

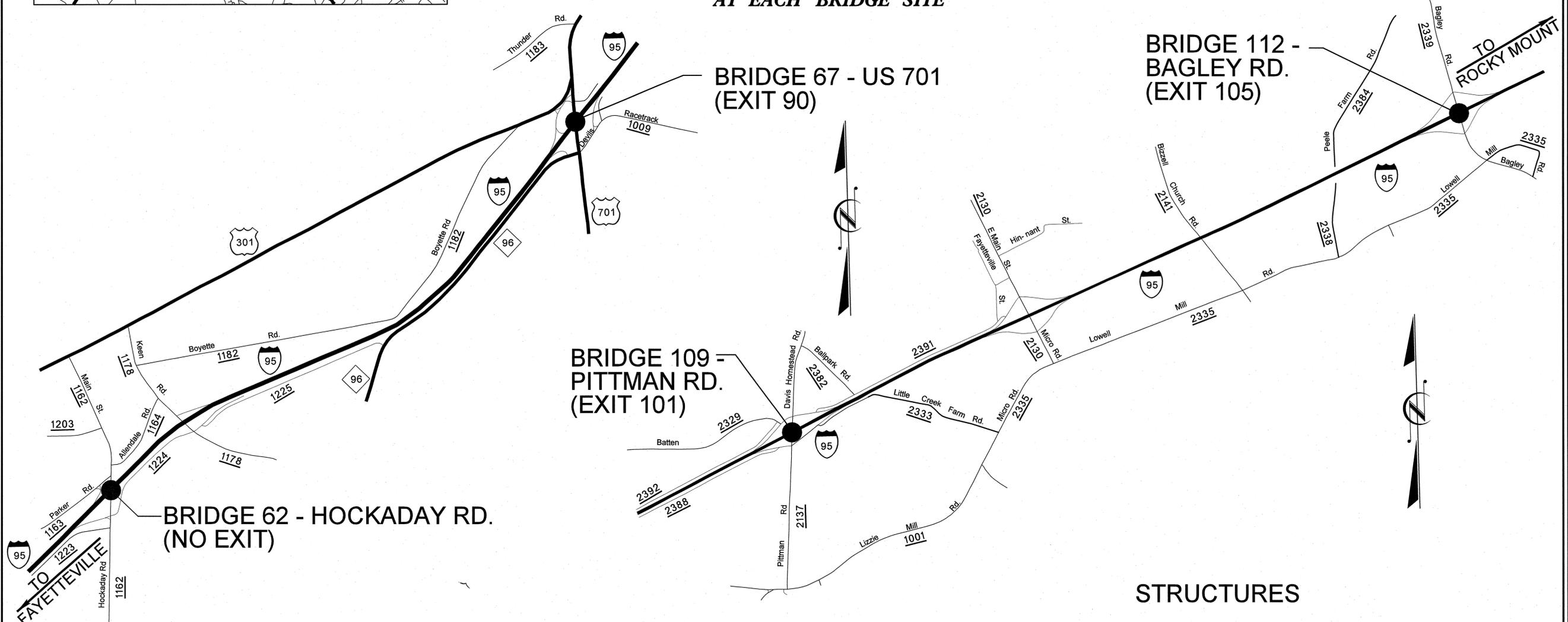
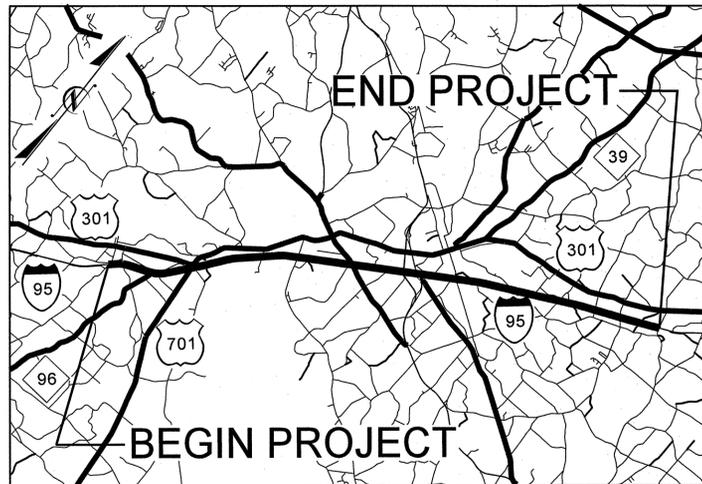
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5020	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
41926.1.1	IMS-95-2(106)89	PE	
41926.3.1	IMD-95-2(109)89	CONST.	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**JOHNSTON COUNTY**

LOCATION: BRIDGES #62, #67, #109, AND #112  
LOCATED ALONG I-95

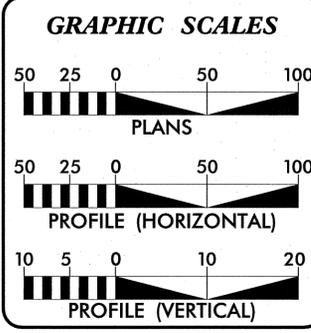
TYPE OF WORK: BRIDGE JACKING, GRADING, PAVING  
DRAINAGE, MILLING AND GUARDRAIL  
AT EACH BRIDGE SITE



STRUCTURES

TIP PROJECT: B-5020

CONTRACT: C202018



**DESIGN DATA**

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT B-5020	= .484 MI.
LENGTH OF STRUCTURE TIP PROJECT B-5020	= .167 MI.
TOTAL LENGTH OF TIP PROJECT B-5020	= .651 MI.

Prepared in the Office of:  
**Stantec**  
Stantec Consulting Inc.  
Suite 300, 801 Jones Franklin Road  
Raleigh, NC U.S.A. 27606  
Tel. 919.851.6866 Fax. 919.851.7024  
www.stantec.com

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
NA

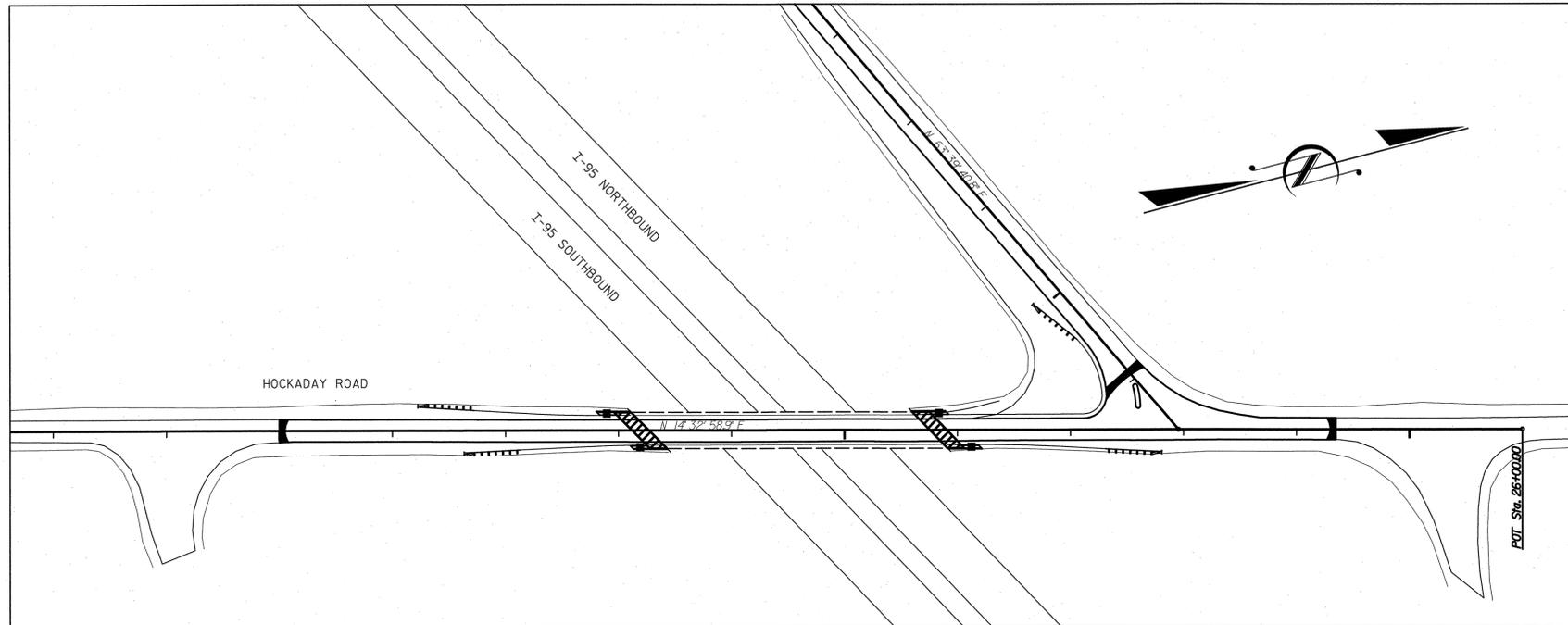
LETTING DATE:  
SEPTEMBER 16, 2008

KENNETH W. SMITH  
PROJECT ENGINEER

JASON GADDY  
PROJECT DESIGN ENGINEER

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

BRIDGE 62 ON HOCKADAY RD.

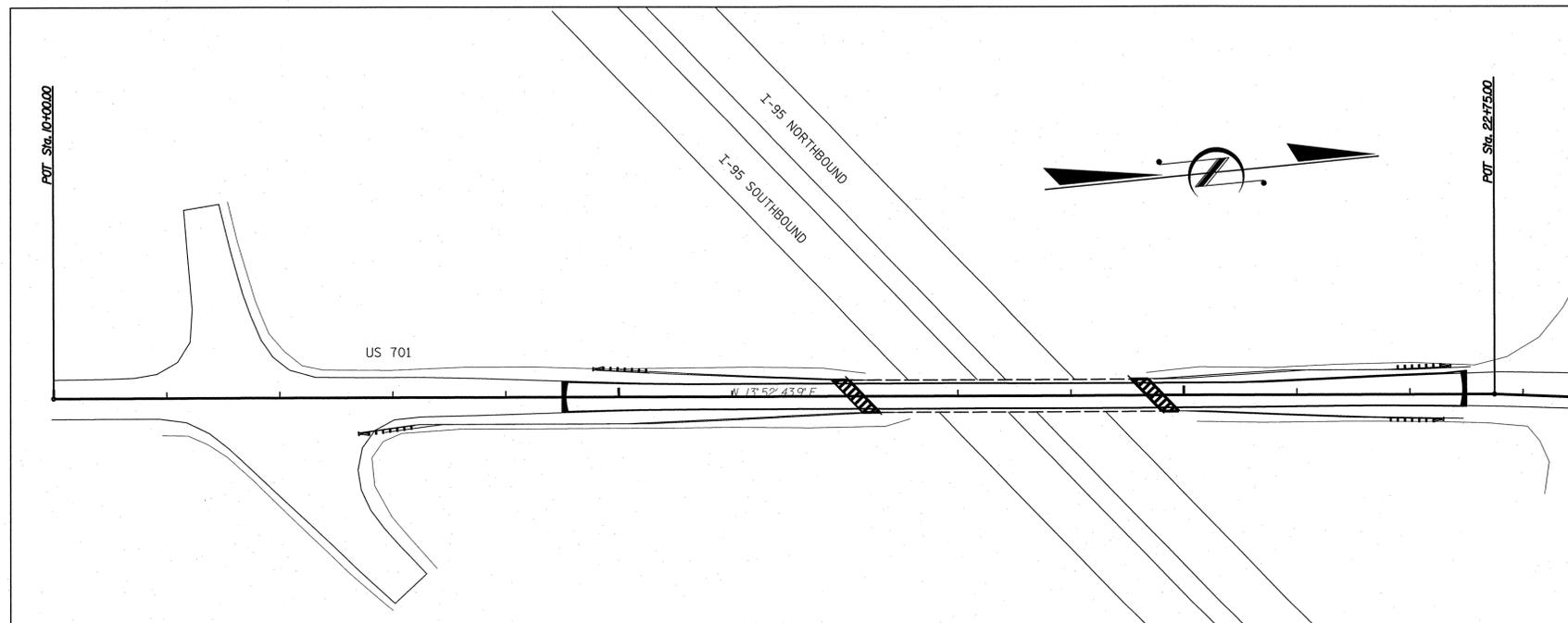


BRIDGE 62 ON HOCKADAY RD.

TOTAL BILL OF MATERIAL									
	PARTIAL REMOVAL OF EXISTING STRUCTURE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL*	EPOXY RESIN INJECTION	EPOXY MORTAR REPAIRS	EVAZOTE JOINT SEALS	BRIDGE JACKING
	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	LINEAR FT.	SQ. FT.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			LUMP SUM		9950			LUMP SUM	LUMP SUM
END BENT 1	LUMP SUM	12.9		2564		5			
BENT 1						5	1		
BENT 2						5	1		
BENT 3						5	1		
END BENT 2	LUMP SUM	12.9		2564		5			
TOTAL	LUMP SUM	25.8	LUMP SUM	5128	9950	25	3	LUMP SUM	LUMP SUM

FOR STRUCTURAL DRAWINGS FOR BRIDGE 62 ON HOCKADAY RD., SEE SHEET NO. S-3 THRU S-11

BRIDGE 67 ON US 701



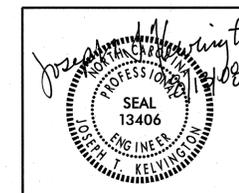
BRIDGE 67 ON US 701

TOTAL BILL OF MATERIAL									
	PARTIAL REMOVAL OF EXISTING STRUCTURE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL*	EPOXY RESIN INJECTION	EPOXY MORTAR REPAIRS	EVAZOTE JOINT SEALS	BRIDGE JACKING
	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	LINEAR FT.	SQ. FT.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			LUMP SUM		9950			LUMP SUM	LUMP SUM
END BENT 1	LUMP SUM	12.9		2610		5			
BENT 1						5	1		
BENT 2						5	1		
BENT 3						5	1		
END BENT 2	LUMP SUM	12.9		2610		5			
TOTAL	LUMP SUM	25.8	LUMP SUM	5220	9950	25	3	LUMP SUM	LUMP SUM

FOR STRUCTURAL DRAWINGS FOR BRIDGE 67 ON US 701, SEE SHEET NO. S-12 THRU S-20

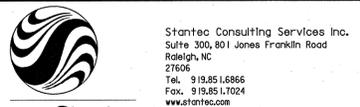
PROJECT NO. 41926.1.1 (B-5020)  
 JOHNSTON COUNTY  
 STATION: \_\_\_\_\_

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 LOCATION SKETCH  
 AND TOTAL  
 BILL OF MATERIAL



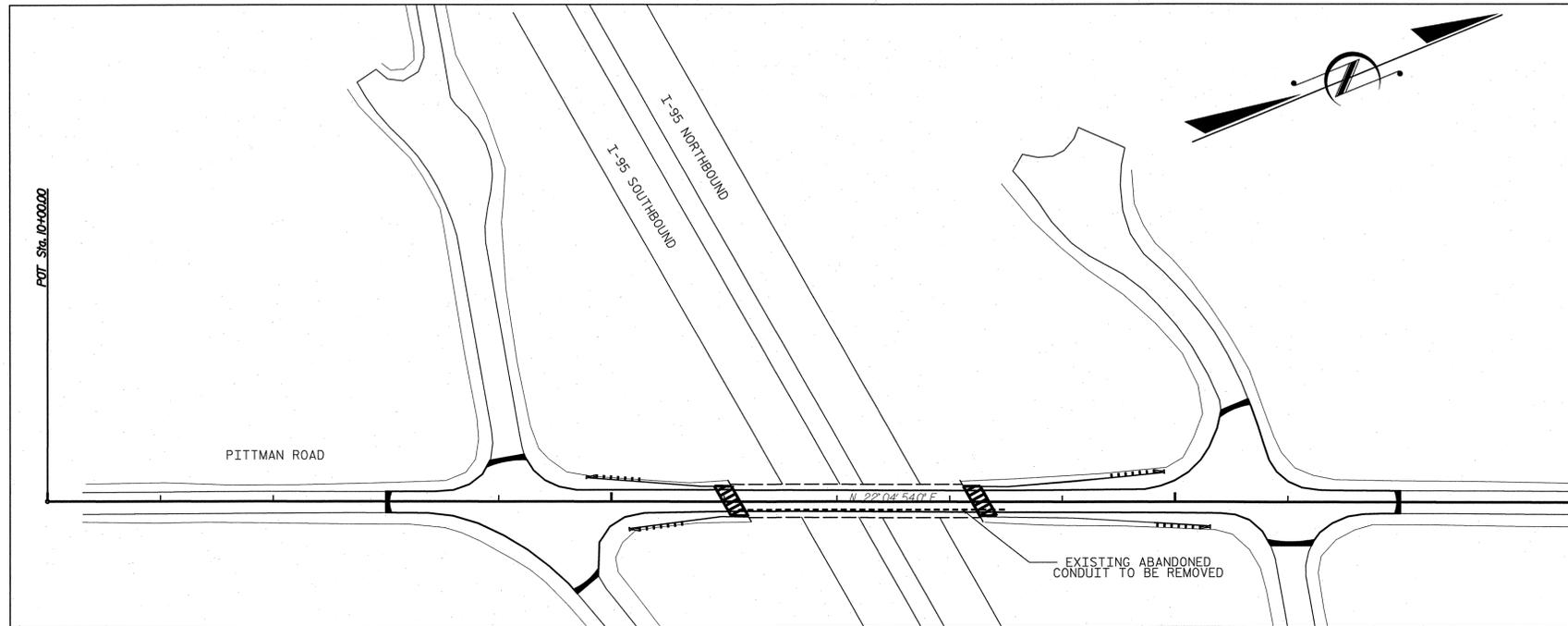
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			29

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DRAWN BY: JEL JENNINGS DATE: 5-30-08  
 CHECKED BY: J. T. KEIDWICKSON DATE: 5-30-08

BRIDGE 109 ON PITTMAN RD.



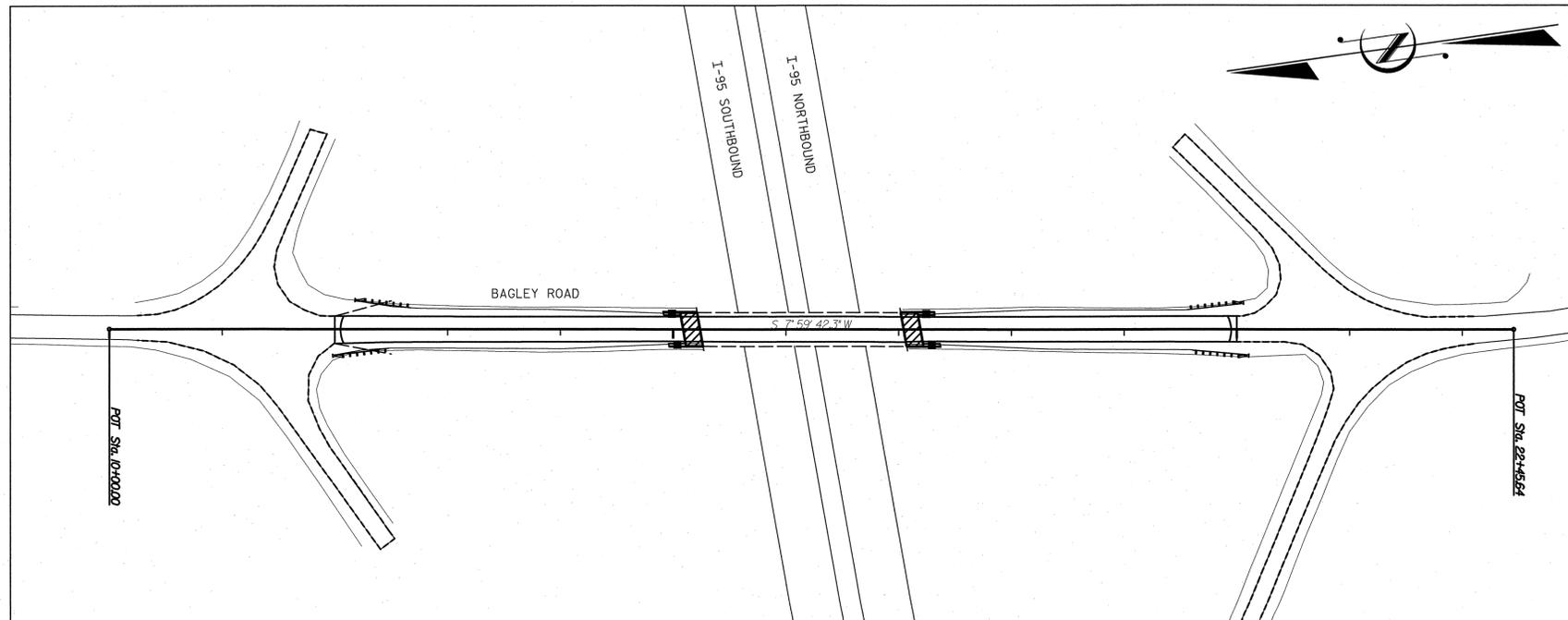
BRIDGE 109 ON PITTMAN RD.

TOTAL BILL OF MATERIAL

	PARTIAL REMOVAL OF EXISTING STRUCTURE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL*	EPOXY RESIN INJECTION	EPOXY MORTAR REPAIRS	EVAZOTE JOINT SEALS	BRIDGE JACKING
	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	LINEAR FT.	SQ. FT.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			LUMP SUM		10100			LUMP SUM	LUMP SUM
END BENT 1	LUMP SUM	12.1		2303		5			
BENT 1						5	1		
BENT 2						5	1		
BENT 3						5	1		
END BENT 2	LUMP SUM	12.1		2301		5			
TOTAL	LUMP SUM	24.2	LUMP SUM	4604	10100	25	3	LUMP SUM	LUMP SUM

FOR STRUCTURAL DRAWINGS FOR BRIDGE 109 ON PITTMAN RD., SEE SHEET NO. S-21 THRU S-29

BRIDGE 112 ON BAGLEY RD.



BRIDGE 112 ON BAGLEY RD.

TOTAL BILL OF MATERIAL

	PARTIAL REMOVAL OF EXISTING STRUCTURE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	STRUCTURAL STEEL*	EPOXY RESIN INJECTION	EPOXY MORTAR REPAIRS	EVAZOTE JOINT SEALS	BRIDGE JACKING
	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	APPROX. LBS.	LINEAR FT.	SQ. FT.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			LUMP SUM		8300			LUMP SUM	LUMP SUM
END BENT 1	LUMP SUM	11.1		2395		5			
BENT 1						5	1		
BENT 2						5	1		
BENT 3						5	1		
END BENT 2	LUMP SUM	11.1		2395		5			
TOTAL	LUMP SUM	22.2	LUMP SUM	4790	8300	25	3	LUMP SUM	LUMP SUM

FOR STRUCTURAL DRAWINGS FOR BRIDGE 112 ON BAGLEY RD., SEE SHEET NO. S-30 THRU S-39

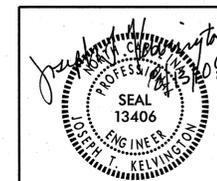
PROJECT NO. 41926.1.1 (B-5020)

JOHNSTON COUNTY

STATION: \_\_\_\_\_

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

LOCATION SKETCH  
AND TOTAL  
BILL OF MATERIAL

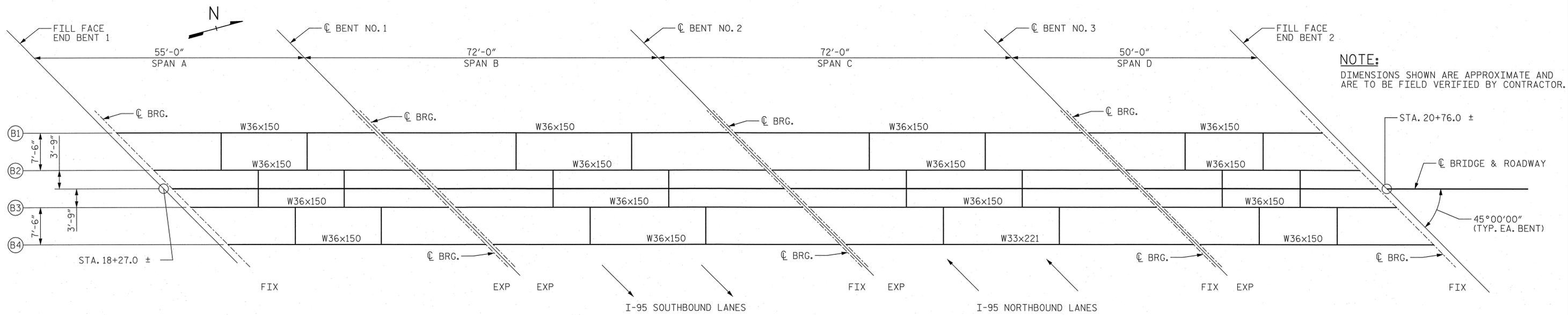


REVISIONS						SHEET NO. S-2 TOTAL SHEETS 39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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Stantec Consulting Services Inc.  
Suite 300, 801 Jones Franklin Road  
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27606  
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www.stantec.com

DRAWN BY : B. J. ELLIOT DATE : 03-12-08  
CHECKED BY : J. T. KELVINGTON DATE : 03-12-08



**NOTE:**  
DIMENSIONS SHOWN ARE APPROXIMATE AND ARE TO BE FIELD VERIFIED BY CONTRACTOR.

**STRUCTURAL STEEL PLAN**

**JACKING REQUIREMENTS:**

CONTRACTOR SHALL RAISE (JACK) BRIDGE SPANS SEQUENTIALLY ONE SPAN AT A TIME IN A PREDETERMINED ORDER. SIMULTANEOUS JACKING OF BRIDGE WILL NOT BE PERMITTED.

CONTRACTOR SHALL SUBMIT FIVE (5) COMPLETE SETS OF PLANS, PROCEDURES, DETAILS, AND DESIGN CALCULATIONS FOR JACKING BRIDGE SPANS TO THE ENGINEER FOR REVIEW AND APPROVAL.

PLANS AND CALCULATIONS SHALL BE SEALED BY A REGISTERED N.C. PROFESSIONAL ENGINEER.

SPANS SHALL BE RAISED IN 2" MAXIMUM LIFTS.

SPANS SHALL BE BLOCKED WITH THE COMPLETION OF EACH LIFT.

SPANS SHALL BE LIFTED UNIFORMLY TO PREVENT DAMAGE TO SUPERSTRUCTURE ELEMENTS THAT MAY BE CAUSED BY DIFFERENTIAL DISPLACEMENTS.

FOR TRAFFIC CONTROL, SEE TRAFFIC CONTROL PLANS.

CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PART OF THE EXISTING STRUCTURE THAT MAY OCCUR DURING JACKING OPERATIONS. CONTRACTOR SHALL REPAIR ALL DAMAGE DONE TO EXISTING STRUCTURES TO THE SATISFACTION OF THE ENGINEER AND AT CONTRACTOR'S EXPENSE.

**NOTES:**  
EXISTING BRIDGE INFORMATION SHOWN ON THE PLANS IS THE BEST DATA CURRENTLY AVAILABLE. CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO VERIFY INFORMATION SHOWN ON THESE PLANS AND SHALL OBTAIN ALL OTHER EXISTING BRIDGE DATA NECESSARY FOR THE EXECUTION OF THE WORK. CONTRACTOR SHALL HAVE NO CLAIM AGAINST THE DEPARTMENT FOR ADDITIONAL COSTS OR DELAYS ARISING FROM DISCREPANCIES BETWEEN THE INFORMATION PRESENTED IN THESE PLANS AND ACTUAL SITE CONDITIONS.

ALL STRUCTURAL STEEL FOR PROPOSED SOLE PLATES AND FILL PLATES SHALL BE AASHTO M270 GRADE 36 AND SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM 1 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE INSTRUCTED ON THE PLANS AND SPECIAL PROVISIONS.

FILL PLATES SHALL BE FURNISHED WITH CURVED SOLE PLATES TO OBTAIN A TOTAL BEARING THICKNESS THAT IS EQUAL TO THE THICKNESS OF EXISTING SOLE PLATES AND MASONRY PLATES AT EACH SUPPORT LOCATION UP TO A MAXIMUM TOTAL THICKNESS OF 3 1/2". FILL PLATES SHALL HAVE THE SAME PLAN DIMENSIONS AS CURVED SOLE PLATES. SEE PEDESTAL NOTES ON SHEET S-2 WHEN EXISTING BEARING HEIGHTS EXCEED 3 1/2".

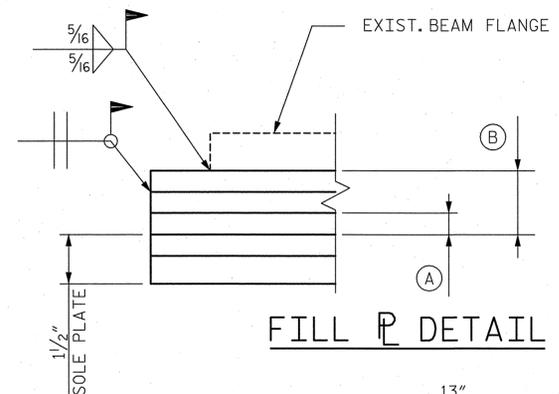
- (A) MINIMUM THICKNESS OF FILL PLATES IS 1/4"
- (B) MAXIMUM TOTAL THICKNESS OF FILL PLATES COMPOSED OF SINGLE PLATE OR MULTIPLE LAYERS OF PLATES SHALL NOT EXCEED 2"

ROLLED BEAM AND DIAPHRAGM SIZES WITHIN EACH SPAN MAY BE EXPECTED TO VARY.

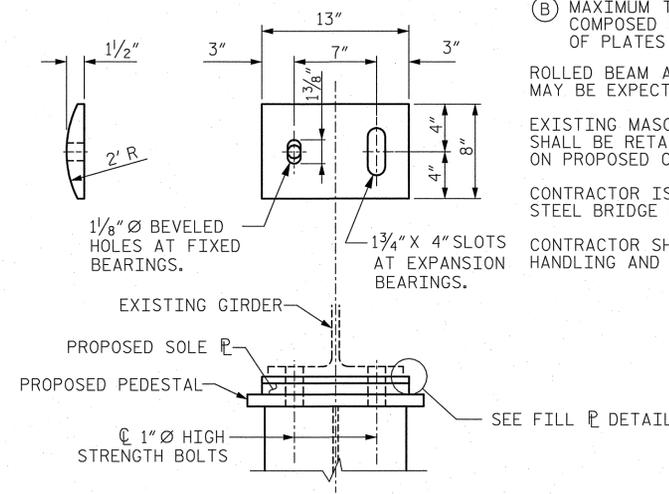
EXISTING MASONRY PLATES AND SOLE PLATES AT END BENTS SHALL BE RETAINED, CLEANED, AND PAINTED FOR SEATING ON PROPOSED CAP BUILD-UPS. SEE SPECIAL PROVISIONS.

CONTRACTOR IS ADVISED OF THE FACT THAT EXISTING STRUCTURAL STEEL BRIDGE ELEMENTS MAY BE COATED WITH LEAD BASED PAINT.

CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY FOR PROPER HANDLING AND DISPOSAL OF LEAD BASED MATERIALS.

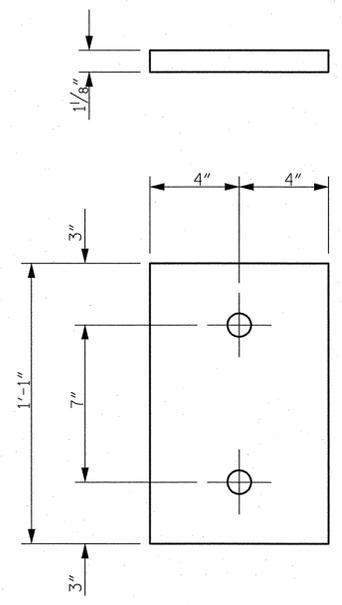


**FILL PLATE DETAIL**



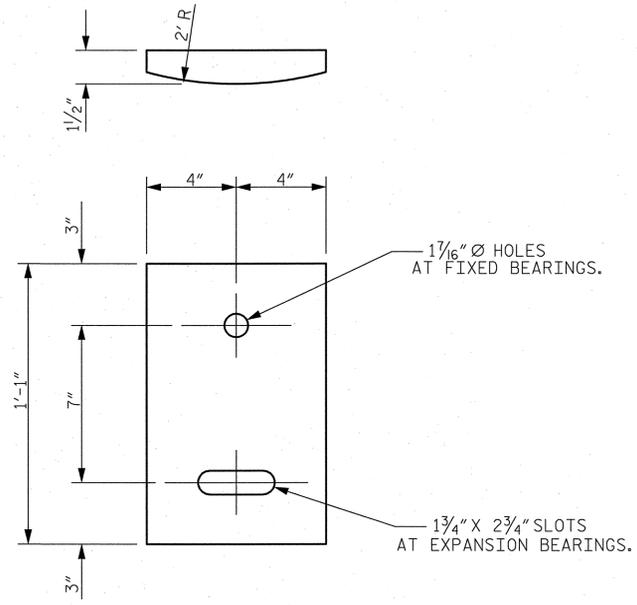
**PROPOSED SOLE PLATE**

BENTS 1, 2 & 3  
(AS REQ'D BY THE ENGINEER)



**EXISTING MASONRY PLATE DETAIL**

(8" X 1 1/8" X 13" PL)  
(RETAIN AT END BENTS AND ELIMINATE AT INTERIOR BENTS)



**EXISTING SOLE PLATE DETAIL**

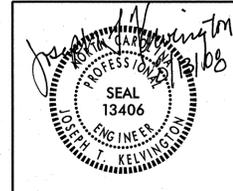
(8" X 1 1/2" X 13" PL)  
(RETAIN AT END BENTS AND REPLACE AT INTERIOR BENTS)

**NOTE**

FOR CONNECTION OF PROPOSED SOLE PLATE AND PEDESTAL, SEE BEARING ATTACHMENT DETAIL ON SHEET NO. S-2.

FOR SOLE PLATES AND MASONRY PLATES, SEE SPECIAL PROVISIONS.

NOT TO SCALE



PROJECT NO. 41926.1.1 (B-5020)

JOHNSTON COUNTY

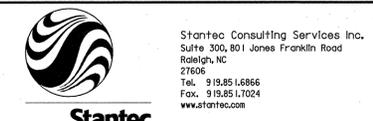
STATION: 19+51.50 -L-

BRIDGE NO. 62 ON HOCKADAY ROAD

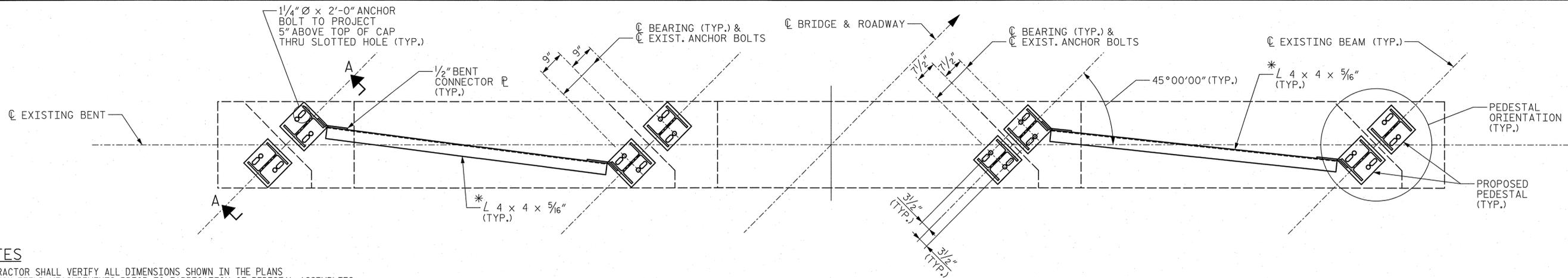
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
EXISTING SUPERSTRUCTURE  
GIRDER LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			39

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DRAWN BY: J. L. HENNEKES DATE: 03-12-08  
CHECKED BY: J. T. KELVINGTON DATE: 03-12-08



**NOTES**

CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN IN THE PLANS THROUGH FIELD MEASUREMENTS PRIOR TO FABRICATION OF PEDESTAL ASSEMBLIES.

ALL PROPOSED STRUCTURAL STEEL SHALL MEET OR EXCEED REQUIREMENTS OF AASHTO M270 GRADE 36 AND SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM 1 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

HSS MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE A.

\*PROPOSED PEDESTAL HEIGHT SHOWN IS BASED ON THE ASSUMPTION THAT TOTAL HEIGHT OF ALL EXISTING BEARING ASSEMBLIES IS 2 1/2".

EXISTING BEARINGS CONSISTING OF STEEL SOLE PLATES AND STEEL MASONRY PLATES CAN BE EXPECTED TO VARY IN HEIGHT AT EACH INTERIOR BENT SUPPORT LOCATION. CONTRACTOR SHALL PROVIDE NEW BEARINGS THAT MATCH EXISTING BEARING HEIGHTS THROUGH THE COMBINATION OF PROPOSED STEEL SOLE PLATES AND STEEL FILL PLATES. TOTAL THICKNESS OF PROPOSED SOLE PLATES AND FILL PLATES SHALL NOT EXCEED 3 1/2". IN THE EVENT THAT EXISTING BEARING HEIGHTS ARE FOUND TO BE IN EXCESS OF 3 1/2", PEDESTAL HEIGHTS SHALL BE INCREASED AN AMOUNT EQUAL TO THE DIFFERENCE IN HEIGHT BETWEEN EXISTING BEARINGS AND PROPOSED BEARINGS.

THE ESTIMATED QUANTITY OF STRUCTURAL STEEL FOR BEARING PEDESTALS AND BEARING MODIFICATIONS IS 9,950 LBS. THIS ESTIMATED QUANTITY FOR STRUCTURAL STEEL AND ALL OTHER HARDWARE IS TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR STRUCTURAL STEEL. THE QUANTITY SHOWN IS FOR INFORMATION PURPOSES ONLY AND NO WARRANTY OF ACCURACY IS EXPRESSED OR IMPLIED. CONTRACTOR WILL NOT BE COMPENSATED FOR ADDITIONAL COSTS ARISING FROM DIFFERENCES BETWEEN THE AMOUNT OF STEEL SHOWN IN THE PLANS AND THE ACTUAL AMOUNT FURNISHED FOR THIS BRIDGE.

EXISTING ANCHOR BOLTS ON INTERIOR BENT CAPS SHALL BE CUT AND GROUND FLUSH WITH THE TOP OF EXISTING CONCRETE AT EACH BEARING LOCATION.

PROPOSED ANCHOR BOLTS SHALL BE SECURED IN EXISTING CONCRETE CAPS THROUGH THE USE OF AN EPOXY ADHESIVE ANCHORING SYSTEM. BOLTS SHALL MEET THE MINIMUM MECHANICAL REQUIREMENTS OF ASTM A307.

ANCHOR BOLT LENGTHS HAVE BEEN ASSUMED ON THE BASIS OF AN 18" MINIMUM EMBEDMENT IN EXISTING CONCRETE CAPS. THIS EMBEDMENT REQUIREMENT MAY BE REDUCED TO BE IN COMPLIANCE WITH MINIMUM EMBEDMENTS SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

MAXIMUM WORKING LOADS ON THE 1/4" DIAMETER ANCHOR BOLTS IS 10 KIPS SHEAR AND 5 KIPS TENSION.

NUTS FOR 1/4" DIAMETER ANCHOR BOLTS SHALL BE HAND TIGHTENED TO A SNUG FIT CONDITION AND TORQUED AN ADDITIONAL 1/2 TURN. THE EXPOSED THREADS OF EACH ANCHOR BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

1" DIAMETER BOLTS SPECIFIED FOR CONNECTION OF BEARINGS TO PEDESTAL TOP PLATES SHALL BE HIGH STRENGTH BOLTS CONFORMING TO THE REQUIREMENTS OF ASTM A325.

NUTS FOR 1" DIAMETER BOLTS AT FIXED BEARINGS SHALL BE HAND TIGHTENED TO A SNUG FIT CONDITION AND BACKED OFF 1/2 TURN. EXPOSED THREADS OF EACH BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

ALL HIGH STRENGTH BOLTS AND ANCHOR BOLTS SHALL BE GALVANIZED.

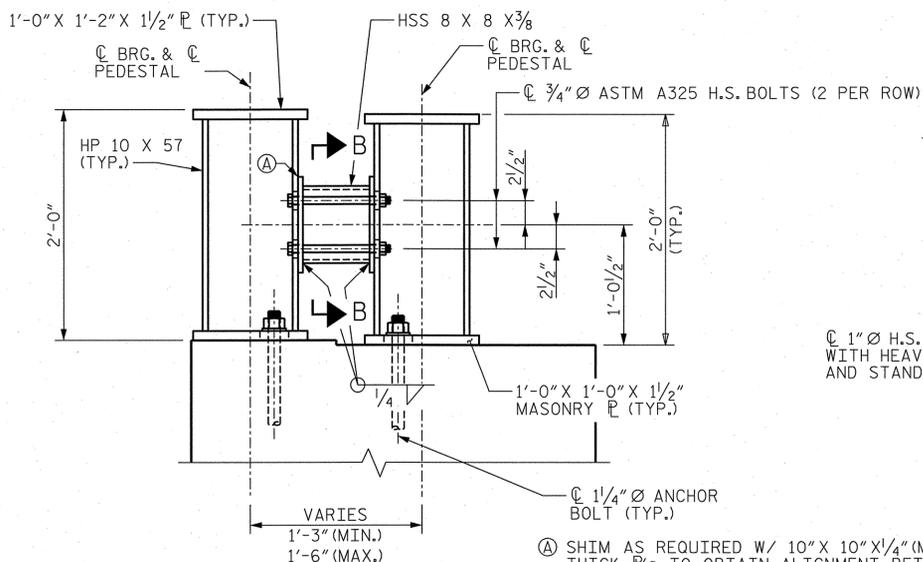
PVC PIPE SLEEVE SHALL BE IN ACCORDANCE WITH ASTM D1785.

\*NOTE: FOR ADDITIONAL LATERAL BRACING DETAILS, SEE SHEET NO. S-3.

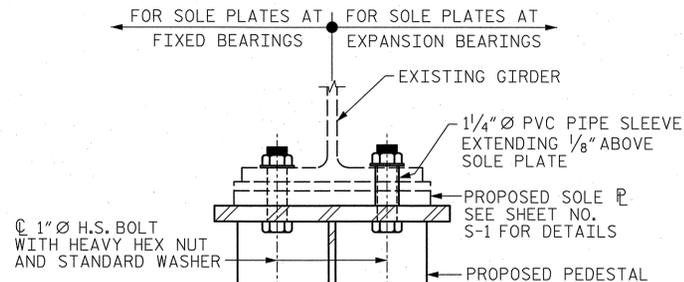
HALF PLAN BENTS 2 & 3

HALF PLAN BENT 1

PLAN OF EXISTING BENT

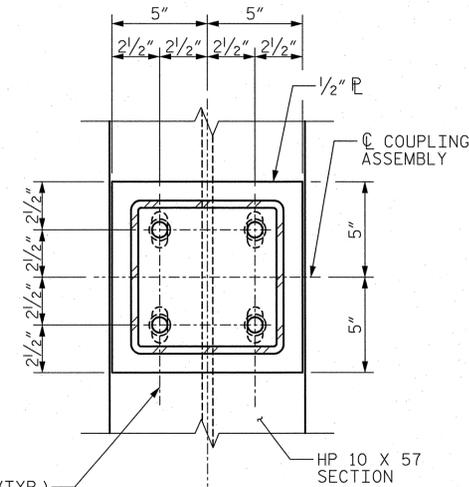


ELEVATION A

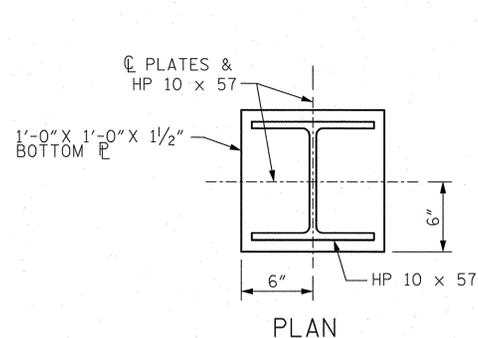


BEARING ATTACHMENT DETAIL

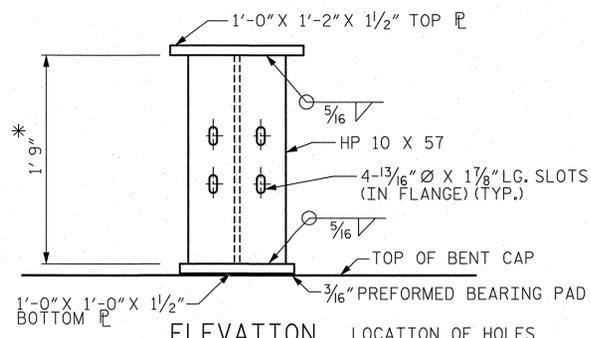
(24 LOCATIONS)



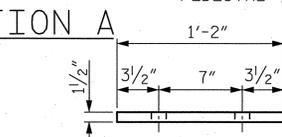
SECTION B



PLAN

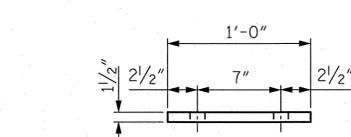


ELEVATION



PROPOSED TOP PLATE DETAIL

(24 REQUIRED)



PROPOSED BOTTOM PLATE DETAIL

(24 REQUIRED)

PEDESTAL COLUMN DETAILS

(24 REQUIRED)

NOT TO SCALE

PROJECT NO. 41926.1.1 (B-5020)

JOHNSTON COUNTY

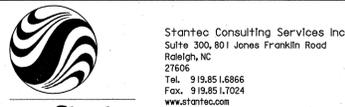
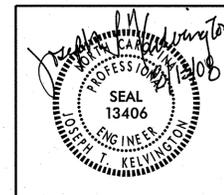
STATION: 19+51.50 -L-

BRIDGE NO. 62 ON HOCKADAY ROAD

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
INTERIOR BENT  
BEARING MODIFICATIONS

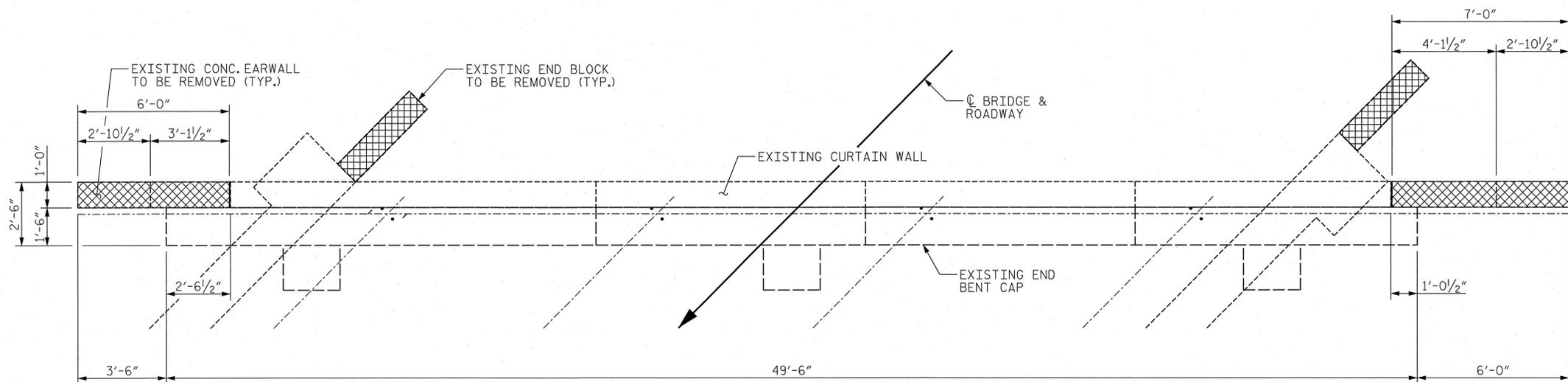
REVISIONS						SHEET NO. S-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			



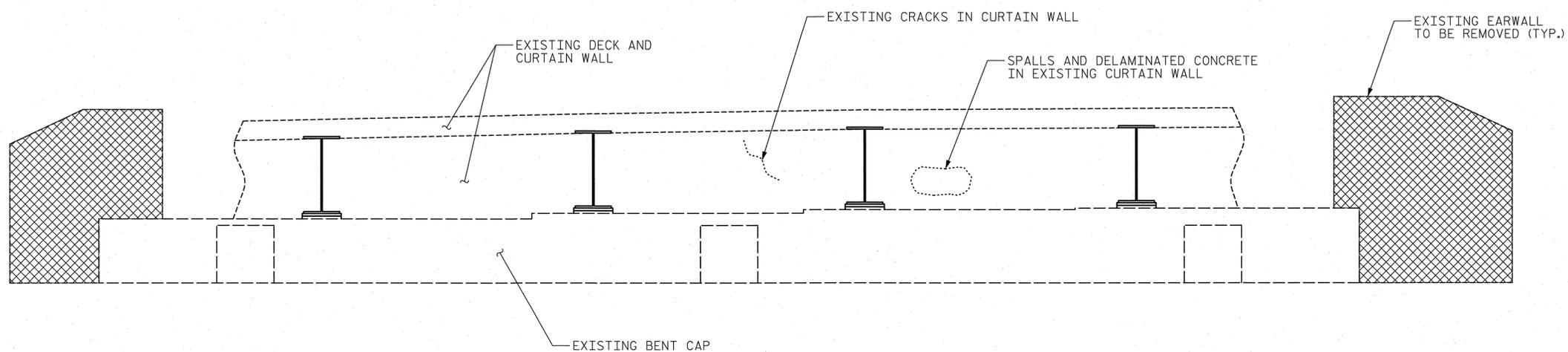
DRAWN BY: J. L. HENNEKES DATE: 03-12-08  
CHECKED BY: J. T. KELVINGTON DATE: 03-12-08

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**PLAN OF EXISTING CAP**  
END BENT 1 SHOWN, END BENT 2 SIMILAR



**ELEVATION OF EXISTING CAP**  
END BENT 1 SHOWN, END BENT 2 SIMILAR

**NOTE:**  
FIELD VERIFY DIMENSIONS PRIOR TO CONSTRUCTION.

PORTIONS OF EXISTING END BENT SHOWN IN CROSS-HATCHED AREAS SHALL BE REMOVED.

VERTICAL AND HORIZONTAL REINFORCING STEEL EXTENDING FROM THE END BENT CAP INTO THE EXISTING WINGWALLS SHALL BE CLEANED AND STRAIGHTENED. CUT EXISTING REINFORCING STEEL TO MAINTAIN REQUIRED CONCRETE COVER. PROVIDE MINIMUM 14" EXTENSION INTO THE PROPOSED WINGWALL.

BARS DAMAGED DURING THE CONCRETE REMOVAL SHALL BE REPLACED BY #6 DOWELS SECURED IN THE EXISTING END BENT CAP WITH EPOXY ADHESIVE AT NO ADDITIONAL PAYMENT.

THE #6 DOWEL LENGTH SHALL BE BASED ON A 9" EMBEDMENT INTO EXISTING CONCRETE AND MAY BE ADJUSTED BASED ON THE MINIMUM EMBEDMENT SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

EXISTING ANCHOR BOLTS ARE TO BE CUT FLUSH WITH THE EXISTING TOP OF CAP.

THE EXISTING CONCRETE AROUND ANCHOR BOLTS AND BEARING ASSEMBLIES SHALL BE REMOVED, USING HAND TOOLS, AS NECESSARY TO FREE ANCHOR BOLTS AND BEARING ASSEMBLIES. THE CONTRACTOR SHALL EXERCISE CARE DURING THE REMOVAL OF EXISTING CONCRETE TO INSURE THAT EXISTING GIRDERS, BEARING ASSEMBLIES AND CURTAIN WALL STEEL REMAIN UNDAMAGED.

FOR PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

REPAIR ALL CRACKS IN EXISTING END BENT CURTAIN WALLS WITH EPOXY RESIN INJECTION. SEE SPECIAL PROVISIONS.

REPAIR SPALLED AND DELAMINATED CONCRETE SURFACES WITH EPOXY MORTAR REPAIR. SEE SPECIAL PROVISIONS.

FOR MODIFICATION OF SUBSTRUCTURE, SEE SPECIAL PROVISIONS.

PROJECT NO. 41926.1.1 (B-5020)

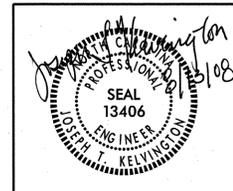
JOHNSTON COUNTY

STATION: 19+51.50 -L-

BRIDGE NO. 62 ON HOCKADAY ROAD

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT  
CONCRETE REMOVAL



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			39

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CHECKED BY: J. T. KELVINGTON DATE: 03-12-08

**NOTES**

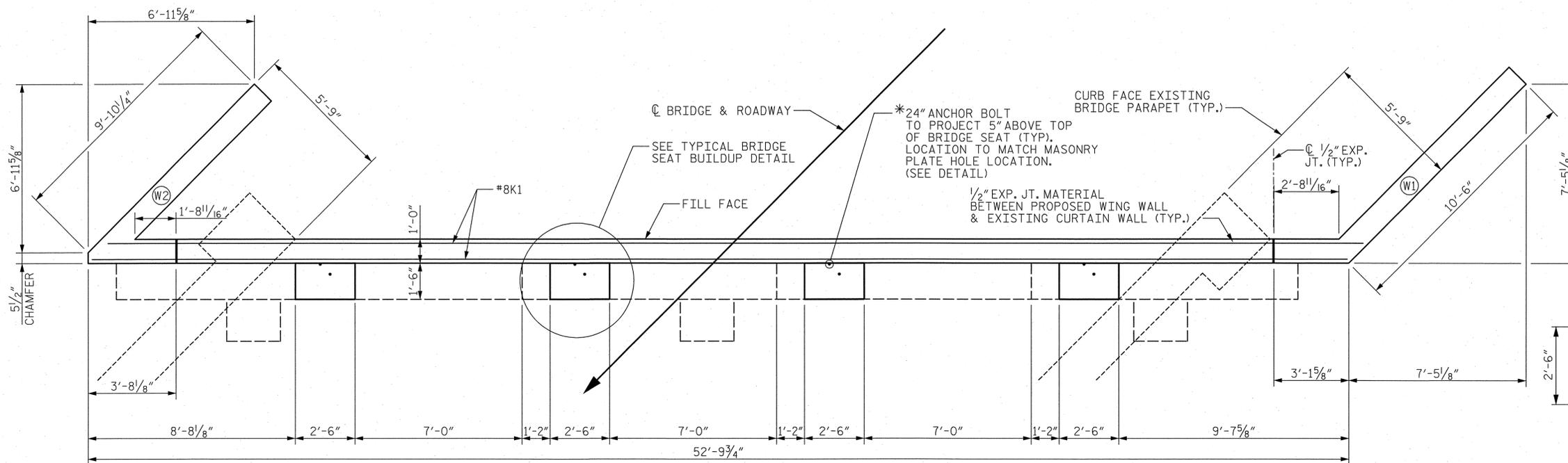
THE #6D1, #4K2, #4B1 & #4V1 BARS SHALL BE SECURED IN EXISTING CONCRETE WITH EPOXY ADHESIVE ANCHORS, SEE SPECIAL PROVISIONS.

THE VERTICAL LEG LENGTH OF THE #6D1, #4K2, & #4B1 BARS IS BASED ON A 9" EMBEDMENT INTO EXISTING CONCRETE AND MAY BE ADJUSTED BASED ON THE MINIMUM EMBEDMENT SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

THE AREAS OF THE CURTAIN WALL AROUND ANCHOR BOLTS AND BEARING ASSEMBLIES PREVIOUSLY REMOVED SHALL BE RECAST TO PRODUCE SMOOTH, STRAIGHT FINISHED SURFACES USING CLASS A CONCRETE.

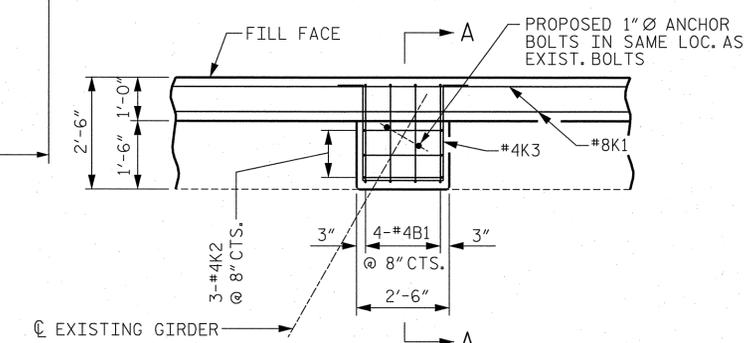
DIMENSIONS SHOWN ARE APPROXIMATE AND ARE TO BE FIELD VERIFIED BY THE CONTRACTOR.

EMBEDMENT OF #4V1 BARS IN THE EXISTING CAP SHALL BE 9" MIN. AND 12" MAX.



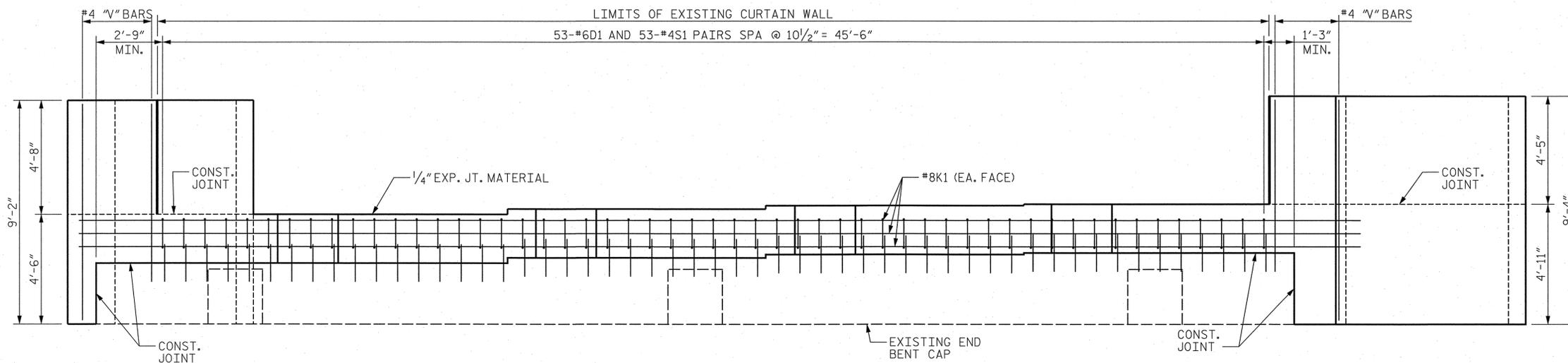
**PLAN OF CAP MODIFICATION**

END BENT 1 SHOWN, END BENT 2 SIMILAR



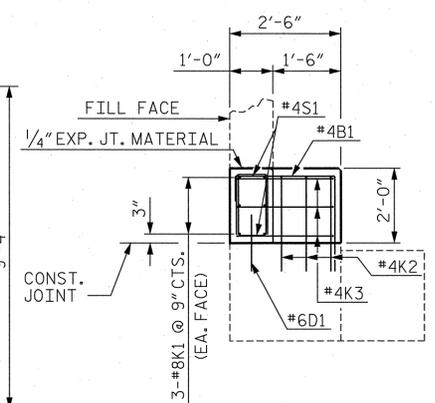
**TYPICAL BRIDGE SEAT BUILDUP**

#4S1 STIRRUPS & #6D1 DOWELS NOT SHOWN FOR CLARITY

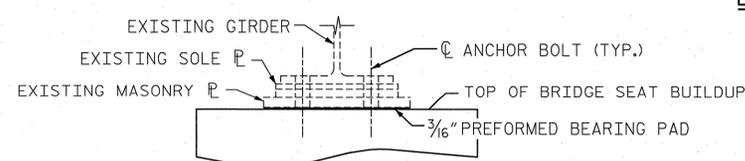


**ELEVATION OF CAP MODIFICATION**

END BENT 1 SHOWN, END BENT 2 SIMILAR

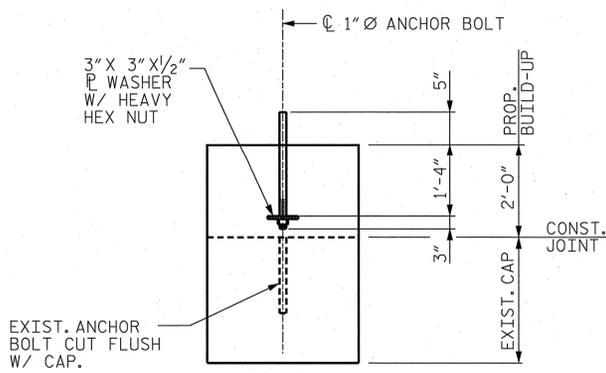


**SECTION A-A**



**TYPICAL BEARING ASSEMBLY**

END BENTS 1 & 2



**ANCHOR BOLT DETAIL**

(TYP. EACH ANCHOR)

NOT TO SCALE

PROJECT NO. 41926.1.1 (B-5020)

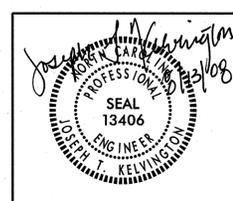
JOHNSTON COUNTY

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BRIDGE NO. 62 ON HOCKADAY ROAD

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT  
CAP MODIFICATIONS

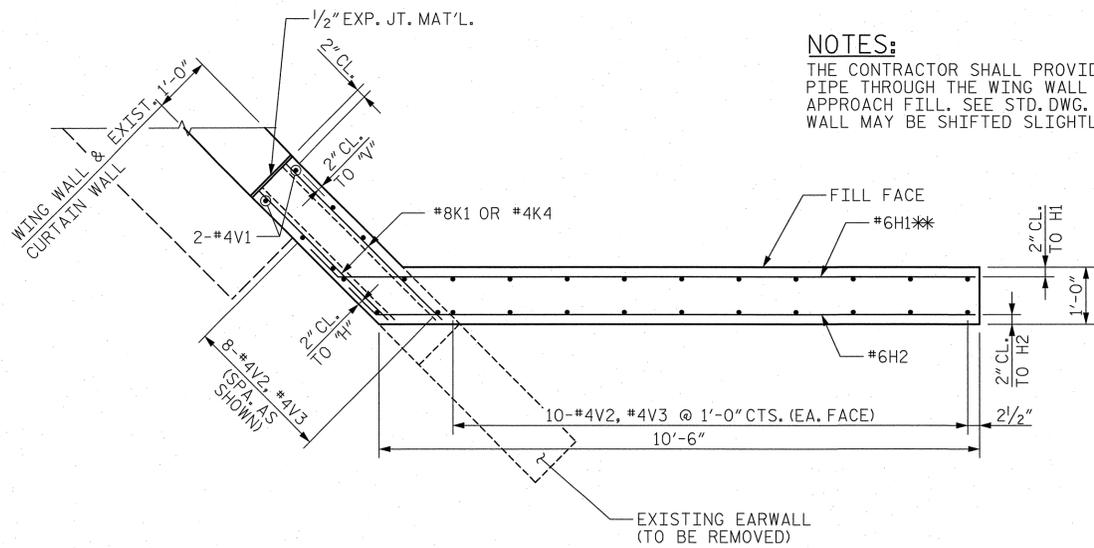


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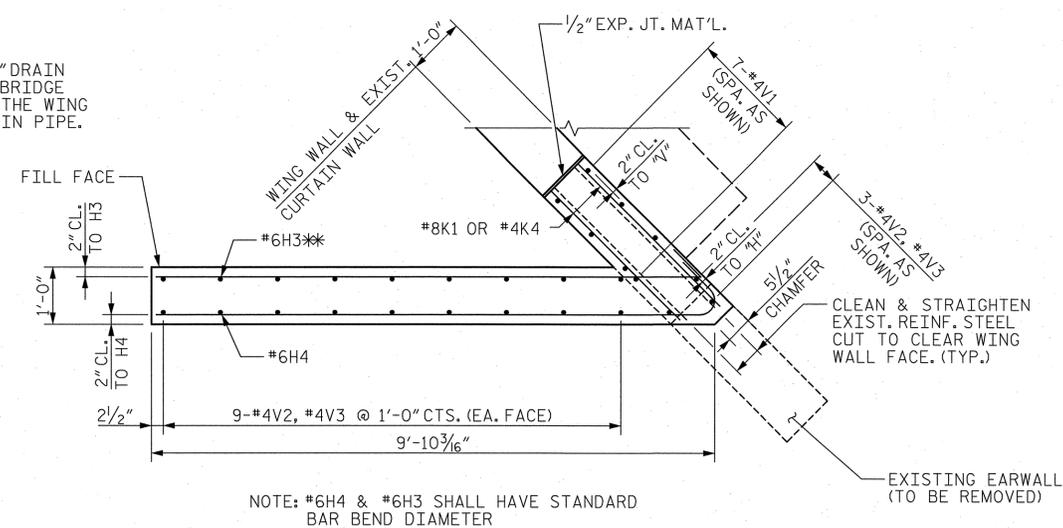
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PLAN OF WING - W1

NOTE: LEFT WING @ END BENT 1  
RIGHT WING @ END BENT 2

**NOTES:**  
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILL. SEE STD. DWG. 422.10. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR DRAIN PIPE.



PLAN OF WING - W2

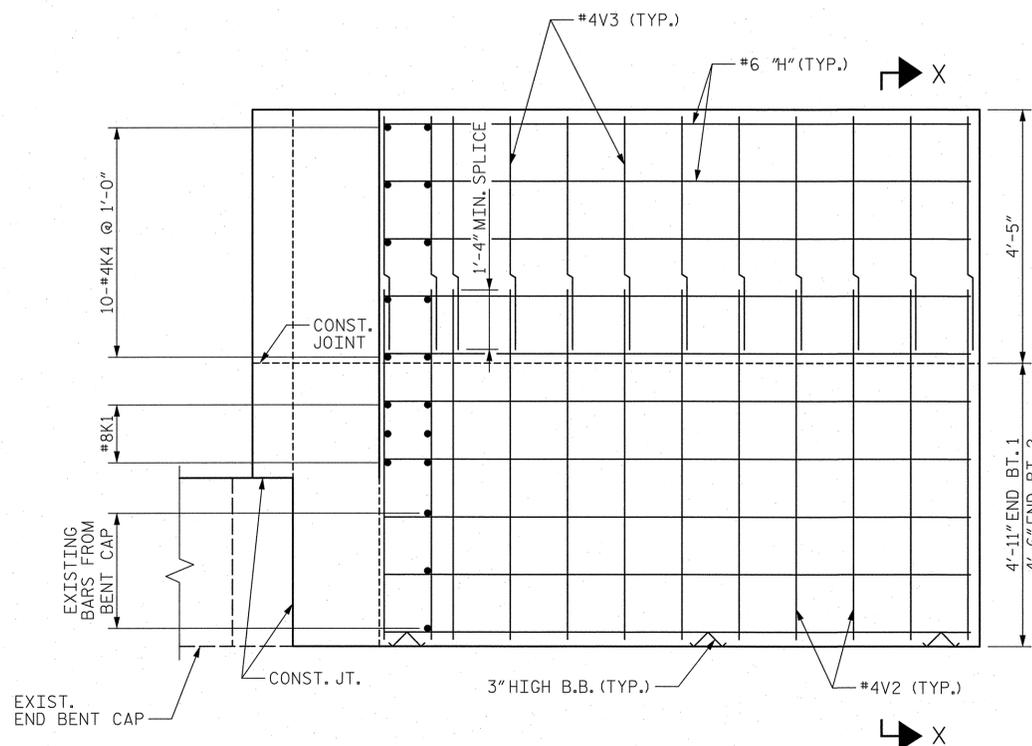
NOTE: RIGHT WING @ END BENT 2  
LEFT WING @ END BENT 1

NOTE: #6H4 & #6H3 SHALL HAVE STANDARD BAR BEND DIAMETER

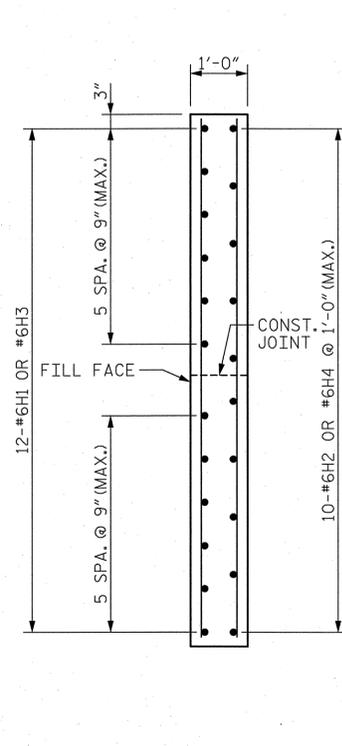
\*\* TURN HOOK ON #6 H1 AND #6H3 TO CLEAR EXIST. CAP AS REQ'D.

BILL OF MATERIAL					
FOR ONE END BENT (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#4	1	5'- 5"	58
D1	53	#6	STR	1'- 6"	119
H1	12	#6	2	11'- 8"	207
H2	10	#6	2	11'- 0"	165
H3	12	#6	3	10'- 0"	180
H4	10	#6	3	10'- 6"	158
K1	6	#8	STR	52'- 5"	840
K2	12	#4	4	7'- 3"	59
K3	12	#4	5	7'- 10"	63
K4	20	#4	STR	2'- 11"	39
S1	106	#4	4	4'- 0"	284
V1	9	#4	STR	7'- 2"	43
V2	49	#4	STR	6'- 8"	218
V3	49	#4	STR	4'- 0"	131
REINFORCING STEEL					LBS. 2564
CLASS A CONCRETE BREAKDOWN					
POUR 1 CAP AND WINGWALLS				C. Y.	7.5
POUR 2 BRIDGE SEATS AND WINGWALLS				C. Y.	5.4
CLASS A CONCRETE					C. Y. 12.9

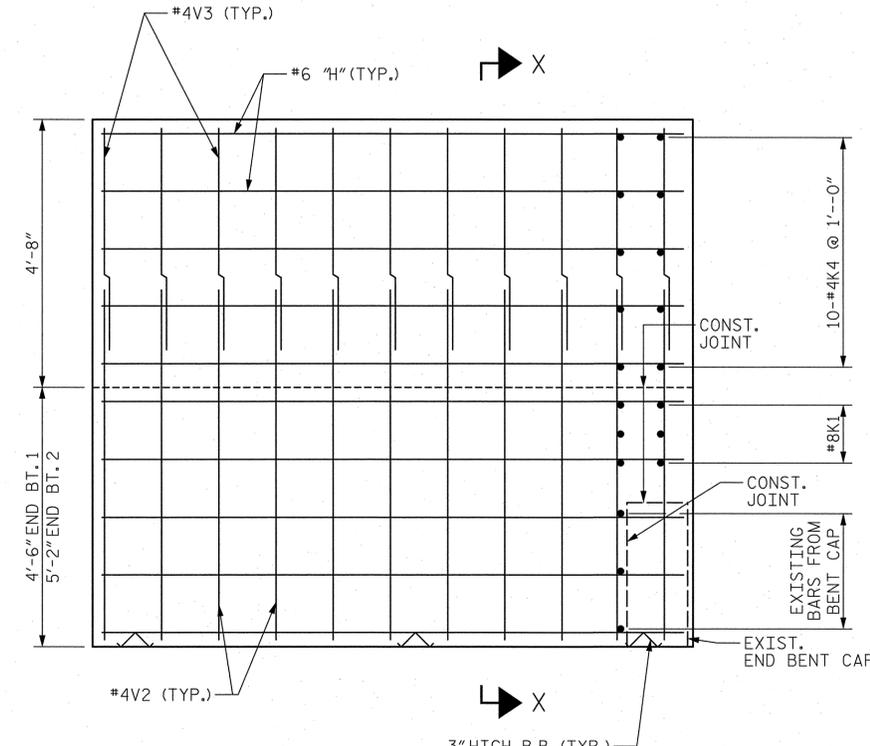
BAR TYPES



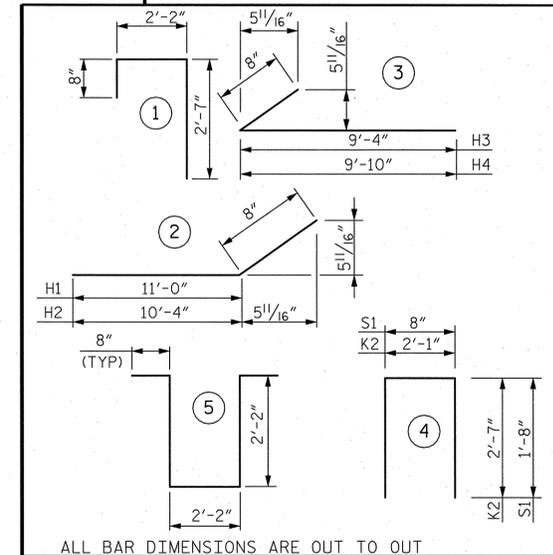
ELEVATION OF WING - W1



SECTION X-X



ELEVATION OF WING - W2



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. 41926.1.1 (B-5020)

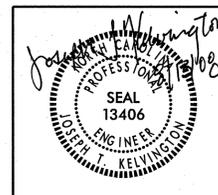
JOHNSTON COUNTY

STATION: 19+51.50 -L-

BRIDGE NO. 62 ON HOCKADAY ROAD

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT  
WINGWALL MODIFICATIONS



REVISIONS						SHEET NO.
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2			4			39

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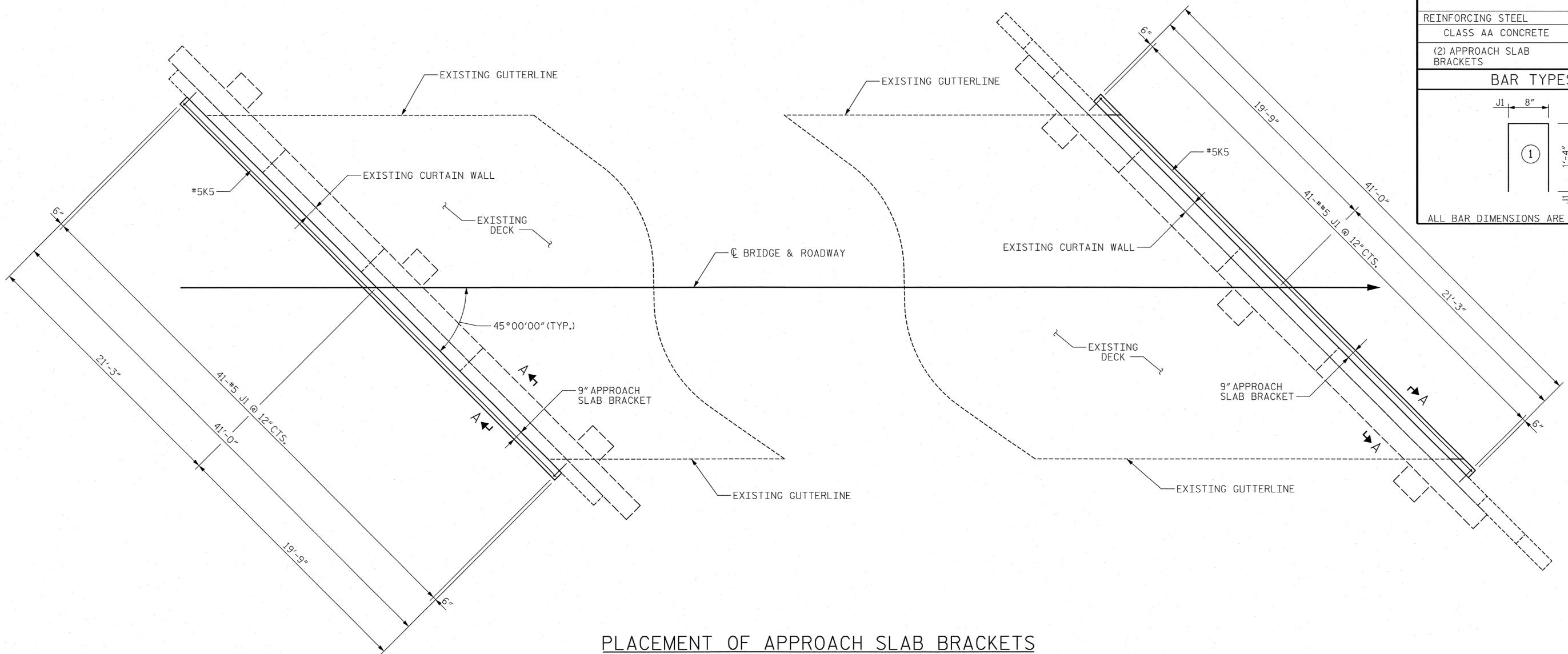
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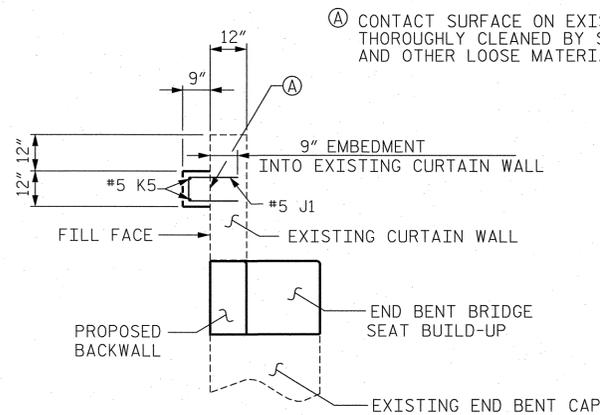
REINFORCING FOR TURNED BACK WING

END BENT 1 SHOWN, END BENT 2 SIMILAR

BILL OF MATERIAL FOR TWO APPROACH SLAB BRACKETS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
J1	82	#5	1	3'-4"	285
K5	4	#5	STR	40'-2"	168
REINFORCING STEEL				LBS.	453
CLASS AA CONCRETE					
(2) APPROACH SLAB BRACKETS				C. Y.	2.3
BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT					



**PLACEMENT OF APPROACH SLAB BRACKETS**



Ⓐ CONTACT SURFACE ON EXISTING CURTAIN WALL SHALL BE THOROUGHLY CLEANED BY SAND BLASTING TO REMOVE ALL SOIL AND OTHER LOOSE MATERIALS PRIOR TO CONCRETE PLACEMENT.

**NOTES**

APPROACH SLAB BRACKET SHOWN IS TO BE CONSTRUCTED IF A PAVEMENT REST IS NOT FOUND TO EXIST ON THE EXISTING CURTAIN WALL.

CONTRACTOR SHALL NOT BE ELIGIBLE FOR ADDITIONAL COMPENSATION TO CONSTRUCT APPROACH SLAB BRACKETS AS SHOWN. COST FOR THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR BRIDGE APPROACH SLABS.

DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION.

THE #5J1 BARS SHALL BE SECURED INTO THE EXISTING CONCRETE WITH EPOXY ADHESIVE.

THE LEG LENGTH OF THE #5J1 BAR IS BASED ON A 9" EMBEDMENT INTO THE EXISTING CONCRETE AND MAY BE ADJUSTED BASED ON THE MINIMUM EMBEDMENT SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

NOT TO SCALE

PROJECT NO. 41926.1.1 (B-5020)

JOHNSTON COUNTY

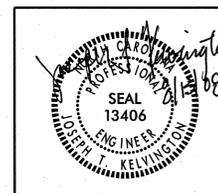
STATION: 19+51.50 -L-

BRIDGE NO. 62 ON HOCKADAY ROAD

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT  
APPROACH SLAB BRACKETS

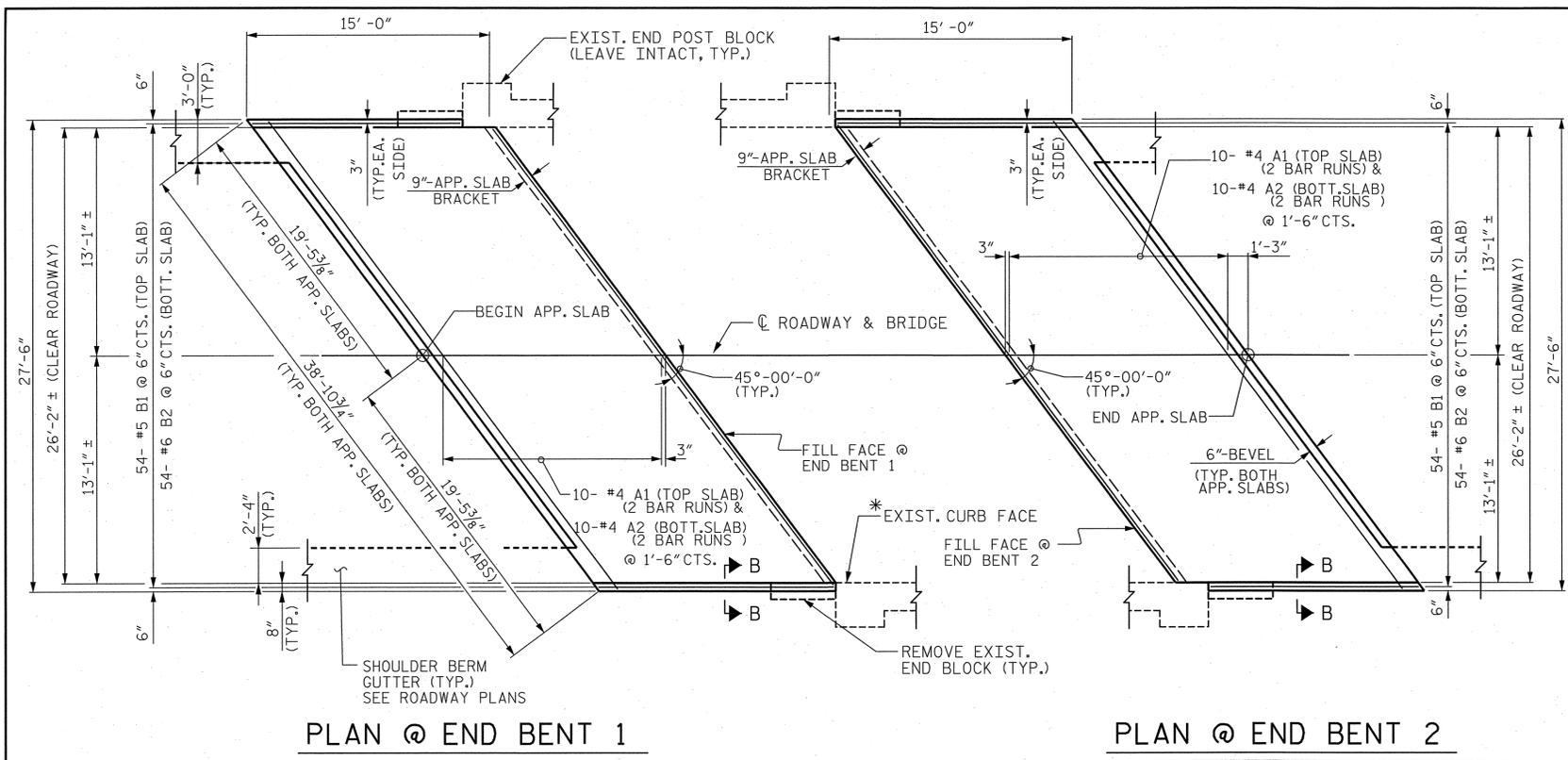
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1			3			TOTAL SHEETS
2			4			39



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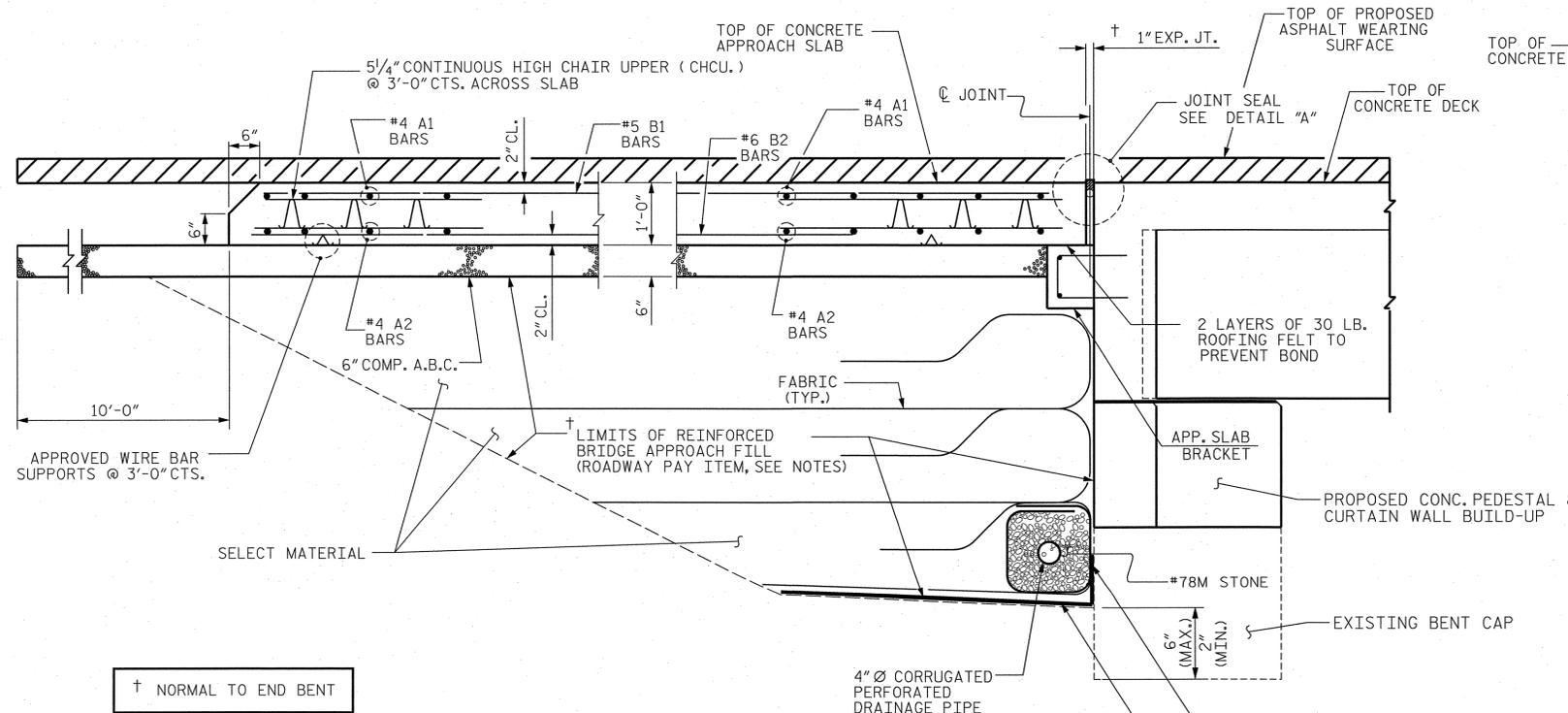
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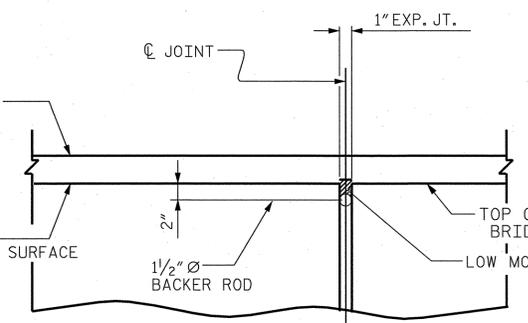
PLAN @ END BENT 1

PLAN @ END BENT 2

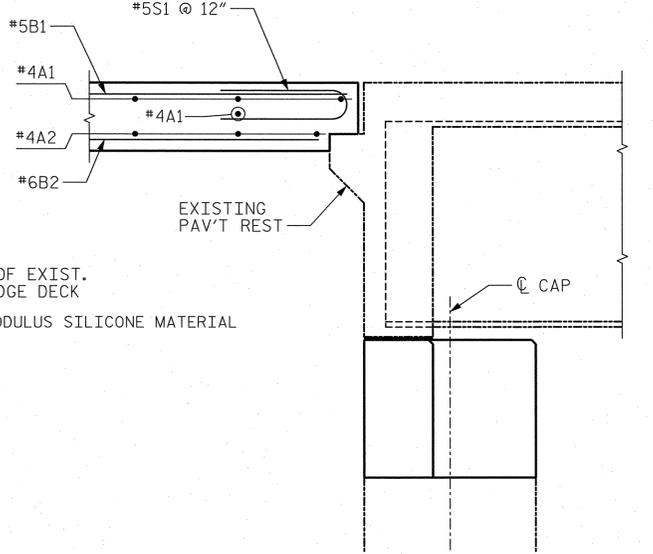
\* MATCH CURB ON APPROACH SLAB TO EXISTING FACE AND EXISTING END POST BLOCK (TYP.)



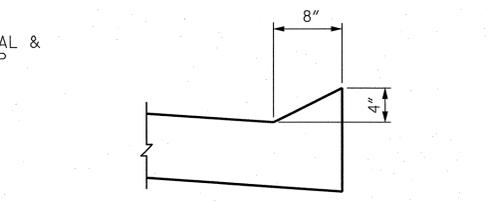
SECTION THRU SLAB WITH APPROACH SLAB BRACKET



DETAIL A



ALTERNATE SECTION THRU SLAB (SLAB SUPPORTED ON EXISTING PAV'T REST)



SECTION B-B (THRU CURB)

NOT TO SCALE

NOTES

- FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE STD. DWG. 422.10.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE STD. DWG. 422.10.
- THE 6" COMP. A.B.C. SHALL EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF SLAB.
- THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.
- THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB. ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.
- THE 6" BEVEL AT THE END OF THE APPROACH SLAB SHALL EXTEND BETWEEN LEFT SIDE AND RIGHT SIDE SHOULDER BERM GUTTER.
- SLOPE TOP OF CONCRETE APPROACH SLAB TO MATCH PROPOSED GRADE LINE PROFILE (SEE RDWY PLANS) AND EXISTING CONCRETE DECK.
- APPROACH SLAB QUANTITIES SHOWN ARE REQUIRED FOR SLAB SUPPORTED ON PROPOSED APPROACH SLAB BRACKET.
- CONTRACTOR SHALL VERIFY ALL FIELD DIMENSIONS.

BILL OF MATERIAL						
ONE APP. SLAB (2 REQ'D)						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	20	#4	STR	20'-3"	271	
A2	20	#4	STR	20'-1"	268	
*B1	54	#5	STR	14'-0"	789	
B2	54	#6	STR	14'-3"	1156	
REINFORCING STEEL				lbs.	1424	
*EPOXY COATED REINFORCING STEEL				lbs.	1060	
CLASS AA CONCRETE						
SLAB				C. Y.	15.7	
TOTAL CONCRETE				C. Y.	15.7	

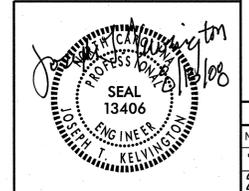
BAR TYPES		SPLICE CHART		
BAR SIZE	EPOXY COATED	UNCOATED		
#4	2'-0"	1'-9"		
#5	2'-6"	2'-2"		
#6	3'-10"	2'-7"		

ALL BAR DIMENSIONS ARE OUT TO OUT

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PROJECT NO. 41926.1.1 (B-5020)  
 JOHNSTON COUNTY  
 STATION: 19+51.50 -L-  
 BRIDGE NO. 62 ON HOCKADAY ROAD

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

REVISIONS						SHEET NO. S-10
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1			3			TOTAL SHEETS 39
2			4			

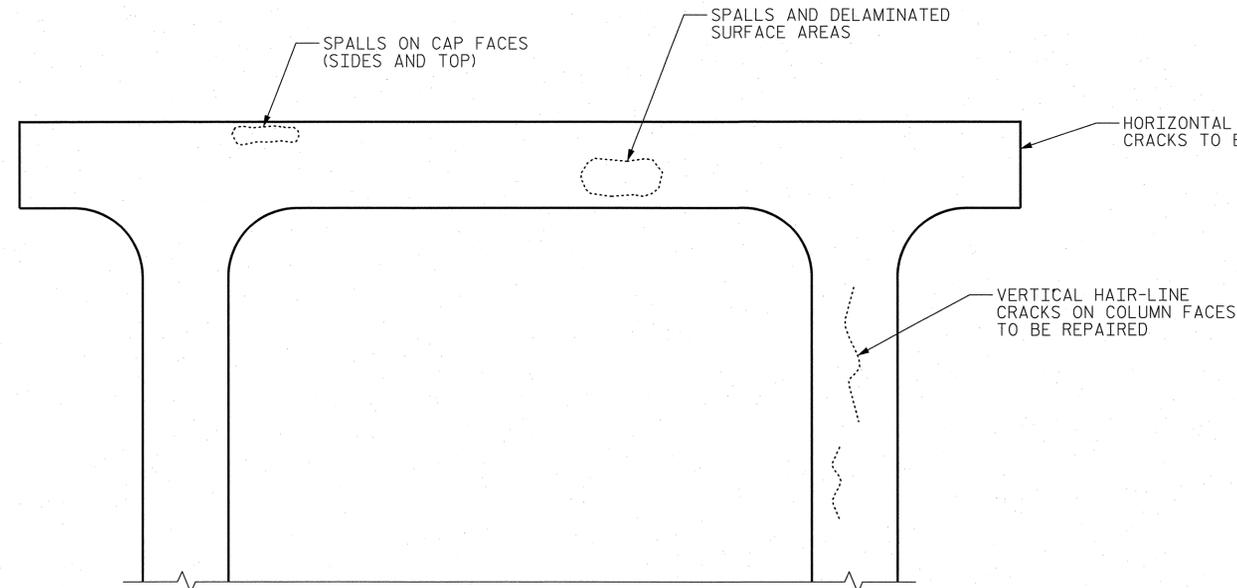
**NOTE**

REPLACEMENT OF EXISTING HORIZONTAL BAR WITH #4 BAR AND #5 DOWELS AS SHOWN IN TYPICAL BENT & DIAPHRAGM REPAIR DETAIL IS INCLUDED UNDER THE CONTRACT PAY ITEM, EPOXY MORTAR REPAIRS.

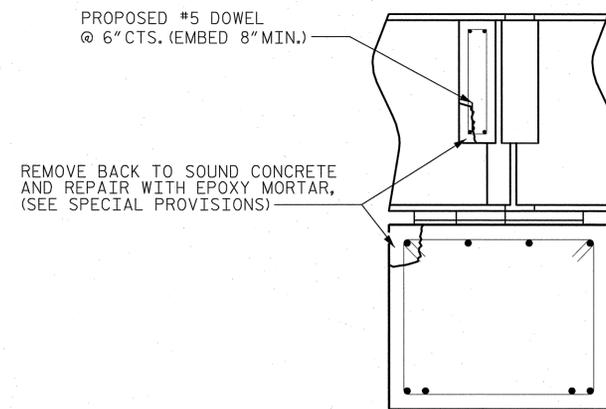
SAWCUT 1/4" - 1/2" DEEP AROUND ALL SPALLS.

HAIR-LINE CRACKS ARE TO BE REPAIRED WITH EPOXY RESIN INJECTION. SEE SPECIAL PROVISIONS.

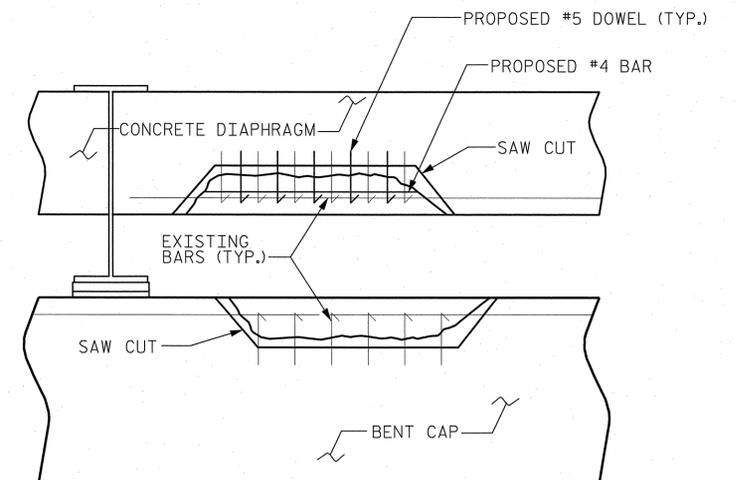
FOR EPOXY MORTAR REPAIR, SEE SPECIAL PROVISIONS.



TYPICAL INTERIOR BENT REPAIRS



SECTION



ELEVATION

TYPICAL BENT & DIAPHRAGM REPAIR DETAIL

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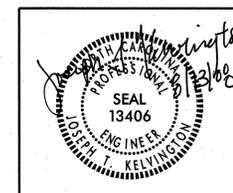
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BRIDGE NO. 62 ON HOCKADAY ROAD

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

INTERIOR BENT  
REPAIRS

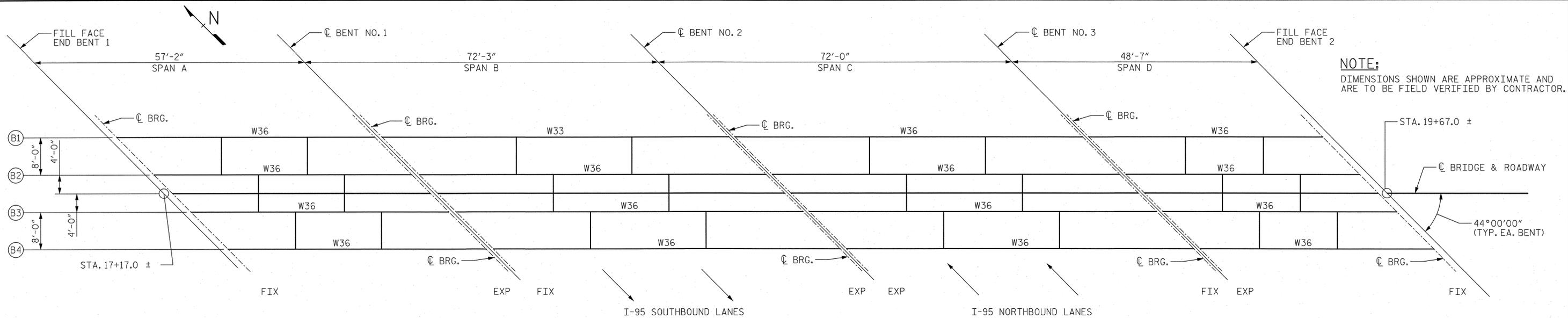


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CHECKED BY : J. T. KELVINGTON DATE : 03-12-08



**NOTE:**  
DIMENSIONS SHOWN ARE APPROXIMATE AND ARE TO BE FIELD VERIFIED BY CONTRACTOR.

**STRUCTURAL STEEL PLAN**

**JACKING REQUIREMENTS:**

CONTRACTOR SHALL RAISE (JACK) BRIDGE SPANS SEQUENTIALLY ONE SPAN AT A TIME IN A PREDETERMINED ORDER. SIMULTANEOUS JACKING OF BRIDGE WILL NOT BE PERMITTED.

CONTRACTOR SHALL SUBMIT FIVE (5) COMPLETE SETS OF PLANS, PROCEDURES, DETAILS, AND DESIGN CALCULATIONS FOR JACKING BRIDGE SPANS TO THE ENGINEER FOR REVIEW AND APPROVAL.

PLANS AND CALCULATIONS SHALL BE SEALED BY A REGISTERED N.C. PROFESSIONAL ENGINEER.

SPANS SHALL BE RAISED IN 2" MAXIMUM LIFTS.

SPANS SHALL BE BLOCKED WITH THE COMPLETION OF EACH LIFT.

SPANS SHALL BE LIFTED UNIFORMLY TO PREVENT DAMAGE TO SUPERSTRUCTURE ELEMENTS THAT MAY BE CAUSED BY DIFFERENTIAL DISPLACEMENTS.

FOR TRAFFIC CONTROL, SEE TRAFFIC CONTROL PLANS.

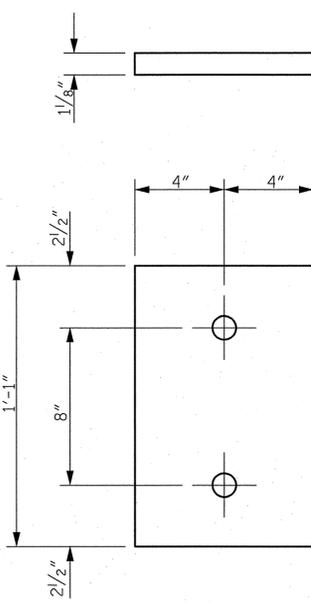
CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PART OF THE EXISTING STRUCTURE THAT MAY OCCUR DURING JACKING OPERATIONS. CONTRACTOR SHALL REPAIR ALL DAMAGE DONE TO EXISTING STRUCTURES TO THE SATISFACTION OF THE ENGINEER AND AT CONTRACTOR'S EXPENSE.

**NOTES:**

EXISTING BRIDGE INFORMATION SHOWN ON THE PLANS IS THE BEST DATA CURRENTLY AVAILABLE. CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO VERIFY INFORMATION SHOWN ON THESE PLANS AND SHALL OBTAIN ALL OTHER EXISTING BRIDGE DATA NECESSARY FOR THE EXECUTION OF THE WORK. CONTRACTOR SHALL HAVE NO CLAIM AGAINST THE DEPARTMENT FOR ADDITIONAL COSTS OR DELAYS ARISING FROM DISCREPANCIES BETWEEN THE INFORMATION PRESENTED IN THESE PLANS AND ACTUAL SITE CONDITIONS.

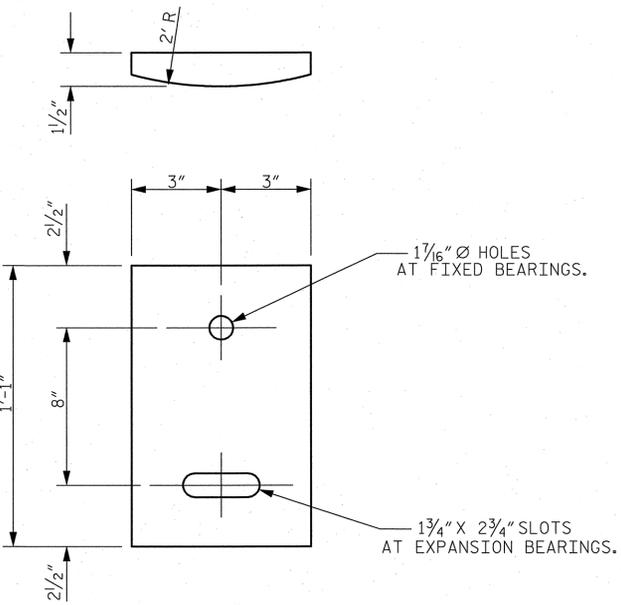
ALL STRUCTURAL STEEL FOR PROPOSED SOLE PLATES AND FILL PLATES SHALL BE AASHTO M270 GRADE 36 AND SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM 1 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE INSTRUCTED ON THE PLANS AND SPECIAL PROVISIONS.

FILL PLATES SHALL BE FURNISHED WITH CURVED SOLE PLATES TO OBTAIN A TOTAL BEARING THICKNESS THAT IS EQUAL TO THE THICKNESS OF EXISTING SOLE PLATES AND MASONRY PLATES AT EACH SUPPORT LOCATION UP TO A MAXIMUM TOTAL THICKNESS OF 3 1/2". FILL PLATES SHALL HAVE THE SAME PLAN DIMENSIONS AS CURVED SOLE PLATES. SEE PEDESTAL NOTES ON SHEET S-2 WHEN EXISTING BEARING HEIGHTS EXCEED 3 1/2".



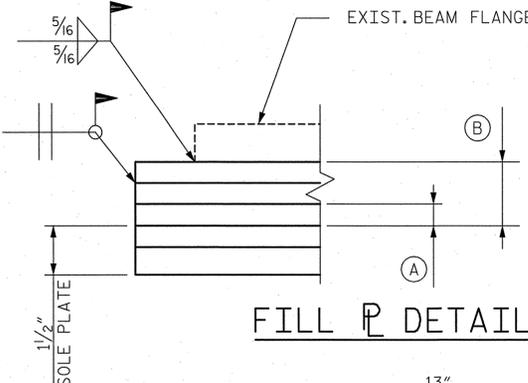
**EXISTING MASONRY PLATE DETAIL**

(8" X 1 1/8" X 13" P)  
(RETAIN AT END BENTS AND ELIMINATE AT INTERIOR BENTS)

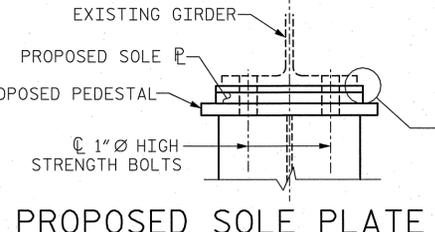
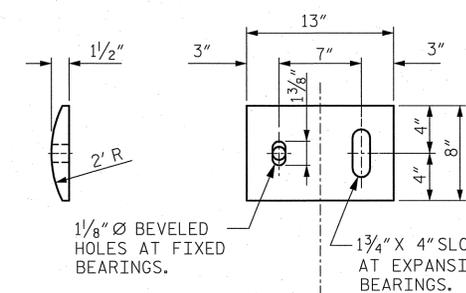


**EXISTING SOLE PLATE DETAIL**

(6" X 1 1/2" X 13" P)  
(RETAIN AT END BENTS AND REPLACE AT INTERIOR BENTS)



**FILL P DETAIL**



**PROPOSED SOLE PLATE**

BENTS 1, 2 & 3  
(AS REQ'D BY THE ENGINEER)

(A) MINIMUM THICKNESS OF FILL PLATES IS 1/4"

(B) MAXIMUM TOTAL THICKNESS OF FILL PLATES COMPOSED OF SINGLE PLATE OR MULTIPLE LAYERS OF PLATES SHALL NOT EXCEED 2"

ROLLED BEAM AND DIAPHRAGM SIZES WITHIN EACH SPAN MAY BE EXPECTED TO VARY.

EXISTING MASONRY PLATES AND SOLE PLATES AT END BENTS SHALL BE RETAINED, CLEANED, AND PAINTED FOR SEATING ON PROPOSED CAP BUILD-UPS. SEE SPECIAL PROVISIONS.

CONTRACTOR IS ADVISED OF THE FACT THAT EXISTING STRUCTURAL STEEL BRIDGE ELEMENTS MAY BE COATED WITH LEAD BASED PAINT.

CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY FOR PROPER HANDLING AND DISPOSAL OF LEAD BASED MATERIALS.

PROJECT NO. 41926.1.1 (B-5020)

JOHNSTON COUNTY

STATION: 18+42.00 -L-

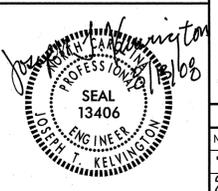
BRIDGE NO. 67 ON U.S. 701

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
EXISTING SUPERSTRUCTURE  
GIRDER LAYOUT

**NOTE**

FOR CONNECTION OF PROPOSED SOLE PLATE AND PEDESTAL, SEE BEARING ATTACHMENT DETAIL ON SHEET NO. S-2.

FOR SOLE PLATES AND MASONRY PLATES, SEE SPECIAL PROVISIONS.



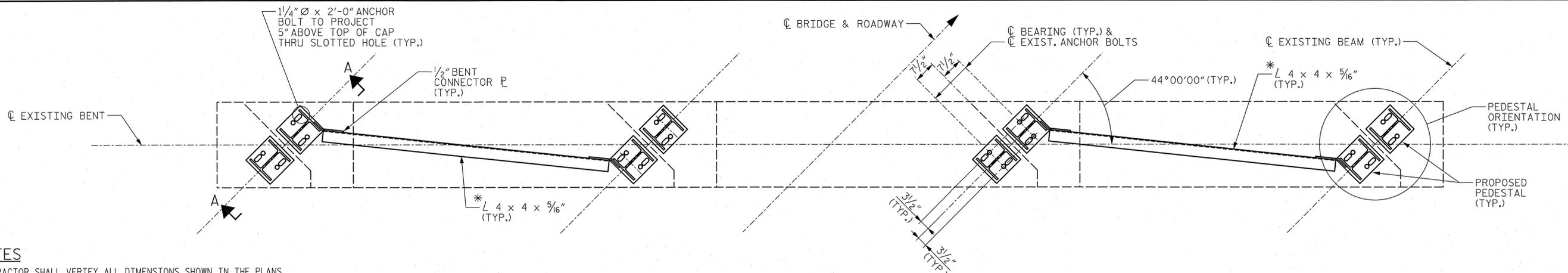
NOT TO SCALE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			39

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DRAWN BY: J. L. HENNEKES DATE: 03-12-08  
CHECKED BY: J. T. KELVINGTON DATE: 03-12-08



**NOTES**

CONTRACTOR SHALL VERIFY ALL DIMENSIONS SHOWN IN THE PLANS THROUGH FIELD MEASUREMENTS PRIOR TO FABRICATION OF PEDESTAL ASSEMBLIES.

ALL PROPOSED STRUCTURAL STEEL SHALL MEET OR EXCEED REQUIREMENTS OF AASHTO M270 GRADE 36 AND SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM 1 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

HSS MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500 GRADE A.

\*PROPOSED PEDESTAL HEIGHT SHOWN IS BASED ON THE ASSUMPTION THAT TOTAL HEIGHT OF ALL EXISTING BEARING ASSEMBLIES IS 2 1/2".

EXISTING BEARINGS CONSISTING OF STEEL SOLE PLATES AND STEEL MASONRY PLATES CAN BE EXPECTED TO VARY IN HEIGHT AT EACH INTERIOR BENT SUPPORT LOCATION. CONTRACTOR SHALL PROVIDE NEW BEARINGS THAT MATCH EXISTING BEARING HEIGHTS THROUGH THE COMBINATION OF PROPOSED STEEL SOLE PLATES AND STEEL FILL PLATES. TOTAL THICKNESS OF PROPOSED SOLE PLATES AND FILL PLATES SHALL NOT EXCEED 3 1/2". IN THE EVENT THAT EXISTING BEARING HEIGHTS ARE FOUND TO BE IN EXCESS OF 3 1/2", PEDESTAL HEIGHTS SHALL BE INCREASED AN AMOUNT EQUAL TO THE DIFFERENCE IN HEIGHT BETWEEN EXISTING BEARINGS AND PROPOSED BEARINGS.

THE ESTIMATED QUANTITY OF STRUCTURAL STEEL FOR BEARING PEDESTALS AND BEARING MODIFICATIONS IS 9,950 LBS. THIS ESTIMATED QUANTITY FOR STRUCTURAL STEEL AND ALL OTHER HARDWARE IS TO BE INCLUDED IN THE LUMP SUM PRICE BID FOR STRUCTURAL STEEL. THE QUANTITY SHOWN IS FOR INFORMATION PURPOSES ONLY AND NO WARRANTY OF ACCURACY IS EXPRESSED OR IMPLIED. CONTRACTOR WILL NOT BE COMPENSATED FOR ADDITIONAL COSTS ARISING FROM DIFFERENCES BETWEEN THE AMOUNT OF STEEL SHOWN IN THE PLANS AND THE ACTUAL AMOUNT FURNISHED FOR THIS BRIDGE.

EXISTING ANCHOR BOLTS ON INTERIOR BENT CAPS SHALL BE CUT AND GROUND FLUSH WITH THE TOP OF EXISTING CONCRETE AT EACH BEARING LOCATION.

PROPOSED ANCHOR BOLTS SHALL BE SECURED IN EXISTING CONCRETE CAPS THROUGH THE USE OF AN EPOXY ADHESIVE ANCHORING SYSTEM. BOLTS SHALL MEET THE MINIMUM MECHANICAL REQUIREMENTS OF ASTM A307.

ANCHOR BOLT LENGTHS HAVE BEEN ASSUMED ON THE BASIS OF AN 18" MINIMUM EMBEDMENT IN EXISTING CONCRETE CAPS. THIS EMBEDMENT REQUIREMENT MAY BE REDUCED TO BE IN COMPLIANCE WITH MINIMUM EMBEDMENTS SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

MAXIMUM WORKING LOADS ON THE 1/4" DIAMETER ANCHOR BOLTS IS 10 KIPS SHEAR AND 5 KIPS TENSION.

NUTS FOR 1/4" DIAMETER ANCHOR BOLTS SHALL BE HAND TIGHTENED TO A SNUG FIT CONDITION AND TORQUED AN ADDITIONAL 1/2 TURN. THE EXPOSED THREADS OF EACH ANCHOR BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

1" DIAMETER BOLTS SPECIFIED FOR CONNECTION OF BEARINGS TO PEDESTAL TOP PLATES SHALL BE HIGH STRENGTH BOLTS CONFORMING TO THE REQUIREMENTS OF ASTM A325.

NUTS FOR 1" DIAMETER BOLTS AT FIXED BEARINGS SHALL BE HAND TIGHTENED TO A SNUG FIT CONDITION AND BACKED OFF 1/2 TURN. EXPOSED THREADS OF EACH BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

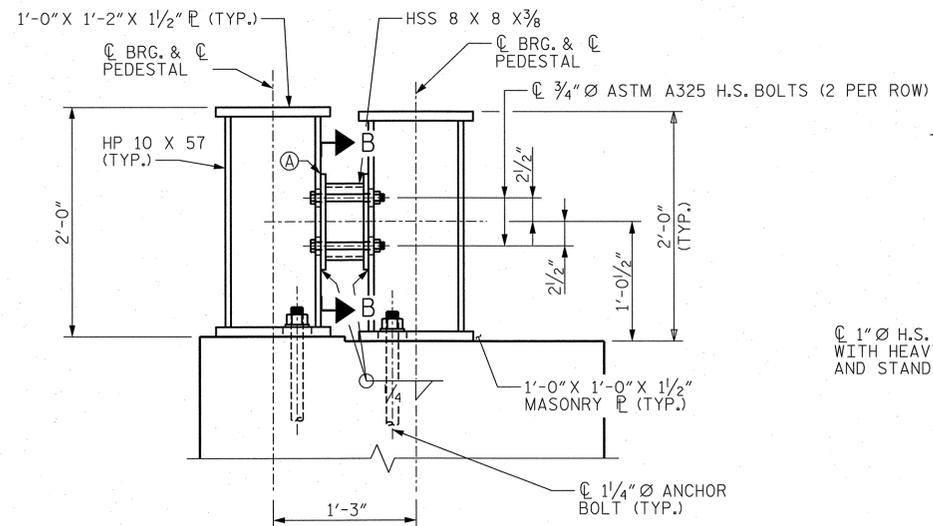
ALL HIGH STRENGTH BOLTS AND ANCHOR BOLTS SHALL BE GALVANIZED.

PVC PIPE SLEEVE SHALL BE IN ACCORDANCE WITH ASTM D1785.

\*NOTE: FOR ADDITIONAL LATERAL BRACING DETAILS, SEE SHEET NO. S-3.

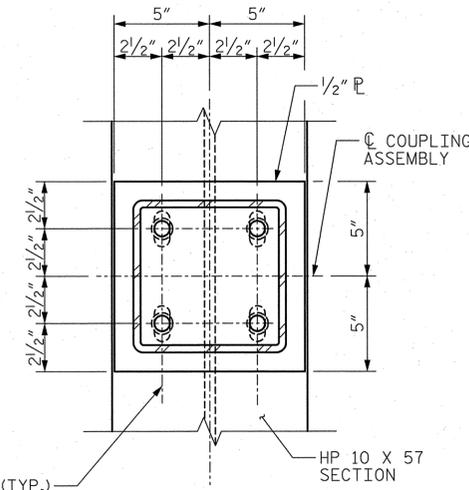
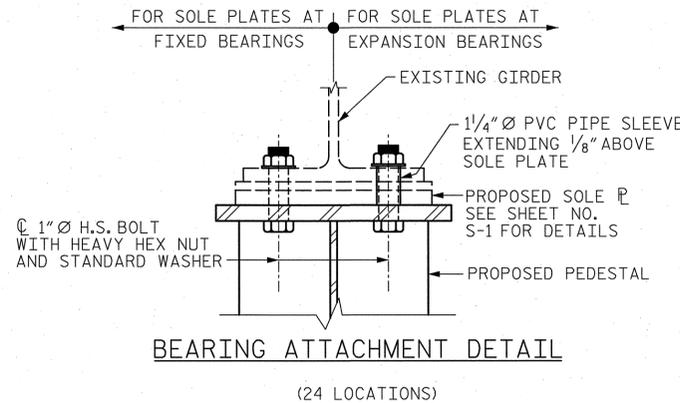
**PLAN OF EXISTING BENT**

BENT 1 SHOWN, BENTS 2 & 3 SIMILAR

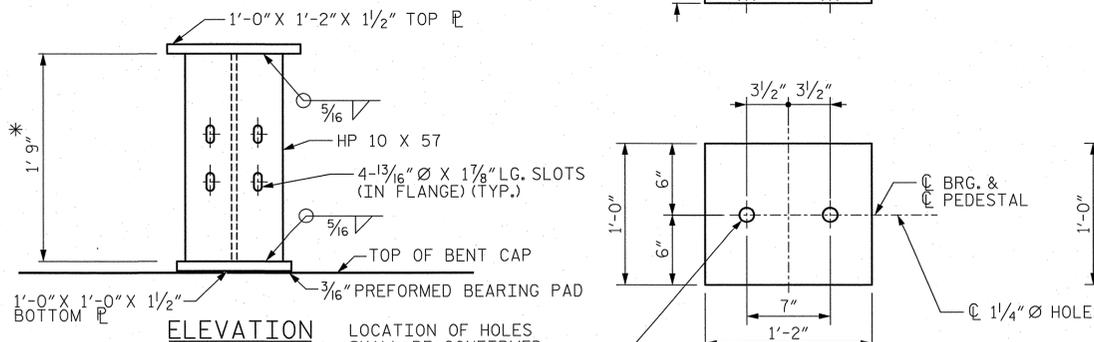


**ELEVATION A**

SHIM AS REQUIRED W/ 10" X 10" X 1/4" (MAX.) THICK P's TO OBTAIN ALIGNMENT BETWEEN PEDESTAL & BRG. C



**SECTION B**



**PEDESTAL COLUMN DETAILS**

(24 REQUIRED)

**PROPOSED TOP PLATE DETAIL**

(24 REQUIRED)

**PROPOSED BOTTOM PLATE DETAIL**

(24 REQUIRED)

NOT TO SCALE

PROJECT NO. 41926.1.1 (B-5020)

JOHNSTON COUNTY

STATION: 18+42.00 -L-

BRIDGE NO. 67 ON U.S. 701

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
INTERIOR BENT  
BEARING MODIFICATIONS

REVISIONS

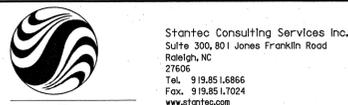
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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SHEET NO.

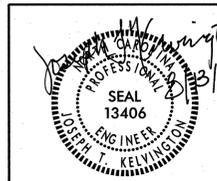
S-13

TOTAL SHEETS

39

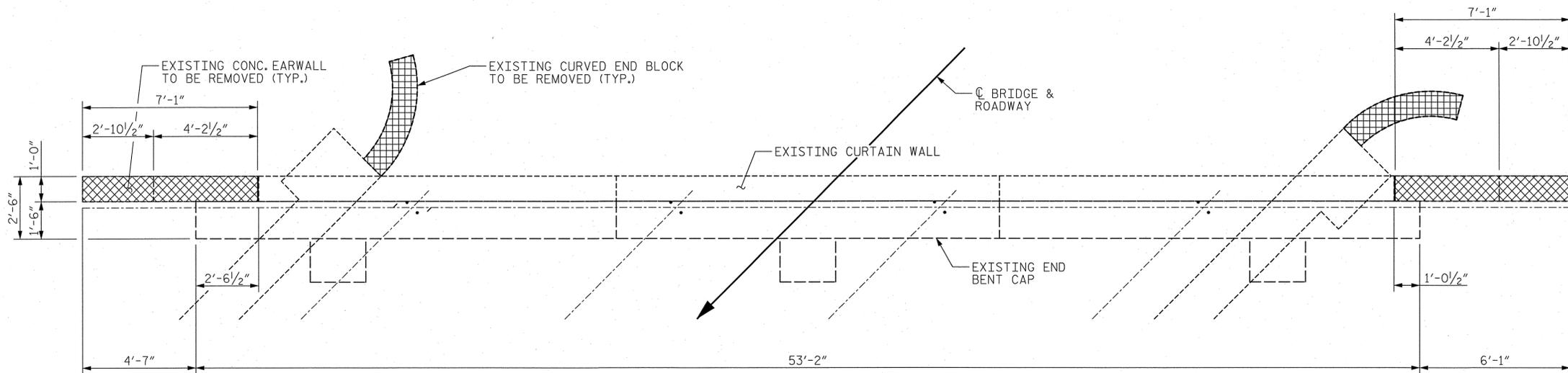


DRAWN BY: JBL JHENNEBES DATE: 03-12-08  
CHECKED BY: J. T. REDWINGKON DATE: 03-12-08

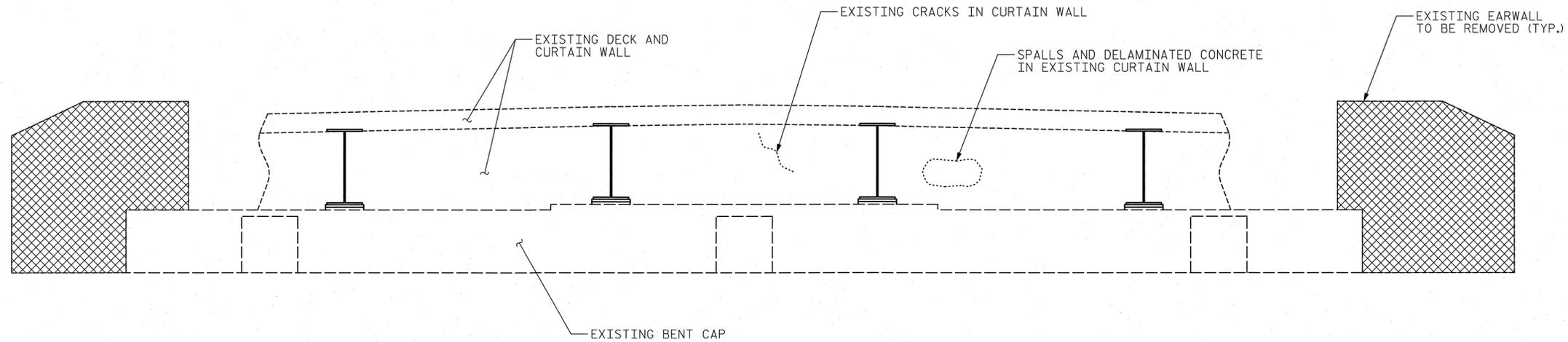


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**PLAN OF EXISTING CAP**  
END BENT 1 SHOWN, END BENT 2 SIMILAR



**ELEVATION OF EXISTING CAP**  
END BENT 1 SHOWN, END BENT 2 SIMILAR

**NOTE:**  
FIELD VERIFY DIMENSIONS PRIOR TO CONSTRUCTION.

PORTIONS OF EXISTING END BENT SHOWN IN CROSS-HATCHED AREAS SHALL BE REMOVED.

VERTICAL AND HORIZONTAL REINFORCING STEEL EXTENDING FROM THE END BENT CAP INTO THE EXISTING WINGWALLS SHALL BE CLEANED AND STRAIGHTENED. CUT EXISTING REINFORCING STEEL TO MAINTAIN REQUIRED CONCRETE COVER. PROVIDE MINIMUM 14" EXTENSION INTO THE PROPOSED WINGWALL.

BARS DAMAGED DURING THE CONCRETE REMOVAL SHALL BE REPLACED BY #6 DOWELS SECURED IN THE EXISTING END BENT CAP WITH EPOXY ADHESIVE AT NO ADDITIONAL PAYMENT.

THE #6 DOWEL LENGTH SHALL BE BASED ON A 9" EMBEDMENT INTO EXISTING CONCRETE AND MAY BE ADJUSTED BASED ON THE MINIMUM EMBEDMENT SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

EXISTING ANCHOR BOLTS ARE TO BE CUT FLUSH WITH THE EXISTING TOP OF CAP.

THE EXISTING CONCRETE AROUND ANCHOR BOLTS AND BEARING ASSEMBLIES SHALL BE REMOVED, USING HAND TOOLS, AS NECESSARY TO FREE ANCHOR BOLTS AND BEARING ASSEMBLIES. THE CONTRACTOR SHALL EXERCISE CARE DURING THE REMOVAL OF EXISTING CONCRETE TO INSURE THAT EXISTING GIRDERS, BEARING ASSEMBLIES AND CURTAIN WALL STEEL REMAIN UNDAMAGED.

FOR PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

REPAIR ALL CRACKS IN EXISTING END BENT CURTAIN WALLS WITH EPOXY RESIN INJECTION. SEE SPECIAL PROVISIONS.

REPAIR SPALLED AND DELAMINATED CONCRETE SURFACES WITH EPOXY MORTAR REPAIR. SEE SPECIAL PROVISIONS.

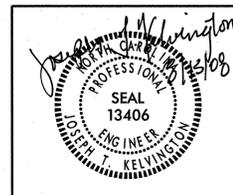
FOR MODIFICATION OF SUBSTRUCTURE, SEE SPECIAL PROVISIONS.

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PROJECT NO. 41926.11 (B-5020)  
JOHNSTON COUNTY  
STATION: 18+42.00 -L-  
BRIDGE NO. 67 ON U.S. 701

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT  
CONCRETE REMOVAL

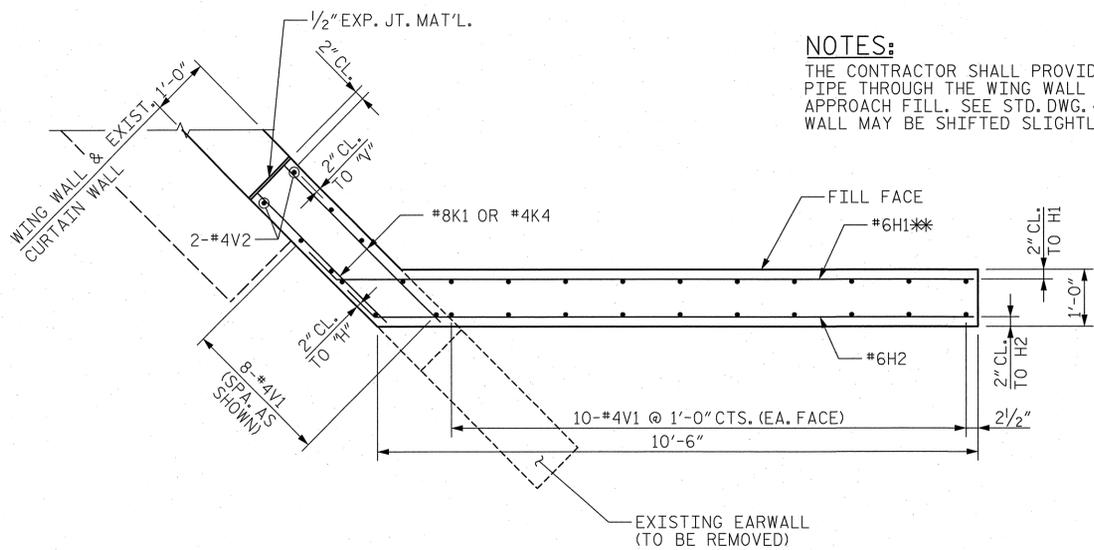


REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

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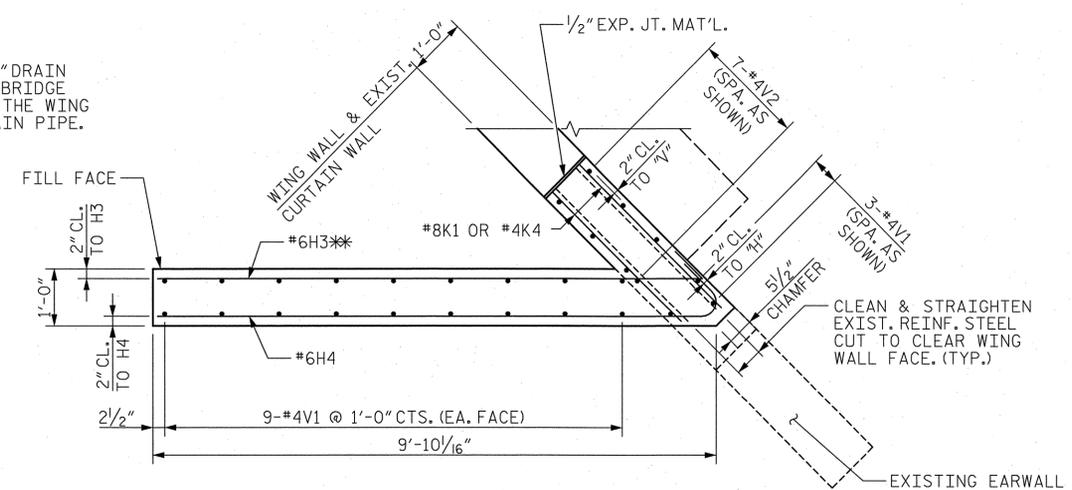
DRAWN BY: J. L. HENNEKES DATE: 03-12-08  
CHECKED BY: J. T. KELVINGTON DATE: 03-12-08





**PLAN OF WING - W1**  
 NOTE: LEFT WING @ END BENT 1  
 RIGHT WING @ END BENT 2

**NOTES:**  
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILL. SEE STD. DWG. 422.10. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR DRAIN PIPE.

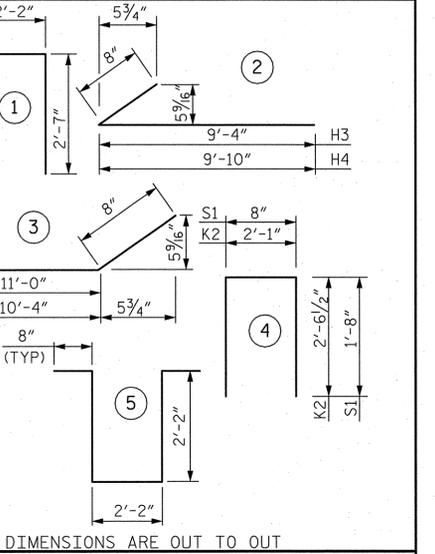


**PLAN OF WING - W2**  
 NOTE: RIGHT WING @ END BENT 1  
 LEFT WING @ END BENT 2

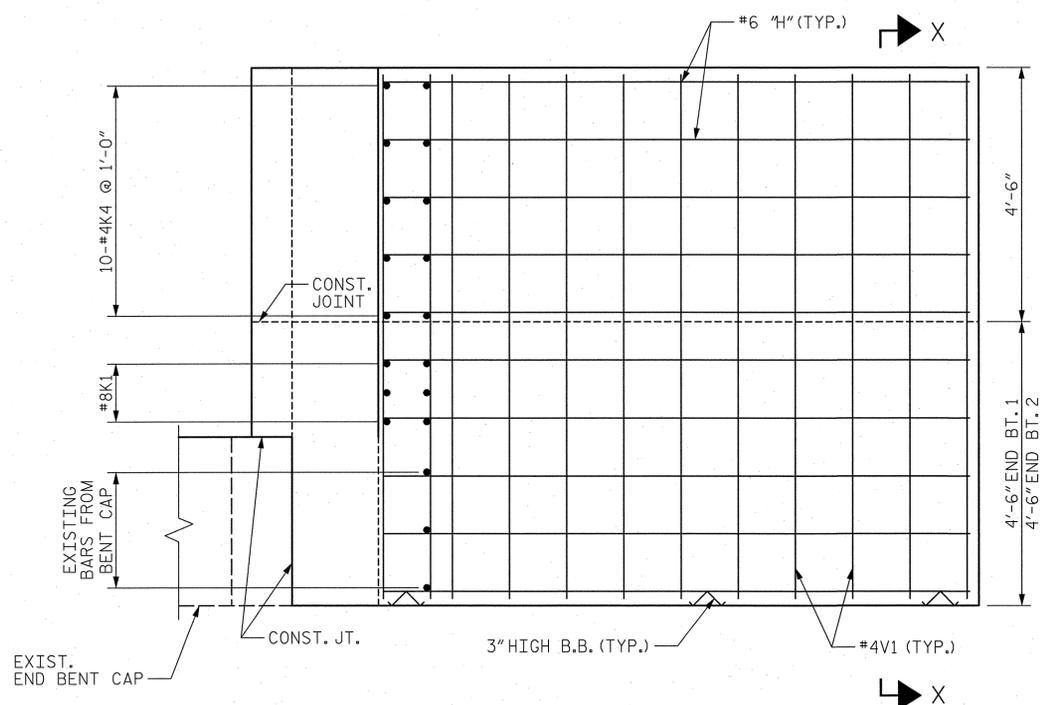
NOTE: #6H4 & #6H3 SHALL HAVE STANDARD BAR BEND DIAMETER

\*\* TURN HOOK ON #6 H1 AND #6H3 TO CLEAR EXIST. CAP AS REQ'D.

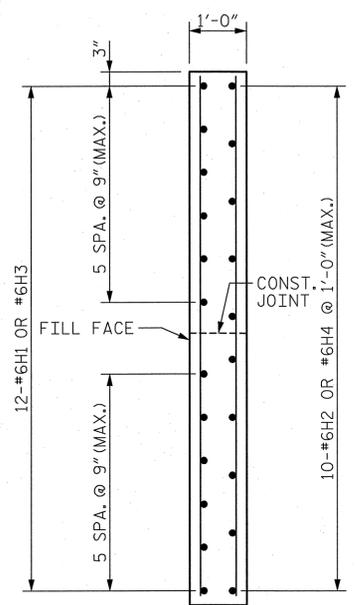
BILL OF MATERIAL FOR ONE END BENT (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#4	1	5'- 5"	58
D1	57	#6	STR	1'- 6"	128
H1	12	#6	3	11'- 8"	210
H2	10	#6	3	11'- 0"	165
H3	12	#6	2	10'- 10"	198
H4	10	#6	2	10'- 6"	158
K1	6	#8	STR	56'- 4"	902
K2	12	#4	4	7'- 2"	58
K3	12	#4	5	7'- 10"	63
K4	20	#4	STR	2'- 10"	38
S1	114	#4	4	4'- 0"	305
V1	49	#4	STR	8'- 8"	284
V2	9	#4	STR	7'- 1"	43
REINFORCING STEEL				LBS.	2610
CLASS A CONCRETE BREAKDOWN					
POUR 1 CAP AND WINGWALLS				C. Y.	7.6
POUR 2 BRIDGE SEATS AND WINGWALLS				C. Y.	5.3
CLASS A CONCRETE				C. Y.	12.9



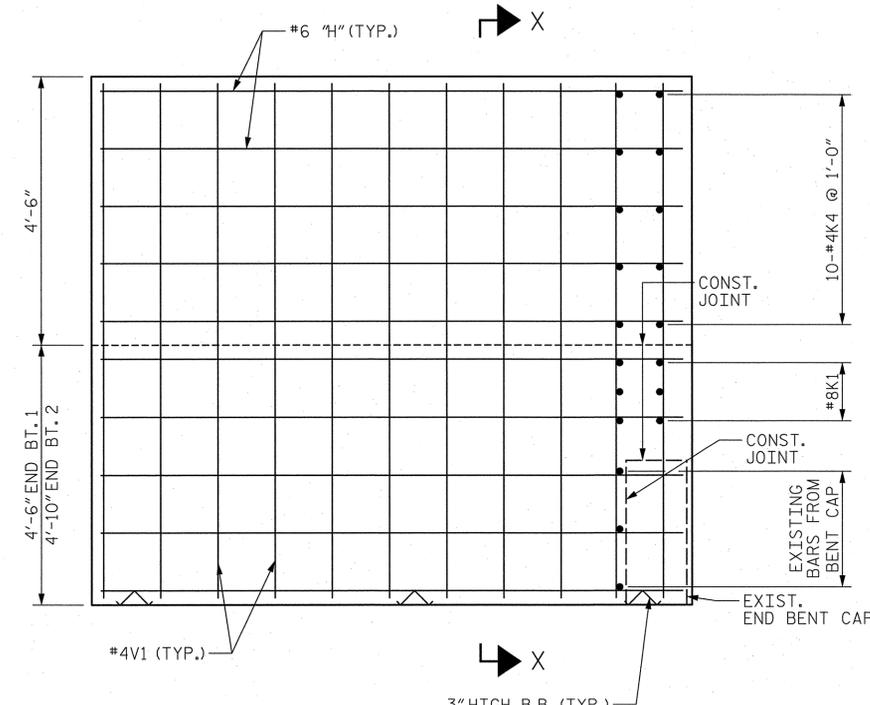
ALL BAR DIMENSIONS ARE OUT TO OUT



**ELEVATION OF WING - W1**



**SECTION X-X**

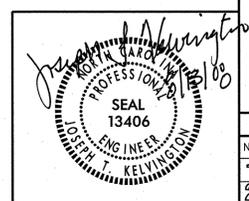


**ELEVATION OF WING - W2**

**REINFORCING FOR TURNED BACK WING**  
 END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. 41926.1.1 (B-5020)  
 JOHNSTON COUNTY  
 STATION: 18+42.00 -L-  
 BRIDGE NO. 67 ON U.S. 701

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WINGWALL MODIFICATIONS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

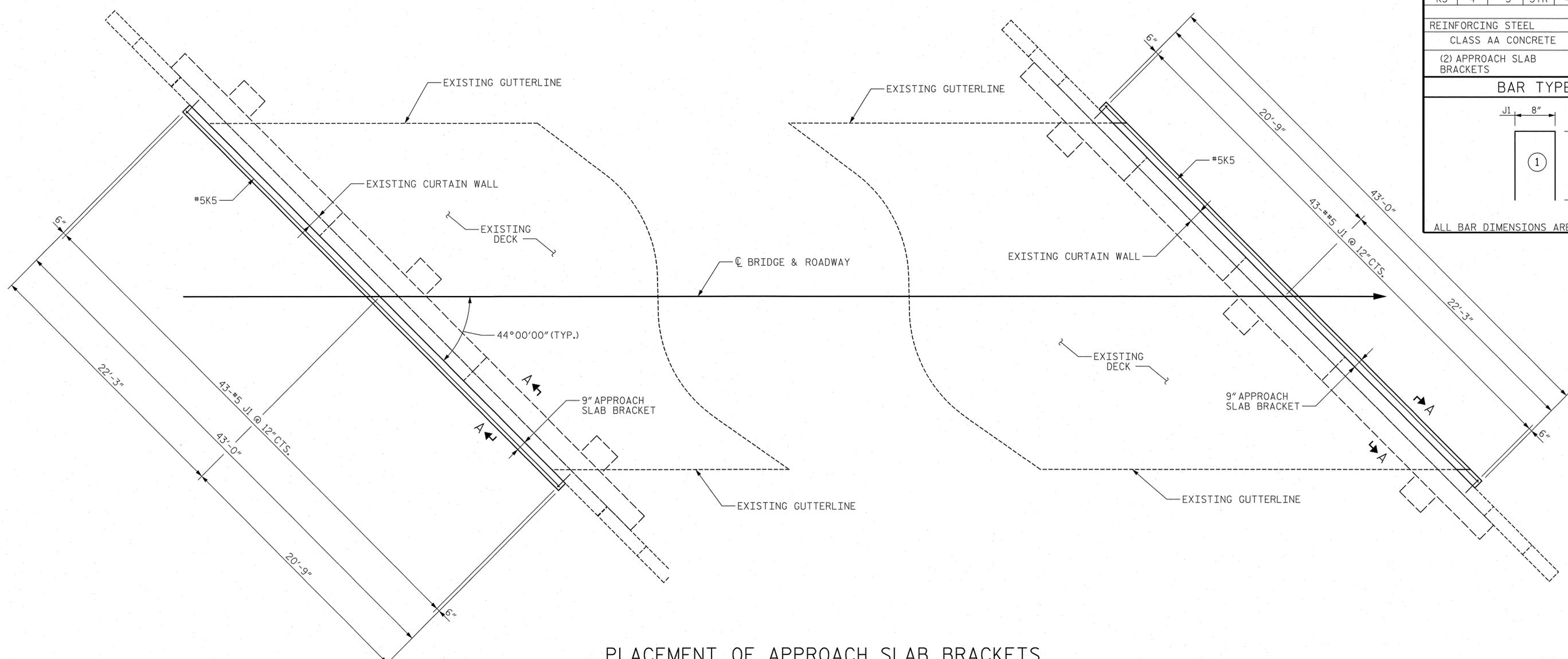


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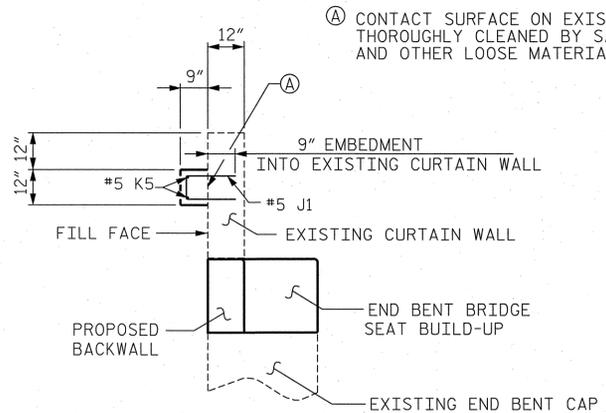
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 Fax. 919.851.7024  
 www.stantec.com

DRAWN BY: J. L. HENNEKES DATE: 03-12-08  
 CHECKED BY: J. T. KELVINGTON DATE: 03-12-08

BILL OF MATERIAL					
FOR TWO APPROACH					
SLAB BRACKETS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
J1	86	#5	1	3'- 4"	299
K5	4	#5	STR	41'-0"	171
REINFORCING STEEL				LBS.	470
CLASS AA CONCRETE					
(2) APPROACH SLAB BRACKETS				C. Y.	2.4
BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT					



PLACEMENT OF APPROACH SLAB BRACKETS



(A) CONTACT SURFACE ON EXISTING CURTAIN WALL SHALL BE THOROUGHLY CLEANED BY SAND BLASTING TO REMOVE ALL SOIL AND OTHER LOOSE MATERIALS PRIOR TO CONCRETE PLACEMENT.

NOTES

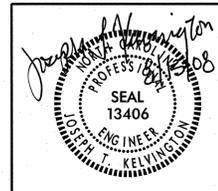
- APPROACH SLAB BRACKET SHOWN IS TO BE CONSTRUCTED IF A PAVEMENT REST IS NOT FOUND TO EXIST ON THE EXISTING CURTAIN WALL.
- CONTRACTOR SHALL NOT BE ELIGIBLE FOR ADDITIONAL COMPENSATION TO CONSTRUCT APPROACH SLAB BRACKETS AS SHOWN. COST FOR THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR BRIDGE APPROACH SLABS.
- DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION.
- THE #5J1 BARS SHALL BE SECURED INTO THE EXISTING CONCRETE WITH EPOXY ADHESIVE.
- THE LEG LENGTH OF THE #5J1 BAR IS BASED ON A 9" EMBEDMENT INTO THE EXISTING CONCRETE AND MAY BE ADJUSTED BASED ON THE MINIMUM EMBEDMENT SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

PROJECT NO. 41926.1.1 (B-5020)  
 JOHNSTON COUNTY  
 STATION: 18+42.00 -L-  
 BRIDGE NO. 67 ON U.S. 701

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT  
 APPROACH SLAB BRACKETS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			39



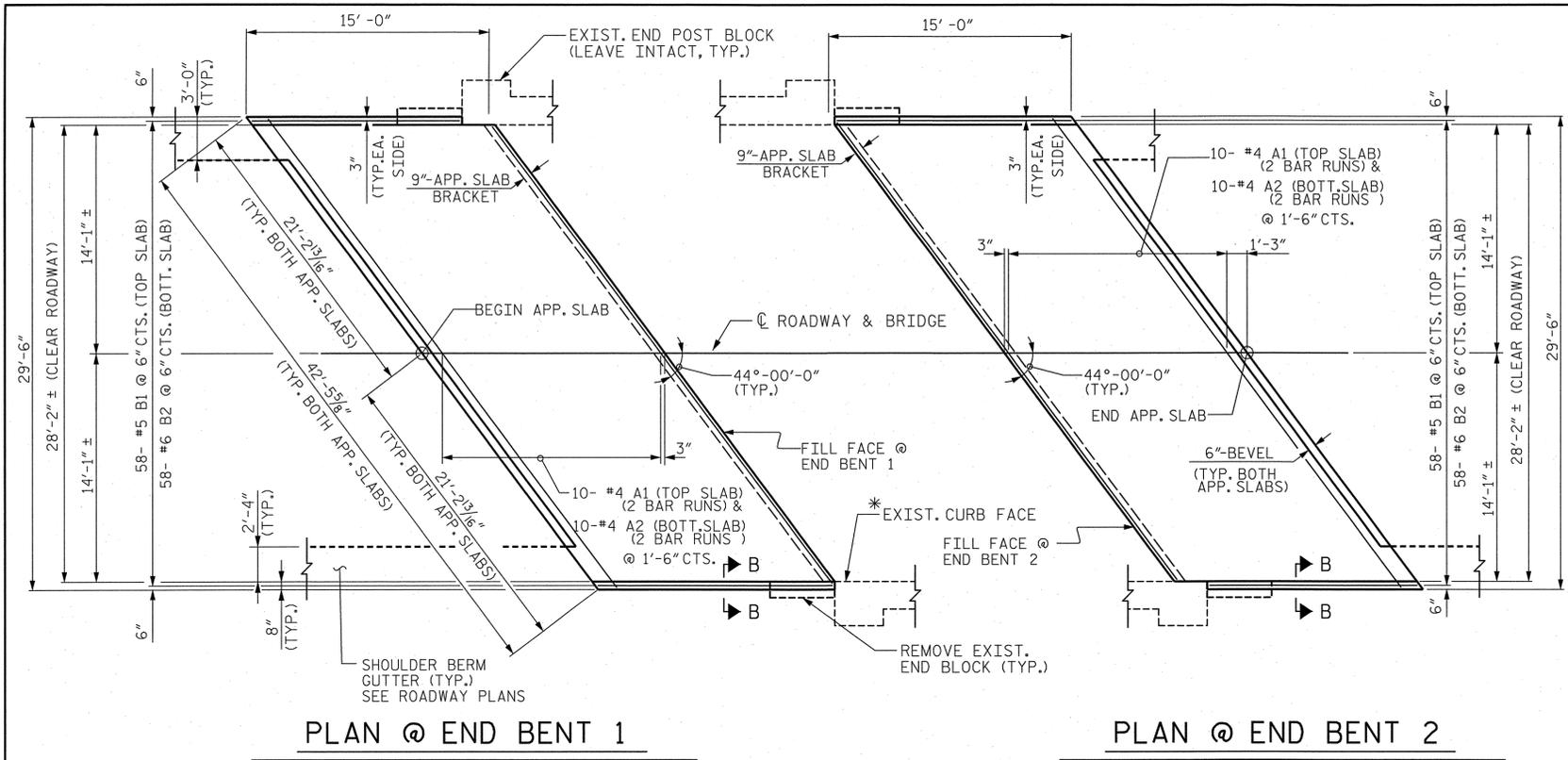
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SECTION A-A

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 CHECKED BY: J. T. KELVINGTON DATE: 03-12-08

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PLAN @ END BENT 1

PLAN @ END BENT 2

\* MATCH CURB ON APPROACH SLAB TO EXISTING FACE AND EXISTING END POST BLOCK (TYP.)

NOTES

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING FABRIC, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE STD. DWG.422.10.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE STD. DWG.422.10 .

THE 6" COMP. A.B.C. SHALL EXTEND 10'-0" BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB. ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

THE 6" BEVEL AT THE END OF THE APPROACH SLAB SHALL EXTEND BETWEEN LEFT SIDE AND RIGHT SIDE SHOULDER BERM GUTTER.

SLOPE TOP OF CONCRETE APPROACH SLAB TO MATCH PROPOSED GRADE LINE PROFILE (SEE RDWY PLANS) AND EXISTING CONCRETE DECK.

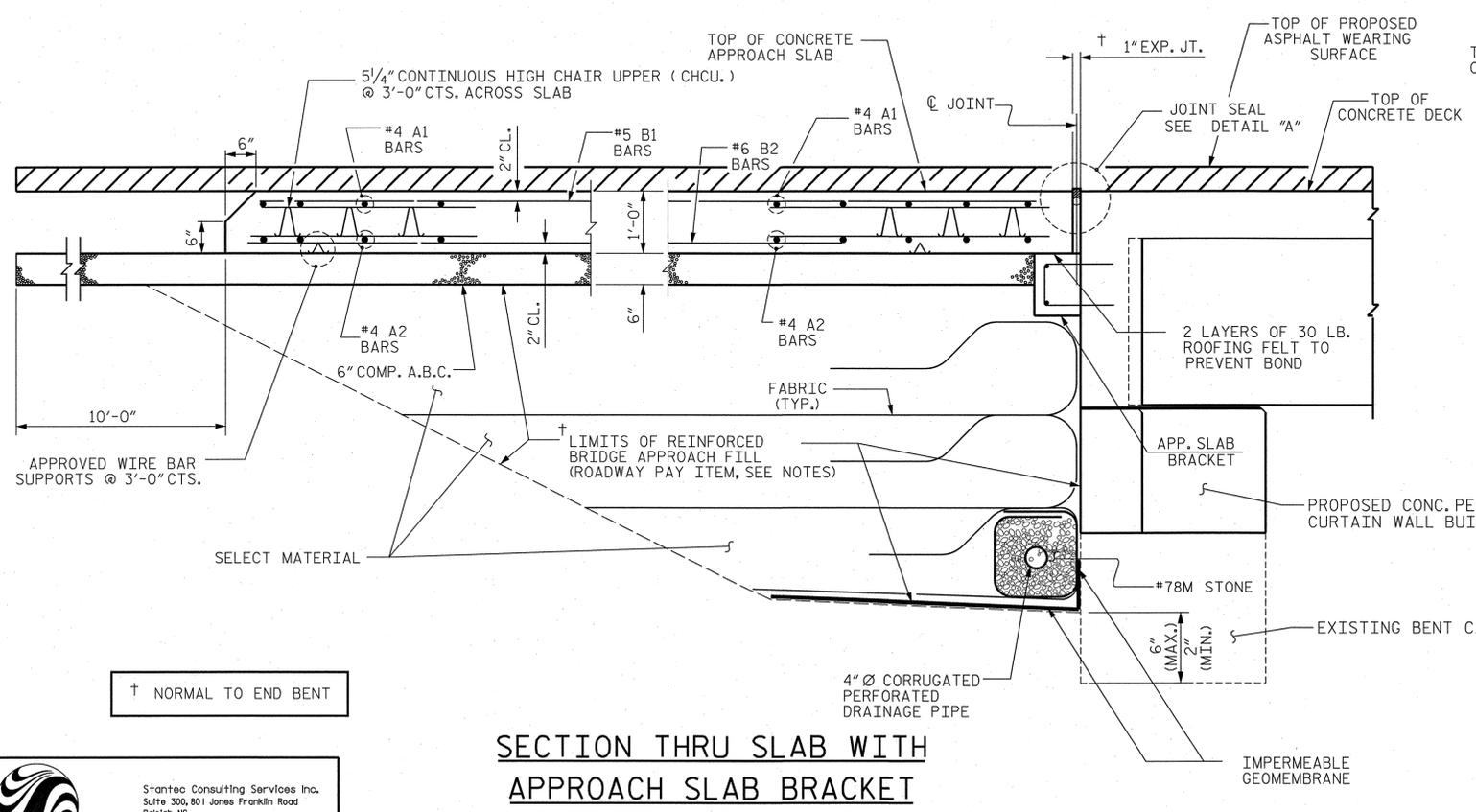
APPROACH SLAB QUANTITIES SHOWN ARE REQUIRED FOR SLAB SUPPORTED ON PROPOSED APPROACH SLAB BRACKET.

CONTRACTOR SHALL VERIFY ALL FIELD DIMENSIONS.

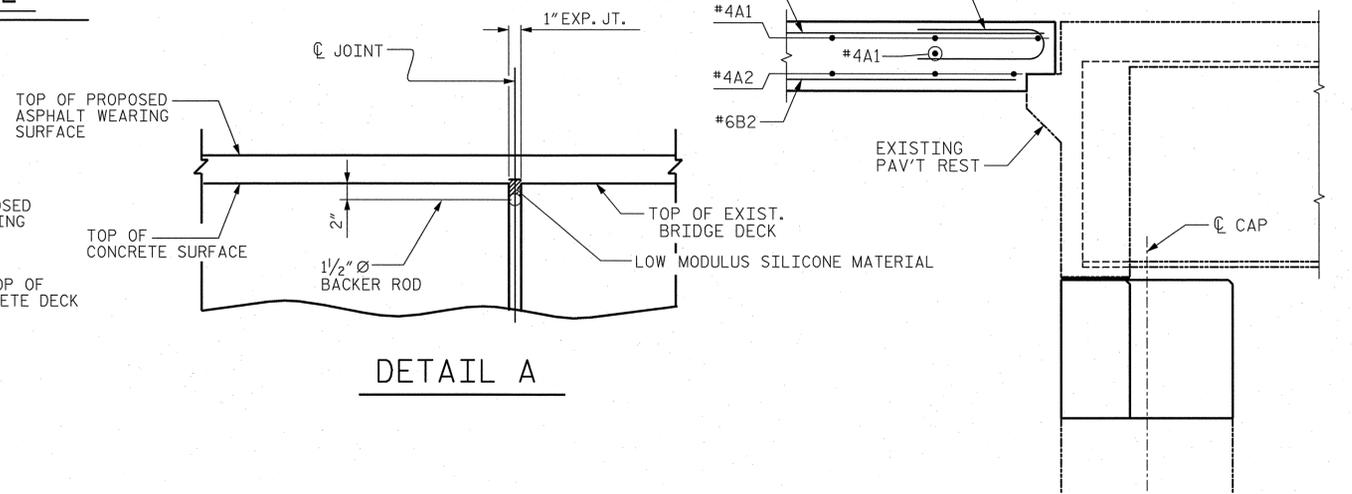
BILL OF MATERIAL					
ONE APP. SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	20	#4	STR	20'-0"	294
A2	20	#4	STR	20'-10"	208
*B1	58	#5	STR	14'-0"	889
B2	58	#6	STR	14'-3"	1236
REINFORCING STEEL				lbs.	1933
*EPOXY COATED REINFORCING STEEL				lbs.	1040
CLASS AA CONCRETE					
SLAB				C. Y.	16.2
TOTAL CONCRETE				C. Y.	16.2

BAR TYPES		SPLICE CHART		
BAR SIZE	EPOXY COATED	UNCOATED		
#4	2'-0"	1'-9"		
#5	2'-6"	2'-2"		
#6	3'-10"	2'-7"		

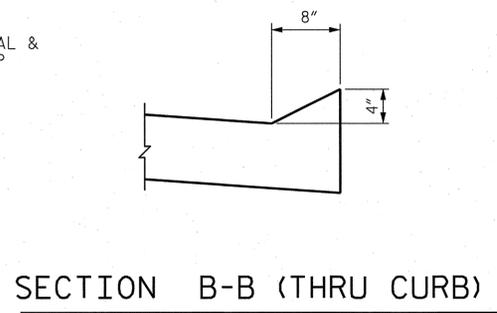


SECTION THRU SLAB WITH APPROACH SLAB BRACKET



DETAIL A

ALTERNATE SECTION THRU SLAB (SLAB SUPPORTED ON EXISTING PAV'T REST)

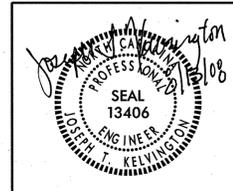


SECTION B-B (THRU CURB)

PROJECT NO. 41926.1.1 (B-5020)  
 JOHNSTON COUNTY  
 STATION: 18+42.00 -L-  
 BRIDGE NO. 67 ON U.S. 701

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			39



NOT TO SCALE

Us:\171000730\Transportation\design\517-#67-Structures\Drawings\B-5020-67.dgn 8/11/2008 7:50:00 AM #JSEB\$

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 Tel. 919.851.6866  
 Fax. 919.851.7024  
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DRAWN BY: J. L. HENNEKES DATE: 03-12-08  
 CHECKED BY: J. T. KELVINGTON DATE: 03-12-08

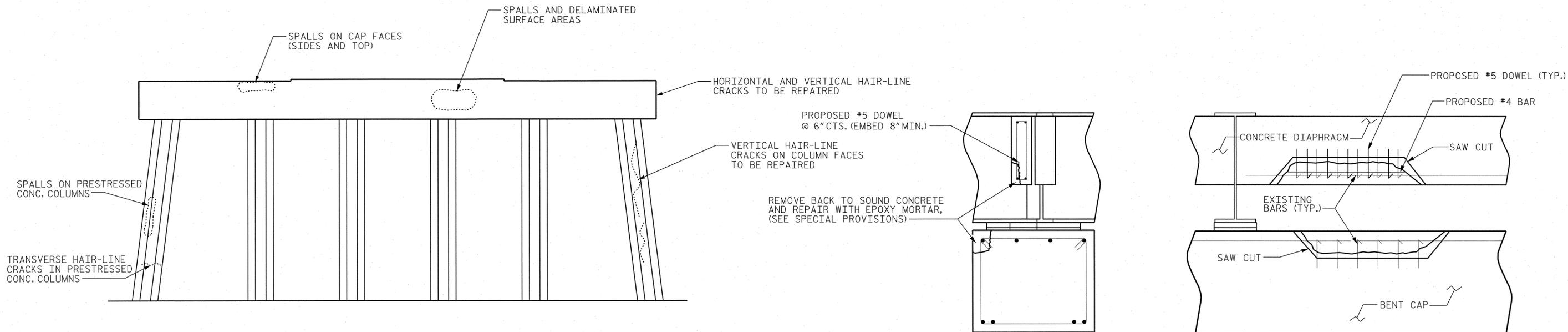
**NOTE**

REPLACEMENT OF EXISTING HORIZONTAL BAR WITH #4 BAR AND #5 DOWELS AS SHOWN IN TYPICAL BENT & DIAPHRAGM REPAIR DETAIL IS INCLUDED UNDER THE CONTRACT PAY ITEM, EPOXY MORTAR REPAIRS.

SAWCUT 1/4" - 1/2" DEEP AROUND ALL SPALLS.

HAIR-LINE CRACKS ARE TO BE REPAIRED WITH EPOXY RESIN INJECTION. SEE SPECIAL PROVISIONS.

FOR EPOXY MORTAR REPAIR, SEE SPECIAL PROVISIONS.



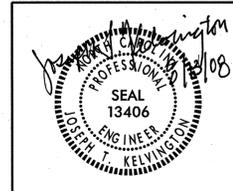
SECTION  
ELEVATION  
TYPICAL BENT & DIAPHRAGM REPAIR DETAIL

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PROJECT NO. 41926.1.1 (B-5020)  
JOHNSTON COUNTY  
 STATION: 18+42.00 -L-  
 BRIDGE NO. 67 ON U.S. 701

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

INTERIOR BENT  
 REPAIRS

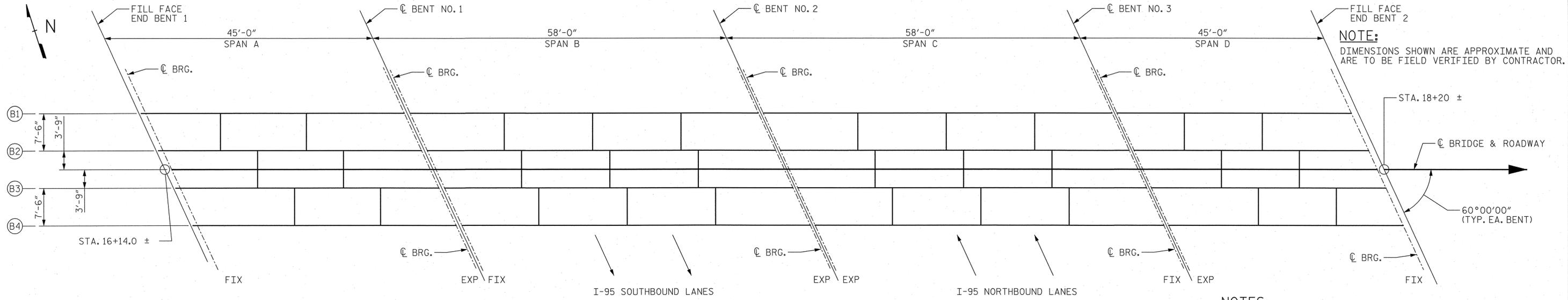


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			39

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DRAWN BY : J. L. HENNEKES DATE : 03-12-08  
 CHECKED BY : J. T. KELVINGTON DATE : 03-12-08



**STRUCTURAL STEEL PLAN**

**JACKING REQUIREMENTS:**

CONTRACTOR SHALL RAISE (JACK) BRIDGE SPANS SEQUENTIALLY ONE SPAN AT A TIME IN A PREDETERMINED ORDER. SIMULTANEOUS JACKING OF BRIDGE WILL NOT BE PERMITTED.

CONTRACTOR SHALL SUBMIT FIVE (5) COMPLETE SETS OF PLANS, PROCEDURES, DETAILS, AND DESIGN CALCULATIONS FOR JACKING BRIDGE SPANS TO THE ENGINEER FOR REVIEW AND APPROVAL.

PLANS AND CALCULATIONS SHALL BE SEALED BY A REGISTERED N.C. PROFESSIONAL ENGINEER.

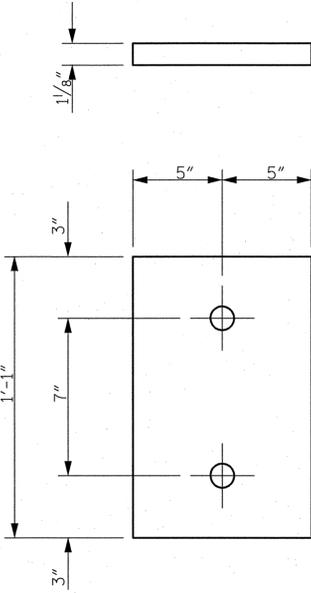
SPANS SHALL BE RAISED IN 2" MAXIMUM LIFTS.

SPANS SHALL BE BLOCKED WITH THE COMPLETION OF EACH LIFT.

SPANS SHALL BE LIFTED UNIFORMLY TO PREVENT DAMAGE TO SUPERSTRUCTURE ELEMENTS THAT MAY BE CAUSED BY DIFFERENTIAL DISPLACEMENTS.

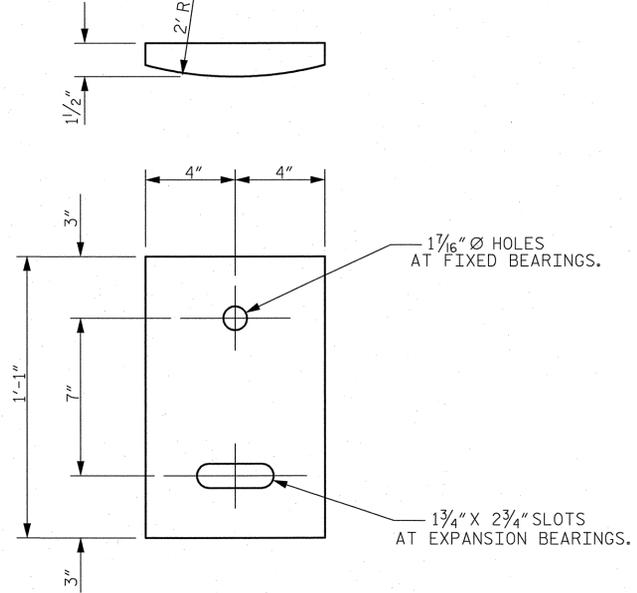
FOR TRAFFIC CONTROL, SEE TRAFFIC CONTROL PLANS.

CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PART OF THE EXISTING STRUCTURE THAT MAY OCCUR DURING JACKING OPERATIONS. CONTRACTOR SHALL REPAIR ALL DAMAGE DONE TO EXISTING STRUCTURES TO THE SATISFACTION OF THE ENGINEER AND AT CONTRACTOR'S EXPENSE.



**EXISTING MASONRY PLATE DETAIL**

(10" X 1 1/8" X 13" P)  
(RETAIN AT END BENTS AND ELIMINATE AT INTERIOR BENTS)



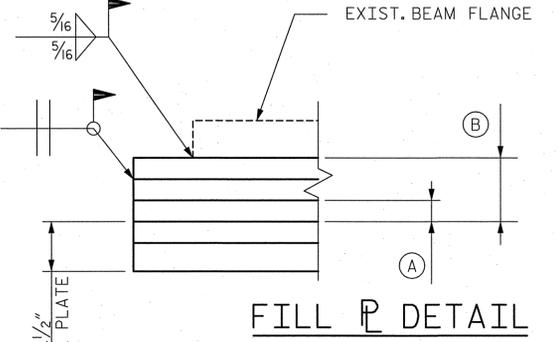
**EXISTING SOLE PLATE DETAIL**

(8" X 1 1/2" X 13" P)  
(RETAIN AT END BENTS AND REPLACE AT INTERIOR BENTS)

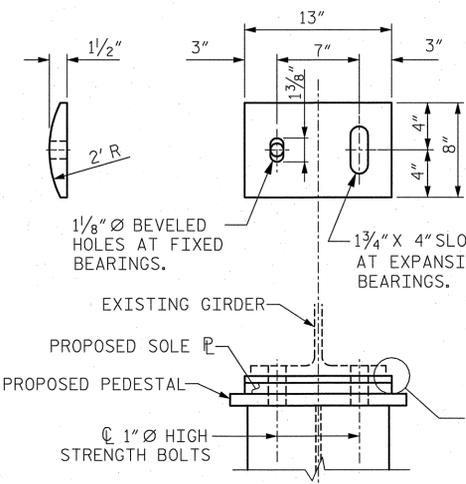
**NOTE**

FOR CONNECTION OF PROPOSED SOLE PLATE AND PEDESTAL, SEE BEARING ATTACHMENT DETAIL ON SHEET NO. S-2.

FOR SOLE PLATES AND MASONRY PLATES, SEE SPECIAL PROVISIONS.



**FILL P DETAIL**



**PROPOSED SOLE PLATE**

BENTS 1, 2 & 3  
(AS REQ'D BY THE ENGINEER)

**NOTES:**

EXISTING BRIDGE INFORMATION SHOWN ON THE PLANS IS THE BEST DATA CURRENTLY AVAILABLE. CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO VERIFY INFORMATION SHOWN ON THESE PLANS AND SHALL OBTAIN ALL OTHER EXISTING BRIDGE DATA NECESSARY FOR THE EXECUTION OF THE WORK. CONTRACTOR SHALL HAVE NO CLAIM AGAINST THE DEPARTMENT FOR ADDITIONAL COSTS OR DELAYS ARISING FROM DISCREPANCIES BETWEEN THE INFORMATION PRESENTED IN THESE PLANS AND ACTUAL SITE CONDITIONS.

ALL STRUCTURAL STEEL FOR PROPOSED SOLE PLATES AND FILL PLATES SHALL BE AASHTO M270 GRADE 36 AND SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM 1 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE INSTRUCTED ON THE PLANS AND SPECIAL PROVISIONS.

FILL PLATES SHALL BE FURNISHED WITH CURVED SOLE PLATES TO OBTAIN A TOTAL BEARING THICKNESS THAT IS EQUAL TO THE THICKNESS OF EXISTING SOLE PLATES AND MASONRY PLATES AT EACH SUPPORT LOCATION UP TO A MAXIMUM TOTAL THICKNESS OF 3 1/2". FILL PLATES SHALL HAVE THE SAME PLAN DIMENSIONS AS CURVED SOLE PLATES. SEE PEDESTAL NOTES ON SHEET S-2 WHEN EXISTING BEARING HEIGHTS EXCEED 3 1/2".

(A) MINIMUM THICKNESS OF FILL PLATES IS 1/4"

(B) MAXIMUM TOTAL THICKNESS OF FILL PLATES COMPOSED OF SINGLE PLATE OR MULTIPLE LAYERS OF PLATES SHALL NOT EXCEED 2"

ROLLED BEAM AND DIAPHRAGM SIZES WITHIN EACH SPAN MAY BE EXPECTED TO VARY.

EXISTING MASONRY PLATES AND SOLE PLATES AT END BENTS SHALL BE RETAINED, CLEANED, AND PAINTED FOR SEATING ON PROPOSED CAP BUILD-UPS. SEE SPECIAL PROVISIONS.

CONTRACTOR IS ADVISED OF THE FACT THAT EXISTING STRUCTURAL STEEL BRIDGE ELEMENTS MAY BE COATED WITH LEAD BASED PAINT.

CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY FOR PROPER HANDLING AND DISPOSAL OF LEAD BASED MATERIALS.

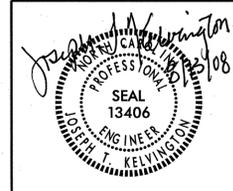
PROJECT NO. 41926.1.1 (B-5020)

JOHNSTON COUNTY

STATION: 17+20.00 ± -L-

BRIDGE NO. 109

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
EXISTING SUPERSTRUCTURE  
GIRDER LAYOUT



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			39

NOT TO SCALE

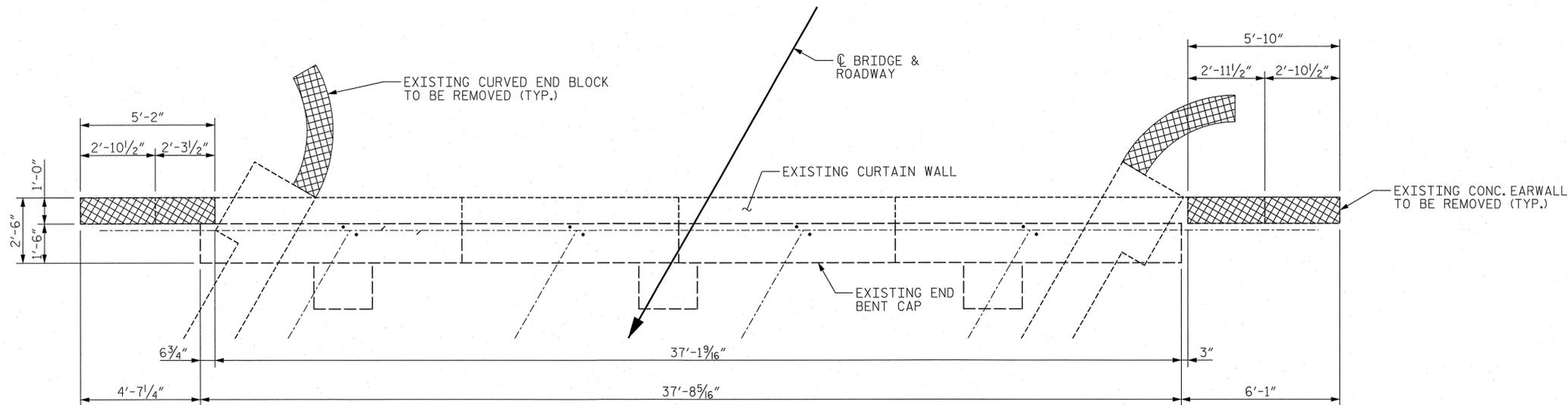
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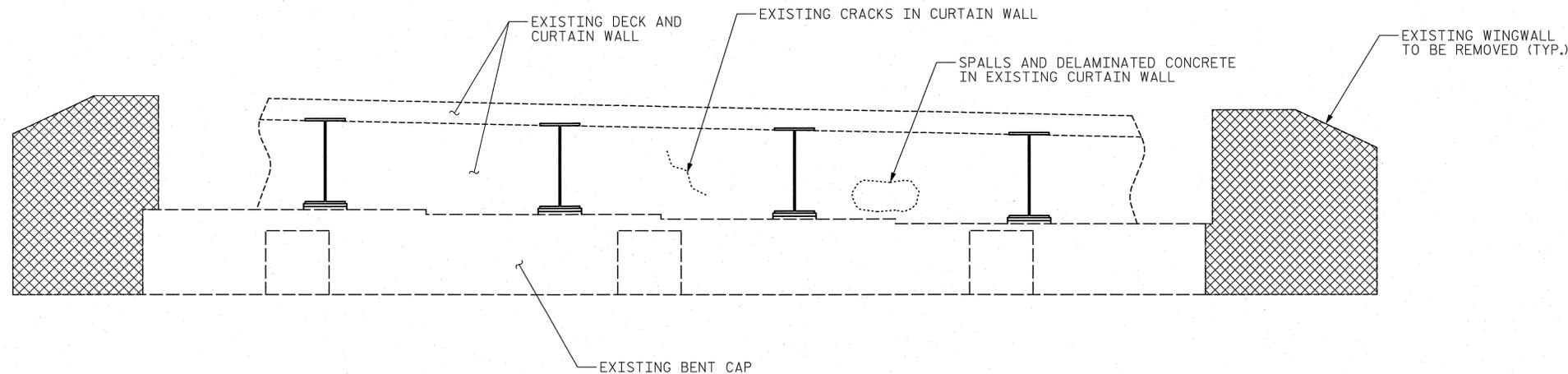
DRAWN BY: JBL JHENNEBES DATE: 03-06-08  
 CHECKED BY: J. T. R. DUDECKON DATE: 2-26-08







**PLAN OF EXISTING CAP**  
END BENT 1 SHOWN, END BENT 2 SIMILAR



**ELEVATION OF EXISTING CAP**  
END BENT 1 SHOWN, END BENT 2 SIMILAR

**NOTE:**  
FIELD VERIFY DIMENSIONS PRIOR TO CONSTRUCTION.

PORTIONS OF EXISTING END BENT SHOWN IN CROSS-HATCHED AREAS SHALL BE REMOVED.

VERTICAL AND HORIZONTAL REINFORCING STEEL EXTENDING FROM THE END BENT CAP INTO THE EXISTING WINGWALLS SHALL BE CLEANED AND STRAIGHTENED. CUT EXISTING REINFORCING STEEL TO MAINTAIN REQUIRED CONCRETE COVER. PROVIDE MINIMUM 14" EXTENSION INTO THE PROPOSED WINGWALL.

BARS DAMAGED DURING THE CONCRETE REMOVAL SHALL BE REPLACED BY #6 DOWELS SECURED IN THE EXISTING END BENT CAP WITH EPOXY ADHESIVE AT NO ADDITIONAL PAYMENT.

THE #6 DOWEL LENGTH SHALL BE BASED ON A 9" EMBEDMENT INTO EXISTING CONCRETE AND MAY BE ADJUSTED BASED ON THE MINIMUM EMBEDMENT SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

EXISTING ANCHOR BOLTS ARE TO BE CUT FLUSH WITH THE EXISTING TOP OF CAP.

THE EXISTING CONCRETE AROUND ANCHOR BOLTS AND BEARING ASSEMBLIES SHALL BE REMOVED, USING HAND TOOLS, AS NECESSARY TO FREE ANCHOR BOLTS AND BEARING ASSEMBLIES. THE CONTRACTOR SHALL EXERCISE CARE DURING THE REMOVAL OF EXISTING CONCRETE TO INSURE THAT EXISTING GIRDERS, BEARING ASSEMBLIES AND CURTAIN WALL STEEL REMAIN UNDAMAGED.

FOR PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

REPAIR ALL CRACKS IN EXISTING END BENT CURTAIN WALLS WITH EPOXY RESIN INJECTION. SEE SPECIAL PROVISIONS.

REPAIR SPALLED AND DELAMINATED CONCRETE SURFACES WITH EPOXY MORTAR REPAIR. SEE SPECIAL PROVISIONS.

FOR MODIFICATION OF SUBSTRUCTURE, SEE SPECIAL PROVISIONS.

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PROJECT NO. 41926.1.1 (B-5020)

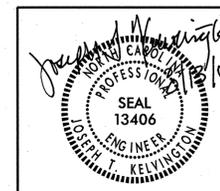
JOHNSTON COUNTY

STATION: 17+20.00 ± -L-

BRIDGE NO. 109

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT  
CONCRETE REMOVAL



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			39

NOT TO SCALE

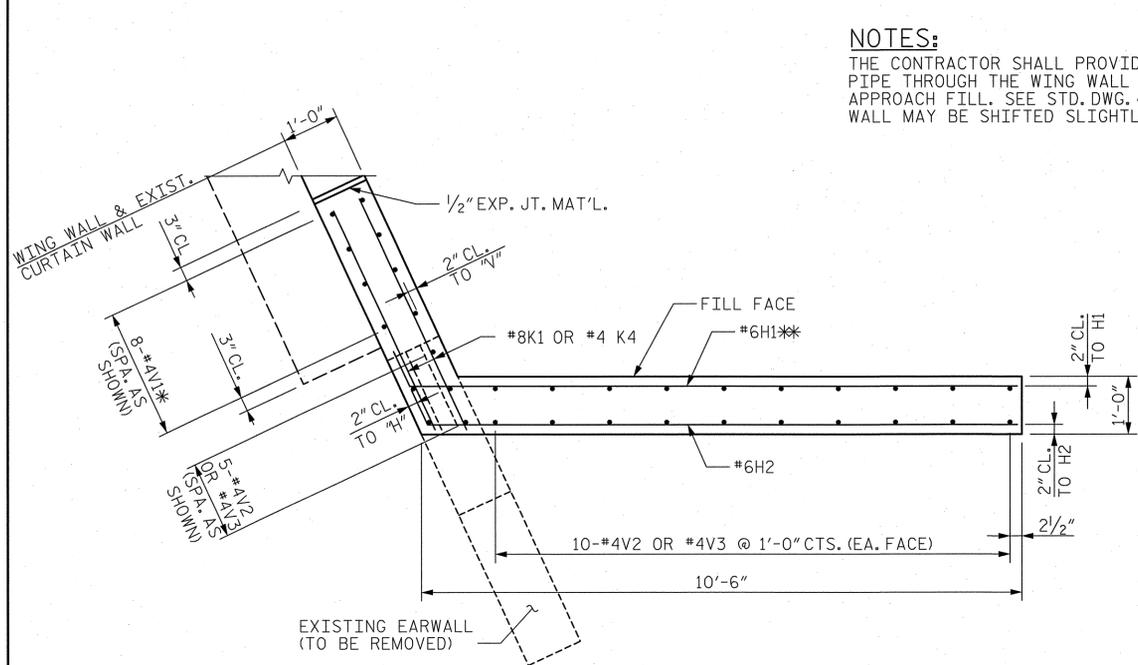


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DRAWN BY: JBL JHENNEBES DATE: 03-06-08  
CHECKED BY: J. T. REIDVINGRON DATE: 03-06-08



**NOTES:**  
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILL. SEE STD. DWG. 422.10. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR DRAIN PIPE.

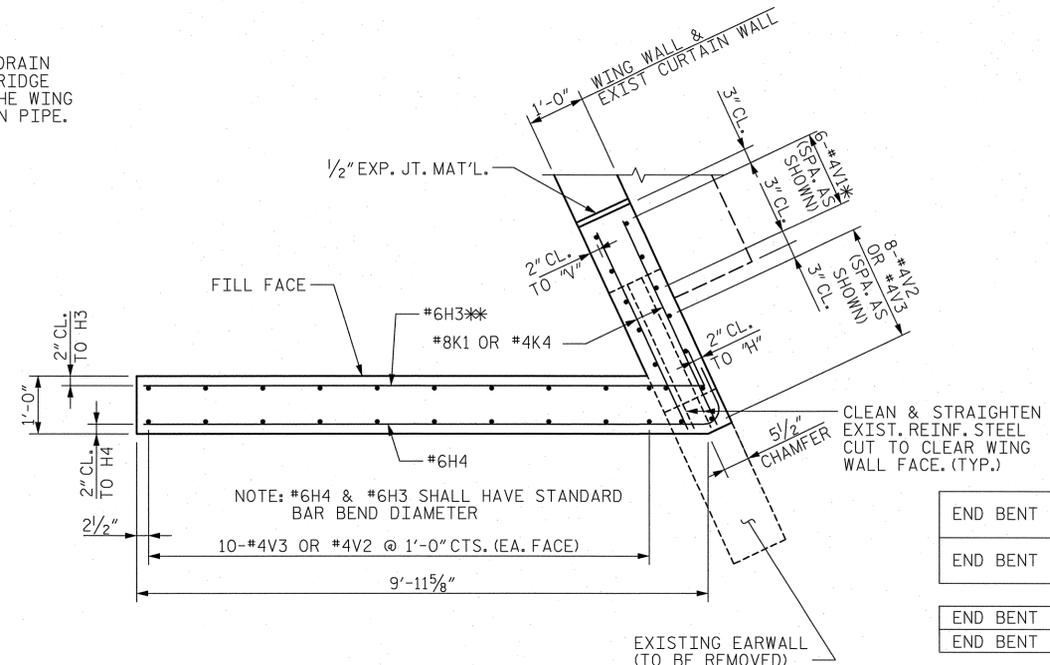


\* SECURE #4V1 IN EXISTING CONCRETE W/ EPOXY ADHESIVE ANCHORS

**PLAN OF WING - W1**

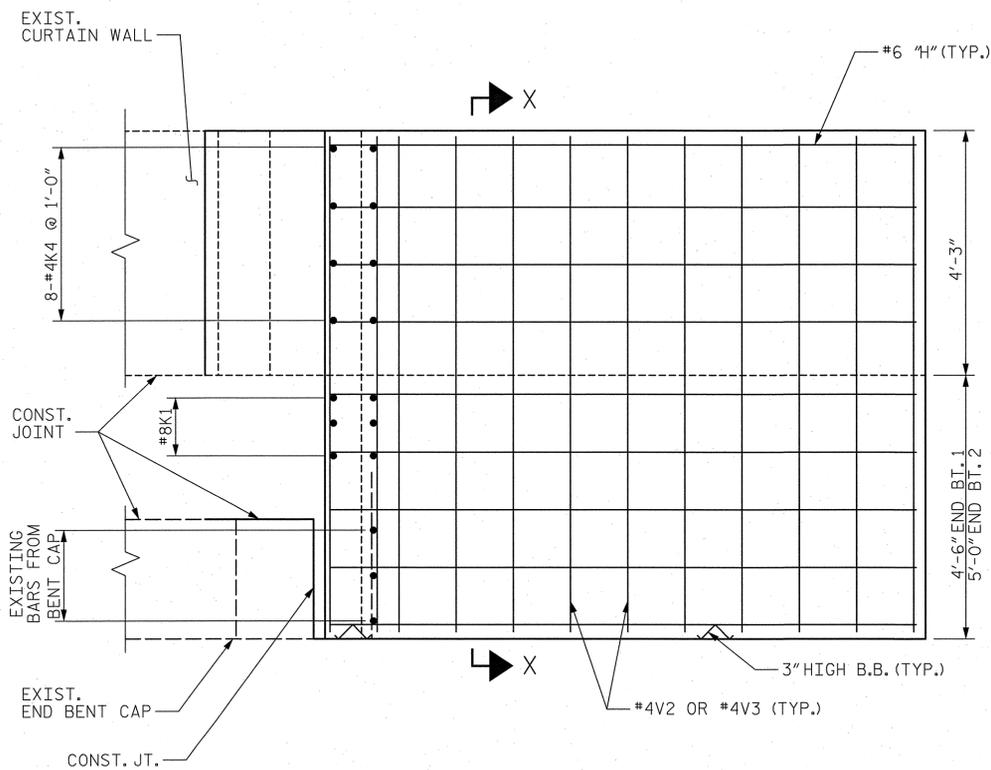
NOTE: LEFT WING @ END BENT 1  
 RIGHT WING @ END BENT 2

\*\* TURN HOOK ON #6 H1 AND #6H3 TO CLEAR EXIST. CAP AS REQ'D.

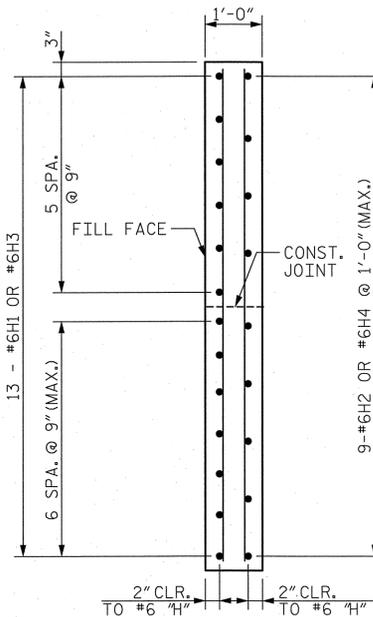


**PLAN OF WING - W2**

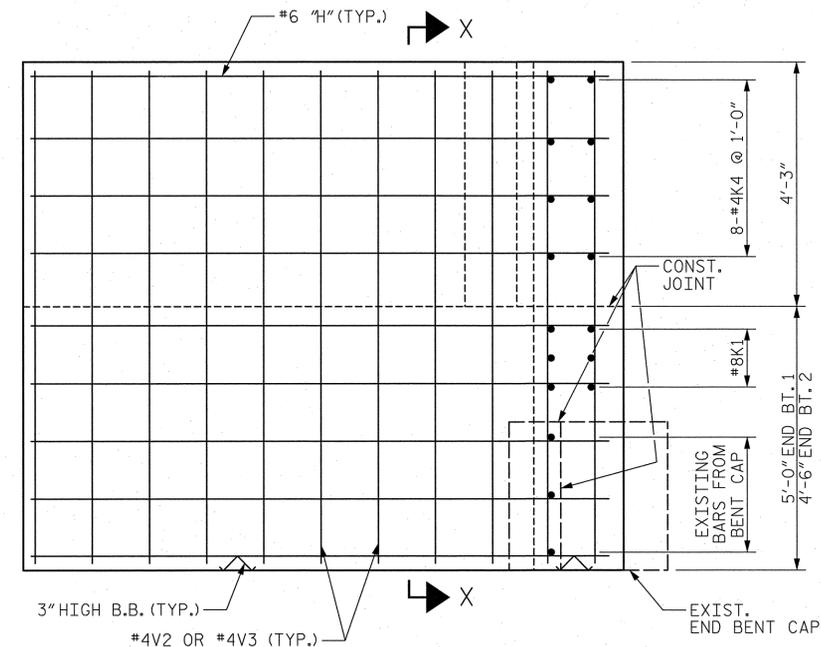
NOTE: RIGHT WING @ END BENT 1  
 LEFT WING @ END BENT 2



**ELEVATION OF WING - W1**



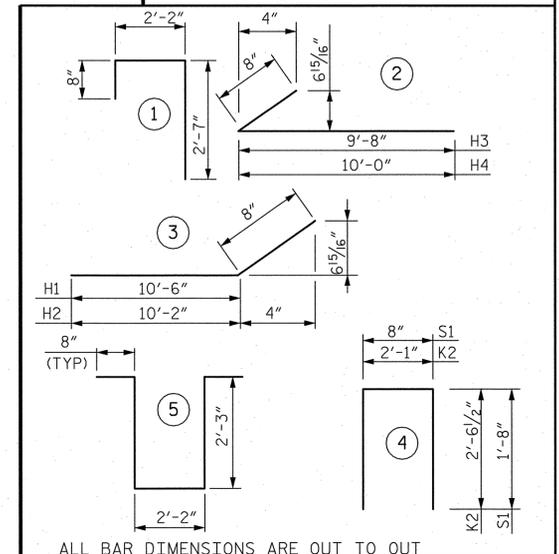
**SECTION X-X**



**ELEVATION OF WING - W2**

BILL OF MATERIAL					
FOR ONE END BENT (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#4		5'-5"	58
D1	43	#6	STR	1'-6"	97
H1	13	#6	3	11'-2"	218
H2	9	#6	3	10'-10"	146
H3	13	#6	2	10'-4"	202
H4	9	#6	2	10'-8"	144
K1	6	#8	STR	42'-11"	688
K2	12	#4	4	7'-2"	58
K3	12	#4	5	8'-0"	64
K4	16	#4	STR	2'-5"	26
S1	86	#4	4	4'-0"	230
V1	14	#4	STR	6'-10"	64
V2	25	#4	STR	8'-5"	141
V3	28	#4	STR	8'-11"	167
V2	28	#4	STR	8'-5"	157
V3	25	#4	STR	8'-11"	149
END BENT 1	REINFORCING STEEL			LBS.	2303
END BENT 2	REINFORCING STEEL			LBS.	2301
CLASS A CONCRETE BREAKDOWN					
POUR 1 CAP AND WINGWALLS				C. Y.	8.2
POUR 2 BRIDGE SEATS AND WINGWALLS				C. Y.	3.9
CLASS A CONCRETE				C. Y.	12.1

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. 41926.1.1 (B-5020)

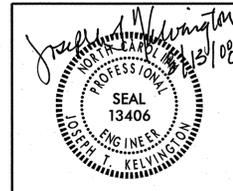
JOHNSTON COUNTY

STATION: 17+20.00 ± -L-

BRIDGE NO. 109

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT  
 WINGWALL MODIFICATIONS



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

SHEET NO. S-26  
 TOTAL SHEETS 39

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DRAWN BY: JBL JHENNEBES DATE: 03-06-08  
 CHECKED BY: J. T. REDDING DATE: 03-06-08

**REINFORCING FOR TURNED BACK WING**  
 END BENT 1 SHOWN, END BENT 2 SIMILAR





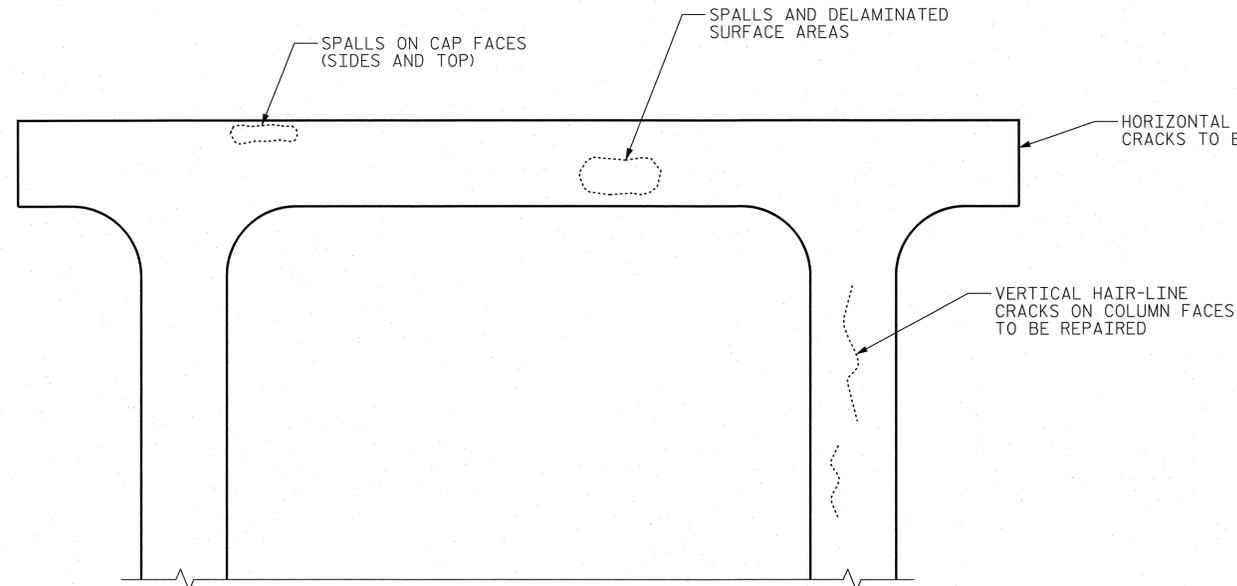
**NOTE**

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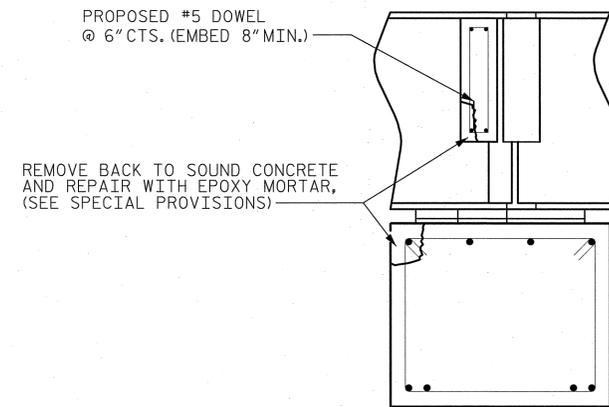
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HAIR-LINE CRACKS ARE TO BE REPAIRED WITH EPOXY RESIN INJECTION. SEE SPECIAL PROVISIONS.

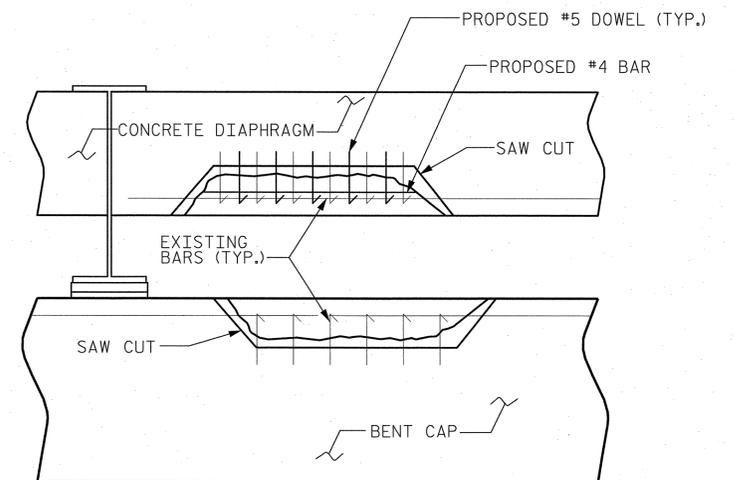
FOR EPOXY MORTAR REPAIR, SEE SPECIAL PROVISIONS.



TYPICAL INTERIOR BENT REPAIRS



SECTION



ELEVATION

TYPICAL BENT & DIAPHRAGM REPAIR DETAIL

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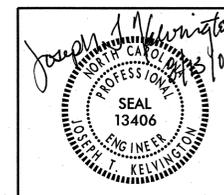
JOHNSTON COUNTY

STATION: 17+20.00 ± -L-

BRIDGE NO. 109

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

INTERIOR BENT REPAIRS

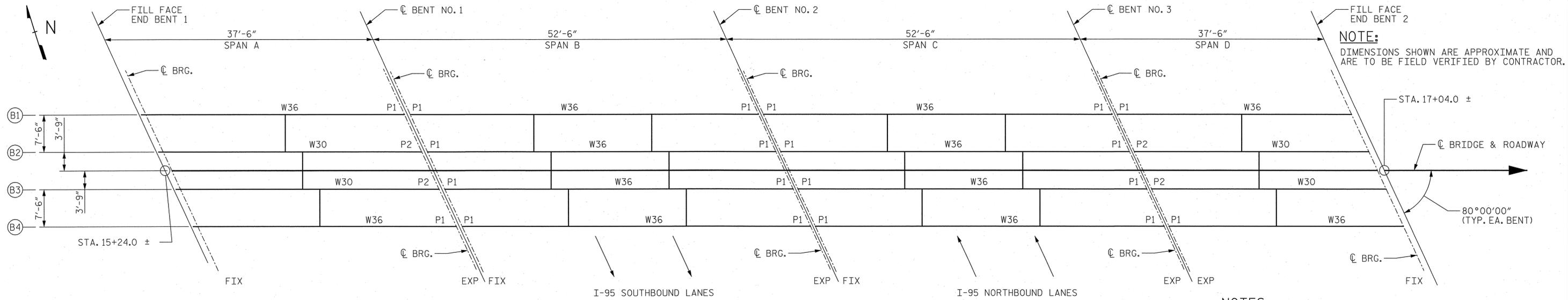


REVISIONS						SHEET NO. S-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			29

NOT TO SCALE



DRAWN BY: JBL JHENNEBES DATE: 03-06-08  
CHECKED BY: J. T. REID/DIGKON DATE: 03-06-08



**NOTE:**  
DIMENSIONS SHOWN ARE APPROXIMATE AND ARE TO BE FIELD VERIFIED BY CONTRACTOR.

**STRUCTURAL STEEL PLAN**

**JACKING REQUIREMENTS:**

CONTRACTOR SHALL RAISE (JACK) BRIDGE SPANS SEQUENTIALLY ONE SPAN AT A TIME IN A PREDETERMINED ORDER. SIMULTANEOUS JACKING OF BRIDGE WILL NOT BE PERMITTED.

CONTRACTOR SHALL SUBMIT FIVE (5) COMPLETE SETS OF PLANS, PROCEDURES, DETAILS, AND DESIGN CALCULATIONS FOR JACKING BRIDGE SPANS TO THE ENGINEER FOR REVIEW AND APPROVAL.

PLANS AND CALCULATIONS SHALL BE SEALED BY A REGISTERED N.C. PROFESSIONAL ENGINEER.

SPANS SHALL BE RAISED IN 2" MAXIMUM LIFTS.

SPANS SHALL BE BLOCKED WITH THE COMPLETION OF EACH LIFT.

SPANS SHALL BE LIFTED UNIFORMLY TO PREVENT DAMAGE TO SUPERSTRUCTURE ELEMENTS THAT MAY BE CAUSED BY DIFFERENTIAL DISPLACEMENTS.

FOR TRAFFIC CONTROL, SEE TRAFFIC CONTROL PLANS.

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**NOTES:**

EXISTING BRIDGE INFORMATION SHOWN ON THE PLANS IS THE BEST DATA CURRENTLY AVAILABLE. CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO VERIFY INFORMATION SHOWN ON THESE PLANS AND SHALL OBTAIN ALL OTHER EXISTING BRIDGE DATA NECESSARY FOR THE EXECUTION OF THE WORK. CONTRACTOR SHALL HAVE NO CLAIM AGAINST THE DEPARTMENT FOR ADDITIONAL COSTS OR DELAYS ARISING FROM DISCREPANCIES BETWEEN THE INFORMATION PRESENTED IN THESE PLANS AND ACTUAL SITE CONDITIONS.

ALL STRUCTURAL STEEL FOR PROPOSED SOLE PLATES AND FILL PLATES SHALL BE AASHTO M270 GRADE 36 AND SHALL BE PAINTED IN ACCORDANCE WITH SYSTEM 1 OF ARTICLE 442-7 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE INSTRUCTED ON THE PLANS AND SPECIAL PROVISIONS.

FILL PLATES SHALL BE FURNISHED WITH CURVED SOLE PLATES TO OBTAIN A TOTAL BEARING THICKNESS THAT IS EQUAL TO THE THICKNESS OF EXISTING SOLE PLATES AND MASONRY PLATES AT EACH SUPPORT LOCATION UP TO A MAXIMUM TOTAL THICKNESS OF 3 1/2". FILL PLATES SHALL HAVE THE SAME PLAN DIMENSIONS AS CURVED SOLE PLATES. SEE PEDESTAL NOTES ON SHEET S-2 WHEN EXISTING BEARING HEIGHTS EXCEED 3 1/2".

(A) MINIMUM THICKNESS OF FILL PLATES IS 1/4"

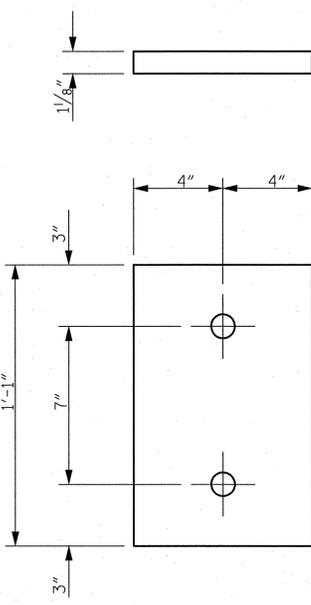
(B) MAXIMUM TOTAL THICKNESS OF FILL PLATES COMPOSED OF SINGLE PLATE OR MULTIPLE LAYERS OF PLATES SHALL NOT EXCEED 2"

ROLLED BEAM AND DIAPHRAGM SIZES WITHIN EACH SPAN MAY BE EXPECTED TO VARY.

EXISTING MASONRY PLATES AND SOLE PLATES AT END BENTS SHALL BE RETAINED, CLEANED, AND PAINTED FOR SEATING ON PROPOSED CAP BUILD-UPS. SEE SPECIAL PROVISIONS.

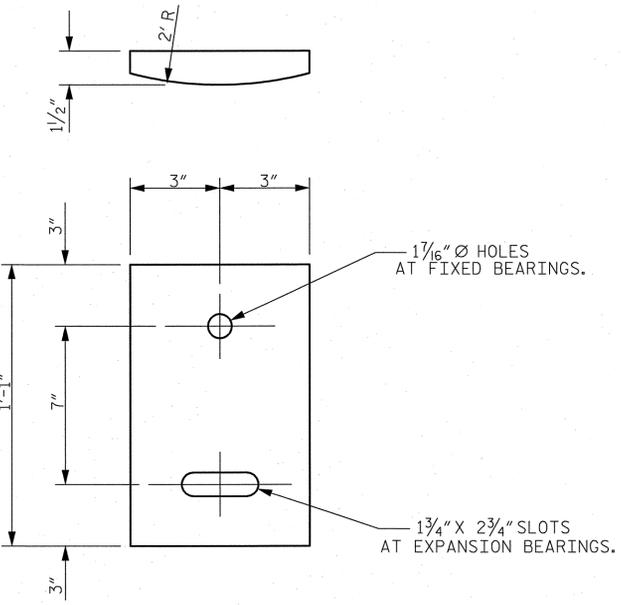
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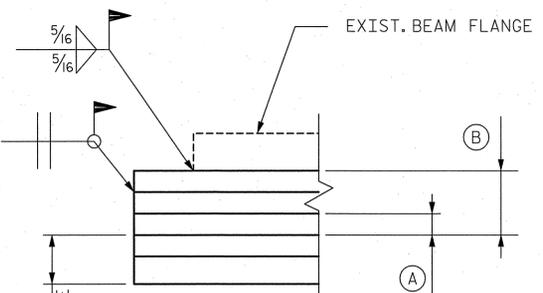
**EXISTING MASONRY PLATE DETAIL**

(8" X 1 1/8" X 13" P)  
(REPLACE AT END BENTS AS REQ'D. BY THE ENGINEER AND ELIMINATE AT INTERIOR BENTS)

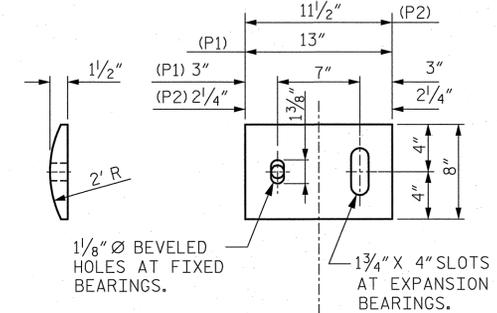


**EXISTING SOLE PLATE DETAIL**

(6" X 1 1/2" X 13" P)  
(REPLACE AT END BENTS AS REQ'D. BY THE ENGINEER AND REPLACE AT INTERIOR BENTS)



**FILL P DETAIL**



**PROPOSED SOLE PLATE**

BENTS 1, 2 & 3  
(AS REQ'D BY THE ENGINEER)

**NOTE**

FOR CONNECTION OF PROPOSED SOLE PLATE AND PEDESTAL, SEE BEARING ATTACHMENT DETAIL ON SHEET NO. S-2.

FOR SOLE PLATES AND MASONRY PLATES, SEE SPECIAL PROVISIONS.

NOT TO SCALE

PROJECT NO. 41926.1.1 (B-5020)

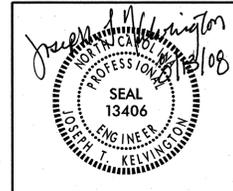
JOHNSTON COUNTY

STATION: 16+14.00 -L-

BRIDGE NO. 112 ON BAGLEY ROAD

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
EXISTING SUPERSTRUCTURE  
GIRDER LAYOUT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			39



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Fax. 919.851.7024  
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DRAWN BY: JBL JHENNIES DATE: 03-10-08  
CHECKED BY: J. T. REDVINGKON DATE: 03-10-08







**NOTE:**  
 FIELD VERIFY DIMENSIONS PRIOR TO CONSTRUCTION.

PORTIONS OF EXISTING END BENT SHOWN IN CROSS-HATCHED AREAS SHALL BE REMOVED.

VERTICAL AND HORIZONTAL REINFORCING STEEL EXTENDING FROM THE END BENT CAP INTO THE EXISTING WINGWALLS SHALL BE CLEANED AND STRAIGHTENED. CUT EXISTING REINFORCING STEEL TO MAINTAIN REQUIRED CONCRETE COVER. PROVIDE MINIMUM 14" EXTENSION INTO THE PROPOSED WINGWALL.

BARS DAMAGED DURING THE CONCRETE REMOVAL SHALL BE REPLACED BY #6 DOWELS SECURED IN THE EXISTING END BENT CAP WITH EPOXY ADHESIVE AT NO ADDITIONAL PAYMENT.

THE #6 DOWEL LENGTH SHALL BE BASED ON A 9" EMBEDMENT INTO EXISTING CONCRETE AND MAY BE ADJUSTED BASED ON THE MINIMUM EMBEDMENT SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

EXISTING ANCHOR BOLTS ARE TO BE CUT FLUSH WITH THE EXISTING TOP OF CAP.

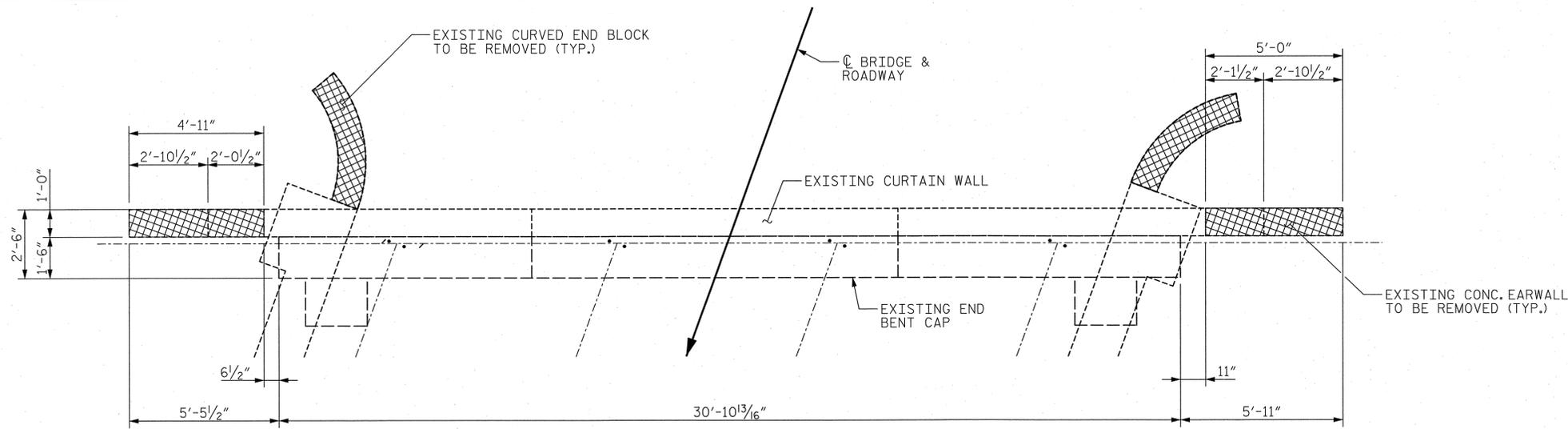
THE EXISTING CONCRETE AROUND ANCHOR BOLTS AND BEARING ASSEMBLIES SHALL BE REMOVED, USING HAND TOOLS, AS NECESSARY TO FREE ANCHOR BOLTS AND BEARING ASSEMBLIES. THE CONTRACTOR SHALL EXERCISE CARE DURING THE REMOVAL OF EXISTING CONCRETE TO INSURE THAT EXISTING GIRDERS, BEARING ASSEMBLIES AND CURTAIN WALL STEEL REMAIN UNDAMAGED.

FOR PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

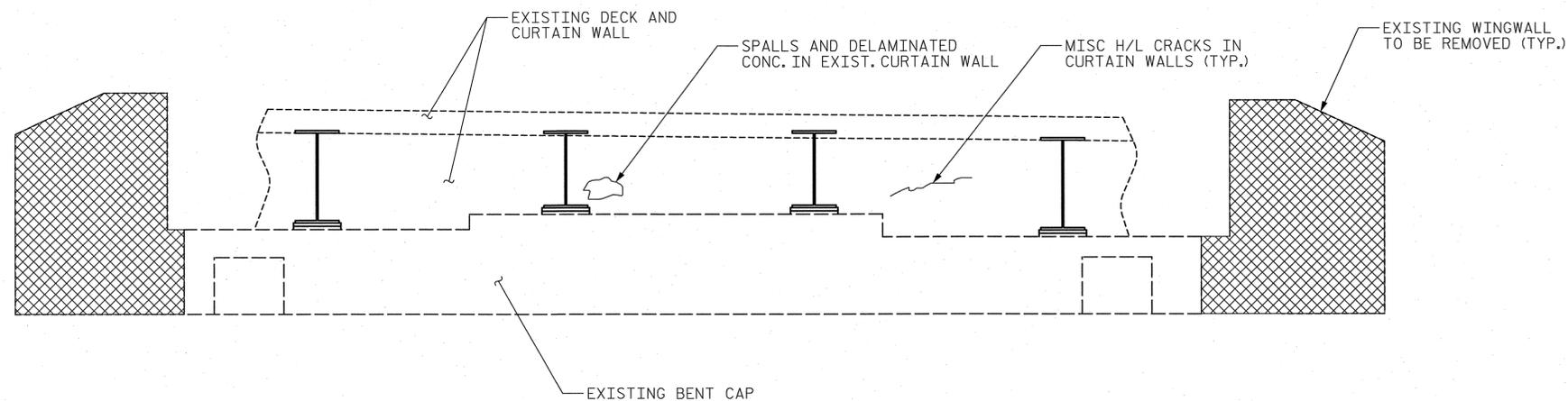
REPAIR ALL CRACKS IN EXISTING END BENT CURTAIN WALLS WITH EPOXY RESIN INJECTION. SEE SPECIAL PROVISIONS.

REPAIR SPALLED AND DELAMINATED CONCRETE SURFACES WITH EPOXY MORTAR REPAIR. SEE SPECIAL PROVISIONS.

FOR MODIFICATION OF SUBSTRUCTURE, SEE SPECIAL PROVISIONS.



**PLAN OF EXISTING CAP**  
 END BENT 1 SHOWN, END BENT 2 SIMILAR



**ELEVATION OF EXISTING CAP**  
 END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. 41926.1.1 (B-5020)

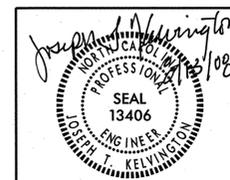
JOHNSTON COUNTY

STATION: 16+14.00 -L-

BRIDGE NO. 112 ON BAGLEY ROAD

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

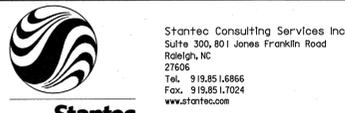
SUBSTRUCTURE  
 END BENT  
 CONCRETE REMOVAL



REVISIONS						SHEET NO. S-34
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

NOT TO SCALE

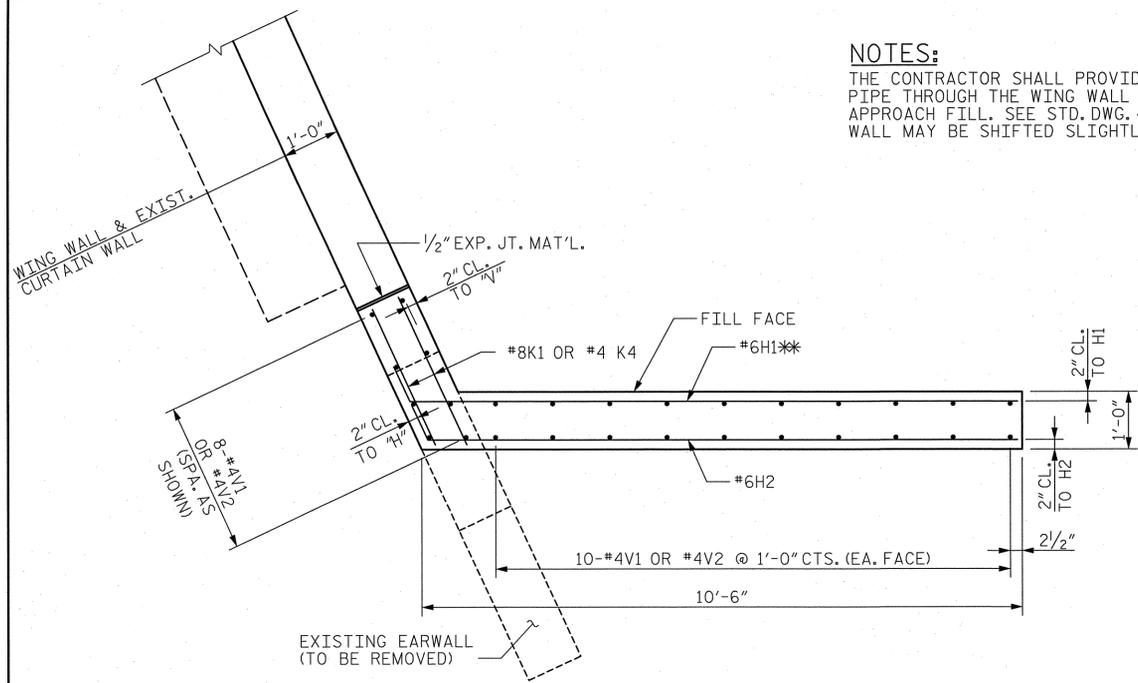
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DRAWN BY: JBL JHENNEBES DATE: 03-10-08  
 CHECKED BY: J. T. REDDINGRON DATE: 03-10-08

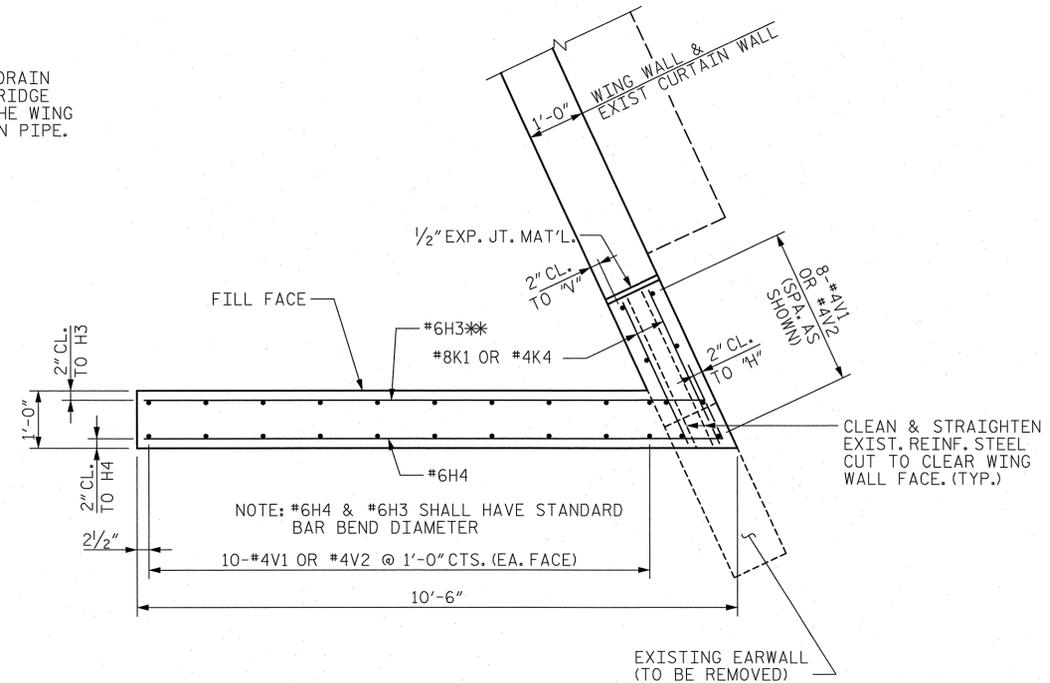


**NOTES:**  
 THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILL. SEE STD. DWG. 422.10. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR DRAIN PIPE.



**PLAN OF WING - W1**

NOTE: LEFT WING @ END BENT 1  
 RIGHT WING @ END BENT 2



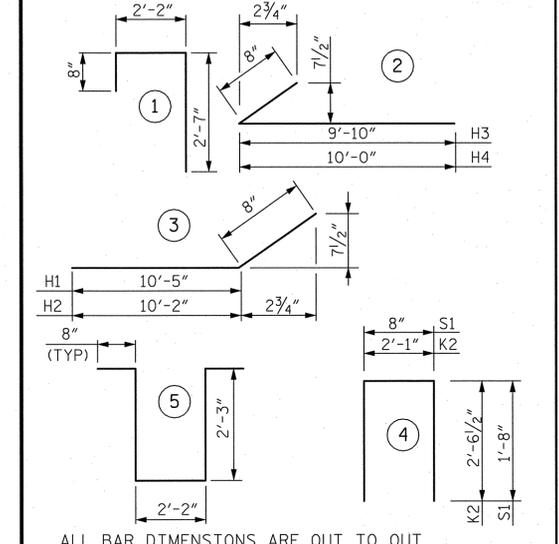
**PLAN OF WING - W2**

NOTE: RIGHT WING @ END BENT 1  
 LEFT WING @ END BENT 2

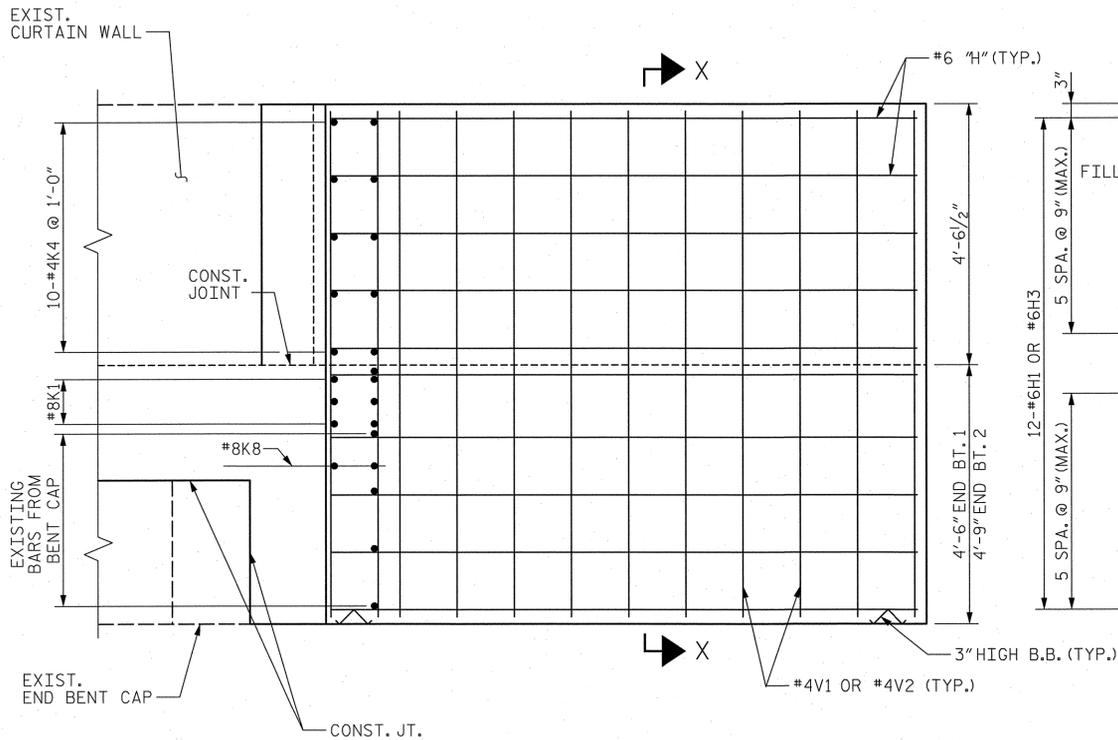
\* TURN HOOK ON #6 H1 AND #6H3 TO CLEAR EXIST. CAP AS REQ'D.

BILL OF MATERIAL					
FOR ONE END BENT (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#4	1	5'-5"	58
D1	37	#6	STR	1'-6"	83
H1	12	#6	3	11'-1"	200
H2	10	#6	3	10'-10"	163
H3	12	#6	2	10'-6"	189
H4	10	#6	2	10'-8"	160
K1	6	#8	STR	39'-6"	633
K2	12	#4	4	7'-2"	58
K3	16	#4	5	8'-0"	86
K4	20	#4	STR	2'-5"	32
K6	2	#8	STR	12'-0"	64
K7	2	#8	STR	13'-0"	69
K8	2	#8	STR	13'-6"	72
S1	74	#4	4	4'-0"	198
V1	28	#4	STR	8'-8"	162
V2	28	#4	STR	9'-0"	168
REINFORCING STEEL				LBS.	2395
CLASS A CONCRETE BREAKDOWN					
POUR 1				C. Y.	6.8
CAP AND WINGWALLS					
POUR 2				C. Y.	4.3
BRIDGE SEATS AND WINGWALLS					
CLASS A CONCRETE				C. Y.	11.1

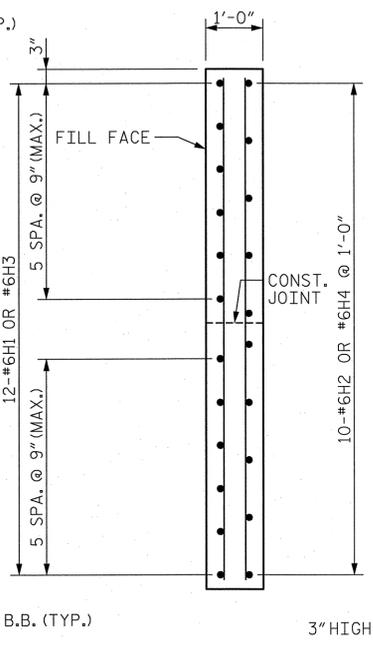
**BAR TYPES**



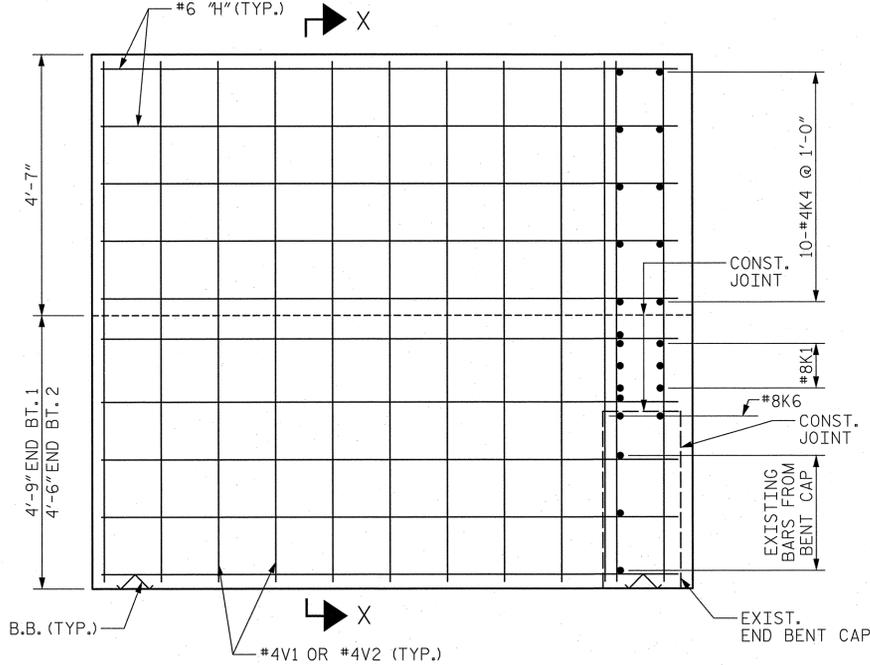
ALL BAR DIMENSIONS ARE OUT TO OUT



**ELEVATION OF WING - W1**



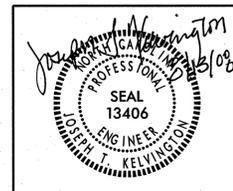
**SECTION X-X**



**ELEVATION OF WING - W2**

**REINFORCING FOR TURNED BACK WING**  
 END BENT 1 SHOWN, END BENT 2 SIMILAR

NOT TO SCALE



PROJECT NO. 41926.1.1 (B-5020)  
 JOHNSTON COUNTY  
 STATION: 16+14.00 -L-  
 BRIDGE NO. 112 ON BAGLEY RD.

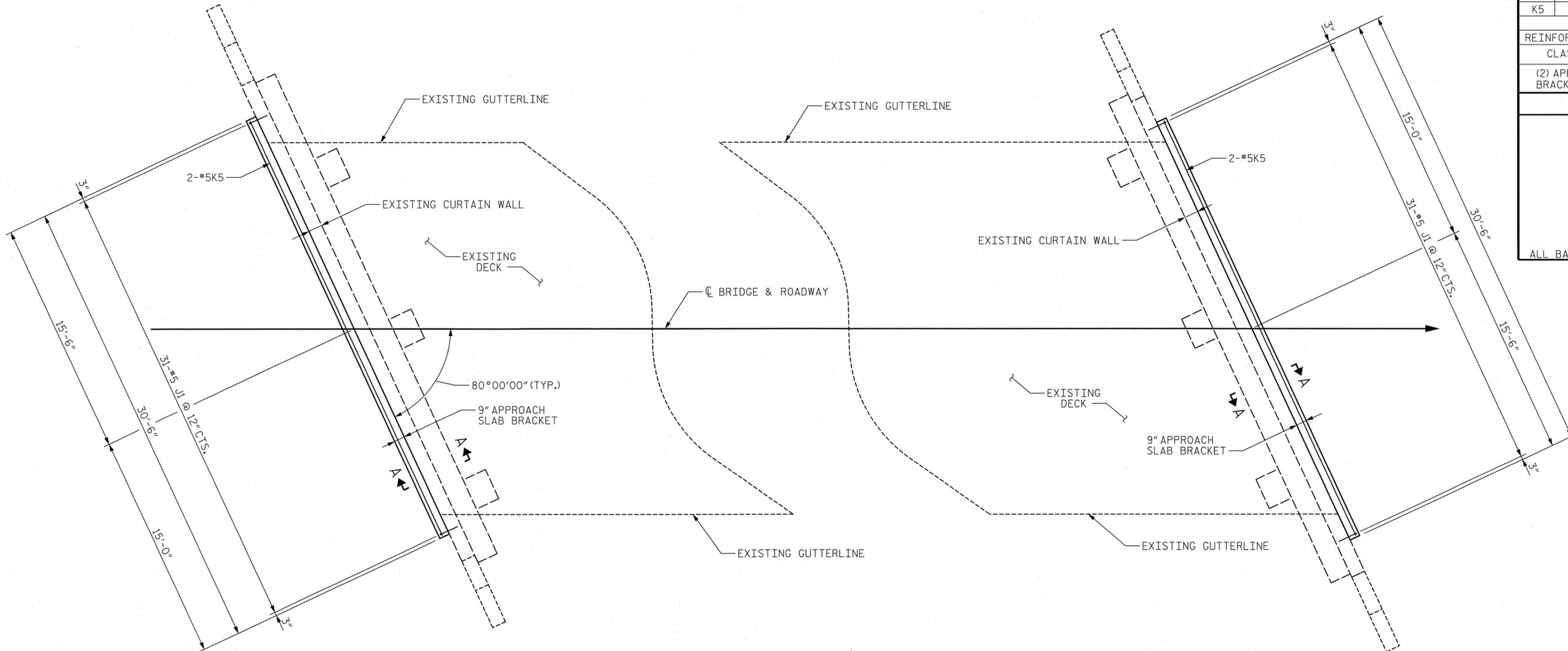
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WINGWALL MODIFICATIONS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 39

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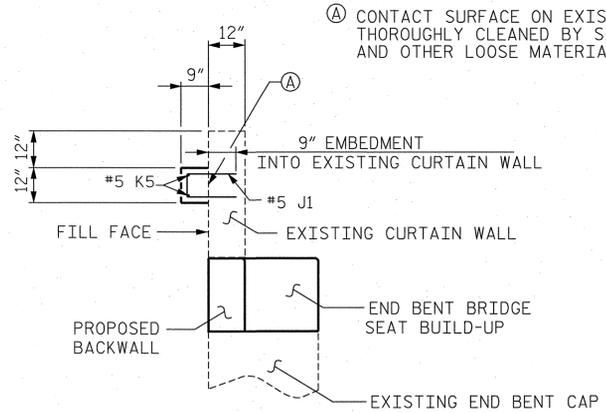
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DRAWN BY: JBL JENNINGS DATE: 03-10-08  
 CHECKED BY: J. T. REID DATE: 03-10-08

BILL OF MATERIAL					
FOR TWO APPROACH SLAB BRACKETS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
J1	62	#5	1	3'- 4"	216
K5	4	#5	STR	30'- 0"	125
REINFORCING STEEL					LBS. 341
CLASS AA CONCRETE					
(2) APPROACH SLAB BRACKETS					C. Y. 1.7
BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT					



**PLACEMENT OF APPROACH SLAB BRACKETS**



**SECTION A-A**

**NOTES**

APPROACH SLAB BRACKET SHOWN IS TO BE CONSTRUCTED IF A PAVEMENT REST IS NOT FOUND TO EXIST ON THE EXISTING CURTAIN WALL.

CONTRACTOR SHALL NOT BE ELIGIBLE FOR ADDITIONAL COMPENSATION TO CONSTRUCT APPROACH SLAB BRACKETS AS SHOWN. COST FOR THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR BRIDGE APPROACH SLABS.

DIMENSIONS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION.

THE #5J1 BARS SHALL BE SECURED INTO THE EXISTING CONCRETE WITH EPOXY ADHESIVE.

THE LEG LENGTH OF THE #5J1 BAR IS BASED ON A 9" EMBEDMENT INTO THE EXISTING CONCRETE AND MAY BE ADJUSTED BASED ON THE MINIMUM EMBEDMENT SPECIFIED BY THE MANUFACTURER OF THE EPOXY ADHESIVE BONDING SYSTEM.

PROJECT NO. 41926.1.1 (B-5020)

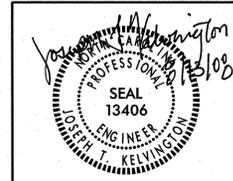
JOHNSTON COUNTY

STATION: 16+14.00 -L-

BRIDGE NO. 112 ON BAGLEY ROAD

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT  
APPROACH SLAB BRACKETS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			39

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Fax. 919.851.7024  
www.stantec.com

DRAWN BY: J. L. HENNEKES DATE: 03-10-08  
CHECKED BY: J. T. KELVINGTON DATE: 03-10-08

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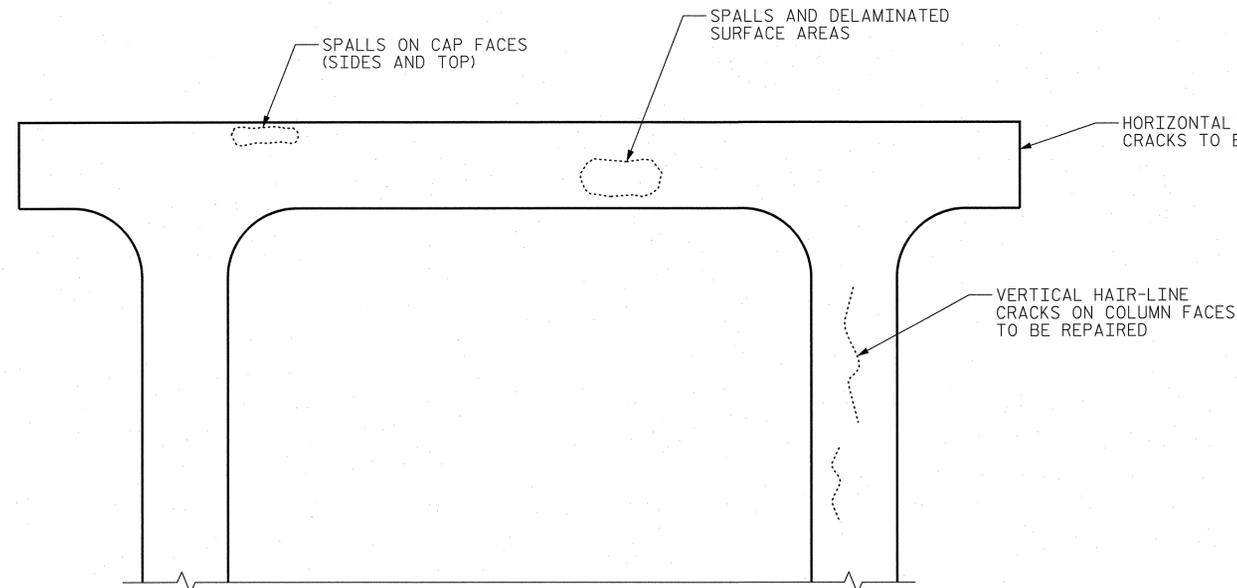
**NOTE**

REPLACEMENT OF EXISTING HORIZONTAL BAR WITH #4 BAR AND #5 DOWELS AS SHOWN IN TYPICAL BENT & DIAPHRAGM REPAIR DETAIL IS INCLUDED UNDER THE CONTRACT PAY ITEM, EPOXY MORTAR REPAIRS.

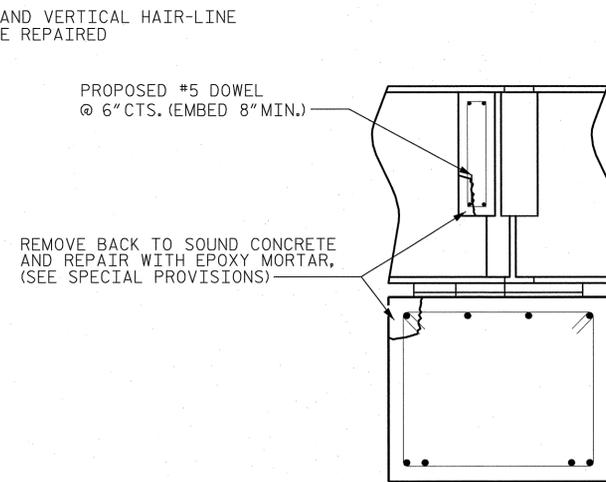
SAWCUT 1/4" - 1/2" DEEP AROUND ALL SPALLS.

HAIR-LINE CRACKS ARE TO BE REPAIRED WITH EPOXY RESIN INJECTION. SEE SPECIAL PROVISIONS.

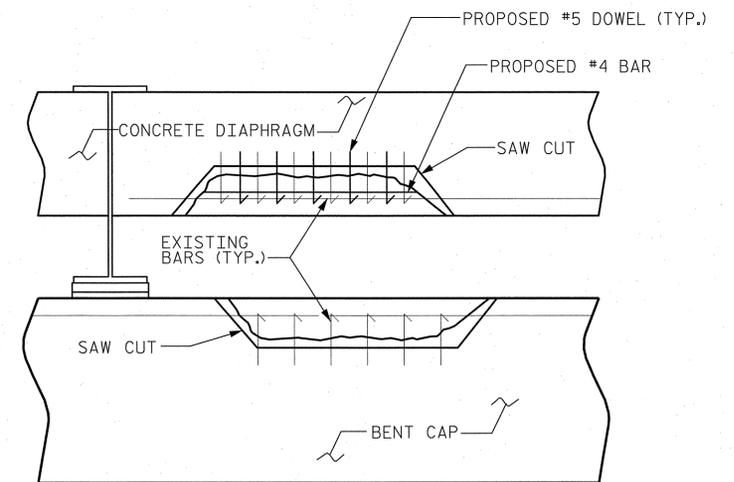
FOR EPOXY MORTAR REPAIR, SEE SPECIAL PROVISIONS.



TYPICAL INTERIOR BENT REPAIRS



SECTION



ELEVATION

TYPICAL BENT & DIAPHRAGM REPAIR DETAIL

BENT 2 SHOWN, BENTS 1 & 3 SIMILAR.

PROJECT NO. 41926.1.1 (B-5020)

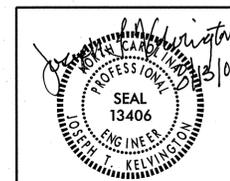
JOHNSTON COUNTY

STATION: 16+14.00 -L-

BRIDGE NO. 112 ON BAGLEY ROAD

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

INTERIOR BENT REPAIRS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			39

NOT TO SCALE

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DRAWN BY: JBL JHENNEBES DATE: 03-10-08  
CHECKED BY: J. T. REDDINGRON DATE: 03-10-08

## 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 2002 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; CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP; AND CLASS S SHALL BE USED FOR UNDERWATER FOOTING SEALS.

### 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 WITH THE EXCEPTION OF #2 BARS WHICH MAY BE FABRICATED FROM COLD DRAWN STEEL WIRE. 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.

PLACEMENT OF BEAM OR GIRDER MEMBERS ON TRUCKS FOR HAULING SHALL BE DONE IN COMPLIANCE WITH LIMITS SHOWN ON SKETCHES PROVIDED TO THE MATERIALS AND TEST UNIT APPROVED BY THE STRUCTURE DESIGN UNIT DATED MAY 8, 1991. THESE SKETCHES PRIMARILY LIMIT THE UNSUPPORTED CANTILEVER LENGTH OF MEMBERS. WHEN THE CONTRACTOR WISHES TO PLACE MEMBERS ON TRUCKS NOT IN ACCORDANCE WITH THESE LIMITS, TO SHIP BY RAIL, TO ATTACH SHIPPING RESTRAINTS TO THE MEMBERS OR TO INVERT MEMBERS, HE SHALL SUBMIT A SKETCH FOR APPROVAL PRIOR TO SHIPPING. SEE ALSO ARTICLE 1072-11.

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