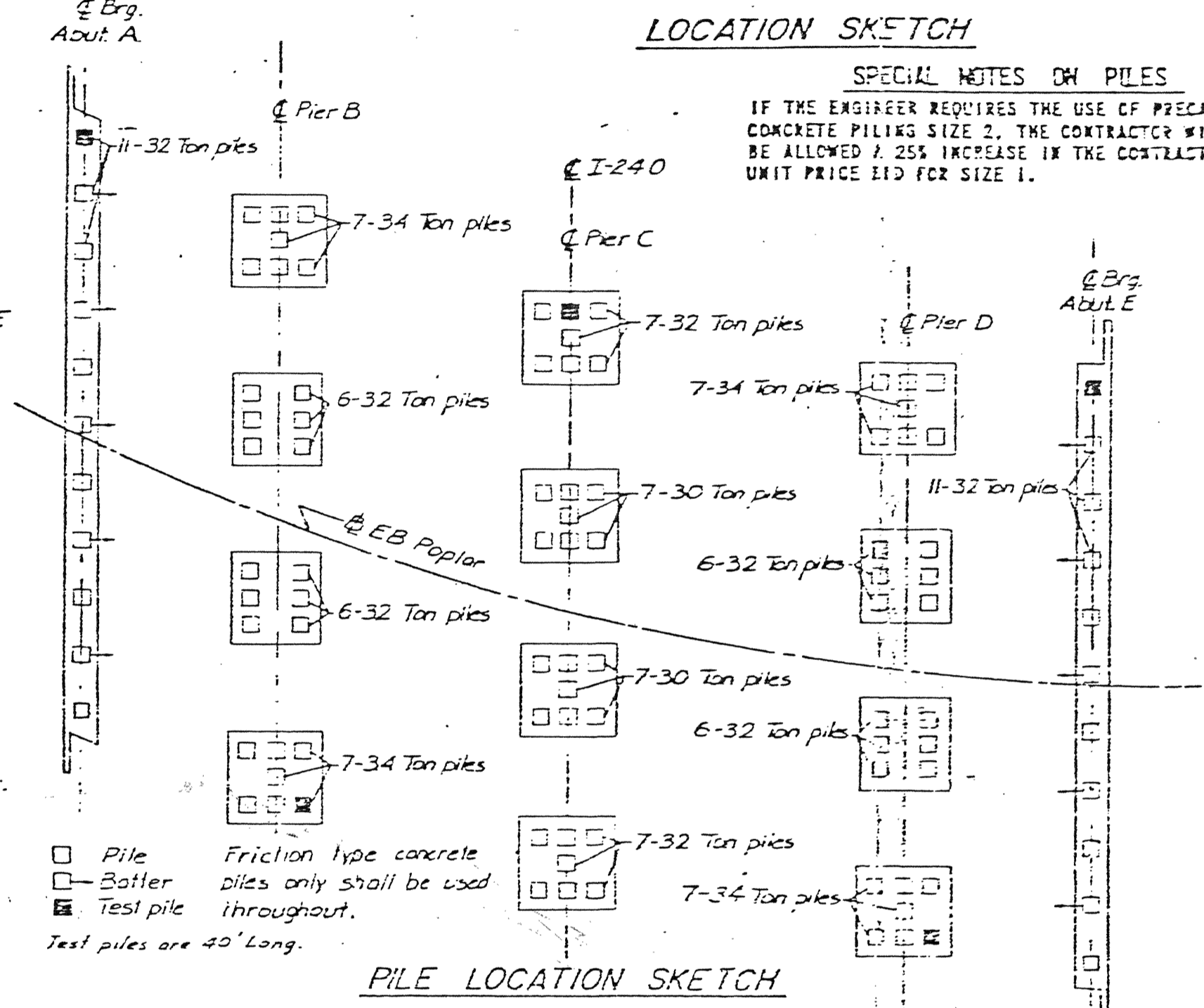
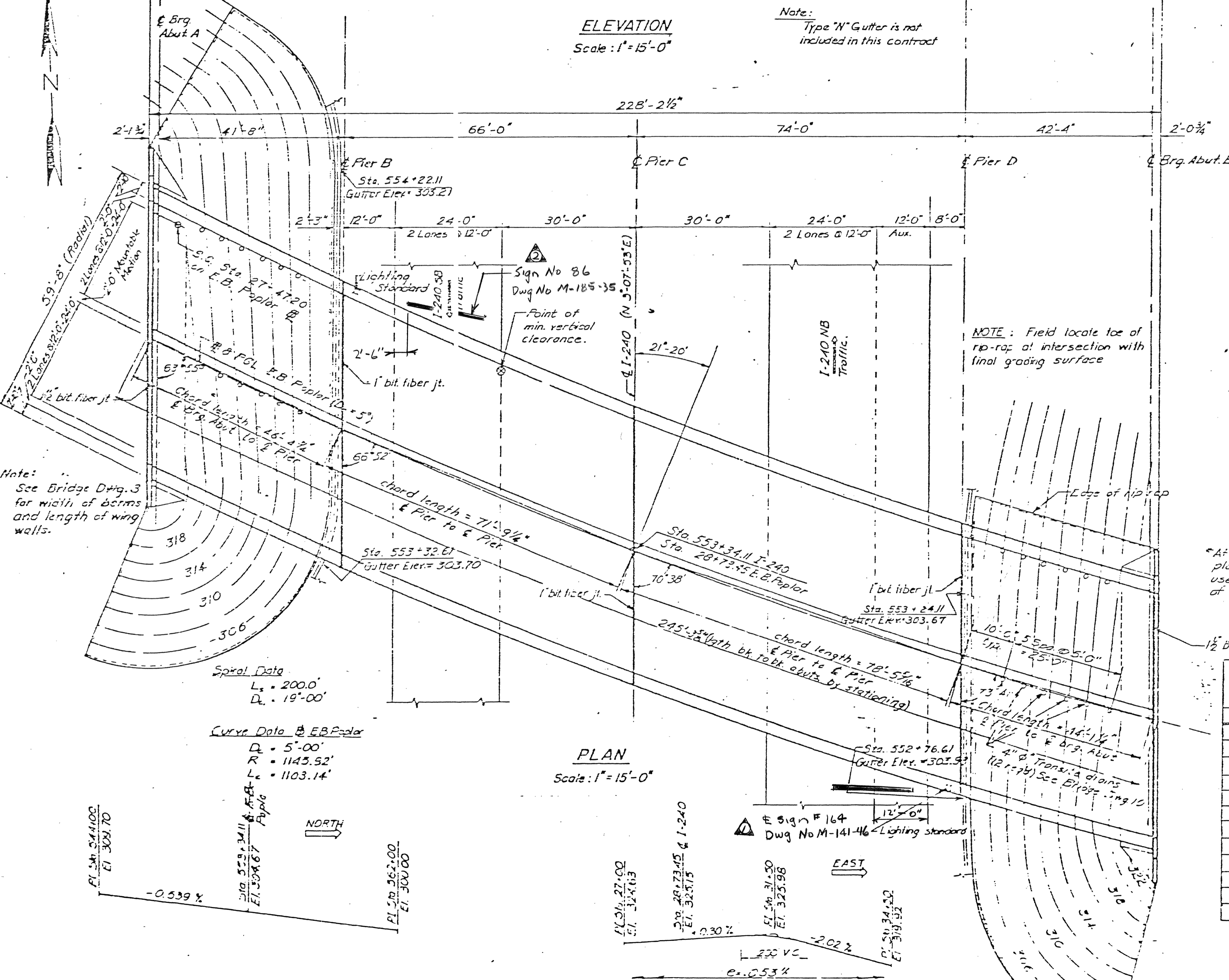
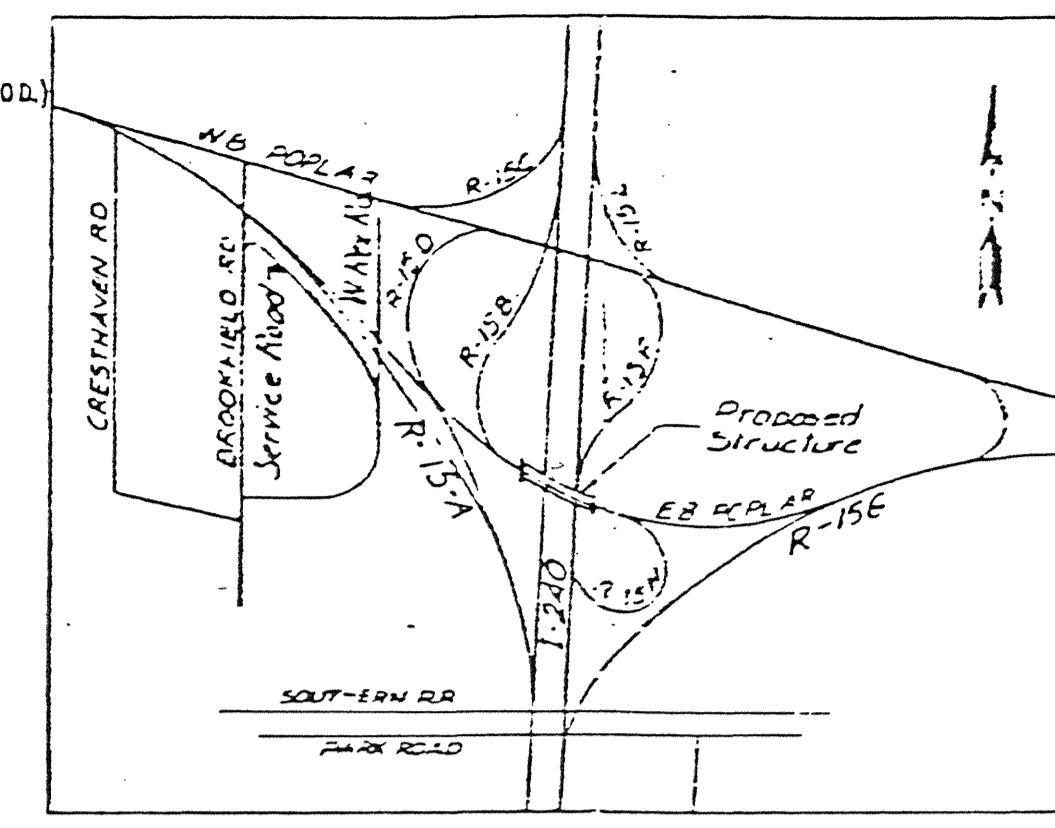
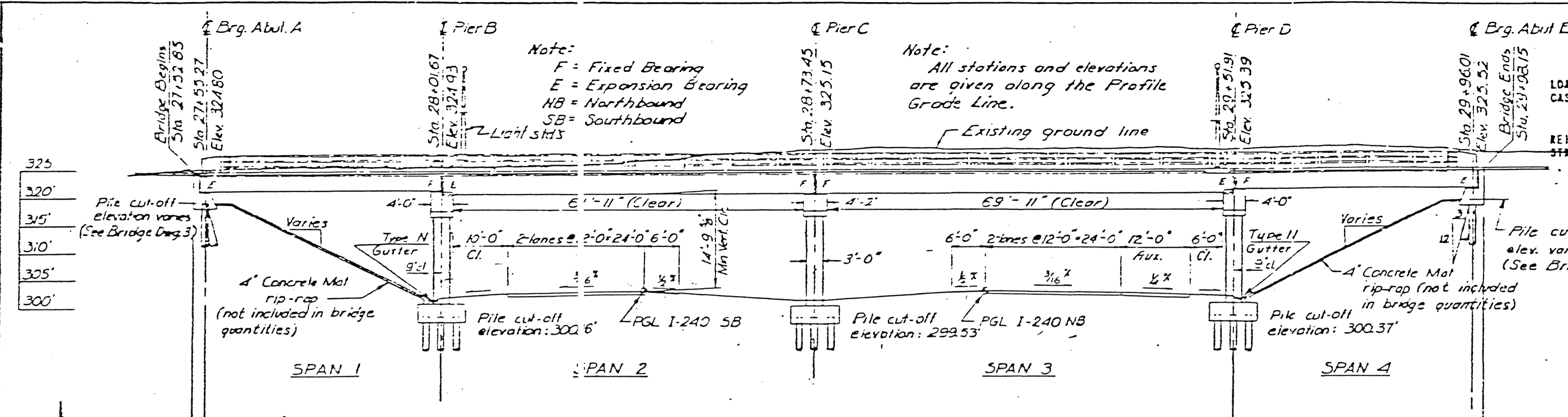


PROJECT NO.	SHEET NO.	TOTAL SHEETS
1-740 - 1 (17) CS	182	334



SUMMARY OF QUANTITIES

ITEM	Dry Excavation	Concrete Class A	Reinforcing Steel	Prestressed Beam Type II	Prestressed Beam Type III	Pre-Cast Conc. Piles	Test Piles	S.D.W. Steel	Lighting System
UNIT	Cu. yds.	Cu. yds.	Lbs.	EACH	EACH	Lin. Ft.	Lbs.	Head	Lin. Ft.
SUPERSTRUCTURE		374.7	78,800	9(26'-0")				279	
SPAN 1									
SPAN 2									
SPAN 3									
SPAN 4									
SUBSTRUCTURE									
ABUTMENT A	107	39.2	3,820						
PIER B	82	91.0	9,710						
PIER C	83	577	10,950						
PIER D	82	68.8	7,470						
ABUTMENT E	107	36.2	3,520						
TOTALS	461	717.6	115,270	5	23	2425	200	279	Lin. Ft.

- GENERAL NOTES**
- SPECIFICATIONS:** STANDARD ROAD & BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS & PUBLIC WORKS.
 - PILES:** SHALL BE OF CONCRETE AS SHOWN ON TEND. STD. DKS. NO. F 2-118. MINIMUM BEARING CAPACITY OF PILES SHALL BE AS SHOWN IN THIS SHEET.
 - CAST IN PLACE CONCRETE:** SHALL BE CLASS "A". ALL EXPOSED EDGES OF CONCRETE SHALL BE BROKEN WITH A 1 1/2 INCH TRIANGULAR CHAMFER OR SUBSTRUCTURE AND A 2 INCH TRIANGULAR CHAMFER OR SUPERSTRUCTURE, UNLESS OTHERWISE NOTED.
 - REINFORCING STEEL:** SEE SPECIFICATIONS AND SPECIAL PROVISIONS. 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 A.C.I. IN ITS: "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE 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 OR DRAWINGS.
 - NOTES ON DETAILING OF REINFORCING STEEL:** STANDARD ABBREVIATIONS ARE USED THROUGHOUT.
 - FF-FACE:** FF-FACE; NF-NEAR-FACE; EF-EACH FACE
 - EXAMPLE:** 8-#5K&3#12
 8-NUMBER OF BARS #5-BAR SIZE
 K&3-POSITION AND LOCATION: 12-SPACING
 K-HORIZONTAL; 3-LOCATED IN ABUTMENT A;
 3-THIRD EACH IN SERIES.
 - FLASKS AND FIXTURES:** SEE SPECIFICATIONS
 - PRESTRESSED BEAM CONCRETE:** SEE SPECIAL PROVISIONS.
 - PRESTRESSED BEAMS REINFORCEMENT:** SEE SPECIAL PROVISIONS.
 - PERFORMED BEARING PADS:** SEE SPECIAL PROVISIONS.
 - BEARING ELEVATIONS:** AT LOCATIONS ON PIERS AND ABUTMENTS ARE GIVEN TO THE TOP OF THE CONCRETE BEARING SURFACES. THESE ELEVATIONS SHALL BE OBTAINED BY STEPPING THE PIER AND ABUTMENT CAPS OR OTHER APPROVED METHODS.
 - SELF LUBRICATING BRONZE:** SEE SPECIAL PROVISIONS

79-57-6.96

LIST OF DRAWINGS

DRAWING NO.	DWG. NO.
BRIDGE LAYOUT	1
BRIDGE GEOMETRY	2
ABUTMENTS A & E	3
PIERS B & D	4
PIER C	5
SUPERSTRUCTURE - SLAB	6
SUPERSTRUCTURE - SLAB DETAILS	7
PRESTRESSED BEAMS - SPANS 1 & 4	8
PRESTRESSED BEAMS - SPANS 2 & 3	9
BEARINGS & MISCELLANEOUS DETAILS	10
HANDRAIL & LIGHTING	11
STAPLE DETAILS - Sid F-2-118	Sheet 3 E of 354
STD. 3-RAIL STEEL HANDRAIL - Sid 6-10-100	Sheet 318

STATE OF TENNESSEE
 DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
 MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
 SOUTH EAST SECTION
 EB. POPLAR OVER I-240
 BRIDGE LAYOUT

JOB NO. 332
 Iron 58 Related D.N.S. J.C. B.C.G. 4-11-71

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240 - 1 (17) 13	1959	183	334

TABLE OF GEOMETRICAL DATA

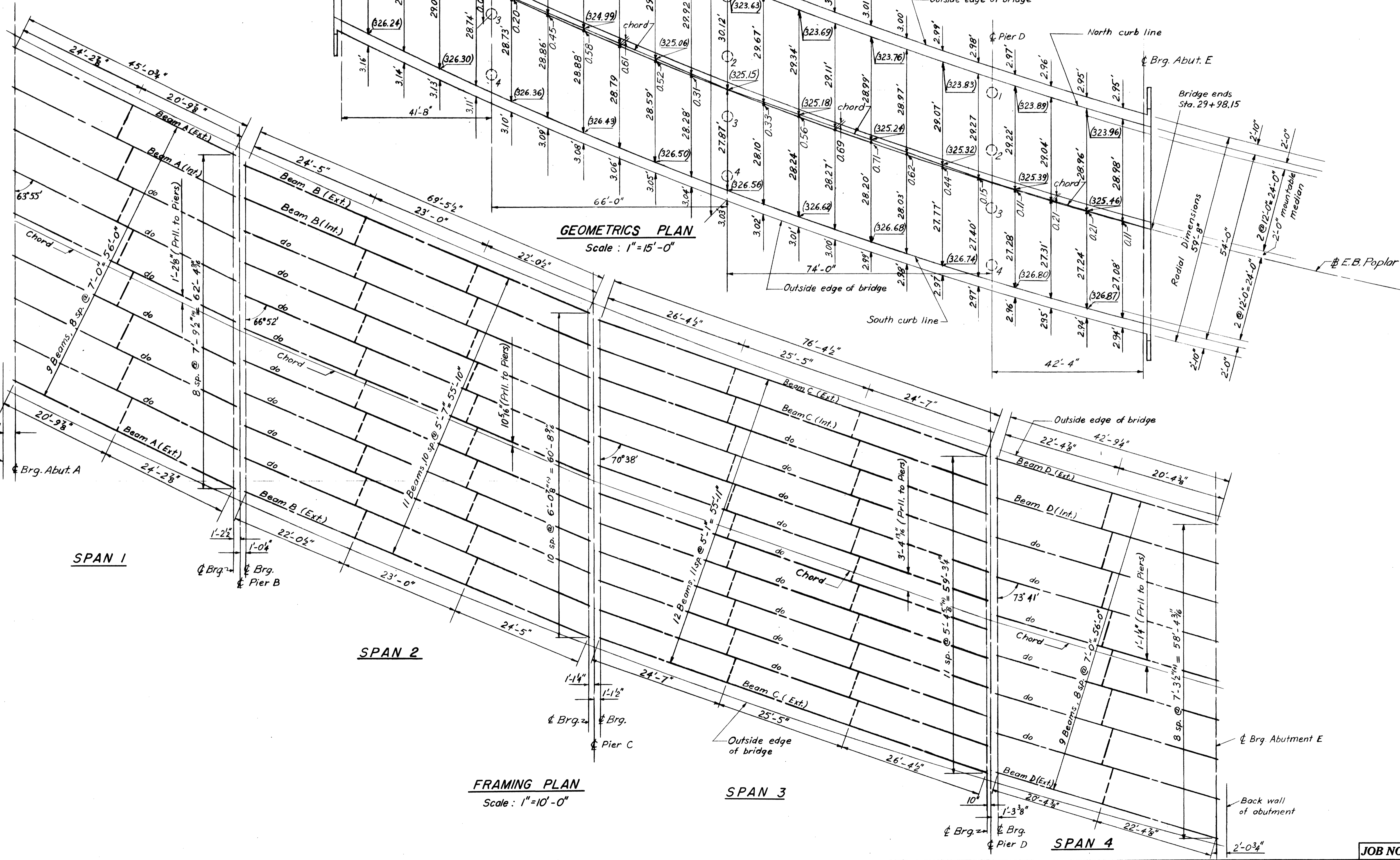
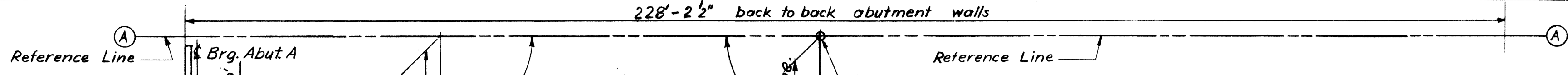
Location	Offsets from Reference Line (A)-(A)					Roadway Surface Elevations		
	to E.B. Poplar	to Col. 1	to Col. 2	to Col. 3	to Col. 4	to Edge of Br.	North Curb @ Base Line	South Curb
Back Ab. A	46.19					11.34	323.25	324.79
¢ Brg. Ab. A	47.30					12.49	323.26	324.80
¢ Pier B	67.70	41.12	58.12	75.12	92.12	33.60	323.40	324.93
¢ Pier C	95.89	69.89	86.56	103.22	119.89	62.72	323.63	325.15
¢ Pier D	121.91	97.08	113.08	129.08	145.08	89.55	323.88	325.39
¢ Brg. Ab. E	134.30					102.32	324.01	325.52
Back Ab. E						102.89	324.02	325.53

NOTES:

- THE ENTIRE BRIDGE IS ON A HORIZONTAL, CIRCULAR CURVE. THE CURB LINES, EDGES OF BRIDGE, AND EDGES OF MEDIAN ARE CONCENTRIC TO THE 5° HORIZONTAL CIRCULAR CURVE OF THE ¢ OF E.B. POPLAR (RAD=1145.916').
- THE OFFSET OF THE SPIRAL OF RAMP 15B WITH RESPECT TO THE EDGE OF THE 2'-0" CARRY-THROUGH AT THE N.W. CORNER OF THE BRIDGE IS NEGLIGIBLE.
- ALL PIERS AND ABUTMENTS ARE PARALLEL TO THE ¢ OF I-240.
- THE PRESTRESSED BEAMS IN EACH SPAN ARE PARALLEL TO EACH OTHER AND TO THE CHORD JOINING THE POINTS OF INTERSECTION OF THE ¢ OF E.B. POPLAR WITH THE ¢ OF ADJACENT PIERS OR THE ¢ BRG. OF ABUTMENTS.

SUGGESTED LAYOUT PROCEDURE

- SUBSTRUCTURE**
- LOCATE STA. 554+30.00 ON ¢ I-240 AND ESTABLISH THE REFERENCE LINE A. THIS LINE IS PERPENDICULAR TO ¢ I-240.
 - LOCATE THE CENTERS OF COLUMNS FOR PIERS B, C AND D BY THE DISTANCES TO THE ¢ OF I-240 SHOWN ON THE GEOMETRICS PLAN AND THE OFFSETS FROM THE REFERENCE LINE SHOWN IN THE TABLE. SEE THE PIER SHEETS (BRIDGE DWGS. 4 & 5) FOR FURTHER DETAILS.
 - LOCATE ABUTMENTS A AND E BY THE DISTANCES SHOWN ON THE GEOMETRICS PLAN FROM THE ¢ OF PIERS B AND D TO THE ¢ BRG. OF ABUTMENTS A AND E, RESPECTIVELY, AND THE OFFSETS AT THESE LINES FROM THE REFERENCE LINE A TO THE ¢ OF E.B. POPLAR, AS SHOWN IN THE TABLE. SEE THE ABUTMENT SHEET (BRIDGE DWG. 3) FOR FURTHER DETAILS.
 - CHECK CHORD DISTANCES ALONG ¢ OF E.B. POPLAR BETWEEN CONSECUTIVE ¢ OF PIERS AND ABUTMENTS WITH THE CORRESPONDING VALUES SHOWN ON THE BRIDGE LAYOUT (BRIDGE DWG. 1).
 - THE ANCHOR BOLTS FOR THE PRESTRESSED BEAMS OF SPANS 1 AND 4 AND FOR THE BEARING PLATES OF THE PRESTRESSED BEAMS OF SPANS 2 AND 3 SHALL BE SET IN ACCORDANCE WITH THE DIMENSIONS SHOWN ON BRIDGE DWGS. 3, 4, 5, AND 10. IT IS PARTICULARLY IMPORTANT THAT THE CENTER TO CENTER SPAN DIMENSIONS ARE CHECKED BY FIELD MEASUREMENT PRIOR TO GROUTING IN THE ANCHOR BOLTS.
- SUPERSTRUCTURE**
- THE ROADWAY SLAB MAY BE BUILT INITIALLY WITH ITS OUTSIDE EDGES PARALLEL, IN EACH SPAN, TO THE CORRESPONDING CHORD LINE, BUT THE CURBS AND THE MOUNTABLE MEDIAN SHALL BE MADE TO FOLLOW CIRCULAR CURVES CONCENTRIC WITH THE ¢ OF E.B. POPLAR. CURBS AND MEDIANS MAY BE CAST IN A SECOND CASTING OPERATION. SEE BRIDGE DWG. 6 FOR FURTHER DETAILS.
 - CURB LINES AND SOUTH EDGE OF MEDIAN SHALL BE LOCATED BY USING THE CHORD OFFSETS GIVEN IN THE GEOMETRICS PLAN. ALL THESE OFFSETS ARE MEASURED FROM THE CHORD LINES ALONG LINES PARALLEL TO THE PIERS. THESE LINES HAVE BEEN ESTABLISHED AT 10'-0" INTERVALS, MEASURED PERPENDICULARLY TO THE PIERS AND STARTING AT THE ¢ OF PIER C. THE LOCATION OF CURB AND MEDIAN LINES, PRIOR TO THE CASTING OF THE ROADWAY SLAB IS NECESSARY FOR ACCURATE PLACING OF ANCHOR BOLTS FOR THE MEDIAN AND THE SAFETY CURBS.
 - ELEVATIONS OF THE ROADWAY SURFACE ARE GIVEN IN PARENTHESES IN THE GEOMETRICS PLAN AT THE CURB LINES AND AT THE CHORD LINE.
 - THE OUTSIDE EDGES OF THE BRIDGE SHALL BE LOCATED BY USING THE CURB WIDTHS GIVEN IN THE GEOMETRICS PLAN. THE LOCATION OF THE CURB LINES SHALL BE CHECKED BY RUNNING THE 5° CIRCULAR CURVE OF ¢ OF E.B. POPLAR AND MEASURING CONSTANT RADIAL DISTANCES FROM THE ¢ TO THE CURB LINES.



GEOMETRICS PLAN
Scale: 1" = 15'-0"

FRAMING PLAN
Scale: 1" = 10'-0"

SPAN 1

SPAN 2

SPAN 3

SPAN 4

MICROFILMED

BRIDGE 15B

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

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

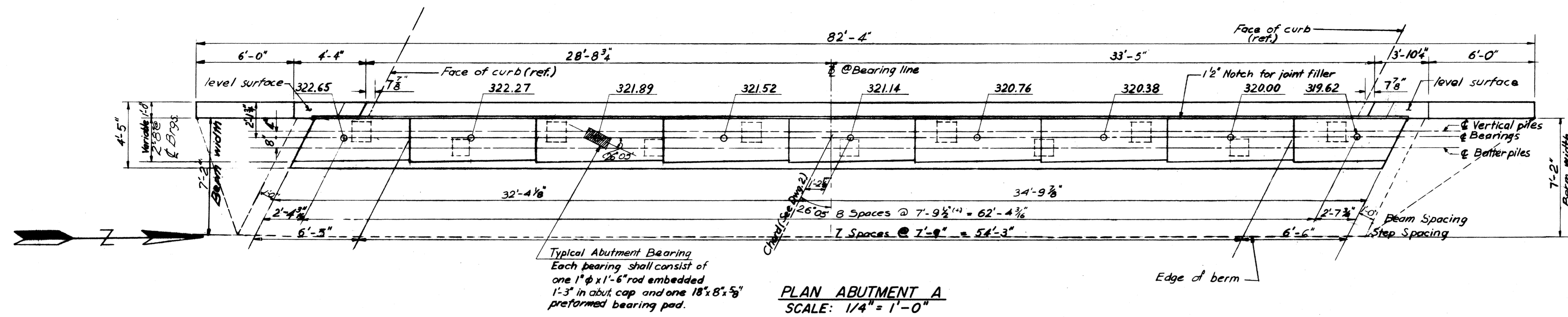
**E.B. POPLAR OVER I-240
BRIDGE GEOMETRY**

DATE	SCALE	DRAWN BY	CHECKED BY	IN CHARGE
Nov. 58	As Noted	C.O.	J.C.	B.C.C.

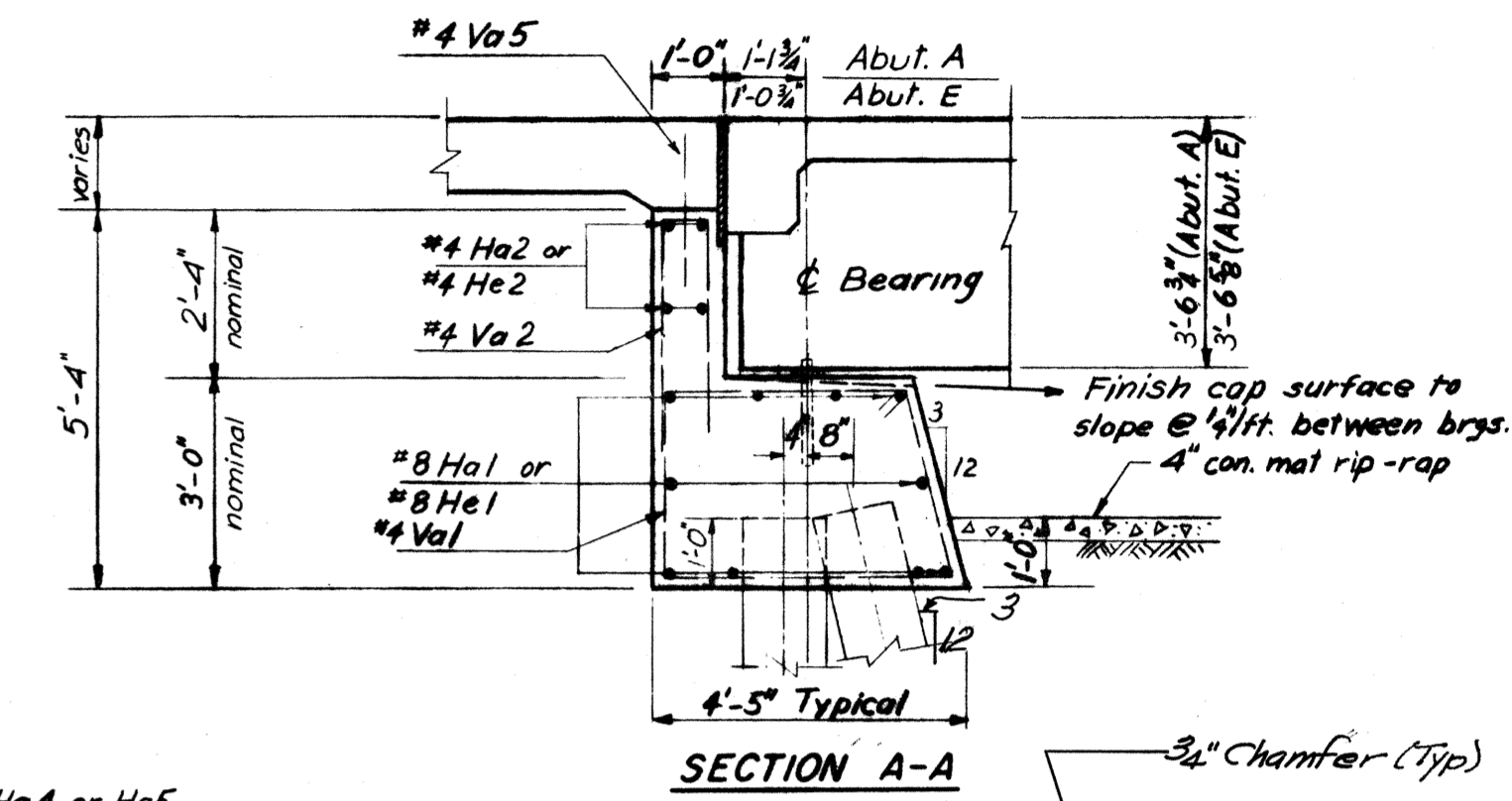
JOB NO. 332

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240 - 1 (17) 13	1959	184	334
REVISION					
11-10-59					
REVISION					

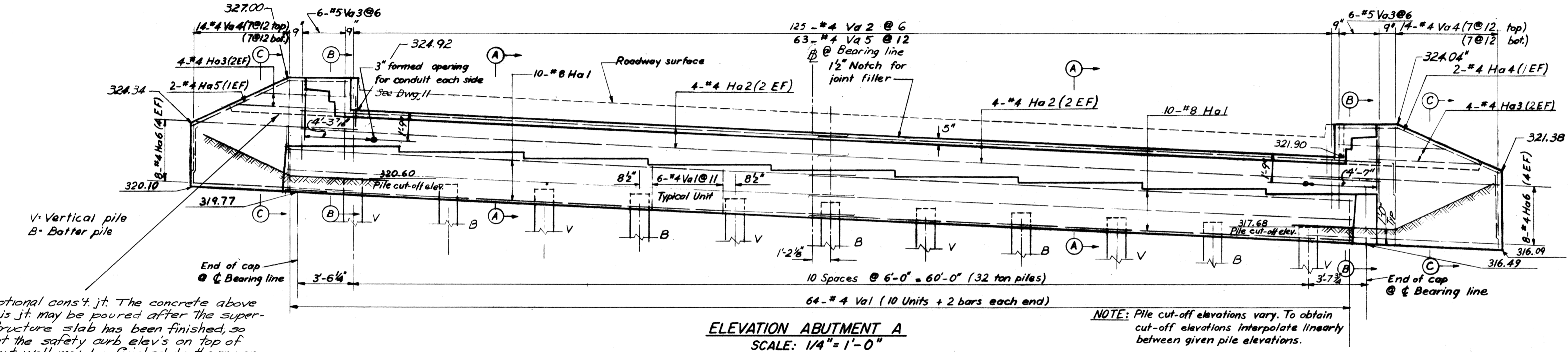
NOTES:
1. See Bridge Dwg. 1 for General Notes, Design Stresses and Pile Data.



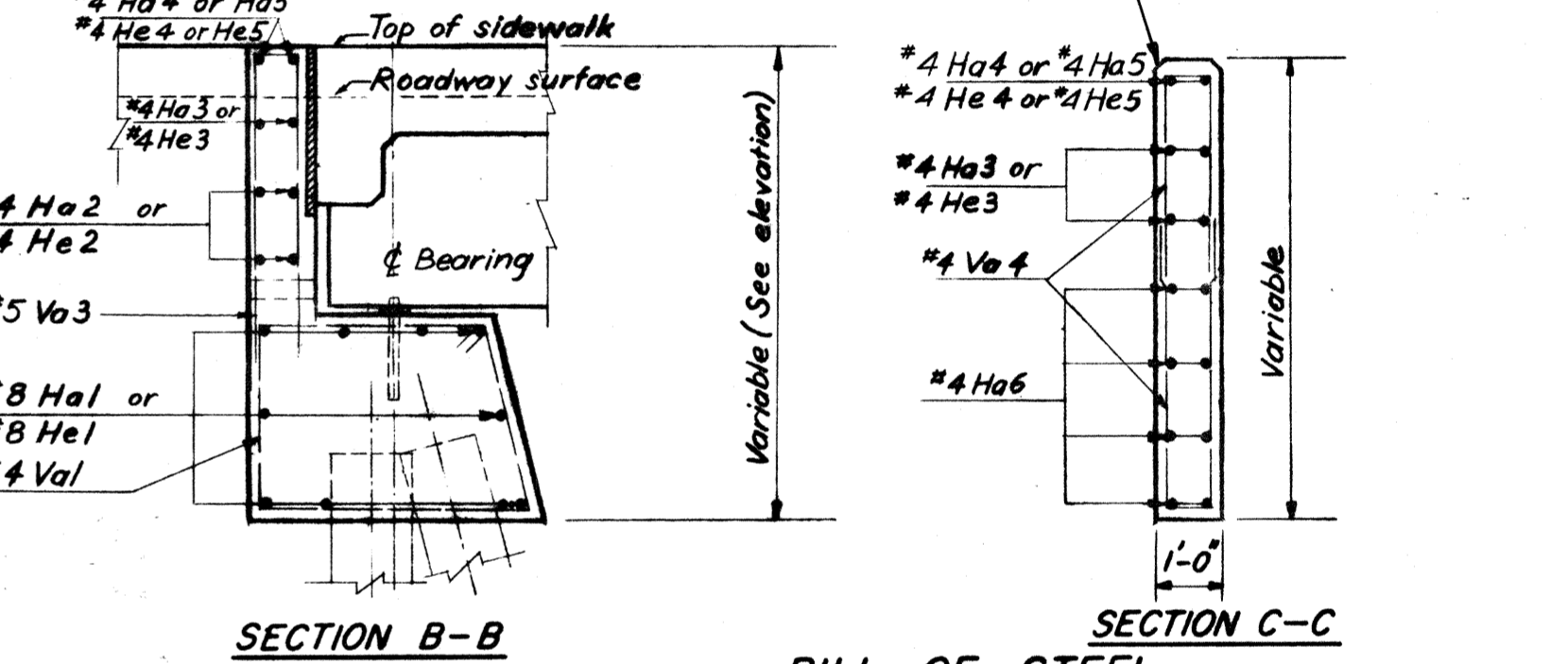
PLAN ABUTMENT A
SCALE: 1/4" = 1'-0"



SECTION A-A



ELEVATION ABUTMENT A
SCALE: 1/4" = 1'-0"



SECTION B-B

SECTION C-C

Optional const. jt. The concrete above this jt. may be poured after the superstructure slab has been finished, so that the safety curb elev's on top of abut wall may be finished to the proper elev. and graded properly. (Typical)

NOTE: Pile cut-off elevations vary. To obtain cut-off elevations interpolate linearly between given pile elevations.

BILL OF STEEL

Bar	Abut. A	Abut. E	Size	Length	Shape	Location
Ha1	20		#8	34'-8"	—	Seat
Ha2	8		#4	36'-0"	—	Parapet
Ha3	8		#4	6'-3"	—	Wing wall
Ha4	2		#4	10'-2"	—	Wing wall
Ha5	2		#4	10'-4"	—	Wing wall
Ha6	16	16	#4	10'-0"	—	Wing wall
He1		20	#8	32'-0"	—	Seat
He2		8	#4	34'-0"	—	Parapet
He3		8	#4	5'-9"	—	Wing wall
He4		2	#4	9'-6"	—	Wing wall
He5		2	#4	10'-3"	—	Wing wall
Val	64	54	#4	12'-9"	□	Seat
Va2	125	115	#4	8'-1"	□	Parapet
Va3	12	12	#5	11'-1"	□	Wing wall
Va4	28	28	#4	8'-8"	□	Wing wall
Va5	63	58	#4	2'-0"	□	Parapet

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A Concrete	Cu. Yds.	39.2
Steel Bar Reinforcement	Lbs.	3820
		3520

BRIDGE 15 B

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT 1-240 - 1 (17) 13 SHEET NO. 184

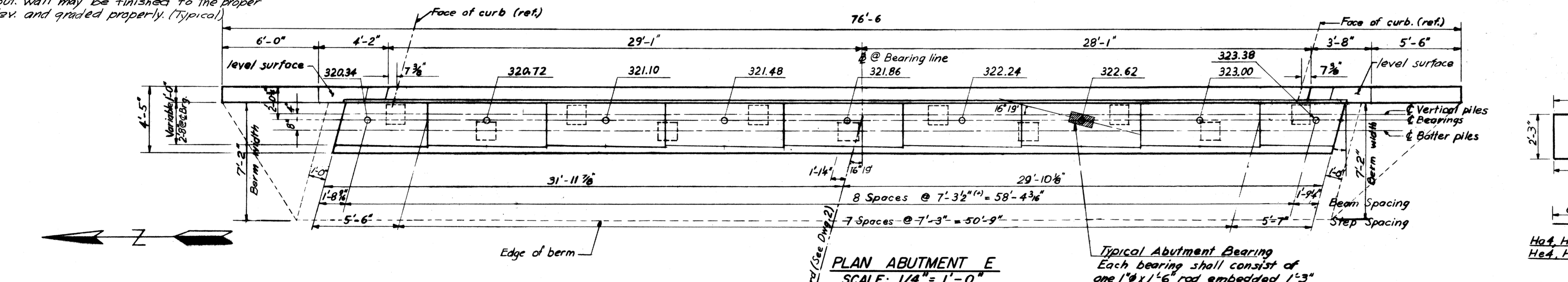
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION

HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

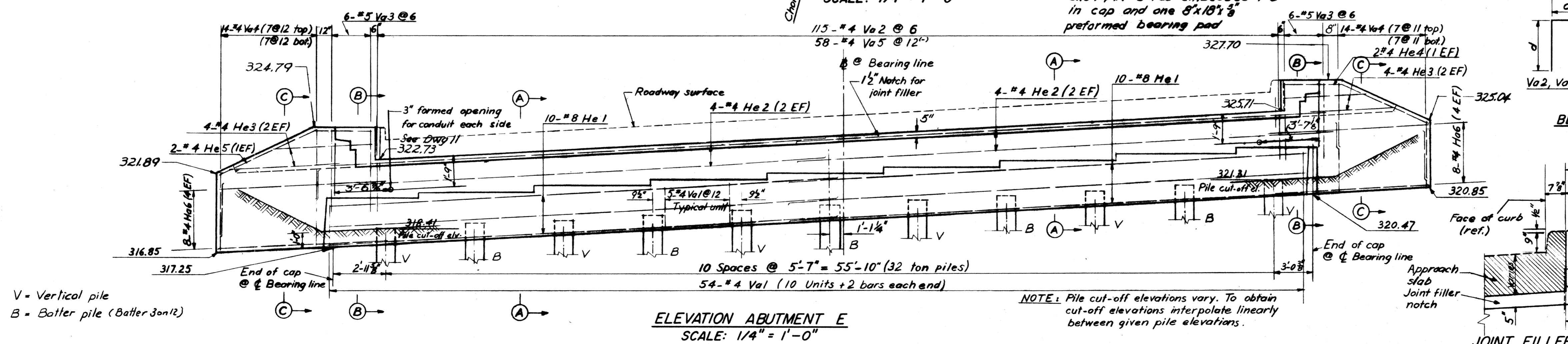
EAST BOUND POPLAR OVER I-240
ABUTMENTS A & E

DATE: 11-25-58 SCALE: AS NOTED DRAWN BY: C O CHECKED BY: J C IN CHARGE: B C C

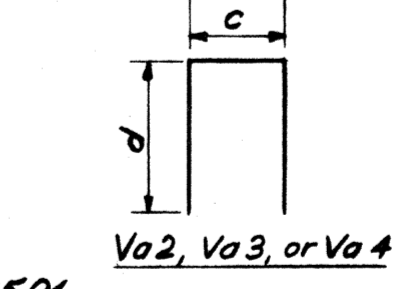
JOB NO. 332



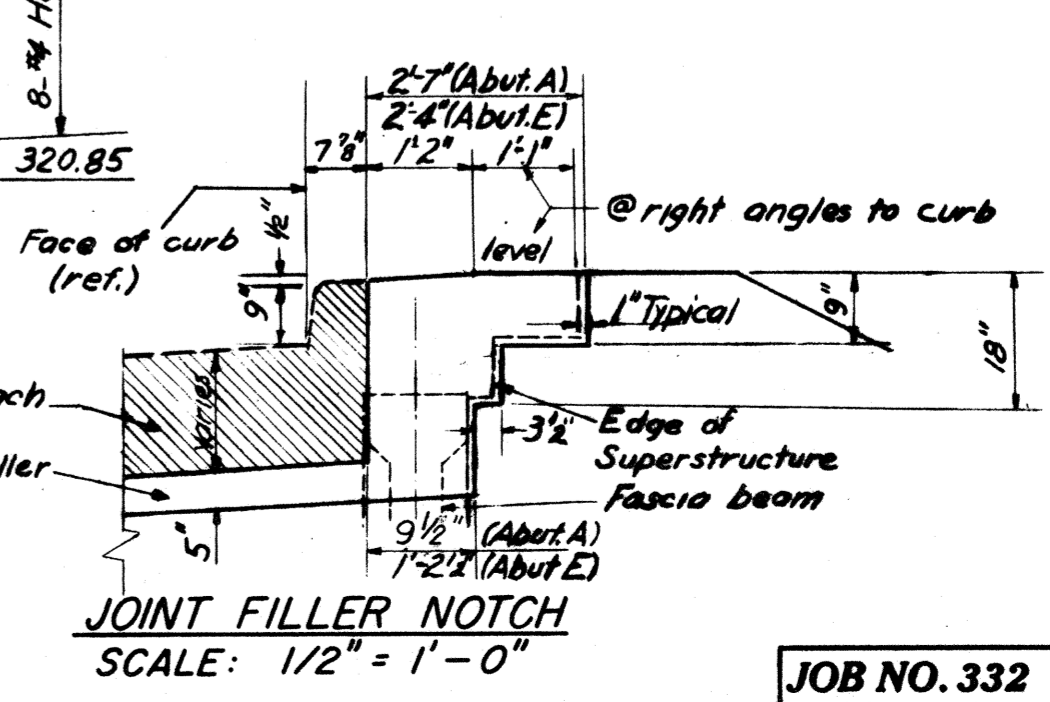
PLAN ABUTMENT E
SCALE: 1/4" = 1'-0"



ELEVATION ABUTMENT E
SCALE: 1/4" = 1'-0"



BENDING DIAGRAMS



JOINT FILLER NOTCH
SCALE: 1/2" = 1'-0"

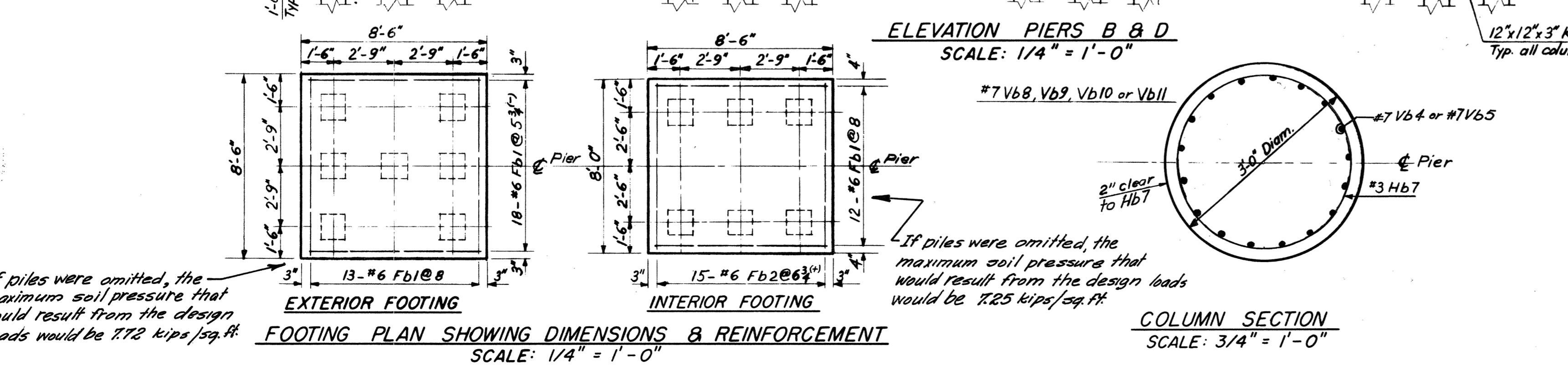
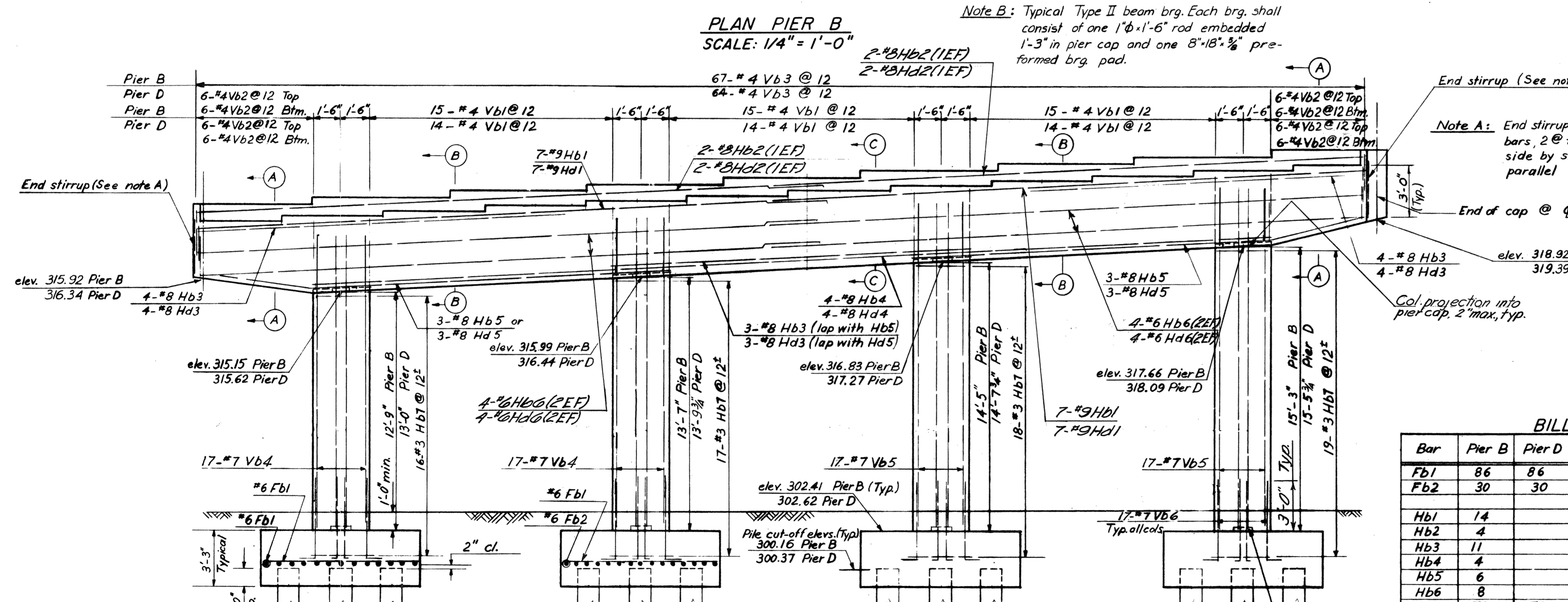
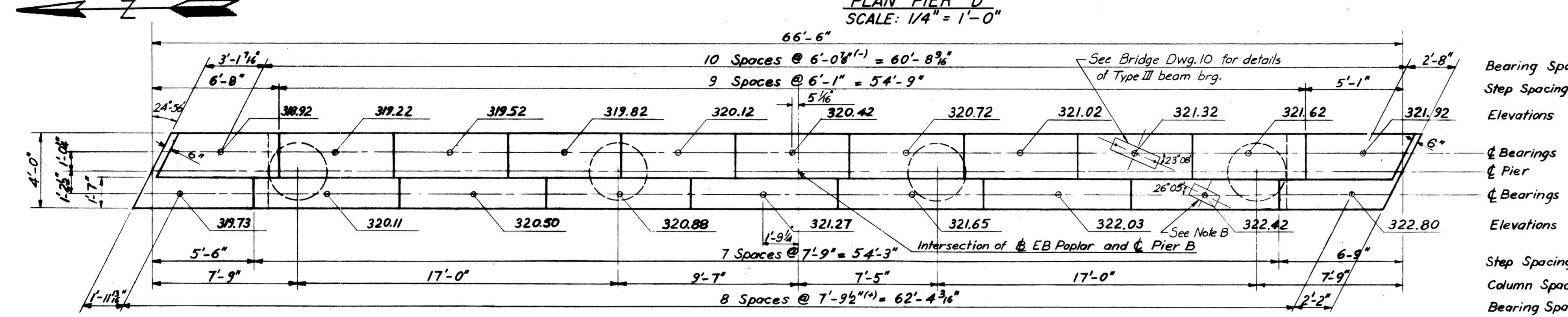
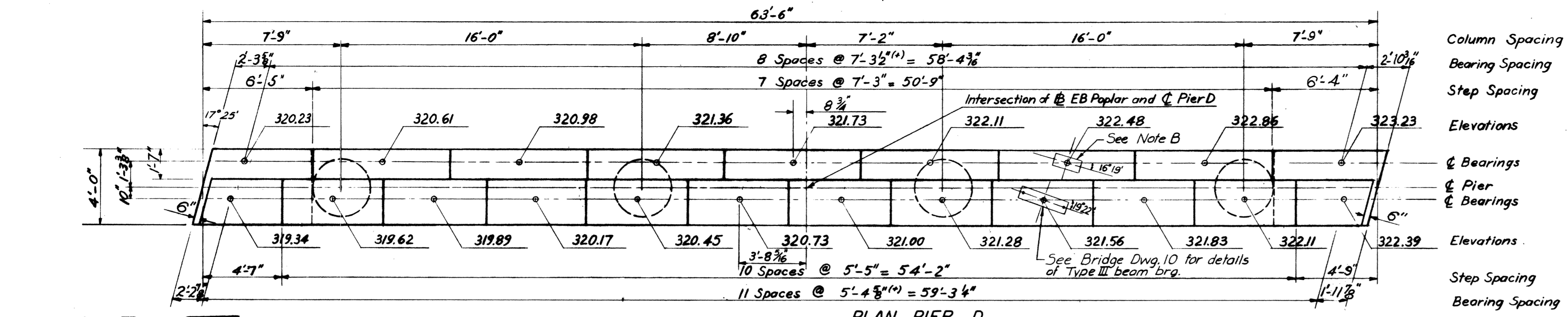
NOTE: Pile cut-off elevations vary. To obtain cut-off elevations interpolate linearly between given pile elevations.

V = Vertical pile
B = Batter pile (Batter 3on/2)

MICROFILMED

PUB. ROAD DIST. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	TENNESSEE	1-240 - 1 (17) 13	1959	185	334
REVISION 1. Nov. 10.59 12-18-59					
REVISION 2-16-62 Reinf. Steel Quant.					

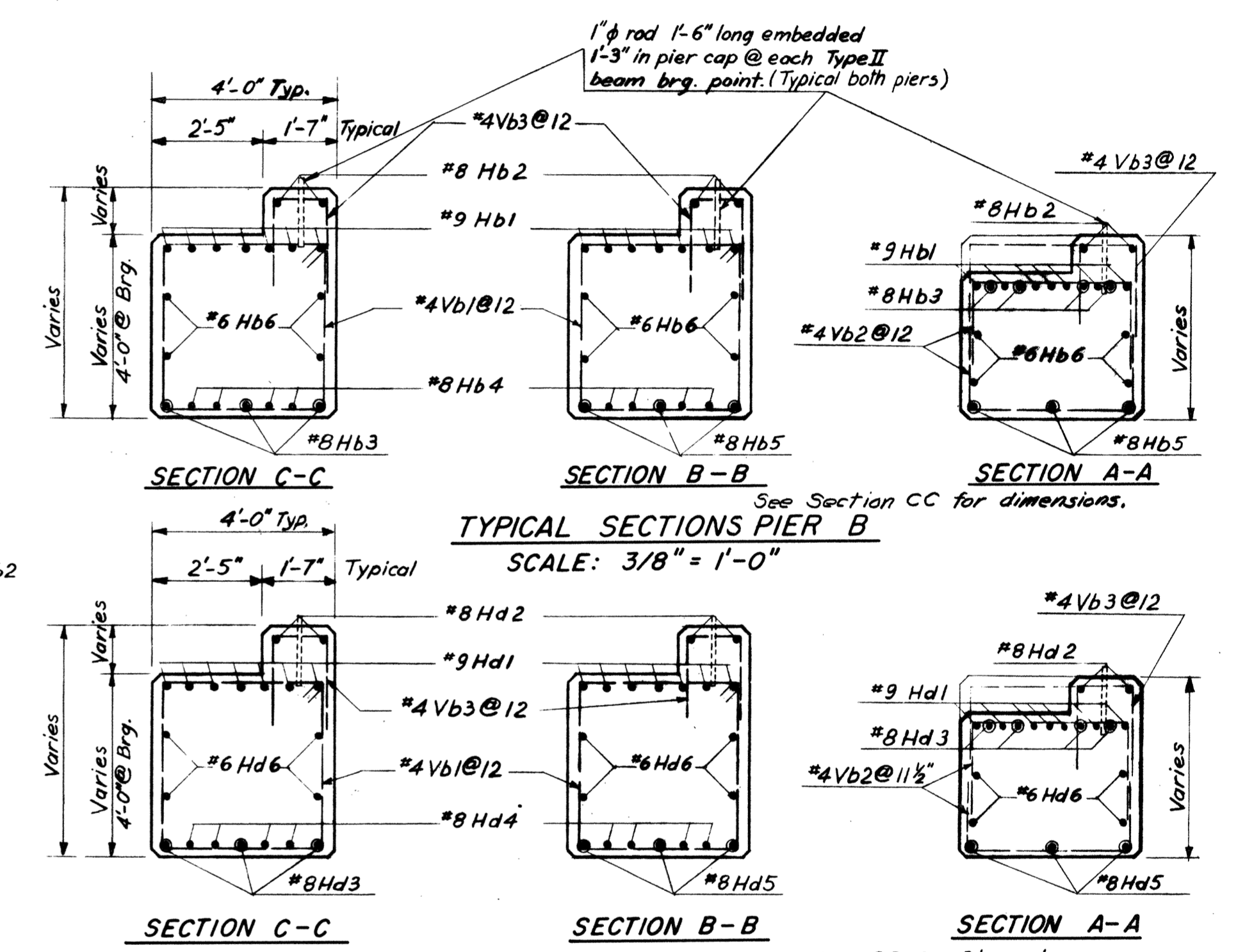
NOTES:
1. See Bridge Dwg. 1 for General Notes, Design Stresses and Pile Data.



Column Spacing
Bearing Spacing
Step Spacing
Elevations
Elevations
Elevations
Step Spacing
Bearing Spacing

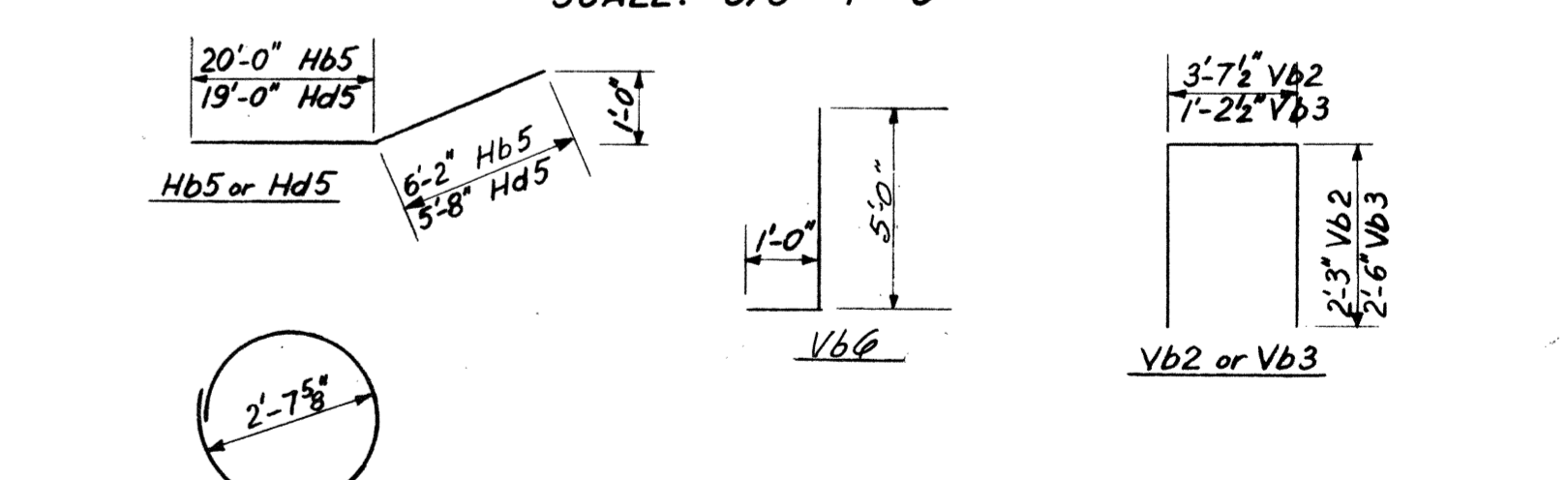
Bearing Spacing
Step Spacing
Elevations
Elevations
Elevations
Step Spacing
Column Spacing
Bearing Spacing

Note B: Typical Type II beam brg. Each brg. shall consist of one 1" dia x 1'-6" rod embedded 1'-3" in pier cap and one 8" dia x 3/4" pre-formed brg. pad.
Note A: End stirrup shall consist of 4 #4 Vb2 bars, 2 @ top & 2 @ btm. placed side by side. Place end stirrup parallel to skew.
End stirrup (See note A)
End of cap @ Pier
Col. projection into pier cap, 2" max. typ.



BILL OF STEEL

Bar	Pier B	Pier D	Size	Length	Shape	Location
Fb1	86	86	#6	8'-0"	—	Footing
Fb2	30	30	#6	7'-6"	—	Footing
Hb1	14		#9	34'-8"	—	Cap
Hb2	4		#8	34'-8"	—	Cap
Hb3	11		#8	20'-0"	—	Cap
Hb4	4		#8	54'-0"	—	Cap
Hb5	6		#8	26'-2"	—	Cap
Hb6	8		#6	34'-8"	—	Cap
Hb7	70	70	#3	9'-0"	○	Column
Hd1		14	#9	33'-2"	—	Cap
Hd2		4	#8	33'-2"	—	Cap
Hd3		11	#8	19'-0"	—	Cap
Hd4		4	#8	51'-0"	—	Cap
Hd5		6	#8	24'-8"	—	Cap
Hd6		8	#6	33'-2"	—	Cap
Vb1	45	42	#4	15'-2"	□	Cap
Vb2	32	32	#4	8'-2"	□	Cap
Vb3	67	64	#4	6'-3"	□	Cap
Vb4	34	34	#7	16'-0"	—	Column
Vb5	34	34	#7	17'-8"	—	Column
Vb6	68	68	#7	6'-0"	—	Col. Ftg.



SUBSTRUCTURE QUANTITIES

	UNIT	PIER B	PIER D
Concrete (Class A)	Cu.yd.	91.0	88.8
Steel Reinforcement	Lb.	9710	9470

BRIDGE 15 B

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

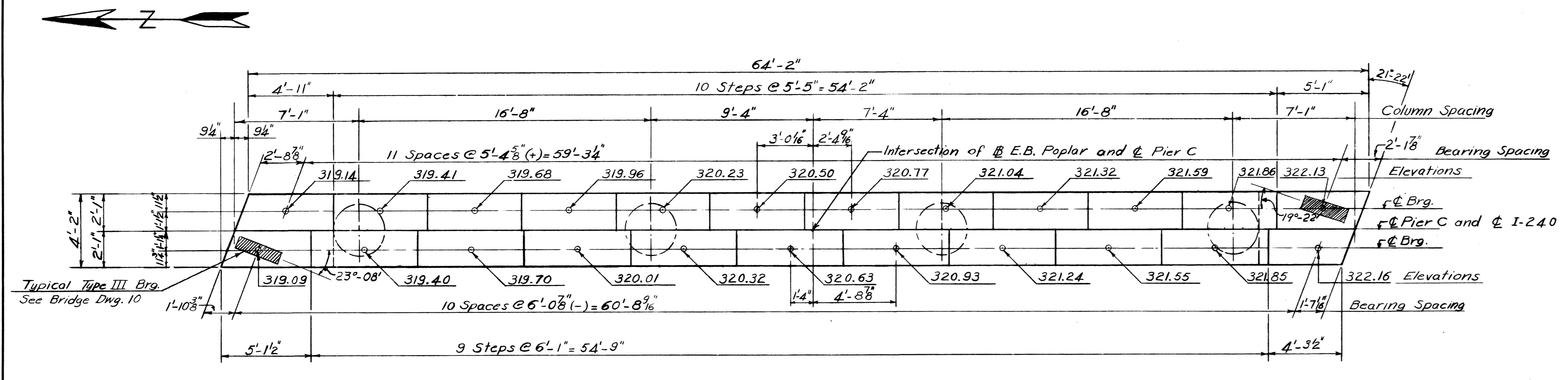
EAST BOUND POPLAR OVER I - 240
PIERS B & D

DATE: 11-25-58 SCALE: AS NOTED DRAWN BY: C O CHECKED BY: DNS IN CHARGE: BCC

JOB NO. 332 H-11-30

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240 - 1 (17) 13	1959	186	334
REVISION 1. Nov. 10, 59					
2. 12-18-59					
REVISION:					

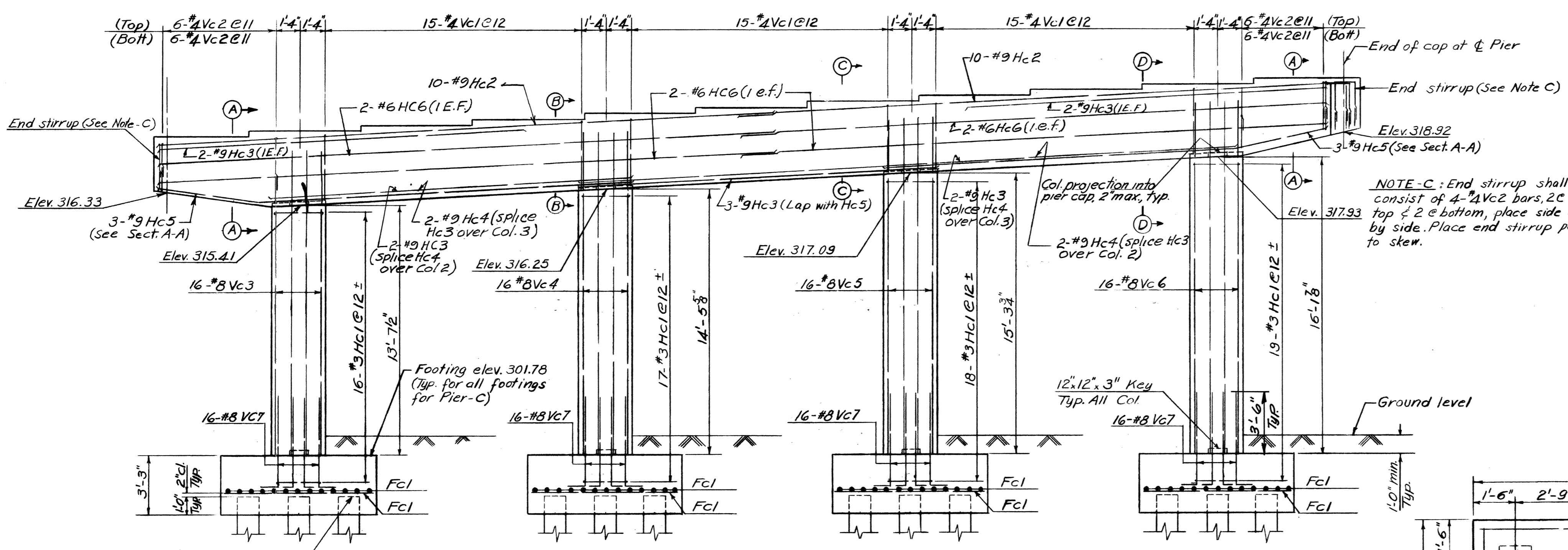
NOTE: For General Notes See Bridge Dwg. 1



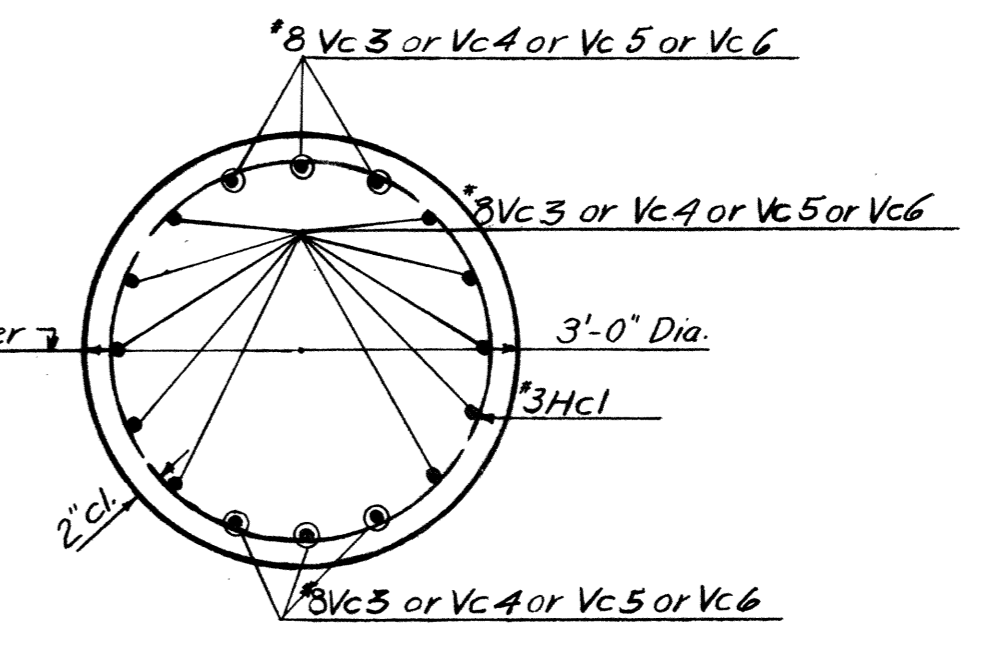
PLAN PIER-C
Scale: 1/4" = 1'-0"

BILL OF STEEL

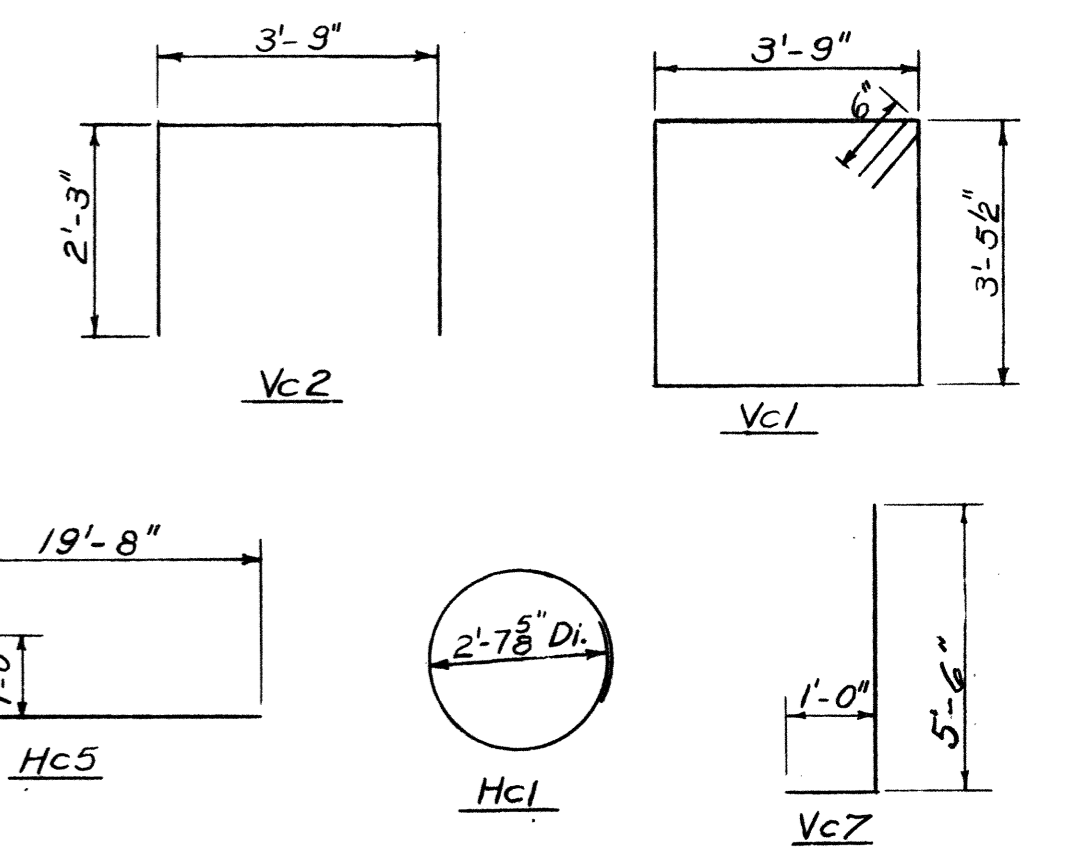
Bar	No.	Size	Length	Shape	Location
Hc1	70	#3	9'-0"	○	Column
Hc2	20	#9	33'-6"	—	Cap
Hc3	11	#9	19'-8"	—	Cap
Hc4	4	#9	36'-4"	—	Cap
Hc5	6	#9	25'-2"	—	Cap
Hc6	8	#6	33'-6"	—	Cap
Vc1	45	#4	15'-5"	□	Cap
Vc2	32	#4	8'-3"	□	Cap
Vc3	16	#8	16'-8"		Column
Vc4	16	#8	17'-6"		Column
Vc5	16	#8	18'-3"		Column
Vc6	16	#8	19'-0"		Column
Vc7	64	#8	6'-6"	┘	Col. Foot.
Fc1	124	#6	8'-0"	—	Footing



ELEVATION PIER-C
Scale: 1/4" = 1'-0"



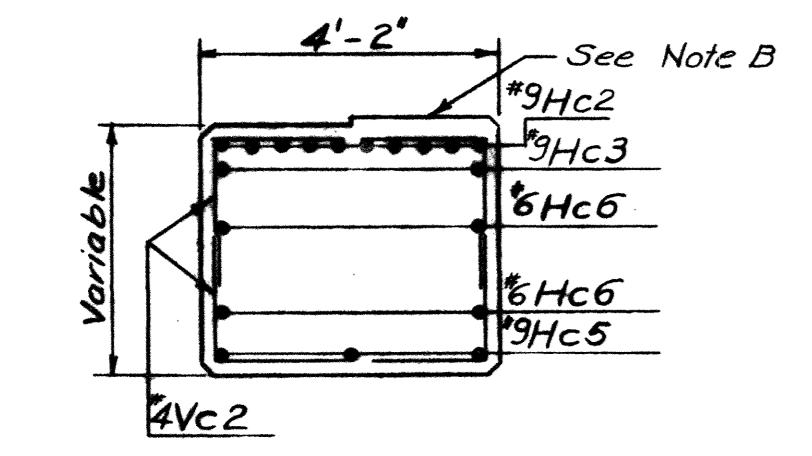
COLUMN PLAN
Scale: 1/4" = 1'-0"



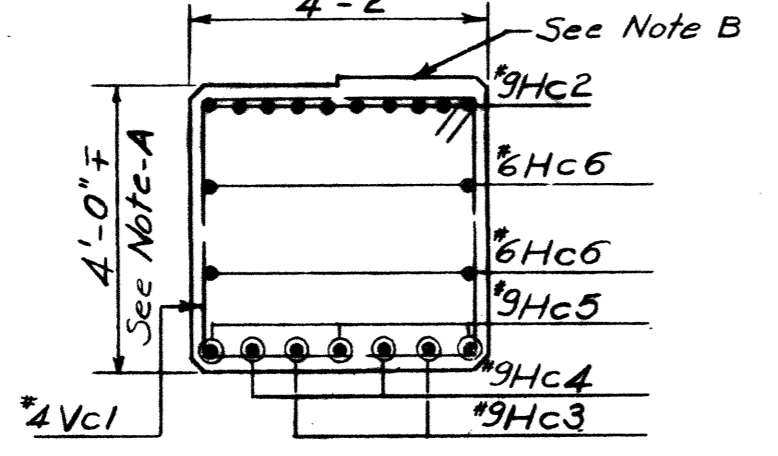
BENDING DIAGRAMS

NOTE-A: This dimension is nominal. It varies across the length of the pier cap, because of the steps and the sloping bottom face of cap.

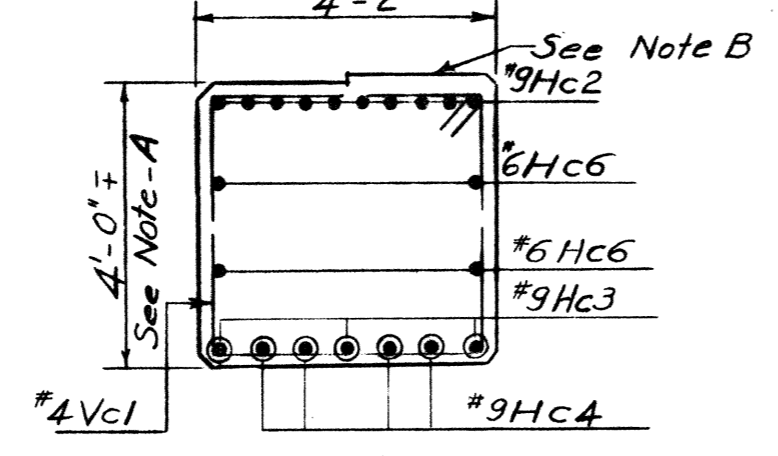
NOTE-B: Top of cap stepped as required by bearing elevations. See Plan



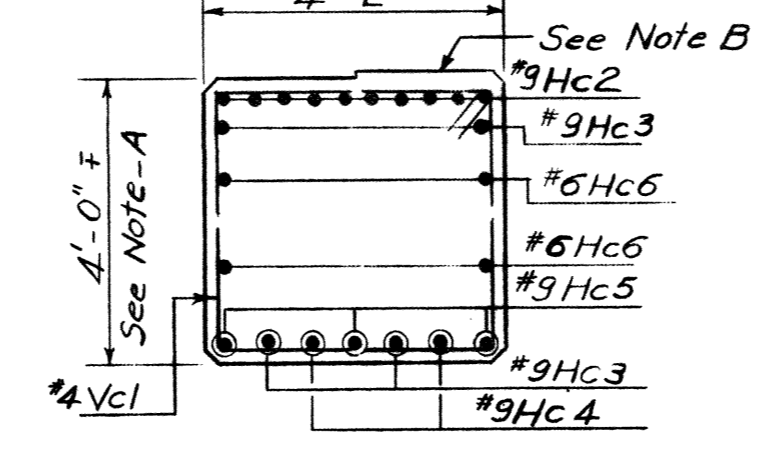
SECTION: A-A
Scale: 3/8" = 1'-0"



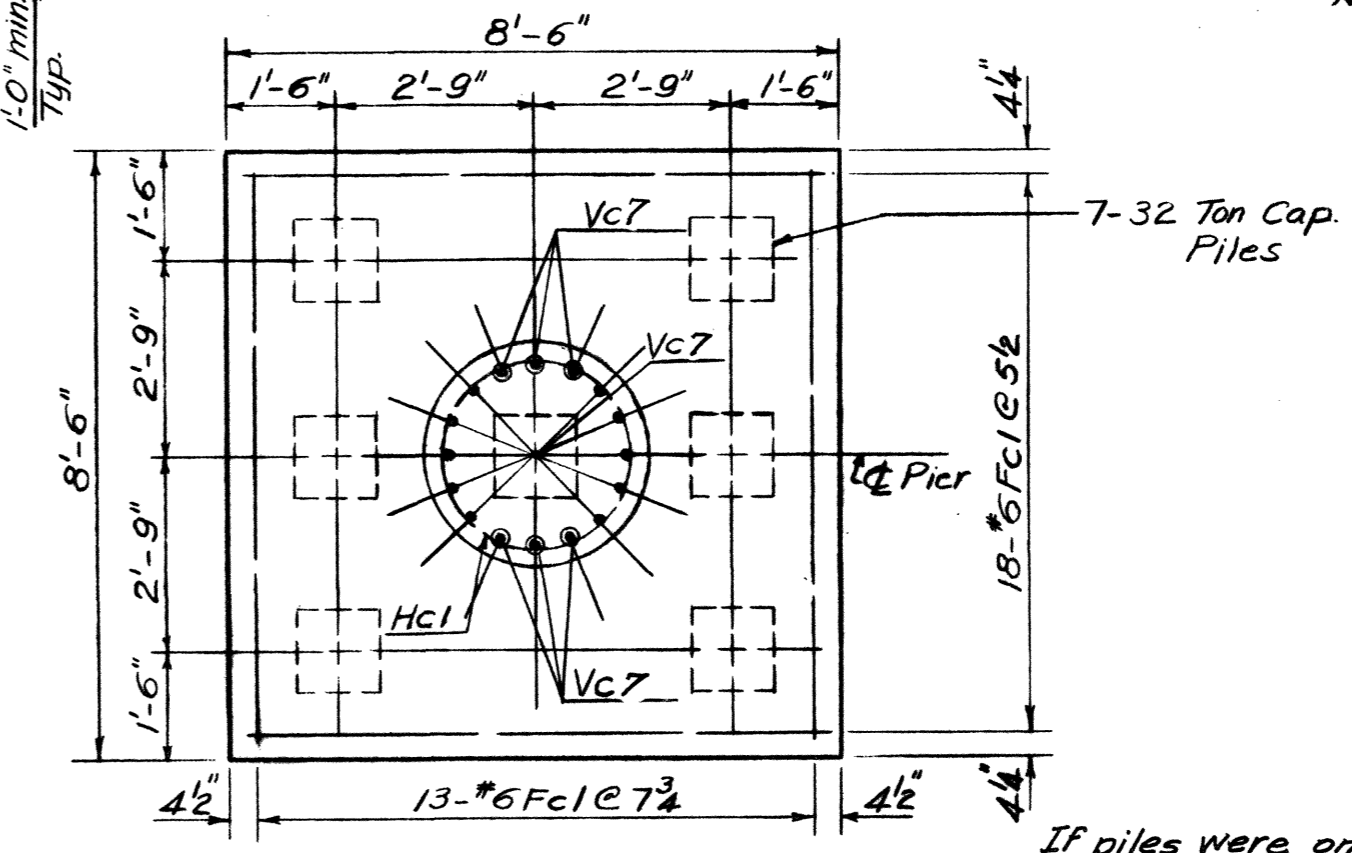
SECTION: B-B
Scale: 3/8" = 1'-0"



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



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



TYP. FOOTING PLAN FOR PIER-C
SHOWING PILES & REINFORCEMENT
Scale: 3/8" = 1'-0"

If piles were omitted, the maximum soil pressures that would result would be 7.65 kips/sqft

ESTIMATED QUANTITIES

ITEM	UNIT	PIER-C
Class "A" Concrete	Cu. Yds.	87.7
Steel Bar Reinforcement	Lbs.	10,950

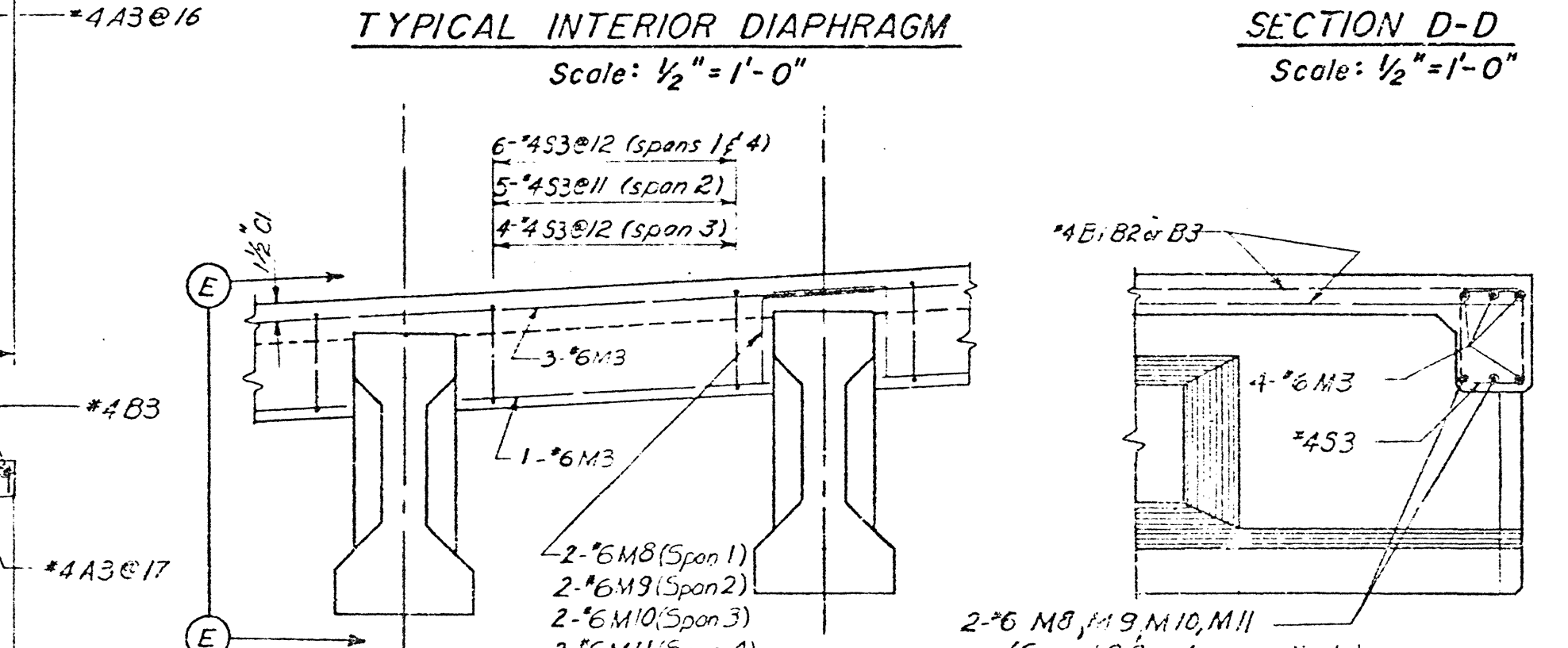
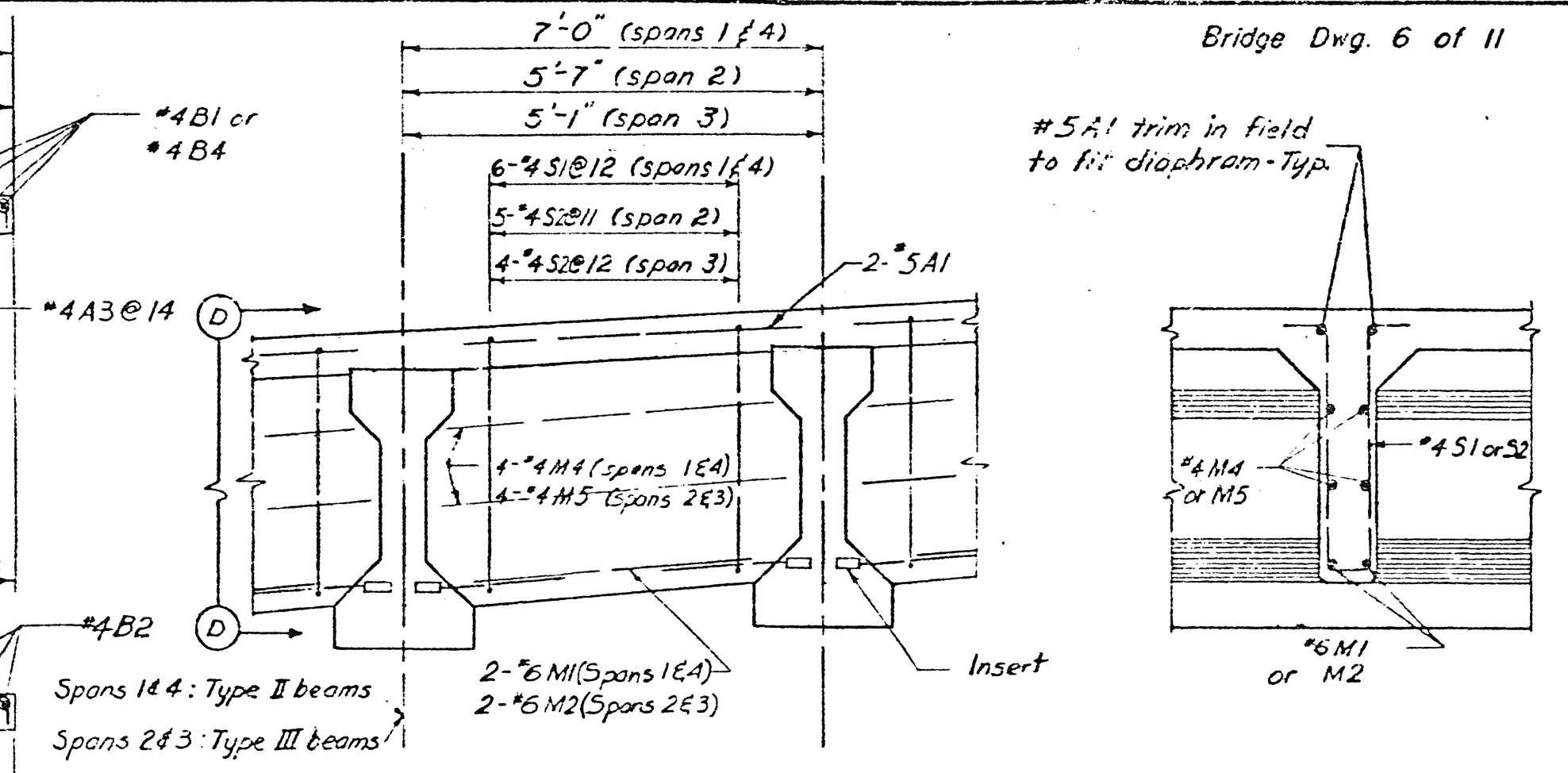
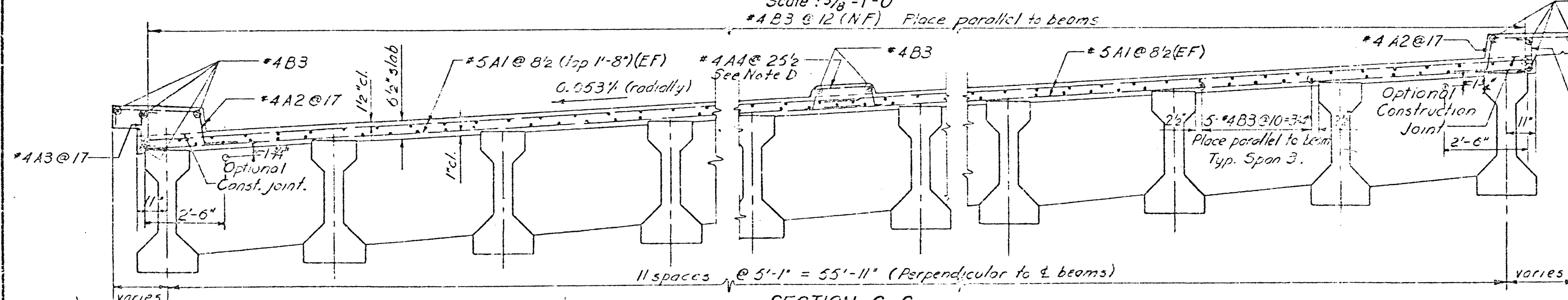
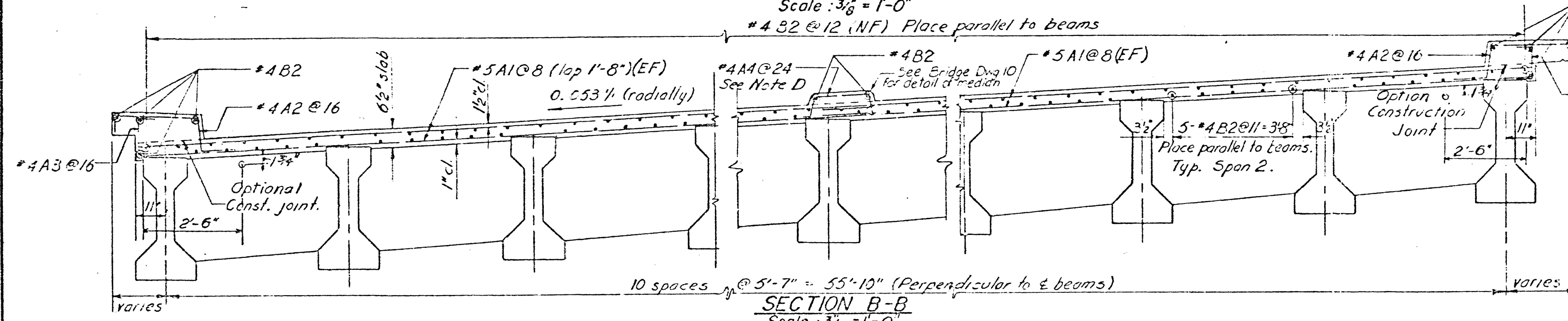
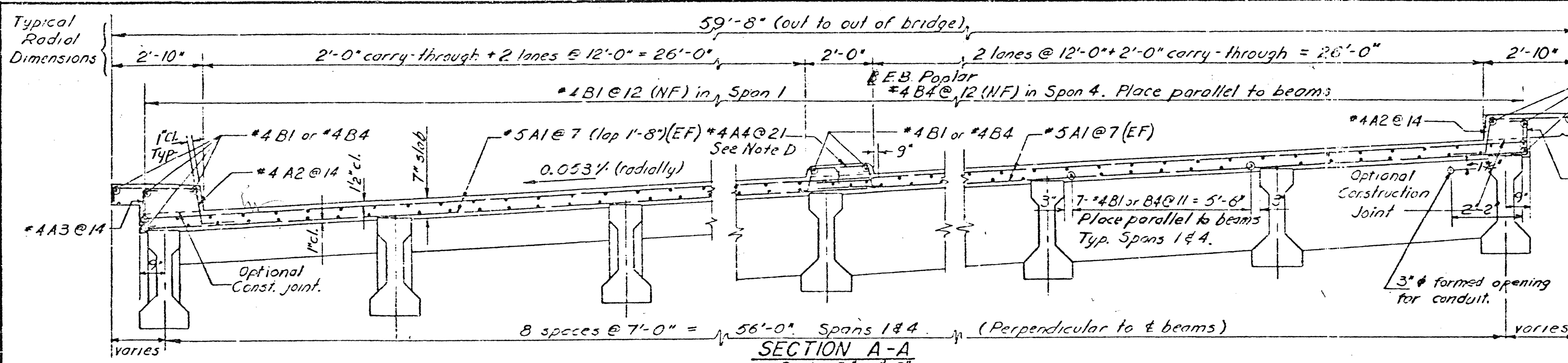
BRIDGE 15 B

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

HARLAN BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS

**EASTBOUND POPLAR OVER I-240
PIER-C**

DATE: 11-1-58	SCALE: As Noted	DRAWN BY: MAT	CHECKED BY: CO	IN CHARGE: BCC
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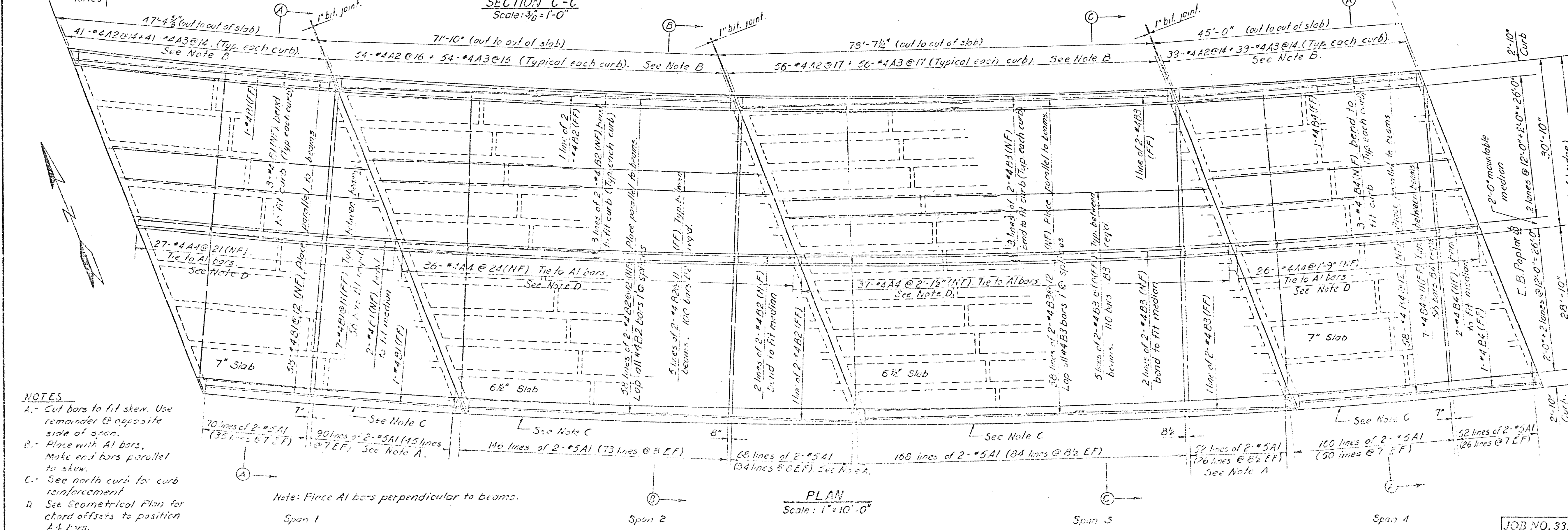
PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1959	187	334

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

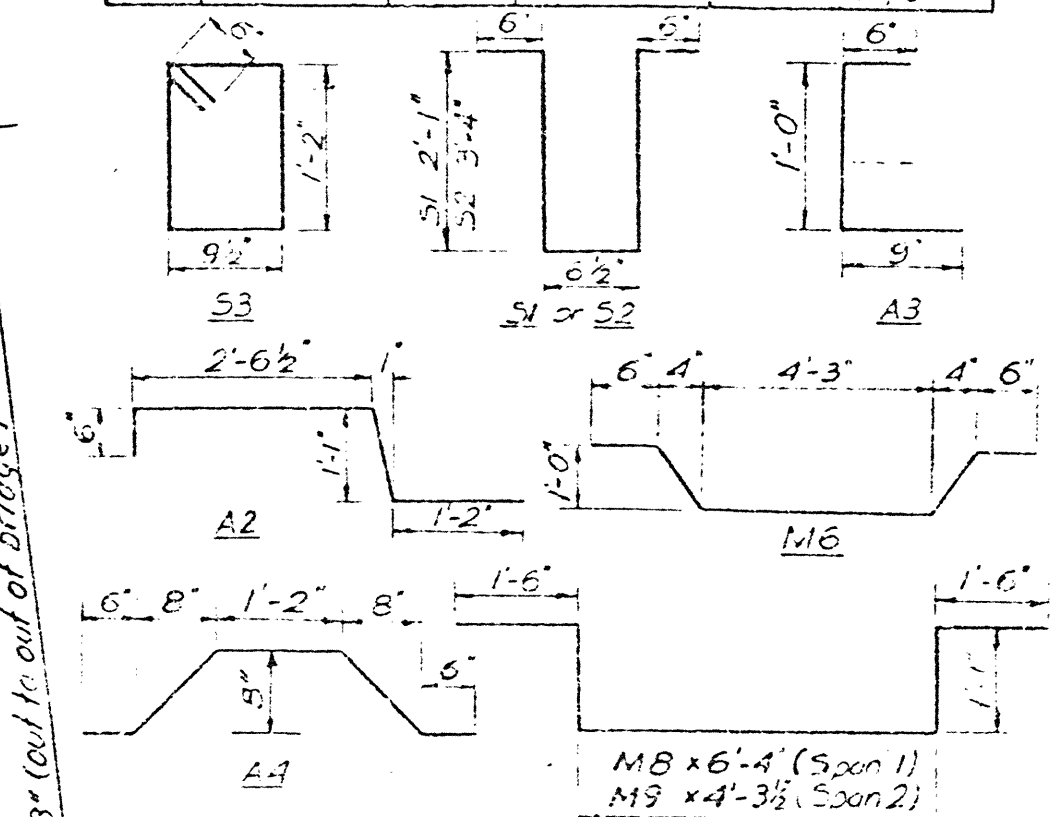
NOTES
See Bridge Dwg. 1 for General Notes and Design Stresses.

BILL OF STEEL

Bar No	Size	Length	Shape	Location
A1	15/16"	*5	29'-6"	Slab
A2	3/80"	*4	5'-4"	Sidewalk
A3	3/80"	*4	2'-3"	Sidewalk
A4	1/2"	*4	4'-1"	Median-slab
B1	1/2"	*4	47'-0"	Slab, sidewalk (Span 1)
B2	2/36"	*4	36'-3"	Slab, sidewalk (Span 2)
B3	2/46"	*4	39'-7"	Slab, sidewalk (Span 3)
B4	1/2"	*4	44'-7"	Slab, sidewalk (Span 4)
M1	3/2"	*6	5'-6"	Int. dia. (Sp. 1 & 4)
M2	3/4"	*6	3'-10"	Int. dia. (Sp. 2 & 3)
M3	3/4"	*6	33'-0"	End diaphragm
M4	3/4"	*4	6'-0"	Int. dia. (Sp. 1 & 4)
M5	1/2"	*4	4'-0"	Int. dia. (Sp. 2 & 3)
M6	1/2"	*4	7'-5"	Slab thickening
M7	1/2"	*4	3'-6"	Slab thickening
M8	3/2"	*6	11'-6"	End dia. (Sp. 1)
M9	3/4"	*6	9'-6"	End dia. (Sp. 2)
M10	3/4"	*6	8'-10"	End dia. (Sp. 3)
M11	3/2"	*6	10'-11"	End dia. (Sp. 4)
S1	3/8"	*4	5'-9"	Int. dia. (Sp. 1 & 4)
S2	1/2"	*4	8'-3"	Int. dia. (Sp. 2 & 3)
S3	3/80"	*4	4'-11"	End diaphragm
T1	1/2"	*5	7'-3"	Handrail end block
T2	1/2"	*5	9'-1"	Handrail end block
WWF	3'-3" @ 10"	715 sq ft		Mortar caps



NOTES
A. - Cut bars to fit skew. Use remainder @ opposite side of span.
B. - Place with A1 bars. Make end bars parallel to skew.
C. - See north curb for curb reinforcement.
D. - See Geometrical Plan for chord offsets to position A & B bars.



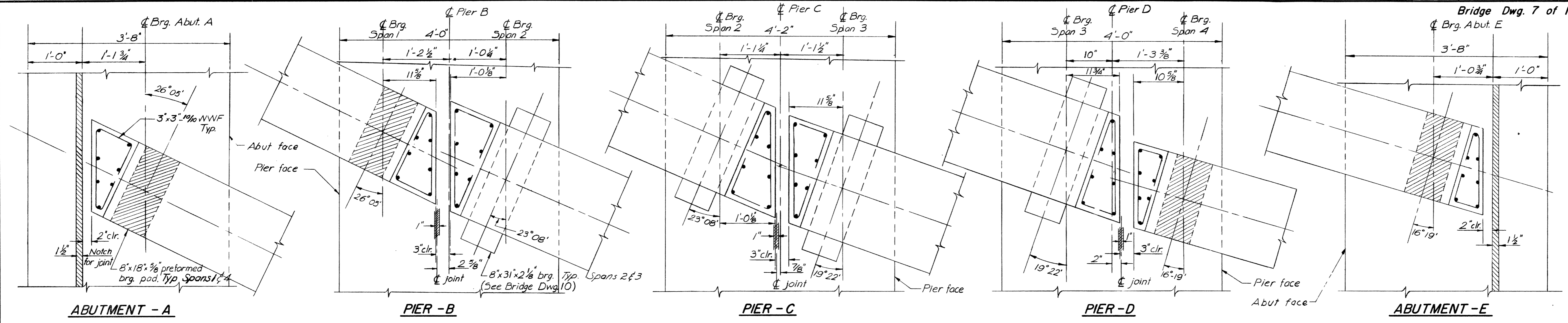
SUPERSTRUCTURE QUANTITIES

ITEM	UNIT	QUANTITY
Class A Concrete	Cu Yds	371.7
Steel Bar Reinforcement	Lbs.	78,800

*Includes WWF Reinforcement

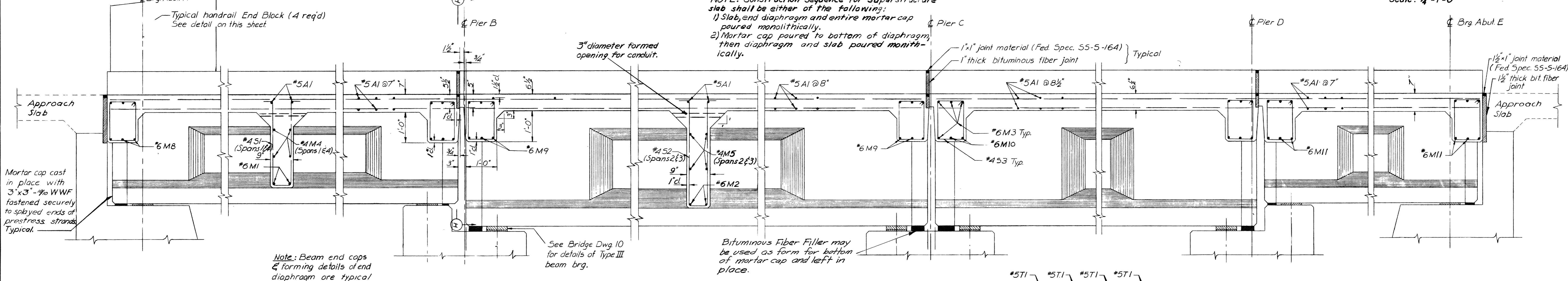
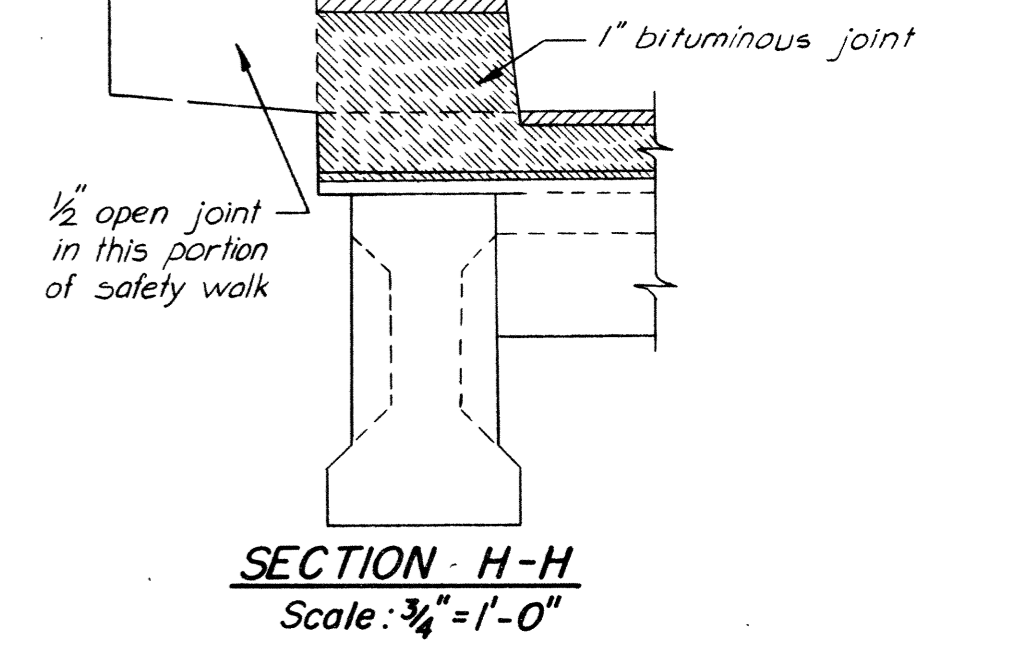
BRIDGE 15 B
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT NO. I-240-1 (17) 13 SHEET NO. 187 OF 334
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION
HAROLD HARTH LOWERY AND ASSOCIATES ENGINEERS
CLARK AND GALT ASSOCIATED ENGINEERS
E.B. POPLAR OVER I-240
SUPERSTRUCTURE - SLAB
DATE: Nov 58
JOB NO. 332
As Noted J.C. ADAMS, W.C.B., B.C.C. H-11-32

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240-1 (17) 13	1959	188	334
REVISION					
11-10-59					
12-18-59					
REVISION					



PLAN OF PIERS & ABUTMENTS
Scale: 1"=1'-0"

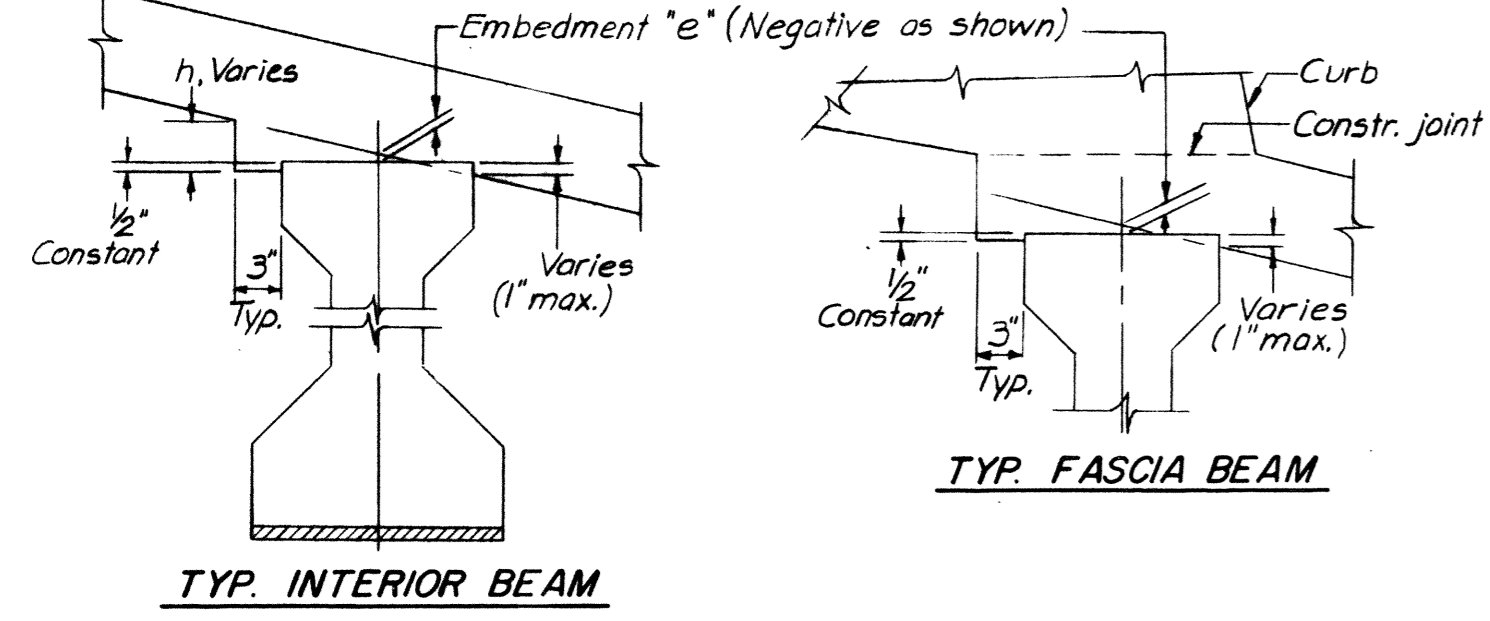
NOTES
1. See Bridge Dwg. 1 for General Notes
2. All steel called out on this sheet is summarized in the Bill of Steel on Bridge Dwg. 6.



SCHEMATIC SECTION ALONG CHORD LINES
End Diaphragms are shown at right angles
Scale: 3/4"=1'-0"

NOTES ON FORMING SLAB

- The prestressed beams have a calculated camber as shown in the table on this sheet. The effect of slab dead load is shown by the difference (Δ) between the two curves on the Deflection Diagram.
- The contractor shall form the bottom surface of the slab using a continuous fillet along the South side of each prestressed beam as shown:



- Embedments have been calculated at the supports and ϕ of each beam and are as follows:

SPAN	Beam Embedment "e"	
	Supports	ϕ
1	1/4" (Abut. A & Pier B)	5/8"
2	1/8" (Pier B & Pier C)	1/2"
3	1/8" (Pier C & Pier D)	1/2"
4	3/8" (Pier D & Abut. E)	5/8"

Negative sign indicates that bottom surface of roadway slab is above the top surface of beam at ϕ of beam.

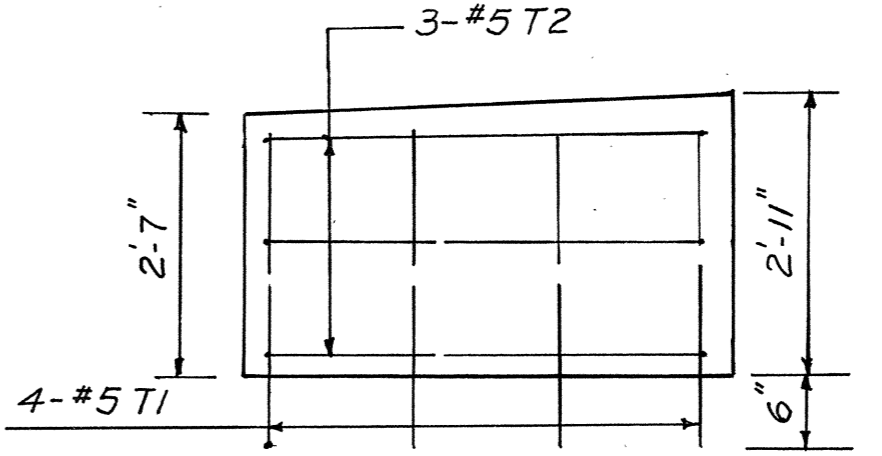
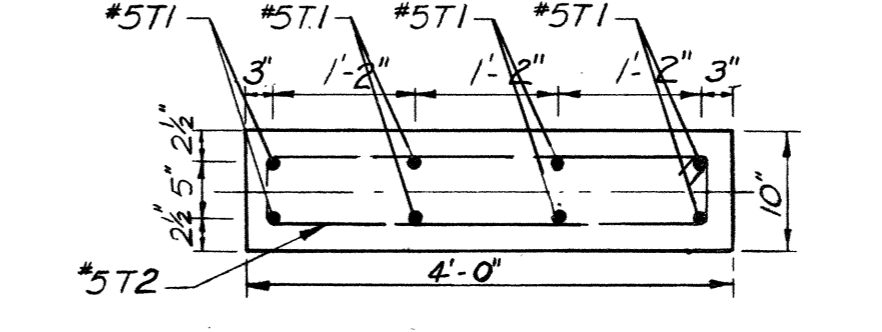
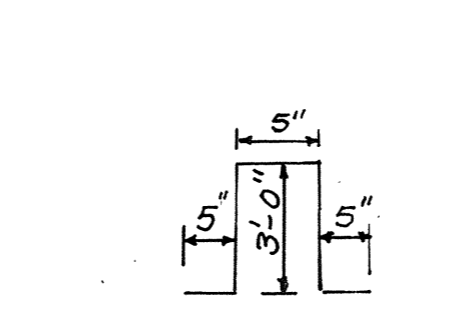
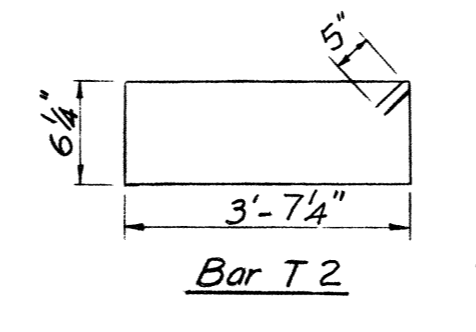
- The Engineer shall calculate the embedment, e , and fillet height, h , for each beam in each span at the points determined by the sections shown on the Geometrical Plan of Bridge Dwg. 2 for use in forming the bottom surface of the slab.
A procedure for obtaining these is as follows:
After the prestressed beams have been erected, elevations of the top flanges of the beams shall be taken at the sections mentioned above. From these elevations shall be subtracted the increment of slab dead load deflection, using the value " Δ " given in the Deflection Diagram and assuming a parabolic variation in Δ from supports to ϕ of beam. The elevations so obtained may be subtracted from the final roadway elevations as determined from the information presented on Bridge Dwg. 2. Subtraction of this difference from the corresponding slab thickness (7" Spans 1&4, 6 1/2" Spans 2&3) equals the algebraic value of the embedment " e " at the point in question. Fillet height, h , equals 1" less the algebraic value of " e " for Type II beams, and 1/2" less the algebraic value of " e " for Type III beams.

EXAMPLE:
To find h & e for middle beam at a section 20ft. west of ϕ Pier C.
Assumed elevation at top of flange (D.L. Beam + Prestress) - (D.L. Beam + Prestress + Slab) = Δ = 324.50
Dead load deflection at the section considered = $[-(1.22 \times 66 - 20)^2] / 0.312 = -0.03$
Final elevation of top of flange = 324.47
Final roadway surface elevation (interpolated from Bridge Dwg. 2) = 325.02
Difference in elevation = 0.55
Slab thickness = 0.54
Embedment " e " (For sign see detail) = -0.01
Fillet height " h " = 1 1/8" - (-1/8") = 1 1/4"

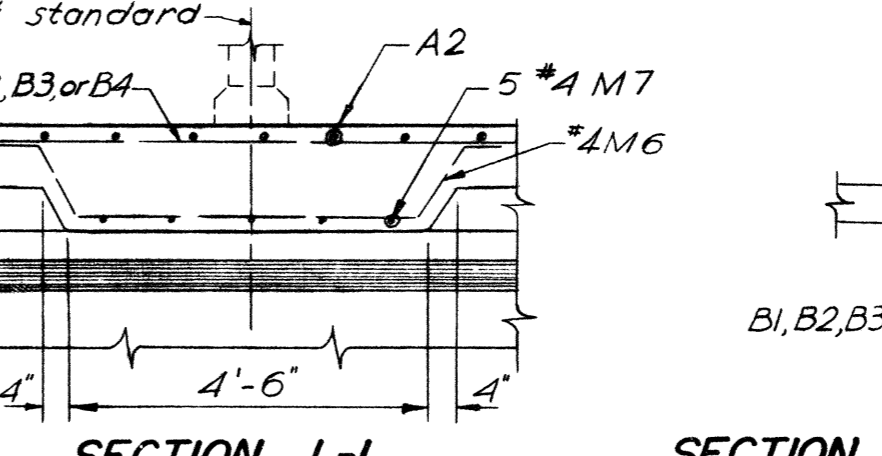
5. In certain instances the North edge of the prestressed beam flange may be below the bottom of the slab. In these cases the Contractor shall provide a fillet similar to that on the South edge or with such modifications as will meet the approval of the Engineer.

DEFLECTION DIAGRAM

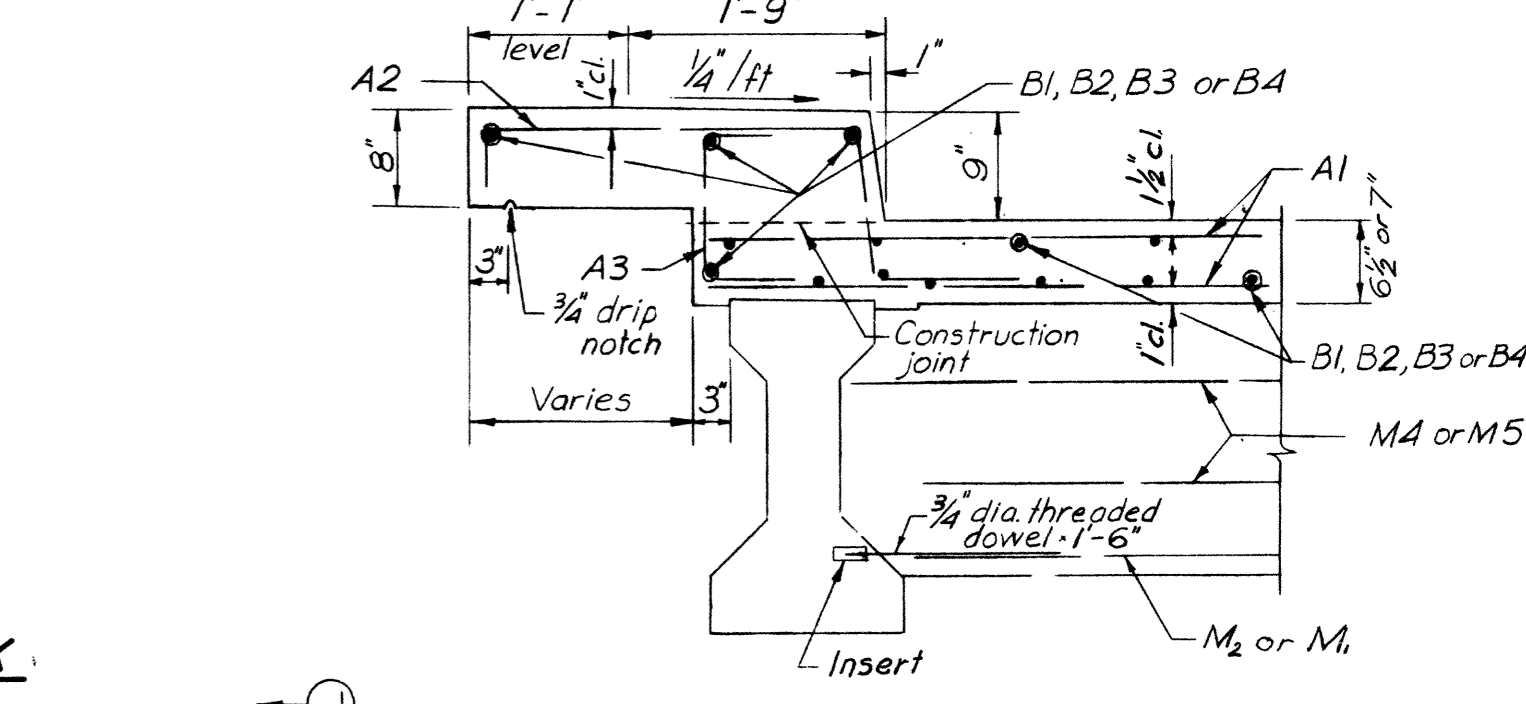
SPAN	A	B	Δ
1	7/16"	1/4"	3/16"
2	3/8"	1/4"	3/8"
3	3/4"	1/4"	1/2"
4	3/8"	3/16"	3/16"



DETAIL OF HANDRAIL END BLOCK



SECTION L-L
SLAB THICKENING DETAILS FOR LIGHT STANDARDS (2 Req'd)



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

BRIDGE 15-B

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

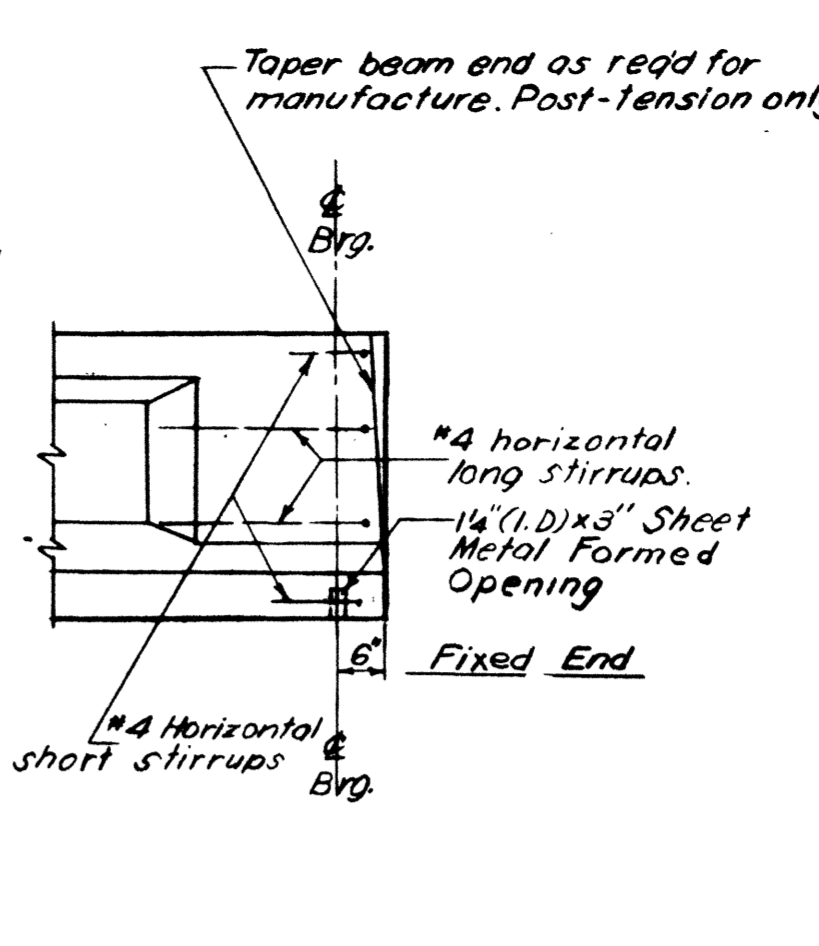
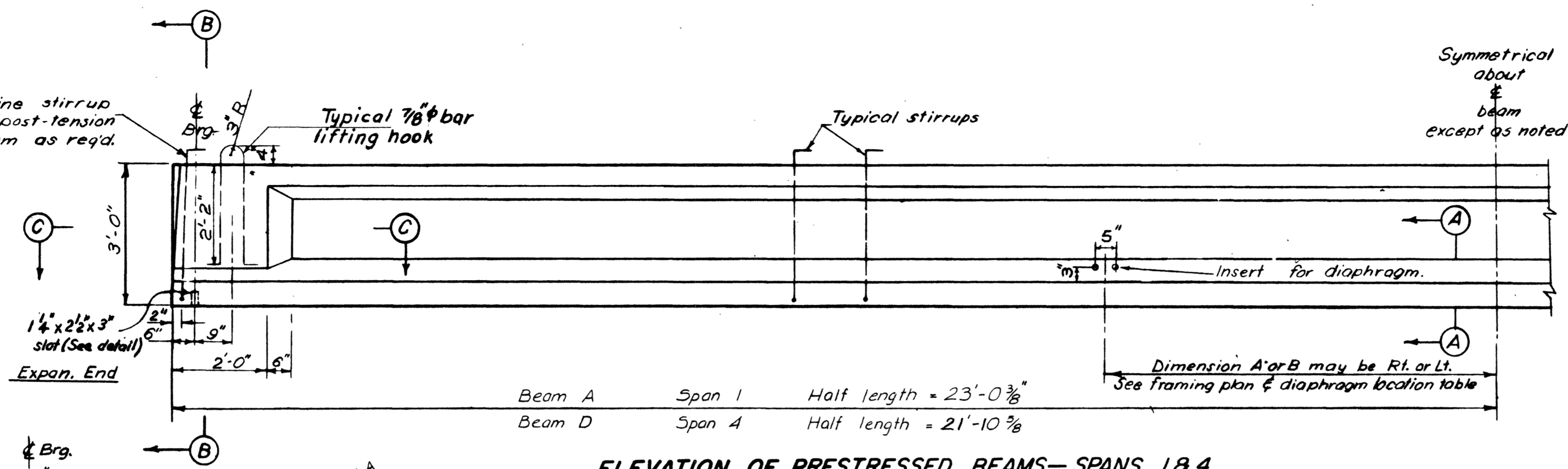
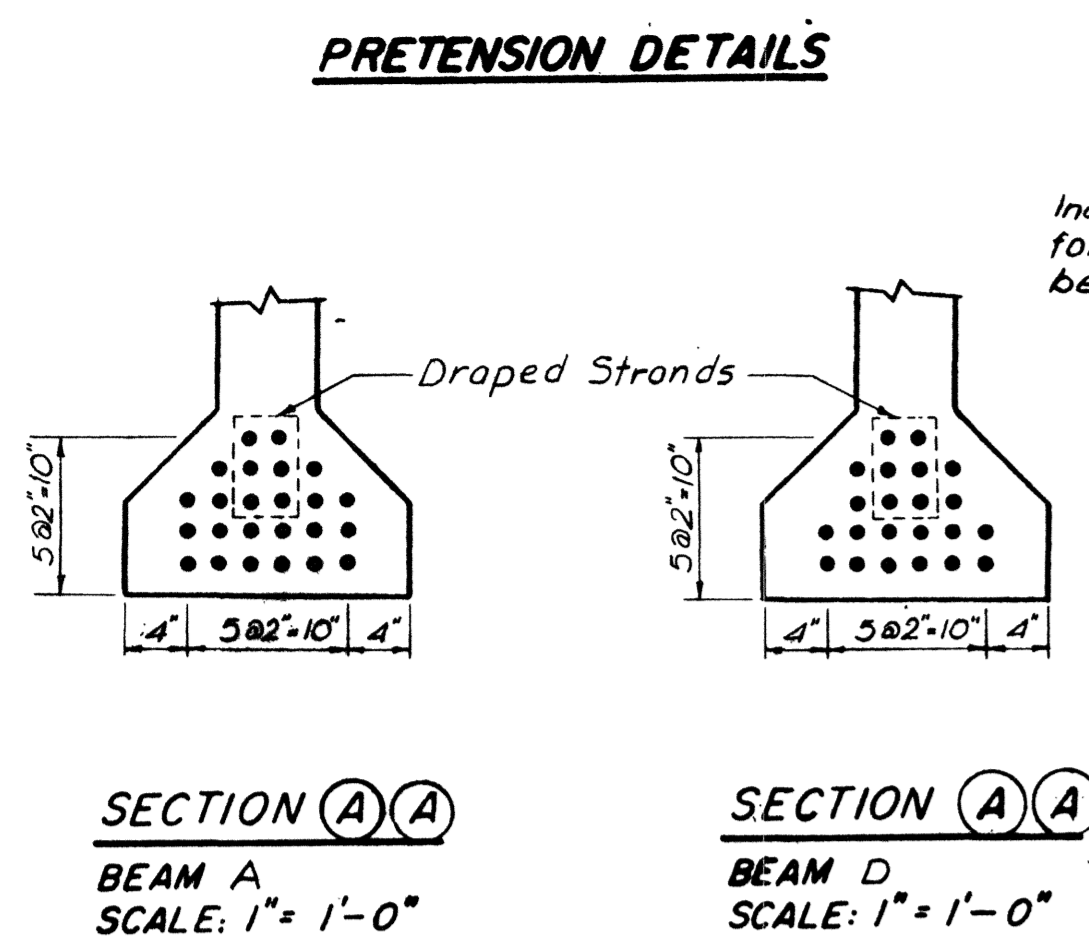
E.B. POPLAR OVER I-240
SUPERSTRUCTURE - SLAB DETAILS

DATE: Nov. 58 SCALE: As Noted DRAWN BY: DNS CHECKED BY: WCB IN CHARGE: BCC

JOB NO. 332 H-11-33

PUB. ROAD DIST. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240-1 (17) 13	1989	189	334
REVISION					
REVISION					

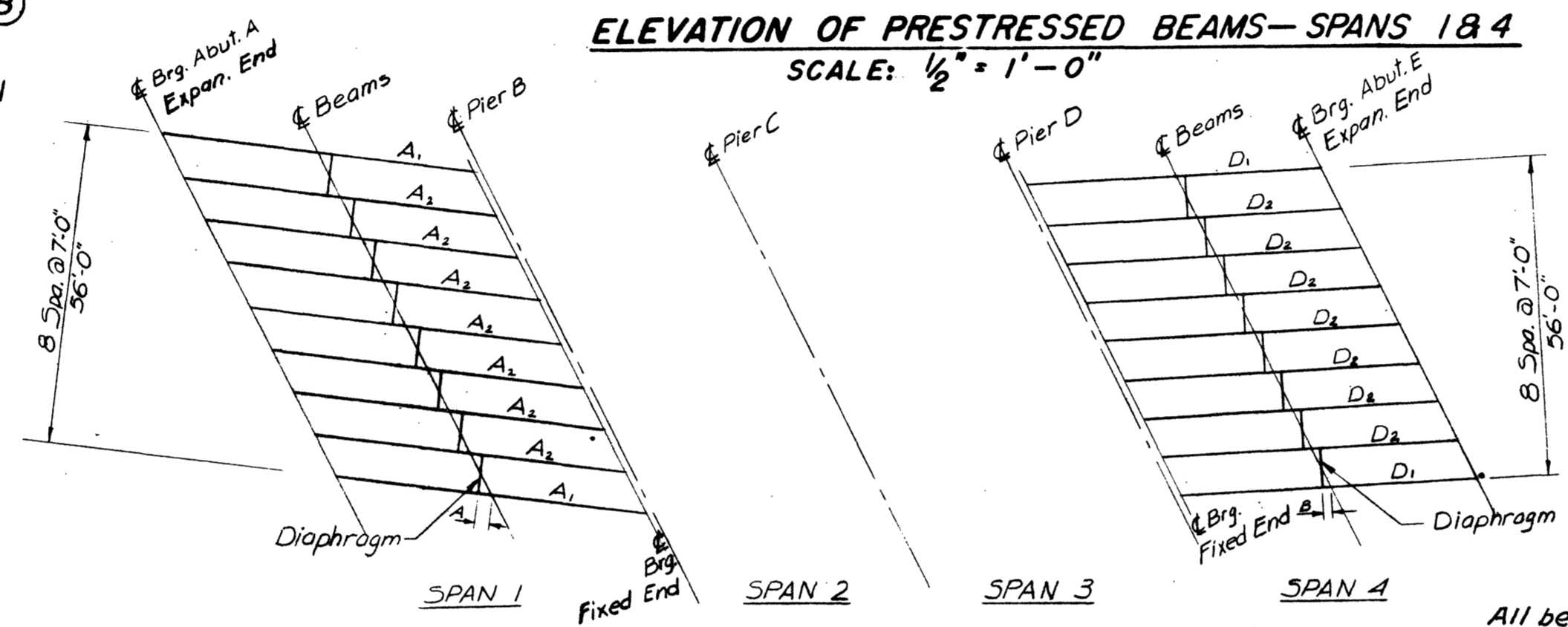
PRETENSION DETAILS



GENERAL NOTES

- The Contractor has the option of furnishing pretensioned, post-tensioned, or a combination beam. See Special Provision.
- Specifications are the STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS.
- LOADING: H20-S16-44 (Modified for Military Loading)
- REINFORCING STEEL: See specifications.
- FORMS & FINISH: See specifications.
- All reinforcing steel, prestressing strands, lifting hooks, inserts, or other items cast into the beam will be included in the unit price per beam for FURNISH & PLACE PRESTRESSED CONCRETE BEAMS, TYPE II, 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 II, LENGTH _____.
- BEARINGS for both ends of TYPE II Beams shall consist of 8" x 18" x 3/4" preformed bearing pads. The beams will rest directly on the pads. The cost will be included in the unit price for FURNISH & PLACE PRESTRESSED CONCRETE BEAMS, TYPE II, LENGTH _____.
- Prestressing forces do not include losses due to friction, jack losses, or relaxation of the anchorage. See Special Provision.
- After concrete has attained initial set, scrub top surface of beam to remove laitance and leave a rough finish.

ELEVATION OF PRESTRESSED BEAMS—SPANS 1 & 4
SCALE: 1/2" = 1'-0"



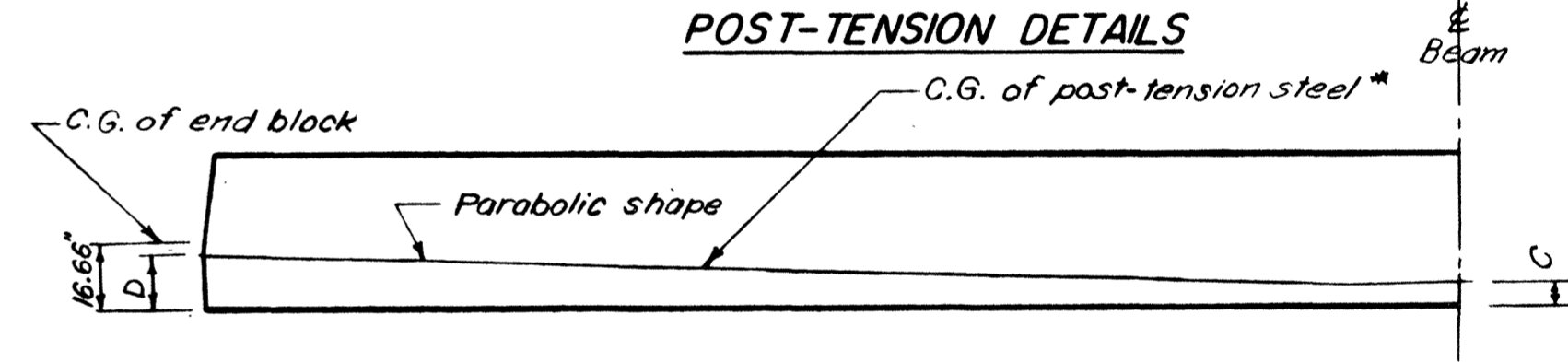
ESTIMATED QUANTITIES—1 BEAM

ITEM	UNIT	BEAM A	BEAM D
Precast Concrete	Cu. Yds.	4.5	4.3
Mild Reinforcing Steel	Lbs.	484	459
Prestress Steel 7/16" dia. strands	Lin. Ft.	1120	975

FRAMING PLAN

All beams (designated as Beams A) are identical except for diaphragm inserts. The same is true for beams designated as Beams D.

POST-TENSION DETAILS

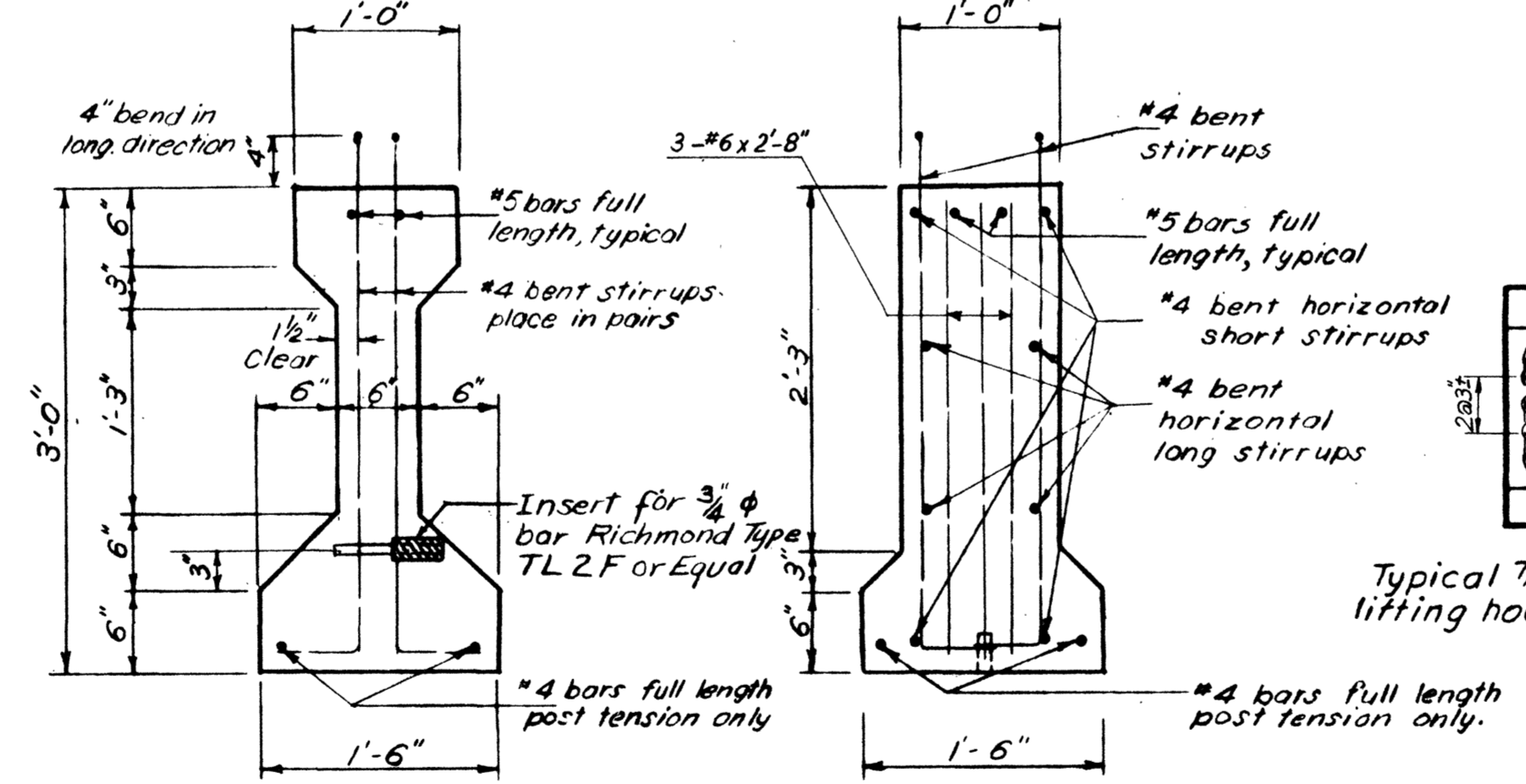
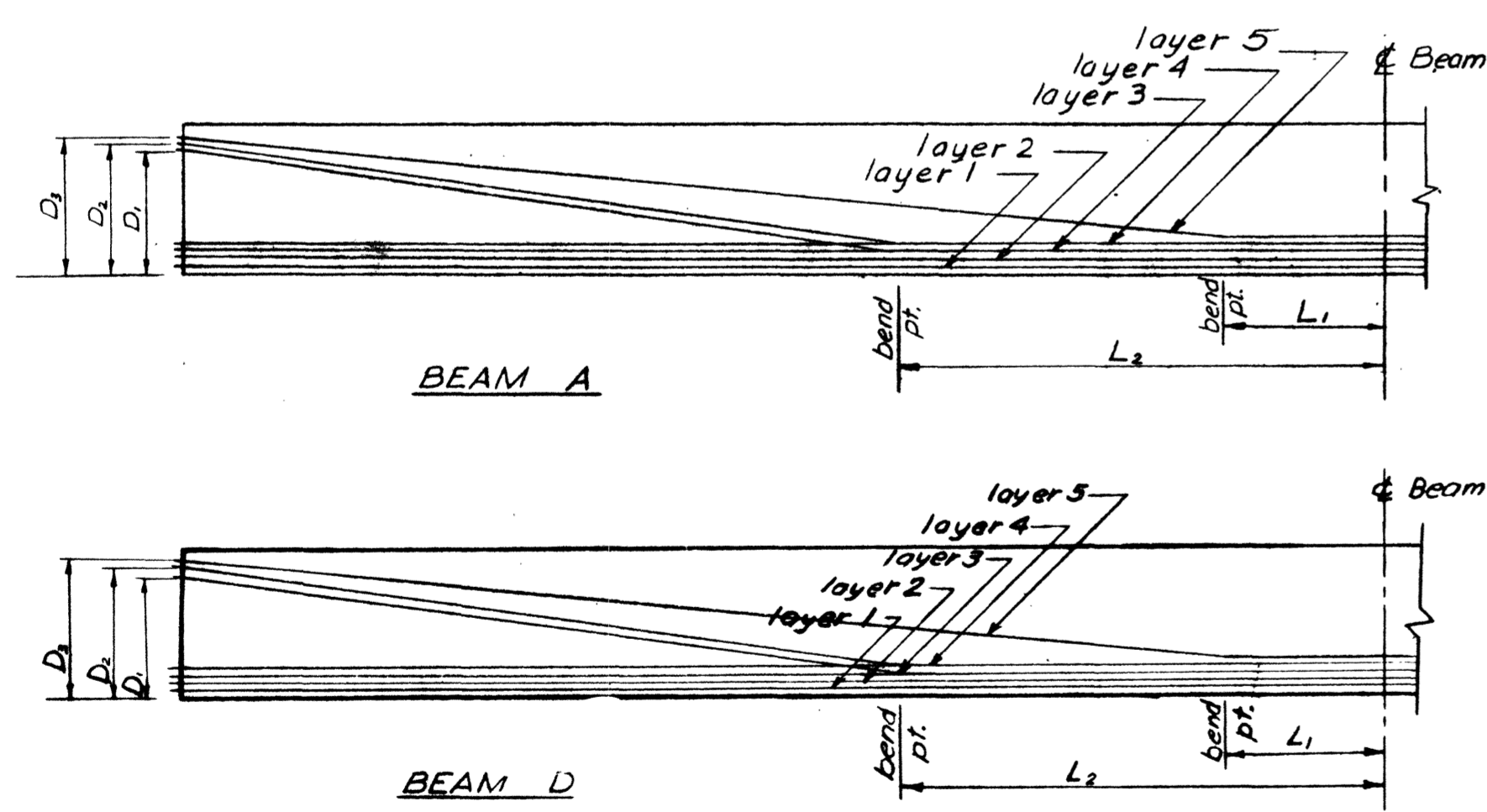


POST-TENSION BEAM DATA

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 Special Provision.

Beam	Dimension *C	Dimension *D	Final Prestress force	Initial Prestress force
A	5 1/2"	12"	355*	438*
D	5 1/2"	12"	325*	401*

Note: All strands shall extend at least 3" beyond each end of beam. Typ.



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

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

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

POST-TENSION BEAM DATA

BILL OF MATERIALS

Beam	Item	Unit	Quantity
A	Prestressed concrete beams Type II (Length 46'-0 3/8")	each	9
D	Prestressed concrete beams Type II (Length 43'-9 3/8")	each	9

Beam	Stirrup spacing for 1/2 beam Spaces shown below start @ the beam end	Dimensions	No. of inserts	No. of sleeves
A	1 @ 2", 1 @ 4", 11 @ 6", 17 @ 12"	A 1-8 1/2"	2	4
D	1 @ 2", 1 @ 4", 9 @ 6", 1 @ 10 1/2" & 16 @ 12"	D 1'-0 1/4"	2	4

STIRRUP SPACING

Beam	No. strands in layer**	Total No. 7/16" strands	Prestress Force*	Dimensions	Beams Req'd.
A	6-6-4-2-2	24	454*	D1 27" D2 29" D3 31" L1 3'-0" L2 8'-0"	9
D	6-6-2-2-2	22	416*	D1 27" D2 29" D3 31" L1 3'-0" L2 8'-0"	9

PRETENSION BEAM DATA

** straight — draped

Beam	Distance from Brg. in feet	Bending Mom. (ft. kips)	Shear @ brg. kips
A	2'-0"	13'-0"	19'-0"
	27'	80	95
	29'	135	161
	31'	165	146
D	2'-0"	11'-0"	17'-0"
	16'	67	84
	27'	114	143
	29'	149	139

TABLE OF BENDING MOMENTS & SHEARS

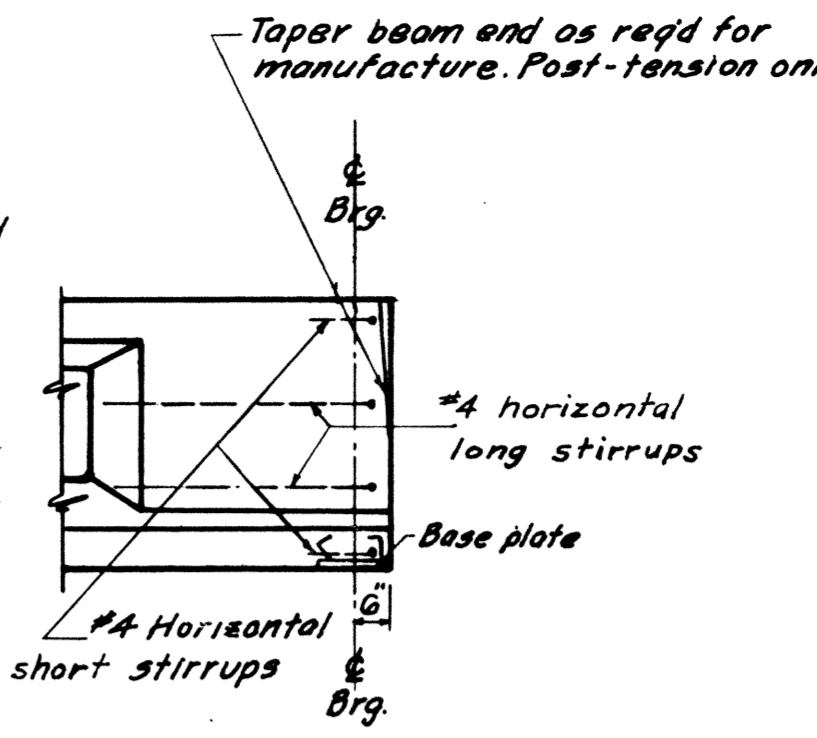
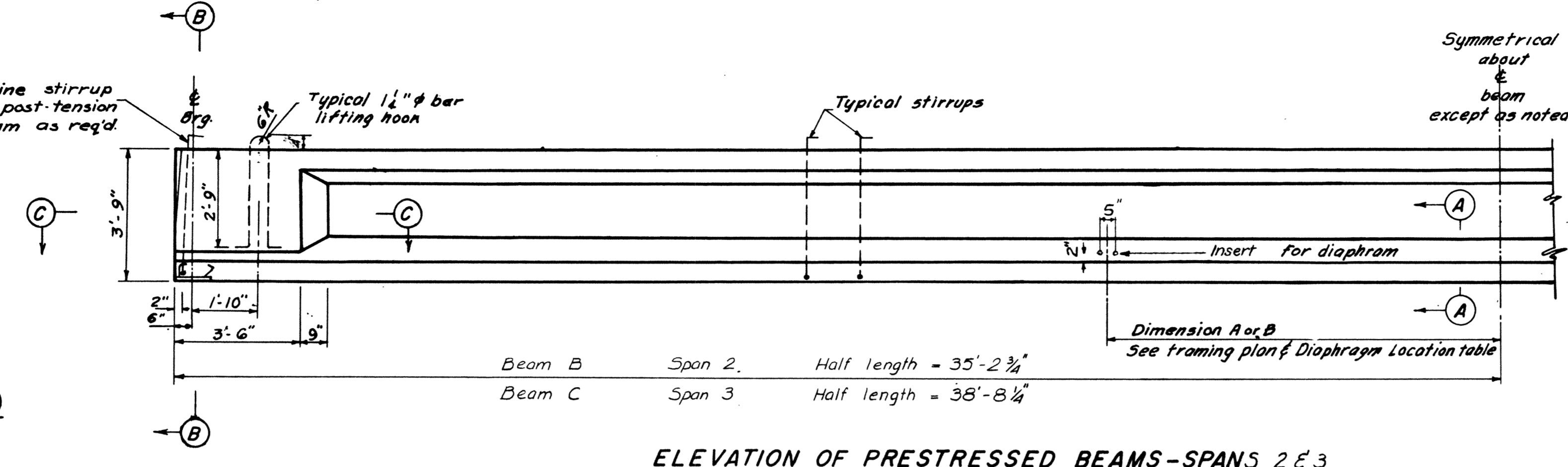
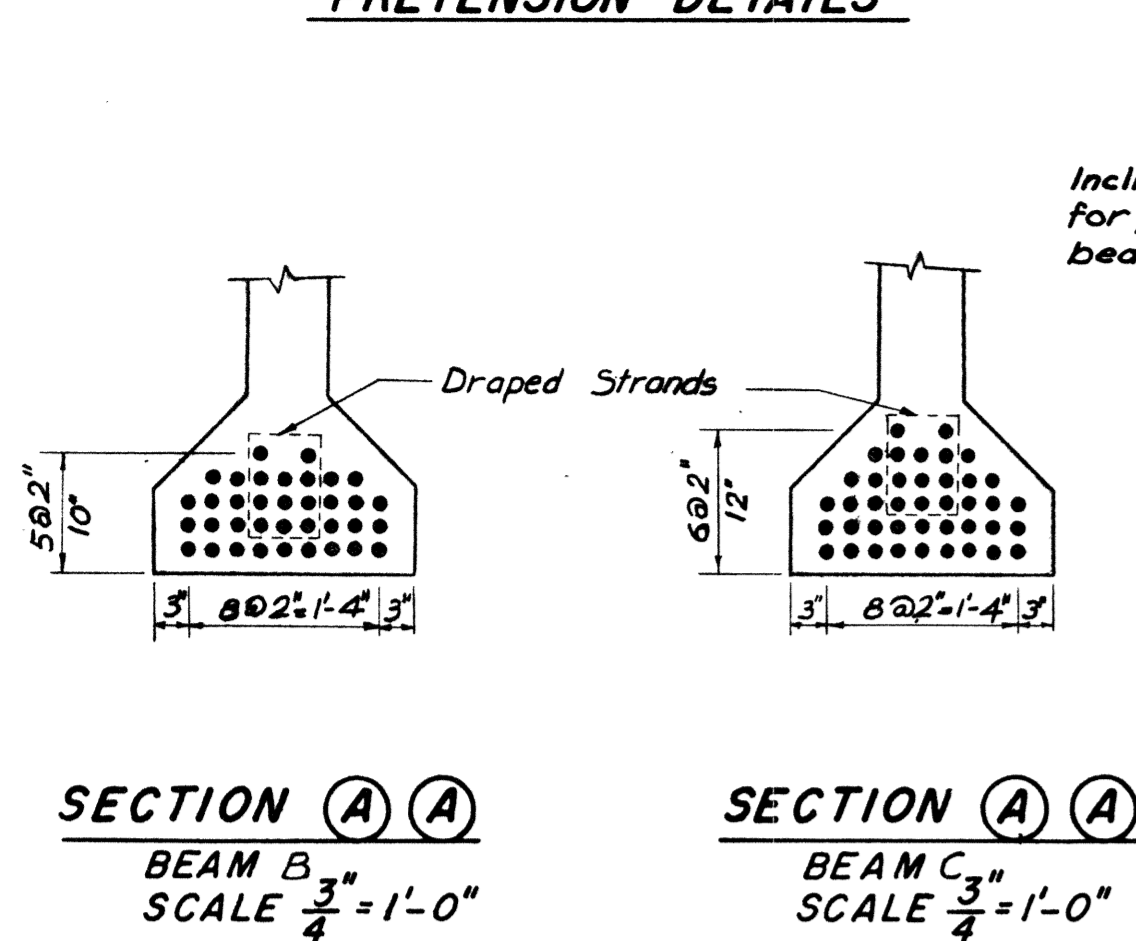
* Superimposed dead load includes slab, diaphragm, etc.
** Live load includes future wearing surface of 20 lbs./sq. ft. & impact.

DIAPHRAGM LOCATION
See Framing plan.

Bridge 15B
STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT: 1-240-1 (17) 13 SHEET NO. 189
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION
HARLAND BARTHOLOMEW AND ASSOCIATES, ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS
EB POPLAR OVER I-240
PRESTRESSED BEAMS—SPANS 1 & 4
DATE: 10-30-58 SCALE: AS NOTED DRAWN BY: DNS CHECKED BY: C.O. IN CHARGE: BCC
JOB NO. 332 H-11-34

PUB. ROAD DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240-1 (17) 13	1989	190	334
REVISION					
REVISION					

PRETENSION DETAILS

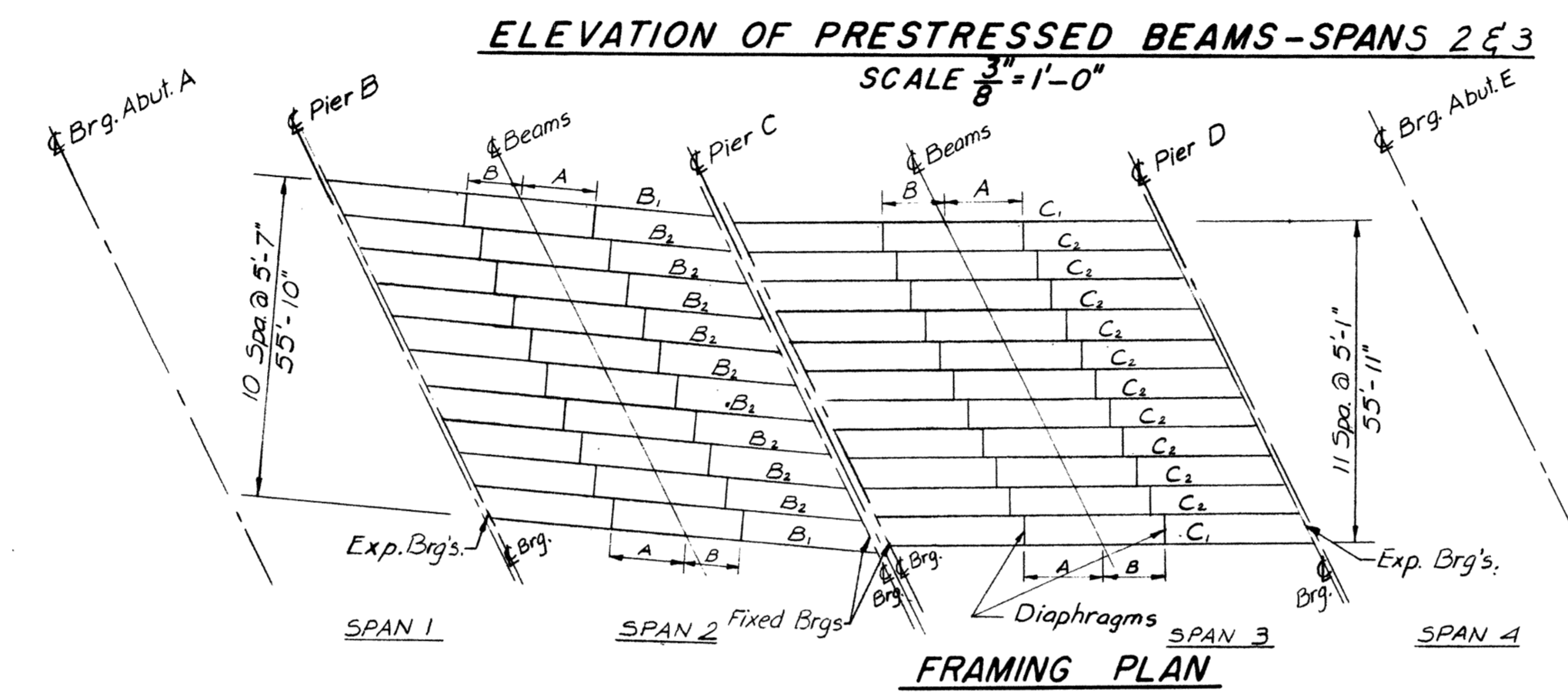


GENERAL NOTES

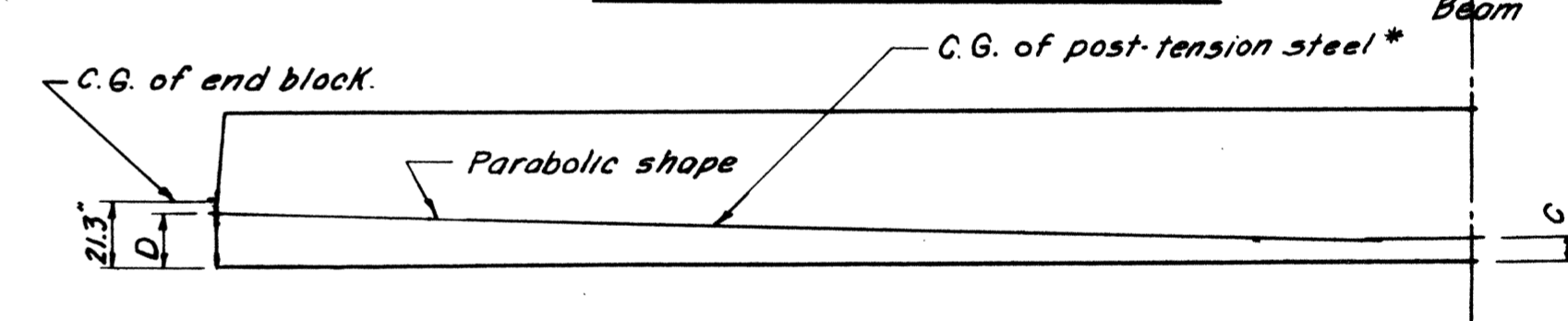
- The Contractor has the option of furnishing pretensioned, post-tensioned, or a combination beam. See the Special Provisions.
- SPECIFICATIONS are the STANDARD ROAD AND BRIDGE SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS.
- LOADING: H20-S16-44 (Modified for Military Loading)
- REINFORCING STEEL: See specifications.
- FORMS & FINISH: See specifications
- All reinforcing steel, prestressing strands, lifting hooks, inserts, 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 _____.
- BEARINGS for both fixed and expansion ends of TYPE III beams are shown on Bridge Dwg. 10
- Prestressing forces shown do not include losses due to friction, jack losses or relaxation of the anchorage. See the Special Provisions.
- 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 B	BEAM C	BEAM
Precast Concrete	Cu. Yds.	10.6	11.6	
Mild Reinforcing Steel	Lbs.	817	865	
Prestress Steel 1/16 dia. strands	Lin. Ft.	2560	3190	



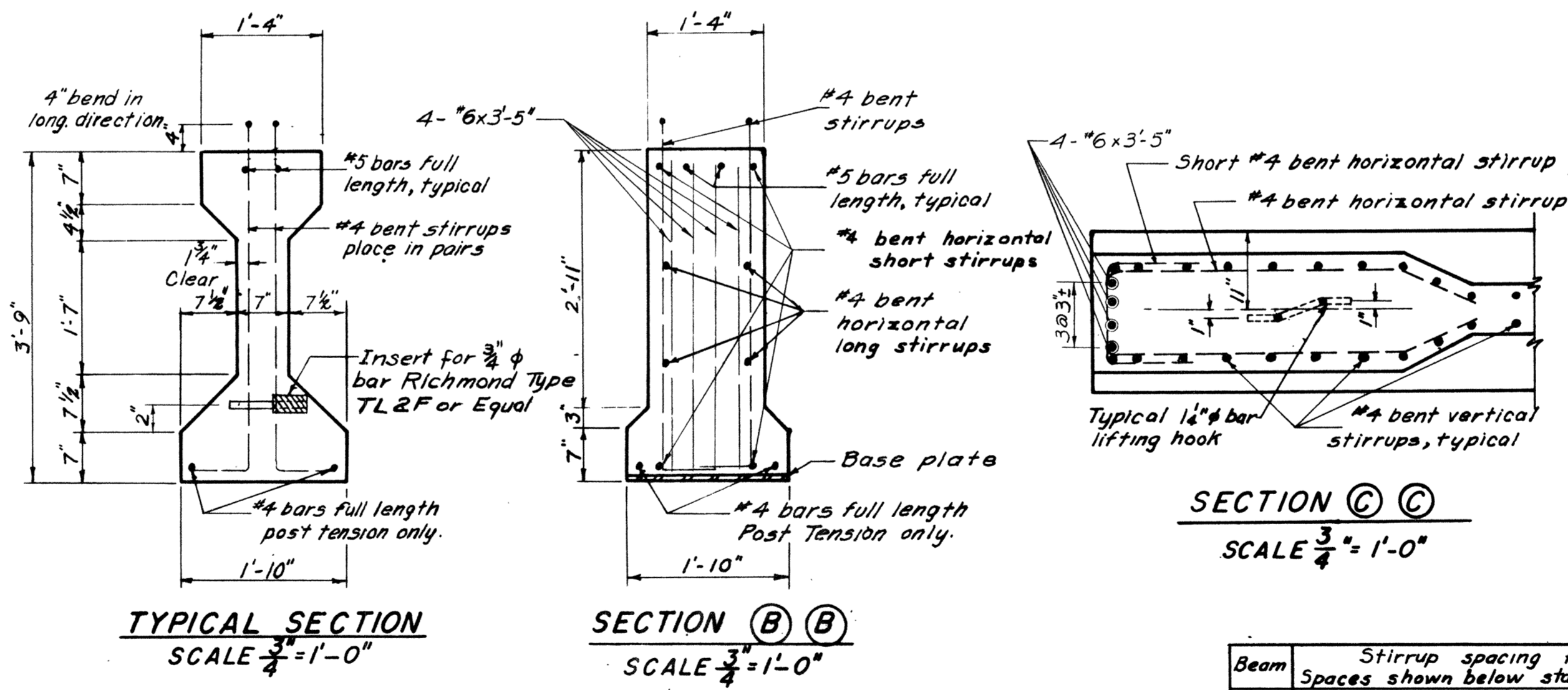
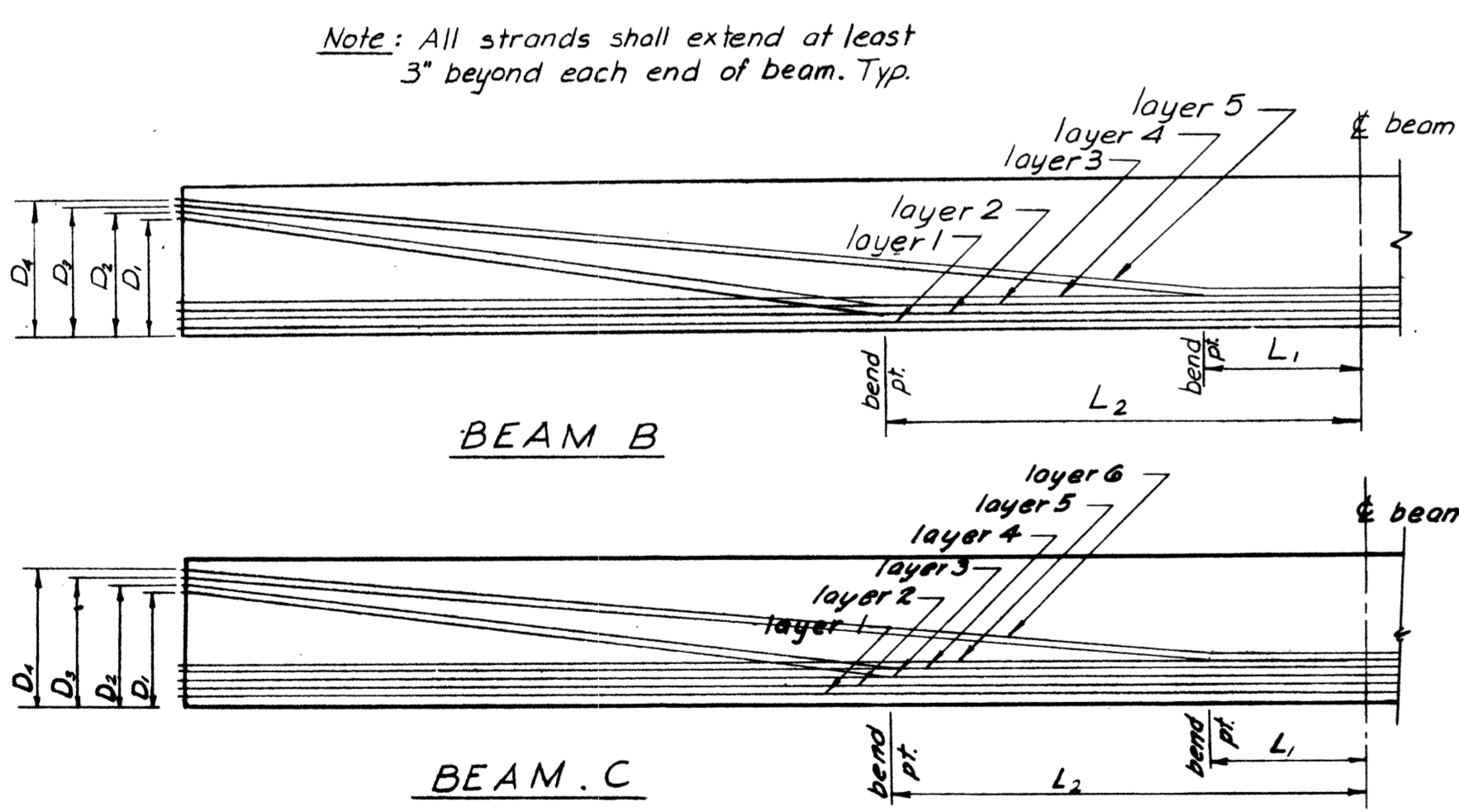
POST-TENSION DETAILS



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 Special Provisions.

Beam	Dimension C	Dimension D	Final Prestress force	Initial Prestress force
B	5 1/2"	15"	532*	656* KIPS
C	5 3/4"	15"	606*	747* KIPS



SECTION C-C

SCALE 3/4" = 1'-0"

STIRRUP SPACING

Beam	Stirrup spacing for 1/2 beam Spaces shown below start @ the beam end	Dimensions	Ext. Int.	Interior beam
B	1 @ 2", 1 @ 4", 1 @ 6", 2 @ 12"	B 12'-8 1/2"	10'-3 3/4"	A B -
C	1 @ 2", 1 @ 4", 1 @ 6", 3 @ 12"	C 13'-7 1/4"	11'-9 3/4"	A B -

PRETENSION BEAM DATA

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	D4	L1	L2	
B	9	6	6	4	3	-	36	680*	34"	36"	38"	40"	4'-0"	12'-0"	11
C	9	9	6	4	3	-	41	775*	34"	36"	38"	40"	4'-0"	12'-0"	12

TABLE OF BENDING MOMENTS & SHEARS

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"	20'-0"	28'-0"	£				3'-9"	23'-0"	31'-0"	£	
B	Dead Load (Beam)	72	287	335	348	20.2	C	Dead Load (Beam)	79	356	407	422	22.2
B	S.D.L.*	61	246	289	299	17.3	C	S.D.L.*	61	275	315	326	17.1
B	Live Load	170	642	739	748	47.6	C	Live Load	153	675	758	768	43.9

BILL OF MATERIALS

Beam	Item	Unit	Quantity
B	Prestressed concrete beams Type III (Length 70'-5 1/2')	each	11
C	Prestressed concrete beams Type III (Length 77'-4 1/2')	each	12

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.

DIAPHRAGM LOCATION

See Framing plan

Bridge 15B
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
E B POPLAR OVER I-240
PRESTRESSED BEAMS - SPANS 283
DATE: 11-1-58 SCALE: As Noted DRAWN BY: DNS CHECKED BY: C.O. IN CHARGE: B.C.C. H-11-35
JOB NO. 332

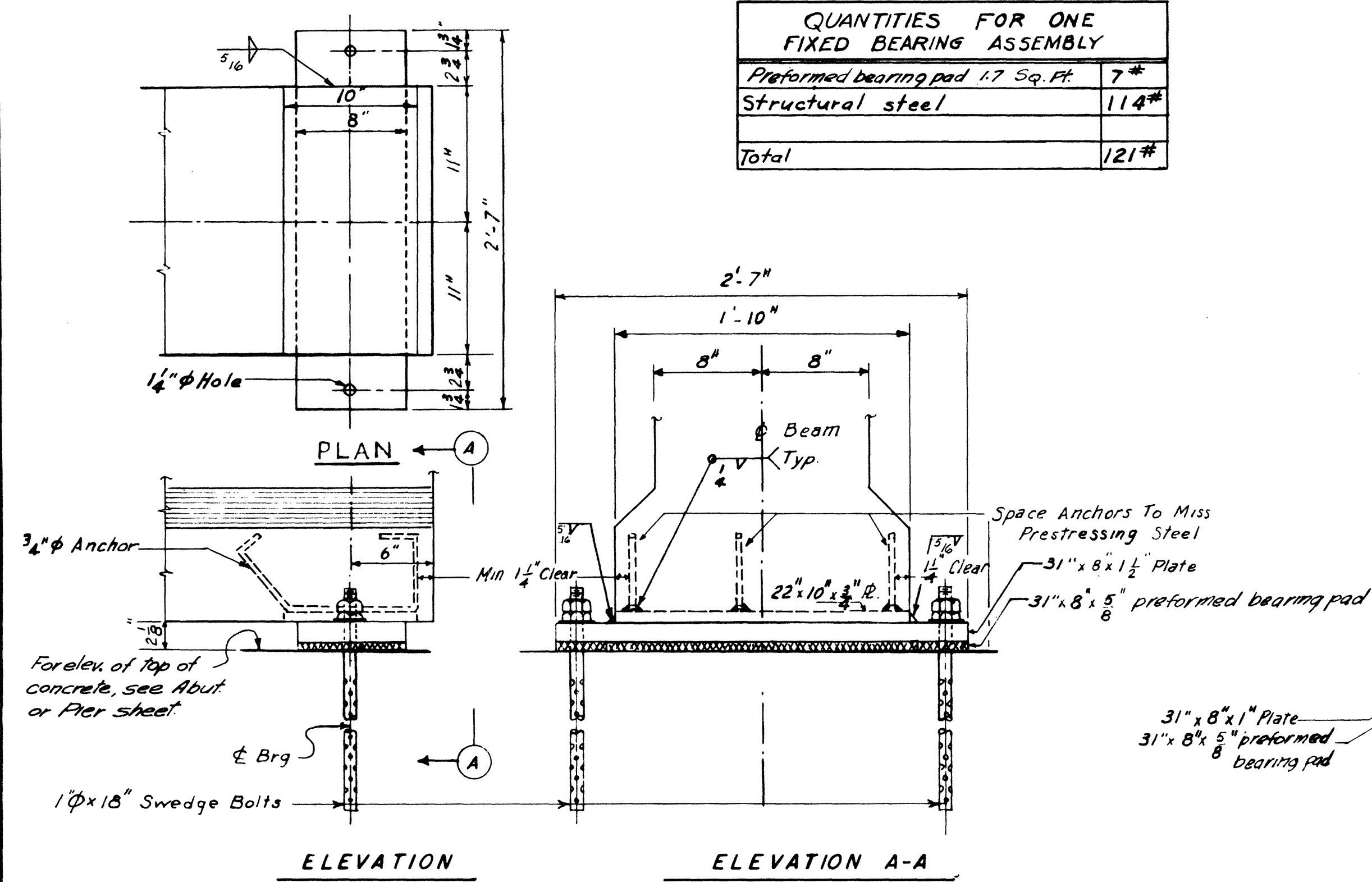
PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	1-240-1 (17) 13	1959	191	334
REVISION		1-9-59	11-10-59		
REVISION					

QUANTITIES FOR ONE FIXED BEARING ASSEMBLY

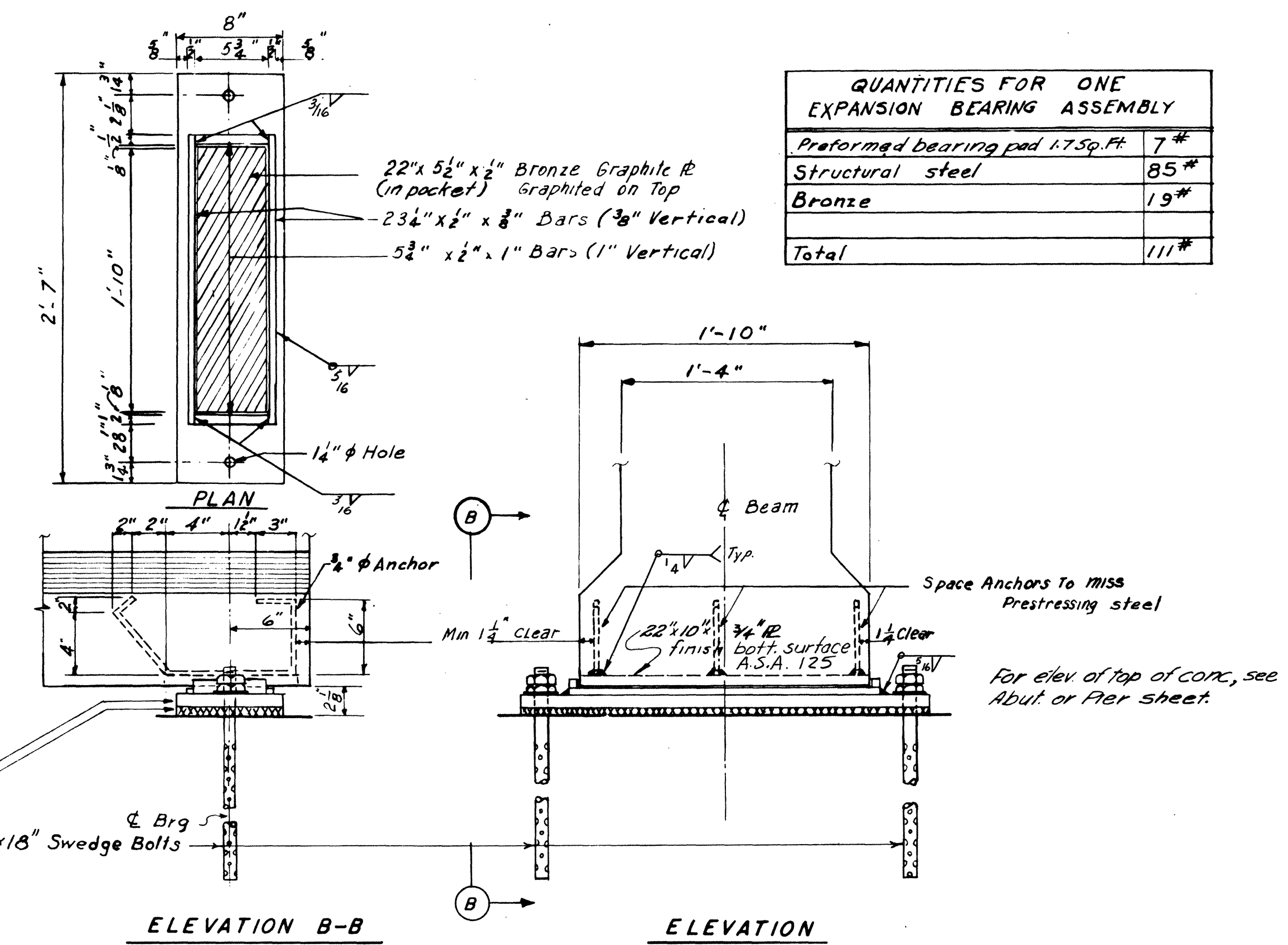
Preformed bearing pad 1.7 Sq. Ft.	7 #
Structural steel	114 #
Total	121 #

QUANTITIES FOR ONE EXPANSION BEARING ASSEMBLY

Preformed bearing pad 1.7 Sq. Ft.	7 #
Structural steel	85 #
Bronze	19 #
Total	111 #



FIXED BEARING DETAILS FOR TYPE III BEAM
 SPANS 2 & 3
 23 REQUIRED
 SCALE 1 1/2" = 1'-0"



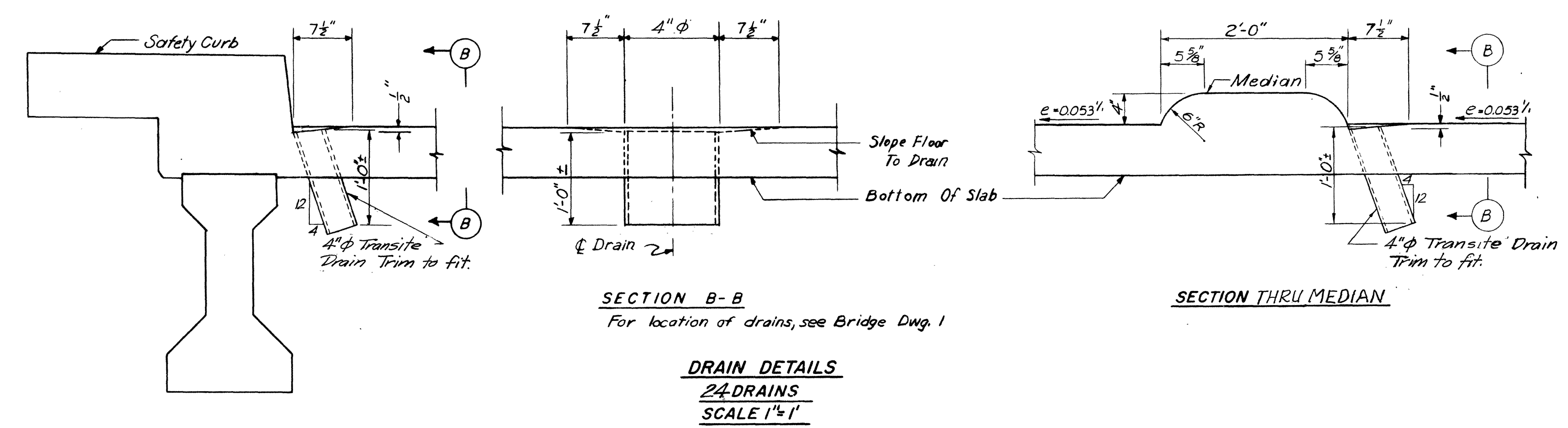
EXPANSION BEARING DETAILS FOR TYPE III BEAM
 SPANS 2 & 3
 23 REQUIRED
 SCALE 1 1/2" = 1'-0"

NOTES

- BEARINGS**
- Bearing for TYPE II prestressed beams shall be 8" x 18" x 5/8" preformed bearing pads (36 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 _____
 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
 24 DRAINS
 SCALE 1" = 1'-1"

ITEM	UNIT	QUANTITY
* Structural steel (fixed bearing)	lbs	2622
* Structural steel (exp. bearing)	lbs	1955
4" Transite drains	each	24
* Self Lubricating Bronze	lbs	421
* 5/8" Preformed Bearing Pads	Sq. ft.	115.2

* The following is a material breakdown by span

PREFORMED BEARING PADS

SPAN 1 18.0 Sq. Ft.
 SPAN 2 37.9 Sq. Ft.
 SPAN 3 41.3 Sq. Ft.
 SPAN 4 18.0 Sq. Ft.

STEEL

SPAN 2 2189 Lbs.
 SPAN 3 2388 Lbs.

BRONZE

SPAN 2 201 Lbs.
 SPAN 3 220 Lbs.

Bridge 15B

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

E.B. POPLAR OVER I-240.

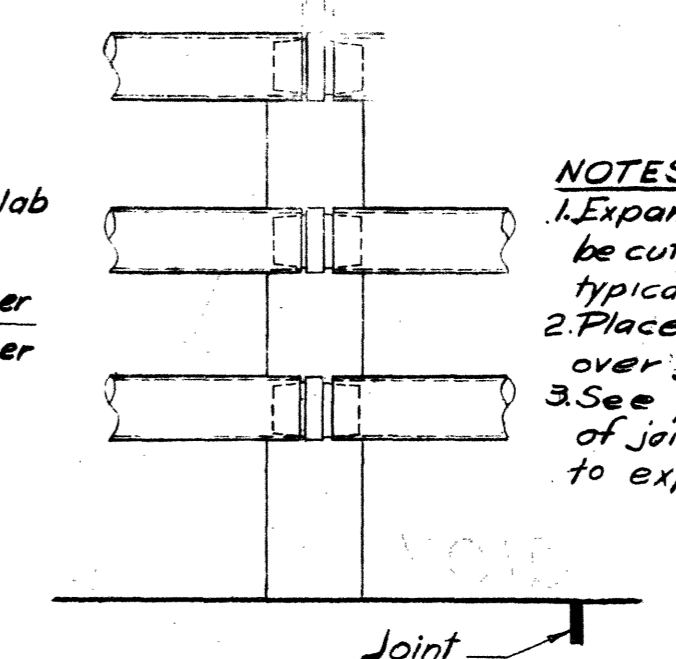
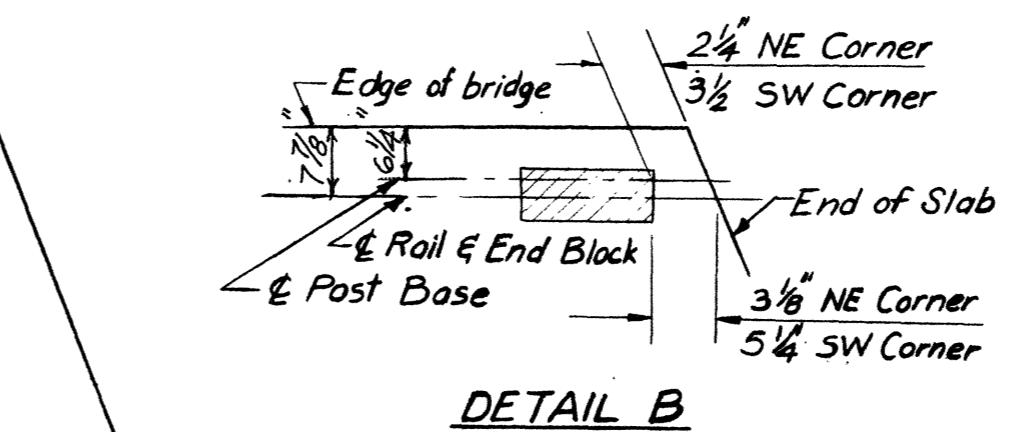
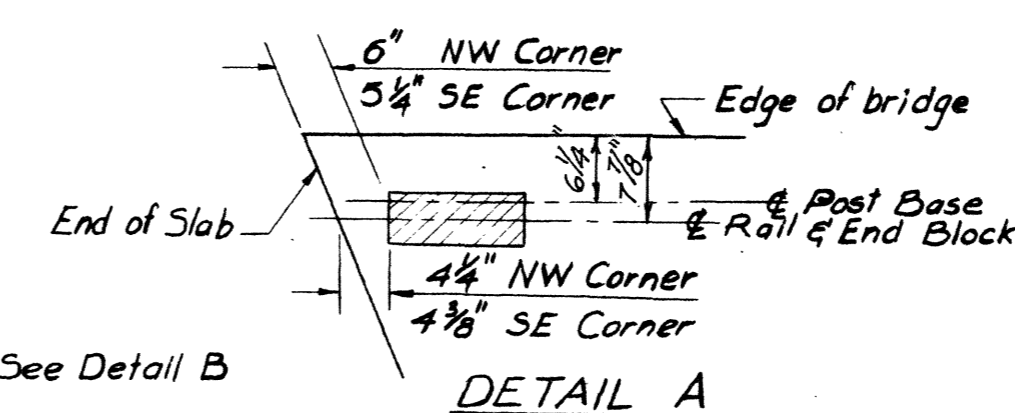
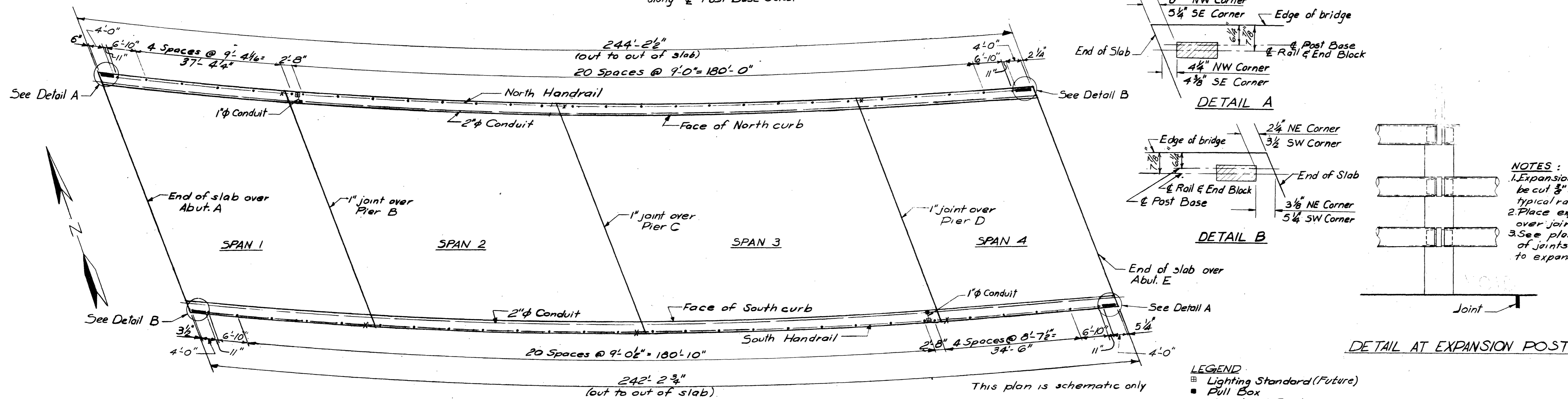
BEARINGS & MISCELLANEOUS DETAILS

DATE	SCALE	DRAWN BY	CHECKED BY	IN CHARGE
DEC '58	As Noted	RPK	DNS	BCC

JOB NO. 332

PUB. ROADS DIV. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	TENNESSEE	I-240 - 1 (17) 13	1959	192	334
REVISION 11-10-59					
REVISION 12-18-59					
REVISION 12-28-59					

NOTE: Lengths shown are measured along & Post Base Bolts.



LIGHTING NOTES

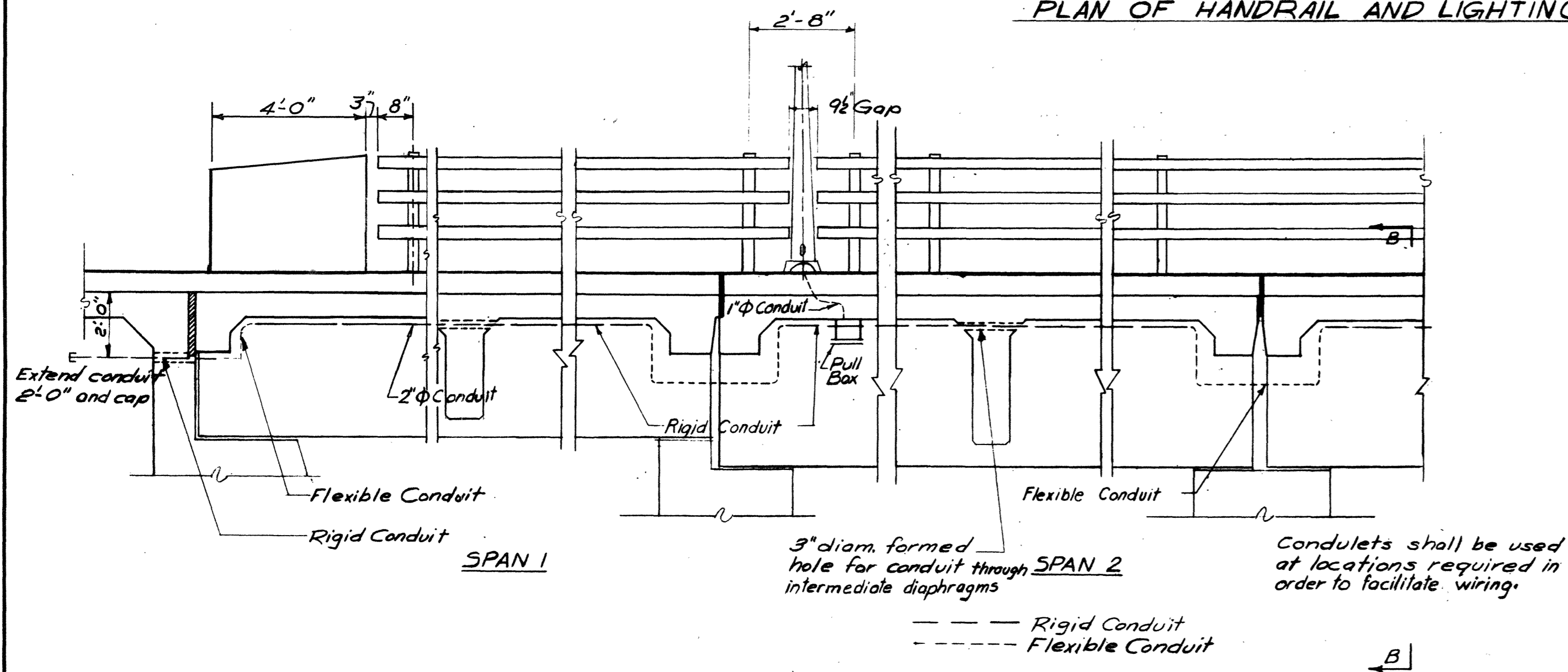
- PULLBOXES shall be Thomas & Betts flanged cast iron junction boxes, size 8"x8"x6" Cat. No. 10904, or equal. They shall be made watertight with cover, gasket and Ever-dur hex. head cap screws. Boxes shall be drilled and tapped for conduit sizes called out on the plans.
- CONDUIT shall be galvanized 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.
- 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" x 8" ground rod. These items shall be furnished & installed under this contract.

- LEGEND
- Lighting Standard (Future)
 - Pull Box
 - Handrail Post
 - End Block
 - Expansion Joint (in rail) See Std. G-10-100. Provide 1" Expansion

HANDRAIL NOTES

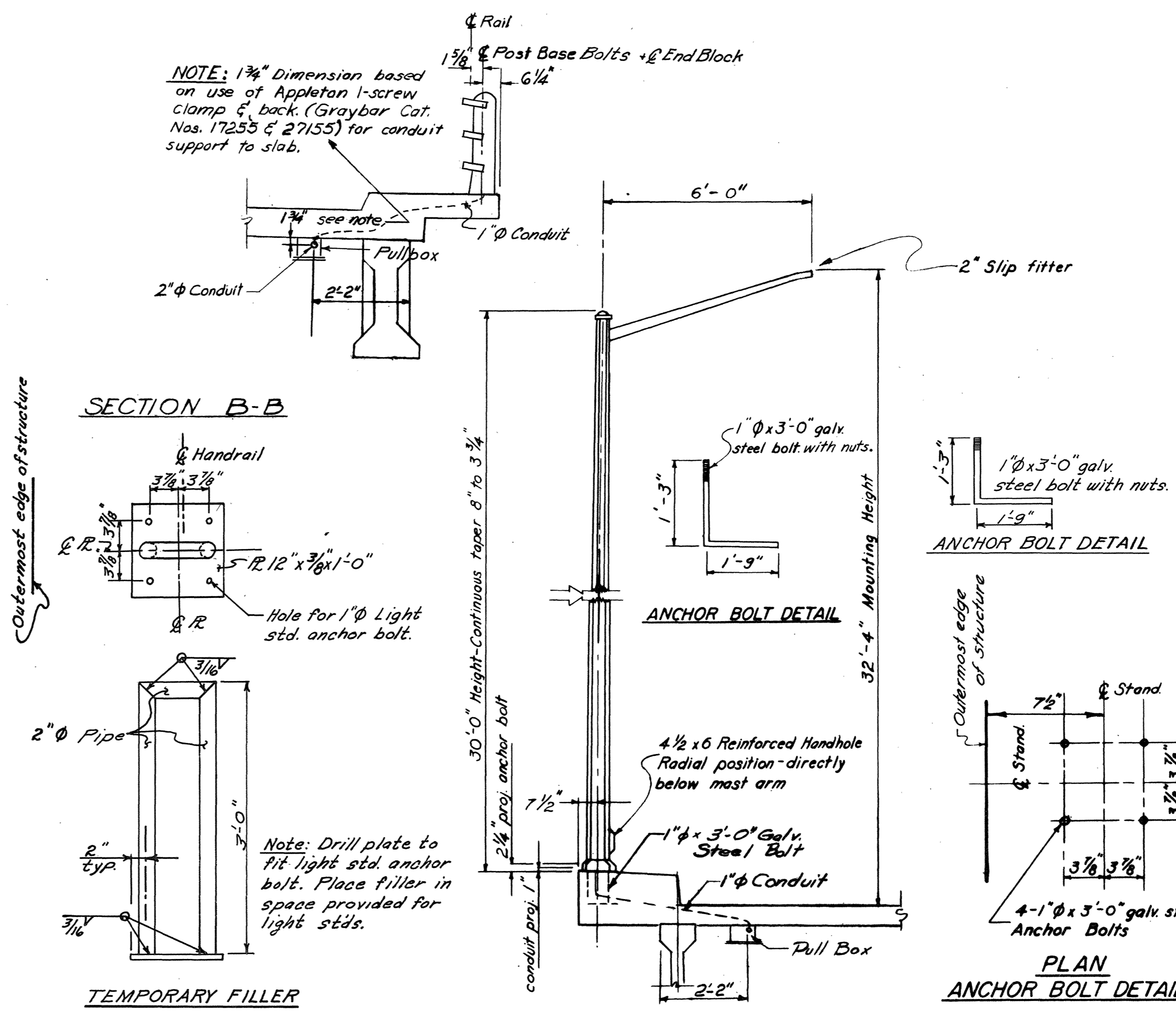
- HANDRAIL: For details of handrail see Tennessee Dept. of Highways and Public Works, Std. Dwg. G-10-100, Sht. No. -318.
- END BLOCK CASTING: At the option of the Contractor, the end block casting as detailed may be fabricated as a weldment. Based on field measurements and tolerances the Contractor may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

PLAN OF HANDRAIL AND LIGHTING LAYOUT



LONGITUDINAL SECTION INSIDE FASCIA BEAM (NORTH SIDE)

Similar wiring south side of Bridge



BILL OF MATERIAL

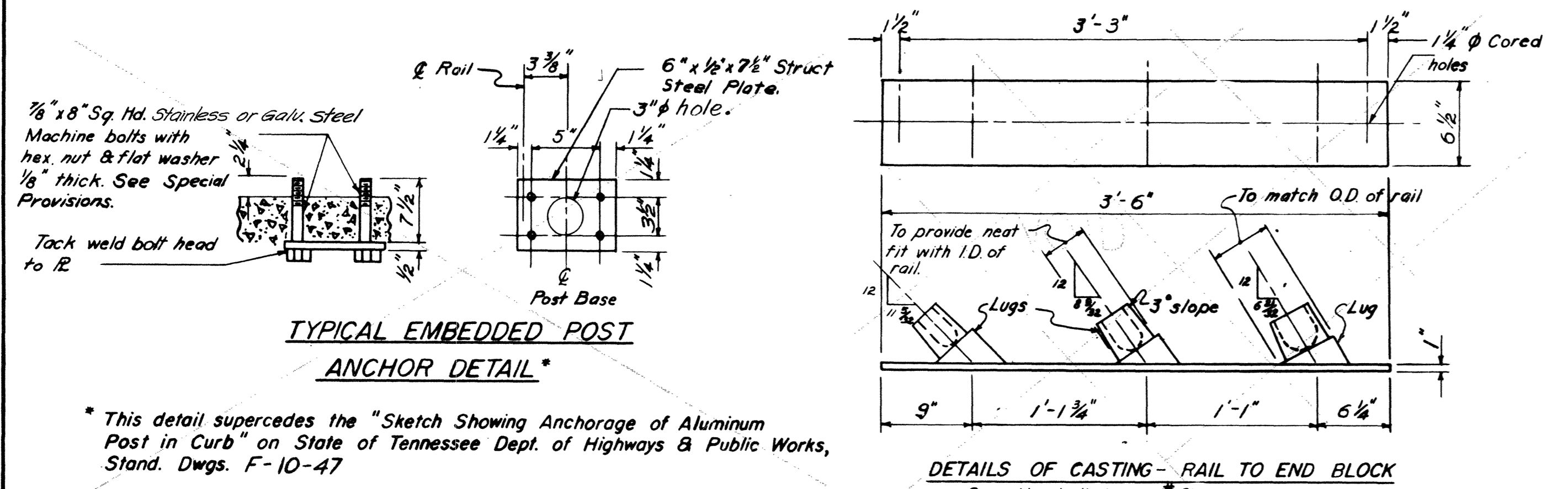
ITEM	UNIT	QUANTITY
LIGHT STANDARDS	EACH	2
RECESSED FIXTURES	EACH	-
PULL BOXES	EACH	2
TEMPORARY FILLER	EACH	2
FLEXIBLE CONDUIT	LIN. FT.	48
CONDUIT 1" Ø	LIN. FT.	14
CONDUIT 2" Ø	LIN. FT.	469

* 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 HANDRAILING	Lin. Ft.	479
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, Including The Casting Rail To End Block.



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. Dwg. F-10-47

STATE OF TENNESSEE
DEPARTMENT OF HIGHWAYS AND PUBLIC WORKS
PROJECT I-240 - 1 (17) 13
MEMPHIS CIRCUMFERENTIAL INTERSTATE HIGHWAY
SOUTHEAST SECTION
HARLAND BARTHOLOMEW AND ASSOCIATES ENGINEERS
CLARK AND DAILY ASSOCIATED ENGINEERS
E.B. POPLAR OVER I-240
HANDRAIL AND LIGHTING DETAILS