

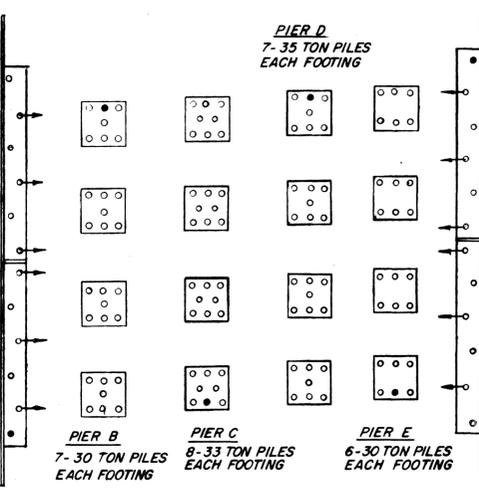
PUB. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240-1 (17) 13	1959	162	334
REVISION					
11-10-59					
12-18-59					
REVISION 2-16-62. Reinf. Steel Quant. and Concr. Q.R.					

Bridge Dwg 1 of 10

SPECIAL NOTE ON PILES

If the Engineer requires the use of Precast Concrete Piling Size 2, the contractor will be allowed a 25% increase in the contract unit price bid for Size 1 piling.

ABUTMENT A
12-30 TON PILES



PLAN OF PILE LOCATIONS

NOTE ON TEST PILES

BEFORE ANY PILES ARE ORDERED TEST PILES SHALL BE DRIVEN. TEST PILE LOCATIONS ARE SHOWN ON THIS SHEET. FROM THE RESULTS, ALL PILES SHALL BE ORDERED OF SUCH LENGTH AS TO PROVIDE THE MINIMUM BEARING CAPACITIES SHOWN. TEST PILES SHALL BE DRIVEN IN FINAL LOCATION IN FOOTINGS AND ABUTMENTS.

LIST OF DRAWINGS	DWG. NO.
BRIDGE LAYOUT	1
ABUTMENTS A & F	2
PIERS B & D	3
PIERS C & E	4
SUPERSTRUCTURE SLAB	5
SUPERSTRUCTURE SLAB DETAILS	6
PRESTRESSED BEAM - SPANS 1, 4 & 5	7
PRESTRESSED BEAM - SPANS 2 & 3	8
BEARINGS & MISCELLANEOUS DETAILS	9
LIGHTING & HANDRAIL DETAILS	10
STD. PILE DETAILS (STD. F-2-118)	sht. 316
STD. 3- RAIL HANDRAIL (STD. G-10-100)	sht. 318

SUMMARY OF QUANTITIES

ITEM	Dry Excavation	Concrete Class A ₂	Reinforcing Steel (S)	Prestressed Beam Type 3E1	Prestressed Beam Type 3E2	Pre-cast Conc. Piles Size 1/3	Test Piles	3 Rail Steel Handrail	Lighting System
UNIT	Cu. Yds.	Cu. Yds.	Lbs.	Each	Each	Lin. Ft.	Lin. Ft.	Lin. Ft.	Lump Sum
SUPERSTRUCTURE		574.5	110,550					575	
SPAN 1				10(42'4")					
SPAN 2					12(73'13")				
SPAN 3					12(73'13")				
SPAN 4				16(60'13")					
SPAN 5				10(35'10")					
SUBSTRUCTURE									
ABUTMENT A	129	43.0	4,370						
PIER B	84	86.4	12,960						
PIER C	85	83.1	12,210						
PIER D	84	86.3	14,300						
PIER E	190	81.3	10,810						
ABUTMENT F	218	43.0	4,370						
TOTAL	790	997.6	169,580	36	24	3260	240	575	Lump Sum

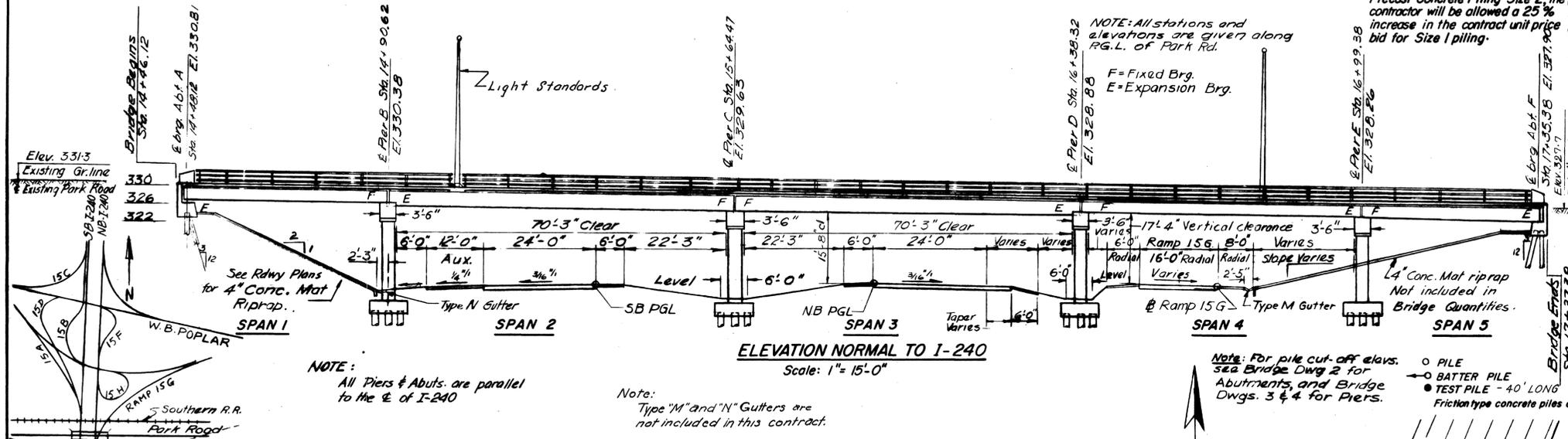
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT 1-240-1 (17) 13 SHELBY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

**PARK ROAD OVER I-240
BRIDGE LAYOUT**

DATE: 10-14-58 SCALE: AS NOTED DRAWN BY: JWN CHECKED BY: V.P. IN CHARGE: B.C.C. H-11-7

JOB NO. 332



ELEVATION NORMAL TO I-240
Scale: 1" = 15'-0"

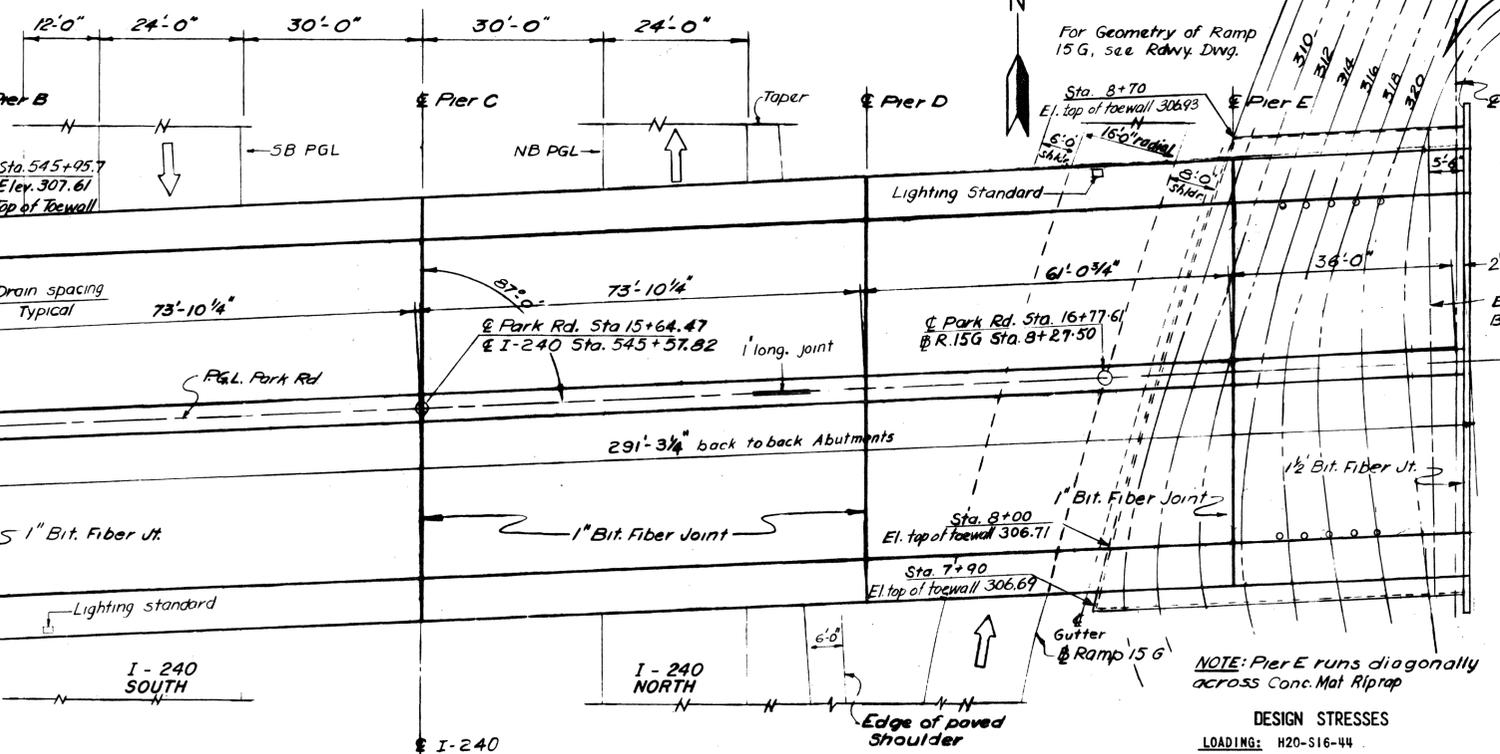
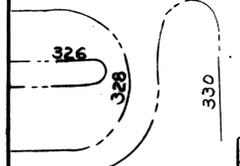
NOTE: All Piers & Abuts. are parallel to the C of I-240

Note: Type "M" and "N" Gutters are not included in this contract.

Note: For pile cut-off elev. see Bridge Dwg 2 for Abutments, and Bridge Dwg. 3 & 4 for Piers.

PILE
BATTER PILE
TEST PILE - 40' LONG
Friction type concrete piles only shall be used throughout

LOCATION SKETCH

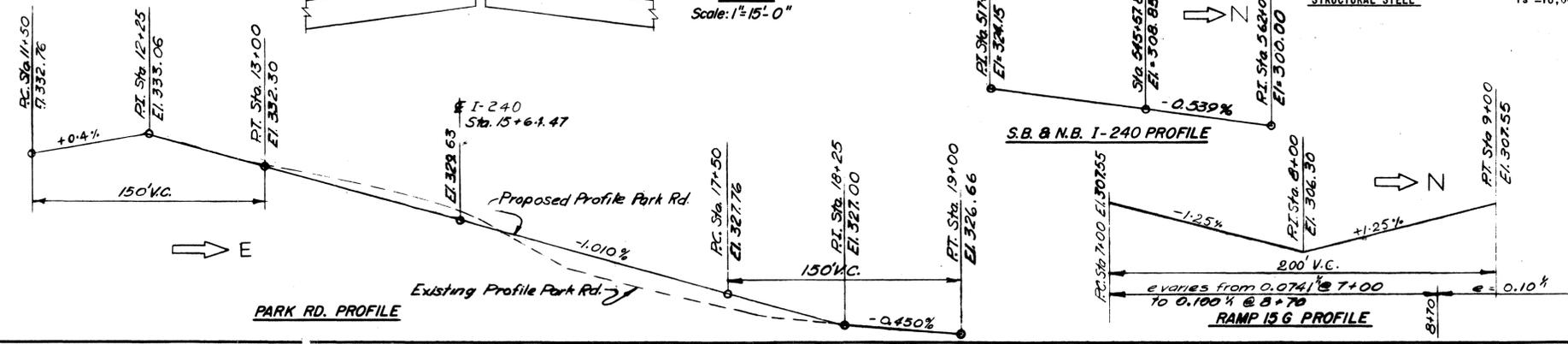


PLAN
Scale: 1" = 15'-0"

DESIGN STRESSES

LOADING: H20-S16-44
CAST IN PLACE CONCRETE
fc' = 3000 psi
fc = 1200 psi
n = 10
fs = 18,000 psi
fs = 18,000 psi

REINFORCING STEEL
STRUCTURAL STEEL



S.B. & N.B. I-240 PROFILE

PARK RD. PROFILE

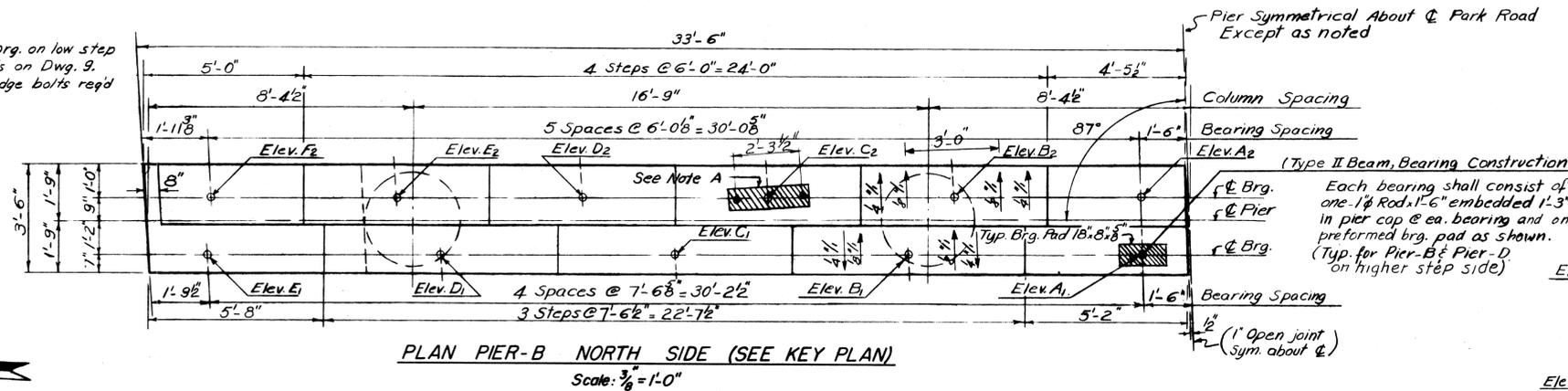
RAMP 15G PROFILE

- Payment for bearings, bearing anchor rods, items cast into the beams, & threaded diaphragm dowels is to be included in the contract price for the prestressed beams. Required for bearings for this structure is 154 sq. ft. of pref. bearing pads, 72-1" 0x1'-6" anchor rods, 456 lbs. of bronze self lubricating plates, & 4776 lbs. of struct. steel.
- All bituminous joint materials & transverse drains are incidental to the Class A concrete for payment.
- The reinforcing steel includes 142 lbs of WWF.
- The contractor shall furnish and install anchor bolts for light standards, conduits, condulets, hangers, pullboxes, grounding wire and auxiliary equipment.
- At the contractor's option cast in place concrete piles may be used at piers B, C, D & E instead of the precast piles shown. Cast in place piles shall be 14".

PUB. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240-1 (17) 13	1989	164	334
REVISION 11-10-59 12-18-59					
REVISION 2-16-62 Reinf. Steel Quant.					

NOTE: For General Notes See Bridge Dwg. 1

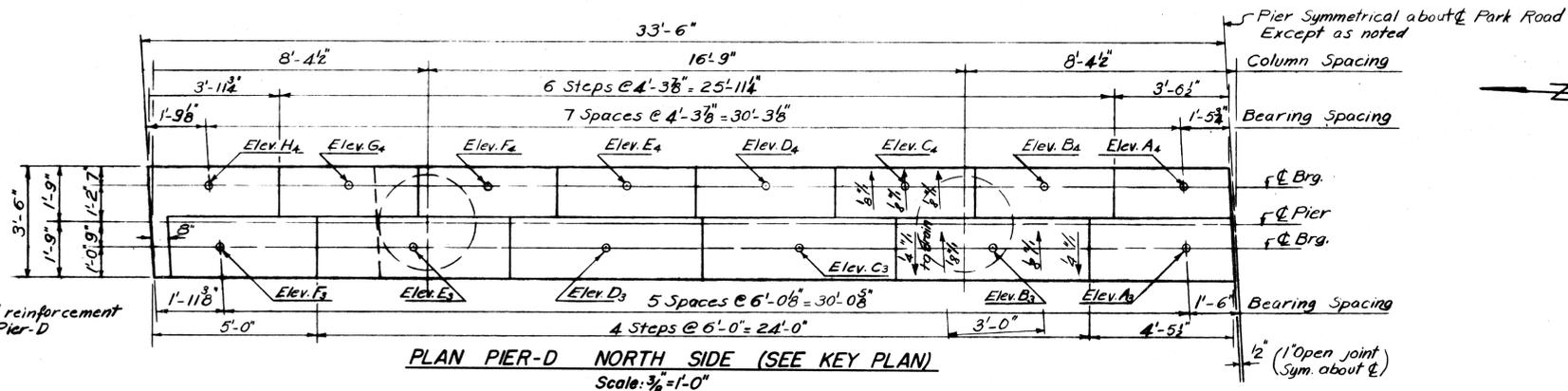
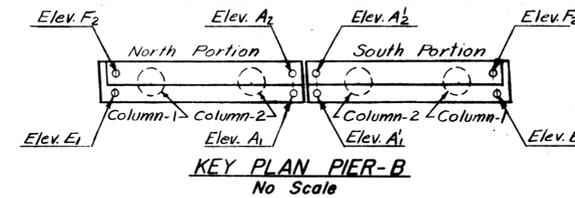
NOTE A: Type III beam brg. on low step side. See details on Dwg. 9. 2-1" x 1-6" swedge bolts req'd each brg.



TABLES FOR BEARING ELEVATION

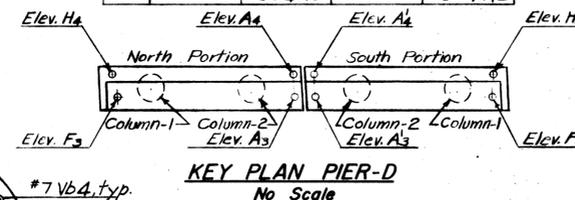
PIER-B

Point	Pier-B South Portion		Pier-B North Portion	
	Elevations A ₂ Thru F ₂	Elevations A ₁ Thru E ₁	Elevations A ₂ Thru F ₂	Elevations A ₁ Thru E ₁
A	325.91	326.77	325.91	326.77
B	325.82	326.66	325.81	326.65
C	325.73	326.53	325.72	326.51
D	325.61	326.38	325.59	326.35
E	325.49	326.23	325.46	326.19
F	325.37		325.33	



PIER-D

Point	Pier-D South Portion		Pier-D North Portion	
	Elevations A ₃ Thru F ₃	Elevations A ₄ Thru H ₄	Elevations A ₃ Thru F ₃	Elevations A ₄ Thru H ₄
A	324.43	325.30	324.43	325.30
B	324.34	325.24	324.33	325.23
C	324.25	325.17	324.24	325.16
D	324.13	325.11	324.11	325.09
E	324.01	325.02	323.98	325.00
F	323.89	324.93	323.85	324.90
G		324.84		324.81
H		324.76		324.72



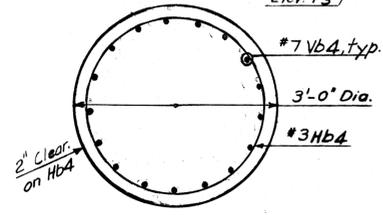
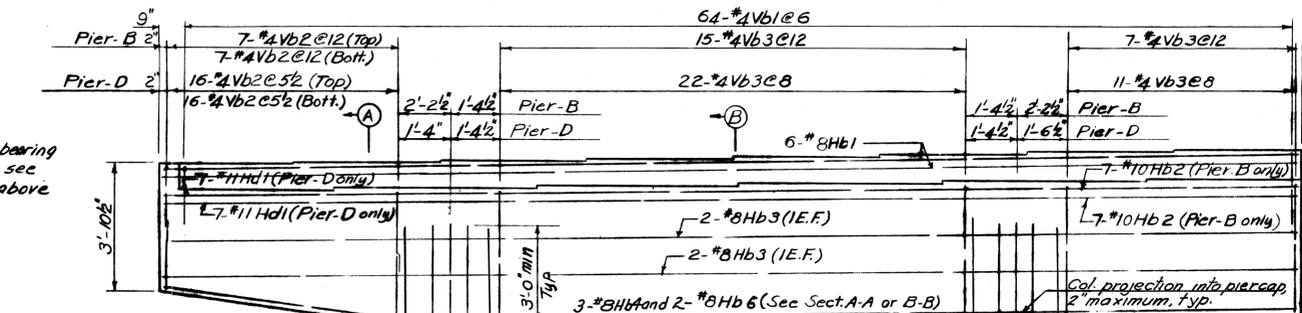
BILL OF STEEL

Bar	Pier-B	Pier-D	Size	Length	Shape	Location
Hb1	12	12	#8	33'-1"	—	Cap
Hd1	-	28	#11	33'-1"	—	Cap
Hb2	28	-	#10	33'-1"	—	Cap
Hb3	8	8	#8	33'-1"	—	Cap
Hb4	6	6	#8	33'-1"	—	Cap
Hb5	68	68	#3	9'-0"	○	Cols.
Hb6	4	4	#8	26'-6"	—	Cap
Vb1	128	128	#4	4'-6"	□	Cap
Vb2	28	64	#4	8'-3"	□	Cap
Vb3	44	66	#4	14'-4"	□	Cap
Vb4	68	68	#7	18'-3"	□	Column
Vb5	68	68	#7	6'-0"	□	Col. Ftg.
Fb1	112	112	#7	8'-0"	—	Footings

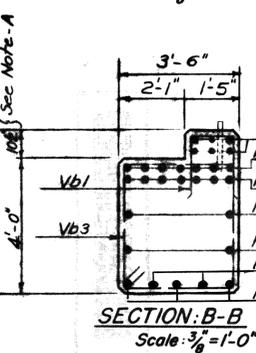
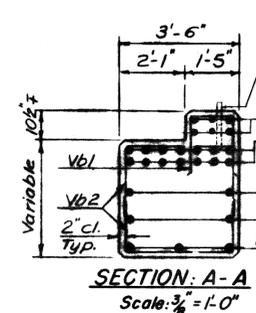
* 26-1" x 1-6" Anchor rods are req'd at Piers B & D = 130 lbs.
* 48-1" x 1-6" Swedge bolts req'd at Piers B & D. See Dwg. 9

NOTE: All dimensions and reinforcement same for Pier-B & Pier-D Except as noted.

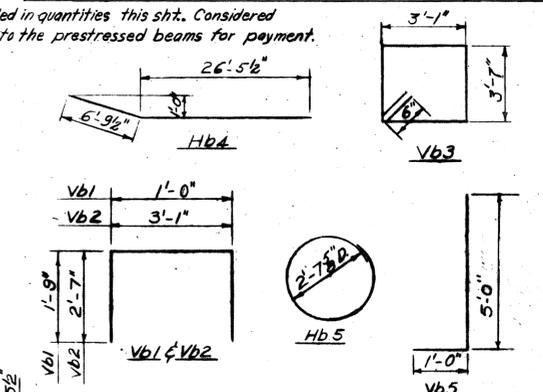
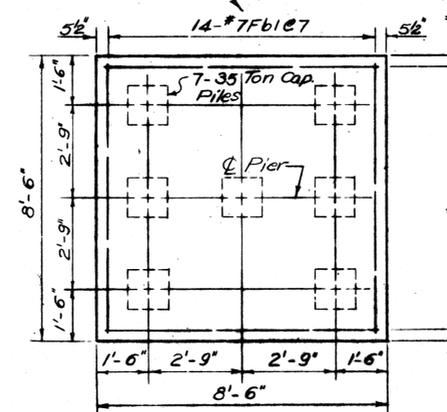
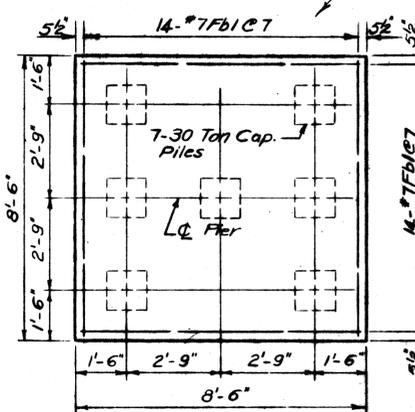
NOTE: For finish slopes on bearing seats of pier caps, see plan of pier B & D above



If piles were omitted, the maximum soil pressures that would result from the design loads would be:
Pier B = 5.7 kips/sq. ft.
Pier D = 7.3 kips/sq. ft.



Note-A: These dimensions are nominal. They vary across the length of the pier cap because of the steps and the sloping bottom face of cap.



ESTIMATED QUANTITIES

ITEM	UNIT	PIER-B	PIER-D
Class A Concrete	Cu. Yds.	86.4	86.3
Steel Bar Reinforcement	Lbs.	12,960	14,300

BRIDGE 14

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT: 1-240-1 (17) 13 SHELBY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DALY ASSOCIATED ENGINEERS

PARK ROAD OVER I-240
PIERS B & D

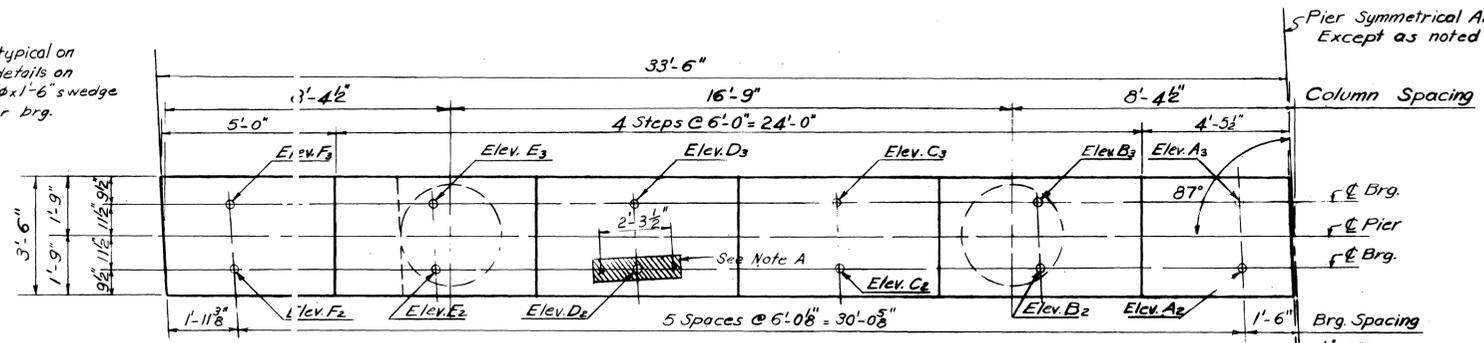
DATE: 9-26-58 SCALE: As Noted DRAWN BY: MAT CHECKED BY: GN IN CHARGE: BCC
JOB NO. 332 9-26-58 As Noted MAT GN BCC H-11-9

TABLES FOR BEARING ELEVATION

PUB. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240-1 (17) 13	1959	165	334
REVISION					
11-10-59					
12-12-59					
REVISION 2-16-62 Reinf. Steel Quant.					

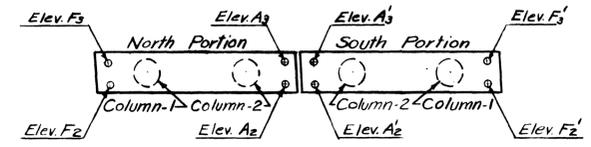
NOTE: For General Notes See Bridge Dwg. 1

NOTE A: Type III brg. typical on Pier C. See details on Dwg. 9. 2-1"x1-6" swedge bolts req'd per brg.



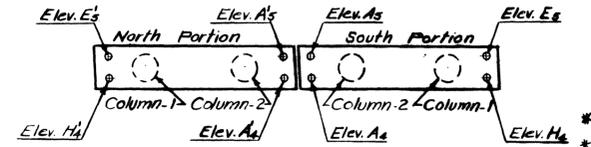
PIER-C

Point	Pier-C South Portion		Pier-C North Portion	
	Elevations A ₁ Thru F ₂	Elevations A ₃ Thru F ₅	Elevations A ₂ Thru F ₂	Elevations A ₃ Thru F ₅
A	325.18	325.16	325.18	325.16
B	325.09	325.07	325.08	325.06
C	325.00	324.98	324.99	324.97
D	324.88	324.86	324.86	324.84
E	324.76	324.74	324.73	324.71
F	324.64	324.62	324.60	324.58



PIER-E

Point	Pier-E South Portion		Pier-E North Portion	
	Elevations A ₁ Thru H ₂	Elevations A ₃ Thru E ₅	Elevations A ₂ Thru H ₂	Elevations A ₃ Thru E ₅
A	324.70	324.64	324.70	324.64
B	324.64	324.53	324.63	324.52
C	324.57	324.40	324.56	324.38
D	324.50	324.25	324.48	324.22
E	324.42	324.09	324.40	324.06
F	324.33		324.30	
G	324.24		324.21	
H	324.15		324.12	

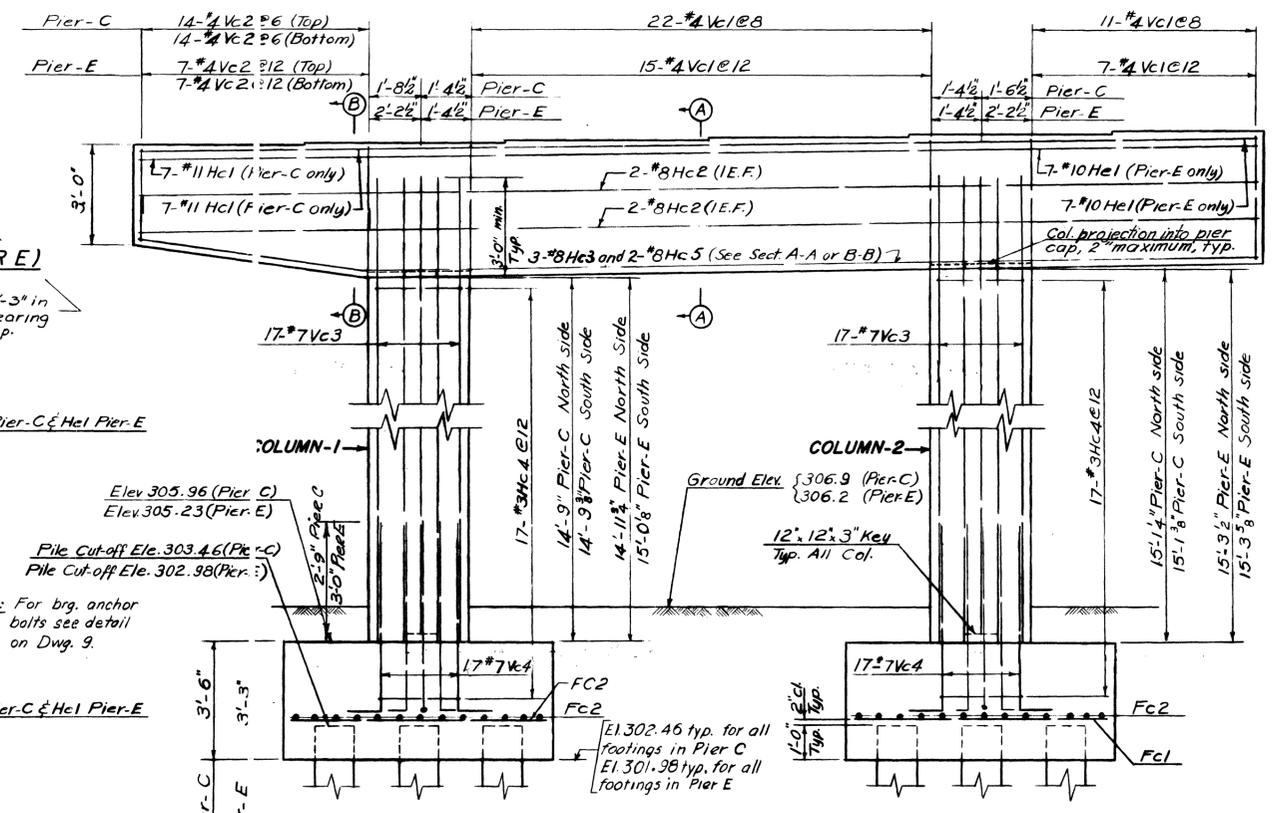
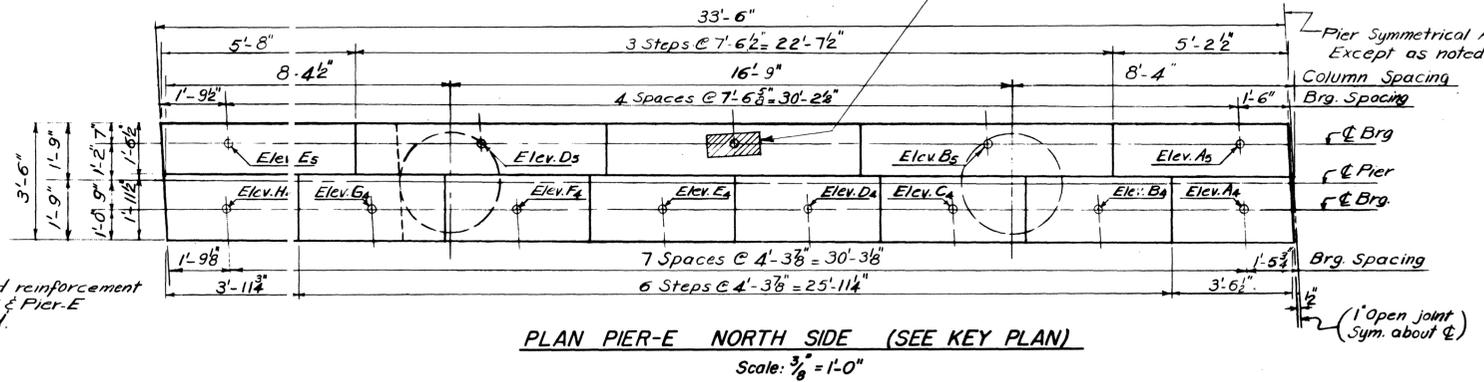


BILL OF STEEL

Bar	Pier-C	Pier-E	Size	Length	Shape	Location
Hc1	28	-	#11	33'-1"	—	Cap
Hc2	-	28	#10	33'-1"	—	Cap
Hc3	8	8	#8	33'-1"	—	Cap
Hc4	6	6	#8	33'-1"	—	Cap
Hc5	68	68	#3	9'-0"	○	Column
Vc1	4	4	#8	26'-6"	—	Cap
Vc2	66	44	#4	14'-4"	□	Cap
Vc3	56	28	#4	8'-3"	□	Cap
Vc4	68	68	#7	18'-4"	□	Column
Vc5	68	68	#7	6'-0"	□	Col-Foot
Fc1	52	52	#6	8'-0"	—	Footings
Fc2	52	44	#6	7'-6"	—	Footings

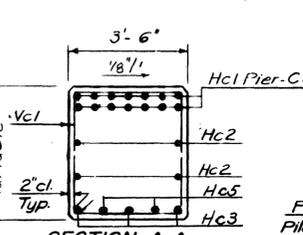
* 26-1"x1-6" Anchor bolts are req'd at Pier E = 130 lbs.
* 48-1"x1-6" Swaged bolts req'd @ Pier C. See Dwg. 9.

NOTE: All dimensions and reinforcement same for Pier-C & Pier-E Except as noted.

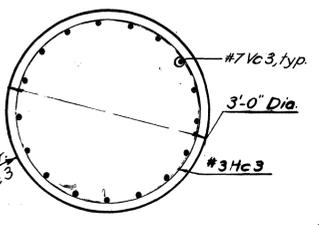
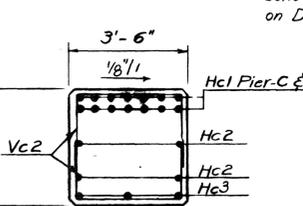


SECTION A-A OR B-B (PIER E) Scale: 3/8" = 1'-0"

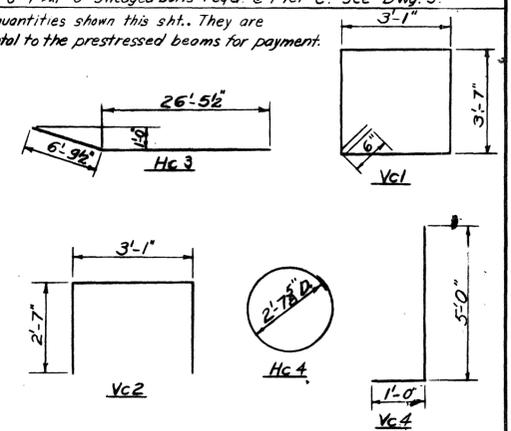
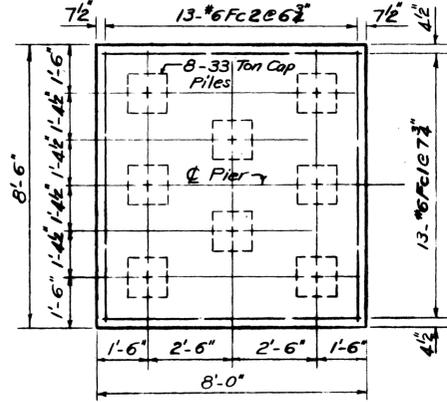
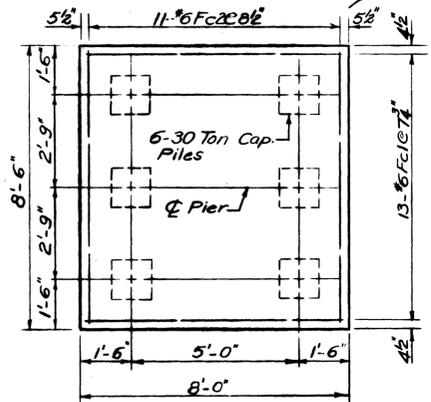
1" x 1-6" rod embedded 1-3" in pier cap @ each beam bearing point, on pier-E only. Typ.



SECTION B-B Scale: 3/8" = 1'-0"



If piles were omitted, the maximum soil pressure that would result from the design loads would be:
Pier C = 8.2 kip/sq. ft.
Pier E = 6 kip/sq. ft.



ESTIMATED QUANTITIES

ITEM	UNIT	PIER-C	PIER-E
Class A Concrete	Cu. Yds.	83.1	81.3
Steel Bar Reinforcement	Lbs.	12,210	10,810

BRIDGE 14

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT: 1-240-1 (17) 13 SHELBY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION
HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS
PARK ROAD OVER I-240
PIERS-C & E

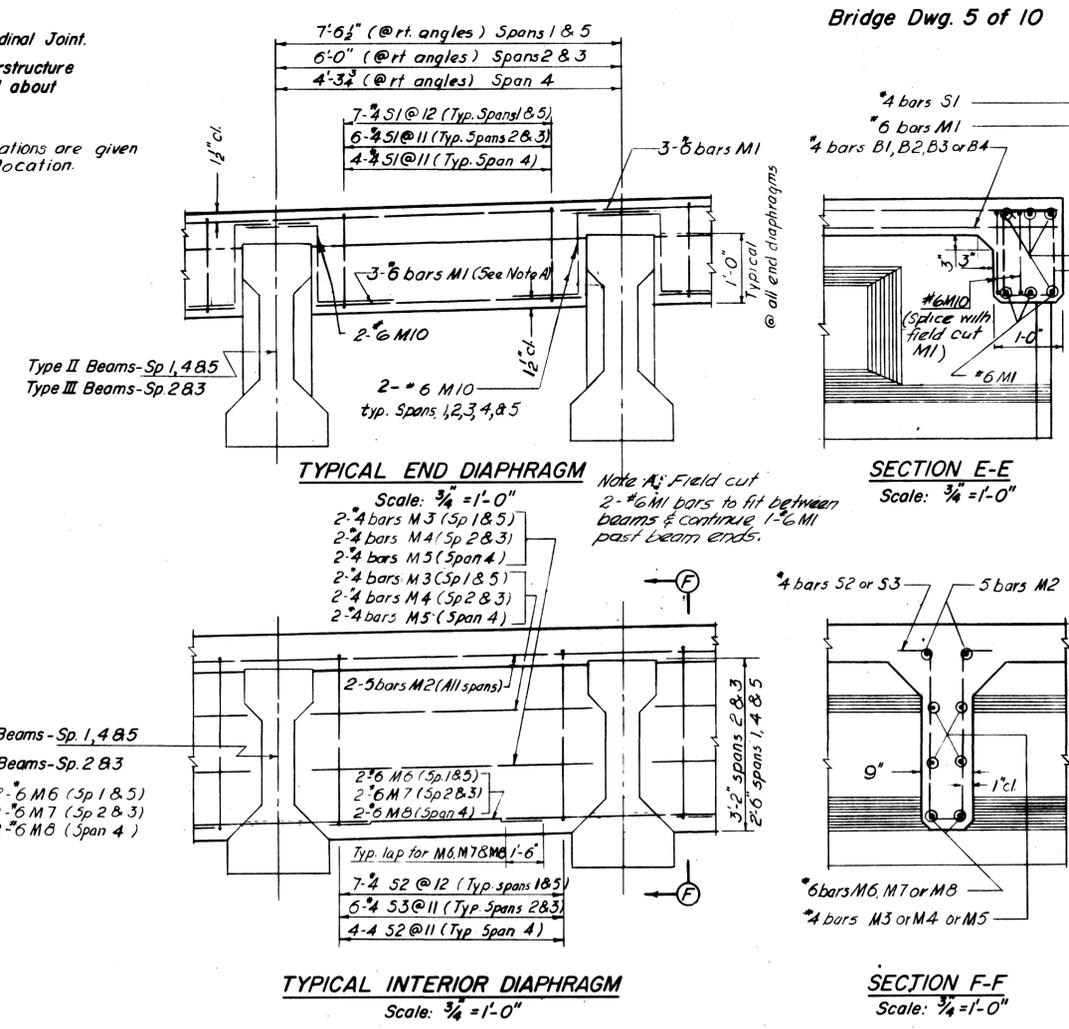
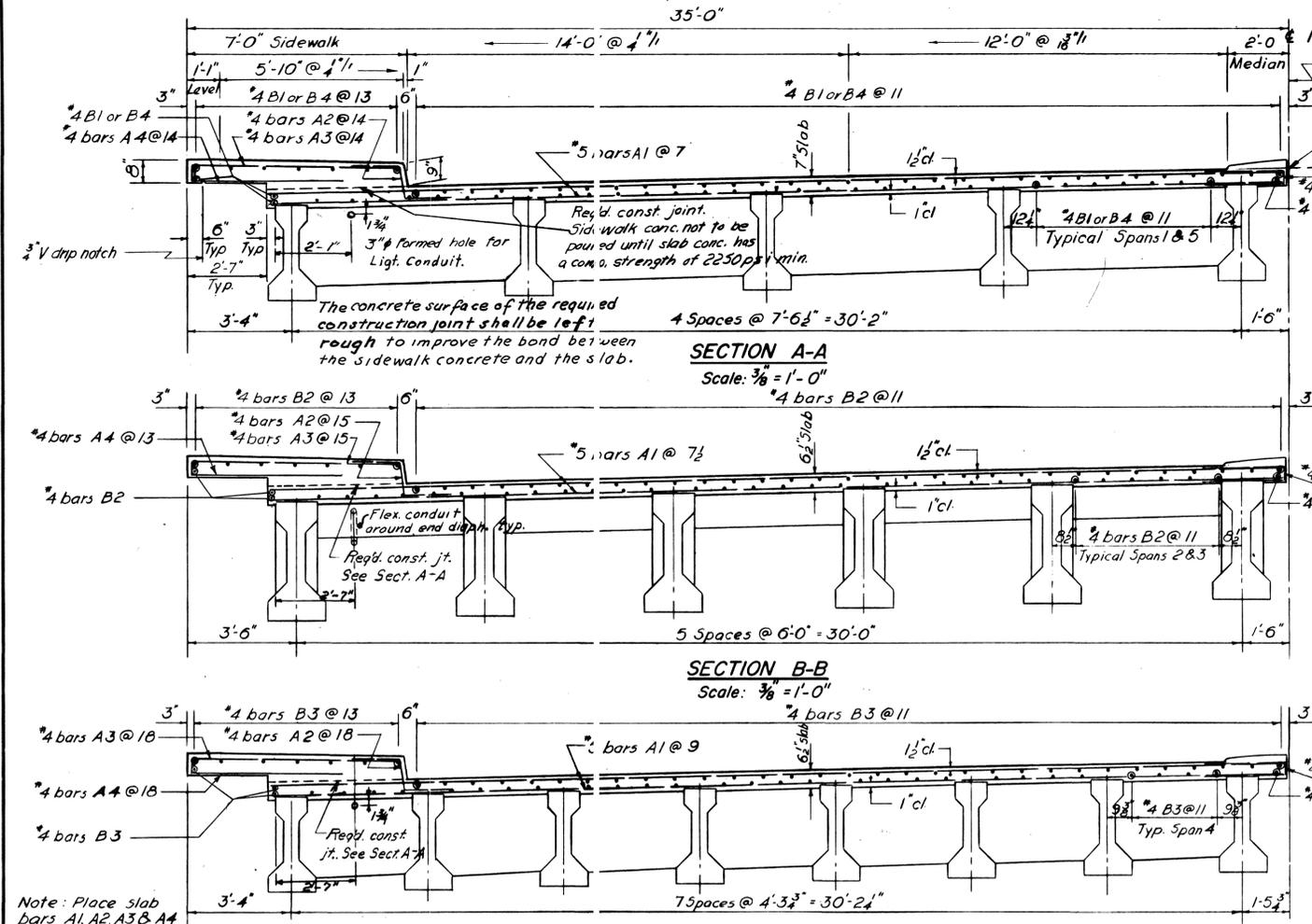
DATE:	SCALE:	DRAWN BY:	CHECKED BY:	IN CHARGE:

PUB. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240-1 (17) 13	1963	166	334

REVISION	DATE	DESCRIPTION
11-12-59		
12-18-59		
2-16-62		Reinf. Steel Quant. & C.I.A. Concrete

NOTES

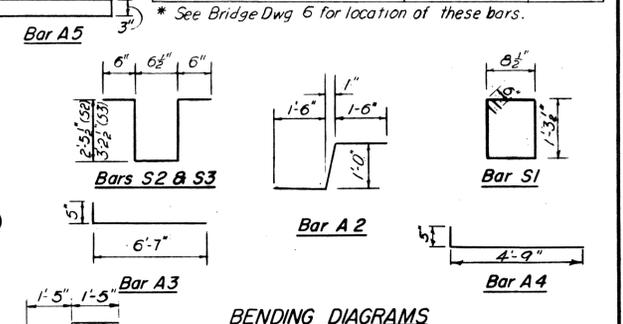
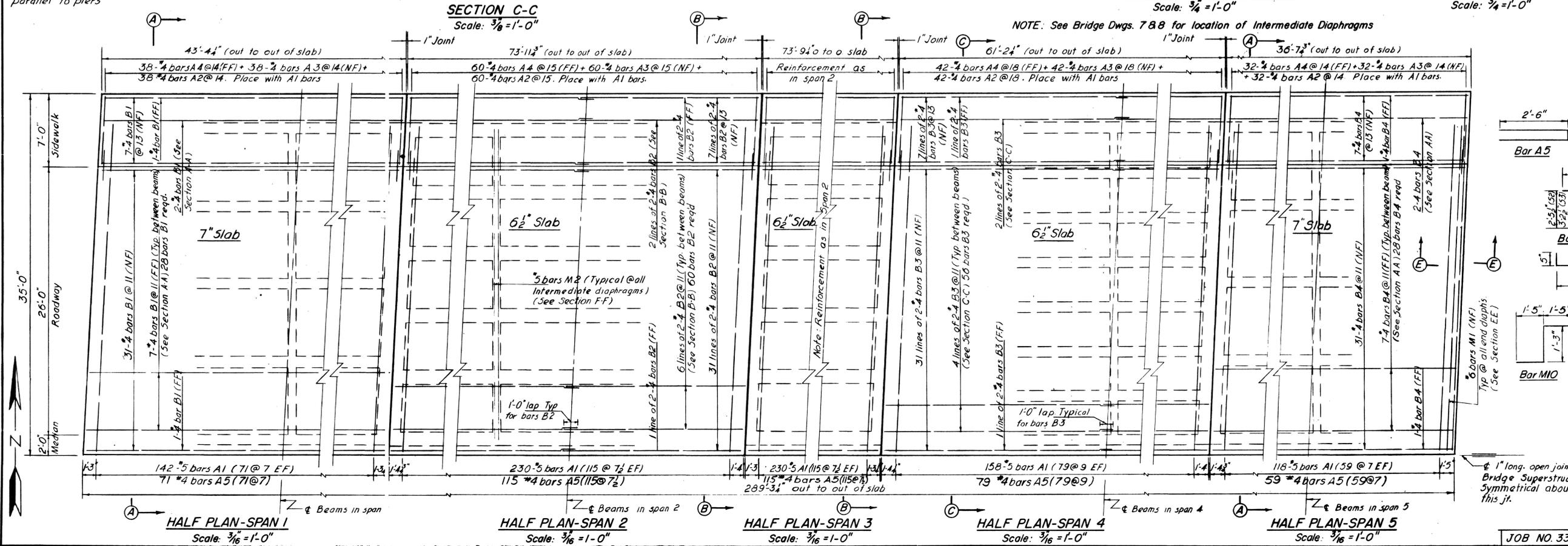
- See Bridge Dwg. 1 for General Notes, and Design Stresses.
- A 3" diam. formed opening shall be provided through inter diaphrag. for passage of lighting conduits.
- See Dwg. 10 for details on anchors for handrail, anchors for lighting standards, pull-box locations, sleeves for conduit supports and buried conduits. See Dwg. 9 for details on drains and Dwg. 6 for handrail end block reinforcements.



BILL OF STEEL

BAR NO.	SIZE	LENGTH	SHAPE	LOCATION
A 1	1756	5	32'-2"	Slab
A 2	464	4	4'-0"	Sidewalk
A 3	464	4	7'-0"	Sidewalk
A 4	464	4	5'-2"	Sidewalk
A 5	878	4	5'-3"	Slab
B 1	140	4	43'-2"	Slab sp 1
B 2	576	4	37'-4"	Slab sp 2 & 3
B 3	280	4	31'-0"	Slab sp 4
B 4	140	4	36'-4"	Slab sp 5
M 1	120	6	32'-2"	End Diaph.
M 2	28	5	30'-2"	Inter Diaph.
M 3	64	4	6'-6"	Inter Diaph.
M 4	160	4	4'-9"	Inter Diaph.
M 5	56	4	3'-3"	Inter Diaph.
M 6	56	6	4'-9"	Inter Diaph.
M 7	144	6	3'-10"	Inter Diaph.
M 8	52	6	2'-11"	Inter Diaph.
M 9	22	5	4'-3"	Slab thickening
M 10	400	6	4'-1"	End Diaph.
S 1	576	4	5'-0"	End Diaph.
S 2	168	4	6'-6"	Inter Diaph.
S 3	240	4	8'-0"	Inter Diaph.

3 x 3 - 10% WWF 474 Sq FT



SUPERSTRUCTURE QUANTITIES

ITEM	UNIT	QUANTITY
Class A Concrete	Cu. Yds.	574.5
Steel Bar Reinforcement *	Lbs.	110,325

* Includes WWF reinforcement

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT 1-240-1 (17) 13 SHELBY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION

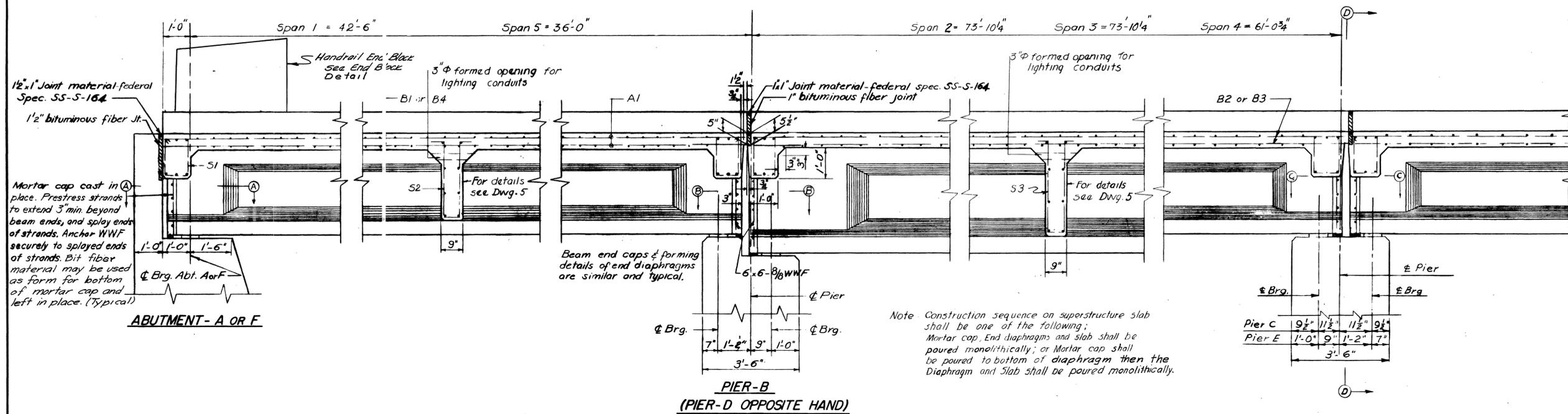
HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK, DAILY AND DIETZ, ASSOCIATED ENGINEERS

**PARK ROAD OVER I - 240
SUPERSTRUCTURE - SLAB**

DATE: SCALE: DRAWN BY: CHECKED BY: IN CHARGE:

JOB NO. 332 10-23-58 As Noted V.P. D. A. S. B.C.G. H-11-11

PUB. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1999	167	334
REVISION 11-10-59 12-13-59					
REVISION 2-16-62 Bill of Steel & Reinf. Steel Quant. & C.A. Concrete					



NOTES:

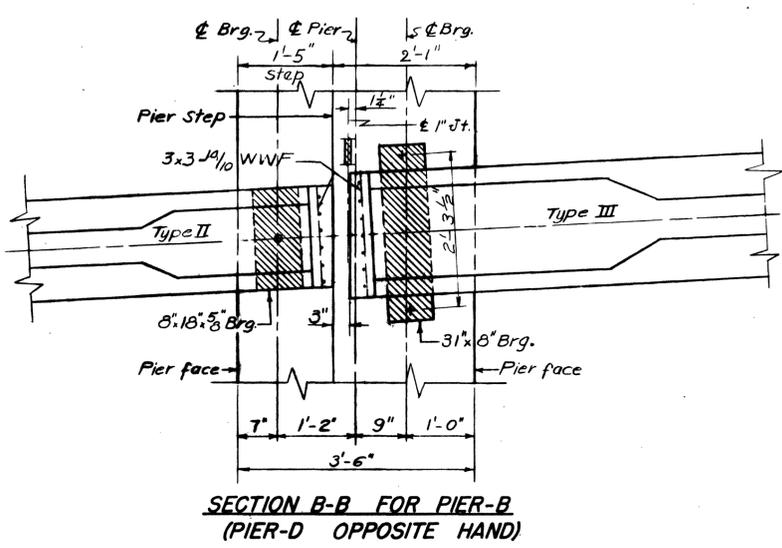
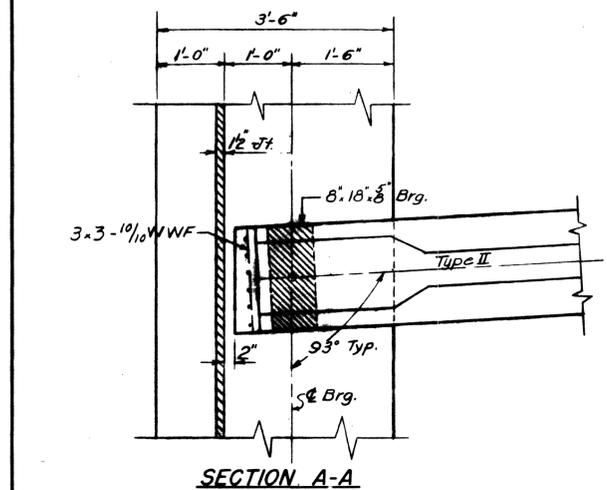
- The same notes as appear on Bridge Dwg. 1 are applicable to the details on this sheet.
- A 3" diam. formed opening for conduit shall be provided through Abutments as well as Inter. Diaphragms.

CAMBER NOTES

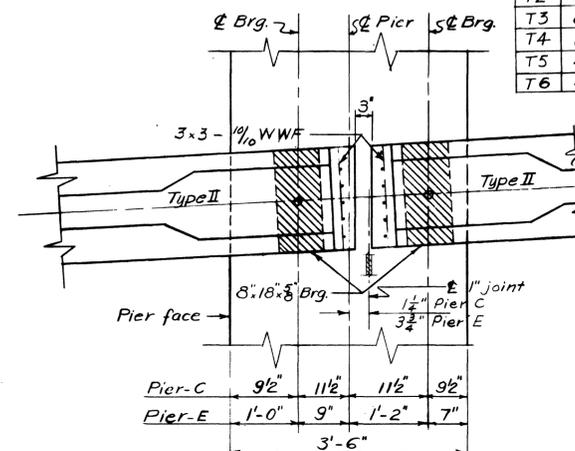
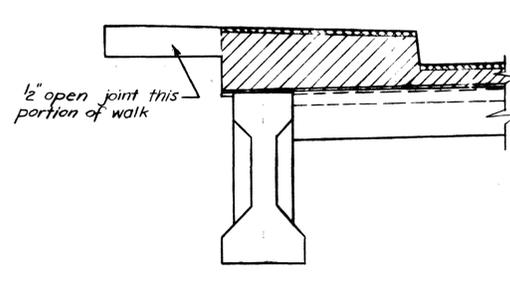
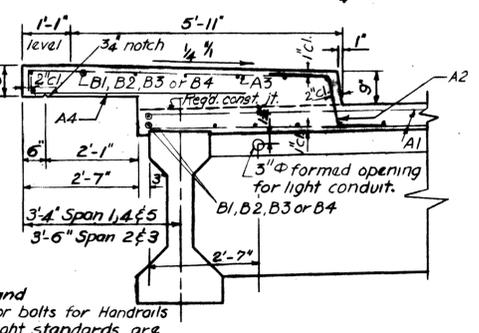
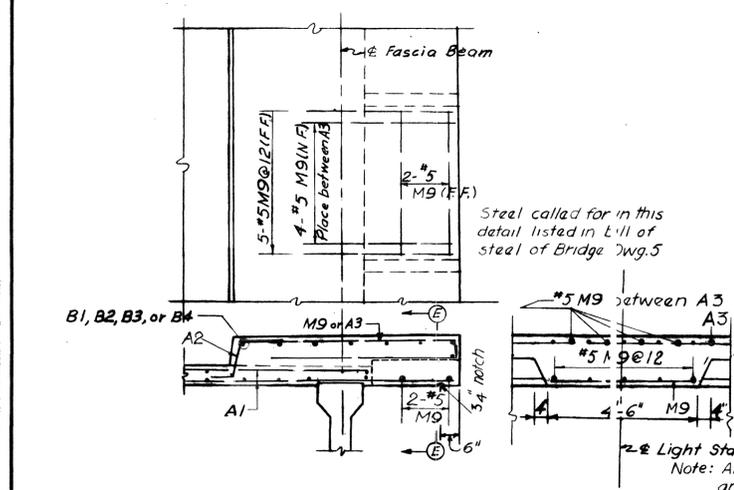
- Verify the calculated deflection at the C of one beam in each span due to the prestressing force and the dead load of the beam, by field elevations before forming the slab.
- If the center elevation of the beam checks calculated elevations within tolerable limits in the judgement of the engineer, the information shown below shall be used directly in forming the slab. This allows for vertical curve and calculated deflections automatically.

Span	beam embedment		Slab thickness L	
	@ support	@ E span	@ support	@ E span
1	1 1/2"	11 1/2"	6 1/2"	6 5/8"
2	1 1/2"	13 1/2"	6"	5 11/16"
3	1 1/2"	13 1/2"	6"	5 11/16"
4	1 1/2"	13 1/2"	6"	5 11/16"
5	1 1/2"	5 1/2"	6 1/2"	6 3/8"

SECTIONS PERPENDICULAR TO C OF PIERS & ABUTMENTS

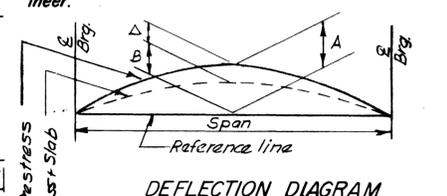
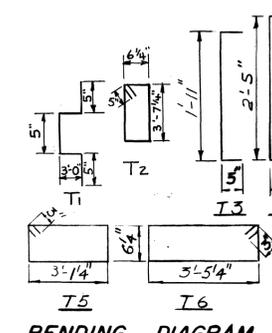


SECTIONS AT PIERS & ABUTMENTS



BILL OF STEEL

BAR	NO.	SIZE	LENGTH	SHAPE	LOCATION
T1	16	#5	7'-3"	[Shape]	End Bl. Slab
T2	12	#5	9'-1"	[Shape]	End Bl.
T3	8	#5	2'-9"	[Shape]	End Bl. Slab
T4	8	#5	3'-3"	[Shape]	End Bl.
T5	4	#5	7'-9"	[Shape]	End Bl.
T6	4	#5	8'-6"	[Shape]	End Bl.



Span	A-in inches	B-in inches	Δ-in inches
1	3 3/8"	3 1/8"	3 1/8"
2	3 1/4"	5 1/8"	7 1/8"
3	3 1/4"	5 1/8"	7 1/8"
4	11 1/16"	5 1/8"	3 3/8"
5	3 1/8"	1 1/8"	1 1/8"

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A concrete	Cu. Yds.	1.4
Reinforcing steel bars	Lbs.	235

BRIDGE 14

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT I-240-1 (17) 13 RHELY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION

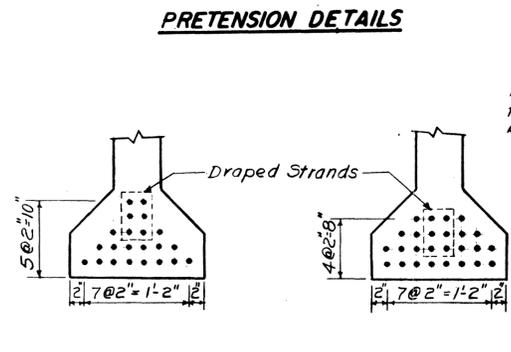
HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

PARK ROAD OVER I-240 SUPERSTRUCTURE - DETAILS

DATE: 10-23-58 SCALE: AS SHOWN DRAWN BY: M.A.T. R.J.M. CHECKED BY: V.P. IN CHARGE: B.C.C.
JOB NO. 332

PUB. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-210-1 (17) 13	1989	168	334
REVISION 12-18-59					
REVISION					

PRETENSION DETAILS

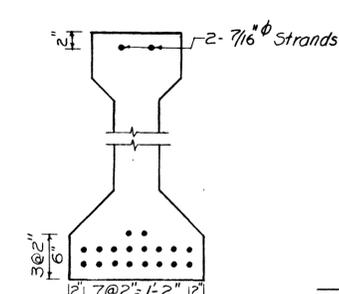


SECTION (A) (A)

BEAM A
SCALE: 1" = 1'-0"

SECTION (A) (A)

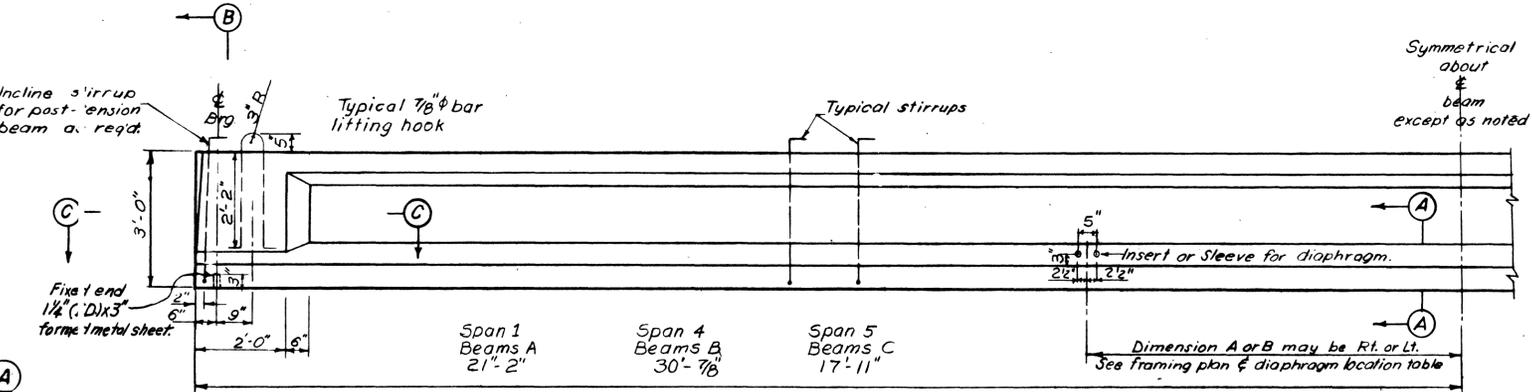
BEAM B
SCALE: 1" = 1'-0"



SECTION @ BEAM C

Scale 1" = 1'-0"

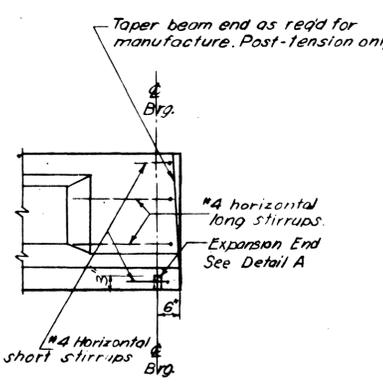
SECTION @ DIAPH.
OF INTERIOR BEAM



ELEVATION OF PRESTRESSED BEAMS— SPANS 1, 4 & 5

SCALE: 1/2" = 1'-0"

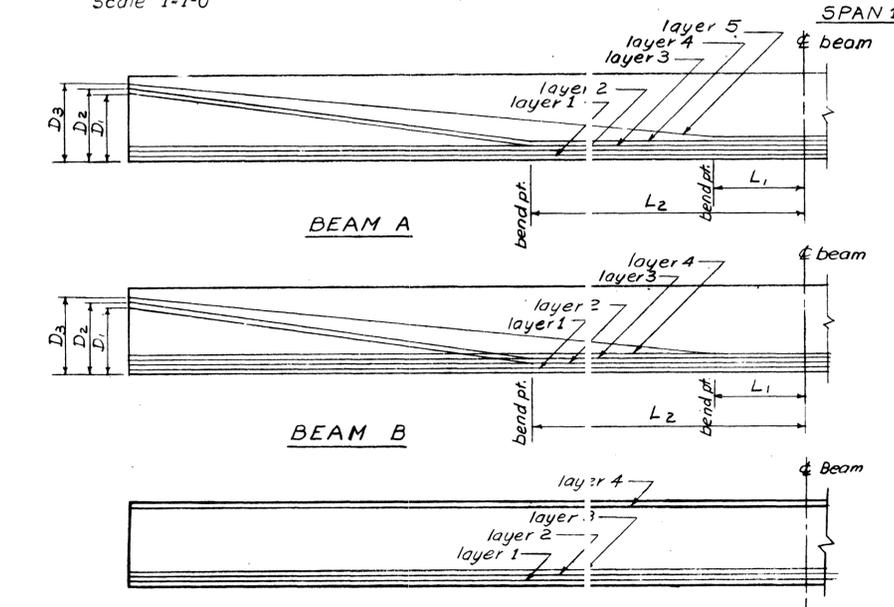
NOTE: Prestress strands shall extend a min. of 3" beyond beam ends.



DETAIL A

ESTIMATED QUANTITIES— 1 BEAM

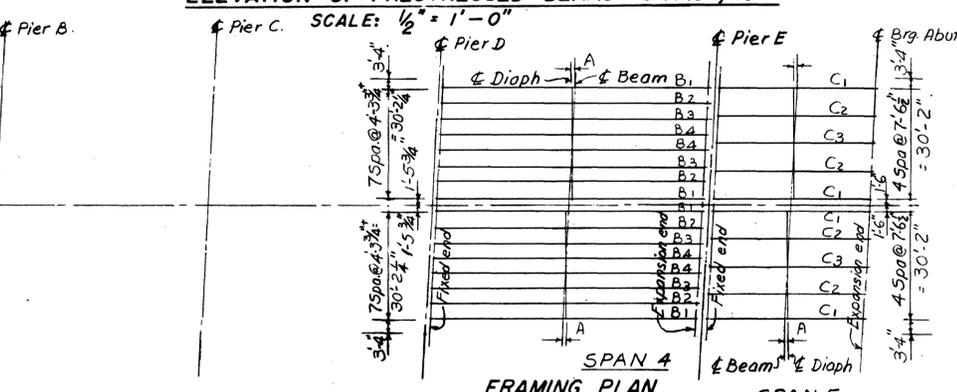
ITEM	UNIT	BEAM A	BEAM B	BEAM C
Precast Concrete	Cu. Yds.	4.2	5.8	3.5
Mild Reinforcing Steel	Lbs.	440	600	400
Prestress Steel 1/2 dia strands	Lin. Ft.	975	1,620	760



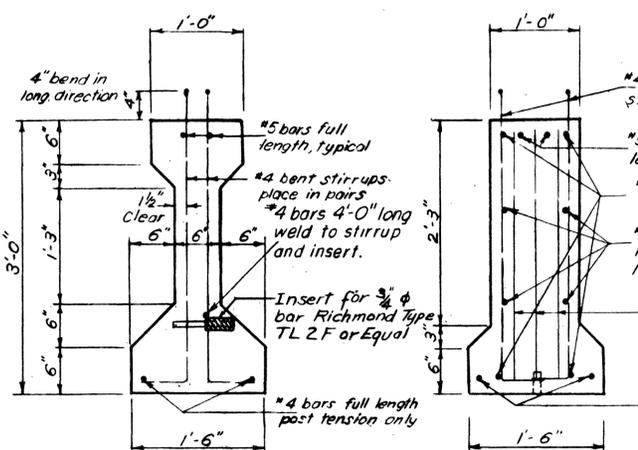
BEAM A

BEAM B

BEAM C (Note: All Strands are straight)



FRAMING PLAN



SECTION (B) (B)
SCALE: 1" = 1'-0"

TYPICAL SECTION
SCALE: 1" = 1'-0"

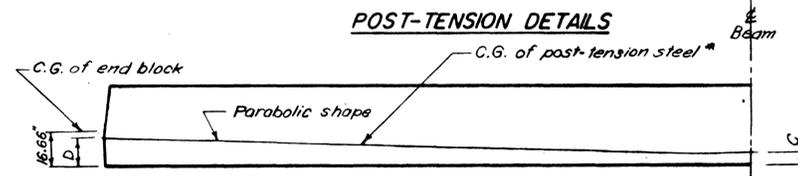
NOTE: Beams A1, A2 and A3 are identical to each other except for locations of sleeves and inserts. The same holds true for beams B and C.

POST-TENSION BEAM DATA

The C.G. of the post-tension steel may vary from the position shown above. The C.G. must approximate a parabola and all required design stress conditions must be satisfied. See the specifications.

Beam	Dimension C x D	Final Prestress force	Initial Prestress force
A	4 1/2" x 12"	320,000 lbs	395,000 lbs
B	4 1/2" x 12"	384,000 lbs	473,000 lbs
C	6 3/8" x 12"	295,000 lbs	364,000 lbs

POST-TENSION DETAILS



SECTION (C) (C)
SCALE: 1" = 1'-0"

Beam	Stirrup spacing for 1/2 beam Spaces shown below start @ the beam end
A	1 @ 2", 1 @ 4", 10 @ 6", 1 @ 8", 15 @ 1'-0" Total 55 Stirrups required per beam.
B	1 @ 2", 1 @ 4", 14 @ 6", 1 @ 6 7/8", 22 @ 1'-0" Total 77 Stirrups required per beam.
C	1 @ 2", 1 @ 4", 11 @ 6", 2 @ 11 1/2" & 10 @ 1'-0" Total 49 Stirrups required per beam.

STIRRUP SPACING

Beam	Distance from Brg. in feet	Bending Mom. (ft. kips)				Shear @ brg. kips	Beam	Distance from Brg. in feet	Bending Mom. (ft. kips)				Shear @ brg. kips
		2'-0"	12'-0"	15'-0"	€				2'-0"	21'-0"	26'-0"	€	
A	Dead Load (Beam)	24	67	76	82	7.9	B	Dead Load (beam)	22	154	166	168	11.4
	S.D.L.*	47	132	148	160	14.5		S.D.L.*	21	147	158	161	10.8
	Live Load**	102	430	466	496	57.7		Live Load**	67	426	470	471	35.8
C	Dead Load (Beam)	13	53	57	58	6.7	C	Dead Load (beam)	13	53	57	58	6.7
	S.D.L.*	25	105	114	116	12.4		S.D.L.*	25	105	114	116	12.4
	Live Load**	89	350	372	374	54.2		Live Load**	89	350	372	374	54.2

TABLE OF BENDING MOMENTS & SHEARS

* Superimposed dead load includes slab, diaphragm, etc.
** Live load includes future wearing surface of 20 lbs/sq.ft. & impact.

BILL OF MATERIALS

Beam	Item	Unit	Quantity
A	Prestressed concrete beams Type II (Length 42'-4")	each	10
B	Prestressed concrete beams Type II (Length 60'-1 3/4")	each	16
C	Prestressed concrete beams Type II (Length 35'-10")	each	10

Beam	No. strands in layer						Total No. 1/16" strands	Prestress Force*	Dimensions			Beams Req'd.		
	1	2	3	4	5	6			D1	D2	D3			
A	6	2	2	2	2	2	22	410,000 lbs	27"	29"	31"	3'-0"	8'-0"	10
B	6	2	2	2	2	2	26	492,000 lbs	27"	29"	31"	3'-0"	8'-0"	16
C	6	2	2	2	2	2	20	378,000 lbs						10

* Total Initial Prestress Force in lbs.

PRETENSION BEAM DATA

□ straight □ draped

DIAPHRAGM LOCATION
See framing plan.

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT 1-210-1 (17) 13 SHELBY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

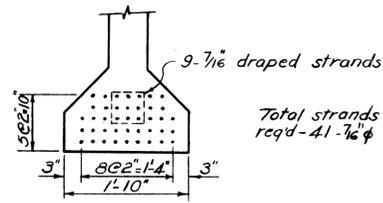
PARK ROAD OVER I-240
PRESTRESSED BEAMS— SPANS 1, 4 & 5

DATE: 9-25-58 SCALE: AS NOTED DRAWN BY: G.N. MAT CHECKED BY: BCC IN CHARGE: JH-11-13

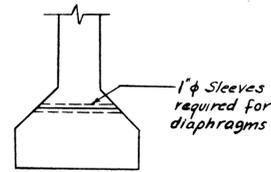
JOB NO. 332

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240-1 (17) 13	1989	169	334
REVISION					
REVISION					

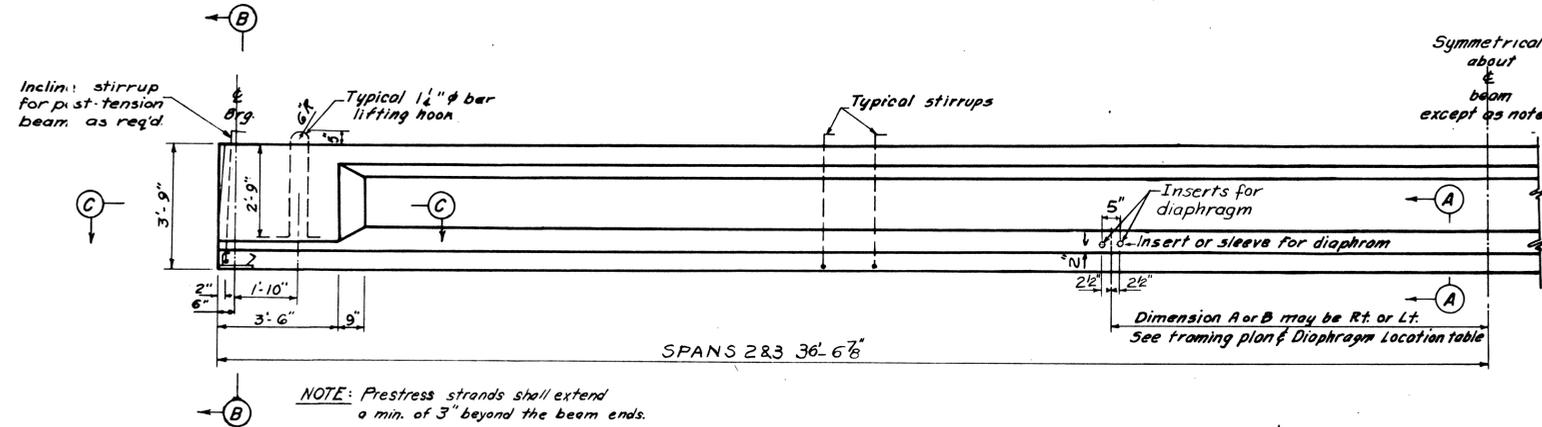
PRETENSION DETAILS



SECTION (A) (A)
BEAM-D 24 REQ'D
SCALE 3/4" = 1'-0"



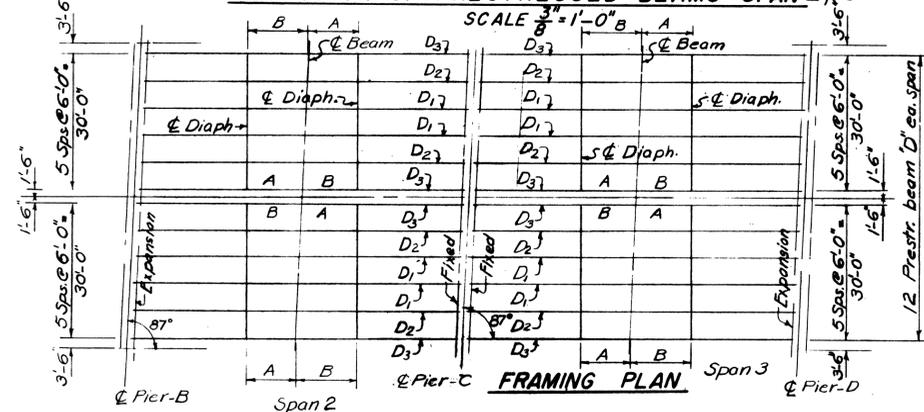
SECTION (C) DIAPH.
OF INTERIOR BEAM



NOTE: Prestress strands shall extend a min. of 3" beyond the beam ends.

NOTE: All beams (designated as Bm. D) are identical except for diaphragm inserts or sleeves.

ELEVATION OF PRESTRESSED BEAMS-SPAN 2 & 3



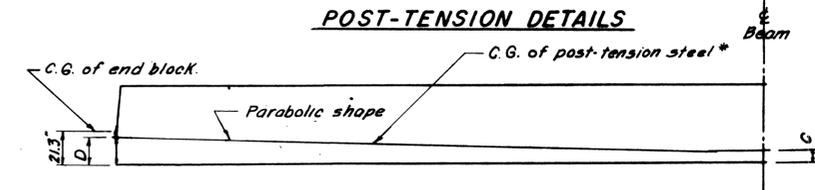
ESTIMATED QUANTITIES - 1 BEAM

ITEM	UNIT	BEAM D	BEAM	BEAM
Precast Concrete	Cu. Yds.	10.9		
Mild Reinforcing Steel	Lbs.	915		
Prestress Steel 7/16 dia. strands	Lin. Ft.	3020		

GENERAL NOTES

- The Contractor has the option of furnishing pretensioned, post-tensioned, or a combination beam. See the specifications.
- SPECIFICATIONS are the STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS.
- LOADING: H20-S16-44
- REINFORCING STEEL: See specifications.
- FORMS & FINISH: See specifications
- All reinforcing steel, prestressing strands, lifting hooks, inserts, sleeves, base plates and anchors, or other items cast into the beam, and the steel plates, anchor bolts and self lubricating bronze plates will be included for payment purposes in the unit price per each for FURNISH & PLACE PRESTRESSED CONCRETE BEAMS, TYPE III, LENGTH _____
- The Contractor shall provide a 3/4" dia. x 1'-6" long dowel with threaded end for each insert. The cost will be included in the unit price for FURNISH & PLACE PRESTRESSED CONCRETE BEAMS, TYPE III, LENGTH 73'-1 1/2"
- BEARINGS for both fixed and expansion ends of TYPE III beams are shown on Bridge Dwg. 9.
- Prestressing forces shown do not include losses due to friction, jack losses or relaxation of the anchorage. See the specifications.
- After concrete has attained initial set, scrub top surface of beam to remove laitance and leave a rough finish.

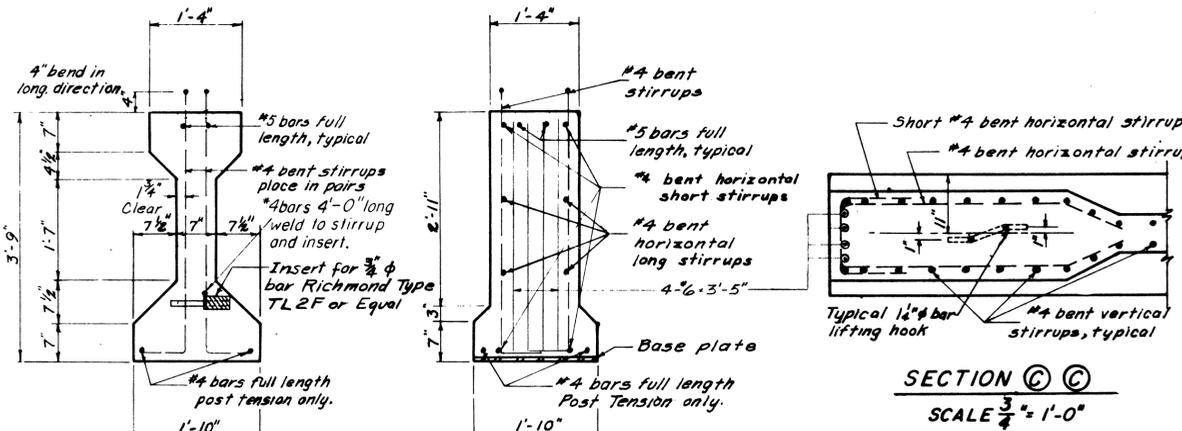
POST-TENSION DETAILS



POST-TENSION BEAM DATA

* The C.G. of the post-tension steel may vary from the position shown above. The C.G. must approximate a parabola and all required design stress conditions must be satisfied. See the specifications.

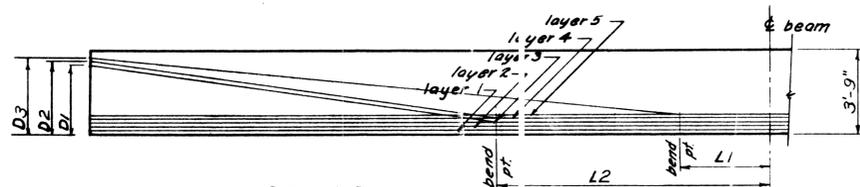
Beam	Dimension * C	Dimension * D	Final Prestress force	Initial Prestress force
D	5'-3"	1'-3"	605,000*	746,000*



TYPICAL SECTION
SCALE 3/4" = 1'-0"

SECTION (B) (B)
SCALE 3/4" = 1'-0"

SECTION (C) (C)
SCALE 3/4" = 1'-0"



BEAM D

Beam	No. strands in layer					Total No. 7/16 strands	Prestress Force*	Dimensions					Beams Req'd.
	1	2	3	4	5			D1	D2	D3	L1	L2	
D	9	9	6	4	5	41	775,000*	3'-0"	2'-2"	3'-4"	4'-0"	12'-0"	24

* Total Initial Prestress Force in lbs.

PRETENSION BEAM DATA

straight - draped

TABLE OF BENDING MOMENTS & SHEARS

* Superimposed dead load, includes slab, diaphragm, etc.
** Live load includes future wearing surface of 20' lbs./sq. ft. & impact.

Beam	Distance from Brg. in feet	Bending Mom. (ft. kips)				Shear @ Brg. KIPS	Beam	Distance from Brg. in feet	Bending Mom. (ft. kips)				Shear @ Brg. KIPS
		3'-9"	24'-0"	32'-0"	€				€	€	€	€	
D	Dead Load (Beam)	75	337	375	379	21.0							
	S.D.L.*	69	309	344	349	19.4							
	Live Load	185	782	848	849	51.5							

STIRRUP SPACING

Beam	Stirrup spacing for 1/2 beam Spaces shown below start @ the beam end
D	10@2", 10@4", 15@6", 1@6", 28@1'-0"
	91 stirrups required per beam.

Bm.	Dimensions A B	No. of inserts/sleeves	
		Ext. Int.	Interior btm. beam
D1	11'-11 1/8" 12'-2 3/8"	-	2
D2	11'-7 3/8" 12'-6 3/8"	-	2
D3	11'-3 3/8" 12'-10 3/8"	2	-

BILL OF MATERIALS

Beam	Item	Unit	Quantity
D	Prestressed concrete beams Type III (Length. 73'-1 1/2")	each	24

BRIDGE 14

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT 1-240-1 (17) B SHLEY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION
HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY, ASSOCIATED ENGINEERS

PARK ROAD OVER I-240
PRESTRESSED BEAMS-SPANS 2&3

DIAPHRAGM LOCATION
See framing plan.

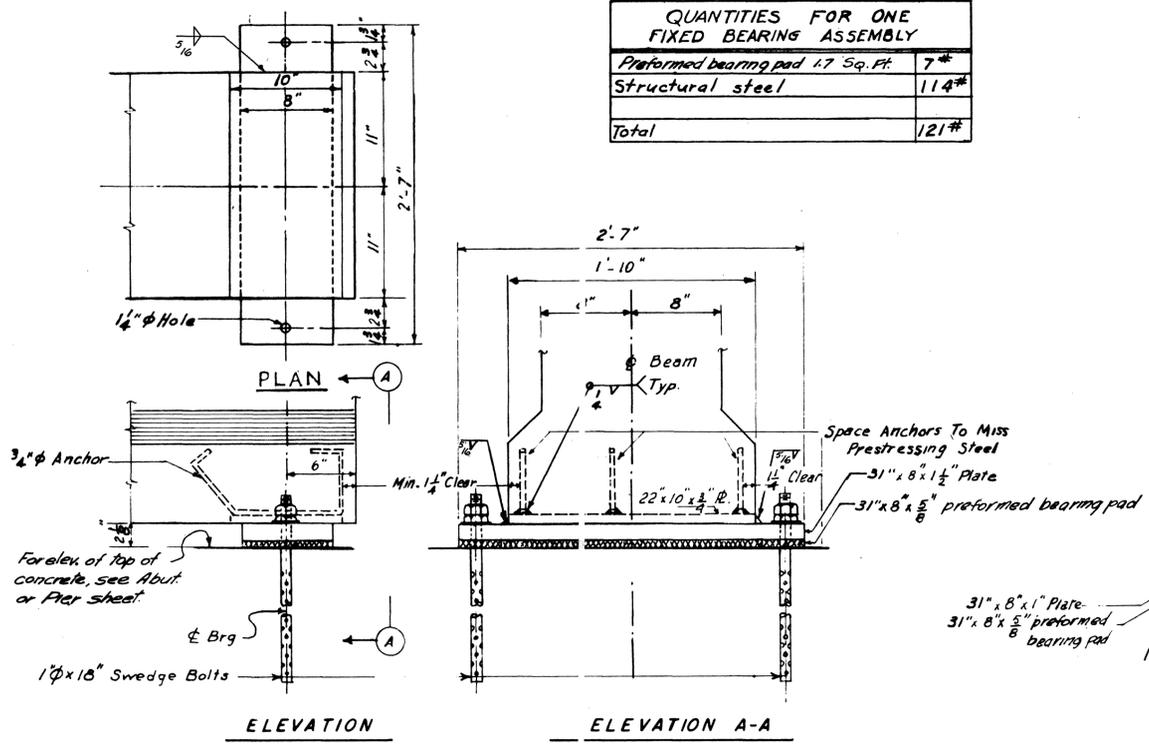
PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240-1 (17) 13	1959	170	334
REVISION					
		1-9-59	11-10-59		
REVISION					

QUANTITIES FOR ONE FIXED BEARING ASSEMBLY

Preformed bearing pad 17 Sq. Ft.	7 #
Structural steel	114 #
Total	121 #

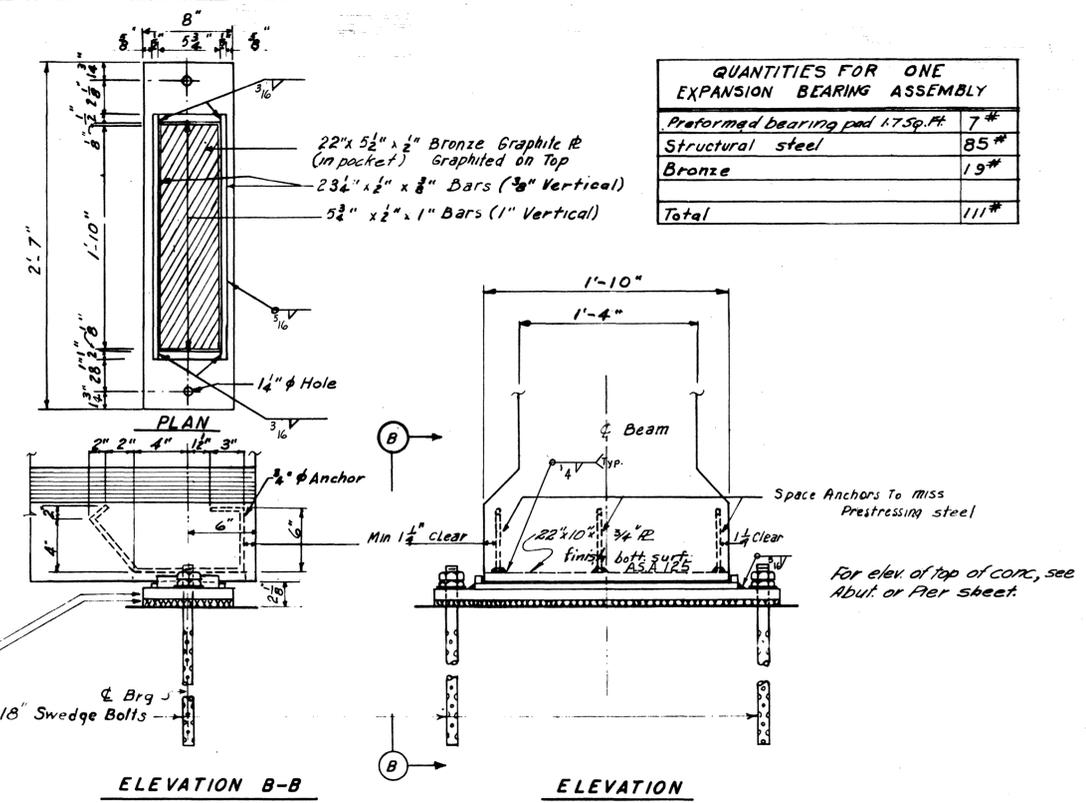
QUANTITIES FOR ONE EXPANSION BEARING ASSEMBLY

Preformed bearing pad 17 Sq. Ft.	7 #
Structural steel	85 #
Bronze	19 #
Total	111 #



FIXED BEARING DETAILS FOR TYPE III BEAM

SPAN 2 & 3
24 REQUIRED
SCALE 1 1/2" = 1'-0"



EXPANSION BEARING DETAILS FOR TYPE III BEAM

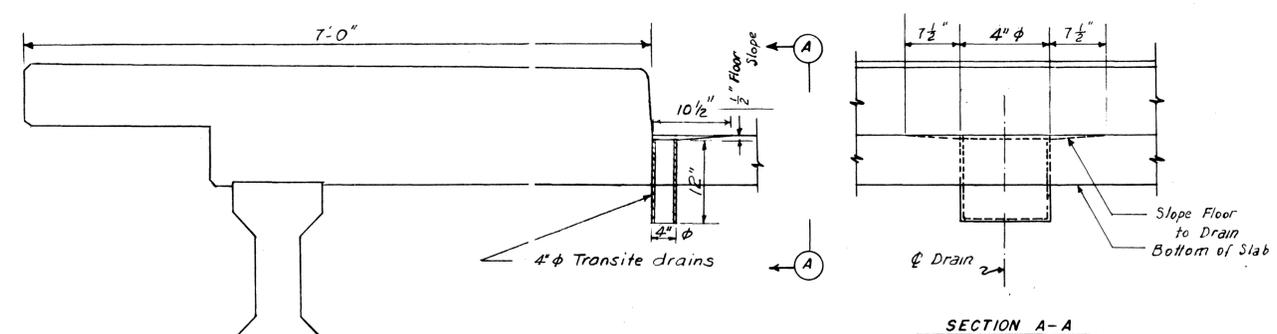
SPAN 2 & 3
24 REQUIRED
SCALE 1 1/2" = 1'-0"

NOTES

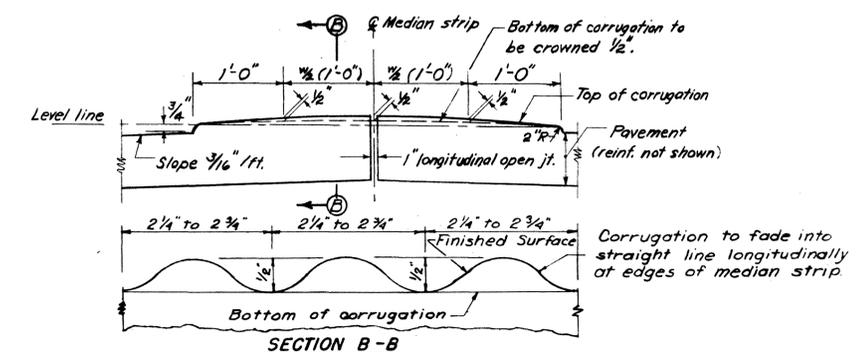
- BEARINGS**
- Bearing for TYPE II prestressed beams shall be 8" x 16" x 3/8" preformed bearing pads (72 req'd this structure). These bearings will be considered incidental to the contract price bid for FURNISH & PLACE PRESTRESSED CONCRETE BEAMS, TYPE II LENGTH —
 - Self lubricating bronze plates, structural steel for bearings & anchors are incidental to the contract bid price for FURNISH & PLACE PRESTRESSED CONCRETE BEAM TYPE III LENGTH 73'-1 3/4".
Weights shown are computed on the following basis:
STEEL at 490 lbs/cu.ft.
BRONZE at 562 lbs/cu.ft.
PREFORMED BEARING PADS at 75 lbs/cu.ft.
 - Preformed bearing pads. See Special Provisions.

DRAINS

- See bridge layout for location of drains.
- Transverse slab reinforcing steel shall be bent in the field to clear roadway drains as directed by the engineer.



DRAIN DETAILS FOR 7' SIDEWALK
20 DRAINS REQUIRED
SCALE 1 1/2" = 1'-0"



DETAIL OF STANDARD CORRUGATED CONCRETE MEDIAN STRIP

ITEM	UNIT	QUANTITY
* Structural steel (fixed bearing)	lbs	2736
* Structural steel (exp. bearing)	lbs	2040
4" φ Transite drains	each	20
* Self lubricating bronze	lbs	456
* Preformed bearing pads	sq. ft.	154

* The following is a material breakdown by span
PREFORMED BEARING PADS
Spans 1, 4 or 5 72 Sq. ft. of 5/8"
Spans 2 or 3 82 Sq. ft. of 5/8"

STEEL
2388 # in span 2 or 3.
BRONZE
228 # in Expan. brgs Sp. 2 or 3.

BRIDGE 14

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT 1-240-1 (17) SHELLEY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY, ASSOCIATED ENGINEERS
**PARK ROAD OVER I-240
BEARINGS & MISCELLANEOUS DETAILS**

DATE:	SCALE:	DRAWN BY:	CHECKED BY:	IN CHARGE:
10-18-58	As Noted	G.N.	C.O.	BCC

MICROFILMED

