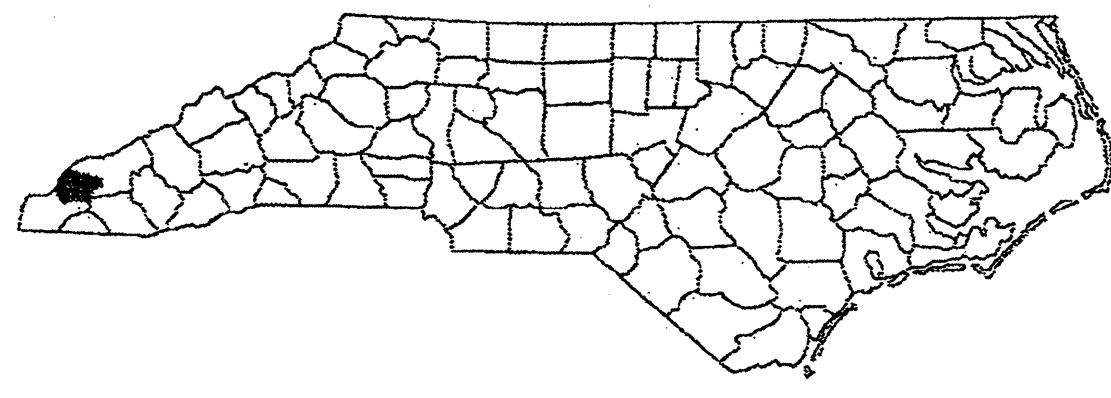


ANTHONY TRUSSARDI CONSULTING ENGINEERS, INC. 2/2/2012 10:52 AM

**CONTRACT: C202998** **TIP PROJECT: WBS 17BP.14.P.8**

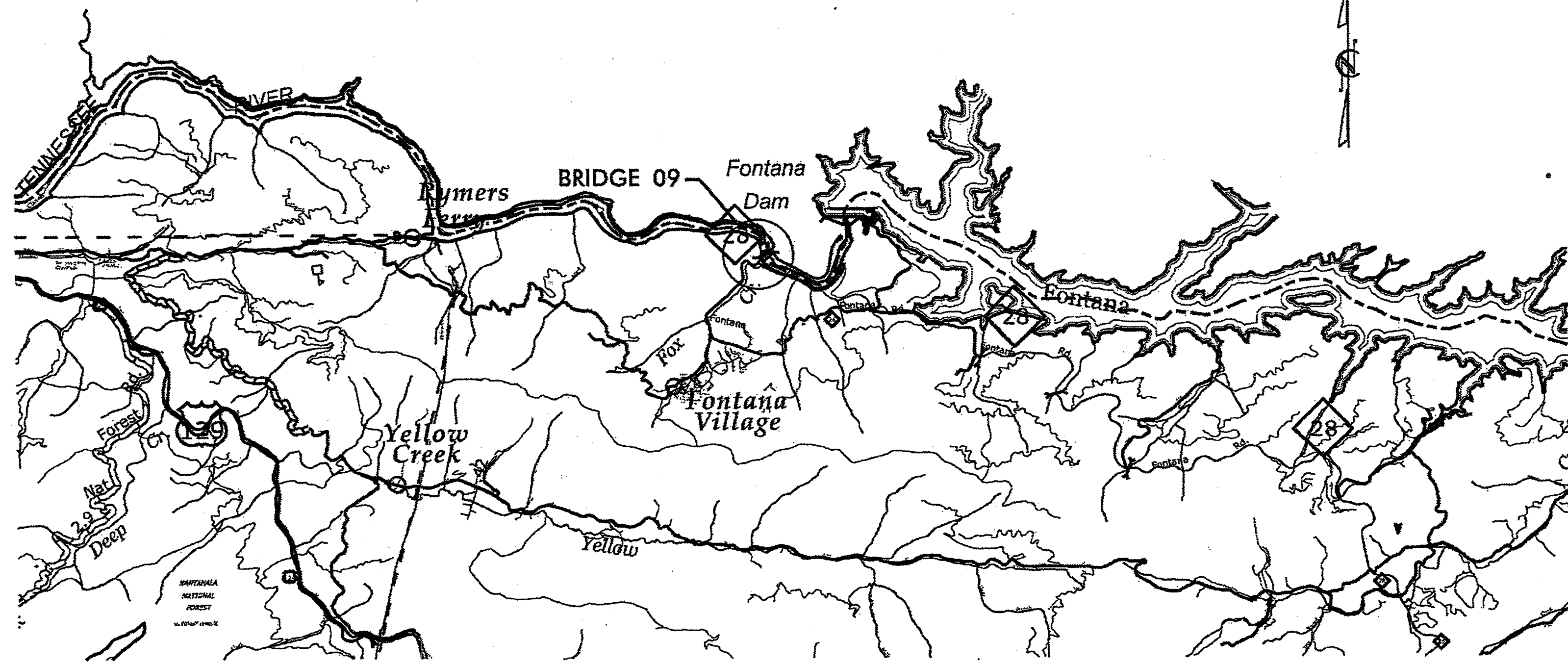


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**GRAHAM COUNTY**

**LOCATION: BRIDGE 09 ON NC 28 OVER LITTLE TENNESSEE RIVER**  
**TYPE OF WORK: BRIDGE DECK PRESERVATION AND REHABILITATION**  
**STRUCTURAL STEEL GIRDER MODIFICATIONS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	WBS 17BP.14.P.8	1	
WBS NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.14.P.8		PE	
17BP.14.P.8		CONST.	



PROJECT LENGTH

**Stantec** PREPARED IN THE OFFICE OF:  
 Stattec Consulting Services Inc.  
 901 Jones Franklin Road  
 Suite 300  
 Raleigh, NC 27628  
 Tel: (919) 881-8225  
 Fax: (919) 881-7254  
 www.stattec.com  
 License No. FC2023

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

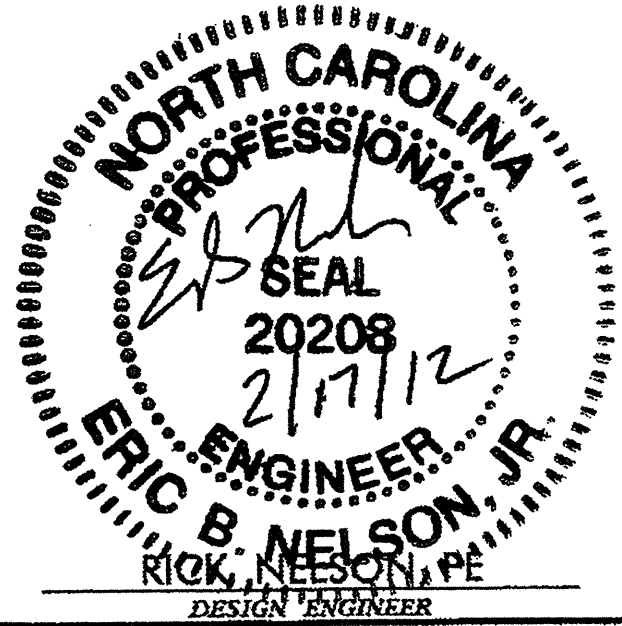
2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N.A.

LETTING DATE: APRIL 17, 2012

NCDOT CONTACT: ZAKI Wafa, PE  
 BRIDGE MANAGEMENT PROJECT MANAGER

JOE KELVINGTON, PE  
 PROJECT ENGINEER

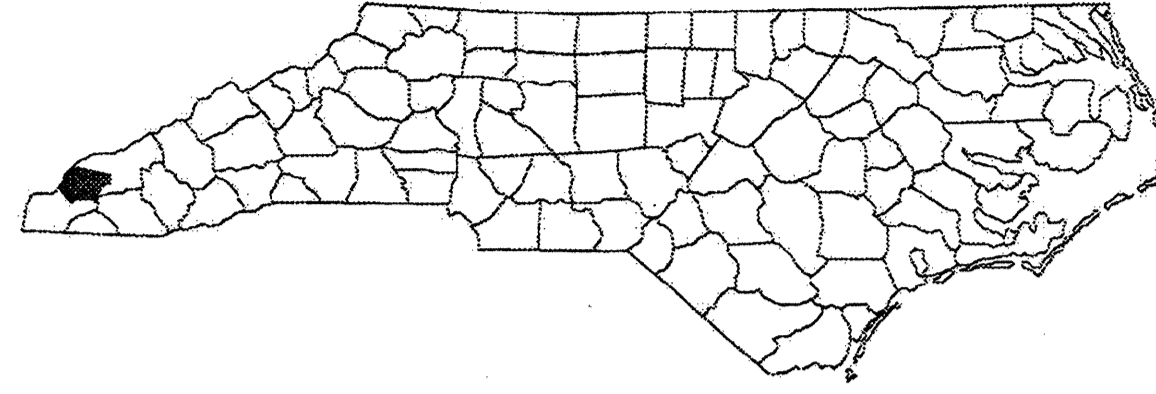


DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

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**CONTRACT: C202998**

**TIP PROJECT: WBS 17BP.14.P.8**



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**GRAHAM COUNTY**

**LOCATION: BRIDGE 09 ON NC 28 OVER LITTLE TENNESSEE RIVER**  
**TYPE OF WORK: BRIDGE DECK PRESERVATION AND REHABILITATION**  
**STRUCTURAL STEEL GIRDER MODIFICATIONS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	WBS 17BP.14.P.8	1A	

**INDEX OF SHEETS**

DWG.	DESCRIPTION
1	TITLE SHEET
1A	INDEX OF SHEETS
2	SUMMARY OF QUANTITIES
S-1 THRU S-13	BRIDGE DECK REPAIRS & JOINT MODIFICATIONS
S-14 THRU S-19	AUXILIARY BEAM AND STEEL REPAIR
TMP-1 THRU TMP-5	TRANSPORTATION MANAGEMENT PLANS

SANITIZATION OF BRIDGE TO HIGHWAY STRUCTURES BRIDGE GROUP 2004 WBS 17BP.14.P.8 CONTRACT CO-202998 9/10/2004 9:10:00 AM OVERALL 2.dgn 2/2/2002 8:34 AM b10101

**CONTRACT: C202998**      **TIP PROJECT: WBS 17BP.14.P.8**

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

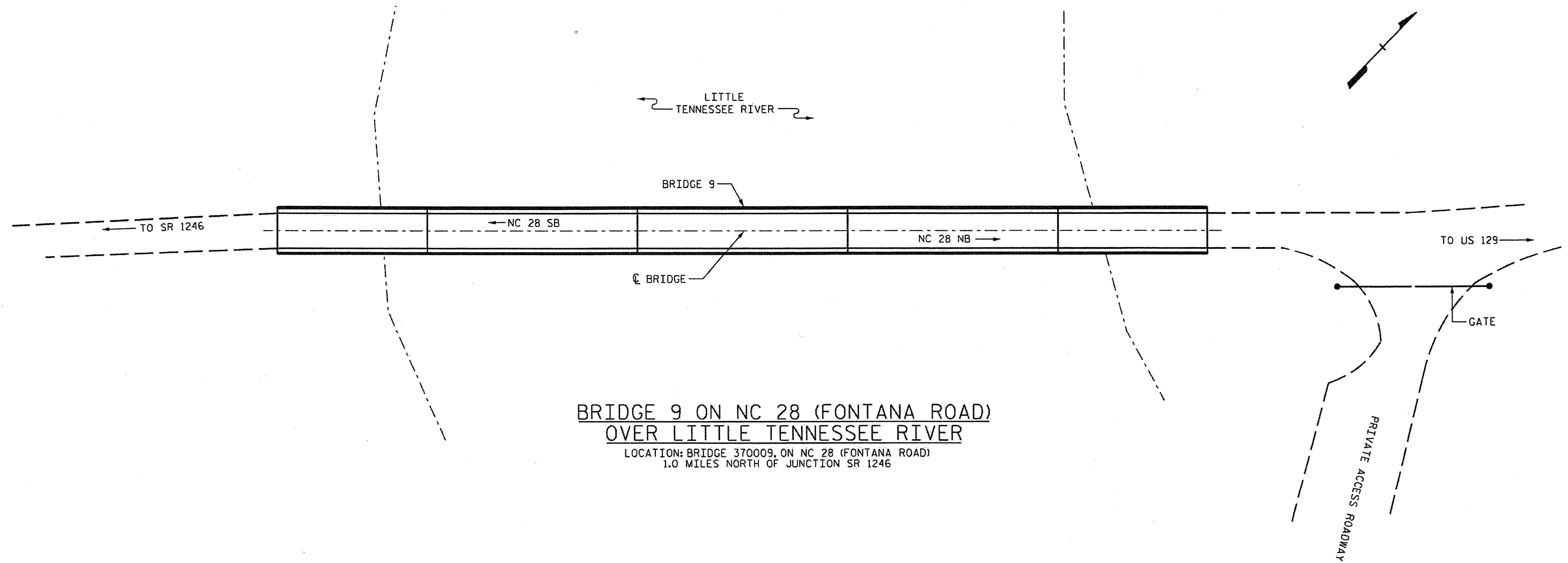
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	WBS 17BP.14.P.8	2	

## SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
 ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202998

ItemNumber	Sec #	Quantity	Unit	Description	ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION	8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM POLLUTION CONTROL
1297000000-E	607	307	SY	MILLING ASPHALT PAVEMENT, ****" DEPTH (1.5")	8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM TEMPORARY STEEL COVER FOR EXPANSION JOINT SEAL REPAIR
1523000000-E	610	23	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C	8881000000-E	SP	86	CY	GENERIC STRUCTURE ITEM LATEX MOD CONC OVERLAY - VERY EARLY STRENGTH
1575000000-E	620	1	TON	ASPHALT BINDER FOR PLANT MIX	8893000000-E	SP	1,278	SY	GENERIC STRUCTURE ITEM HYDRO-DEMOLITION OF BRIDGE DECK
4400000000-E	1110	463	SF	WORK ZONE SIGNS (STATIONARY)	8893000000-E	SP	1,302	SY	GENERIC STRUCTURE ITEM PLACING & FINISHING LATEX MOD CONC OVERLAY - VERY EARLY STRENGTH
4405000000-E	1110	128	SF	WORK ZONE SIGNS (PORTABLE)	8893000000-E	SP	1,278	SY	GENERIC STRUCTURE ITEM SCARIFYING BRIDGE DECK
4410000000-E	1110	45	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)	8897000000-N	SP	4	EA	GENERIC STRUCTURE ITEM ELASTOMERIC BEARINGS
4420000000-N	1120	4	EA	PORTABLE CHANGEABLE MESSAGE SIGN					
4430000000-N	1130	30	EA	DRUMS					
4435000000-N	1135	20	EA	CONES					
4445000000-E	1145	128	LF	BARRICADES (TYPE III)					
4450000000-N	1150	224	HR	FLAGGER					
4480000000-N	1165	2	EA	TMA					
4810000000-E	1205	5,200	LF	PAINT PAVEMENT MARKING LINES (4")					
4905000000-N	1253	60	EA	SNOWPLOWABLE PAVEMENT MARKERS					
8147000000-E	420	288	SF	REINFORCED CONCRETE DECK SLAB					
8161000000-E	420	9,737	SF	GROOVING BRIDGE FLOORS					
8224000000-E	425	1,146	LB	EPOXY COATED REINFORCING STEEL (BRIDGE)					
8692000000-N	SP	Lump Sum		FOAM JOINT SEALS					
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM AUXILIARY BEAM					
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM CLEANING & REPAINTING OF BRIDGE #9					
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM EXPANSION JOINT SEAL EJ2					
8860000000-N	SP	Lump Sum		GENERIC STRUCTURE ITEM PARTIAL REMOVAL OF EXISTING STRUCTURE					

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**BRIDGE 9 ON NC 28 (FONTANA ROAD)  
 OVER LITTLE TENNESSEE RIVER**  
 LOCATION: BRIDGE 370009, ON NC 28 (FONTANA ROAD)  
 1.0 MILES NORTH OF JUNCTION SR 1246

**BRIDGE 9**

TOTAL BILL OF MATERIAL										
MILLING ASPHALT PAVEMENT 1/2" DEPTH	ASPHALT CONC. SURFACE COURSE TYPE S9.5C	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	EPOXY COATED REINFORCING STEEL	AUXILIARY BEAM	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	EXPANSION JOINT SEAL EJ2	HYDRO-DEMOLITION OF BRIDGE DECK	CLASS I* SURFACE PREPARATION
SQ.YDS.	TON	SQ.FT.	SQ.FT.	LBS.	LUMP SUM	EA.	LUMP SUM	LUMP SUM	SQ.YDS.	SQ.YDS.
307	23	288	9,737	1,146	LUMP SUM	4	LUMP SUM	LUMP SUM	1,278	0

TOTAL BILL OF MATERIAL									
CLASS II* SURFACE PREPARATION	CLASS III* SURFACE PREPARATION	CLASS AA* CONCRETE	CLEANING AND REPAINTING OF BRIDGE #9	LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	PARTIAL REMOVAL OF EXISTING STRUCTURE	PLACING & FINISHING LATEX MODIFIED CONCRETE OVERLAY-VERY EARLY STRENGTH	POLLUTION CONTROL	SCARIFYING BRIDGE DECK	TEMP STEEL COVER FOR EXP JOINT SEAL REPAIR
SQ.YDS.	SQ.YDS.	CU.YDS.	LUMP SUM	CU.YDS.	LUMP SUM	SQ.YDS.	LUMP SUM	SQ.YDS.	LUMP SUM
13.0	0	0	LUMP SUM	86.0	LUMP SUM	1,302	LUMP SUM	1,278	LUMP SUM

PROJECT NO. WBS 17BP.14.P.8  
GRAHAM COUNTY  
 STATION: \_\_\_\_\_

\* QUANTITIES ARE ESTIMATES FROM BEST AVAILABLE DATA, AND SHOULD BE CONSIDERED FOR INFORMATION PURPOSES ONLY. IF ANY CLASS III LOCATIONS ARE ENCOUNTERED PRIOR TO OR DURING HYDRO-DEMOLITION, SEE "TYP. BLOW THRU" CONTAINMENT AND FORMWORK" DETAIL. NO SEPARATE MEASUREMENT OR PAYMENT FOR THIS ITEM SHALL BE MADE. ALL COSTS FOR THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR HYDRO-DEMOLITION.  
 FOR ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

Stantec Consulting Services Inc.  
 801 Jones Franklin Road  
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 License No. F-0672

DRAWN BY : P. Z. ARMATA DATE : 12/11  
 CHECKED BY : J. T. KELVINGTON DATE : 12/11

*Joseph H. Kelvington*  
 12/12  
 SEAL 13406  
 PROFESSIONAL ENGINEER  
 STATE OF NORTH CAROLINA

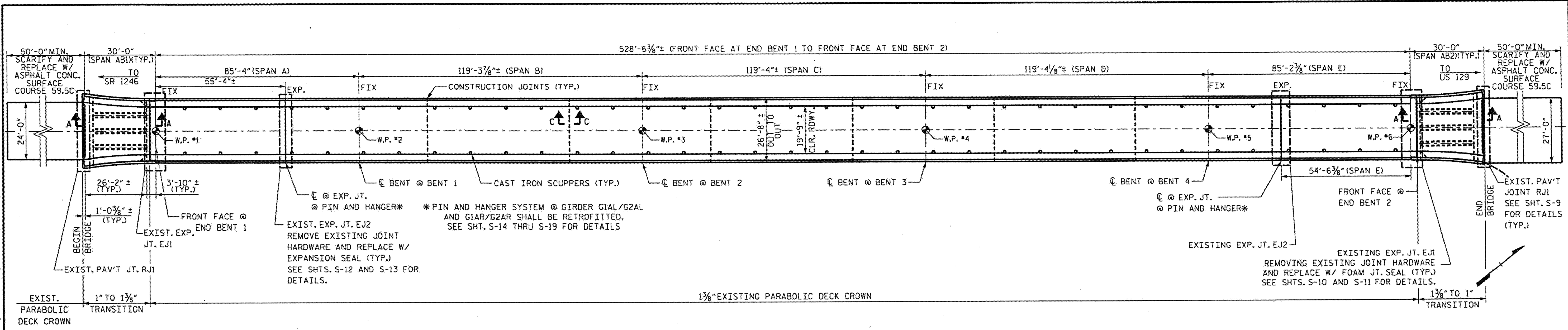
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**LOCATION SKETCH  
 AND TOTAL  
 BILL OF MATERIAL**

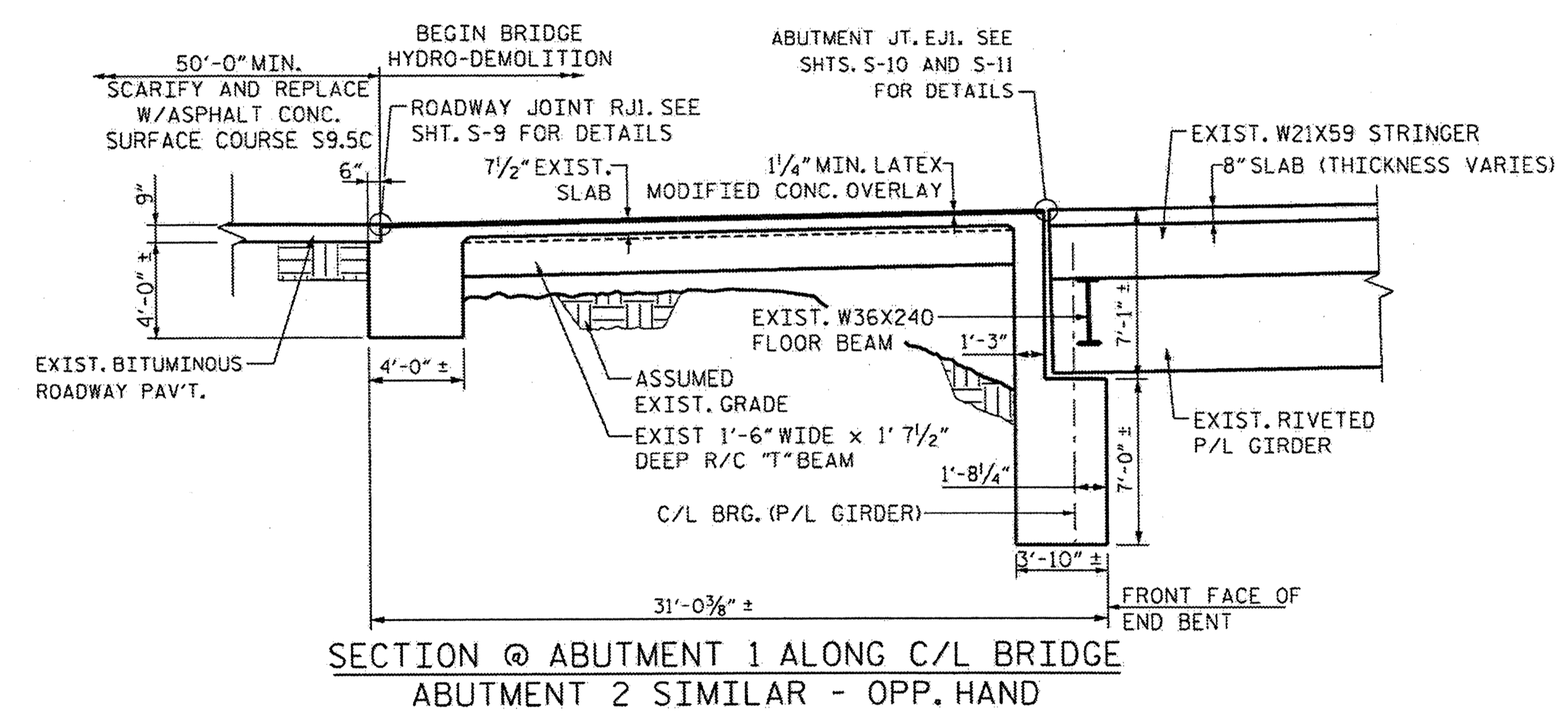
**REHABILITATE BRIDGE NO. 9**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			19

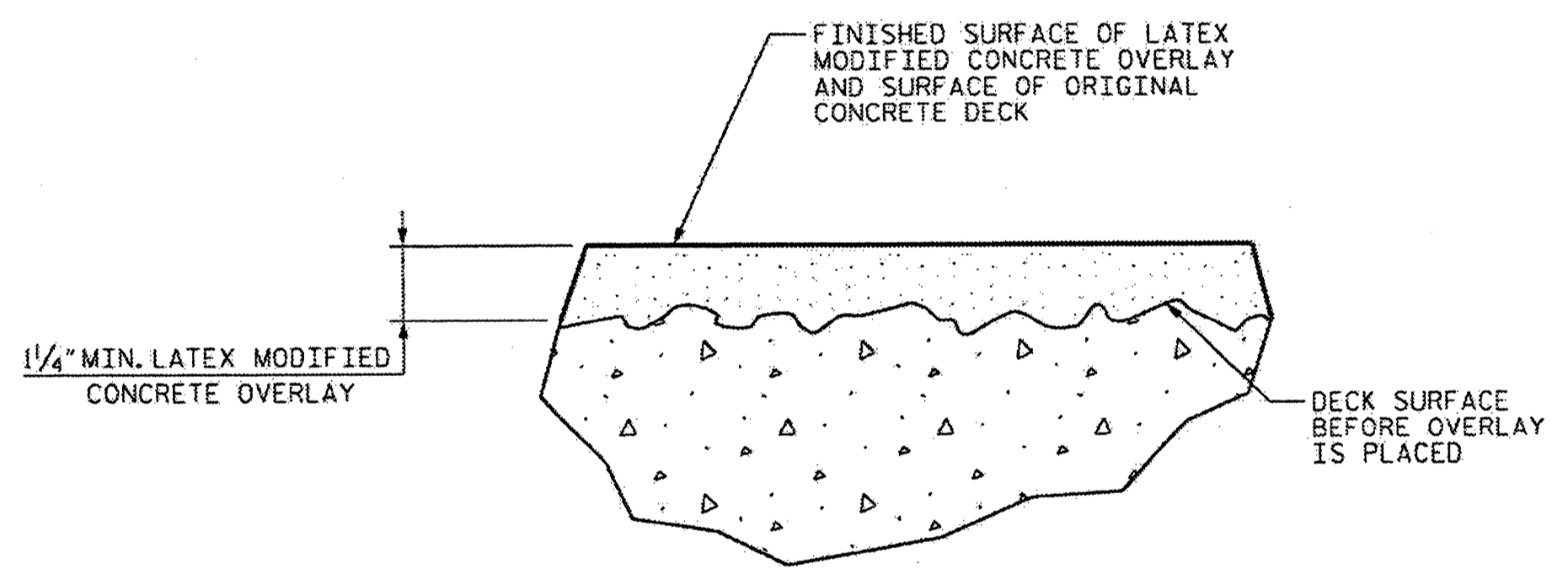
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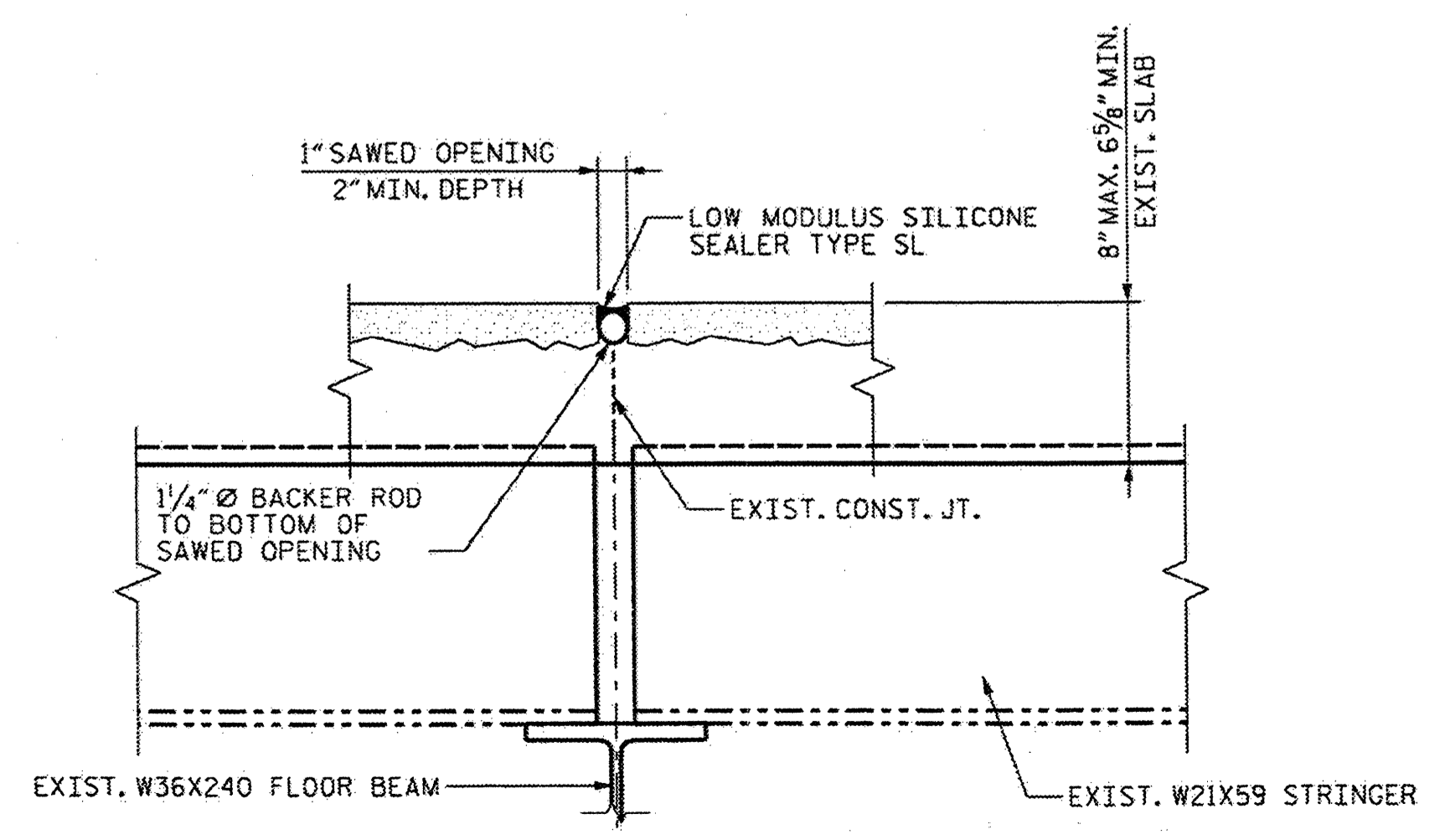
PLAN VIEW - SPANS A-E



SECTION @ ABUTMENT 1 ALONG C/L BRIDGE  
ABUTMENT 2 SIMILAR - OPP. HAND



DETAIL FOR LATEX MODIFIED CONCRETE OVERLAY




SECTION C-C  
CONCRETE JOINT SEAL - TYPICAL ALL EXISTING  
DECK SLAB CONSTRUCTION JOINTS

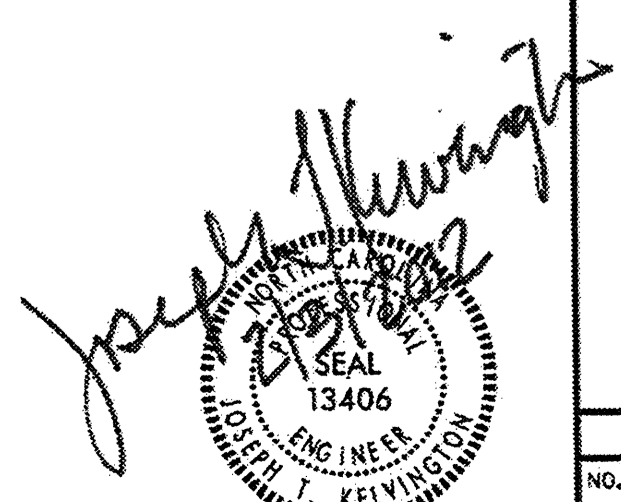
**NOTES:**  
 DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING REPAIR OF BRIDGE DECKS WITH LATEX MODIFIED CONCRETE. SEE SPECIAL PROVISIONS.  
 FOR HYDRO-DEMOLITION, SEE SPECIAL PROVISIONS.  
 THE CONTRACTOR MUST COLLECT, TREAT AND DISPOSE OF RUN-OFF WATER FROM THE HYDRO-DEMOLITION PROCESS. SEE SPECIAL PROVISIONS.  
 THE BOUNDARIES OF AREAS IDENTIFIED FOR CLASS III SURFACE PREPARATION ARE APPROXIMATE. THE CONTRACTOR SHALL PROVIDE A METHOD OF HANDLING UNEXPECTED BLOW THROUGH OF THE DECK. SEE DETAIL ON SHT. S-4.  
 LATEX MODIFIED CONCRETE SHALL BE LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH.  
 FOR LATEX MODIFIED CONCRETE - VERY EARLY STRENGTH, SEE SPECIAL PROVISIONS.  
 FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.  
 FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

INSTALL 1/4" Ø BACKER ROD AND LOW MODULUS SILICONE SEALER IN A CONTINUOUS STRIP FROM CURB TO CURB.  
 1/4" Ø BACKER ROD SHALL BE CLOSED CELL EXPANDED POLYETHYLENE FOAM TYPE L. PLACE BACKER ROD TO EXISTING CURB FACE. NO SEPARATE PAYMENT FOR LABOR, MATERIALS, AND EQUIPMENT NEEDED TO CONSTRUCT CONCRETE JOINT SEALS SHALL BE MADE. COSTS FOR THIS WORK SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

PROJECT NO. WBS 17BP.14.P.8  
 GRAHAM COUNTY  
 STATION: \_\_\_\_\_

  
 Stantec Consulting Services Inc.  
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DRAWN BY : P. Z. ARMATA DATE : 12/11  
 CHECKED BY : J. T. KELVINGTON DATE : 12/11

  
 JOSEPH KELVINGTON  
 ENGINEER  
 LICENSE NO. 13406

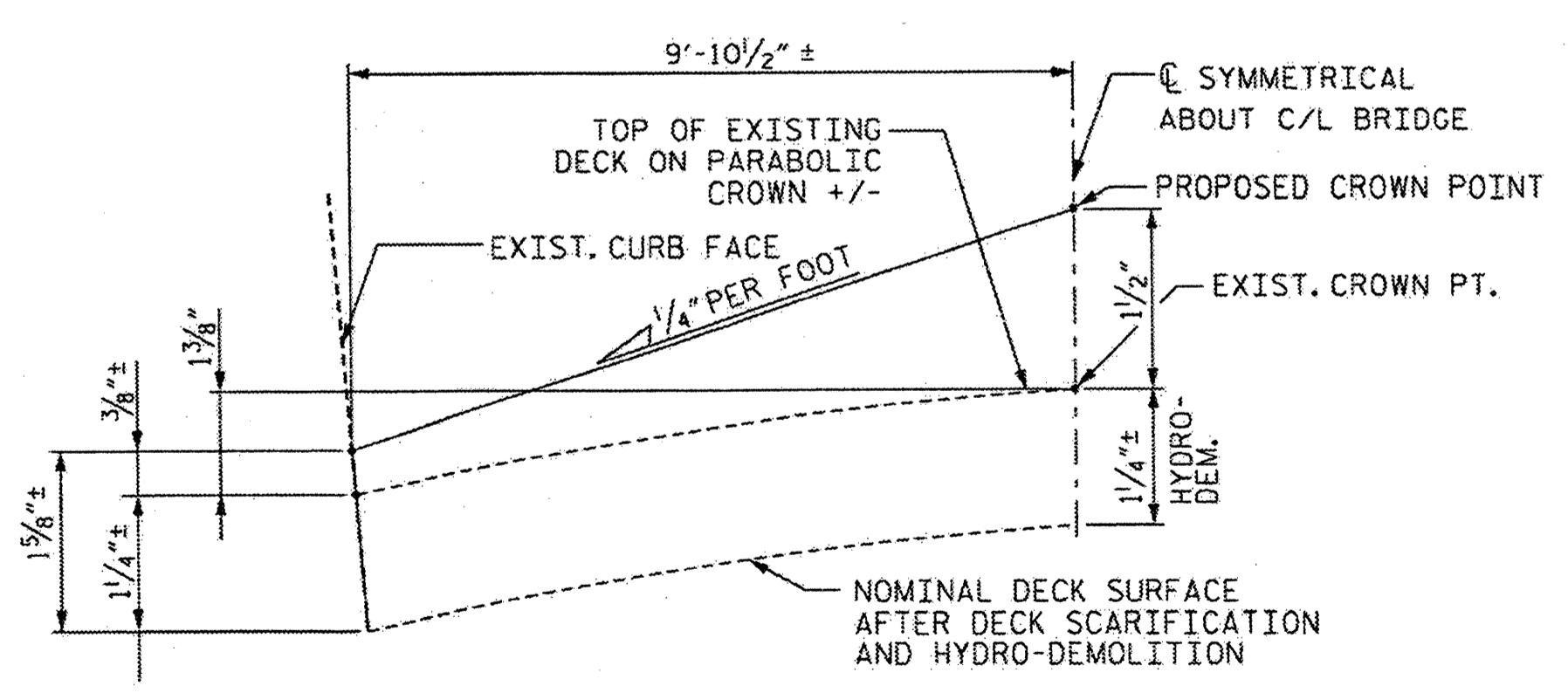
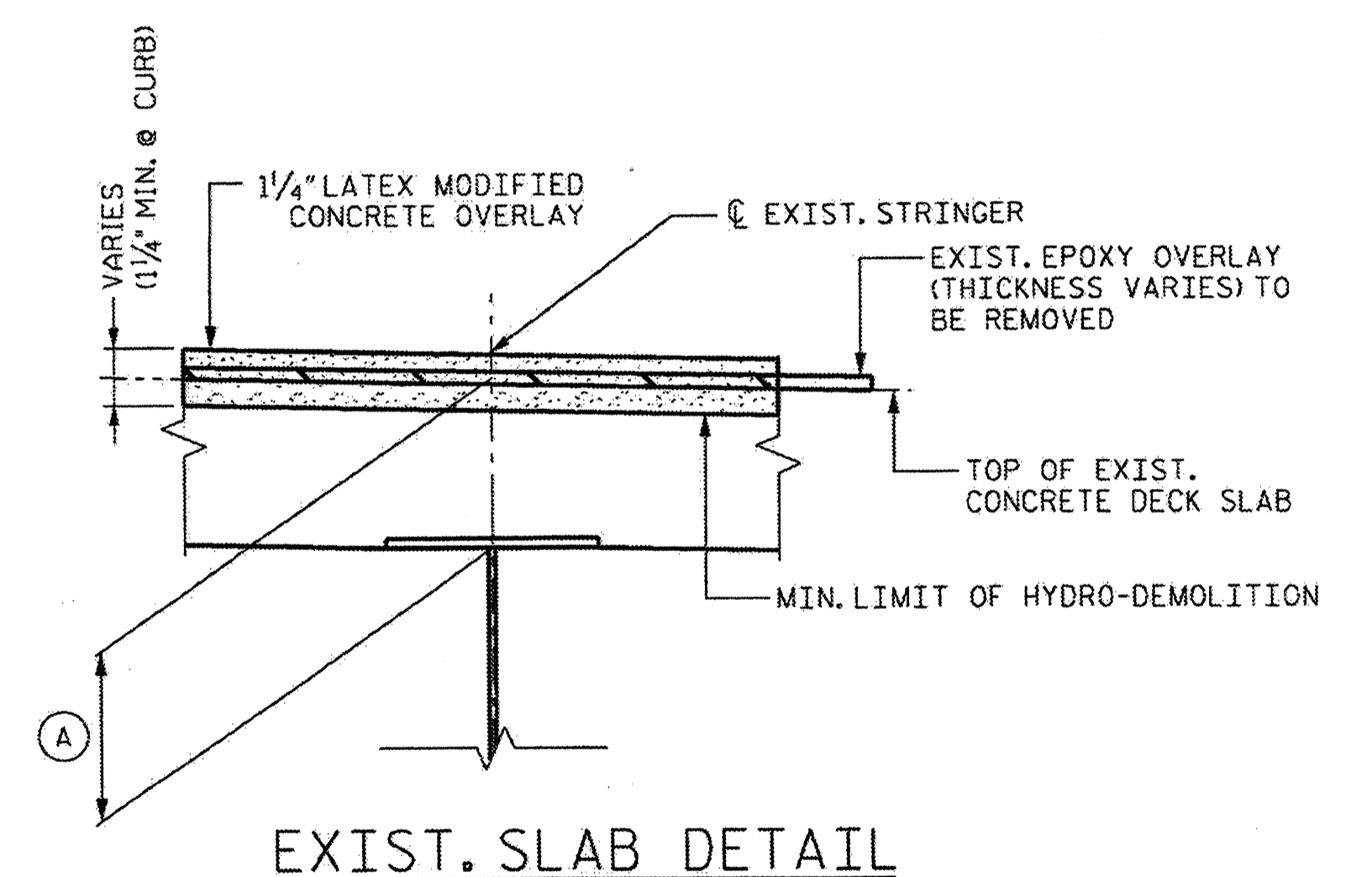
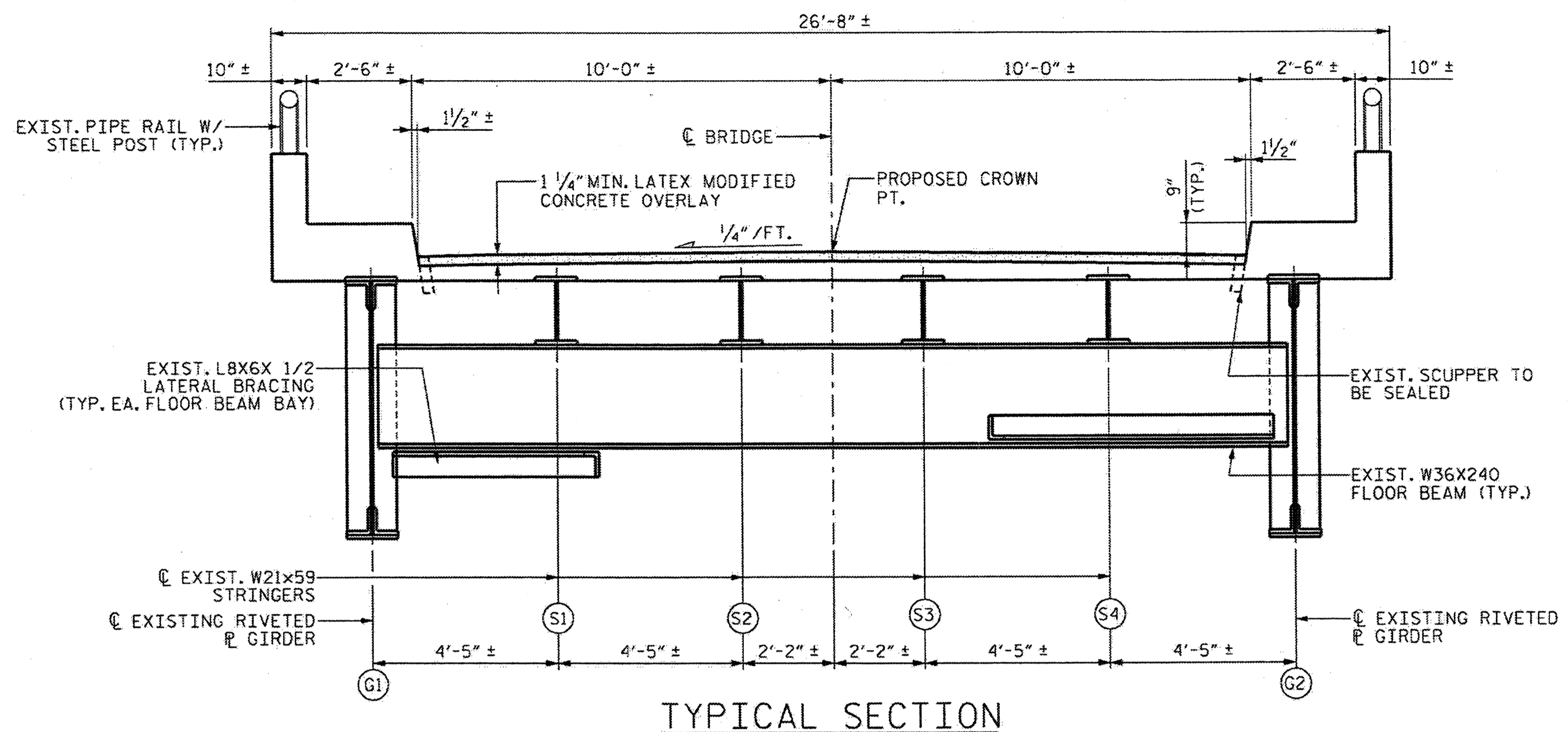
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN OF BRIDGE

REHABILITATE BRIDGE NO. 9

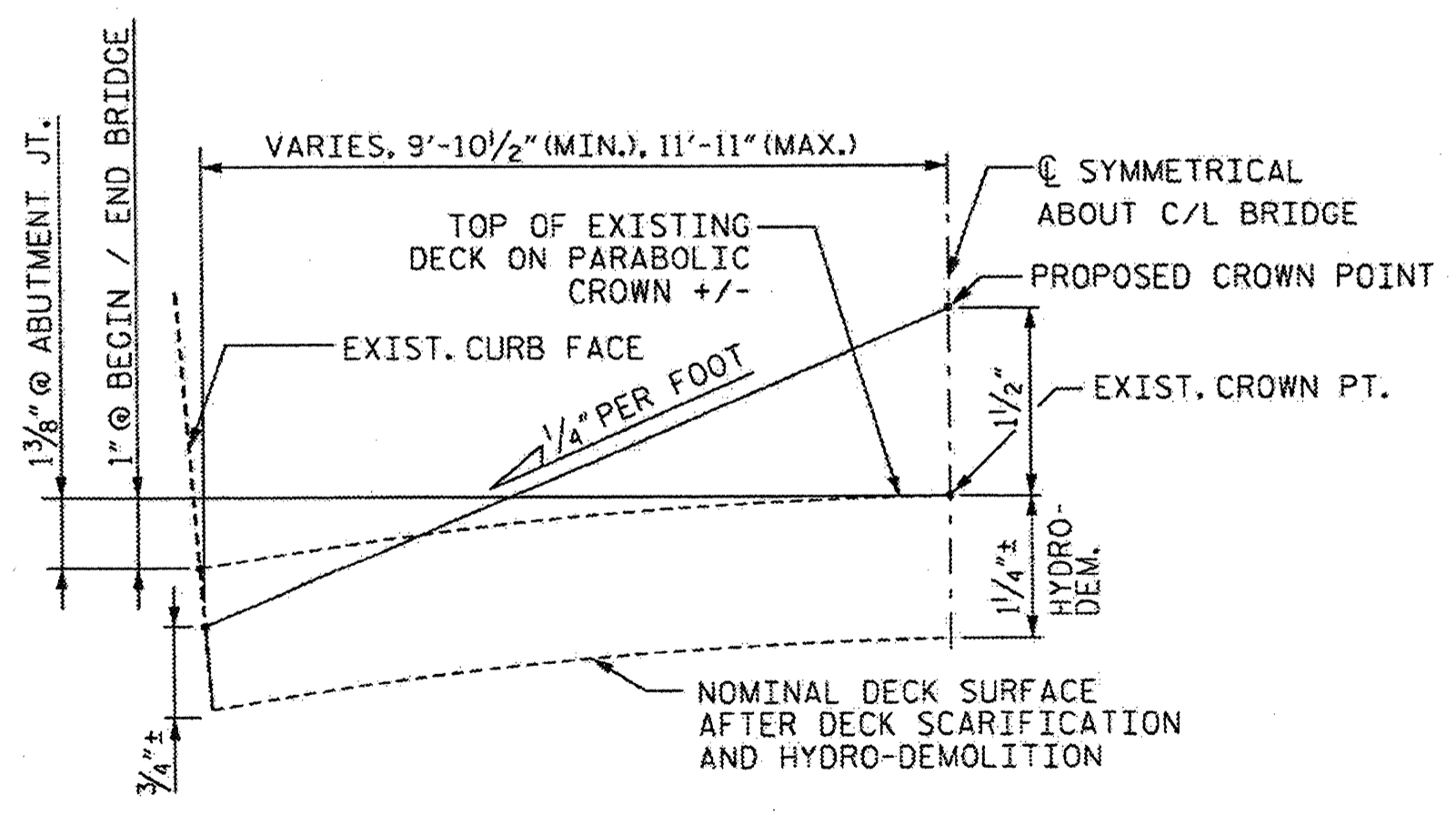
REVISIONS						SHEET NO. S-2
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**BRIDGE CROSS SLOPE SCHEMATIC FOR DECK OVERLAY**

TYP. BETWEEN ABUTMENT JOINTS EJ1 AT END BENT 1 AND END BENT 2



**BRIDGE CROSS SLOPE SCHEMATIC FOR DECK OVERLAY**

TYP. SPANS AB1 & AB2

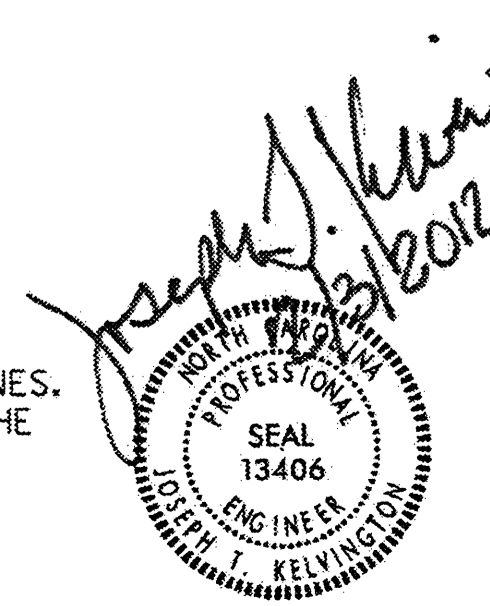
(A) DECK SLAB VARIES

STRINGER	SLAB THICKNESS
S1	7 3/8"
S2	7 15/16"
S3	7 15/16"
S4	7 3/8"

PROJECT NO. WBS 17BP.14.P.8  
GRAHAM COUNTY  
 STATION: \_\_\_\_\_

Stantec Consulting Services Inc.  
 801 Jones Franklin Road  
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 Raleigh, NC 27606  
 Tel: (919) 851-6888  
 Fax: (919) 851-7024  
 www.stantec.com  
 License No. F-0672

NOTES:  
 WATER & CONCRETE SLURRY FROM HYDRO-DEMOLITION SHALL NOT BE ALLOWED TO DRAIN ACROSS TRAVEL LANES. CONTRACTOR SHALL PROVIDE A METHOD TO CONTROL THE WATER.



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

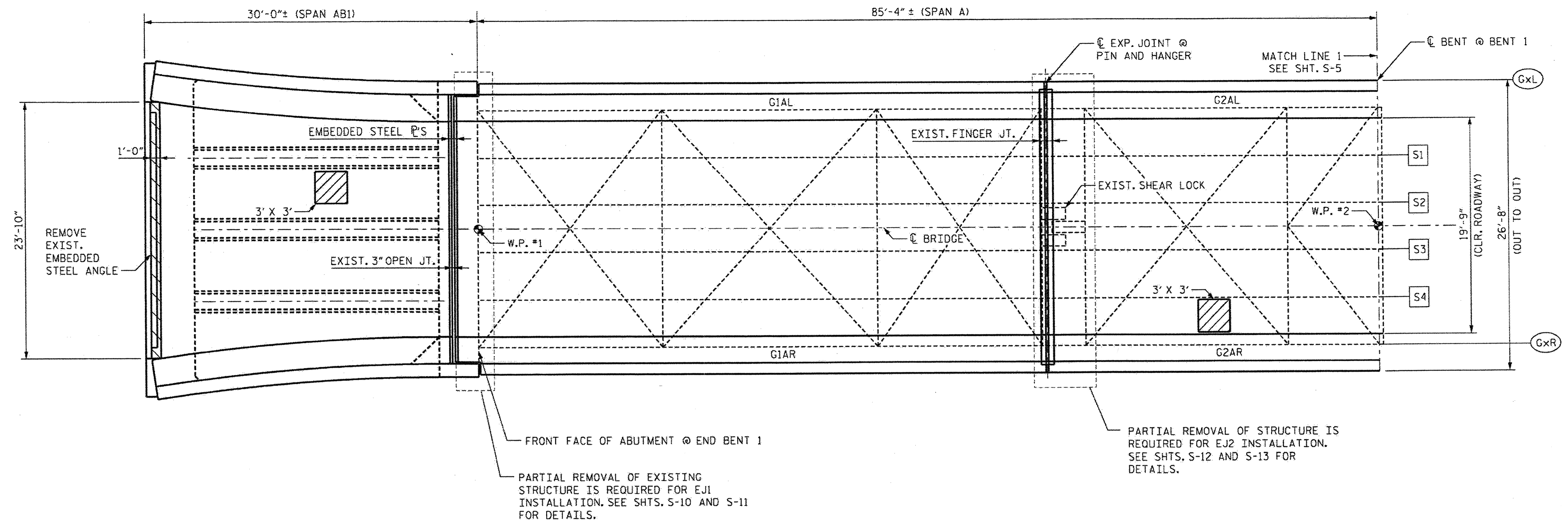
**BRIDGE TYPICAL SECTION**

**REHABILITATE BRIDGE NO. 9**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
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FOR TRAFFIC CONTROL AND PHASING DETAILS, SEE TRAFFIC MANAGEMENT PLANS.

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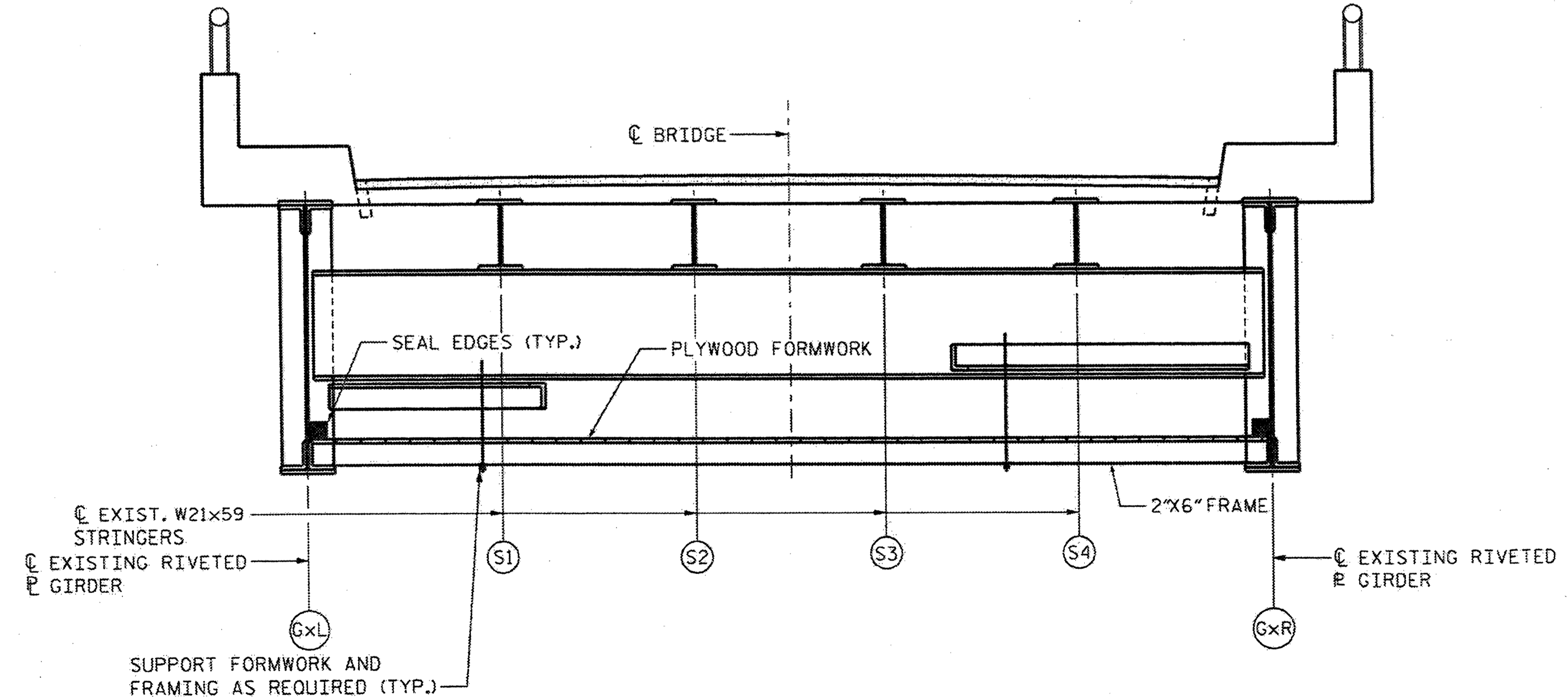
**PLAN OF SPAN A - DECK REPAIRS**

A METHOD TO CAPTURE WATER AND DEBRIS FROM BLOW THRU DURING HYDRO-DEMOLITION SHALL BE INSTALLED IN AREAS INDICATED AS CLASS III SURFACE PREPARATION.

CONTRACTOR, AT HIS OPTION, MAY CHOOSE TO MONITOR HYDRO-DEMOLITION WORK AND CONTROL TRAFFIC UNDER THE BRIDGE IN LIEU OF BLOW THRU CONTAINMENT.

COSTS FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE BID PER SQ. YD. OF HYDRO-DEMOLITION.

**NOTES:**  
 CONTRACTOR SHALL FURNISH FORM WORK TO SUPPORT SLAB OVERHANG REGIONS WITH EXTENSIVE CLASS III SURFACE PREPARATION.  
 SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.  
 COSTS FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE BID PER SQ. YD. OF HYDRO-DEMOLITION.  
 SEE HYDRO-DEMOLITION SPECIAL PROVISIONS.  
 CLASS II AND CLASS III SURFACE PREPARATION SHOWN IS REPRESENTATIVE AND DOES NOT REFLECT ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED @ THE PROJECT SITE.



**TYPICAL SECTION**  
 TYP. "BLOW THRU" CONTAINMENT AND FORMWORK

- GxL GxR** DENOTES  $\phi$  RIVETED STEEL  $\phi$  GIRDER
- S#** DENOTES STEEL ROLLED SECTION STRINGER #
- CLASS II SURFACE PREPARATION
- CLASS III SURFACE PREPARATION

**NOTES:**  
 L' X W' = LENGTH OF AREA ALONG  $\phi$  BRIDGE X WIDTH OF AREA NORMAL TO  $\phi$  BRIDGE

**PROJECT NO. WBS 17BP.14.P.8**  
**GRAHAM COUNTY**  
**STATION: \_\_\_\_\_**

**Stantec**  
 Stantec Consulting Services Inc.  
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 Fax. (919) 851-7024  
 www.stantec.com  
 License No. F-0672

DRAWN BY : P Z ARMATA DATE : 12/11  
 CHECKED BY : J T KELVINGTON DATE : 12/11

*Joseph Kelvington*  
 SEAL 13406  
 REGISTERED PROFESSIONAL ENGINEER  
 JOSEPH T. KELVINGTON

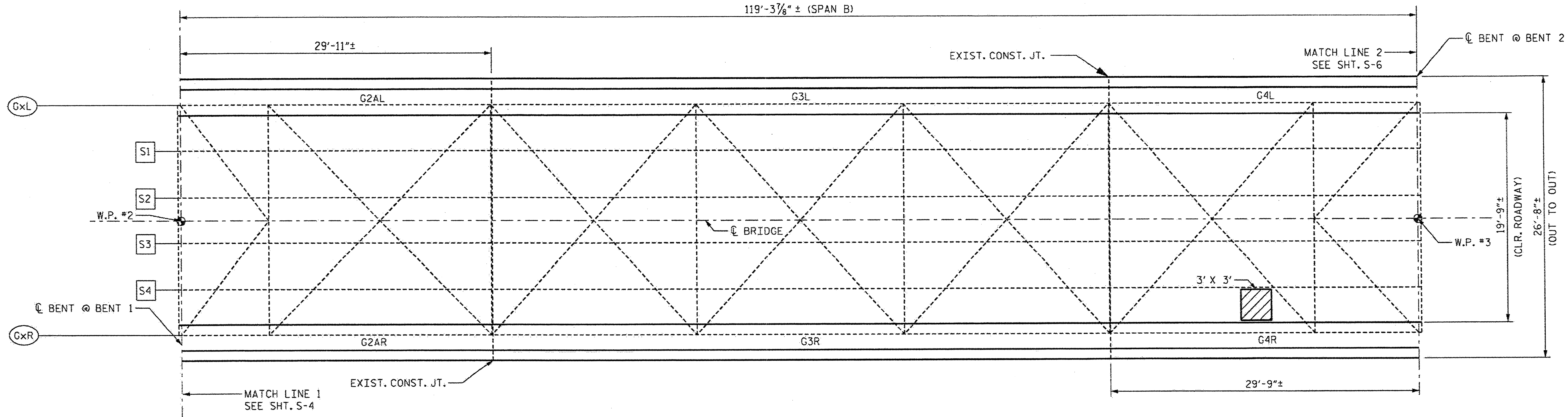
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**DECK REPAIR DETAILS**  
**SPAN A**

**REHABILITATE BRIDGE NO. 9**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			19

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**PLAN OF SPAN B - DECK REPAIRS**

**NOTE:**

CONTRACTOR SHALL FURNISH FORM WORK TO SUPPORT SLAB OVERHANG REGIONS WITH EXTENSIVE CLASS III SURFACE PREPARATION.

SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.

COSTS FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE BID PER SQ. YD. OF HYDRO-DEMOLITION.

SEE HYDRO-DEMOLITION SPECIAL PROVISIONS.

CLASS II AND CLASS III SURFACE PREPARATION SHOWN IS REPRESENTATIVE AND DOES NOT REFLECT ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED @ THE PROJECT SITE.

- (GxL) (GxR) DENOTES  $\phi$  RIVETED STEEL  $\square$  GIRDER
- [S#] DENOTES STEEL ROLLED SECTION STRINGER #
- CLASS II SURFACE PREPARATION
- CLASS III SURFACE PREPARATION

**NOTES:**

L' X W' = LENGTH OF AREA ALONG  $\phi$  BRIDGE X WIDTH OF AREA NORMAL TO  $\phi$  BRIDGE

**PROJECT NO. WBS 17BP.14.P.8**  
**GRAHAM COUNTY**  
**STATION: \_\_\_\_\_**

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 www.stantec.com  
 License No. F-0672

DRAWN BY : P. Z. ARMATA      DATE : 12/11  
 CHECKED BY : J. T. KELVINGTON      DATE : 12/11

Joseph T. Kelvington

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

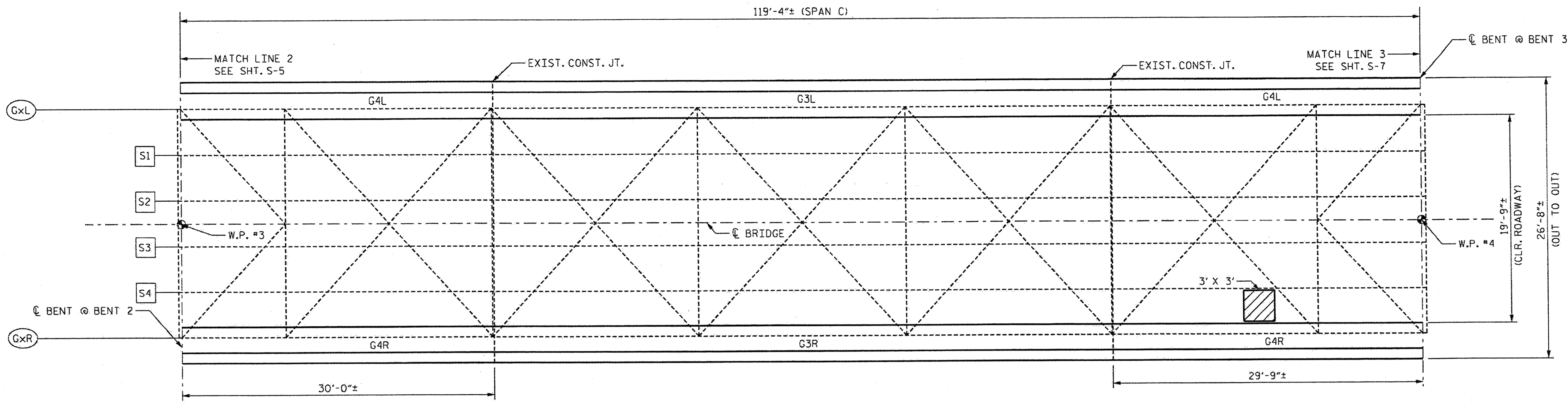
DECK REPAIR DETAILS  
 SPAN B

REHABILITATE BRIDGE NO. 9

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-5
2			4			19



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**PLAN OF SPAN C - DECK REPAIRS**

NOTE:  
 CONTRACTOR SHALL FURNISH FORM WORK TO SUPPORT SLAB OVERHANG REGIONS WITH EXTENSIVE CLASS III SURFACE PREPARATION.  
 SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.  
 COSTS FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE BID PER SQ. YD. OF HYDRO-DEMOLITION.  
 SEE HYDRO-DEMOLITION SPECIAL PROVISIONS.  
 CLASS II AND CLASS III SURFACE PREPARATION SHOWN IS REPRESENTATIVE AND DOES NOT REFLECT ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED @ THE PROJECT SITE.

- GxL GxR DENOTES CL RIVETED STEEL P GIRDER
- S# DENOTES STEEL ROLLED SECTION STRINGER #
- CLASS II SURFACE PREPARATION
- CLASS III SURFACE PREPARATION

NOTES:  
 L' X W' = LENGTH OF AREA ALONG CL BRIDGE X  
 WIDTH OF AREA NORMAL TO CL BRIDGE

PROJECT NO. WBS 17BP.14.P.8  
 GRAHAM COUNTY  
 STATION: \_\_\_\_\_

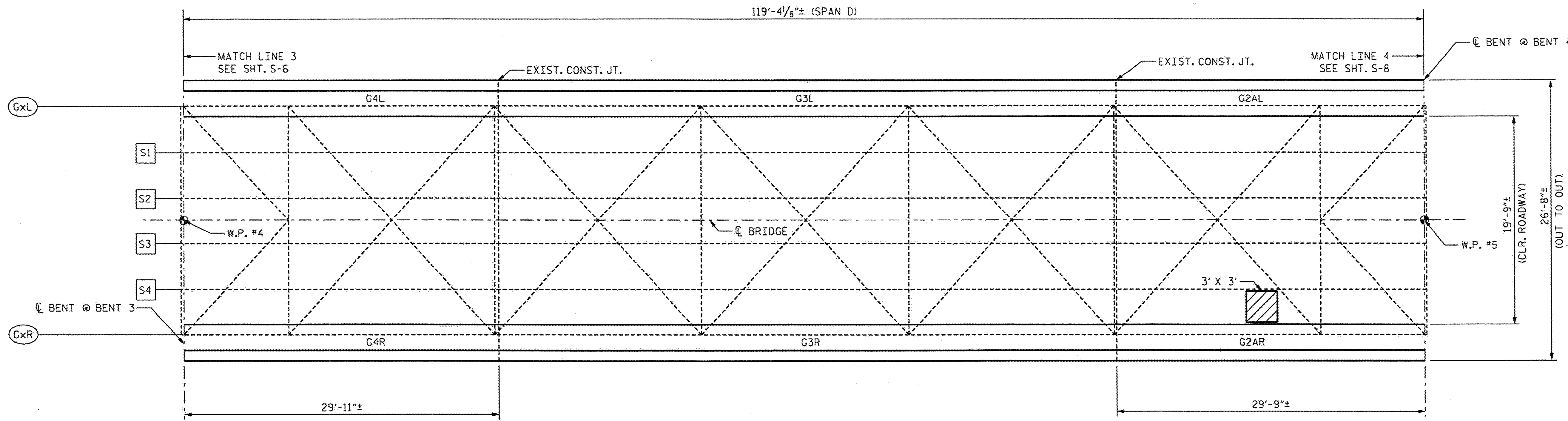
*Joseph J. Kelvington*  
 2/2/2012  
 SEAL 13406  
 ENGINEER  
 KELVINGTON

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
DECK REPAIR DETAILS SPAN C					
REHABILITATE BRIDGE NO. 9					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-6
					TOTAL SHEETS 19

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DRAWN BY : P. Z. ARMATA DATE : 12/11  
 CHECKED BY : J. T. KELVINGTON DATE : 12/11

11/3/20 AM blarton  
 2/2/2012  
 9: Drawing 17BP.14.P.8 Repair Plan.dgn  
 Co. 17BP.14.P.8 Graham  
 2011\WBS 17BP.14.P.8  
 Group 2011\WBS 17BP.14.P.8  
 Design\Structures\Bridges Group 2011\WBS 17BP.14.P.8  
 17BP.14.P.8 Graham



**PLAN OF SPAN D - DECK REPAIRS**

**NOTE:**  
 CONTRACTOR SHALL FURNISH FORM WORK TO SUPPORT SLAB OVERHANG REGIONS WITH EXTENSIVE CLASS III SURFACE PREPARATION.  
 SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.  
 COSTS FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE BID PER SQ. YD. OF HYDRO-DEMOLITION.  
 SEE HYDRO-DEMOLITION SPECIAL PROVISIONS.  
 CLASS II AND CLASS III SURFACE PREPARATION SHOWN IS REPRESENTATIVE AND DOES NOT REFLECT ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED @ THE PROJECT SITE.

- GxL GxR DENOTES CL RIVETED STEEL P GIRDER
- S# DENOTES STEEL ROLLED SECTION STRINGER #
- CLASS II SURFACE PREPARATION
- CLASS III SURFACE PREPARATION

**NOTES:**  
 L' X W' = LENGTH OF AREA ALONG CL BRIDGE X  
 WIDTH OF AREA NORMAL TO CL BRIDGE

**PROJECT NO.** WBS 17BP.14.P.8  
**GRAHAM COUNTY**  
**STATION:** \_\_\_\_\_

*Joseph J. Kelvington*  
 SEAL 13406  
 ENGINEER  
 KELVINGTON

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**DECK REPAIR DETAILS  
 SPAN D**

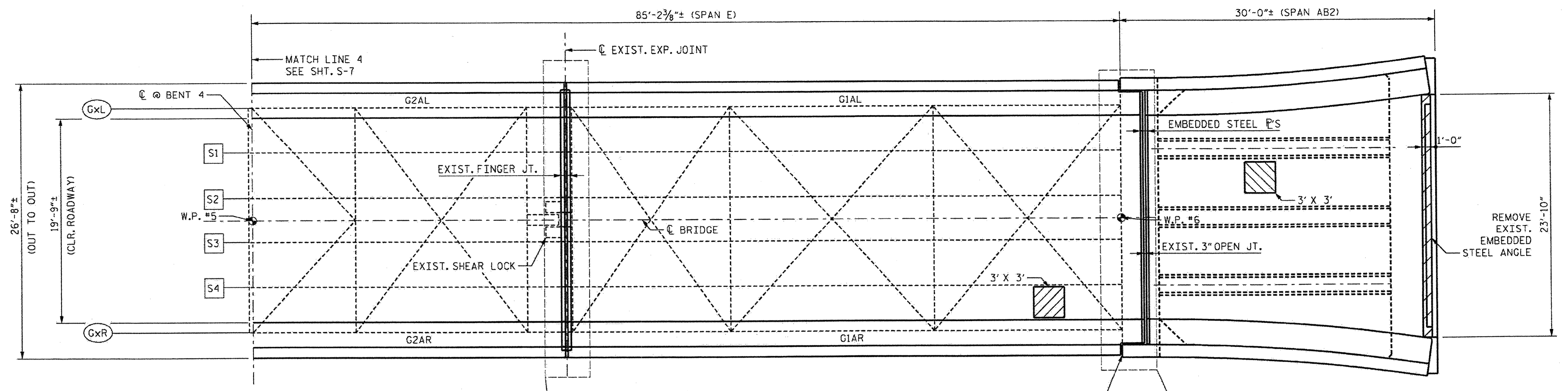
**REHABILITATE BRIDGE NO. 9**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-7
2			4			TOTAL SHEETS 19

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 CHECKED BY : J. T. KELVINGTON DATE : 12/11

2/2/2012 11:32:20 AM blaton  
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PARTIAL REMOVAL OF STRUCTURE IS REQUIRED FOR EJ2 INSTALLATION. SEE SHTS. S-12 AND S-13 FOR DETAILS.

FRONT FACE OF ABUTMENT @ END BENT 2

PARTIAL REMOVAL OF STRUCTURE IS REQUIRED FOR EJ1 INSTALLATION. SEE SHTS. S-10 AND S-11 FOR DETAILS.

NOTE:  
CONTRACTOR SHALL FURNISH FORM WORK TO SUPPORT SLAB OVERHANG REGIONS WITH EXTENSIVE CLASS III SURFACE PREPARATION.  
SUBMIT DETAILS OF PROPOSED FORM WORK FOR APPROVAL PRIOR TO BEGINNING WORK.  
COSTS FOR INSTALLING AND REMOVING FORM WORK SHALL BE INCIDENTAL TO THE PRICE BID PER SQ. YD. OF HYDRO-DEMOLITION.  
SEE HYDRO-DEMOLITION SPECIAL PROVISIONS.  
CLASS II AND CLASS III SURFACE PREPARATION SHOWN IS REPRESENTATIVE AND DOES NOT REFLECT ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED @ THE PROJECT SITE.

### PLAN OF SPAN E - DECK REPAIRS

(GxL) (GxR) DENOTES @ RIVETED STEEL P GIRDER

[S#] DENOTES STEEL ROLLED SECTION STRINGER #

[Hatched Box] CLASS II SURFACE PREPARATION

[Cross-hatched Box] CLASS III SURFACE PREPARATION

#### NOTES:

L' X W' = LENGTH OF AREA ALONG @ BRIDGE X WIDTH OF AREA NORMAL TO @ BRIDGE

PROJECT NO. WBS 17BP.14.P.8  
GRAHAM COUNTY  
STATION: \_\_\_\_\_

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DRAWN BY : P Z ARMATA DATE : 12/11  
CHECKED BY : J T KELVINGTON DATE : 12/11

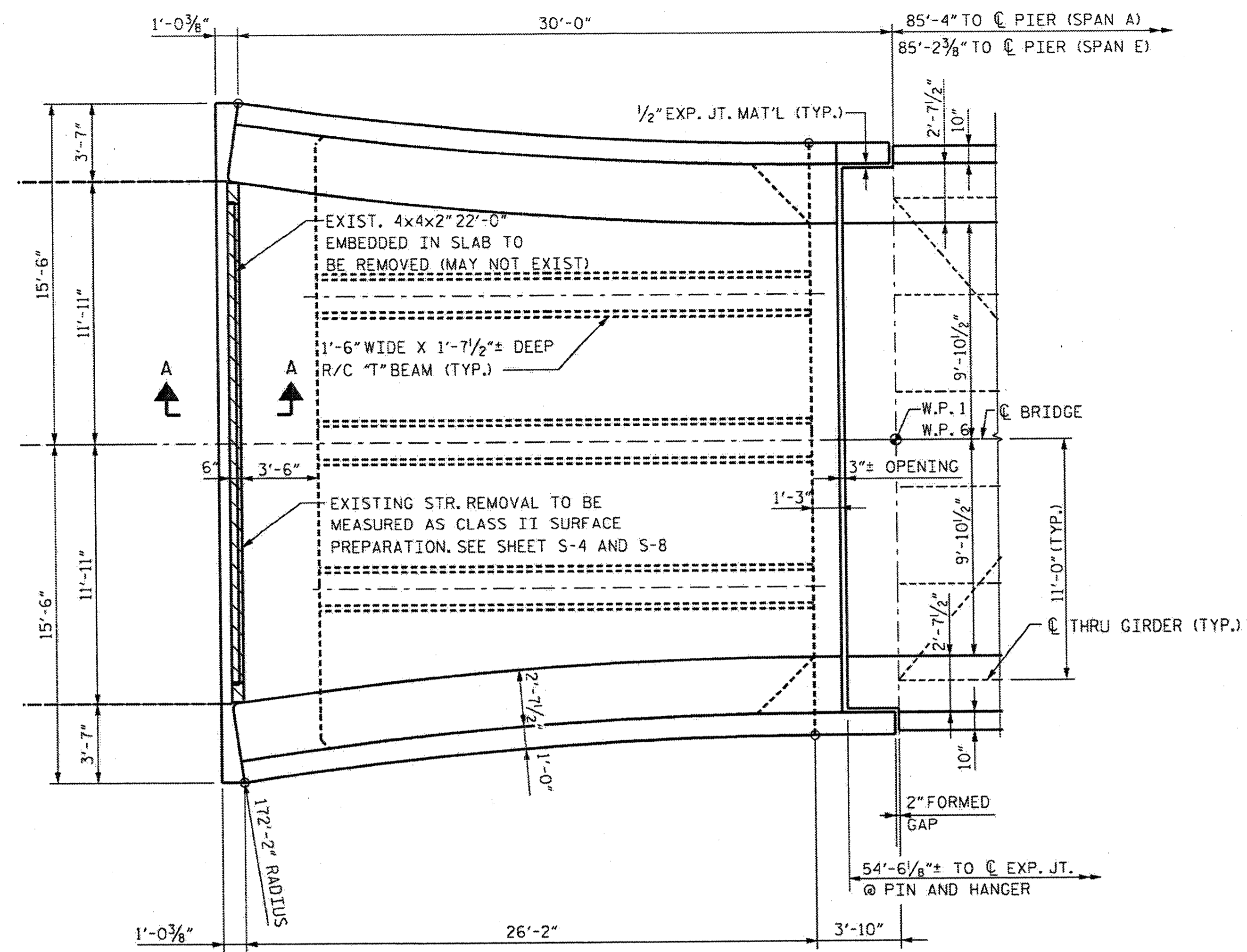
STATE OF NORTH CAROLINA  
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RALEIGH

### DECK REPAIR DETAILS SPAN E

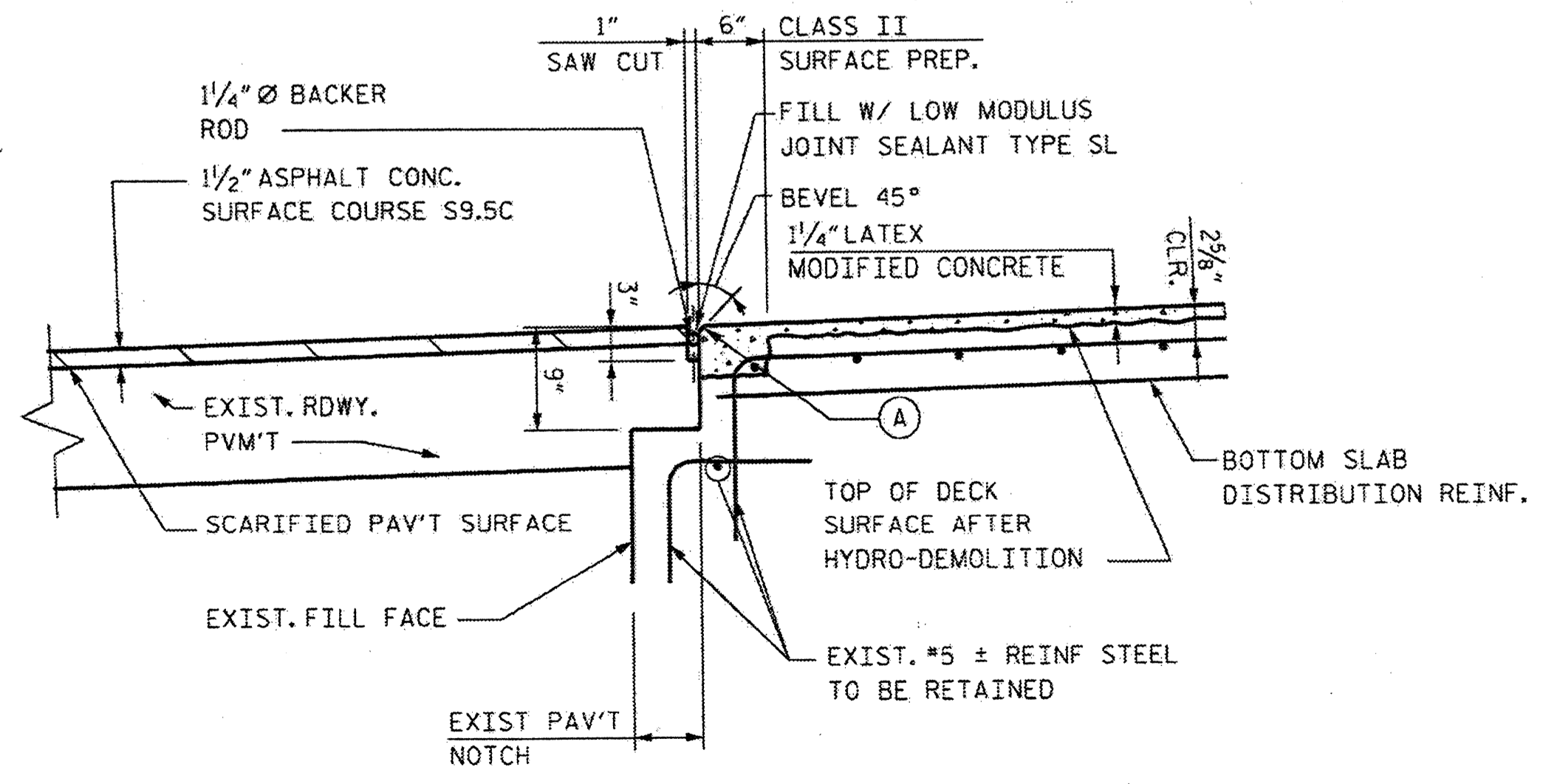
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			19

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**PLAN OF ABUTMENT**



**SECTION A-A**

(A) EXISTING 4x4 PER ORIGINAL CONTRACT PLANS TO BE REMOVED.

1/4" BACKER ROD SHALL BE CLOSED CELL EXPANDED POLYETHYLENE FOAM TYPE L. PLACE BACKER ROD TO WITHIN 1'-0" OF EXISTING CURB FACE. NO SEPARATE PAVEMENT FOR LABOR, MATERIALS, AND EQUIPMENT NEEDED TO CONSTRUCT CONCRETE JOINT SEALS SHALL BE MADE. COSTS FOR THIS WORK SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

NOTE:  
 ALL JOINT REPAIR WORK FOR RJ1 SHALL BE COMPLETED AS PART OF DECK REPAIRS TO THE ABUTMENT SPANS. PROVIDE TEMP STEEL COVER P AS REQUIRED TO RUN TRAFFIC OVER JOINT CONSTRUCTION. SEE SHTS. S-12 AND S-13 FOR DETAILS.

PROJECT NO. WBS 17BP.14.P.8  
GRAHAM COUNTY  
 STATION: \_\_\_\_\_

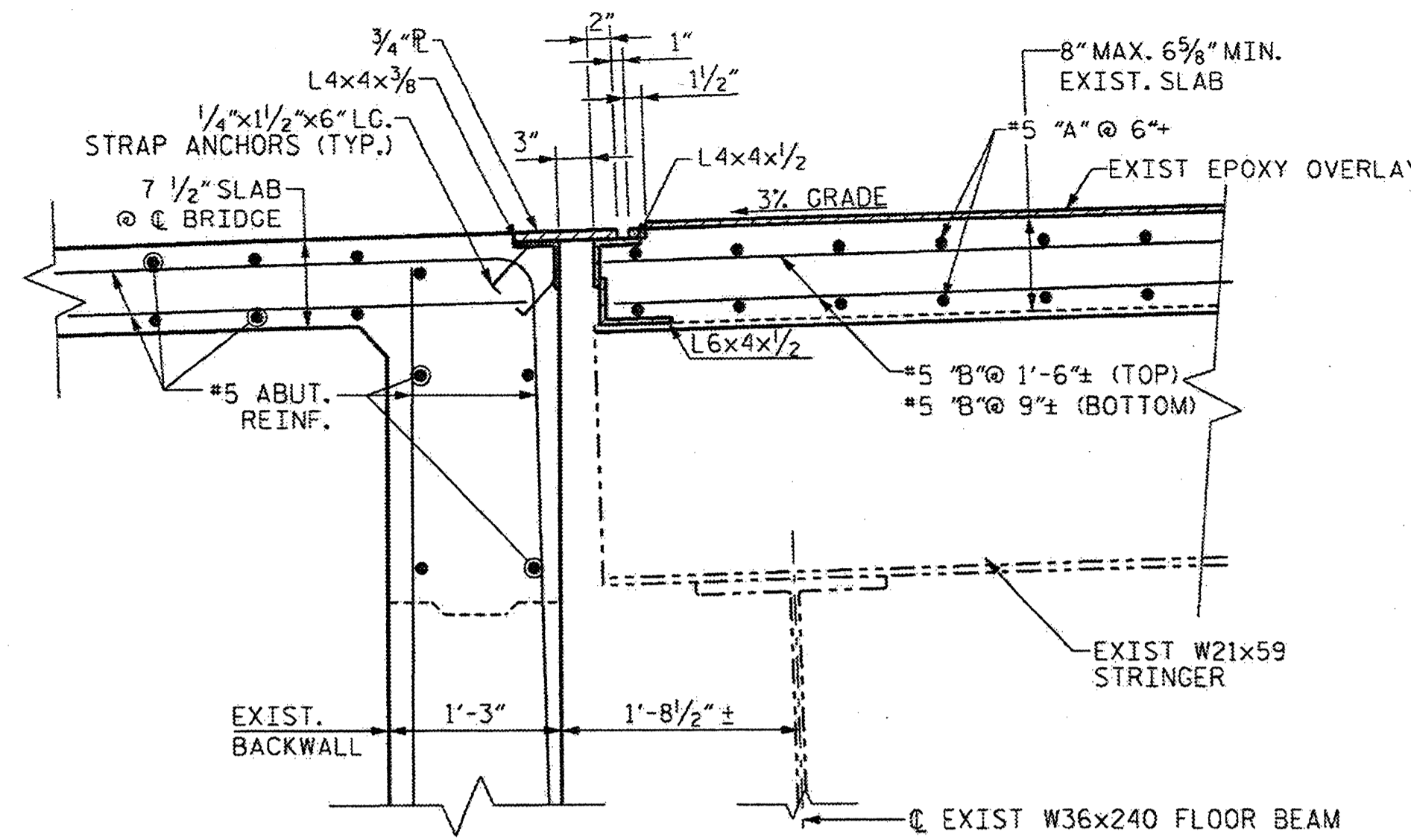
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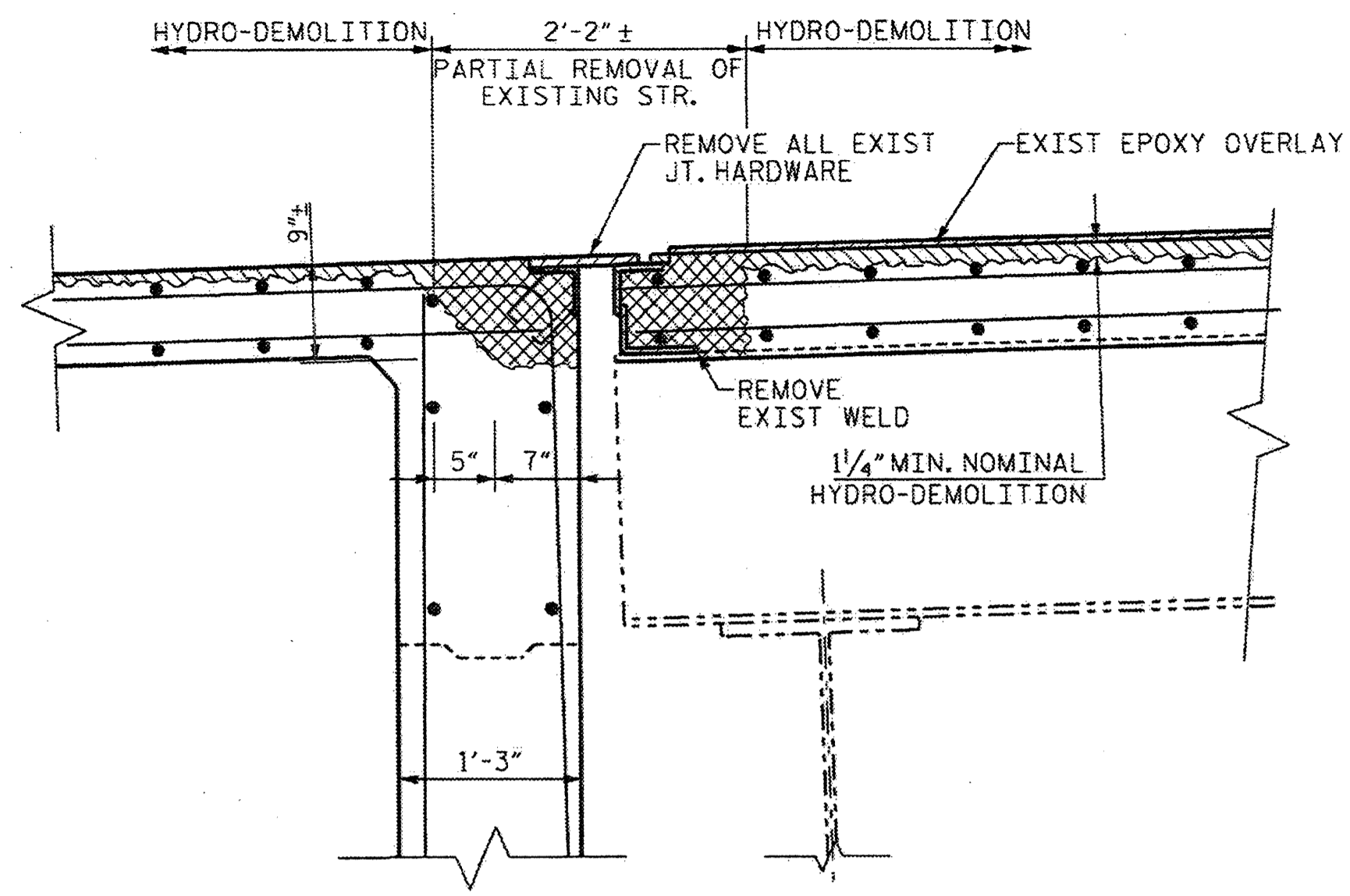
*J. Kelvington*  
 11/15/2012  
 NORTH CAROLINA  
 PROFESSIONAL ENGINEER  
 13406  
 J. KELVINGTON

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
ROADWAY JOINT RJ1					
DETAILS					
REHABILITATE BRIDGE NO. 9					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO.
					S-9
					TOTAL SHEETS
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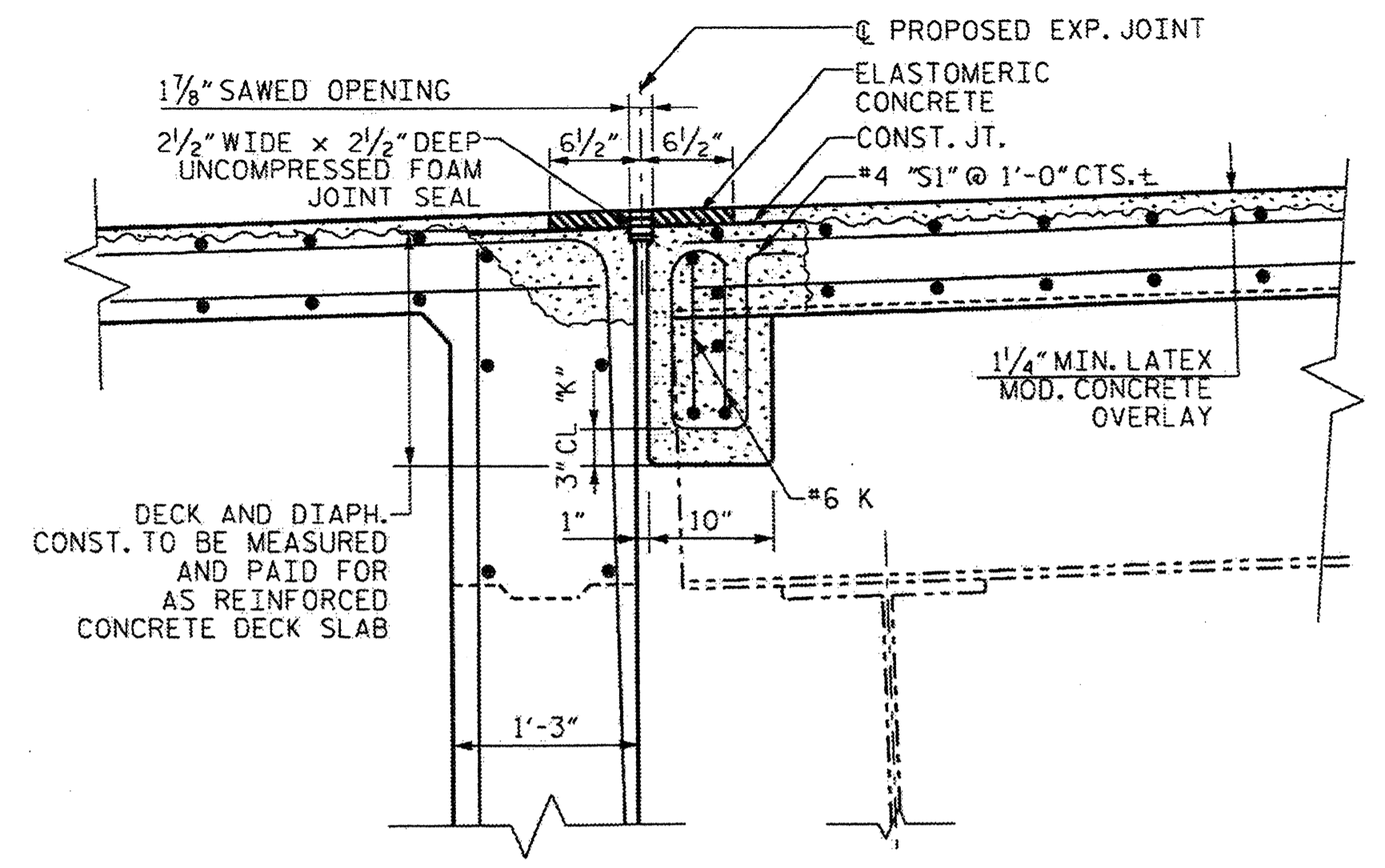
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**SECTION C-C**  
 EXISTING JOINT  
 @ ABUTMENT 1 SHOWN,  
 ABUTMENT 2 SIMILAR-OPP. HAND



**SECTION C-C**  
 JOINT DEMOLITION  
 @ ABUTMENT 1 SHOWN,  
 ABUTMENT 2 SIMILAR-OPP. HAND



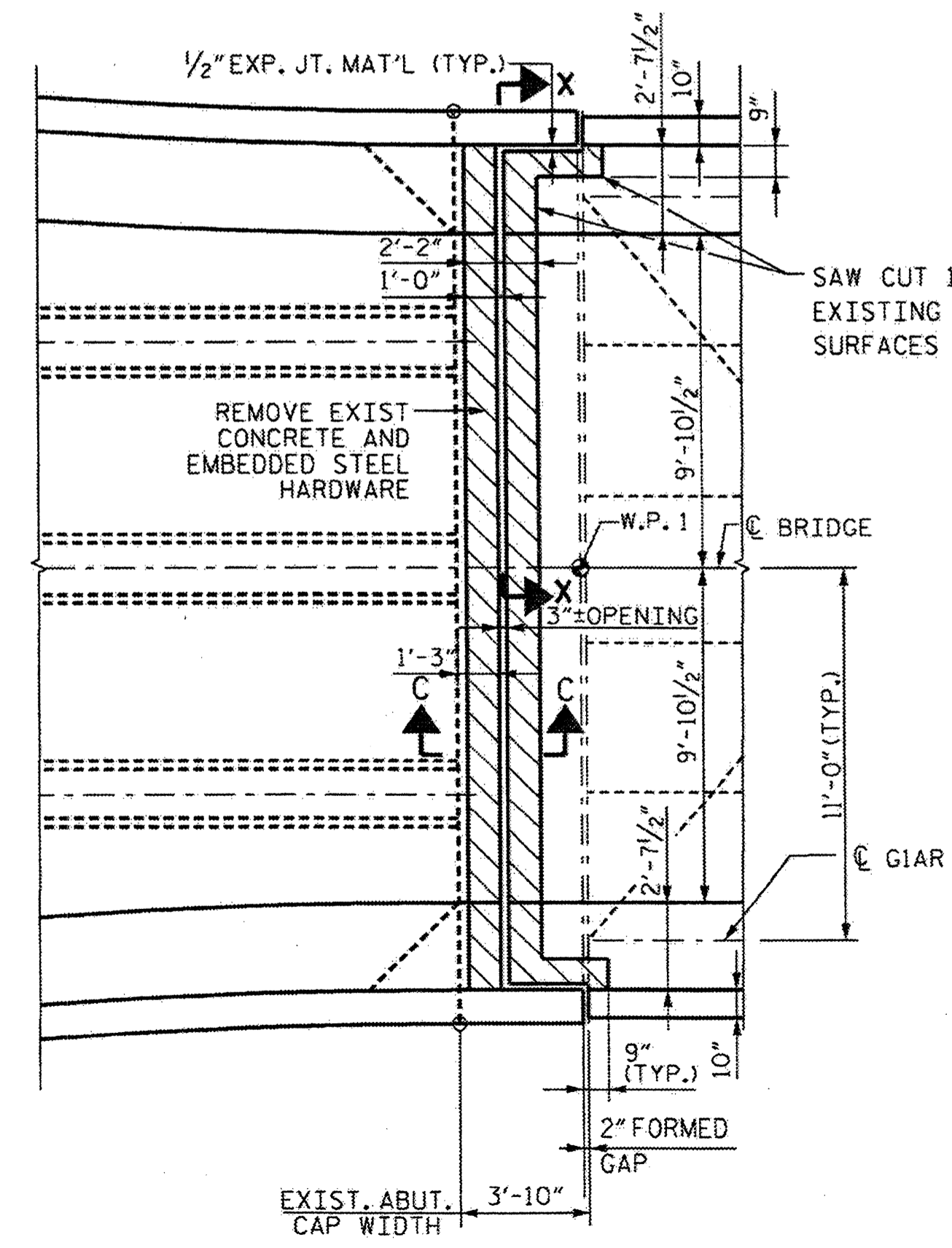
**SECTION C-C**  
 JOINT SEAL  
 @ ABUTMENT 1 SHOWN,  
 ABUTMENT 2 SIMILAR-OPP. HAND

NOTES:  
 FOR PARTIAL REMOVAL OF EXIST. STRUCTURE,  
 SEE SPECIAL PROVISIONS.

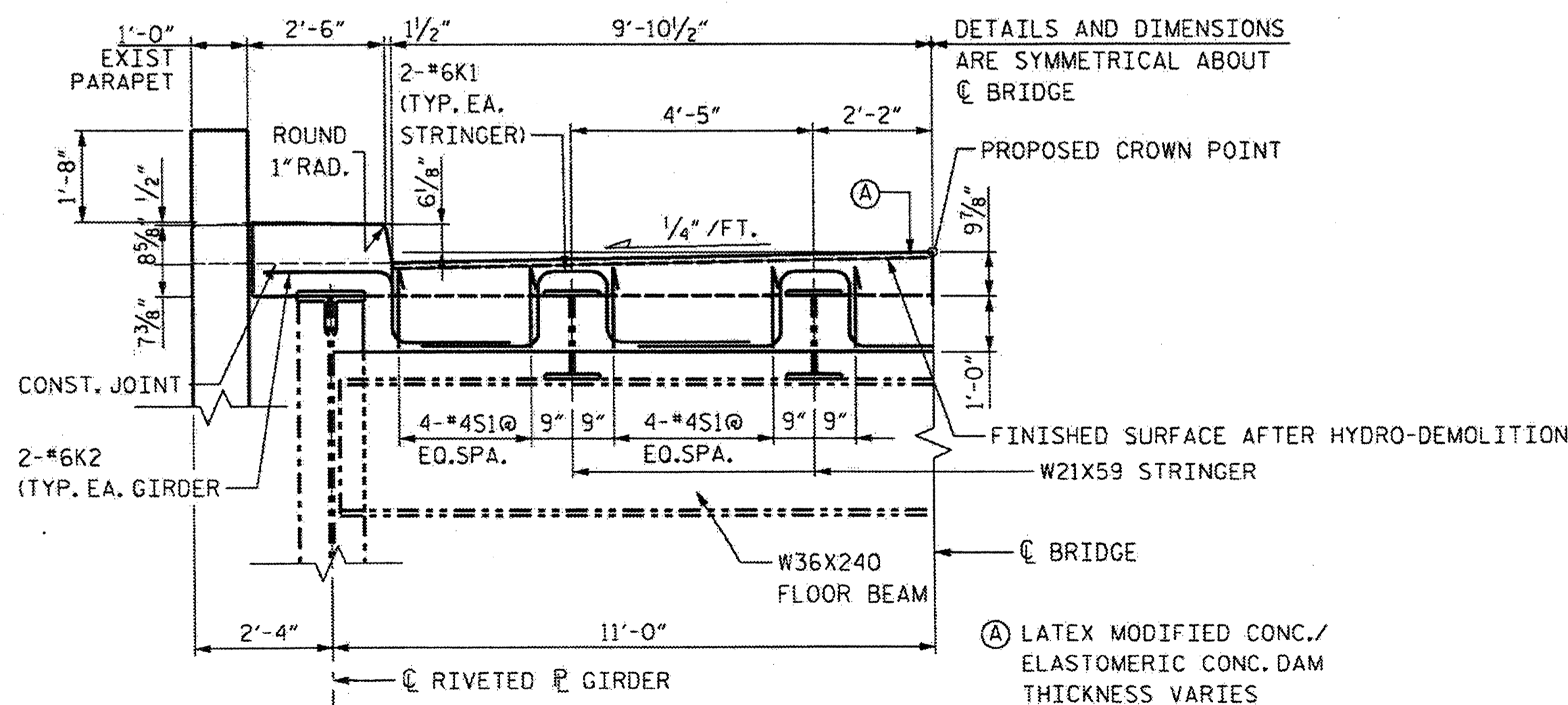
ALL EXISTING REINFORCING STEEL IN BACKWALL  
 AND DECK SLAB EXPOSED BY CONCRETE REMOVAL  
 SHALL BE RETAINED.

NOTE:  
 ALL DIAPHRAGM REPAIR WORK AND EDGE  
 BEAM CONST. FOR EJ1 SHALL BE COMPLETE  
 PRIOR TO DECK SCARIFICATION AND  
 HYDRO-DEMOLITION.

FOR TEMPORARY STEEL COVER REQ'D FOR  
 JOINT CONSTRUCTION, SEE SHTS. S-12 THRU S-13.



**PLAN @ END BENT 1**  
 EXISTING END BENT JOINT  
 END BENT 2 SIMILAR - OPP. HAND



**SECTION X-X**

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**PROJECT NO. WBS 17BP.14.P.8**  
**GRAHAM COUNTY**  
**STATION:**  
**SHEET 1 OF 2**

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

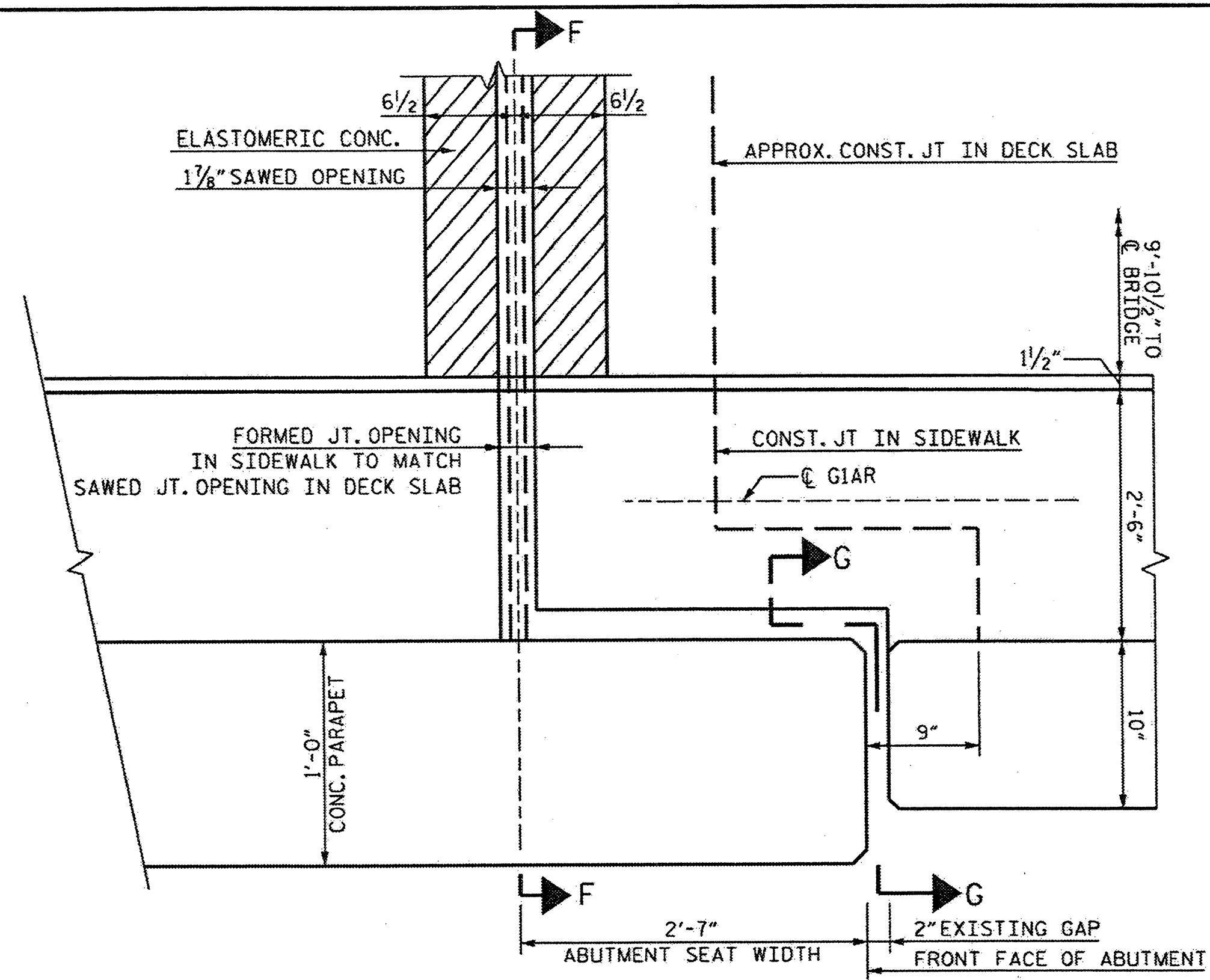
**JOINT SEAL EJ1  
 DETAILS**

**REHABILITATE BRIDGE NO. 9**

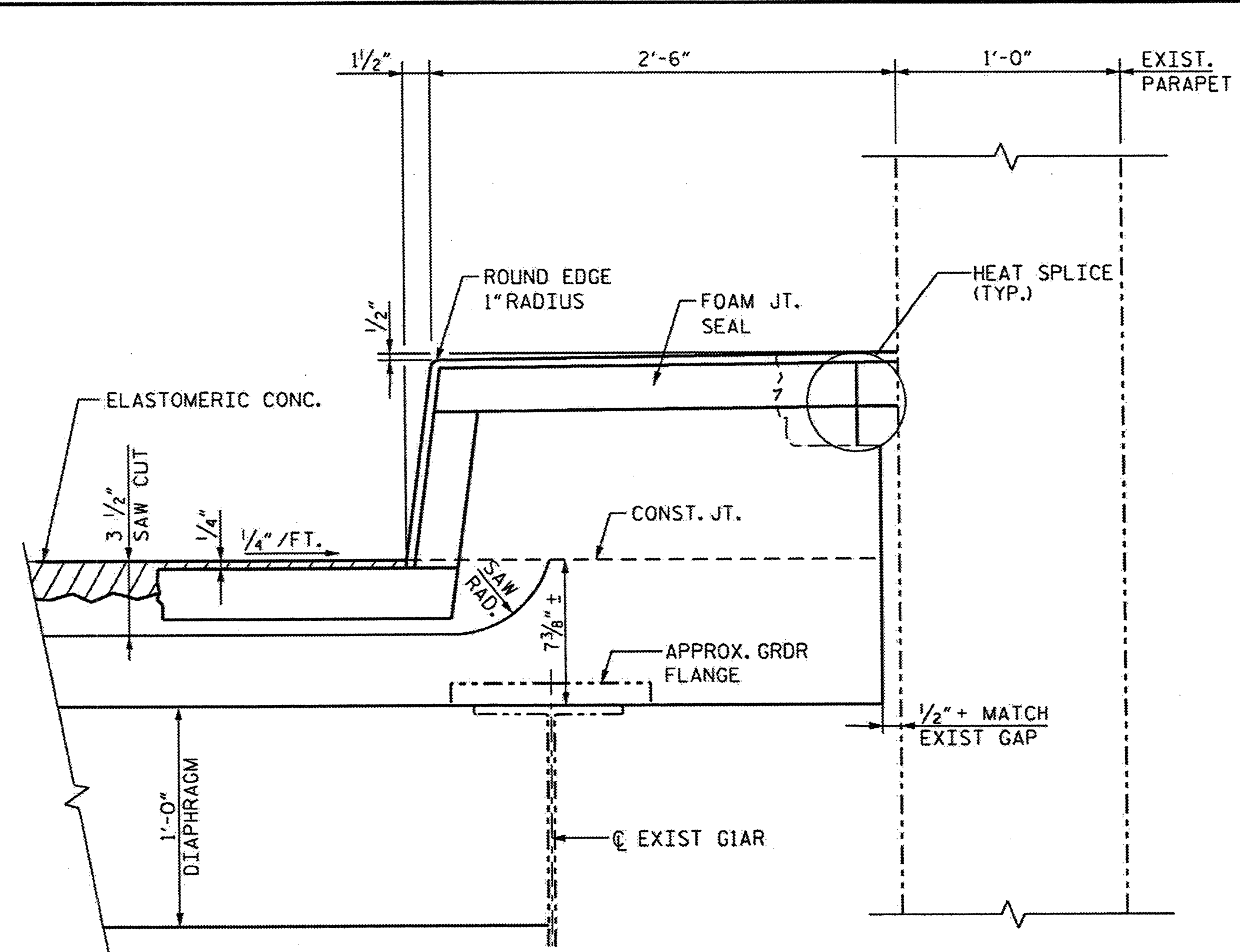
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-10
1			3			TOTAL SHEETS
2			4			19

*Joseph Kelvington*  
 12/11/11  
 SEAL  
 13406  
 J. KELVINGTON

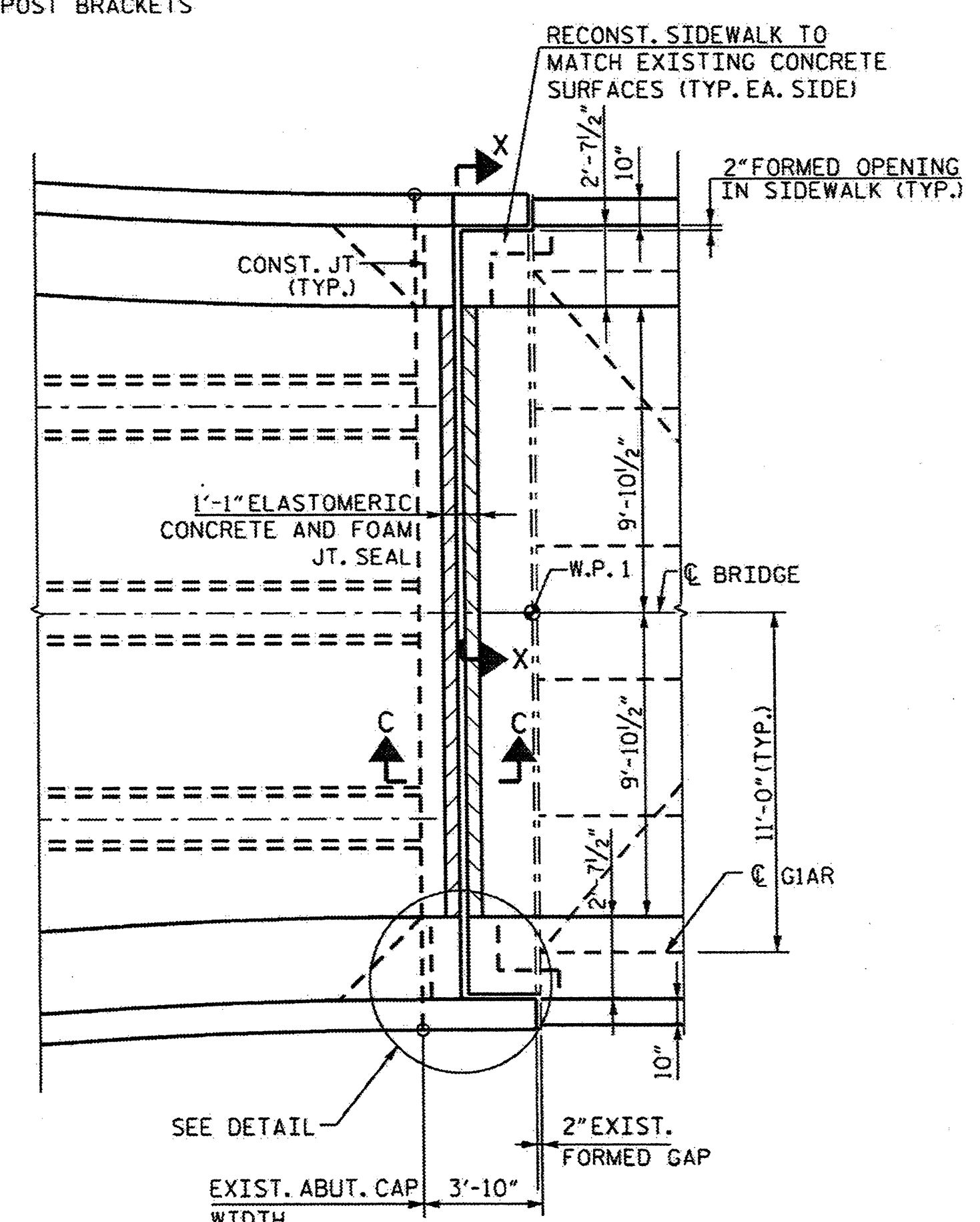
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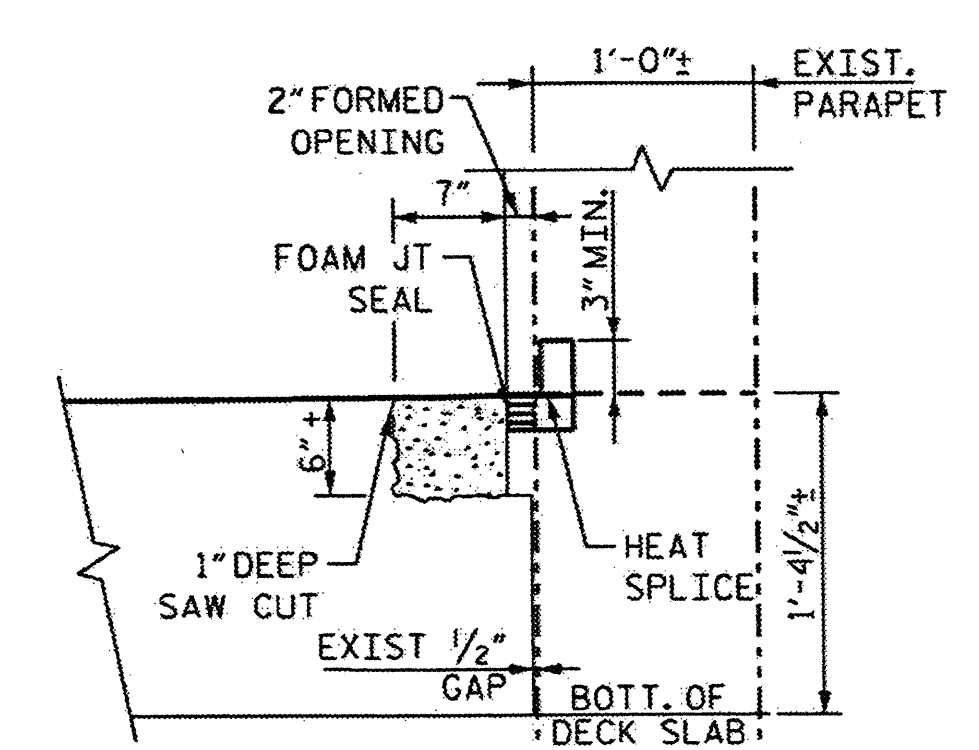
**PARTIAL PLAN @ END BENT #1**  
 (END BENT #2 SIMILAR)  
 NOTE: BARRIER, END POSTS AND BARRIER POST BRACKETS NOT SHOWN FOR CLARITY.



**SECTION F-F**



**PLAN @ END BENT 1**  
 END BENT 2 SIMILAR - OPP. HAND



**SECTION G-G**

BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT					
BILL OF MATERIAL					
1 JOINT SHOWN (2 REQ'D.)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*K1	8	#6	1	8'-10"	106
*K2	4	#6	2	5'-0"	30
*S1	20	#4	3	3'-7"	48
REINFORCING STEEL					LBS.
* EPOXY COATED REINFORCING STEEL					LBS.
					184
CLASS AA CONCRETE					C. Y.
					1.8

FOR PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.  
 REINFORCED CONCRETE DECK SLAB (1 END) = 52 SF

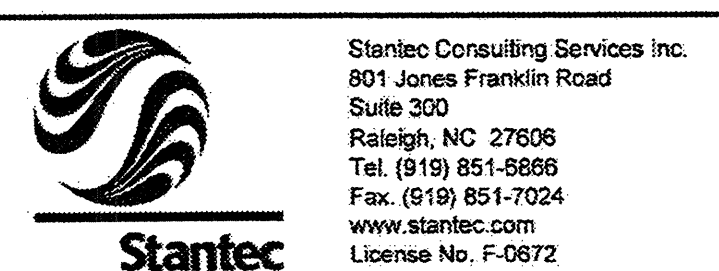
ELASTOMERIC CONCRETE-EJI	
LOCATION	QTY
END BENT 1	3.3 C.F.
END BENT 2	3.3 C.F.

TOTAL ELASTOMERIC CONC. = 6.6 C.F.  
 TOTAL ELASTOMERIC CONC. = 0.2 C.Y.

PROJECT NO. WBS 17BP.14.P.8  
GRAHAM COUNTY  
 STATION: \_\_\_\_\_

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
JOINT SEAL EJI DETAILS					
REHABILITATE BRIDGE NO. 9					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-11
					TOTAL SHEETS 19

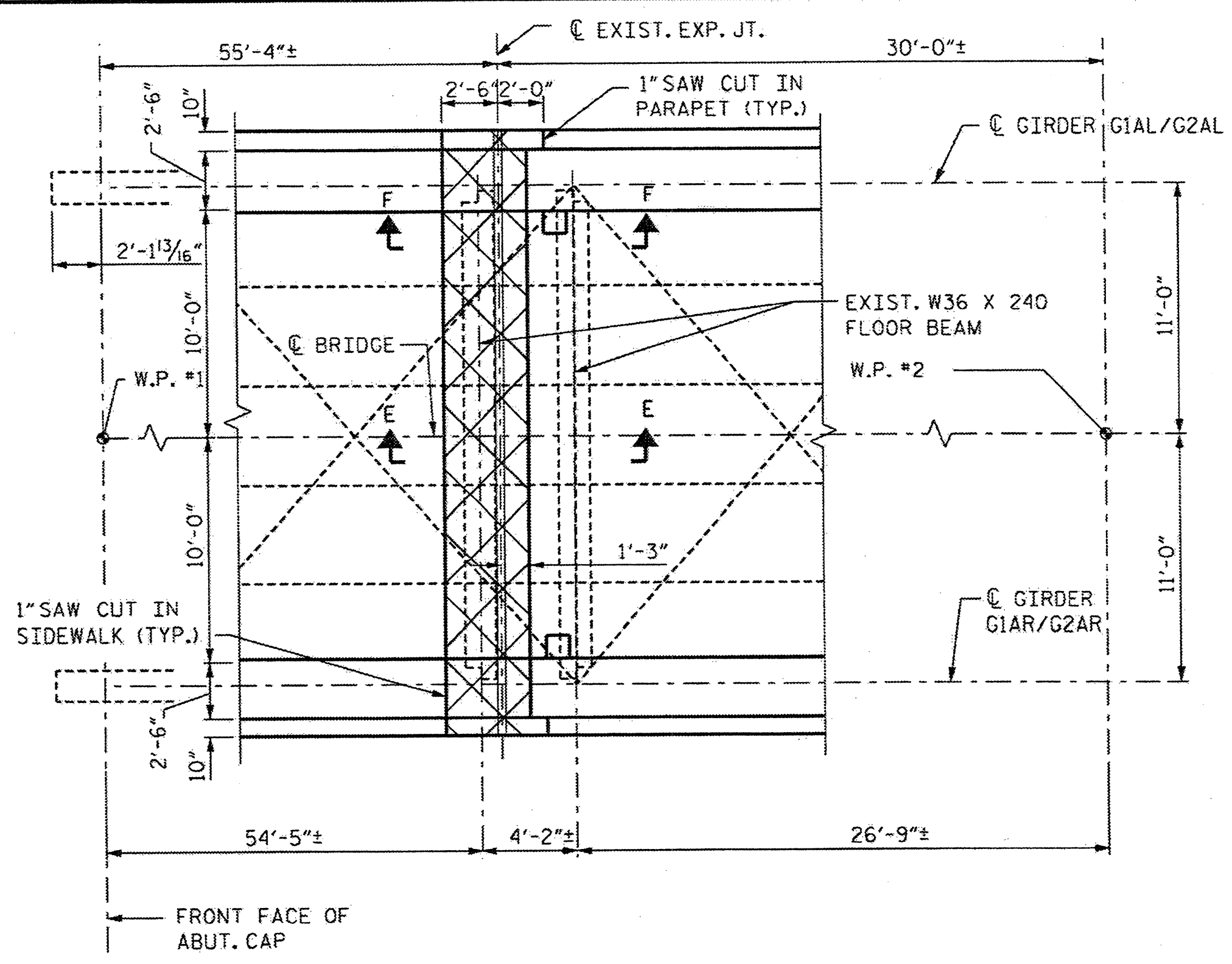


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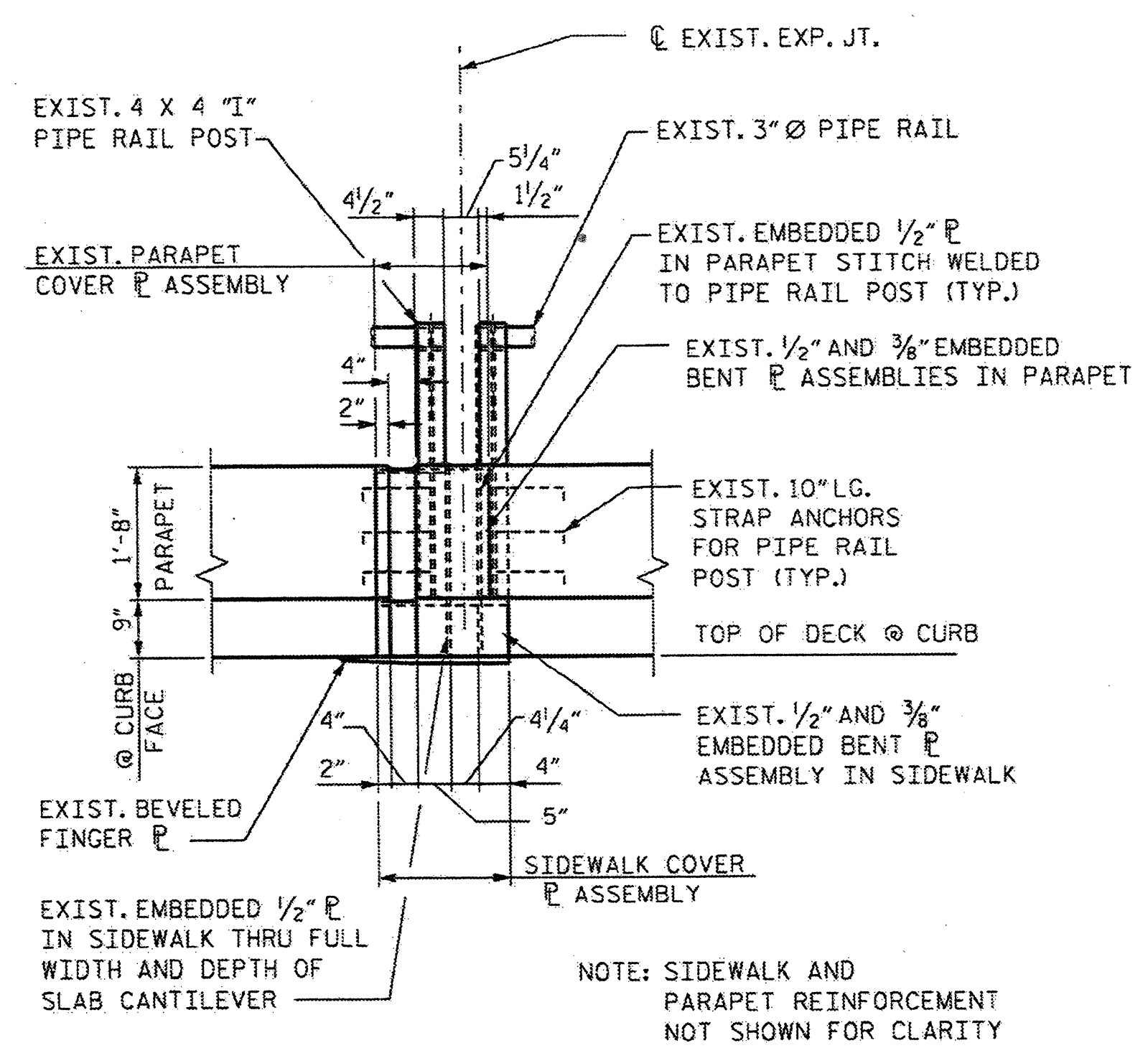
FOR SECTION C-C, SEE SHT. S-10. FOR SECTION X-X, SEE SHT. S-13.

*Joseph Kelvington*  
 SEAL 13406  
 ENGINEER  
 JOSEPH T. KELVINGTON

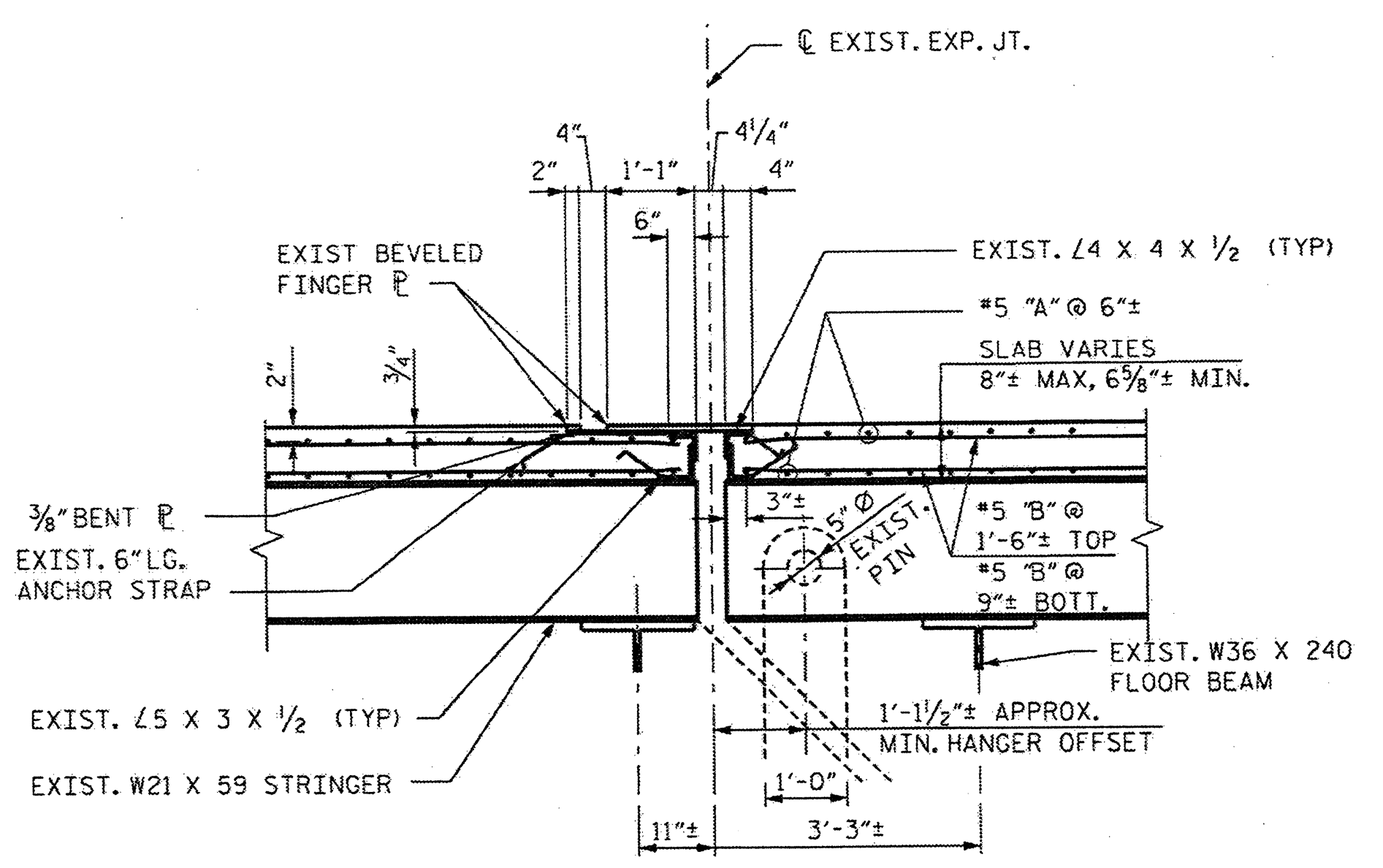
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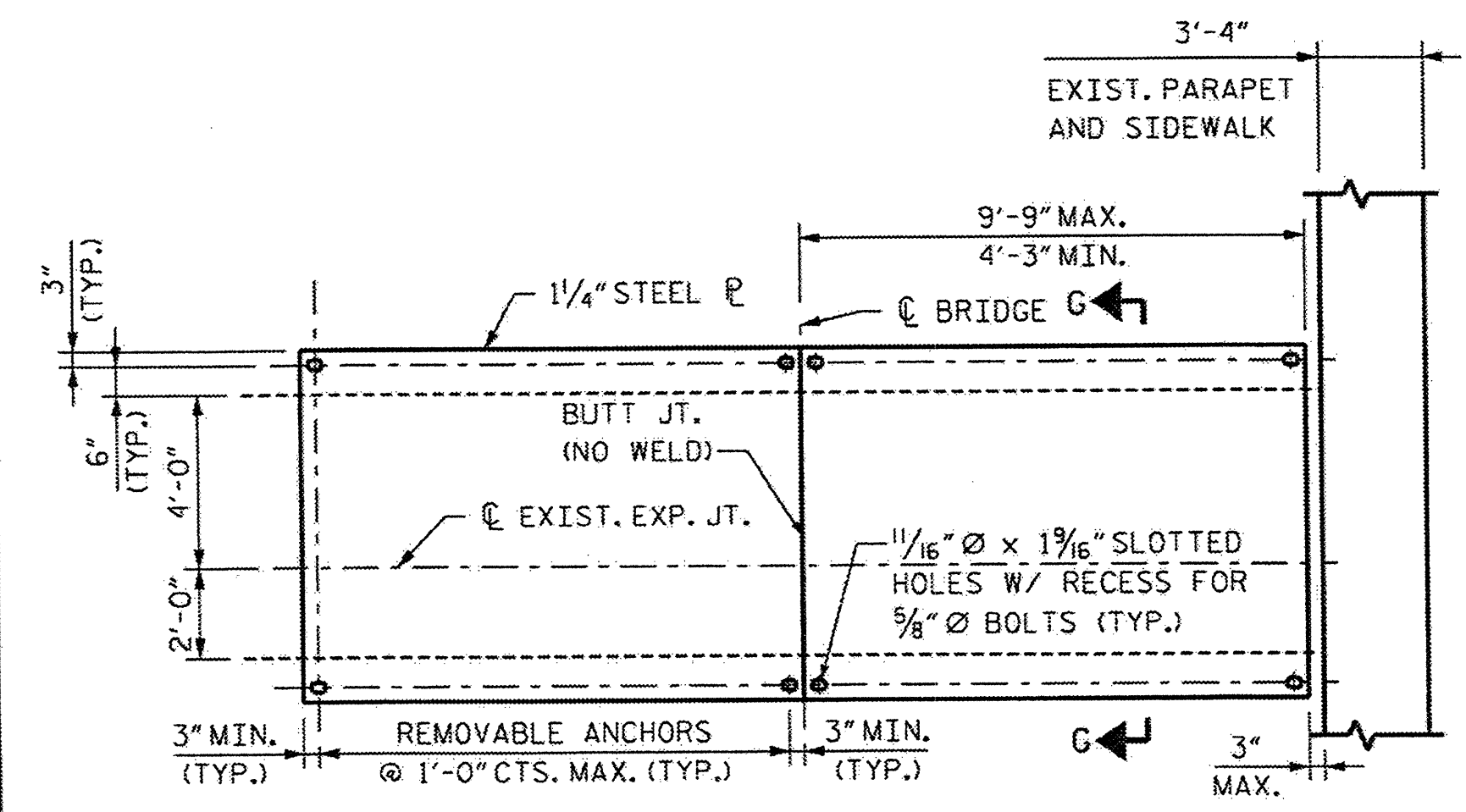
PLAN  
APROX. EXIST. CONDITIONS AND  
STRUCTURAL REMOVAL



SECTION F-F  
APROX. EXIST. CONDITIONS

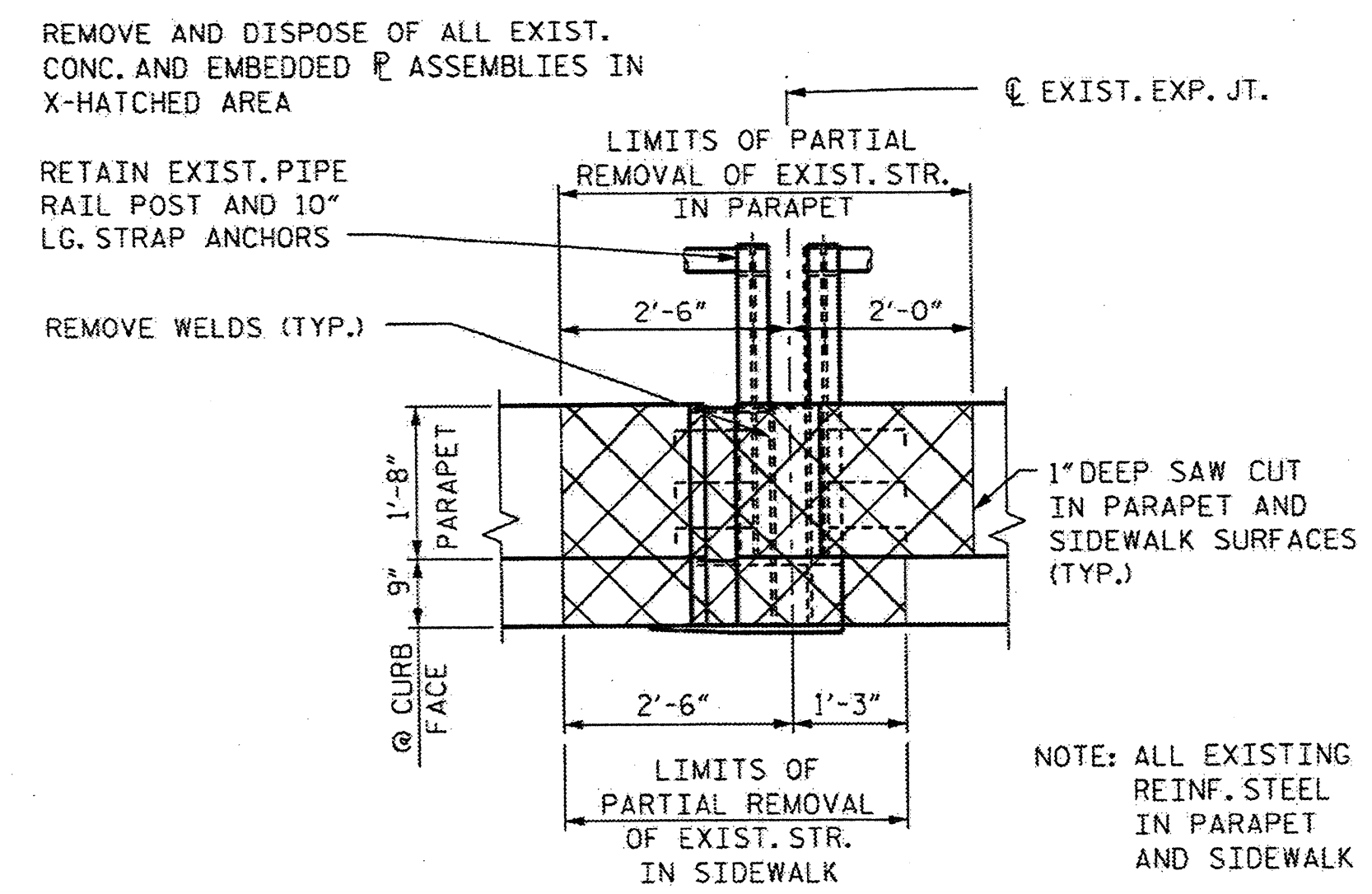


SECTION E-E  
APROX. EXIST. CONDITIONS

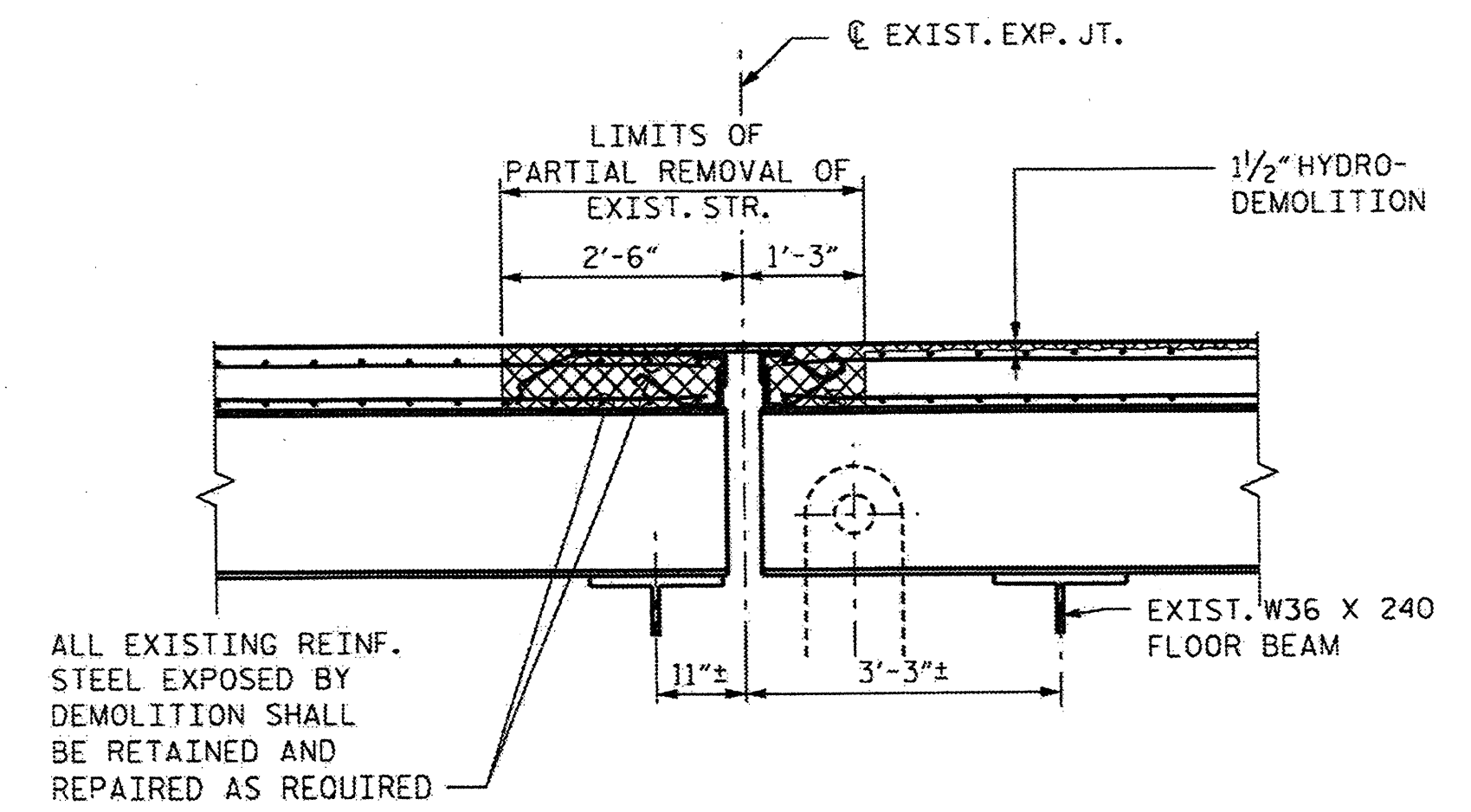


USE THIS DETAIL FOR CONSTRUCTION OF JOINTS RJ1, EJ1 AND EJ2. FOR SECTION G-G, SEE SHT. S-13.

TEMP. COVER REINFORCEMENT DETAIL  
PLAN



SECTION F-F  
STRUCTURAL REMOVAL



SECTION E-E  
STRUCTURAL REMOVAL

NOTE:  
ALL DIAPHRAGM REPAIR WORK AND EDGE BEAM CONST. FOR EJ2 SHALL BE COMPLETE PRIOR TO DECK SCARIFICATION AND HYDRO-DEMOLITION.  
  
TEMP. COVER REINFORCEMENT IS REQ'D FOR TRAFFIC DURING CONSTRUCTION.

PROJECT NO. WBS 17BP.14.P.8  
GRAHAM COUNTY  
STATION: \_\_\_\_\_

SHEET 1 OF 2

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DEPARTMENT OF TRANSPORTATION  
RALEIGH

JOINT SEAL EJ2  
DETAILS

REHABILITATE BRIDGE NO. 9

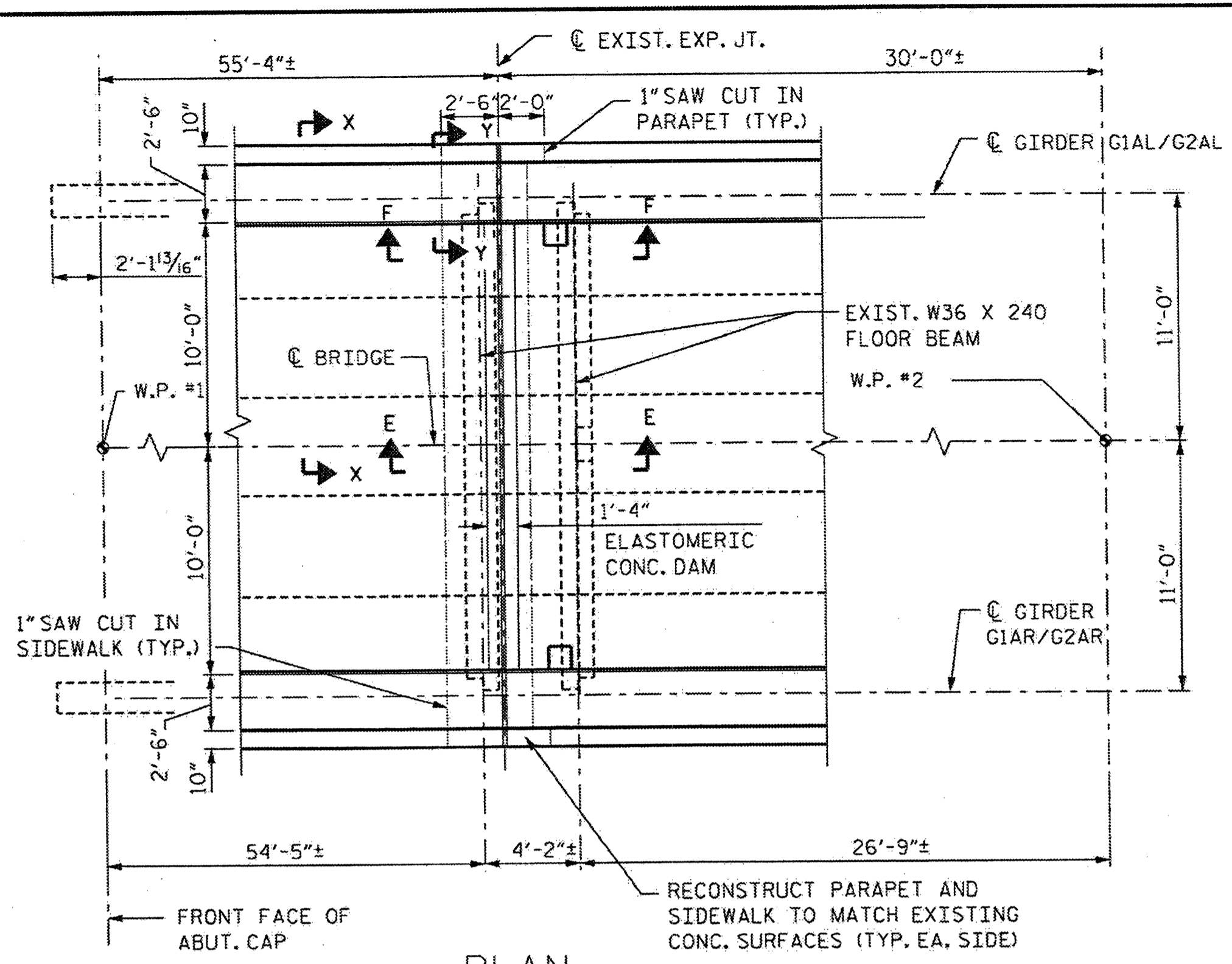
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2			4				

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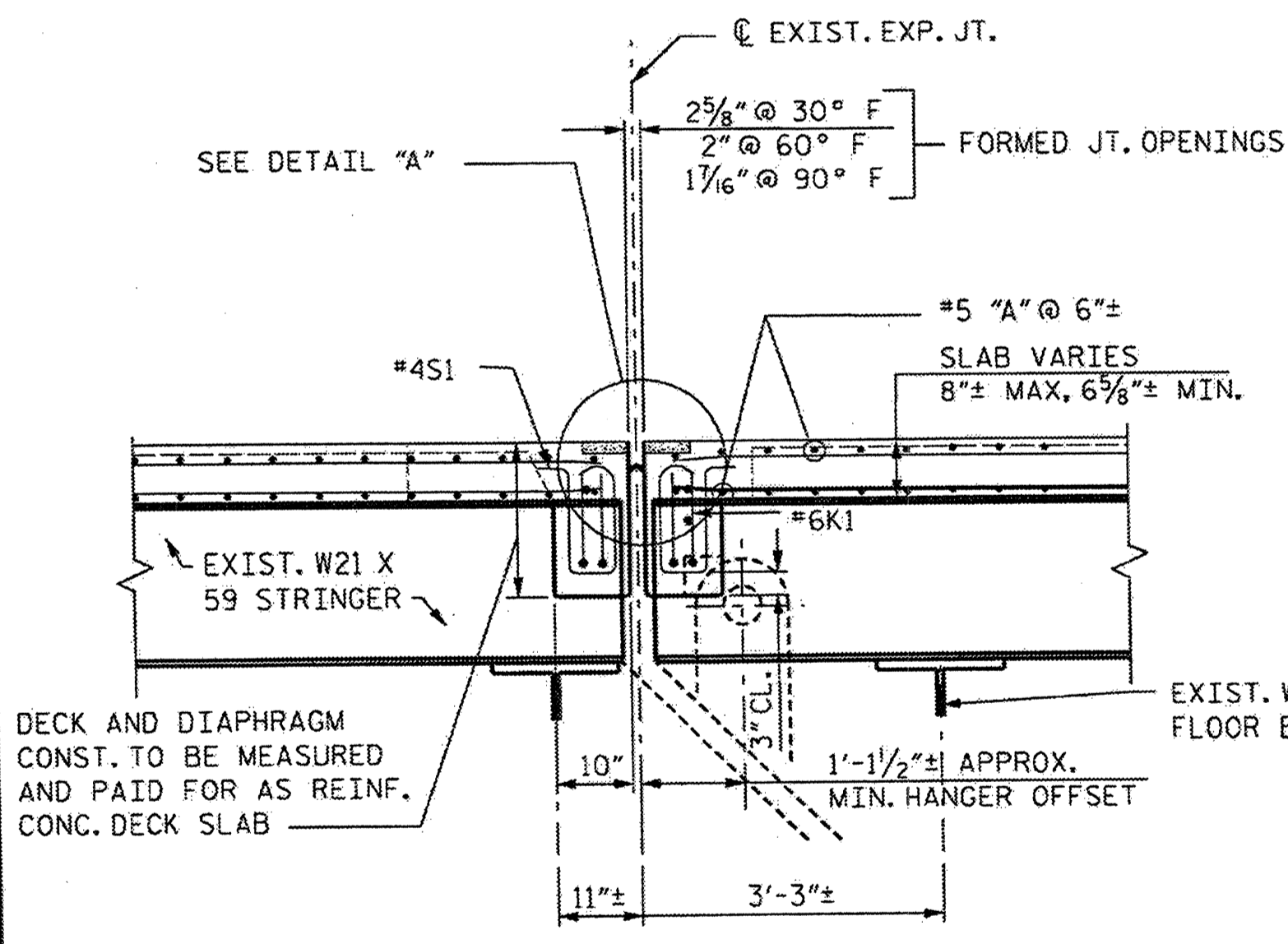
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 CHECKED BY: J T KELVINGTON DATE: 12/11

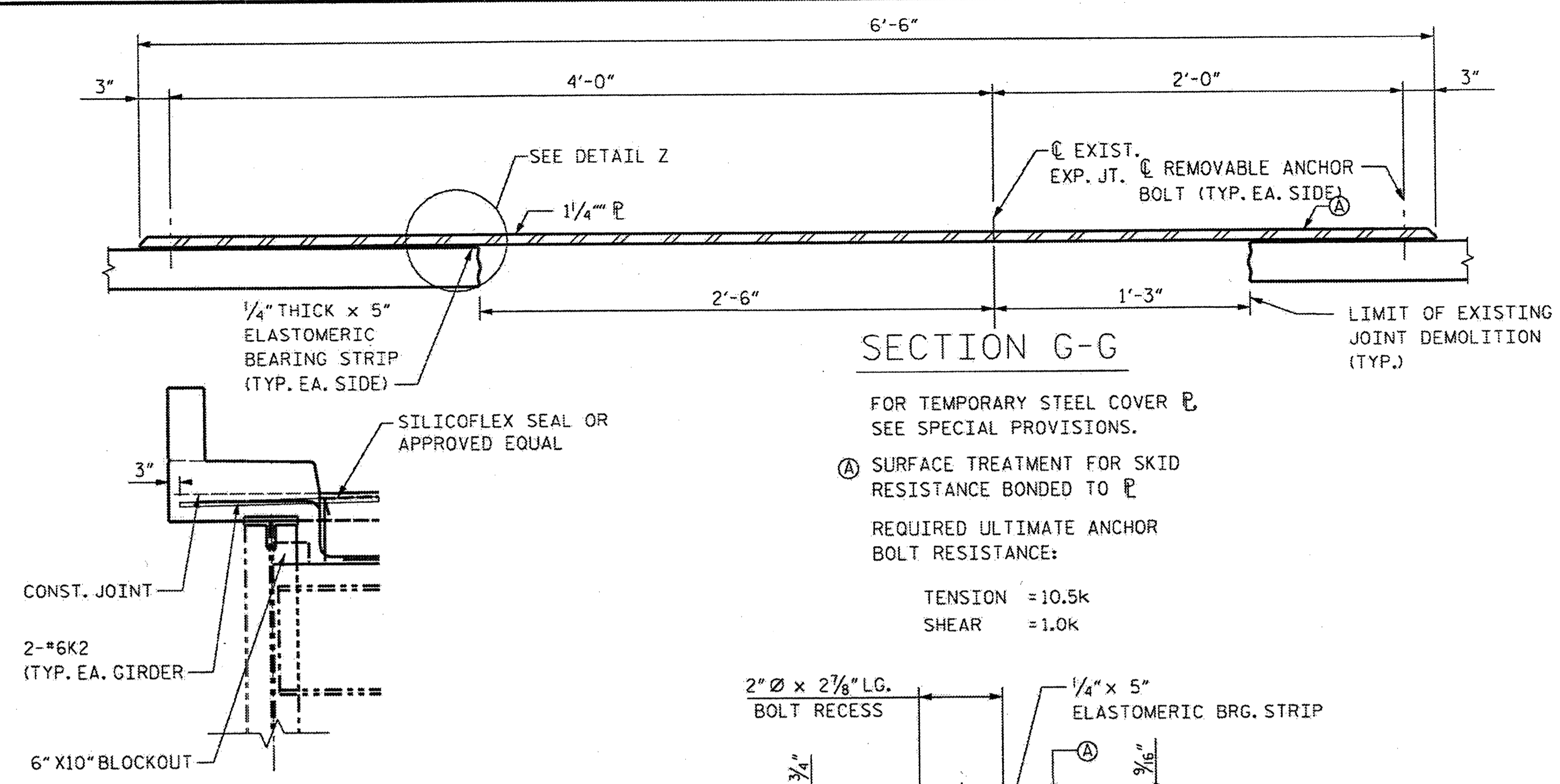
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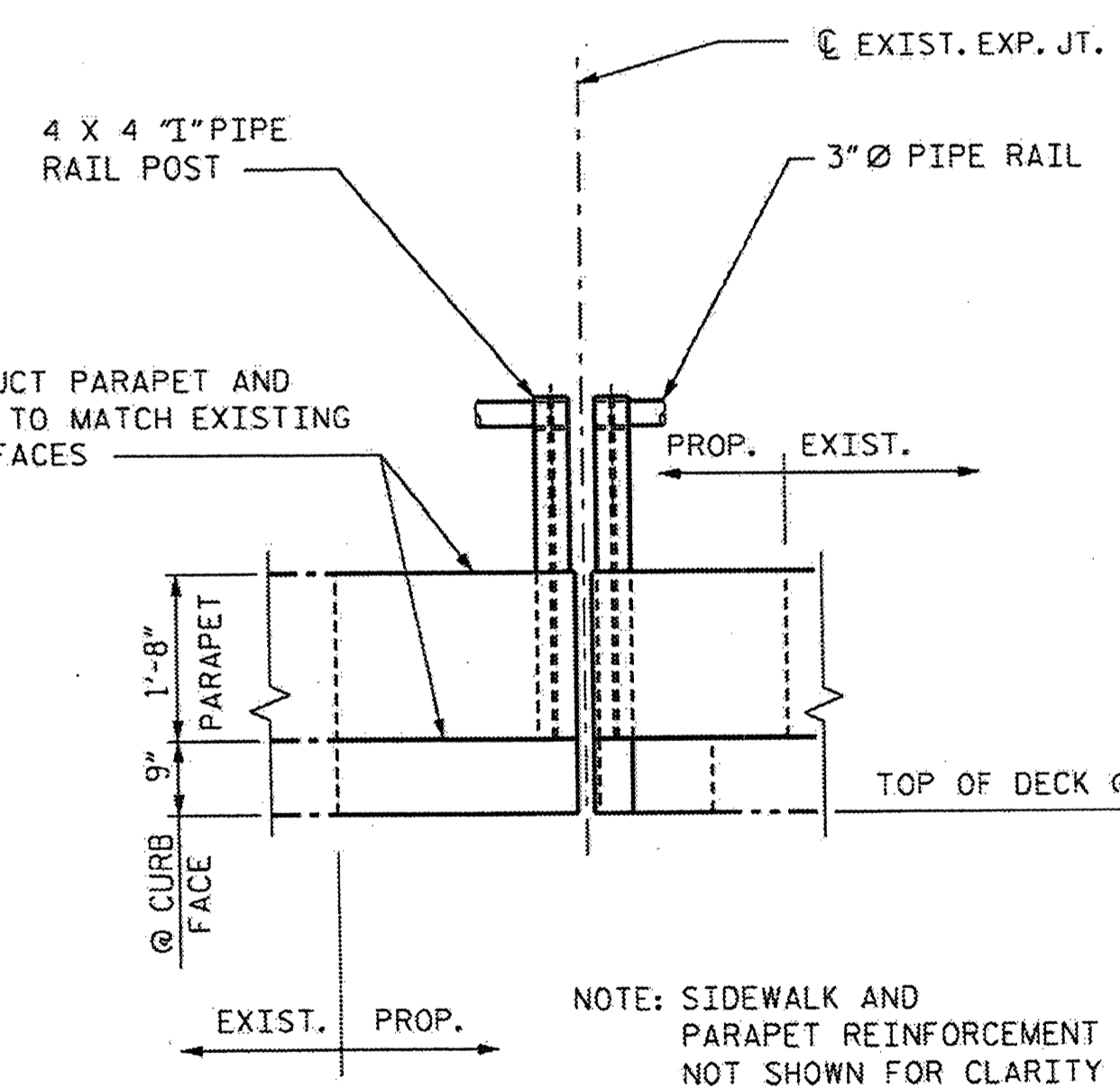
**PLAN**  
PROPOSED CONDITIONS @ EXP. JT.



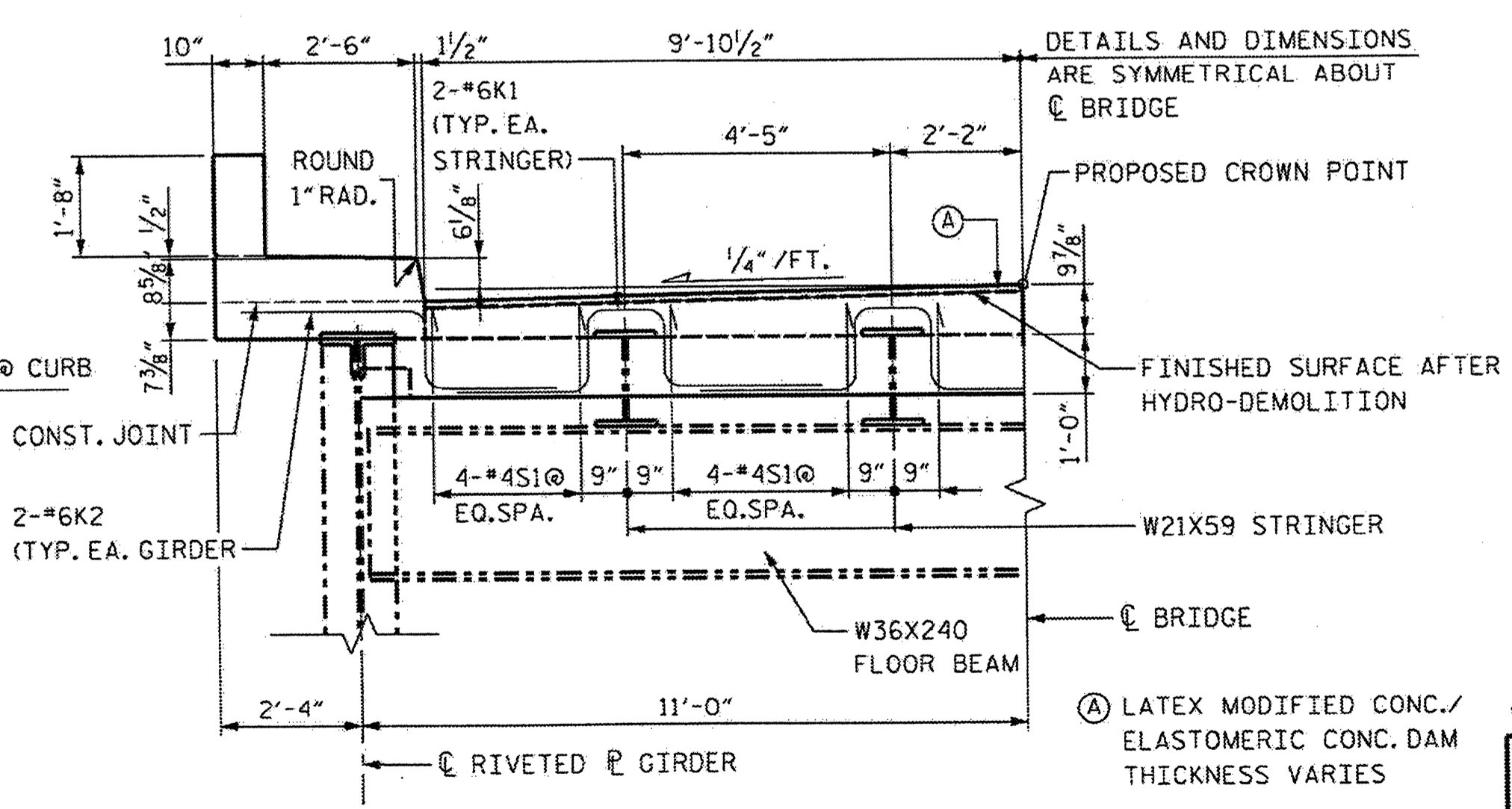
**SECTION E-E**  
PROPOSED CONSTRUCTION



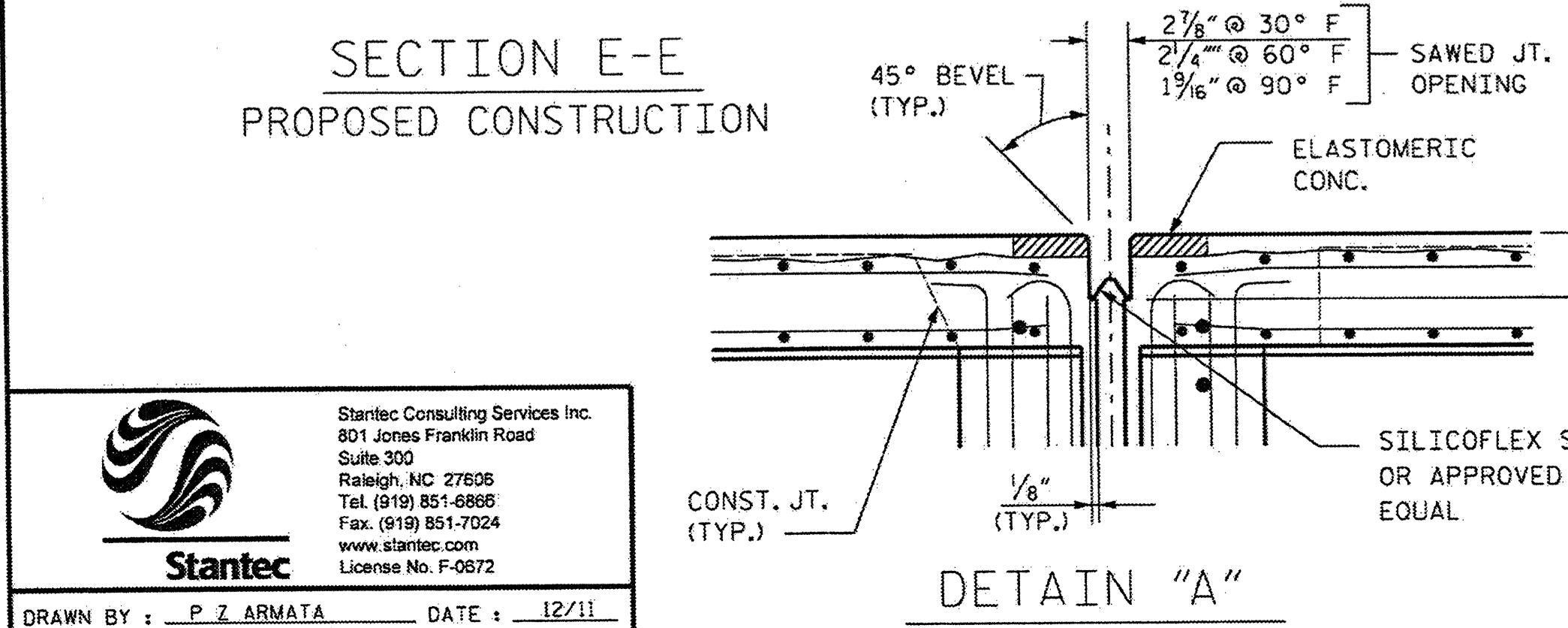
**SECTION Y-Y**  
PROPOSED CONDITIONS



**SECTION F-F**  
PROPOSED CONDITIONS



**SECTION X-X**



**DETAIL "A"**

BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT					
BILL OF MATERIAL					
1 JOINT SHOWN (2 REQ'D.)					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
*K1	16	#6	1	8'-10"	212
*K2	8	#6	2	6'-9"	81
*S1	40	#4	3	3'-7"	96
REINFORCING STEEL			LBS.		
*EPOXY COATED REINFORCING STEEL			LBS. 389		
CLASS AA CONCRETE			C. Y. 4.4		

ELASTOMERIC CONCRETE-EJ2	
LOCATION	QTY
BENT 1	3.3 C.F.
BENT 4	3.3 C.F.

TOTAL ELASTOMERIC CONC. = 6.6 C.F.  
TOTAL ELASTOMERIC CONC. = 0.2 C.Y.

FOR PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

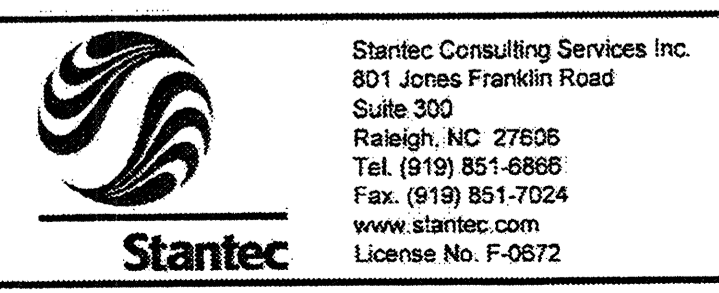
REINFORCED CONCRETE DECK SLAB (1 END)=92 SF

FOR EXPANSION JOINT SEAL EJ2, SEE SPECIAL PROVISIONS.

**PROJECT NO. WBS 17BP.14.P.8**  
**GRAHAM COUNTY**

**STATION:** \_\_\_\_\_  
**SHEET 2 OF 2**

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
JOINT SEAL EJ2 DETAILS					
REHABILITATE BRIDGE NO. 9					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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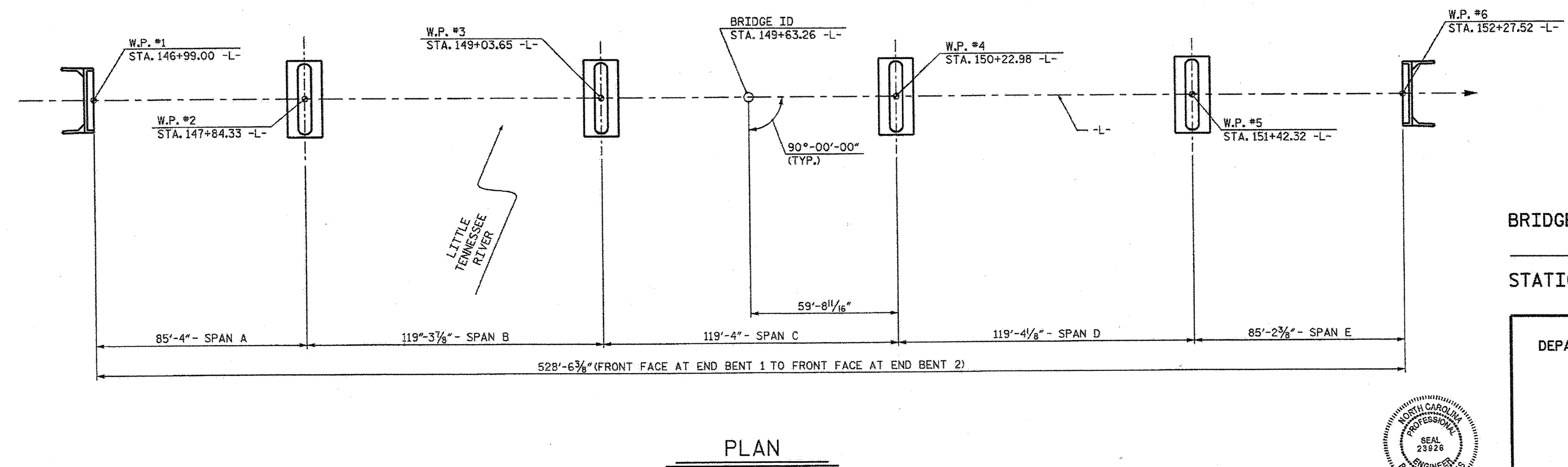
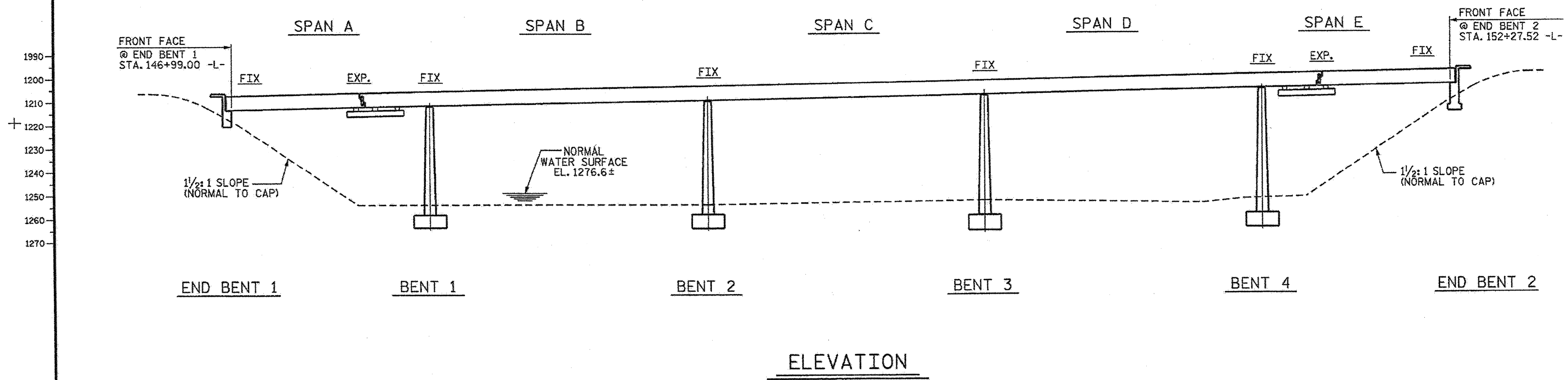


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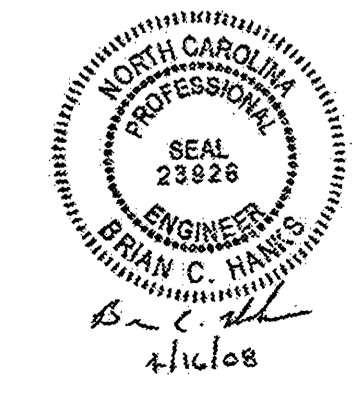


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GRADE DATA -L-



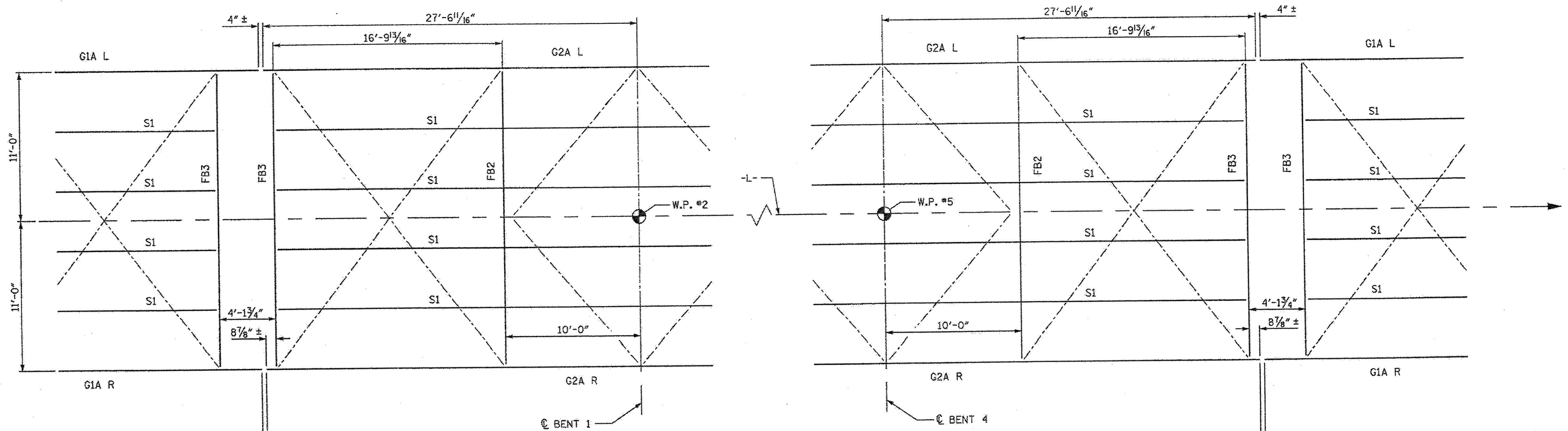
BRIDGE NO. 9  
GRAHAM COUNTY  
 STATION: 149+63.26 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE LAYOUT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
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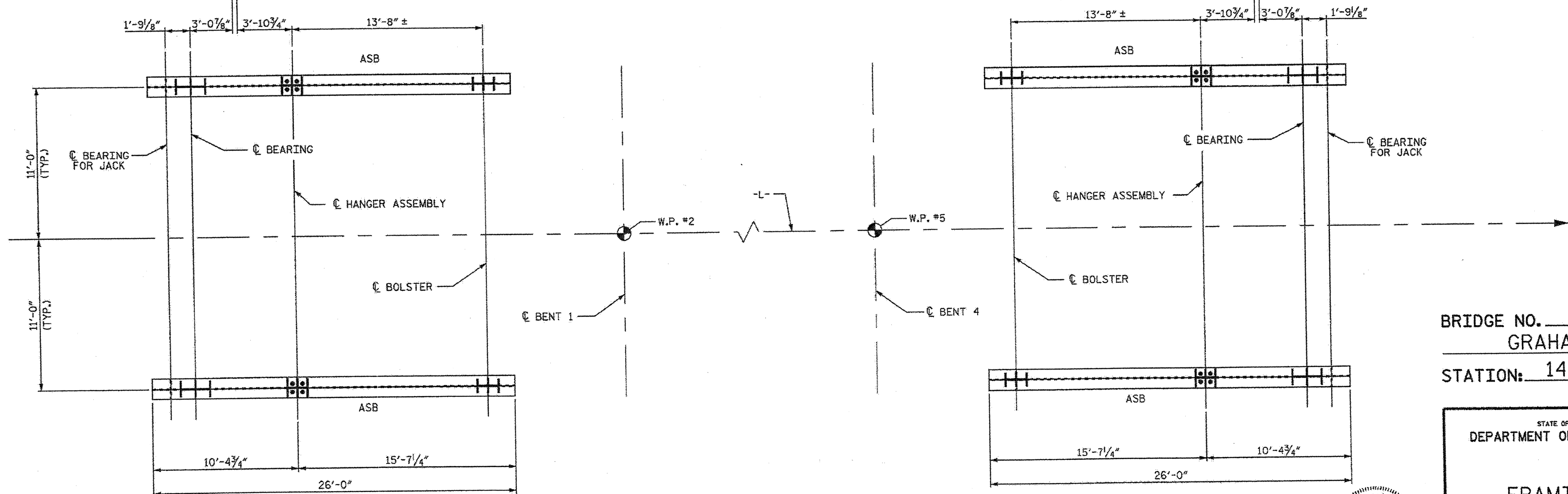


DRAWN BY: K. McCAULEY    DATE: 10/19/07  
 CHECKED BY: B. HANKS    DATE: 2/22/08

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FRAMING PLAN - BOTTOM OF EXISTING STRUCTURE



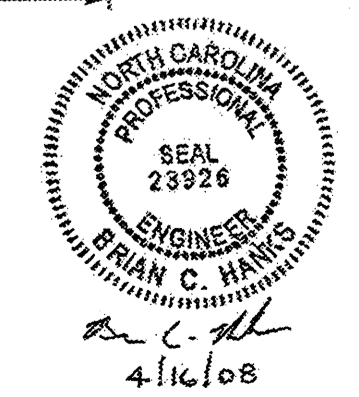
FRAMING PLAN - AUXILIARY SUPPORT SYSTEM

BRIDGE NO. 9  
 COUNTY GRAHAM  
 STATION: 149+63.32 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

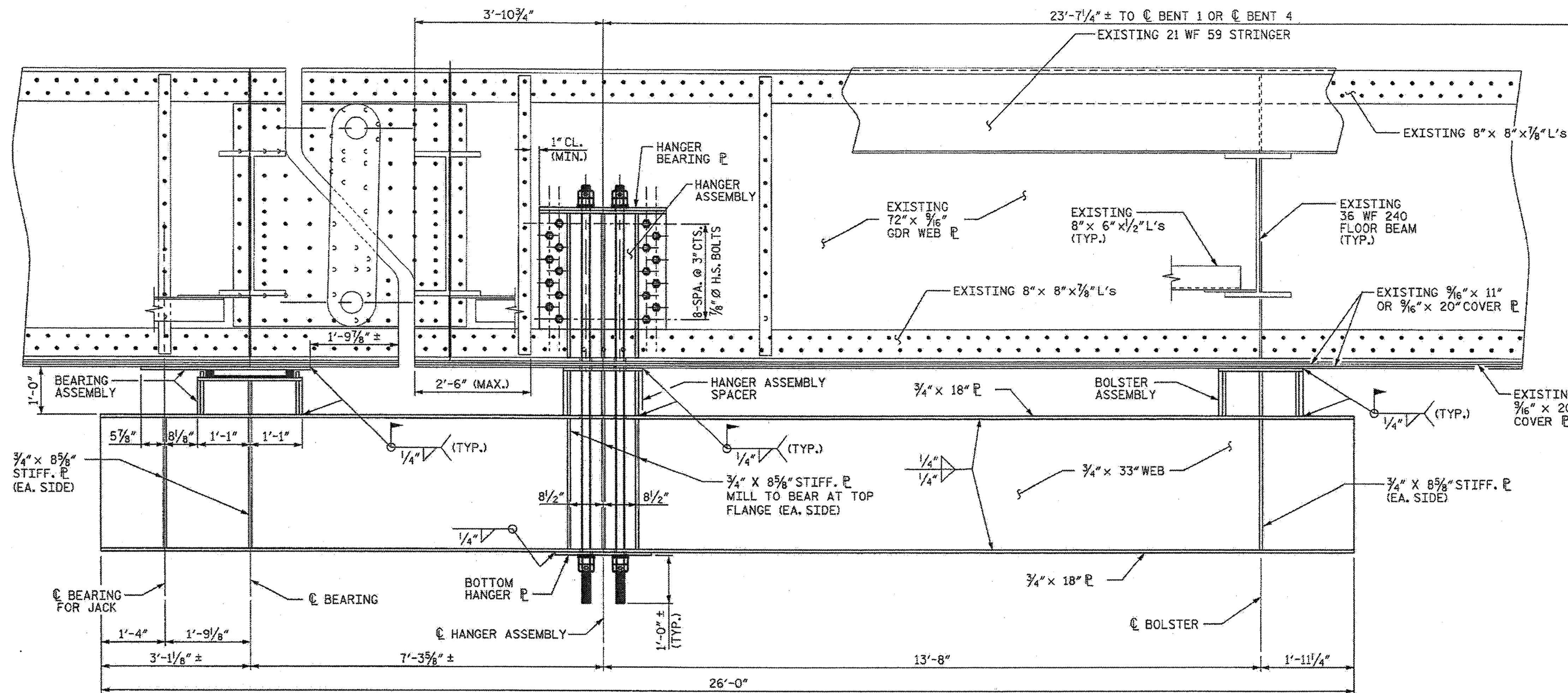
FRAMING PLAN

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS	
2			4			19	



DRAWN BY: M.A. ALLEN DATE: 10-07  
 CHECKED BY: B.C. HANKS DATE: 2-08

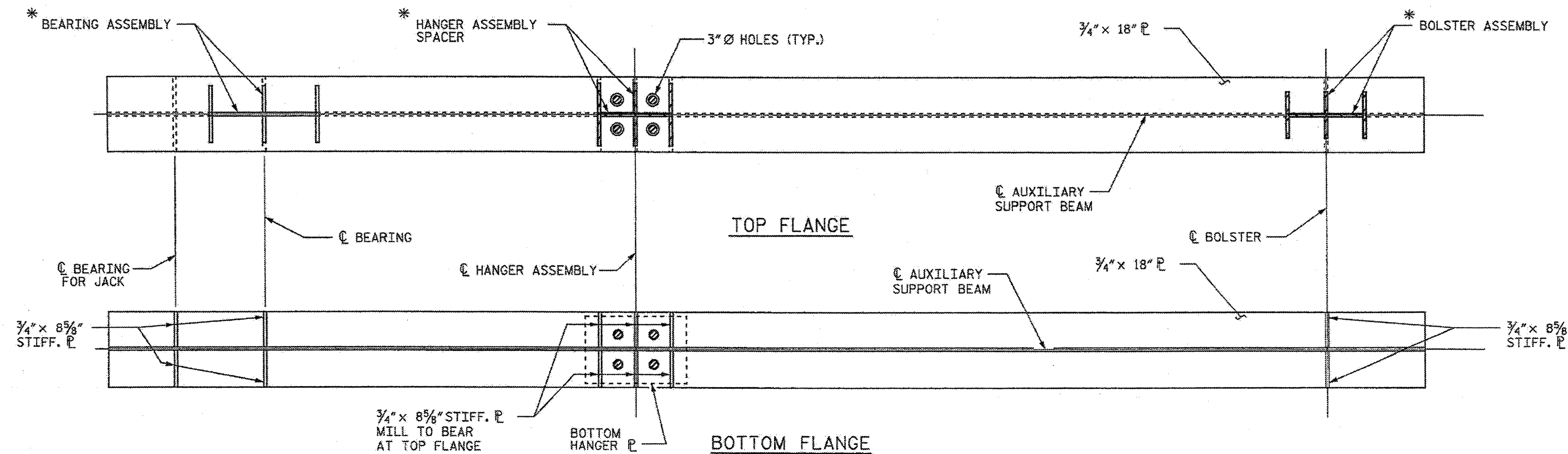
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- NOTES:**
- ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W.
- ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.
- BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.
- A CHARPY V-NOTCH TEST IS REQUIRED FOR WEB PLATES, BOTTOM FLANGE PLATES AND TOP FLANGE PLATES FOR ALL GIRDERS AND IN ACCORDANCE WITH ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.
- WHEN FIELD WELDING THE BEARING ASSEMBLY TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE BEARING ASSEMBLY DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.
- NO SHOP CAMBER REQUIRED.
- ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.
- TENSION ON THE AASHTO M164 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.
- REMOVE RIVETS AND BACKFILL RIVET HOLES IN EXISTING ANGLES AND COVER PLATES AT NEW BEARING, HANGER SPACER AND BOLSTER LOCATIONS PRIOR TO WELDING NEW PLATES AND DRILLING NEW HOLES.
- IN SECTION 440-8(A) OF THE STANDARD SPECIFICATIONS, REVISE THE THIRD PARAGRAPH AND INSERT A NEW PARAGRAPH FOUR, RESPECTIVELY, AS FOLLOWS: "MAKE SURE THE PLAIN BOLTS AND WASHERS HAVE A THIN COAT OF LUBRICANT AT THE TIME OF INSTALLATION." "USE NUTS THAT ARE PRE-WAXED BY THE PRODUCER/SUPPLIER PRIOR TO SHIPPING TO THE PROJECT."
- FIELD WELD THE BOLSTER, BEARING AND HANGER ASSEMBLY THE MINIMUM AMOUNT REQUIRED TO HOLD THE ASSEMBLIES IN PLACE.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISION.

**ELEVATION OF AUXILIARY SUPPORT BEAM**

SPAN A SHOWN (SPAN E OPP. HAND)



**PLAN OF AUXILIARY SUPPORT BEAM**

SPAN A SHOWN (SPAN E OPP. HAND)

\* TO BE PLACED IN FINAL POSITION AND THEN WELDED IN THE FIELD

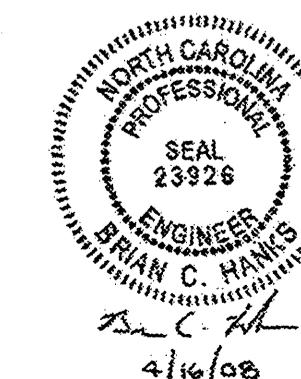
BILL OF MATERIAL	
STRUCTURAL STEEL (APPROX. LBS.)	29,860
ELASTOMERIC BEARINGS (EA.)	4

BRIDGE NO. 9  
 COUNTY GRAHAM  
 STATION: 149+63.32 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

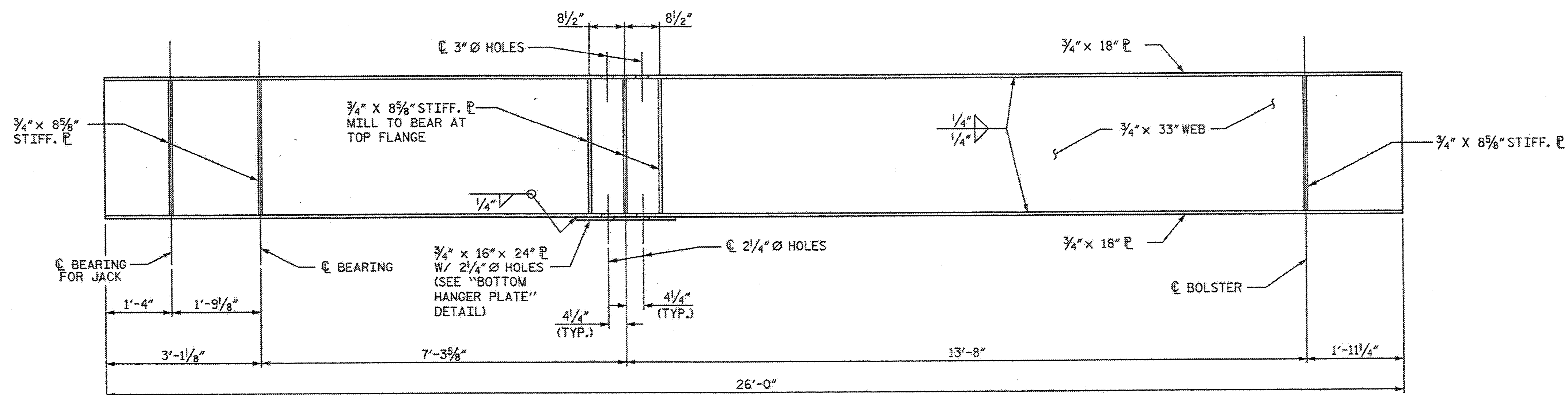
**AUXILIARY SUPPORT SYSTEM DETAILS**



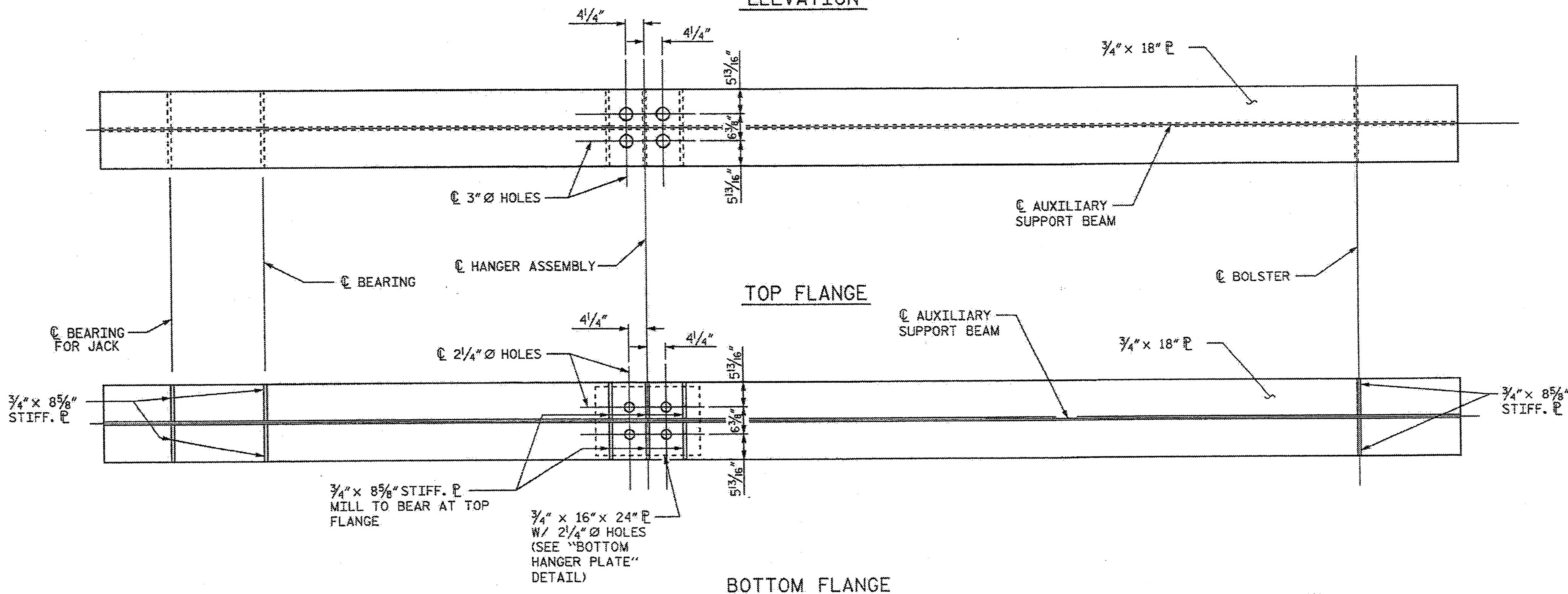
DRAWN BY : M.A. ALLEN DATE : 10-07  
 CHECKED BY : B.C. HANKS DATE : 2-08

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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-16
1			3			TOTALS
2			4			19



ELEVATION

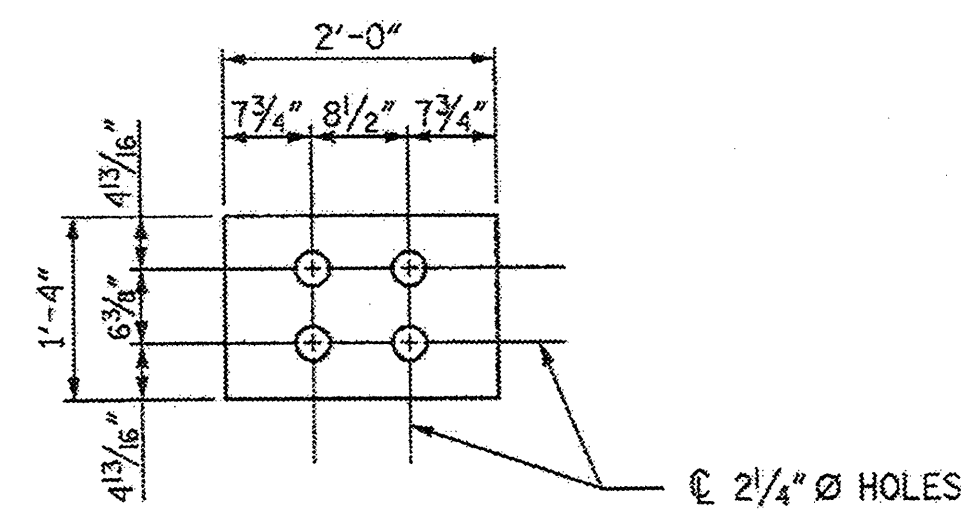


TOP FLANGE

BOTTOM FLANGE

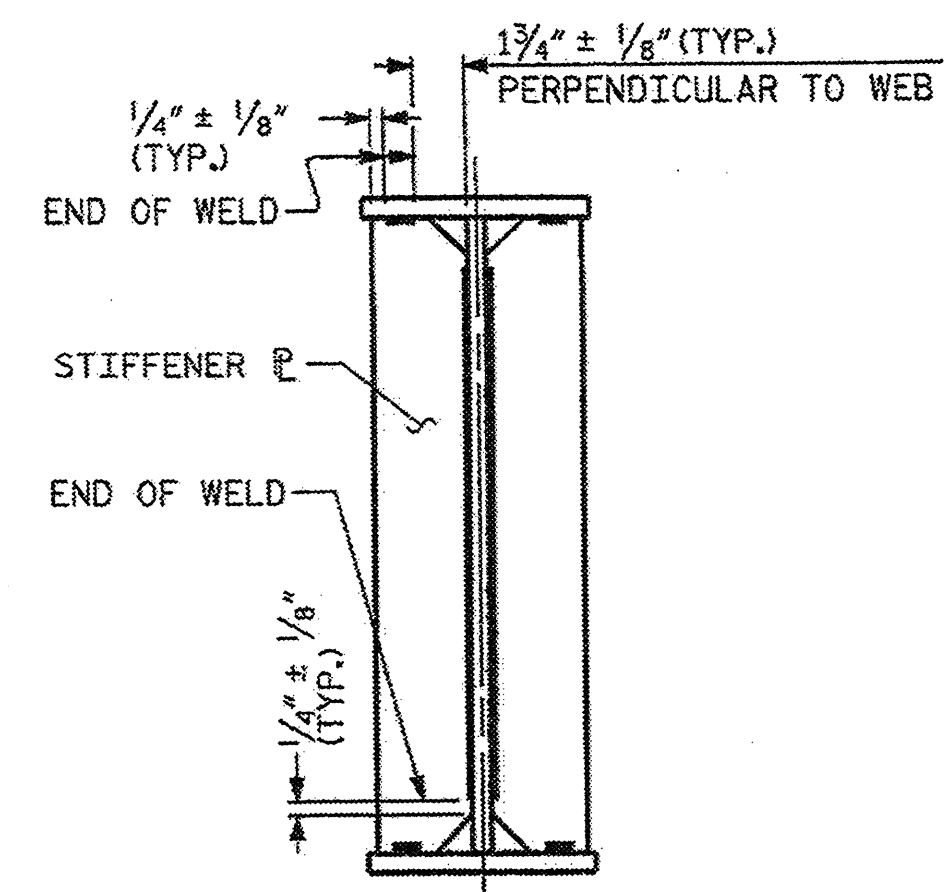
AUXILIARY SUPPORT BEAM

(4 REQ'D)



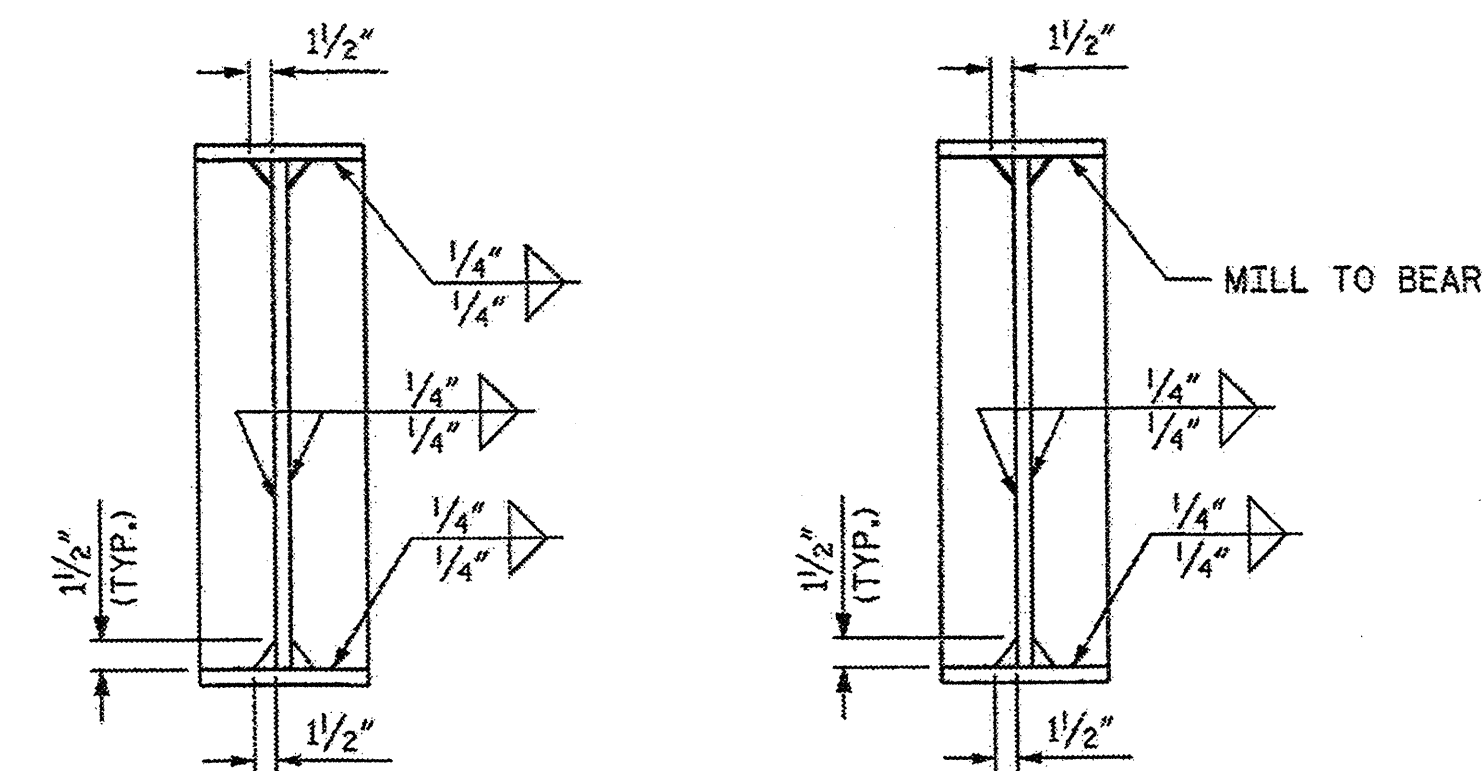
BOTTOM HANGER PLATE

(4 REQ'D)



TYPICAL STIFFENER  
PLATE CONNECTIONS

WELD TERMINATION DETAILS



AT OTHER LOCATIONS AT HANGER ASSEMBLY

STIFFENER DETAILS

BRIDGE NO. 9  
GRAHAM COUNTY  
 STATION: 149+63.32 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

AUXILIARY SUPPORT  
 SYSTEM DETAILS

REVISIONS

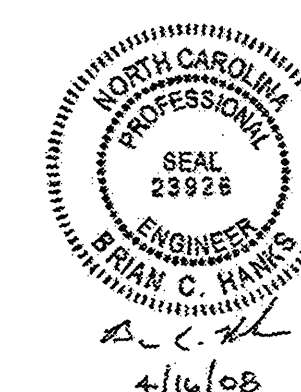
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

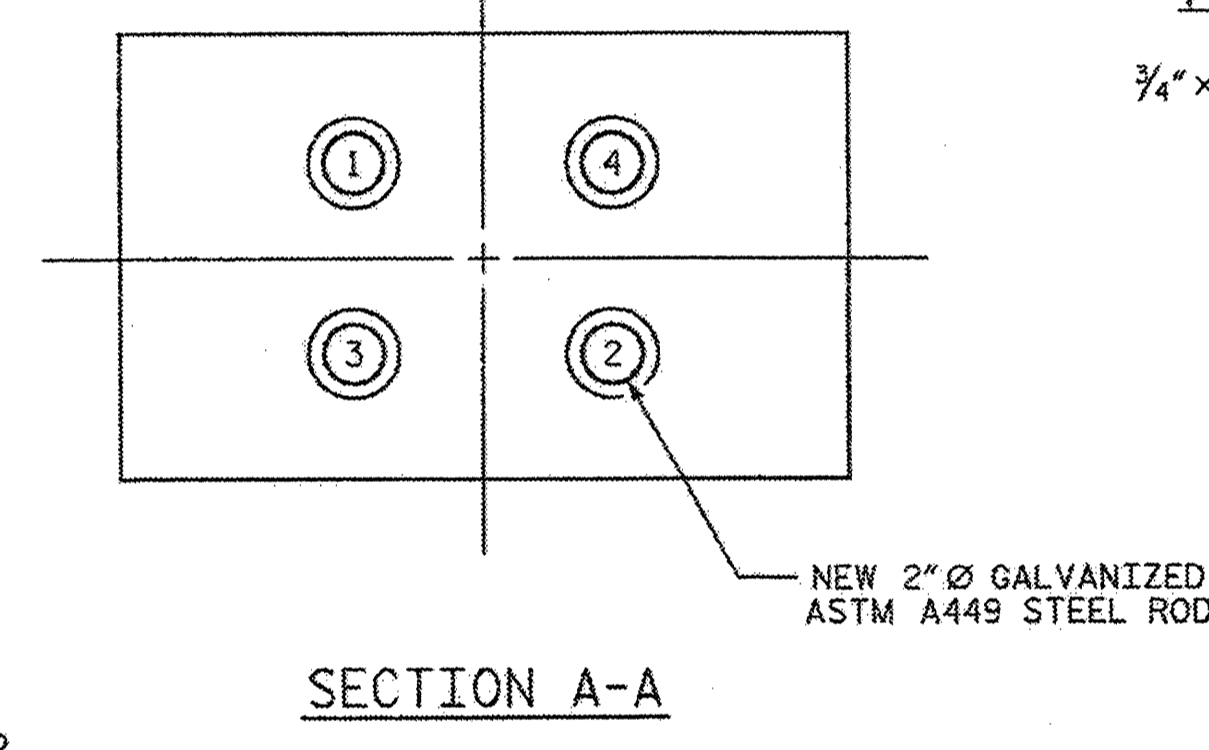
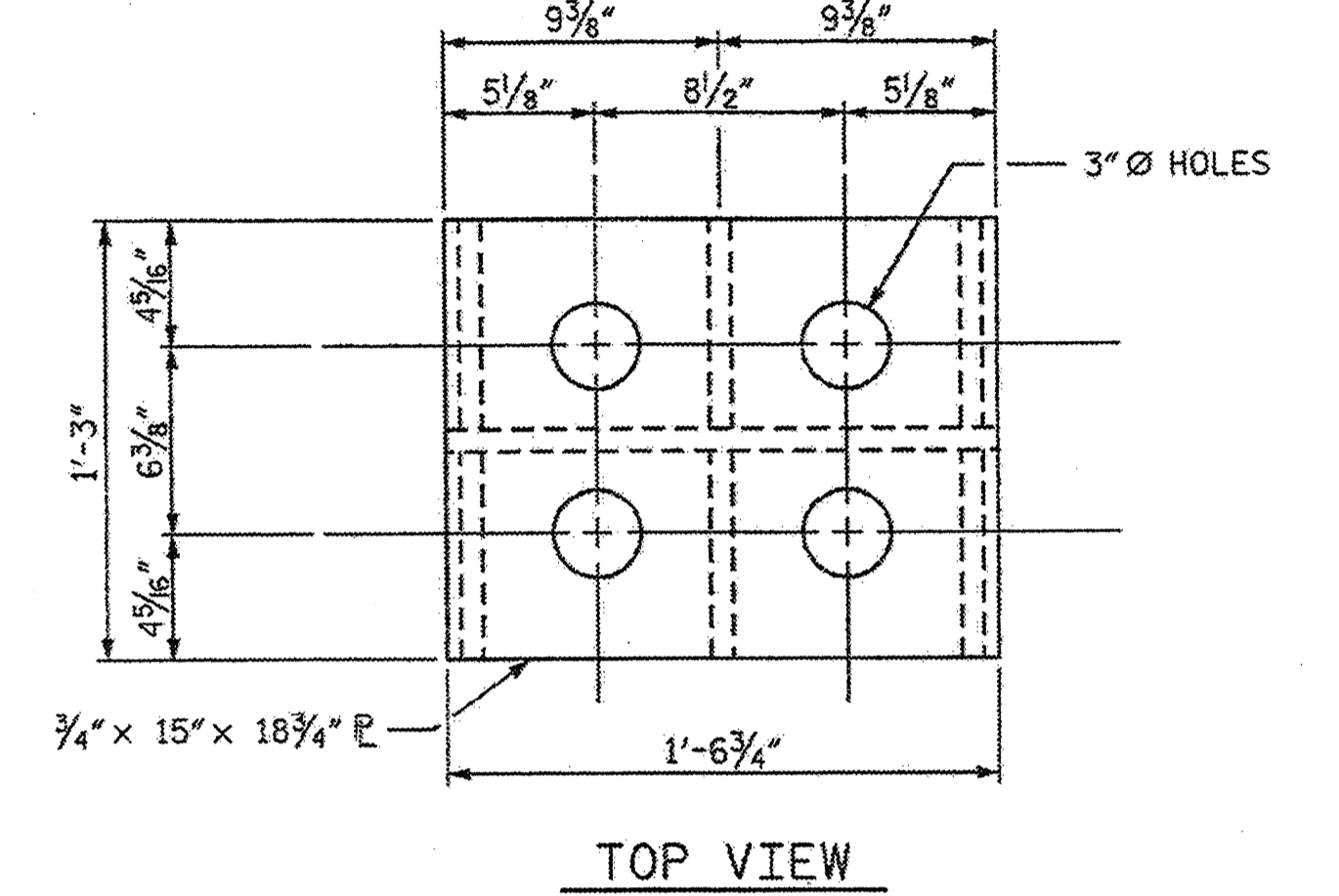
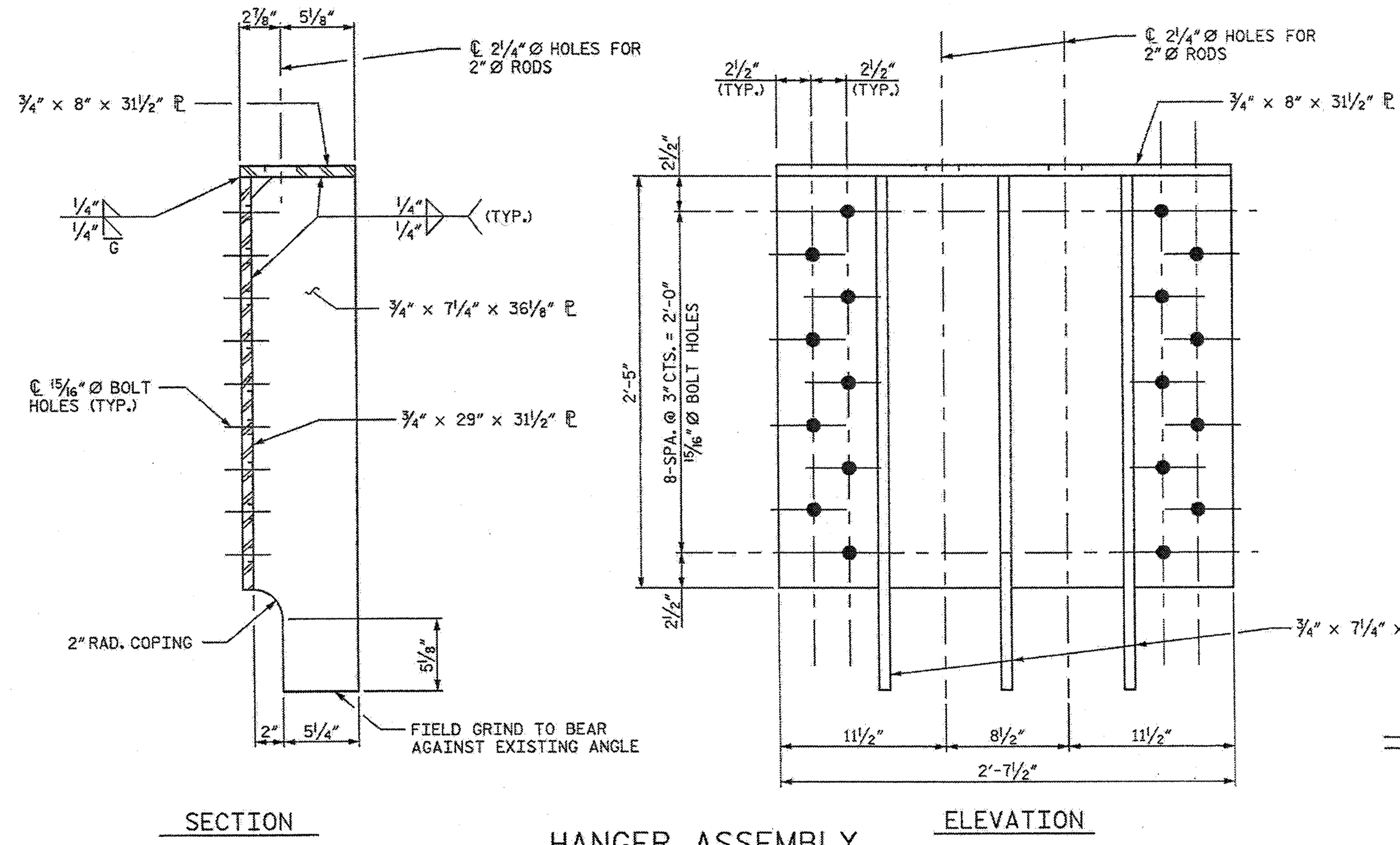
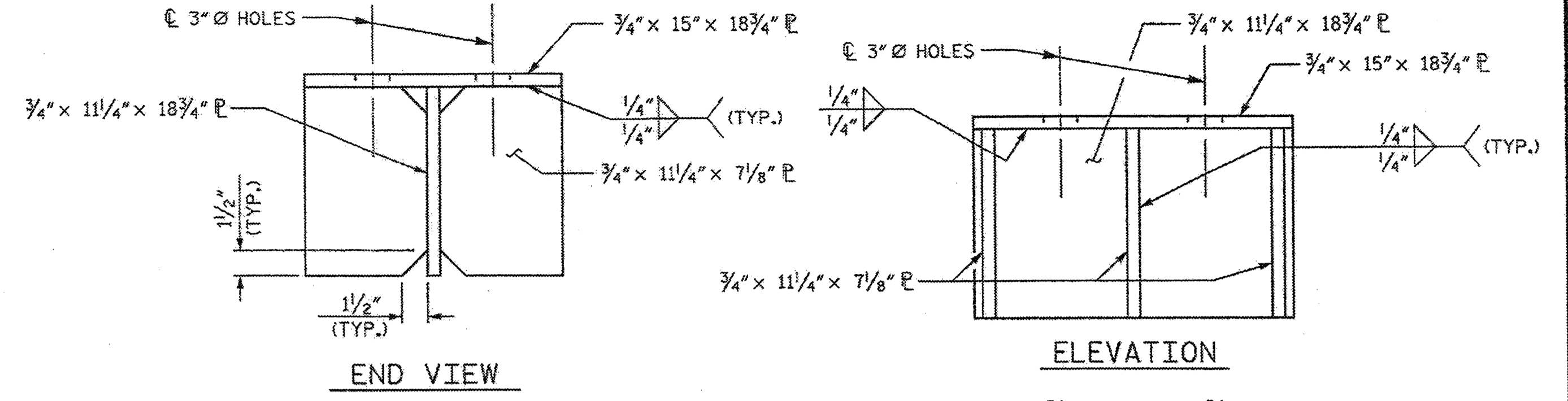
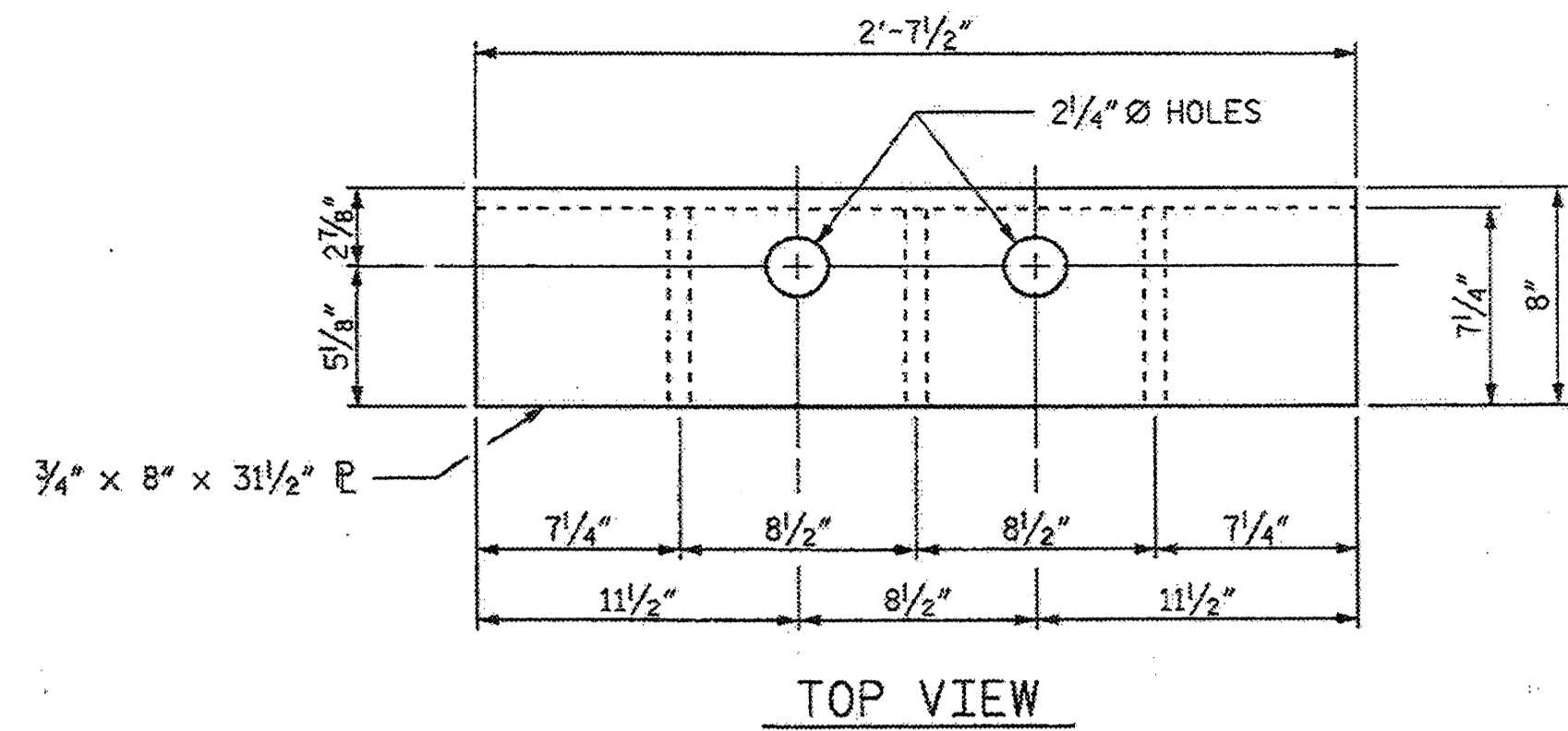
SHEET NO.

S-17  
 TOTAL SHEETS  
 19

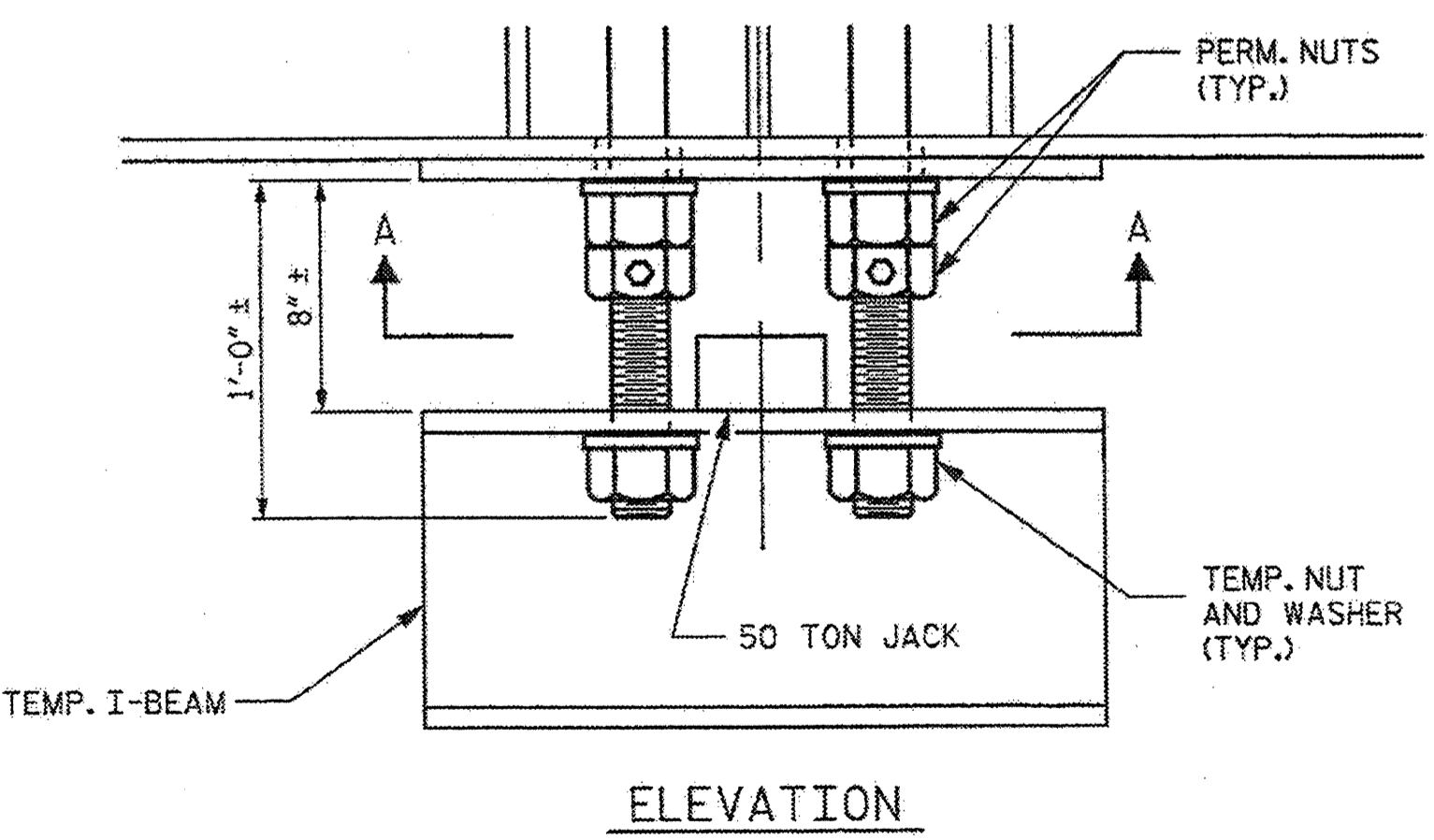
DRAWN BY: M.A. ALLEN DATE: 10-07  
 CHECKED BY: B.C. HANKS DATE: 2-08

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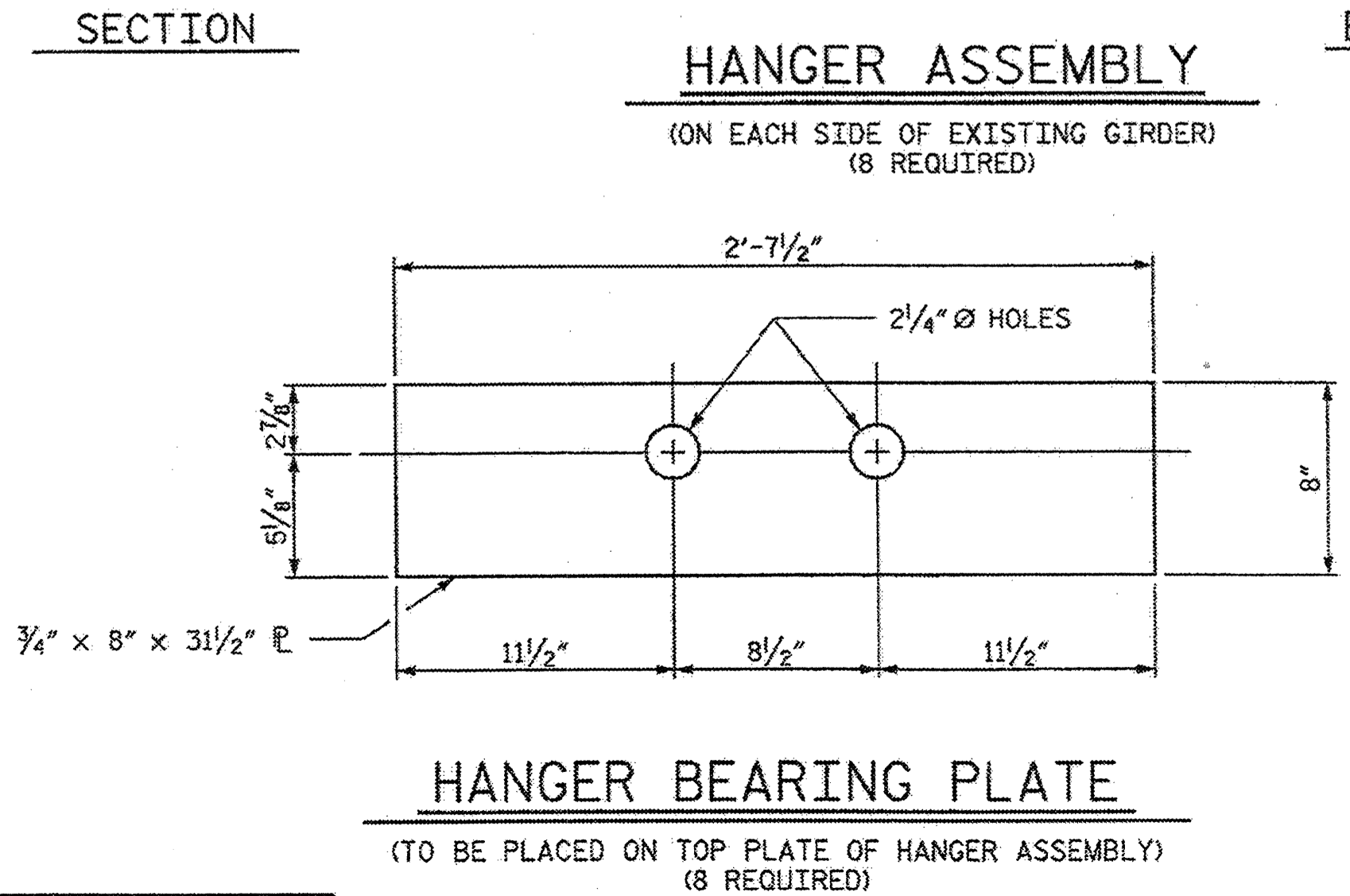
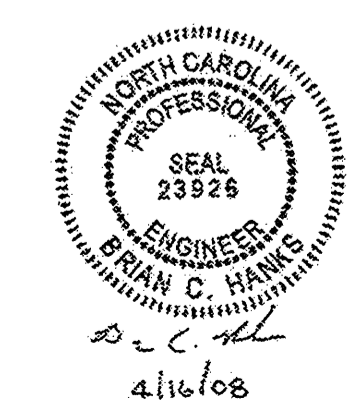


**HANGER ASSEMBLY SPACER**  
(BETWEEN EXISTING GIRDER AND AUXILIARY SUPPORT BEAM)  
(4 REQUIRED)



**BAR TIGHTENING SEQUENCE DETAIL**

1. SNUG ALL 4 RODS WITH RODS APPROXIMATELY CENTERED WITHIN ALL HOLES THEY PASS THROUGH TO THE TEMPORARY I-BEAM WITH TEMPORARY NUTS AND WASHERS.
2. APPLY A 40 TON FORCE USING THE 50 TON JACK.
3. HAND TIGHTEN PERMANENT ROD NUTS.
4. TIGHTEN PERMANENT ROD NUTS AN EXTRA 1/2 TURN IN SEQUENCE INDICATED.

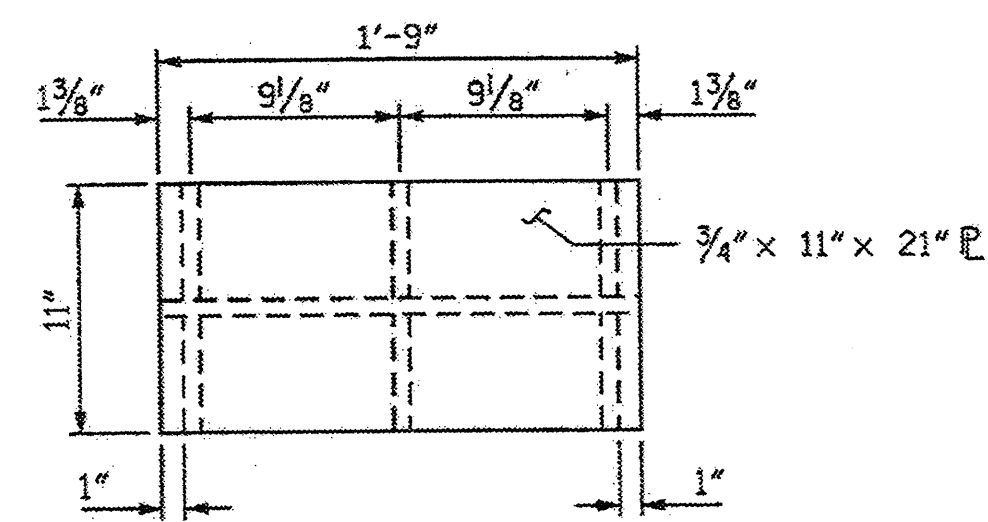


**HANGER BEARING PLATE**  
(TO BE PLACED ON TOP PLATE OF HANGER ASSEMBLY)  
(8 REQUIRED)

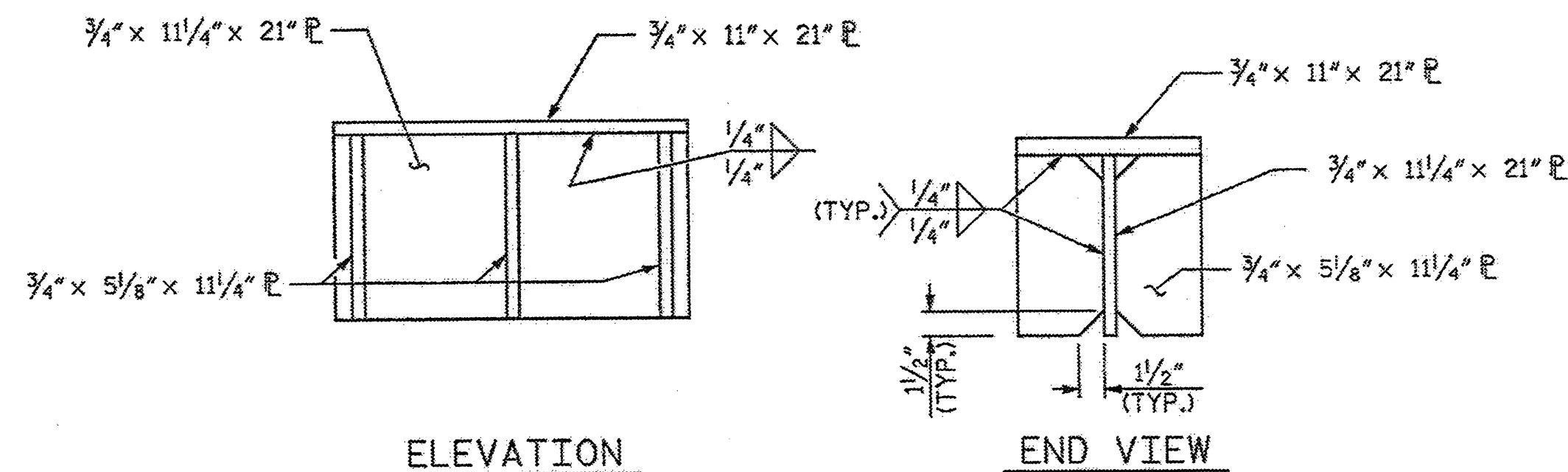
BRIDGE NO. 9  
GRAHAM COUNTY  
STATION: 149+63.32 -L-  
SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
<b>AUXILIARY SUPPORT SYSTEM DETAILS</b>					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-18 TOTAL SHEETS 19

DRAWN BY: M.A. ALLEN DATE: 10-07  
CHECKED BY: B.C. HANKS DATE: 2-08



PLAN

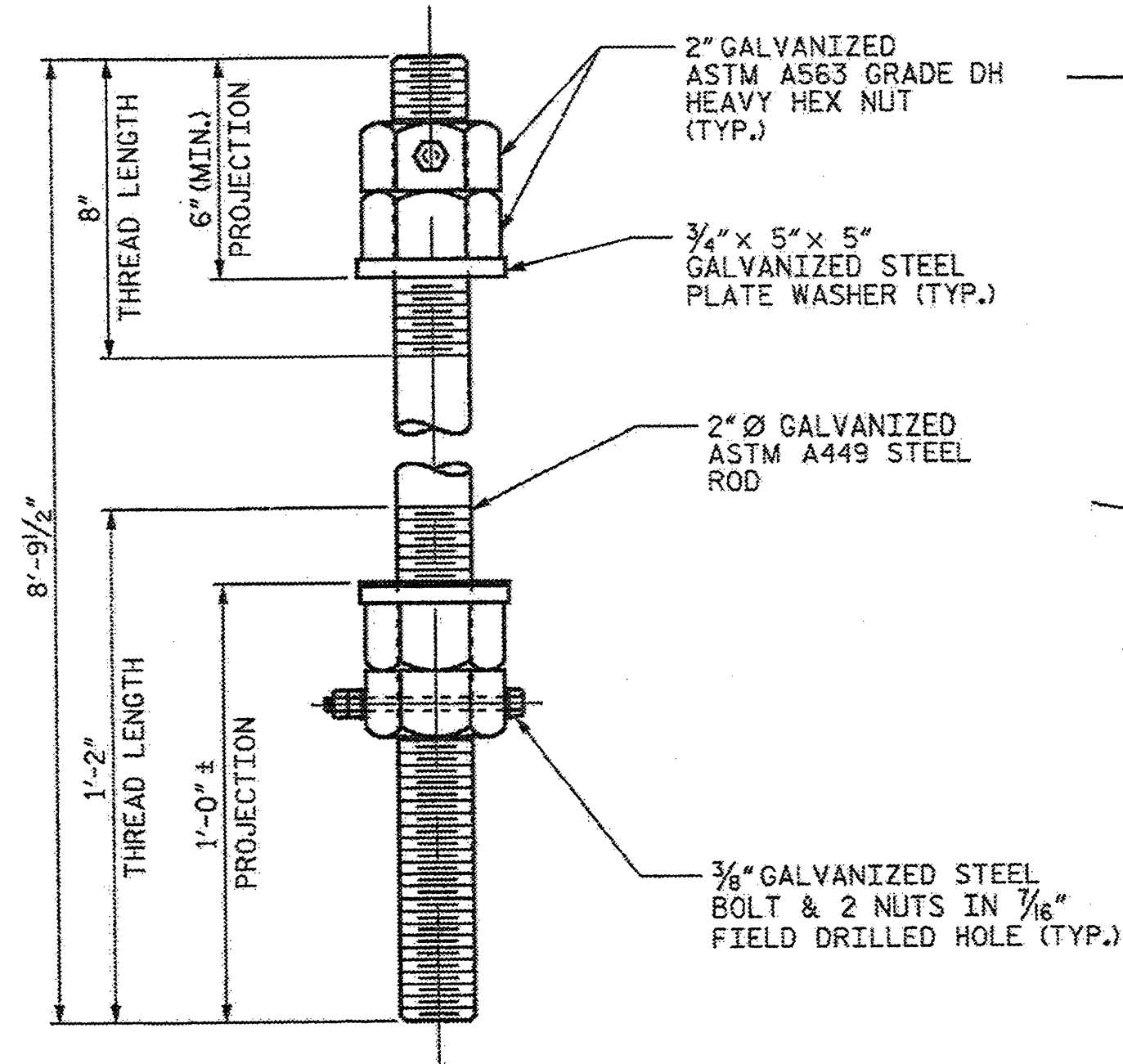


ELEVATION

END VIEW

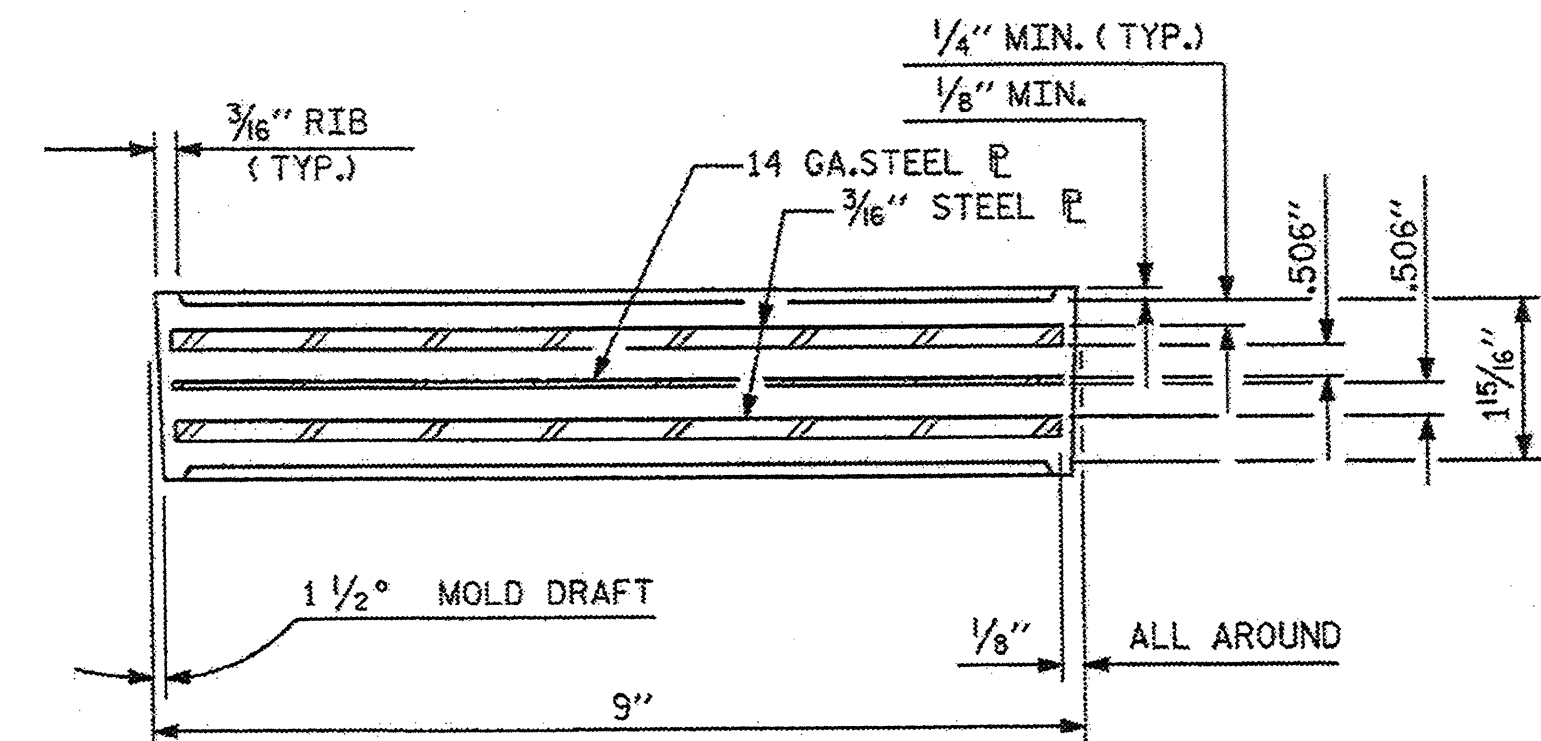
**BOLSTER ASSEMBLY**

(4 REQUIRED)

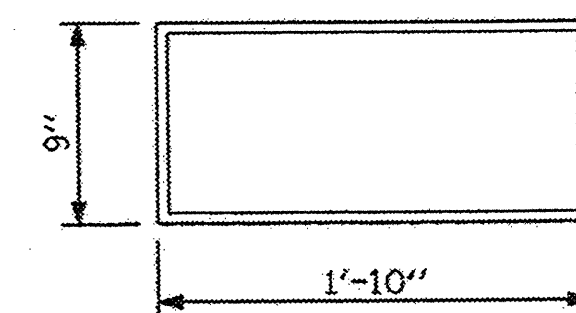


**HANGER RODS**

(16 REQUIRED)



TYPICAL SECTION OF ELASTOMERIC BEARINGS

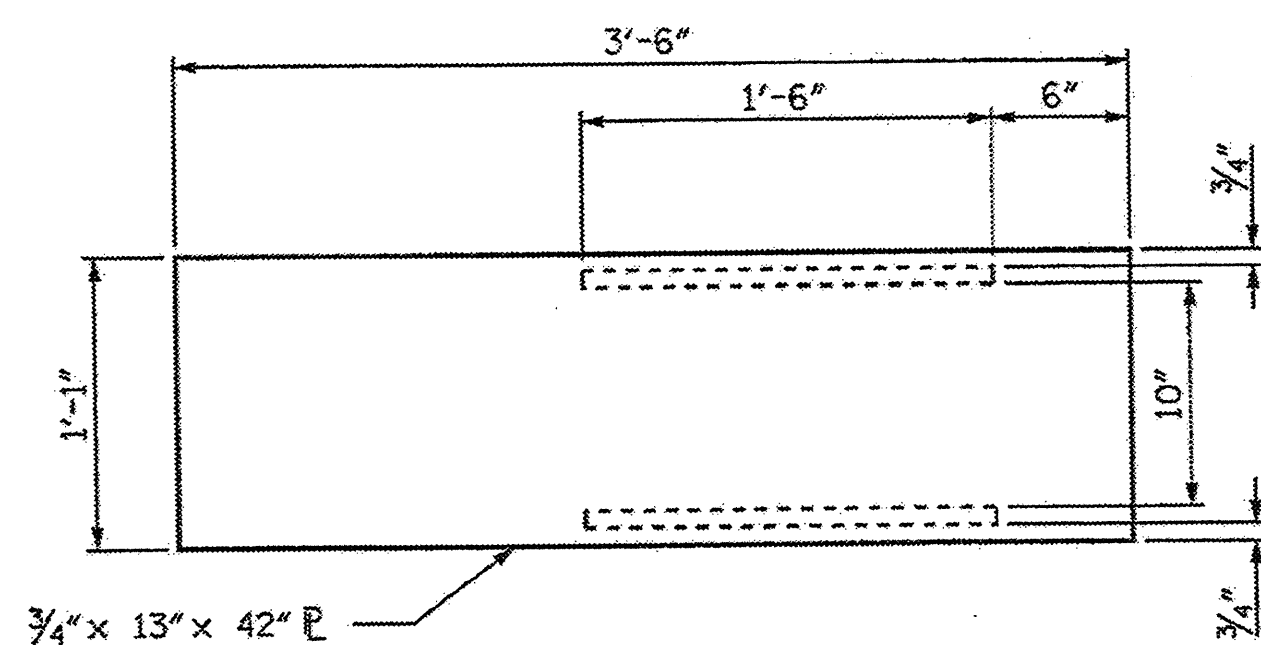


PLAN VIEW OF ELASTOMERIC BEARING

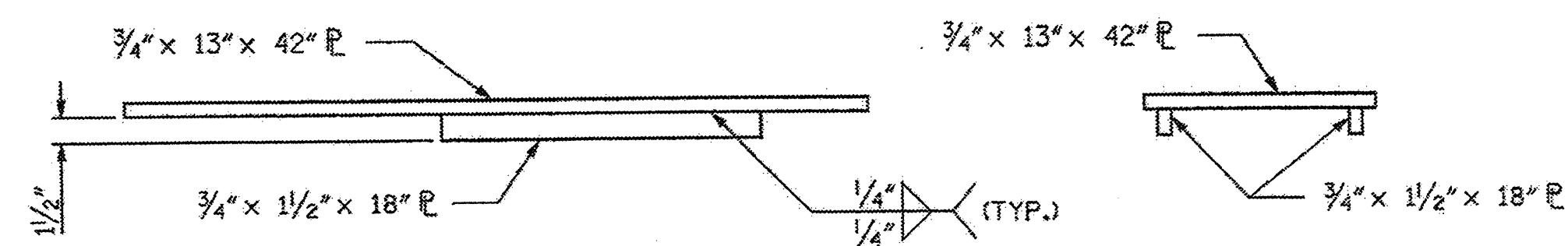
**TYPE IV**

(4 REQUIRED)

— LOAD RATINGS —	
	MAX.D.L.+ L.L.
TYPE IV	137 K



PLAN

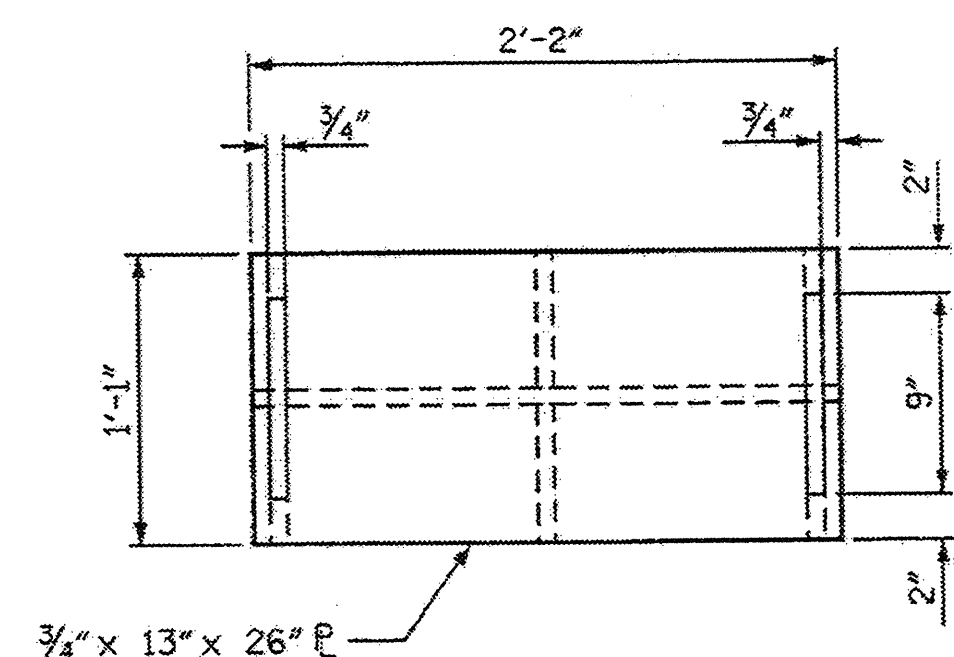


ELEVATION

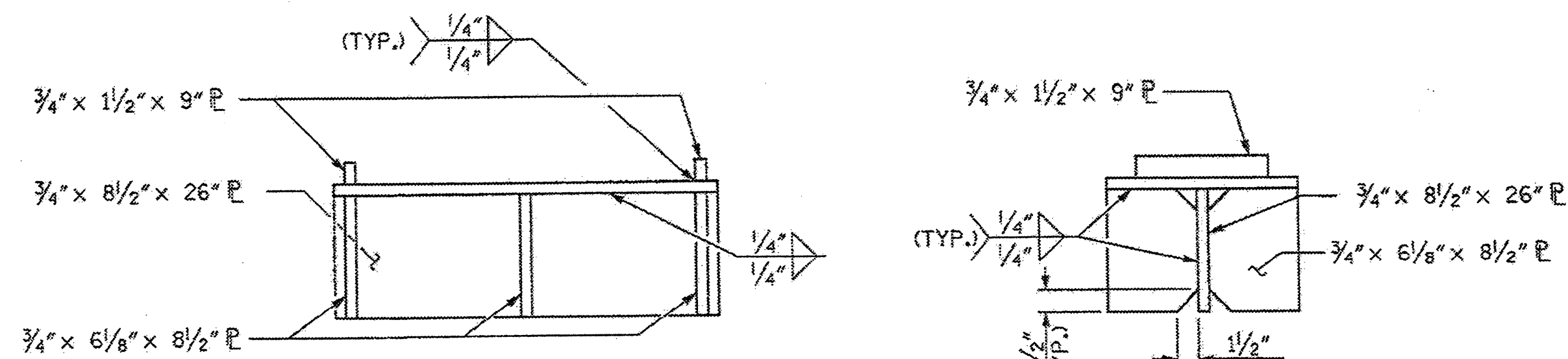
END VIEW

**BEARING ASSEMBLY**

(UPPER ASSEMBLY)  
(4 REQUIRED)



PLAN



ELEVATION

END VIEW

**BEARING ASSEMBLY**

(LOWER ASSEMBLY)  
(4 REQUIRED)



BRIDGE NO. 9  
GRAHAM COUNTY  
 STATION: 149+63.32 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**AUXILIARY SUPPORT SYSTEM DETAILS**

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-19
1			3			TOTAL SHEETS
2			4			19

DRAWN BY: M.A. ALLEN DATE: 10-07  
 CHECKED BY: B.C. HANKS DATE: 2-08

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

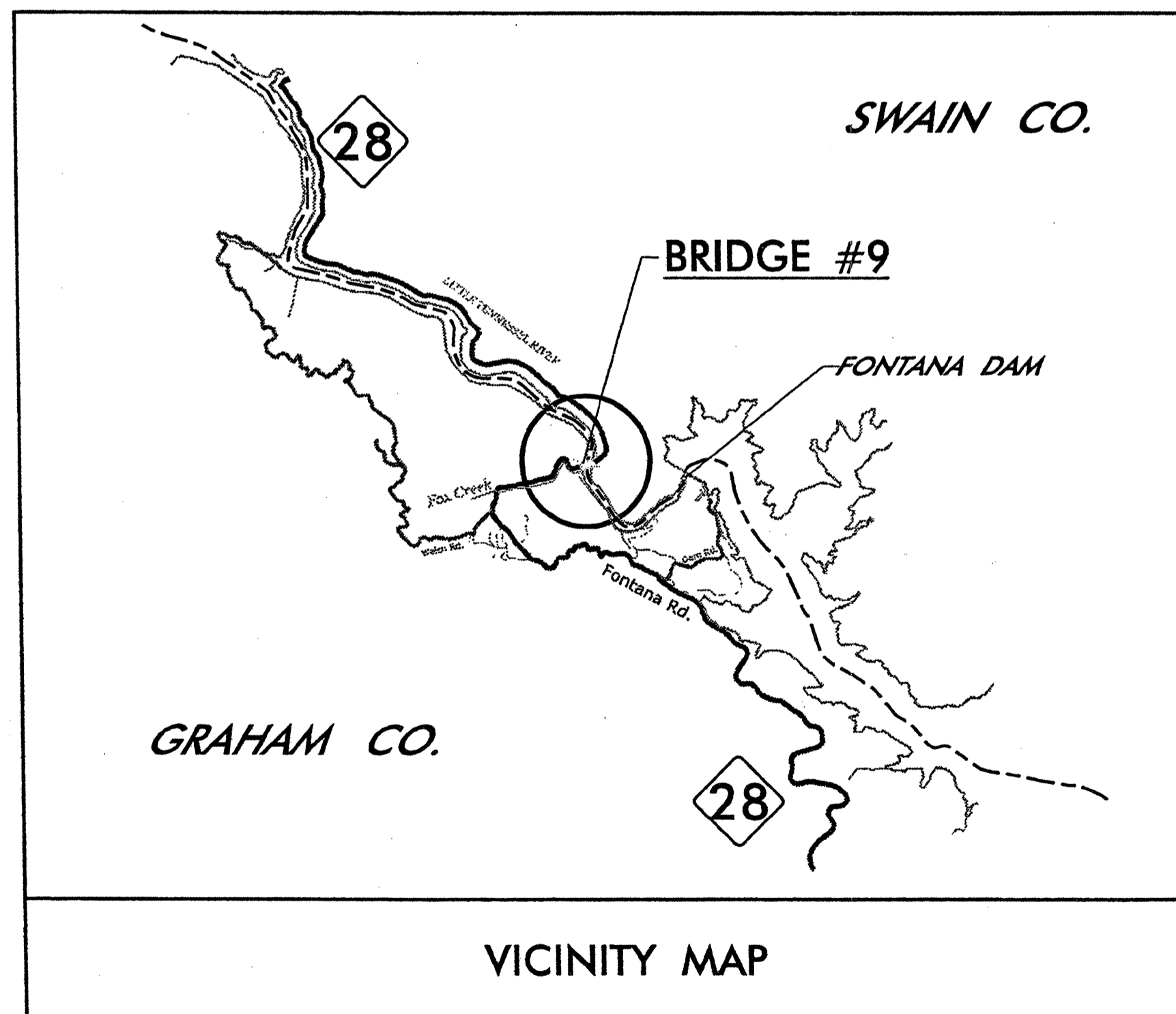
**GRAHAM COUNTY**

**DIVISION 14**



**BRIDGE PRESERVATION**

**BRIDGE #9 - NC 28 ACROSS LITTLE TENNESSEE RIVER**



VICINITY MAP

**INDEX OF SHEETS**

SHEET NO.	TITLE
TMP-1	TITLE SHEET AND INDEX OF SHEETS
TMP-1A	LEGEND AND LIST OF ROADWAY STANDARD DRAWINGS
TMP-2	GENERAL NOTES & PHASING
TMP-3	NC 28 ROAD CLOSURE
TMP-4	NC 28 DETOUR ROUTE SIGNING
TMP-5	CHANGEABLE MESSAGE SIGN LOCATIONS

SHEET NO.

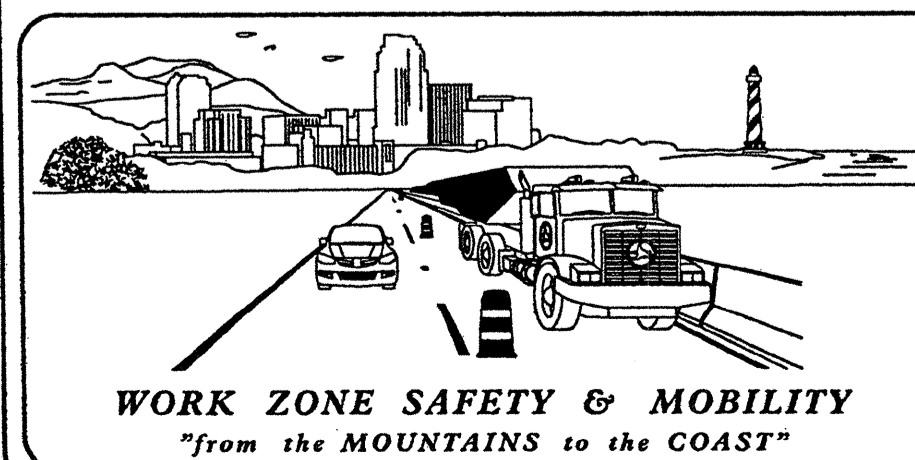
TMP-1

**WBS 17BP.14.P.8**

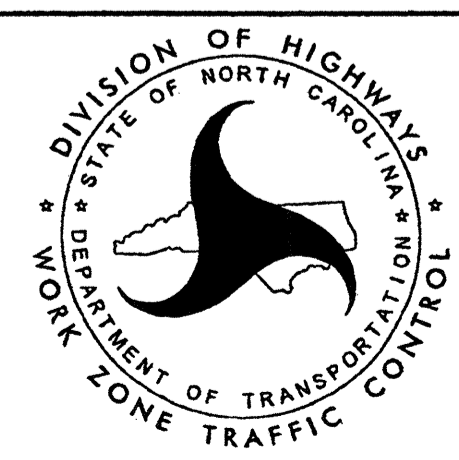
**TRAFFIC MANAGEMENT STRATEGY**

PROPOSED WORK ON BRIDGE #9 WILL BE PERFORMED USING TIME RESTRICTED ROAD CLOSURES FOR MAJOR WORK ITEMS. FOR MINOR OPERATIONS FLAGGER OPERATIONS MAY BE UTILIZED AS ALLOWED BY THE ENGINEER.

12/22/2011 U:\TrafficControl\TCP\WBS 17BP.14.P.8 Graham 9 Preservation\TCP\Plan Sheets\17BP.14.P.8.TC.TMP\_01.TITLE.dgn



PLAN PREPARED FOR NCDOT BRIDGE MANAGEMENT UNIT  
RALEIGH, NC




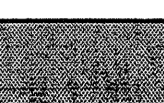
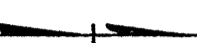








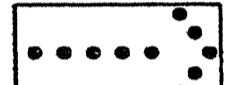
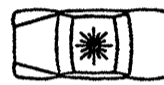







**Stantec**  
PLAN PREPARED BY:  
Stantec Consulting Services Inc.  
801 Jones Franklin Road-Suite 300  
Raleigh, NC 27606  
Tel. 919.851.6866  
Fax. 919.851.7024  
www.stantec.com




BETSY L. WATSON, P.E. *TRAFFIC ENGINEER*  
GEORGE KARAGEORGE *SR. TRANSPORTATION DESIGNER*

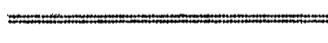



APPROVED: *Betsy L. Watson*  
DATE: 12/22/11


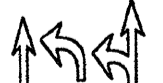

SEAL  
NORTH CAROLINA  
PROFESSIONAL  
ENGINEER  
SEAL  
29449  
BETSY L. WATSON

# LEGEND

-  DIRECTION OF TRAFFIC FLOW
-  WORK AREA
-  NORTH ARROW
-  TYPE III BARRICADE
-  CONE
-  DRUM     SKINNY DRUM     TUBULAR MARKER
-  CHANGEABLE MESSAGE SIGN (CMS)
-  FLAGGER
-  FLASHING ARROW BOARD (TYPE C)    
-  LAW ENFORCEMENT
-  TRUCK MOUNTED ATTENUATOR (TMA)
-  PORTABLE CONCRETE BARRIER (PCB)
-  TEMPORARY CRASH CUSHION
-  TEMPORARY SHORING
-  WORK ZONE SIGN-PORTABLE
-  WORK ZONE SIGN-STATIONARY
-  WORK ZONE SIGN-STATIONARY OR PORTABLE

- SIGNALS**
-  EXISTING
  -  PROPOSED
  -  TEMPORARY

- PAVEMENT MARKINGS**
-  EXISTING PAVEMENT MARKING (GRAY)
  -  SKIP LINES
  -  MINI-SKIP LINES
  -  SOLID LINES

- PAVEMENT MARKING SYMBOLS**
-  PAVEMENT MARKING SYMBOLS
  -  EXISTING PAVEMENT MARKING SYMBOLS (HOLLOW)
  -  ONLY PAVEMENT MARKING ALPHANUMERIC CHARACTERS


- PAVEMENT MARKERS**
-  CRYSTAL/CRYSTAL
  -  CRYSTAL/RED
  -  YELLOW/YELLOW

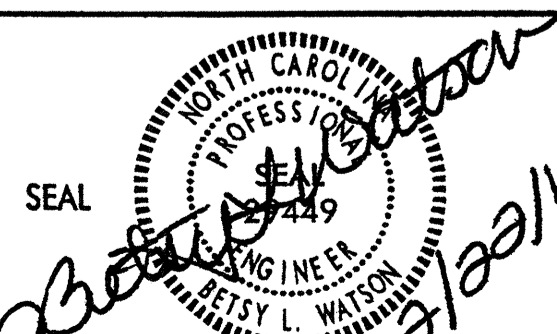
## ROADWAY STANDARD DRAWINGS

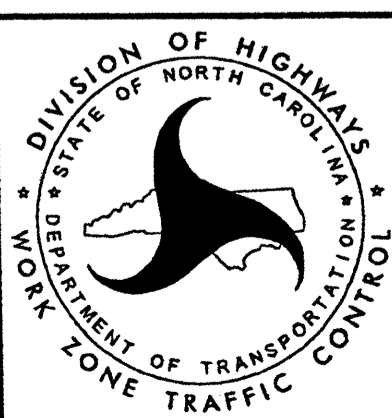
THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1165.01	WORK VEHICLE LIGHTING SYSTEMS AND TMA DELINEATION
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1253.01	RAISED PAVEMENT MARKERS - SNOWPLOWABLE

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License No. F-0672

APPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_  
 BEISTY L. WATSON  
PROFESSIONAL ENGINEER  
NO. 449  
STATE OF NORTH CAROLINA

 DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
WORK ZONE TRAFFIC CONTROL

LEGEND  
&  
ROADWAY STANDARD DRAWINGS



## GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS, AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OR REMOVAL OF DEVICES AS DIRECTED BY THE ENGINEER.

### HOLIDAY & HOLIDAY WEEKEND LANE & ROAD CLOSURE TIME RESTRICTIONS

- A) DO NOT CLOSE OR NARROW ANY TRAVEL LANE AND DO NOT CLOSE ANY ROADWAY DURING HOLIDAYS AND HOLIDAY WEEKENDS AS FOLLOWS:
- 1) FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
  - 2) FOR NEW YEAR'S, BETWEEN THE HOURS OF 8:00 A.M. DECEMBER 31st TO 8:00 P.M. JANUARY 2nd. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 8:00 P.M. THE FOLLOWING TUESDAY.
  - 3) FOR EASTER, BETWEEN THE HOURS OF 8:00 A.M. THURSDAY AND 8:00 P.M. MONDAY.
  - 4) FOR MEMORIAL DAY, BETWEEN THE HOURS OF 8:00 A.M. FRIDAY TO 8:00 P.M. TUESDAY.
  - 5) FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 8:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 8:00 P.M. THE DAY AFTER INDEPENDENCE DAY. IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY; THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 8:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
  - 6) FOR LABOR DAY, BETWEEN THE HOURS OF 8:00 A.M. FRIDAY AND 8:00 P.M. TUESDAY.
  - 7) FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 8:00 A.M. TUESDAY TO 8:00 P.M. MONDAY.
  - 8) FOR CHRISTMAS, BETWEEN THE HOURS OF 8:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 8:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

B) DO NOT CLOSE ROADS AS FOLLOWS:

<u>ROAD NAME</u>	<u>DAY AND TIME RESTRICTIONS</u>
NC 28	MONDAY THROUGH SUNDAY 8:00 A.M.-8:00 P.M.

WITH THE EXCEPTION THAT TWO (2) EXTENDED ROAD CLOSURE PERIODS WILL BE ALLOWED FROM SUNDAY 8:00 P.M.-THURSDAY 8:00 A.M.

### PAVEMENT MARKINGS AND MARKERS

- C) RECORD ALL LOCATIONS AND TYPES OF EXISTING PAVEMENT MARKINGS AS THEY WILL BE REPLACED IN THE SAME LOCATION ON THE NEW SURFACE.
- D) UPON COMPLETION OF ALL OTHER CONSTRUCTION OPERATIONS INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

<u>ROAD NAME</u>	<u>MARKING</u>	<u>PAVEMENT MARKER</u>
NC 28	PAINT	SNOWPLOWABLE

- E) REPLACE ANY PAVEMENT MARKINGS ERADICATED OR DAMAGED BY CONSTRUCTION OPERATIONS BEFORE OPENING LANES TO TRAFFIC.

### LANE AND SHOULDER CLOSURE REQUIREMENTS

- F) LANE CLOSURES ARE REQUIRED WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN ANY PORTION OF A TRAVEL LANE. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- G) INSTALL ALL LANE CLOSURES ACCORDING TO THE PLANS, ROADWAY STANDARD DRAWINGS (1101.02), OR AS DIRECTED BY THE ENGINEER.
- H) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER. COVER OR LAY DOWN SIGNS, AND TURN OFF ARROW BOARDS AND MESSAGE BOARDS.
- I) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- J) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

### ROAD CLOSURES

- K) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY ROAD CLOSURE.
- L) FURNISH AND INSTALL SIGNING AND DEVICES FOR ROAD CLOSURES ACCORDING TO THE TRAFFIC MANAGEMENT PLAN. COVER OR REMOVE ALL SIGNS AND DEVICES FOR ROAD CLOSURES WHEN NOT IN EFFECT.
- M) FURNISH AND INSTALL OFFSITE-DETOUR ROUTE SIGNING AS SHOWN IN THE TRAFFIC MANAGEMENT PLAN. COVER OR REMOVE OFFSITE-DETOUR SIGNING WHEN THE DETOUR IS NOT IN OPERATION, UNLESS OTHERWISE ALLOWED BY THE ENGINEER. ALL DETOUR ROUTES MUST BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTING.
- N) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.
- O) WHEN CLOSING A ROADWAY OR DRIVEWAY PLACE TYPE III BARRICADES COMPLETELY ACROSS THE ROADWAY OR FROM CURB TO CURB. ATTACH BARRICADE MOUNTED "ROAD CLOSED" SIGN R11-2 AT ALL CLOSURE LOCATIONS. IF LOCAL TRAFFIC IS TO BE MAINTAINED STAGGER THE BARRICADES TO ALLOW ACCESS.
- P) INSTALL SIGNS BEFORE BARRICADES WHEN CLOSING A ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING A ROADWAY TO TRAFFIC. INSTALL/REMOVE ROAD CLOSURE SIGNS AND BARRICADES IN A CONTINUOUS OPERATION AND WITHIN THE SAME CALENDAR DAY.

### MISCELLANEOUS

- Q) ALL DIMENSIONS AND STATIONS IN THE TRAFFIC MANAGEMENT PLAN AND PHASING ARE APPROXIMATE (+/-); FIELD ADJUST AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
- R) ENSURE THE OVERSIZE/OVERWEIGHT PERMIT UNIT (919) 733-4740 HAS BEEN ADVISED OF THE ONGOING TRAFFIC OPERATIONS THROUGH THE DIVISION OFFICE.

## PHASING

NIGHTLY ROAD CLOSURES BETWEEN THE HOURS OF 8:00 P.M. AND 8:00 A.M. WILL BE REQUIRED FOR ALL MAJOR OPERATIONS SUCH AS WORK ON AUXILIARY BEAMS, BEARING PLATES, JOINTS, GROOVING, DECK REPAIRS, HYDRO-DEMOLITION AND LMC OVERLAY.

TWO (2) EXTENDED ROAD CLOSURE PERIODS WILL BE ALLOWED FROM SUNDAY 8:00 PM TO THURSDAY 8:00 A.M. FOR FINGER JOINT REPLACEMENT OR ANY OTHER WORK THAT CAN BE COMPLETED SIMULTANEOUSLY.

REFER TO GENERAL NOTES A AND B FOR LANE AND ROAD CLOSURE TIME RESTRICTIONS.


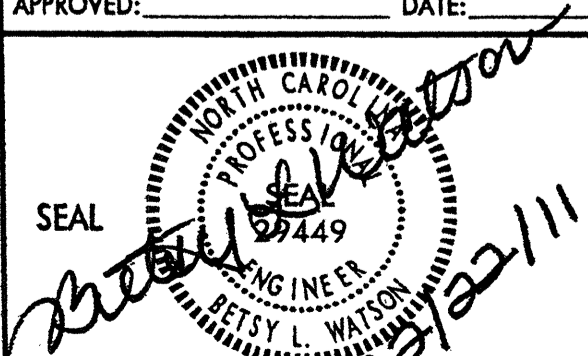

REFER TO SHEET TMP-3 FOR ROAD CLOSURE DEVICES.

REFER TO SHEET TMP-4 FOR DETOUR ROUTE SIGNING.

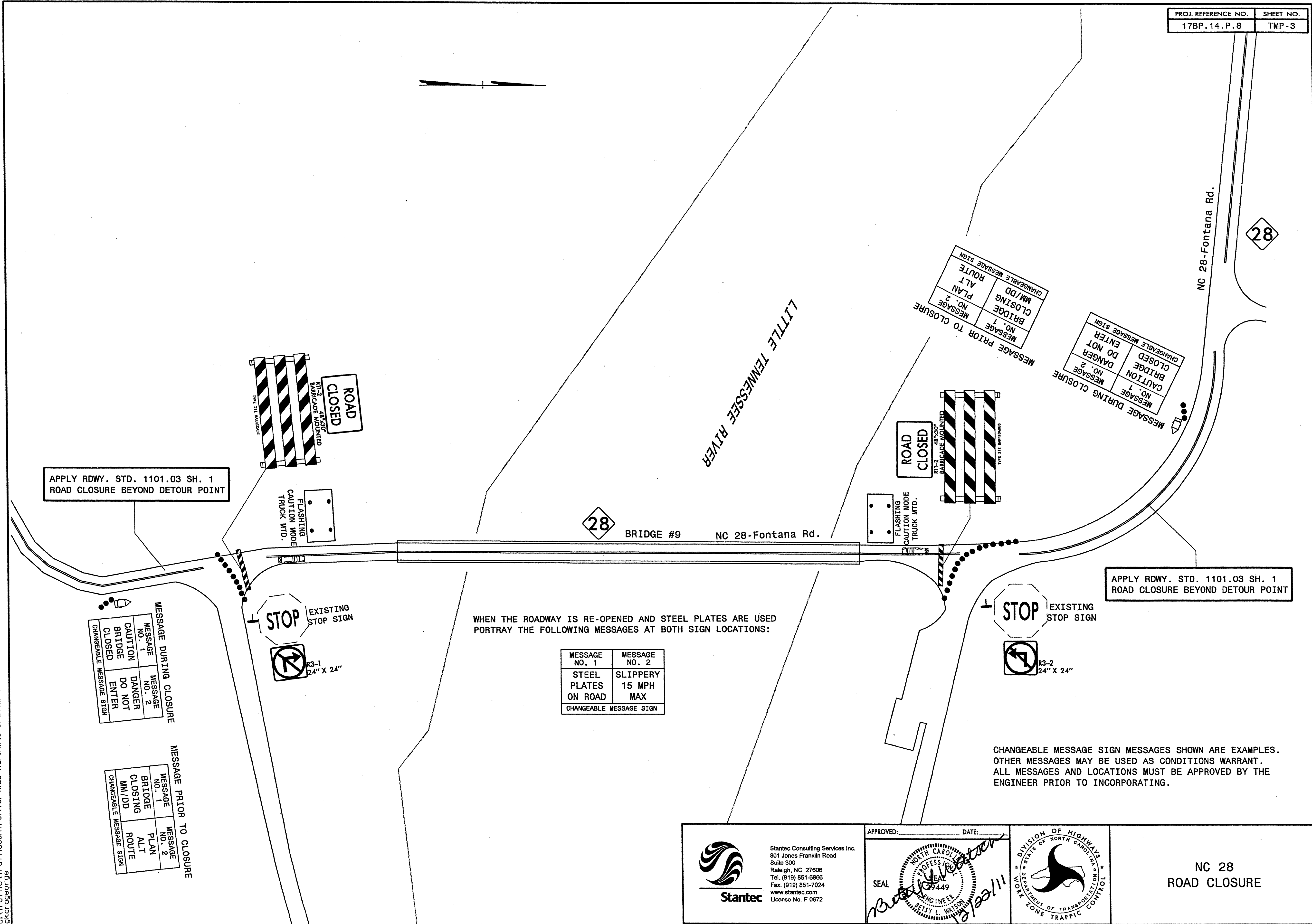
REFER TO SHEET TMP-5 FOR CHANGEABLE MESSAGE SIGN LOCATIONS.

FLAGGER CONTROLLED LANE CLOSURES IN ACCORDANCE WITH ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 15 MAY BE USED WHEN APPROVED BY THE ENGINEER. FLAGGER CONTROLLED LANE CLOSURES MAY BE ALLOWED WHEN PLACING PAVEMENT MARKING OR DURING BRIDGE PAINTING OPERATIONS.

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APPLY RDWY. STD. 1101.03 SH. 1  
ROAD CLOSURE BEYOND DETOUR POINT

APPLY RDWY. STD. 1101.03 SH. 1  
ROAD CLOSURE BEYOND DETOUR POINT

WHEN THE ROADWAY IS RE-OPENED AND STEEL PLATES ARE USED  
PORTRAY THE FOLLOWING MESSAGES AT BOTH SIGN LOCATIONS:

MESSAGE NO. 1	MESSAGE NO. 2
STEEL PLATES ON ROAD	SLIPPERY 15 MPH MAX

CHANGEABLE MESSAGE SIGN

CHANGEABLE MESSAGE SIGN MESSAGES SHOWN ARE EXAMPLES.  
OTHER MESSAGES MAY BE USED AS CONDITIONS WARRANT.  
ALL MESSAGES AND LOCATIONS MUST BE APPROVED BY THE  
ENGINEER PRIOR TO INCORPORATING.

MESSAGE DURING CLOSURE

MESSAGE NO. 1	MESSAGE NO. 2
CAUTION BRIDGE CLOSED	DANGER DO NOT ENTER

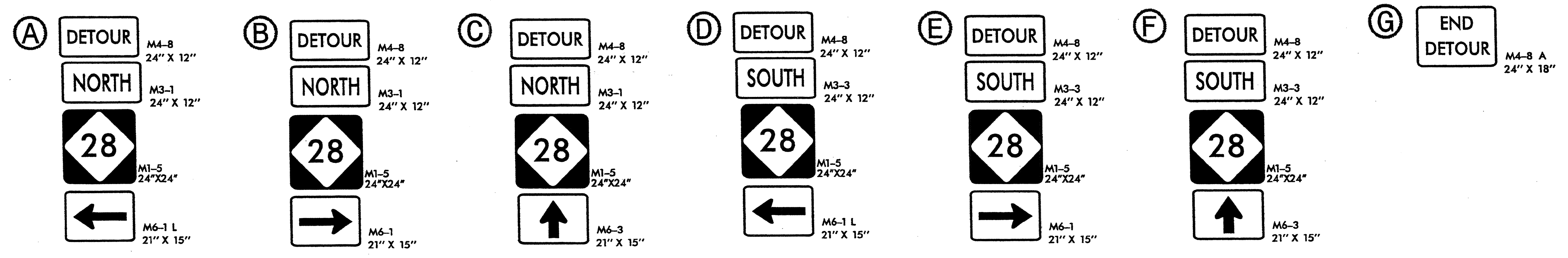
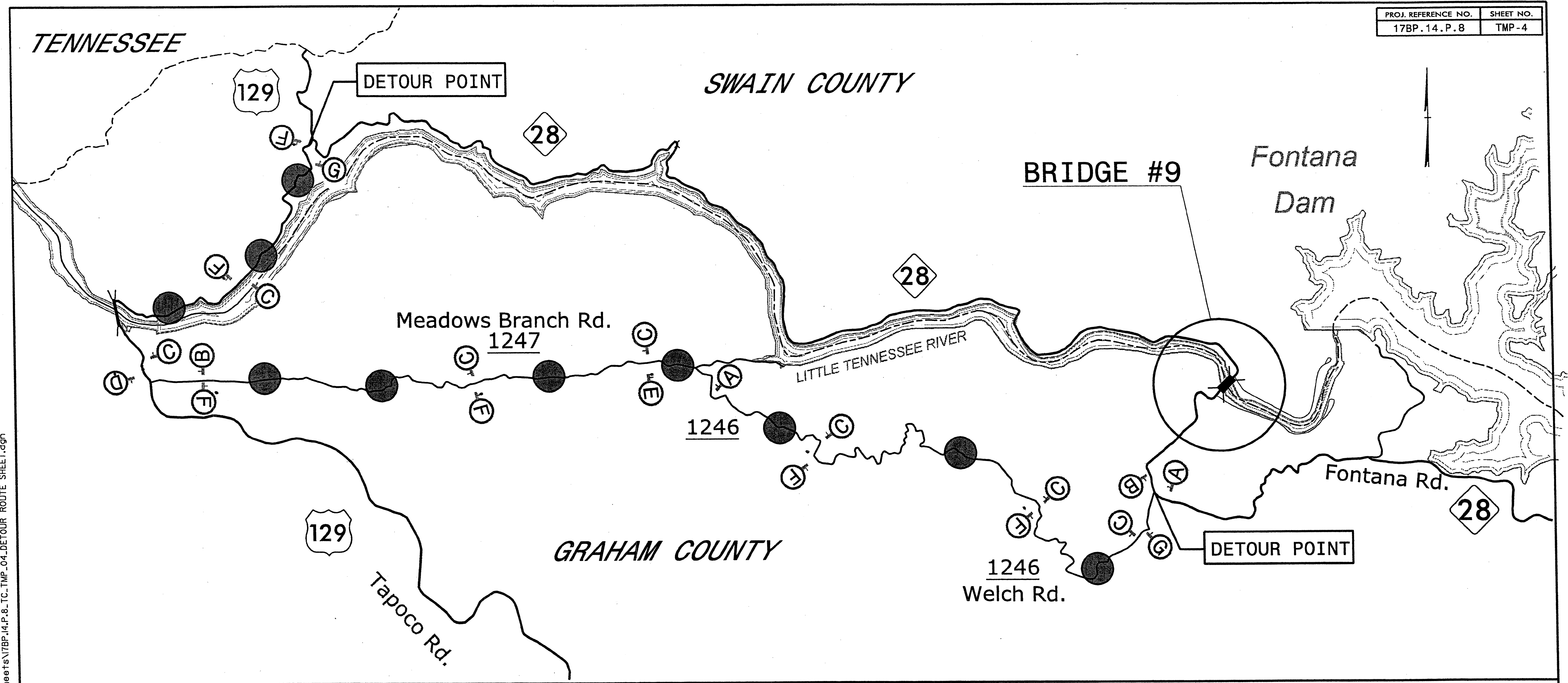
CHANGEABLE MESSAGE SIGN

MESSAGE PRIOR TO CLOSURE

MESSAGE NO. 1	MESSAGE NO. 2
BRIDGE CLOSING PLAN	ALT ROUTE

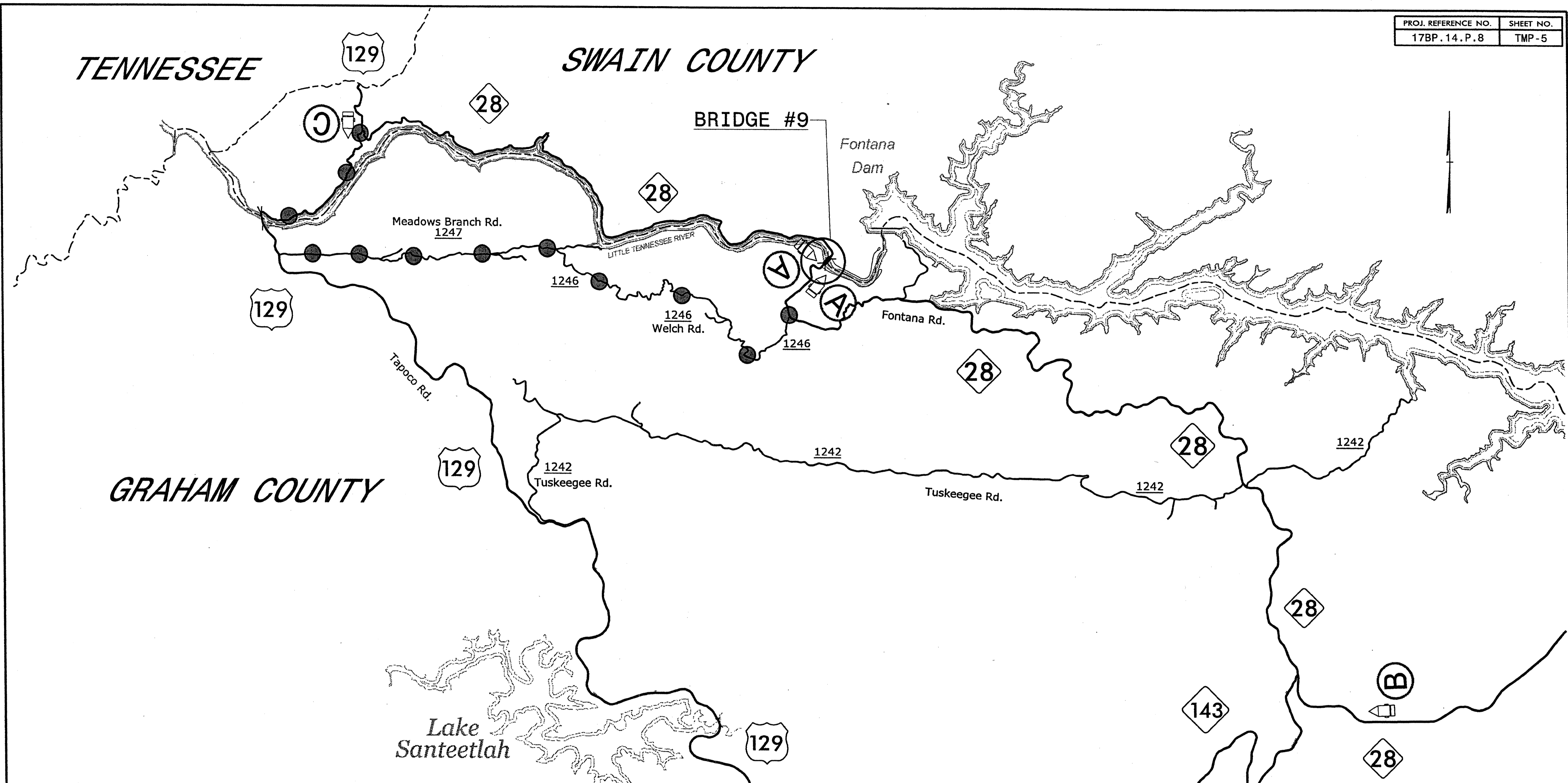
CHANGEABLE MESSAGE SIGN

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12/22/2011  
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	<p align="right">12/22/11</p>		



SEE TMP-3		MESSAGE DURING CLOSURE		MESSAGE DURING CLOSURE		MESSAGE DURING CLOSURE	
MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2
CAUTION	DO	NC 28	USE	NC 28	NC 28	NC 28 AT	CLOSES
BRIDGE	NOT	CLOSED	NC 143 W	CLOSED	FOLLOW	FONTANA	8 PM
CLOSED	ENTER	10 MILES	US 129 N	7 MI AHD	DETOUR	DAM	TONITE
CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN		OR MM/DD	

MESSAGE PRIOR TO CLOSURE		MESSAGE PRIOR TO CLOSURE		MESSAGE PRIOR TO CLOSURE	
MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2	MESSAGE NO. 1	MESSAGE NO. 2
BRIDGE	PLAN	NC 28 AT	CLOSES	NC 28 AT	CLOSES
CLOSING	ALT	FONTANA	8 PM	FONTANA	8 PM
M/DD	ROUTE	DAM	TONITE	DAM	TONITE
CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN		CHANGEABLE MESSAGE SIGN	

CHANGEABLE MESSAGE SIGN MESSAGES SHOWN ARE EXAMPLES. OTHER MESSAGES MAY BE USED AS CONDITIONS WARRANT. ALL MESSAGES AND LOCATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO INCORPORATING.

<p>Stantec Consulting Services Inc. 801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672</p>	APPROVED: _____ DATE: _____ 		CHANGEABLE MESSAGE SIGN LOCATIONS

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## STANDARD NOTES

### DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT.
		(MINIMUM)

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2006 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.  
ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

# ENGLISH

JANUARY, 1990

STD. NO. SN