER TO THE ENGINEER FOR REVIEW AND SHALL CAMBER THE DECK PANELS ACCORDING TO THE ACCEPTED SUBMITTAL.
- CONTRACTOR SHALL SHOW PARAPET AND ORNAMENTAL RAILING ALIGNMENTS AND ASSOCIATED INSERTS AND APPURTENANCES FOR EACH PANEL, REGARDLESS OF PANEL TYPE, IN DECK PANEL SHOP DRAWINGS, ACCORDING TO THE SPECIAL PROVISIONS.
- CONTRACTOR SHALL DETERMINE ALL WEIGHTS OF PANELS AND APPURTENANCES PRIOR TO SHIPPING OR HANDLING.
- DECK PANELS ARE SYMMETRIC ABOUT THE CENTERLINE OF BRIDGE, UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL SUBMIT LIFTING ANCHOR DETAILS FOR ACCEPTANCE BY THE ENGINEER PRIOR TO USE. THE TOP OF THE LIFTING ANCHORS SHALL BE RECESSED 1/2 INCH MINIMUM FROM THE SURFACE OF THE PANEL. THE LIFTING ANCHORS SHALL BE HOT-DIP GALVANIZED.
- ALTERNATE LIFT LOCATIONS AND CONFIGURATIONS MAY BE PROPOSED BY THE CONTRACTOR. CONTRACTOR SHALL SUBMIT LIFT CONFIGURATION DESIGN AND CALCULATIONS TO THE ENGINEER FOR ACCEPTANCE.
- BARS EXTENDING FROM PRECAST PANELS INTO TRANSVERSE AND LONGITUDINAL CLOSURE POURS SHALL BE IN OFFSETTING LOCATIONS RELATIVE TO ADJACENT PANELS.

- IMMEDIATELY PRIOR TO PRECAST PANEL CONCRETE PLACEMENT DURING FABRICATION, THOROUGHLY COAT THE FACES OF THE FORM WORK AT ALL CLOSURE JOINTS WITH AN APPROVED CONCRETE RETARDING ADMIXTURE.
 - IMMEDIATELY AFTER FORMS ARE STRIPPED FROM PRECAST PANELS DURING FABRICATION, USE A HIGH-PRESSURE STREAM OF WATER TO ROUGHEN THE FACES AT ALL CLOSURE JOINTS TO AN AMPLITUDE OF 1/4 INCH WITHOUT DISPLACING COARSE AGGREGATE.
 - EDGES OF CLOSURE POUR SHALL BE SATURATED SURFACE DRY IMMEDIATELY PRIOR TO PLACING UHPC. ALL CONCRETE FACES TO BE IN CONTACT WITH UHPC SHALL BE CLEANED AND PREPARED IN ACCORDANCE WITH THE SPECIAL PROVISIONS PRIOR TO PLACING UHPC.
 - MOCKUPS OF EACH UHPC POUR SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIAL PROVISIONS PRIOR TO ACTUAL UHPC CONSTRUCTION.
 - USE CONTINUOUS TOP AND BOTTOM FORMS FOR UHPC JOINTS.
 - TWO OR MORE PORTABLE BATCHING UNITS SHALL BE USED FOR MIXING OF THE UHPC.
 - EACH UHPC PLACEMENT SHALL BE CAST USING ONE CONTINUOUS POUR. VERTICAL COLD JOINTS ARE PERMITTED ONLY WHERE INDICATED ON THE PLANS OR AS ACCEPTED BY THE ENGINEER. HORIZONTAL COLD JOINTS ARE NOT PERMITTED. UHPC SHALL BE PRODUCED TO FILL ANY ONE CONNECTION AREA WITHIN 30 MINUTES.
 - IF THE CONTRACTOR ELECTS TO OVERLAY THE NORTH SIDEWALK AFTER THE COMPLETION OF PHASE 2, THE CONTRACTOR SHALL DIAMOND GRIND THE CLOSURE POURS ON THE NORTH SIDEWALK TO BE FLUSH WITH THE TOP OF THE DECK PANELS PRIOR TO OPENING THE SIDEWALK TO PEDESTRIAN TRAFFIC IN PHASE 3 OF CONSTRUCTION.
- PANEL SIZES SHOWN ON THESE PLANS WERE SELECTED TO ALLOW FOR TRUCKING OF PANELS FROM A PRECAST PLANT TO THE CONSTRUCTION SITE. THE CONTRACTOR MAY ELECT TO USE LARGER PANEL SIZES IF THE CONTRACTOR CHOOSES TO SELF-PERFORM THE PRECAST PANELS IN AN ALTERNATE PRECAST SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING SHOP DRAWINGS AND ERECTION CALCULATIONS FOR LARGER PANELS FOR ACCEPTANCE BY THE ENGINEER. IF THE CONTRACTOR CHOOSES TO USE LONGER PANELS THAT SPAN OVER THE CAPBEAMS, THE CONTRACTOR SHALL ALSO SUBMIT NEGATIVE MOMENT REGION CALCULATIONS FOR ACCEPTANCE BY THE ENGINEER.

- DECK PANEL PLACEMENT WITHIN EACH SPAN SHALL BE SEQUENCED SYMMETRICALLY ABOUT THE CENTERLINE OF THE SPAN. FOR ADDITIONAL REQUIREMENTS, SEE SHEETS B9 AND B10 (CONSTRUCTION STAGING NOTES).
- FOR CLOSURE POUR SEQUENCING NOTES, SEE SHEET B120 (DECK PLAN 2 OF 4).
- FOR SECTIONS E-E, F-F, G-G, H-H, J-J, K-K, L-L, AND M-M AND OTHER MISCELLANEOUS DECK DETAILS, SEE SHEETS B139 AND B140 (DECK DETAILS SHEETS).
- ALL PRECAST PANEL STRESSES DURING HANDLING AND ERECTION SHALL NOT EXCEED THE MODULUS OF RUPTURE $f_r = 7.5 \cdot \sqrt{f'_{ci}}$, f'_{ci} IN PSI, DIVIDED BY A SAFETY FACTOR OF 1.5 (WHERE f'_{ci} IS THE CONCRETE STRENGTH AT THE TIME OF ERECTION). ALL DEAD LOADS SHALL BE MULTIPLIED BY A FACTOR OF 1.25.
- FOR DECK BEARING CONDITIONS AT CAP BEAMS, SEE SHEET B7 (JOINT LOCATIONS AND BEARING CONDITIONS).
- CONTRACTOR TO FIELD VERIFY SPAN DIMENSIONS PRIOR TO SUBMITTING SHOP DRAWINGS.

- SEE SHEETS B122A-E FOR REVISED DECK PANEL LAYOUT BASED ON POST CONTRACTOR SURVEY.
- SEE PRECAST DECK PANEL SHOP DRAWING 120 FOR DETAILS.
- SEE UHPC SHOP DRAWING 154 FOR DETAILS.

LEGEND:

- (XN) INDICATES DECK PANEL TYPE XN
- (ASN) INDICATES APPROACH SPAN PANEL TYPE N
- INDICATES LONGITUDINAL UHPC CLOSURE POUR
- INDICATES TRANSVERSE UHPC CLOSURE POUR
- N-N INDICATES SPANDREL NUMBER

	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA. <div style="text-align: center; margin-top: 10px;"> DANIEL F. ENSER, PROFESSIONAL ENGINEER </div>	DESIGN BY: CB CAD BY: CB CHECKED BY: EBR LAST REVISION: 10/07/2014	AS-BUILT - DECK PLAN (1 OF 4) C.S.A.H. 5 / HENNEPIN COUNTY PROJECT 0705 BRIDGE 2441 S.P. 027-605-029	SHEET B119R B176
	<div style="display: flex; justify-content: space-between;"> 41308 8/14/2014 </div> <p style="text-align: center; margin-top: 5px;"> LICENSE NO. DATE </p>	<p style="text-align: right; margin: 0;">MATCH LINE A-A STA 12+89.27</p>		