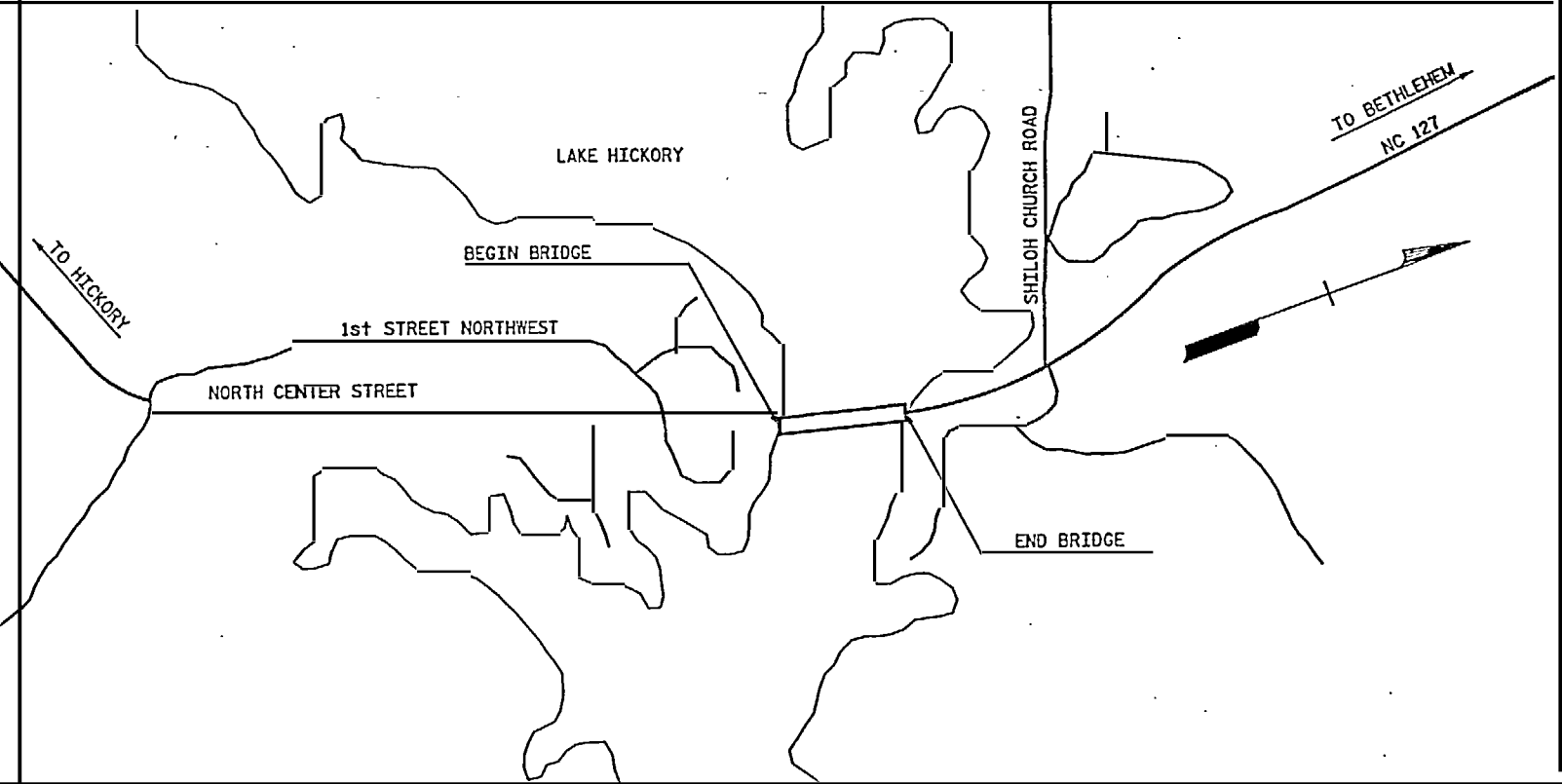


LOCATION SKETCH



INDEX OF SHEETS:

SHEET NO.	TITLE
1	GENERAL PLAN AND NOTES
2	JACKING SEQUENCE SHEET 1 OF 2
3	JACKING SEQUENCE SHEET 2 OF 2
4	DIAPHRAGM MODIFICATION
5	GIRDER REPAIR
6	BEARING BUILD-UP
7	ELASTOMERIC BEARING ASSEMBLY
8	BACKWALL REPAIR
9	TROUGH SYSTEM

NOTES

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR THIS PROJECT.

ALL EXISTING AND PROPOSED STEEL SHALL BE CLEANED AND PAINTED FOR A DISTANCE OF 4 FEET EITHER SIDE OF THE JOINTS AT BENTS 1 AND 6. THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 442 OF THE STANDARD SPECIFICATIONS AND THE SPECIAL PROVISIONS.

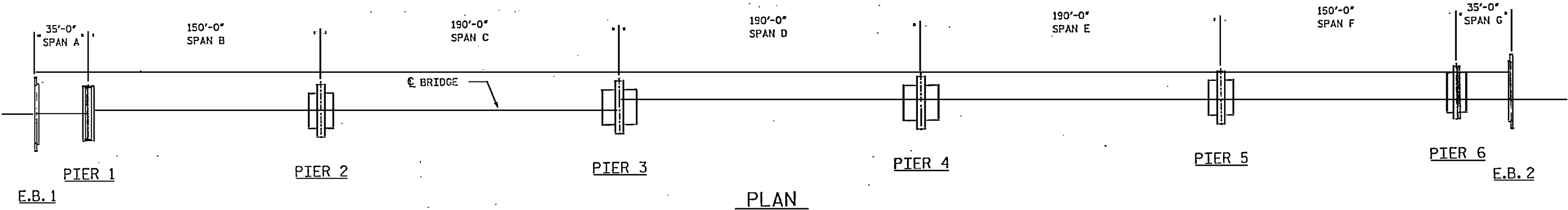
THE CONTRACTOR SHALL PAINT ANY STRUCTURAL STEEL THAT HAS BEEN DISTURBED OR MARRED DURING THE LIFE OF THIS PROJECT. THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 442 OF THE STANDARD SPECIFICATIONS.

WORK ON THIS BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL SUBMIT PLANS FOR EROSION CONTROL AND CONSTRUCTION ACCESS IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS AND THE PROJECT SPECIAL PROVISIONS.

STRUCTURAL STEEL FOR GIRDER REPAIR SHALL BE ASTM A36 GRADE 36, OR APPROVED EQUIVALENT.

WORK, AS DESCRIBED IN THESE PLANS TO BE COMPLETED WITHOUT INTERRUPTION OF TRAFFIC ON THE BRIDGE.

IT IS THE CONTRACTORS RESPONSIBILITY TO FOLLOW ALL OSHA AND STATE SAFETY REQUIREMENTS.

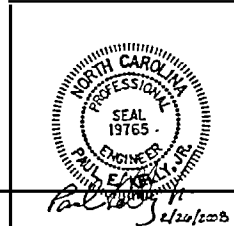


PLAN

PAY ITEMS

	BRIDGE JACKING AT PIERS 1 & 6	DIAPHRAGM MODIFICATION SPANS A & G	DIAPHRAGM MODIFICATION SPANS B & F	GIRDER REPAIR SPANS A & G	GIRDER REPAIR SPANS B & F	LONGITUDINAL STIFFENER REPAIR	BEARING ASSEMBLIES SPANS A & G	BEARING ASSEMBLIES SPANS B & F	BACKWALL REPAIR	TROUGH SYSTEM	CLEANING & PAINTING STRUCTURAL STEEL
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	EA.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
PIER 1	1	3	3	4	4	1	4	4	1	1	
PIER 4						2					
PIER 5							4	4	1	1	
PIER 6	1	3	3	4	4						
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	3	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

PROJECT NO. 15B.22.5
CATAWBA COUNTY
STATION: 104+55
BRIDGE #91



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE ON US 127
OVER LAKE HICKORY
GENERAL PLAN

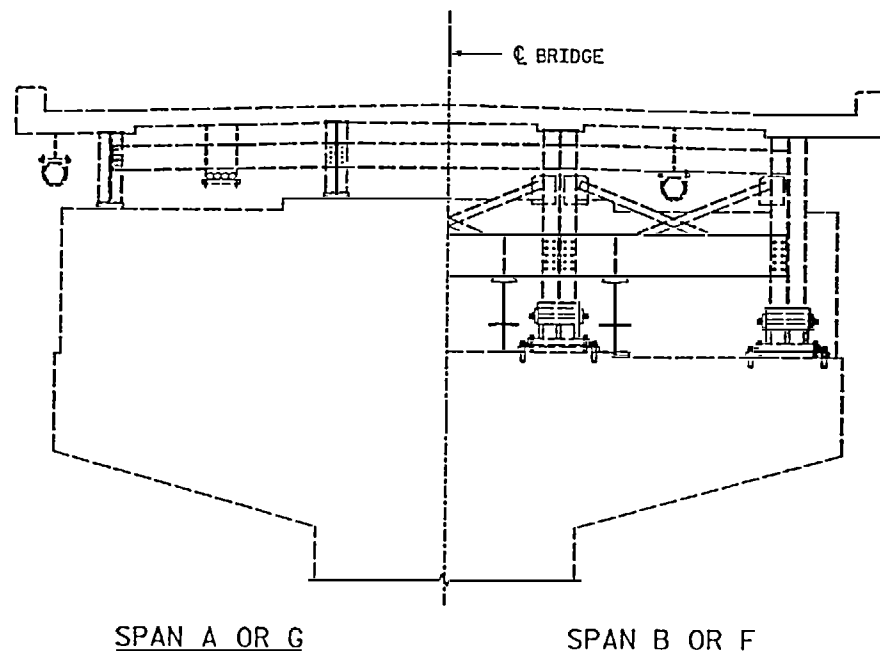
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			1
2			4			9

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CHECKED BY: TVR DATE: 8-07

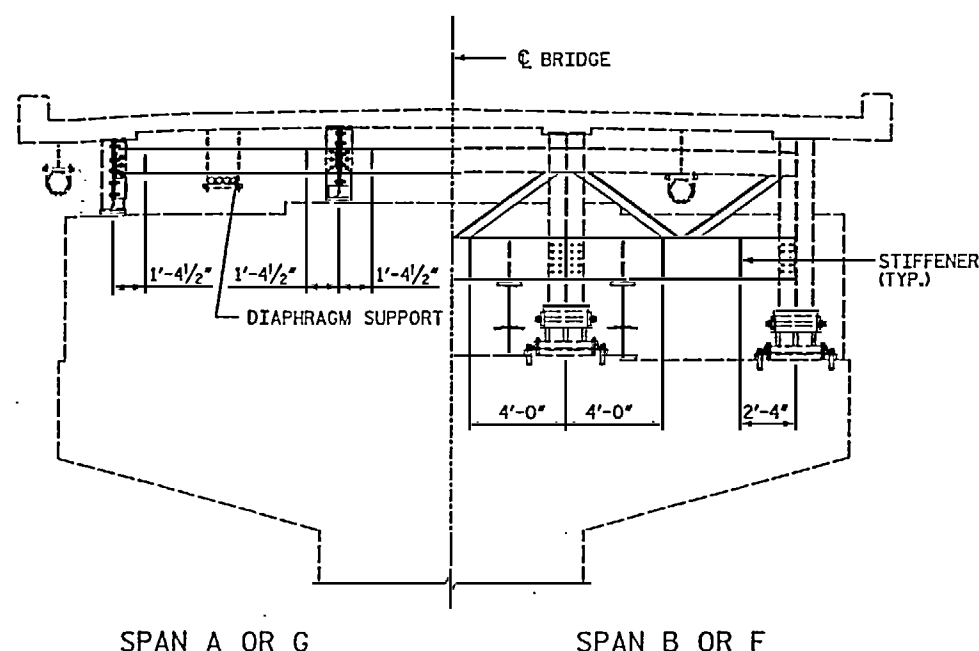
02/26/2009

ERN 3/13/08 Marked Set

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1000 West Morehead St., Ste. 200
Charlotte, NC 28228



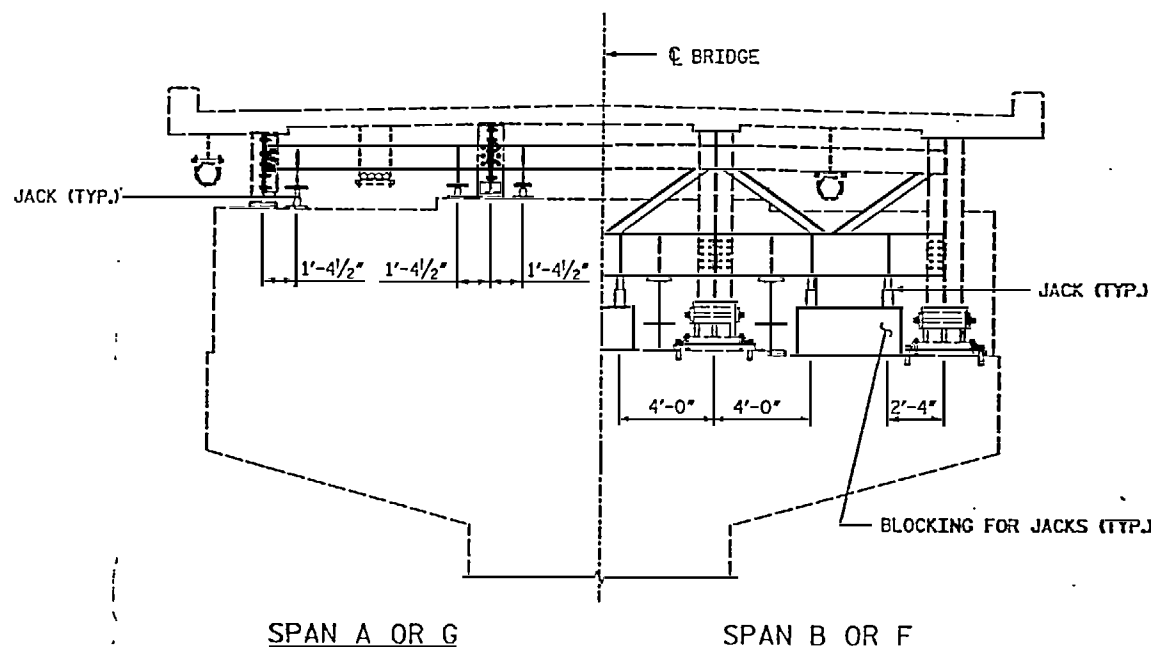
EXISTING CONDITION



STEP 1

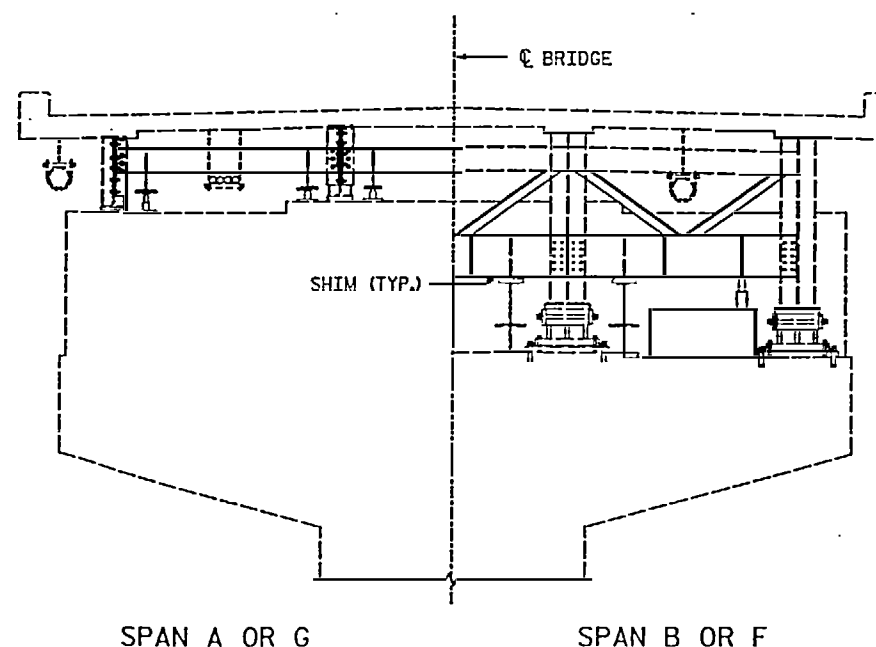
STEP 1 WORK SHALL BE COMPLETED ONE BAY AT A TIME

1. WELD STIFFENER PLATES TO DIAPHRAGMS ABOVE ALL JACKING LOCATIONS. (SEE DIAPHRAGM MODIFICATION SHEET FOR DETAILS.)
2. FOR SPANS A AND G, INSTALL ADDITIONAL DIAPHRAGM SUPPORT. (SEE DIAPHRAGM MODIFICATION SHEET FOR DETAILS.)
3. REMOVE EXISTING ANGLES IN END DIAPHRAGM OF SPANS B AND F. THE CONTRACTOR SHALL TAKE STEPS TO ENSURE THAT THE BEARING STIFFENERS AND OTHER MEMBERS ARE NOT DAMAGED DURING THIS PROCEDURE. SEE DIAPHRAGM MODIFICATION SHEET FOR DETAILS.
4. ATTACH PROPOSED STEEL MEMBERS. (SEE DIAPHRAGM MODIFICATION SHEET FOR DETAILS.)



STEP 2

1. PLACE JACKS AND BLOCKING AT THE LOCATIONS SHOWN. FOR SPANS A OR G, PLACE HP 8 x 36 ABOVE JACK.
2. INSTALL MONITORING GUIDES.
3. JACK ALL GIRDERS $\frac{5}{8}$ " FOR BOTH ADJACENT SPANS.



STEP 3

1. ADD $\frac{5}{8}$ " OF SHIMS TO TOP OF CRUTCH SUPPORTS FOR SPANS B AND F.
2. MECHANICALLY LOCK EXTERIOR BAY JACKS, REMOVE INTERIOR BAY JACKS FOR SPANS B AND F.
3. MECHANICALLY LOCK ALL JACKS FOR SPANS A OR G.

NOTES:

ALL JACKING AND REPAIR WORK SHOWN ON THESE PLANS TO BE PERFORMED AT BENTS 1 AND 6.

ON THIS SHEET BENT 6 IS SHOWN, BENT 1 SIMILAR.

BLOCKING FOR JACKS AT SPANS B AND F SHALL CONSIST OF STEEL PLATES AND STRUCTURAL SHAPES. TIMBER BLOCKING SHALL NOT BE PERMITTED. THE CONTRACTOR SHALL SUBMIT A BLOCKING PLAN, FOR ALL SPANS LIFTED, TO THE ENGINEER FOR APPROVAL.

EACH JACK SHALL HAVE A MINIMUM SAFE WORKING CAPACITY OF 150 TONS FOR SPANS B AND F AND 60 TONS FOR SPANS A AND G.

JACKS THAT REMAIN IN PLACE DURING THE ENTIRE JACKING AND REPAIR OPERATION SHALL HAVE MECHANICAL LOCK OFF CAPABILITIES.

THE CONTRACTOR SHALL JACK ALL GIRDERS ON AN INDIVIDUAL BENT SIMULTANEOUSLY BY MEANS OF A DUAL-FLOW PRESSURIZED PUMP CONTROLLING THE JACKS.

THE CONTRACTOR SHALL MONITOR THE PLAN LOCATION OF THE GIRDERS FROM INITIAL JACKING UNTIL GIRDERS ARE SECURED ON THEIR PERMANENT BEARINGS. IF THE PLAN LOCATION OF THESE GIRDERS SHIFT FROM ITS ORIGINAL POSITION, ALL WORK SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY. THE MONITORING SYSTEM SHALL BE APPROVED BY THE ENGINEER.

JACKING WILL BE CONDUCTED DURING PERIODS OF LOW TRAFFIC FLOW AT THE DISCRETION OF THE ENGINEER.

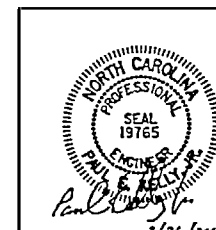
AT THE CONTRACTORS OPTION, INTERIOR JACKS THAT ARE TO BE REMOVED IN STEP 3 MAY REMAIN IN PLACE THROUGHOUT THE ENTIRE JACKING AND REPAIR OPERATION.

PROJECT NO. 15B.22.5
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SHEET 1 OF 2 BRIDGE #91

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE ON US 127
OVER LAKE HICKORY

JACKING SEQUENCE



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CHECKED BY: TVR DATE: 11-07

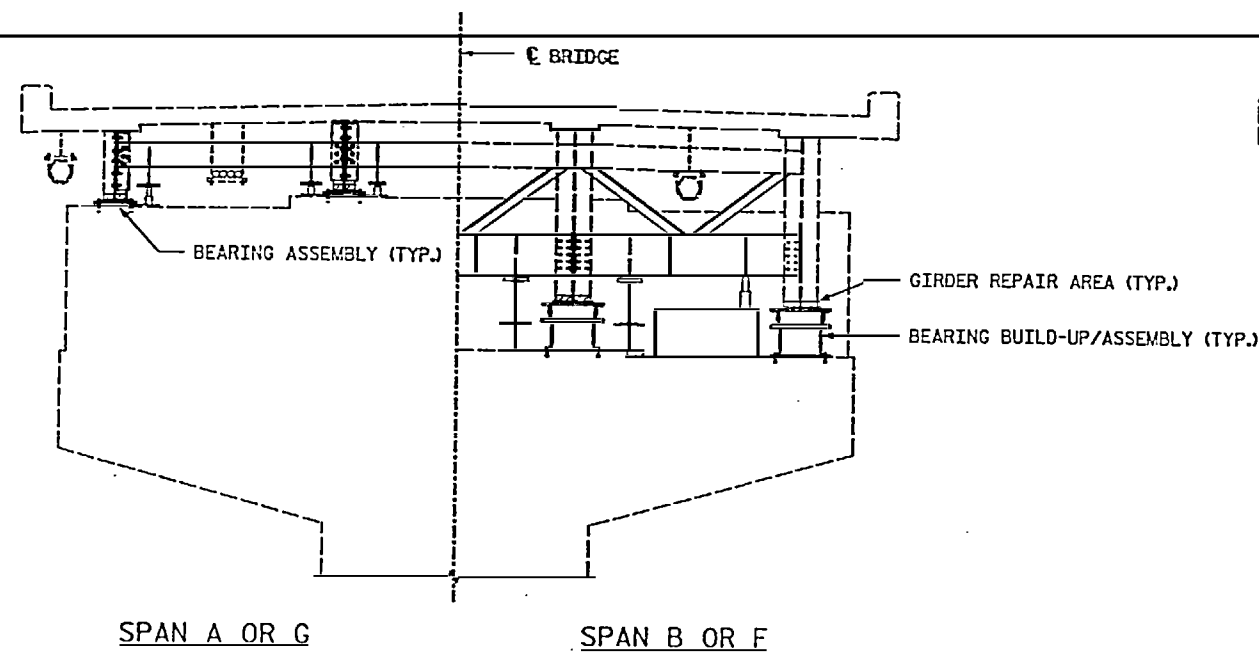
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REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
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2			3			9

NOTES:

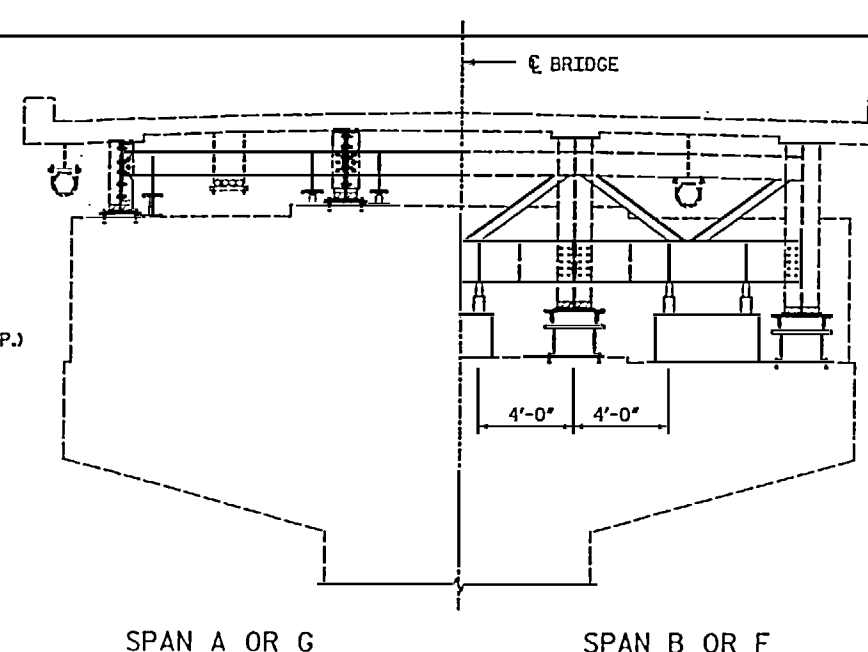
1. FOR NOTES SEE SHEET 1 OF 2.



STEP 4

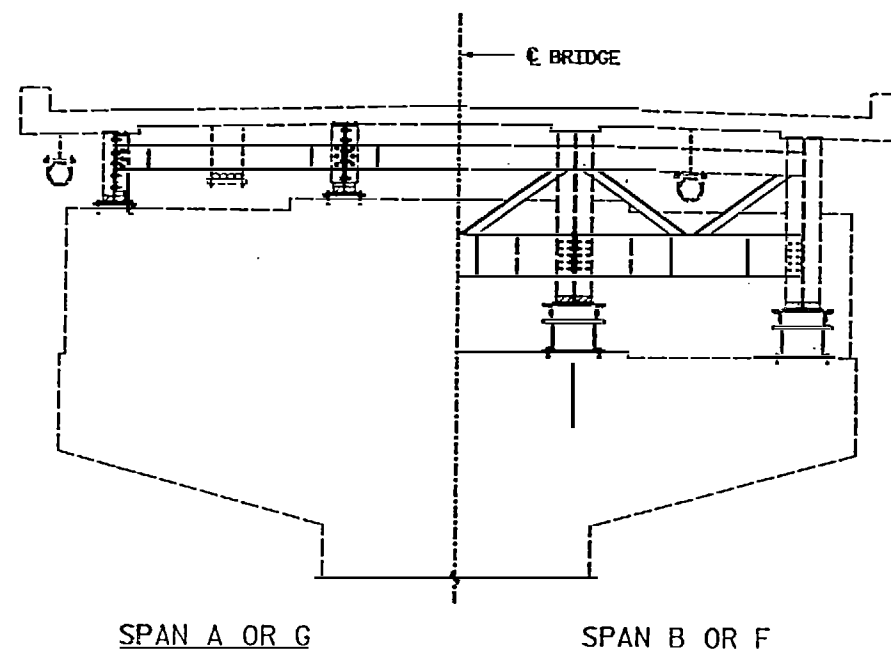
THE FOLLOWING WORK TO BE COMPLETED ONE GIRDER AT A TIME:
HIGHEST PRIORITY GIRDER FIRST (TO BE DETERMINED BY ENGINEER).

1. REMOVE EXISTING BEARING ASSEMBLY.
2. REPAIR GIRDER: CUT DAMAGED WEB & FLANGE AND WELD IN REPLACEMENT. (SEE GIRDER REPAIR SHEET)
3. INSTALL PROPOSED BEARING ASSEMBLY. (SEE BEARING BUILD-UP SHEET AND ELASTOMERIC BEARING SHEET)



STEP 5

1. RE-PLACE IN SPANS B OR F JACKS AS SHOWN.
2. JACK.
3. REMOVE CRUTCH SUPPORTS AND SHIMS.
4. LOWER SPANS INTO FINAL POSITION.



FINAL CONDITION

PROJECT NO. 15B.22.5
CATAWBA COUNTY

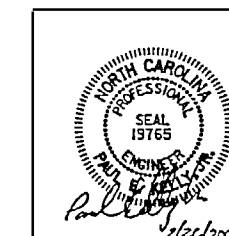
STATION: 104+55

SHEET 2 OF 2 BRIDGE #91

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON US 127
OVER LAKE HICKORY

JACKING SEQUENCE

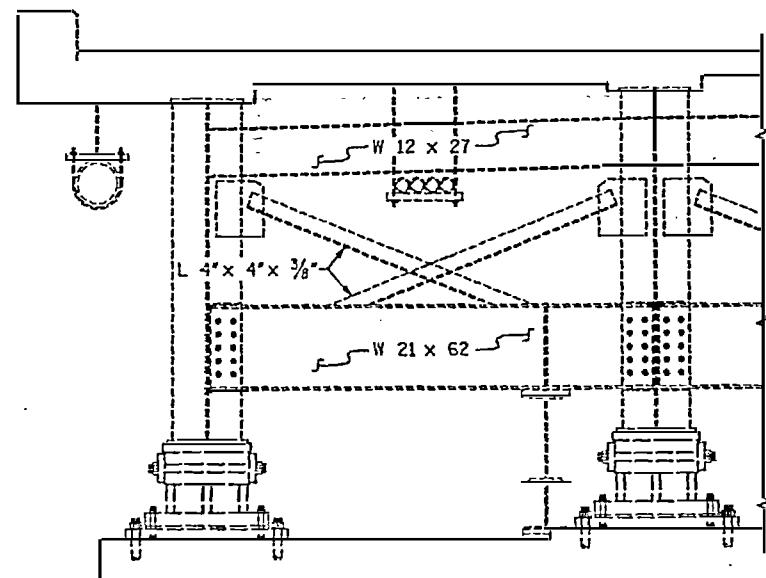


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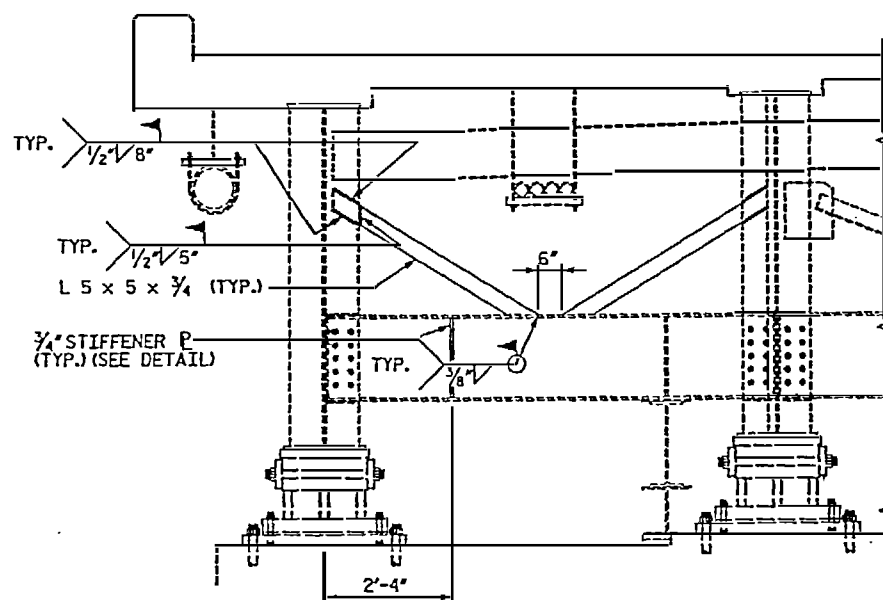
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Charlotte, NC 28206

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1			3			3
2			4			TOTAL SHEETS 9



EXISTING CONDITION
(EXTERIOR BAY SHOWN, OTHERS SIMILAR)



PROPOSED MODIFICATION
(EXTERIOR BAY SHOWN, OTHERS SIMILAR)

DIAPHRAGM @ PIERS 1 & 6 SPANS B & F SIDE

NOTES:

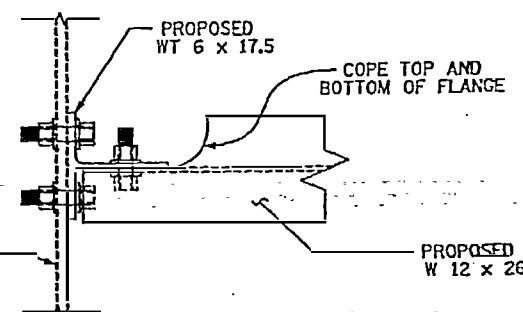
THIS MODIFICATION TO BE COMPLETED ONE BAY AT A TIME.

THE CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS TO ENSURE THE BEARING STIFFENERS AND DIAPHRAGM MEMBERS ARE NOT DAMAGED WHEN REMOVING THE L 4" x 4" x 3/8" MEMBERS.

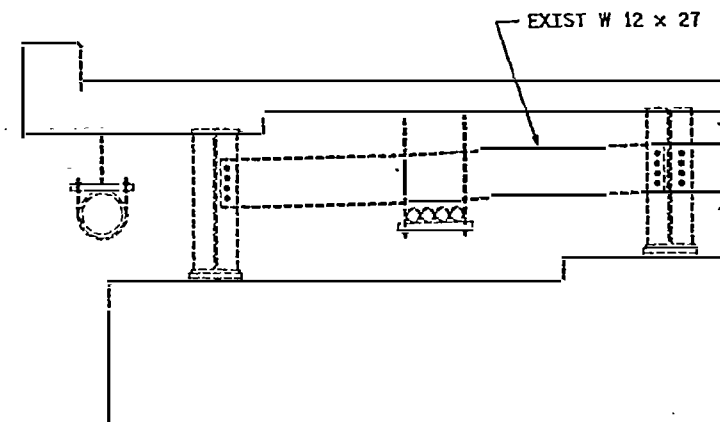
STRUCTURAL STEEL SHALL BE A572 GRADE 50, OR APPROVED EQUIVALENT, GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHERE DIAPHRAGMS ARE TO BE BOLTED TO EXISTING STEEL BEAMS, DO NOT REMOVE PAINT FROM THE CONTACT SURFACE.

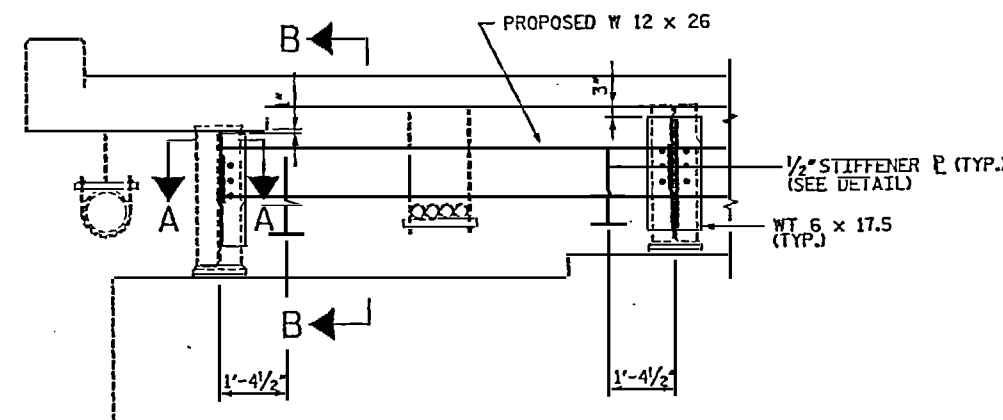
ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT AWS SPECIFICATIONS.



SECTION A-A

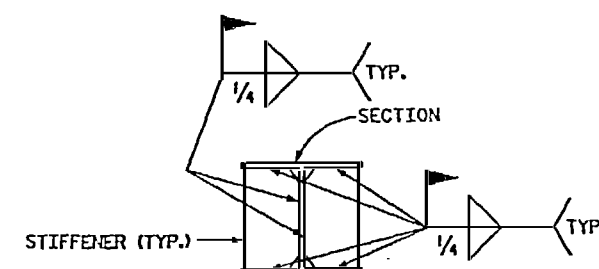


EXISTING CONDITION
(EXTERIOR BAY SHOWN, OTHERS SIMILAR)

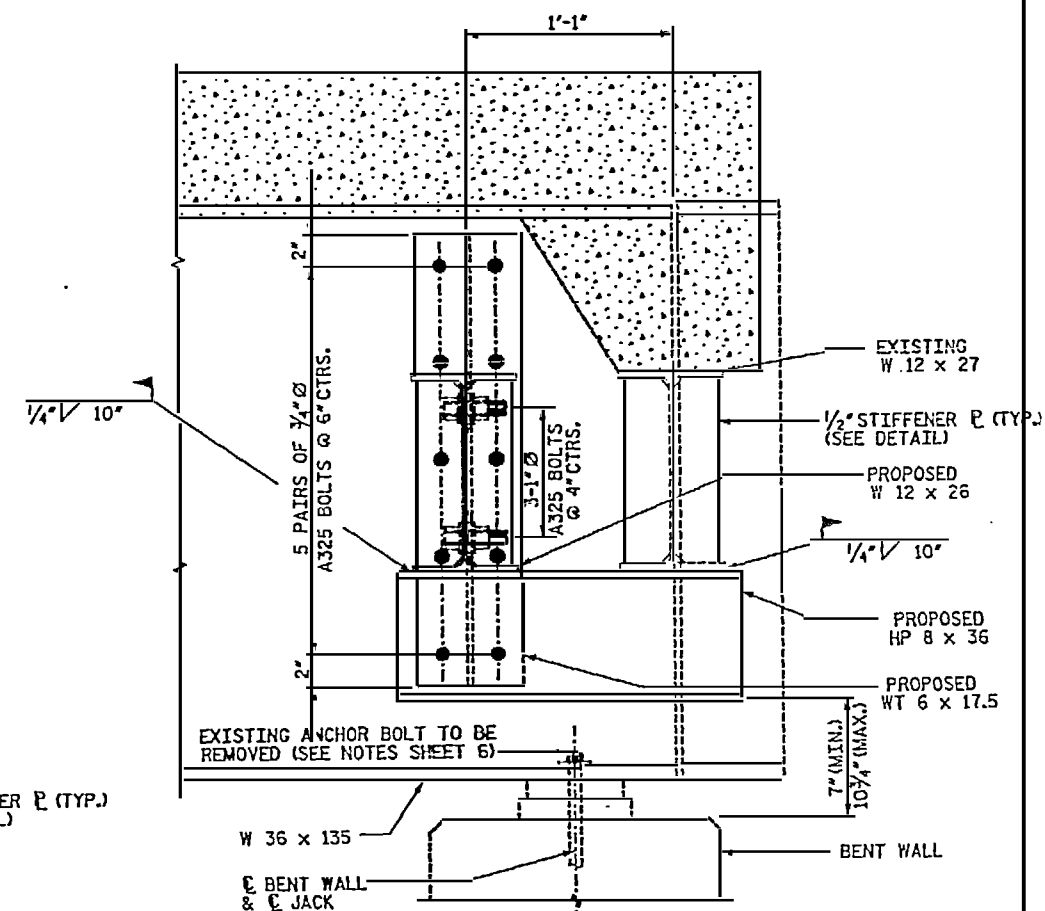


PROPOSED MODIFICATION
(EXTERIOR BAY SHOWN, OTHERS SIMILAR)

DIAPHRAGM @ PIERS 1 & 6 SPANS A & G SIDE



TYPICAL STIFFENER DETAIL
(STIFFENER P SHALL EXTEND AS NEAR AS PRACTICAL TO THE FLANGE TIPS)

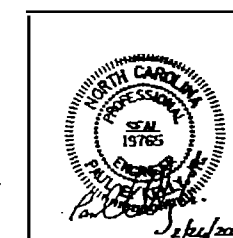


SECTION B-B
(JOINT DETAILS NOT SHOWN FOR CLARITY)

PROJECT NO. 15B.22.5
CATAWBA COUNTY
STATION: 104+55
BRIDGE #91

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE ON US 127
OVER LAKE HICKORY

DIAPHRAGM
MODIFICATION



REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			4
2			4			

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Charlotte, NC 28208

DRAWN BY: TRL DATE: 11-07
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02/26/2008

NOTES:

REPLACEMENT STEEL SHALL BE A36 STEEL OR APPROVED EQUAL AND PAINTED IN ACCORDANCE WITH SYSTEM 3 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS. THE TOP COAT SHALL BE GRAY.

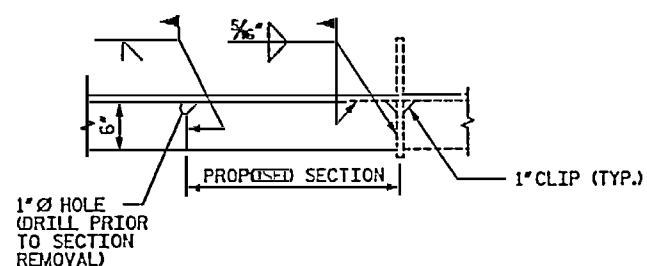
THE ENGINEER SHALL DETERMINE THE EXTENT OF GIRDER REPAIR.

REPLACEMENT PLATES SHALL BE MANUFACTURED USING MATERIAL OF CORRESPONDING THICKNESS AND WIDTH TO MATERIAL BEING REPLACED.

FOR ADDITIONAL NOTES SEE SHEET 4.

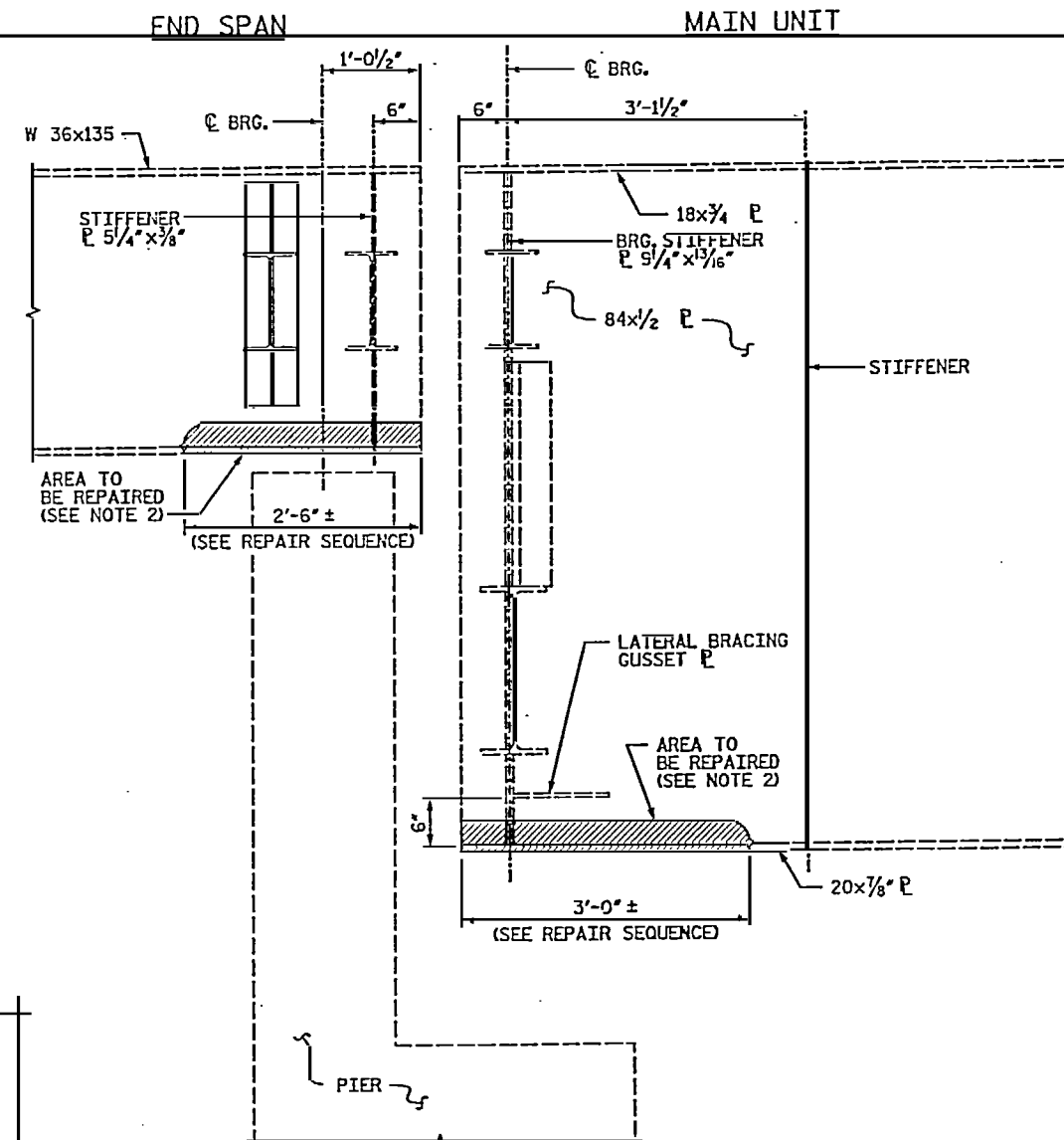
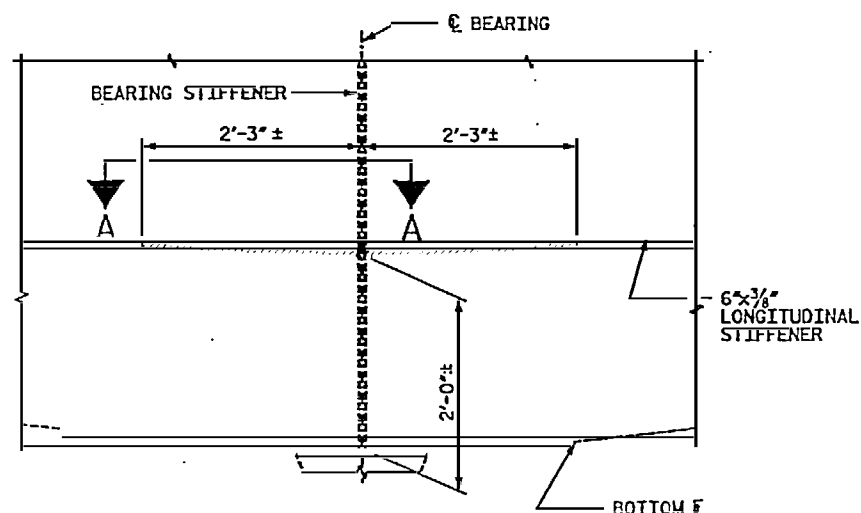
REPAIR SEQUENCE:

1. AREA AROUND GIRDER DAMAGE SHALL BE SAND BLASTED SUCH THAT NO CORROSION OR LOOSE PAINT IS REMAINING.
2. DAMAGED AREA SHALL BE REMOVED AND REMAINING SURFACES SHALL BE PREPARED FOR WELDING.
3. REPLACEMENT PLATES SHALL BE WELDED TO GIRDER AS SHOWN.
4. GIRDER ENDS, AND ANY DAMAGED AREAS, SHALL BE PAINTED PER NOTE 1 ABOVE.

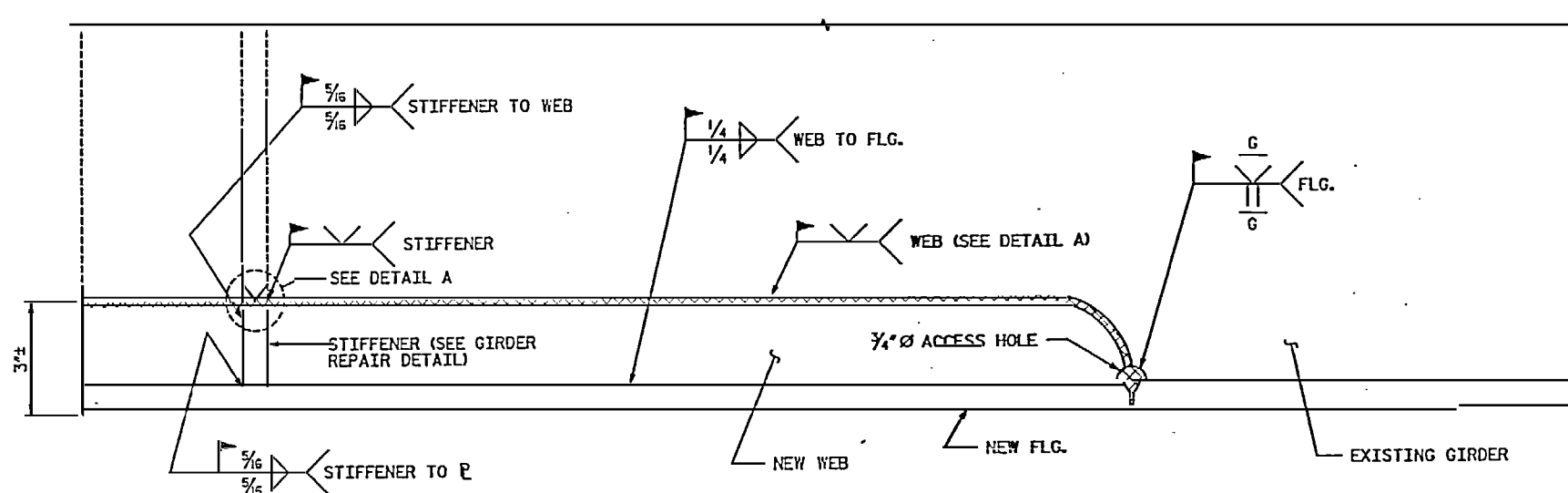


SECTION A-A

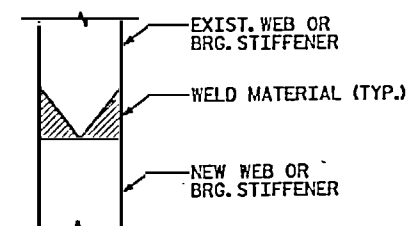
LONGITUDINAL STIFFENER REPAIR DETAIL (GIRDER #1 & 4 OF PIER #4 & #5)



GIRDER REPAIR DETAIL (BEARINGS NOT SHOWN FOR CLARITY)



TYPICAL REPAIR WELD DETAIL (OTHER SIDE SIMILAR)



DETAIL A

PROJECT NO. 15B.22.5

CATAWBA COUNTY

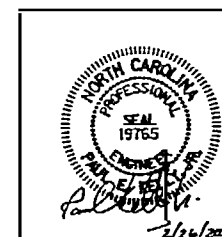
STATION: 104+55

BRIDGE #91

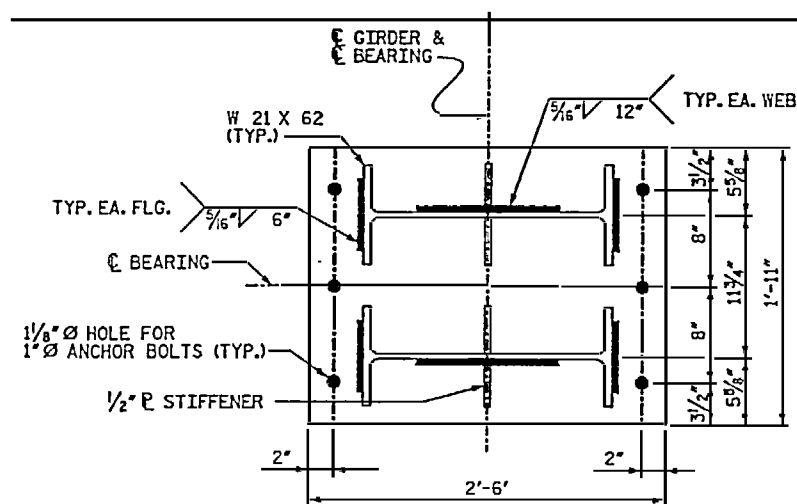
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON US 127
OVER LAKE HICKORY

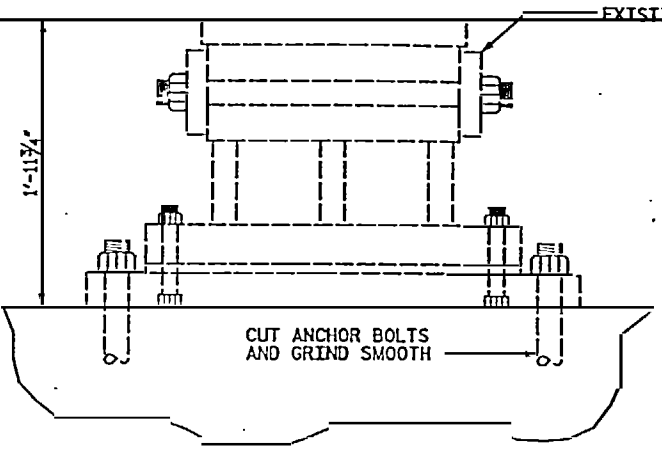
GIRDER REPAIR



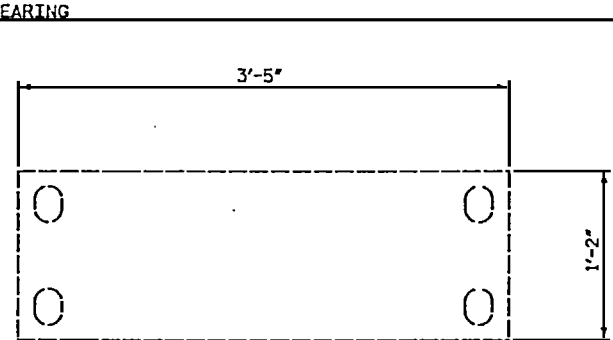
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MASONRY
PLAN VIEW

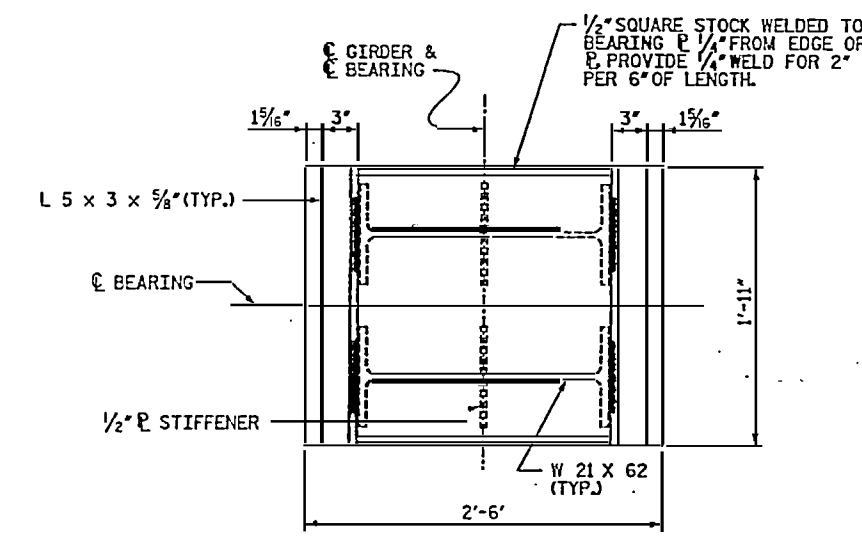


FRONT VIEW EXISTING BEARING

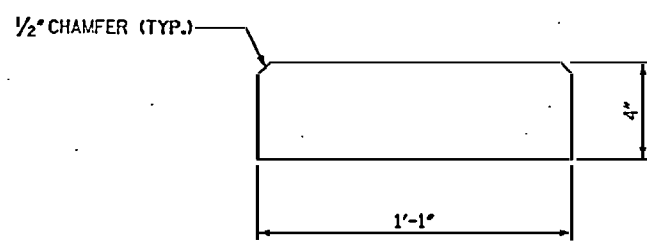


EXISTING PLATE

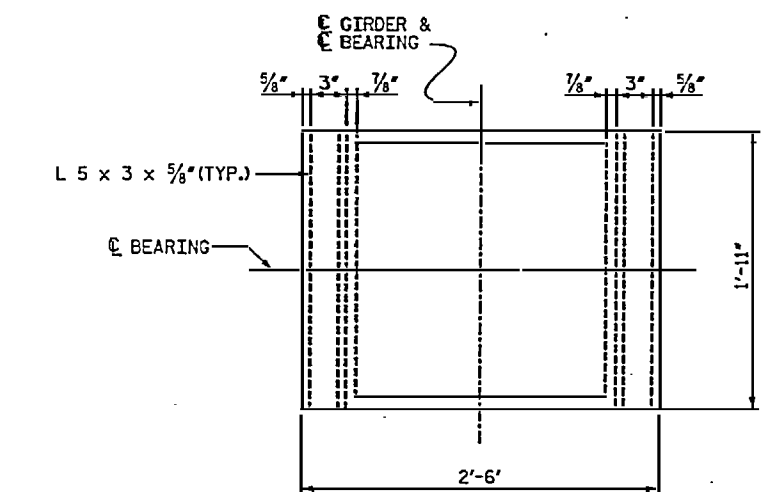
EXISTING ROCKER BEARING



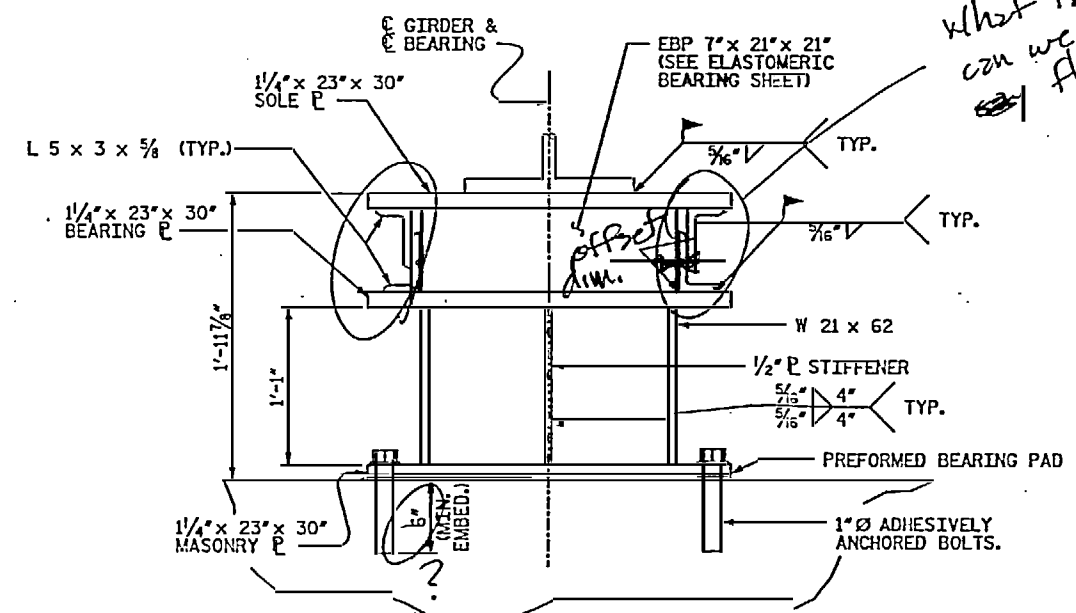
BEARING
PLAN VIEW



1/2" R STIFFENER



TOP SOLE
PLAN VIEW

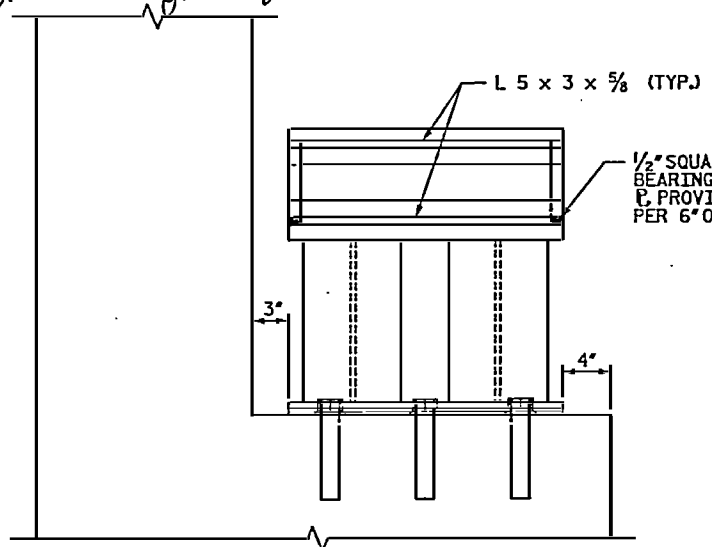


FRONT VIEW

BEARING ASSEMBLY
SPANS B & F

What for? can we weld 1st bar stock 2" x 11"? or eliminate upper angle?

Is this enough? pullout? shear strength of bond?



SIDE VIEW

NOTES

EXISTING ANCHOR BOLTS SHALL BE CUT AND GRIND FLUSH WITH THE BRIDGE SEAT.

ANCHOR BOLTS SHALL BE DRILLED AND EPOXYED INTO CAP USING SIMPSON SET HIGH STRENGTH EPOXY, OR APPROVED EQUAL, WITH A MINIMUM SAFE WORKING LOAD OF 7,600 lbs. SEE SPECIAL PROVISIONS FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS.

FOR ANCHOR BOLTS SEE STANDARD SPECIFICATIONS.

NUTS OF ANCHOR BOLTS OF SPAN A & G ONLY SHALL BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

TOP SOLE PLATE, BEARING PLATE, MASONRY PLATE, W 21 x 62, ANCHOR BOLTS, AND BEARING STIFFENER PLATES SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ELASTOMERIC BEARING PADS SHALL BE OF 50 DUROMETER ELASTOMER MANUFACTURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

FOR ADDITIONAL NOTES SEE SHEET 4.

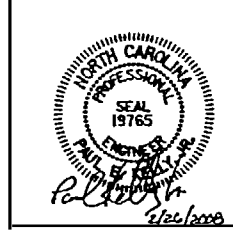
FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS SEE SPECIAL PROVISIONS. LEVEL ONE FIELD TESTING IS REQUIRED.

ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

STEEL PLATES AND STRUCTURAL SHAPES SHALL BE A572 GRADE 50 AND GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PREFORMED BEARING PAD SHALL MATCH THE PLAN DIMENSIONS OF THE MASONRY PLATE. FOR DETAILS SEE STANDARD SPECIFICATIONS.

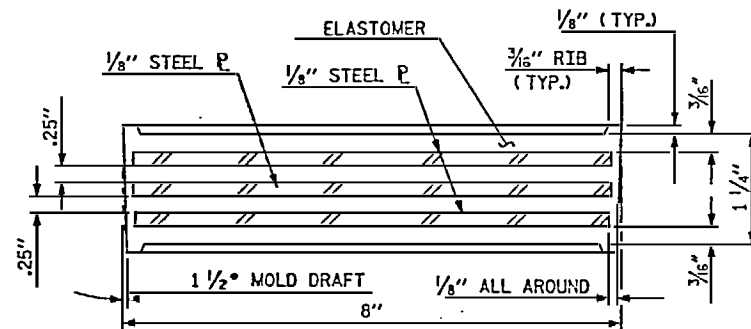
PROJECT NO. 15B.22.5
CATAWBA COUNTY
STATION: 104+55
BRIDGE #91



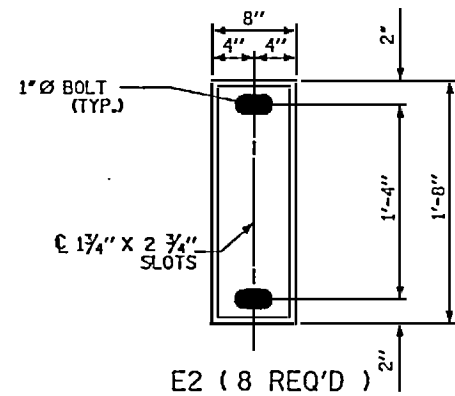
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION FALCON					
BRIDGE ON US 127 OVER LAKE HICKORY					
BEARING BUILD-UP					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					SHEET NO. 6
					TOTAL SHEETS 9

NOTES

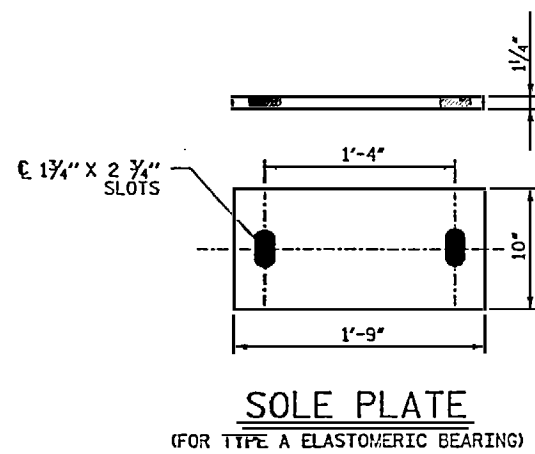
SEE SHEET 6 FOR NOTES



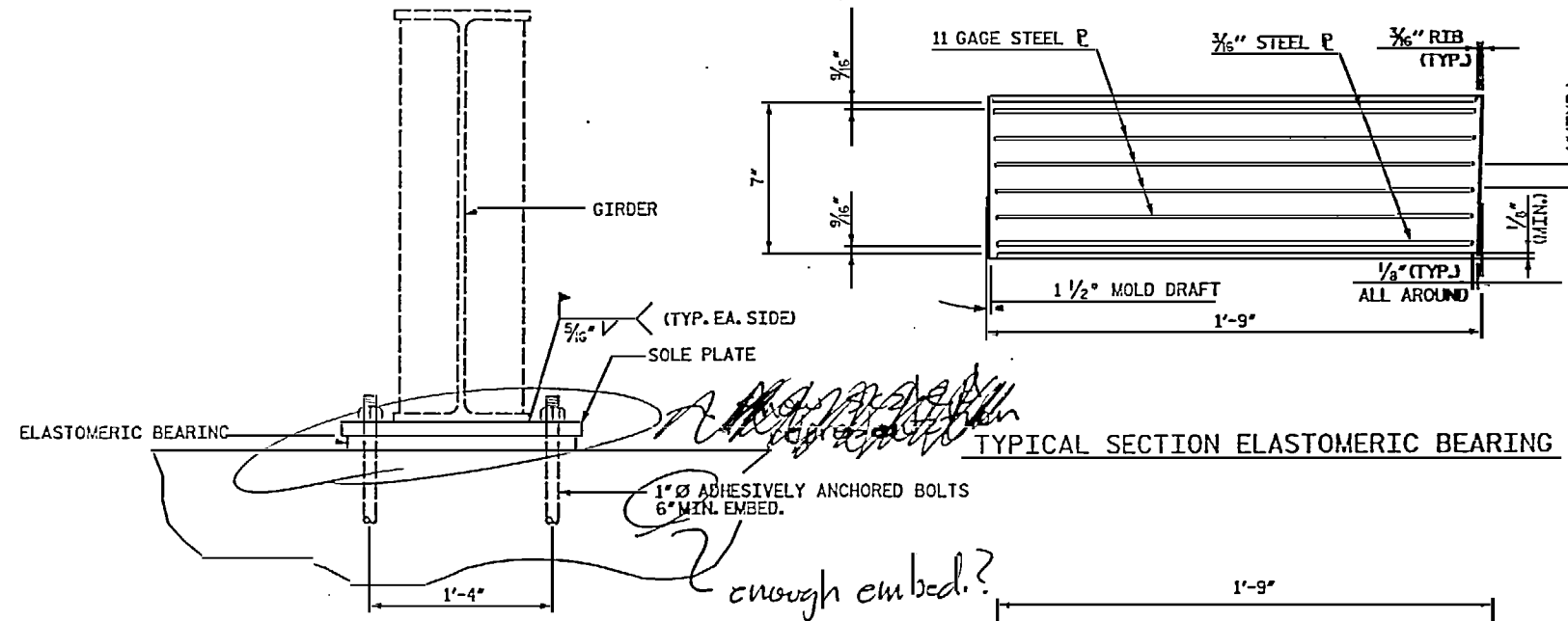
TYPICAL SECTION OF ELASTOMERIC BEARINGS



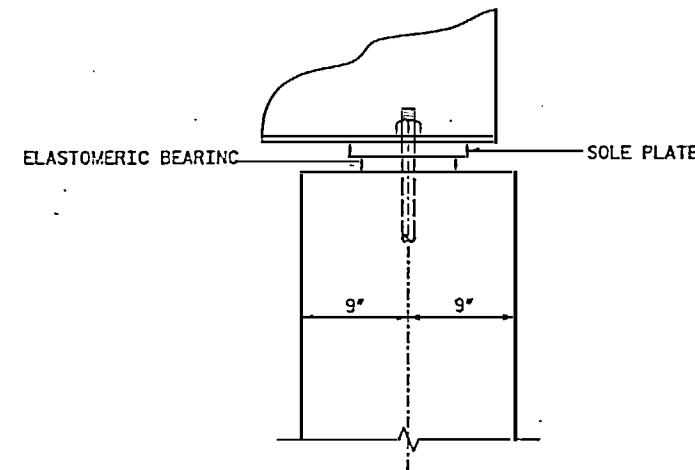
PLAN VIEW OF ELASTOMERIC BEARING
TYPE A ELASTOMERIC BEARING
SPANS A & G



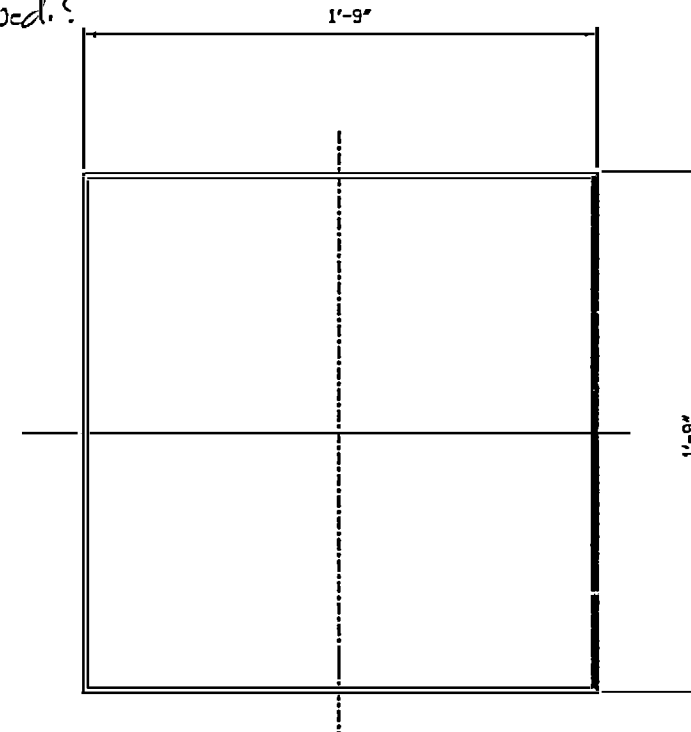
SOLE PLATE
(FOR TYPE A ELASTOMERIC BEARING)



FRONT VIEW



SIDE VIEW



E1 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE B ELASTOMERIC BEARING
SPANS B & F

-LOAD RATINGS-	
	MAX.D.L.+L.L.
TYPE A	65 K
TYPE B	164 K

PROJECT NO. 15B.22.5
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE ON US 127
OVER LAKE HICKORY

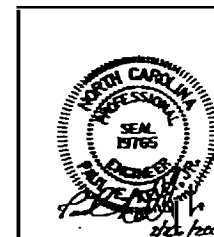
ELASTOMERIC
BEARING ASSEMBLY

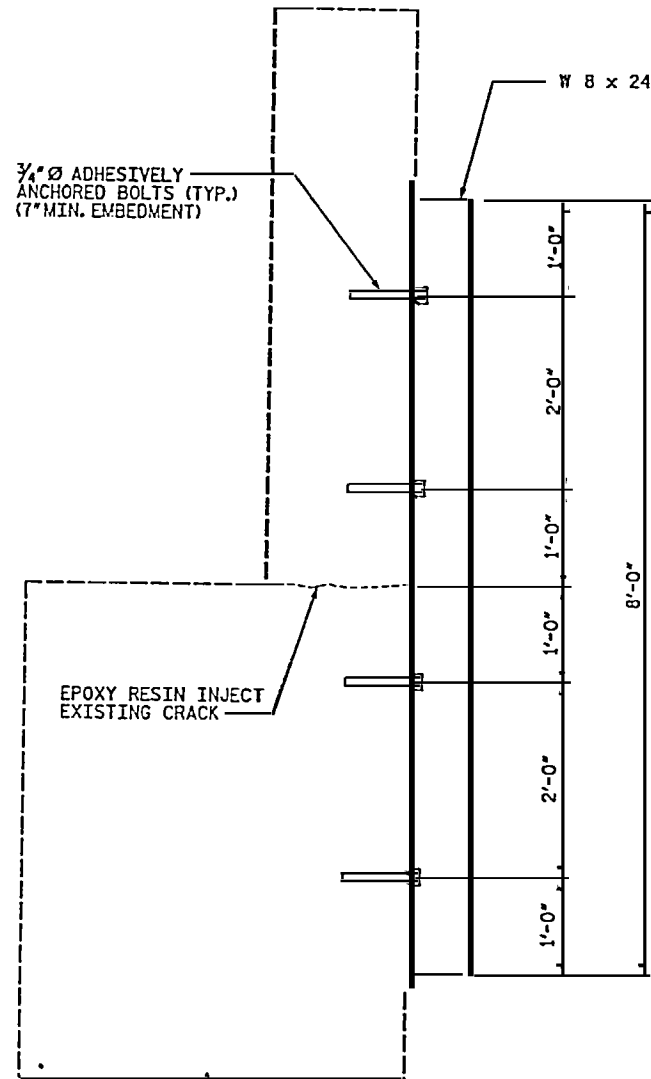
REVISIONS						SHEET NO. 7
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 9
2			4			

DRAWN BY: TRL DATE: 10-07
CHECKED BY: TYR DATE: 11-07

02/26/2009

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28205





BENT SECTION

NOTES:

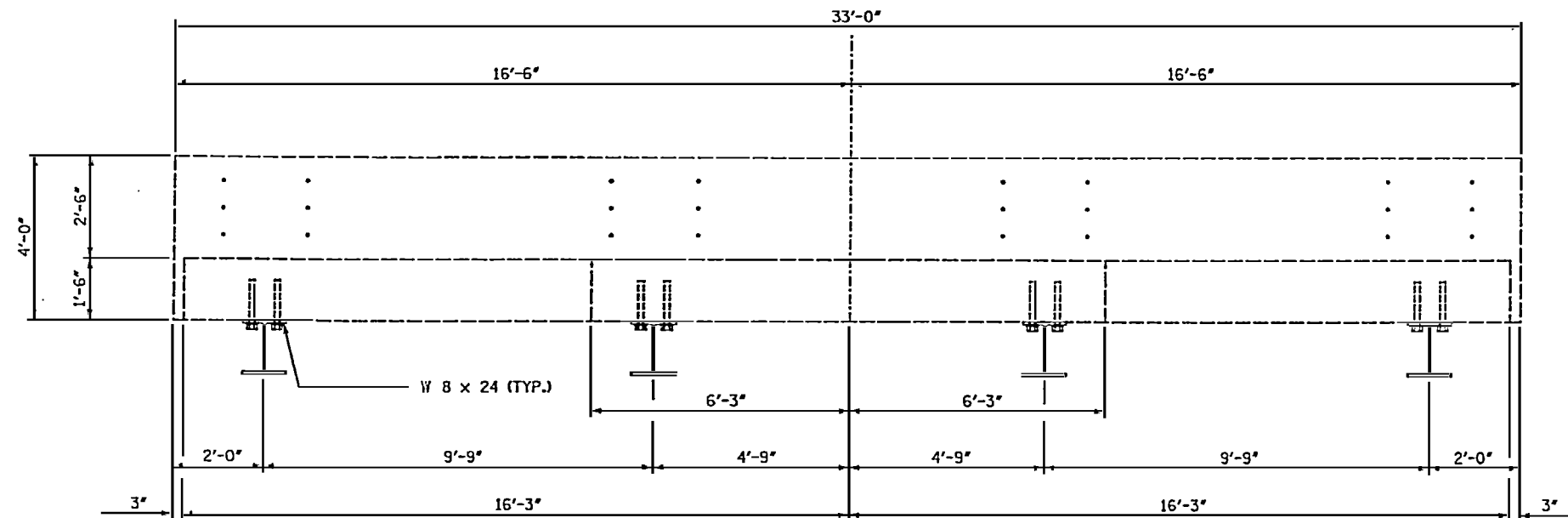
FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS SEE SPECIAL PROVISIONS. LEVEL TWO FIELD TESTING IS REQUIRED FOR BACKWALL ANCHOR BOLTS.

W 8 x 24 SHALL BE A572 GRADE 50 AND GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

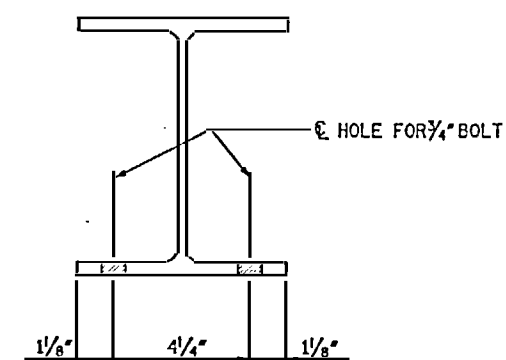
3/4" ADHESIVELY ANCHORED BOLTS SHALL HAVE A SAFE WORKING LOAD OF 8,200 LBS. IN TENSION AND 4,000 LBS. IN SHEAR.

FOR EPOXY RESIN INJECTION SEE SPECIAL PROVISIONS.

ESTIMATED LENGTH OF EPOXY RESIN INJECTION PER BENT IS 68.0 FT.



PLAN VIEW



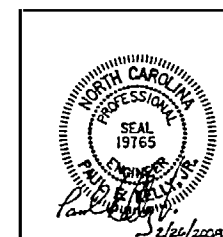
PROJECT NO. 15B.22.5
CATAWBA COUNTY
STATION: 104+55

BRIDGE #91

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON US 127
OVER LAKE HICKORY

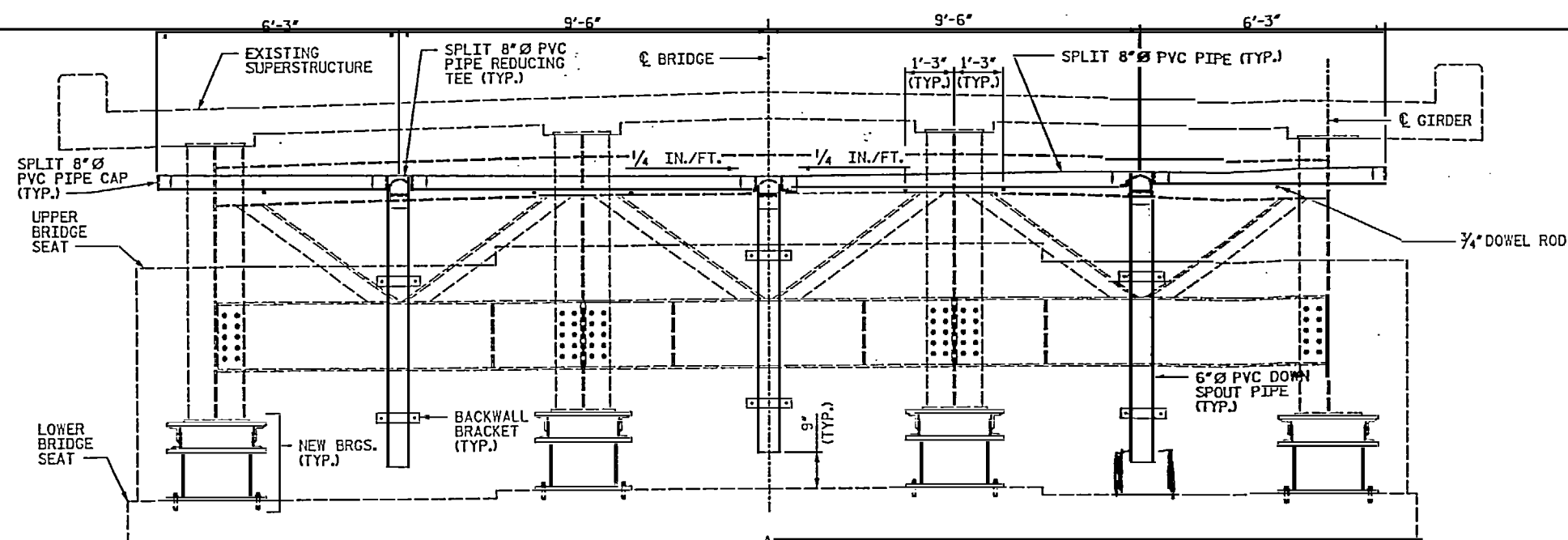
BACKWALL REPAIR



DRAWN BY: TRL DATE: 10-07
CHECKED BY: TVR DATE: 11-07

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208

REVISIONS						SHEET NO
NO.	BY	DATE	NO.	BY	DATE	
1			3			8
2			4			TOTAL SHEETS 9



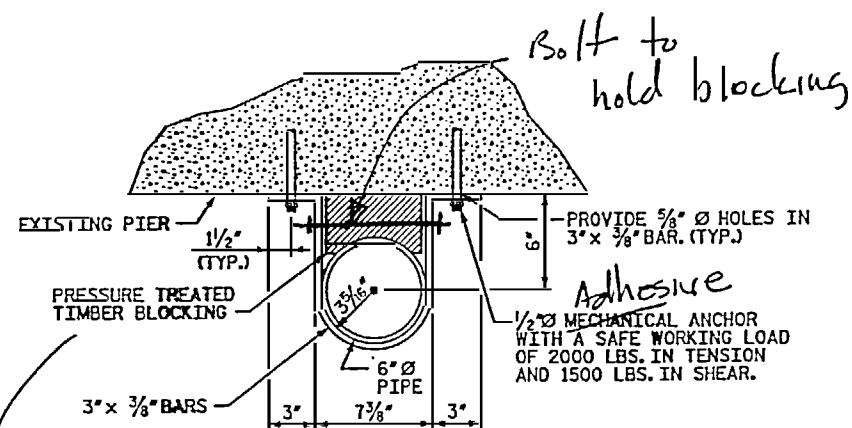
TROUGH SYSTEM ELEVATION

NOTES:

1. ALL WELDING SHALL BE IN ACCORDANCE WITH CURRENT AWS SPECIFICATIONS.
2. BOLTS, NUTS, WASHERS, DOWEL ROD, AND STEEL BAR ~~SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.~~
3. PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE ~~40~~ AND CONFORM TO ASTM 1785.
4. 3"x 3/8" BAR SHALL CONFORM TO AASHTO M270 GRADE ~~36~~ STEEL OR APPROVED EQUAL.
5. 3/4" DOWEL ROD SHALL BE ASTM A307 STEEL OR APPROVED EQUAL.
6. APPLY AN EPOXY PROTECTIVE COATING TO THE TOP ~~SURFACE ARE~~ OF THE LOWER BENT CAP, EXCLUDING AREAS UNDER MASONRY PLATES. FOR EPOXY COATING SEE STANDARD SPECIFICATIONS.

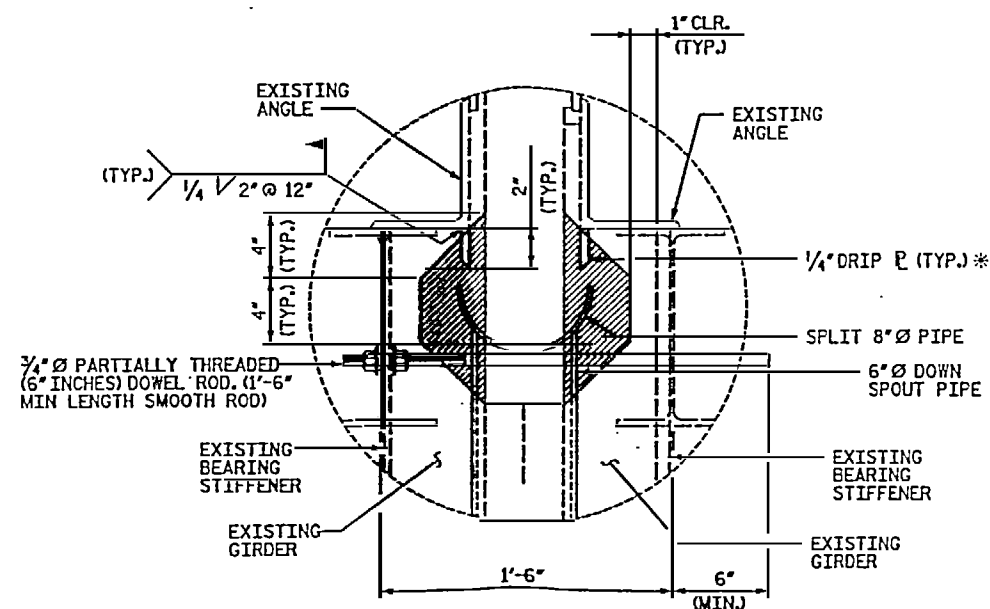
APPLY AN EPOXY PROTECTIVE COATING TO THE TOP SURFACE ARE OF THE LOWER BENT CAP, EXCLUDING AREAS UNDER MASONRY PLATES. FOR EPOXY COATING SEE STANDARD SPECIFICATIONS.

pressure wash czp prior to epoxy coat?



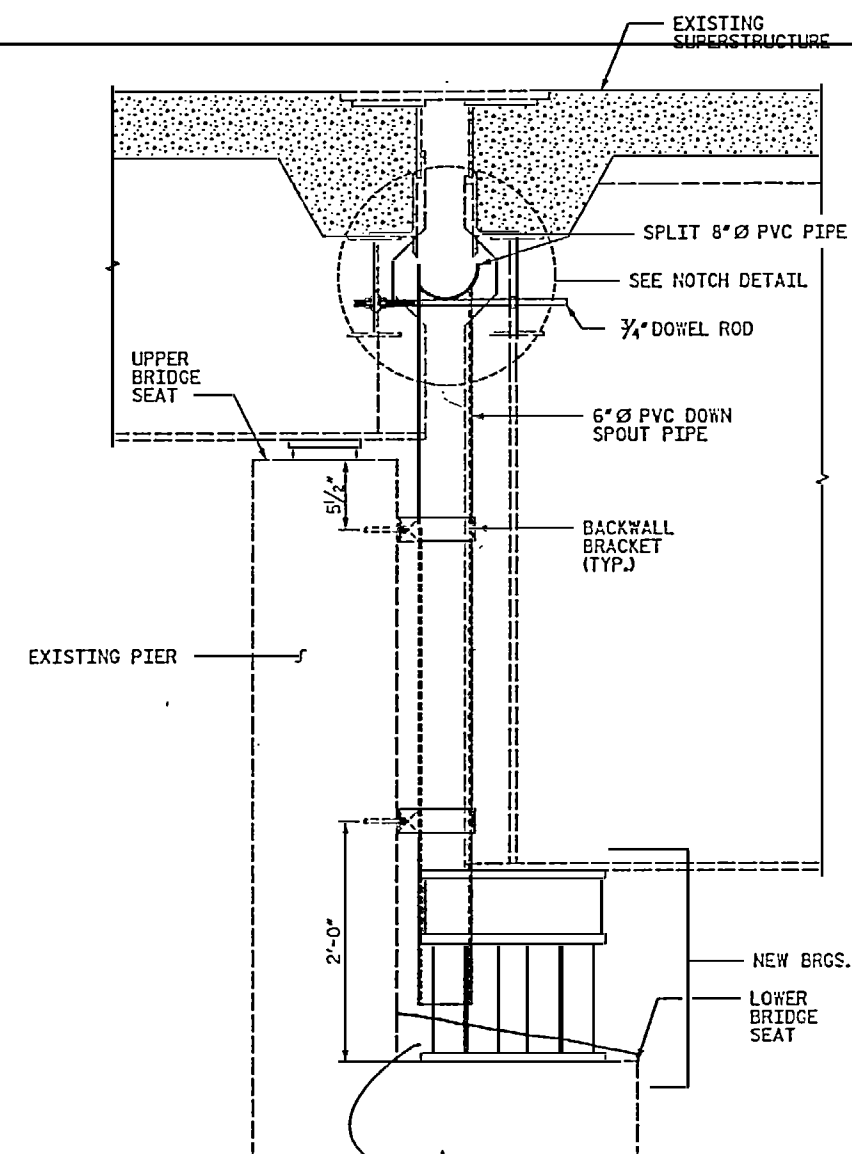
BACKWALL BRACKET DETAIL

Timb. blocks will shrink & fall out
over time. Bolt thru U clamp



NOTCH DETAIL

*NOTE: TO ATTACH 1/4" DRIP P TO ANGLE,
GRIND ANGLE TO GOOD MATERIAL.
CUT OUT CROSSHATCHED AREA OF
WEB TO DIMENSIONS SHOWN.



TROUGH SYSTEM SECTION

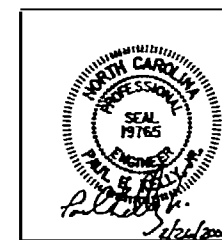
splzsh prd of
trough?

PROJECT NO. 15B.22.5

CATAWBA COUNTY

STATION: 104+55

BRIDGE #91



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE ON US 127
OVER LAKE HICKORY

TROUGH SYSTEM
(PIERS 1 & 6)

REVISIONS						SHEET NO. 9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 9
2			4			