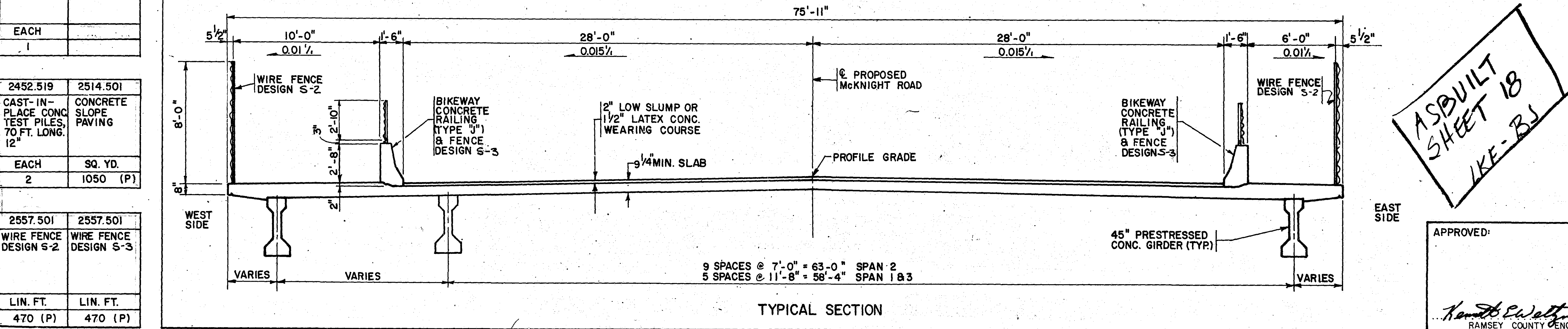
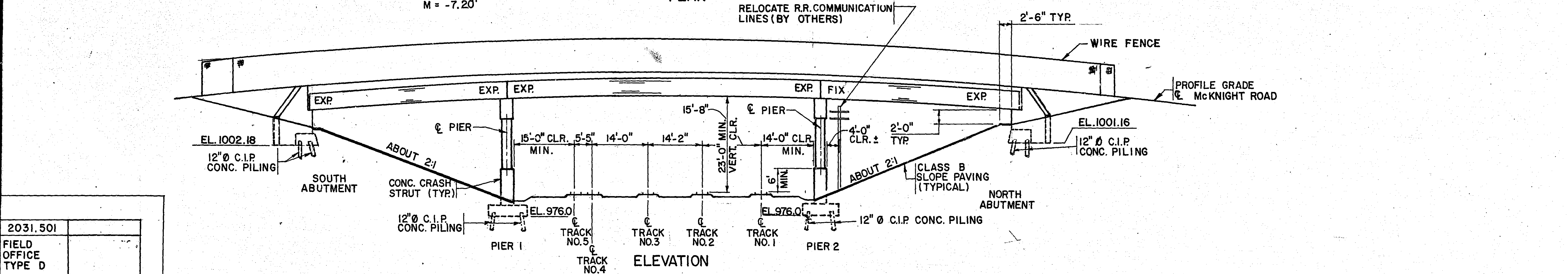
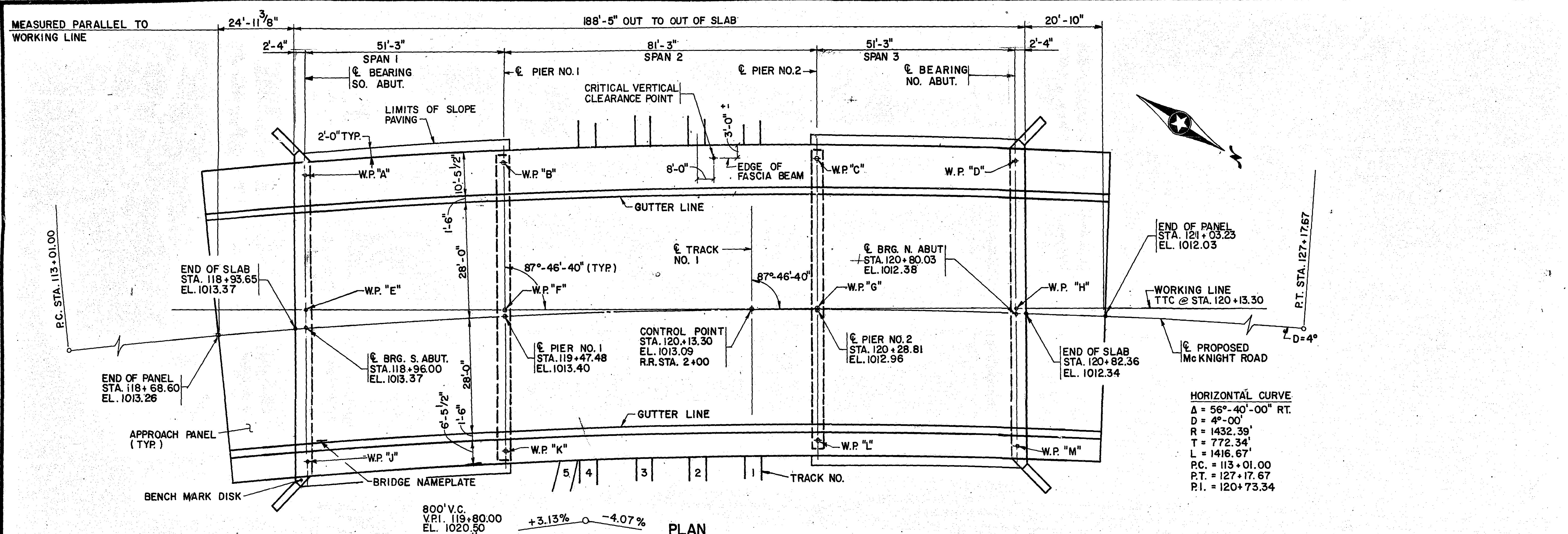




SCHEDULE OF QUANTITIES FOR ENTIRE BRIDGE																					
ITEM NO.	0301.601	0401.601	0402.606	0402.607	0402.607	0402.607	2401.501	2401.501	2401.512	2401.513	2401.541	2401.541	2401.543	2402.591	2404.501	2405.501	2405.501	2405.511	2452.507	2452.508	2452.509
ITEM	BRIDGE APPROACH PANELS	STRUCTURE EXCAVATION	FIXED CURVED PLATE BRG. ASSEMBLIES (TYPE 1)	EXP. CURVED PLATE BRG. ASSEMBLIES (TYPE 1)	EXP. CURVED PLATE BRG. ASSEMBLIES (TYPE 2)	EXP. CURVED PLATE BRG. ASSEMBLIES (TYPE 3)	STRUCTURE CONC.(1A43)	STRUCTURE CONC.(3Y43)	BRIDGE SLAB CONC.(3X36)	TYPE "J" RAILING CONC.(3X46)	REINFORCE- MENT BARS	REINFORCE- MENT BARS (EPOXY COATED)	SPIRAL REINFORCE- MENT	EXPANSION JOINT DEVICE TYPE 3	CONCRETE OVERLAY TYPE SPECIAL	PRESTRESSED CONC. BEAMS TYPE 45-81	PRESTRESSED CONC. BEAMS TYPE 45-52	DIAPHRAGMS FOR TYPE 45 PRESTRESSED BEAMS	CAST-IN- PLACE CONC. PILING DELIVERED, 12"	CAST-IN- PLACE CONC. PILING DRIVEN, 12"	CAST- IN- PLACE CONC. TEST PILE 90 FT. LONG. 12"
UNIT	LUMP SUM	LUMP SUM	EACH	EACH	EACH	EACH	CU. YD.	CU. YD.	SQ. FT.	LIN. FT.	POUND	POUND	POUND	LIN. FT.	SQ. FT.	EACH	EACH	LIN. FT.	LIN. FT.	LIN. FT.	EACH
QUANTITY	1	1	7	25	11	7	130 (P)	383(P)	14304 (P)	470 (P)	116,180 (P)	62,410(P)	1,280 (P)	152 (P)	10,398 (P)	11	14	560 (P)	5080	5080	2

Fed. Proj. No.	
DESIGN DATA	
1983 AND INTERIM AASHTO DESIGN SPECIFICATIONS LOAD FACTOR DESIGN METHOD (HS20 LOADING) INCLUDES 17 PSF DEAD LOAD ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS. MAXIMUM ALLOWABLE DESIGN STRESSES: REINFORCED CONCRETE F _c = 4000 PSI N=8 F _y = 60,000 PSI REINFORCEMENT (GRADE 60) PRESTRESSED CONCRETE F _c = 6000 PSI N=6 F _s = 270,000 PSI (STRANDS) DECK AREA = 14,304 SQ. FT. PROJECTED ADT 12,000 FOR 2007	
LIST OF SHEETS	
NO	DESCRIPTION
1	GENERAL PLAN & ELEVATION
2	BRIDGE LAYOUT
3	ABUTMENT GEOMETRICS
4	ABUTMENT REINFORCEMENT
5-6	PIER DETAILS
7-8	SUPERSTRUCTURE DETAILS
9	45" PRESTRESSED CONC. BEAMS TYPE 45-52
10	45" PRESTRESSED CONC. BEAMS TYPE 45-81
11	BIKEWAY RAILING CONC. (TYPE "J") & FENCE
12	8 FOOT WIRE FENCE
13	WATERPROOF EXPANSION JOINT DEVICE
14	BRIDGE APPROACH PANEL
15	CLASS "B" SLOPE PAVING
16-19	DETAILS
20	BRIDGE SURVEY
21	BRIDGE SURVEY PLAN & PROFILE

CONSTRUCTION NOTES

THE MN/DOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION," 1983 EDITION SHALL GOVERN.

THE FIRST DIGIT OR FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE.

THE BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED.

BRIDGE SEAT REINFORCEMENT SHALL BE CAREFULLY PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE SUPERSTRUCTURE BEAMS SHALL BE ERECTED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR AND PLACING ANCHOR BOLTS.

2031.501	
FIELD OFFICE TYPE D	
EACH	
1	

2452.519	2514.501
CAST-IN-PLACE CONC. TEST PILES, 70 FT. LONG, 12"	CONCRETE SLOPE PAVING
EACH	SQ. YD.
2	1050 (P)

2557.501	2557.501
WIRE FENCE DESIGN S-2	WIRE FENCE DESIGN S-3
LIN. FT.	LIN. FT.
470 (P)	470 (P)

PREPARED BY
SHORT ELLIOTT HENDRICKSON, INC.
ST. PAUL, MINNESOTA • CHIPPENAW FALLS, WISC.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

SIGNED *John D. Stenlund*
DATE *9/25/86* REG NO. *13865*

B.M. ELEV. 989.97 (M.S.L. 1929 ADJ.)
TOP HYD. N.W. CORNER IVY & MCKNIGHT.
B.M. ELEV. 975.28 (M.S.L. 1929 ADJ.)
TOP HYD. N.E. COR. MARYLAND & MCKNIGHT.

TRUNK HIGHWAY NO. MINNESOTA
DEPARTMENT OF TRANSPORTATION

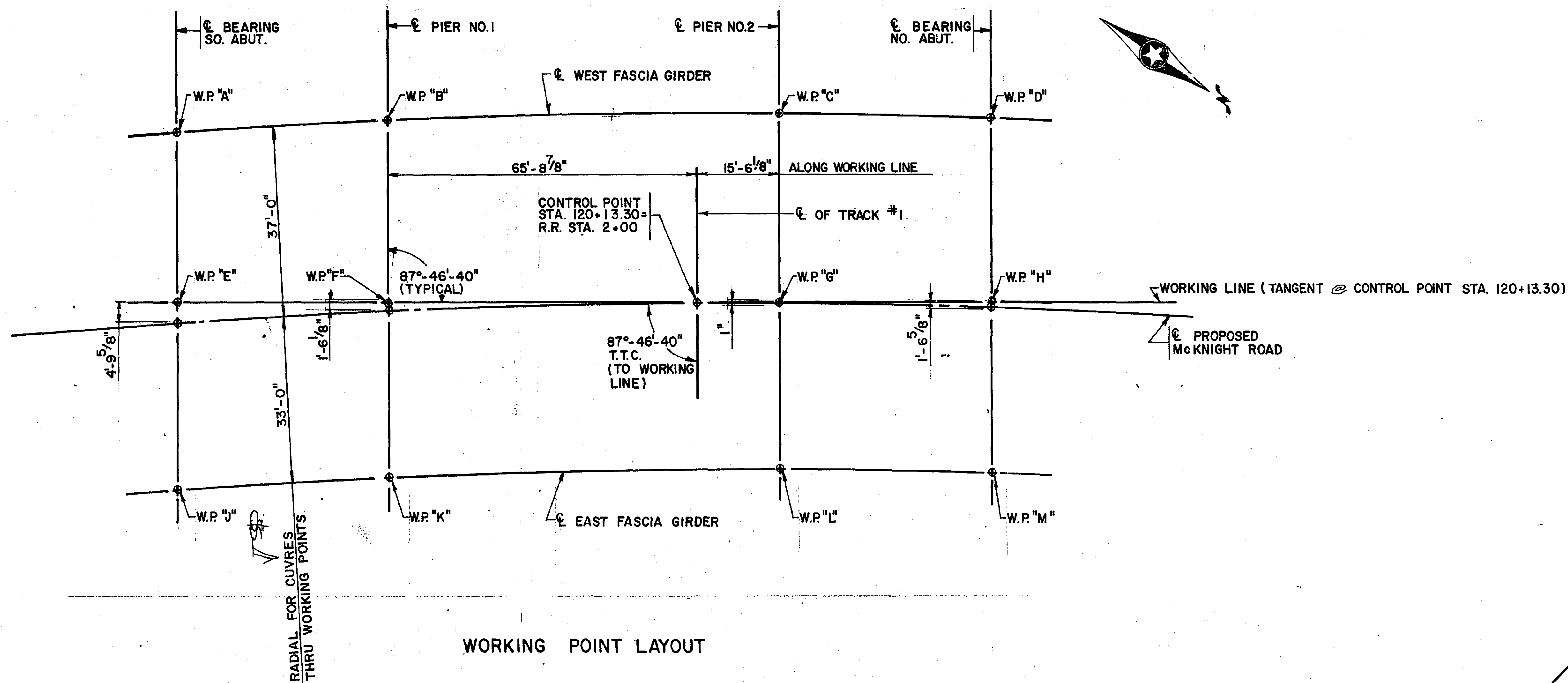
Bridge No. 62543
MCKNIGHT ROAD OVER THE CHICAGO & NORTHWESTERN RAILROAD IN MAPLEWOOD, MINNESOTA
51'-3" - 81'-3" - 51'-3" SPANS, 45" PPG
2°-13'-20" SKEW, 56' RDWY
10'-0" SDWK. W.SIDE & 6'-0" SDWK. E.SIDE
IDENTIFICATION 531

GENERAL PLAN AND ELEVATION

SEC. 24 T. 29 N. R. 22 W.
MAPLEWOOD city RAMSEY COUNTY

APPROVED: *John D. Stenlund* 9/11/86
BRIDGE ENGINEER

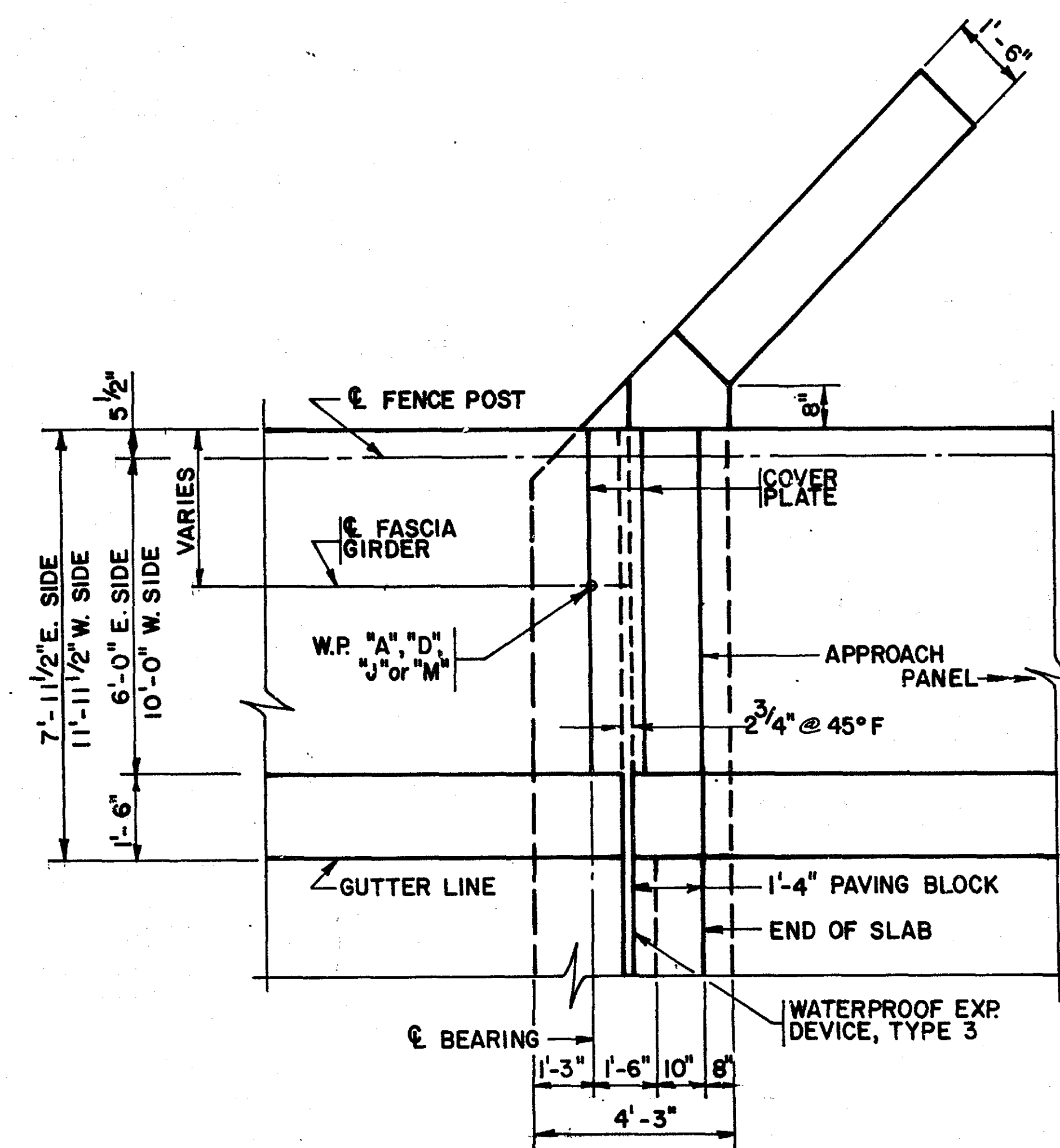
DES. J.S. DR. J.P. 62543
CHK. B.J. CHK. B.J.



HORIZONTAL CURVE
 $\Delta = 56^\circ 40' 00''$ RT.
 $D = 4^\circ 00'$
 $R = 1432.39'$
 $T = 772.34'$
 $L = 1416.67'$
 $P.C. = 113+01.00$
 $P.T. = 127+17.67$
 $P.I. = 120+73.34$

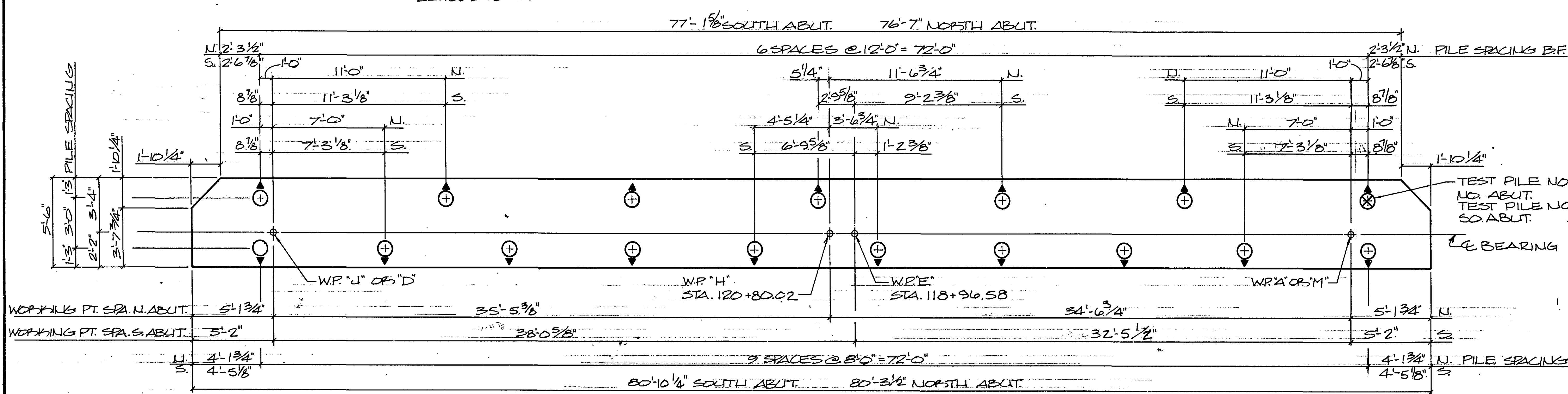
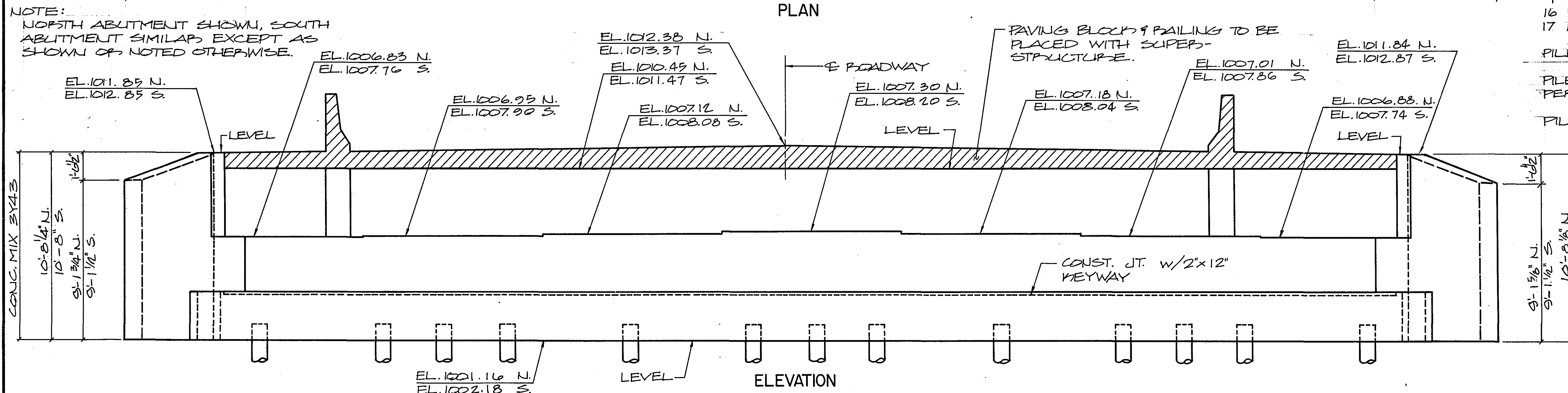
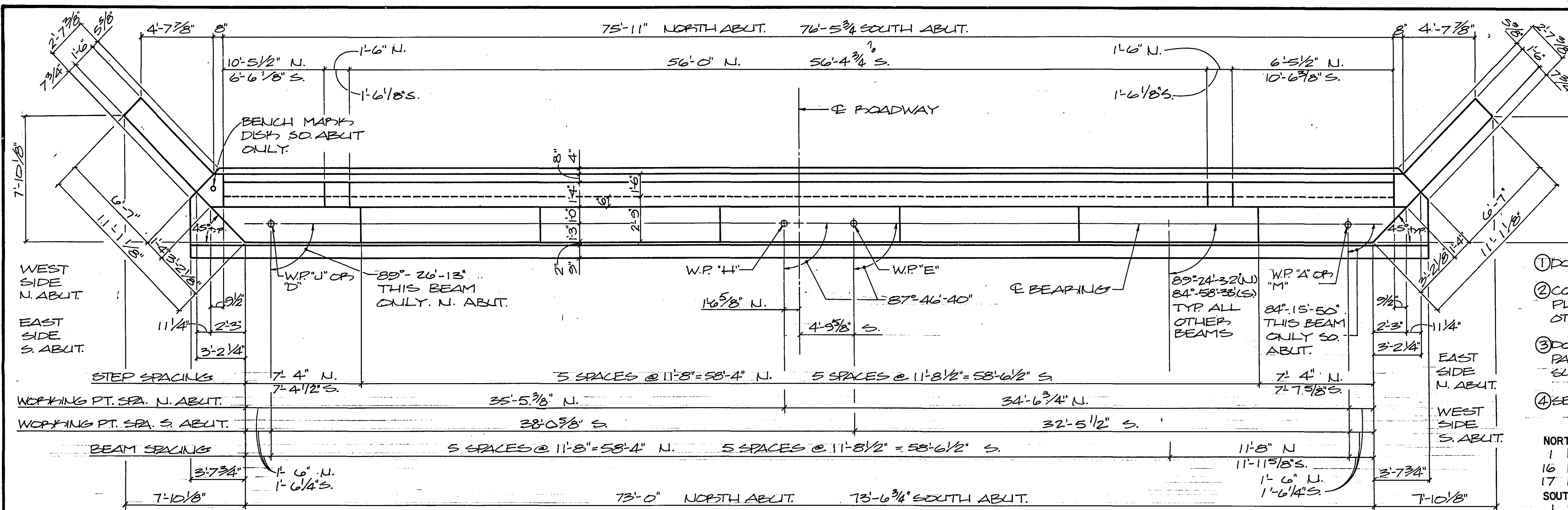
TOP OF ROADWAY TO BRIDGE SEAT				
	SO. ABUT.	PIER NO.1	PIER NO.2	NO. ABUT.
SLAB THICKNESS	9 1/4"	9 1/4"	9 1/4"	9 1/4"
STOOL HEIGHT	1 1/2"	1 1/2"	1 1/2"	1 1/2"
BEAM HEIGHT	45"	45"	45"	45"
BEARING HEIGHT	6"	4 3/4"	2 3/4"	4 3/4"
TOTAL	61 3/4"	60 1/2"	58 1/2"	60 1/2"
	5.15'	5.04'	4.88'	5.04'

DIMENSIONS																					BETWEEN										WORKING										POINTS										ELEVATIONS			POINT
POINT	STATION	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	W	TOP OF RDWY.	TOP OF RDWY. TO BR. SEAT	BRIDGE SEAT																													
A	119+00.37																						1012.89	5.15'	1007.74	A																												
B	119+50.55	51.47'																					1012.91	5.04	1007.87	B																												
C	120+29.82		81.31'																				1012.46	4.88	1007.58	C																												
D	120+79.75			51.21'																			1011.87	5.04	1006.03	D																												
E	118+96.58	32.46'																					1013.31			E																												
F	119+47.61	59.59'	35.62'			51.25'																	1013.38			F																												
G	120+28.81		87.44'	36.93'			81.25'																1012.96			G																												
H	120+80.02			62.00'	35.45'			51.25'															1012.36			H																												
J	118+91.90		91.36'	154.76'		38.05'																	1012.91	5.15	1007.76	J																												
K	119+44.61	82.84'		110.34'	152.28'	60.73'	34.64'			51.50'													1012.96	5.04	1007.92	K																												
L	120+27.87	145.54'	104.36'		87.16'		86.54'	33.10'			81.32'												1012.52	4.88	1007.64	L																												
M	120+80.29		147.51'	86.33'				60.69'	34.56'			51.21'											1011.92	5.04	1006.88	M																												
N																										N																												
P																										P																												
Q																										Q																												
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W																										W																												



S.P. 62-688-18

TITLE: BRIDGE LAYOUT	DES: J.S.	DR: J.P.	APPROVED:	Bridge No. 62543
	CHK: B.J.	CHK: B.J.	6-12-87	
	Sheet No. 2 of 21 Sheets			



SUMMARY OF QUANTITIES - BOTH ABUT.	
③ CONCRETE MIX 1A43	91 CU.YD.
③ CONCRETE MIX 3Y43	115 CU.YD.
REINF. BARS	9330 POUND
REINF. BARS (EPOXY COATED)	5040 POUND
① 12" Ø C.I.P. CONC. PILING DELIVERED	2560 LIN. FT.
① 12" Ø C.I.P. CONC. PILING DRIVEN	2560 LIN. FT.
① 12" Ø C.I.P. CONC. TEST PILE 90' LONG	2 EACH
② BENCH MARK DISK	1 EACH
④ STRUCTURE EXCAVATION	1 LUMP SUM

- ① DOES NOT INCLUDE TEST PILE.
- ② COUNTY WILL FURNISH DISK. PAYMENT FOR PLACING TO BE INCLUDED IN PRICE. BID FOR OTHER ITEMS. SEE STD. PLATE NO. 9301 FOR PLACING.
- ③ DOES NOT INCLUDE PAUL CONC. (3x4x6) & PAVING BLOCK (3x3x6) CONC. TO BE PLACED WITH SUPERSTRUCTURE & INCLUDED IN SUPER. QUANT.
- ④ SEE SPECIAL PROVISIONS.

PILE NOTES

NORTH ABUTMENT

- 1 12" Ø C.I.P. CONC. TEST PILE 90' LONG.
- 16 12" Ø C.I.P. CONC. PILES EST. LENGTH 80 FT.
- 17 12" Ø C.I.P. CONC. PILES REQ'D. NORTH ABUT.

SOUTH ABUTMENT

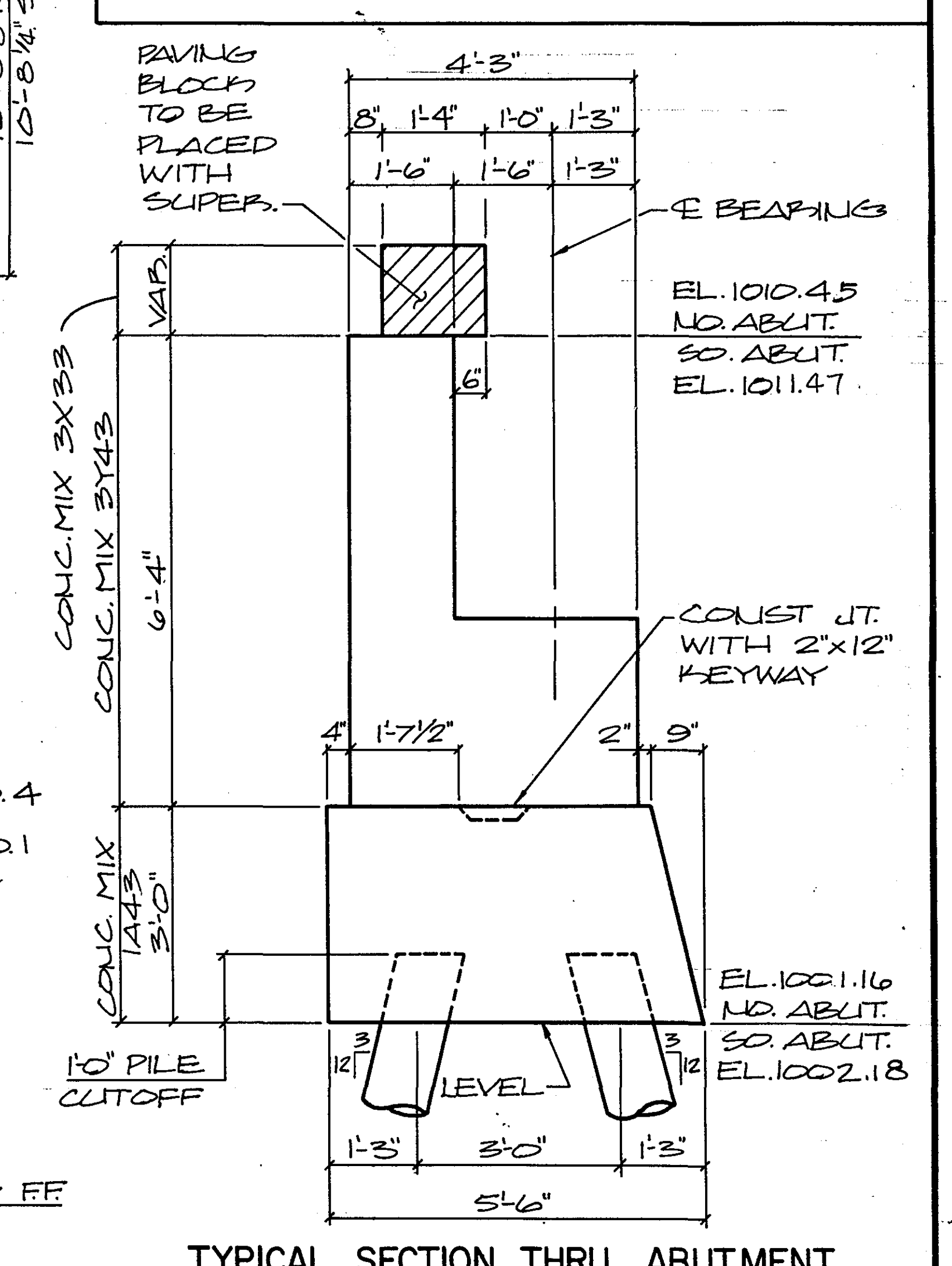
- 1 12" Ø C.I.P. CONC. TEST PILE 90' LONG.
- 16 12" Ø C.I.P. CONC. PILES EST. LENGTH 80 FT.
- 17 12" Ø C.I.P. CONC. PILES REQ'D. SOUTH ABUT.

PILE SPACING SHOWN AT BOTTOM OF FOOTINGS.

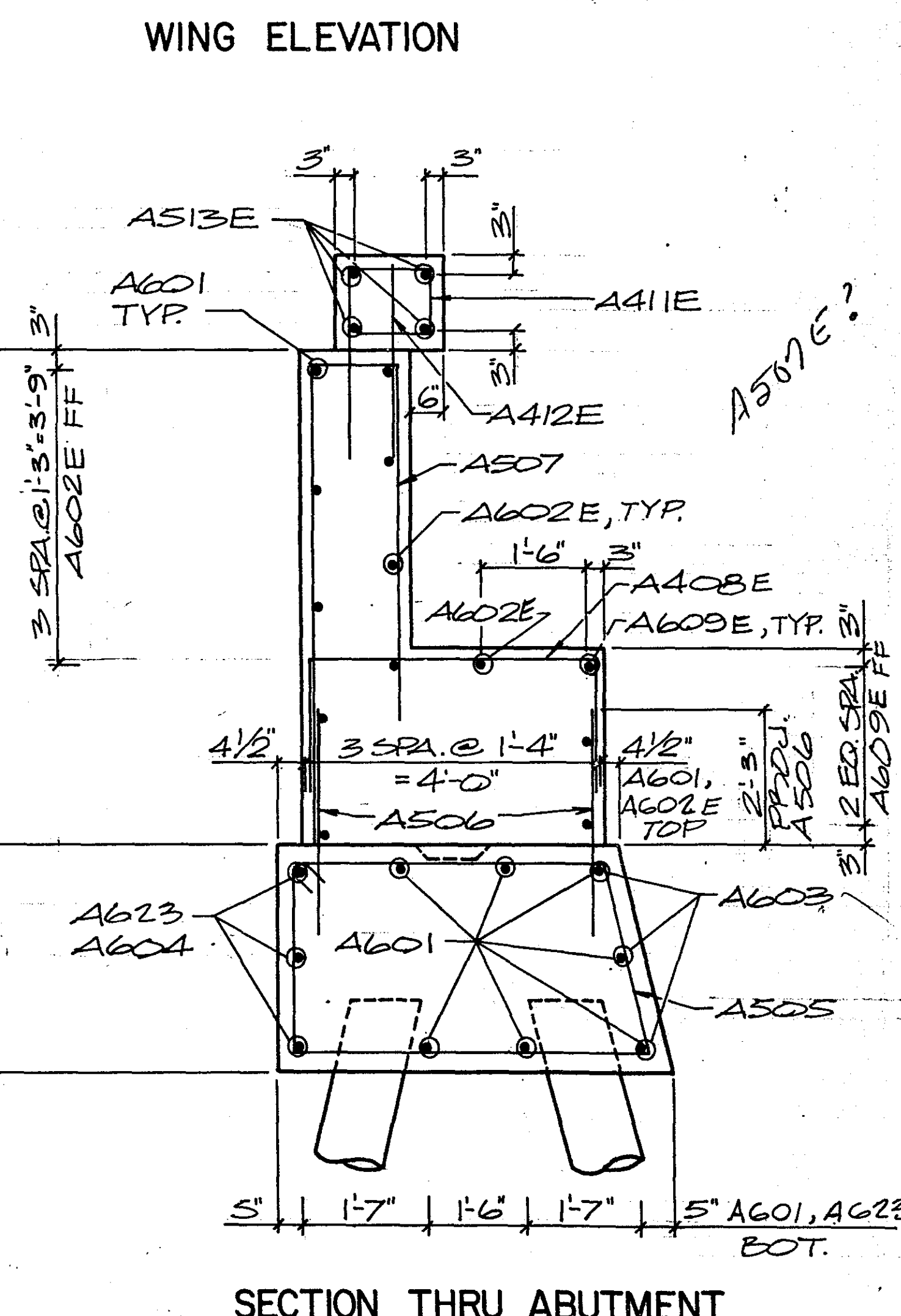
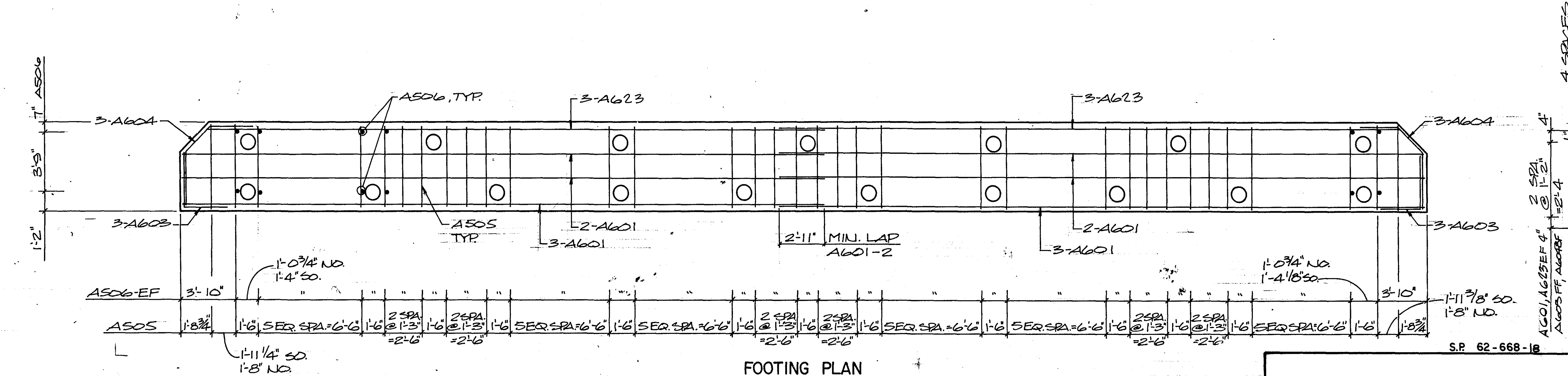
PILES MARKED THUS (O) TO BE BATTERED 3" PER FOOT IN THE DIRECTION SHOWN.

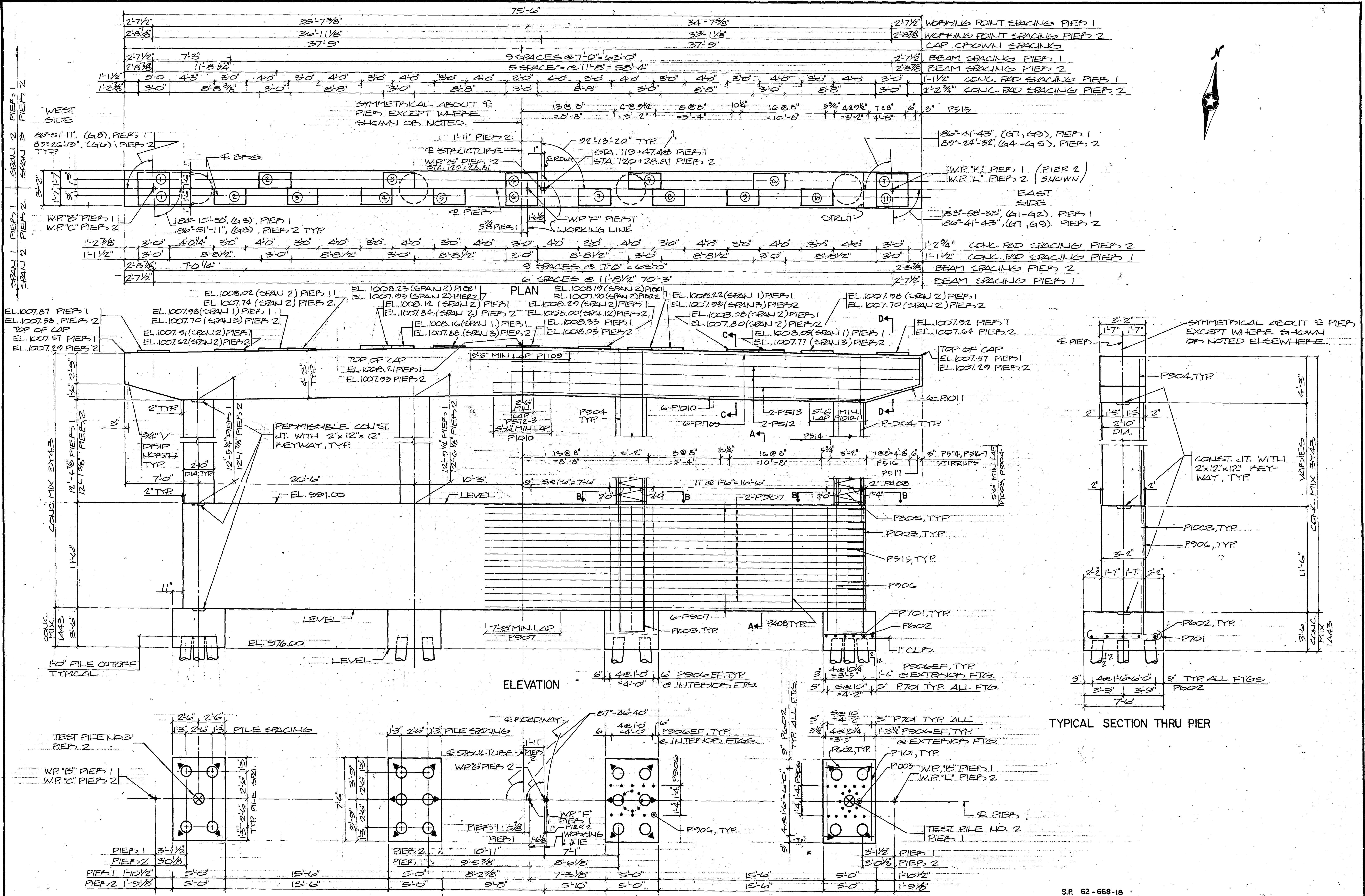
PILES TO HAVE A NOMINAL DIAMETER OF 12"

COMPUTED PILE LOADS	TONS/PILE
DEAD LOAD + EARTH PRESSURE	34
LIVE LOAD	7
DESIGN LOAD	41



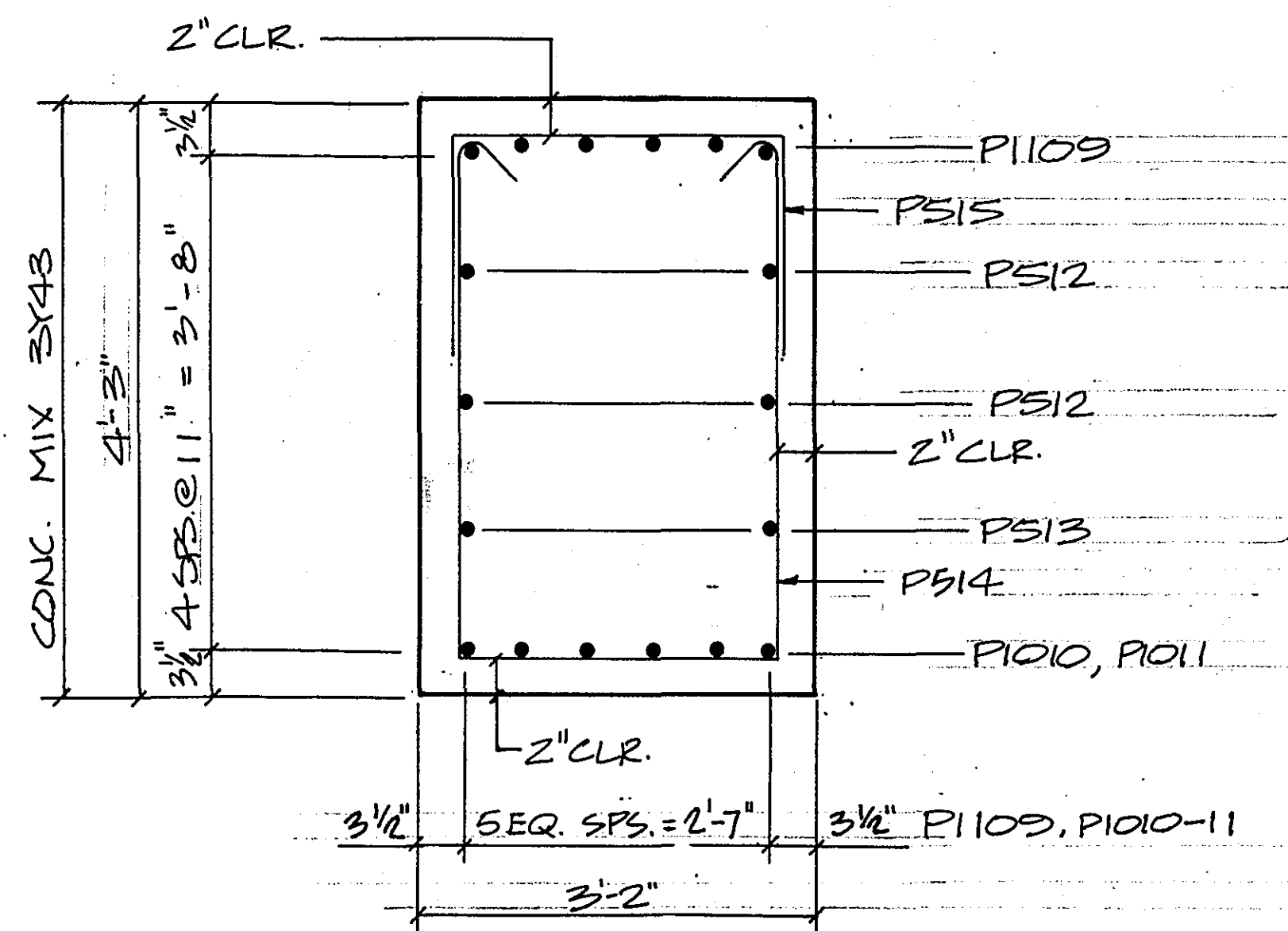
S.P. 62-668-18		DES: J.P.		DR: D.F.	APPROVED:	Bridge No. 62543
ABUTMENT GEOMETRICS		CHK: B.J.	CHK: J.P.	6-72-87		
	Sheet No. 3 of 21 Sheets					



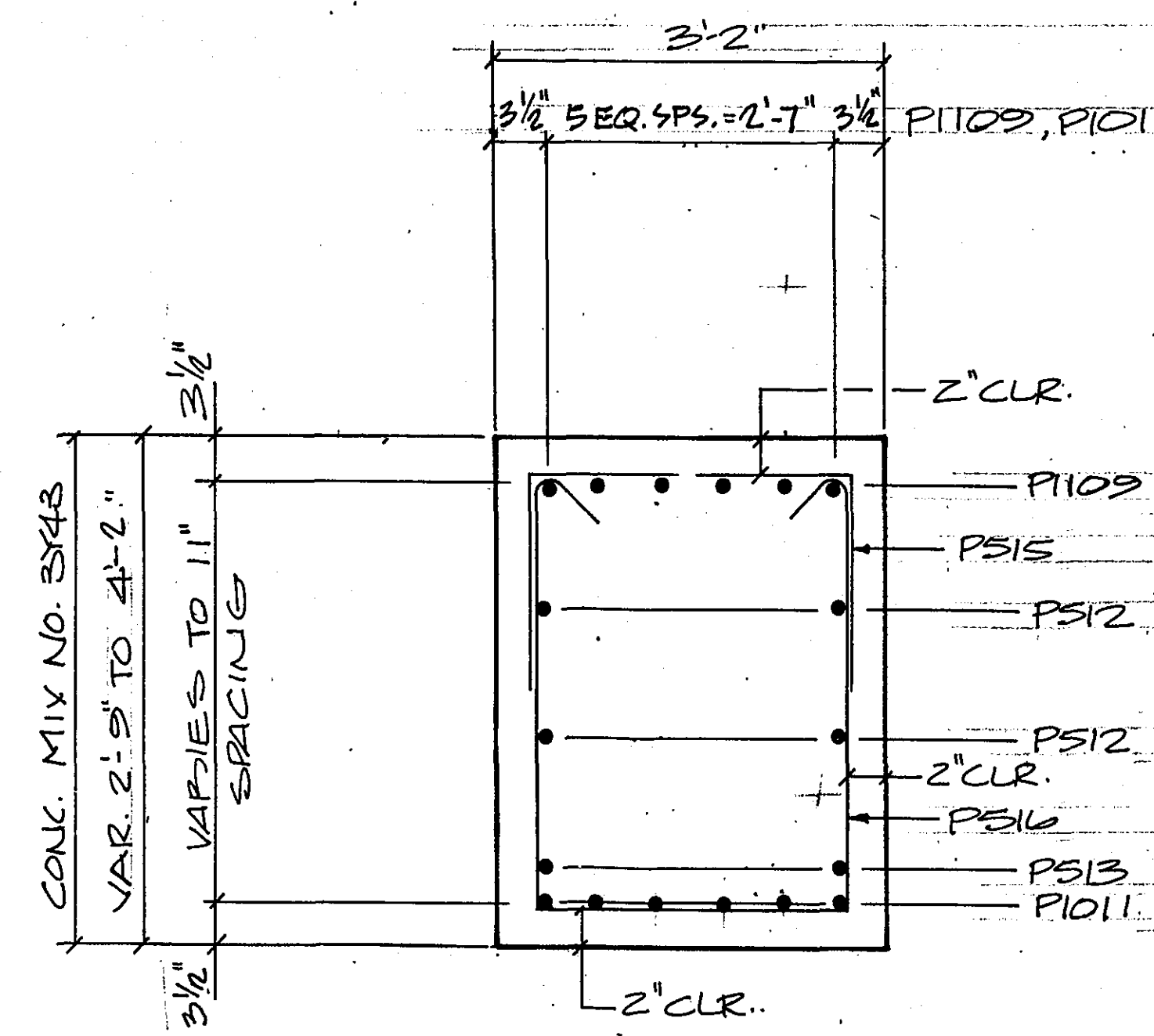


S.P. 62 - 668-1B

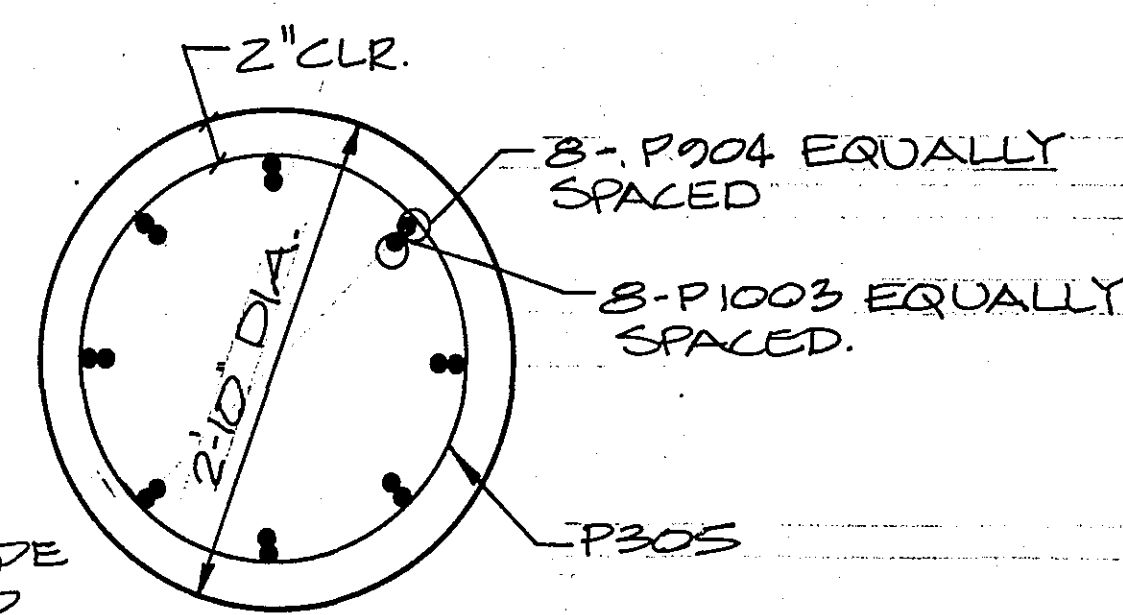
DES: J.S.	DR: D.F.	APPROVED:	Bridge No. 62543
CHK: B.J.	CHK: J.P.	6-12-87	
Sheet No. 5 of 21 Sheets			



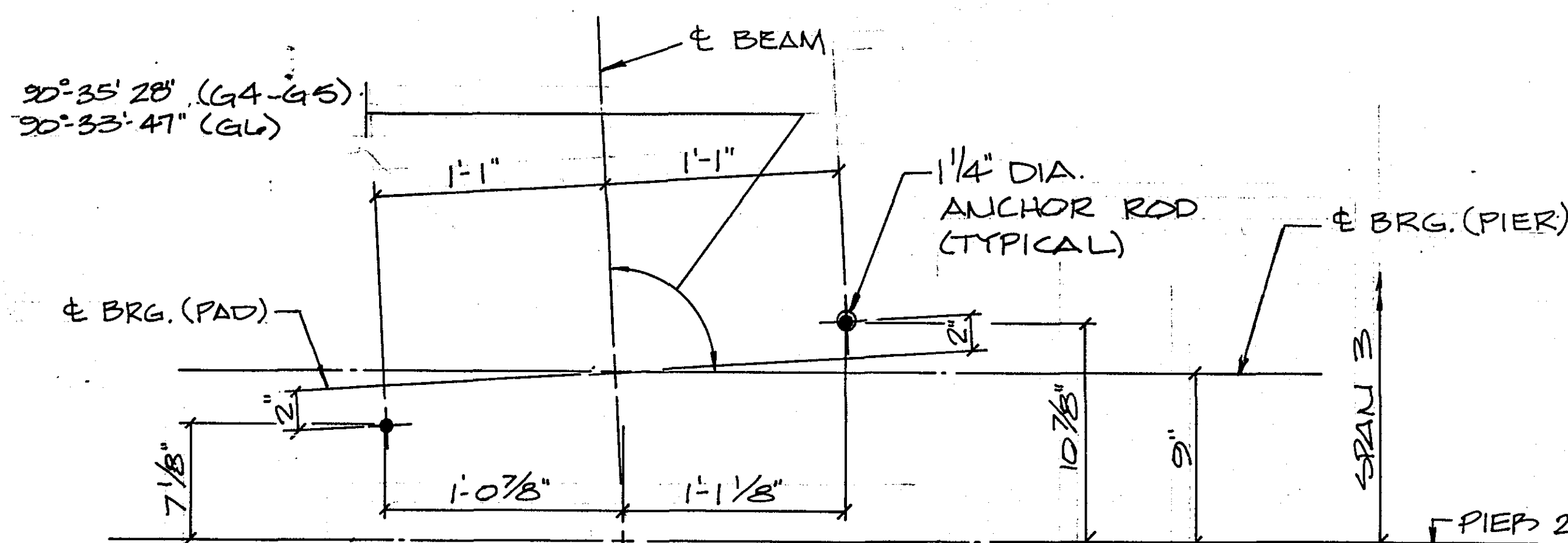
SECTION C-C



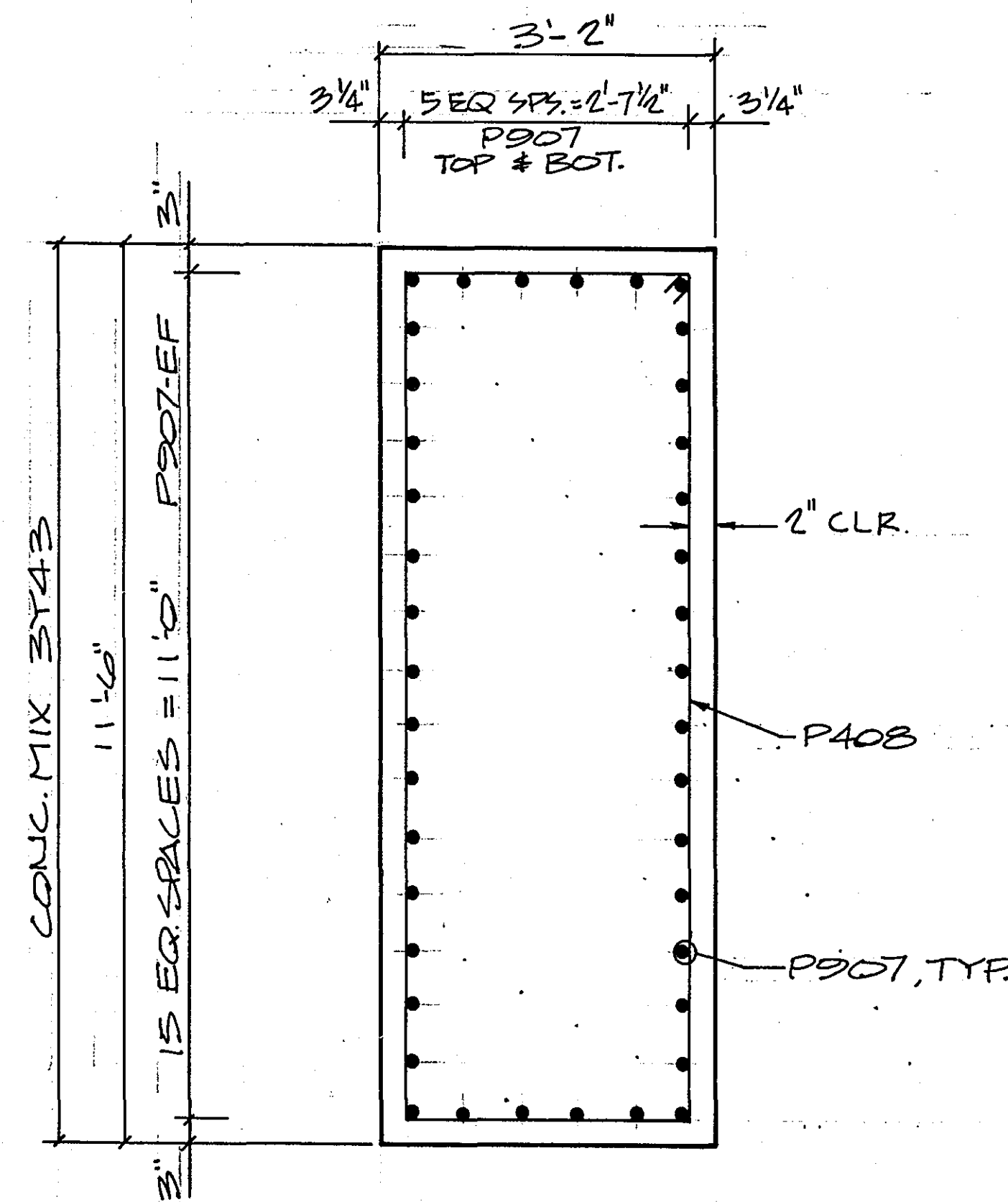
SECTION D-D



SECTION B-B



ANCHOR ROD DETAIL
(PIER 2 ONLY)



SECTION A-A

BILL OF REINFORCEMENT - BOTH PIER					
BAR	NO.	LENGTH	SHAPE	LOCATION	
P701	48	8'-10"	BENT	FTG. LONG.	
P602	40	4'-10"	STRT.	FTG. TRANS.	
P1003	64	21'-4"	BENT	COL. VERT.	
P904	64	16'-2"	STRT.	COL. VERT.	
P305	8	-	-	SPIRAL	
P906	80	14'-6"	BENT	STRAIT DOWELS	
P907	160	35'-11"	STRT.	STRAIT LONG.	
P408	72	28'-9"	BENT	STRAIT TIE	
P1109	24	44'-9"	"	CAP LONG. TOP	
P1010	24	34'-11"	STRT.	" " BOT.	
P1011	24	10'-11"	BENT	" " "	
PS12	16	38'-10"	STRT.	CAP LONG.	
PS13	8	34'-5"	"	" " "	
PS14	160	11'-7"	BENT	CAP TIE	
PS15	190	6'-2"	"	" " "	
PS16	32	8'-11"	"	" " "	
PS17	4	8'-7"	"	" " "	

COMPUTED PILE LOADS		TONS/PILE
DEAD LOAD		47
LIVE LOAD		10
OVERTURNING		-
*DESIGN LOAD		57

* 57/100 = 57 TONS/PILE REDUCTION
PER A.A.S.H.T.O. 3.22.4 GROUP I LOADING.

SUMMARY OF QUANTITIES FOR BOTH PIERS	
CONCRETE MIX NO. 3Y43	39 CU. YD.
CONCRETE MIX NO. 3Y43	268 CU. YD.
REINFORCEMENT BARS	50,960 POUND
STRUCTURE EXCAVATION	1 LUMP SUM
SPIRAL REINFORCEMENT	1280 POUND
12" C.I.P. CONC. PILING DELIVERED	2520 LIN. FT.
12" C.I.P. CONC. PILING DRIVEN	2520 LIN. FT.
12" C.I.P. CONC. TEST PILE 70' LONG	2 EACH

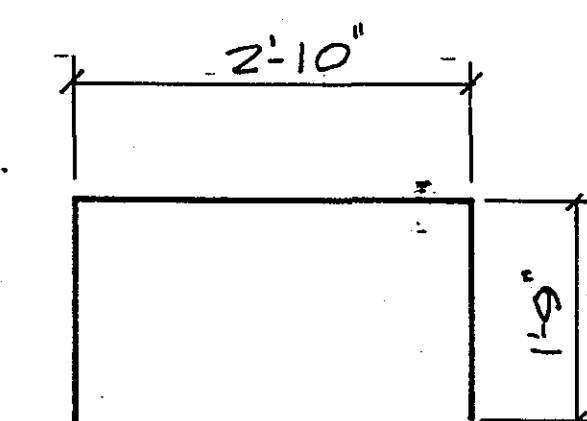
- ① DOES NOT INCLUDE TEST PILE.
② SEE SPECIAL PROVISIONS

PILE NOTES

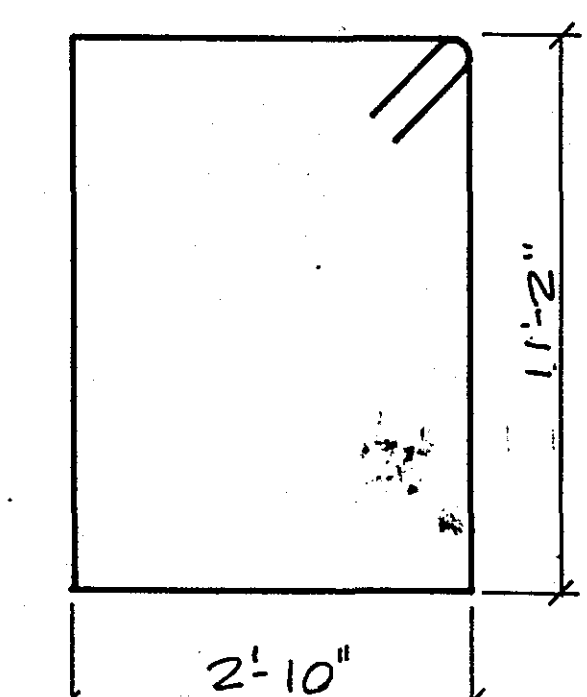
- PIERS NO. 1
1 12" C.I.P. CONC. TEST PILE 70' LONG.
21 12" C.I.P. CONC. PILES, EST. LENGTH 60 FT.
22 12" C.I.P. CONC. PILES REQ'D. PIER NO. 1
- PIERS NO. 2
1 12" C.I.P. CONC. TEST PILE 70' LONG.
21 12" C.I.P. CONC. PILES, EST. LENGTH 60 FT.
22 12" C.I.P. CONC. PILES REQ'D. PIER NO. 2

PILE SPACING SHOWN IS AT BOTTOM OF FTG.
PILES MARKED THUS (O*) TO BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.
PILES TO HAVE A NOMINAL DIAMETER OF 12".

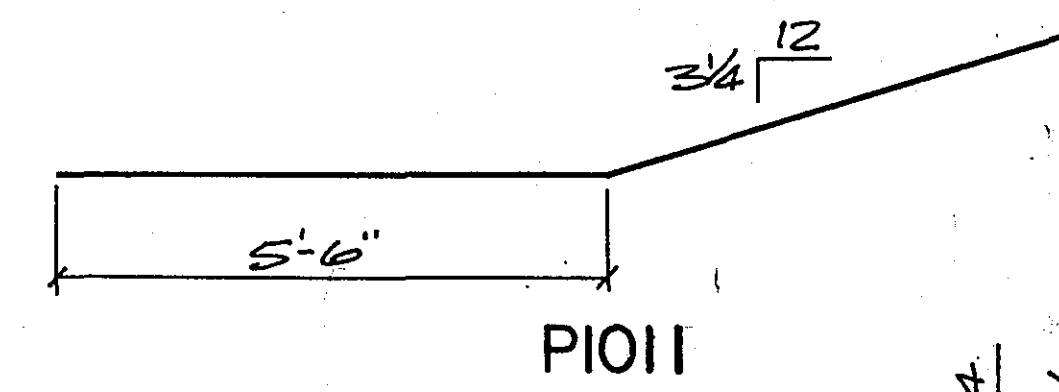
SPIRAL DATA	
BAR NO.	P305
OUTSIDE DIA.	2'-6"
HEIGHT	12'-10"
PITCH	3"
SPIRAL BAR SIZE	3/8" φ
EST. WT. (EACH)	160.55#



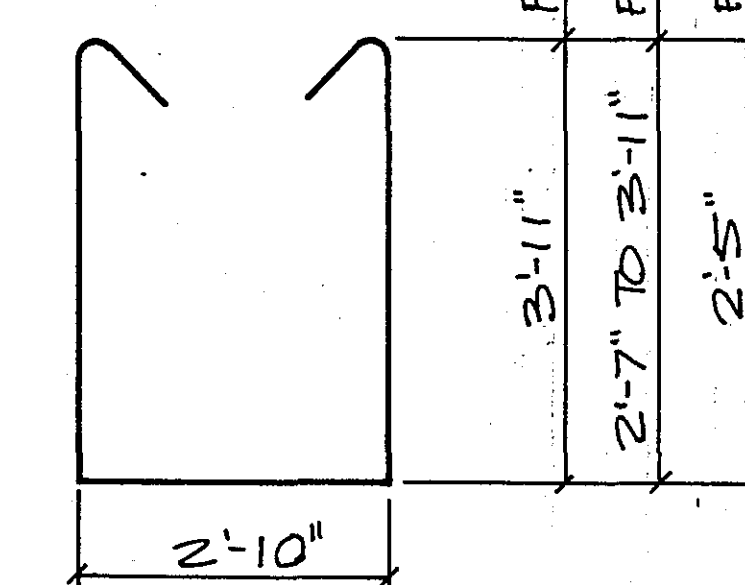
P515



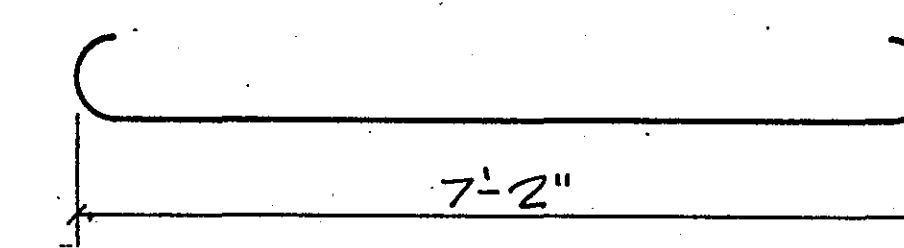
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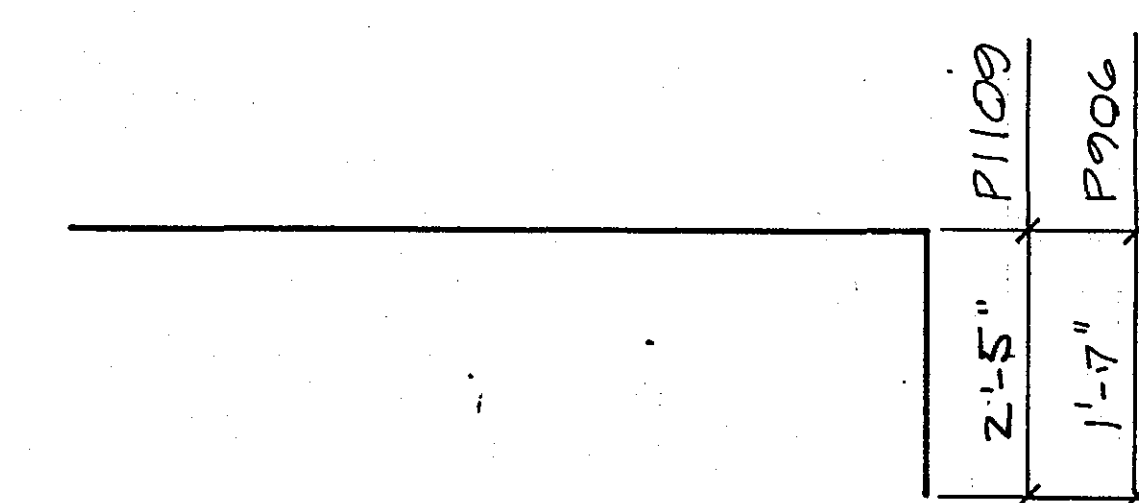
P1011



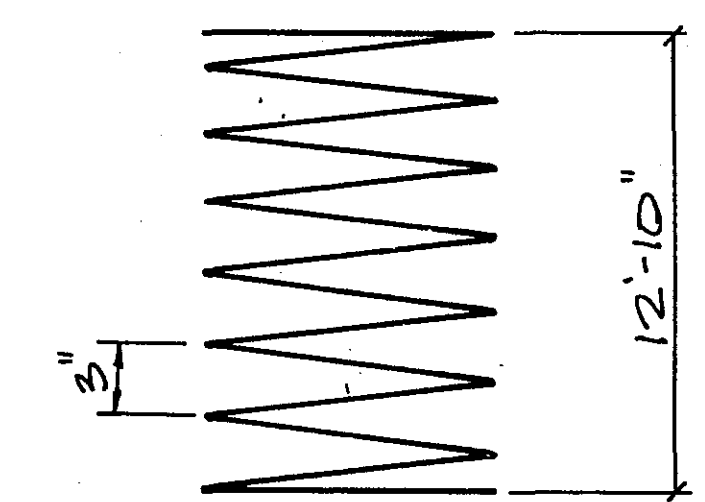
P514, P516-17



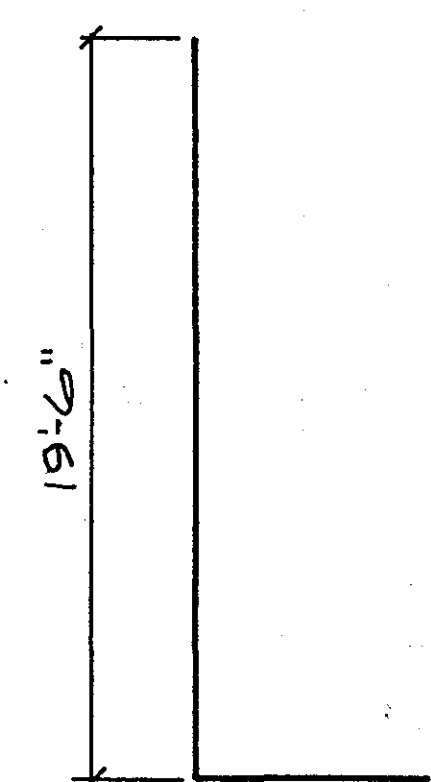
P701



P1109, P906

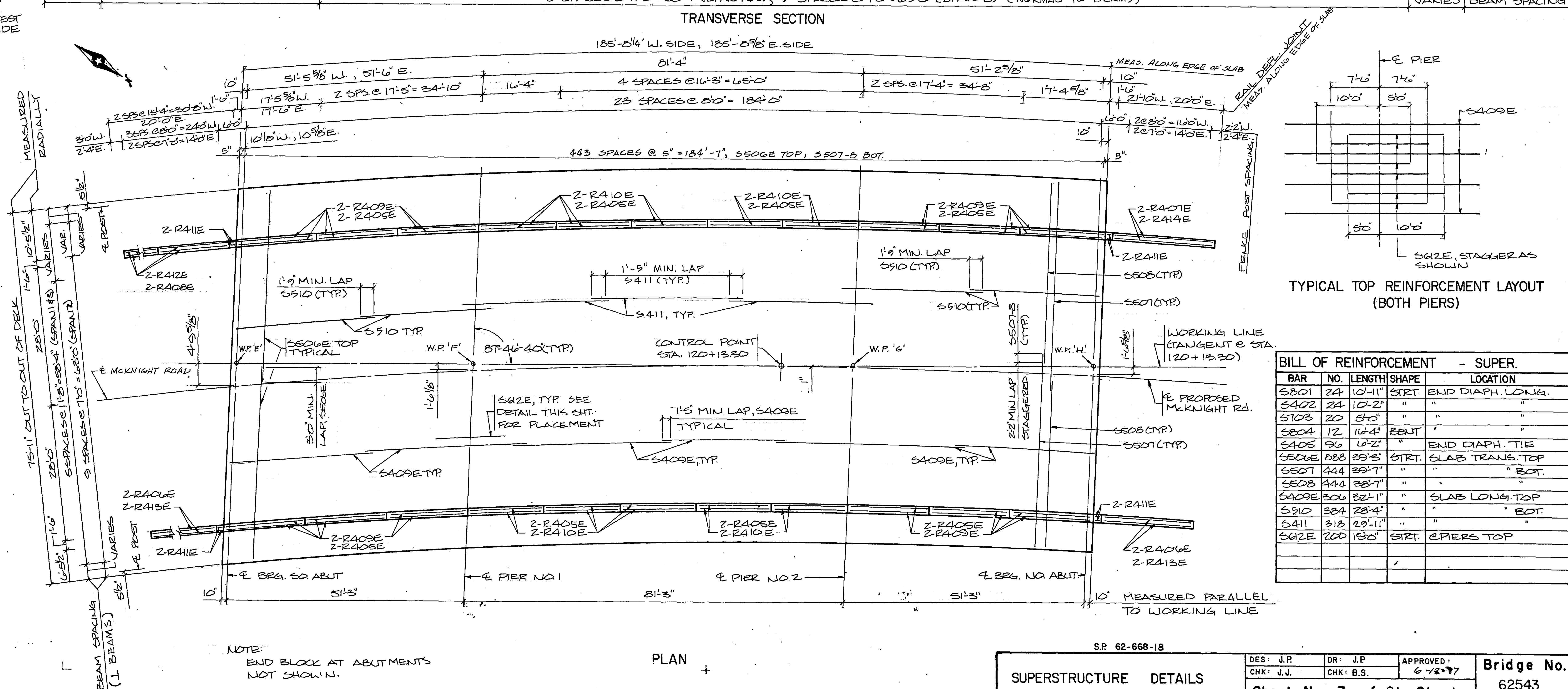
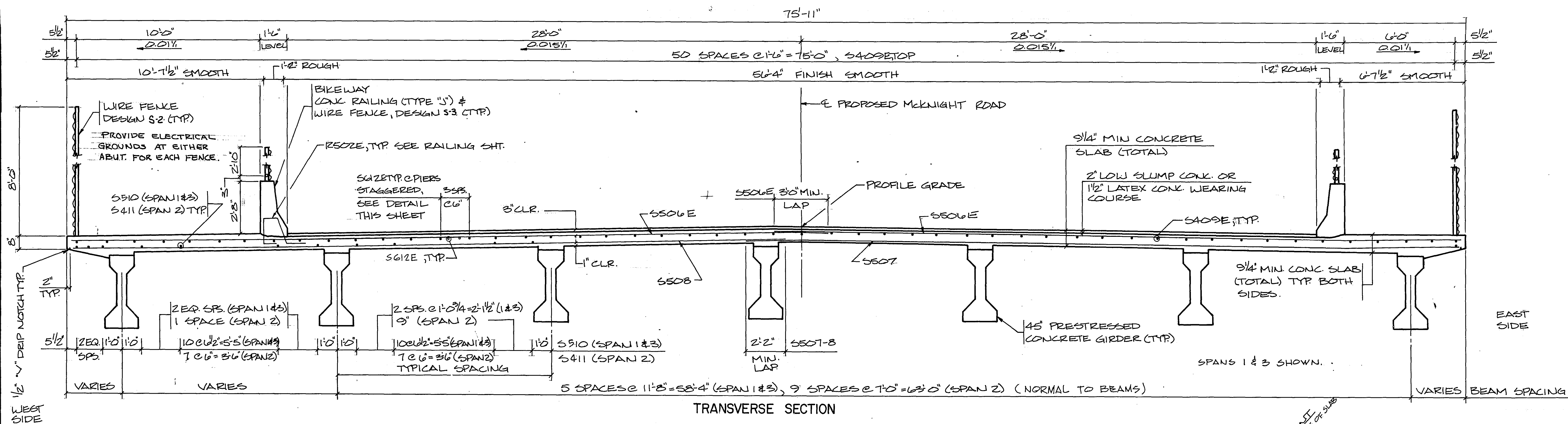


P305

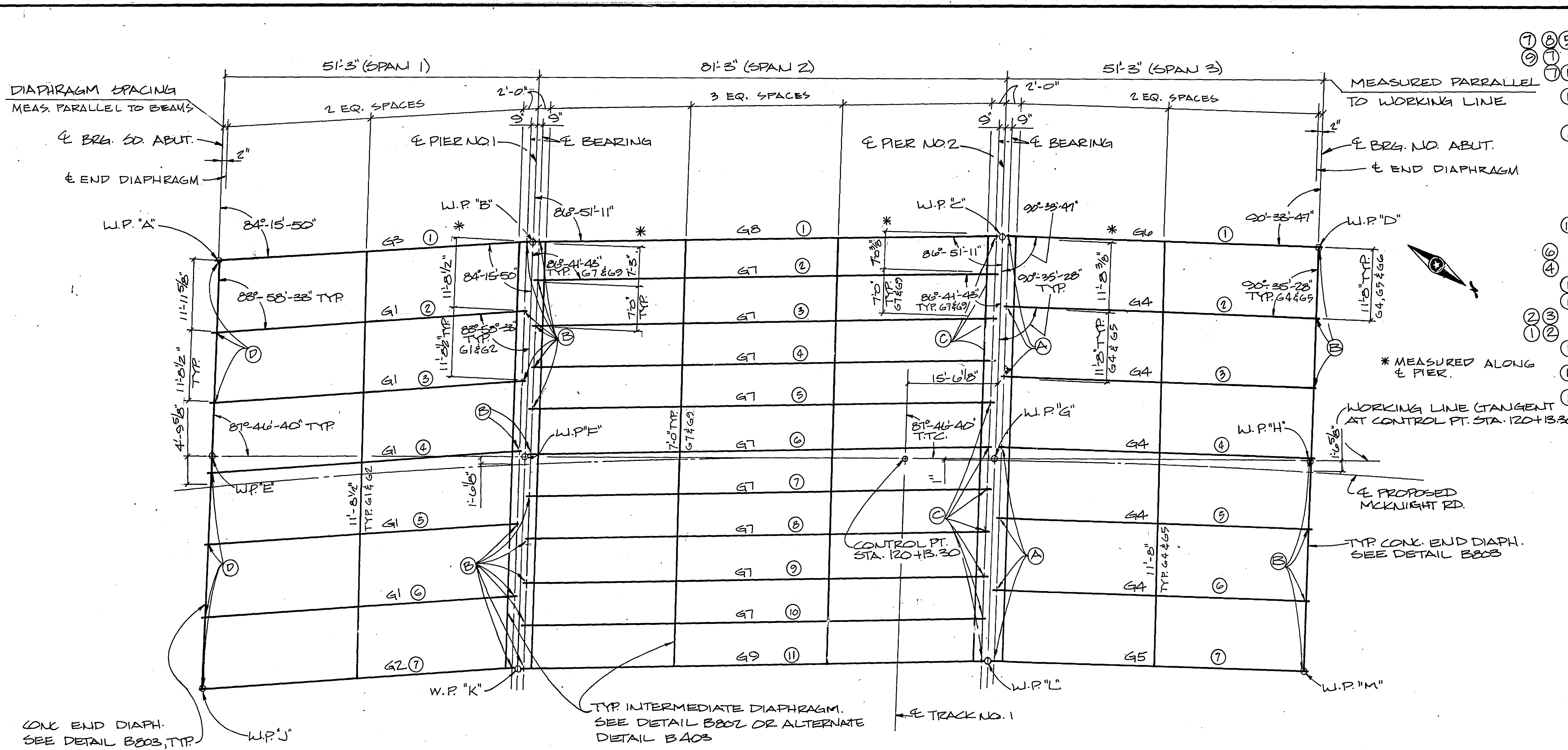


P1003

PIER DETAILS	S.P. 62-668-18		Bridge No. 62543
	DES: J.S.	DR: J.P.	
	CHK: B.J.	CHK: B.J.	
	APPROVED: 6-12-87		
Sheet No. 6 of 21 Sheets			



BILL OF REINFORCEMENT				- SUPER.
BAR	NO.	LENGTH	SHAPE	LOCATION
5801	24	10'-11"	STR.	END DIAPH. LONG.
5802	24	10'-2"	"	" "
5803	20	5'-0"	"	" "
5804	12	10'-4"	REIN	" "
5805	96	6'-2"	"	END DIAPH. TIE
5806	288	33'-3"	STR.	SLAB TRANS. TOP
5807	444	39'-7"	"	" " BOT.
5808	444	38'-7"	"	" " BOT.
5809E	306	32'-1"	"	SLAB LONG. TOP
5810	384	28'-4"	"	" " BOT.
5811	318	29'-11"	"	" "
5812E	260	15'-6"	STR.	CPERS TOP



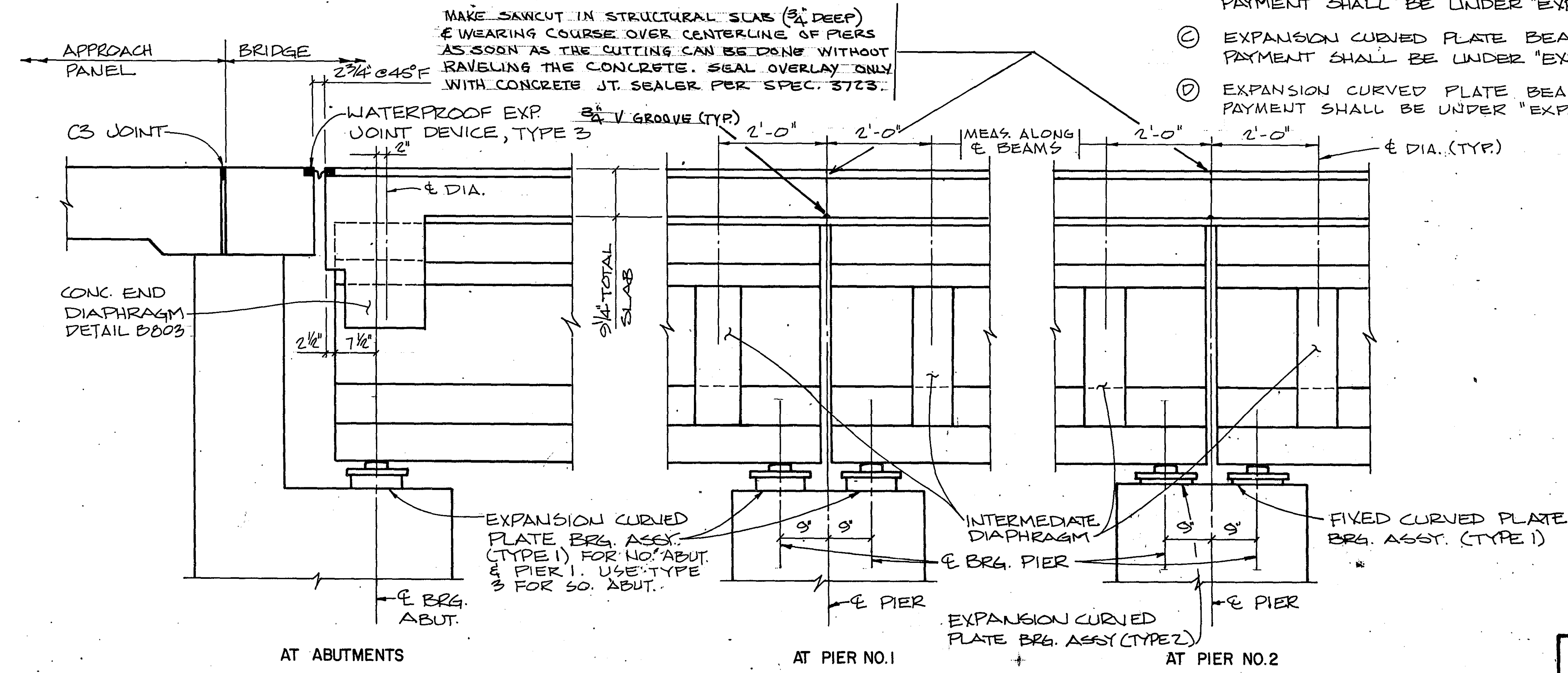
SUMMARY OF QUANTITIES		SUPER.
BRIDGE SLAB CONC MIX 3X36	14304 SQ. FT.	
TYPE "J" RAILING CONC MIX 3X46	410 LIN. FT.	
CONCRETE OVERLAY TYPE SPECIAL 10398	SQ. FT.	
FIXED CURVED PLATE BEARING ASSEMBLIES (TYPE 1)	7 EACH	
EXP CURVED PLATE BEARING ASSEMBLIES (TYPE 1)	25 EACH	
PRESTRESSED CONCRETE BEAMS, TYPE 45-81	11 EACH	
PRESTRESSED CONCRETE BEAMS, TYPE 45-52	14 EACH	
DIAPHRAGMS FOR TYPE 45 PRESTRESSED BEAMS	560 LIN. FT.	
REINFORCEMENT BARS	55890 POUND	
REINFORCEMENT BARS (EPOXY COATED)	57370 POUND	
WIRE FENCE DESIGN S-2	470 LIN. FT.	
WIRE FENCE DESIGN S-3	470 LIN. FT.	
BRIDGE NAMEPLATE	1 UNIT	
JOINT FILLER (SEE SCHEDULE THIS SHEET)		
EXPANSION JOINT DEVICE, TYPE (Z)	3 152 LIN. FT.	
EXP CURVED PLATE BEARING ASSEMBLIES (TYPE 2)	11 EACH	
" (TYPE 3)	7 EACH	

- ① SEE SPECIAL PROVISIONS.
- ② INCLUDED IN PRICE BID FOR OTHER ITEMS.
- ③ BRIDGE 62543, 1987, RAMSEY CO.
- ④ INCLUDES RAILING REINFORCEMENT.
- ⑤ INCLUDES END DIAPHRAGM CONCRETE.
- ⑥ INCLUDES END DIAPH. REINFORCEMENT.
- ⑦ THE FOLLOWING VOLUMES ARE APPROX.:
BR. SLAB CONC. (WITH 2" OVERLAY) 347 CU.YD.
BR. SLAB CONC. (WITH 1 1/2" OVERLAY) 383 CU.YD.
2" CONC. OVERLAY 64 CU.YD.
1 1/2" CONC. OVERLAY 48 CU.YD.
- ⑧ INCLUDES ABUT. END BLOCKS.
- ⑨ INCLUDES RAIL END POSTS ON ABUT.
- ⑩ CUT TO FIT.
- ⑪ INT. DIAPHRAGMS

FRAMING PLAN

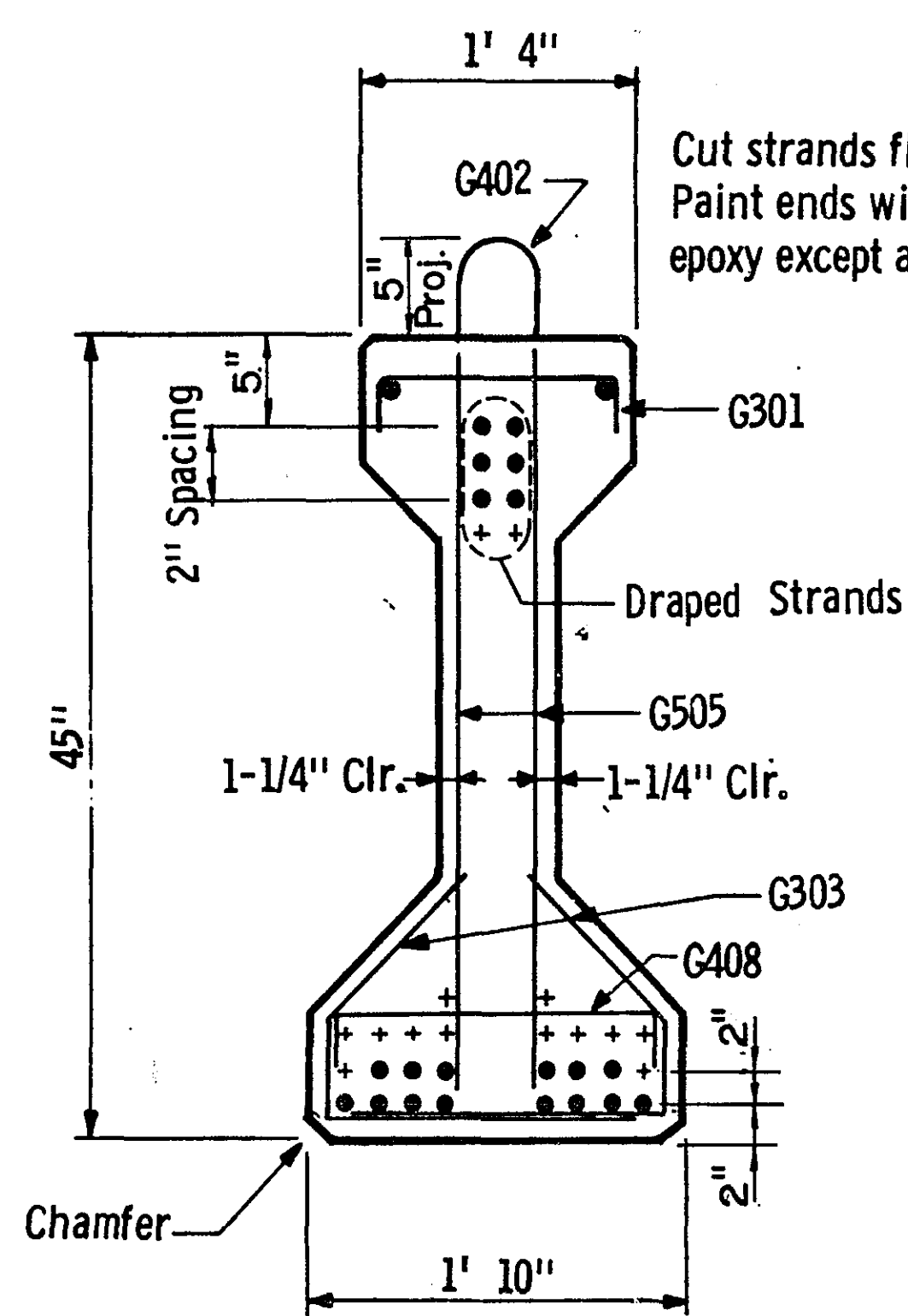
- Ⓐ FIXED CURVED PLATE BEARING ASSEMBLY. SEE DETAIL B310. PAYMENT SHALL BE UNDER "FIXED CURVED R BRG. ASSY. (TYPE 1).
- Ⓑ EXPANSION CURVED PLATE BEARING ASSEMBLY. SEE DETAIL B311. PAYMENT SHALL BE UNDER "EXP CURVED R BRG. ASSY. (TYPE 1).
- Ⓒ EXPANSION CURVED PLATE BEARING ASSEMBLY. SEE DETAIL B311. PAYMENT SHALL BE UNDER "EXP CURVED R BRG. ASSY. (TYPE 2).
- Ⓓ EXPANSION CURVED PLATE BEARING ASSEMBLY. SEE DETAIL B311. PAYMENT SHALL BE UNDER "EXP CURVED R BRG. ASSY. (TYPE 3).

① ② ⑩ JOINT FILLER		
CORK		
25	1" X 1/2" X 11"	@ RAIL JOINTS



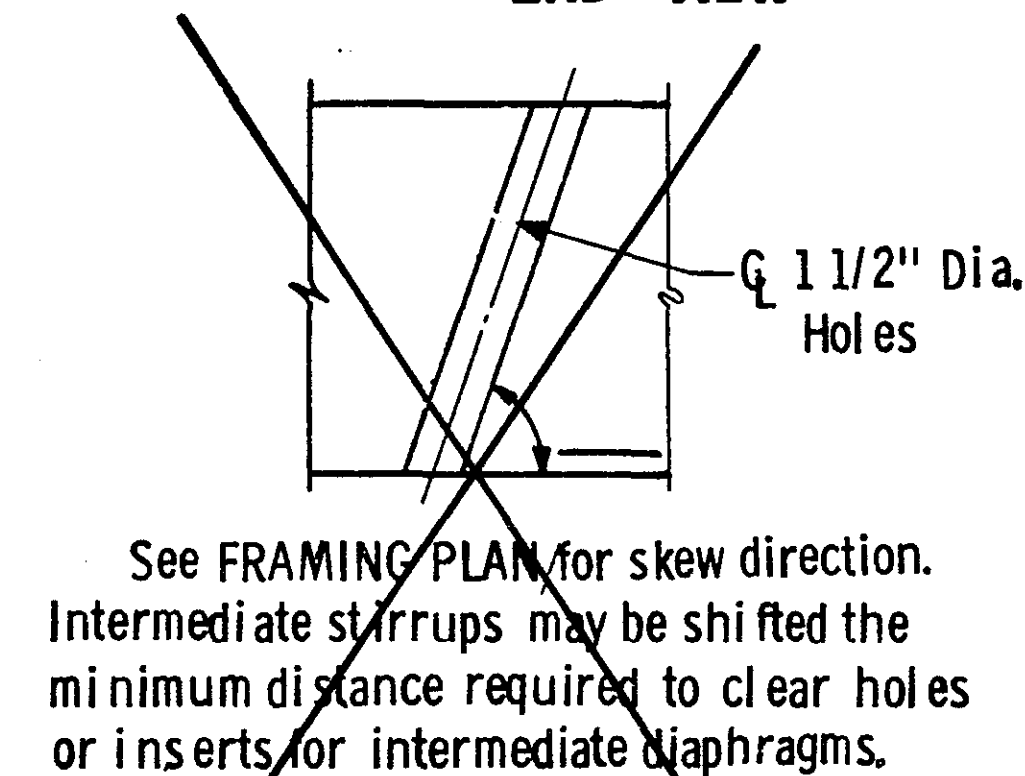
PART LONGITUDINAL SECTION

SUPERSTRUCTURE DETAILS		S.P. 62-668-18	
DES: J.S.	DR: J.P.	APPROVED:	Bridge No.
CHK: B.J.	CHK: B.S.	6-12-97	62543
Sheet No. 8 of 21 Sheets			



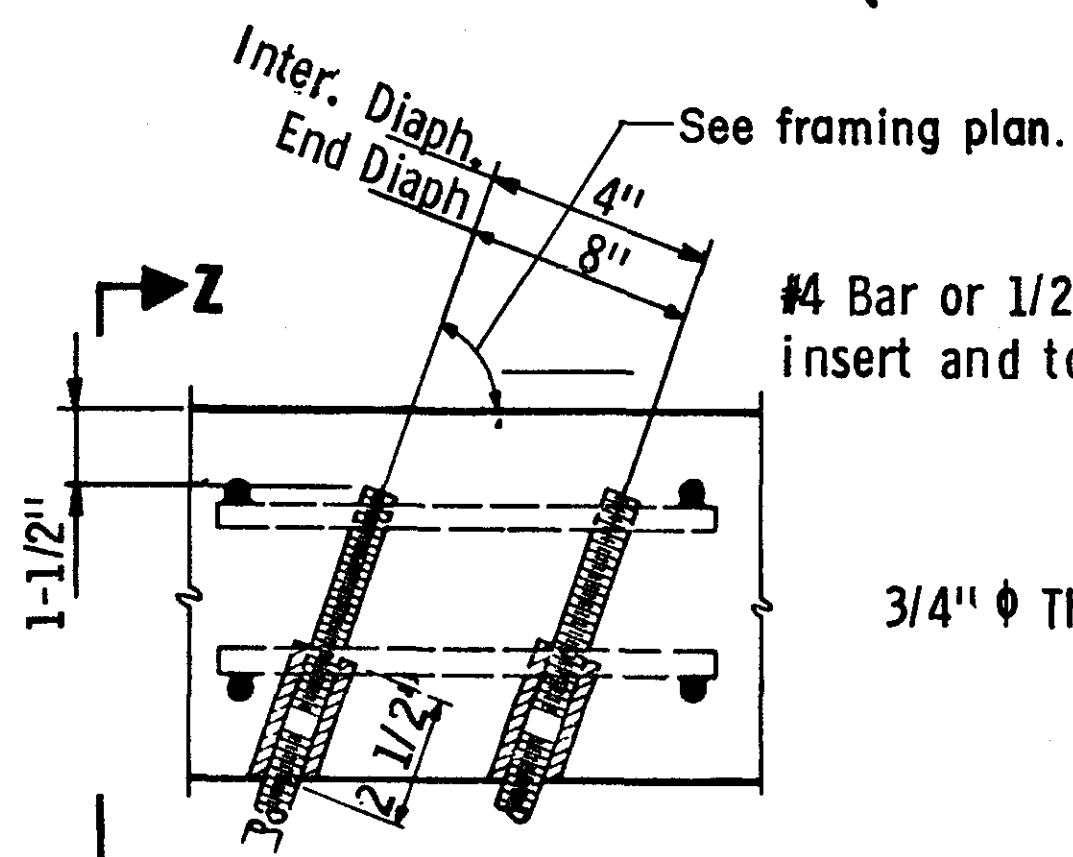
Details not shown are the same as the SECTION AT Q BEAM

END VIEW



SECTION Y-Y

FOR USE WITH CONCRETE END DIAPHRAGMS WITH PILE BENT ABUTMENTS

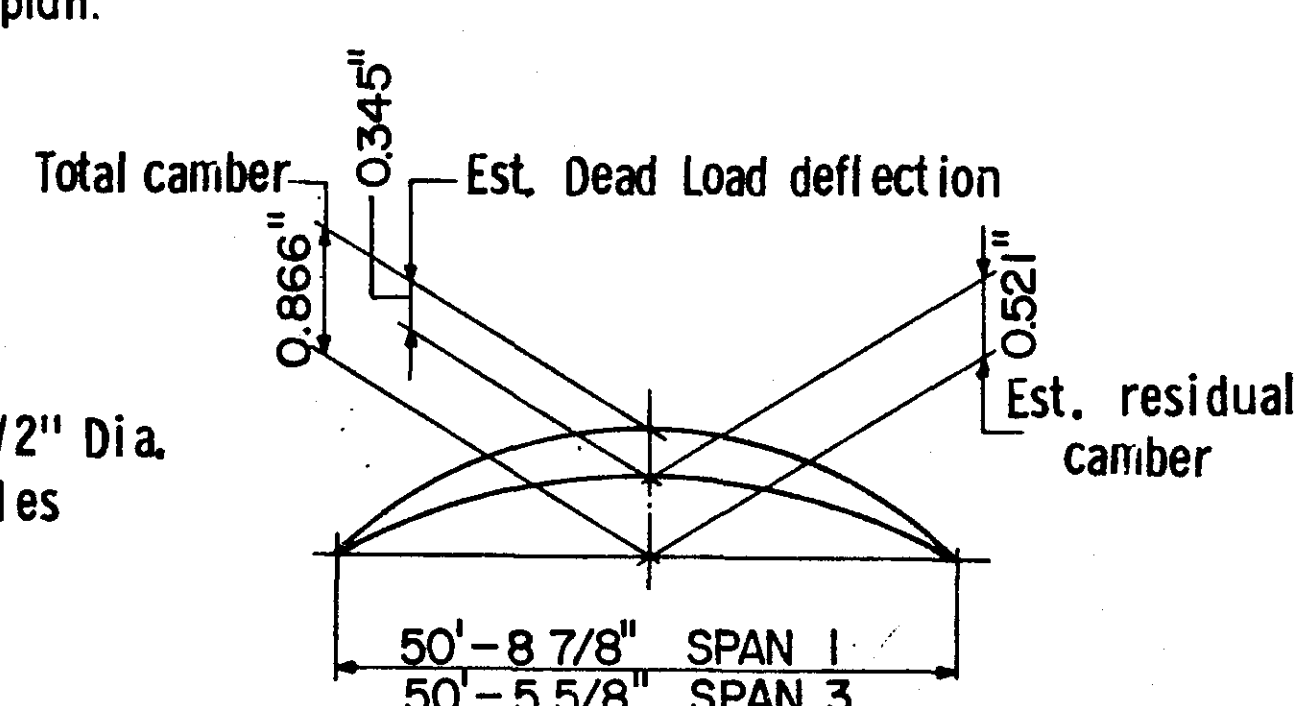


SECTION X-X

USE AT FASCIA BEAM AND INTERIOR BEAM WITH STAGGERED DIAPHRAGMS

Nuts and rods per Spec. 3306. No paint

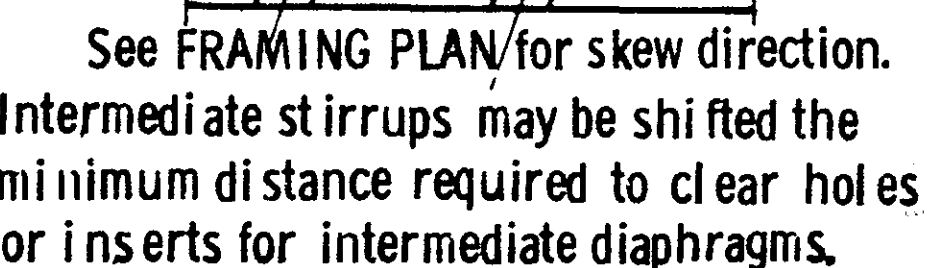
SECTION Z-Z



CAMBER DIAGRAM

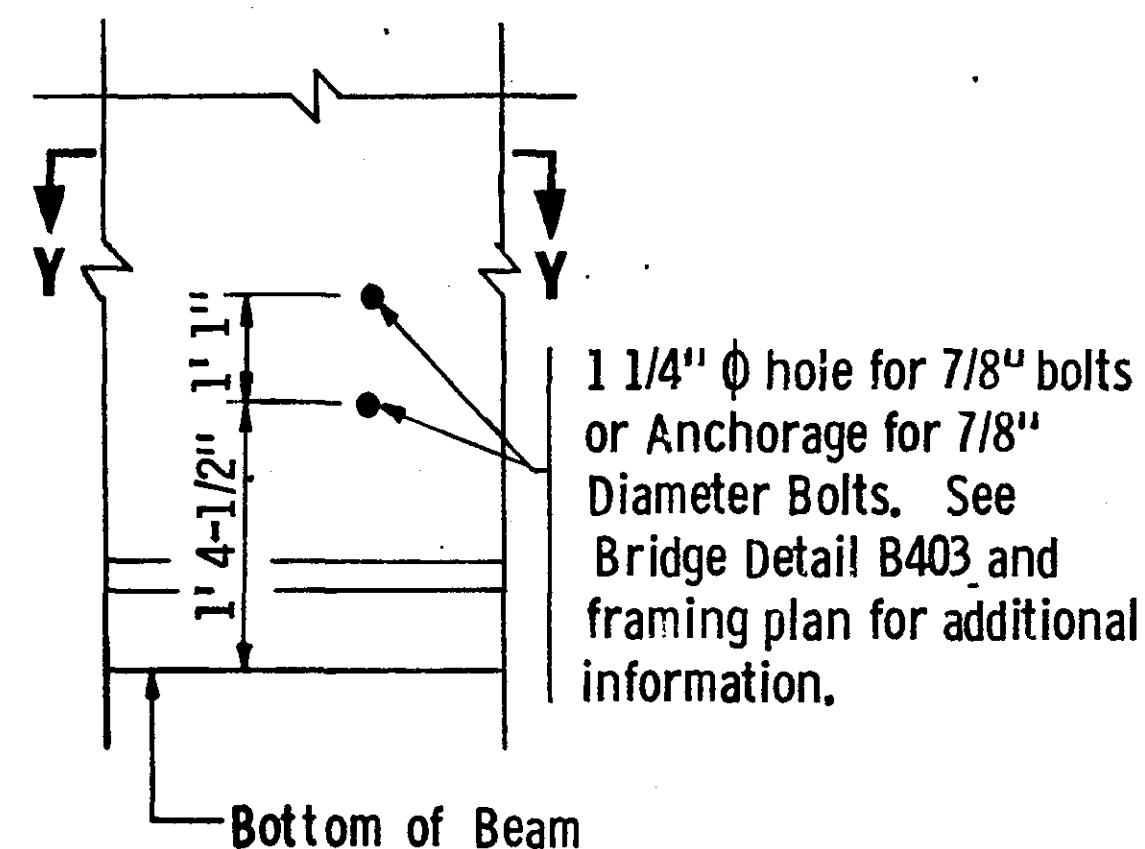
SECTION X-X

USE AT INTERIOR BEAM WITH CONTINUOUS CONCRETE DIAPHRAGM

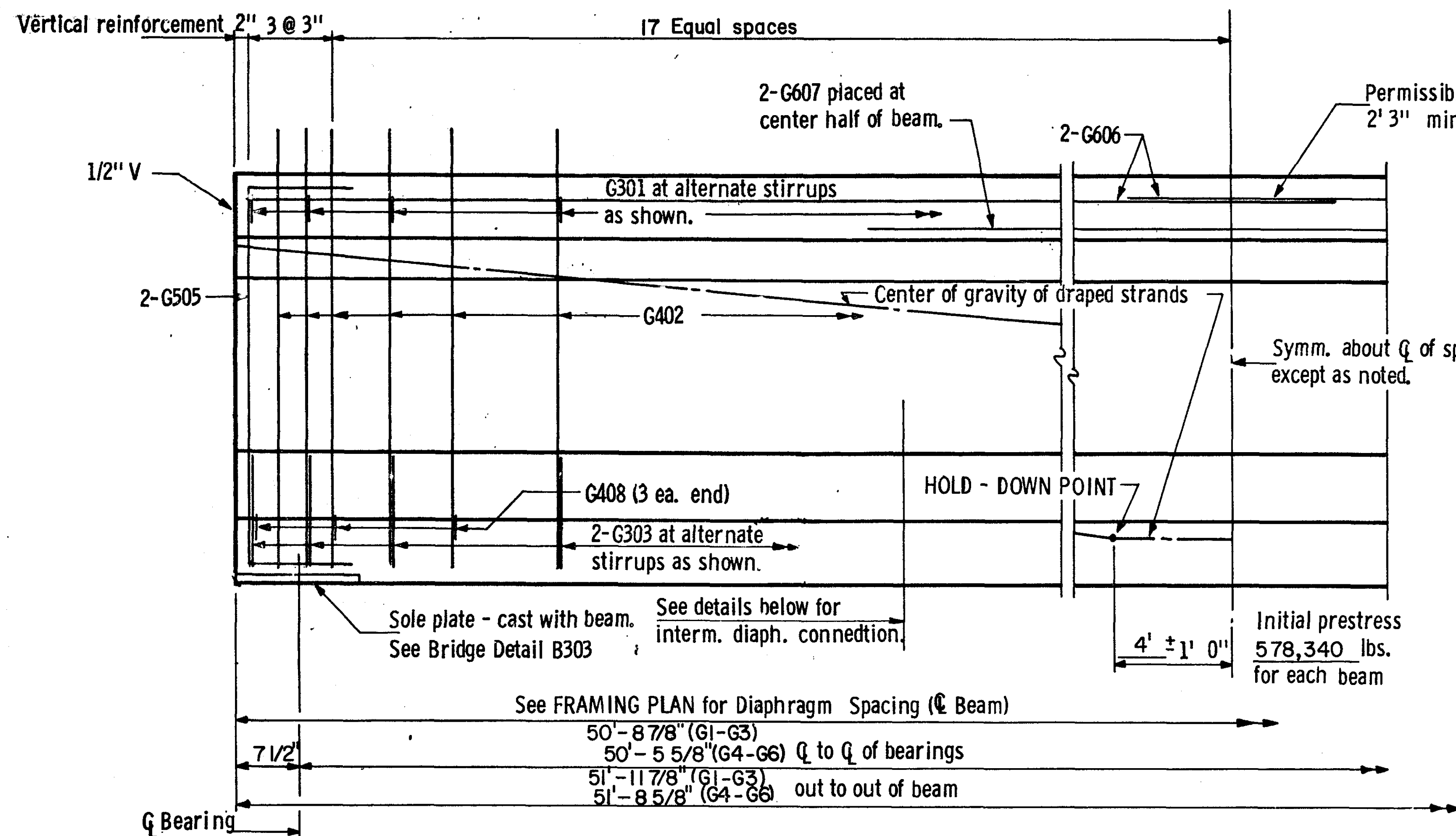
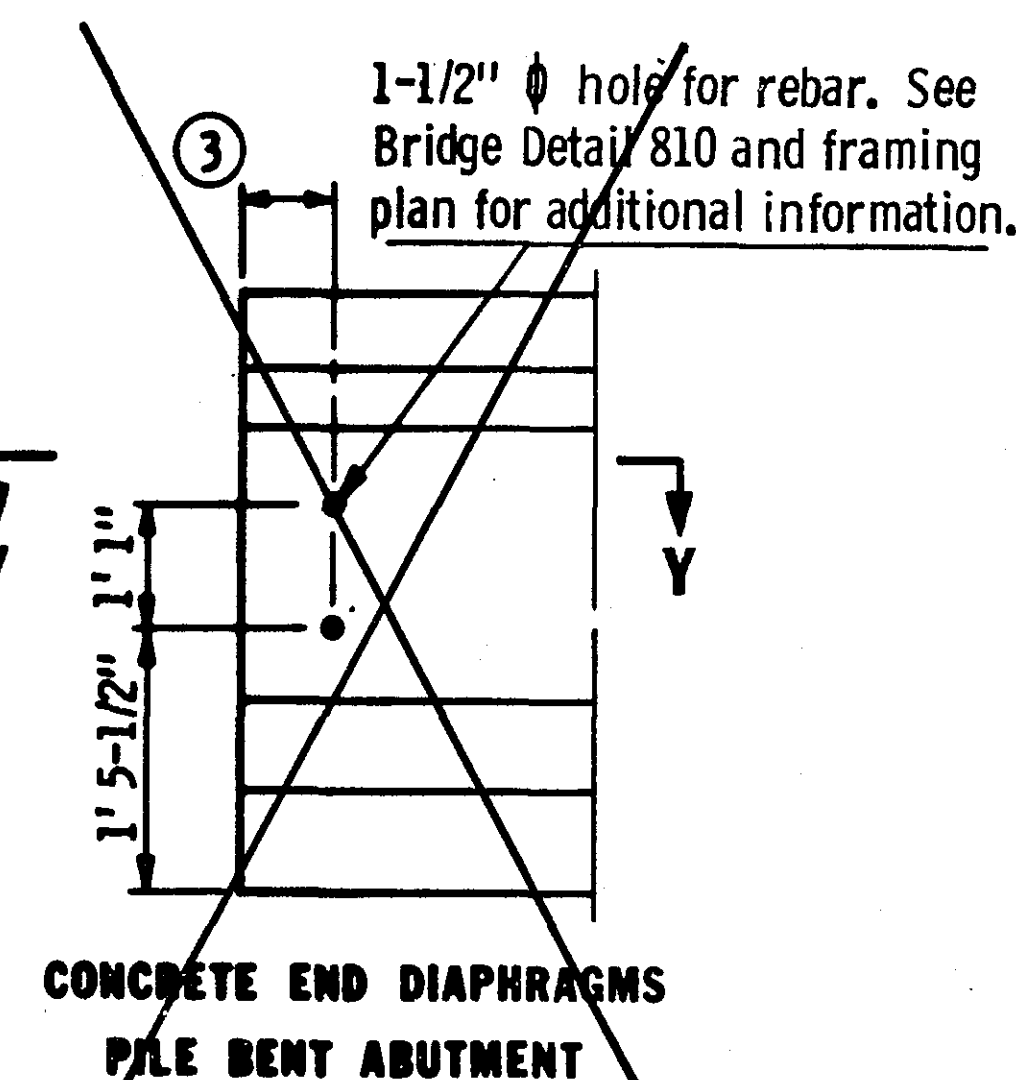


Intermediate stirrups may be shifted the minimum distance required to clear holes or inserts for intermediate diaphragms.

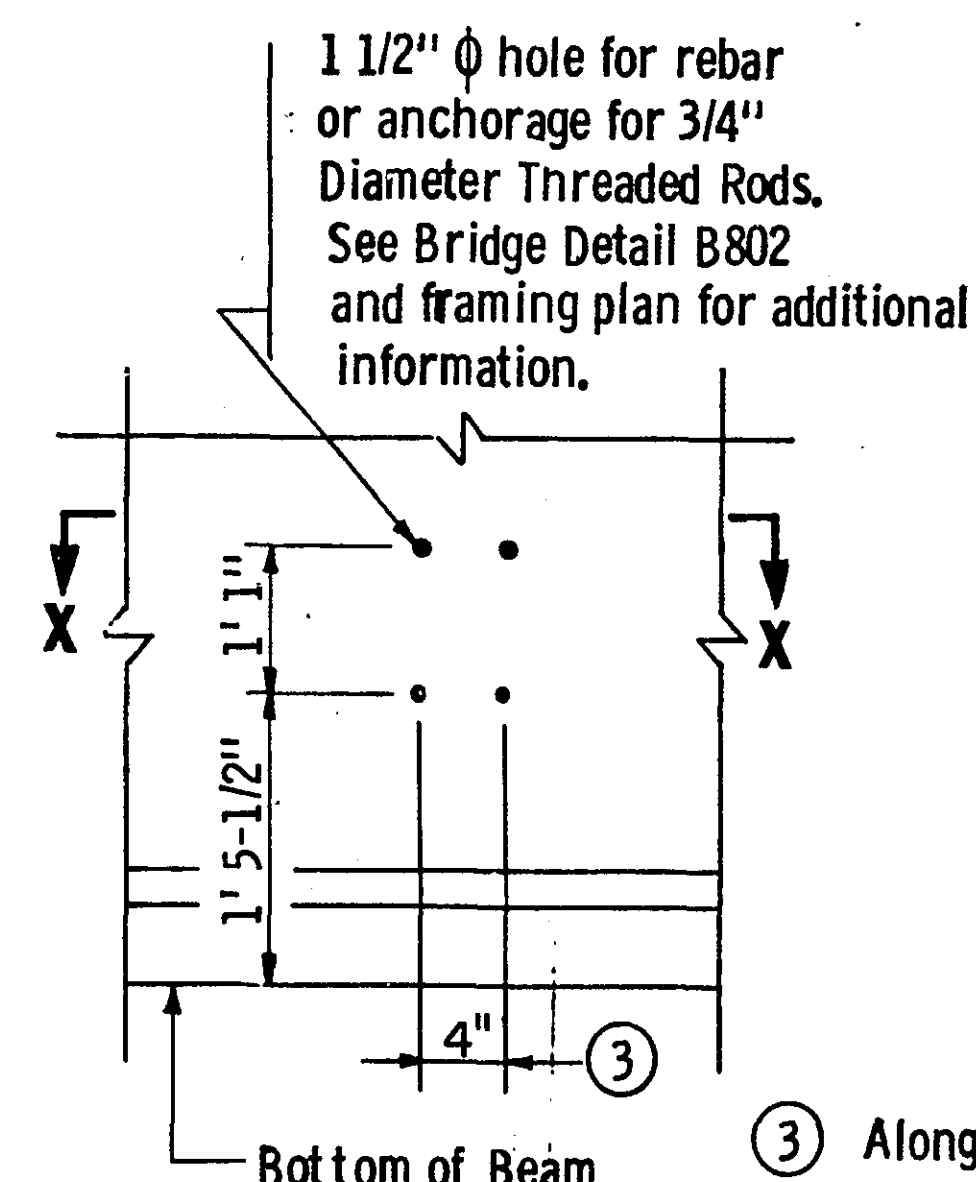
SECTION Y-Y USE AT INTERIOR BEAM WITH STEEL DIAPHRAGM



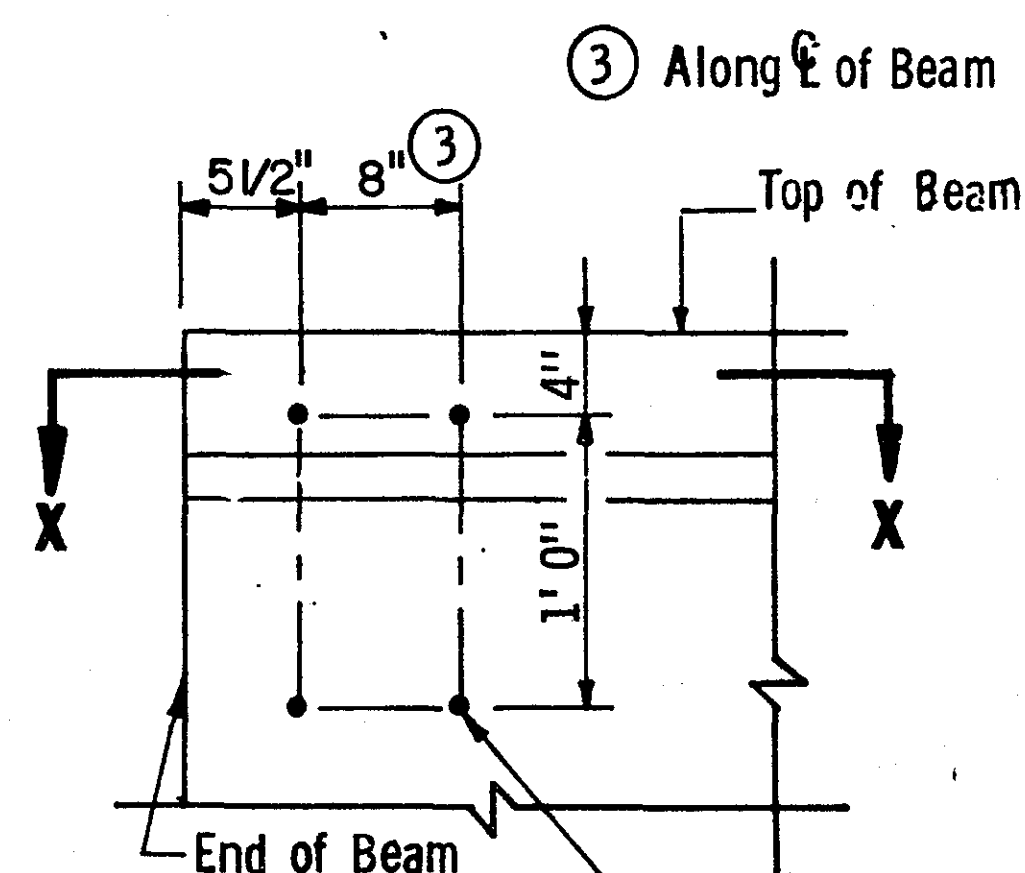
FOR USE WITH STEEL INTERMEDIATE DIAPHRAGM



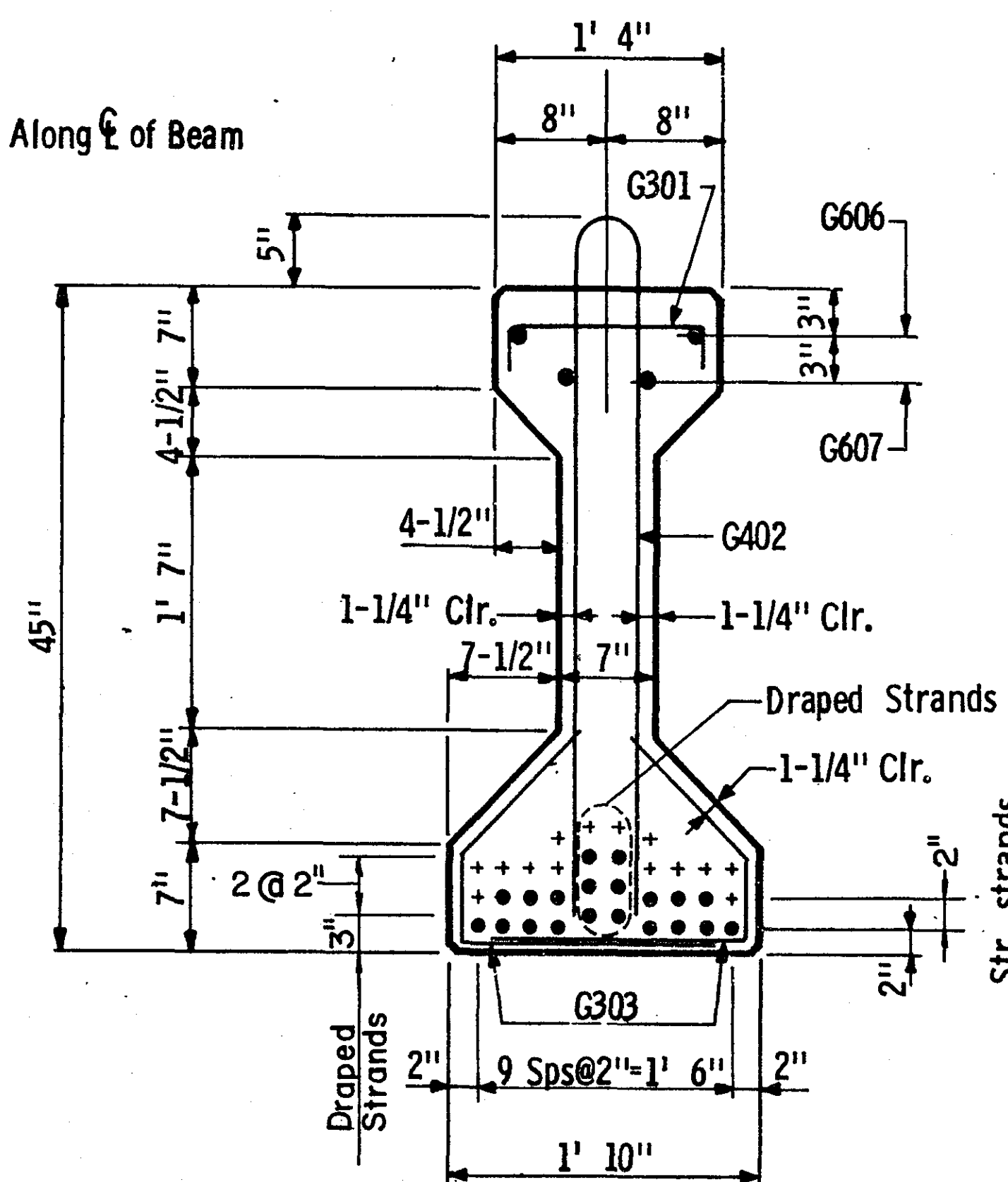
HALF ELEVATION



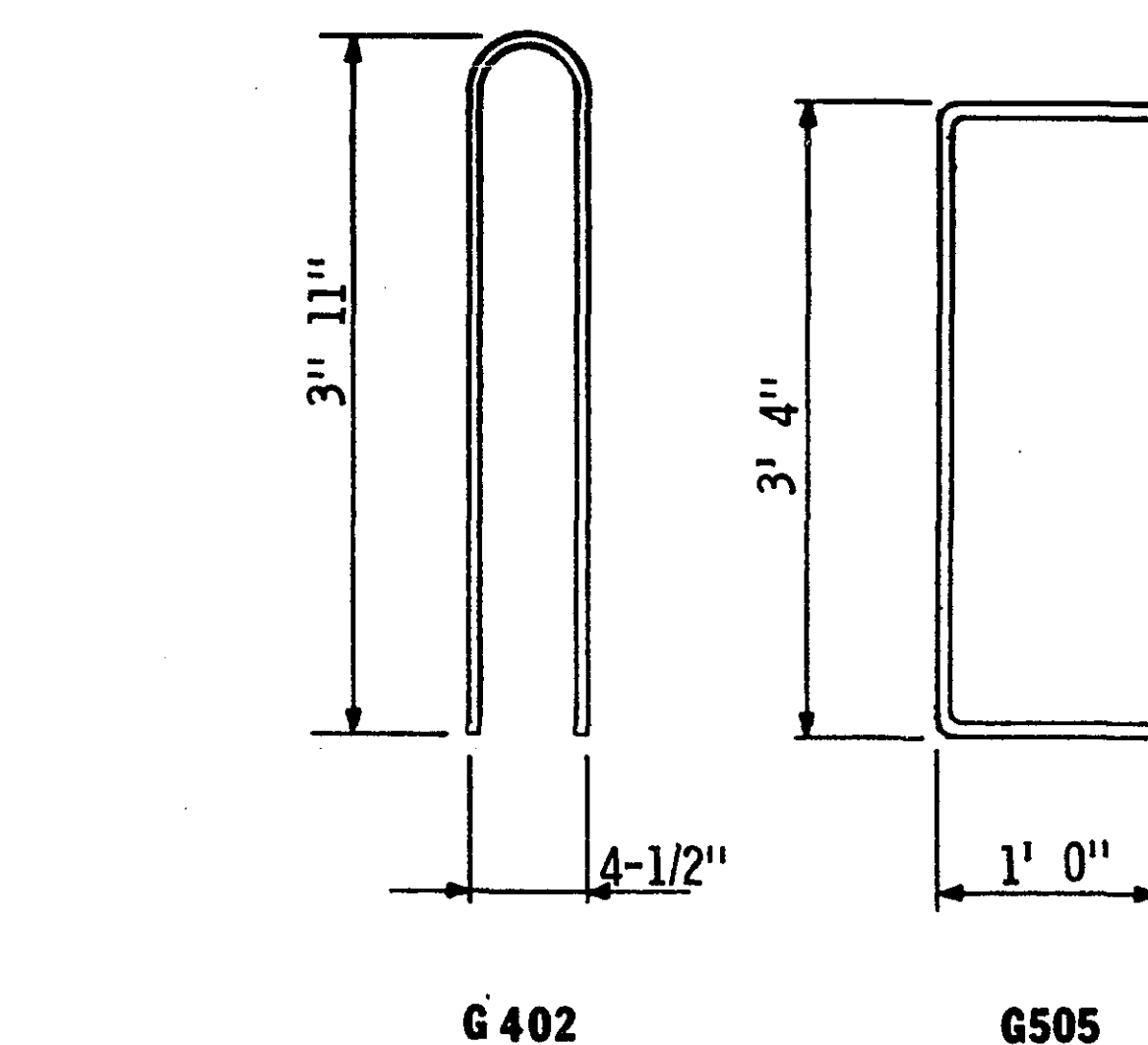
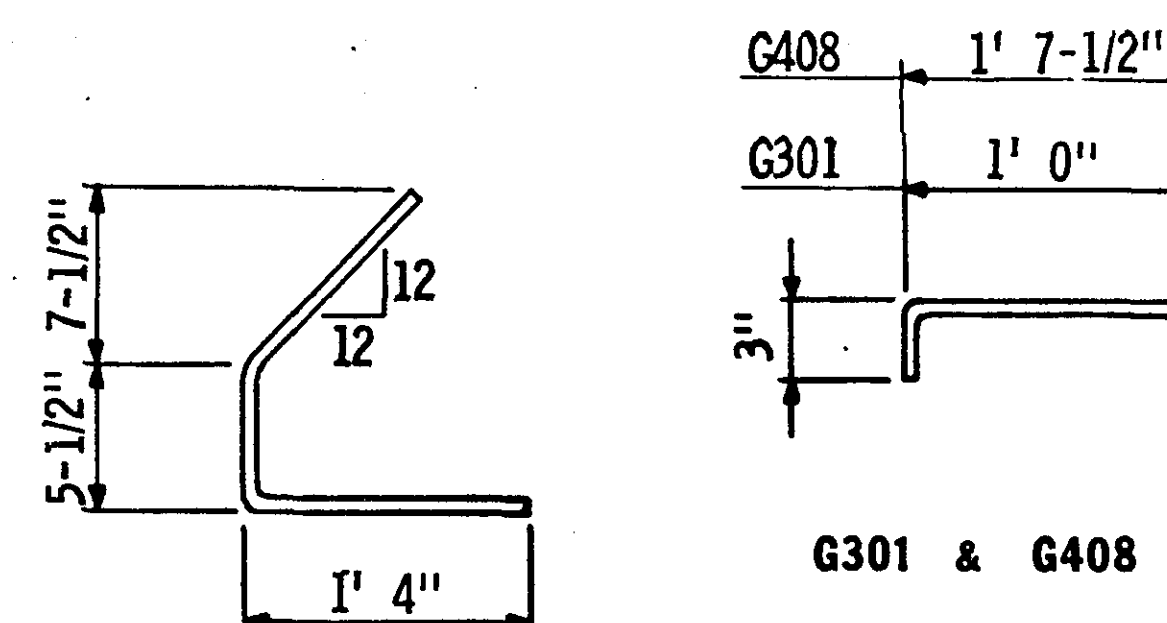
FOR USE WITH CONCRETE INTERMEDIATE DIAPHRAGM



CONCRETE END DIAPHRAGMS PARAPET ABUTMENT



SECTION AT Q BEAM



First digit of bar mark indicates bar size. All bar dimensions are out-to-out.

Y DISTANCES (IN INCHES)			
	NO.	Q SPAN	END
Straight strands	14	2.86	
Draped strands	6	5.00	38.00
Total strands	20	3.50	

Y = distance of Center of Gravity of strands from bottom of beam. All strands spaced 2" c-c, horizontally and vertically except as noted.

All strands 1/2" ϕ 270 kip, ultimate strength

A tolerance of ± 2" will be permitted in this dimension

TITLE: 45" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 45-52

Bar	Wt.
G 301	.56 lb.
G 402	5.34 lb.
G 303	1.00 lb.
G 505	5.56 lb.
G 606	
G 607	
G 408	1.42 lb.

Girder Section Data	
Wt./ft. = 583 lbs.	
Cross sec. area at Q of span = 560 in. ²	
C. G. (from bottom) = 20.27 in.	
I = 125,390 in. ⁴	
S _B = 6,186 in. ³	
1/2" ϕ 270k strand wt./ft. = .525 lb.	
1/2" ϕ 270k strand area = .1531 sq. in.	

GENERAL NOTES:

Tops of beams shall be rough floated and broomed transversely for bond.

Provide handling hooks or devices as required by Contractor. Hooks or devices provided will be subject to approval of Engineer and shall be installed within 4' 0" of the end of beam.

A modified strand pattern or a bundled strand pattern which does not change center of gravity of strands may be submitted to the Engineer for approval.

A post-tensioned beam may be used as an alternate for the pretensioned design shown. Designer will provide plans for the post-tensioned alternate on request.

Each beam shall be marked, showing bridge number, casting date, and individual identification letters and numbers. Markings shall be made on the face of the beam, near the end, so located that they will be exposed after the end diaphragms have been cast. Fascia beams shall be marked on an inside face. All markings shall be stencilled and be clearly legible. For location of beams, see framing plan.

All material and work shown or noted on this sheet shall be included in unit price bid for prestressed concrete beams. See Spec. 2405.

See framing plan for beam ends marked "X".

Approximate weight of beam 15.2 tons.

As an alternate to the diaphragm anchorages shown, the contractor may submit details of a cast-in-place anchorage to the engineer for approval. Anchorage must provide an ultimate pull out strength of 15 kips per anchorage.

MINIMUM CONCRETE STRENGTH - P.S.I.

	① f'ci	② f'c
Required min. Concrete Strength	4,000	5,000

① Minimum concrete strength at time of prestress transfer.

② Minimum concrete strength when curing can be discontinued and beam transported and installed.

Fig. 5-397.504

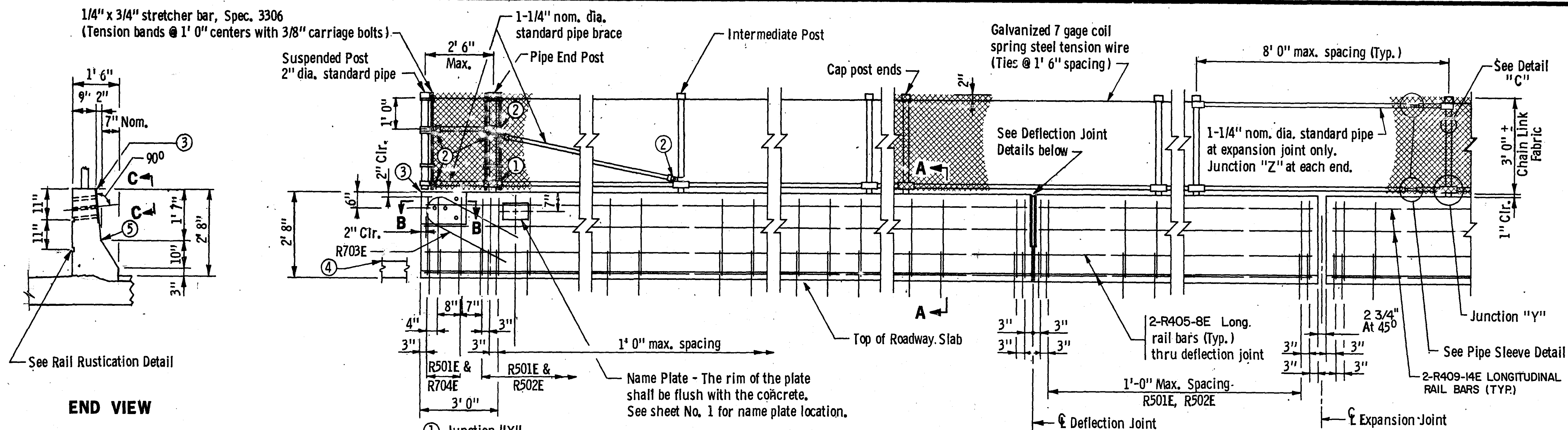
Revised: Sept. 11, 1981

Approved: May 13, 1977

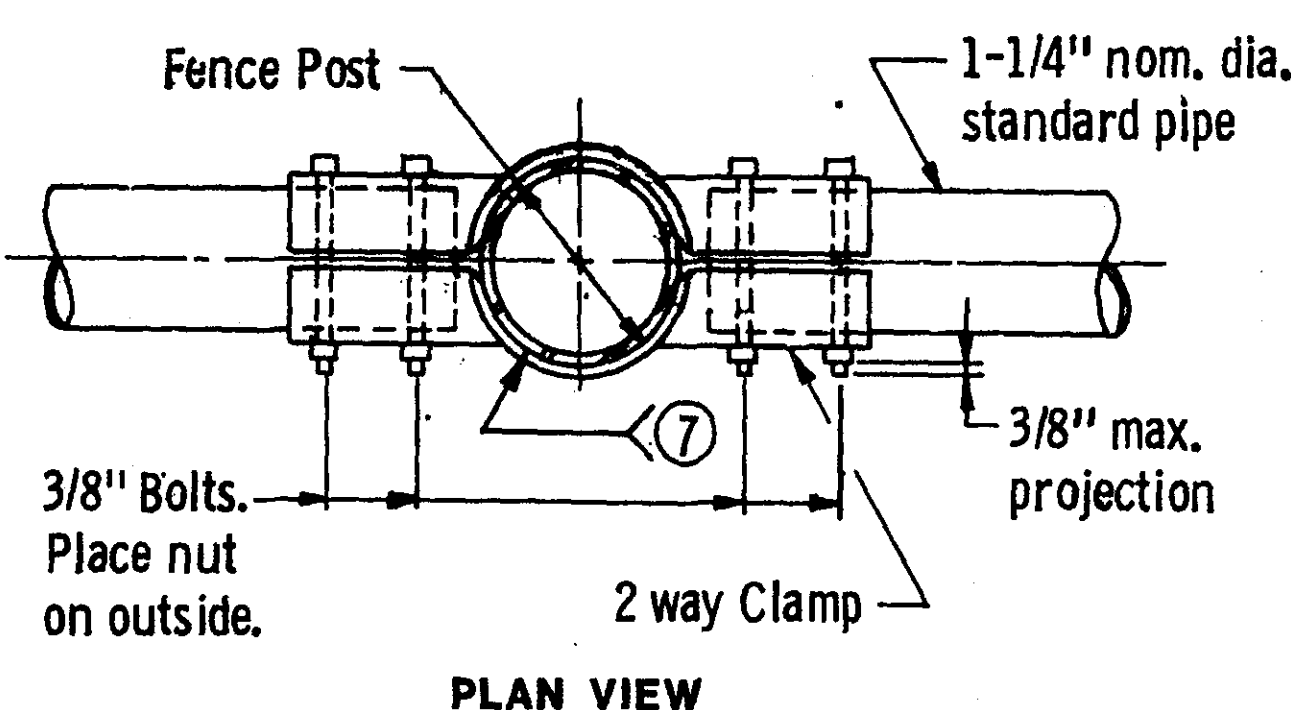
DES: J.P.	DR: D.F.	APPROVED: 6-12-87	Bridge No. 62543
CHK: B.J.	CHK: J.P.		

Sheet No. 9 of 21 Sheets

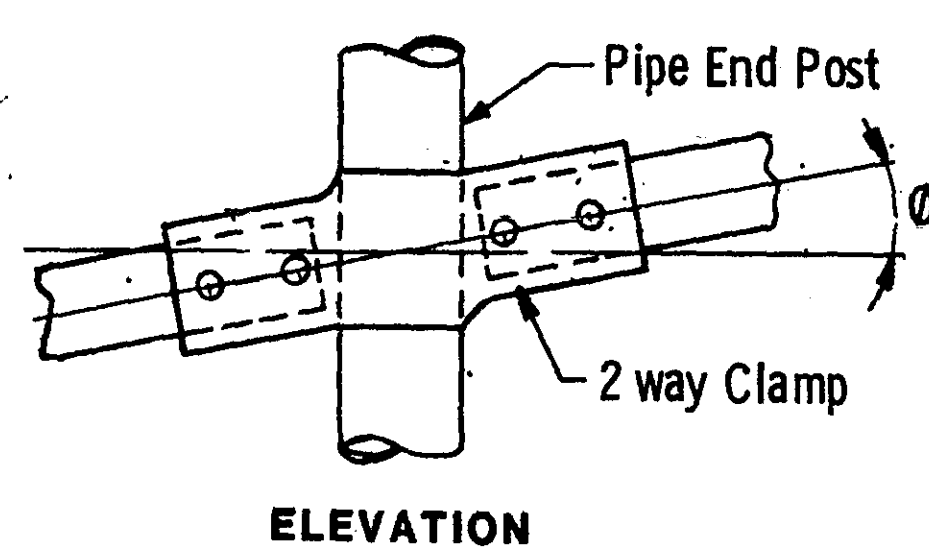




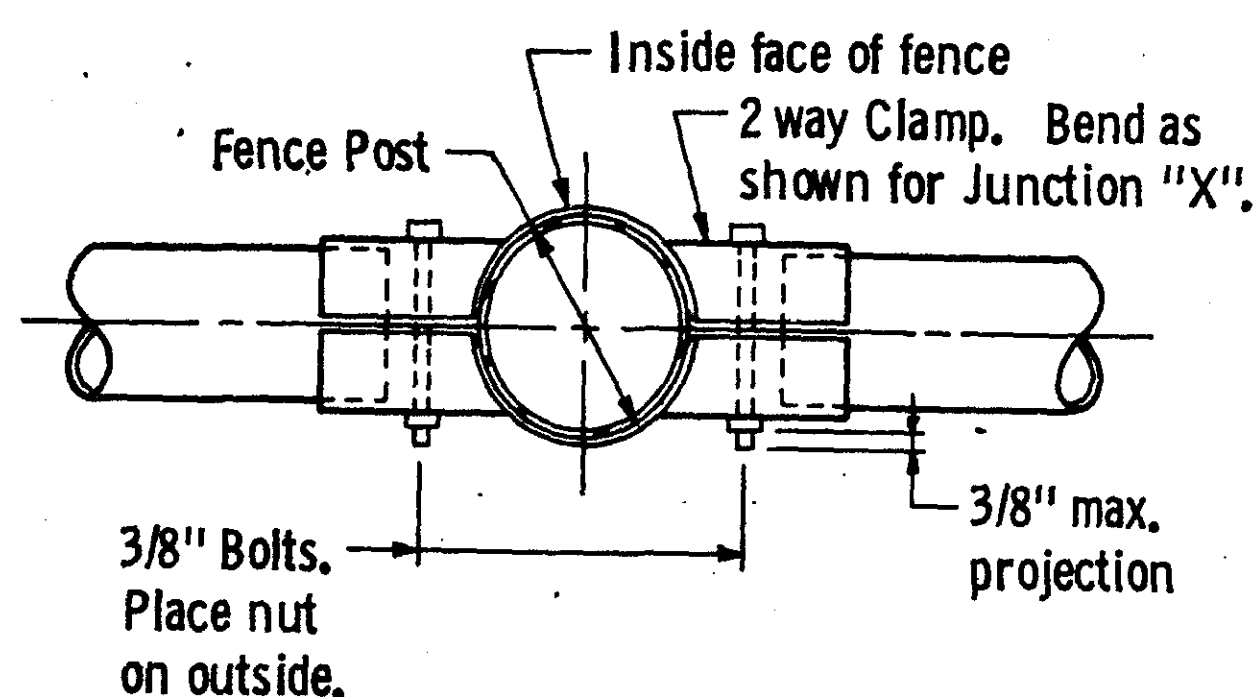
END VIEW



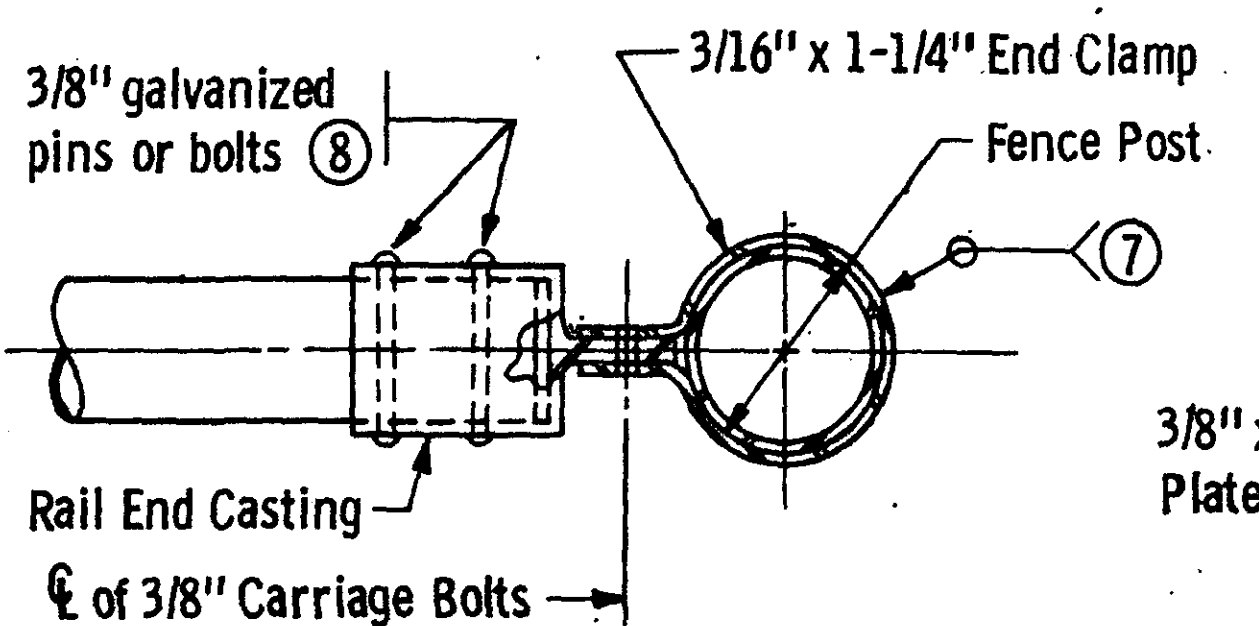
PLAN VIEW



ELEVATION
JUNCTION "X"



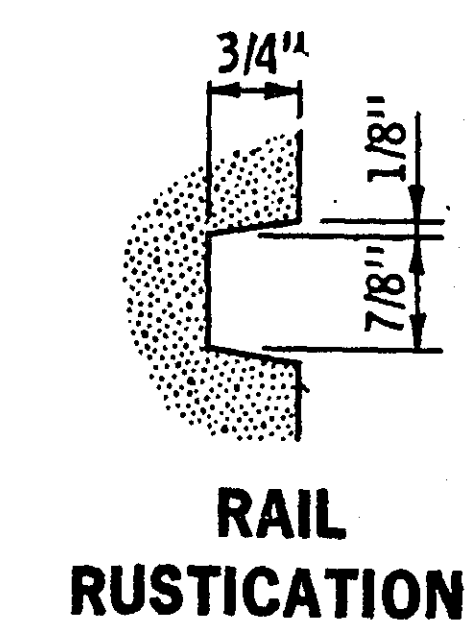
JUNCTION "Y"



JUNCTION "Z"

- ⑦ Weld clamps to the posts between the end & suspended posts.
⑧ Provide two 3/8" dia. pins or bolts on the rail end castings between the end & suspended posts.

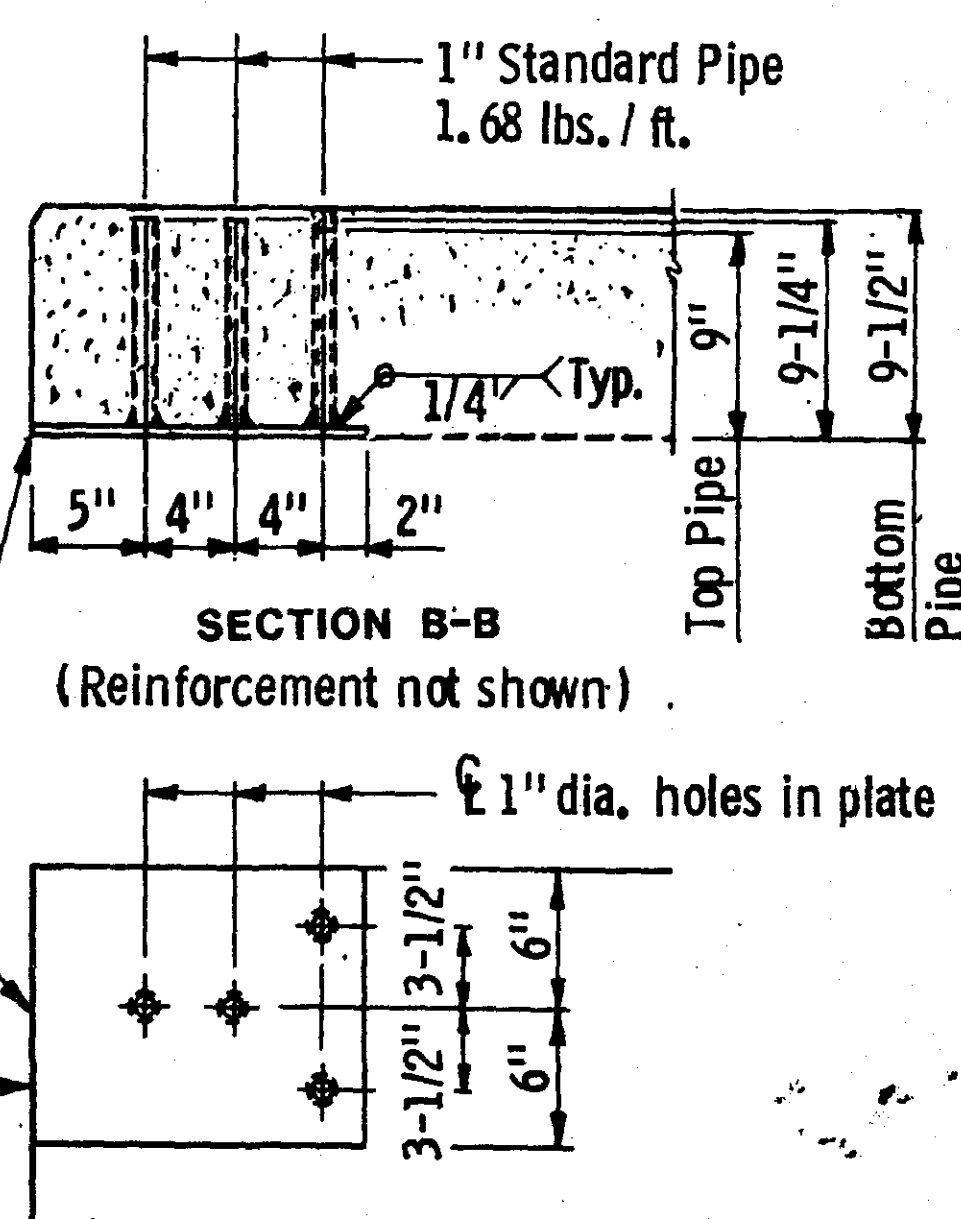
- ① Junction "X"
② Junction "Z"
③ See guardrail connection detail
④ Top of approach curb
⑤ 6" Minimum, 10" Maximum Radius



RAIL
RUSTICATION

2-WAY CLAMP
BENDING TABLE

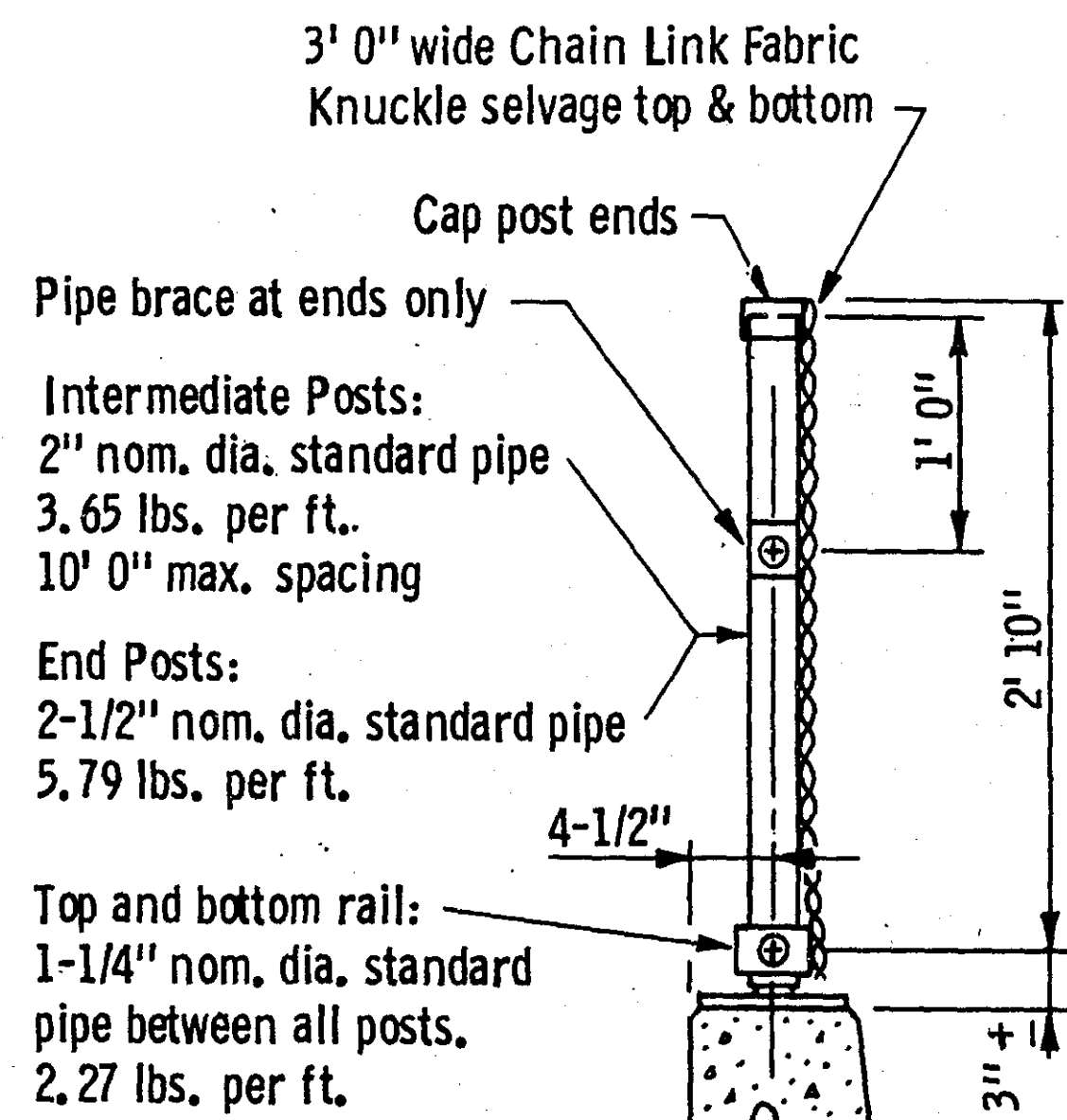
Grade of Fence	θ
0° to 20°	0°
20° to 60°	40°
60° to 100°	80°



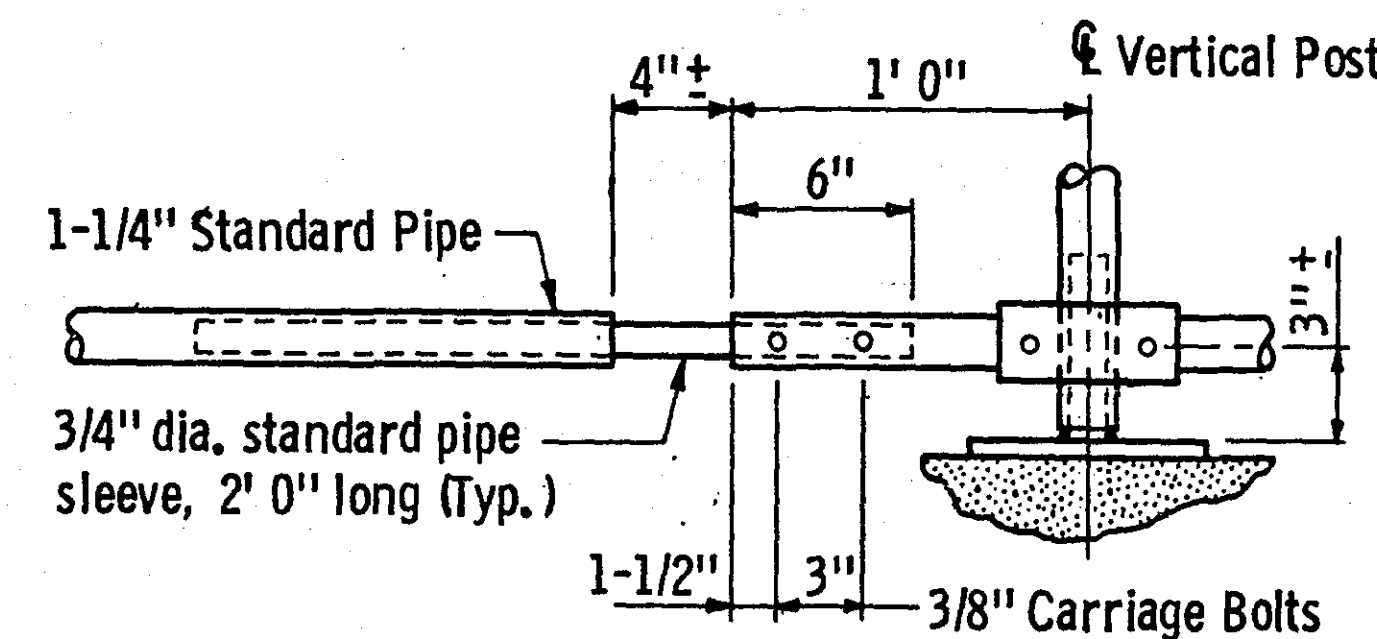
GUARDRAIL CONNECTION DETAIL
Estimated Weight = 23 lbs.

INSIDE ELEVATION OF RAILING
INTEGRAL END POST

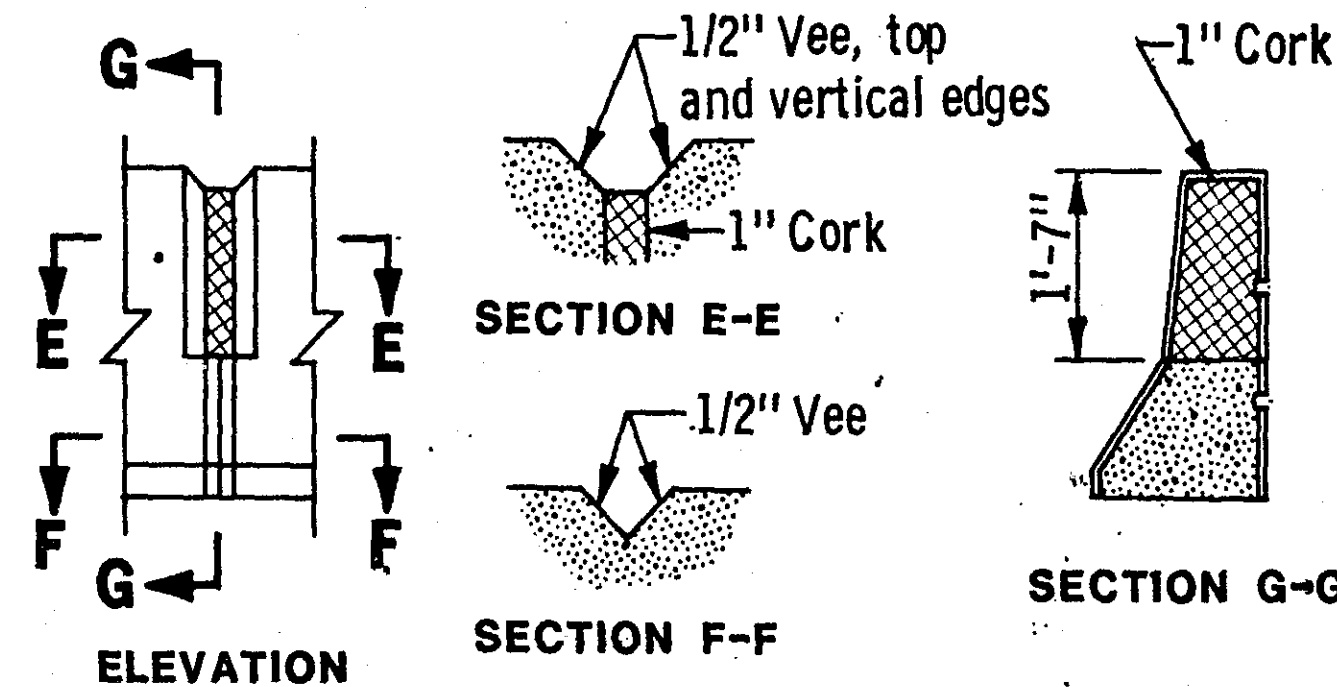
Conc. Railing = 0.100 Cu. Yds. per ft.
and 405 lbs. per ft.



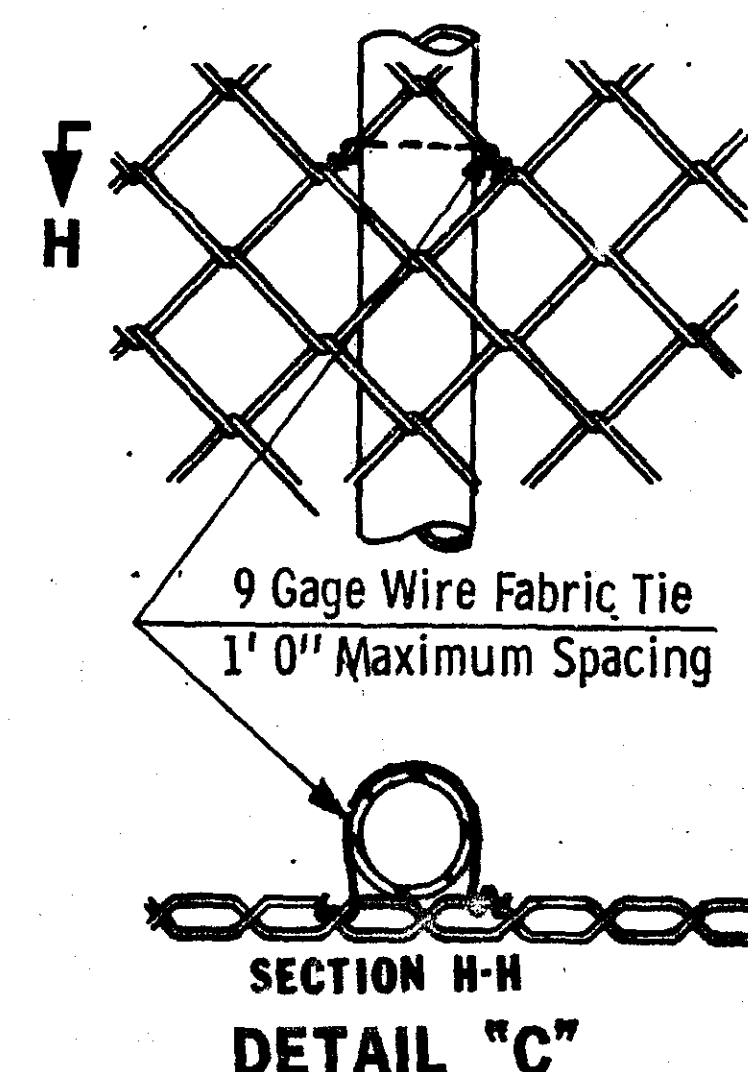
TYPICAL SECTION THRU FENCE
(Intermediate Post Shown)



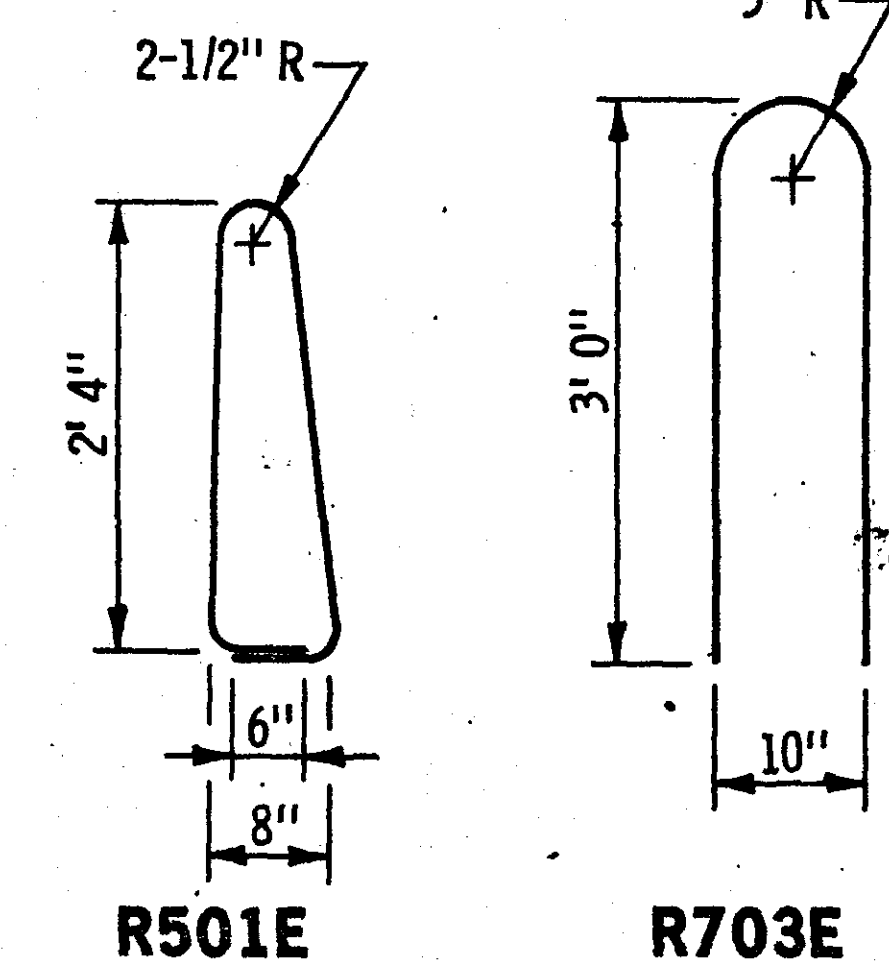
PIPE SLEEVE DETAIL
For 4" maximum bridge expansion



DEFLECTION JOINT DETAILS



DETAIL "C"

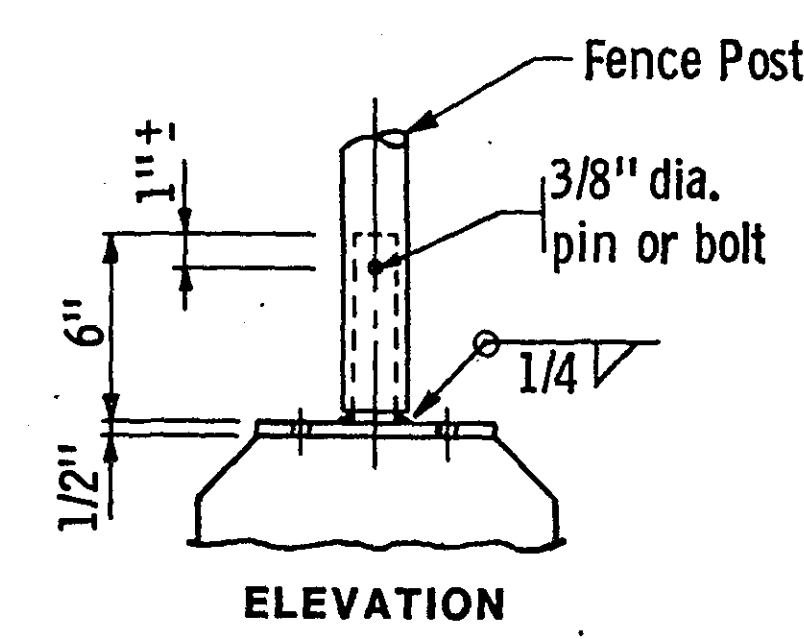


R501E

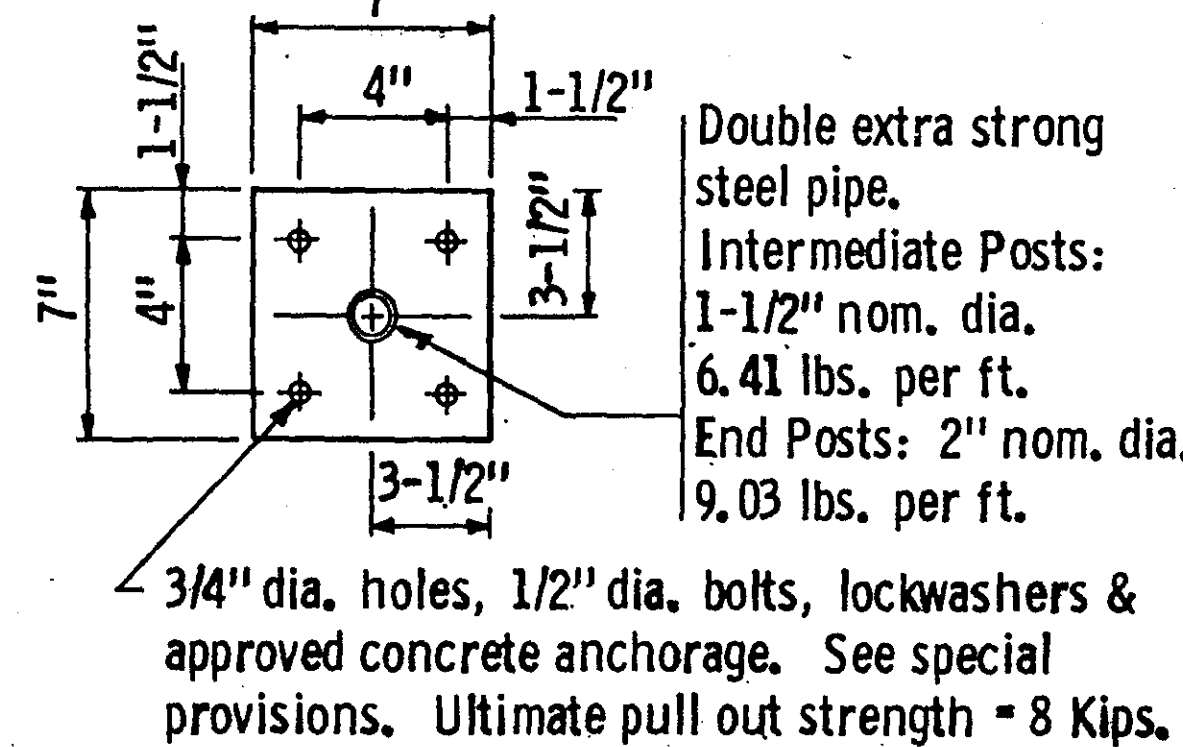
R703E

EXPANSION JOINT

The expansion device is not shown.
An expansion joint is required only
if an expansion device is used.
Provide pipe sleeve in span between
the vertical posts at expansion joint.
See Superstructure Sheets for location.



ELEVATION



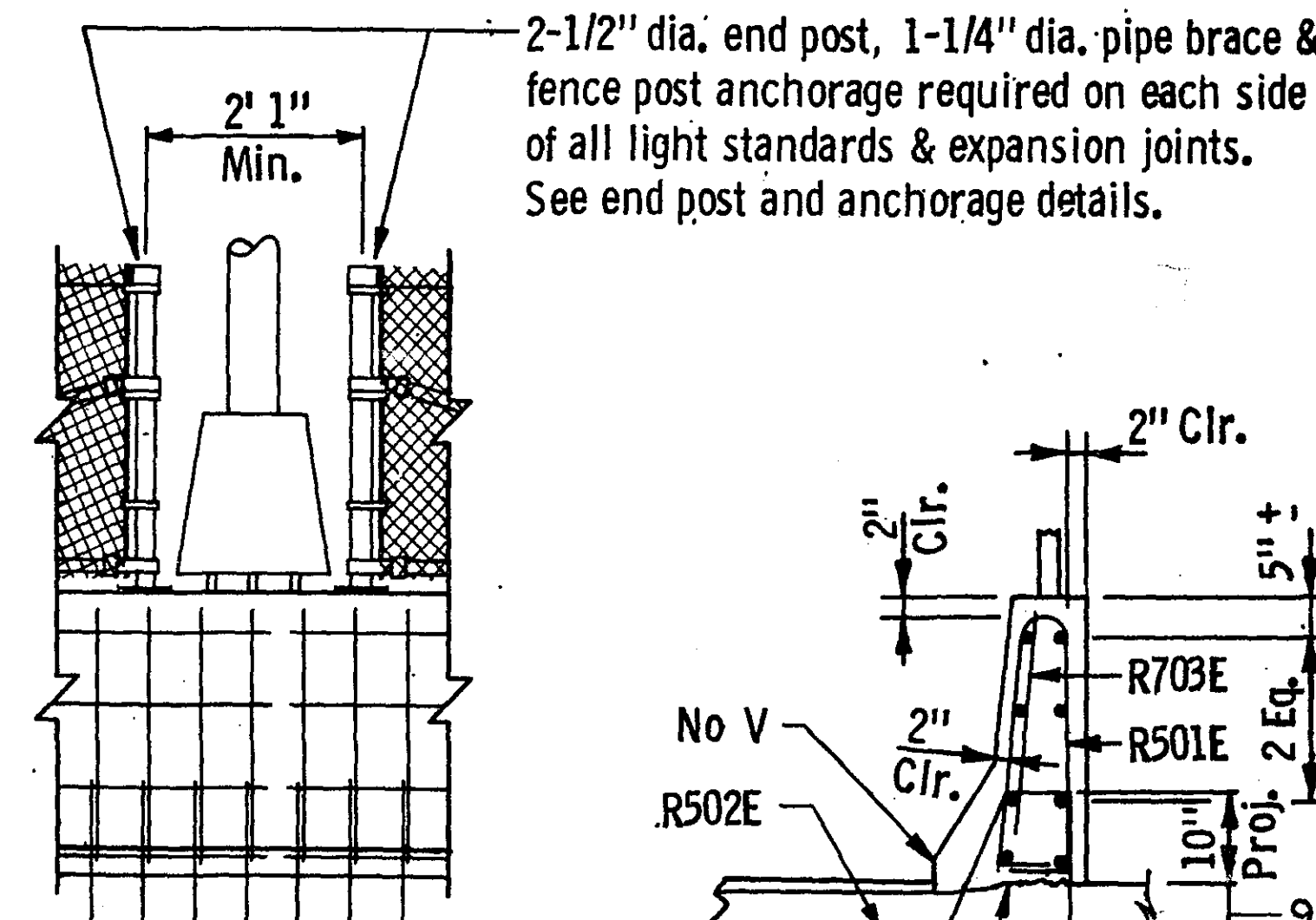
PLAN VIEW

FENCE POST ANCHORAGE ⑨

Estimated Weight = 10 or 11 lbs.
Structural Steel per Spec. 3306
Structural Pipe per Spec. 3362

R502E & R704E

TITLE: BIKEWAY RAILING
CONCRETE (TYPE J) & FENCE
Integral End Post
Wearing Course



LIGHT STANDARD

Construction Joint
Rough Finish

SECTION A-A

BILL OF REINFORCEMENT FOR RAILING

BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	606	6' 1"	Bent	Rail Vertical
R502E	590	5' 6"	Bent	Rail Vertical
R703E	4	6' 6"	Bent	Integral End Post
R704E	12	5' 6"	Bent	Integral End Post
R405E	48	32'-6"	Straight	Rail Longitudinal
R406E	8	21'-4"	Straight	Rail Longitudinal
R407E	4	23'-0"	"	"
R408E	4	31'-10"	"	"
R409E	48	17'-0"	"	"
R410E	40	16'-0"	"	"
R411E	16	1'-0"	"	"
R412E	8	15'-0"	"	"
R413E	8	19'-8"	"	"
R414E	4	21'-6"	"	"

GENERAL NOTES

Finish all edges of rail with 1/2" vee except where otherwise noted.

Galvanize the fence post anchorage after fabrication per Mn. / D.O.T. Spec 3394. Galvanize the fasteners per Mn. / D.O.T. Spec 3392

All posts shall have a means to securely hold the top tension wire in position and allow for the removal and replacement of a post without damaging the top wire.

Wire ties may be 9 gage galvanized steel or 0.179" minimum aluminum alloy conforming to ASTM B211, Alloy 1100-H18. Use 12-1/2 gage galvanized hog rings for tension wire ties.

End Post bracing is not to exceed 500 ft. maximum interval.

Concrete in the rail base shall be Mix No. 3X46

For fence material, workmanship, galvanizing, and electrical grounds, see Special Provisions.

For spacing of fence posts, joints and electrical grounds, see superstructure sheets.

Fence posts and fence post anchorages shall be set vertical.

All material in the concrete base and anchorage is included in the superstructure quantities.

Electrical grounds, and all material above the concrete base is included in the price bid for Wire Fence, Design S-3.

The guard rail connection is included in the price bid for other items.

Maximum spacing of deflection joints shall be 20' 0".

The length of railing concrete is to be measured for payment between the outside faces of railing.

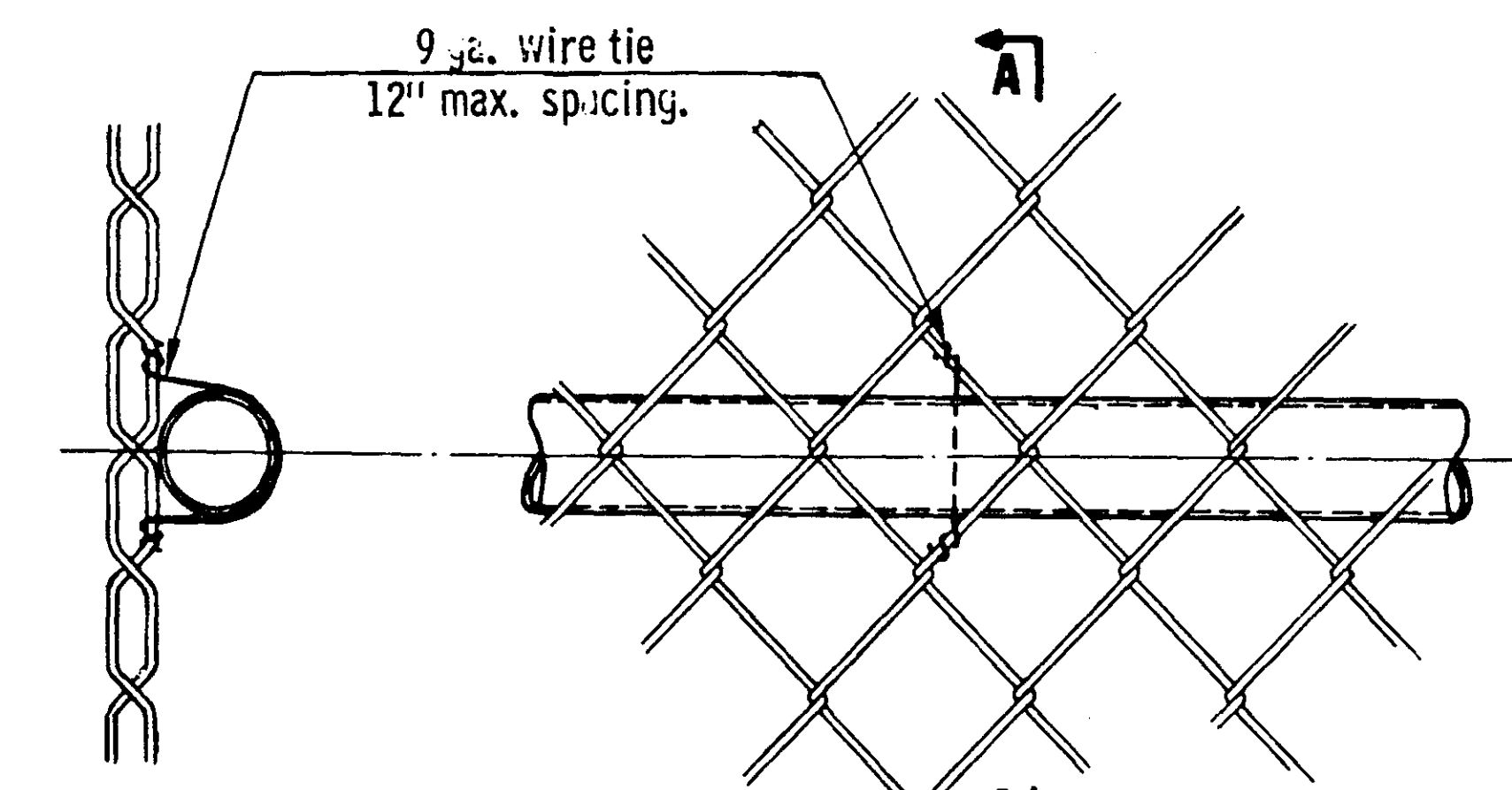
The length of Wire Fence for payment will be the horizontal dimension along the centerline of each fence between the centers of the pipe end posts. Suspended lengths at each end of railing are not to be included in the length for payment.

Guardrail connection is to be Structural Steel, Spec. 3306 and galvanized after fabrication per Spec. 3394

See Sht. 12 for electrical grounds.
Revised: April 5, 1983
Approved: October 12, 1981

FIG. 5-397.156

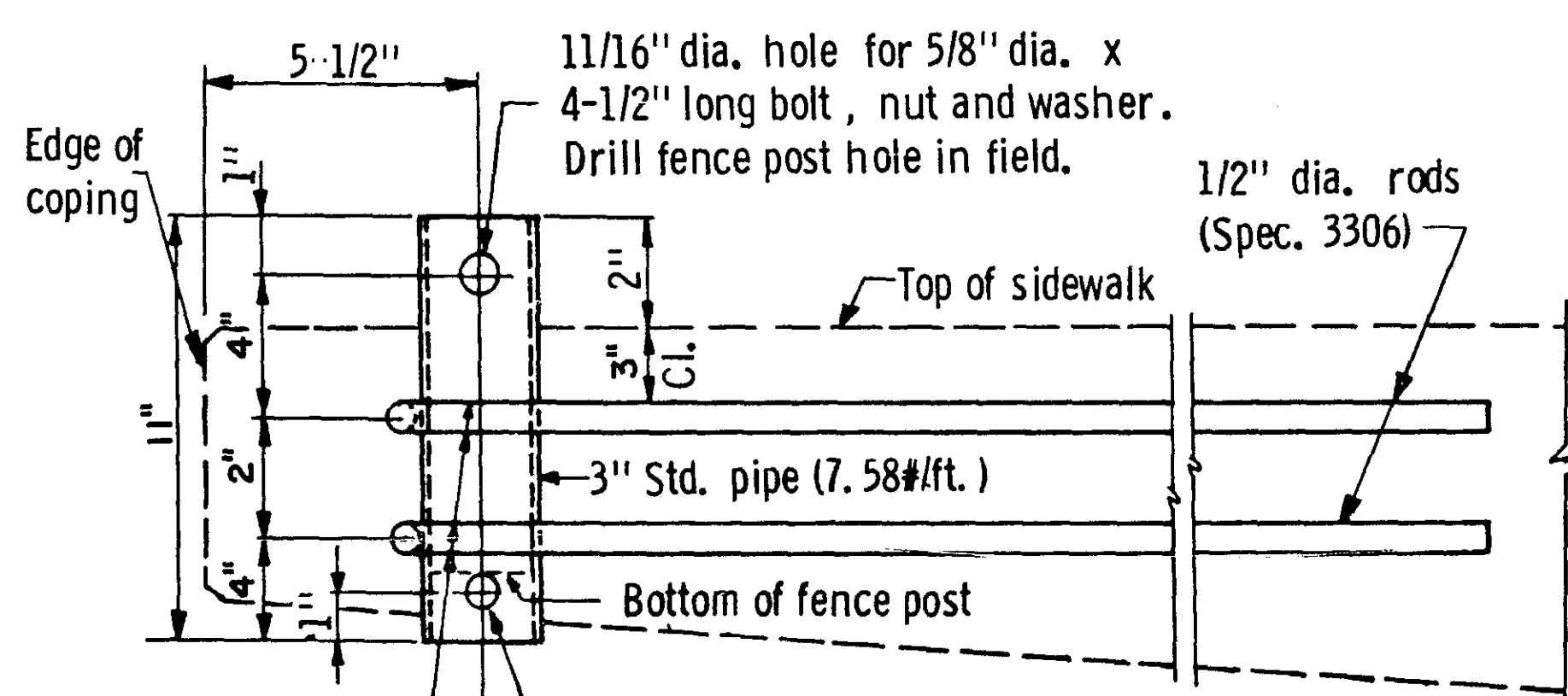
DES: J.P.	DR: J.P.	APPROVED:	Bridge No. 62543
CHK: J.J.	CHK: B.S.	6-12-97	
Sheet No. 11 of 21 Sheets			



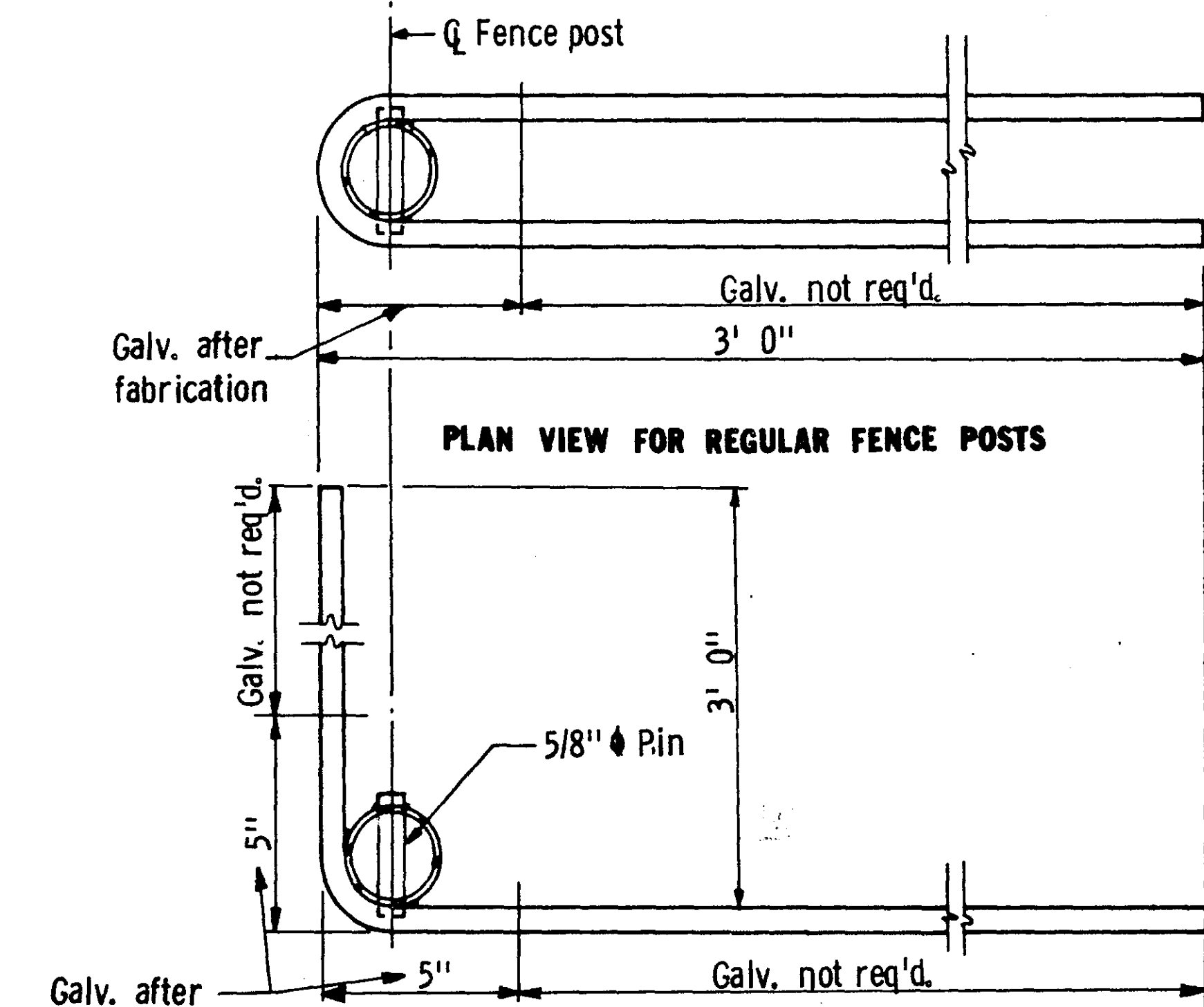
SECTION A-A

PART ELEVATION

FABRIC TIE



ELEVATION

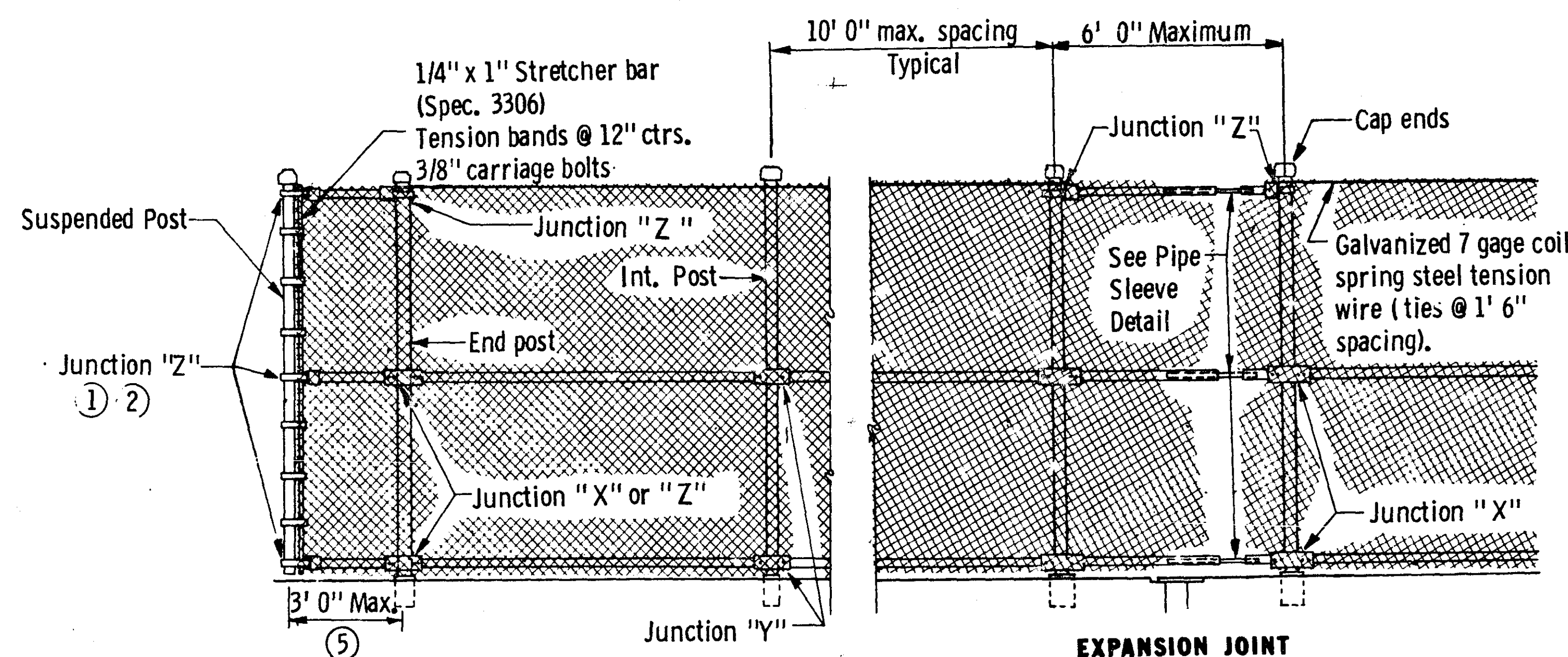


PLAN VIEW FOR REGULAR FENCE POSTS

PLAN VIEW FOR CORNER FENCE POSTS

PIPE ANCHORAGE FOR FENCE POSTS

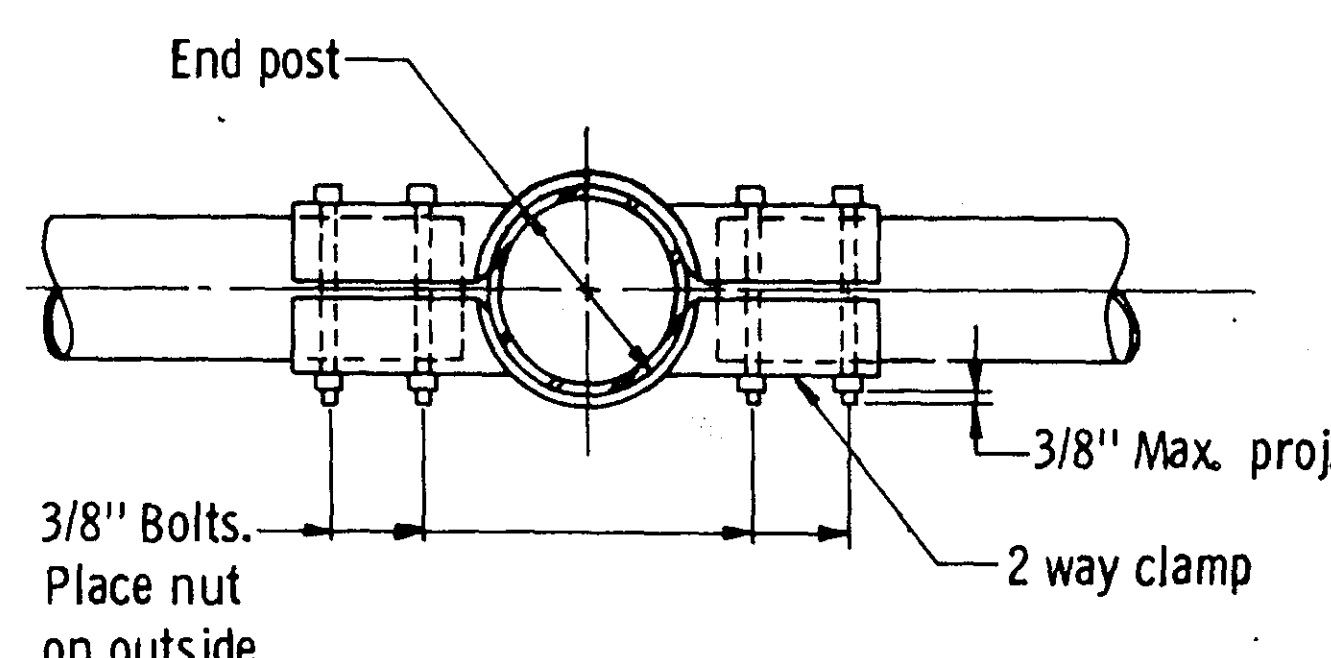
TYPE 1



⑤ Overhang is optional

PART ELEVATION

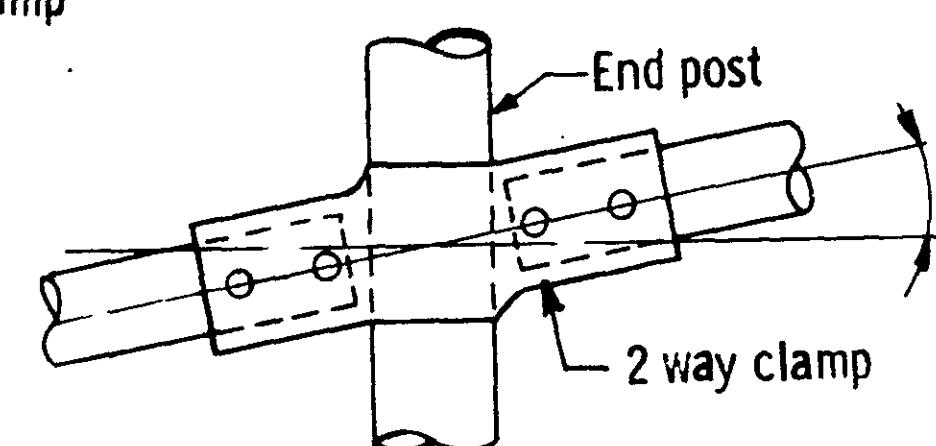
EXPANSION JOINT



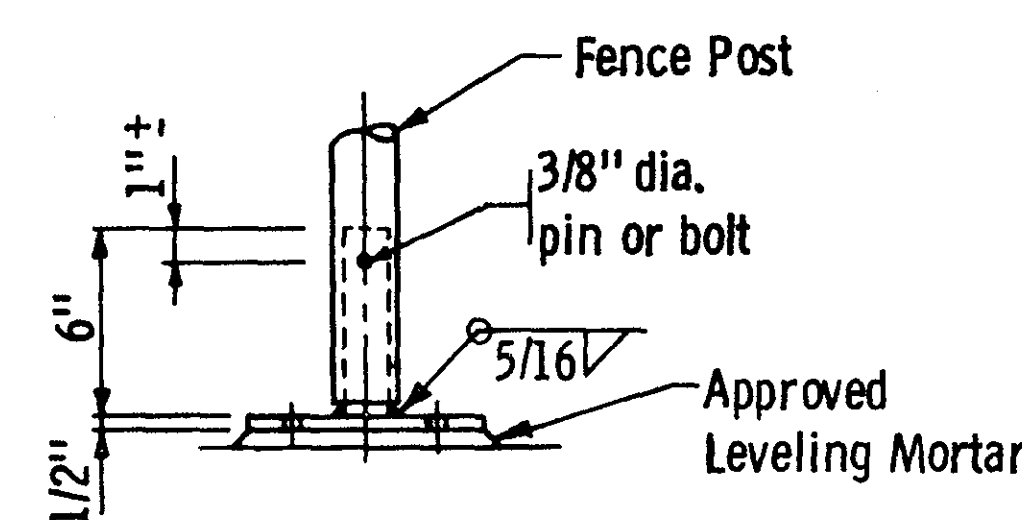
JUNCTION "X"

Bend 2 way clamp as follows:

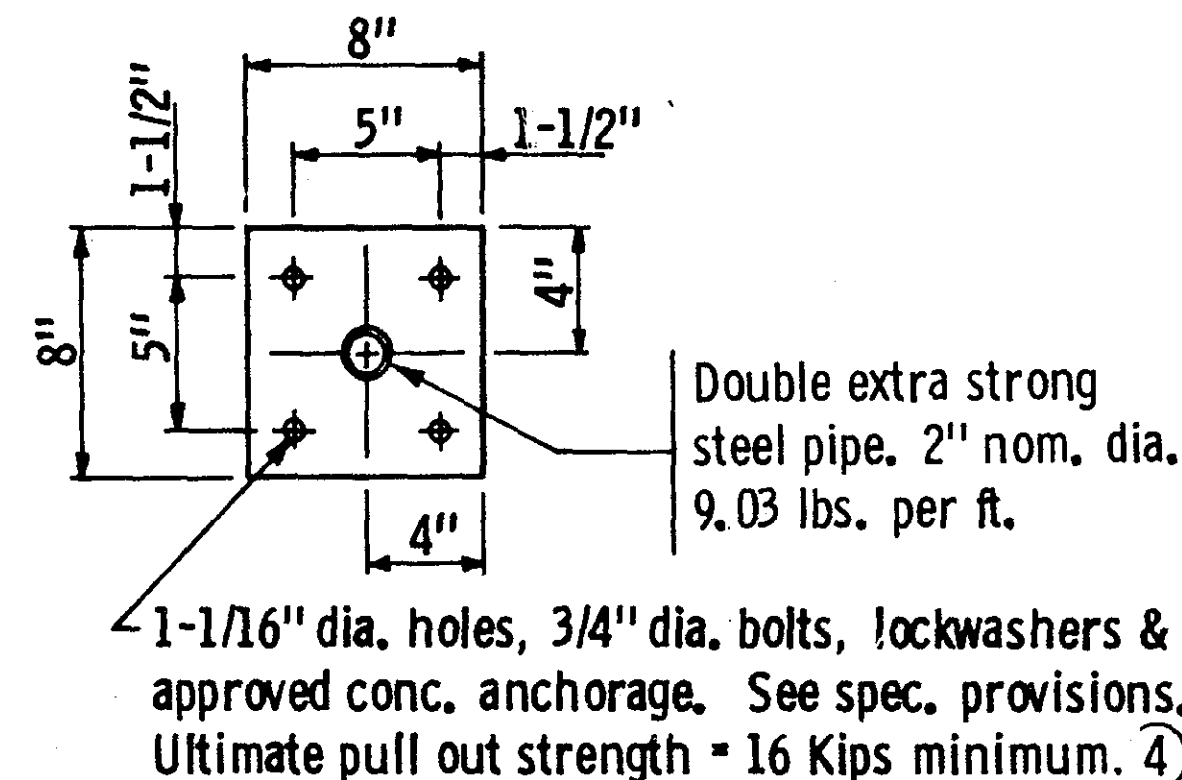
GRADE OF FENCE	θ
0° to 2°	0°
2° to 6°	4°
6° to 10°	8°



ELEVATION
JUNCTION "Y"



ELEVATION



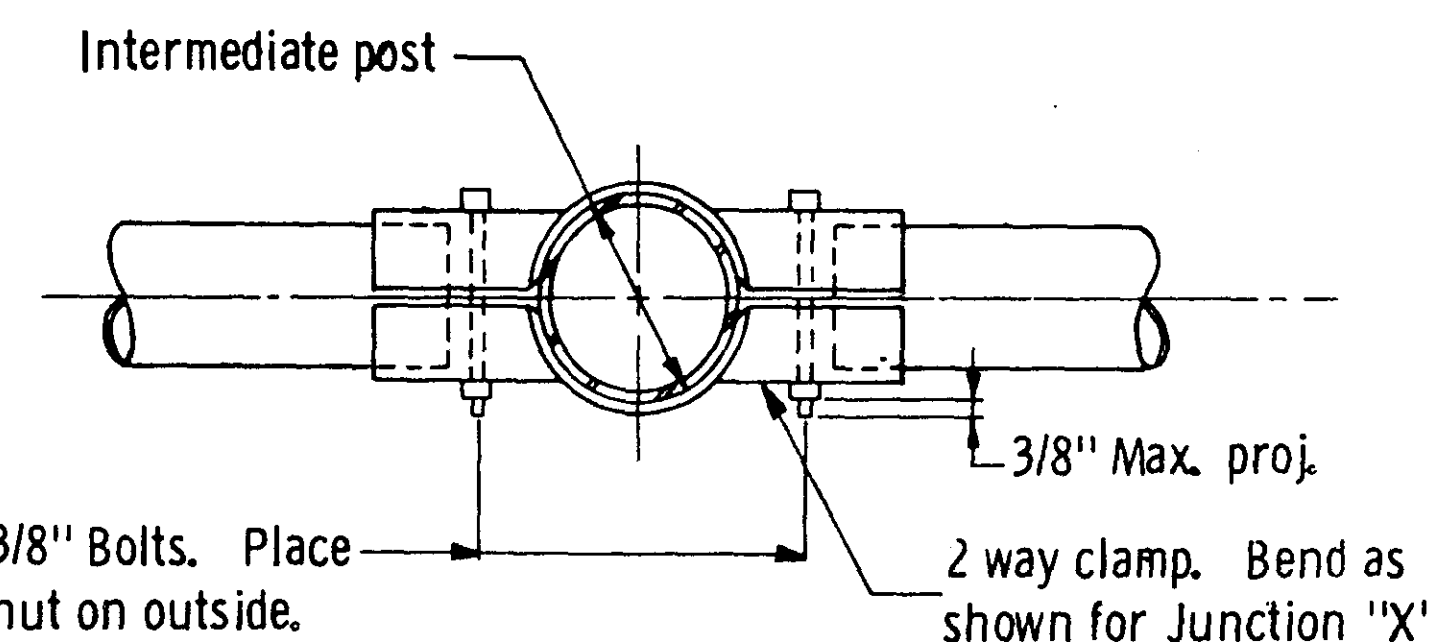
PLAN VIEW
FENCE POST ANCHORAGE ③

Estimated Weight = 14 lbs.
Structural Steel per Spec. 3306
Structural Pipe per Spec. 3362

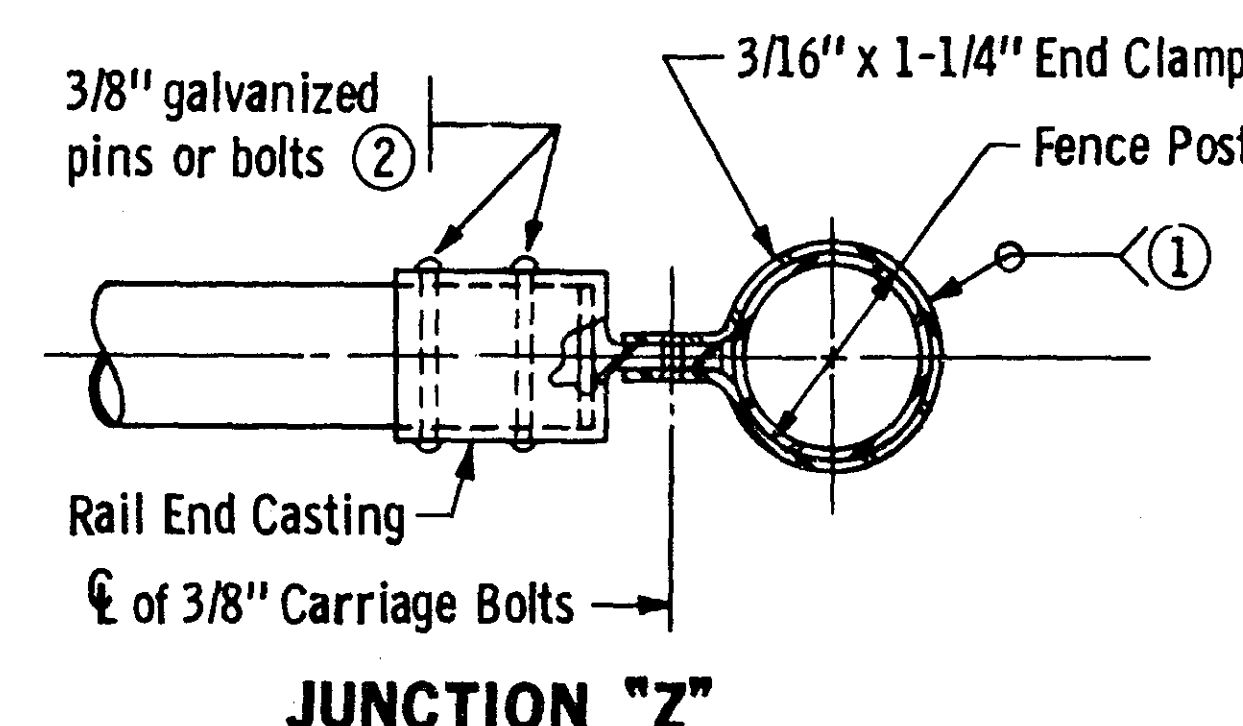
③ ϕ of anchorage to be a min. of 6" from deflection joints.

④ Place reinforcement in slab to clear concrete anchorage.

TYPE 2

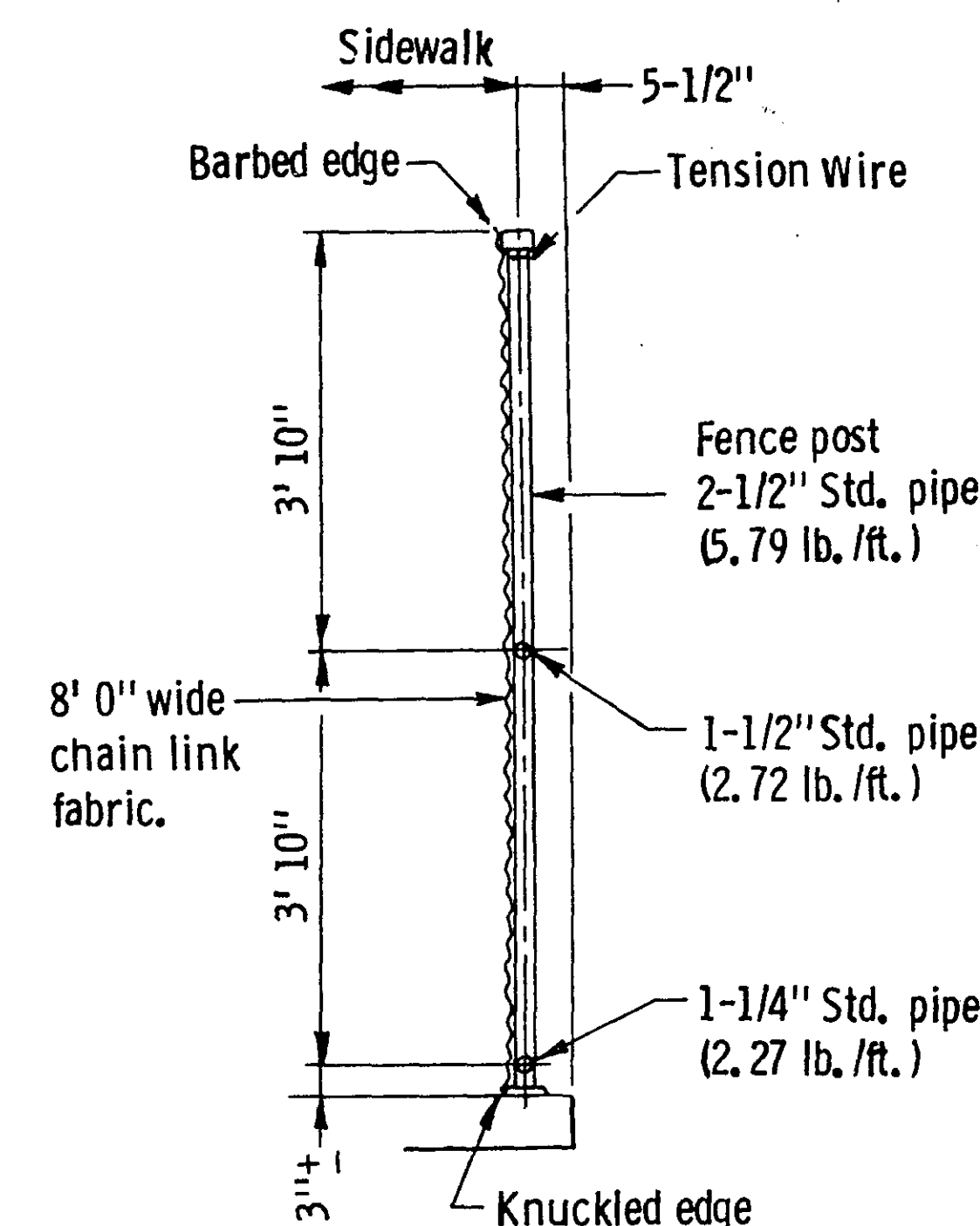


JUNCTION "Y"

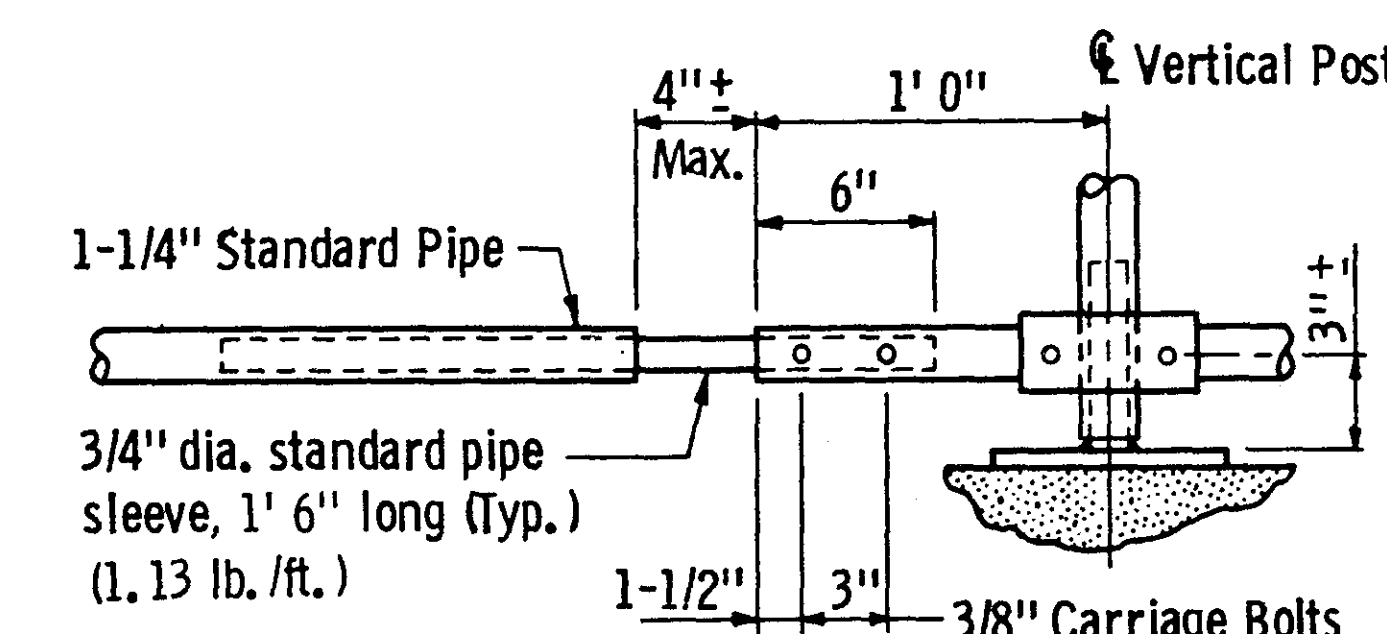


JUNCTION "Z"

- ① Weld clamps to the posts between the end & suspended posts.
- ② Provide two 3/8 inch dia. pins or bolts on the rail end castings between the end & suspended posts.



TYPICAL SECTION THRU FENCE



PIPE SLEEVE DETAIL
For 4" maximum bridge expansion

GENERAL NOTES:

For material, workmanship, galvanizing, electrical grounds, and payment, see Special Provisions and Spec. 2557, except as noted.

For post spacing, location, type of anchorages, and other details, see sht. no. 7

Maximum spacing for 2 1/2 inch std. pipe posts = 10' 0". Post spacings of 10 ft. are desired for efficient use of std. pipe lengths.

Posts shall be vertical.

Galvanize the Fence Post Anchorage after fabrication per Spec. 3394. Galvanize the fasteners per Spec. 3392.

All posts shall have a means to securely hold the top tension wire in position and allow for the removal and replacement of a post without damaging the top wire.

Wire ties may be 9 gage galvanized steel or 0.179" minimum aluminum alloy conforming to ASTM B211, Alloy 1100-H18. Use 12-1/2 gage galvanized hog rings for tension wire ties.

Grounding of each fence shall be done by connecting a solid copper #6 wire to a rail post. Copper wire shall be connected to an 8' min. copper-coated steel ground rod, 3/4" min. at each fence.

Approved: May 17, 1982
Revised: January 20, 1983

Fig. 5-397.205

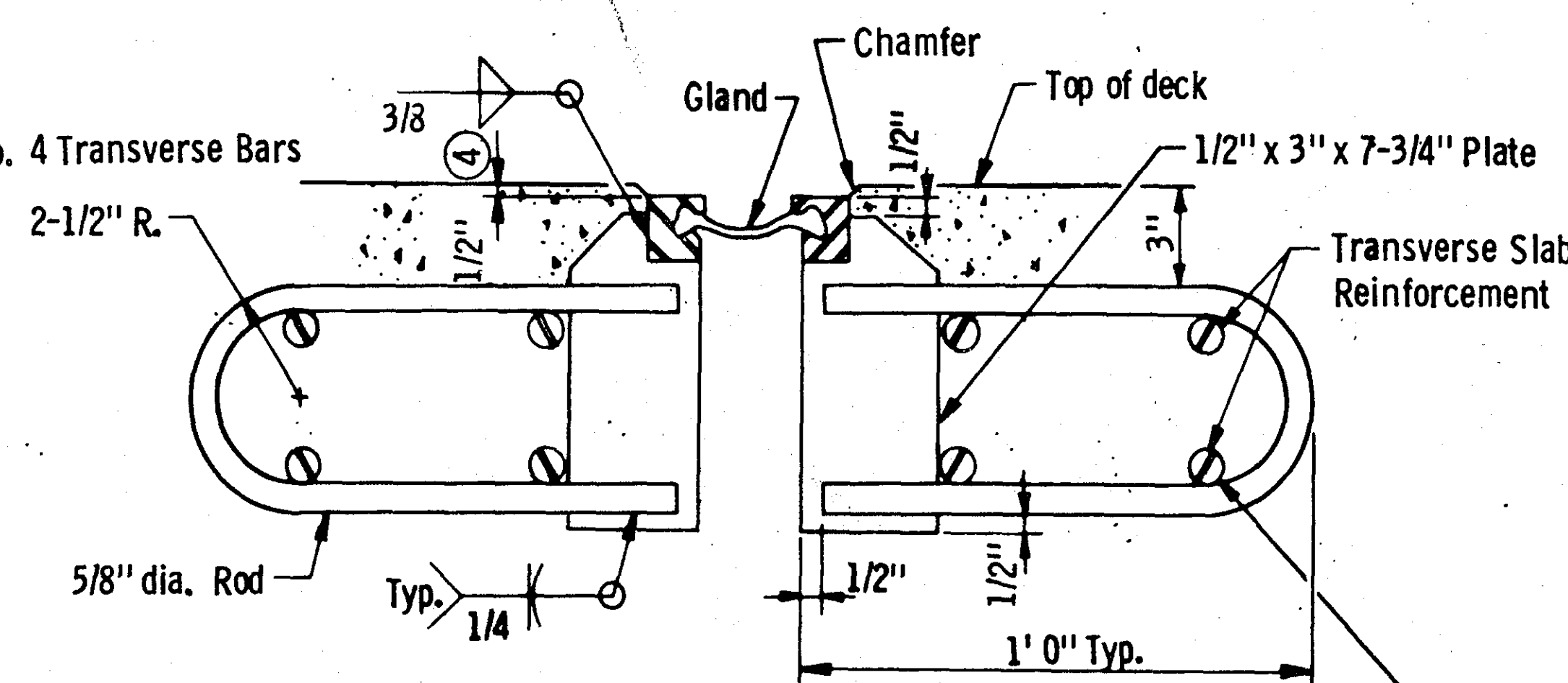
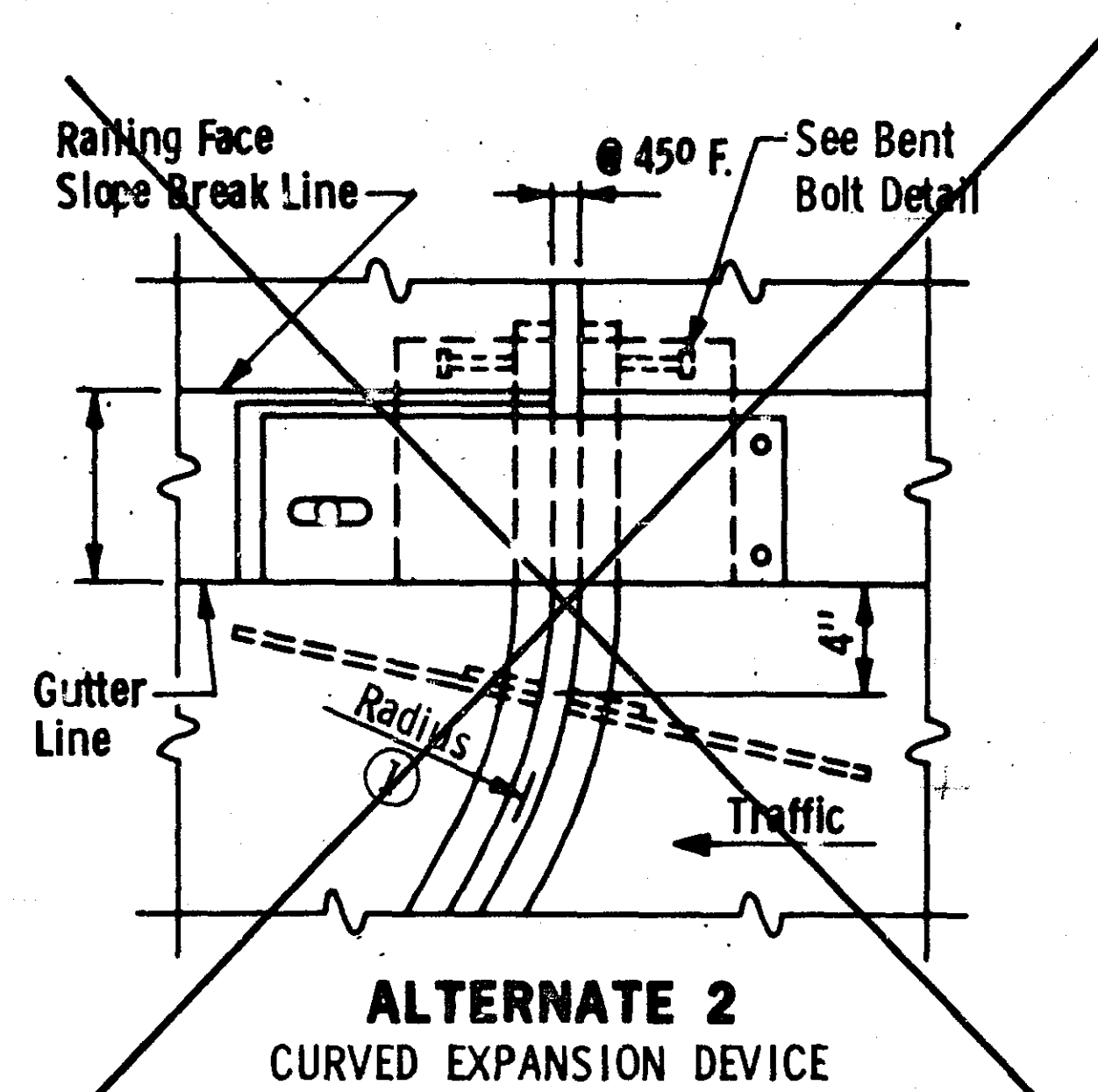
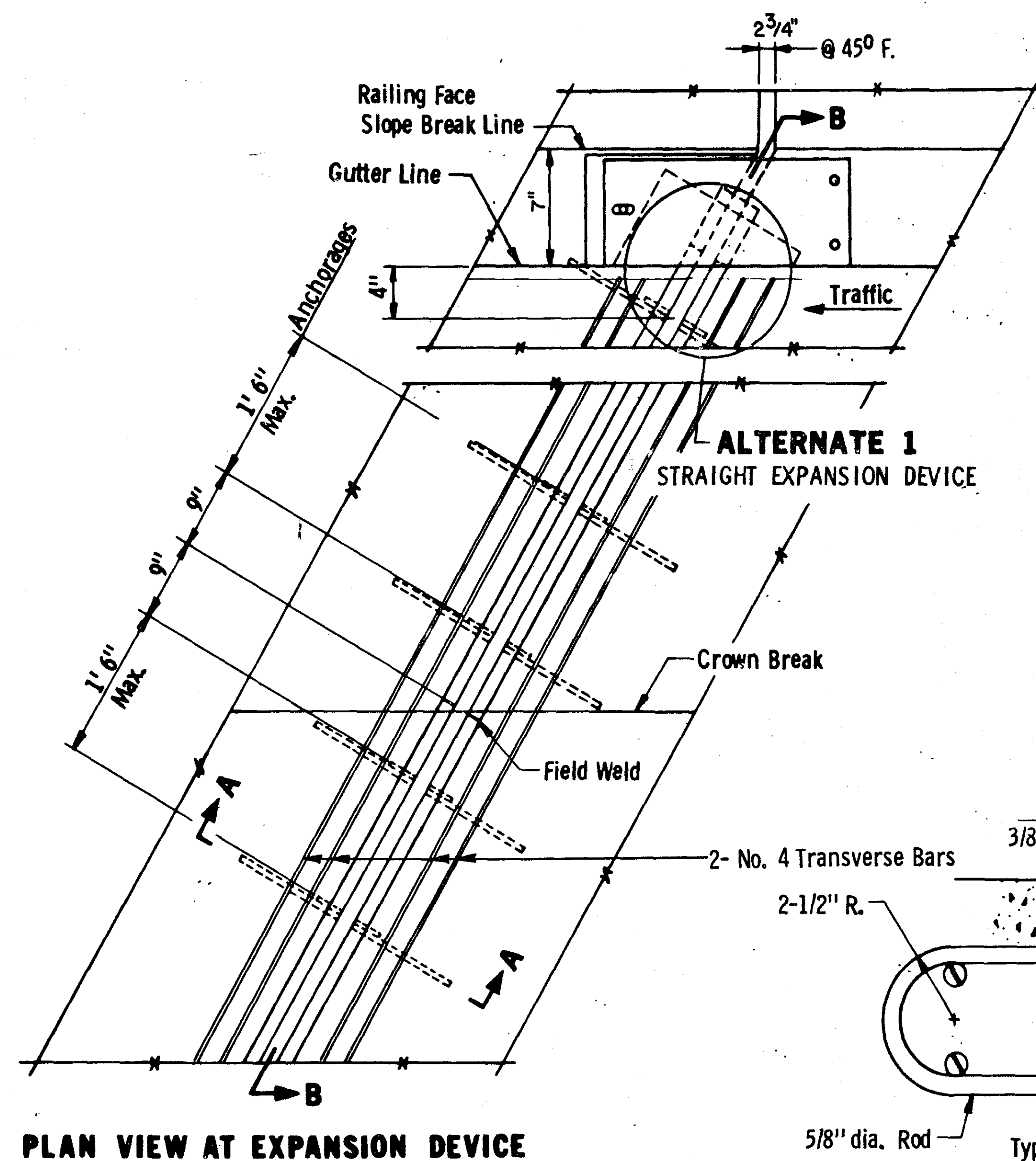
DES. S-2

S.P. 62-668-18

TITLE: 8 FT. WIRE FENCE
FOR PEDESTRIAN WALKS
(USE WITH TYPE J RAILING)

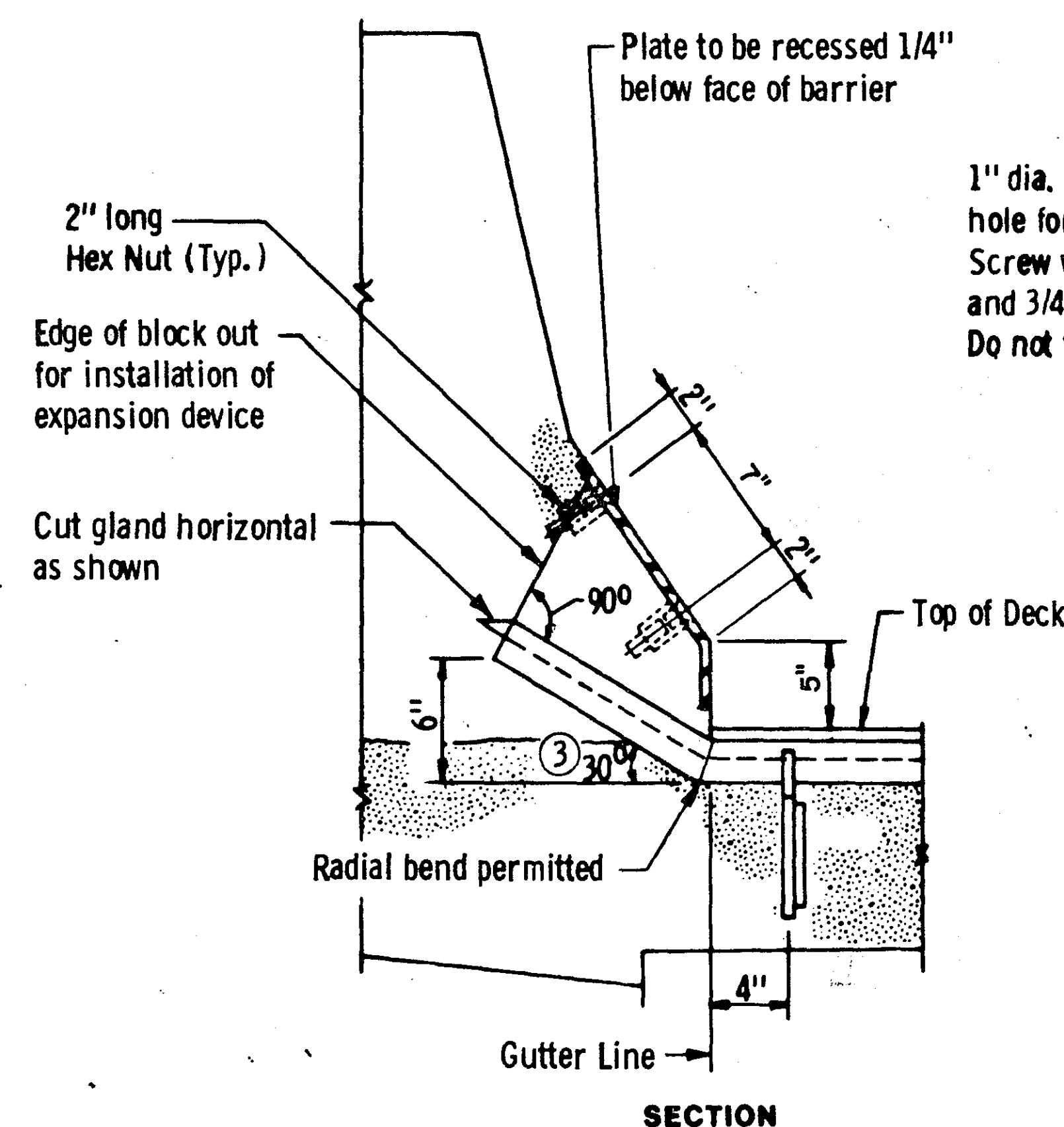
DES: J.R. DR: D.F. APPROVED: 6-72-87
CHK: B.J. CHK: J.R.
Sheet No. 12 of 21 Sheets

Bridge No.
62543

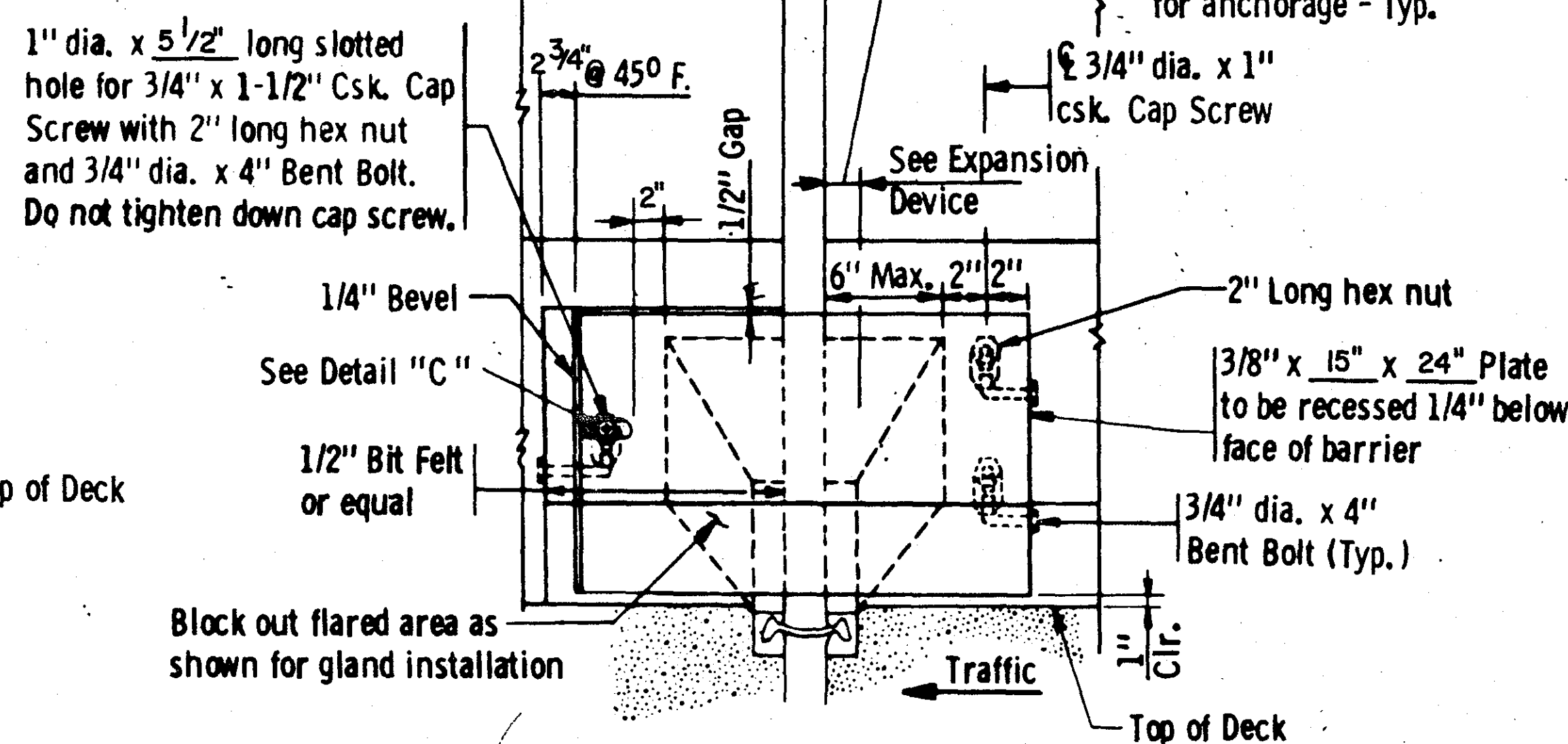


4 - No. 4 Bars full length of device in Approach Panel only. (To be provided by the roadway contractor)

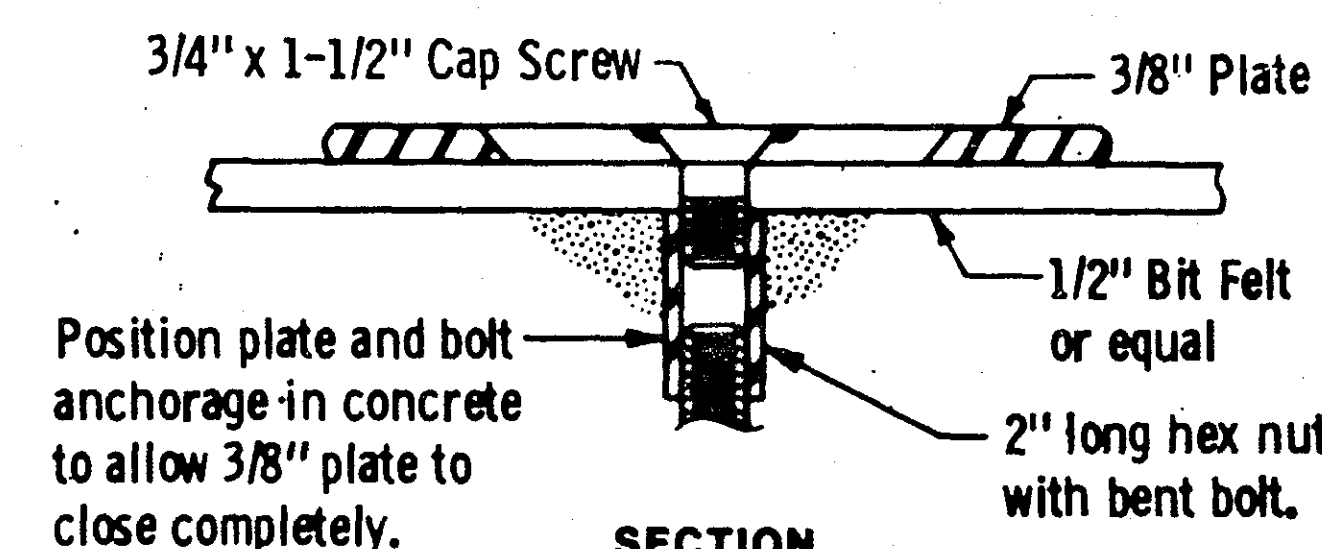
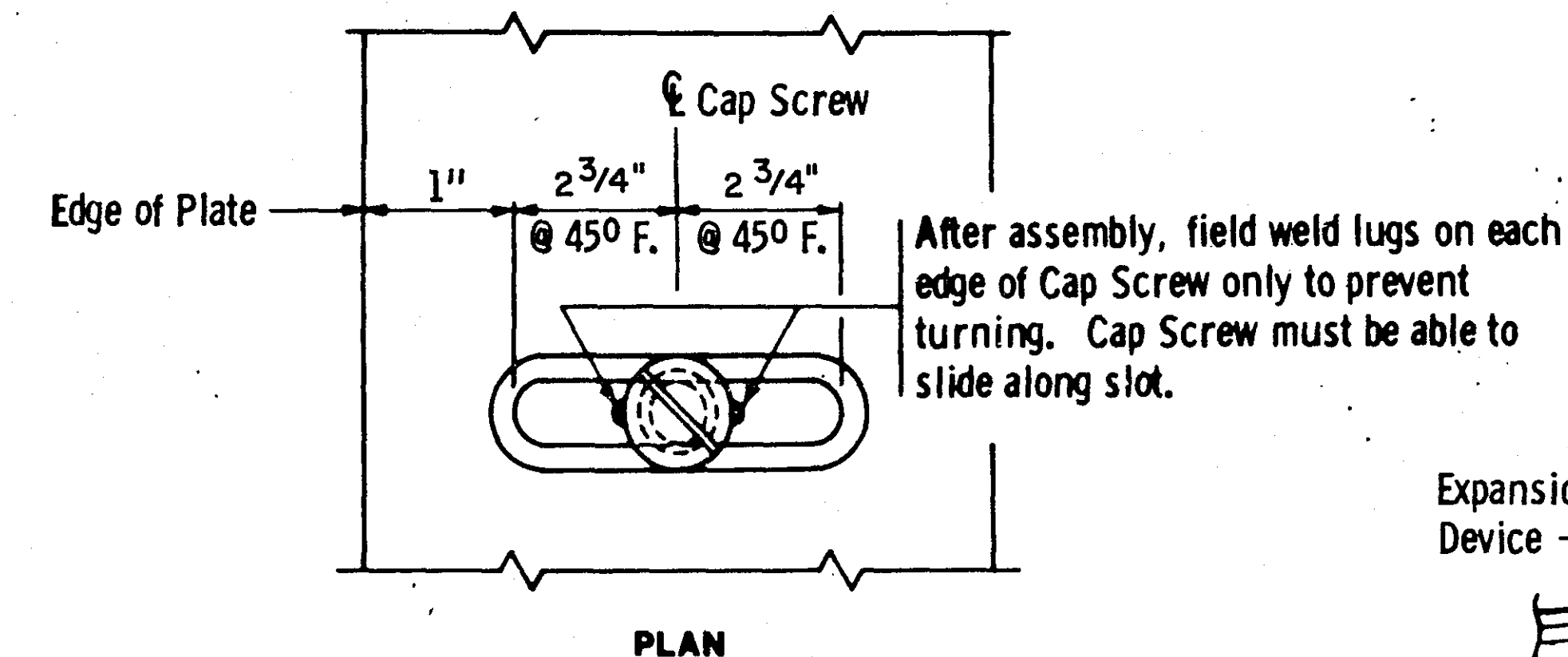
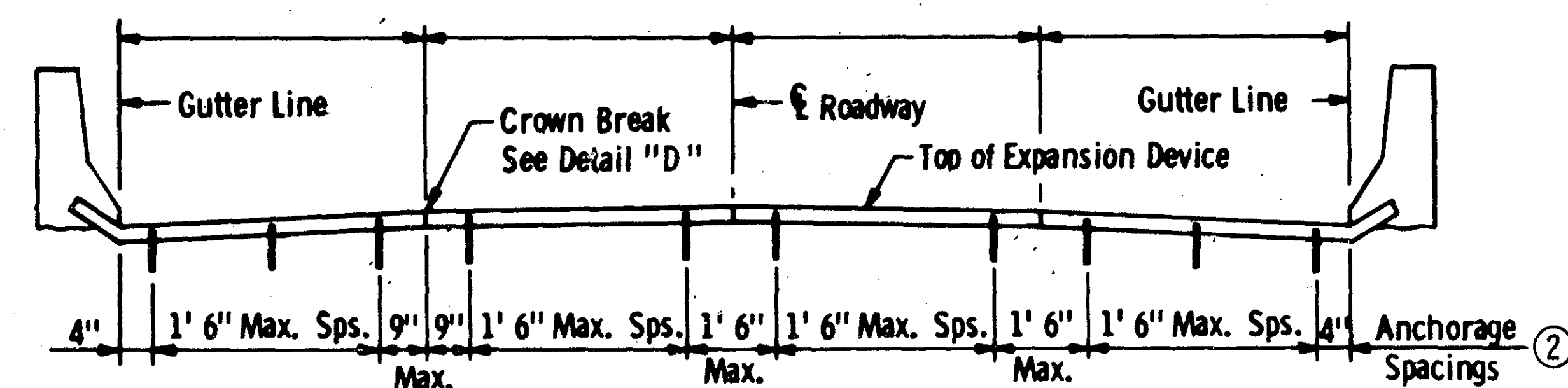
SECTION A-A ANCHORAGE



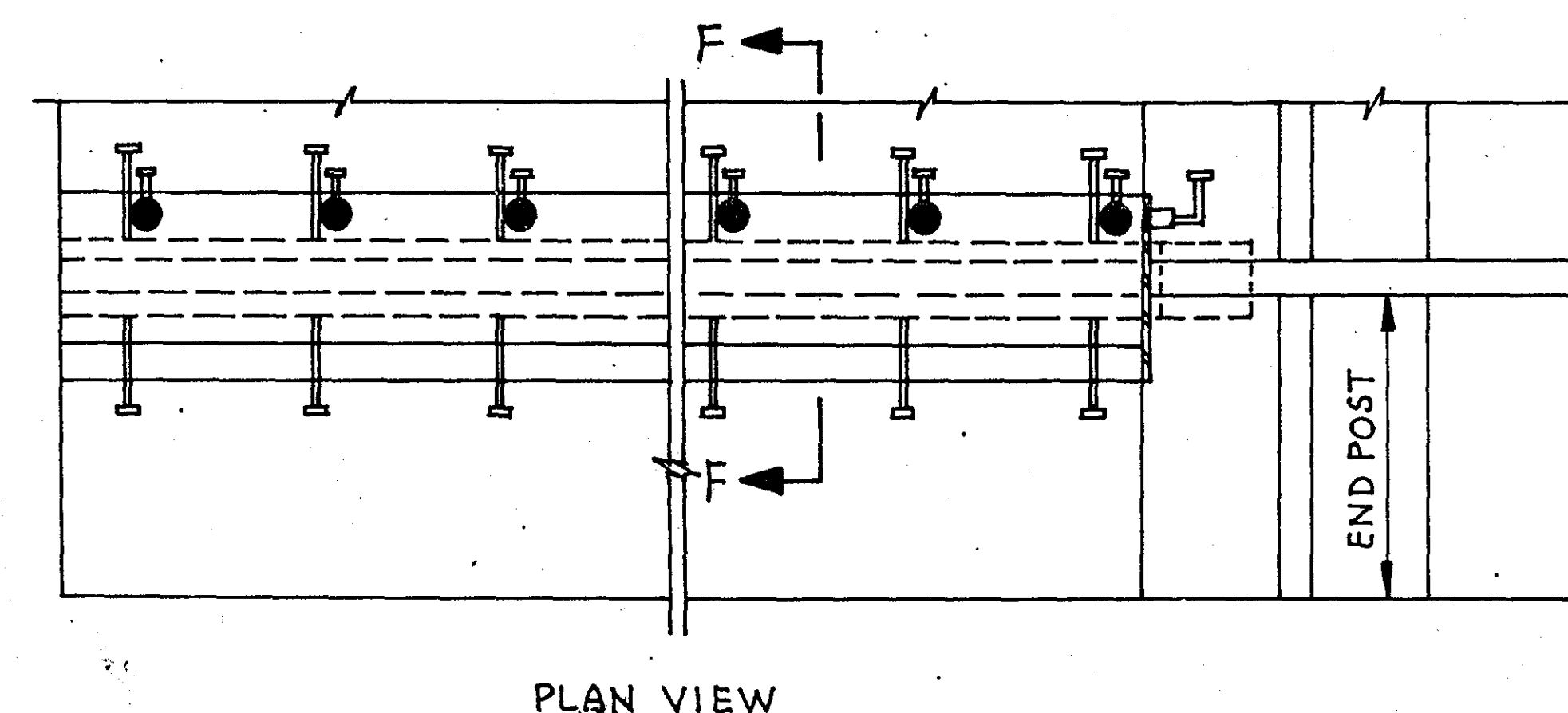
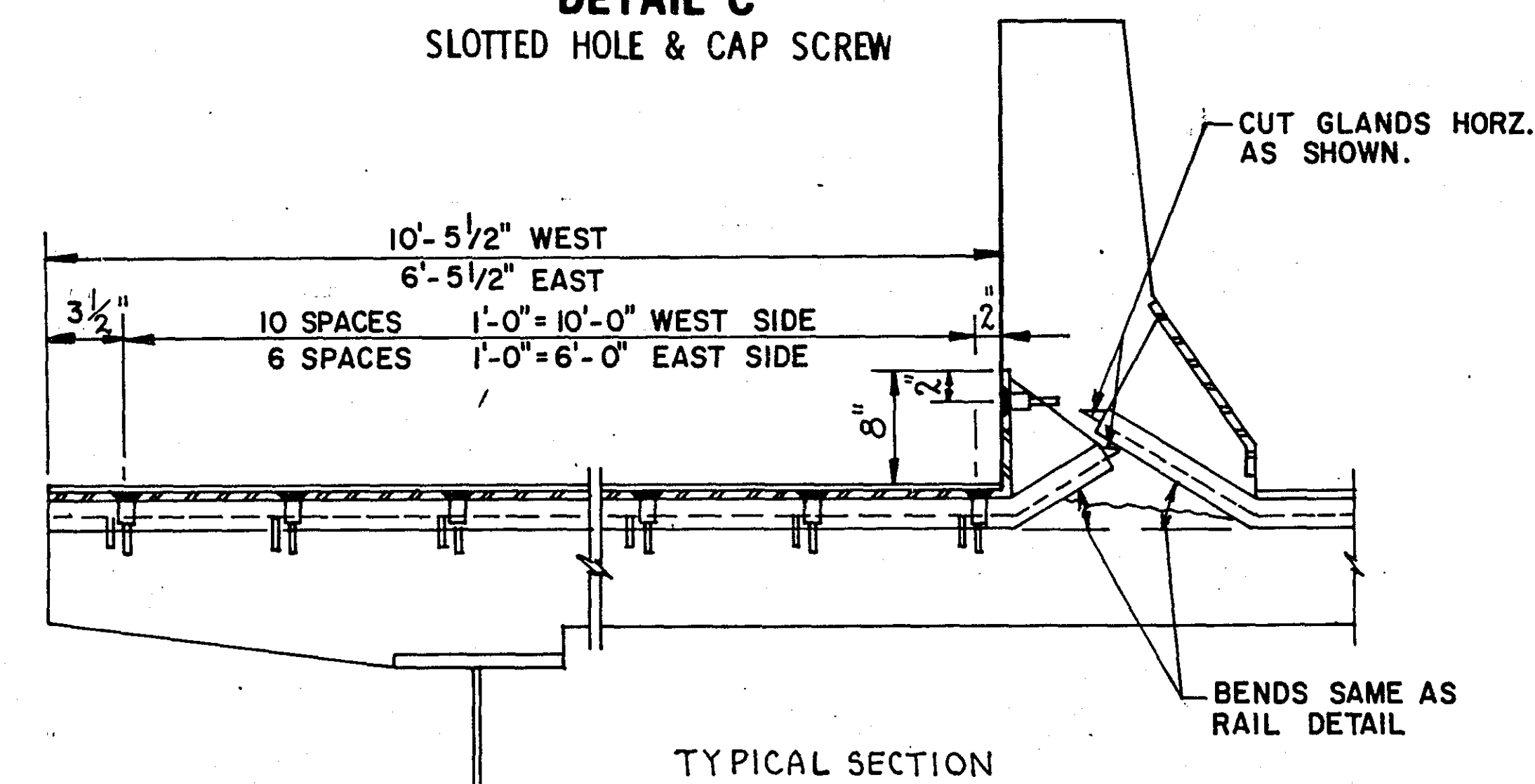
RAILING OR MEDIAN SQUARE BRIDGE APPLICATION



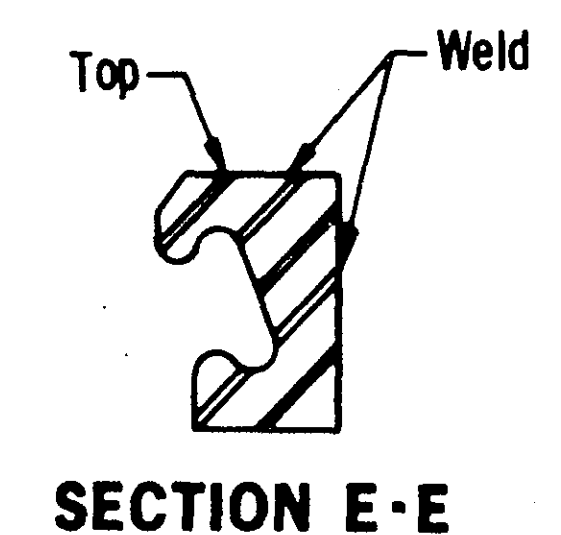
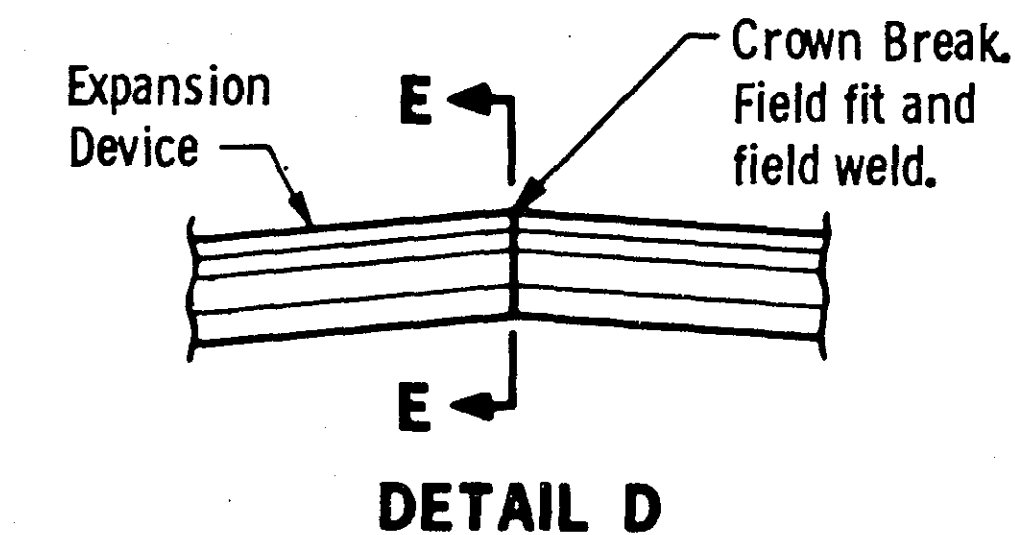
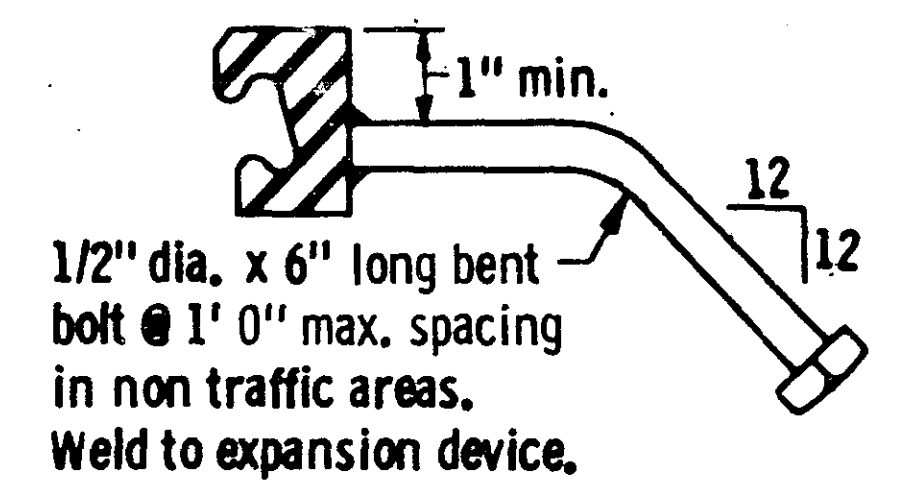
- ① Varies 18" to 24"
- ② Dimension along centerline of joint.
- ③ For roadway skews over 25° use 45°.
- ④ 5/8" max. when Snowplow Fingers are used. Use 1/8" (with 1/4" max.) when Snowplow Fingers are not used.



DETAIL C SLOTTED HOLE & CAP SCREW

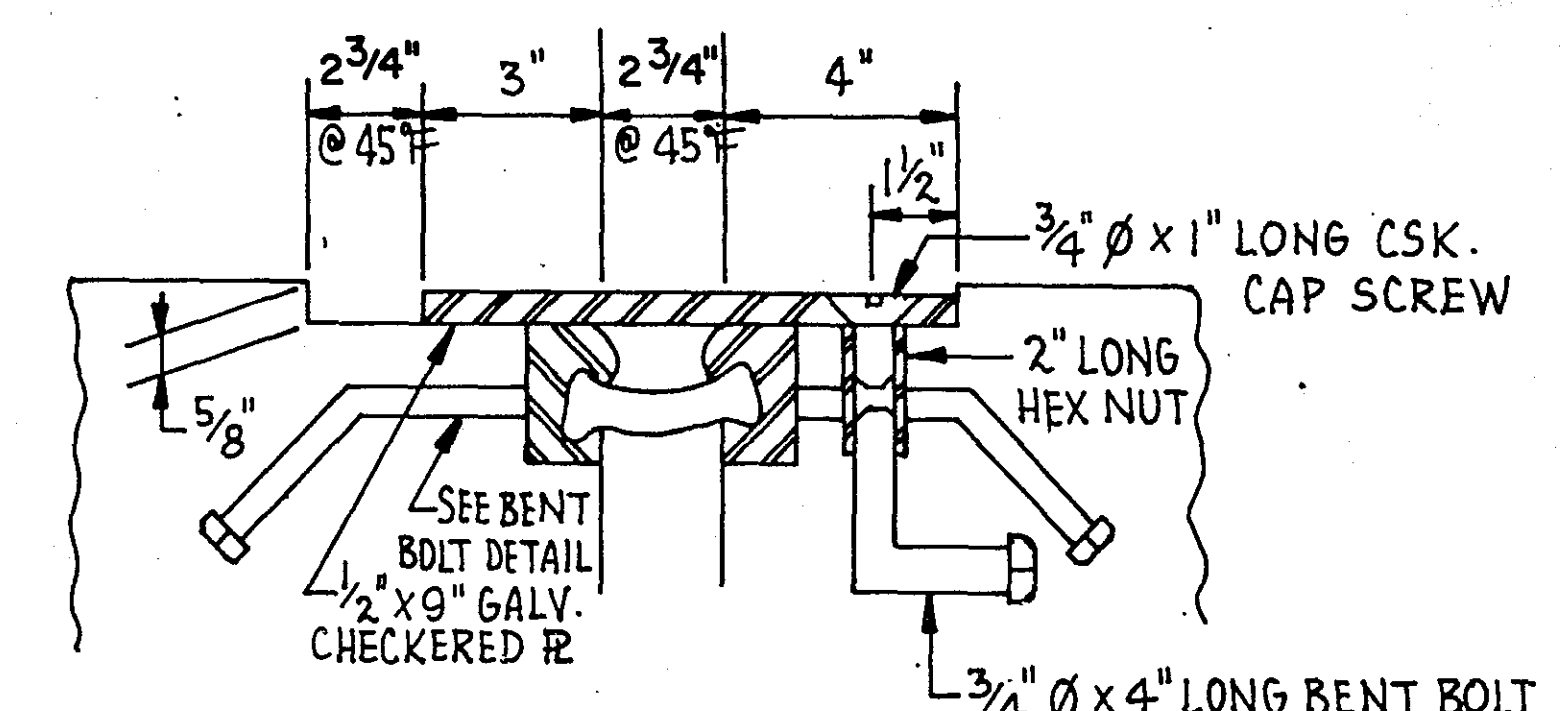


EXPANSION DEVICE AT SIDEWALK



NOTES:

- Galvanize structural steel after fabrication as per Spec. 3394.
- Joints in roadway plate or extrusion shall be located at breaks in transverse profile and as otherwise required. Joints shall be close fit and welded. Repair after welding as per Spec. 2471.3L.
- Structural steel shall comply with Spec. 3306, Spec. 3307 & Spec. 3309.
- Expansion device shall be straightened to a tolerance of 1/8" in 10 ft.
- Cap screws shall be countersunk 1/16" below top of plate.
- Galvanize screws and nuts as per Spec. 3392.
- See superstructure sheets for expansion device alternate at railing.



SECTION F-F

(MODIFIED)
FIG. 5-397.627

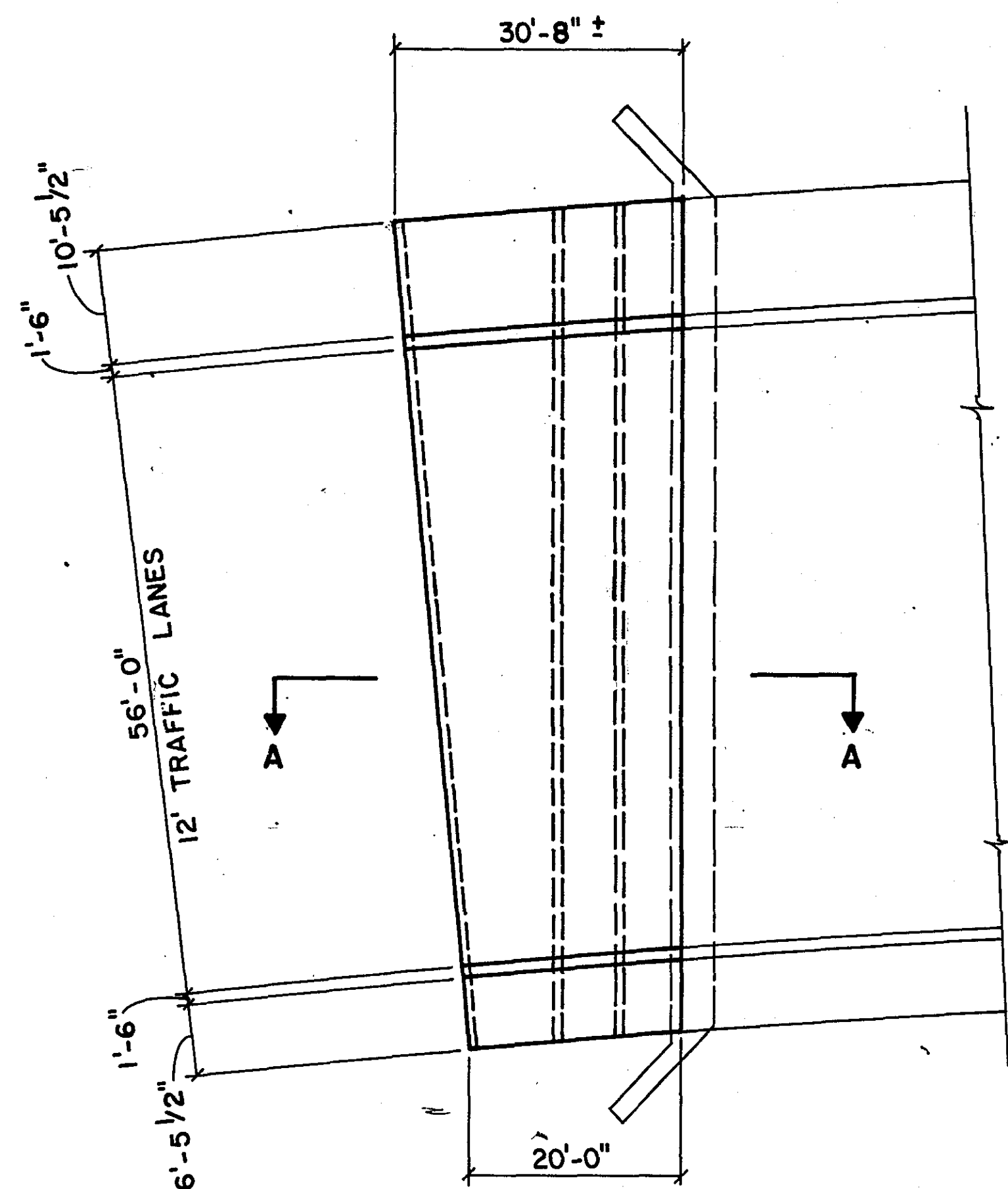
S.P. 62-668-18

Revised: October 15, 1982 Approved: July 16, 1982

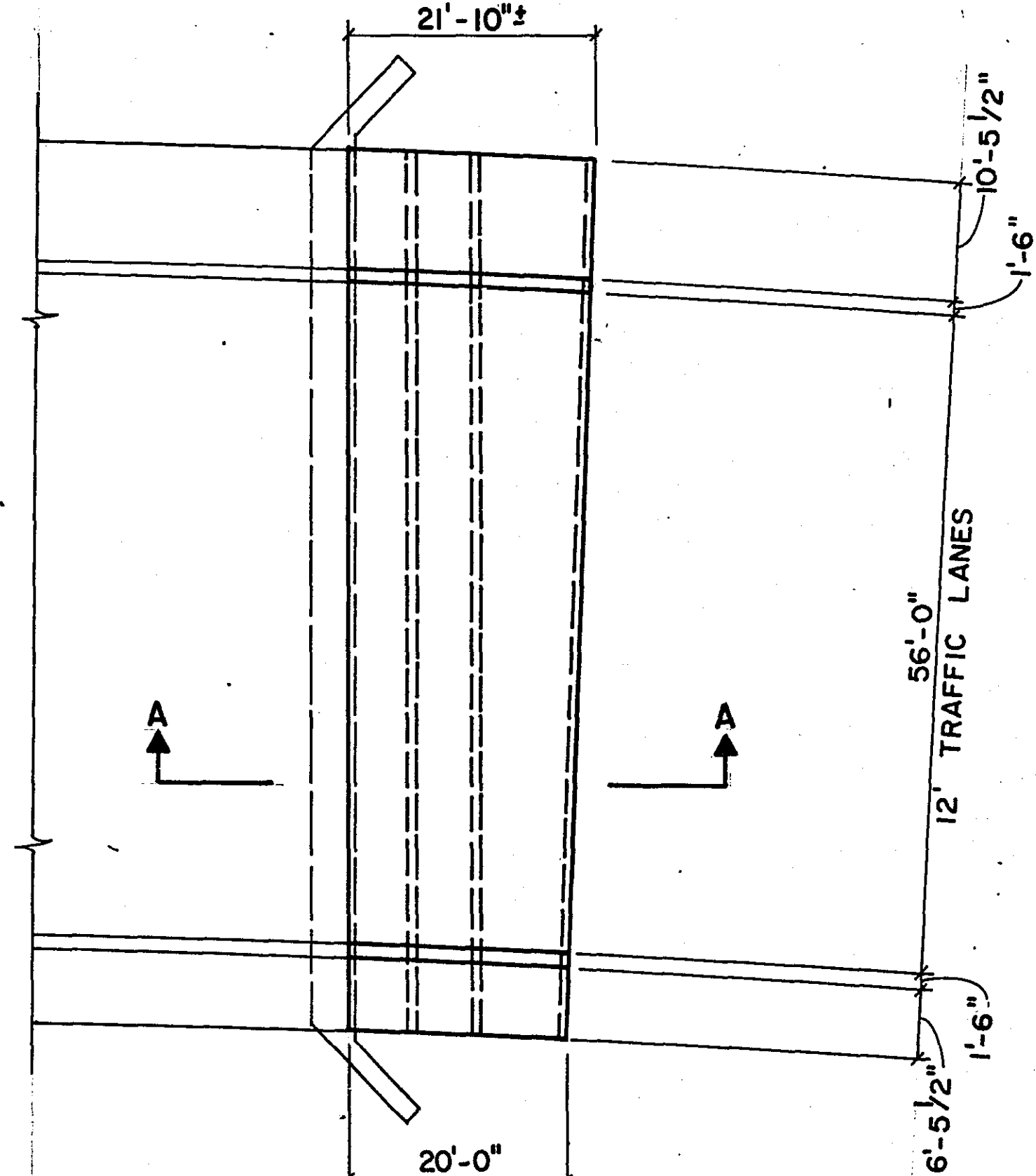
TITLE:
WATERPROOF EXPANSION DEVICE
WITH TYPE J BARRIER

DES: J.P.	DR: D.F.	APPROVED: G-2-87	Bridge No. 62543
CHE: B.J.	CHE: J.P.		

Sheet No. 13 of 21 Sheets

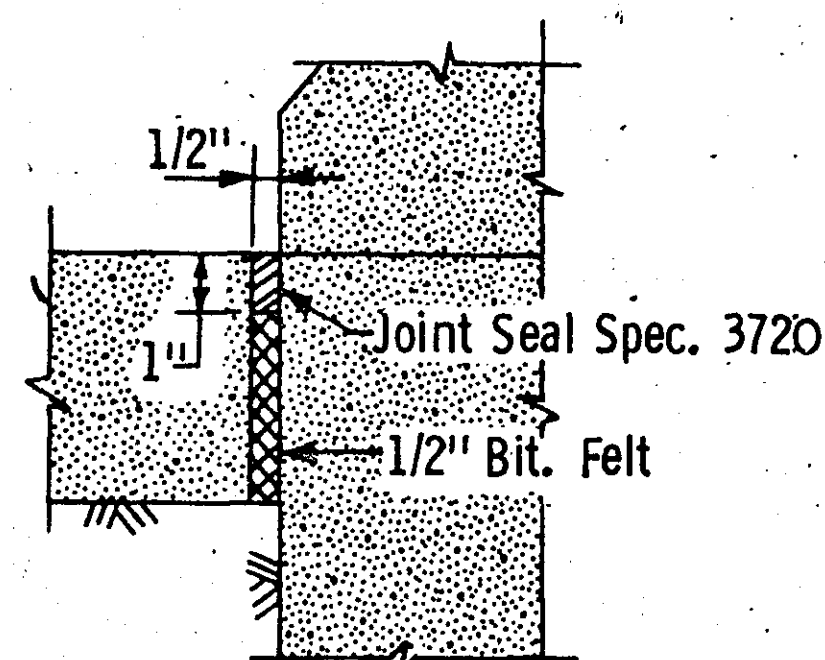


APPROACH PANEL, SOUTH SIDE

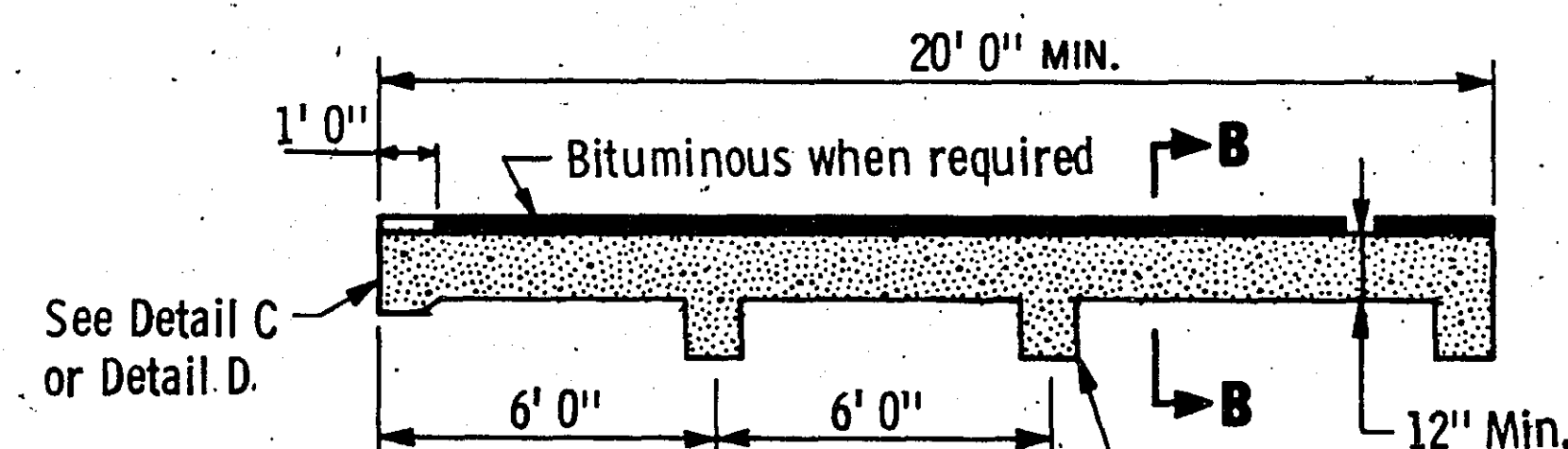


APPROACH PANEL, NORTH SIDE

- ① Use No. 6 @ 6" longitudinal and No. 5 @ 1' 0" transverse reinforcement
- ② See Joint Detail

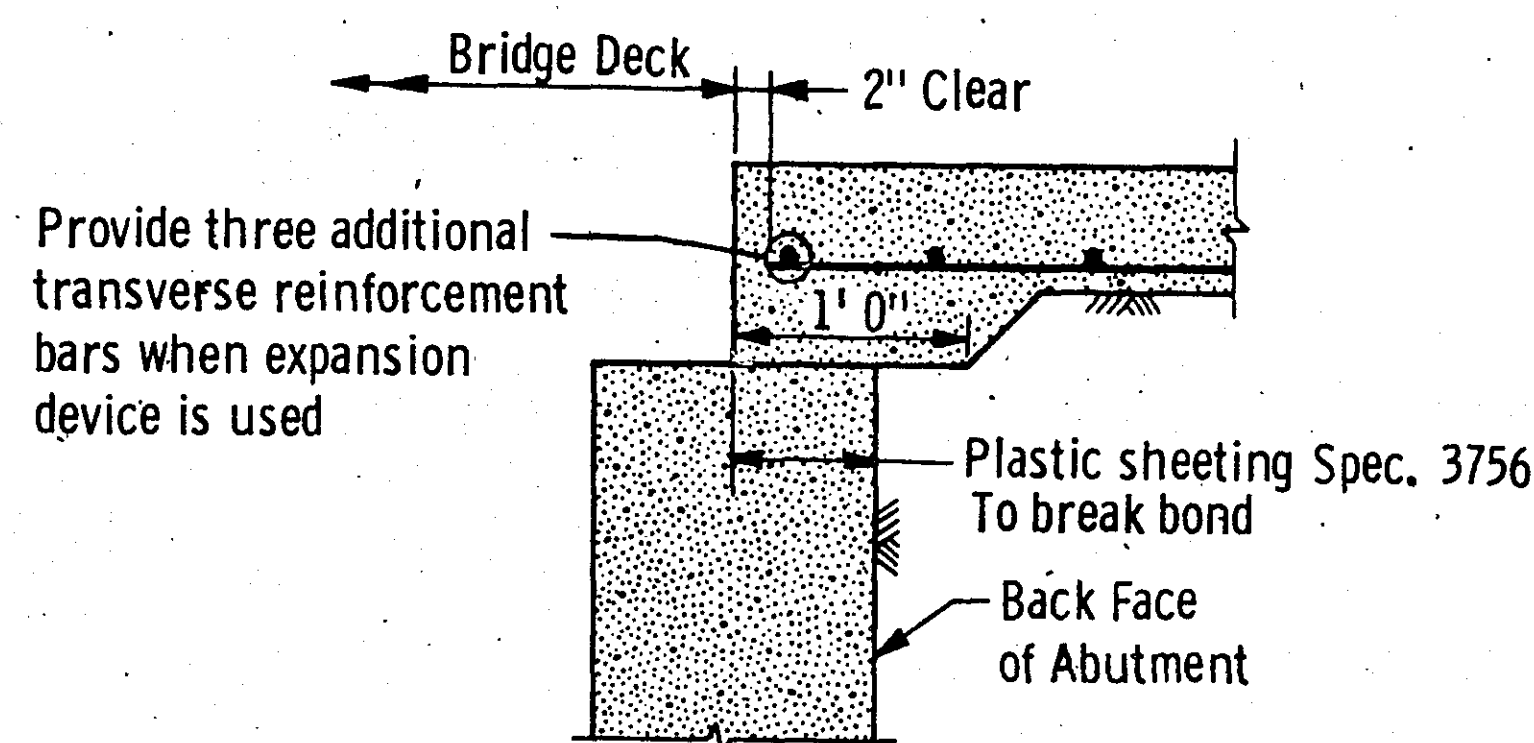


JOINT DETAIL

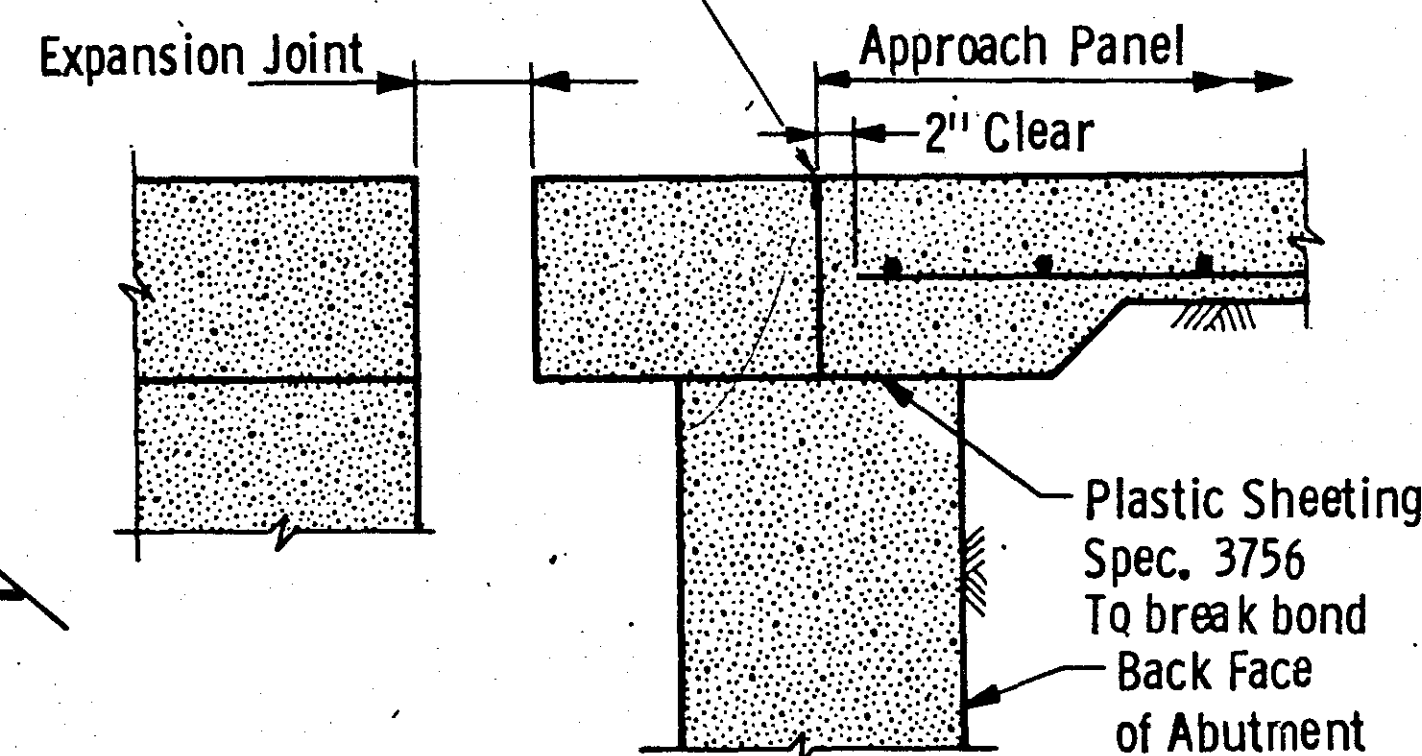


1' 0" x 1' 0" min. key, no reinforcement. Concrete shall be placed directly against compacted base material and parallel to skew if any.

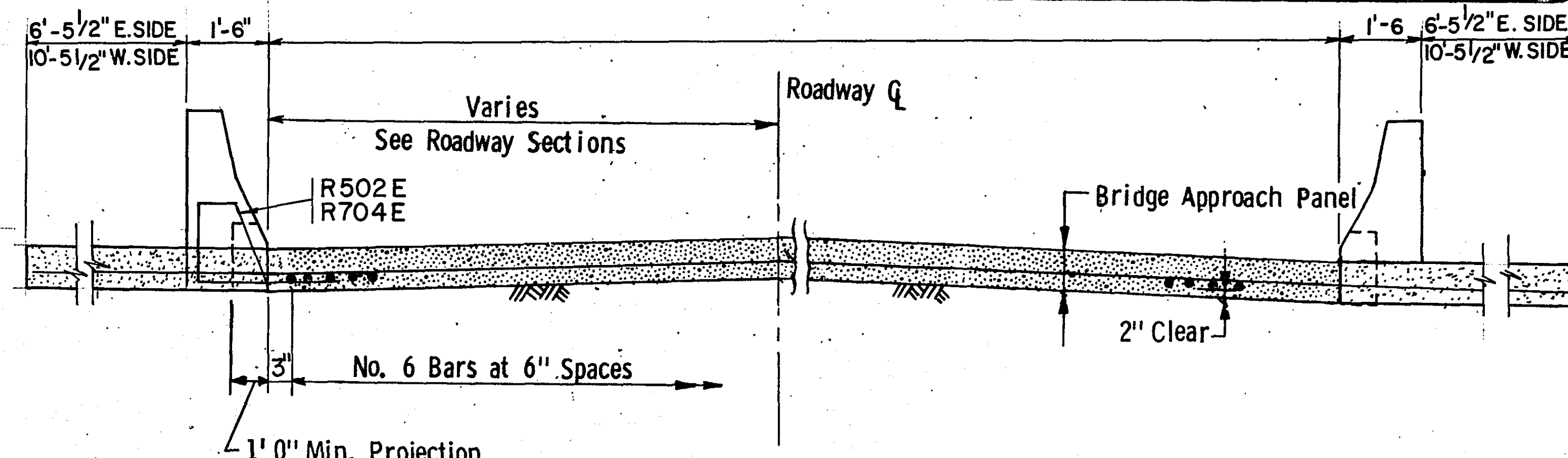
SECTION A-A



DETAIL C



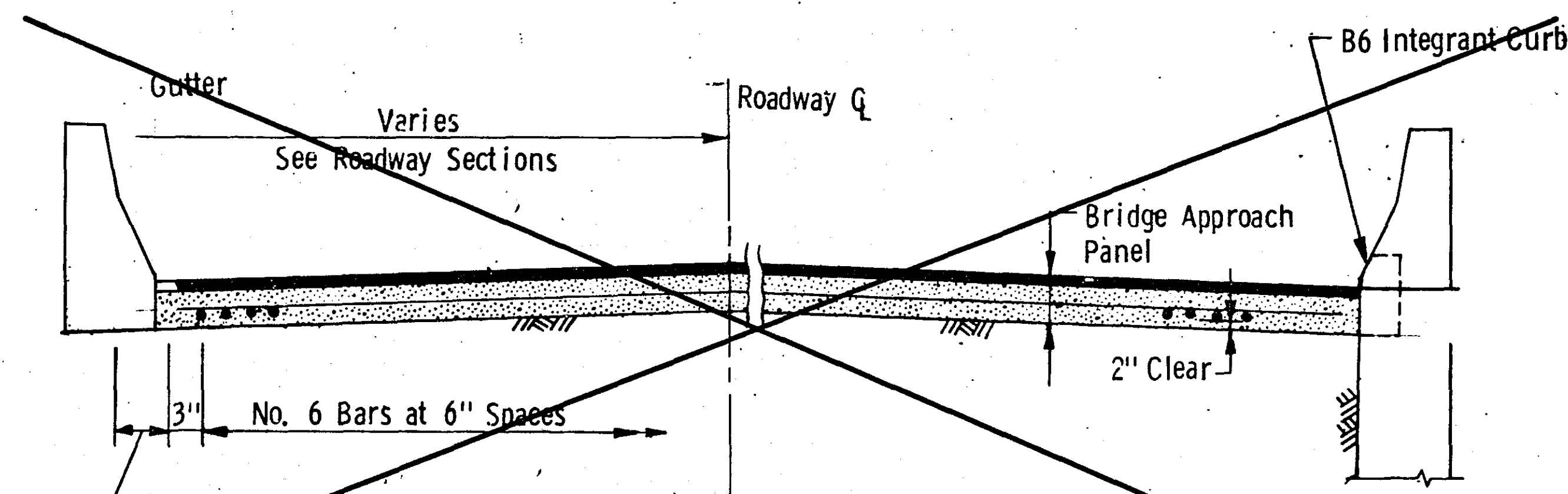
DETAIL D



SECTION B-B

(See Roadway Cross Section)

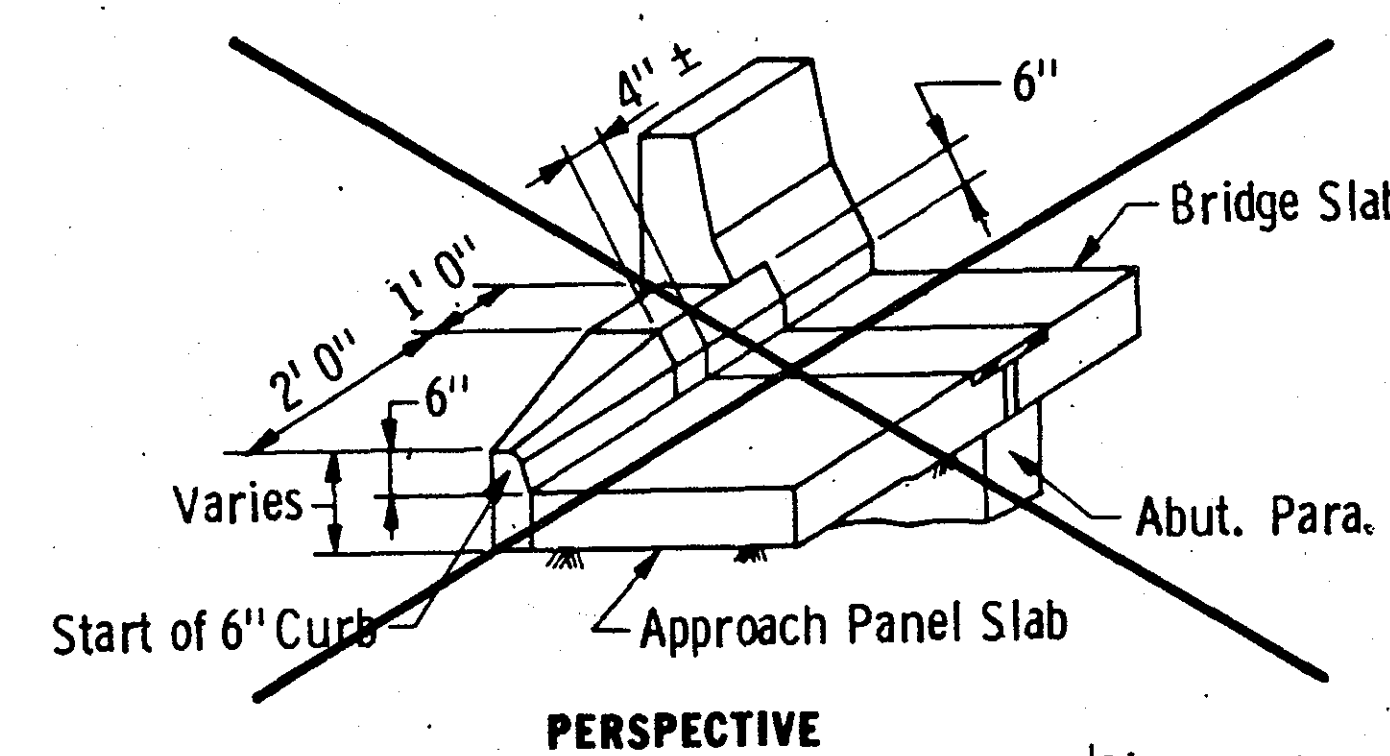
THIS SECTION TO BE USED WHEN BRIDGE SURFACE IS CONCRETE



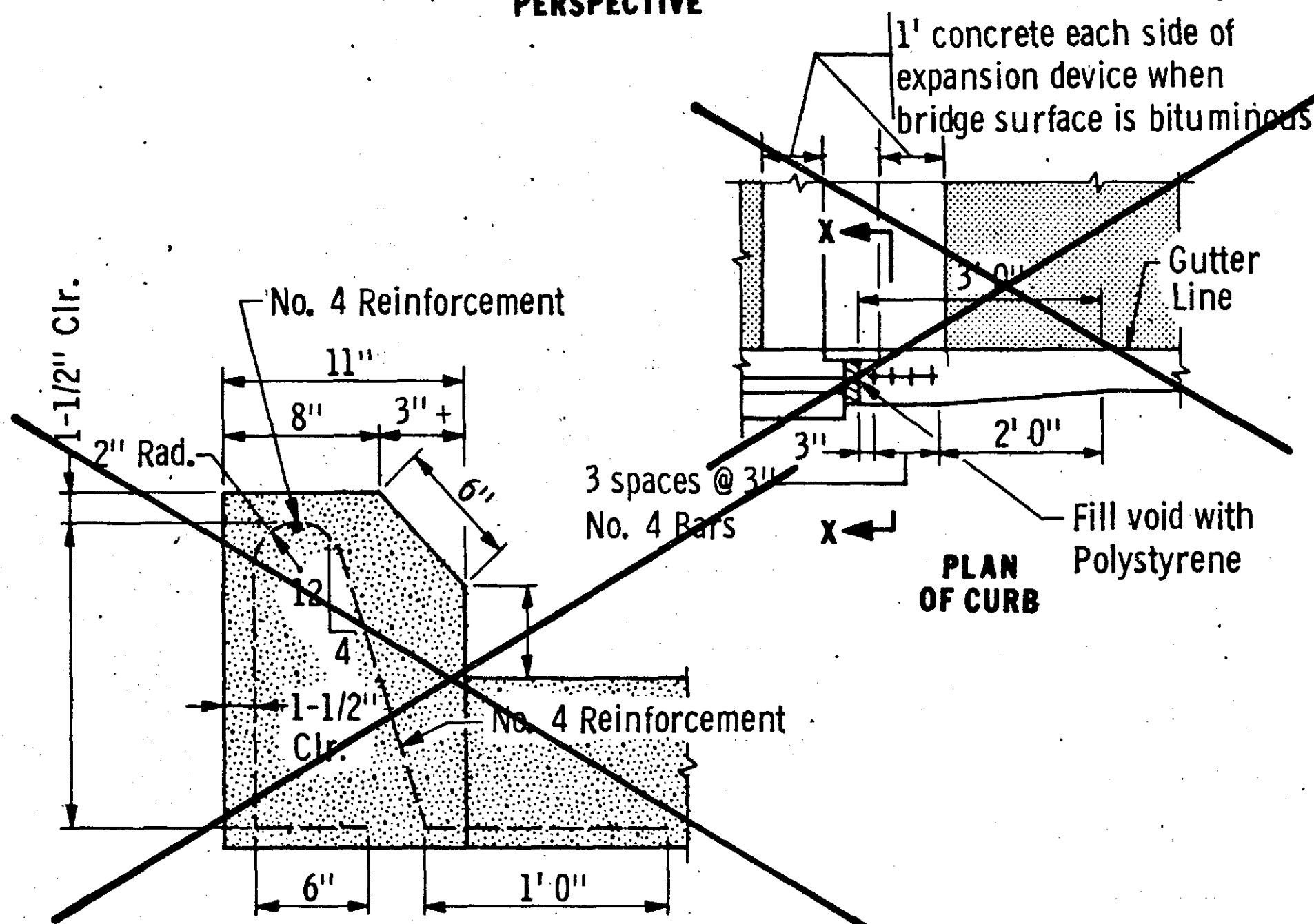
SECTION B-B

(See Roadway Cross Section)

THIS SECTION TO BE USED WHEN BRIDGE SURFACE IS BITUMINOUS



PERSPECTIVE



SECTION X-X

CURB TRANSITION DETAILS

FOR USE WHEN BRIDGE EXPANSION JOINT IS BETWEEN END OF APPROACH PANEL AND BRIDGE SLAB

The summary of quantities for approach panel is as shown below. Any additional minor items and slight changes of quantities required shall be furnished by the contractor with no additional compensation.

ITEM	*MANUAL REFERENCE
Sodding at Pipe Culverts	Std. Plts. 9102
Riprap at CMP Outlets	Std. Plts. 3134
Metal Apron for CM Pipe	Std. Plts. 3123
Curb and Gutter	Std. Plt. 7100
Catch Basin Details	Std. Plt. 4002
Catch Basin Details	Std. Plt. 4006
Precast Concrete Base	Std. Plt. 4011
Catch Basin Frame	Std. Plt. 4129
Catch Basin Curb Box	Std. Plt. 4160
Catch Basin Grate	Std. Plt. 4151
Catch Basin Installation	Std. Plt. 7111
Metal Pipe Flume	Std. Plt. 5000
Longitudinal Joints	Std. Plt. 1140
Integral Curbs	Std. Plt. 7000
Contraction Joint	Std. Plt. 1120
Conc. Short Cone & Adj. Ring	Std. Plt. 4010

*Specification Ref. Std. Plts. 0001 & 0002
Reinforcement shall be lapped as per Spec. 2472.3D

③ SUMMARY OF QUANTITIES FOR BRIDGE APPROACH PANELS		
④ Concrete Mix No. 3X42	152	Cu. Yd.
⑧ Reinforcement Bars (Epoxy coated)	14,030	Lbs.

③ Quantities listed are for approach panels at both ends of bridge

Payment will be included in the single lump sum price for "Item 301.601 Bridge Approach Panels."

④ The Volume of concrete shown is based on an average slab depth of 12" plus the volume of keys and sills as dimensioned. (Concrete for TYPE "J" Barrier is not included in this quantity.)

⑤ Includes all concrete work and all castings and appurtenances necessary to construct the catch basins as shown and noted.

⑦ Permissible L2KT longitudinal joint. See Standard Plan Sheet 5-297.221.

⑧ Does not include R502E & R704E bars.

CROSS SECTION AT CATCH BASINS

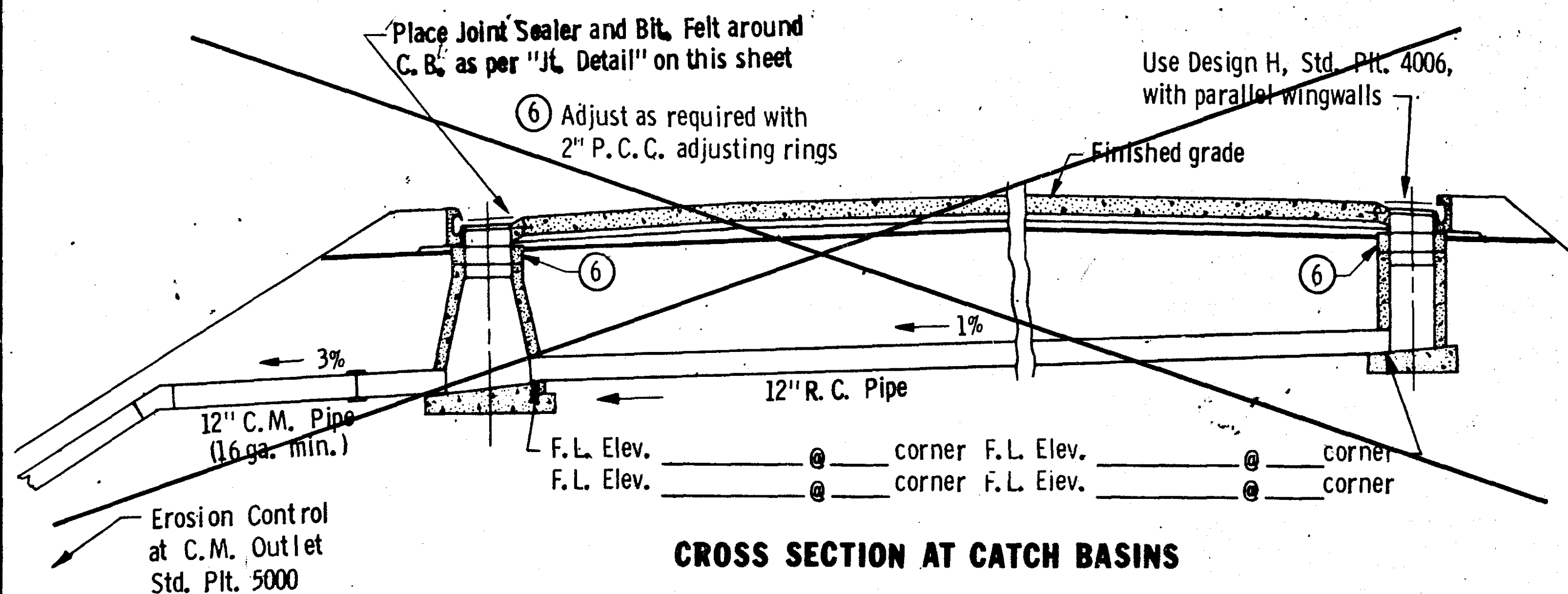
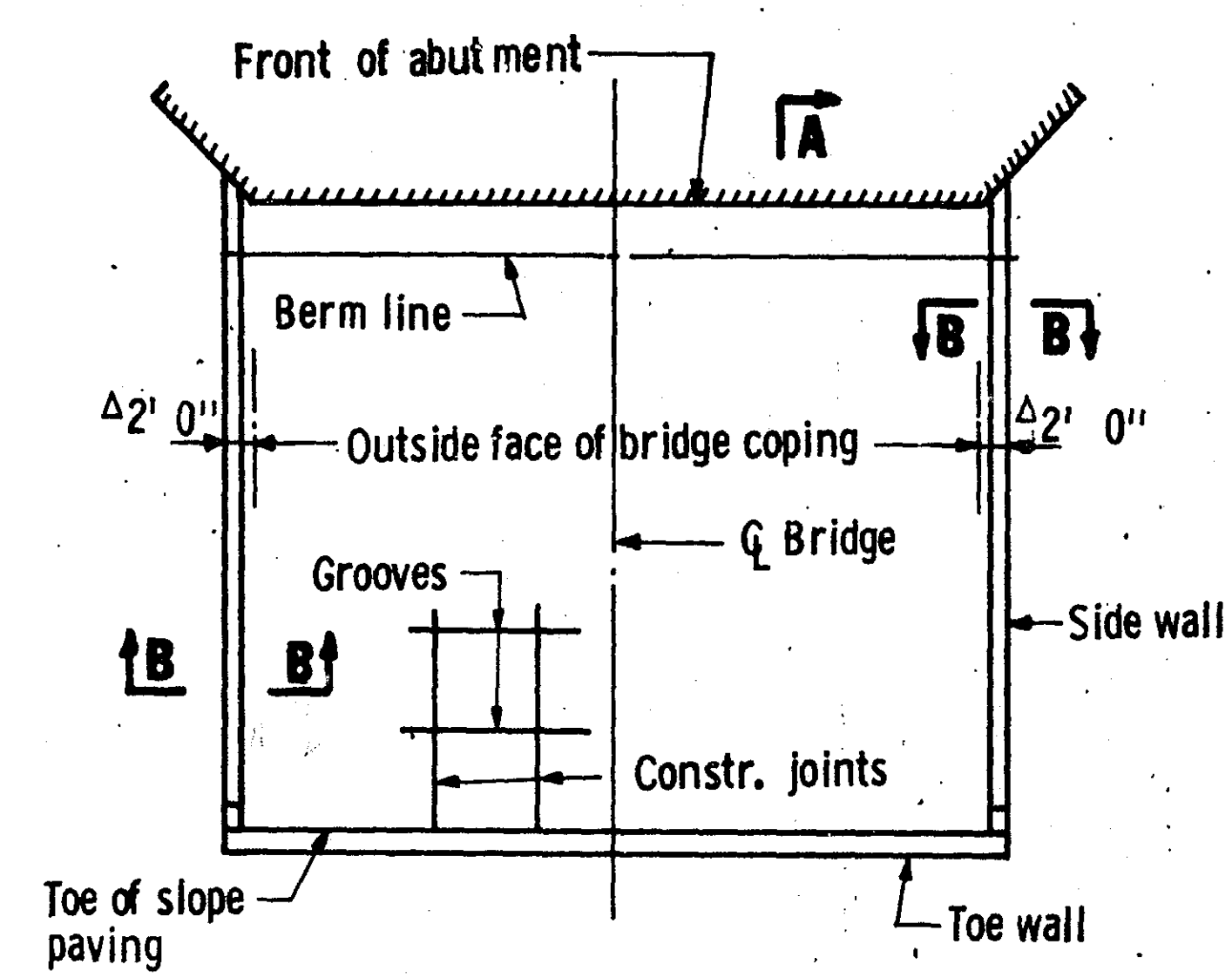
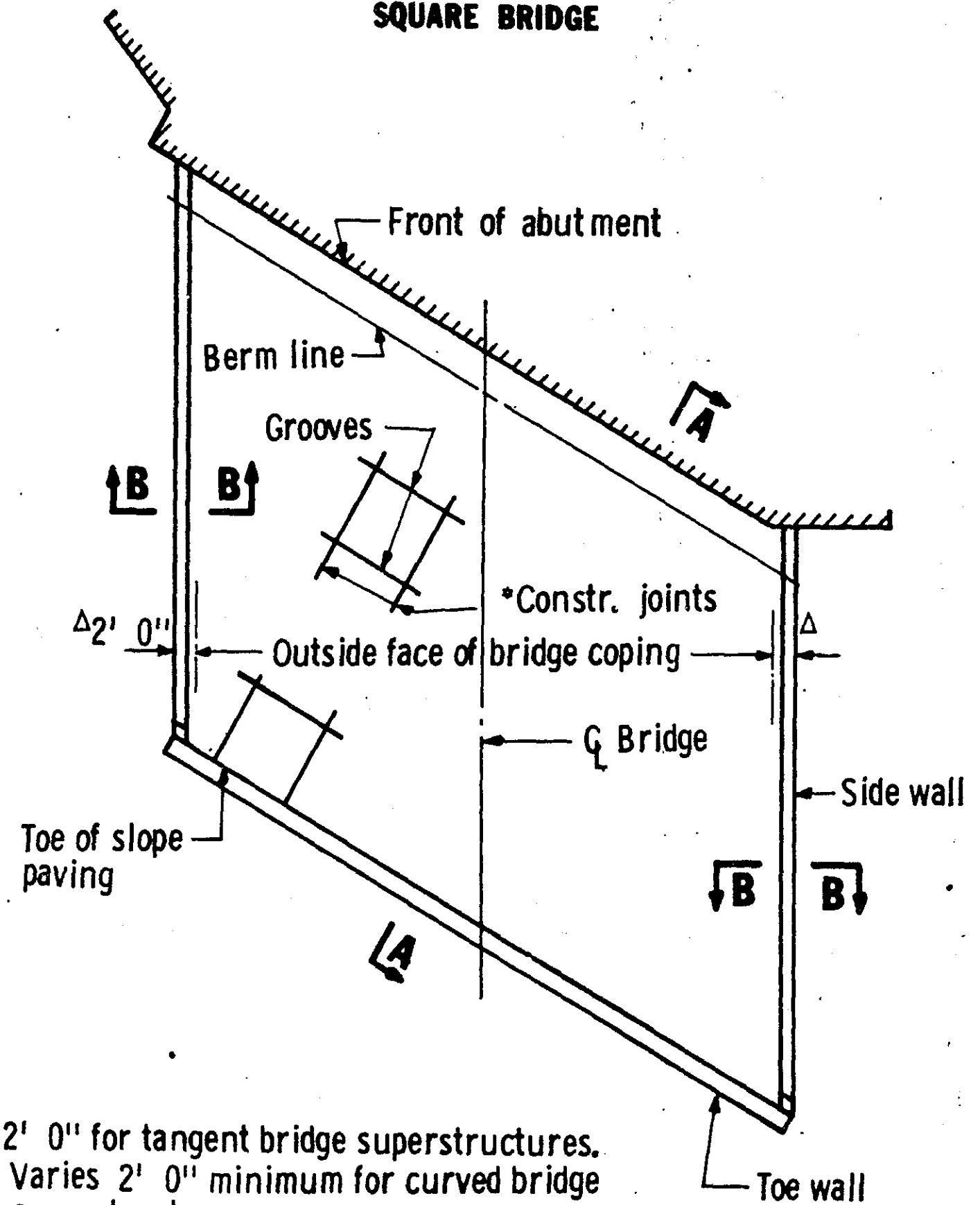


Fig. 5-397.308

TITLE: BRIDGE APPROACH PANEL ALL SKEWS (BITUMINOUS PAVEMENT)	DES: J.P.	DR: D.F.	APPROVED: 	Bridge No. 62543
	CHK: B.J.	CHK: J.P.	6-12-87	
	Sheet No. 14 of 21 Sheets			

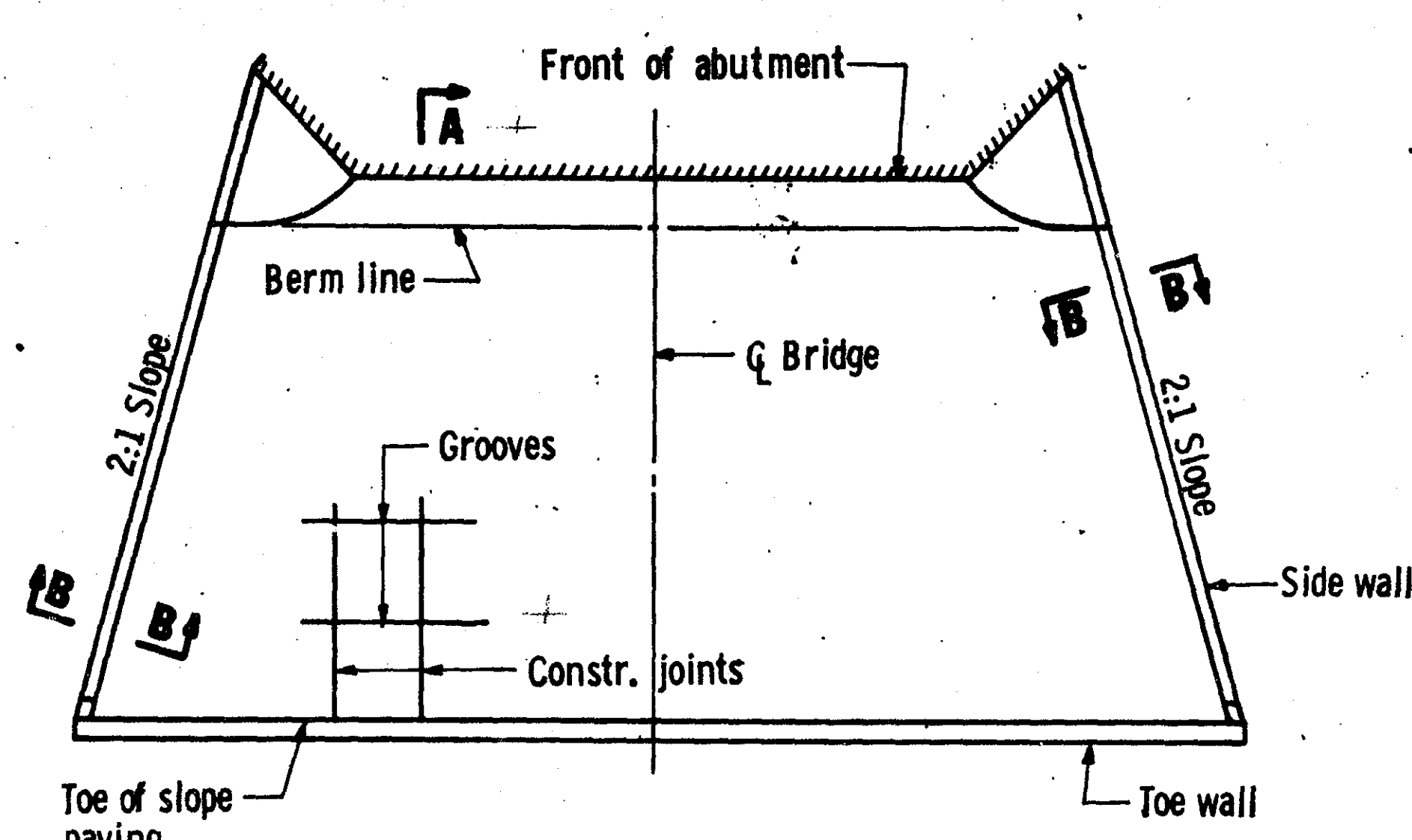


SQUARE BRIDGE

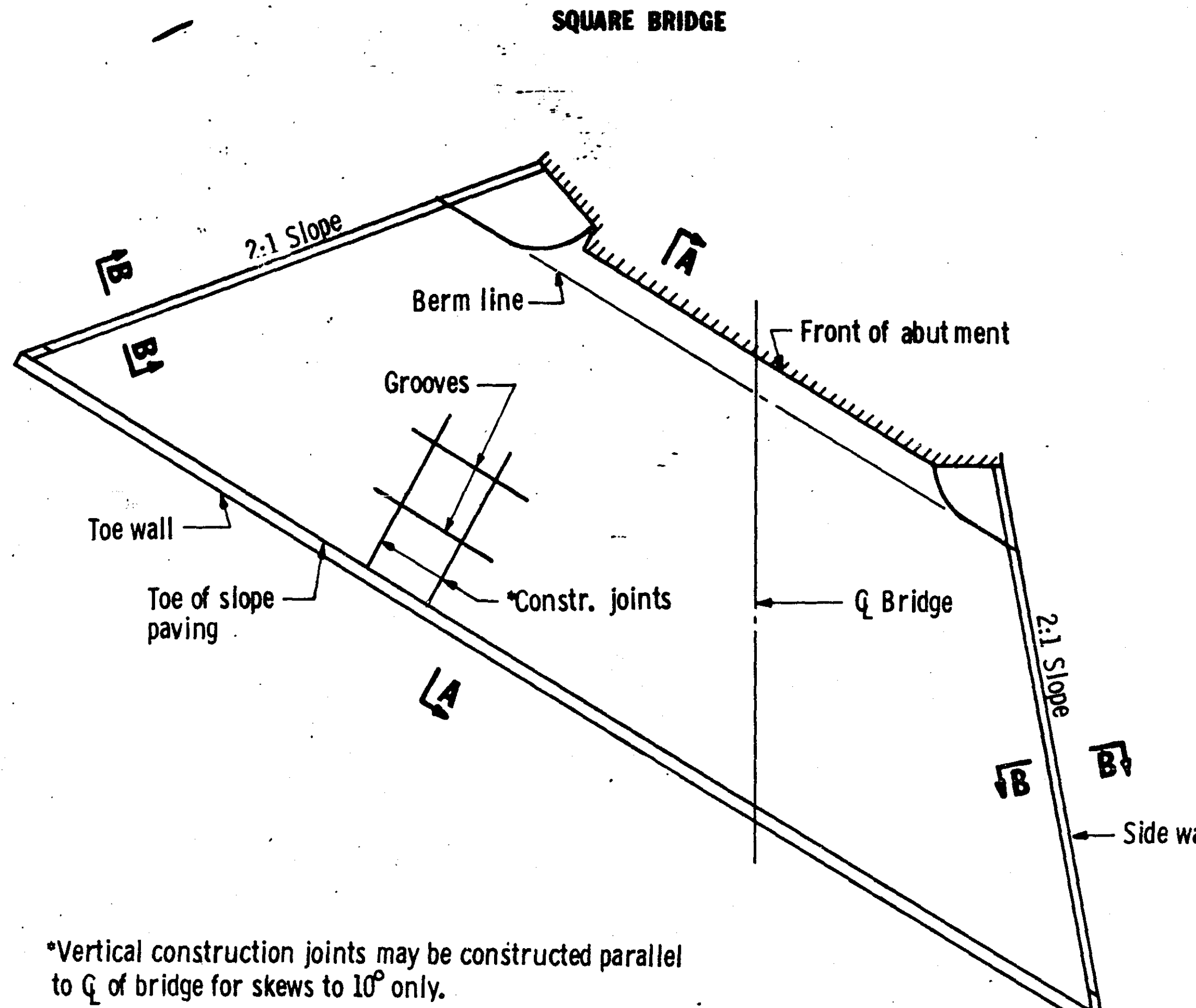


2' 0" for tangent bridge superstructures. Varies 2' 0" minimum for curved bridge superstructures.
*Vertical construction joints may be constructed parallel to Q of bridge for skews to 10° only.

**SKEWED BRIDGE
LAYOUTS FOR SLOPES 2:1 OR FLATTER**

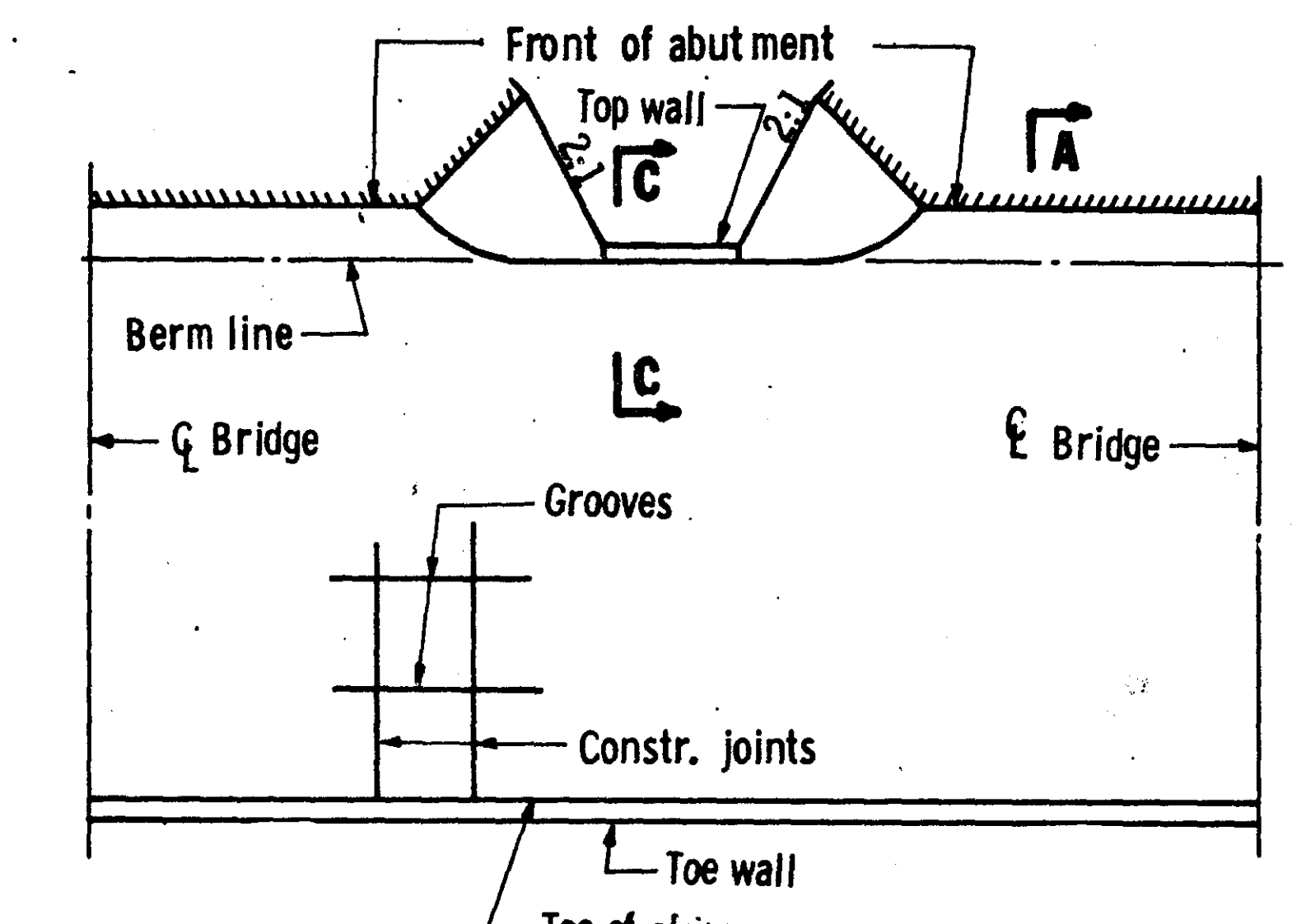


SQUARE BRIDGE

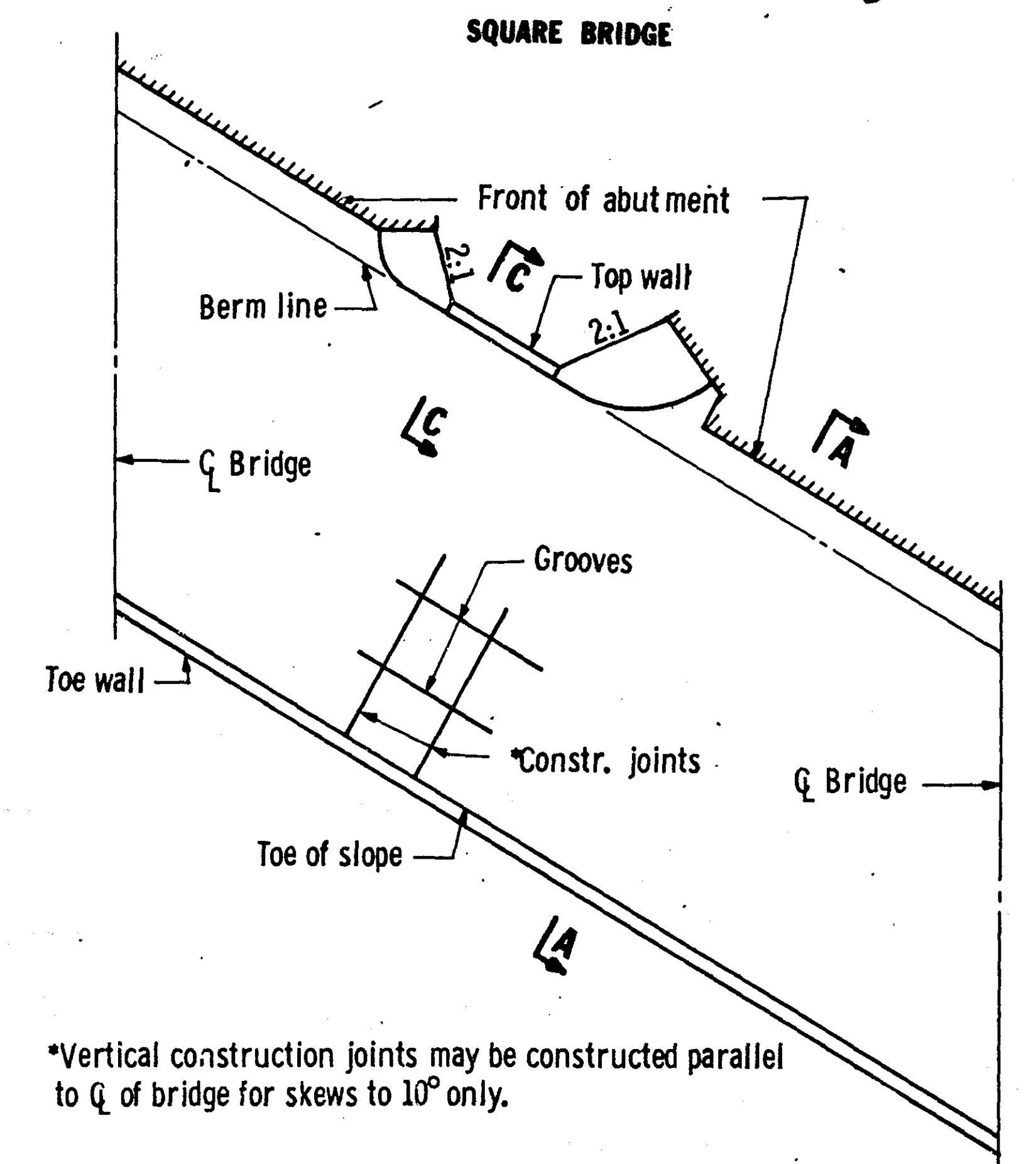


*Vertical construction joints may be constructed parallel to Q of bridge for skews to 10° only.

**SKEWED BRIDGE
LAYOUTS FOR SLOPES STEEPER THAN 2:1**

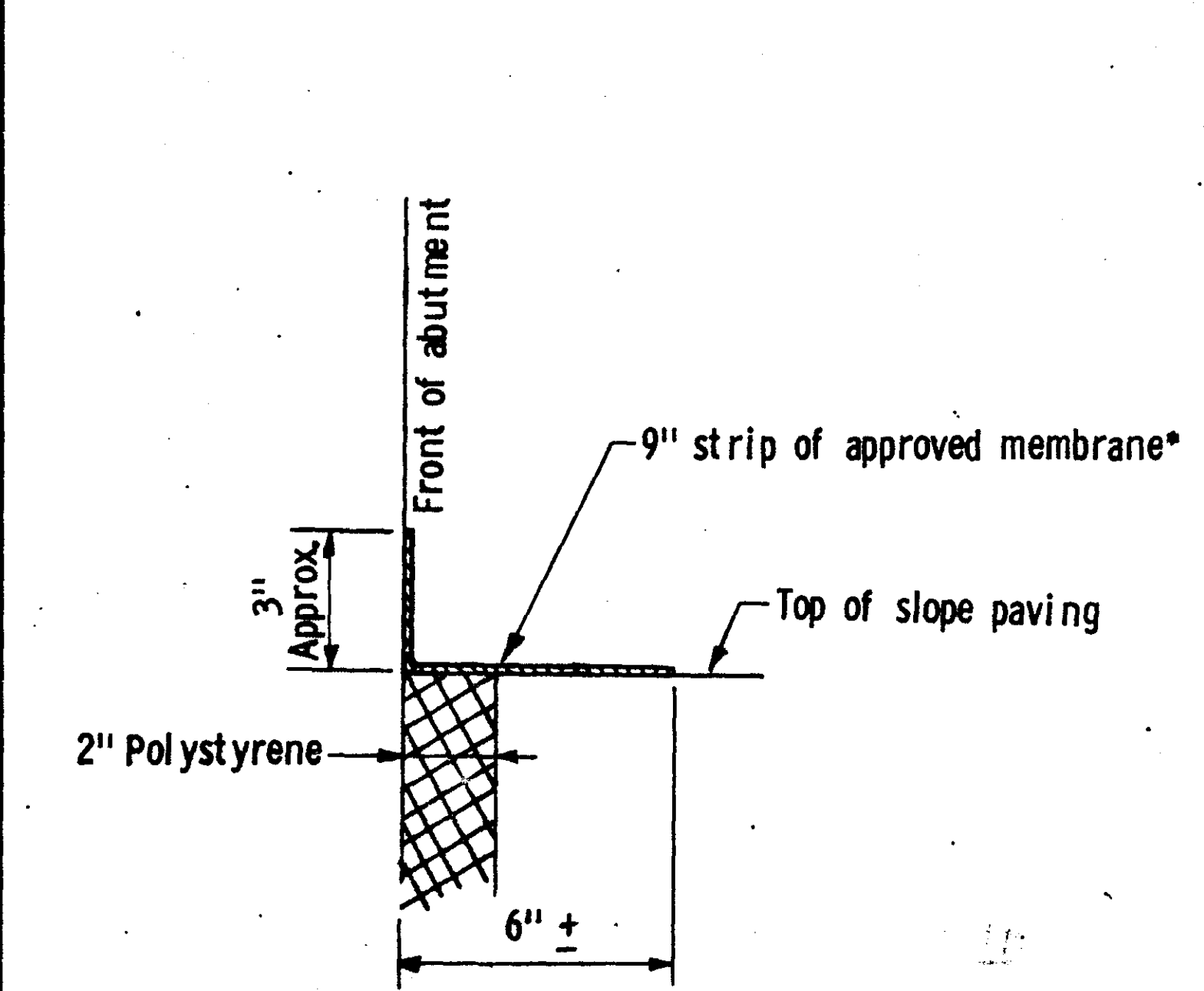


SQUARE BRIDGE



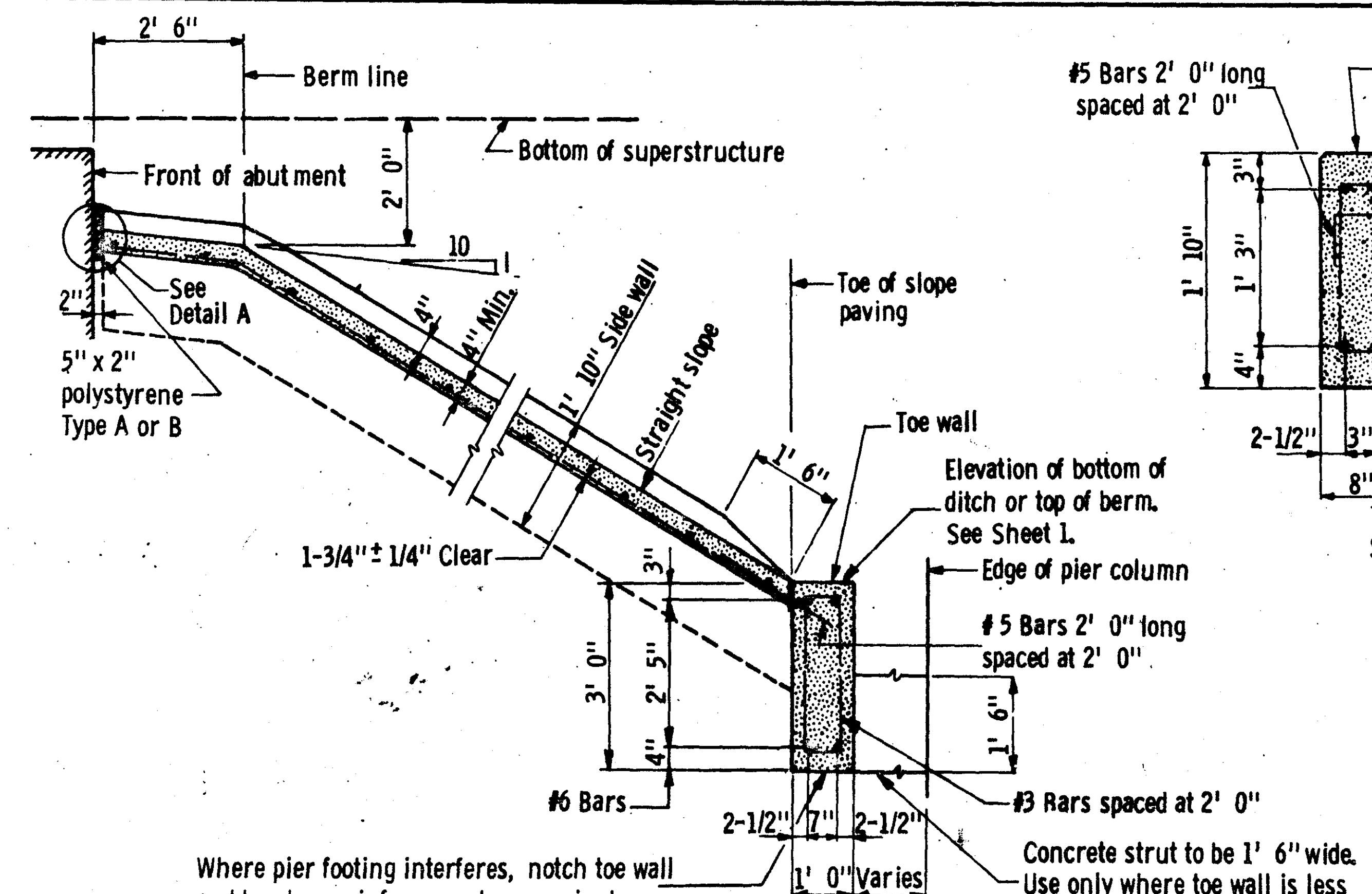
*Vertical construction joints may be constructed parallel to Q of bridge for skews to 10° only.

**SKEWED BRIDGE
LAYOUTS FOR SLOPES STEEPER THAN 2:1
BETWEEN BRIDGES**

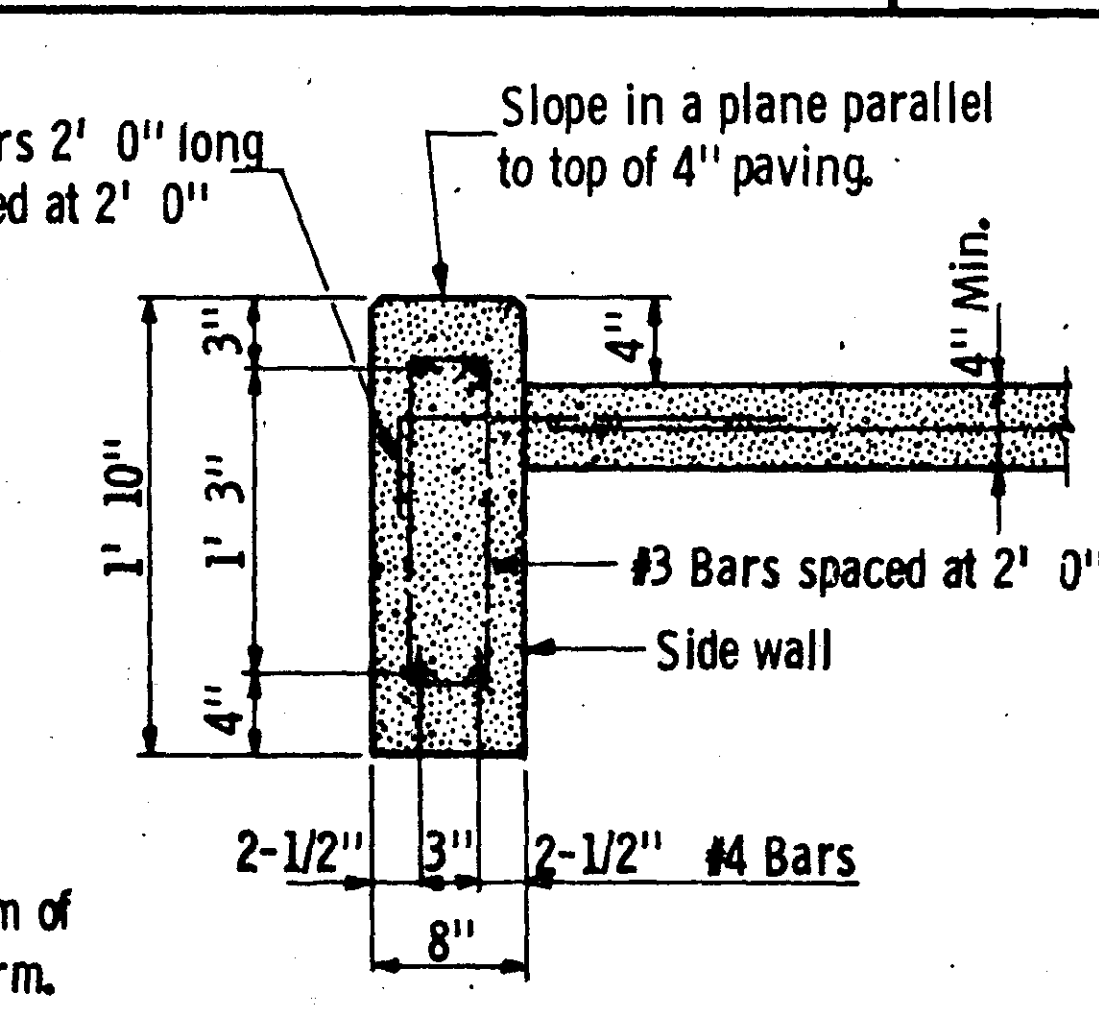


DETAIL A

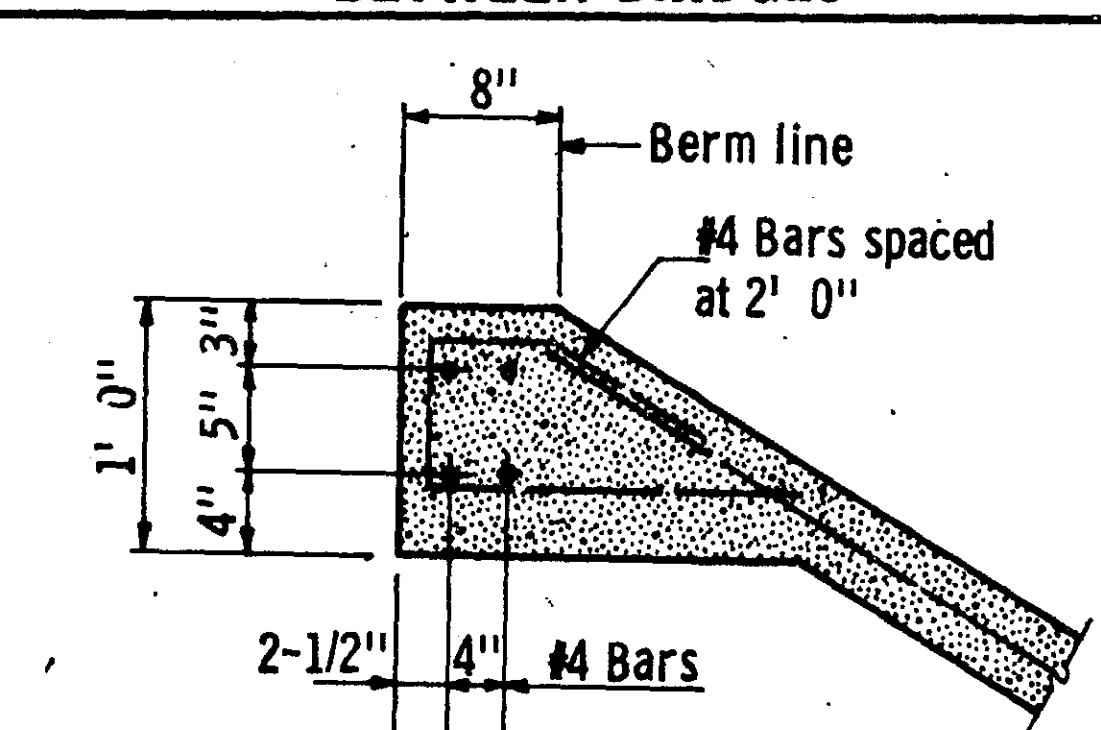
*Membrane shall be a rubberized asphalt integrally bonded to polyethylene sheeting or approved equal. Material shall be placed in accordance with manufacturers recommendations.



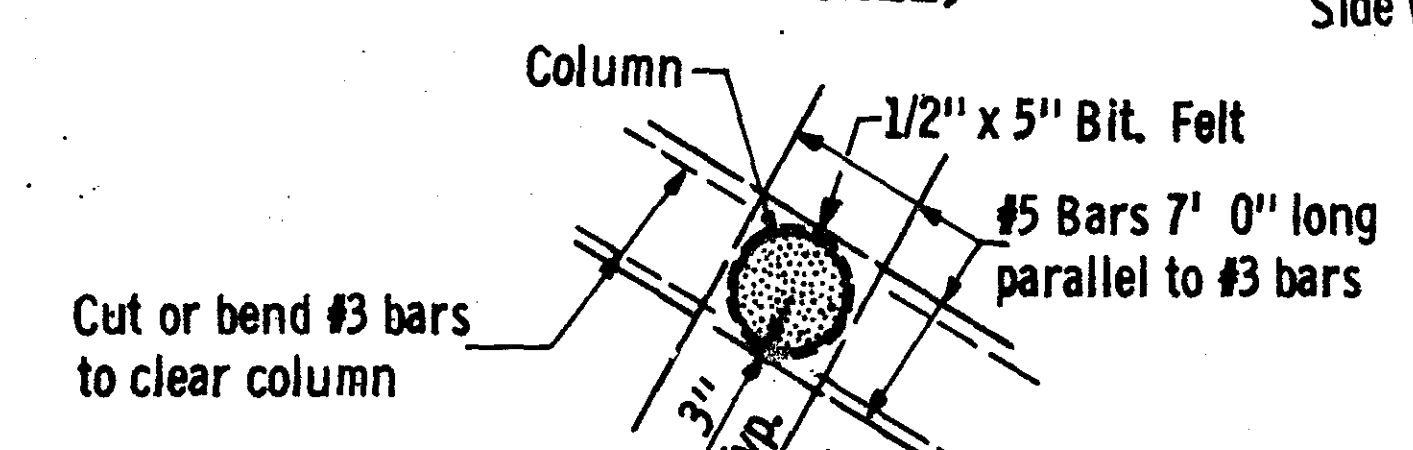
SECTION A-A



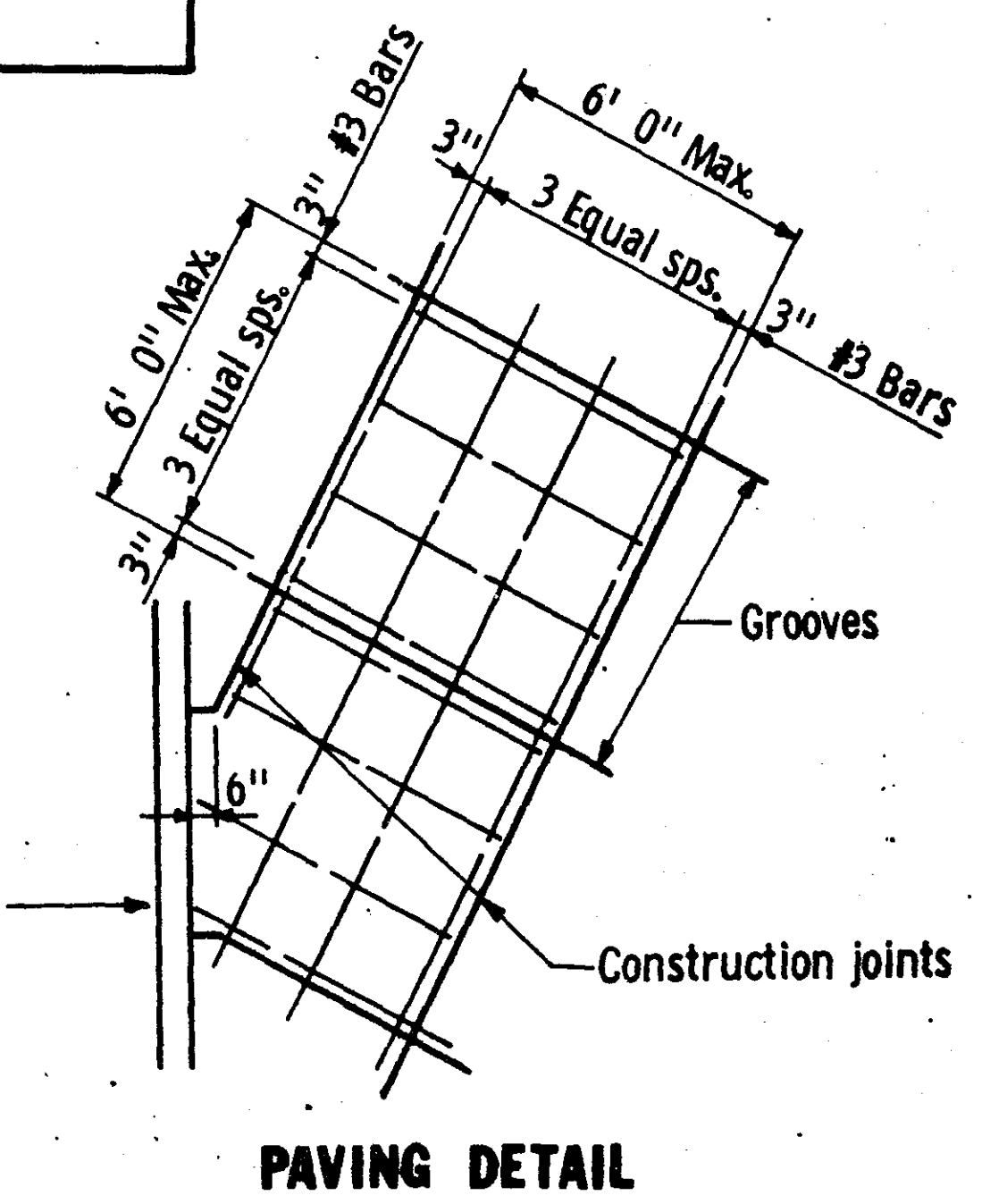
**SECTION B-B
(SIDE WALL)
Normal to slope**



**SECTION C-C
(TOP WALL)**

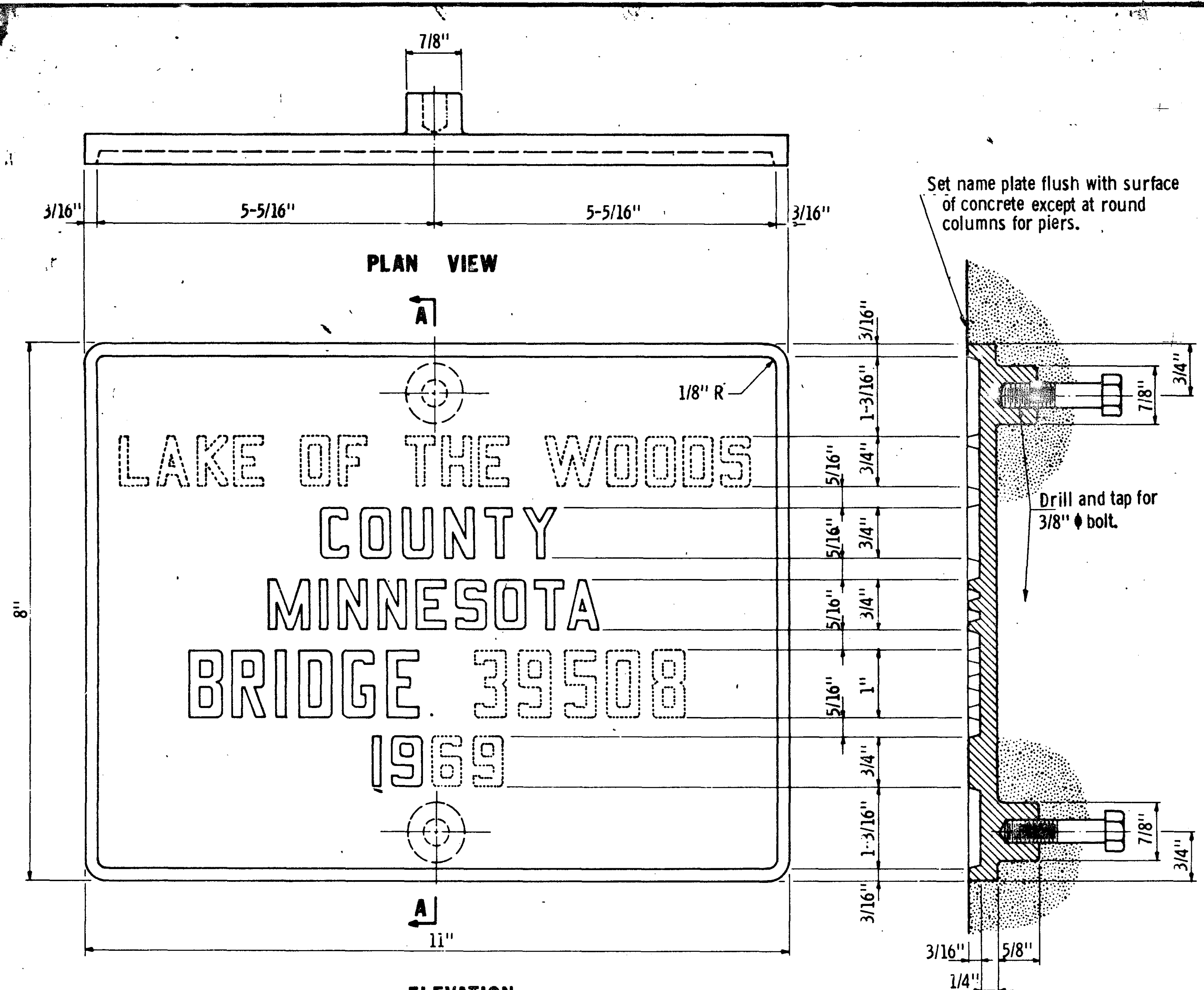


**DETAIL WHERE PIER COLUMN
EXTENDS THRU SLOPE PAVING**



PAVING DETAIL

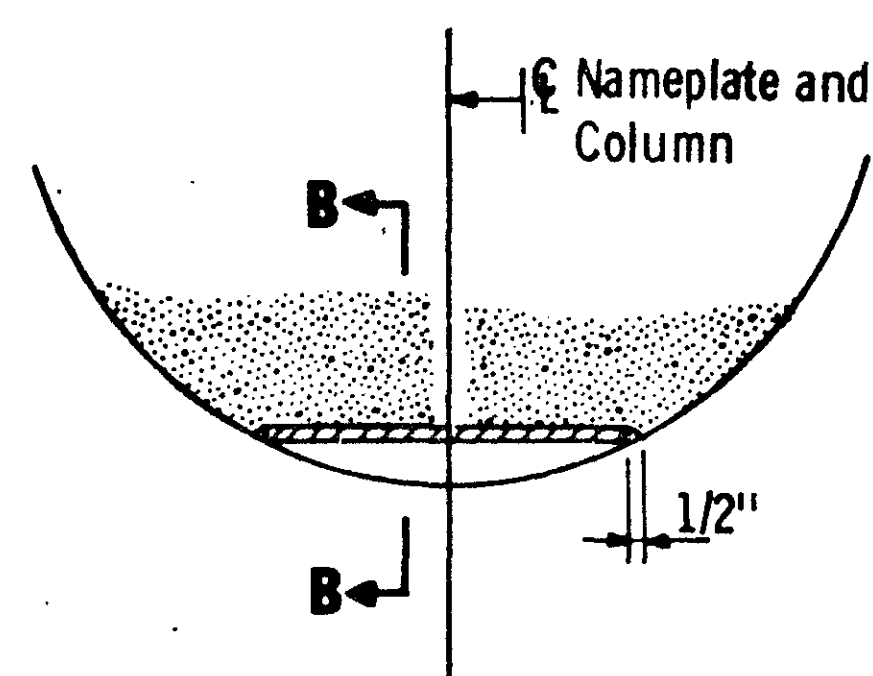
TITLE: CLASS B SLOPE PAVING UNDER BRIDGES	S.P. 62-668-18			Fig. 5-397.301 Feb. 25, 1974 Bridge No. 62543
	DES: J.P.	DR: J.P.	A ^{PROVED} : J.J.	
	CHK: J.J.	CHK: J.J.	6-12-87	
Sheet No. 15 of 21 Sheets				



ELEVATION

The numbers shown above are for illustration.
Data to be shown on name plate is as follows:

BRIDGE 62543
YEAR 1987
COUNTY: RAMSEY



SECTION B-B

NAMEPLATE PLACEMENT

(Round Concrete Pier Columns)

ABCDEFGHIJKLMNOPQRSTUVWXYZ

1234567890

Specification reference:

LETTERS & NUMBERS FOR NAMEPLATES

2471, 3H, A.S.T.M. Designation: B145 - Alloy 836.

APPROVED: March 15, 1976
Developed by: OFFICE OF ENGINEERING
STANDARDS AND BRIDGE DESIGN
Issued by: OFFICE OF ENGINEERING
STANDARDS

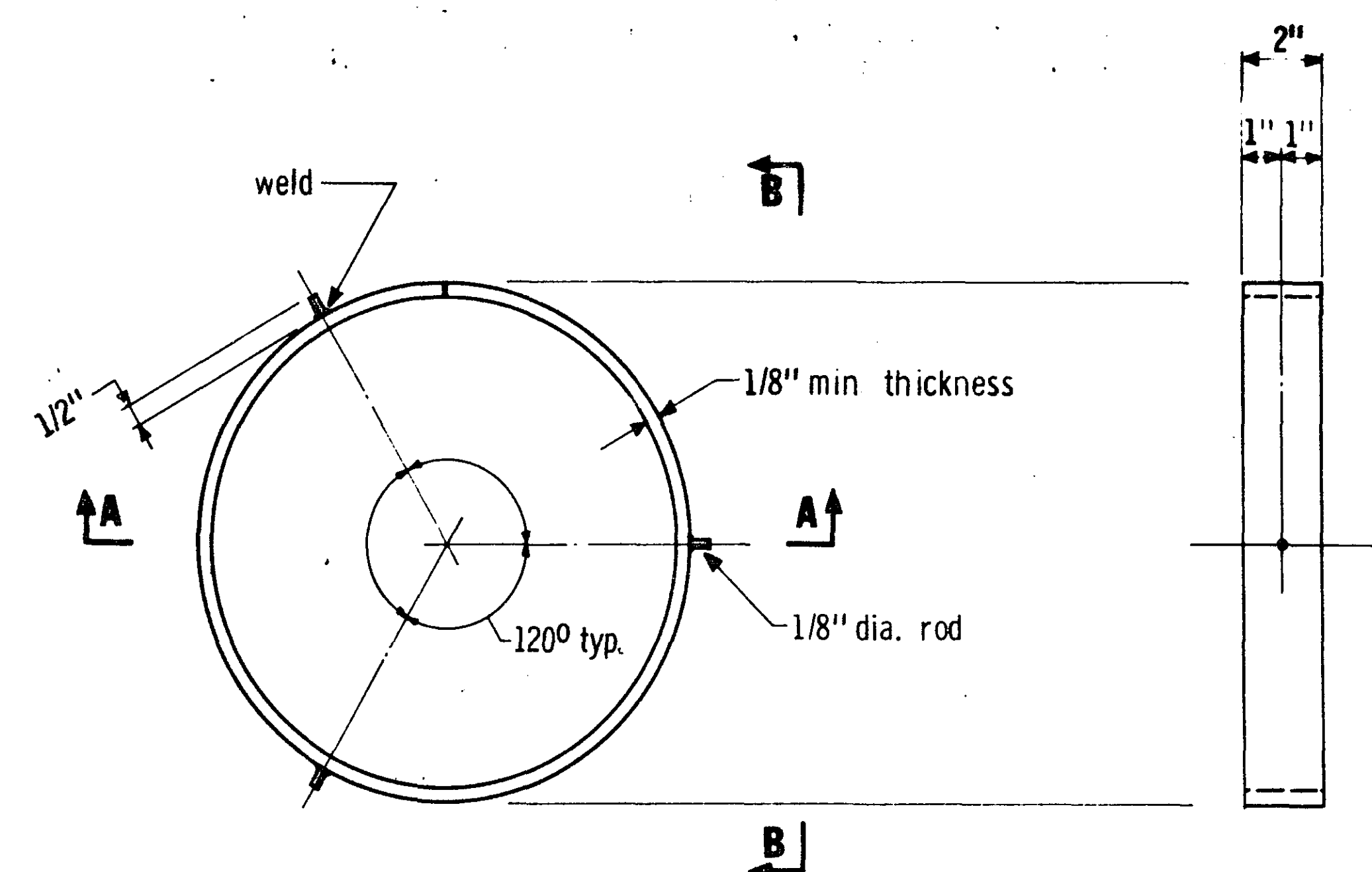
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
BRIDGE NAMEPLATE
COUNTY BRIDGES

DETAIL NO.

B103

NOTES:

No shop drawing required.
Material shall comply with SPEC. 3327.
Numbers and letters shall conform to those shown.
Draft on letters shall not be more than 3" in 12" Horizontal spacing of letters shall produce a balanced layout in proportion to spacing shown.
Top surface of letters and frames shall be burnished.
Furnish 2 steel bolts 3/8" ϕ x 3" long with each plate.
All dimensions for 3/4" high letters and numbers shall be in direct proportion to those shown for the 1" high letters and numbers.

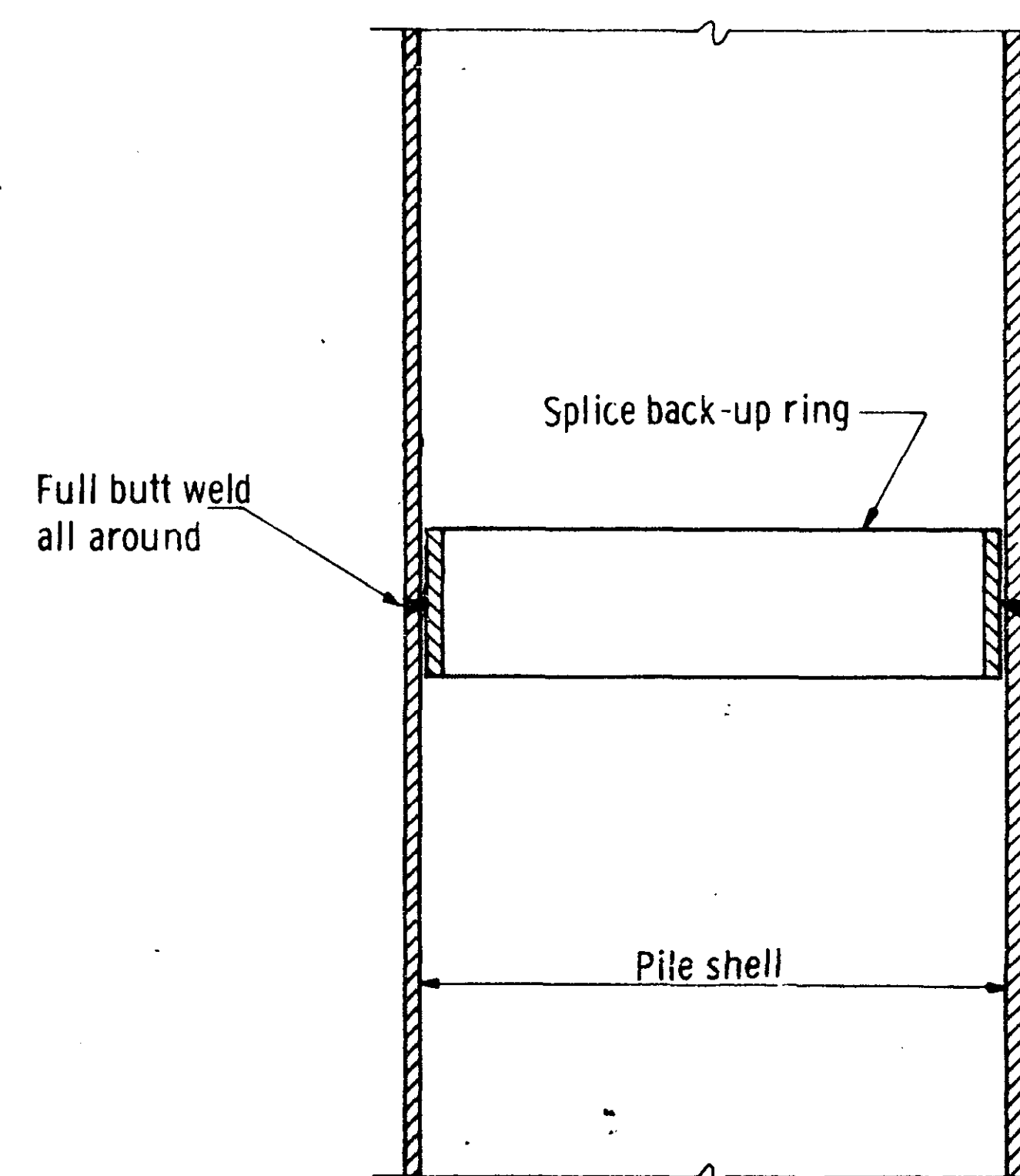


PLAN VIEW

(Pile not shown)

SECTION B-B

(Pile not shown)



SECTION A-A

NOTES:

Approved commercial pile splice back-up ring may be used in lieu of the type detailed. Back-up ring shall have a tight fit.
Welding electrodes shall be A. W. S. Type E7016 or E7018 (low-hydrogen)
Low-hydrogen electrodes shall be supplied in hermetically (air-tight) sealed containers.
Low-hydrogen electrodes shall be stored in holding ovens at a temperature of not less than 250° F.
Low-hydrogen electrodes shall be placed in a holding oven for at least 8 hours, after having been exposed to the atmosphere for more than 2 hours.
Electrodes which have become wet, soiled or damaged shall not be used.
Welding shall not be done when the ambient temperature is lower than 0° F. or when the pile is wet or exposed to falling rain or snow. When the pile metal temperature is below 32° F., the pile metal in the area of the weld shall be heated to a minimum temperature of 70° F. and maintained at this temperature during welding.

APPROVED July 21, 1972

Engineering Standards Engineer
RESEARCH AND STANDARDS
DIVISION

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

PILE SPLICE
CAST-IN-PLACE CONCRETE PILES

DETAIL NO.

B201

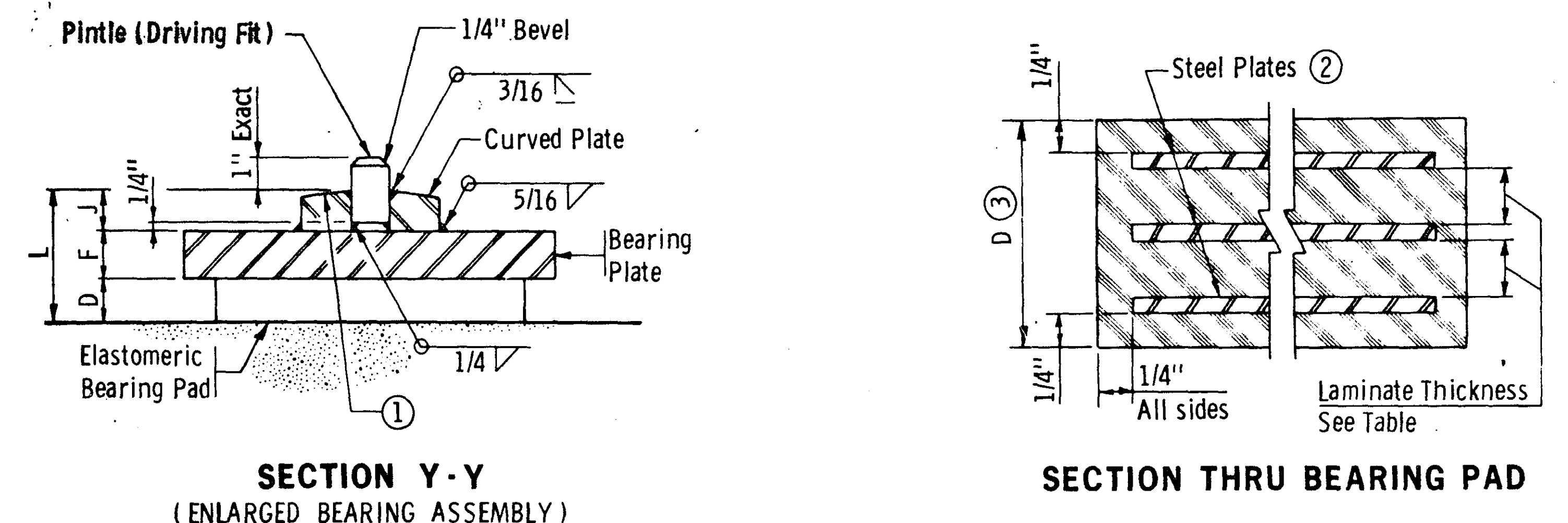
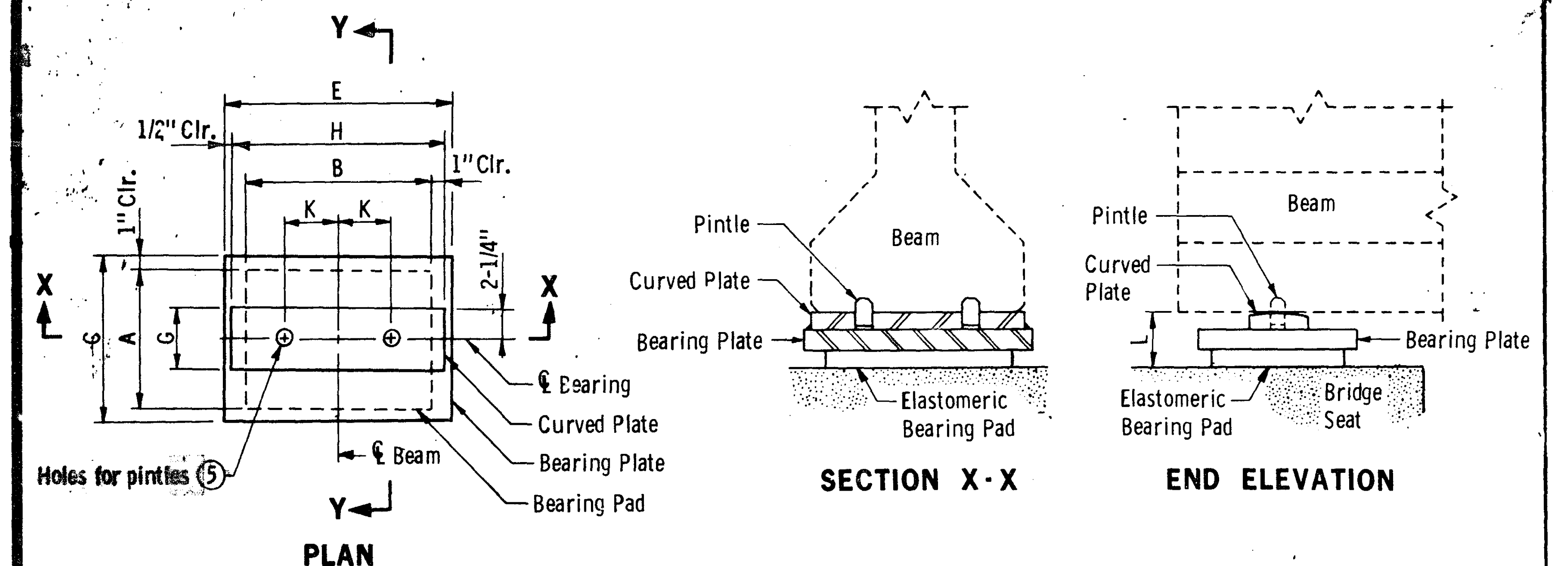
DETAILS

DES: J.P. DR: D.F. APPROVED: 6-12-87
CHK: B.J. CHK: J.P.
Sheet No. 16 of 21 Sheets

Bridge No.
62543

S.P. 62-668-18

27-130

[illegible]

- ① The radius of the curved plate shall be 1' 0" min. and 1' 6" max. Finish to 250 Micro. The finished thickness of the plate may be 1/16" less than shown.
- ② See Bridge Design Manual for design requirements.
- ③ **1-1/4" dia. pintle for total loads to 200 Kips.**
1-1/2" dia. pintle for total loads over 200 Kips.

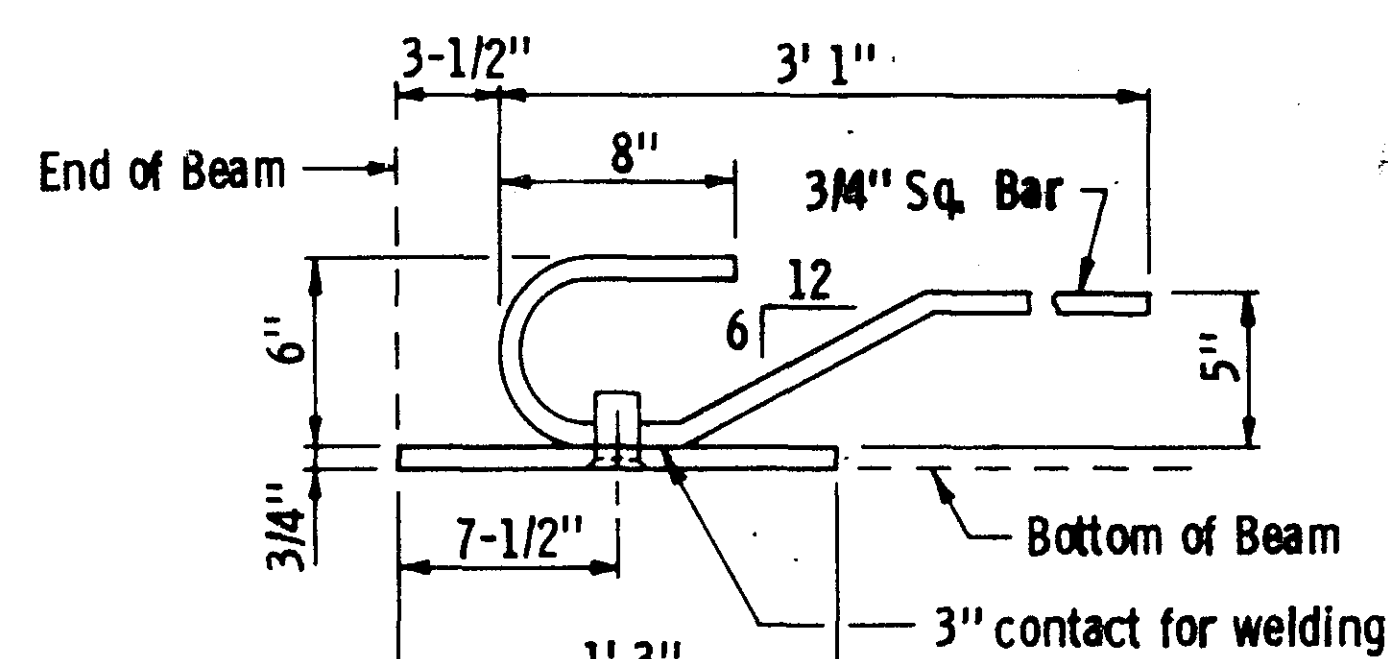
- ① The radius of the curved plate shall be 1' 0" min. and 1' 6" max. Finish to 250 Micro. The finished thickness of the plate may be 1/16" less than shown.
- ② Do not galvanize these plates.
- ③ The total thickness shown includes the steel plates.
- ④ See Bridge Design Manual for design requirements.
- ⑤ **1-1 1/4" dia. pintle for total loads to 200 Kips.**
1-1 1/2" dia. pintle for total loads over 200 Kips.

APPROVED: <u>May 25, 1982</u>	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by: ENGINEERING STANDARDS AND BRIDGES AND STRUCTURES OFFICES	CURVED PLATE BEARING ASSEMBLY	August 19, 1982	B311
Issued by: OFFICE OF ENGINEERING STANDARDS	PRESTRESSED CONCRETE BEAMS (EXPANSION)		

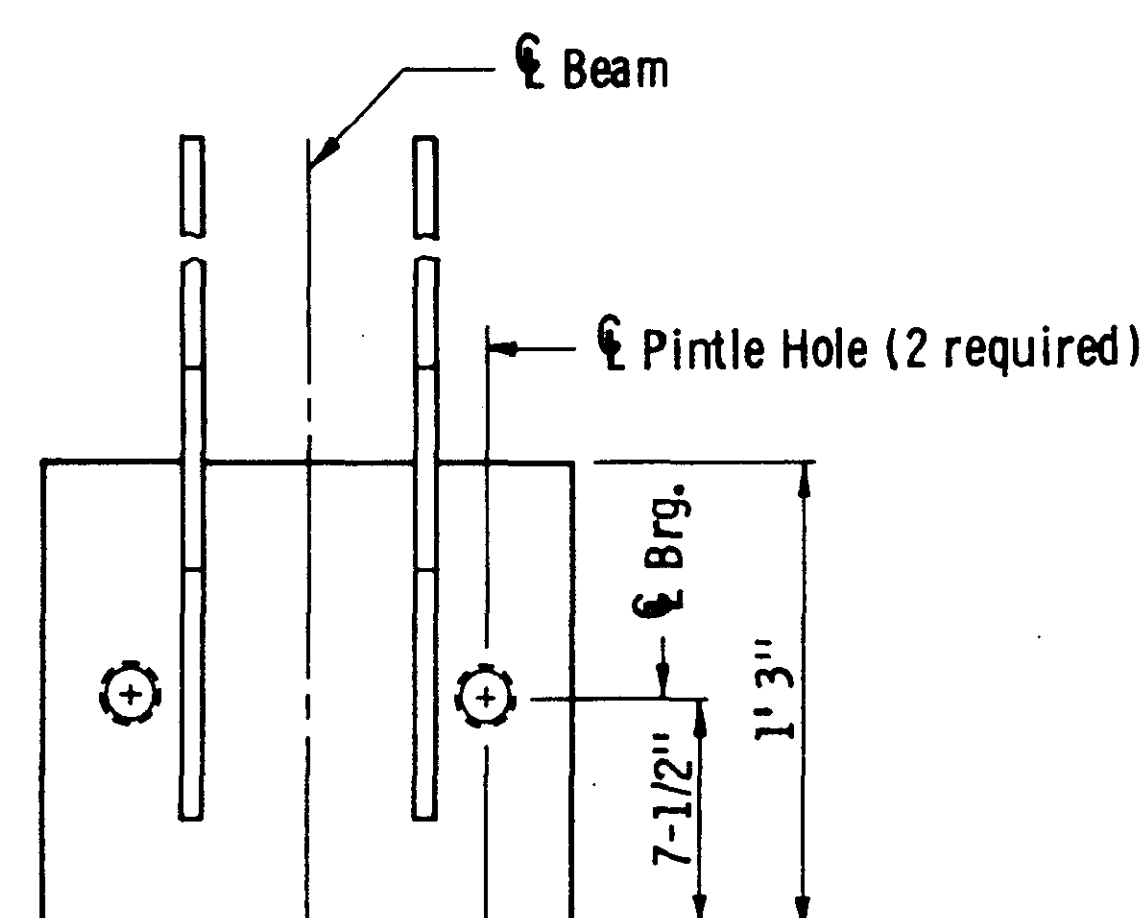
Diagram illustrating the vertical dimensions and reinforcement details of a wall section:

- Horizontal dimensions (from top to bottom):
 - 7" Bulb Tee Beams
 - 7" 63", 72" & 81" Beams
 - 6" 54" Beams
 - 5" 36", 40" & 45" Beams
 - 6" 28" Beams
- Vertical reinforcement details:
 - Two vertical bars are shown, labeled 5/16.
 - The bottom reinforcement is labeled W ①.
 - A note indicates "Chamfer (sides only)".

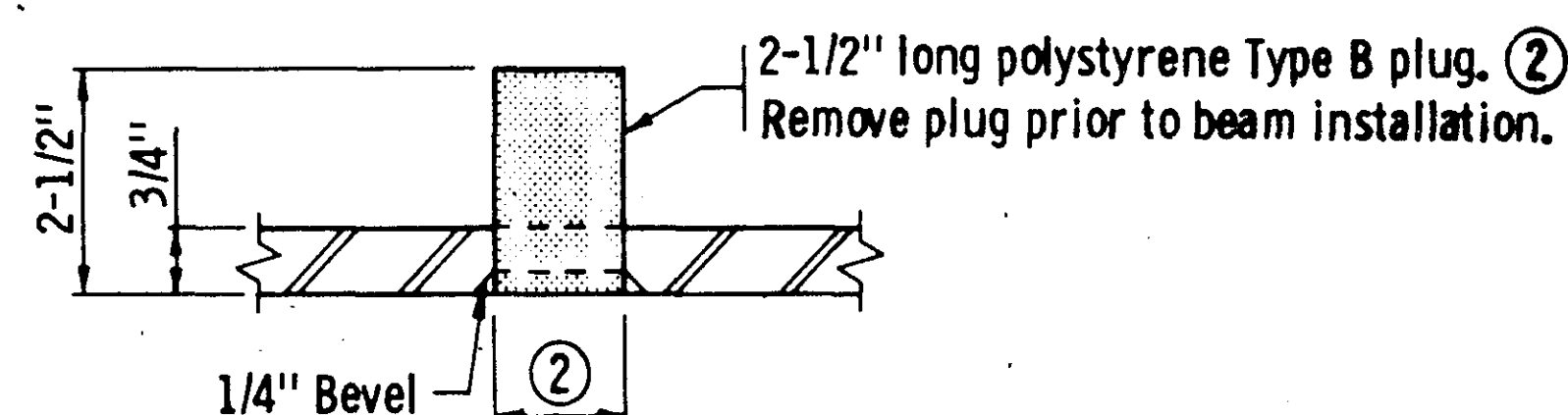
FRONT VIEW



SIDE VIEW



PINTLE HOLE DETAIL



Material to be structural steel per Spec. 3306
Sole plate for Bearing Assembly to be hot dipped galvanized
per Spec. 3394 after fabrication.
Pintle holes shall be free of zinc build up from galvanizing.
Payment for sole plates to be included in price bid for
Prestressed Concrete Beams.

- ① Dimension "W" to be the width at the bottom flange of the beam minus 1/4".
- ② 1-1/2" dia. for 1-1/4" dia. pintles.
1-3/4" dia. for 1-1/2" dia. pintles.
Check bearing assemblies for pintle size used.

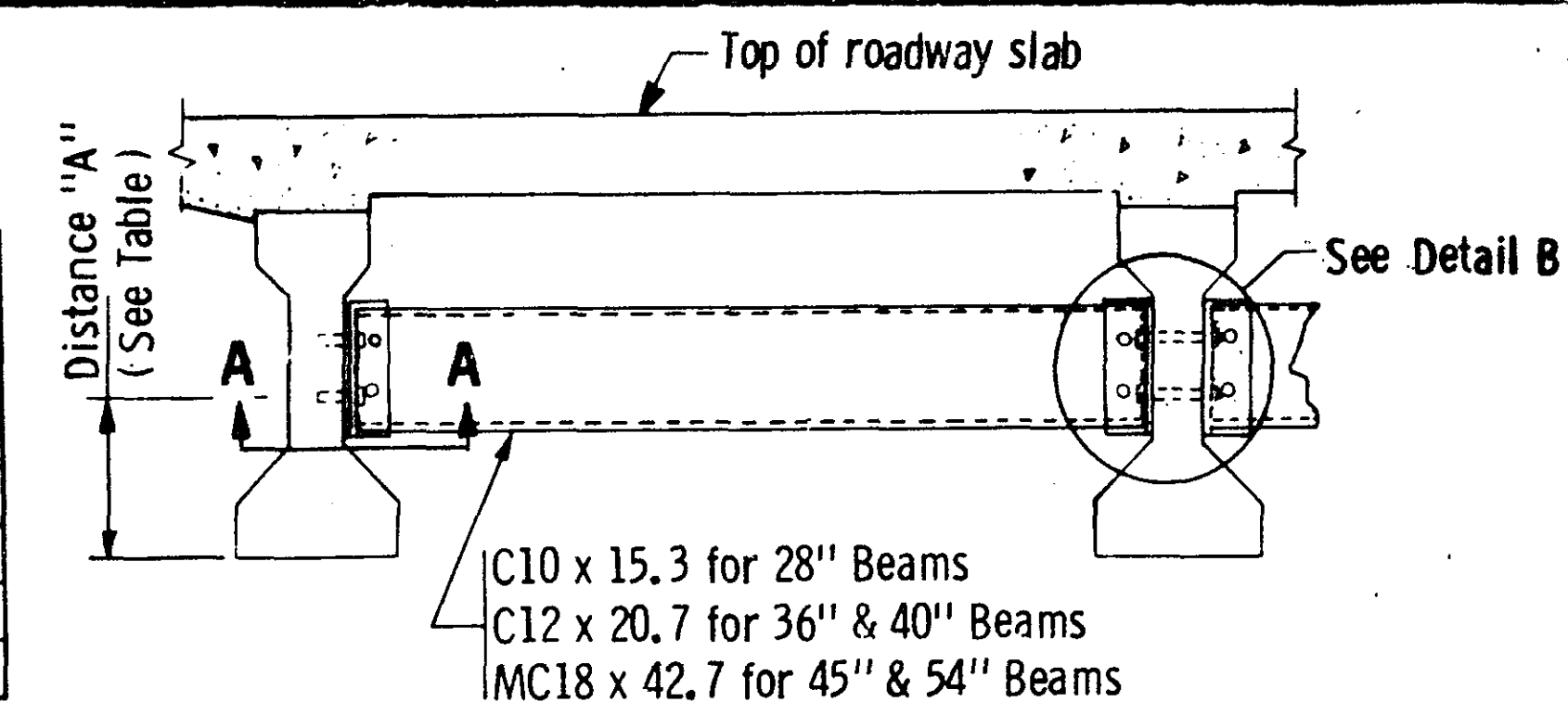
APPROVED: October 11, 1982
Developed by: ENGINEERING STANDARDS
& BRIDGES AND STRUCTURES
OFFICES
Issued by: OFFICE OF ENGINEERING
STANDARDS

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
SOLE PLATE
PRESTRESSED CONCRETE BEAMS
(FOR BEARINGS WITH PINTLES)

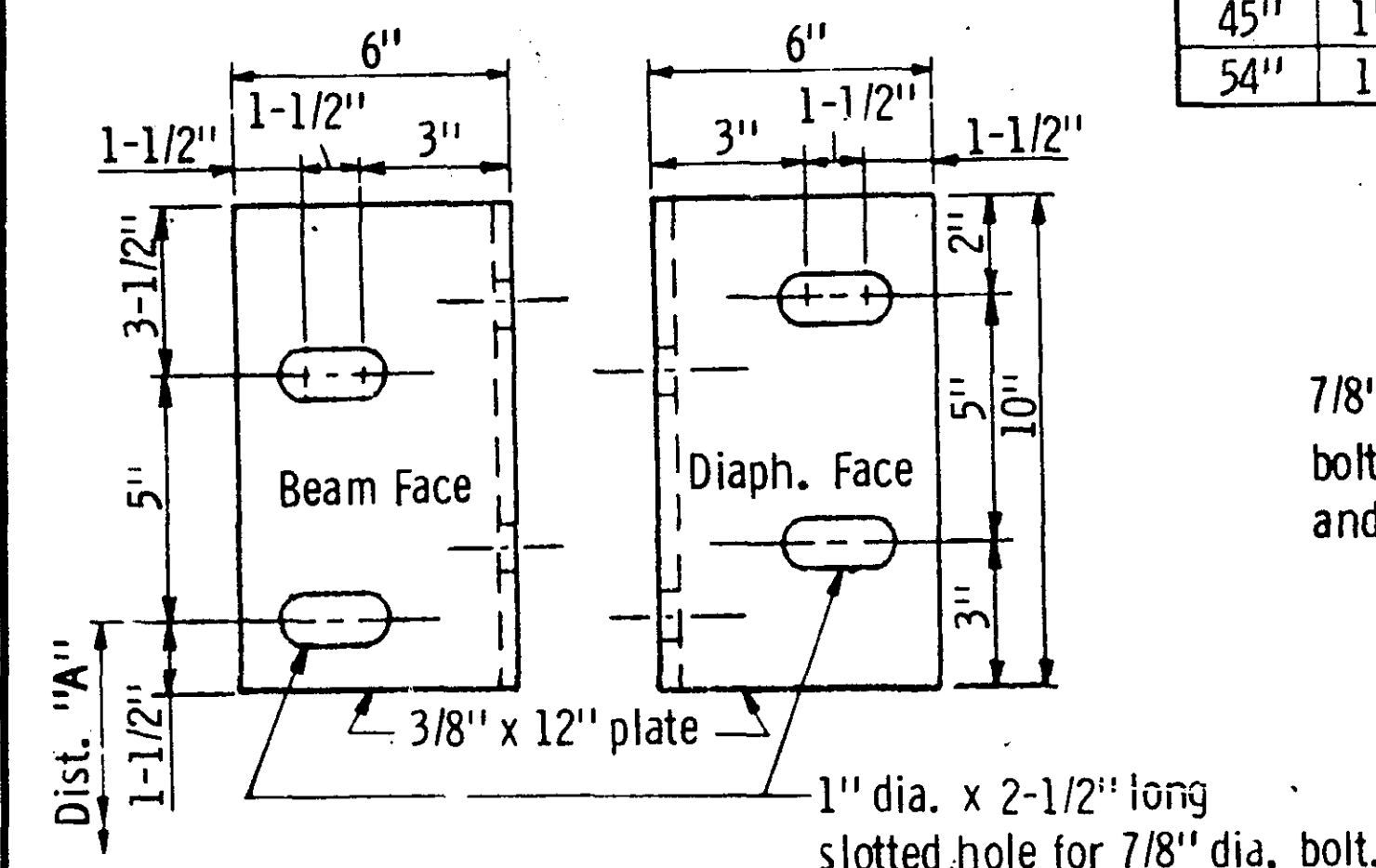
REVISION	DETAIL NO.
----------	------------

B303

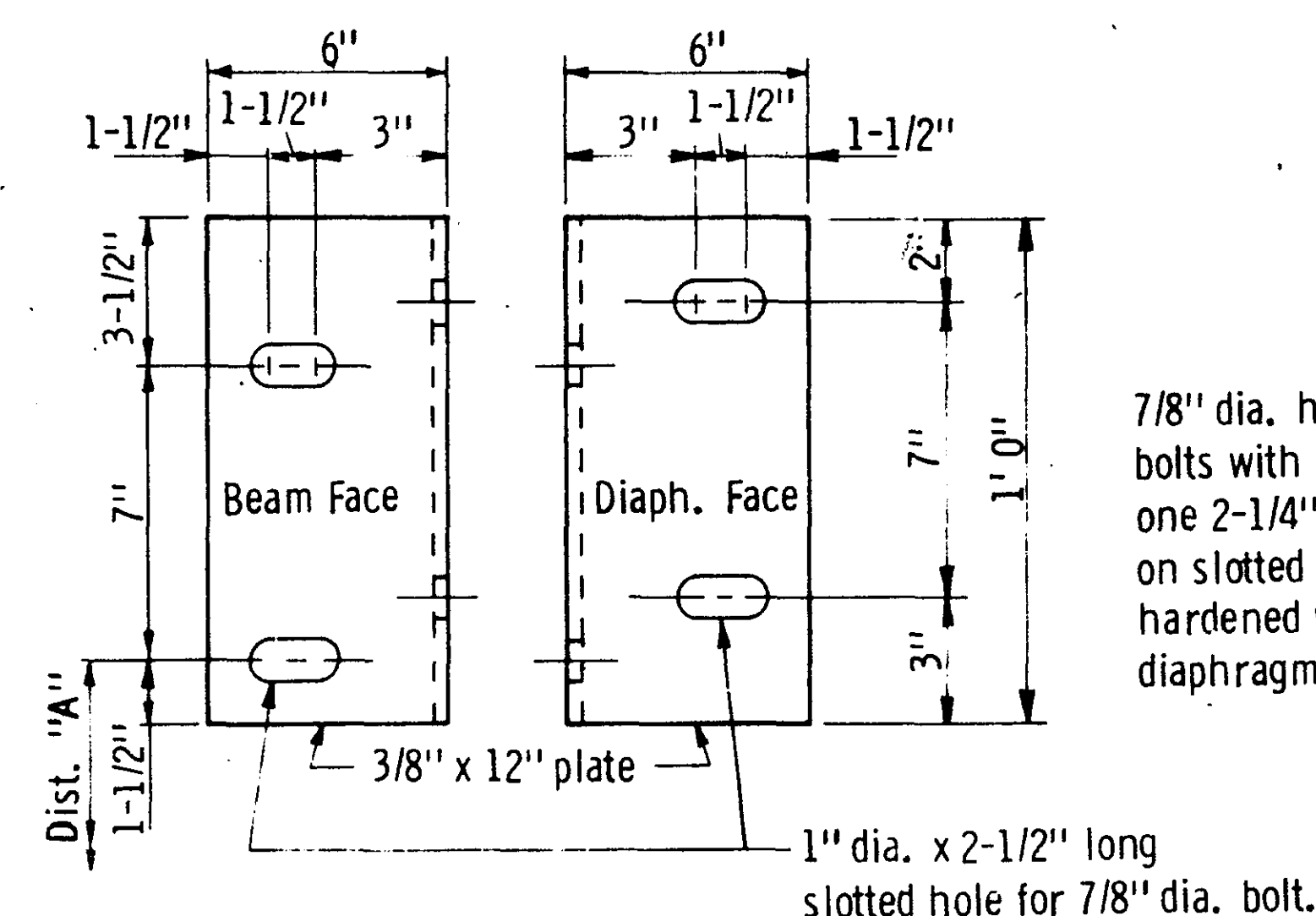
Beam Ht.	Distance "A"
28"	1' 0"
30"	1' 1-1/2"
36"	1' 3"
40"	1' 5"
45"	1' 4-1/2"
54"	1' 9"



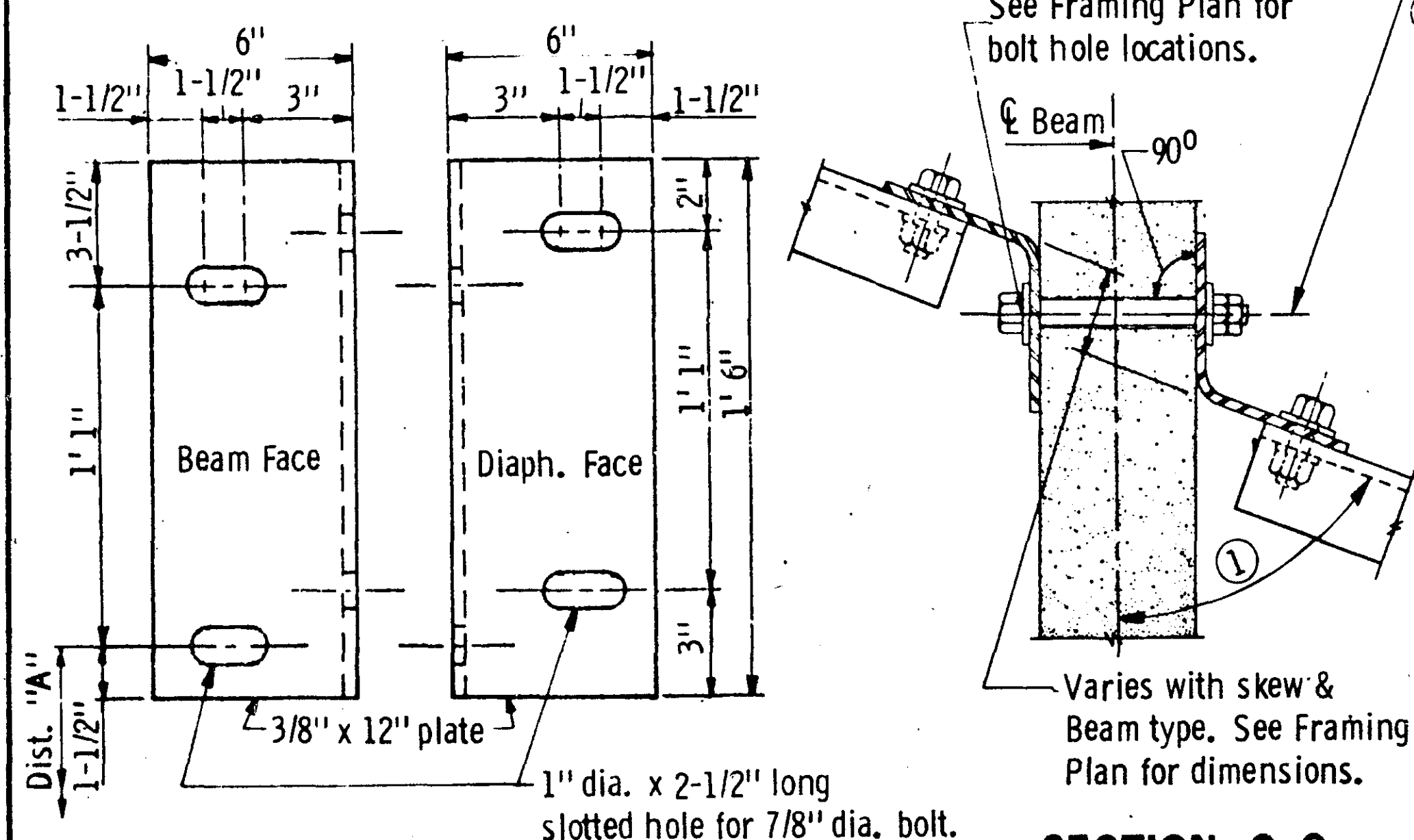
PART TRANSVERSE SECTION AT DIAPHRAGM



DIAPHRAGM SUPPORT FOR 28" BEAMS



DIAPHRAGM SUPPORT FOR 36" & 40" BEAMS AND 30" BULB TEES



DIAPHRAGM SUPPORT FOR 45" & 54" BEAMS

SECTION A-A
Typical Section at all
facia beam connections

DETAIL B
Interior Beam With
Continuous Line
Of Diaphragms

④ Conc. Diaphragm.-
 See Framing Plan

See Framing Plan for
bolt hole locations.

Q Beam!

①

Varies with skew: ρ

Varies with skew &
Beam type. See Fram
Plan for dimensions

SECTION C-C

Typical Section at
interior diaphragms

GENERAL NOTES

- ① For skew angles under 20° use 90° less the skew angle. For skew angles over 20° use 90°
- The leg of the 12" plate shall be shop bent to conform to the diaphragm. A $3/8" \times 6" \times 6"$ angle may be used for diaphragms perpendicular to beams.
- ② As an alternate to the 7/8" bolt connection shown, the contractor may submit details of a cast-in-place anchorage to the engineer for approval. Anchorage must provide ultimate pull out strength of 15 kips per anchorage.
- For bolt lengths greater than 9", use high strength bolts per Spec. SAE Grade 5 or better.
- The use of concrete intermediate diaphragms or steel intermediate diaphragms shall be optional to the contractor. All structural steel shown on this detail including bolts and washers shall be included in the payment for diaphragms for prestressed beams.
- Diaphragms over the piers are considered to be intermediate if the slab is continuous.

APPROVED: October 20, 1982

Developed by: OFFICE OF ENGINEERING
STANDARDS AND BRIDGE DESIGN

Issued by: OFFICE OF ENGINEERING
STANDARDS

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

STEEL INTERMEDIATE DIAPHRAGM
(FOR 28"-54" PRESTRESSED CONCRETE BEAM SPANS
AND 30" BULB TEE BEAMS)

As Built

REVISION	DETAIL NO.
Feb. 7, 1983	

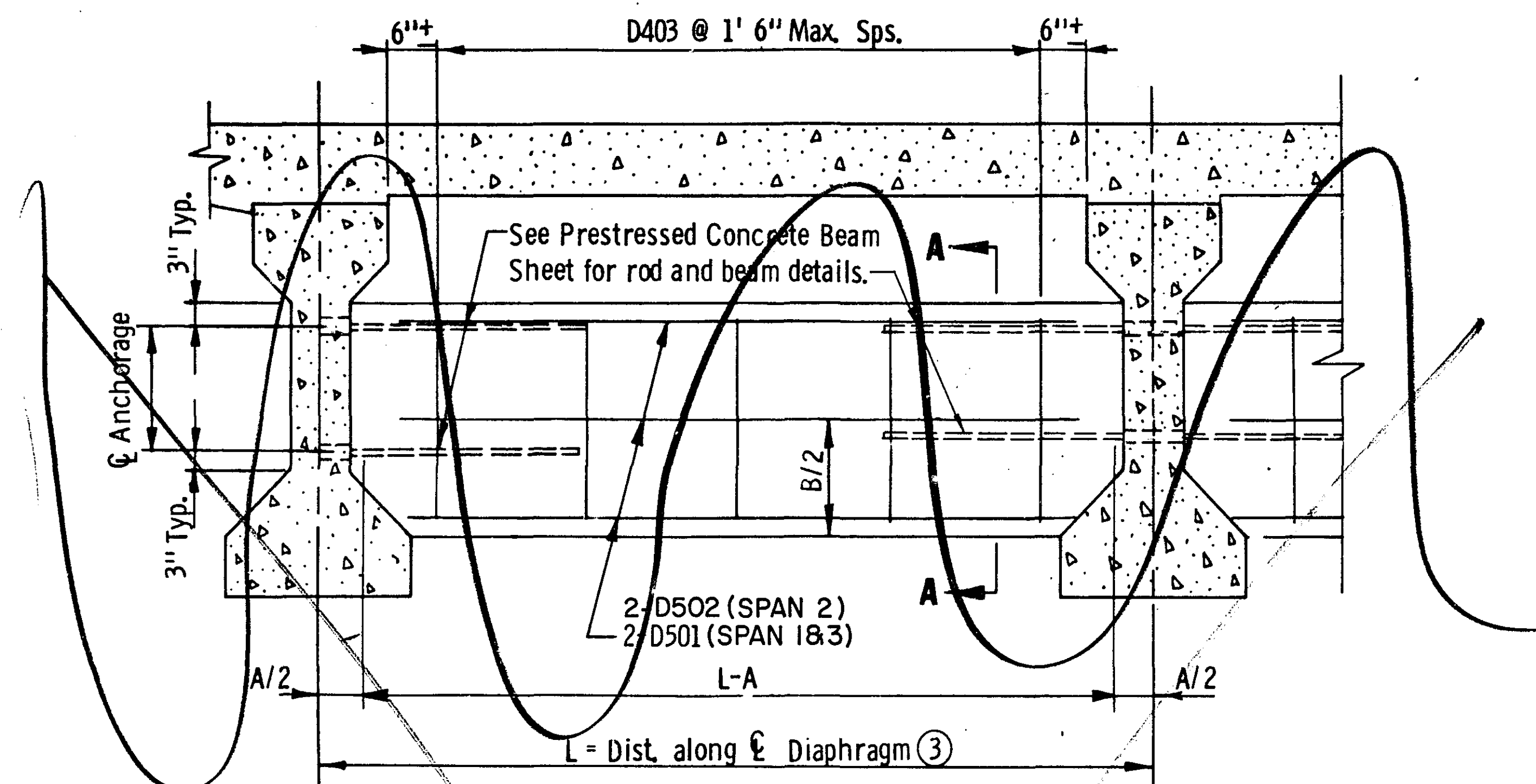
B403

DETAILS

DES: J.P.	DR: D.F.	APPROVED: 6-12-87
CHK: B.J.	CHK: J.P.	

Sheet No. 18 of 21 Sheets

Bridge No.	62543
------------	-------

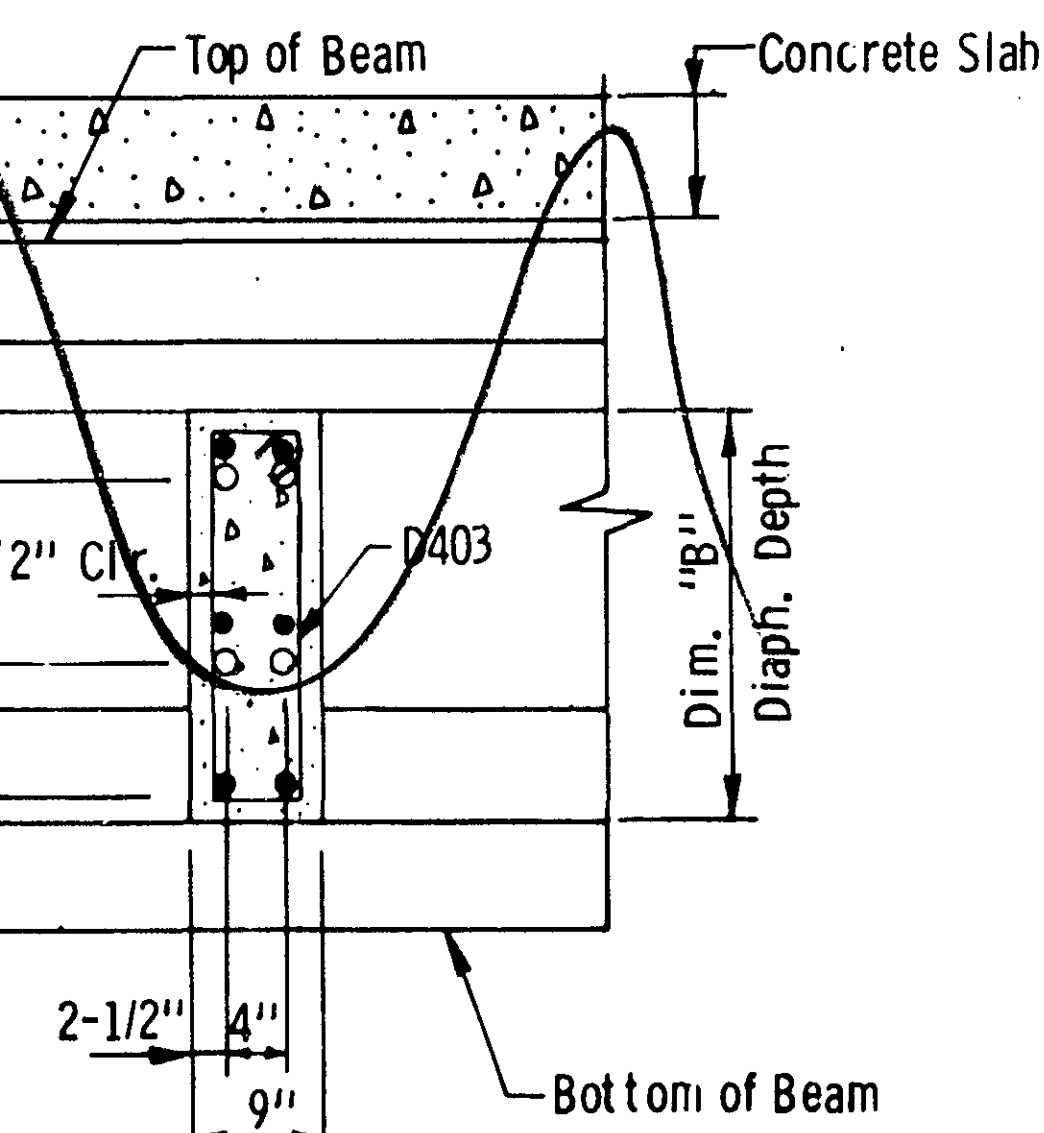


PART TRANSVERSE SECTION

Beam Height	Dim. "A" for comp. volume	Diaph. Dim. "B"	Bar D403 Length
28"	7-1/2"	1'-4"	3'-9"
36"	7-3/4"	1'-5"	4'-7"
40"	8-3/4"	1'-11"	4'-11"
46"	9"	2'-1 1/2"	5'-6"
54"	10-1/2"	2'-8"	6'-5"

Concrete volume per diaphragm
 $(L - A) \times B \times .75 = (\text{Cu. yd.})$
 27

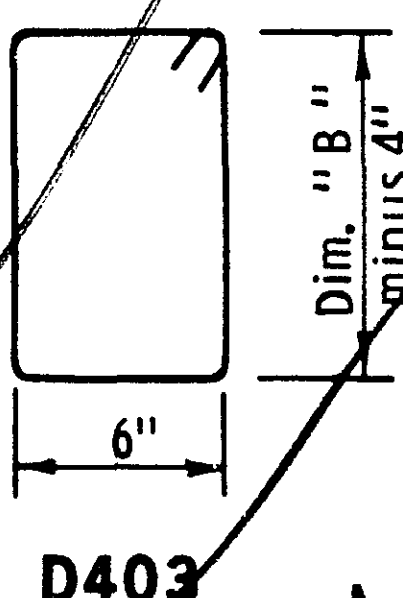
BAR NO.	LENGTH	SHAPE	LOCATION
D501	144	10'-3"	Str. Diaph. Horiz. Span 1 & 3
D502	240	5'-6"	Str. Diaph. Horiz. Span 2
D403	328	5'-6"	Bent Diaph. Vert.



SECTION A-A

GENERAL NOTES

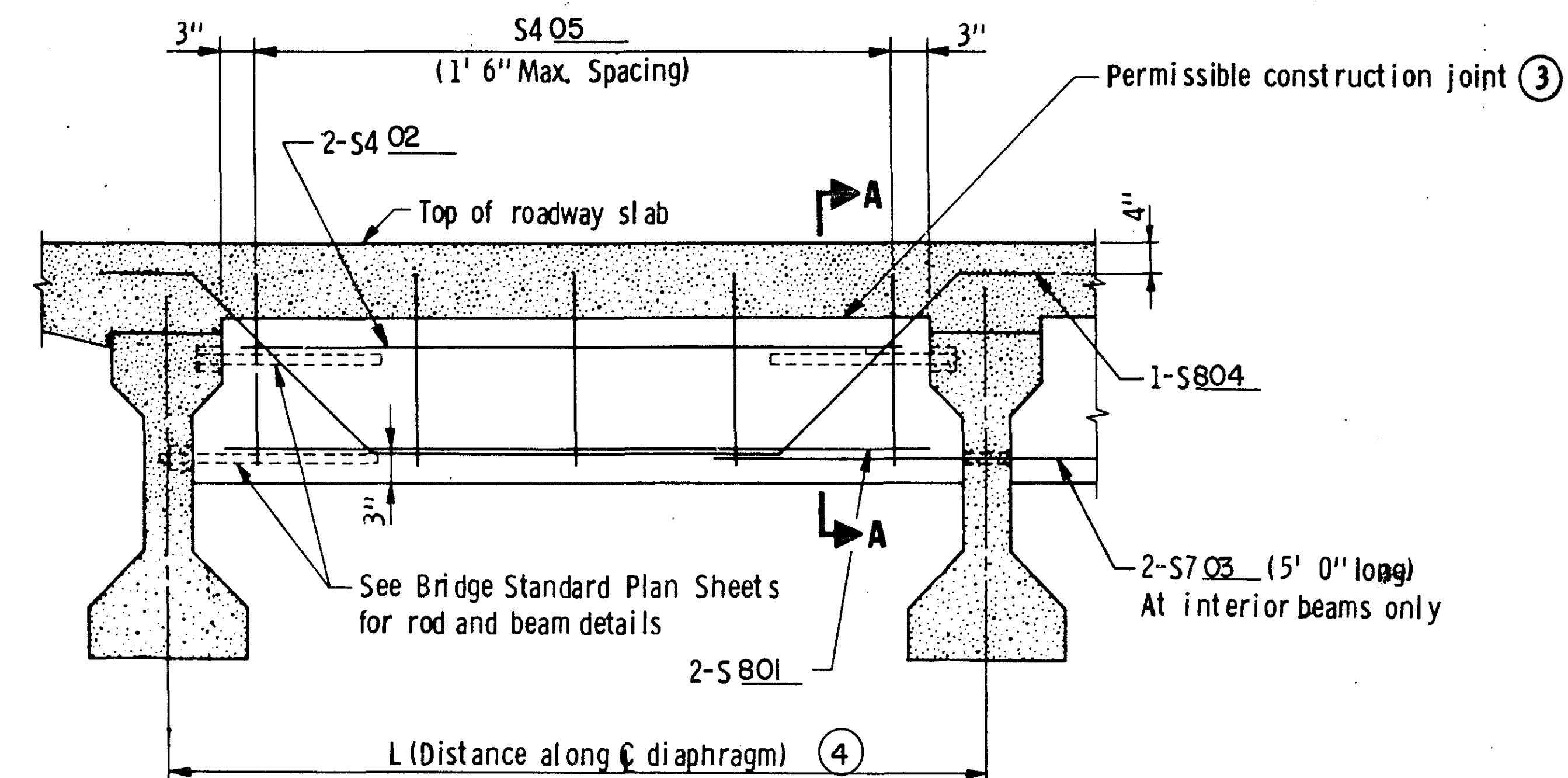
- For Diaphragms 200 and over, use threaded rods as shown on standard prestressed concrete beam sheet.
- All diaphragm concrete and reinforcement bars shown on this detail to be included in payment for diaphragms for prestressed beams. Threaded rods are included in payment for prestressed concrete beams.
- Payment length for diaphragms.
 $L = 11'-8"$ SPAN 1 & 3
 $L = 7'-6"$ SPAN 2
 $L = \text{VARIES } 7'-0 1/4" \text{ TO } 7'-3" \text{ SPAN 2 W. BAY}$



D403

Abuilt - Not used in construction LKF-BJ ml

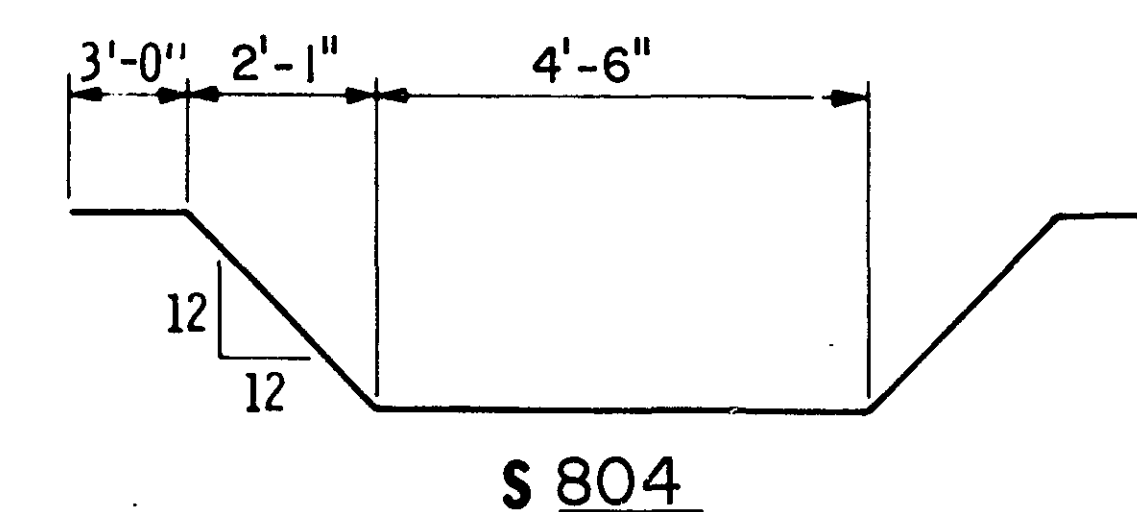
APPROVED: March 27, 1979	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN	CONCRETE INTERMEDIATE DIAPHRAGM (FOR 28" - 54" PRESTRESSED CONCRETE BEAM SPANS)		B802
Issued by: OFFICE OF ENGINEERING STANDARDS			



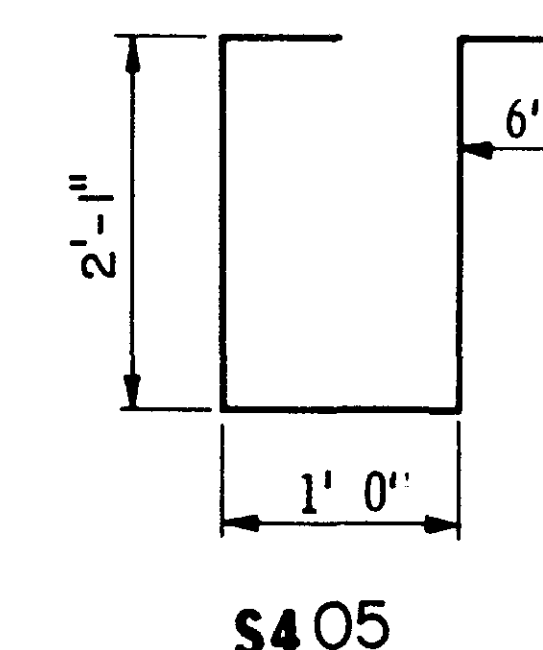
PART TRANSVERSE SECTION AT END DIAPHRAGM

LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

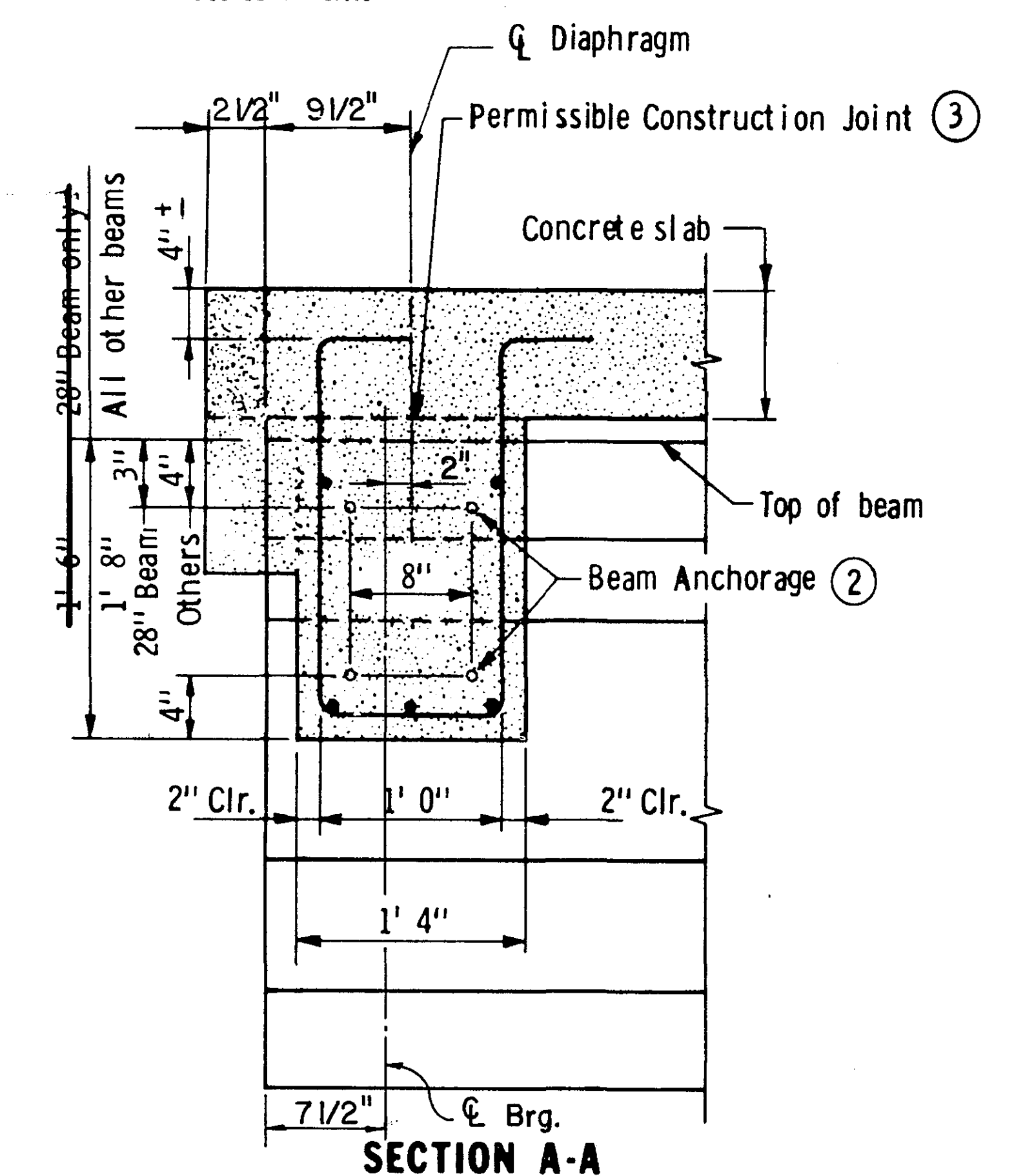
BEAM SPACING ℓ TO ℓ ①	BARS REQUIRED			
	STRAIGHT		BENT	
	NO.	SIZE	NO.	SIZE
Up to 8'	2	6	1	5
Over 8' to 11'	2	7	1	6
Over 11' to 13'	2	8	1	8
Over 13' to 15'	2	9	1	10
Over 15' to 18'	2	11	1	11



S 804



S 405



SECTION A-A

- NOTE:
- Distance measured along ℓ of diaphragm.
 - BEAM ANCHORAGES
 Fascia beams only: four 3/4" dia. threaded rods.
 Interior beams: Two 3/4" dia. threaded rods on top two No. 7 bars on bottom.
 - When a construction joint is used at this location, diaphragm falsework shall remain in place until the diaphragm concrete has obtained the required strength.
 - See plans for dimensions.
 - All diaphragm bars shown are listed with the superstructure reinforcement. Diaphragm concrete and reinforcement quantities are included in superstructure quantities (except threaded rods are included in payment for prestressed beams).

APPROVED: March 3, 1977	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISIONS	DETAIL NO.
Developed by: ENGINEERING STANDARDS AND BRIDGES AND STRUCTURES	CONCRETE END DIAPHRAGM 28" - 54" PRESTRESSED CONCRETE BEAMS (PARAPET ABUTS.)	Aug. 23, 1978	B803
Issued by: ENGINEERING STANDARDS		Sept. 22, 1982	

TITLE: DETAILS	DES: J.P.	DR: D.F.	APPROVED: 6-12-97	Bridge No. 62543
	CHK: B.J.	CHK: J.P.		
Sheet No. 19 of 21 Sheets				

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