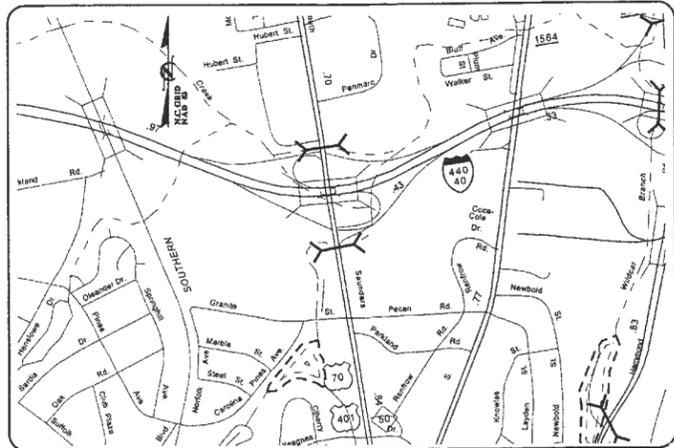


10/26/2011 M:\projects\2011\Division 5 Bridge Rehab\Bridge 571 Div. 5\_Wake Co\Design\STRUCTURES\tsh.dgn

**CONTRACT: DO00143 WAKE BRIDGE #571 17BP.5.H.2**



VICINITY MAP

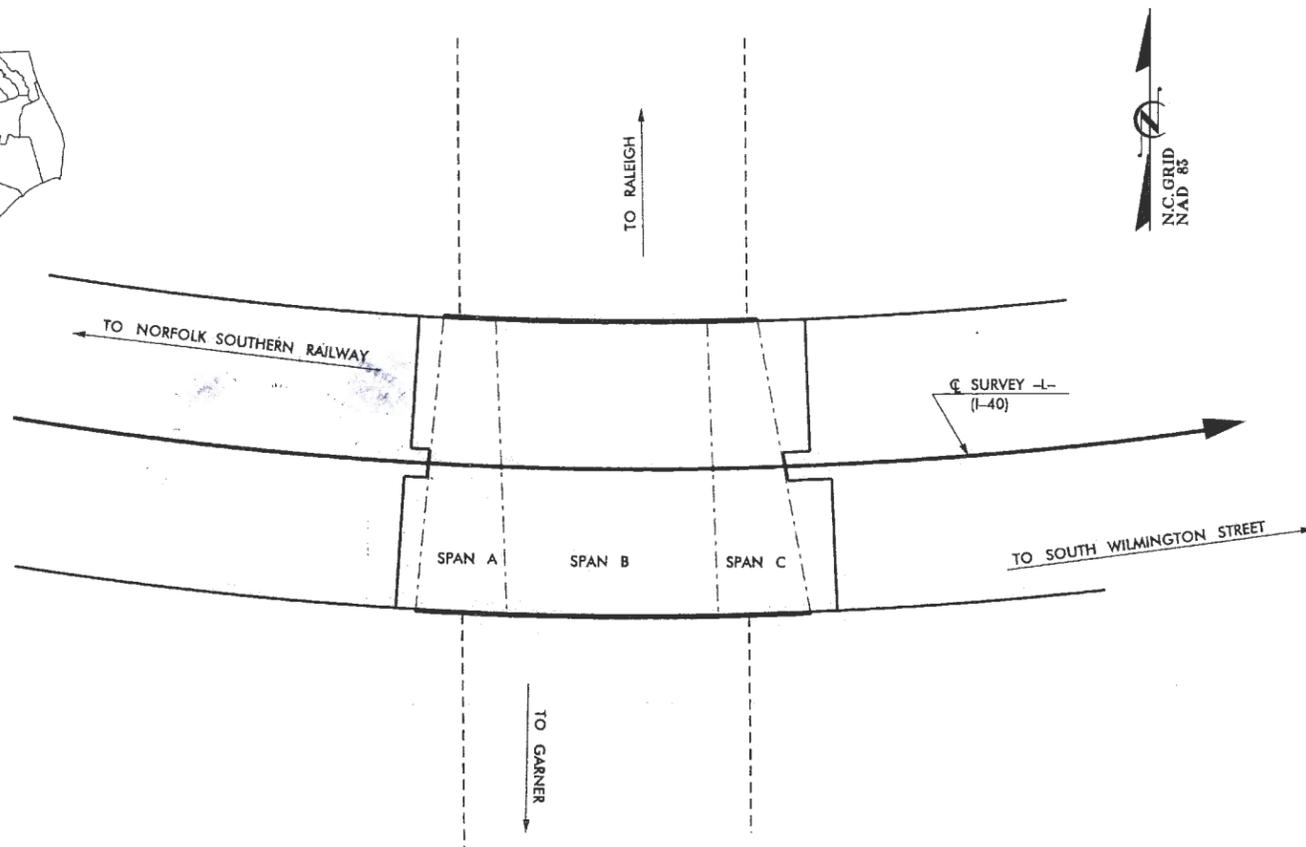


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**WAKE COUNTY**

**LOCATION: BRIDGE # 571 EBL ON I-40 OVER SOUTH SAUNDERS ST.  
BRIDGE # 571 WBL ON I-40 OVER SOUTH SAUNDERS ST.**

**TYPE OF WORK: SUBSTRUCTURE, BUILD-UP WALL REPAIR,  
BEARING REPLACEMENT,  
PAINT GIRDER ENDS AND EXISTING BEARINGS**



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.5.H.2	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.5.H.2	N/A	PE	
17BP.5.H.2	N/A	CONST.	

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA



PLANS PREPARED BY :  
**RK&K**  
RUMMEL, KLEPPER & KAHL, LLP  
900 RIDGEFIELD DRIVE, SUITE 350  
RALEIGH, NORTH CAROLINA 27609  
NC LICENSE NO. F-0112

2012 STANDARD SPECIFICATIONS

LETTING DATE:  
NOVEMBER 30, 2011

RICKY V. KIETH, PE  
PROJECT ENGINEER



## BRIDGE JACKING NOTES

- EXISTING PEDESTAL REMOVAL, BUILD-UP WALL CONSTRUCTION, AND BEARING REPLACEMENT SHALL BE PERFORMED PRIOR TO PAINTING OF BEAMS, GIRDERS, AND OTHER BEARINGS.
- THE CONTRACTOR SHALL SUBMIT A PROPOSAL TO JACK AND SUPPORT THE DUAL BRIDGES AT BENT #1 AND BENT #2 TO FACILITATE THE REMOVAL OF SPAN A AND C EXISTING PEDESTALS, BEARINGS, AND INSTALLATION OF NEW BUILD-UP WALLS AND BEARINGS.
- THE CONTRACTOR SHALL PERFORM JACKING OPERATIONS AT ONE INTERIOR BENT LINE (E.G. BENT #1A, #1B, & #1C) OF ONE BRIDGE AT A TIME.
- THE EXISTING FILLED EXPANSION JOINT ALONG BENT #2 SHALL BE SAW CUT AS NECESSARY TO SEPARATE THE SPANS PRIOR TO JACKING SPAN C.
- THE CONTRACTOR SHALL NOT SUPPORT THE JACKS DIRECTLY OFF THE TOP OF THE BENT CAP.
- PROVIDE ONE HYDRAULIC JACK UNDER EACH STEEL BEAM.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT, THERE ARE TAPERED PLATE GIRDERS ON THE EXTERIOR OF THE STRUCTURE END SPANS THAT REQUIRE JACKING SIMULTANEOUSLY WITH THE OTHER BEAMS.
- EACH HYDRAULIC JACK SHALL HAVE THE RATED CAPACITY CLEARLY SHOWN ON THE MANUFACTURER'S NAME PLATE ATTACHED TO EACH JACK.
- REDUCE I-40 WB TRAFFIC TO A SINGLE LANE OVER THE BRIDGE IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS AND LANE CLOSURE TIME RESTRICTIONS DURING THE ACTUAL JACKING OPERATION.
- THE UNFACTORED DEAD LOAD JACKING FORCE MINIMUM IS 50 KIPS. THE UNFACTORED LIVE LOAD JACKING FORCE INCLUDING IMPACT MINIMUM IS 80 KIPS. JACKS AND OTHER LIFTING EQUIPMENT SHALL HAVE A MINIMUM RATED CAPACITY OF 205 KIPS CALCULATED IN ACCORDANCE WITH THE LATEST EDITION OF AASHTO LRFD ARTICLE 3.4.3.
- AT EACH PROPOSED JACKING LOCATION, THE CONTRACTOR SHALL CHECK THE WEB TO DETERMINE IF STIFFENERS ARE REQUIRED. IF STIFFENERS ARE REQUIRED THEY SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA AND INSTALLED PRIOR TO JACKING.
- LIFT THE INTERIOR BENT END OF SPAN A (BENT #1) OF WESTBOUND BRIDGE BY JACKING ALL 13 BEAMS SIMULTANEOUSLY NO MORE THAN 0.25".
- ONCE THE BEAMS ARE IN THE RAISED POSITION, LOCK-OFF THE JACKS.
- REMOVE EXISTING CONCRETE PEDESTALS AND BEARINGS WITH THE EXCEPTION OF BEARINGS UNDER THE TAPERED GIRDERS ON THE EXTERIOR OF THE STRUCTURE WHICH ARE TO REMAIN IN PLACE.
- CONSTRUCT THE NEW CONCRETE BUILD-UP WALL ON THE BENT CAP AS INDICATED IN THE PLANS.
- INSTALL NEW BEARINGS (SEE ELASTOMERIC BEARING DETAILS SHEET).
- CONCRETE IN THE BUILD-UP WALL SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE RETURNING THE GIRDER LOADS TO THE NEW BEARINGS.
- GRADUALLY RELEASE HYDRAULIC PRESSURE ON THE JACKS AND SLOWLY LOWER THE SUPERSTRUCTURE DOWN ON THE NEW BEARINGS.
- REMOVE THE JACKS AND MOVE THE APPARATUS TO THE BENT #2 OF THE WESTBOUND BRIDGE AND REPEAT THE PROCEDURE FOR THE INTERIOR BENT END OF SPAN C.
- REPEAT PROCEDURE FOR THE EASTBOUND BRIDGE.
- THE CONTRACTOR SHALL MONITOR THE JACKING PROCEDURE TO ENSURE THAT THE SPAN BEING JACKED DOES NOT BIND AGAINST THE ADJACENT SPAN, THE SPAN BEING JACKED DOES NOT SHIFT LONGITUDINALLY AND THAT THE JACKING DOES NOT CAUSE DAMAGE AT ANY LOCATION IN THE SPAN. IF THERE IS ANY EVIDENCE OF DAMAGE OCCURRING DURING THE JACKING OPERATION, THE INSPECTOR SHALL TAKE CORRECTIVE ACTIONS AND NOTIFY THE ENGINEER IMMEDIATELY. ANY COSTS ASSOCIATED WITH DAMAGE AND SUBSEQUENT REPAIR TO THE STRUCTURE DURING THE JACKING OPERATION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA FOR HIS JACKING AND SUPPORT PROPOSAL, WHICH WILL INCLUDE A METHOD FOR MONITORING ANY BRIDGE LATERAL AND LONGITUDINAL MOVEMENTS.
- FOR SPAN JACKING AND SUPPORT, SEE SPECIAL PROVISIONS.

## GENERAL NOTES

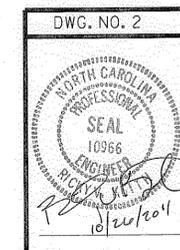
- ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE "2012 STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION.
- ALL REINFORCING STEEL SHALL BE GRADE 60.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- FOR CLEANING AND PAINTING EXISTING BEARING PLATES, SEE SPECIAL PROVISIONS.
- FOR PAINTING EXISTING STRUCTURES, SEE SPECIAL PROVISIONS.
- ANY DAMAGE TO THE EXISTING STRUCTURE, SIDEWALK, OR SLOPE PROTECTION AS A RESULT OF FALSEWORK OR TEMPORARY SUPPORTS SHALL BE REPAIRED AT THE DIRECTION OF THE ENGINEER. ANY COSTS ASSOCIATED WITH THIS WORK WILL BE INCLUDED IN THE SEVERAL PAY ITEMS.
- QUANTITIES FOR CLASS AA CONCRETE AND REINFORCING STEEL ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. PAYMENT FOR THESE ITEMS SHALL BE INCLUDED IN THE PRICE PER CUBIC FOOT FOR "CONCRETE REPAIR". SEE SPECIAL PROVISIONS.
- THE TOP SURFACE OF THE INTERIOR BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- ASSUMED LIVE LOAD = HL-93.
- EPOXY PROTECTIVE COATING SHALL BE APPLIED TO THE ENTIRE TOP SURFACE AREA OF THE CAP EXCEPT THE AREA UNDER THE ELASTOMERIC BEARINGS.

### TOTAL BILL OF MATERIALS

	CONCRETE * REPAIRS	ELASTOMERIC BEARINGS	SPAN JACKING AND SUPPORT	CLEANING AND REPAINTING OF BRIDGE # 571	POLLUTION CONTROL
	CUBIC FEET	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	---	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
BENT 1	359	---	---	---	---
BENT 2	378	---	---	---	---
TOTAL	737	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

\* SEE GENERAL NOTE #12

PROJECT NO. 17BP.5.H.2  
WAKE COUNTY  
 STATION: 82+42.41 -L- P.O.C.



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

### NOTES AND BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	2
1			3			TOTAL SHEETS
2			4			10

DRAWN BY : F.O. WEEDEN DATE : OCT. 2011  
 CHECKED BY : R.V. KEITH DATE : OCT. 2011

**NOTES**

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

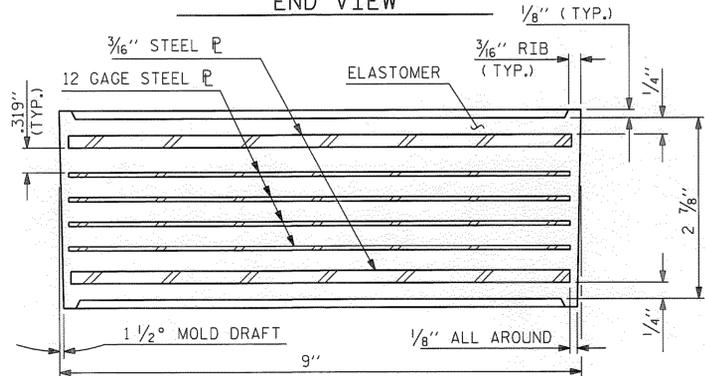
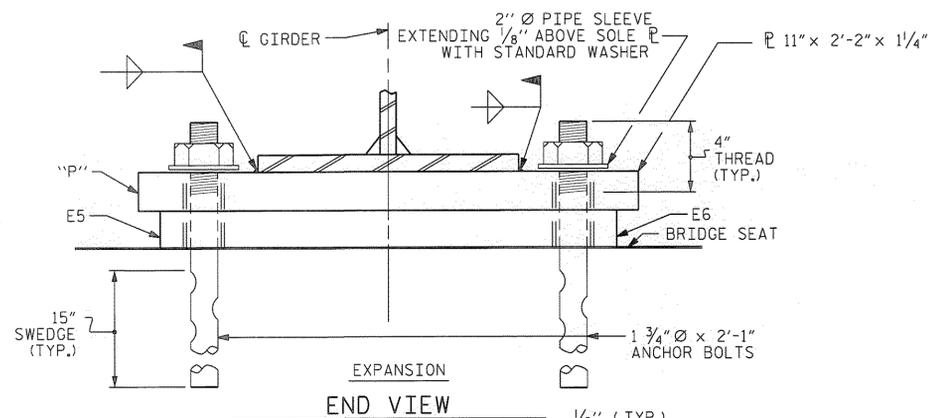
THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

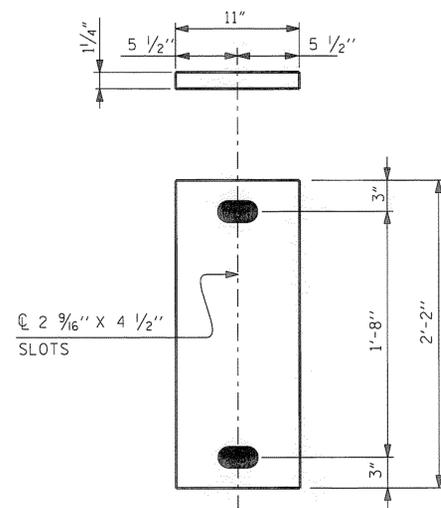
WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

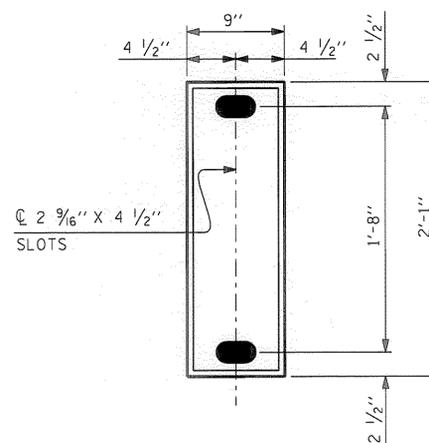


TYPICAL SECTION OF ELASTOMERIC BEARINGS

-LOAD RATINGS-	
	MAX.D.L.+L.L.
TYPE III	144 K



P 6  
(EXPANSION)  
SOLE PLATE DETAILS ("P")

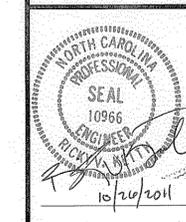


E6 (44 REQ'D)  
PLAN VIEW OF ELASTOMERIC BEARING

**TYPE III**

PROJECT NO. 17BP.5.H.2  
WAKE COUNTY  
STATION: 82+42.41 -L- P.O.C.

DWG. NO. 3

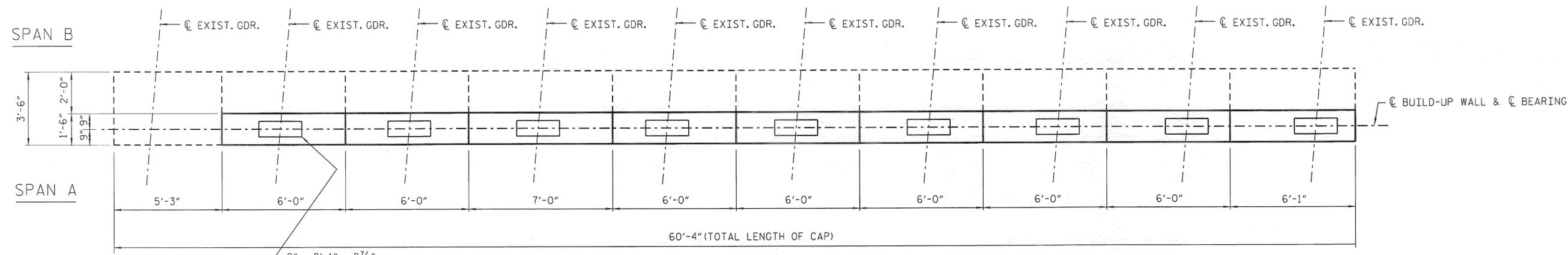


STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
ELASTOMERIC BEARING  
DETAILS  
(STEEL SUPERSTRUCTURE)

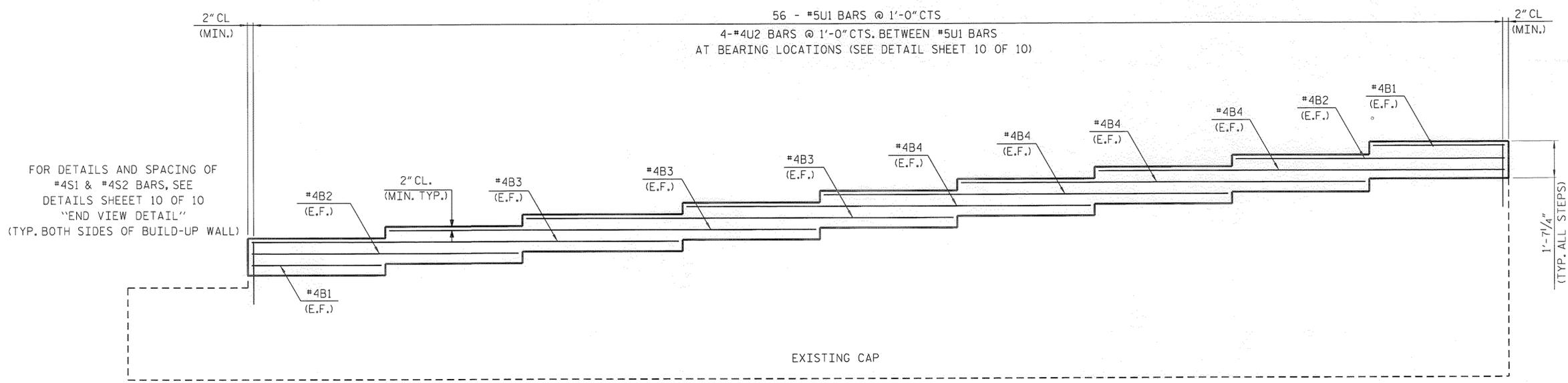
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	3
1			3			TOTAL SHEETS
2			4			10

M:\projects\2011\Division 5 Bridge Rehab\Bridge 571 Div. 5 Wake Co\Design\STRUCTURES\BEARING.dgn

DRAWN BY: F.D. WEEDEN DATE: OCT. 2011  
CHECKED BY: R.V. KEITH DATE: OCT. 2011



PLAN



ELEVATION

NOTES:  
DIMENSIONS AND ELEVATIONS GIVEN FOR THE STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD.

REPLACE BEARINGS AS SHOWN. ALL OTHER EXISTING BEARINGS TO REMAIN IN PLACE.

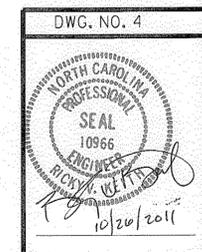
A MAXIMUM OF TWO PERMITTED CONSTRUCTION JOINTS SHALL BE ALLOWED ALONG THE BUILD-UP WALL. PERMITTED JOINTS SHALL BE LOCATED AT STEP UPS ALONG THE WALL AND AS APPROVED BY THE ENGINEER.

BUILD-UP WALL SHALL BE CONSTRUCTED USING CLASS AA CONCRETE.

BAR TYPES		BILL OF MATERIAL				
		END BENT NO. 1A				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	4	#4	STR.	5'-7"	15	
B2	4	#4	STR.	11'-7"	31	
B3	6	#4	STR.	18'-8"	75	
B4	8	#4	STR.	17'-7"	94	
S1	4	#4	1	3'-0"	8	
S2	4	#4	2	3'-7"	10	
U1	56	#5	1	6'-8"	389	
U2	36	#4	1	3'-10"	92	
REINFORCING STEEL				714 LBS.		
CLASS "AA" CONCRETE						
POUR 1 (CAP)				TOTAL	4.9 C.Y.	

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. 17BP.5.H.2  
WAKE COUNTY  
 STATION: 82+42.41 -L- P.O.C.



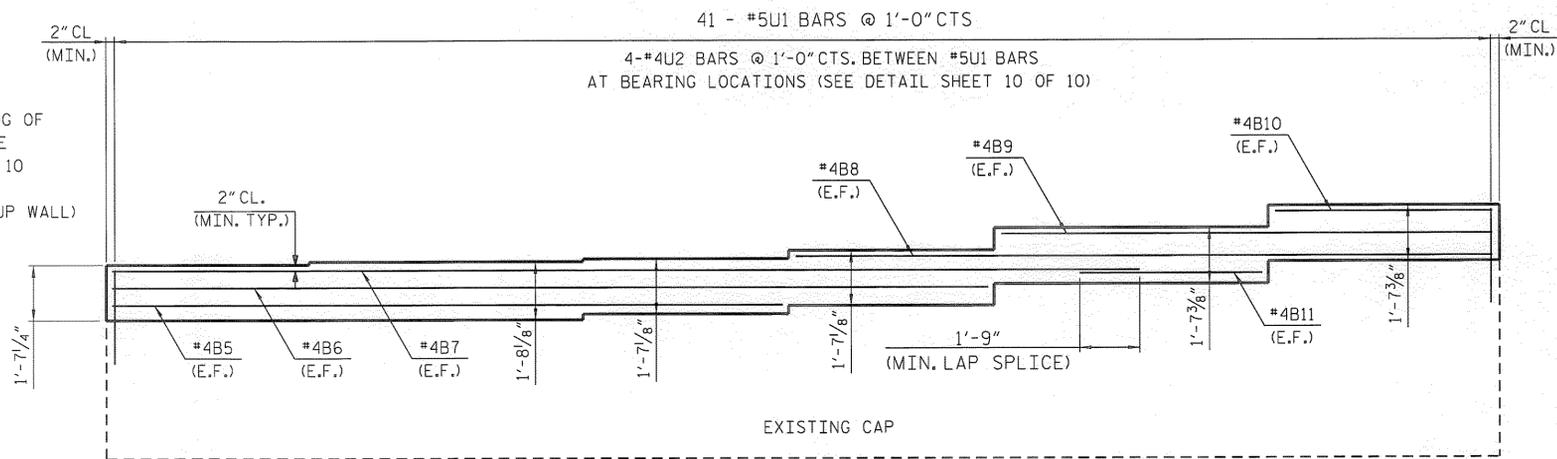
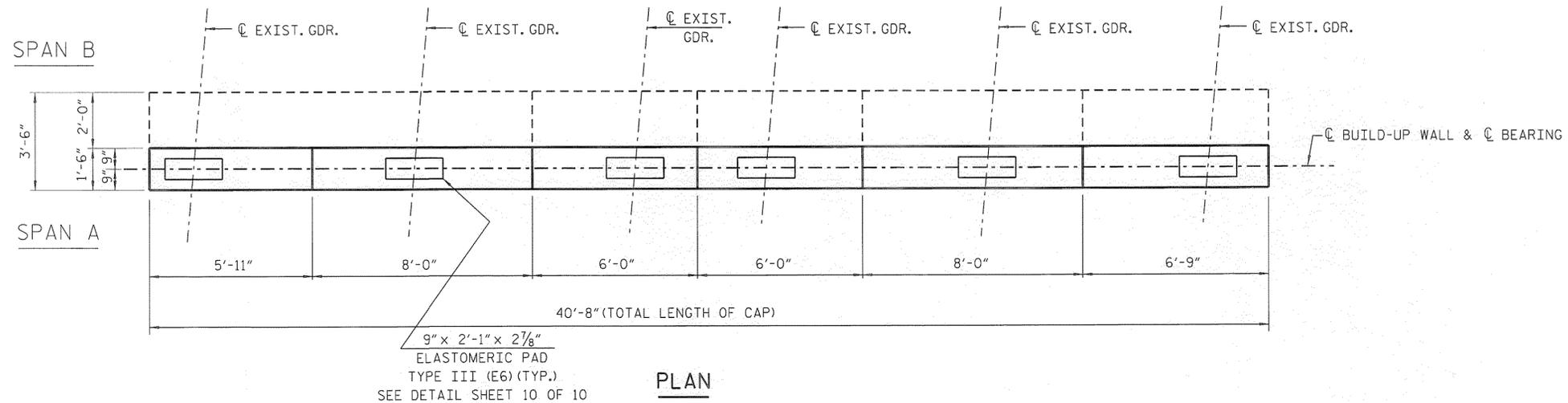
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN AND ELEVATION  
 BILL OF MATERIALS  
 BENT NO. 1A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	4
1			3			TOTAL SHEETS 10
2			4			

M:\projects\2011\Division 5 Bridge Rehab\Bent 571 Div. 5 Wake Co.\Design\STRUCTURES\sect.dgn

DRAWN BY: F.D. WEEDEN DATE: OCT. 2011  
 CHECKED BY: R.V. KEITH DATE: OCT. 2011



FOR DETAILS AND SPACING OF #4S1 & #4S2 BARS, SEE DETAILS SHEET 10 OF 10 "END VIEW DETAIL" (TYP. BOTH SIDES OF BUILD-UP WALL)

NOTES:  
DIMENSIONS AND ELEVATIONS GIVEN FOR THE STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD.

REPLACE BEARINGS AS SHOWN. ALL OTHER EXISTING BEARINGS TO REMAIN IN PLACE.

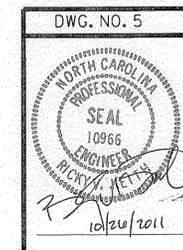
A MAXIMUM OF TWO PERMITTED CONSTRUCTION JOINTS SHALL BE ALLOWED ALONG THE BUILD-UP WALL. PERMITTED JOINTS SHALL BE LOCATED AT STEP UPS ALONG THE WALL AND AS APPROVED BY THE ENGINEER.

BUILD-UP WALL SHALL BE CONSTRUCTED USING CLASS AA CONCRETE.

BAR TYPES		BILL OF MATERIAL				
		END BENT NO. 1B				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B5	2	#4	STR.	19'-7"	26	
B6	2	#4	STR.	25'-7"	34	
B7	2	#4	STR.	30'-0"	40	
B8	2	#4	STR.	20'-4"	27	
B9	2	#4	STR.	14'-4"	19	
B10	2	#4	STR.	6'-4"	8	
B11	2	#4	STR.	5'-4"	7	
S1	4	#4	1	3'-0"	8	
S2	4	#4	2	3'-7"	10	
U1	41	#5	1	6'-8"	285	
U2	24	#4	1	3'-10"	61	
REINFORCING STEEL				525 LBS.		
CLASS "AA" CONCRETE						
POUR 1 (CAP)				TOTAL	3.6 C.Y.	

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. 17BP.5.H.2  
WAKE COUNTY  
STATION: 82+42.41 -L- P.O.C.



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

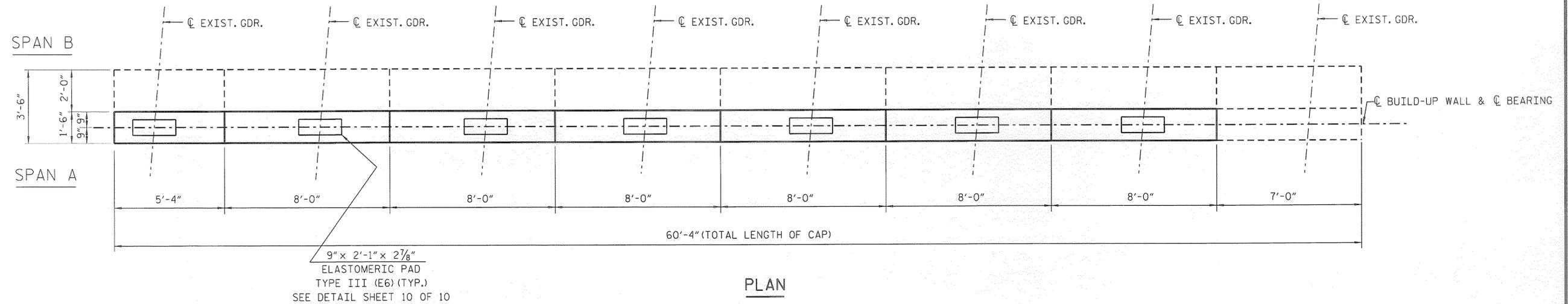
DWG. NO. 5

PLAN AND ELEVATION  
BILL OF MATERIALS  
BENT NO. 1B

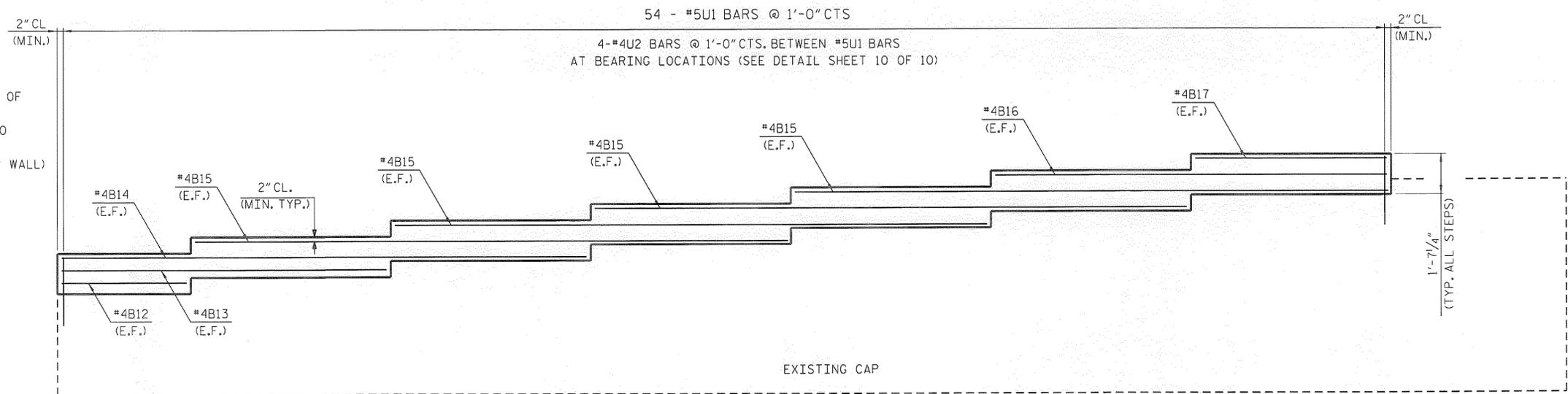
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5
1			3			TOTAL SHEETS 10
2			4			

DRAWN BY: F.D. WEEDEN DATE: OCT. 2011  
CHECKED BY: R.V. KEITH DATE: OCT. 2011

M:\Projects\2011\Division 5 Bridge Rehab\Bent 571 Div. 5.Wake Co.\Design\STRUCTURES\sect.dgn



PLAN



ELEVATION

FOR DETAILS AND SPACING OF #4S1 & #4S2 BARS, SEE DETAILS SHEET 10 OF 10 "END VIEW DETAIL" (TYP. BOTH SIDES OF BUILD-UP WALL)

NOTES:  
DIMENSIONS AND ELEVATIONS GIVEN FOR THE STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD.

REPLACE BEARINGS AS SHOWN. ALL OTHER EXISTING BEARINGS TO REMAIN IN PLACE.

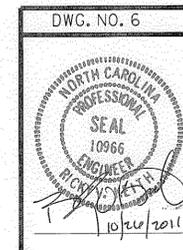
A MAXIMUM OF TWO PERMITTED CONSTRUCTION JOINTS SHALL BE ALLOWED ALONG THE BUILD-UP WALL. PERMITTED JOINTS SHALL BE LOCATED AT STEP UPS ALONG THE WALL AND AS APPROVED BY THE ENGINEER.

BUILD-UP WALL SHALL BE CONSTRUCTED USING CLASS AA CONCRETE.

BAR TYPES		BILL OF MATERIAL				
		END BENT NO. 1C				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B12	2	#4	STR.	5'-0"	7	
B13	2	#4	STR.	13'-0"	17	
B14	2	#4	STR.	21'-0"	28	
B15	8	#4	STR.	23'-8"	126	
B16	2	#4	STR.	15'-8"	21	
B17	2	#4	STR.	7'-8"	10	
S1	4	#4	1	3'-0"	8	
S2	4	#4	2	3'-7"	10	
U1	54	#5	1	6'-8"	375	
U2	28	#4	1	3'-10"	72	
REINFORCING STEEL				674		
CLASS "AA" CONCRETE						
POUR 1 (CAP)				TOTAL	4.8 C.Y.	

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. 17BP.5.H.2  
WAKE COUNTY  
 STATION: 82+42.41 -L- P.O.C.



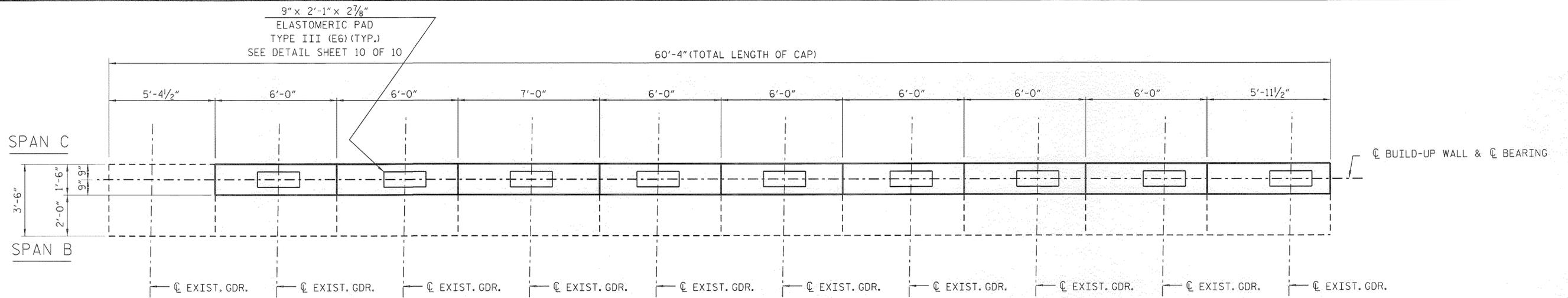
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**PLAN AND ELEVATION  
 BILL OF MATERIALS  
 BENT NO. 1C**

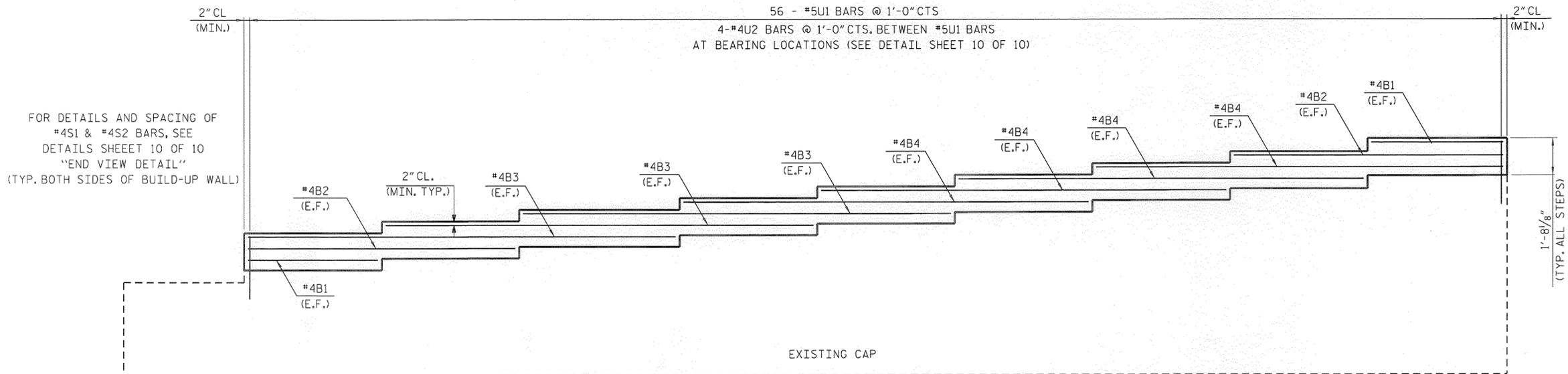
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	6
1			3			TOTAL SHEETS 10
2			4			

M:\projects\2011\Division 5 Bridge Rehab\Bridge 571 Div. 5 Wake Co\Design\STRUCTURES\sect.dgn

DRAWN BY: F.D. WEEDEN DATE: OCT. 2011  
 CHECKED BY: R.V. KEITH DATE: OCT. 2011



PLAN



ELEVATION

NOTES:  
DIMENSIONS AND ELEVATIONS GIVEN FOR THE STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD.

REPLACE BEARINGS AS SHOWN. ALL OTHER EXISTING BEARINGS TO REMAIN IN PLACE.

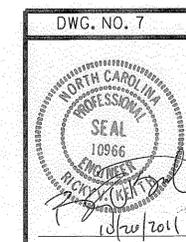
A MAXIMUM OF TWO PERMITTED CONSTRUCTION JOINTS SHALL BE ALLOWED ALONG THE BUILD-UP WALL. PERMITTED JOINTS SHALL BE LOCATED AT STEP UPS ALONG THE WALL AND AS APPROVED BY THE ENGINEER.

BUILD-UP WALL SHALL BE CONSTRUCTED USING CLASS AA CONCRETE.

BAR TYPES		BILL OF MATERIAL				
		END BENT NO. 2A				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	4	#4	STR.	5'-7"	15	
B2	4	#4	STR.	11'-7"	31	
B3	6	#4	STR.	18'-8"	75	
B4	8	#4	STR.	17'-7"	94	
S1	4	#4	1	3'-0"	8	
S2	4	#4	2	3'-7"	10	
U1	56	#5	1	6'-8"	389	
U2	36	#4	1	3'-10"	92	
REINFORCING STEEL				714 LBS.		
CLASS "AA" CONCRETE						
POUR 1 (CAP)				TOTAL	5.2 C.Y.	

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. 17BP.5.H.2  
WAKE COUNTY  
STATION: 82+42.41 -L- P.O.C.



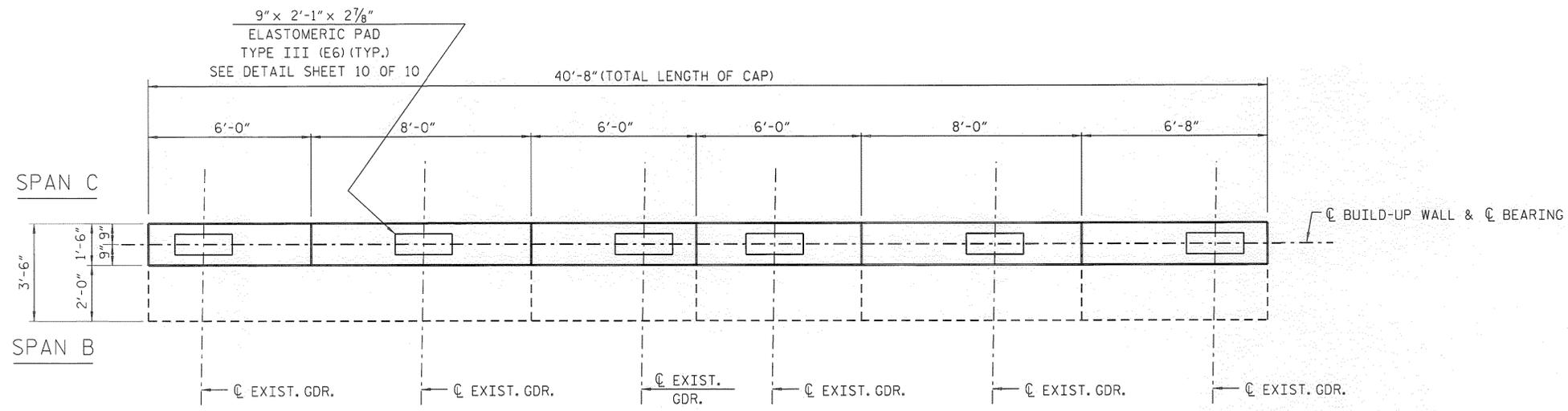
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

PLAN AND ELEVATION  
BILL OF MATERIALS  
BENT NO. 2A

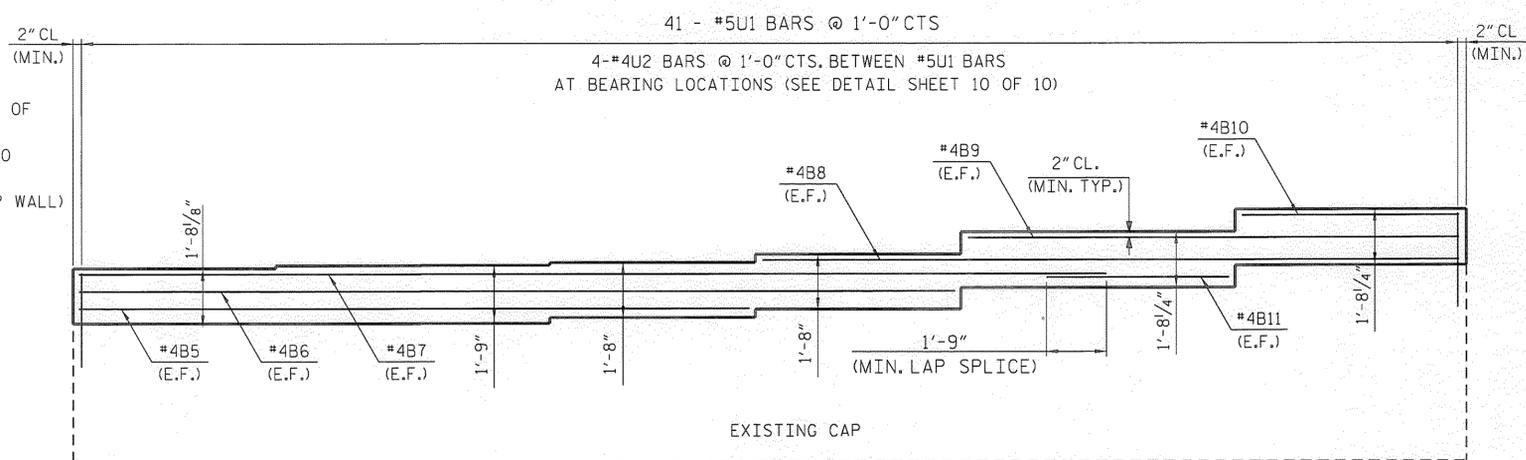
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	7
1			3			TOTAL SHEETS 10
2			4			

M:\Projects\2011\Division 5 Bridge Rehab\Bridge 571 Div. 5.Wake Co.\Design\STRUCTURES\sect.dgn

DRAWN BY: F.D. WEEDEN DATE: OCT. 2011  
CHECKED BY: R.V. KEITH DATE: OCT. 2011



**PLAN**



**ELEVATION**

FOR DETAILS AND SPACING OF #4S1 & #4S2 BARS, SEE DETAILS SHEET 10 OF 10 "END VIEW DETAIL" (TYP. BOTH SIDES OF BUILD-UP WALL)

NOTES:  
DIMENSIONS AND ELEVATIONS GIVEN FOR THE STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD.

REPLACE BEARINGS AS SHOWN. ALL OTHER EXISTING BEARINGS TO REMAIN IN PLACE.

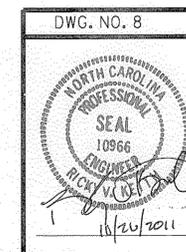
A MAXIMUM OF TWO PERMITTED CONSTRUCTION JOINTS SHALL BE ALLOWED ALONG THE BUILD-UP WALL. PERMITTED JOINTS SHALL BE LOCATED AT STEP UPS ALONG THE WALL AND AS APPROVED BY THE ENGINEER.

BUILD-UP WALL SHALL BE CONSTRUCTED USING CLASS AA CONCRETE.

BAR TYPES		BILL OF MATERIAL				
		END BENT NO. 2B				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B5	2	#4	STR.	19'-7"	26	
B6	2	#4	STR.	25'-7"	34	
B7	2	#4	STR.	30'-0"	40	
B8	2	#4	STR.	20'-4"	27	
B9	2	#4	STR.	14'-4"	19	
B10	2	#4	STR.	6'-4"	8	
B11	2	#4	STR.	5'-4"	7	
S1	4	#4	1	3'-0"	8	
S2	4	#4	2	3'-7"	10	
U1	41	#5	1	6'-8"	285	
U2	24	#4	1	3'-10"	61	
REINFORCING STEEL				525 LBS.		
CLASS "AA" CONCRETE						
POUR 1 (CAP)				TOTAL	3.8 C.Y.	

ALL BAR DIMENSIONS ARE OUT TO OUT.

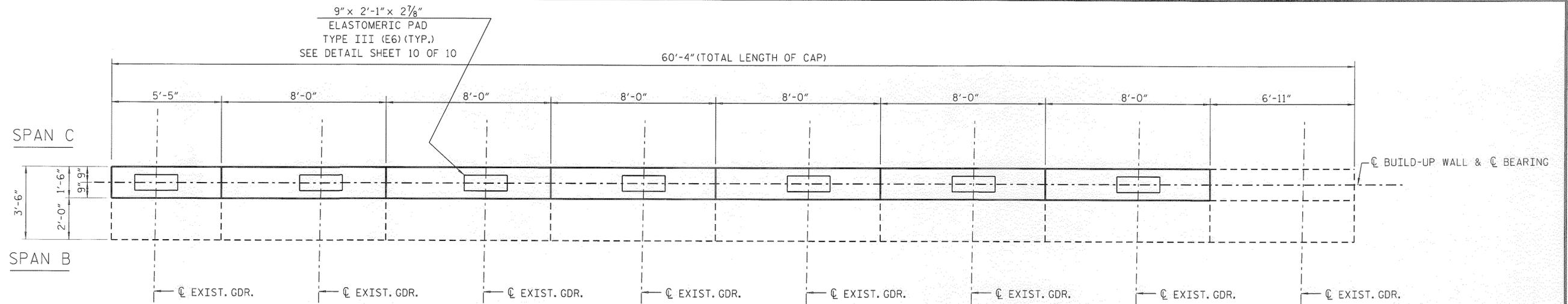
PROJECT NO. 17BP.5.H.2  
WAKE COUNTY  
 STATION: 82+42.41 -L- P.O.C.



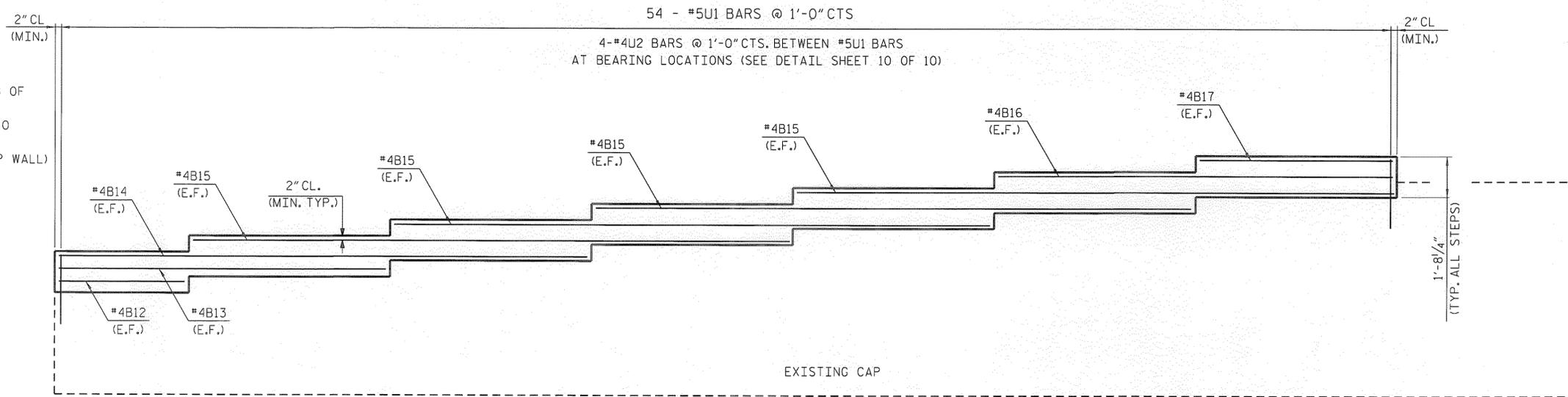
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PLAN AND ELEVATION BILL OF MATERIALS BENT NO. 2B					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. 8					TOTAL SHEETS 10

M:\projects\2011\Division 5 Bridge Rehab\Bridges\571 Div. 5 Wake Co\Design\STRUCTURES\sect.dgn

DRAWN BY: F.D. WEEDEN DATE: OCT. 2011  
 CHECKED BY: R.V. KEITH DATE: OCT. 2011



PLAN



ELEVATION

FOR DETAILS AND SPACING OF #4S1 & #4S2 BARS, SEE DETAILS SHEET 10 OF 10 "END VIEW DETAIL" (TYP. BOTH SIDES OF BUILD-UP WALL)

NOTES:  
DIMENSIONS AND ELEVATIONS GIVEN FOR THE STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY DIMENSIONS IN THE FIELD.

REPLACE BEARINGS AS SHOWN. ALL OTHER EXISTING BEARINGS TO REMAIN IN PLACE.

A MAXIMUM OF TWO PERMITTED CONSTRUCTION JOINTS SHALL BE ALLOWED ALONG THE BUILD-UP WALL. PERMITTED JOINTS SHALL BE LOCATED AT STEP UPS ALONG THE WALL AND AS APPROVED BY THE ENGINEER.

BUILD-UP WALL SHALL BE CONSTRUCTED USING CLASS AA CONCRETE.

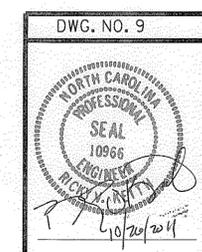
BAR TYPES		BILL OF MATERIAL				
		END BENT NO. 2C				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B12	2	#4	STR.	5'-0"	7	
B13	2	#4	STR.	13'-0"	17	
B14	2	#4	STR.	21'-0"	28	
B15	8	#4	STR.	23'-8"	126	
B16	2	#4	STR.	15'-8"	21	
B17	2	#4	STR.	7'-8"	10	
S1	4	#4	1	3'-0"	8	
S2	4	#4	2	3'-7"	10	
U1	54	#5	1	6'-8"	375	
U2	28	#4	1	3'-10"	72	
REINFORCING STEEL				674		
CLASS "AA" CONCRETE						
POUR 1 (CAP)				TOTAL	5.0 C.Y.	

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. 17BP.5.H.2  
WAKE COUNTY  
STATION: 82+42.41 -L- P.O.C.

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

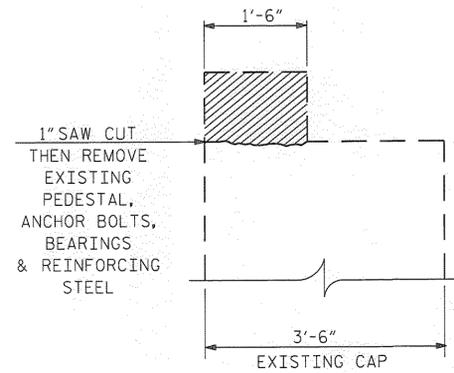
PLAN AND ELEVATION  
BILL OF MATERIALS  
BENT NO. 2C



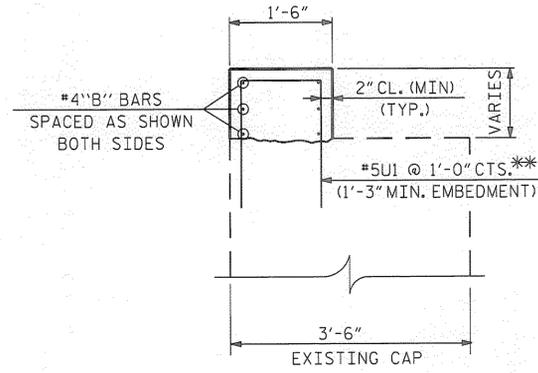
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	9
1			3			TOTAL SHEETS 10
2			4			

M:\Projects\2011\Division 5 Bridge Rehab\Bridg 571 Div. 5\_Wake Co\Design\STRUCTURES\sect.dgn

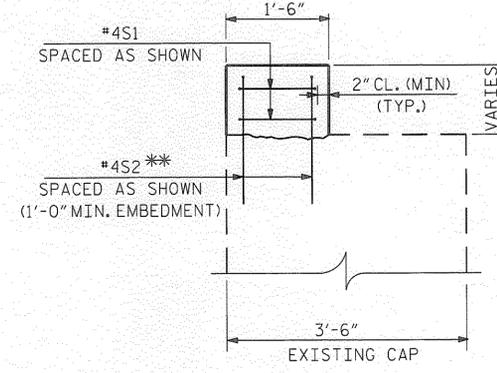
DRAWN BY : F.D. WEEDEN DATE : OCT. 2011  
CHECKED BY : R.V. KEITH DATE : OCT. 2011



**REMOVAL OF EXISTING PEDESTAL DETAIL**  
(SEE BRIDGE JACKING NOTES)

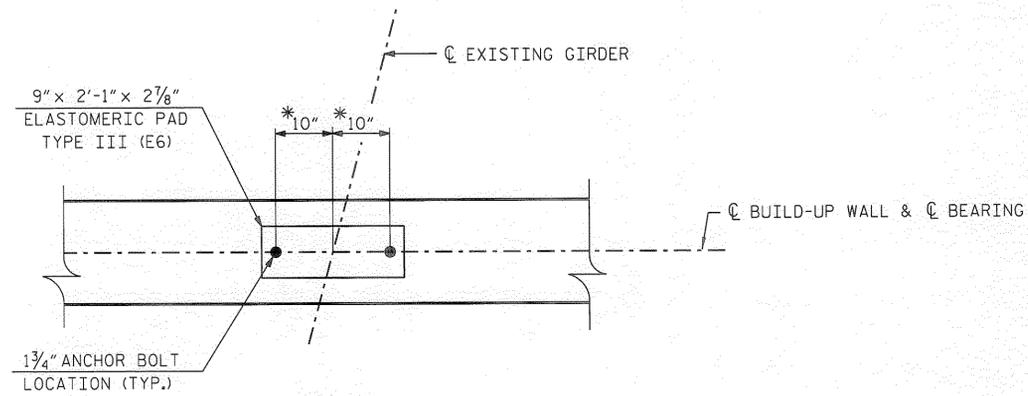


**TYPICAL CAP SECTION**



**END VIEW DETAIL**

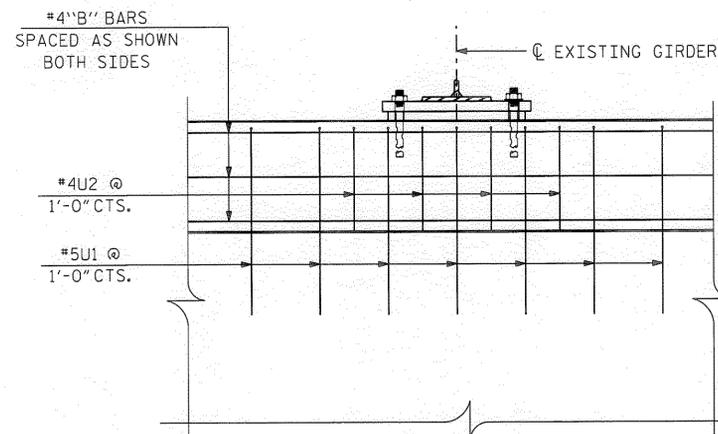
\*\* FOR GROUT FOR STRUCTURES,  
SEE SPECIAL PROVISIONS



**TYPICAL PLAN**

\* SPACING FOR 1 3/4" Ø x 2'-1" ANCHOR BOLT WITH 7" PROJECTION

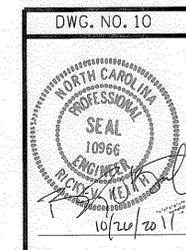
NOTE:  
BUILD-UP WALL SHALL BE CONSTRUCTED  
USING CLASS AA CONCRETE.



**TYPICAL ELEVATION**

**BEARING DETAIL**

PROJECT NO. 17BP.5.H.2  
WAKE COUNTY  
STATION: 82+42.41 -L- P.O.C.



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. 10
DETAILS						TOTAL SHEETS 10
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

M:\projects\2011\Division 5 Bridge Rehab\Bridge 571 Div. 5 Wake Co\Design\STRUCTURES\sect.dgn

DRAWN BY: F.D. WEEDEN DATE: OCT. 2011  
CHECKED BY: R.V. KEITH DATE: OCT. 2011

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

STATE PROJECT REFERENCE NO.	SHEET NO.
17BP.5.H.2	TCP-1

**PLAN FOR PROPOSED TRAFFIC CONTROL**

**WAKE COUNTY**

**TYPE OF WORK: TRAFFIC CONTROL FOR BRIDGE REHABILITATION**  
**LOCATION: I-40 BRIDGE NO. 571 OVER SOUTH SAUNDERS STREET**

**ROADWAY STANDARD DRAWINGS**

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS"-ROADWAY DESIGN UNIT-N.C. DEPARTMENT OF TRANSPORTATION-RALEIGH, N.C., DATED JULY 2006 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL PLAN DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW PANELS
1130.01	DRUM
1165.01	TRUCK MOUNTED IMPACT ATTENUATOR
1205.01	PAVEMENT MARKINGS - LINE TYPES & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1205.08	PAVEMENT MARKINGS - SYMBOLS & WORD MESSAGES
1250.01	PAVEMENT MARKER SPACING

**INDEX OF SHEETS**

SHEET NO.	TITLE
TCP-1	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND AND INDEX OF SHEETS
TCP-2	PROJECT GENERAL NOTES
TCP-3	PROJECT PHASING
TCP-4 AND TCP-5	DETAIL DRAWINGS FOR ADVANCED WORK ZONE WARNING SIGNS

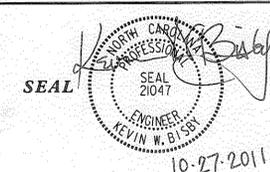
**LEGEND**

- GENERAL**
- DIRECTION OF TRAFFIC FLOW
  - NORTH ARROW
  - PROPOSED PVMT. EXIST. PVMT.
  - WORK AREA
- TRAFFIC CONTROL DEVICES**
- TYPE III BARRICADE
  - CONE
  - DRUM
  - FLASHING ARROW PANEL (TYPE C)
  - STATIONARY SIGN
  - PORTABLE SIGN
  - TEMPORARY CRASH CUSHION
  - PORTABLE CONCRETE BARRIER
  - TEMPORARY SHORING, (SHEET PILE)
  - SKINNY-DRUM
  - CHANGEABLE MESSAGE SIGN
  - TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
  - POLICE
  - FLAGGER
- PAVEMENT MARKINGS**
- PAVEMENT MARKING SYMBOLS

**PROJECT: 17BP.5.H.2**

10/27/2011 M:\projects\2009\05085\_NCDOT\_Div.Operations\J01\_Bridge Rehab\J02\Traffic Control\TCP\17BP.5.H.2\_top01.dgn mcoble

PLANS PREPARED BY :  
**RK&K**  
RUMMEL, KLEPPER & KAHL, LLP  
900 RIDGEFIELD DRIVE SUITE 350  
RALEIGH, NORTH CAROLINA 27609-3960  
NC LICENSE NO. F-0112 • (919) 878-9560



K. BISBY, P.E. PROJECT ENGINEER  
M. A. COLE PROJECT DESIGNER  
N. HARRIS PROJECT TECHNICIAN

FOR  
DIVISION OF HIGHWAYS

# GENERAL NOTES

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

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

## TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
I-40 AND I-40 RAMPS	MONDAY THROUGH FRIDAY 6:00 A.M. TO 9:00 P.M. SATURDAY 9:00 A.M. TO 9:00 P.M. SUNDAY 10:00 A.M. TO 9:00 P.M.
SOUTH SAUNDERS STREET	MONDAY THROUGH FRIDAY 7:00 A.M. TO 9:00 A.M. AND 2:00 P.M. TO 6:00 P.M.

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME	HOLIDAY
I-40 AND I-40 RAMPS SOUTH SAUNDERS STREET	HOLIDAY
	1) FOR UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
	2) FOR NEW YEAR'S BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31ST AND 9:00 P.M. JANUARY 2ND.  IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN UNTIL 9:00 P.M. THE FOLLOWING TUESDAY.
	3) FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 9:00 P.M. MONDAY.
	4) FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 9:00 P.M. TUESDAY.
	5) FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE DAY AFTER INDEPENDENCE DAY.  IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY, THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 9:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
	6) FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 9:00 P.M. TUESDAY.
	7) FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY 9:00 P.M. MONDAY.
	8) FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS DAY.
	9) FOR ANY EVENT, OCCURRING AT THE RBC CENTER, CARTER-FINLEY STADIUM AND/OR THE STATE FAIR GROUNDS BETWEEN TWO (2) HOURS BEFORE THE START AND TWO (2) HOURS AFTER THE END OF THE EVENT.

C) DO NOT CLOSE ROADS AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
I-40 AND I-40 RAMPS SOUTH SAUNDERS STREET	SUNDAY TO SATURDAY SUNDAY TO SATURDAY

## LANE AND SHOULDER CLOSURE REQUIREMENTS

- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED.
- F) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FEET OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING NCDOT 2006 ROADWAY STANDARD DRAWING NO. 1101.04, UNLESS THE WORK AREA IS PROTECTED BY AN APPROVED TEMPORARY TRAFFIC BARRIER OR GUARDRAIL.
- G) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FEET OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING NCDOT 2006 ROADWAY STANDARD DRAWING NO. 1101.02, UNLESS THE WORK AREA IS PROTECTED BY AN APPROVED TEMPORARY TRAFFIC BARRIER OR GUARDRAIL.
- H) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FEET OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING NCDOT 2006 ROADWAY STANDARD DRAWING NO. 1101.02, UNLESS THE WORK AREA IS PROTECTED BY AN APPROVED TEMPORARY TRAFFIC BARRIER OR GUARDRAIL.

## PAVEMENT MARKING

- I) REPLACE ANY PAVEMENT MARKING OBLITERATED FROM CONSTRUCTION OPERATIONS WITH 2 APPLICATIONS OF 6" WIDE PAINT.

## MISCELLANEOUS

- J) LAW ENFORCEMENT SHALL BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR POSITIONED WITHIN THE CLOSED LANE OF TRAVEL DURING ALL LANE CLOSURES ON I-40 AND/OR SOUTH SAUNDERS STREET AS DIRECTED BY THE ENGINEER.

10/28/2011  
 M:\projects\2009\09085\_NCDOT\_Div\_0nCall\01\_Bridge\_Rehab\02\_Traffic\_Control\TCP\17BP.5.H.2\_tcp02.dgn  
 mcole

PLANS PREPARED BY :  RUMMEL, KLEPPER & KAHL, LLP 900 RIDGEFIELD DRIVE SUITE 350 RALEIGH, NORTH CAROLINA 27609-3960 NC LICENSE NO. F-0112 (919) 878-9560 FOR THE DIVISION OF HIGHWAYS		 SEAL 10-28-2011	<h2>PROJECT NOTES</h2> <table border="1"> <tr> <td>SCALE:</td> <td>NONE</td> </tr> <tr> <td>DATE:</td> <td>10/20/11</td> </tr> <tr> <td>DWG. BY:</td> <td>NH</td> </tr> <tr> <td>DESIGN BY:</td> <td>MAC</td> </tr> <tr> <td>REVIEWED BY:</td> <td>KWB</td> </tr> </table>  <table border="1"> <tr> <th colspan="2">REVISIONS</th> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table> <p>CADD FILE 17BP.5.H.2_tcp02.dgn</p>	SCALE:	NONE	DATE:	10/20/11	DWG. BY:	NH	DESIGN BY:	MAC	REVIEWED BY:	KWB	REVISIONS					
SCALE:	NONE																		
DATE:	10/20/11																		
DWG. BY:	NH																		
DESIGN BY:	MAC																		
REVIEWED BY:	KWB																		
REVISIONS																			

# TRAFFIC CONTROL PHASING

**PHASE I**

**STEP 1:**  
 ERECT ADVANCED WORK ZONE WARNING SIGNS IN ACCORDANCE WITH WORK ZONE WARNING SIGN DETAILS. (SEE TCP-4 AND TCP-5)

**STEP 2:**  
 USING RDWY STD 1101.02 SHEETS 5 OF 9, 6 OF 9 AND 7 OF 9, PERFORM BRIDGE NO. 571 REHABILITATION WORK AS SHOWN IN THE STRUCTURE PLANS. LAW ENFORCEMENT SHALL BE PRESENT DURING WORK OPERATIONS REQUIRING LANE CLOSURES OF I-40 AND/OR SOUTH SAUNDERS STREET. (SEE TCP-2)

**STEP 3:**  
 USING RDWY STD 1101.02 SHEETS 5 OF 9, 6 OF 9 AND 7 OF 9, AT THE END OF EACH NIGHTS WORK PERIOD REPLACE ANY PAVEMENT MARKINGS THAT HAS BEEN OBLITERATED BY WORK OPERATIONS. REMOVE ANY TRAFFIC CONTROL DEVICES REMAINING IN THE TRAVEL LANES AND RESTORE I-40 AND/OR SOUTH SAUNDERS STREET TO THEIR ORIGINAL TRAFFIC PATTERN. (SEE TCP-2)

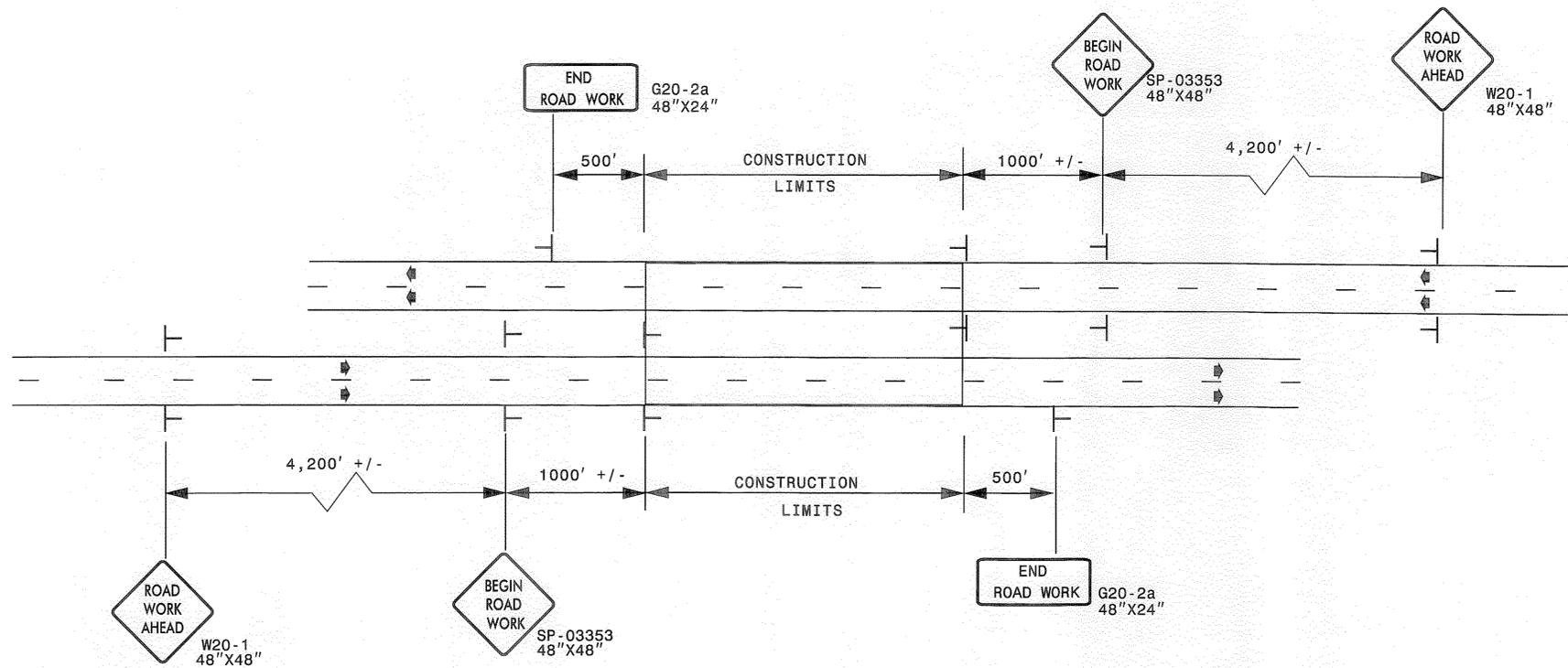
10/27/2011  
 M:\proj\cts\2009\09085.NCDDOT\_Div\_OnCell\101.Bridge Rehab\102.Traffic Control\TCP\17BP.5.H.2\_tcp03.dgn

<p><b>PLANS PREPARED BY :</b>    <b>RUMMEL, KLEPPER &amp; KAHL, LLP</b>          900 RIDGFIELD DRIVE SUITE 350          RALEIGH, NORTH CAROLINA 27609-3960          NC LICENSE NO. F-0112 (919) 878-9560  <b>FOR</b>  <b>THE DIVISION OF HIGHWAYS</b></p>	 SEAL 21047 ENGINEER KEVIN W. B. BY 10-27-2011	<p><b>TRAFFIC CONTROL PHASING</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">SCALE: NONE</td> <td rowspan="4" style="width: 20%; text-align: center;"> </td> <td style="width: 30%;">REVISIONS</td> </tr> <tr> <td>DATE: 10/2011</td> <td></td> </tr> <tr> <td>DWG. BY: NH</td> <td></td> </tr> <tr> <td>DESIGN BY: MAC</td> <td></td> </tr> <tr> <td>REVIEWED BY: KWB</td> <td></td> <td></td> </tr> </table>	SCALE: NONE		REVISIONS	DATE: 10/2011		DWG. BY: NH		DESIGN BY: MAC		REVIEWED BY: KWB		
SCALE: NONE		REVISIONS												
DATE: 10/2011														
DWG. BY: NH														
DESIGN BY: MAC														
REVIEWED BY: KWB														
		CADD FILE   17BP.5.H.2_tcp03.dgn												

# ADVANCED WORK ZONE WARNING SIGNING FOR FREEWAYS (4 LANES OR GREATER)

PROJ. REFERENCE NO. 17BP.5.H.2 SHEET NO. TCP-4

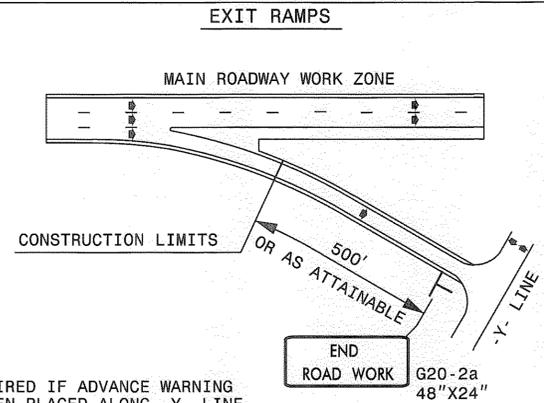
## DETAIL A



**LEGEND**  
 — STATIONARY SIGN  
 ⇨ DIRECTION OF TRAFFIC FLOW

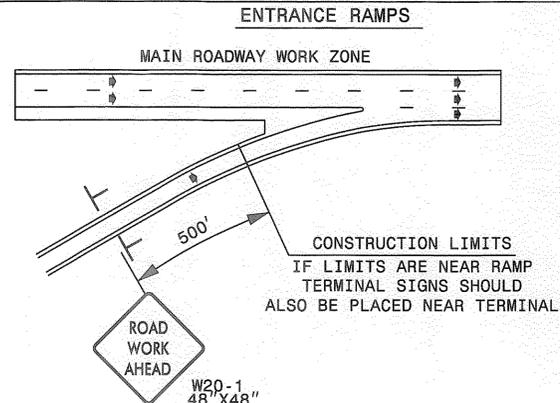
\* USE THE "\$250 SPEEDING PENALTY" SIGN, SPEED LIMIT SIGN, AND ORANGE PANEL; ONLY WHEN A "\$250 SPEEDING PENALTY" ORDINANCE HAS BEEN ISSUED BY THE REGIONAL TRAFFIC ENGINEER.

## DETAIL B



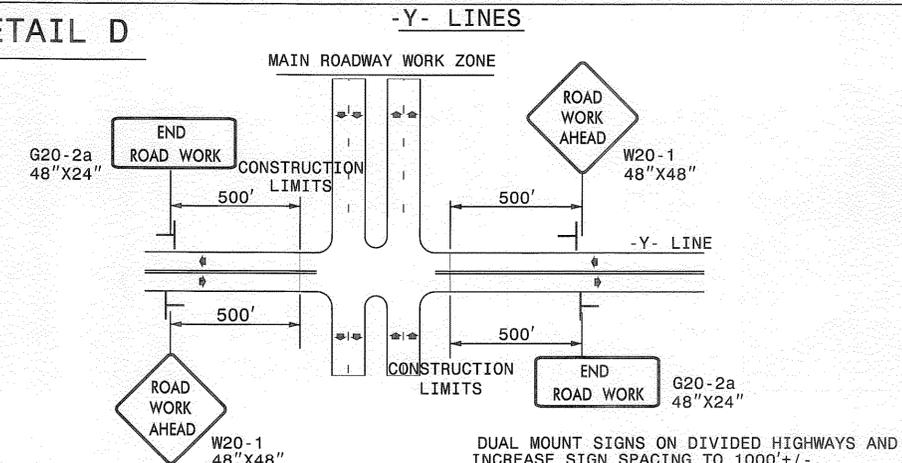
NOTE: SIGN NOT REQUIRED IF ADVANCE WARNING SIGNS HAVE BEEN PLACED ALONG -Y- LINE THAT RAMP INTERSECTS. IF CONSTRUCTION LIMITS ARE AT END OF RAMP, PLACE SIGN AT END OF RAMP.

## DETAIL C



CONSTRUCTION LIMITS  
 IF LIMITS ARE NEAR RAMP  
 TERMINAL SIGNS SHOULD  
 ALSO BE PLACED NEAR TERMINAL

## DETAIL D



## GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCED WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- SIGNS SHOWN ARE REQUIRED FOR WORK ZONES THAT WILL REMAIN IN EFFECT OVERNIGHT. FOR SHORT-TERM DAILY MAINTENANCE TYPE OPERATIONS, THIS SIGNING APPLICATION IS OPTIONAL; MAY USE ONLY APPLICABLE ROADWAY STANDARD DRAWINGS INSTEAD. HOWEVER, IF THIS SIGNING APPLICATION IS USED, SIGNS MAY BE PORTABLE MOUNTED.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE 3LB STEEL U-CHANNEL POST OR 4" X 4" WOOD POST FOR ALL WORK ZONE SIGNS. 3LB STEEL U-CHANNEL POSTS MUST MEET THE REQUIREMENTS OF STANDARD SPECIFICATION SECTION 1094-1(B). MAY BE GALVANIZED STEEL OR MAY BE PAINTED GREEN BY THE POST MANUFACTURER. SQUARE STEEL TUBING POSTS HAVING EQUIVALENT STRENGTH OF THE 3 LB STEEL U-CHANNEL POST ARE ALSO ACCEPTABLE FOR USE. ERECT SIGNS PER ROADWAY STANDARD DRAWING 1110.01. PAYMENT FOR WOOD POSTS, 3LB STEEL U-CHANNEL AND SQUARE STEEL TUBING POSTS WITH SIGNS WILL BE MADE ACCORDING TO STANDARD SPECIFICATION "WORK ZONE SIGNS" SECTION 1110.
- WHEN NECESSARY, USE SPLICING IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1110.01. REMOVE ENTIRE POST WHEN REMOVING SIGNS WITH SPLICED POSTS.
- DO NOT BACK BRACE SIGN SUPPORTS.

SHEET 1 OF 2

PLANS PREPARED BY:  
**RK&K**  
 RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE SUITE 350  
 RALEIGH, NORTH CAROLINA 27609-3960  
 NC LICENSE NO. F-0112 (919) 878-9560  
 FOR  
 THE DIVISION OF HIGHWAYS

SEAL  
 NORTH CAROLINA  
 PROFESSIONAL ENGINEER  
 MEVIN W. BISHOP  
 2047  
 10-27-2011

**ADVANCED WORK ZONE  
 WARNING SIGNS FOR FREEWAYS**

SCALE: NONE  
 DATE: 10/20/11  
 DWG. BY: NH  
 DESIGN BY: MAC  
 REVIEWED BY: KWB

REVISIONS

CADD FILE 17BP.5.H.2 tcp04.dgn

10/27/2011 \\s:\p\projects\2009\09085\_NCDOT.Div. OnCall\J01.Bridge Rehab\J02\Traffic Control\TCP\17BP.5.H.2\_tcp04.dgn

# SP 03353

SIGN NUMBER: SP-03353 TYPE: A QUANTITY: 1 SIGN WIDTH: 4'-0" HEIGHT: 4'-0" TOTAL AREA: 16.0 Sq.Ft. BORDER TYPE: FLUSH RECESS: 0.59" WIDTH: 0.75" RADII: 1.38" NO. Z BARS: N/A LENGTH: N/A	BACKG COLOR: Fluorescent Orange COPY COLOR: Black <table border="1"> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> MAT'L:	SYMBOL	X	Y	WID	HT																																														DESIGN BY: CL DOWNEY PROJECT ID: ALL PROJECTS CHECKED BY: CHECKED DIV: DIV STD #: W20-1 DATE: Aug 20, 2003
SYMBOL	X	Y	WID	HT																																																

USE NOTES: 2, 4

- Legend and border shall be direct applied Type VII reflective sheeting.
- Legend and border shall be direct applied non-reflective sheeting.
- Shields shall be Type VII reflective sheeting on 0.032" (0.8mm) aluminum and demountable.
- Background shall be Type VII reflective sheeting.
- Background shall be Type I reflective sheeting.
- Center arrow(s) vertically on sign.
- Bottom panel shall be yellow Type III sheeting. Legend shall be direct applied black non-reflective sheeting. Yellow panel is:

LETTER POSITIONS

Letter spacings are to start of next letter											Series/Size
	B	E	G	I	N						Text Length
	22.4	5.3	4.6	5.4	2.5	3.8	22.4				C7
											21.6
											C7
	23.4	5	5.2	5.6	3.8	23.4					19.6
											C7
	22.6	6.4	5.6	5.2	4	22.6					21.2

Spacing Factor is 1 unless specified otherwise

## GENERAL NOTES FOR THE "BEGIN ROAD WORK" SIGN

- SIGN SP-03353 "BEGIN ROAD WORK" ONLY APPLIES TO FULL CONTROL AND PARTIAL CONTROL OF ACCESS ROADWAYS
- WHEN USED, INSTALL SIGN SP-03353 "BEGIN ROAD WORK" ACCORDING TO DETAIL A ON SHEET TCP-4.

PLANS PREPARED BY :

RUMMEL, KLEPPER & KAHL, LLP  
 900 RIDGEFIELD DRIVE SUITE 350  
 RALEIGH, NORTH CAROLINA 27609-3960  
 NC LICENSE NO. F-0112 (919) 878-9560

FOR  
 THE DIVISION OF HIGHWAYS

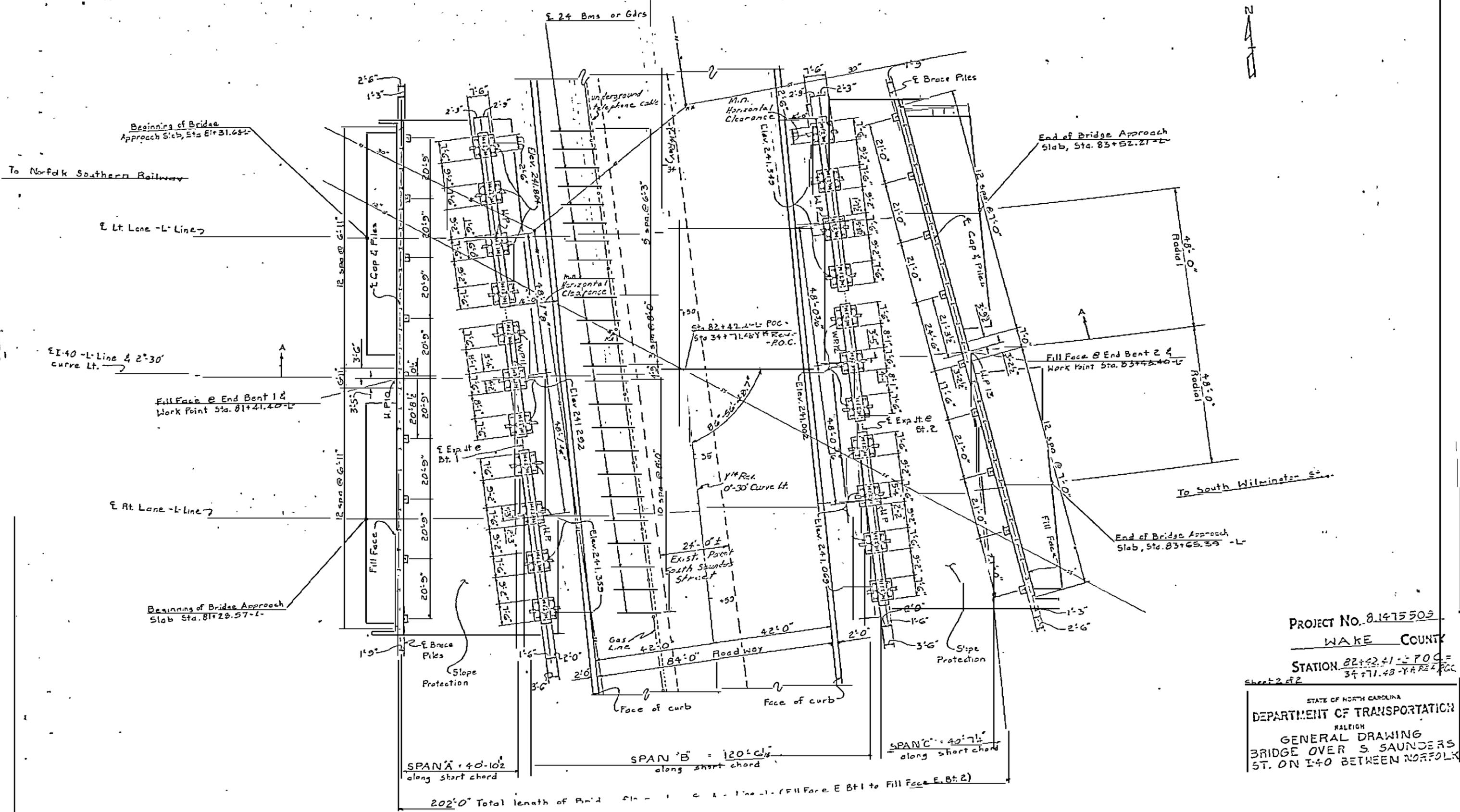
ADVANCE WORK ZONE  
 WARNING SIGN DESIGN

SCALE: NONE		REVISIONS
DATE: 10/2011		
DWG. BY: NH		
DESIGN BY: MAC		
REVIEWED BY: KWB		

CADD FILE 17BP.5.H.2\_tcp05.dgn



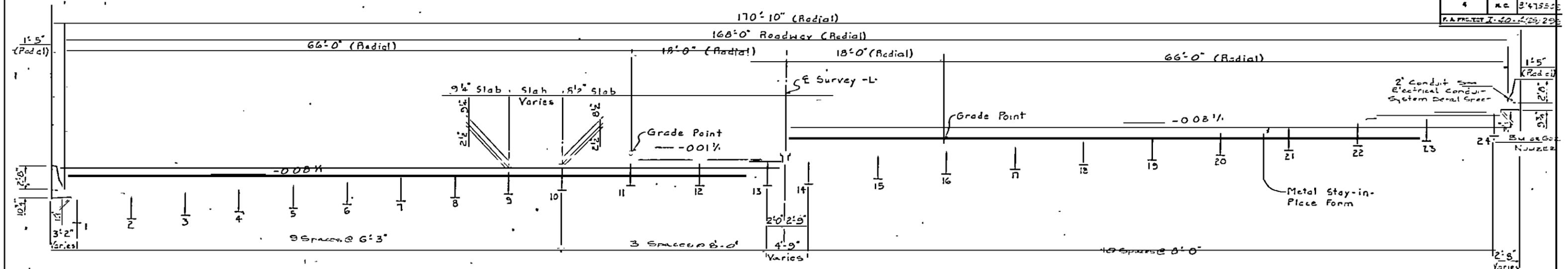
FED. ROAD DIST. NO.	STATE	PROJECT NO.
4	N.C.	91475
P.A. PROJECT E-40-4(25)200		



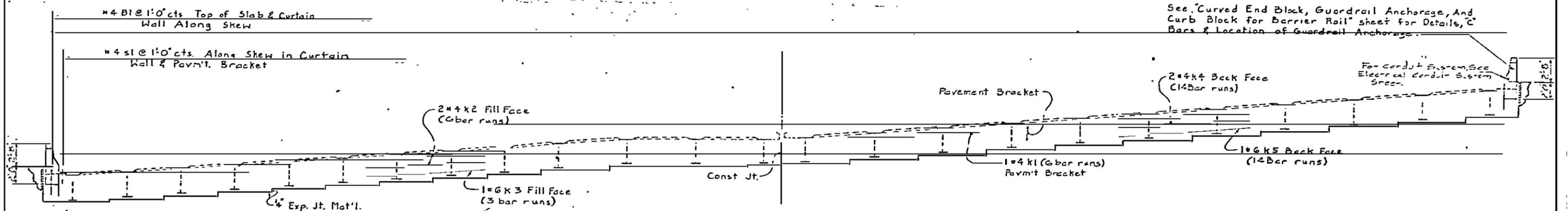
PROJECT NO. 81475 509  
WAKE COUNTY  
STATION 82+42.41 = P.O.C. = 34+71.43 - Y.A. REAR P.O.C.  
Sheet 2 of 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
GENERAL DRAWING  
BRIDGE OVER S SAUNDERS ST. ON I-40 BETWEEN NORFOLK

FED. ROAD DIST. NO.	STATE	PROJECT NO.
4	N.C.	81475509
P.A. PROJECT 1-40-4(25) 200		



TYPICAL SECTION

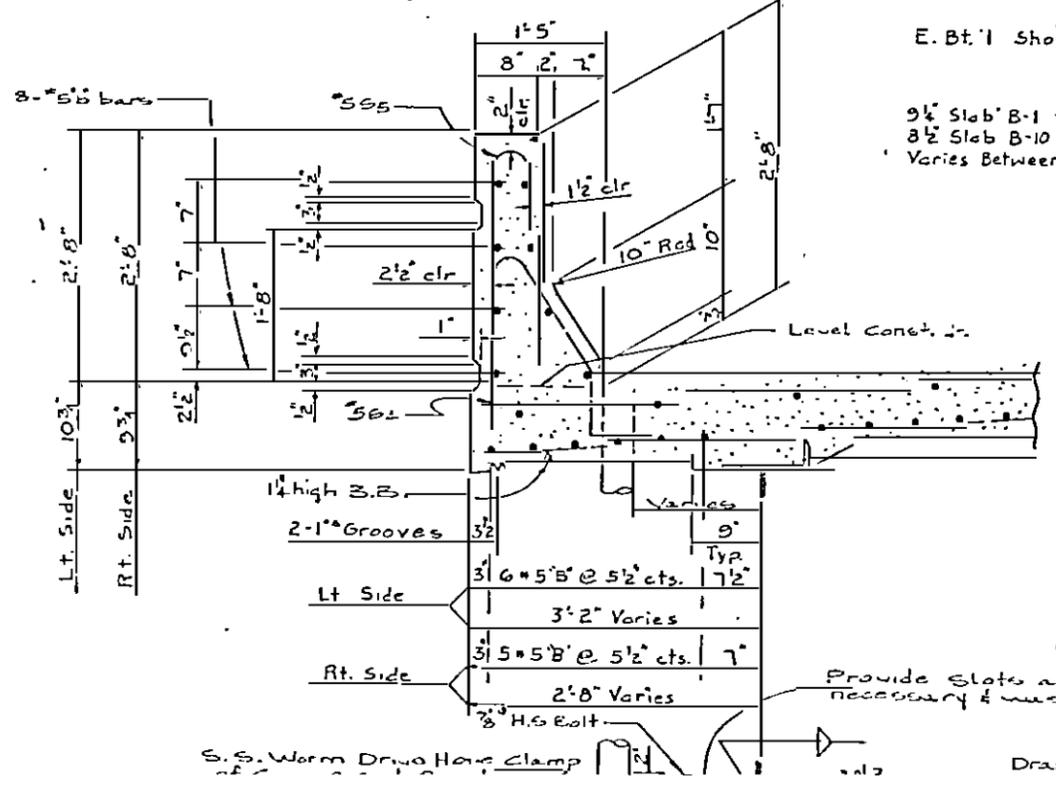


END ELEVATION

E. Br. 1 Shown, For Bar Marks @ E. Br. 2 See Plan

NOTES

- For Bars Indicated And No Bar Mark Shown, See Plan of Spans.
- Floor Drains To Be Set  $\frac{3}{8}$ " Below Surface of Slab.
- Stress In Extreme Fiber Of Structural Steel Equals 27,000 Lbs. Per Sq. In.
- For Other Design Data And General Notes, See Sheet S-N.
- No Chamfer Required on Exterior Girder Buildups.
- If Contractor Elects To Use The Permitted Transverse Construction Joints In Span 'B', A Concrete Pouring Diagram And Relative Movement By Pours Will Be Furnished By The Structure Design Dept. Upon Request.
- Stay-In-Place Metal Forms Shall have Closed Tapered Ends.
- \* Drains shall be of PVC Plastic Pipe, See Specifications. Drains to be on Left Side Only in Spans 'A' & 'C'.

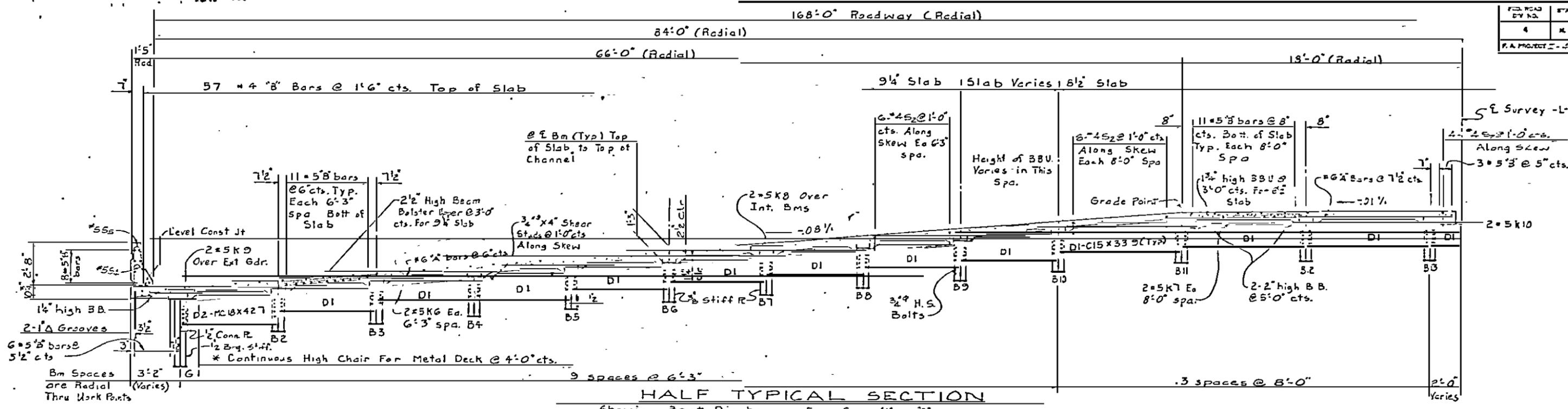


DETAIL SHOWING SLAB DEPTH

SPAN 'A'	SPAN 'C'
1'-0"	1'-0"
2'-0"	2'-0"
3'-0"	3'-0"
4'-0"	4'-0"
5'-0"	5'-0"
6'-0"	6'-0"
7'-0"	7'-0"
8'-0"	8'-0"
9'-0"	9'-0"
10'-0"	10'-0"
11'-0"	11'-0"

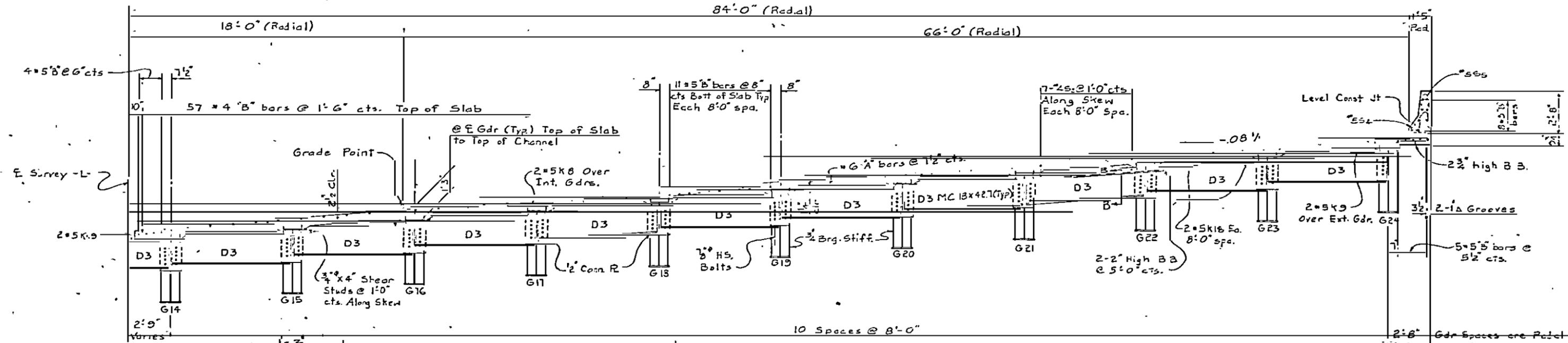
PROJECT No. 81475509  
 WAKE COUNTY  
 STATION: 82+42.41-L P.O.C.  
 Sheet 1 of 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTIONS



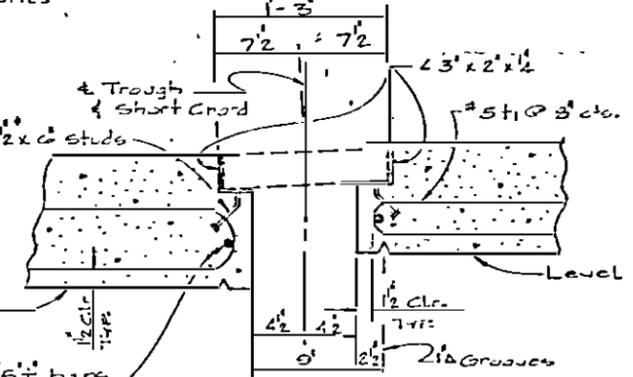
**HALF TYPICAL SECTION**

Showing Bent Diaphragms For Spans 'A' or 'C'  
Slab Reinforcing Typical For All Spans.

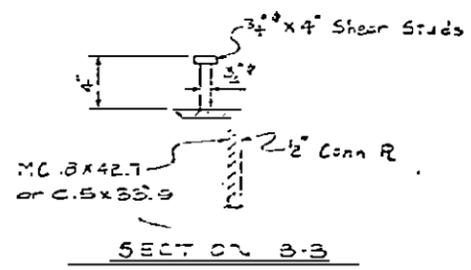


**HALF TYPICAL SECTION**

Showing Bent Diaphragms For Span 'B' or Bent 1 or 2  
Slab Reinforcing Typical For All Spans.

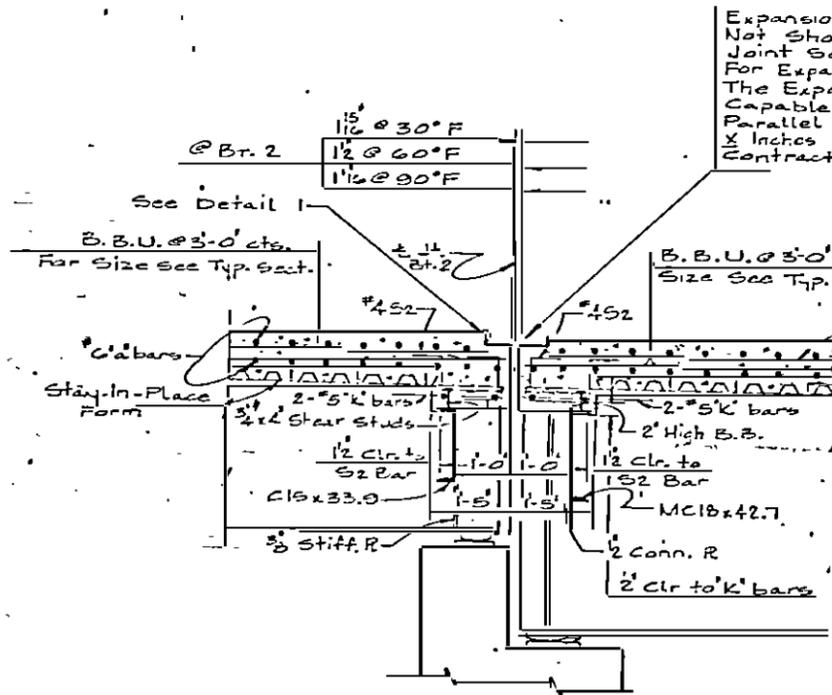


\*Provide Continuous High Chair For Metal Deck (C.H.C.M.) @ 4'-0" cts. With Leg Spacing to Match the Pitch of the Form and Adequate to Support Bottom Layer of Slab Reinforcement a clear Distance of 1/4" Above the Top of the Stay-In-Piece Form. For Reinforcing Bar Supports, See Special Provisions.



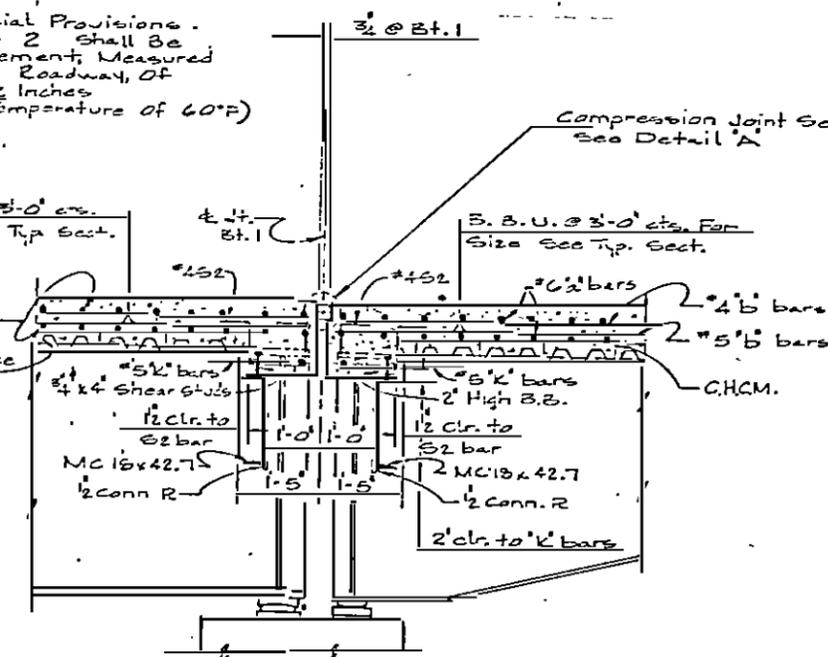
PROJECT NO. 81475505  
 WAKE COUNTY  
 STATION: 82+42.41-L.P.O.  
 Sheet 2 of 2  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTIONS

Expansion Joint Seal is Required At This Joint But Not Shown. See Sketch Showing Limits of Expansion Joint Seal.  
 For Expansion Joint Seal, See Special Provisions. The Expansion Joint Seal At Bent 2 shall be Capable of Handling A Total Movement, Measured Parallel To The Centerline of The Roadway, of X Inches (Y Inches Expansion And Z Inches Contraction From A Mid-Point Temperature of 60°F)



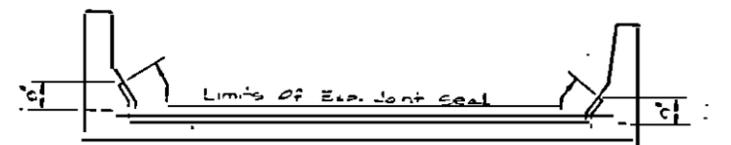
SECTION B-B

	Bt. 1	Bt. 2
X =	1/2	15/16
Y =	1/4	13/16
Z =	1/4	13/16

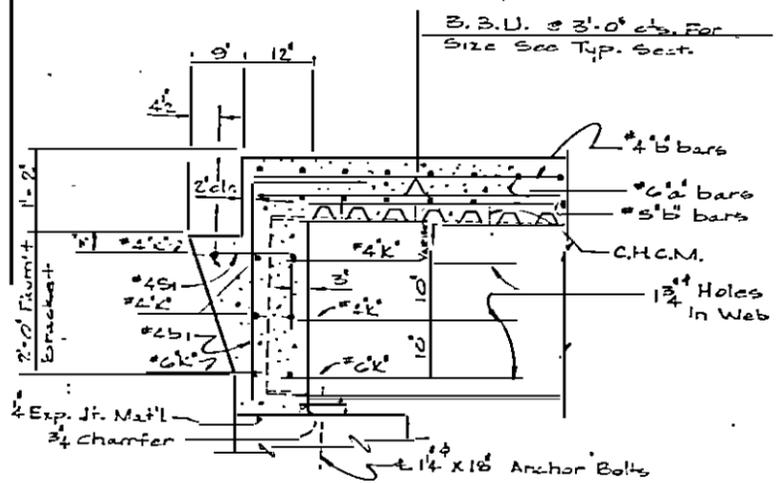


SECTION C-C

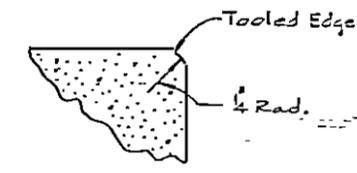
\* Expansion Joint Seal To Be Set 1/2 Below Top of Slab. A Joint In The Device Will Be Required At Each Break In The Cross Slope of The Slab.



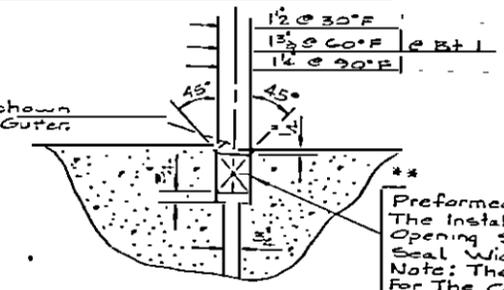
SKETCH SHOWING LIMITS OF EXPANSION JOINT SEAL



SECTION A-A



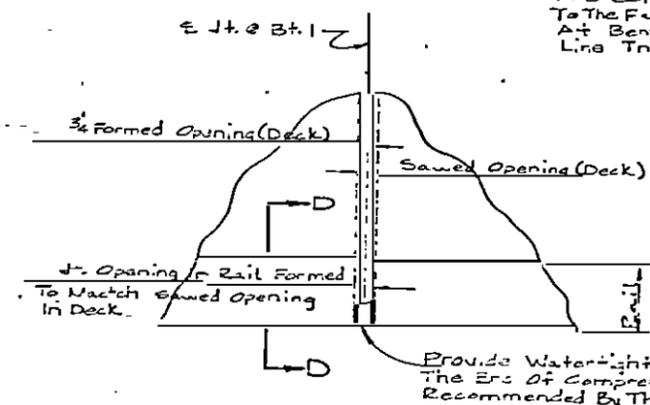
DETAIL 1 For Formed Joint



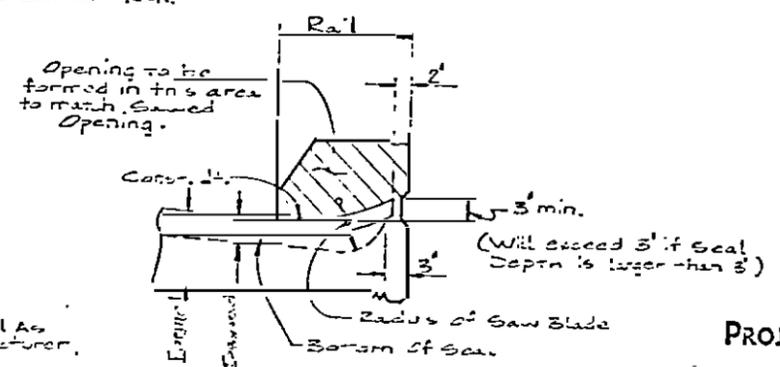
DETAIL A

\*\* Preformed Compression Joint Seal. See Special Provisions. The Installed Compression Seal Shall Be Watertight. Opening Shown Are Based On A Nominal Uncompressed Seal Width of 2". Note: The Contractor Will Not Be Permitted To Form The Joint For The Compression Seal In Lieu Of Sawing The Joint.

The Contractor's Attention is Called To The Fact That The Joint In The Deck At Bent 1 Continues In A Straight Line Through The Barrier Rail.



PLAN



SECTION D-D

DETAILS OF OPENING & COMPRESSION JOINT

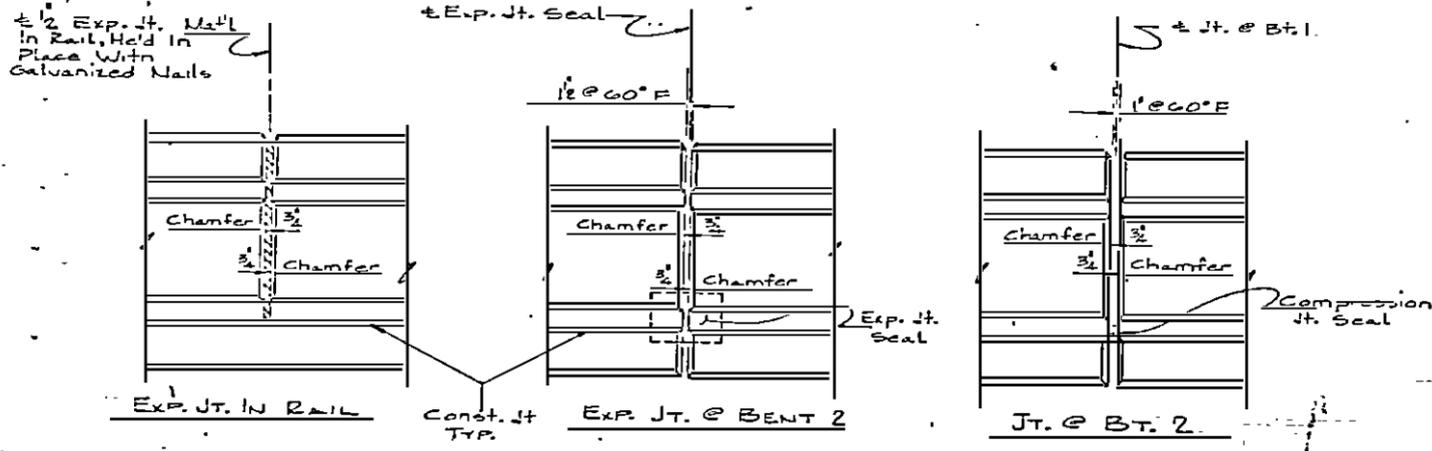
PROJECT NO. 8-1475509

WAKE COUNTY

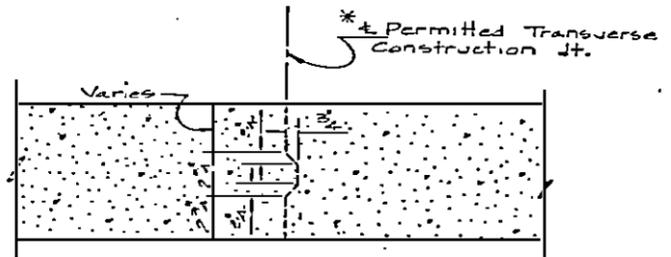
STATION 82-42.4-6-700

SHEET 3 of 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE

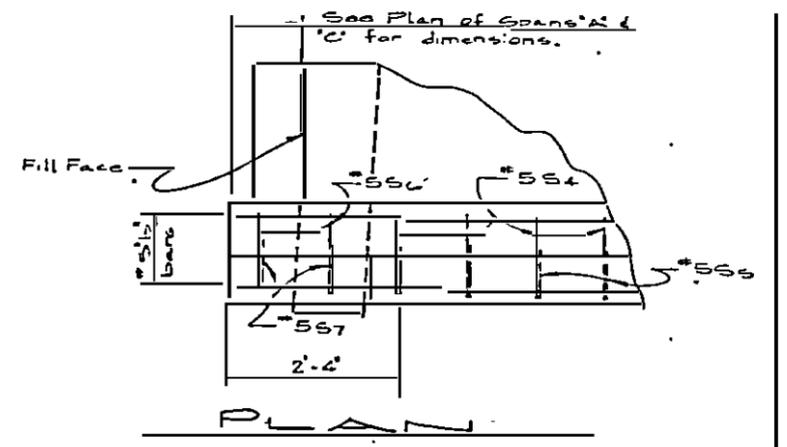


RAIL ELEVATIONS

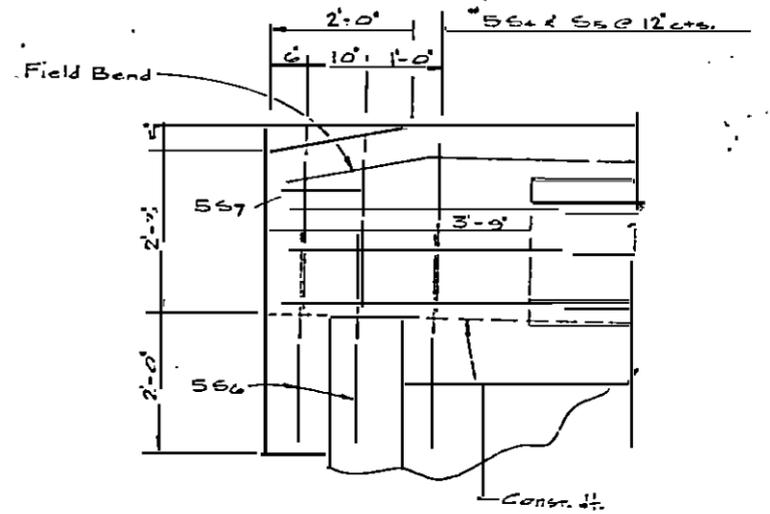


SECTION E-E  
(Reinforcing Steel Shall Be Continuous Thru Joint)

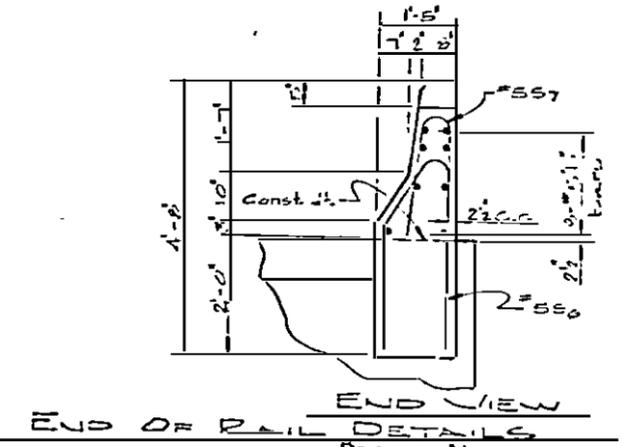
\* If Contractor elects to use the Permitted Transverse Construction Joints in the Bridge Slab, a Concrete Pouring Diagram and Relative Movement due to pours will be furnished by the Structure Design Dept. upon request.



PLAN



SIDE VIEW



END OF RAIL DETAILS

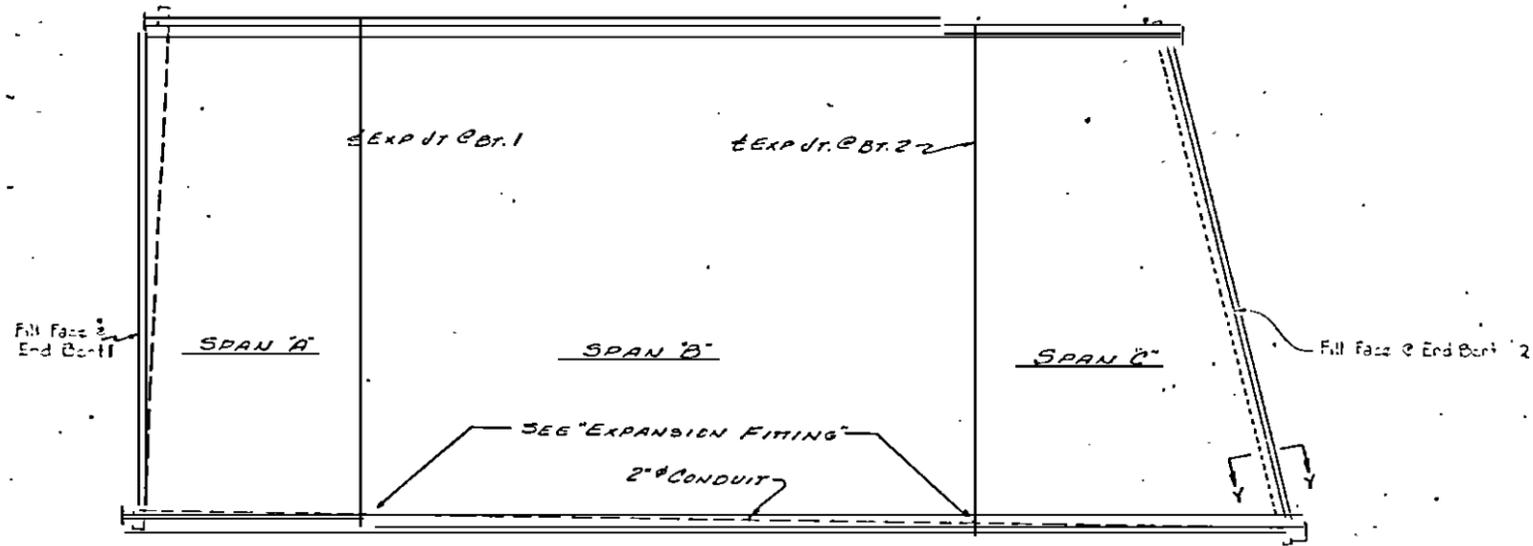
PROJECT NO. S.1475509

WAKE COUNTY

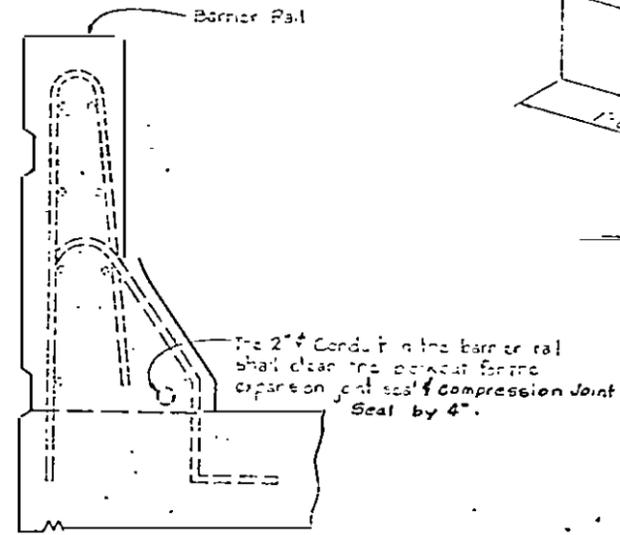
STATION 32-42.41-L-PC

SHEET 2 OF 2

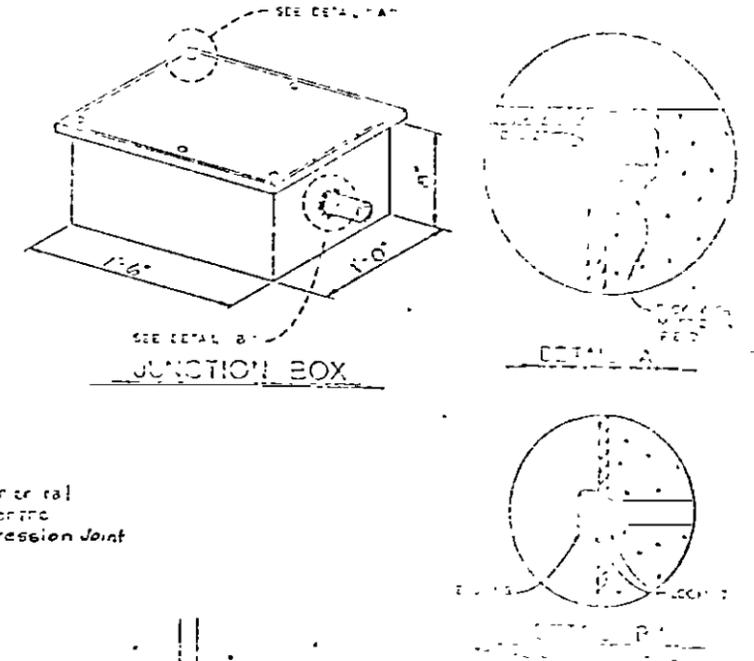
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE



PLAN OF SPANS



SECTION "K-K"

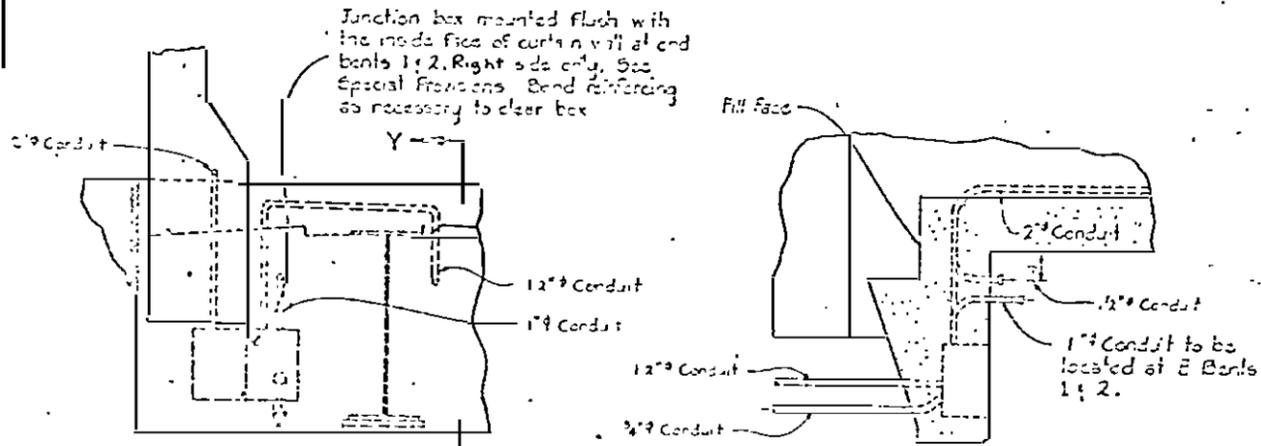


JUNCTION BOX

EXPANSION FITTING

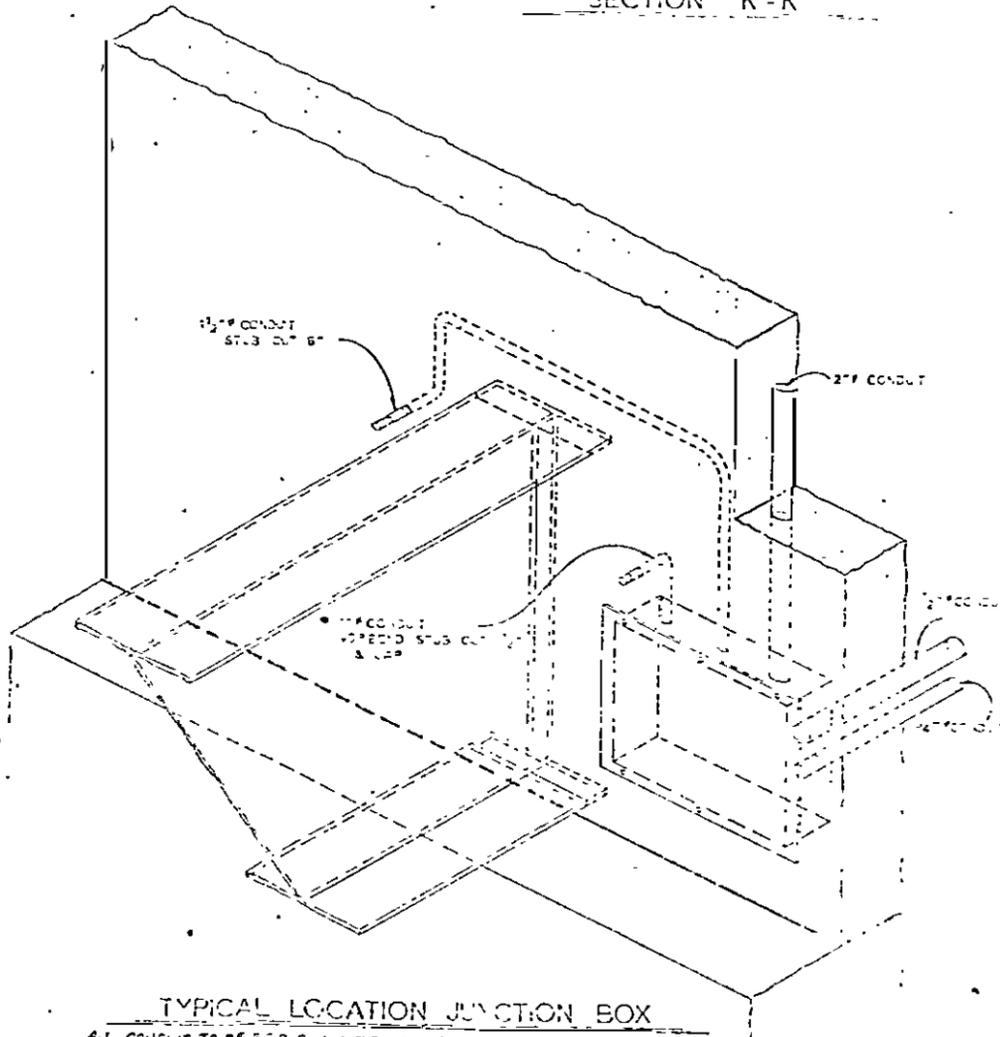
NOTES

Reinforcing Steel is to be shifted or bent as necessary to clear junction boxes.  
 For requirements and payment for conduit system, see Special Provisions.  
 All exposed ends of conduit to be threaded and capped.



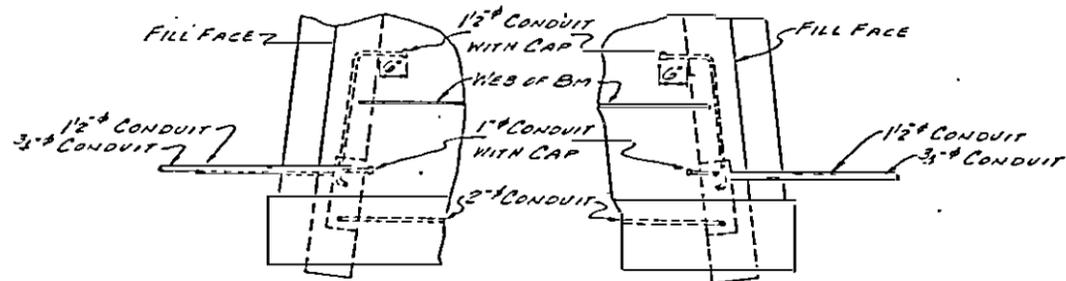
PART END ELEVATION

SECTION Y-Y



TYPICAL LOCATION JUNCTION BOX

ALL CONDUIT TO BE RFD C-CLASSIFIED



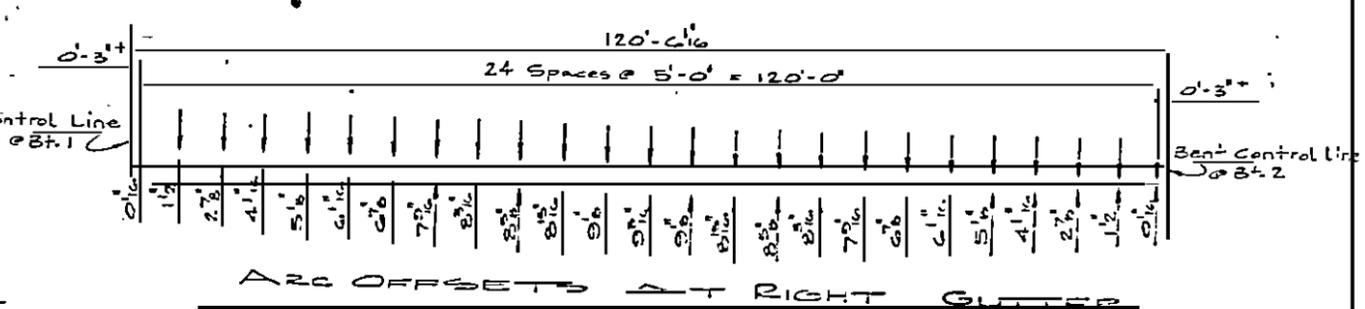
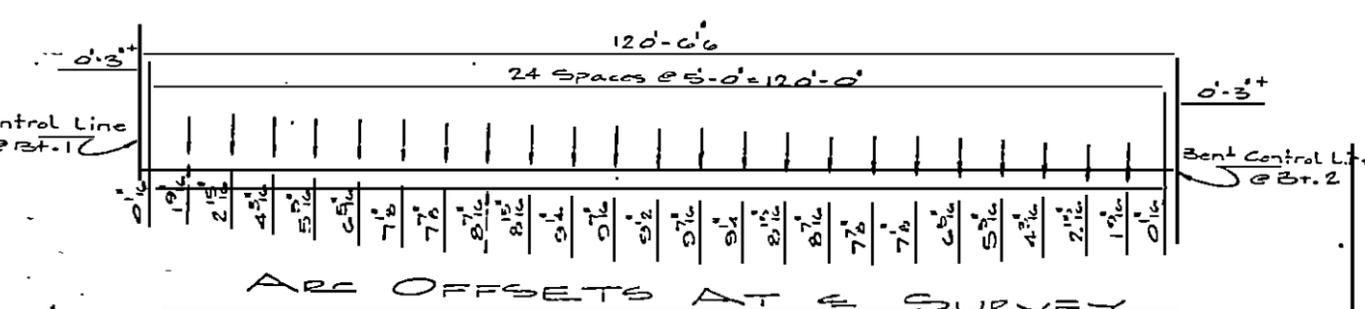
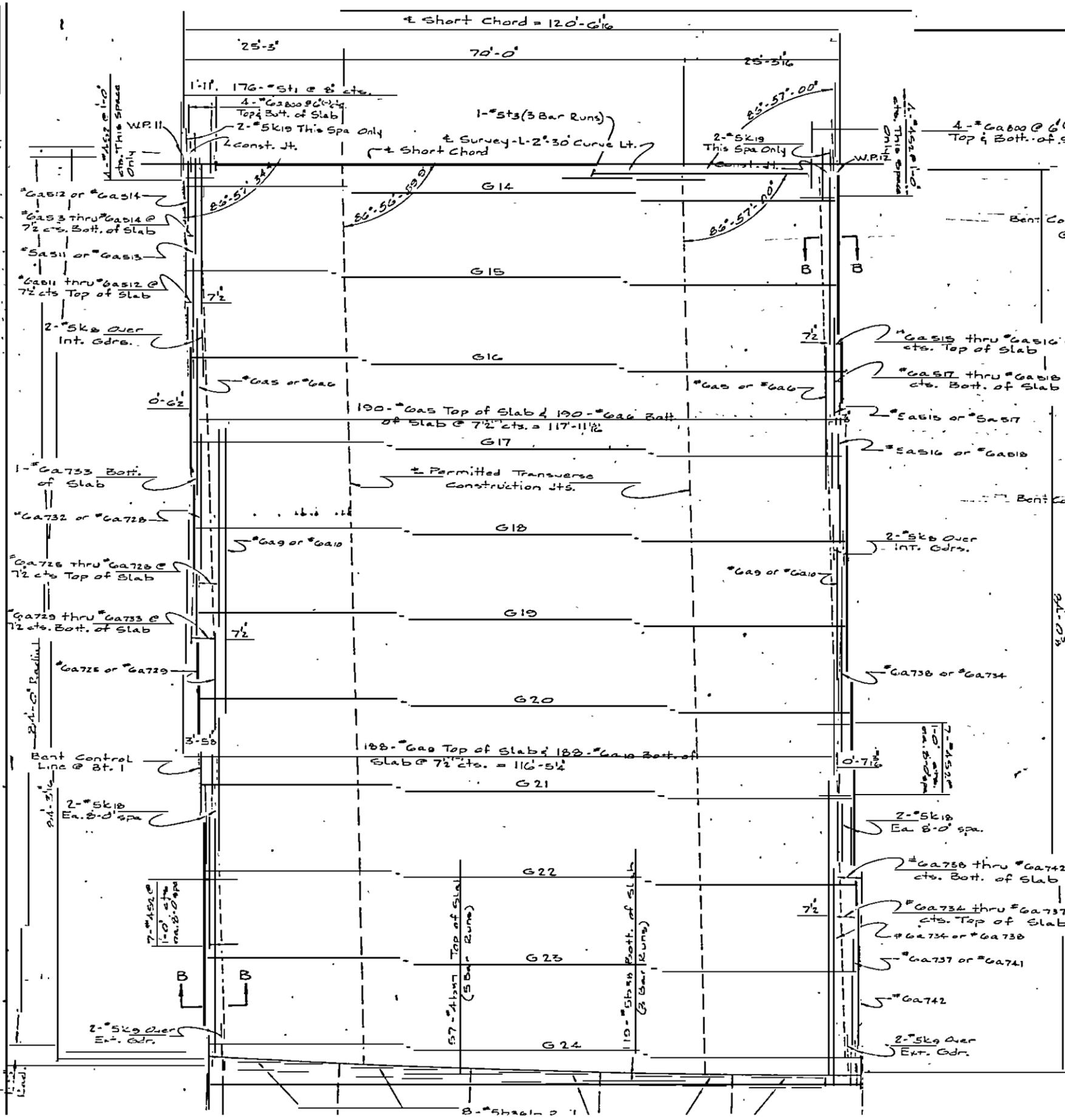
PROJECT NO. 81475509  
 MAKE \_\_\_\_\_  
 DATE 02-22-11

ELECTRICAL CONDUIT SYSTEM DETAILS









Note: Transverse Reinforcing Steel To Be Placed Normal To Girder 17.

LEFT & RIGHT SIDE SPAN 'B'	
MINIMUM SPICE LENGTHS	
BAR	SPACE
#2537	1'-2"
#5036	1'-4"

PROJECT No. S.1475503  
WAKE COUNTY  
 STATION: 82+22.415200  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH





REINFORCING STEEL

SPAN 'A'

SPAN 'B'

SPAN 'C' (CONT'D)

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
a101	1	*C	45-11'	69	a712	1	*C	17-1'	26	a130	1	*C	5-1-1'	77	b37	570	*4	Str	24-10'	9,456	a153	1	*C	28-8'	43	
a102			35-5'	53	a715			9-11'	15	a131			41-9'	63	b38	780	*5	Str	40-11'	33,287	a154			2-1'	12	
a103			25-0'	38	a714			2-10'	4	a132			32-5'	49							a155			47-10'	72	
a104			14-8'	22	a717			53-0'	80	a133			23-1'	35	k17	36	*5	Str	5-0'	207	a156			27-4'	41	
a105			4-0'	6	a718			45-11'	69	a134			13-9'	21	k18	52	*5	Str	7-3'	392	a157			53-0'	80	
a106			48-10'	73	a719			38-9'	58	a135			4-5'	7	k19	88	*5	2	5-11'	543	a158			49-10'	75	
a107			38-4'	58	a720			31-8'	48	a136			51-8'	78	k9	8	*5	3	4-2'	35	a159			46-9'	70	
a108			27-11'	42	a721			24-7'	37	a137			42-6'	64	k10	4	*5	Str	4-0'	17	a160			43-8'	66	
a109			17-5'	26	a722			17-6'	26	a138			33-2'	50							a161			40-7'	61	
a110			6-11'	10	a723			10-4'	16	a139			23-10'	36	s2	280	*4	5	3-4'	623	a162			37-6'	56	
a111			52-0'	78	a724	1	*C	3-3'	5	a140			14-6'	22	+1	352	*5	9	3-0'	1,101	a163			34-5'	52	
a112			46-4'	70						a141			5-2'	8	+3	6	*5	Str	41-0'	257	a164			31-4'	47	
a113			40-7'	61	a1	59	*C	Str	57-3'	5073	a142			44-10'	67	a800	8	*C	Str	4-6'	54	a165			28-3'	42
a114			35-0'	53	a2	59			60-0'	5317	a143			37-6'	56						a166			25-2'	38	
a115			29-4'	44	a3	59			29-4'	2599	a144			28-2'	42						a167			22-0'	33	
a116			23-8'	36	a4	59			26-8'	2363	a145			18-11'	28						a168			18-11'	28	
a117			18-1'	27	a7	66			31-1'	3081	a146			9-6'	14						a169			15-10'	24	
a118			12-4'	19	a8	66			27-4'	2710	a147			54-7'	82						a170			12-9'	19	
a119			6-8'	10	a9	71			55-7'	5928	a148			47-3'	71						a171			9-8'	15	
a120			55-4'	83	a10	71	*C	Str	59-7'	6354	a149			37-11'	57						a172			6-8'	10	
a121			49-8'	75							a150			28-7'	43						a173			3-7'	5	
a122			44-0'	66	b1	170	*4	1	5-8'	644	a151			19-4'	29						a174			55-11'	84	
a123			38-4'	58	b3	12	*5	Str	15-4'	192	a152	1	*C	Str	9-11'	15					a175			52-10'	79	
a124			32-8'	49	b4	22			15-9'	361											a176			49-9'	75	
a125			27-0'	41	b5				16-2'	371	a317	1	*C	Str	18-3'	27					a177			46-7'	70	
a126			21-5'	32	b6				16-7'	381	a318				6-8'	10					a178			43-6'	65	
a127			15-9'	24	b7				17-0'	390	a319				16-1'	24					a179			40-5'	61	
a128			10-0'	15	b8				17-5'	400	a320				4-5'	7					a180			37-4'	56	
a129	1	*C	Str	4-5'	7	b9			17-10'	409	a321				17-10'	27					a181			34-3'	51	
a301	1	*C	Str	24-2'	36	b10			18-3'	419	a322				6-2'	9					a182			31-2'	47	
a302						b11			18-5'	430	a323				24-11'	37					a183			28-1'	42	
a303						b12			19-2'	440	a324	1	*C	Str	13-3'	20					a184			25-0'	38	
a304						b13			19-8'	451	a51	1	*C	Str	19-3'	29					a185			21-11'	33	
a305						b14			20-3'	465	a512				7-5'	11					a186			18-10'	28	
a306						b15	22		20-9'	476	a513				20-3'	30					a187			15-8'	24	
a307						b16	6		20-11'	131	a514				8-4'	13					a188			12-7'	19	
a308						b17	8		21-1'	176	a515				19-7'	29					a189			9-7'	14	
a309						b18	22		21-8'	497	a516				7-9'	12					a190			6-6'	10	
a310						b19			22-2'	509	a517				22-7'	34					a191	1	*C	Str	3-5'	5
a311						b20			22-8'	522	a518	1	*C	Str	10-8'	16					a325	1	*C	Str	25-7'	38
a312						b21			23-2'	535	a725	1	*C	Str	45-2'	68					a326			21-9'	33	
a313						b22			23-10'	547	a726				33-2'	50					a327			17-11'	27	
a314						b23			24-5'	560	a727				21-4'	32					a328			13-11'	21	
a315						b24			24-11'	572	a728				9-4'	14					a329			10-1'	15	
a316	1	*C	Str	8-11'	13	b25			25-6'	585	a729				49-11'	75					a330			6-3'	9	
a501	1	*C	Str	18-10'	28	b26			26-0'	597	a730				37-11'	57					a331			2-5'	4	
a502						b27	22		26-7'	610	a731				26-0'	39					a332			25-10'	39	
a503						b28	10	*5	26-8'	278	a732				14-1'	21					a333			22-0'	33	
a504						b29	39	*4	17-0'	432	a733				2-2'	3					a334			18-1'	27	
a505						b30	38	*4	18-11'	480	a734				47-9'	72					a335			14-2'	21	
a506						b31	38	*4	20-11'	531	a735				35-10'	54					a336			10-4'	16	
a507						b32	38	*4	22-9'	577	a736				24-0'	36					a337			6-6'	10	
a508						b33	38	*4	24-11'	632	a737				12-0'	18					a338	1	*C	Str	2-8'	4
a509						b34	38	*4	Str	26-8'	677	a738				54-10'	82				a519	1	*C	Str	27-7'	41
a510	1	*C	Str	6-8'	10	k1	6	*4	Str	29-5'	118	a739				42-10'	64				a520	1		23-9'	36	
a701	1	*C	Str	47-0'	71	k2	12	*4	Str	30-0'	240	a740				30-11'	46				a521			19-10'	30	
a702						k3	3	*C	Str	58-5'	263	a741				19-0'	29				a522			15-10'	24	
a703						k4	28	*4	Str	13-18'	259	a742	1	*C	Str	7-1'	11					a523			11-11'	17
a704						k5	14	*C	Str	14-0'	294	a1	234	*C	Str	57-3'	20122					a524			4-1'	6
a705						k6	13	*5	Str	5-8'	106	a2	234			60-0'	21,088					a525			4-1'	6
a706						k7	26	*5	Str	7-5'	201	a3	190			29-4'	8371					a526			23-7'	25
a707						k8	44	*5	2	5-11'	272	a4	190			26-8'	7610					a527			15-8'	30
a708						k9	4	*5	3	4-2'	17	a5	190			31-9'	9061					a528			15-9'	24
a709						k10	2</																			

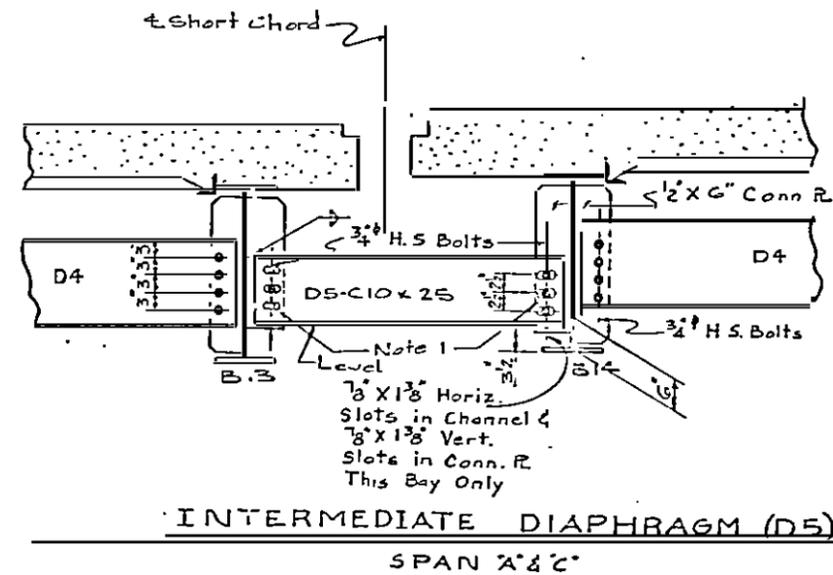
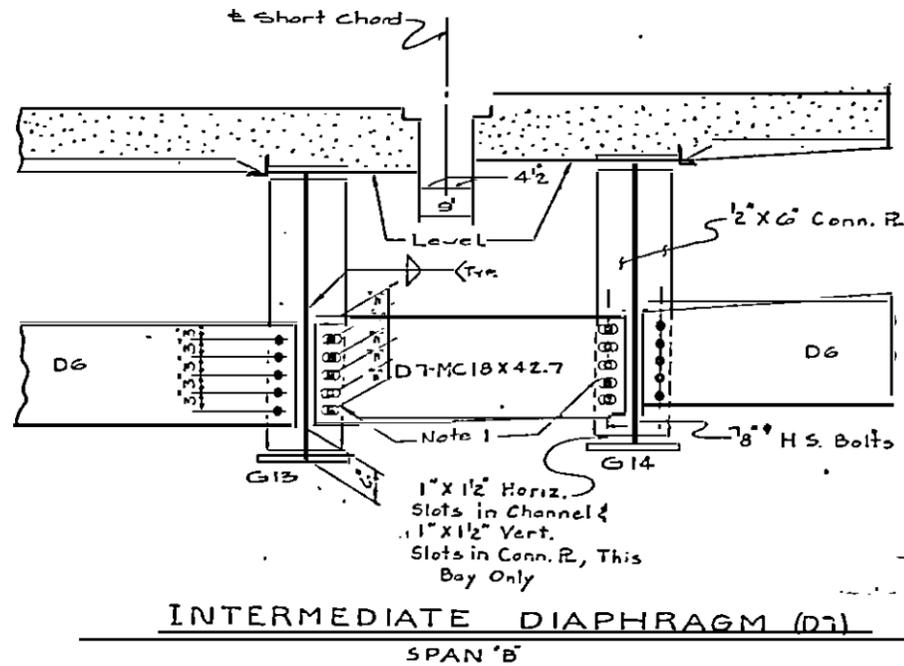
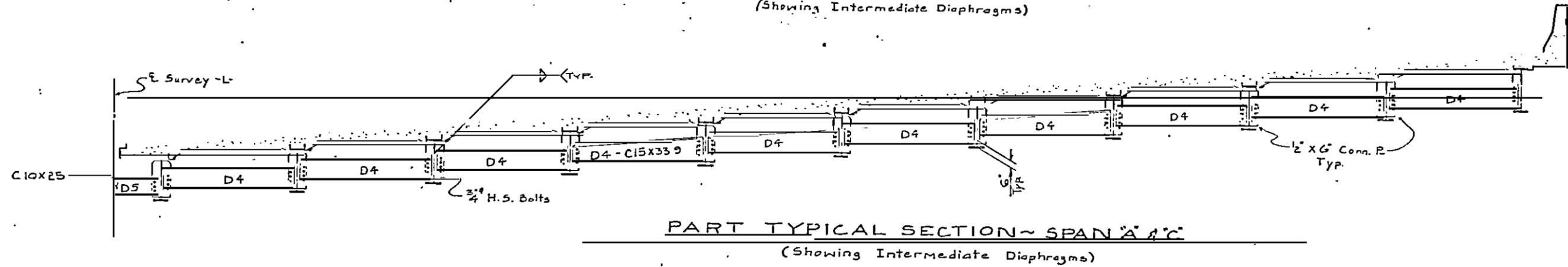
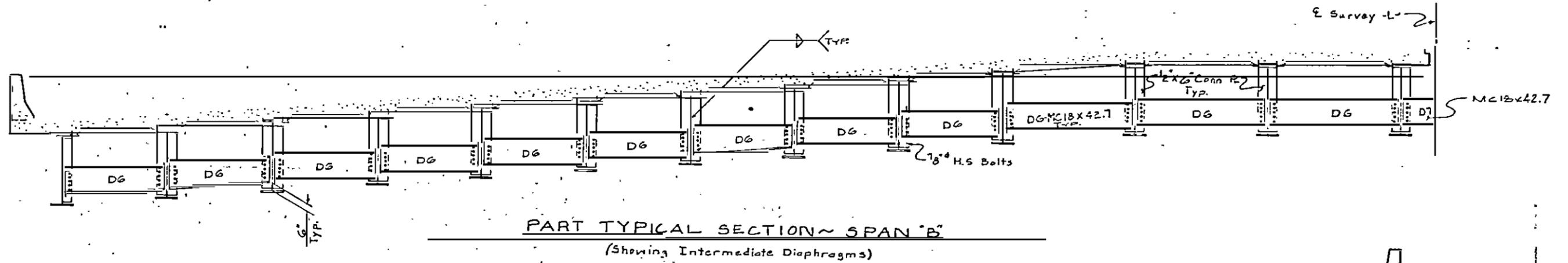
REINFORCING STEEL (CONTD) SPAN 'C'

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
a743	#6	str.	18'-0"	27	k12	#4	str.	25'-8"	120
a744	#6	str.	43'-8"	66	k13	#4	str.	26'-2"	245
a745	#6	str.	6'-10"	10	k14	#6	str.	36'-1"	271
a746	#6	str.	55'-9"	84	k15	#4	str.	14'-0"	262
a747	#6	str.	51'-10"	78	k6	#6	str.	14'-2"	298
a748	#6	str.	47'-11"	72	s1	#4	str.	2'-0"	227
a749	#6	str.	43'-11"	66	s2	#4	str.	3'-4"	361
a750	#6	str.	40'-1"	60	t1	#5	str.	3'-0"	350
a751	#6	str.	36'-2"	54	t2	#5	str.	40'-0"	83
a752	#6	str.	32'-3"	48	a800	#6	str.	4'-6"	54
a753	#6	str.	28'-4"	43	a1	#6	str.	57'-3"	4643
a754	#6	str.	24'-5"	37	a2	#6	str.	60'-0"	4866
a755	#6	str.	20'-5"	31	a3	#6	str.	29'-4"	2555
a756	#6	str.	16'-7"	25	a4	#6	str.	26'-8"	2323
a757	#6	str.	12'-8"	19	a7	#6	str.	31'-1"	3035
a758	#6	str.	8'-9"	13	a8	#6	str.	27'-4"	2669
a759	#6	str.	4'-10"	7	a9	#6	str.	55'-7"	5761
a760	#6	str.	55'-9"	84	a10	#6	str.	59'-7"	6175
a761	#6	str.	51'-10"	78	Reinforcing Steel - Span 'C'				
a762	#6	str.	47'-11"	72	TOTAL 54,166 lbs				
a763	#6	str.	43'-11"	66					
a764	#6	str.	40'-1"	60					
a765	#6	str.	36'-2"	54					
a766	#6	str.	32'-3"	48					
a767	#6	str.	28'-4"	43					
a768	#6	str.	24'-5"	37					
a769	#6	str.	20'-5"	31					
a770	#6	str.	16'-7"	25					
a771	#6	str.	12'-8"	19					
a772	#6	str.	8'-9"	13					
a773	#6	str.	4'-10"	7					

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	#4	str.	5'-8"	651
b2	#5	str.	14'-11"	187
b3	#5	str.	15'-4"	352
b4	#5	str.	15'-9"	361
b5	#5	str.	16'-3"	373
b6	#5	str.	16'-5"	382
b7	#5	str.	17'-2"	394
b8	#5	str.	17'-7"	403
b9	#5	str.	18'-0"	413
b10	#5	str.	18'-6"	425
b11	#5	str.	18'-11"	434
b12	#5	str.	19'-6"	447
b13	#5	str.	20'-1"	461
b14	#5	str.	20'-8"	474
b15	#5	str.	21'-0"	507
b16	#5	str.	21'-7"	495
b17	#5	str.	22'-1"	507
b18	#5	str.	22'-8"	520
b19	#5	str.	23'-3"	533
b20	#5	str.	23'-10"	547
b21	#5	str.	24'-5"	560
b22	#5	str.	25'-0"	574
b23	#5	str.	25'-7"	587
b24	#5	str.	26'-2"	600
b25	#5	str.	26'-11"	613
b26	#5	str.	27'-0"	626
b27	#5	str.	27'-9"	639
b28	#5	str.	28'-8"	652
b29	#5	str.	29'-7"	665
b30	#5	str.	30'-6"	678
b31	#5	str.	31'-5"	691
b32	#5	str.	32'-4"	704
b33	#5	str.	33'-3"	717
b34	#5	str.	34'-2"	730
b35	#5	str.	35'-1"	743
b36	#5	str.	36'-0"	756
b37	#5	str.	36'-9"	769
b38	#5	str.	37'-8"	782
b39	#5	str.	38'-7"	795
b40	#5	str.	39'-6"	808
b41	#5	str.	40'-5"	821
b42	#5	str.	41'-4"	834
b43	#5	str.	42'-3"	847
b44	#5	str.	43'-2"	860
b45	#5	str.	44'-1"	873
b46	#5	str.	45'-0"	886
b47	#5	str.	45'-9"	899
b48	#5	str.	46'-8"	912
b49	#5	str.	47'-7"	925
b50	#5	str.	48'-6"	938
b51	#5	str.	49'-5"	951
b52	#5	str.	50'-4"	964
b53	#5	str.	51'-3"	977
b54	#5	str.	52'-2"	990
b55	#5	str.	53'-1"	1003
b56	#5	str.	54'-0"	1016
b57	#5	str.	54'-9"	1029
b58	#5	str.	55'-8"	1042
b59	#5	str.	56'-7"	1055
b60	#5	str.	57'-6"	1068
b61	#5	str.	58'-5"	1081
b62	#5	str.	59'-4"	1094
b63	#5	str.	60'-3"	1107
b64	#5	str.	61'-2"	1120
b65	#5	str.	62'-1"	1133
b66	#5	str.	63'-0"	1146
b67	#5	str.	63'-9"	1159
b68	#5	str.	64'-8"	1172
b69	#5	str.	65'-7"	1185
b70	#5	str.	66'-6"	1198
b71	#5	str.	67'-5"	1211
b72	#5	str.	68'-4"	1224
b73	#5	str.	69'-3"	1237
b74	#5	str.	70'-2"	1250
b75	#5	str.	71'-1"	1263
b76	#5	str.	72'-0"	1276
b77	#5	str.	72'-9"	1289
b78	#5	str.	73'-8"	1302
b79	#5	str.	74'-7"	1315
b80	#5	str.	75'-6"	1328
b81	#5	str.	76'-5"	1341
b82	#5	str.	77'-4"	1354
b83	#5	str.	78'-3"	1367
b84	#5	str.	79'-2"	1380
b85	#5	str.	80'-1"	1393
b86	#5	str.	81'-0"	1406
b87	#5	str.	81'-9"	1419
b88	#5	str.	82'-8"	1432
b89	#5	str.	83'-7"	1445
b90	#5	str.	84'-6"	1458
b91	#5	str.	85'-5"	1471
b92	#5	str.	86'-4"	1484
b93	#5	str.	87'-3"	1497
b94	#5	str.	88'-2"	1510
b95	#5	str.	89'-1"	1523
b96	#5	str.	90'-0"	1536
b97	#5	str.	90'-9"	1549
b98	#5	str.	91'-8"	1562
b99	#5	str.	92'-7"	1575
b100	#5	str.	93'-6"	1588
b101	#5	str.	94'-5"	1601
b102	#5	str.	95'-4"	1614
b103	#5	str.	96'-3"	1627
b104	#5	str.	97'-2"	1640
b105	#5	str.	98'-1"	1653
b106	#5	str.	99'-0"	1666
b107	#5	str.	99'-9"	1679
b108	#5	str.	100'-8"	1692
b109	#5	str.	101'-7"	1705
b110	#5	str.	102'-6"	1718
b111	#5	str.	103'-5"	1731
b112	#5	str.	104'-4"	1744
b113	#5	str.	105'-3"	1757
b114	#5	str.	106'-2"	1770
b115	#5	str.	107'-1"	1783
b116	#5	str.	108'-0"	1796
b117	#5	str.	108'-9"	1809
b118	#5	str.	109'-8"	1822
b119	#5	str.	110'-7"	1835
b120	#5	str.	111'-6"	1848
b121	#5	str.	112'-5"	1861
b122	#5	str.	113'-4"	1874
b123	#5	str.	114'-3"	1887
b124	#5	str.	115'-2"	1900
b125	#5	str.	116'-1"	1913
b126	#5	str.	117'-0"	1926
b127	#5	str.	117'-9"	1939
b128	#5	str.	118'-8"	1952
b129	#5	str.	119'-7"	1965
b130	#5	str.	120'-6"	1978
b131	#5	str.	121'-5"	1991
b132	#5	str.	122'-4"	2004
b133	#5	str.	123'-3"	2017
b134	#5	str.	124'-2"	2030
b135	#5	str.	125'-1"	2043
b136	#5	str.	126'-0"	2056
b137	#5	str.	126'-9"	2069
b138	#5	str.	127'-8"	2082
b139	#5	str.	128'-7"	2095
b140	#5	str.	129'-6"	2108
b141	#5	str.	130'-5"	2121
b142	#5	str.	131'-4"	2134
b143	#5	str.	132'-3"	2147
b144	#5	str.	133'-2"	2160
b145	#5	str.	134'-1"	2173
b146	#5	str.	135'-0"	2186
b147	#5	str.	135'-9"	2199
b148	#5	str.	136'-8"	2212
b149	#5	str.	137'-7"	2225
b150	#5	str.	138'-6"	2238
b151	#5	str.	139'-5"	2251
b152	#5	str.	140'-4"	2264
b153	#5	str.	141'-3"	2277
b154	#5	str.	142'-2"	2290
b155	#5	str.	143'-1"	2303
b156	#5	str.	144'-0"	2316
b157	#5	str.	144'-9"	2329
b158	#5	str.	145'-8"	2342
b159	#5	str.	146'-7"	2355
b160	#5	str.	147'-6"	2368
b161	#5	str.	148'-5"	2381
b162	#5	str.	149'-4"	2394
b163	#5	str.	150'-3"	2407
b164	#5	str.	151'-2"	2420
b165	#5	str.	152'-1"	2433
b166	#5	str.	153'-0"	2446
b167	#5	str.	153'-9"	2459
b168	#5	str.	154'-8"	2472
b169	#5	str.	155'-7"	2485
b170	#5	str.	156'-6"	2498
b171	#5	str.	157'-5"	2511
b172	#5	str.	158'-4"	2524
b173	#5	str.	159'-3"	2537
b174	#5	str.	160'-2"	2550
b175	#5	str.	161'-1"	2563
b176	#5	str.	162'-0"	2576
b177	#5	str.	162'-9"	2589
b178	#5	str.	163'-8"	2602
b179	#5	str.	164'-7"	2615
b180	#5	str.	165'-6"	2628
b181	#5	str.	166'-5"	2641
b182	#5	str.	167'-4"	2654
b183	#5	str.	168'-3"	2667
b184	#5	str.	169'-2"	2680
b185	#5	str.	170'-1"	2693
b186	#5	str.	171'-0"	2706
b187	#5	str.	171'-9"	2719
b188	#5	str.	172'-8"	2732
b189	#5	str.	173'-7"	2745
b190	#5	str.	174'-6"	2758
b191	#5	str.	175'-5"	2771
b192	#5	str.	176'-4"	2784
b193	#5	str.	177'-3"	2797
b194	#5	str.	178'-2"	2810
b195	#5	str.	179'-1"	2823
b196	#5	str.	180'-0"	2836
b197	#5	str.	180'-9"	2849
b198	#5	str.	181'-8"	2862
b199	#5	str.	182'-7"	2875
b200	#5	str.	183'-6"	2888
b201	#5	str.	184'-5"	2901
b202	#5	str.	185'-4"	2914
b203	#5	str.	186'-3"	2927
b204	#5	str.	187'-2"	2940
b205	#5	str.	188'-1"	2953
b206	#5	str.	189'-0"	2966
b207	#5	str.	189'-9"	2979
b208	#5	str.	190'-8"	2992
b209	#5	str.	191'-7"	3005
b210	#5	str.	192'-6"	3018
b211	#5	str.	193'-5"	3031
b212	#5	str.	194'-4"	3044
b213	#5	str.	195'-3"	3057
b214	#5	str.	196'-2"	3070
b215	#5	str.	197'-1"	3083
b216	#5	str.	198'-0"	3096
b217	#5	str.	198'-9"	3109
b218	#5	str.	199'-8"	3122
b219	#5	str.	200'-7"	3135
b220	#5	str.	201'-6"	3148
b221	#5	str.	202'-5"	3161
b222	#5	str.	203'-4"	3174
b223	#5	str.	204'-3"	3187
b224	#5	str.	205'-2"	3200
b225	#5	str.	206'-1"	3213
b226	#5	str.	207'-0"	3226
b227	#5	str.	207'-9"	3239
b228	#5	str.	208'-8"	3252
b229	#5	str.	209'-7"	3265
b230	#5	str.	210'-6"	3278
b231	#5	str.	211'-5"	3291
b232	#5	str.	212'-4"	3304
b233	#5	str.	213'-3"	3317
b234	#5	str.	214'-2"	3330
b235	#5	str.	215'-1"	3343
b236				



FED. ROAD DIST. NO.	STATE	PROJECT NO.
4	N.C.	81475509
F.A. PROJECT I - 40-2(25)299		



Note 1-Nuts on Bolts For Connecting Channel

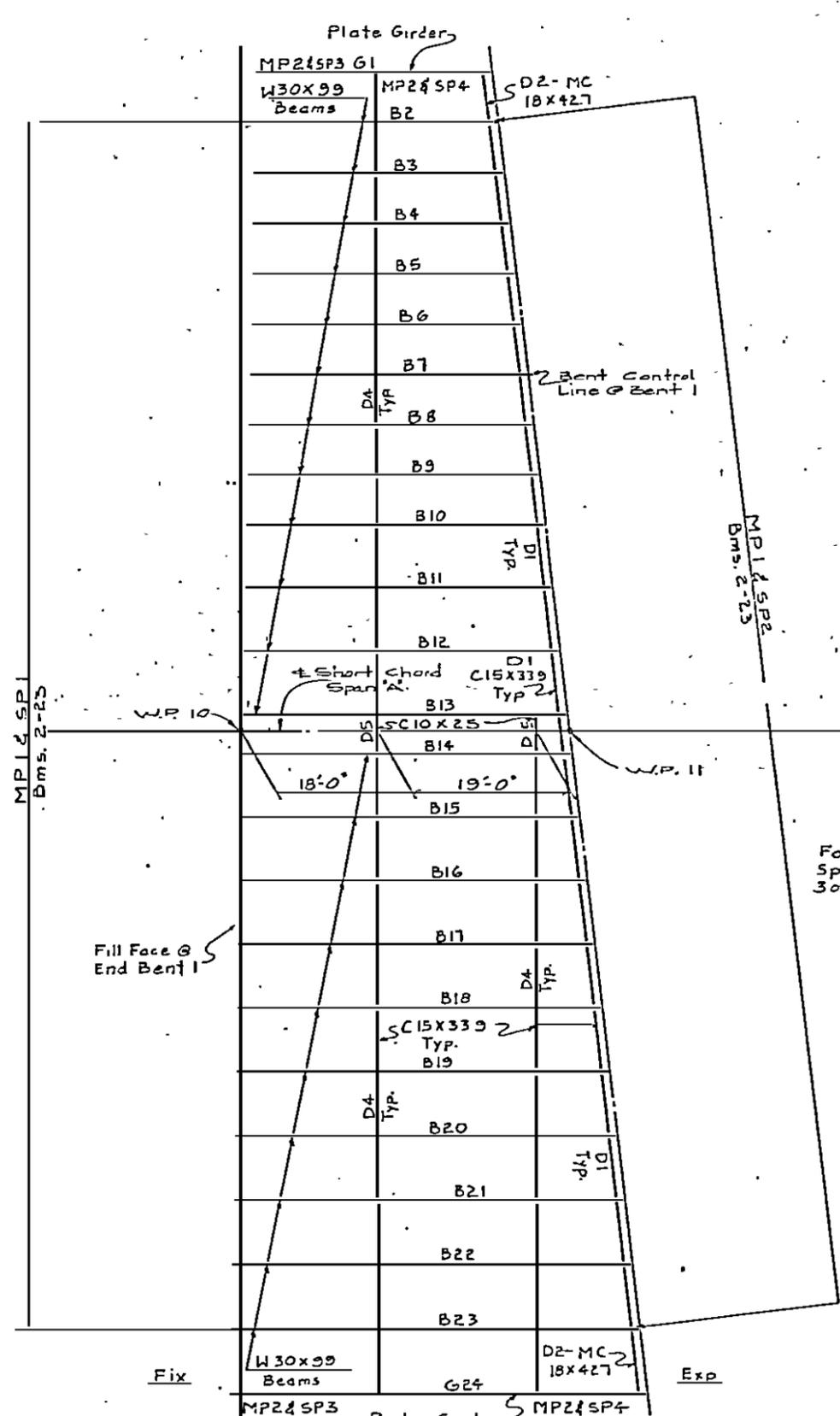
PROJECT NO. 81475509

WAKE COUNTY

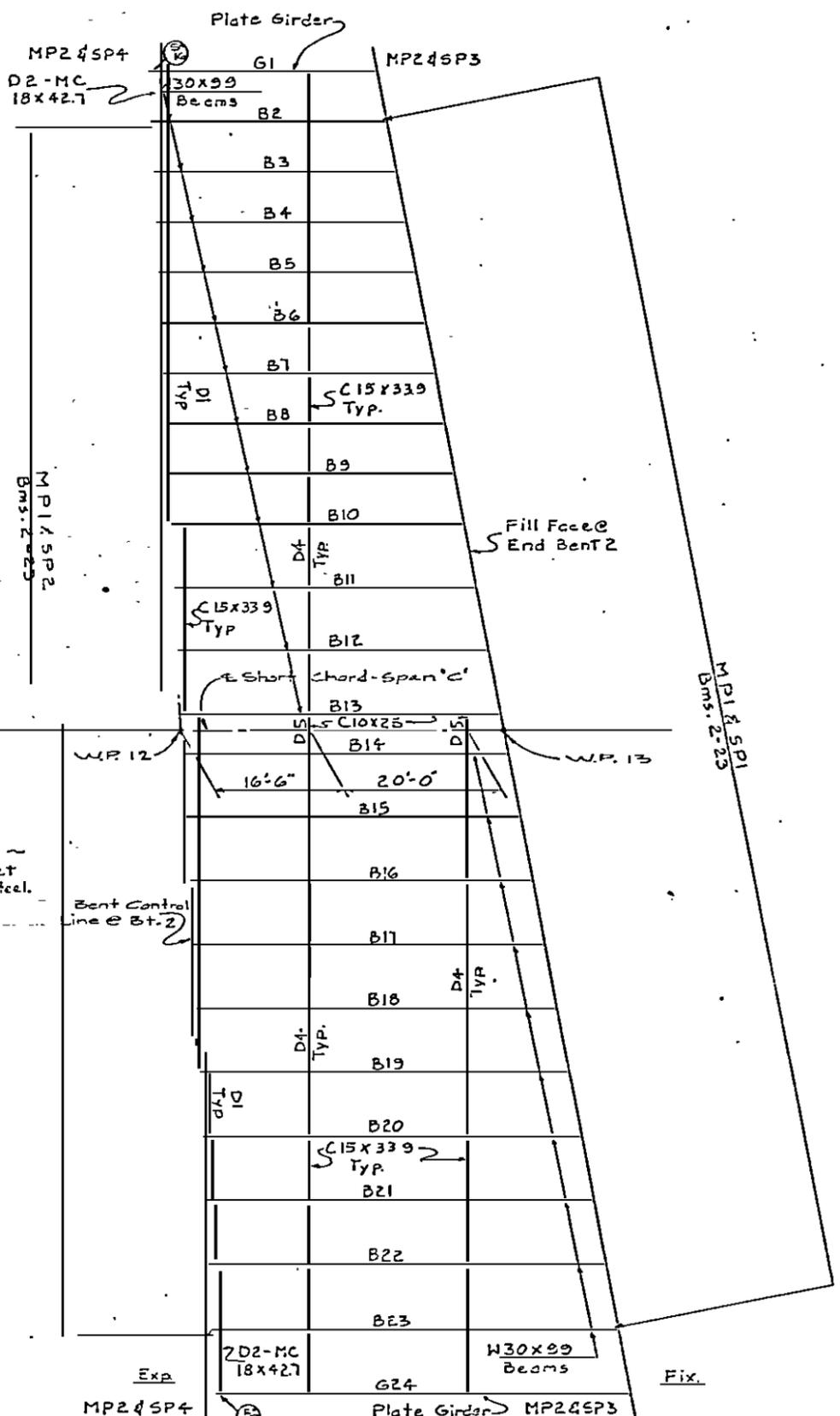
STATION 82+42.41-L PCC

Sheet 1 of 9

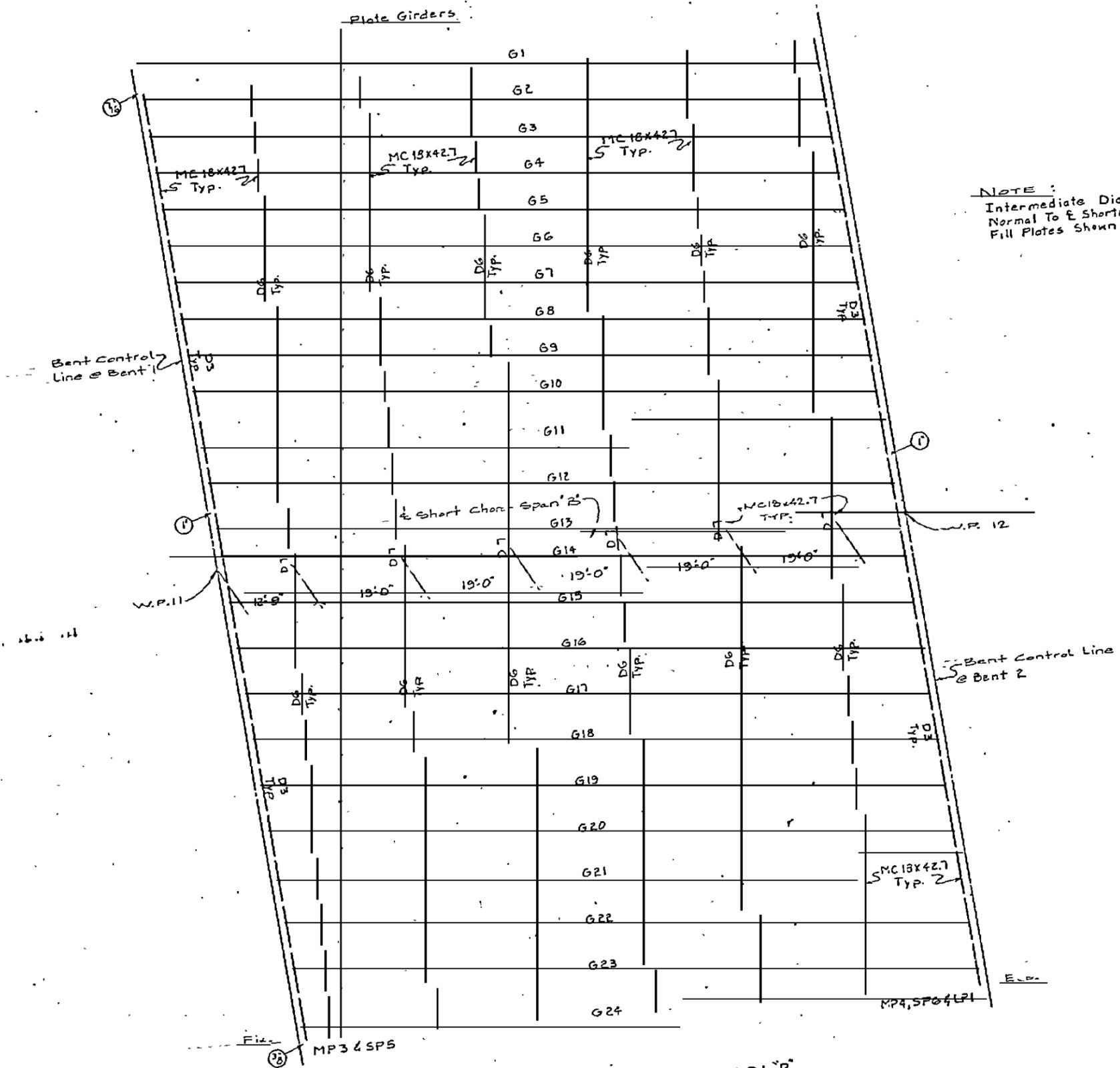
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH



For Framing Plan ~  
Span 'B' See Sheet  
3 of 9 Structural Steel.

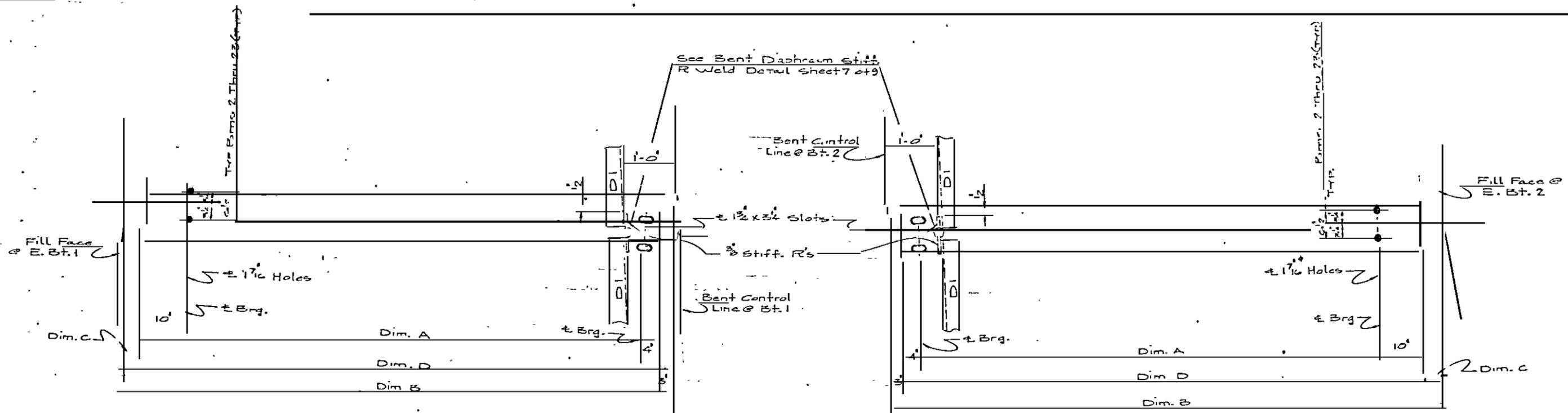


PROJECT No. 81475509  
 WAKE COUNTY  
 STATION: 82+42.41-L POC  
 Sheet 2 of 9  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE



NOTE:  
 Intermediate Diaphragms To Be Placed  
 Normal To E Short Chord.  
 Fill Plates Shown Thusly (Symbol)

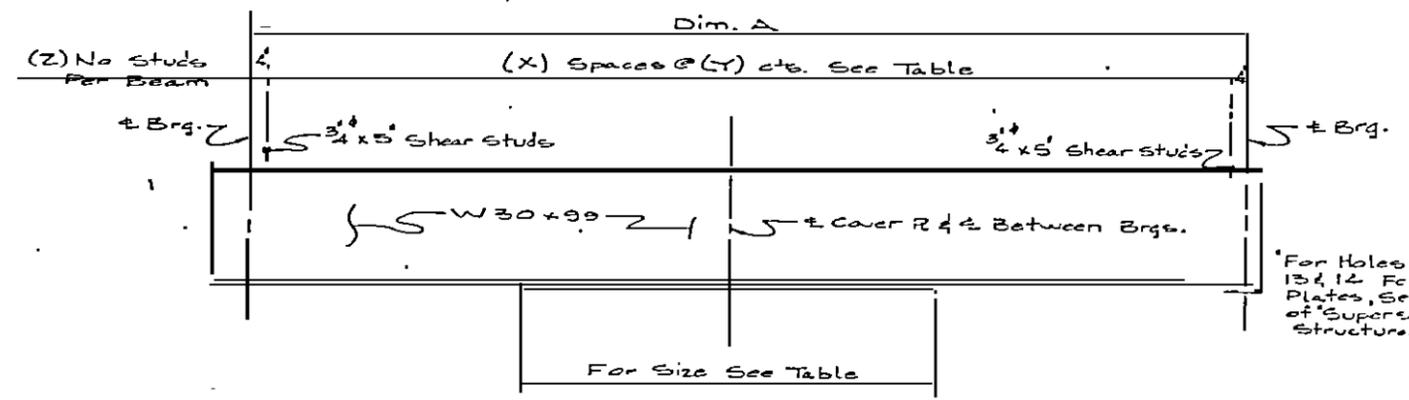
PROJECT NO. 8.1475509  
 WAKE COUNTY  
 STATION: 82+42.41-L FAC.  
 SHEET 3 OF 9  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 STRUCTURAL STEEL



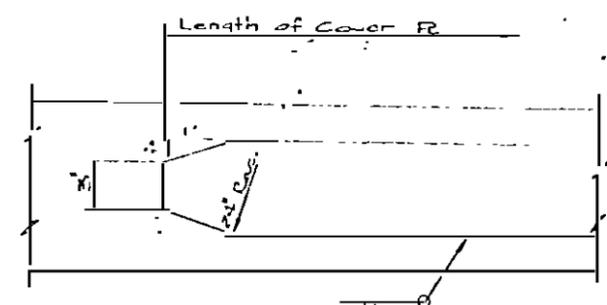
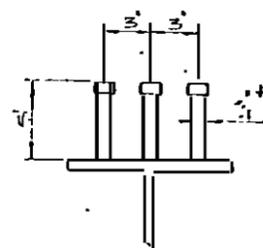
**SPAN A**  
Beams 2 Thru 25

**SPAN C**  
Beams 2 Thru 25

**BOTTOM FLANGE LAYOUT**



**BEAM ELEVATION**  
Beams 2 Thru 25 SPAN A & C



**TABLE OF VARIABLES**

Beam No.	Dim. A	Dim. B	Dim. C	Dim. D	(X)	(Y)	(Z)	Cover R Size
2	28'-7 7/8"	30'-5 7/8"	5'	29'-9 7/8"	39	8 3/4"	120	Not Req'd
3	29'-6 3/8"	31'-4 3/8"	5'	30'-8 3/8"	39	8 3/8"	120	Not Req'd
4	30'-4 3/8"	32'-2 3/8"	5'	31'-6 3/8"	39	9 3/8"	120	Not Req'd
5	31'-2 3/8"	33'-0 3/8"	5'	32'-4 3/8"	39	9 3/8"	120	Not Req'd
6	32'-0 3/8"	33'-10 3/8"	5'	33'-2 3/8"	39	9 3/8"	120	Not Req'd
7	32'-11 3/8"	34'-9 3/8"	5'	34'-1 3/8"	40	9 3/8"	123	Not Req'd
8	33'-9 3/8"	35'-7 3/8"	5'	34'-11 3/8"	39	10 3/8"	120	Not Req'd
9	34'-7 3/8"	36'-5 3/8"	5'	35'-9 3/8"	40	10 3/8"	123	Not Req'd
10	35'-5 3/8"	37'-3 3/8"	5'	36'-7 3/8"	42	10 3/8"	120	Not Req'd
11	36'-7"	38'-5"	5'	37'-9"	40	10 3/8"	123	Not Req'd
12	37'-8 1/2"	39'-6 1/2"	5 1/2"	38'-10 1/2"	42	10 3/8"	129	Not Req'd
13	38'-9 3/8"	40'-7 3/8"	5 1/2"	39'-11 3/8"	39	11 3/8"	120	Not Req'd
14	39'-5"	41'-3"	5'	40'-7"	39	11 3/8"	120	Not Req'd
15	40'-6 3/8"	42'-4 3/8"	5'	41'-8 3/8"	40	12 3/8"	141	Not Req'd
16	41'-7 3/8"	43'-5 3/8"	5'	42'-9 3/8"	43	12 3/8"	147	Not Req'd
17	42'-8 3/8"	44'-6 3/8"	5'	43'-10 3/8"	49	10 3/8"	150	Not Req'd
18	43'-9 3/8"	45'-7 3/8"	5 1/2"	44'-11 3/8"	51	10 3/8"	156	Not Req'd
19	44'-10 3/8"	46'-8 3/8"	5 1/2"	45'-12 3/8"	52	10 3/8"	159	1/2 x 6 x 21'-0"
20	45'-11 3/8"	47'-9 3/8"	5'	47'-1 3/8"	53	10 3/8"	162	1/2 x 6 x 21'-0"
21	47'-0 3/8"	48'-10 3/8"	5'	48'-2 3/8"	55	10 3/8"	162	1/2 x 6 x 22'-0"
22	48'-1 3/8"	49'-11 3/8"	5'	49'-3 3/8"	57	10 3/8"	174	1/2 x 6 x 22'-0"
23	49'-3 3/8"	51'-1 3/8"	5'	50'-5 3/8"	58	10 3/8"	177	1/2 x 6 x 24'-0"
2	27'-10 1/2"	29'-2 1/2"	5 1/2"	29'-0 1/2"	39	8 3/8"	120	Not Req'd
3	28'-9 1/2"	30'-7 1/2"	5 1/2"	29'-11 1/2"	39	8 3/8"	120	Not Req'd
4	29'-7 1/2"	31'-6 1/2"	5 1/2"	30'-9 1/2"	40	8 3/8"	123	Not Req'd
5	30'-6 1/2"	32'-5 1/2"	5 1/2"	31-8 1/2"	40	8 3/8"	123	Not Req'd
6	31'-5 1/2"	33-4 1/2"	5 1/2"	32-7 1/2"	40	8 3/8"	123	Not Req'd
7	32'-4 1/2"	34-3 1/2"	5 1/2"	33-6 1/2"	40	8 3/8"	123	Not Req'd
8	33'-3 1/2"	35-2 1/2"	5 1/2"	34-5 1/2"	40	8 3/8"	123	Not Req'd
9	34'-2 1/2"	36-1 1/2"	5 1/2"	35-4 1/2"	40	8 3/8"	123	Not Req'd
10	35'-1 1/2"	37-0 1/2"	5 1/2"	36-3 1/2"	41	8 3/8"	126	Not Req'd
11	36'-0 1/2"	38-0 1/2"	5 1/2"	37-2 1/2"	41	8 3/8"	126	Not Req'd
12	37-3 3/8"	39-2 3/8"	5 1/2"	38-5 3/8"	41	10 3/8"	123	Not Req'd
13	38-5 3/8"	40-3 3/8"	5 1/2"	39-7 3/8"	40	11 3/8"	123	Not Req'd
14	39-1 1/2"	41'-0"	5 1/2"	40-3 1/2"	40	11 3/8"	123	Not Req'd

PROJECT No. S-1475309

COUNTY

STATION: 12+10.5





**NOTES**

Specifications: Design --- A.A.S.H.T.O  
Welding --- A.W.S. (Current)

All Structural Steel, Except Bearing Assemblies, shall be unpainted ASTM-A588 Grade with a minimum yield strength of 50,000 psi.

The Atmospheric Corrosion Resistance and Coloring Characteristics of ASTM-A588 Steel are required for the high strength bolts, Nuts, Washers, and the weld filler metal for this structure.

Shipping details for beams and girders shall be submitted for approval, indicating the top flange location during shipment, and in all cases showing the web vertical. The Method of Shipment, position on the vehicle, and Attachments to the Bms. or Gdrs. of any shipping restraints shall be clearly detailed.

All dimensions shown are horizontal or vertical unless otherwise noted.

See Superstructure Typical Section for location of slots in Bms. or Gdrs. at End Bents for "K" bars.

Stiffeners are not required on End Bent End of Beams or Girders.

Girders shall be fabricated with camber to compensate for the deflection caused by the combined weights of the Structural Steel, Superimposed Dead Load, and Horiz. & Vert. Curve Correction. See Table of "Dead Load Deflection & Girder Camber."

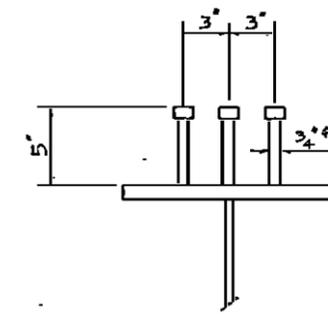
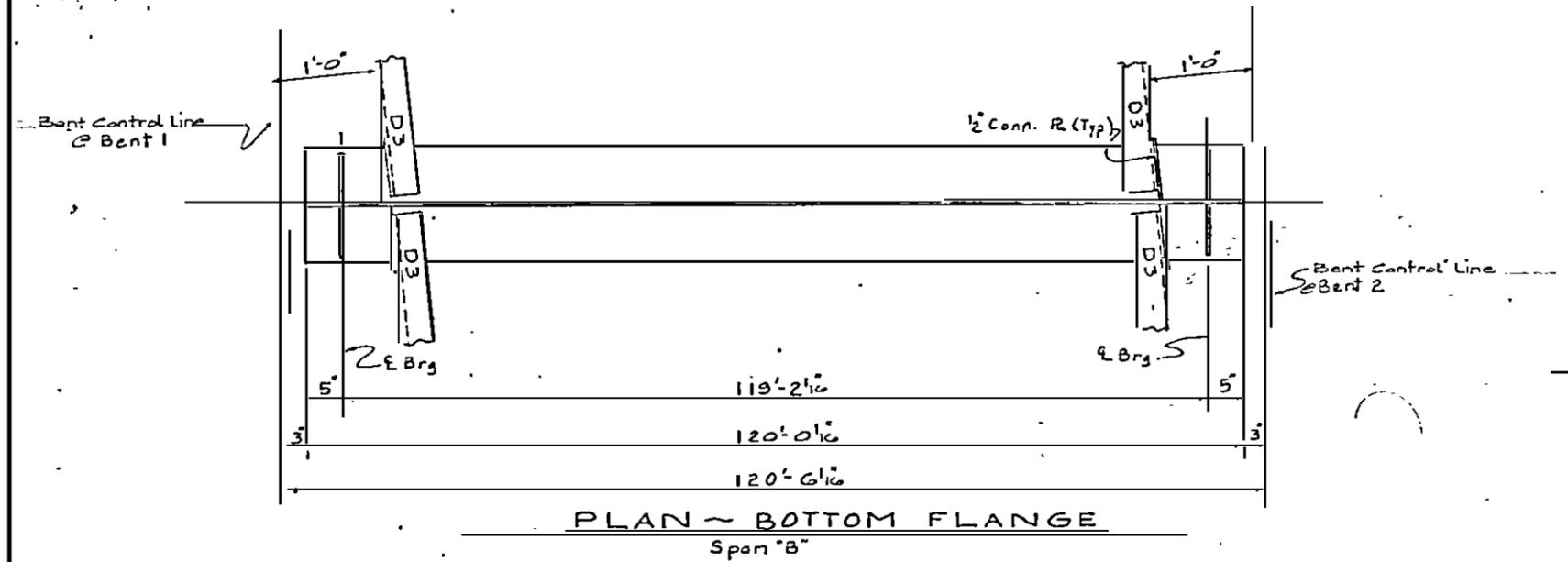
Cambered Girder Lengths shall be adjusted and Bearings are to be placed on the cambered Girder so as to be aligned with the Anchors After the Dead Load Deflection has occurred. Shop Plans shall be prepared accordingly.

At the Contractor's Option a Bolted Field Splice will be permitted for Girders in Span "B". The splice shall be located and detailed by the contractor and submitted to the Structure Design Department for approval. The cost of the splice shall be at the Contractor's Expense and no additional measurement or payment will be made for additional material required.

Charpy V-Notch Test required as follows:  
On all Beams and Cover Plates,  
On all Girder Webs & all Bottom Flanges,  
In the event a Bolted Field Splice is used in Span "B", test will be required for Bottom Flange Splice Plates and Web Splice Plates.  
For Charpy V-Notch Test, See Special Provisions.

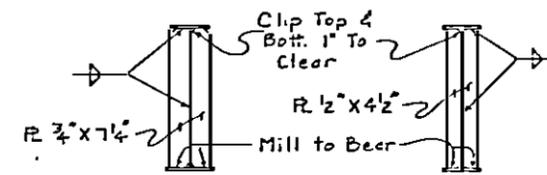
**SPAN "B"**  
All Shop Splices in the Web Plates & Flange Plates shall be made prior to welding Flange Plates to web Plates. Shop Web Splices shall not be located within 10 feet of the ends of the of the girder. Three Shop Web Splices will be permitted. The location of all Shop Splices shall be shown on the Shop Plans.

For Permitted Shop Web Splice in Spans "A" & "C" Gdr. 24, See Sheet 6 of 9.

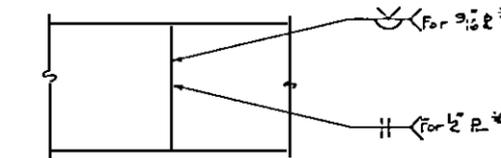


**SHEAR STUD DETAIL**

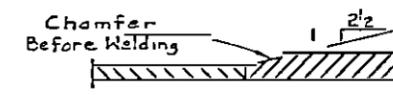
For Gdrs. in Span "B"



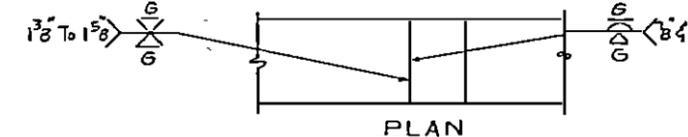
**END BRG STIFFENER DETAIL**



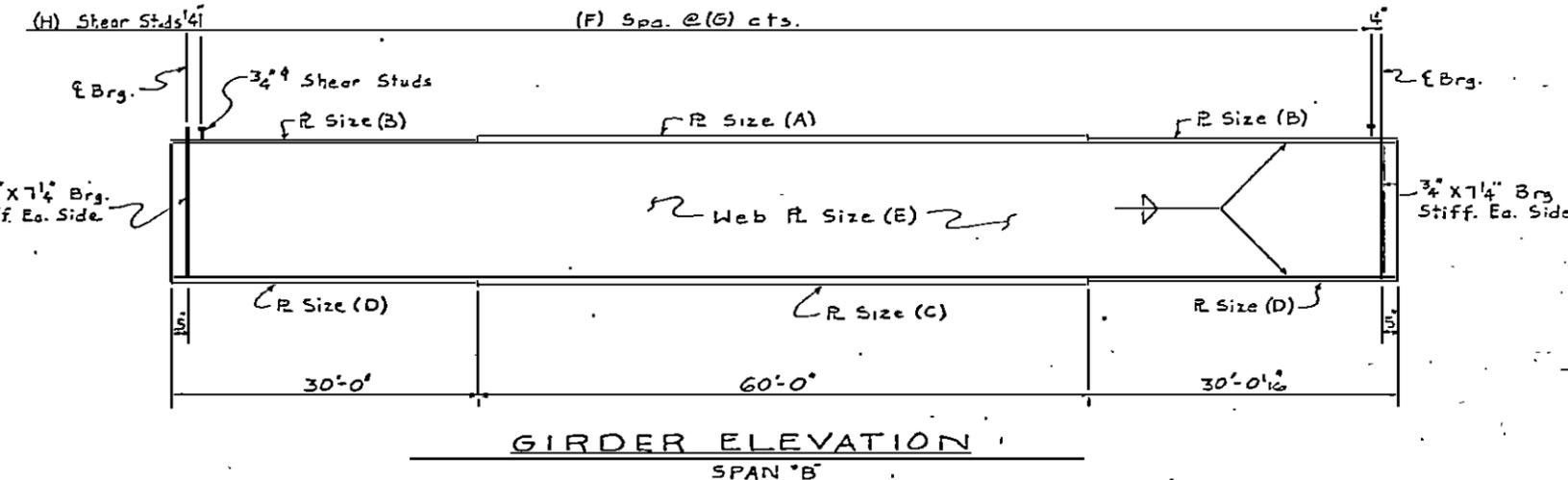
**PERMITTED SHOP WEB SPLICE**



**SECTION THRU FLG**



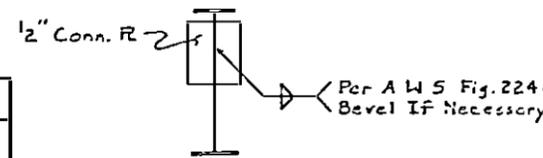
**SHOP FLANGE SPLICE**



**GIRDER ELEVATION**

SPAN "B"

TABLE OF VARIABLES - SPAN "B"							
Girder No	Flange R Size				Web R Size (E)	Stud Inform.	
	(A)	(B)	(C)	(D)		(F)	(H)
1, 2, 3	1 1/4" X 14"	7/8" X 14"	2 1/8" X 16"	1 9/16" X 16"	1/2" X 48"	91	1-3 5/8" (H) 276
4, 5, 6, 7, 8, 9, 10	1 1/4" X 14"	7/8" X 14"	2 1/8" X 16"	1 1/2" X 16"	1/2" X 48"	91	1-3 5/8" (H) 276
11, 12, 17, 18, 19, 20, 21	1 3/8" X 14"	1" X 14"	2 1/8" X 16"	1 1/2" X 16"	9/16" X 48"	82	1-5 3/8" (H) 249
13, 14	1 1/4" X 14"	7/8" X 14"	1 7/8" X 16"	1 3/8" X 16"	1/2" X 48"	65	1-9 3/8" (H) 198
15, 16, 22, 23	1 1/2" X 14"	1" X 14"	2 1/4" X 16"	1 5/8" X 16"	9/16" X 48"	82	1-5 3/8" (H) 249



**BENT DIAPHRAGM CONNECTOR  
PLATE WELD DETAIL FOR SPAN "B"**

For A.W.S. Fig 224 c  
Bevel If Necessary

PROJECT NO. 81475509

WAKE COUNTY

STATION: 82 + 7.4 - 6 PCC

Sheet 7 of 9

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
STRUCTURAL STEEL

DEAD LOAD DEFLECTIONS & GIRDER CAMBER ~ SPAN "B"

	GIRDER 1										GIRDERS 2 & 3										GIRDERS 4, 5, 6, 7, 8 & 9											
	1/2 Brg	.1	.2	.3	.4	.5	.6	.7	.8	.9	1/2 Brg	1/2 Brg	.1	.2	.3	.4	.5	.6	.7	.8	.9	1/2 Brg	1/2 Brg	.1	.2	.3	.4	.5	.6	.7	.8	.9
Deflection Due to Weight of Steel	.000	.034	.064	.085	.099	.104	.099	.085	.064	.034	.000	.000	.035	.066	.089	.103	.108	.103	.089	.066	.035	.000	.000	.036	.066	.089	.103	.108	.103	.089	.066	.035
Deflection Due to Weight of Slab	.000	.101	.188	.253	.293	.307	.293	.253	.188	.101	.000	.000	.109	.204	.274	.319	.334	.319	.274	.204	.109	.000	.000	.110	.205	.275	.320	.335	.320	.275	.205	.110
Deflection Due to Rail & F.W.S.	.000	.024	.045	.061	.071	.075	.071	.061	.045	.024	.000	.000	.017	.031	.042	.049	.052	.049	.042	.031	.017	.000	.000	.010	.018	.025	.029	.030	.029	.025	.018	.010
Total Dead Load Deflection	.000	.159	.297	.399	.463	.486	.463	.399	.297	.159	.000	.000	.161	.301	.405	.471	.494	.471	.405	.301	.161	.000	.000	.156	.259	.369	.452	.473	.452	.369	.259	.156
Vertical Curve Correction	.000	.010	.017	.022	.026	.027	.026	.022	.017	.010	.000	.000	.010	.017	.022	.025	.026	.025	.022	.017	.010	.000	.000	.009	.017	.022	.025	.026	.025	.022	.017	.009
Horizontal Curve Correction	.000	-.023	-.041	-.054	-.062	-.064	-.062	-.054	-.041	-.023	.000	.000	-.023	-.041	-.054	-.062	-.062	-.054	-.041	-.023	.000	.000	.000	-.023	-.041	-.053	-.061	-.063	-.061	-.053	-.041	-.023
Required Girder Camber	0	1 3/8"	3 3/8"	4 3/8"	5 1/8"	5 3/8"	5 1/8"	4 3/8"	3 3/8"	1 3/8"	0	0	1 3/8"	3 3/8"	4 1/2"	5 1/8"	5 1/8"	4 1/2"	3 3/8"	1 3/8"	0	0	0	1 1/8"	3 3/8"	4 3/8"	5"	5 1/8"	5"	4 3/8"	3 3/8"	1 1/8"
	GIRDER 10										GIRDER 11										GIRDER 13											
Deflection Due to Weight of Steel	.000	.036	.066	.089	.103	.108	.103	.089	.066	.036	.000	.000	.035	.066	.088	.103	.108	.103	.088	.066	.035	.000	.000	.035	.066	.089	.103	.108	.103	.089	.066	.035
Deflection Due to Weight of Slab	.000	.118	.220	.296	.344	.360	.344	.296	.220	.118	.000	.000	.123	.230	.309	.359	.376	.359	.309	.230	.123	.000	.000	.106	.198	.266	.309	.324	.309	.266	.198	.106
Deflection Due to Rail & F.W.S.	.000	.010	.018	.025	.029	.030	.029	.025	.018	.010	.000	.000	.009	.017	.023	.027	.028	.027	.023	.017	.009	.000	.000	.011	.020	.028	.032	.034	.032	.028	.020	.011
Total Dead Load Deflection	.000	.164	.304	.410	.476	.498	.476	.410	.304	.164	.000	.000	.167	.313	.420	.489	.512	.489	.420	.313	.167	.000	.000	.152	.284	.383	.444	.466	.444	.383	.284	.152
Vertical Curve Correction	.000	.009	.016	.021	.024	.025	.024	.021	.016	.009	.000	.000	.009	.016	.021	.024	.025	.024	.021	.016	.009	.000	.000	.009	.016	.021	.024	.025	.024	.021	.016	.009
Horizontal Curve Correction	.000	-.023	-.040	-.053	-.060	-.063	-.060	-.053	-.040	-.023	.000	.000	-.023	-.040	-.053	-.060	-.063	-.060	-.053	-.040	-.023	.000	.000	-.023	-.040	-.053	-.060	-.063	-.060	-.053	-.040	-.023
Required Girder Camber	0	1 3/8"	3 3/8"	4 3/8"	5 1/8"	5 3/8"	5 1/8"	4 3/8"	3 3/8"	1 3/8"	0	0	1 3/8"	3 3/8"	4 1/2"	5 1/8"	5 1/8"	4 1/2"	3 3/8"	1 3/8"	0	0	0	1 1/8"	3 3/8"	4 3/8"	5 1/8"	5 1/8"	4 3/8"	3 3/8"	1 3/8"	
	GIRDER 14										GIRDERS 15 & 16										GIRDERS 17, 18, 19, 20 & 21											
Deflection Due to Weight of Steel	.000	.035	.066	.089	.103	.108	.103	.089	.066	.035	.000	.000	.035	.066	.087	.101	.106	.101	.087	.065	.035	.000	.000	.035	.066	.088	.103	.108	.103	.088	.066	.035
Deflection Due to Weight of Slab	.000	.116	.216	.290	.337	.353	.337	.290	.216	.116	.000	.000	.116	.217	.291	.338	.354	.338	.291	.217	.116	.000	.000	.123	.230	.309	.359	.376	.359	.309	.230	.123
Deflection Due to Rail & F.W.S.	.000	.012	.023	.031	.036	.038	.036	.031	.023	.012	.000	.000	.010	.019	.026	.031	.032	.031	.026	.019	.010	.000	.000	.011	.020	.027	.032	.033	.032	.027	.020	.011
Total Dead Load Deflection	.000	.163	.305	.410	.476	.499	.476	.410	.305	.163	.000	.000	.161	.301	.404	.470	.492	.470	.404	.301	.161	.000	.000	.169	.316	.424	.484	.507	.484	.424	.316	.169
Vertical Curve Correction	.000	.009	.016	.021	.024	.025	.024	.021	.016	.009	.000	.000	.009	.016	.021	.024	.025	.024	.021	.016	.009	.000	.000	.009	.015	.020	.023	.024	.023	.020	.015	.009
Horizontal Curve Correction	.000	-.022	-.040	-.052	-.059	-.062	-.059	-.052	-.040	-.022	.000	.000	-.022	-.040	-.052	-.059	-.062	-.059	-.052	-.040	-.022	.000	.000	-.022	-.039	-.051	-.059	-.061	-.059	-.051	-.039	-.022
Required Girder Camber	0	1 3/8"	3 3/8"	4 3/8"	5 1/8"	5 3/8"	5 1/8"	4 3/8"	3 3/8"	1 3/8"	0	0	1 3/8"	3 3/8"	4 1/2"	5 1/8"	5 1/8"	4 1/2"	3 3/8"	1 3/8"	0	0	0	1 1/8"	3 3/8"	4 3/8"	5 1/8"	5 1/8"	4 3/8"	3 3/8"	1 1/8"	
	GIRDERS 22 & 23										GIRDER 24										GIRDER 12											
Deflection Due to Weight of Steel	.000	.035	.065	.087	.101	.106	.101	.087	.065	.035	.000	.000	.034	.063	.084	.097	.102	.097	.084	.063	.034	.000	.000	.035	.066	.088	.103	.108	.103	.088	.066	.035
Deflection Due to Weight of Slab	.000	.116	.217	.291	.338	.354	.338	.291	.217	.116	.000	.000	.101	.188	.252	.292	.308	.292	.252	.188	.101	.000	.000	.123	.230	.309	.359	.376	.359	.309	.230	.123
Deflection Due to Rail & F.W.S.	.000	.017	.031	.042	.049	.052	.049	.042	.031	.017	.000	.000	.024	.045	.060	.070	.074	.070	.060	.045	.024	.000	.000	.009	.017	.023	.027	.028	.027	.023	.017	.009
Total Dead Load Deflection	.000	.168	.313	.420	.488	.512	.488	.420	.313	.168	.000	.000	.159	.296	.396	.459	.482	.459	.396	.296	.159	.000	.000	.167	.313	.420	.489	.512	.489	.420	.313	.167
Vertical Curve Correction	.000	.008	.015	.020	.022	.023	.022	.020	.015	.008	.000	.000	.008	.015	.019	.022	.023	.022	.019	.015	.008	.000	.000	.009	.016	.021	.024	.025	.024	.021	.016	.009
Horizontal Curve Correction	.000	-.022	-.039	-.051	-.058	-.060	-.058	-.051	-.039	-.022	.000	.000	-.022	-.038	-.050	-.057	-.060	-.057	-.050	-.038	-.022	.000	.000	-.023	-.039	-.051	-.059	-.061	-.059	-.051	-.039	-.023
Required Girder Camber	0	1 3/8"	3 3/8"	4 1/8"	5 1/8"	5 1/8"	5 1/8"	4 1/8"	3 3/8"	1 3/8"	0	0	1 3/8"	3 3/8"	4 3/8"	5 1/8"	5 1/8"	4 3/8"	3 3/8"	1 3/8"	0	0	0	2 1/8"	3 3/8"	4 3/8"	5 1/8"	5 1/8"	4 3/8"	3 3/8"	2 1/8"	

Note: Values are given in feet (Decimal Form) at tenth points between & Brgs, except Gdr. Camber which is given in inches (Fraction Form).

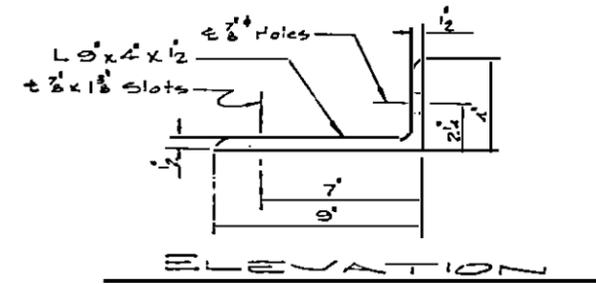
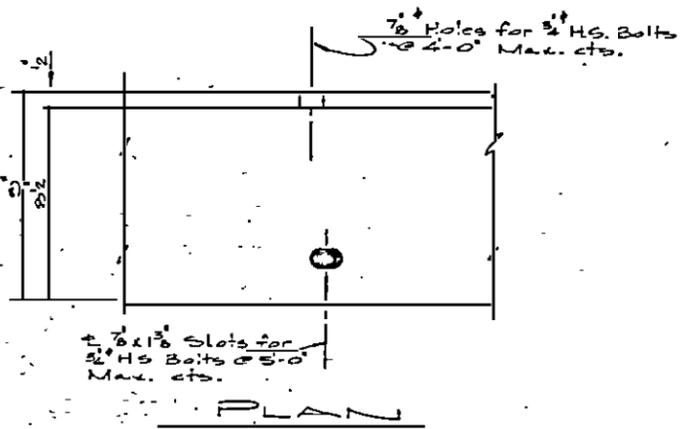
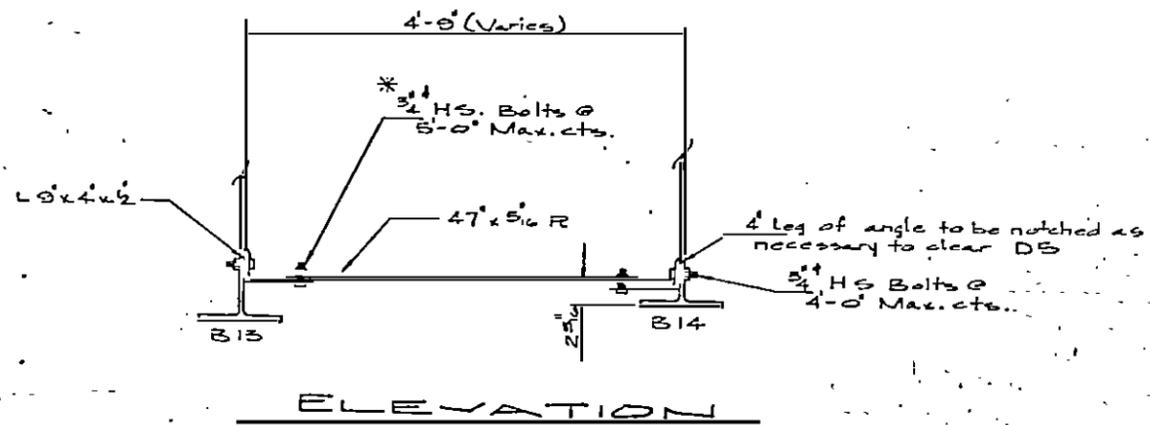
PROJECT No. 8.1475509

WAKE COUNTY

STATION: E 2 1-2-41-L PCC

Sheet 8 of 9

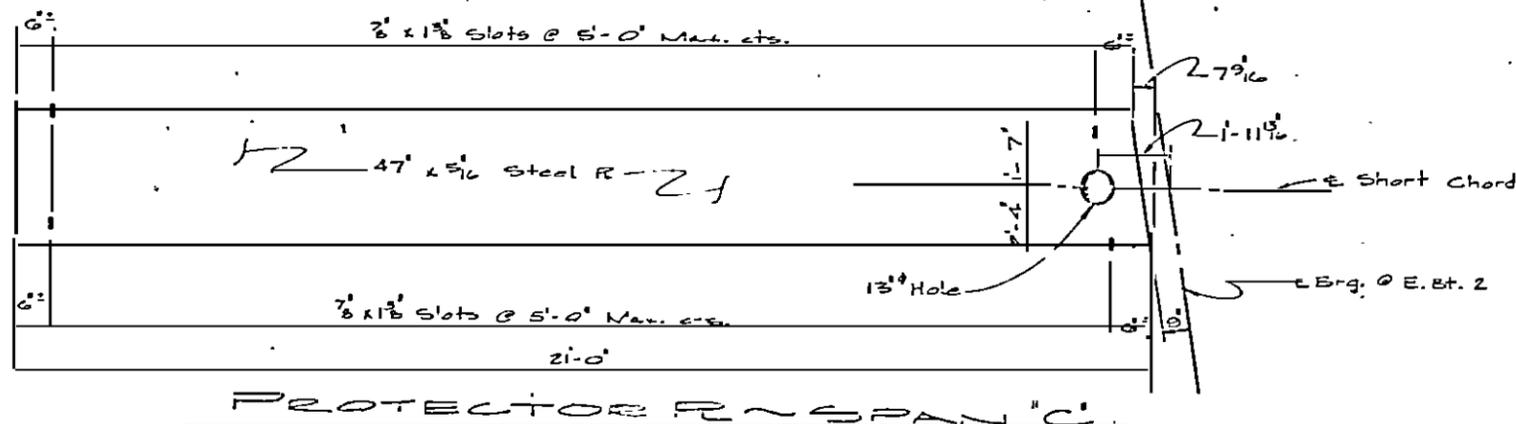
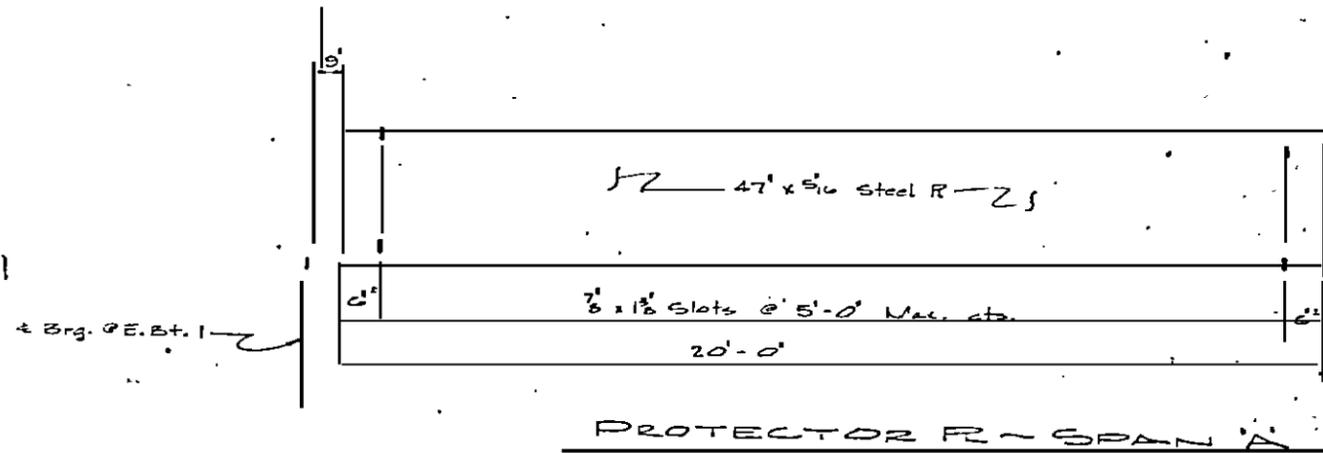
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 STRUCTURAL STEEL



ANGLE DETAILS

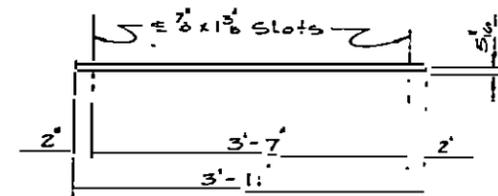
NOTES

- Protector Plate to be placed after Trough is in place. For convenience in erection, plate may be fabricated in short sections. Each section shall have at least two bolts on each side with bolts 6" from each end and a maximum spacing of 5'-0".
- \* For bolts connecting plate to angle, the standard requirements for High Strength Bolts will be followed with the exception of the procedure for nut tightening. Nuts for the 3/4" bolts will be given one-half turn with a wrench from a finger-tight position. A torque wrench is not required.



BEAM ELEVATION WITH ANGLE ATTACHED

Note: 4" Leg of Angle To Be Notched As Necessary To Clear DB.



STEEL PLATE DETAIL

PROJECT NO. 8.147330

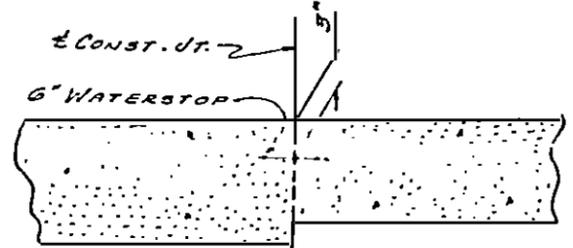
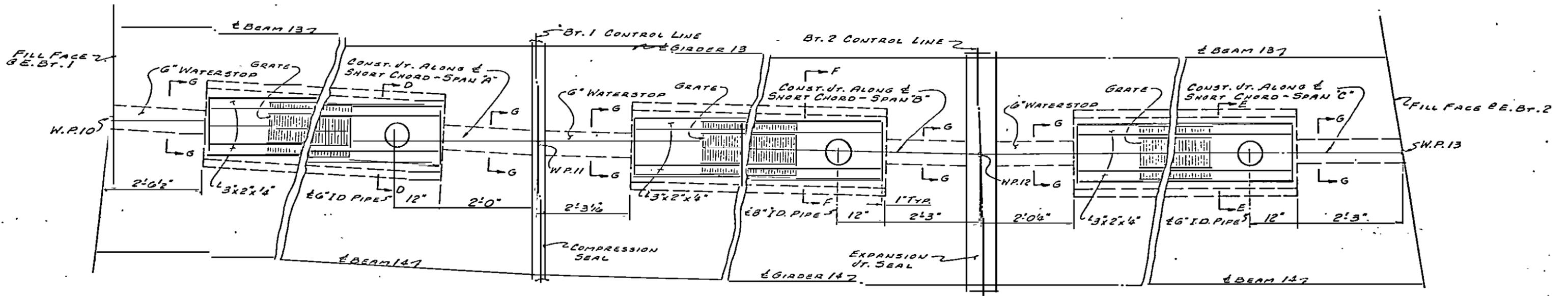
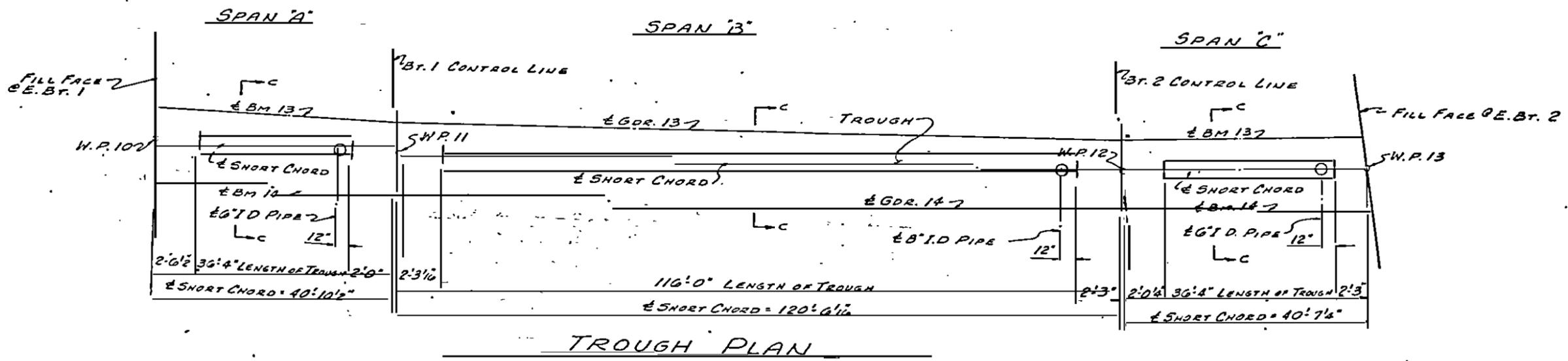
WAKE COUNTY

STATION 82-42.41-20

SHEET 9-20

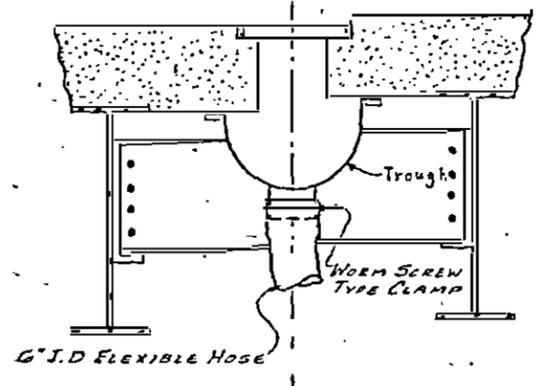
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
STREET 21 CASE

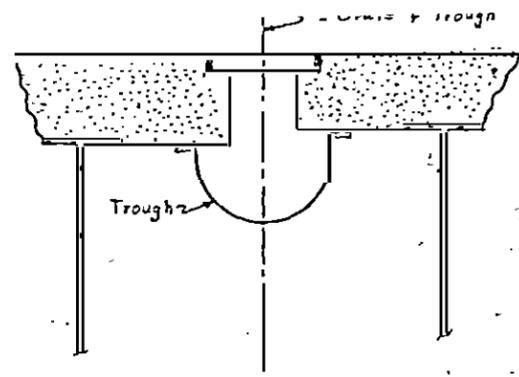


NOTE: SEE SHEET 2 OF 9 FOR "END OF TROUGH DETAIL"

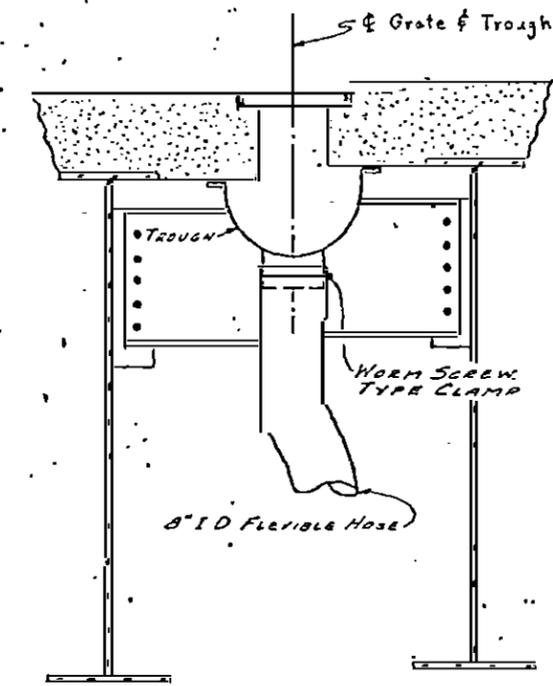
PROJECT No. 8.1275509  
 WISSE COUNTY  
 STATION. 1+00.00  
 SHEET 1 OF 9  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STRUCTURE DRAWING



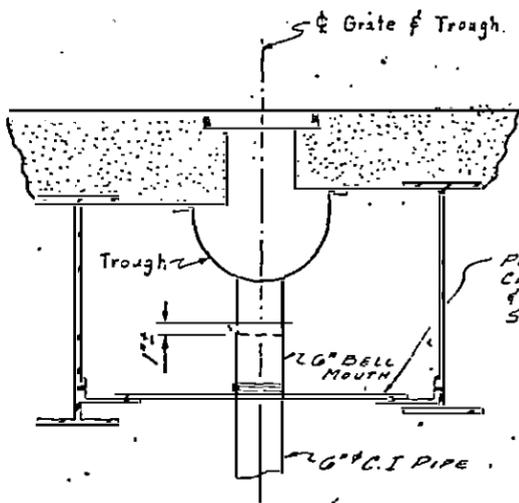
SECTION D-D



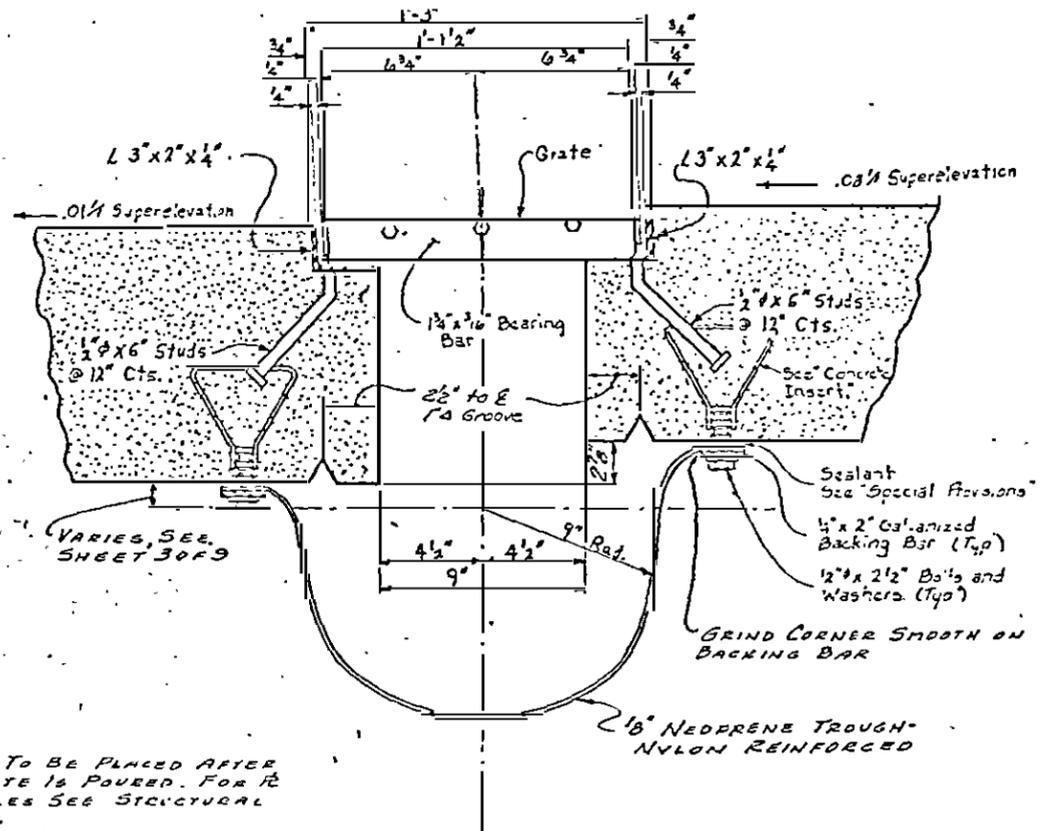
SECTION G-C



SECTION F-F

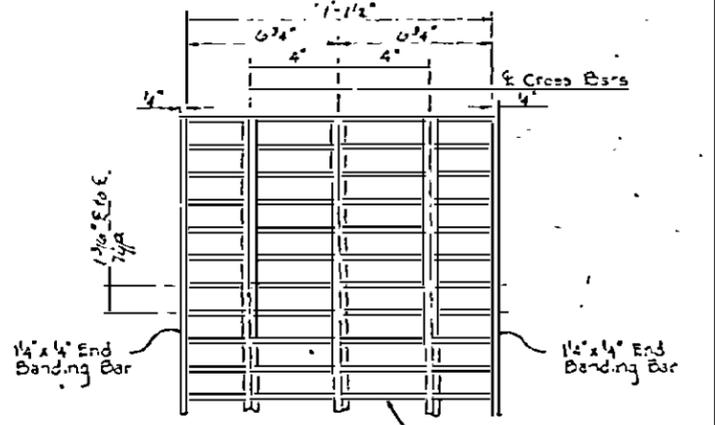


SECTION E-E

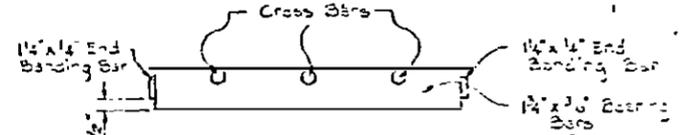


TYPICAL SECTION OF GRATE & TROUGH

L3"x2"x1/4" shall be structural steel meeting the requirements of ASTM-A36, and shall be galvanized to conform to the requirements of ASTM-A123.



PLAN VIEW



ELEVATION VIEW

GRATING DETAILS

For Grating Requirements, See "Special Provisions"

CONCRETE ANCHOR:

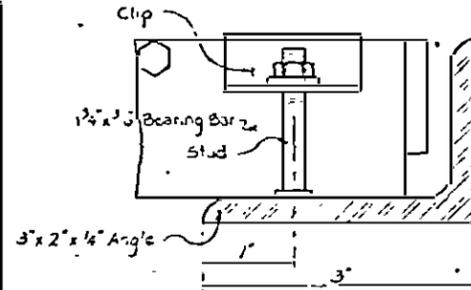
Concrete anchors shall consist of a stud bolt with nut & washer, threaded on one end and an expansion type assembly (friction anchor) on the other end. They shall provide a minimum safe holding power of 600 lbs. for a 1/4" bolt & 1/2" concrete insert. The holding power of the anchor in 3000 lb. concrete as determined by an approved commercial testing laboratory, satisfactory, prior to the anchor shall be furnished to the Engineer before holes are drilled.

ANCHORS SHALL BE GALVANIZED TO CONFORM TO THE REQUIREMENTS OF ASTM A153.

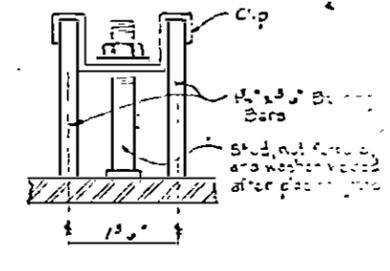
Holes for the concrete anchors shall be the size recommended by the manufacturer of the anchors and shall be drilled with a carbide or diamond tipped masonry core bit by means of a rotary drill or a rotary impact drill. Other impact tools will not be permitted. The hole size recommended for the specific anchor shall be furnished to the Engineer before holes are drilled.

Holes for anchors shall be thoroughly cleaned before anchors are installed. It is quite important that all chips and dust be completely removed.

All concrete damaged by this work shall be repaired to the satisfaction of the Engineer.



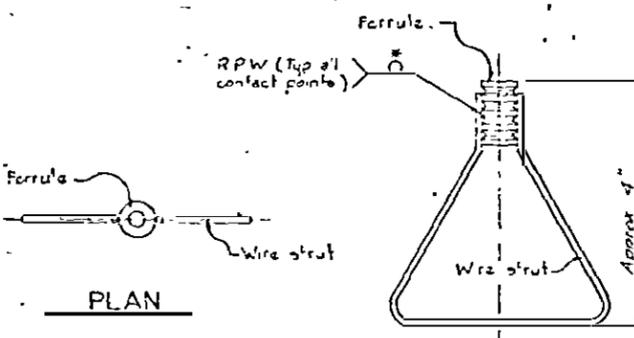
SIDE VIEW



END VIEW

GRATING FASTENER DETAILS

For Grating Fastener requirements, See "Special Provisions"



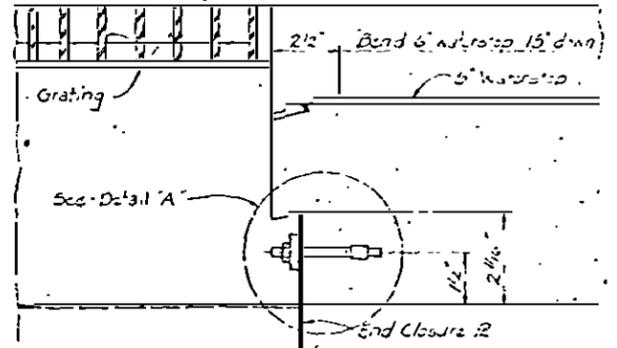
PLAN

ELEVATION

CONCRETE INSERT

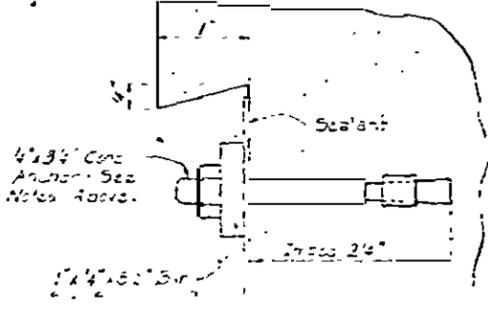
NOTES ---

- Ferrules shall be made from steel meeting the requirements of ASTM A108, grade 1214. Inserts shall be tapered to the dimensional requirements specified in ASTM A563 for nuts receiving galvanized bolts.
- The 1/2" x 2 1/2" Bolts shall conform to the requirements of ASTM A307. Bolts & washers shall be galvanized.
- At the contractor's option, stainless steel bolts & washers may be used as an alternate for the 1/2" x 2 1/2" galvanized bolts & washers. They shall conform to or exceed the mechanical requirements of ASTM A307. The use of this alternate shall be approved by the engineer.
- The insert assembly with bolt shall be assembled in the shop.
- The 1/2" structural Concrete Insert shall have a working load tension capacity of 2500 lbs. The ferrule shall be closed and will engage a 1/2" bolt with NC threads.



Sec. Detail A

End Closure B



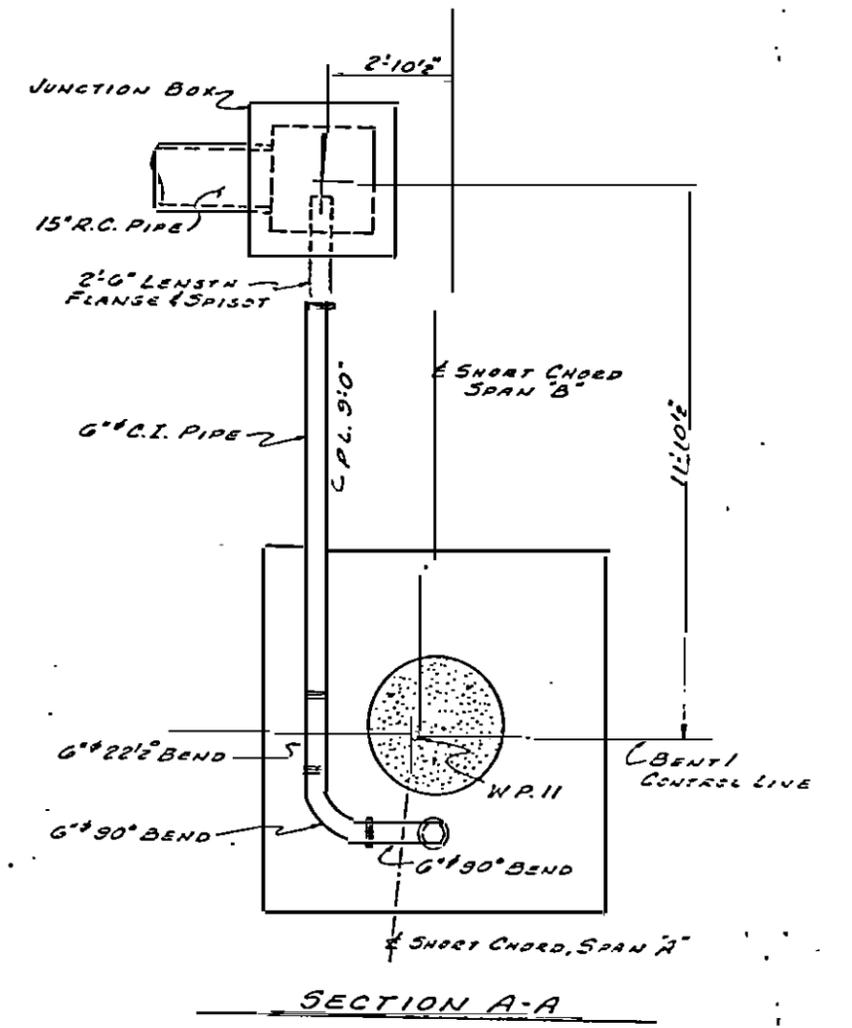
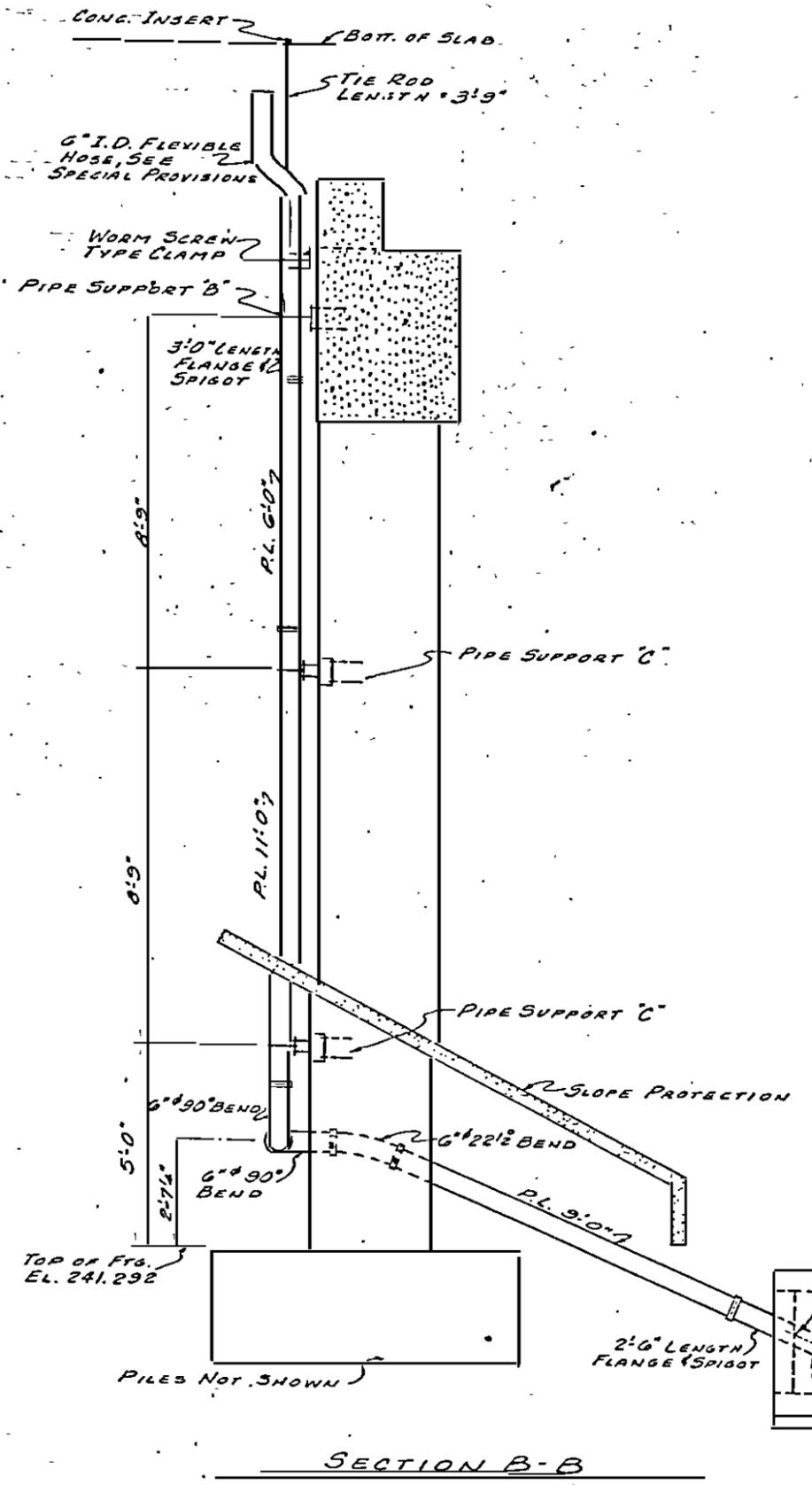
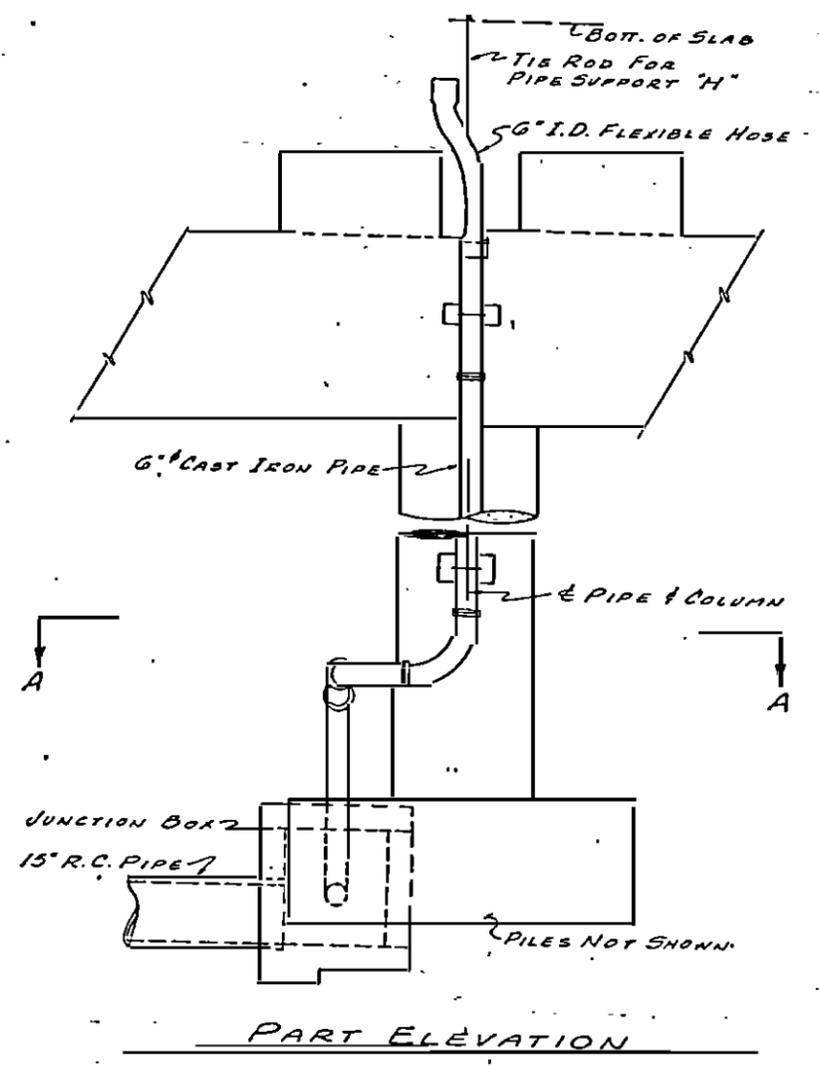
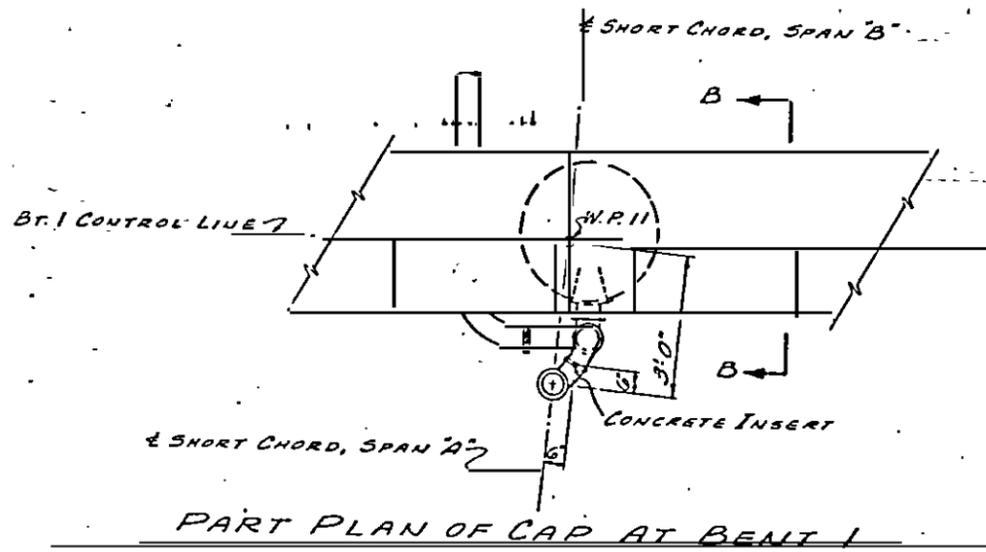
4\"/>

PROJECT No. 81475509  
 WAKE COUNTY  
 STATION: 62+22.51-0

Sheet 2 of 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STRUCTURE DRAINAGE SYSTEM

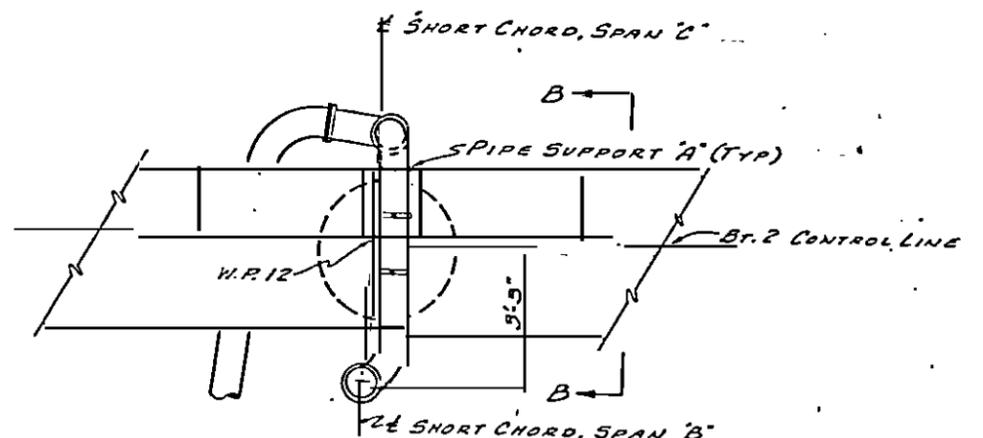




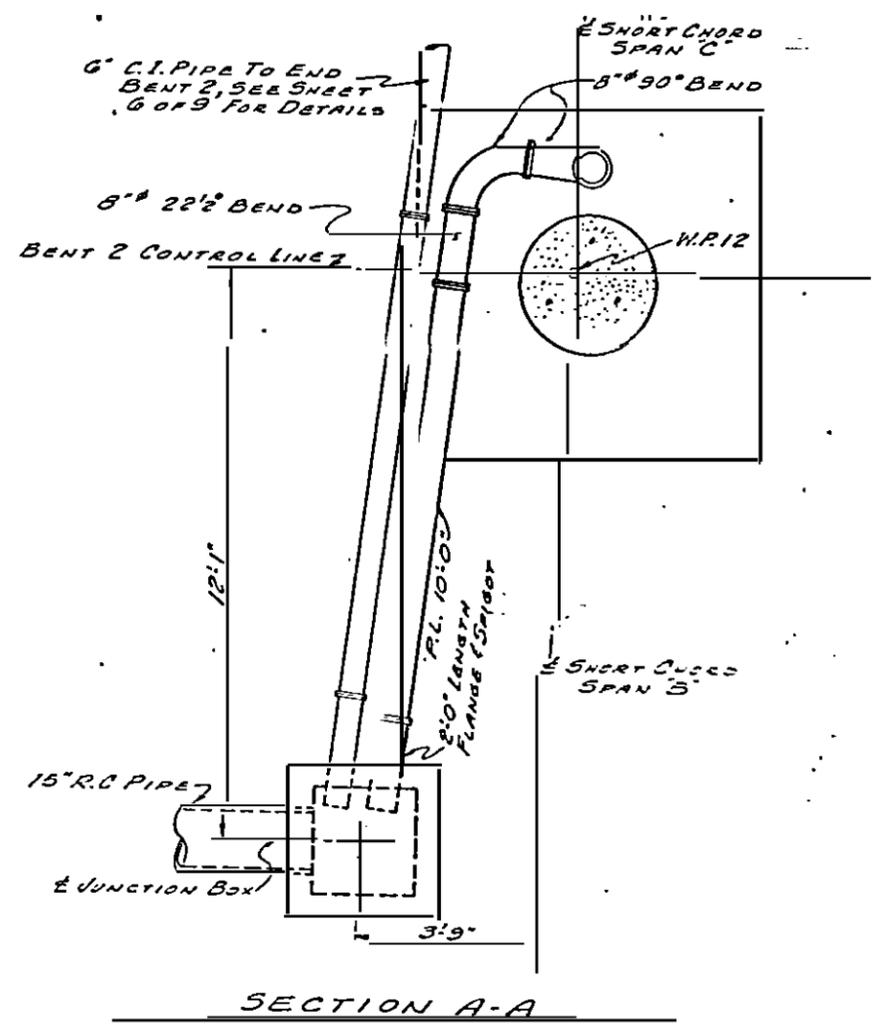
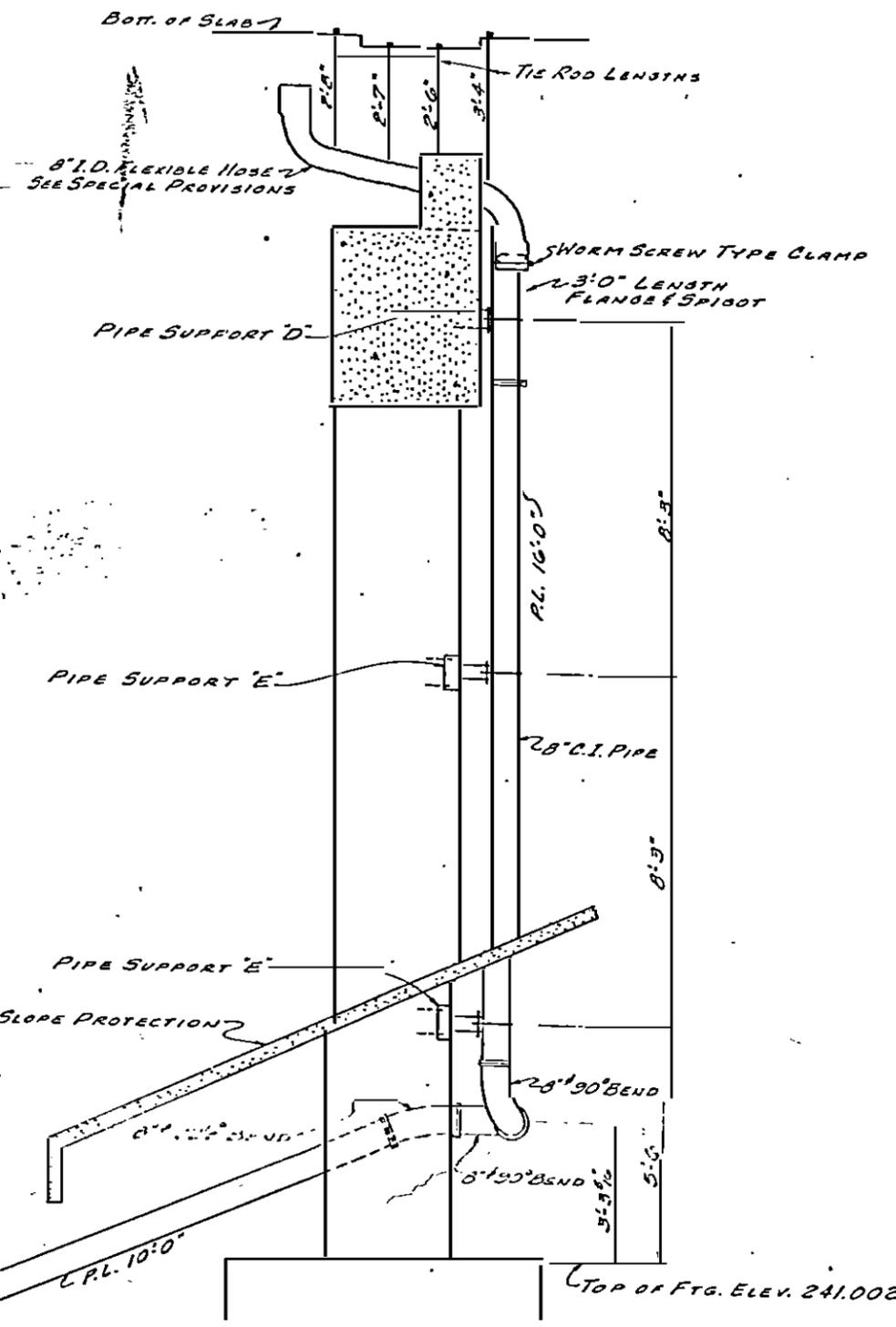
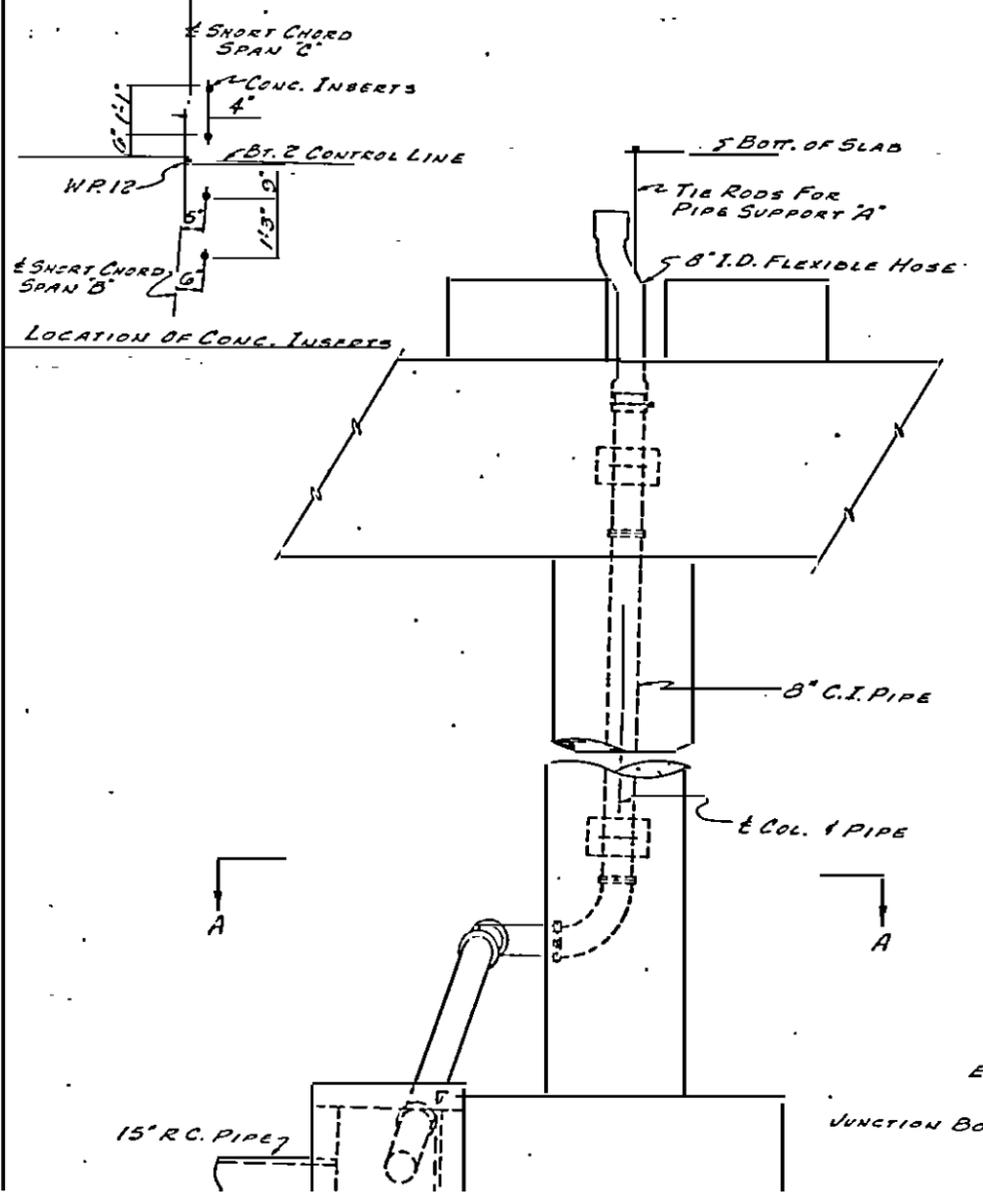
NOTE: FOR DETAILS OF JUNCTION BOX & 15" R.C. PIPE, SEE ROADWAY PLANS.

PROJECT No. 81275502  
 WAKE COUNTY  
 STATION: 82+22.41-6.  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STRUCTURE DRAINAGE  
 SYSTEM



PART PLAN OF CAP AT BENT 2

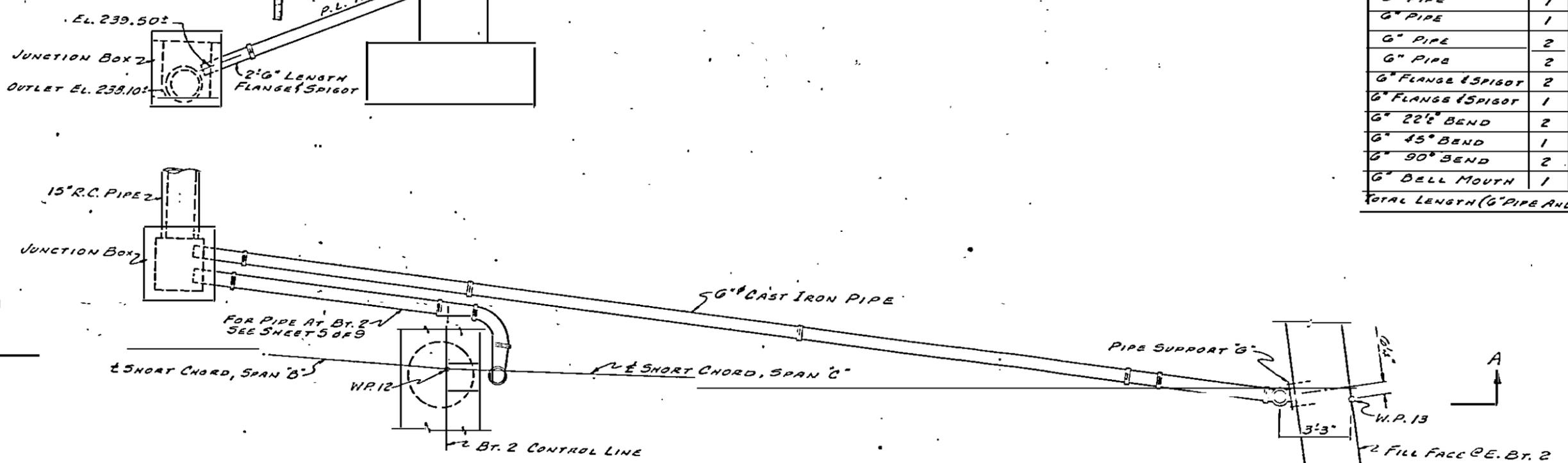
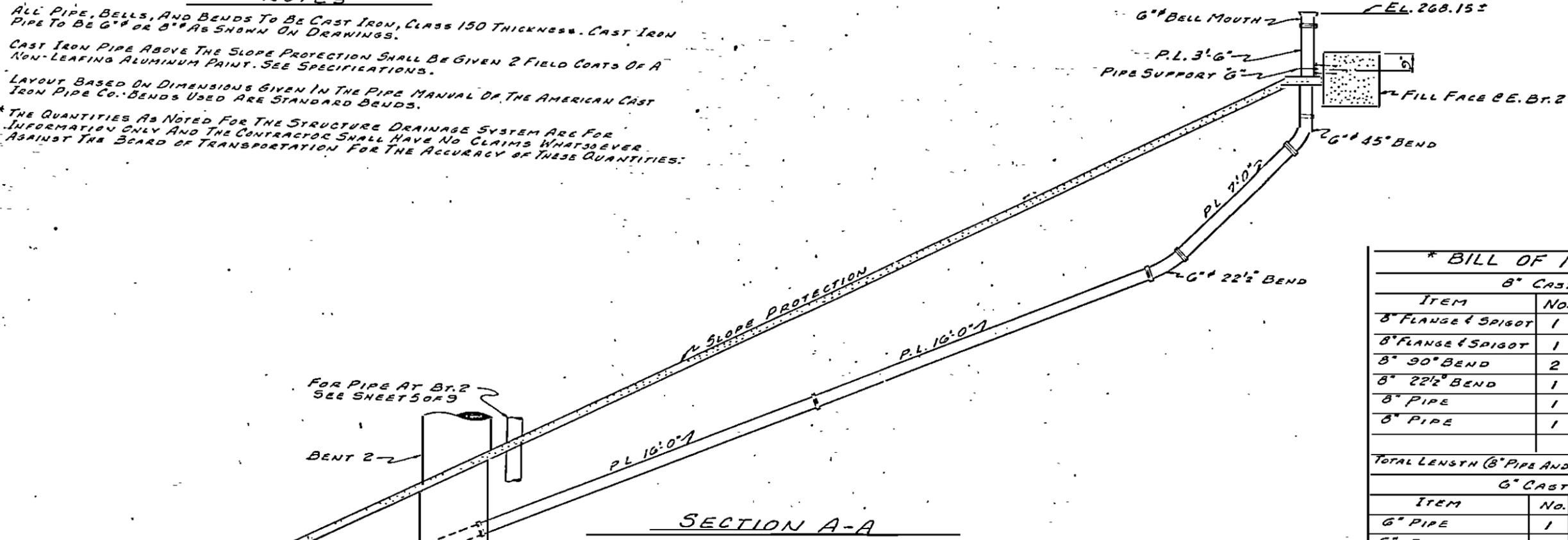


SECTION A-A

PROJECT No. 81475509  
 WAKE COUNTY  
 STATION: 11+50  
 SHEET 5 OF 9  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STRUCTURE DRAINAGE

**NOTES**

ALL PIPE, BELLS, AND BENDS TO BE CAST IRON, CLASS 150 THICKNESS. CAST IRON PIPE TO BE 6" OR 8" AS SHOWN ON DRAWINGS.  
 CAST IRON PIPE ABOVE THE SLOPE PROTECTION SHALL BE GIVEN 2 FIELD COATS OF A NON-LEAFING ALUMINUM PAINT. SEE SPECIFICATIONS.  
 LAYOUT BASED ON DIMENSIONS GIVEN IN THE PIPE MANUAL OF THE AMERICAN CAST IRON PIPE CO. BENDS USED ARE STANDARD BENDS.  
 \* THE QUANTITIES AS NOTED FOR THE STRUCTURE DRAINAGE SYSTEM ARE FOR INFORMATION ONLY AND THE CONTRACTOR SHALL HAVE NO CLAIMS WHATSOEVER AGAINST THE BOARD OF TRANSPORTATION FOR THE ACCURACY OF THESE QUANTITIES.

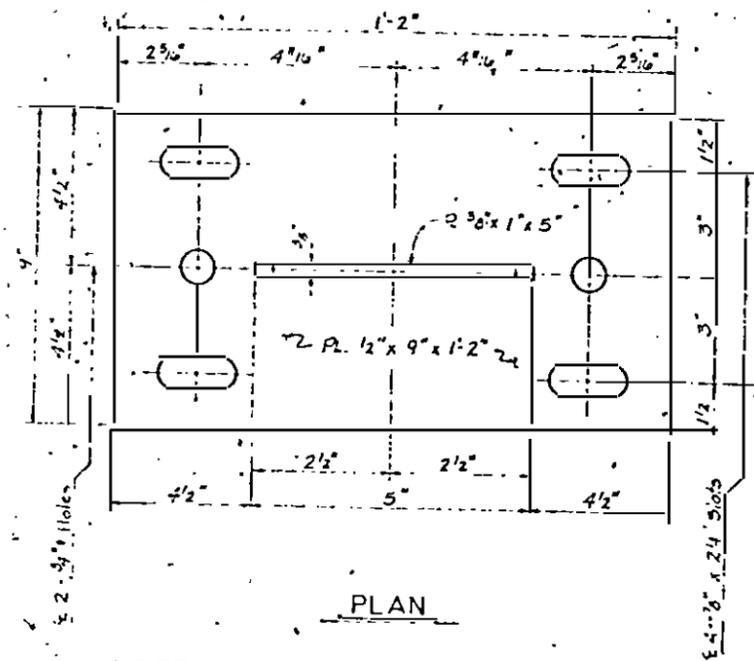


**\* BILL OF MATERIAL**

8" CAST IRON PIPE			
ITEM	NO.	LENGTH	TOTAL LENGTH
8" FLANGE & SPIGOT	1	3'-0"	3'-0"
8" FLANGE & SPIGOT	1	2'-0"	2'-0"
8" 90° BEND	2		
8" 22½° BEND	1		
8" PIPE	1	16'-0"	16'-0"
8" PIPE	1	10'-0"	10'-0"
TOTAL LENGTH (8" PIPE AND FLANGE & SPIGOT) 31'-0"			
6" CAST IRON PIPE			
ITEM	NO.	LENGTH	TOTAL LENGTH
6" PIPE	1	3'-0"	3'-0"
6" PIPE	1	6'-0"	6'-0"
6" PIPE	1	7'-0"	7'-0"
6" PIPE	1	9'-0"	9'-0"
6" PIPE	2	11'-0"	22'-0"
6" PIPE	2	16'-0"	32'-0"
6" FLANGE & SPIGOT	2	2'-0"	4'-0"
6" FLANGE & SPIGOT	1	3'-0"	3'-0"
6" 22½° BEND	2		
6" 45° BEND	1		
6" 90° BEND	2		
6" BELL MOUTH	1		
TOTAL LENGTH (6" PIPE AND FLANGE & SPIGOT) 67'-6"			

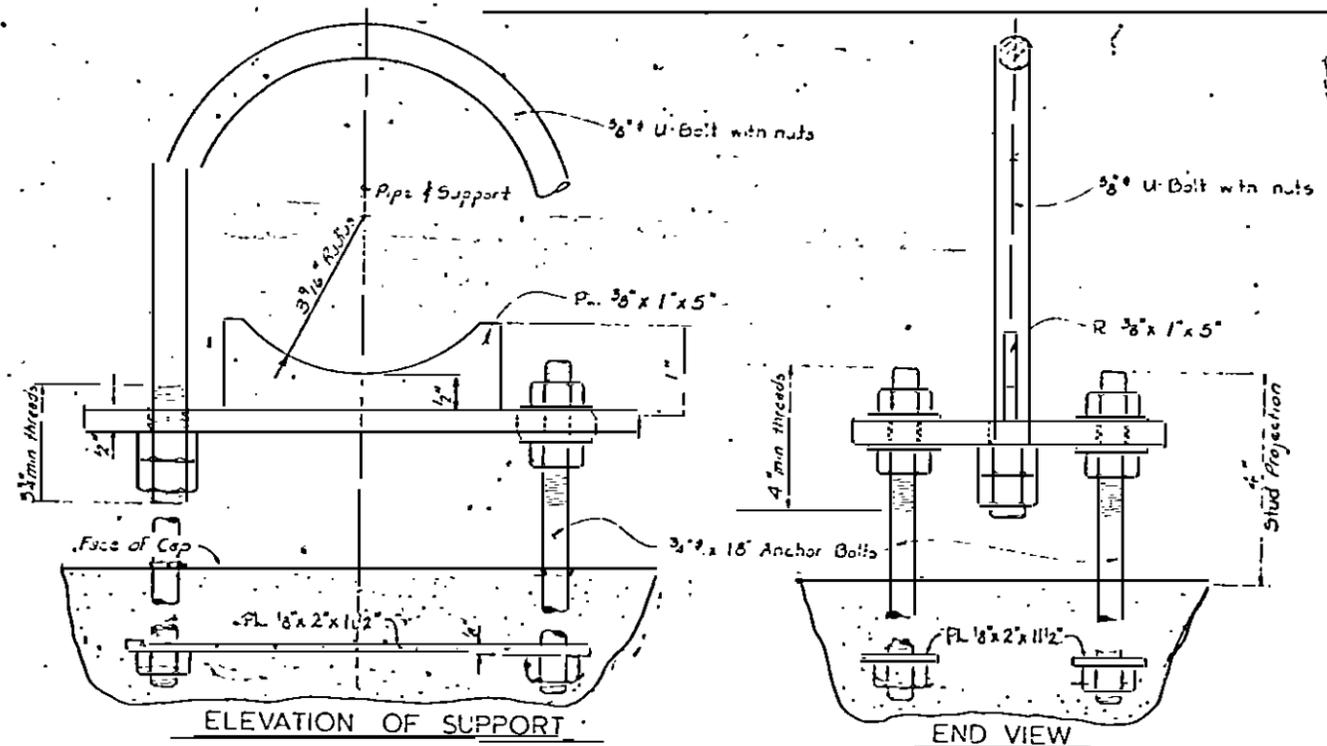
PROJECT NO. 512-25500  
 WILSON COUNTY  
 STATION 02+23.51-2  
 SHEET 6 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STRUCTURE DRAINAGE  
 SYSTEM



PLAN

**NOTE:**  
The 3/4" x 18" Anchor Bolts shall conform to the requirements of ASTM A-307. Bolts and washers shall be galvanized to conform to the requirements of ASTM A-153.  
Pipe Support shall be galvanized, See Specifications.

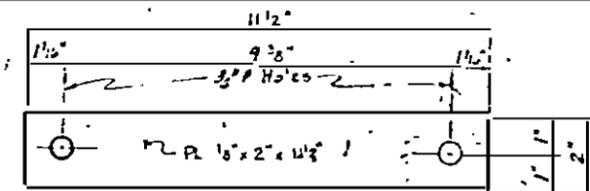


ELEVATION OF SUPPORT

END VIEW

PIPE SUPPORT "B"  
Located on Cap @ Bent 1 - Center

**NOTES:**  
Max Nuts - After final pipe alignment, tighten and jam threads of all nuts with sharp pointed tool to prevent movement.  
Anchor Bolts (3/4" x 18") are to be cast in place.

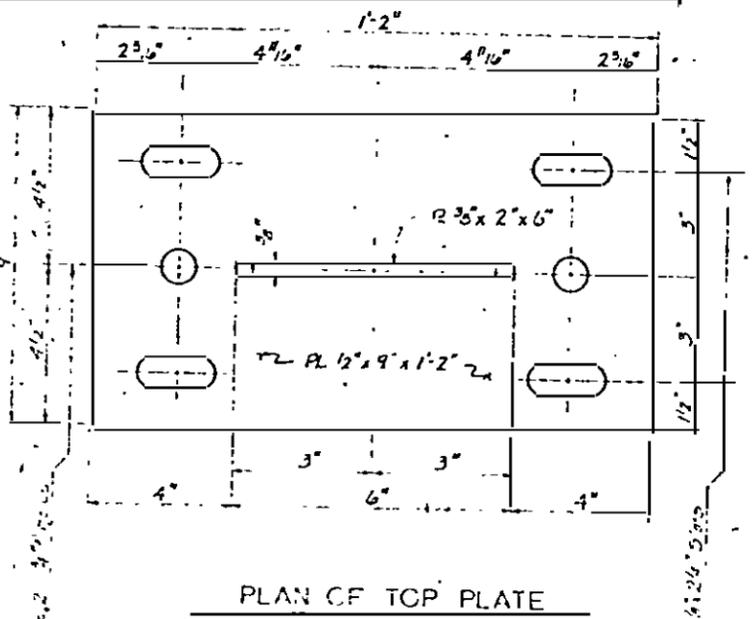


PLAN OF ANCHOR PLATE  
2 - Required per Unit

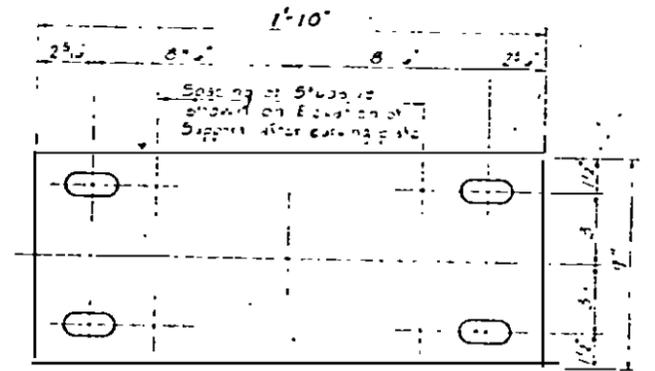
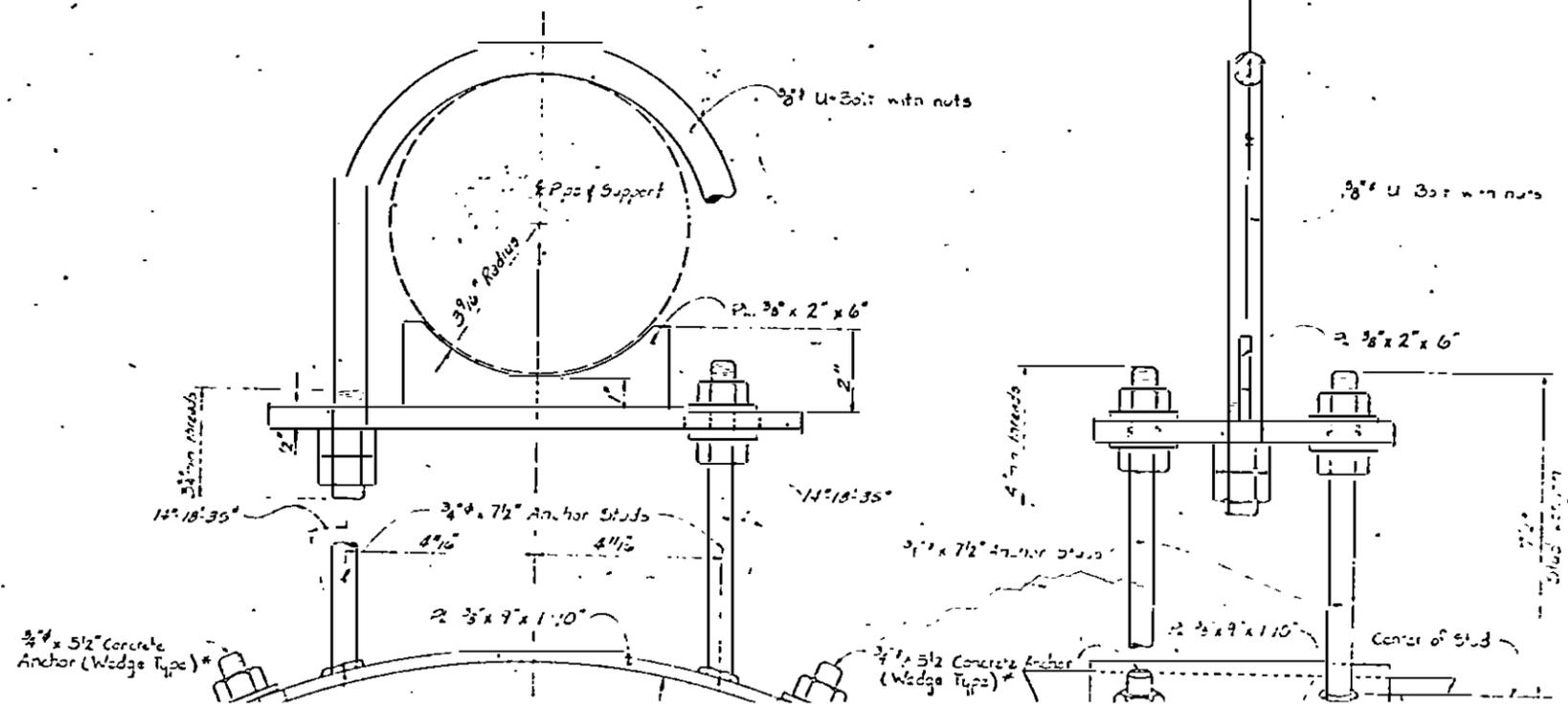
**NOTES:**  
Holes for the concrete anchors shall be the size recommended by the manufacturer of the anchors and shall be drilled with a carbide or diamond tipped masonry core bit by means of a rotary drill or a rotary impact drill. Other impact tools will not be permitted. The hole size recommendation for the specified anchor shall be furnished to the Engineer before holes are drilled.  
Holes for anchors shall be thoroughly cleaned before anchors are installed. It is quite important that all chipped dust be completely removed.  
All concrete damaged by this work shall be repaired to the satisfaction of the Engineer.  
Concrete anchors shall consist of a stud bolt with nut and washer at one end and an expander wedge assembly at the other end. They shall provide a minimum holding power of 2,000 lbs for a 3/4" bolt based upon 1 1/2" diameter holding power of the anchor in 3000 lb concrete as determined by an approved commercial testing laboratory. Satisfactory proof shall be furnished to the Engineer.  
Anchors shall be galvanized to conform to the requirements of ASTM A153.

**NOTES:**  
Max Nuts - After final pipe alignment, tighten and jam threads of all nuts with sharp pointed tool to prevent movement.  
Pipe Support shall be galvanized, See Specifications.

PIPE SUPPORT "C"  
Located on Column @ Bent 1 - Center

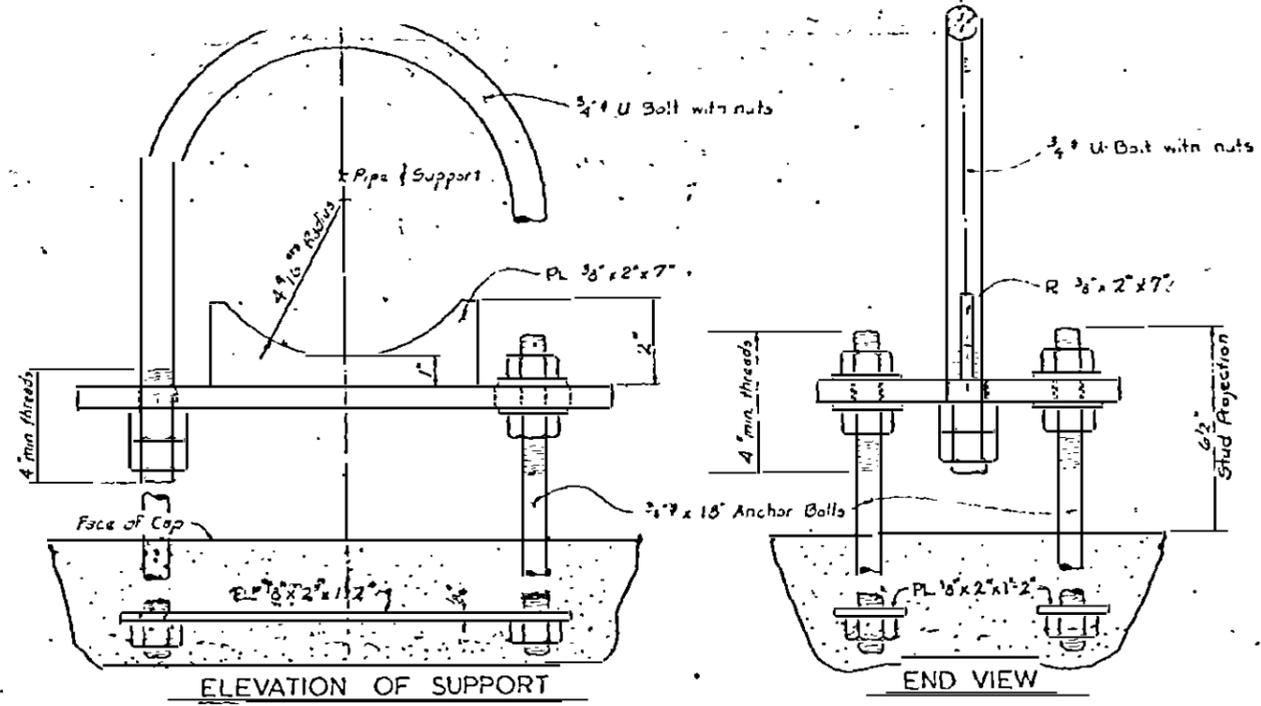
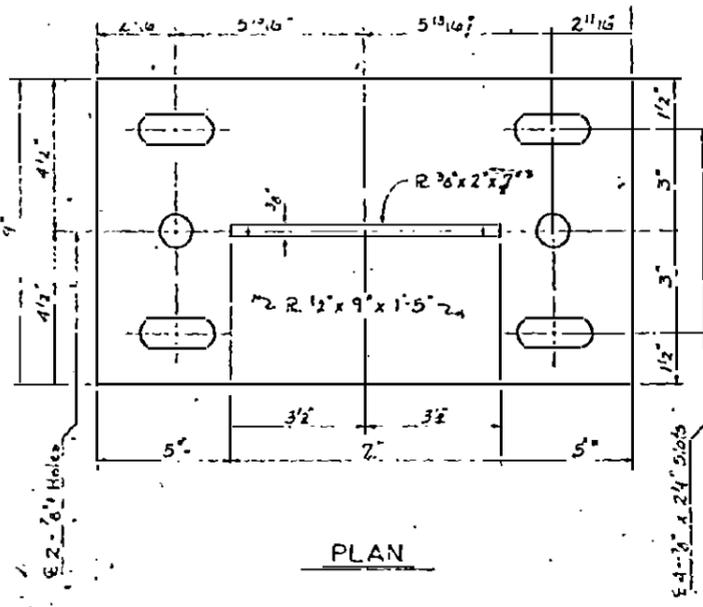


PLAN OF TOP PLATE



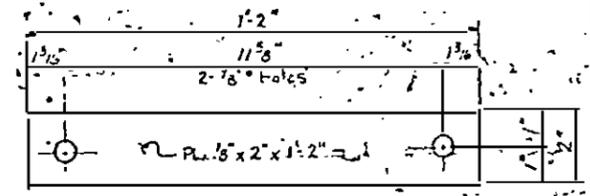
PLAN OF BOTTOM PLATE  
Dimensions shown are nominal on all plates.

PROJECT No. 81475509  
WAKE COUNTY  
STATION: 82+41.1-41.2  
SHEET 7 of 9  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STRUCTURE DRAINAGE



**PIPE SUPPORT "D"**  
Located on Cap of Bent 2 - Center

**NOTES:**  
Hex Nuts - After final pipe alignment, tighten and jam threads of all nuts with sharp pointed tool to prevent movement.  
Anchor Bolts (3/4" x 18") are to be cast-in-place.



**PLAN OF ANCHOR PLATE**  
2- Required

**NOTES: \***

Concrete anchors shall consist of a stud bolt with nut and washer, spaced on one end and an expansion wedge assembly positioned around a tapered area at the other end. They shall provide a minimum safe holding power of 3000 lbs. for a 3/4" bolt in concrete. The actual holding power of the anchors shall be determined by an approved commercial testing laboratory. Satisfactory proof shall be furnished to the Engineer.

Anchors shall be galvanized to conform to the requirements of ASTM A153.

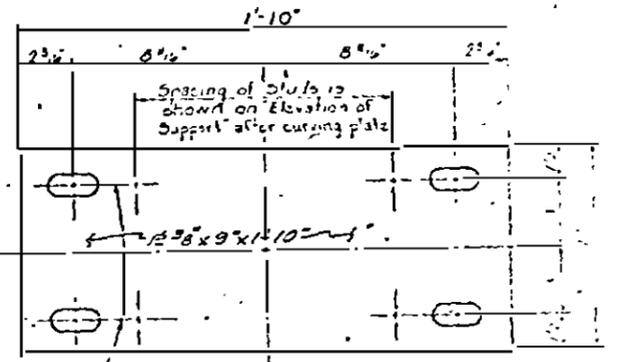
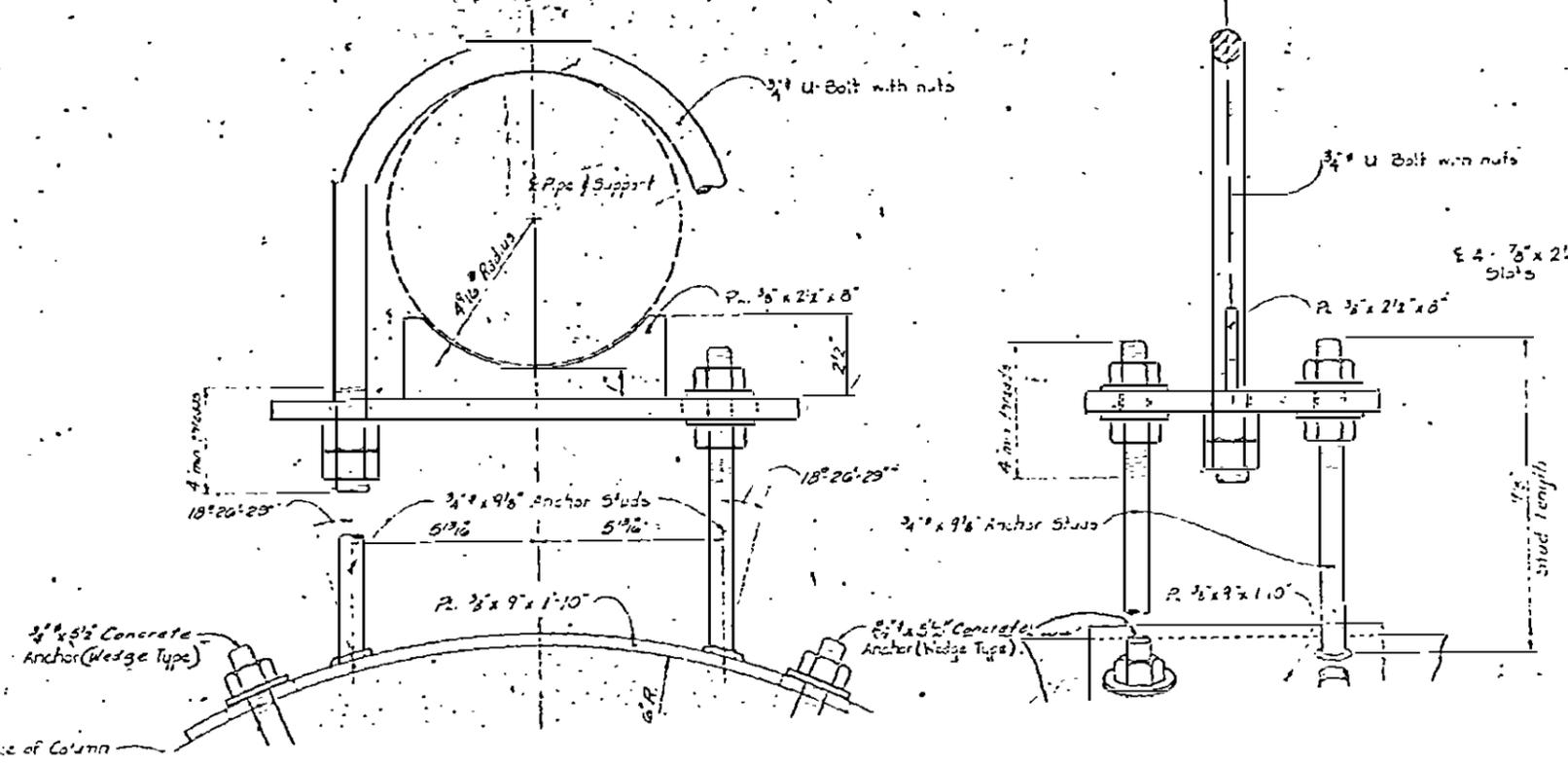
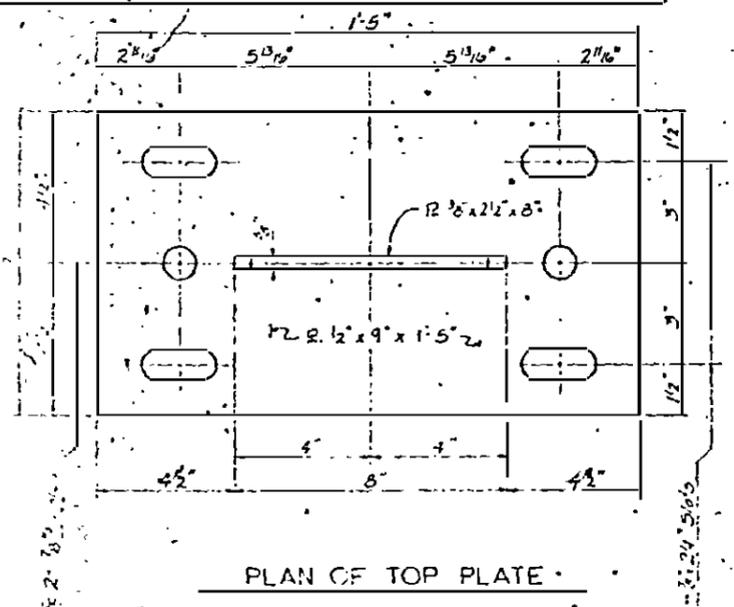
Holes for the concrete anchors shall be the size recommended by manufacturer of the anchors and shall be drilled with carbide or diamond tipped rotary core bit by means of a rotary drill or a rotary impact drill. Careful impact tools will not be permitted. The hole size recommendation for the size of the anchor shall be furnished to the Engineer before hole are drilled.

Holes for anchors shall be thoroughly clean before anchors are installed. It is quite important that all chips and dust be completely removed.

All concrete drilled by this work shall be repaired to the satisfaction of the Engineer.

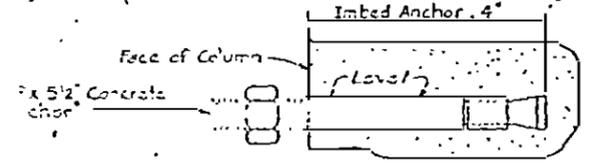
**NOTES:**  
Hex Nuts - After final pipe alignment, tighten and jam threads of all nuts with sharp pointed tool to prevent movement.  
Pipe Supports shall be galvanized, See Specifications.

**PIPE SUPPORT "E"**  
Located on Column of Bent 2 - Center



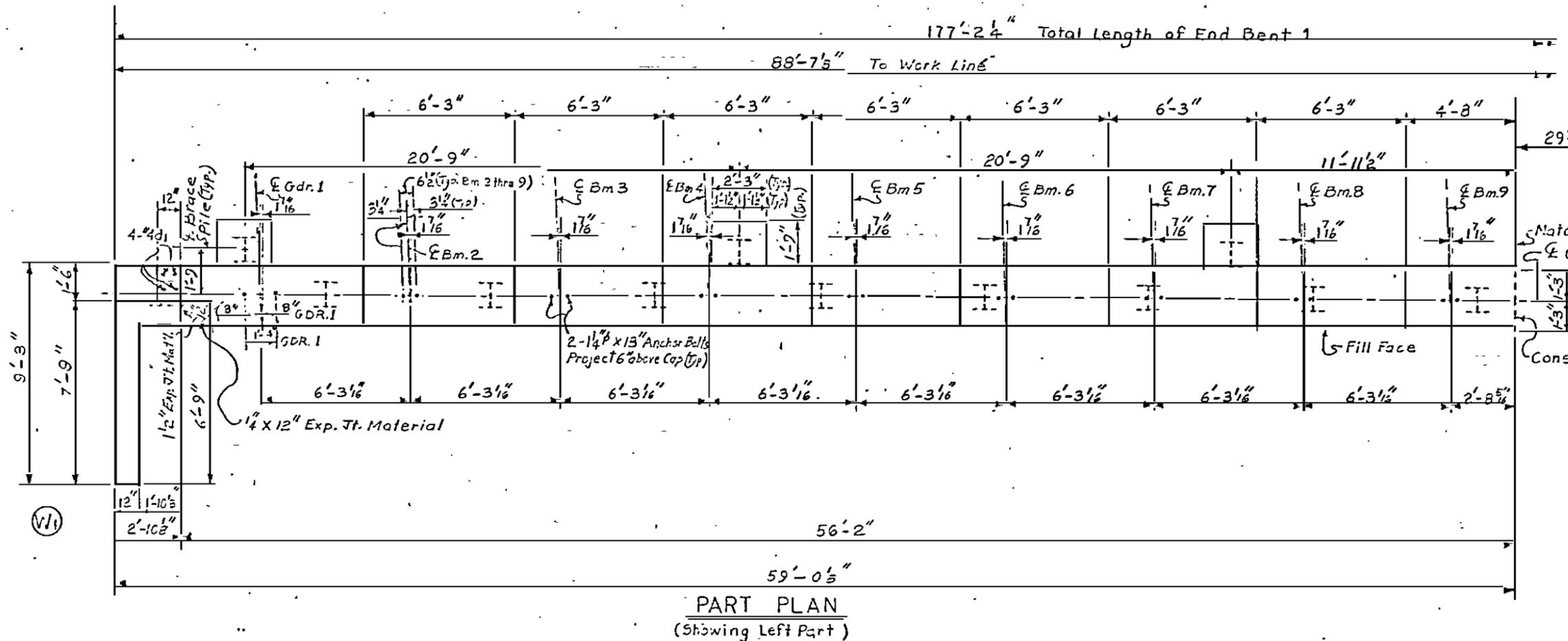
**PLAN OF BOTTOM PLATE**  
Dimensions shown are horizontal on flat plate.

PROJECT NO. 31475509  
WAKE COUNTY  
STATION: 82+42.51-2  
Sheet 8 of 9  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STRUCTURE DRAINAGE









**NOTES**

Piles to be driven to a Minimum Bearing Capacity of 30 Tons each

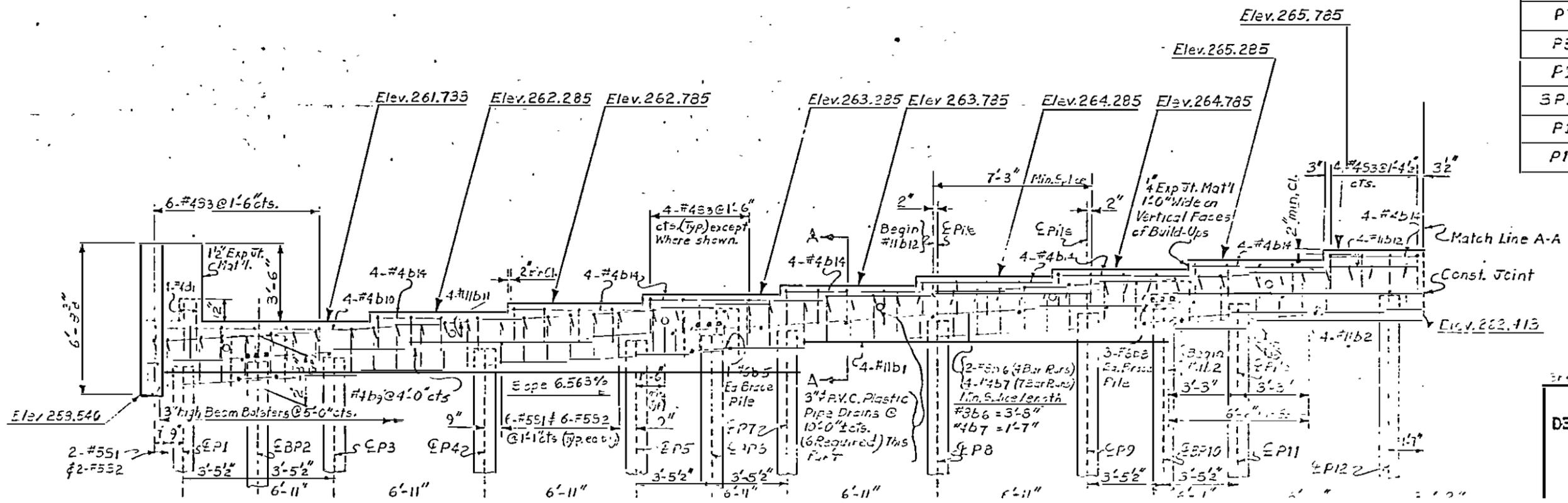
Cap steel may be shifted to clear Anchor Bolts.

Pipe Drains may be shifted to clear Reinforcing Steel and Anchor Bolts.

For Pile Splice Detail and Pipe Drain Details, see Sheet 5 of 5 End Bent 1.

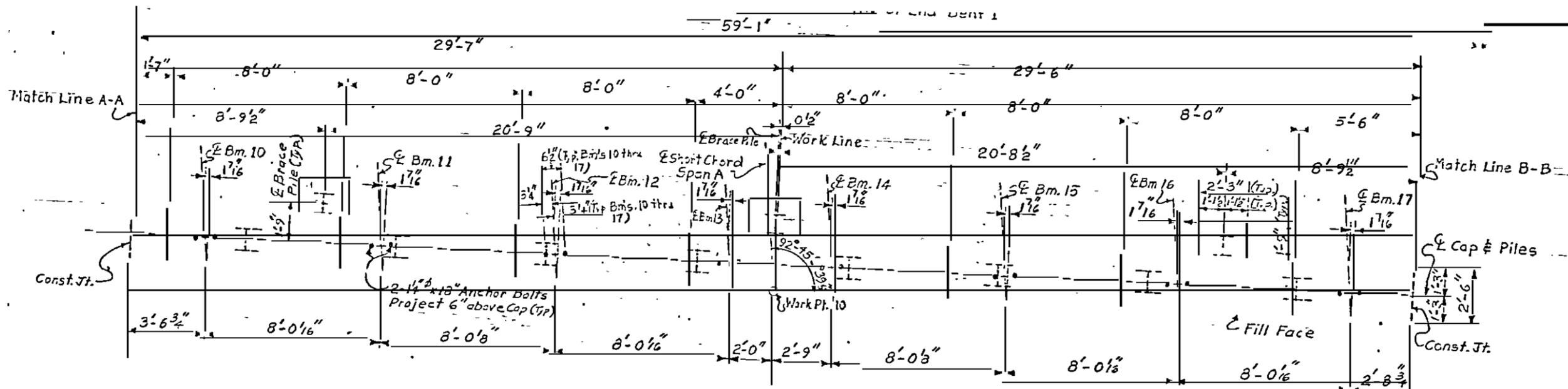
TOP OF PILE ELEVATION NO.	ELEV.
P 1	259.677
BP 2	259.904
P 3	260.131
P 4	260.585
P 5	261.039
BP 6	261.266
P 7	261.493
P 8	261.947
P 9	262.401
BP 10	262.623
P 11	262.855
P 12	263.309

**PART PLAN**  
(Showing Left Part)

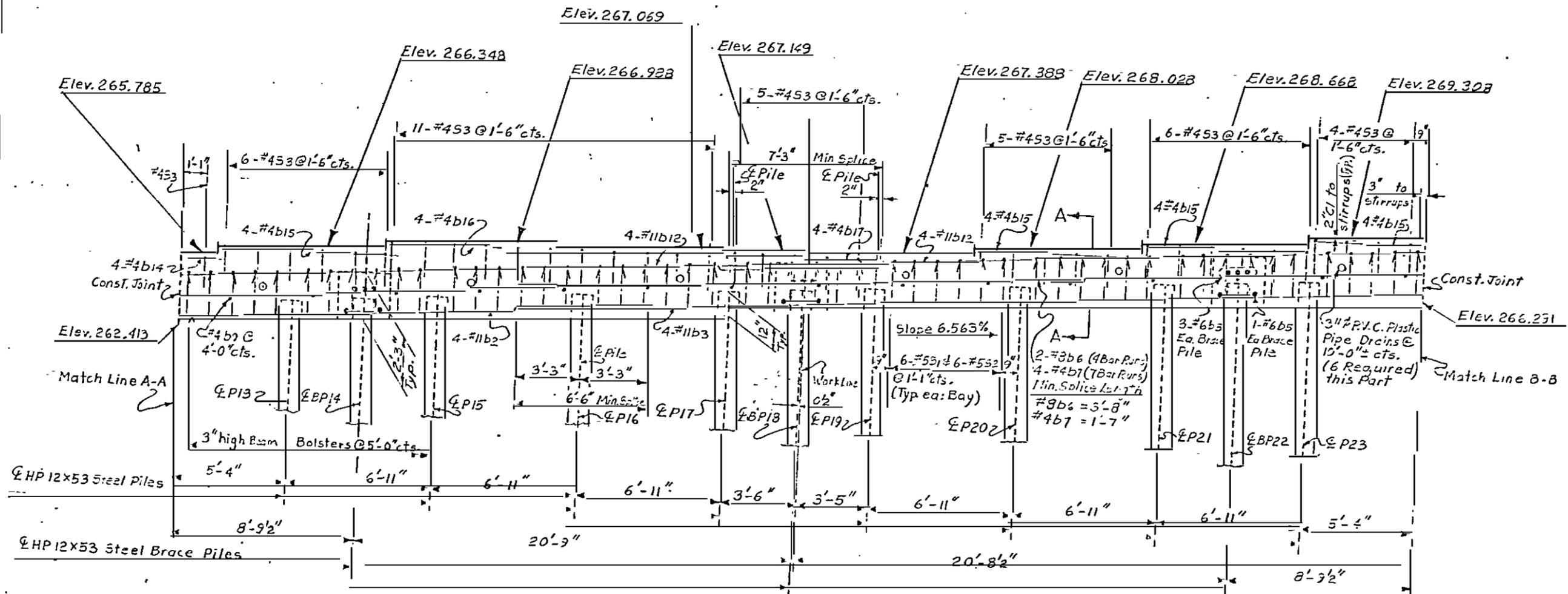


PROJECT NO. 8.147550S  
WAKE COUNTY  
STATION: 82+42.41-L  
Sheet 1 of 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT 1



**PART PLAN**  
(Showing Middle Part)



**PART ELEVATION**

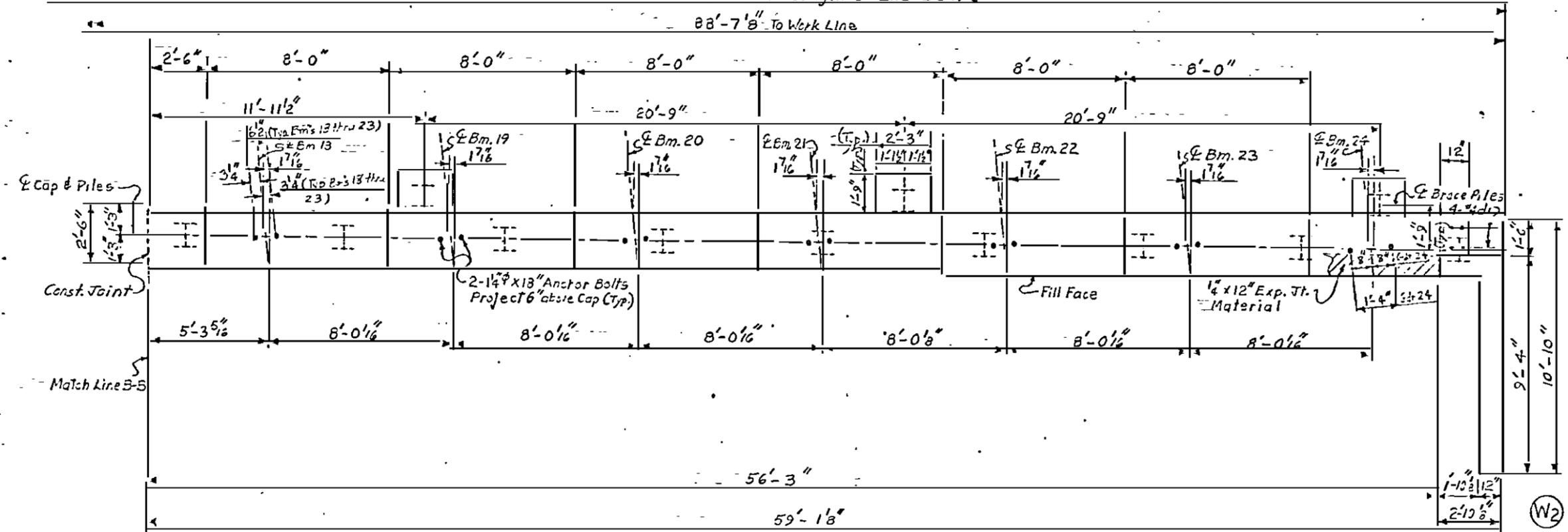
TOP OF PILE ELEVATION NO.	ELEV.
P 13	263.763
BP14	263.590
P15	264.217
P16	264.671
P17	265.125
BP18	265.352
P19	265.579
P20	266.053
P21	266.457
BP22	266.714
P23	266.911

PROJECT No. 8.1475509  
 WAKE COUNTY  
 STATION: 82+42.41-1-  
 Sheet 2 of 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE

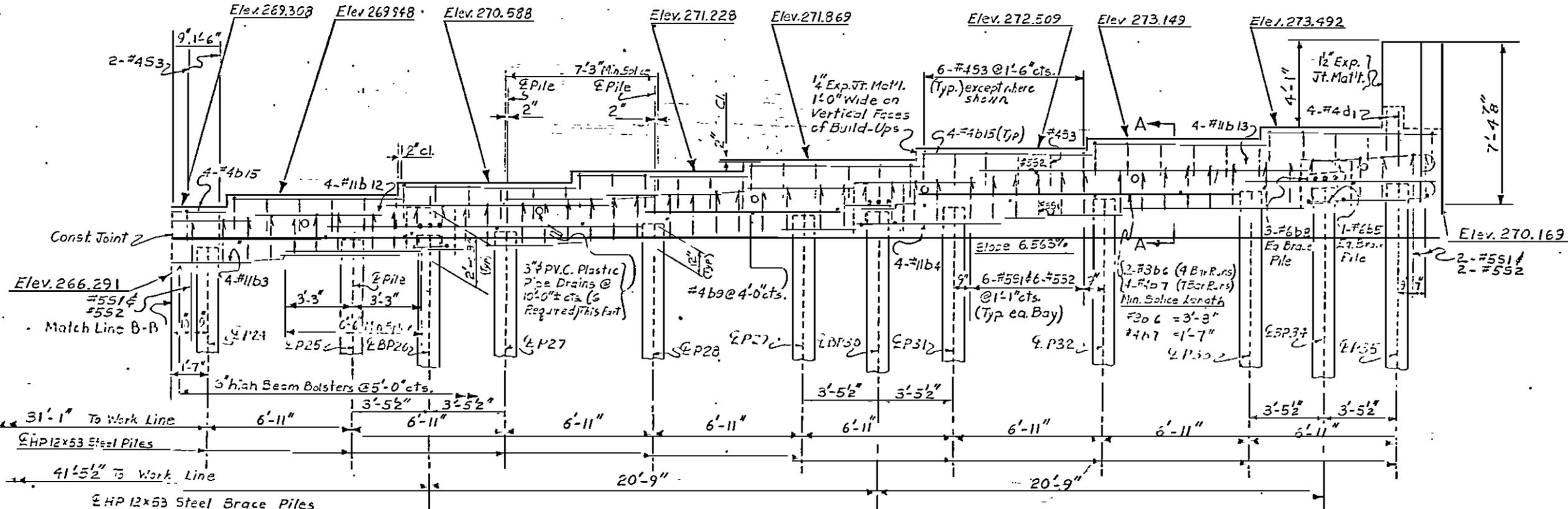
177'-2 1/4" Total Length of End Bent 1

88'-7 1/8" To Work Line



PART PLAN  
(Showing Right Part)

TOP OF PILE ELEVATION NO.	ELEV.
P 24	267.395
P 25	267.843
BP 26	268.075
P 27	268.302
P 28	268.753
P 29	269.210
BP 30	269.437
P 31	269.664
P 32	270.113
P 33	270.572
BP 34	270.799
P 35	271.026



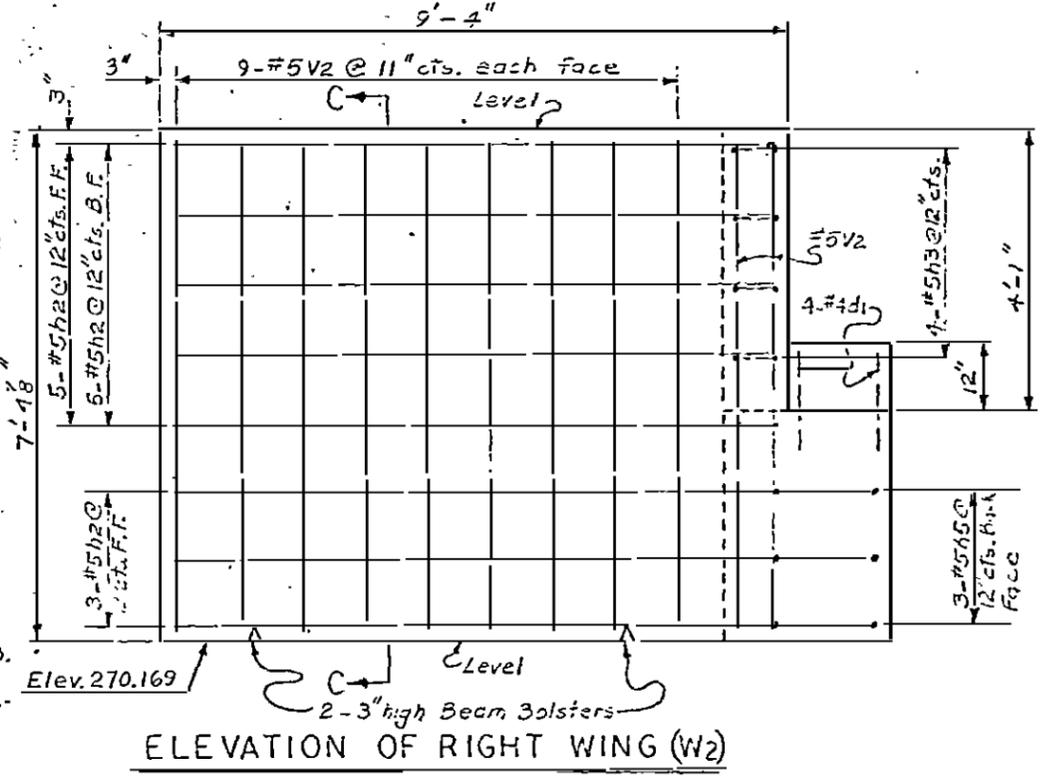
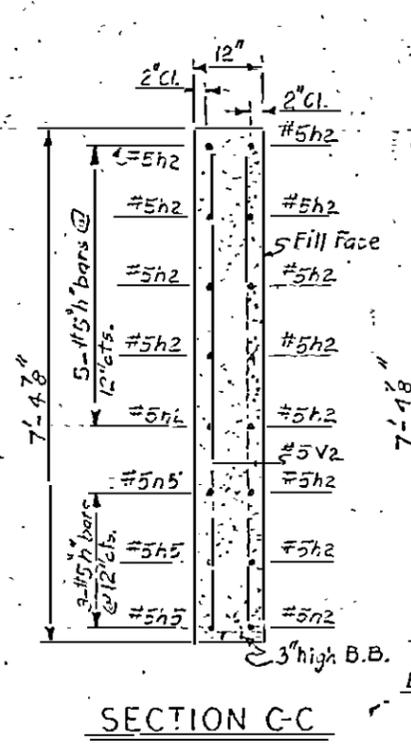
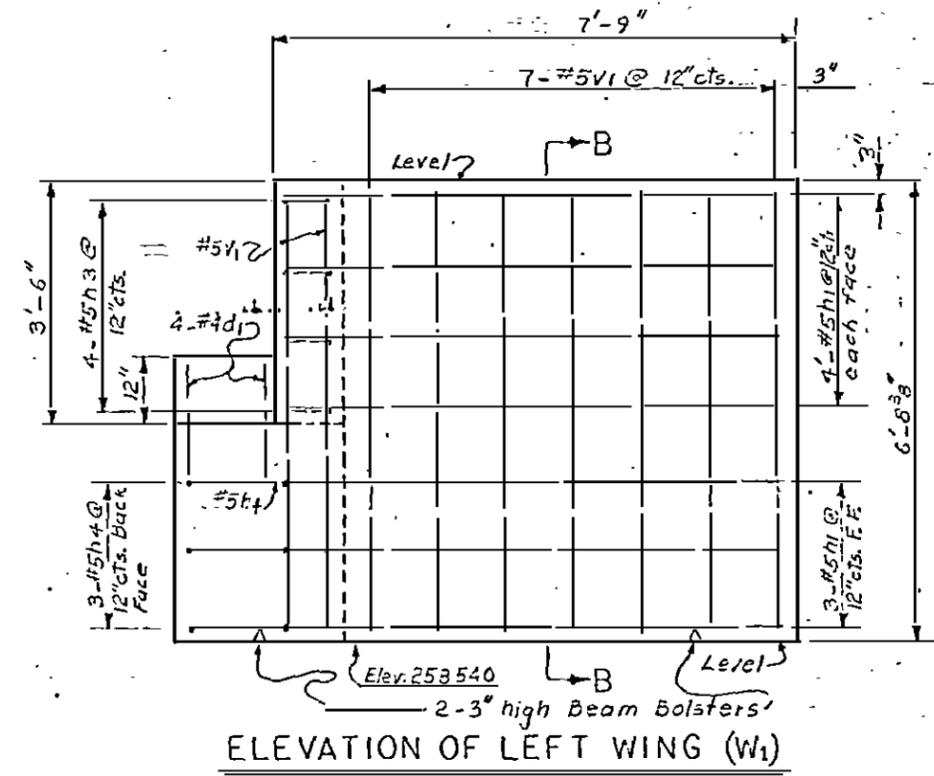
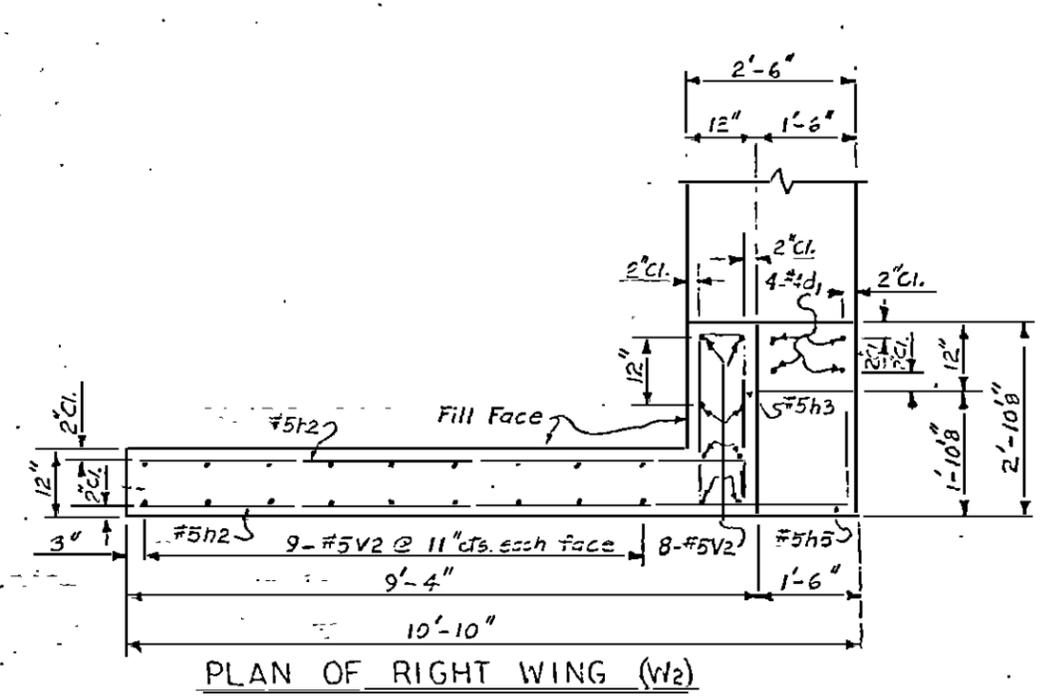
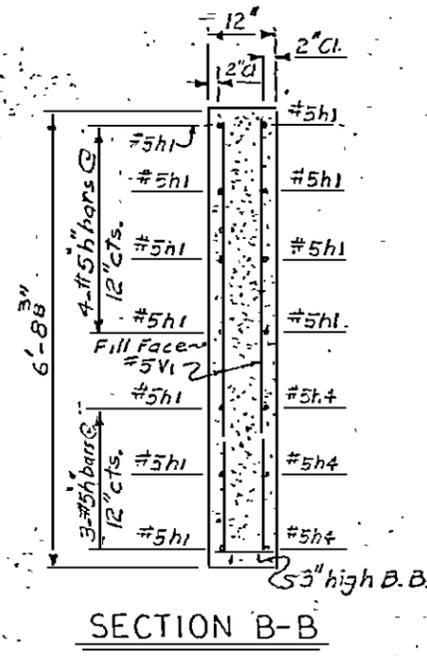
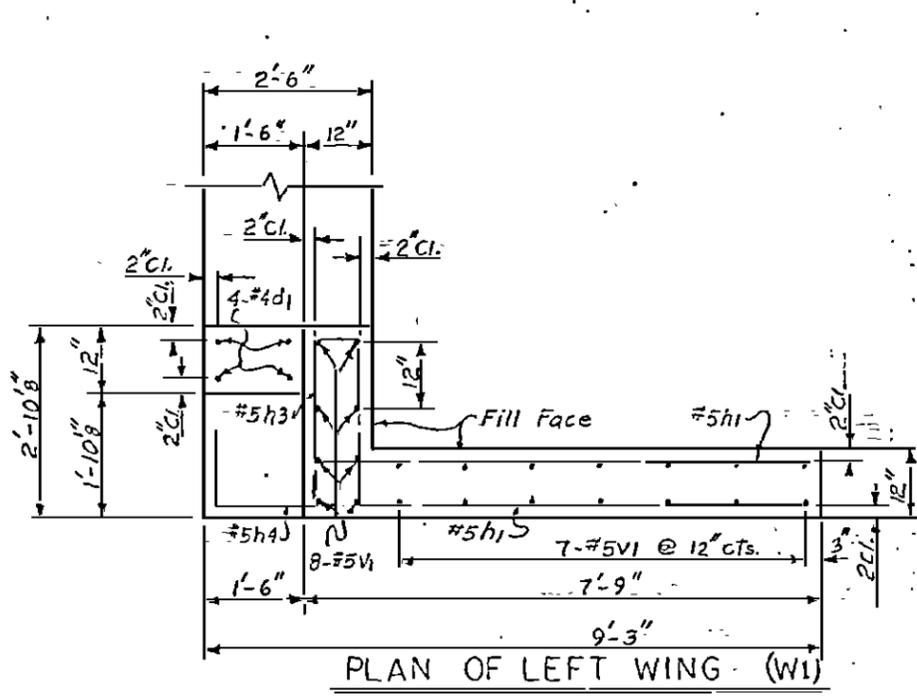
PROJECT NO. 8.1475509

WAKE COUNTY

STATION: 82+41.41-L

Sheet 3 of 5

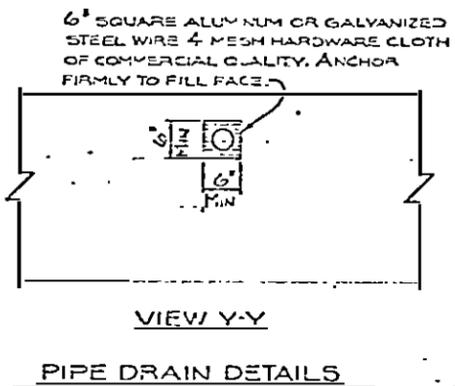
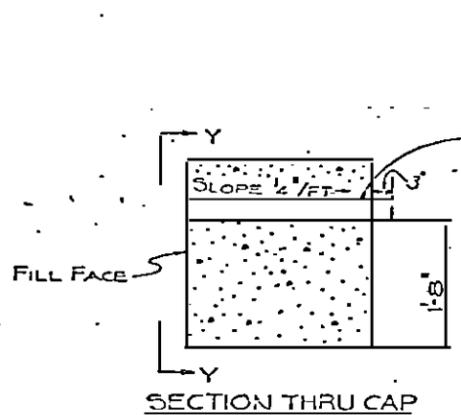
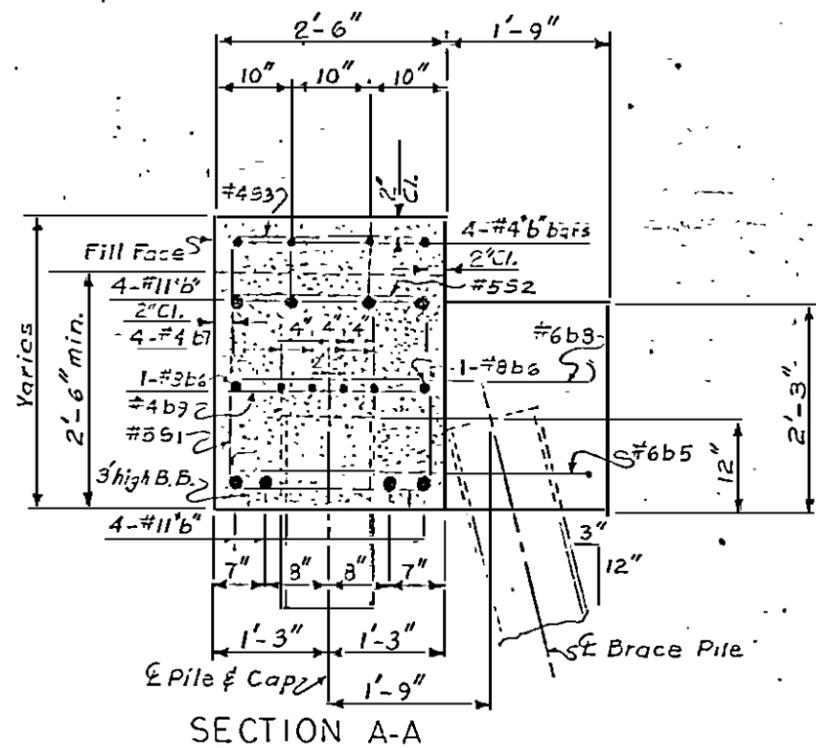
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT 1



PROJECT No. 8.1475509  
 WAKE COUNTY  
 STATION 82+42.41-L  
 Sheet 2 of 5

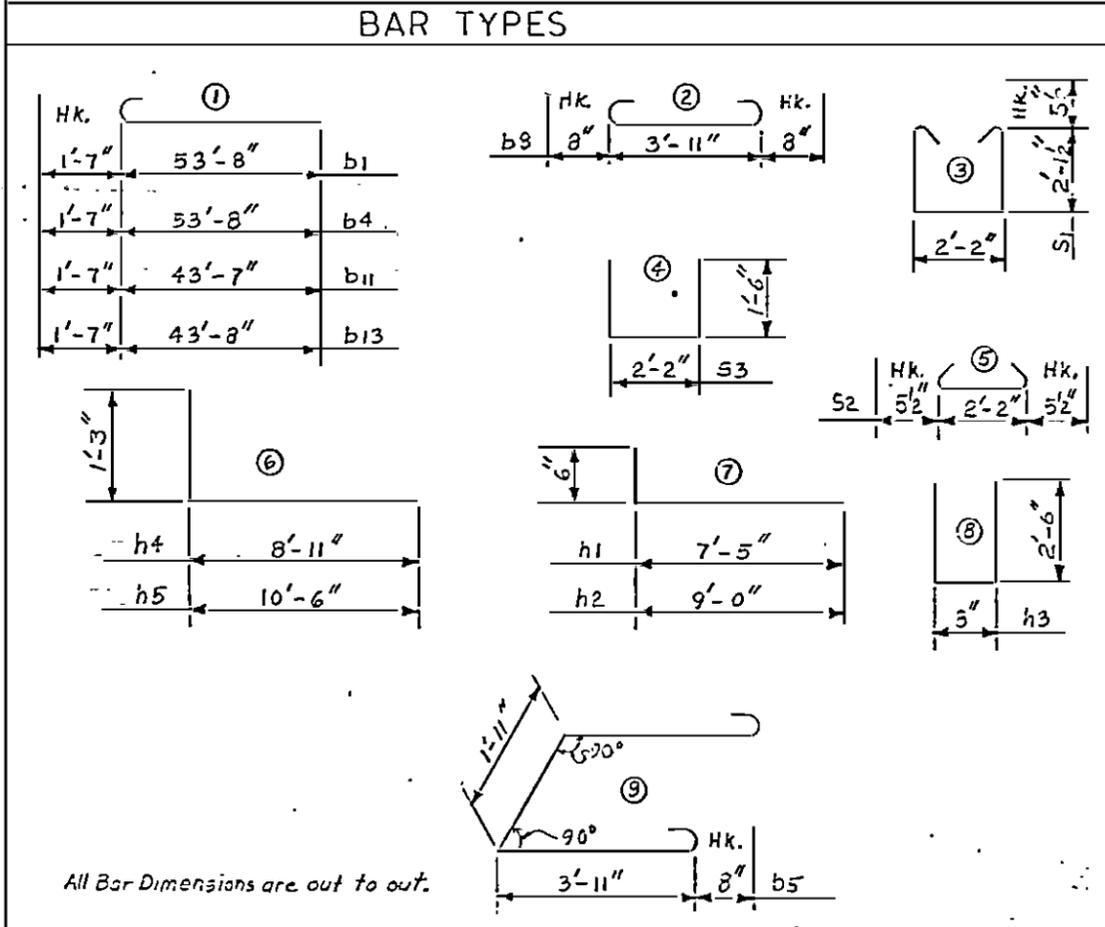
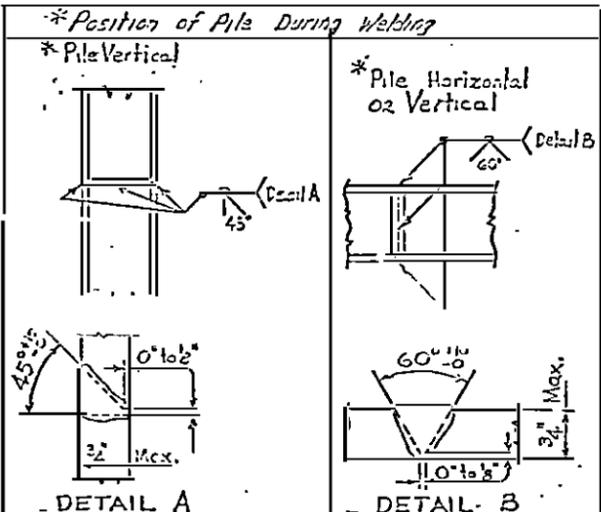
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1

March 1975  
 REVISED SHEET 1 of 2



NOTE: NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE PVC PLASTIC

3" P.V.C. Plastic Pipe Drains. This pipe shall meet the minimum requirements of A.S.T.M. D 1785.

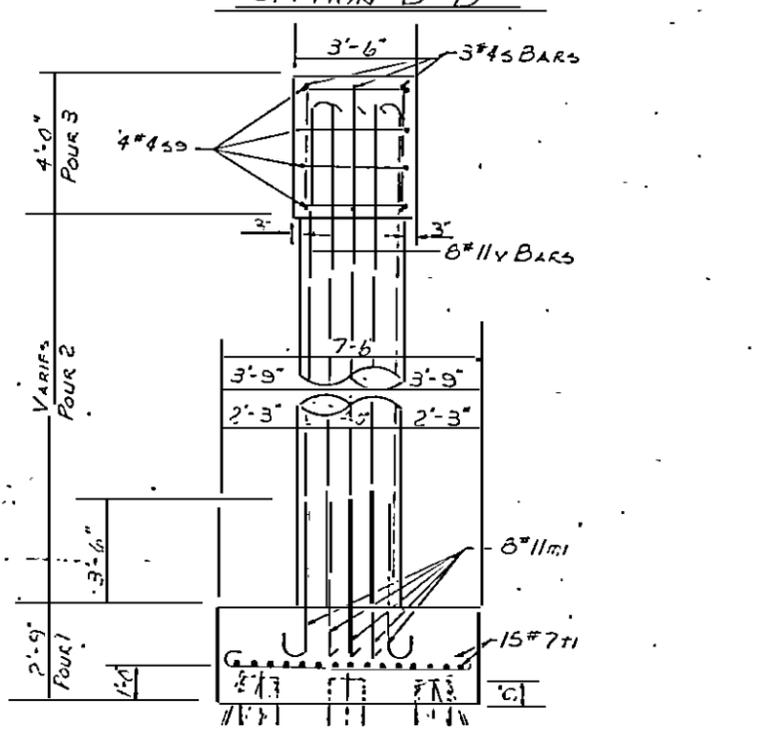
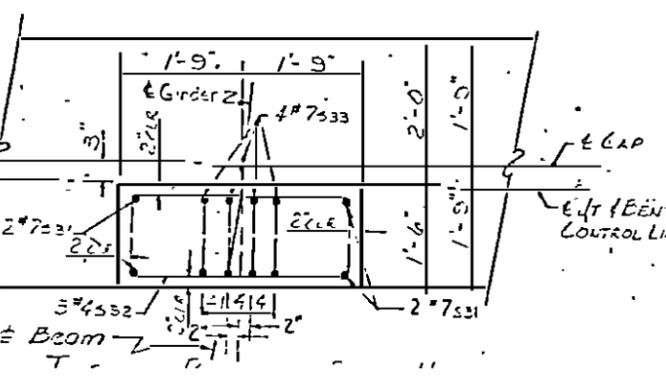
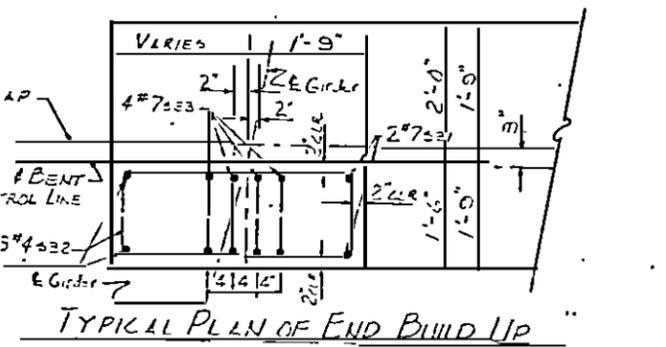
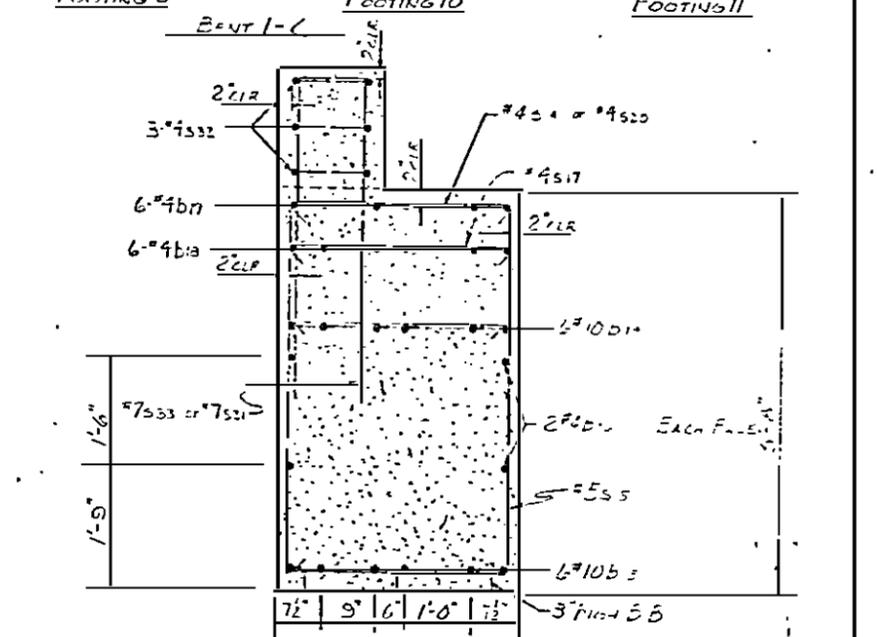
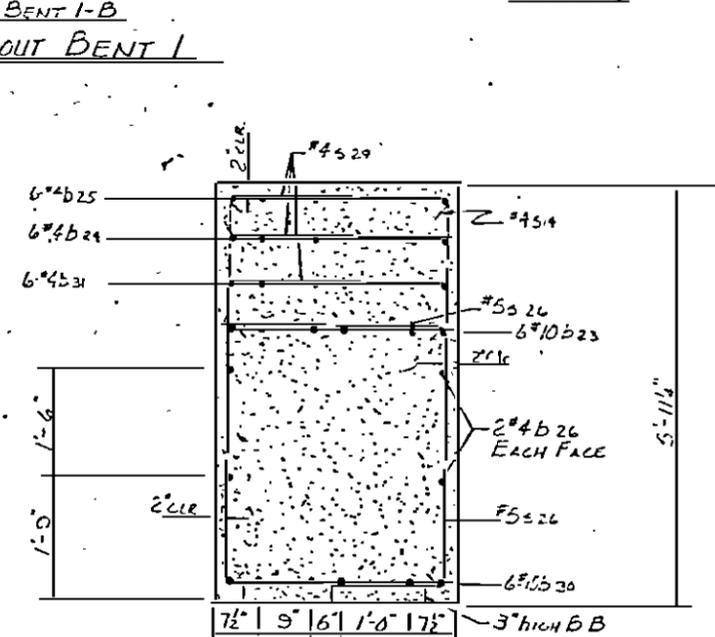
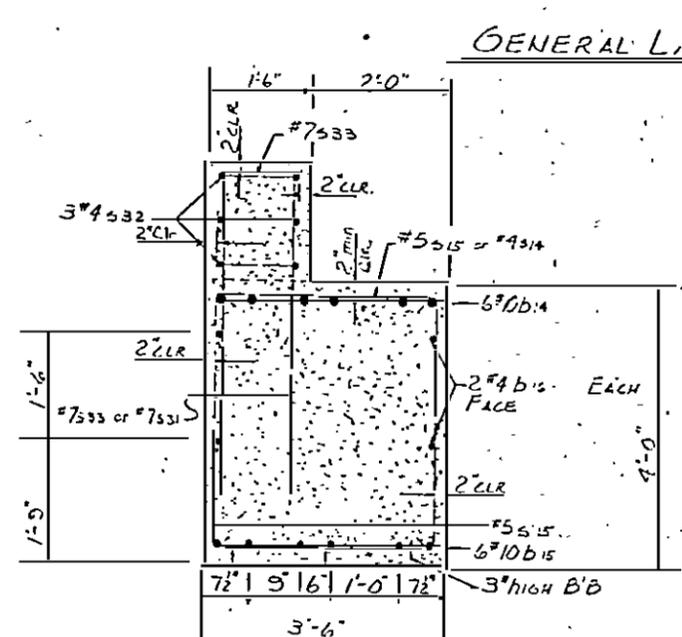
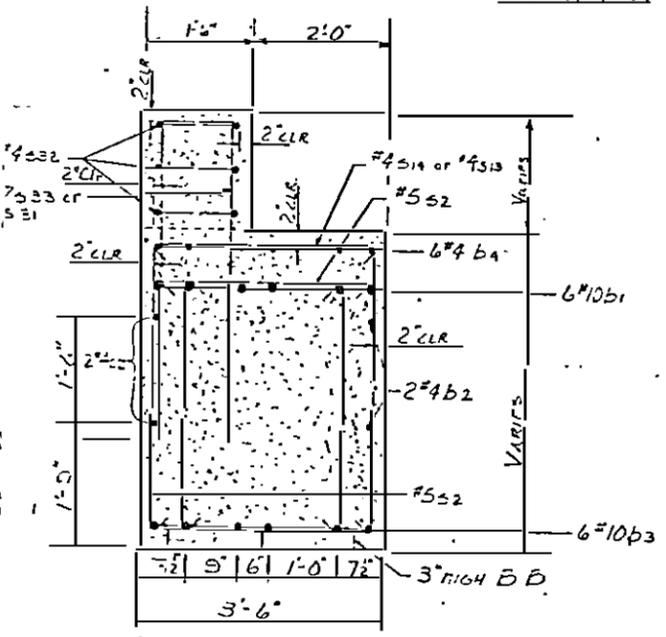
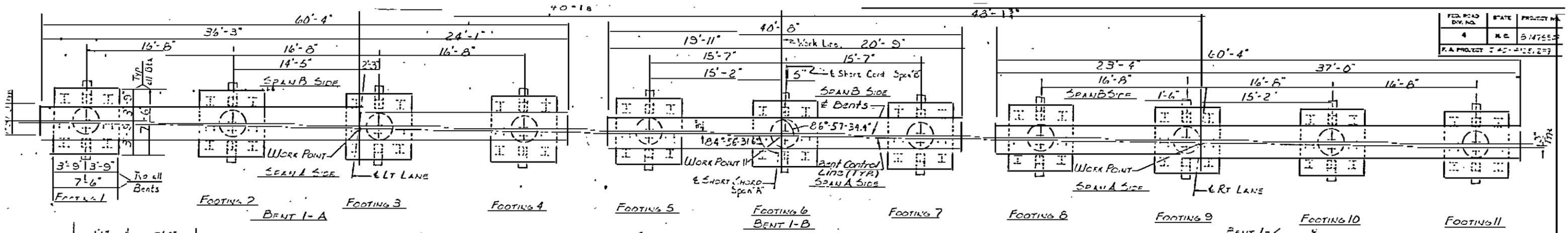


All Bar Dimensions are out to out.

BILL OF MATERIAL FOR END BENT 1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
b1	4	#11	53'-8"	1174	
b2	4	#11	53'-8"	1174	
b3	4	#11	53'-8"	1174	
b4	4	#11	53'-8"	1174	
b5	9	#8	11'-7"	150	
b6	8	#3	47'-5"	1054	
b7	23	#4	26'-5"	433	
b8	27	#6	5'-3"	213	
b9	44	#4	2'-2"	64	
b10	4	#4	5'-2"	24	
b11	4	#11	45'-2"	960	
b12	8	#11	25'-9"	570	
b13	4	#11	45'-3"	962	
b14	32	#4	6'-2"	125	
b15	44	#4	5'-0"	235	
b16	4	#4	16'-0"	43	
b17	4	#4	7'-0"	3	
b1	8	#4	2'-2"	11	
h1	11	#5	7'-7"	31	
h2	13	#5	7'-7"	43	
h3	8	#5	8'-0"	31	
h4	2	#5	10'-6"	22	
h5	5	#5	10'-6"	11	
s1	15	#5	3'-11"	75	
s2	15	#5	3'-11"	75	
s3	12	#4	1'-6"	21	
v1	22	#5	12'-2"	47	
v2	23	#5	12'-2"	50	
Reinforcing Steel Lbs. 13,637					
Close-Wire Mesh					
Left Part 20,654					
Right Part 13,854					
Total 34,508					
HP 12" x 12" x 135					
No. 5 24.75					

PROJECT No. 8.1475503  
WAKE COUNTY  
STATION

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT 1



TOTAL QUANTITIES FOR BENT 1

	BENT 1-A	BENT 1-B	BENT 1-C	TOTAL
Reinforcing Steel (lb)	14,248	10,247	15,602	40,097
Class 'A' Concrete (CY)	926	590	675	2,191
Foundation Excavation (CY)	135	100	135	370
#12-53 Steel Piles (ft)	36	27	36	99
#12-53 Steel Piles (sq ft)	1080	810	1080	2,970
Epoxy Resin Protective Coating	212 Sq Ft	143	212	567

**GENERAL NOTES**

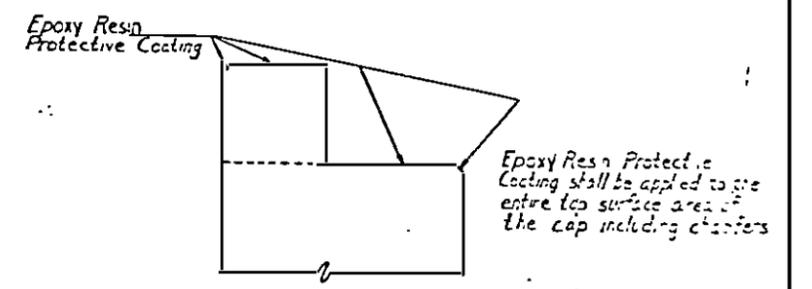
Hooks on v bars may be turned as necessary for placing reinforcing steel.

Cap steel may be shifted as necessary to clear Anchor Bolts.

Piles for Bent 1-A, Bent 1-B, & Bent 1-C are to be driven to a minimum bearing capacity of 30 tons each.

For Pile Splice Detail see End Bent 1, sheet 5 of 5.

The top surface areas of the Bent 1 caps shall be cured in accordance with the Standard Specifications except the Membrane Curing Compound Method shall not be used.



PROJECT No. 81475509

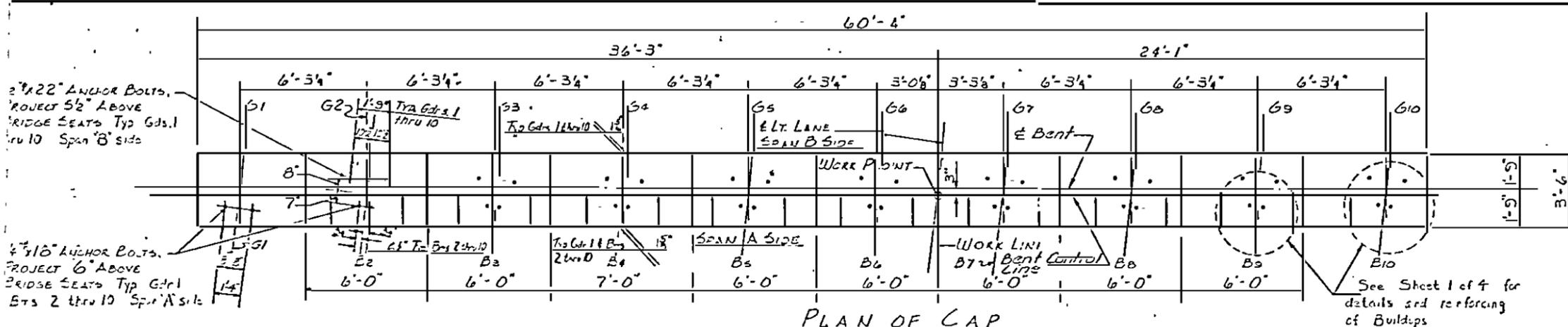
WAKE COUNTY

STATION: 82+11.1

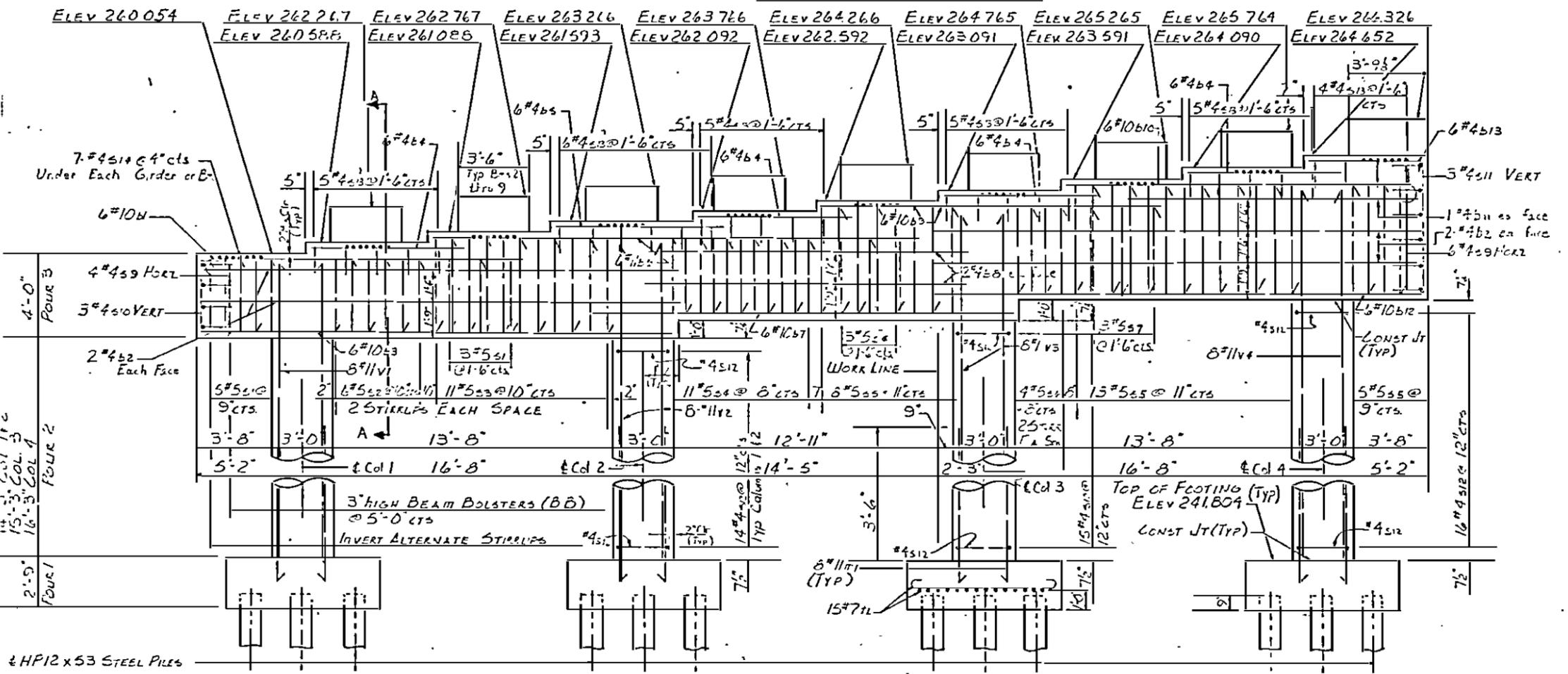
SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
GENERAL LAYOUT

FED. ROAD DIST. NO.	STATE	PROJECT NO.
4	N.C.	8-175529
P.A. PROJECT 2-40-67529		

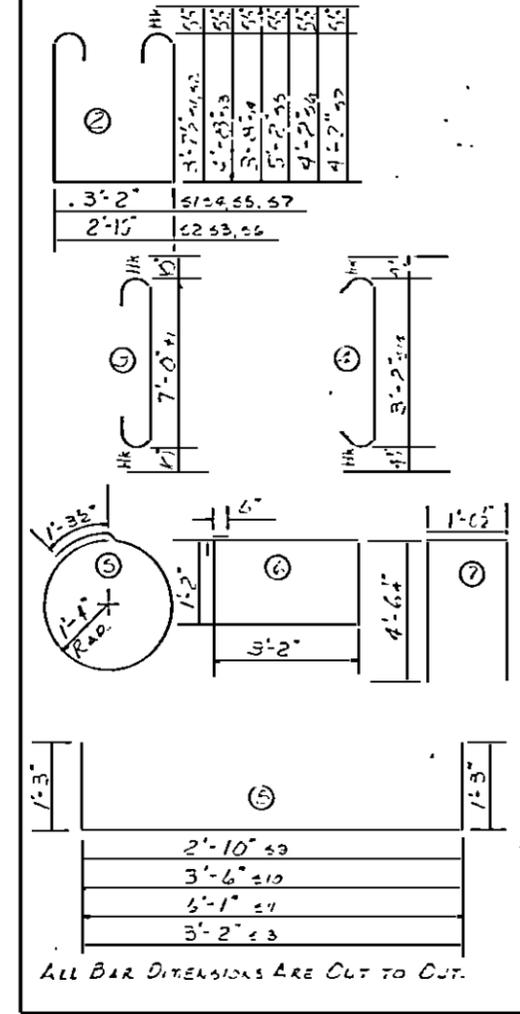


PLAN OF CAP



ELEVATION

BAR TYPES				BILL OF MATERIAL			
BENT 1-A				BENT 1-A			
NO.	SIZE	TYPE	LENGTH	WEIGHT	NO.	SIZE	TYPE
1	16'-0"	b1			1	17'-5"	b10
2	17'-7"	b10			2	23'-1"	b2
3	17'-9"	v1			3	7'-1"	v2
4	15'-9"	v2			4	0'-7"	v3
5	20'-6"	v3			5	23'-9"	v4
6	21'-5"	v4			6	15'-7"	m1
7	5'-0"	m1			7	15'-5"	b3
8					8	13'-0"	b4
9					9	12'-6"	b5
10					10	26'-1"	b6
11					11	5'-7"	b7
12					12	7'-2"	b8
13					13	11'-2"	b9
14					14	11'-4"	b10
15					15	13'-1"	b11
16					16	11'-5"	b12
17					17	12'-1"	b13
18					18	15'-1"	b14
19					19	11'-5"	b15
20					20	12'-1"	b16
21					21	15'-1"	b17
22					22	11'-5"	b18
23					23	12'-1"	b19
24					24	15'-1"	b20
25					25	11'-5"	b21
26					26	12'-1"	b22
27					27	15'-1"	b23
28					28	11'-5"	b24
29					29	12'-1"	b25
30					30	15'-1"	b26
31					31	11'-5"	b27
32					32	12'-1"	b28
33					33	15'-1"	b29
34					34	11'-5"	b30
35					35	12'-1"	b31
36					36	15'-1"	b32
37					37	11'-5"	b33
38					38	12'-1"	b34
39					39	15'-1"	b35
40					40	11'-5"	b36
41					41	12'-1"	b37
42					42	15'-1"	b38
43					43	11'-5"	b39
44					44	12'-1"	b40
45					45	15'-1"	b41
46					46	11'-5"	b42
47					47	12'-1"	b43
48					48	15'-1"	b44
49					49	11'-5"	b45
50					50	12'-1"	b46
51					51	15'-1"	b47
52					52	11'-5"	b48
53					53	12'-1"	b49
54					54	15'-1"	b50
55					55	11'-5"	b51
56					56	12'-1"	b52
57					57	15'-1"	b53
58					58	11'-5"	b54
59					59	12'-1"	b55
60					60	15'-1"	b56
61					61	11'-5"	b57
62					62	12'-1"	b58
63					63	15'-1"	b59
64					64	11'-5"	b60
65					65	12'-1"	b61
66					66	15'-1"	b62
67					67	11'-5"	b63
68					68	12'-1"	b64
69					69	15'-1"	b65
70					70	11'-5"	b66
71					71	12'-1"	b67
72					72	15'-1"	b68
73					73	11'-5"	b69
74					74	12'-1"	b70
75					75	15'-1"	b71
76					76	11'-5"	b72
77					77	12'-1"	b73
78					78	15'-1"	b74
79					79	11'-5"	b75
80					80	12'-1"	b76
81					81	15'-1"	b77
82					82	11'-5"	b78
83					83	12'-1"	b79
84					84	15'-1"	b80
85					85	11'-5"	b81
86					86	12'-1"	b82
87					87	15'-1"	b83
88					88	11'-5"	b84
89					89	12'-1"	b85
90					90	15'-1"	b86
91					91	11'-5"	b87
92					92	12'-1"	b88
93					93	15'-1"	b89
94					94	11'-5"	b90
95					95	12'-1"	b91
96					96	15'-1"	b92
97					97	11'-5"	b93
98					98	12'-1"	b94
99					99	15'-1"	b95
100					100	11'-5"	b96

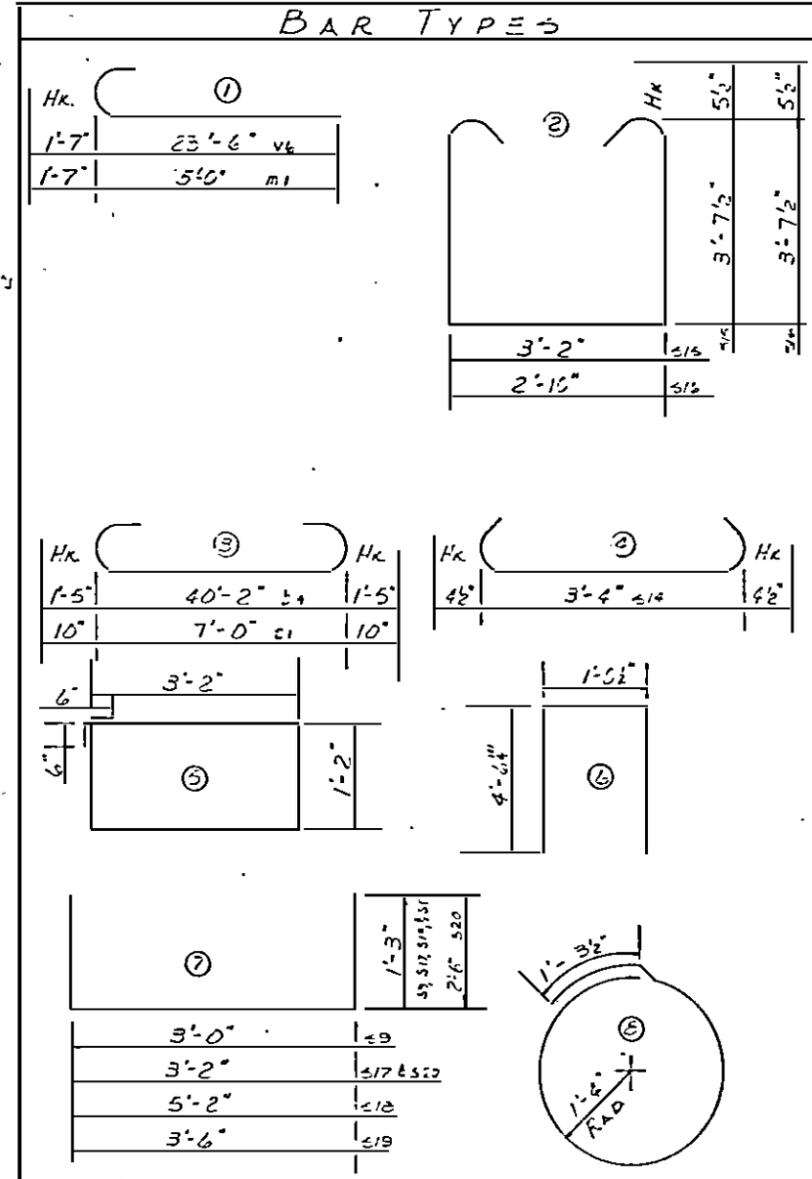
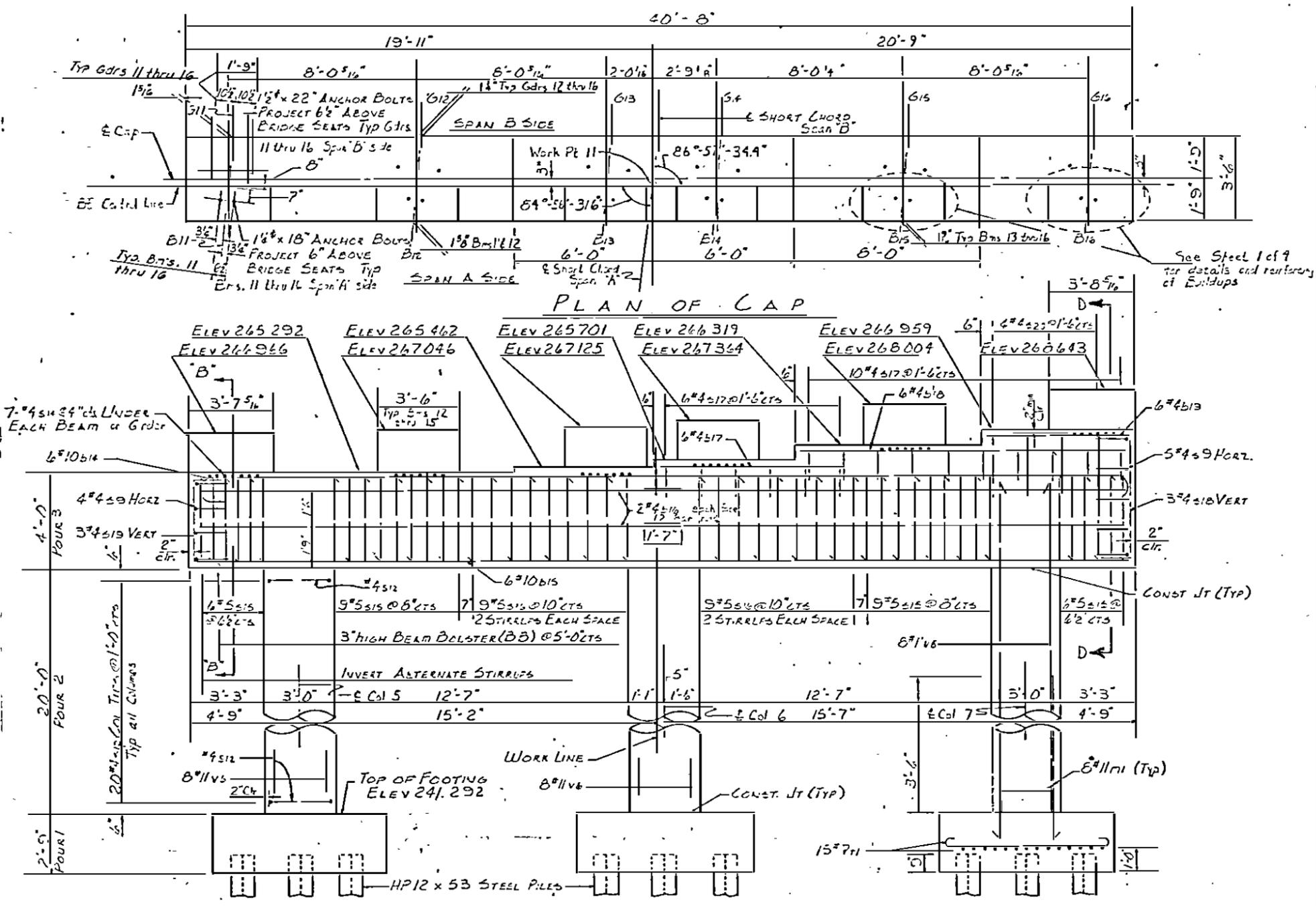


PROJECT NO. 8-175529

W. A. R. E. COUNTY

STATION 11-11

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
2-1-1-A



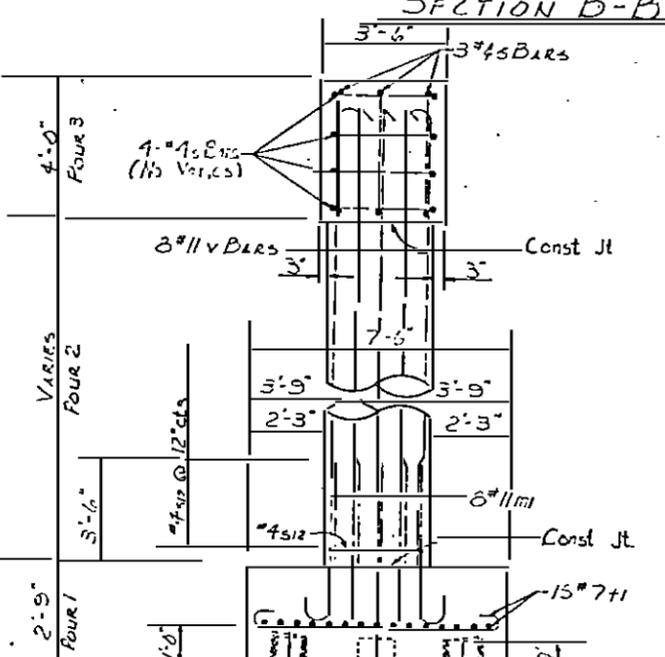
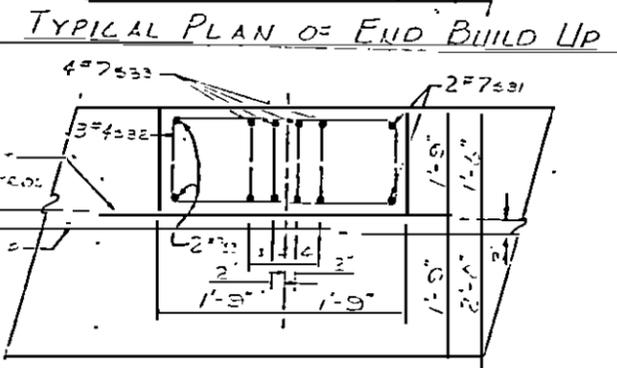
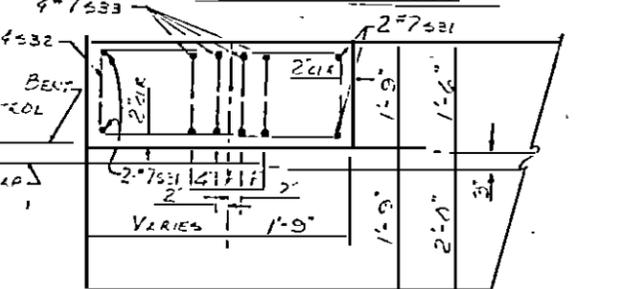
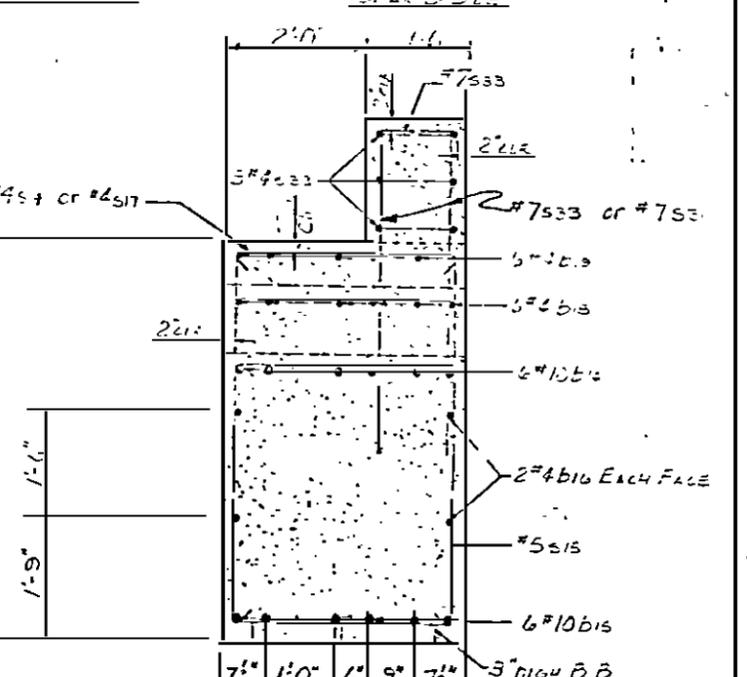
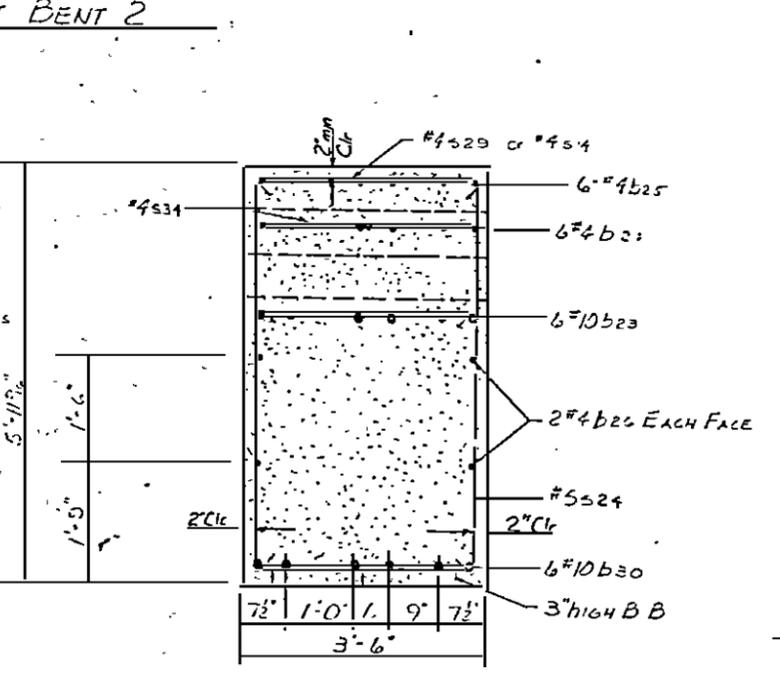
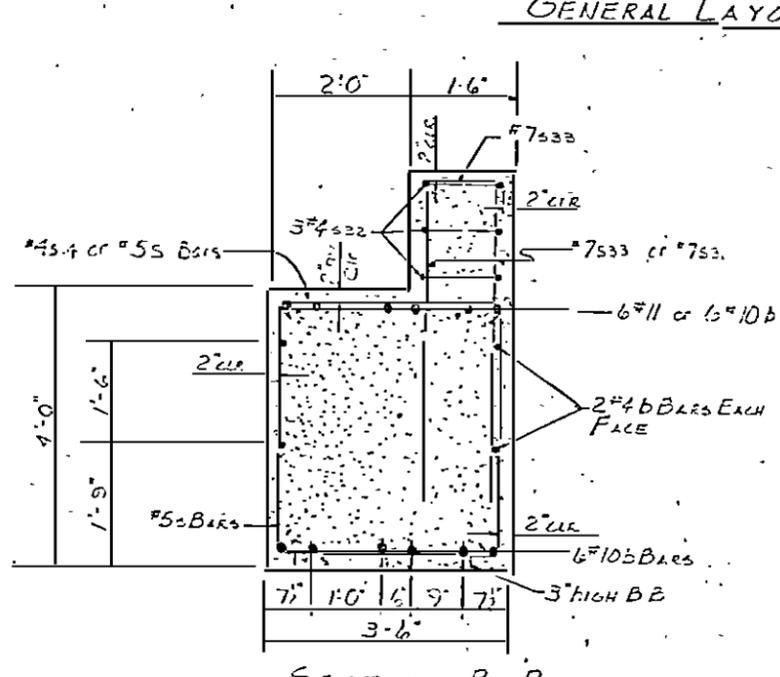
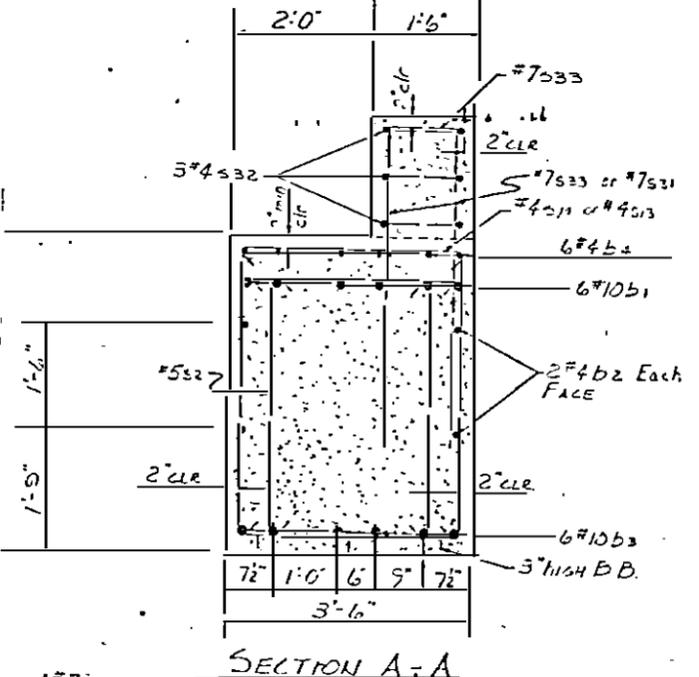
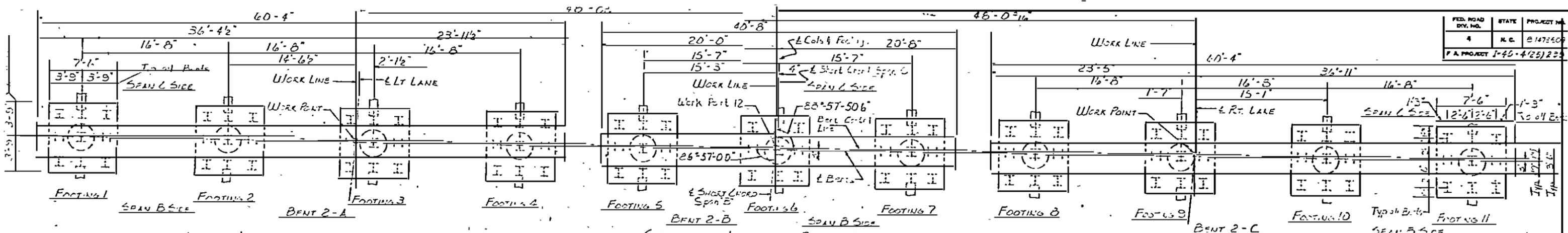
BAR TYPES		BILL OF MATERIAL				
		BENT 1-B				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
612	2	#10	3	35.0	11.0	
615	6	#10	2	52.2	10.37	
617	8	#2	1	20.7	11.2	
617	2	#1	1	7.7	3.0	
618	4	#1	1	12.3	5.7	
619	6	#4	4	6.3	2.5	
619	9	#4	7	5.1	3.3	
612	10	#2	8	3.8	3.7	
612	47	#2	4	2.1	1.0	
615	30	#5	2	4.2	3.25	
616	36	#5	2	4.0	4.15	
617	16	#3	7	5.3	4.1	
618	3	#2	7	7.8	1.5	
619	3	#2	7	6.0	3	
620	4	#4	7	5.2	2.2	
62	24	#11	1	25.0	11.0	
61	24	#1	1	1.0	1.0	
71	30	#7	3	1.0	3.0	
82	25	#1	1	1.0	2.0	
822	3	#1	1	1.0	1.0	
823	27	#1	1	1.0	2.5	

ALL BAR DIMENSIONS ARE OUT TO OUT.

NOTES: See Sheet 1 of 4 for Sections 3-3E, D-D & End Elevation.  
For General Notes see Sheet 1 of 4

PROJECT No. 8-1475555  
 WALKER COUNTY  
 STATION: 32-1-1-1  
 SHEET 3 OF 4  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT 1-B

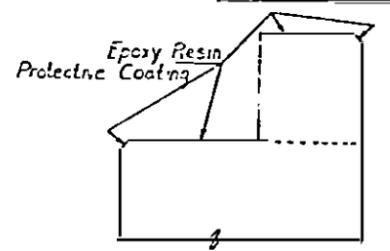




TOTAL QUANTITIES FOR BENT 2					
		BENT 2-A	BENT 2-B	BENT 2-C	TOTAL
Reinforcing Steel	Lbs	14,285	10,252	15,486	40,023
Class "A" Concrete	Cu Yds	831	591	896	2318
Foundation Excavation	Cu Yds	135	105	140	380
HP12x53 Steel Piles	N <sub>3</sub>	36	27	36	99
HP12x53 Steel Piles	Lin Ft.	1260	945	1260	3465
Epoxy Resin Protective Coating	Sq Ft.	212	143	212	567

GENERAL NOTES

- Hooks on v-bars may be turned as necessary for placing reinforcing steel.
- Cap steel may be shifted as necessary to clear Anchor Bolts.
- Piles for Bent 2-A, Bent 2-B & Bent 2-C are to be driven to a minimum bearing capacity of 30 Tons each.
- For Pile Splice Details see End Bent 1 Sheet 5 of 5.

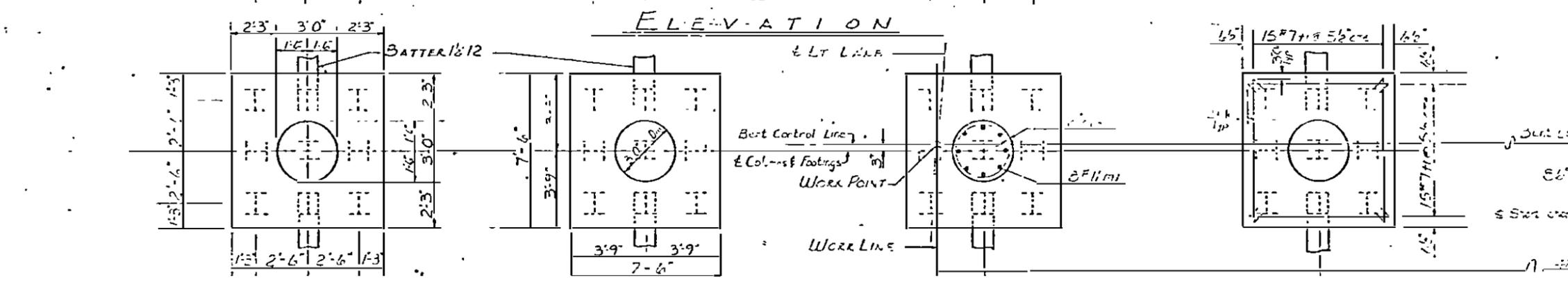
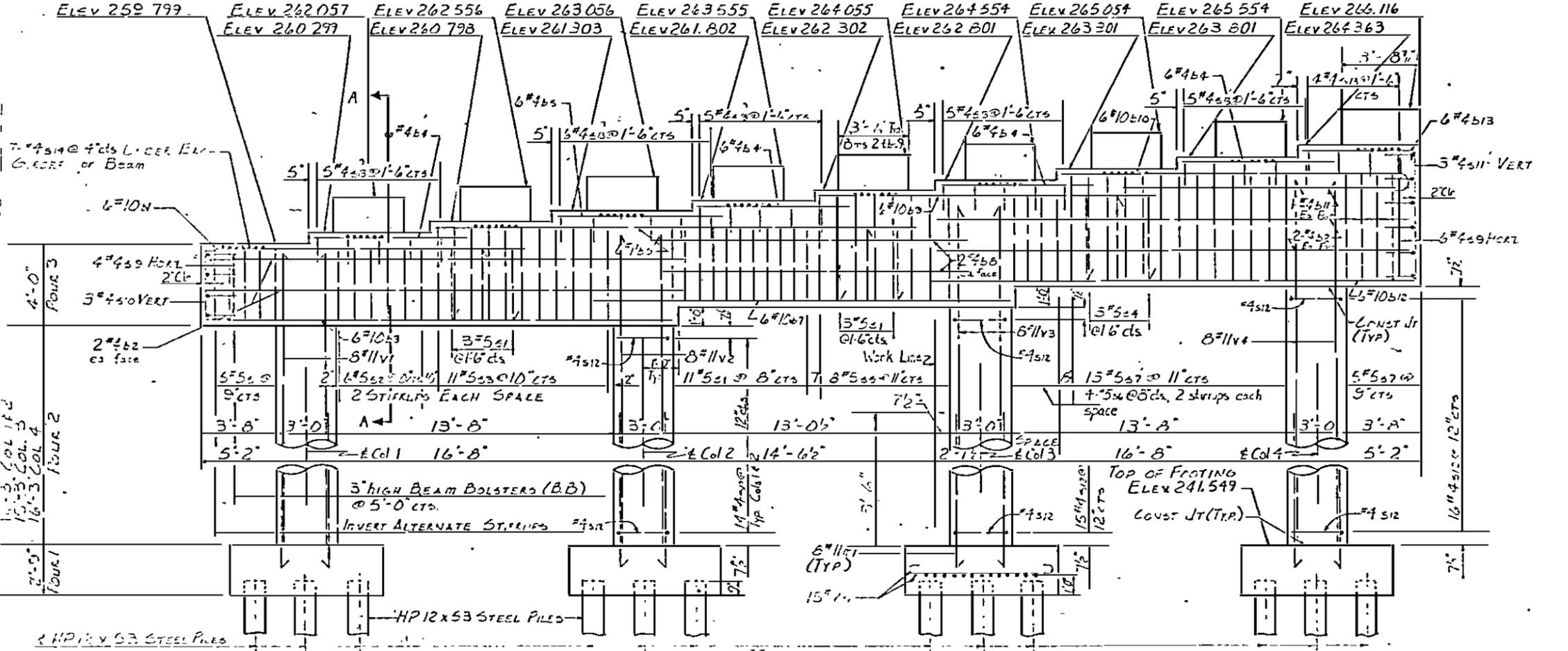
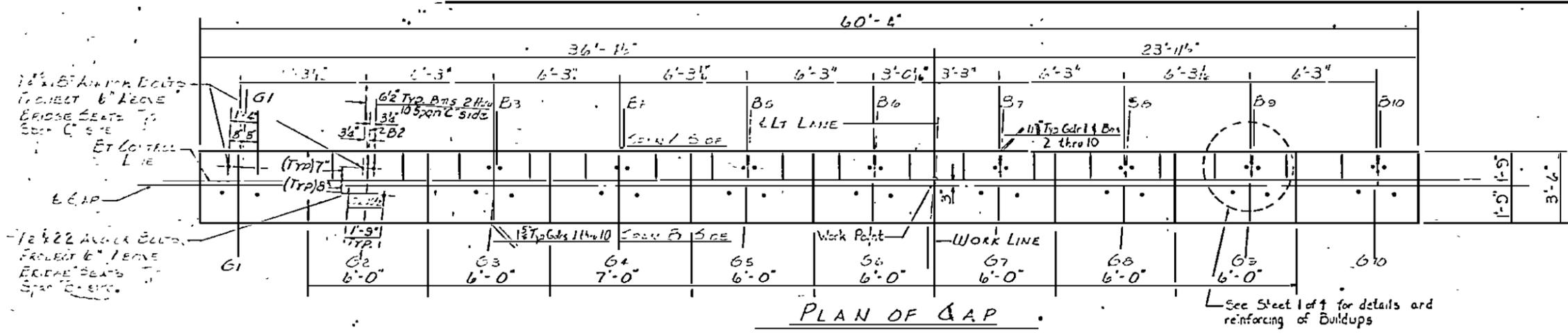


Epoxy Resin Protective Coating shall be applied to the entire top surface area of the cap.

PROJECT No. 21475509  
 WAKE COUNTY  
 STATION: 22+52.1-1-1

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 GENERAL LAYOUT

PROJECT NO.	DATE	PROJECT
4	K.C.	B. 47500
P. PROJECT 2-45-52		



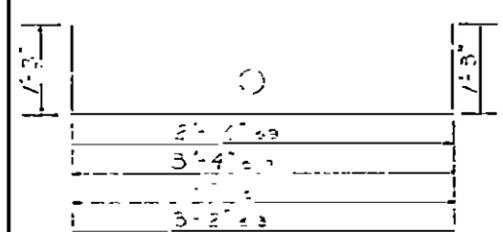
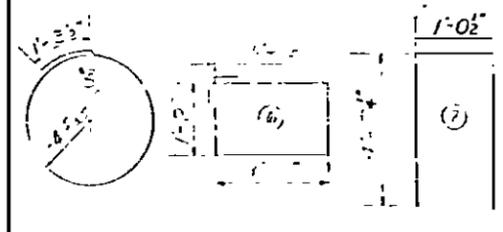
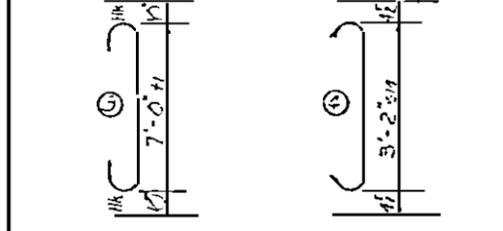
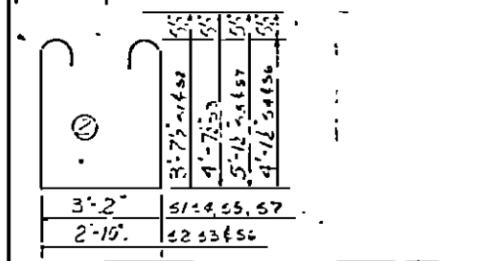
### BAR TYPES

HK	①
1-5	16'-2" b1
1-5	17'-5" b10
1-7	17'-9" v1
1-7	18'-9" v2
1-7	20'-3" v3
1-7	21'-3" v4
1-7	5'-0" m1

### BILL OF MATERIAL

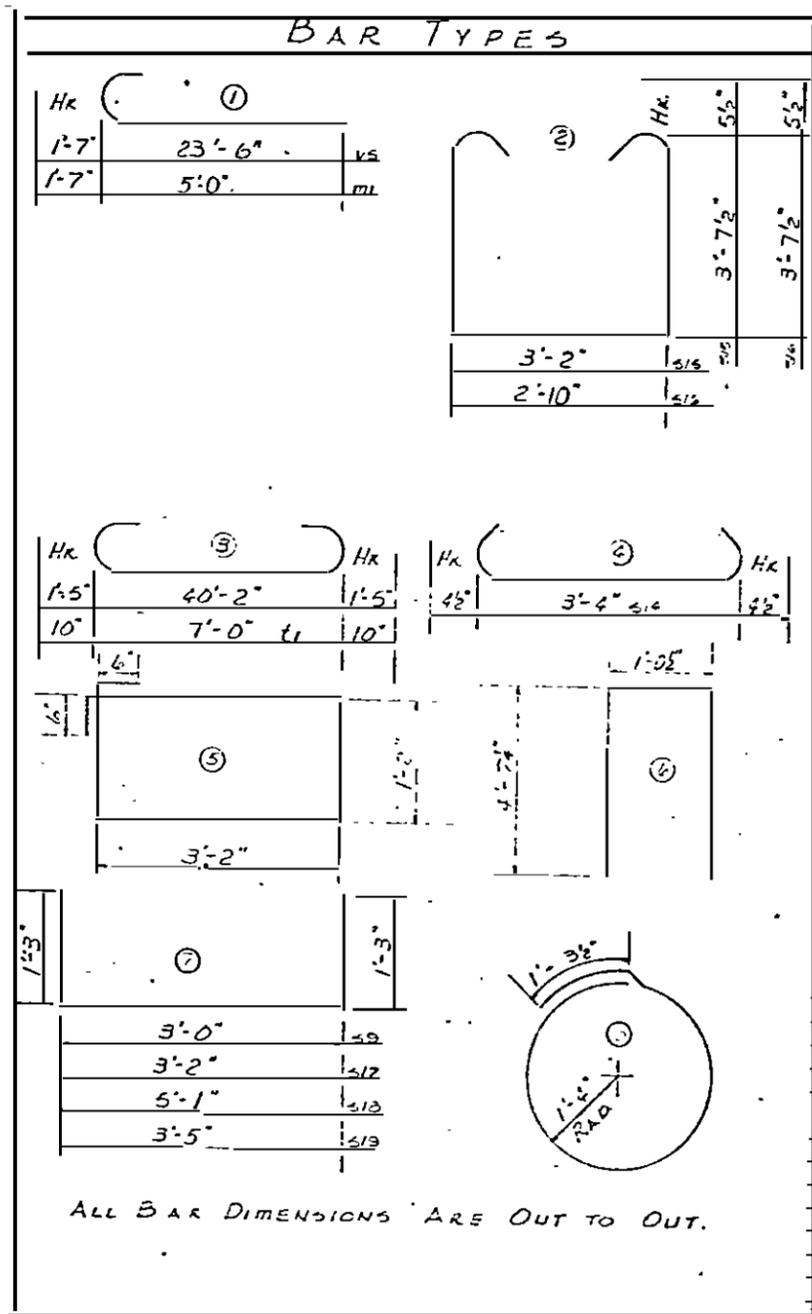
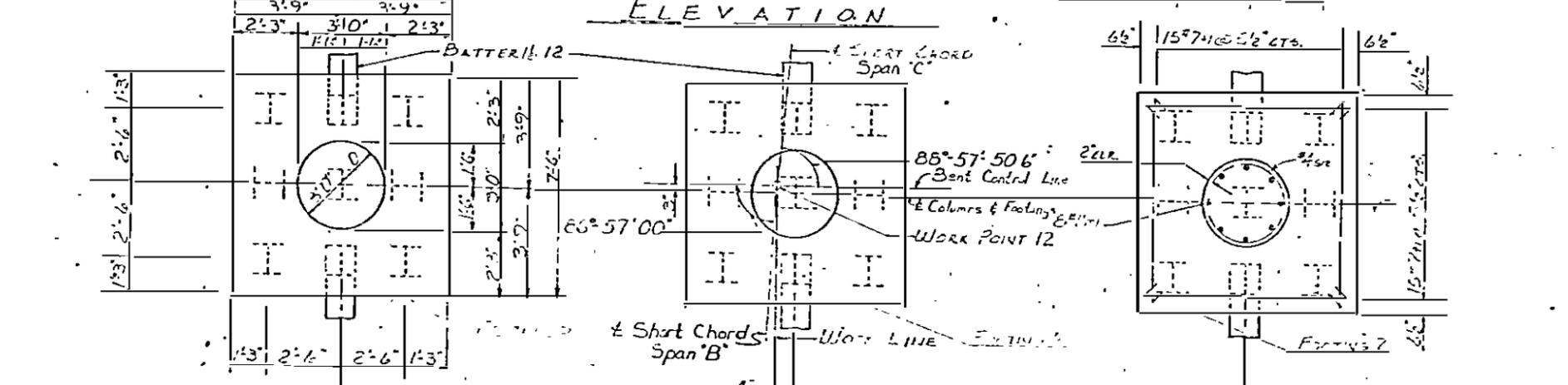
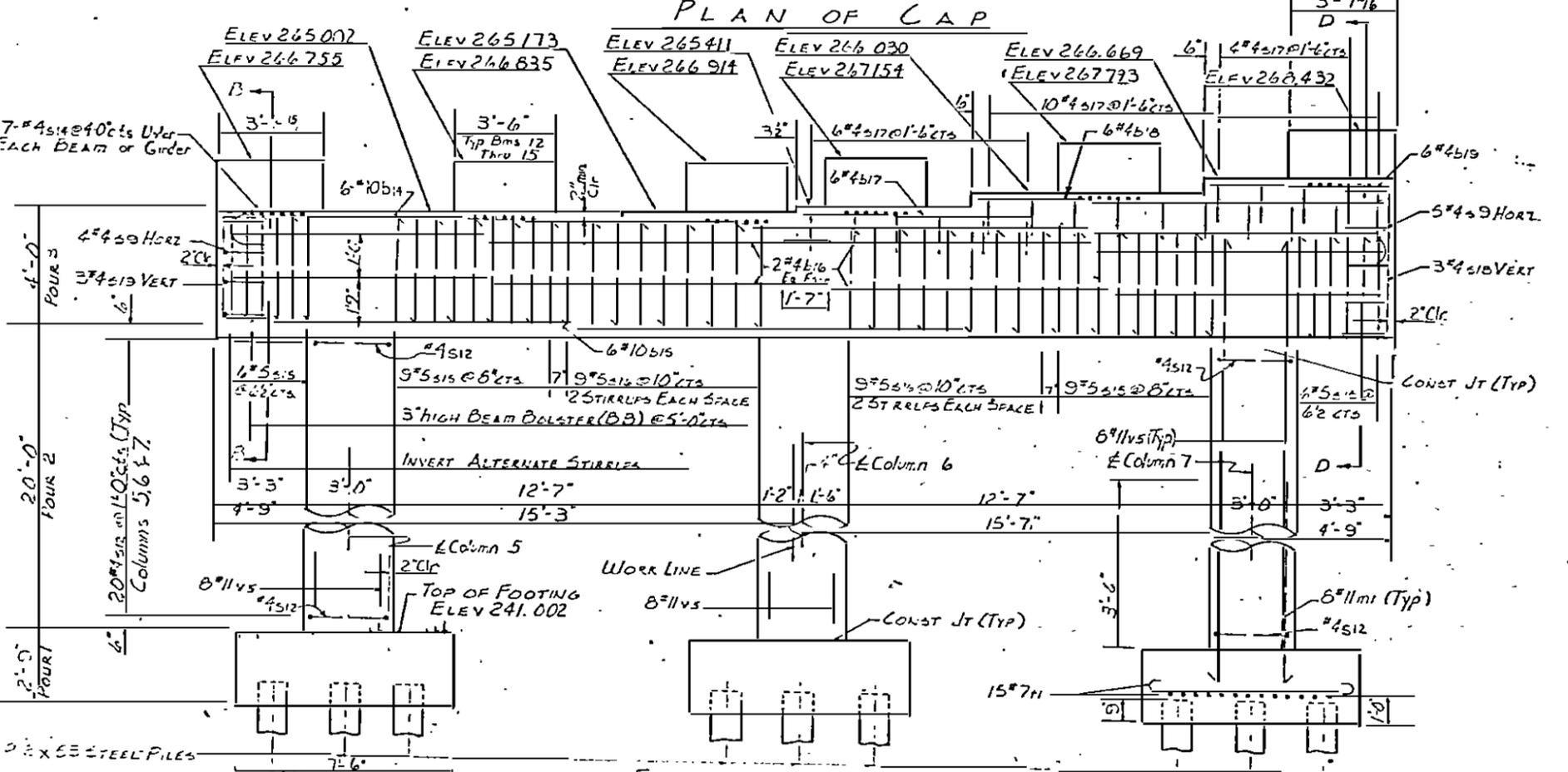
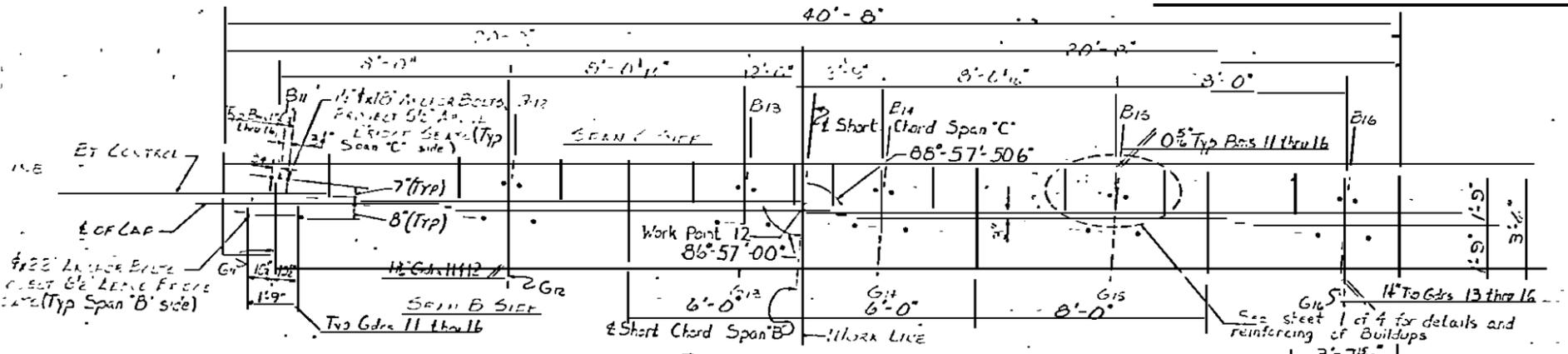
#### BENT - A

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	6	#10		17'-2"	15
b2	8	#4	VERT	23'-0"	127
b3	6	#10		23'-0"	153
v1	4	#4		17'-9"	122
v2	6	#4		18'-9"	135
v3	6	#4		20'-3"	157
v4	6	#4		21'-3"	169
m1	6	#10		5'-0"	432
b11	2	#4		14'-0"	19
b12	6	#10		23'-0"	122
b13	6	#4	VERT	5'-7"	29
s1	22	#3		11'-0"	260
s2	12	#3		11'-0"	138
s3	22	#3		11'-0"	75
s4	3	#3		11'-0"	39
s5	8	#3		11'-0"	120
s6	5	#3		11'-0"	100
s7	18	#3		11'-0"	269
c1	10	#3		5'-0"	55
c2	3	#3		5'-0"	12
s8	3	#3		11'-0"	7
s9	5	#3		11'-0"	35
s10	130	#3		11'-0"	71
s11	170	#3		11'-0"	100
v5	1	#4		11'-0"	1
v6	1	#4		11'-0"	1
v7	1	#4		11'-0"	1
v8	1	#4		11'-0"	1
m2	3	#10		7'-0"	119
m3	12	#10		7'-0"	153
REINFORCING STEEL					4255
CLASS A CONCRETE					41.5
FORMS					20.52
FORMS					15.1
FORMS					44.74
FORMS					831
4" 3/8" STEEL PILES					15.3
STEEL PILES					260
FOUNDATION					212



ALL BAR DIRECTIONS ARE CUT TO OUT

PROJECT NO. B. 47500  
 W. A. R. COUNTY  
 STATION 0+00 TO 0+100  
 SHEET 1 OF 4  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT - A

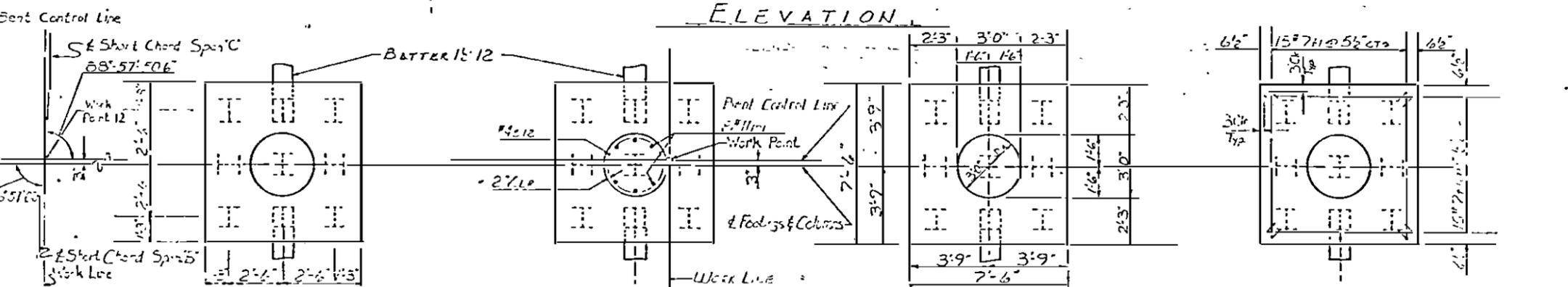
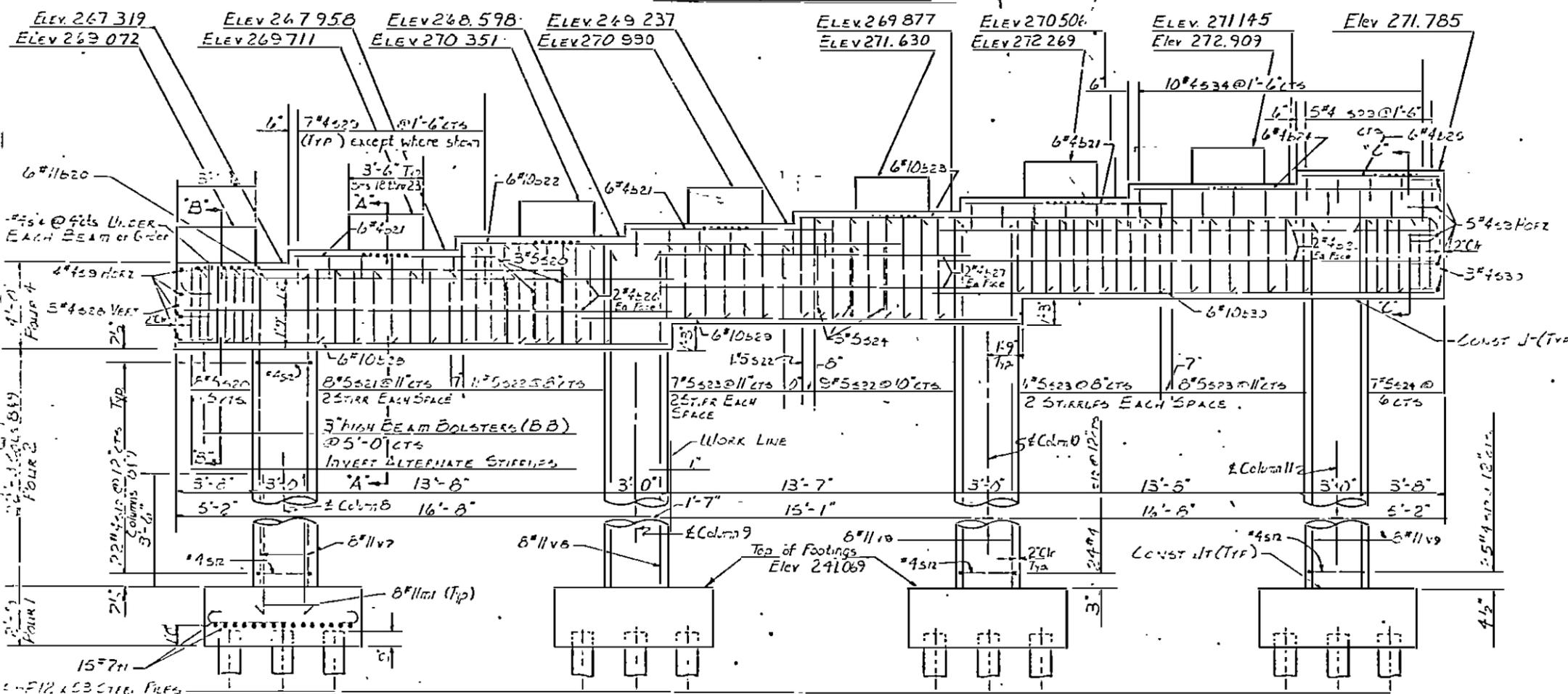
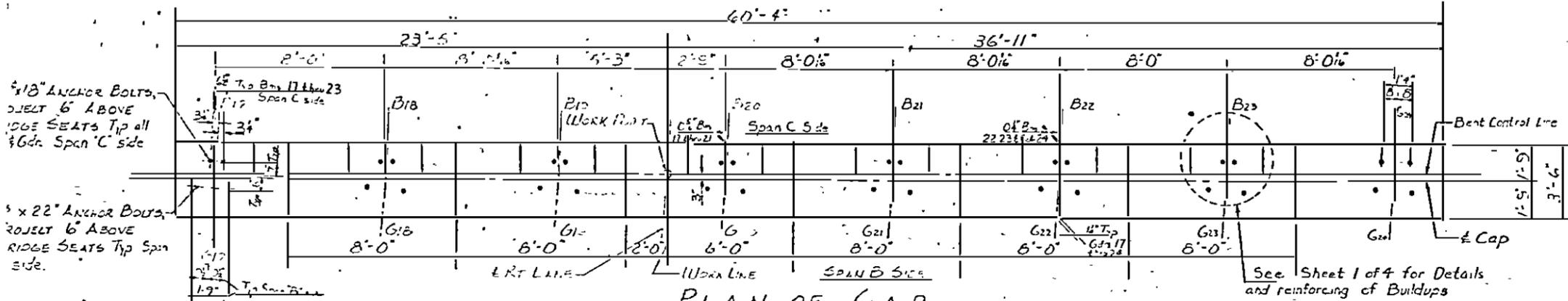


BILL OF MATERIAL					
BENT 2-B					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B14	6	#10	3	43.1	111.0
B15	6	#10	2	40.2	103.7
B16	8	#4	1	20.1	1.12
B17	6	#1	1	7.7	2.0
B18	6	#1	1	14.2	3.7
B19	6	#4	2	4.2	2.5
B20	8	#4	7	5.2	3.3
B21	10	#1	8	9.8	3.7
B22	42	#2	4	4.7	11.5
B23	30	#3	2	11.4	3.5
B24	36	#5	2	11.0	4.1
B25	20	#2	-	5.8	2.4
B26	3	#2	-	7.7	1.5
B27	3	#2	-	5.1	1.2
VS	24	#11	1	25.1	3.8
MI	24	#11	1	1.7	5.3
TI	30	#7	3	4.2	1.5
REINFORCING STEEL	10252				
CLASS A CONCRETE	61.2				
FOOTING	17.1				
POST TENSIONING	15.7				
POST TENSIONING	2.1				
TOTAL CONCRETE	96.1				
2" x 5" STEEL PILES	1.5				
FOUNDATION EXCAVATION	1.2				

ALL BAR DIMENSIONS ARE OUT TO OUT.

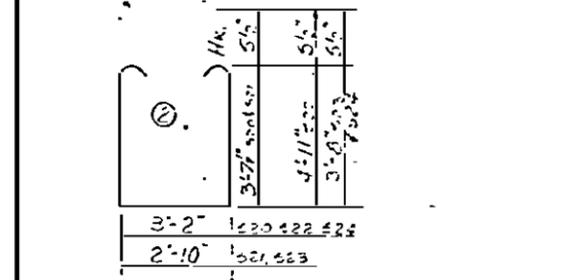
NOTES: For Sections B-B & D-D and End Elevation, see Sheet 1 of 4.  
For General Notes see Sheet 1 of 4.

PROJECT No. 6475503  
 WAKE COUNTY  
 STATION: 82-50-...  
 SHEET 3 OF 4  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 SUBSTRUCTURE  
 BENT 2-B

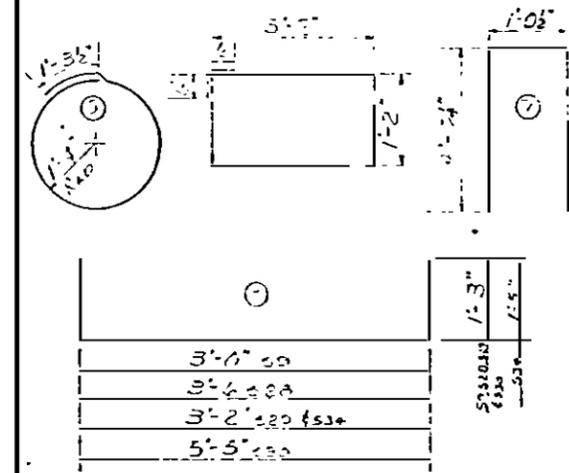


BAR TYPES	
Hk	(1)
1'-7"	10'-2" b20
1'-5"	30'-5" b20
1'-7"	5'-0" m1
1'-7"	25'-9" v7
1'-7"	27'-0" v8
1'-7"	27'-8" v9

BILL OF MATERIAL					
BENT 2-C					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
b20	#4	1	13'-3"	33	
b21	#4	5-2	9'-7"	115	
b22	#10	2-2	20'-8"	536	
b23	#10	1	3'-11"	22	
b24	#4	4-2	14'-5"	58	
b25	#4	1	4'-5"	26	
b26	#4	1	23'-10"	127	
b27	#4	1	15'-4"	41	
b28	#10	1	23'-1"	584	
b29	#10	1	20'-8"	534	
b30	#10	1	24'-1"	622	
b31	#4	1	6'-0"	40	
b32	#4	1	5'-6"	33	
b33	#4	5	9'-8"	401	
b34	#4	3	3'-11"	147	
b35	#5	2	11'-4"	150	
b36	#4	1	11'-0"	184	
b37	#4	1	15'-4"	205	
b38	#2	1	11'-1"	601	
b39	#5	2	11'-5"	119	



Hk	(2)	Hk	(3)	Hk	(4)
10'	7'-0"	10'	4'-2"	3'-2"	1'-2"



ALL BAR DIMENSIONS ARE OUT TO OUT.

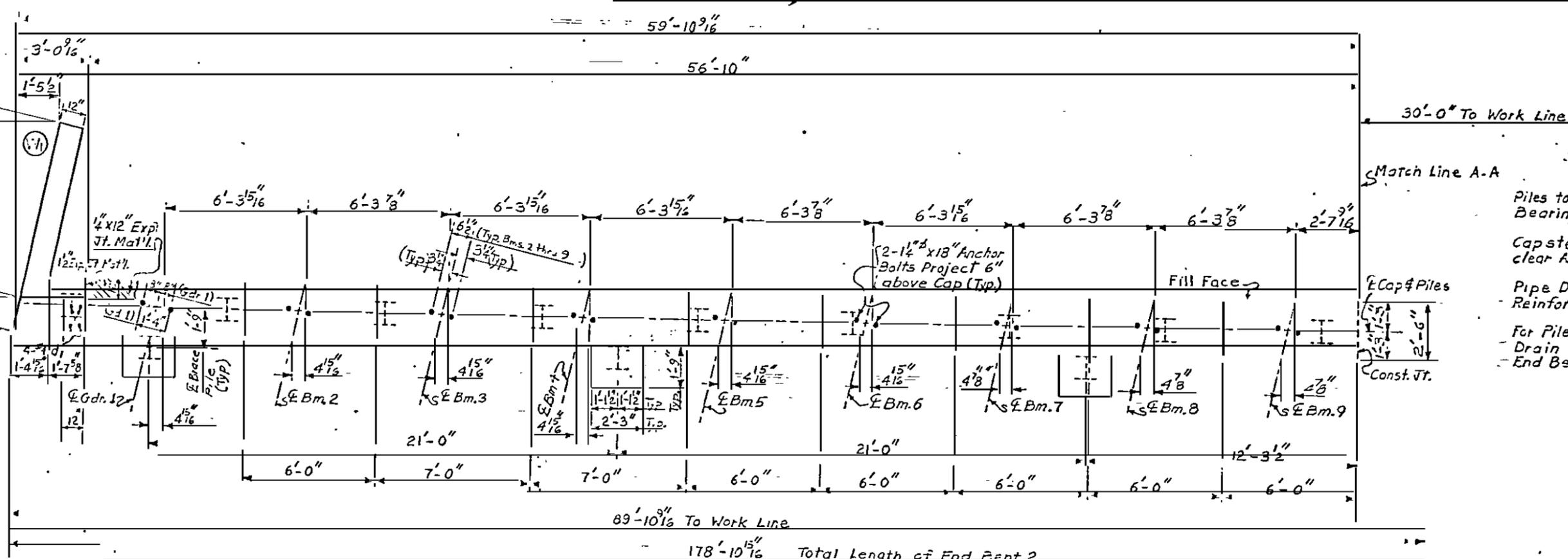
NOTES For Sections B-B, C-C and E-E  
Elevation See Sheet 1 of 4  
For Column Notes see Sheet 1 of 4

b40	#4	3	1'-8"	12	
b41	#4	2	3'-8"	2	
b42	#4	1	7'-1"	1	
b43	#4	1	1'-2"	2	
b44	#4	1	1'-2"	2	
b45	#4	1	1'-2"	2	
b46	#4	1	1'-2"	2	
b47	#4	1	1'-2"	2	
b48	#4	1	1'-2"	2	
b49	#4	1	1'-2"	2	
b50	#4	1	1'-2"	2	
b51	#4	1	1'-2"	2	
b52	#4	1	1'-2"	2	
b53	#4	1	1'-2"	2	
b54	#4	1	1'-2"	2	
b55	#4	1	1'-2"	2	
b56	#4	1	1'-2"	2	
b57	#4	1	1'-2"	2	
b58	#4	1	1'-2"	2	
b59	#4	1	1'-2"	2	
b60	#4	1	1'-2"	2	

REINFORCING STEEL	WEIGHT
REINFORCING STEEL	15,486
LINKS A CONCRETE CL YES	
POST TENSIONING	22.92
FOUR 2" DIAM	29.28
FOUR 3" CL	42.41
TOTAL CL YES	296
4" DIAM STEEL FILES	15.31
LINKS B	
FOUNDATION EXCAVATION	
CONCRETE	212.97

PROJECT No. 6475529  
 WAKE COUNTY  
 STATION 2+11.11

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT 2-C

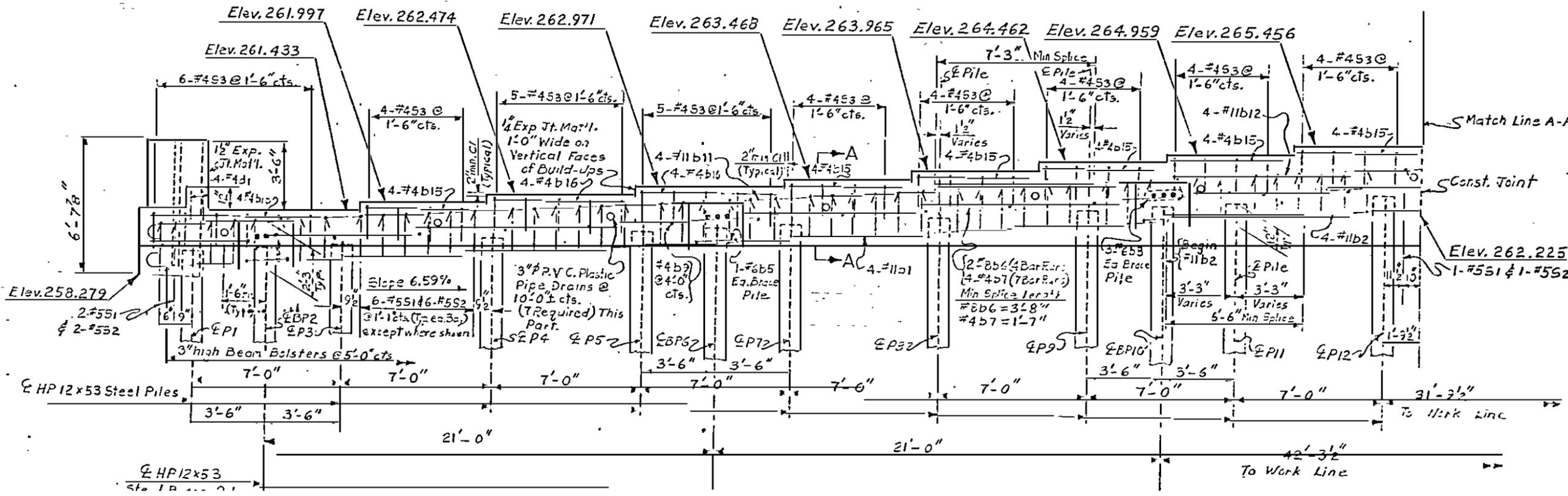


**PART PLAN**  
(Showing Left Part)

**NOTES**

- Piles to be driven to a Minimum Bearing Capacity of 30 Tons each.
- Cap steel may be shifted to clear Anchor Bolts.
- Pipe Drains may be shifted to clear Reinforcing Steel and Anchor Bolts.
- For Pile Splice Detail and Pipe Drain Details, see Sheet 5 of 5 End Bent 1.

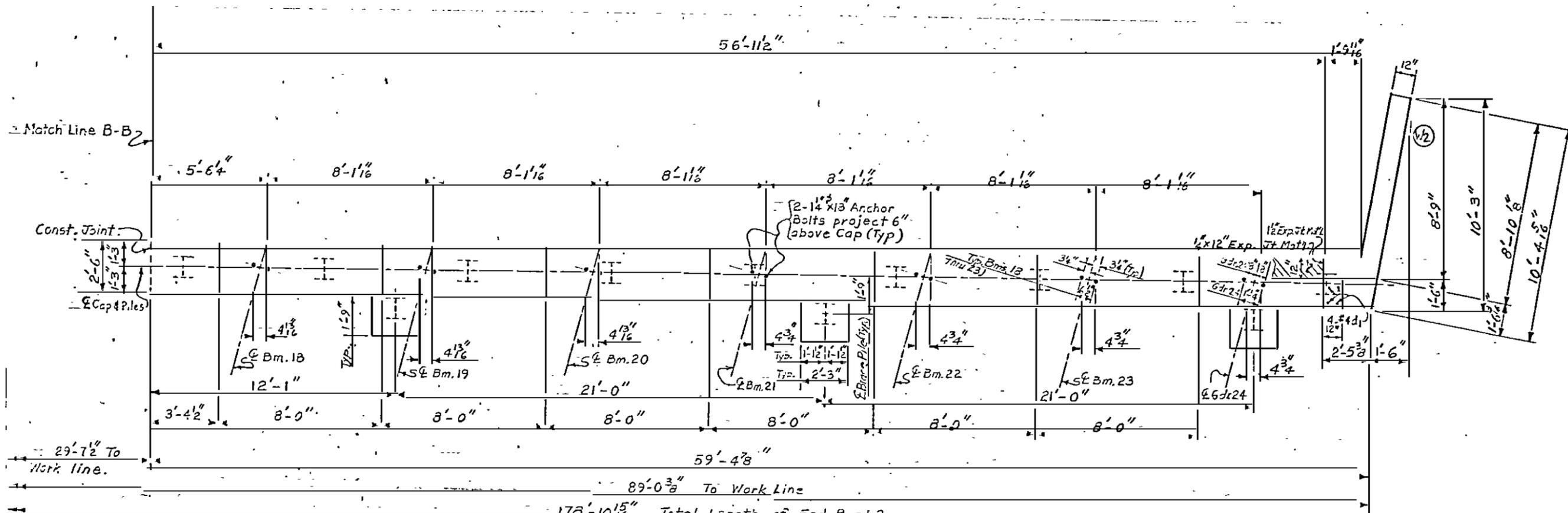
TOP OF PILE ELEVATION	
NO.	ELEV.
P1	259.417
BP2	259.645
P3	259.878
P4	260.339
P5	260.900
BP6	261.031
P7	261.262
P8	261.723
P9	262.184
BP10	262.415
P11	262.646
P12	263.107



PROJECT No 8.1475509  
 WAKE COUNTY  
 STATION: 82-12.41-1  
 Sheet 1 of 5

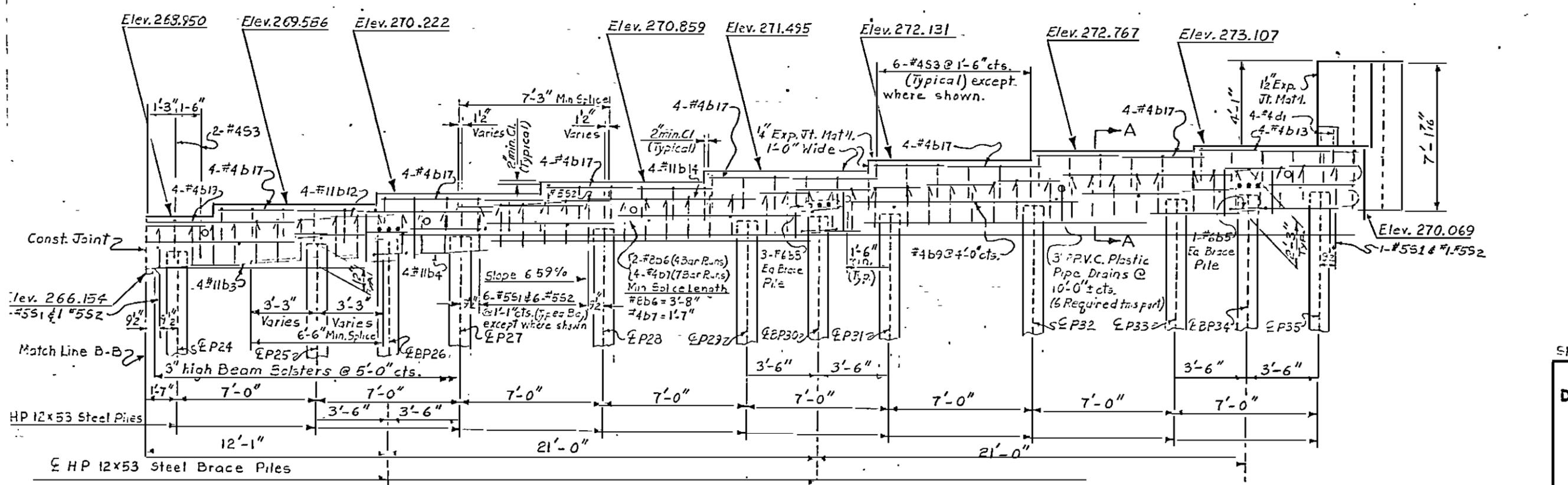
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2





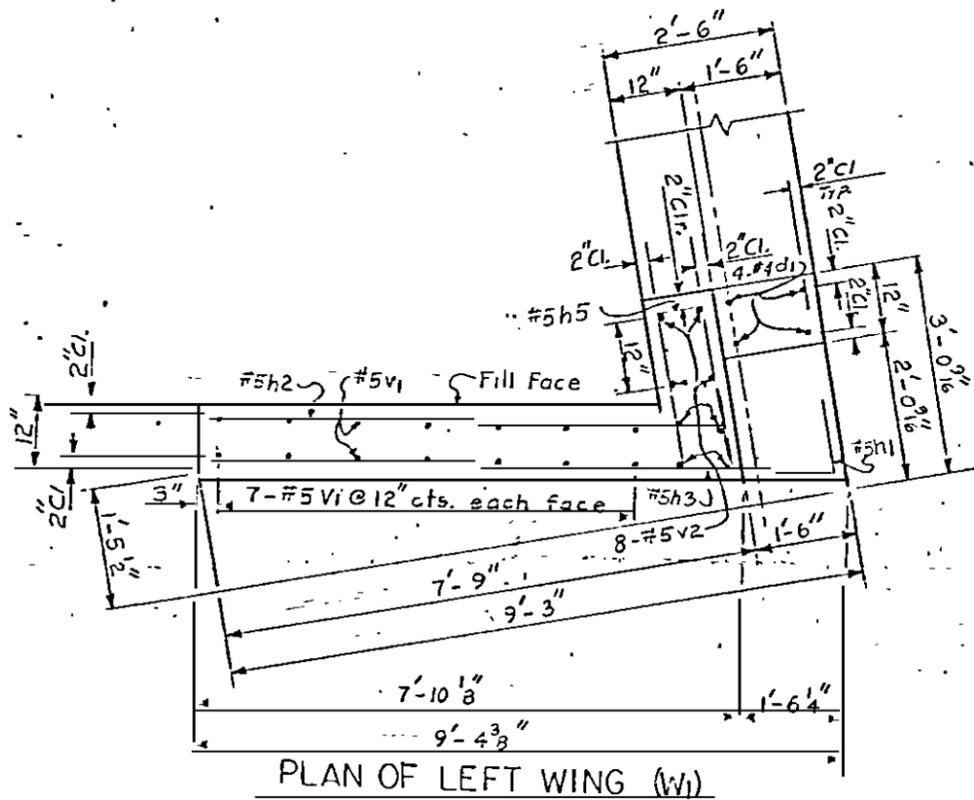
**PART PLAN**  
(Showing Right Part)

TOP OF PILE ELEVATION	
NO.	ELEV.
P 24	267.259
P 25	267.720
-BP 26	267.951
-P 27	268.181
-P 28	268.642
P 29	269.104
-BP 30	269.335
-P 31	269.565
-P 32	270.026
P 33	270.488
BP 34	270.719
P 35	270.949

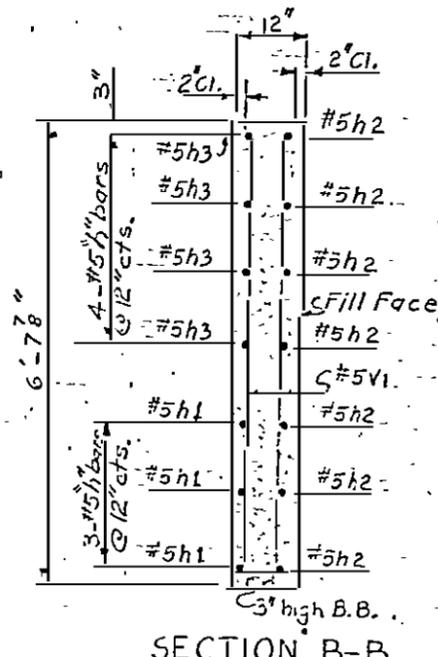


PROJECT No. 81475509  
 WAKE COUNTY  
 STATION: 82+42.41-L  
 Sheet 3 of 5

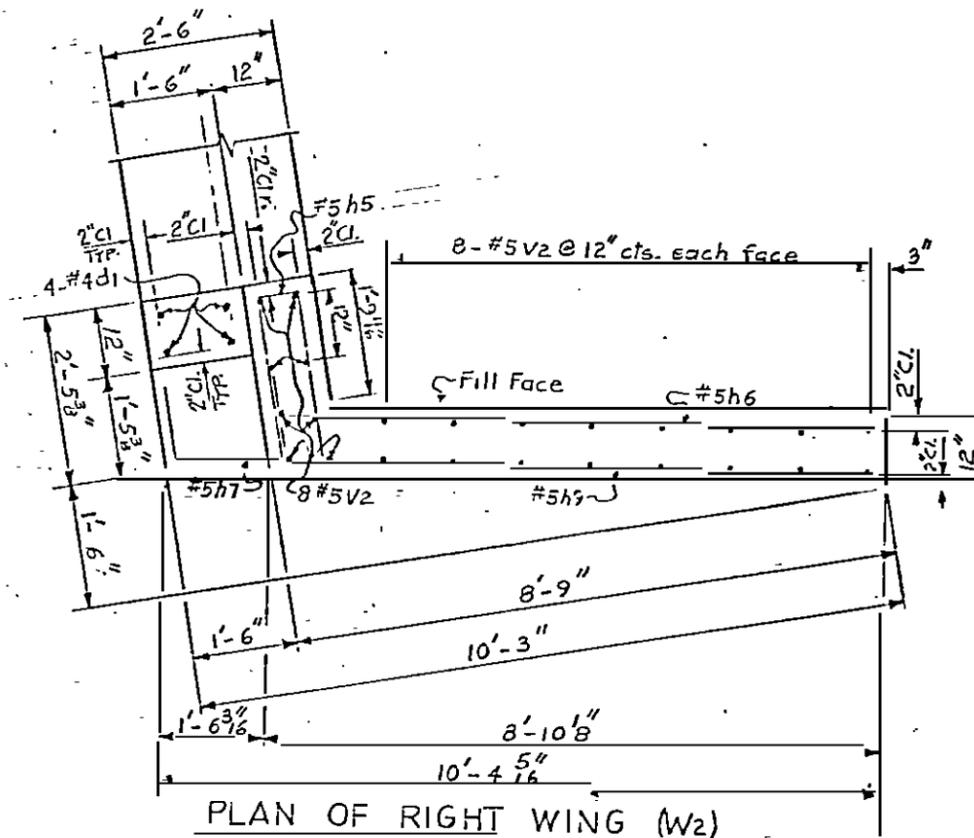
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2  
 RIGHT PART



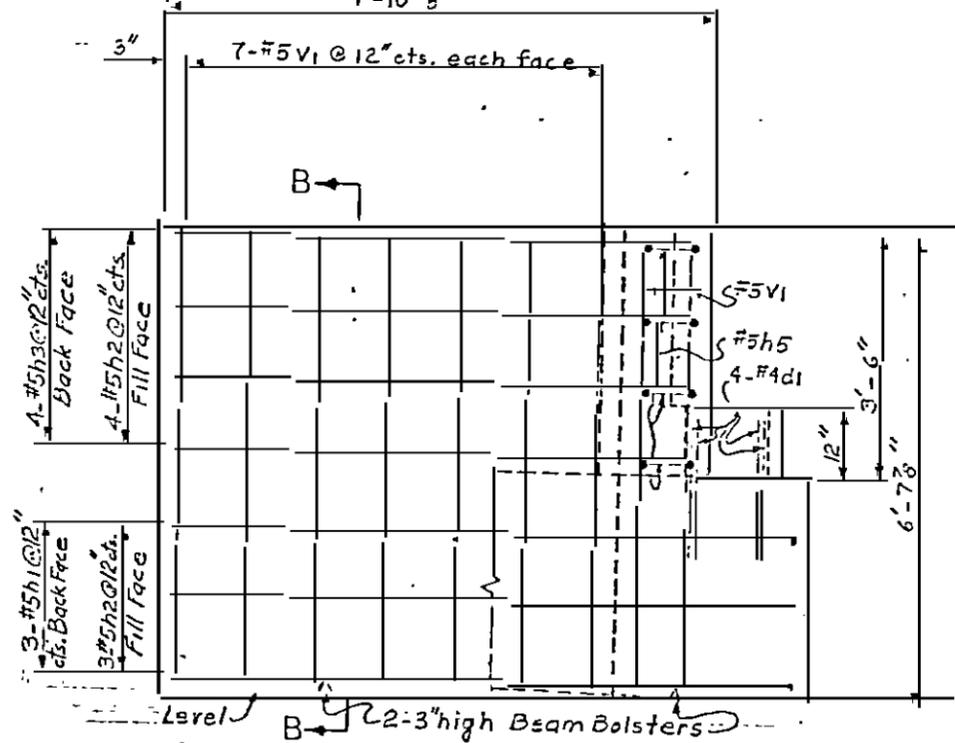
PLAN OF LEFT WING (W1)



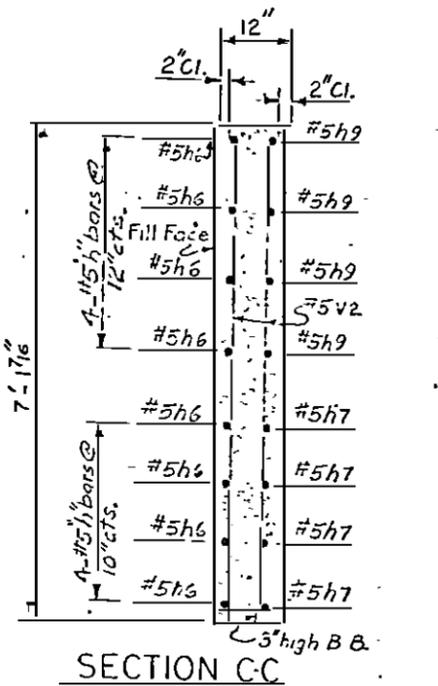
SECTION B-B



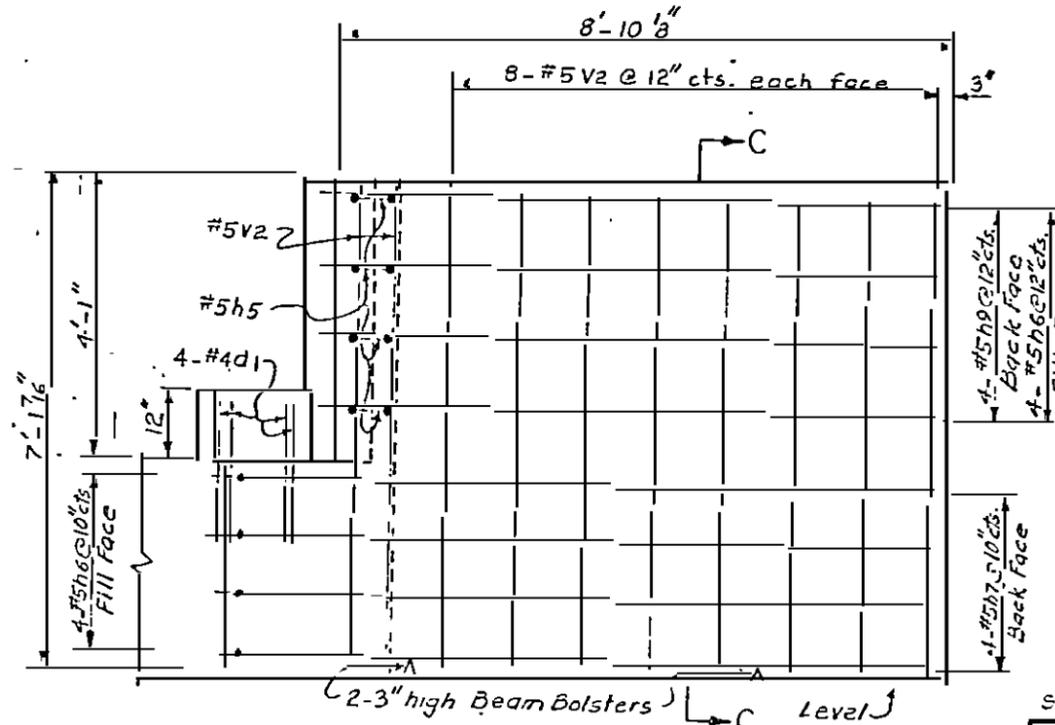
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



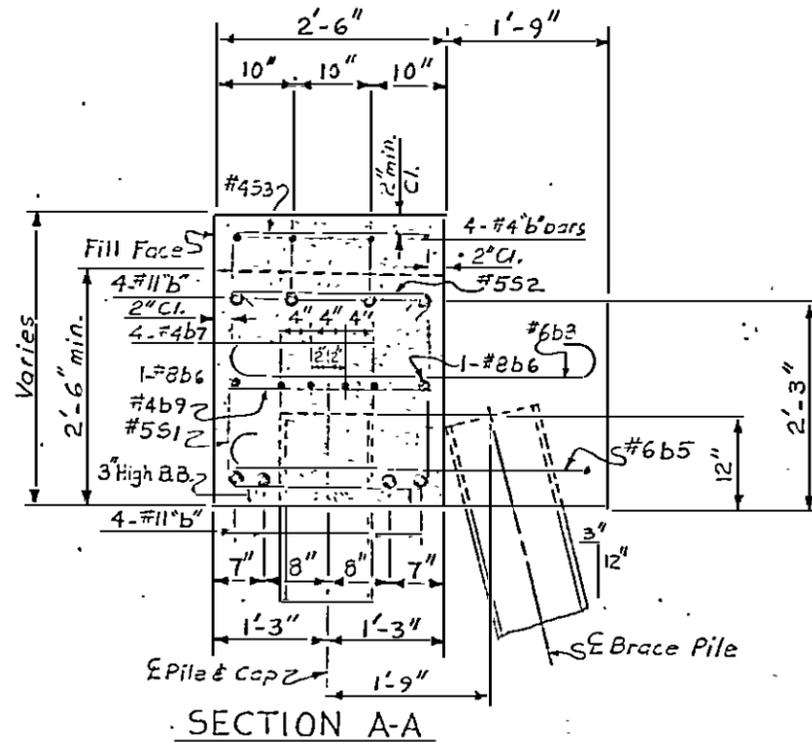
SECTION C-C



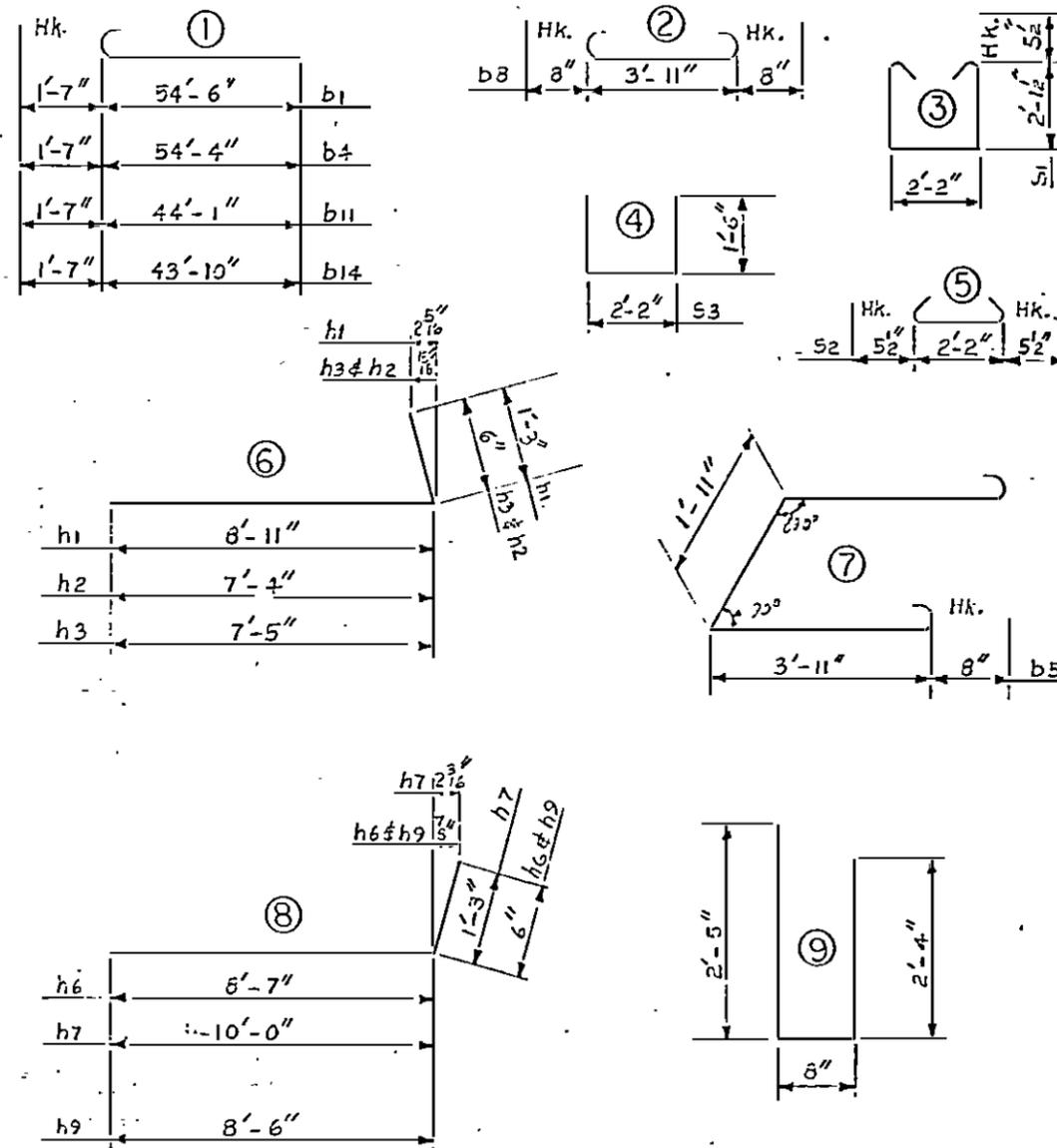
ELEVATION OF RIGHT WING (W2)

PROJECT No. 8.1475509  
 WAKE COUNTY  
 STATION: 82+42.41-L-  
 Sheet 4 of 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE



**BAR TYPES**



All Bar Dimensions are out to cut.

**BILL OF MATERIAL FOR END BENT 2**

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	4	#11	1	54'-6"	1172
b2	4	#11	STR.	34'-7"	755
b3	4	#11	STR.	55'-9"	1183
b4	4	#11	1	54'-4"	1163
b5	4	#11	1	43'-10"	965
b6	8	#8	STR.	47'-6"	1015
b7	28	#4	STR.	27'-0"	505
b8	7	#6	2	5'-3"	213
b9	23	#4	STR.	2'-2"	65
b10	4	#4	STR.	7'-10"	21
b11	4	#11	1	45'-3"	971
b12	8	#11	STR.	56'-5"	2398
b13	4	#4	STR.	7'-7"	20
b14	4	#11	1	45'-5"	965
b15	24	#4	STR.	5'-3"	84
b16	3	#4	STR.	6'-6"	35
b17	32	#4	STR.	8'-3"	176
b18	4	#4	STR.	13'-10"	53
b19	8	#4	STR.	9'-3"	43
d1	3	#4	STR.	2'-6"	11
h1	3	#5	6	10'-2"	32
h2	7	#5	6	7'-10"	57
h3	4	#5	6	7'-11"	33
h4	5	#5	3	5'-5"	25
h5	8	#5	3	9'-11"	75
n7	4	#5	8	11'-5"	47
n9	4	#5	5	9'-0"	35
s1	153	#5	3	7'-4"	1170
s2	153	#5	5	3'-11"	292
s3	122	#4	4	5'-2"	221
v1	22	#5	STR.	6'-4"	145
v2	24	#5	STR.	16'-9"	169

Reinforcing Steel Lbs. 13,724

Class A Concrete  
 Left Part 13.5 C.Y.  
 Middle Part 12.1 C.Y.  
 Right Part 21.1 C.Y.  
 Total 57.7 C.Y.

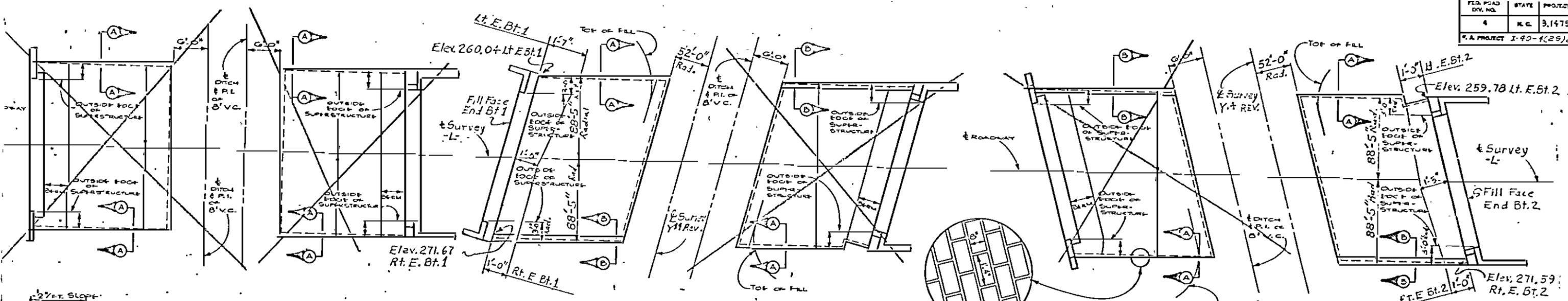
HP 12x53 Steel Piles  
 No. 35 Lin. Ft. 2,275

PROJECT No. 21475503

WAKE COUNTY

STATION: 2+42.41-L

Sheet 5 of 3



PLAN



NOTES

**GENERAL NOTES:**

A 4" CONCRETE SLOPE PROTECTION PAVING SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE. LIMITS OF THE PROTECTION SHALL BE AS SHOWN IN THE DETAILS. THE CONTRACTOR, AT HIS OPTION, MAY PLACE EITHER TYPE, ALTERNATE "A" OR "B", AS DESCRIBED BELOW. IMMEDIATELY BEFORE PLACING THE PAVING, THE SLOPE SHALL BE PROPERLY SHAPED AND FIRMLY COMPACTED SO THAT IT CONFORMS TO THE LINES AND GRADES SHOWN. THE FINISHED SURFACE SHALL BE REASONABLY SMOOTH AND UNIFORM AND SHALL NOT VARY MORE THAN 1/2 INCH IN A DISTANCE OF 10 FEET. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. METHOD OF MEASUREMENT AND BASIS OF PAYMENT SHALL BE AS PRESCRIBED IN SECTION 870 OF THE STANDARD SPECIFICATIONS.

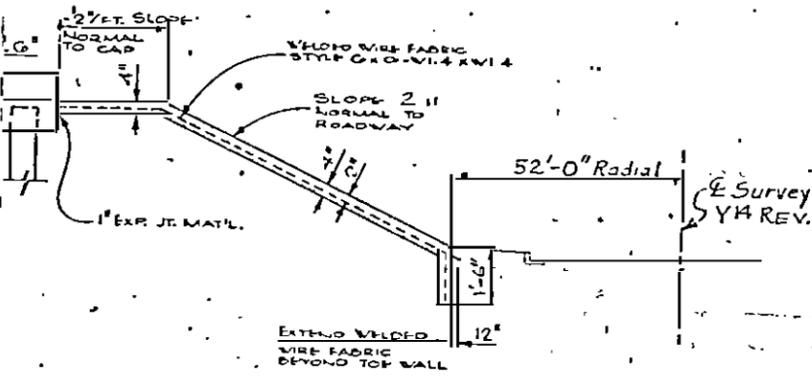
THE SAME TYPE OF SLOPE PROTECTION SHALL BE USED UPON BOTH ENDS OF ANY ONE BRIDGE.

**ALTERNATE "A":**

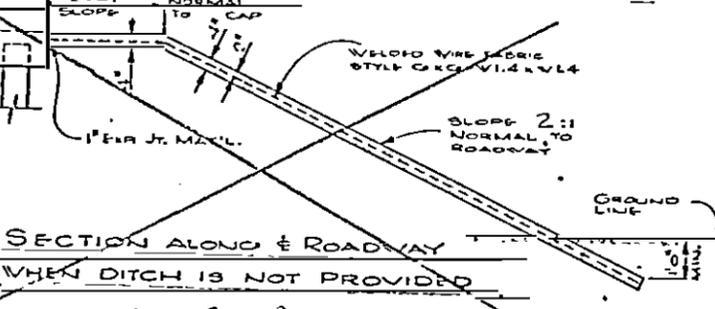
ALTERNATE "A" SHALL CONSIST OF 4" POURED IN PLACE CONCRETE PAVING AS SHOWN IN DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS B. THE CONCRETE SURFACE SHALL BE FINISHED WITH A WOODEN FLOAT AND FINISHED. ALTERNATE "A" WELDED WIRE FABRIC REINFORCING TO BE STYLE G X G - W1.4 X W1.4 @ 6" WIDE. ADJACENT RUNS OF WELDED WIRE FABRIC TO LAP AT LEAST 6". SLOPE PROTECTION TO BE POURED IN ALTERNATE 4" AND 5" STRIPS AS SHOWN IN POURING DETAIL. THE COST OF THE WELDED WIRE FABRIC TO BE INCLUDED IN THE CONTRACT UNIT PRICE DID PER SQUARE YARD FOR 4" CONCRETE SLOPE PROTECTION.

**ALTERNATE "B":**

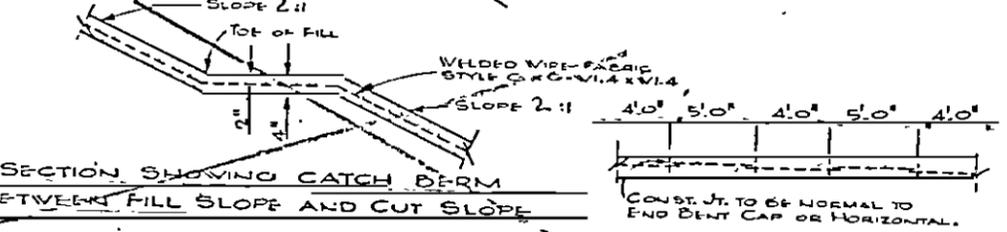
ALTERNATE "B" SHALL CONSIST OF SOLID CONCRETE BLOCKS 4" X 8" X 16" LAID IN HORIZONTAL COURSES SUCH THAT JOINTS IN SUCCESSIVE COURSES WILL BREAK JOINTS WITH UNITS IN THE PRECEDING ONE. BLOCKS ARE TO BE LAID WITH THEIR LONG AXIS PARALLEL TO THE END BENT CAP WITH GROUDED JOINTS PREFERABLY 3/4" BUT NOT LESS THAN 1/2" NOR MORE THAN 1 1/4" WIDE BETWEEN SUCCESSIVE COURSES AND ENDS OF BLOCKS. JOINTS SHALL BE GROUDED BY POURING A MIXTURE OF ONE PART PORTLAND CEMENT TO THREE PARTS SAND MIXED WITH SUFFICIENT WATER TO EQUALIZE THE MIXTURE TO BE Poured THROUGH A SHOUT. THE CONCRETE AND TEXTURE, AND SHALL BE MANUFACTURED OF MATERIALS TO PRODUCE A COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 P.S.I. AT AGE OF 28 DAYS. NO FROZEN BLOCKS SHALL BE USED EXCEPT IN CONSTRUCTING A STRAIGHT LINE ALONG EACH SIDE OF THE PAVING DOWN THE SLOPE. CARE SHALL BE TAKEN TO PREPARE THE BLOCKS SO AS TO GIVE A UNIFORM WORKMANLIKE JOINT AND SURFACE.



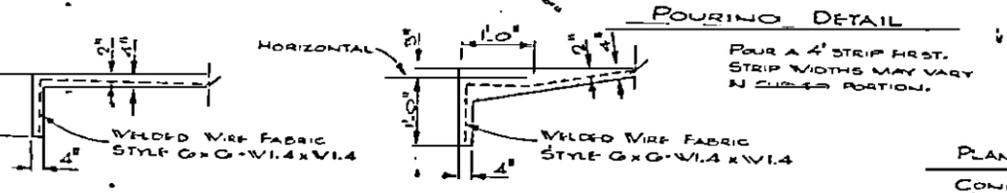
SECTION ALONG & ROADWAY WHEN FILL CATCHES IN DITCH



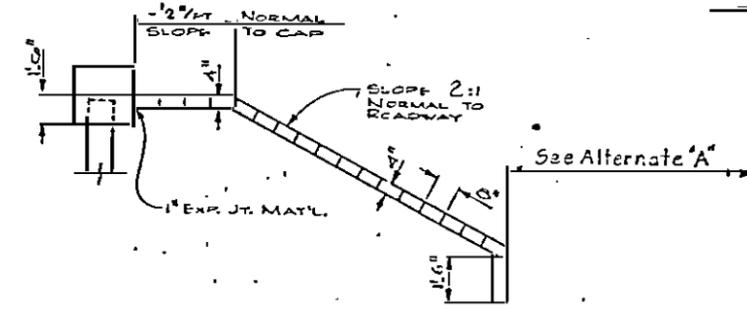
SECTION ALONG & ROADWAY WHEN DITCH IS NOT PROVIDED



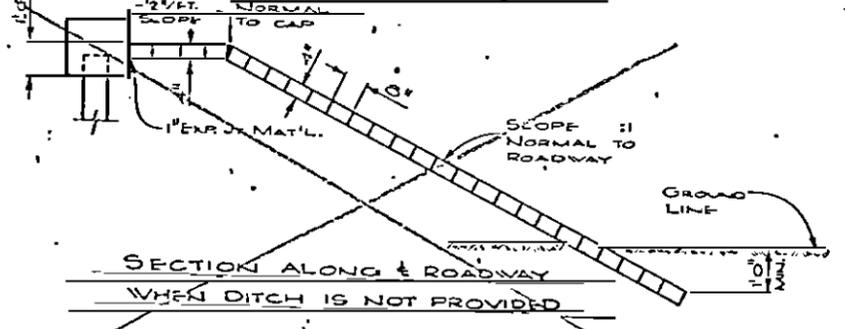
SECTION SHOWING CATCH BERM BETWEEN FILL SLOPE AND CUT SLOPE



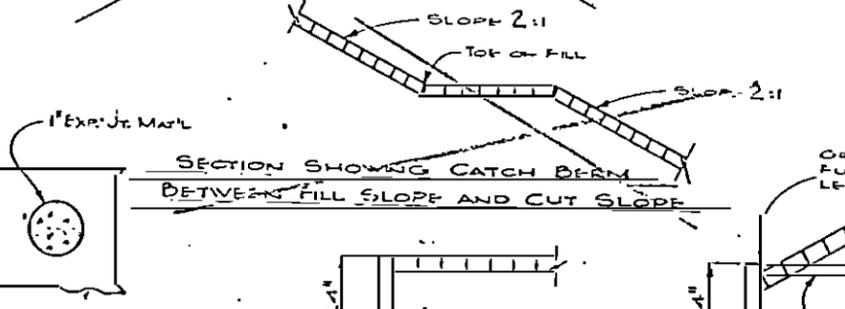
SECTION A-A SECTION B-B DETAILS FOR ALTERNATE "A"



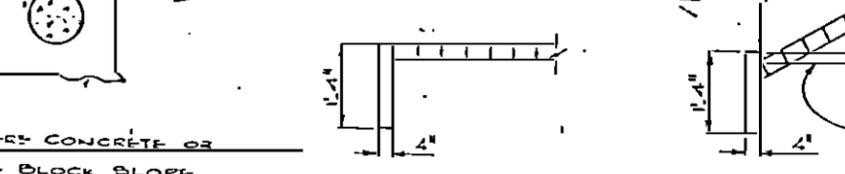
SECTION ALONG & ROADWAY WHEN FILL CATCHES IN DITCH



SECTION ALONG & ROADWAY WHEN DITCH IS NOT PROVIDED



SECTION SHOWING CATCH BERM BETWEEN FILL SLOPE AND CUT SLOPE



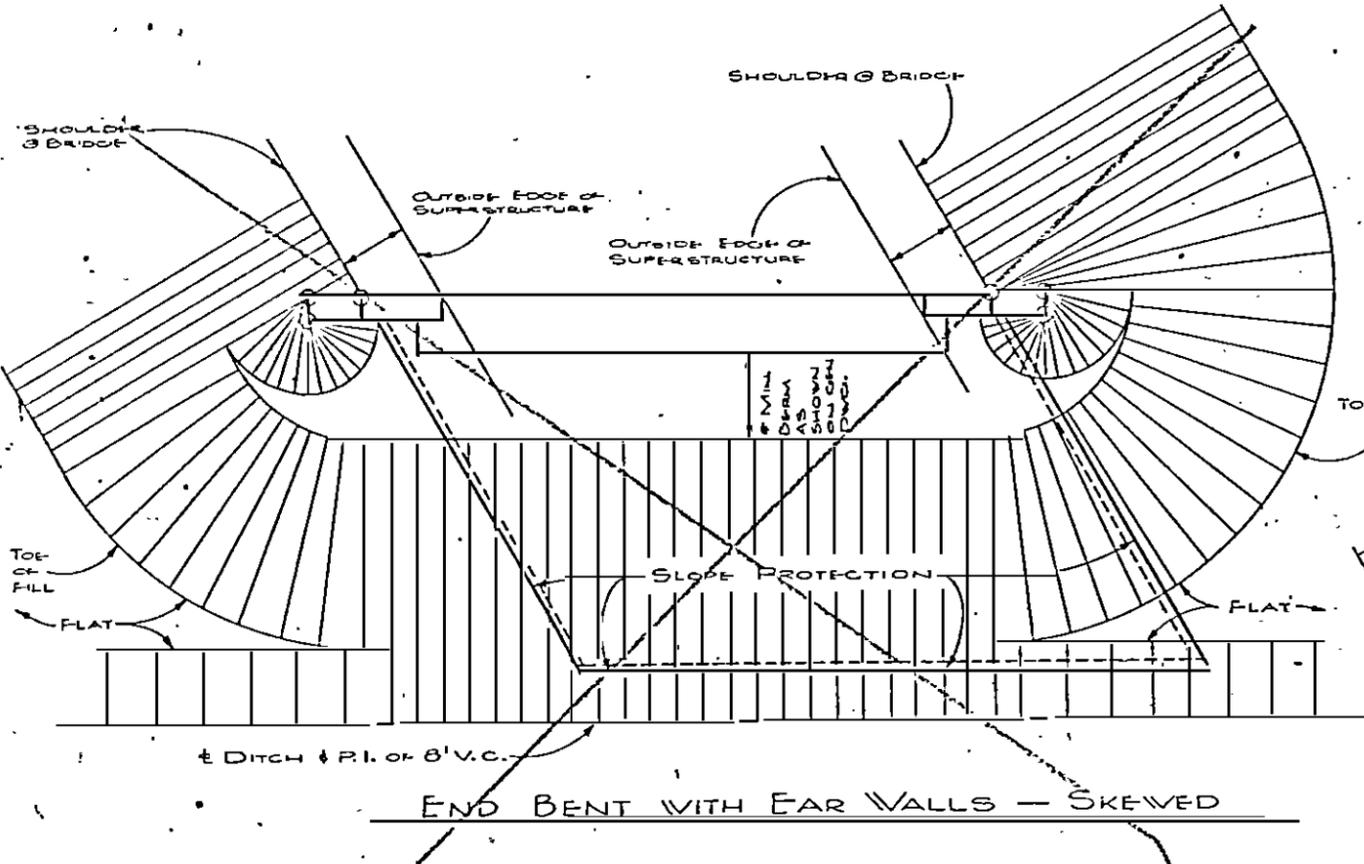
SECTION A-A SECTION B-B

PLAN WHERE CONCRETE OR CONCRETE BLOCK SLOPE PROTECTION MUST BE PLACED AROUND A BENT COLUMN

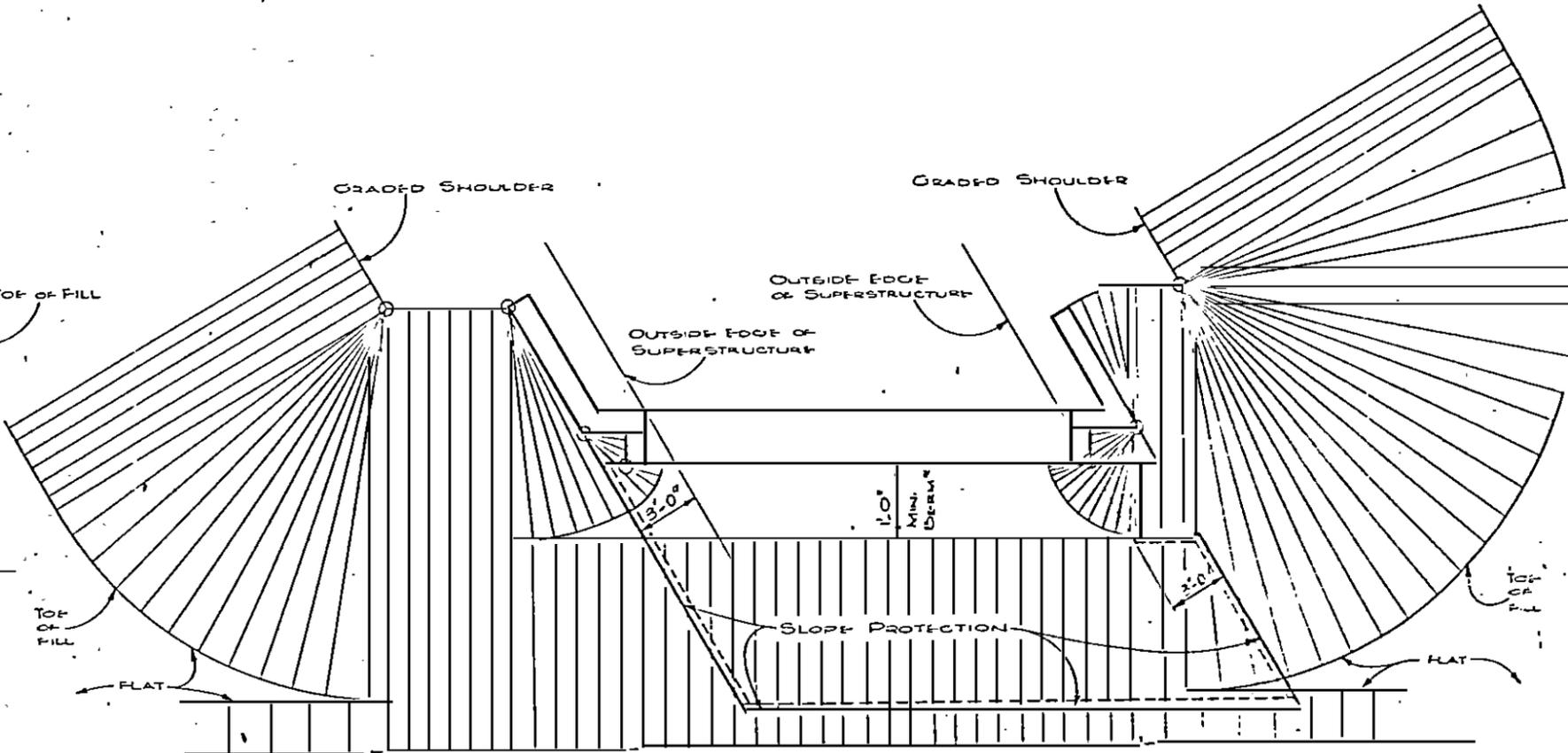
BRIDGE	4" CONC. SLOPE PROTECTION OR 4" CONC. BLOCK SLOPE PROTECTION S.Y.		WELDED WIRE FABRIC 60" WIDE APPROXIMATE
	END BENT 1	END BENT 2	
BRIDGE C Sta 82+42.41-L-	1060	1055	4230

PROJECT No. 8.1475509  
 WAKE COUNTY  
 STATION 82+42.41-L-P.O.C.  
 37+71.25

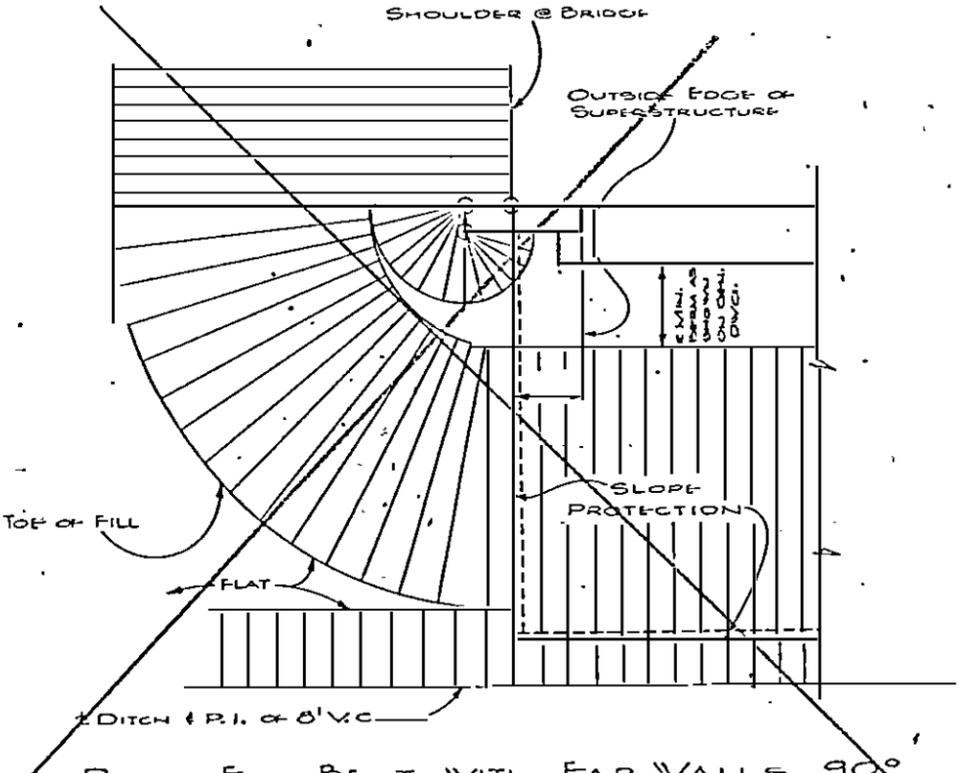
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD SLOPE PROTECTION PAVING DETAILS



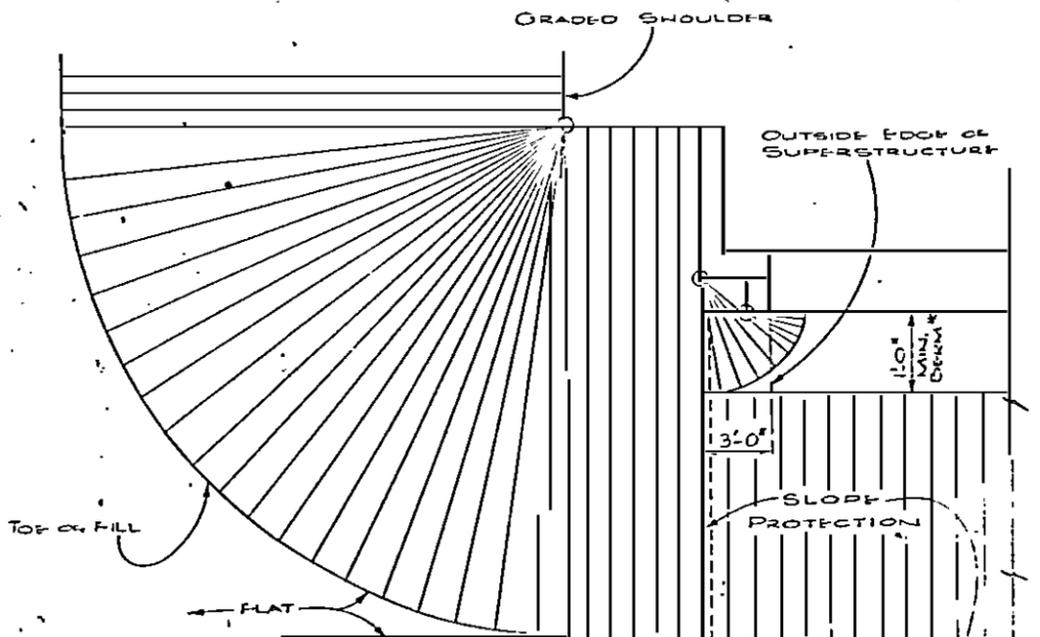
END BENT WITH EAR WALLS - SKEWED



END BENT WITH SWEEP-BACK WINGS - SKEWED



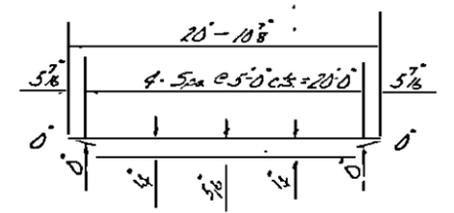
END BENT WITH EAR WALLS 90°



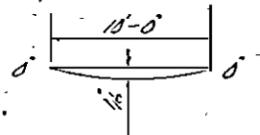
NOTE: VARY BERM WIDTH AS NECESSARY TO FIT DITCH ALIGNMENT.

PROJECT NO. E.147509  
 WAKE COUNTY  
 STATION: E2-42.41-L-P.O.C  
 E2-71.49-Y+REV.  
 SHEET 2 OF 2  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 SLOPE PROTECTION

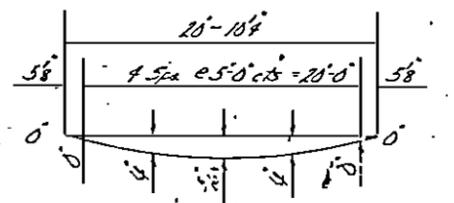




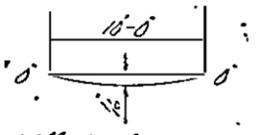
Arc Offset @ E Bent 2 Left Side  
Lt. Lane



Arc Offset @ E Bent 2 Right Side  
Lt. Lane



Arc Offset @ E Bent 2 Left Side  
Rt. Lane

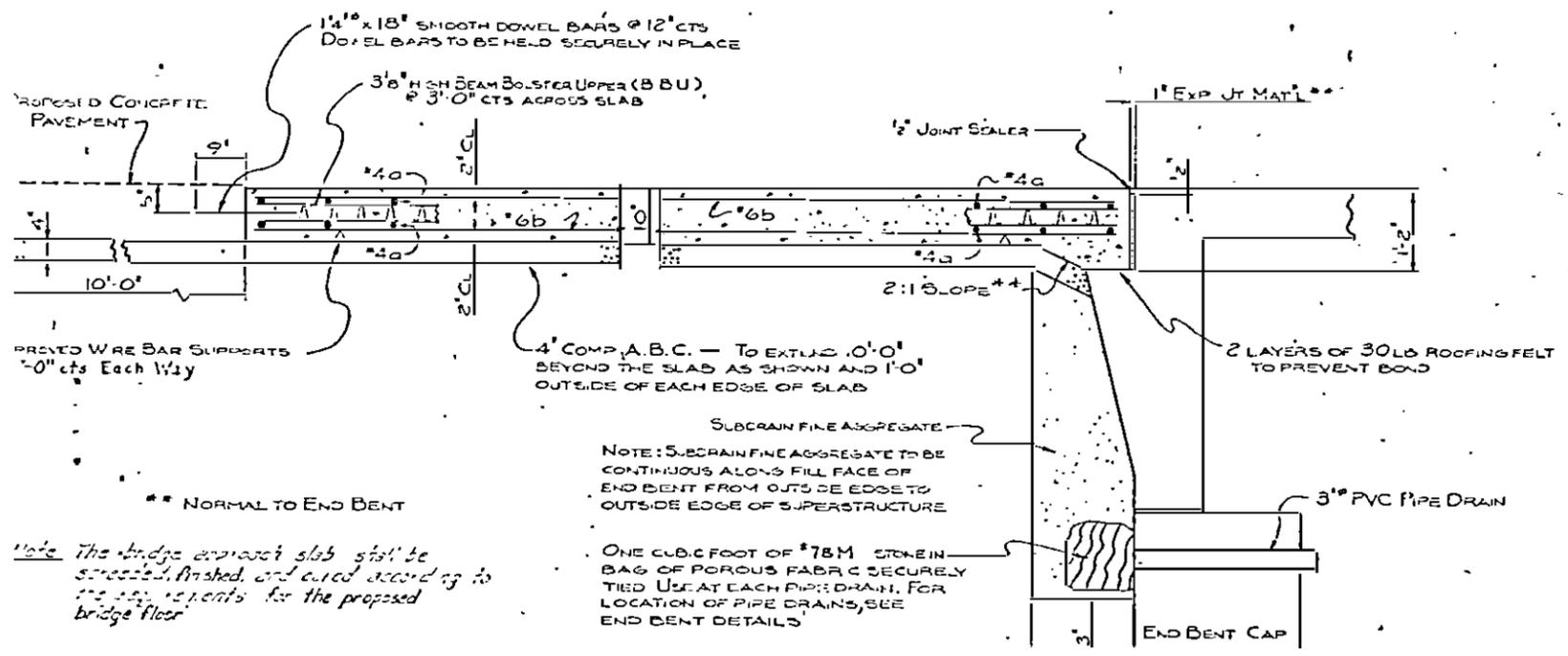


Arc Offset @ E Bent 2 Right Side  
Rt. Lane

1 1/2" Ordinate = 1/8" At Side of Lane  
Middle Ordinate = 1/8" At Side of Lane

Arc Offset At Side of At Side E Bent 1  
Left & Right Lane

BILL OF MATERIAL										
For Approach Slabs at END BENTS 1 & 2 At Lanes										
Bar	Size	Type	Length	Weight	Bar	Size	Type	Length	Weight	
a1	#2	str	16-0	2183	b29	10	#6	str	16-5	250
a2	#2	str	15-2	766	b30	10	#6	str	17-0	255
a3	#2	str	26-1	267	b31	12	#6	str	17-2	260
a4	#6	str	15-8	167	b32	12	#6	str	17-5	267
a5	#6	str	16-3	165	b33	12	#6	str	15-1	212
a101	#4	str	15-7	50	b34	12	#6	str	15-5	215
a102	#4	str	17-9	87	b35	10	#6	str	15-5	215
a103	#6	str	21-0	88	b36	10	#6	str	17-5	257
a104	#4	str	27-8	73	b37	10	#6	str	15-7	252
a105	#4	str	22-5	60	b38	10	#6	str	20-0	320
a106	#4	str	17-5	67	b39	12	#6	str	17-2	177
a107	#2	str	13-0	32	b40	12	#6	str	9-1	175
a108	#2	str	14-5	19	b41	12	#6	str	10-8	186
a109	#2	str	9-2	6	b42	12	#6	str	10-10	195
a110	#6	str	22-5	91	b43	12	#6	str	11-3	203
a111	#4	str	28-3	75	b44	12	#6	str	11-8	210
a112	#4	str	23-1	62	b45	12	#6	str	12-1	213
a113	#4	str	17-11	88	b46	12	#6	str	12-6	225
a114	#2	str	14-5	33	b47	12	#6	str	12-11	253
a115	#2	str	14-2	19	b48	12	#6	str	13-2	220
a116	#2	str	3-10	5	b49	12	#6	str	13-5	247
b1	301	1 1/2" str	1-6	1007	b50	12	#6	str	13-5	247
b2	76	#6 str	9-6	1667	b51	12	#6	str	14-3	257
b3	76	#6 str	9-10	1127	b52	12	#6	str	14-5	261
b4	76	#6 str	10-2	1161	b53	12	#6	str	15-1	212
b5	76	#6 str	10-5	1139	b54	12	#6	str	15-6	279
b6	76	#6 str	10-10	1237	b55	12	#6	str	15-11	251
b7	76	#6 str	11-2	1275	b56	12	#6	str	16-5	272
b8	76	#6 str	11-6	1313	b57	12	#6	str	16-10	303
b9	76	#6 str	11-10	1351	b58	12	#6	str	17-3	311
b10	10	#6 str	9-6	143	b59	12	#6	str	17-8	313
b11	10	#6 str	9-11	157	b60	12	#6	str	18-1	325
b12	10	#6 str	10-9	155	b61	12	#6	str	18-6	333
b13	10	#6 str	10-6	160	b62	12	#6	str	18-11	321
b14	10	#6 str	11-0	165	b63	12	#6	str	19-2	340
b15	10	#6 str	11-5	171	b64	12	#6	str	19-3	355
b16	10	#6 str	11-9	176	b65	4	#6 str	20-5	122	
b17	10	#6 str	12-2	183	Reinforcing Steel, lbs 28,633					
b18	10	#6 str	12-6	188	End Bent 1 Class AA Conc 2 Lanes					
b19	10	#6 str	12-11	194	Approach Slab 273 Co. 105					
b20	10	#6 str	11-3	190	End Bent 2 Class AA Conc 11 Lanes					
b21	10	#6 str	13-6	205	Approach Slab 357 Co. 105					
b22	10	#6 str	14-0	210	Class A Conc					
b23	10	#6 str	14-5	215	Approach Slab 10 Co. 105					
b24	10	#6 str	15-5	222	End Bent 1 Class AA Conc At Lane					
b25	10	#6 str	15-8	220	Approach Slab 212 Co. 105					
b26	10	#6 str	15-5	233	End Bent 2 Class AA Conc 17 Lanes					
b27	10	#6 str	15-10	230	Approach Slab 349 Co. 105					
b28	10	#6 str	16-3	247						



REV No 10 - TO CHANGE BOLTED TO FINISHED AND ADD PROVIDED IN FINISH NOTE BY: KGP v BY: AJS 5-4-76  
REV No 9 - TO REMOVE LOCATION FOR APPROACH SLAB AREA. BY: KGP v BY: AJS 3-15-76  
REV No 8 - TO CHANGE DESIGNATION OF AGGREGATE SIZE AND TO PROVIDE LOCATION FOR APPROACH SLAB AREA. BY: KGP v BY: AJS 1-9-76  
REV No 7 - TO CHANGE DESIGNATION OF AGGREGATE SIZE. BY: CGM v BY: AJS R 5-7-75  
REV No 6 - TO CHANGE MATERIAL FROM RIGID TO FLEXIBLE. BY: KGP v BY: AJS 1-12-76

PROJECT No. 81475503  
WAKE COUNTY  
STATION: 82+42.41 ±  
Sheet 2 of 2

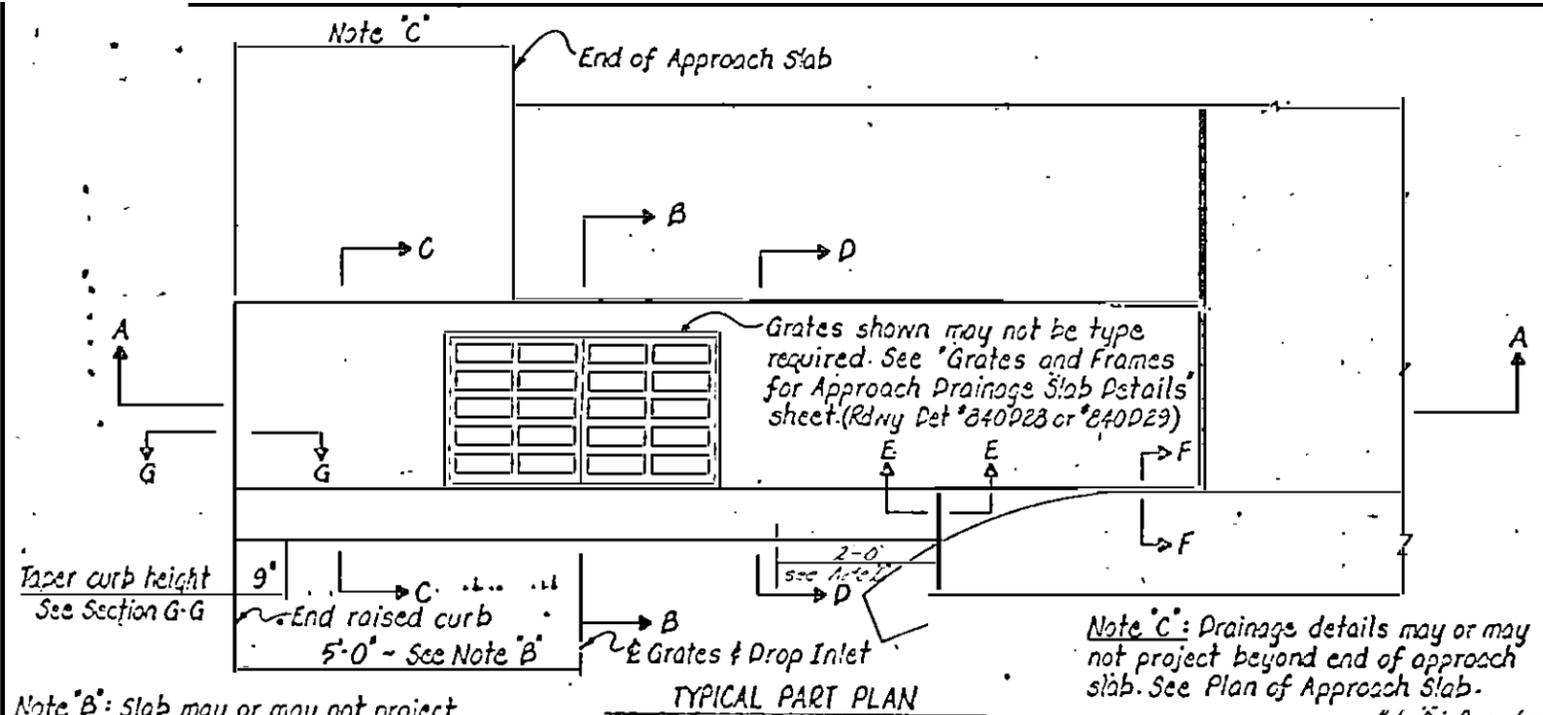
STATE OF NORTH CAROLINA  
STATE HIGHWAY COMMISSION  
RALEIGH  
BRIDGE APPROACH SLAB  
FOR RIGID PAVEMENT  
@ END BENTS 1 & 2  
At Lanes

**NOTES**

For requirements and payment for Approach Drainage Slab Details, see Special Provisions for Bridge Approach Slabs.

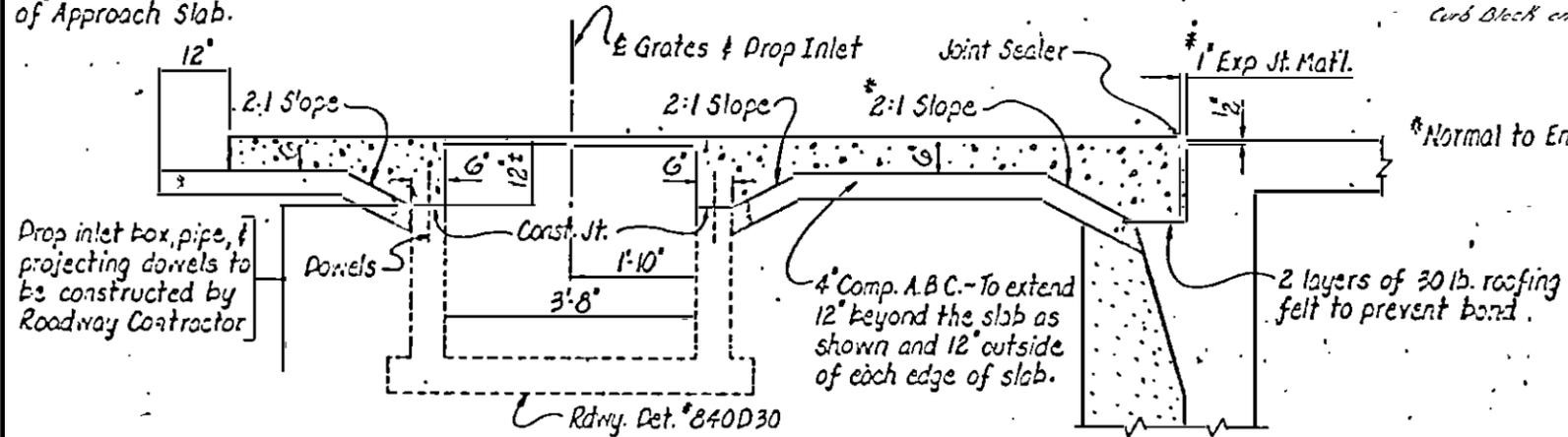
12" Expansion joint material shall be used in Approach Drainage Slab to limit the length of pours to a maximum of 35 feet. The location of joints, where required, shall be approved by the Engineer. The expansion joint shall be sealed with joint sealer as shown in Section E-E.

The Engineer will be responsible for establishing the elevations for the Approach Drainage Slab.

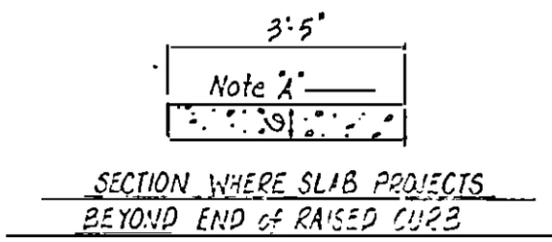
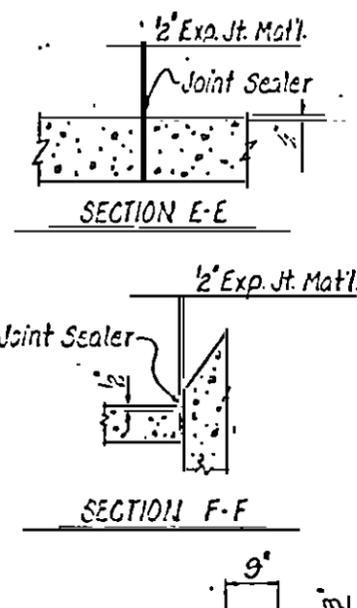
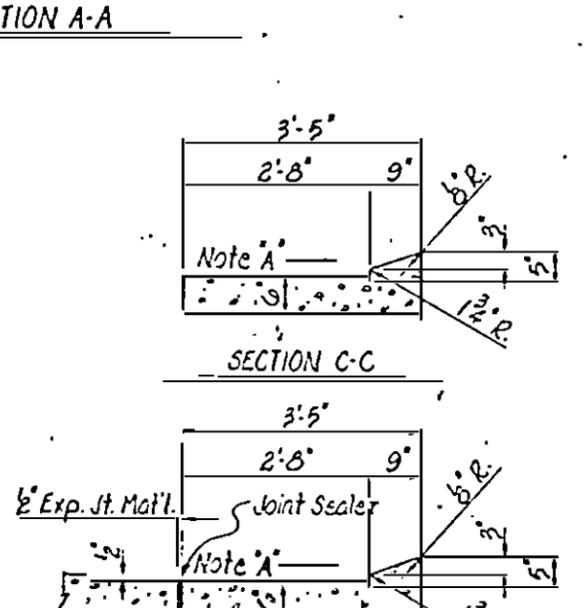
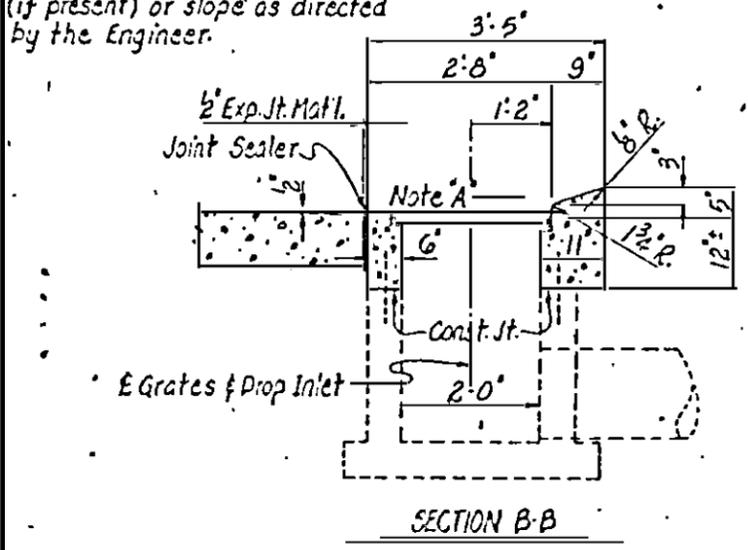


Note B: Slab may or may not project beyond end of raised curb. See Plan of Approach Slab.

Note D: Raised curb section shall be transitioned within this length to match with the curb block on the curved end block.



Note A: Match slope of adjacent slab (if present) or slope as directed by the Engineer.



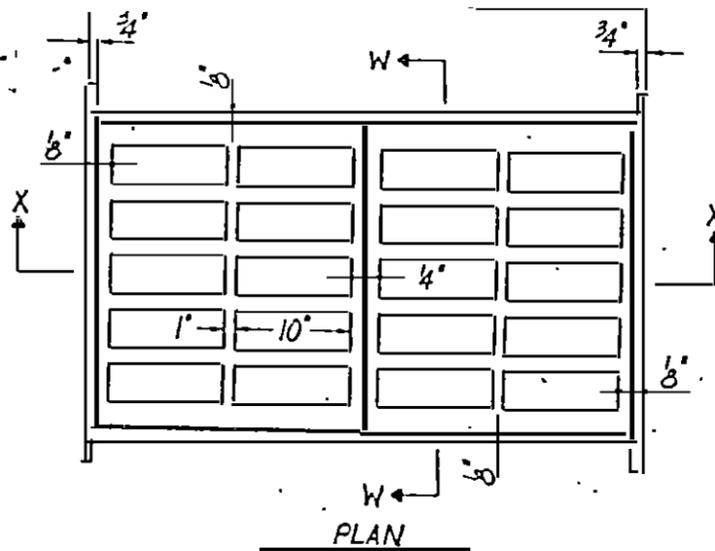
PROJECT No. 81475509

WAYE COUNTY

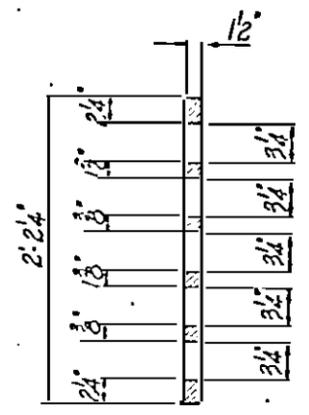
STATION 82+42.41

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
APPROACH DRAINAGE SLAB DETAILS  
& END BENT 2

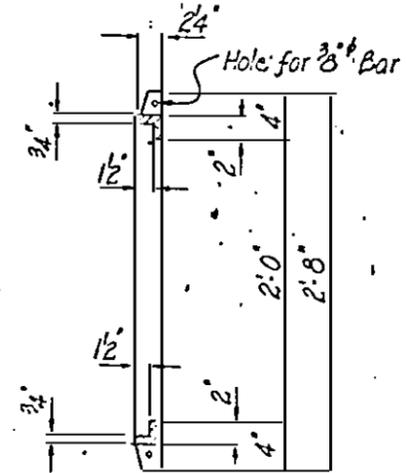
PROJECT NO.	81475509
DATE	7/15/59
BY	...



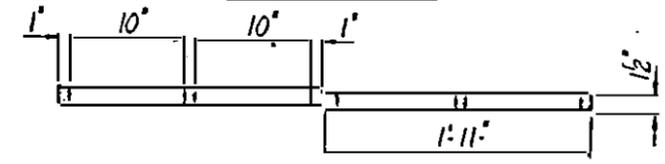
PLAN



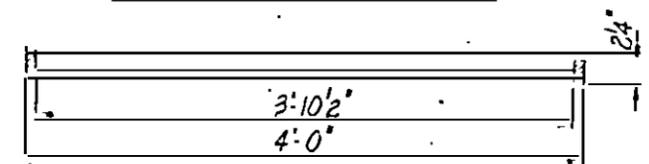
GRATE SECTION W-W



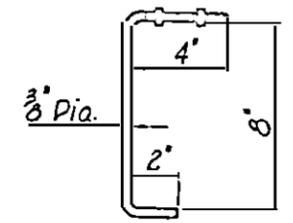
FRAME SECTION W-W



GRATE SECTION X-X

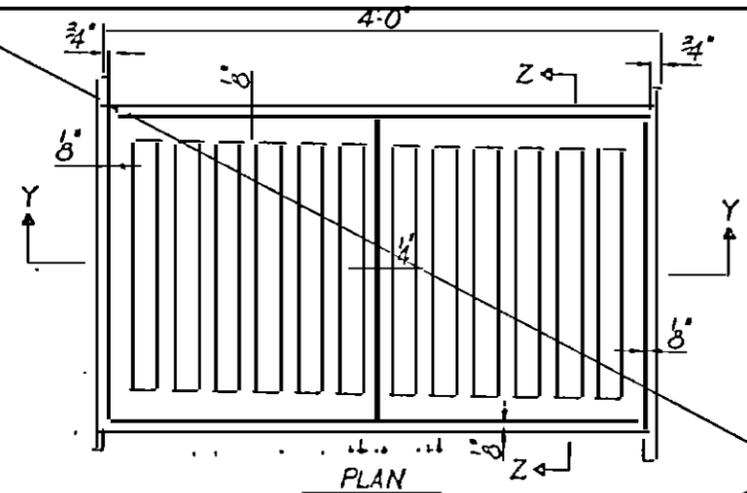


FRAME SECTION X-X

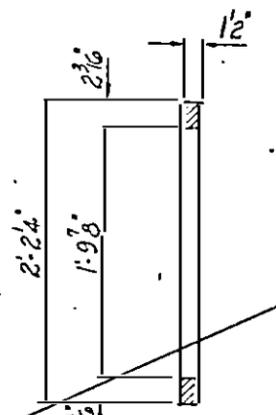


CONCRETE ANCHOR  
3/8" Bent Bar

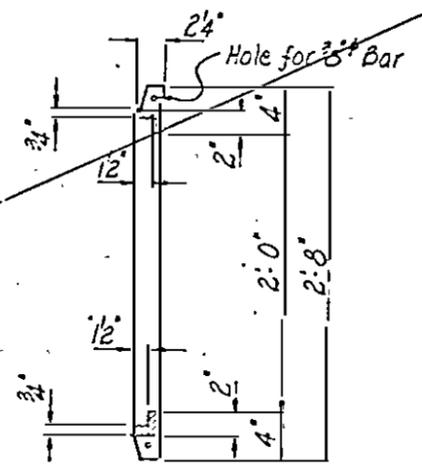
STANDARD FLAT GRATES AND FRAME (RDWY.DET. 840D28)



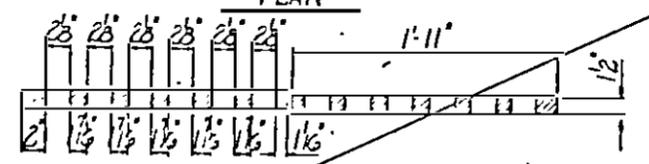
PLAN



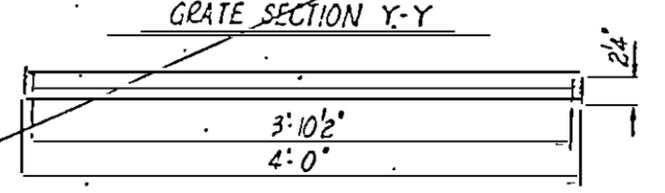
GRATE SECTION Z-Z



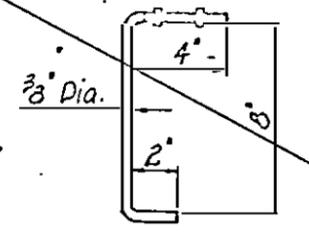
FRAME SECTION Z-Z



GRATE SECTION Y-Y



FRAME SECTION Y-Y



CONCRETE ANCHOR

PROJECT No. 81475509

WAKE COUNTY

STATION 82+42.41-4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
SCALE ON  
GRATES AND FRAMES FOR  
APPROACH DRAINAGE S/S