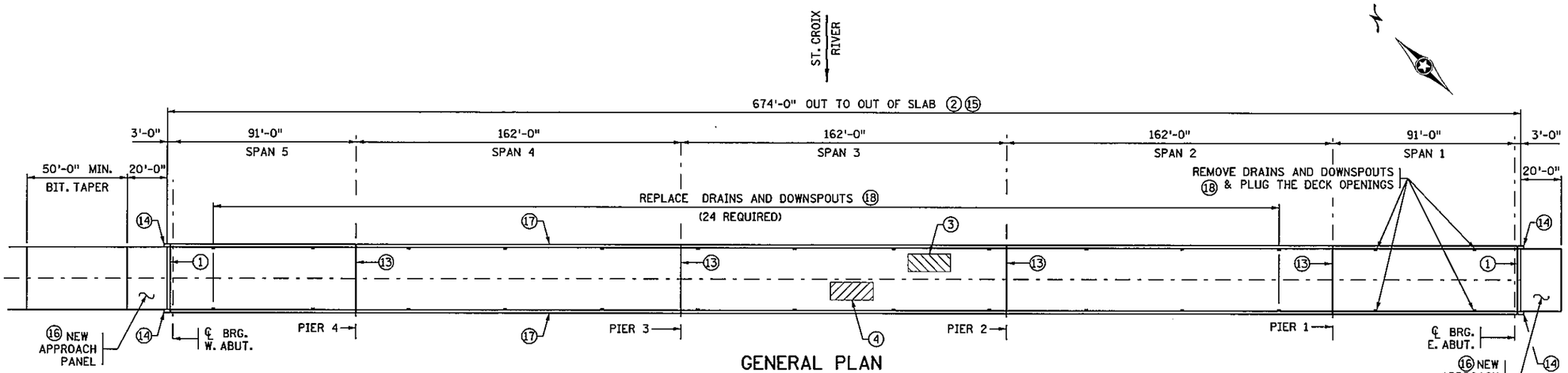
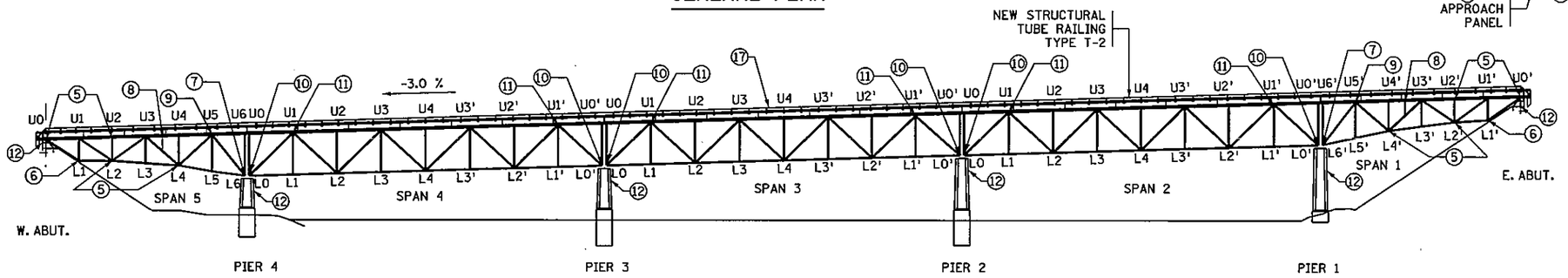
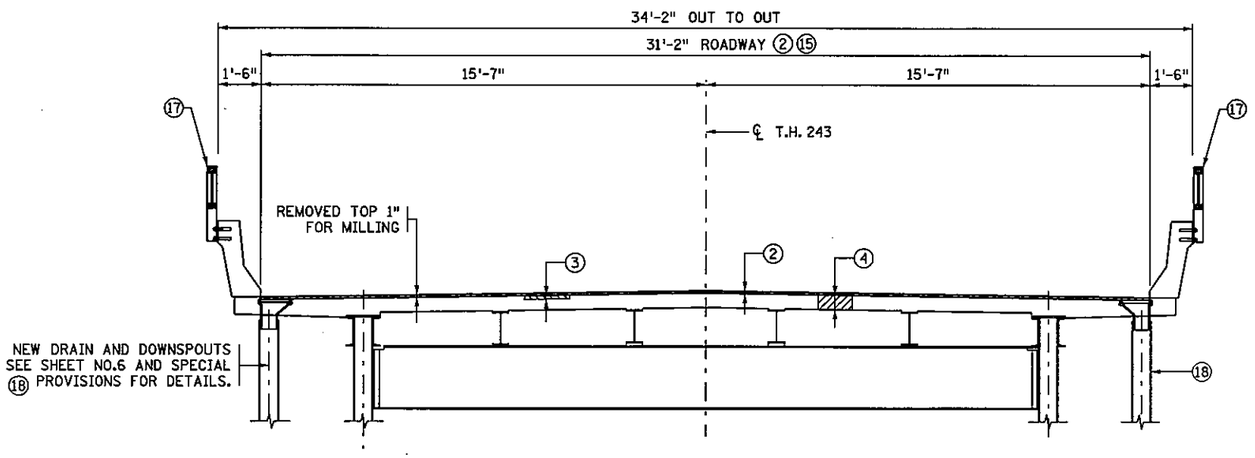


GENERAL PLAN



GENERAL ELEVATION



TRAVERSE SECTION

NOTES

(1) "RECONSTRUCT EXP. JT. TYPE C" @ ABUTMENTS. SEE SHEET NO. 4 & SPECIAL PROVISIONS FOR DETAILS.

(2) NEW 3/8" MIN. EPOXY CHIP OVERLAY "CONCRETE CHIPSEAL". SEE SPECIAL PROVISIONS.

(3) CONCRETE SLAB REMOVAL TYPE 1. SEE SHEET NO. 2 & SPECIAL PROVISIONS FOR DETAILS.

(4) CONCRETE SLAB REMOVAL TYPE 3. SEE SHEET NO. 2 & SPECIAL PROVISIONS FOR DETAILS.

(5) TYPE 1 TRUSS REPAIRS. SEE SHEET NO. 9 FOR DETAILS.

(6) TYPE 2 TRUSS REPAIRS. SEE SHEET NO. 10 FOR DETAILS.

(7) TYPE 3 TRUSS REPAIRS. SEE SHEET NO. 11 FOR DETAILS.

(8) TYPE 4 TRUSS REPAIRS. SEE SHEET NO. 12 FOR DETAILS.

(9) TYPE 5 TRUSS REPAIRS. SEE SHEET NOS. 13 AND 14 FOR DETAILS.

(10) TYPE 6 TRUSS REPAIRS. SEE SHEET NO. 15 FOR DETAILS.

(11) TYPE 7 TRUSS REPAIRS. SEE SHEET NO. 16 FOR DETAILS.

(12) "CONCRETE SURFACE REPAIR" @ PIERS & ABUTMENTS.

(13) "RECONSTRUCT EXP. JT. TYPE E" @ PIERS. SEE SHEET NO. 3 & SPECIAL PROVISIONS FOR DETAILS.

(14) "RECONSTRUCT CONCRETE END POSTS". SEE SHEET NO. 5 & SPECIAL PROVISIONS FOR DETAILS.

(15) "SCARIFY BRIDGE DECK". SEE SPECIAL PROVISIONS.

(16) "SCARIFY CONCRETE APPROACH". SEE SPECIAL PROVISIONS.

(17) "STRUCTURAL TUBE RAILING DESIGN T-2", NEW RAILING.

(18) TO BE INCLUDED IN PAY ITEM "RECONSTRUCT FLOOR DRAIN".

FEDERAL PROJ. NO.

DESIGN DATA

2007 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

LOAD AND RESISTANCE FACTOR DESIGN METHOD

HL 93 LIVE LOAD

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

MATERIAL DESIGN PROPERTIES:
REINFORCED CONCRETE:
f'c = 4 ksi n = 8
Fy = 60 ksi FOR REINFORCEMENT

STRUCTURAL STEEL:
Fy = 50 ksi STRUCTURAL STEEL SPEC. 3309

DECK AREA = 23051 SQ. FT.
PROJECTED ADT FOR YEAR
DESIGN SPEED = MILES PER HOUR
BRIDGE OPERATING RATING HS 26.2

LIST OF SHEETS

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 Scott A Pierson DATE 1/12/10
LICENSED PROFESSIONAL ENGINEER

NAME: SCOTT A. PIERSON LIC NO. 22561

B.M. ELEV. (M.S.L. 1929 ADJ.)

TRUNK HIGHWAY NO. 243
MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 6347

T.H. 243 OVER ST. CROIX RIVER
1.2 MI. E. OF JCT. (S. OF TAYLOR FALLS)
OF T.H. 95 & T.H. 243

IDENTIFICATION NO. 204

GENERAL PLAN AND ELEVATION

SEC. 27 T 33 N R 19 W
FRANCO TOWNSHIP CHISAGO COUNTY

APPROVED Kevin Western FOR STATE BRIDGE ENGINEER
DATE 1/12/10

DES. SAP		DR. GRF	6347
CHK. GFA/DJD		CHK. JJL	

APPROVED 1-12-10

6347_s12-1710.dgn
1/11/2010

JOB NO.1131-6347A DESIGN UNIT: JIHSHYA J. LIN STATE PROJ. NO. 1311 -6347A (T.H. 243=243) SHEET NO. 1 OF 19 SHEETS

SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE

ITEM NO.	ITEM	UNIT	QUANTITY
(1) 2401.618	STRUCTURAL CONCRETE (3Y33) SPECIAL	SQ. FT.	70
2402.584	STRUCTURAL TUBE RAILING DESIGN T-2	LIN. FT.	1348 (P)
2402.591	EXPANSION JOINT DEVICES TYPE 4	LIN. FT.	187 (P)
2402.602	TYPE 1 TRUSS REPAIR	EACH	16
2402.602	TYPE 2 TRUSS REPAIR	EACH	4
2402.602	TYPE 3 TRUSS REPAIR	EACH	4
2402.602	TYPE 4 TRUSS REPAIR	EACH	4
2402.602	TYPE 5 TRUSS REPAIR	EACH	4
2402.602	TYPE 6 TRUSS REPAIR	EACH	12
2402.602	TYPE 7 TRUSS REPAIR	EACH	12
2433.505	REMOVE SLAB TYPE 1	SQ. FT.	700
2433.505	REMOVE SLAB TYPE 3	SQ. FT.	70
2433.516	ANCHORAGES TYPE REINF BARS	EACH	16
2433.602	RECONSTRUCT CONCRETE END POST	EACH	4 (P)
2433.602	RECONSTRUCT FLOOR DRAIN	EACH	24 (P)
2433.603	RECONSTRUCT EXPANSION JOINT TYPE C	LIN .FT.	67 (P)
2433.603	RECONSTRUCT EXPANSION JOINT TYPE E	LIN .FT.	134 (P)
2433.618	SCARIFY BRIDGE DECK	SQ. FT.	21010
2433.618	SCARIFY CONCRETE APPROACHES	SQ. FT.	1250
2433.618	CONCRETE SURFACE REPAIR	SQ. FT.	200
(2) 2433.618	CONCRETE CHIP SEAL	SQ. FT.	22260

(1) TYPE 1 & TYPE 3 REMOVAL CONCRETE ONLY.

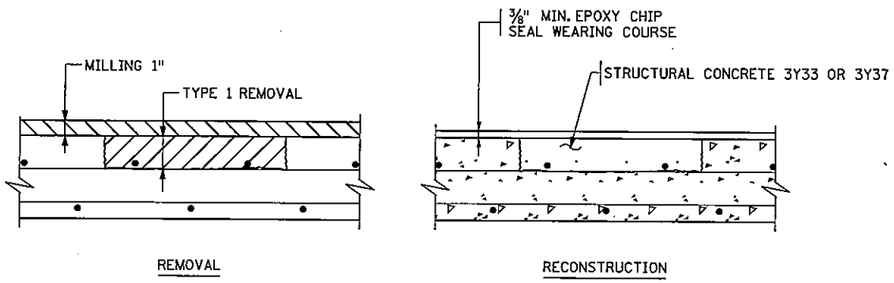
(2) INCLUDING 1250 S.F. FOR BOTH APPROACH PANELS.

CONSTRUCTION NOTES

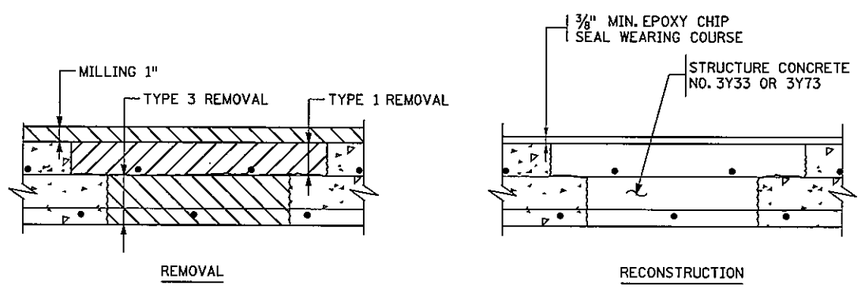
THE 2005 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

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.



TYPE 1 REMOVAL



TYPE 3 REMOVAL

CERTIFIED BY Scott A Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

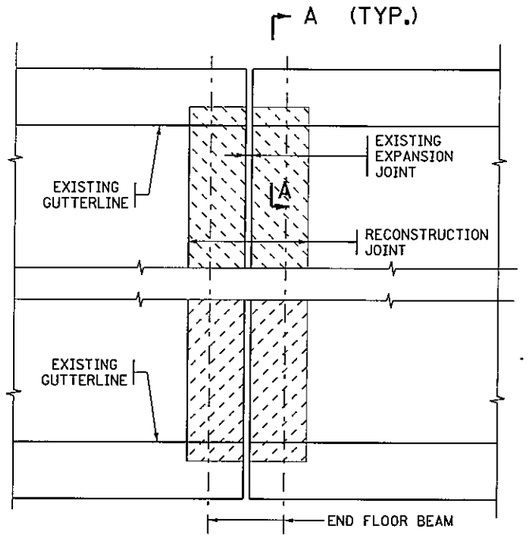
TITLE: QUANTITIES & DETAILS

DES: SAP	DR: GRF	APPROVED: 1/21/10
CHK: DJD/GFA	CHK: JJL	

SHEET NO. 2 OF 19 SHEETS

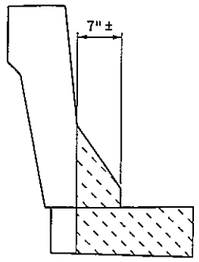
BRIDGE NO. 6347

1/21/2010 6347_s12.dgn

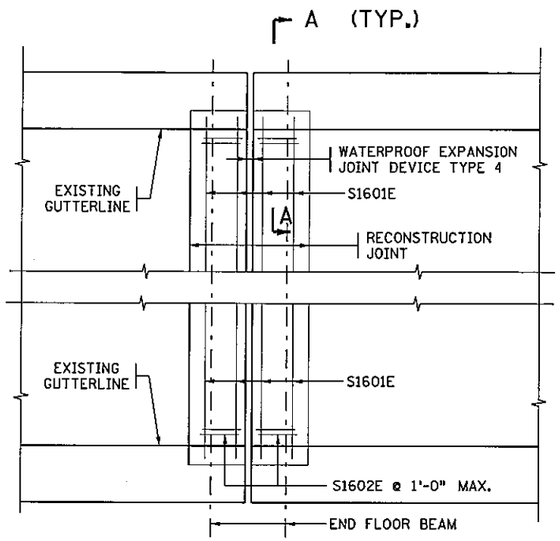


DECK JOINT REMOVAL PLAN

(@ PIERS)



SECTION A-A



DECK JOINT RECONSTRUCTION PLAN

(TYPE E)

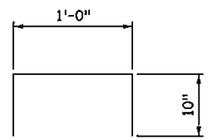
④ SUMMARY OF QUANTITIES FOR RECONSTRUCT EXPANSION JOINT TYPE E	
③ BRIDGE SLAB CONCRETE (3Y33 OR 3Y37)	400 SQ. FT.
CONCRETE WEARING COURSE (3U17A)	380 SQ. FT.
REINFORCEMENT BARS (EPOXY COATED)	3020 POUND
EXPANSION JOINT DEVICES TYPE 4	134 LIN. FT.

③ "BRIDGE SLAB CONCRETE (3Y33)" VOLUME IS APPROXIMATELY 22 CU. YDS. FOR 18" THICK CONC. REMOVAL.

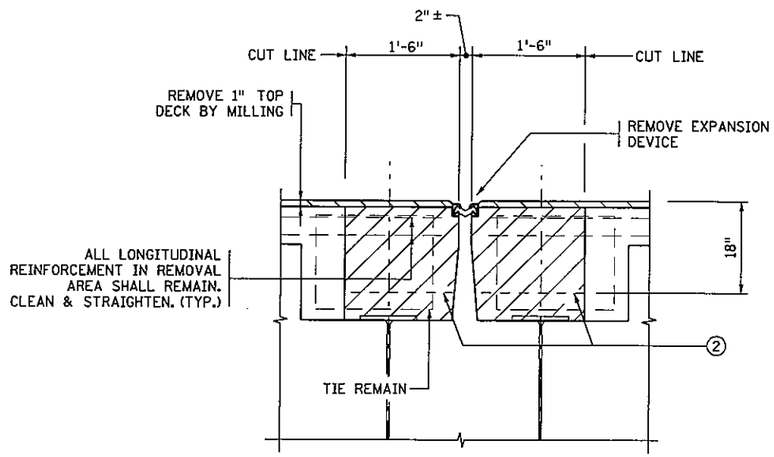
④ CONCRETE & REINFORCEMENT BARS TO BE INCLUDED IN PAY ITEM "RECONSTRUCT EXPANSION JOINT TYPE E".

④ BILL OF REINFORCEMENT FOR SUPERSTRUCTURE

BAR	NO.	LENGTH	SHAPE	LOCATION
S1601E	48	31'-10"	——	TRANSVERSE
S1602E	512	2'-8"	⊓	LONGITUDINAL - TIE

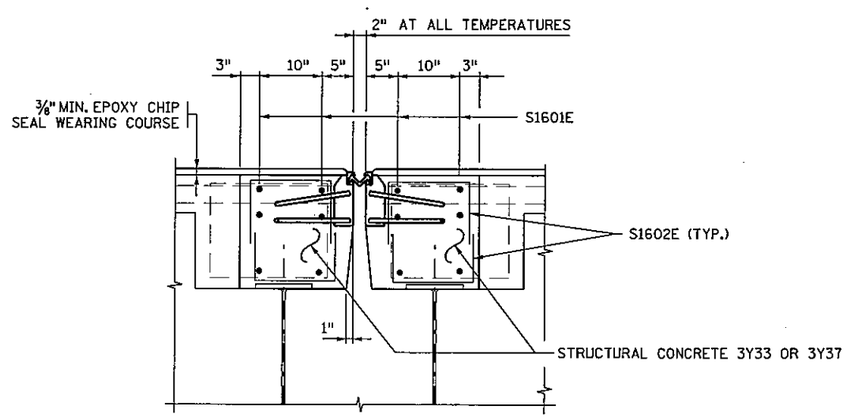


S1602E



DECK SECTION SHOWING JOINT REMOVAL

(@ PIERS)



DECK SECTION SHOWING JOINT RECONSTRUCTION ①

(TYPE E)

NOTES:

HATCHED AREAS INDICATE CONCRETE TO BE REMOVED.

SAW CUT SURFACES THAT WILL BE EXPOSED TO VIEW BEFORE REMOVAL OPERATIONS BEGIN.

① SET EXPANSION JOINT DEVICE AT THE TOP OF MILLED CONCRETE SURFACE.

② REMOVE INPLACE CONCRETE TO THIS LIMIT IF CONCRETE DECK AT THIS LOCATION IS GREATER THAN 18" THICK.

CERTIFIED BY Scott A Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

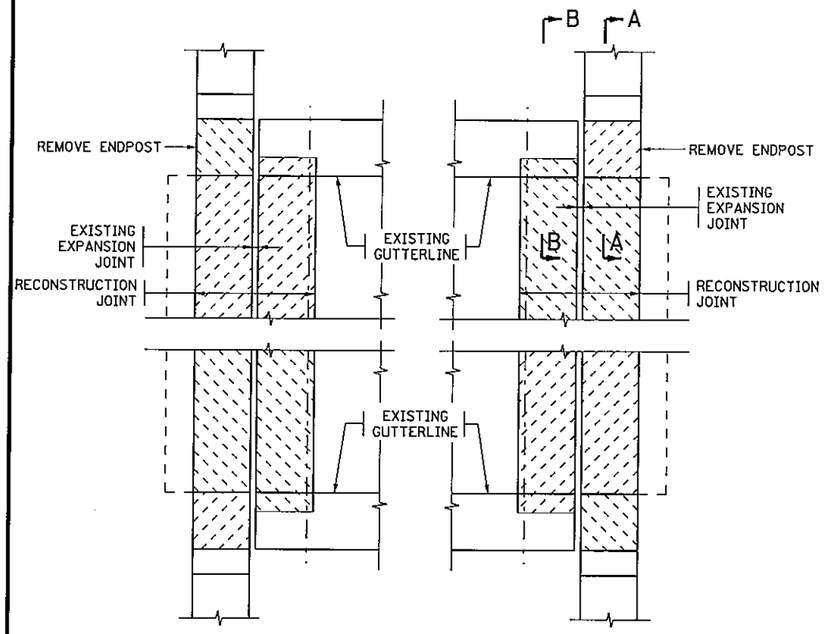
TITLE: RECONSTRUCT EXP. JOINT TYPE E

DES: SAP	DR: GRF	APPROVED: 1/21/10
CHK: DJD/GFA	CHK: JJL	

SHEET NO. 3 OF 19 SHEETS

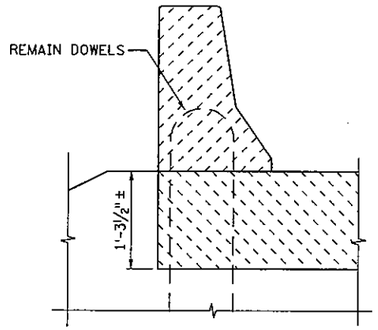
BRIDGE NO. 6347

1/21/2010 6347_s12.dgn

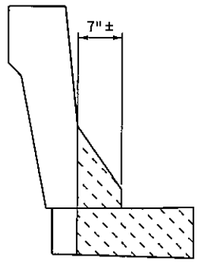


ABUTMENT JOINT AND END POST REMOVAL PLAN

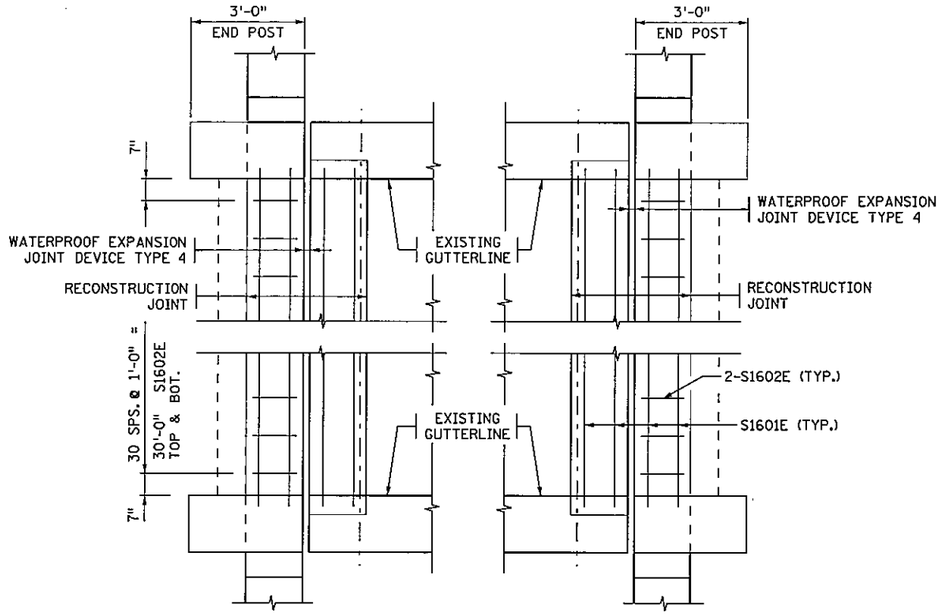
(℄ ABUTMENTS)



SECTION A-A

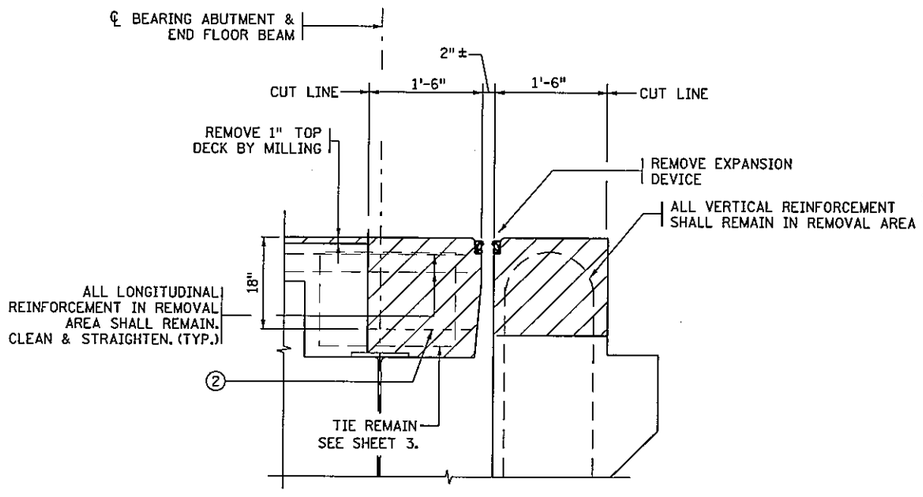


SECTION B-B

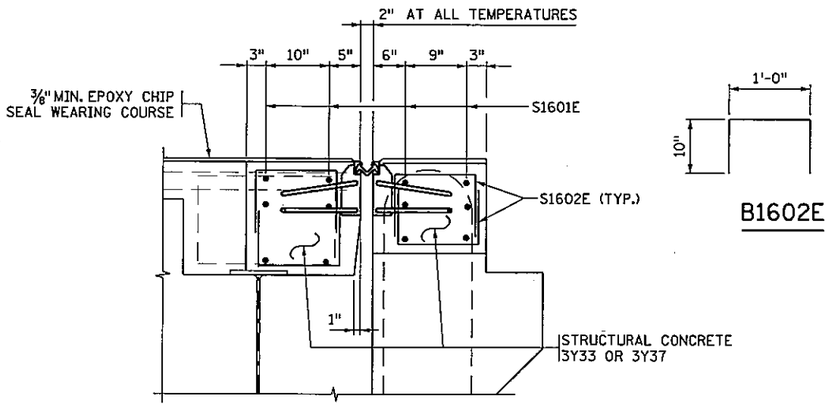


ABUTMENT JOINT AND END POST RECONSTRUCTION PLAN (TYPE C)

SEE SHEET NO. 5 FOR END POSTS DETAILS



ABUTMENT SECTION SHOWING JOINT REMOVAL



ABUTMENT SECTION SHOWING JOINT RECONSTRUCTION

(TYPE C)

④ SUMMARY OF QUANTITIES FOR RECONSTRUCT EXPANSION JOINT TYPE C	
③ BRIDGE SLAB CONCRETE (3Y33 OR 3Y37)	200 SQ. FT.
REINFORCEMENT BARS (EPOXY COATED)	1510 POUND
EXPANSION JOINT DEVICES TYPE 4	67 LIN. FT.

④ BILL OF REINFORCEMENT FOR SUPERSTRUCTURE

BAR	NO.	LENGTH	SHAPE	LOCATION
S1601E	24	31'-10"	——	TRANSVERSE
S1602E	256	2'-8"	⊓	LONGITUDINAL - TIE

NOTES:

HATCHED AREAS INDICATE CONCRETE TO BE REMOVED.

SAW CUT SURFACES THAT WILL BE EXPOSED TO VIEW BEFORE REMOVAL OPERATIONS BEGIN.

① SET EXPANSION JOINT DEVICE AT THE TOP OF MILLED CONCRETE SURFACE.

② REMOVE INPLACE CONCRETE TO THIS LIMIT IF CONCRETE DECK AT THIS LOCATION IS GREATER THAN 18" THICK.

③ "BRIDGE SLAB CONCRETE (3Y33)" VOLUME IS APPROXIMATELY 11 CU. YDS. FOR 18" THICK CONCRETE REMOVAL.

④ CONCRETE & REINFORCEMENT BARS TO BE INCLUDED IN PAY ITEM "RECONSTRUCT EXPANSION JOINT TYPE C".

CERTIFIED BY Scott A Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE

NAME: SCOTT A. PIERSON LIC. NO. 22561

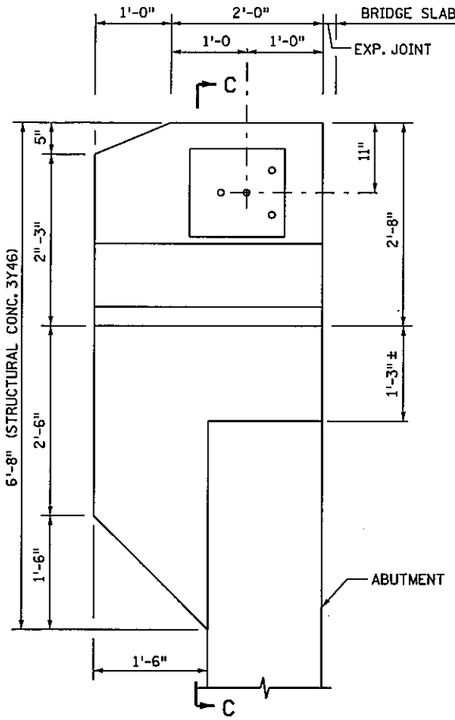
TITLE: RECONSTRUCT EXP. JOINT TYPE C

DES: SAP	DR: GRF	APPROVED: 1/21/10
CHK: DJD/GFA	CHK: JJL	

SHEET NO. 4 OF 19 SHEETS

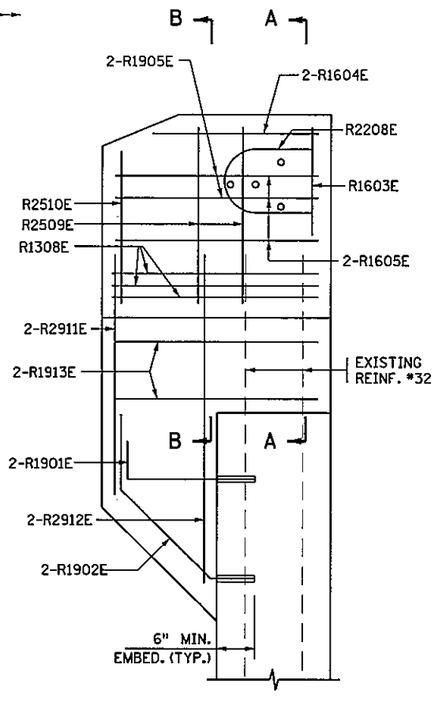
BRIDGE NO. 6347

1/21/2010 6347_sht2.dgn

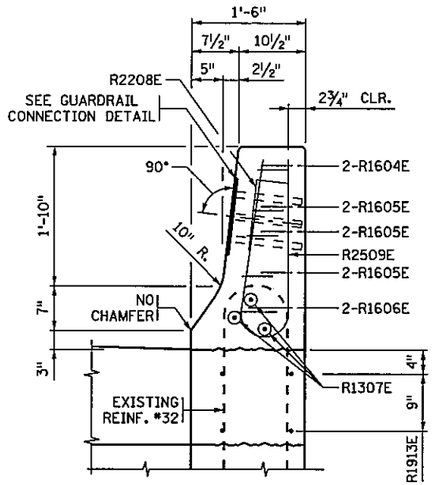


END POST VIEW INSIDE

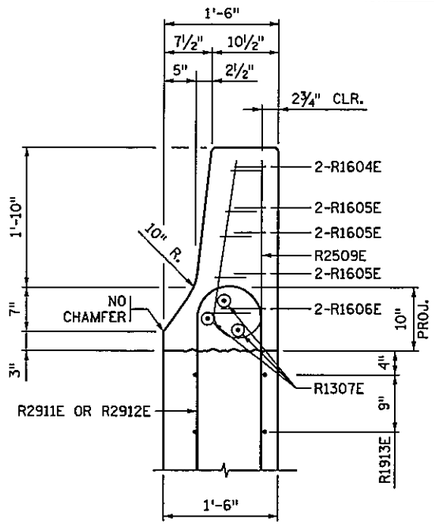
(ALL CORNERS SIMILAR MIRRORED)



END POST REINFORCEMENT



SECTION A-A



SECTION B-B

BILL OF REINFORCEMENT END POST				
BAR	NO.	LENGTH	SHAPE	LOCATION
① R1901E	8	2'-8"		DOWEL
① R1902E	8	3'-4"		DOWEL
R1603E	4	4'-5"		VERTICAL
R1604E	8	2'-8"		END POST-HORIZ.
R1605E	24	3'-6"		END POST-HORIZ.
R1606E	8	3'-4"		END POST-HORIZ.
R1307E	12	2'-3"		END POST-HORIZ.
R2208E	4	4'-1"		END POST-VERT.
R2509E	8	5'-0"		END POST-VERT.
R2510E	4	4'-5"		END POST-VERT.
R2911E	4	6'-7"		END POST-VERT.
R2912E	4	8'-11"		END POST-VERT.
R1913E	16	2'-8"		HORIZONTAL

GENERAL NOTES

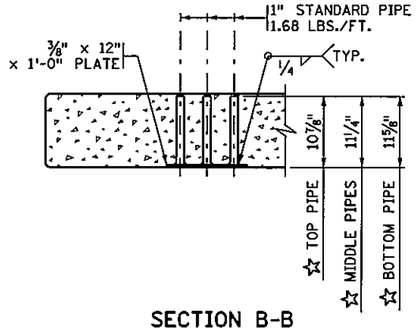
CONCRETE VOLUME FOR EACH RECONSTRUCTED END POST IS APPROXIMATELY 1.0 CU. YDS.

FINISH ALL EDGES OF RAIL WITH ½" VEE, EXCEPT WHERE OTHERWISE NOTED.

GUARDRAIL CONNECTION TO BE STRUCTURAL STEEL, Mn/DOT SPEC. 3306.

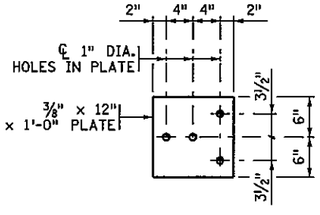
GUARDRAIL CONNECTION TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS.

① NOT INCLUDED IN REINFORCEMENT BAR QUANTITITY. TO BE INCLUDED IN PAY ITEM "ANCHORAGES TYPE REINFORCEMENT BARS".



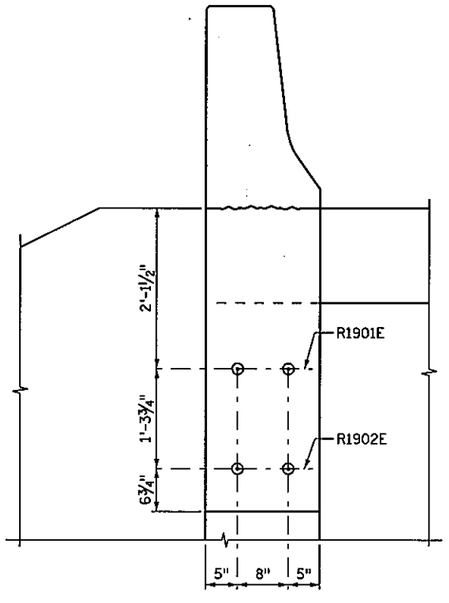
SECTION B-B

(REINFORCEMENT NOT SHOWN)
☆ DIMENSIONS INCLUDE ⅜" PLATE



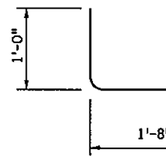
GUARDRAIL CONNECTION DETAIL

GALVANIZE AFTER FABRICATION PER Mn/DOT SPEC. 3394
ESTIMATED WEIGHT = 22 LBS

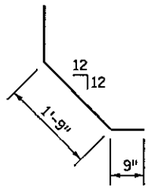


VIEW C-C

GROUTED ANCHORAGE LOCATION



R1901E



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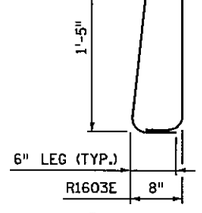
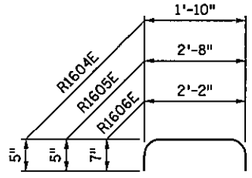
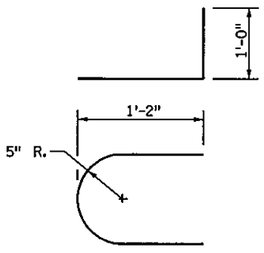


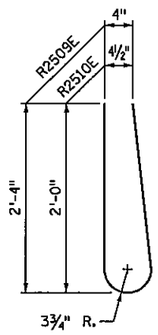
R1603E



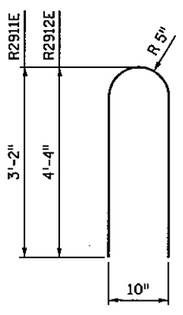
R1604E,
R1605E & R1606E



R2208E



R2509E & R2510E



R2911E & R2912E

1/11/2010 6347_s12-1710.dgn

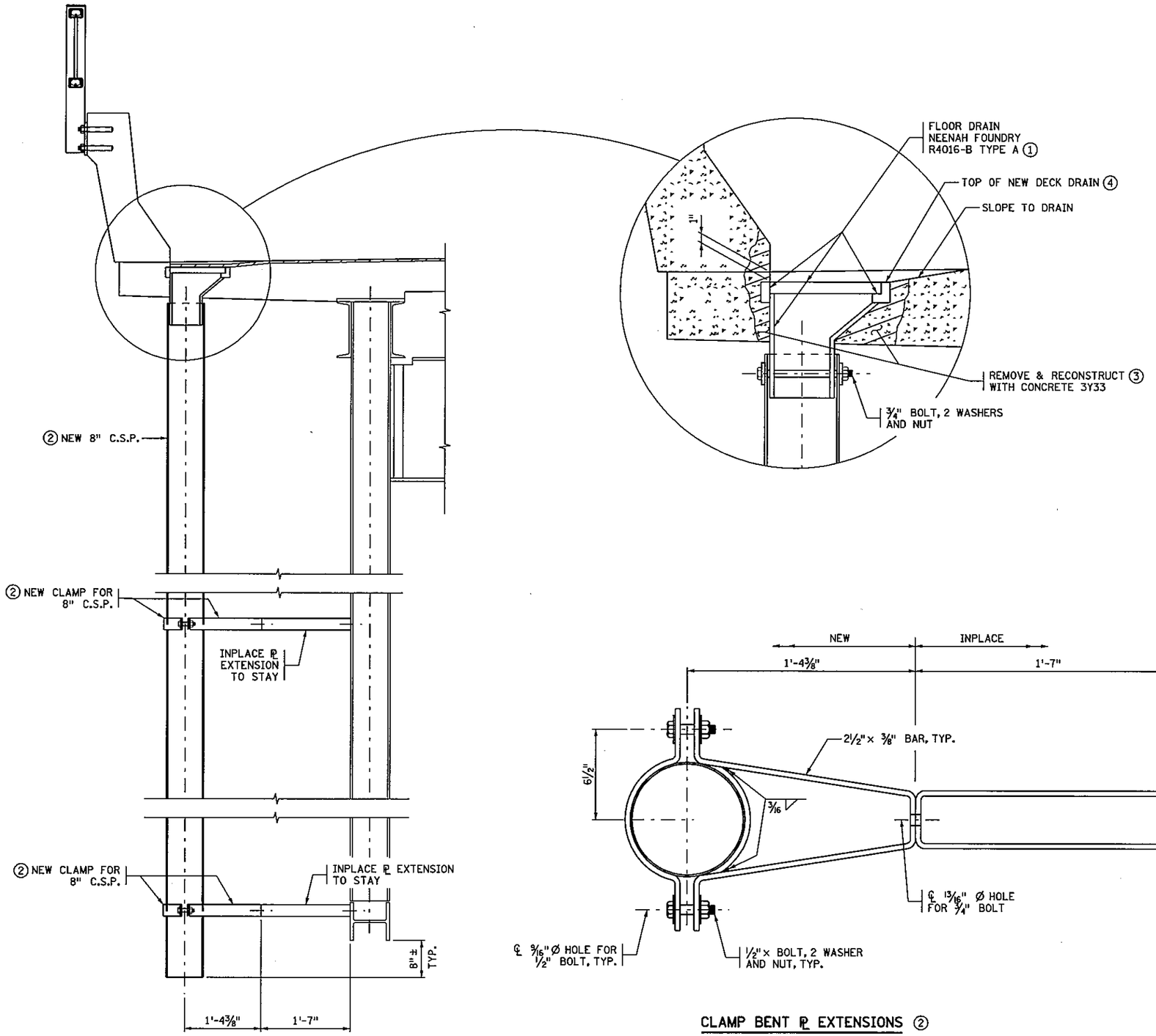
CERTIFIED BY Scott A. Pierson 11/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

TITLE: END POST & REINFORCEMENT DETAILS

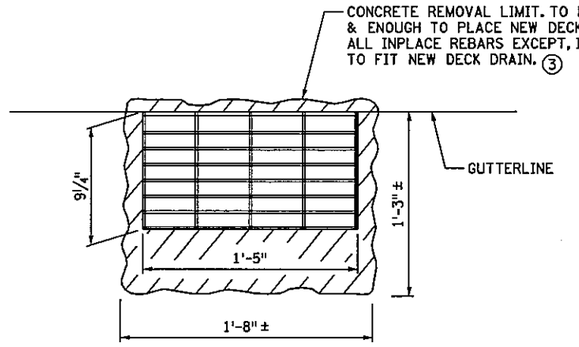
DES: SAP DR: GRF APPROVED: 11-12-10
CHK: DJD/GFA CHK: JJL

SHEET NO. 5 OF 19 SHEETS

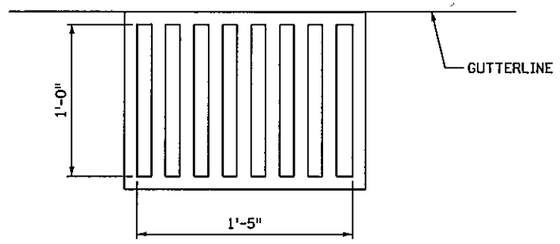
BRIDGE NO. 6347



SECTION FLOOR DRAINS AND EXTENSIONS



INPLACE DRAIN



NEW DRAIN (1)

CLAMP BENT ℄ EXTENSIONS (2)

BAR TO BE STRUCTURAL STEEL 3306,
GALV. AFTER FABRICATION.

(48 CLAMP SETS REQUIRED)

NOTES:

ALL STEEL SHAPES & PARTS SHALL BE GALVANIZED PER SPECS. 3392 OR 3394. DOWNSPOUT C.S.P. TO BE PAINTED W/BROWN COLOR THE SAME AS T-2 STEEL TUBE RAILING. SEE SPECIAL PROVISIONS.

ALL WORK TO REMOVE, DISPOSE AND RECONSTRUCT FLOOR DRAIN AND DOWNSPOUT SYSTEM TO BE INCLUDED IN PAY ITEM "RECONSTRUCT FLOOR DRAIN". SEE SPECIAL PROVISIONS.

REMOVE 4 DRAINS AND DOWNSPOUTS IN SPAN 1 TO BE INCLUDED IN PAY ITEM "RECONSTRUCT FLOOR DRAIN".

(1) NEW DECK FLOOR DRAIN SHALL BE NEENAH FOUNDRY ROADWAY & DECK DRAIN PRODUCT R4016-B TYPE A, OR APPROVED EQUAL. SEE SPECIAL PROVISIONS.

(2) DOWNSPOUT TUBE, 8" C.S.P. & CLAMPING SUSTEM TO BE INCLUDED IN PAY ITEM "RECONSTRUCT FLOOR DRAIN".

(3) REMOVAL & RECONSTRUCTION OF DECK CONCRETE, INCLUDING REBAR MODIFICATIONS FOR NEW FLOOR DRAIN, TO BE INCLUDED IN PAY ITEM "RECONSTRUCT FLOOR DRAIN".

(4) SET THE TOP OF THE FLOOR DRAIN AT 5/8" BELOW THE TOP OF THE SCARIFIED DECK SURFACE, OR 1" BELOW THE FINAL DECK SURFACE.

CERTIFIED BY Scott A. Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

TITLE: RECONSTRUCT FLOOR DRAIN

DES: SAP	DR: GRF	APPROVED:
CHK: DJD/GFA	CHK: JJL	1-12-10

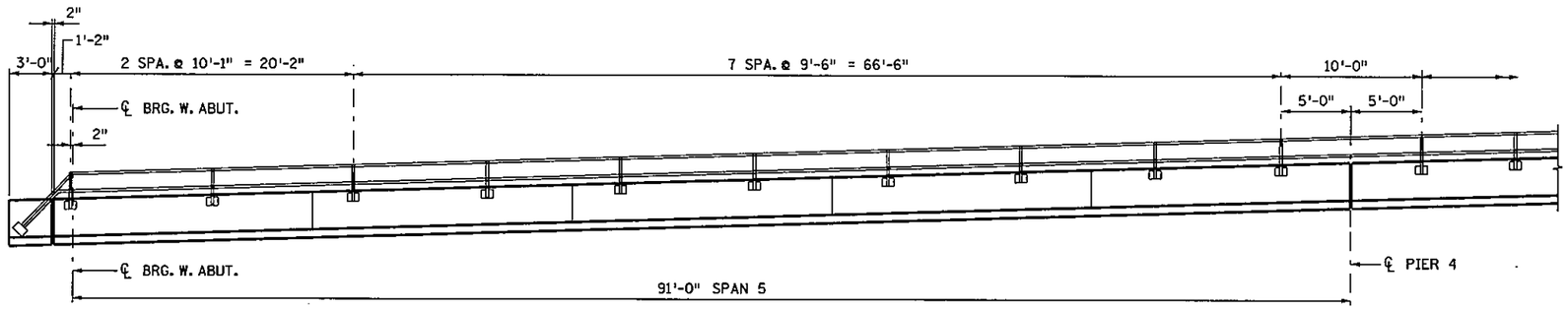
SHEET NO. 6 OF 19 SHEETS

BRIDGE NO. 6347

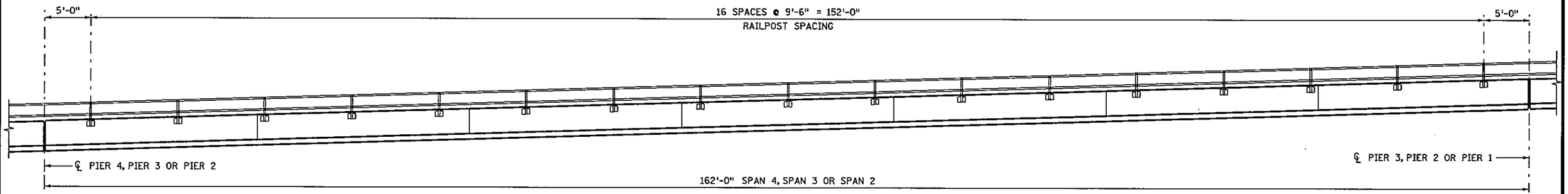
1/11/2010 6347_s12-1718.dgn

NOTE:

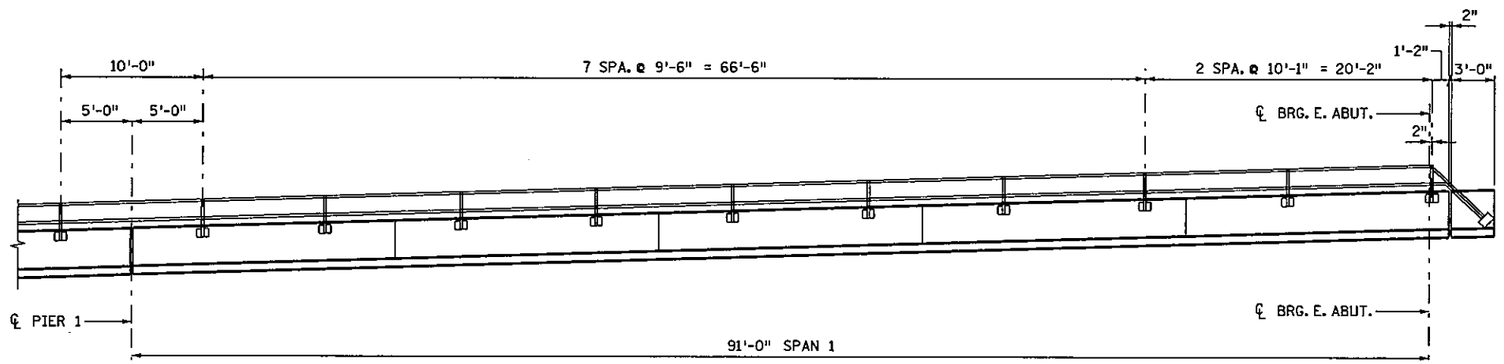
① SEE SPECIAL PROVISIONS FOR GALVANIZING, FINISH COATING & FINISH COLOR.



ELEVATION STRUCTURAL TUBE RAILING TYPE 2 - SPAN 5 ①



ELEVATION STRUCTURAL TUBE RAILING TYPE 2 - SPAN 4, SPAN 3, SPAN 2 ①



ELEVATION STRUCTURAL TUBE RAILING TYPE 2 - SPAN 1 ①

① SEE SPECIAL PROVISIONS FOR GALVANIZING, FINISH COATING AND FINISH COLOR.

dgnfilename
mmddyy

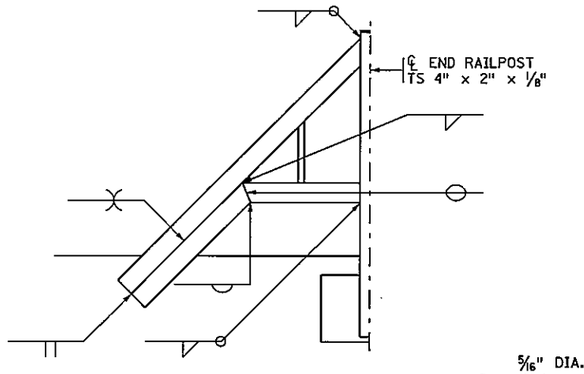
CERTIFIED BY _____ 11/12/10
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: SCOTT A. PIERSON — LIC. NO. 22561

TITLE: STRUCTURAL TUBE RAILING

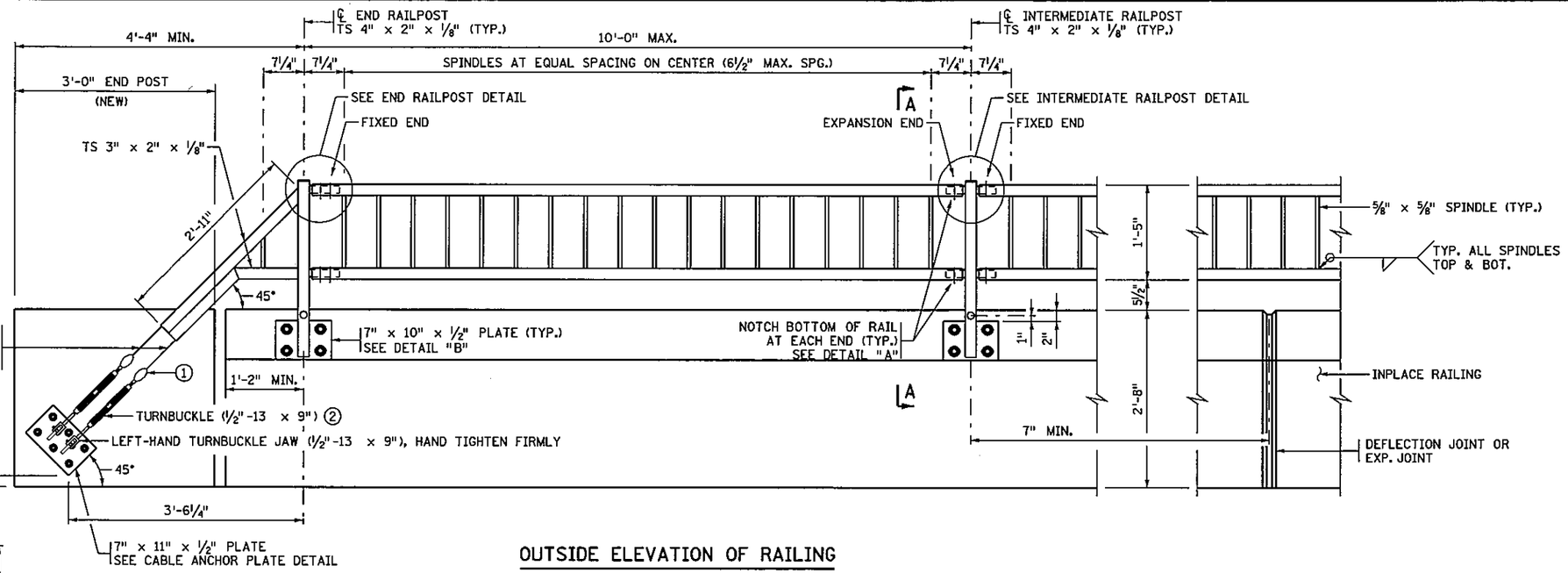
DES: SAP	DR: GRF	APPROVED:
CHK: DJD/GFA	CHK: JJL	1-12-10

SHEET NO. 7 OF 19 SHEETS

BRIDGE NO. 6347

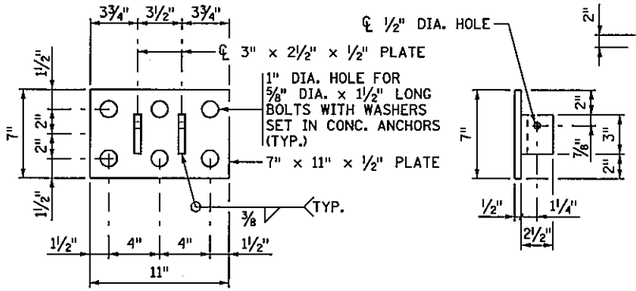


WELDS AT END PANEL

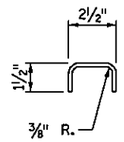


OUTSIDE ELEVATION OF RAILING

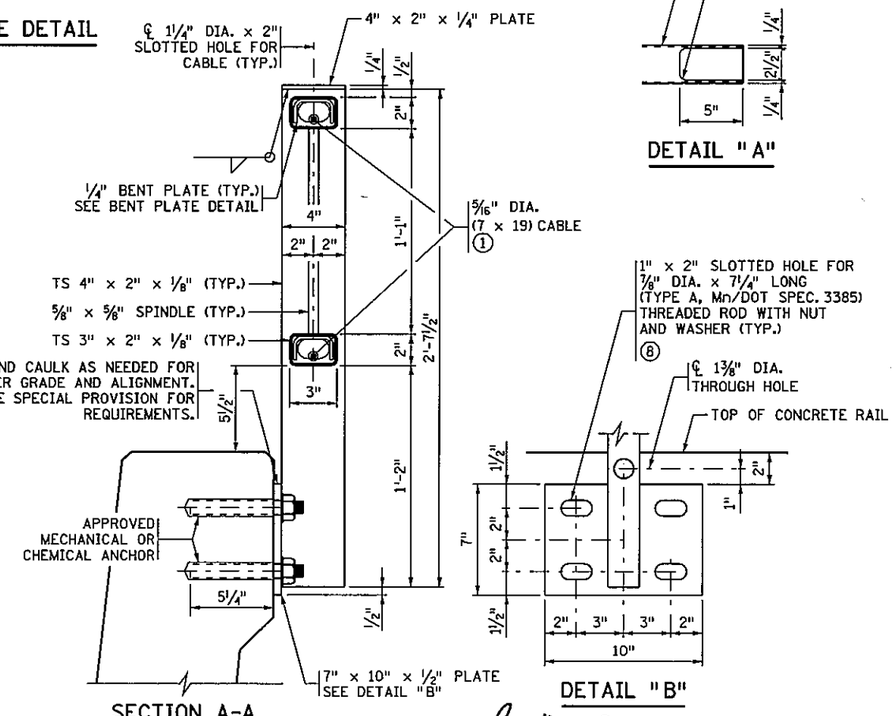
RAIL MEETS TEST LEVEL 4
REQUIREMENTS OF NCHRP REPORT 350.



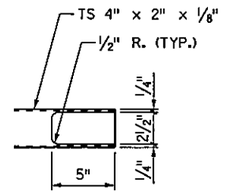
CABLE ANCHOR PLATE DETAIL



BENT PLATE DETAIL

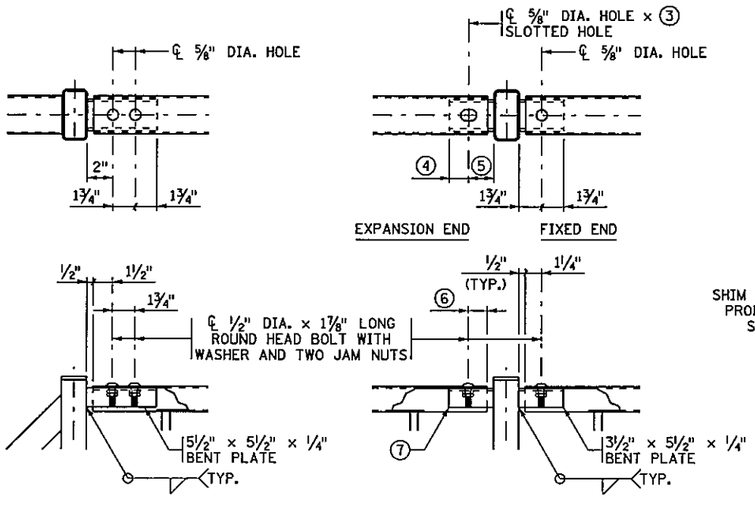


SECTION A-A



DETAIL "A"

DETAIL "B"



END RAILPOST DETAIL

TOP AND BOTTOM RAIL
CONNECTIONS ARE SIMILAR

INTERMEDIATE RAILPOST DETAIL

TOP AND BOTTOM RAIL
CONNECTIONS ARE SIMILAR

GENERAL NOTES

SEE CONCRETE RAILING SHEET FOR DETAILS, RAILPOST SPACING AND PAYMENT.

LENGTH OF "STRUCTURAL TUBE RAILING (DESIGN T-2)" FOR PAYMENT SHALL BE MEASURED BETWEEN THE OUTSIDE FACES OF THE CONCRETE RAIL.

ALL STRUCTURAL STEEL TUBING IN THE RAIL SHALL BE A500, GRADE B.

ALL STRUCTURAL STEEL MATERIAL SHALL COMPLY WITH Mn/DOT SPEC. 3306.

RAILPOSTS AND SPINDLES SHALL BE NORMAL TO GRADE.

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

RAILING SHALL BE GROUNDED WITH ⅝" DIA. COPPER ROD AS PER Mn/DOT SPEC. 2557.

GALVANIZE THREADED RODS, BOLTS, NUTS AND WASHERS PER Mn/DOT SPEC. 3392.

GALVANIZE ALL OTHER STRUCTURAL STEEL PER Mn/DOT SPEC. 3394 AFTER FABRICATION.

ALL RAILING MEMBERS SHALL BE STRAIGHT AFTER FABRICATION AND GALVANIZING TO WITHIN ⅛" IN 10 FT. BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

ALL STRUCTURAL STEEL AND EXPOSED BOLTS, NUTS AND WASHERS ARE TO BE PAINTED AFTER GALVANIZING IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

① CABLE WEDGE END FITTING FORGED SERIES -- STUD SOCKET ASSEMBLY. UNC ½" x 9" THREAD FOR 5/16" DIA. (7 x 19) CABLE. MAY BE HELPFUL TO USE SPECIAL ASSEMBLY KIT TOOLS.

② IF ONLY ONE TURNBUCKLE IS USED PER CABLE, LOCATE ONE OF THESE SHOWN AT OTHER END OF WALL.

③ 1¼" (AT TYP. EXP. END) OR 3" (AT EXP. END AT EXPANSION JOINT)

④ 1½" (AT TYP. EXP. END) OR 2½" (AT EXP. END AT EXPANSION JOINT)

⑤ 2" (AT TYP. EXP. END) OR 3" (AT EXP. END AT EXPANSION JOINT)

⑥ 1½" (AT TYP. EXP. END) OR 2½" (AT EXP. END AT EXPANSION JOINT)

⑦ 3½" x 5½" x 3/16" BENT PLATE (AT TYP. EXP. END)
5½" x 5½" x 3/16" BENT PLATE (AT EXP. END AT EXPANSION JOINT)

⑧ MINIMUM ULTIMATE PULLOUT STRENGTH OF 31,000 LBS. EACH.

REVISED:

APPROVED: OCTOBER 29, 2004
Daniel J. Peterson
STATE BRIDGE ENGINEER

CERTIFIED BY Scott A. Pierson 11/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

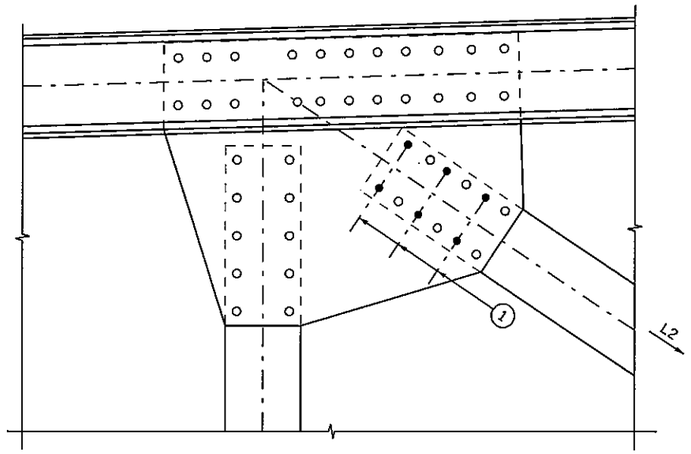
TITLE: STRUCTURAL TUBE RAILING (DESIGN T-2)
AND CONC. RAILING (TYPE F) OR CONC. PARAPET (TYPE P-1)

DES: SAP	DR: GRF	APPROVED:
CHK: DJD/GFA	CHK: JJL	1-12-10

FIG. 5-397.158 MOD.

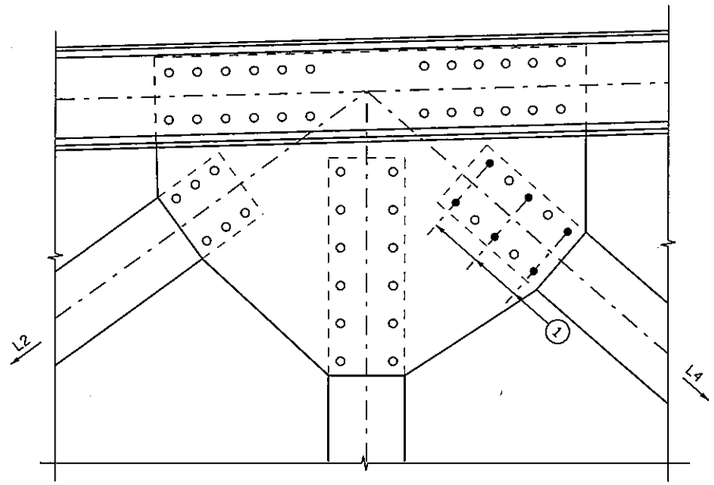
SHEET NO. 8 OF 19 SHEETS

BRIDGE NO. 6347



JOINT U1, U'1*

48 BOLTS REQUIRED
FOR FOUR JOINTS



JOINT U3, U'3*

48 BOLTS REQUIRED
FOR FOUR JOINTS

SUMMARY OF QUANTITIES FOR TYPE 1 REPAIR

A325 BOLT ¾"Ø x 2½" LONG, WASHER AND NUT

LOCATION	QUANTITY
JT U1 (INT. & EXT. FACES) SPAN 5	24
JT U'1 (INT. & EXT. FACES) SPAN 1	24
JT U3 (INT. & EXT. FACES) SPAN 5	24
JT U'3 (INT. & EXT. FACES) SPAN 1	24
JT L4 (INT. FACE) SPAN 5	42
JT L4 (EXT. FACE) SPAN 5	48
JT L'4 (INT. FACE) SPAN 1	42
JT L'4 (EXT. FACE) SPAN 1	48
JT L2 (INT. & EXT. FACES) SPAN 5	60
JT L2' (INT. & EXT. FACES) SPAN 1	60
SUB TOTAL	396

A325 BOLT ¾"Ø x 2¾" LONG, WASHER AND NUT

LOCATION	QUANTITY
JT L4 (INT. FACE) SPAN 5	6
JT L'4 (INT. FACE) SPAN 1	6
SUB TOTAL	12

A325 BOLT ¾"Ø x 3" LONG, WASHER AND NUT

LOCATION	QUANTITY
JT L2 (INT. & EXT. FACES) SPAN 5	6
JT L2' (INT. & EXT. FACES) SPAN 1	6
SUB TOTAL	12

A325 BOLT ¾"Ø x 3¼" LONG, WASHER AND NUT

LOCATION	QUANTITY
JT L2 (INT. FACE) SPAN 5	4
JT L'2 (INT. FACE) SPAN 1	4
SUB TOTAL	8
TOTAL	512

NOTES

UNLESS NOTED OTHERWISE RIVET REMOVED SHALL BE REPLACED WITH BOLT BEFORE PROCEEDING TO NEXT RIVET REMOVAL.

BOLTS SHALL COMPLY WITH MN/DOT SPEC. 3391.2B TYPE 3 AND BE GALVANIZED PER MN/DOT SPEC. 3392.

PAINT NEW MEMBERS AND BOLTS AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.

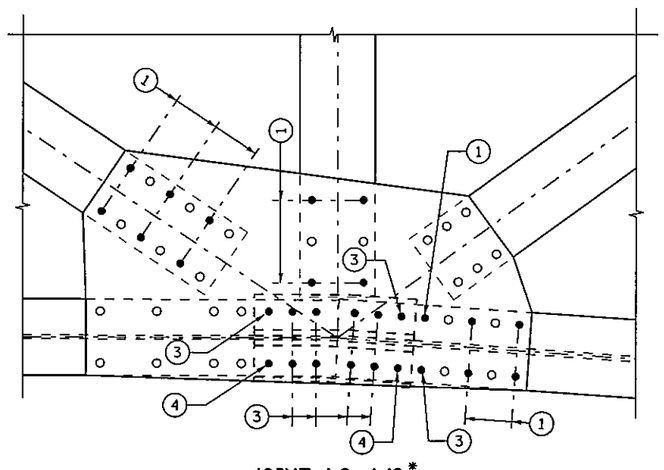
(1) REMOVE RIVET AND REPLACE WITH ¾"Ø A325 BOLT x 2½" LONG, WASHER AND NUT. EXTERIOR AND INTERIOR GUSSET PLATES.

(2) REMOVE RIVET AND REPLACE WITH ¾"Ø A325 BOLT x 2½" LONG, WASHER AND NUT. EXTERIOR FACE.
REMOVE RIVET AND REPLACE WITH ¾"Ø A325 BOLT x 2¾" LONG, WASHER AND NUT. INTERIOR FACE.

(3) REMOVE RIVET AND REPLACE WITH ¾"Ø A325 BOLT x 3" LONG, WASHER AND NUT. EXTERIOR AND INTERIOR GUSSET PLATES.

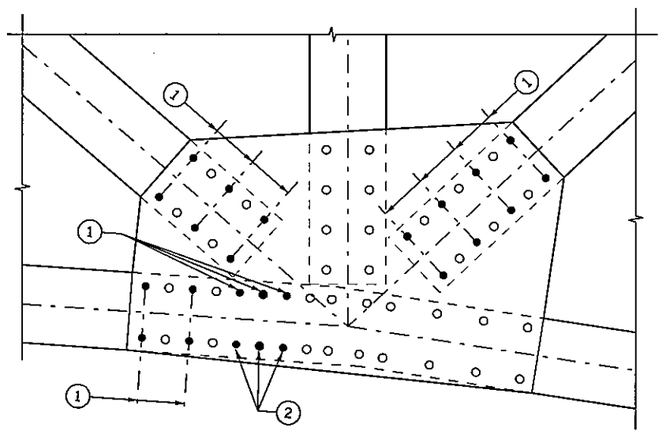
(4) REMOVE RIVET AND REPLACE WITH ¾"Ø A325 BOLT x 3" LONG, WASHER AND NUT. EXTERIOR FACE.
REMOVE RIVET AND REPLACE WITH ¾"Ø A325 BOLT x 3¼" LONG, WASHER AND NUT. INTERIOR FACE.

* EXTERIOR GUSSET PLATE SHOWN, INTERIOR GUSSET PLATE ALSO REPAIRED.



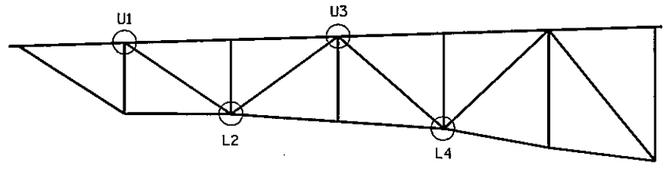
JOINT L2, L'2*

224 BOLTS REQUIRED
FOR FOUR JOINTS



JOINT L4, L'4*

192 BOLTS REQUIRED
FOR FOUR JOINTS



CERTIFIED BY Scott A. Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

TITLE: TYPE 1 REPAIRS @ SPAN 1 & 5

DES: SAP	DR: GRF	APPROVED: 1-12-10
CHK: DJD/GFA	CHK: JJL	

SHEET NO. 9 OF 19 SHEETS

BRIDGE NO. 6347

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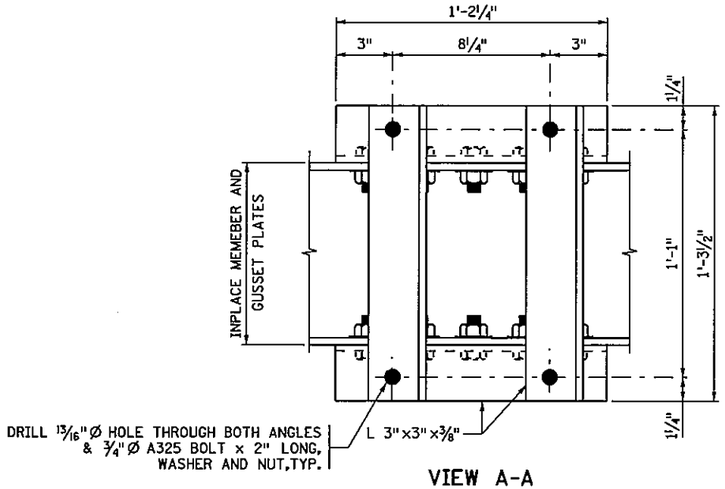
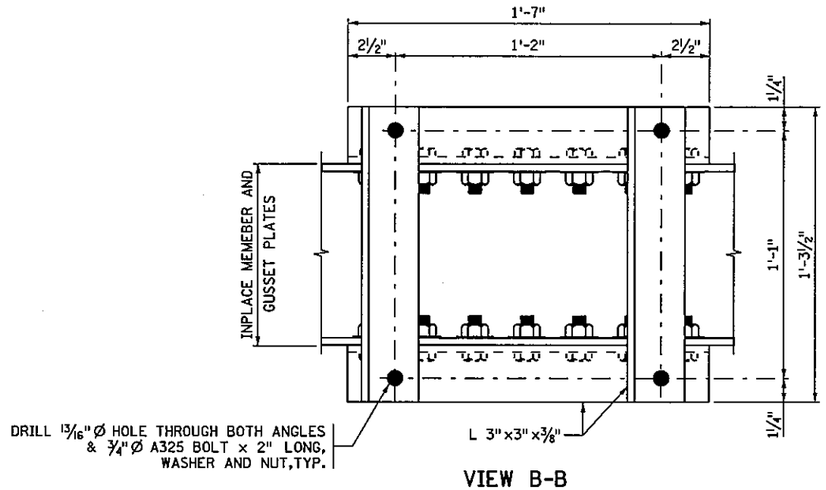


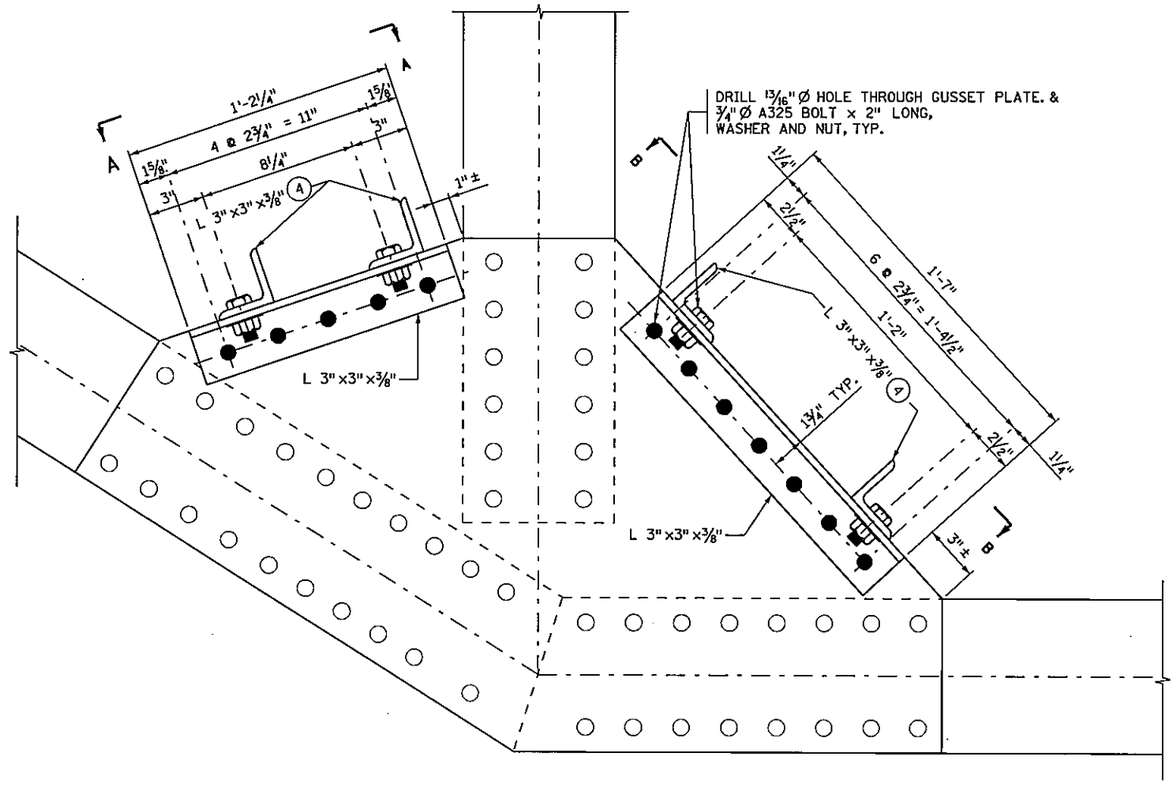
VIEW A-A

56 BOLTS REQUIRED FOR FOUR JOINTS



VIEW B-B

72 BOLTS REQUIRED FOR FOUR JOINTS



JOINT L1, L'1

SUMMARY OF QUANTITIES FOR TYPE 2 REPAIR

STRUCTURAL STEEL (3309)	320 POUND

A325 BOLT ¾"Ø x 2" LONG, WASHER AND NUT

LOCATION	QUANTITY
JT L1 (INT. & EXT. FACES) SPAN 5	64
JT L'1 (INT. & EXT. FACES) SPAN 1	64
TOTAL	128

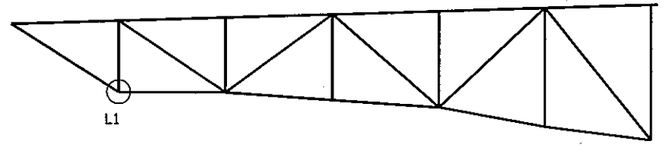
NOTES

BOLTS SHALL COMPLY WITH MN/DOT SPEC. 3391.2B TYPE 3 AND BE GALVANIZED PER MN/DOT SPEC. 3392.

PAINT NEW MEMBERS AND BOLTS AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.

INSTALLATION SEQUENCE

1. PREDRILL HOLES IN L 3x3x⅜ ANGLES THAT WILL BE BOLTED TO GUSSET PLATE.
2. ALIGN THE ANGLES ON THE GUSSET AS SHOWN AND USE AS TEMPLATE TO DRILL HOLES IN GUSSET PLATE.
3. BOLT ANGLES TO GUSSET PLATE.
4. ALIGN L 3x3x⅜ TOP BRACE AND DRILL HOLES AS REQUIRED. BOLT ANGLES TO ANGLES.



1/13/2010 6347_sh12.dgn

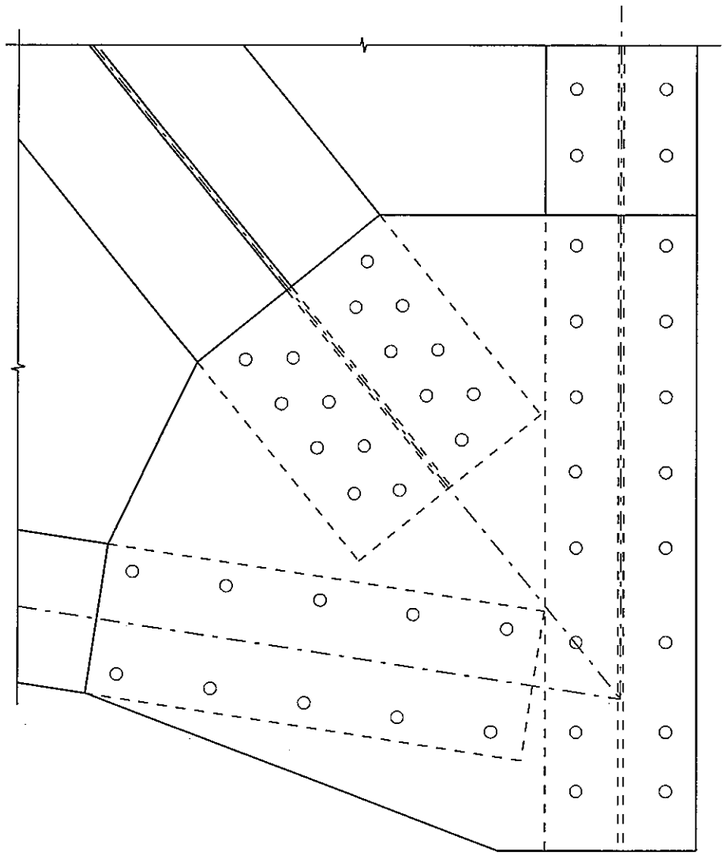
CERTIFIED BY Scott A Pierson 1/12/10 (LICENSED PROFESSIONAL ENGINEER / DATE)
NAME: SCOTT A. PIERSON LIC. NO. 22561

TITLE: TYPE 2 TRUSS REPAIRS @ SPANS 1 & 5

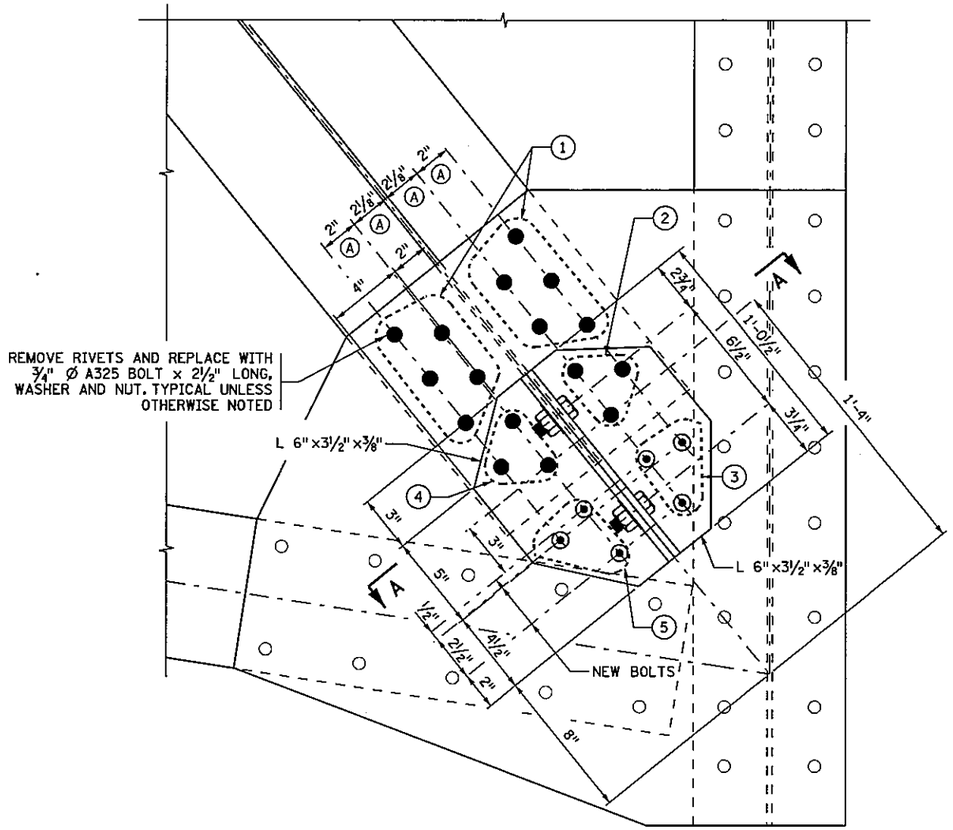
DES: SAP | DR: GRF | APPROVED: 1-12-10
CHK: DJD/GFA | CHK: JJL

SHEET NO. 10 OF 19 SHEETS

BRIDGE NO. 6347

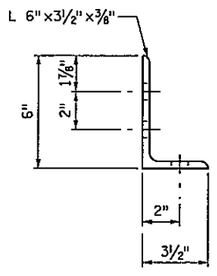


INPLACE JOINTS L6, L'6 @ SPANS 1 & 5

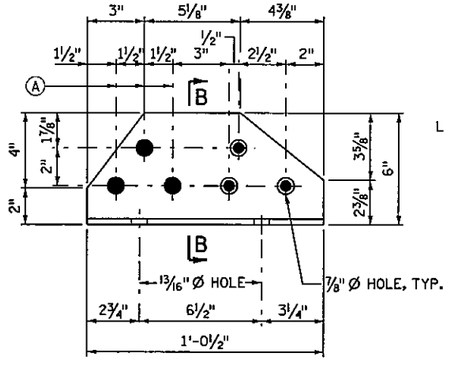


PROPOSED JOINTS L6, L'6 @ SPANS 1 & 5 L6, L'6

192 BOLTS REQUIRED

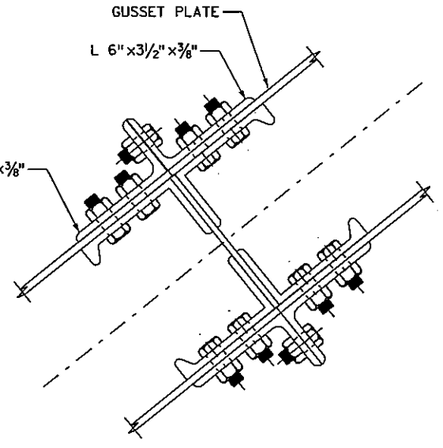


SECTION B-B



CLIPPED ANGLE (6"x3½"x⅜")

8 THUS & 8 MIRROR IMAGE



SECTION A-A

SUMMARY OF QUANTITIES FOR TYPE 3 REPAIR

STRUCTURAL STEEL (3309 FOR L6x3½"x3/8")	200 POUND

A325 BOLT ¾"Ø x 2½" LONG, WASHER AND NUT

LOCATION	QUANTITY
JT L6 (INT. & EXT. FACES) SPAN 5	48
JT L'6 (INT. & EXT. FACES) SPAN 1	48

A325 BOLT ¾"Ø x 2" LONG, WASHER AND NUT

LOCATION	QUANTITY
JT L6 (INT. & EXT. FACES) SPAN 5	48
JT L'6 (INT. & EXT. FACES) SPAN 1	48
TOTAL	192

NOTES

UNLESS NOTED OTHERWISE RIVET REMOVED SHALL BE REPLACED WITH BOLT BEFORE PROCEEDING TO NEXT RIVET REMOVAL.

BOLTS SHALL COMPLY WITH MN/DOT SPEC. 3391.2B TYPE 3 AND BE GALVANIZED PER MN/DOT SPEC. 3392.

PAINT NEW MEMBERS AND BOLTS AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.

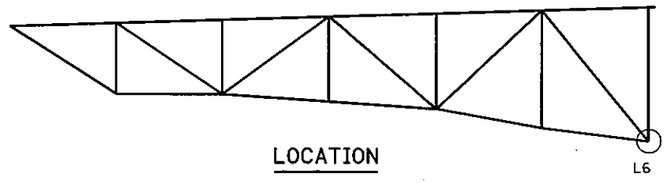
(A) VERIFY DIMENSIONS BEFORE FABRICATING ANGLES.

INSTALLATION SEQUENCE

1. IN AREA (1) REMOVE EACH RIVET AND REPLACE WITH ¾"Ø . X 2" LONG A325 BOLT, WASHER & NUT. EACH RIVET REMOVED SHALL BE REPLACED WITH A BOLT BEFORE PROCEEDING TO THE NEXT RIVET REMOVAL.
2. REMOVE THE RIVETS IN AREA (2).
3. FIELD DRILL IN GUSSET PLATE THE NEW 13/16"Ø HOLES IN AREA (3). USING CLIPPED ANGLE AS TEMPLATE TO SCRIBE HOLE LOCATION..
4. CLEAN FAYING SURFACES OF GUSSET AND CLIPPED ANGLE, REMOVE DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
5. INSTALL CLIPPED ANGLES BY REPLACING REMOVED RIVETS WITH ¾" Ø X 2½" LONG A325 BOLT, WASHER & NUT AT AREA (2) AND ¾"Ø X 2" LONG A325 BOLT, WASHER AND NUT AT AREA (3).
6. REMOVE THE RIVETS IN AREA (4).
7. FIELD DRILL IN GUSSET PLATE THE NEW 13/16"Ø HOLES IN AREA (5) USING CLIPPED ANGLE AS TEMPLATE TO SCRIBE HOLE LOCATION.
8. CLEAN FAYING SURFACES OF GUSSET AND CLIPPED ANGLE, REMOVE DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
9. INSTALL CLIPPED ANGLES BY REPLACING REMOVED RIVETS WITH ¾"Ø X 2½" LONG A325 BOLT, WASHER & NUT AT AREA (4) AND ¾" Ø X 2" LONG A325 BOLT, WASHER AND NUT AT AREA (5).
10. PAINT AFFECTED GUSSET PLATES SURFACES, NEW ANGLES AND BOLTS, AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.

SYMBOLS

- ● REMOVE RIVETS AND ADD NEW BOLTS, AS IN STEPS (1), (2) (3) & (5).
- ⊙ DRILL GUSSET AND ADD NEW BOLTS, AS IN STEPS (4) & (6).



LOCATION

1/13/2010 6347_s12.dgn

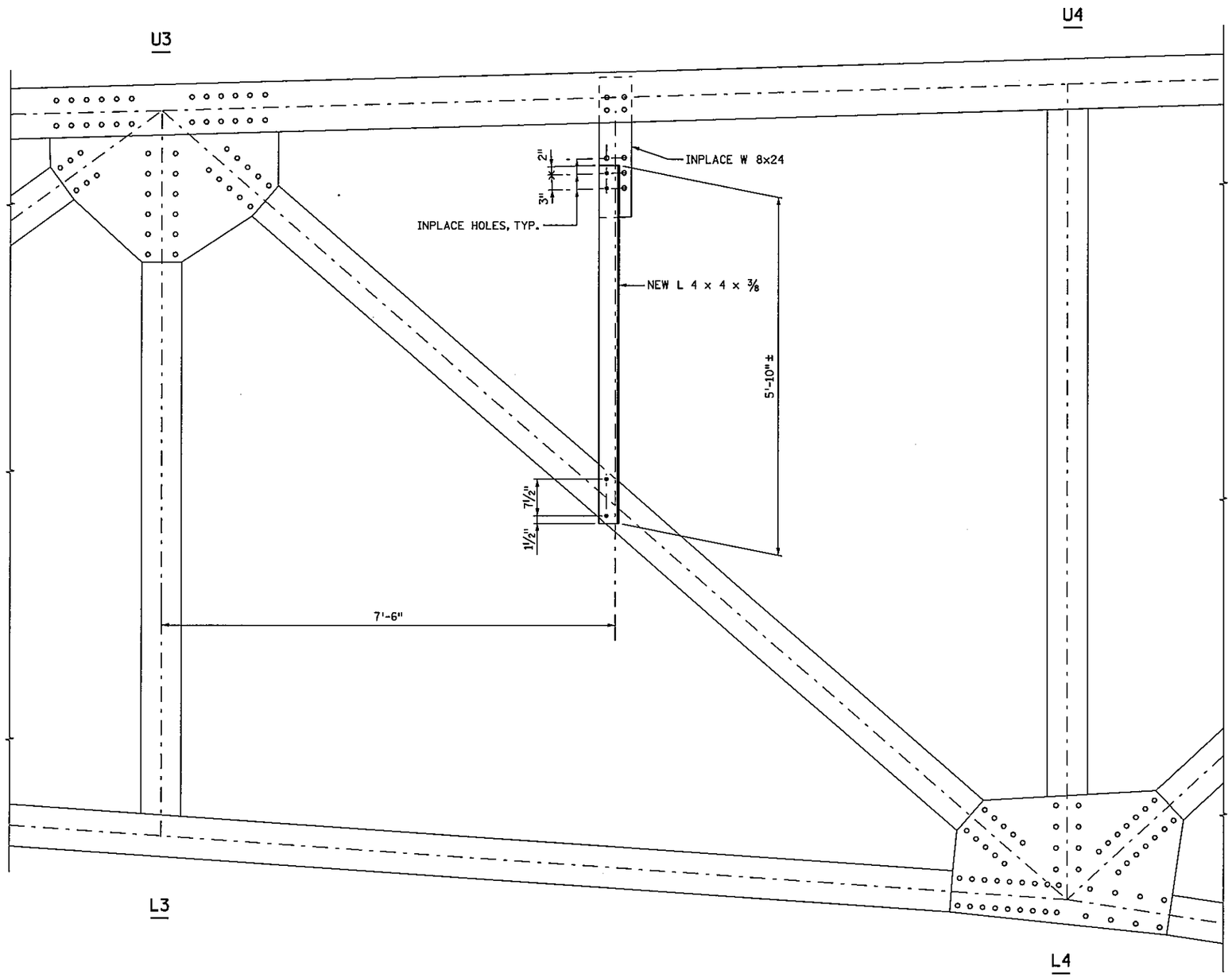
CERTIFIED BY S. A. Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

TITLE: TYPE 3 TRUSS REPAIRS @ SPAN 1 & 5

DES: SAP	DR: GRF	APPROVED: 1-12-10
CHK: DJD/GFA	CHK: JJL	

SHEET NO. 11 OF 19 SHEETS

BRIDGE NO. 6347



JOINT U3 - L4, U'3 - L'4

(4 ANGLES AND 16 BOLTS REQUIRED FOR 4 LOCATIONS)

SUMMARY OF QUANTITIES FOR TYPE 5 REPAIR

②	STRUCTURAL STEEL (3309)	240 POUND
①	A325 BOLT ¾"Ø x 2" LONG, WASHER AND NUT	

LOCATION	QUANTITY
U3 - L4 (INT. & EXT. FACES) SPAN 5	8
U'3 - L'4 (INT. & EXT. FACES) SPAN 1	8
TOTAL	16

NOTES

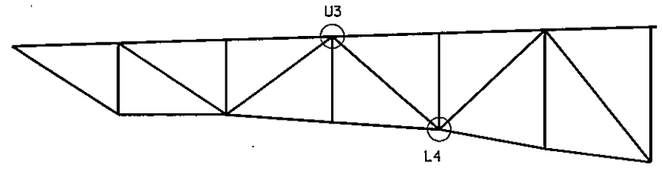
UNLESS NOTED OTHERWISE RIVET REMOVED SHALL BE REPLACED WITH BOLT BEFORE PROCEEDING TO NEXT RIVET REMOVAL.

HARDWARE TO BE GALVANIZED PER MN/DOT SPEC. 3392. SEE SPECIAL PROVISIONS.

TO BE GALVANIZED PER MN/DOT SPEC. 3394. SEE SPECIAL PROVISIONS.

INSTALLATION SEQUENCE

1. USE EXISTING HOLES BY CHECKING THE BOLT HOLE FOR ¾" Ø NEW BOLTS.
2. PREDRILL SLOTTED BOLT HOLES AT THE TOP OF NEW ANGLE MEMBER THAT WILL FIT THE INPLACE BOLT HOLES ON THE INPLACE W 8x24 STUD. PREDRILL TWO STD BOLT HOLES AT THE BOTTOM OF NEW ANGLE MEMBER
3. FIELD DRILL THE BOLT HOLES OF THE EXTERIOR FLANGE OF THE DIAGONAL MEMBER, U3 - L4 OR U'3 - L'4 WITH ADEQUATE EDGE DISTANCE OR 1¼" MIN. FOR BOLT HOLES.
4. CLEAN ALL AFFECTED SURFACE OF MEMBERS & PLATES. TIE BOLTS TO CONNECT NEW L 4x4 ANGLE TO OUTSIDE FACE OF TRUSS MEMBERS.
5. PAINT NEW MEMBERS AND BOLTS AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.



1/13/2010 6347_sl2.dgn

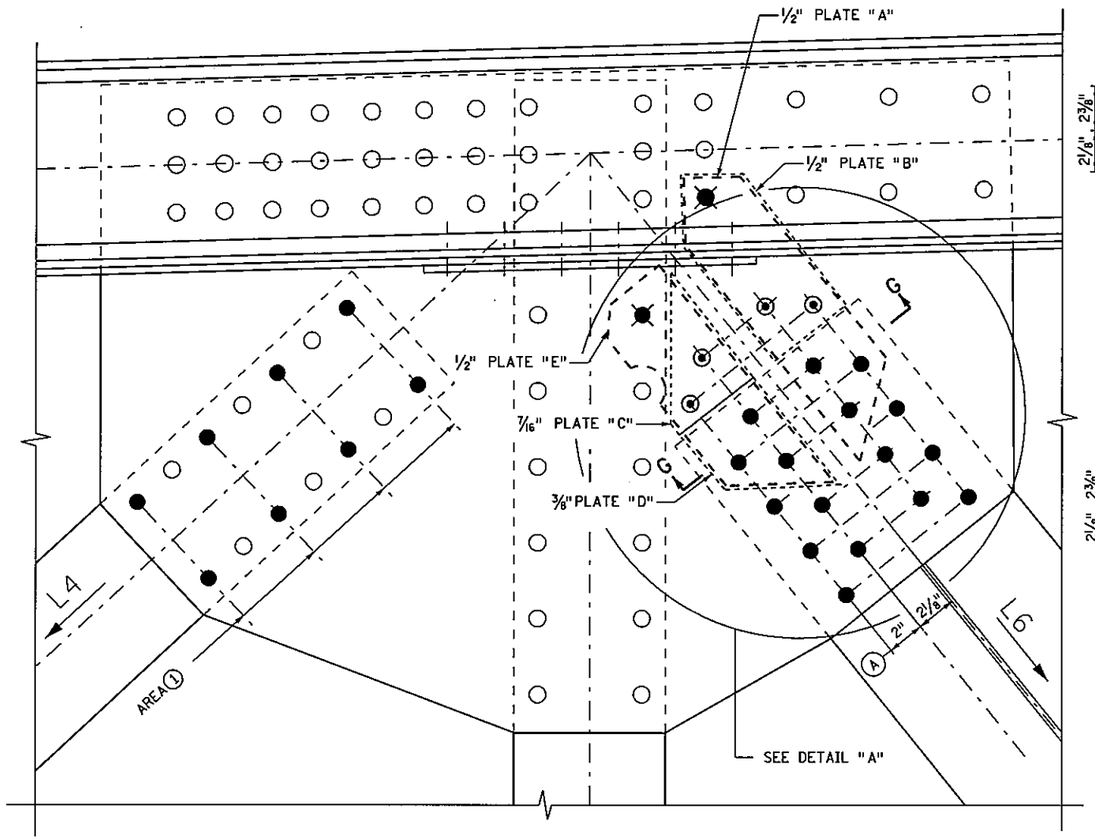
CERTIFIED BY [signature] 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

TITLE: TYPE 4 TRUSS REPAIRS @ SPANS 1 & 5

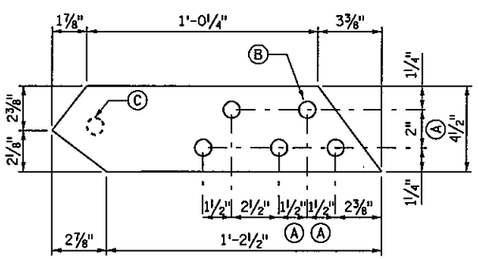
DES: SAP	DR: GRF	APPROVED:
CHK: DJD/GFA	CHK: JJL	1-12-10

SHEET NO. 12 OF 19 SHEETS

BRIDGE NO. 6347



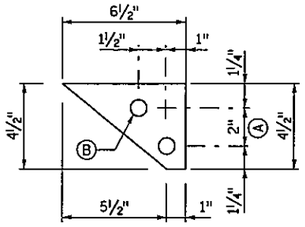
JOINT U5 @ SPAN 5



½" PLATE "A"

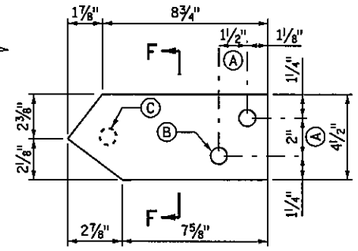
(B) 13/16"Ø HOLE, TYP.

(C) FIELD DRILL THIS HOLE



7/16" PLATE "C"

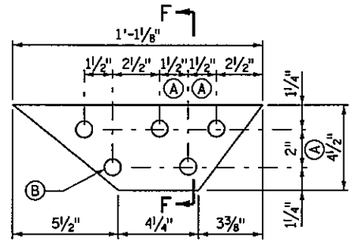
(B) 13/16"Ø HOLE, TYP.



7/16" PLATE "B"

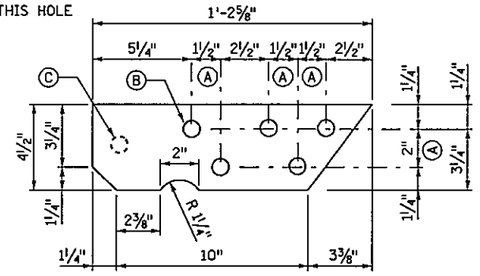
(B) 13/16"Ø HOLE, TYP.

(C) FIELD DRILL THIS HOLE



⅜" PLATE "D"

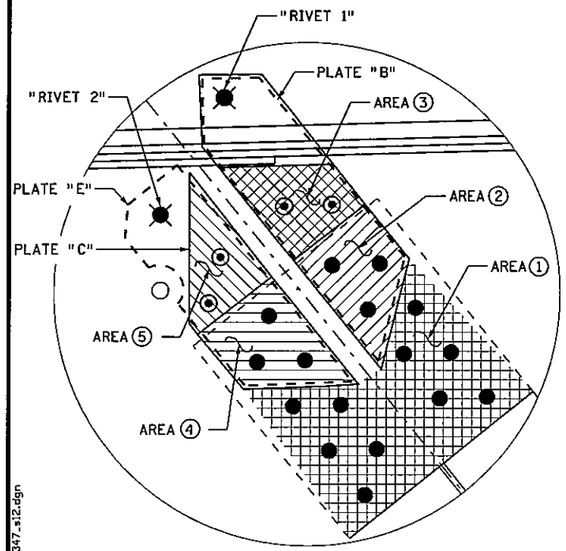
(B) 13/16"Ø HOLE, TYP.



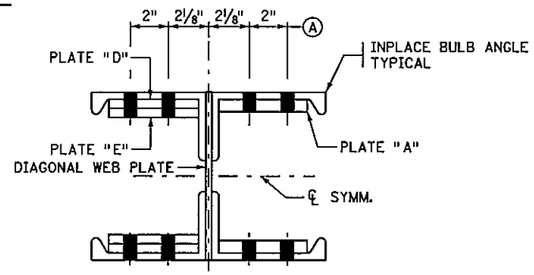
½" PLATE "E"

(B) 13/16"Ø HOLE, TYP.

(C) FIELD DRILL THIS HOLE

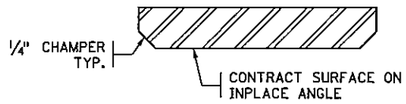


DETAIL "A"



SECTION G-G

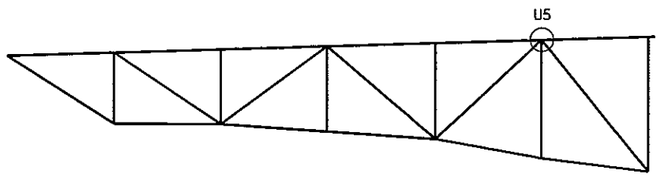
(ALL NEW BOLTS TO BE ¾"Ø .)



SECTION F-F

SYMBOLS

- ● REMOVE RIVETS AND NEW BOLTS
- ⊙ DRILL GUSSET AND NEW BOLTS.
- ✱ REMOVE RIVETS AND DRILL PLATES "C","D" AND "E" AND NEW BOLTS.



NOTES

UNLESS NOTED OTHERWISE RIVET REMOVED SHALL BE REPLACED WITH BOLT BEFORE PROCEEDING TO NEXT RIVET REMOVAL.

(A) VERIFY DIMENSIONS BEFORE FABRICATING PLATES.

SEE SPECIAL PROVISIONS FOR COATING REQUIREMENTS.

INSTALLATION SEQUENCE

1. IN AREA (1) REMOVE EACH RIVET AND REPLACE WITH ¾"Ø . X 2½" LONG A325 BOLT, WASHER & NUT. EACH RIVET REMOVED SHALL BE REPLACED WITH A BOLT BEFORE PROCEEDING TO THE NEXT RIVET REMOVAL.
2. REMOVE THE THREE RIVETS IN AREA (2) INPLACE CHANNEL.
3. USE A TEMPLATE THAT WILL NOT INTERFERE WITH FIELD DRILL IN GUSSET PLATE THE TWO NEW ⅞"Ø HOLES IN AREA (3). THIS TEMPLATE IS NOT SHOWN IN THIS SHEET AND WILL BE INCIDENTAL.
4. REMOVE THE RIVET INDICATED "RIVET 1".
5. ALIGN PLATE "A" ON INSIDE OF JOINT & SCRIBE LOCATION OF "RIVET 1" & FIELD DRILL 13/16"Ø HOLE IN PLATE "A" AND PLATE "B".
6. CLEAN FAYING SURFACES OF GUSSET AND PLATE "A" AND PLATE "B". REMOVE DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
7. INSTALL PLATES "A" AND "B" BY REPLACING REMOVED RIVETS WITH ¾" Ø X 3" LONG A325 BOLT, WASHER & NUT AT AREA (2) AND ¾"Ø X 3" LONG A325 BOLT, WASHER AND NUTS AT AREA (3).
8. REPLACE "RIVET 1" WITH ¾"Ø X 2½" LONG A325 BOLT, WASHER & NUT.
9. REMOVE THE THREE RIVETS IN AREA (4).
10. USE PLATE "D" TO SCRIBE AND LOCATE TWO NEW 13/16"Ø HOLES IN AREA (5).
11. DRILL IN GUSSET PLATE THE NEW TWO 13/16"Ø HOLES IN AREA (5).
12. REMOVE THE RIVET INDICATED "RIVET 2".
13. ALIGN PLATE "E" ON THE INSIDE OF JOINT AND SCRIBE ON PLATE "E" LOCATION OF "RIVET 2". FIELD DRILL A 13/16"Ø HOLE IN PLATE "E".
14. CLEAN FAYING SURFACES OF GUSSET AND PLATE "E". REMOVE DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
15. INSTALL PLATES "C","D" AND "E" BY REPLACING REMOVED RIVETS WITH ¾"Ø X 2½" LONG A325 BOLT, WASHER & NUT AT AREA (3) AND ¾"Ø X 3" LONG A325 BOLT, WASHER AND NUTS AT AREA (4).
16. REPLACE "RIVET 2" WITH ¾"Ø X 3" LONG A325 BOLT, WASHER & NUT.
17. PAINT NEW MEMBERS AND BOLTS AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.

CERTIFIED BY Scott A. Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

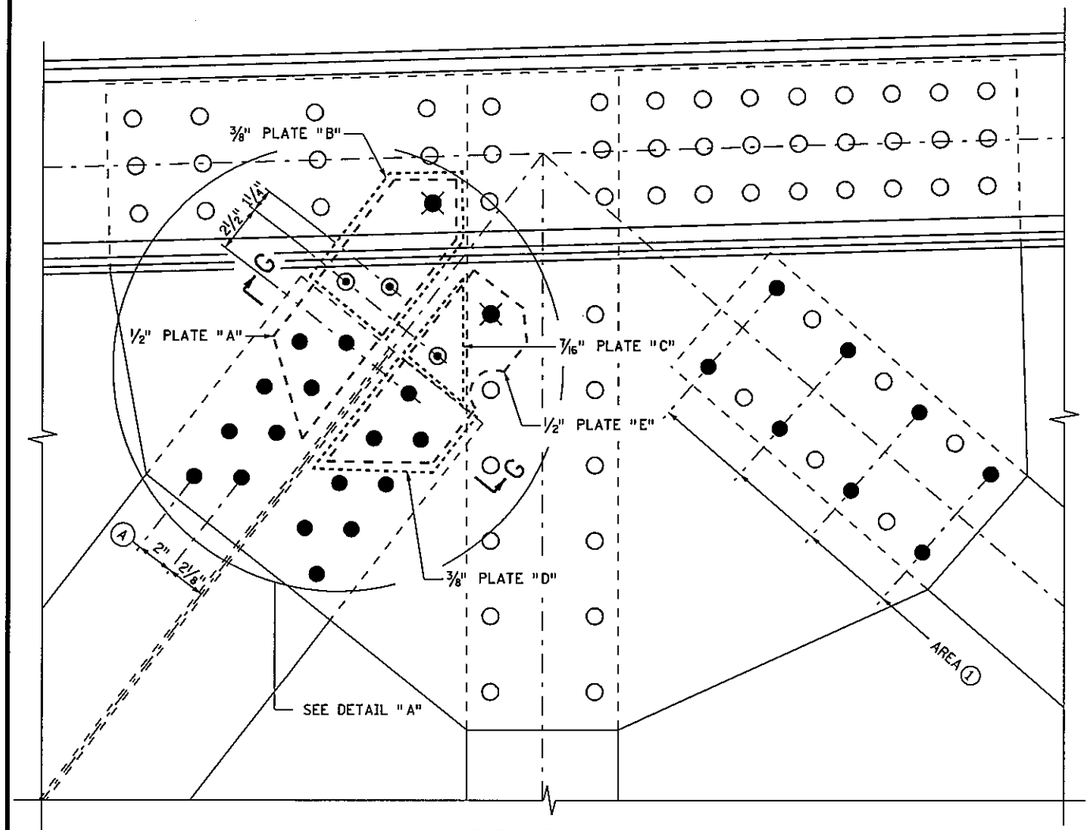
TITLE: TYPE 5 TRUSS REPAIRS @ SPAN 5

DES: SAP	DR: GRF	APPROVED: 1-12-10
CHK: DJD/GFA	CHK: JJL	

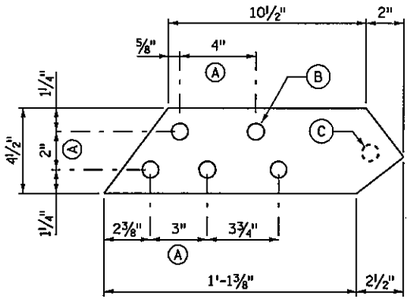
SHEET NO. 13 OF 19 SHEETS

BRIDGE NO. 6347

1/13/2010 6347_s12.dgn

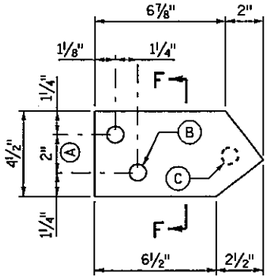


JOINT U'5 ℄ SPAN 1



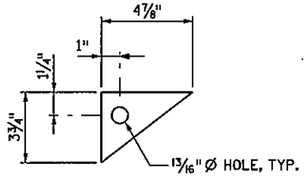
½" PLATE "A"

(B) 13/16"Ø HOLE, TYP.
(C) FIELD DRILL THIS HOLE

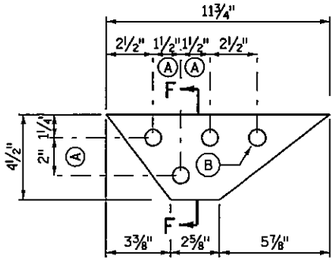


7/16" PLATE "B"

(B) 13/16"Ø HOLE, TYP.
(C) FIELD DRILL THIS HOLE

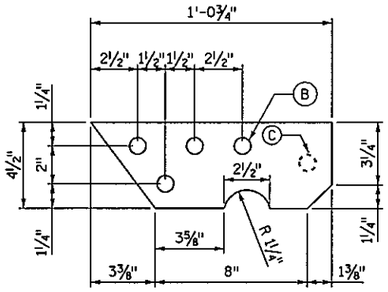


7/16" PLATE "C"



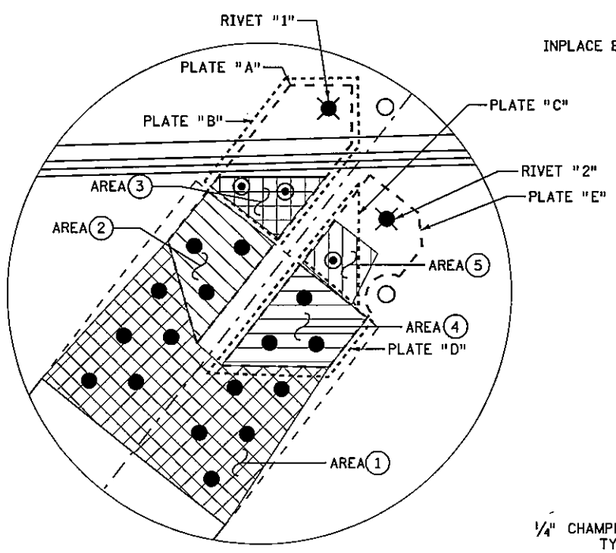
3/8" PLATE "D"

(B) 13/16"Ø HOLE, TYP.

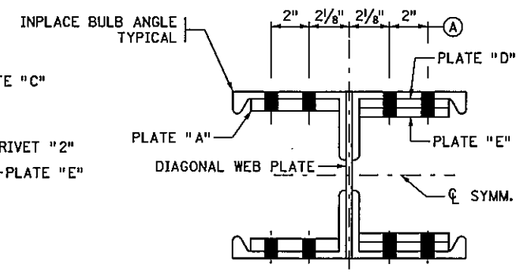


½" PLATE "E"

(B) 13/16"Ø HOLE, TYP.
(C) FIELD DRILL THIS HOLE

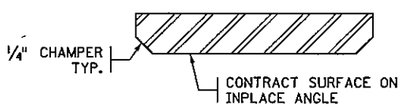


DETAIL "A"



SECTION G-G

(ALL NEW BOLTS TO BE ¾"Ø.)



SECTION F-F

SUMMARY OF QUANTITIES FOR TYPE 5 TRUSS REPAIR ℄ U5, U'5

STRUCTURAL STEEL (3309)	150 POUND
A325 BOLT ¾"Ø x 2½" LONG, WASHER AND NUT	
LOCATION	QUANTITY
JT U5 (INT. & EXT. FACES) SPAN 5	72
JT U'5 (INT. & EXT. FACES) SPAN 1	72
A325 BOLT ¾"Ø x 3" LONG, WASHER AND NUT	
JT U5 (INT. & EXT. FACES) SPAN 5	48
JT U'5 (INT. & EXT. FACES) SPAN 1	44
TOTAL	236

NOTES

UNLESS NOTED OTHERWISE RIVET REMOVED SHALL BE REPLACED WITH BOLT BEFORE PROCEEDING TO NEXT RIVET REMOVAL.

(A) VERIFY DIMENSIONS BEFORE FABRICATING PLATES.

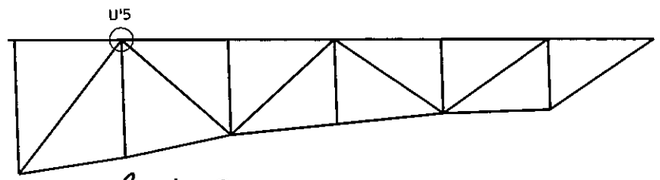
SEE SPECIAL PROVISIONS FOR COATING REQUIREMENTS.

INSTALLATION SEQUENCE

1. IN AREA (1) REMOVE EACH RIVET AND REPLACE WITH ¾"Ø. X 2½" LONG A325 BOLT, WASHER & NUT. EACH RIVET REMOVED SHALL BE REPLACED WITH A BOLT BEFORE PROCEEDING TO THE NEXT RIVET REMOVAL.
2. REMOVE THE THREE RIVETS IN AREA (2) INPLACE CHANNEL.
3. USE A TEMPLATE THAT WILL NOT INTERFERE WITH FIELD DRILL IN GUSSET PLATE THE TWO NEW ⅞"Ø HOLES IN AREA (3). THIS TEMPLATE IS NOT SHOWN IN THIS SHEET AND WILL BE INCIDENTAL.
4. REMOVE THE RIVET INDICATED "RIVET 1".
5. ALIGN PLATE "A" ON INSIDE OF JOINT & SCRIBE LOCATION OF "RIVET 1" & FIELD DRILL 13/16"Ø HOLE IN PLATE "A" AND PLATE "B".
6. CLEAN FAYING SURFACES OF GUSSET AND PLATE "A" AND PLATE "B". REMOVE DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
7. INSTALL PLATES "A" AND "B" BY REPLACING REMOVED RIVETS WITH ¾"Ø X 3" LONG A325 BOLT, WASHER & NUT AT AREA (2) AND ¾"Ø X 3" LONG A325 BOLT, WASHER AND NUTS AT AREA (3).
8. REPLACE "RIVET 1" WITH ¾"Ø X 2½" LONG A325 BOLT, WASHER & NUT.
9. REMOVE THE THREE RIVETS IN AREA (4).
10. USE PLATE "D" TO SCRIBE AND LOCATE TWO NEW 13/16"Ø HOLES IN AREA (5).
11. DRILL IN GUSSET PLATE THE NEW TWO 13/16"Ø HOLES IN AREA (5).
12. REMOVE THE RIVET INDICATED "RIVET 2".
13. ALIGN PLATE "E" ON THE INSIDE OF JOINT AND SCRIBE ON PLATE "E" LOCATION OF "RIVET 2". FIELD DRILL A 13/16"Ø HOLE IN PLATE "E".
14. CLEAN FAYING SURFACES OF GUSSET AND PLATE "E". REMOVE DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
15. INSTALL PLATES "C", "D" AND "E" BY REPLACING REMOVED RIVETS WITH ¾"Ø X 2½" LONG A325 BOLT, WASHER & NUT AT AREA (3) AND ¾"Ø X 3" LONG A325 BOLT, WASHER AND NUTS AT AREA (4).
16. REPLACE "RIVET 2" WITH ¾"Ø X 3" LONG A325 BOLT, WASHER & NUT.
17. PAINT NEW MEMBERS AND BOLTS AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.

SYMBOLS

- ● REMOVE RIVETS AND NEW BOLTS
- ⊙ DRILL GUSSET AND NEW BOLTS.
- ✕ REMOVE RIVETS AND DRILL PLATES "C", "D" AND "E" AND NEW BOLTS.



CERTIFIED BY Scott A. Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

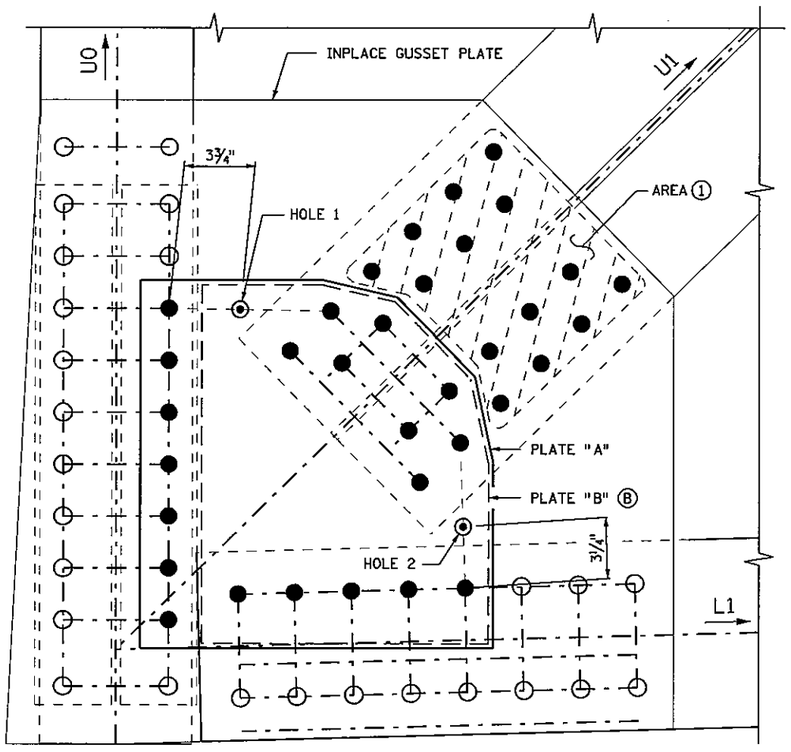
TITLE: TYPE 5 TRUSS REPAIRS ℄ SPAN 1

DES: SAP	DR: GRF	APPROVED: 1-12-10
CHK: DJD/GFA	CHK: JJL	

SHEET NO. 14 OF 19 SHEETS

BRIDGE NO. 6347

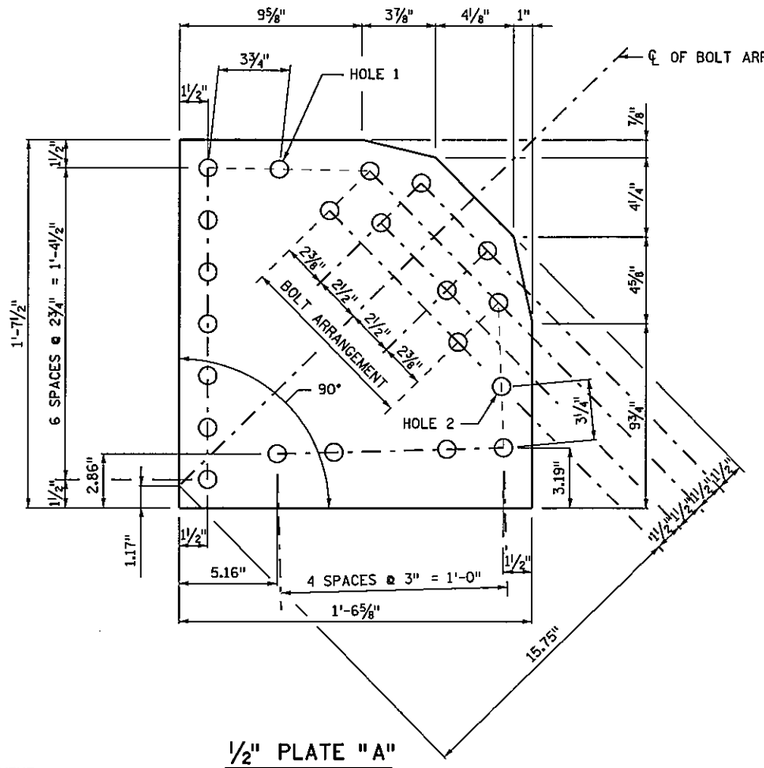
1/13/2010 6347_s12.dgn



JOINT LO SPAN 2, 3 &4

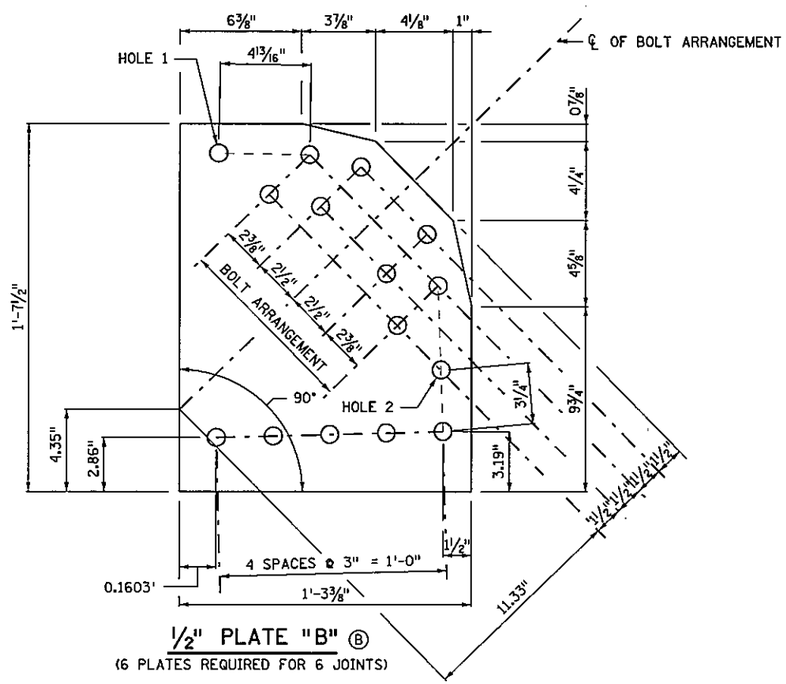
(OUTSIDE FACE SHOWN)

(492 BOLTS REQUIRED FOR 6 JOINTS)



½" PLATE "A"

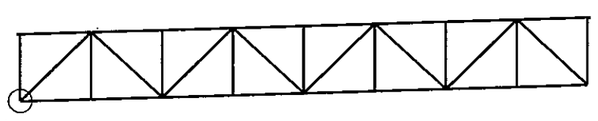
(12 PLATES REQUIRED FOR 6 JOINTS)



½" PLATE "B" (B)

(6 PLATES REQUIRED FOR 6 JOINTS)

DENOTES AREA 1



LO

SUMMARY OF QUANTITIES FOR TYPE 6 REPAIR

STRUCTURAL STEEL (3309)	3525 POUND

A325 BOLT ⅞"Ø x 2½" LONG, WASHER AND NUT

LOCATION	QUANTITY
JT LO (INT. & EXT. FACES) SPANS 2, 3 & 4	192
JT LO' (INT. & EXT. FACES) SPANS 2, 3 & 4	192

A325 BOLT ⅞"Ø x 3" LONG, WASHER AND NUT

JT LO (EXT. FACES) SPANS 2, 3 & 4	120
JT LO' (EXT. FACES) SPANS 2, 3 & 4	120

A325 BOLT ⅞"Ø x 3½" LONG, WASHER AND NUT

JT LO (EXT. FACES) SPANS 2, 3 & 4	120
JT LO' (EXT. FACES) SPANS 2, 3 & 4	120
TOTAL	864

INSTALLATION SEQUENCE

1. IN AREA (1) REMOVE EACH RIVET AND REPLACE WITH ⅞" Ø X 2½" LONG A325 BOLT, WASHER & NUT. EACH RIVET REMOVED SHALL BE REPLACED WITH A BOLT BEFORE PROCEEDING TO THE NEXT RIVET REMOVAL.
2. ON INTERIOR OF JOINT LOCATE HOLE 1 AND HOLE 2 AT THE INDICATED DISTANCE ALONG THE LINE AS FORMED BY THE ADJACENT BOLTS. FIELD DRILL 15/16" Ø HOLES AND CLEAN SURFACE OF DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
3. ONE AT A TIME REMOVE RIVETS THAT COINCIDE WITH PLATE "A". A TAPERED DRIFT PIN SHALL BE PLACED AT EACH RIVET REMOVED BEFORE PROCEEDING TO THE NEXT.
4. PLACE PLATE "A" ON TAPERED DRIFT PINS.
5. ONE AT A TIME REMOVE REMAINING RIVETS THAT COINCIDE WITH PLATE "B". A TAPERED DRIFT PIN SHALL BE PLACED AT EACH RIVET REMOVED BEFORE PROCEEDING TO THE NEXT.
6. PLACE PLATE "B" ON TAPERED DRIFT PINS.
7. ONE AT A TIME REPLACE EACH DRIFT PIN WITH ⅞" Ø BOLT, WASHER AND NUT.
8. ON EXTERIOR OF JOINT LOCATE HOLE 1 AND HOLE 2 AT THE INDICATED DISTANCE ALONG THE LINE AS FORMED BY THE ADJACENT BOLTS. FIELD DRILL 15/16" Ø HOLES AND CLEAN SURFACE OF DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
9. ONE AT A TIME REMOVE RIVETS THAT COINCIDE WITH PLATE "B". A TAPERED DRIFT PIN SHALL BE PLACED AT EACH RIVET REMOVED BEFORE PROCEEDING TO THE NEXT.
10. PLACE PLATE "B" ON TAPERED DRIFT PINS.
11. ONE AT A TIME REPLACE EACH DRIFT PIN WITH ⅞" Ø BOLT, WASHER AND NUT.
12. PAINT NEW PLATES AND BOLTS AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.

SYMBOLS

- ● **REMOVE RIVETS AND NEW BOLTS**
- ⊙ **DRILL GUSSET AND NEW BOLTS.**

NOTES:

UNLESS NOTED OTHERWISE RIVET REMOVED SHALL BE REPLACED WITH A BOLT BEFORE PROCEEDING TO NEXT RIVET REMOVAL.

(A) VERIFY DIMENSIONS BEFORE FABRICATING PLATES.

SEE SPECIAL PROVISIONS FOR COATING REQUIREMENTS.

(B) FOR INTERIOR GUSSET PLATE ONLY.

CERTIFIED BY Scott A. Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE

NAME: SCOTT A. PIERSON LIC. NO. 22561

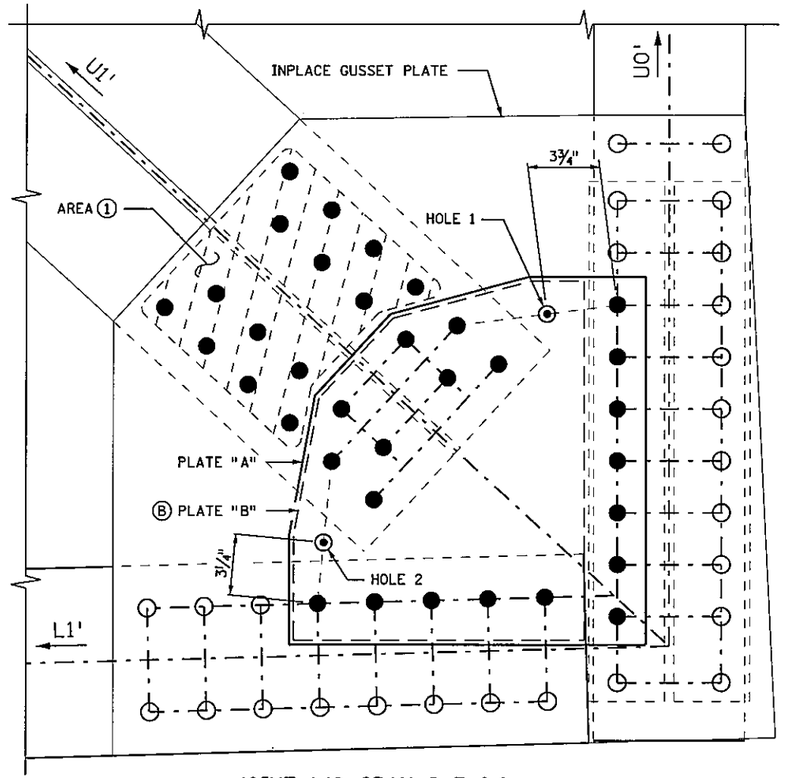
TITLE: TYPE 6 REPAIRS SPANS 2, 3 & 4

DES: S.A.P.	DR: L.A.B.	APPROVED:
CHK: D.J.D./G.F.A.	CHK: J.J.L.	1-12-10

SHEET NO. 15 OF 19 SHEETS

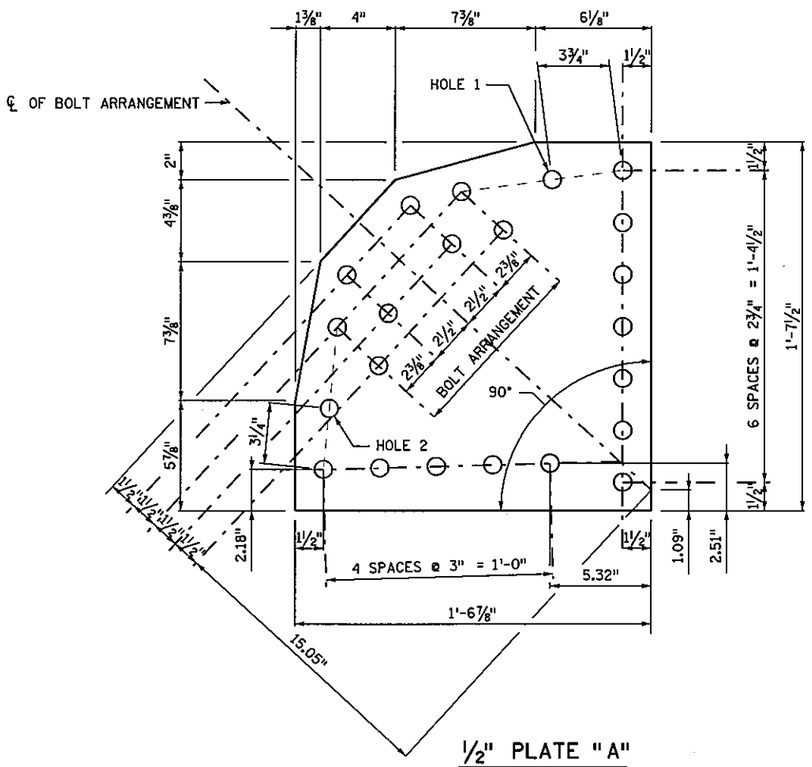
BRIDGE NO. 6347

1/13/2010 6347_LAB.DGN



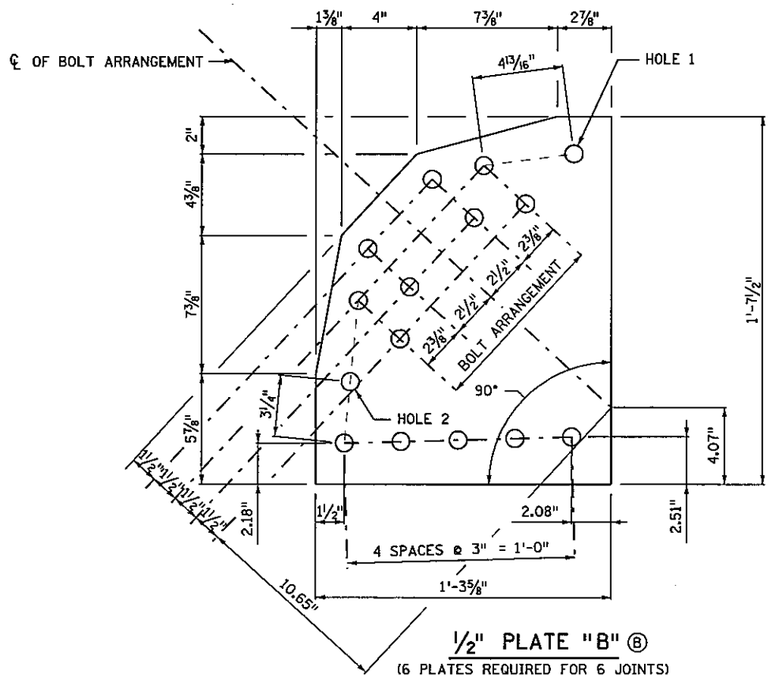
JOINT L'0 SPAN 2, 3 &4

(OUTSIDE FACE SHOWN)
(492 BOLTS REQUIRED FOR 6 JOINTS)



½" PLATE "A"

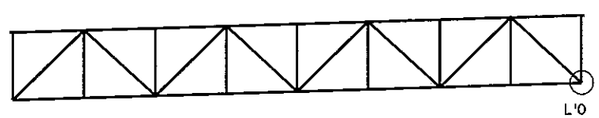
(12 PLATES REQUIRED FOR 6 JOINTS)



½" PLATE "B" (B)

(6 PLATES REQUIRED FOR 6 JOINTS)

DENOTES AREA 1



INSTALLATION SEQUENCE

1. IN AREA (1) REMOVE EACH RIVET AND REPLACE WITH ⅞" Ø X 2½" LONG A325 BOLT, WASHER & NUT. EACH RIVET REMOVED SHALL BE REPLACED WITH A BOLT BEFORE PROCEEDING TO THE NEXT RIVET REMOVAL.
2. ON INTERIOR OF JOINT LOCATE HOLE 1 AND HOLE 2 AT THE INDICATED DISTANCE ALONG THE LINE AS FORMED BY THE ADJACENT BOLTS. FIELD DRILL ¹⁵/₁₆" Ø HOLES AND CLEAN SURFACE OF DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
3. ONE AT A TIME REMOVE RIVETS THAT COINCIDE WITH PLATE "A". A TAPERED DRIFT PIN SHALL BE PLACED AT EACH RIVET REMOVED BEFORE PROCEEDING TO THE NEXT.
4. PLACE PLATE "A" ON TAPERED DRIFT PINS.
5. ONE AT A TIME REMOVE REMAINING RIVETS THAT COINCIDE WITH PLATE "B". A TAPERED DRIFT PIN SHALL BE PLACED AT EACH RIVET REMOVED BEFORE PROCEEDING TO THE NEXT.
6. PLACE PLATE "B" ON TAPERED DRIFT PINS.
7. ONE AT A TIME REPLACE EACH DRIFT PIN WITH ⅞" Ø BOLT, WASHER AND NUT.
8. ON EXTERIOR OF JOINT LOCATE HOLE 1 AND HOLE 2 AT THE INDICATED DISTANCE ALONG THE LINE AS FORMED BY THE ADJACENT BOLTS. FIELD DRILL ¹⁵/₁₆" Ø HOLES AND CLEAN SURFACE OF DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
9. ONE AT A TIME REMOVE RIVETS THAT COINCIDE WITH PLATE "B". A TAPERED DRIFT PIN SHALL BE PLACED AT EACH RIVET REMOVED BEFORE PROCEEDING TO THE NEXT.
10. PLACE PLATE "B" ON TAPERED DRIFT PINS.
11. ONE AT A TIME REPLACE EACH DRIFT PIN WITH ⅞" Ø BOLT, WASHER AND NUT.
12. PAINT NEW PLATES AND BOLTS AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.

SYMBOLS

- ● REMOVE RIVETS AND NEW BOLTS
- ⦿ DRILL GUSSET AND NEW BOLTS.

NOTES:

UNLESS NOTED OTHERWISE RIVET REMOVED SHALL BE REPLACED WITH A BOLT BEFORE PROCEEDING TO NEXT RIVET REMOVAL.

(A) VERIFY DIMENSIONS BEFORE FABRICATING PLATES.

SEE SPECIAL PROVISIONS FOR COATING REQUIREMENTS.

(B) FOR INTERIOR GUSSET PLATE ONLY.

1/13/2010 6347_LAB.DGN

CERTIFIED BY Scott A Pierson LICENSED PROFESSIONAL ENGINEER 1/12/10 DATE

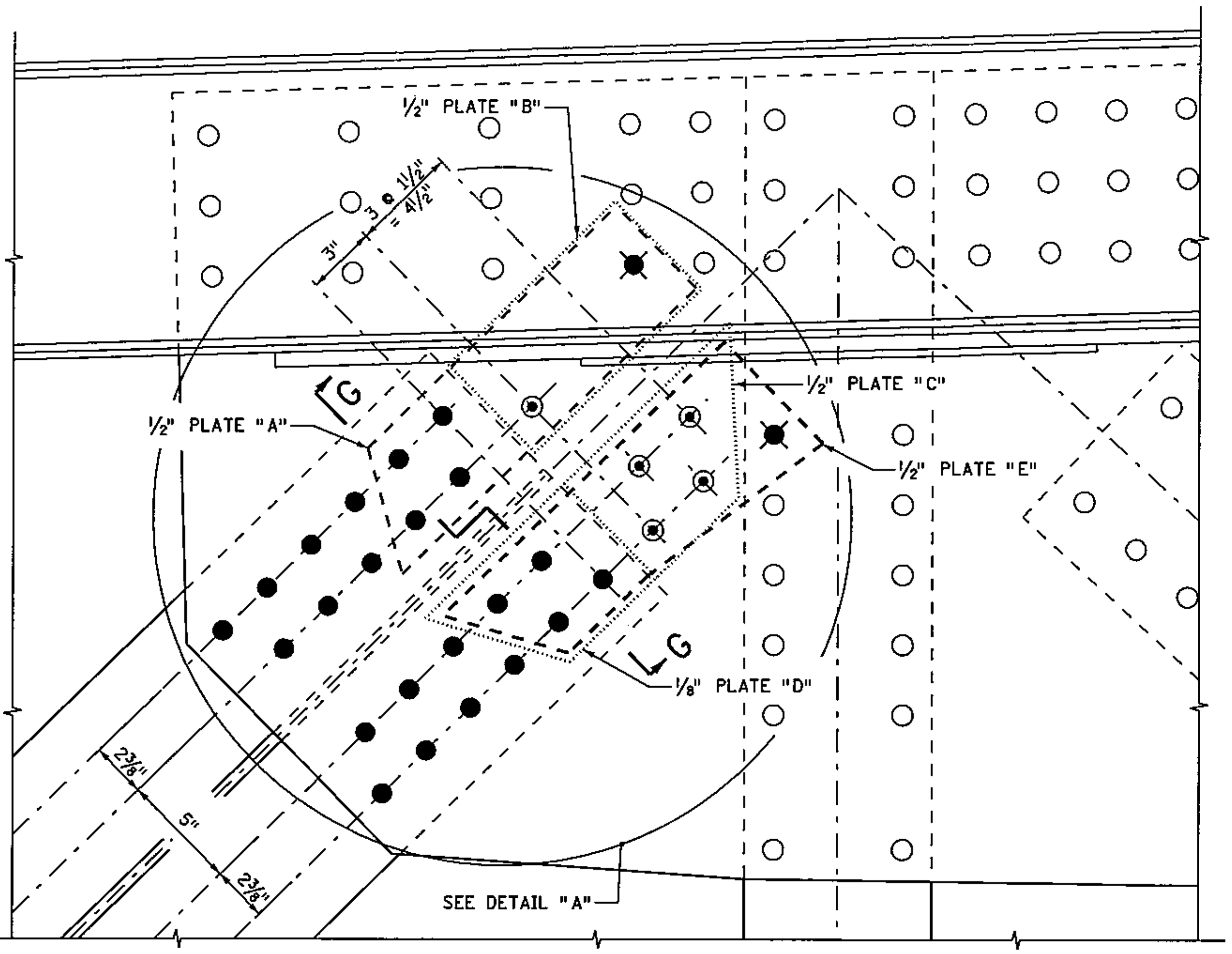
NAME: SCOTT A. PIERSON LIC. NO. 22561

TITLE: TYPE 6 REPAIRS SPANS 2, 3 & 4

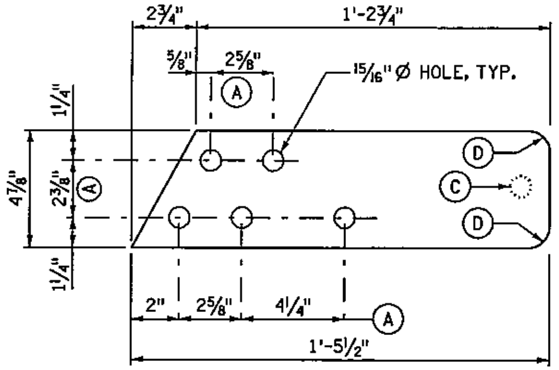
DES: S.A.P.	DR: L.A.B.	APPROVED: 1-12-10
CHK: D.J.D./G.F.A.	CHK: J.J.L.	

SHEET NO. 16 OF 19 SHEETS

BRIDGE NO. 6347

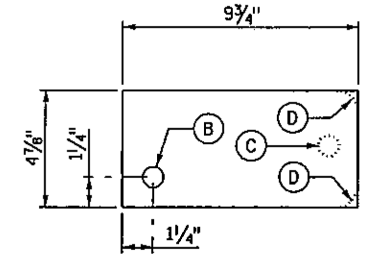


JOINT U1, U'1



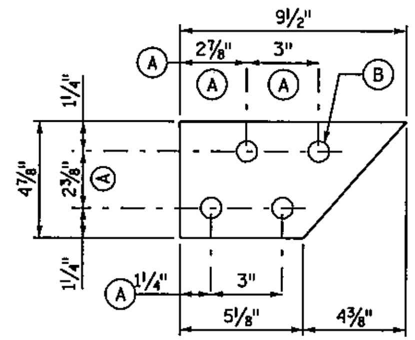
1/2" PLATE "A"

Ⓒ FIELD DRILL THIS HOLE
Ⓓ GRIND THE EDGE OF RIVET HEAD IF NECCESARY.



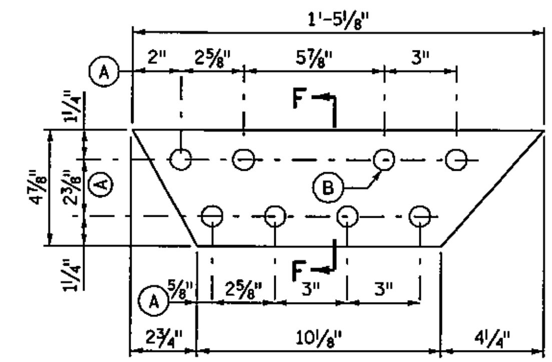
7/16" PLATE "B"

Ⓑ 15/16"Ø HOLE, TYP.
Ⓒ FIELD DRILL THIS HOLE
Ⓓ GRIND THE EDGE OF RIVET HEAD IF NECCESARY.



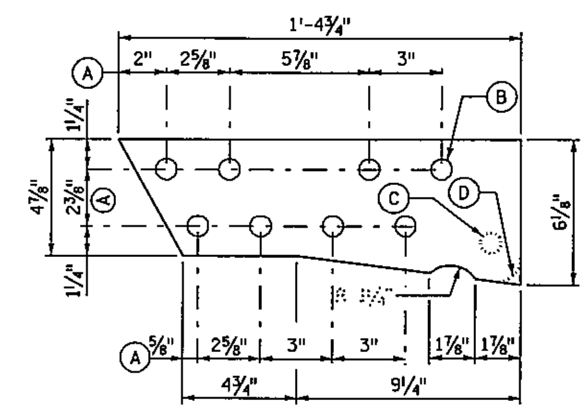
7/16" PLATE "C"

Ⓑ 15/16"Ø HOLE, TYP.



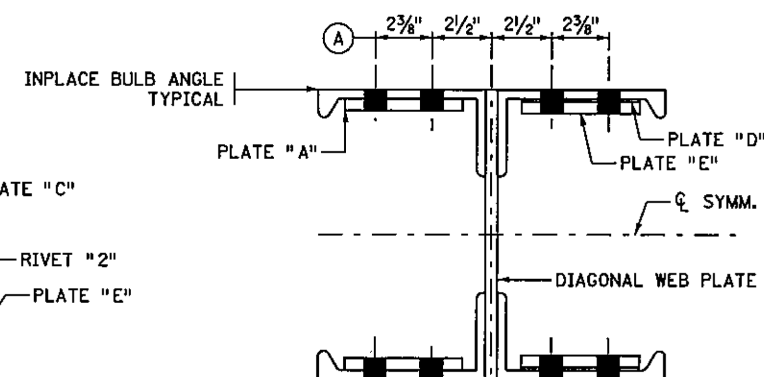
1/8" PLATE "D"

Ⓑ 15/16"Ø HOLE, TYP.

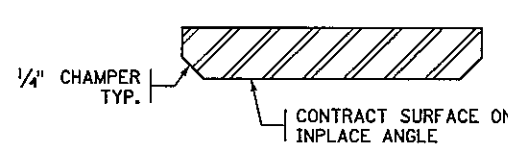


1/2" PLATE "E"

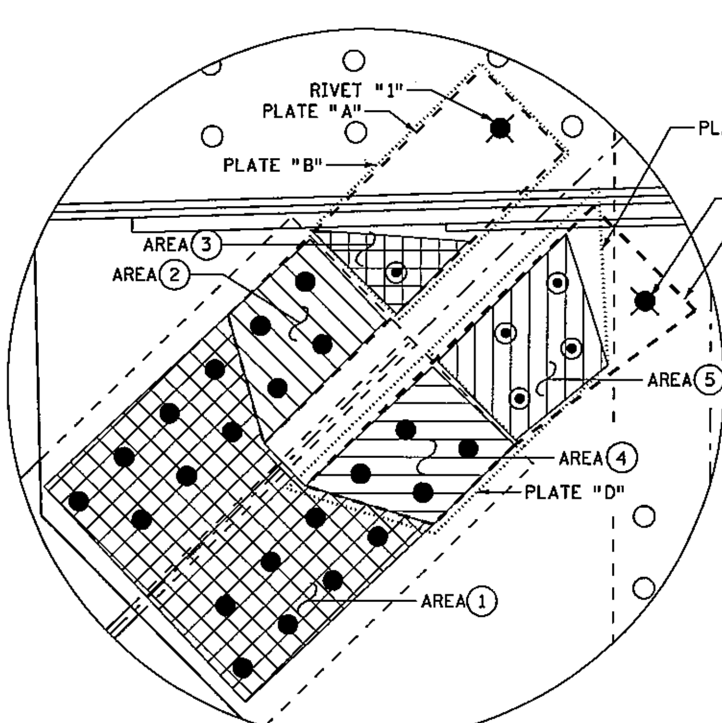
Ⓑ 15/16"Ø HOLE, TYP.
Ⓒ FIELD DRILL THIS HOLE
Ⓓ GRIND THE EDGE OF RIVET HEAD IF NECCESARY.



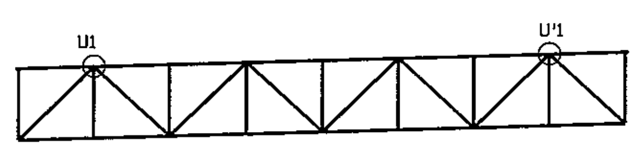
SECTION G-G
(ALL NEW BOLTS TO BE 7/8"Ø.)



SECTION F-F



DETAIL "A"



LOCATION

SUMMARY OF QUANTITIES FOR TYPE 7 TRUSS REPAIR

STRUCTURAL STEEL (3309)	1010 POUND
A325 BOLT 7/8"Ø x 2 1/2" LONG, WASHER AND NUT	
LOCATION	QUANTITY
JT U1 (INT. & EXT. FACES) SPAN 2, 3 & 4	168
JT U'1 (INT. & EXT. FACES) SPAN 2, 3 & 4	168
A325 BOLT 7/8"Ø x 3" LONG, WASHER AND NUT	
LOCATION	QUANTITY
JT U1 (INT. & EXT. FACES) SPAN 2, 3 & 4	180
JT U'1 (INT. & EXT. FACES) SPAN 2, 3 & 4	180
TOTAL	696

NOTES

UNLESS NOTED OTHERWISE RIVET REMOVED SHALL BE REPLACED WITH BOLT BEFORE PROCEEDING TO NEXT RIVET REMOVAL.

Ⓐ VERIFY DIMENSIONS BEFORE FABRICATING PLATES.

SEE SPECIAL PROVISIONS FOR COATING REQUIREMENTS.

INSTALLATION SEQUENCE

1. IN AREA ① REMOVE EACH RIVET AND REPLACE WITH 7/8"Ø X 2 1/2" LONG A325 BOLT, WASHER & NUT. EACH RIVET REMOVED SHALL BE REPLACED WITH A BOLT BEFORE PROCEEDING TO THE NEXT RIVET REMOVAL.
2. REMOVE THE RIVETS IN AREA ②.
3. USING A TEMPLATE TO FIELD DRILL IN GUSSET PLATE THE NEW 15/16"Ø HOLES IN AREA ③.
4. REMOVE THE RIVET INDICATED "RIVET 1".
5. ALLIGN PLATE "A" AND SCRIBE LOCATION OF "RIVET 1" AND FIELD DRILL 15/16"Ø HOLE IN PLATE "A" AND PLATE "B".
6. CLEAN FAYING SURFACES OF GUSSET AND PLATE "A" AND PLATE "B". REMOVE DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
7. INSTALL PLATES "A" AND "B" BY REPLACING REMOVED RIVETS WITH 7/8"Ø X 3" LONG A325 BOLT, WASHER & NUT AT AREA ② AND 7/8"Ø X 3" LONG A325 BOLT, WASHER AND NUTS AT AREA ③.
8. REPLACE "RIVET 1" WITH 7/8"Ø X 3" LONG A325 BOLT, WASHER & NUT.
9. REMOVE THE RIVETS IN AREA ④.
10. USE PLATE "D" TO SCRIBE AND LOCATE NEW 15/16"Ø HOLES IN AREA ⑤.
11. DRILL IN GUSSET PLATE THE NEW 15/16"Ø HOLES IN AREA ⑤.
12. REMOVE THE RIVET INDICATED "RIVET 2".
13. ALLIGN PLATE "E" ON THE INSIDE OF JOINT AND SCRIBE ON PLATE "E" LOCATION OF "RIVET 2".
14. FIELD DRILL 15/16" HOLE IN PLATE "E".
15. CLEAN FAYING SURFACES OF GUSSET AND PLATE "E". REMOVE DRILLING OIL, STEEL SHAVINGS AND DEBRIS.
16. INSTALL PLATES "C", "D" AND "E" BY REPLACING REMOVED RIVETS WITH 7/8"Ø X 3" LONG A325 BOLT, WASHER & NUT AT AREA ⑤ AND 7/8"Ø X 3" LONG A325 BOLT, WASHER AND NUTS AT AREA ④.
17. REPLACE "RIVET" WITH 7/8"Ø X 3" LONG A325 BOLT, WASHER & NUT.
18. PAINT NEW MEMBERS AND BOLTS AND SEAL THE BOLTS WITH PRIMER BEFORE BOLTING. SEE SPECIAL PROVISIONS.

SYMBOLS

● REMOVE RIVETS AND NEW BOLTS
⊙ DRILL GUSSET AND NEW BOLTS.
✱ REMOVE RIVETS AND DRILL PLATES "A", "B" AND "E" AND NEW BOLTS.

CERTIFIED BY [signature] 1/12/10
LICENSED PROFESSIONAL ENGINEER — DATE
NAME: SCOTT A. PIERSON LIC. NO. 22561

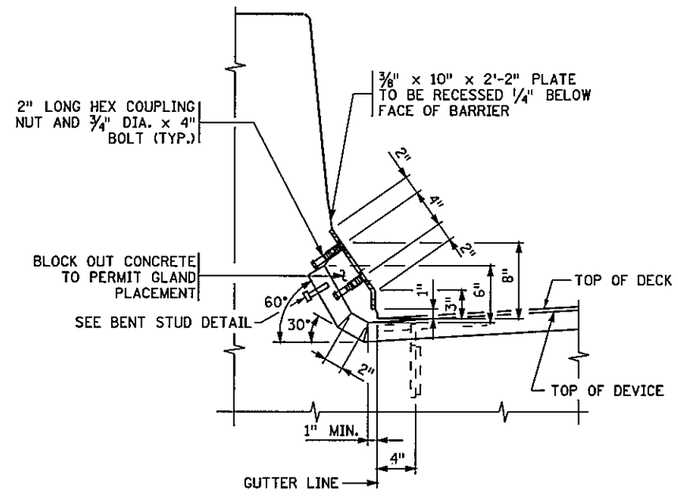
TITLE: TYPE 7 TRUSS REPAIRS @ SPANS 2, 3 & 4

DES: SAP	DR: GRF	APPROVED: 1/21/10
CHK: DJD/GRA	CHK: JJL	

SHEET NO. 17 OF 19 SHEETS

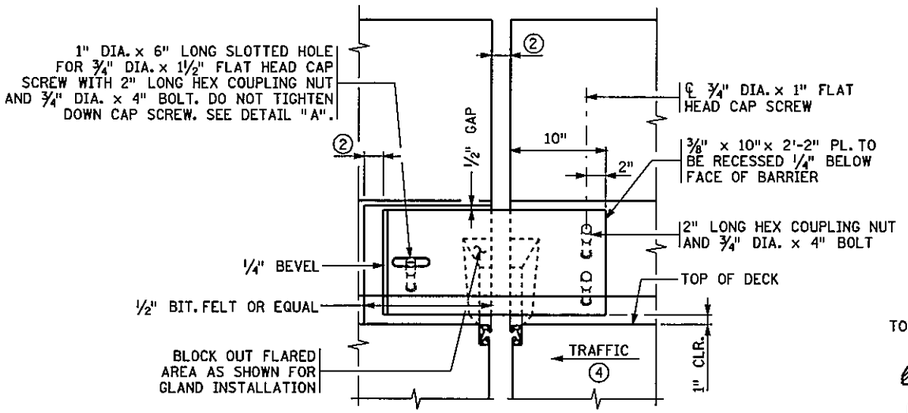
BRIDGE NO. 6347

c:\ProjectWise\PW_Working\NegalBea\d0174859\6347_s12.dgn
1/21/2010

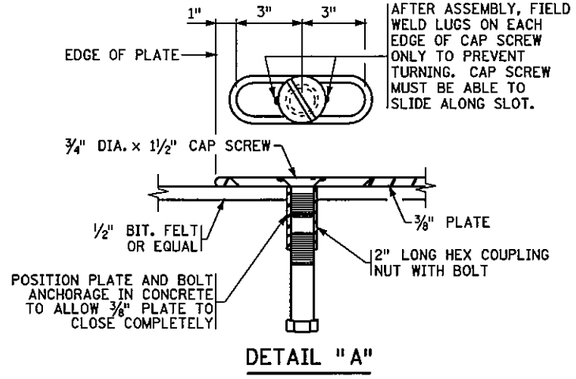


SECTION THROUGH RAILING

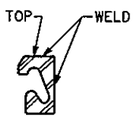
TYPE F RAILING



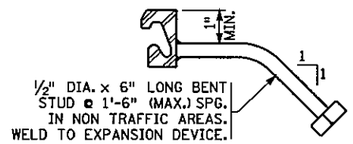
RAILING ELEVATION



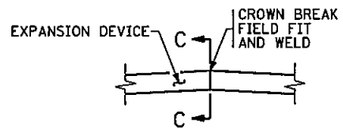
DETAIL "A"



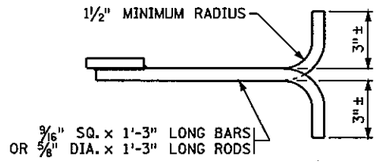
SECTION C-C



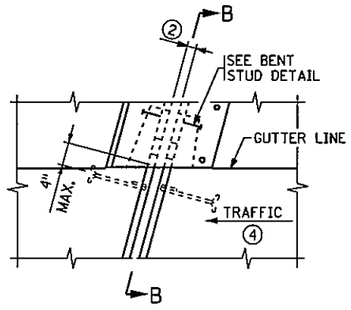
BENT STUD DETAIL



DETAIL "B"

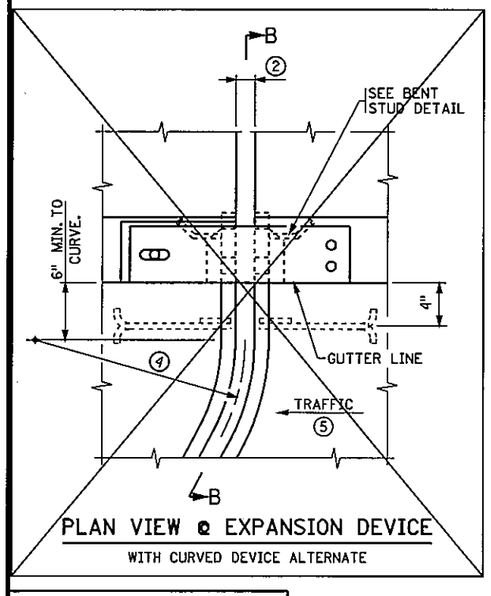


BAR-ROD DETAIL



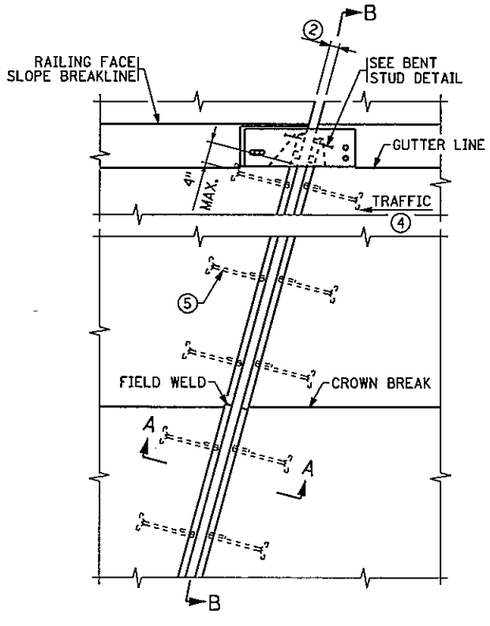
PLAN VIEW ℄ EXPANSION DEVICE

MEDIAN OR SIDEWALK ALTERNATE



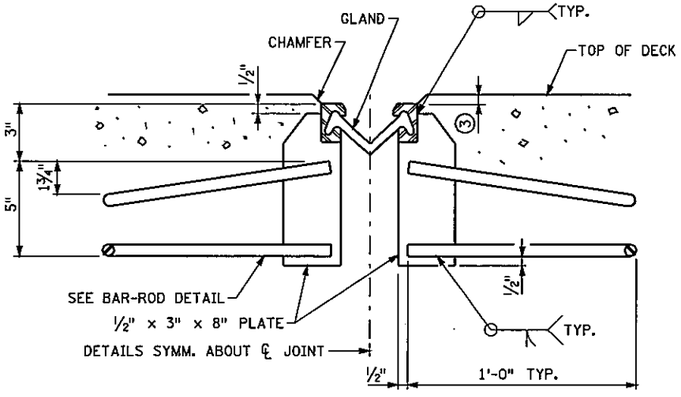
PLAN VIEW ℄ EXPANSION DEVICE

WITH CURVED DEVICE ALTERNATE

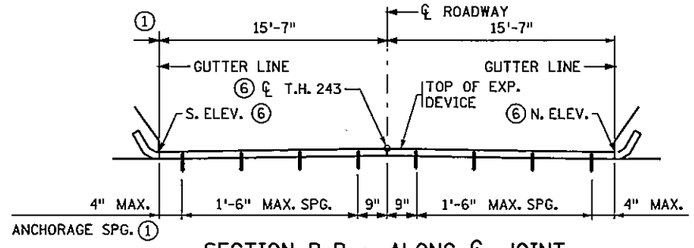


PLAN VIEW ℄ EXPANSION DEVICE

WITH STRAIGHT DEVICE



SECTION A-A



SECTION B-B ~ ALONG ℄ JOINT

GENERAL NOTES

GALVANIZE STRUCTURAL STEEL AFTER FABRICATION AS PER Mn/DOT SPEC. 3394. GALVANIZE FASTENERS AS PER Mn/DOT SPEC. 3392.

JOINTS IN EXTRUSION SHALL BE LOCATED AT BREAKS IN TRANSVERSE PROFILE AND AS OTHERWISE REQUIRED. JOINTS SHALL BE CLOSE FIT AND WELDED. REPAIR AFTER WELDING AS PER Mn/DOT SPEC. 2471.3L.

STRUCTURAL STEEL SHALL COMPLY WITH Mn/DOT SPEC. 3306 OR Mn/DOT SPEC. 3309.

EXPANSION DEVICE SHALL BE STRAIGHTENED TO A TOLERANCE OF ⅛" IN 10 FT.

CAP SCREWS SHALL BE COUNTERSUNK 1/16" BELOW TOP OF PLATE.

LENGTH OF PAYMENT FOR DEVICE IS FROM OUT TO OUT OF EXTRUSION ALONG CENTERLINE OF JOINT.

1. DIMENSIONS ARE ALONG CENTERLINE OF JOINT.
2. 2" AT ALL TEMPERATURE
3. SEE NOTE 6 FOR DETAILS.
4. SEE SHEET NO. 1 FOR DIRECTION OF TRAFFIC.
5. PLACE BAR-ROD NORMAL TO JOINT ON NEW BRIDGES AND JOINT REPLACEMENTS. ON JOINT REPLACEMENTS WHEN SKEW IS OVER 15° AND LESS THAN 50° BEND RODS PARALLEL TO ℄ ROADWAY.
6. SET ELEVATIONS IN FIELD AFTER SCARIFYING. SET JOINT AT THE TOP OF SCARIFYING DECK CONCRETE SURFACE, OR ⅜" BELOW THE TOP OF FINISHED CHIP SEAL DECK SURFACE.

REVISION:

APPROVED: SEPTEMBER 26, 2003

Daniel J. Hegeman
STATE BRIDGE ENGINEER

CERTIFIED BY Scott A. Pierson 1/12/10
LICENSED PROFESSIONAL ENGINEER DATE

NAME: SCOTT A. PIERSON LIC. NO. 22561

TITLE: WATERPROOF EXPANSION DEVICE (WITH TYPE F BARRIER)

FIG. 5-397.627 MOD.

DES: SAP	DR: GRF	APPROVED: 1-12-10
CHK: DJD/GFA	CHK: JJL	BRIDGE NO. 6347

SHEET NO. 18 OF 19 SHEETS

CONCRETE WEARING COURSE

☐ LOW SLUMP

☐ OTHER _____
TYPE OR MANUFACTURER

EXPANSION JOINTS

JOINT MANUFACTURER

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR JOINT USED

GLAND MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SIZE OF GLAND _____

MANUFACTURER'S IDENTIFICATION _____
MFR'S No. AND/OR LETTER DESIGNATION FOR GLAND USED

ELASTOMERIC BEARING PADS

PAD MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

SPECIAL SURFACE FINISH

SYSTEM: _____ COLOR: _____

FINISHING ROADWAY FACES OF BARRIER RAILING

TYPE: _____ COLOR: _____

ANTI-GRAFFITI COATING

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRODUCT NAME: _____ LOCATION: _____

PAINT SYSTEM

Mn/DOT SPECIFICATION NUMBER _____
2478 OR 2479 OR OTHER

MANUFACTURER _____
NAME AND ADDRESS (CITY, STATE)

PRIME COAT _____
Mn/DOT MATERIAL SPECIFICATION NUMBER

INTERMEDIATE COAT _____
Mn/DOT MATERIAL SPECIFICATION NUMBER

FINISH COAT _____ _____
Mn/DOT MATERIAL SPECIFICATION NUMBER COLOR

PLAN QUALITY

RATE 1 (AGREE), 2 (NEUTRAL), OR 3 (DISAGREE, PLEASE COMMENT BELOW)

DIMENSIONING AND DETAILING ADEQUATELY DESCRIBED REQUIRED CONSTRUCTION. _____

BAR LISTS AND QUANTITIES WERE TYPICALLY COMPLETE AND FREE OF ERRORS. _____

SCALE OF DRAWINGS AND OVERALL LEGIBILITY OF LINES AND TEXT WAS GOOD. _____

(SB) SPECIAL PROVISIONS ADEQUATELY DESCRIBED SPECIAL WORK AND PAYMENT. _____

COMMENTS: _____

NUMBER OF BRIDGE
SUPPLEMENTAL AGREEMENTS: _____ COST: $ _____

LIST SIGNIFICANT ERRORS OR OMISSIONS IN PLAN DETAILS OR PAY QUANTITIES IN THE SPACE PROVIDED AT RIGHT.

BRIDGE REMOVAL / BRIDGE OPENING

NUMBER OF AND DATE OLD BRIDGE WAS REMOVED (IF APPLICABLE):

BRIDGE NUMBER _____ DATE REMOVED _____

DATE NEW BRIDGE WAS OPENED TO TRAFFIC _____

NOTIFY THE BRIDGE OFFICE BRIDGE MANAGEMENT UNIT WITH THIS INFORMATION AS SOON AS POSSIBLE. (651) 366-4557

OTHER ITEMS ①

① UTILITIES ADDED DURING CONSTRUCTION AND SPECIALTY ITEMS.

FINAL QUANTITIES ENTERED ON SCHEDULE OF QUANTITIES: YES ☐ NO ☐

SUMMARY OF SIGNIFICANT AS-BUILT CHANGES

THE AS-BUILT INFORMATION WAS ADDED TO THE PLAN BY:

_____ _____
INSPECTOR(S) SIGNATURE DATE

CHECKED BY: _____ _____
PROJECT ENGINEER/SUPERVISOR SIGNATURE DATE

AT THE TIME OF THE FINAL, THIS COMPLETED AS-BUILT BRIDGE DATA SHEET MUST BE SUBMITTED TO THE BRIDGE OFFICE - ATTN: REGIONAL CONSTRUCTION ENGINEER (MS610).

REVISION: 10-28-2008

APPROVED: SEPTEMBER 26, 2003
Daniel T. Morgan
STATE BRIDGE ENGINEER

AS-BUILT DETAILS
(AS NEEDED)

FIG. 5-397.900

TITLE:	DES:	DR:	APPROVED:	BRIDGE NO.
AS-BUILT BRIDGE DATA	CHK:	CHK:	1-12-10	6347
	SHEET NO. 19 OF 19 SHEETS			