



## Memo

**Bridge Office**  
Mail Stop 610  
3485 Hadley Avenue North  
Oakdale, MN 55128-3307

Phone No: 651/366-4500  
Fax No: 651/366-4497

April 24, 2013

To: Tony Schrempp  
MnDOT Central Resident Construction Office

From: Arielle Ehrlich *HLGE*  
State Bridge Design Engineer  
Bridge Office

Subject: S.P. 2774-27504A  
Bridge No. 27504  
Revised Plan Sheets

Enclosed is the revised plan sheet 9-R2 for Bridge 27504. The deflection diagram for Beam 7 was flipped between spans, and this revision was made to reflect the correct deflection diagram. This revision will not affect the cost for this project.

Copies of prints sent to:

- Tony Schrempp (1)
- Paul Pilarski (1)
- Ben Jilk (1)
- Bridge Office File (1)

Encl: Copies of prints as noted.

c.c.: N. Daubenberger / A. Ehrlich  
J. Southward



## Memo

**Bridge Office**  
Mail Stop 610  
3485 Hadley Avenue North  
Oakdale, MN 55128-3307

Phone No: 651/366-4500  
Fax No: 651/366-4497

September 13, 2013

To: Steve Barrett  
Resident Engineer  
Golden Valley

From: Arielle Ehrlich *ALGE*  
State Bridge Design Engineer  
Bridge Office

Subject: S.P. 2774-16  
Bridge No. 27504  
Revised Plan Sheets

Enclosed are the revised plan sheets 16-R2, 17R and 18-R2 for Bridge 27504. These revisions were made to clarify section E-E on sheet 16-R2, to change slope of Mock-Up panel on sheet 17R and to change Construction Sequence on sheet 18-R2. These revisions will not affect the cost for this project.

Copies of prints sent to:

- Steve Barrett (3)
- Ron Rauchle (1)
- Paul Pilarski (1)
- Ben Jilk (1)
- Bridge Office File (1)

Encl: Copies of prints as noted.

c.c.: N. Daubenberger / A. Ehrlich  
J. Southward



## Memo

**Bridge Office**  
Mail Stop 610  
3485 Hadley Avenue North  
Oakdale, MN 55128-3307

Phone No: 651/366-4500  
Fax No: 651/366-4497

July 30, 2013

To: Steve Barrett  
Resident Engineer  
Golden Valley

From: Arielle Ehrlich *ALGE*  
State Bridge Design Engineer  
Bridge Office

Subject: S.P. 2774-16  
Bridge No. 27504  
Revised Plan Sheets

Enclosed are the revised plan sheets 1-R2, 2-R2, 3-R2 and 23-R1 for Bridge 27504. These revisions were made to add conduit through the sidewalk on the bridge. Since this adds a pay item, this revision will affect the cost for this project.

Copies of prints sent to:

- Steve Barrett (3)
- Ron Rauchle (1)
- Paul Pilarski (1)
- Ben Jilk (1)
- Bridge Office File (1)

Encl: Copies of prints as noted.

c.c.: N. Daubenberger / A. Ehrlich  
J. Southward

## Addendum 1 for changes to the Plans and Special Provisions for Bridge Nos. 7268 and 27504:

### Plans for Bridge No. 7268:

- 1) On Sheet 1R of 22 for Bridge No. 7268 the following changes were made:
  - a. Notes and call-outs were added for reconstruction of paving brackets.
  - b. Circle note 12 was revised.
  - c. Signatures were updated.
- 2) On Sheet 2R of 22 for Bridge No. 7268 the following changes were made:
  - a. In the "Schedule of Quantities", the quantity for Anchorages Type Reinf Bars changed from 92 each to 176 each.
  - b. In the "Schedule of Quantities", a pay item was added for Structural Steel (3306) with a quantity of 1400 pounds.
  - c. In the "Schedule of Quantities", a pay item was added for Furnish and Install Beam Stiffeners with a quantity of 8 each.
- 3) On Sheet 6R of 22 for Bridge No. 7268 the following changes were made:
  - a. A second reinforcing anchorage was added to the paving bracket, with quantities adjusted accordingly.
  - b. A note was added specifying the paving bracket is level.
  - c. A call-out for the deck protection plate was added.
- 4) On Sheet 8R of 22 for Bridge No. 7268 the following changes were made:
  - a. Added beam stiffener angles and call-outs to "Framing Plan".
  - b. Added circle note S1 for beam stiffener angles.
- 5) On Sheet 9R of 22 for Bridge No. 7268 the following changes were made:
  - a. Added beam stiffener angle details.



- 6) On Sheet 12R of 22 for Bridge No. 7268 the following changes were made:
  - a. Added beam stiffeners to “Summary of Quantities”.
  - b. Added beam stiffener to “Section B-B”.
- 7) On Sheet 19R of 22 for Bridge No. 7268 the following changes were made:
  - a. Revised details for F1 bearings.

Plans for Bridge No. 27504:

- 8) On Sheet 1R of 34 for Bridge No. 27504 the following changes were made:
  - a. Notes and call-outs were added for reconstruction of paving brackets.
  - b. Circle note 12 was revised
  - c. Signatures were updated.
- 9) On Sheet 2R of 34 for Bridge No. 27504 the following changes were made:
  - a. In the “Schedule of Quantities”, the quantity for Structural Steel (3309) changed from 2000 pounds to 3400 pounds; and the quantity for Anchorages Type Reinf Bars changed from 96 each to 184 each.
  - b. In the “Schedule of Quantities”, a pay item was added for Furnish and Install Beam Stiffeners with a quantity of 8 each.
- 10) On Sheet 3R of 34 for Bridge No. 27504 the following changes were made:
  - a. Deck thickness was revised in “Reconstructed Transverse Section”.
- 11) On Sheet 5R of 34 for Bridge No. 27504 the following changes were made:
  - a. Circle note 3 was revised.
- 12) On Sheet 6R of 34 for Bridge No. 27504 the following changes were made:
  - a. A second reinforcing anchorage was added to the paving bracket, with quantities adjusted accordingly.
  - b. A note was added specifying the paving bracket is level.
  - c. A call-out for the deck protection plate was added

13) On Sheet 8R of 34 for Bridge No. 27504 the following changes were made:

- a. Revised notes to clarify new steel and salvaged steel.
- b. Added stiffener angles and call-outs to "Framing Plan".
- c. Added circle note S1 for stiffener angles.

14) On Sheet 9R of 34 for Bridge No. 27504 the following changes were made:

- a. Added deflection ordinate at field splice location.
- b. Added notes to clarify new and salvaged steel.
- c. Added stiffener angle to "Beam 7 Elevation".

15) On Sheet 11R of 34 for Bridge No. 27504 the following changes were made:

- a. Added beam stiffener angle details.

16) On Sheet 12R of 34 for Bridge No. 27504 the following changes were made:

- a. Added quantity for beam stiffeners in "Summary of Quantities".
- b. Revised circle note 12.
- c. Added circle note 13.
- d. Clarified 1'-2" dimension in "Partial Deck Plan".

17) On Sheet 13R of 34 for Bridge No. 27504 the following changes were made:

- a. Revised circle note 12.
- b. Added circle note 13.
- c. Clarified 1'-2" dimension in "Partial Deck Plan".

18) On Sheet 14R of 34 for Bridge No. 27504 the following changes were made:

- a. Added descriptions to Panel P1 and P3 titles.

19) On Sheet 16R of 34 for Bridge No. 27504 the following changes were made:

- a. Revised haunch forming scheme and call-outs.
- b. Revised note for reinforcing bars attached to vertical adjustment device.

20) On Sheet 18R of 34 for Bridge No. 27504 the following changes were made:

- a. Revised required grout strength in Sequence note 3.
- b. Switched order of Sequence steps 5 and 6, and revised note 6.
- c. Revised Sequence notes 7, 9, and 10.

21) On Sheet 21R of 34 for Bridge No. 27504 the following changes were made:

- a. Revised haunch forming scheme.

22) On Sheet 22R of 34 for Bridge No. 27504 the following changes were made:

- a. Revised haunch forming scheme.

23) On Sheet 24R of 34 for Bridge No. 27504 the following changes were made:

- a. Added longitudinal section at pier.

24) On Sheet 26R of 34 for Bridge No. 27504 the following changes were made:

- a. Revised rail rustication from  $\frac{3}{4}$ " to  $\frac{1}{2}$ ".

25) On Sheet 31R of 34 for Bridge No. 27504 the following changes were made:

- a. Revised details for F1 bearings

Special Provisions:

26) For SB-7.5, make the following revisions:

- a. Replace the title with the following:

(2401) Structural Concrete: (Contractor Concrete Mix Design, Bridge Nos. 7268 and 27504)”.

- b. Replace the first sentence of the first paragraph with the following:

For the cast-in-place deck of Bridge No. 7268 and the precast deck panels of Bridge No. 27504, the Contractor shall design a 3Y33HP concrete mix that will minimize cracking.

- c. Delete SB-7.5.C.7 (Modulus of elasticity tests)

- d. Delete SB-7.5.C.8 (Creep and shrinkage tests)

- e. Revise the title of SB-7.5.E to “Slab Placement and Curing”.

- f. Revise the title of SB-7.5.E.1 to “Full-depth slab curing”, and replace the second paragraph with the following:

Bridge slab shall have conventional wet curing applied immediately following the finishing machine or air screed. The conventional wet curing shall consist of pre-wetted burlap covered with white plastic sheeting. The burlap shall cover 100% of the deck area with no visible openings, the only exception being that area of the deck which will be located beneath the permanent barrier. The wet curing shall be placed no later than 30 minutes after the finishing machine has completed final strike-off of the concrete surface. If, at any time, the Contractor fails to place the wet curing within the 30 minute time period, and to the satisfaction of the Engineer, the Contractor will be assessed a non-compliance charge of \$500.00 for every 5 minute period or any portion thereof, which the Engineer determines that the Contractor has not complied. The non-compliance charge, set forth above, may be assessed more than once. The slab surface shall be kept continuously wet for an initial curing period of at least 7 days. The Contractor must provide adequate personnel to ensure the burlap is maintained in a wet condition on weekends and/or holidays. In order to comply with the wet curing requirement a work bridge following the finish machine may be required, and an additional center rail may be required on wide bridges.

If for any reason wet burlap cannot be placed within 30 minutes after carpet dragging, apply a membrane curing compound within 30 minutes meeting the requirements of MnDOT Spec. 3754, section B (Requirements for Concrete Pavement Membrane Curing Compound). Apply the curing compound with approved power-operated spray equipment. Place the membrane cure material homogeneously to provide

a uniform solid white opaque coverage on all exposed concrete surfaces (equal to a white sheet of paper). The membrane cure shall be placed within 30 minutes of concrete placement unless otherwise directed by the Engineer. Failure to comply with this provision will result in a price reduction for the concrete item involved in accordance with MnDOT Spec. 1503. The curing compound is not a substitute for the cure specified above and below, but is required for moisture retention until the conventional wet curing material can be placed.

27) For SB-7.6C, add the following lab testing requirements:

4. Hardened air content (ASTM C457) at a minimum of 7 days
5. Rapid chloride permeability (ASTM C1202) at 28 days and 56 days (2 specimens for 28 day test and 2 test specimens for 56 day test) (Take 2 specimens from each batch of a 2 batch mix)
6. ASR Expansion results

28) For SB-8.1.G, add the following to the end of the paragraph:

Repair of coatings by use of aerosol spray paint is not permitted.

29) In the second paragraph under SB-8.4, replace the reference to SB-7.5 with SB-8.5.

30) Replace SB-8.7.A.2 with the following:

Immediately before the studs are installed, the weld area shall be cleaned to bright metal by sandblasting or other approved methods.

31) Add the following paragraph after the 6<sup>th</sup> paragraph of SB-10.A:

The Contractor shall demonstrate the ability to accurately locate and splice post-tensioning ducts by placing two lines of ducts in the mock-up panels, and splicing and sealing the ducts after the placement of the panel concrete. Grouting of these ducts will not be required.

32) Revise the second paragraph under SB-11.1.A as follows:

The concrete for the precast panels shall be mix 3Y33HP, as per SB-7.5.

33) Replace the bulleted note under SB-11.1.B.11 with the following:

Submit written verification acknowledging compatibility with chip seal wearing course. Verification letter shall be signed by representatives from

the chip seal epoxy manufacturer and the grout manufacturer, and indicate acknowledgement from the Contractor.

34) Add the following to the end of SB-11.6.A:

Inplace shear connectors shall be removed such that no more than the attached flange of the angle or channel remains, as long as material left in place does not impede grout flow. Contractor shall take care to not damage beam flanges.

35) Replace SB-11.6.D with the following:

Correct any shifting of precast concrete deck panels during subsequent placement and joining of all the deck panels.

36) Add SB-11.6.E as follows:

Protect openings over girder flanges from surface water and debris intrusion that may occur prior to grouting pockets. Alternatively, Contractor may propose method for cleaning flanges after deck panel placement subject to the approval of the Engineer.

37) Make the following revisions to SB-11.7:

- a. Move Step F (install strands) up to Step D.
- b. Rename Step D (grout transverse joints) as Step E.
- c. Rename Step E as Step F and replace with the following:

Fully tension strands. Do not begin stressing operations until the grout in the transverse joint reaches the strength and age designated on the plans. Stress strands within 36 hours of transverse joint grouting, but not until the panel transverse shear key joint grout has attained the required compressive strength (based on manufacturer's data).

- d. Replace Step G with the following:

Grout all ducts (See SB-12) upon approval of stressing logs from the Engineer.

38) Replace SB-11.8.H with the following:

Do not apply distributed loads exceeding 10 psf, or concentrated loads exceeding 1000 pounds, to the precast concrete deck panels until the

structural non-shrink grout in the shear blockouts and the girder haunches has reached a strength of 2500 psi, based on manufacturer's published data.

39) Insert the following after the first sentence of SB-12.3.A:

Storage of prestressing strand in direct contact with the ground will not be permitted.

40) Under SB-12.3.E.a, add the following requirement to the grouting operation plan:

13. Warm weather grout contingency plan

41) Add the following to the end of the first paragraph of SB-12.3.E.e:

Head boxes are recommended for placement of grout in transverse panel joints and shear blockouts.

42) Revise the second sentence of the second paragraph of SB-13.F.5 to read as follows:

Conduct normal grouting operations at a pressure of 10 psi to 15 psi measured at the grout inlet.

43) Revise the second sentence of the second paragraph of SB-13.F.5 to read as follows:

Concrete for bridge seat repairs shall be either mix 3Y43 or 3Y46

44) Add the following new special provision:

SB-13.10 Beam Stiffeners

This work consists of furnishing and installing supplemental beam stiffeners at the piers of the in-place beams of Bridge Nos. 7268 and 27504, as shown in the Plans. The work shall be performed in accordance with Mn/DOT 2402, 2471, and the following:

Material for the stiffeners shall conform to the requirements of Mn/DOT 3309, and shall be galvanized after fabrication per Mn/DOT 3394.

Fasteners shall be high strength conforming to the requirements of Mn/DOT 3391, and shall be galvanized per Mn/DOT 3392.

Beam stiffeners will be measured by each stiffener installed and accepted.



Payment for Item No. 2433.602, "FURNISH AND INSTALL BEAM STIFFENERS", will be made at the Contract price per each and shall be compensation in full for all costs of performing the work described above.

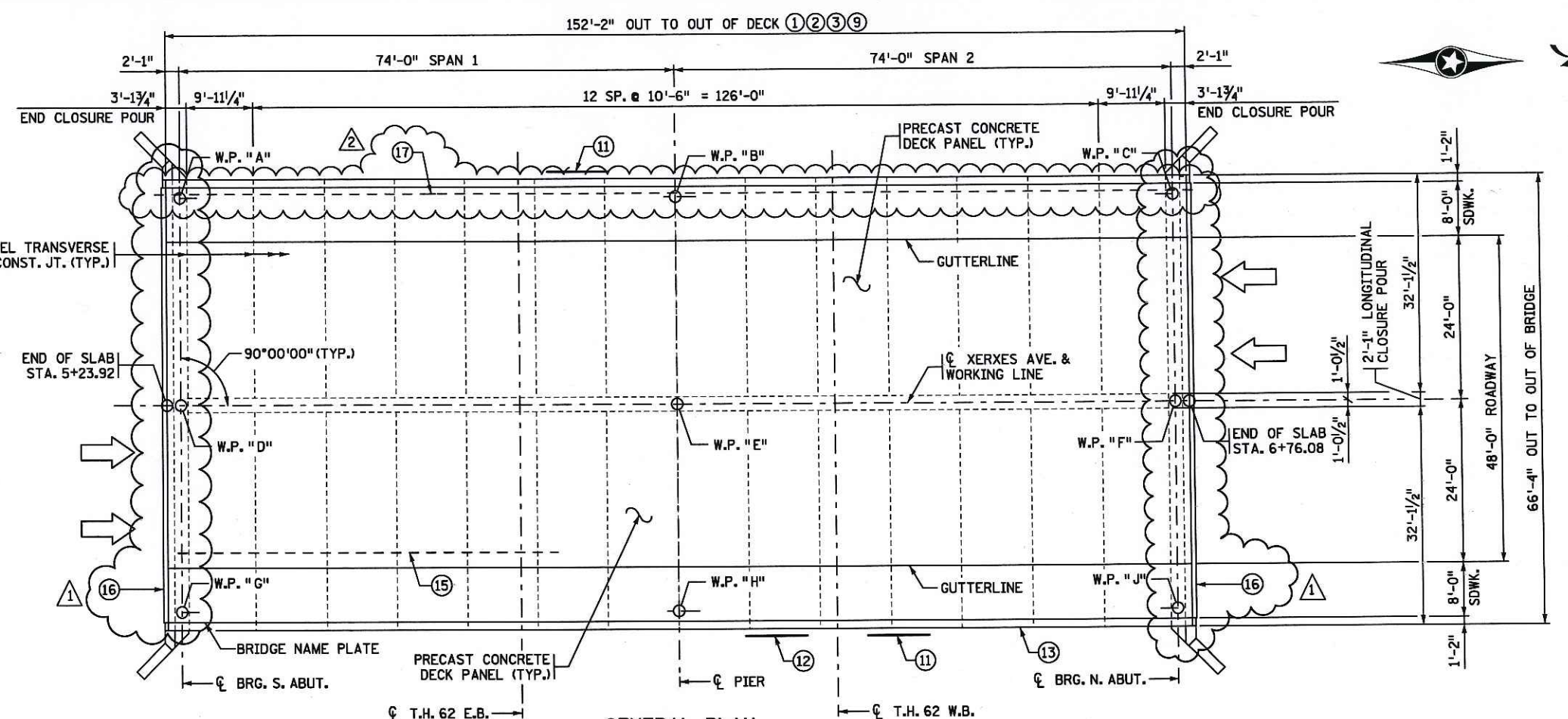
MINNESOTA PROJECT NUMBER  
STATE FUNDS  
DESIGN DATA

MAXIMUM ALLOWABLE DESIGN STRESSES:  
REINFORCED CONCRETE:  
f'c = 4 ksi n = 8  
fy = 60 ksi REINFORCEMENT  
STRUCTURAL STEEL: fy = 36 ksi  
PRECAST CONCRETE (DECK PANELS):  
f'c = 6 ksi n = 7  
fpu = 270 ksi LOW RELAXATION STRANDS  
0.72 fpu FOR INITIAL POST-TENSION  
0.6" DIA. STRANDS

DECK AREA = 10094 SQ. FT.  
14800 CURRENT ADT FOR YEAR 2012  
OPERATING RATING HS 33.2

LIST OF SHEETS

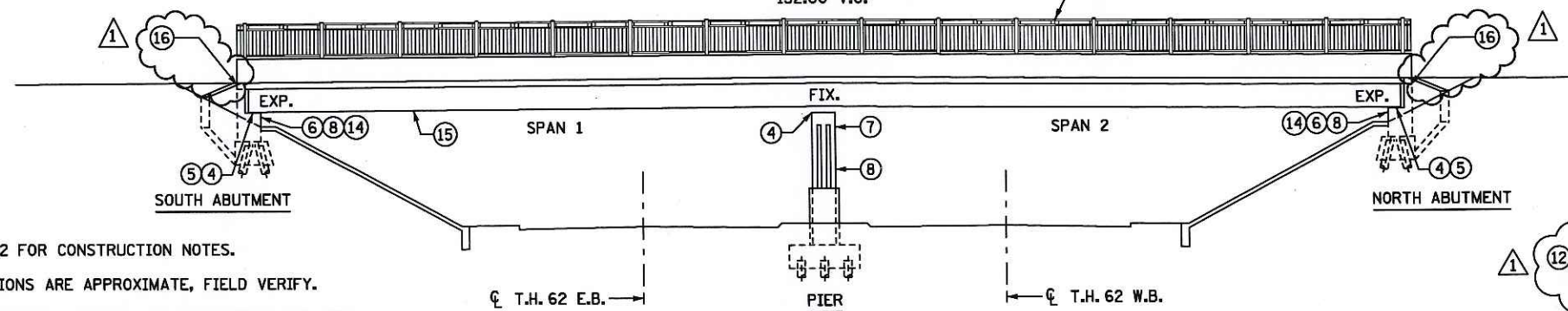
NO.	DESCRIPTION
1	GENERAL PLAN AND ELEVATION
2	SCHEDULE OF QUANTITIES
3	TRANSVERSE SECTIONS
4	BRIDGE LAYOUT
5	REMOVAL DETAILS
6-7	ABUTMENT RECONSTRUCTION & REPAIRS
8-11	STRUCTURAL STEEL DETAILS
12-24	SUPERSTRUCTURE DETAILS & REINFORCEMENT
25-26	CONCRETE BARRIER TYPE MOD P-1 (TL-2)
27-28	ORNAMENTAL METAL RAILING TYPE SPECIAL
29-33	DETAILS
34	AS-BUILT BRIDGE DATA



GENERAL PLAN  
RECONSTRUCTION

+0.801%      -0.545%

V.P.I. 6+00.00  
EL. 896.45  
152.00' V.C.



GENERAL ELEVATION  
RECONSTRUCTION

NOTES:

- SEE SHEET 2 FOR CONSTRUCTION NOTES.
- ALL DIMENSIONS ARE APPROXIMATE, FIELD VERIFY.
- STATIONS, WORKING POINTS, AND DIMENSIONS FOR NEW CONSTRUCTION ARE BASED ON THE ORIGINAL 1960 PLANS. FIELD VERIFY.
- ① DIMENSIONS MEASURED ALONG NEW CL XERXES AVE. AND WORKING LINE.
- ② REMOVE INPLACE BARRIER, SIDEWALK, CONCRETE DECK AND WEARING COURSE. INCLUDED IN ITEM "REMOVE CONC SLAB, CURBS, OVERLAY, RAIL".
- ③ REMOVE TUBULAR METAL RAIL. INCLUDED IN ITEM "REMOVE METAL PIPE RAILING".

- ④ REPLACE INPLACE BEARINGS AT ABUTMENTS AND PIERS WITH NEW BEARINGS. INCLUDED IN ITEM "RECONSTRUCT EXPANSION BEARINGS" AND "RECONSTRUCT FIXED BEARINGS".
- ⑤ SAND-BLAST AND PAINT THE END 2' OF BOTTOM FLANGES, WEBS AND SOLE PLATES AT ABUTMENTS. SEE SPECIAL PROVISIONS.
- ⑥ AREAS AROUND BEARINGS AND UNSOUND CONCRETE ON ABUTMENT BEAM SEATS SHALL BE REMOVED AND REPAIRED. INCLUDED IN ITEM "RECONSTRUCT BRIDGE SEAT".
- ⑦ UNSOUND CONCRETE ON THE PIER CAP SHALL BE REMOVED AND REPAIRED WITH SHOTCRETE. INCLUDED IN PAY ITEM "CONCRETE SURFACE REPAIR".
- ⑧ PAINT ALL EXPOSED SURFACES OF THE PIER AND THE FRONT FACE OF EACH ABUTMENT. INCLUDED IN ITEM "SPECIAL SURFACE FINISH (INPLACE)".
- ⑨ CONSTRUCT A NEW PRECAST DECK, SIDEWALKS AND CONCRETE PARAPETS.
- ⑩ INSTALL NEW METAL RAILING. INCLUDED IN ITEM "ORNAMENTAL METAL RAILING TYPE SPECIAL".
- ⑪ SIGN PANELS TO BE REMOVED AND RE-INSTALLED WITH NEW SUPPORTS. INCLUDED IN GRADING PORTION OF PLAN.

- ⑫ CHANGEABLE MESSAGE SIGN (CMS) TO BE SALVAGED, AND NEW CMS TO BE INSTALLED ON NEW SUPPORTS. INCLUDED IN GRADING PORTION OF CONTRACT.
- ⑬ CONDUIT TO CMS TO BE REMOVED. INCLUDED IN ITEM "REMOVE CONC SLAB, CURBS, OVERLAY, RAIL".
- ⑭ EXISTING CONDUITS AND JUNCTION BOXES TO REMAIN IN PLACE.
- ⑮ FIRST INTERIOR BEAM TO BE REPLACED FROM ABUTMENT TO FIELD SPLICE. SEE SPECIAL PROVISIONS.
- ⑯ REMOVE AND RECONSTRUCT PAVING BRACKET AT BOTH ABUTMENTS. INCLUDED IN ITEM "RECONSTRUCT PAVING BRACKET".
- ⑰ 2" Ø R.S.C. TO BE INSTALLED IN WEST SIDEWALK. DEFLECTION/EXPANSION FITTINGS TO BE PROVIDED AT EACH END OF BRIDGE. ALL MATERIAL INCLUDED IN ITEM "CONDUIT SYSTEM (SIGNALS)".

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 *Benjamin J. Jilk* DATE 7/30/13  
LICENSED PROFESSIONAL ENGINEER  
NAME: BENJAMIN J. JILK LIC NO. 49852

TRUNK HIGHWAY NO. 62  
MINNESOTA  
DEPARTMENT OF TRANSPORTATION

**BRIDGE NO. 27504**

XERXES AVE. (C.S.A.H. 31) OVER T.H. 62,  
1.7 MILES E. OF JCT. T.H. 100

IDENTIFICATION NO. 401

**GENERAL PLAN AND ELEVATION**

SEC. 20 & 29      T 28 N      R 24 W

MINNEAPOLIS / RICHFIELD      HENNEPIN COUNTY

APPROVED *Nancy A. ...* STATE BRIDGE ENGINEER  
DATE 7/30/13

DES. RJB      DR. BEP      27504  
CHK. GBB      CHK. TRS/BJJ

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	① NOTES & SIGNATURES	TRS
7-30-13	② ADDED CONDUIT SYSTEM & SIGNATURES	BJJ

JOB NO. T9H137

DESIGN UNIT: TODD R. STEVENS

STATE PROJ. NO. 2774-27504A (T.H. 62=384)

SHEET NO. 1-R2 OF 34 SHEETS

TIME: 1:28:43 PM  
 PLOTTED: 30-JUL-2013  
 FILENAME: IP\_PWP-d1460960\27504\_bep  
 PATH & FILENAME: Bridge/Final\_Design/27504/Cadd-Plan/27504\_bep



TIME : 1:28:53 PM  
 PLOTTED : 30-JUL-2013  
 PATH & FILENAME: Bridge/Final\_Design/2/27504/Cadd-Plan/27504\_bep  
 FILENAME: IP\_PWP-d1460960\27504\_bep

SCHEDULE OF QUANTITIES			
ITEM NO.	ITEM	UNIT	QUANTITY
2104.501	REMOVE METAL PIPE RAILING	LIN. FT.	304 (P)
2104.601	REMOVE REGULATED WASTE MATERIAL (BRIDGE)	LUMP SUM	1
2104.601	HAUL SALVAGED MATERIAL	LUMP SUM	1
2401.513	TYPE MOD P-1 (TL-2) RAILING CONC (3Y46)	LIN. FT.	305 (P)
2401.515	SIDEWALK CONCRETE (3Y46)	SQ. FT.	2435 (P)
2401.541	REINFORCEMENT BARS (EPOXY COATED)	POUND	13820 (P)
2401.601	STRUCTURE EXCAVATION	LUMP SUM	1
2401.607	STRUCTURAL CONCRETE (3Y33HP) SPECIAL	CU. YD.	30 (P)
2401.618	SPECIAL SURFACE FINISH (INPLACE)	SQ. FT.	1500 (P)
2401.618	BRIDGE DECK PLANING	SQ. FT.	7304 (P)
① 2402.521	STRUCTURAL STEEL (3309)	POUND	3400 (P) ①
2402.533	ERECTING STRUCTURAL METALS	POUND	15200 (P)
2402.583	ORNAMENTAL METAL RAILING TYPE SPECIAL	LIN. FT.	305 (P)
2402.601	INSPECT COVER PLATE WELDS	LUMP SUM	1
2402.602	SHEAR STUDS	EACH	2112
2402.602	SPLICE PLATE REPAIR	EACH	1
2402.602	WELD REPAIR	EACH	1
2404.618	CHIP SEAL WEARING COURSE	SQ. FT.	7304 (P)
2405.601	MOCK-UP PANEL	LUMP SUM	1
2405.616	POST-TENSIONING SYSTEM	SYSTEM	1
2405.618	PRECAST DECK PANEL	SQ. FT.	9375 (P)
2433.505	REMOVE CONCRETE SLAB, CURBS, OVERLAY, RAIL	SQ. FT.	9789
2433.516	ANCHORAGES TYPE REINF BARS	EACH	184 ①
2433.602	RECONSTRUCT EXPANSION BEARINGS	EACH	16
2433.602	RECONSTRUCT FIXED BEARINGS	EACH	8
2433.602	EMBEDDED GALVANIC ANODE	EACH	60
2433.602	FURNISH AND INSTALL BEAM STIFFENERS	EACH	8 (P) ①
2433.603	RECONSTRUCT PAVING BRACKET	LIN. FT.	130 (P)
2433.618	CONCRETE SURFACE REPAIR	SQ. FT.	50
2433.618	RECONSTRUCT BRIDGE SEAT	SQ. FT.	350
2476.601	WASTE COLLECTION AND DISPOSAL	LUMP SUM	1
2478.502	ORGANIC ZINC-RICH PAINT SYSTEM (SHOP)	SQ. FT.	900 (P)
2478.503	ORGANIC ZINC-RICH PAINT SYSTEM (FIELD)	LUMP SUM	1
2545.509	CONDUIT SYSTEM (SIGNALS)	LUMP SUM	1 ②

① INCLUDES NEW SPLICE PLATES, DIAPHRAGMS, DIAPHRAGM STIFFENERS, AND PROTECTION PLATES.

**CONSTRUCTION NOTES**

THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

PLANS OF INPLACE BRIDGE NO. 27504 ARE AVAILABLE AT THE MINNESOTA DEPARTMENT OF TRANSPORTATION.

THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR NUMBER WHICH APPROXIMATES THE NOMINAL DIAMETER OF THE BAR IN MILLIMETERS (mm).

BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.

NO CUTTING WILL BE PERMITTED UNTIL THE CUTTING LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. REMOVAL AND RECONSTRUCTION SHALL CONFORM TO Mn/DOT SPEC. 2433.

PERFORMED JOINT FILLER MATERIALS ARE INCIDENTAL. PAYMENT TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

APPROVED BONDING GROUT TO BE APPLIED TO ALL CONTACT SURFACES BETWEEN NEW AND INPLACE CONCRETE.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. 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".

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	① REVISED QUANTITIES, ADDED PAY ITEMS	TRS
7-30-13	② ADDED PAY ITEM	BJJ

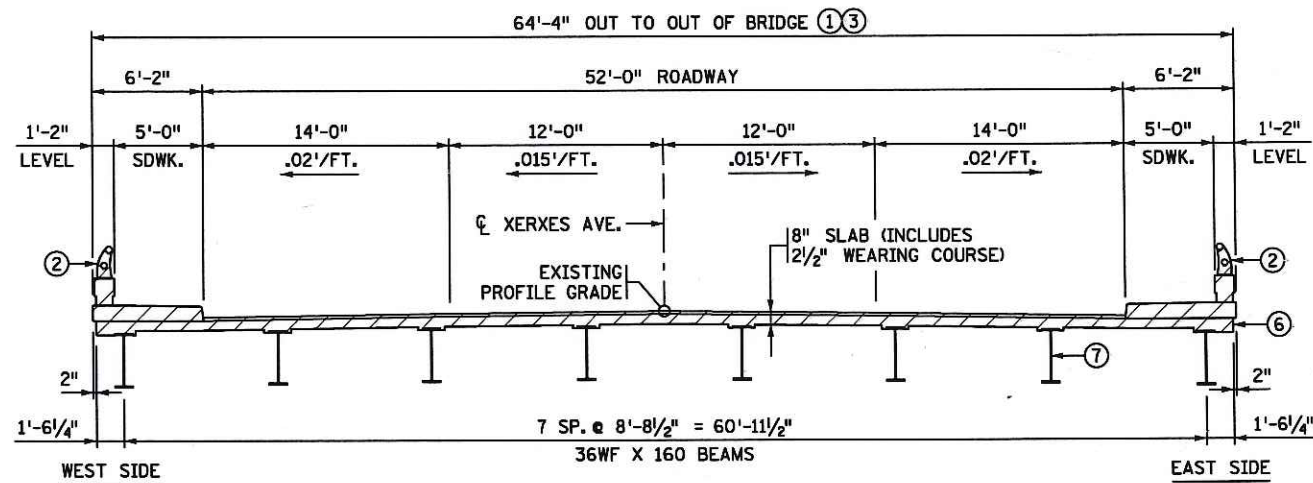
CERTIFIED BY Benjamin J. Jilk 7/30/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: BENJAMIN J. JILK LIC. NO. 49852

TITLE: SCHEDULE OF QUANTITIES

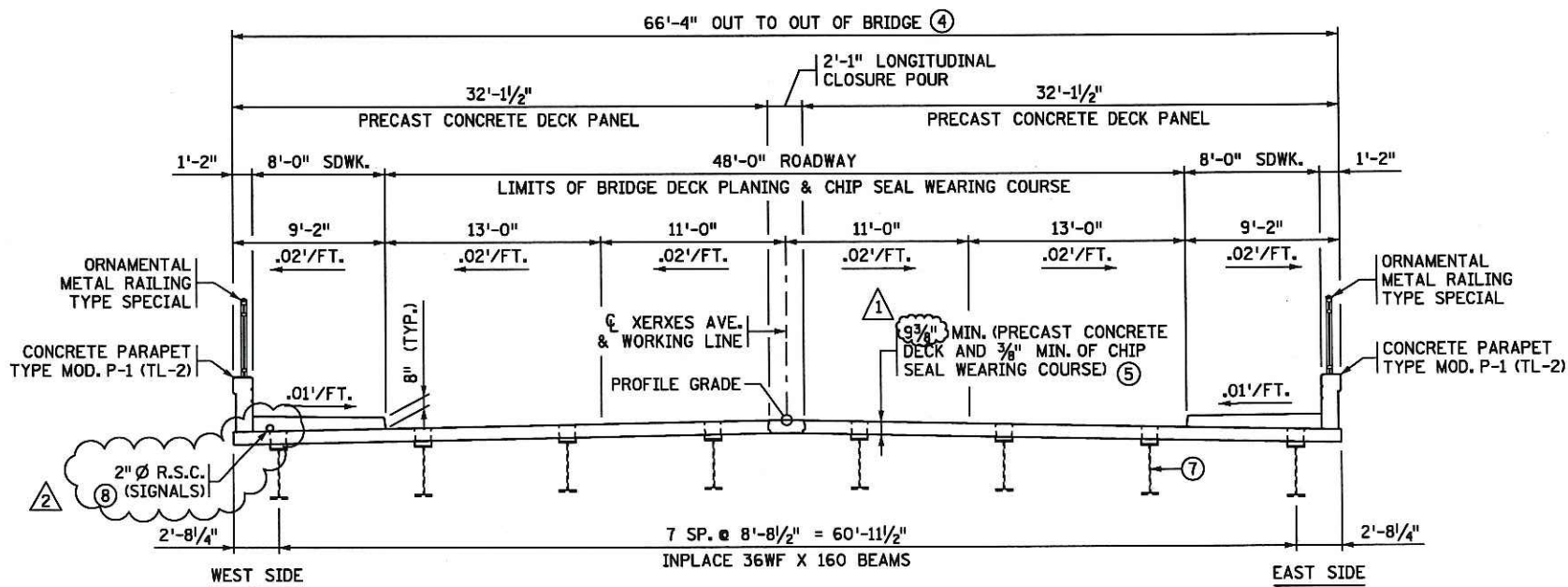
DES: RJR DR: BEP APPROVED: 7/30/13  
 CHK: GBB CHK: TRS/BJJ  
 SHEET NO. 2-R2 OF 34 SHEETS

BRIDGE NO. 27504





**INPLACE TRANSVERSE SECTION**



**RECONSTRUCTED TRANSVERSE SECTION**

**NOTES:**

- 1/2 HATCHED AREAS INDICATE REMOVAL.
- ALL DIMENSIONS FOR INPLACE STRUCTURE ARE APPROXIMATE, FIELD VERIFY.
- ① REMOVE INPLACE BARRIER, SIDEWALK, CONCRETE DECK AND WEARING COURSE. INCLUDED IN ITEM "REMOVE CONC SLAB, CURBS, OVERLAY, RAIL"
- ② REMOVE TUBULAR METAL RAIL. INCLUDED IN ITEM "REMOVE METAL PIPE RAILING".
- ③ CONCRETE END DIAPHRAGMS TO REMAIN INPLACE. REPAIR OF DAMAGE DUE TO DECK REMOVAL OPERATIONS INCLUDED IN ITEM "REMOVE CONC SLAB, CURBS, OVERLAY, RAIL".
- ④ CONSTRUCT A NEW PRECAST DECK, SIDEWALKS, CONCRETE PARAPETS AND ORNAMENTAL METAL RAILINGS.
- ⑤ 9 3/8" MINIMUM TOTAL THICKNESS AFTER BRIDGE DECK PLANING AND CHIP SEAL WEARING COURSE IS APPLIED.
- ⑥ INPLACE CONDUIT TO CMS TO BE REMOVED. INCLUDED IN ITEM "REMOVE CONC SLAB, CURBS, OVERLAY, RAIL".
- ⑦ REPLACE BEAM FROM SOUTH ABUTMENT TO FIELD SPLICE.
- ⑧ 2" Ø R.S.C. TO BE INSTALLED IN WEST SIDEWALK. COMBINATION DEFLECTION/EXPANSION FITTING TO BE PROVIDED AT EACH END OF BRIDGE. ALL MATERIAL INCLUDED IN ITEM "CONDUIT SYSTEM (SIGNALS)".

TIME : 1:29:09 PM  
 PLOTTED : 30-JUL-2013  
 PATH & FILENAME: Bridge/Find\_Design/2/27504/Cadd-Plan/27504\_bep

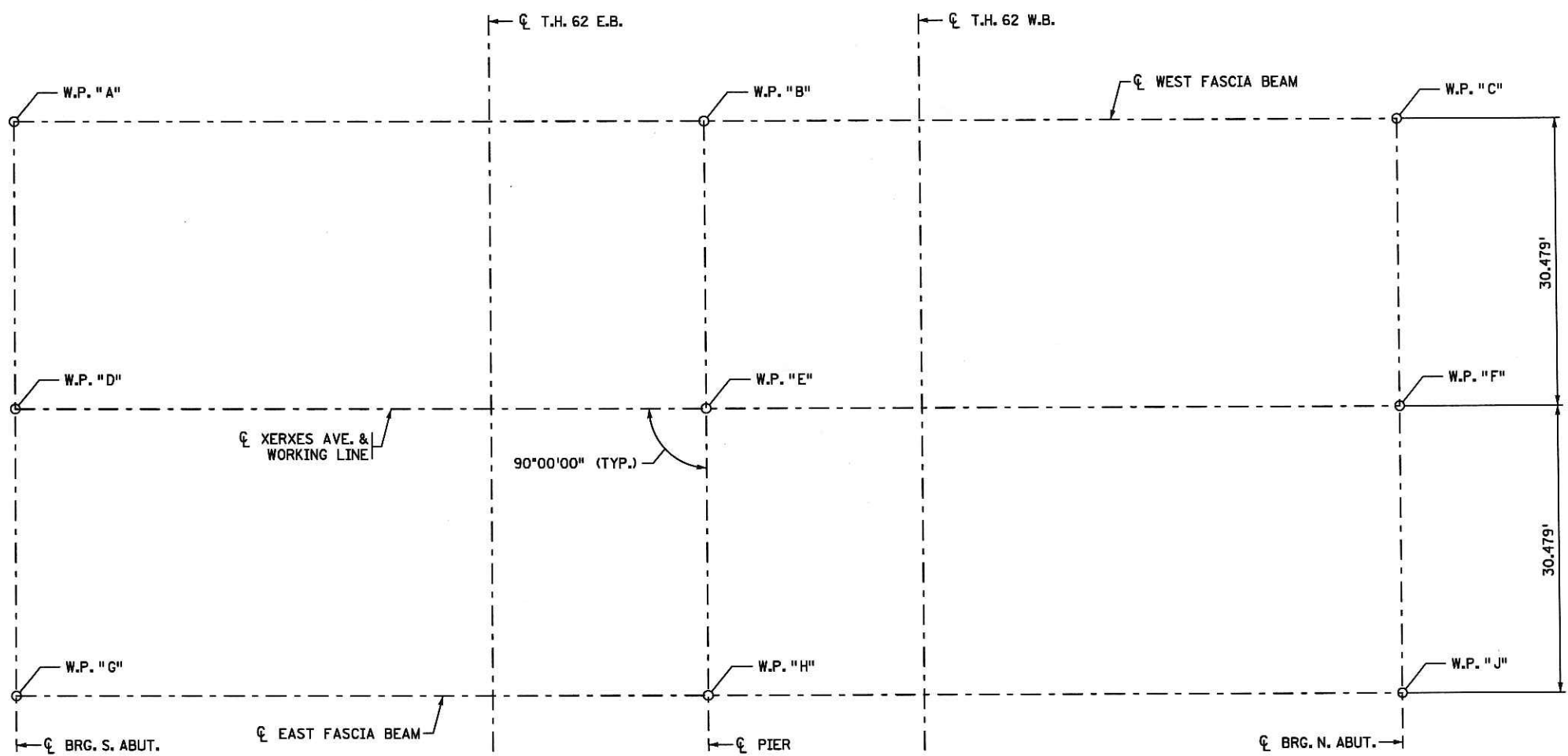
REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	① REVISED DECK PANEL THICKNESS	TRS
7-30-13	② ADDED CONDUIT SYSTEM	BJJ

CERTIFIED BY *Benjamin J. Jilk* 7/30/13  
LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: BENJAMIN J. JILK LIC. NO. 49852

TITLE: TRANSVERSE SECTIONS

DES: RJR DR: BEP APPROVED: 7/30/13  
 CHK: GBB CHK: TRS/BJJ  
 SHEET NO. 3-R2 OF 34 SHEETS

BRIDGE NO. 27504



**WORKING POINT LAYOUT**

POINT	STATION	DIMENSIONS BETWEEN WORKING POINTS										ELEV.	POINT
		A	B	C	D	E	F	G	H	J	TOP OF ROADWAY		
A	5+26.00		74.00		30.48	80.03			95.87	160.06	895.23	A	
B	6+00.00			74.00		30.48	80.03	95.87	95.87	895.58	B		
C	6+74.00					30.48	160.06	95.87		895.43	C		
D	5+26.00					74.00	30.48	80.03		895.84	D		
E	6+00.00						74.00	30.48	80.03	896.19	E		
F	6+74.00							30.48	896.04	896.04	F		
G	5+26.00							74.00		895.23	G		
H	6+00.00								74.00	895.58	H		
J	6+74.00									895.43	J		

TOP OF ROADWAY TO BRIDGE SEAT				
	SLAB THICKNESS	STOOL HEIGHT	BEAM HEIGHT	BEARING HEIGHT
S. ABUT	9 1/4"	VARIES	36"	2 5/8"
S. ABUT	9 1/4"	VARIES	35 7/8"	2 3/8"
PIER	9 1/4"	VARIES	36"	5 5/8"
N. ABUT	9 1/4"	VARIES	36"	2 5/8"

① NEW BEAM 7 AT SOUTH ABUTMENT.

TIME : 9:53:59 AM  
 PLOTTED : 07-MAY-2013  
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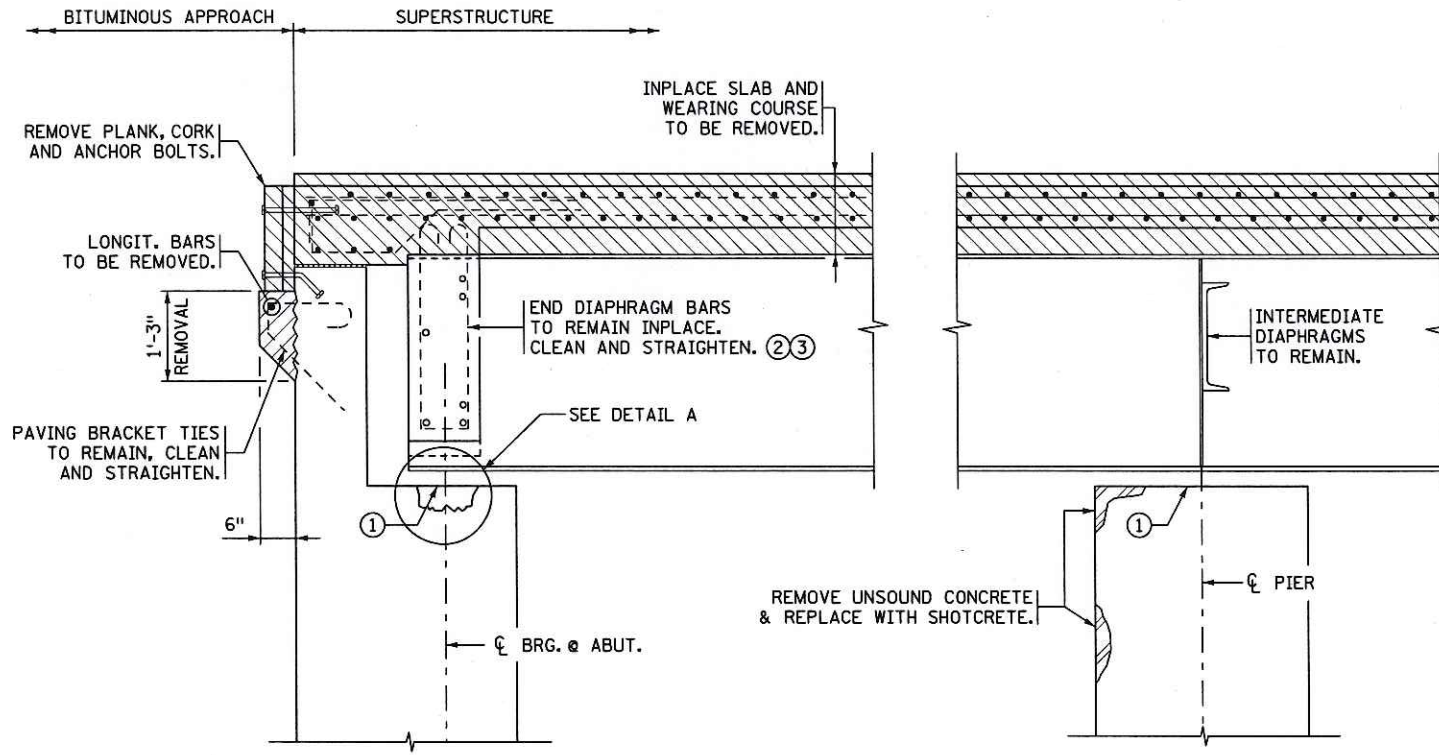
CERTIFIED BY <u>Todd R. Stevens</u> <u>5/7/13</u> <small>LICENSED PROFESSIONAL ENGINEER DATE</small> NAME: TODD R. STEVENS LIC. NO. 21312	TITLE: <b>BRIDGE LAYOUT</b>	DES: RJR DR: BEP CHK: GBB CHK: TRS	APPROVED: <u>5/7/13</u>	BRIDGE NO. 27504
		SHEET NO. 4 OF 34 SHEETS		



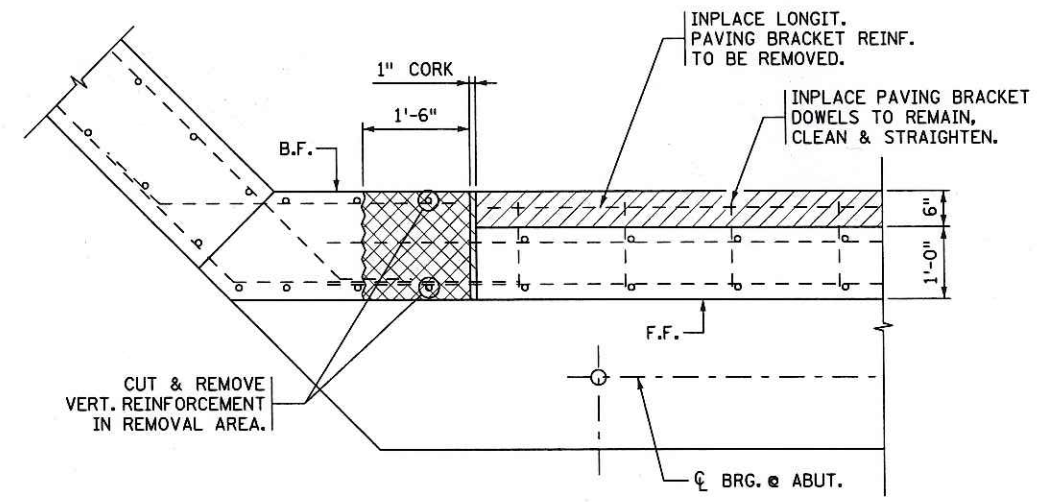
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TIME: 6:16:25 AM  
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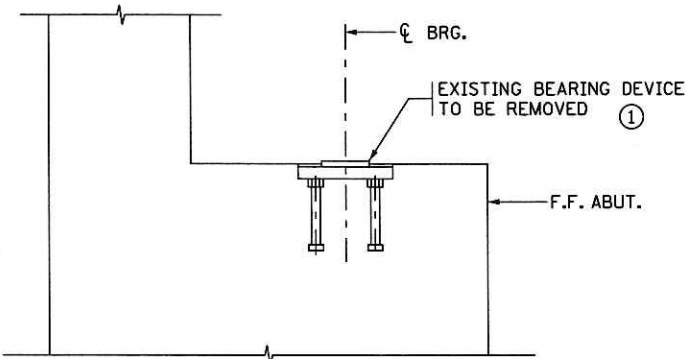
**PART LONGITUDINAL VIEW**  
(REMOVAL)



**REMOVAL PLAN**  
N.W. & S.E. CORNER SHOWN  
N.E. & S.W. CORNER SIMILAR

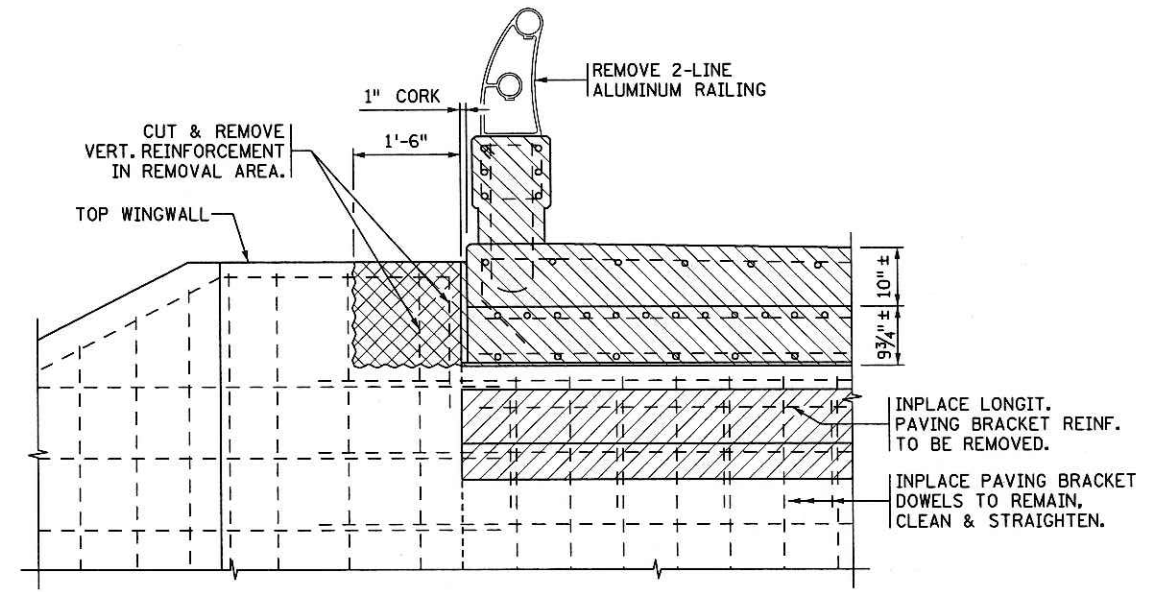
**NOTES:**

- F.F. DENOTES FRONT FACE  
B.F. DENOTES BACK FACE
- ① REPLACEMENT OF BEARING ASSEMBLIES TO BE INCLUDED IN ITEM "RECONSTRUCT EXPANSION BEARINGS" & "RECONSTRUCT FIXED BEARINGS". INCLUDES REMOVAL OF EMBEDDED PLATES AT ABUTMENT BEARINGS. VOIDS NOT FILLED AS PART OF "RECONSTRUCT BRIDGE SEAT" TO BE FILLED WITH AN APPROVED NON-SHRINK GROUT AND FINISHED LEVEL WITH ADJACENT SURFACE.
- ② GROUTED REINFORCEMENT BARS MAY BE USED TO REPLACE CUT END DIAPHRAGM REINFORCEMENT. GROUTED REINFORCEMENT BARS SHALL BE INCIDENTAL TO ITEM "REMOVE CONCRETE SLAB, CURBS, OVERLAY, RAIL". SEE SPECIAL PROVISIONS.
- ③ REMOVE CONCRETE END DIAPHRAGMS ON EACH SIDE OF BEAM 7 AT THE SOUTH ABUTMENT. REMOVAL INCLUDED IN PAYMENT FOR ITEMS "REMOVE CONCRETE SLAB, CURBS, OVERLAY, RAIL". PROVIDE MEANS OF TEMPORARY STABILIZATION FOR EXTERIOR GIRDER.



**DETAIL A**

- BACK HATCHED AREA DENOTES REMOVAL OF CONCRETE, REINFORCEMENT, RAILING, PLANK AND JOINT MATERIAL. INCLUDED IN PAYMENT FOR ITEM "REMOVE CONCRETE SLAB, CURBS, OVERLAY, RAIL".
- CROSS HATCHED AREA DENOTES REMOVAL OF CONCRETE AND REINFORCEMENT AT WINGWALLS. INCLUDED IN PAYMENT FOR "REMOVE CONCRETE SLAB, CURBS, OVERLAY, RAIL".
- DENOTES REMOVAL OF LOOSE CONCRETE ON PIER CAP. INCLUDED IN PAYMENT FOR "CONCRETE SURFACE REPAIR".
- HATCHED AREA DENOTES REMOVAL OF PAVING BRACKETS. INCLUDED IN PAYMENT FOR "RECONSTRUCT PAVING BRACKET".



**REMOVAL ELEVATION**  
S.W. & N.E. CORNER SHOWN  
S.E. & N.W. CORNER SIMILAR

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	NOTES	T.R.S.

CERTIFIED BY *Todd R. Stevens* 5/29/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE: **REMOVAL DETAILS**

DES: \_\_\_\_\_ DR: BEP  
 CHK: \_\_\_\_\_ CHK: TRS  
 APPROVED: *5/29/13*  
 SHEET NO. 5R OF 34 SHEETS

BRIDGE NO. 27504



**BILL OF REINFORCEMENT  
FOR RECONSTRUCT PAVING BRACKET**

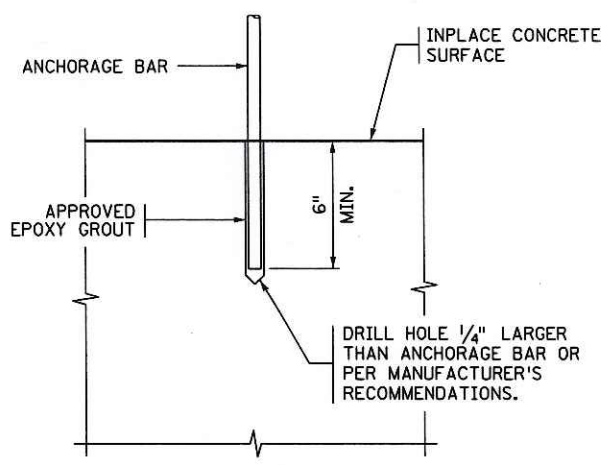
BAR	NO.	LENGTH	SHAPE	LOCATION
③ A1901E	8	1'-6"	—	BACKWALL DOWEL
③ A1602E	176	1'-8"	—	PAVING BRACKET DOWEL
① A1603E	8	33'-1"	—	PAVING BRACKET LONGIT.

③ PAID FOR AS "ANCHORAGE TYPE REINF BARS". NOT INCLUDED IN WEIGHT OF REINFORCEMENT.

**SUMMARY OF QUANTITIES FOR  
RECONSTRUCT TWO PAVING BRACKETS**

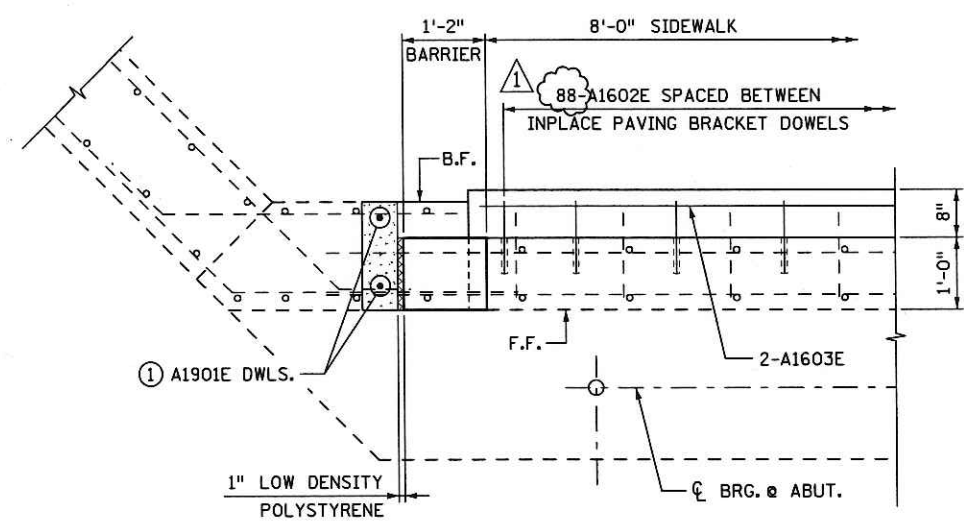
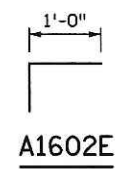
RECONSTRUCT PAVING BRACKET	130 LIN. FT.
① STRUCTURAL CONCRETE (3Y43)	5 CU. YDS.
① REINFORCEMENT BARS (EPOXY COATED)	280 POUND
ANCHORAGE TYPE REINF BAR	184 EACH
① 1/2" BITUMINOUS FELT	133 SQ. FT.
① 1" THICK LOW DENSITY POLYSTYRENE	6 SQ. FT.

① INCLUDED IN ITEM "RECONSTRUCT PAVING BRACKET".



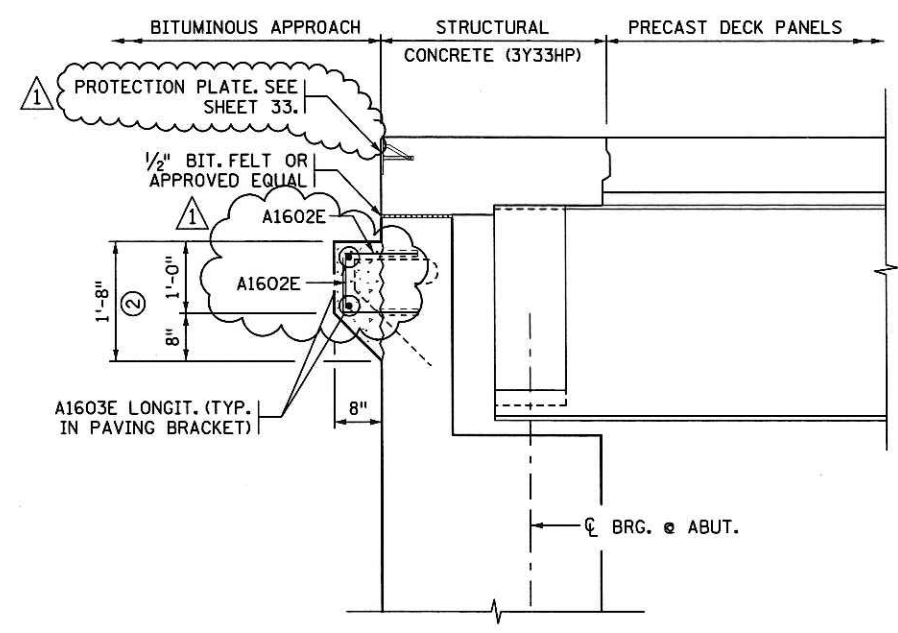
**ANCHORAGE DETAIL**

INCLUDED IN ITEM "ANCHORAGES TYPE REINF BARS". SEE THE SPECIAL PROVISIONS FOR ULTIMATE PULL OUT STRENGTH.



**PLAN VIEW**

N.W. & S.E. CORNER SHOWN  
N.E. & S.W. CORNER SIMILAR

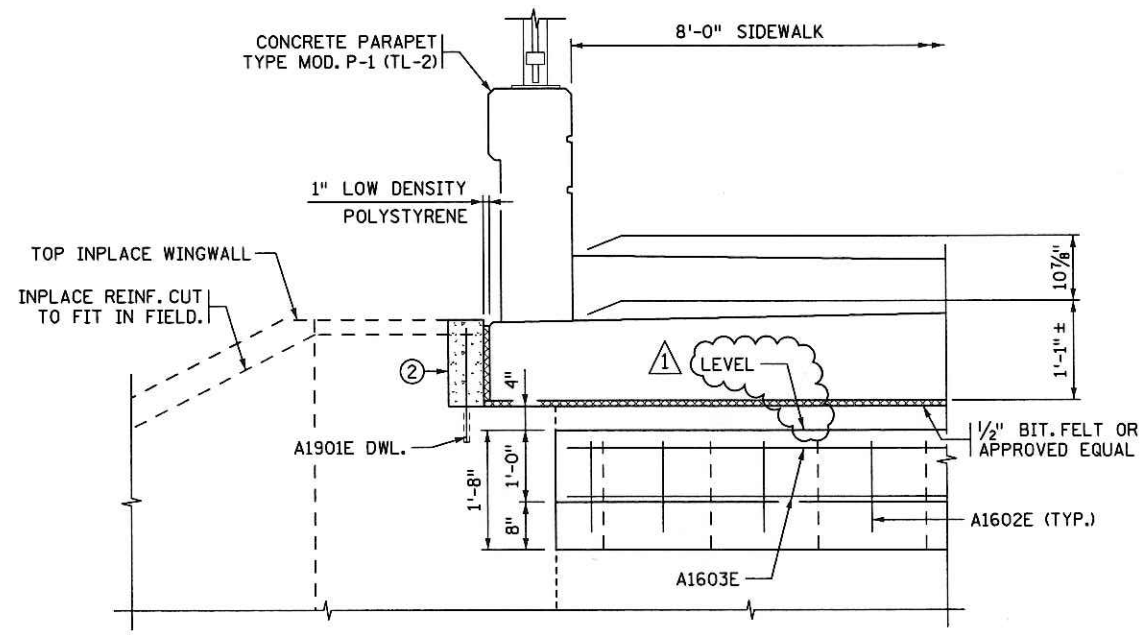


**PAVING BRACKET SECTION  
(RECONSTRUCTION)**

**NOTES:**

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

② STRUCTURAL CONCRETE (3Y43). INCLUDED IN ITEM "RECONSTRUCT PAVING BRACKET".



**ELEVATION VIEW**

S.W. & N.E. CORNER SHOWN  
S.E. & N.W. CORNER SIMILAR

**REVISION**

DATE	DESCRIPTION	APPROVED BY
5-28-13	PAVING BRACKET REINF. AND NOTES	T.R.S.

CERTIFIED BY *Todd R. Stevens* 5/29/13  
LICENSED PROFESSIONAL ENGINEER DATE  
NAME: TODD R. STEVENS LIC. NO. 21312

TITLE: PAVING BRACKET & BACKWALL RECONSTRUCTION

DES: DR: BEP APPROVED: 5/29/13  
CHK: CHK: TRS  
SHEET NO. 6R OF 34 SHEETS

BRIDGE NO. 27504

TIME : 6:19:18 AM  
 PLOTTED : 24-MAY-2013  
 FILENAME: Bridge/Final\_Design/2/27504/Cadd-Plan/27504\_bep  
 FILENAME: IP\_PWF-d/460960/27504\_bep



TIME : 10:30:43 AM  
 PLOTTED : 06-MAY-2013  
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FILENAME: IP\_PWP-d1460960\27504\_bep

FILENAME: Bridge/Final\_Design/2/27504/Cadd-Plan/27504\_bep

**SUMMARY OF QUANTITIES  
 FOR TWO BRIDGE SEAT REPAIRS**

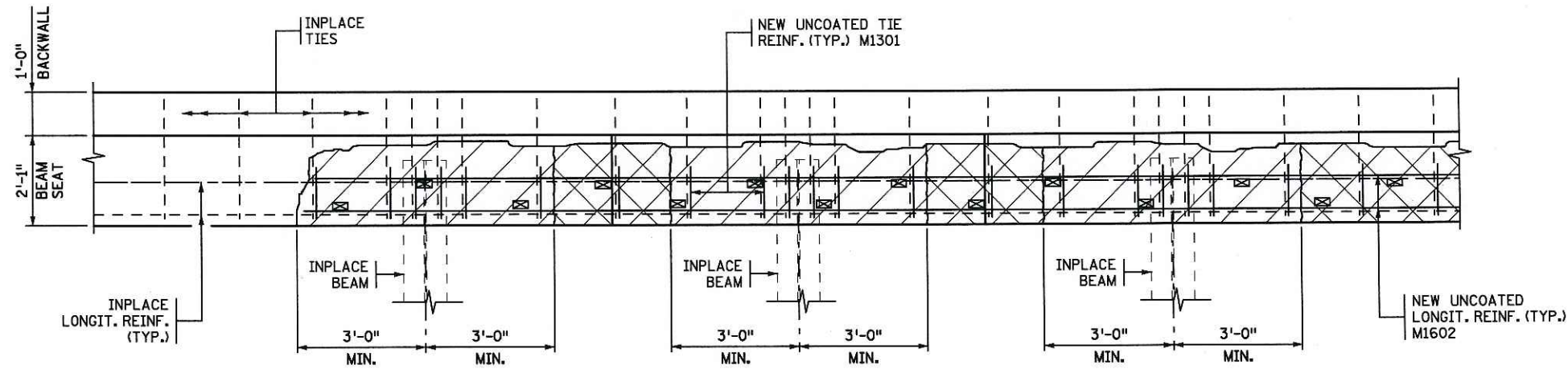
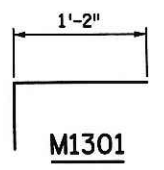
RECONSTRUCT BRIDGE SEAT	250 SQ. FT.
CONCRETE SURFACE REPAIR	50 SQ. FT.
EMBEDDED GALVANIC ANODES	60 EACH
REINFORCEMENT BARS	300 POUND

- ① INCLUDED IN ITEM "RECONSTRUCT BRIDGE SEAT" SEE SPECIAL PROVISIONS.

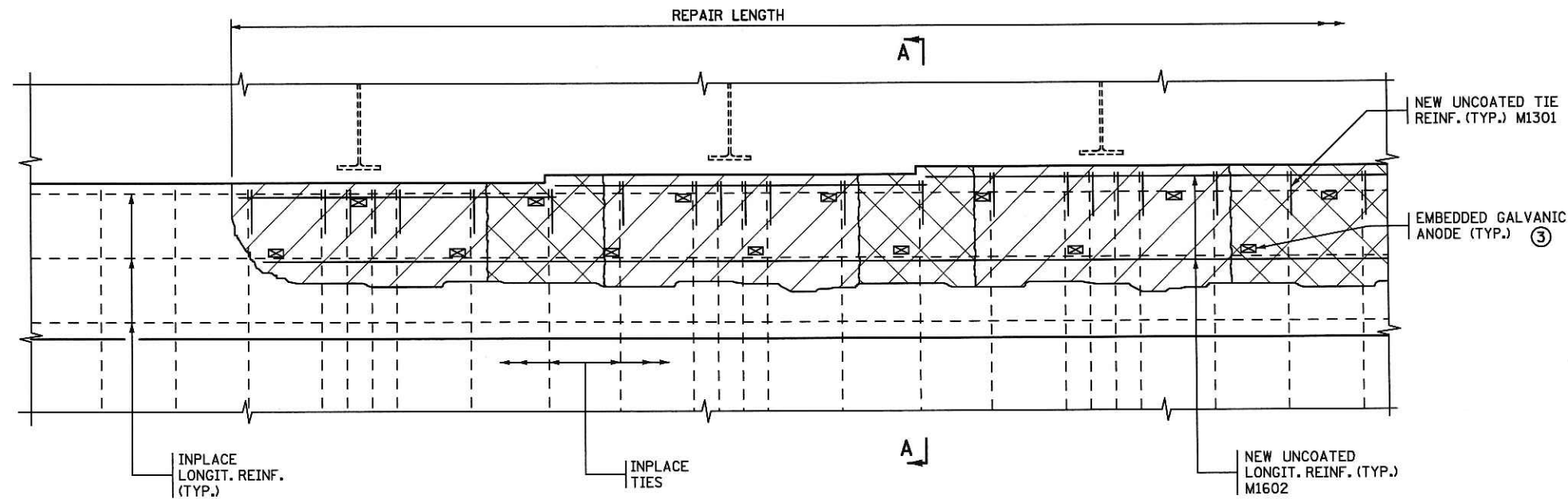
**BILL OF REINFORCEMENT  
 FOR BRIDGE SEAT REPAIRS ①**

BAR	NO.	LENGTH	SHAPE	LOCATION
② M1301	60	2'-2"	TIE	
② M1602	10	20'-0"	HORIZONTAL	

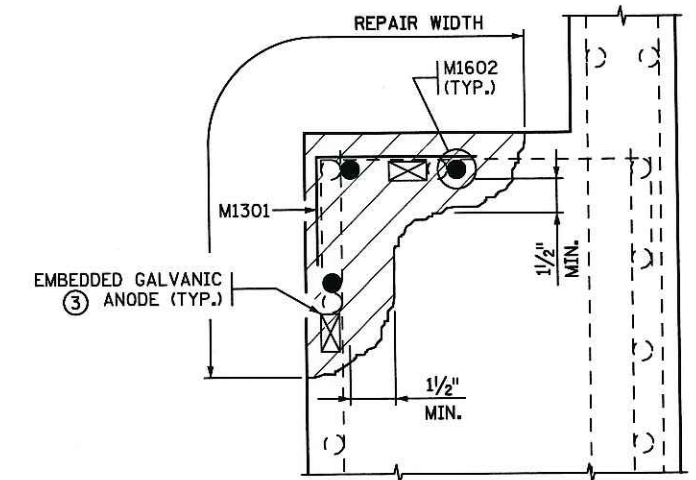
- ② CUT TO LENGTH IN FIELD AS NEEDED.



**PARTIAL REPAIR PLAN**



**PARTIAL REPAIR ELEVATION**



- ③ SECURE TO INPLACE BARS AT INTERSECTIONS AS DIRECTED BY THE ENGINEER. SEE SPECIAL PROVISIONS.

**SECTION A-A**

**NOTES:**

DENOTES REMOVAL OF UNSOUND CONCRETE AND REPAIR WITH STRUCTURAL CONCRETE (3Y43). INCLUDED IN ITEM "RECONSTRUCT BRIDGE SEAT". DETAILS SHOW EXAMPLES OF POSSIBLE AREAS NEEDING REPAIR. ACTUAL AREAS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

DENOTES REMOVAL OF UNSOUND CONCRETE AND REPAIR WITH SHOTCRETE. INCLUDED IN ITEM "CONCRETE SURFACE REPAIR". DETAILS SHOW EXAMPLES OF POSSIBLE AREAS NEEDING REPAIR. ACTUAL AREAS SHALL BE DETERMINED BY THE ENGINEER IN THE FIELD.

REMOVE AND REPLACE CORRODED REINFORCING AS DIRECTED BY THE ENGINEER.

REPAIR WORK MAY NEED TO BE STAGED TO ENSURE STRUCTURAL ADEQUACY. SEE SPECIAL PROVISIONS.

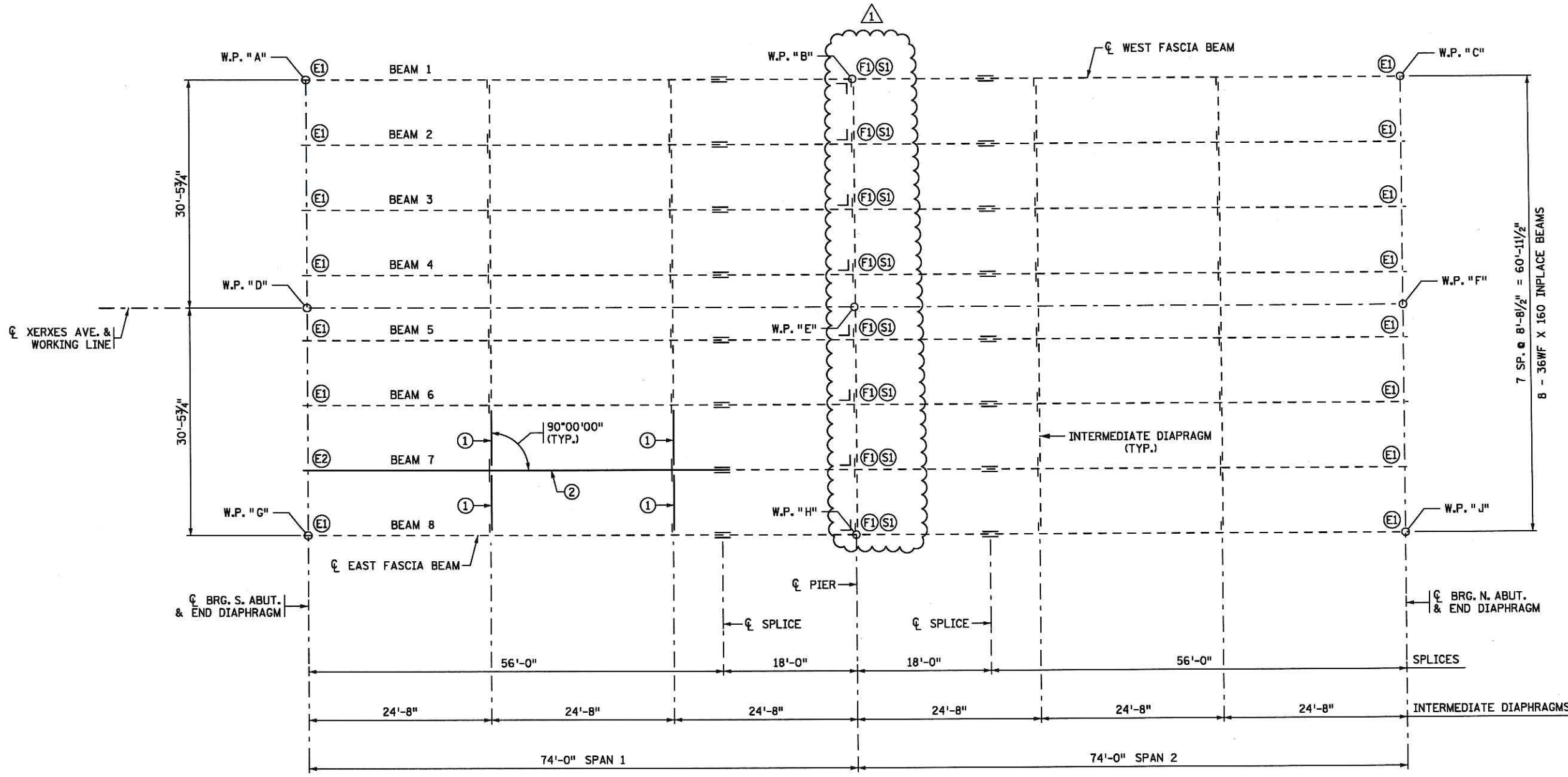
CERTIFIED BY Todd R. Stevens 5/7/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**ABUTMENT REPAIRS**

DES: DR: BEP APPROVED: 5/7/13  
 CHK: CHK: TRS  
 SHEET NO. 7 OF 34 SHEETS

BRIDGE NO.  
 27504





FRAMING PLAN

STRUCTURAL STEEL NOTES:

ALL STRUCTURAL STEEL SHALL CONFORM TO SPEC. 3309 UNLESS OTHERWISE NOTED.

SHEAR STUD CONNECTORS TO BE INCLUDED IN WEIGHT OF "FURNISHING STRUCTURAL STEEL (3309)" AND CONFORM TO SPEC. 3391.

SPECIAL ASSEMBLY PER MN/DOT SPEC. 2471.3H1d WILL BE REQUIRED FOR BEAM SPLICES.

ALL BOLTED CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER A325 BOLTS, EXCEPT AS NOTED.

SHEAR CONNECTORS TO PROJECT A MINIMUM OF 2" INTO STRUCTURAL SLAB. IN NO CASE SHALL THEY BE INSTALLED CLOSER THAN 1" FROM TOP OF STRUCTURAL SLAB. ENGINEER TO FIELD VERIFY BEAM ELEVATION AND AUTHORIZE STUD LENGTH.

1 ALL NEW AND REPLACEMENT STRUCTURAL STEEL AND EXISTING BEAM ENDS TO BE PAINTED. SEE SPECIAL PROVISIONS.

NOTES:

- E1 DENOTES NEW EXPANSION BEARING ASSEMBLY TYPE 1.
- E2 DENOTES NEW EXPANSION BEARING ASSEMBLY TYPE 2.
- F1 DENOTES NEW FIXED BEARING ASSEMBLY TYPE 1.
- S1 DENOTES NEW ANGLE STIFFENERS AT PIER BEARINGS.
- 1 DENOTES NEW 3/8" BENT @ INTERMEDIATE DIAPHRAGMS WITH NEW CONNECTION STIFFENERS.
- 2 DENOTES REPLACEMENT W36 X 230 BEAM SECTION. BEAM TO BE HEAT-CAMBERED TO MEET ANTICIPATED DEFLECTION.

TIME : 12:45:16 PM  
 PLOTTED : 28-MAY-2013  
 PATH & FILENAME: Bridge\Final\_Design\2\27504\Cadd-Plan\27504\_bep

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	1 ANGLE STIFFENERS AT PIER, NOTES	TRS

CERTIFIED BY Todd R. Stevens 5/29/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
 STRUCTURAL STEEL DETAILS

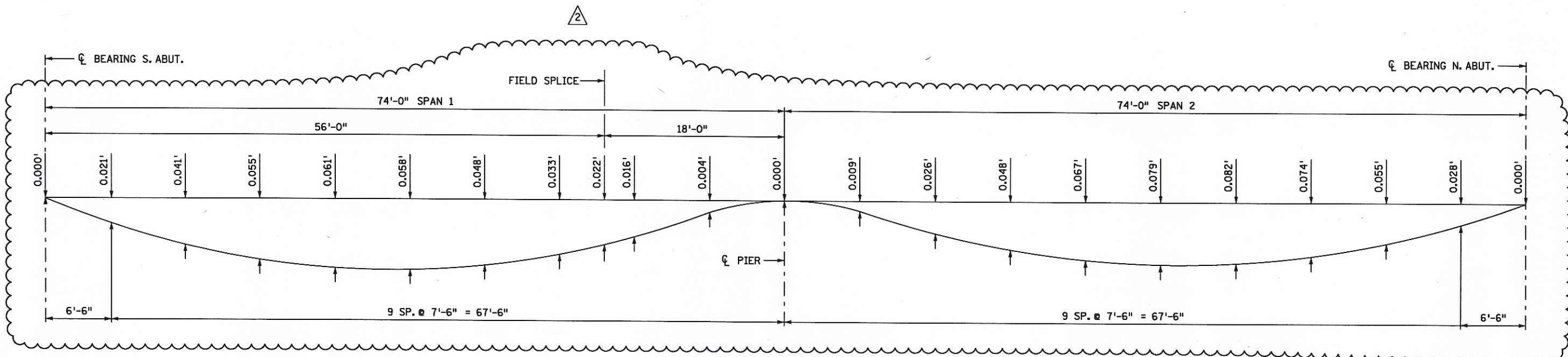
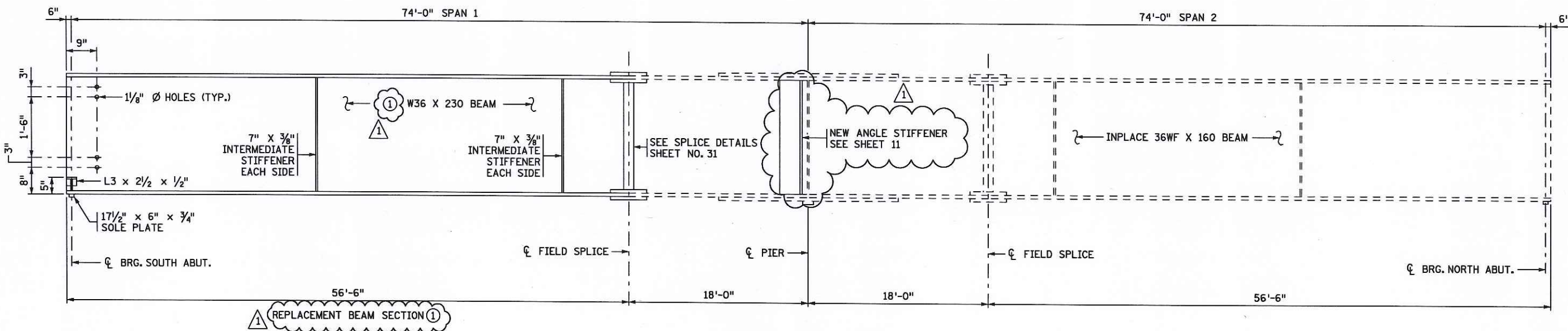
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 CHK: GBB CHK: TRS  
 SHEET NO. 8R OF 34 SHEETS

BRIDGE NO.  
 27504

FILENAME: IP\_PWP-d1460960\27504\_bep

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TIME: 9:22:14 AM  
 PLOTTED: 24-APR-2014



**NOTES:**

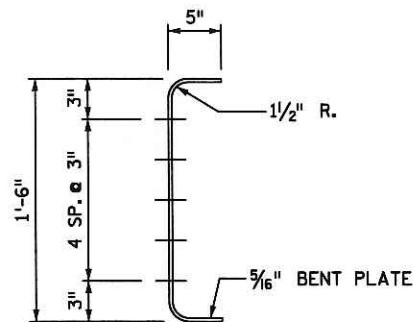
1 BEAM SECTION SALVAGED FROM MNDOT STORAGE YARD. SEE SPECIAL PROVISIONS. NEW STEEL TO BE USED FOR ALL OTHER STEEL COMPONENTS.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	1 BEAM DETAILS AND NOTES	T.R.S.
4-24-14	2 BEAM DETAILS AND NOTES	B.J.J.

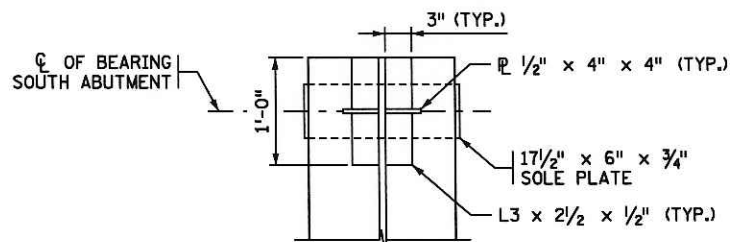
CERTIFIED BY: <i>Benjamin J. Jilk</i> 4-24-14 <small>LICENSED PROFESSIONAL ENGINEER DATE</small>	TITLE: STRUCTURAL STEEL DETAILS	DES: RJR   DR: BEP   APPROVED: 4/24/14 <small>CHK: GBB   CHK: TRS</small>	BRIDGE NO. 27504
NAME: BENJAMIN J. JILK <small>LIC. NO. 49852</small>		SHEET NO. 9-R2 OF 34 SHEETS	



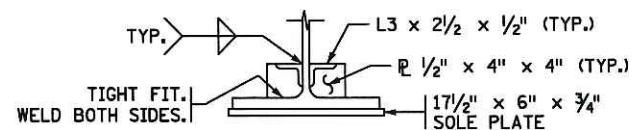
TIME : 8:00:33 AM  
 PLOTTED : 07-MAY-2013  
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 FILENAME: IP\_PWP-d1460960\27504\_bep



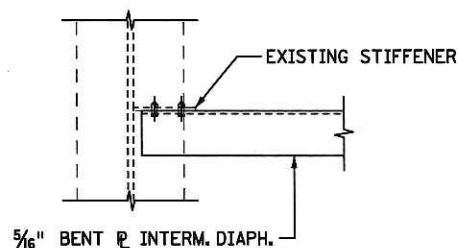
**BENT PLATE**  
 INTERMEDIATE DIAPHRAGM



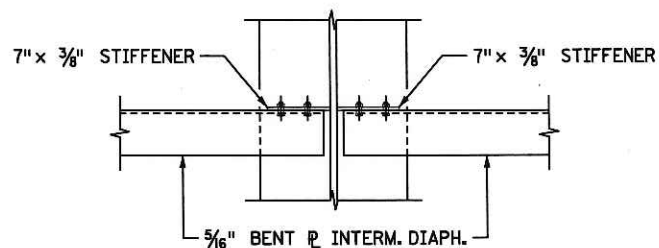
**PLAN**



**NEW INTERIOR BEAM**  
 AT ABUTMENT

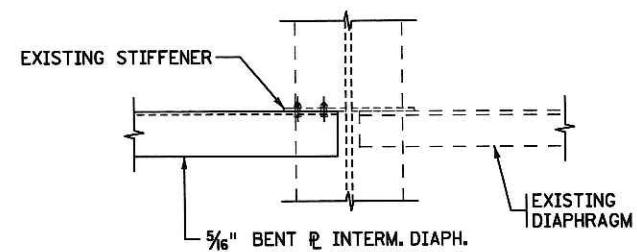


**EXISTING BEAM**



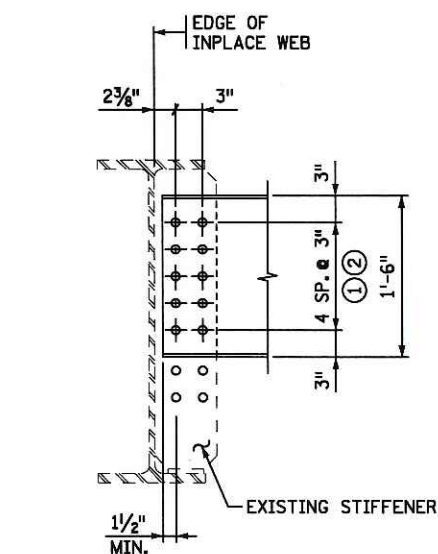
**NEW BEAM**

**PLAN**

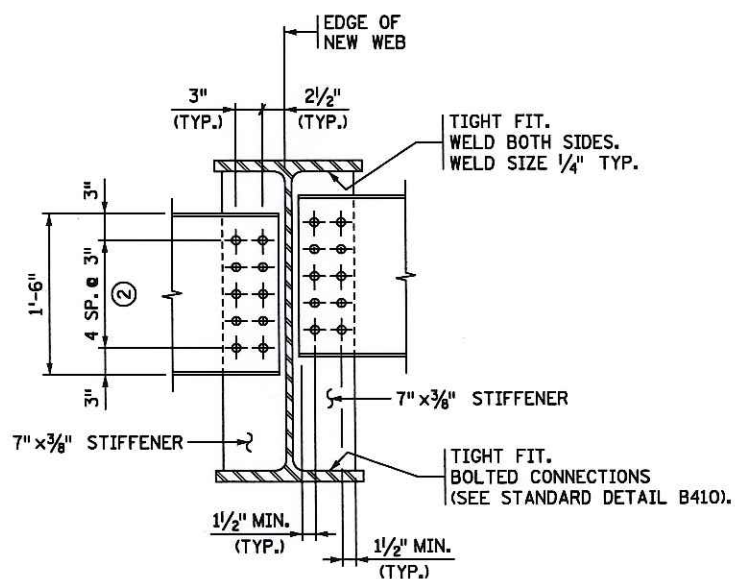


**EXISTING BEAM**

**PLAN**



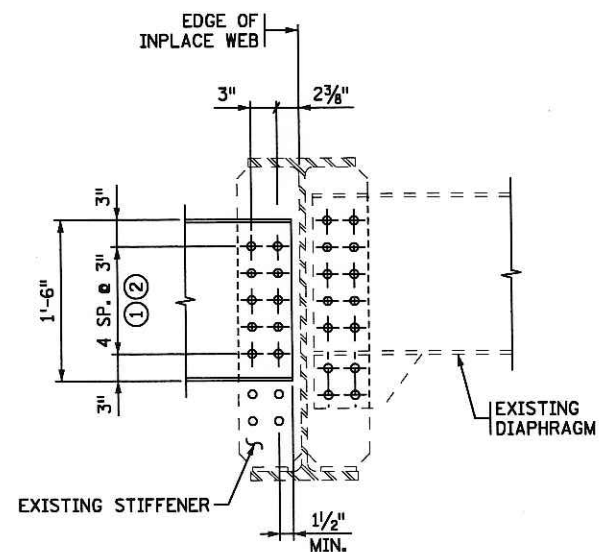
**EXISTING FASCIA BEAM**  
 BEAM 8



**NEW INTERIOR BEAM**  
 BEAM 7

**ELEVATION**

**ELEVATION**



**EXISTING INTERIOR BEAM**  
 BEAM 6

**INTERMEDIATE DIAPHRAGM**  
 (CONNECTION TO EXISTING BEAM)

**INTERMEDIATE DIAPHRAGM**  
 (CONNECTION TO EXISTING BEAM)

**NOTES:**

- ALL STEEL SHALL CONFORM TO Mn/DOT SPEC. 3309.
- ① DIMENSIONS TAKEN FROM THE ORIGINAL 1962 SHOP DRAWINGS. FIELD DRILL NEW BENT PLATE INTERMEDIATE DIAPHRAGMS TO EXISTING STIFFENERS.
- ② FIELD DRILL 5/16" Ø HOLES FOR 3/8" Ø A325 BOLTS (TYP.)

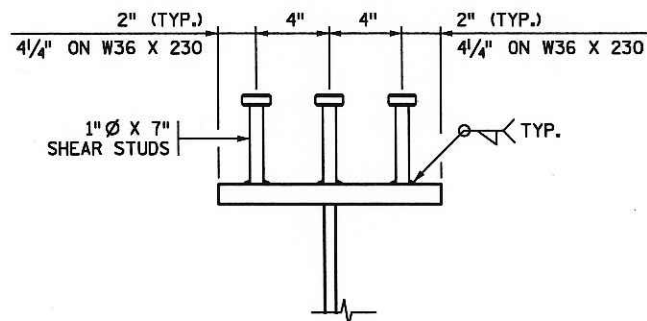
CERTIFIED BY Todd R. Stevens 5/2/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**STRUCTURAL STEEL DETAILS**

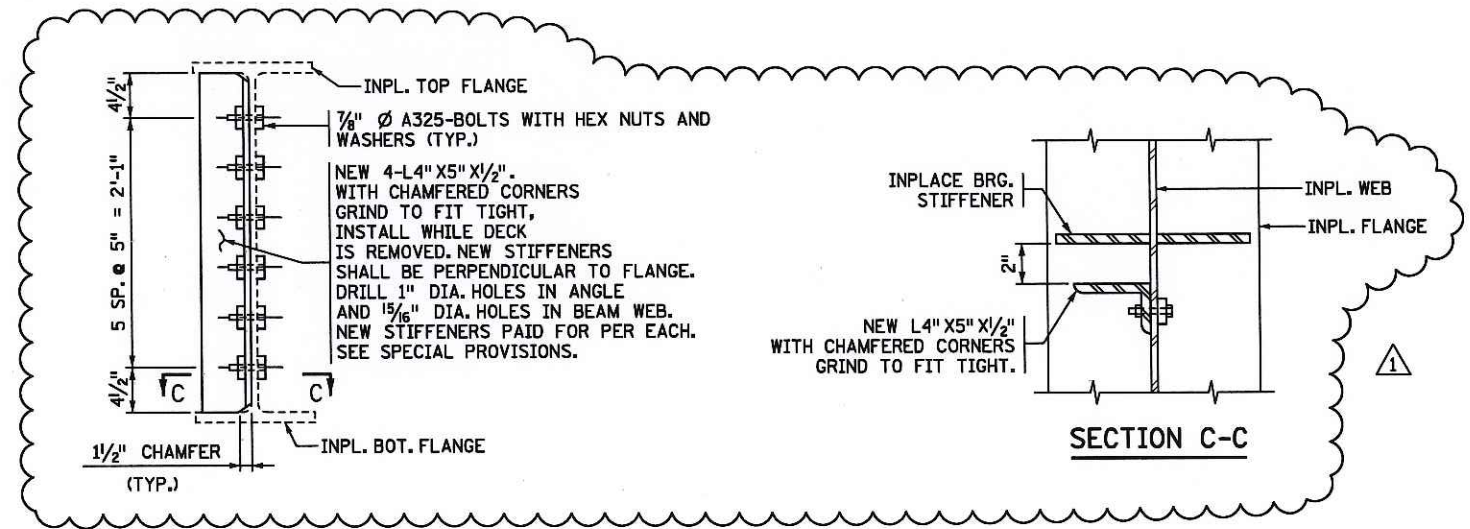
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CHK: GBB	CHK: TRS	

SHEET NO. 10 OF 34 SHEETS

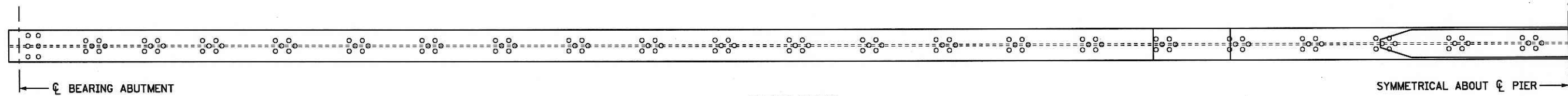
BRIDGE NO.  
 27504



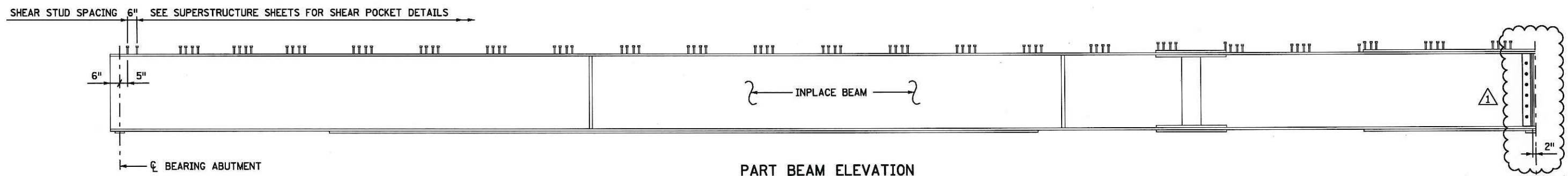
**SHEAR CONNECTOR DETAIL**  
(SHEAR STUD SPACING @ ABUTMENTS)



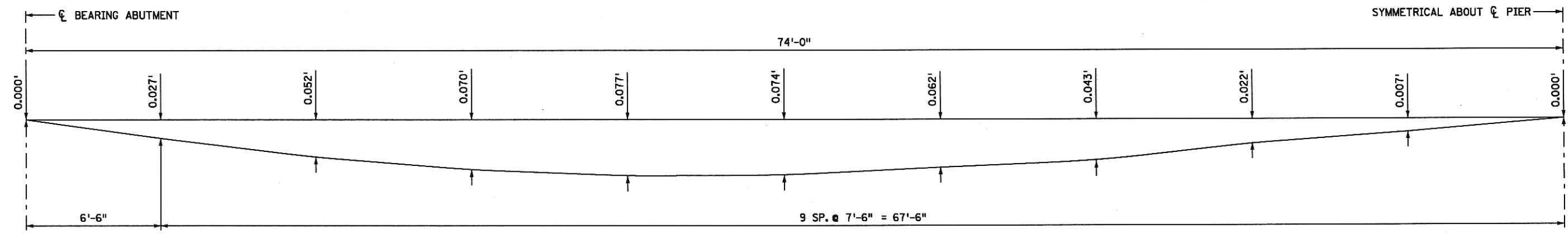
**SECTION C-C**



**PLAN VIEW**  
BEAMS 1-6 AND 8



**PART BEAM ELEVATION**  
BEAMS 1-6 AND 8



**DEFLECTION DIAGRAM**  
BEAMS 1-6 AND 8

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	ANGLE STIFFENERS AT PIER	TRS

CERTIFIED BY Todd R. Stevens 5/29/13  
LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**BEAM DETAILS**

DES: RJR DR: BEP APPROVED: 5/29/13  
 CHK: GBB CHK: TRS  
 SHEET NO. 11R OF 34 SHEETS

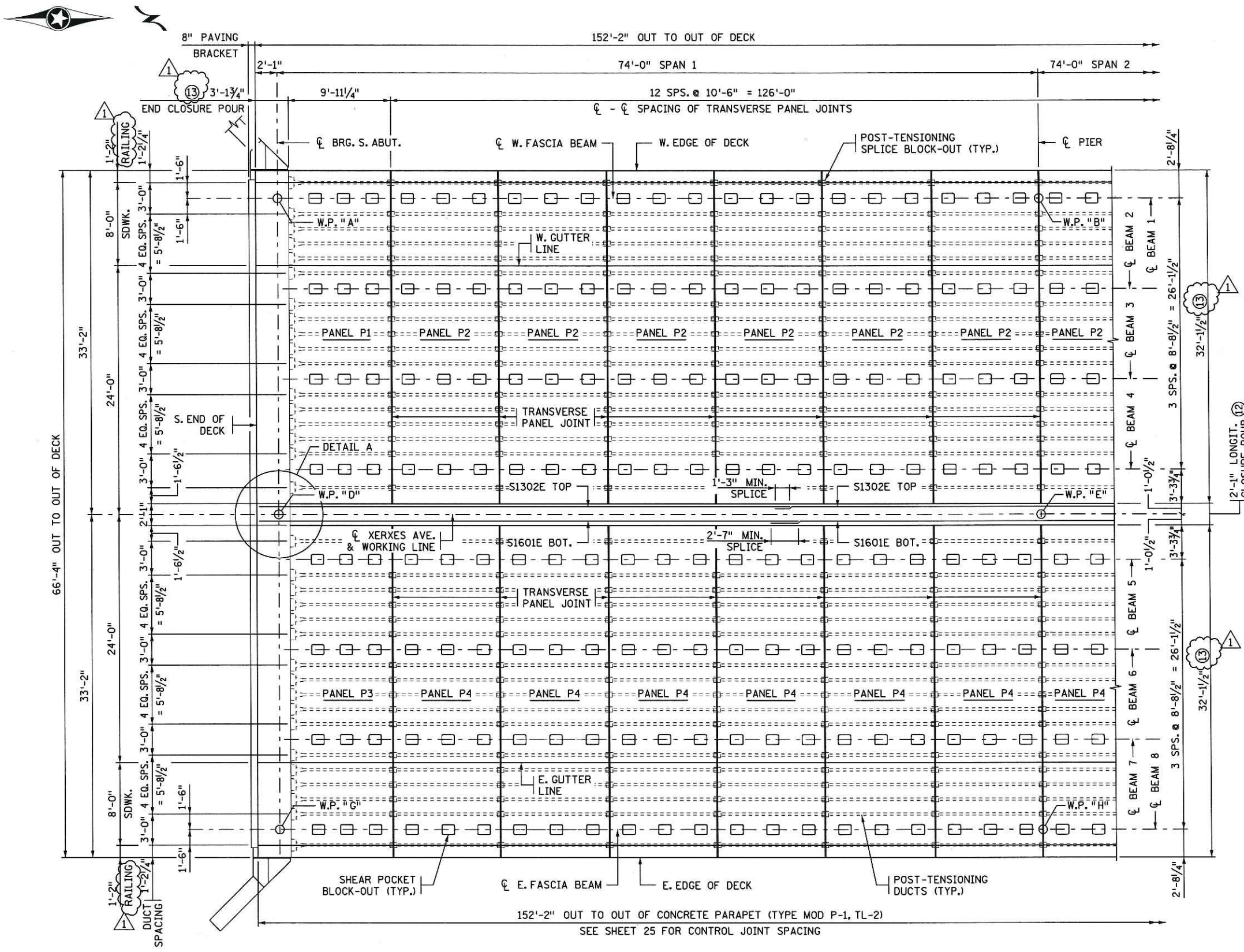
BRIDGE NO.  
 27504

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FILENAME: IP\_PWP-d1460960/27504\_r1.s.dgn



**PARTIAL DECK PLAN**

**SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE**

④ ①	STRUCTURAL CONCRETE (3Y33HP) SPECIAL	30 CU. YD.
②	TYPE MOD P-1 (TL-2) RAILING CONC (3Y46)	305 LIN. FT.
③	SIDEWALK CONCRETE (3Y46)	2435 SQ. FT.
⑤	REINFORCEMENT BARS (EPOXY COATED)	13820 POUND
①	BRIDGE DECK PLANING	7304 SQ. FT.
	STRUCTURAL STEEL (3309)	2000 POUND
	ORNAMENTAL METAL RAILING TYPE SPECIAL	305 LIN. FT.
	SHEAR STUDS	2112 EACH
①	CHIP SEAL WEARING COURSE	7304 SQ. FT.
①	POST-TENSIONING SYSTEM	1 SYS.
⑥ ①	PRECAST DECK PANEL	9375 SQ. FT.
⑦	EXPANSION BEARING ASSEMBLY TYPE E1	15 EACH
⑦	EXPANSION BEARING ASSEMBLY TYPE E2	1 EACH
⑧	FIXED BEARING ASSEMBLY TYPE F1	8 EACH
⑨	BRIDGE NAME PLATE	1 EACH
⑩ ①	NON-SHRINK GROUT	17 CU. YD.
⑪ ①	1" THICK LOW DENSITY POLYSTYRENE	6 SQ. FT.
⑪ ①	FURNISH AND INSTALL BEAM STIFFENERS	8 EACH

- ① SEE SPECIAL PROVISIONS.
- ② "TYPE MOD P-1 (TL-2) CONCRETE (3Y46)" VOLUME IS APPROXIMATELY 39 CU. YDS.
- ③ "SIDEWALK CONCRETE (3Y46)" VOLUME IS APPROXIMATELY 71 CU. YDS.
- ④ INCLUDES 2 CU. YDS. FOR END DIAPHRAGMS AND 9 CU. YDS. FOR LONGITUDINAL CLOSURE POUR.
- ⑤ INCLUDES LONGITUDINAL CLOSURE POUR, END DIAPHRAGM, SIDEWALK AND RAILING REINFORCEMENT.
- ⑥ INCLUDES CONCRETE, REINFORCEMENT BARS, POST-TENSIONING DUCTS, LIFTING ASSEMBLIES, VERTICAL ADJUSTMENT ASSEMBLIES AND THE FURNISHING AND INSTALLING OF NON-SHRINK GROUT IN TRANSVERSE JOINTS.
- ⑦ PAYMENT FOR EXPANSION BEARINGS INCLUDED IN ITEM "RECONSTRUCT EXPANSION BEARINGS".
- ⑧ PAYMENT FOR FIXED BEARINGS INCLUDED IN ITEM "RECONSTRUCT FIXED BEARINGS".
- ⑨ PAYMENT SHALL BE CONSIDERED INCIDENTAL TO ITEM "TYPE MOD P-1 (TL-2) RAILING CONCRETE (3Y46)".
- ⑩ INCLUDED IN PRICE BID FOR PRECAST DECK PANEL.
- ⑪ INCLUDED IN ITEM "RECONSTRUCT PAVING BRACKET".

**NOTES:**

- SEE SHEET 13 FOR CONTINUED DECK PLAN.
- SEE SHEET 13 FOR DETAIL A.
- ⑫ STRUCTURAL CONCRETE (3Y33HP) SPECIAL. SEE SHEETS 21 & 22 FOR REINFORCEMENT.
- ⑬ STRUCTURAL CONCRETE (3Y33HP) SPECIAL. SEE SHEET 24 FOR REINFORCEMENT.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	① REVISED NOTES, ADDED PAY ITEM	TRS

CERTIFIED BY *Todd R. Stevens* 5/29/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**SUPERSTRUCTURE DETAILS**

DES: RJR DR: RLS APPROVED: 5/29/13  
 CHK: GBB CHK: TRS  
 SHEET NO. 12R OF 34 SHEETS

BRIDGE NO.  
 27504

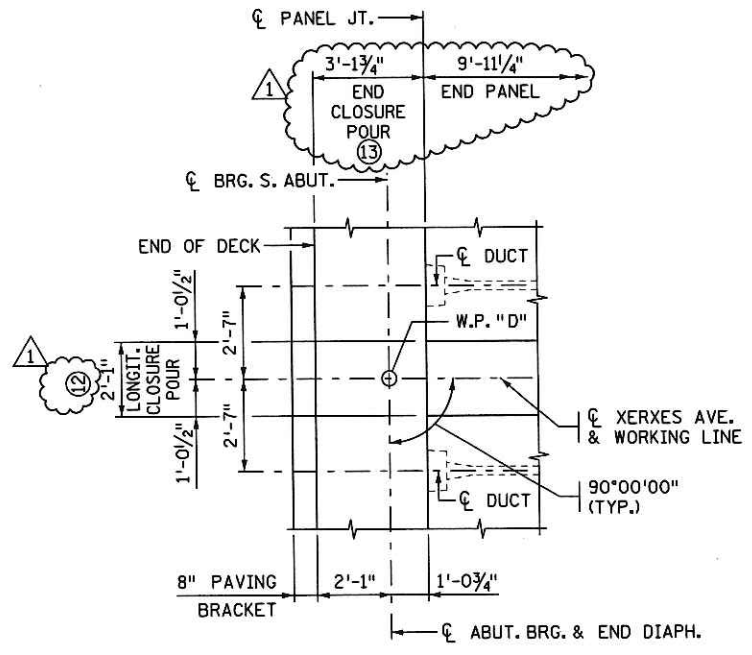
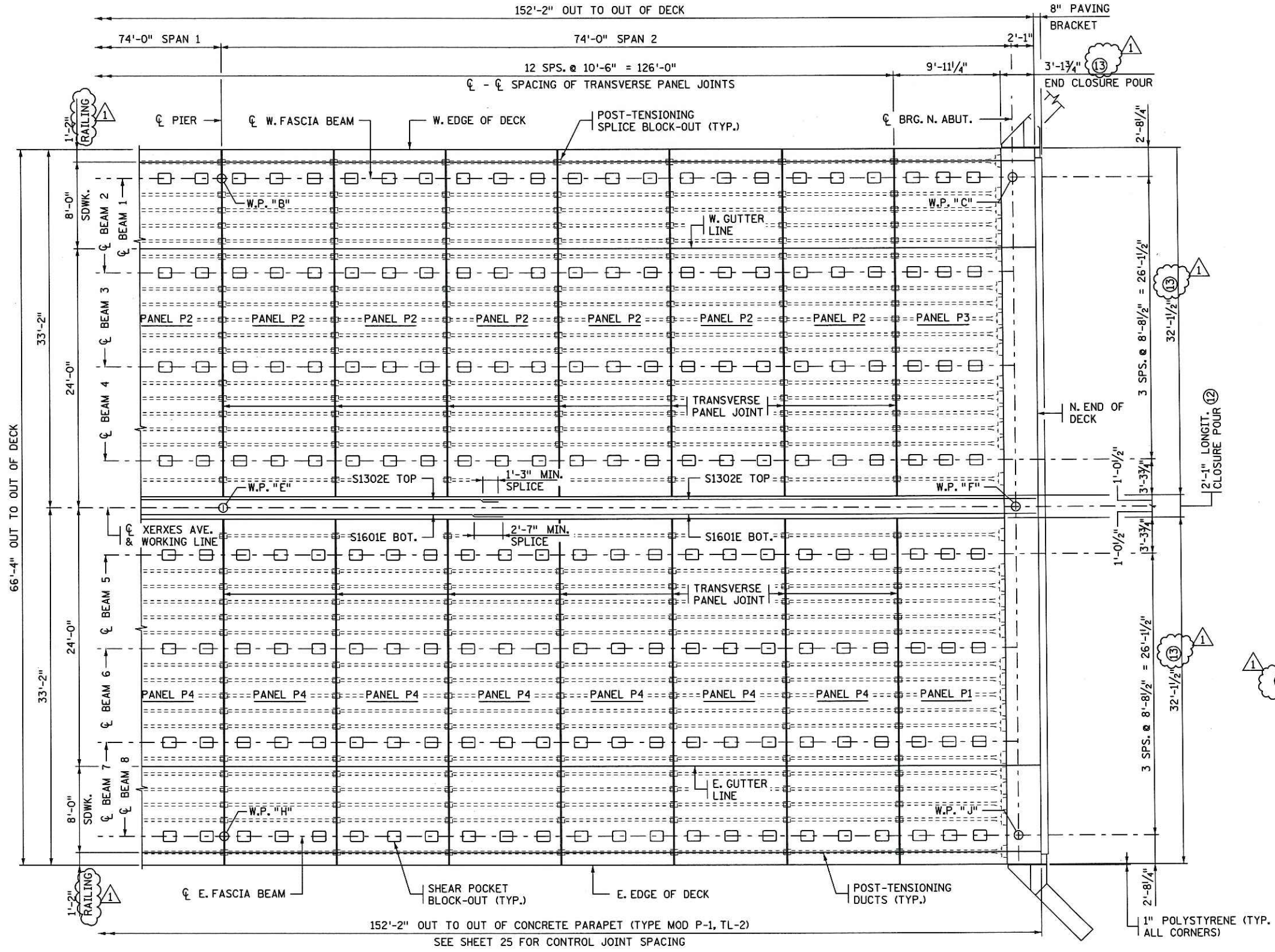




**NOTES:**

CONTINUED DECK PLAN FROM SHEET 12.  
SEE SHEET 12 FOR LOCATION OF DETAIL A.  
SEE SHEET 12 FOR TRANSVERSE DUCT SPACING.

- ⑫ STRUCTURAL CONCRETE (3Y33HP) SPECIAL. SEE SHEETS 21 & 22 FOR REINFORCEMENT.
- ⑬ STRUCTURAL CONCRETE (3Y33HP) SPECIAL. SEE SHEET 24 FOR REINFORCEMENT.



**DETAIL A**

(SOUTH ABUTMENT SHOWN, NORTH ABUTMENT OPPOSITE HAND)

**PARTIAL DECK PLAN**

TIME : 11:25:00 AM  
 PLOTTED : 23-MAY-2013  
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REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	REVISED NOTES	TRS

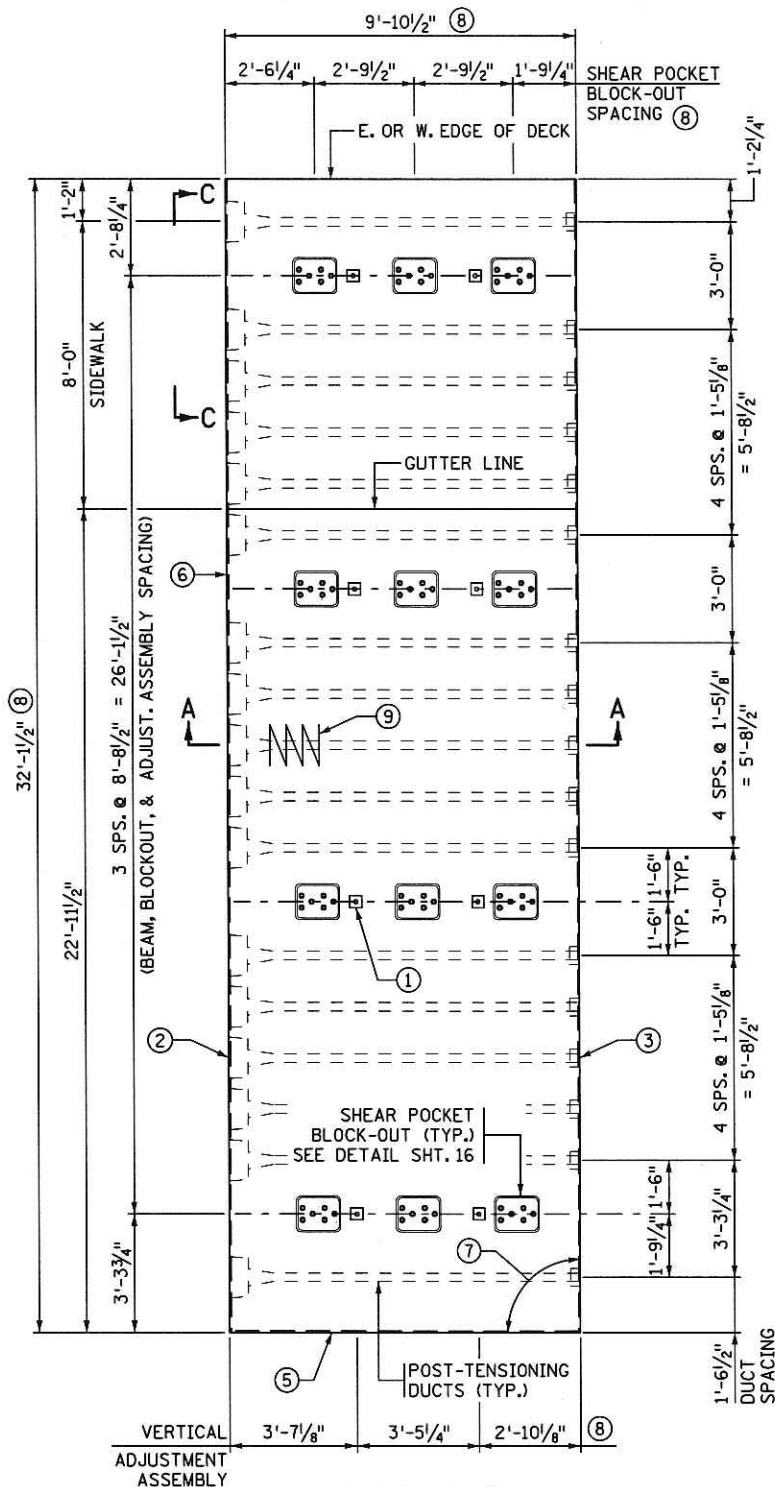
CERTIFIED BY *Todd R. Stevens* 5/29/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**SUPERSTRUCTURE DETAILS**

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 SHEET NO. 13R OF 34 SHEETS

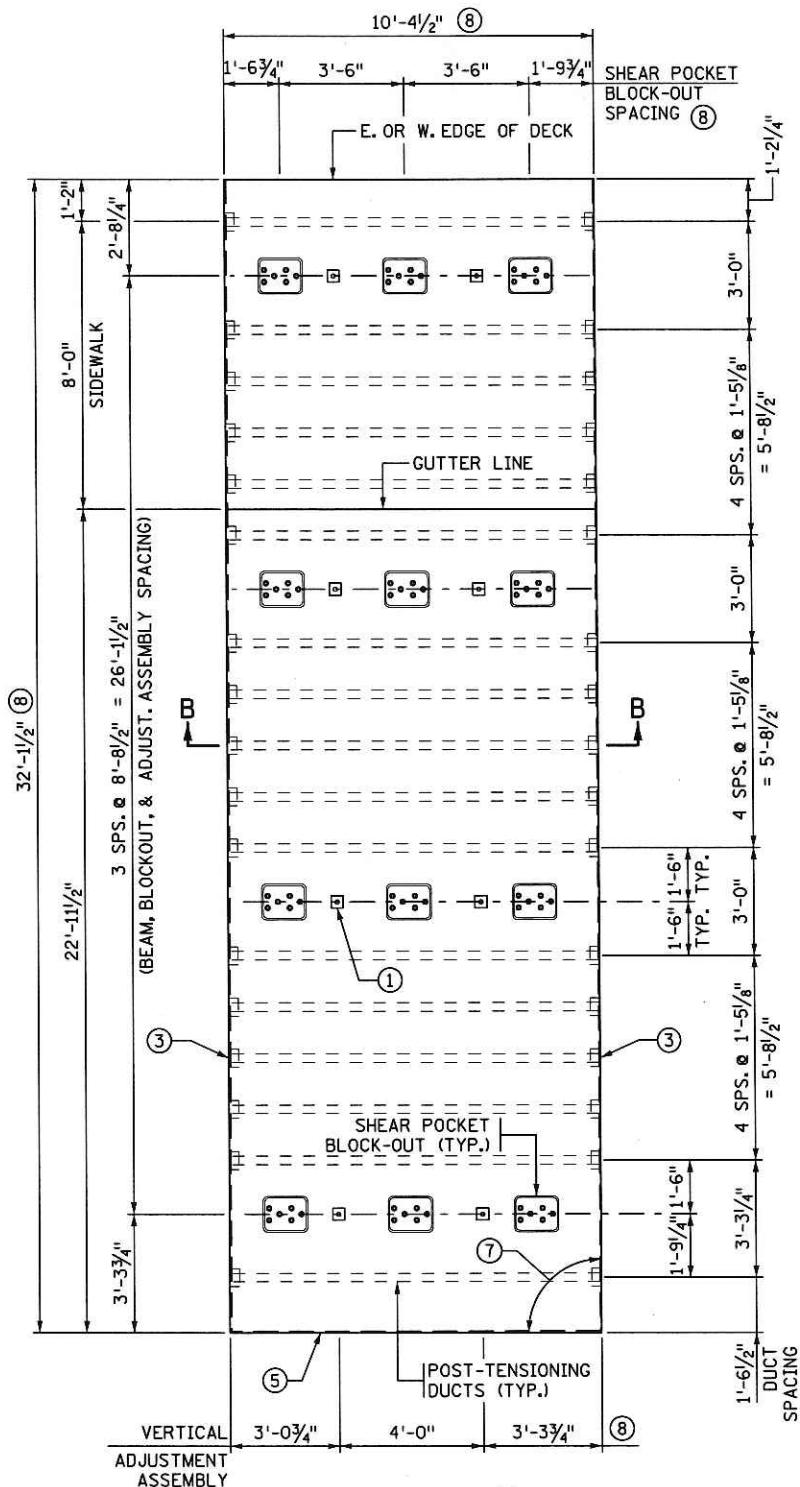
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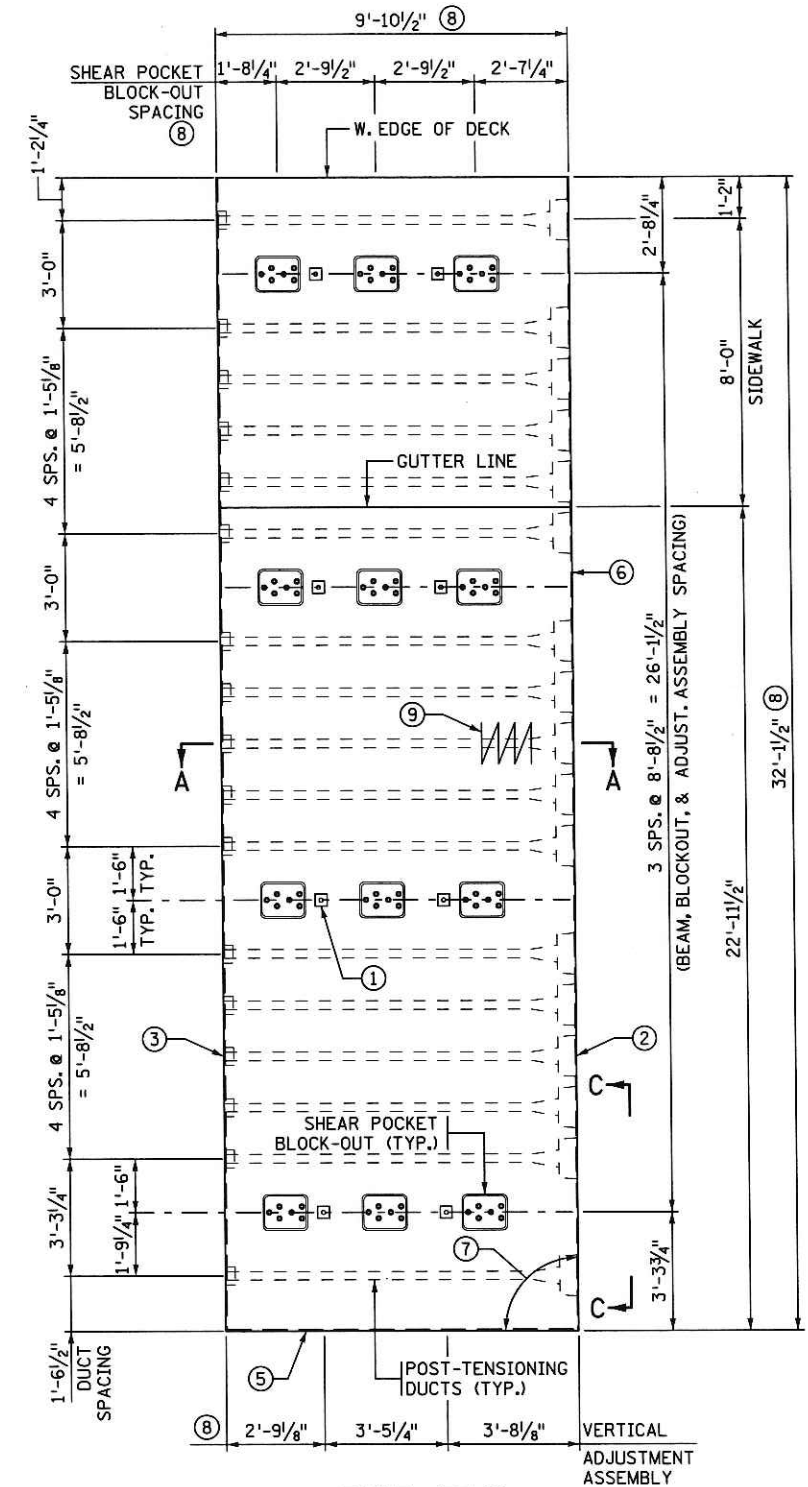
PANEL P1 (4)

(2 PANELS REQUIRED)  
 (SW PANEL SHOWN; NE PANEL ROTATED 180°)



PANEL P2 (4)

(12 PANELS REQUIRED)



PANEL P3 (4)

(2 PANELS REQUIRED)  
 (NW PANEL SHOWN; SE PANEL ROTATED 180°)

NOTES:

- SEE SHEET 15 FOR SECTIONS A-A, B-B & VIEW C-C.
- ① VERTICAL ADJUSTMENT ASSEMBLY. A MINIMUM OF 2 ASSEMBLIES REQUIRED AT EACH BEAM PER PANEL. SEE DETAIL SHEET 16.
- ② POST-TENSION END ANCHORAGE BLOCK-OUT (TYP.).
- ③ DUCT SPLICE BLOCK-OUT (TYP.). SEE SHEET 16.
- ④ CONTRACTOR SHALL DETERMINE NUMBER, SIZE AND LOCATIONS OF LIFTING ASSEMBLIES. SEE SPECIAL PROVISIONS AND PRECAST DECK PANEL NOTES.
- ⑤ PANEL SHEAR KEY REQUIRED FULL LENGTH AT LONGITUDINAL CLOSURE POUR.
- ⑥ PANEL SHEAR KEY REQUIRED BETWEEN ANCHOR BLOCK-OUTS.
- ⑦ 90°00'00" (TYP.)
- ⑧ MEASURED ALONG TOP SURFACE OF DECK PANEL.
- ⑨ ANCHORAGE ZONE REINFORCEMENT (TYP.).

REVISION

DATE	DESCRIPTION	APPROVED BY
5-28-13	REVISED NOTES	TRS

CERTIFIED BY *Todd R. Stevens* 5/29/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

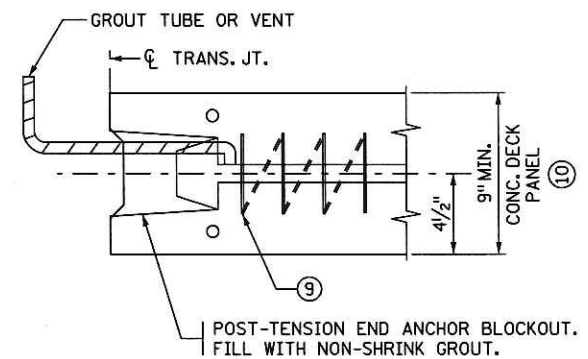
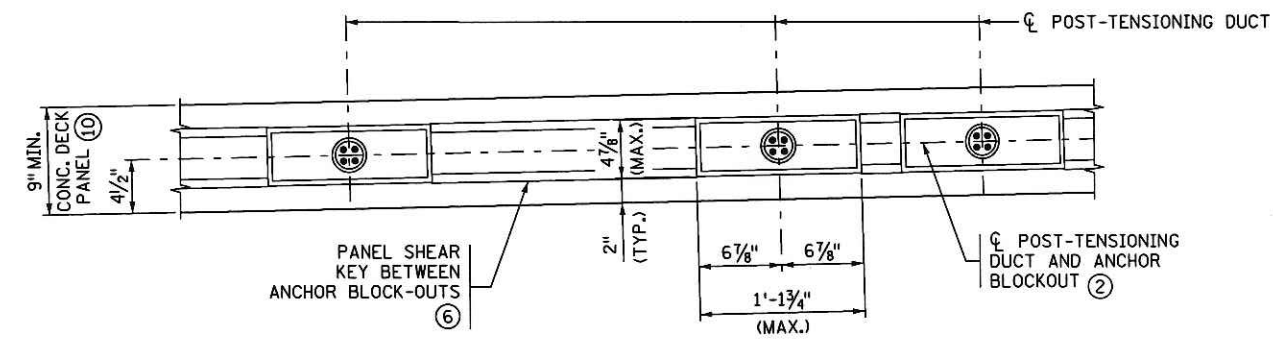
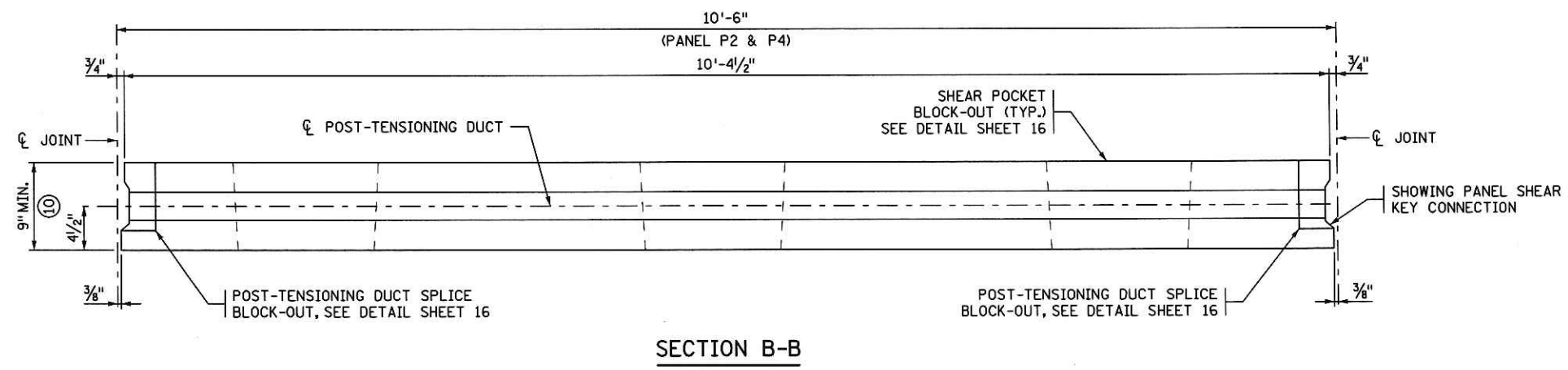
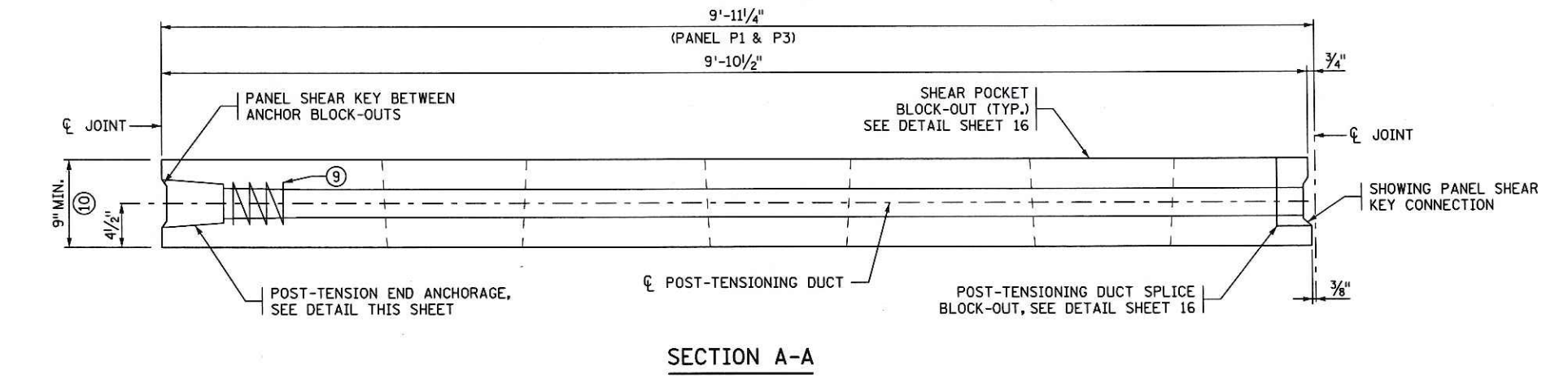
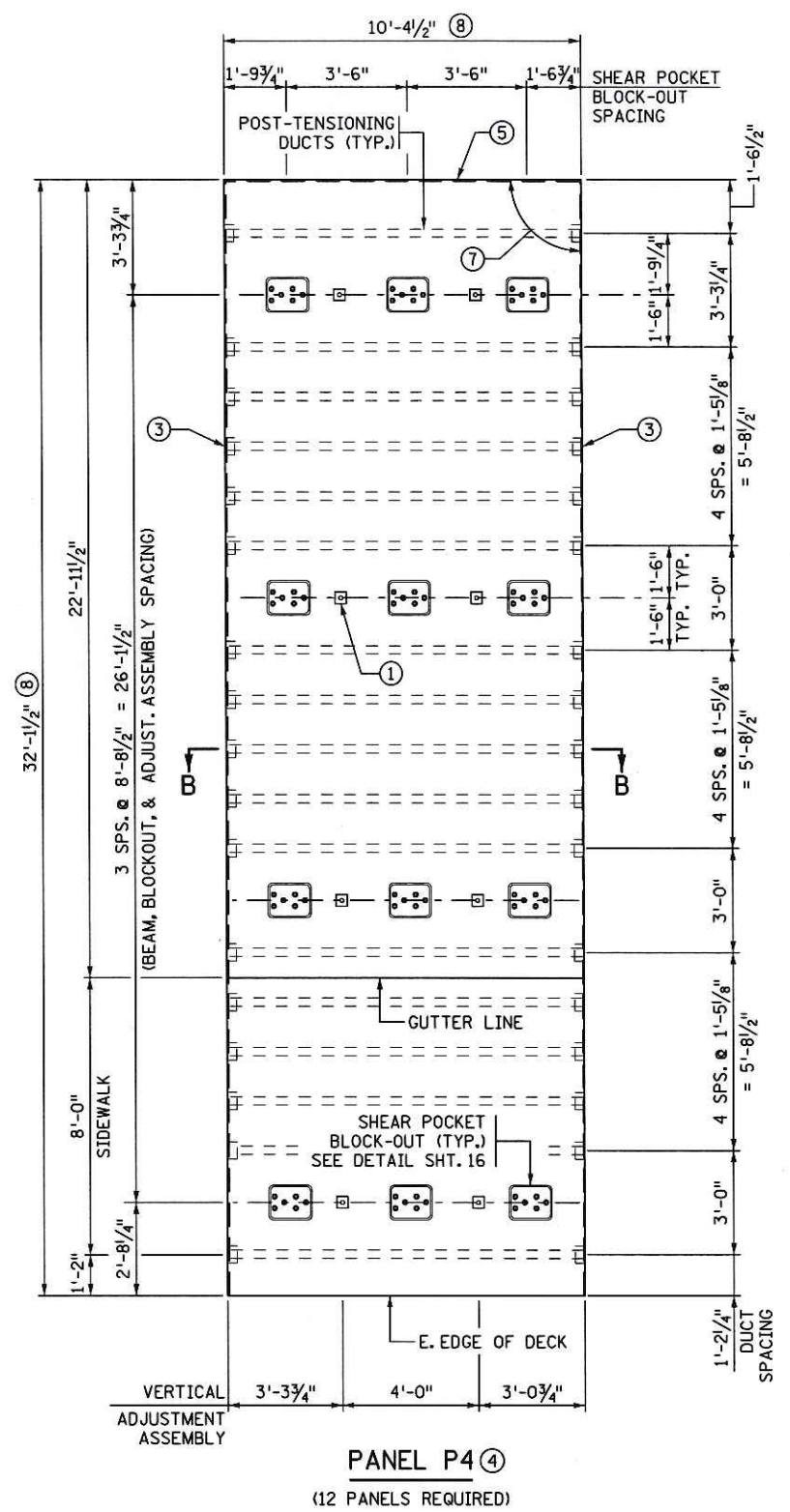
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 SHEET NO. 14R OF 34 SHEETS

BRIDGE NO.  
 27504



TIME : 8:23:42 AM  
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**VIEW C-C**

**NOTE:**

- SEE SHEET 14 FOR LOCATION OF SECTIONS A-A, B-B & VIEW C-C.
- ① VERTICAL ADJUSTMENT ASSEMBLY. A MINIMUM OF 2 ASSEMBLIES REQUIRED AT EACH BEAM PER PANEL. SEE DETAIL SHEET 16.
  - ② POST-TENSION END ANCHORAGE BLOCK-OUT (TYP.).
  - ③ DUCT SPLICE BLOCK-OUT (TYP.). SEE SHEET 16.
  - ④ CONTRACTOR SHALL DETERMINE NUMBER, SIZE AND LOCATIONS OF LIFTING ASSEMBLIES. SEE SPECIAL PROVISIONS AND PRECAST DECK PANEL NOTES.
  - ⑤ PANEL SHEAR KEY REQUIRED FULL LENGTH AT LONGITUDINAL CLOSURE POUR.
  - ⑥ PANEL SHEAR KEY REQUIRED BETWEEN ANCHOR BLOCK-OUTS.
  - ⑦ 90°00'00" (TYP.)
  - ⑧ MEASURED ALONG TOP SURFACE OF DECK PANEL.
  - ⑨ ANCHORAGE ZONE REINFORCEMENT (TYP.).
  - ⑩ MIN. THICKNESS AFTER BRIDGE DECK PLANING.

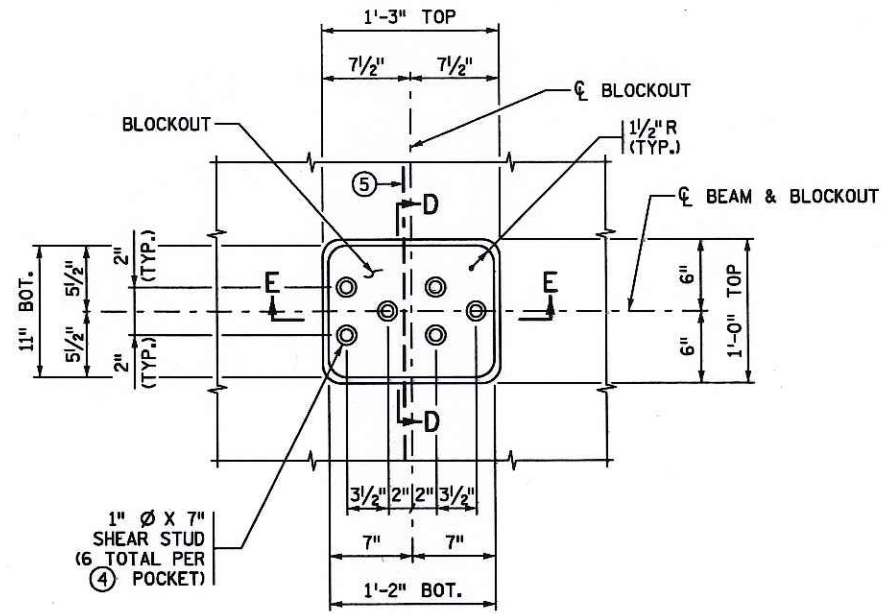
CERTIFIED BY *Todd R. Stevens* 5/7/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**SUPERSTRUCTURE DETAILS**

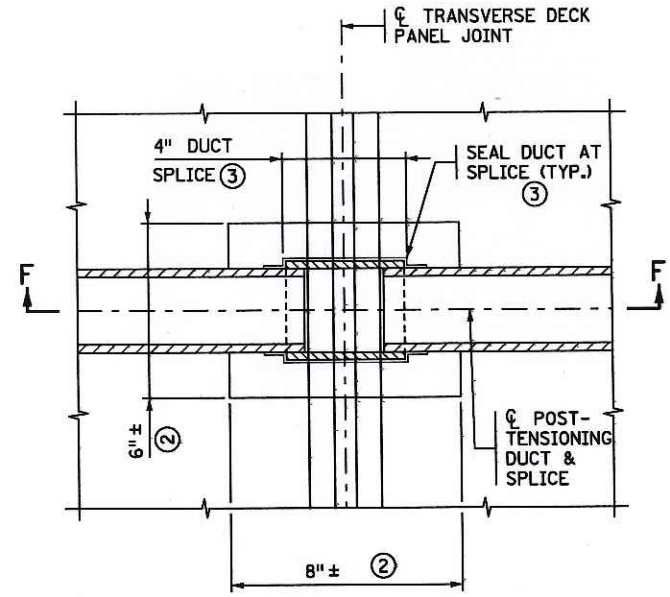
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CHK: GBB	CHK: TRS		
SHEET NO. 15 OF 34 SHEETS			



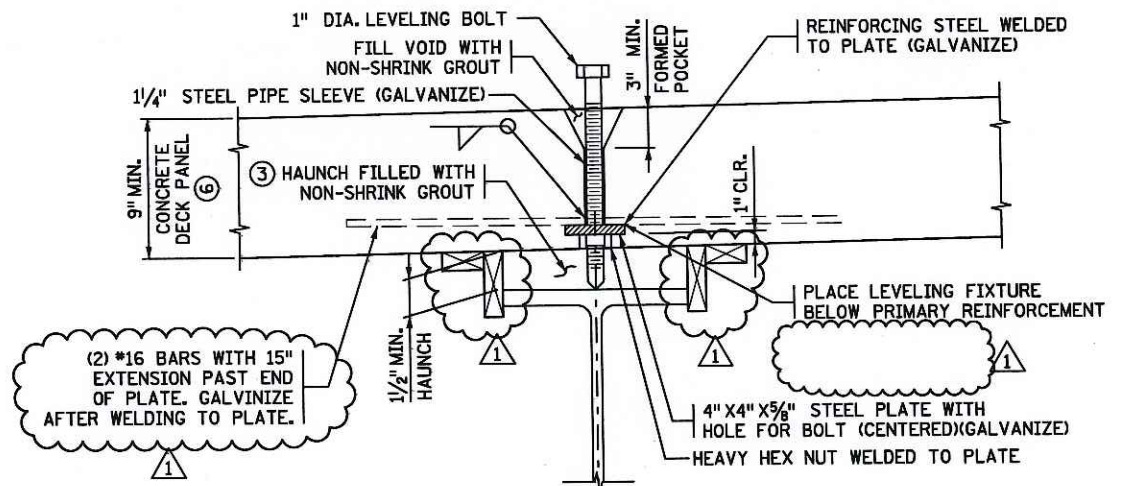
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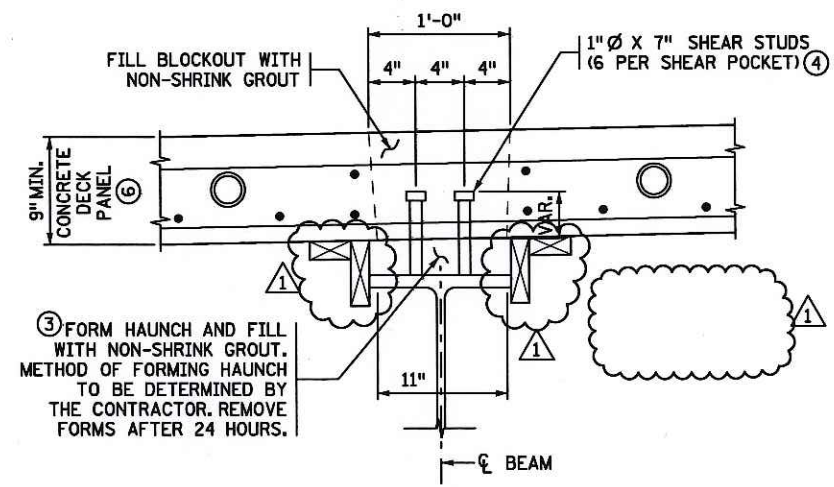
SHEAR POCKET BLOCKOUT DETAIL



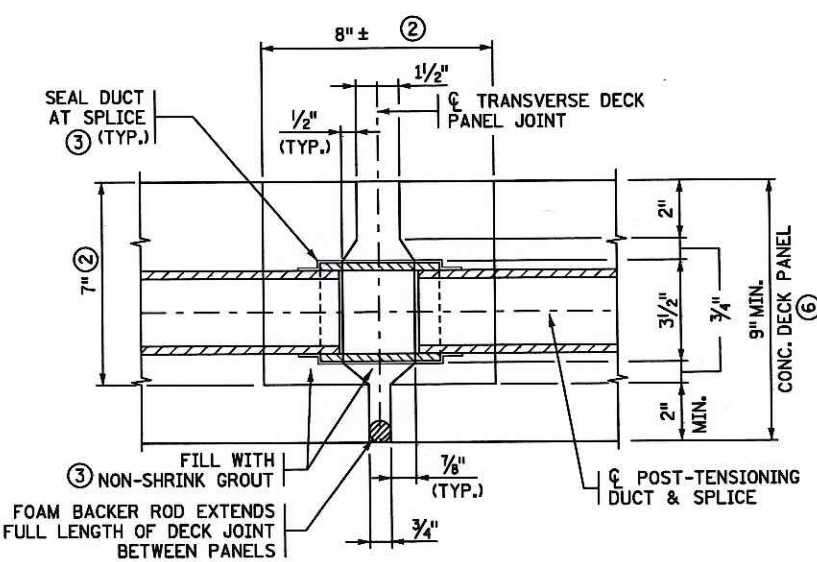
PLAN VIEW AT DUCT CONNECTION



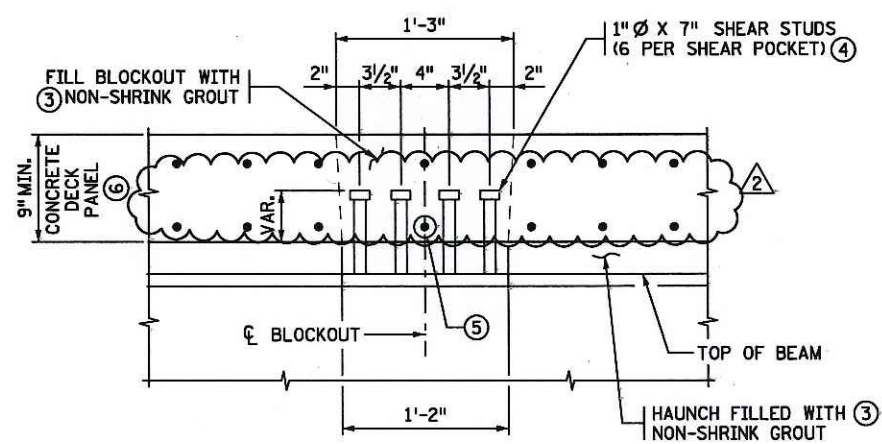
VERTICAL ADJUSTMENT DETAIL (1)



SECTION D-D



SECTION F-F  
 (PANEL SHEAR KEY)



SECTION E-E

NOTES:

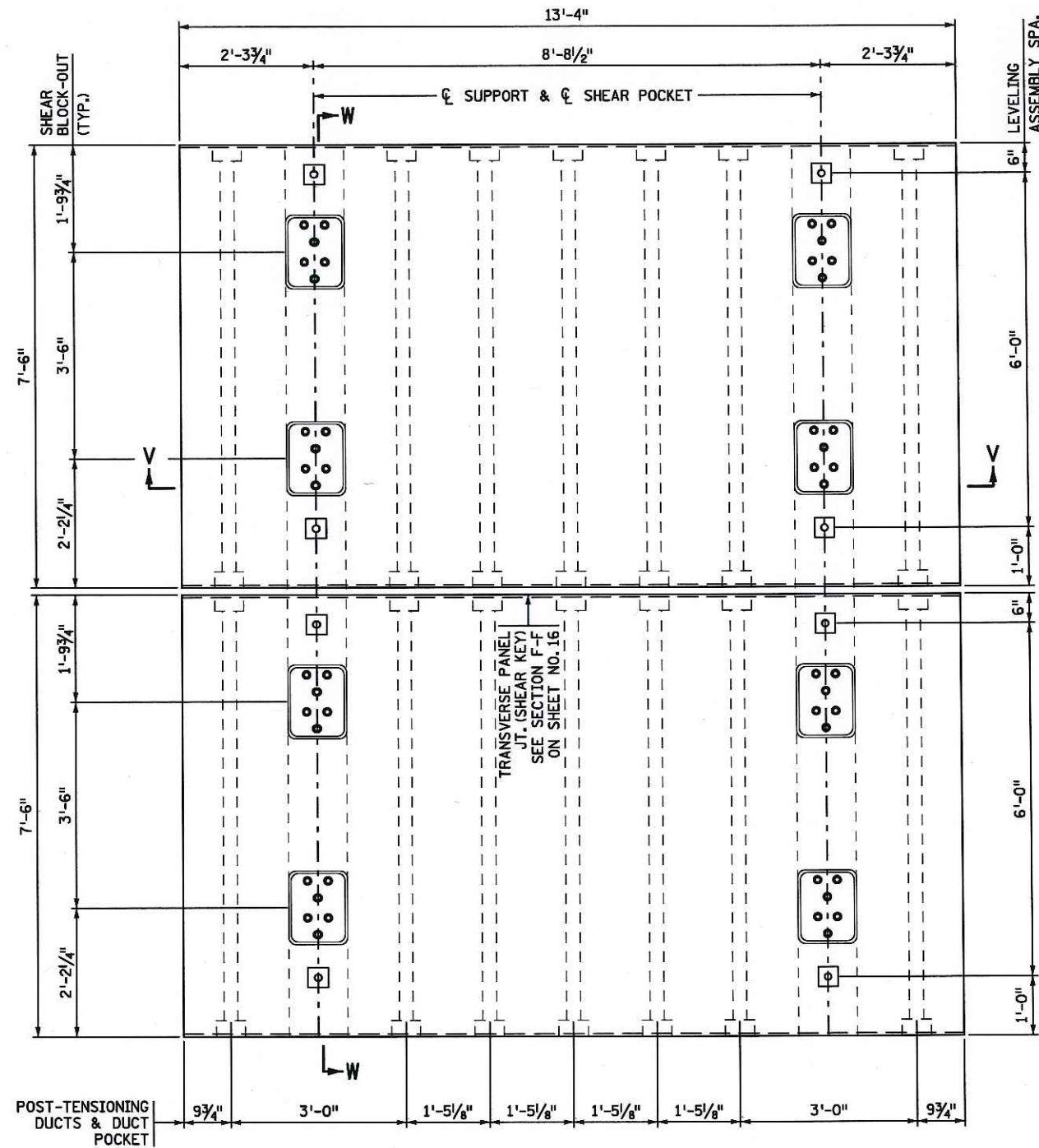
- (1) VERTICAL ADJUSTMENT ASSEMBLY. A MINIMUM OF 2 ASSEMBLIES REQUIRED AT EACH BEAM PER PANEL. SEE SPECIAL PROVISIONS.
- (2) POST-TENSIONING DUCT SPLICE BLOCK-OUT (TYP.).
- (3) SEE SPECIAL PROVISIONS.
- (4) CONTRACTOR SHALL PROVIDE GROUNDING METHOD PRIOR TO FIELD WELDING. THE FURNISHING AND INSTALLATION OF THE SHEAR STUDS SHALL BE INCLUDED IN THE PRICE BID FOR "SHEAR STUDS".
- (5) TRANSVERSE REINF. BAR THROUGH BLOCKOUT.
- (6) MIN. THICKNESS AFTER BRIDGE DECK PLANING.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	(1) REVISED ADJUSTMENT & HAUNCH DETAILS	TRS
9-12-13	(2) REVISED SECTION E-E NO LONG. BARS THRU SHEAR POCKET	BJJ

CERTIFIED BY	<i>Benjamin J. Jilk</i> 9/12/13 LICENSED PROFESSIONAL ENGINEER	DATE	9-13-13	APPROVED BY	
NAME: BENJAMIN J. JILK	LIC. NO. 49852	TITLE:	SUPERSTRUCTURE DETAILS		
			DES: RJR	DR: RLS	BRIDGE NO. 27504
			CHK: GBB	CHK: TRS	
			SHEET NO. 16-R2 OF 34 SHEETS		

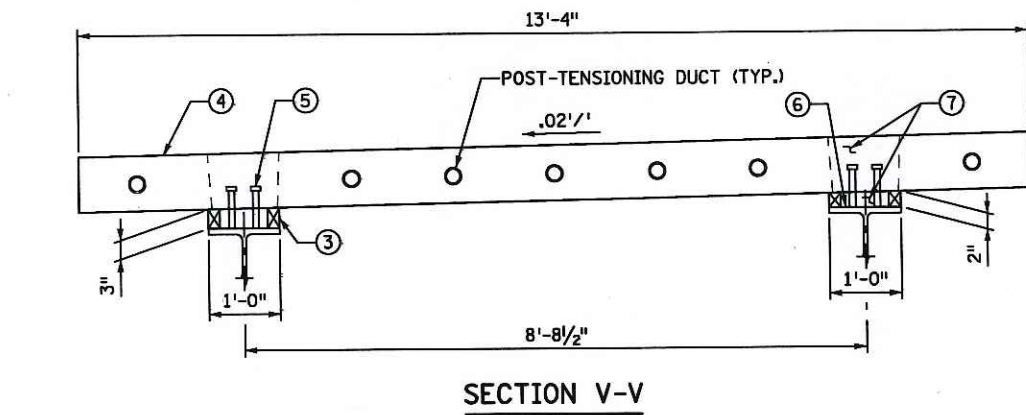


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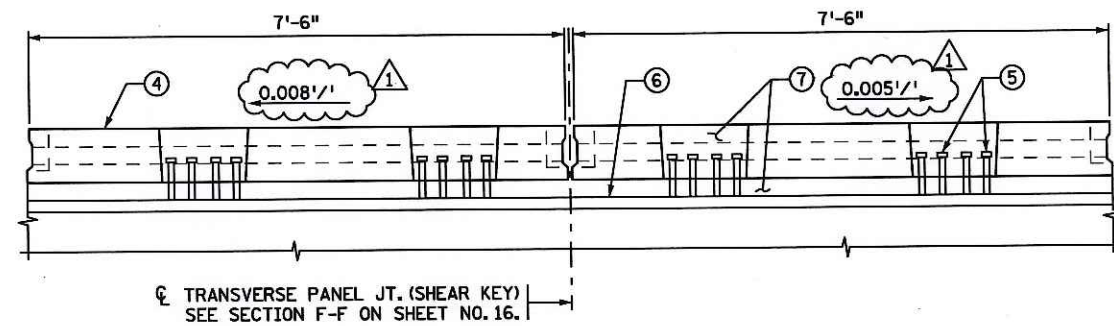


MOCK-UP PANEL DETAIL

REVISION		
DATE	DESCRIPTION	APPROVED BY
9-12-13	REVISED SECTION W-W FOR SLOPE	BJJ



SECTION V-V



SECTION W-W

**MOCK-UP PANEL NOTES:**

SEE SHEET 16 FOR ADDITIONAL DETAILS FOR THE MOCK-UP PANEL. CONTRACTOR SHALL PROVIDE AT LEAST FOUR LIFTING ASSEMBLIES PER MOCK-UP PANEL IDENTICAL TO THE LIFTING ASSEMBLIES FOR THE PRECAST CONCRETE DECK PANELS.

REINFORCEMENT SHALL CONSIST OF TWO MATS WITH BAR SIZE AND SPACING SIMILAR TO THAT OF THE PRECAST CONCRETE DECK PANELS SHOWN ON SHEETS 19 & 20.

THE SAME SIZE POST-TENSIONING DUCT, THE SAME PROPOSED VERTICAL ADJUSTMENT ASSEMBLY, THE SAME SIZE SHEAR BLOCKOUT AND DUCT SPLICE POCKET SHALL BE USED AS SHOWN FOR THE PRECAST CONCRETE DECK PANEL. SEE SPECIAL PROVISIONS.

- ④ PRECAST CONCRETE MOCK-UP PANEL SHALL BE CAST IN THE SAME FORMS AS THE PRECAST DECK PANELS FOR BR. NO. 27504. THE CONCRETE MIX, PANEL THICKNESS, REINFORCEMENT, POCKET DIMENSIONS, TRANSVERSE PANEL JOINT, LIFTING ASSEMBLIES, POST-TENSIONING DUCTS AND LEVELING ASSEMBLIES SHALL BE THE SAME AS USED FOR THE PRECAST DECK PANELS.
- ⑤ USE (6) 1" Ø SHEAR STUDS PER SHEAR POCKET.
- ⑥ SUPPORT SURFACE SHALL BE SIMILAR TO TOP OF EXISTING STEEL BEAMS IN WIDTH AND THICKNESS.
- ⑦ USE PROPOSED NON-SHRINK GROUT IN POCKETS, TRANSVERSE JOINT AND HAUNCH.
- ③ USE PROPOSED HAUNCH FORMING MATERIAL.

CERTIFIED BY *Benjamin J. Jilk* 9/12/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: BENJAMIN J. JILK LIC. NO. 49852

TITLE:  
**SUPERSTRUCTURE DETAILS**

DES: RJR DR: RLS  
 CHK: GBB CHK: TRS  
 APPROVED: *9-13-13*  
 SHEET NO. 17R OF 34 SHEETS

BRIDGE NO.  
 27504



**PRECAST DECK PANEL NOTES:**

FABRICATOR SHALL BE RESPONSIBLE FOR EXERCISING CARE IN LIFTING, HANDLING, STORING, AND TRANSPORTATION OF THE PRECAST DECK PANELS TO PREVENT CRACKING OR DAMAGE. PANELS SHALL BE LIFTED BY DEVICES AS DESIGNED BY THE CONTRACTOR AND REVIEWED BY THE ENGINEER.

USE THE PCI DESIGN HANDBOOK, PRECAST AND PRESTRESSED CONCRETE, FIFTH EDITION WITH ALL INTERIMS AND ERRATA FOR THE DESIGN AND DETAIL OF LIFTING SUPPORTS AND HANDLING CONSIDERATIONS (NO CRACKING CRITERIA). LIFTING HARDWARE LEFT IN PLACE SHALL BE GALVANIZED AND SHALL HAVE A 3" MIN. CLEAR COVER TO THE TOP OF THE SLAB AND A 1" MIN. CLEAR COVER TO THE BOTTOM OF THE SLAB.

POST-TENSIONING STRANDS SHALL BE UNCOATED, SEVEN-WIRE, LOW-RELAXATION STEEL STRAND OF 0.6" NOMINAL DIAMETER, AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM A416, GRADE 270. ALL METHODS EMPLOYED AND PROCEDURES TO BE FOLLOWED IN POST-TENSIONING THE STRANDS SHALL BE SUBJECT TO THE ENGINEER'S APPROVAL.

POST-TENSIONING PARAMETERS:  
 MAXIMUM JACKING STRESS = 0.8 FU = 216 KSI.  
 MAXIMUM STRESS AT ANCHOR (SET) = 0.70 FU = 189 KSI.  
 ASSUMED ANCHOR SET = 0.375 IN.  
 FOUR STRANDS PER DUCT, JACKING FORCE PER STRAND = 46.8 KIPS.  
 ASSUMED FRICTION COEFFICIENT = 0.23.  
 ASSUMED WOBBLE COEFFICIENT = 0.0002/FT.

THE POST-TENSIONING PARAMETERS HAVE BEEN DEVELOPED ASSUMING A FLAT END ANCHORAGE AND ROUND CORRUGATED PLASTIC POST-TENSIONING DUCT.

IF THE PROPOSED POST TENSIONING DOES NOT MEET THESE VALUES, THEN THE CONTRACTOR SHALL ADJUST THE JACKING FORCE TO PRODUCE THE FINAL POST-TENSIONING FORCE LISTED BELOW.

BEGIN STRESSING AT CENTER OF PANELS. DO NOT ALLOW MORE THAN 12.5% OF THE PRESTRESSING FORCE TO BE ECCENTRIC AT ANY TIME. SUBMIT STRESSING SEQUENCE TO ENGINEER FOR REVIEW PRIOR TO WORK.

CONCRETE IN THE PRECAST DECK PANELS SHALL HAVE A MINIMUM CONCRETE STRENGTH OF 4000 PSI BEFORE REMOVAL FROM CASTING BEDS.

DECK PANELS MUST BE ALLOWED TO SLIDE ON GIRDERS DURING POST-TENSIONING.

FORCE PER STRAND = 39.6 KIPS (AFTER LOSSES DUE TO FRICTION, ANCHORAGE SET AND ELASTIC SHORTENING).

THE CONTRACTOR IS RESPONSIBLE FOR DESIGN OF ALL POST-TENSIONING ELEMENTS AND ANCHORAGE ZONE REINFORCEMENT (REQUIRED FOR SPLITTING, BURSTING, SPALLING, ETC.) INCLUDING THE LOCAL ZONE (REGION IMMEDIATELY SURROUNDING POST-TENSIONING DEVICES) AND THE GENERAL ZONE. DESIGN SHALL CONFORM WITH AASHTO LRFD SPECIFICATIONS.

SPIRAL REINFORCEMENT ALTERNATE IS SHOWN FOR INFORMATION ONLY.

THE PRECAST CONCRETE DECK PANELS SHALL BE FABRICATED TO PLAN DIMENSIONS WITHIN THE RECOMMENDED TOLERANCES SHOWN.

PRECAST DECK PANELS SHALL BE PRODUCED AND PLACED SUCH THAT THERE IS NO MORE THAN 1/4 IN. DIFFERENCE IN ELEVATION BETWEEN THE TOP SURFACES OF ADJACENT PANELS.

USE A LIGHT BROOM FINISH FOR THE TOP SURFACES OF PANELS AND AT ALL JOINT SURFACES. USE A SMOOTH FINISH FOR THE BOTTOM OF THE PANELS.

CONTRACTOR SHALL PROVIDE TEST PANEL MOCK-UPS. SEE PLAN DETAILS AND SPECIAL PROVISIONS.

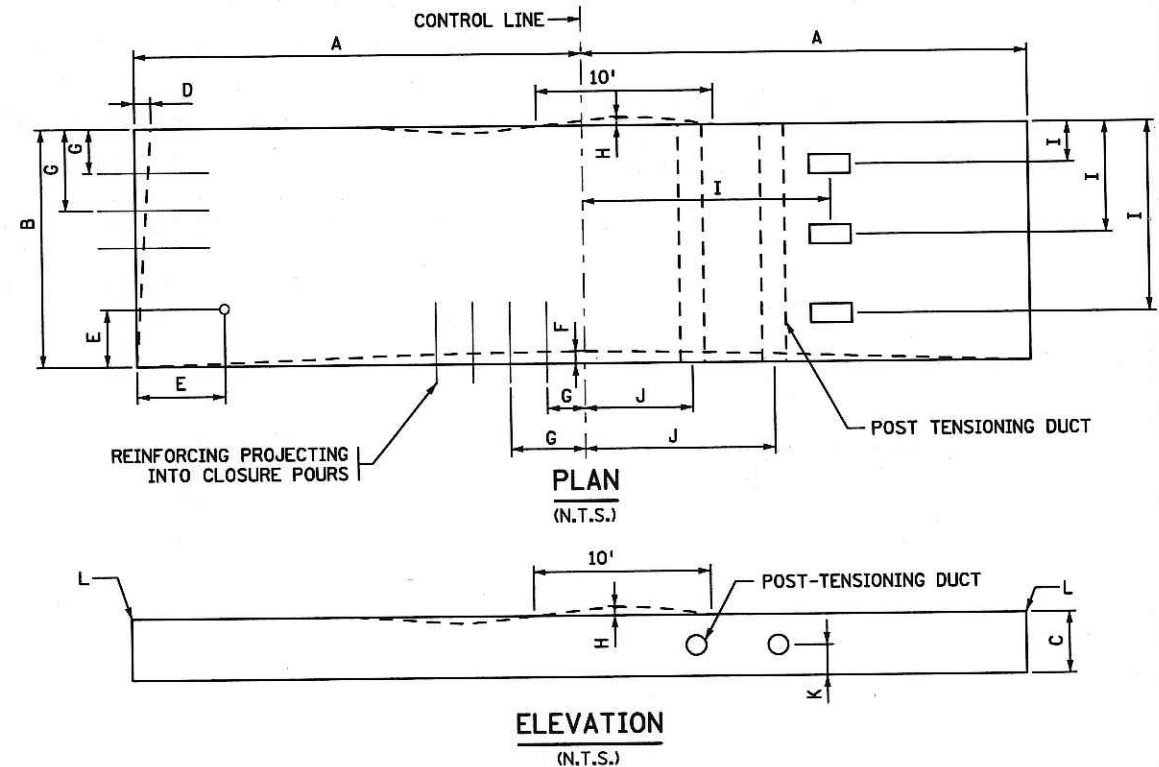
ALL PANEL JOINTS SHALL BE CLEAN AND CONTAIN NO DIRT, OIL, GREASE OR OTHER LOOSE MATERIAL BEFORE PLACING GROUT OR CONCRETE. WATER BLAST AFTER CLEANING.

**SUPERSTRUCTURE CONSTRUCTION SEQUENCE**

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW A DETAILED CONSTRUCTION SEQUENCE OF WORK TASKS TO BE PERFORMED BEFORE REMOVAL OF THE EXISTING STRUCTURE. DETAILED WORK TASK SEQUENCE SHALL INCLUDE THE INTENDED METHOD FOR FORMING THE GIRDER HAUNCHES & QUALITY CONTROL CONSTRUCTION METHOD FOR OBTAINING THE PROPER ALIGNMENT AND GRADE FOR THE PRECAST DECK PANELS. THE PLANS HAVE BEEN DEVELOPED ASSUMING THE FOLLOWING CONSTRUCTION SEQUENCE.

1. REMOVE EXISTING CONCRETE DECK; REMOVE EXISTING SHEAR CONNECTORS; REPLACE SECTION OF BEAM 7. TOP OF BEAMS SHALL BE CLEAN AND CONTAIN NO DIRT, OIL, GREASE, OR OTHER LOOSE MATERIAL BEFORE PLACING HAUNCH FORMS, PRECAST DECK PANELS AND NON-SHRINK GROUT.
2. ERECT ALL OF THE PRECAST DECK PANELS AS SHOWN IN THE SUPERSTRUCTURE SHEETS. BEGIN PLACING PANELS AT CENTERLINE OF PIER AND WORK TOWARDS BOTH ABUTMENTS SIMULTANEOUSLY. PLACE BOTH P2 AND P4 PANELS AT EACH CROSS SECTION BEFORE MOVING TO THE NEXT PAIR OF PANELS. CARE SHOULD BE TAKEN TO ENSURE THE PRECAST SLAB PANELS ARE IN TIGHT CONTACT WITH THE BACKER ROD SEPARATING THEM AND PROPER ALIGNMENTS ACHIEVED. USE LEVELING BOLTS TO ACHIEVE THE REQUIRED GRADE. TORQUE ALL LEVELING BOLTS ON EACH PANEL TO WITHIN 15 PERCENT OF EACH OTHER TO ENSURE PROPER DISTRIBUTION OF PANEL WEIGHT TO THE SUPPORTING BEAMS. AT NO TIME WILL CONSTRUCTION EQUIPMENT BE ALLOWED ON THE PRECAST SLAB PANELS UNTIL CONSTRUCTION OF THE PRECAST SLAB IS COMPLETE AND THE HAUNCHES AND KEYWAYS HAVE ACHIEVED A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI. THE CONTRACTOR SHALL ENSURE ALL BOLTS ARE IN CONTACT WITH THE TOP FLANGE BEFORE THE PRECAST SLAB PANELS ARE RELEASED FROM THE ERECTING CRANE AND THE PRECAST SLAB PANELS ARE SOLELY SUPPORTED BY ALL THE LEVELING BOLTS.
3. FORM THE GIRDER HAUNCHES. NOTES: ALL PANELS SHALL BE ERECTED AND THE PANELS SHALL BE LONGITUDINALLY POST-TENSIONED AND ACCEPTED BY THE ENGINEER PRIOR TO PLACING CONCRETE FOR HAUNCHES (SEE STEP 12 BELOW).
4. JOIN DUCTS FOR POST-TENSIONING TENDONS AT ALL TRANSVERSE JOINTS. IT IS SUGGESTED THAT THE DUCT SPLICE BE ATTACHED TO THE DUCTS PROTRUDING OUT OF THE PANELS BEFORE THE NEXT SUCCESSIVE PANELS ARE ERECTED.
5. INSTALL THE 0.6" POST-TENSIONING STRANDS THROUGH THE POST-TENSIONING DUCTS AND ANCHORAGE SYSTEMS.
6. CLEAN TRANSVERSE JOINT SURFACES. FILL THE TRANSVERSE JOINTS WITH NON-SHRINK GROUT LEVEL WITH OR 1/8" HIGHER THAN THE TOPS OF THE PRECAST DECK PANELS.
7. BEGINNING AT EITHER END OF THE BRIDGE, TENSION THE STRANDS IN EACH POST-TENSIONING DUCT TO THE SPECIFIED FORCE AND IN THE SEQUENCE SHOWN IN THE REVIEWED SHOP DRAWINGS. TENSIONING SHALL BE COMPLETED WITHIN 36 HOURS OF GROUTING OF TRANSVERSE JOINTS, BUT ONLY IF GROUT HAS ACHIEVED A COMPRESSIVE STRENGTH OF 3000 PSI.
8. GROUT POST-TENSIONING DUCTS WITH MANUFACTURER'S RECOMMENDED PRODUCT.
9. CAP AND SEAL ALL GROUT VENT TUBES.
10. INSTALL SHEAR STUDS (AND HAMMER TEST PER SPECIFICATIONS).
11. FILL ALL SHEAR STUD POCKETS IN THE PRECAST DECK PANELS, DUCT SPLICE POCKETS AND HAUNCHES WITH THE SPECIFIED GROUT MIX. CURE TO SPECIFIED STRENGTH.
12. PLACE END CLOSURE POUR WITH CONCRETE MIX (3Y33HP) SPECIAL.
13. PLACE LONGITUDINAL CLOSURE POUR CONCRETE MIX (3Y33HP) SPECIAL.
14. REMOVE LEVELING BOLTS AND FILL HOLES WITH THE SPECIFIED GROUT MIX.
15. PERFORM BRIDGE DECK PLANING. SEE SPECIAL PROVISIONS.
16. PLACE BARRIER RAIL AND SIDEWALKS.
17. SEAL ALL DECK AND JOINT CRACKS WITH JOINT & CRACK SEALANT. CONTRACTOR TO VERIFY COMPACTABILITY OF ANY JOINT/CRACK SEALANT WITH CHIP SEAL WEARING COURSE SUPPLIER.
18. PLACE EPOXY CHIP SEAL WEARING COURSE. SEE SPECIAL PROVISIONS.

DECK PANEL TOLERANCES		
A	LENGTH MEASURED FROM CONTROL LINE	± 3/16"
B	WIDTH (OVERALL)	± 1/4"
C	DEPTH (OVERALL)	+ 3/16"
D	VARIATION FROM SPECIFIED PLAN END SQUARENESS OR SKEW	± 1/4"
E	LOCATION OF LEVELING BOLTS	± 1"
F	SWEEP OVER MEMBER LENGTH:	± 1/4"
G	LOCATION OF PROJECTING REINFORCING MEASURED FROM A COMMON REFERENCE POINT	± 1/2"
H	LOCAL SMOOTHNESS OF ANY SURFACE	± 1/8" IN 10 FEET
I	LOCATION OF BLOCKOUT FOR SHEAR CONNECTORS	± 1/2"
J	LOCATION OF POST TENSIONING DUCT MEASURED FROM A COMMON REFERENCE POINT	± 1/8"
K	LOCATION OF POST TENSIONING DUCT MEASURED FROM BOTTOM OF PANEL.	± 1/8"
L	ERECTION ELEVATION TOLERANCE	± 1/8"



REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	⚠️ REVISED CONSTRUCTION SEQUENCE NOTES	TRS
9-12-13	⚠️ REVISED CONSTRUCTION SEQUENCE NOTES	BJJ

TIME : 3:13:04 PM  
 PLOTTED : 12-SEP-2013  
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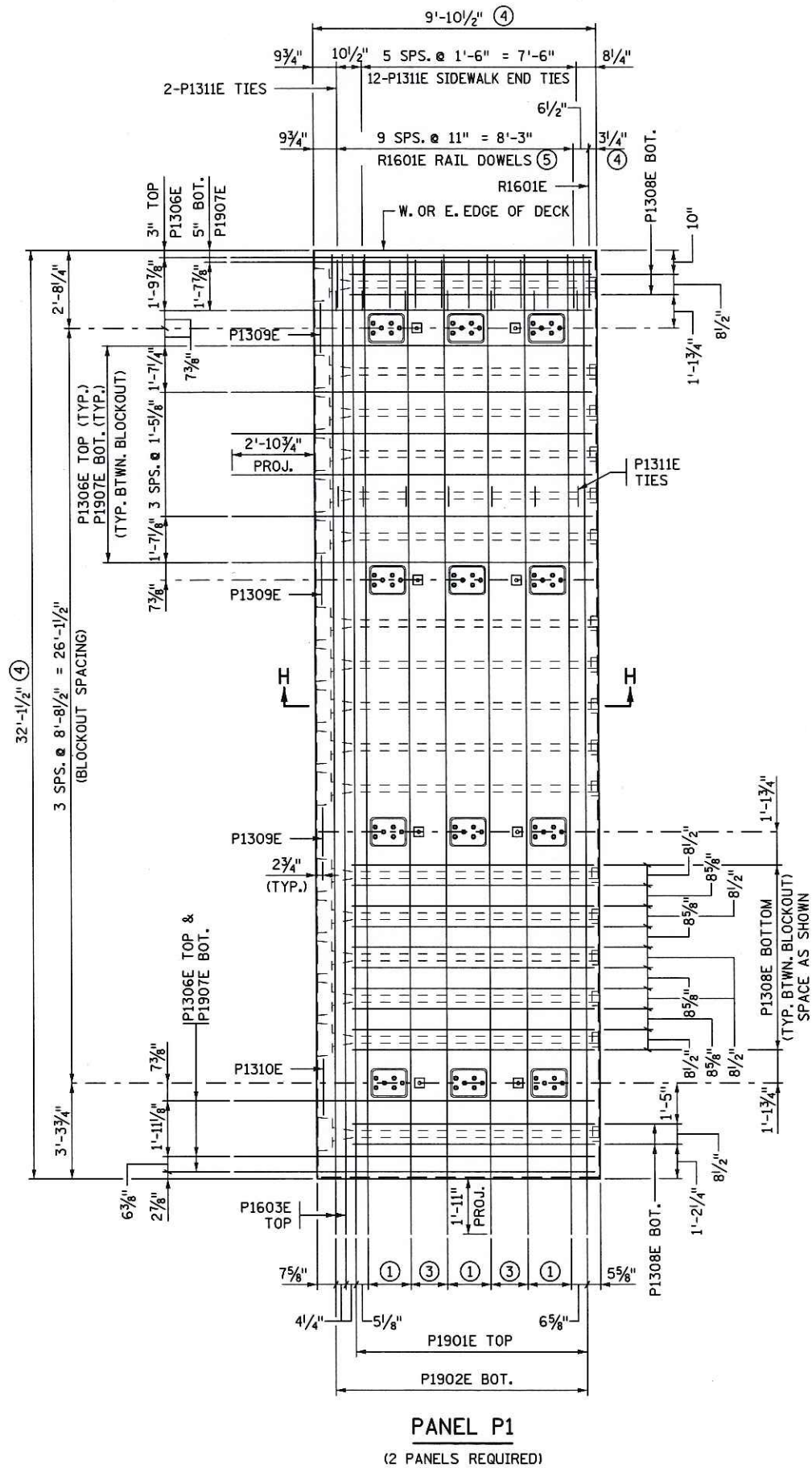
FILENAME: IP\_PWP-d1460960\27504\_rls.dgn

CERTIFIED BY <i>Benjamin J. Jilk</i> 9/12/13 LICENSED PROFESSIONAL ENGINEER DATE NAME: BENJAMIN J. JILK LIC. NO. 49852	TITLE: SUPERSTRUCTURE DETAILS	DES: RJR DR: RLS CHK: GBB CHK: TRS	APPROVED: 9-13-13	BRIDGE NO. 27504
		SHEET NO. 18-R2 OF 34 SHEETS		

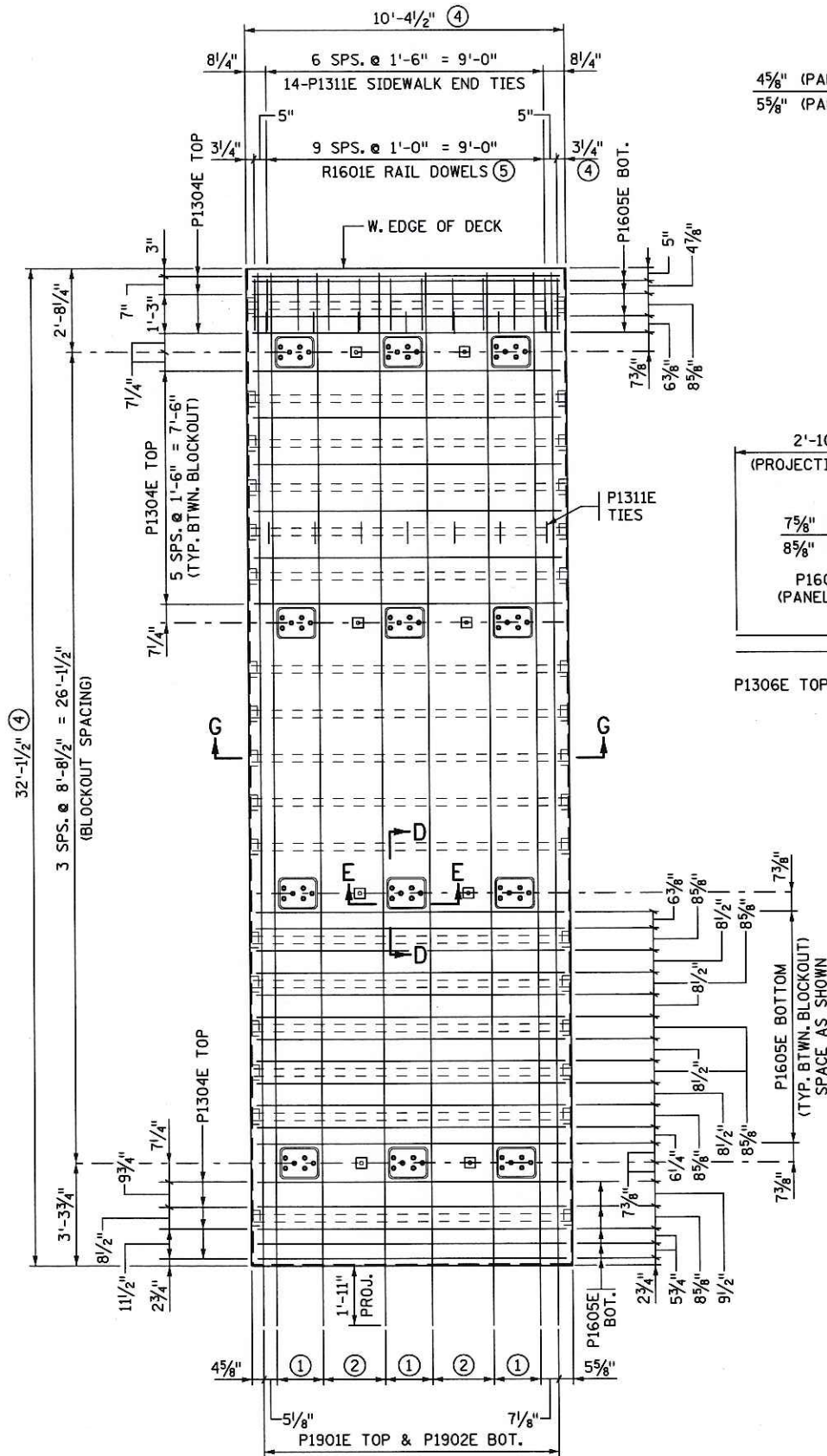


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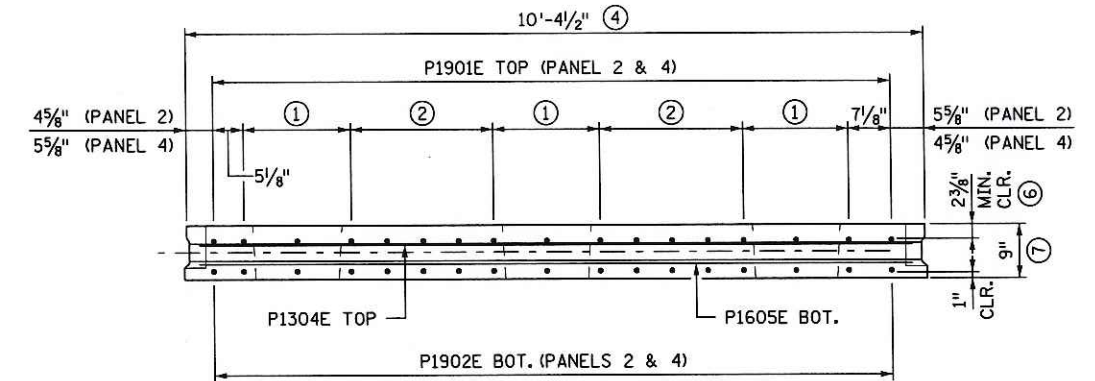
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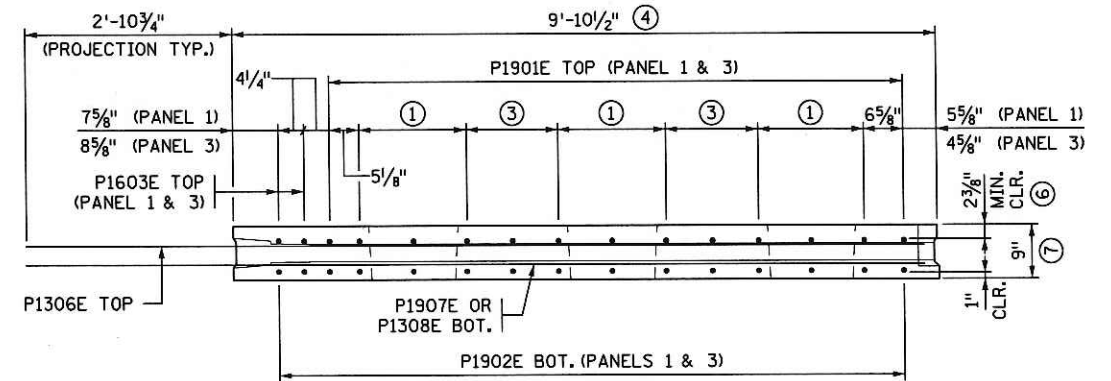
**PANEL P1**  
(2 PANELS REQUIRED)



**PANEL P2**  
(12 PANELS REQUIRED)



**SECTION G-G**  
(PANEL P2 SHOWN)



**SECTION H-H**  
(PANEL P1 SHOWN)

APPROXIMATE PANEL WEIGHT	
PANEL	WEIGHT (TONS)
P1 & P3	16.7
P2 & P4	17.4

- NOTES:**
- SEE SHEET 16 FOR SECTIONS D-D & E-E.
  - ① 2 SPS. @ 9" = 1'-6".
  - ② 4 SPS. @ 6" = 2'-0".
  - ③ 2 SPS. @ 7 3/4" = 1'-3 1/2".
  - ④ MEASURED ALONG TOP SURFACE OF DECK PANEL.
  - ⑤ CONTRACTOR SHALL WRAP R1601E BARS AT PRECAST SLAB FACILITY TO PROTECT FROM EXPOSURE TO SUN LIGHT.
  - ⑥ MEASURED TO TOP OF CONCRETE DECK PANEL PRIOR TO BRIDGE DECK PLANING.
  - ⑦ MINIMUM THICKNESS AFTER BRIDGE DECK PLANING.

CERTIFIED BY *Todd R. Stevens* 5/7/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**SUPERSTRUCTURE DETAILS  
 AND REINFORCEMENT**

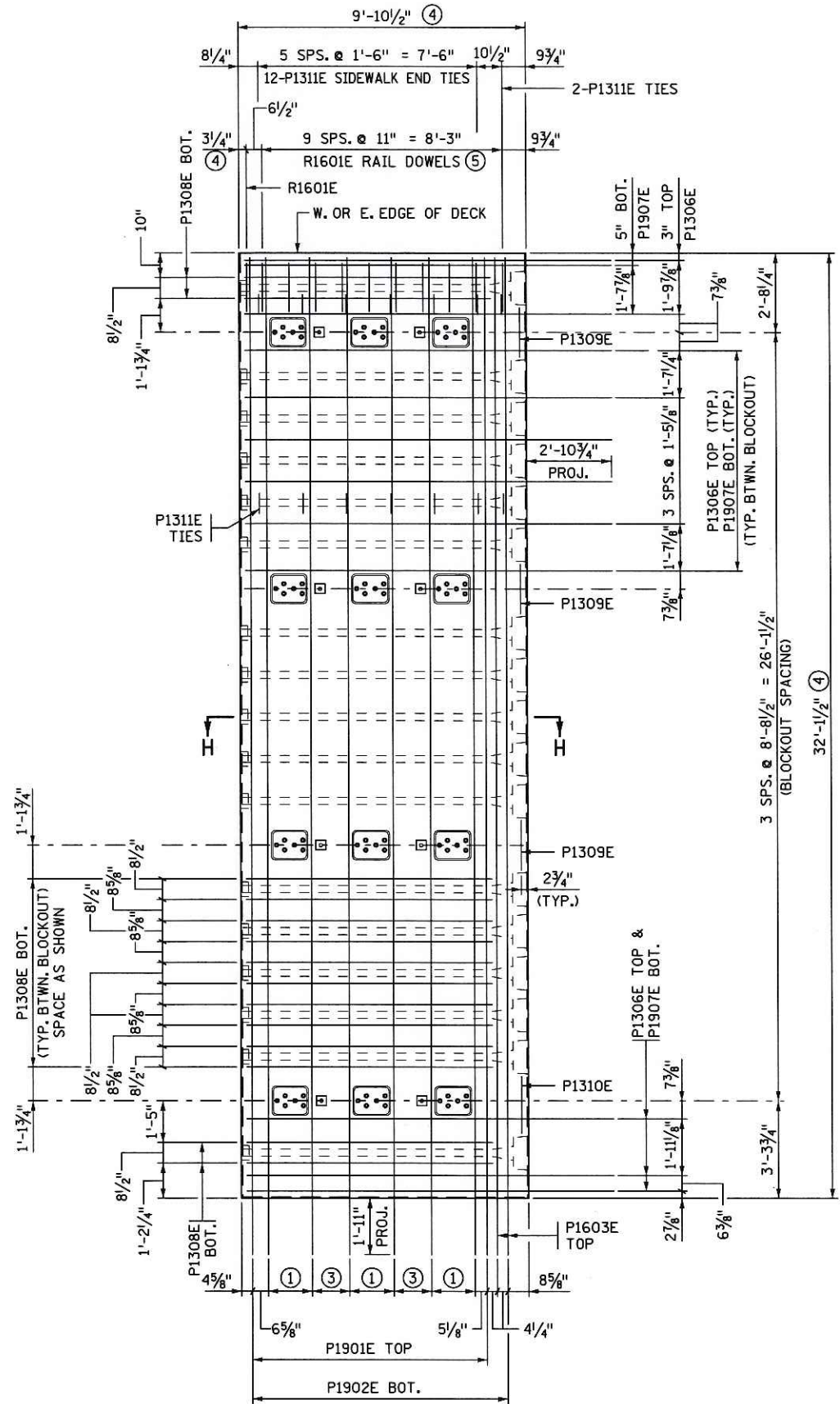
DES: RJR DR: RLS APPROVED: *5/7/13*  
 CHK: GBB CHK: TRS  
 SHEET NO. 19 OF 34 SHEETS

BRIDGE NO.  
 27504



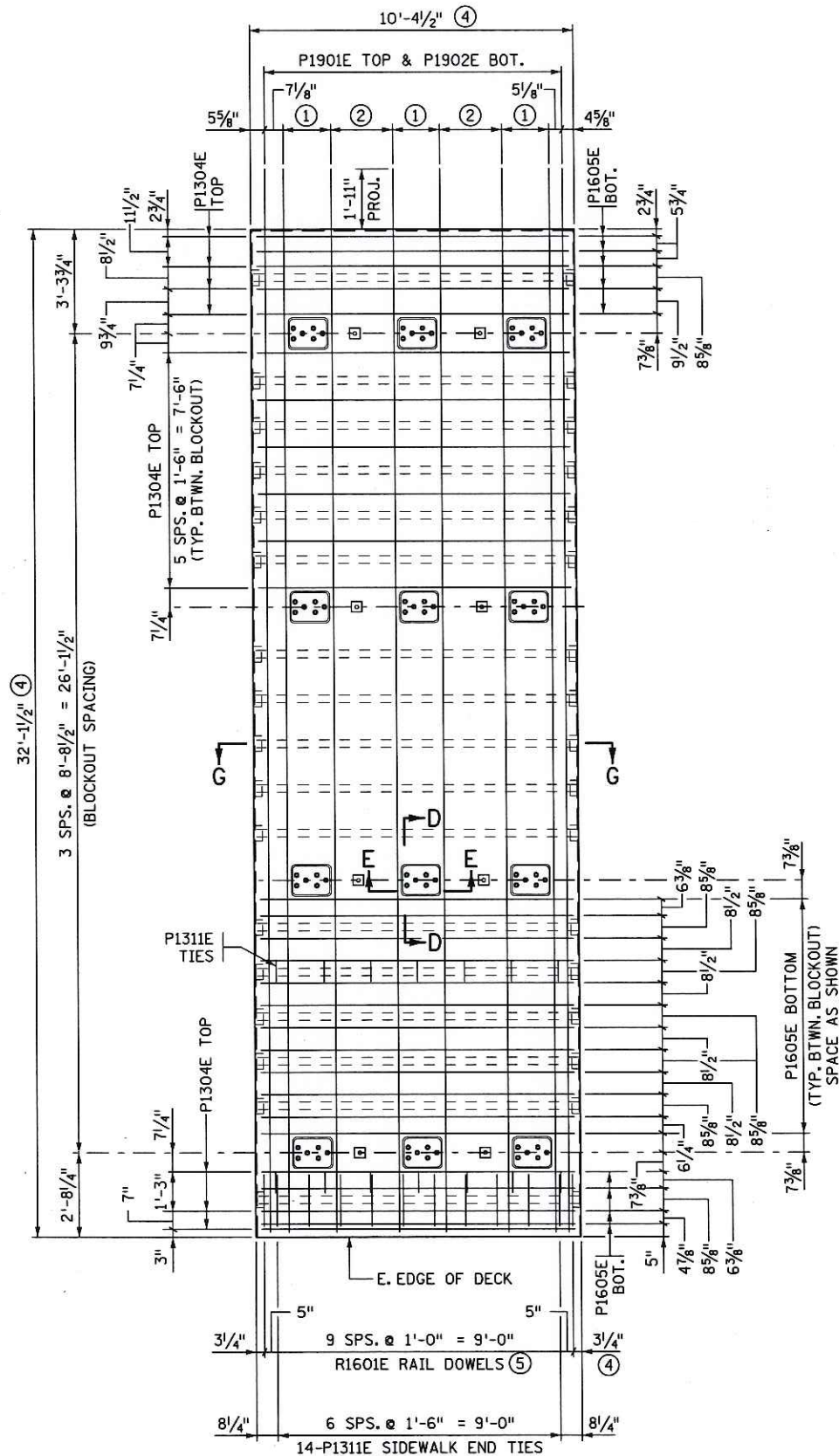
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FILENAME: IP\_PWF-dl46096027504\_r1.s.dgn



**PANEL P3**

(2 PANELS REQUIRED)



**PANEL P4**

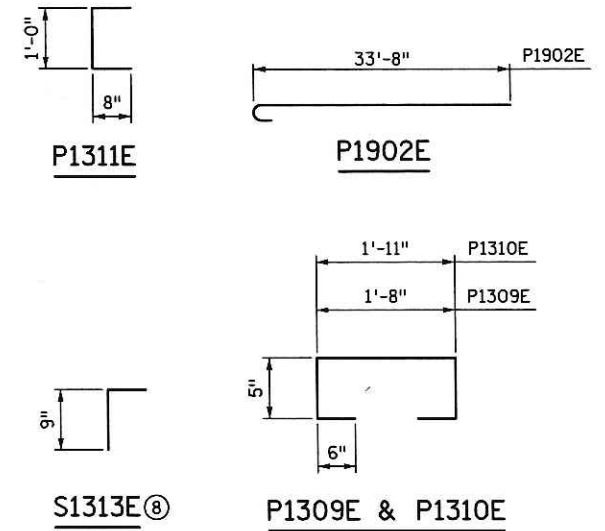
(12 PANELS REQUIRED)

**BILL OF REINFORCEMENT FOR PRECAST CONCRETE PANELS (6)**

BAR NO.	LENGTH	SHAPE	LOCATION
P1901E 460	33'-10"	—	PANELS P1, P2, P3 & P4 TOP
P1902E 468	34'-4"	—	PANELS P1, P2, P3 & P4 BOT.
P1603E 8	33'-10"	—	PANELS P1 & P3 TOP
P1304E 600	10'-0"	—	PANELS P2 & P4 TOP LONGIT.
P1605E 1080	10'-0"	—	PANELS P2 & P4 BOT. LONGIT.
P1306E 92	12'-7"	—	PANELS P1 & P3 TOP LONGIT.
P1907E 92	12'-7"	—	PANELS P1 & P3 BOT. LONGIT.
P1308E 136	9'-6"	—	PANELS P1 & P3 BOT. LONGIT.
P1309E 12	3'-6"	—	PANELS P1 & P3 END TIES
P1310E 4	3'-9"	—	PANELS P1 & P3 END TIES
P1311E 392	2'-4"	—	SIDEWALK END TIES

**BILL OF REINFORCEMENT FOR SIDEWALK & LONGITUDINAL CLOSURE POUR (7)**

BAR NO.	LENGTH	SHAPE	LOCATION
S1601E 12	52'-4"	—	LONGIT. JT. BOTTOM
S1302E 12	51'-6"	—	LONGIT. JT. TOP
S1311E 48	51'-6"	—	SIDEWALK LONGITUDINAL
S1312E 208	7'-7"	—	SIDEWALK TRANSVERSE
S1313E 392	1'-7"	—	SIDEWALK TIE ANCHORAGE (ALT.)



**NOTES:**

- SEE SHEET 16 FOR SECTIONS D-D & E-E.
- SEE SHEET 19 FOR SECTIONS G-G & H-H.
- ① 2 SPS. @ 9" = 1'-6".
- ② 4 SPS. @ 6" = 2'-0".
- ③ 2 SPS. @ 7 3/4" = 1'-3 1/2".
- ④ MEASURED ALONG TOP SURFACE OF DECK PANEL.
- ⑤ CONTRACTOR SHALL WRAP R1601E BARS AT PRECAST SLAB FACILITY TO PROTECT FROM EXPOSURE TO SUN LIGHT.
- ⑥ INCLUDED IN PRICE BID FOR "PRECAST DECK PANEL".
- ⑦ INCLUDED IN PRICE BID FOR "REINFORCEMENT BARS (EPOXY COATED)".
- ⑧ PAYMENT BASED ON USE OF P1311E. SEE NOTE ON SHEET 23.

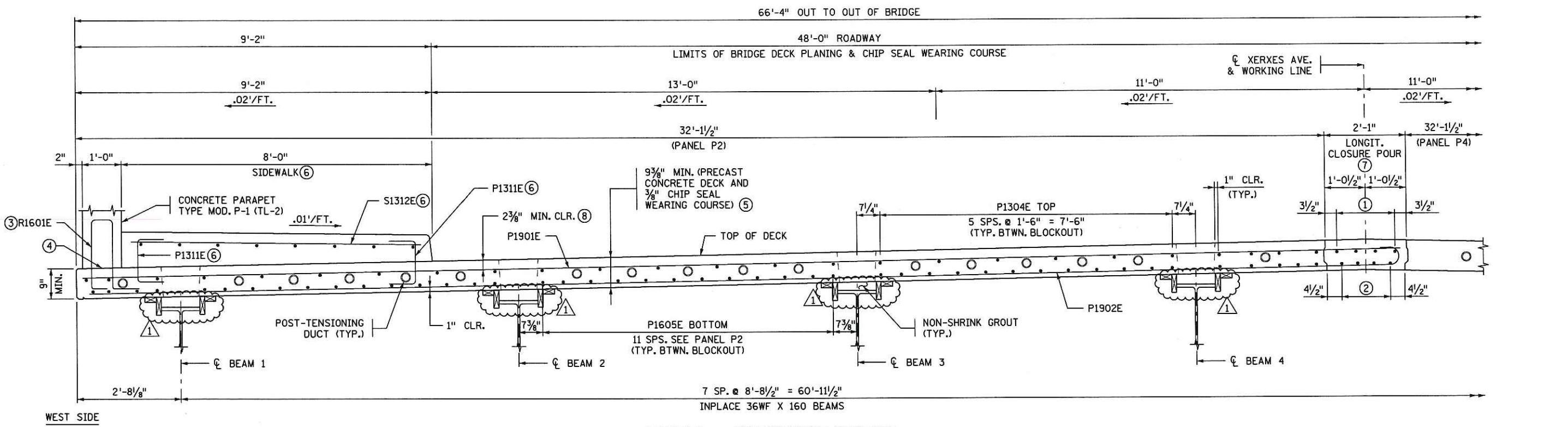
CERTIFIED BY *Todd R. Stevens* 5/7/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**SUPERSTRUCTURE DETAILS AND REINFORCEMENT**

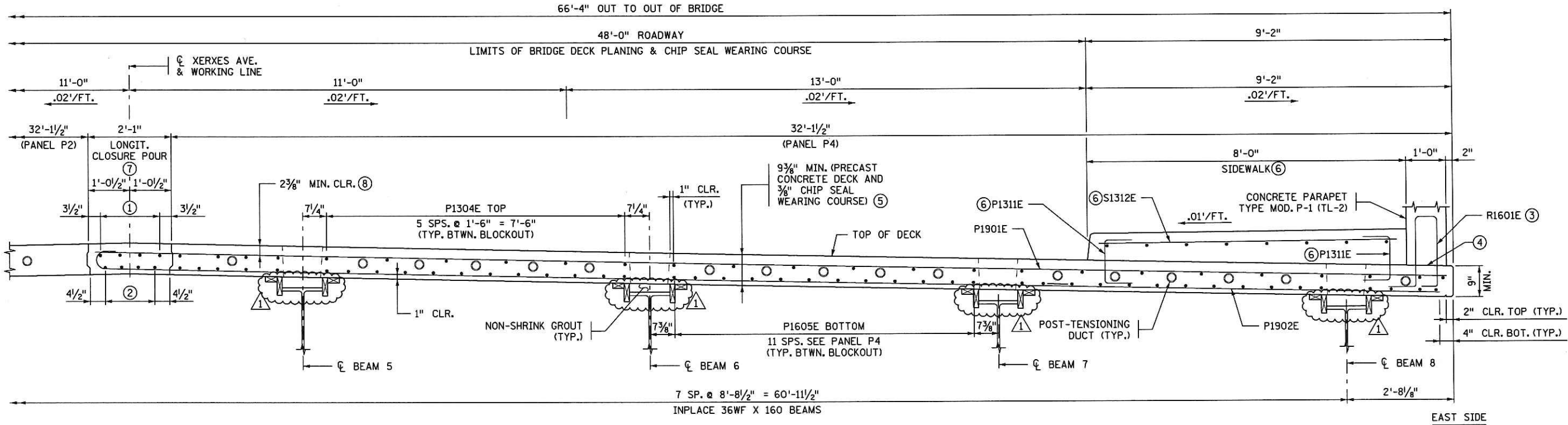
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 CHK: GBB CHK: TRS  
 SHEET NO. 20 OF 34 SHEETS

BRIDGE NO.  
 27504





**PARTIAL - TRANSVERSE SECTION**  
(SECTION @ INTERIOR PANEL)



**PARTIAL - TRANSVERSE SECTION**  
(SECTION @ INTERIOR PANEL)

**NOTES:**

- ① 3 SPS. @ 6" = 1'-6" S1302E TOP
- ② 3 EQ. SPS. = 1'-4" S1601E BOTTOM.
- ③ SEE BARRIER SHEET NO. 26 FOR DETAILS.
- ④ ROUGH FINISH. SEE BARRIER SHEET NO. 26 FOR DETAILS.
- ⑤ 9 3/8" TOTAL THICKNESS AFTER BRIDGE DECK PLANING & CHIP SEAL WEARING COURSE IS APPLIED.
- ⑥ SEE SHEET 23 FOR SIDEWALK REINFORCEMENT LAYOUT AND ALTERNATE ANCHORAGE DETAIL.
- ⑦ STRUCTURAL CONCRETE (3Y33HP) SPECIAL.
- ⑧ MEASURED TO TOP OF CONCRETE DECK PANEL PRIOR TO BRIDGE DECK PLANING.

**REVISION**

DATE	DESCRIPTION	APPROVED BY
5-28-13	① REVISED HAUNCH FORMING DETAIL	TRS

CERTIFIED BY *Todd R. Stevens* 5/29/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**SUPERSTRUCTURE DETAILS  
 AND REINFORCEMENT**

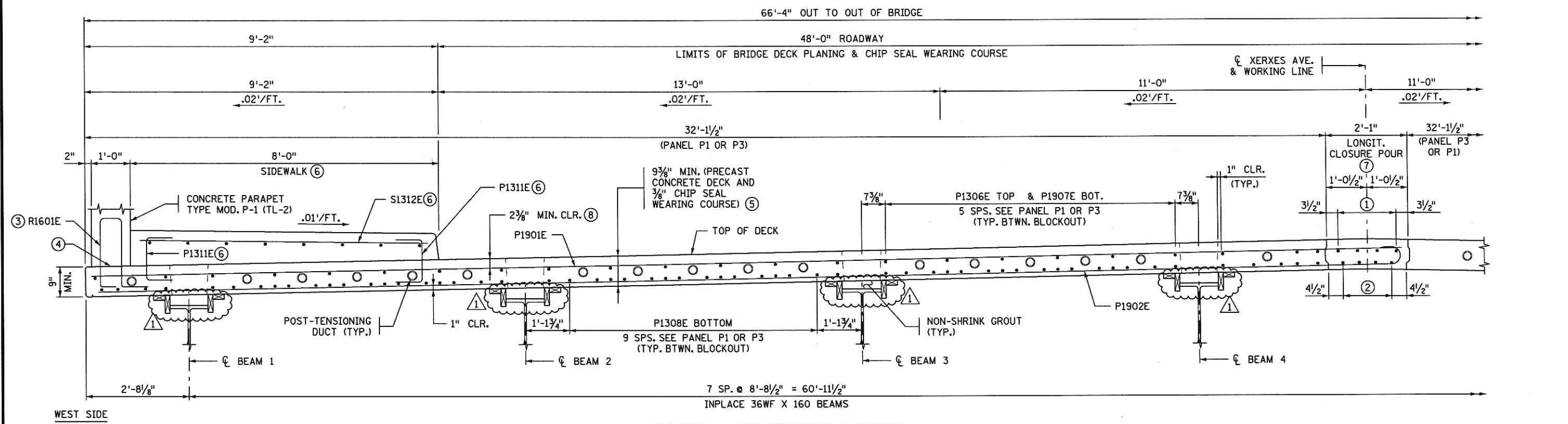
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**SHEET NO. 21R OF 34 SHEETS**

**BRIDGE NO.  
 27504**

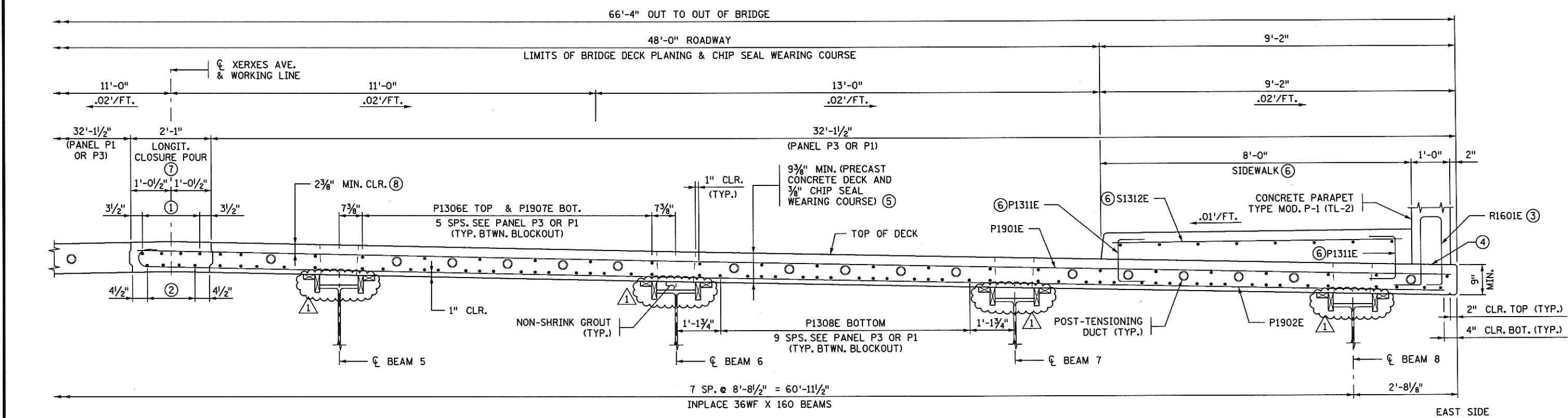
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TIME : 11:26:26 AM  
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 FILENAME: IP\_PWP-d1460960\27504\_r1.s.dgn



**PARTIAL - TRANSVERSE SECTION**  
(SECTION @ END PANEL)



**PARTIAL - TRANSVERSE SECTION**  
(SECTION @ END PANEL)

**NOTES:**

- ① 3 SPS. @ 6" = 1'-6" S1302E TOP
- ② 3 EQ. SPS. = 1'-4" S1601E BOTTOM.
- ③ SEE BARRIER SHEET NO. 26 FOR DETAILS.
- ④ ROUGH FINISH. SEE BARRIER SHEET NO. 26 FOR DETAILS.
- ⑤ 9 3/8" TOTAL THICKNESS AFTER BRIDGE DECK PLANING & CHIP SEAL WEARING COURSE IS APPLIED.
- ⑥ SEE SHEET 23 FOR SIDEWALK REINFORCEMENT LAYOUT AND ALTERNATE ANCHORAGE DETAIL.
- ⑦ STRUCTURAL CONCRETE (3Y33HP) SPECIAL.
- ⑧ MEASURED TO TOP OF CONCRETE DECK PANEL PRIOR TO BRIDGE DECK PLANING.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	① REVISED HAUNCH FORMING DETAIL	TRS

CERTIFIED BY Todd R. Stevens 5/29/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**SUPERSTRUCTURE DETAILS  
 AND REINFORCEMENT**

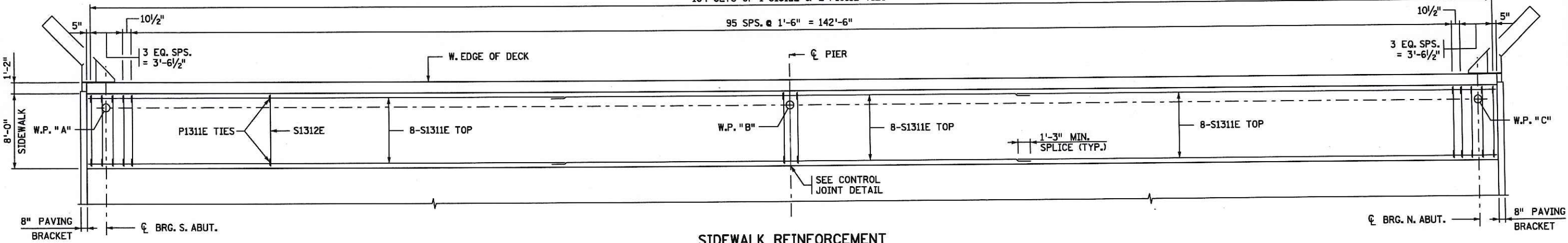
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 SHEET NO. 22R OF 34 SHEETS

BRIDGE NO.  
**27504**

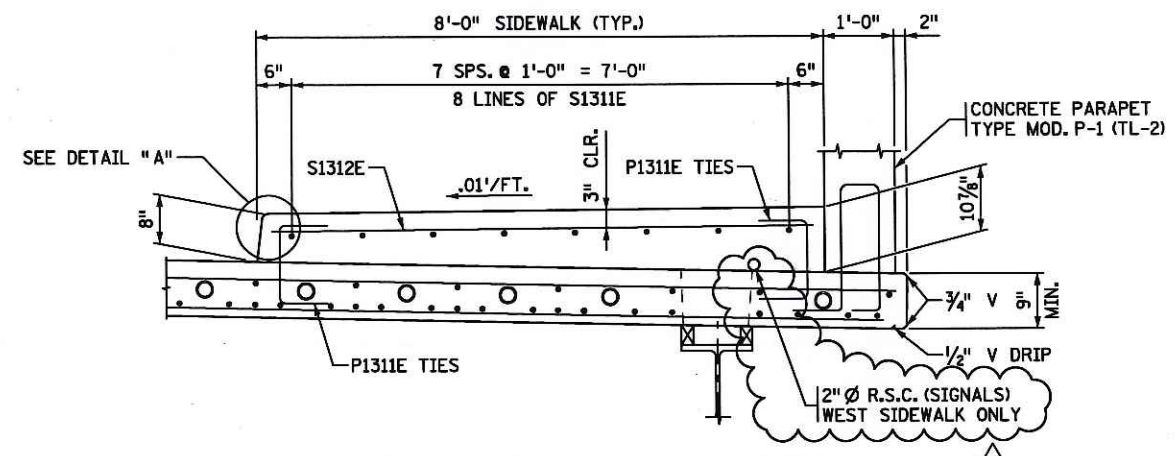




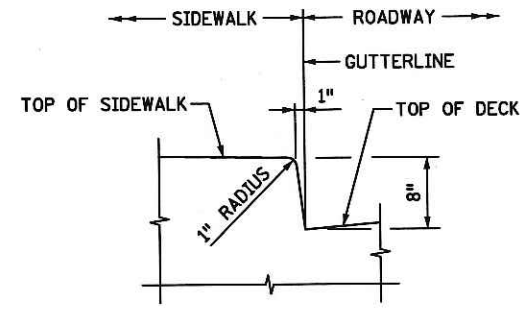
104 SETS OF 1-S1312E & 2-P1311E TIES



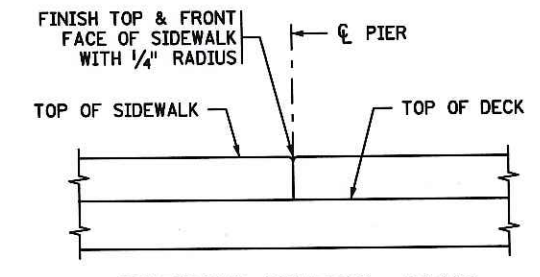
**SIDEWALK REINFORCEMENT**  
(WEST SIDEWALK SHOWN, EAST SIDEWALK SIMILAR)



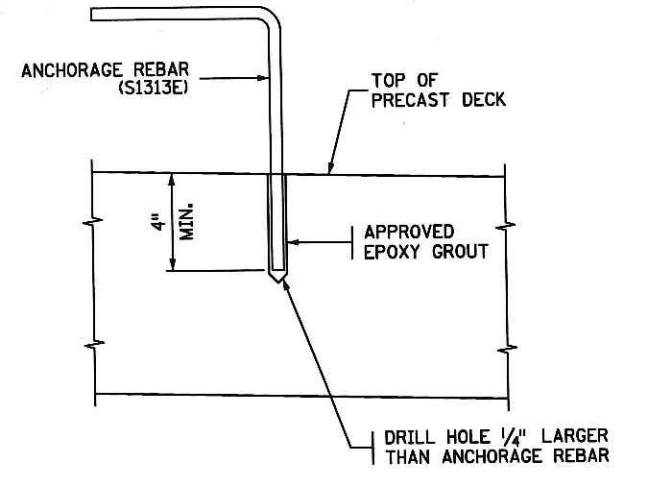
**TRANSVERSE SECTION THRU SIDEWALK**



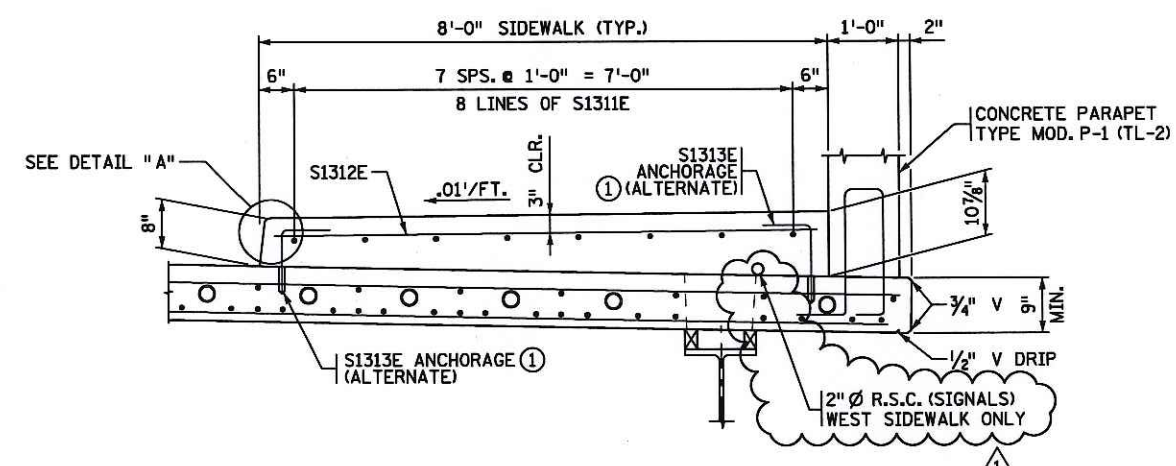
**DETAIL "A"**



**SIDEWALK CONTROL JOINT**  
(REINFORCEMENT NOT SHOWN)



**ANCHORAGE DETAIL (ALTERNATE) ①**



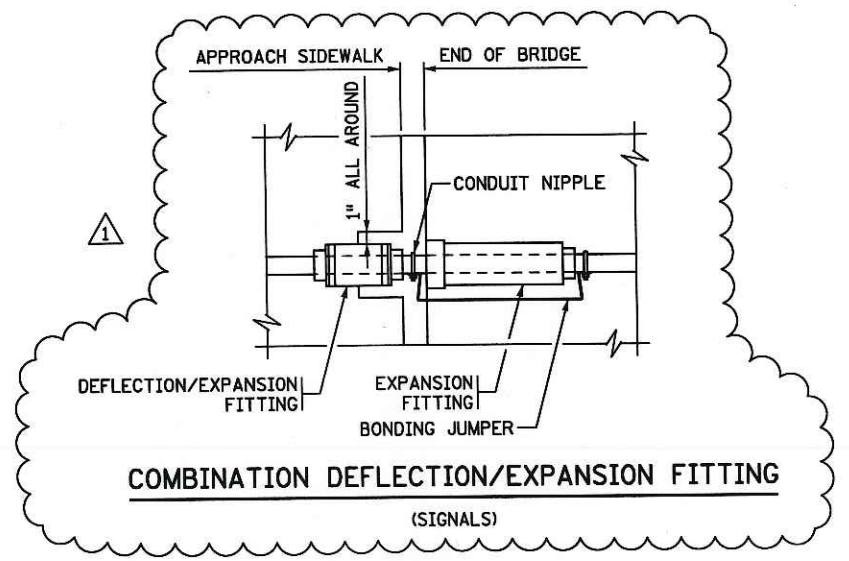
**TRANSVERSE SECTION THRU SIDEWALK (ALTERNATE ANCHORAGE)**

SUMMARY OF QUANTITIES FOR CONDUIT SYSTEM (SIGNALS)	
②	2" DIA. RIGID STEEL CONDUIT 153 LIN. FT.
③	COMBINATION DEFLECTION/EXPANSION FITTING (2") 2 UNITS

② SYSTEM TO BE GROUNDED.

③ WRAP A 1/2" THICK SOFT RUBBER PAD AROUND EXPANSION FITTING WITH TWO STAINLESS STEEL CLAMPS, TO PROVIDE FOR LATERAL MOVEMENT.

ALL MATERIAL LISTED ABOVE IS INCLUDED IN "CONDUIT SYSTEM (SIGNALS)".



**COMBINATION DEFLECTION/EXPANSION FITTING (SIGNALS)**

**NOTE:**

① PAYMENT BASED ON CAST-IN-PLACE REINFORCEMENT. CONTRACTOR IS RESPONSIBLE FOR ALL ADDITIONAL COSTS DUE TO SUBSTITUTION OF DRILLED-IN REINFORCING.

REVISION		
DATE	DESCRIPTION	APPROVED BY
7-30-13	① ADDED CONDUIT SYSTEM & DETAILS	BJJ

CERTIFIED BY *Benjamin J. Jilk* 7/30/13  
LICENSED PROFESSIONAL ENGINEER DATE

NAME: BENJAMIN J. JILK LIC. NO. 49852

TITLE: **SUPERSTRUCTURE DETAILS AND REINFORCEMENT**

DES: RJR DR: RLS APPROVED: *7/30/13*  
CHK: GBB CHK: TRS/BJJ

SHEET NO. 23-R1 OF 34 SHEETS

BRIDGE NO. 27504

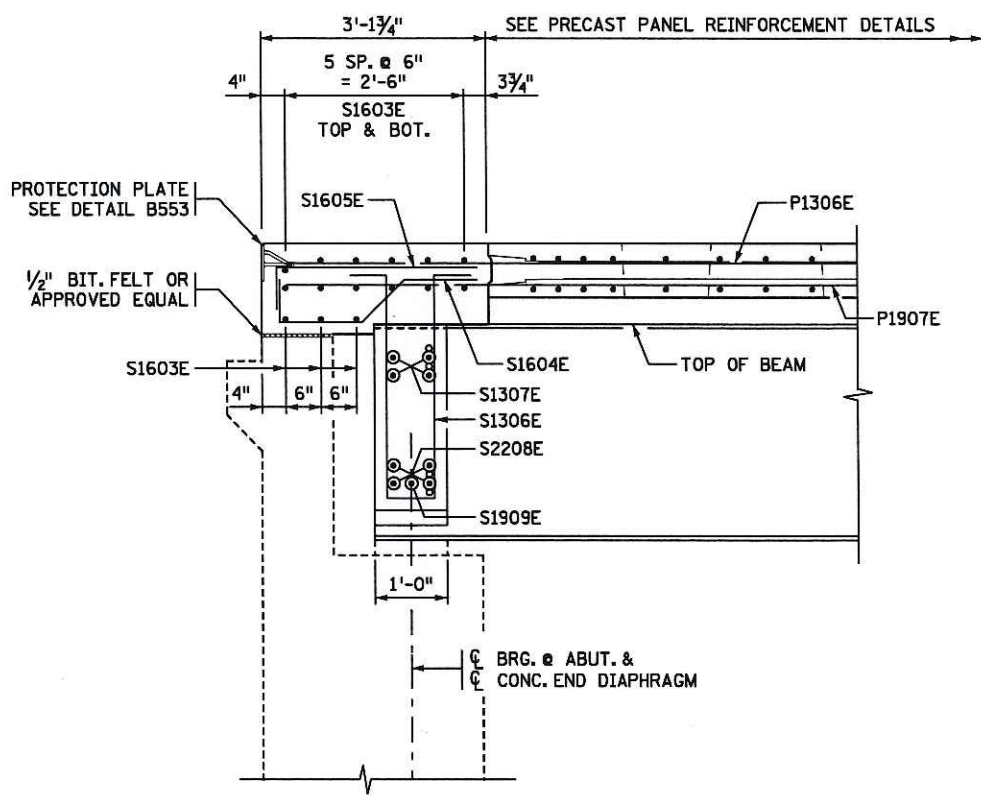
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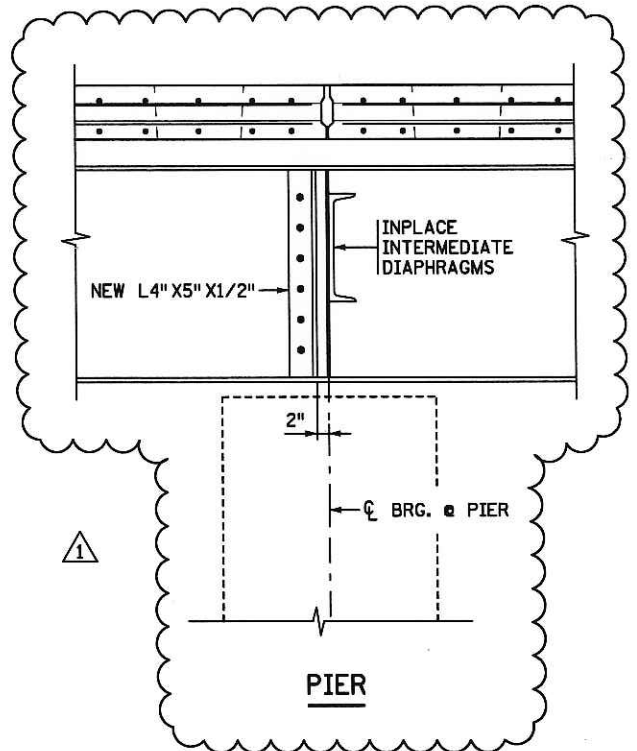
**BILL OF REINFORCEMENT FOR SUPERSTRUCTURE ②**

BAR	NO.	LENGTH	SHAPE	LOCATION
S1603E	60	34'-0"	—	TRANSVERSE @ ABUTMENT
① S1604E	100	3'-8"	⌋	SLAB @ ABUTMENT
① S1605E	100	3'-5"	⌋	SLAB @ ABUTMENT
S1306E	12	7'-6"	⌋	END DIAPHRAGM VERTICAL TIE
S1307E	8	8'-3"	—	END DIAPHRAGM LONGITUDINAL
S2208E	8	8'-3"	—	END DIAPHRAGM LONGITUDINAL
S1909E	2	13'-0"	—	END DIAPHRAGM LONGITUDINAL
S2210E	4	5'-0"	—	END DIAPHRAGM DOWEL THRU BEAM

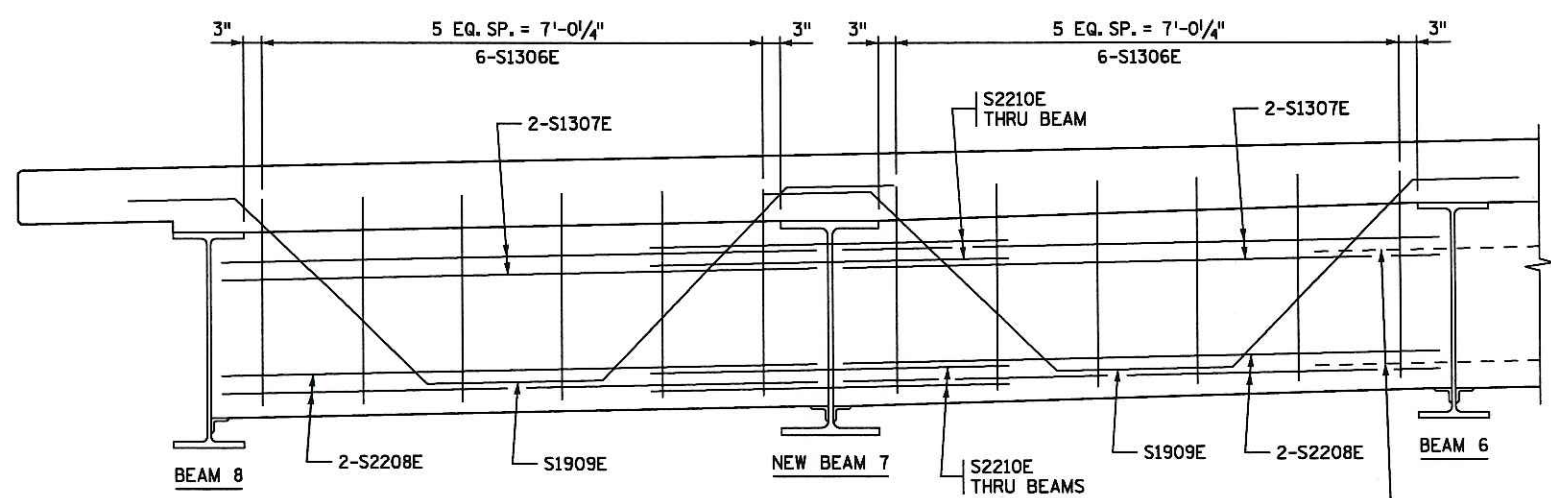
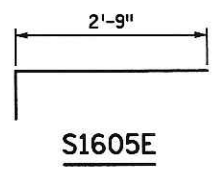
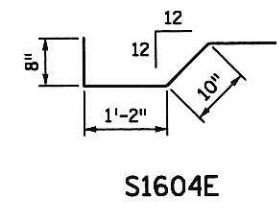
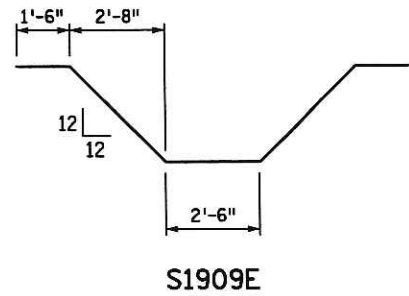
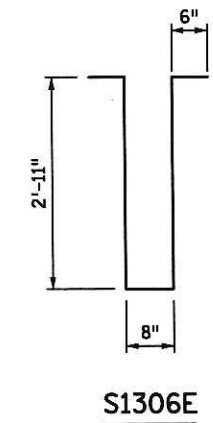
- ① SPACED WITH PRECAST PANEL LONGITUDINAL REINFORCEMENT AND CLOSURE POUR LONGITUDINAL REINFORCEMENT.
- ② INCLUDED IN PRICE BID FOR "REINFORCEMENT BARS (EPOXY COATED)".



**PART LONGITUDINAL SECTION**



**PIER**



**TRANSVERSE SECTION THRU CONCRETE END DIAPHRAGM**

CUT & REMOVE INPLACE REINFORCEMENT. CLEAN & STRAIGHTEN. LAP 2'-0" ±

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	① ADD SECTION AT PIER	TRS

CERTIFIED BY Todd R. Stevens 5/29/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE: SUPERSTRUCTURE DETAILS

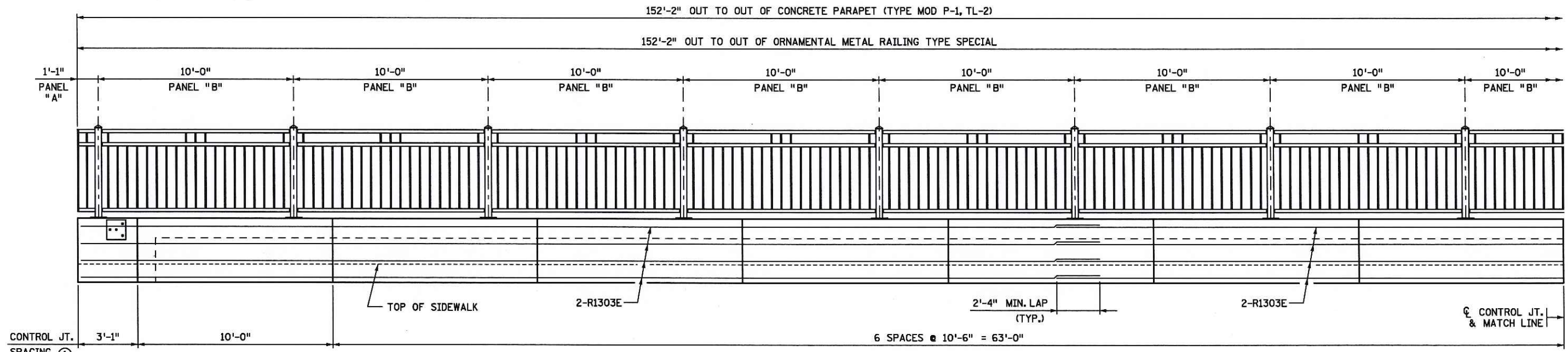
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 SHEET NO. 24R OF 34 SHEETS

BRIDGE NO. 27504

TIME: 12:16:36 PM  
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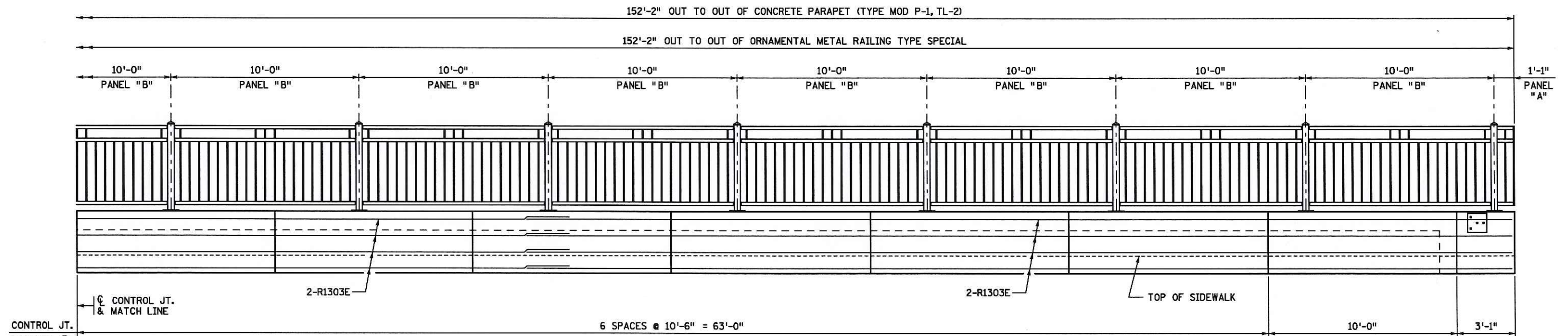
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SOUTHWEST OR NORTHEAST CORNER

### INSIDE ELEVATION OF BARRIER & METAL RAILING

(ELEVATION SHOWN IS FOR BOTH WEST AND EAST BARRIER)



NORTHWEST OR SOUTHEAST CORNER

### INSIDE ELEVATION OF BARRIER & METAL RAILING

(ELEVATION SHOWN IS FOR BOTH WEST AND EAST BARRIER)

#### NOTE:

SEE SHEET NO. 26 FOR CONCRETE PARAPET AND REINFORCEMENT DETAILS.

SEE SHEET NO. 27 FOR RAIL PANEL DETAILS.

① MATCH DECK PANEL JOINTS.

CERTIFIED BY Todd R. Stevens 5/7/13  
LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:  
**BARRIER & RAILING DETAILS**

DES: RJR	DR: BEP	APPROVED: <u>5/7/13</u>
CHK: GBB	CHK: TRS	

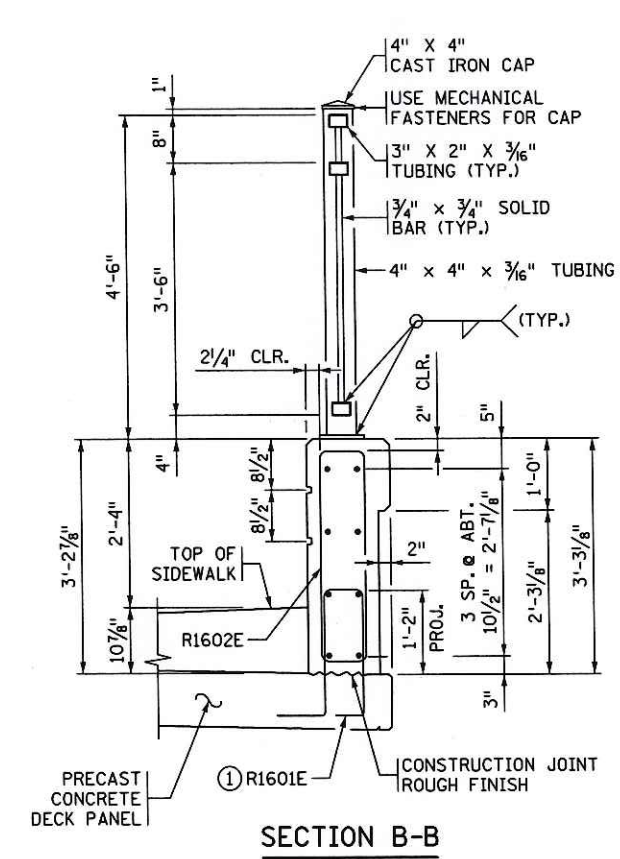
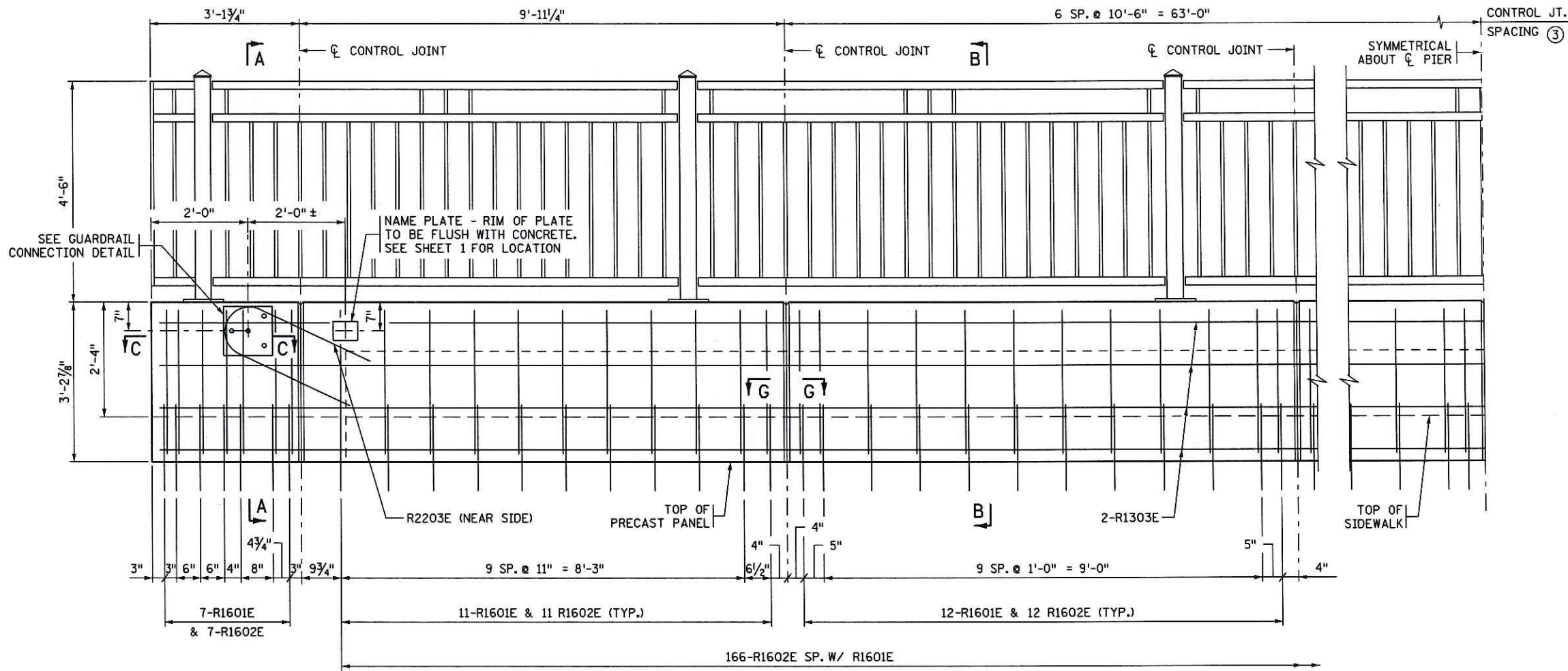
SHEET NO. 25 OF 34 SHEETS

BRIDGE NO.  
 27504

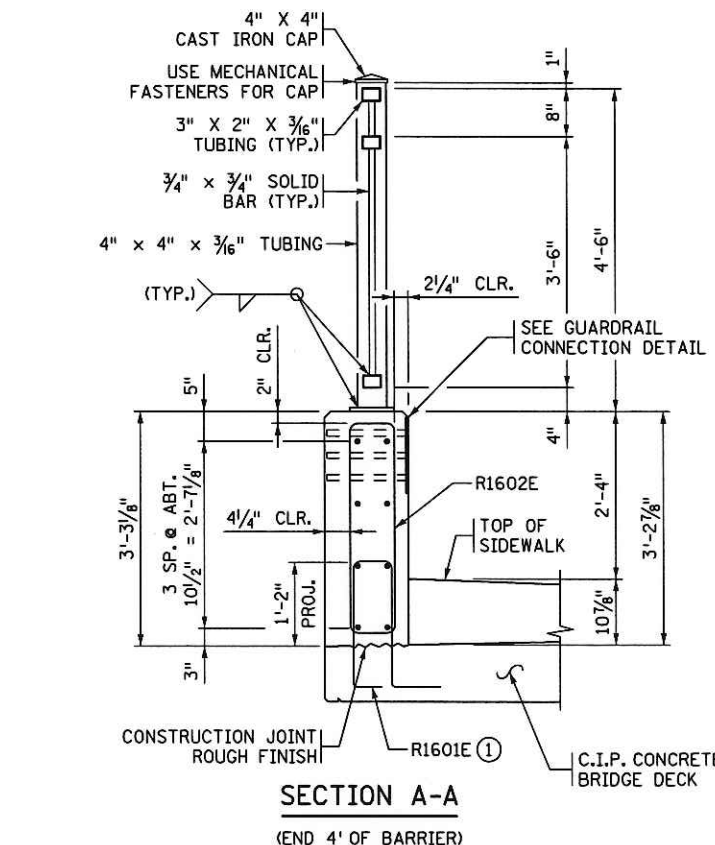


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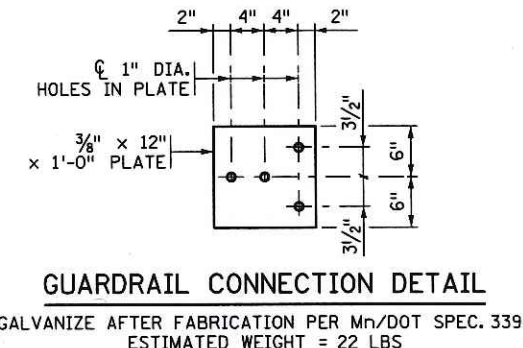
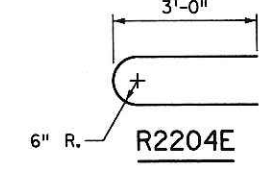
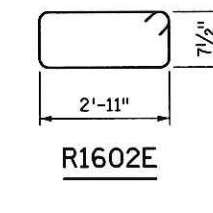
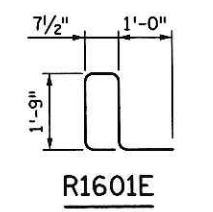
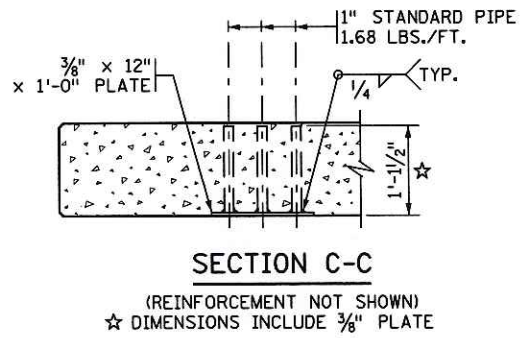
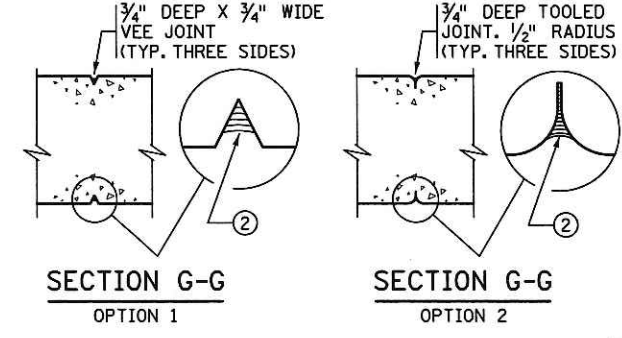
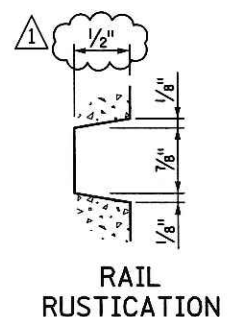


BILL OF REINFORCEMENT FOR TWO BARRIERS				
BAR	NO.	LENGTH	SHAPE	LOCATION
R1601E	360	5'-8"		BARRIER VERTICAL
R1602E	360	8'-0"		BARRIER VERTICAL
R1303E	48	52'-2"		BARRIER LONGITUDINAL
R2204E	4	6'-6"		GUARDRAIL CONNECTION



INSIDE ELEVATION OF BARRIER

BARRIER MEETS TEST LEVEL 2 REQUIREMENTS OF NCHRP REPORT 350



- GENERAL NOTES**
- SEE SHEET NO. 27 & 28 FOR ORNAMENTAL METAL RAILING DETAILS.
  - SEE SPECIAL PROVISIONS FOR RAIL ANCHORAGE REQUIREMENTS.
  - LENGTH OF "TYPE MOD P-1 (TL-2) RAILING CONCRETE (3Y46)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE PARAPET.
  - CONCRETE PARAPET = 513 LBS./FT. (0.126 CU. YDS./FT.)
  - FINISH ALL EDGES OF BARRIER WITH 1/2" VEE, EXCEPT WHERE OTHERWISE NOTED.
  - SEE BARRIER & RAILING DETAILS SHEET NO. 25 FOR CONTROL JOINT SPACING.
  - BARRIER QUANTITIES ARE LISTED IN SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE.
  - GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, Mn/DOT SPEC. 3306.
  - GUARDRAIL CONNECTION AND NAME PLATE TO BE INCLUDED IN PRICE BID FOR PAY ITEM "TYPE MOD P-1 (TL-2) RAILING CONCRETE (3Y46)".
- PLACE BAR ON TOP OF BOTTOM REINFORCEMENT MAT.
  - SEE SPECIAL PROVISIONS FOR JOINT SEALING REQUIREMENTS.
  - MATCH DECK PANEL JOINTS.

REVISION		
DATE	DESCRIPTION	APPROVED BY
5-28-13	NOTES	T.R.S.

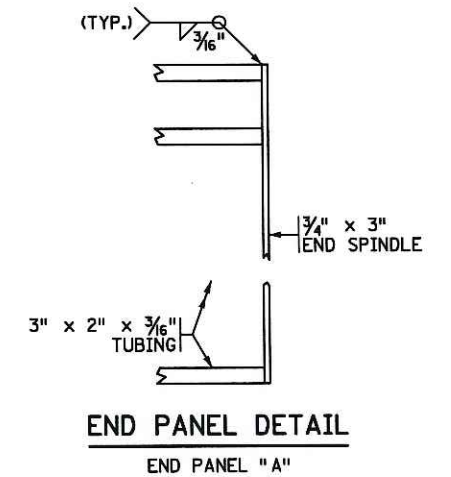
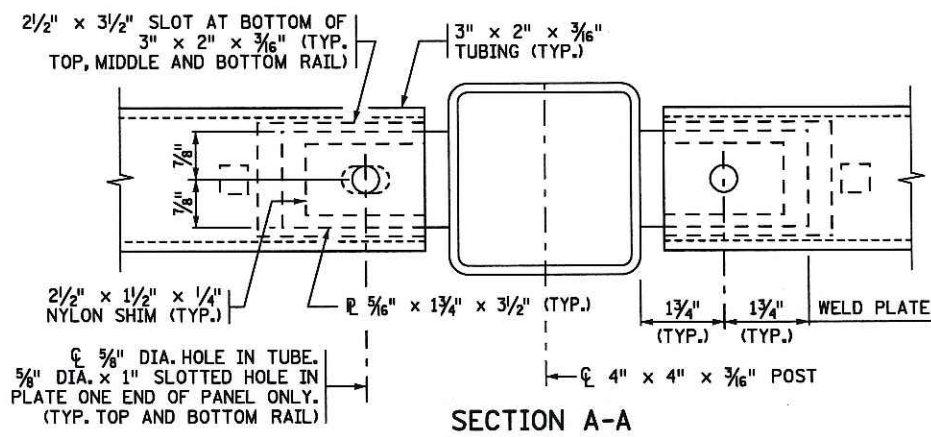
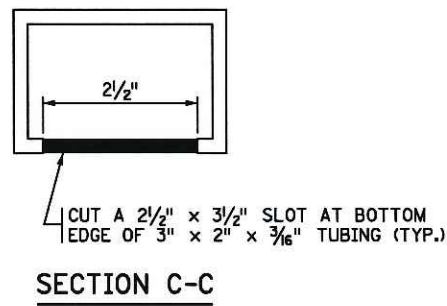
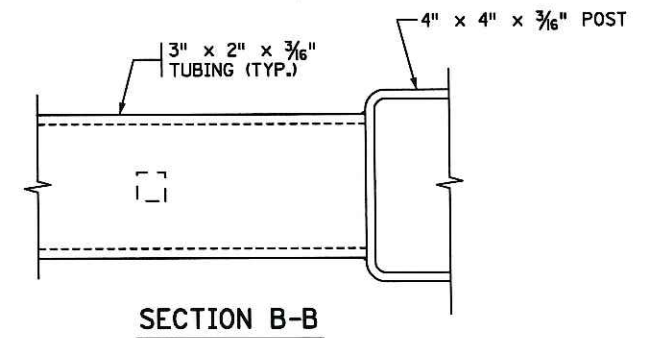
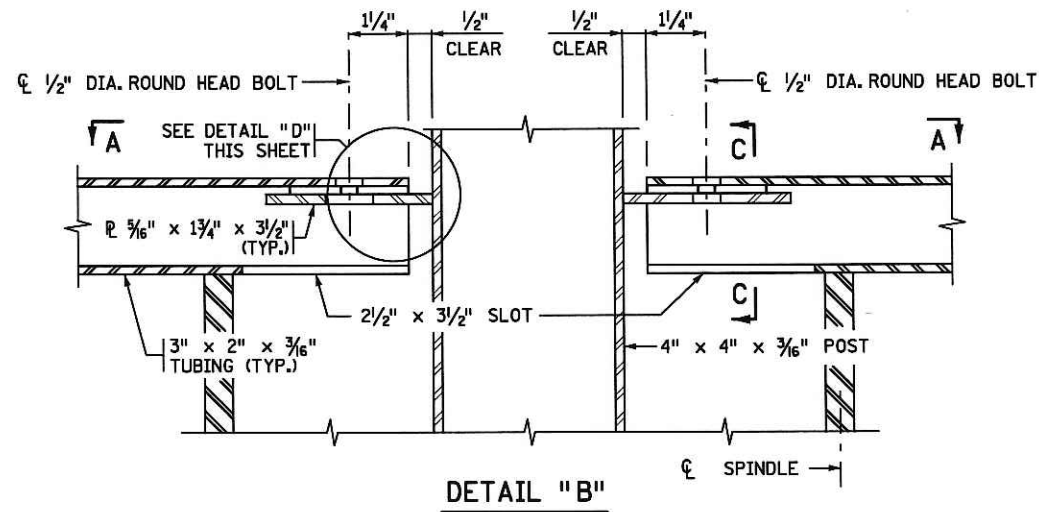
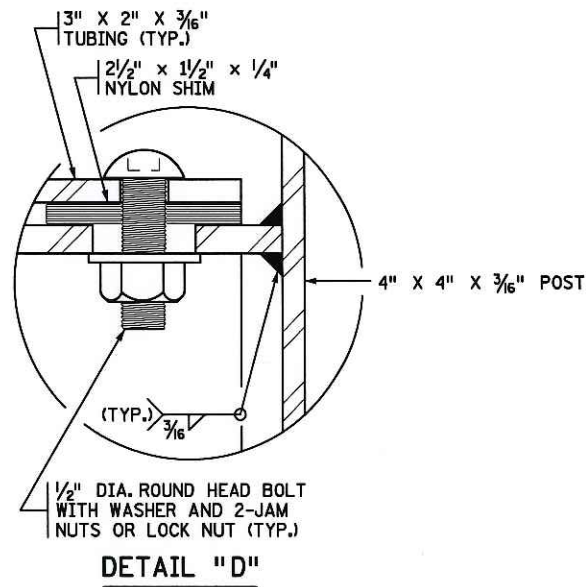
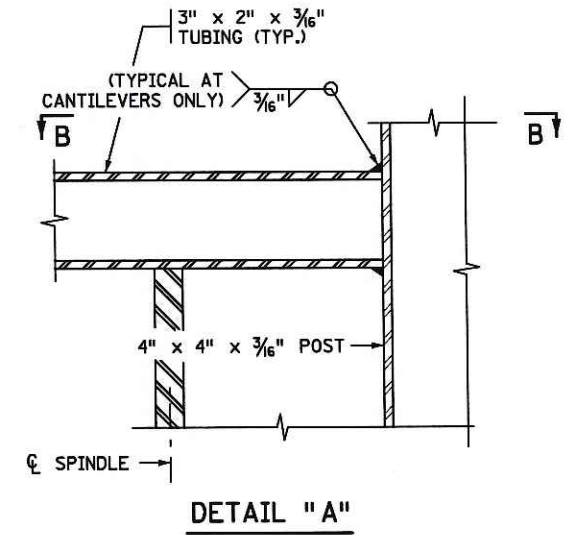
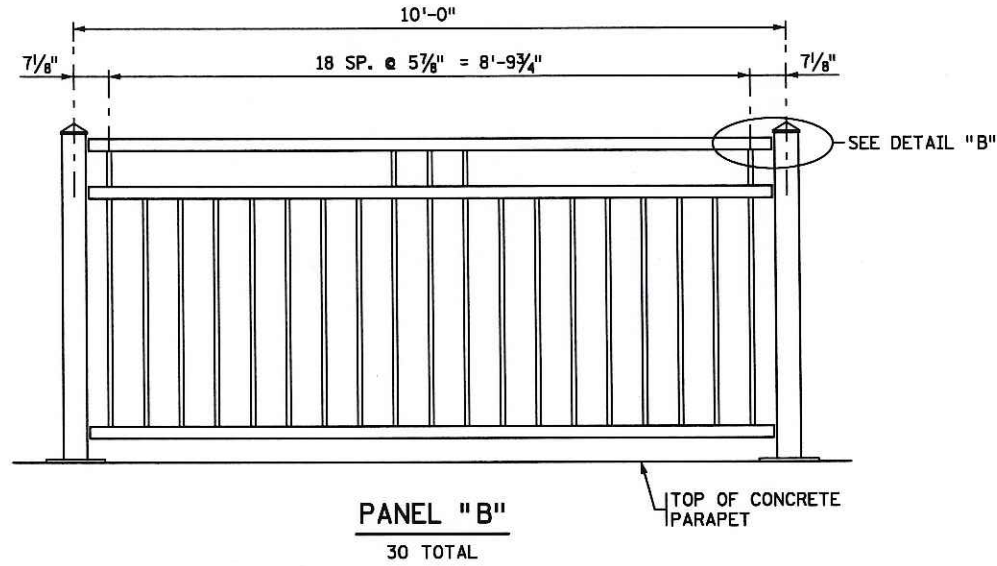
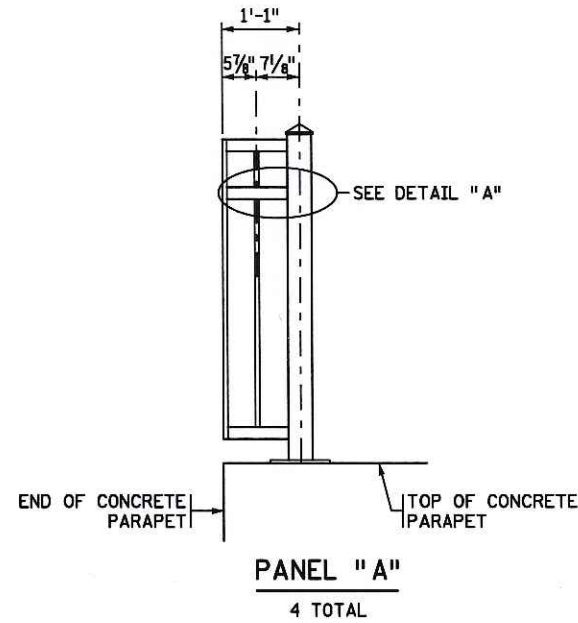
Revised Rail Rustication

CERTIFIED BY *Todd R. Stevens* 5/29/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE: CONCRETE PARAPET (TYPE MOD P-1, TL-2)

DES: RJR DR: BEP APPROVED: *5/29/13*  
 CHK: GBB CHK: TRS  
 SHEET NO. 26R OF 34 SHEETS BRIDGE NO. 27504





TIME: 8:16 AM  
 PLOTTED: 07-MAY-2013  
 PATH & FILENAME: Bridge/Final\_Design/2/27504/Cadd-Plan/27504\_bep  
 FILENAME: IP\_PWP-dl460960/27504\_bep

CERTIFIED BY Todd R. Stevens 5/7/13  
LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE: **ORNAMENTAL METAL RAILING DETAILS**

DES: RJR DR: BEP APPROVED: 5/7/13  
 CHK: GBB CHK: TRS  
 SHEET NO. 27 OF 34 SHEETS

BRIDGE NO. 27504

**GENERAL NOTES:**

ALL STRUCTURAL STEEL TUBING IN THE RAIL SHALL BE ASTM A 500, GRADE B AND SHALL CONFORM TO MnDOT SPEC. 3361. ALL OTHER STRUCTURAL STEEL SHALL CONFORM TO MnDOT SPEC. 3306.

ANCHOR RODS SHALL CONFORM TO MnDOT SPEC. 3385, TYPE A. SEE SPECIAL PROVISIONS FOR RAIL ANCHORAGE REQUIREMENTS.

VENT HOLES SHALL BE DRILLED IN THE RAIL POST BASE AND THE RAIL TUBES AS NECESSARY TO FACILITATE GALVANIZING.

GALVANIZE BOLTS, NUTS, AND WASHERS PER SPEC. 3392.

GALVANIZE ALL OTHER STRUCTURAL STEEL PER MnDOT SPEC. 3394 AFTER FABRICATION.

RAIL POSTS AND PICKETS SHALL BE VERTICAL AS NOTED OR SHOWN.

HORIZONTAL RAILS SHALL BE PARALLEL TO THE TOP OF THE PARAPET.

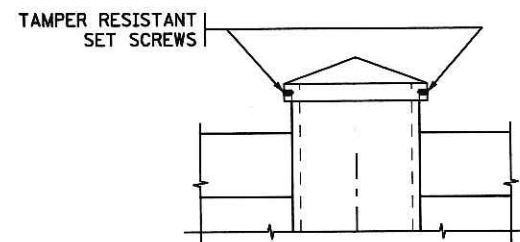
RAILING, BASE PLATES AND EXPOSED PORTIONS OF BOLTS, NUTS AND WASHERS SHALL BE PAINTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

THE METAL RAILING SHALL BE GROUNDED WITH 5/8" DIA. COPPER ROD AS PER MnDOT SPEC. 2557.

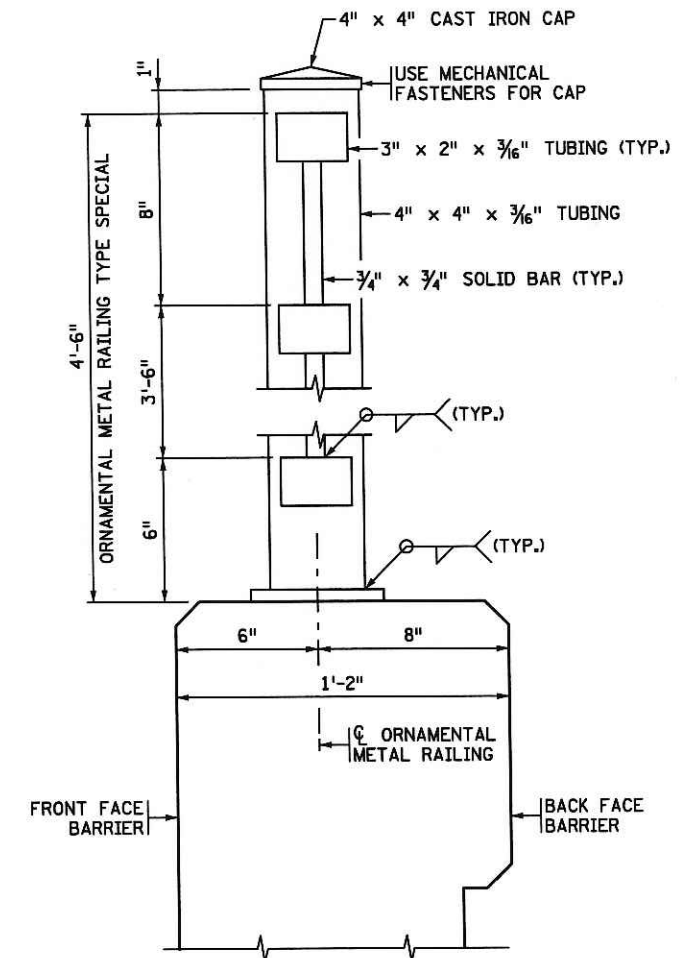
PRICE BID FOR ORNAMENTAL METAL RAILING INCLUDES THE ANCHORAGES AND ALL MATERIAL ABOVE TOP OF CONCRETE PARAPET.

LENGTH OF ORNAMENTAL METAL RAILING FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE ENDS OF THE ORNAMENTAL METAL RAILING.

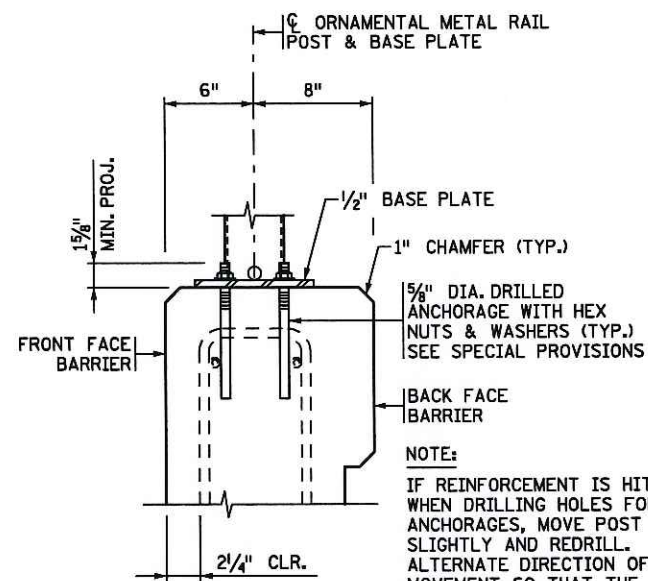
SEE SHEET 26 FOR ADDITIONAL DETAILS AND NOTES.



**RAILPOST CAP SET SCREW DETAIL**  
PLACE SET SCREWS PARALLEL TO RAILING AS SHOWN

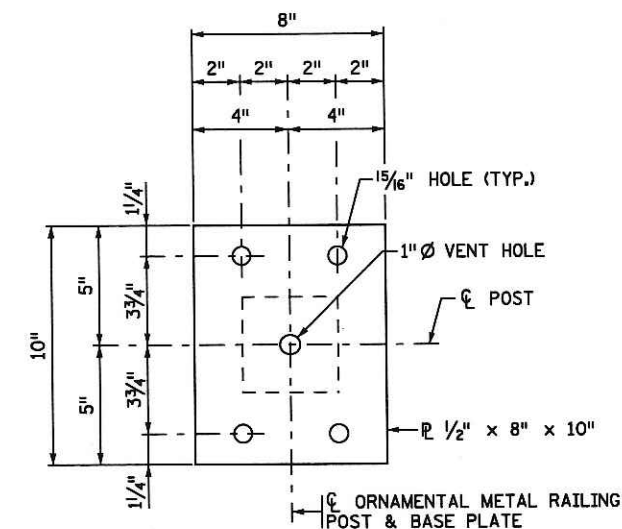


**SECTION THRU RAILING**

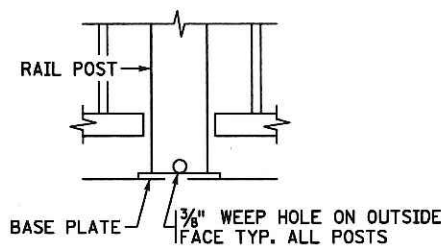


**ANCHOR DETAIL**

**NOTE:**  
IF REINFORCEMENT IS HIT WHEN DRILLING HOLES FOR ANCHORAGES, MOVE POST SLIGHTLY AND REDRILL. ALTERNATE DIRECTION OF MOVEMENT SO THAT THE OVERALL RAIL LENGTH COMES OUT THE SAME.



**BASE PLATE**



**WEEPHOLE DETAIL**

TIME : 10:32:25 AM  
PLOTTED : 06-MAY-2013  
PATH & FILENAME: Bridge/Final\_Design/2/27504/Cadd-Plan/27504\_bep

FILENAME: IP\_PWP-dl460960V27504\_bep

CERTIFIED BY Todd R. Stevens 5/7/13  
LICENSED PROFESSIONAL ENGINEER DATE  
NAME: TODD R. STEVENS LIC. NO. 21312

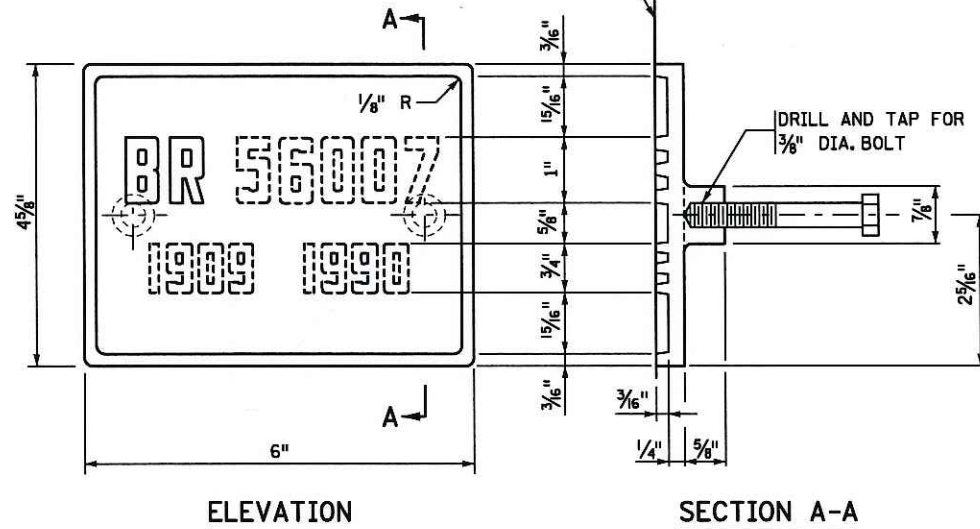
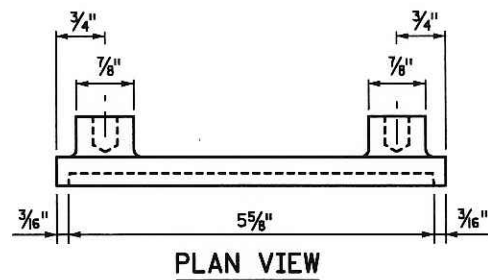
TITLE: **ORNAMENTAL METAL RAILING DETAILS**

DES: RJR	DR: BEP	APPROVED: 5/7/13
CHK: GBB	CHK: TRS	

SHEET NO. 28 OF 34 SHEETS

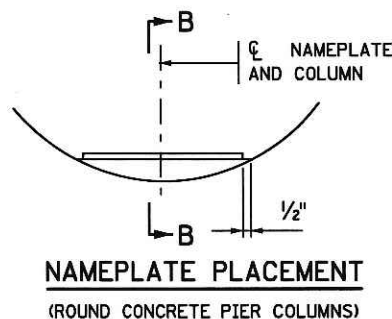
BRIDGE NO. 27504





THE DASHED NUMBERS SHOWN ABOVE ARE FOR ILLUSTRATION.  
DATA TO BE SHOWN ON NAMEPLATE IS AS FOLLOWS:

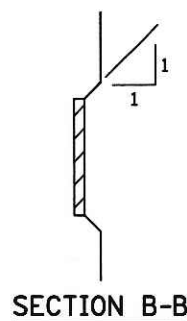
BRIDGE: 27504  
YEAR: 1962 YEAR: 2014



**NOTES:**

- NO SHOP DRAWING REQUIRED.
- MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3327.
- LETTERS AND NUMBERS SHALL CONFORM TO THOSE SHOWN.
- DRAFT ON LETTERS AND NUMBERS SHALL NOT BE MORE THAN 3" IN 12".
- HORIZONTAL SPACING OF LETTERS AND NUMBERS SHALL PRODUCE A BALANCED LAYOUT IN PROPORTION TO SPACING SHOWN.
- TOP SURFACE OF LETTERS, NUMBERS AND FRAMES SHALL BE BURNISHED.
- FURNISH 2 STEEL BOLTS 3/8" DIA. x 3" LONG WITH EACH PLATE.
- ALL DIMENSIONS FOR 3/4" HIGH LETTERS AND NUMBERS SHALL BE IN DIRECT PROPORTION TO THOSE SHOWN FOR THE 1" HIGH LETTERS AND NUMBERS.

TIME: 8:11:37 AM  
 PLOTTED: 07-MAY-2013  
 PATH & FILENAME: Bridge/Final\_Design/2/27504/Cadd-Plan/27504\_bep



APPROVED: NOVEMBER 22, 2002

*David L. Johnson*  
STATE BRIDGE ENGINEER

STATE OF MINNESOTA  
DEPARTMENT OF TRANSPORTATION

BRIDGE NAMEPLATE  
(FOR BRIDGE RECONSTRUCTION)

REVISION

DETAIL NO.

B102

CERTIFIED BY *Todd R. Stevens* 5/9/13  
LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:

DETAILS

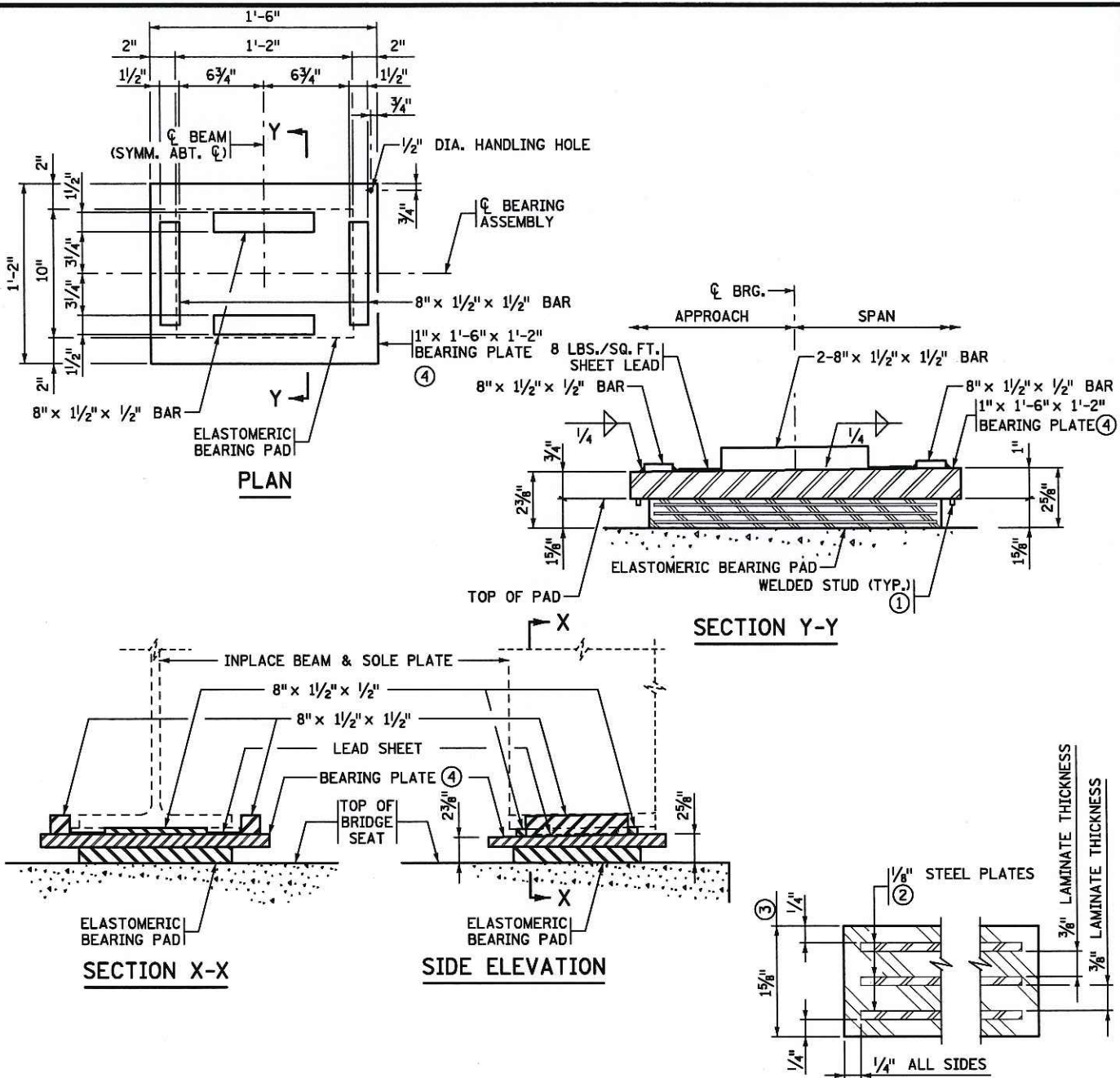
DES: RJR	DR: BEP	APPROVED: 5/9/13
CHK: GBB	CHK: TRS	

SHEET NO. 29 OF 34 SHEETS

BRIDGE NO.  
27504



TIME : 9:53:28 AM  
 PLOTTED : 07-MAY-2013  
 PATH & FILENAME: Bridge/Fincl\_Design/2/27504/Cadd/Plan/27504\_bep  
 FILENAME: IP\_PWP-dl460960V27504\_bep



**NOTES:**

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH Mn/DOT SPEC. 3306.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER Mn/DOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

① 5/16" DIA. x 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 1/2", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

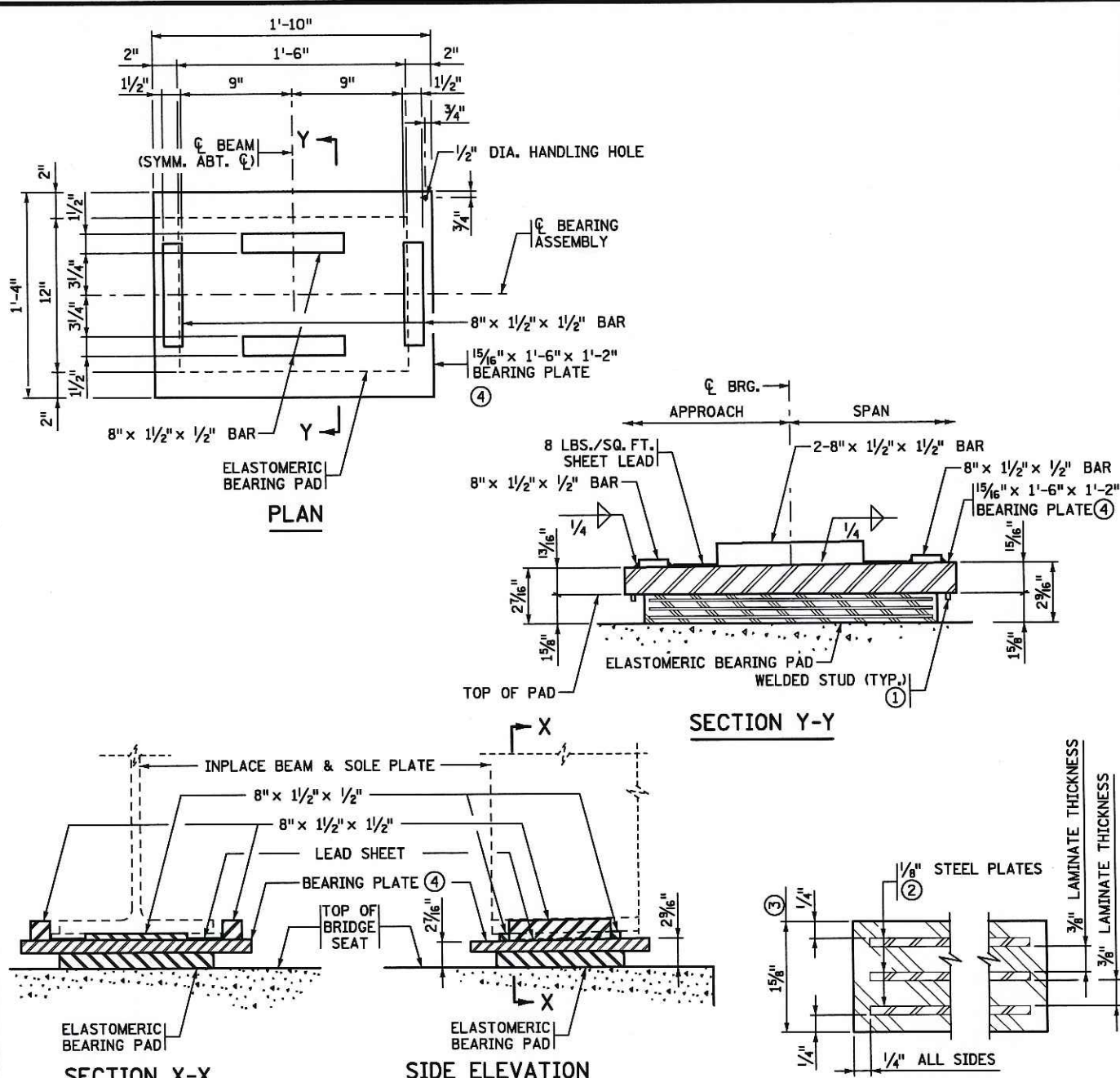
② DO NOT GALVANIZE THESE PLATES.

③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

④ BEARING PLATE SHALL BE TAPERED.

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION

**BEARING ASSEMBLY TYPE E1**  
 (STEEL BEAMS)  
 (EXPANSION)



**NOTES:**

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 3741.

ALL STEEL PLATES SHALL COMPLY WITH Mn/DOT SPEC. 3306.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER Mn/DOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL.

① 5/16" DIA. x 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 1/2", MAX. STUD SPACING = 4", AND MAX. SPACING TO PAD CORNER = 2".

② DO NOT GALVANIZE THESE PLATES.

③ THE TOTAL THICKNESS SHOWN INCLUDES THE STEEL PLATES.

④ BEARING PLATE SHALL BE TAPERED.

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION

**BEARING ASSEMBLY TYPE E2**  
 (STEEL BEAMS)  
 (EXPANSION)

CERTIFIED BY Todd R. Stevens 5/7/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE: **DETAILS**

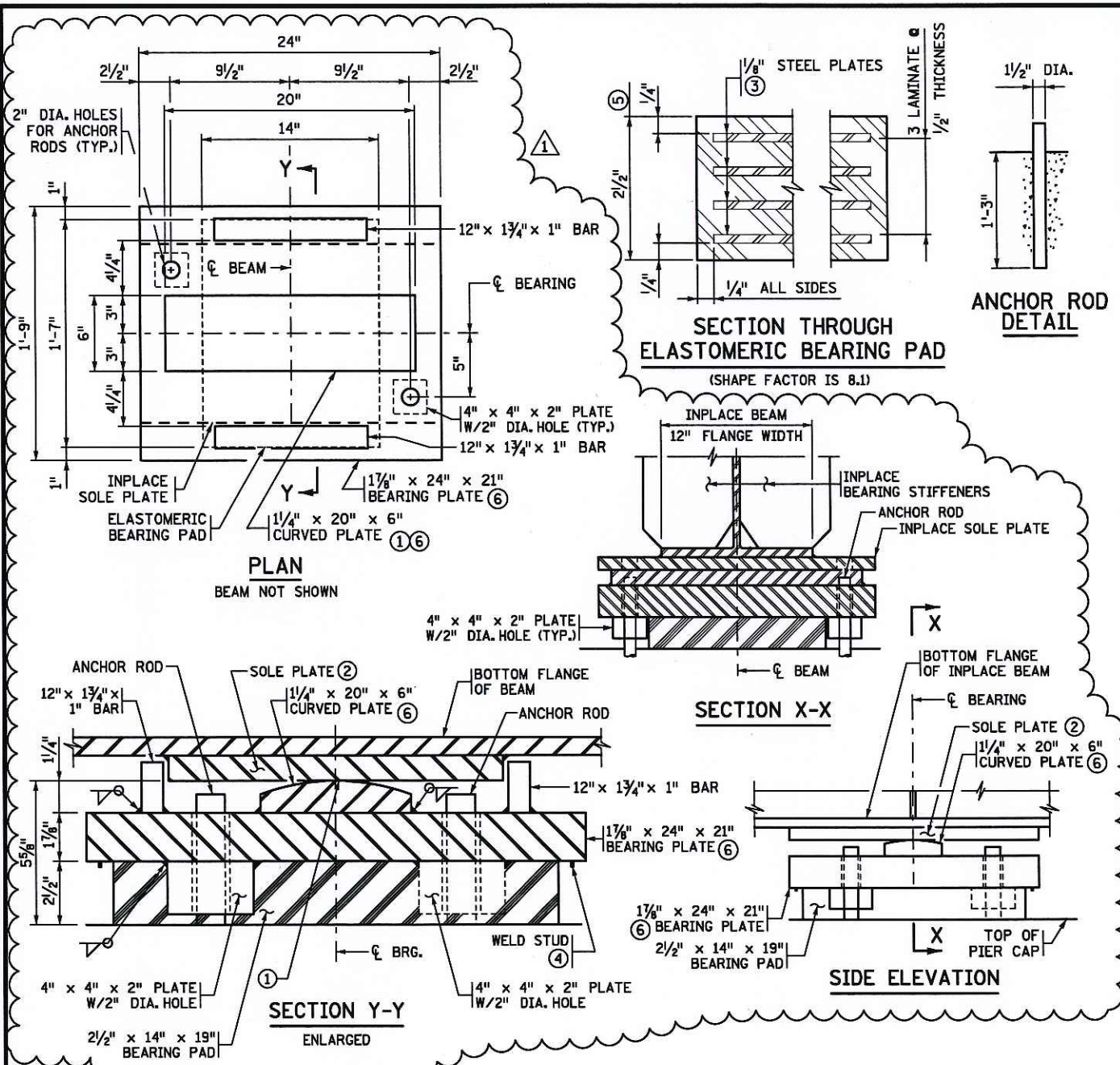
DES: RJR	DR: BEP	APPROVED: 5/7/13
CHK: GBB	CHK: TRS	

SHEET NO. 30 OF 34 SHEETS

BRIDGE NO. 27504



TIME: 8:41:17 AM  
 PLOTTED: 29-MAY-2013  
 PATH & FILENAME: Bridge/Final\_Design/2/27504/Cadd-Plan/27504\_bep  
 FILENAME: IP\_PWP-d1460960/27504\_bep



**NOTES:**

ELASTOMERIC MATERIALS AND PAD CONSTRUCTION SHALL COMPLY WITH Mn/DOT SPEC. 374L.

ANCHOR RODS SHALL COMPLY WITH Mn/DOT SPEC. 3306. GALVANIZE PER Mn/DOT SPEC. 3394.

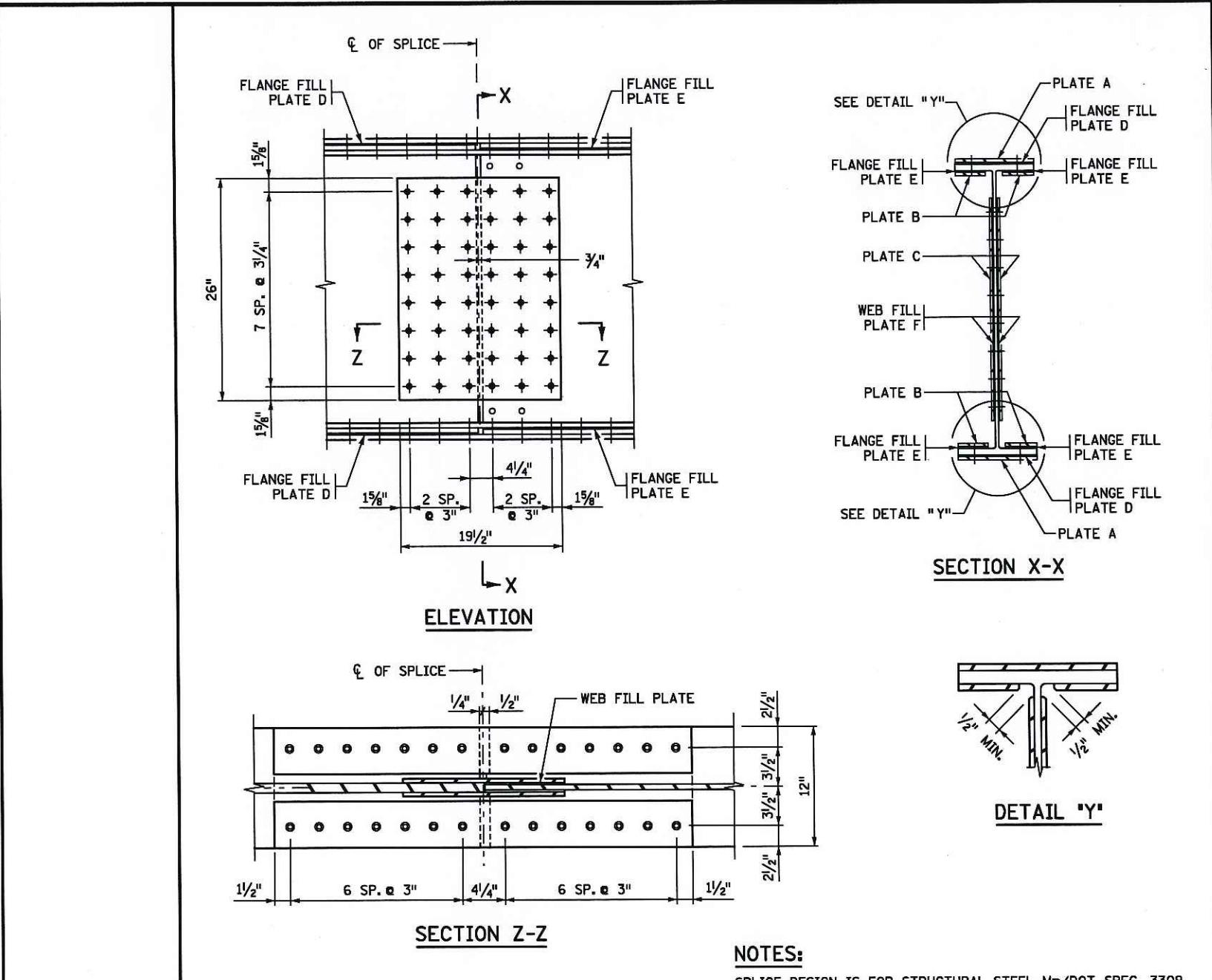
FOR SPANS UP TO 150 FEET, USE 1/2" DIAMETER ANCHOR RODS. ABOVE 150 FOOT SPANS, DESIGN ANCHOR RODS PER AASHTO DESIGN CRITERIA.

GALVANIZE STRUCTURAL STEEL BEARING ASSEMBLY AFTER FABRICATION PER Mn/DOT SPEC. 3394, EXCEPT AS NOTED.

PAYMENT FOR BEARING ASSEMBLY SHALL INCLUDE ALL MATERIAL ON THIS DETAIL EXCEPT THE SOLE PLATE. THE SOLE PLATE IS INCLUDED IN THE WEIGHT OF STRUCTURAL STEEL.

- ① THE MIN. RADIUS SHALL BE 16". THE MAX. RADIUS SHALL BE 24". FINISH TO 250MICRO. THE FINISHED THICKNESS OF THE PLATE MAY BE 1/16" LESS THAN SHOWN.
- ② EXISTING 14" x 1" x 1'-10" SOLE PLATE TO REMAIN IN PLACE. FIELD DRILL NEW HOLES FOR ANCHOR RODS.
- ③ DO NOT GALVANIZE THIS PLATE.
- ④ 5/16" DIA. x 3/8" KNOCK-OFF WELD STUDS INSTALLED ON BEARING PLATE AROUND PERIMETER OF BEARING PAD. CENTERLINE STUD TO EDGE OF PAD DIMENSION = 1/2", MAX. STUD SPACING = 4" AND THE MAX. SPACING TO THE PAD CORNER = 2".
- ⑤ THE TOTAL THICKNESS SHOWN INCLUDES STEEL PLATES.
- ⑥ ALL STEEL PLATES SHALL COMPLY WITH Mn/DOT SPEC. 3309 EXCEPT THE SOLE PLATE. THE SOLE PLATE SHALL BE THE SAME MATERIAL SPECIFICATION AS THE STEEL BEAMS.

STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION		
<b>BEARING ASSEMBLY TYPE F1</b> (STEEL BEAMS) (FIXED)		
<b>REVISION</b>		
DATE	DESCRIPTION	APPROVED BY
5-28-13	REVISIONS TO F1 BEARINGS	TRS



**NOTES:**

SPLICE DESIGN IS FOR STRUCTURAL STEEL Mn/DOT SPEC. 3309. 1" Ø HOLES FOR 7/8" Ø A325 BOLTS (TYP.)

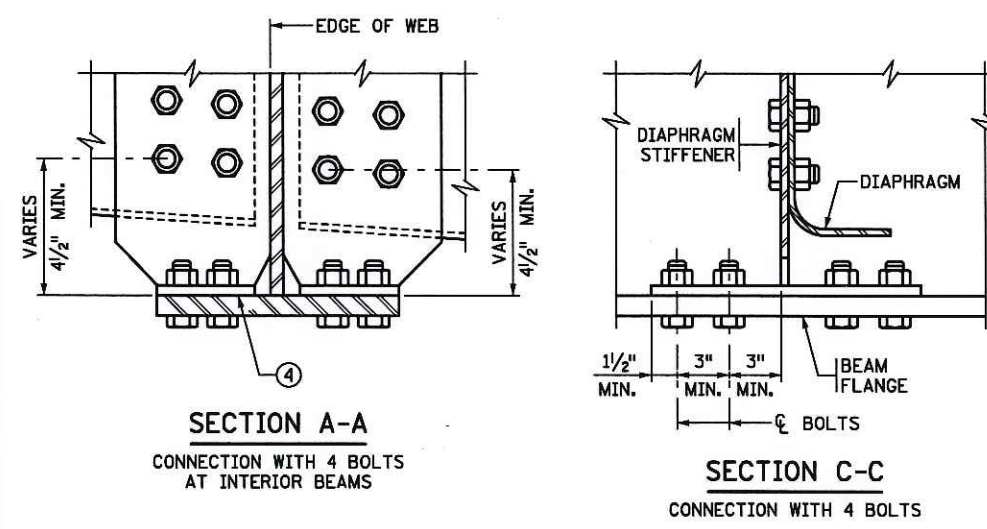
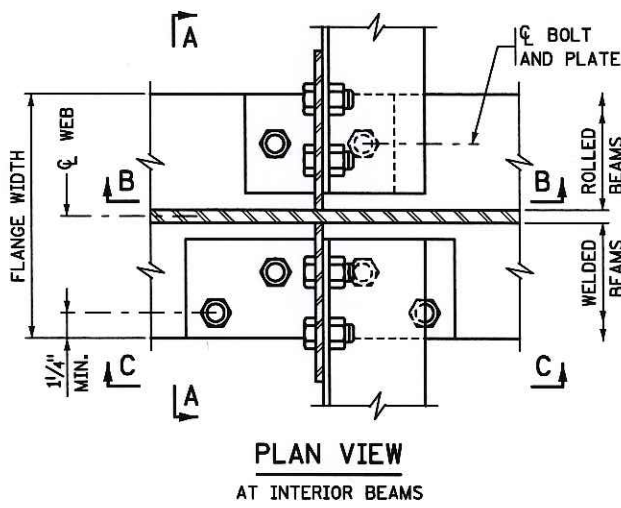
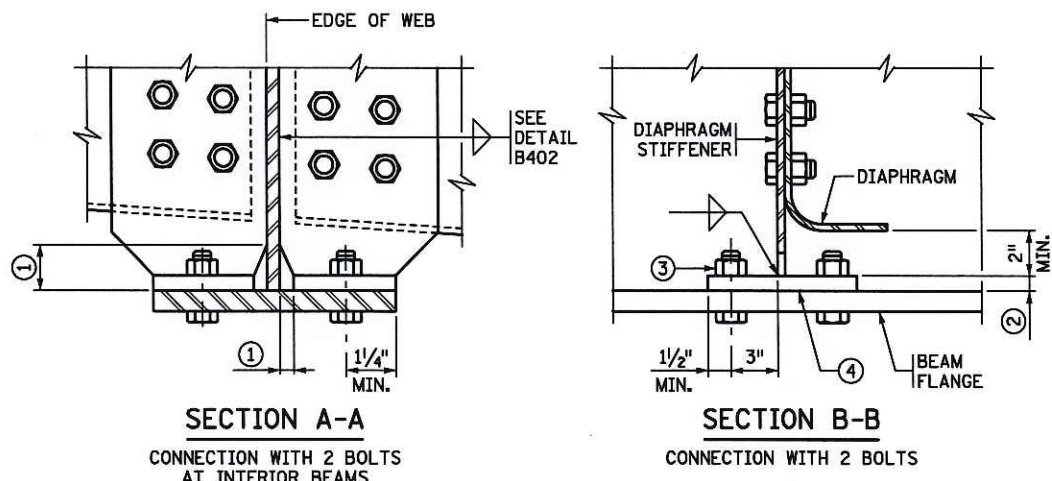
FILL PLATES SHALL BE STRUCTURAL STEEL, MINIMUM THICKNESS 1/16". WHERE THE DIFFERENCE IN WEB THICKNESS IS 1/8" OR MORE, PLACE FILL PLATES OF SAME THICKNESS ON BOTH SIDES OF THINNER WEB. WHERE DIFFERENCE IN WEB THICKNESS IS LESS THAN 1/16" OMIT FILLS.

TABLE						
BEAM SIZE	PLATE A (IN.)	PLATE B (IN.)	PLATE C (IN.)	FLANGE FILL PLATE D	FLANGE FILL PLATE E	WEB FILL PLATE F
W36 X 230	43 1/4" X 12" X 5/8"	43 3/4" X 4 1/2" X 7/8"	26" X 19 1/2" X 7/16"	21 1/4" X 12" X 1/16"	21 1/4" X 4 1/2" X 5/16"	26" X 9 3/8" X 1/16"

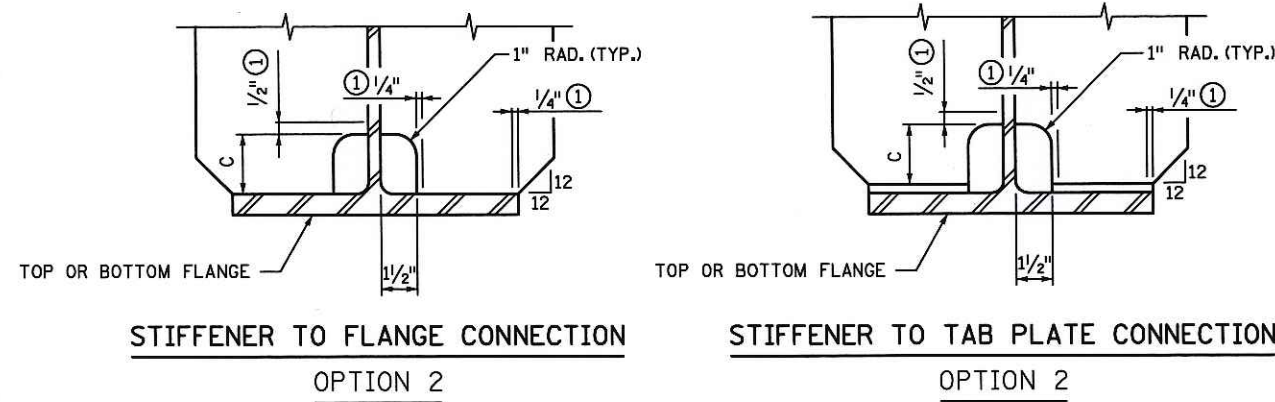
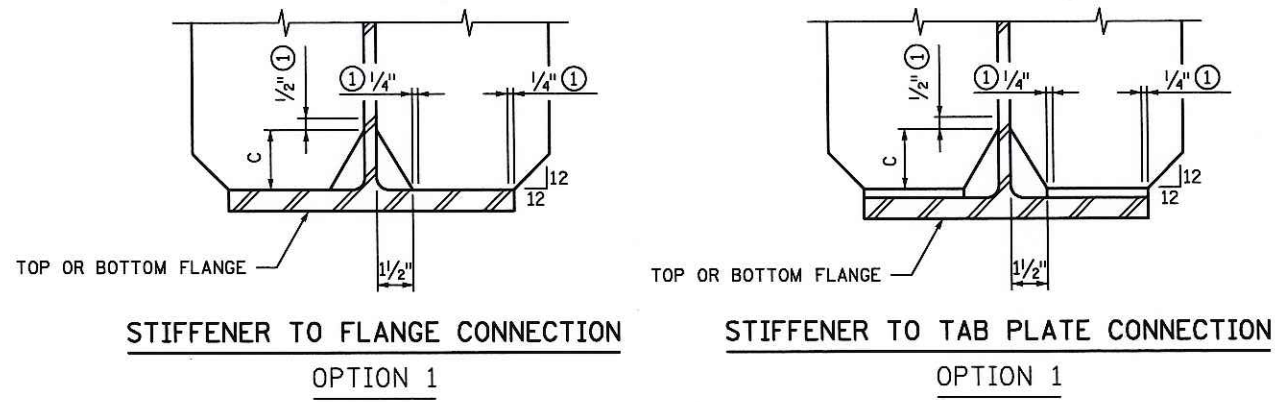
APPROVED: NOVEMBER 22, 2002	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION 10-22-2009 05-24-2012	DETAIL NO. <b>B400 MOD</b>
<i>David J. Wagoner</i> STATE BRIDGE ENGINEER	<b>SPLICES FOR STEEL BEAMS</b>		
CERTIFIED BY <i>Todd R. Stevens</i> 5/29/13 LICENSED PROFESSIONAL ENGINEER DATE	TITLE: <b>DETAILS</b>	DES: RJR DR: BEP CHK: GBB CHK: TRS	APPROVED: <i>5/29/13</i> BRIDGE NO. 27504
NAME: TODD R. STEVENS LIC. NO. 21312	SHEET NO. 31R OF 34 SHEETS		



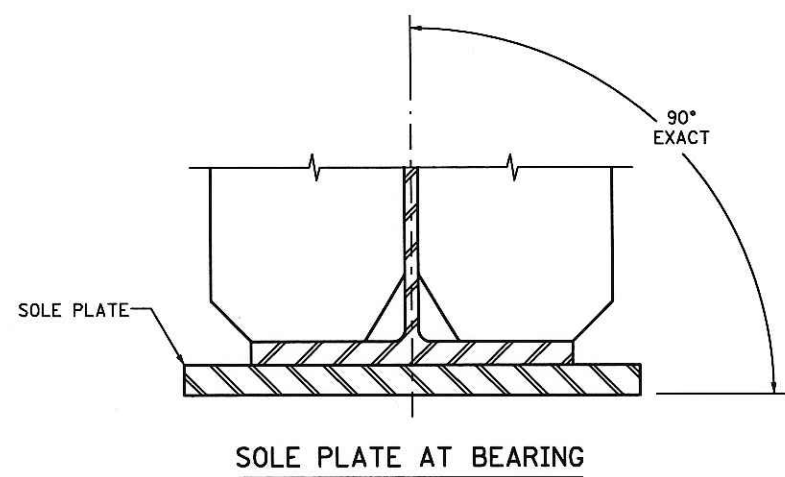
TIME : 8:23:31 AM  
 PLOTTED : 07-MAY-2013  
 PATH & FILENAME: Bridge/Final\_Design/2/27504/Cadd-Plan/27504\_bep  
 FILENAME: IP\_PWF-d1460960/27504\_bep



- NOTES:**  
 ALL STEEL SHALL CONFORM TO Mn/DOT SPEC. 3309.  
 ① SEE DETAIL B411.  
 ② MINIMUM PLATE THICKNESS SHALL BE 3/4".  
 ③ BOLT PLATE TO BEAM FLANGE PRIOR TO WELDING PLATE TO DIAPHRAGM STIFFENER.  
 ④ REMOVE LOOSE SCALE AND RUST FROM CONTACT AREA AT DIAPHRAGM CONNECTION. SURFACE MUST BE FLAT AND PRIMED.



**STIFFENER COPE DETAIL**  
 PLATE GIRDER OR ROLLED BEAM



WEB THICKNESS	DIMENSION C
1/2", 9/16", 5/8"	2 1/2"
1/16", 3/4"	3"

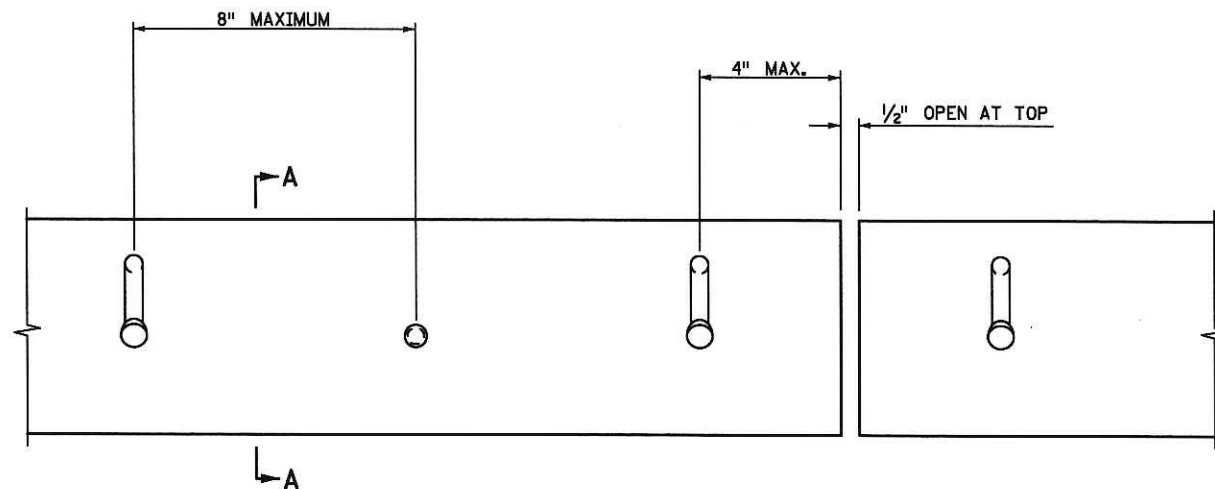
- NOTES:**  
 ① DO NOT WELD IN THIS AREA. SEE B410 FOR CONNECTION DETAILS.

APPROVED: NOVEMBER 22, 2002  
 STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION  
 BOLTED FLANGE TO STIFFENER DETAIL  
 REVISED 09-11-2004, 10-28-2008, 05-24-2012  
 DETAIL NO. B410 MOD

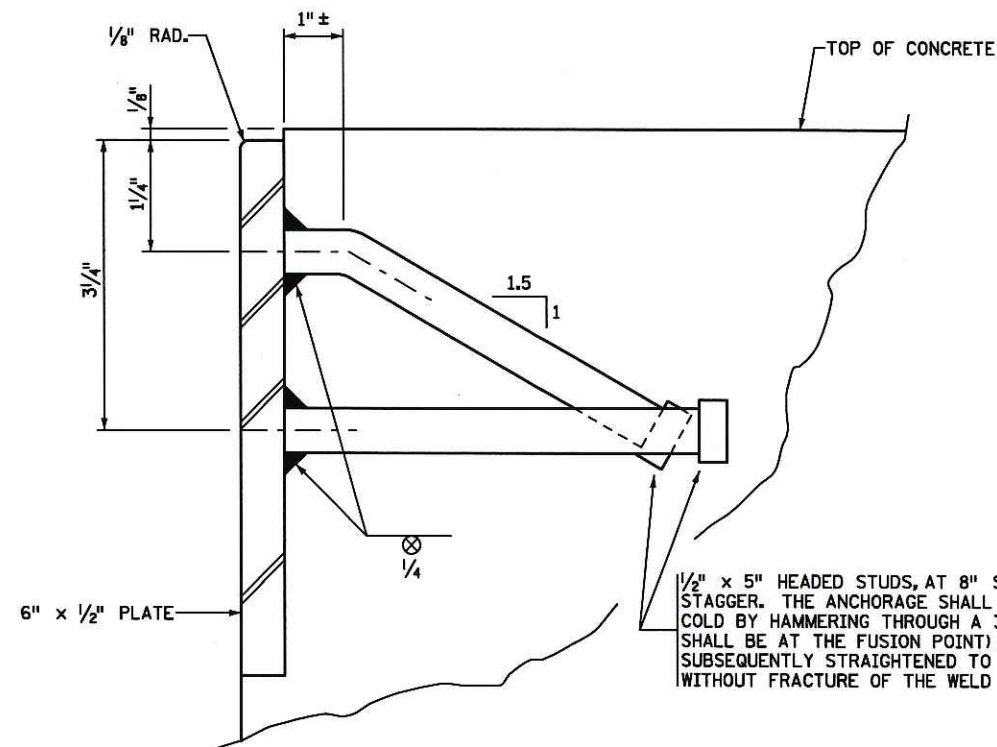
APPROVED: OCTOBER 22, 2008  
 STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION  
 STIFFENER DETAILS (FOR STEEL BEAMS)  
 REVISION  
 DETAIL NO. B411

CERTIFIED BY *Todd R. Stevens* 5/7/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312  
 TITLE: DETAILS  
 DES: RJR DR: BEP  
 CHK: GBB CHK: TRS  
 APPROVED: 5/7/13  
 SHEET NO. 32 OF 34 SHEETS  
 BRIDGE NO. 27504

TIME : 12:59:26 PM  
 PLOTTED : 03-MAY-2013  
 PATH & FILENAME: Bridge/Inal\_Design/2/27504/Cadd-Plan/27504\_bep  
 FILENAME: IP\_PWP-d1460960\27504\_bep



**ELEVATION**  
 CONCRETE NOT SHOWN



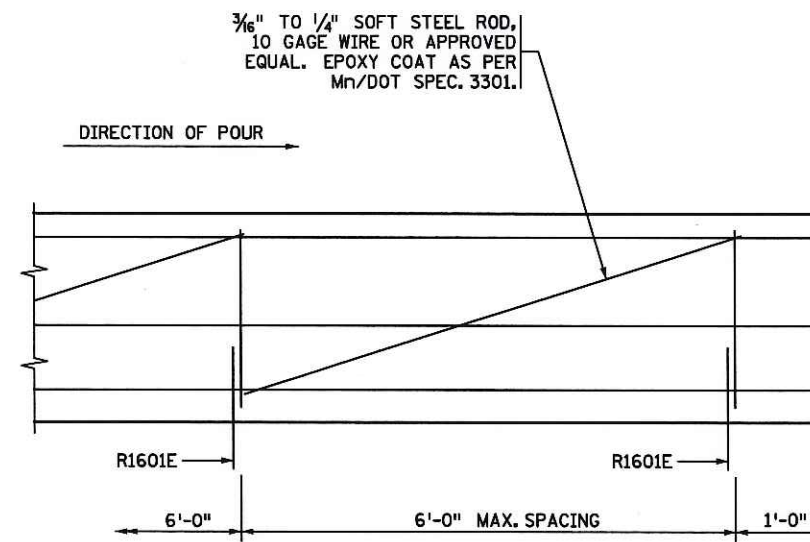
**SECTION A-A**

**NOTES:**

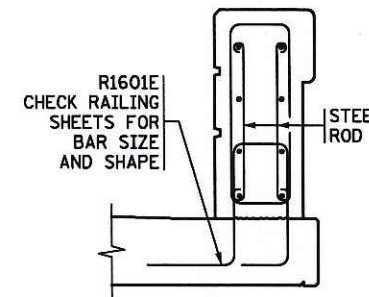
PLATES SHALL EXTEND FULL WIDTH OF ROADWAY BETWEEN GUTTER LINES WITH A 1/2" OPEN JOINT AT EACH BREAK IN CROWN PROFILE. MAX. LENGTH 22 FT.

MATERIALS: STRUCTURAL STEEL PER Mn/DOT SPEC. 3306. GALVANIZE AFTER FABRICATION PER Mn/DOT SPEC. 3394

SET PLATE TO PROPER GRADE AND CROWN.



**INSIDE ELEVATION OF RAILING**



**RAILING SECTION**  
 ORNAMENTAL METAL RAILING NOT SHOWN

**NOTES:**

CONTRACTOR WILL TOOL V-GROOVE AT CONTROL JOINTS AT TIME RAIL IS CAST AND SHALL EXTEND V-GROOVE AROUND ENTIRE PERIMETER OF RAIL.

FOR ADDITIONAL DIMENSIONS, DETAILS, REINFORCEMENT AND NOTES SEE RAILING SHEET.

FORM RAIL FOR A MINIMUM OF 2' ON EACH SIDE OF EXPANSION DEVICES, LIGHT STANDARDS AND DECK DRAIN BOX OUTS.

PAY QUANTITIES WILL NOT BE ADJUSTED AS A RESULT OF SELECTING THIS ALTERNATE.

USE A SIMILAR METHOD FOR TALLER RAILINGS OR MODIFIED VERSIONS OF THIS RAILING.

APPROVED: NOVEMBER 22, 2002

*Daniel J. Wenzel*  
 STATE BRIDGE ENGINEER

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION

**PROTECTION PLATE**  
 (FOR END OF SLAB)

REVISION

DETAIL NO.

**B553  
 MOD**

APPROVED: NOVEMBER 22, 2002

*Daniel J. Wenzel*  
 STATE BRIDGE ENGINEER

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION

**CONCRETE PARAPET RAILING**  
 (SLIPFORM ALTERNATE)

REVISION

DETAIL NO.

**B831  
 MOD**

CERTIFIED BY *Todd R. Stevens* 5/7/13  
 LICENSED PROFESSIONAL ENGINEER DATE  
 NAME: TODD R. STEVENS LIC. NO. 21312

TITLE:

**DETAILS**

DES: RJR DR: BEP  
 CHK: GBB CHK: TRS  
 APPROVED: 5/7/13  
 SHEET NO. 33 OF 34 SHEETS

BRIDGE NO.  
 27504



