8.1430701

NORTH C
STATE HIGHW
REPRODUCT
RALEIGH, N

REDUCTION RATIO 24 TO 1

N. C. DEPT. OF TRANSPORTA
REPRODUCTION DEPT. (HIGHW
RALEIGH, N. C. 27611

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION & HIGHWAY SAFETY
REPRODUCTION DEPT., HIGHWAY BLDG.
RALEIGH, N. C. 27611

Project No._____ County_____ Reel No._____
Position No._____

Type of Plan: Rdway

REMARKS:

SOLD AS PLANS ILLEGIBLE, AS FILM TYPICAL SECTION, DETAILS, AND SLAB X-SE FILM SERVED FOR ASSEMBLY. IF TITLE & SHEET FOR DETAIL, THESE HAVE BEEN MADE AND SENT BACK TO THE OFFICE.

THESE PLANS MICRO-FILMED
BY
NORTH CAROLINA
DEPT. OF TRANSPORTATION

REPRODUCTION
1-16-92

FINAL ESTIMATE

PROJECT NO. 8.1430701

COLUMBUS COUNTY

ROADWAY CONTRACT

EXACT LENGTH 1.818 MILES

INCLUDING BRIDGES

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.			
F. A. PROJ. NO.			

THESE PLANS MICRO FILMED
BY
NORTH CAROLINA
DEPT. OF TRANSPORTATION
REPRODUCTION

INDEX

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PROJECT NUMBER 8.1430701

F.A.NO. MAF-4-1-(19)

COUNTY: COLUMBUS

GRADING, DRAINAGE, AND STRUCTURES ON
U.S. 74 FROM WEST OF FRIAR SWAMP TO WEST
OF NC 211 NEAR BOLTON

DIVISION NO.6

CONTRACTOR: DICKERSON CAROLINA, INC.
P.O.BOX 339
CASTLE HAYNE, N.C. 28429

DIVISION ENGINEER: D.J. BOWERS

RESIDENT ENGINEER: D.W. BOYLSTON

FINAL RIGHT OF WAY HAS BEEN CHECKED

D.J. Jordan

DIVISION RIGHT OF WAY AGENT

R-61 G

PROJECT: 8.1430701

50

SEE SHEET 1-A FOR INDEX OF SHEETS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

COLUMBUS COUNTY

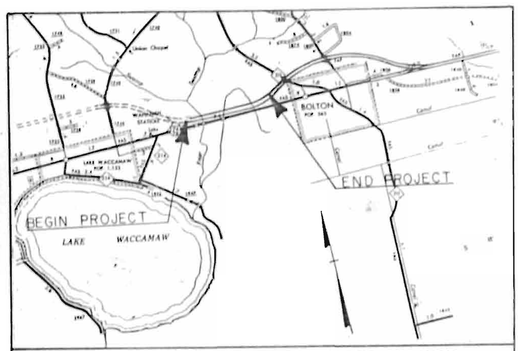
LOCATION: U.S. 74 FROM WEST OF FRIAR SWAMP TO WEST OF N.C. 211 NEAR BOLTON

TYPE OF WORK: GRADING, DRAINAGE, AND STRUCTURES

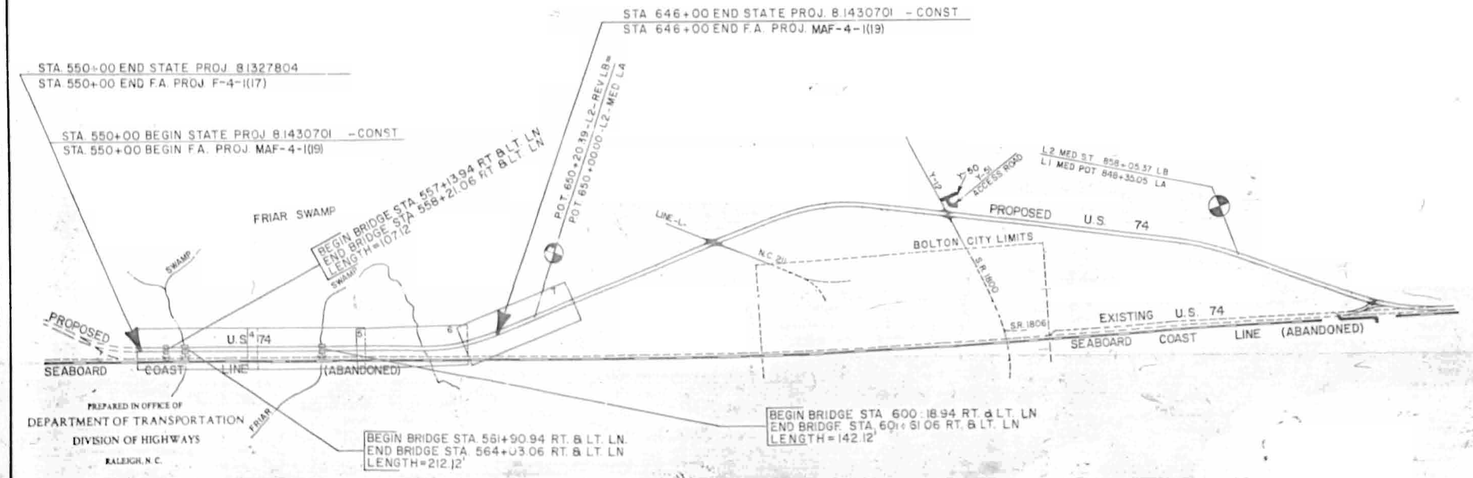
THESE PLANS MICRO FILMED BY NORTH CAROLINA DEPT. OF TRANSPORTATION
REPRODUCTION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	8.1430701		2

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
8.1430701	MAF-4-1(19)	PE & CONST.
6.431001.1		R/W & UTILITIES
~~6.804459~~		ORIG. PE.



SKETCH MAP SHOWING VICINITY OF STATE PROJECT NO. 8.1430701



PREPARED IN OFFICE OF
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N. C.

PLANS PREPARED BY: ROADWAY DESIGN UNIT
G.T. SHEARIN, PROJECT ENGINEER
C.C. PAINTER, JR., PROJECT DESIGN ENGINEER

THIS IS A FULL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

LETTING DATE: JULY 15, 1986

1984 STANDARD SPECIFICATIONS

CONVENTIONAL SYMBOLS

County Line	
City or Town Line	
Exist. Right of Way Line & Marker	
Right of Way Marker	
Survey Line	
Property Line	
Exist. Fence	
Proposed Road	
Existing Road	
Railroad	
Control of Access Line	
Slope Stake Line	
Bridge	
Culvert	
Woods	
Telephone or Telegraph Pole	(EXISTING) (PROPOSED)
Tower Pole and Line	
Power Pole	(EXISTING) (PROPOSED)
Easement Line	E E E
Temporary Silt Fence	
Guard Rail	
Sanitary Sewer Line	SS SS
Water Line	
Gas Line	GAS
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Equality	
Prop. Right of Way Marker	

GRAPHIC SCALES

PLANS 0 100 200 300

PROFILE (HORIZONTAL) 0 100 200 300

PROFILE (VERTICAL) 0 10 20 30

DESIGN DATA

ADT 1980 =	5300
ADT 2000 =	10,700
DHV	= 12% ADT
D	= 60% ADT
T	= 13% ADT
V	= 70 MPH

NORTH CAROLINA PROFESSIONAL SEAL 4169 ENGINEER WILLIAM G. MARLEY, JR.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
APPROVED William G. Marley, Jr., P.E.
MANAGER - HIGHWAY DESIGN BRANCH
APPROVED W. S. Campbell, P.E.
CHIEF ENGINEER - OPERATIONS

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED for Ray C. Shelton 6-5-86
DIVISION ADMINISTRATOR DATE

LENGTH ROADWAY F.A. PROJECT MAF-4-1(19) = 1.731 MI.
LENGTH STRUCTURE F.A. PROJECT MAF-4-1(19) = .087 MI.
TOTAL LENGTH STATE PROJECT 8.1430701 = 1.818 MI.

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
8.1430701	1-A-3	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

SHEET NO.	INDEX OF SHEETS
1	TITLE SHEET
1-A	INDEX SHEET, LIST OF STANDARDS, AND GENERAL NOTES
2	TYPICAL SECTION
2-A	FABRIC AND SURCHARGE DETAIL
2-B	EMBANKMENT SETTLEMENT GAUGE DETAIL
2-C	DETAIL OF PIPE INSTALLATION, METHOD A
3	SUMMARY OF QUANTITIES
3-A	PIPE SUMMARY
3-B	SUMMARY OF EARTHWORK
4 THRU 7	PLAN AND PROFILE SHEETS
TCP-1	TRAFFIC CONTROL PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
X-1 THRU X-7	CROSS SECTIONS
S-1 THRU S-84	STRUCTURE PLANS

GENERAL NOTES:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE FUTURE SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE AREAS IN THE PLANS DESIGNATED "SAFETY CLEARING". THE LIMITS ARE AS SHOWN AND THE CLEARING AND GRUBBING IS CONSIDERED A PART OF THE LUMP SUM ITEM OF "CLEARING AND GRUBBING".

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 100.02 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

~~SHOULDER CONSTRUCTION ON HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 100.04B.~~

~~UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03B AT LOCATIONS DIRECTED BY THE ENGINEER.~~

THE CONTRACT INCLUDES THE FOLLOWING ITEMS FOR WHICH QUANTITIES AND LOCATIONS WILL BE DETERMINED BY THE ENGINEER DURING CONSTRUCTION:

UNDERCUT EXCAVATION
DRAINAGE DITCH EXCAVATION
CLEANING OUT SILT BASINS
FOUNDATION CONDITIONING MATERIAL, PIPE CULVERT
BITUMINOUS PLANT MIX PAVEMENT REPAIR
FABRIC FOR STABILIZATION
~~UNDERDRAIN AND RELATED ITEMS~~

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTIONS PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

ALL RIGHT OF WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

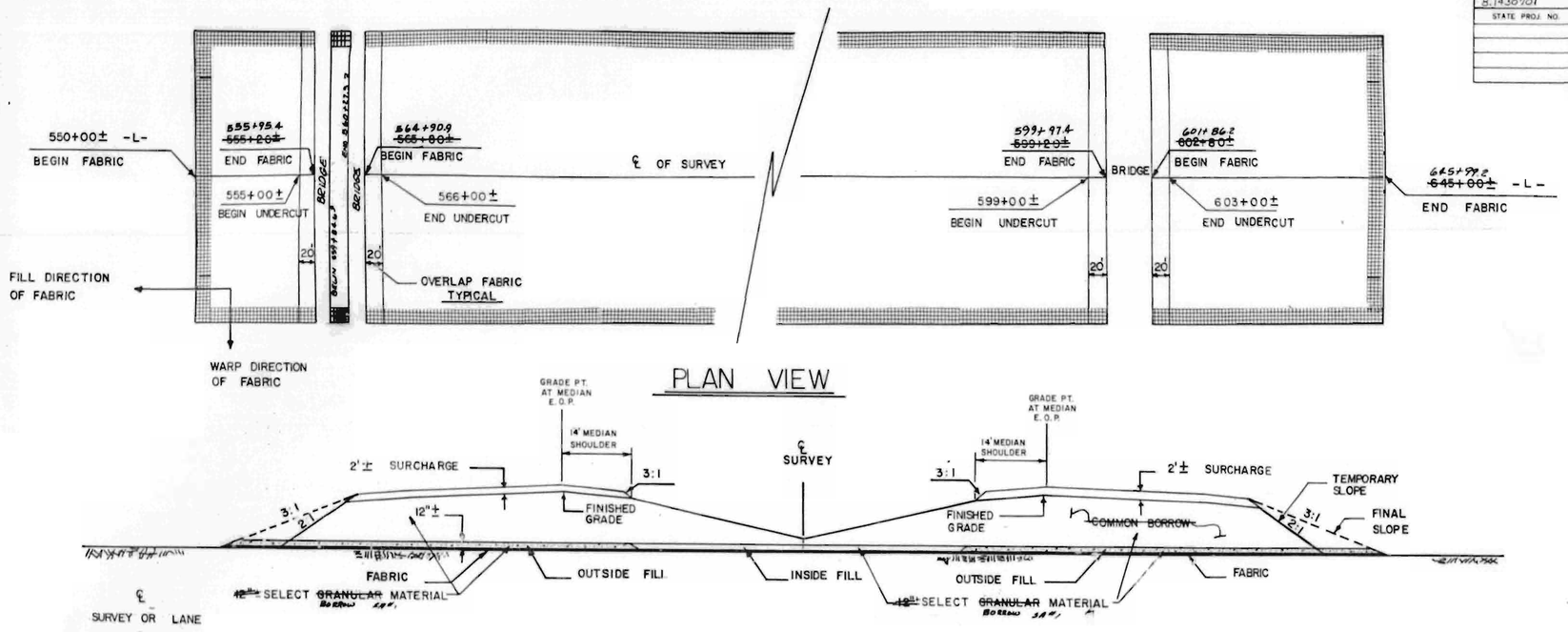
BORROW PIT #1 1/4 MILE NORTH OF NC 87 ON NC 11
BORROW PIT #2 1/4 MILE NORTH OF NC 87 ON SR 1811
BORROW PIT #3 1/2 MILE NORTH OF NC 87 ON NC 11

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - ROADWAY DESIGN UNIT - N. C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N. C., DATED JULY 1, 1978 AND THE LATEST REVISION THERETO ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
100.02	METHODS FOR OBTAINING SUPERELEVATION - DIVIDED HIGHWAYS
~~100.04B~~	~~METHOD OF SHOULDER CONSTRUCTION - HIGH SIDE OF SUPERELEVATED CURVE - METHOD II~~
150.01	TEMPORARY TRAFFIC CONTROL DEVICES
150.11	TRAFFIC CONTROL FOR BORROW PIT ENTRANCE AND HAUL ROAD
200.03	METHODS OF CLEARING - METHOD III
245.02	SILT BASIN TYPE B
~~815.03B~~	~~PIPE UNDERDRAIN AND BLIND DRAIN~~
840.00	CONC. BASE PAD FOR DRAINAGE STRUCTURES
840.19C	CONC. MEDIAN DROP INLET TYPE "D" - 12" THRU 36" PIPE
840.22	GRATES AND FRAME - FOR MEDIAN DROP INLET TYPE "A" AND "B"
840.28B	BRICK MEDIAN DROP INLET TYPE "D" - 12" THRU 36" PIPE
840.66	DRAINAGE STRUCTURE STEPS
868.02	GUIDE FOR RIP RAP SLOPES, DITCHES, AND DRAINAGE PATHS
890.05	GUIDE FOR TEMPORARY BERMS AND SLOPE DRAINS
893.01	TEMPORARY SILT FENCE

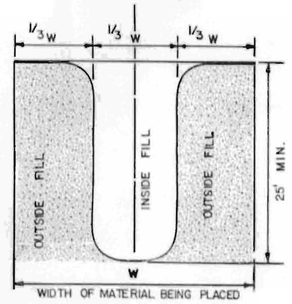
R-61G

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
8.1430701	2A 4	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION



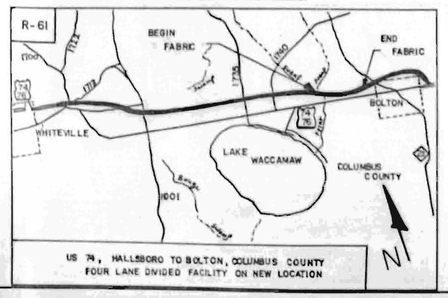
PLAN VIEW

ELEVATION VIEW



DETAIL OF FILL PLACEMENT OVER FABRIC

PLAN VIEW



NOTE:

1. USE LOW GROUND PRESSURE (2.5 - 3.0 PSI) EQUIPMENT UNTIL A MINIMUM OF THREE FEET OF FILL IS PLACED OVER THE FABRIC.
2. THE FIRST 12", OR AS DIRECTED BY THE ENGINEER, OF FILL ON FABRIC WILL BE A SELECT GRANULAR MATERIAL, SUCH AS ABC, HAVING THE FOLLOWING GRADATION:

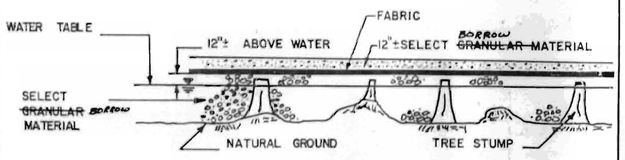
SIZE	% PASSING
4 IN.	100%
1 IN.	100 - 75%
NO 200 SIEVE	0 - 15%

3. THE QUANTITIES REQUIRED SHOULD BE AS FOLLOWS:

~~SELECT GRANULAR MATERIAL~~	~~234,800 CU. YD.~~
~~FABRIC~~	~~180,000 SQ. YD.~~

SEQUENCE OF EMBANKMENT CONSTRUCTION

1. AT FABRIC LOCATIONS, ALL STUMPS SHALL BE CUT CLOSE TO THE GROUND AND/OR WATER SURFACE. GRUBBING IS NOT TO BE PERFORMED IN THE FABRIC PLACEMENT AREAS.
2. WHERE FABRIC CAN BE PLACED IN THE DRY, LAY THE FABRIC DIRECTLY ON THE NATURAL GROUND.
3. IN WATER FILLED DEPRESSIONS, FILL WITH SELECT GRANULAR MATERIAL TO 12± INCHES ABOVE THE WATER SURFACE AS DIRECTED BY THE ENGINEER.
4. WHERE THE FABRIC PLACEMENT OPERATION APPROACHES A WET DEPRESSION, THE CONTRACTOR SHALL MOVE SELECT GRANULAR MATERIAL INTO THE LOW AREA, TO CONSTRUCT LEVELING PAD, FROM ACROSS THE "OUTSIDE FILL" AREAS WHICH ARE IN PLACE OVER THE FABRIC.
5. FABRIC AND SELECT GRANULAR MATERIAL SHALL BE PLACED TO ACCOMMODATE 3:1 SIDE SLOPES. COMMON BORROW EMBANKMENT SHALL BE CONSTRUCTED ON TEMPORARY 2:1 SIDE SLOPES.
6. LAY FABRIC FROM TOE OF FINAL SLOPE TO TOE OF FINAL SLOPE IN CONTINUOUS TRANSVERSE-TO-CENTERLINE STRIPS AND SEW STRIPS TOGETHER WITH SEAM FACING UP. (SEE SPECIAL PROVISIONS)
7. END DUMP BOTH OUTSIDE EDGE FILLS OF SELECT GRANULAR MATERIAL TO A MINIMUM 25 FEET DISTANCE AHEAD OF INSIDE FILL. KEEP SIZE AND LENGTHS OF BOTH OUTSIDE FILLS EQUAL. ALL TRAFFIC ON FILL DURING DUMPING OPERATION SHALL BE PARALLEL TO CENTERLINE OF SURVEY. (SEE DETAIL OF FABRIC AND FILL PLACEMENT)
8. CONSTRUCT INSIDE FILL SECTION.
9. CONSTRUCT SUBSEQUENT LIFTS OF COMMON BORROW ABOVE THE SELECT GRANULAR MATERIAL FOR EACH LANE FOLLOWING THE SAME OUTSIDE-FILL-FIRST PROCEDURE. (SEE DETAIL)
10. IF CONSTRUCTION OF FILL LAYERS IS NOT UNIFORM ALONG THE ALIGNMENT, RAMP DOWN SLOPES PARALLEL TO THE CENTERLINE NO STEEPER THAN 5 TO 1.
11. FOR PLACEMENT AND REMOVAL OF SURCHARGE, SEE SPECIAL PROVISIONS.



DETAIL SHOWING LEVELING PAD

TO BE USED IN FILLED DEPRESSIONS

PROJECT NO. 8.1430701

COLUMBUS COUNTY

DRAWN BY R.S. Eldridge CHECKED BY W.D. McFarling

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

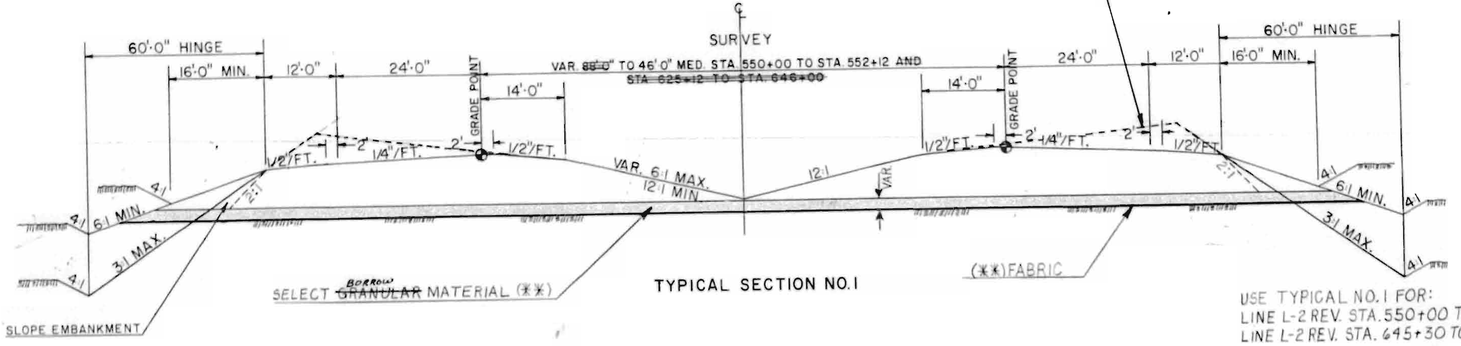
FABRIC & SURCHARGE DETAIL

JANUARY 1986

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
8.1430701	2	15
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

3-oct-96
Construction revision 75.21
Var. Limits at beg. Project put
Changed to 46'med 3 end. c.o.

NOTE: SEE PHOTOGRAMMETY X-SECTION'S FOR THE SURCHARGE MATERIAL LEFT IN PLACE

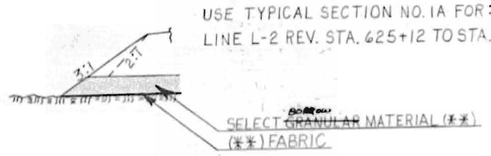


TYPICAL SECTION NO.1

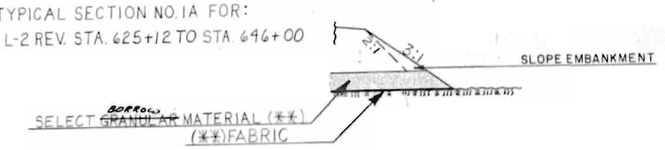
USE TYPICAL NO.1 FOR:
LINE L-2 REV. STA. 550+00 TO STA. 552+12
LINE L-2 REV. STA. 645+30 TO STA. 646+00 (LEFT LANE)

TYPICAL SECTION NO.1A

(LEFT LANE)
USE TYPICAL SECTION NO.1A FOR:
LINE L-2 REV. STA. 625+12 TO STA. 645+30

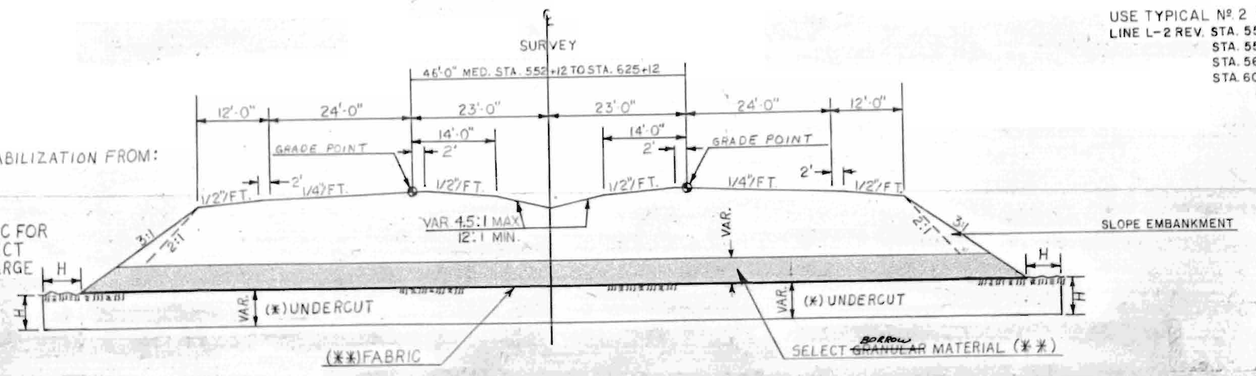


(RIGHT LANE)
USE TYPICAL SECTION NO.1A FOR:
LINE L-2 REV. STA. 625+12 TO STA. 696+00



(*)NOTE: USE UNDERCUT FROM:
STA. 555+00 TO STA. 566+00
STA. 599+00 TO STA. 603+00

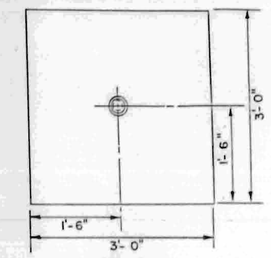
(**)NOTE: USE FABRIC FOR EMBANKMENT STABILIZATION FROM:
STA. 550+00 TO STA. ~~555+20~~
STA. ~~565+80~~ TO STA. ~~599+20~~
STA. ~~602+80~~ TO STA. ~~645+00~~
SEE SHEET 2-B FOR DETAIL OF FABRIC FOR EMBANKMENT STABILIZATION, SELECT ~~GRANULAR~~ BORROW MATERIAL, AND SURCHARGE PLACEMENT.



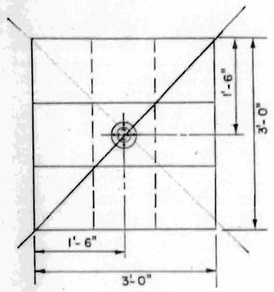
TYPICAL SECTION NO.2

USE TYPICAL Nº 2 FOR:
LINE L-2 REV. STA. 552+12 TO STA. 557+13.94
STA. 558+21.06 TO STA. 561+90.94
STA. 564+03.06 TO STA. 600+18.94
STA. 601+61.06 TO STA. 625+12

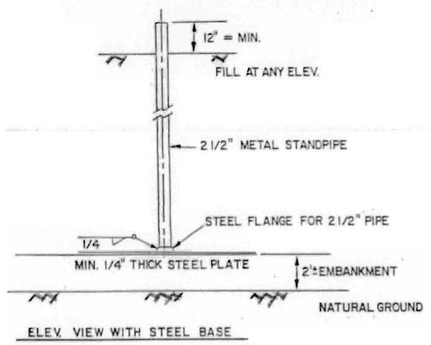
PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
8.1430701	2-B 6	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION



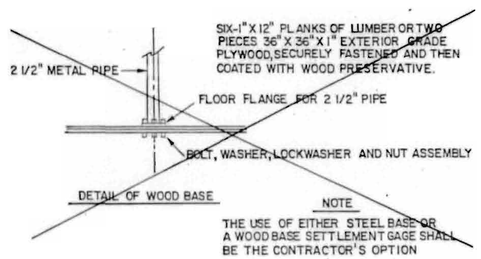
STEEL BASE



~~WOOD BASE~~



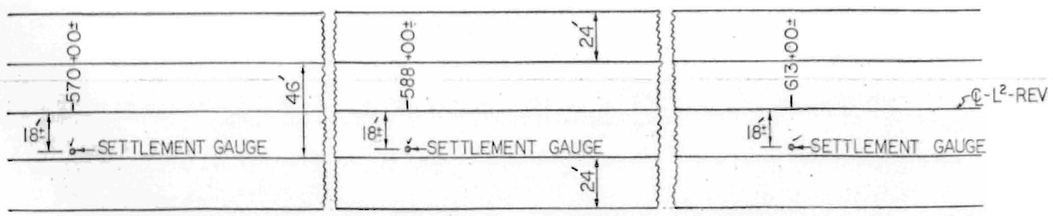
ELEV. VIEW WITH STEEL BASE



EMBANKMENT SETTLEMENT GAUGE

NOTES

THE INITIAL ELEVATION OF THE SETTLEMENT GAUGE PLATE (AT TOP OF PLATE) SHALL BE DETERMINED AT THE TIME OF INSTALLATION ALONG WITH THE EMBANKMENT ELEVATION AT THAT TIME. SETTLEMENT GAUGE ELEVATIONS ARE TO BE DETERMINED AND RECORDED WEEKLY FROM THEN ON BY THE RESIDENT ENGINEER. WHEN NEW SECTIONS OF PIPE ARE ADDED, ELEVATIONS SHALL BE RECORDED AT TOP OF EXISTING PIPE AND AT TOP OF NEW PIPE. THIS IS TO TAKE INTO ACCOUNT INTERIM SETTLEMENT, VARIABLE PIPE LENGTHS, AND THREAD LENGTHS IN COUPLINGS. RESULTS OF SETTLEMENT GAUGE READINGS SHALL BE FORWARDED TO D. L. SQUIRES, HEAD OF DESIGN SERVICES, THE SAME DAY THEY ARE MADE.



PLAN VIEW

PROJECT NO. 8.1430701

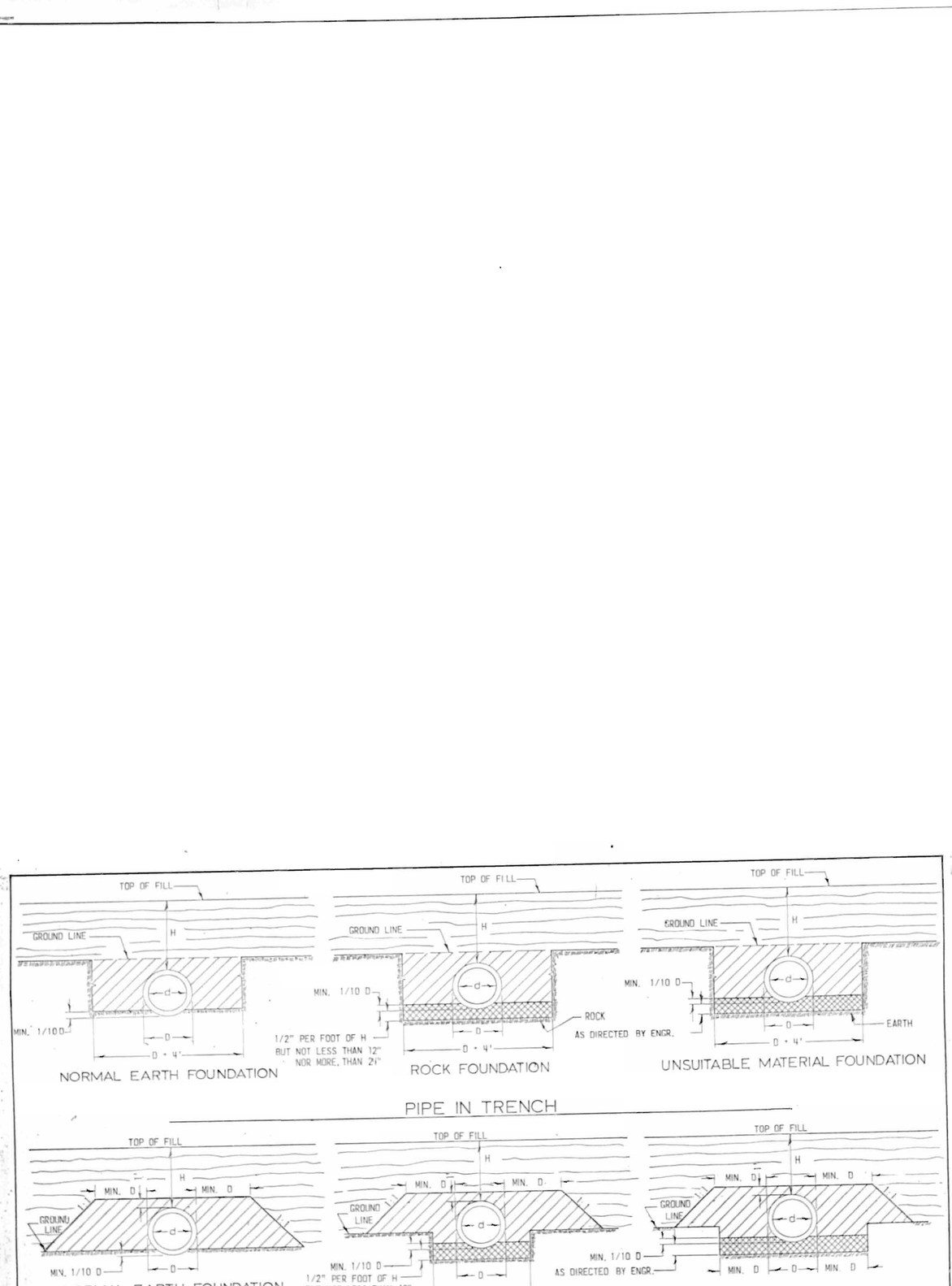
COLUMBUS COUNTY

STATION:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DETAIL FOR EMBANKMENT SETTLEMENT GAUGES

DRAWN BY J.J. BEARD
CHECKED BY W.O. McFARLING



PIPE IN TRENCH

PIPE ABOVE GROUND

GENERAL NOTES:

d = THE MAXIMUM HORIZONTAL INSIDE DIMENSION.

D = THE MAXIMUM HORIZONTAL OUTSIDE DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

▩ APPROVED SUITABLE LOCAL MATERIAL OR FOUNDATION CONDITIONING MATERIAL, AS DIRECTED BY THE ENGINEER.

▨ APPROVED BACKFILL OR SELECT BACKFILL MATERIAL. WHEN H IS GREATER THAN 30 FEET, SELECT BACKFILL MATERIAL OF THE APPROPRIATE CLASS, SHALL BE USED AS FOLLOWS:

SELECT BACKFILL	H
CLASS I	OVER 50 FEET
CLASS II	OVER 40 FEET THROUGH 50 FEET
CLASS III	OVER 30 FEET THROUGH 40 FEET

THE CLASS OF SELECT BACKFILL MATERIAL TO BE USED FOR AN INDIVIDUAL PIPE INSTALLATION WILL BE BASED ON THE MAXIMUM H WHICH OCCURS ALONG THE PIPE INSTALLATION.

SELECT BACKFILL MATERIAL WILL NOT BE REQUIRED AROUND THOSE PORTIONS OF AN INDIVIDUAL PIPE INSTALLATION LOCATED UNDER THAT PART OF THE FILL WHERE H IS 30 FEET OR LESS.

HEAVY EQUIPMENT SHALL NOT OPERATE OVER ANY PIPE CULVERT UNTIL THE PIPE CULVEPT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REVISIONS		
NO.	DATE	DESCRIPTION
A	10-14-76	Added 1' Cover and Material Under Pipe
		Changed to less than 12" and no more than 24"

DETAIL OF PIPE INSTALLATION
METHOD "A"

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RALEIGH, N. C.

STD. NO.	REV.
	A

DESCRIPTION	NO.	SHEET NO.	PROJ. REFERENCE NO.
TOTAL SHEETS	F A PROJ. NO.		STATE PROJ. NO.
		7	8.143.01

R/W SHEET Nº 8

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
8.1430701	4 8	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

INTERNATIONAL PAPER COMPANY

INTERNATIONAL PAPER CO.

-L²- REV.
P.I. = 542+07.64
= 26°45'13" LT.
D = 1°30'
Θ_S = 1°30'
L_S = 200.00'
L_C = 1008.4529'
T = 583.5741'
R = 3819.7187'
C.P.C. = 133.3381'
V = 66.6710'

-L²- REV.
N 89° 52' 35" E

STA. 550+00 BEGIN STATE PROJ. 8.1430701 -CONST.
STA. 550+00 BEGIN F.A. PROJ. MAF-4-1(19)

MARSH LINE BEGIN WETLAND

C.S. 549+82.76 -L²- REV.
12" RCP S 55°-47'58" E

S.T. 551+82.76 L² Rev. =
P.O.T. 551+98.69 RT. LN. (23' RT.)

PROPOSED R/W N 89° 52' 35" E

CLASS II RIP RAP (SEE BRIDGE PLANS)

FUTURE FENCE

FRIAR SWAMP

EXIST. R/W

100' R/W ASSUMED

BM R-113 ELEV. 52.47
BRASS DISC IN CONCRETE HEADWALL OF BRIDGE
20' LT. STA. 562+65 PROJ. 8.801570

BM 8 ELEV. 45.42
RR SPIKE IN BASE OF 15" DUM
68' LT. L-2- MED. 9/8 LINE STA. 574+50

SKETCH SHOWING PAVEMENT - BRIDGE RELATIONSHIP

-0.59375%
+0.40%
-0.2618%
0.000% ℄ ELEV. 52.00
-0.25%
+0.25%
FABRIC ELEV. 46.85
FABRIC ELEV. 47.05
CLASS II RIPRAP TO EL. 48.51
P.I. STA. 554+00 ELEV. 52.00 400 V.C.
HIGH WATER ELEV. 47.9± (1960)

P.I. MED. DITCH STA. 550+00 EL. 51.32
P.I. MED. DITCH STA. 551+00 EL. 51.92
P.I. MED DITCH STA. 556+00 EL. 49.50
P.I. MED DITCH STA. 560+00 EL. 49.50
P.I. MED DITCH STA. 567+00 EL. 49.50
P.I. MED DITCH STA. 570+00 EL. 50.25
P.I. MED DITCH STA. 573+00 EL. 49.50
P.I. MED DITCH STA. 576+00 EL. 50.25
P.I. MED. DITCH STA. 579+00 EL. 49.50

BEGIN CONSTRUCTION STA. 550+00
END SPEC. DITCH LT & RT. STA. 551+00 EL. 44.50
BEGIN BRIDGE STA. 557+13.94
END BRIDGE STA. 558+21.06
BEGIN BRIDGE STA. 561+90.94
END BRIDGE STA. 564+03.16
UNDERCUT

PLAN — DRAWN BY
PROFILE — DRAWN BY

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
8.1430701	5-9	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

R/W SHEET Nº. 9

DRAINAGE REV. STA 584+00
ADDED A 24"CM CROSS DRAIN PIPE
4-17-86 JWD.

PLAN
SURVEYED
PLOTTED
ALIGNMENT CHECKED
R/W PINS SET
NOTE BOOK
NO.

PROFILE
SURVEYED
PLOTTED
GRADES CHECKED
NOTE BOOK
NO.
STRUCTURE NOTATIONS GIVEN

INTERNATIONAL PAPER COMPANY
(150)

TRACT #3 (51.87 ACRES)

INTERNATIONAL PAPER COMPANY
(150)

WETLANDS
FRIAR SWAMP
FUTURE FENCE
PROPOSED R/W
N 39° 52' 35" E
N 89° 52' 35" E
℄ MED.
℄ REV.
℄ O/S
150'-24"CM
200'
CLASS "A" STONE
US 74 BYP
20' BST
SETTLEMENT GUAGE
CLASS "B" STONE & FILTER
CLASS II RIP RAP (SEE BRIDGE PLANS)
-Y1- 590
-Y2- 600
-Y3- 610
-L2- 580
-L2- 590
-L2- 600
-L2- 610

BM 9 ELEV. 46.08
RR SPIKE IN BASE OF 12" GUM
69' LT. L-2- MED 9A LINE STA 583+08

BM 10 ELEV. 45.94
RR SPIKE IN BASE OF 8" GUM
66' LT. MED. 9A LINE STA 592+69

BM 11 ELEV. 45.80
RR SPIKE IN BASE OF 8" GUM
67' LT. L-2- MED 9A LINE STA. 602+27

SKETCH SHOWING PAVEMENT - BRIDGE RELATIONSHIP

0.000% @ ELEV 52.00
+0.25% -0.25% +0.25% -0.25% +0.25% -0.25% +0.22 4/9% -0.312 5/9% +0.25% -0.25%
FINISH GRADE 47.0± R
1960 H.W. EL 47.5±
CLASS II RIPRAP TO EL. 48.5

PI MED DITCH STA. 582+00 EL 50.25
PI MED DITCH STA. 585+00 EL 49.50
PI MED DITCH STA. 588+00 EL 50.25
PI MED DITCH STA. 591+00 EL 49.50
PI MED DITCH STA. 594+00 EL 50.25
PI MED DITCH STA. 597+00 EL 49.50
PI MED DITCH STA. 604+00 EL 49.10
PI MED. DITCH STA. 607+00 EL 50.25
PI MED. DITCH STA. 610+00 EL 49.50

BEGIN BRIDGE STA. 600+18.94
END MED GRADE @ BR. ELEV 51.25
Beg. MED GRADE @ BR. EL 50.25
END BRIDGE STA. 601+61.06
UNDERCUT
END UNDERCUT

60
50
40
580 1 2 3 4 5 6 7 8 9 590 1 2 3 4 5 6 7 8 9 600 1 2 3 4 5 6 7 8 9 610

R/W SHEET No. 10

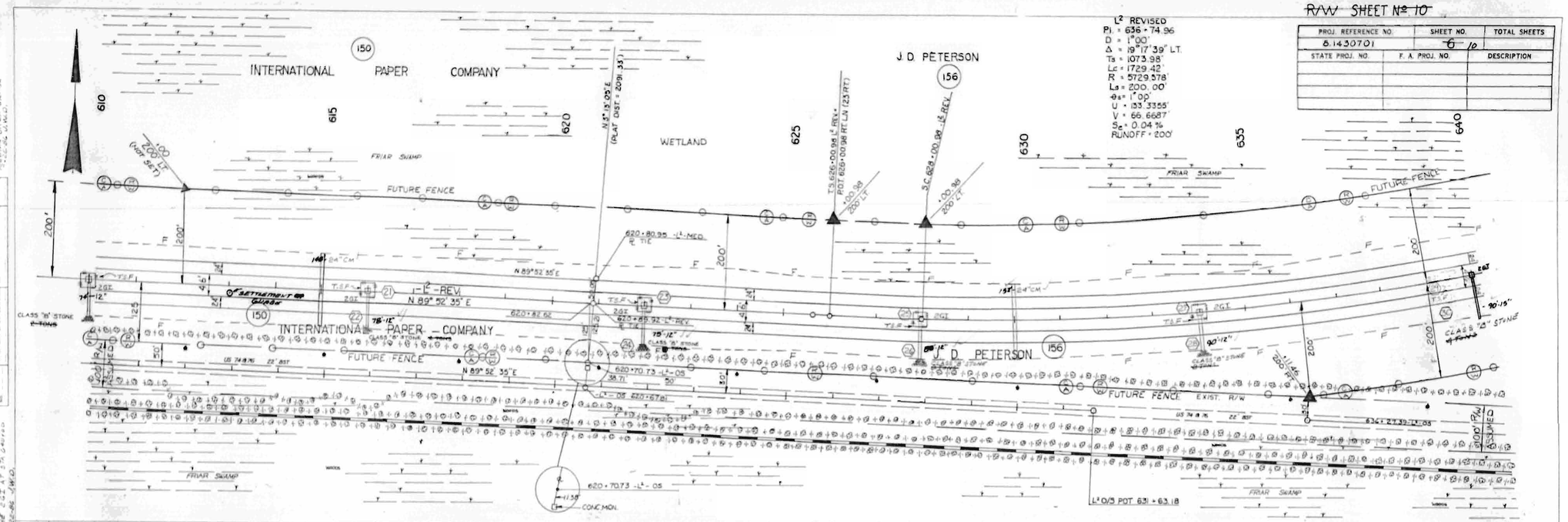
PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
8.1430701	6 10	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

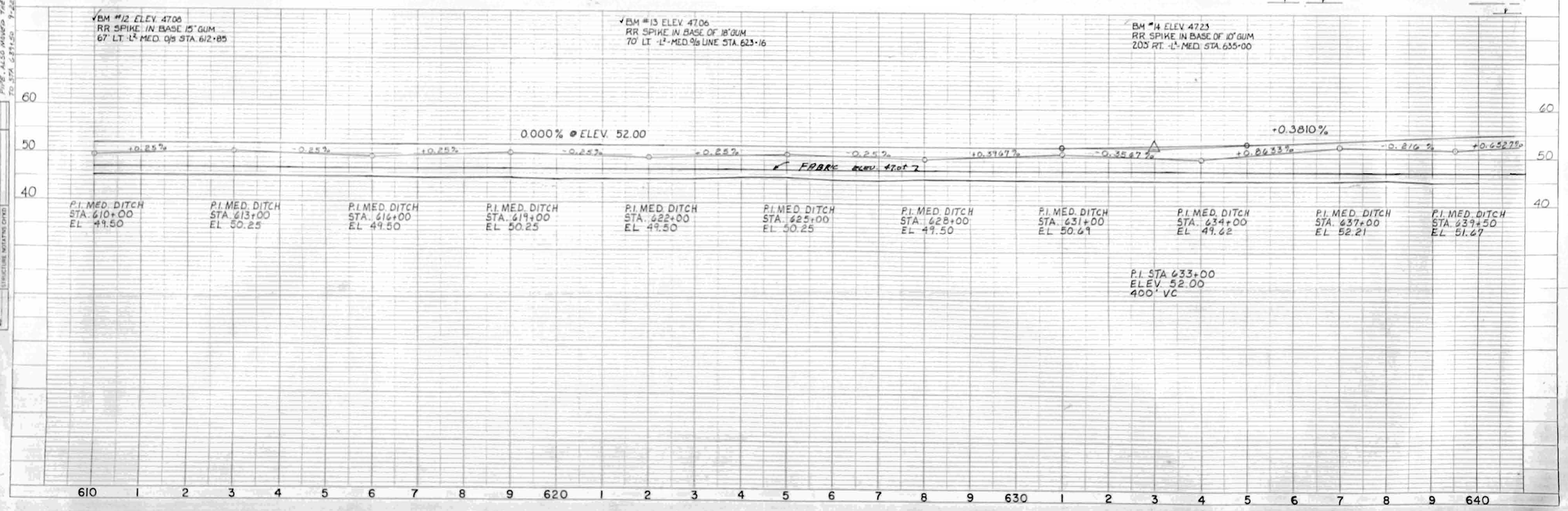
L² REVISED
PI = 636 + 74.96
D = 1°00'
Δ = 19°17'39" LT.
Ts = 1073.98'
Lc = 1729.42'
R = 5729.578'
Ls = 200.00'
θs = 1°00'
L = 1933.3355'
V = 66.6687'
Sc = 0.04 %
RUNOFF = 200'

DRAINAGE REV AT STA 615+00 AND STA 630+00 ADDED A 24" CM CROSS DRAIN PIPE ALSO MOVED THE L² TO STA 634+50 9-22-86 WHD

PLAN
SURVEYED
DRAWN
CHECKED
NOTE BOOK
NO.
STRUCTURE ROTATING CHKD
DATE
BY

PROFILE
SURVEYED
DRAWN
CHECKED
NOTE BOOK
NO.
STRUCTURE ROTATING CHKD
DATE
BY





CONST. REV. FROM STA. 645+00 TO STA. 656+45 TO BE CONSTRUCTED AT 4% MAXIMUM GRADE. ALL OTHER CONSTRUCTION TO BE AS SHOWN ON THE ORIGINAL PLANS.

PLAN — SURVEYED: PLOTTED: NOTE BOOK: — DATE: BY:

PROFILE — SURVEYED: PLOTTED: CHECKED: — DATE: BY:

PI = 636 + 74.96
Δ = 19° 17' 39" LT
D = 1° 00'
Tg = 1073.88
Lc = 1729.42
R = 5729.578
Ls = 200.00'
es = 1.00
U = 133.3333'
V = 66.6587'
Se = 0.04% REV.

TEMP. DRAIN. EASE.

WASTE AREA NO 2

WASTE AREA NO 3

WASTE AREA NO 1

FRIAR SWAMP

FUTURE FENCE

FUTURE GRADING

L2 - REV.

L2 - MED

N 70° 34' 56" E

STEARNS 40' L² REV.

CL STORAGE TANK

CL DITCH

CL DRIVE

CL

200' LT

200' RT

PROPOSED R/W

FLORENCE BROWN (157)

J. D. PETERSON (156)

J. D. PETERSON (156)

J. D. PETERSON (156)

GILES BYRD (158)

R/W 11

ACCESS TO PARCELS 157 AND 158 (NOT SHOWN) IS BY MEANS OF 8' SOIL ROAD, WHICH IS TO BE SEVERED, THEREFORE CLAIMS ARE TO BE NEGOTIATED.

LIGHT WOOD STUMP

S 79° 44' 02" W 695.81'

S 33° 33' 24" W 967.72'

N 32° 59' 34" E 1132.36'

656+45 2.00' RT

658+80 4.20' RT.

658+15 4.90' RT.

TEMPORARY DRAINAGE EASEMENT

MARSH LINE END WETLAND

STA. 646+00 - L² REV - END
STATE PROJECT 8.1430701 - CONST -
STA. 646+00 - L² REV - BEGIN F.A.
PROJECT F-4-1(20)

2 WITNESS TREES

PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
B 1430701	7	11
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

BM # 15 ELEV. 53.82
RR SPIKE IN BASE 24" OAK
369' RT. L2 MED. STA. 647+82

~~BM # 16 ELEV. 59.90~~
~~RR SPIKE IN BASE 20" PINE~~
~~220' LT. L2 MED. STA. 653+00~~

BM # 17 ELEV. 58.02
RR SPIKE IN BASE 8" PINE
247' LT. L2 MED. STA. 369+00

PI STA 654+00
ELEV. 60.00
400' V.C.

+0.381%

+0.102277%

GRADE ELEV. 61.64

FARM ELEV. 47.0'

645+99.2

PI MED. DITCH STA. 641+00 ELEV. 52.22

PI MED. DITCH STA. 643+50 ELEV. 50.91

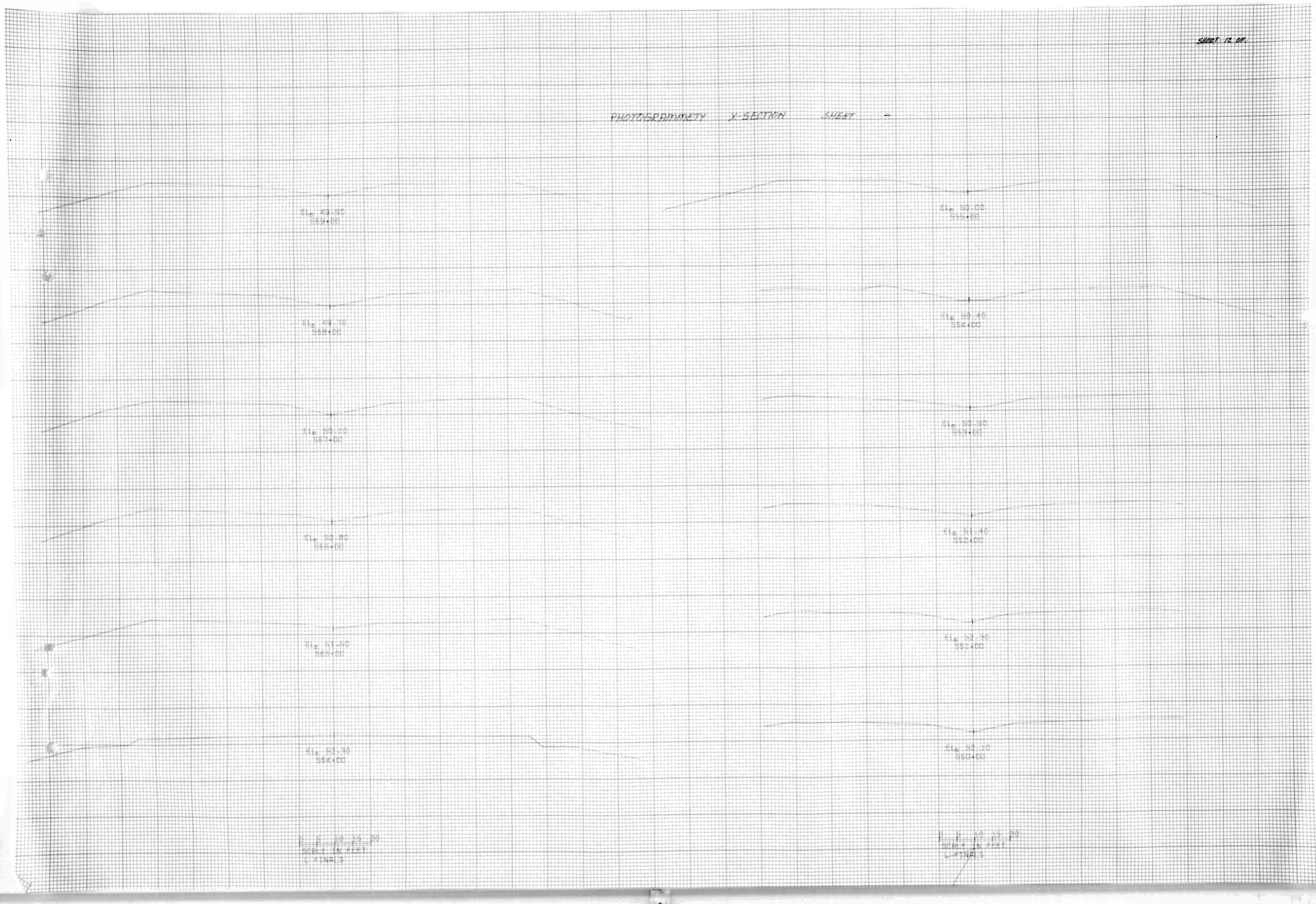
BEGIN SPECIAL DITCH LT & RT STA. 645+00 ELEV. 46.8

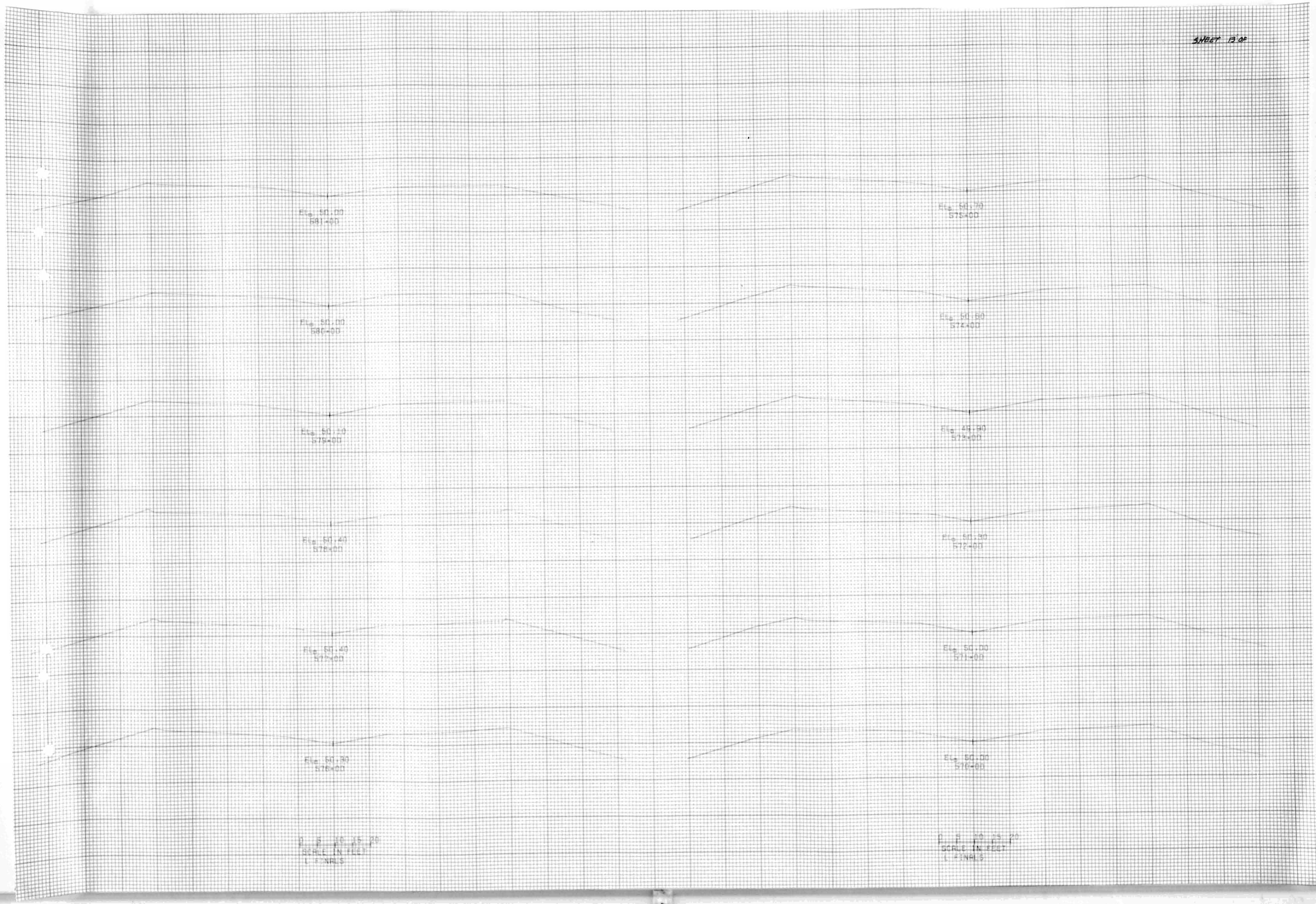
END GRADE STA. 645+00 GRD ELEV. 56.95

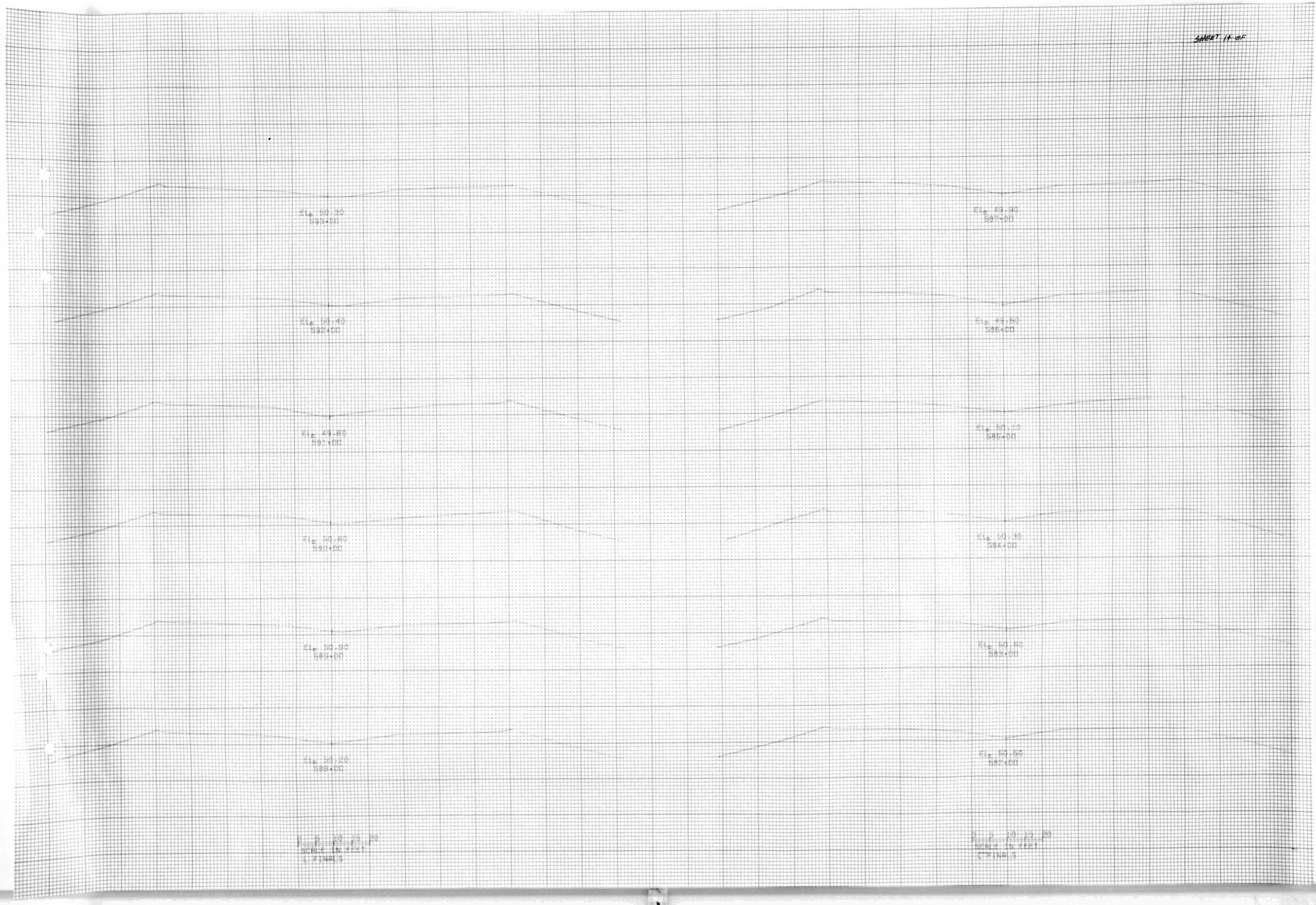
60
50
40

640 1 2 3 4 5 6 7 8 9 650 1 2 3 4 5 6 7 8 9 660 1 2 3 4 5 6 7 8 9 670

PHOTOGRAMMETY X-SECTION SHEET –




El@ 50.00
581+00
El@ 50.00
580+00
El@ 50.10
579+00
El@ 50.40
578+00
El@ 50.40
577+00
El@ 50.30
576+00
0 5 10 15 20
SCALE IN FEET
(1"=5ft.)
El@ 50.70
575+00
El@ 50.80
574+00
El@ 49.90
573+00
El@ 50.00
572+00
El@ 50.00
571+00
El@ 50.00
570+00
0 5 10 15 20
SCALE IN FEET
(1"=5ft.)


EL. 50.30
594+00
EL. 49.90
587+00
EL. 50.40
592+00
EL. 49.60
586+00
EL. 49.60
591+00
EL. 50.10
585+00
EL. 50.60
590+00
EL. 50.30
584+00
EL. 50.90
589+00
EL. 50.60
583+00
EL. 50.50
588+00
EL. 50.60
582+00
SCALE IN FEET
0 5 10 20
SCALE IN FEET
0 5 10 20

El. 49.90
610+00

El. 50.10
609+00

El. 50.50
608+00

El. 50.50
607+00

El. 50.40
606+00

El. 50.50
605+00

El. 50.50
604+00

0 5 10 15 20
SCALE IN FEET
1" = 5'-0"

El. 50.10
599+00

El. 50.50
598+00

El. 49.90
597+00

El. 50.40
596+00

El. 50.50
595+00

El. 50.50
594+00

0 5 10 15 20
SCALE IN FEET
1" = 5'-0"

SHEET NO OF

RL 49.70
B22+00

RL 50.20
B21+00

RL 50.50
B20+00

RL 50.50
B19+00

RL 50.50
B18+00

RL 50.50
B17+00

RL 50.25 PM
SCALE IN FEET
(FINAL)

RL 49.90
B16+00

RL 50.50
B15+00

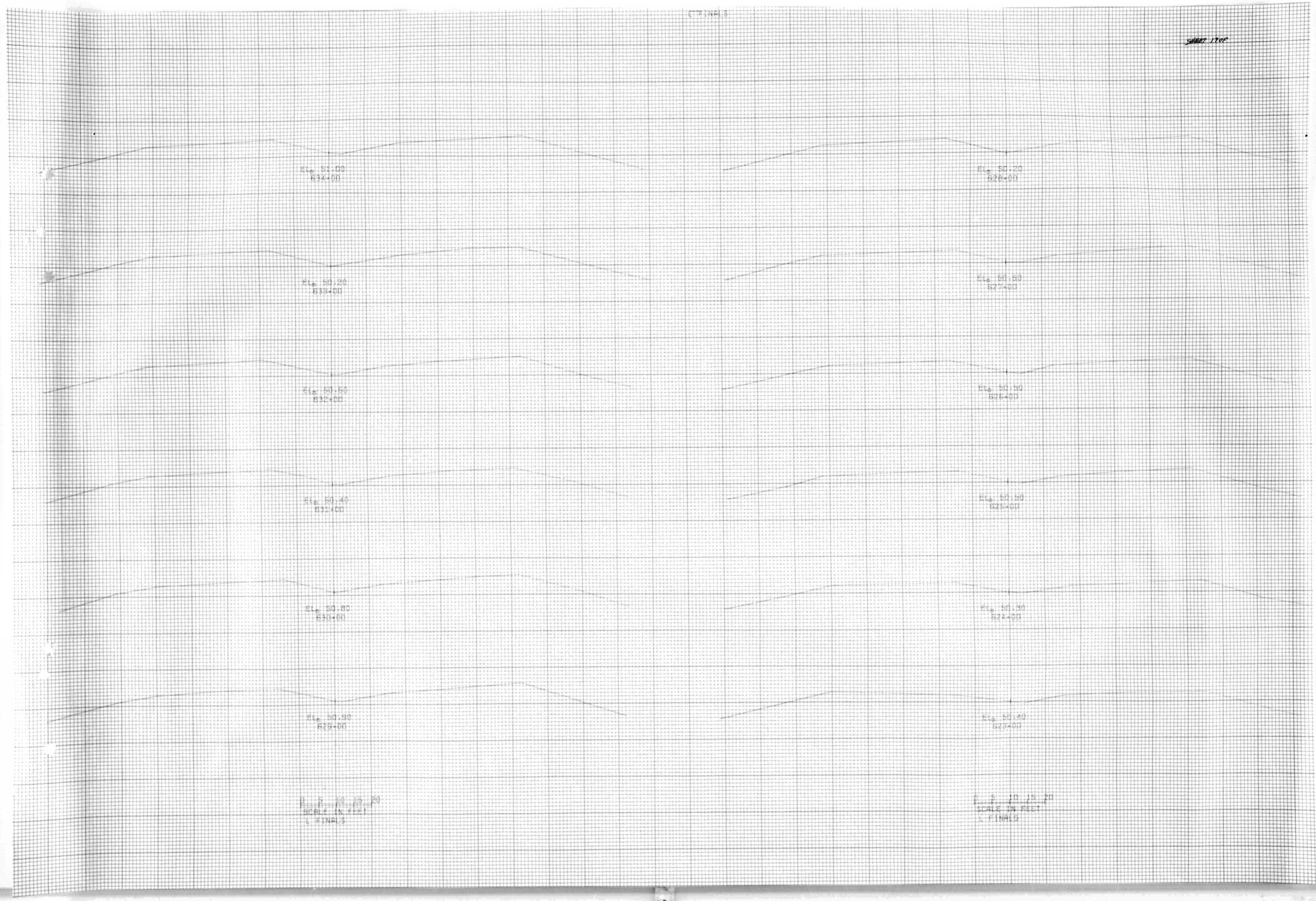
RL 50.30
B14+00

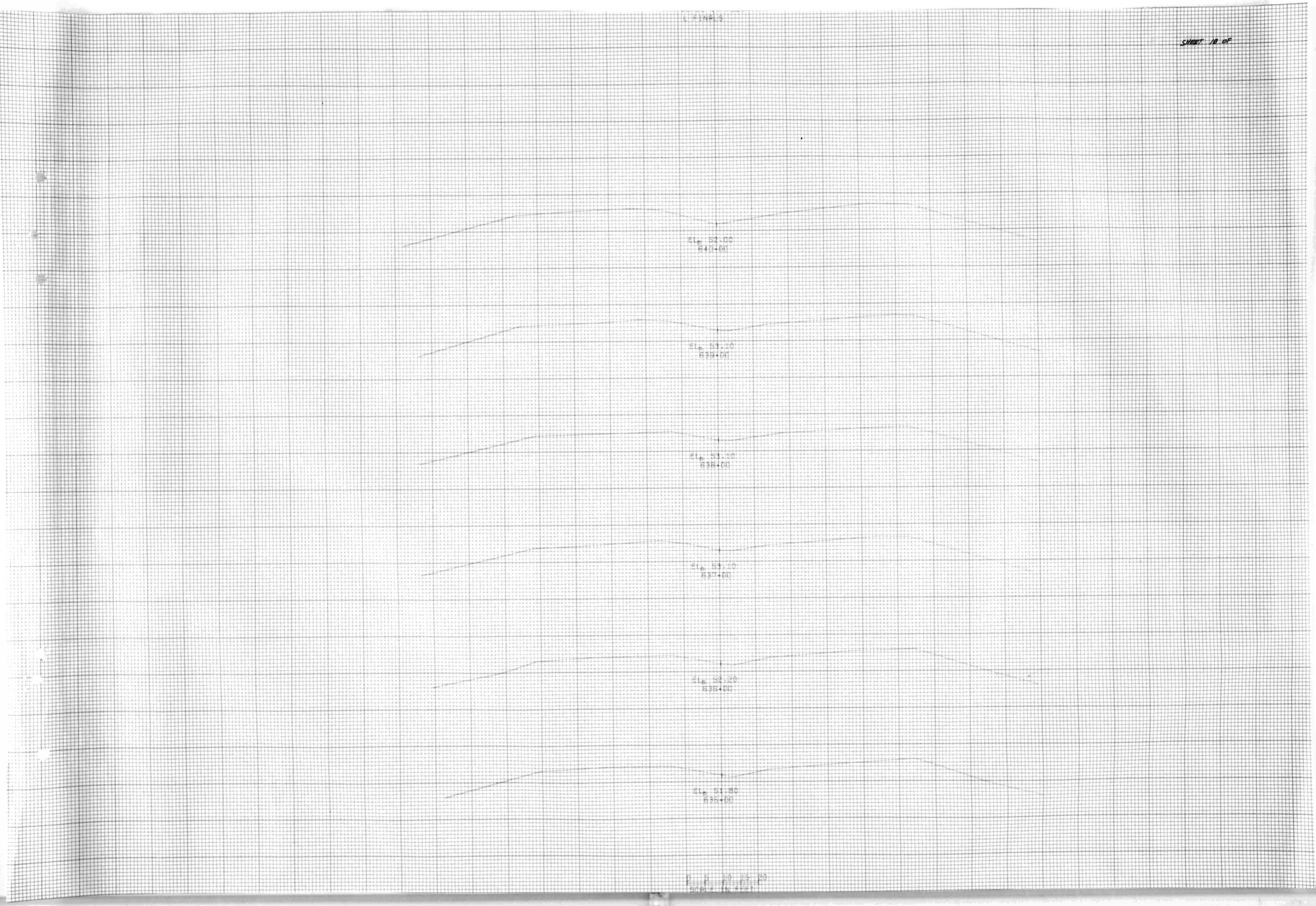
RL 50.50
B13+00

RL 50.50
B12+00

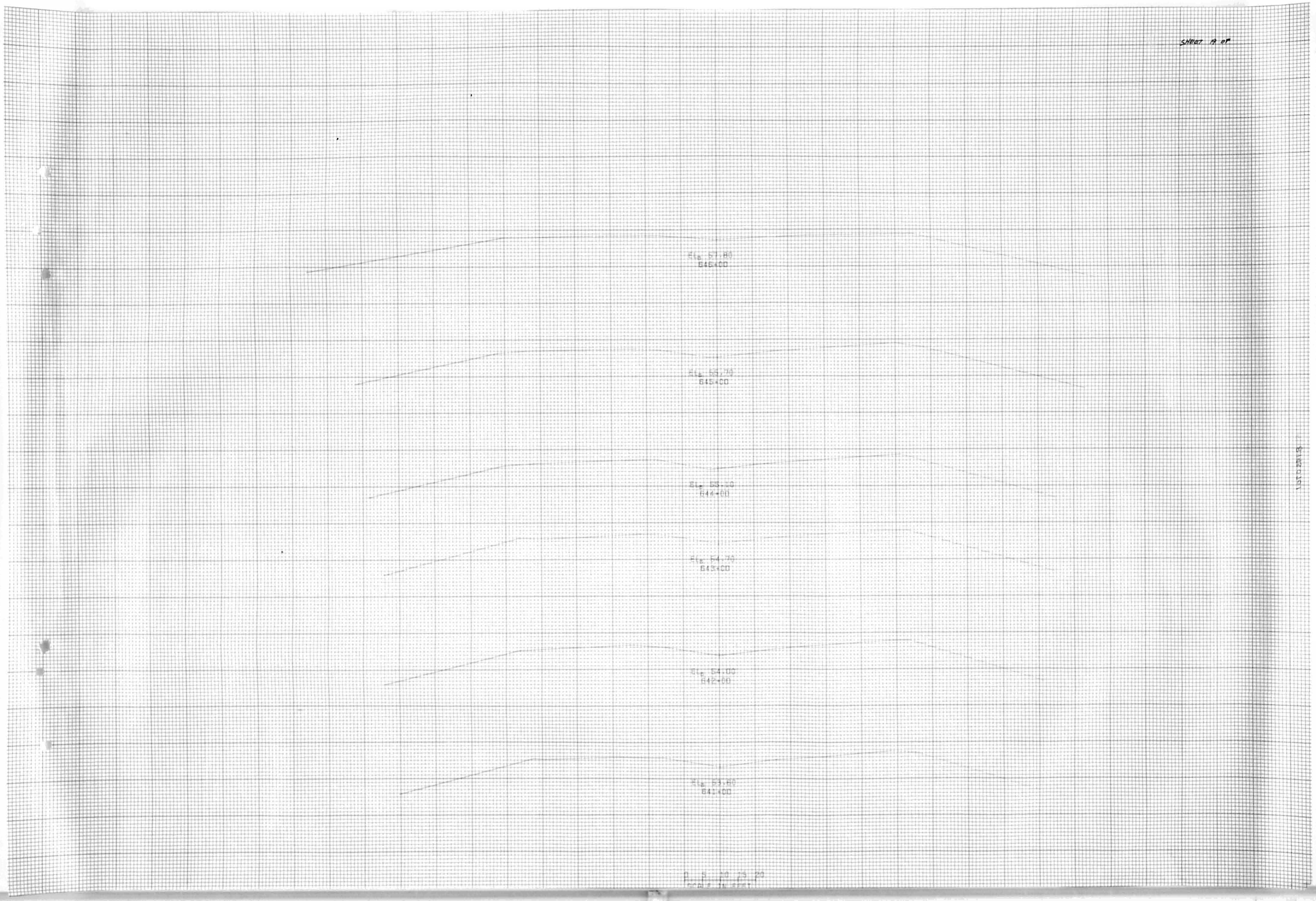
RL 50.30
B11+00

RL 50.25 PM
SCALE IN FEET
(FINAL)


FLG. 51.00
B34+00
FLG. 50.20
B30+00
FLG. 50.20
B33+00
FLG. 50.50
B27+00
FLG. 50.50
B32+00
FLG. 50.50
B26+00
FLG. 50.40
B31+00
FLG. 50.50
B25+00
FLG. 50.80
B30+00
FLG. 50.50
B24+00
FLG. 50.90
B29+00
FLG. 50.40
B23+00
0 5 10 15 20
SCALE: IN = FEET
C. FINALS
0 5 10 15 20
SCALE: IN FEET
C. FINALS


CL PANEL 3
EL. 52.00
R414.00'
EL. 52.10
R394.00'
EL. 52.10
R384.00'
EL. 52.10
R374.00'
EL. 52.20
R364.00'
EL. 51.90
R354.00'

SHEET 19 OF


FIG. 57.40
645×00
FIG. 57.30
645×00
FIG. 55.40
644×00
FIG. 54.30
643×00
FIG. 54.00
642×00
FIG. 53.40
642×00

SHEET 2 OF

STATE	STATE PROJECT REFERENCE NO	SHEET NO	TOTAL SHEETS
N.C.	8.1430701		

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
8.1430701	MAF-4-1(19)	PE & CONST.
6.431001		R/W & UTILITIES
~~6.804459~~		ORIG. P.E.

SEE SHEET 1-A FOR INDEX OF SHEETS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

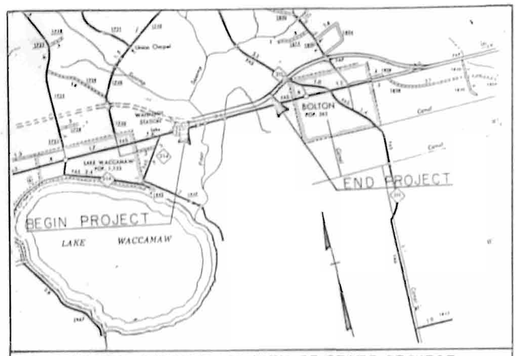
COLUMBUS COUNTY

LOCATION: U.S. 74 FROM WEST OF FRIAR SWAMP TO WEST OF N.C. 211 NEAR BOLTON

TYPE OF WORK: GRADING, DRAINAGE, AND STRUCTURES

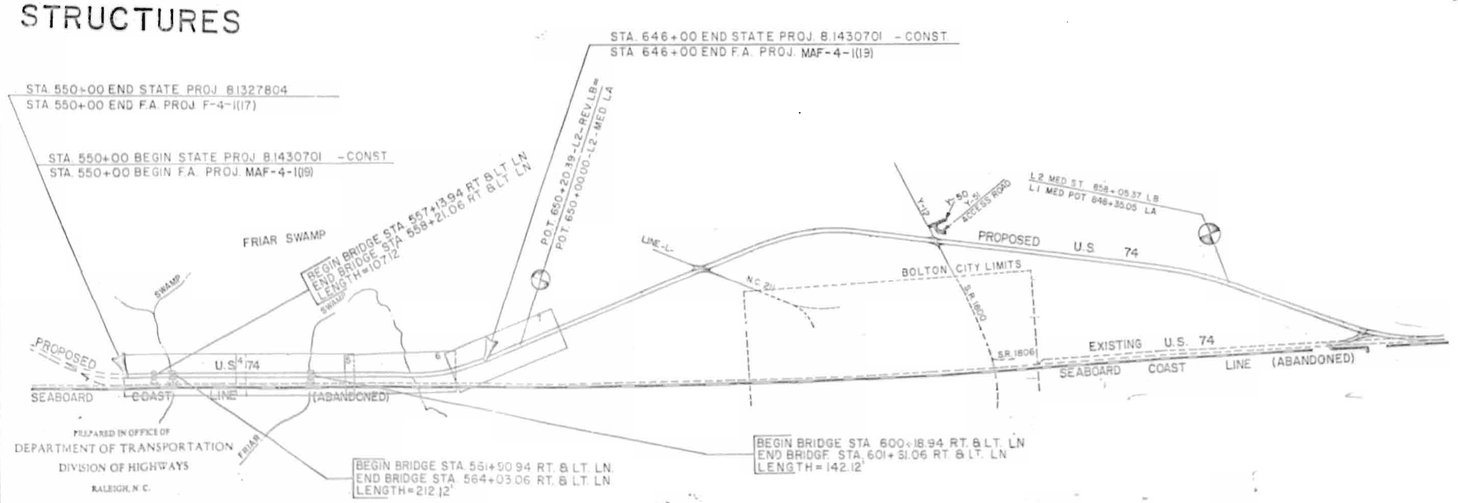
R-61 G

PROJECT: 8.1430701



SKETCH MAP SHOWING VICINITY OF STATE PROJECT NO. 8.1430701

STRUCTURES



PREPARED IN OFFICE OF
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N. C.

PLANS PREPARED BY: STRUCTURE DESIGN UNIT
PROJECT ENGINEER — G. M. WHITE
PROJECT DESIGN ENGINEER — K. W. SMITH

THIS IS A FULL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

LETTING DATE: JULY 15, 1986

1984 STANDARD SPECIFICATIONS

CONVENTIONAL SYMBOLS

- County Line
- City or Town Line
- Exist. Right of Way Line & Marker
- Right of Way Marker
- Survey Line
- Property Line
- Exist. Fence
- Proposed Road
- Existing Road
- Railroad
- Control of Access Line
- Slope Stake Line
- Bridge
- Culvert
- Woods
- Telephone or Telegraph Pole (EXISTING) (PROPOSED)
- Tower Pole and Line
- Power Pole (EXISTING) (PROPOSED)
- Easement Line
- Temporary Silt Fence
- Guard Rail
- Sanitary Sewer Line (SS)
- Water Line
- Gas Line (GAS)
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Equality
- Prop. Right of Way Marker

GRAPHIC SCALES

PLANS 0 100 200 300

PROFILE (HORIZONTAL) 0 100 200 300

PROFILE (VERTICAL) 0 10 20 30

DESIGN DATA

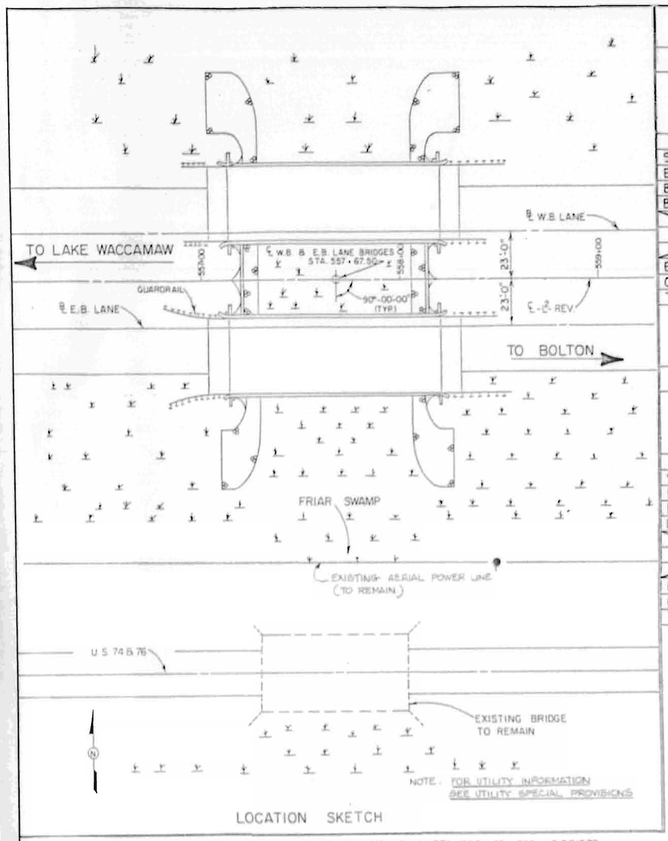
ADT 1980	= 5300
ADT 2000	= 10,700
DHV	= 12% ADT
D	= 60% ADT
T	= 13% ADT
V	= 70 MPH

NORTH CAROLINA PROFESSIONAL SEAL 4169 ENGINEER WILLIAM G. MARLEY, JR.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
APPROVED: William G. Marley, Jr., P.E.
MANAGER - HIGHWAY DESIGN BRANCH
APPROVED: W. S. Campbell, P.E.
CHIEF ENGINEER - OPERATIONS

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED: Roy C. Shelton 6-5-86
FOR DIVISION ADMINISTRATOR DATE

LENGTH ROADWAY F.A. PROJECT MAF-4-1(19)	= 1.731 MI.
LENGTH STRUCTURE F.A. PROJECT MAF-4-1(19)	= .087 MI.
TOTAL LENGTH STATE PROJECT 8.1430701	= 1.818 MI.



LOCATION SKETCH

B.M. R-113 - BRASS DISC IN CONCRETE HEADWALL OF BRIDGE 20' LT. -L- STA. 562+65 PROJ. 6.801570 EL. 52.47' DATUM M.S.L.

TOTAL BILL OF MATERIAL - WEST BOUND LANE

	CLASS "A" CONCRETE	REINFORCING STEEL	12" Φ PRESTRESSED CONCRETE PILES		CONCRETE BARRIER RAIL	BRIDGE APPROACH SLAB STA. 557+67.50 W. B. LANE	ELASTOMERIC BEARINGS	PLAIN RIP-RAP CLASS II (2'-0" THICK)	3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS		PREFORMED COMPRESSION JOINT SEAL
	CU. YDS.	LBS.	NO.	LIN. FT.	LIN. FT.	LUMP SUM	LUMP SUM	TONS	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE					209.~~75~~ 9		L. S.		39	1360.13	L. S.
END BENT #1	14.4	3188	8	~~240~~ 320.0		L. S.		~~235~~ 226.88			
BENT #1	15.1	3044	10	~~300~~ 400.0							
BENT #2	15.1	2985	10	~~300~~ 400.0							
END BENT #2	14.4	3188	8	~~240~~ 320.0		L. S.		~~235~~ 226.88			
CURVED END BLOCKS	5.3	857									
TOTAL	64.3	13,262	36	~~1,080~~ 1440.0	209.~~75~~ 9	LUMP SUM	LUMP SUM	~~470~~ 451.73	39	1360.13	LUMP SUM

TOTAL BILL OF MATERIAL - EAST BOUND LANE

	CLASS "A" CONCRETE	REINFORCING STEEL	12" Φ PRESTRESSED CONCRETE PILES		CONCRETE BARRIER RAIL	BRIDGE APPROACH SLAB STA. 557+67.50 E. B. LANE	ELASTOMERIC BEARINGS	PLAIN RIP-RAP CLASS II (2'-0" THICK)	3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS		PREFORMED COMPRESSION JOINT SEAL
	CU. YDS.	LBS.	NO.	LIN. FT.	LIN. FT.	LUMP SUM	LUMP SUM	TONS	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE					209.~~75~~ 8		L. S.		39	1360.13	L. S.
END BENT #1	14.4	3188	8	~~240~~ 320.0		L. S.		~~215~~ 221.90			
BENT #1	15.1	3044	10	~~300~~ 400.0							
BENT #2	15.1	2985	10	~~300~~ 400.0							
END BENT #2	14.4	3188	8	~~240~~ 320.0		L. S.		~~215~~ 186.96			
CURVED END BLOCKS	5.3	857									
TOTAL	64.3	13,262	36	~~1,080~~ 1440	209.~~75~~ 8	LUMP SUM	LUMP SUM	~~430~~ 408.86	39	1360.13	LUMP SUM

I HEREBY CERTIFY THAT THESE STRUCTURE WAS BUILT ACCORDING TO PLANS EXCEPT AS NOTED HERE IN

RESIDENT ENGINEER

PROJECT NO. 8.1430701

COLUMBUS COUNTY

STATION: 557+67.50 -L2 REV.

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING OF
BRIDGES OVER FRIAR
SWAMP ON U.S. 74 - 76
BETWEEN LAKE WACCAMAW & BOLTON

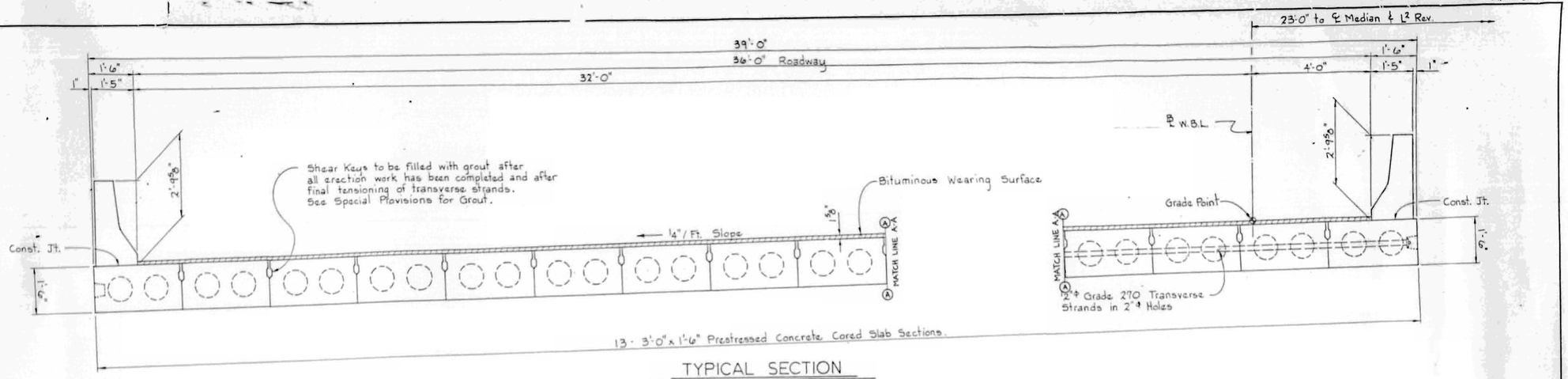
OCT. 1981

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

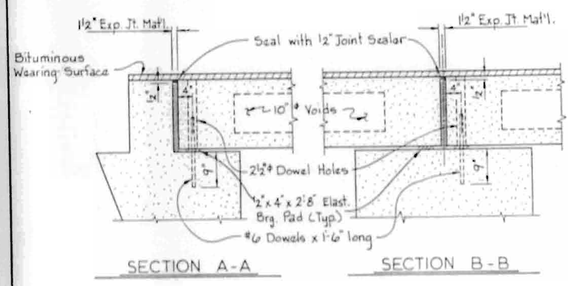
DRAWN BY S. D. JOYNER DATE 10/13/81
CHECKED BY R. J. Moore DATE 10-14-81

3 & 4

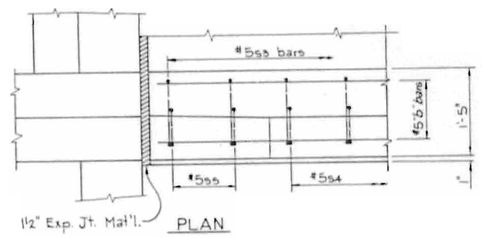
KEUFFEL & ESSER CO. MADE IN U.S.A.



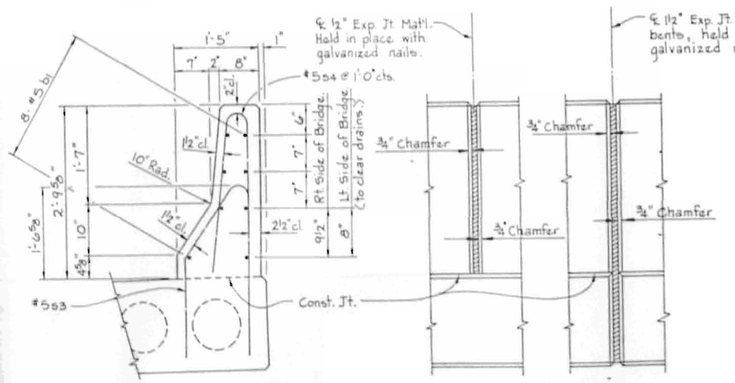
TYPICAL SECTION



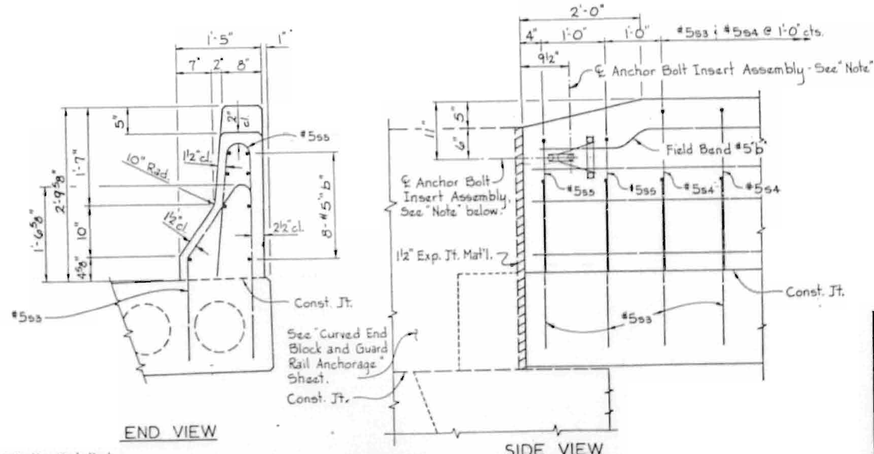
SECTION A-A SECTION B-B



1½" Exp. Jt. Mat'l. PLAN



SECTION THRU RAIL ELEVATION @ EXP. JTS.



END VIEW SIDE VIEW

BARRIER RAIL DETAILS

See Special Provisions for Concrete Barrier Rail.

Note: The Contractor's attention is called to the fact that the ½" thick joint material between the ends of the cored slabs at bents and between the backwall and the ends of the cored slabs is ½" nominal and can be expected to vary. The Contractor may use more than one layer of expansion joint material to provide the thickness req'd. with a minimum layer thickness of ¼".

BARRIER RAIL ~ END OF RAIL DETAILS

Note: See "Curved End Block and Guard Rail Anchorage" Sheet, For Anchor Bolt Insert Assembly.

DRAWN BY: Reed Edward Kubeny DATE: 10-13-81
CHECKED BY: R. J. Moore DATE: 10-15-81

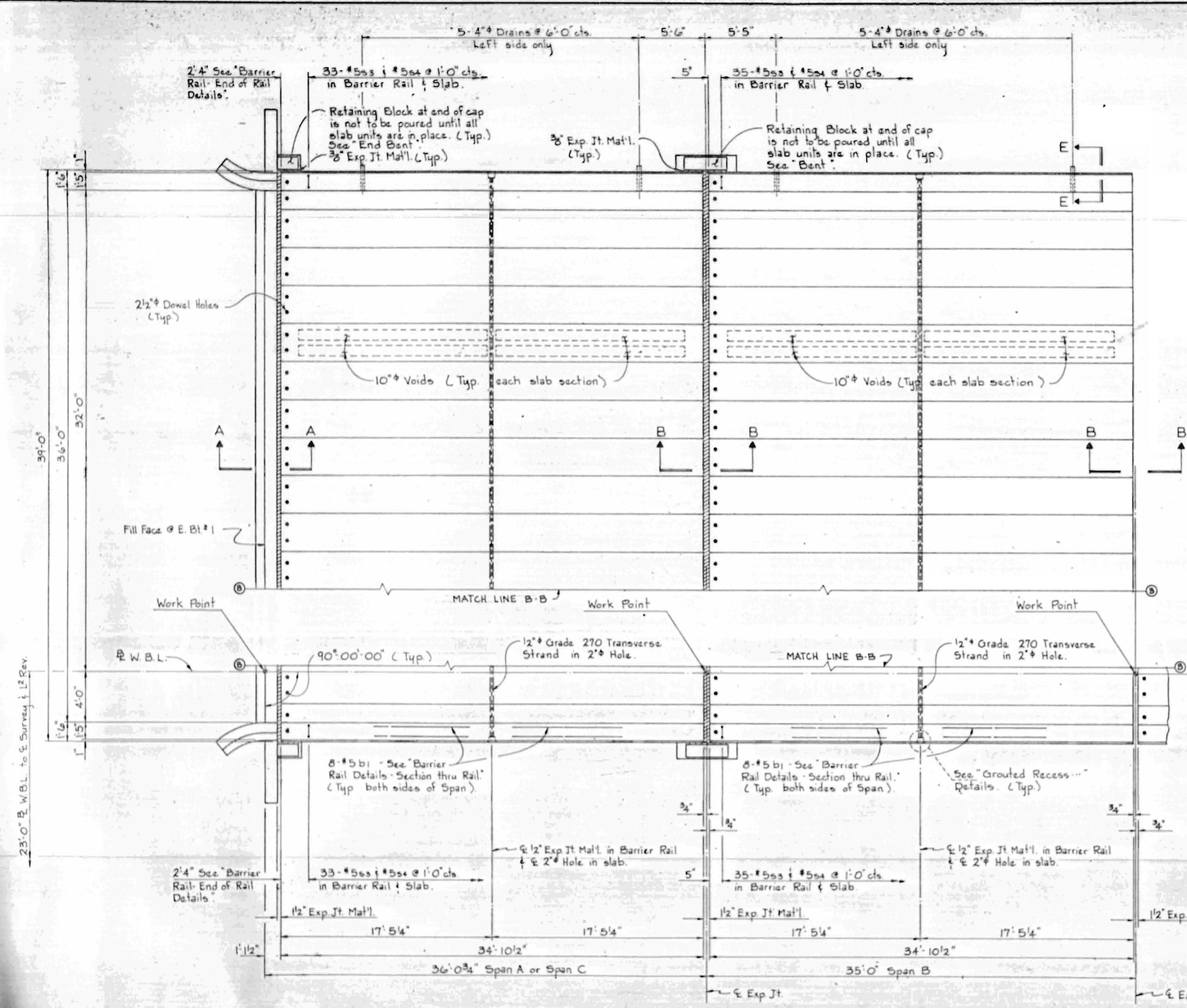
PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 557+67.50 L2 Rev. W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTIONS

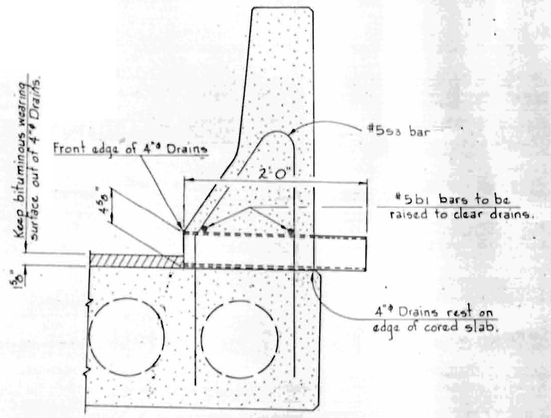
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	23
1			3			TOTAL SHEETS
2			4			34



PLAN OF SPAN

PLAN OF SPAN



SECTION E-E

Showing placement of 2'-0" long 4"ϕ Drains thru Barrier Rail.

(15 - 4"ϕ Drains required.)

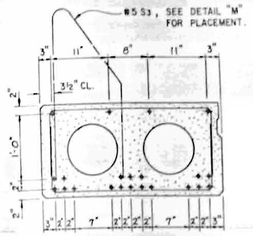
Drains may be shifted as necessary to clear #5ss bars.

DRAWN BY: Ross Edward Kubeny DATE 10-15-81
CHECKED BY: R. V. Moore DATE 10-15-81

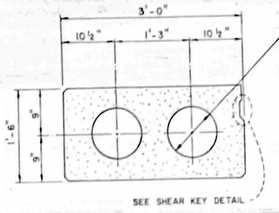
PROJECT NO. 8.1430701 3
COLUMBUS COUNTY
STATION: 557+67.50 L² Rev. W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPANS
OCT. 1981

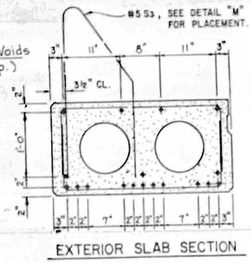
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NO.	BY	DATE	NO.	BY	DATE	24
1			3			TOTAL SHEETS
2			4			84



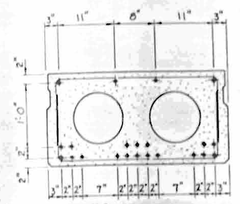
EXTERIOR SLAB SECTION



EXTERIOR SLAB SECTION

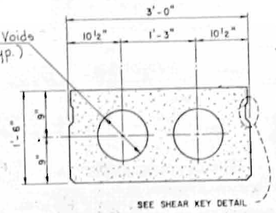


EXTERIOR SLAB SECTION



INTERIOR SLAB SECTION

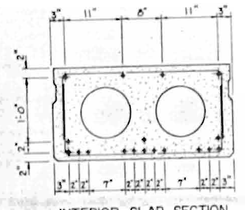
$\frac{7}{16}$"ø PRESTRESSED CABLE LAYOUT



INTERIOR SLAB SECTION

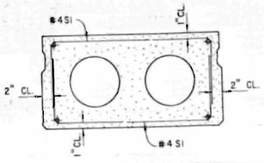
TYPICAL SECTION

NOTE: CHAMFER CORNERS ¾" AS SHOWN.



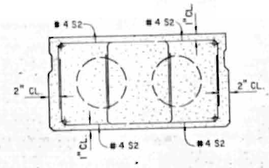
INTERIOR SLAB SECTION

$\frac{1}{2}$"ø PRESTRESSED CABLE LAYOUT



SLAB SECTION

SHOWING #4 S1 STIRRUPS.



SLAB SECTION

SHOWING #4 S2 STIRRUPS.

NOTES

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS
$\frac{7}{16}$"ø	270	0.115 SQ. IN.	31,000 LBS. PER CABLE	21,700 LBS. PER CABLE
$\frac{1}{2}$"ø	270	0.153 SQ. IN.	41,300 LBS. PER CABLE	28,900 LBS. PER CABLE

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRESS RELIEVED HIGH-STRENGTH GRADE 270 CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

ALL PRESTRESSED STRANDS SHALL MEET THE REQUIREMENTS OF ASTM-A416.

FOR PRESTRESSED CORED SLABS, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR PRESTRESSED CORED SLABS.

RECESS FOR TRANSVERSE STRANDS IS TO BE GROUTED AFTER THE TENSIONING OF STRANDS.

THE 2½"ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS TO BE FILLED WITH GROUT, SEE SPECIAL PROVISIONS. THE 2½"ø DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS ARE NOT REQUIRED.

AT TRANSFER OF TENSIONING LOAD, THE CYLINDER STRENGTH OF CONCRETE SHALL BE 4,000 P.S.I. MINIMUM AND THE 28 DAY CYLINDER STRENGTH SHALL BE 5,000 P.S.I. MINIMUM.

ELASTOMER IN ELASTOMERIC BEARINGS SHALL HAVE A GRADE 50 DUROMETER HARDNESS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	NO. SPAN A OR C	NO. SPAN B	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	32	32	96	5	STR.	17'-0"	1702
S4	66	70	202	5	3	4'-11"	1036
S5	4		8	5	3	4'-4"	36
REINFORCING STEEL Lbs.							2774
CLASS A A CONCRETE CU YDS. (@ 6.9 CU YDS. PER SPAN)							20.7
TOTAL LIN FT. OF CONCRETE BARRIER RAIL *							200'-0"

* SEE SPECIAL PROVISIONS.

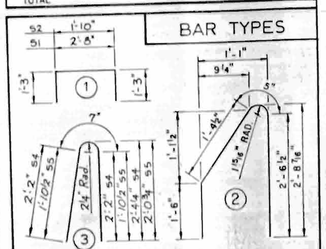
REINFORCING STEEL FOR ONE EXTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
S3	35	#5	2	5'-10"	213
TOTAL				LBS. -	484

REINFORCING STEEL FOR ONE INTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
TOTAL				LBS. -	271

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE CORED SLAB

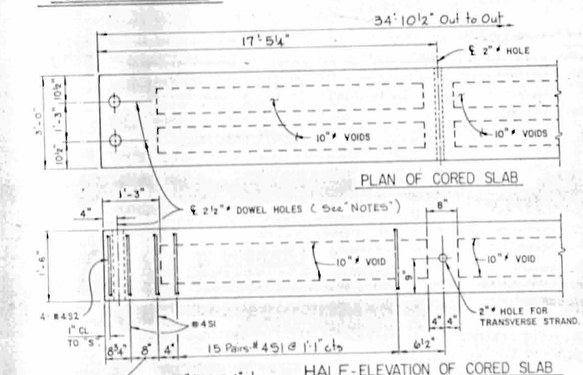
	REINFORCING STEEL LBS.	5,000 P.S.I. CONCRETE C.Y.	$\frac{7}{16}$"ø S.R. CABLES Nº	$\frac{1}{2}$"ø S.R. CABLES Nº
EXTERIOR C.S.	484	4.5	22	18
INTERIOR C.S.	271	4.5	22	18

CORED SLAB REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	6	34'-10½"	209'-3"
INTERIOR C.S.	33	34'-10½"	1150'-10½"
TOTAL	39		1360'-1½"

DEAD LOAD DEFLECTION AND CAMBER FOR INT. or EXT. SECTION

	$\frac{7}{16}$"ø Cables	$\frac{1}{2}$"ø Cables
CAMBER (SLAB ALONE IN PLACE)	5/8" ↑	11/16" ↑
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD	1/16" ↓	1/8" ↓
FINAL CAMBER	9/16" ↑	9/16" ↑



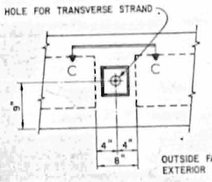
PLAN OF CORED SLAB

HALF-ELEVATION OF CORED SLAB

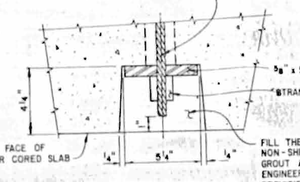
Note: #5 S3 bars in exterior cored slab not shown. For spacing of #5 S3 bars in exterior cored slab, see "Plan" of Superstructure.

NOTE

* THE CONTRACTOR, AT HIS OPTION, MAY USE LOW-RELAXATION STRANDS IN LIEU OF STRESS RELIEVED STRANDS. DESIGN AND STRAND PATTERN MUST PROVIDE AT LEAST THE SAME NET COMPRESSIVE STRESS AFTER THE LOSSES. THE ULTIMATE STRENGTH OF THE CORED SLAB UNIT MUST MEET THE REQUIREMENTS OF THE APPLICABLE AASHTO SPECIFICATIONS. LOW-RELAXATION STRANDS SHALL BE TENSIONED AND ANCHORED AT A LOAD EQUAL TO 75% OF ITS ULTIMATE STRENGTH. THE APPLIED PRESTRESSED FORCE SHALL BE SHOWN ON THE PLANS. SIZE OF LOW-RELAXATION STRANDS SHALL NOT BE LARGER THAN THOSE SHOWN FOR STRESS RELIEVED STRANDS. DESIGN AND DETAIL PLANS USING LOW-RELAXATION STRANDS MUST BE SUBMITTED TO THE STATE BRIDGE DESIGN ENGINEER FOR APPROVAL. ANY ADDITIONAL COST DUE TO THE USE OF LOW-RELAXATION STRANDS WILL BE PAID FOR BY THE CONTRACTOR.

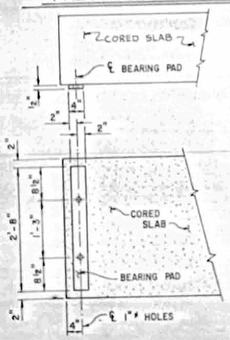


ELEVATION VIEW



SECTION C-C

GROUTED RECESS IN EXTERIOR SIDE OF PRETENSIONED CABLE CORED SLABS



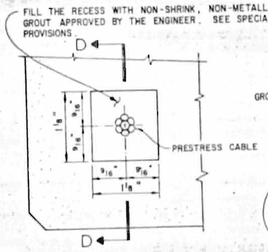
ELASTOMERIC BEARING DETAIL

39 (with holes) Brg. Pads Required.
39 (without holes) Brg. Pads Required.

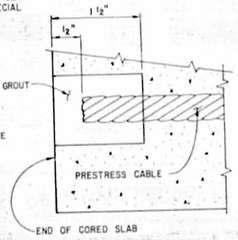


SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



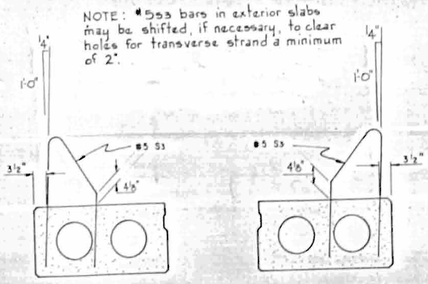
PART ELEVATION AT END OF CORED SLAB



SECTION D-D

GROUTED RECESS AT END OF PRETENSIONED CABLE CORED SLABS

NOTE: #5 S3 bars in exterior slabs may be shifted, if necessary, to clear holes for transverse strand a minimum of 2".



LEFT EXTERIOR SLAB

RIGHT EXTERIOR SLAB

DETAIL "M"

DRAWN BY ROSS EDWARD KUBENY DATE 10-15-81
CHECKED BY R.J. Moore DATE 10-15-81

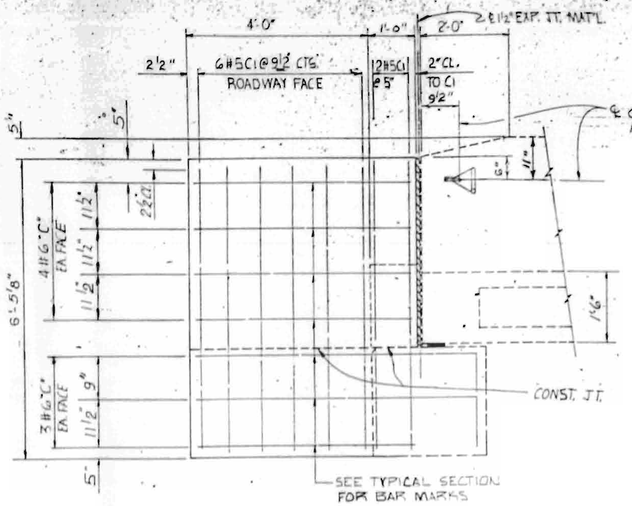
PROJECT No. 8.1430701 #3
COLUMBUS COUNTY
STATION: 557+67.5 L² Rev. W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

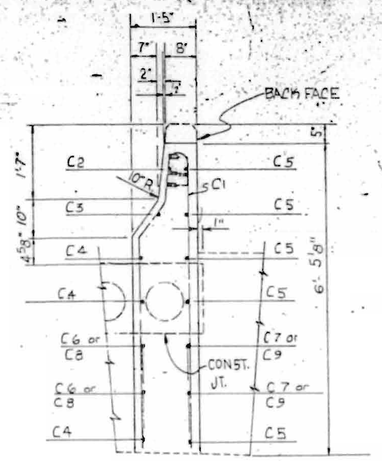
3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS

OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS 84
1			3			
2			4			

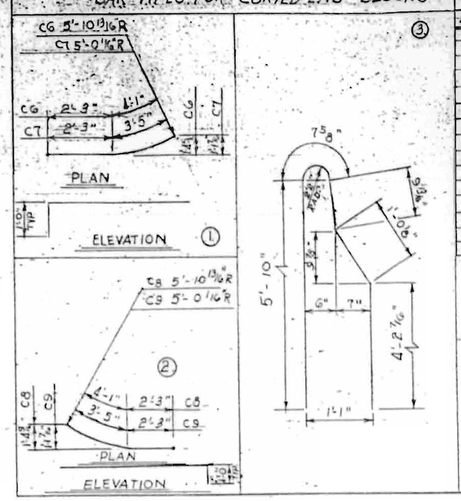


ELEVATION



TYPICAL SECTION

BAR TYPES FOR CURVED END BLOCKS



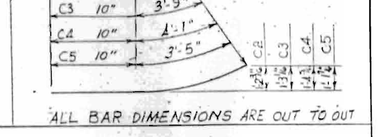
Bill of Material for four Curved End Blocks

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
C1	32	#5	3	12'-6"	417
C2	4	#6	4	4'-5"	27
C3	4	#6	4	4'-7"	28
C4	12	#6	4	4'-11"	89
C5	20	#6	4	4'-3"	128
C6	4	#6	1	7'-4"	44
C7	4	#6	1	6'-8"	40
C8	4	#6	2	7'-4"	44
C9	4	#6	2	6'-8"	40

REINFORCING STEEL : 857 LBS.

CLASS "A" CONC. - 5.3 C.Y.

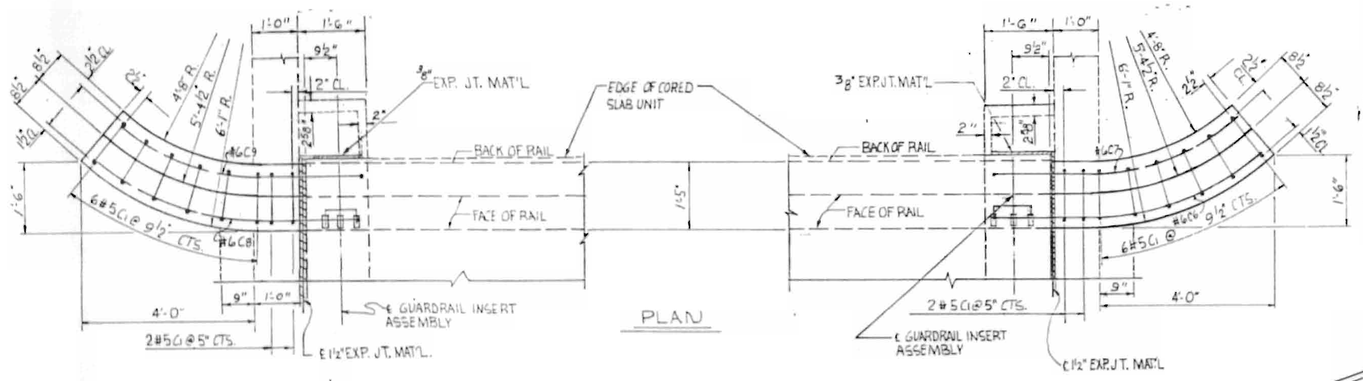
④ C3 5'-4⅝"R ; C2 5'-2 11/16"R
C5 5'-0 1/16"R C4 5'-10 13/16"R

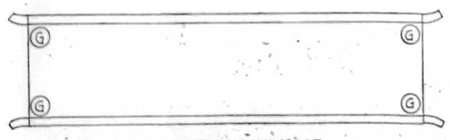


ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

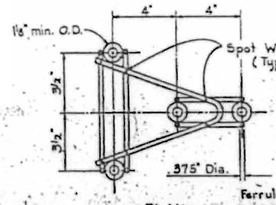
1. THE 4 - BOLT INSERT ASSEMBLY UNIT SHALL CONSIST OF THE FOLLOWING COMPONENTS:
   a. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF A.S.T.M. A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".
   b. 4 - 7/8"ø x 2 3/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8"ø x 2 3/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF A.S.T.M. A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
   c. WIRE STRUTS SHOWN IN THE INSERT ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.
2. THE INSERT ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.
3. THE COST OF THE 4-BOLT INSERT ASSEMBLY UNIT COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.
4. THE 4 - BOLT INSERT ASSEMBLY UNIT IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END POSTS. FOR POINTS OF ATTACHMENT, SEE *LOCATION OF GUARDRAIL ANCHORAGE* SKETCH, THIS SHEET.
5. CURVED END BLOCKS ARE REQUIRED AT ALL END POSTS.
6. THE COST OF THE EXCAVATION AND BACKFILL FOR THE CURVED END BLOCKS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

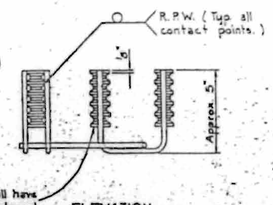




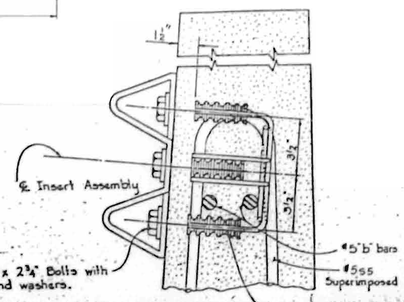
LOCATION OF GUARDRAIL ANCHORAGE

Ⓖ DENOTES GUARDRAIL ANCHORAGE LOCATION.





INSERT ASSEMBLY



SECTION E-E

DRAWN BY S.D. JOYNER DATE 7/30/81
CHECKED BY R.J. Moore DATE 7-2-81

PROJECT No. 8.1430701

COLUMBUS COUNTY #3

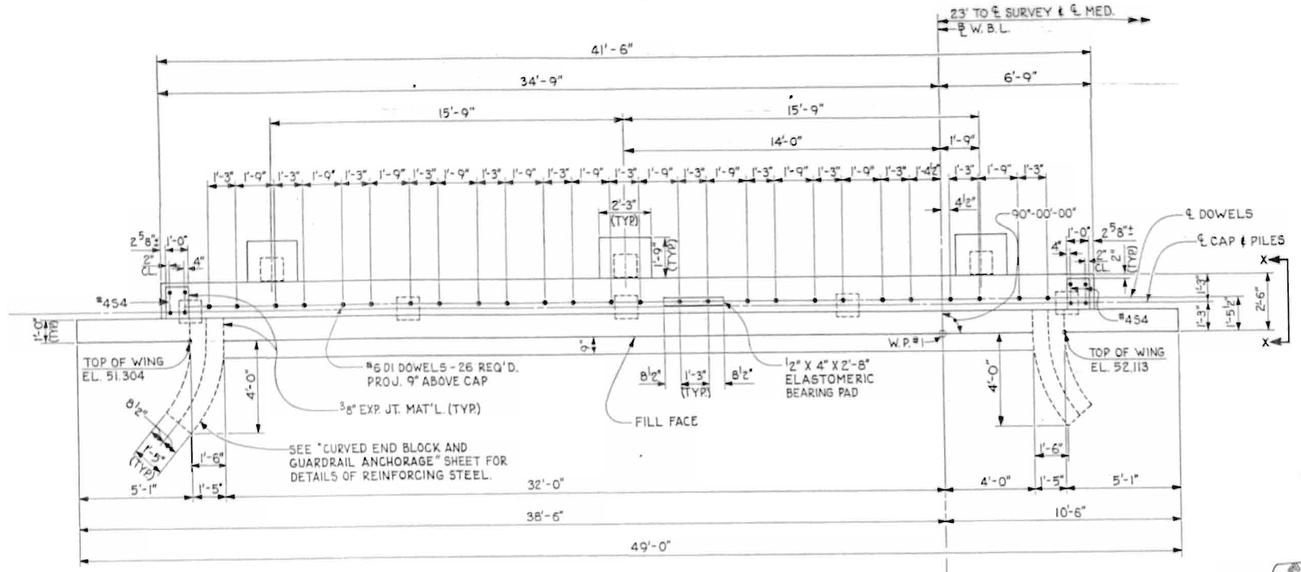
STATION: 557+6750 12 Rev. W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

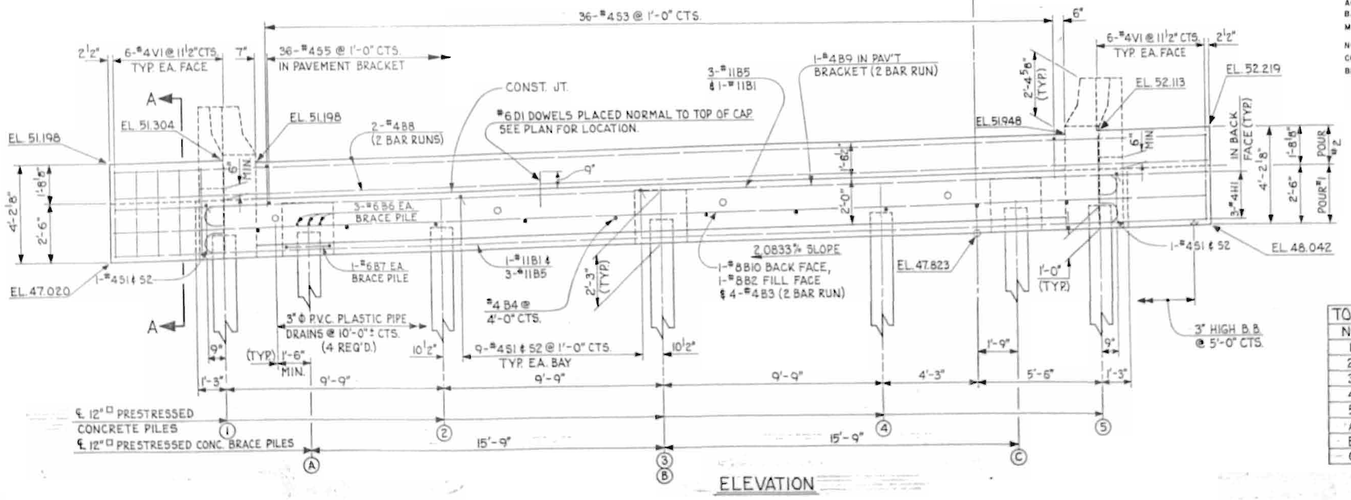
CURVED END BLOCK AND GUARDRAIL ANCHORAGE FOR BARRIER RAIL

JULY 1981

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



PLAN



ELEVATION

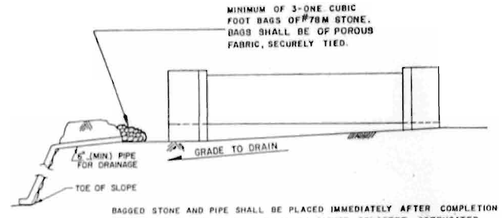
TOP OF PILE ELEVATIONS	
NO.	ELEVATIONS
1	48.125
2	48.328
3	48.531
4	48.734
5	48.938
A	48.203
B	48.531
C	48.859

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

PROJECT No. 8.1430701

COLUMBUS COUNTY

STATION: 557+67.50-L-2 REV.

SHEET 1 OF 2 W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

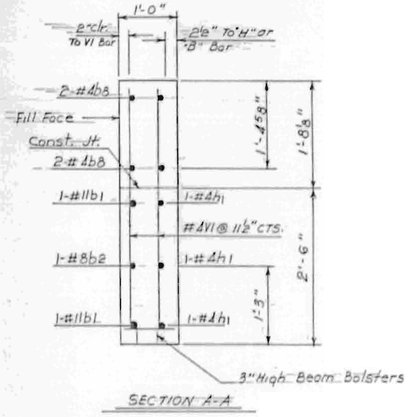
OCT. 1981

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

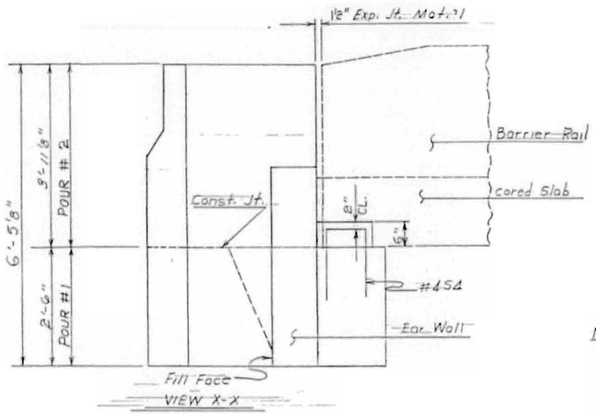
DRAWN BY C. B. GODBOLD DATE DEC. 17, 1981
CHECKED BY R. J. Moore DATE 12-18-81

SHEET #7 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

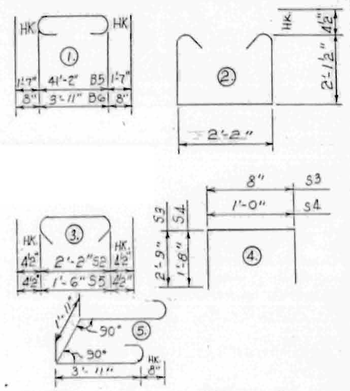


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See "Curved End Block And Guardrail Anchorage For Barrier Rail Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-8"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1813
B6	9	#6	1	5'-3"	71
B7	3	#6	5	11'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	4	1'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str.	5'-1"	20
V1	24	#4	Str.	3'-10"	61

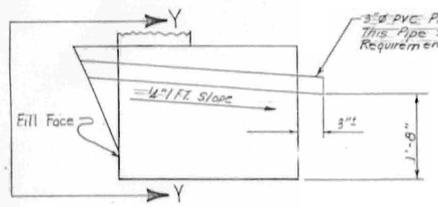
Reinforcing Steel LBS. 3,188

CLASS "A" Conc.

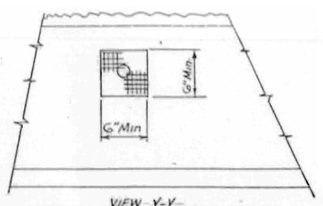
POUR # 1*	=	11.7 CU YDS
Pour # 2	=	2.7 CU YDS
Total	=	14.4 CU YDS

12"ø Prestressed Conc. Piles No. 6 Lin Ft ~~240~~ 320

PIPE DRAIN DETAILS

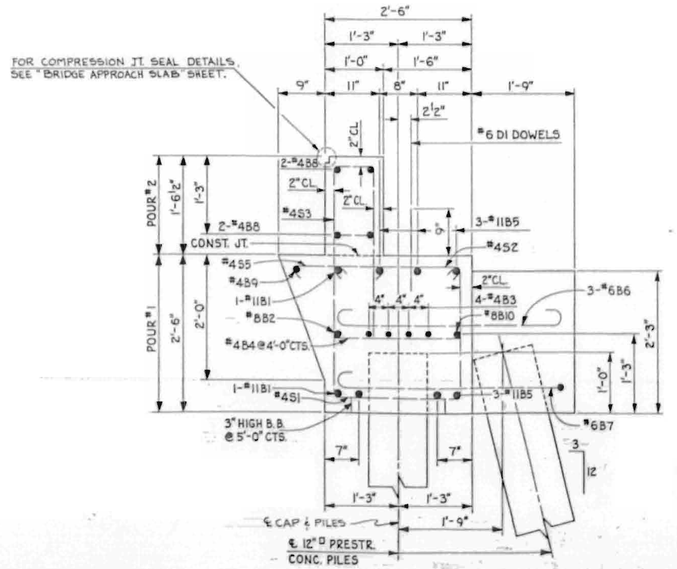


Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.



SECTION THRU CAP

PROJECT NO. 8.1430701 #3

COLUMBUS COUNTY

STATION: 557+67.50-L²-REV.

SHEET 2 OF 2 W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 1

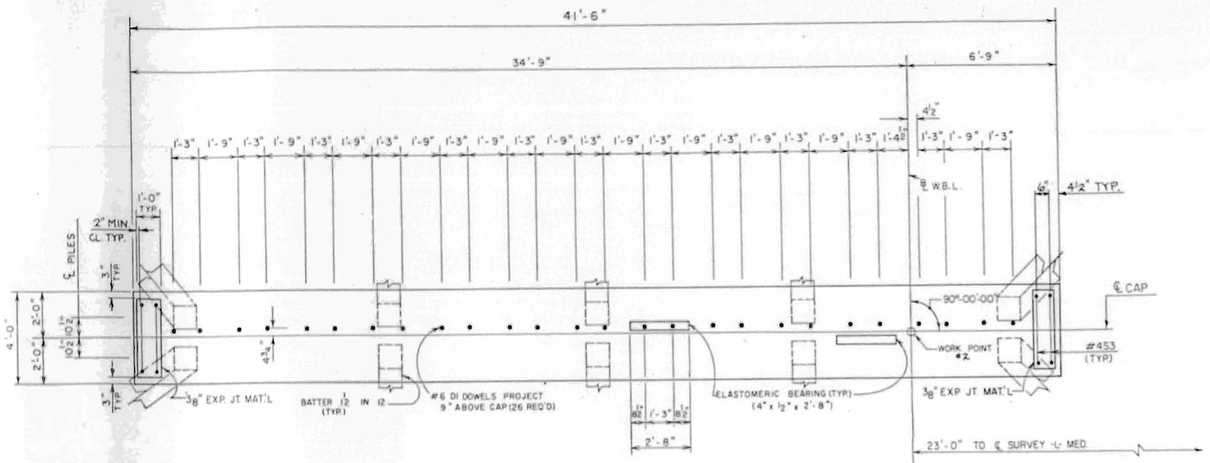
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	~~S-8~~
1			3			TOTAL SHEETS
2			4			~~84~~

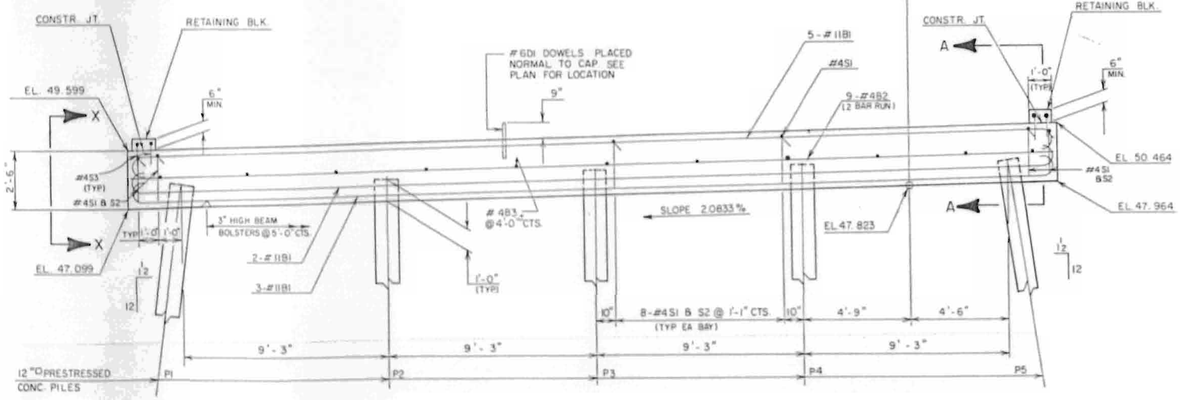
DRAWN BY S.D. JOYNER DATE 7/24/81
CHECKED BY R. J. Moore DATE 7-30-81

SHEET 28 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N.C.	
F.A. PROJECT		

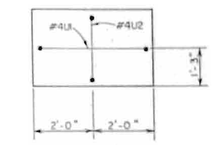


PLAN



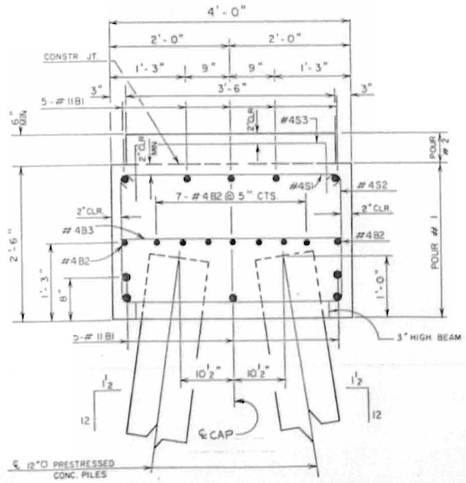
ELEVATION

TOP OF PILE ELEVATION	
P1	48.146
P2	48.339
P3	48.531
P4	48.724
P5	48.917



VIEW X-X

REINFORCING SHOWN TYP EACH END.

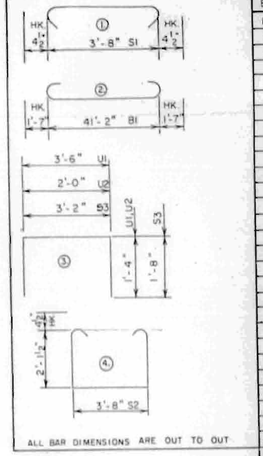


SECTION A-A

NOTES: *CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

THE RETAINING BLOCK AT EA. END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (1 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR.	21'-5"	258
B3	11	#4	STR.	3'-8"	27
D1	26	#6	STR.	1'-6"	59
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6

REINFORCING STEEL = 3,044 #

CLASS "A" CONCRETE = 15.1 CU. YDS.

12" ϕ PRESTRESSED CONC. PILES

NO. 10 LIN. FT. = ~~300~~ 400

CLASS "A" CONC

POUR # 1 = 15.0 CU. YDS.

POUR # 2 = 0.1 CU. YDS.

TOTAL = 15.1 CU. YDS.

PROJECT NO. 8.1430701 #3

COLUMBUS COUNTY

STATION: 557+67.50 -℄ REV

W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT # 1

OCT. 1981

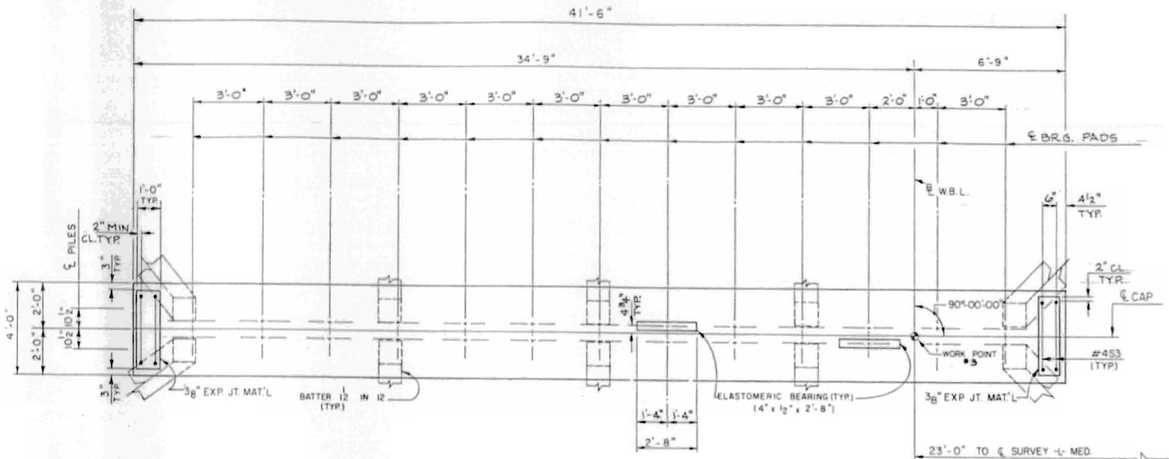
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-4
1			3			TOTAL SHEETS
2			4			84

DRAWN BY S. D. JOYNER DATE 10/13/81
CHECKED BY R. J. Moore DATE 10-28-81

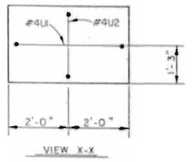
CASS ELLERBEE & SUPPLY CO. 14020

SHEET 29 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N.C.	
F.A. PROJECT		

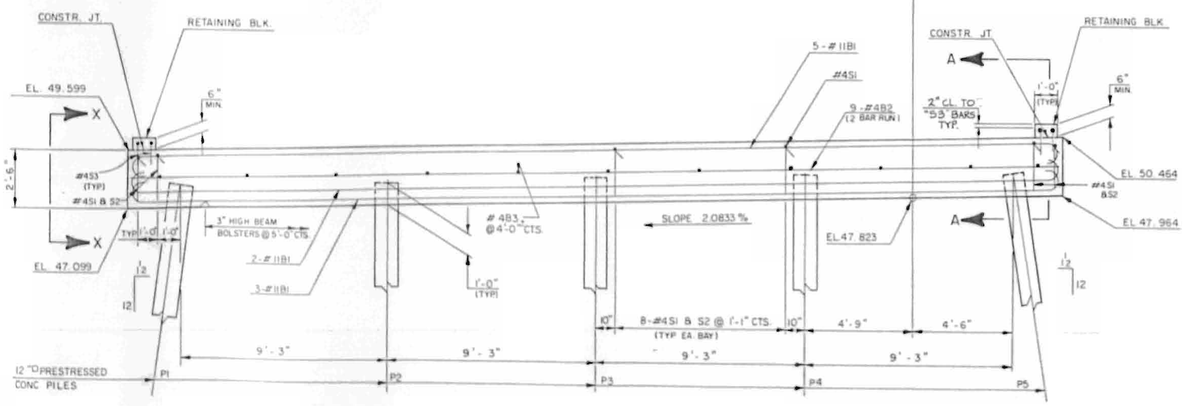


PLAN



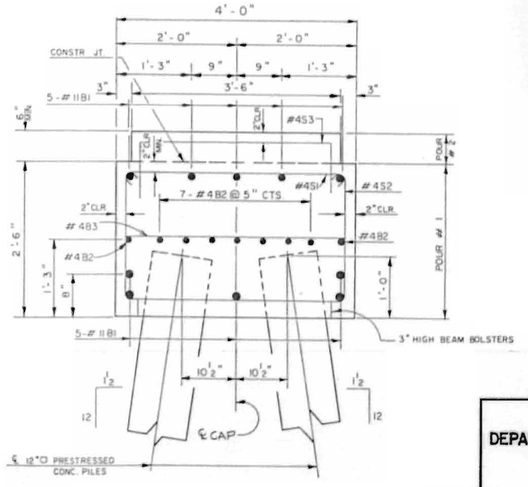
VIEW X-X

REINFORCING SHOWN TYP. EACH END.



ELEVATION

TOP OF PILE ELEVATION	
P1	48.146
P2	48.339
P3	48.531
P4	48.724
P5	48.917



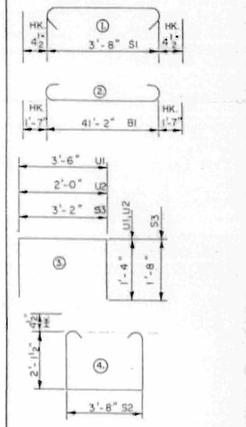
SECTION A-A

NOTES:

*CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

THE RETAINING BLOCK AT EA. END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (1 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR.	21'-5"	258
B3	11	#4	STR.	3'-8"	27
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6

REINFORCING STEEL = 2,965 #

CLASS "A" CONCRETE = 15.1 CU. YDS.

12" "D" PRESTRESSED CONC. PILES

NO. 10 LIN. FT. = ~~300~~ 400

CLASS "A" CONC.

POUR # 1 = 15.0 CU. YDS.

POUR # 2 = 0.1 CU. YDS.

TOTAL = 15.1 CU. YDS.

DRAWN BY S.D. JOYNER DATE 10/13/81

CHECKED BY R.J. Moore DATE 10-28-81

EAST ELIZABETH & SUPPLY CO. 16008

PROJECT NO. 8.1430701 *3

COLUMBUS COUNTY

STATION: 557+67.50-℄ REV.

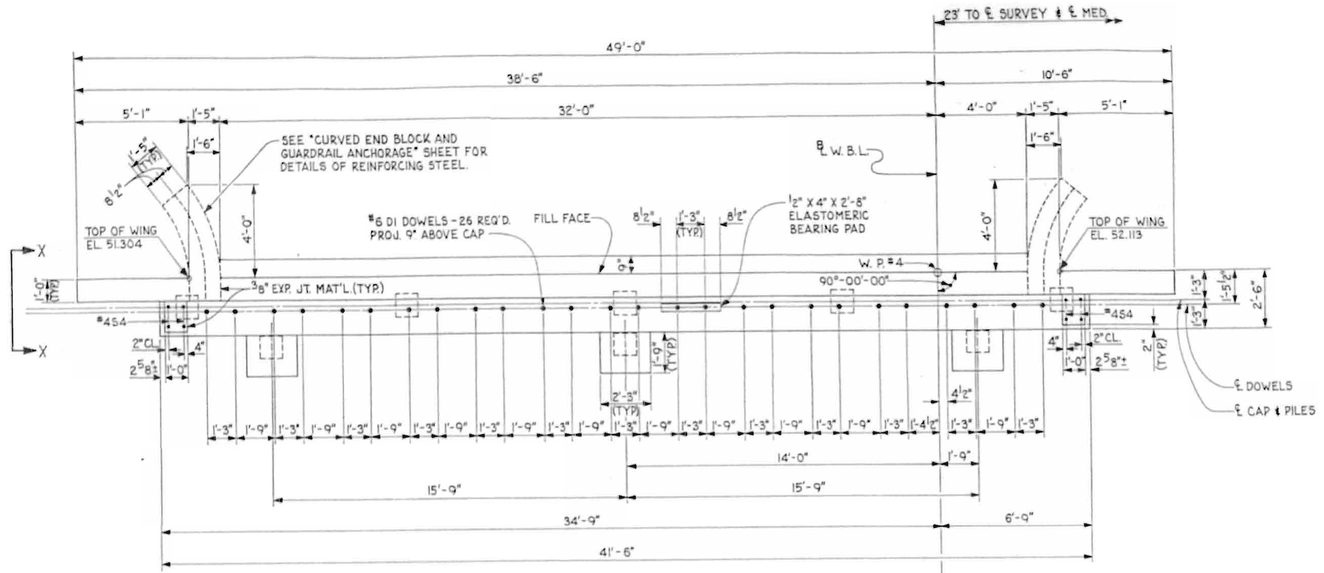
W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

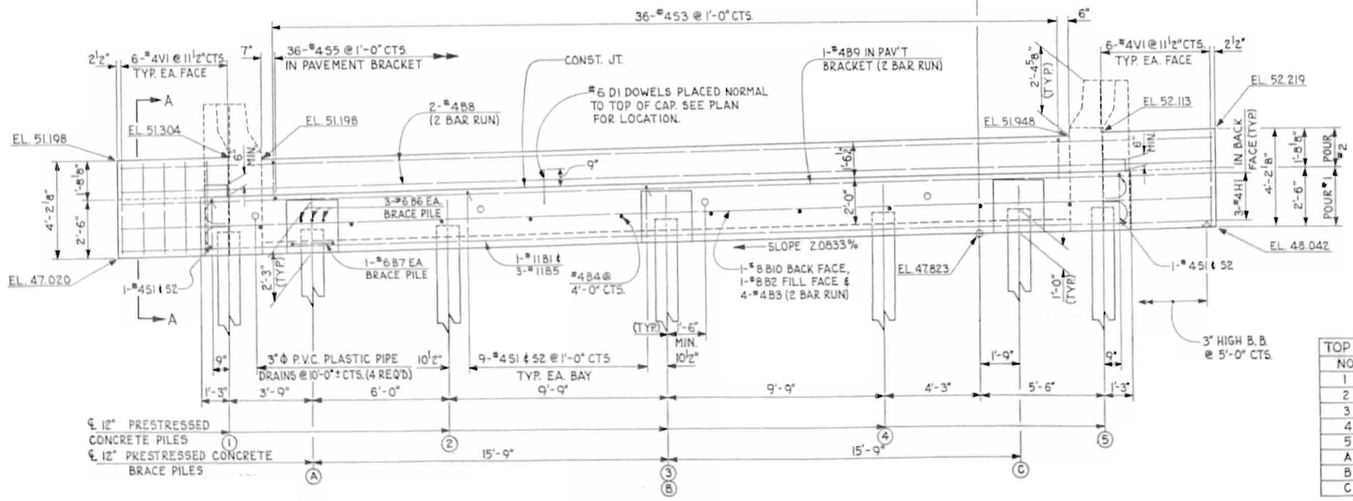
SUBSTRUCTURE
BENT # 2

OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-10
1			3			TOTAL SHEETS
2			4			84



PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
NO.	ELEVATION
1	48.125
2	48.328
3	48.531
4	48.734
5	48.938
A	48.203
B	48.531
C	48.859

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

FOR "TEMPORARY DRAINAGE" DETAILS FOR END BENT 2, SEE END BENT 1, SHEET 1 OF 2.

DRAWN BY: C. S. GODBOLD DATE: 11/6/81
CHECKED BY: R. J. Moore DATE: 12-18-81

PROJECT NO 8.1430701 #3
COLUMBUS COUNTY
STATION: 557+67.50-L-2 REV.
SHEET 1 OF 2 W. B. L.

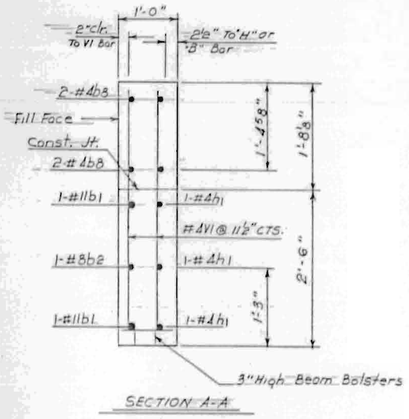
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

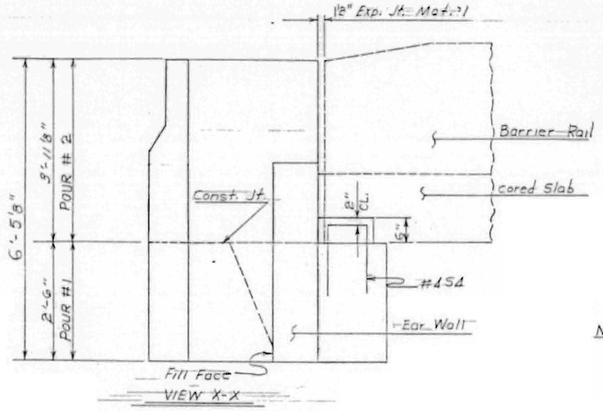
NOV. 1981

REVISIONS						SHEET NO. 30
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS 64
1			3			
2			4			

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

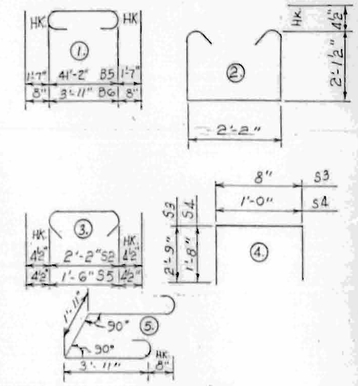


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See "Curved End Block And Guardrail Anchorage For Barrier Rail" Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-8"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	19'-1"	30
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	4	4'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str.	5'-1"	20
V1	24	#4	Str.	3'-10"	61

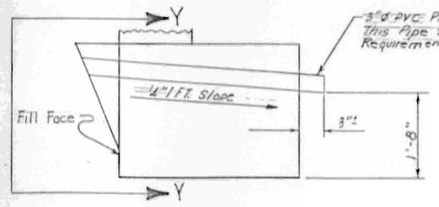
Reinforcing Steel LBS. 3,188

CLASS "A" Conc.:

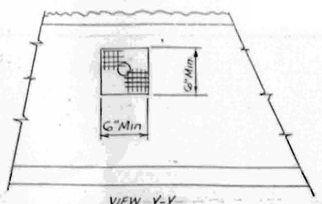
Pour #1*	=	11.7 CU.YDS.
Pour #2	=	2.7 CU.YDS.
Total	=	14.4 CU.YDS.

12"ø Prestressed Conc. Piles No. 8 Lin Ft. ~~240~~ 320'

PIPE DRAIN DETAILS

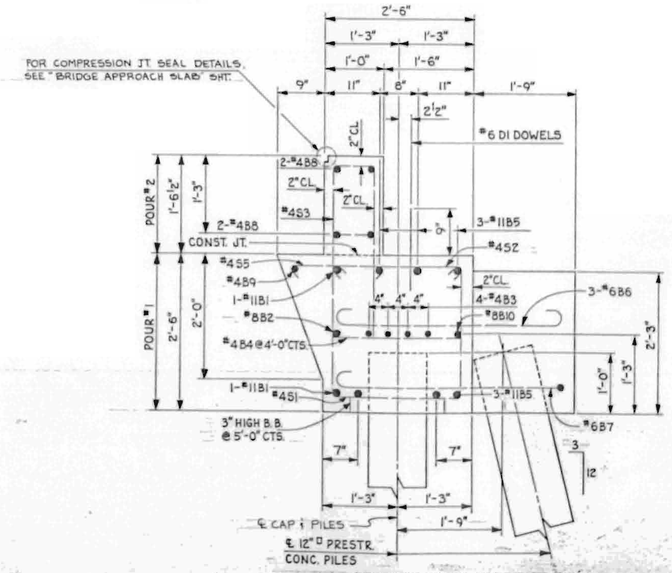


Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.



SECTION THRU CAP

PROJECT No. 8.1430701 #3

COLUMBUS COUNTY

STATION: 557+67.50-L- REV.

SHEET 2 OF 2 W.B.L.

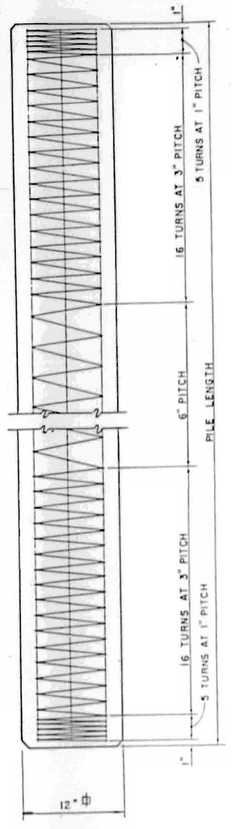
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 2

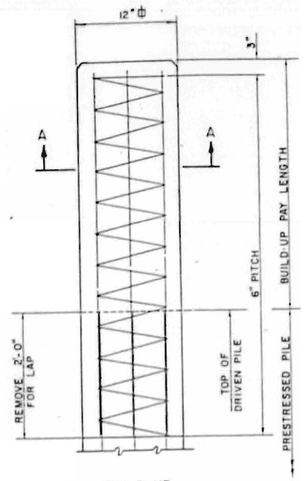
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-12
1			3			TOTAL SHEETS
2			4			84

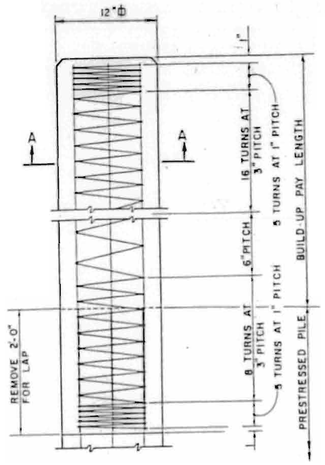
DRAWN BY S.D. JOYNER DATE 7/24/81
CHECKED BY R. V. Moore DATE 7-30-81



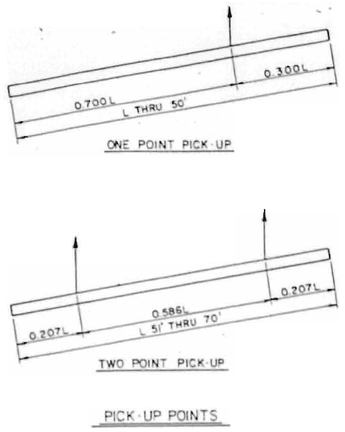
ELEVATION



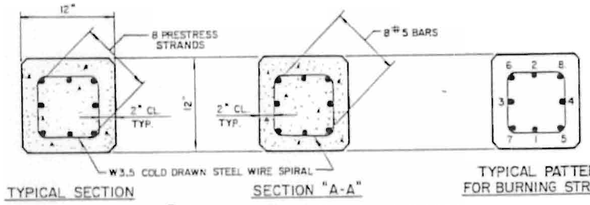
BUILD-UP WITHOUT DRIVING



BUILD-UP WITH DRIVING

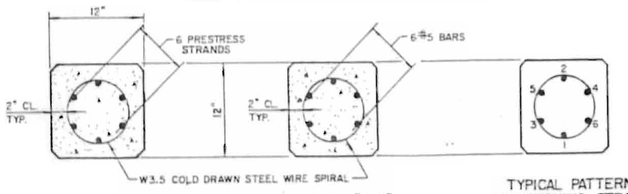


PICK-UP POINTS



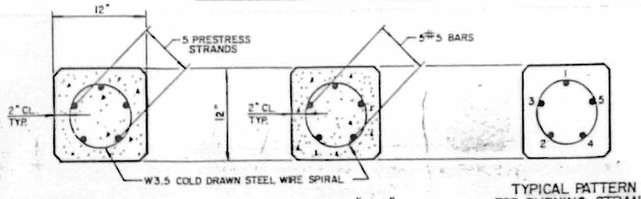
TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{3}{8}$"Φ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{7}{16}$"Φ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{1}{2}$"Φ GRADE 270 PRESTRESS STRANDS

QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINT 0.300L	ONE PICK-UP POINT 0.700L	TWO PICK-UP POINT 0.207L	TWO PICK-UP POINT 0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.70	15'-0"	35'-0"		
55'-0"	2.01	4.07			11'-4½"	32'-3"
60'-0"	2.19	4.44			12'-5"	35'-2"
65'-0"	2.37	4.81			13'-5½"	38'-1"
70'-0"	2.56	5.18			14'-6"	41'-0"

NOTES

CONCRETE DESIGN DATA: f'c = 5,000 PSI ; fc = 2,000 PSI

IMPACT IN HANDLING = 50%

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DEVICES FOR LIFTING THE PILES SHALL BE APPROVED BY THE ENGINEER. LOOPS OF STRAND CAST IN THE PILES WILL NOT BE PERMITTED. INSERTS, CAST IN THE PILES TO RECEIVE THREADED EYE-BOLTS OR SIMILAR APPROVED DEVICES, MAY BE USED; OR WHERE IT IS PRACTICABLE, SATISFACTORY CLAMPS OR SLINGS MAY BE USED. WHERE PILES WILL BE EXPOSED TO VIEW IN THE STRUCTURE AND INSERTS ARE CAST IN THE PILES, THE OPENINGS SHALL BE REPAIRED AFTER THE EYE-BOLTS OR OTHER ATTACHMENTS HAVE BEEN REMOVED. THE OPENINGS SHALL BE REPAIRED IN A SATISFACTORY MANNER IN ORDER TO OBTAIN A UNIFORM APPEARANCE.

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRANDS AS PRESCRIBED IN THE SPECIFICATIONS. THE CONTRACTOR MAY, AT HIS OPTION, USE EITHER OF THE THREE TYPES OF STRANDS LISTED BELOW; HOWEVER, ALL STRANDS IN A PILE SHALL BE OF THE SAME TYPE.

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
$\frac{3}{8}$"Φ	270	8	0.085 Sq.In.	23,000 # PER STRAND	16,100 # PER STRAND
$\frac{7}{16}$"Φ	270	6	0.115 Sq.In.	31,000 # PER STRAND	21,700 # PER STRAND
$\frac{1}{2}$"Φ	270	5	0.153 Sq.In.	41,300 # PER STRAND	28,900 # PER STRAND

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED THE LAST STRAND MAY BE BURNED SINGLY, ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE CLASS "A" CONCRETE W/20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

ALL CORNERS TO BE CHAMFERED ¾".

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

STEEL PILE TIP DETAILS

NOTES

WHEN NOTED ON GENERAL DRAWING, THE CONTRACTOR, AT HIS OPTION, MAY SUBSTITUTE 12" PRESTRESSED CONCRETE PILES WITH STEEL PILE TIPS, AS SHOWN IN THE DETAILS, IN LIEU OF HP 12 x 53 STEEL PILES.

THE STEEL PILE TIP SHALL NOT BE INCLUDED IN DETERMINING THE LENGTH OF THE PILE FOR PAYMENT. THE COST OF THE STEEL PILE TIP UNIT SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF PILES.

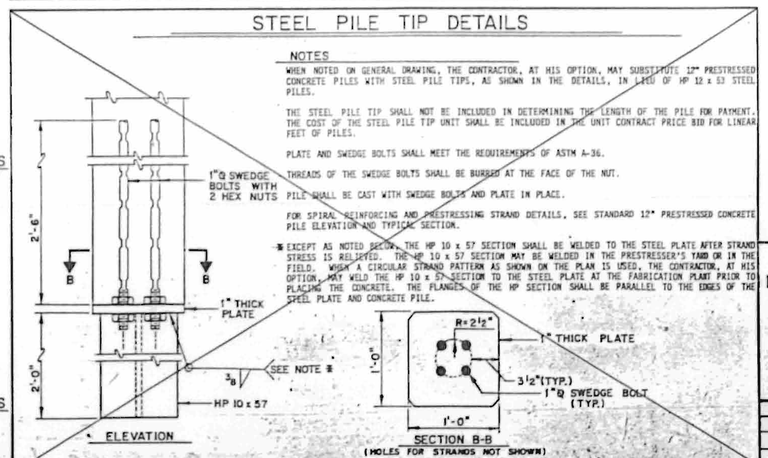
PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A-36.

THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

* EXCEPT AS NOTED BELOW, THE HP 10 x 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 x 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLAN IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 x 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 557+67.50-L-, REV.
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
12" PRESTRESSED
CONCRETE PILE

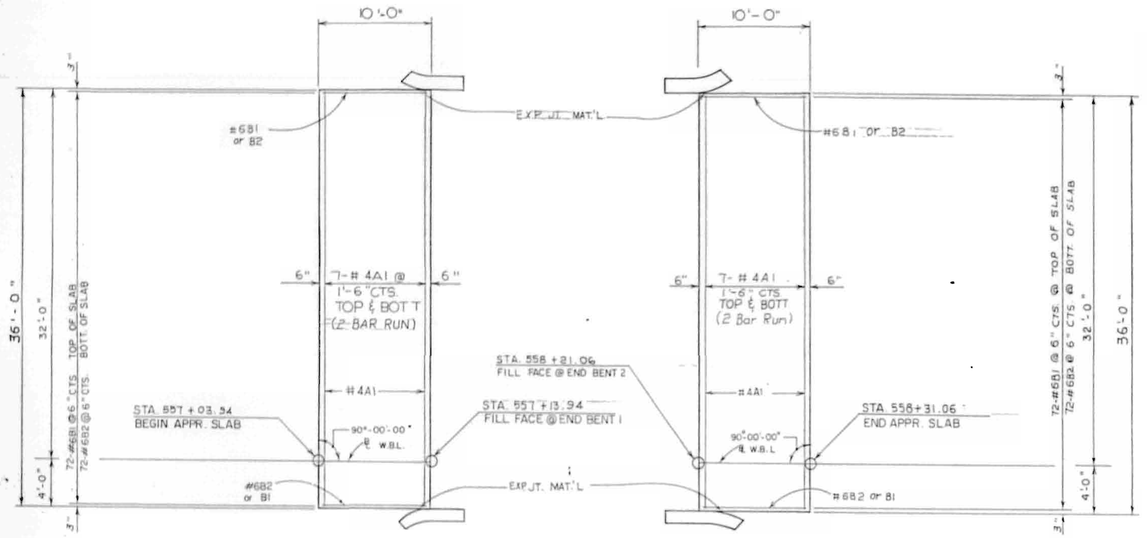
REVISIONS							SHEET NO. 6-13
NO.	BY	DATE	NO.	BY	DATE		
1			3				TOTAL SHEETS 84
2			4				

STD. NO. PCPI

ASSEMBLED BY: ROSS E KUBENY DATE: 6-21-85
CHECKED BY: DATE:
DRAWN BY: R Desphande DATE: Oct 14 1977
CHECKED BY: Rashesh A Patel DATE: May 7 1977

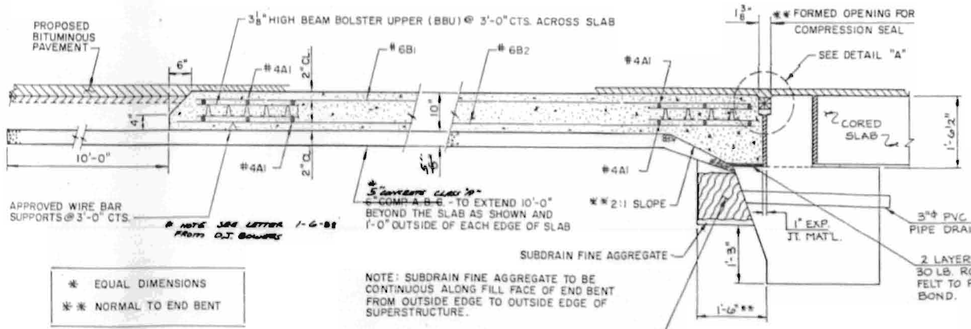
SPECIAL
STANDARD

REVISED 11-12-82 BY JNB / BY RDU
REVISED 12-22-80 BY CCM / BY RDU
REVISED 7-31-78 BY REK / BY RDU
REVISED 7-14-83 BY JNB / BY RDU
REVISED 2-3-83 BY JNB / BY RDU



PLAN OF APPROACH SLAB
(END BENT # 1)

PLAN OF APPROACH SLAB
(END BENT # 2)

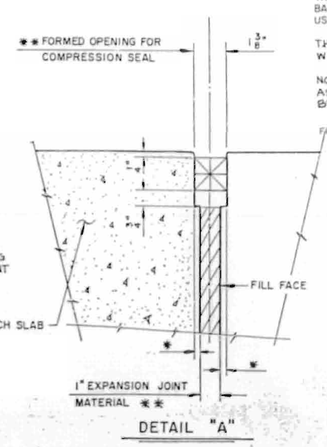


* EQUAL DIMENSIONS
** NORMAL TO END BENT

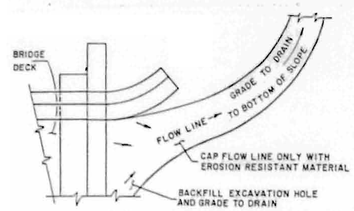
NOTE: SUBDRAIN FINE AGGREGATE TO BE CONTINUOUS ALONG FILL FACE OF END BENT FROM OUTSIDE EDGE TO OUTSIDE EDGE OF SUPERSTRUCTURE.

ONE CUBIC FOOT OF # 78M STONE IN BAG OF POROUS FABRIC SECURELY TIED. USE AT EACH PIPE DRAIN. FOR LOCATION OF PIPE DRAINS, SEE END BENT DETAILS.

SECTION THRU SLAB



DETAIL "A"



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAILS

NOTES

FOR PREFORMED COMPRESSION JOINT SEAL, SEE SPECIAL PROVISIONS.

PREFORMED COMPRESSION JOINT SEAL SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID. SEE GENERAL DRAWING.

OPENING SHOWN IS BASED ON A NOMINAL UNCOMPRESSED SEAL WIDTH OF 2"

THE INSTALLED COMPRESSION SEAL SHALL BE WATERTIGHT.

PROVIDE WATERTIGHT SEAL AT END OF COMPRESSION SEAL AS RECOMMENDED BY MANUFACTURER.

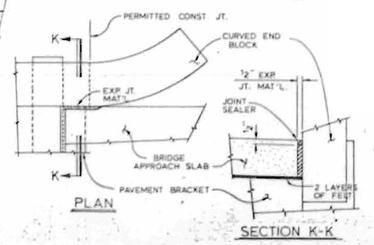
COMPRESSION SEAL EXTENDS FROM GUTTER TO GUTTER ALONG BRIDGE DECK NOTCH.

THE CONTRACTOR, AT HIS OPTION, MAY USE 4" BITUMINOUS CONCRETE BASE COURSE, TYPE HB IN LIEU OF 6" A.B.C. - ANY ADDITIONAL COST DUE TO USE OF THIS OPTION WILL BE PAID FOR BY THE CONTRACTOR.

THE 1" EXPANSION JOINT MATERIAL IS TO BE HELD IN PLACE WITH GALVANIZED NAILS.

NO DIRECT PAYMENT WILL BE MADE FOR THE TEMPORARY DRAINAGE AS SUCH WORK WILL BE CONSIDERED INCIDENTAL TO OTHER WORK BEING PAID FOR BY THE VARIOUS ITEMS IN THE CONTRACT.

FOR BRIDGE APPROACH SLABS, SEE SPECIAL PROVISIONS.



DETAIL OF EXP. JT. MAT'L. BETWEEN APPROACH SLAB AND CURV. END BLK

THE EXPANSION JOINT SHALL BE SEALED WITH JOINT SEALER AS SHOWN.

BILL OF MATERIAL

FOR ONE APPR. SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	28	#4	STR.	18'-5"	344
B1	72	#6	STR.	9'-1"	982
B2	72	#6	STR.	9'-7"	1,036

REINFORCING STEEL LBS. = 2,362
CLASS "A" CONCRETE CU. YDS. = 12.4

PROJECT NO. 8.1430701 #3
COLUMBUS COUNTY
STATION: 557+67.50 -L- REV. W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

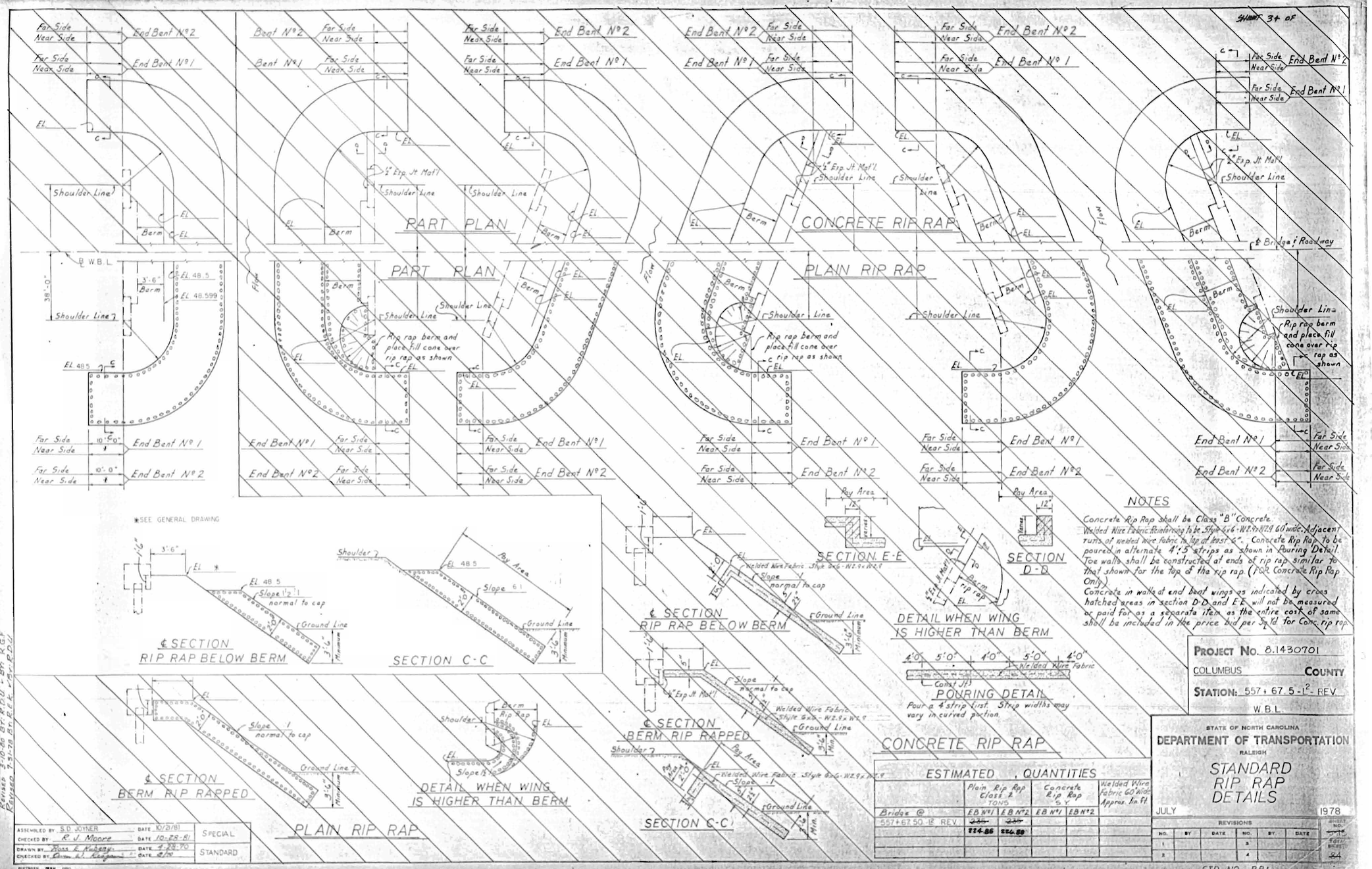
JULY 1978

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	34
1			3			TOTAL SHEETS
2			4			84

STD. NO. BAS2

REVISED 9-1-81 BY: E.R.L. CHECKED BY: R.E.K.
REVISED 3-27-81 BY: R.E.K. CHECKED BY: R.D.U.
REVISED 4-24-79 BY: C.M. CHECKED BY: R.D.U.
REVISED 7-31-78 BY: R.E.K. CHECKED BY: R.D.U.

STD. DRAWN BY: K.G.P. DATE: 2-71 CHECKED BY: J.A.K.
DRAWN BY: S.D. JOYNER DATE: 11 2181
CHECKED BY: R.J. Moore DATE: 11-10-81



NOTES

Concrete Rip Rap shall be Class "B" Concrete.
Welded Wire Fabric Reinforcing to be Style 6x6-W2.9xW2.9 60"wide. Adjacent runs of welded wire fabric to lap at least 6". Concrete Rip Rap to be poured in alternate 4':5' strips as shown in Pouring Detail.
Toe walls shall be constructed at ends of rip rap similar to that shown for the top of the rip rap (FOR Concrete Rip Rap Only)
Concrete in walls at end bent wings as indicated by cross hatched areas in section D-D and E-E will not be measured or paid for as a separate item, as the entire cost of same shall be included in the price bid per Sq. Yd. for Conc. rip rap.

PROJECT NO. 8.1430701
COLUMBUS **COUNTY**
STATION: 557+67.5 -L- REV.
W.B.L.

ESTIMATED QUANTITIES

	Plain Rip Rap Class 2 TONS		Concrete Rip Rap C.Y.		Welded Wire Fabric 60" Wide Approx. In Ft.
Bridge @	EB N°1	EB N°2	EB N°1	EB N°2	
557+67.50 -L- REV.	~~220~~ 224.86	~~220~~ 224.86			

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

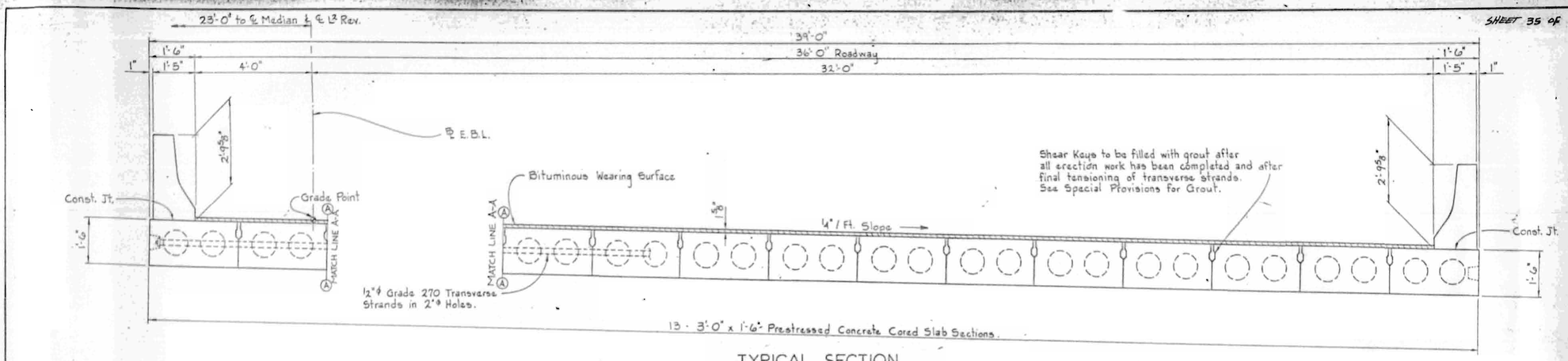
STANDARD RIP RAP DETAILS

JULY 1978

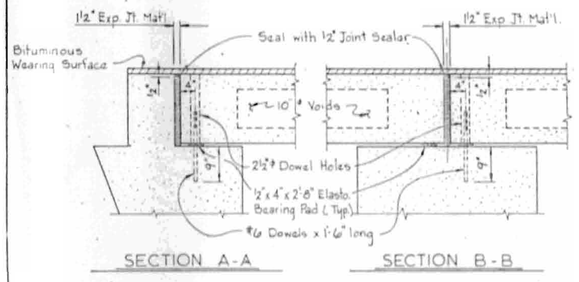
REVISIONS						ADDED SHEET NO.
NO.	BY	DATE	NO.	BY.	DATE	~~TOTAL SHEETS~~
1			3			~~84~~
2			4			

STD. NO. RR1

ASSEMBLED BY S.D. JOYNER	DATE 10/2/81	SPECIAL
CHECKED BY R.J. Moore	DATE 10-28-81	
DRAWN BY Ross K. Rubegni	DATE 4-28-70	STANDARD
CHECKED BY Glenn K. Kluppenz	DATE 8/70	

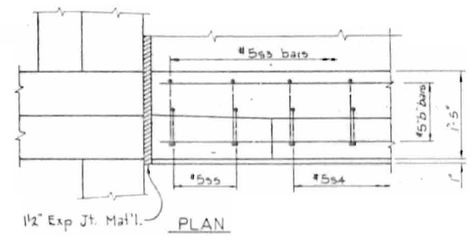


TYPICAL SECTION

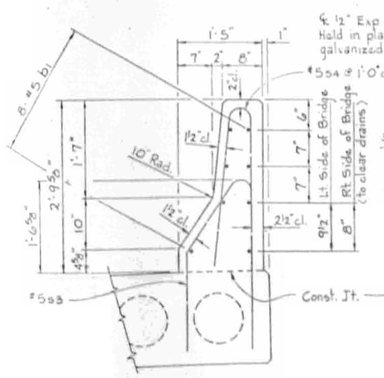


SECTION A-A

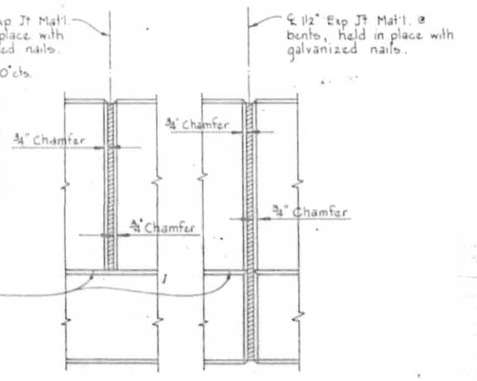
SECTION B-B



PLAN



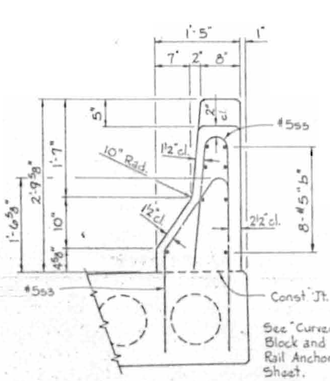
SECTION THRU RAIL



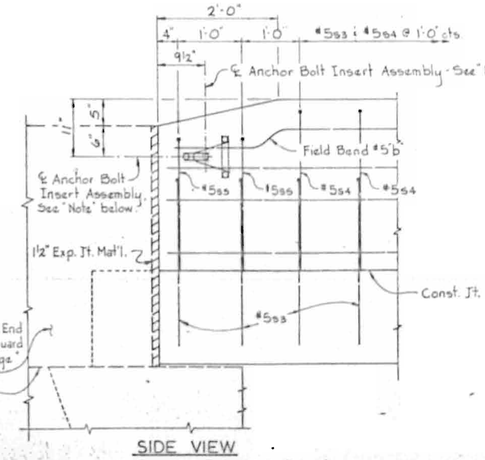
ELEVATION @ EXP JTS.

BARRIER RAIL DETAILS

See Special Provisions for Concrete Barrier Rail.



END VIEW



SIDE VIEW

BARRIER RAIL - END OF RAIL DETAILS

Note: See "Curved End Block and Guard Rail Anchorage" Sheet, For Anchor Bolt Insert Assembly.

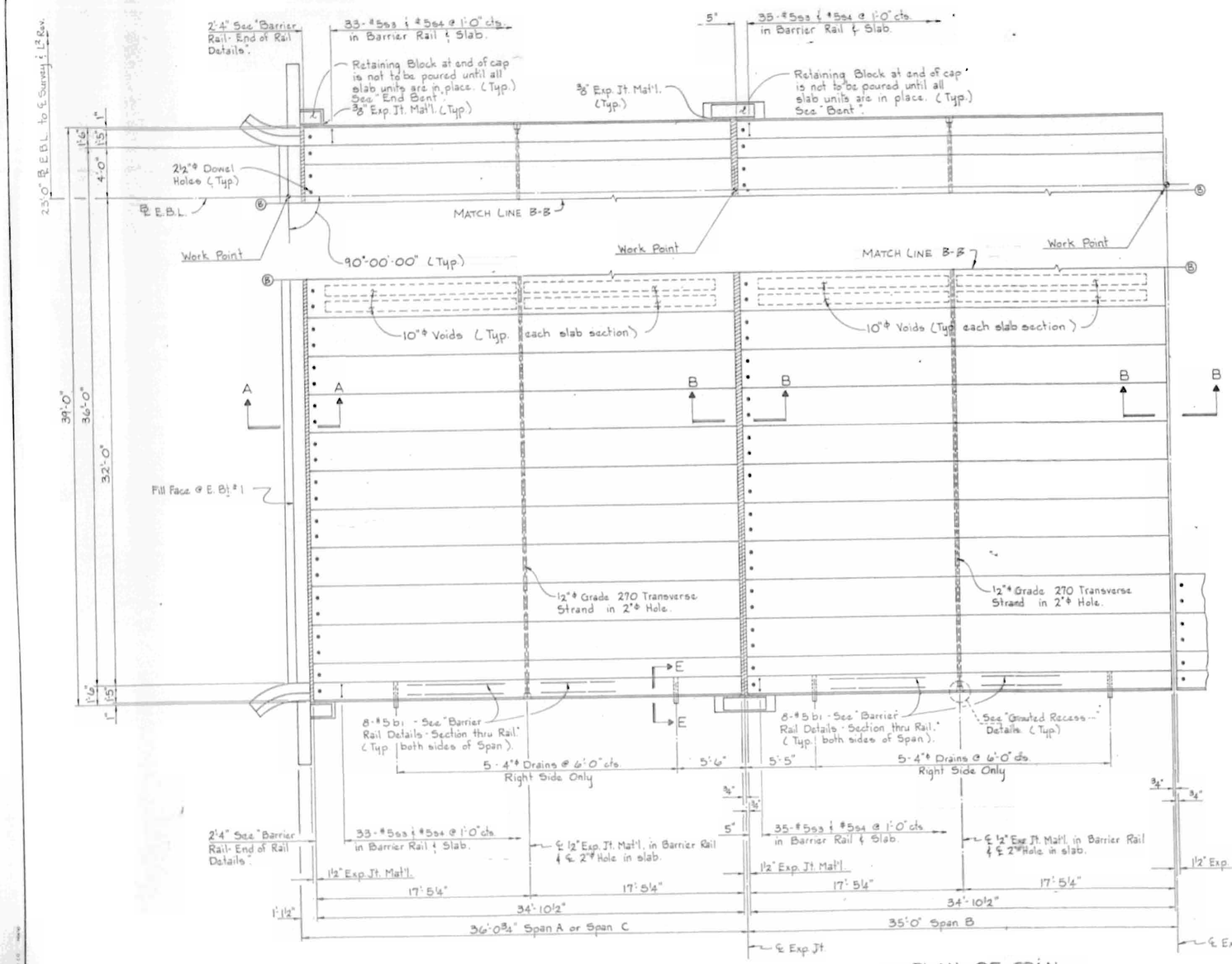
Note: The Contractor's attention is called to the fact that the 1½" thick joint material between the ends of the cored slabs at bents and between the backwall and the ends of the cored slabs is 1½" nominal and can be expected to vary. The Contractor may use more than one layer of expansion joint material to provide the thickness req'd. with a minimum layer thickness of ¼".

DRAWN BY: Ross Edward Kubeny DATE 10-15-81
CHECKED BY: R.J. Moore DATE 10-15-81

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 557+67.50 L2 REV
E.B.L.

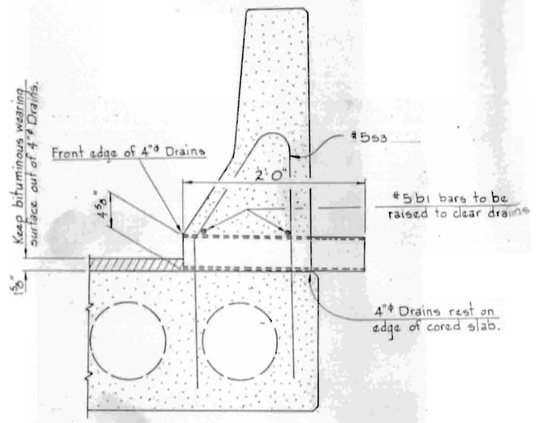
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTIONS
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-11b
1			3			TOTAL SHEETS
2			4			84



PLAN OF SPAN

PLAN OF SPAN



SECTION E-E

Showing placement of 2'-0" long 4"ϕ Drains thru Barrier Rail.
(15 - 4"ϕ Drains required.)
Drains may be shifted as necessary to clear #5s3 bars.

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 557+67.50 L-2 R
E.B.L.

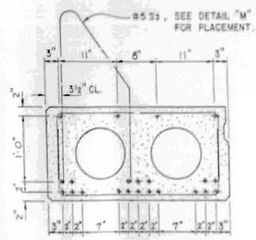
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS

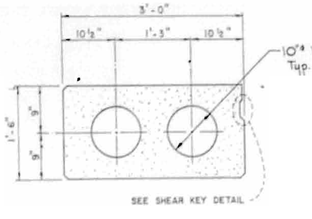
OCT. 19

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

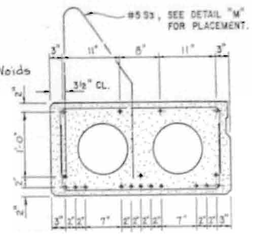
DRAWN BY: Ross Edward Kubany DATE: 10-15-81
CHECKED BY: R. J. Moore DATE: 10-15-81



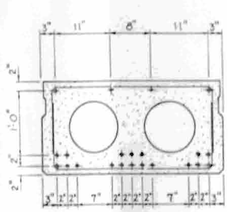
EXTERIOR SLAB SECTION



EXTERIOR SLAB SECTION

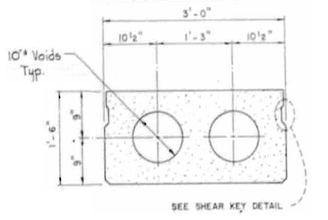


EXTERIOR SLAB SECTION



INTERIOR SLAB SECTION

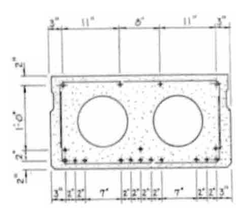
$^7/_{16}$"ϕ PRESTRESSED CABLE LAYOUT



INTERIOR SLAB SECTION

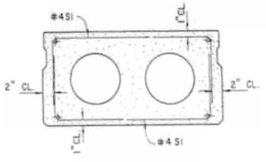
TYPICAL SECTION

NOTE: CHAMFER CORNERS ¾" AS SHOWN.



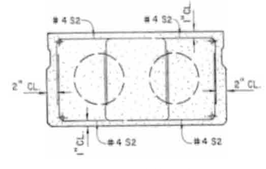
INTERIOR SLAB SECTION

$^1/_2$"ϕ PRESTRESSED CABLE LAYOUT



SLAB SECTION

SHOWING #4 S1 STIRRUPS.



SLAB SECTION

SHOWING #4 S2 STIRRUPS.

NOTES

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS
$^7/_{16}$"ϕ	270	0.115 SQ. IN.	31,000 LBS. PER CABLE	21,700 LBS. PER CABLE
$^1/_2$"ϕ	270	0.153 SQ. IN.	41,300 LBS. PER CABLE	28,900 LBS. PER CABLE

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRESS RELIEVED HIGH-STRENGTH GRADE 270 CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

ALL PRESTRESSED STRANDS SHALL MEET THE REQUIREMENTS OF ASTM-A416.

FOR PRESTRESSED CORED SLABS, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR PRESTRESSED CORED SLABS.

RECESS FOR TRANSVERSE STRANDS IS TO BE GROUTED AFTER THE TENSIONING OF STRANDS.

THE 2½"ϕ DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS TO BE FILLED WITH GROUT, SEE SPECIAL PROVISIONS. THE 2½"ϕ DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS ARE NOT REQUIRED.

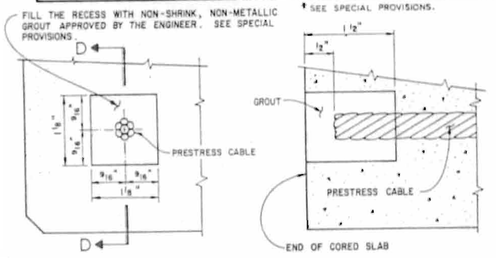
AT TRANSFER OF TENSIONING LOAD, THE CYLINDER STRENGTH OF CONCRETE SHALL BE 4,000 P.S.I. MINIMUM AND THE 28 DAY CYLINDER STRENGTH SHALL BE 5,000 P.S.I. MINIMUM.

ELASTOMER IN ELASTOMERIC BEARINGS SHALL HAVE A GRADE 50 DUROMETER HARDNESS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	NO. SPAN A or C	NO. SPAN B	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	32	32	96	5	STR.	17'-0"	1702
S4	68	70	202	5	3	4'-11"	1036
S5	4		8	5	3	4'-4"	36
REINFORCING STEEL Lbs.							2774
CLASS A A CONCRETE CU.YDS. (@ 6.9 CU. YDS. PER SPAN)							20.7
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL *							209.~~25~~ 8

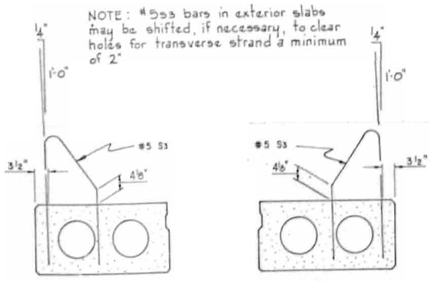
* SEE SPECIAL PROVISIONS.



PART ELEVATION AT END OF CORED SLAB

SECTION D-D

GROUTED RECESS AT END OF PRETENSIONED CABLE CORED SLABS



LEFT EXTERIOR SLAB

RIGHT EXTERIOR SLAB

DETAIL "M"

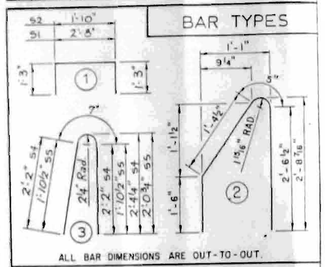
REINFORCING STEEL FOR ONE EXTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
S3	35	#5	2	5'-10"	213
TOTAL				LBS -	484

REINFORCING STEEL FOR ONE INTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
TOTAL				LBS -	271

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE CORED SLAB

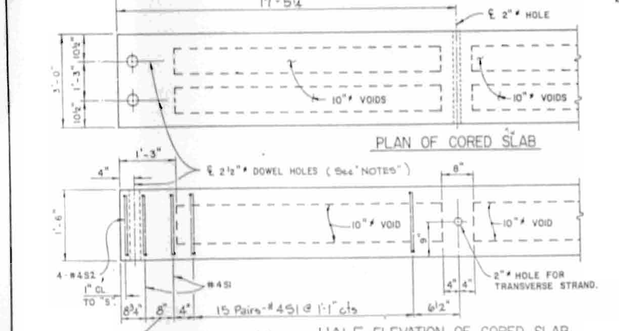
	REINFORCING STEEL LBS.	5,000 P.S.I. CONCRETE C.Y.	$^7/_{16}$"ϕ S.R. CABLES Nº	$^1/_2$"ϕ S.R. CABLES Nº
EXTERIOR C.S.	484	4.5	22	18
INTERIOR C.S.	271	4.5	22	18

CORED SLAB REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	6	34'-10½"	209'-3"
INTERIOR C.S.	33	34'-10½"	1150'-10½"
TOTAL	39		1360'-1½"

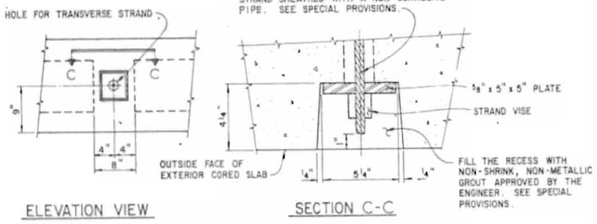
DEAD LOAD DEFLECTION AND CAMBER

FOR INT. or EXT. SECTION	$^7/_{16}$"ϕ Cables	$^1/_2$"ϕ Cables
CAMBER (SLAB ALONE IN PLACE)	5/8" ↑	11/16" ↑
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD	1/16" ↑	1/8" ↑
FINAL CAMBER	9/16" ↑	9/16" ↑



HALF-ELEVATION OF CORED SLAB

Note: #5ss bars in exterior cored slab not shown. For spacing of #5ss bars in exterior cored slab, see "Plan" of Superstructure.



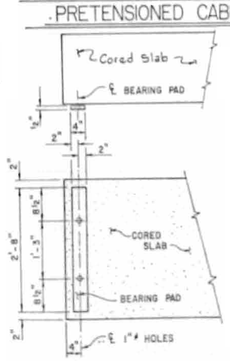
ELEVATION VIEW

SECTION C-C

GROUTED RECESS IN EXTERIOR SIDE OF PRETENSIONED CABLE CORED SLABS

NOTE

* THE CONTRACTOR, AT HIS OPTION, MAY USE LOW-RELAXATION STRANDS IN LIEU OF STRESS RELIEVED STRANDS. DESIGN AND STRAND PATTERN MUST PROVIDE AT LEAST THE SAME NET COMPRESSIVE STRESS AFTER THE LOSSES. THE ULTIMATE STRENGTH OF THE CORED SLAB UNIT MUST MEET THE REQUIREMENTS OF THE APPLICABLE AASHTO SPECIFICATIONS. LOW-RELAXATION STRANDS SHALL BE TENSIONED AND ANCHORED AT A LOAD EQUAL TO 75% OF ITS ULTIMATE STRENGTH. THIS APPLIED PRESTRESSED FORCE SHALL BE SHOWN ON THE PLANS. SIZE OF LOW-RELAXATION STRANDS SHALL NOT BE LARGER THAN THOSE SHOWN FOR STRESS RELIEVED STRANDS. DESIGN AND DETAIL PLANS USING LOW-RELAXATION STRANDS MUST BE SUBMITTED TO THE STATE BRIDGE DESIGN ENGINEER FOR APPROVAL. ANY ADDITIONAL COST DUE TO THE USE OF LOW-RELAXATION STRANDS WILL BE PAID FOR BY THE CONTRACTOR.



ELASTOMERIC BEARING DETAIL

39-(with holes) Brg. Pads Required.
39-(without holes) Brg. Pads Required.



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

DRAWN BY: ROSS EDWARD KUBENT DATE 10-15-81
CHECKED BY: R. V. Moore DATE 10-15-81

PROJECT NO. 8.1430701 #4

COLUMBUS COUNTY

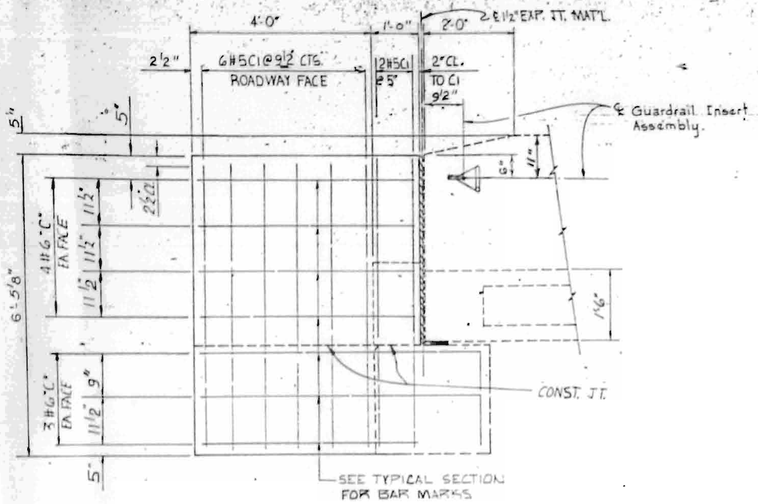
STATION: 557+67.5 L^2 Rev. E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

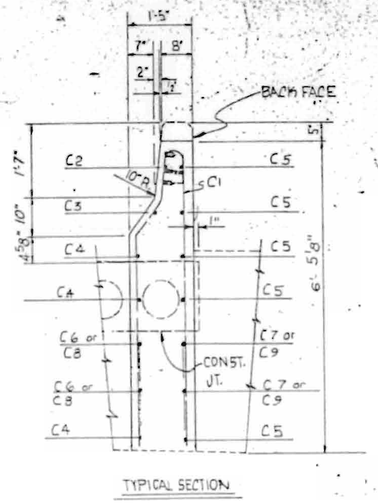
3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS

OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	~~S-1~~
1			3			TOTAL SHEETS
2			4			~~54~~

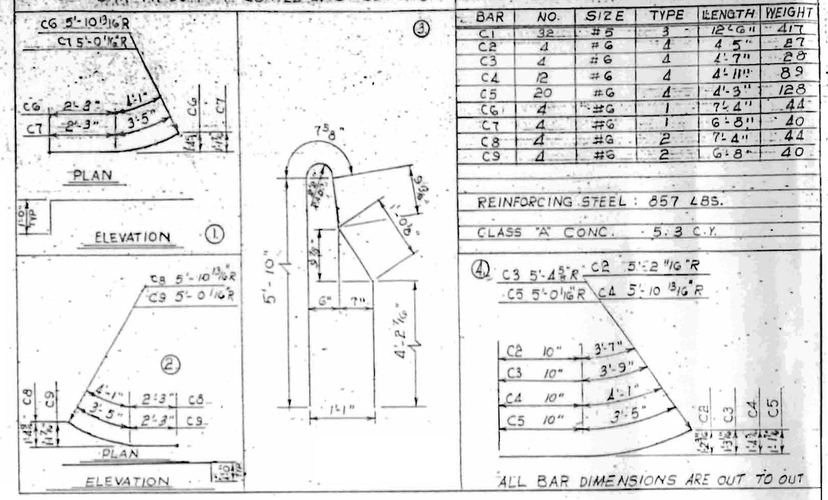


ELEVATION



TYPICAL SECTION

BAR TYPES FOR CURVED END BLOCKS



Bill of Material for Four Curved End Blocks

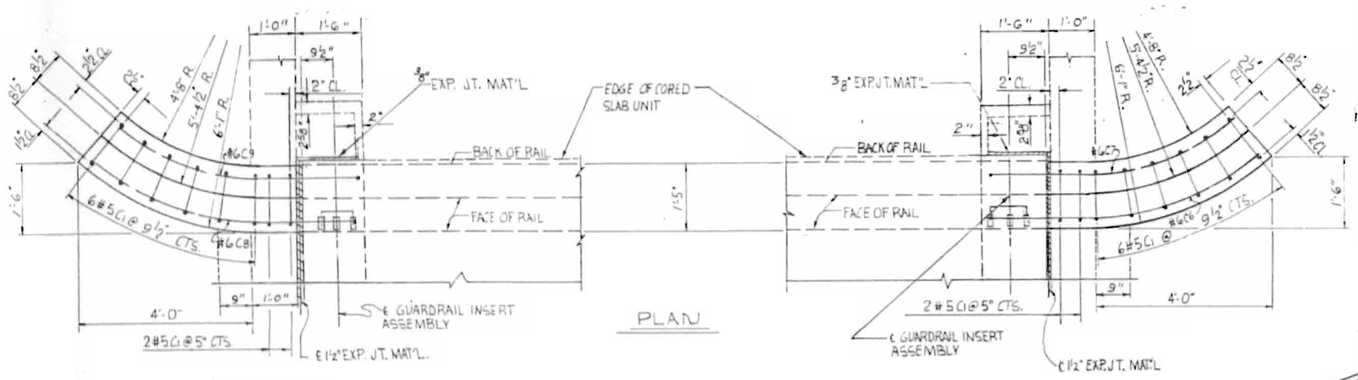
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
C1	32	#5	3	12'-6"	417
C2	4	#6	1	4'-5"	27
C3	4	#6	4	4'-7"	28
C4	12	#6	4	4'-11"	89
C5	20	#6	4	4'-3"	128
C6	4	#6	1	7'-4"	44
C7	4	#6	1	6'-8"	40
C8	4	#6	2	7'-4"	44
C9	4	#6	2	6'-8"	40

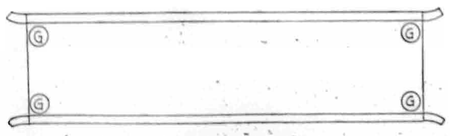
REINFORCING STEEL : 857 LBS.

CLASS "A" CONC. : 5.3 C.Y.

NOTES

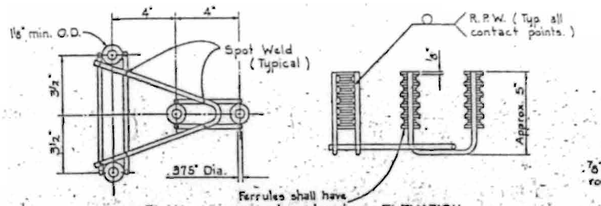
1. THE 4 - BOLT INSERT ASSEMBLY UNIT SHALL CONSIST OF THE FOLLOWING COMPONENTS:
   a. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF A.S.T.M. A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".
   b. 4 - 7/8"ø x 2 3/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8"ø x 2 3/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF A.S.T.M. A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
   c. WIRE STRUTS SHOWN IN THE INSERT ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.
2. THE INSERT ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.
3. THE COST OF THE 4-BOLT INSERT ASSEMBLY UNIT COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.
4. THE 4 - BOLT INSERT ASSEMBLY UNIT IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END POSTS. FOR POINTS OF ATTACHMENT, SEE *"LOCATION OF GUARDRAIL ANCHORAGE" SKETCH, THIS SHEET.*
5. CURVED END BLOCKS ARE REQUIRED AT ALL END POSTS.
6. THE COST OF THE EXCAVATION AND BACKFILL FOR THE CURVED END BLOCKS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.



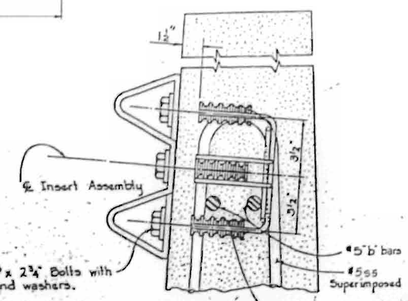


LOCATION OF GUARDRAIL ANCHORAGE

Ⓖ DENOTES GUARDRAIL ANCHORAGE LOCATION



INSERT ASSEMBLY



SECTION E-E

DRAWN BY: S.D.JOYNER DATE: 7/16/81
CHECKED BY: R.L. Moore DATE: 7-21-81

PROJECT NO. 8.1430701

COLUMBUS COUNTY

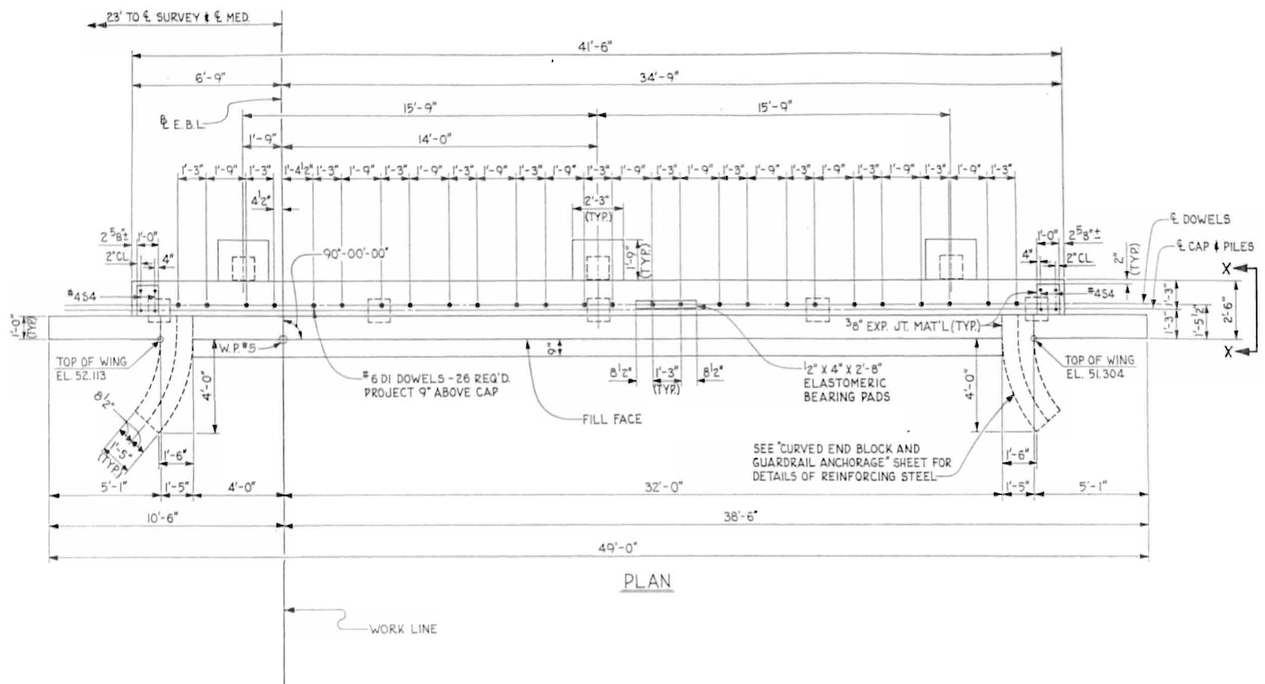
STATION: 557+67.50 (2 Rev.) E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

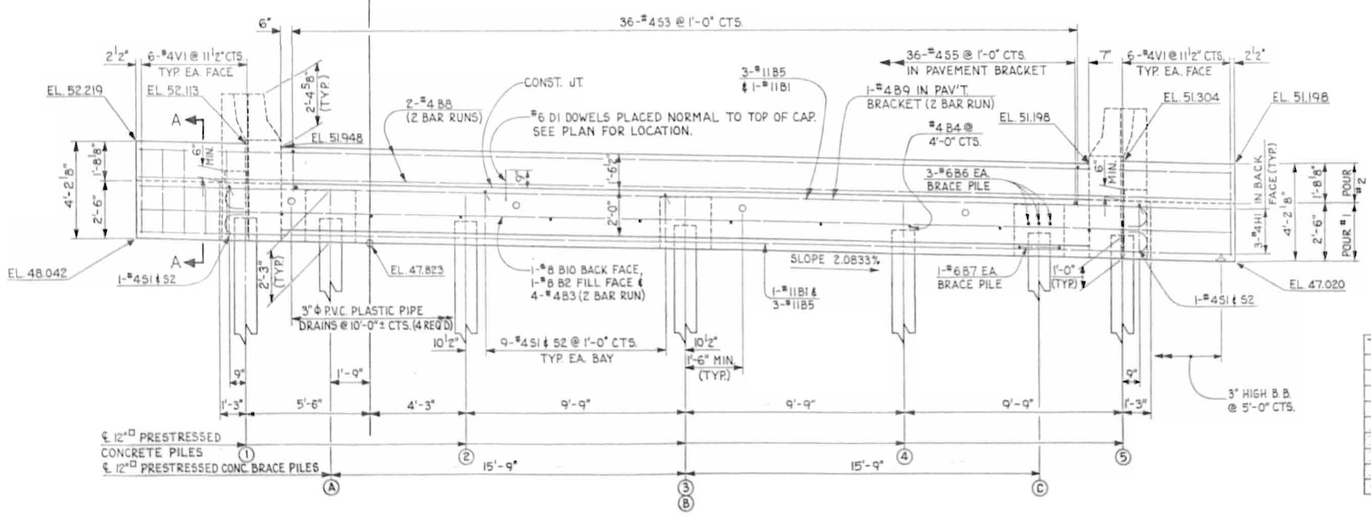
CURVED END BLOCK AND GUARDRAIL ANCHORAGE FOR BARRIER RAIL

JULY 1981

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		5-14
1			3				TOTAL SHEETS
2			4				84



PLAN



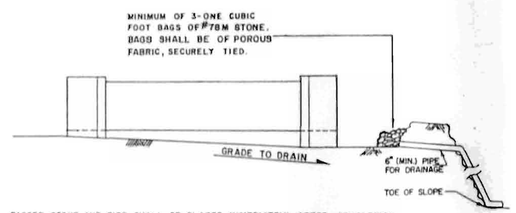
ELEVATION

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECCESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

TOP OF PILE ELEVATIONS	
NO.	ELEVATION
1	48.938
2	48.734
3	48.531
4	48.328
5	48.125
A	48.859
B	48.531
C	48.203

PROJECT NO. 8.1430701 #4

COLUMBUS COUNTY

STATION: 557+67.50-L-2 REV

SHEET 1 OF 2 E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

NOV. 1981

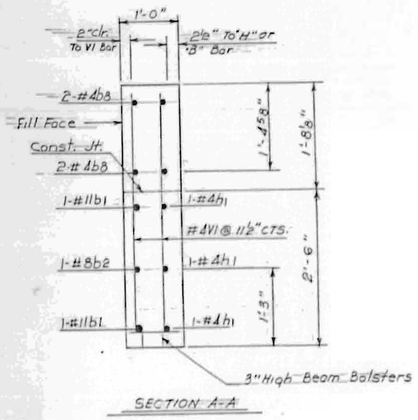
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-50
1			3			TOTAL SHEETS
2			4			54

DRAWN BY C.S. GODBOLD DATE 13 NOV 81
CHECKED BY R.V. Moore DATE 12-18-81

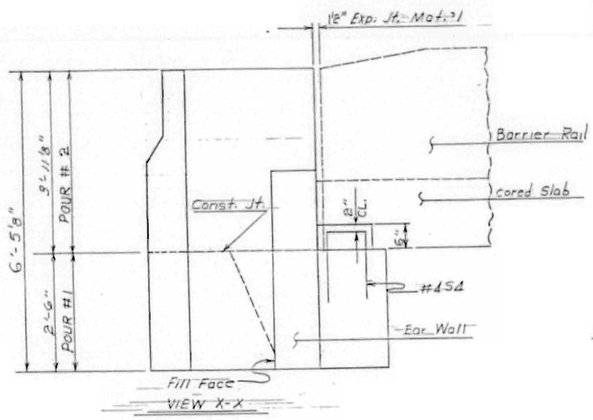
CAPE BLUEPRINT & SUPPLY CO., INC.

SHEET 40 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

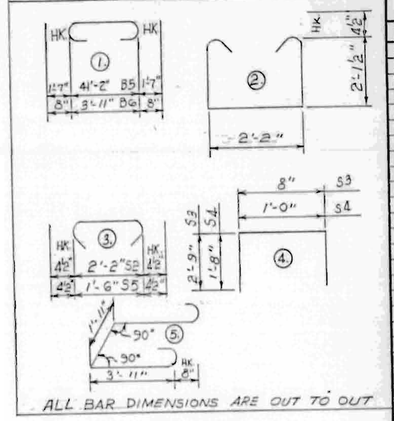


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See "Curved End Block And Guardrail Anchorage For Barrier Rail Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 1

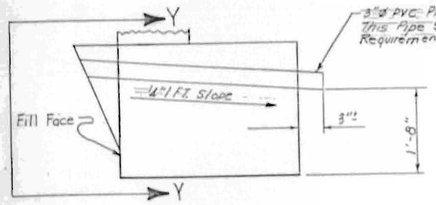
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-8"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-3"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	11'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	4	4'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str.	5'-1"	20
VI	24	#4	Str.	3'-10"	61

Reinforcing Steel LBS. 3,188

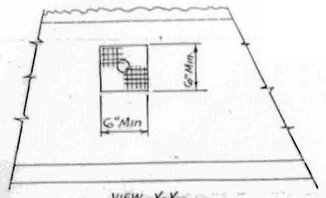
CLASS "A" Conc.
Pour #1 * = 11.7 CU YDS
Pour #2 = 2.7 CU YDS
Total = 14.4 CU YDS

12"ø Prestressed Conc. Piles No. 8 Lin Ft. ~~240~~ 320'

PIPE DRAIN DETAILS



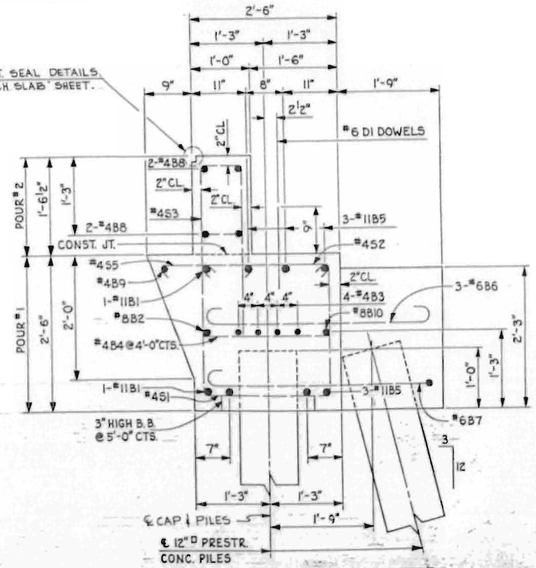
Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.

FOR COMPRESSION JT. SEAL DETAILS SEE "BRIDGE APPROACH SLAB" SHEET.



SECTION THRU CAP

PROJECT No. 8.1430701 #4

COLUMBUS COUNTY

STATION: 557+67.50-L- REV.

SHEET 2 OF 2 E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 1

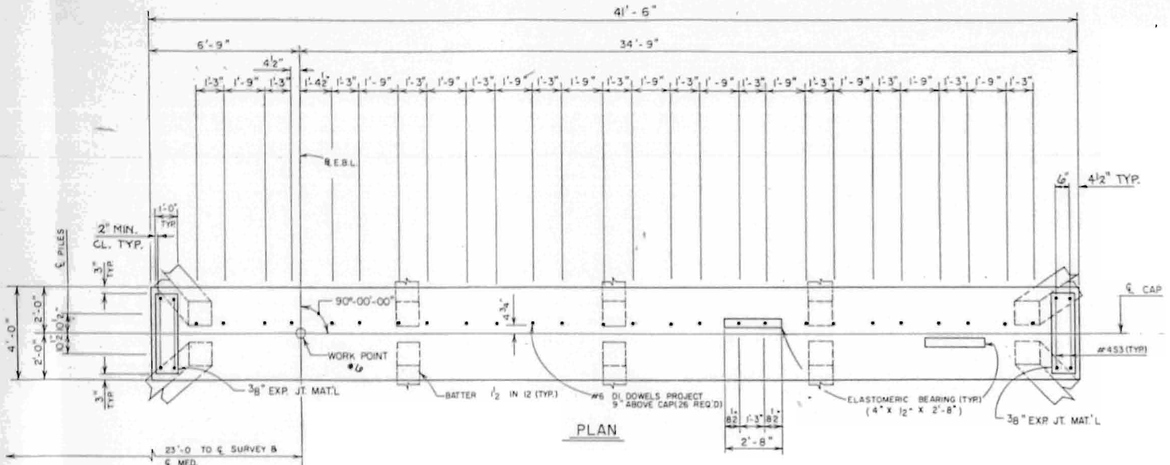
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6-71
1			3			TOTAL SHEETS
2			4			~~84~~

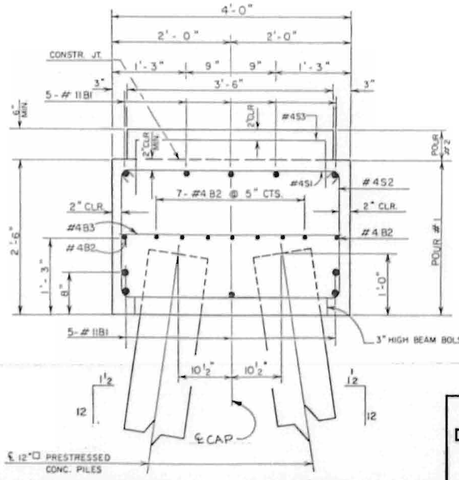
DRAWN BY S.D. JOYNER DATE 7/24/81
CHECKED BY R. J. Moore DATE 7-30-81

SHEET 4-1 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

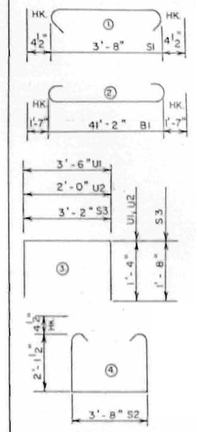


TOP OF PILE ELEVATION	
P1	48.917
P2	48.724
P3	48.531
P4	48.339
P5	48.146



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (1 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR.	21'-5"	258
B3	11	#4	STR	3'-8"	27
D1	26	#6	STR	1'-6"	59
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6
REINFORCING STEEL					3,044
CLASS "A" CONC					15.1 CU. YDS.
12"□ PRESTRESSED CONC. PILES					
NO 10 LIN. FT.				~~400~~	400'
CLASS "A" CONC.					
POUR #1				15.0	CU. YDS.
POUR #2				0.1	CU. YDS.
TOTAL				15.1	CU. YDS.

PROJECT NO. 8.1430701 #4

COLUMBUS COUNTY

STATION: 557+67.50-L- REV.

E. B. L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
BENT # 1

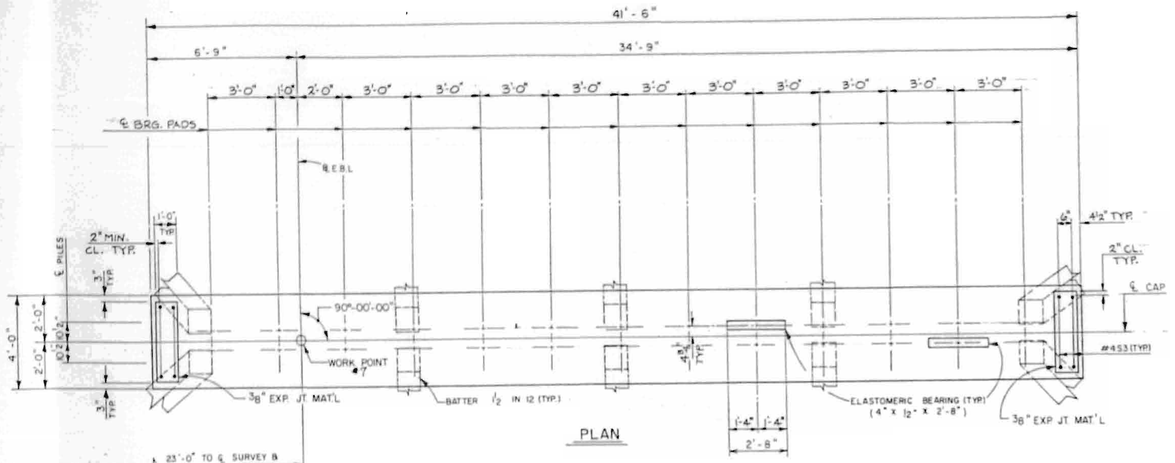
OCT. 1981

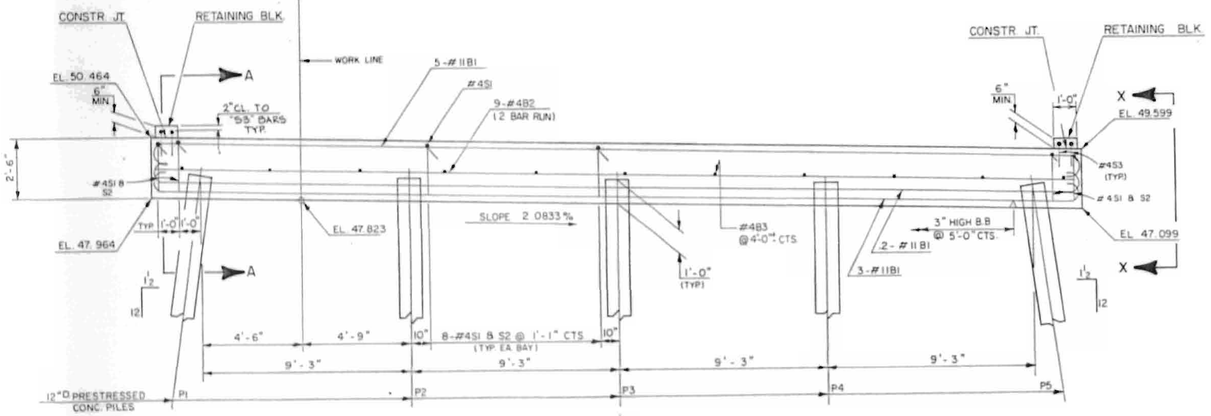
REVISIONS						SHEET NO. ~~S-1~~
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS ~~84~~
2			4			

DRAWN BY S. O. JOYNER DATE 10/19/81
CHECKED BY R. J. Moore DATE 10-28-81

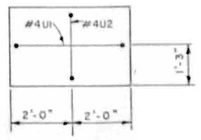
SHEET 12 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		





ELEVATION



VIEW X-X

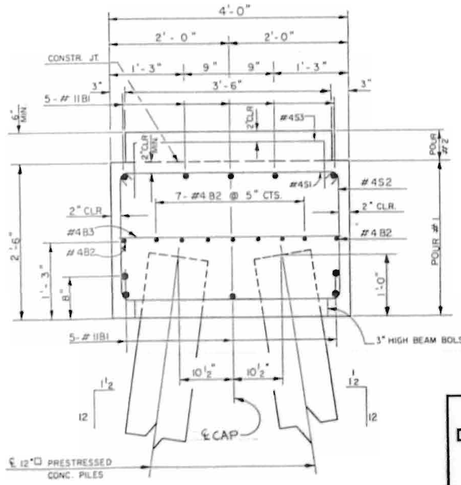
REINFORCING SHOWN TYP. EACH END.

NOTES:

*CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

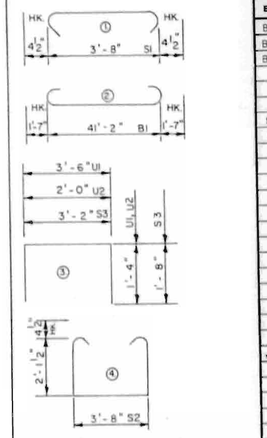
THE RETAINING BLOCK AT EACH END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

TOP OF PILE ELEVATION	
P1	48.317
P2	48.724
P3	48.531
P4	48.339
P5	48.146



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (1 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR.	21'-5"	258
B3	11	#4	STR.	3'-8"	27
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6
REINFORCING STEEL					2,985
CLASS "A" CONC					15.1 CU.YDS
12" □ PRESTRESSED CONC. PILES					
NO. 10 LIN. FT.					~~300~~ 400'

CLASS "A" CONC

POUR #1	=	15.0 CU. YDS.
POUR #2	=	0.1 CU. YDS.
TOTAL	=	15.1 CU. YDS.

DRAWN BY S. D. JOYNER DATE 10/19/81
CHECKED BY R. V. Moore DATE 10-22-81

PROJECT NO. 8.1430701 *4
COLUMBUS COUNTY
STATION: 557+47.50-L- REV.
E.B.L.

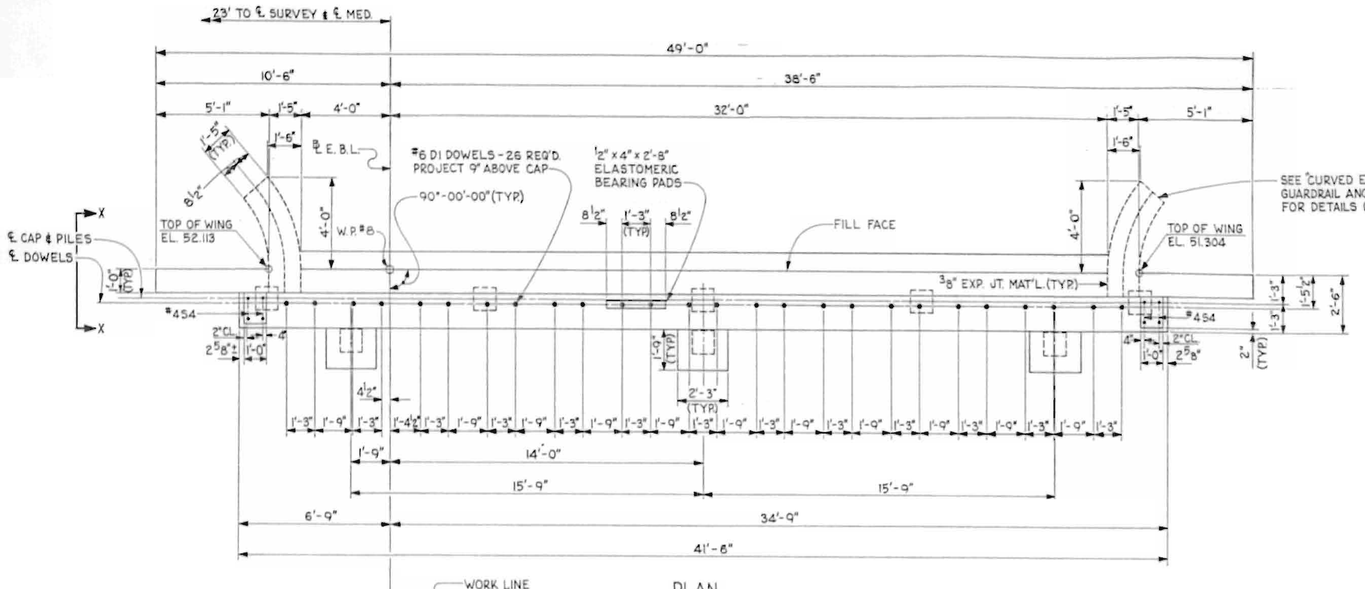
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
BENT # 2

OCT. 1981

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

SHEET 43 OF 82



NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

FOR "TEMPORARY DRAINAGE" DETAILS FOR END BENT 2, SEE END BENT 1 SHEET 1 OF 2.

TOP OF PILE ELEVATIONS	
NO.	ELEVATION
1	48.938
2	48.734
3	48.531
4	48.328
5	48.125
A	48.859
B	48.531
C	48.203

DRAWN BY C. S. GODBOLD DATE DEC. 17, 1981
CHECKED BY K. V. Moore DATE 12-18-81

CASE HUNTER & SUPPLY CO. 19606

PROJECT NO. 8.1430701 #4
COLUMBUS COUNTY
STATION: 557+67.50-L-2 REV.
SHEET 1 OF 2 E. B. L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

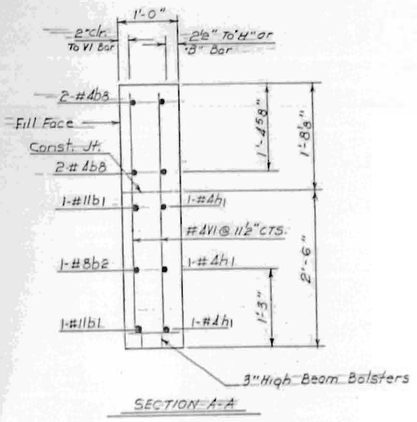
SUBSTRUCTURE
END BENT 2

DEC. 1981

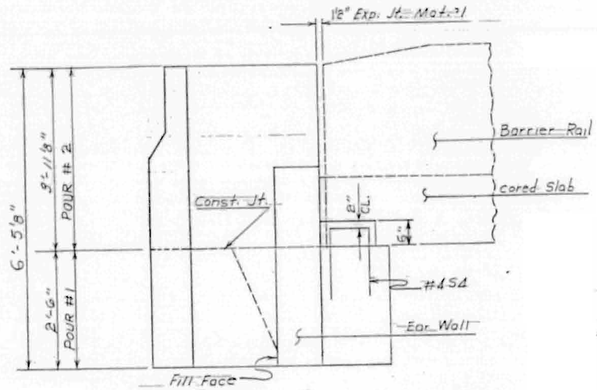
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-21
1			3			TOTAL SHEETS
2			4			84

SHEET 44 OF

FED. ROAD DIV.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

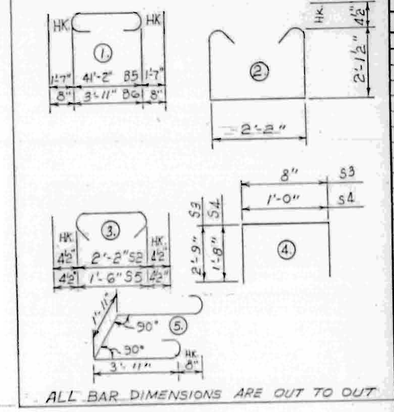


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See "Curved End Block And Guardrail Anchorage For Barrier Rail" Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-6"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	11'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	1	1'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str	5'-1"	20
V1	24	#4	Str.	3'-10"	61

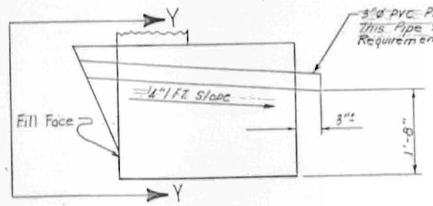
Reinforcing Steel LBS 3,188

CLASS "A" Conc.

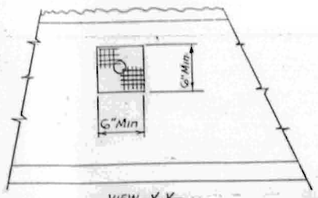
Pour #1*	=	11.7 CU YDS
Pour #2	=	2.7 CU YDS
Total	=	14.4 CU YDS

12" ø Prestressed Conc. Piles No. 8 Lin Ft. ~~240~~ 320'

PIPE DRAIN DETAILS

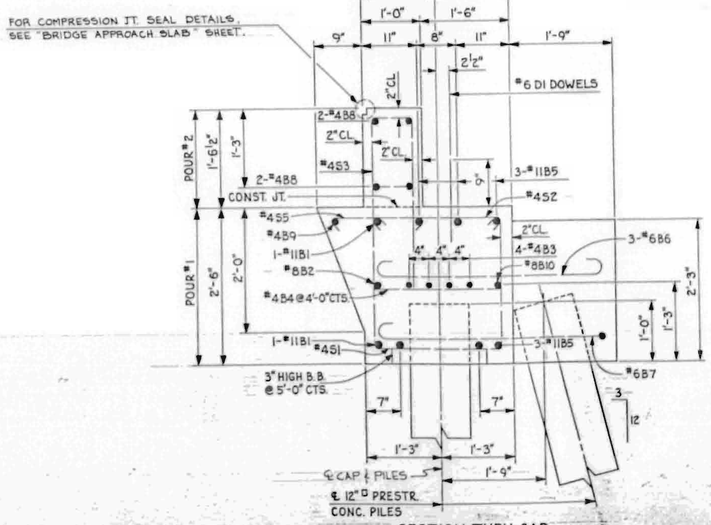


Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing Pvc Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.



SECTION THRU CAP

DRAWN BY J.D. JOYNER DATE 11/24/81
CHECKED BY R. J. Moore DATE 7-30-81

PROJECT NO. 8.1430701 #4

COLUMBUS COUNTY

STATION: 557+67.50-L³ REV.

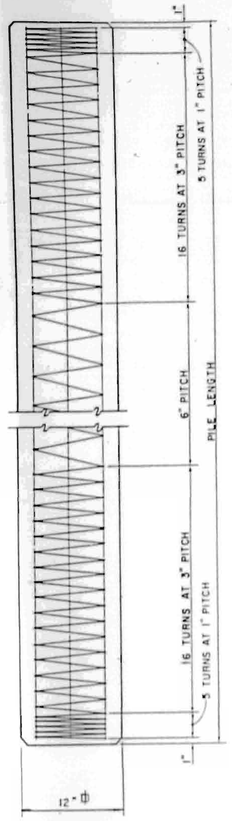
SHEET 2 OF 2 E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

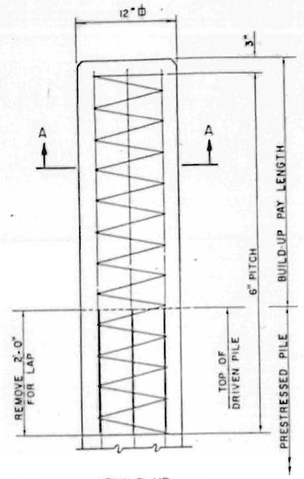
SUBSTRUCTURE
END BENT 2

OCT. 1981

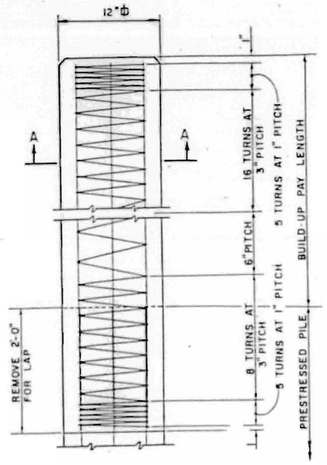
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NO.	BY	DATE	NO.	BY	DATE	~~5~~ 25
1			3			TOTAL SHEETS
2			4			~~84~~



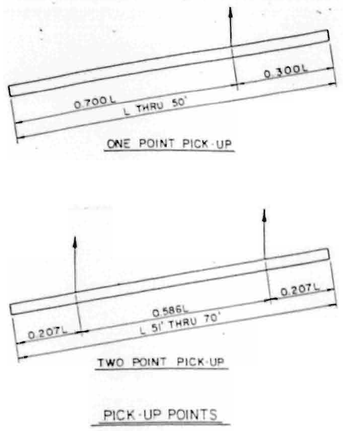
ELEVATION



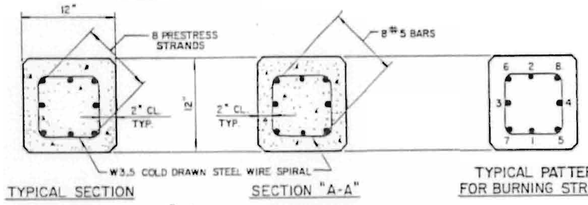
BUILD-UP WITHOUT DRIVING



BUILD-UP WITH DRIVING

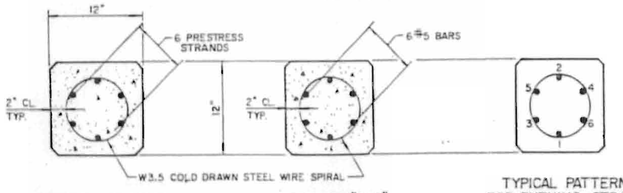


PICK-UP POINTS



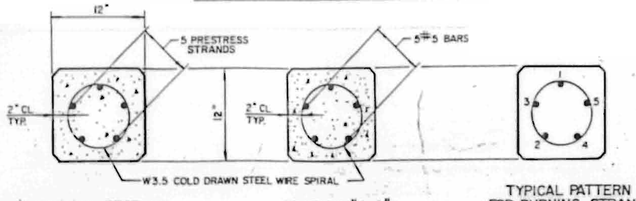
TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{3}{8}$"Φ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{7}{16}$"Φ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{1}{2}$"Φ GRADE 270 PRESTRESS STRANDS

QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINT 0.300L	ONE PICK-UP POINT 0.700L	TWO PICK-UP POINT 0.207L	TWO PICK-UP POINT 0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.70	15'-0"	35'-0"		
55'-0"	2.01	4.07			11'-4½"	32'-3"
60'-0"	2.19	4.44			12'-5"	35'-2"
65'-0"	2.37	4.81			13'-5½"	38'-1"
70'-0"	2.56	5.18			14'-6"	41'-0"

NOTES

- CONCRETE DESIGN DATA: f'c = 5,000 PSI ; fc = 2,000 PSI

IMPACT IN HANDLING = 50%

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DEVICES FOR LIFTING THE PILES SHALL BE APPROVED BY THE ENGINEER. LOOPS OF STRAND CAST IN THE PILES WILL NOT BE PERMITTED. INSERTS, CAST IN THE PILES TO RECEIVE THREADED EYE-BOLTS OR SIMILAR APPROVED DEVICES, MAY BE USED; OR WHERE IT IS PRACTICABLE, SATISFACTORY CLAMPS OR SLINGS MAY BE USED. WHERE PILES WILL BE EXPOSED TO VIEW IN THE STRUCTURE AND INSERTS ARE CAST IN THE PILES, THE OPENINGS SHALL BE REPAIRED AFTER THE EYE-BOLTS OR OTHER ATTACHMENTS HAVE BEEN REMOVED. THE OPENINGS SHALL BE REPAIRED IN A SATISFACTORY MANNER IN ORDER TO OBTAIN A UNIFORM APPEARANCE.

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRANDS AS PRESCRIBED IN THE SPECIFICATIONS. THE CONTRACTOR MAY, AT HIS OPTION, USE EITHER OF THE THREE TYPES OF STRANDS LISTED BELOW; HOWEVER, ALL STRANDS IN A PILE SHALL BE OF THE SAME TYPE.

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
$\frac{3}{8}$"Φ	270	8	0.085 Sq In	23,000 # PER STRAND	16,100 # PER STRAND
$\frac{7}{16}$"Φ	270	6	0.115 Sq In	31,000 # PER STRAND	21,700 # PER STRAND
$\frac{1}{2}$"Φ	270	5	0.153 Sq In	41,300 # PER STRAND	28,900 # PER STRAND

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED THE LAST STRAND MAY BE BURNED SINGLY, ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE CLASS "A" CONCRETE W/20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

ALL CORNERS TO BE CHAMFERED ¾".

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

STEEL PILE TIP DETAILS

NOTES

WHEN NOTED ON GENERAL DRAWING, THE CONTRACTOR, AT HIS OPTION, MAY SUBSTITUTE 12" PRESTRESSED CONCRETE PILES WITH STEEL PILE TIPS, AS SHOWN IN THE DETAILS, IN LIEU OF HP 12 x 53 STEEL PILES.

THE STEEL PILE TIP SHALL NOT BE INCLUDED IN DETERMINING THE LENGTH OF THE PILE FOR PAYMENT. THE COST OF THE STEEL PILE TIP UNIT SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF PILES.

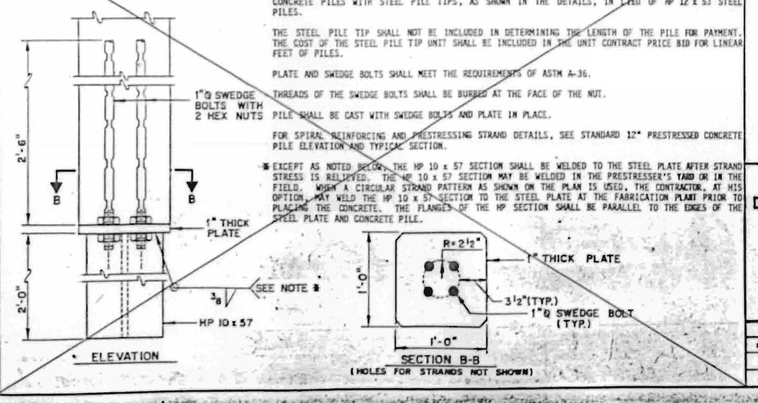
PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A-36.

THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

* EXCEPT AS NOTED BELOW, THE HP 10 x 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 x 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLAN IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 x 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



REVISED 11-12-82 BY JMB / BY RDU
REVISED 12-22-80 BY CCM / BY RDU
REVISED 7-31-78 BY REK / BY RDU
REVISED 7-14-83 BY JMB / BY RDU
REVISED 2-3-83 BY JMB / BY RDU

ASSEMBLED BY: ROSS E. KUBENY DATE: 8-21-65
CHECKED BY: [illegible] DATE: 7-3-68
DRAWN BY: R. DEEP PRASAD DATE: OCT 14 1977
CHECKED BY: RAMESH A. PATEL DATE: MAY 7 1977

SPECIAL
STANDARD

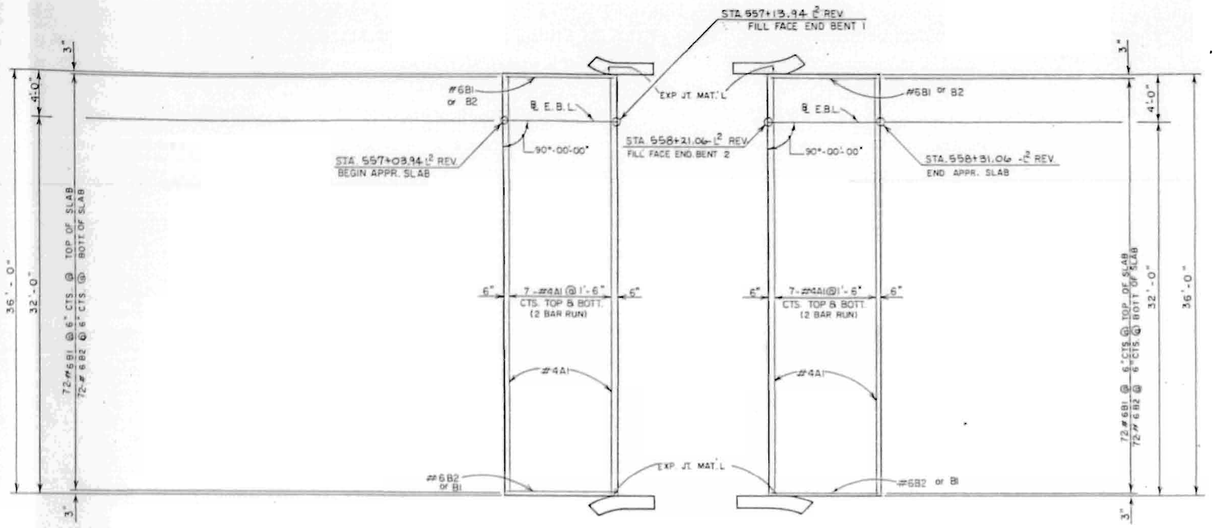
PROJECT NO. 8.1430701 #4
COLUMBUS COUNTY
STATION: 557+67.5-L² REV.
E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
12" PRESTRESSED
CONCRETE PILE

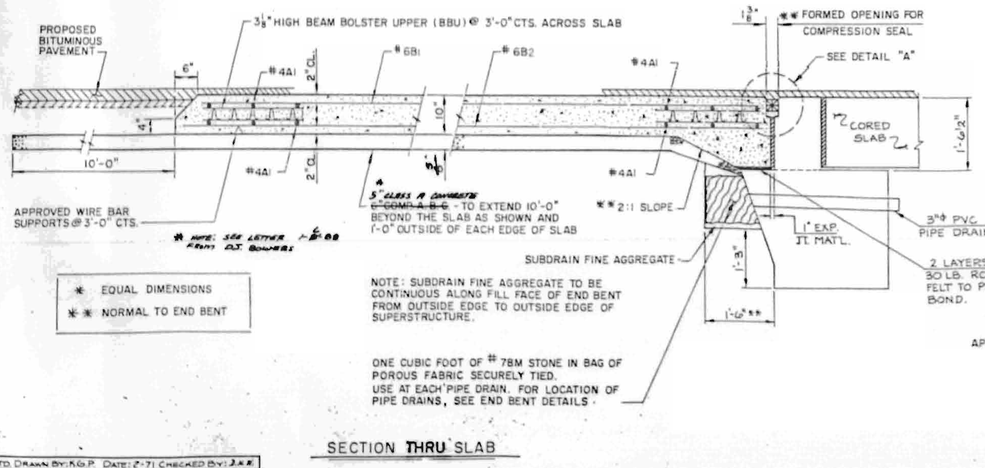
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2			4			64

STD. NO. PCP1



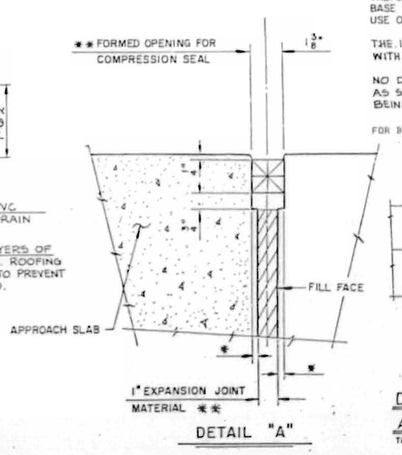
PLAN OF APPROACH SLAB
(END BENT #1)

PLAN OF APPROACH SLAB
(END BENT #2)

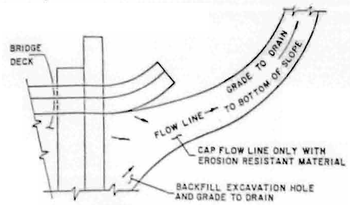


* EQUAL DIMENSIONS
** NORMAL TO END BENT

SECTION THRU SLAB



DETAIL "A"



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAILS

NOTES

FOR PREFORMED COMPRESSION JOINT SEAL, SEE SPECIAL PROVISIONS.

PREFORMED COMPRESSION JOINT SEAL SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID. SEE GENERAL DRAWING.

OPENING SHOWN IS BASED ON A NOMINAL UNCOMPRESSED SEAL WIDTH OF 2".

THE INSTALLED COMPRESSION SEAL SHALL BE WATERTIGHT.

PROVIDE WATERTIGHT SEAL AT END OF COMPRESSION SEAL AS RECOMMENDED BY MANUFACTURER.

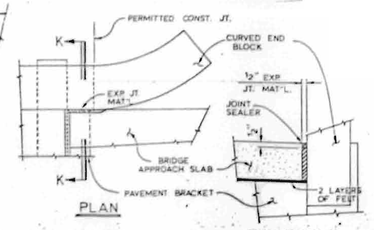
COMPRESSION SEAL EXTENDS FROM GUTTER TO GUTTER ALONG BRIDGE DECK NOTCH.

THE CONTRACTOR, AT HIS OPTION, MAY USE 4" BITUMINOUS CONCRETE BASE COURSE, TYPE HB IN LIEU OF 6" A.B.C. ANY ADDITIONAL COST DUE TO USE OF THIS OPTION WILL BE PAID FOR BY THE CONTRACTOR.

THE 1" EXPANSION JOINT MATERIAL IS TO BE HELD IN PLACE WITH GALVANIZED NAILS.

NO DIRECT PAYMENT WILL BE MADE FOR THE TEMPORARY DRAINAGE AS SUCH WORK WILL BE CONSIDERED INCIDENTAL TO OTHER WORK BEING PAID FOR BY THE VARIOUS ITEMS IN THE CONTRACT.

FOR BRIDGE APPROACH SLABS, SEE SPECIAL PROVISIONS.



DETAIL OF EXP. JT. MAT'L. BETWEEN APPROACH SLAB AND CURV. END BLK

THE EXPANSION JOINT SHALL BE SEALED WITH JOINT SEALER AS SHOWN.

BILL OF MATERIAL

FOR ONE APPR. SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	28	#4	STR.	18'-5"	344
B1	72	#6	STR.	9'-1"	982
B2	72	#6	STR.	9'-7"	1,036

REINFORCING STEEL LBS. = 2,362

CLASS "A" CONCRETE CU. YDS. = 12.4

REVISED 9-17-81 BY: E.R.L. CHECKED BY: J.L.G.
REVISED 4-2-81 BY: E.R.L. CHECKED BY: C.C.M.
REVISED 8-28-79 BY: R.D.U. CHECKED BY: R.D.U.
REVISED 4-1-79 BY: C.C.M. CHECKED BY: R.D.U.
REVISED 7-31-78 BY: R.E.K. CHECKED BY: R.D.U.

STD. DRAWN BY: R.G.P. DATE: 2-71 CHECKED BY: J.A.E.
DRAWN BY: S.D. JOYNER DATE: 11-2-81
CHECKED BY: R.J. Moore DATE: 11-10-81

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 557+67.50 -L- REV. E.B.L.

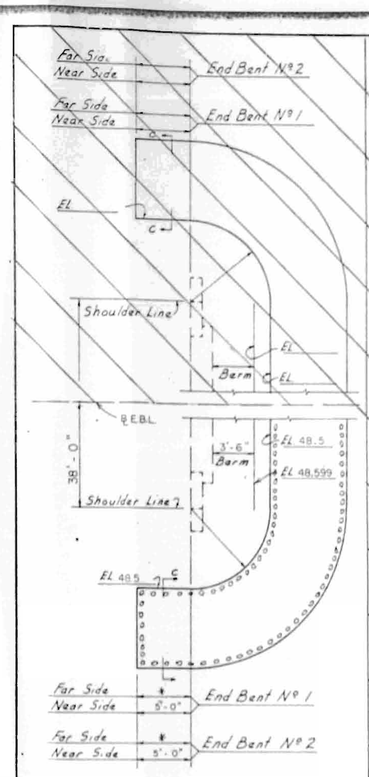
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

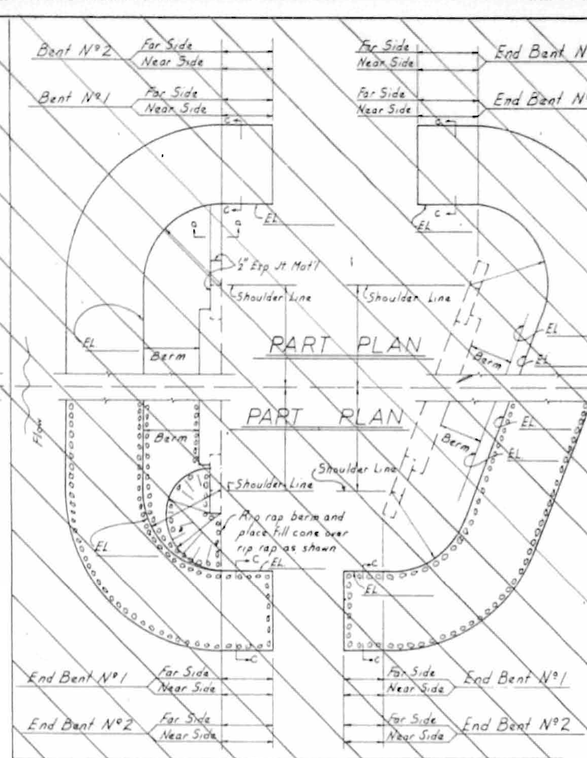
BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

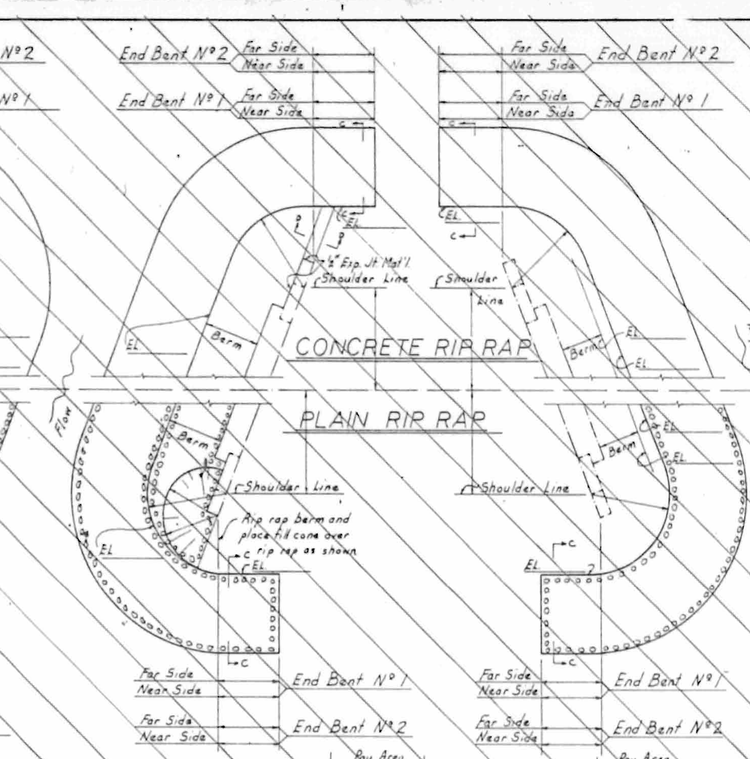
JULY 1978

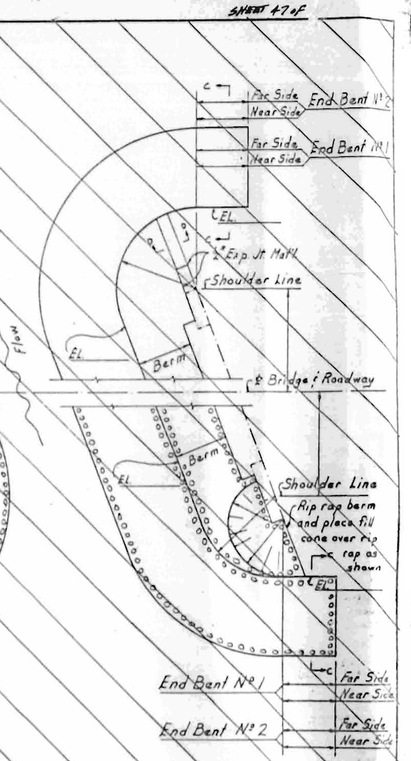
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NO.	BY	DATE	NO.	BY	DATE	6-27
1			3			TOTAL SHEETS
2			4			84

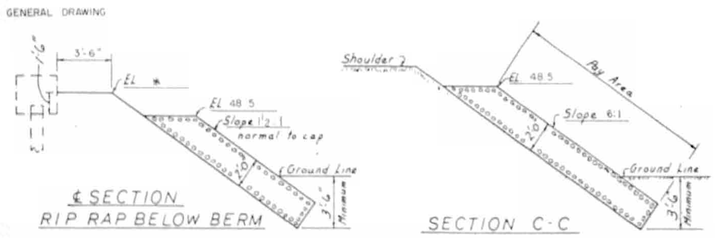
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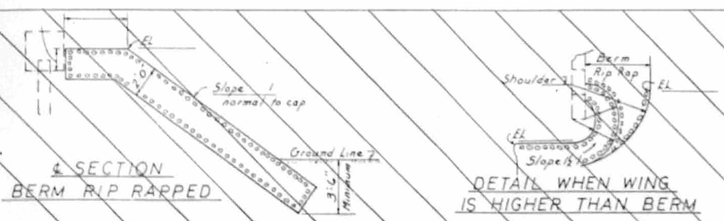


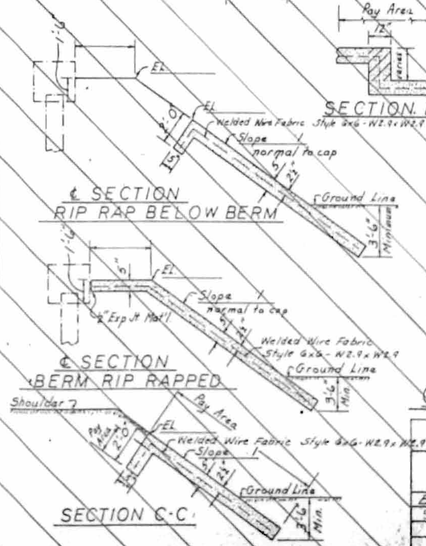














NOTES

Concrete Rip Rap shall be Class "B" Concrete.
Welded Wire Fabric Reinforcing to be Style 6x6-W2.9xW2.9 60" wide. Adjacent runs of welded wire fabric to lap at least 6". Concrete Rip Rap to be poured in alternate 4'-5' strips as shown in Pouring Detail.
Toe walls shall be constructed at ends of rip rap similar to that shown for the top of the rip rap (FOR Concrete Rip Rap Only.)
Concrete in walls at end bent wings as indicated by cross hatched areas in section D-D and E-E will not be measured or paid for as a separate item as the entire cost of same shall be included in the price bid per S.Y. for Conc. rip rap.

CONCRETE RIP RAP

ESTIMATED QUANTITIES

Bridge @	Plain Rip Rap Class 2 TONS EB No 1	Plain Rip Rap Class 2 TONS EB No 2	Concrete Rip Rap S.Y. EB No 1	Concrete Rip Rap S.Y. EB No 2	Welded Wire Fabric 60" Wide Approx. lin. ft
557 + 67.50 ℓ REV	~~216~~ 221.90	~~210~~ 186.96			

PROJECT No. 8.1430701
COLUMBUS COUNTY
STATION: 557 + 67.5 -ℓ- REV
E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD RIP RAP DETAILS

JULY 1978

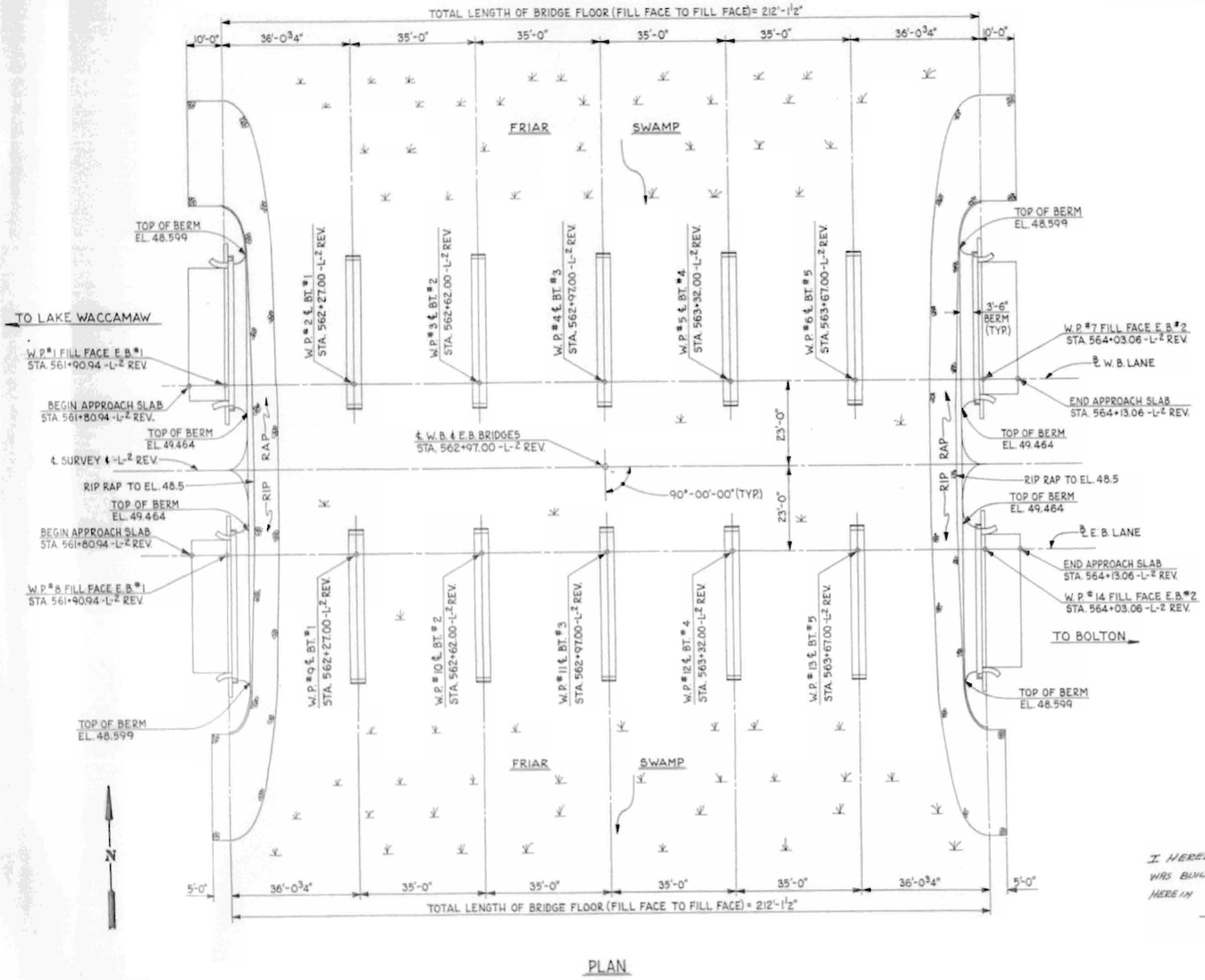
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

ASSEMBLED BY	S.D. JOYNER	DATE 10/21/81	SPECIAL
CHECKED BY	R.W. Moore	DATE 10-28-81	
DRAWN BY	Ross C. Lopens	DATE 4-23-70	STANDARD
CHECKED BY	Stan V. Kaylor	DATE 8-70	

Revised 3-10-80 BY P.D.W. & BY R.G.F.
Revised 7-31-78 BY R.E.K. & P.D.W.

STD. NO. RR1

50 60 70 80 90 562+00 10 20 30 40 50 60 70 80 90 563+00 10 20 30 40 50 60 70 80 90 564+00 10 20 30 40 50



PLAN

NOTES

ASSUMED LIVE LOAD = H.S. 20-44 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET S-N.

ALL REINFORCING STEEL SHALL BE GRADE 60.

PILES FOR BENTS AND END BENTS SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 40 TONS EACH.

BITUMINOUS WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

DRAWN BY: C. S. GODBOLD DATE: 10/7/81
CHECKED BY: R. V. Moore DATE: 10-12-81

I HEREBY CERTIFY THAT THESE STRUCTURES WAS BUILT ACCORDING TO PLANS EXCEPT AS NOTED HEREIN

RESIDENT ENGINEER

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.0 -L-2 REV.

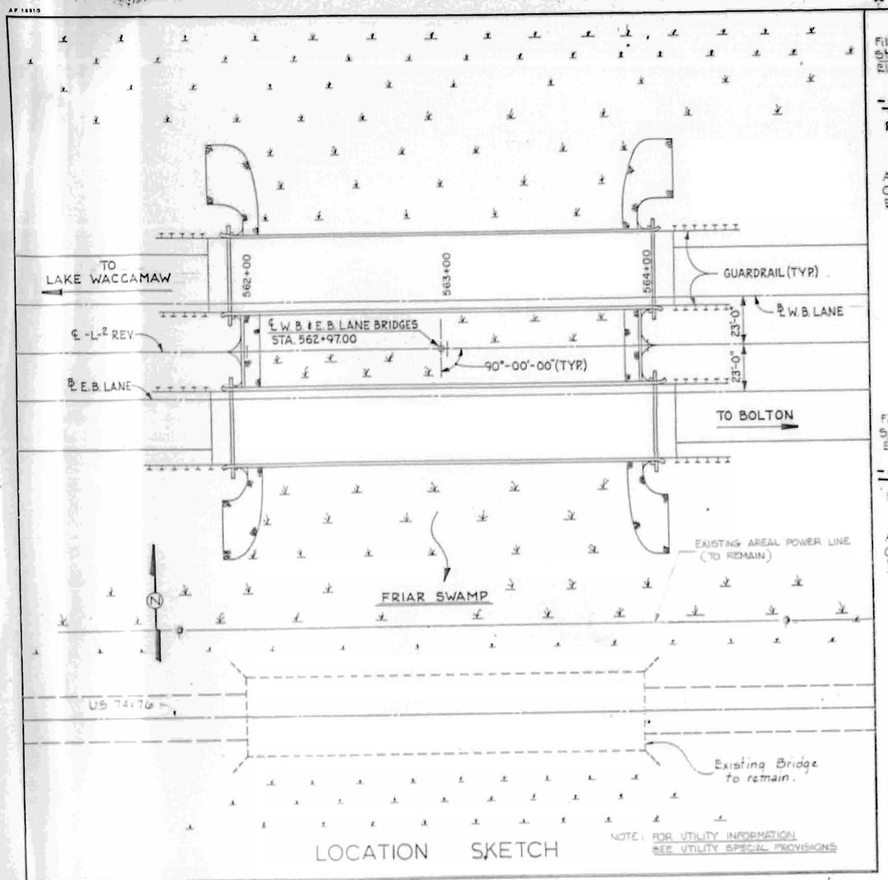
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING OF BRIDGES OVER FRIAR SWAMP ON U.S. 74-76 BETWEEN LAKE WACCAMAW AND BOLTON

OCT. 1981

REVISIONS						SHEET NO. S-47
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS 84
1			3			
2			4			

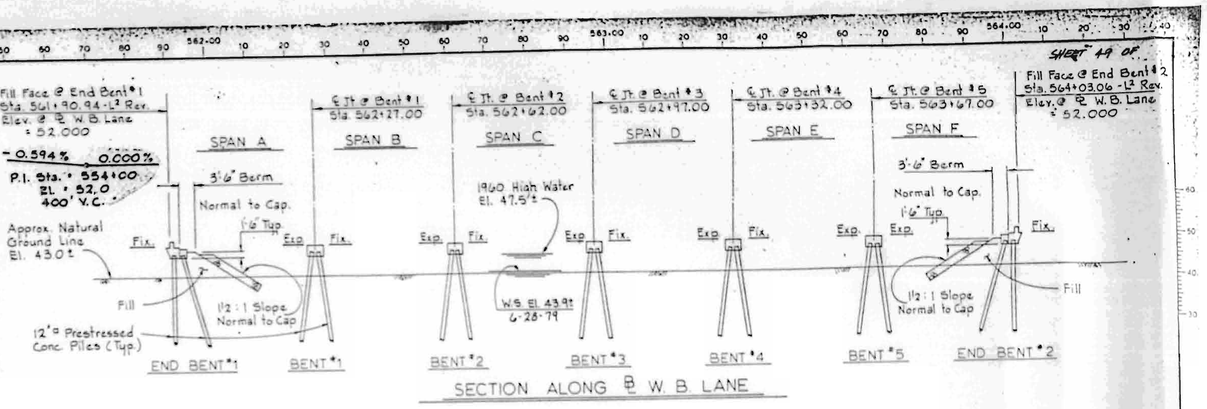


LOCATION SKETCH

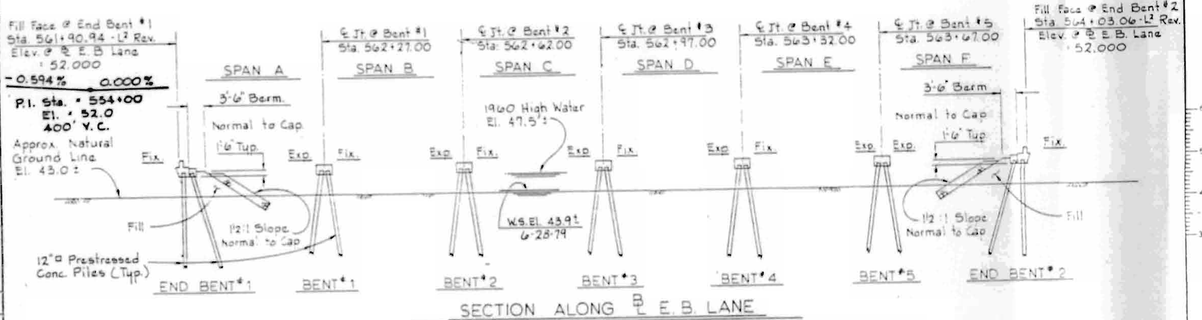
B.M. R-113 Brass Disc in concrete headwall of bridge 20' Lt. -L- Sta. 562+65 Proj. 6.801570 El. 52.47 Datum M.S.L.

Design Discharge	=	4,000 c.f.s.
Frequency of Design Flood	=	50 yrs.
Design High Water Elevation	=	47.5
Drainage Area	=	85 Sq. Miles
Basic "Discharge (Q100)	=	4,900 c.f.s.
Basic Highwater Elev.	=	48.0

OVERTOPPING FLOOD DATA:
ELEVATION = 52.7'
FREQUENCY = > 500 YRS.



SECTION ALONG ℄ W.B. LANE



SECTION ALONG ℄ E.B. LANE

TOTAL BILL OF MATERIAL - WEST BOUND LANE

	CLASS "A" CONCRETE	REINFORCING STEEL	12"Φ PRESTRESSED CONCRETE PILES		CONCRETE BARRIER RAIL	BRIDGE APPROACH SLAB STA. 567+97.00 W.B. LANE	ELASTOMERIC BEARINGS	PLAIN RIP-RAP CLASS II (2'-0" THICK)	3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS		PREFORMED COMPRESSION JOINT SEAL
	CU. YDS.	LBS.	NO.	LIN. FT.	LIN. FT.	LUMP SUM	LUMP SUM	TONS	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE					~~419.75~~ 420.0		L.S.		78	2720.25	L.S.
END BENT #1	14.4	3188	8	~~240~~ 320		L.S.		~~280~~ 147.8			
BENT #1	15.1	3044	10	~~300~~ 380							
BENT #2	15.1	3044	10	~~300~~ 380							
BENT #3	15.1	3044	10	~~300~~ 380							
BENT #4	15.1	3044	10	~~300~~ 400							
BENT #5	15.1	2985	10	~~300~~ 389							
END BENT #2	14.4	3188	8	~~240~~ 320		L.S.		~~280~~ 272.54			
CURVED END BLOCKS	5.3	857									
TOTAL	109.6	22,394	66	~~1,980~~ 2569	~~419.75~~ 420.0	LUMP SUM	LUMP SUM	~~560~~ 320.72	78	2720.25	LUMP SUM

TOTAL BILL OF MATERIAL - EAST BOUND LANE

	CLASS "A" CONCRETE	REINFORCING STEEL	12"Φ PRESTRESSED CONCRETE PILES		CONCRETE BARRIER RAIL	BRIDGE APPROACH SLAB STA. 567+97.00 E.B. LANE	ELASTOMERIC BEARINGS	PLAIN RIP-RAP CLASS II (2'-0" THICK)	3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS		PREFORMED COMPRESSION JOINT SEAL
	CU. YDS.	LBS.	NO.	LIN. FT.	LIN. FT.	LUMP SUM	LUMP SUM	TONS	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE					~~419.75~~ 420.0		L.S.		78	2720.25	L.S.
END BENT #1	14.4	3188	8	~~240~~ 320		L.S.		~~260~~ 152.9			
BENT #1	15.1	3044	10	~~300~~ 379							
BENT #2	15.1	3044	10	~~300~~ 382							
BENT #3	15.1	3044	10	~~300~~ 400							
BENT #4	15.1	3044	10	~~300~~ 400							
BENT #5	15.1	2985	10	~~300~~ 400							
END BENT #2	14.4	3188	8	~~240~~ 320		L.S.		~~260~~ 26.85			
CURVED END BLOCKS	5.3	857									
TOTAL	109.6	22,394	66	~~1,900~~ 2541	~~419.75~~ 420.0	LUMP SUM	LUMP SUM	~~520~~ 369.72	78	2720.25	LUMP SUM

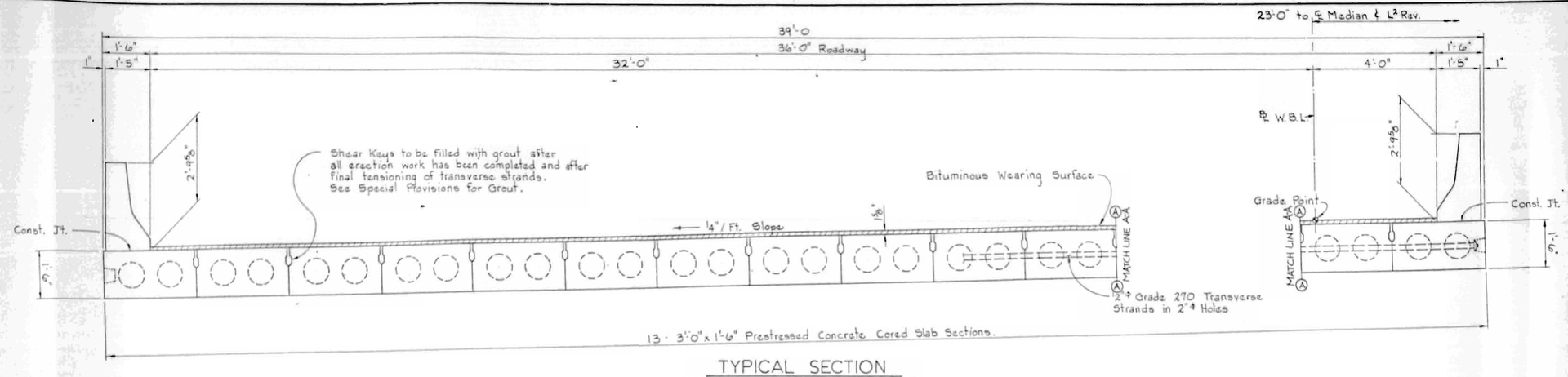
DRAWN BY C.S. GOOBOLD DATE 10-13-81
CHECKED BY R.V. Moore DATE 10-14-81

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.0-L2-REV.
Sheet 2 of 2

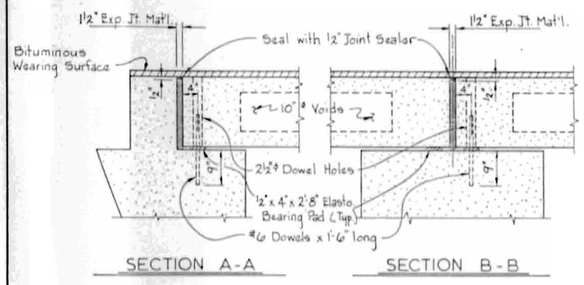
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING OF BRIDGES OVER FRIAR SWAMP ON US. 74-76 BETWEEN LAKE WACCAMAW AND BOLTON
OCT. 1981

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

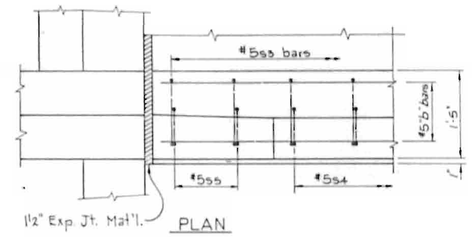


TYPICAL SECTION

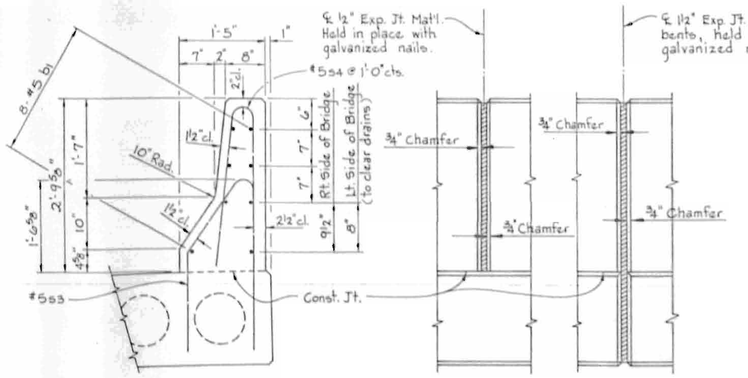


SECTION A-A

SECTION B-B

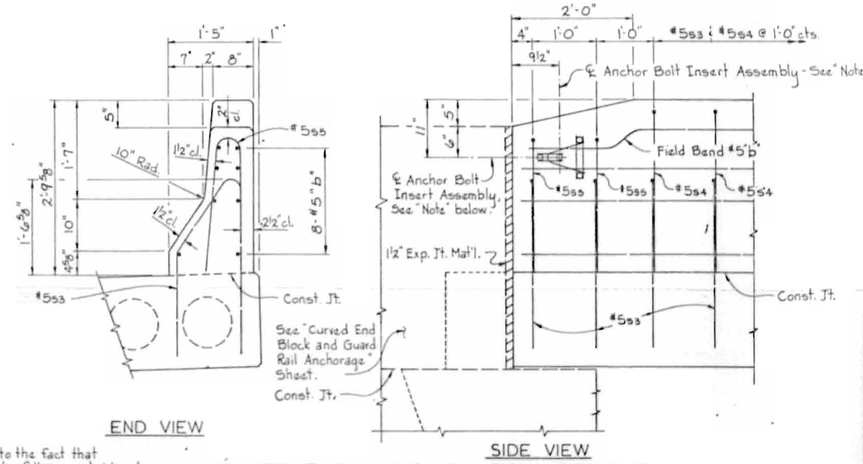


PLAN



SECTION THRU RAIL

ELEVATION @ EXP. JTS.



END VIEW

SIDE VIEW

BARRIER RAIL DETAILS

See Special Provisions for Concrete Barrier Rail.

Note: The Contractor's attention is called to the fact that the 1½" thick joint material between the ends of the cored slabs at bents and between the backwall and the ends of the cored slabs is 1½" nominal and can be expected to vary. The Contractor may use more than one layer of expansion joint material to provide the thickness req'd. with a minimum layer thickness of ¼".

BARRIER RAIL ~ END OF RAIL DETAILS

Note: See "Curved End Block and Guard Rail Anchorage" Sheet, For Anchor Bolt Insert Assembly.

DRAWN BY Ross, Edward Kuhelly DATE 10-15-81
CHECKED BY R. J. Moore DATE 10-15-81

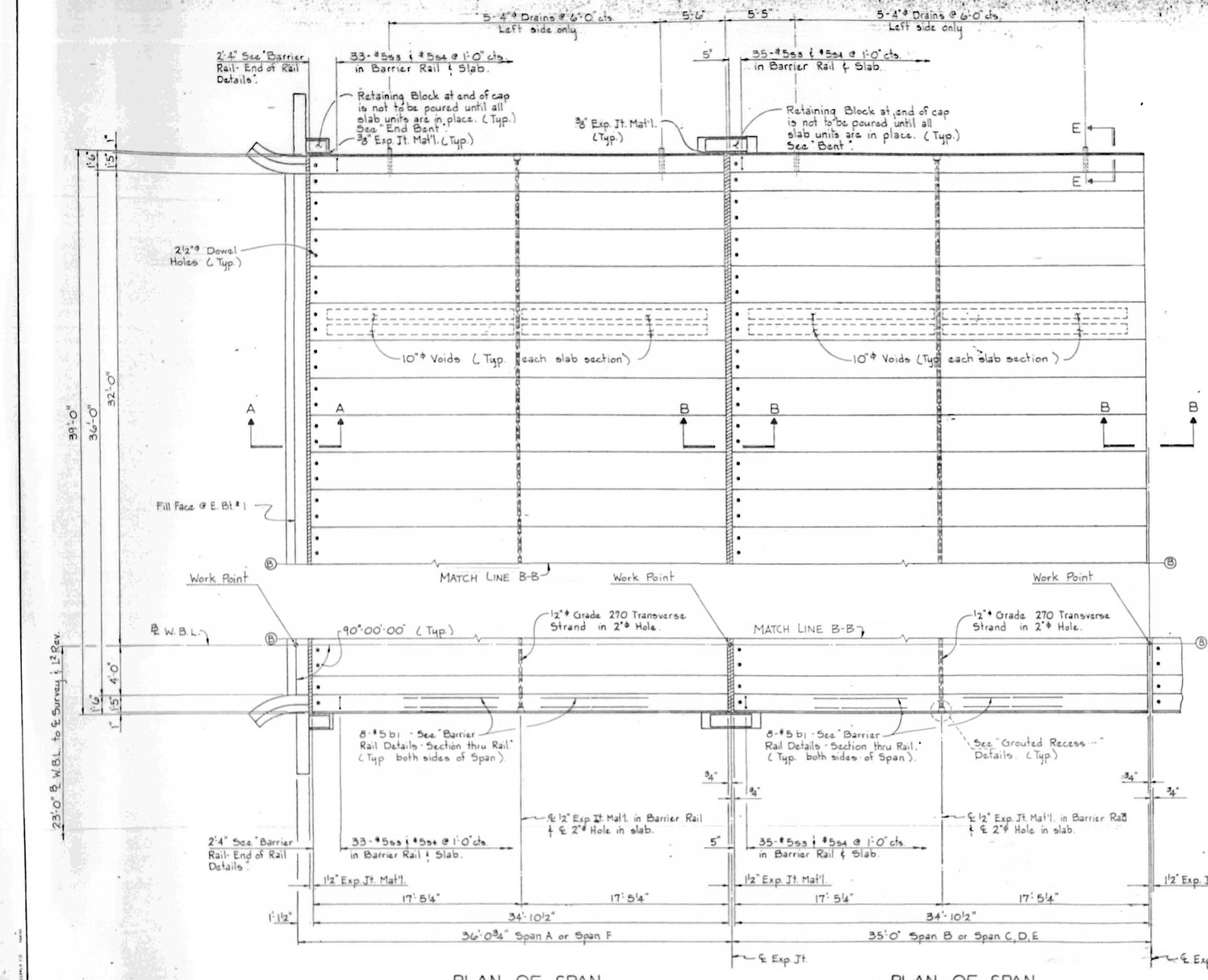
PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.00 L² Rev. W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTIONS

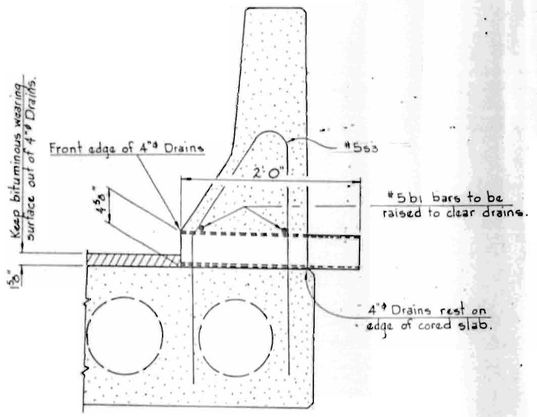
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6-31
1			3			TOTAL SHEETS
2			4			34



PLAN OF SPAN

PLAN OF SPAN



SECTION E-E

Showing placement of 2'-0" long 4"ϕ Drains thru Barrier Rail.

(30 - 4"ϕ Drains required.)

Drains may be shifted as necessary to clear #5s3 bars.

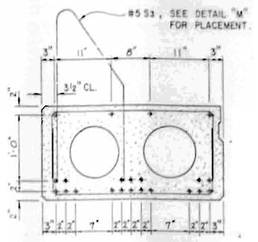
DRAWN BY Ross Edward Kubeny DATE 10-15-81
CHECKED BY R. V. Moore DATE 10-15-81

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.00 L² Rev.
W.B.L.

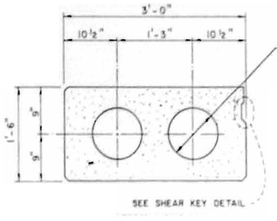
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPANS

OCT. 1981

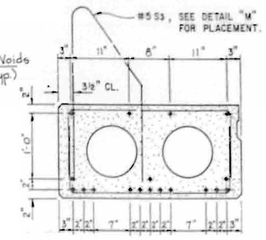
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2			4			84



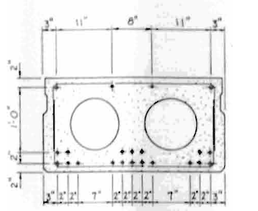
EXTERIOR SLAB SECTION



EXTERIOR SLAB SECTION

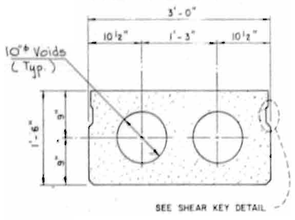


EXTERIOR SLAB SECTION



INTERIOR SLAB SECTION

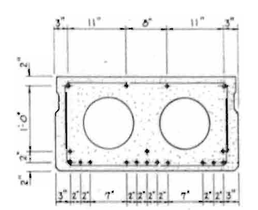
$\frac{7}{16}$"ø PRESTRESSED CABLE LAYOUT



INTERIOR SLAB SECTION

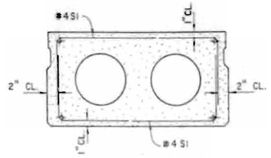
TYPICAL SECTION

NOTE: CHAMFER CORNERS ¾" AS SHOWN.



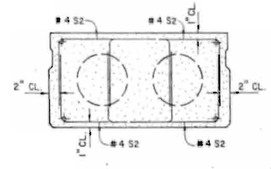
INTERIOR SLAB SECTION

$\frac{1}{2}$"ø PRESTRESSED CABLE LAYOUT



SLAB SECTION

SHOWING #4 S1 STIRRUPS.



SLAB SECTION

SHOWING #4 S2 STIRRUPS.

NOTES

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS
$\frac{7}{16}$"ø	270	0.115 SQ IN	31,000 LBS PER CABLE	21,700 LBS PER CABLE
$\frac{1}{2}$"ø	270	0.153 SQ IN	41,300 LBS PER CABLE	28,900 LBS PER CABLE

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRESS RELIEVED HIGH-STRENGTH GRADE 270 CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

ALL PRESTRESSED STRANDS SHALL MEET THE REQUIREMENTS OF ASTM-A416.

FOR PRESTRESSED CORED SLABS, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR PRESTRESSED CORED SLABS.

RECESS FOR TRANSVERSE STRANDS IS TO BE GROUTED AFTER THE TENSIONING OF STRANDS.

THE 2½"ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS TO BE FILLED WITH GROUT, SEE SPECIAL PROVISIONS. THE 2½"ø DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS ARE NOT REQUIRED.

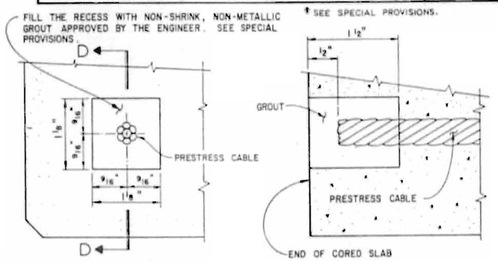
AT TRANSFER OF TENSIONING LOAD, THE CYLINDER STRENGTH OF CONCRETE SHALL BE 4,000 P.S.I. MINIMUM AND THE 28 DAY CYLINDER STRENGTH SHALL BE 5,000 P.S.I. MINIMUM.

ELASTOMER IN ELASTOMERIC BEARINGS SHALL HAVE A GRADE 50 DUROMETER HARDNESS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	NO. SPAN A or F	NO. SPAN B,C,D,E	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	32	32	192	5	STR.	17'-0"	3404
S4	66	70	412	5	3	4'-11"	2113
S5	4		8	5	3	4'-4"	36
REINFORCING STEEL Lbs.							5553
CLASS A A CONCRETE CU.YDS. (@ 6.9 CU.YDS. PER SPAN)							41.4
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL *							420.0 ~~414.75~~

* SEE SPECIAL PROVISIONS.



PART ELEVATION AT END OF CORED SLAB

SECTION D-D

GROUTED RECESS AT END OF PRETENSIONED CABLE CORED SLABS

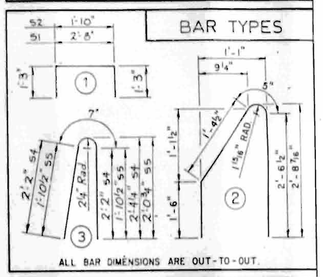
REINFORCING STEEL FOR ONE EXTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
S3	35	#5	2	5'-10"	213
TOTAL				LBS. -	484

REINFORCING STEEL FOR ONE INTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
TOTAL				LBS. -	271

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE CORED SLAB

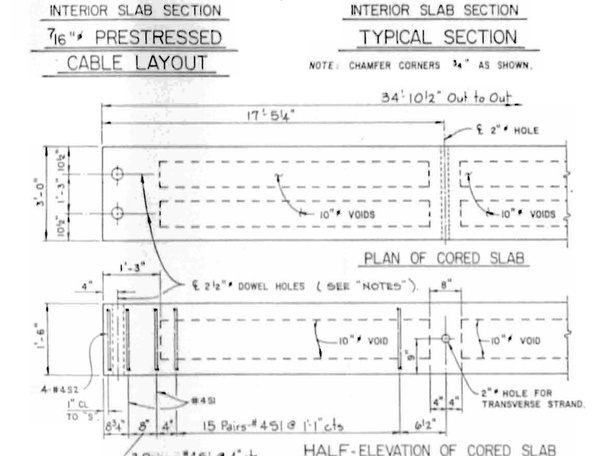
	REINFORCING STEEL LBS.	5,000 P.S.I. CONCRETE C.Y.	$\frac{7}{16}$"ø S.R. CABLES N°	$\frac{1}{2}$"ø S.R. CABLES N°
EXTERIOR C.S.	484	4.5	22	18
INTERIOR C.S.	271	4.5	22	18

CORED SLAB REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	12	34'-10½"	418'-6"
INTERIOR C.S.	66	34'-10½"	2301'-9"
TOTAL	78		2720'-3"

DEAD LOAD DEFLECTION AND CAMBER FOR INT. or EXT. SECTION

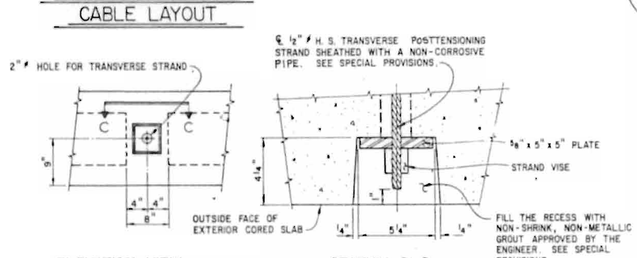
	$\frac{7}{16}$"ø Cables	$\frac{1}{2}$"ø Cables
CAMBER (SLAB ALONE IN PLACE)	$\frac{5}{8}$" ↑	$\frac{11}{16}$" ↑
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD	$\frac{1}{16}$" ↓	$\frac{3}{16}$" ↓
FINAL CAMBER	$\frac{9}{16}$" ↑	$\frac{9}{16}$" ↑



Note: #5 S3 bars in exterior cored slab not shown. For spacing of #5 S3 bars in exterior cored slab, see "Plan" of Superstructure.

NOTE

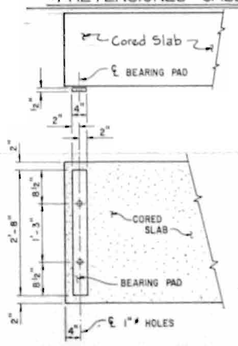
* THE CONTRACTOR, AT HIS OPTION, MAY USE LOW-RELAXATION STRANDS IN LIEU OF STRESS RELIEVED STRANDS. DESIGN AND STRAND PATTERN MUST PROVIDE AT LEAST THE SAME NET COMPRESSIVE STRESS AFTER THE LOSSES, THE ULTIMATE STRENGTH OF THE CORED SLAB UNIT MUST MEET THE REQUIREMENTS OF THE APPLICABLE AASHTO SPECIFICATIONS. LOW-RELAXATION STRANDS SHALL BE TENSIONED AND ANCHORED AT A LOAD EQUAL TO 75% OF ITS ULTIMATE STRENGTH. THIS APPLIED PRESTRESSED FORCE SHALL BE SHOWN ON THE PLANS. SIZE OF LOW-RELAXATION STRANDS SHALL NOT BE LARGER THAN THOSE SHOWN FOR STRESS RELIEVED STRANDS. DESIGN AND DETAIL PLANS USING LOW-RELAXATION STRANDS MUST BE SUBMITTED TO THE STATE BRIDGE DESIGN ENGINEER FOR APPROVAL. ANY ADDITIONAL COST DUE TO THE USE OF LOW-RELAXATION STRANDS WILL BE PAID FOR BY THE CONTRACTOR.



ELEVATION VIEW

SECTION C-C

GROUTED RECESS IN EXTERIOR SIDE OF PRETENSIONED CABLE CORED SLABS



ELASTOMERIC BEARING DETAIL

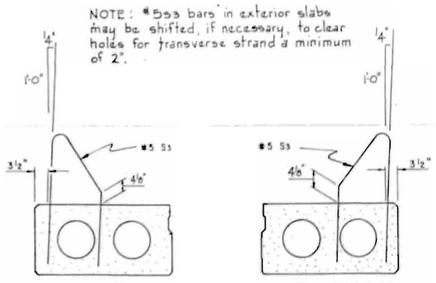
78 (with holes) Brg. Pads Required.
78 (without holes) Brg. Pads Required.



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

NOTE: #5 S3 bars in exterior slabs may be shifted, if necessary, to clear holes for transverse strand a minimum of 2".



LEFT EXTERIOR SLAB

RIGHT EXTERIOR SLAB

DETAIL "M"

DRAWN BY: ROSS EDWARD KUBENY DATE 10-15-81
CHECKED BY: R. V. Moore DATE 10-15-81

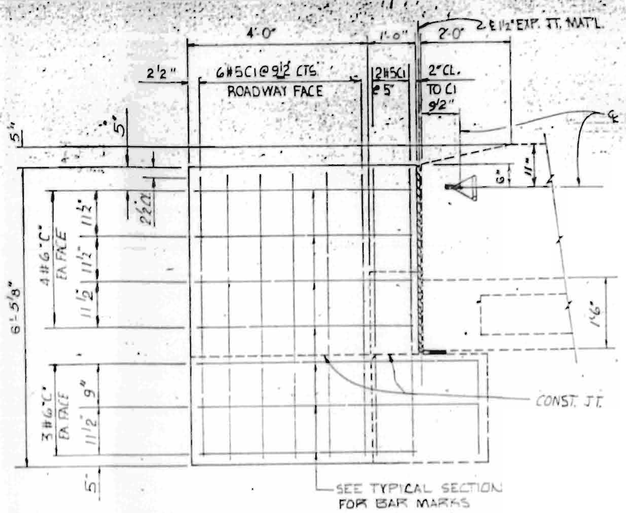
PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.0 L² Rev.
W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

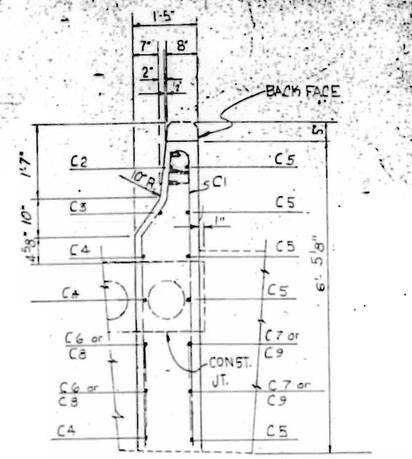
3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS

OCT. 1981

REVISIONS						SHEET NO. ~~S-32~~
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 84
2			4			

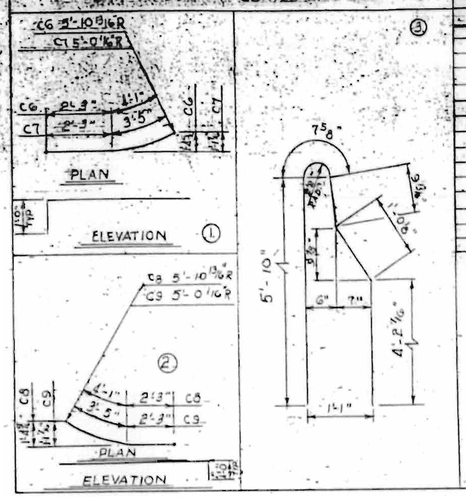


ELEVATION



TYPICAL SECTION

BAR TYPES FOR CURVED END BLOCKS



ALL BAR DIMENSIONS ARE OUT TO OUT

Bill of Material for four Curved End Blocks

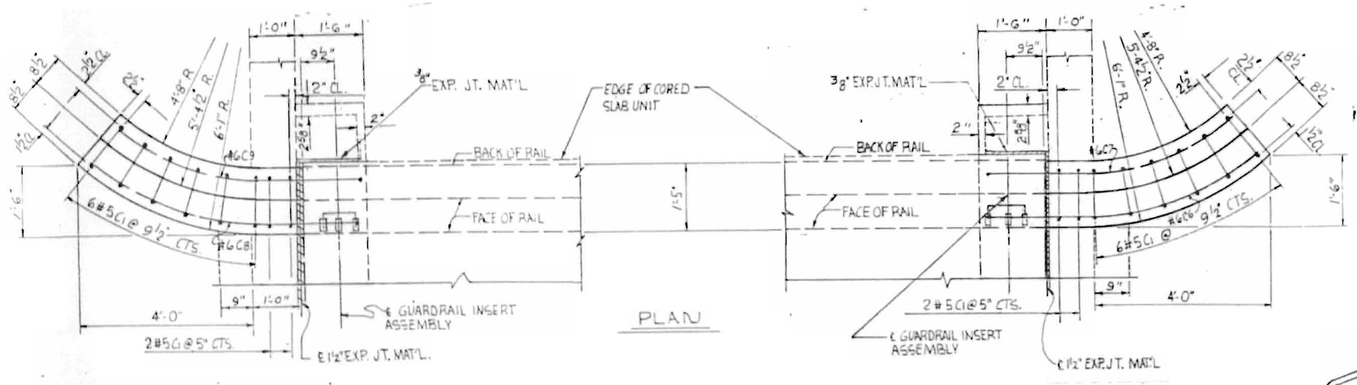
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
C1	32	#6	3	12'6"	417
C2	4	#6	4	4'5"	27
C3	4	#6	4	4'7"	28
C4	12	#6	4	4'11"	89
C5	20	#6	4	4'3"	128
C6	4	#6	1	7'4"	44
C7	4	#6	1	6'8"	40
C8	4	#6	2	7'4"	44
C9	4	#6	2	6'8"	40

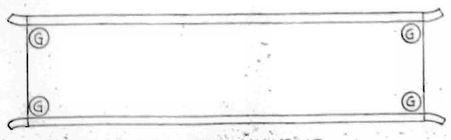
REINFORCING STEEL : 857 LBS.

CLASS "A" CONC. 5.3 C.Y.

NOTES

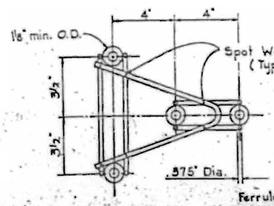
1. THE 4 - BOLT INSERT ASSEMBLY UNIT SHALL CONSIST OF THE FOLLOWING COMPONENTS:
   a. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF A.S.T.M. A108, GRADE 1215 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1¼".
   b. 4 - 7/8"ø x 2 3/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8"ø x 2 3/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF A.S.T.M. A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
   c. WIRE STRUTS SHOWN IN THE INSERT ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.
2. THE INSERT ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.
3. THE COST OF THE 4-BOLT INSERT ASSEMBLY UNIT COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.
4. THE 4 - BOLT INSERT ASSEMBLY UNIT IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END POSTS. FOR POINTS OF ATTACHMENT, SEE *"LOCATION OF GUARDRAIL ANCHORAGE" SKETCH, THIS SHEET.*
5. CURVED END BLOCKS ARE REQUIRED AT ALL END POSTS.
6. THE COST OF THE EXCAVATION AND BACKFILL FOR THE CURVED END BLOCKS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

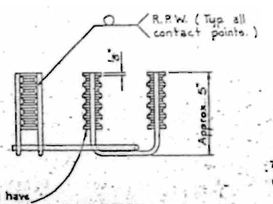




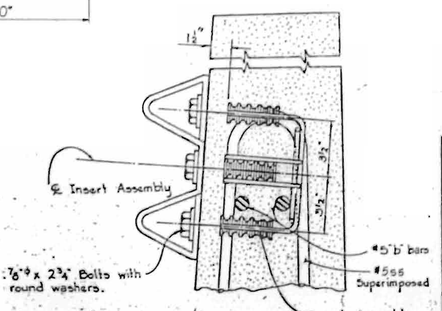
LOCATION OF GUARDRAIL ANCHORAGE

Ⓖ DENOTES GUARDRAIL ANCHORAGE LOCATION.





INSERT ASSEMBLY



SECTION E-E

DRAWN BY: R.D. JOYNER DATE: 11/30/81
CHECKED BY: R. J. Moore DATE: 7-21-81

PROJECT NO. 8.1430701

COLUMBUS COUNTY

STATION: 562+97.00 (2 Rev. W.B.L.

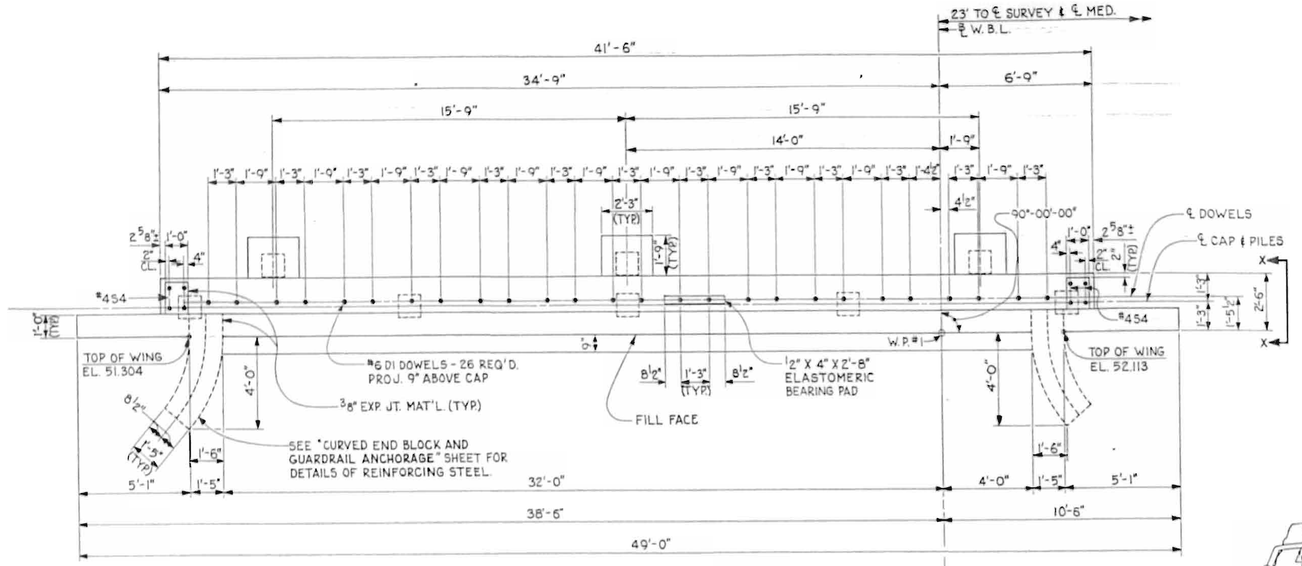
#5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CURVED END BLOCK AND GUARDRAIL ANCHORAGE FOR BARRIER RAIL

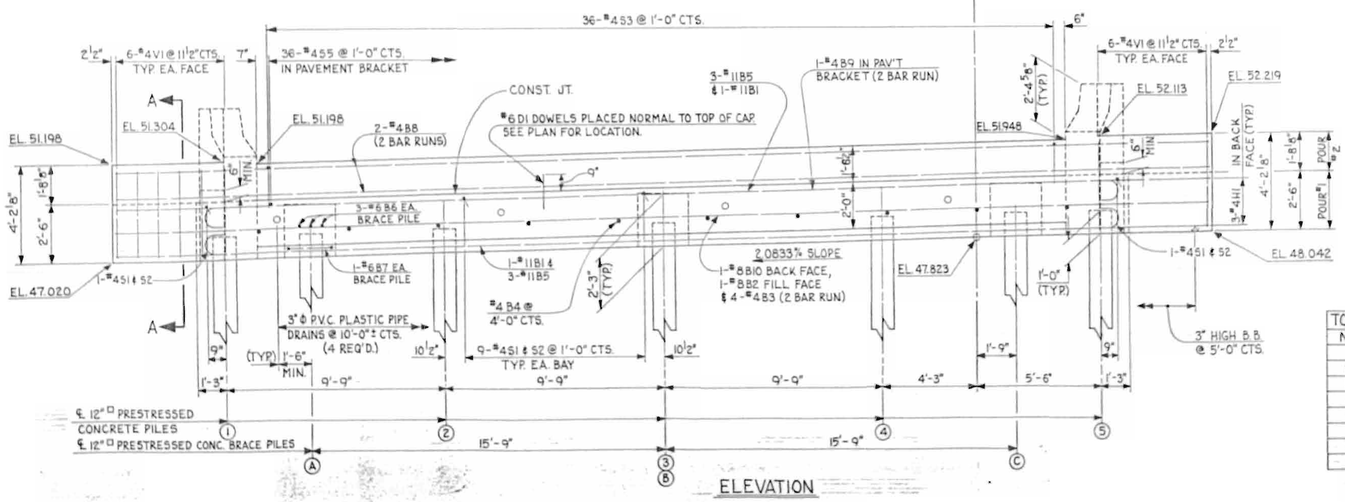
JULY 1981

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



PLAN

WORK LINE



ELEVATION

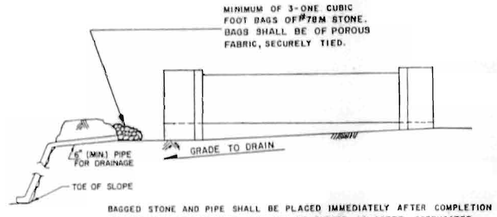
TOP OF PILE ELEVATIONS	
NO.	ELEVATIONS
1	48.125
2	48.328
3	48.531
4	48.734
5	48.938
A	48.203
B	48.531
C	48.859

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY: C. S. GODBOLD DATE: DEC. 17, 1981
CHECKED BY: K. V. Moore DATE: 12-18-81

PROJECT NO. 8.1430701 #5
COLUMBUS COUNTY
STATION: 562+97.0-L-2 REV.
SHEET 1 OF 2 W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

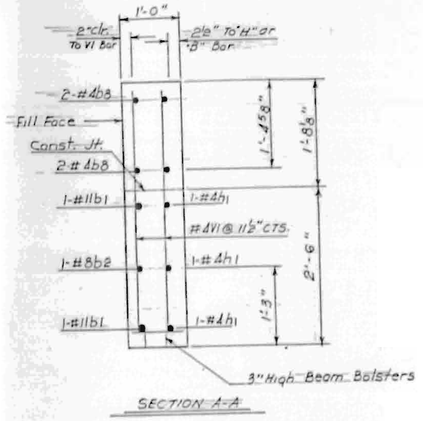
SUBSTRUCTURE
END BENT 1

OCT. 1981

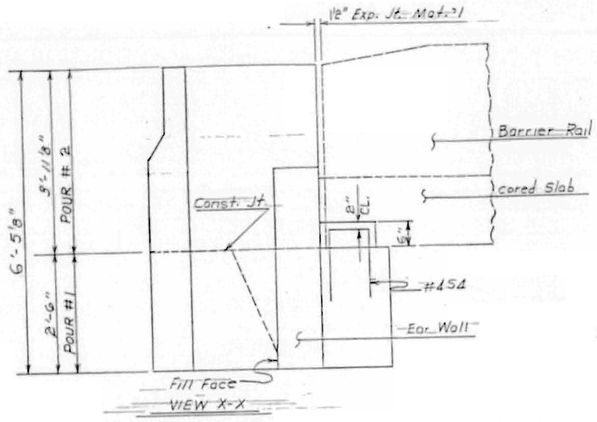
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-35
1			3			TOTAL SHEETS
2			4			34

SHEET 55 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	———
F. A. PROJECT		

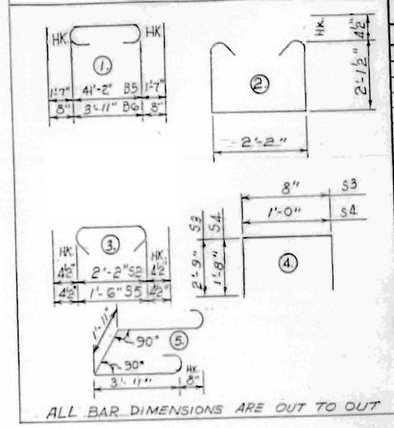


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See Curved End Block And Guardrail Anchorage For Barrier Rail Str.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-6"	517
B2	1	#8	Str.	48'-6"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	11'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	1	1'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str.	5'-1"	20
V1	24	#4	Str.	3'-10"	61

Reinforcing Steel 1.85 3,188

CLASS "A" Conc.

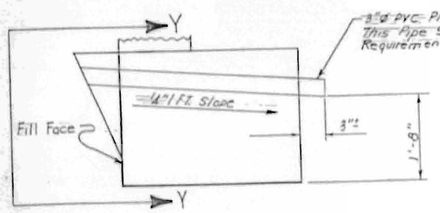
Pour # 1 = 11.7 CU YDS

Pour # 2 = 2.7 CU YDS

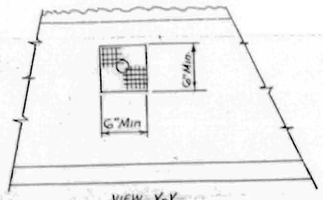
Total = 14.4 CU YDS

12"ø Prestressed Conc. Piles No. 8 Lin Ft. ~~260~~ 320'

PIPE DRAIN DETAILS

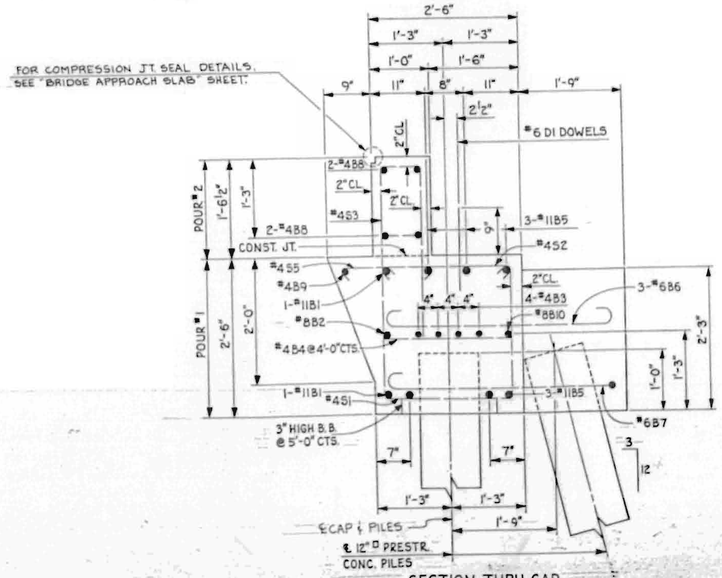


Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.



SECTION THRU CAP

PROJECT NO. 8.1430701 #5

COLUMBUS COUNTY

STATION: 562+97.0 - L² REV.

SHEET 2 OF 2 W.B.L

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 1

OCT. 1981

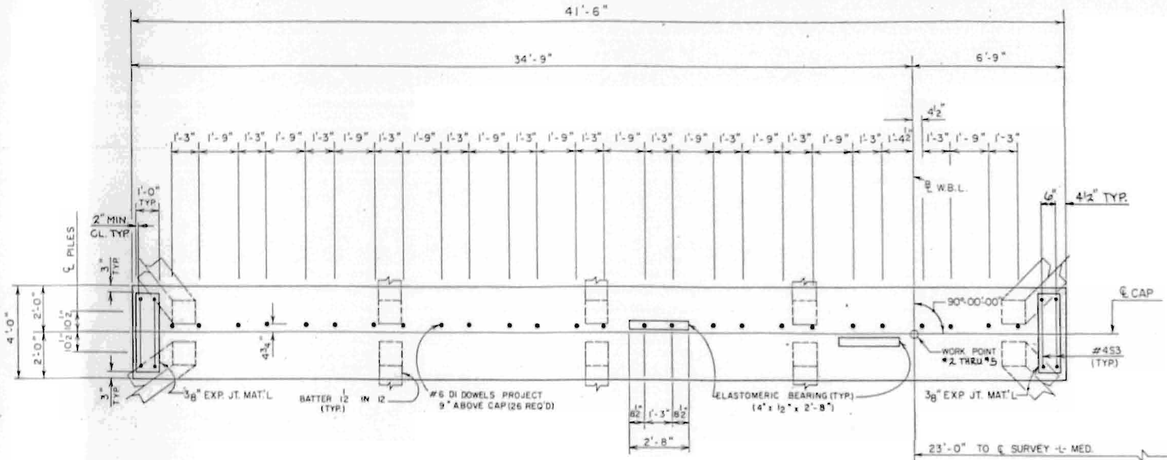
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-34a
1			3			TOTAL SHEETS
2			4			84

DRAWN BY S.D. JOYNER DATE 7/24/81

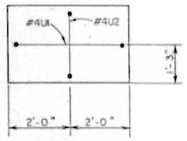
CHECKED BY R. J. Moore DATE 7-30-81

SHEET 56 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N.C.	
F.A. PROJECT		

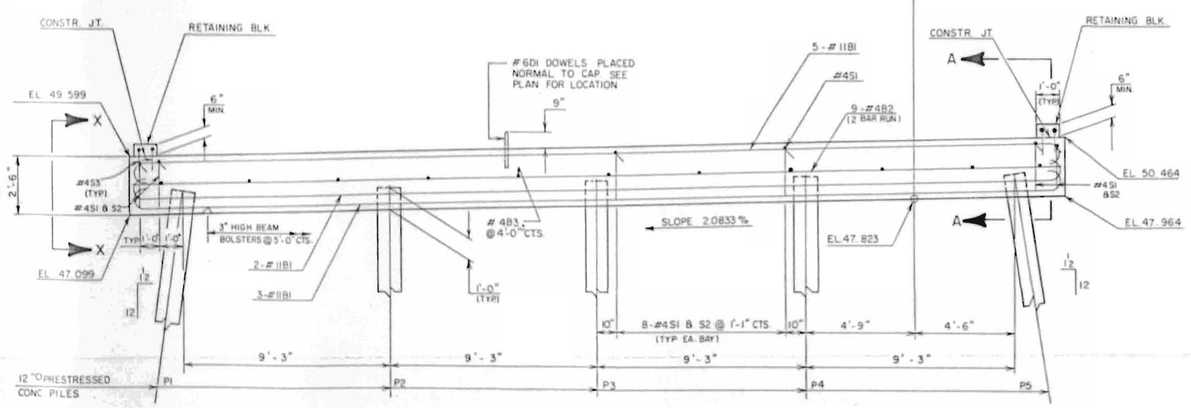


PLAN



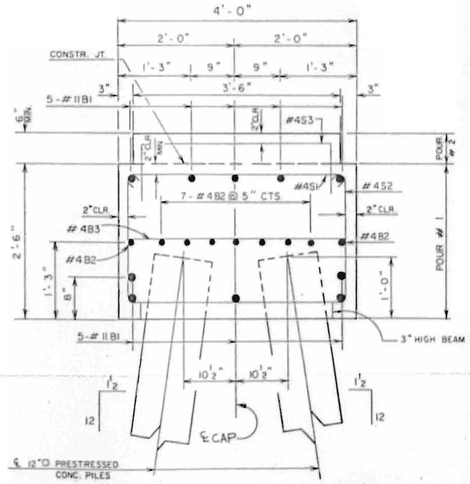
VIEW X-X

REINFORCING SHOWN TYP. EACH END.



ELEVATION

TOP OF PILE ELEVATION	
P1	48.146
P2	48.339
P3	48.531
P4	48.724
P5	48.917

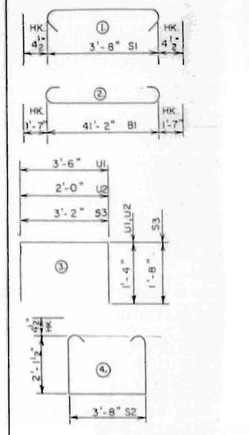


SECTION A-A

NOTES: *CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

THE RETAINING BLOCK AT EA. END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (4 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR.	21'-5"	258
B3	11	#4	STR.	3'-8"	27
D1	26	#6	STR.	1'-6"	59
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6

REINFORCING STEEL = 3,044

CLASS "A" CONCRETE = 15.1 CU. YDS.

12" ⌀ PRESTRESSED CONC. PILES

NO. 10 LIN. FT. = ~~300~~ 320 320 320 320

CLASS "A" CONC.

POUR # 1 = 15.0 CU. YDS.

POUR # 2 = 0.1 CU. YDS.

TOTAL = 15.1 CU. YDS.

PROJECT NO. 8.1430701 #5

COLUMBUS COUNTY

STATION: 562+97.0 -℄ REV.

W.B.L.

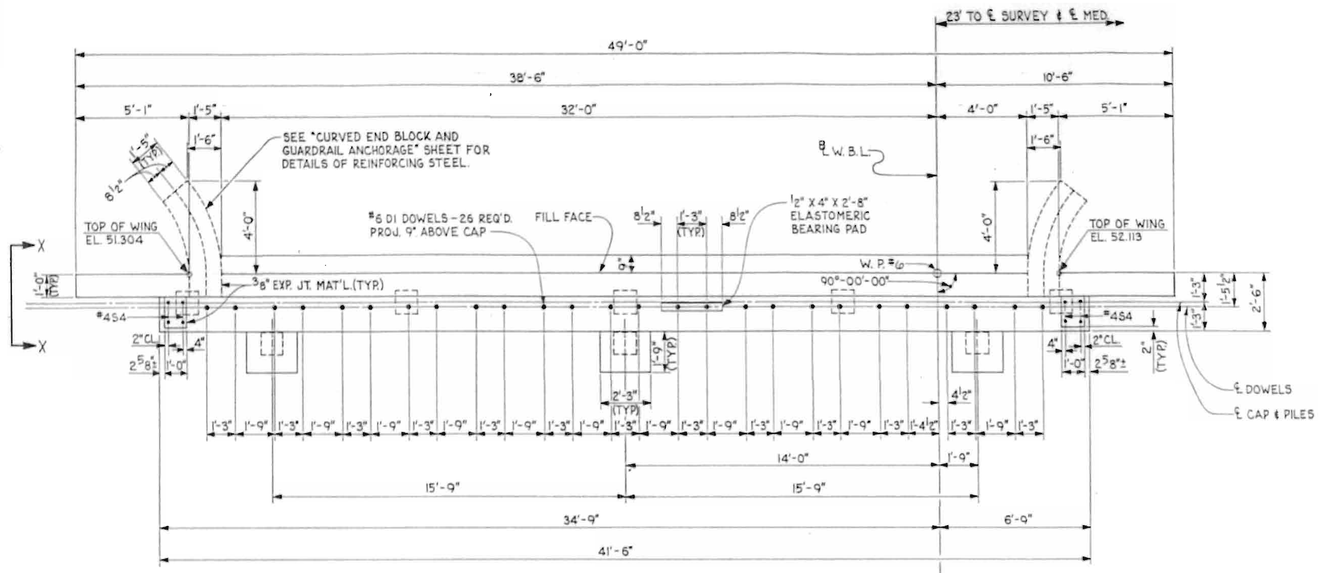
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #1 - #4

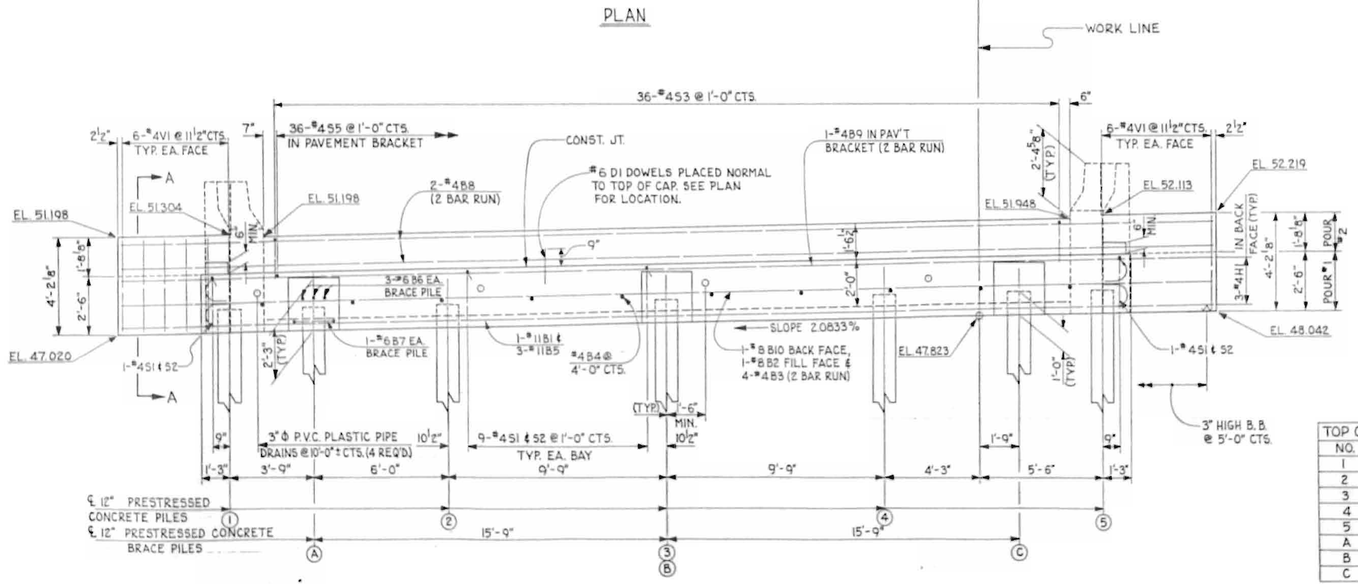
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	54
1			3			TOTAL SHEETS
2			4			84

DRAWN BY: S.D. JOYNER DATE: 10/13/81
CHECKED BY: R.J. Moore DATE: 10-28-81



PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
NO.	ELEVATION
1	48.125
2	48.328
3	48.531
4	48.734
5	48.938
A	48.203
B	48.531
C	48.859

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

FOR "TEMPORARY DRAINAGE" DETAILS FOR END BENT 2, SEE END BENT 1 SHEET 1 OF 2.

DRAWN BY C.S. GODBOLD DATE 11/6/81
CHECKED BY R.J. Moore DATE 12-18-81

PROJECT NO. 8.1430701 #5
COLUMBUS COUNTY
STATION: 562+97.0 -L-2 REV.
SHEET 1 OF 2 W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

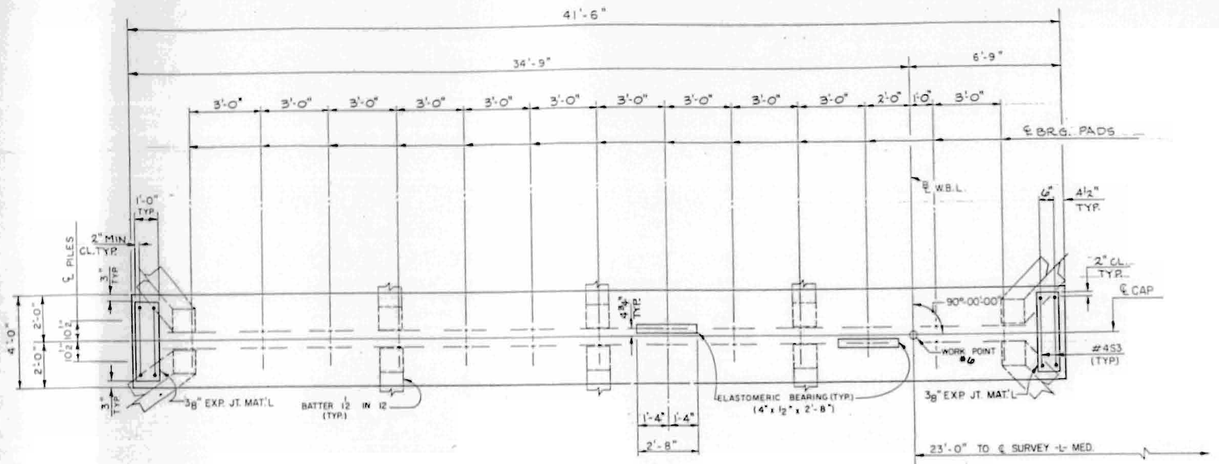
SUBSTRUCTURE
END BENT 2

NOV. 1981

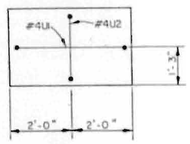
REVISIONS						SHEET NO. 5B-1
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 84
2			4			

SHEET 67 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N.C.	
F.A. PROJECT		

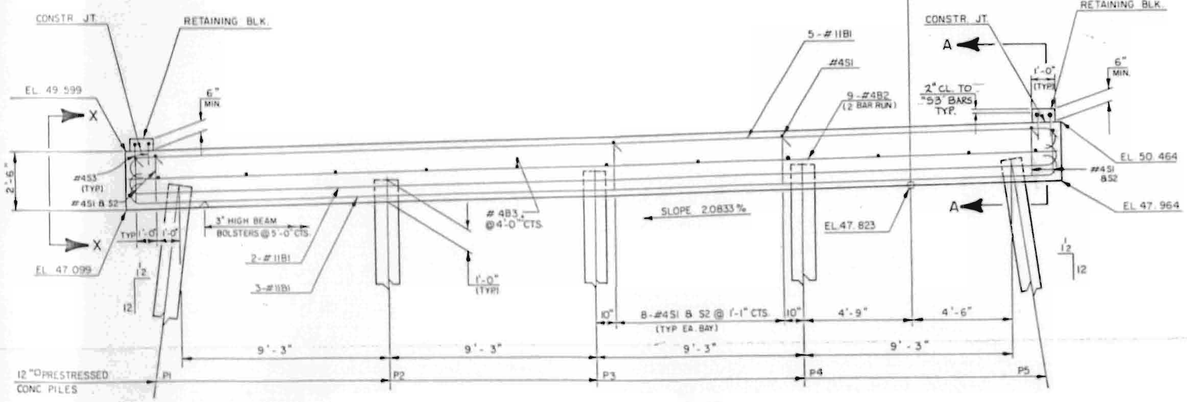


PLAN



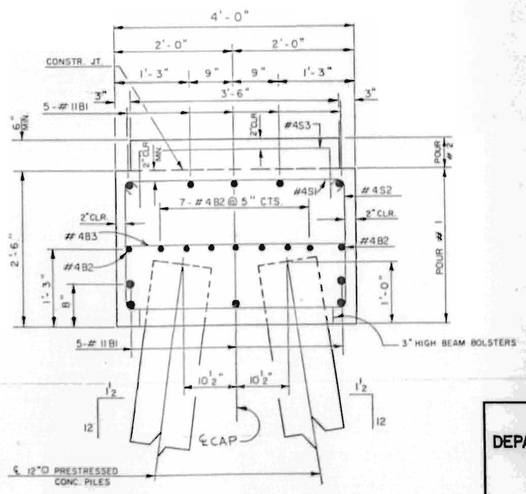
VIEW X-X

REINFORCING SHOWN TYP. EACH END.



ELEVATION

TOP OF PILE ELEVATION	
P1	48.146
P2	48.339
P3	48.531
P4	48.724
P5	48.917



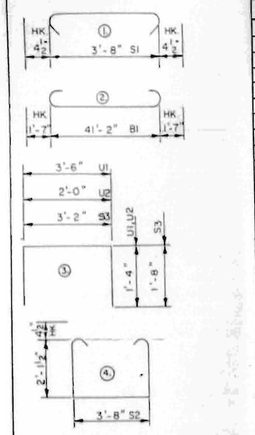
SECTION A-A

NOTES:

*CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

THE RETAINING BLOCK AT EA. END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

BILL OF MATERIAL

FOR ONE BENT (1 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR	21'-5"	258
B3	11	#4	STR	3'-8"	27
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6

REINFORCING STEEL = 2,985

CLASS "A" CONCRETE = 15.1 CU. YDS.

12" ØPRESTRESSED CONC. PILES

NO. 10 LIN. FT. = ~~380~~ 382

CLASS "A" CONC.

POUR # 1 = 15.0 CU. YDS.

POUR # 2 = 0.1 CU. YDS.

TOTAL = 15.1 CU. YDS.

PROJECT NO. 8.1430701 *5

COUNTY COLUMBUS

STATION: 562+97.0 -L- REV

W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT # 5

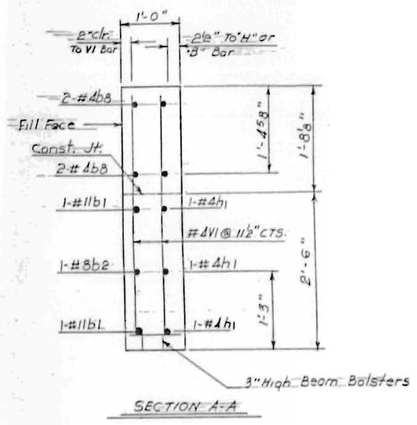
OCT. 1981

REVISIONS						SHEET NO. ~~5~~ 33
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS 84
1			3			
2			4			

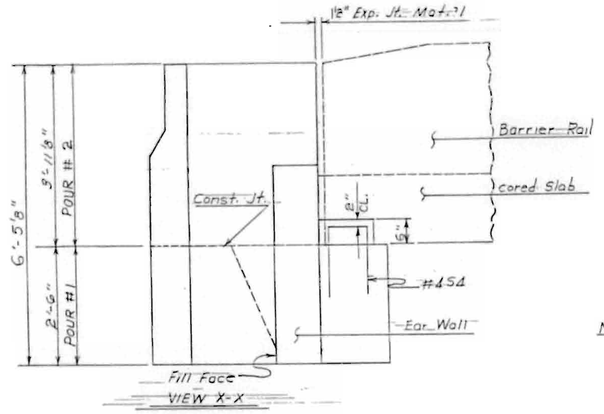
DRAWN BY S.D. JOYNER DATE 10/13/81
CHECKED BY R.J. Moore DATE 10-28-81

SHEET 39 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

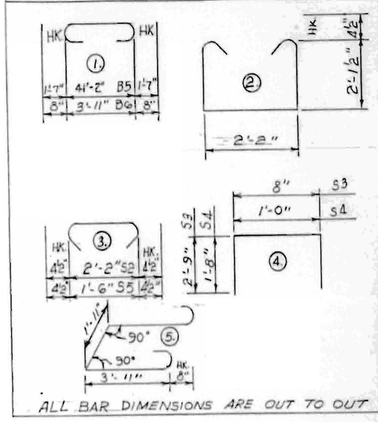


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details Of Reinforcing Steel In Curved Block, See Curved End Block And Guardrail Anchorage For Barrier Rail Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 2

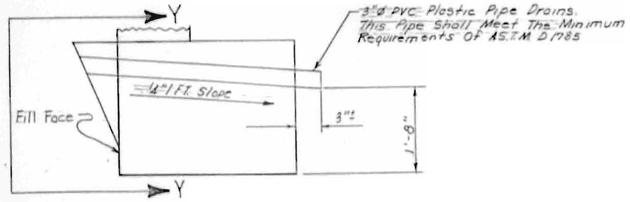
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-8"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	19'-1"	30
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	4	2'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str.	5'-1"	20
V1	24	#4	Str.	3'-10"	61

Reinforcing Steel LBS. 3,188

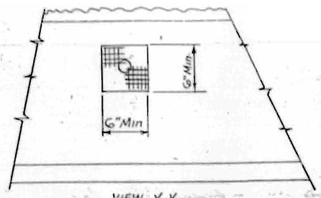
CLASS "A" Conc.
Pour #1* = 11.7 CU YDS.
Pour #2 = 2.7 CU YDS.
Total = 14.4 CU YDS.

12"□ Prestressed Conc.
Piles No. 8 Lin Ft. ~~240~~ 320

PIPE DRAIN DETAILS



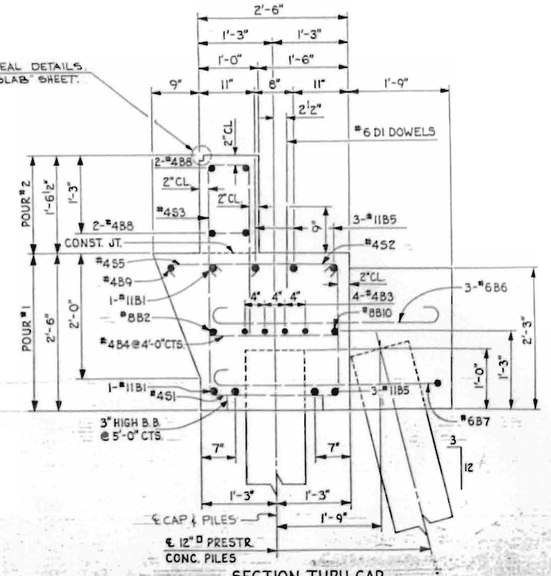
Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains Hardware Cloth And Fasteners, The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.

FOR COMPRESSION JT. SEAL DETAILS SEE "BRIDGE APPROACH SLAB" SHEET.



SECTION THRU CAP

PROJECT NO. 8.1430701 #5

COLUMBUS COUNTY

STATION: 562+97.0-L- REV.

SHEET 2 OF 2 W.B.L.

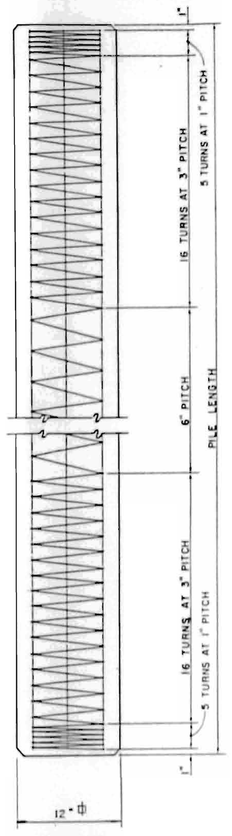
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 2

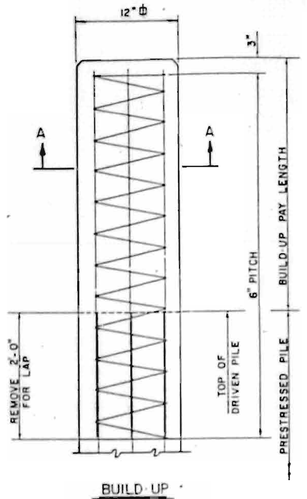
OCT. 1981

REVISIONS							SHEET NO. 5-40
NO.	BY	DATE	NO.	BY	DATE		
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2			4				

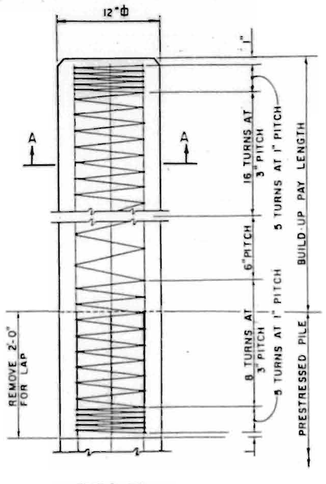
DRAWN BY S.D. JOYNER DATE 7/24/81
CHECKED BY R.J. Moore DATE 7-30-81



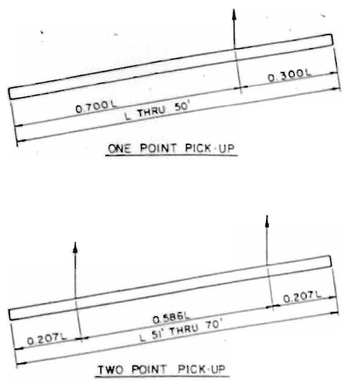
ELEVATION



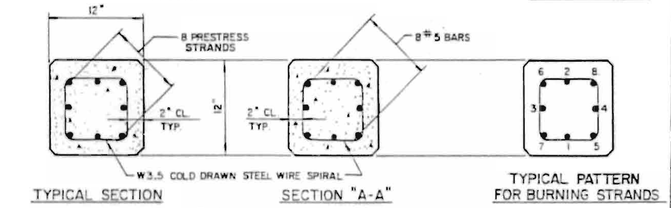
BUILD-UP WITHOUT DRIVING



BUILD-UP WITH DRIVING

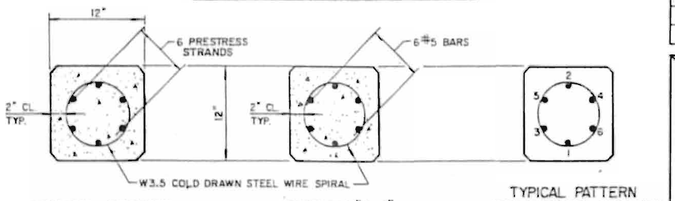


PICK-UP POINTS



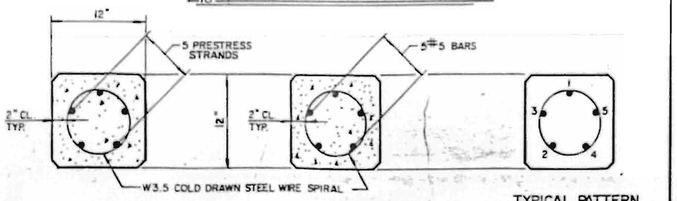
TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{3}{8}$"Φ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{7}{16}$"Φ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{1}{2}$"Φ GRADE 270 PRESTRESS STRANDS

ASSEMBLED BY: ROSS E. KUBENY DATE: 6-21-85	
CHECKED BY: DATE: 7-3-85	SPECIAL
DRAWN BY: DATE: OCT 14 1977	STANDARD
CHECKED BY: DATE: MAY 7 1979	

REVISED 11-12-82 BY JWB / BY RDU
REVISED 12-22-80 BY CCM / BY RDU
REVISED 7-31-78 BY REK / BY RDU
REVISED 7-14-83 BY JWB / BY RDU
REVISED 2-3-83 BY JWB / BY RDU

QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS	PILE WT. TONS	ONE PICK-UP POINT 0.300L	ONE PICK-UP POINT 0.700L	TWO PICK-UP POINT 0.207L	TWO PICK-UP POINT 0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.70	15'-0"	35'-0"		
55'-0"	2.01	4.07			11'-4½"	32'-3"
60'-0"	2.19	4.44			12'-5"	35'-2"
65'-0"	2.37	4.81			13'-5½"	38'-1"
70'-0"	2.56	5.18			14'-6"	41'-0"

STEEL PILE TIP DETAILS

NOTES

WHEN NOTED ON GENERAL DRAWING, THE CONTRACTOR, AT HIS OPTION, MAY SUBSTITUTE 12" PRESTRESSED CONCRETE PILES WITH STEEL PILE TIPS, AS SHOWN IN THE DETAILS, IN LIEU OF HP 12 x 53 STEEL PILES.

THE STEEL PILE TIP SHALL NOT BE INCLUDED IN DETERMINING THE LENGTH OF THE PILE FOR PAYMENT. THE COST OF THE STEEL PILE TIP UNIT SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF PILES.

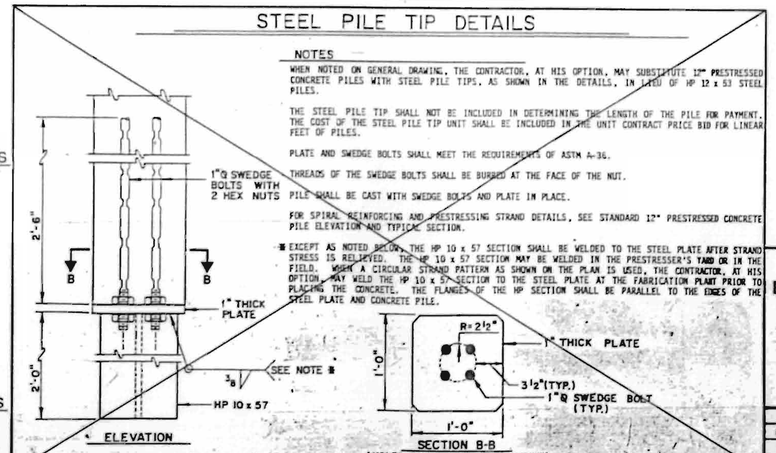
PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A-36.

THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

* EXCEPT AS NOTED BELOW, THE HP 10 x 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 x 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLAN IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 x 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



NOTES

CONCRETE DESIGN DATA: f'c = 5,000 PSI ; fc = 2,000 PSI

IMPACT IN HANDLING = 50%

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DEVICES FOR LIFTING THE PILES SHALL BE APPROVED BY THE ENGINEER. LOOPS OF STRAND CAST IN THE PILES WILL NOT BE PERMITTED. INSERTS, CAST IN THE PILES TO RECEIVE THREADED EYE-BOLTS OR SIMILAR APPROVED DEVICES, MAY BE USED, OR WHERE IT IS PRACTICABLE, SATISFACTORY CLAMPS OR SLINGS MAY BE USED. WHERE PILES WILL BE EXPOSED TO VIEW IN THE STRUCTURE AND INSERTS ARE CAST IN THE PILES, THE OPENINGS SHALL BE REPAIRED AFTER THE EYE-BOLTS OR OTHER ATTACHMENTS HAVE BEEN REMOVED. THE OPENINGS SHALL BE REPAIRED IN A SATISFACTORY MANNER IN ORDER TO OBTAIN A UNIFORM APPEARANCE.

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRANDS AS PRESCRIBED IN THE SPECIFICATIONS. THE CONTRACTOR MAY, AT HIS OPTION, USE EITHER OF THE THREE TYPES OF STRANDS LISTED BELOW; HOWEVER, ALL STRANDS IN A PILE SHALL BE OF THE SAME TYPE.

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
$\frac{3}{8}$"Φ	270	8	0.085 Sq In	23,000 # PER STRAND	16,100 # PER STRAND
$\frac{7}{16}$"Φ	270	6	0.115 Sq In	31,000 # PER STRAND	21,700 # PER STRAND
$\frac{1}{2}$"Φ	270	5	0.153 Sq In	41,300 # PER STRAND	28,900 # PER STRAND

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED THE LAST STRAND MAY BE BURNED SINGLY, ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE CLASS "A" CONCRETE W/20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

ALL CORNERS TO BE CHAMFERED ¾".

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

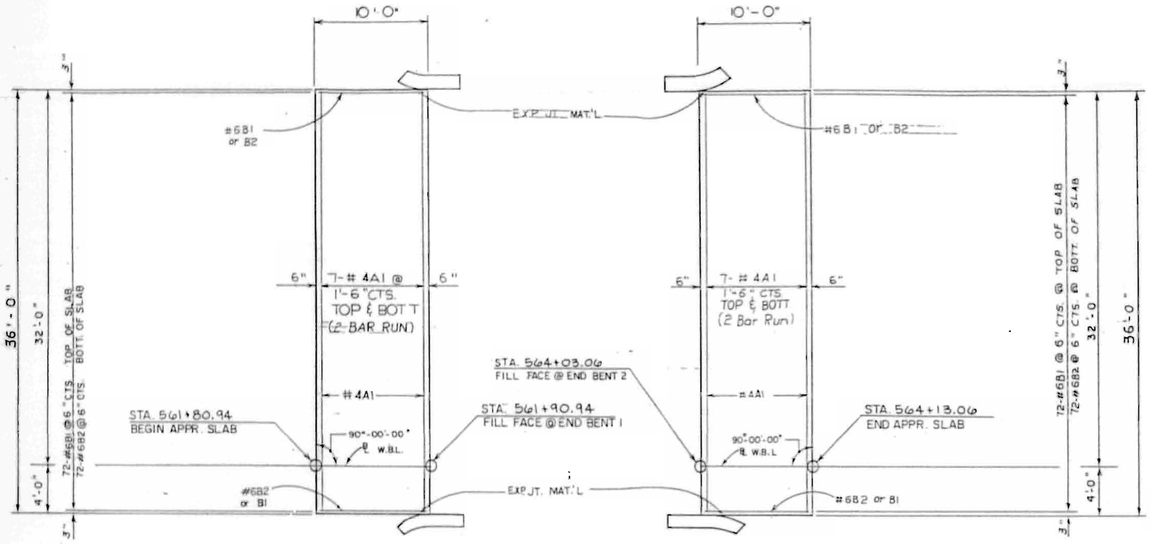
PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.0 - L² REV.
W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
12" PRESTRESSED
CONCRETE PILE

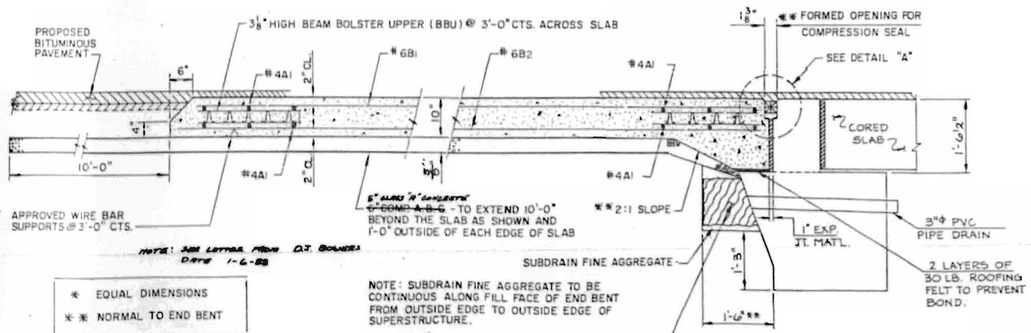
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			

STD. NO. PCPI



PLAN OF APPROACH SLAB
(END BENT # 1)

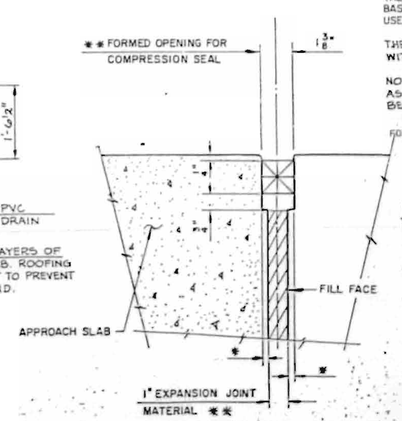
PLAN OF APPROACH SLAB
(END BENT # 2)



NOTE: SUBDRAIN FINE AGGREGATE TO BE CONTINUOUS ALONG FILL FACE OF END BENT FROM OUTSIDE EDGE TO OUTSIDE EDGE OF SUPERSTRUCTURE.

ONE CUBIC FOOT OF # 78M STONE IN BAG OF POROUS FABRIC SECURELY TIED. USE AT EACH PIPE DRAIN. FOR LOCATION OF PIPE DRAINS, SEE END BENT DETAILS.

SECTION THRU SLAB



DETAIL "A"

NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAILS

NOTES

FOR PREFORMED COMPRESSION JOINT SEAL, SEE SPECIAL PROVISIONS.

PREFORMED COMPRESSION JOINT SEAL SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID. SEE GENERAL DRAWING.

OPENING SHOWN IS BASED ON A NOMINAL UNCOMPRESSED SEAL WIDTH OF 2"

THE INSTALLED COMPRESSION SEAL SHALL BE WATERTIGHT.

PROVIDE WATERTIGHT SEAL AT END OF COMPRESSION SEAL AS RECOMMENDED BY MANUFACTURER.

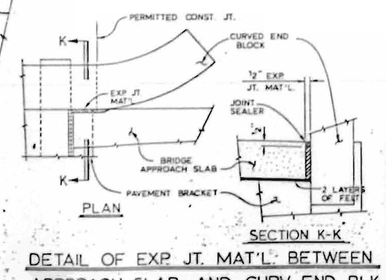
COMPRESSION SEAL EXTENDS FROM GUTTER TO GUTTER ALONG BRIDGE DECK NOTCH.

THE CONTRACTOR, AT HIS OPTION, MAY USE 4" BITUMINOUS CONCRETE BASE COURSE, TYPE HB IN LIEU OF 6" A.B.C., ANY ADDITIONAL COST DUE TO USE OF THIS OPTION WILL BE PAID FOR BY THE CONTRACTOR.

THE 1" EXPANSION JOINT MATERIAL IS TO BE HELD IN PLACE WITH GALVANIZED NAILS.

NO DIRECT PAYMENT WILL BE MADE FOR THE TEMPORARY DRAINAGE AS SUCH WORK WILL BE CONSIDERED INCIDENTAL TO OTHER WORK BEING PAID FOR BY THE VARIOUS ITEMS IN THE CONTRACT.

FOR BRIDGE APPROACH SLABS, SEE SPECIAL PROVISIONS.



PLAN

SECTION K-K

DETAIL OF EXP. JT. MAT'L. BETWEEN APPROACH SLAB AND CURV. END BLK

THE EXPANSION JOINT SHALL BE SEALED WITH JOINT SEALER AS SHOWN.

BILL OF MATERIAL

FOR ONE APPR. SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	28	#4	STR.	18'-5"	344
B1	72	#6	STR.	9'-1"	982
B2	72	#6	STR.	9'-7"	1,036
REINFORCING STEEL LBS.					2,362
CLASS "A" CONCRETE CU. YDS.					12.4

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.00-L- REV. W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

JULY 1978

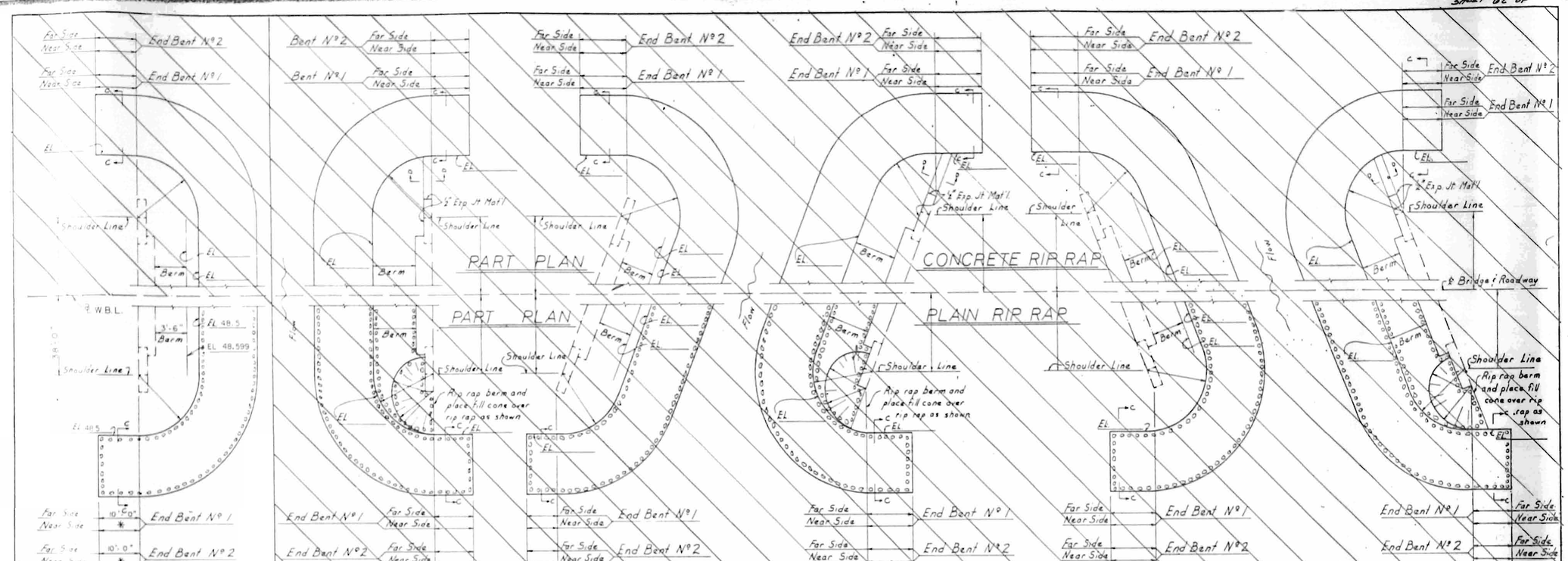
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	542
1			3			TOTAL SHEETS
2			4			84

SID. NO. BAS2

#5

REVISED 9-11-81 BY: E.R.L. CHECKED BY: R.L.G.
REVISED 3-27-81 BY: CHECKED BY: R.L.G.
REVISED 8-28-79 BY: R.D.U. CHECKED BY: C.C.M.
REVISED 4-1-79 BY: C.C.M. CHECKED BY: R.D.U.
REVISED 7-31-78 BY: R.E.K. CHECKED BY: R.D.U.

STD. DRAWN BY: K.G.P. DATE: 2-71 CHECKED BY: J.A.K.
DRAWN BY: SID JOYNER DATE: 11 2781
CHECKED BY: R. J. Moore DATE: 11-10-81



*SEE GENERAL DRAWING

NOTES

Concrete Rip Rap shall be Class "B" Concrete.
Welded Wire Fabric Reinforcing to be Style 6x6-W2.9xW2.9 60" wide. Adjacent runs of welded wire fabric to lap at least 6". Concrete Rip Rap to be poured in alternate 4'-5" strips as shown in Pouring Detail.
Toe walls shall be constructed at ends of rip rap similar to that shown for the top of the rip rap (FOR Concrete Rip Rap Only.)
Concrete in walls at end bent wings as indicated by cross hatched areas in section D-D and E-E will not be measured or paid for as a separate item as the entire cost of same shall be included in the price bid per S.Y. for Conc. rip rap.

ESTIMATED QUANTITIES

	Plain Rip Rap Class 2 TONS		Concrete Rip Rap S.Y.		Welded Wire Fabric 60" Wide Approx. lin. ft
Bridge @	EB N°1	EB N°2	EB N°1	EB N°2	
562 + 97.0 -L- REV.	~~300~~	~~280~~			
	147.18	273.54			

PROJECT No. 8.1430701
COLUMBUS COUNTY
STATION: 562 + 97.0 -L- REV
W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD RIP RAP DETAILS

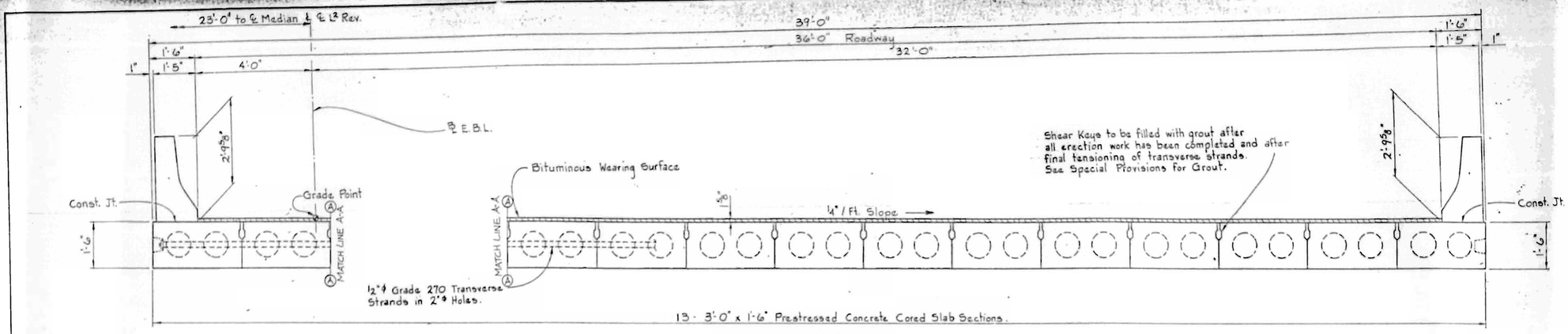
JULY 1978

REVISIONS						SHEET NO.	~~6-45~~
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS	~~84~~
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2			4				

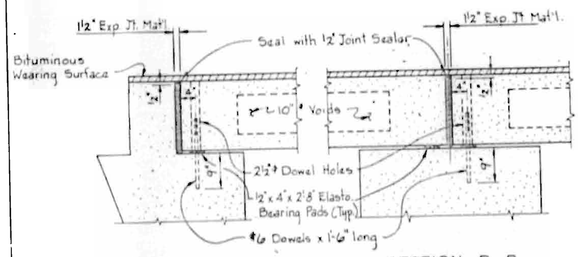
STD. NO. RR1

ASSEMBLED BY: S.D. JOYNER — DATE: 10/26/81
CHECKED BY: R.J. Moore — DATE: 10-28-81
DRAWN BY: Ross E. Kuberski — DATE: 4-28-10
CHECKED BY: Thomas W. Keaton — DATE: 5-7-10
SPECIAL
STANDARD

REVISED 3-10-86 BY RDU - BY RGF
REVISED 7-31-78 BY REK - BY RDU

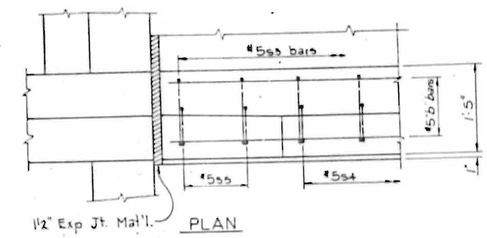


TYPICAL SECTION

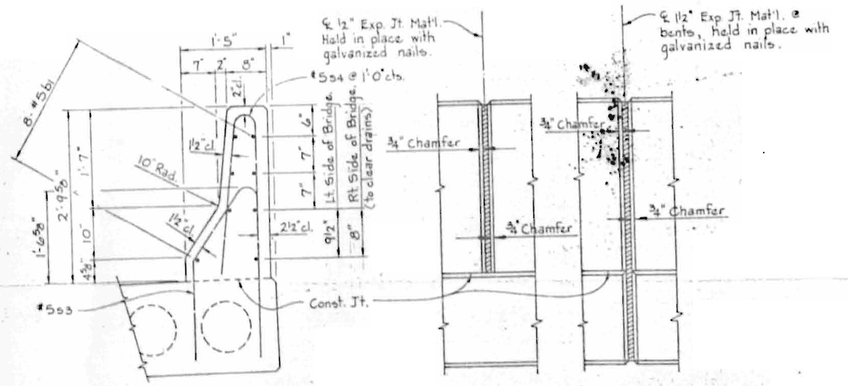


SECTION A-A

SECTION B-B



PLAN

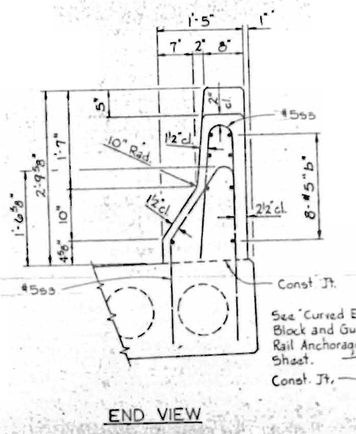


SECTION THRU RAIL

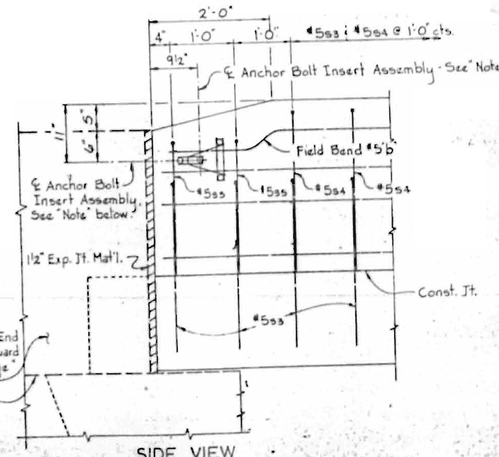
ELEVATION @ EXP. JTS.

BARRIER RAIL DETAILS

See Special Provisions for Concrete Barrier Rail.



END VIEW



SIDE VIEW

BARRIER RAIL - END OF RAIL DETAILS

Note: See "Curved End Block and Guard Rail Anchorage" Sheet, For Anchor Bolt Insert Assembly.

Note: The Contractor's attention is called to the fact that the 1½" thick joint material between the ends of the cored slabs at bents and between the backwall and the ends of the cored slabs is 1½" nominal and can be expected to vary. The Contractor may use more than one layer of expansion joint material to provide the thickness req'd. with a minimum layer thickness of ¼".

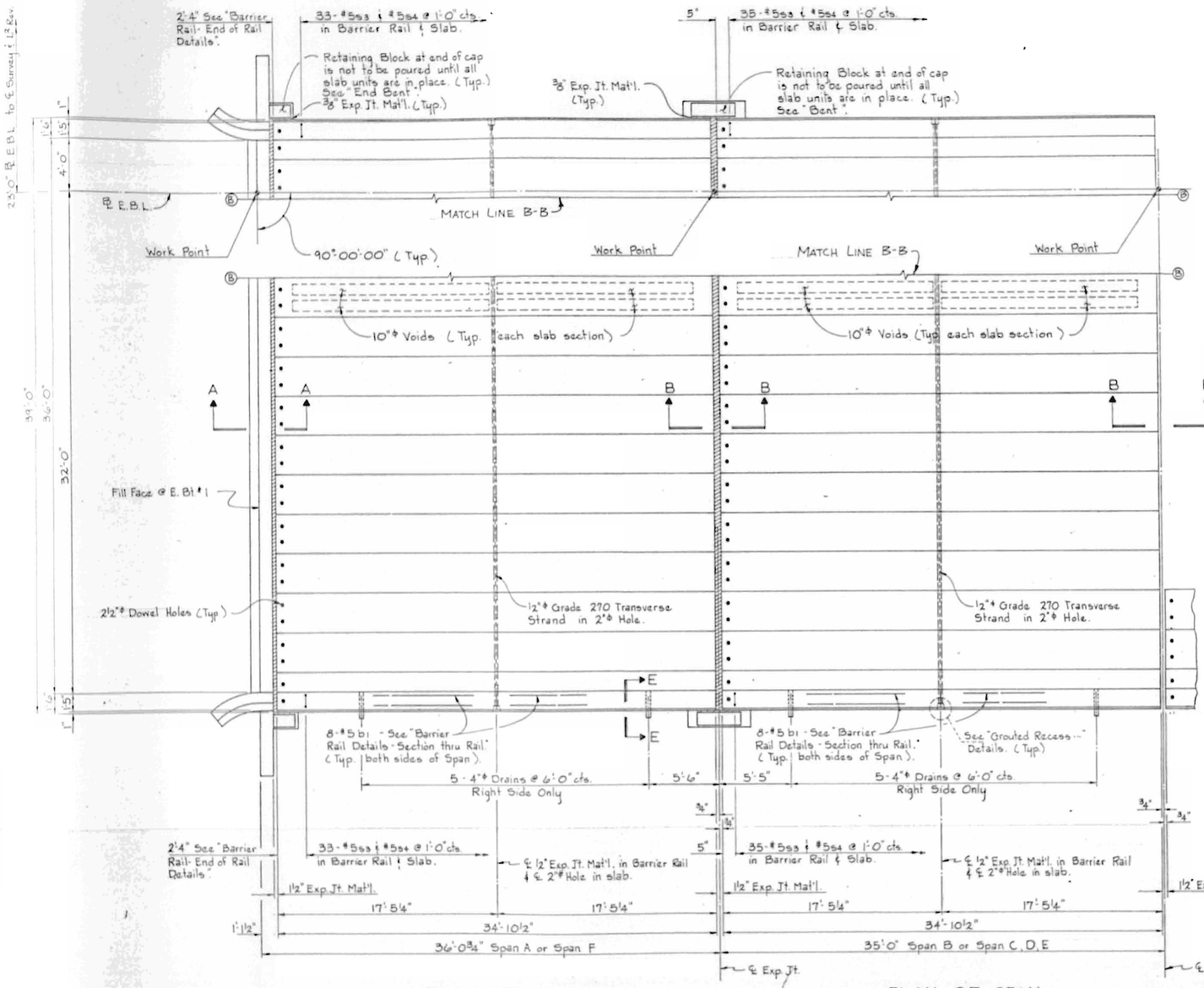
DRAWN BY: Rocky Edward Kubelik DATE: 10-15-81
CHECKED BY: R.J. Moore DATE: 10-15-81

PROJECT NO. 8.1430701 #6
COLUMBUS COUNTY
STATION: 562+97.00 L² REV
E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTIONS

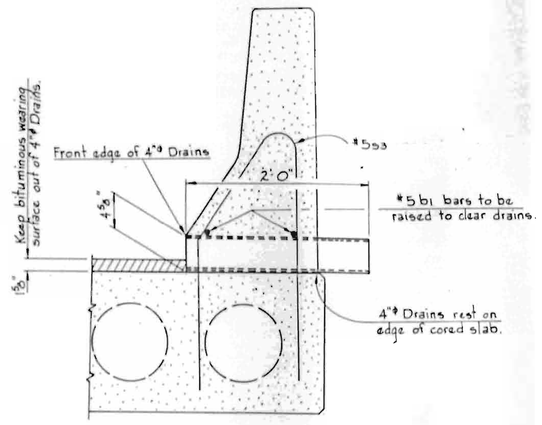
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-49
1			3			TOTAL SHEETS
2			4			84



PLAN OF SPAN

PLAN OF SPAN



SECTION E-E

Showing placement of 2'-0" long 4"ϕ Drains thru Barrier Rail.

(30-4"ϕ Drains required.)

Drains may be shifted as necessary to clear #5s3 bars.

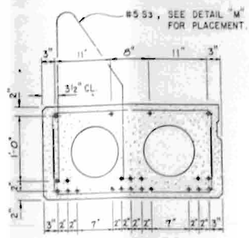
DRAWN BY Ross Edward Kubeny DATE 10-15-81
CHECKED BY R. J. Moore DATE 10-15-81

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.00 L² Rev.
E.B.L.

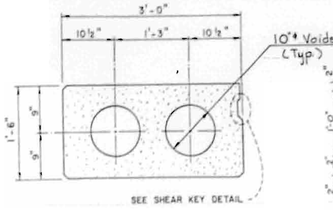
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPANS

OCT 1981

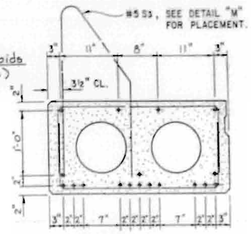
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2			4			84



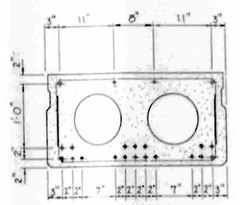
EXTERIOR SLAB SECTION



EXTERIOR SLAB SECTION

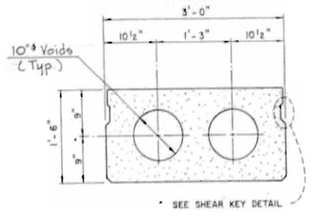


EXTERIOR SLAB SECTION



INTERIOR SLAB SECTION

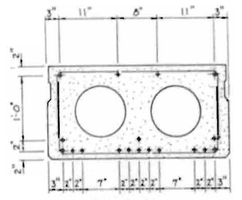
$^7/_{16}$"ø PRESTRESSED CABLE LAYOUT



INTERIOR SLAB SECTION

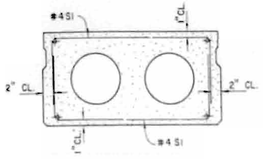
TYPICAL SECTION

NOTE: CHAMFER CORNERS ¾" AS SHOWN.



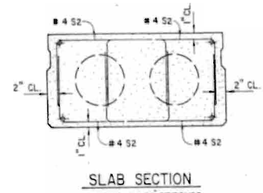
INTERIOR SLAB SECTION

$^1/_2$"ø PRESTRESSED CABLE LAYOUT



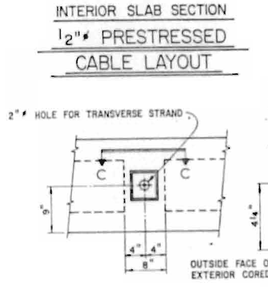
SLAB SECTION

SHOWING #4 S1 STIRRUPS.

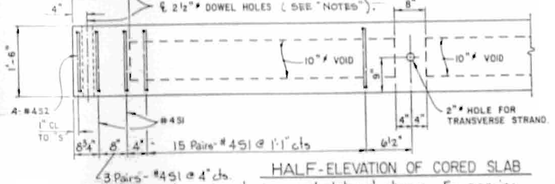


SLAB SECTION

SHOWING #4 S2 STIRRUPS.



PLAN OF CORED SLAB



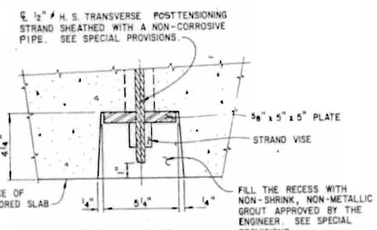
HALF-ELEVATION OF CORED SLAB

Note: #5s3 bars in exterior cored slab not shown. For spacing of #5s3 bars in exterior cored slab, see "Plan" of Superstructure.

NOTE

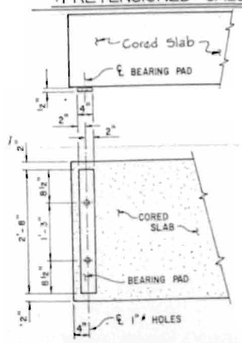
- THE CONTRACTOR, AT HIS OPTION, MAY USE LOW-RELAXATION STRANDS IN LIEU OF STRESS RELIEVED STRANDS. DESIGN AND STRAND PATTERN MUST PROVIDE AT LEAST THE SAME NET COMPRESSIVE STRESS AFTER THE LOSSES. THE ULTIMATE STRENGTH OF THE CORED SLAB UNIT MUST MEET THE REQUIREMENTS OF THE APPLICABLE AASHTO SPECIFICATIONS. LOW-RELAXATION STRANDS SHALL BE TENSIONED AND ANCHORED AT A LOAD EQUAL TO 75% OF ITS ULTIMATE STRENGTH. THIS APPLIED PRESTRESSED FORCE SHALL BE SHOWN ON THE PLANS. SIZE OF LOW-RELAXATION STRANDS SHALL NOT BE LARGER THAN THOSE SHOWN FOR STRESS RELIEVED STRANDS. DESIGN AND DETAIL PLANS USING LOW-RELAXATION STRANDS MUST BE SUBMITTED TO THE STATE BRIDGE DESIGN ENGINEER FOR APPROVAL. ANY ADDITIONAL COST DUE TO THE USE OF LOW-RELAXATION STRANDS WILL BE PAID FOR BY THE CONTRACTOR.

ELEVATION VIEW



SECTION C-C

GROUTED RECESS IN EXTERIOR SIDE OF PRETENSIONED CABLE CORED SLABS



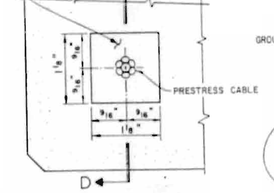
ELASTOMERIC BEARING DETAIL

76-(with holes) Brg. Pads Required.
76-(without holes) Brg. Pads Required.

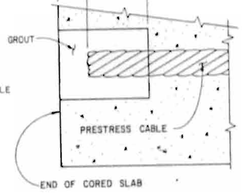


SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

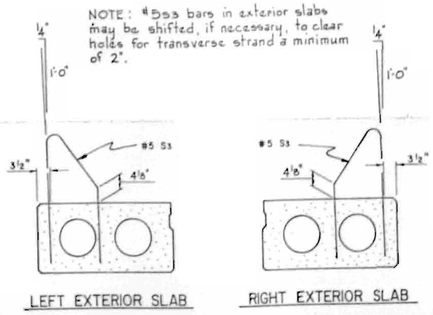


PART ELEVATION AT END OF CORED SLAB



SECTION D-D

GROUTED RECESS AT END OF PRETENSIONED CABLE CORED SLABS



LEFT EXTERIOR SLAB

RIGHT EXTERIOR SLAB

DETAIL "M"

NOTES

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS
$^7/_{16}$"ø	270	0.115 SQ IN	31,000 LBS PER CABLE	21,700 LBS PER CABLE
$^1/_2$"ø	270	0.153 SQ IN	41,300 LBS PER CABLE	28,900 LBS PER CABLE

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRESS RELIEVED HIGH-STRENGTH GRADE 270 CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

ALL PRESTRESSED STRANDS SHALL MEET THE REQUIREMENTS OF ASTM-A416.

FOR PRESTRESSED CORED SLABS, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR PRESTRESSED CORED SLABS.

RECESS FOR TRANSVERSE STRANDS IS TO BE GROUTED AFTER THE TENSIONING OF STRANDS.

THE 2½"ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS TO BE FILLED WITH GROUT, SEE SPECIAL PROVISIONS. THE 2½"ø DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS ARE NOT REQUIRED.

AT TRANSFER OF TENSIONING LOAD, THE CYLINDER STRENGTH OF CONCRETE SHALL BE 4,000 P.S.I. MINIMUM AND THE 28 DAY CYLINDER STRENGTH SHALL BE 5,000 P.S.I. MINIMUM.

ELASTOMER IN ELASTOMERIC BEARINGS SHALL HAVE A GRADE 50 DUROMETER HARDNESS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	NO. SPAN A or F	NO. SPAN B,C,D,E	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	32	32	192	5	STR.	17'-0"	3404
S4	66	70	412	5	3	4'-11"	2113
S5	4		8	5	3	4'-4"	36
REINFORCING STEEL Lbs.							5553
CLASS AA CONCRETE CU.YDS. (@ 6.9 CU.YDS. PER SPAN)							41.4
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL *							4200 ~~4176~~

FILL THE RECESS WITH NON-SHRINK, NON-METALLIC GROUT APPROVED BY THE ENGINEER. SEE SPECIAL PROVISIONS

* SEE SPECIAL PROVISIONS.

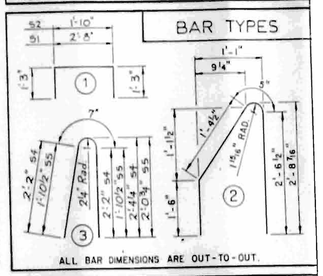
REINFORCING STEEL FOR ONE EXTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
S3	35	#5	2	5'-10"	213
TOTAL				LBS. -	484

REINFORCING STEEL FOR ONE INTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
TOTAL				LBS. -	271

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE CORED SLAB

	REINFORCING STEEL LBS.	5,000 P.S.I. CONCRETE C.Y.	$^7/_{16}$"ø S.R CABLES No.	$^1/_2$"ø S.R CABLES No.
EXTERIOR C.S.	484	4.5	22	18
INTERIOR C.S.	271	4.5	22	18

CORED SLAB REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	12	34'-10½"	418'-6"
INTERIOR C.S.	66	34'-10½"	2301'-9"
TOTAL	78		2720'-3"

DEAD LOAD DEFLECTION AND CAMBER FOR INT. or EXT. SECTION

	$^7/_{16}$"ø Cables	$^1/_2$"ø Cables
CAMBER (SLAB ALONE IN PLACE)	5/8" ↑	11/16" ↑
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD	1/16" ↓	1/8" ↓
FINAL CAMBER	9/16" ↑	9/16" ↑

PROJECT No. 8.1430701

COLUMBUS COUNTY

STATION: 562+97.0 L² Rev. E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

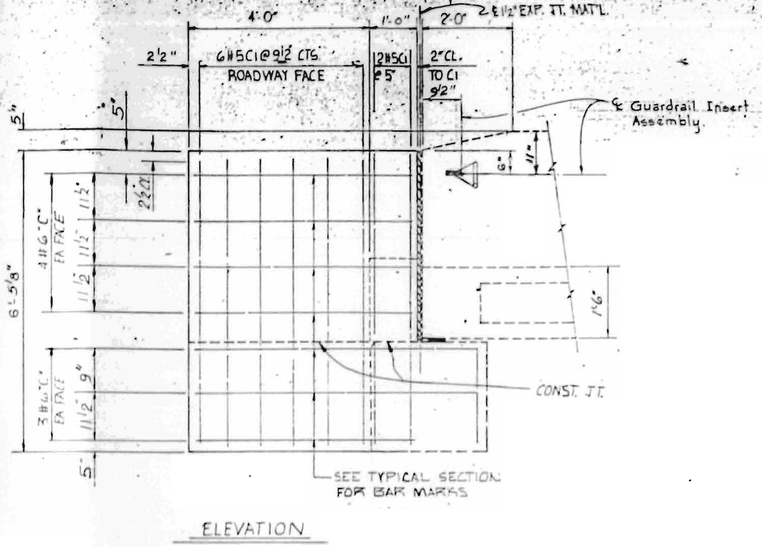
3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS

OCT. 1981

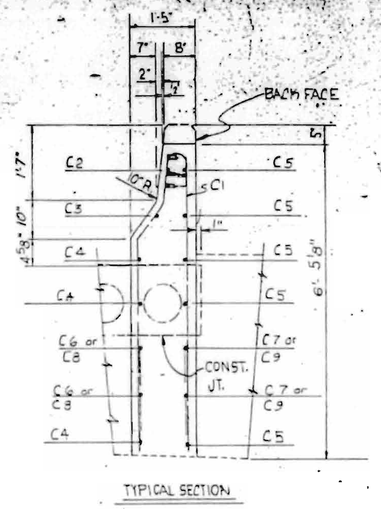
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	~~5~~ 6
1			3			TOTAL SHEETS
2			4			~~64~~ 64

DRAWN BY ROSS EDWARD KURENY DATE 10-15-81
CHECKED BY R. V. Moore DATE 10-15-81

#6

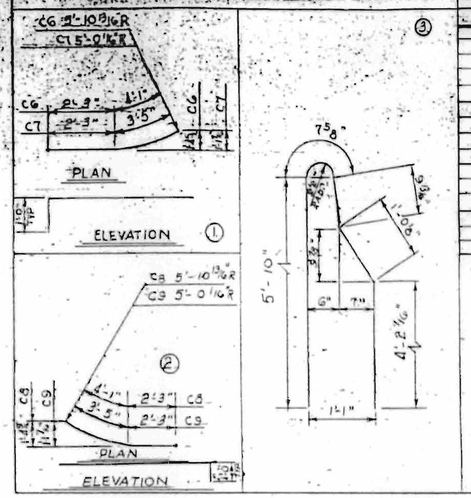


ELEVATION



TYPICAL SECTION

BAR TYPES FOR CURVED END BLOCKS



ALL BAR DIMENSIONS ARE OUT TO OUT

Bill of Material for Four Curved End Blocks

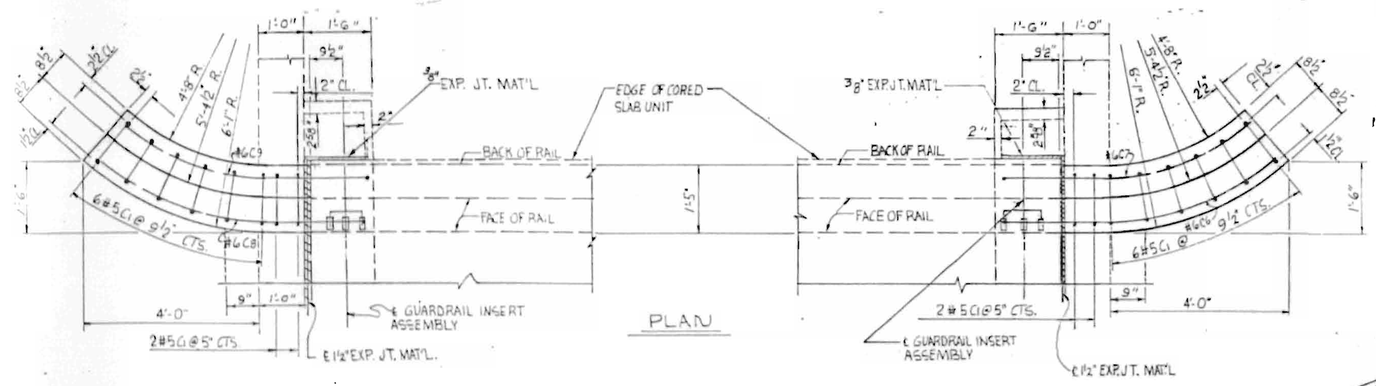
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
C1	32	#6	3	12'-6"	417
C2	4	#6	4	4'-5"	87
C3	4	#6	4	4'-7"	88
C4	12	#6	4	4'-11"	89
C5	20	#6	4	4'-3"	128
C6	4	#6	1	7'-4"	44
C7	4	#6	1	6'-8"	40
C8	4	#6	2	7'-4"	44
C9	4	#6	2	6'-8"	40

REINFORCING STEEL : 857 LBS.

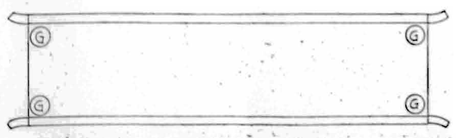
CLASS "A" CONC. 5.3 C.Y.

NOTES

1. THE 4 - BOLT INSERT ASSEMBLY UNIT SHALL CONSIST OF THE FOLLOWING COMPONENTS:
   a. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF A.S.T.M. A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1¾".
   b. 4 - 7/8"ø x 2 3/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8"ø x 2 3/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF A.S.T.M. A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
   c. WIRE STRUTS SHOWN IN THE INSERT ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.
2. THE INSERT ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.
3. THE COST OF THE 4-BOLT INSERT ASSEMBLY UNIT COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.
4. THE 4 - BOLT INSERT ASSEMBLY UNIT IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END POSTS. FOR POINTS OF ATTACHMENT, SEE "LOCATION OF GUARDRAIL ANCHORAGE" SKETCH, THIS SHEET.
5. CURVED END BLOCKS ARE REQUIRED AT ALL END POSTS.
6. THE COST OF THE EXCAVATION AND BACKFILL FOR THE CURVED END BLOCKS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

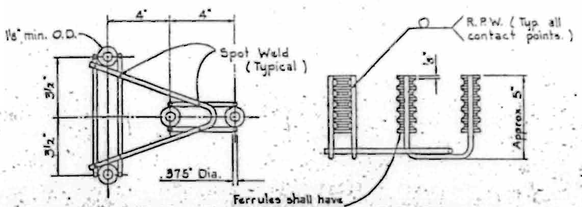


PLAN



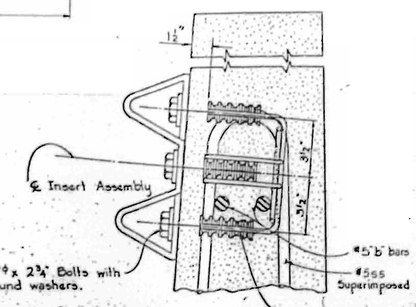
LOCATION OF GUARDRAIL ANCHORAGE

Ⓖ DENOTES GUARDRAIL ANCHORAGE LOCATION.



PLAN ELEVATION

INSERT ASSEMBLY



SECTION E-E

PROJECT NO. 8.1430701

COLUMBUS COUNTY

STATION: 562+97.00 (2 Rev.) E.B.L.

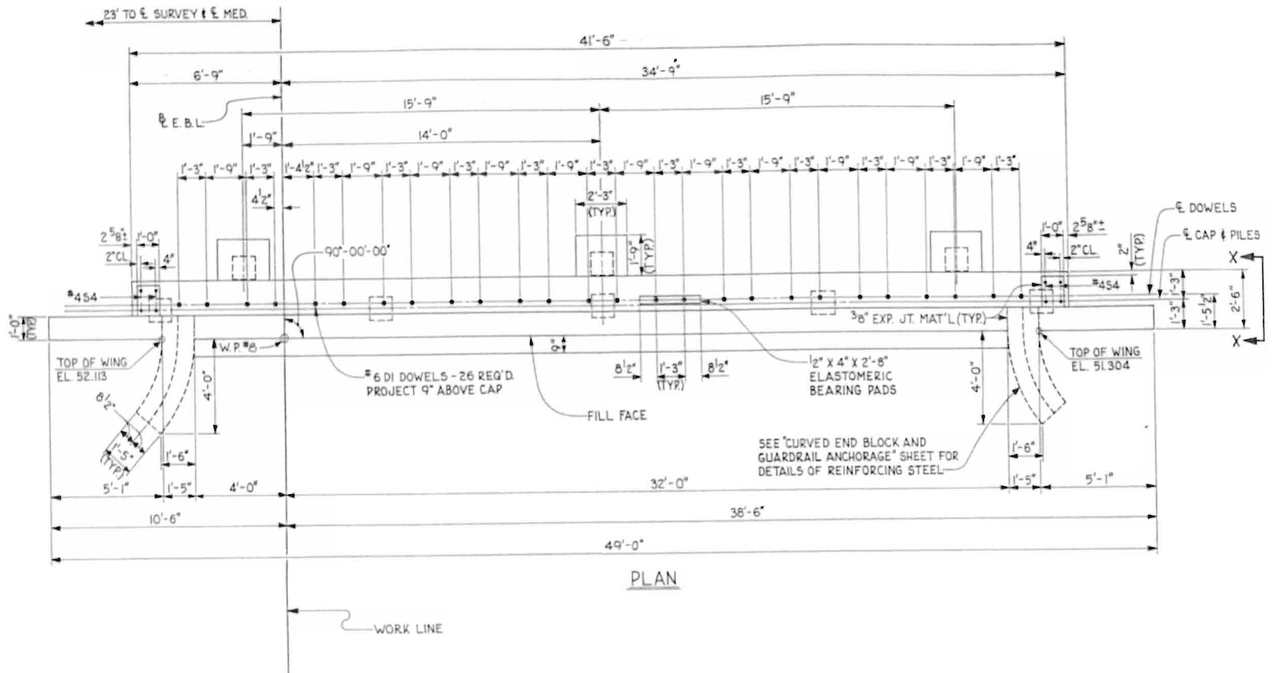
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CURVED END BLOCK AND GUARDRAIL ANCHORAGE FOR BARRIER RAIL

JULY 1981

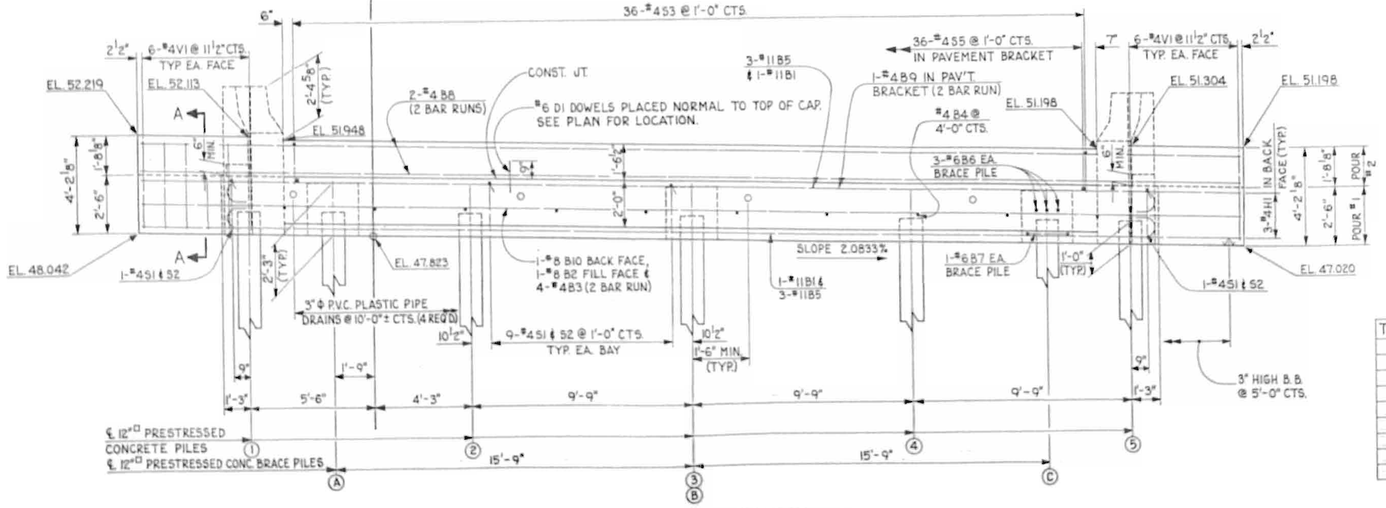
REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		
1			3			TOTAL SHEETS	
2			4				84

DRAWN BY: B.D. JOYNER DATE: 7/10/81
CHECKED BY: R.J. Moore DATE: 7-21-81



PLAN

WORK LINE



ELEVATION

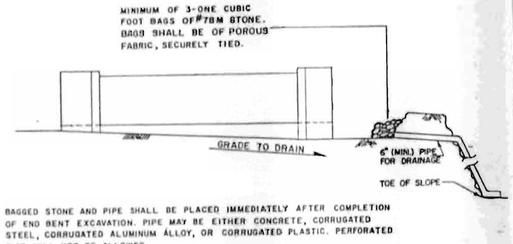
TOP OF PILE ELEVATIONS	
NO.	ELEVATION
1	48.938
2	48.734
3	48.531
4	48.328
5	48.125
A	48.859
B	48.531
C	48.203

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECCESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY: C. S. GODBOLD DATE: 13 NOV 81
CHECKED BY: R. J. Moore DATE: 12-18-81

PROJECT NO. 8.1430701 #6
COLUMBUS COUNTY
STATION: 562+97.0 -L-2 REV.
SHEET 1 OF 2 E. B. L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

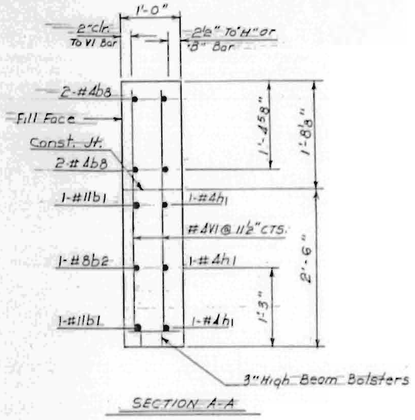
SUBSTRUCTURE
END BENT 1

NOV. 1981

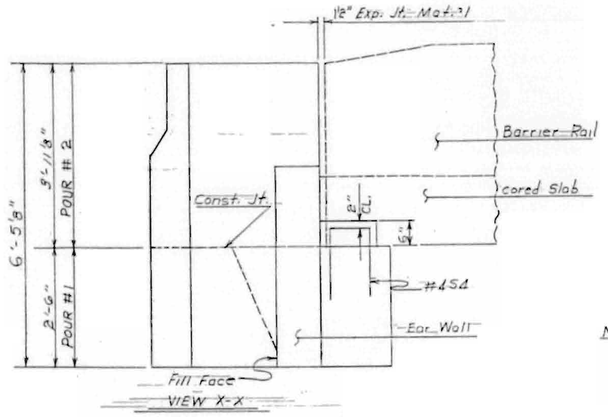
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-48
1			3			TOTAL SHEETS
2			4			84

SHEET 6B OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N.C.	———
F. A. PROJECT		

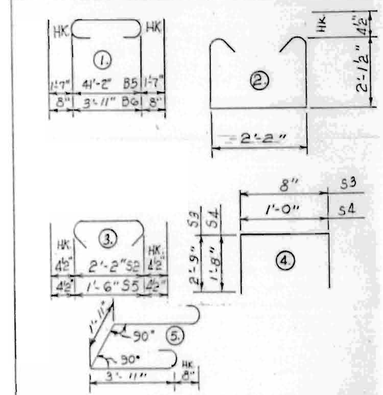


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See 'Curved End Block And Guardrail Anchorage for Barrier Rail' Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-8"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	11'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	4	4'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str	5'-1"	20
V1	24	#4	Str.	3'-10"	61

Reinforcing Steel LBS. 3,188

CLASS "A" Conc.

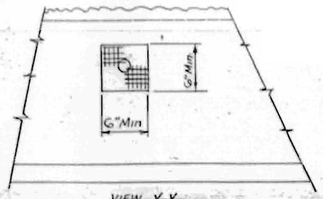
Pour #1*	=	11.7 CU YDS
Pour #2	=	2.7 CU YDS
Total	=	14.4 CU YDS

12"ø Prestressed Conc. Piles No. 8 Lin Ft. ~~240~~ 320

PIPE DRAIN DETAILS

3"ø PVC Plastic Pipe Drains. This Pipe Shall Meet The Minimum Requirements Of A.S.T.M. D1785

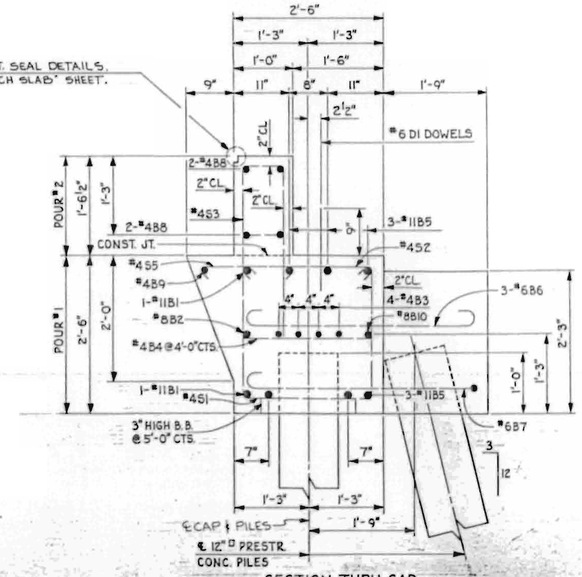
Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.

FOR COMPRESSION JT. SEAL DETAILS, SEE 'BRIDGE APPROACH SLAB' SHEET.



SECTION THRU CAP

PROJECT No. 8.1430701 #6

COLUMBUS COUNTY

STATION: 562+97.0 -L³- REV.

SHEET 2 OF 2 E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 1

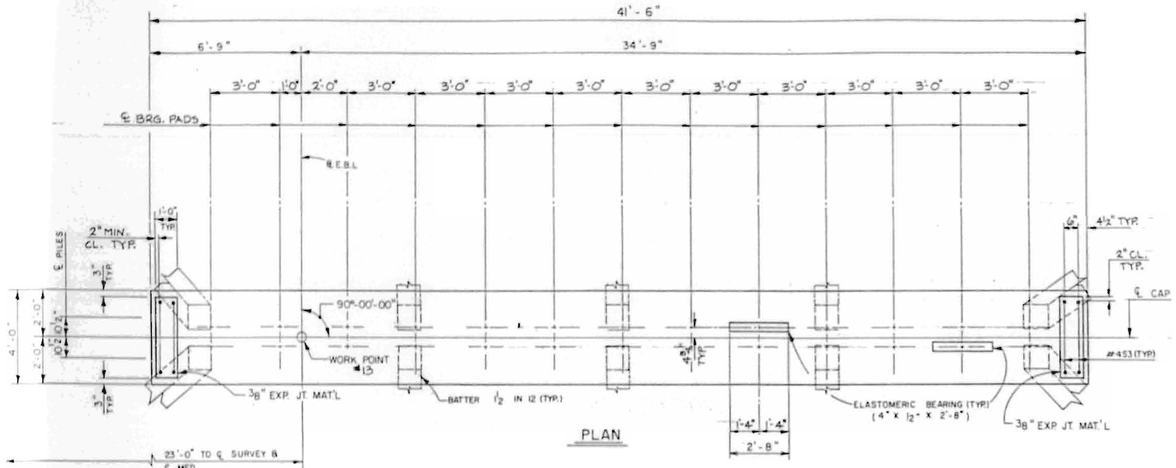
OCT. 1981

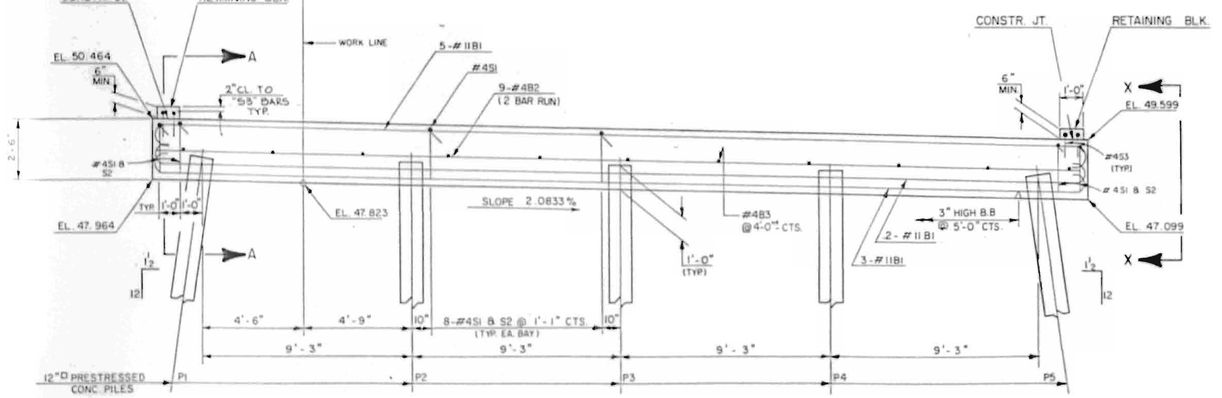
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6-49
1			3			TOTAL SHEETS
2			4			~~84~~

DRAWN BY S.D. JOYNER DATE 11-24-81
CHECKED BY R.J. Moore DATE 7-30-81

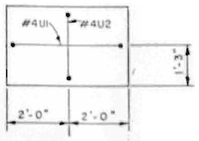
SHEET 10 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		





ELEVATION



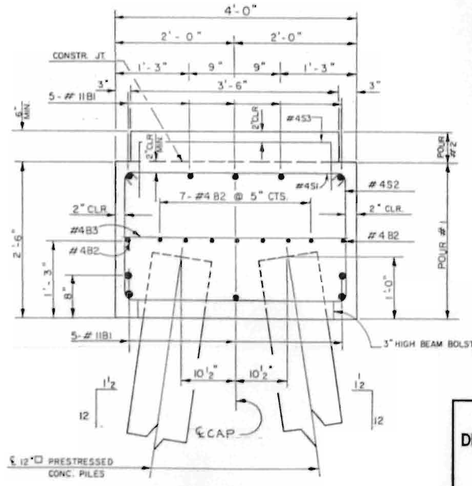
VIEW X-X
REINFORCING SHOWN TYP EACH END.

NOTES:

℄CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

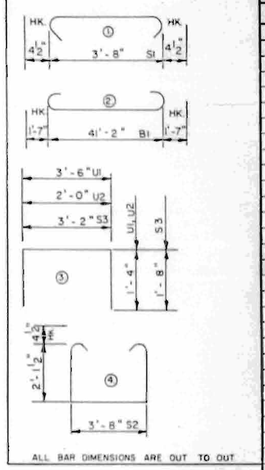
THE RETAINING BLOCK AT EACH END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

TOP OF PILE ELEVATION	
P1	48.917
P2	48.724
P3	48.531
P4	48.339
P5	48.146



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (1 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR	21'-5"	258
B3	11	#4	STR	3'-8"	27
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6

REINFORCING STEEL = 2,985

CLASS "A" CONC = 15.1 CU.YDS.

12" □ PRESTRESSED CONC. PILES

NO. 10 LIN. FT. = ~~300~~ 400

CLASS "A" CONC.

POUR #1 = 15.0 CU. YDS.

POUR #2 = 0.1 CU. YDS.

TOTAL = 15.1 CU. YDS.

PROJECT NO. 8.1430701 *6

COLUMBUS COUNTY

STATION: 562+97.0-L- REV.

E.B.L.

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY

RALEIGH

SUBSTRUCTURE

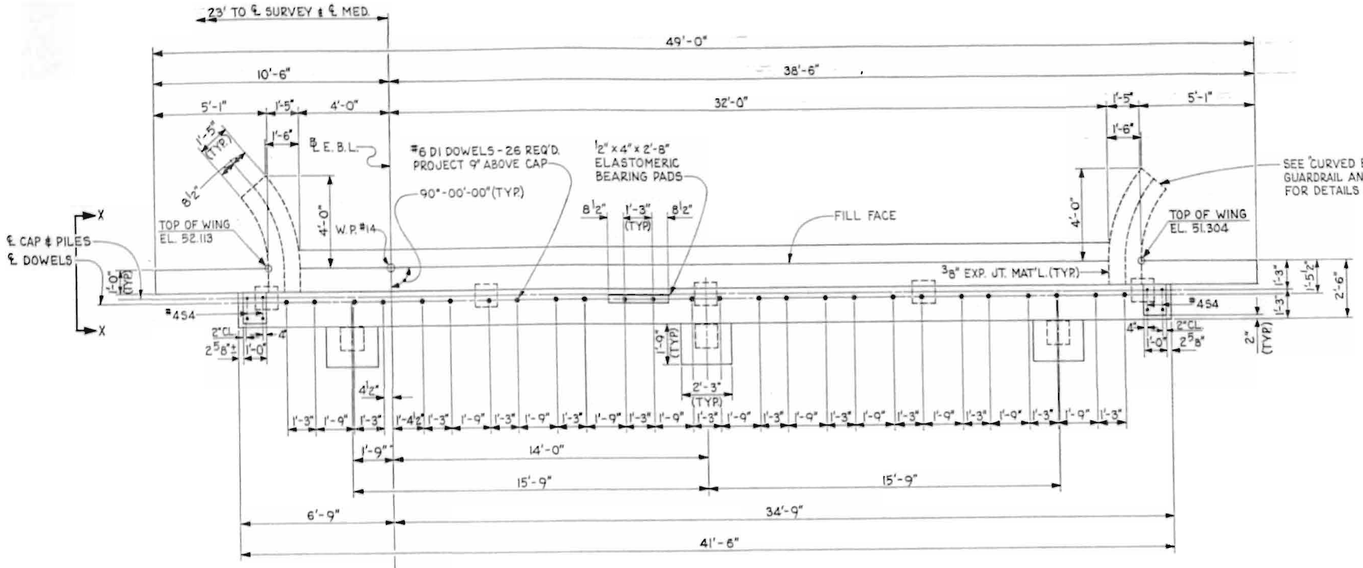
BENT #5

OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-54
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2			4			84

DRAWN BY S. D. JOYNER DATE 10/15/81

CHECKED BY R. J. Moore DATE 10-22-81



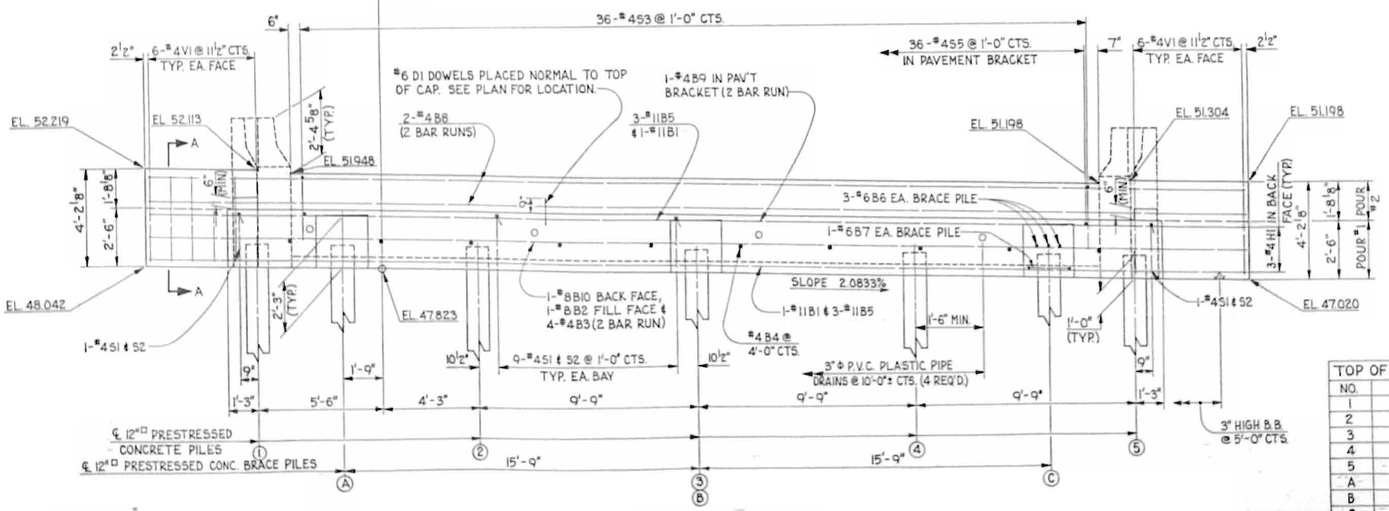
NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

FOR "TEMPORARY DRAINAGE" DETAILS FOR END BENT 2, SEE END BENT 1 SHEET 1 OF 2.



TOP OF PILE ELEVATIONS	
NO.	ELEVATION
1	48.938
2	48.734
3	48.531
4	48.328
5	48.125
A	48.859
B	48.531
C	48.203

DRAWN BY: C. S. GODBOLD DATE: DEC. 17, 1981
CHECKED BY: R. J. Moore DATE: 12-18-81

PROJECT NO. 8.1430701 #6
COLUMBUS COUNTY
STATION: 562+97.00-L-2 REV.
SHEET 1 OF 2 E. B. L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

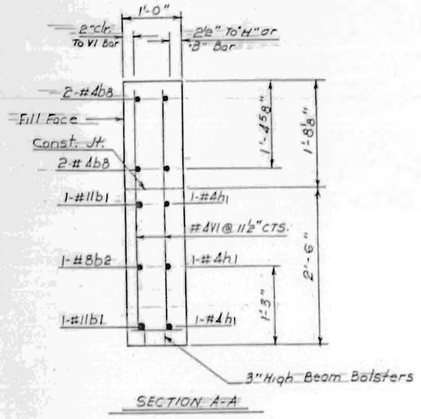
SUBSTRUCTURE
END BENT 2

DEC. 1981

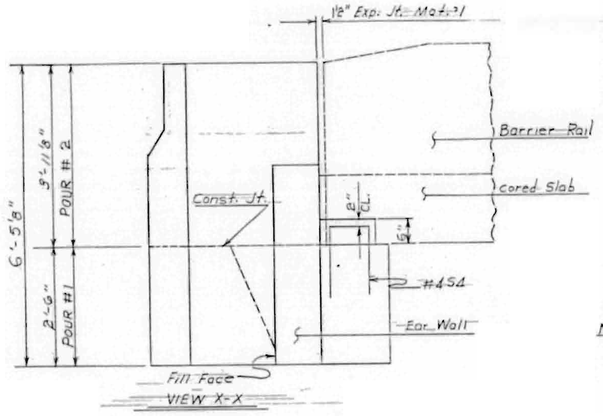
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NO.	BY	DATE	NO.	BY	DATE	S-C2
1			3			TOTAL SHEETS
2			4			84

SHEET 72 oF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	———
F. A. PROJECT		

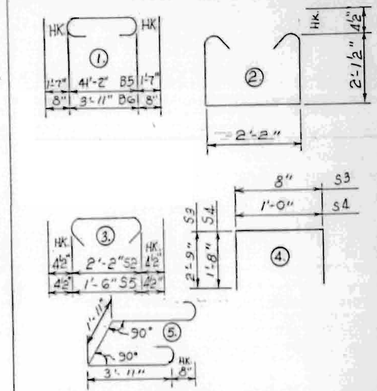


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See 'Curved End Block And Guardrail Anchorage For Barrier Rail' Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 2

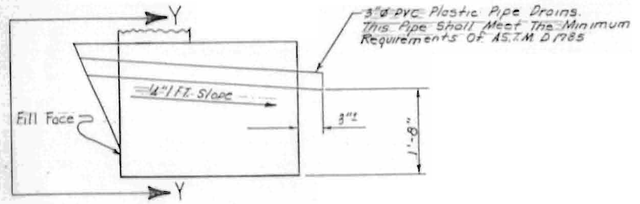
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-8"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	19'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	1	4'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str	5'-1"	20
V1	24	#4	Str.	3'-10"	61

Reinforcing Steel LBS. 3,188

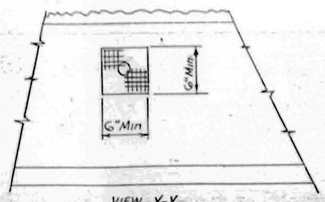
CLASS "A" Conc.
Pour #1* = 11.7 CU YDS.
Pour #2 = 2.7 CU YDS.
Total = 14.4 CU YDS.

12"ø Prestressed Conc.
Piles No. 8 Lin Ft. ~~240~~ 320'

PIPE DRAIN DETAILS



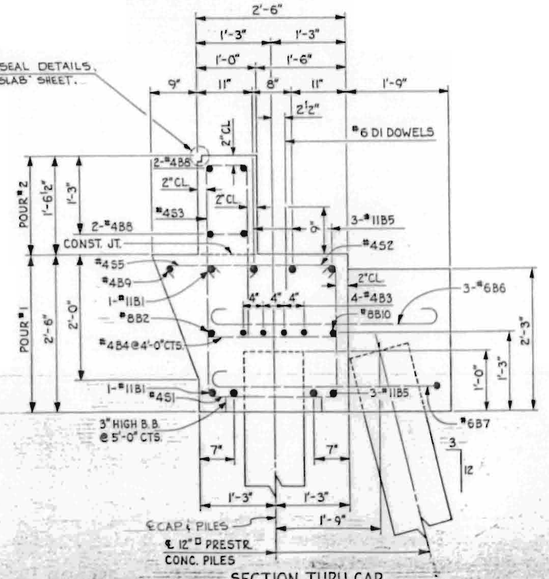
Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.

FOR COMPRESSION JT. SEAL DETAILS, SEE 'BRIDGE APPROACH SLAB' SHEET.



SECTION THRU CAP

PROJECT NO. 8.1430701

COLUMBUS COUNTY

STATION: 562+97.00 - L² REV.

SHEET 2 oF 2 E.B.L.

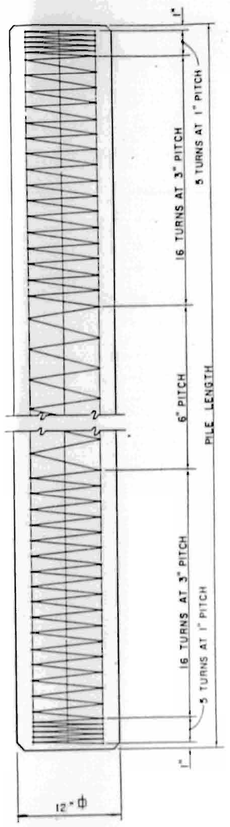
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 2

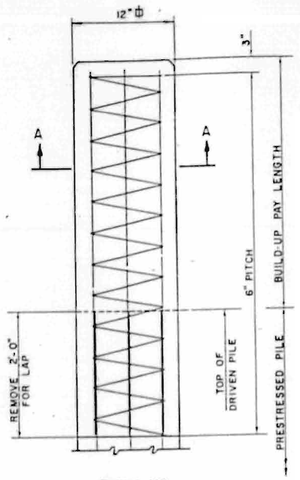
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	~~S-53~~
1			3			TOTAL SHEETS
2			4			~~84~~

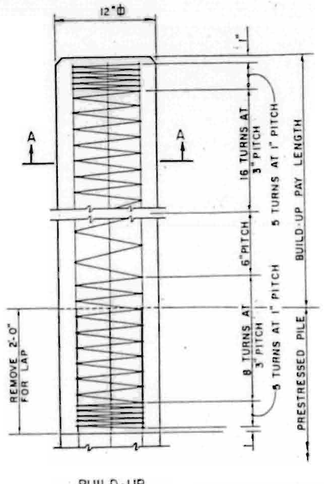
DRAWN BY S.B. JOYNER DATE 11-6-81
CHECKED BY R. W. Moore DATE 7-30-81



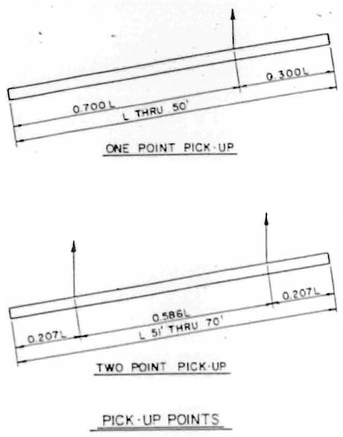
ELEVATION



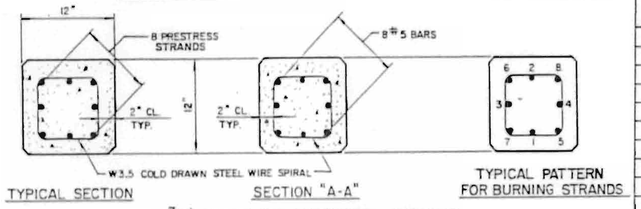
BUILD-UP WITHOUT DRIVING



BUILD-UP WITH DRIVING

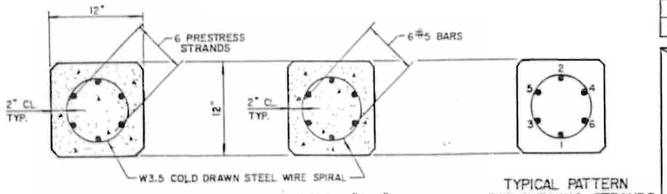


PICK-UP POINTS



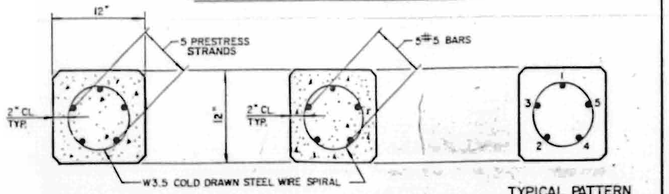
TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{3}{8}$"ϕ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{7}{16}$"ϕ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{1}{2}$"ϕ GRADE 270 PRESTRESS STRANDS

QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINT 0.300L	ONE PICK-UP POINT 0.700L	TWO PICK-UP POINT 0.207L	TWO PICK-UP POINT 0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.70	15'-0"	35'-0"		
55'-0"	2.01	4.07			11'-4½"	32'-3"
60'-0"	2.19	4.44			12'-5"	35'-2"
65'-0"	2.37	4.81			13'-5½"	38'-1"
70'-0"	2.56	5.18			14'-6"	41'-0"

NOTES

CONCRETE DESIGN DATA: f'c = 5,000 PSI ; fc = 2,000 PSI

IMPACT IN HANDLING = 50%

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DEVICES FOR LIFTING THE PILES SHALL BE APPROVED BY THE ENGINEER. LOOPS OF STRAND CAST IN THE PILES WILL NOT BE PERMITTED. INSERTS, CAST IN THE PILES TO RECEIVE THREADED EYE-BOLTS OR SIMILAR APPROVED DEVICES, MAY BE USED; OR WHERE IT IS PRACTICABLE, SATISFACTORY CLAMPS OR SLINGS MAY BE USED. WHERE PILES WILL BE EXPOSED TO VIEW IN THE STRUCTURE AND INSERTS ARE CAST IN THE PILES, THE OPENINGS SHALL BE REPAIRED AFTER THE EYE-BOLTS OR OTHER ATTACHMENTS HAVE BEEN REMOVED. THE OPENINGS SHALL BE REPAIRED IN A SATISFACTORY MANNER IN ORDER TO OBTAIN A UNIFORM APPEARANCE.

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRANDS AS PRESCRIBED IN THE SPECIFICATIONS. THE CONTRACTOR MAY, AT HIS OPTION, USE EITHER OF THE THREE TYPES OF STRANDS LISTED BELOW; HOWEVER, ALL STRANDS IN A PILE SHALL BE OF THE SAME TYPE.

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
$\frac{3}{8}$"ϕ	270	8	0.085 □"	23,000 # PER STRAND	16,100 # PER STRAND
$\frac{7}{16}$"ϕ	270	6	0.115 □"	31,000 # PER STRAND	21,700 # PER STRAND
$\frac{1}{2}$"ϕ	270	5	0.153 □"	41,300 # PER STRAND	28,900 # PER STRAND

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED THE LAST STRAND MAY BE BURNED SINGLY, ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE CLASS "A" CONCRETE W/20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

ALL CORNERS TO BE CHAMFERED ¾".

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

STEEL PILE TIP DETAILS

NOTES

WHEN NOTED ON GENERAL DRAWING, THE CONTRACTOR, AT HIS OPTION, MAY SUBSTITUTE 12" PRESTRESSED CONCRETE PILES WITH STEEL PILE TIPS, AS SHOWN IN THE DETAILS, IN LIEU OF HP 12 x 53 STEEL PILES.

THE STEEL PILE TIP SHALL NOT BE INCLUDED IN DETERMINING THE LENGTH OF THE PILE FOR PAYMENT. THE COST OF THE STEEL PILE TIP UNIT SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF PILES.

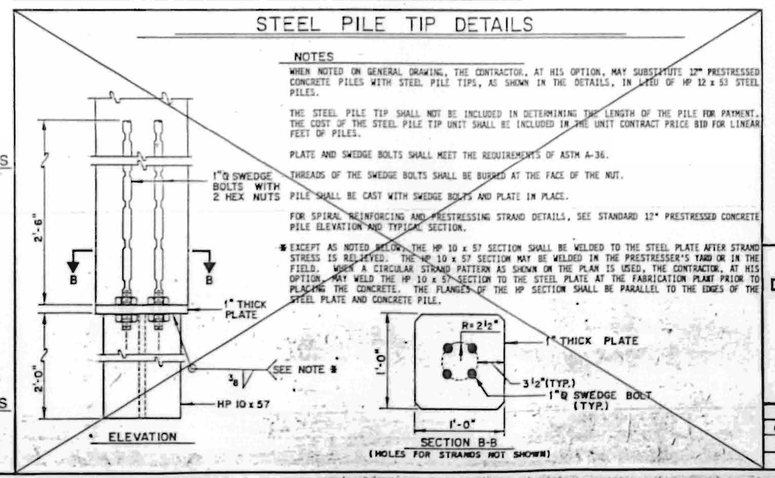
PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A-36.

THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

EXCEPT AS NOTED BELOW, THE HP 10 x 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 x 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLAN IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 x 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



REVISED 11-12-82 BY JMB / BY RDU
REVISED 12-22-82 BY JMB / BY RDU
REVISED 2-3-83 BY JMB / BY RDU
REVISED 7-14-83 BY JMB / BY RDU
REVISED 7-31-78 BY REK / BY RDU

ASSEMBLED BY: ROSS E. KUBENY DATE: 8-21-85
CHECKED BY: DATE:
DRAWN BY: R. HUFFMAN DATE: OCT 14 1977
CHECKED BY: RAMSEY A. FOREMAN DATE: MAY 2 1977

SPECIAL
STANDARD

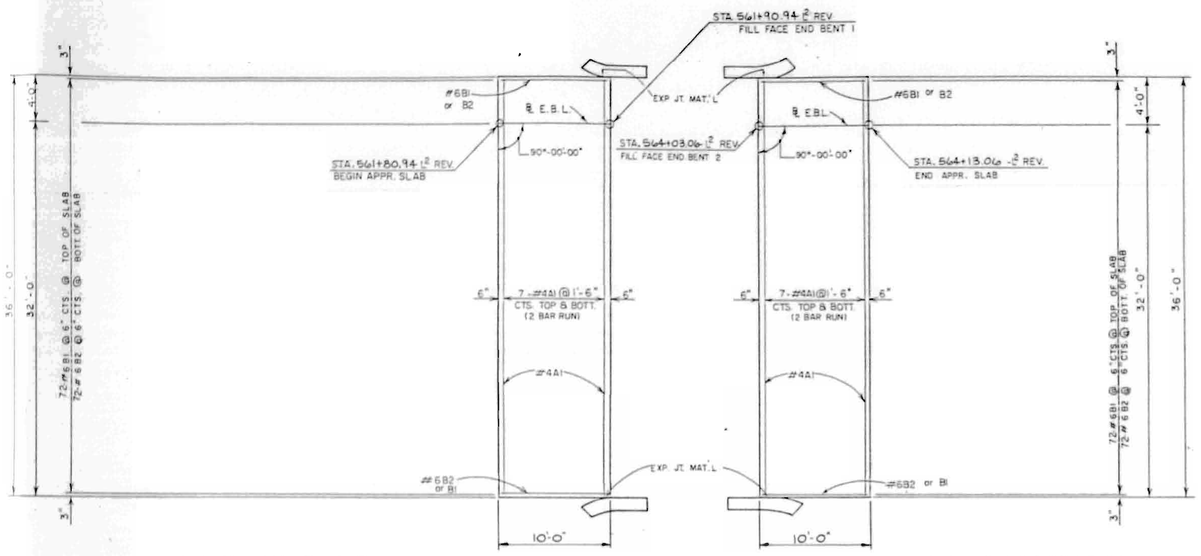
PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.0-L- REV.
E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
12" PRESTRESSED
CONCRETE PILE

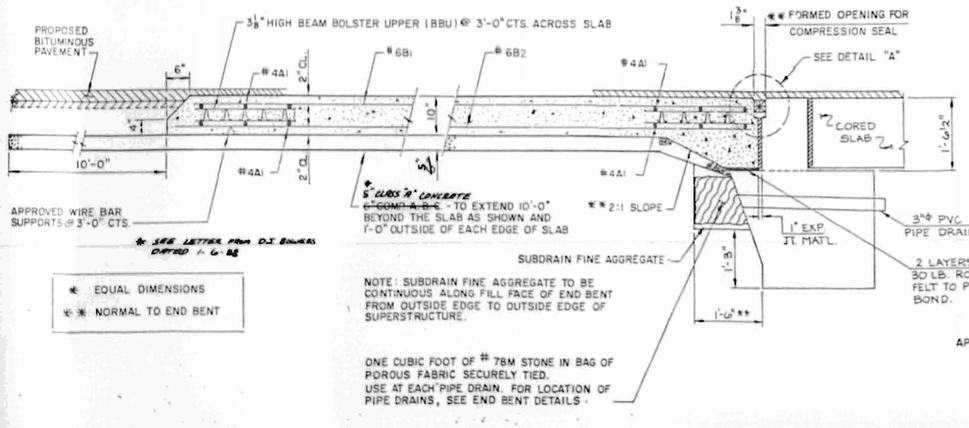
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			84

STD. NO. PCPI

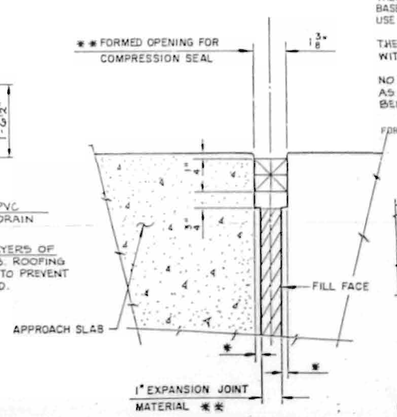


PLAN OF APPROACH SLAB
(END BENT #1)

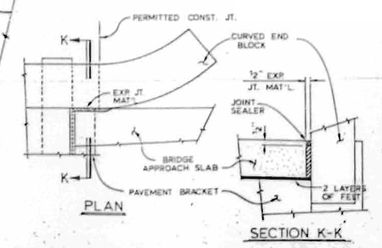
PLAN OF APPROACH SLAB
(END BENT #2)



SECTION THRU SLAB

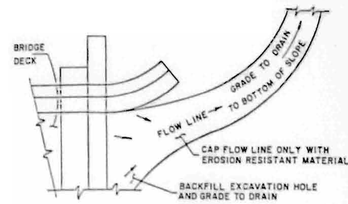


DETAIL "A"



DETAIL OF EXP. JT. MAT'L. BETWEEN APPROACH SLAB AND CURV. END BLK

THE EXPANSION JOINT SHALL BE SEALED WITH JOINT SEALER AS SHOWN.



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAILS

NOTES

FOR PREFORMED COMPRESSION JOINT SEAL, SEE SPECIAL PROVISIONS.

PREFORMED COMPRESSION JOINT SEAL SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID. SEE GENERAL DRAWING.

OPENING SHOWN IS BASED ON A NOMINAL UNCOMPRESSED SEAL WIDTH OF 2"

THE INSTALLED COMPRESSION SEAL SHALL BE WATERTIGHT.

PROVIDE WATERTIGHT SEAL AT END OF COMPRESSION SEAL AS RECOMMENDED BY MANUFACTURER.

COMPRESSION SEAL EXTENDS FROM GUTTER TO GUTTER ALONG BRIDGE DECK NOTCH.

THE CONTRACTOR, AT HIS OPTION, MAY USE 4" BITUMINOUS CONCRETE BASE COURSE, TYPE HB IN LIEU OF 6" A.B.C. ANY ADDITIONAL COST DUE TO USE OF THIS OPTION WILL BE PAID FOR BY THE CONTRACTOR.

THE 1" EXPANSION JOINT MATERIAL IS TO BE HELD IN PLACE WITH GALVANIZED NAILS.

NO DIRECT PAYMENT WILL BE MADE FOR THE TEMPORARY DRAINAGE AS SUCH WORK WILL BE CONSIDERED INCIDENTAL TO OTHER WORK BEING PAID FOR BY THE VARIOUS ITEMS IN THE CONTRACT.

FOR BRIDGE APPROACH SLABS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

FOR ONE APPR. SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	28	#4	STR.	18'-5"	344
B1	72	#6	STR	9'-1"	982
B2	72	#6	STR.	9'-7"	1,036

REINFORCING STEEL LBS. = 2,362

CLASS "A" CONCRETE CU. YDS. = 12.4

REVISED 9-1-81 BY: E.R.L. CHECKED BY: R.L.G.
REVISED 3-27-81 BY: R.E.K. CHECKED BY: R.D.U.
REVISED 8-28-79 BY: RDU CHECKED BY: CCM
REVISED 4-1-79 BY: CCM CHECKED BY: R.D.U.
REVISED 7-31-78 BY: R.E.K. CHECKED BY: R.D.U.

STD. DRAWN BY: K&P DATE: 2-71 CHECKED BY: J.A.K.
DRAWN BY: S.D. JOYNER DATE: 11 2181
CHECKED BY: R.J. Moore DATE: 11-10-81

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.00 -L2- REV. E.B.L.

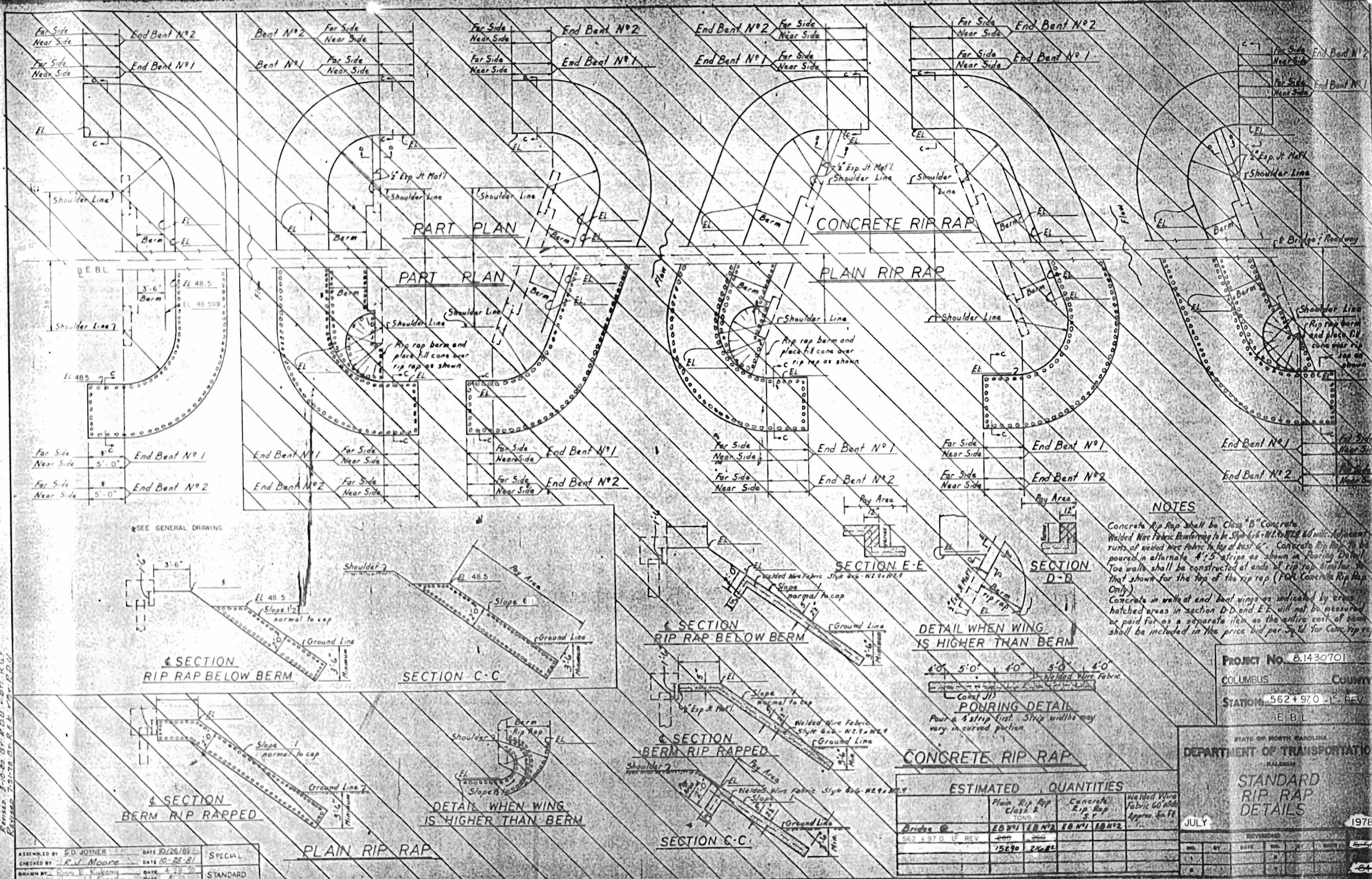
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

JULY 1978

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6-B
1			3			TOTAL SHEETS
2			4			84

STD. NO. BAS2



NOTES

Concrete Rip Rap shall be Class "B" Concrete.
Welded Wire Fabric Reinforcing to be Style 6x6-W2.9xW2.9 60" wide. Adjacent runs of welded wire fabric to lap at least 6". Concrete Rip Rap to be poured in alternate 4' & 5' strips as shown in Pouring Detail. Toe walls shall be constructed at ends of rip rap similar to that shown for the top of the rip rap. (FOR Concrete Rip Rap Only)
Concrete in walls at end bent wings as indicated by cross hatched areas in section D-D and E-E will not be measured or paid for as a separate item as the entire cost of same shall be included in the price bid per Sq. Yd. for Conc. rip rap.

ESTIMATED QUANTITIES

	Plain Rip Rap Class 2 TONS		Concrete Rip Rap S.Y.		Welded Wire Fabric 60" wide Approx. Sq. Ft.
	EB Nº1	EB Nº2	EB Nº1	EB Nº2	
Bridge @					
562 + 97.0 L REV	~~200~~	~~260~~			
	15290	216.82			

PROJECT No. 8.1430701
COLUMBUS COUNTY
STATION: 562+97.0 -L- REV.
E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RIP RAP
DETAILS

JULY 1978

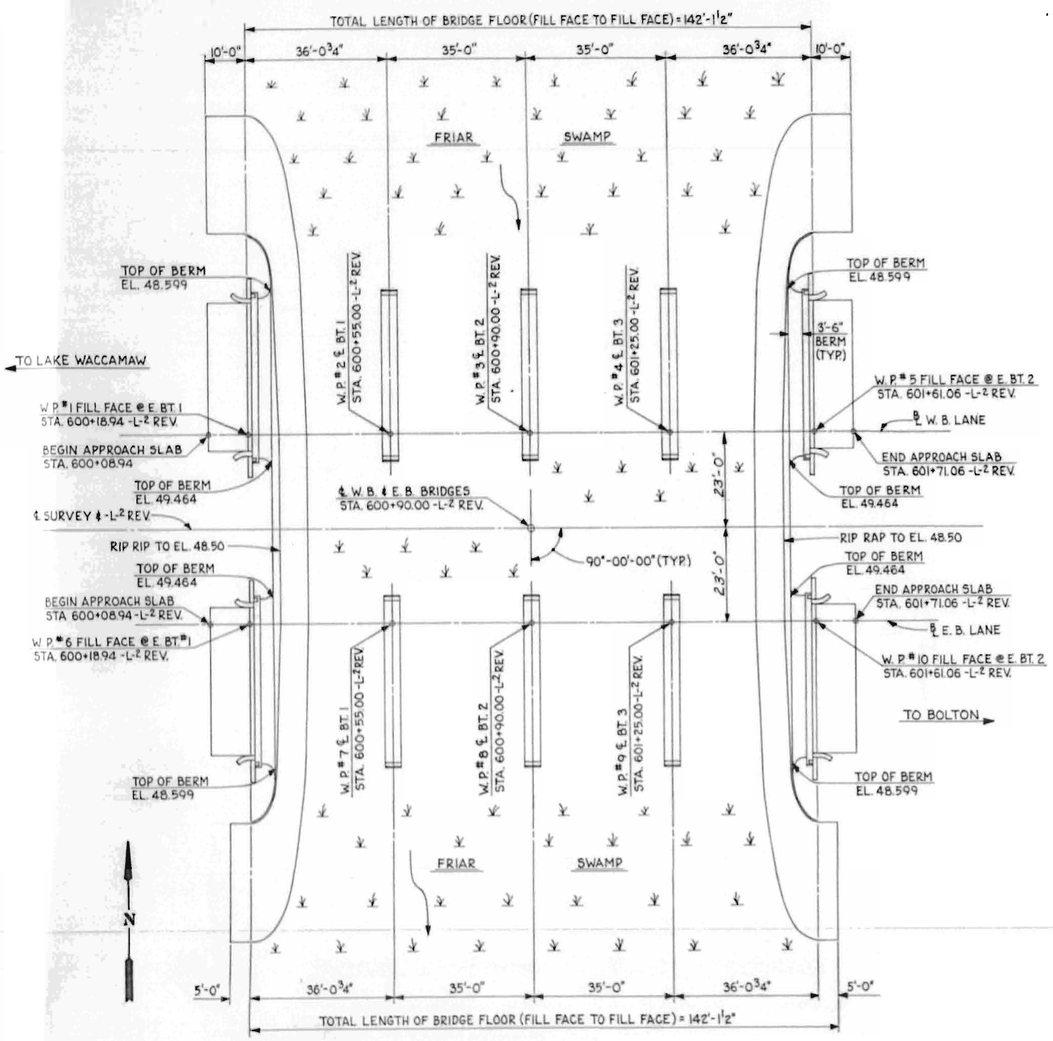
REVISIONS

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

ASSEMBLED BY S.D. JOYNER DATE 10/26/81 — SPECIAL
CHECKED BY R.J. Moore DATE 10-28-81
DRAWN BY Ross E. Kubany DATE 4-28-70 — STANDARD
CHECKED BY Owen W. Keary DATE 8/70

Revised 3-10-80 By: R.D.U. By: R.G.F.
Revised 7-31-78 By: R.E.K. By: R.D.U.

600+00 10 20 30 40 50 60 70 80 90 601+00 10 20 30 40 50 60 70 80 90



NOTES

ASSUMED LIVE LOAD = H.S. 20-44 OR ALTERNATE LOADING.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET S-N.

ALL REINFORCING STEEL SHALL BE GRADE 60.

PILES FOR BENTS AND END BENTS SHALL BE DRIVEN TO A MINIMUM BEARING CAPACITY OF 40 TONS EACH.

BITUMINOUS WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

I HEREBY CERTIFY THAT THESE STRUCTURES WAS BUILT ACCORDING TO PLANS EXCEPT AS NOTED HEREIN

RESIDENT ENGINEER

DRAWN BY C. S. GODBOLD DATE 10-12-81
CHECKED BY R.V. Moore DATE 10-13-81

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 600+90 -L-2 REV.

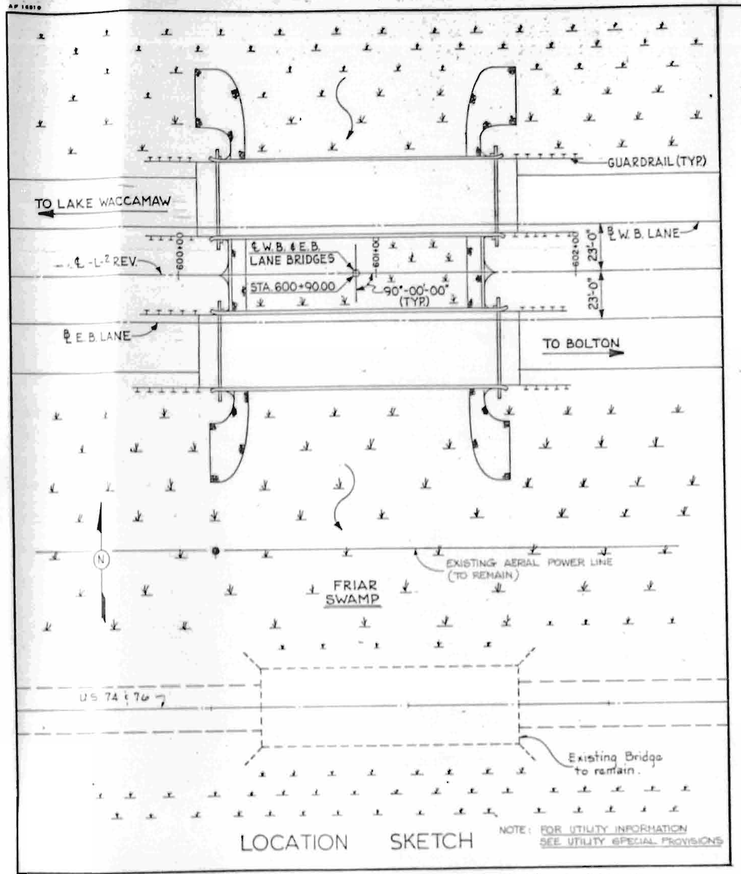
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING OF BRIDGES OVER FRIAR SWAMP ON US 74-76 BETWEEN LAKE WACCAMAW AND BOLTON

OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-57
1			3			TOTAL SHEETS
2			4			84

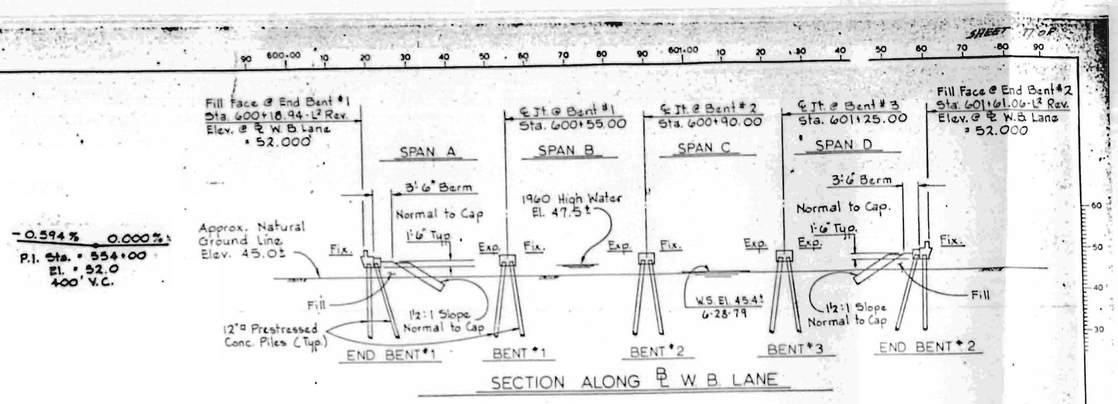


BM #11: Elev. 45.80 RR Spike in base of 8" Gum, 67 Ft. Left -L- Mod 0/0 Sta. 602+27. Datum M.S.L.

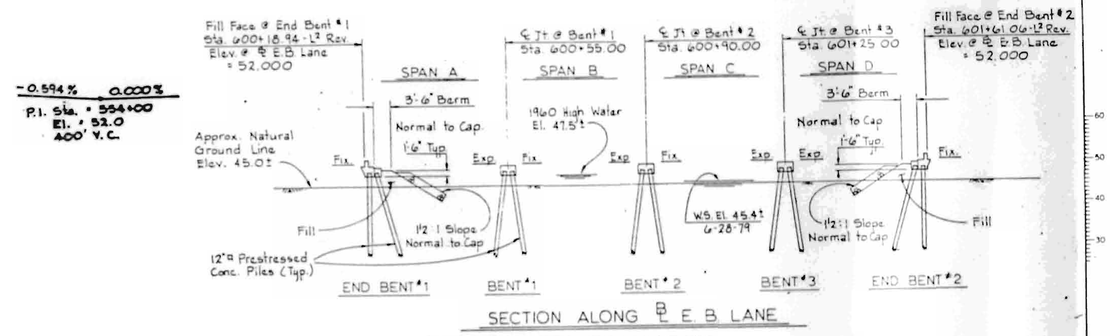
DESIGN DISCHARGE	=	4,000 C.F.S.
FREQUENCY OF DESIGN FLOOD	=	50 YRS.
DESIGN HIGH WATER ELEVATION	=	47.5
DRAINAGE AREA	=	85 SQ. MI.
BASIC DISCHARGE (Q100)	=	4,900 C.F.S.
BASIC HIGH WATER ELEVATION	=	48.0

OVERTOPPING FLOOD DATA:
ELEVATION : 52'±
FREQUENCY : >500 YRS.

DRAWN BY: C.S. GODBOLD DATE: 10-13-81
CHECKED BY: R.V. Moore DATE: 10-13-81



SECTION ALONG ℄ W.B. LANE



SECTION ALONG ℄ E.B. LANE

TOTAL BILL OF MATERIAL - WEST BOUND LANE

	CLASS "A" CONCRETE	REINFORCING STEEL	12"ø PRESTRESSED CONCRETE PILES		CONCRETE BARRIER RAIL	BRIDGE APPROACH SLAB STA. 600+90.00 W.B. LANE	ELASTOMERIC BEARINGS	PLAIN RIP-RAP CLASS II (2'-0" THICK)	3'-0"x1'-6" PRESTRESSED CONCRETE CORED SLABS		PREFORMED COMPRESSION JOINT SEAL
	CU. YDS.	LBS.	NO.	LIN. FT.	LIN. FT.	LUMP SUM	LUMP SUM	TONS	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE					~~279.75~~		L.S.		52	1813.50	L.S.
END BENT #1	14.4	3188	8	~~240~~ 267.5	280.1	L.S.		~~190~~ 124.03			
BENT #1	15.1	3044	10	~~300~~ 367.7							
BENT #2	15.1	3044	10	~~300~~ 302.0							
BENT #3	15.1	2985	10	~~300~~ 303.0							
END BENT #2	14.4	3188	8	~~240~~ 280.0		L.S.		~~190~~ 136.17			
CURVED END BLOCKS	5.3	857			280.1						
TOTAL	79.4	16,306	46	~~1,380~~ 1501	~~279.75~~	LUMP SUM	LUMP SUM	~~380~~ 260.20	52	1813.50	LUMP SUM

TOTAL BILL OF MATERIAL - EAST BOUND LANE

	CLASS "A" CONCRETE	REINFORCING STEEL	12"ø PRESTRESSED CONCRETE PILES		CONCRETE BARRIER RAIL	BRIDGE APPROACH SLAB STA. 600+90.00 E.B. LANE	ELASTOMERIC BEARINGS	PLAIN RIP-RAP CLASS II (2'-0" THICK)	3'-0"x1'-6" PRESTRESSED CONCRETE CORED SLABS		PREFORMED COMPRESSION JOINT SEAL
	CU. YDS.	LBS.	NO.	LIN. FT.	LIN. FT.	LUMP SUM	LUMP SUM	TONS	NO.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE					279.79		L.S.		52	1813.50	L.S.
END BENT #1	14.4	3188	8	~~240~~ 275		L.S.		~~170~~ 155.46			
BENT #1	15.1	3044	10	~~300~~ 372.5							
BENT #2	15.1	3044	10	~~300~~ 330.6							
BENT #3	15.1	2985	10	~~300~~ 298.8							
END BENT #2	14.4	3188	8	~~240~~ 361.4		L.S.		~~170~~ 156.75			
CURVED END BLOCKS	5.3	857									
TOTAL	79.4	16,306	46	~~1,380~~ 1698	279.79	LUMP SUM	LUMP SUM	~~340~~ 312.21	52	1813.50	LUMP SUM

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 600+90.0-L²REV.

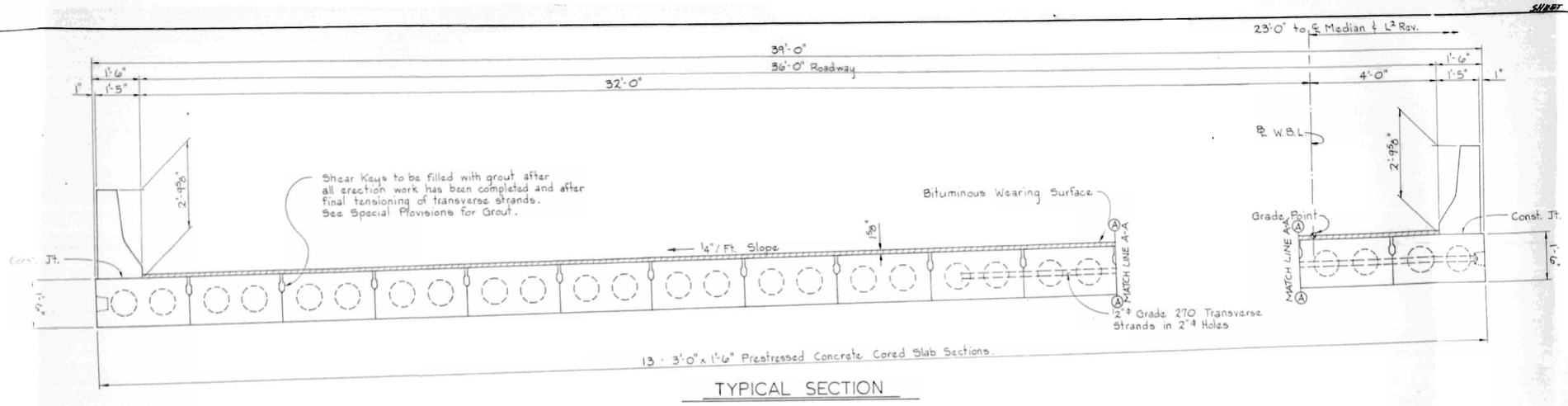
Sheet 2 of 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

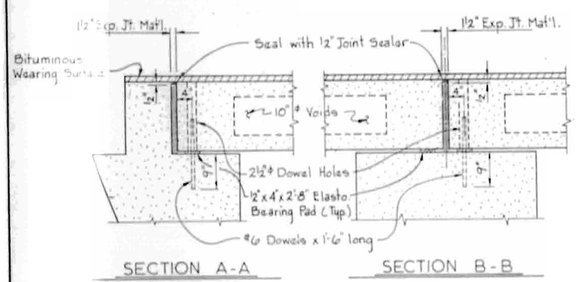
GENERAL DRAWING OF BRIDGES OVER FRIAR SWAMP ON U.S. 74-76 BETWEEN LAKE WACCAMAW AND BOLTON
OCT. 1981

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		S-56
1			3				TOTAL SHEETS
2			4				60

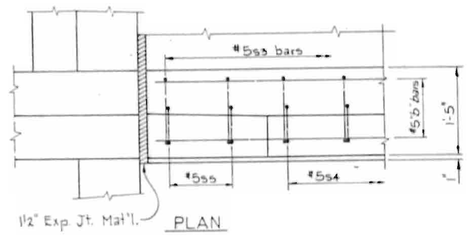
7 & 8



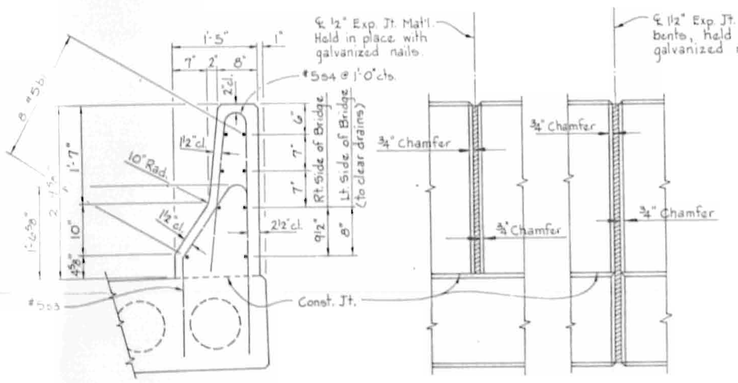
TYPICAL SECTION



SECTION A-A SECTION B-B



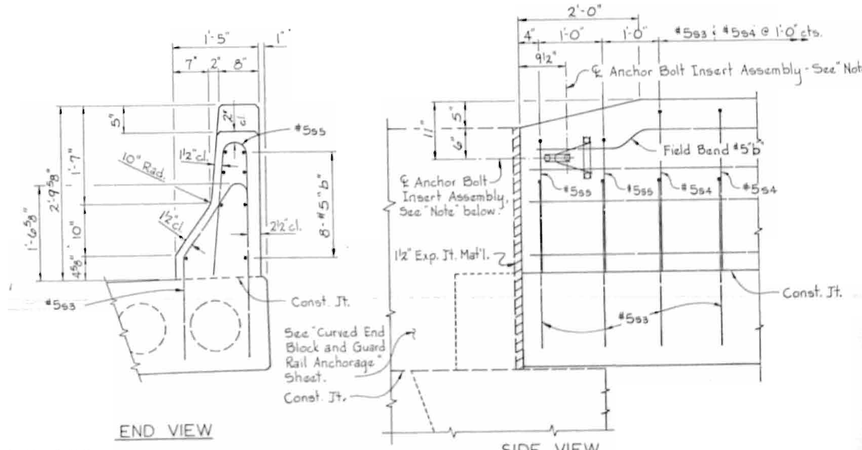
PLAN



SECTION THRU RAIL ELEVATION @ EXP JTS.

BARRIER RAIL DETAILS

See Special Provisions for Concrete Barrier Rails.



END VIEW SIDE VIEW

BARRIER RAIL ~ END OF RAIL DETAILS

Note: See "Curved End Block and Guard Rail Anchorage" Sheet, For Anchor Bolt Insert Assembly.

Note: The Contractor's attention is called to the fact that the 1½" thick joint material between the ends of the cored slabs at bents and between the backwall and the ends of the cored slabs is 1½" nominal and can be expected to vary. The Contractor may use more than one layer of expansion joint material to provide the thickness req'd. with a minimum layer thickness of ¼".

DRAWN BY: Ross Edward Kubany DATE: 10-15-81
CHECKED BY: K. J. Moore DATE: 10-15-81

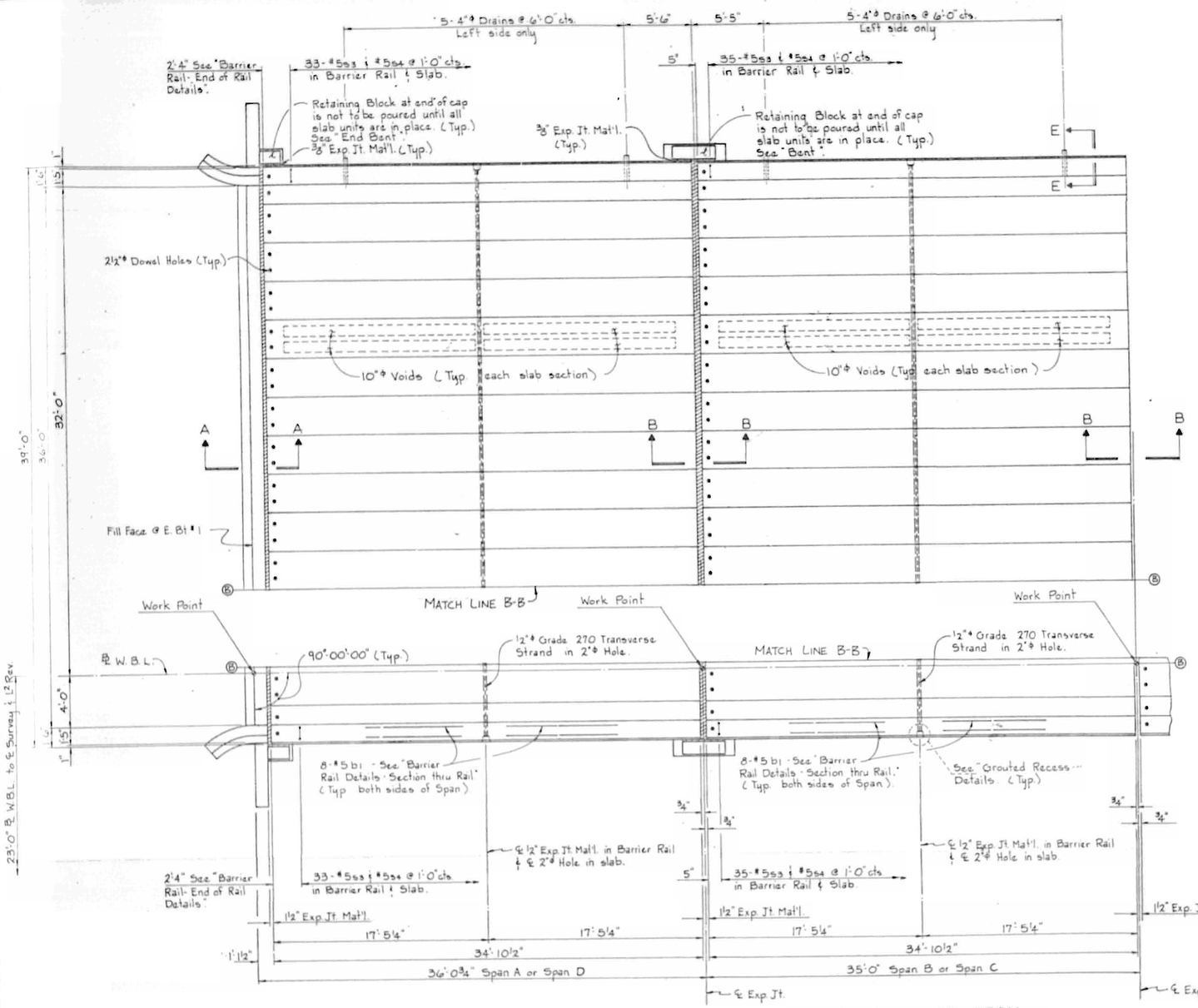
PROJECT NO. 8.1430701 7
COLUMBUS COUNTY
STATION: 600+90.00 L² Rev.
W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTIONS

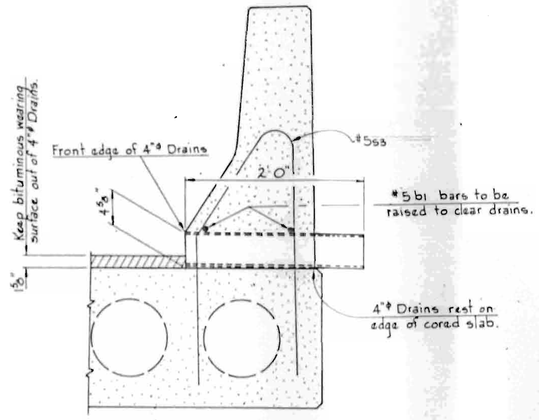
OCT. 1981

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NO.	BY	DATE	NO.	BY	DATE	78
1			3			TOTAL SHEETS
2			4			84



PLAN OF SPAN

PLAN OF SPAN



SECTION E-E

Showing placement of 2'-0" long 4"ϕ Drains thru Barrier Rail.

(20 - 4"ϕ Drains required.)

Drains may be shifted as necessary to clear #5s3 bars.

DRAWN BY: Ross Edward Kubany DATE: 10-15-81
CHECKED BY: R. V. Moore DATE: 10-15-81

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 600+90.00 Lᵀ Rev
W.B.L.

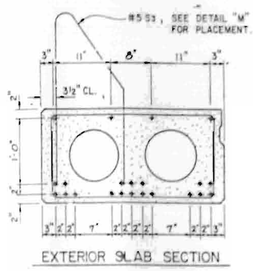
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RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS

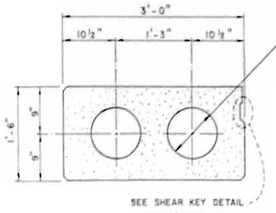
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-6C
1			3			TOTAL SHEETS
2			4			84

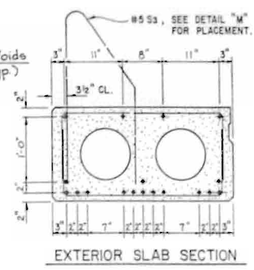
SHEET 80 OF



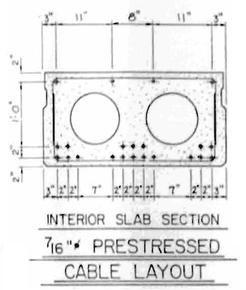
EXTERIOR SLAB SECTION



EXTERIOR SLAB SECTION

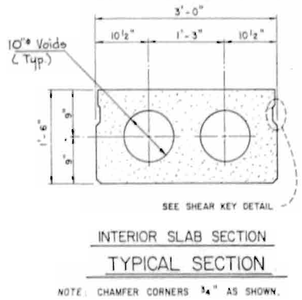


EXTERIOR SLAB SECTION



INTERIOR SLAB SECTION

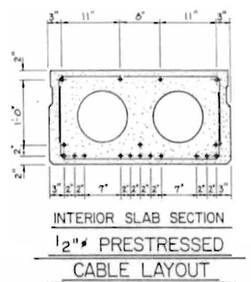
$\frac{7}{16}$"ϕ PRESTRESSED CABLE LAYOUT



INTERIOR SLAB SECTION

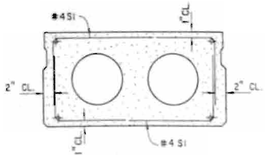
TYPICAL SECTION

NOTE: CHAMFER CORNERS ¾" AS SHOWN.



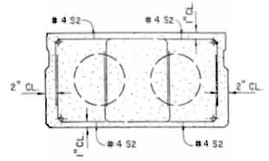
INTERIOR SLAB SECTION

$\frac{1}{2}$"ϕ PRESTRESSED CABLE LAYOUT



SLAB SECTION

SHOWING #4 S1 STIRRUPS.



SLAB SECTION

SHOWING #4 S2 STIRRUPS.

NOTES

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS
$\frac{7}{16}$"ϕ	270	0.115 SQ. IN.	31,000 LBS. PER CABLE	21,700 LBS. PER CABLE
$\frac{1}{2}$"ϕ	270	0.153 SQ. IN.	41,300 LBS. PER CABLE	28,900 LBS. PER CABLE

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRESS RELIEVED HIGH-STRENGTH GRADE 270 CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

ALL PRESTRESSED STRANDS SHALL MEET THE REQUIREMENTS OF ASTM-A416.

FOR PRESTRESSED CORED SLABS, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR PRESTRESSED CORED SLABS.

RECESS FOR TRANSVERSE STRANDS IS TO BE GROUTED AFTER THE TENSIONING OF STRANDS.

THE 2½"ϕ DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS TO BE FILLED WITH GROUT, SEE SPECIAL PROVISIONS. THE 2½"ϕ DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS ARE NOT REQUIRED.

AT TRANSFER OF TENSIONING LOAD, THE CYLINDER STRENGTH OF CONCRETE SHALL BE 4,000 P.S.I. MINIMUM AND THE 28 DAY CYLINDER STRENGTH SHALL BE 5,000 P.S.I. MINIMUM.

ELASTOMER IN ELASTOMERIC BEARINGS SHALL HAVE A GRADE 50 DUROMETER HARDNESS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	NO. SPAN A or D	NO. SPAN B,C	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	32	32	128	5	STR	17'-0"	2270
S4	66	70	272	5	3	4'-11"	1345
S5	4		8	5	3	4'-4"	36
REINFORCING STEEL Lbs.							3701
CLASS A A CONCRETE CU.YDS. (@ 6.9 CU. YDS. PER SPAN)							27.6
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL *							280. / 144.5

* SEE SPECIAL PROVISIONS.

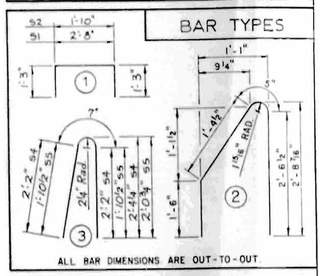
REINFORCING STEEL FOR ONE EXTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
S3	36	#5	2	5'-10"	213
TOTAL				LBS. -	484

REINFORCING STEEL FOR ONE INTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
TOTAL				LBS. -	271

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE CORED SLAB

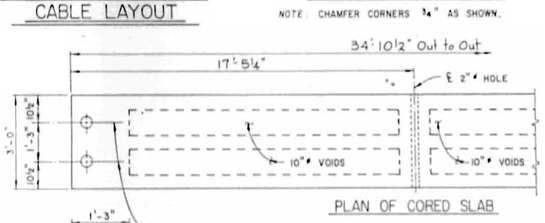
	REINFORCING STEEL LBS.	5,000 P.S.I. CONCRETE C.Y.	$\frac{7}{16}$"ϕ S.R. CABLES N°	$\frac{1}{2}$"ϕ S.R. CABLES N°
EXTERIOR C.S.	484	4.5	22	18
INTERIOR C.S.	271	4.5	22	18

CORED SLAB REQUIRED

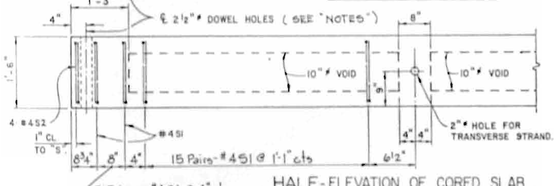
	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	8	34'-10½"	279'-0"
INTERIOR C.S.	44	34'-10½"	1534'-6"
TOTAL	52		1813'-6"

DEAD LOAD DEFLECTION AND CAMBER

FOR INT. or EXT. SECTION	$\frac{7}{16}$"ϕ Cables	$\frac{1}{2}$"ϕ Cables
CAMBER (SLAB ALONE IN PLACE)	$\frac{5}{8}$" ↑	$\frac{11}{16}$" ↑
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD	$\frac{1}{16}$" ↓	$\frac{1}{8}$" ↓
FINAL CAMBER	$\frac{9}{16}$" ↑	$\frac{9}{16}$" ↑



PLAN OF CORED SLAB

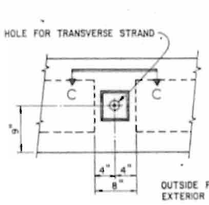


HALF-ELEVATION OF CORED SLAB

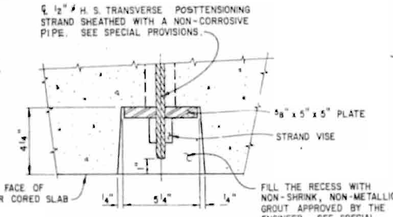
Note: #5 S3 bars in exterior cored slab not shown. For spacing of #5 S3 bars in exterior cored slab, see "Plan" of Superstructure.

NOTE

* THE CONTRACTOR, AT HIS OPTION, MAY USE LOW-RELAXATION STRANDS IN LIEU OF STRESS RELIEVED STRANDS. DESIGN AND STRAND PATTERN MUST PROVIDE AT LEAST THE SAME NET COMPRESSIVE STRESS AFTER THE LOSSES. THE ULTIMATE STRENGTH OF THE CORED SLAB UNIT MUST MEET THE REQUIREMENTS OF THE APPLICABLE AASHTO SPECIFICATIONS. LOW-RELAXATION STRANDS SHALL BE TENSIONED AND ANCHORED AT A LOAD EQUAL TO 75% OF ITS ULTIMATE STRENGTH. THIS APPLIED PRESTRESSED FORCE SHALL BE SHOWN ON THE PLANS. SIZE OF LOW-RELAXATION STRANDS SHALL NOT BE LARGER THAN THOSE SHOWN FOR STRESS RELIEVED STRANDS. DESIGN AND DETAIL PLANS USING LOW-RELAXATION STRANDS MUST BE SUBMITTED TO THE STATE BRIDGE DESIGN ENGINEER FOR APPROVAL. ANY ADDITIONAL COST DUE TO THE USE OF LOW-RELAXATION STRANDS WILL BE PAID FOR BY THE CONTRACTOR.

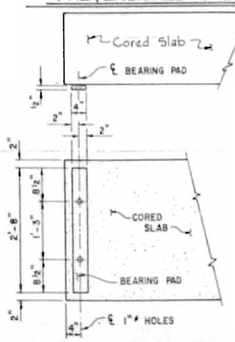


ELEVATION VIEW



SECTION C-C

GROUTED RECESS IN EXTERIOR SIDE OF PRETENSIONED CABLE CORED SLABS



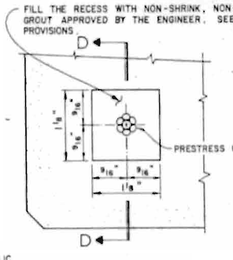
ELASTOMERIC BEARING DETAIL

52 (with holes) Brg. Pads Required.
52 (without holes) Brg. Pads Required.

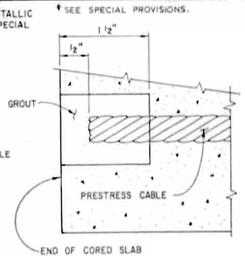


SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



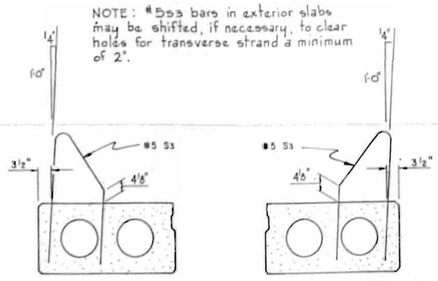
PART ELEVATION AT END OF CORED SLAB



SECTION D-D

GROUTED RECESS AT END OF PRETENSIONED CABLE CORED SLABS

NOTE: #5 S3 bars in exterior slabs may be shifted, if necessary, to clear holes for transverse strand a minimum of 2".



LEFT EXTERIOR SLAB

RIGHT EXTERIOR SLAB

DETAIL "M"

DRAWN BY: ROSS EDWARD KUBENY DATE: 10-15-81
CHECKED BY: R. J. Moore DATE: 10-15-81

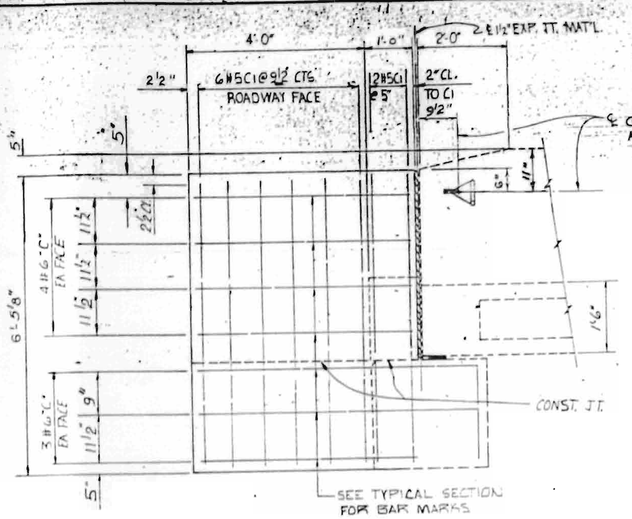
PROJECT NO. 8.1430701 #7
COLUMBUS COUNTY
STATION: 600+90.0 L² Rev. W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

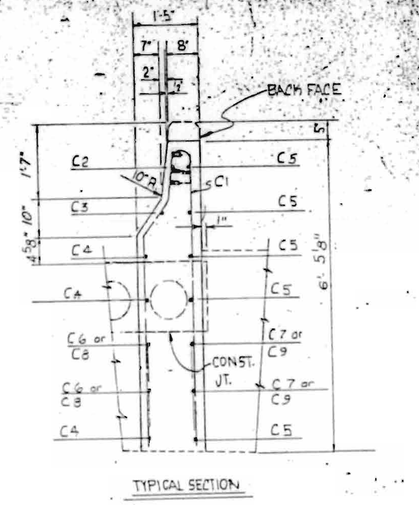
3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS

OCT. 1981

REVISIONS NO.	BY	DATE	NO.	BY	DATE	SHEET NO.
1			3			TOTAL SHEETS
2			4			84

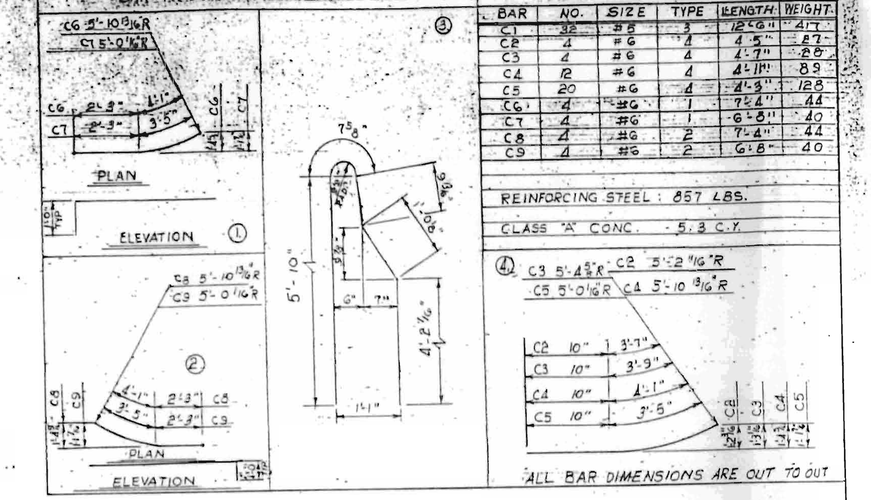


ELEVATION



TYPICAL SECTION

BAR TYPES FOR CURVED END BLOCKS



ALL BAR DIMENSIONS ARE OUT TO OUT

Bill of Material for four Curved End Blocks

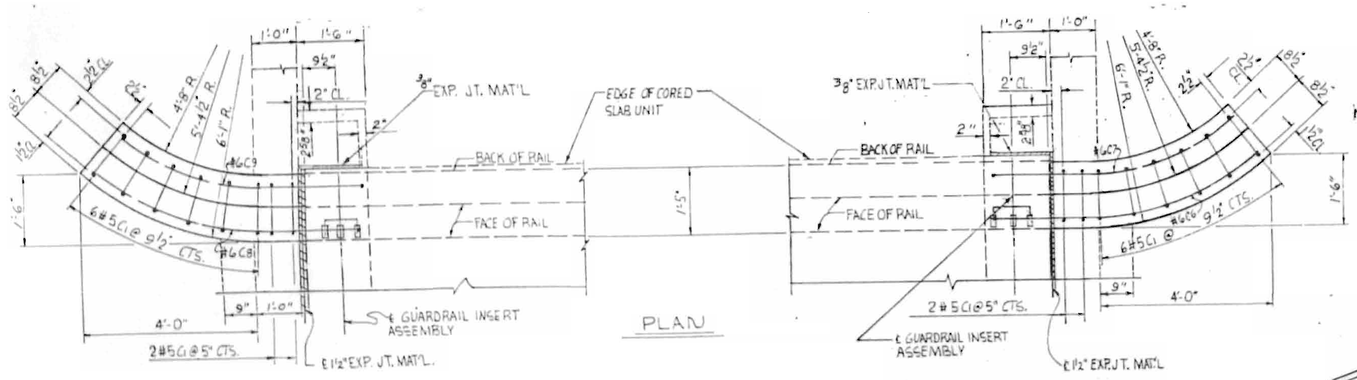
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
C1	32	#5	3	12'-6"	417
C2	4	#6	4	4'-5"	27
C3	4	#6	4	4'-7"	28
C4	12	#6	4	4'-11"	89
C5	20	#6	4	4'-3"	128
C6	4	#6	1	7'-4"	44
C7	4	#6	1	6'-8"	40
C8	4	#6	2	7'-4"	44
C9	4	#6	2	6'-8"	40

REINFORCING STEEL : 857 LBS.

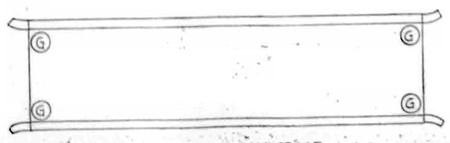
CLASS "A" CONC. - 5.3 C.Y.

NOTES

1. THE 4 - BOLT INSERT ASSEMBLY UNIT SHALL CONSIST OF THE FOLLOWING COMPONENTS:
   a. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF A.S.T.M. A108, GRADE 1215 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1¼".
   b. 4 - 7/8"ø x 2 3/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8"ø x 2 3/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF A.S.T.M. A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
   c. WIRE STRUTS SHOWN IN THE INSERT ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.
2. THE INSERT ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.
3. THE COST OF THE 4-BOLT INSERT ASSEMBLY UNIT COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.
4. THE 4 - BOLT INSERT ASSEMBLY UNIT IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END POSTS. FOR POINTS OF ATTACHMENT, SEE "LOCATION OF GUARDRAIL ANCHORAGE" SKETCH, THIS SHEET.
5. CURVED END BLOCKS ARE REQUIRED AT ALL END POSTS.
6. THE COST OF THE EXCAVATION AND BACKFILL FOR THE CURVED END BLOCKS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

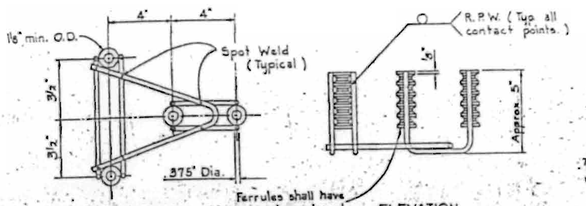


PLAN

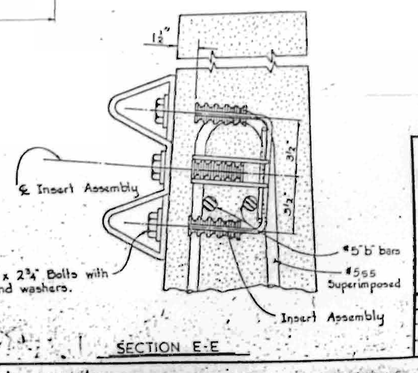


LOCATION OF GUARDRAIL ANCHORAGE

Ⓖ DENOTES GUARDRAIL ANCHORAGE LOCATION.



INSERT ASSEMBLY



SECTION E-E

PROJECT NO. 8.1430701

COLUMBUS COUNTY

STATION: 600+90.00 W.B.L. L² Rev.

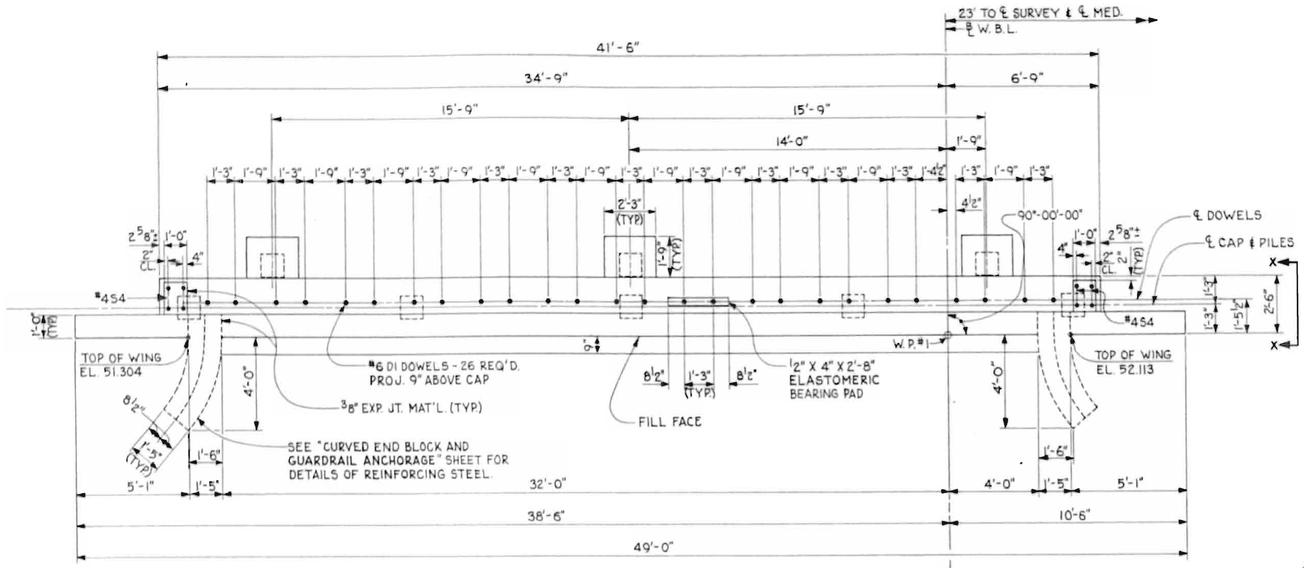
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CURVED END BLOCK AND GUARDRAIL ANCHORAGE FOR BARRIER RAIL

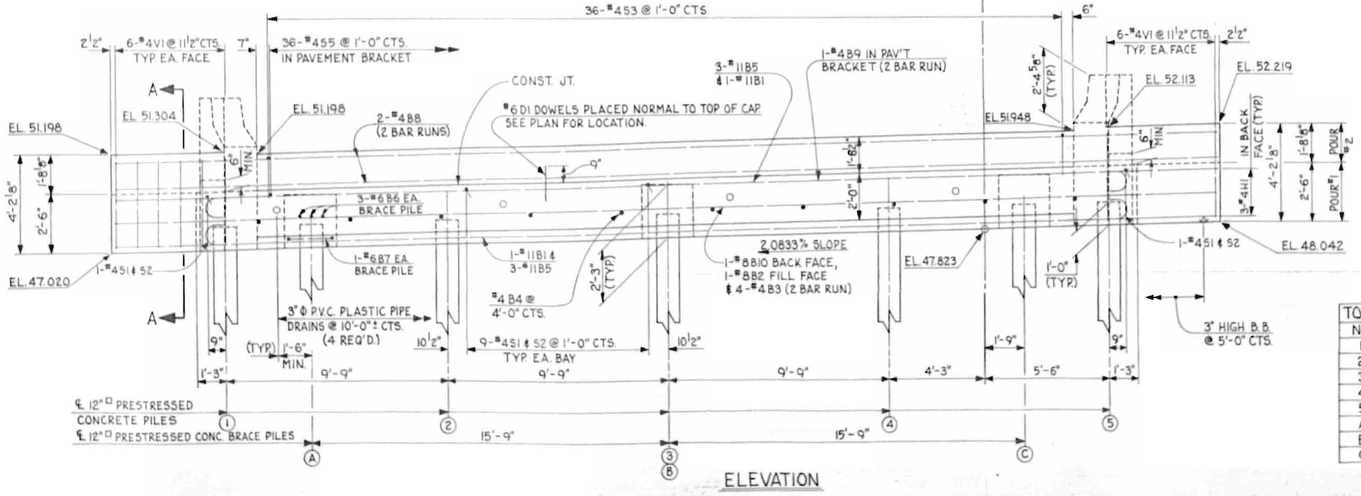
JULY 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-b2
1			3			TOTAL SHEETS
2			4			84

DRAWN BY S.D.JOYNER DATE 7-16-81
CHECKED BY R.J. Moore DATE 7-21-81



PLAN



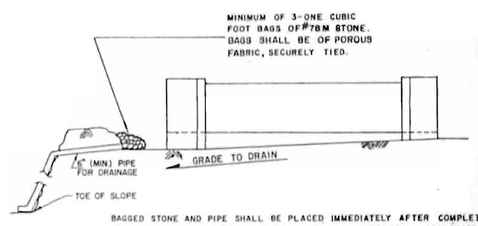
ELEVATION

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

TOP OF PILE ELEVATIONS	
NO.	ELEVATIONS
1	48.125
2	48.328
3	48.531
4	48.734
5	48.938
A	48.203
B	48.531
C	48.859

PROJECT NO. 8.1430701 #7

COLUMBUS COUNTY

STATION: 600+90.00-L-2 REV.

SHEET 1 OF 2 W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

OCT. 1981

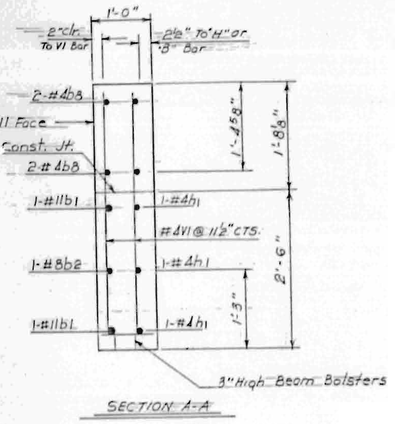
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	2263
1			3			TOTAL SHEETS
2			4			84

DRAWN BY C. S. GODBOLD DATE DEC 17, 1981
CHECKED BY R. J. Moore DATE 12-18-81

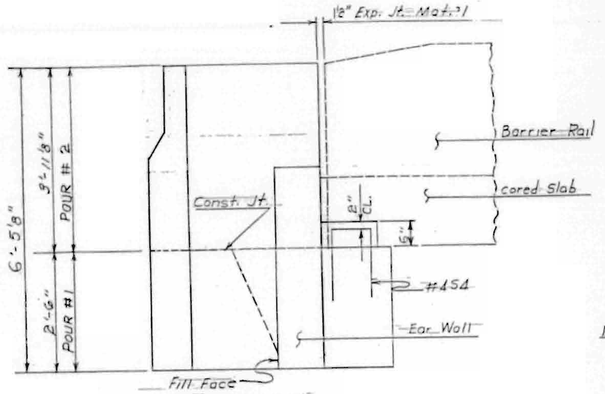
CAROLINA BLUEPRINT & SUPPLY CO. RALEIGH

SHEET 83 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

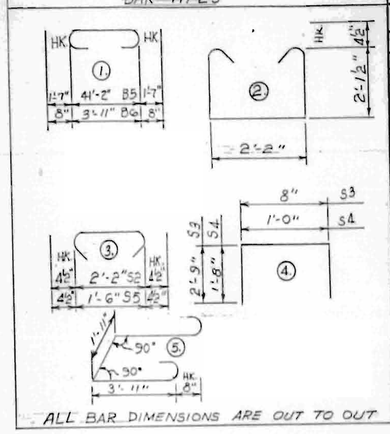


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See 'Curved End Block And Guardrail Anchorage For Barrier Rail' Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 1

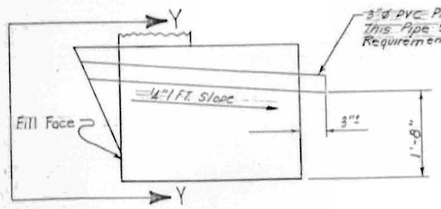
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-6"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	11'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	4	1'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str.	5'-1"	20
V1	24	#4	Str.	3'-10"	61

Reinforcing Steel LBS. 3,188

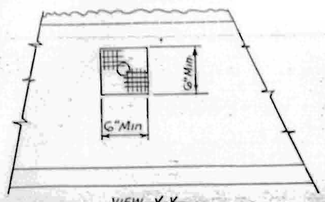
CLASS "A" Conc.
Pour #1* = 11.7 CU YDS
Pour #2 = 2.7 CU YDS
Total = 14.4 CU YDS

12"ø Prestressed Conc.
Piles No. 8 - Lin Ft. 249
267.5'

PIPE DRAIN DETAILS

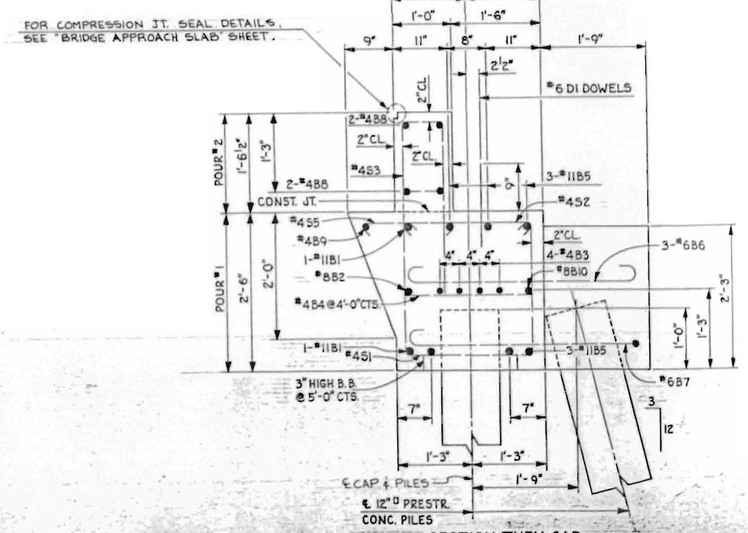


Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners; The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.



SECTION THRU CAP

PROJECT NO. 8.1430701 *7
COLUMBUS COUNTY
STATION: 600+90.00-L- REV.
SHEET 2 OF 2 W.B.L.

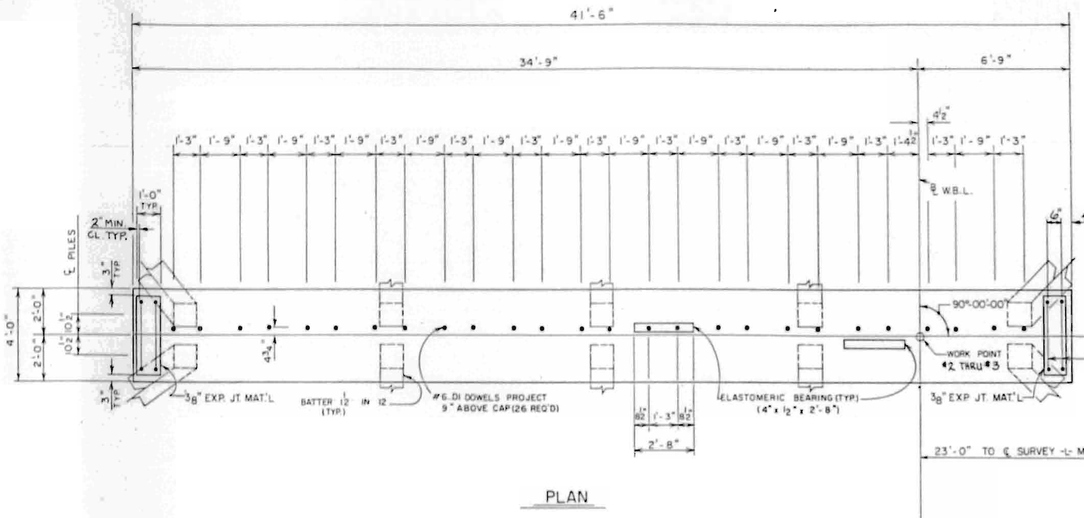
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH
SUBSTRUCTURE
END BENT 1
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-44
1			3			TOTAL SHEETS
2			4			84

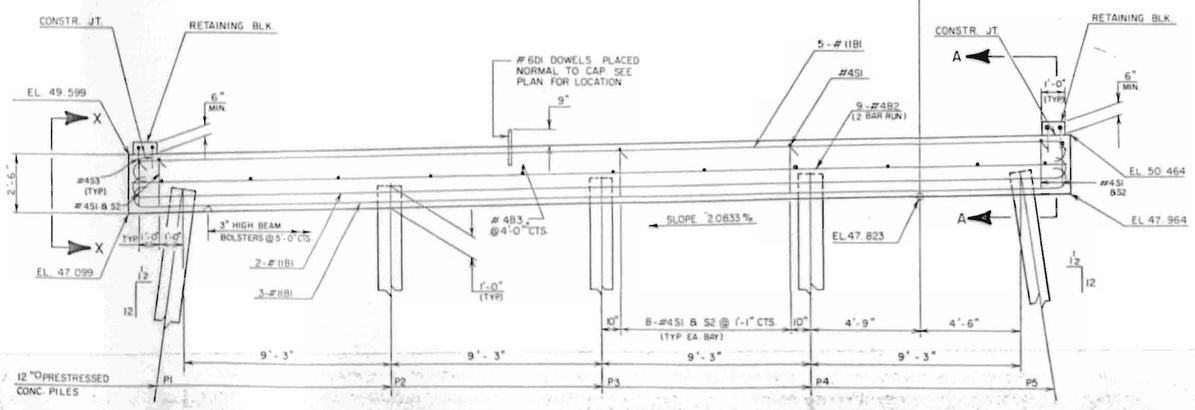
DRAWN BY S.D. JOYNER DATE 7/24/81
CHECKED BY R.J. Nooce DATE 7-30-81

SHEET 84 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N.C.	
F.A. PROJECT		

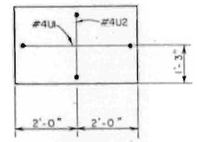


PLAN



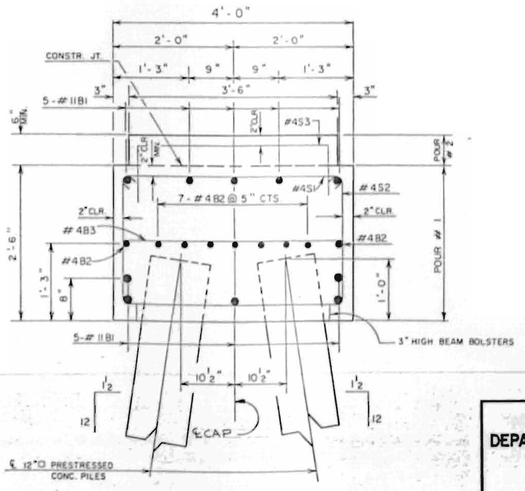
ELEVATION

TOP OF PILE ELEVATION	
P1	48.146
P2	48.339
P3	48.531
P4	48.724
P5	48.917



VIEW X-X

REINFORCING SHOWN TYP. EACH END.



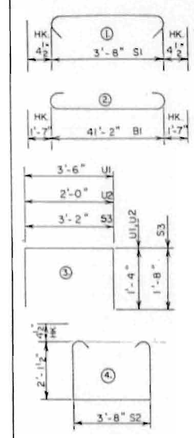
SECTION A-A

NOTES:

*CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

THE RETAINING BLOCK AT EA. END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (2 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR.	21'-5"	258
B3	11	#4	STR.	3'-8"	27
D1	26	#6	STR.	1'-6"	59
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6

REINFORCING STEEL = 3,044 #

CLASS "A" CONCRETE = 15.1 CU. YDS.

12" □ PRESTRESSED CONC. PILES

NO. 18 LIN. FT. = ~~300~~ 372.5 330.6

CLASS "A" CONC.

POUR # 1 = 15.0 CU. YDS.

POUR # 2 = 0.1 CU. YDS.

TOTAL = 15.1 CU. YDS.

PROJECT NO. 8.1430701 #7

COLUMBUS COUNTY

STATION: 600+90.0-L- REV. W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

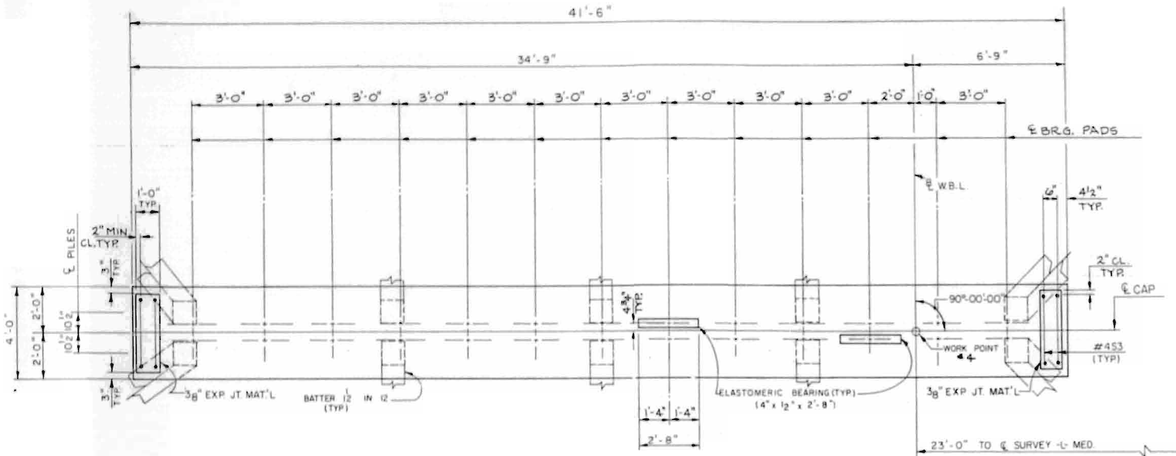
SUBSTRUCTURE
BENT #1 & #2

OCT. 1981

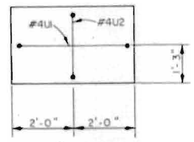
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-45
1			3			TOTAL SHEETS
2			4			84

DRAWN BY S.D. JOYNER DATE 10/13/81
CHECKED BY R.J. Moore DATE 10-28-81

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N.C.	
F.A. PROJECT		



PLAN

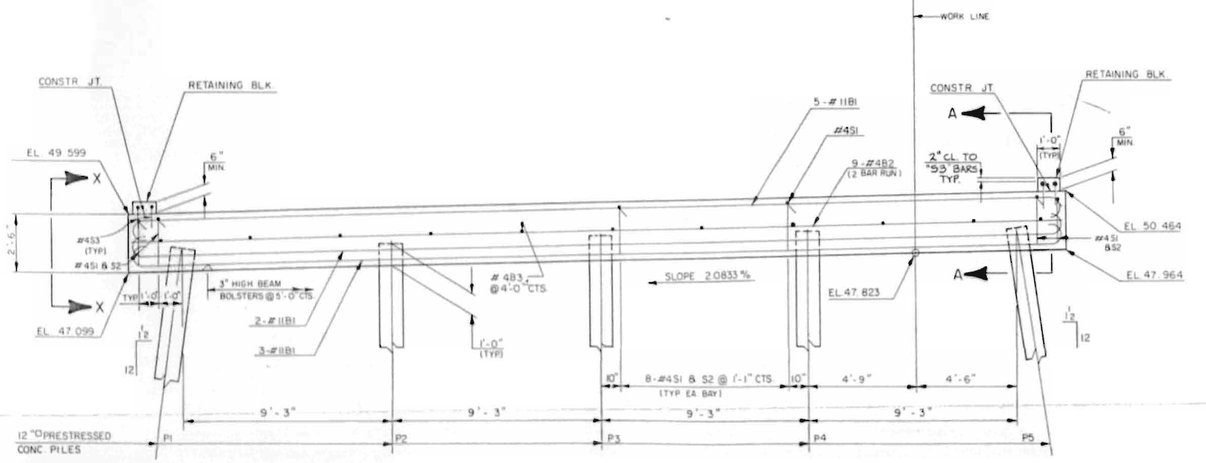


VIEW X-X

REINFORCING SHOWN TYP. EACH END.

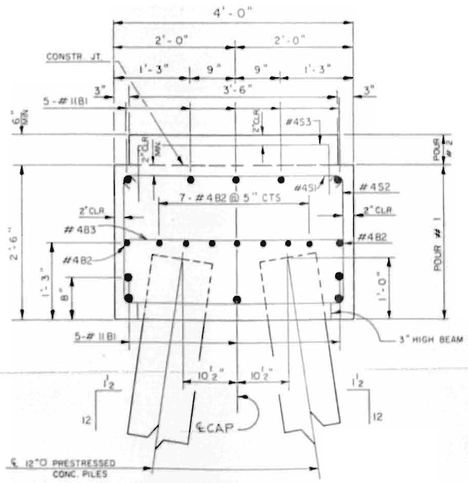
23'-0" TO ℄ SURVEY ℄ MED.

WORK LINE



ELEVATION

TOP OF PILE ELEVATION	
P1	48.146
P2	48.339
P3	48.531
P4	48.724
P5	48.917



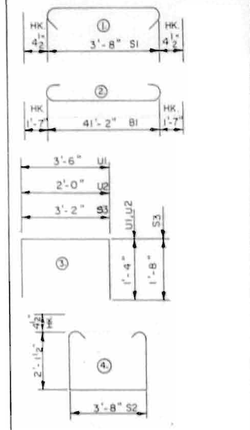
SECTION A-A

NOTES:

*CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

THE RETAINING BLOCK AT EA. END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (1 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR	21'-5"	258
B3	11	#4	STR	3'-8"	27
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6

REINFORCING STEEL = 2,985

CLASS "A" CONCRETE = 15.1 CU. YDS.

12" ØPRESTRESSED CONC. PILES

NO. 10 LIN. FT. = ~~300~~ 302.0'

CLASS "A" CONC.

POUR # 1 = 15.0 CU. YDS.

POUR # 2 = 0.1 CU. YDS.

TOTAL = 15.1 CU. YDS.

PROJECT NO. 8.1430701 *7

COLUMBUS COUNTY

STATION: 600+90.0-L- REV. W.B.L.

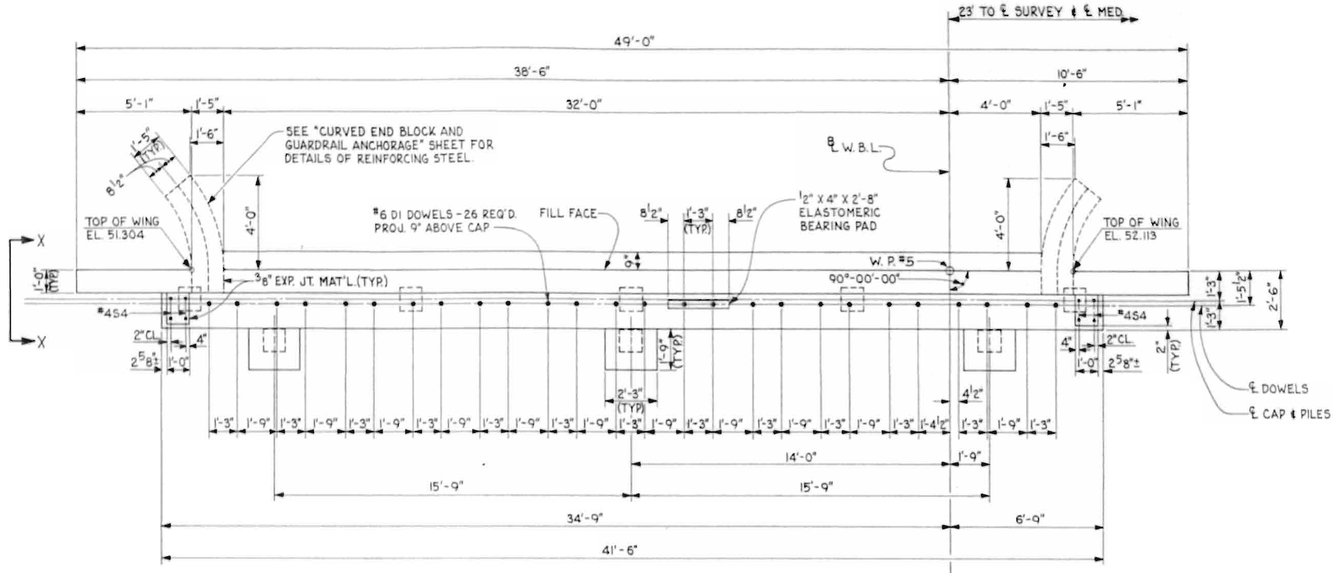
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT # 3

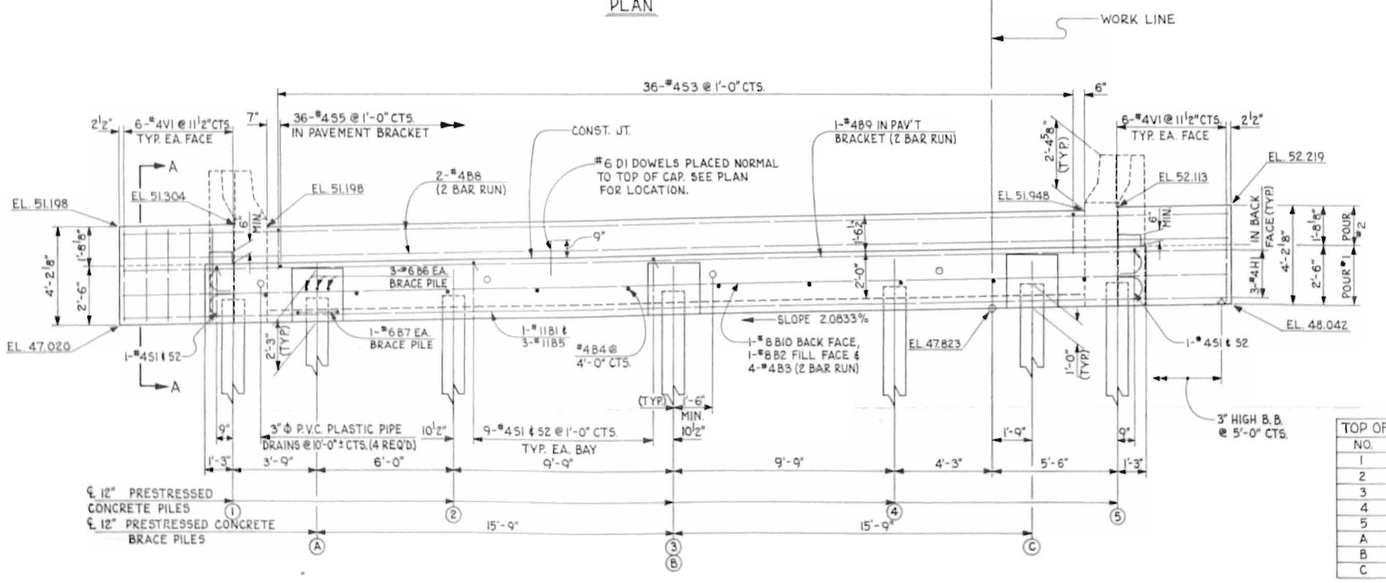
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6 of 6
1			3			TOTAL SHEETS
2			4			84

DRAWN BY S.D. JOYNER DATE 10/13/81
CHECKED BY R.J. Moore DATE 10-28-81



PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
NO.	ELEVATION
1	48.125
2	48.328
3	48.531
4	48.734
5	48.938
A	48.203
B	48.531
C	48.859

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

FOR "TEMPORARY DRAINAGE" DETAILS FOR END BENT 2, SEE END BENT 1 SHEET 1 OF 2.

DRAWN BY: C. S. GODBOLD DATE: 11/6/81
CHECKED BY: R. J. Moore DATE: 12-18-81

PROJECT NO. 8.1430701 #7
COLUMBUS COUNTY
STATION: 600+90.00-L-2 REV.
SHEET 1 OF 2 W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

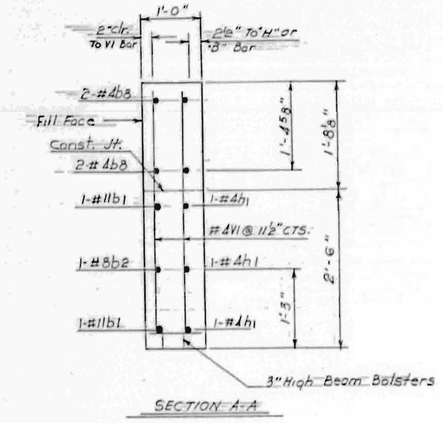
SUBSTRUCTURE
END BENT 2

NOV. 1981

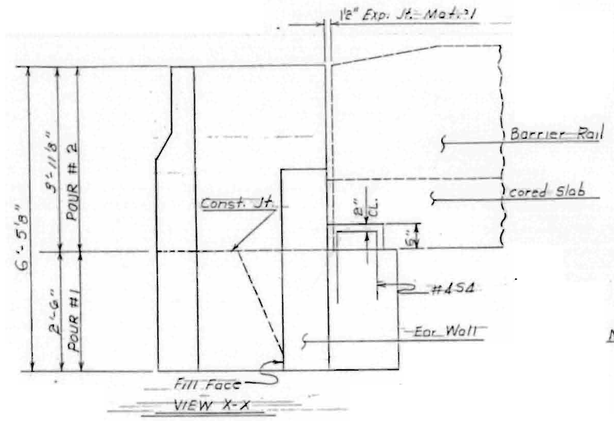
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-67
1			3			TOTAL SHEETS
2			4			84

SHEET 87 OF

FED. ROAD DIV.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

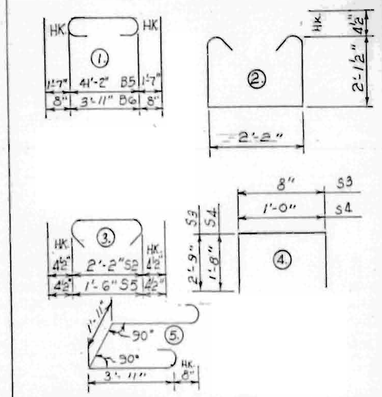


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See Curved End Block And Guardrail Anchorage For Barrier Rail Sht.

*Conc. Displaced By Pile Heads Has Been Deducted!

BILL OF MATERIAL

END BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-8"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	11'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	8'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	4	4'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str	5'-1"	20
V1	24	#4	Str.	3'-10"	61

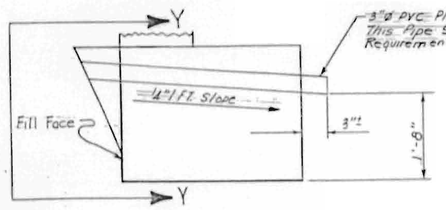
Reinforcing Steel LBS. 3188

CLASS "A" Conc.

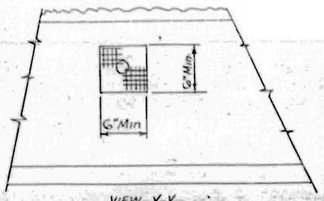
Pour #1*	=	11.7 CU YDS
Pour #2	=	2.7 CU YDS
Total	=	14.4 CU YDS

12"ø Prestressed Conc. Piles No. 8 Lin Ft. ~~240~~ 280.0'

PIPE DRAIN DETAILS



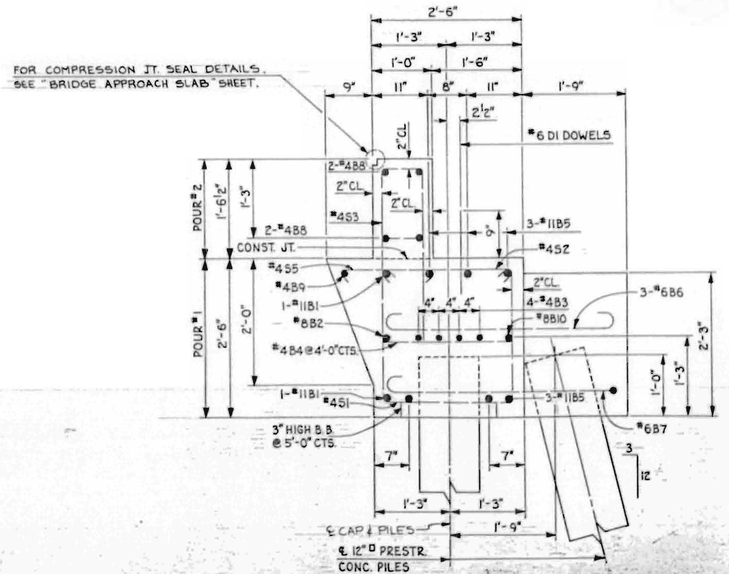
Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.

FOR COMPRESSION JT. SEAL DETAILS, SEE "BRIDGE APPROACH SLAB" SHEET.



SECTION THRU CAP

PROJECT NO. 8.1430701 *7

COLUMBUS COUNTY

STATION: 600+90.00-L-REV

SHEET 2 OF 2 W.B.L.

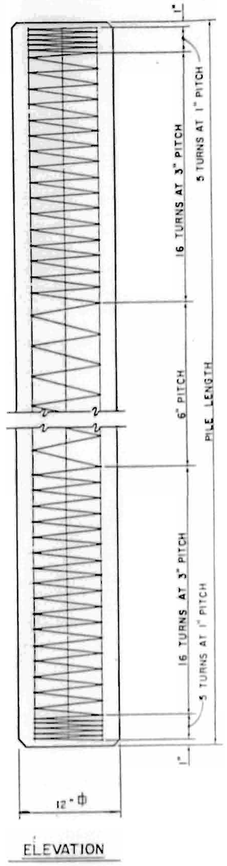
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 2

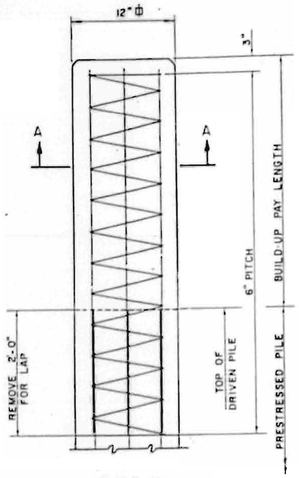
OCT. 1981

REVISIONS						SHEET NO. ~~5&6~~
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS ~~84~~
2			4			

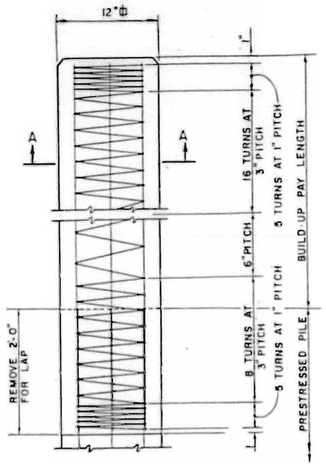
DRAWN BY S.D. JOYNER DATE 7/24/81
CHECKED BY R.J. Moore DATE 7-30-81



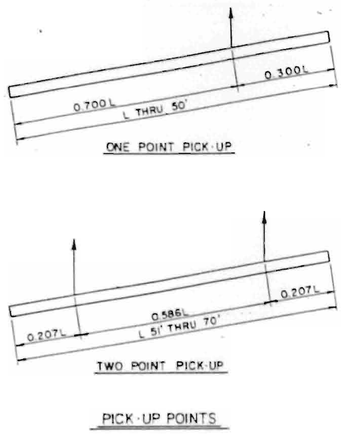
ELEVATION



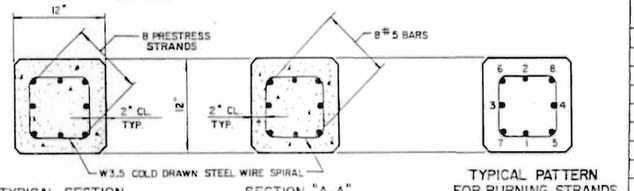
BUILD-UP WITHOUT DRIVING



BUILD-UP WITH DRIVING

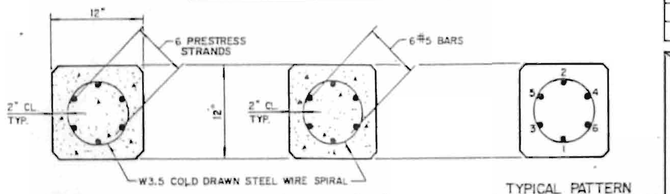


PICK-UP POINTS



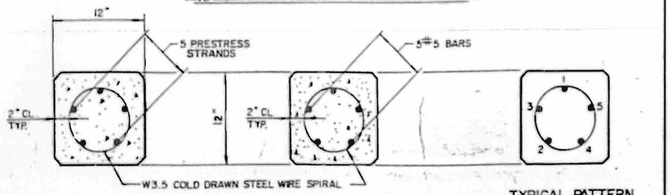
TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{3}{8}$"ϕ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{7}{16}$"ϕ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{1}{2}$"ϕ GRADE 270 PRESTRESS STRANDS

QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINT 0.300L	ONE PICK-UP POINT 0.700L	TWO PICK-UP POINT 0.207L	TWO PICK-UP POINT 0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.70	15'-0"	35'-0"		
55'-0"	2.01	4.07			11'-4½"	32'-3"
60'-0"	2.19	4.44			12'-5"	35'-2"
65'-0"	2.37	4.81			13'-5½"	38'-1"
70'-0"	2.56	5.18			14'-6"	41'-0"

NOTES

CONCRETE DESIGN DATA: f'c = 5,000 PSI ; fc = 2,000 PSI

IMPACT IN HANDLING = 50%

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DEVICES FOR LIFTING THE PILES SHALL BE APPROVED BY THE ENGINEER. LOOPS OF STRAND CAST IN THE PILES WILL NOT BE PERMITTED. INSERTS, CAST IN THE PILES TO RECEIVE THREADED EYE-BOLTS OR SIMILAR APPROVED DEVICES, MAY BE USED; OR WHERE IT IS PRACTICABLE, SATISFACTORY CLAMPS OR SLINGS MAY BE USED. WHERE PILES WILL BE EXPOSED TO VIEW IN THE STRUCTURE AND INSERTS ARE CAST IN THE PILES, THE OPENINGS SHALL BE REPAIRED AFTER THE EYE-BOLTS OR OTHER ATTACHMENTS HAVE BEEN REMOVED. THE OPENINGS SHALL BE REPAIRED IN A SATISFACTORY MANNER IN ORDER TO OBTAIN A UNIFORM APPEARANCE.

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRANDS AS PRESCRIBED IN THE SPECIFICATIONS. THE CONTRACTOR MAY, AT HIS OPTION, USE EITHER OF THE THREE TYPES OF STRANDS LISTED BELOW; HOWEVER, ALL STRANDS IN A PILE SHALL BE OF THE SAME TYPE.

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
$\frac{3}{8}$"ϕ	270	8	0.085 □"	23,000 # PER STRAND	16,100 # PER STRAND
$\frac{7}{16}$"ϕ	270	6	0.115 □"	31,000 # PER STRAND	21,700 # PER STRAND
$\frac{1}{2}$"ϕ	270	5	0.153 □"	41,300 # PER STRAND	28,900 # PER STRAND

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED THE LAST STRAND MAY BE BURNED SINGLY, ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE CLASS "A" CONCRETE W/20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

ALL CORNERS TO BE CHAMFERED ¾".

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

STEEL PILE TIP DETAILS

NOTES

WHEN NOTED ON GENERAL DRAWING, THE CONTRACTOR, AT HIS OPTION, MAY SUBSTITUTE 12" PRESTRESSED CONCRETE PILES WITH STEEL PILE TIPS, AS SHOWN IN THE DETAILS, IN LIEU OF HP 12 x 53 STEEL PILES.

THE STEEL PILE TIP SHALL NOT BE INCLUDED IN DETERMINING THE LENGTH OF THE PILE FOR PAYMENT. THE COST OF THE STEEL PILE TIP UNIT SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF PILES.

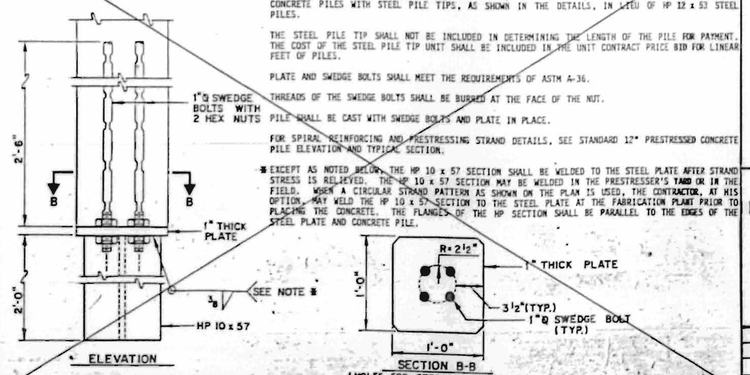
PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A-36.

THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

EXCEPT AS NOTED BELOW, THE HP 10 x 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 x 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLAN IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 x 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



REVISED 11-12-82 BY JNB / BY RDU
REVISED 12-22-82 BY JNB / BY RDU
REVISED 2-3-83 BY JNB / BY RDU
REVISED 7-14-83 BY JNB / BY RDU
REVISED 7-31-98 BY REK / BY RDU

ASSEMBLED BY ROSS E. KUBENY DATE 8-21-85
CHECKED BY ____ DATE 9-1-85
DRAWN BY R. Deep/Harris DATE Oct 14, 1977
CHECKED BY Ramesh G. Fofekar DATE May 7, 1977

SPECIAL
STANDARD

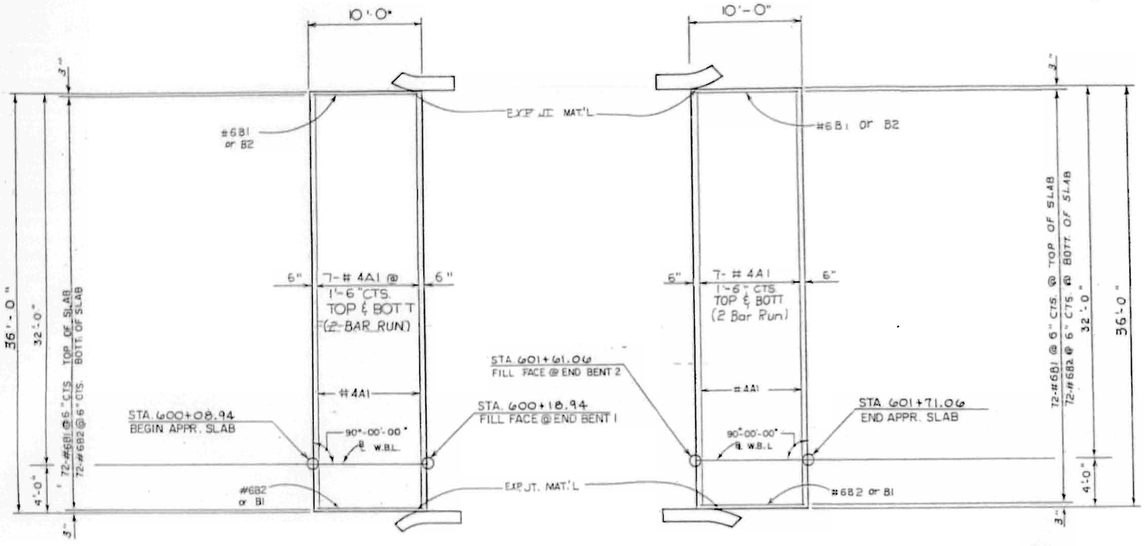
PROJECT NO. 8.1430701 #7
COLUMBUS COUNTY
STATION: 600+90.0-L² REV.
W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
12" PRESTRESSED
CONCRETE PILE

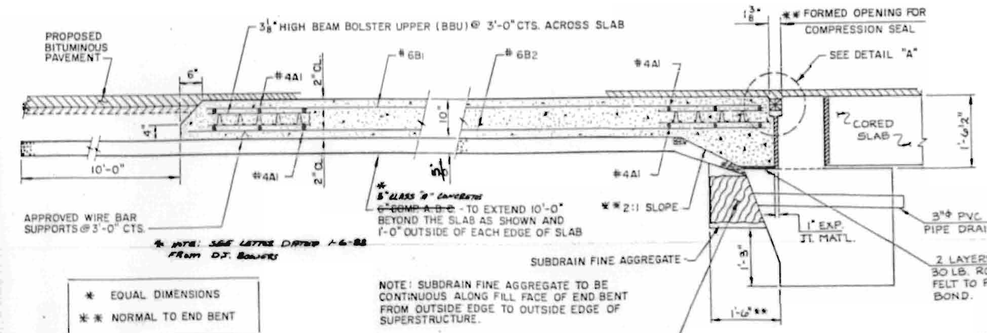
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6-67
1			3			TOTAL SHEETS
2			4			84

STD. NO. PCP1



PLAN OF APPROACH SLAB
(END BENT # 1)

PLAN OF APPROACH SLAB
(END BENT # 2)

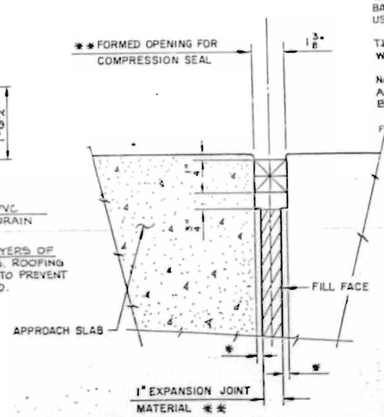


* EQUAL DIMENSIONS
** NORMAL TO END BENT

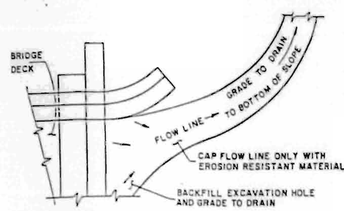
NOTE: SUBDRAIN FINE AGGREGATE TO BE CONTINUOUS ALONG FILL FACE OF END BENT FROM OUTSIDE EDGE TO OUTSIDE EDGE OF SUPERSTRUCTURE.

ONE CUBIC FOOT OF # 78M STONE IN BAG OF POROUS FABRIC SECURELY TIED. USE AT EACH PIPE DRAIN. FOR LOCATION OF PIPE DRAINS, SEE END BENT DETAILS.

SECTION THRU SLAB



DETAIL "A"



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAILS

NOTES

FOR PREFORMED COMPRESSION JOINT SEAL, SEE SPECIAL PROVISIONS.

PREFORMED COMPRESSION JOINT SEAL SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID. SEE GENERAL DRAWING.

OPENING SHOWN IS BASED ON A NOMINAL UNCOMPRESSED SEAL WIDTH OF 2"

THE INSTALLED COMPRESSION SEAL SHALL BE WATERTIGHT.

PROVIDE WATERTIGHT SEAL AT END OF COMPRESSION SEAL AS RECOMMENDED BY MANUFACTURER.

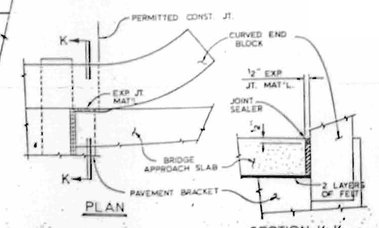
COMPRESSION SEAL EXTENDS FROM GUTTER TO GUTTER ALONG BRIDGE DECK NOTCH.

THE CONTRACTOR, AT HIS OPTION, MAY USE 4" BITUMINOUS CONCRETE BASE COURSE, TYPE HB IN LIEU OF 6" A.B.C. ANY ADDITIONAL COST DUE TO USE OF THIS OPTION WILL BE PAID FOR BY THE CONTRACTOR.

THE 1" EXPANSION JOINT MATERIAL IS TO BE HELD IN PLACE WITH GALVANIZED NAILS.

NO DIRECT PAYMENT WILL BE MADE FOR THE TEMPORARY DRAINAGE AS SUCH WORK WILL BE CONSIDERED INCIDENTAL TO OTHER WORK BEING PAID FOR BY THE VARIOUS ITEMS IN THE CONTRACT.

FOR BRIDGE APPROACH SLABS, SEE SPECIAL PROVISIONS.



DETAIL OF EXP. JT. MAT'L. BETWEEN APPROACH SLAB AND CURV. END BLK

THE EXPANSION JOINT SHALL BE SEALED WITH JOINT SEALER AS SHOWN.

BILL OF MATERIAL

FOR ONE APPR. SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	28	#4	STR	18'-5"	344
B1	72	#6	STR	9'-1"	982
B2	72	#6	STR.	9'-7"	1,036

REINFORCING STEEL LBS. x 2,362
CLASS "A" CONCRETE CU. YDS. x 12.4

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 600+90.00-L- REV.
W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

JULY 1978

REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE		
1			3			TOTAL SHEETS	
2			4			84	

STD. DRAWN BY: K.G.P. DATE: 2-71 CHECKED BY: J.A.K.
DRAWN BY: SID JOYNER DATE 11 2 71
CHECKED BY: R.V. Moore DATE 11-10-81

REVISED 9-11-81 BY: E.R.L. CHECKED BY: R.V.M.
REVISED 3-27-81 BY: R.D.J. CHECKED BY: R.D.J.
REVISED 4-29-80 BY: C.D.M. CHECKED BY: P.D.J.
REVISED 4-4-79 BY: C.C.M. CHECKED BY: P.D.J.
REVISED 7-31-78 BY: R.E.K. CHECKED BY: R.D.J.

SID. NO. BAS2

PART PLAN

PART PLAN

CONCRETE RIP RAP

PLAIN RIP RAP

NOTES

Concrete Rip Rap shall be Class "B" Concrete. Welded Wire Fabric Reinforcing to be Style 6x6-W2.9xW2.9 80 mm. Adjacent runs of welded wire fabric to lap at least 6". Concrete Rip Rap to be poured in alternate 4'-5" strips as shown in Pouring Detail. Toe walls shall be constructed at ends of rip rap similar to that shown for the top of the rip rap. (FOR Concrete Rip Rap Only)
Concrete in walls at end bent wings as indicated by cross hatched areas in section D-D and E-E will not be measured or paid for as a separate item as the entire cost of same shall be included in the price bid per S.Y. for Conc. rip rap.

*SEE GENERAL DRAWING

SECTION C-C

SECTION E-E

SECTION D-D

SECTION RIP RAP BELOW BERM

SECTION BERM RIP RAPPED

DETAIL WHEN WING IS HIGHER THAN BERM

POURING DETAIL

Pour a 4' strip first. Strip widths may vary in curved portion.

ESTIMATED QUANTITIES

Bridge @		Plain Rip Rap Class B TONS		Concrete Rip Rap S.Y.		Welded Wire Fabric 60" Wide Approx. No. Ft
		EB No 1	EB No 2	EB No 1	EB No 2	
600+90.0 -L- REV.		~~490~~	~~490~~			
		129.03	136.17			

PROJECT No. 8.1430701

COLUMBUS COUNTY

STATION: 600+90.0 -L- REV.

W.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD RIP RAP DETAILS

JULY 1978

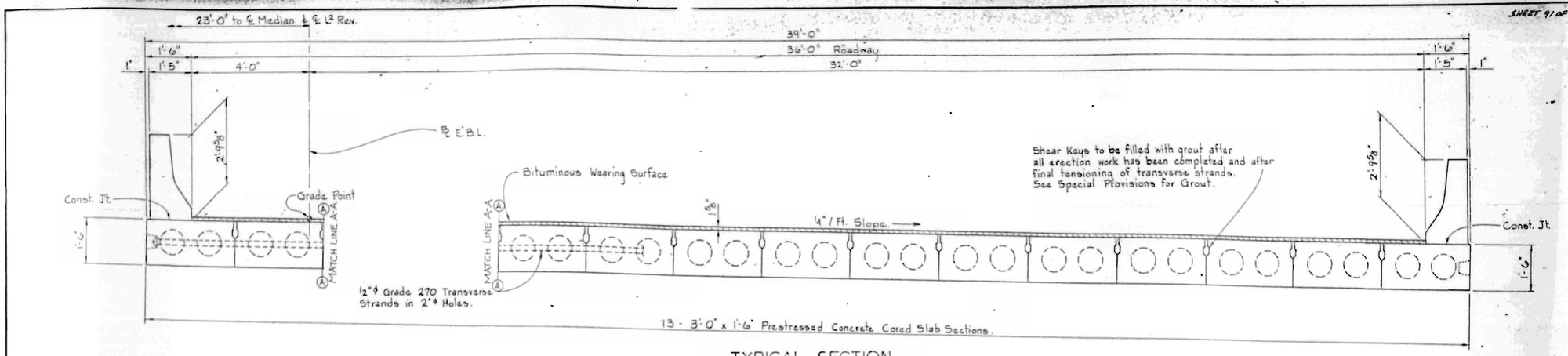
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

ASSEMBLED BY S.D. JOYNER DATE 10/26/81
CHECKED BY R.J. Moore DATE 10-28-81
DRAWN BY Ross E. Kuykendall DATE 4-28-78
CHECKED BY John W. Reaves DATE 8/78

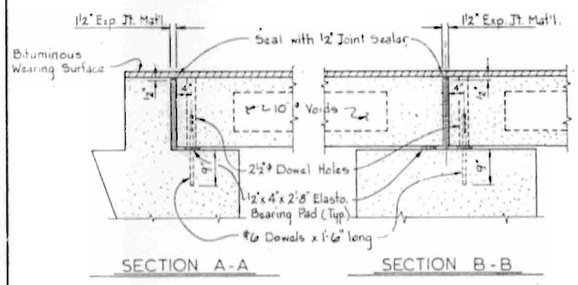
SPECIAL
STANDARD

Revised 5-10-85 BY R.D.U. + BY R.G.F.
Revised 7-31-78 BY R.E.K. + J.W.R.

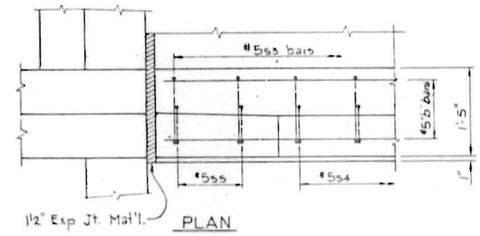
S-94
84



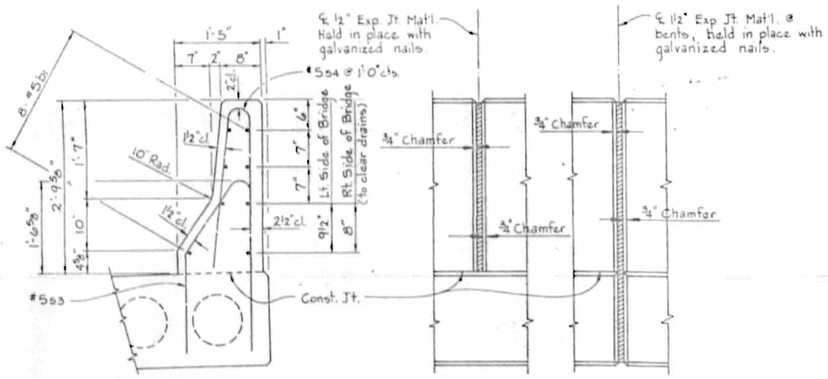
TYPICAL SECTION



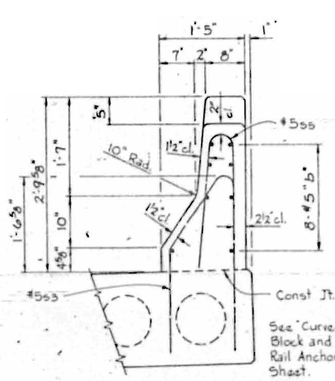
SECTION A-A SECTION B-B



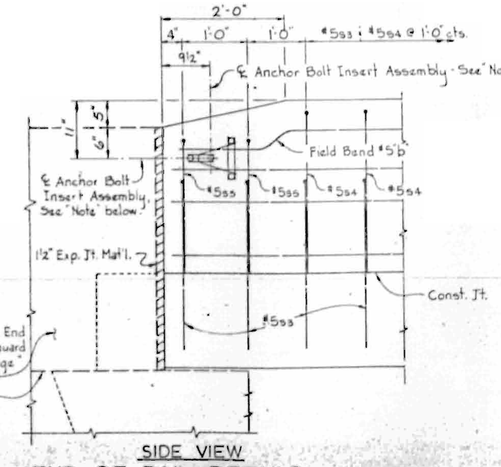
PLAN



SECTION THRU RAIL ELEVATION @ EXP JTS



END VIEW



SIDE VIEW

BARRIER RAIL DETAILS

See Special Provisions for Concrete Barrier Rail.

BARRIER RAIL - END OF RAIL DETAILS

Note: See "Curved End Block and Guard Rail Anchorage" Sheet, For Anchor Bolt Insert Assembly.

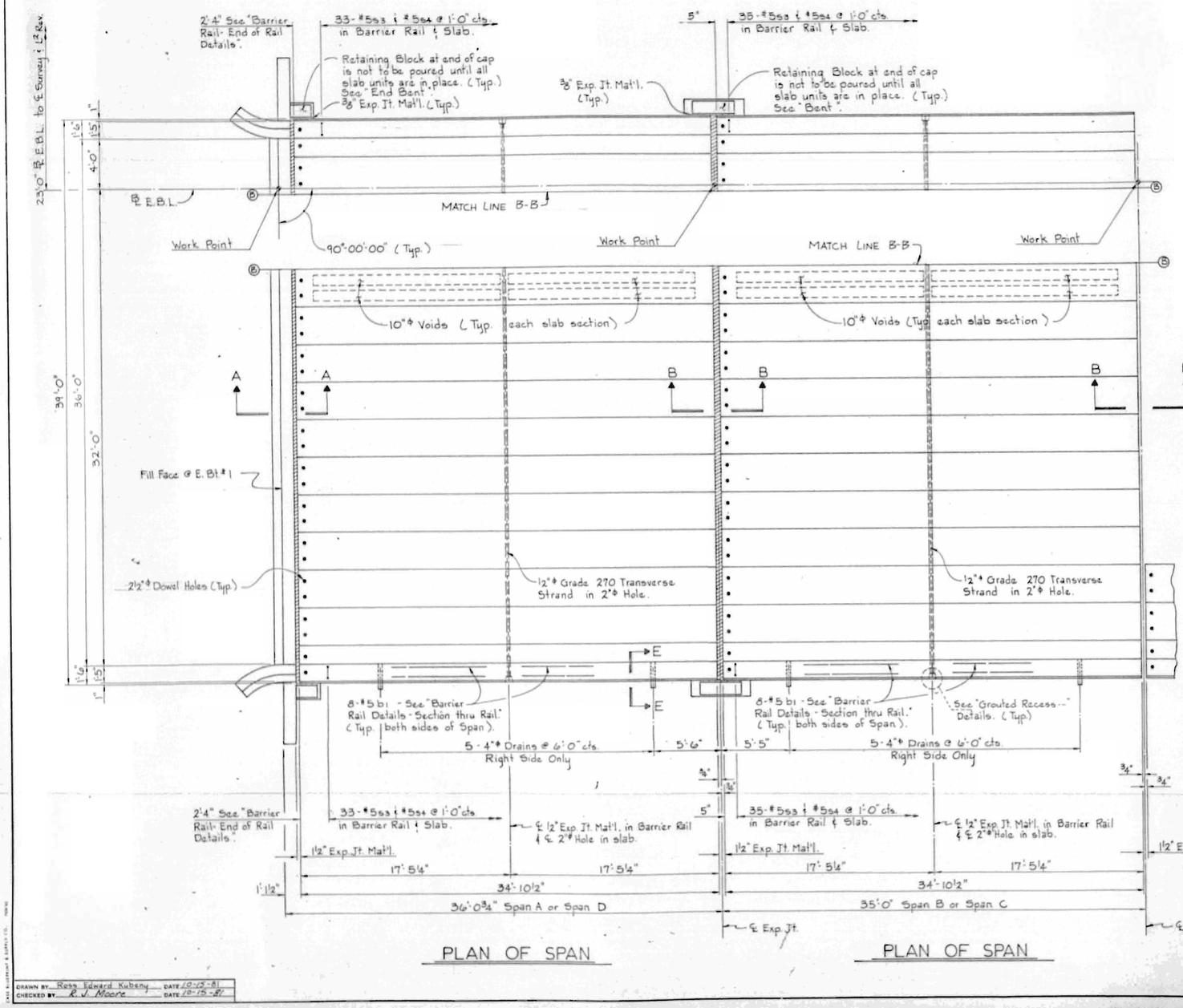
Note: The Contractor's attention is called to the fact that the ½" thick joint material between the ends of the cored slabs at bents and between the backwall and the ends of the cored slabs is ½" nominal and can be expected to vary. The Contractor may use more than one layer of expansion joint material to provide the thickness req'd. with a minimum layer thickness of ¼".

DRAWN BY Ross Edward Kubany DATE 10-15-81
CHECKED BY K. V. Moore DATE 10-15-81

PROJECT NO. 8.1430701 *8
COLUMBUS COUNTY
STATION: 600+90.00 L² REV.
E.B.L.

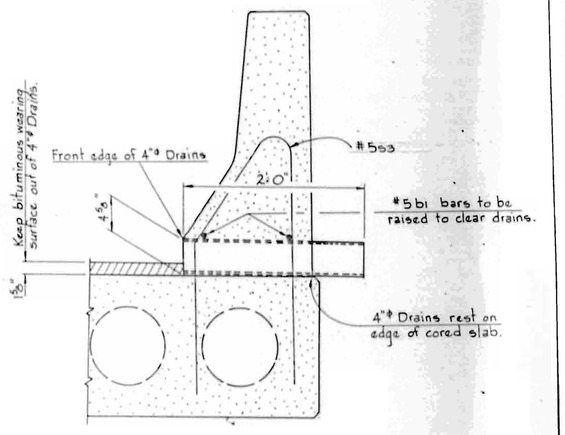
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTIONS
OCT. 1981

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		~~10-12~~
3			5				TOTAL SHEETS
2			4				~~84~~



PLAN OF SPAN

PLAN OF SPAN



SECTION E-E

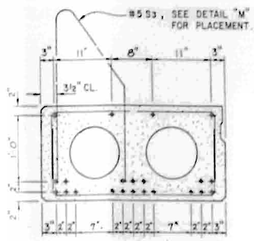
Showing placement of 2'-0" long 4"ϕ Drains thru Barrier Rail.
(℄ 20 - 4"ϕ Drains required.)
Drains may be shifted as necessary to clear #5s3 bars.

DRAWN BY: Ross Edward Kubeny DATE: 10-15-81
CHECKED BY: R.J. Moore DATE: 10-15-81

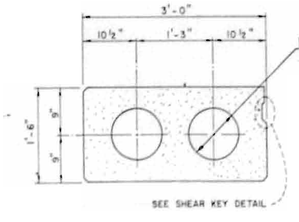
PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION: 600+90.00 L² Rev.
E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPANS
OCT. 1981

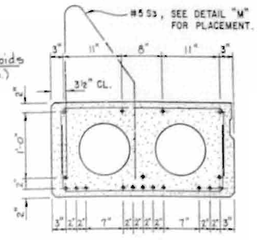
REVISIONS						SHEET NO. 92
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 84
2			4			



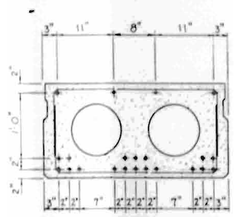
EXTERIOR SLAB SECTION



EXTERIOR SLAB SECTION

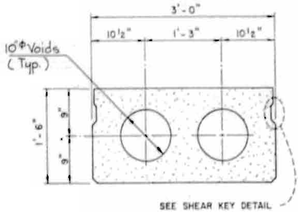


EXTERIOR SLAB SECTION



INTERIOR SLAB SECTION

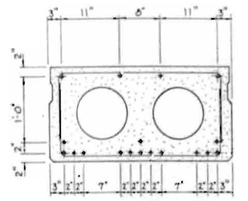
$\frac{7}{16}$"ϕ PRESTRESSED CABLE LAYOUT



INTERIOR SLAB SECTION

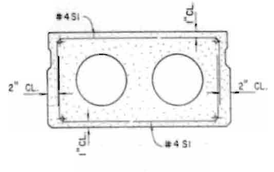
TYPICAL SECTION

NOTE: CHAMFER CORNERS ¾" AS SHOWN.



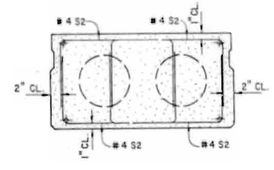
INTERIOR SLAB SECTION

$\frac{1}{2}$"ϕ PRESTRESSED CABLE LAYOUT



SLAB SECTION

SHOWING #4S1 STIRRUPS.



SLAB SECTION

SHOWING #4S2 STIRRUPS.

NOTES

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS
$\frac{7}{16}$"ϕ	270	0.115 SQ. IN.	31,000 LBS. PER CABLE	21,700 LBS. PER CABLE
$\frac{1}{2}$"ϕ	270	0.153 SQ. IN.	41,300 LBS. PER CABLE	28,900 LBS. PER CABLE

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRESS RELIEVED HIGH-STRENGTH GRADE 270 CABLES IN ACCORDANCE WITH THE SPECIFICATIONS.

ALL PRESTRESSED STRANDS SHALL MEET THE REQUIREMENTS OF ASTM-A416.

FOR PRESTRESSED CORED SLABS, SEE SPECIAL PROVISIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE INCLUDED IN THE CONTRACT PRICE FOR PRESTRESSED CORED SLABS.

RECESS FOR TRANSVERSE STRANDS IS TO BE GROUTED AFTER THE TENSIONING OF STRANDS.

THE 2½"ϕ DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS TO BE FILLED WITH GROUT, SEE SPECIAL PROVISIONS. THE 2½"ϕ DOWEL HOLES AT EXPANSION ENDS OF SLAB SECTIONS ARE NOT REQUIRED.

AT TRANSFER OF TENSIONING LOAD, THE CYLINDER STRENGTH OF CONCRETE SHALL BE 4,000 P.S.I. MINIMUM AND THE 28 DAY CYLINDER STRENGTH SHALL BE 5,000 P.S.I. MINIMUM.

ELASTOMER IN ELASTOMERIC BEARINGS SHALL HAVE A GRADE 50 DUROMETER HARDNESS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL FOR CONCRETE BARRIER RAIL

BAR	NO. SPAN A or D	NO. SPAN B,C	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	32	32	128	5	STR.	17'-0"	2270
S4	66	70	272	5	3	4'-11"	1395
S5	4		8	5	3	4'-4"	36
REINFORCING STEEL Lbs.							3701
CLASS A A CONCRETE CU. YDS. (@ 6.9 CU. YDS. PER SPAN)							27.6
TOTAL LIN. FT. OF CONCRETE BARRIER RAIL *							278.9 ~~334.75~~

* SEE SPECIAL PROVISIONS.

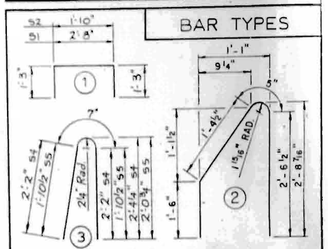
REINFORCING STEEL FOR ONE EXTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
S3	35	#5	2	5'-10"	213
TOTAL				LBS. -	484

REINFORCING STEEL FOR ONE INTERIOR CORED SLAB SECTION

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	5'-2"	248
S2	8	#4	1	4'-4"	23
TOTAL				LBS. -	271

BAR TYPES



QUANTITIES FOR ONE CORED SLAB

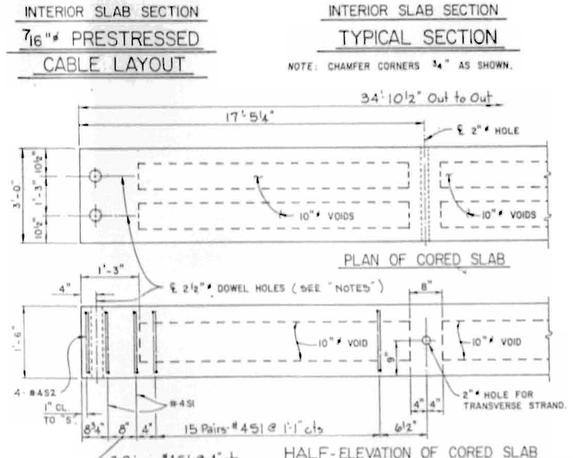
	REINFORCING STEEL LBS.	5,000 P.S.I. CONCRETE C.Y.	$\frac{7}{16}$"ϕ S.R. CABLES Nº	$\frac{1}{2}$"ϕ S.R. CABLES Nº
EXTERIOR C.S.	484	4.5	22	18
INTERIOR C.S.	271	4.5	22	18

CORED SLAB REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	8	34'-10½"	279'-0"
INTERIOR C.S.	44	34'-10½"	1534'-6"
TOTAL	52		1813'-6"

DEAD LOAD DEFLECTION AND CAMBER

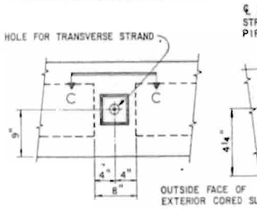
FOR INT. or EXT. SECTION	$\frac{7}{16}$"ϕ Cables	$\frac{1}{2}$"ϕ Cables
CAMBER (SLAB ALONE IN PLACE)	$\frac{5}{8}$" ↑	1" ↑
DEFLEC. DUE TO SUPERIMPOSED DEAD LOAD	1/16" ↓	⅛" ↓
FINAL CAMBER	9/16" ↑	9/16" ↑

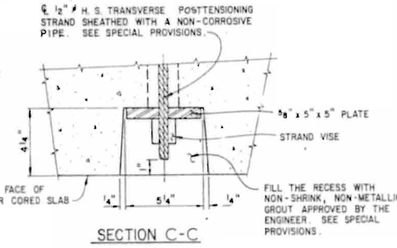


Note: #5s3 bars in exterior cored slab not shown. For spacing of #5s3 bars in exterior cored slab, see "Plan" of Superstructure.

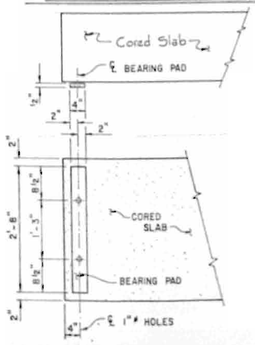
NOTE

* THE CONTRACTOR, AT HIS OPTION, MAY USE LOW-RELAXATION STRANDS IN LIEU OF STRESS RELIEVED STRANDS. DESIGN AND STRAND PATTERN MUST PROVIDE AT LEAST THE SAME NET COMPRESSIVE STRESS AFTER THE LOSSES. THE ULTIMATE STRENGTH OF THE CORED SLAB UNIT MUST MEET THE REQUIREMENTS OF THE APPLICABLE AASHTO SPECIFICATIONS. LOW-RELAXATION STRANDS SHALL BE TENSIONED AND ANCHORED AT A LOAD EQUAL TO 75% OF ITS ULTIMATE STRENGTH. THIS APPLIED PRESTRESSED FORCE SHALL BE SHOWN ON THE PLANS. SIZE OF LOW-RELAXATION STRANDS SHALL NOT BE LARGER THAN THOSE SHOWN FOR STRESS RELIEVED STRANDS. DESIGN AND DETAIL PLANS USING LOW-RELAXATION STRANDS MUST BE SUBMITTED TO THE STATE BRIDGE DESIGN ENGINEER FOR APPROVAL. ANY ADDITIONAL COST DUE TO THE USE OF LOW-RELAXATION STRANDS WILL BE PAID FOR BY THE CONTRACTOR.





GROUTED RECESS IN EXTERIOR SIDE OF PRETENSIONED CABLE CORED SLABS



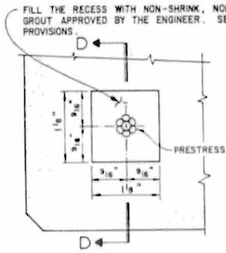
ELASTOMERIC BEARING DETAIL

52-(with holes) Brg. Pads Required.
52-(without holes) Brg. Pads Required.

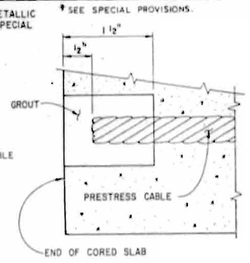


SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



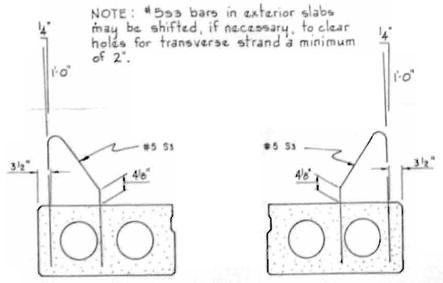
PART ELEVATION AT END OF CORED SLAB



SECTION D-D

GROUTED RECESS AT END OF PRETENSIONED CABLE CORED SLABS

NOTE: #5s3 bars in exterior slabs may be shifted, if necessary, to clear holes for transverse strand a minimum of 2".



DETAIL "M"

DRAWN BY ROSS EDWARD KUBENY DATE 10-15-81
CHECKED BY R.J. Moore DATE 10-15-81

PROJECT No. 8.1430701 #8
COLUMBUS COUNTY
STATION: 600+90.0 L² Rev. E.B.L.

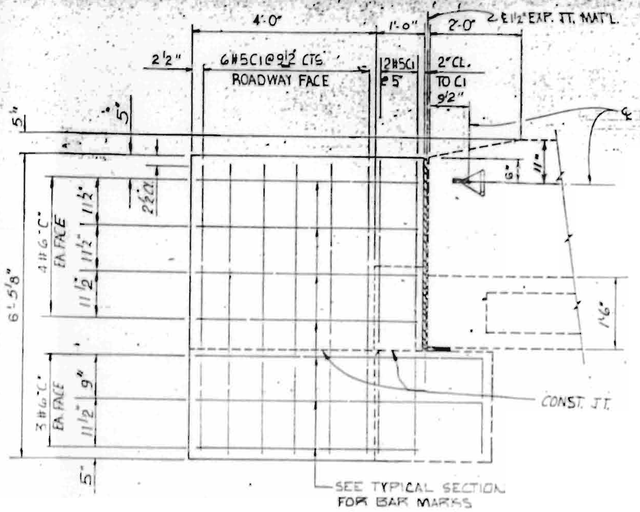
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" x 1'-6" PRESTRESSED CONCRETE CORED SLABS

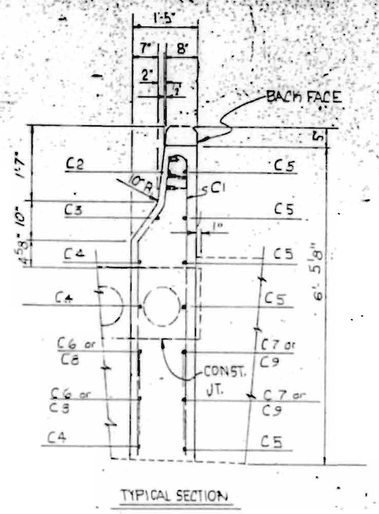
OCT. 1981

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

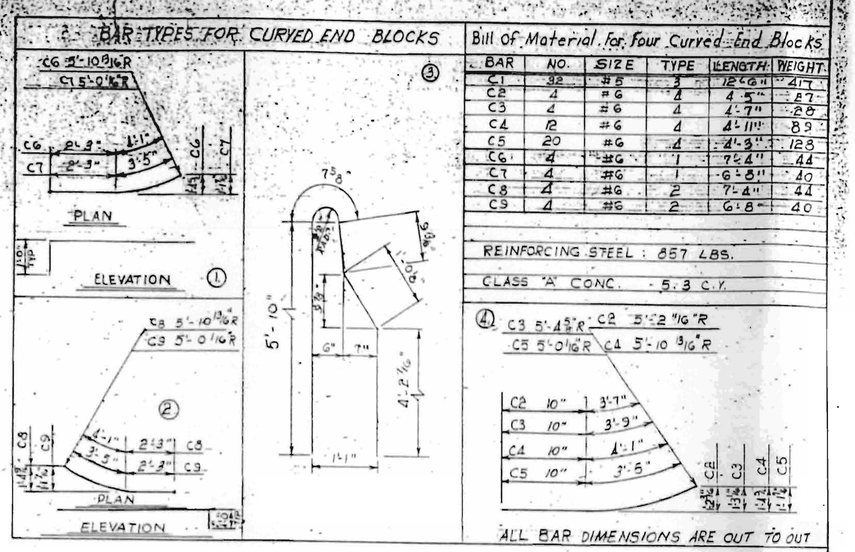
SHEET NO. ~~5~~ 74
TOTAL SHEETS 84



ELEVATION



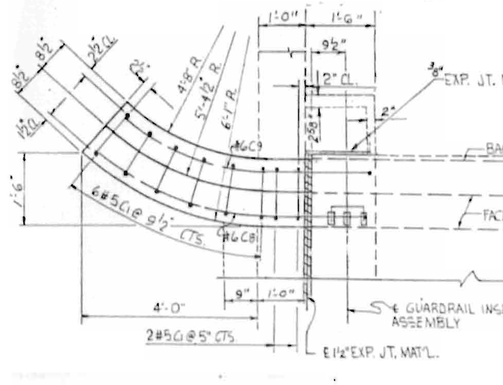
TYPICAL SECTION



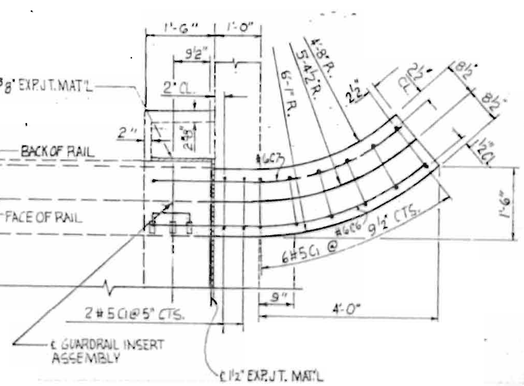
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
C1	92	#5	3	12'-6"	417
C2	4	#6	4	4'-5"	27
C3	4	#6	4	4'-7"	28
C4	12	#6	4	4'-11"	89
C5	20	#6	4	4'-3"	128
C6	4	#6	1	7'-4"	44
C7	4	#6	1	6'-8"	40
C8	4	#6	2	7'-4"	44
C9	4	#6	2	6'-8"	40

REINFORCING STEEL : 857 LBS.

CLASS "A" CONC. - 5.3 C.Y.



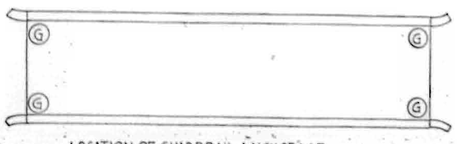
PLAN



PLAN

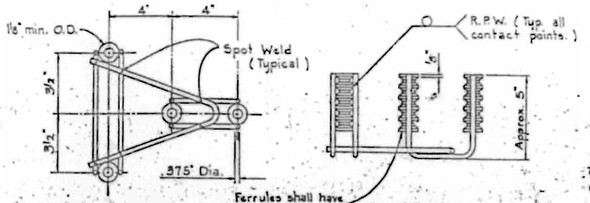
NOTES

1. THE 4 - BOLT INSERT ASSEMBLY UNIT SHALL CONSIST OF THE FOLLOWING COMPONENTS:
   a. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF A.S.T.M. A108, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1¼".
   b. 4 - 7/8"ø x 2 3/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8"ø x 2 3/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF A.S.T.M. A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
   c. WIRE STRUTS SHOWN IN THE INSERT ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I.
2. THE INSERT ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.
3. THE COST OF THE 4-BOLT INSERT ASSEMBLY UNIT COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.
4. THE 4 - BOLT INSERT ASSEMBLY UNIT IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END POSTS. FOR POINTS OF ATTACHMENT, SEE "LOCATION OF GUARDRAIL ANCHORAGE" SKETCH, THIS SHEET.
5. CURVED END BLOCKS ARE REQUIRED AT ALL END POSTS.
6. THE COST OF THE EXCAVATION AND BACKFILL FOR THE CURVED END BLOCKS SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.



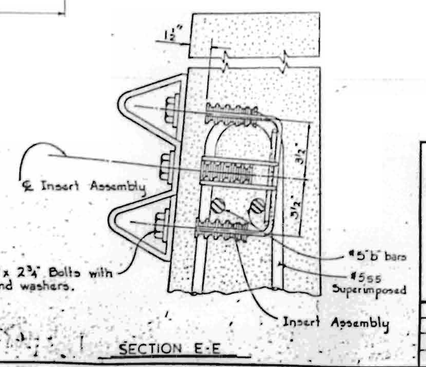
LOCATION OF GUARDRAIL ANCHORAGE

Ⓖ DENOTES GUARDRAIL ANCHORAGE LOCATION.



PLAN ELEVATION

INSERT ASSEMBLY



SECTION E-E

DRAWN BY: B.U.JOYNER DATE: 7-16-81
CHECKED BY: K.J. Moore DATE: 7-21-81

PROJECT NO. 8.1430701

COLUMBUS COUNTY

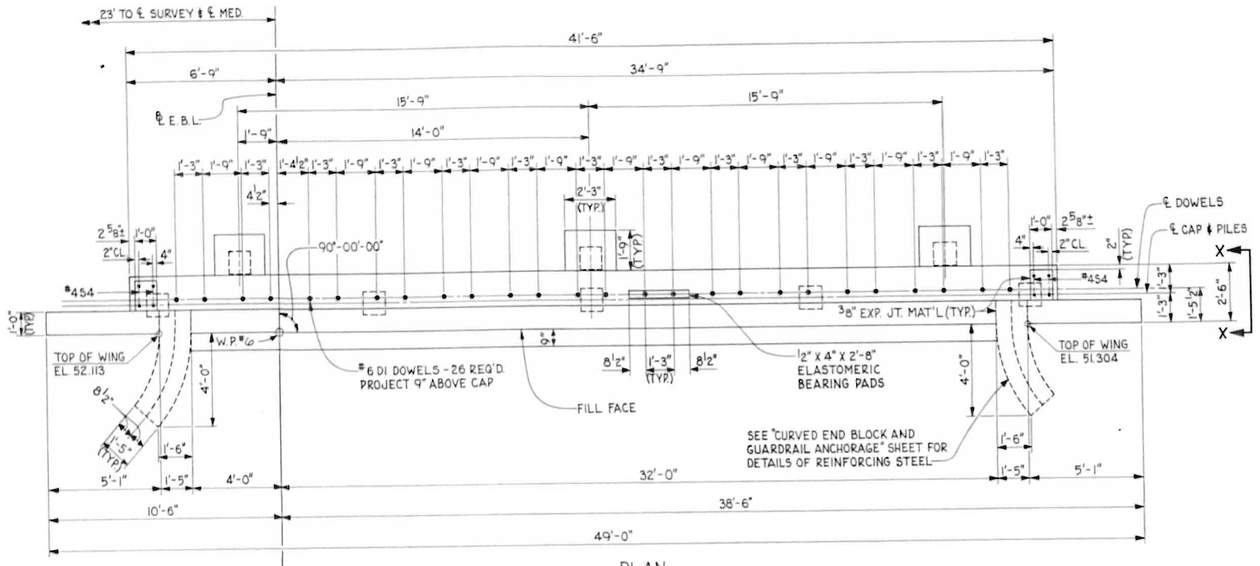
STATION: 600+90.00 -L- E.B.L. 2 Rev. *8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CURVED END BLOCK AND GUARDRAIL ANCHORAGE FOR BARRIER RAIL

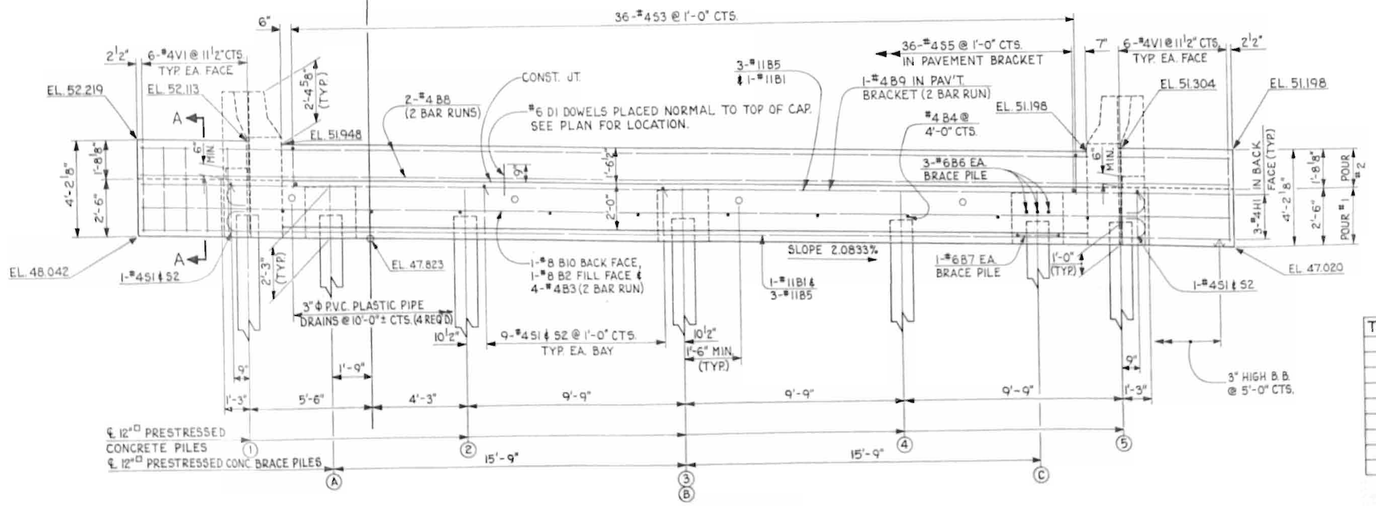
JULY 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	9-98
1			3			TOTAL SHEETS
2			4			84



PLAN

WORK LINE



ELEVATION

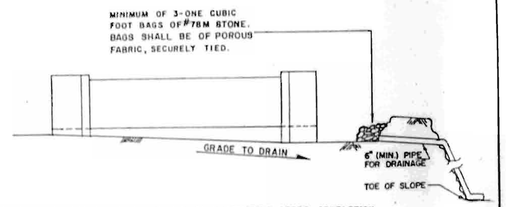
TOP OF PILE ELEVATIONS	
NO.	ELEVATION
1	48.938
2	48.734
3	48.531
4	48.328
5	48.125
A	48.859
B	48.531
C	48.203

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECCESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.



BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

PROJECT NO. 8.1430701 #8

COLUMBUS COUNTY

STATION: 600+90.00-L-2 REV.

SHEET 1 OF 2 E. B. L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

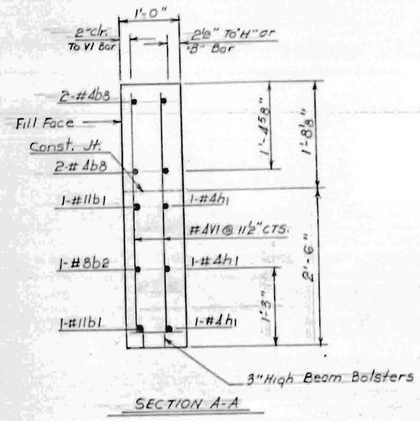
NOV. 1981

REVISIONS						SHEET NO. 9-9A
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 84
2			4			

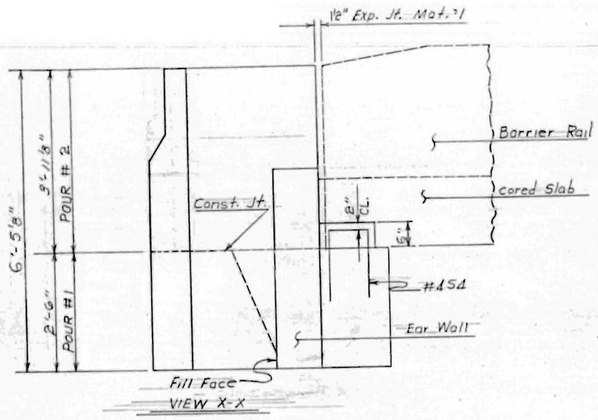
DRAWN BY: C. S. GODBOLD DATE: 13 NOV 81
CHECKED BY: R. J. Moore DATE: 12-18-81

SHEET 26 OF

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		

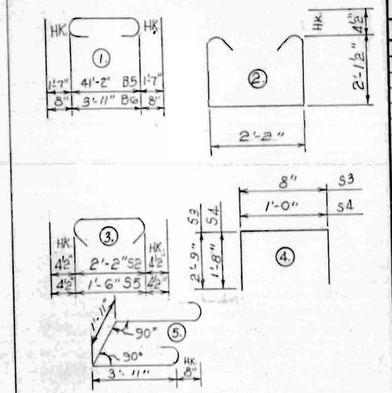


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See "Curved End Block And Guardrail Anchorage For Barrier Rail Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 1

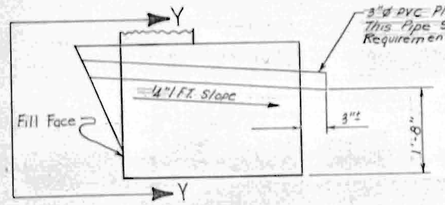
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	46'-8"	517
B2	1	#8	Str.	48'-8"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	11'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	1	1'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str	5'-1"	20
V1	24	#4	Str.	3'-10"	61

Reinforcing Steel LBS. 3,188

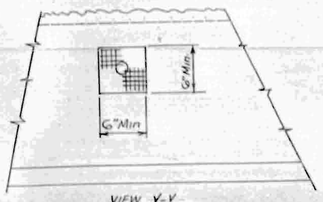
CLASS "A" Conc.
Pour #1* = 11.7 CU YDS
Pour #2 = 2.7 CU YDS
Total = 14.4 CU YDS

12"ø Prestressed Conc. Piles No. 8 Lin Ft. ~~240~~ 279.1

PIPE DRAIN DETAILS



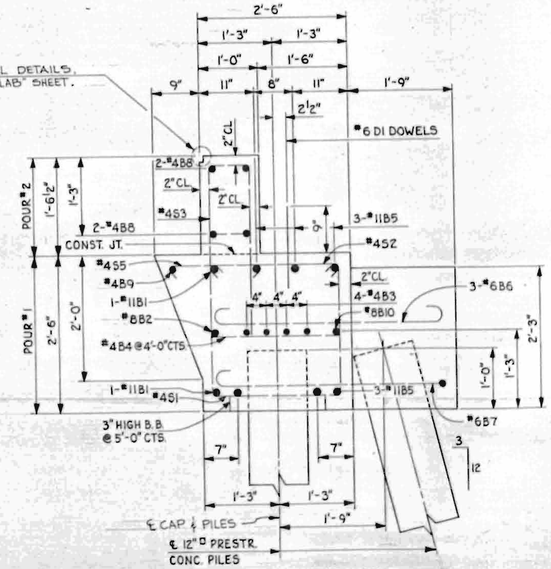
Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.

FOR COMPRESSION JT. SEAL DETAILS, SEE "BRIDGE APPROACH SLAB" SHEET.



SECTION THRU CAP

PROJECT No. 8.1430701 #8

COLUMBUS COUNTY

STATION: 600+90.00-L²-REV.

SHEET 2 OF 2 E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 1

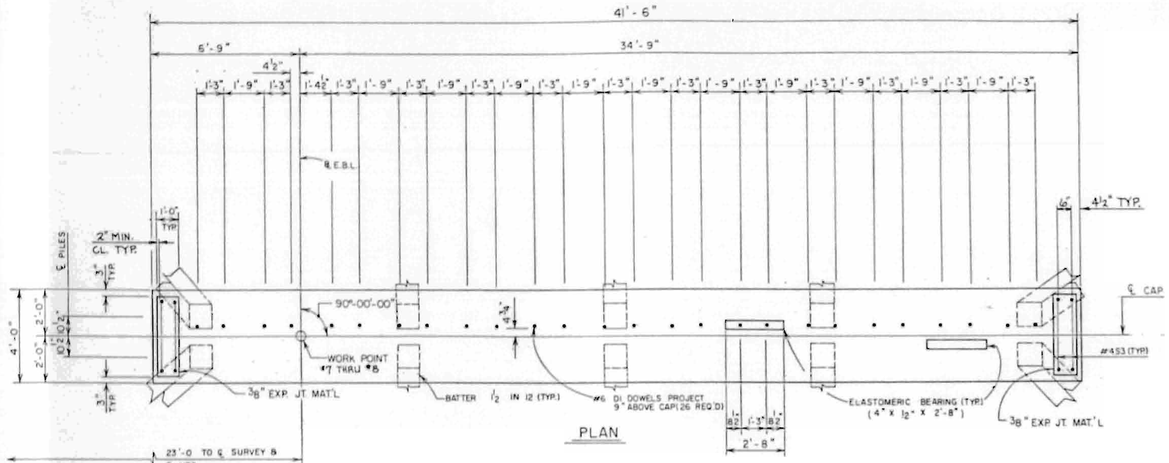
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	4-24
1			3			TOTAL SHEETS
2			4			84

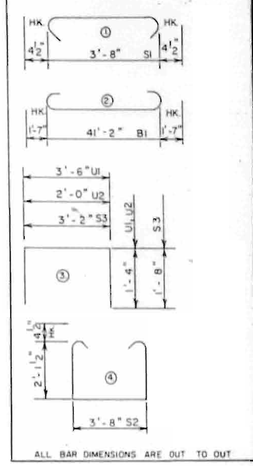
DRAWN BY S.D. JOYNER DATE 7/28/81
CHECKED BY R. J. Moore DATE 7-30-81

SHEET 9 of F

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		



BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (2 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR	21'-5"	258
B3	11	#4	STR	3'-8"	27
D1	26	#6	STR	1'-6"	59
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6
REINFORCING STEEL					3,044
CLASS "A" CONC					15.1 CU YDS
12" □ PRESTRESSED CONC. PILES					
NO. 10 LIN. FT.					~~360~~ 372.5 ADJUST #1 #2

CLASS "A" CONC

POUR #1	15.0 CU YDS
POUR #2	0.1 CU YDS
TOTAL	15.1 CU YDS

TOP OF PILE ELEVATION	
P1	48.917
P2	48.724
P3	48.531
P4	48.339
P5	48.146

NOTES:

*CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

THE RETAINING BLOCK AT EACH END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

DRAWN BY S. D. JOYNER DATE 10/19/81
CHECKED BY R. J. Moore DATE 10-28-81

PROJECT NO. 8.1430701 *8
COLUMBUS COUNTY
STATION: 600+90.0-L- REV.
E.B.L.

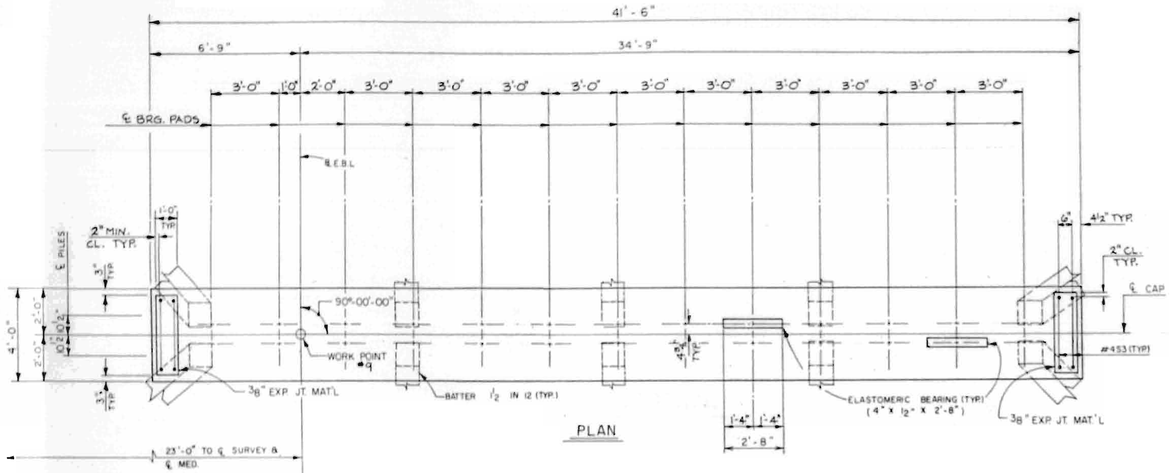
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
BENT #1 & #2

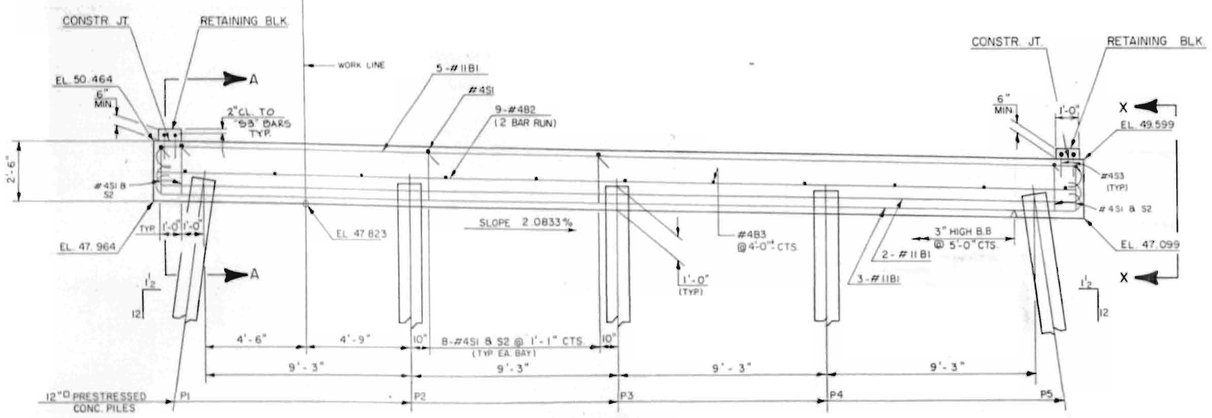
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-76
1			3			TOTAL SHEETS
2			4			84

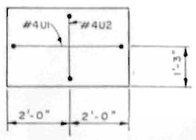
FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	
F. A. PROJECT		



PLAN



ELEVATION



VIEW X-X

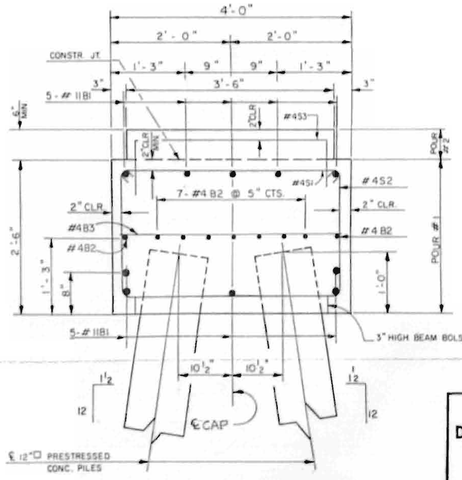
REINFORCING SHOWN TYP. EACH END.

NOTES:

*CONCRETE DISPLACED BY PILE HEADS HAS BEEN DEDUCTED.

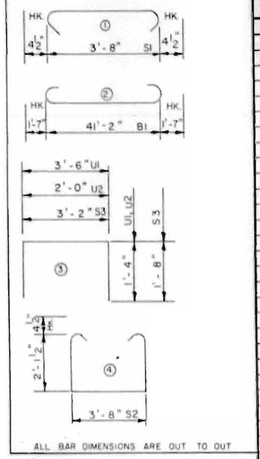
THE RETAINING BLOCK AT EACH END OF CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

TOP OF PILE ELEVATION	
P1	48.917
P2	48.724
P3	48.531
P4	48.339
P5	48.146



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR ONE BENT (1 REQUIRED)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#11	2	44'-4"	2,355
B2	18	#4	STR.	21'-5"	258
B3	11	#4	STR.	3'-8"	27
S1	36	#4	1	4'-5"	106
S2	36	#4	4	8'-8"	208
S3	4	#4	3	6'-6"	17
U1	2	#4	3	6'-2"	8
U2	2	#4	3	4'-8"	6

REINFORCING STEEL = 2,985

CLASS "A" CONC = 15.1 CU YDS

12" □ PRESTRESSED CONC. PILES

NO. 10 LIN. FT. = ~~300~~ 288 Corr.

CLASS "A" CONC.

POUR #1 = 15.0 CU YDS

POUR #2 = 0.1 CU YDS

TOTAL = 15.1 CU YDS

PROJECT NO. 8.1430701 #8

COLUMBUS COUNTY

STATION: 600+90.0-L- REV.

E.B.L.

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY

RALEIGH

SUBSTRUCTURE

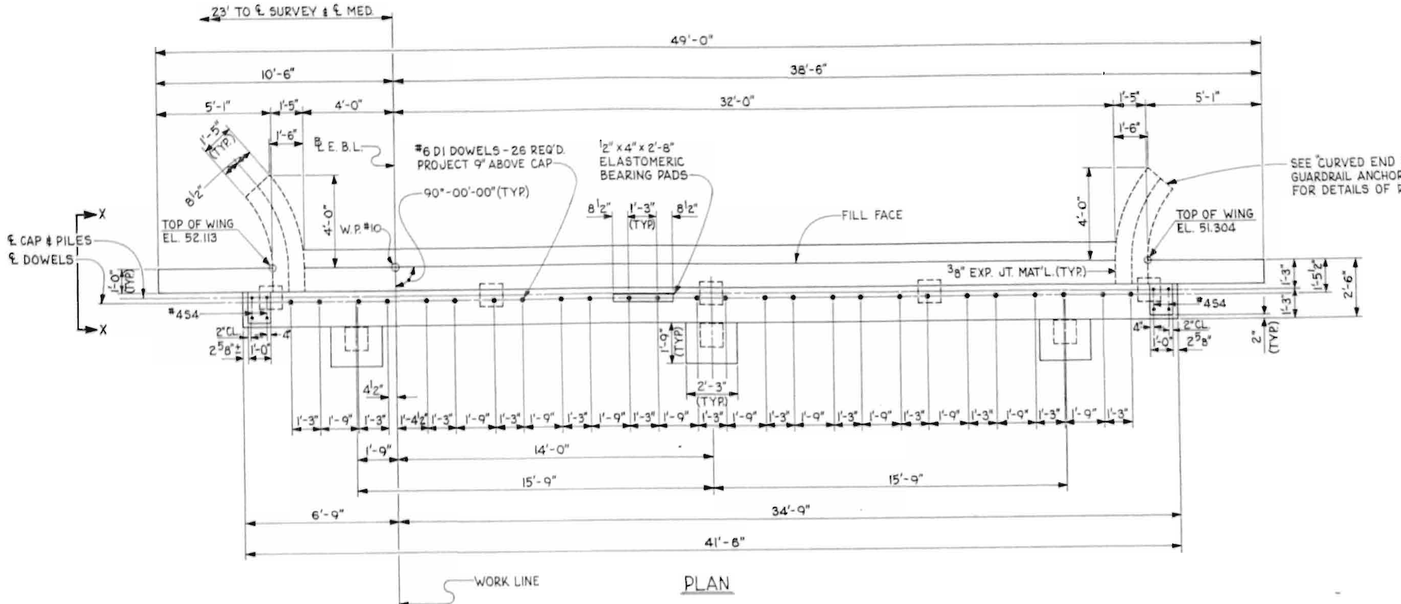
BENT # 3

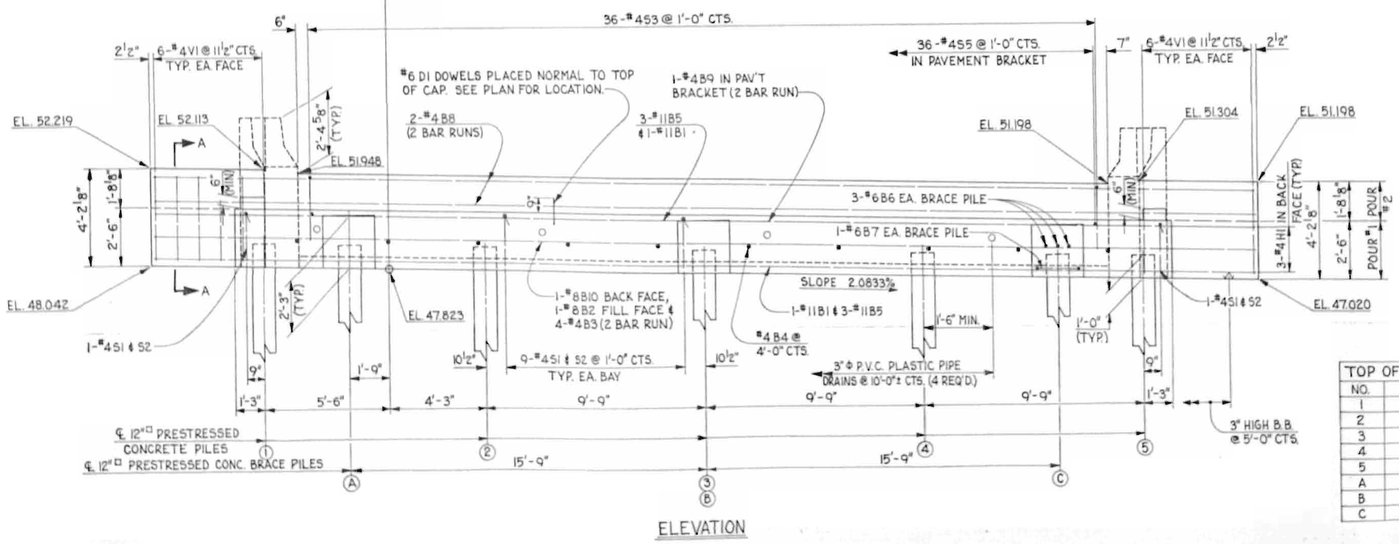
OCT. 1981

REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		S-79
1			3				TOTAL SHEETS
2			4				~~84~~

DRAWN BY S. D. JOYNER DATE 10/19/81

CHECKED BY R. V. Moore DATE 10-22-81





ELEVATION

TOP OF PILE ELEVATIONS	
NO.	ELEVATION
1	48.938
2	48.734
3	48.531
4	48.328
5	48.125
A	48.859
B	48.531
C	48.203

NOTES

REINFORCING STEEL IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

PIPE DRAINS MAY BE SHIFTED AS NECESSARY TO CLEAR REINFORCING STEEL & DOWELS.

THE RETAINING BLOCK AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL ALL SLAB UNITS ARE IN PLACE.

FOR "TEMPORARY DRAINAGE" DETAILS FOR END BENT 2, SEE END BENT 1 SHEET 1 OF 2.

DRAWN BY C. S. GODBOLD DATE DEC. 17, 1981
CHECKED BY R. J. Moore DATE 12-18-81

PROJECT NO. 8.1430701 #8
COLUMBUS COUNTY
STATION: 600+90.00-L-2 REV.
SHEET 1 OF 2 E. B. L.

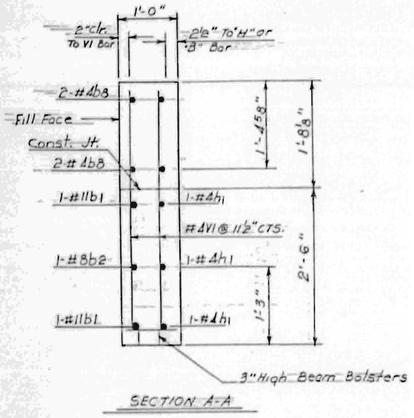
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2

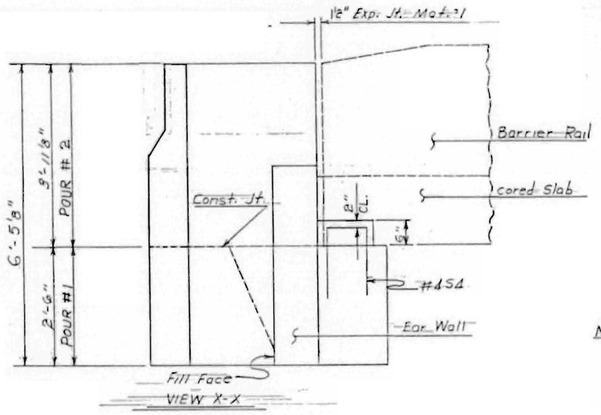
DEC. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-B6
1			3			TOTAL SHEETS
2			4			84

FED. ROAD DIV. NO.	STATE	PROJECT NO.
4	N. C.	———
F. A. PROJECT		

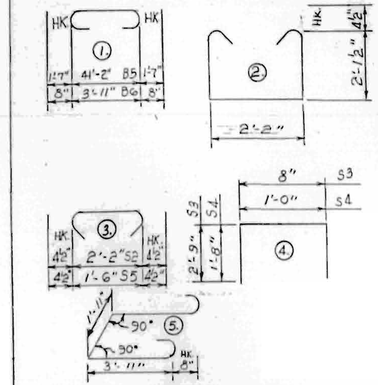


SECTION A-A



VIEW X-X

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

Notes: For Details of Reinforcing Steel In Curved Block, See "Curved End Block And Guardrail Anchorage For Barrier Rail" Sht.

*Conc. Displaced By Pile Heads Has Been Deducted.

BILL OF MATERIAL

END BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#11	Str.	48'-8"	517
B2	1	#8	Str.	48'-8"	130
B3	8	#4	Str.	21'-5"	114
B4	10	#4	Str.	2'-2"	14
B5	6	#11	1	44'-4"	1413
B6	9	#6	1	5'-3"	71
B7	3	#6	5	11'-1"	50
B8	8	#4	Str.	25'-2"	134
B9	2	#4	Str.	18'-6"	25
B10	1	#8	Str.	41'-2"	110
D1	26	#6	Str.	1'-6"	59
S1	38	#4	2	7'-2"	182
S2	38	#4	3	2'-11"	74
S3	36	#4	4	6'-2"	148
S4	4	#4	4	4'-4"	12
S5	36	#4	3	2'-3"	54
H1	6	#4	Str	5'-1"	20
V1	24	#4	Str.	3'-10"	61

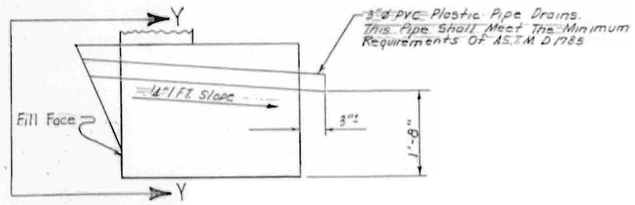
Reinforcing Steel LBS. 3188

CLASS "A" Conc.:

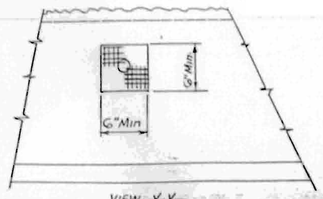
Pour #1*	=	11.7 CU YDS
Pour #2	=	2.7 CU YDS
Total	=	14.4 CU YDS

12"ø Prestressed Conc. Piles No. 8 Lin Ft. ~~240~~ 295.2

PIPE DRAIN DETAILS



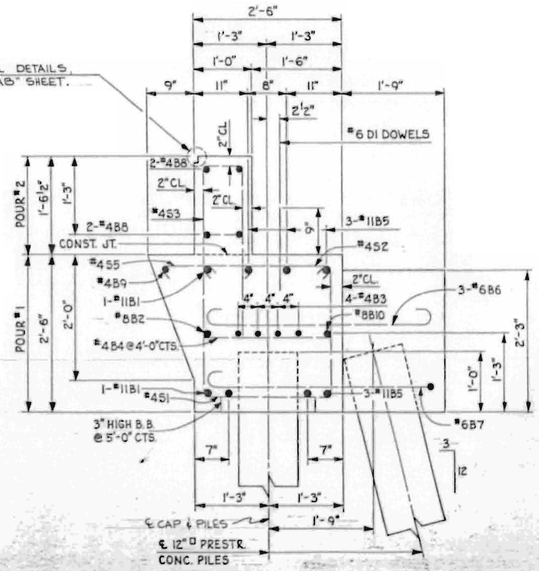
Section Thru Cap



VIEW Y-Y

Note: No Separate Payment Will Be Made For Furnishing And Installing PVC Plastic Pipe Drains, Hardware Cloth And Fasteners. The Entire Cost Of This Work Shall Be Included In The Unit Contract Price Bid For The Several Pay Items.

FOR COMPRESSION JT. SEAL DETAILS, SEE "BRIDGE APPROACH SLAB" SHEET.



SECTION THRU CAP

PROJECT NO. 8.1430701 *8

COLUMBUS COUNTY

STATION: 600+90.00 -L²- REV.

SHEET 2 OF 2 E.B.L.

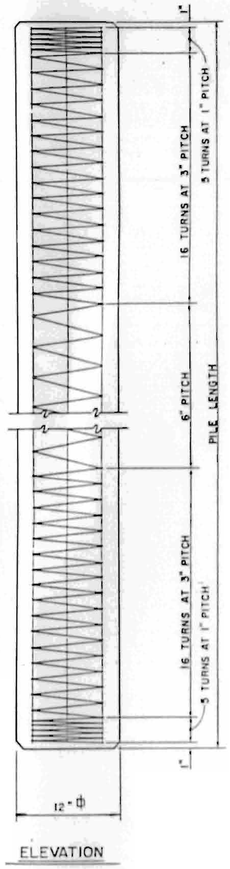
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION AND HIGHWAY SAFETY
RALEIGH

SUBSTRUCTURE
END BENT 2

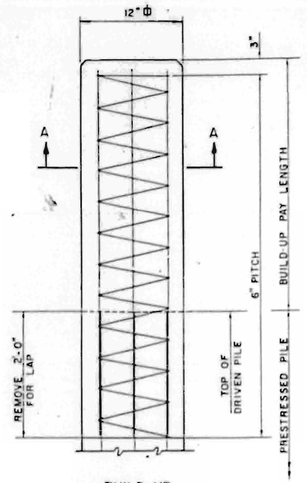
OCT. 1981

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6-81
1			3			TOTAL SHEETS
2			4			84

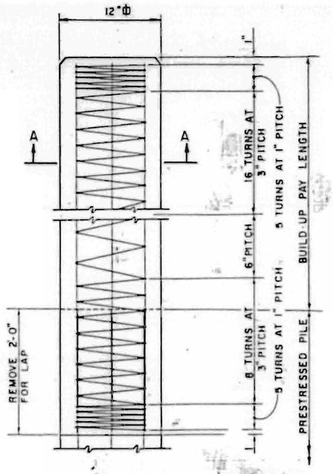
DRAWN BY S.D. JOYNER DATE 11/24/81
CHECKED BY R.J. Moore DATE 2-20-81



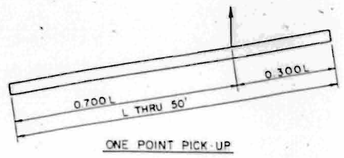
ELEVATION



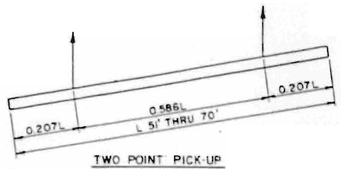
BUILD-UP WITHOUT DRIVING



BUILD-UP WITH DRIVING

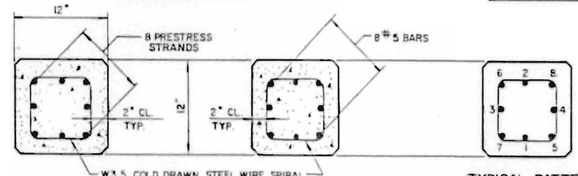


ONE POINT PICK-UP



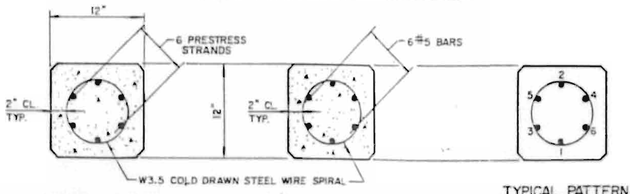
TWO POINT PICK-UP

PICK-UP POINTS



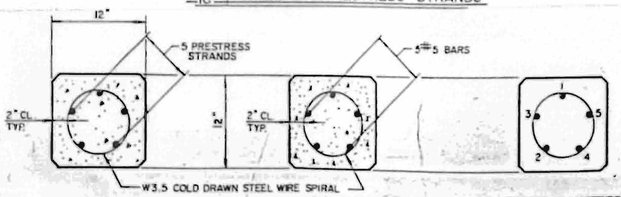
TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{3}{8}$"Φ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{7}{16}$"Φ GRADE 270 PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" TYPICAL PATTERN FOR BURNING STRANDS

$\frac{1}{2}$"Φ GRADE 270 PRESTRESS STRANDS

ASSEMBLED BY ROSS E. KUBENY	DATE 8-21-85	SPECIAL
CHECKED BY [illegible]	DATE 9-3-85	
DRAWN BY K. Deal/Smith	DATE Oct 14, 1977	STANDARD
CHECKED BY Ramesh K. Patel	DATE Nov 7, 1977	

QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE PICK-UP POINT 0.300L	ONE PICK-UP POINT 0.700L	TWO PICK-UP POINT 0.207L	TWO PICK-UP POINT 0.586L
25'-0"	± 0.91	1.85	7'-6"	17'-6"		
30'-0"	± 1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.70	15'-0"	35'-0"		
55'-0"	2.01	4.07			11'-4½"	32'-3"
60'-0"	2.19	4.44			12'-5"	35'-2"
65'-0"	2.37	4.81			13'-5½"	38'-1"
70'-0"	2.56	5.18			14'-6"	41'-0"

NOTES

* CONCRETE DESIGN DATA: f'c = 5,000 PSI ; fc = 2,000 PSI

IMPACT IN HANDLING = 50%

IN DRIVING PILES, A METHOD APPROVED BY THE ENGINEER SHALL BE USED, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DEVICES FOR LIFTING THE PILES SHALL BE APPROVED BY THE ENGINEER. LOOPS OF STRAND CAST IN THE PILES WILL NOT BE PERMITTED. INSERTS, CAST IN THE PILES TO RECEIVE THREADED EYE-BOLTS OR SIMILAR APPROVED DEVICES, MAY BE USED; OR WHERE IT IS PRACTICABLE, SATISFACTORY CLAMPS OR SLINGS MAY BE USED. WHERE PILES WILL BE EXPOSED TO VIEW IN THE STRUCTURE AND INSERTS ARE CAST IN THE PILES, THE OPENINGS SHALL BE REPAIRED AFTER THE EYE-BOLTS OR OTHER ATTACHMENTS HAVE BEEN REMOVED. THE OPENINGS SHALL BE REPAIRED IN A SATISFACTORY MANNER IN ORDER TO OBTAIN A UNIFORM APPEARANCE.

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE STRANDS AS PRESCRIBED IN THE SPECIFICATIONS. THE CONTRACTOR MAY, AT HIS OPTION, USE EITHER OF THE THREE TYPES OF STRANDS LISTED BELOW; HOWEVER, ALL STRANDS IN A PILE SHALL BE OF THE SAME TYPE.

SIZE	GRADE	NUMBER OF STRANDS	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
$\frac{3}{8}$"Φ	270	8	0.085 in²	23,000 # PER STRAND	16,100 # PER STRAND
$\frac{7}{16}$"Φ	270	6	0.115 in²	31,000 # PER STRAND	21,700 # PER STRAND
$\frac{1}{2}$"Φ	270	5	0.153 in²	41,300 # PER STRAND	28,900 # PER STRAND

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED THE LAST STRAND MAY BE BURNED SINGLY, ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

BUILD-UPS SHALL BE CLASS "A" CONCRETE W/20% ADDITIONAL CEMENT. NO DRIVING OF THE BUILT-UP PILE WILL BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

ALL CORNERS TO BE CHAMFERED ¾".

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS TO BE INDICATED WITH A BLACK MARK 2" WIDE.

STEEL PILE TIP DETAILS

NOTES

WHEN NOTED ON GENERAL DRAWING, THE CONTRACTOR, AT HIS OPTION, MAY SUBSTITUTE 12" PRESTRESSED CONCRETE PILES WITH STEEL PILE TIPS, AS SHOWN IN THE DETAILS, IN LIEU OF HP 12 x 53 STEEL PILES.

THE STEEL PILE TIP SHALL NOT BE INCLUDED IN DETERMINING THE LENGTH OF THE PILE FOR PAYMENT. THE COST OF THE STEEL PILE TIP UNIT SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF PILES.

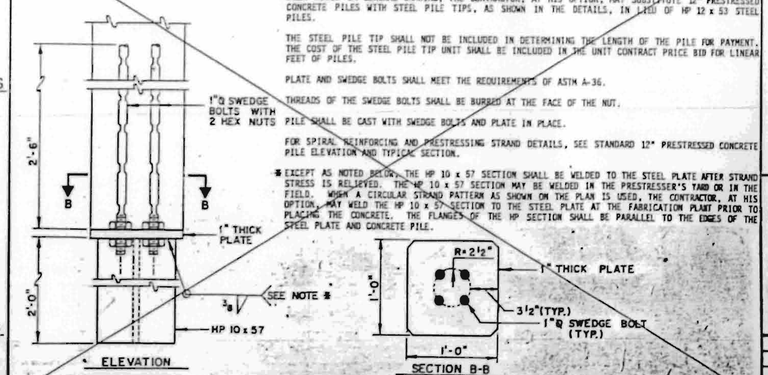
PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A-36.

THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

* EXCEPT AS NOTED BELOW, THE HP 10 x 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 x 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLAN IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 x 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



REVISED 11-12-82 BY JWB / BY RDU
REVISED 12-22-80 BY CCM / BY RDU
REVISED 7-31-78 BY REK / BY RDU
REVISED 7-14-83 BY JWB / BY RDU
REVISED 2-3-83 BY JWB / BY RDU

PROJECT NO. 8.1430701 #8
COLUMBUS COUNTY
STATION: 600+90.0-L²REV.
E.B.L.

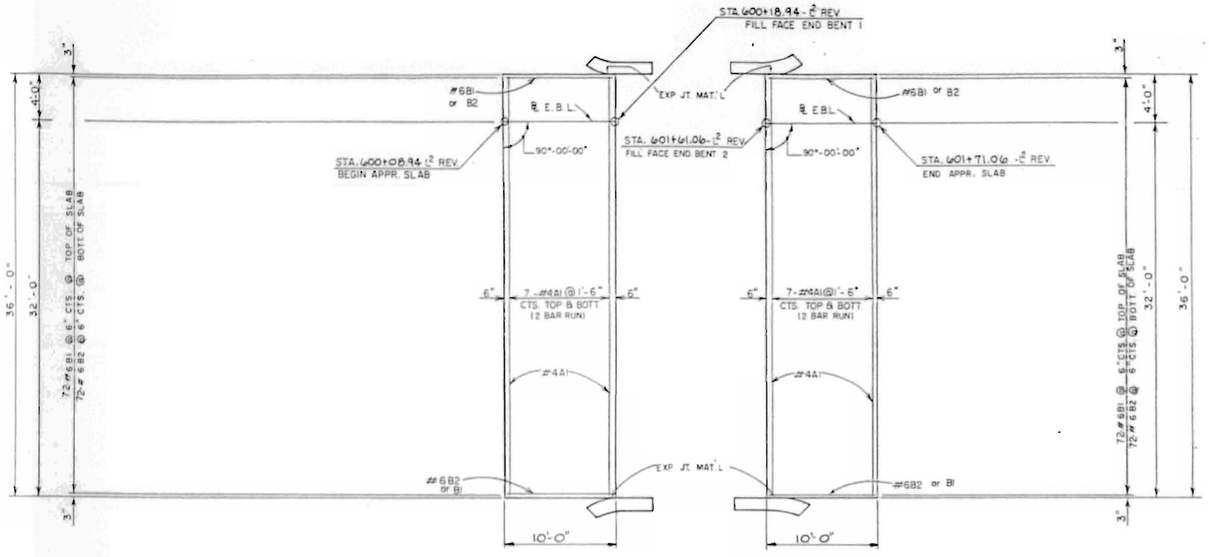
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
12" PRESTRESSED
CONCRETE PILE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	6-82
1			3			TOTAL SHEETS
2			4			84

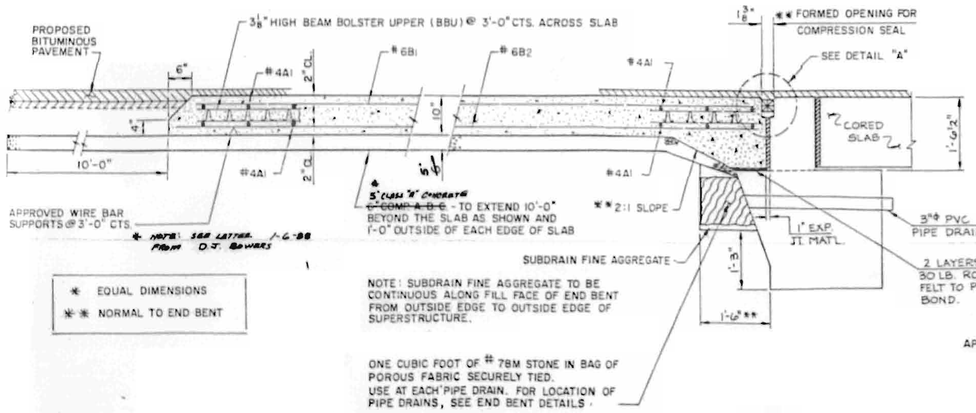
STD. NO. PCP1

SHEET 102 OF



PLAN OF APPROACH SLAB
(END BENT #1)

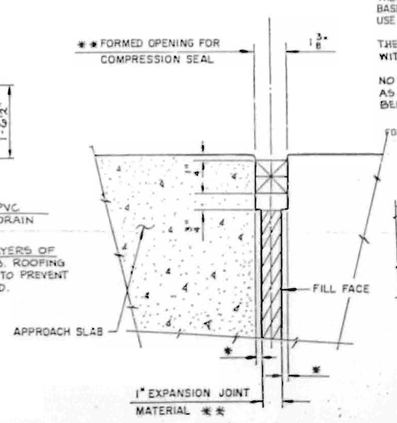
PLAN OF APPROACH SLAB
(END BENT #2)



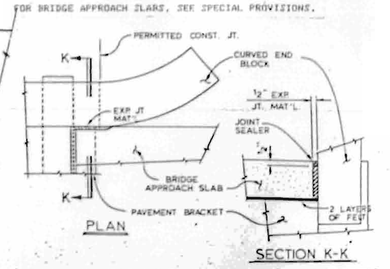
NOTE: ONE CUBIC FOOT OF # 78M STONE IN BAG OF POROUS FABRIC SECURELY TIED. USE AT EACH PIPE DRAIN. FOR LOCATION OF PIPE DRAINS, SEE END BENT DETAILS.

* EQUAL DIMENSIONS
** NORMAL TO END BENT

SECTION THRU SLAB



DETAIL "A"

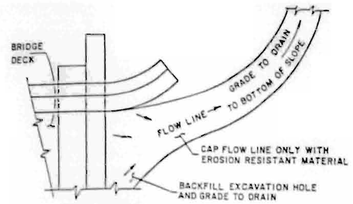


PLAN

SECTION K-K

DETAIL OF EXP. JT. MAT'L. BETWEEN APPROACH SLAB AND CURV. END BLK

THE EXPANSION JOINT SHALL BE SEALED WITH JOINT SEALER AS SHOWN.



NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAILS

NOTES

FOR PREFORMED COMPRESSION JOINT SEAL, SEE SPECIAL PROVISIONS.

PREFORMED COMPRESSION JOINT SEAL SHALL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE BID. SEE GENERAL DRAWING.

OPENING SHOWN IS BASED ON A NOMINAL UNCOMPRESSED SEAL WIDTH OF 2"

THE INSTALLED COMPRESSION SEAL SHALL BE WATERTIGHT.

PROVIDE WATERTIGHT SEAL AT END OF COMPRESSION SEAL AS RECOMMENDED BY MANUFACTURER.

COMPRESSION SEAL EXTENDS FROM GUTTER TO GUTTER ALONG BRIDGE DECK NOTCH.

THE CONTRACTOR, AT HIS OPTION, MAY USE 4" BITUMINOUS CONCRETE BASE COURSE, TYPE HB IN LIEU OF 6" A.B.C. ANY ADDITIONAL COST DUE TO USE OF THIS OPTION WILL BE PAID FOR BY THE CONTRACTOR.

THE 1" EXPANSION JOINT MATERIAL IS TO BE HELD IN PLACE WITH GALVANIZED NAILS.

NO DIRECT PAYMENT WILL BE MADE FOR THE TEMPORARY DRAINAGE AS SUCH WORK WILL BE CONSIDERED INCIDENTAL TO OTHER WORK BEING PAID FOR BY THE VARIOUS ITEMS IN THE CONTRACT.

FOR BRIDGE APPROACH SLABS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

FOR ONE APPR. SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	28	#4	STR	18'-5"	344
B1	72	#6	STR	9'-1"	982
B2	72	#6	STR.	9'-7"	1,036

REINFORCING STEEL LBS. = 2,362
CLASS A-4" CONCRETE CU. YDS. = 12.4

PROJECT NO. 8.1430701
COLUMBUS COUNTY
STATION 600+90.00 -L- REV. E.B.L.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

JULY 1978

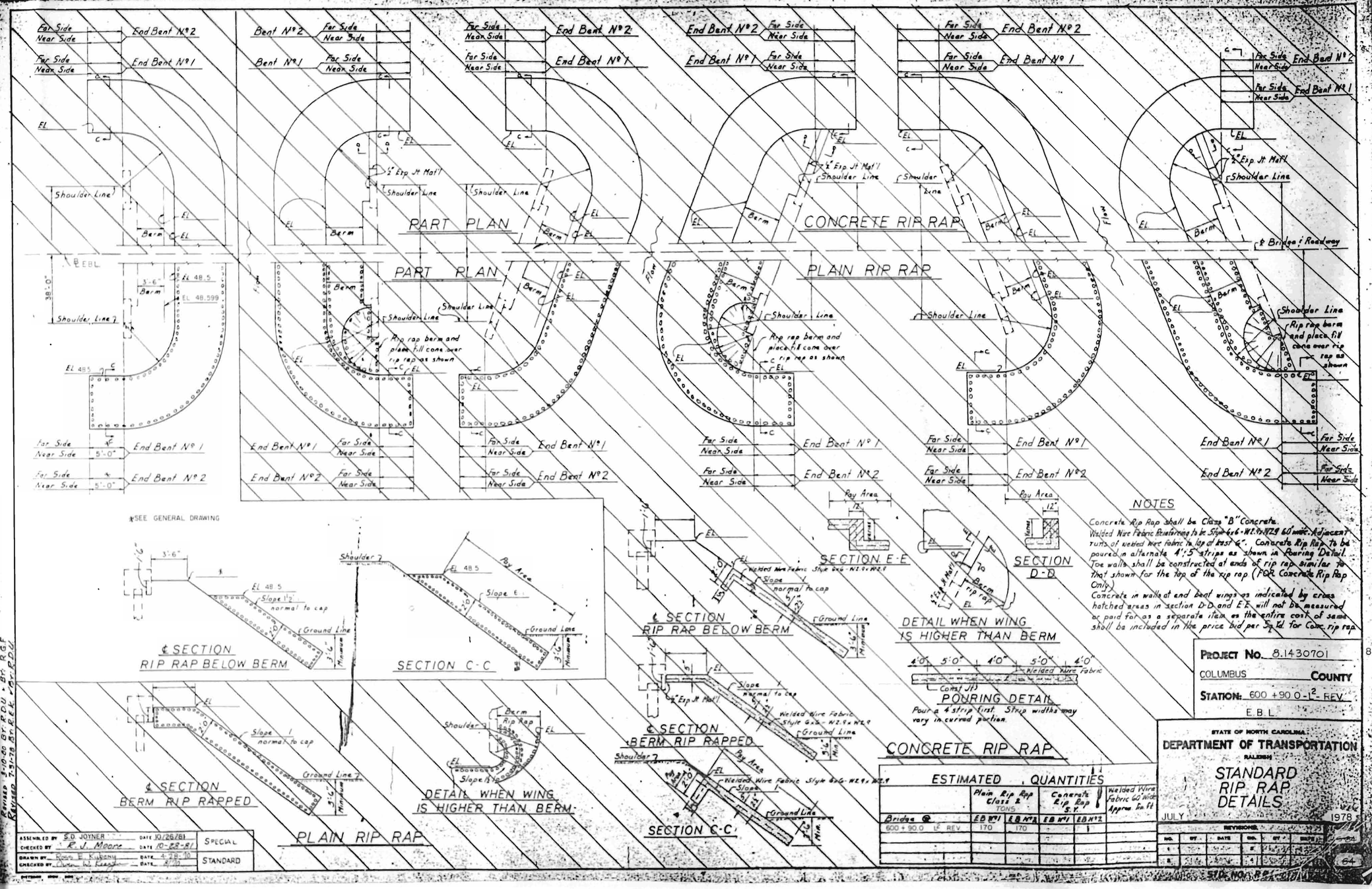
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-83
1			3			TOTAL SHEETS
2			4			84

STD. NO. BAS2

REVISED	9-1-81	BY: E.R.L.	CHECKED BY: A.J.
REVISED	3-27-79	BY: R.E.K.	CHECKED BY: R.D.U.
REVISED	5-16-79	BY: R.D.U.	CHECKED BY: F.D.G.
REVISED	4-1-79	BY: C.C.M.	CHECKED BY: R.D.U.
REVISED	7-31-78	BY: R.E.K.	CHECKED BY: R.D.U.

STD. DRAWN BY: K.G.P. DATE: 2-71 CHECKED BY: R.K.K.
DRAWN BY: S.D. JOYNER DATE: 11-2-81
CHECKED BY: R.V. Moore DATE: 11-10-81

#8



NOTES

Concrete Rip Rap shall be Class "B" Concrete.
Welded Wire Fabric Reinforcing to be Style 6x6-W2.9xW2.9 60 min. Adjacent runs of welded wire fabric to lap at least 6". Concrete Rip Rap to be poured in alternate 4';5' strips as shown in Pouring Detail.
Toe walls shall be constructed at ends of rip rap similar to that shown for the top of the rip rap (FOR Concrete Rip Rap Only)
Concrete in walls at end bent wings as indicated by cross hatched areas in section D-D and E-E will not be measured or paid for as a separate item as the entire cost of same shall be included in the price bid per Sq. Yd. for Conc. rip rap.

ESTIMATED QUANTITIES

Bridge ℄	Plain Rip Rap Class B TONS EB No 1	Plain Rip Rap Class B TONS EB No 2	Concrete Rip Rap S.Y. EB No 1	Concrete Rip Rap S.Y. EB No 2	Welded Wire Fabric 60 Wide Approx lin ft
600 + 90.0 L² REV.	170	170		1	

PROJECT No. 8.1430701
COLUMBUS COUNTY
STATION: 600 +90 0-1² - REV.
E.B.L

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD RIP RAP DETAILS

JULY 1978

NO.	BY	DATE	NO.	BY	DATE
1			5		
2			6		
3			7		
4			8		

STD. NO. RR-4

ASSEMBLED BY S.D. JOYNER DATE 10/26/78
CHECKED BY R.J. Moore DATE 10-28-81
DRAWN BY Ross E. Kinney DATE 4-28-10
CHECKED BY Dana W. Reed DATE 4-30-10
SPECIAL
STANDARD

REVISED 3-10-80 BY: RDU • BY: RGF
REVISED 7-31-79 BY: REK • BY: RDU

8
64

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.		104	
F.A. PROJ. NO.			

Daily Summation of Ticket Books

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DAILY SUMMATION OF TICKET BOOKS

TYPE MIX EROSION CONTROL STONE

PROJECT NUMBER 8.1430701 US 74-76 WEST OF BOLTON

WORK ORDER NUMBER	DATE	BOOK NO.	NO. LOADS	NO. TONS
8.1430701	2- 3-88	1	1	17.6000
8.1430701	2- 9-88	2	1	19.8400
8.1430701	2-22-88	3	1	5.2300
8.1430701	2-26-88	4	1	5.0800
WORK ORDER TOTAL				47.7500 TONS
PROJECT TOTALS				47.7500 TONS
PAY TOTALS				47.750 TONS

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DAILY SUMMATION OF TICKET BOOKS

TYPE MIX RIP RAP CLASS II

PROJECT NUMBER 8.1430701 US 74-76 WEST OF BOLTON

WORK ORDER NUMBER	DATE	BOOK NO.	NO. LOADS	NO. TONS
8.1430701	10-20-87	1	4	94.3400
8.1430701	10-21-87	2	7	149.8800
8.1430701	10-22-87	3	3	68.2100
8.1430701	10-27-87	4	5	113.6700
8.1430701	10-28-87	5	1	24.8300
8.1430701	1-14-88	6	3	67.8700
8.1430701	1-19-88	7	4	85.3000
8.1430701	1-20-88	8	1	22.2000
8.1430701	1-27-88	9	3	67.1000
8.1430701	1-28-88	10	3	66.8900
8.1430701	2- 1-88	11	2	42.1300
8.1430701	3-14-88	12	4	90.9900
8.1430701	3-15-88	13	8	153.9300
8.1430701	3-16-88	14	5	76.3700
8.1430701	3-17-88	15	3	45.3400
8.1430701	3-18-88	16	6	110.2700
8.1430701	3-22-88	23	1	20.5500
8.1430701	3-24-88	17	8	181.5100
8.1430701	3-25-88	18	4	93.6300
8.1430701	3-28-88	19	8	180.0600
8.1430701	3-29-88	20	5	110.4000
8.1430701	3-30-88	21	5	113.0000
8.1430701	3-31-88	22	4	88.5600
8.1430701	4- 4-88	24	3	64.7600
8.1430701	4- 7-88	25	3	64.4500
8.1430701	4- 8-88	26	2	45.1600
WORK ORDER TOTAL				2,241.4000 TONS
PROJECT TOTALS				2,241.4000 TONS
PAY TOTALS				2,241.400 TONS

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DAILY SUMMATION OF TICKET BOOKS

TYPE MIX PAVEMENT REPAIR

PROJECT NUMBER 8.1430701 US 74-76 WEST OF BOLTON

WORK ORDER NUMBER	DATE	BOOK NO.	NO. LOADS	NO. TONS
8.1430701	9-14-87	1	1	14.5000
8.1430701	12-08-87	2	1	10.0000
WORK ORDER TOTAL				24.5000 TONS
PROJECT TOTALS				24.5000 TONS
PAY TOTALS				24.500 TONS

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.		105	
F.A. PROJ. NO.			

SUMMARY OF QUANTITIES AND CROSS REFERENCES

CONTRACT NO: C101718 PROJECT NO: 81430701 PAGE: 0010

LINE CB	PROJ. TOTAL QUANTITY	DESCRIPTION	UNIT	PAY RECORD BOOK: BOOK	PAGE	AMOUNT	COMP. SHEETS	COMPUTER PRINTOUT BOOK
0001	295,000.0	MOBILIZATION	LS	AR	1	$295,000		
0002	583,151.0	CLEARING & GRUBBING	LS	AR	443	$583,151		
0003	0.0	SUPP CLEARING & GRUBBING	ACR	1	21			
0004	22,878.0	UNCLASSIFIED EXCAVATION	CY	7	546			3
0005	75,437.0	UNDERCUT EXCAVATION	CY	9	40			2
0006	151,568.0	FABRIC FOR EMBKM'T STAB	SY	8	47	151,568.0		
0007	0.0	SELECT GRANULAR MATERIAL	CY	AR	1	20	0.0	
0008	3.0	EMBANKMENT SETTLEM'T GAGE	EA	AR	1	5	3.0	
0009	0.0	BORROW EXCAVATION	CY	AR	1	19	0.0	
0010	0.0	DRAINAGE DITCH EXCAVATION	CY	1		22	0.0	
0011	0.0	CLEANING OUT SILT BASINS	CY	1		23	0.0	
0012	0.0	FNDATION MATL. PIPE CULV	TON	1		24	0.0	
0013	871.0	TEMP 12"CORR PLASTIC PIPE	LF	10		6	871.0	
0014	1103.5	12" RC PIPE CULV III	LF	10		11	1103.5	
0015	90.0	15" RC PIPE CULV III	LF	10		12	90.0	
0016	24.5	BIT PM MATL PVMT REPAIR	TON					104
0017	0.0	4" PERF SUBDRN PIPE	LF	1		25	0.0	
0018	0.0	SUBDRAIN FINE AGGREGATE	CY	1		26	0.0	

PHOTOGRAMMETRY PSRD

CONTRACT NO: C101718 PROJECT NO: 81430701 PAGE: 0020

LINE CB	PROJ. TOTAL QUANTITY	DESCRIPTION	UNIT	PAY RECORD BOOK: BOOK	PAGE	AMOUNT	COMP. SHEET	COMPUTER PRINTOUT BOOK
0019	0.0	6" PERF SUBDRN PIPE	LF	1	27	0.0		
0020	0.0	6" SUBDRN Y,T,OR L	EA	1	28	0.0		
0021	0.0	CONC PAD SUBDRN OUTLET	EA	1	29	0.0		
0022	15.0	MASNRY DRAINAGE STRUCT	EA	10	14	15.0		
0023	15.0	FRAME W/GRATE D840..22	EA	10	16	15.0		
0024	0.0	FIBERGLASS ROVING	SY	1	30	0.0		
0025	57.80	SEEDING AND MULCHING	ACR	5	99	57.80		
0026	0.0	MOWING	ACR	1	31	0.0		
0027	0.0	SEED FOR TEMP SEEDING	LB	1	32	0.0		
0028	0.0	FERT FOR TEMP SEEDING	TON	1	33	0.0		
0029	312.0	SEED FOR REPAIR SEEDING	LB	5	95	312.0		
0030	0.45	FERT FOR REPAIR SEEDING	TON	5	97	0.45		
0031	0.0	SEED FOR SUPP SEEDING	LB	1	34	0.0		
0032	4.00	FERTILIZER TOPDRESSING	TON	5	4	4.00		
0033	0.0	TEMPORARY MULCHING	ACR	1	35	0.0		
0034	0.0	TEMPORARY SLOPE DRAINS	LF	1	36	0.0		
0035	25,797.0	TEMPORARY SILT FENCE	LF	1	17	25,797		
0036	47.75	EROS CONTRL STONE CL B	TON					104

TOTAL — PAGE TOTAL

CONTRACT NO: C101718 PROJECT NO: 81430701 PAGE: 0030

LINE CB	PROJ. TOTAL QUANTITY	DESCRIPTION	UNIT	PAY RECORD BOOK: BOOK	PAGE	AMOUNT	COMP. SHEET	COMPUTER PRINTOUT BOOK
0037	64.0	STATIONARY CONST SIGNS	SF	1	9	64.0		
0038	506.6	CLASS A CONCRETE (BRIDGE)	CY	3	55	506.6		
0039	103,969.0	REINF STEEL (BRIDGE)	LB	3	55	103,969.0		
0040	11,155.0	12" PRESTR CONC PILES	LF	3	55	11,155.0		
0041	1788.2	CONCRETE BARRIER RAIL	LF	3	55	1788.2		
0042	11,550.00	BRG APPR SLAB 557+67.****	LS	3	55	$11,550		
0043	11,550.00	BRG APPR SLAB 557+67.****	LS	3	55	$11,550		
0044	11,550.00	BRG APPR SLAB 562+97.****	LS	3	55	$11,550		
0045	11,550.00	BRG APPR SLAB 562+97.****	LS	3	55	$11,550		
0046	11,550.00	BRG APPR SLAB 600+90.****	LS	3	55	$11,550		
0047	11,550.00	BRG APPR SLAB 600+90.****	LS	3	65	$11,550		
0048	10,500.00	ELASTOMERIC BEARINGS	LS	3	55	$10,500		
0049	2,241.40	PLAIN RIP RAP, CLASS 2	TON				104	
0050	6300.00	PREFORM COMP JOINT SEAL	LS	3	55	$6300		
0051	11,787.76	3'-0"X 1'-6"PRESTR SLABS	LF	3	55	11,787.76		
0500	5940.74	FUEL ADJUSTMENT	LS					4

CONTRACT NO: C101718 PROJECT NO: 81430701 PAGE: 3010

LINE CB	PROJ. TOTAL QUANTITY	DESCRIPTION	UNIT	PAY RECORD BOOK: BOOK	PAGE	AMOUNT	COMP. SHEET	COMPUTER PRINTOUT BOOK
3001	1040.0	BL CARMICHEAL 251-27-7636	HR	6	7	1040.0		
3002	761.75	R.N. KING 246-98-0286	HR	6	21	761.75		
3003	309.0	EDDIE GODWIN 238-11-4849	HR	6	24	309.0		
3004	397.75	N.T. POTTER 238-43-2300	HR	6	26	397.75		
3005	482.0	JEFF. ROSSER 248-37-3698	HR	6	34	482.0		

TOTAL — PAGE TOTAL

CONTRACT NO: C101718 PROJECT NO: 81430701 PAGE: 4010

LINE CB	PROJ. TOTAL QUANTITY	DESCRIPTION	UNIT	PAY RECORD BOOK: BOOK	PAGE	AMOUNT	COMP. SHEET	COMPUTER PRINTOUT BOOK
4001	644,012.0	SA#1 SELECT BORROW MATER.	CY	"	13	804.9		1 PHOTOHISTORY, LANE
4002	600.0	SA#2 24"BIT.CT.STEEL PIPE	LF	10	5	600		
4003	25.57	SA#3-SEEDING & MULCHING	ACRE	5	68	25.57		

TOTAL — PAGE TOTAL

END OF CONTRACT

I HEREBY CERTIFY THAT THIS ESTIMATE HAS BEEN PREPARED UNDER MY SUPERVISION AND THAT IT IS TRUE AND CORRECT TO MY BEST KNOWLEDGE.

SIGNED _____ RESIDENT ENGINEER. DATE 8/26/88

I HEREBY CERTIFY THAT THIS ESTIMATE HAS BEEN COMPLETELY CHECKED IN ACCORDANCE WITH ESTABLISHED PROCEDURES AND TO MY BEST KNOWLEDGE AND BELIEF IS CORRECT IN EVERY RESPECT.

SIGNED _____ DIVISION ENGINEER. DATE 10/20/88



NORTH CAROLINA
STATE HIGHWAY COMMISSION
REPRODUCTION

Project No. 8.1430701 County Columbus Reel No. 1530
Postion No. 15

Type of Plan: Subsurface(Location Dept.)

REMARKS:

ID. NO. R-61 G

PROJECT: 8.1430701

CONTENTS:

LINE	STATION	PAGE
-L2-Rev.	550+00-646+00	4-8
X-SECTIONS		
-L2-Rev.	551+00-635+00	9-13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT

SUBSURFACE INVESTIGATION

STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
8.143070_ R-61G	1	13

8.1430701 PE#
6.804459 PE#

STATE PROJECT 8.1430701 ID. No. R-61G

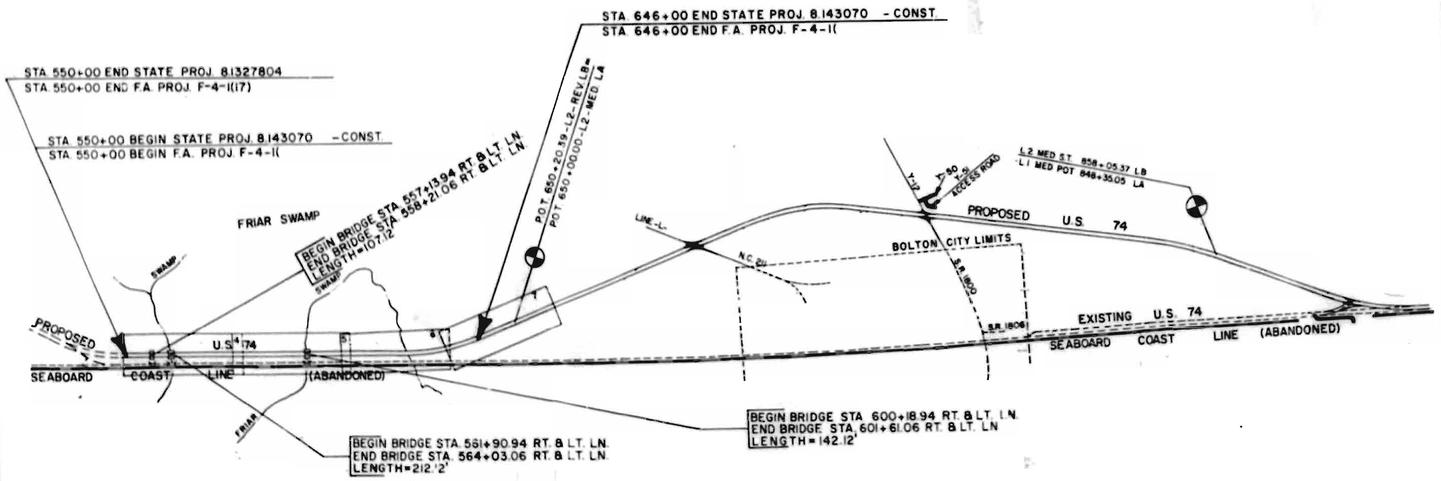
F.A. PROJECT MAF-4-1(19)

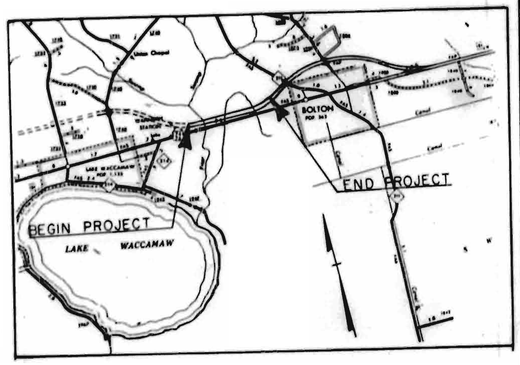
COUNTY COLUMBUS

DESCRIPTION U.S. 74 FROM WEST OF FRIAR SWAMP TO WEST OF N.C. 211.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT CONSIDERED TO BE A PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIM FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.





CAUTION NOTICE

The Subsurface Information and the Subsurface Investigation on which it is based was made for the purpose of study, planning and design, and not for construction or pay purposes. The various field boring logs, rock cores, and soil test data available may be reviewed or inspected in Raleigh at the Highway Building by contacting the Geotechnical Unit. Neither the Subsurface Information nor the field boring logs, rock cores, or soil test data is part of the contract.

General soil and rock strata descriptions and indicated boundaries are based on a geotechnical interpretation of all available subsurface data and may not necessarily reflect the actual subsurface conditions between borings or between sampled strata within the borehole. The laboratory sample data and the in situ (in-place) test data can be relied on only to the degree of reliability inherent in the standard test method. The observed water levels or soil moisture conditions indicated in the subsurface investigations are as recorded at the time of the investigation. These water levels or soil moisture conditions may vary considerably with time according to climatic conditions including temperature, precipitation and wind, as well as other non-climatic factors.

THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE INFORMATION ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE OR OPINIONS OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

The Subsurface Investigation shown herein was made between 6-79 and 8-80 by NCDOT GEOTECHNICAL UNIT.

INVESTIGATED BY R.O. BLACK, JR. PERSONNEL L.T. PACKER

CHECKED BY C.E. MITCHELL, JR. W.C. O'NEAL

SUBMITTED BY C.E. MITCHELL, JR. B.E. BISSETTE

DATE 8-80 A.C. COX

J.R. OWEN

C.M. GILLIAM

DRAWN BY: _____

STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
8.143070	2	13

N.C. DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED OR WEATHERED EARTH MATERIALS WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 B.P.F. ACCORDING TO THE STANDARD PENETRATION TEST (ASTM-D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHO SYSTEM AND BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHO CLASSIFICATION AND OTHER PERTINENT FACTORS, SUCH AS, MINERALOGICAL COMPOSITION, ANGULARITY STRUCTURE, PLASTICITY, ETC. EXAMPLE: *VERY STIFF, GRAY SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6.*

SOIL LEGEND AND CLASSIFICATION

GENERAL CLASS	GRANULAR MATERIALS (35% LESS PASSING NO. 200)						SILT-CLAY MATERIALS (+ 35% PASSING NO. 200)				ORGANIC SOILS		
GROUP CLASS.	A-1		A-2		A-7		A-4	A-5	A-6	A-7	A-1, A-2, A-3	A-4, A-5, A-6, A-7	
	A-1-a	A-1-b	A-2-4	A-2-5	A-7-5	A-7-6	A-2-6	A-2-7			A-2-4, A-2-5, A-2-6, A-2-7		
SYMBOL													
% PASSING											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
# 10	50 MX												
# 40	30 MX	50 MX	51 MN										
# 200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	
LIQUID LIMIT			N.P.	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN		
PLASTIC INDEX	6 MX.			10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN	WITH LITTLE OR MODERATE AMOUNT OF ORGANIC MATTER	HIGHLY ORGANIC SOIL
GROUP INDEX	0		0		4 MAX.		8 MAX.	12 MX	16 MX	20 MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL & SAND		SILTY OR CLAYEY GRAVEL & SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD						FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

P.I. OF A-7-5 ≤ LL -30; P.I. OF A-7-6 > LL -30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTANCE	RANGE OF UNCONFINED COMPRESSIVE STRENGTH
COARSE GRAINED SOILS	VERY LOOSE	LESS THAN 4 B.P.F.	
	LOOSE	4 TO 10	
	MED. DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	MORE THAN 50	
FINE GRAINED SOILS	VERY SOFT	LESS THAN 2 B.P.F.	LESS THAN .25 TSF
	SOFT	2 TO 4	0.25 to 0.5
	MED. STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1.0 TO 2.0
	VERY STIFF	15 TO 30	2.0 TO 4.0
	HARD	MORE THAN 30	MORE THAN 4.0

1 SEE STANDARD PENETRATION TEST

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.0	0.42	0.25	.074	.053

BOULDER	COBBLE	GRAVEL	COARSE SAND	MED. SAND	FINE SAND	SILT	CLAY
GRAIN MM	305	76	2	0.6 0.25	0.2	.05	.005
SIZE IN.	12"	3"					

SOIL MOISTURE—CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	PHYSICAL STATE	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	LIQUID	SATURATED	VERY WET, USUALLY FROM BELOW GROUND WATER TABLE
LL LIQUID LIMIT			
PLASTIC RANGE (P.I.)	SEMISOLID	WET (W)	REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL PLASTIC LIMIT			
	SOLID	MOIST (M)	AT OR NEAR OPTIMUM MOISTURE
OM OPT. MOISTURE			
SL SHRINKAGE LIMIT		DRY (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE
MS			

PLASTICITY

	PLASTICITY INDEX	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YEL-BRN, BLUE-GRAY) MODIFIERS SUCH AS LIGHT, DARK, MOTTLED, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL-GRADED INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS ARE DESIGNATED BY THE TERMS; ANGULAR, SUBANGULAR SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 30
MODERATELY COMPRESSIBLE	LIQUID LIMIT 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

ROCK DESCRIPTION

IN THE BROADEST MEANING, HARD ROCK IS CONSIDERED TO BE THAT INDURATED EARTH MATERIAL WHICH CANNOT BE SAMPLED BY CONVENTIONAL SOIL SAMPLING TOOLS OR TECHNIQUES. THE BOUNDARY BETWEEN SOIL AND ROCK IS ARBITRARY. TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF "WEATHERED ROCK". FOR THE PURPOSE OF THIS INVESTIGATION, THESE MATERIALS ARE DIVIDED AS FOLLOWS:

TERM	SYMBOL		
WEATHERED ROCK (CWR) (SWR)		SOFT WEATHERED ROCK	MATERIAL THAT CAN BE PENETRATED WITH SOME DIFFICULTY USING POWER AUGER AND YIELDS S.P.T. VALUES >100 B.P.F. BUT <1.P.I. REFUSAL.
		HARD WEATHERED ROCK	MATERIAL THAT CAN BE PENETRATED WITH GREAT DIFFICULTY USING POWER AUGER AND YIELDS S.P.T. REFUSAL.*
HARD ROCK (HR)	"BASIC ROCK"	INFERRED ROCK LINE	MATERIAL SUCH THAT IT CANNOT BE PENETRATED BY POWER AUGER, EXCEPT IN THIN LEDGES, AND REQUIRES ROCK CORING TOOLS FOR OBTAINING SAMPLE.

* S.P.T. REFUSAL (ASTM) ≙ 1" OF PENETRATION PER 50 BLOWS.

AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH AUGERS COULD NO LONGER PENETRATE.

WHEN ROCK IS CORED, THE HARD ROCK SYMBOL IS SHOWN TO THE DEPTH CORED. A FULL DESCRIPTION OF ROCK USING APPROPRIATE TERMS (SEE DEFINITION OF TERMS)—INCLUDES PERCENT OF CORE RECOVERY (% REC) AND ROCK QUALITY DESIGNATION (RQD).

GROUND WATER

▽ DATE : WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING

▼ DATE : STATIC WATER LEVEL AFTER 24 HOURS

▽ DATE : PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA

: SPRING

MISCELLANEOUS SYMBOLS AND ABBREVIATIONS

- ROADWAY EMBANKMENT WITH SOIL DESCRIPTION
- SOIL SYMBOL
- AUGER BORING
- SPT TEST BORING
- STRIKE AND DIP OF BEDS
- SPT N-COUNT
- ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS
- CORE BORING
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- INFERRED SOIL BOUNDARIES
- APPARENT DIP (NORMAL TO ____)

SAMPLE DESIGNATION: ST - SHELBY TUBE SAMPLES; S - BULK SAMPLE; SS - SPLIT SPOON SAMPLE; RS - ROCK ROCKING SAMPLE

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS: ☐ CME - 550 ☐ PORTABLE HOIST ☐ MOBILE B-52 ☐ MOBILE B-56 ☐ CME - 45 ☐ MINUTEMAN

AUGER TOOLS: ☐ 6" CONTINUOUS FLIGHT AUGER ☐ HARD FACED FINGER BITS ☐ TUNG.-CARBIDE INSERTS ☐ CLAY BITS ☐ 8" HOLLOW AUGERS

CORE BORING TOOLS: ☐ -AX ☐ -BX ☐ -NX

HAND TOOLS: ☒ POST HOLE DIGGER ☒ HAND AUGER ☒ SOUNDING ROD

TERMS AND DEFINITIONS

ALLUVIUM (alluv.) - Soils which have been transported by flowing water.

APPARENT DIP - The dip of rock strata not perpendicular to strike.

AQUIFER - A water-bearing formation or strata.

AUGER REFUSAL (A.R.) - Point at which power augers will not actually or practically penetrate.

BEDDED - Soil or rock lying in a position essentially parallel.

BEDROCK - Rock of relatively great thickness and extent in its original location.

CALCAREOUS (calc.) - Soils which contain appreciable amounts of calcium carbonate.

COHESIVE SOIL - A soil that when unconfined has considerable dry strength and significant cohesion when submerged.

COLLUVIUM - Rock fragments mixed with soil deposited by gravity on slope or at bottom of slope.

CORE RECOVERY (% Rec.) - Total length of all rock divided by total length of core run expressed as a percentage.

COQUINA - A rock type composed essentially of marine shells cemented by calcium carbonate.

DIKE - Igneous rock intrusive which is narrow compared with its other dimensions.

DIP - The angle between a bedding plane, joint plane or fault plane and the horizontal, measured perpendicular to the strike.

DUMPS - Uncovered deposits of waste materials such as wood, masonry debris or garbage.

FAULT - A break in the continuity of a body of rock, attended by a movement on either or both sides of the break.

FINES - Portion of a soil finer than No. 200 U. S. Standard Sieve.

FISSILITY OR FISSILE - A property of splitting easily along closely spaced parallel planes.

FLOAT - Rock fragments on surface near their original position dislodged from parent material.

FLOODPLAIN - Land bordering a stream, built of sediments deposited by the stream.

FORMATION - A mappable unit that can be recognized and traced in the field.

FRACTURE - A crack large enough to be visible to unaided eye.

FRIABLE - Easy to break or crumble.

GRANULAR SOIL - Soil that when unconfined has little or no dry strength and has little or no cohesion when submerged.

GROUND WATER - (Free Water) (G. W.) - Water that is free to move through soil mass under influence of gravity.

GROUNDWATER LEVEL - Level at which the pressure in water is zero with respect to the atmospheric pressure.

HARDPAN - A general term used to describe a hard cemented soil layer which does not soften when wet.

INDURATED - Earth material hardened by heat, pressure or cementation.

INTERBEDDED - Alternating lenses or layers of soil and/or rock materials.

JOINT - Fracture in rock along which no appreciable movement has occurred.

LAMINATED - Very thin alternating layers less than 1" in thickness.

LAYER - Subject material greater than 1" thick.

LEDGE - A shelf-like ridge or projection of rock whose thickness is small compared to its lateral extent.

LENS - A body of soil or rock that thins out in one or more directions.

MARL - A non-indurated, calcareous deposit of clays, silts and sand, often containing shells.

MICACEOUS SOIL (mic.) - A soil or rock containing an appreciable amount of mica.

MUCK (muk.) - An highly organic soil of very soft consistency, generally found on tidal flats, lakes or stream floodplains.

PEAT (pt) - A fibrous mass of organic matter in various stages of decomposition.

PERCHED WATER - Water maintained above the normal ground water level by the presence of an intervening impervious stratum.

RESIDUAL SOIL - Soil formed in place by weathering of rock.

ROCK - SEE Legend

ROCK QUALITY DESIGNATION (R.Q.D.) - A measure of rock quality described by: total length of rock segments equal to or greater than 4 inches divided by total length of core run expressed as a percentage.

SANITARY LANDFILLS - Compacted and/or covered layers of soil and waste products.

SAPROLITE (sap.) - Residual soil which retain the relic structure or fabric of the parent rock.

SLICKENSIDE - Polished and striated surface that results from friction along a fault, or slip plane.

SILL - An igneous sheet of rock intrusive whose thickness is slight compared to its lateral extent.

SOME - Presence of 55 to 30% of subject material.

STANDARD PENETRATION TEST (Penetration Resistance) (SPT) - Number of blows (N or B.P.F.) of a 140# hammer falling 30" required to produce a penetration of 1 foot into soil with a 2" O.D. split spoon sampler. SPT refusal - penetration resistance of less than 1 inch with 50 blows.

STRIKE - The direction or bearing of a horizontal line in the plane of an inclined stratum, joint, fault or other structural plane.

SUBGRADE - The soil prepared to support a structure or a pavement system.

TOPSOIL - (T.S.) - Surface soils usually containing organic matter.

TRACE - Presence of less than 5% of subject material.

ABBREVIATIONS

Boulder - bldr.	Organic - org.
Clay - cl.	Plastic Limit - P.L.
Cobble - cob.	Plasticity Index - P.I.
Coarse - cse.	Porosity - n
Fine - f.	Sand - sd.
Fossiliferous - foss.	Saturated - sat.
Fractured - frac.	Silt, Silty - si.
Gravel - gr.	Slightly - sli.
Liquid Limit - LL	Specific Gravity - G_s
Medium - med.	Unconfined Compressive Strength - q_u
Moisture Content - w	Unit Weight (wet unit weight) - γ
Mottled - mot.	Dry Unit Weight - γ_d
Optimum Moisture - OM	Saturated Unit Weight - $\gamma_{sat.}$
	Void Ratio - e
	Very - V
	Estimated - Est

NOTES:

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revised, October 1, 1981

PROJ REFERENCE NO		SHEET NO	TOTAL SHEETS
8.1430701	R-616	3	13
STATE PROJ NO	F A PROJ NO		DESCRIPTION
6.905459			P.E.&R

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH 27611

JAMES B. HUNT JR.
GOVERNOR

THOMAS W. BRADSHAW JR.
SECRETARY

DIVISION OF HIGHWAYS

August 1, 1980

STATE PROJECT: [redacted] 8.1430701 (R-616)
F. A. NO.: [redacted]
COUNTY: Columbus
DESCRIPTION: [redacted] US 74 Relocation of Friar Swamp to West of Bolton
SUBJECT: Geotechnical Report - Inventory

PROJECT DESCRIPTION

This project consists of the total relocation and four lane construction of US 74-76 near Lake Waccamaw. The project begins at Station 447+91.44 just east of SR 1735 and continues in an easterly direction to Station 890+39.20 where it ties into existing four lane US-74-76 east of Bolton. The proposed relocation lies to the north of existing US 74-76.

The following lines [redacted] investigated for this project:

-L-Rev. Station 530+88.12 - 650+30.39

AREAS OF SPECIAL GEOTECHNICAL INTEREST

The following sections were found to contain soft highly organic soils or muck.

1. -L-Rev. Station 551+00 to Station 644+00, [redacted] Friar Swamp contains muck throughout.

PHYSIOGRAPHY AND GEOLOGY

The project corridor traverses a flat, poorly-drained area of the Lower Coastal Plain Province. Friar Swamp is the principal drainage feature in this area.

The majority of the proposed relocation is in woodland, and a sometimes-excessive buildup of organic matter and root mat exist over much of the project. The area through Friar Swamp and some other small areas were found to contain muck up to 9 ft. in depth. Soils underlying this root mat and muck are A-2-4, A-4 and A-5 silty sands and clayey sands. Soils are slightly more granular and less plastic east of Friar Swamp.

METHOD

Investigation of this project was made primarily by hand tools. Power auger borings and vane shear test were performed through Friar Swamp along existing US 74. Results obtained from this investigation were plotted on the attached centerline profile sheets to form a continuous representation of soil and groundwater conditions along the project.

GROUNDWATER PROPERTIES

Groundwater was encountered generally from 0.5 to 2.0 ft. below existing ground elevation from beginning of project to Station 550+00, west of Friar Swamp. The area east of Friar Swamp, Station 645+00 to the end of project is slightly higher and water was encountered from 2.0 to 4.0 below existing ground elevation. The area of Station 550+00 to Station 645+00 crosses Friar Swamp and is 10 to 12 ft. lower than the remainder of the project. Water stands over this area year round and, at the time of this investigation, ranged in depth from 0.5 to 2.0 ft.

GEOTECHNICAL DESCRIPTION OF THE PROJECT

Station 551+00 - 644+80 -L-Rev.

Friars Swamp: This area has a low flat topography [redacted] Muck varying in depth from 5.0 to 9.0 ft. was encountered throughout this area. Soils underlying this muck are A-2-4 and A-4 silty, clayey sands. This area is permanently flooded, with water standing from 0.5 to 2.0 ft. in depth at the time of this investigation.

Station 644+80 - 650+30.39 -L-Rev.
Station 650+00 - 697+00 -L-

This is a [redacted] section with very gently sloping to nearly flat irregular topography. Soils consist of 0.5 to 1.0 ft. organic sand and root mat, underlain by A-2-4, A-4 and A-5 clayey sands. Groundwater ranges from 1.0-3.0 ft. below the surface.

STATION TO STATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANKMENT	BORROW	SELECT MATERIAL CLASS A	SELECT MATERIAL CLASS B	WASTE
SUMMARY N°1		8,494	30,244	33,317	12,006	15,408	8,494
644+80 -L- TO 650+30.39 -L-		8,494	30,244	33,317	12,006	15,408	8,494
SUMMARY N°2 TOTAL	8	4,317	7,317	5,612	0	0	4,317
697+13.11 TO 758+82.06		4,317	7,317	5,612	0	0	4,317
SUMMARY N°2 TOTAL	8	15,739	31,437	40,946	0	0	15,739
SUMMARY N°3		15,739	31,437	40,946	0	0	15,739
758+82.06 TO 841+90.34	8	10,478	10,478	13,621	0	0	10,478
SUMMARY N°3 TOTAL		10,478	10,478	13,621	0	0	10,478
841+90.34 TO 924+03.04	8	18,003	18,003	102,327	70,817	92,042	18,003
SUMMARY N°4 TOTAL		18,003	18,003	102,327	70,817	92,042	18,003
924+03.04 TO 960+18.94	8	7,444	7,444	9,706	0	0	7,444
SUMMARY N°5 TOTAL		7,444	7,444	9,706	0	0	7,444
960+18.94 TO 1040+60.06	8	5,744	5,744	114,772	97,790	127,127	5,744
SUMMARY N°6 TOTAL		5,744	5,744	114,772	97,790	127,127	5,744
1040+60.06 TO 1044+00.00	117	2,744	2,744	114,772	80,413	234,797	2,744
SUMMARY N°7 TOTAL	117	2,744	2,744	114,772	80,413	234,797	2,744
SUB-TOTAL	117	70,144	251,001	324,301	117,854		70,243
EMBANKMENT REQ'D FOR SURCHARGE			90,457	117,854			
REMOVING SURCHARGE	26,915						
REMOVED SURCHARGE TO BE USED IN LIEU OF BORROW							
PROJECT TOTAL	27,032	70,144	341,458	442,155	117,240	234,797	70,243
PAY TOTAL	27,032	70,144		417,240		234,797	

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N. C.	8.1430701	4	13
F. A. PROJ. NO.			

BM ELEV 55.90
RR SPIKE IN BASE 18" PINE
357' LT-℄ - MED STA 540+00

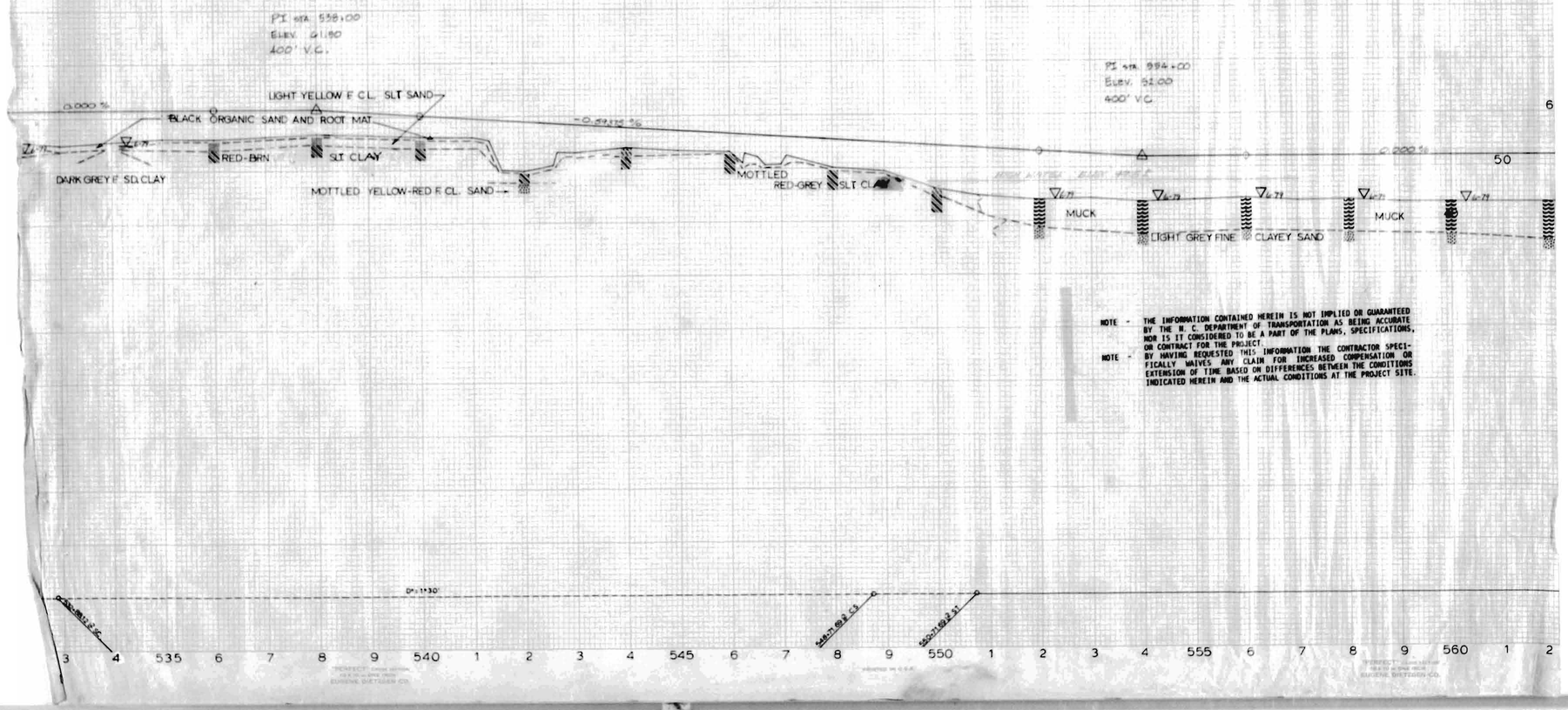
BM ELEV 51.00
RR SPIKE IN BASE 10" OAK
300' LT-℄ - MED STA 549+00

SOIL TEST RESULTS

SAMPLE NUMBER	STATION	DEPTH INTERVAL	AASHO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING #200 SIEVE	% MOISTURE
19	534+00	1.0-4.0	A-7-6(16)	45	25	5	31	15	49	89	
20	536+00	0.5-2.0	A-4(4)	21	4	5	46	27	22	58	
20-A	536+00	2.0-9.0	A-6(10)	40	20	3	36	23	38	69	
21	542+00	0.5-2.0	A-6(6)	33	17	8	46	17	30	51	
21-A	542+00	2.0-4.0	A-2-6(0)	30	9	8	63	5	20	31	
22	548+00	0.5-1.5	A-6(9)	31	15	7	50	21	22	48	
22-A	548+00	1.5-9.0	A-6(7)	33	16	5	42	23	30	58	
23	554+00	5.0-7.0	A-2-4(0)	18	NP	4	70	8	18	26	
24	562+00	0.8-2.0	A-2-5(0)	17	NP	15	60	7	18	27	

PI sta. 538+00
Elev. 61.80
400' V.C.

PI sta. 554+00
Elev. 52.00
400' V.C.



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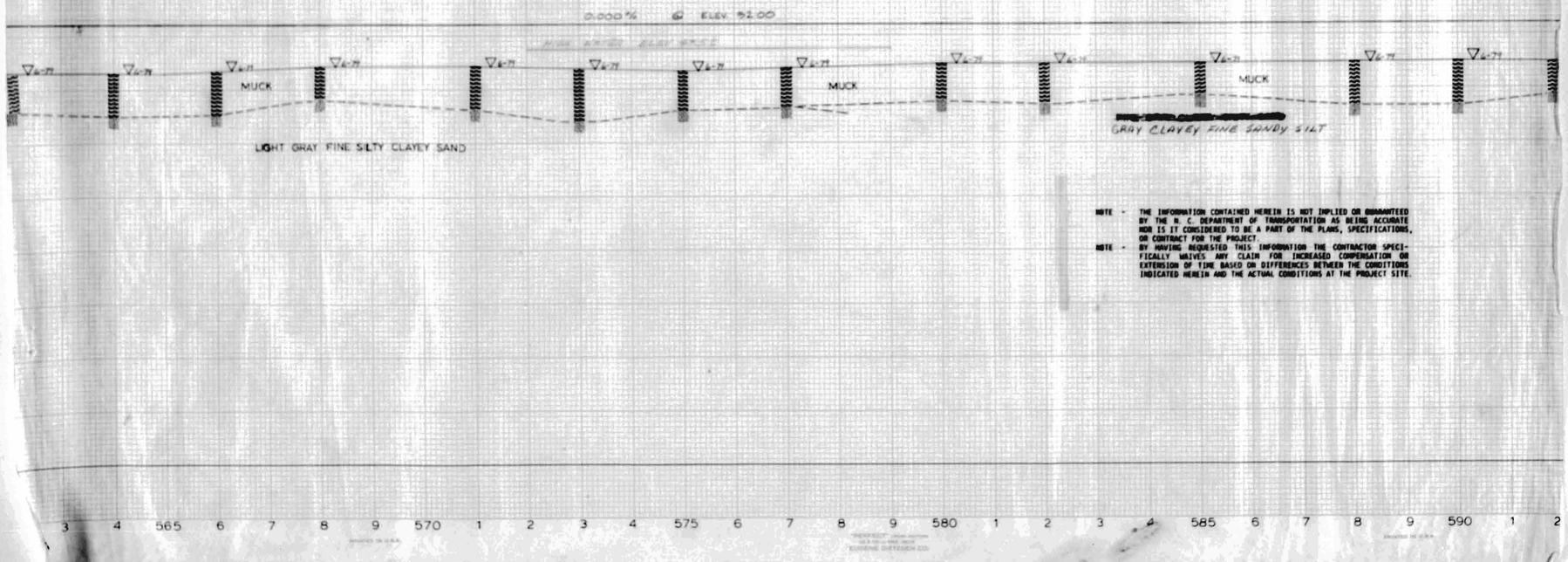
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N. C.	B-193090	5	13
F. A. PROJ. NO.			

BM ELEV 45.42
RR SPIKE IN BASE 15" GUM
157' RT-℄ - MED STA 574+50

BM ELEV 46.08
RR SPIKE IN BASE 12" GUM
156' RT-℄ - MED STA 583+08

SOIL TEST RESULTS

SAMPLE NUMBER	STATION	DEPTH IN FEET	AASHO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING #200 SIEVE	% MOISTURE
25	568+00	5.0-6.5	A-2-4(0)	16	NP	6	67	13	14	31	
26	577+00	7.0-8.5	A-2-4(0)	23	NP	3	85	8	4	14	
27	580+00	7.0-8.5	A-6(3)	40	6	7	44	25	24	51	
28	588+00	6.0-7.5	A-6(2)	17	2	4	54	25	17	47	
29	590+00	7.5-8.5	A-6(2)	19	2	3	58	23	16	43	



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BM ELEV 45.94
RR SPIKE IN BASE 8"GUM
159' RT-℄-MED STA 592+69

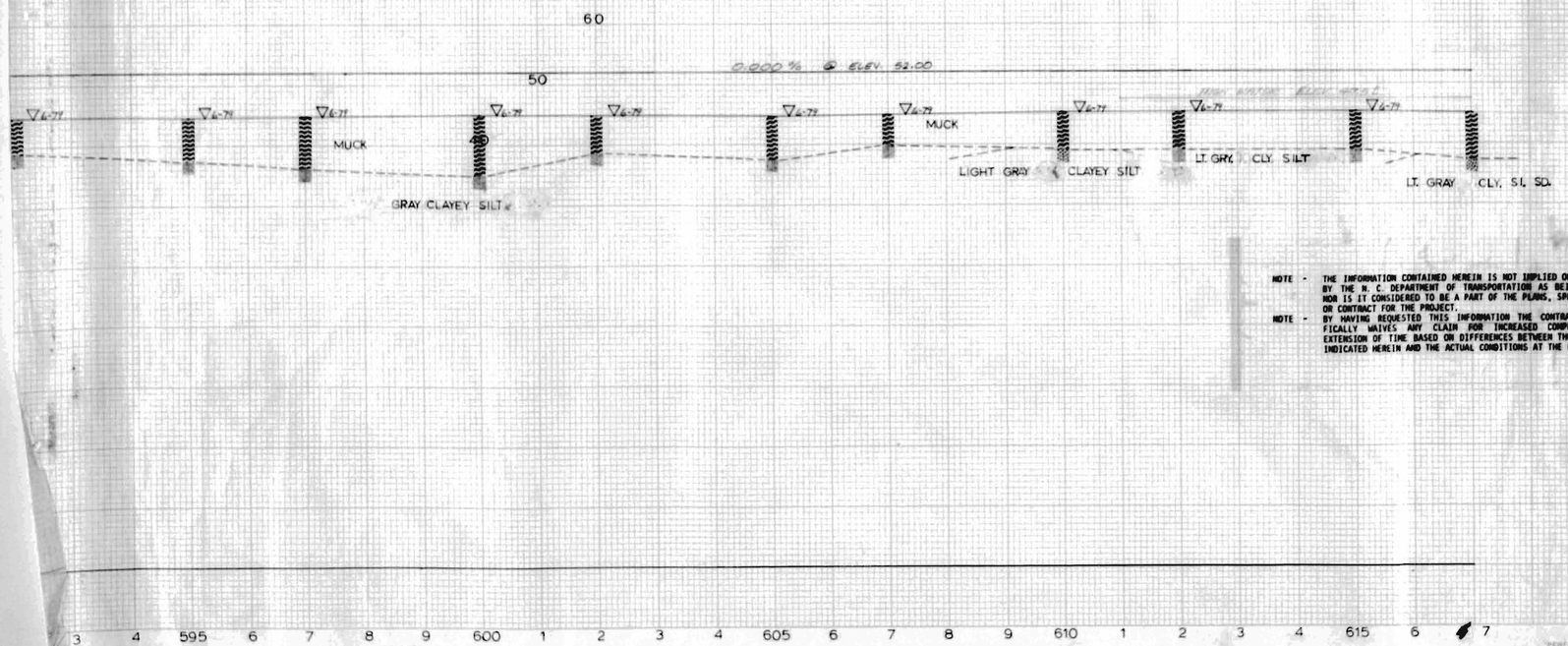
BM ELEV 45.80
RR SPIKE IN BASE 8" GUM
158' RT-℄- MED STA 602+27

BM ELEV 47.08
RR SPIKE IN BASE 15"GUM
158' RT-℄ - MED STA 612+85

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8.1430701	6	13
F.A. PROJ. NO.			

SOIL TEST RESULTS

SAMPLE NUMBER	STATION	DEPTH INTERVAL	AASHO CLASS.	L.L.	P.I.	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING #200 SIEVE	% MOISTURE
30	595+00	7.5-8.5	A-4(8)	19	4	7	52	23	18	46	
31	600+00	9.5-10.5	A-4(8)	21	7	14	46	19	21	45	
32	605+00	6.0-7.0	A-4(9)	22	8	5	46	25	24	64	
33	610+00	6.0-7.0	A-2-4(0)	18	NP	15	55	18	12	35	
34	615+00	6.5-7.5	A-4(0)	18	NP	24	46	19	19	37	



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BRG 2-80 1428 CONVERS CONTY BOTT OF 3 TINED 21

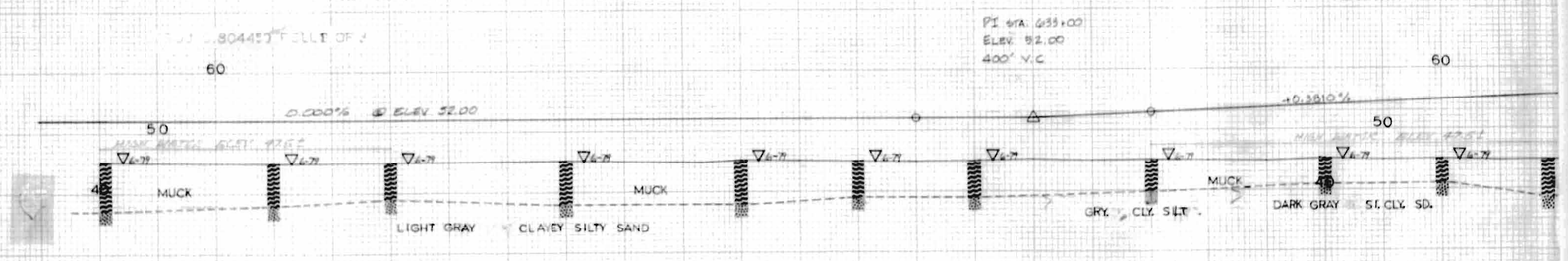
STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8.143070-	7	13
F. A. PROJ. NO.			

BM ELEV 47.06
RR SPIKE IN BASE 18" GUM
70' RT-℄-MED STA 623+16

BM ELEV 47.23
RR SPIKE IN BASE 10" GUM
203' RT-℄-MED STA 635+00

SOIL TEST RESULTS

SAMPLE NUMBER	STATION	DEPTH INTERVAL	AASHO CLASS.	LL	PI	% BY WEIGHT				% PASSING	%
						C. SAND	F. SAND	SILT	CLAY	200 SIEVE	MOISTURE
35	620+00	70-80	A-8-(00)	80	NP	18	56	16	10	34	
36	625+00	70-80	A-2-4(0)	17	NP	15	58	15	12	38	
37	630+00	60-70	A-8-(00)	80	3	80	51	13	16	34	
38	635+00	50-70	A-6(0)	61	3	9	59	16	16	37	
39	640+00	90-120	A-2-6(0)	80	NP	65	37	6	12	20	



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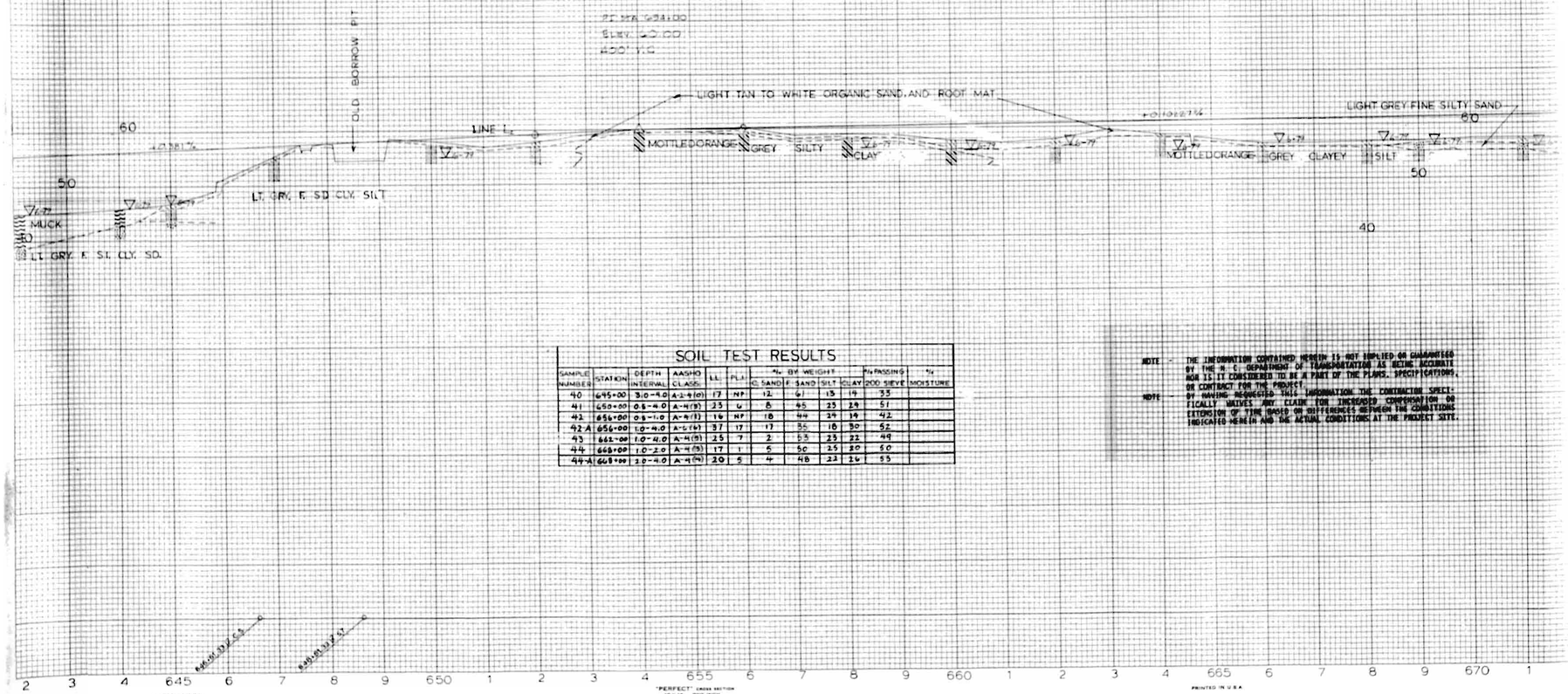
PROJ. 8 BONDS COLUMBUS COUNTY
0.000 TO 18.000
0+800 TO 10+00
0+00 TO 10+42.85
1 SHEET
1 SHEET
"PERFECT" CROSS SECTION 10 X 10 - ONE INCH EUGENE DIETZGEN CO.
PRINTED IN U.S.A.
"PERFECT" CROSS SECTION 10 X 10 - ONE INCH EUGENE DIETZGEN CO.

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N. C.	8.143070	8	13
F. A. PROJ. NO.			

BM ELEV 53.82
RR SPIKE IN BASE 24" OAK
363' RT.-L- MED STA 647+82

BM ELEV 59.90
RR SPIKE IN BASE 20" PINE
255' LT.-L- MED STA 659+00

BM ELEV 58.02
RR SPIKE IN BASE 8" PINE
247' LT.-L- MED STA 669+00



SOIL TEST RESULTS

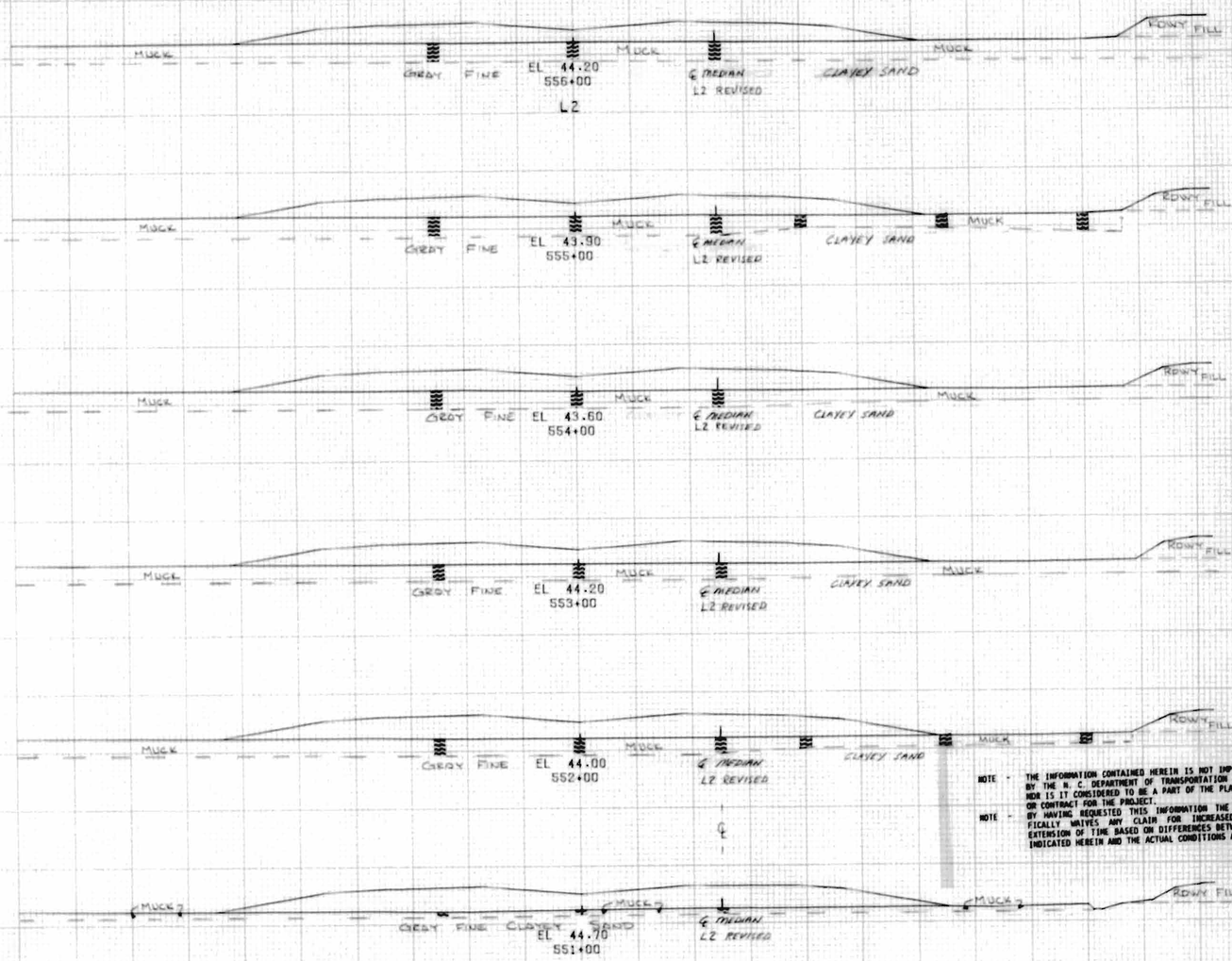
SAMPLE NUMBER	STATION	DEPTH INTERVAL	AASHO CLASS.	LL	PI	% BY WEIGHT C. SAND	F. SAND	SILT	CLAY	% PASSING 200 SIEVE	% MOISTURE
40	645+00	3.0-4.0	A-2-4(0)	17	NP	12	61	13	14	33	
41	650+00	0.6-4.0	A-4(8)	23	6	8	45	23	24	51	
42	656+00	0.6-1.0	A-4(1)	16	NP	18	44	24	14	42	
42-A	656+00	1.0-4.0	A-6(6)	37	17	13	35	18	30	52	
43	662+00	1.0-4.0	A-4(8)	25	7	2	53	23	22	49	
44	668+00	1.0-2.0	A-4(5)	17	1	6	50	25	20	50	
44-A	668+00	2.0-4.0	A-4(8)	20	5	4	48	23	24	55	

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PRINTED IN U.S.A.
"PERFECT" cross section
10 x 10 = ONE INCH
EUGENE DIETZGEN CO.
PRINTED IN U.S.A.

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8.1430701	9	13
F.A. PROJ. NO.			

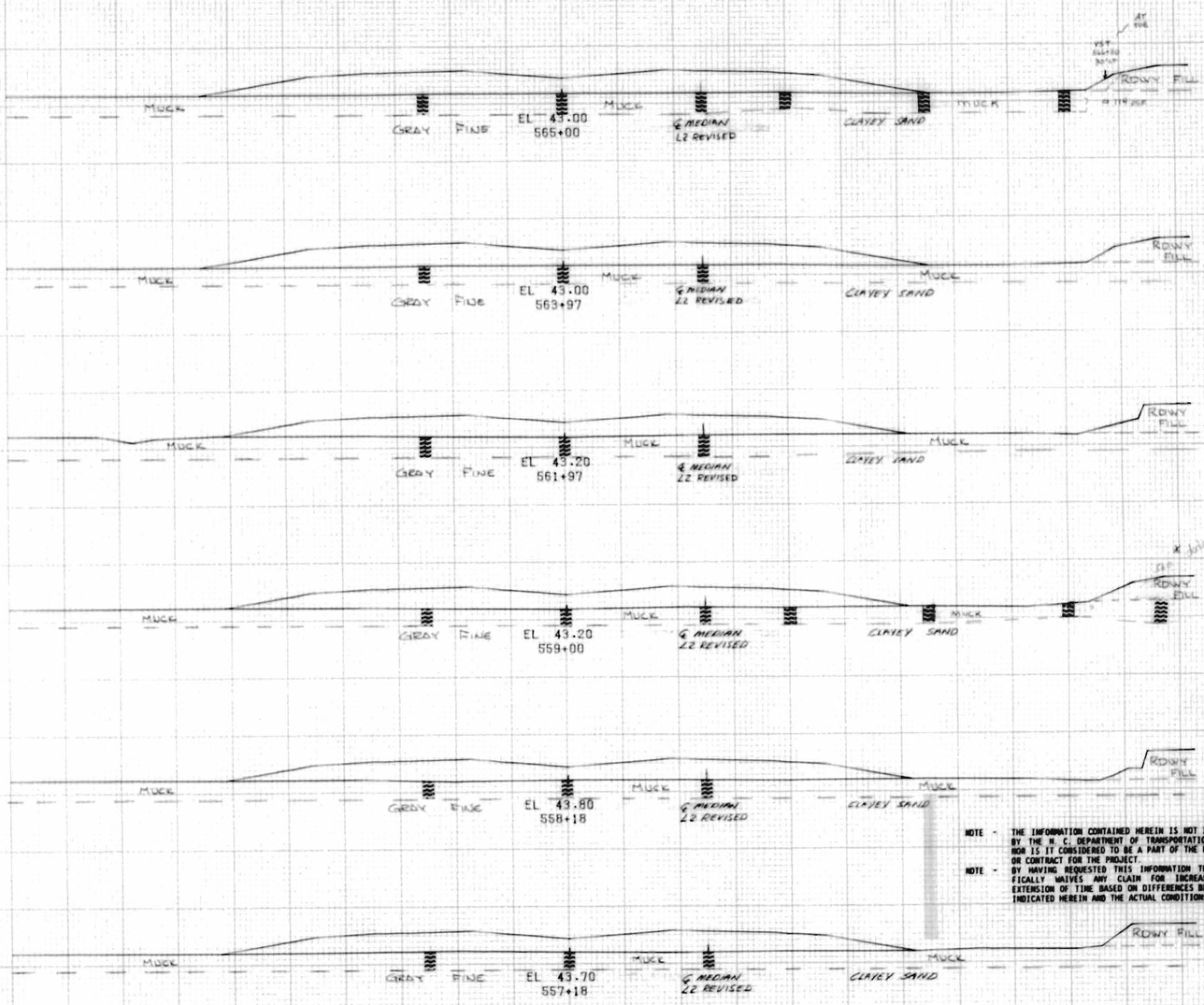


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P S 101520
SCALE IN FEET
6.804459

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8.143070	10	13
F.A. PROJ. NO.			

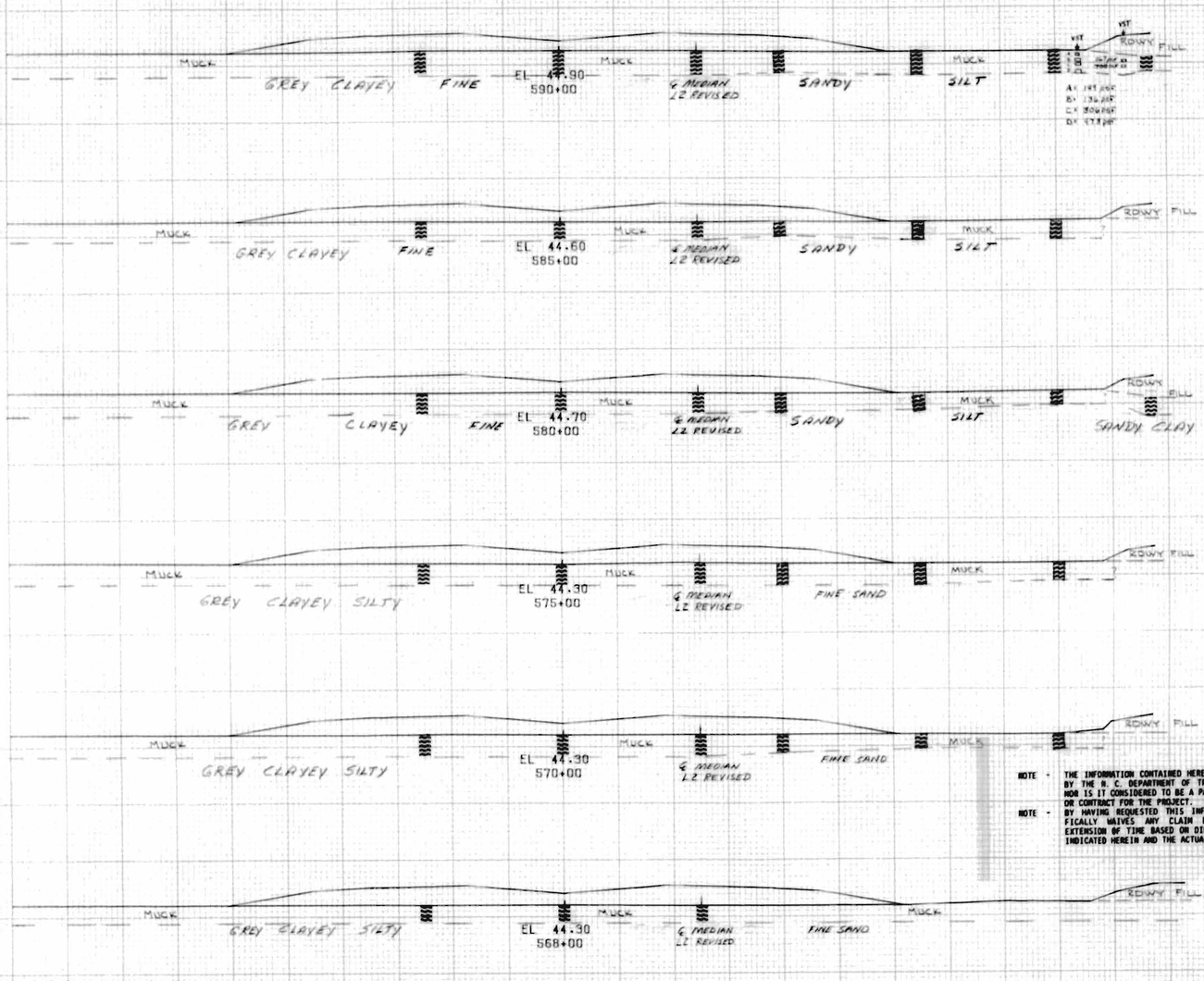


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0 5 10 15 20
SCALE IN FEET
6.804459

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8.143070	11	13
F.A. PROJ. NO.			

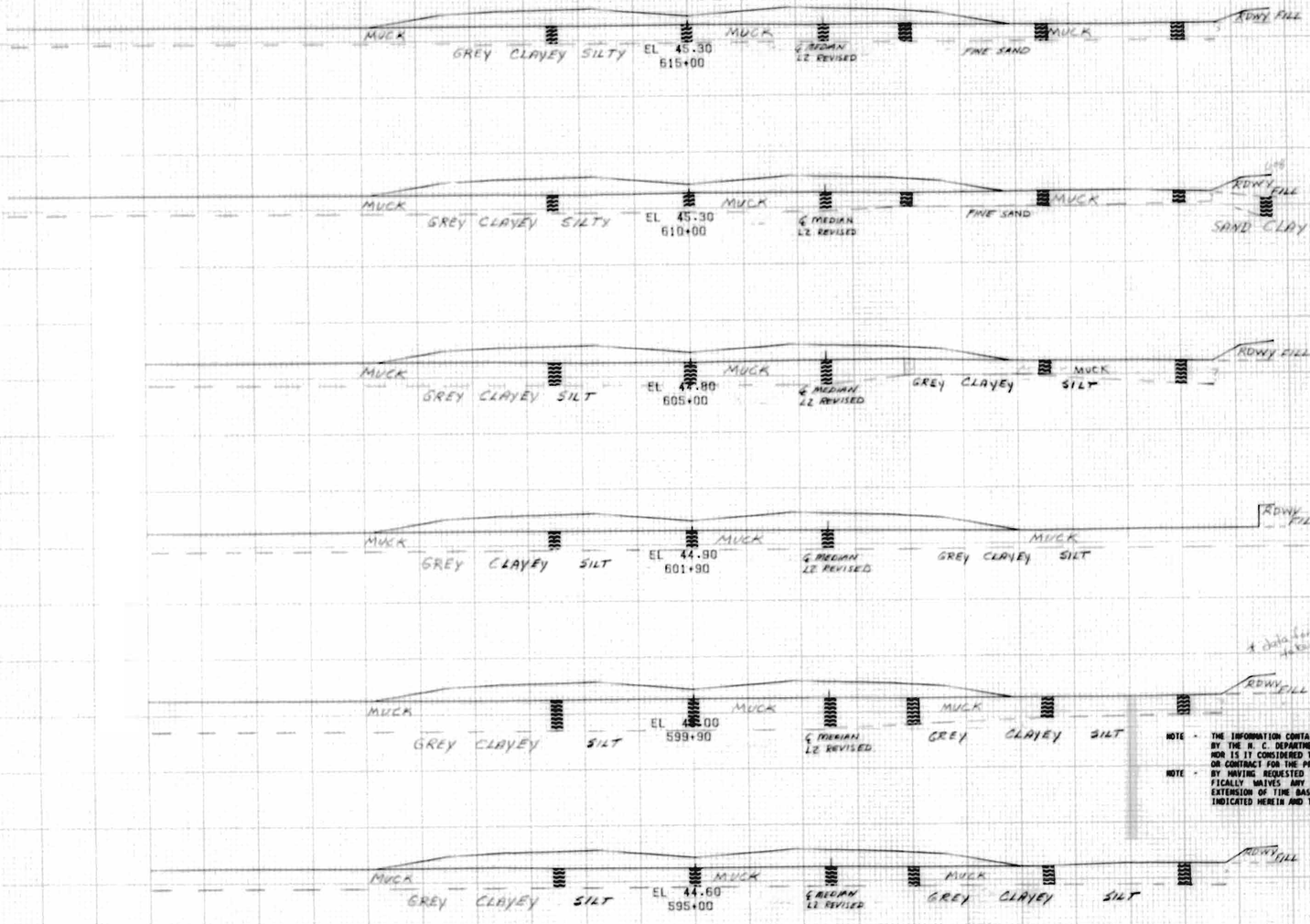


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D 5 10 15 20
SCALE IN FEET
6.804459

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8.143090	12	13
F.A. PROJ. NO.			

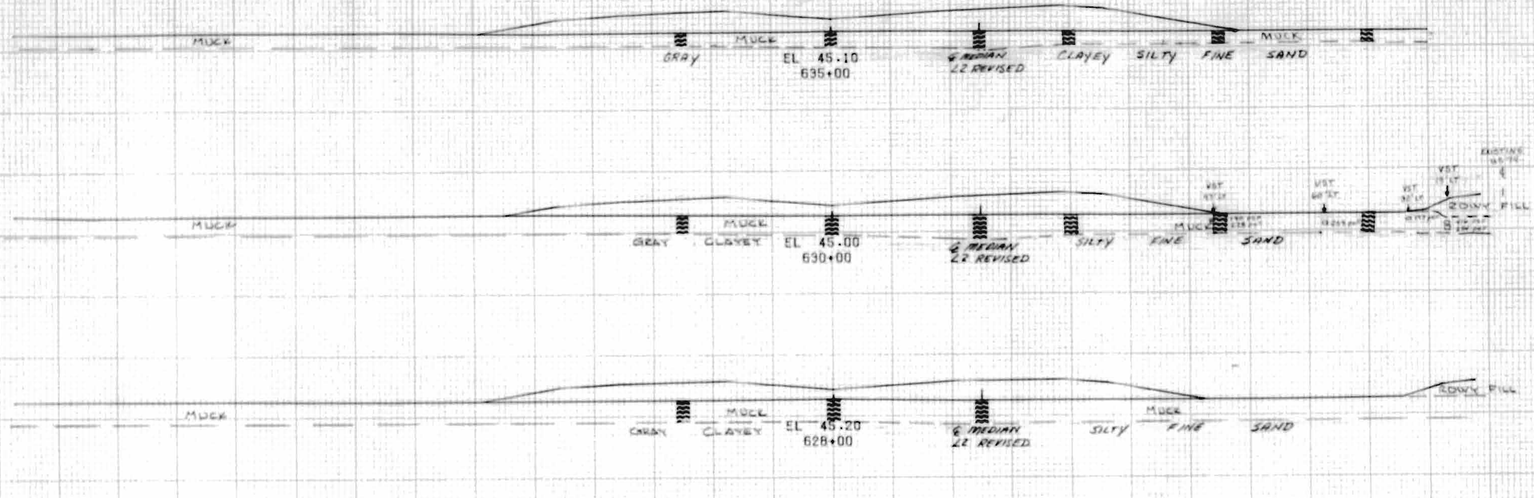


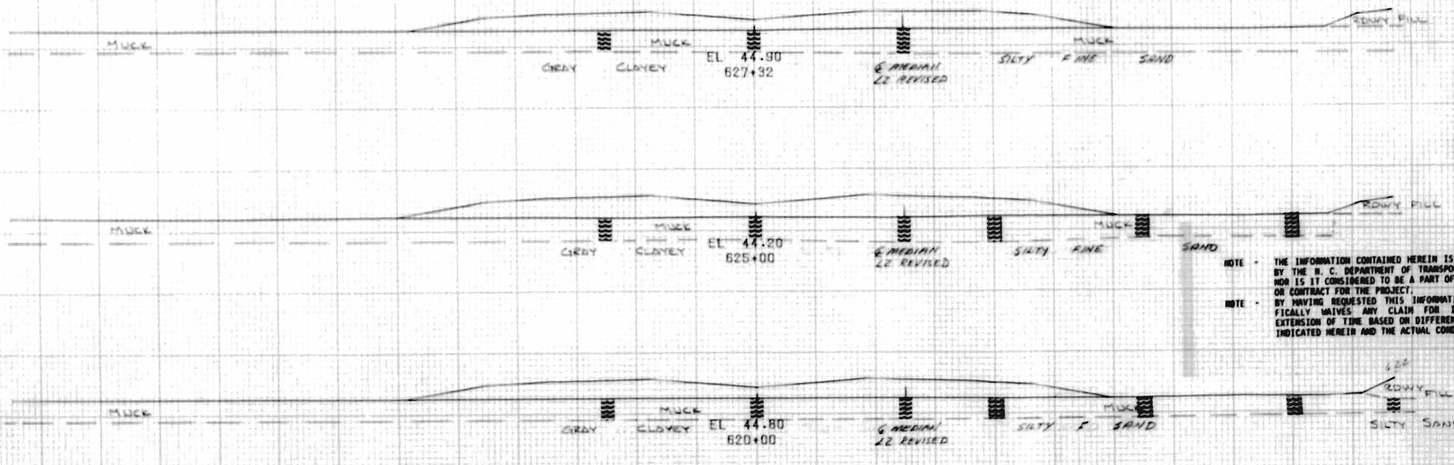
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D S 101520
P F 1443
SCALE IN FEET
6.804459

STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS
N.C.	8.143090	13	13
F. A. PROJ. NO.			





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P S 10520
SCALE IN FEET
6.804459