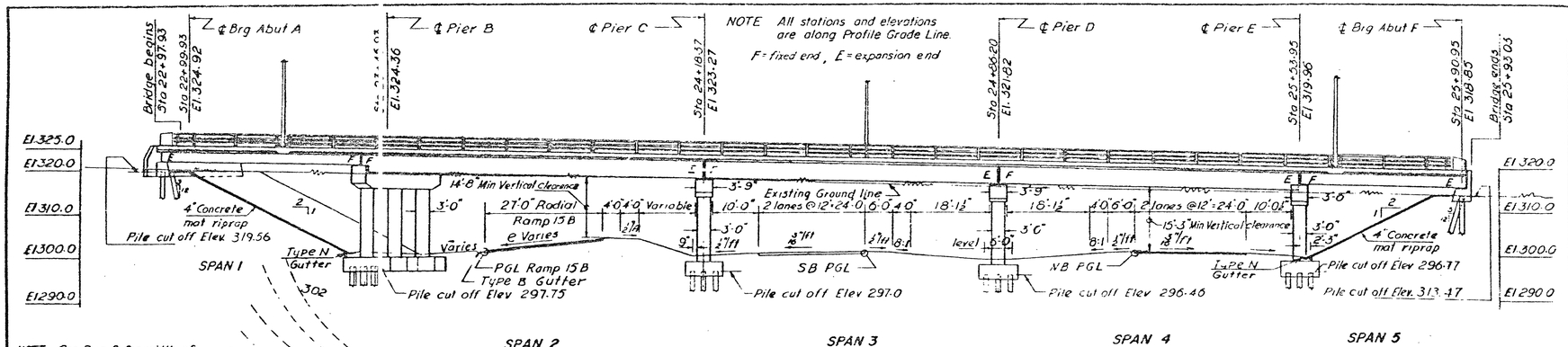


NOTE: See Dwg. 2 for width of Berms and length of Wing Walls.

NOTE: See Dwg. 5 for Taper dimensions of bridge Slab in Span 1.

NOTE: Field locate toe of riprap at intersection with final grading or existing ground level

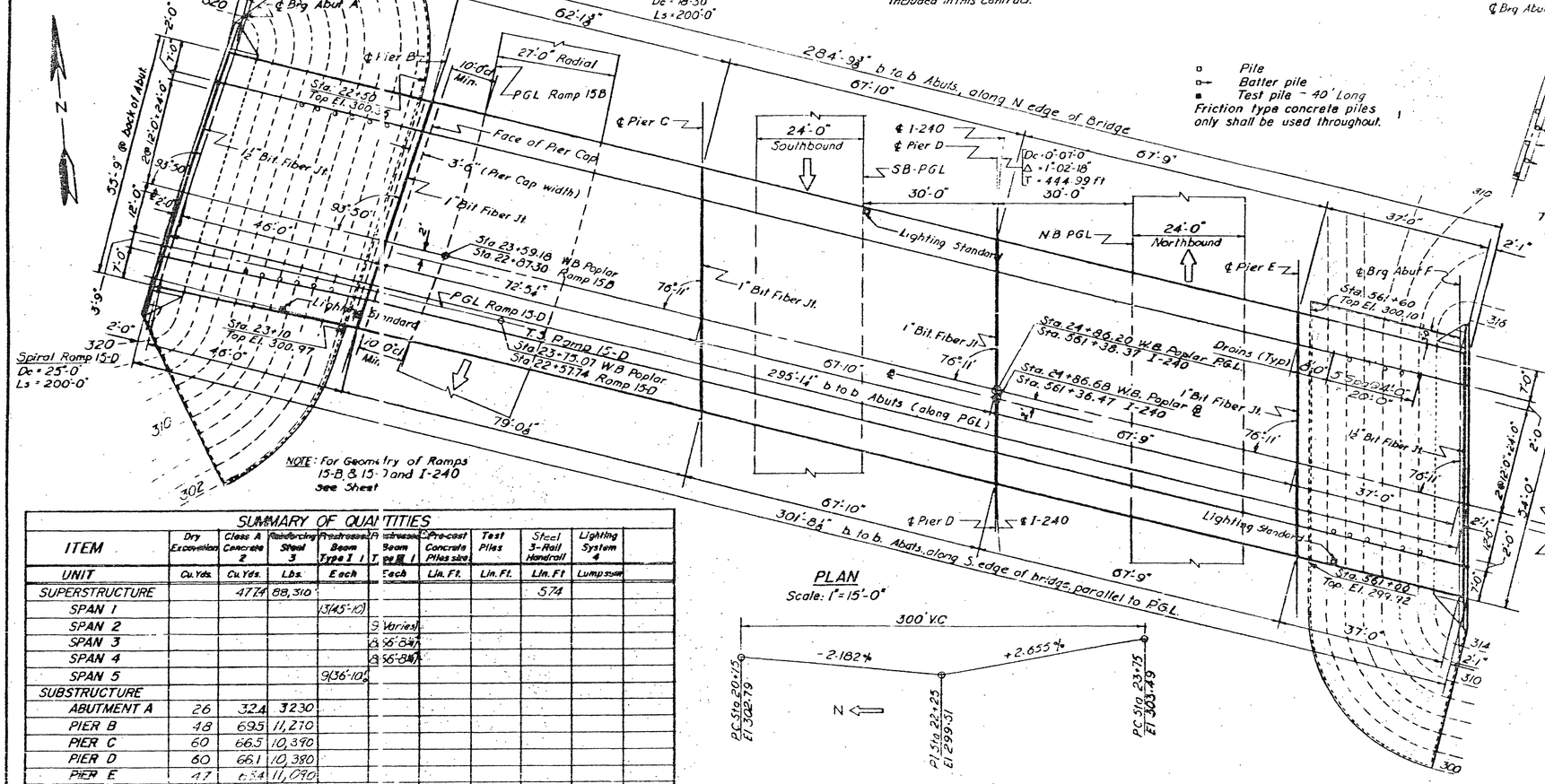
ELEVATION NORMAL TO I-240

Scale: 1"=15'-0"

Note: Type "N" Gutter is not included in this contract.

SPECIAL NOTES ON PILES

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



NOTE: For Geometry of Ramps 15-B, & 15-D and I-240 See Sheet

PLAN

Scale: 1"=15'-0"

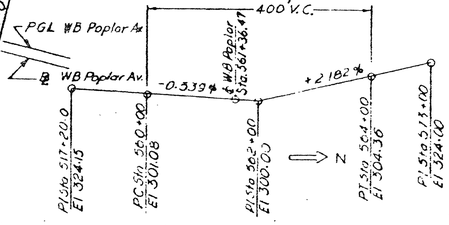
SUPERELEVATION

PROFILE GRADE LINE RAMP 15B

PILE LOCATION SKETCH

NOTE ON TEST PILES

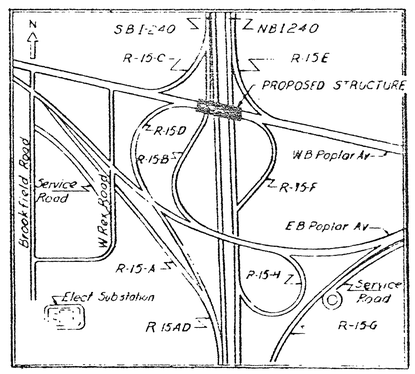
BEFORE ANY PILES ARE ORDERED, PRECAST CONCRETE TEST PILES SHALL BE DRIVEN. TEST PILE LOCATIONS ARE SHOWN ON THIS SHEET. FROM THE RESULTS, ALL PILES SHALL BE ORDERED OF SUCH LENGTH AS TO PROVIDE THE MINIMUM BEARING CAPACITIES SHOWN.
TEST PILES SHALL BE DRIVEN IN FINAL LOCATION IN FOOTINGS AND ABUTMENTS.



PROFILE GRADE LINE I-240

PROFILE GRADE LINE W.B POPLAR AV.

LOCATION SKETCH



SUMMARY OF QUANTITIES

ITEM	Dry Excavation	Class A Concrete 2	Reinforcing Steel 3	Prestressed Beam Type I	Prestressed Beam Type III	Pre-cast Concrete Piles size	Test Piles	Steel 3-Rail Handrail	Lighting System 4
UNIT	Cu.Yds.	Cu.Yds.	Lbs.	Each	Each	Lin. Ft.	Lin. Ft.	Lin. Ft	Lump sum
SUPERSTRUCTURE		477.4	88,310					57.4	
SPAN 1				(145'-10")					
SPAN 2				9	Varies				
SPAN 3				8	36'-8½"				
SPAN 4				8	36'-8½"				
SPAN 5				9	(36'-10")				
SUBSTRUCTURE									
ABUTMENT A	26	32.4	3230						
PIER B	48	69.5	11,210						
PIER C	60	66.5	10,390						
PIER D	60	66.1	10,380						
PIER E	47	63.4	11,090						
ABUTMENT F	18	31.7	3250						
TOTAL	259	807.0	137,920	22	5	2475	240	57.4	Lump Sum

1. Payment for pref. brg. pads, anchor rods, items cast into the beams and threaded dowels, etc. is considered incidental to the contract unit price bid for furnish and place Prestressed Beams Type I, & III Required for bearings for this structure are 29.3 sq. ft. of ½ bearing pad & 61.1 sq. ft. of 1" bearing pad.
2. All bituminous joint materials & transite drains are considered incidental to the class A concrete for payment.
3. The reinforcing steel includes 114 lbs. of WWF
4. The contractor shall furnish and install anchor bolts for light standards conduits, conduletes, hangers pull boxes, grounding wire & auxiliary equipment.
5. At the contractor's option cast in place concrete piles may be used at Piers B, C, D and E, instead of the precast piles shown. Cast in place piles shall be 14".

DESIGN STRESSES

LOADING: H20-S16-44 (MODIFIED FOR HIL. LOADING)

CAST IN PLACE CONCRETE: f'_c = 3000 psi; f_c = 1200 psi; n = 10

REINFORCING STEEL: f_s = 18,000 psi

STRUCTURAL STEEL: f_s = 18,000 psi

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	172	334

REVISION 9-1-59

REVISION 11-10-59 11-23-59-Beam Length Span 5; 12-18-59 2-16-62 Reinf. Steel Quant

GENERAL NOTES

1. SPECIFICATIONS - STANDARD ROAD & BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS & PUBLIC WORKS.
2. CAST IN PLACE CONCRETE - SHALL BE CLASS "A". ALL EXPOSED EDGES OF CONCRETE SHALL BE BROKEN WITH A 1 1/2 INCH TRIANGULAR CHAMFER ON SUBSTRUCTURE AND A 3/4 INCH TRIANGULAR CHAMFER ON SUPERSTRUCTURE.
3. REINFORCING STEEL - SEE SPECIFICATIONS
   THE MINIMUM LAP FOR SPLICES OF MAIN REINFORCING STEEL SHALL BE 30 DIAMETERS, AND FOR OTHER STEEL 20 DIAMETERS, UNLESS OTHERWISE NOTED. ALL DIMENSIONS ARE TO THE CENTER OF BARS UNLESS OTHERWISE INDICATED. REINFORCING BAR HOOK AND BEND DIMENSIONS SHALL BE THOSE RECOMMENDED BY THE ACI IN ITS : "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE HIGHWAY STRUCTURES."
   REINFORCING BAR LOCATIONS SHALL BE SHIFTED SLIGHTLY TO ALLOW FOR PLACEMENT OF ANCHOR BOLTS FOR BEARINGS, HANDRAILS, AND LIGHT STANDARDS.
   ALL BARS SHALL HAVE A MINIMUM COVER OF 3 INCHES IN PIER FOOTINGS, 2 INCHES IN PIER CAPS, ABUTMENTS AND COLUMNS, AND 1 INCH IN SLABS, EXCEPT AS NOTED OTHERWISE ON DRAWINGS.
4. FORMS & FINISH - SEE SPECIFICATIONS.
5. FILL - ALL FILL SHALL BE PLACED AND COMPACTED BEFORE PILES ARE DRIVEN.
6. PILES - SHALL BE OF CONCRETE AS SHOWN ON DWG. NO. F-2-118 MINIMUM BEARING CAPACITY OF FILES SHALL BE AS SHOWN ON THIS SHEET.
7. PRESTRESSED BEAM CONCRETE - SEE SPECIAL PROVISIONS.
8. PRESTRESSED BEAMS REINFORCEMENT - SEE SPECIAL PROVISIONS.
9. NOTES ON DETAILING REINFORCING STEEL: STANDARD ABBREVIATIONS ARE USED THROUGHOUT. FF- FAR FACE: NF - NEAR FACE; EF - EACH FACE:
   EXAMPLE: 8-#5H@12
   8-NUMBER OF BARS; #5-BAR SIZE
   H@-POSITION AND LOCATION: 12-SPACING:
   H-HORIZONTAL; 3-LOCATION IN ABUTMENT-A:
   3-THIRD BAR IN SERIES.
10. PREFORMED BEARING PADS - SEE SPECIAL PROVISIONS.
11. BEARING ELEVATIONS - AT LOCATIONS OF PIERS AND ABUTMENTS ARE GIVEN TO THE BOTTOM OF THE PRE-FORMED BEARING PADS. THESE ELEVATIONS MAY BE OBTAINED BY STEPPING THE PIER CAP OR ABUTMENT, OR OTHER APPROVED METHODS.

LIST OF DRAWINGS	DWG NO
BRIDGE LAYOUT	1
ABUTMENTS A & F	2
PIERS B & E	3
PIERS C & D	4
SUPERSTRUCTURE - SLAB	5
SUPERSTRUCTURE - SLAB DETAILS	6
PRESTRESSED BEAMS - SPANS 1 & 5	7
PRESTRESSED BEAMS - SPANS 2, 3 & 4	8
PRESTRESSED BEAMS - SPAN 2	9
HANDRAIL AND LIGHTING DETAILS	10
STANDARD PILE DETAILS-STAND F-2-118 SHT 3/8	
STANDARD 3 RAIL STEEL HANDRAIL STD. G-10-100	SHT 3/8

Bridge 15 A

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

HARLAND BARTHOLOMEW AND ASSOCIATES ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

W.B. POPLAR AVENUE OVER I-240
BRIDGE LAYOUT

DATE	SCALE	DRAWN BY	CHECKED BY	N CHARGE	
11-10-58	As noted	V.P	G.N	B.C.C	H-11-17

JOB NO. 332

Bridge Dwg. 1 of 10

K&E CO. P9198

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	173	334
REVISION	11-10-59				
REVISION					

NOTES

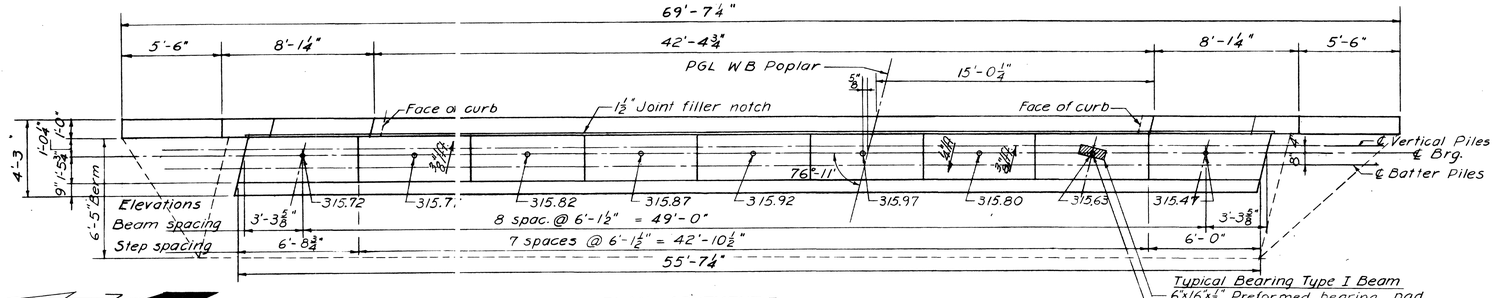
1. See Bridge Dwg. 1 for General Notes, Design Stresses, and Pile Data.

BILL OF STEEL

Bar	Size	Abt. A	Abt. F	Length	Shape	Location
Ha1	#8	10	10	55'-3"	——	Seat
Ha2	#4	8	8	28'-6"	——	Parapt.
Ha3	#4	28	28	9'-3"	——	W. Wall
Ha4	#4	4	4	14'-0"	——	W. Wall
Va1	#4	58	60	13'-0"	[	Seat
Va2	#4	85	85	6'-1"	⊓	Parapt.
Va3	#5	26	26	10'-1"	⊓	W. Wall
Va4	#4	28	28	8'-2"	⊓	W. Wall
Va5	#4	85	85	2'-0"	I	Parapt.

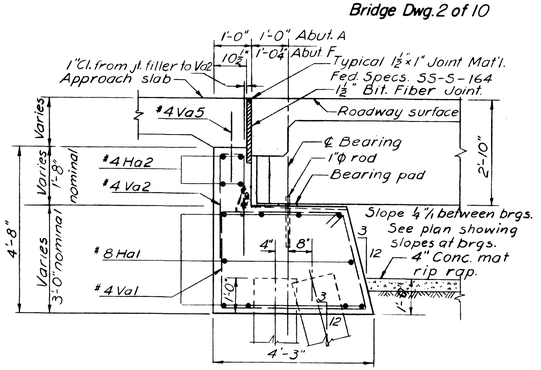
* 22-1"ϕx1'-6" Anchor rods are req'd at Abuts=110#

* Not included in quantities this sheet. Considered incidental to the prestressed beams for payment.



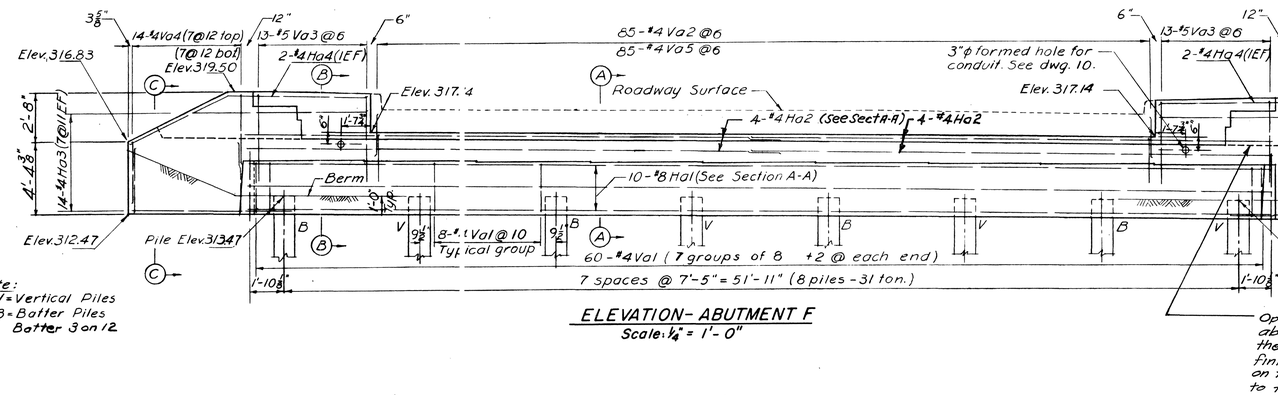
PLAN - ABUTMENT F

Scale: 1/4" = 1'-0"



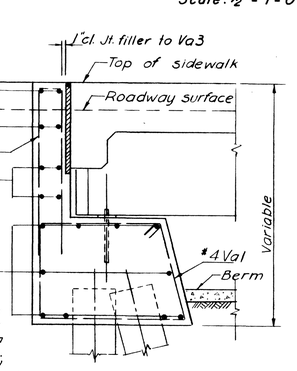
SECTION A - A

Scale: ½" = 1'-0"



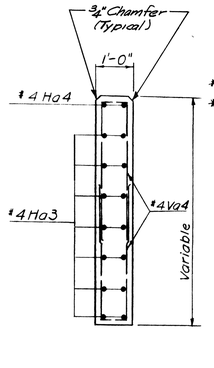
ELEVATION - ABUTMENT F

Scale: 1/4" = 1'-0"



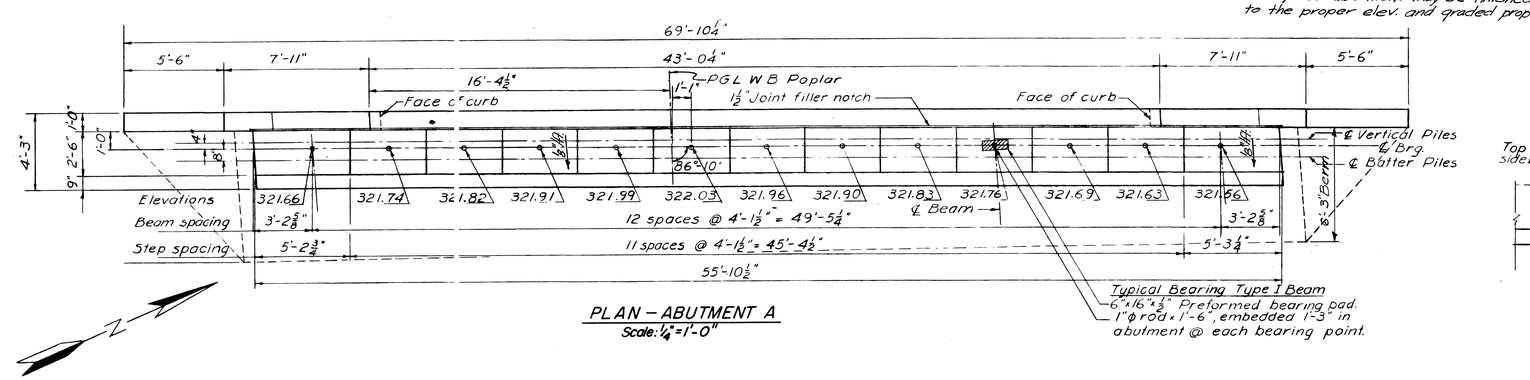
SECTION B-B

Scale: ½" = 1'-0"



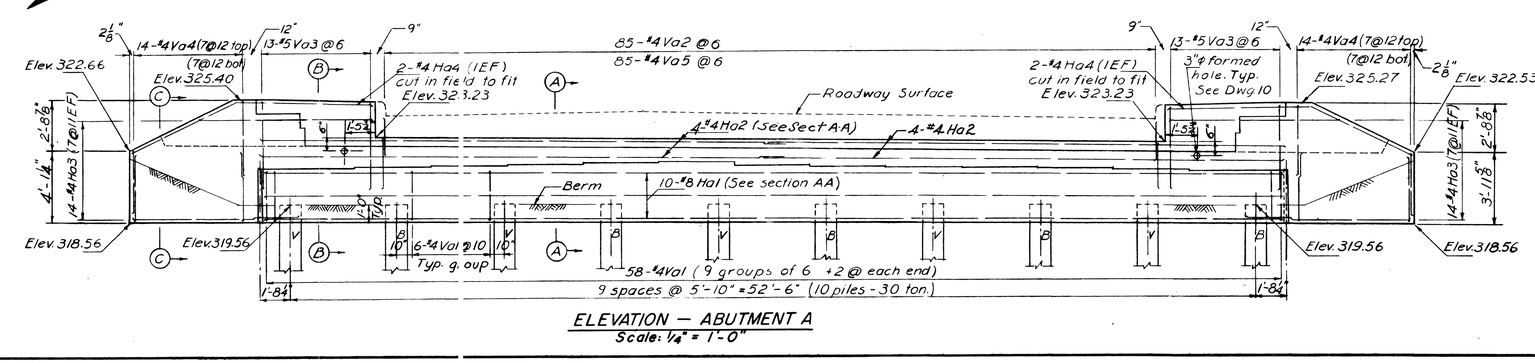
SECTION C-C

Scale: ½" = 1'-0"



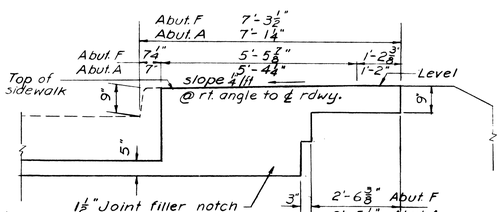
PLAN - ABUTMENT A

Scale: 1/4" = 1'-0"



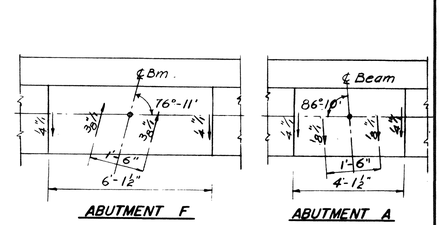
ELEVATION - ABUTMENT A

Scale: 1/4" = 1'-0"



JOINT FILLER NOTCH

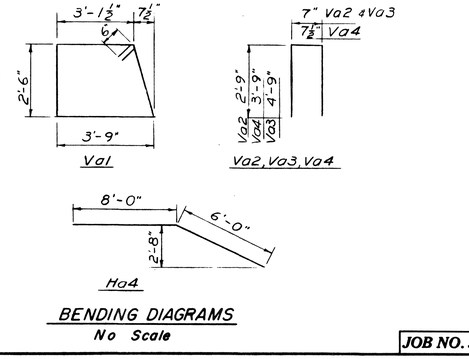
Scale: ½" = 1'-0"



ABUTMENT F — ABUTMENT A

PLAN SHOWING FINISH SLOPES ON BEARING SEATS

Scale: ⅜" = 1'-0"



BENDING DIAGRAMS

No Scale

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY ABT. A	QUANTITY ABT. F
Class A Concrete	Cu.Yds.	32.4	31.7
Steel Bar Reinforcing	Lbs:	3230	3250

Bridge 15 A

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

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

W.B. POPLAR AVENUE OVER I-240
ABUTMENTS A & F

JOB NO. 332	DATE:	SCALE:	DRAWN BY:	CHECKED BY:	IN CHARGE:	
	11-10-58	AS NOTED	W G	G.N	B C C	H-11-18

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	174	334

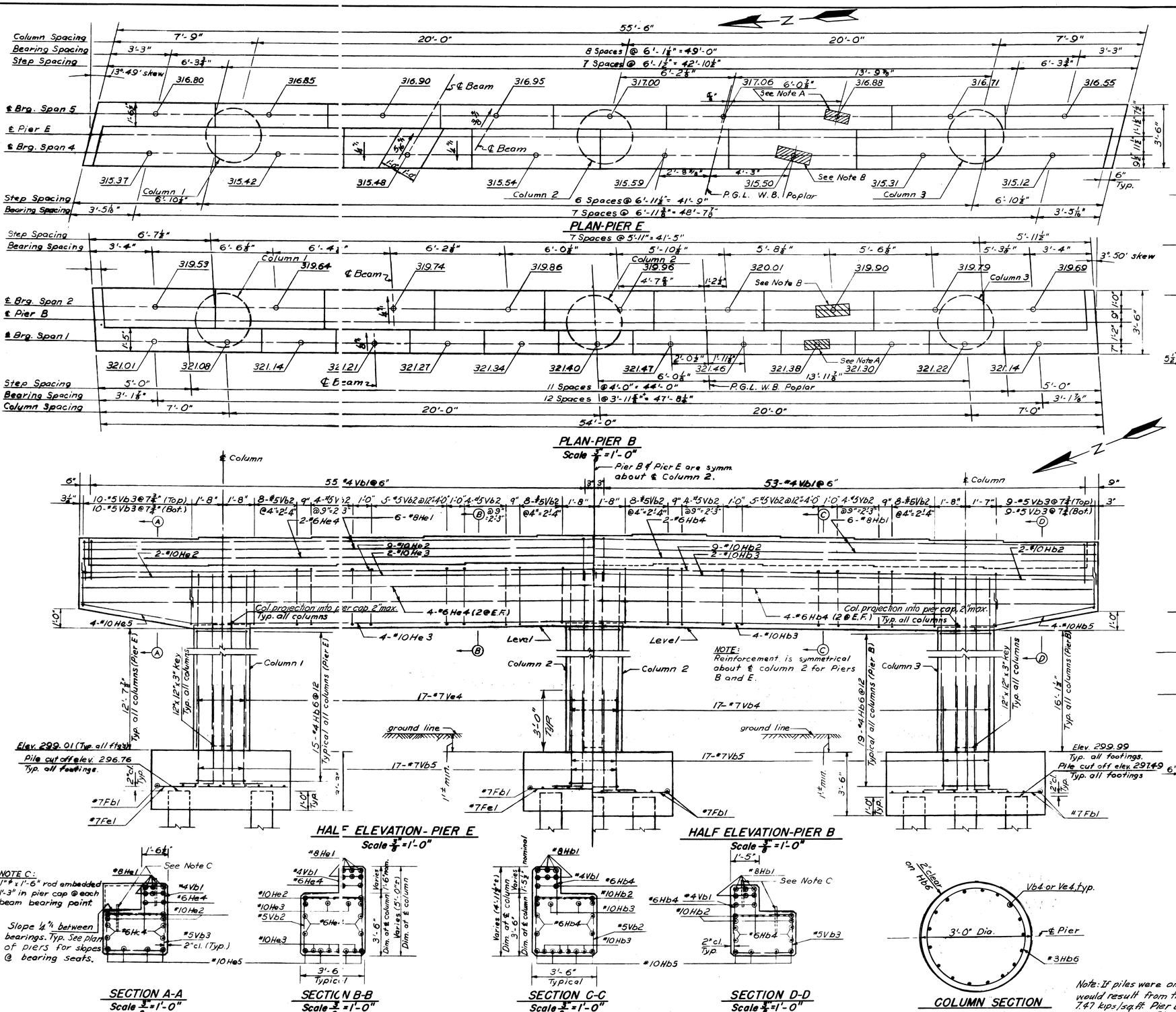
REVISION 11-10-59
REVISION 12-16-62 Reinf. Steel Quant.

NOTE A: Type I Beam bearing shall consist of one 1"ϕ x 1'-6" rod embedded 1'-3" in pier cap and one 6"x16"x½" preformed bearing pad, as shown.

NOTE B: Type III Beam bearing, shall consist of one 1"ϕ x 1'-6" rod embedded 1'-3" in pier cap and one 8"x22"x1" preformed bearing pad, as shown.

NOTES

1. See Bridge Dwg. 1 for General Notes, Design Stresses, and Pile Data.
2. Elevations at bearing locations on piers are given to the bottom of the neoprene bearing pads. These elevations may be obtained by stepping the pier cap, or using other approved methods.



SECTION A-A
Scale ⅜"=1'-0"

SECTION B-B
Scale ⅜"=1'-0"

SECTION C-C
Scale ⅜"=1'-0"

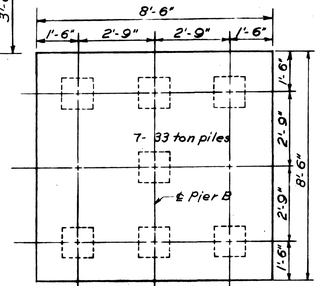
SECTION D-D
Scale ⅜"=1'-0"

HALF ELEVATION-PIER E
Scale ⅜"=1'-0"

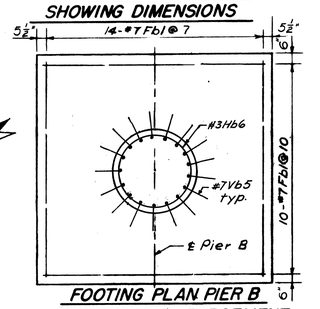
HALF ELEVATION-PIER B
Scale ⅜"=1'-0"

COLUMN SECTION

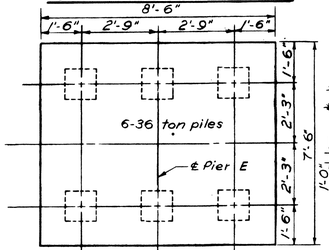
Note: If piles were omitted, the maximum soil pressure that would result from the design loads would be;
7.47 kips/sq.ft. Pier B
8.13 kips/sq.ft. Pier E



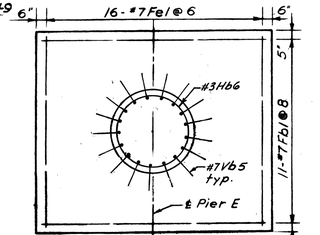
FOOTING PLAN PIER B
SHOWING DIMENSIONS



FOOTING PLAN PIER B
SHOWING REINFORCEMENT



FOOTING PLAN PIER E
SHOWING DIMENSIONS

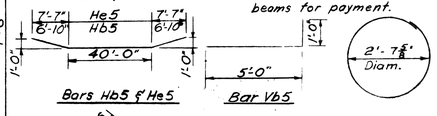


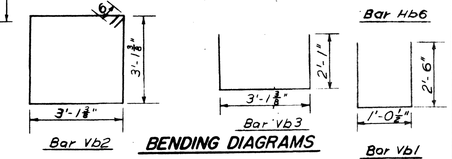
FOOTING PLAN PIER E
SHOWING REINFORCEMENT
Scale ⅜"=1'-0"

BILL OF STEEL

Bar	Pier B	Pier E	Size	Length	Shape	Location
Fb1	72	33	#7	8'-0"	——	Footing
Fe1	—	48	#7	7'-0"	——	Footing
Hb1	6	—	#8	53'-8"	——	Cap
Hb2	11	—	#10	53'-8"	——	Cap
Hb3	6	—	#10	40'-0"	——	Cap
Hb4	6	—	#6	53'-8"	——	Cap
Hb5	4	—	#10	53'-8"	⌒	Cap
Hb6	57	45	#3	9'-0"	○	Column
He1	—	6	#8	55'-2"	——	Cap
He2	—	11	#10	55'-2"	——	Cap
He3	—	6	#10	40'-0"	——	Cap
He4	—	6	#6	55'-2"	——	Cap
He5	—	4	#10	55'-2"	⌒	Cap
Vb1	106	110	#4	6'-1"	⊔	Cap
Vb2	58	58	#5	13'-6"	⊓	Cap
Vb3	36	40	#5	7'-4"	⊔	Cap
Vb4	51	—	#7	18'-4"	——	Column
Vb5	51	51	#7	6'-0"	⌐¬	Col. Ftg.
Ve4	—	51	#7	14'-10"	——	Column

* 39-1"ϕx1'-6" Anchor rods are reqd at Piers B&E = 190 lbs.
* Not included in quant. this sht. Considered incidental to prestressed beams for payment.





BENDING DIAGRAMS

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY Pier B	Pier E
Class A Concrete	Cu. Yds.	69.5	63.4
Steel Bar Reinforcement	Lbs.	11,270	11,090

Bridge 15 A

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

W.B. POPLAR OVER I-240
PIERS B & E

DATE:	SCALE:	DRAWN BY:	CHECKED BY:	IN CHARGE:
11-26-58	AS SHOWN	D.A.S.	G.N.	R.C.C.

JOB NO. 332

H-11-19

K&E CO. P8166

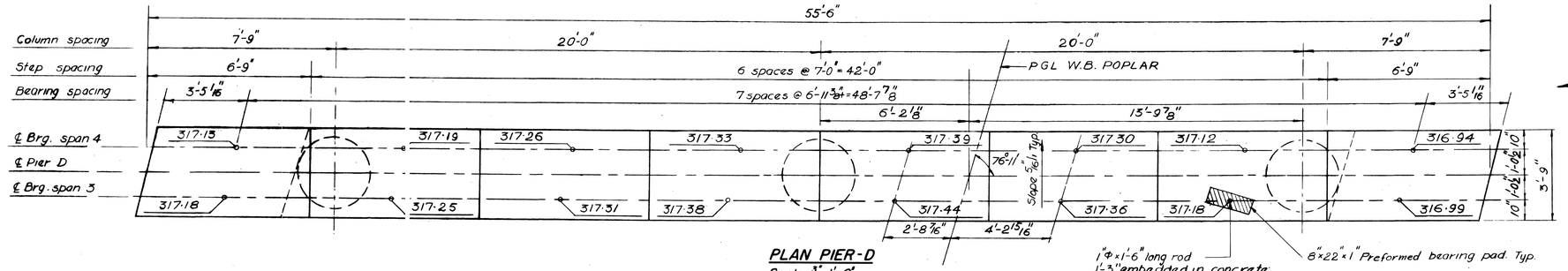
PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	175	334

REVISION 11-10-59, 12-18-59

REVISION 2-16-62 Reinf. Steel Quant.

NOTES

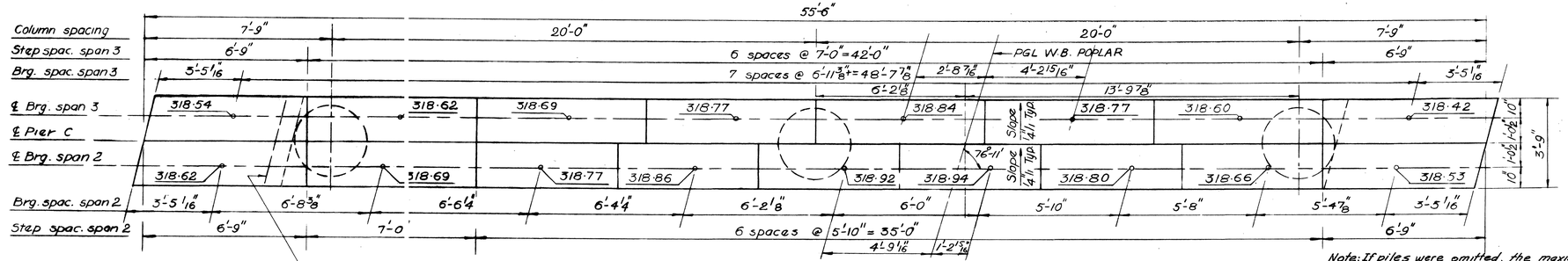
1. See Bridge Dwg. 1 for General Notes, Design Stresses, and Pile Data.



PLAN PIER-D
Scale: 3/8" = 1'-0"

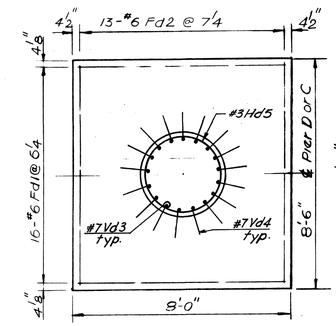
1"Φ x 1'-6" long rod 1'-3" embedded in concrete

8"x22"x1" Preformed bearing pad. Typ.



PLAN PIER-C
Scale: 3/8" = 1'-0"

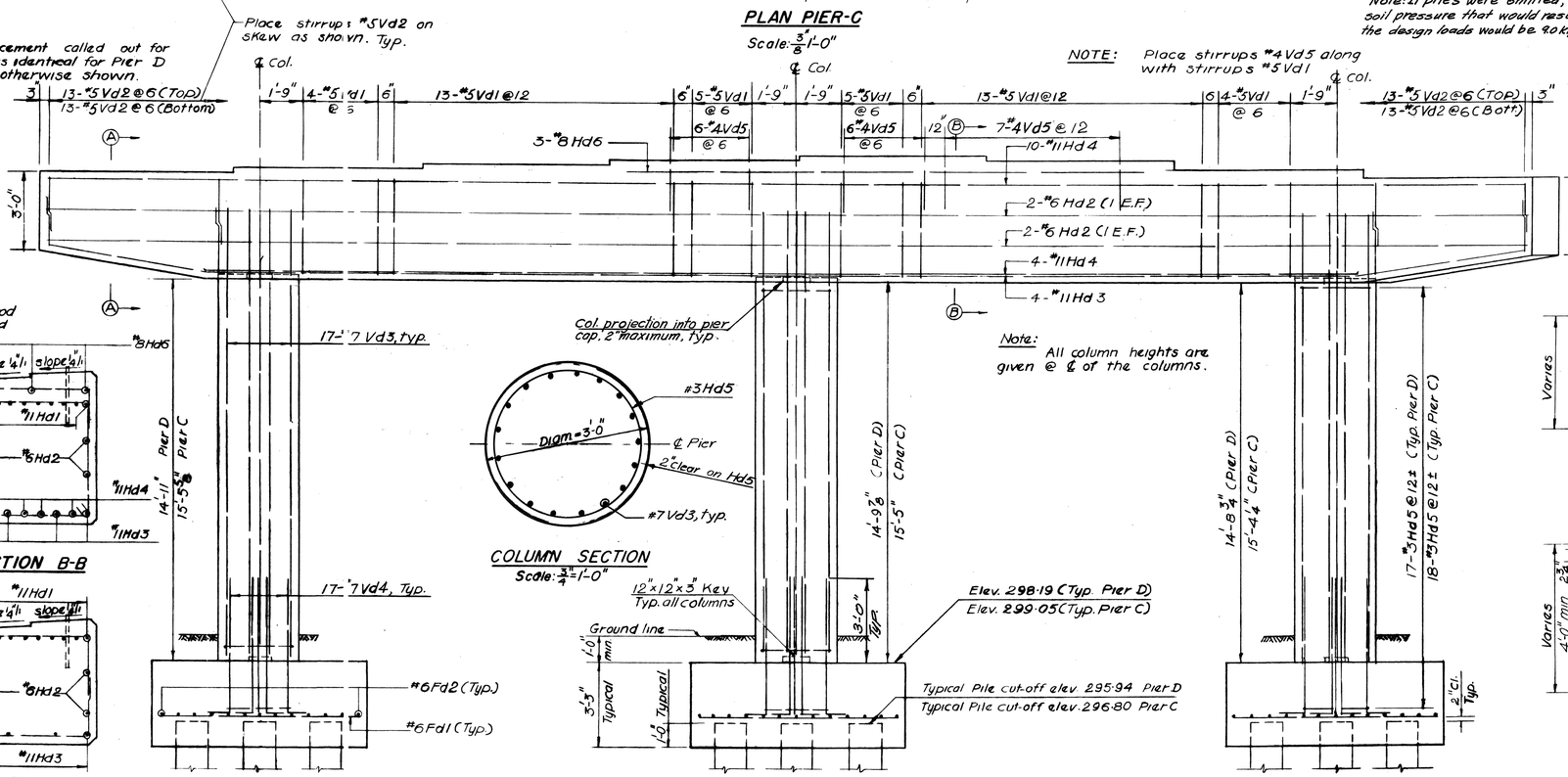
Note: If piles were omitted, the maximum soil pressure that would result from the design loads would be 9.0 kips/sq. ft.



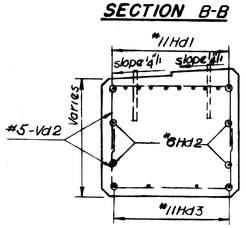
FOOTING PLAN PIER-D OR C SHOWING REINFORCEMENT
Scale: 3/8" = 1'-0"

FOOTING PLAN PIER-D OR C SHOWING DIMENSIONS
Scale: 3/8" = 1'-0"

NOTE: Reinforcement called out for Pier C is identical for Pier D unless otherwise shown.



SECTION B-B

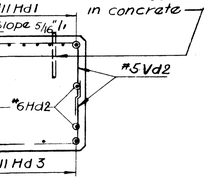


SECTION A-A

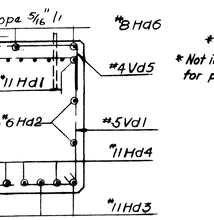
SECTIONS PIER C
Scale: 1/2" = 1'-0"

COLUMN SECTION
Scale: 3/4" = 1'-0"

ELEVATION PIER-D (ELEVATION PIER-C Similar)
Scale: 3/8" = 1'-0"

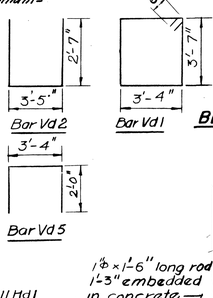


SECTION A-A
Scale: 1/2" = 1'-0"



SECTION B-B
Scale: 1/2" = 1'-0"

SECTIONS PIER D



BENDING DIAGRAMS Bar Vd4 Bar Hd3

BILL OF STEEL

Bar	NO Pier C	NO Pier D	Size	Length	Shape	Location
Fd1	48	48	#6	7'-6"	—	Footing
Fd2	39	39	#6	8'-0"	—	Footing
Hd1	10	10	#11	55'-2"	—	Pier cap
Hd2	4	4	#6	55'-2"	—	Pier cap
Hd3	4	4	#11	55'-4"	⌣	Pier cap
Hd4	4	4	#11	43'-0"	—	Pier cap
Hd5	54	51	#3	9'-0"	○	Column
Hd6	3	3	#8	17'-0"	—	Pier cap
Vd1	44	44	#5	14'-10"	□	Pier cap
Vd2	52	52	#5	8'-7"	⊔	Pier cap
Vd3	51	51	#7	17'-8"	⌊	Column
Vd4	51	51	#7	6'-0"	⌊	Col. Ftg.
Vd5	19	19	#4	7'-4"	⊔	Pier cap

* 33-1"Φ x 1'-6" Anchor rods are req'd at Piers C & D = 1601 lbs.

* Not included in qty's. this sht. Considered incidental to prestressed beams for payment.

ESTIMATED QUANTITIES

ITEM	UNIT	PIER C	PIER D
Class A Concrete	Cu. Yd.	66.5	66.1
Steel bar reinforcement	Lb.	10,390	10,380

Bridge 15 A

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

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

W.B. POPLAR AVENUE OVER I-240
PIERS C & D

DATE:	SCALE:	DRAWN BY:	CHECKED BY:	IN CHARGE:
11-26-58	AS SHOWN	R.J.M.	M.A.T.	B.C.C.

JOB NO. 332

H-11-20

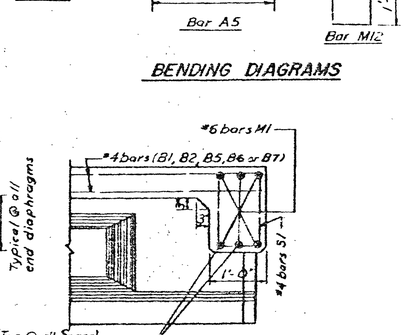
PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1963	176	334

REVISION 11-10-59
REVISION 2-16-62 Bill of Steel & Reinf. Steel Quant.

NOTES

1. See Bridge Dwg. 1 for General Notes, and Design Stresses.
2. A 3" diam. formed opening shall be provided through interior diaphragms for passage of lighting conduits.
3. 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. 6 for details on drains and handrail end block reinforcements.

BENDING DIAGRAMS



BILL OF STEEL

Bar	No.	Size	Length	Shape	Location
A1	216	#5	25'-11"	——	Slab
A2	2	#5	47'-2"	——	Int. Diaph
A3	730	#5	49'-10"	——	Slab
Set A4	2 Sets	#5	Varies	——	Slab
A5	454	#5	7'-0"	——	Sidewalk
A6	454	#5	5'-2"	L	Sidewalk
A7	454	#5	4'-0"	⟍	Sidewalk
B1	121	#4	46'-8"	——	Slab
B2	119	#4	40'-0"	——	Slab
*Set B3	1 Set	#4	Varies	——	Sidewalk
*Set B4	1 Set	#4	Varies	——	Slab
*Set B5	1 Set	#4	Varies	——	Slab
B6	508	#4	34'-6"	——	Slab
B7	127	#4	37'-7"	——	Slab
*Set B8	1 Set	#4	Varies	——	Sidewalk
M1	60	#6	49'-0"	——	End Diaph
M2	48	#4	3'-3"	——	Int. Diaph
M3	64	#4	4'-3"	——	Int. Diaph
M4	112	#4	5'-7"	——	Int. Diaph
M5	32	#4	5'-0"	——	Int. Diaph
M6	46	#6	3'-0"	——	Int. Diaph
M7	60	#6	3'-8"	——	Int. Diaph
M8	56	#6	5'-3"	——	Int. Diaph
M9	16	#6	4'-11"	——	Int. Diaph
M12	336	#6	3'-3"	L	End Diaph
S1	424	#4	5'-0"	⊐	End Diaph
S2	88	#4	5'-8"	⊔	Int. Diaph
S3	248	#4	8'-2"	⊔	Int. Diaph
3 x 3 - 12/10 WWF			360 sq ft.		Beam Cap

* Set A4 - 23 bars; varies from 4'-10" to 48'-10" in 2'-6" increments
* Set B3 - 7 bars; varies from 38'-4" to 39'-10" in 3" increments
* Set B4 - 53 bars; varies from 25'-1" to 38'-1" in 3" increments
* Set B5 - 48 bars; varies from 23'-8" to 39'-4" in 4" increments
* Set B8 - 7 bars; varies from 23'-4" to 24'-10" in 3" increments

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A Concrete	Cu. Yds	477.4
Steel Bar Reinforcement *	Lbs.	88,310

*Includes WWF reinforcement Bridge 15 A

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

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

W.B. POPLAR AVE. OVER I-240 SUPERSTRUCTURE SLAB

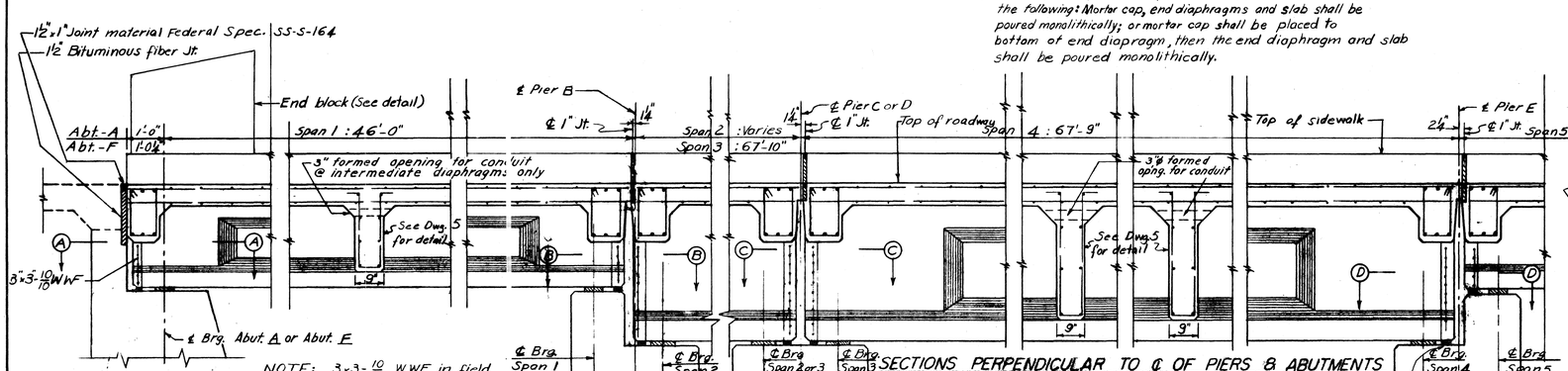
DATE	SCALE	DRAWN BY	CHECKED BY	M. CHANGE	
11-15-58	As Shown	D.A.S.	M.A.T	B.C.C	H-11-21

JOB NO. 332

K&E CO. P3119

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	177	334
REVISION 11-10-59					
REVISION 12-18-59					

NOTE: Construction sequence on superstructure slab shall be one of the following: Mortar cap, end diaphragms and slab shall be poured monolithically; or mortar cap shall be placed to bottom of end diaprogm, then the end diaphragm and slab shall be poured monolithically.



ABUTMENT A OR F

NOTE: 3x3-10/10 WWF in field cast mortar cap shall be anchored securely to splayed ends of prestress strands extending 3" minimum beyond the beam end.

SECTIONS PERPENDICULAR TO ℄ OF PIERS & ABUTMENTS

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

NOTE: Bit. Fib. Mat'l. may be used as form for bottom of mortar cap and left in place. (Typical)

PIER-B

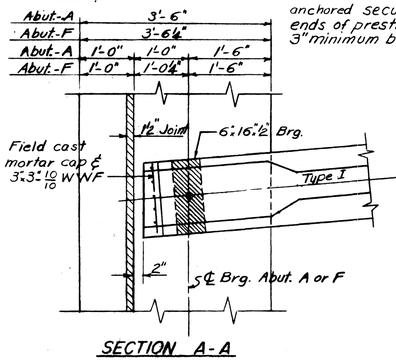
PIER-C OR D

PIER-E

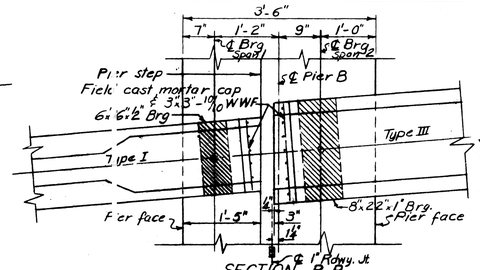
DRAIN DETAILS - 24 REQ'D

Scale 1"=1'-0"

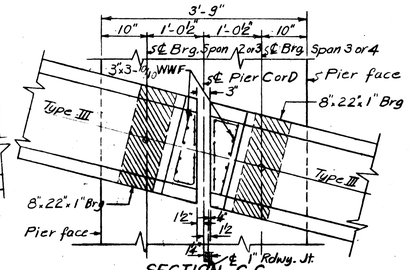
NOTE: See Bridge Dwg. 1, for drain location.



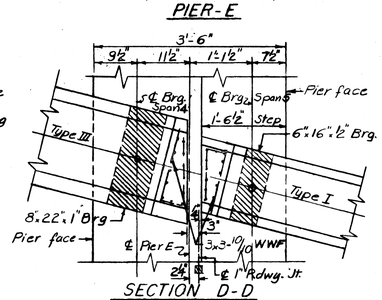
SECTION A-A



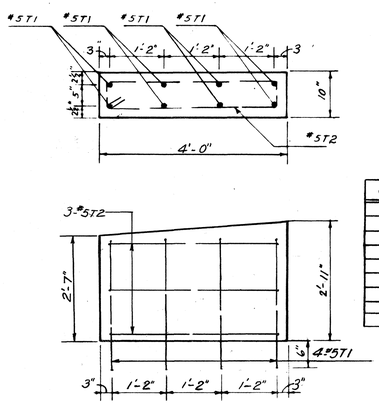
SECTION B-B



SECTION C-C



SECTION D-D



END BLOCK DETAILS

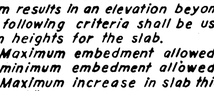
NOTES

1. The same notes as appear on Bridge Dwg. 5 are applicable to the details on this sheet.
2. All steel summarized in Bill of Steel on this sheet is included in the Estimated Quantities on Bridge Dwg. 5.

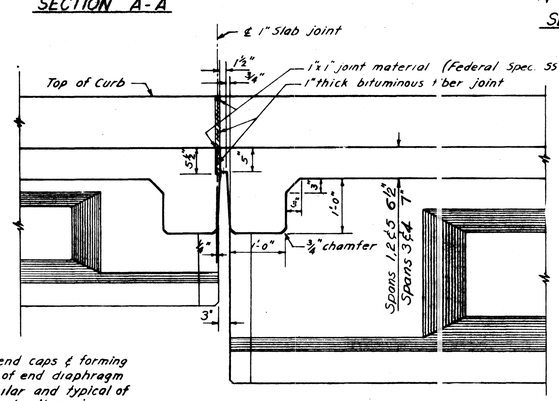
CAMBER NOTES

1. Verify the calculated deflection at the ℄ 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.
2. If the center elevation of the beam checks calculated elevations within tolerable limits in the judgment of the engineer, the information shown below shall be used directly in forming the slab. This allows for vertical curve and the calculated deflections automatically.

Span	Beam	beam embedment e		slab thickness t	
		@ support	@ ℄ span	@ support	@ ℄ span
1	A	12"	¾"	6"	5¾"
2	B1, B2 & B3	¾"	4"	5¾"	6¼"
2	B4	¾"	5/16"	5¾"	6⅝"
2	B5 & B6	¾"	⅜"	5¾"	6⅝"
2	B7 & B8	12"	4"	6"	6¼"
2	B9	12"	5/16"	6"	6⅜"
3 & 4	C	12"	½"	6¼"	6⅝"
5	D	12	16	6"	5⅛"



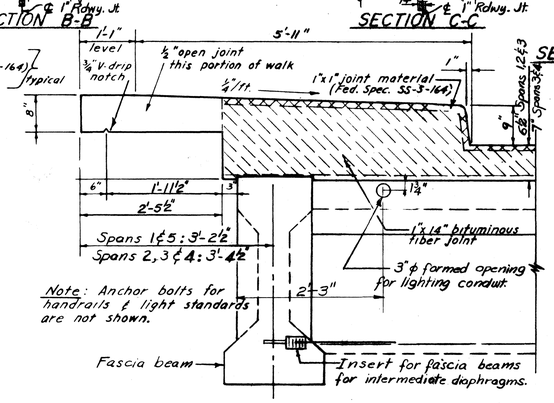
3. If the field check of the center elevation of the beam results in an elevation beyond tolerable limits the following criteria shall be used in determining form heights for the slab.
   (a) Maximum embedment allowed shall be 1" and minimum embedment allowed shall be 0".
   (b) Maximum increase in slab thickness (ts) shall be ½" for cambering requirements. In any case the normal slab thickness will not be reduced for cambering requirements.
   (c) If the maximum slab thickness and the minimum embedment at the ℄ of the beam will not result in the desired finished surface profile, fillets shall be used. Fillet details are subject to the approval of the engineer.



Beam end caps & forming details of end diaphragm are similar and typical of details at other piers.

SECTION PERPENDICULAR TO ℄ PIER

Scale ¾"=1'-0"



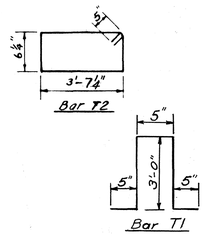
Note: Anchor bolts for handrails & light standards are not shown.

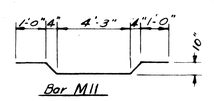
TYPICAL CURB SECTION

Scale ¾"=1'-0"

SECTIONS AT PIERS & ABUTMENTS

Scale: 3/4"=1'-0"

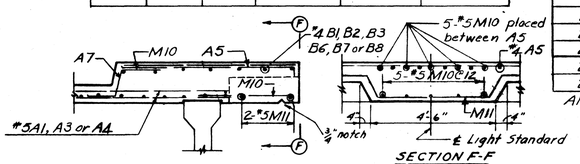




BENDING DIAGRAMS

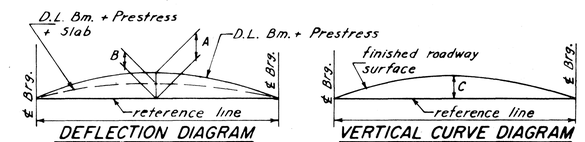
BILL OF STEEL

Bar	No.	Size	Length	Shape	Location
T1	16	#5	7'-3"		End Block-Slab
T2	12	#5	9'-1"		End Block-Slab
M10	30	#5	4'-6"		Slab Thickn.
M11	6	#5	8'-1"		Slab Thickn.



SLAB THICKENING DETAILS FOR LIGHT STANDARD

Scale ¾"=1'-0"



Span	Beam	A inches	B inches
1	A	1/2"	1/4"
3 ℄ 4	C	11/16"	3/16"
5	D	3/8	3/16"
2	B1, B2 ℄ B3	3/4"	1/4"
2	B4	3/4"	1/16"
2	B5 ℄ B6	3/4"	1/4"
2	B6	5/8"	1/4"
2	B7 ℄ B8	5/8"	5/16"
2	B9	9/16"	5/16"

All deflections are upward

Beam	Span	C inches
A & D	1 ℄ 5	0"
C	3 ℄ 4	9/16"
B1, B6 ℄ B3	2	3/4"
B4	2	11/16"
B5 ℄ B6	2	5/16"
B7 ℄ B8	2	5/16"
B9	2	1/2"

Bridge 15A

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

HARLAND BARTHOLOMEW AND ASSOCIATES ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

W.B. POPLAR AVE. OVER I-240 SUPERSTRUCTURE SLAB DETAILS

DATE	SCALE	DRAWN BY	CHECKED BY	IN CHARGE	
11-26-58	As Noted	MAT	DAS	BCC	H-11-22

JOB NO. 332

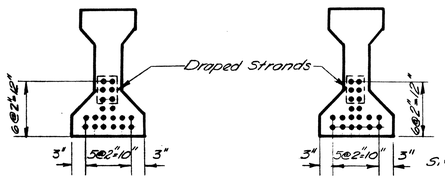
K&E CO. PB166

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	178	334

REVISION 5/23/60

REVISION

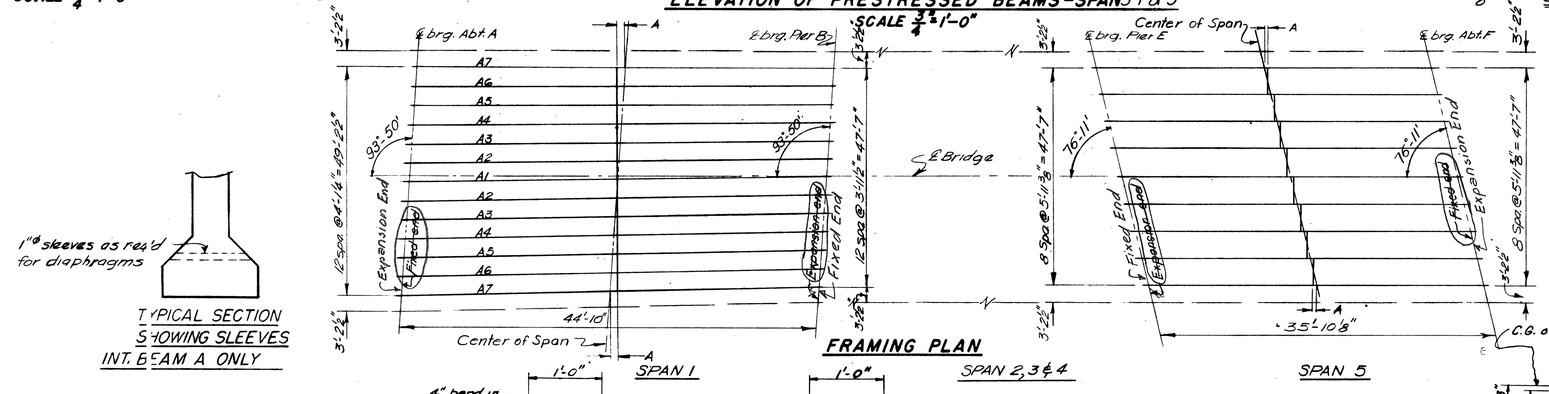
PRETENSION DETAILS



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

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

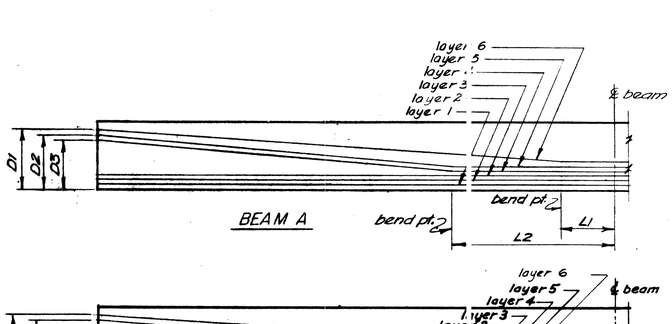
NOTE Prestress strands to extend 3" min. beyond beam ends

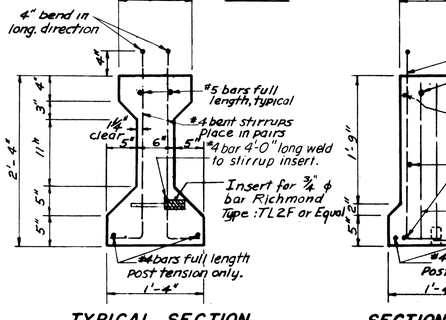


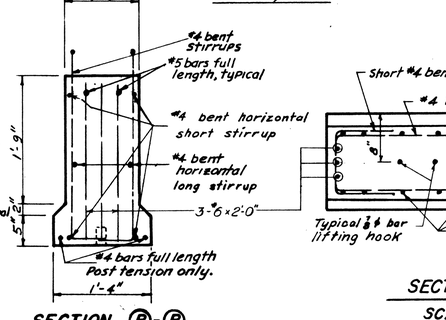
FRAMING PLAN

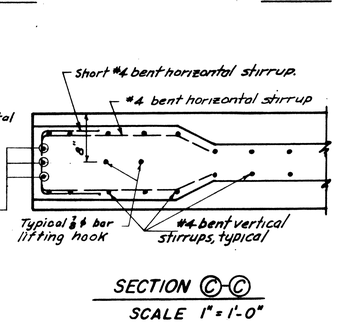
SPAN 1 SPAN 2, 3 & 4 SPAN 5

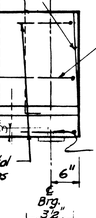
TYPICAL SECTION SHOWING SLEEVES INT. BEAM A ONLY











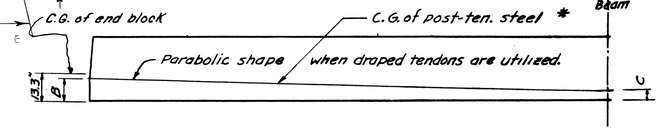
GENERAL NOTES

1. The Contractor has the option of furnishing pretensioned, post-tensioned, or a combination beam. See the specifications.
2. Specifications are the STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS.
3. LOADING: H20-S16-44 (Modified for Military Loading)
4. REINFORCING STEEL: See specifications.
5. FORMS & FINISH: See specifications.
6. All reinforcing steel, prestressing strands, lifting hooks, inserts, sleeves, or other items cast into the beam will be included in the unit price per each for FURNISH & PLACE PRESTRESSED CONCRETE BEAMS, TYPE I, LENGTH _____.
7. 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 I, LENGTH _____.
8. BEARINGS for both ends of TYPE I Beams shall consist of 6"x16"x 1/2" preformed bearing pads. 8 1"ϕ x 1'-6" anchor rods. The cost of the pads & anchor rods will be included in the unit price for the PRESTRESSED CONCRETE BEAMS, TYPE I, LENGTH _____.
9. Prestressing forces do not include losses due to friction, jack losses, or relaxation of the anchorage. See the specifications.
10. After concrete has attained initial set, scrub top surface of beam to remove laitance and leave a rough finish.

ESTIMATED QUANTITIES—1 BEAM

ITEM	UNIT	BEAM A	BEAM D	BEAM
Precast Concrete	Cu. Yds.	3.4	2.7	
Mild Reinforcing Steel	Lbs.	403	340	
Pre-stress Steel 7/16 dia. strands	Lin. Ft.	940	760	

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 * B	Dimension * C	Final Prestress force	Initial Prestress force
A	10'2"	5 3/8"	295,000 lbs	364,000 lbs
D	10'2"	5 3/8"	277,000 lbs	342,000 lbs

Beams	Stirrup spacing for ℄ beam spaces shown below start @ the beam end
A	1@2", 1@4", 11@6", 2@11 1/2", and 15@1'-0"
	59 stirrups required per beam.
D	1@2", 1@4", 10@6", 1@11 1/16" and 12@1'-0"
	49 stirrups required per beam.

STIRRUP SPACING

Beam	Dimen. A	No. of inserts Ext. bm.	No. of inserts Int. bm.	No. of sleeves interior beam
A1	0'-0"	0	0	2
A2	0'-3 1/4"	0	0	2
A3	0'-6 1/2"	0	0	2
A4	0'-9 3/4"	0	0	2
A5	1'-1"	0	0	2
A6	1'-4 1/4"	0	0	2
A7	1'-7 1/2"	2	0	0
D	8 3/4"	2	4	0

DIAPHRAGM LOCATION
See framing plan.

Beams	Distance from ℄ brg. in feet	Bending Mom. (ft.KIPS) 2'-0"	15'-0"	20'-0"	℄ Span	Shear @ brg. KIPS
A	Dead load (Beam)	12	64	72	72	6.5
	S.D.L.*	15	80	89	90	7.7
	Live Load**	59	276	298	298	31.5

Beams	Distance from ℄ brg. in feet	Bending Mom. (ft.KIPS) 2'-0"	11'-0"	16'-0"	℄ Span	Shear @ brg. KIPS
D	Dead Load (Beam)	10	39	46	46	5.2
	S.D.L.*	19	75	82	88	9.2
	Live Load**	75	279	309	316	43.3

TABLE OF BENDING MOMENTS & SHEARS

* Superimposed dead load, includes slab, diaphragms, etc.

** Live load includes future wearing surface of 20 lbs/sq. ft. & impact.

Beam	No. strands in layer 1	2	3	4	5	6	Total No. 7/16 strands	Prestress Force*	Dimensions D1	D2	D3	L1	L2	Beams Req'd.
A	⊕	⊕	⊕	⊖	⊖	⊖	20	378,000 lbs	23"	21"	19"	2'-0"	6'-0"	13
D	⊕	⊕	⊕	⊖	⊖	⊖	20	355,000 lbs	23"	21"	19"	2'-0"	6'-0"	9

Total Initial Prestress Force in lbs.

PRETENSION BEAM DATA
⊕ straight — ⊖ draped

BILL OF MATERIALS

	Item	Unit	Quantity
A	Prestressed concrete beams Type I - Length 45'-10"	each	13
D	Prestressed concrete beams Type I - Length 36'-10 3/8"	each	9

Bridge 15A

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT I-240-1 (17) 15 SHELBY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION
HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY, ASSOCIATED ENGINEERS

W.B. POPLAR AVENUE OVER I-240

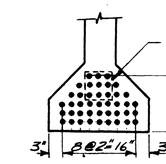
PRESTRESSED BEAMS-SPANS 1 & 5

DATE:	SCALE:	DRAWN BY:	CHECKED BY:	IN CHARGE:	
11-8-58	As Noted	JWN	MAT	B.C.C.	H-11-23

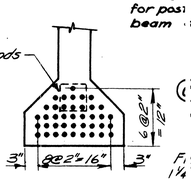
JOB NO. 332

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	179	334
REVISION					
REVISION					

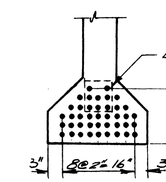
PRETENSION DETAILS



SECTION (A)(A)
BEAM B1 & B2
SCALE 3/4" = 1'-0"



SECTION (A)(A)
BEAM B4
SCALE 3/4" = 1'-0"



SECTION (A)(A)
BEAM B3
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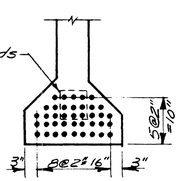
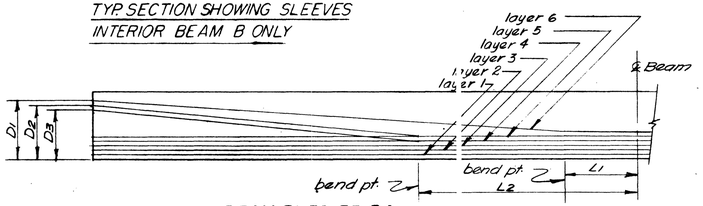
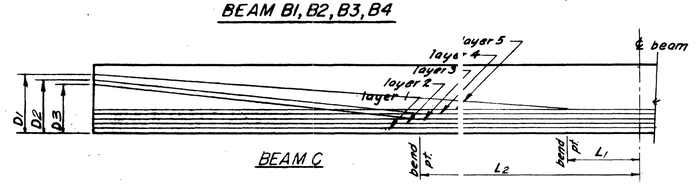


SECTION A A
BEAM C
SCALE 3/4" = 1'-0"

TYP. SECTION SHOWING SLEEVES
INTERIOR BEAM B ONLY

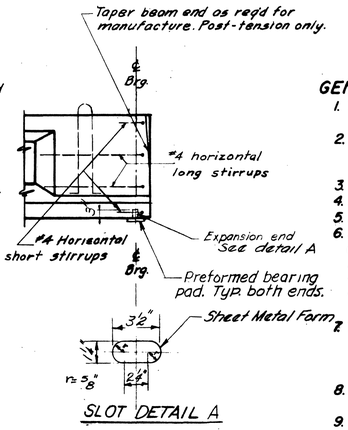


BEAM B1, B2, B3, B4



BEAM C

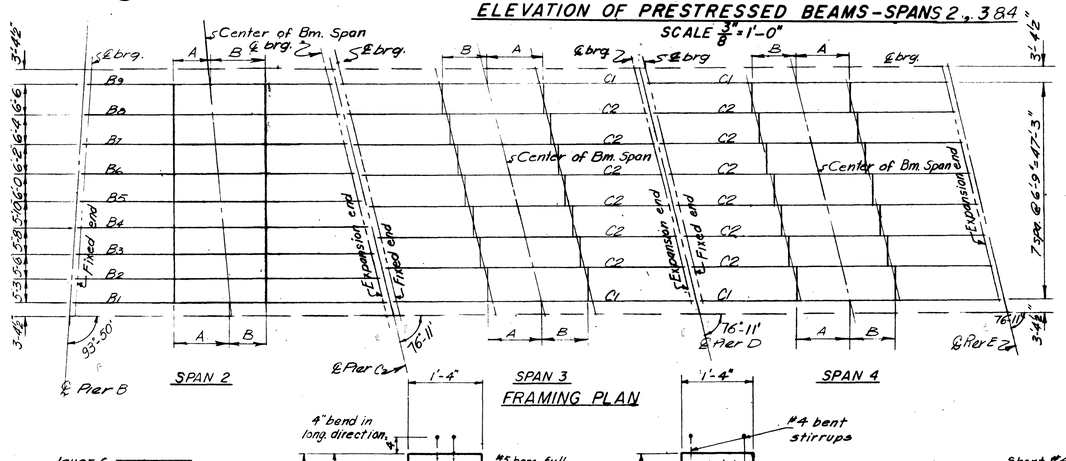
NOTE: Prestress strands to extend 3" min. beyond beam ends



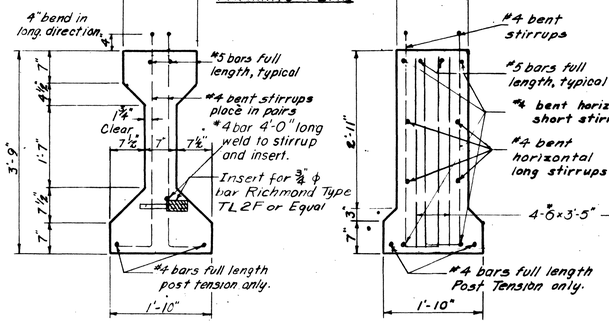
SLOT DETAIL A

ELEVATION OF PRESTRESSED BEAMS - SPANS 2, 3 & 4

SCALE 3/8" = 1'-0"

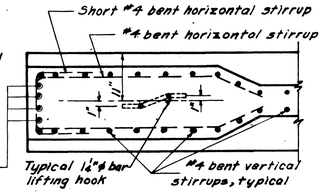


FRAMING PLAN



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

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



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

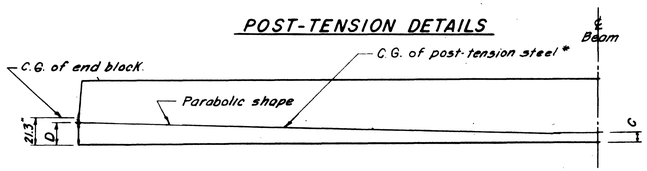
GENERAL NOTES

1. The Contractor has the option of furnishing pretensioned, post-tensioned, or a combination beam. See the specifications.
2. SPECIFICATIONS are the STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS.
3. LOADING: H20 - S16 - 44 (Modified for Military Loading)
4. REINFORCING STEEL: See specifications.
5. FORMS & FINISH: See specifications
6. All reinforcing steel, prestressing strands, lifting hooks, inserts, sleeves, or other items cast into the beam and all preformed bearing pads and 1"ϕ x 1'-6" Anchor Rods will be included for payment purposes in the Unit Price each under Furnish and Place Prestressed Concrete Beams (Type III)
7. The Contractor shall provide a ¾" 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_____.
8. BEARINGS for both ends of Type III beams consists only of a 8"x22"x1" pref. brg. pad & a 1"ϕ x 1'-6" anchor rod.
9. Prestressing forces shown do not include losses due to friction, jack losses or relaxation of the anchorage. See the specifications.
10. After concrete has attained initial set, scrub top surface of beam to remove laitance and leave a rough finish.

ESTIMATED QUANTITIES — 1 BEAM

ITEM	UNIT	BEAMS B1	B2	B3	B4	C
Precast Concrete	Cu.Yd.	11.5	11.3	11.1	10.8	10.0
Mild Reinforcing Steel	Lbs.	910	890	890	860	820
Prestress Steel 7/16 dia. strands	Lin.Ft.	3280	3210	3060	2920	2640

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
B1	6"	1'-3"	620,000#	765,000#
B2	6"	1'-3"	609,000#	751,000#
B3	5¾"	1'-3"	597,000#	736,000#
B4	5⅝"	1'-3"	580,000#	715,000#
C	5½"	1'-3"	571,000#	704,000#

= lbs.

BILL OF MATERIALS

	Item	Unit	Quantity
B1	Prestressed concrete beam's Type III (Length 77'-12")	each	1
B2	Prestressed concrete beams Type III (Length 75'-5⅜")	each	1
B3	Prestressed concrete beams Type III (Length 73'-9¼")	each	1
B4	Prestressed concrete beams Type III (Length 72'-0")	each	1
C	Prestressed concrete beams Type III (Length 66'-8¼")	each	16

Beam	No. strands in layer 1	2	3	4	5	6	Total No. 7/16 strands	Prestress Force *	D1	D2	D3	Dimensions L1	L2	Beams Reqd.
B1	9	9	9	7	5	5	42	794,000 lbs.	40	38	36	4'-0"	12'-0"	1
B2	9	9	9	7	4	3	42	780,000 lbs.	40	38	36	4'-0"	12'-0"	1
B3	9	9	9	6	4	4	41	765,000 lbs.	40	38	36	4'-0"	12'-0"	1
B4	9	9	9	6	4	3	40	742,000 lbs.	40	38	36	4'-0"	12'-0"	1
C	9	9	9	6	4	4	39	731,000 lbs.	40	38	36	4'-0"	12'-0"	16

* Total Initial Prestress Force

PRETENSION BEAM DATA

℄ straight — ⊘ — draped

Beam	Distance from ℄ Brg. in feet	Bending Mom. (ft. kips) 3'-9"	24'-0"	32'-0"	℄	Shear @ brg Kips
B1	Dead Load (Beam)	79	365	411	422	22.2
	S.D.L.*	65	301	340	349	17.8
	Live Load	165	719	787	794	45.6
B2	Dead Load (Beam)	77	353	396	404	21.7
	S.D.L.*	66	300	336	343	17.9
	Live Load	182	722	787	792	46.4
B3	Dead Load (Beam)	76	341	380	386	21.2
	S.D.L.*	65	292	336	341	18.2
	Live Load	171	735	796	798	48.0

Beam	Distance from ℄ brg. in feet	Bending Mom. (ft. kips) 3'-9"	23'-0"	31'-0"	℄	Shear @ brg. Kips
B4	Dead Load (Beam)	74	322	362	367	20.7
	S.D.L.*	67	885	320	336	18.3
	Live Load	174	730	792	797	49.2
	Distance from ℄ brg. in ft.	Bending Mom. (ft. kips) 3'-9"	20'-0"	28'-0"	℄	Shear ℄ brg. Kips
C	Dead Load (Beam)	68	266	308	315	19.1
	S.D.L.*	78	309	357	365	21.5
	Live Load	201	750	841	847	57.1

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	Stirrup spacing for ½ beam Spaces shown below start @ the beam end
B1	18@2", 18@4", 13@6", 28@9⅜", 30@1'-0". 93 Stirrups required per beam.
B2	18@2", 18@4", 13@6", 18@8⅝" and 30@1'-0" 91 Stirrups required per beam.
B3	18@2", 18@4", 15@6", 18@10⅝" and 28@1'-0" 91 Stirrups required per beam.
B4	18@2", 18@4", 13@6", 2@1'-0" and 27@1'-0" 87 stirrups required per beam.
C	18@2", 18@4", 14@6", 18@10⅝", 25@1'-0" 83 Stirrups required per beam.

Bm.	Dimensions A	B	No. of inserts Ext. bm.	Int. bm.	No. of sleeves Interior beam
B1	13'-5½"	9'-6⅝"	4	—	—
B2	13'-0⅜"	9'-11⅜"	—	—	4
B3	12'-6⅞"	10'-5⅛"	—	—	4
B4	12'-0¼"	10'-11¾"	—	—	4
C1	11'-11⅝"	10'-3⅝"	4	—	—
C2	11'-11⅜"	10'-3⅜"	—	B	—

DIAPHRAGM LOCATION

See Framing plan.

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

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

W.B. POPLAR AVENUE OVER I - 240
PRESTRESSED BEAMS - SPANS 2, 3 & 4

DATE:	SCALE:	DRAWN BY:	CHECKED BY:	IN CHARGE:
11-12-58	As Noted	JWN	MAT	B.C.C.

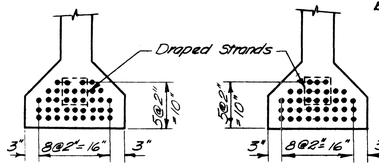
JOB. NO. 332

H-11-24

Bridge 15A

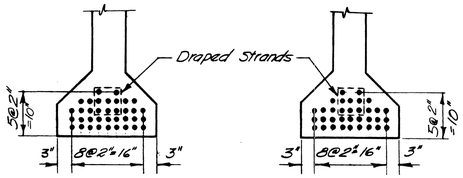
PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	180	334
REVISION					
REVISION					

PRETENSION DETAILS



SECTION (A)(A)
BEAM B5-B6
SCALE $\frac{3}{4}$"=1'-0"

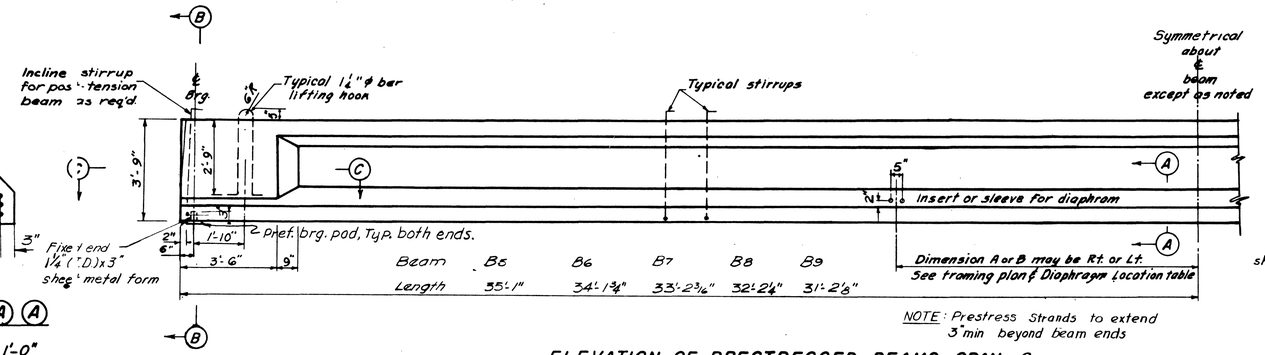
SECTION (A)(A)
BEAM B7
SCALE $\frac{3}{4}$"=1'-0"



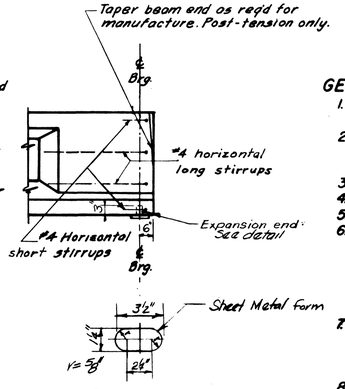
SECTION (A)(A)
BEAM B8
SCALE $\frac{3}{4}$"=1'-0"

SECTION (A)(A)
BEAM B9
SCALE $\frac{3}{4}$"=1'-0"

1"ϕ sleeves as req'd for diaphragms



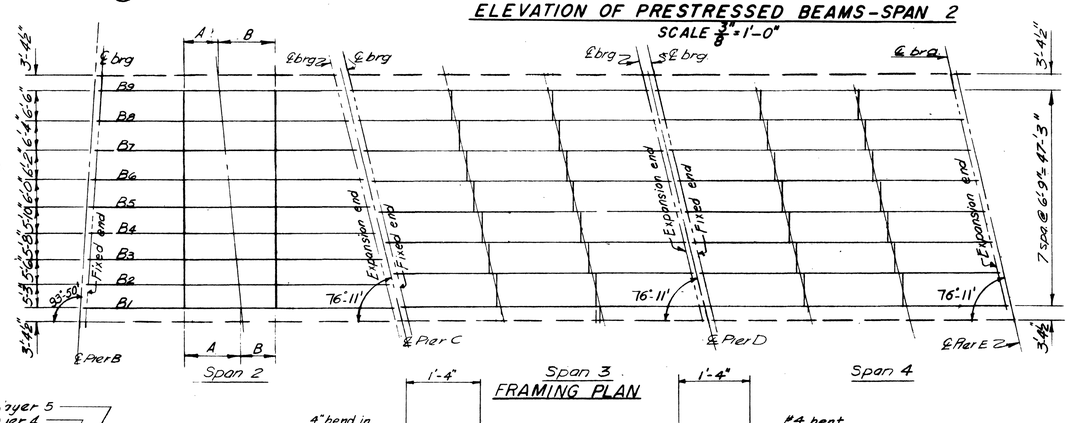
NOTE: Prestress Strands to extend 3" min beyond beam ends



SLOT DETAIL

ELEVATION OF PRESTRESSED BEAMS - SPAN 2

SCALE $\frac{3}{8}$"=1'-0"



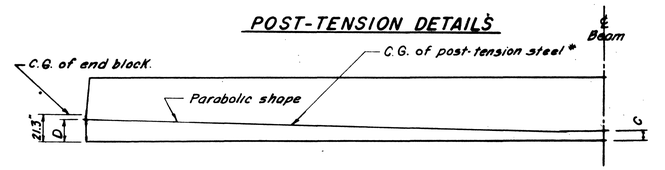
GENERAL NOTES

1. The Contractor has the option of furnishing pretensioned, post-tensioned, or a combination beam. See the specifications.
2. SPECIFICATIONS are the STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS.
3. LOADING: H20-S16-44 (Modified for Military Loading)
4. REINFORCING STEEL: See specifications.
5. FORMS & FINISH: See specifications
6. All reinforcing steel, prestressing strands, lifting hooks, inserts, sleeves, or other items cast into the beam and all preformed bearing pads and 1"ϕx1'-6" Anchor Rods will be included for payment purposes in the Unit Price each under Furnish and Place Prestressed Concrete Beams (Type III)
7. The Contractor shall provide a ¾" dia. x1'-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_____.
8. BEARINGS for both ends of Type III beams consist only of a 8"x 22"x1" pref. brg. pad & a 1"ϕx1'-6" anchor rod.
9. Prestressing forces shown do not include losses due to friction, jack losses or relaxation of the anchorage. See the specifications.
10. After concrete has attained initial set, scrub top surface of beam to remove laitance and leave a rough finish.

ESTIMATED QUANTITIES — 1 BEAM

ITEM	UNIT	BEAM B5	BEAM B6	BEAM B7	BEAM B8	BEAM B9
Precast Concrete	Cu.Yd.	10.5	10.3	10.0	9.7	9.4
Mild Reinforcing Steel	Lbs.	850	840	820	790	780
Prestress Steel 7/16" dia. strands	Lin.Ft.	2,710	2,640	2,490	2,370	2,160

POST-TENSION DETAILS

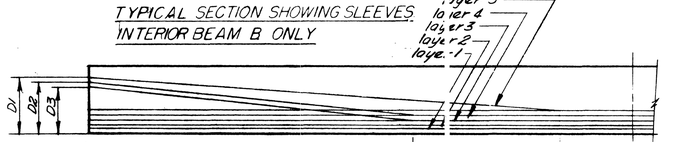


POST-TENSION BEAM DATA

* 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.

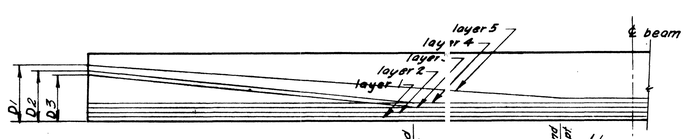
Beam	Dimension *C	Dimension *D	Final Prestress force	Initial Prestress force
B5	5 3/8"	1'-3"	558,000#	687,000#
B6	5 3/8"	1'-3"	544,000#	670,000#
B7	5¼"	1'-3"	546,000#	673,000#
B8	5⅛"	1'-3"	531,000#	655,000#
B9	5"	1'-3"	501,000#	618,000#

= Lbs.

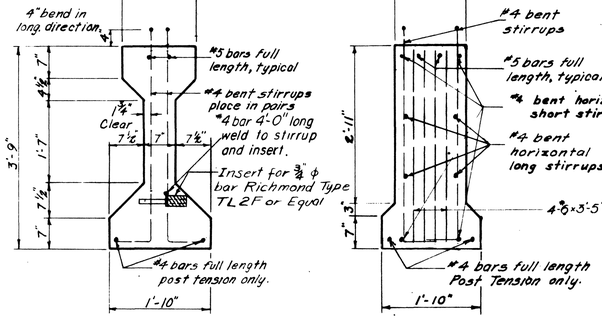


TYPICAL SECTION SHOWING SLEEVES INTERIOR BEAM B ONLY

BEAMS B5 & B6

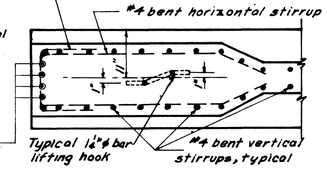


BEAMS B7, B8 & B9



TYPICAL SECTION
SCALE $\frac{3}{4}$"=1'-0"

SECTION (B)(B)
SCALE $\frac{3}{4}$"=1'-0"



SECTION (C)(C)
SCALE $\frac{3}{4}$"=1'-0"

Beam	No. strands in layer 1	2	3	4	5	6	Total No. ⅞" strands	Prestress Force *	Dimensions D1	D2	D3	L1	L2	Beams Reqd.
B5	9	9	6	3	2	2	38	715,000#	40	3[illegible]	36	4'-0"	12'-0"	1
B6	9	9	6	3	2	2	38	696,000#	40	3[illegible]	36	4'-0"	12'-0"	1
B7	9	9	6	3	2	0	37	699,000#	40	3[illegible]	36	4'-0"	12'-0"	1
B8	9	9	6	3	2	0	36	680,000#	40	3[illegible]	36	4'-0"	12'-0"	1
B9	9	9	6	3	2	0	34	642,000#	40	3[illegible]	36	4'-0"	12'-0"	1

* Total Initial Prestress Force # = Lbs.

PRETENSION BEAM DATA

℄ straight — ⊠ draped

Beam	Distance from ℄ Brg. in feet	Bending Mom. (ft. kips) 3'-9"	20'-0"	28'-0"	℄	Shear @ brg. kips
B5	Dead Load (Beam)	72	287	336	349	20.2
	S.D.L.*	68	271	317	329	18.4
	Live Load	188	683	784	794	50.7
B6	Dead Load (Beam)	69	276	321	330	19.6
	S.D.L.*	68	260	302	321	18.5
	Live Load	187	686	779	787	51.6

Beam	Distance from ℄ brg. in feet	Bending Mom. (ft. kips) 3'-9"	19'-0"	27'-0"	℄	Shear @ brg. KIPS
B7	Dead Load (Beam)	67	257	302	311	19.1
	S.D.L.*	68	258	304	313	18.5
	Live Load	193	675	770	779	52.9
B8	Dead Load (Beam)	65	246	286	293	18.5
	S.D.L.*	68	255	297	304	18.5
	Live Load	190	674	764	768	54.0
B9	Dead Load (Beam)	63	235	271	274	17.9
	S.D.L.*	67	248	285	290	18.2
	Live Load	192	669	745	746	54.3

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	Stirrup spacing for ½ beam Spaces shown below start @ the beam end
B5	1@2", 1@4", 12@6", 2@9½" and 27@1'-0" 85 Stirrups required per beam
B6	1@2", 1@4", 14@6", 2@9⅜" and 25@1'-0" 85 Stirrups required per beam.
B7	1@2", 1@4", 14@6", 1@8⅜" and 25@1'-0" 83 Stirrups required per beam.
B8	1@2", 1@4", 12@6", 2@10⅛" and 24@1'-0" 79 Stirrups required per beam.
B9	1@2", 1@4", 12@6", 1@8⅜" and 24@1'-0" 77 Stirrups required per beam.

Bm.	Dimensions A	B	No. of inserts Ext. bm.	Int. bm.	No. of sleeves Interior beam
B5	11'-6"	11'-6"	–	–	4
B6	10'-11⅜"	12'-0⅜"	–	–	4
B7	10'-4⅝"	12'-7⅛"	–	–	4
B8	9'-10⅜"	13'-1⅜"	–	–	4
B9	9'-3⅝"	13'-8⅝"	4	–	–

DIAPHRAGM LOCATION

See framing plan.

BILL OF MATERIALS

	Item	Unit	Quantity
B5	Prestressed concrete beam's Type III (Length 70'-2")	each	1
B6	Prestressed concrete beam's Type III (Length 68'-3½")	each	1
B7	Prestressed concrete beam Type III (Length 66'-4⅝")	each	1
B8	Prestressed concrete beam Type III (Length 64'-6")	each	1
B9	Prestressed concrete beam Type III (Length 62'-4½")	each	1

Bridge 15A

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT I-240-1 (17) 15 SHELBY CO.
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION
HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY, ASSOCIATED ENGINEERS

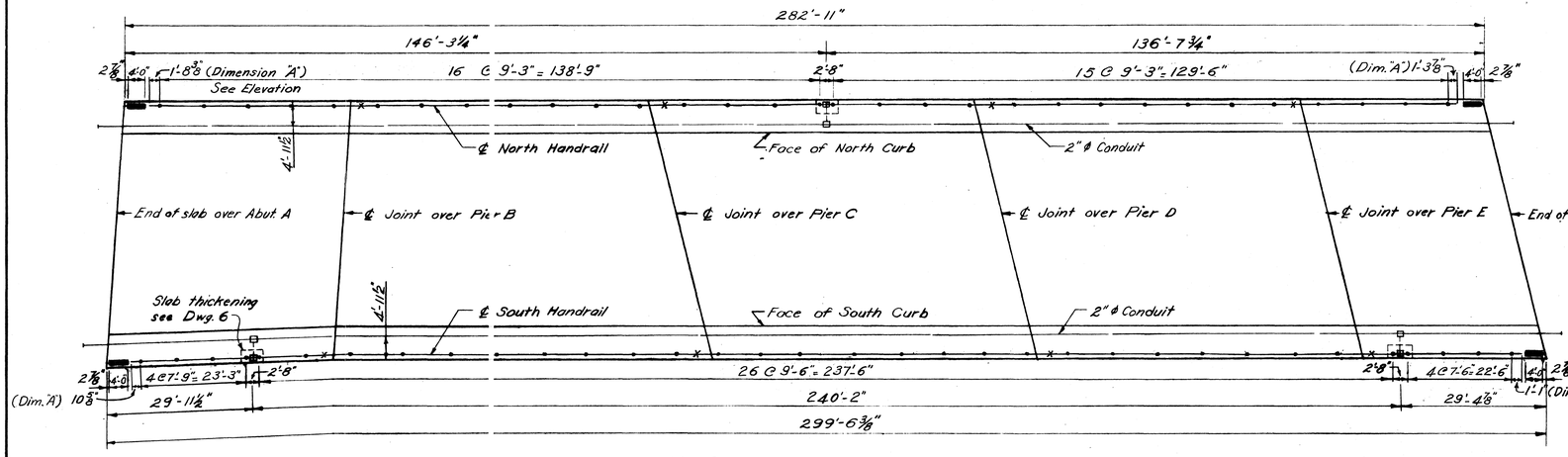
W.B. POPLAR AVENUE OVER I-240
PRESTRESSED BEAMS - SPAN 2

DATE:	SCALE:	DRAWN BY:	CHECKED BY:	IN CHARGE:	
11-11-58	As Noted	JWN	M.A.T.	B.C.C.	H-11-25

JOB. NO. 332

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	181	334
REVISION 11-10-59					
REVISION 12-18-59 12-28-59					

NOTE: All handrail dimensions are given along the ℄ handrail posts.

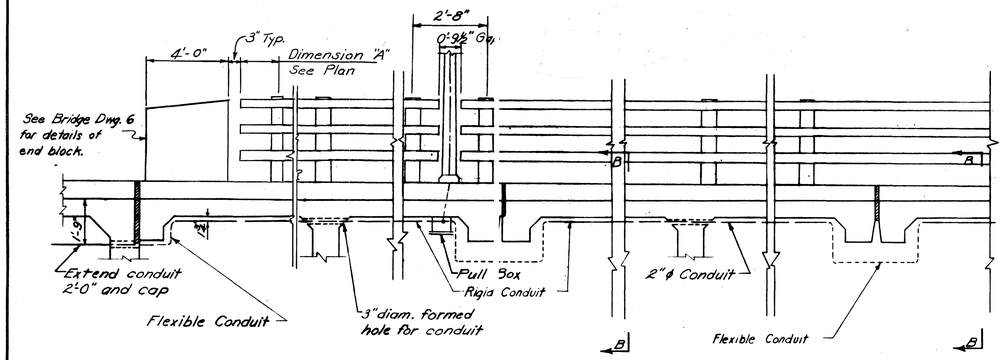


PLAN OF HANDRAIL AND LIGHTING LAYOUT

LEGEND

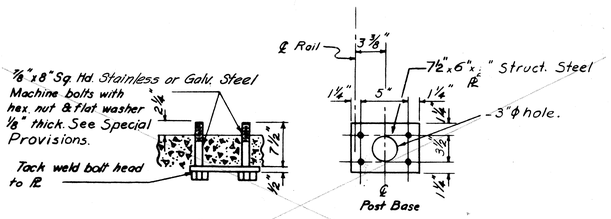
- ⊞ Lighting Standard
- □ Pull Box
- ▬ End Block
- —×— 1" Expansion Joint in rail (See Std. G-10-100)
- • Post

Note: Conduits shall be placed at locations required in order to facilitate the wiring.



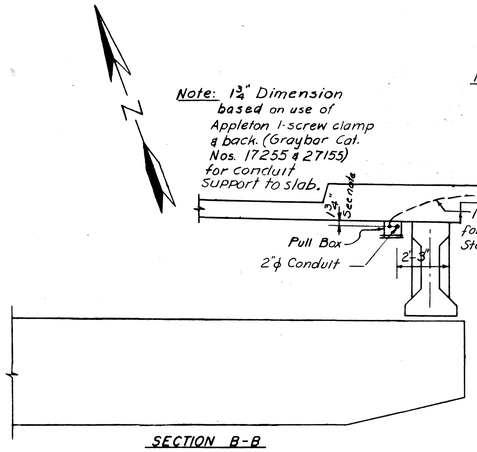
LONGITUDINAL SECTION INSIDE FASCIA BEAM

Identical wiring opposite side of ℄ Roadway

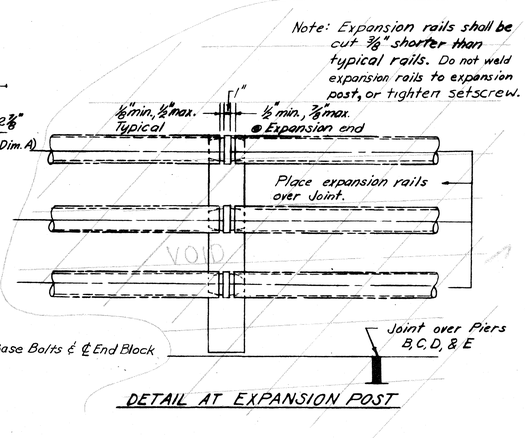


TYPICAL EMBEDDED POST ANCHOR DETAIL *

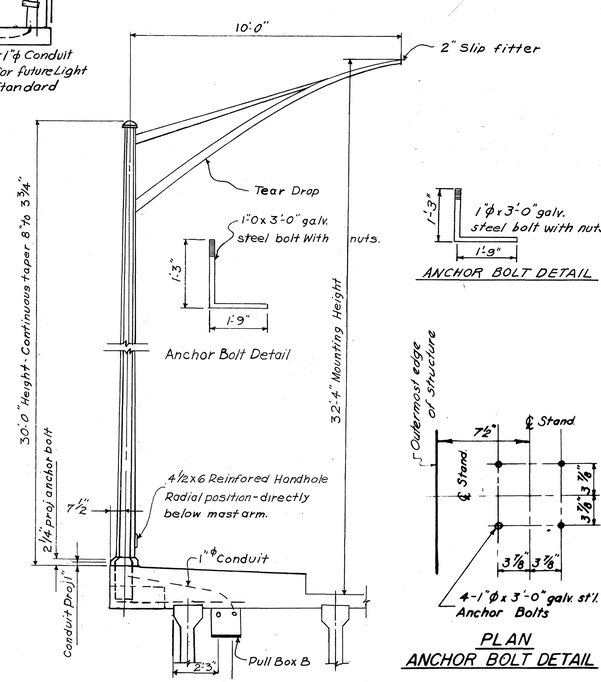
* This detail supercedes the "Sketch Showing Anchorage of Aluminum Post in Curb" on State of Tennessee Dept. of Highways & Public Works, Stand. Dwgs. F-10-47.



SECTION B-B



DETAIL AT EXPANSION POST



ALUMINUM LIGHTING STANDARD

Kerrigan Weldforged Lighting Standard Type 500K-30-10T, or equal.

PLAN ANCHOR BOLT DETAIL

LIGHTING NOTES

1. PULL BOXES shall be Thomas & Betts flanged cast iron junction boxes, size 8"x8"x6", Cat. No. 10904, or equal. They shall be made watertight with cover, gasket and Ever-dur hex. head cap screws. Boxes shall be drilled and tapped for conduit sizes called out on the plans.
2. CONDUIT shall be galvanized rigid steel, sizes as shown. Conduit shall be secured to the structure with such materials as to prevent bi-metallic action. Connections to pull boxes shall be reinforced with bushing and locknut. Hangers and spacing shall be approved by the engineer.
3. GROUNDING: All lighting standards shall be grounded by means of #6 weatherproof ground wire attached at the upper end to one anchor bolt, extended down the face of closest abutment or pier, then attached at the lower end to a 3/4" ϕ x 8' ground rod. These items shall be furnished & installed under this contract.
4. CONDULETS: The contractor shall furnish condulets in addition to those called out on the plans as required to facilitate the wiring.

HANDRAIL NOTES

1. HANDRAIL: For details of handrail see Tennessee Dept. of Highways and Public Works, Std. Dwg. G-10-100 , Sht. No. 318
2. END BLOCK CASTING: At the option of the Contractor, the end block casting as detailed may be fabricated as a weldment. Based on field measurements and tolerances the Contractor may choose to weld the pipe rails directly to the aluminum anchor plate and omit the lugs as shown on the detail.

BILL OF MATERIAL *

ITEM	UNIT	QUANTITY
LIGHT STANDARDS	EACH	3
RECESSED FIXTURES	EACH	—
PULL BOXES	EACH	3
TEMPORARY FILLER (At light std.)	EACH	3
FLEXIBLE CONDUIT	LIN. FT.	60
CONDUIT 1" ϕ	LIN. FT.	18
CONDUIT 2" ϕ	LIN. FT.	568

* The Contractor shall furnish and install, in addition to the above bill of materials, such incidental items as grounding wire, conduit caps, conduit hangers, etc., with no increase in compensation above the contract lump sum bid for FURNISH & INSTALL LIGHT STANDARDS, CONDUITS, PULL BOXES, & AUXILIARY EQUIPMENT. See the special provisions.

SUMMARY OF QUANTITIES

ITEM	UNIT	QUANTITY
3-RAIL STEEL HANDRAIL	Lin. Ft.	574
LIGHTING SYSTEM	Lump sum	1

NOTE The Cost Per Lin. Ft. Of Rail Shall Include The Furnishing & Placing Of Bolts & Anchorages, All Galv. Parts And All Other Incidentals Necessary To Complete The Rail.

Bridge 15 A

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

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
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W.B. POPLAR OVER I-240
HANDRAIL AND LIGHTING DETAILS

DATE:	SCALE:	DRAWN BY:	CHECKED BY:	IN CHARGE:	
12-11-58	As Noted	F.V.M.	W.G.*	B.C.C.	H-11-26

JOB NO. 332