

STATE OF MINNESOTA  
DEPARTMENT OF TRANSPORTATION  
CONSTRUCTION PLAN FOR BRIDGE NO. 02501

County State Aid Highway No. 24

Between C.S.A.H. NO. 28 And ST. FRANCIS  
From A PT. 1300' EAST & 950' NORTH OF S.W. COR. SEC. 32, T34N, R 24W To A PT. 1890.67' EAST & 950' NORTH OF S.W. COR. SEC. 32, T34N, R 24W  
Give proper reference to Sections, Township and Range

GROSS LENGTH \_\_\_\_\_ FEET \_\_\_\_\_ MILES  
BRIDGES LENGTH 390.67 FEET 0.074 MILES  
EXCEPTIONS LENGTH \_\_\_\_\_ FEET \_\_\_\_\_ MILES  
NET LENGTH 390.67 FEET 0.074 MILES

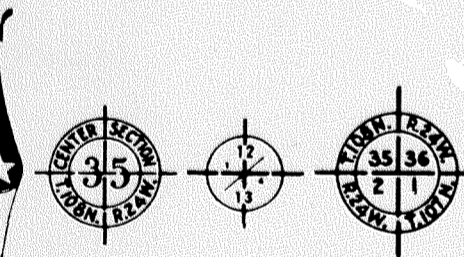
INDEX OF SHEETS

Title Sheet & Layout Map

SHT. NO. 1-27 BRIDGE PLANS

CONVENTIONAL SIGNS

- STATE LINE
- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- RIGHT OF WAY LINE
- PRESENT RIGHT OF WAY LINE
- CONTROL OF ACCESS LINE
- PROPERTY LINE (Except Land Lines)
- INDICATED PLATTED PROPERTY
- CORPORATE OR CITY LIMITS
- TRUNK HIGHWAY CENTER LINE
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT OF WAY LINE
- RIVER OR CREEK
- DRY RUN
- DRAINAGE DITCH
- ELECTRIC POWER LINE
- TELEPHONE OR TELEGRAPH LINE
- JOINT TELEPHONE AND POWER
- CONDUIT
- TELEPHONE CABLE - AERIAL
- TELEPHONE CABLE - UNDERGROUND
- POWER CABLE UNDERGROUND
- GAS MAIN
- CULVERT
- DROP INLET
- GUARD RAIL
- BARBED WIRE FENCE
- WOVEN WIRE FENCE
- CHAIN LINK FENCE
- RAILROAD SNOW FENCE
- STONE WALL OR FENCE
- MEADE
- WATER PIPE
- SEWER PIPE
- DRAIN TILE
- SPRINGS
- MARSH
- TIMBER
- ORCHARD
- BRUSH
- NURSERIES
- CATCH BASIN
- MANHOLE
- FIRE HYDRANT
- STREET LIGHT
- RAILROAD CROSSING SIGN
- RAILROAD CROSSING BELL
- ELECTRIC WARNING SIGN
- CROSSING GATE
- CATTLE GUARD
- OVERPASS (Highway Over)
- UNDERPASS (Highway Under)
- BRIDGE
- BUILDING (One Story Frame)
- F - FRAME
- S - STONE
- B - BRICK
- C - CONCRETE
- T - TILE
- ST - STUCCO
- IRON PIPE OR ROD
- MONUMENT (STONE, CONCRETE, OR METAL)
- WOODEN HOE
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY
- MEANDER CORNER



DESIGN DESIGNATION

ADT (CURRENT YEAR) 5045 (1985)

ADT (FUTURE YEAR) 8071 (2005)

T (HEAVY COMMERCIAL)

Ton Design

Design Speed \_\_\_\_\_ MPH

Design Speed not achieved at:

STA. \_\_\_\_\_ TO STA. \_\_\_\_\_ MPH

STA. \_\_\_\_\_ MPH

GOVERNING SPECIFICATIONS

THE 1983 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH, IN THE CONSTRUCTION OF THIS PROJECT.

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.

Paul K. Kuntz COUNTY ENGINEER DATE June 24, 1985

ANOKA COUNTY REG. NO. 6549

RECOMMENDED FOR APPROVAL W. H. Schell 6/27, 1985 DISTRICT STATE AID ENGINEER

RECOMMENDED FOR APPROVAL W. H. Schell 7-2, 1985 BRIDGE ENGINEER

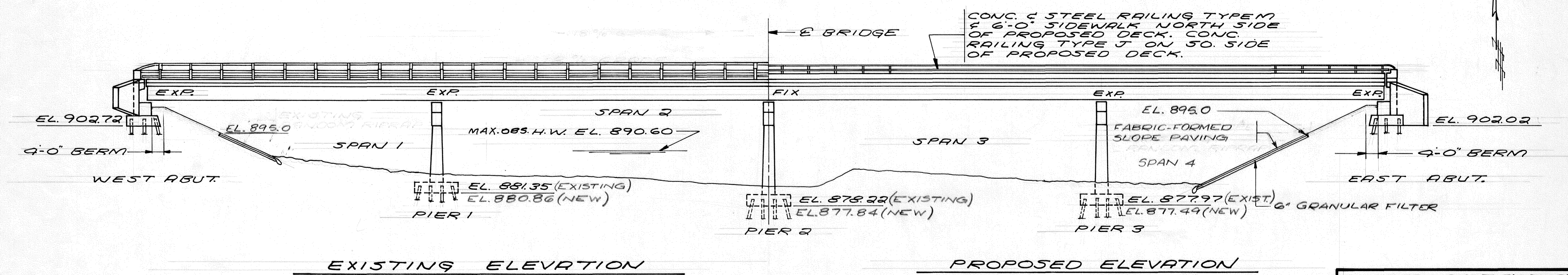
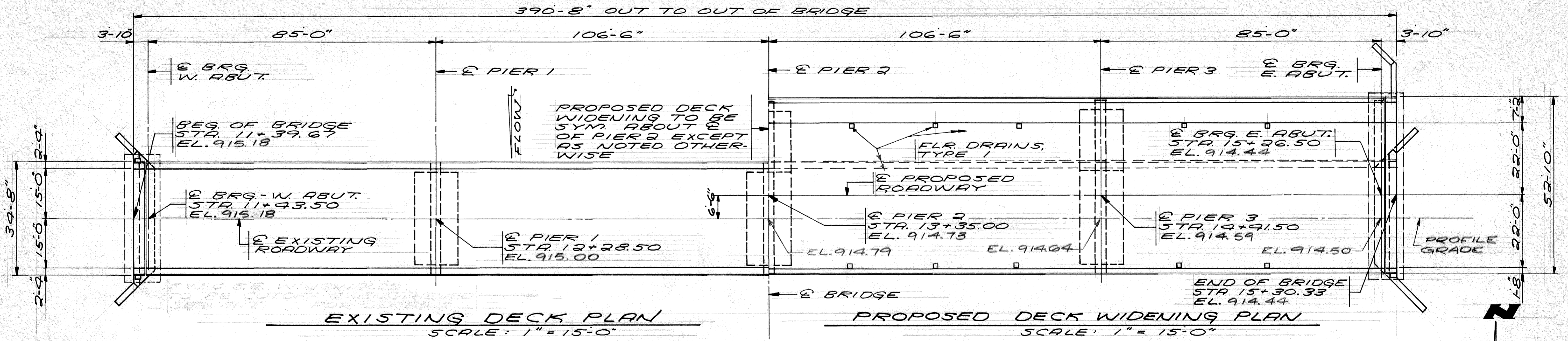
APPROVED 1/3 1985 STATE AID ENGINEER

Minn. Proj. No. \_\_\_\_\_ County Proj. No. \_\_\_\_\_

State Proj. No. 02-624-19 S.A.P. \_\_\_\_\_

ANOKA County, Minnesota. Plan No. 02501





**CONSTRUCTION NOTES**

THE 1983 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. BRIDGE SEAT REINFORCEMENT SHALL BE PLACED TO AVOID INTERFERENCE WITH DRILLING HOLES FOR ANCHOR RODS. THE SUPERSTRUCTURE GIRDERS SHALL BE ERECTED IN FINAL POSITION PRIOR TO DRILLING HOLES FOR AND PLACING ANCHOR RODS. THE FIRST DIGIT OR THE FIRST TWO DIGITS OF EACH BAR MARK INDICATE THE BAR SIZE. BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED.

**DESIGN DATA (WIDENING)**

1977 & INTERIM A.A.S.H.T.O. DESIGN SPECIFICATIONS LOAD FACTOR DESIGN METHOD-H520 LOADING. REINFORCED CONCRETE:  
 $f_c = 4000$  P.S.I.  $n = 8$   
 $f_y = 60000$  P.S.I. REINFORCEMENT  
 STRUCTURAL STEEL:  
 $f_y = 36000$  P.S.I. SPEC. 3306  
 $f_y = 50000$  P.S.I. SPEC. 3309  
 APPROX. DECK AREA = 20640 SQ. FT.  
 PROJECTED A.D.T. FOR 2005 = 8071  
 1985 =

**LIST OF SHEETS**

NO.	DESCRIPTION
1	GENERAL PLAN & ELEVATION
2	DECK CROSS SECTIONS
3-8	ABUTMENT DETAILS
9 & 10	PIER DETAILS
11 & 12	SUPERSTRUCTURE DETAILS
13	FRAMING PLAN
14	STRUCTURAL STEEL DETAILS
15	CAMBER & DEFLECTION DIAGRAMS
16	RAILING ELEVATION
17	CONCRETE & PIPE RAILING (TYPE M)
18	CONCRETE RAILING (TYPE J)
19 & 20	EXPANSION DEVICE
21-25	DETAILS
26 & 27	BRIDGE SURVEYS

THE FOLLOWING STANDARD PLATES, APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION, SHALL APPLY ON THIS PROJECT.

PLATE NO.	DESCRIPTION
0004A	SPECIFICATION REFERENCE TO STANDARD PLATES
8000I	BREAKAWAY BARRICADES
8003B	BREAKAWAY SIGN SUPPORT
8333A	TEMPORARY PORTABLE PRECAST CONCRETE BARRIER

I HEREBY CERTIFY THAT THIS PLAN IS 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.  
*Karl L. Lund*  
 REG. NO. 6929  
 DATE: 7-9-84

MINNESOTA DEPARTMENT OF TRANSPORTATION  
**BRIDGE NO. 02501**  
 WIDEN ROWY. & ADD A SIDEWALK  
 1.9 MI. NO. OF ANOKA ON C.S.A.H. 29 OVER THE RUM RIVER.  
 85'-106'-6" - 106'-6" - 85'-0"  
 CONT. WELDED BEAM SPANS 99'-0" ROWY, 6'-0" SIDEWALK  
 SPAN IDENT. NO. 401  
**GENERAL PLAN & ELEVATION**  
 ST. FRANCIS TOWNSHIP  
 SEC. 32 TWR 34N R 29W  
 ANOKA COUNTY  
 APPROVED: *Karl L. Lund* 7-2-85  
 BRIDGE ENGINEER

APPROVED:  
*Karl L. Lund*  
 COUNTY ENGINEER  
 ANOKA COUNTY  
 DATE: 7/19/84



NOTES

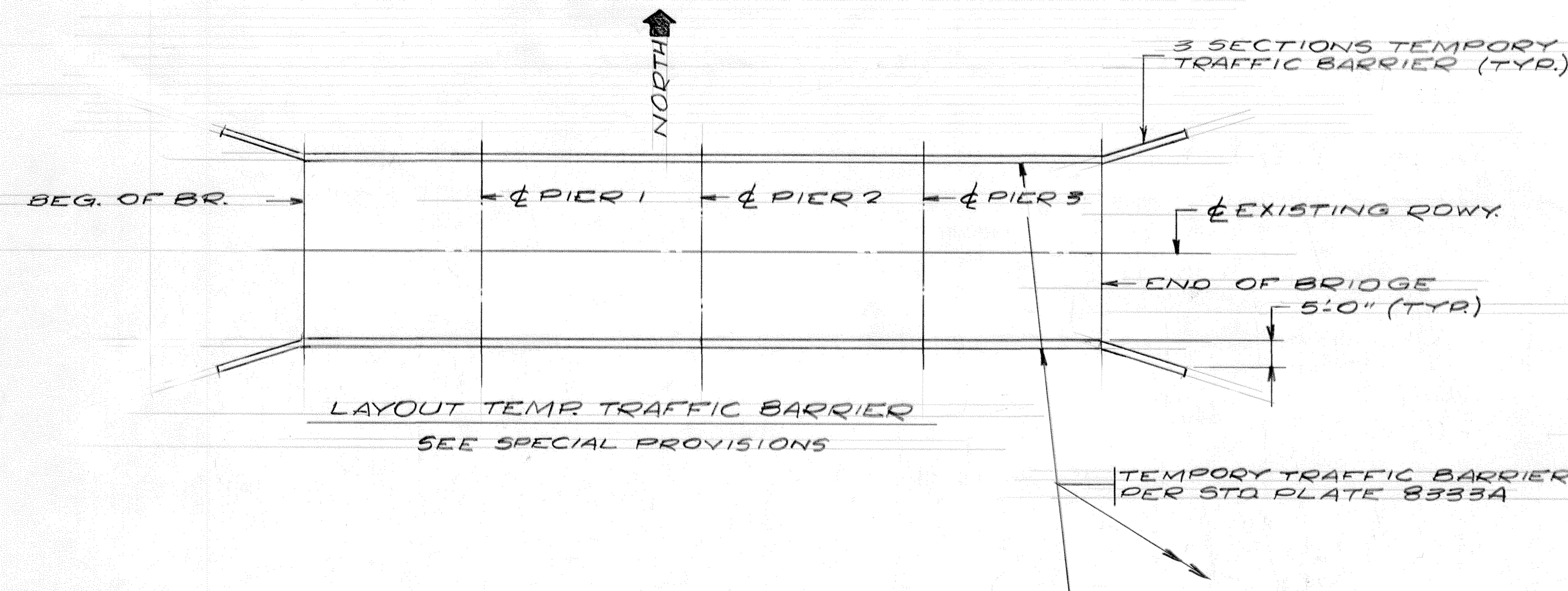
NO CUTTING WILL BE PERMITTED UNTIL THE CUTTING LIMITS HAVE BEEN OUTLINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. REMOVAL AND RECONSTRUCTION SHALL CONFORM TO SPEC. 2433.

ALL ELEVATIONS AND DIMENSION SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD.

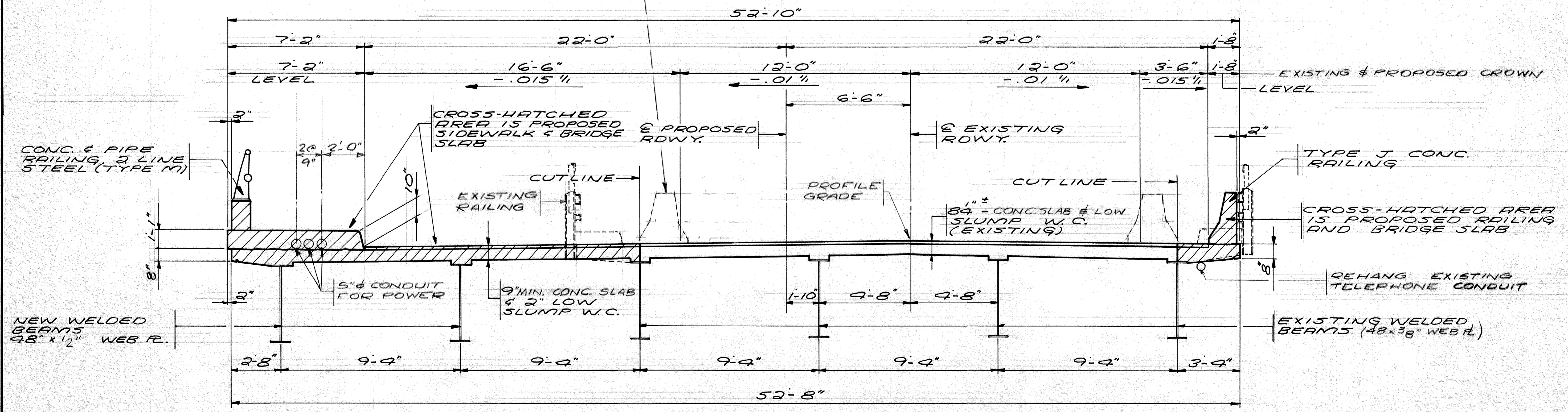
ALL STRUCTURAL STEEL SHALL BE PAINTED PER SPEC. 2417.

REMOVE GLAND FROM EXISTING EXPANSION DEVICE AND REPLACE IN RECONSTRUCTED EXP DEVICE IN ONE LENGTH. (SEE SPECIAL PROVS.)

SPECIAL SURFACE FINISH ON ALL NEW AND EXISTING CONCRETE. PAINT ABUTMENT BRIDGE SEAT WITH EPOXY.



SCHEDULE OF QUANTITIES FOR BRIDGE WIDENING			
ITEM NO.	ITEM	QUANT.	UNIT.
2401.512	BRIDGE SLAB CONCRETE (3X36)	9700 (P)	50 FT.
2404.501	CONCRETE OVERLAY (30174)	6185 (P)	50 FT.
2401.501	STRUCTURE CONCRETE (1A43)	101 (P)	CU.YD.
2401.501	STRUCTURE CONCRETE (3Y43)	149 (P)	CU.YD.
2401.501	STRUCTURE CONCRETE (3X46)	168 (P)	CU.YD.
2401.541	REINFORCEMENT BARS	57000 (P)	POUND
2401.541	REINFORCEMENT BARS (EPOXY COATED)	52490 (P)	POUND
2402.521	STRUCTURAL STEEL, (3309)	185100 (P)	POUND
2402.546	FLOOR DRAINS, TYPE 1	20	EACH
0401.601	FOUNDATION PREPARATION (PIER 1)	1	LUMP SUM
0401.601	FOUNDATION PREPARATION (PIER 2)	1	LUMP SUM
0401.601	FOUNDATION PREPARATION (PIER 3)	1	LUMP SUM
2402.591	EXPANSION JOINT DEVICES, TYPE 3	32	LIN. FT.
2402.585	PIPE RAILING, TYPE M	391 (P)	LIN. FT.
2433.501	STRUCTURE REMOVALS	1	LUMP SUM
2477.501	ZINC-RICH PAINT SYSTEM (NEW)	1	LUMP SUM
0401.601	STRUCTURE EXCAVATION	1	LUMP SUM
2021.501	MOBILIZATION	1	LUMP SUM
0401.612	SPECIAL SURFACE FINISH	9580	SQ. FT.
0402.607	EXP CURVED PLATE BRG. ASS'M. TYPE 1	8	EACH
0402.607	EXP (VULCANIZED) CURVED & BRG. ASS'M, TYPE 2	4	EACH
0402.607	EXP CURVED PLATE BRG. ASS'M, TYPE 3	4	EACH
0402.606	FIXED CURVED PLATE BRG. ASS'M, TYPE 1	2	EACH
0514.601	FABRIC-FORMED SLOPE PAVING	490	SQ. YD.
2511.511	GRANULAR FILTER	74	CU. YD.
2452.510	STEEL H- PILING DRIVEN, 12"	840	LIN. FT.
2452.511	STEEL H- PILING DELIVERED, 12"	840	LIN. FT.
2452.520	STEEL H-TEST PILES, 45 FT. LONG, 12"	3	EACH
2452.503	TREATED TIMBER PILING DELIVERED	585	LIN. FT.
2452.504	TREATED TIMBER PILING DRIVEN	585	LIN. FT.
2452.517	TREATED TIMBER TEST PILES, 35 FT. LG.	1	EACH
0545.601	CONDUIT SYSTEM PROVISIONS (TELEPHONE)	1	LUMP SUM
2452.517	TREATED TIMBER TEST PILES, 40 FT. LG.	1	EACH
0104.601	REMOVE MISCELLANEOUS STRUCTURES	1	LUMP SUM
0433.604	CONCRETE REPAIR	1	LUMP SUM
0452.602	PILE TIP PROTECTION, 12"	27	EACH
2545.509	CONDUIT SYSTEM (POWER)	1	LUMP SUM
2477.501	ZINC-RICH PAINT SYSTEM (OLD)	1	LUMP SUM
0554.603	CONCRETE MEDIAN BARRIER, DES. 8333	890	LIN. FT.

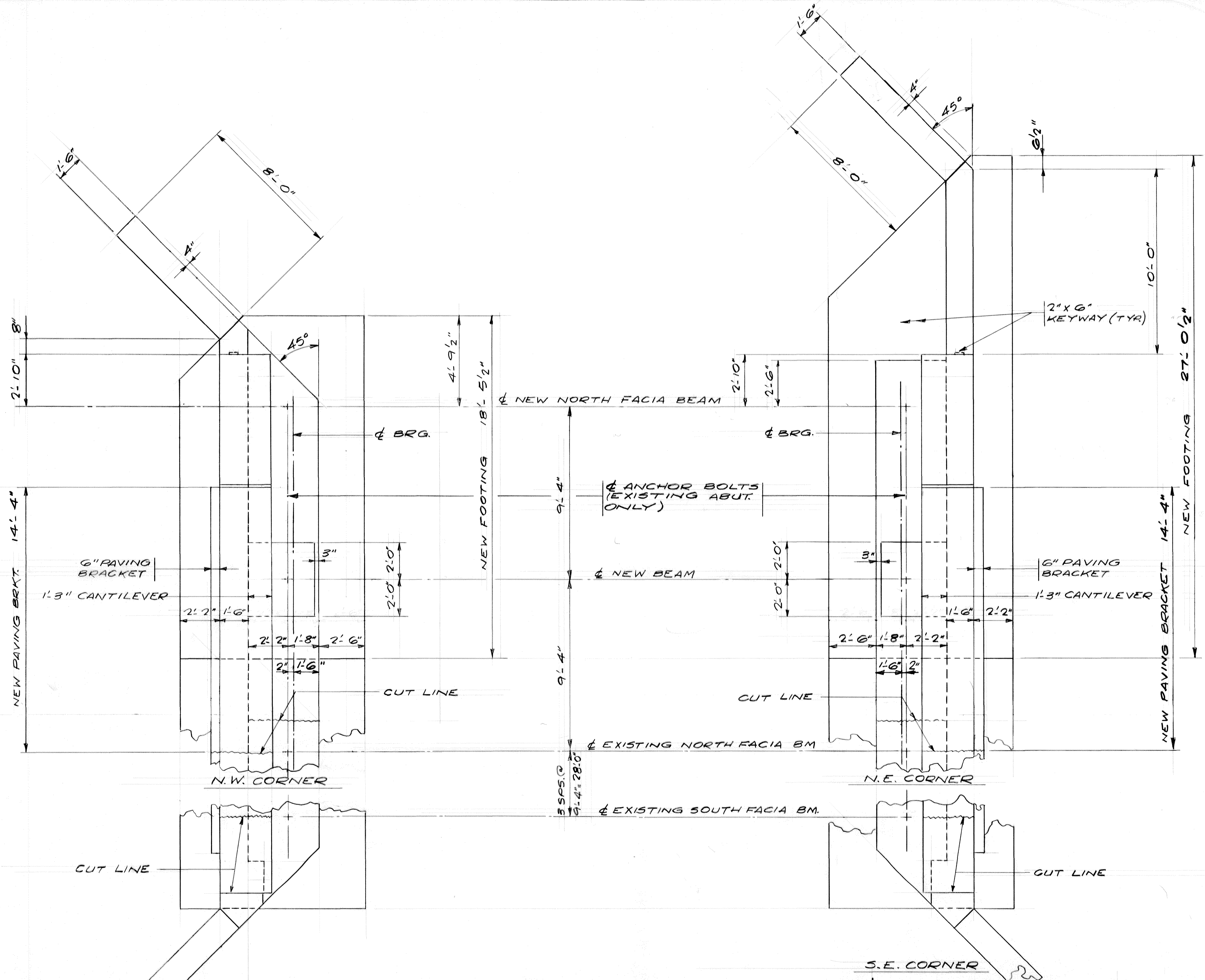


TYPICAL SECTION THRU PROPOSED NEW DECK  
SCALE: 3/8" = 1'-0"

DECK CROSS SECTION	DRAWN: D.J.V.	CHECKED: R.R.T.	APPROVED:	BRIDGE NUMBER 02501
	SHEET 2 OF 27 SHEETS			

S.P.No. 02-624-19

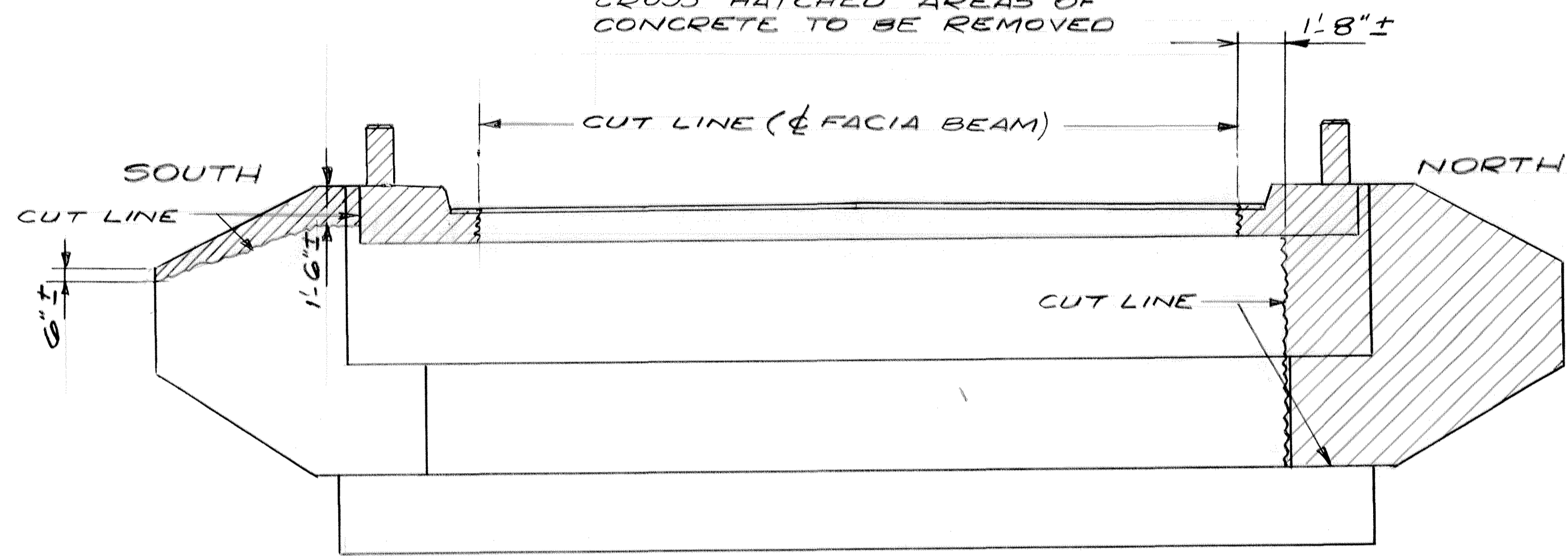




ABUTMENT DETAILS S.P. NO. 02-624-19	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER 02501
	SHEET 3 OF 27 SHEETS			

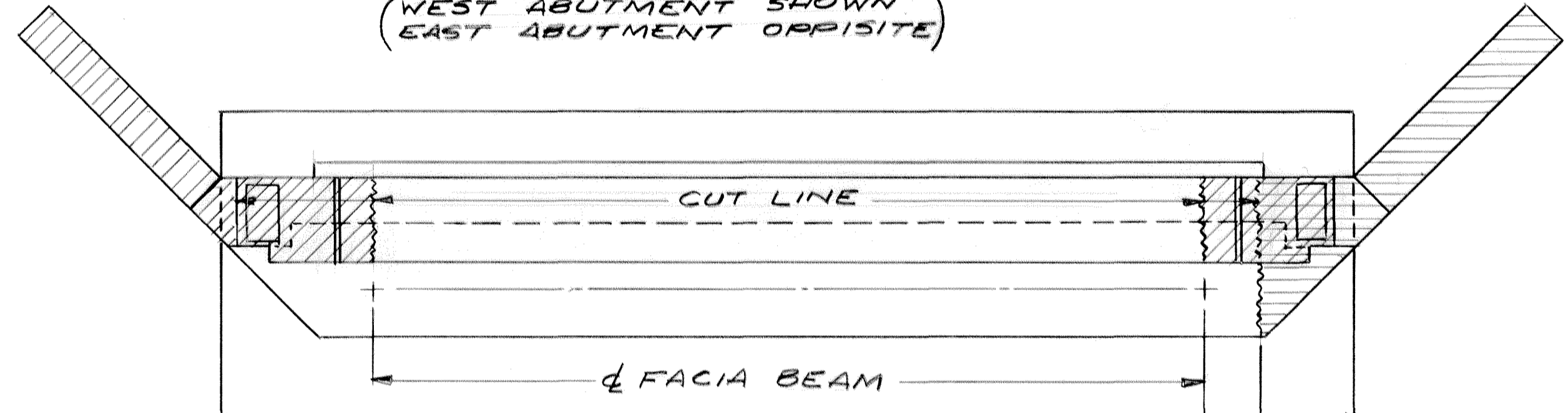


NOTE:  
CROSS HATCHED AREAS OF  
CONCRETE TO BE REMOVED

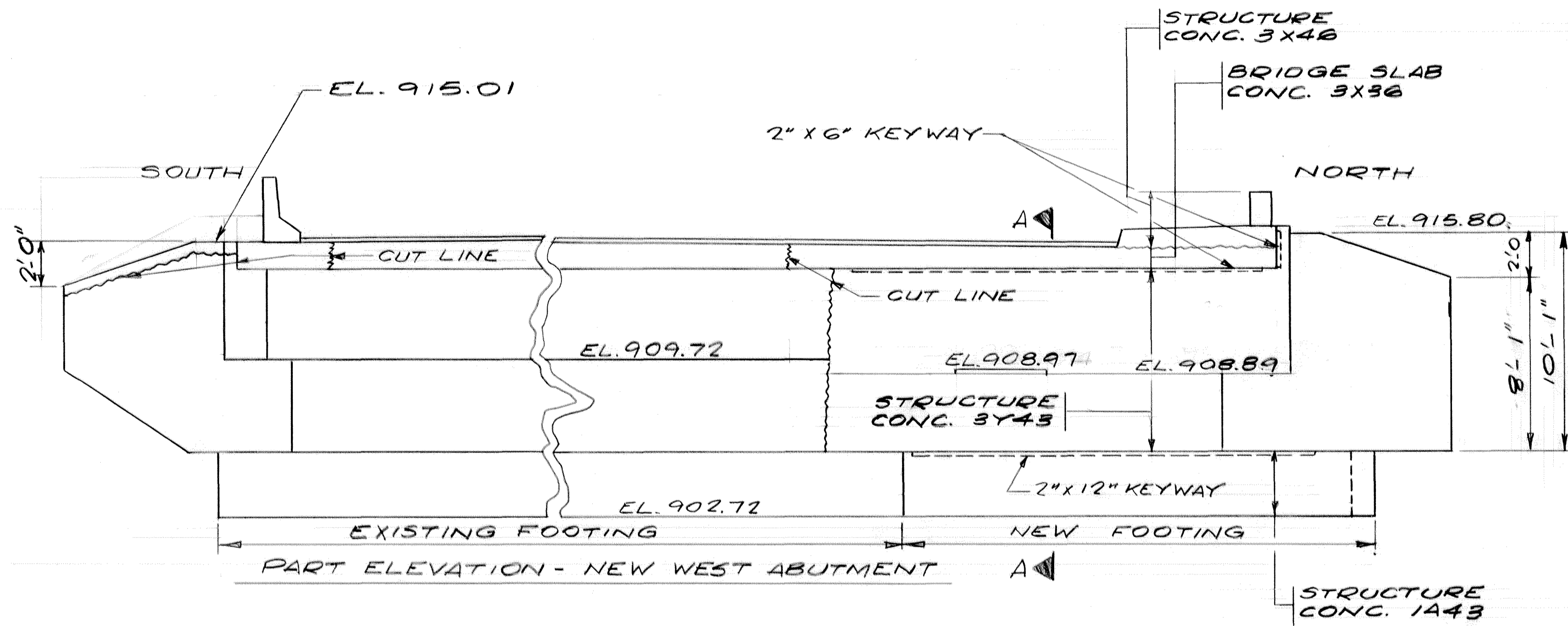


ELEVATION OF EXISTING ABUTMENTS

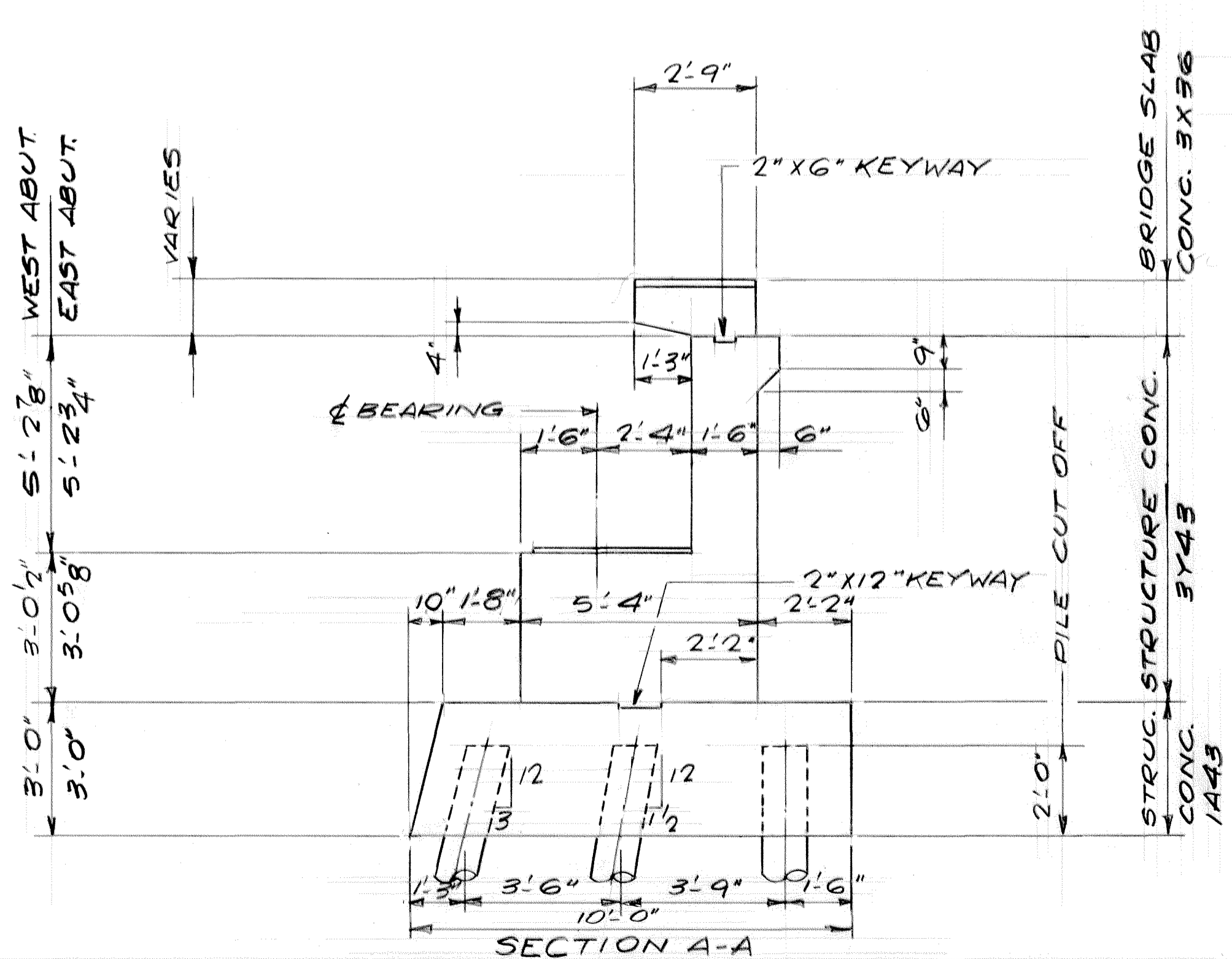
(WEST ABUTMENT SHOWN  
EAST ABUTMENT OPPOSITE)



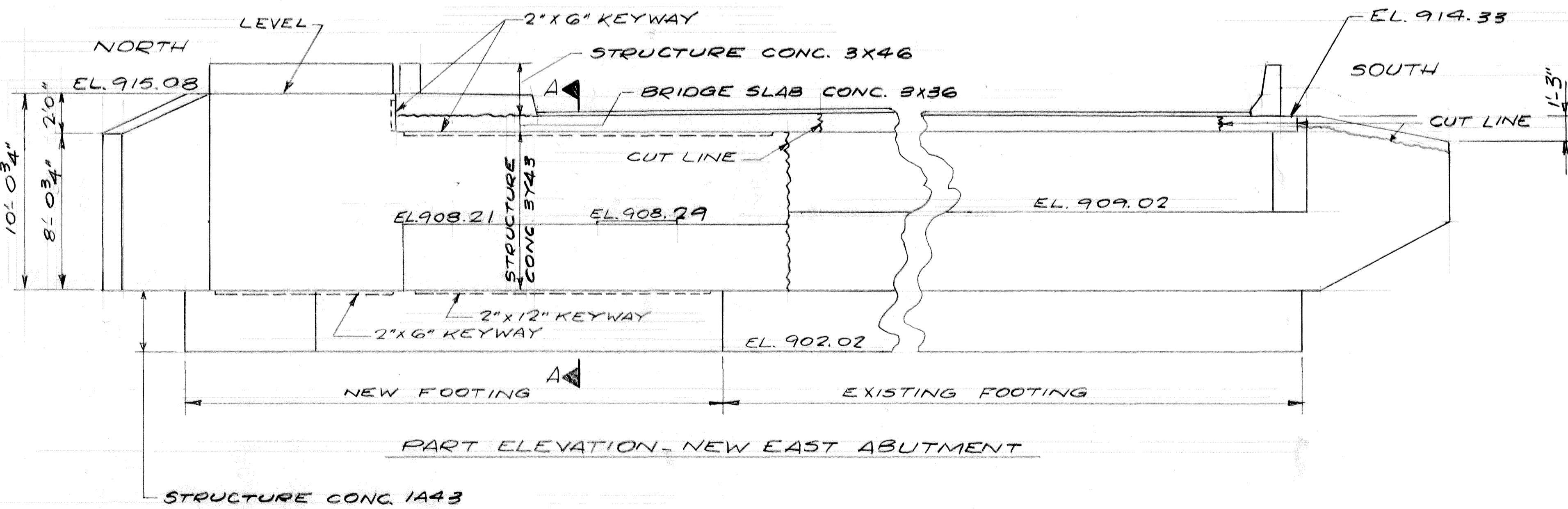
PLAN OF EXISTING ABUTMENTS



PART ELEVATION - NEW WEST ABUTMENT



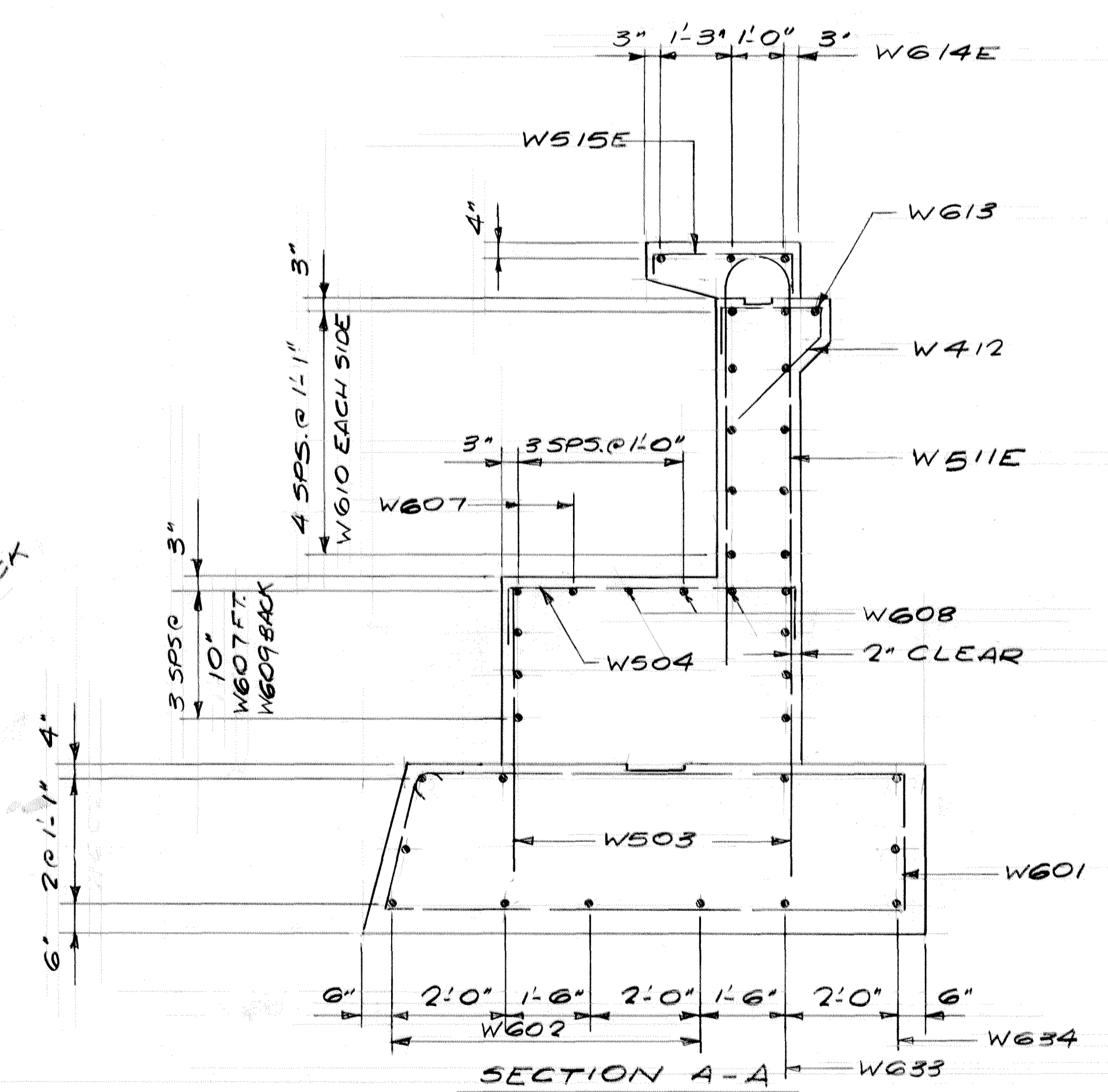
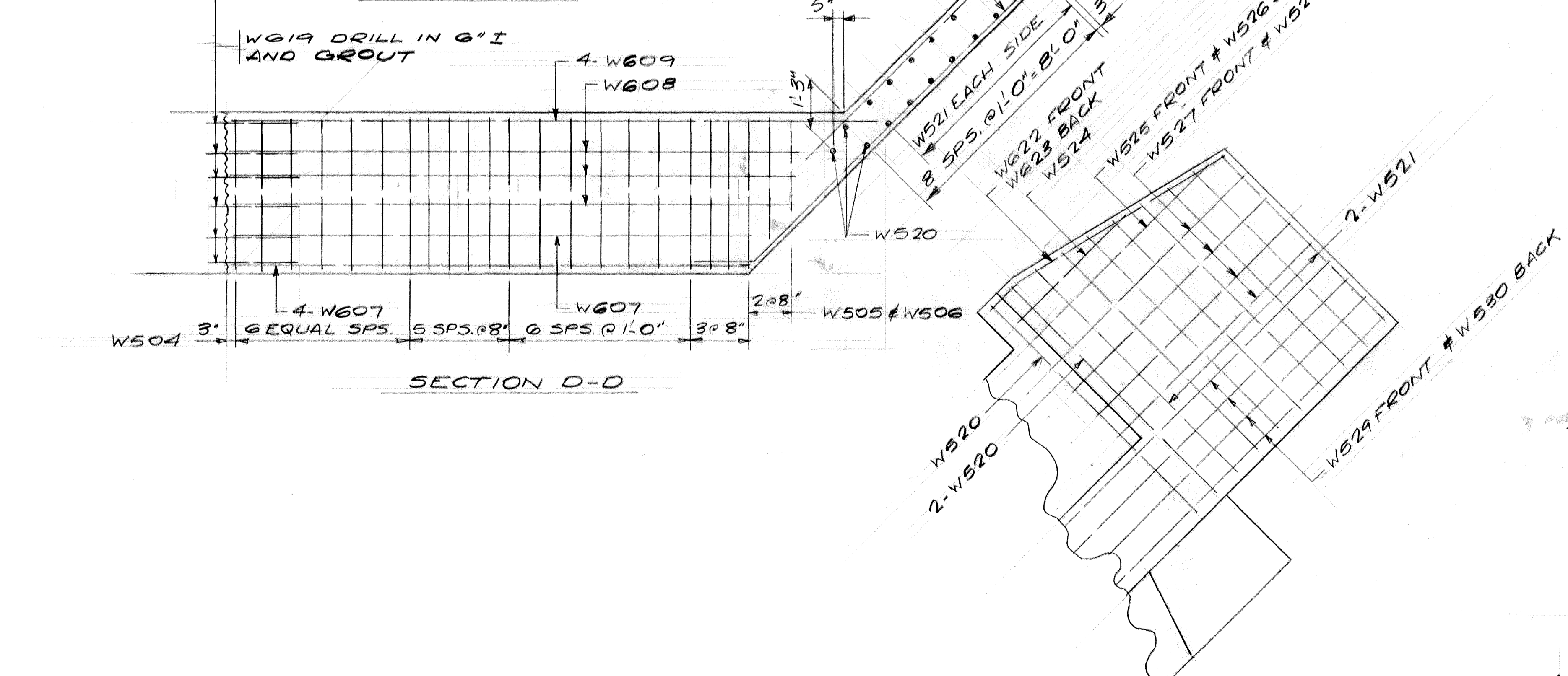
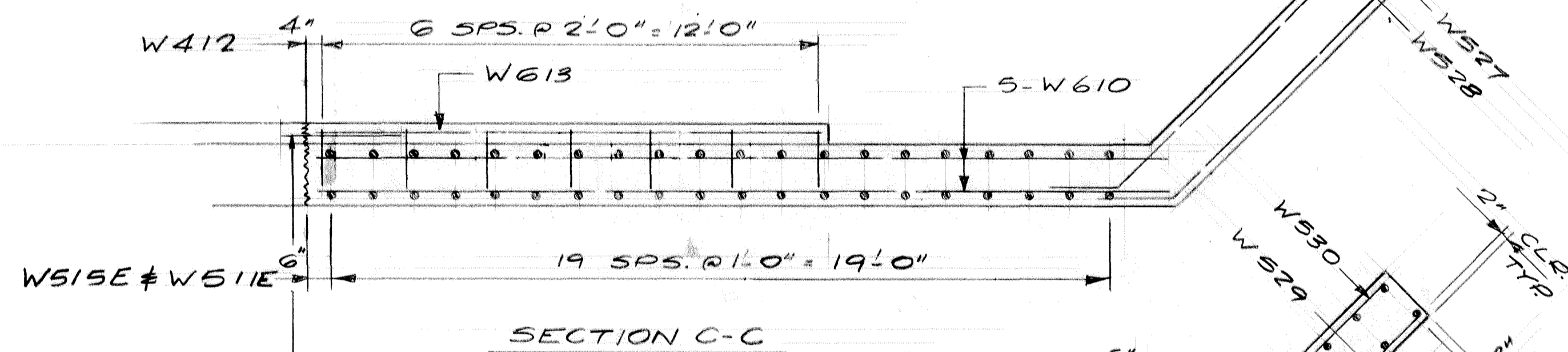
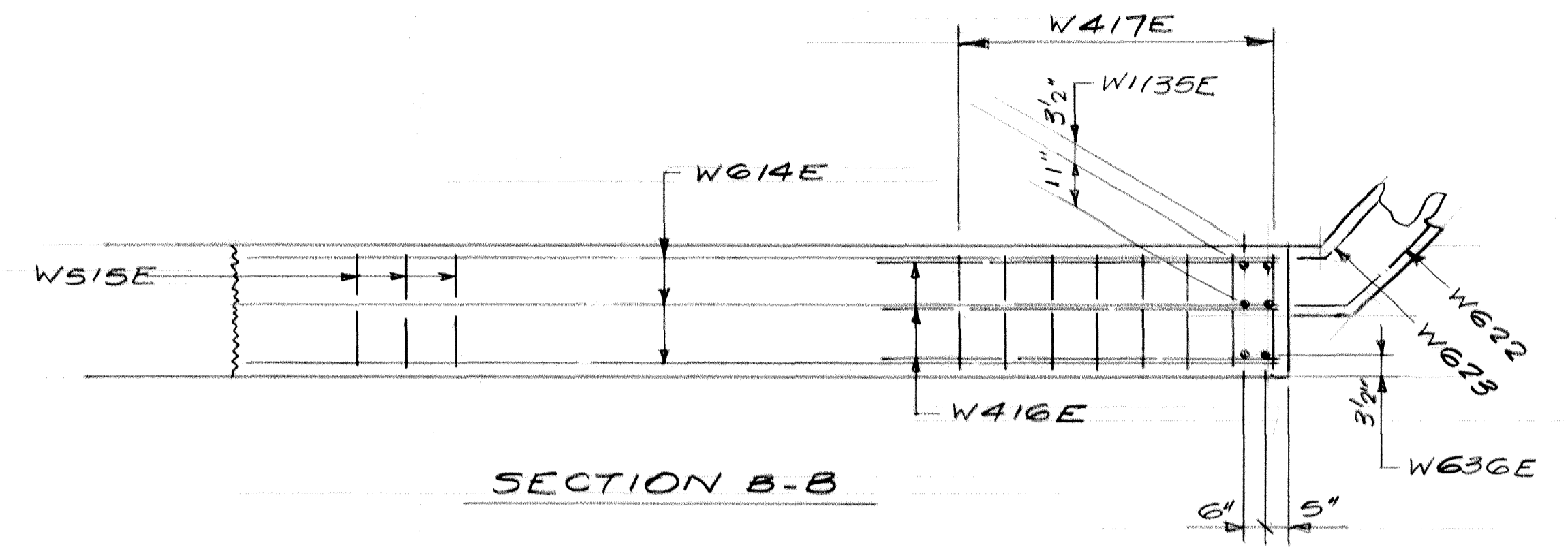
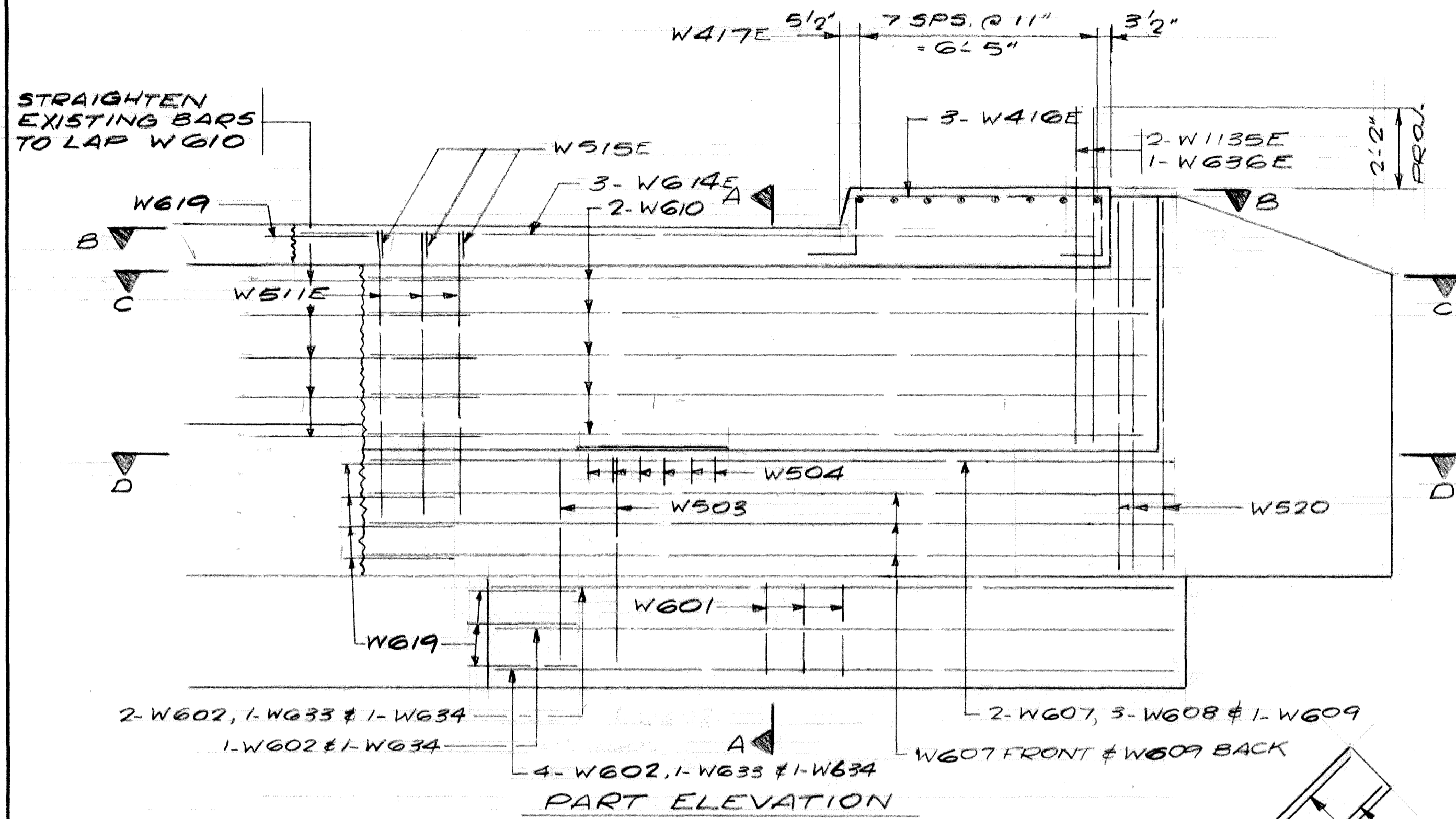
SECTION A-A



PART ELEVATION - NEW EAST ABUTMENT

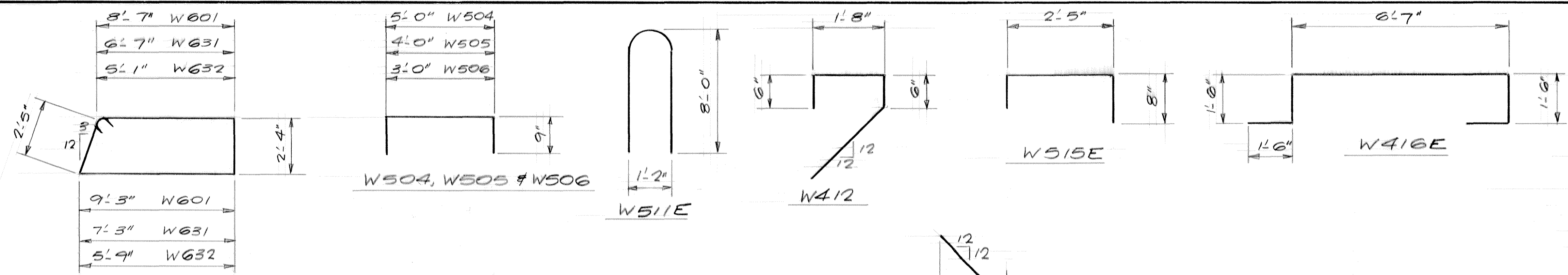
ABUTMENT DETAILS S.P.N.O.02-024-19	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER 02501
	SHEET 4 OF 27 SHEETS			



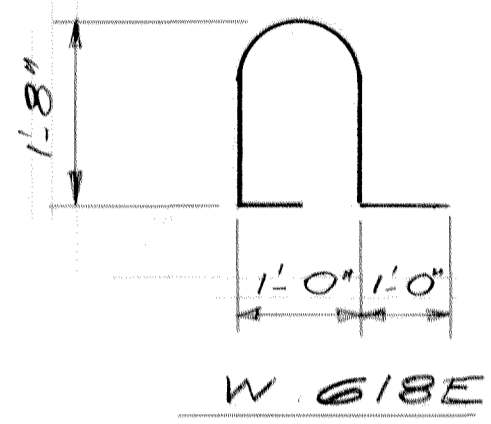


WEST ABUTMENT	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER
S.P. NO. 02-624-19	SHEET 5 OF 27 SHEETS			02501

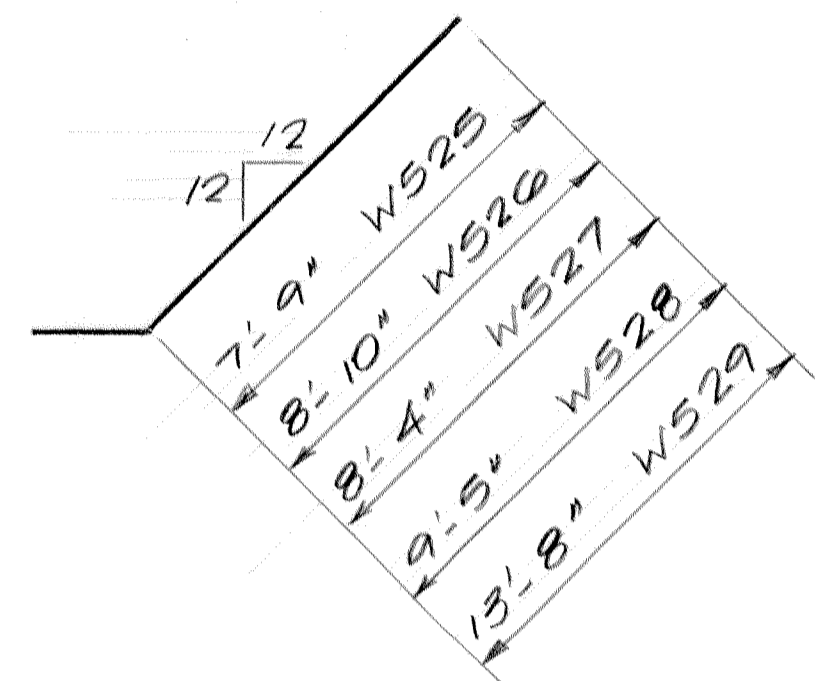




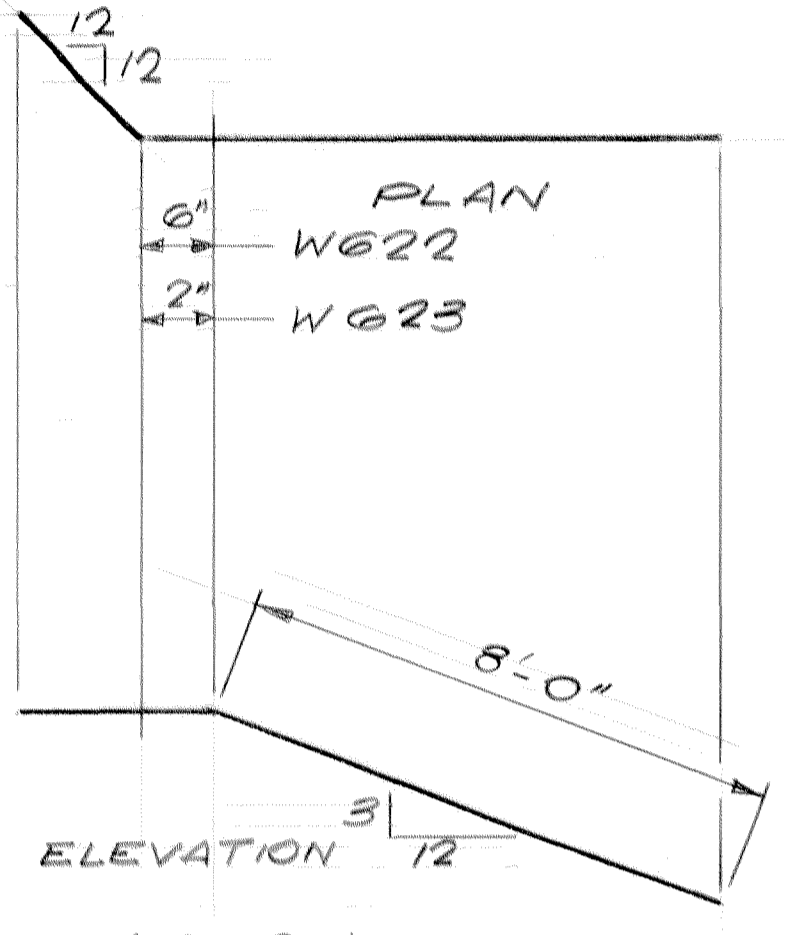
W601, W631 & W632



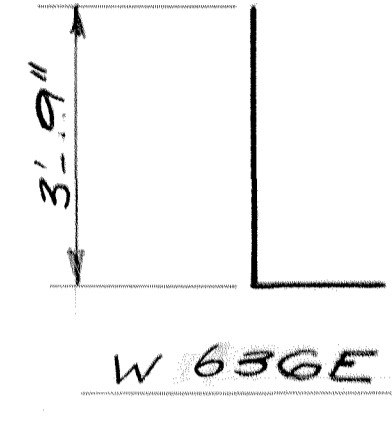
W618E



W525 - W529



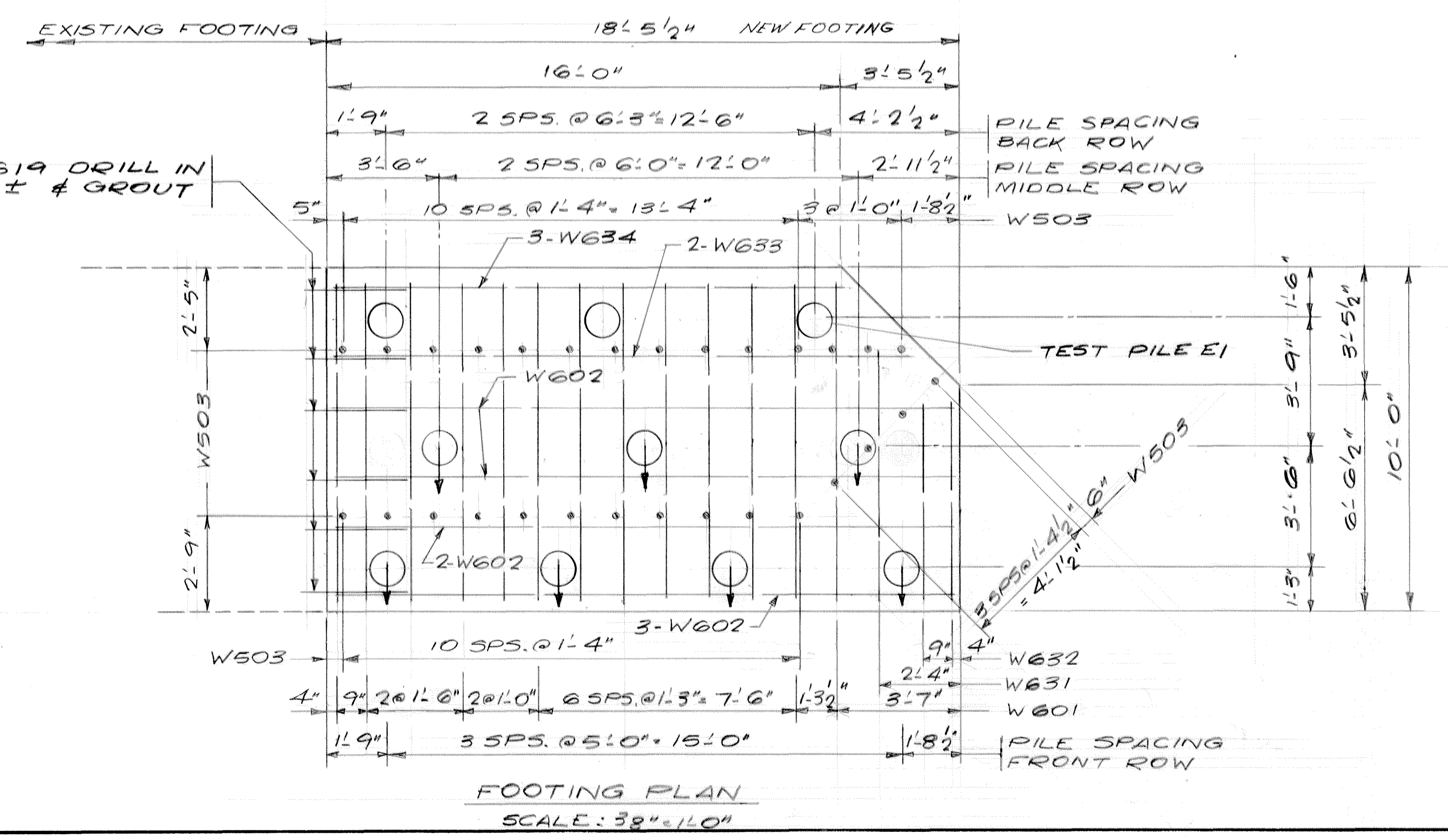
A622 & A623



W636E

**BILL OF REINF. - WEST ABUTMENT**

BAR NO.	LEN.	SHAPE	LOCATION
W601	13	23'6"	BENT FOOTING-TIES
W602	7	17'11"	STR. " LONGIT.
W503	29	4'2"	" " DOWELS
W504	21	6'6"	BENT BRIDGE SEAT
W505	1	5'6"	" " "
W506	1	4'6"	" " "
W607	5	17'3"	STR. " "
W608	3	18'9"	" " "
W609	4	21'6"	" " "
W610	10	20'9"	" " PARAPET
W511E	20	16'8"	BENT " "
W412	7	4'9"	" " PAVING BRACKET
W613	1	12'0"	STR. " "
W614E	3	21'0"	" " ROADWAY
W515E	20	3'4"	BENT " "
W416E	3	12'6"	" " "
W417E	8	2'5"	STR. " "
W618E	3	5'6"	BENT END POST-DOWEL
W619	25	3'0"	STR. DOWEL
W520	3	9'9"	STR. WINGWALL
W521	2 SERIES OF 8	7'6" TO 9'3"	" " "
W622	1	9'6"	BENT " "
W623	1	8'9"	" " "
W524	2	4'10"	STR. " "
W525	1	9'9"	BENT " "
W526	1	10'10"	" " "
W527	4	10'4"	" " "
W528	4	11'5"	" " "
W529	4	15'8"	" " "
W530	4	9'9"	STR. " "
W631	1	19'6"	BENT FOOTING-TIES
W632	2	16'6"	" " "
W633	2	17'0"	STR. " LONGIT.
W634	3	15'0"	" " "
W1135E	4	8'0"	" " END POST
W636E	2	4'9"	BENT " "



FOOTING PLAN SCALE: 3/8"=1'0"

**SUMMARY OF QUANTITIES - WEST ABUTMENT**

STRUCTURE CONCRETE (1A43)	20 CU.YD.
STRUCTURE CONCRETE (3Y43)	22 CU.YD.
REINFORCEMENT BARS	2330 LB.
REINFORCEMENT BARS (EPOXY COATED)	780 LB.
② STRUCTURE EXCAVATION	
① TREATED TIMBER PILING DELIVERED	225 LIN. FT.
① TREATED TIMBER PILING DRIVEN	225 LIN. FT.
TREATED TIMBER TEST PILES, 35 FT. LG.	1 EACH

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

**PILE NOTES**

1 TREATED TIMBER TEST PILES 35 FT. LG.  
 9 " " " PILES EST. LENGTH 25 FT.  
 10 " " " " REQ'D FOR WEST ABUT.

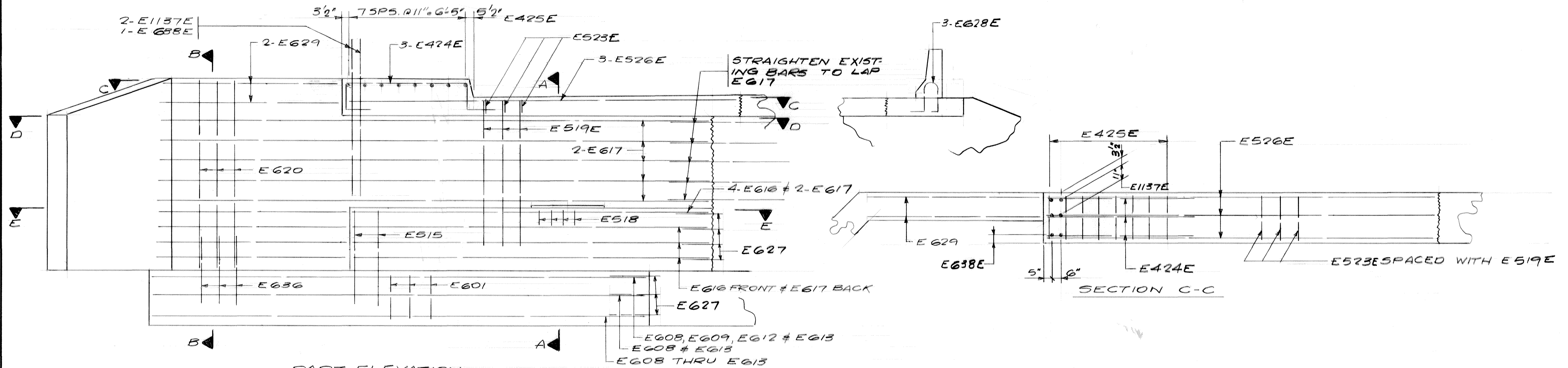
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.  
 PILES MARKED THUS ⊕ TO BE BATTERED 3" PER FT. FRONT ROW AND 1 1/2" PER FT. IN MIDDLE ROW IN DIRECTION SHOWN.

**COMPUTED PILE LOADS TONS PER PILE**

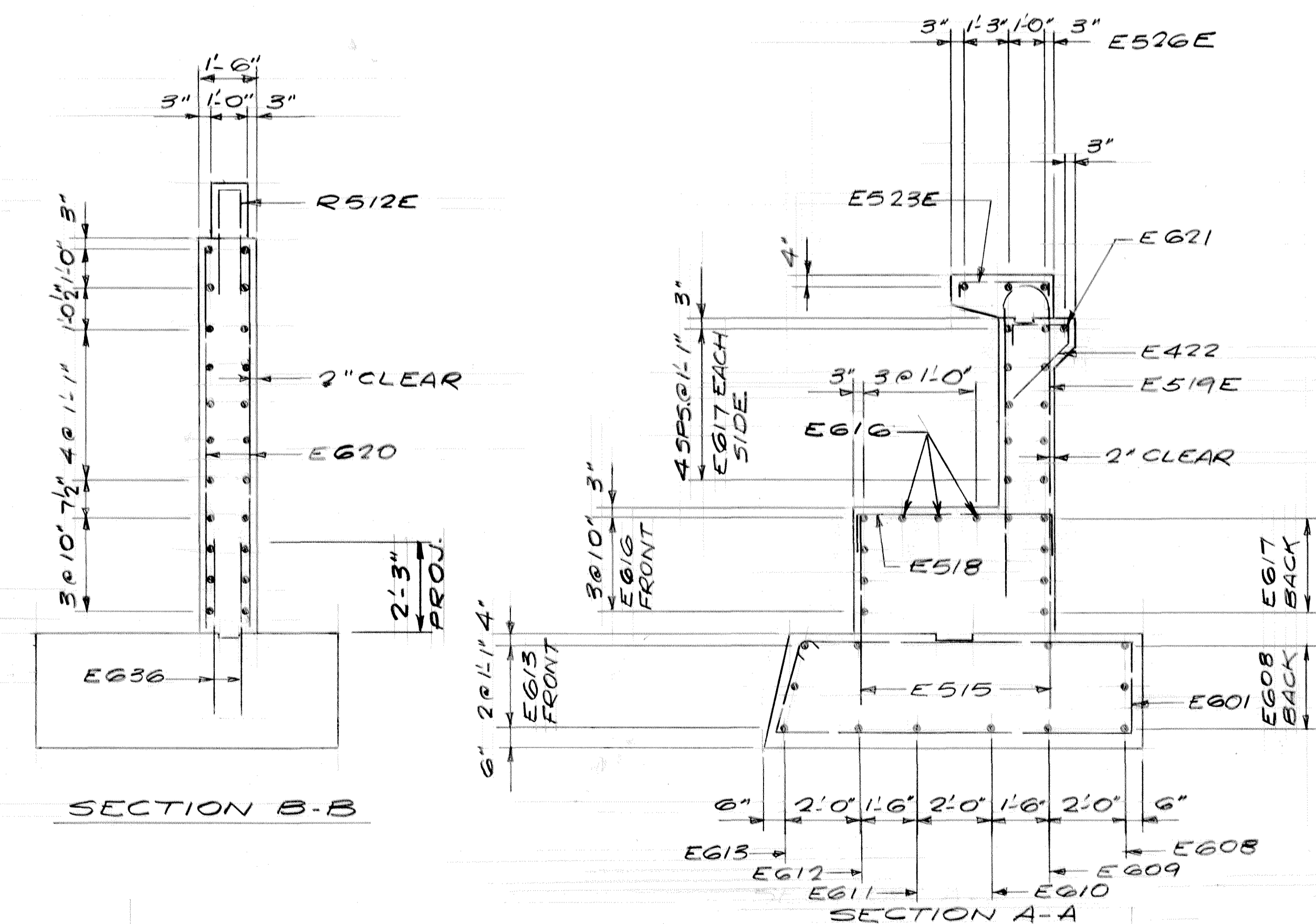
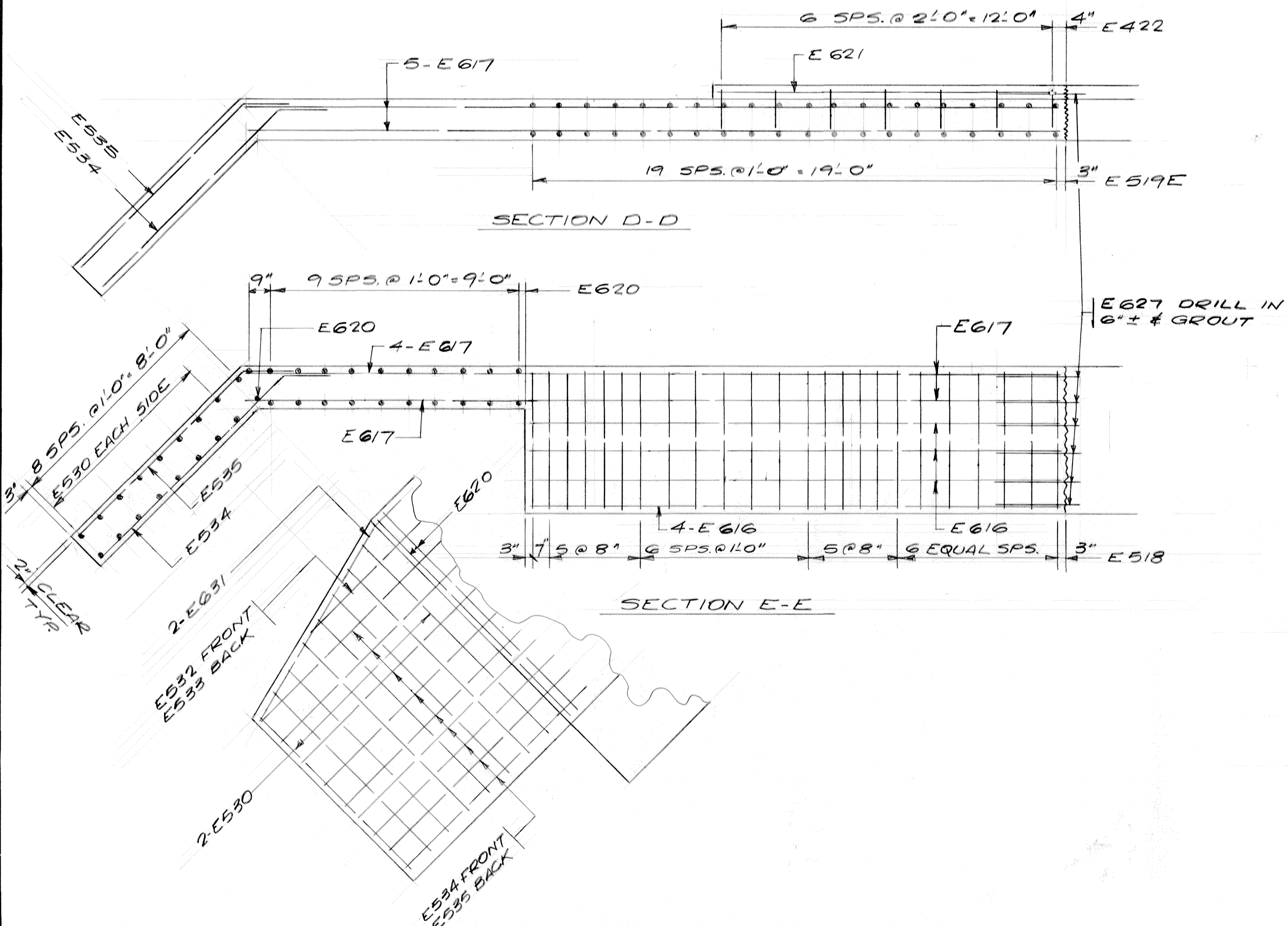
DEAD LOAD + EARTH PRESSURE	23.4
LIVE LOAD	5.6
<b>TOTAL</b>	<b>29.0</b>

WEST ABUTMENT	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER
S.P. NO. 02-624-19	SHEET 6 OF 21 SHEETS			02501



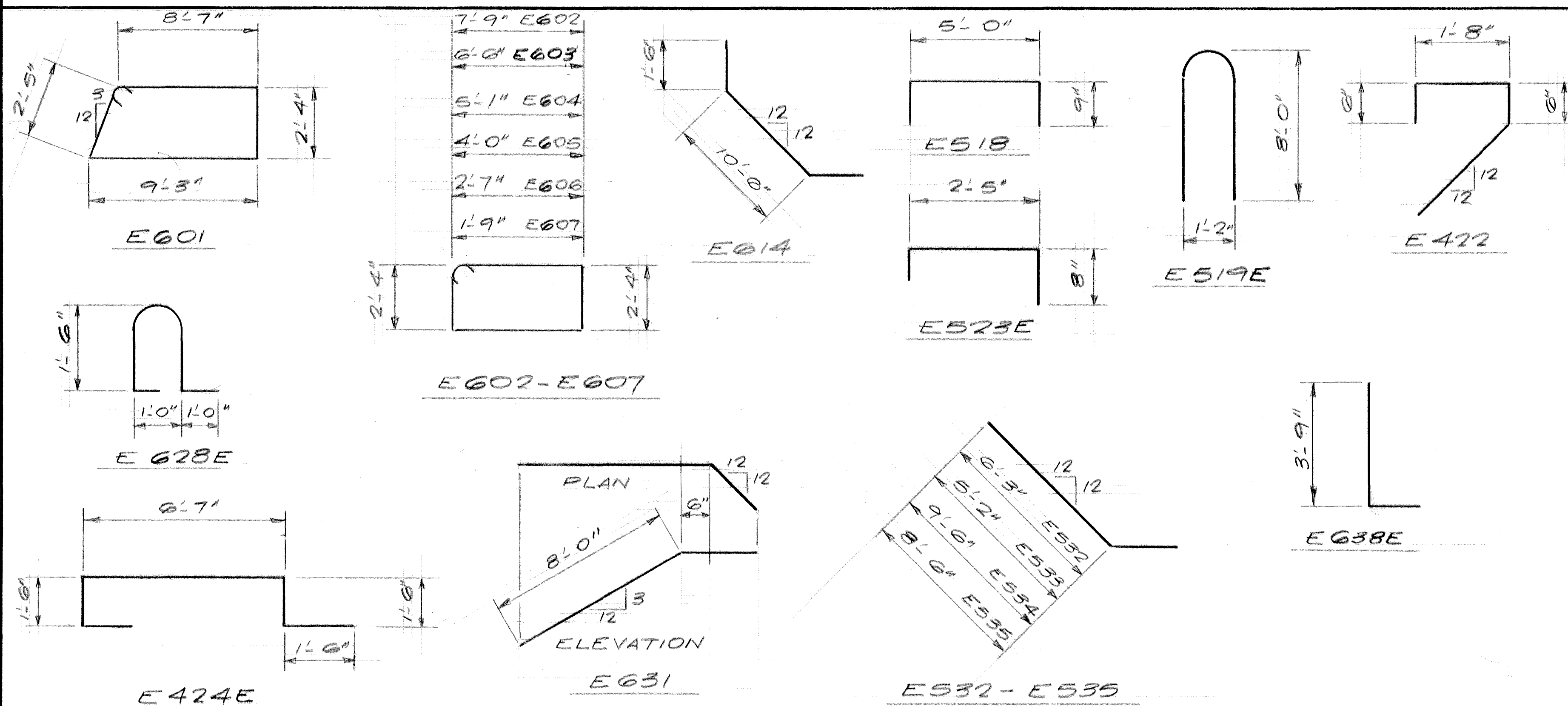


PART ELEVATION  
SCALE: 3/8" = 1'-0"



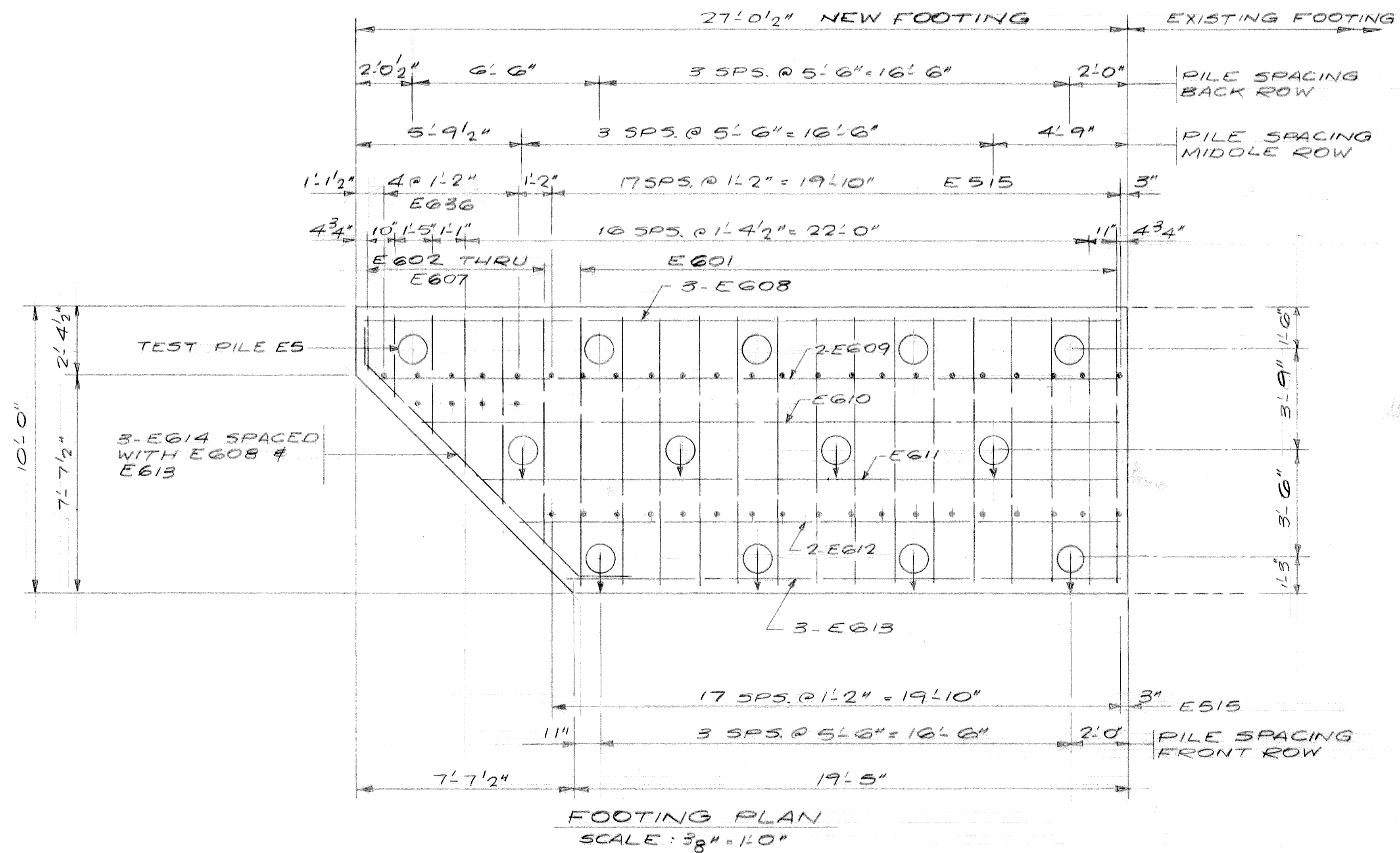
EAST ABUTMENT S.P. NO. 02-624-19	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER 02501
SHEET 7 OF 27 SHEETS				





**BILL OF REINF. - EAST ABUTMENT**

BAR NO.	LEN.	SHAPE	LOCATION
E601	15	23'-8"	BENT FOOTING - TIES
E602	1	20'-11"	" "
E603	1	18'-5"	" "
E604	1	15'-7"	" "
E605	1	13'-5"	" "
E606	1	10'-5"	" "
E607	1	8'-11"	" "
E608	3	26'-4"	STR "
E609	2	26'-0"	" "
E610	1	24'-5"	" "
E611	1	22'-4"	" "
E612	2	21'-0"	" "
E613	3	19'-0"	" "
E614	3	15'-6"	BENT "
E515	36	4'-2"	STR " DOWELS
E616	7	19'-3"	" BR. SEAT
E617	15	29'-7"	" " # PARAPET
E518	24	6'-6"	BENT " "
E519E	20	16'-8"	" PARAPET
E620	23	10'-0"	STR "
E621	1	12'-4"	" PAVING BRACKET
E422	7	4'-9"	BENT " "
E523E	20	3'-4"	" ROADWAY
E424E	3	12'-6"	" "
E425E	8	2'-5"	STR "
E526E	3	21'-0"	" "
E627	25	3'-0"	" DOWELS
E628E	3	5'-6"	" END POST DOWEL
E529	4	8'-5"	STR PARAPET HORZ.
E530	2 SERIES OF 8	7'-3" TO 9'-0"	" WINGWALL
E631	2	10'-0"	BENT "
E532	1	7'-9"	" "
E533	1	6'-8"	" "
E534	9	11'-0"	" "
E535	9	10'-0"	" "
E636	9	5'-6"	STR PARAPET DOWELS
E1137E	4	8'-0"	" END POST
E638E	2	4'-9"	BENT " "



**SUMMARY OF QUANTITIES - EAST ABUTMENT**

STRUCTURE CONCRETE (1443)	27	CU.YD.
STRUCTURE CONCRETE (3Y43)	29	CU.YD.
REINFORCEMENT BARS	3310	LB.
② STRUCTURE EXCAVATION		
① TREATED TIMBER PILING DELIVERED	360	LIN. FT.
① TREATED TIMBER PILING DRIVEN	360	LIN. FT.
TREATED TIMBER TEST PILES, 40 FT. LG.	1	EACH
REINFORCEMENT BARS (EPOXY COATED)	730	LB.
②③ CONCRETE REPAIR		

- ① DOES NOT INCLUDE TEST PILES
- ② SEE SPECIAL PROVISIONS
- ③ APPROX. AREA: 45 SQ. FT.

**PILE NOTES**

1 TREATED TIMBER TEST PILE 40 FT. LONG  
 12 " " PILES EST. LENGTH 30 FT.  
 13 " " " " REQ'D FOR EAST ABUT.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.  
 PILES MARKED THUS  $\rightarrow$  TO BE BATTERED 3" PER FT. IN FRONT ROW AND 1 1/2" PER FT. IN MIDDLE ROW IN DIRECTION SHOWN.  
 ESTIMATED PILING QUANTITY IS 2700 LBS.

**COMPUTED PILE LOADS - TONS / PILE**

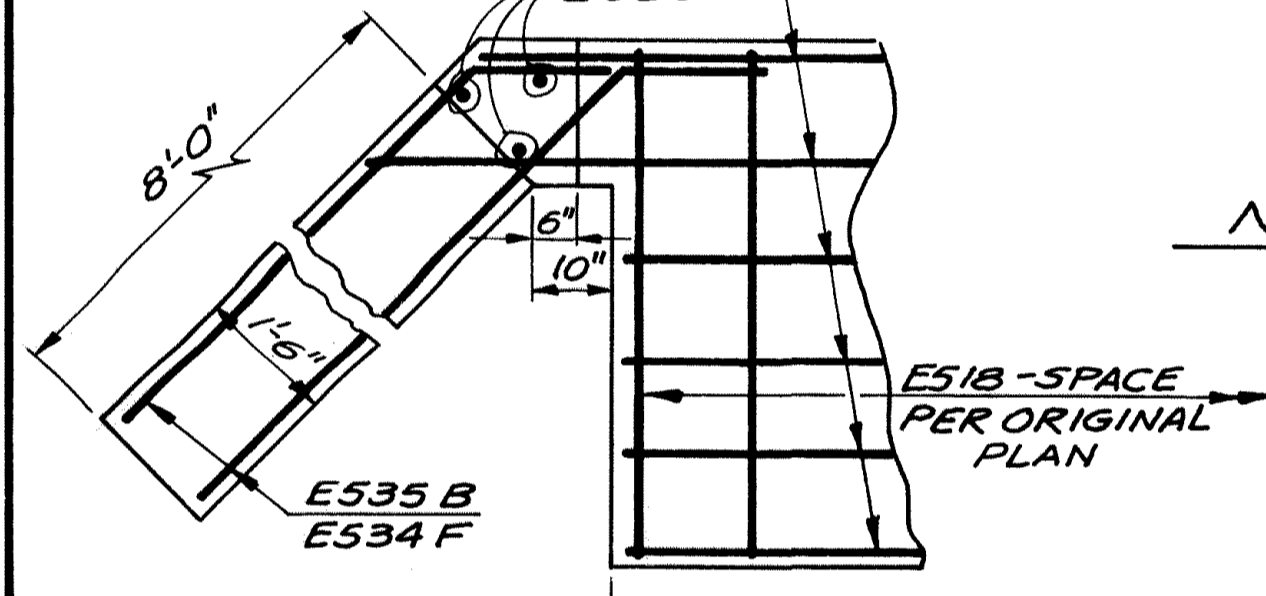
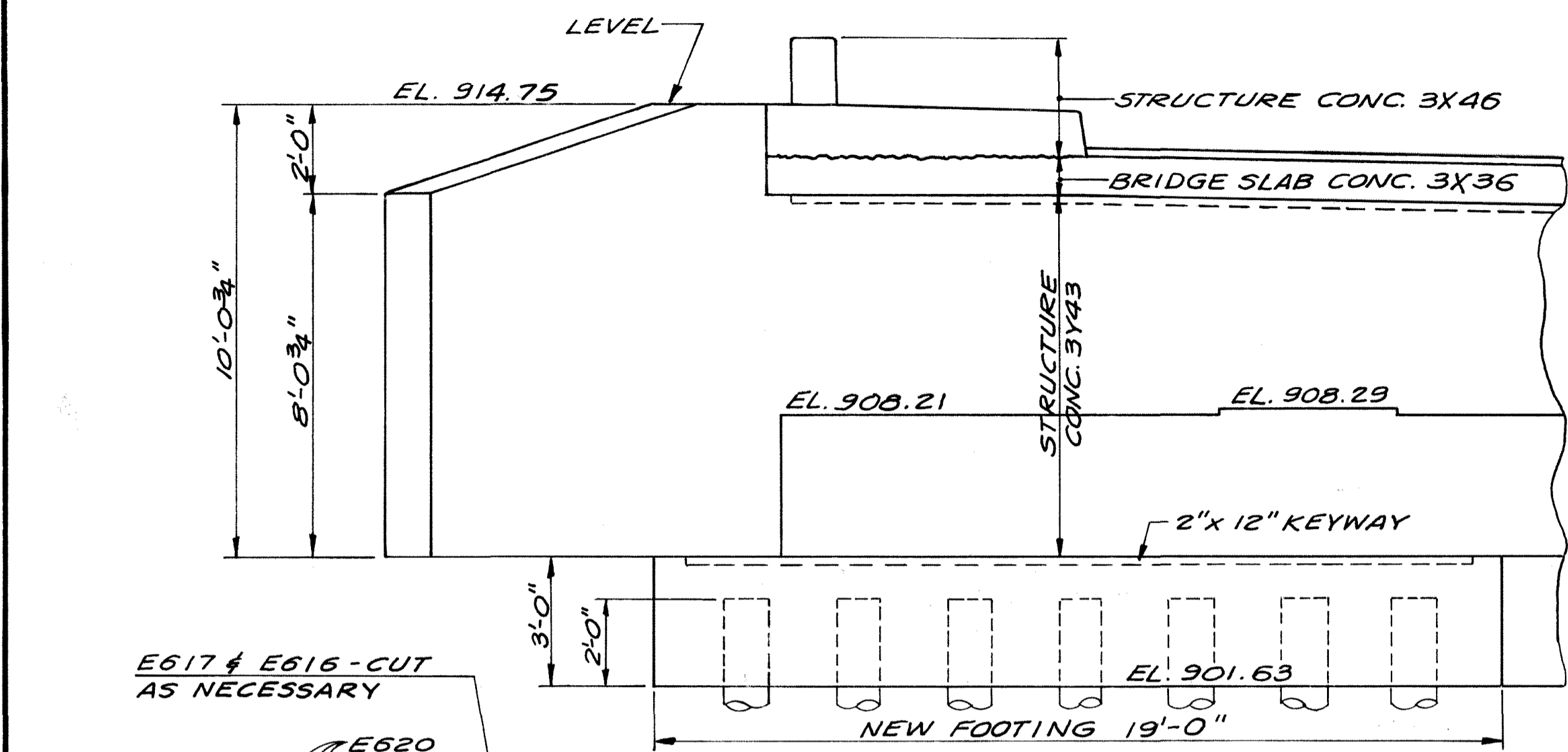
DEAD LOAD + EARTH PRESSURE	23.4
LIVE LOAD	5.6
TOTAL	29.0

EAST ABUTMENT	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER
S.P. NO. 02-624.19	SHEET 8 OF 27 SHEETS			02501

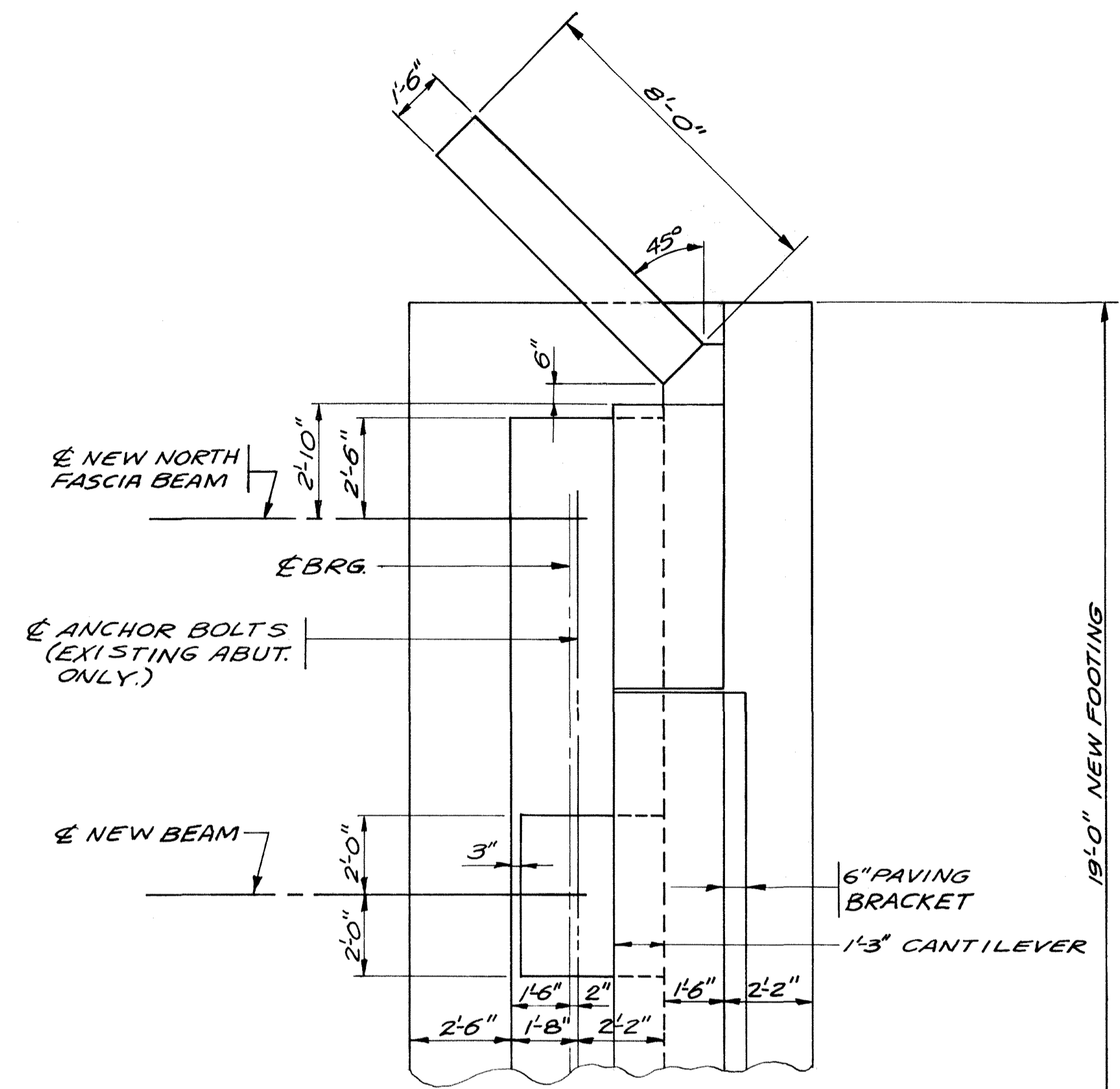


**BILL OF REINF-EAST ABUTMENT**

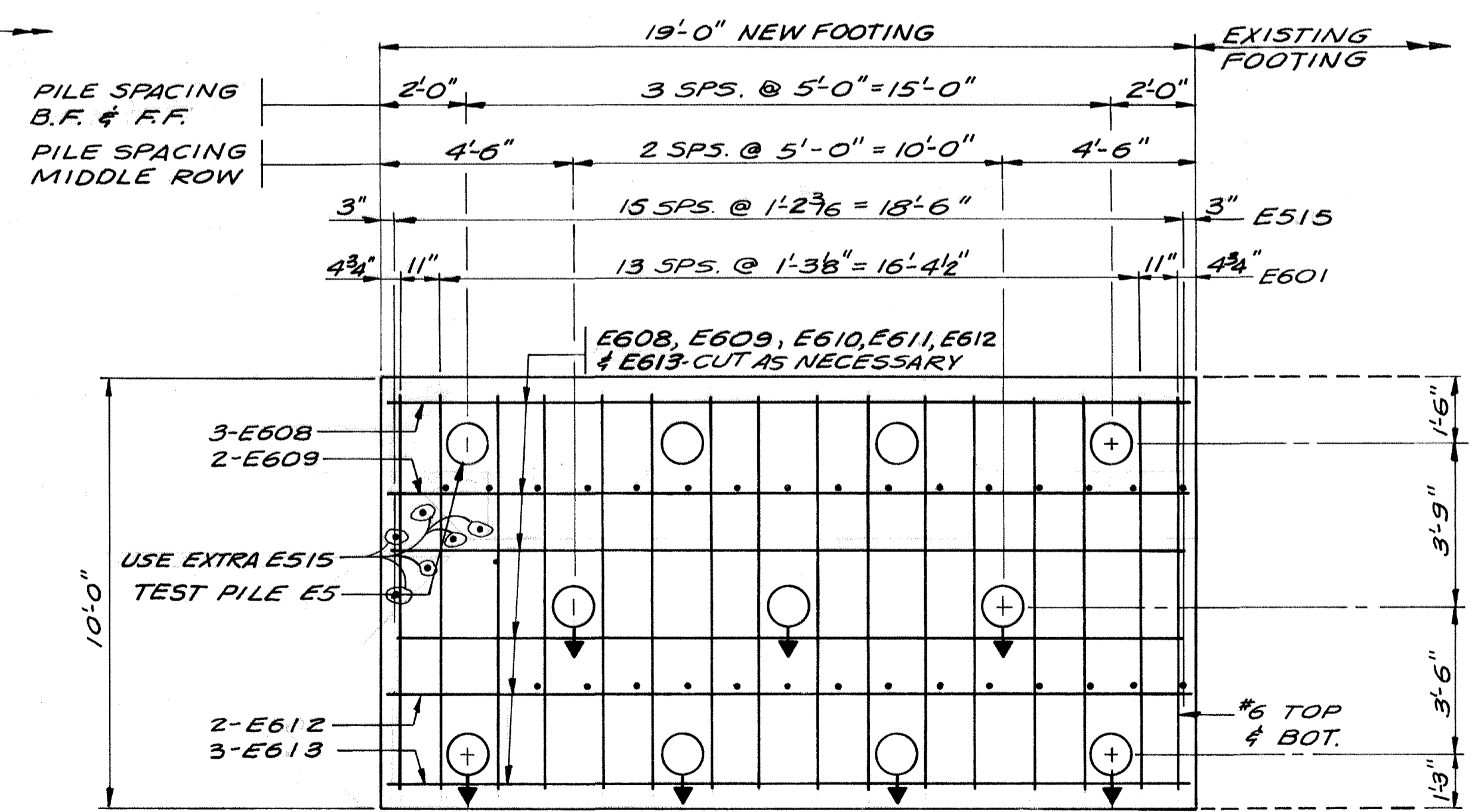
BAR	NO.	LEN.	SHAPE	LOCATION
E602	1	20'-11"	BENT	FOOTING TIES
E603	1	18'-5"	"	"
E604	1	15'-7"	"	"
E605	1	13'-5"	"	"
E606	1	10'-5"	"	"
E607	1	8'-11"	"	"
E608	3	19'-0"	STR.	"
E609	2	19'-0"	"	"
E610	1	19'-0"	"	"
E611	1	19'-0"	"	"
E612	2	19'-0"	"	"
E613	3	19'-0"	"	"
E614	3	13'-6"	BENT	"
E616	7	19'-6"	STR.	BR. SEAT
E617	15	21'-0"	"	" & PARAPET
E620	3	10'-0"	"	PARAPET
E529	4	8'-5"	"	"
E636	9	5'-6"	"	"



**N.E. CORNER REINFORCEMENT**  
2'-0" SCALE



**N.E. CORNER**



**FOOTING PLAN**

NOTE:  
DIMENSIONS, DETAILS AND REINFORCEMENT NOT SHOWN ARE SAME AS ORIGINAL PLAN.

3'-0" SCALE

**SUMMARY OF QUANTITIES - EAST ABUTMENT**

STRUCTURE CONCRETE (1A43)	21	CU.YD.
STRUCTURE CONCRETE (3Y43)	24	CU.YD.
REINFORCEMENT BARS	3010	POUNDS

**PILE NOTES**

1 TREATED TIMBER TEST PILE 40 FT. LONG.  
 10 " " PILES EST. LENGTH 30 FT.  
 11 " " " REQ'D. FOR EAST ABUTMENT.

PILE SPACING SHOWN IS AT BOTTOM OF FOOTING. PILES MARKED THUS  $\odot$  TO BE BATTERED 3" PER FT. IN FRONT ROW AND 1/2" PER FT. IN MIDDLE ROW. IN DIRECTION SHOWN.

**COMPUTED PILE LOADS TONS/PILE**

DEAD LOAD + EARTH PRESSURE	21.2
LIVE LOAD	5.0
TOTAL	26.2

EAST ABUTMENT DETAILS S.P. NO. 02-624-19	DRAWN	CHECK	APPROVED:	BRIDGE NUMBER 02501
	SHEET 89 OF 27 SHEETS			

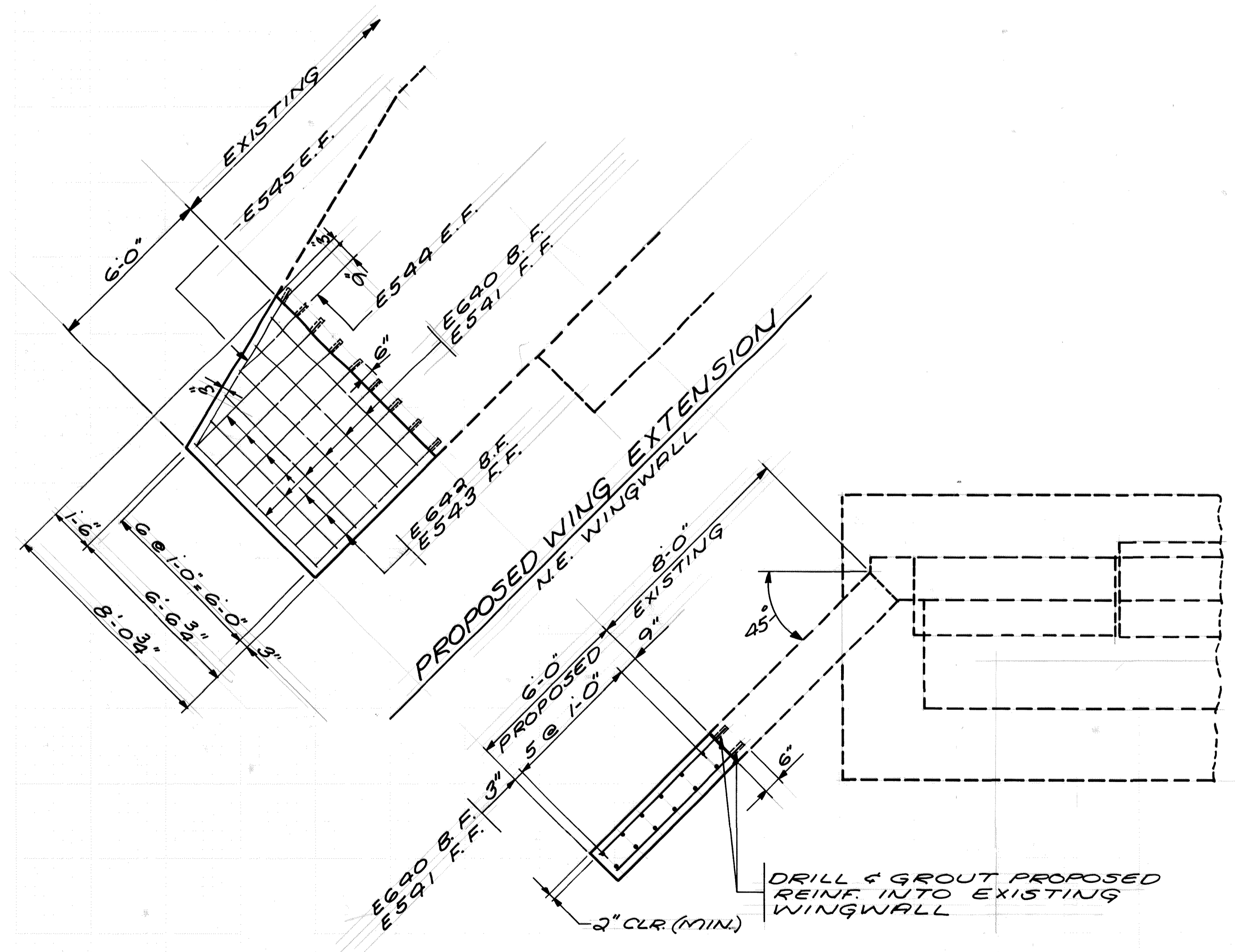


BILL OF REINF. - N.E. WING EXTENSION				
BAR	NO.	LEN.	SHAPE	LOCATION
E640	3	13'-7"	STR.	B.F. - VERT.
E541	3	13'-7"	"	F.F. - VERT.
E642	7	6'-3"	"	B.F. - HORZ.
E543	7	6'-3"	"	F.F. - HORZ.
E544	2	3'-3"	"	E.F. - HORZ.
E545	2	6'-6"	"	" "

F.F. = FRONT FACE  
 B.F. = BACK FACE  
 E.F. = EACH FACE

① CUT 2 FROM 1

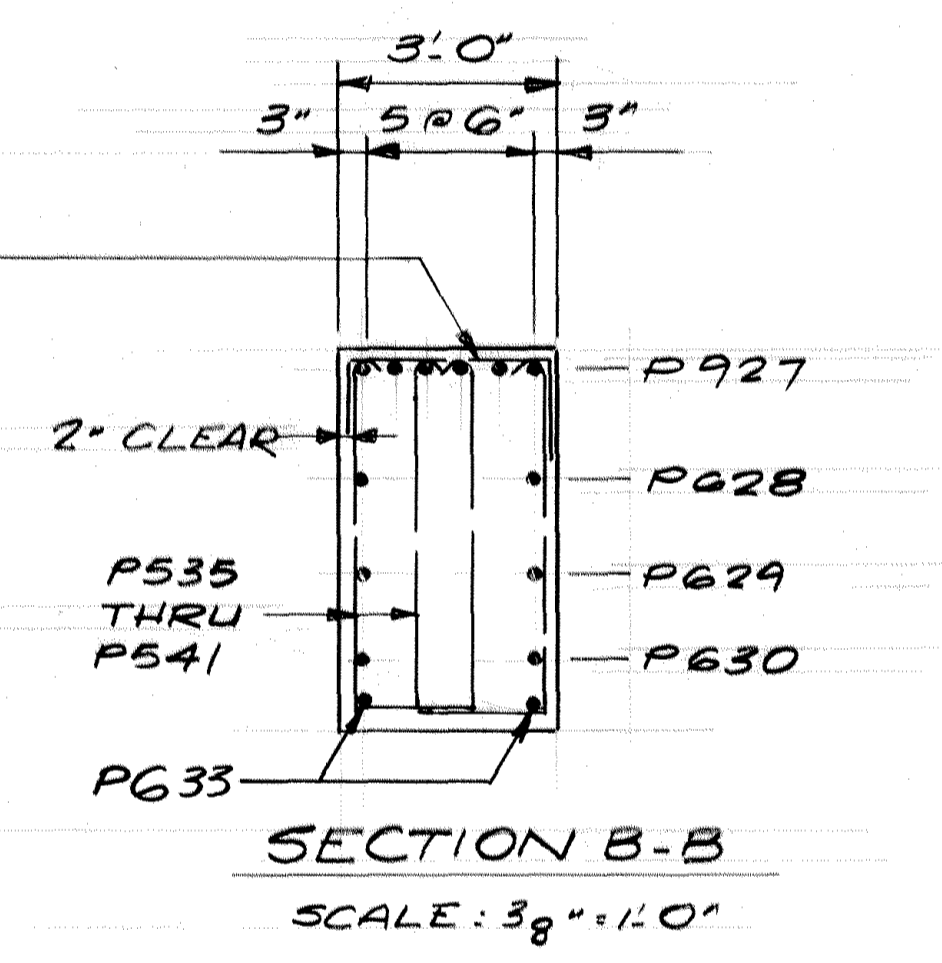
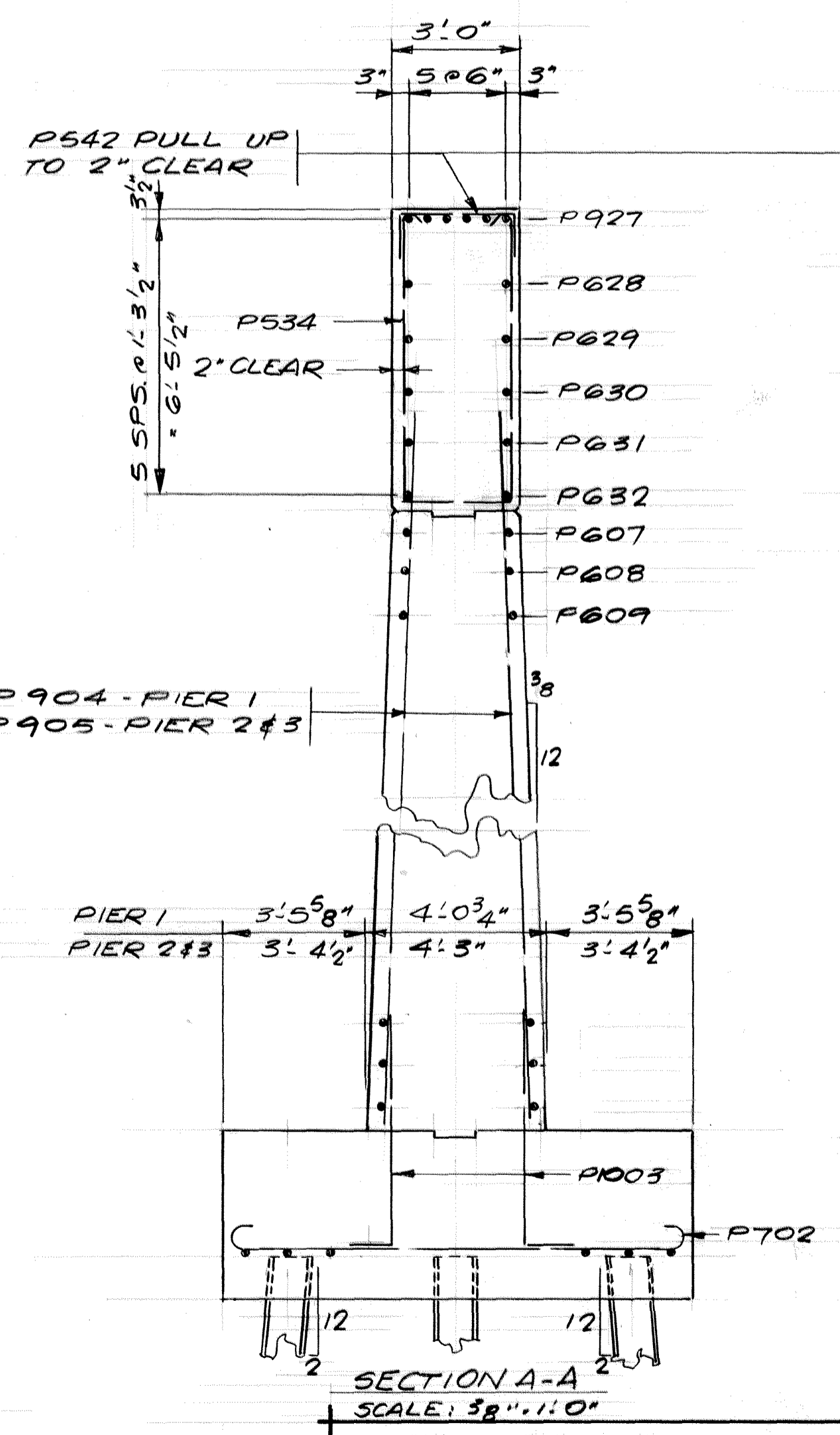
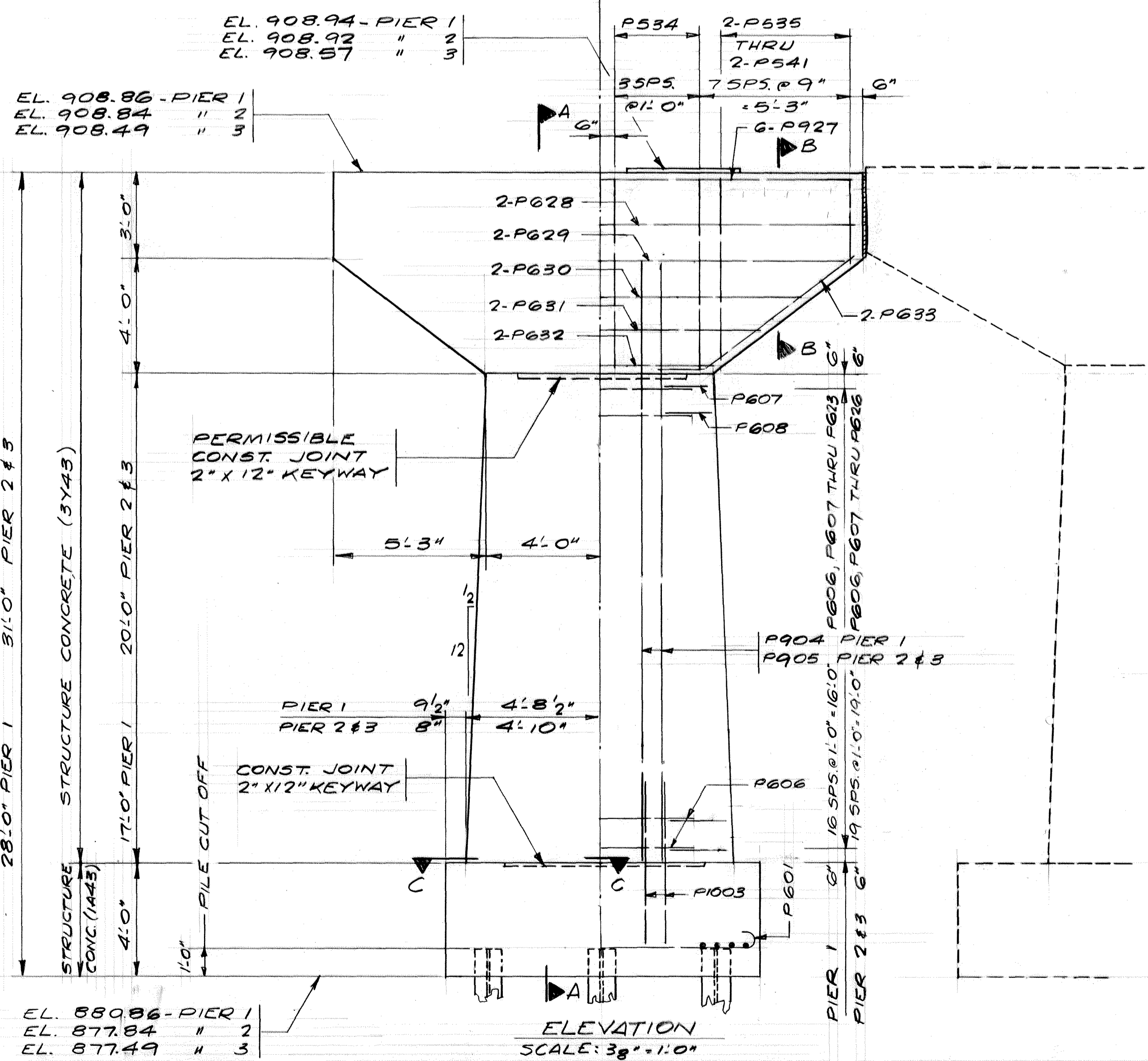
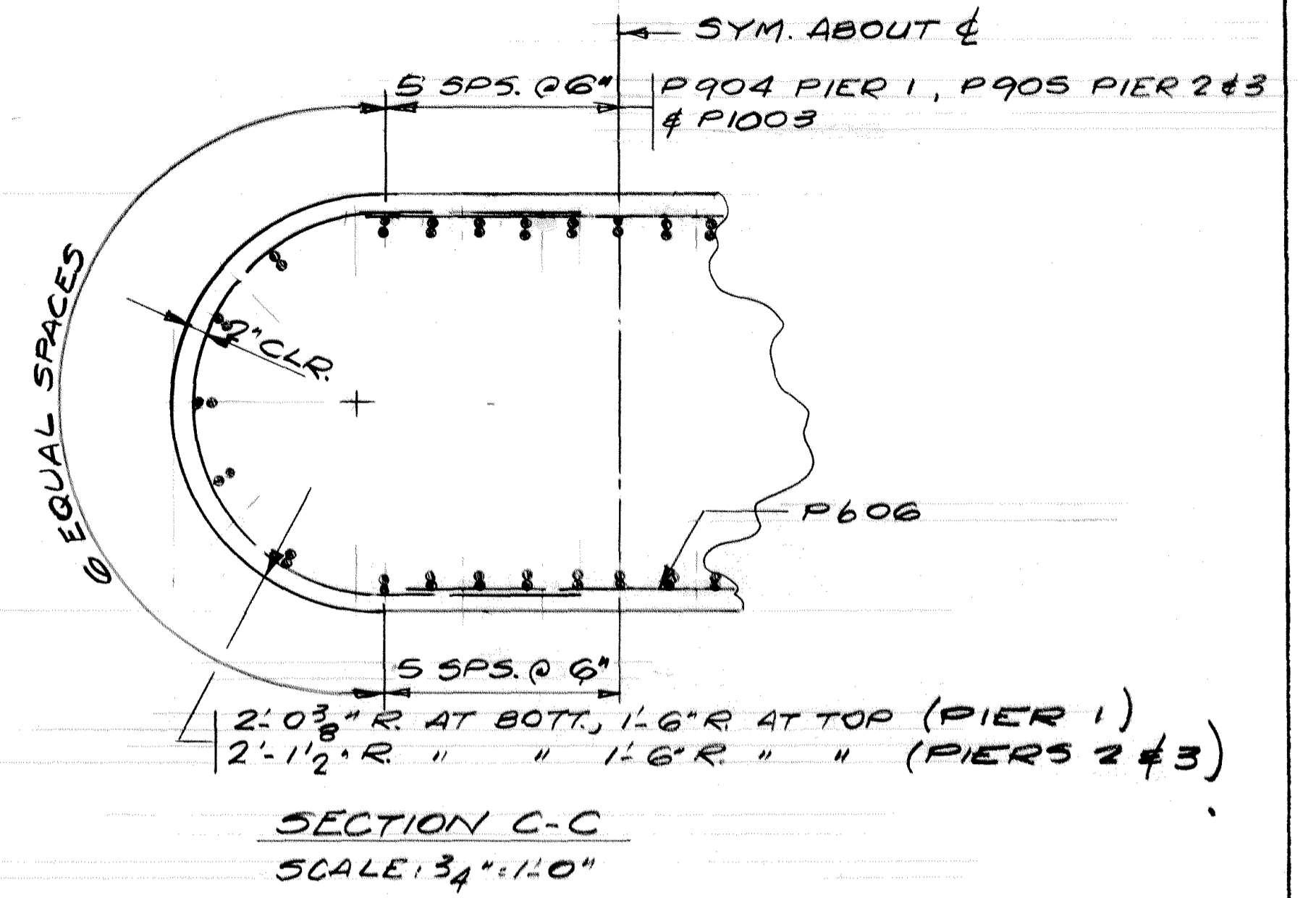
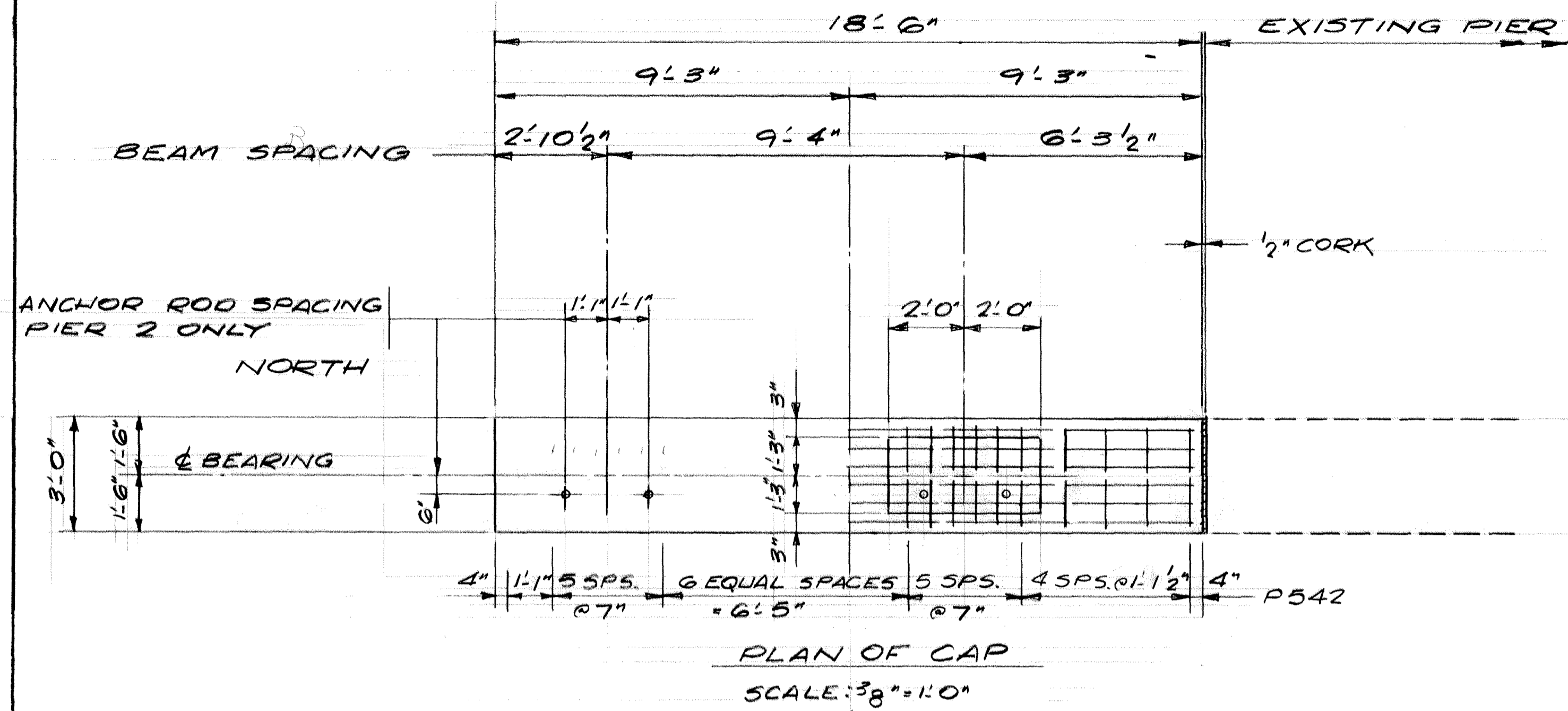
SUMMARY OF QUANTITIES		
STRUCTURE CONCRETE (3143)	3	CU. YD.
REINFORCEMENT BARS	236	POUND



PLAN VIEW - WINGWALL EXTENSION

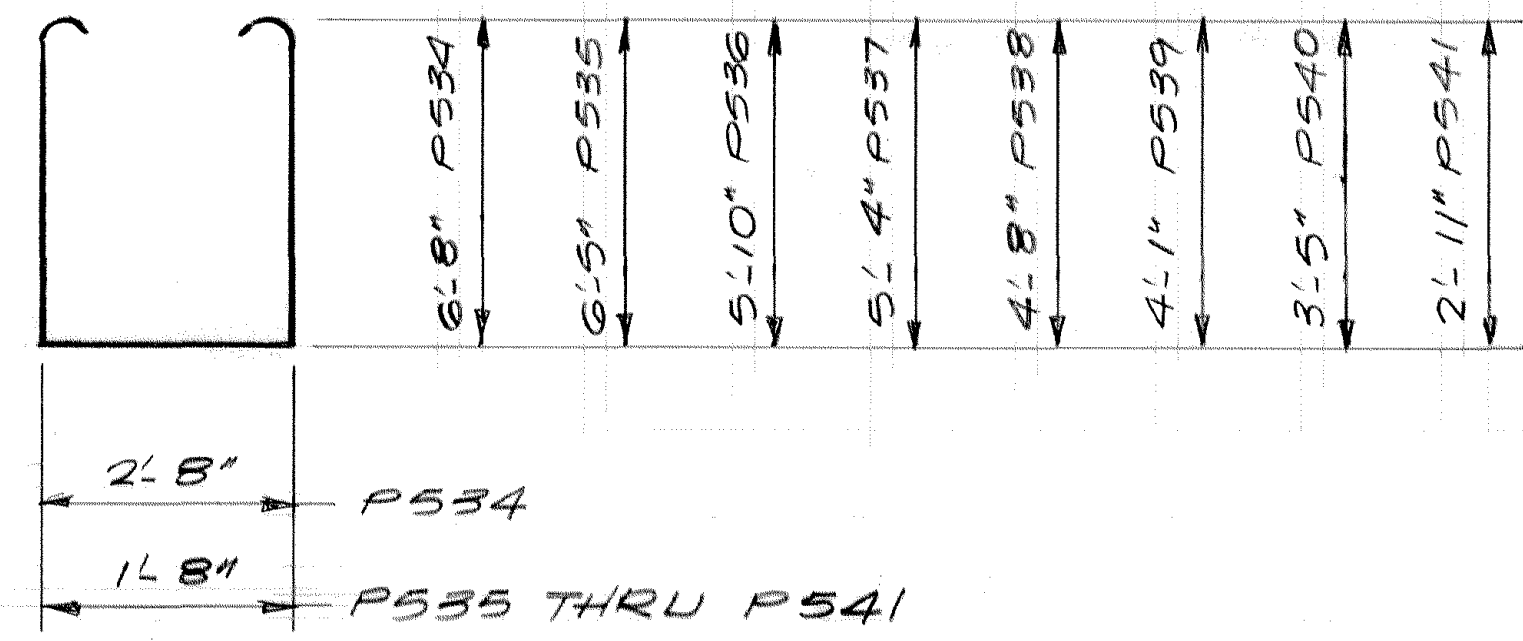
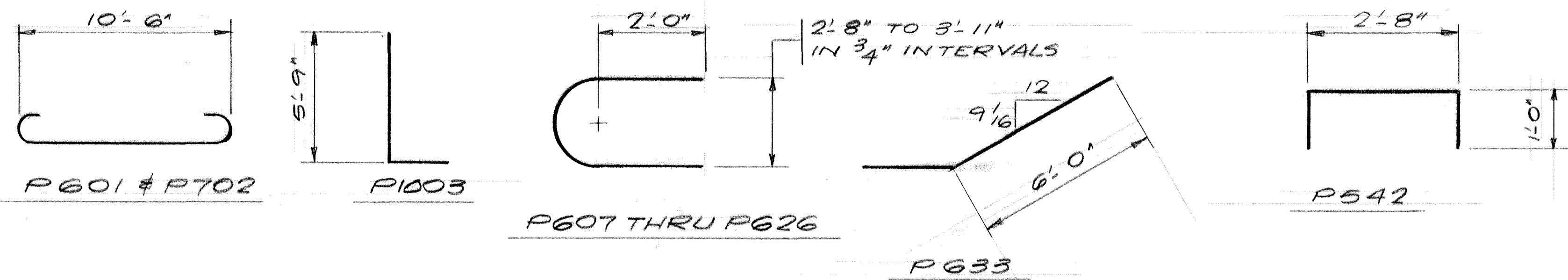
N.E. WINGWALL EXTENSION	DRAWN: D.J.V.	CHECKED: R.R.T.	APPROVED:	BRIDGE NUMBER
	SHEET 8b OF 27 SHEETS			





PIER DETAILS	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER
S.P. NO. 02-624-19	SHEET 9 OF 27 SHEETS			02501





P534 THRU P541

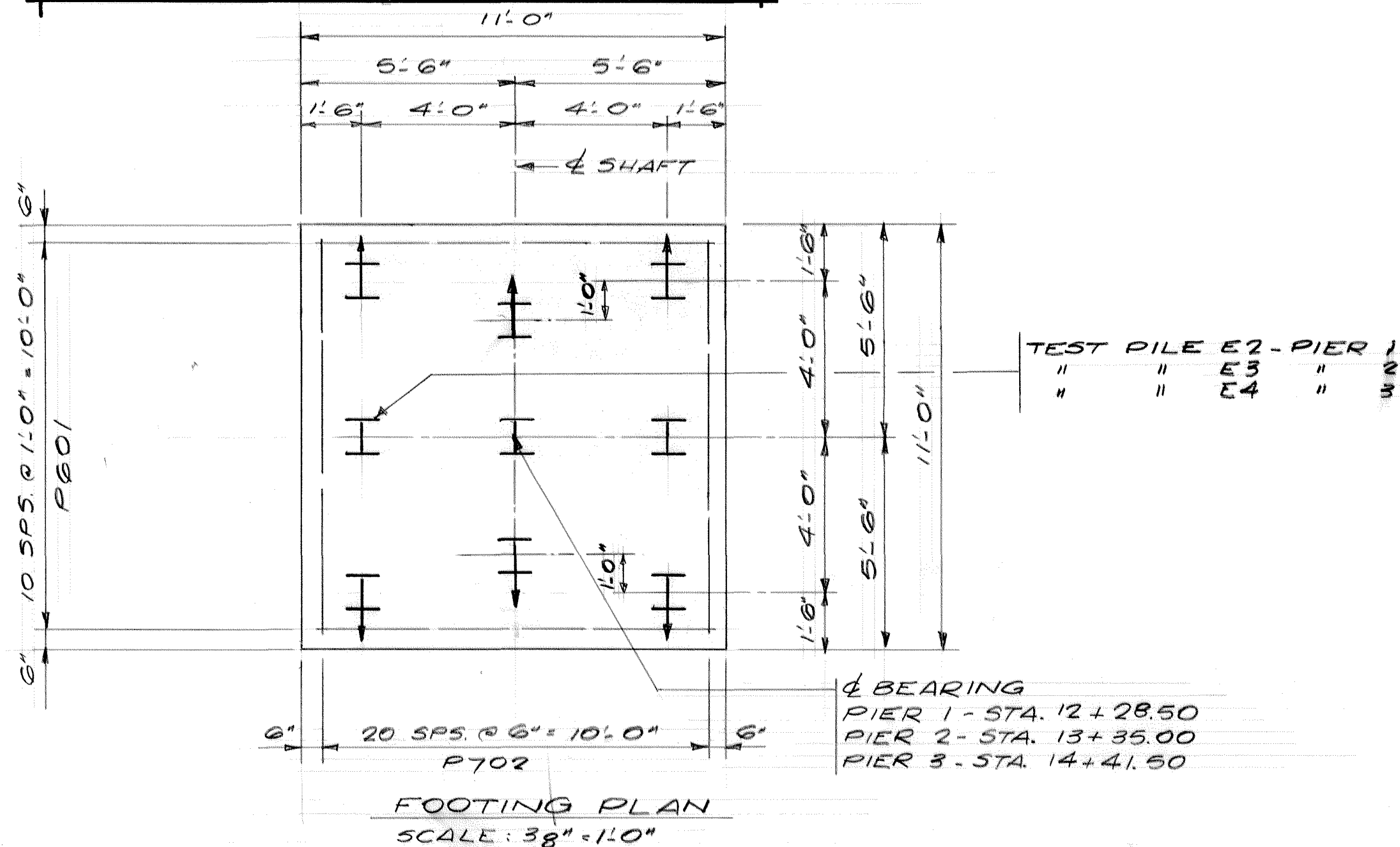
**PILE NOTES**

- 3 STEEL H-TEST PILES 45 FT LONG
- 24 " " PILES EST. LENGTH 35 FT
- 27 " " " REQ'D. FOR 3 PIERS

ALL PILES TO BE HP 12 X 53  
 PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.  
 PILES MARKED THUS H → TO BE BATTERED 2" PER FT. IN DIRECTION SHOWN.  
 FOR SPLICES SEE DETAIL B202.

COMPUTED PILE LOADS	
TONS PER PILE	
DEAD LOAD	38.0
LIVE LOAD	5.6
OVERTURNING	33.0
TOTAL	76.6 / 1.4 = 54.7

\*GROUP VI LOADING  
 REDUCTION PER  
 AASHTO 1.2.22



**BILL OF REINFORCEMENT - 3 PIERS**

BAR	NUMBER			TOTAL	LEN.	SHAPE	LOCATION
	PIER 1	PIER 2	PIER 3				
P601	11	11	11	33	11'-10"	BENT	FOOTING
P702	21	21	21	63	12'-2"		
P1003	32	32	32	96	7'-0"		DOWELS
P904	32	0	0	32	19'-8"	STR.	SHAFT-VERT.
P905	0	32	32	64	22'-3"		
P606	34	40	40	114	6'-0"		HORZ.
P607	2	2	2	6	8'-2"	BENT	ENDS
F608	2	2	2	6	8'-3"		
F609	2	2	2	6	8'-4"		
P610	2	2	2	6	8'-6"		
P611	2	2	2	6	8'-7"		
P612	2	2	2	6	8'-8"		
P613	2	2	2	6	8'-10"		
P614	2	2	2	6	8'-11"		
P615	2	2	2	6	9'-0"		
P616	2	2	2	6	9'-2"		
P617	2	2	2	6	9'-3"		
P618	2	2	2	6	9'-4"		
P619	2	2	2	6	9'-6"		
P620	2	2	2	6	9'-7"		
P621	2	2	2	6	9'-8"		
P622	2	2	2	6	9'-10"		
P623	2	2	2	6	9'-11"		
P624	0	2	2	4	10'-0"		
P625	0	2	2	4	10'-1"		
P626	0	2	2	4	10'-2"		
P927	6	6	6	18	18'-1"	STR.	CAP
P628	2	2	2	6	18'-1"		
P629	2	2	2	6	18'-1"		
P630	2	2	2	6	14'-8"		
P631	2	2	2	6	11'-2"		
P632	2	2	2	6	8'-2"		
P633	4	4	4	12	8'-0"	BENT	
P534	8	8	8	24	16'-11"		
P535	4	4	4	12	15'-5"		
P536	4	4	4	12	14'-3"		
P537	4	4	4	12	13'-3"		
P538	4	4	4	12	11'-11"		
P539	4	4	4	12	10'-9"		
P540	4	4	4	12	9'-5"		
P541	4	4	4	12	8'-5"		
P542	22	22	22	66	4'-8"		

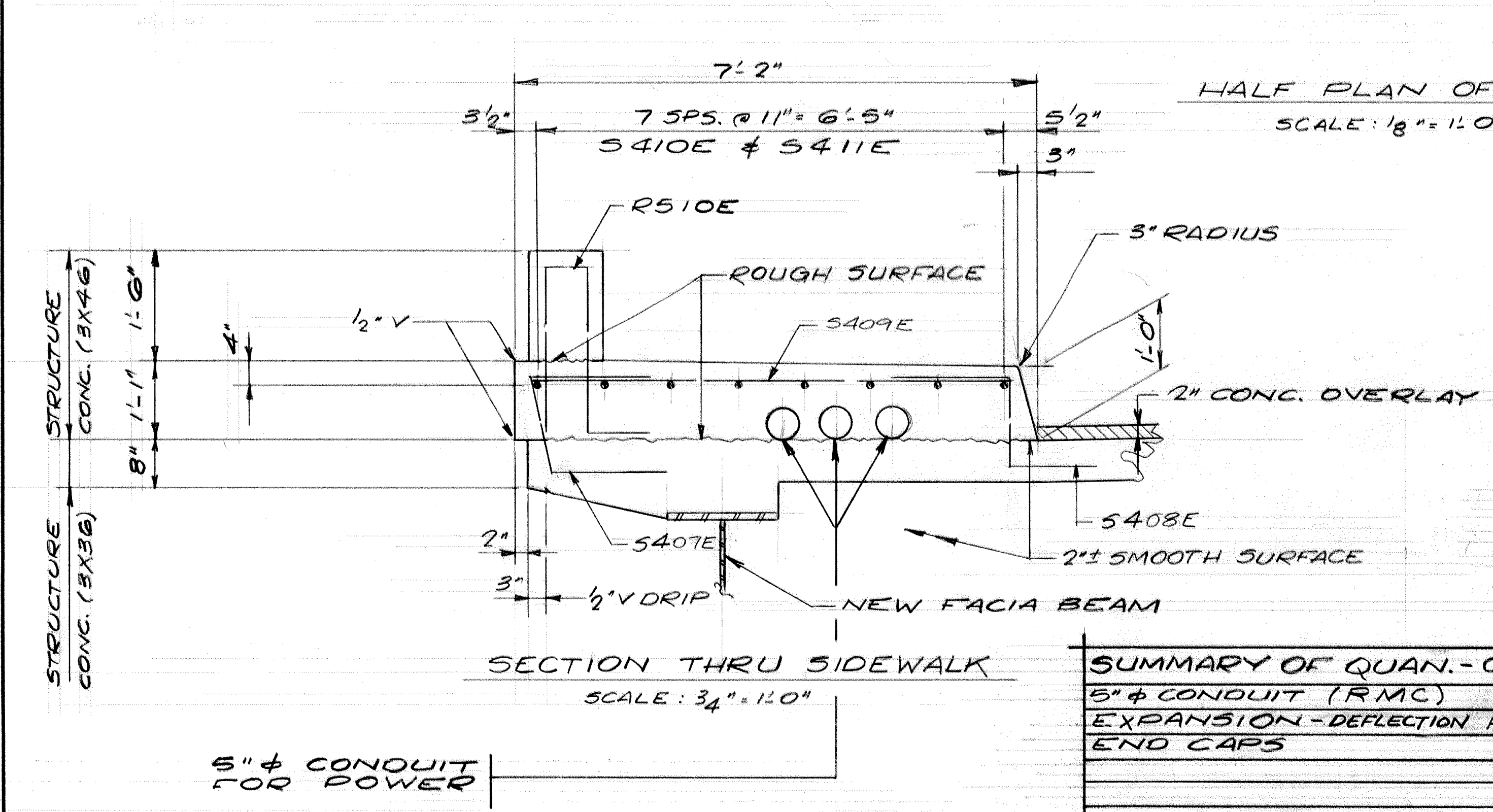
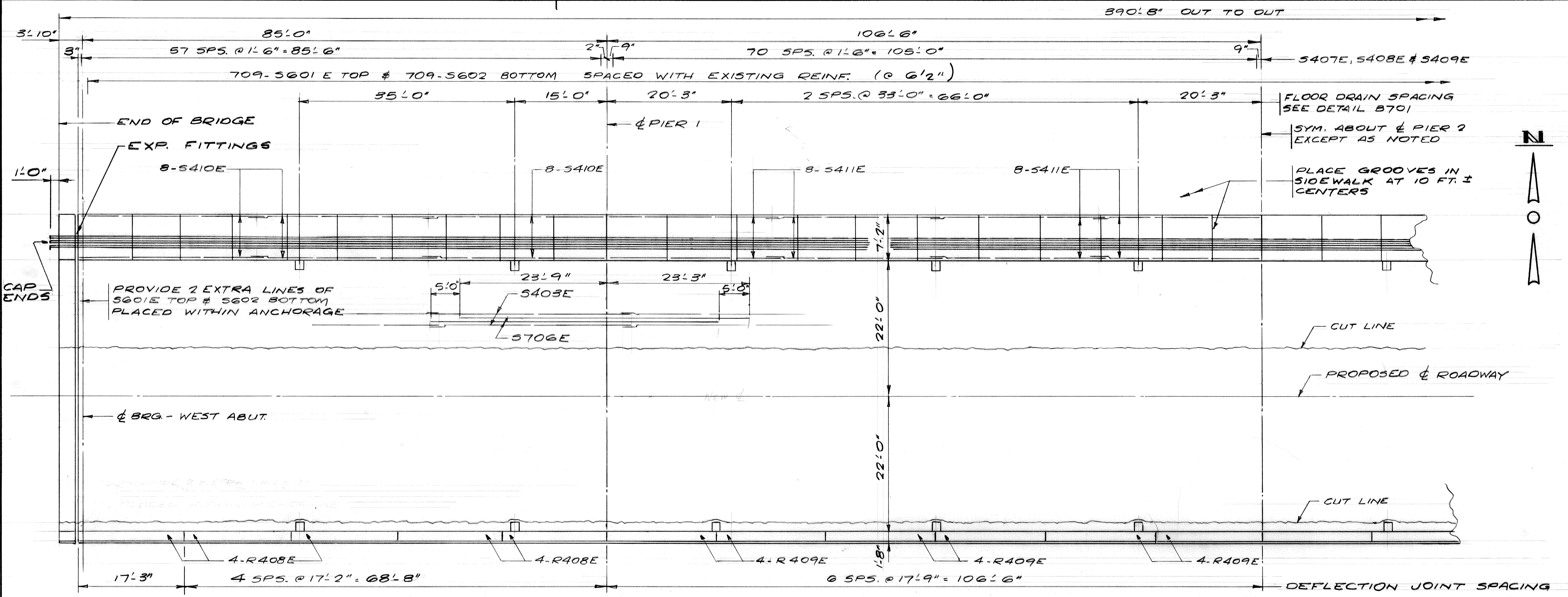
**SUMMARY OF QUANTITIES - 3 PIERS**

	PIER 1	PIER 2	PIER 3	TOTAL
STRUCTURE CONCRETE (1A43)	18	18	18	54 CU.YD.
STRUCTURE CONCRETE (3Y43)	30	34	34	98 CU.YD.
REINFORCEMENT BARS	5770	6245	6245	18260 LB.
FOUNDATION PREPARATION (PIER 1)	1			1 LUMP SUM
" " (PIER 2)		1		1 LUMP SUM
" " (PIER 3)			1	1 LUMP SUM
STEEL H PILING DELIVERED	280	280	280	840 LIN. FT.
STEEL H PILING DRIVEN	280	280	280	840 LIN. FT.
STEEL H-TEST PILES, 45 FT. LONG	1	1	1	3 EACH
PREFORMED CORK JT. FILLER 36" X 12" X 3'-0"	1	1	1	3 PIECES

- ① DOES NOT INCLUDE TEST PILES.
- ② SEE SPECIAL PROVISIONS.
- ③ INCLUDED IN PRICE BID FOR OTHER ITEMS

PIER DETAILS	DRAWN GRC	CHECK RRT	APPROVED:	BRIEGE NUMBER
S.R. NO. 02-624-19	SHEET 10 OF 27 SHEETS			02501





DECK OVERLAY REPAIR:  
 APPROX. AREA = 125 SQ. FT.  
 ⑨ APPROX. AREA = 12,015 SQ. FT.  
 ⑩ APPROX. AREA = 27,575 SQ. FT.

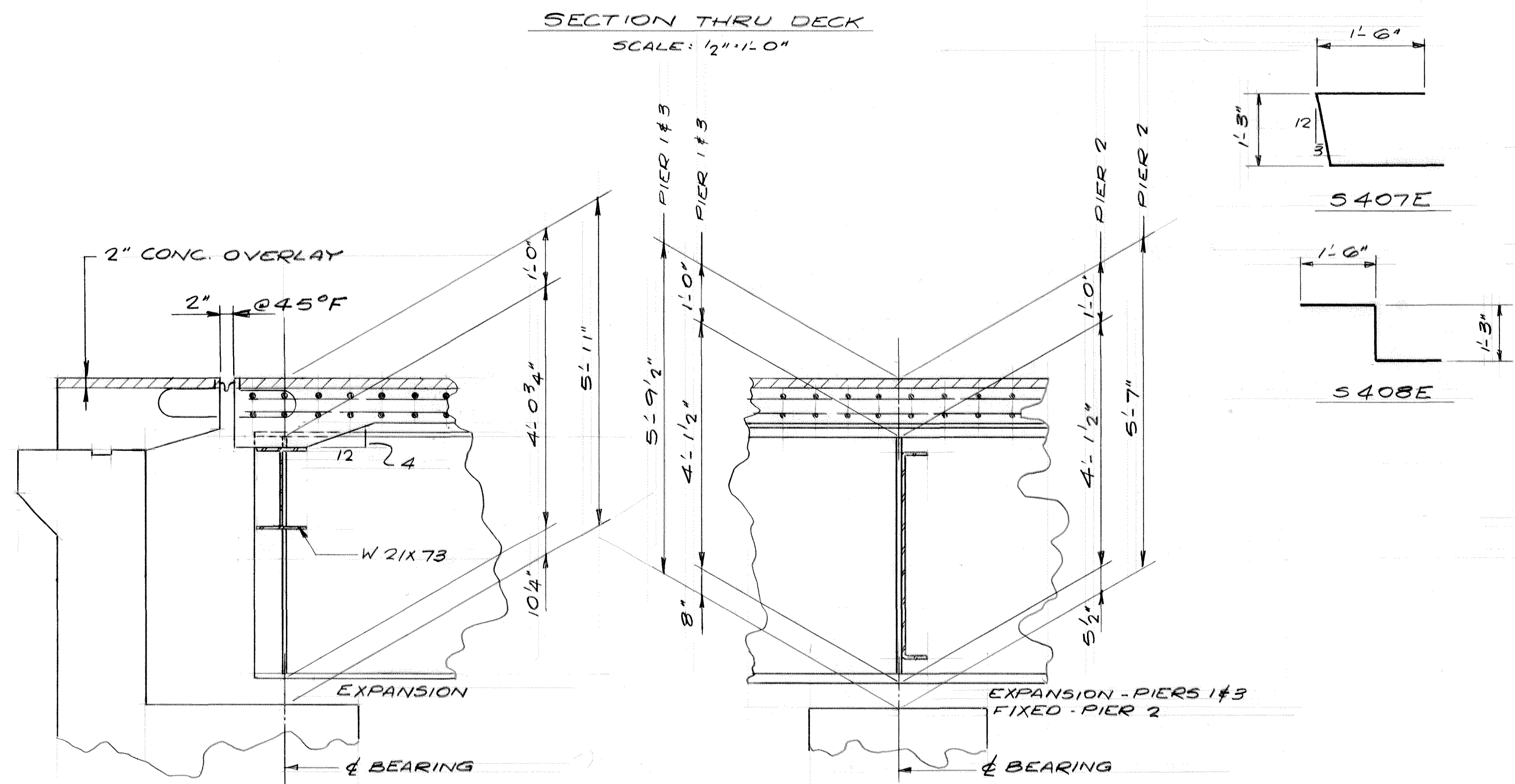
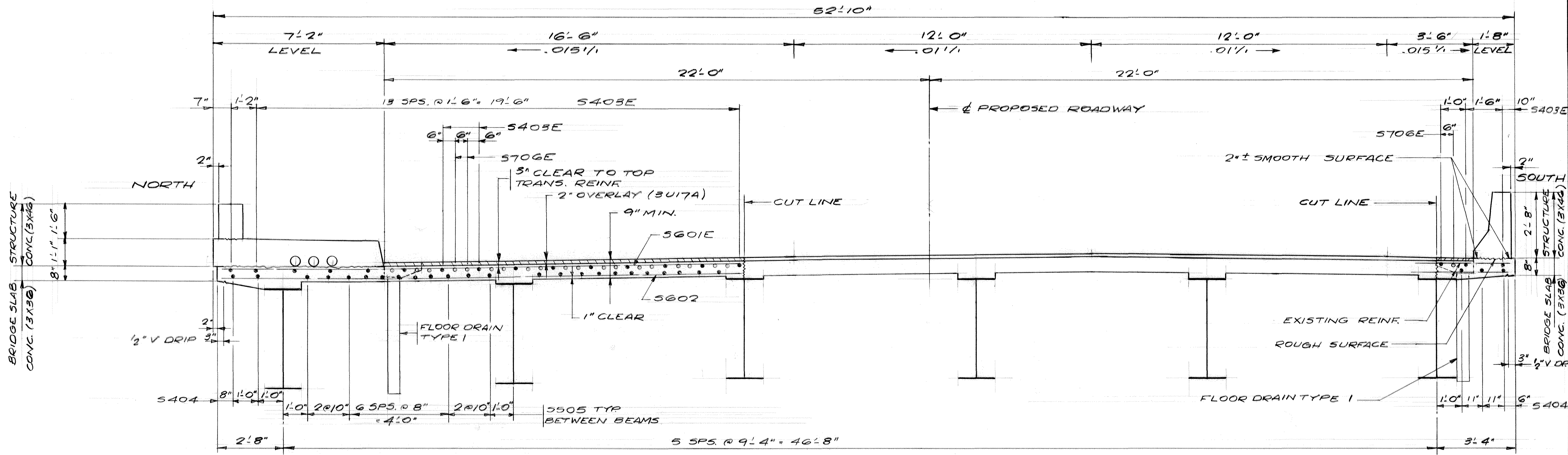
SUMMARY OF QUAN. - CONDUIT SYSTEM (POWER)	
5" φ CONDUIT (RMC)	1178 LIN. FT.
EXPANSION-DEFLECTION FITTINGS	6 EACH
END CAPS	6 EACH

SUMMARY OF QUANTITIES - SUPERSTRUCTURE	
① BRIDGE SLAB CONCRETE (3X36)	9700 SQ. FT.
② CONCRETE OVERLAY (3UITA)	6185 SQ. FT.
③ STRUCTURE CONCRETE (3X46)	108 CU. YD.
REINFORCEMENT BARS	53100 POUND
REINFORCEMENT BARS (EPOXY COATED)	50980 POUND
STRUCTURAL STEEL, (3309)	188220 POUND
FLOOR DRAINS, TYPE 1	20 EACH
④ EXPANSION JOINT DEVICE, TYPE 1	52 LIN. FT.
④ PIPE RAILING, TYPE M	391 LIN. FT.
④ ZINC RICH PAINT SYSTEM	1 LUMP SUM
④ FIXED CURVED PLATE BRG. ASSEMBLY, TYPE 1	2 EACH
⑦ ④ EXP. " " " " " " 1	8 EACH
④ " (VUL.) " " " " " 2	4 EACH
④ " " " " " " 3	4 EACH
⑥ NAME PLATE (SEE DETAIL B103)	1 EACH
⑧ ⑥ NAME PLATE (RESET)	1 EACH
④ ⑥ PREFORMED CORK JT. FILLER 11"X11"X1'-7" DEFL. JTS. TYPE J RAIL	21 PIECES
④ ⑥ " " " " " " 12"X11"X1'-6" " " " M "	21 PIECES
④ CONDUIT SYSTEM (POWER)	1 LUMP SUM
④ ⑧ ZINC-RICH PAINT SYSTEM (NEW)	1 LUMP SUM
④ ⑧ ZINC-RICH PAINT SYSTEM (OLD)	1 LUMP SUM

① INCLUDES RAILING QUANTITIES.  
 ② APPROX. VOLUME = 233 CU. YD. (COMPUTED USING AVG. STOOD OF 2").  
 ③ APPROX. VOLUME = 39 CU. YD.  
 ④ SEE SPECIAL PROVISIONS.  
 ⑤ REPLACES EXISTING ABUTMENT BEARING ASSEMBLIES.  
 ⑥ INCLUDED IN PRICE BID FOR OTHER ITEMS.  
 ⑦ CONTRACTOR WILL BE REQ'D TO ADJUST THESE BRG'S. AT 45°F. SEE SPECIAL PROVISIONS.  
 ⑧ SEE SHT. 17

SUPERSTRUCTURE DETAILS S.P. NO. 02-624-19	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER 02501
	SHEET 11 OF 27 SHEETS			

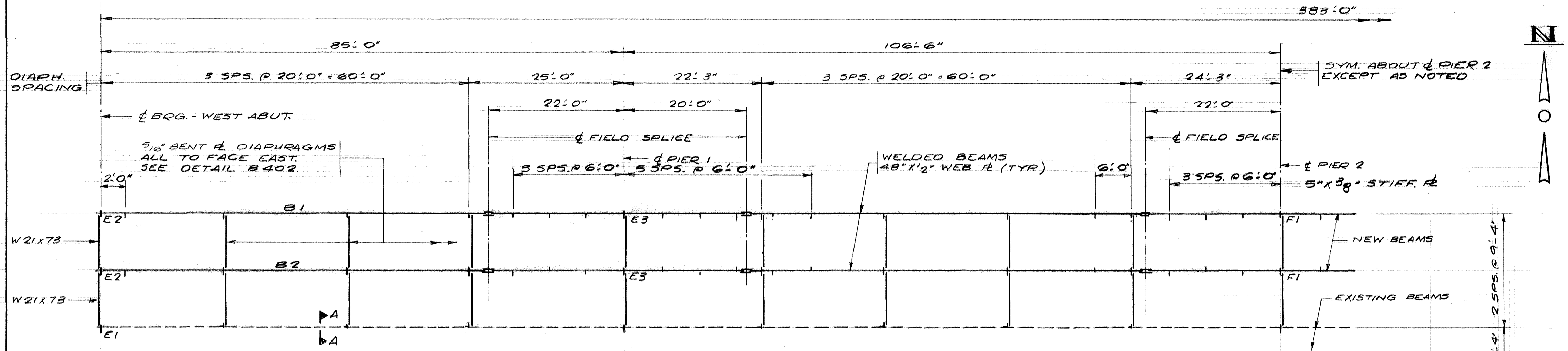




BILL OF REINF. - SUPERSTRUCTURE				
BAR	NO.	LEN.	SHAPE	LOCATION
S601E	713	21'-0"	STR.	SLAB-TRANS. TOP
S602	713	21'-0"	"	" " BOT.
S403E	216	33'-5"	"	" LONGIT-TOP
S404	60	33'-5"	"	" " BOT.
S505	242	36'-9"	"	" " "
S706E	60	"	"	" OVER PIERS
S407E	258	4'-3"	BENT	SIDEWALK
S408E	258	4'-3"	"	" " "
S409E	258	6'-7"	STR.	" " "
S410E	48	29'-6"	"	" LONGIT.
S411E	64	28'-10"	"	" " "

- ① 12 LINES, 1'-6" MIN. LAP
- ② 11 LINES, 1'-11" MIN. LAP
- ③ 1'-6" MIN. LAP





HALF FRAMING PLAN

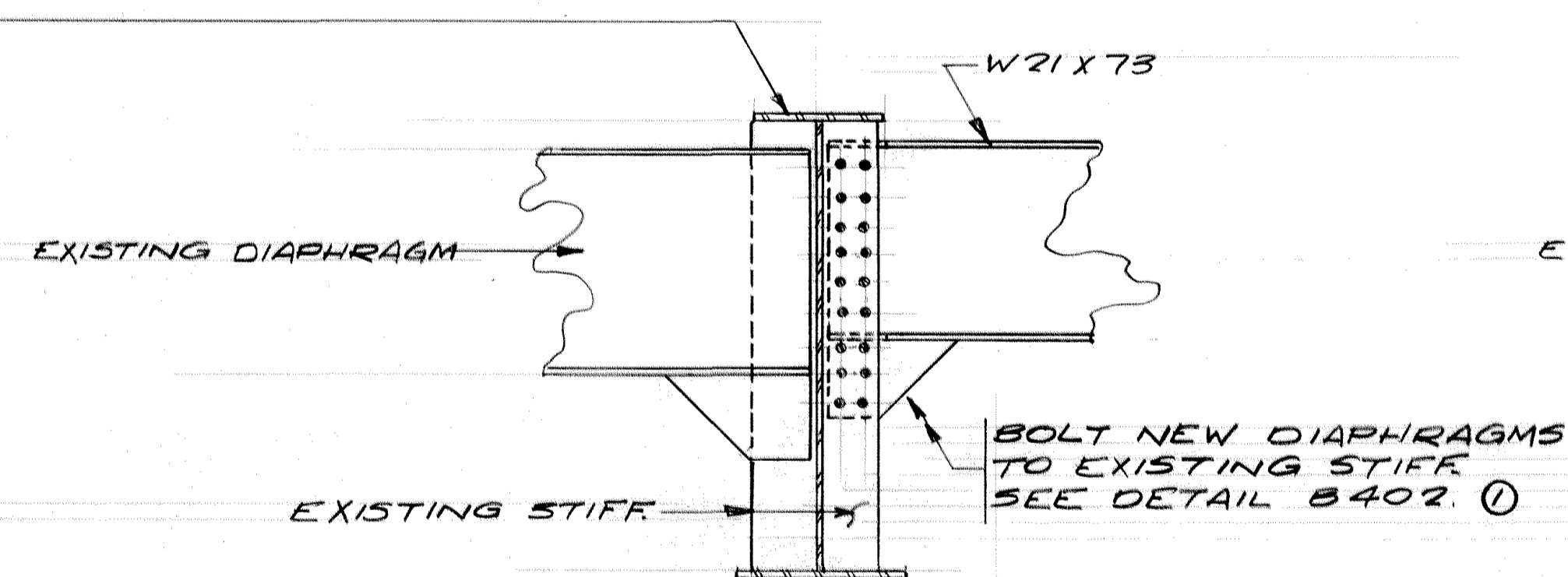
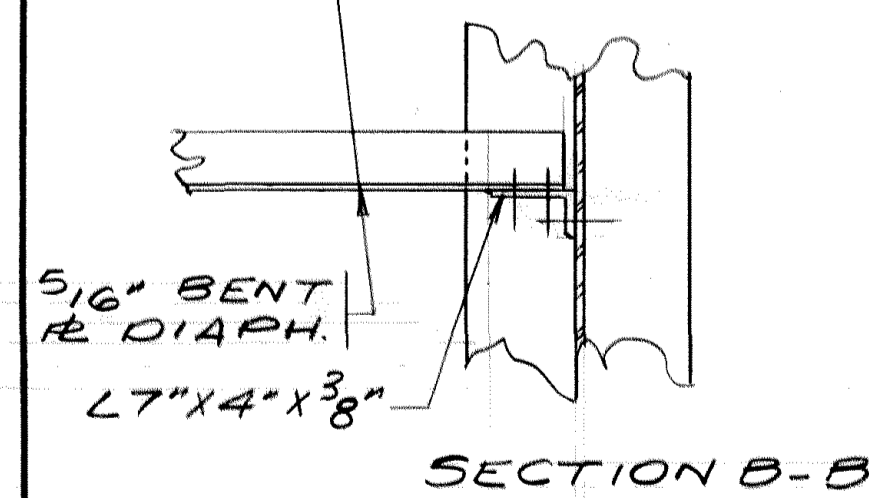
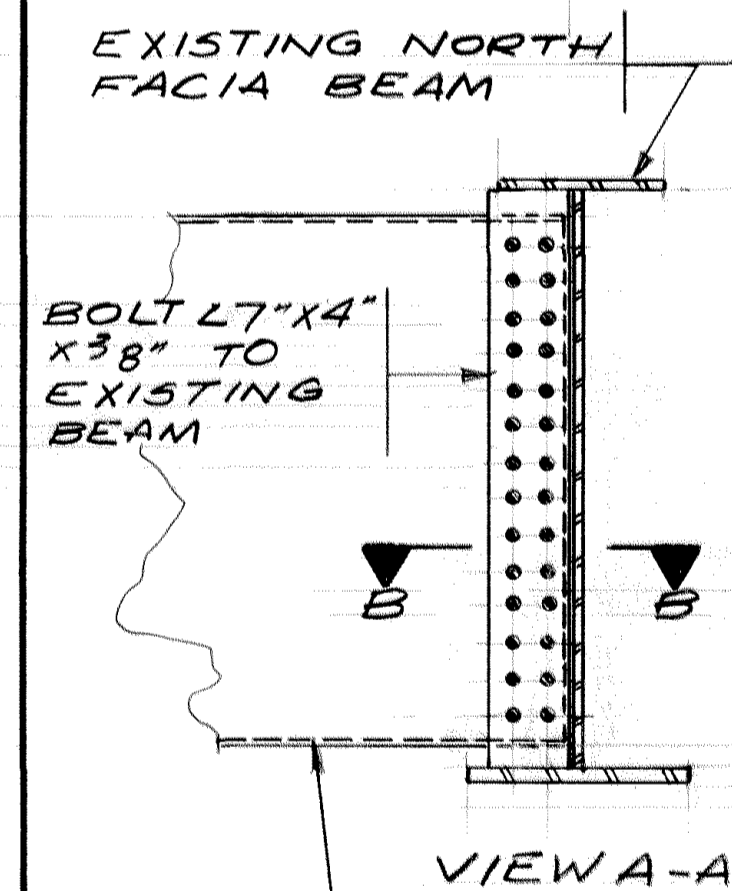
18" x 1'-0"

NOTE

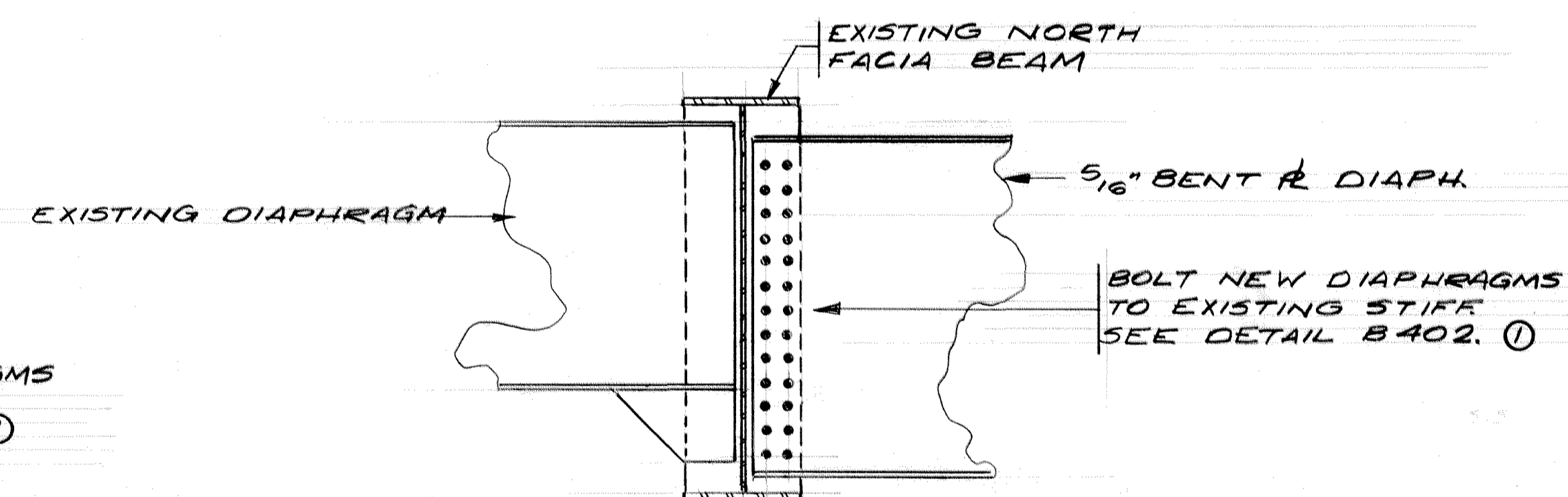
ALL EXISTING BEARINGS AT BOTH ABUTMENTS ARE TO BE REPLACED WITH EXP. CURVED PLATE BRG. ASSEMBLY, TYPE I (SEE SPEC. PROVS.). NEW BEARINGS (E1) UNDER EXISTING BEAMS AT THE ABUTMENTS WILL BE REQUIRED TO BE RESET AT A TEMPERATURE OF 45° F.

NOTE:

E1 = EXPANSION CURVED PLATE BEARING ASSEMBLY, TYPE I (SEE DETAIL B355)  
 E2 = " (VUL.) " " " " " " " " " B357  
 E3 = " " " " " " " " " " B356  
 FI = FIXED " " " " " " " " " " B354



EXISTING BMS. 3 SPS. @ 9'-4"  
 NEW BEAMS 2 SPS. @ 9'-4"  
 ABUT. DIAPHRAGMS

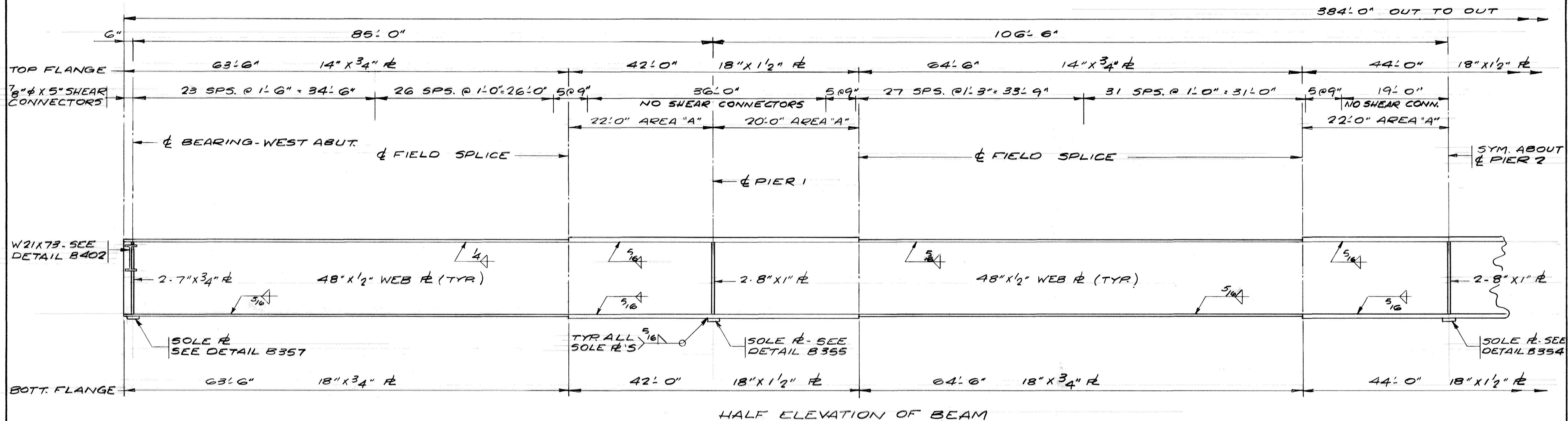


EXISTING BEAMS 3 SPS. @ 9'-4"  
 NEW BEAMS 2 SPS. @ 9'-4"  
 PIER DIAPHRAGM

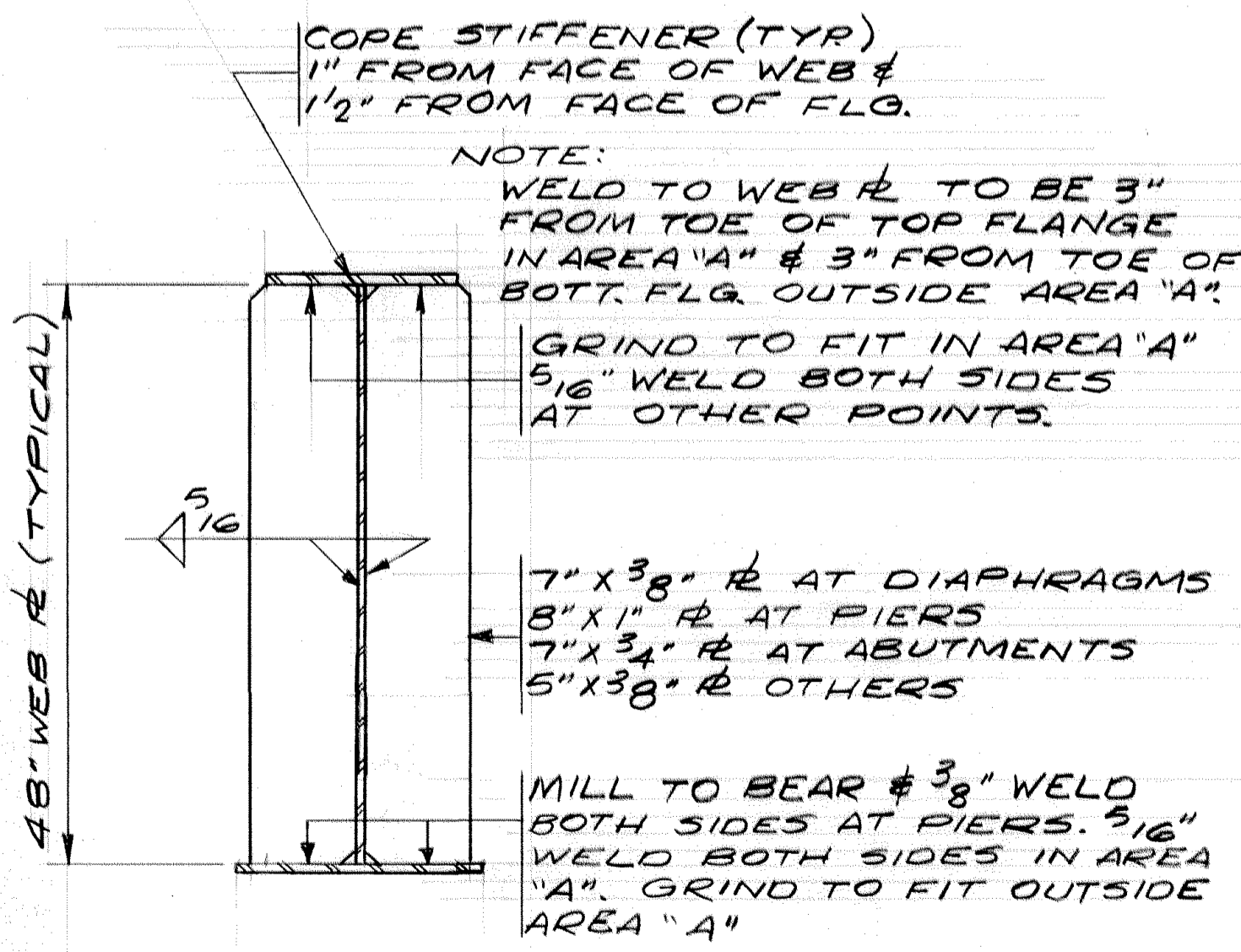
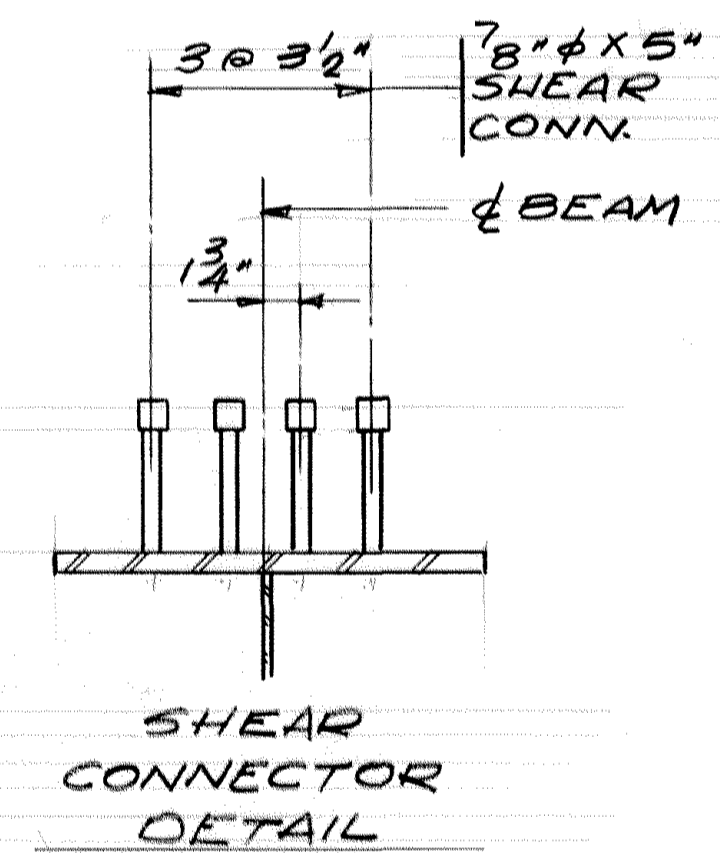
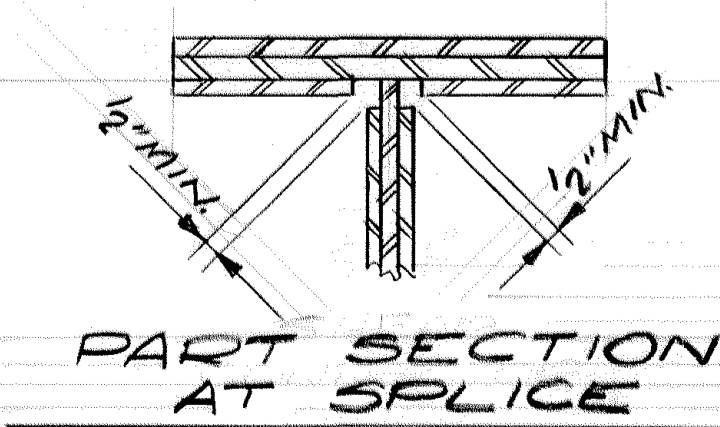
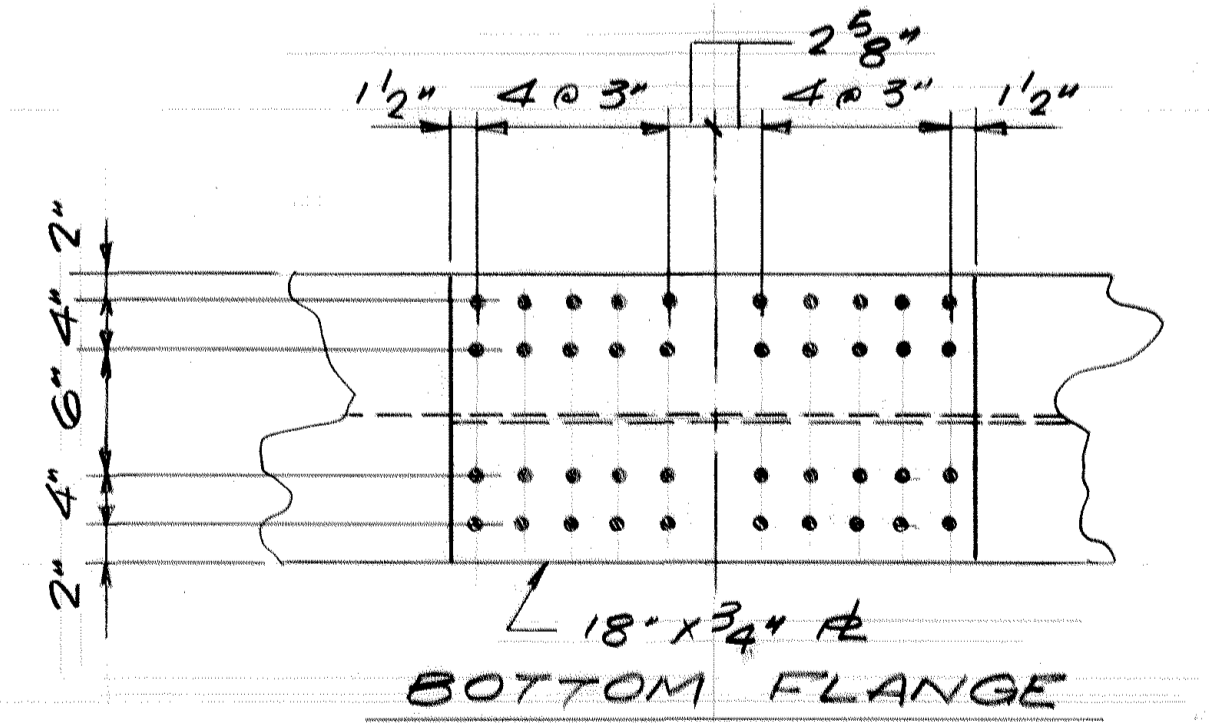
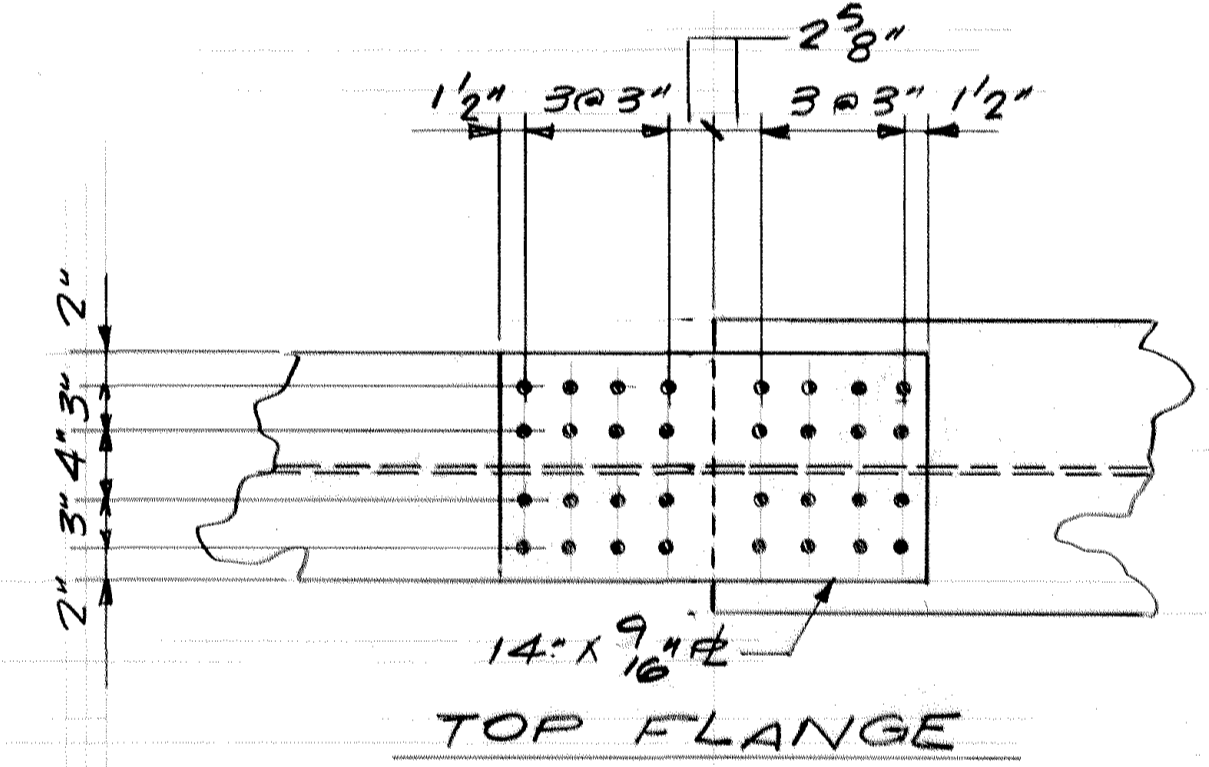
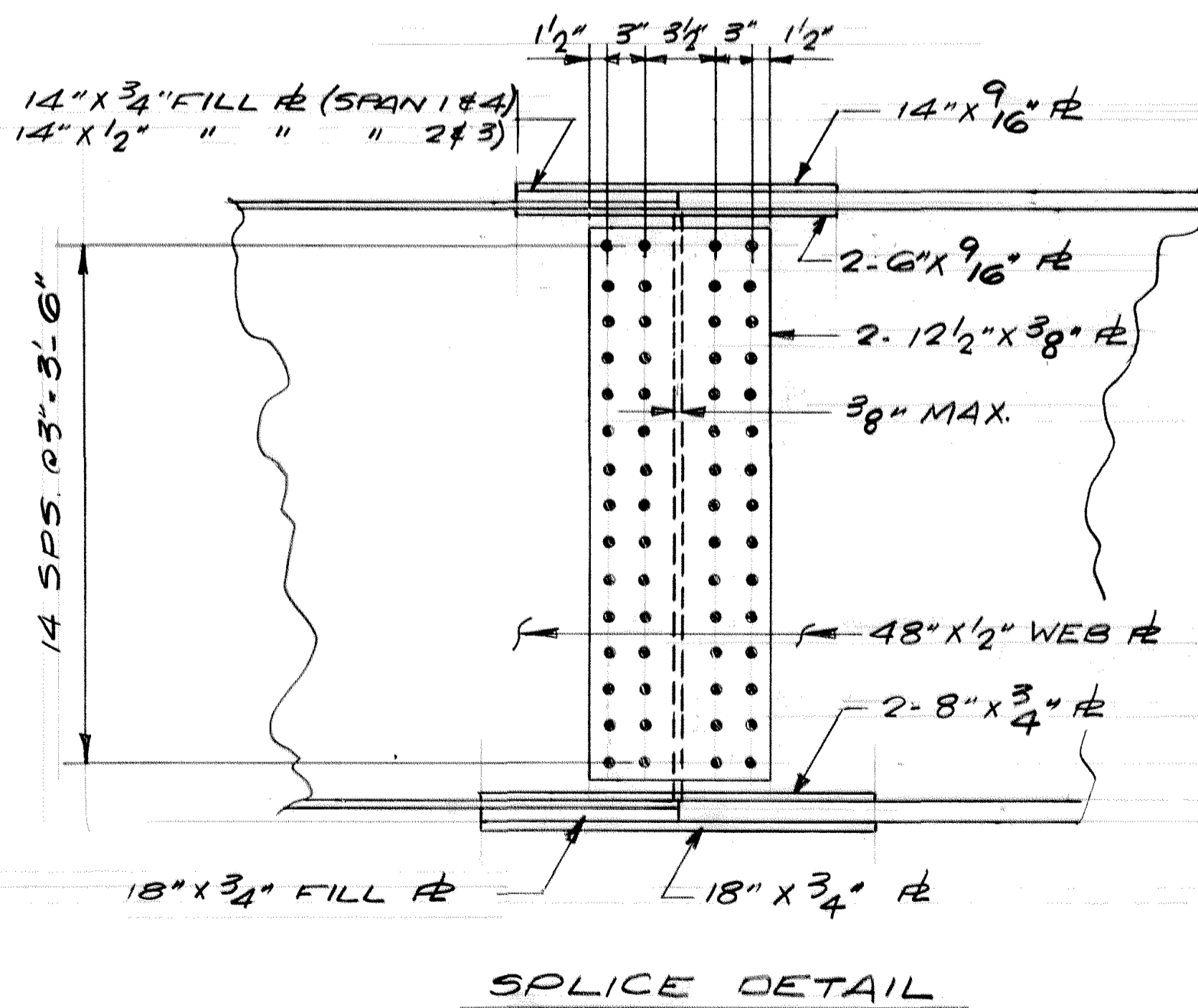
① NEW DIAPHRAGM CONNECTIONS TO THE EXISTING BEAM SHALL NOT BE TIGHTENED UNTIL THE DECK IS IN PLACE.

FRAMING PLAN	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER
S.P. NO. 02-624-19	SHEET 13 OF 27 SHEETS			02501





HALF ELEVATION OF BEAM



**STRUCTURAL STEEL NOTES:**

ALL STRUCTURAL STEEL SHALL CONFORM TO SPEC. 3309 UNLESS OTHERWISE NOTED.

FIELD CONNECTIONS SHALL BE MADE USING 7/8" HIGH STRENGTH BOLTS OR 7/8" PIN BOLTS, EXCEPT AS NOTED.

SHEAR CONNECTORS TO BE INCLUDED IN WEIGHT OF STRUCTURAL STEEL 3309.

WEB PLATES SHALL BE FURNISHED IN AVAILABLE MILL LENGTHS. LOCATION OF SPLICES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER AND SHALL BE A MINIMUM OF 1'-0" FROM STIFFENERS OR FLANGE SPLICES.

ALL BUTT SPLICES SHALL BE FULL BUTT WELDS USING LOW HYDROGEN PROCESS AND SHALL BE GROUND FLUSH.

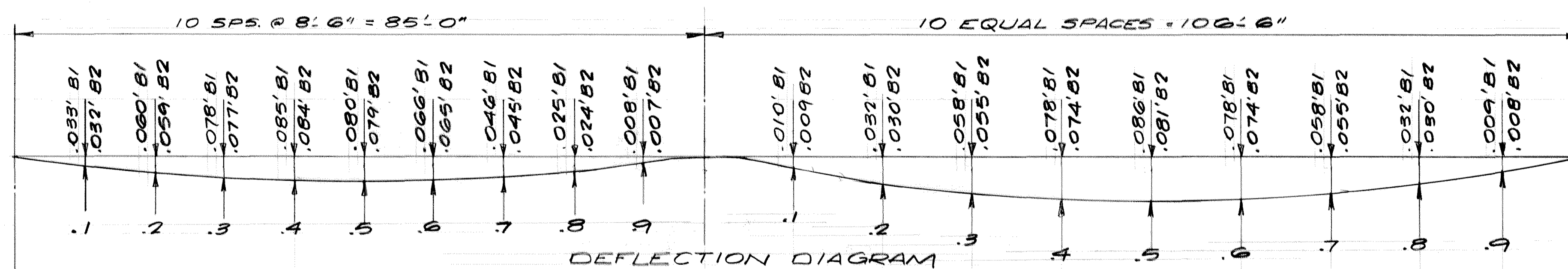
BEARING STIFFENERS SHALL BE PERPENDICULAR TO FLANGE.

END OF BEAMS SHALL BE VERTICAL TO OF ALL DIAPHRAGMS TO FACE DOWN GRADE.

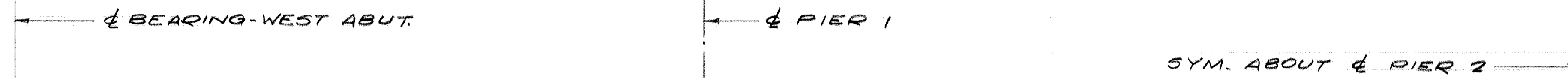
SPECIAL REAMING PER SPEC. 2471.3E1D WILL BE REQUIRED FOR THE BEAM SPLICES.

STRUCTURAL STEEL DETAILS S.R. NO. 02-624-19	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER 02501
	SHEET 14 OF 27 SHEETS			

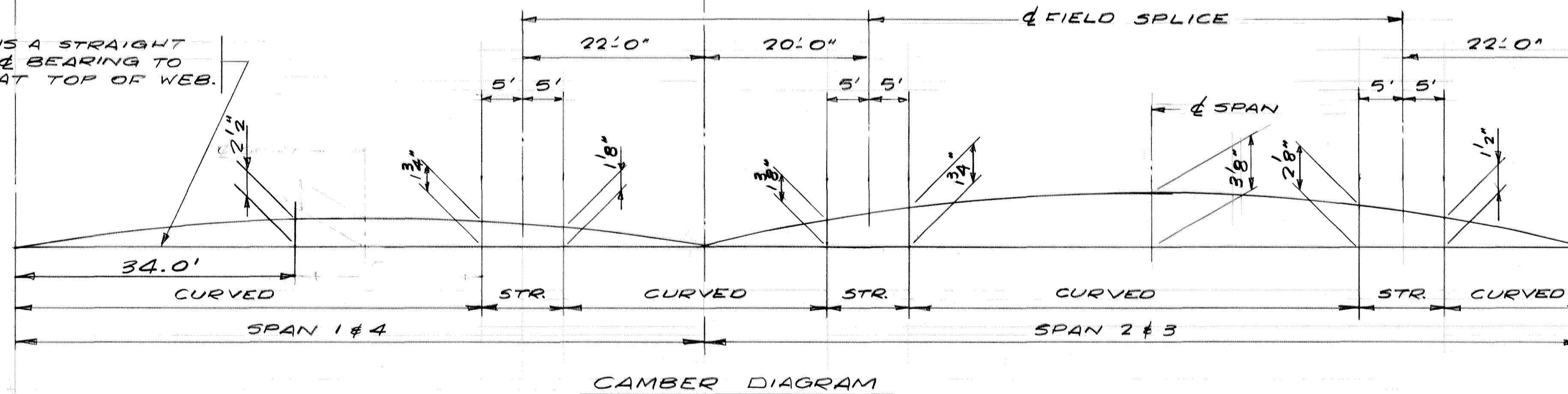




DEFLECTIONS SHOWN ARE FOR WEIGHT OF SLAB, FUTURE WEARING COURSE, STUOLS, SIDEWALK AND RAILING.

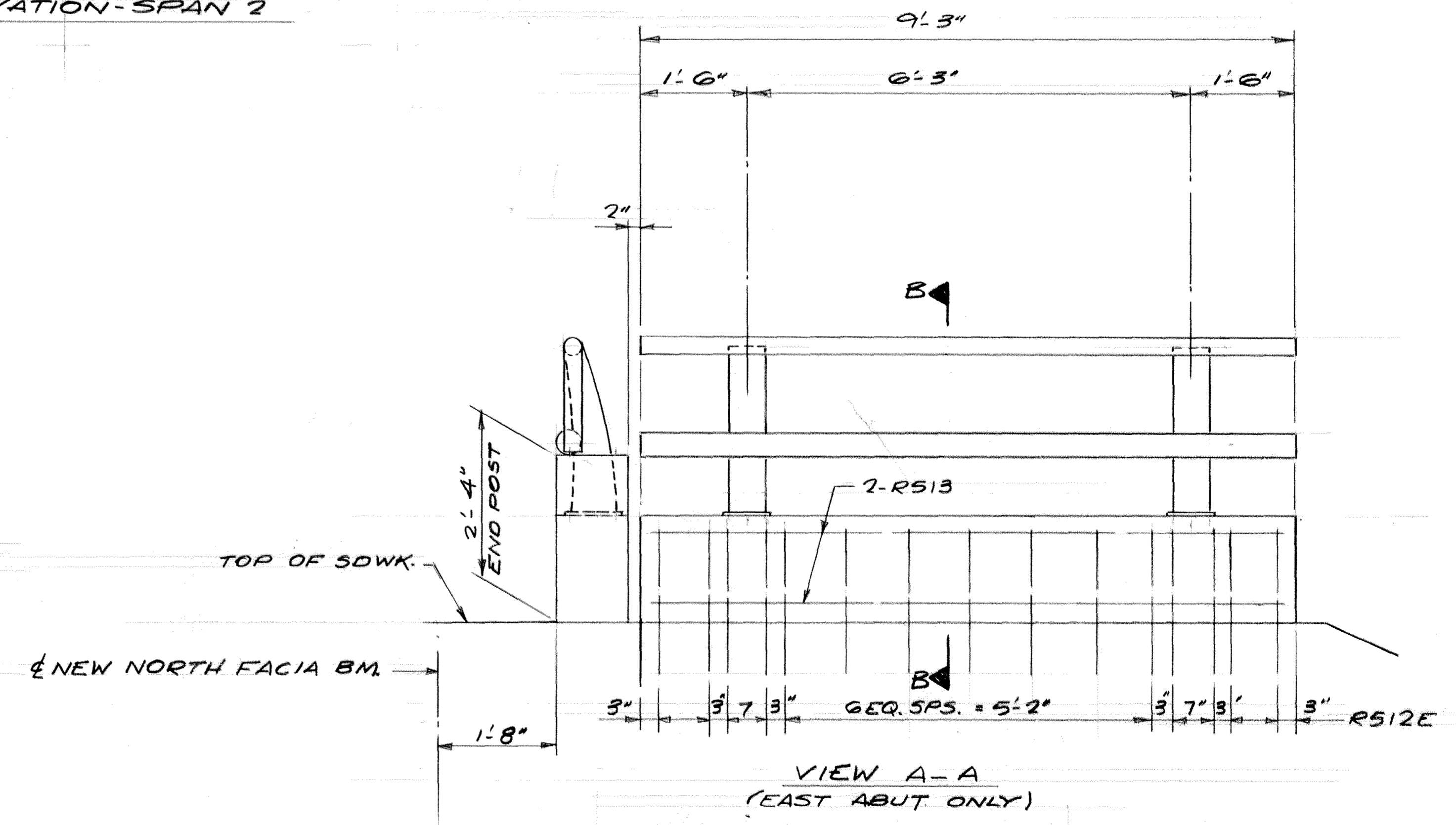
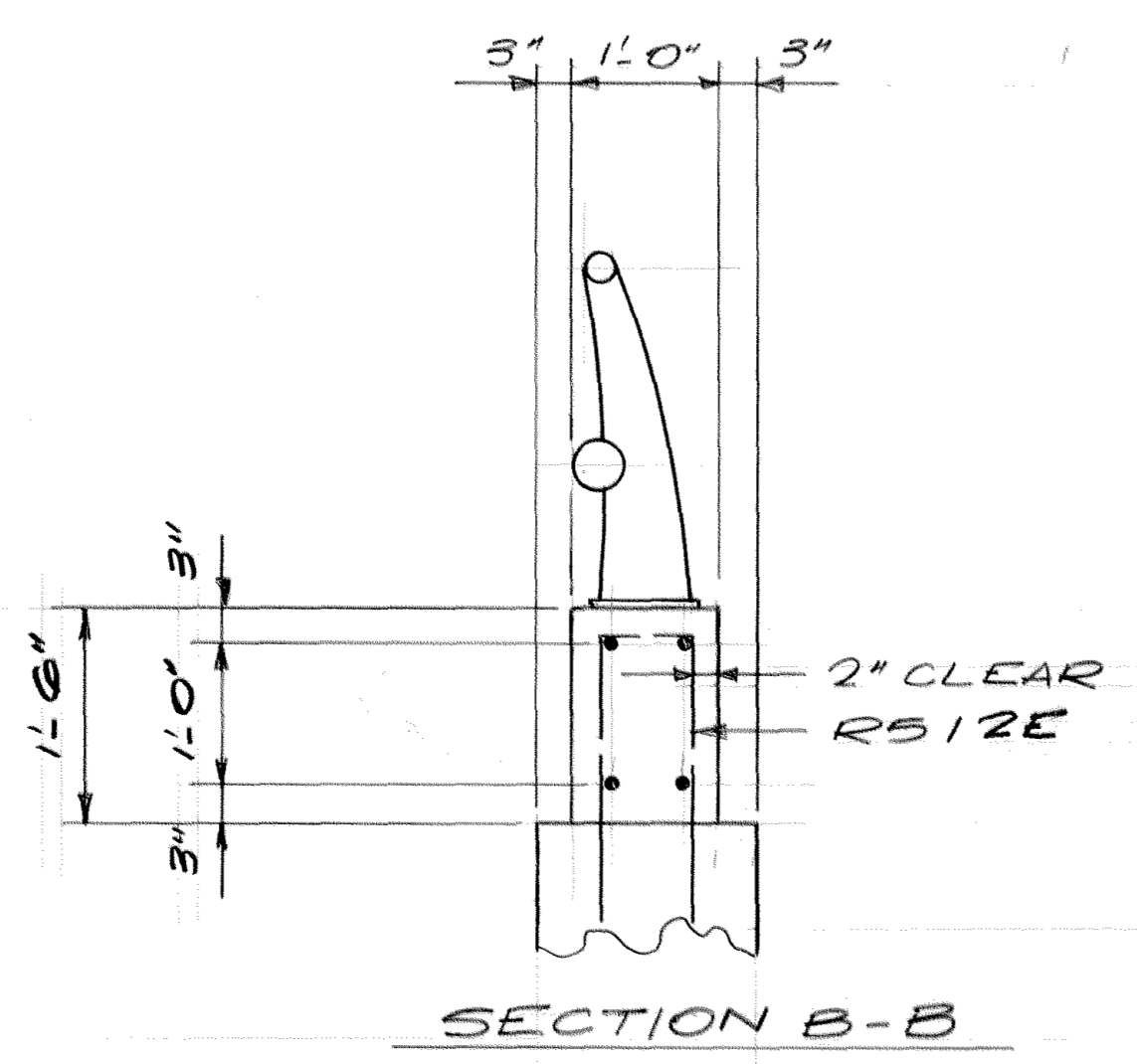
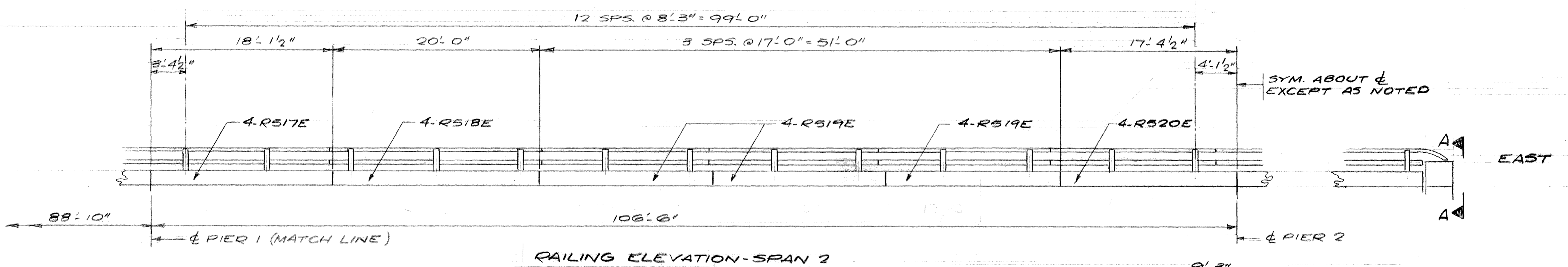
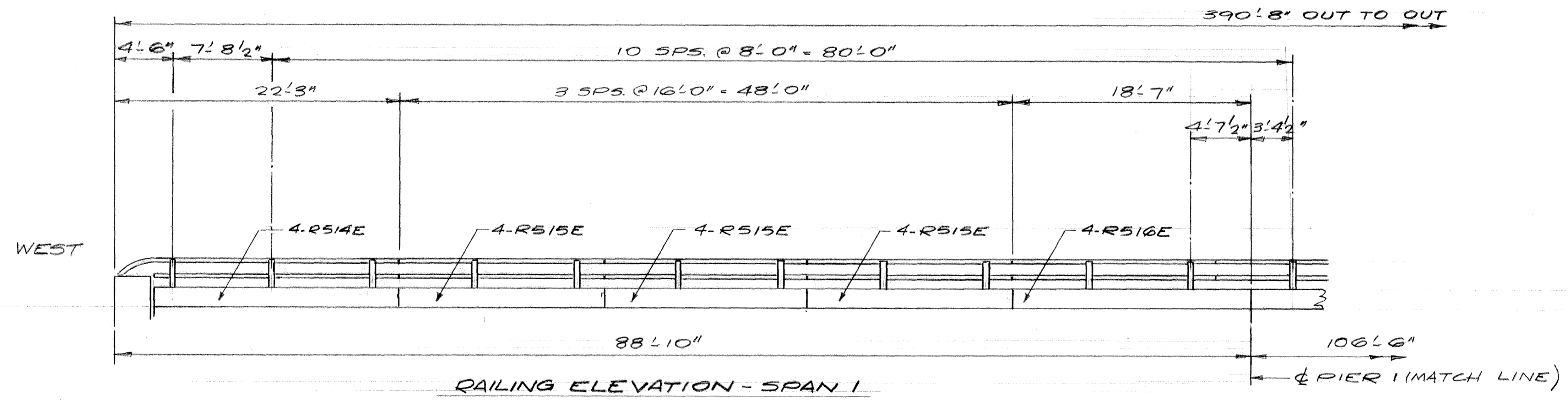


BASELINE IS A STRAIGHT LINE FROM BEARING TO BEARING AT TOP OF WEB.



CAMBER & DEFLECTION DIAGRAMS S.R. NO. 02-624-19	DRAWN GRC	CHECK RRT	APPROVED:	BRIDGE NUMBER 02501
	SHEET 15 OF 27 SHEETS			



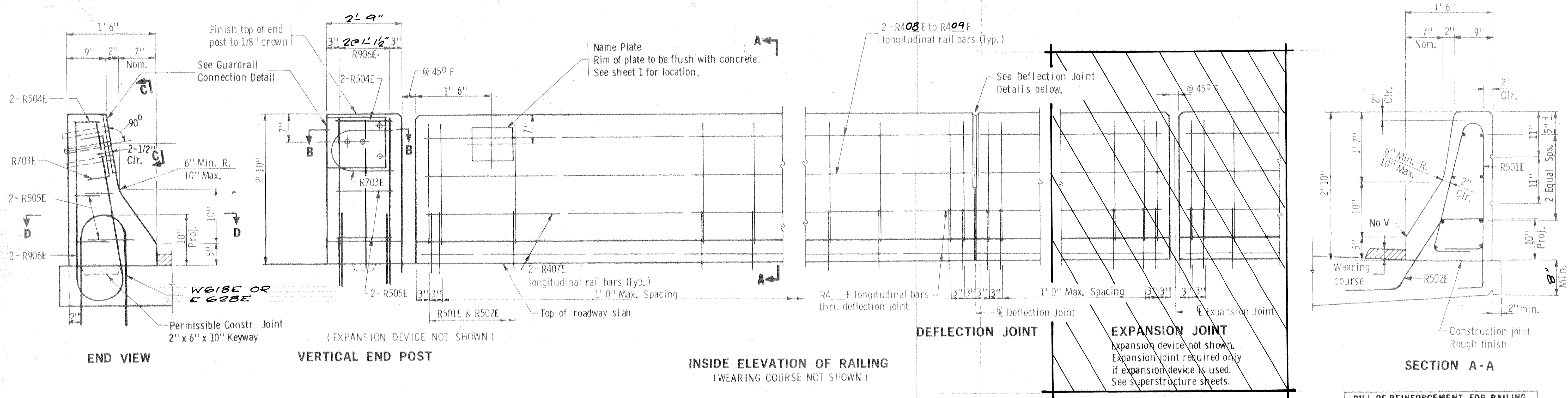


RAILING ELEVATION	DRAWN	CHECK	APPROVED:	BRIDGE NUMBER
S.P. NO 02-624-19				02501
SHEET 16 OF 27 SHEETS				





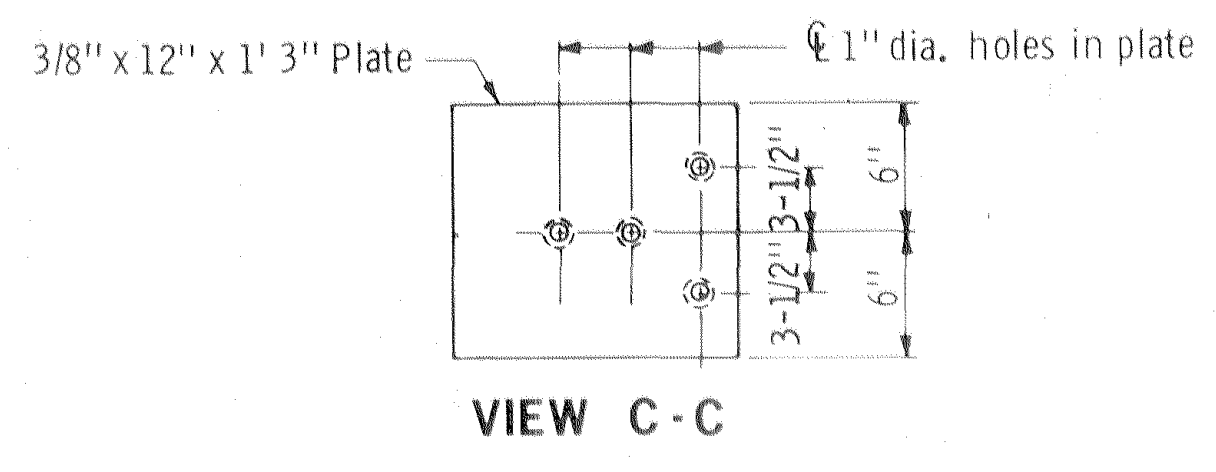
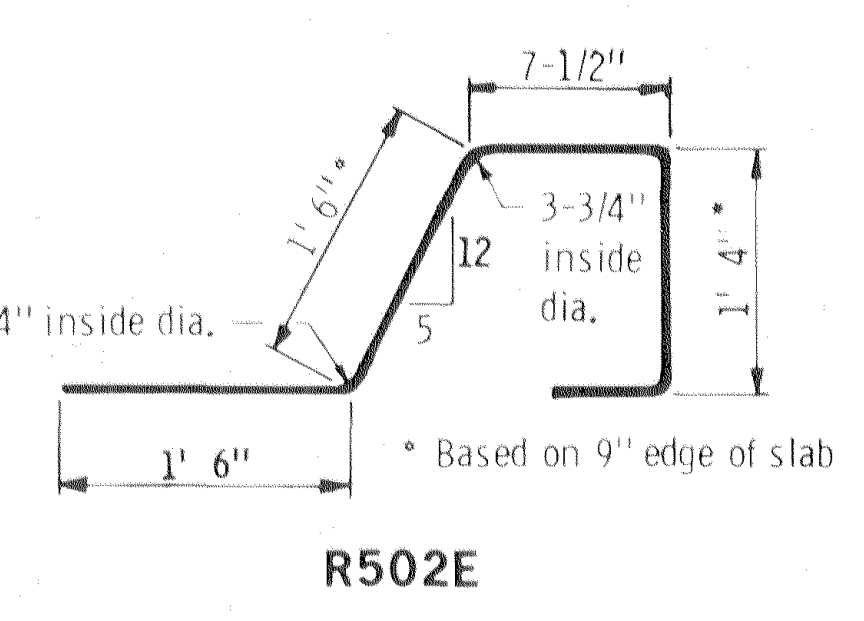
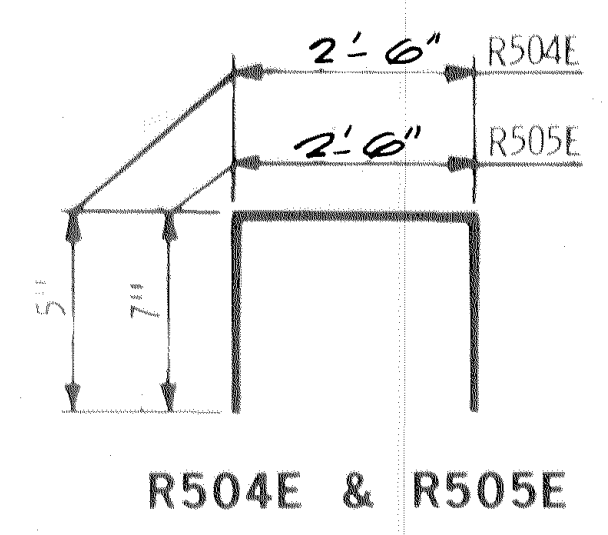
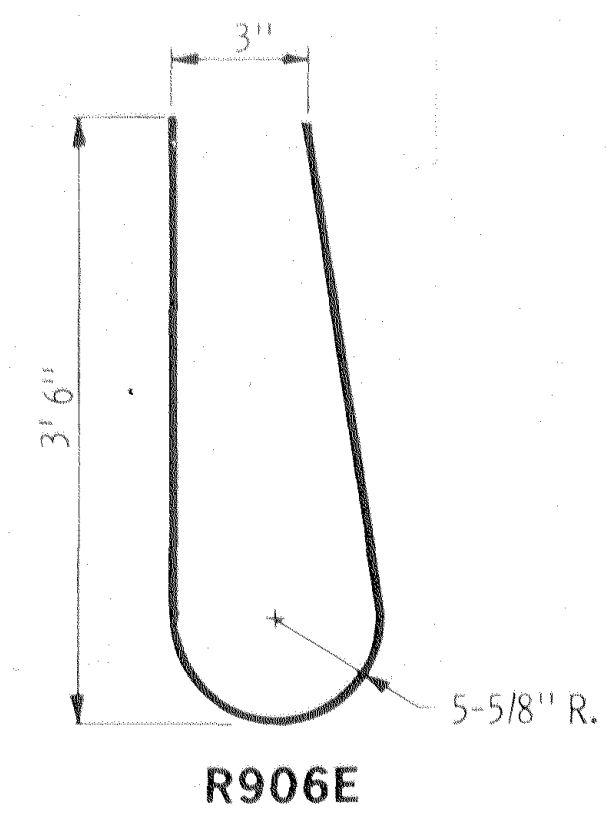
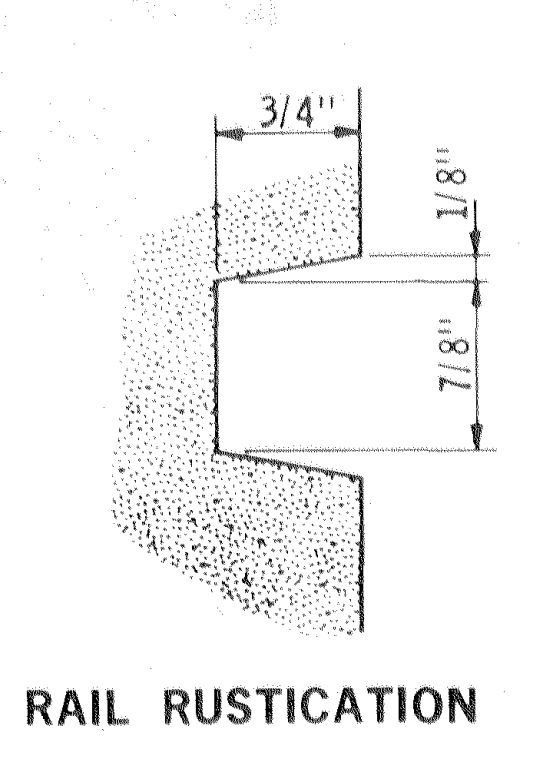
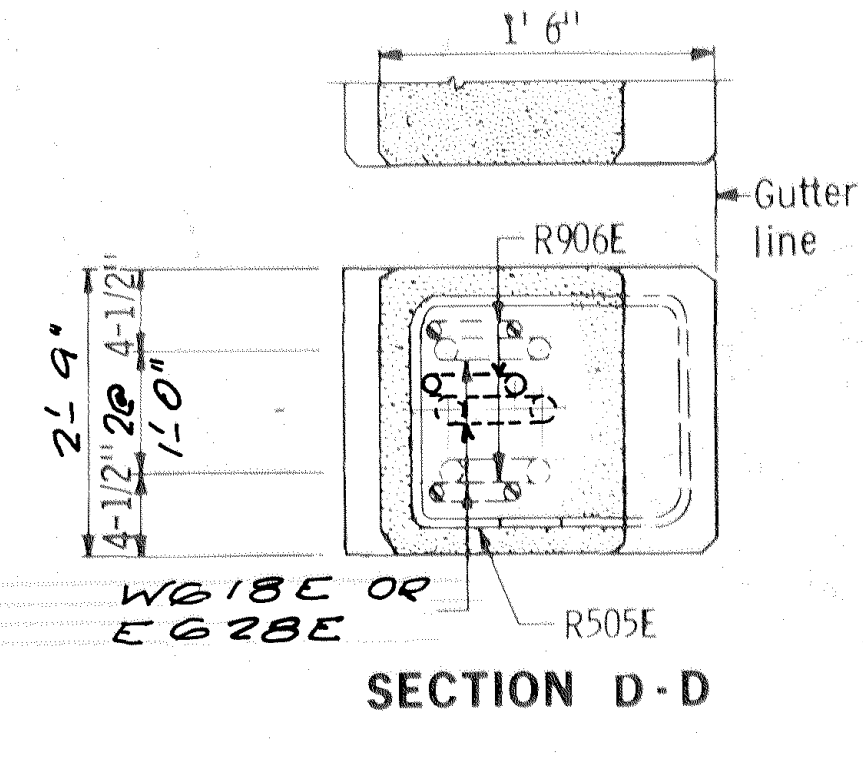
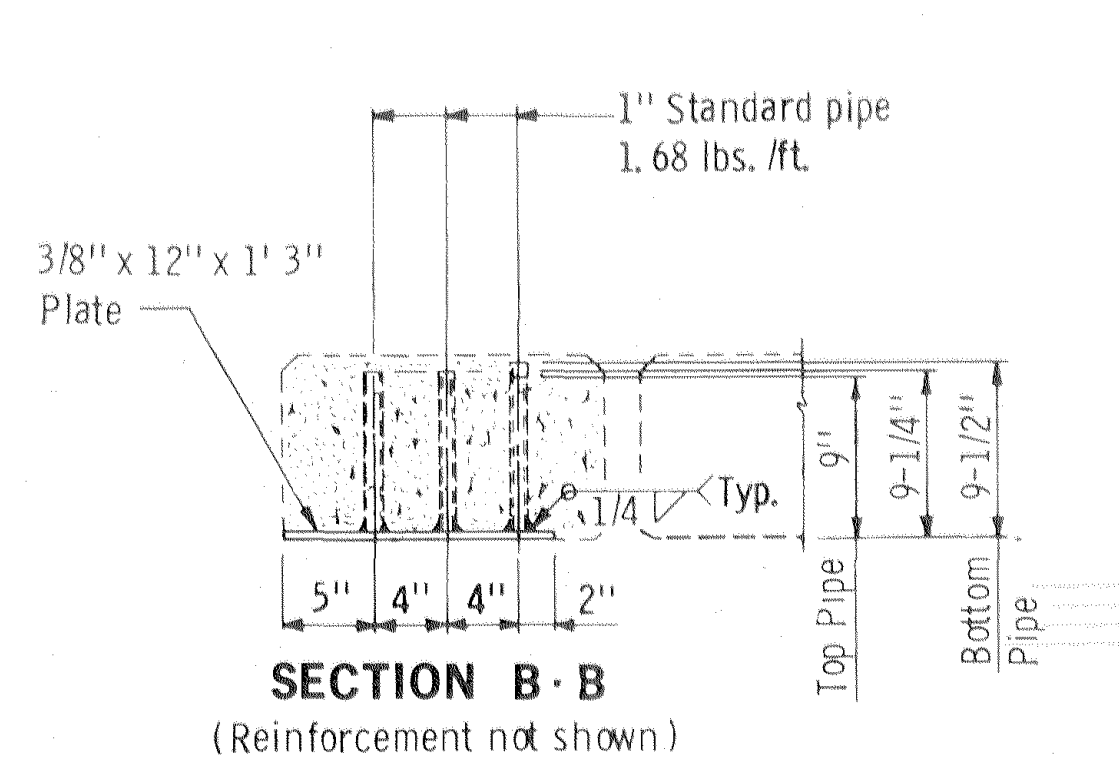




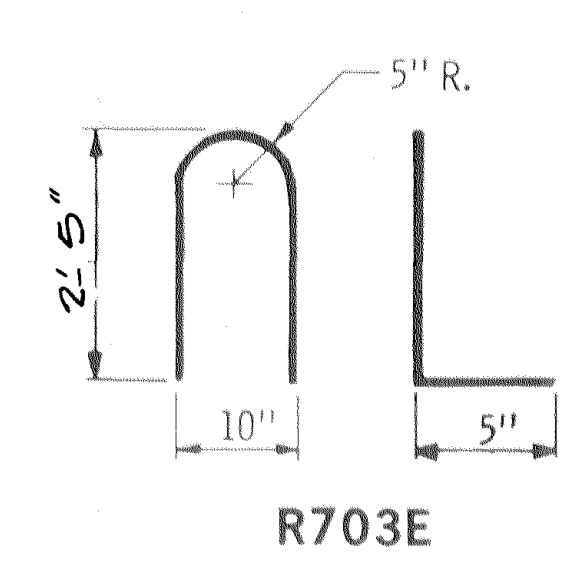
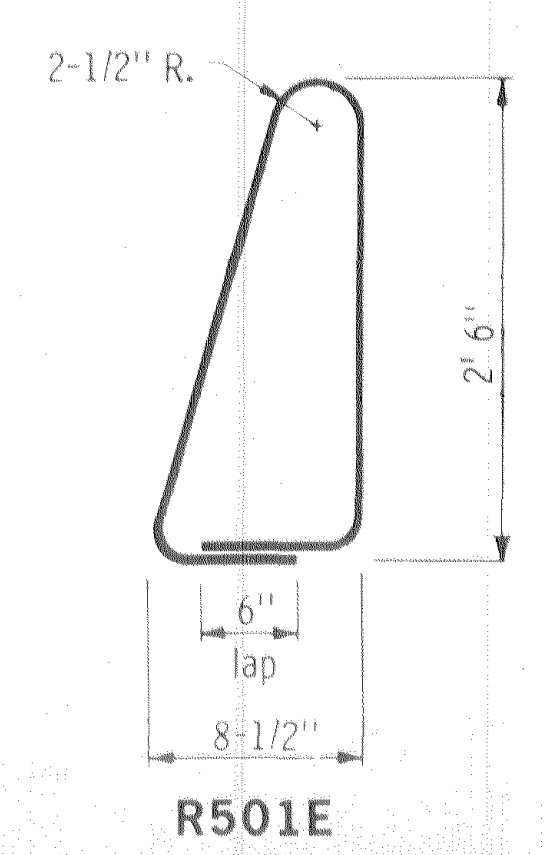
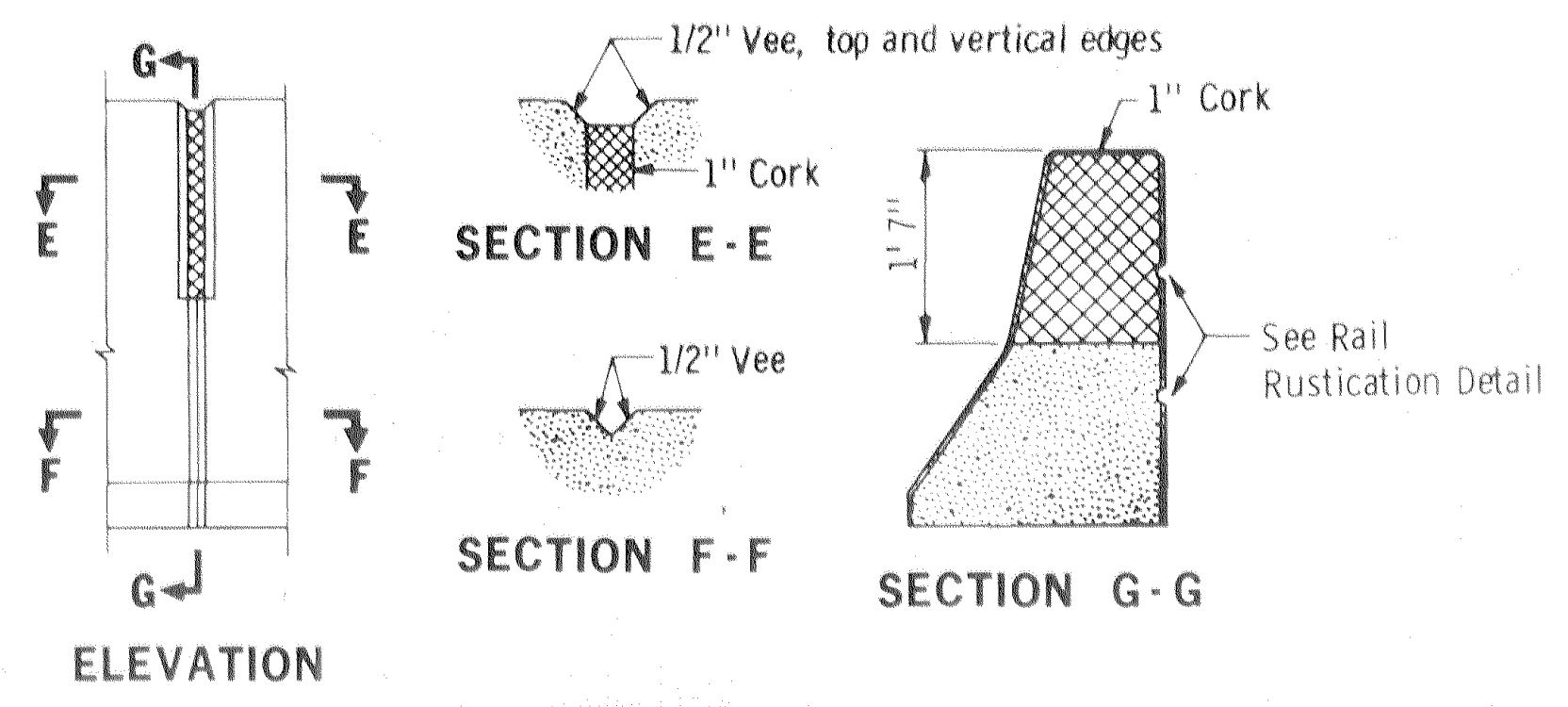
**BILL OF REINFORCEMENT FOR RAILING**

BAR NO.	LENGTH	SHAPE	LOCATION
R501E 484	6' 6"	Bent	Rail Vertical
R502E 484	5' 6"	Bent	Rail Vertical
R703E 2	6'-2"	Bent	End Post
R504E 4	3'-4"	Bent	End Post
R505E 8	3'-8"	Bent	End Post
R906E 6	7' 6"	Bent	End Post
R407E 48	33'-5"	Str'l.	Rail Long.
R408E 40	16'-10"	Str'l.	Rail Long.
R409E 48	17'-5"	"	"

① 12 LINES, 1'-6" MIN. LAP



**GUARDRAIL CONNECTION DETAIL**  
 Galvanize after fabrication per Spec. 3394  
 Estimated Weight = 23 lbs.



**GENERAL NOTES:**

- Bars marked with the suffix "E" shall be epoxy coated
- Conc. Railing = 440 lbs./ft.
- Conc. Railing = .109 cu. yds./ft.
- Rail and end post to be Concrete Mix No. 3X46
- Guardrail connection to be Structural Steel, Spec. 3306
- Finish all edges of rail and end post with 1/2" vee except where otherwise noted.
- See superstructure sheet for joint spacing.
- Maximum spacing of concrete deflection joints shall be 20' 0".
- Guardrail connection to be included in price bid for other items.
- Rail quantities are included in summary of quantities for superstructure.
- Length of railing concrete to be measured for payment between outside face of end posts.

S.P. No. 02-624.19

Revised: June 9, 1980 Approved: April 23, 1980

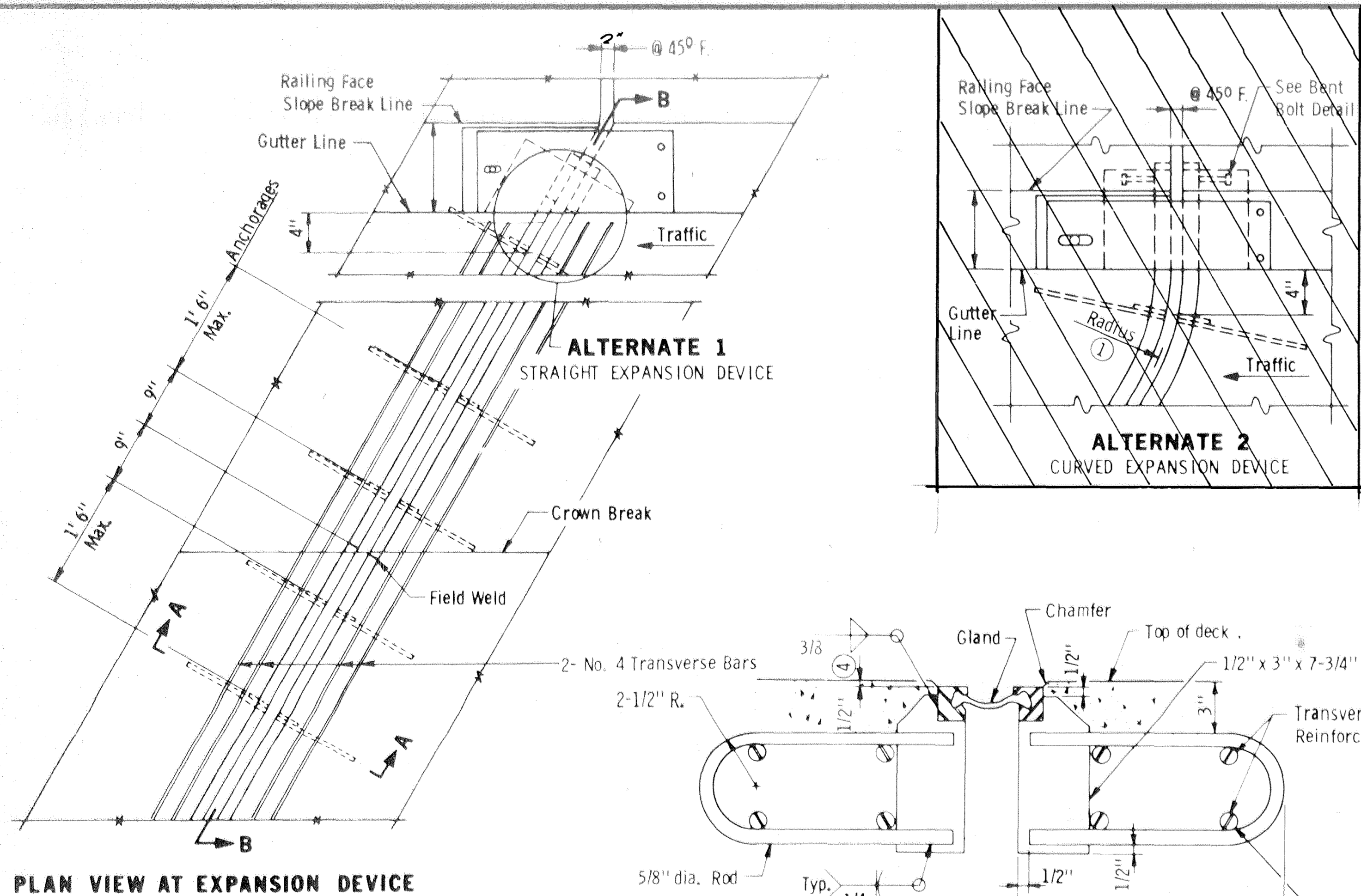
**TITLE: CONCRETE RAILING (TYPE J) WITH SEPARATE END POST**

DES: \_\_\_\_\_ DR: \_\_\_\_\_ APPROVED: \_\_\_\_\_  
 CHK: \_\_\_\_\_ CHN: \_\_\_\_\_

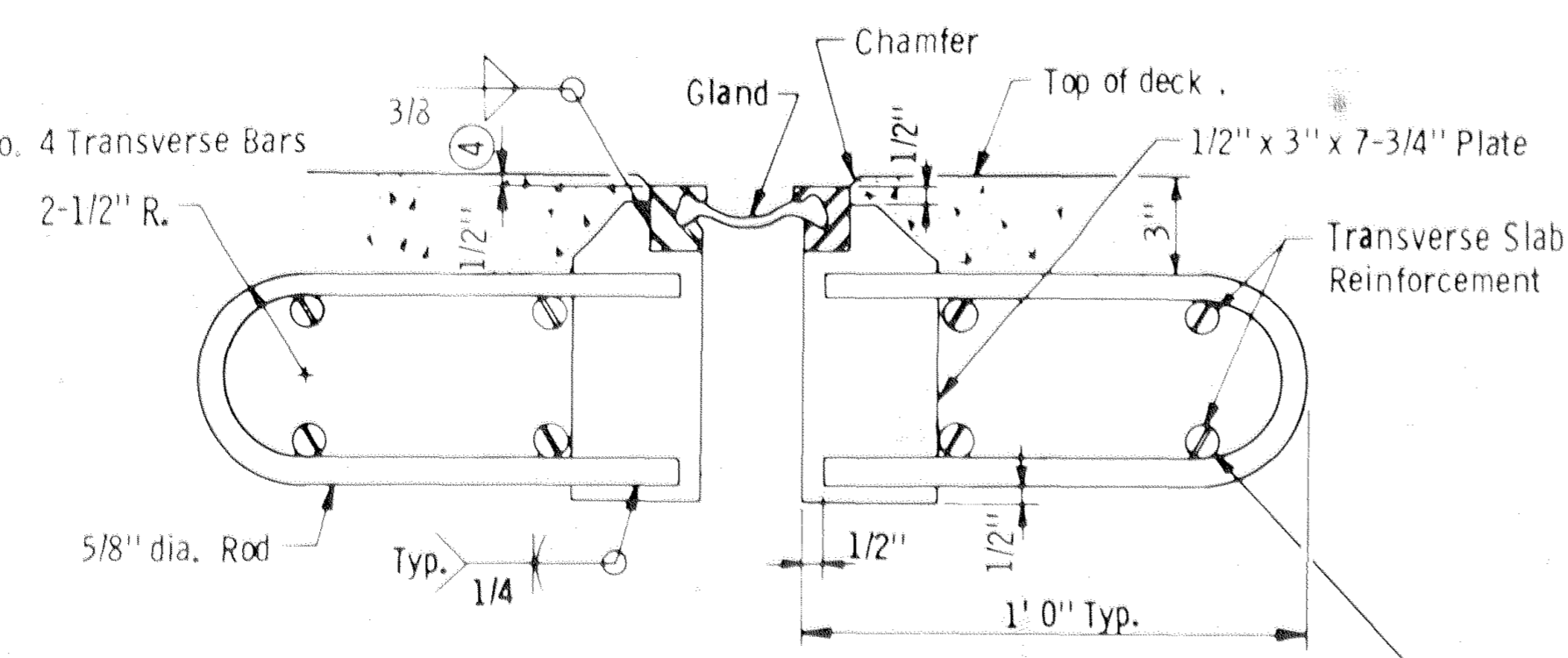
Sheet No. 18 of 27 Sheets **Bridge No. 02501**

Fig. 5-397.116

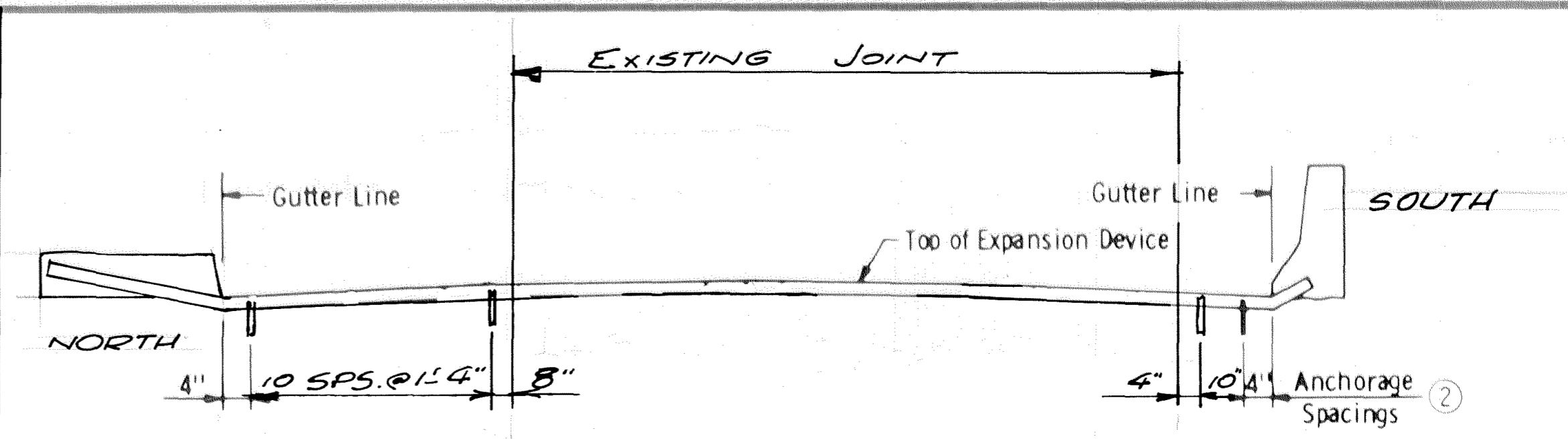




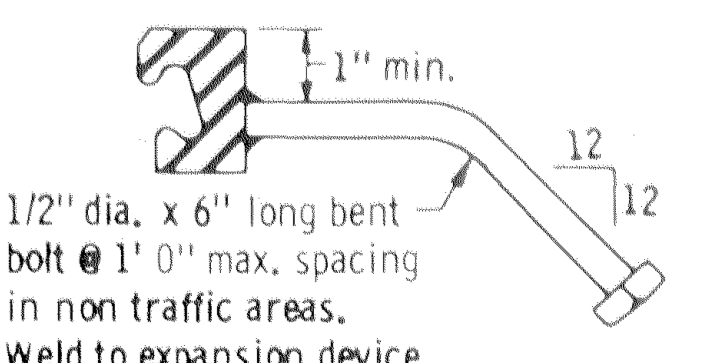
PLAN VIEW AT EXPANSION DEVICE



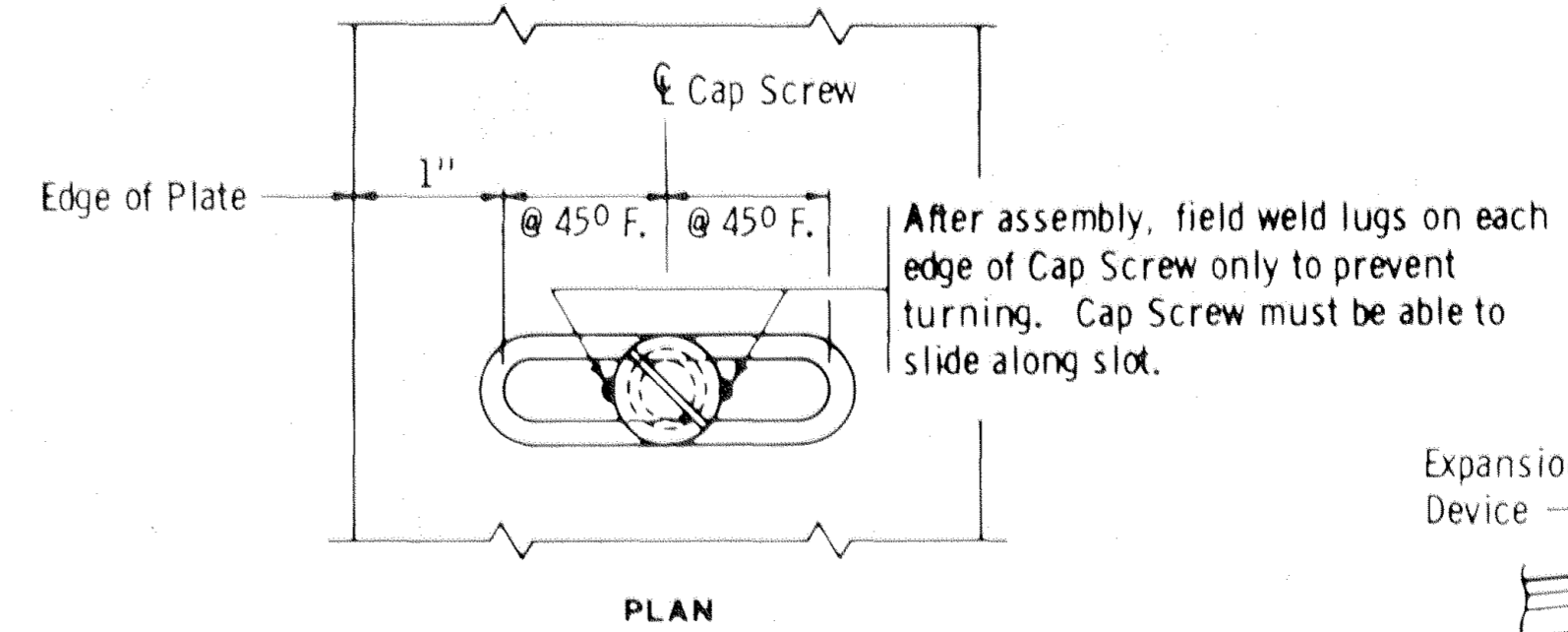
SECTION A-A ANCHORAGE  
4 - No. 4 Bars full length of device in Approach Panel only. (To be provided by the roadway contractor)



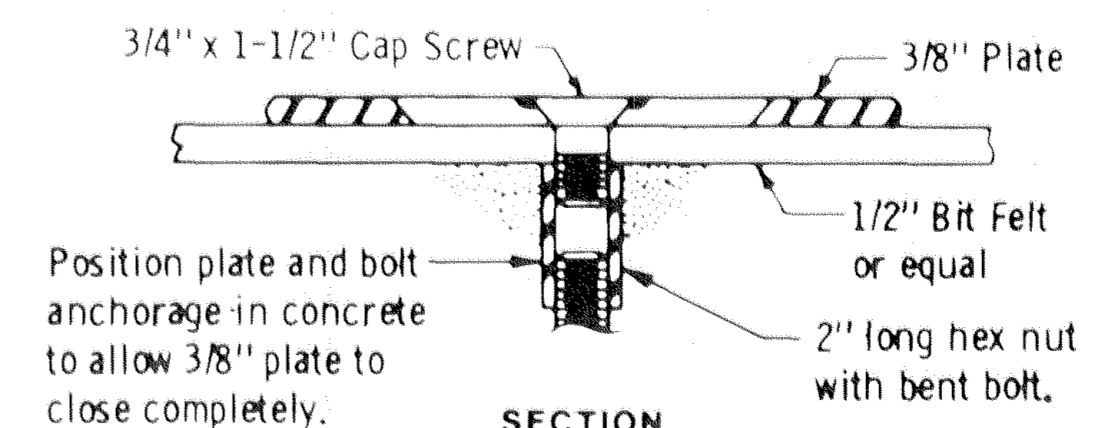
SECTION B-B



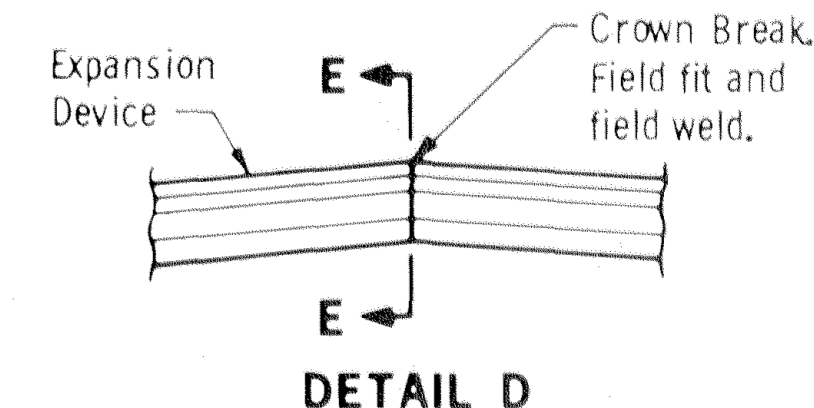
BENT BOLT DETAIL



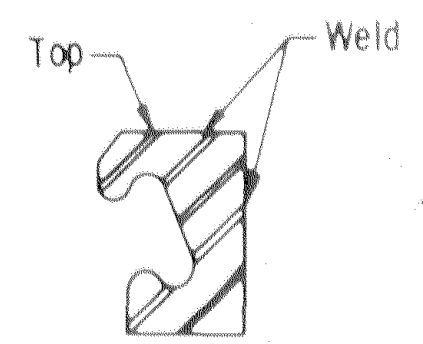
PLAN



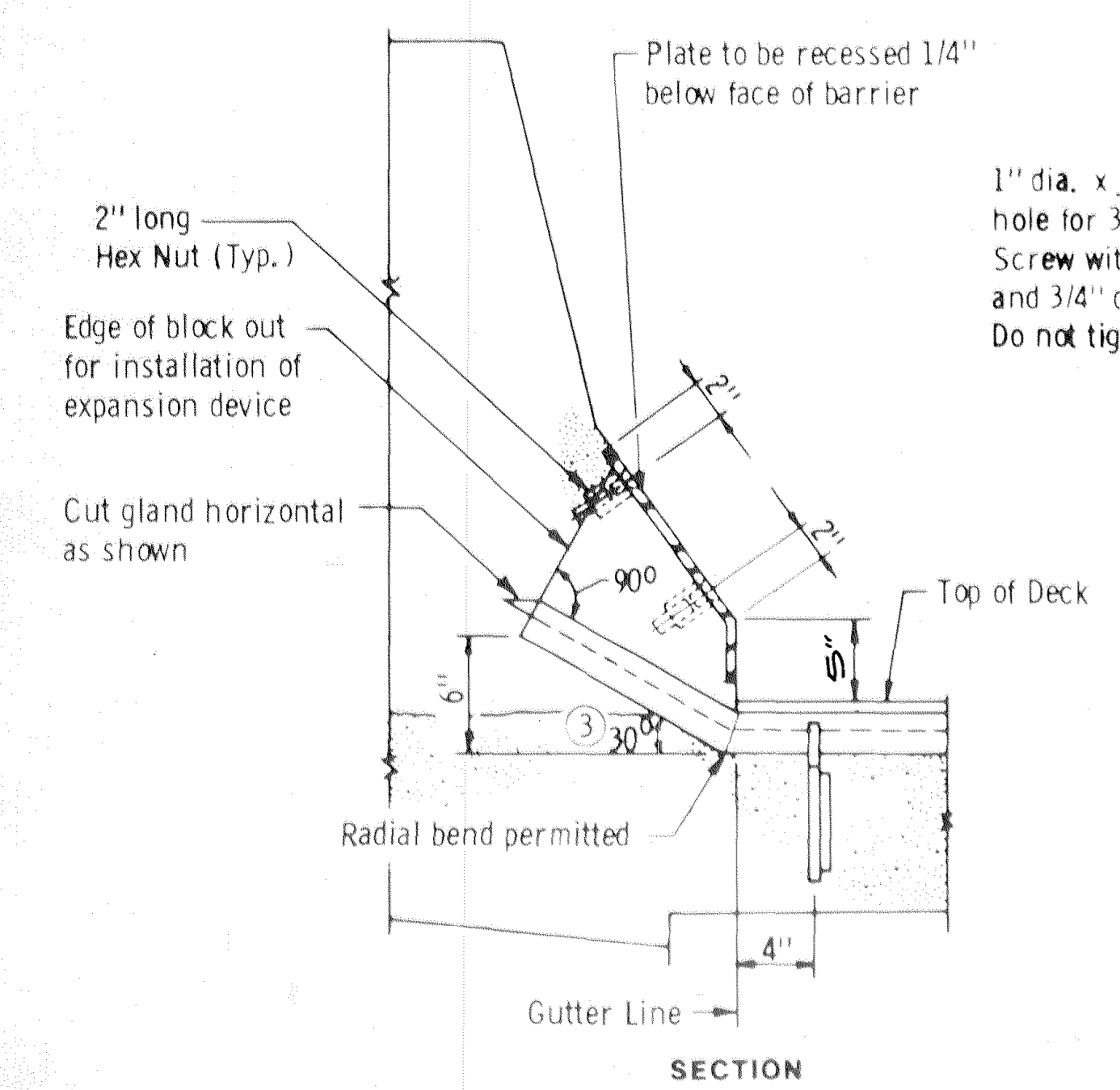
SECTION  
DETAIL C  
SLOTTED HOLE & CAP SCREW



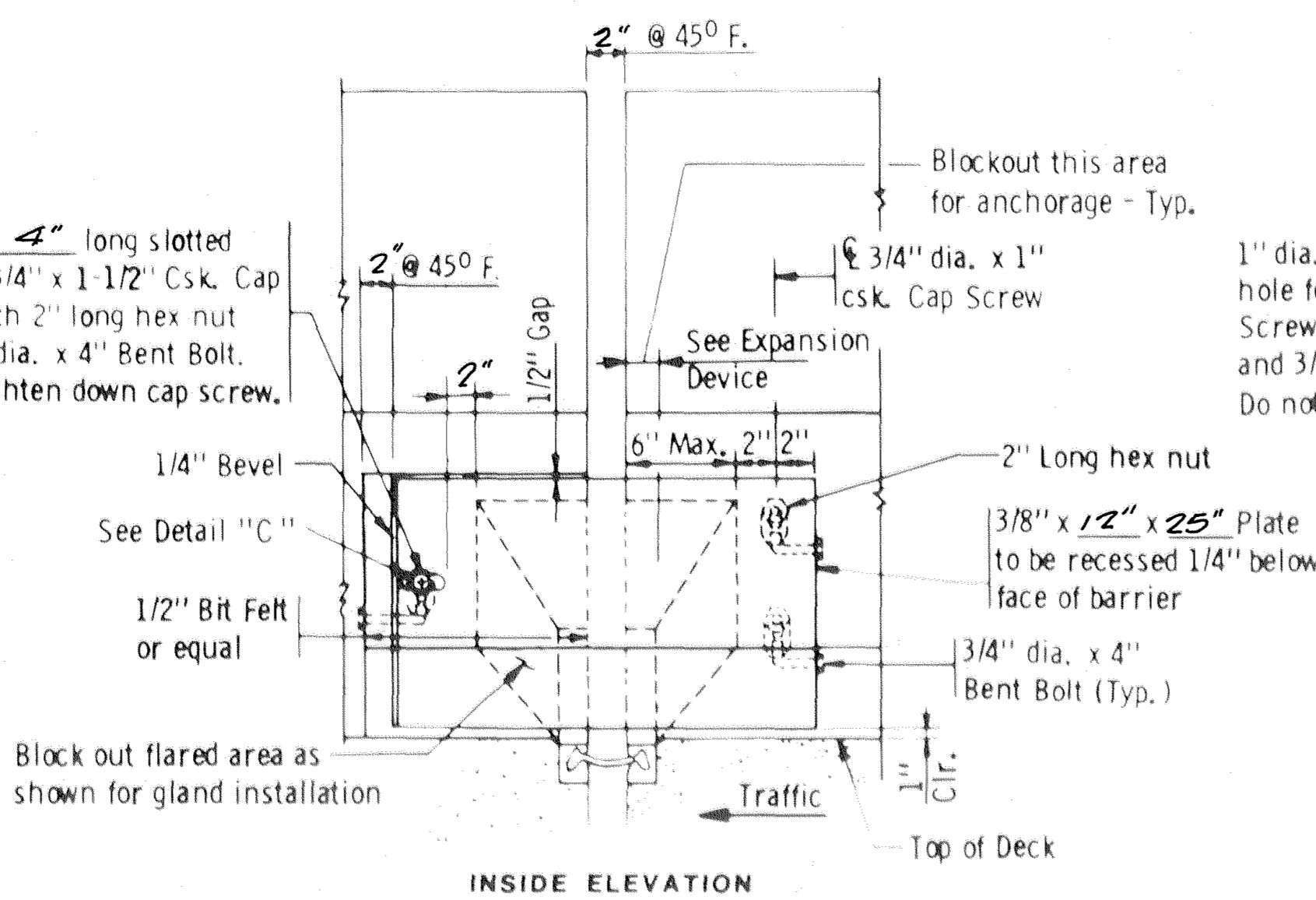
DETAIL D



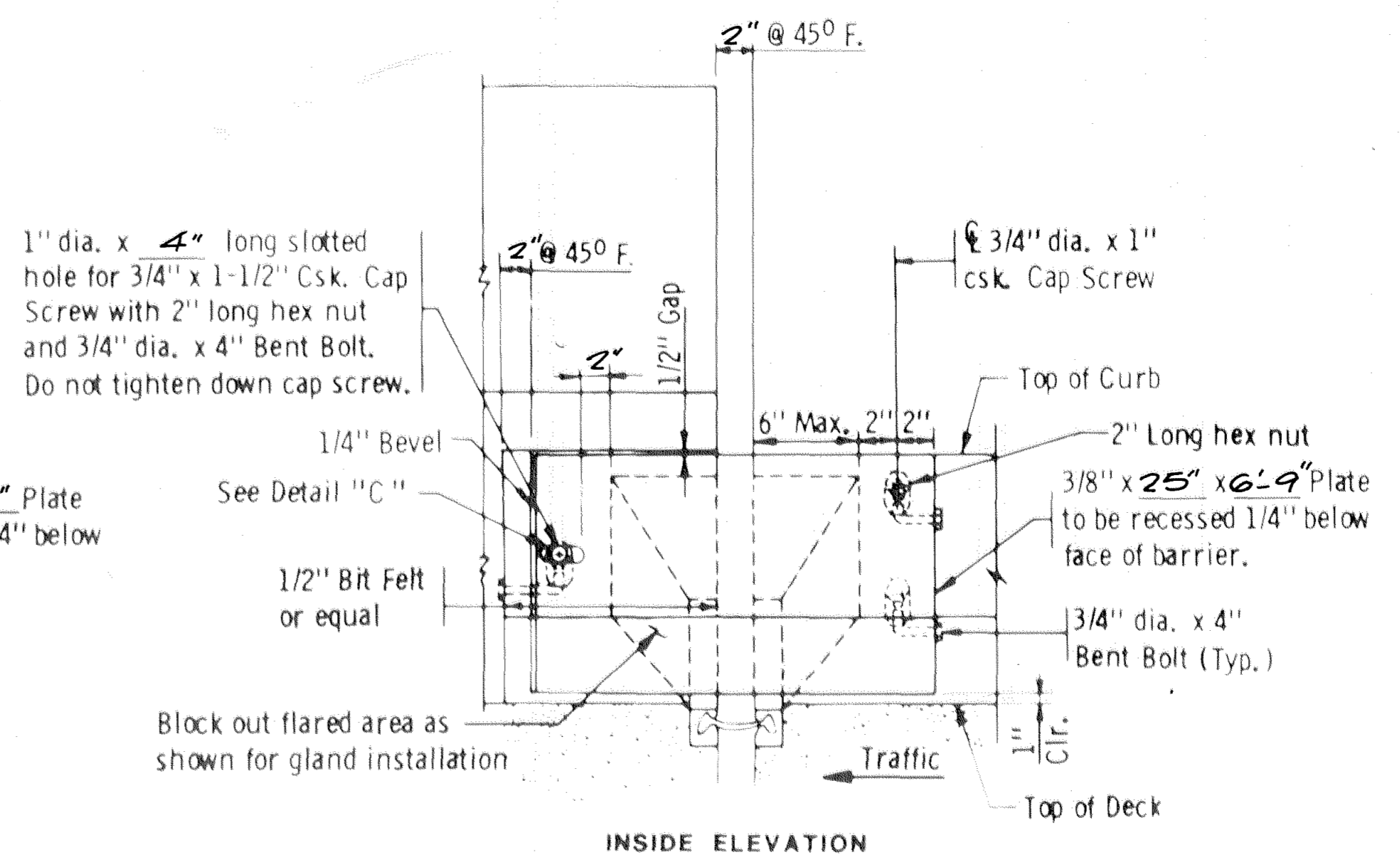
SECTION E-E



RAILING OR MEDIAN  
SQUARE BRIDGE APPLICATION



INSIDE ELEVATION



INSIDE ELEVATION

RAILING AT CURB TRANSITION

**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.

When expansion devices are used at ends of bridge, the bridge contractor shall furnish expansion device and gland. The roadway contractor shall install the part of the expansion device which includes the gland as shown on this sheet.

- 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.

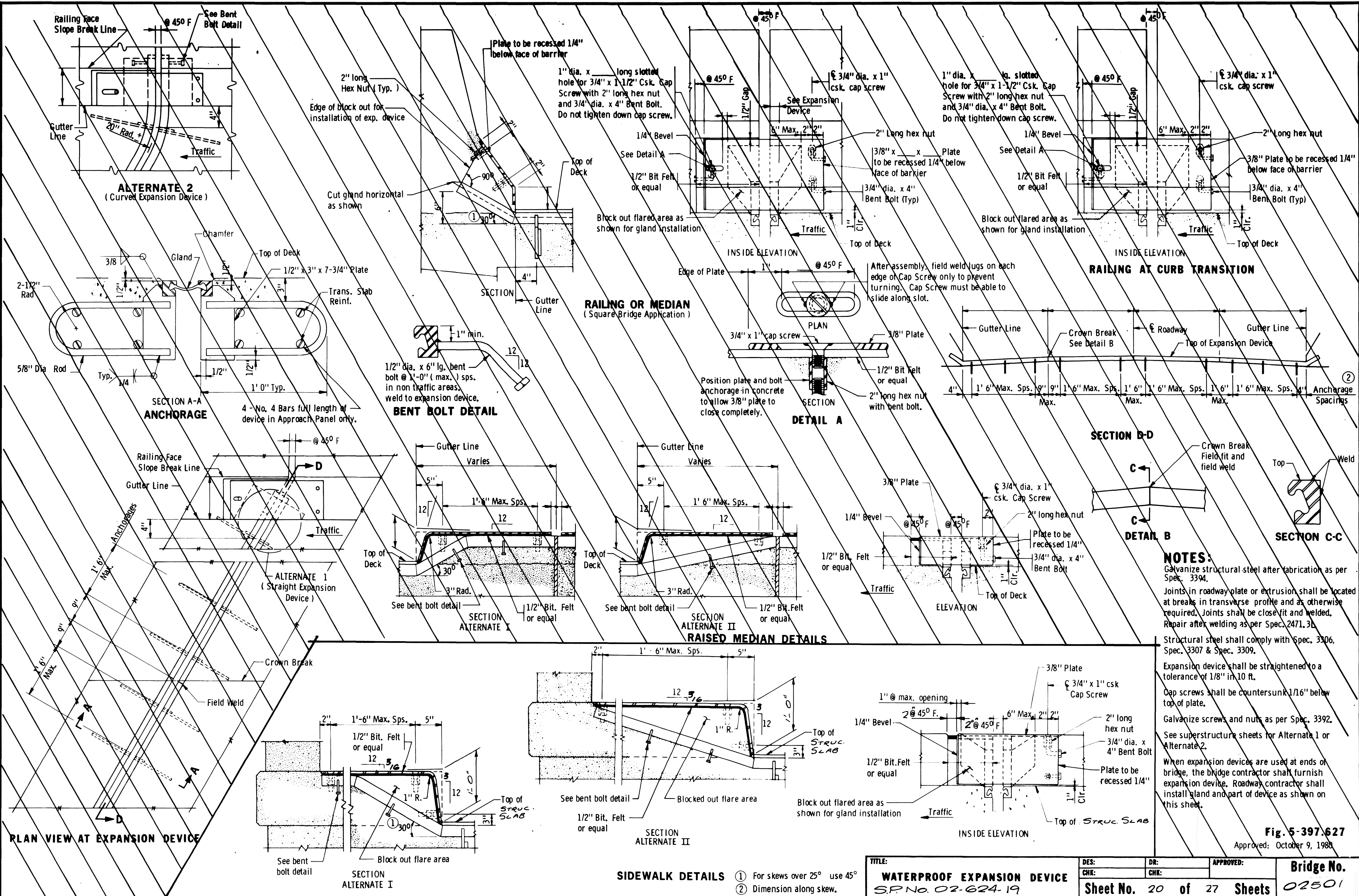
FIG. 5-397.627

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

TITLE: <b>WATERPROOF EXPANSION DEVICE</b> WITH TYPE J BARRIER	DES:	DR:	APPROVED:	Bridge No. <b>02501</b>
	CHK:	CHK:		
Sheet No. 19 of 27 Sheets				

S.P. No. 02-624-19





**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. 2471.3.

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 Alternate 1 or Alternate 2.

When expansion devices are used at ends of bridge, the bridge contractor shall furnish expansion device. Roadway contractor shall install gland and part of device as shown on this sheet.

**Fig. 5-397.627**  
Approved: October 9, 1980

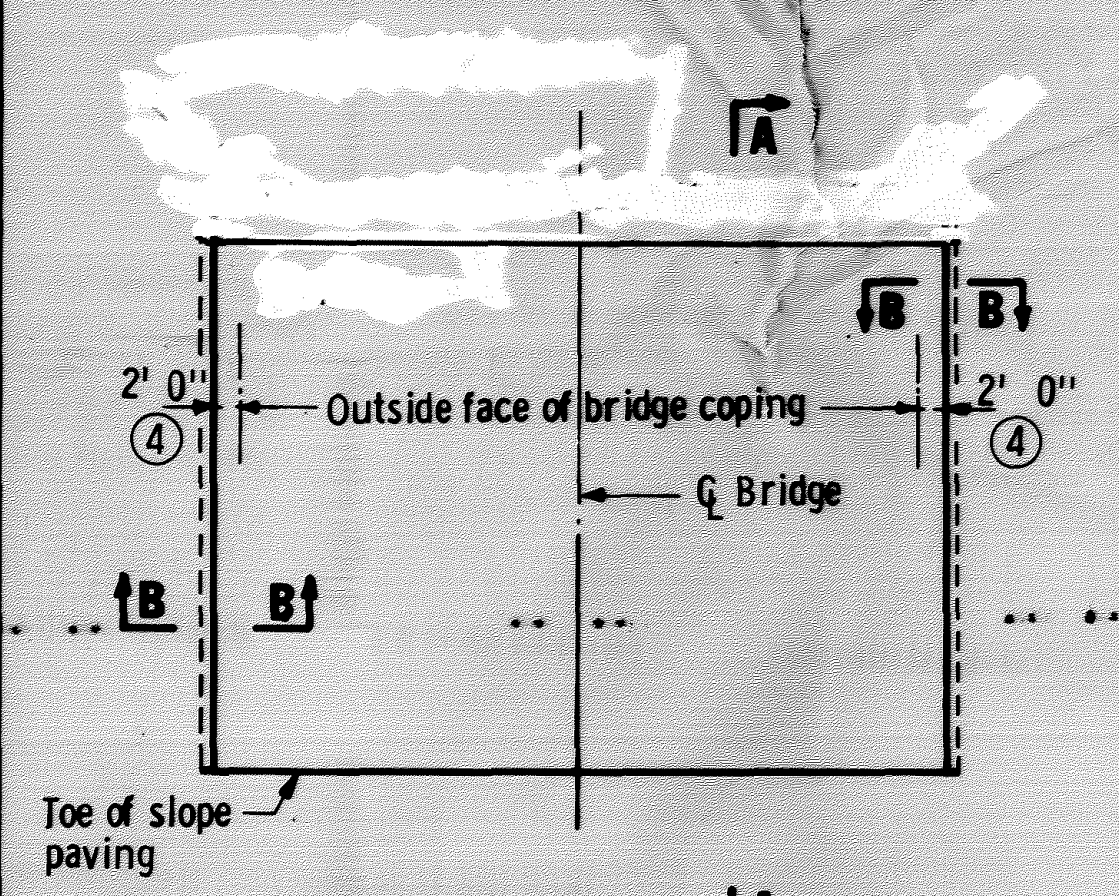
<b>TITLE:</b> WATERPROOF EXPANSION DEVICE S.P. No. 02-624-19		<b>DES:</b>	<b>DR:</b>	<b>APPROVED:</b>	<b>Bridge No.</b> 02501
		<b>CHK:</b>	<b>CHK:</b>	<b>Sheet No. 20 of 27 Sheets</b>	

**SIDEWALK DETAILS**

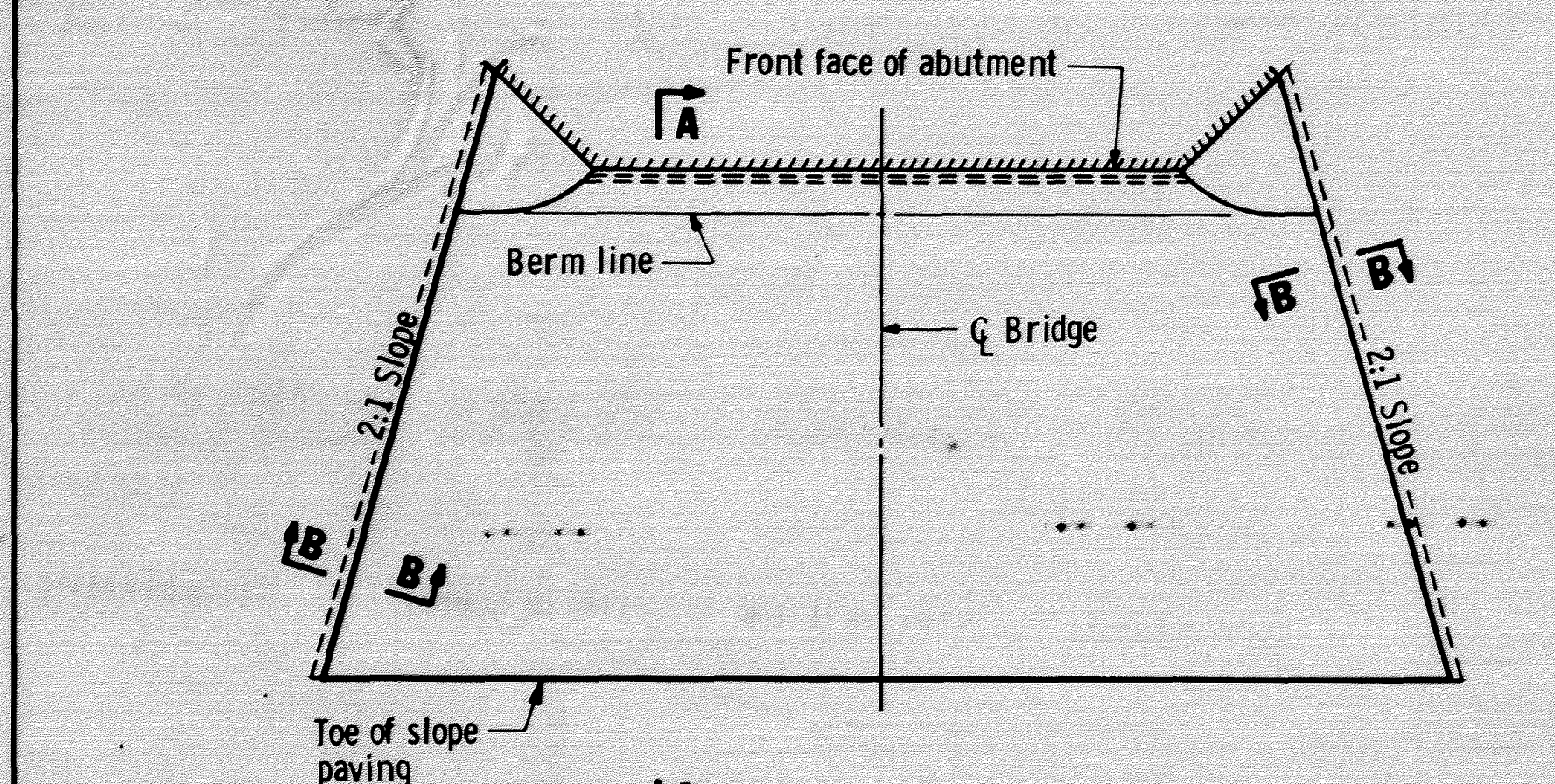
① For skews over 25° use 45°

② Dimension along skew.

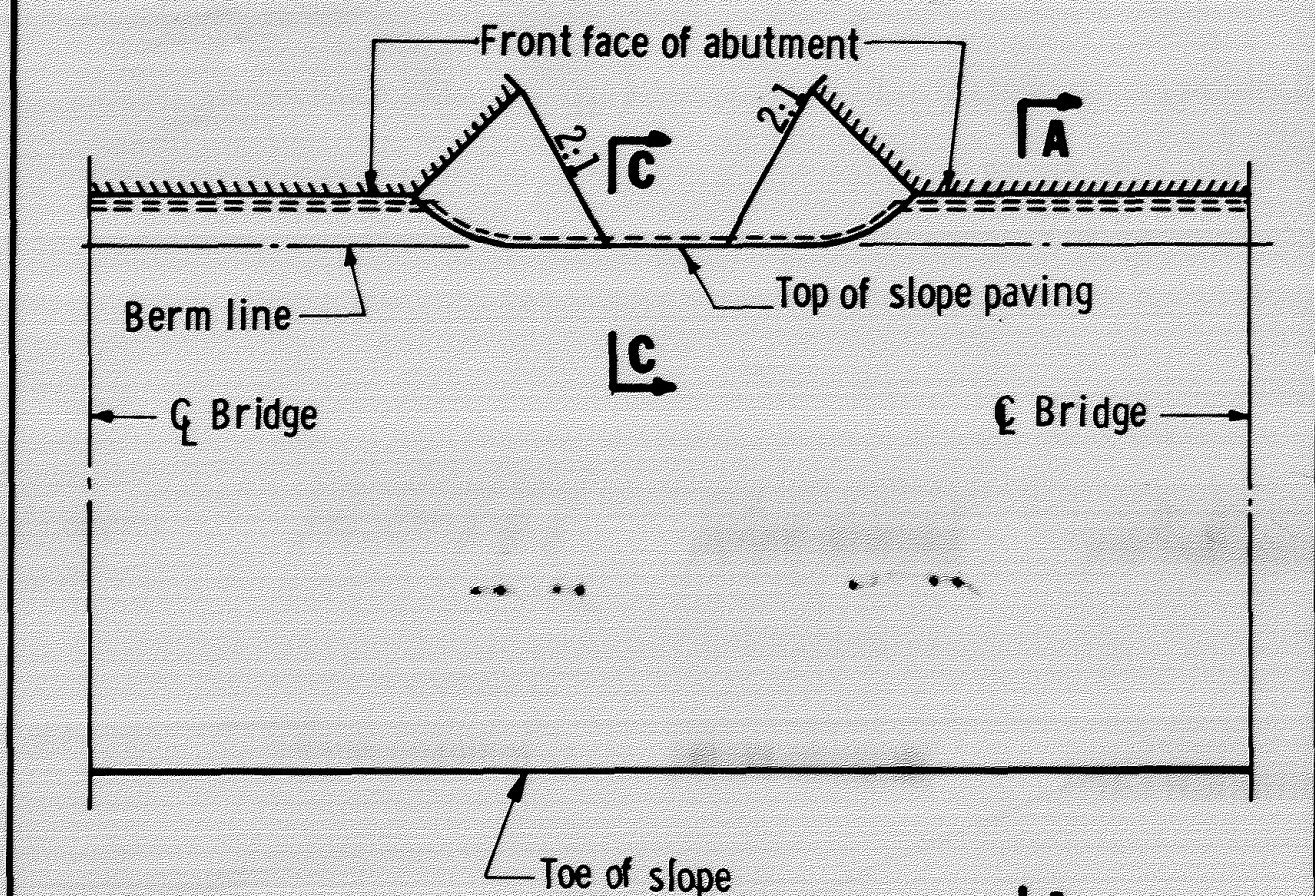




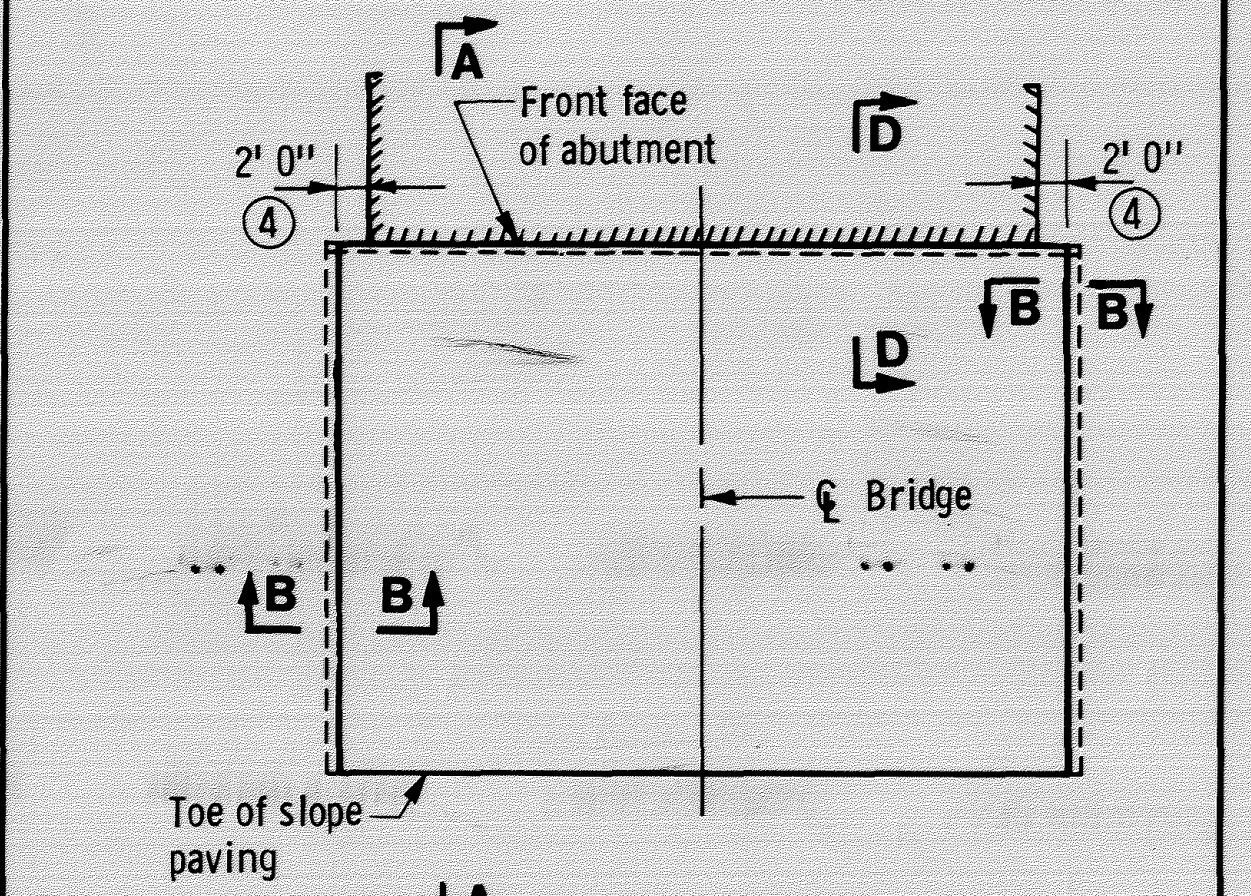
SQUARE BRIDGE



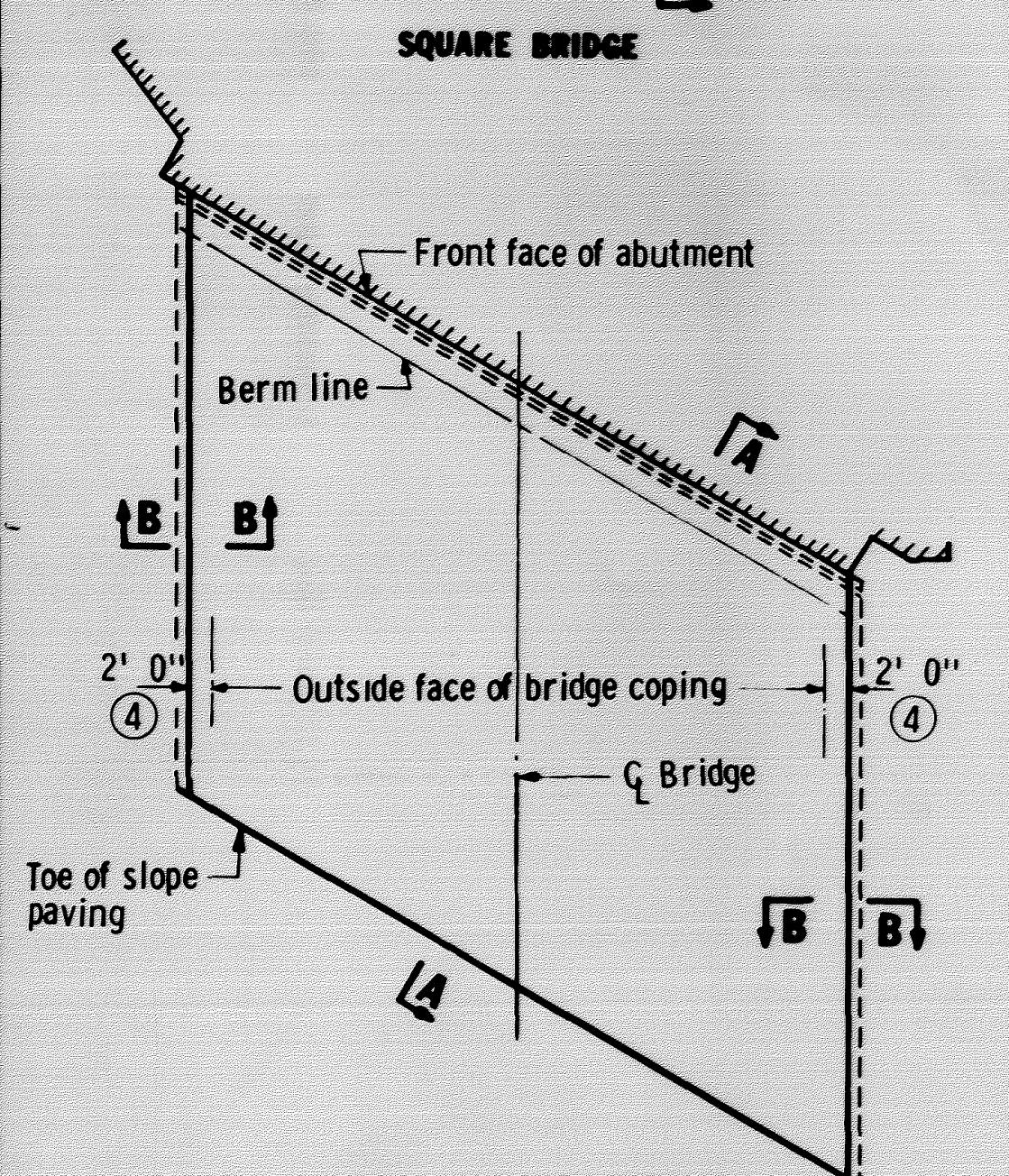
SQUARE BRIDGE



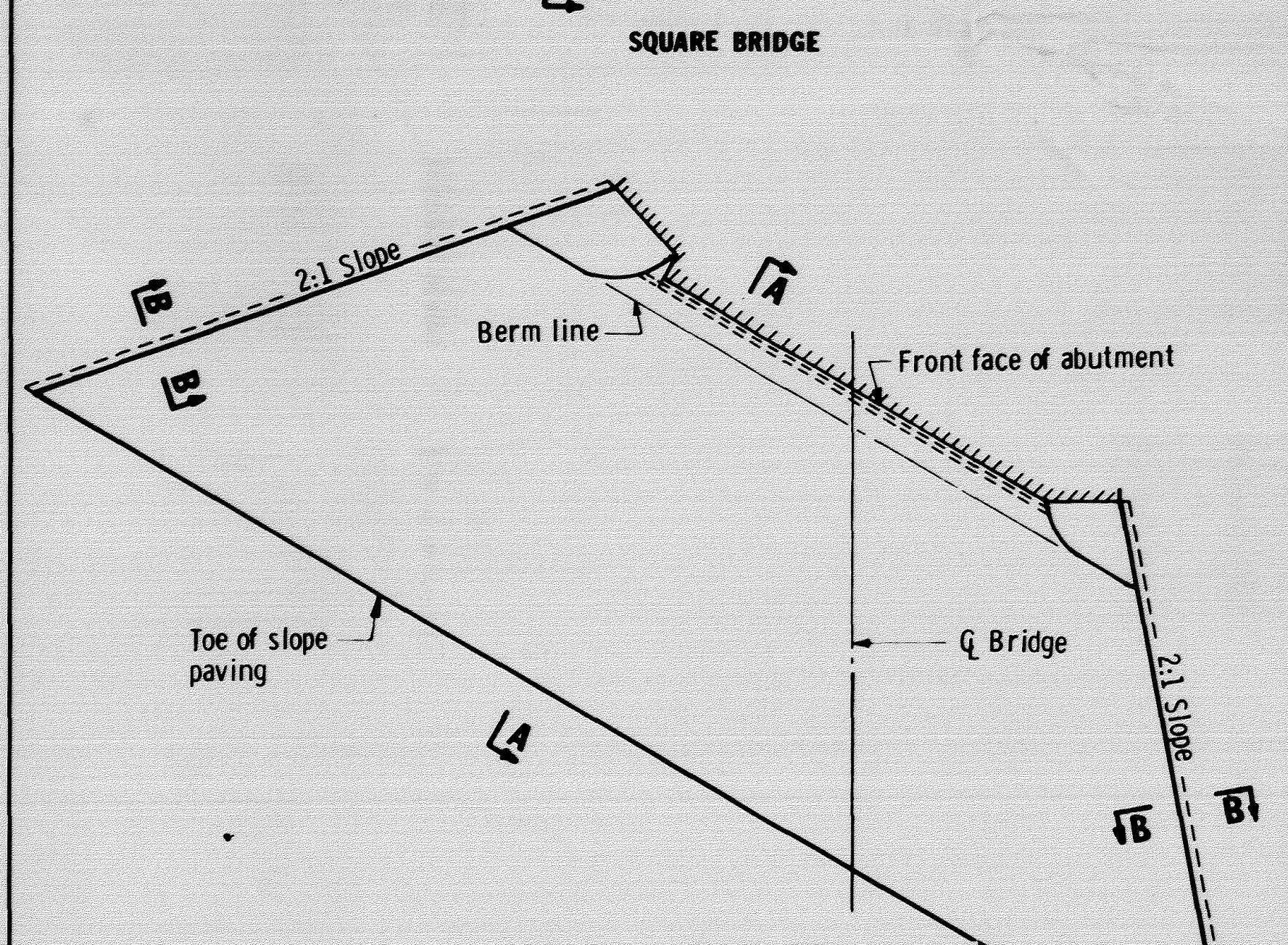
SQUARE BRIDGE



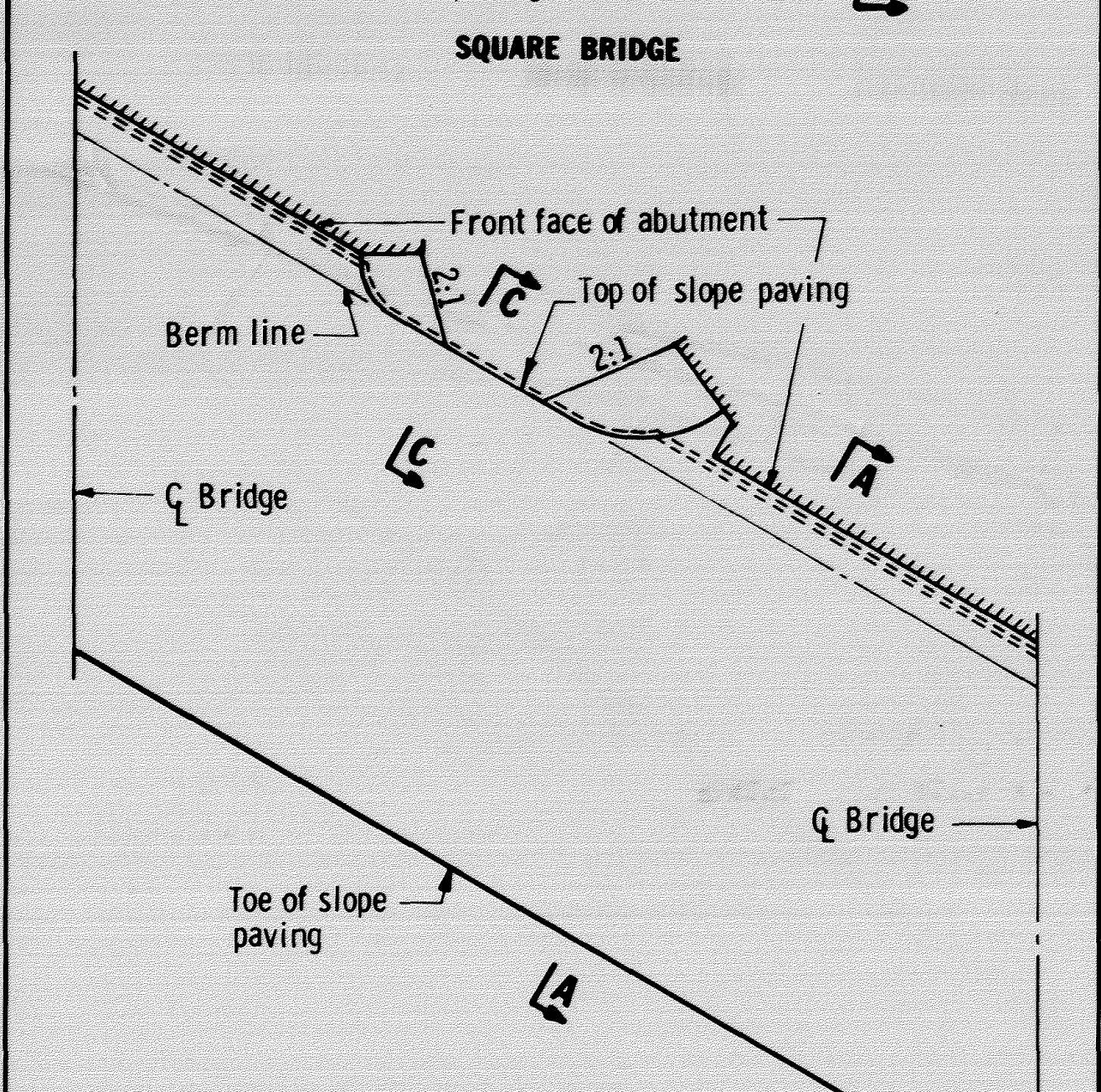
SQUARE BRIDGE



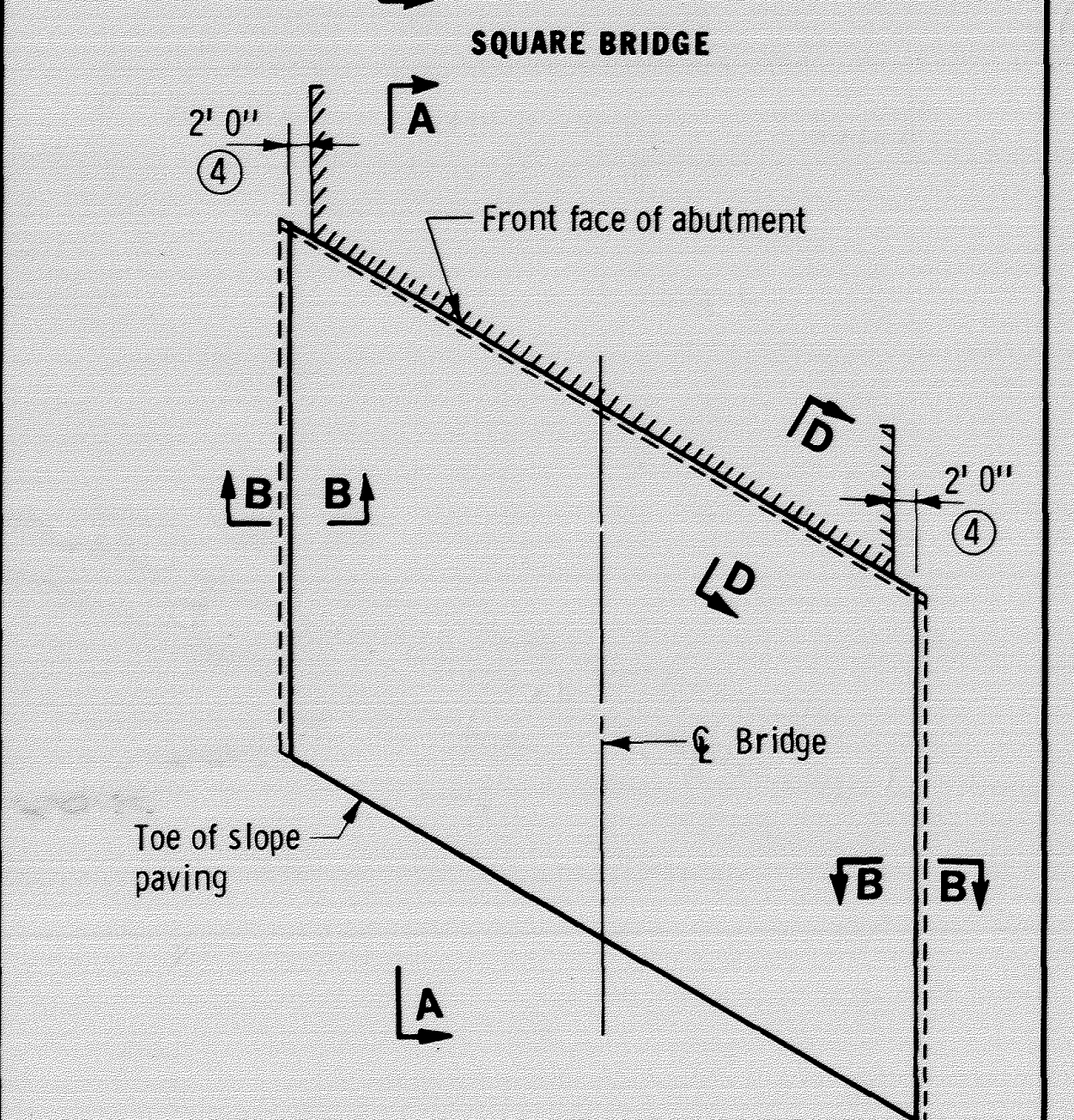
SKEWED BRIDGE



SKEWED BRIDGE



SKEWED BRIDGE



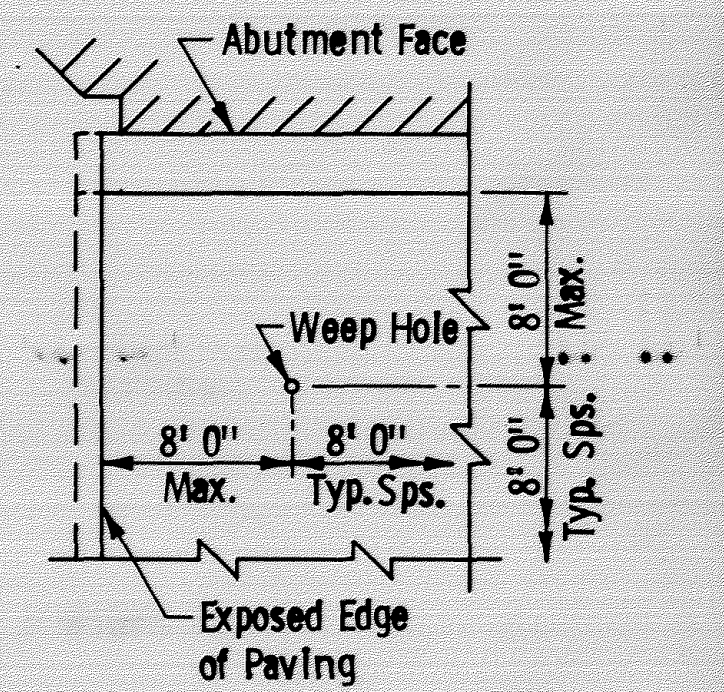
SKEWED BRIDGE

LAYOUTS FOR SLOPES 2:1 OR FLATTER

LAYOUTS FOR SLOPES STEEPER THAN 2:1

LAYOUTS FOR SLOPES STEEPER THAN 2:1 BETWEEN BRIDGES

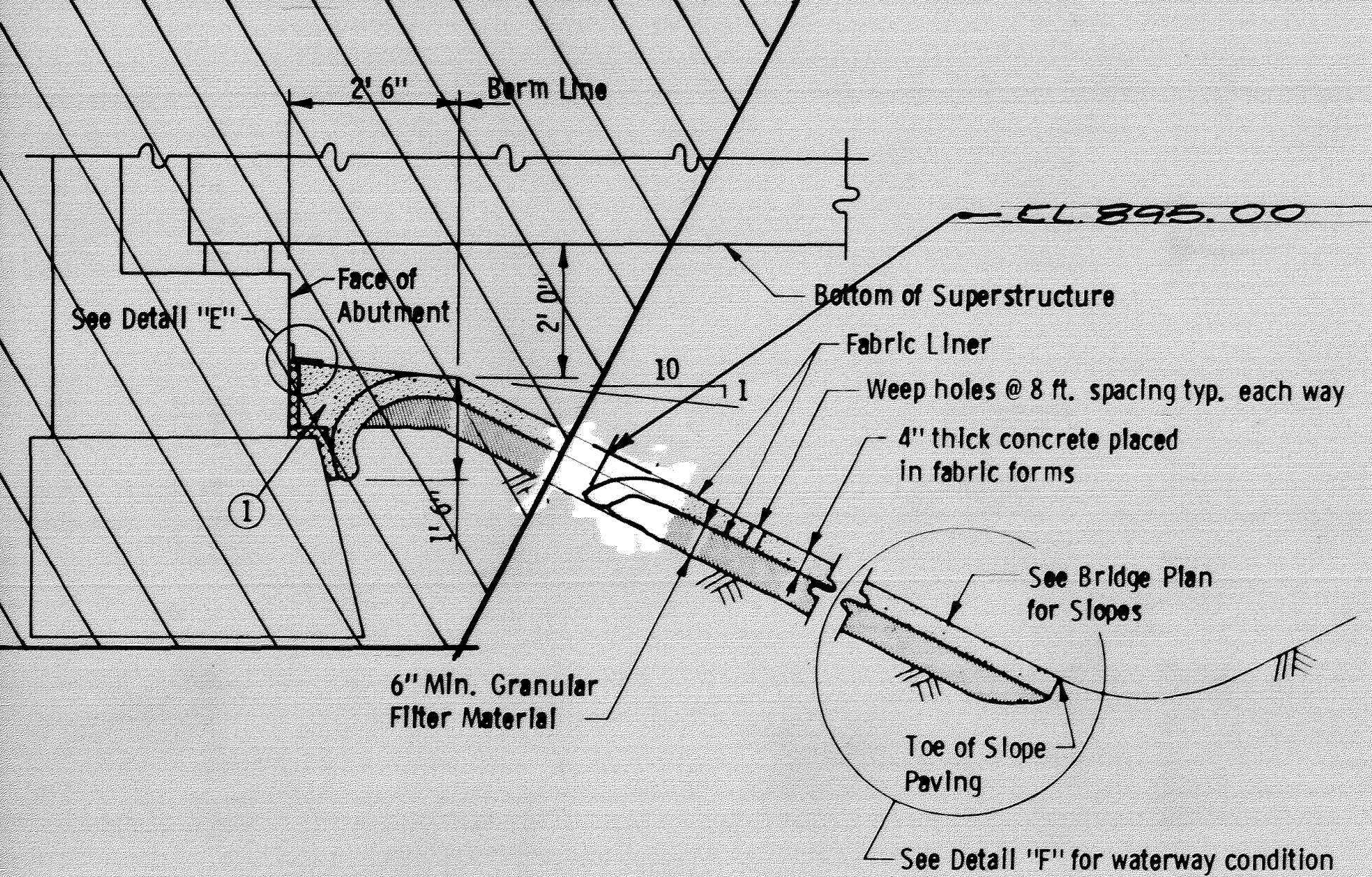
LAYOUTS FOR SLOPES AT HIGH ABUTMENTS



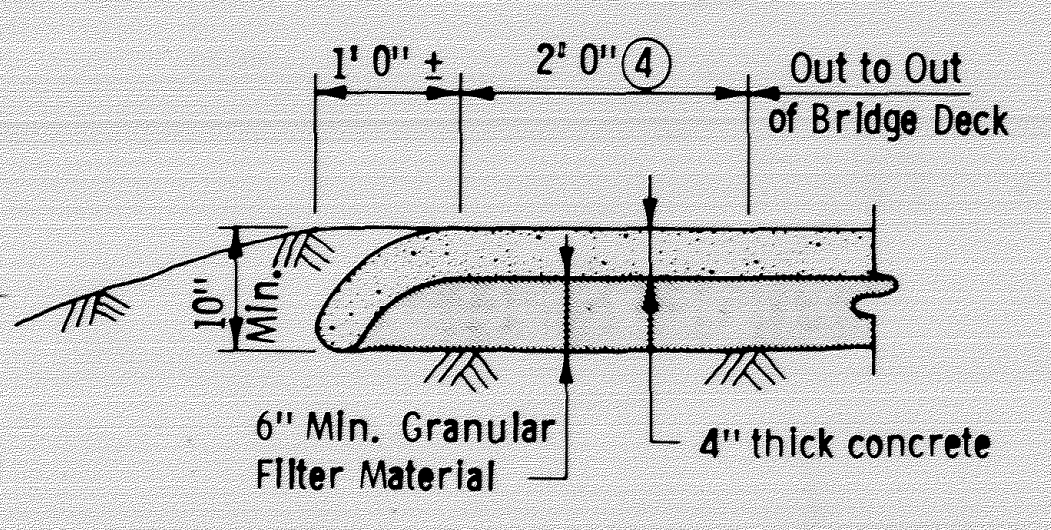
WEEP HOLE DETAIL  
PLAN VIEW  
(All Slopes and Abutments)

NOTES:

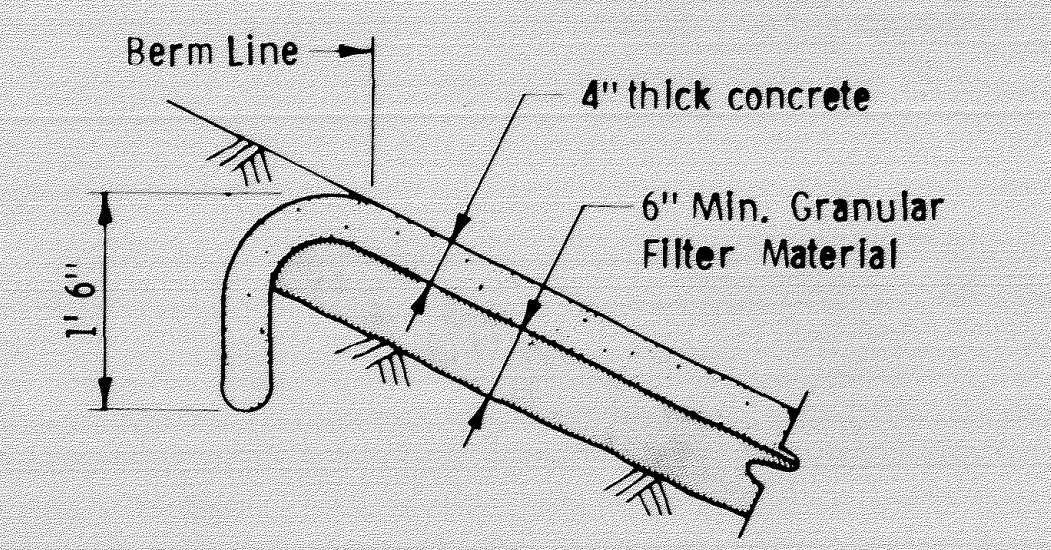
- ① Fill recess with concrete, slope and compact to form a smooth surface.
2. See Special Provisions for Materials, Preparation, Placement and Payment.
3. Granular filter material as per Spec. 3601.
- ④ 2' 0" for tangent bridge superstructures. Varies 2' 0" minimum for curved bridge superstructures.



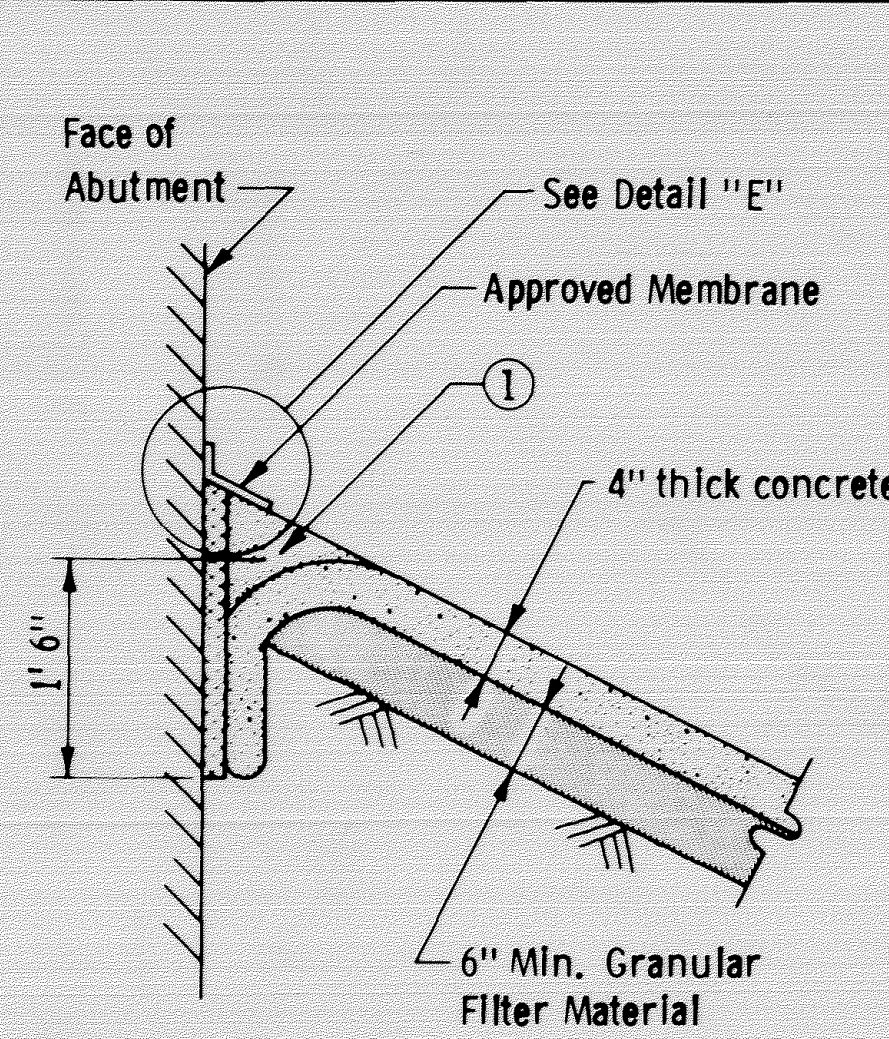
SECTION A-A  
(Low Abutment shown)



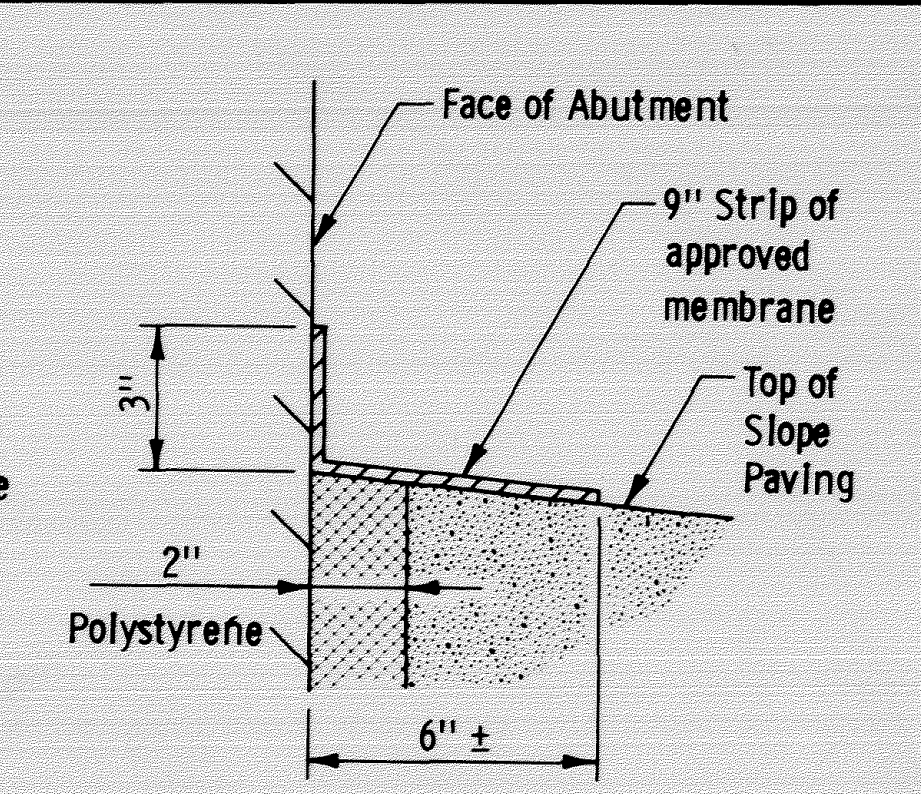
SECTION B-B



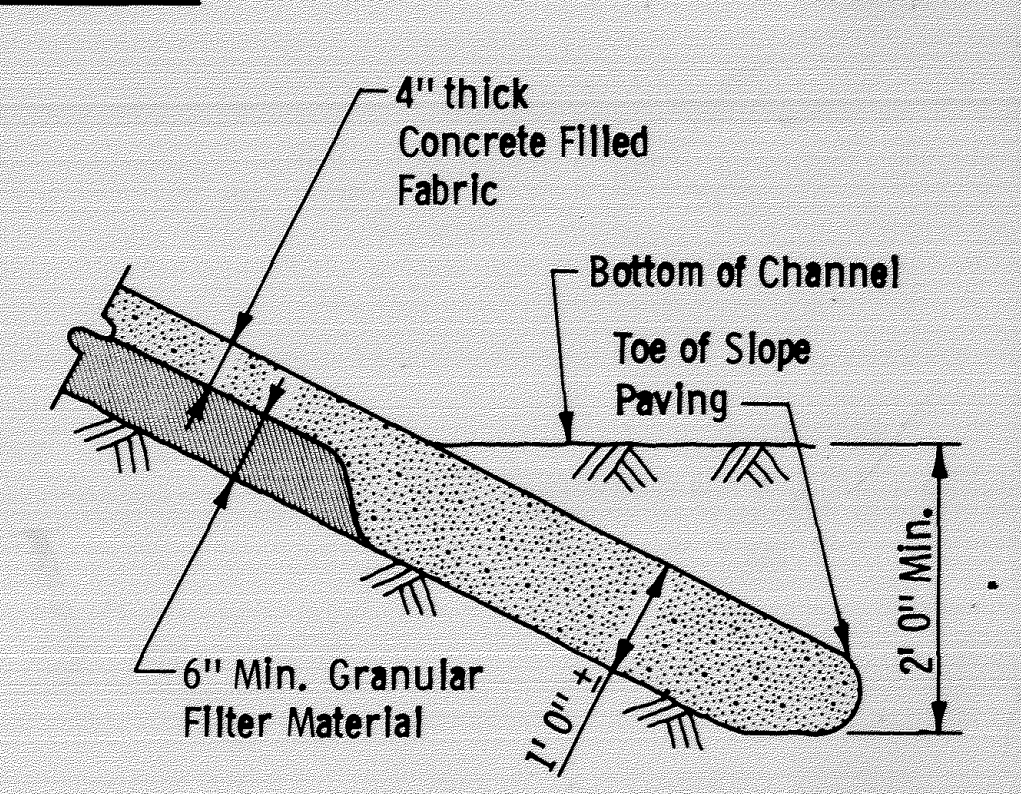
SECTION C-C



SECTION D-D  
(High Abutment)



DETAIL E

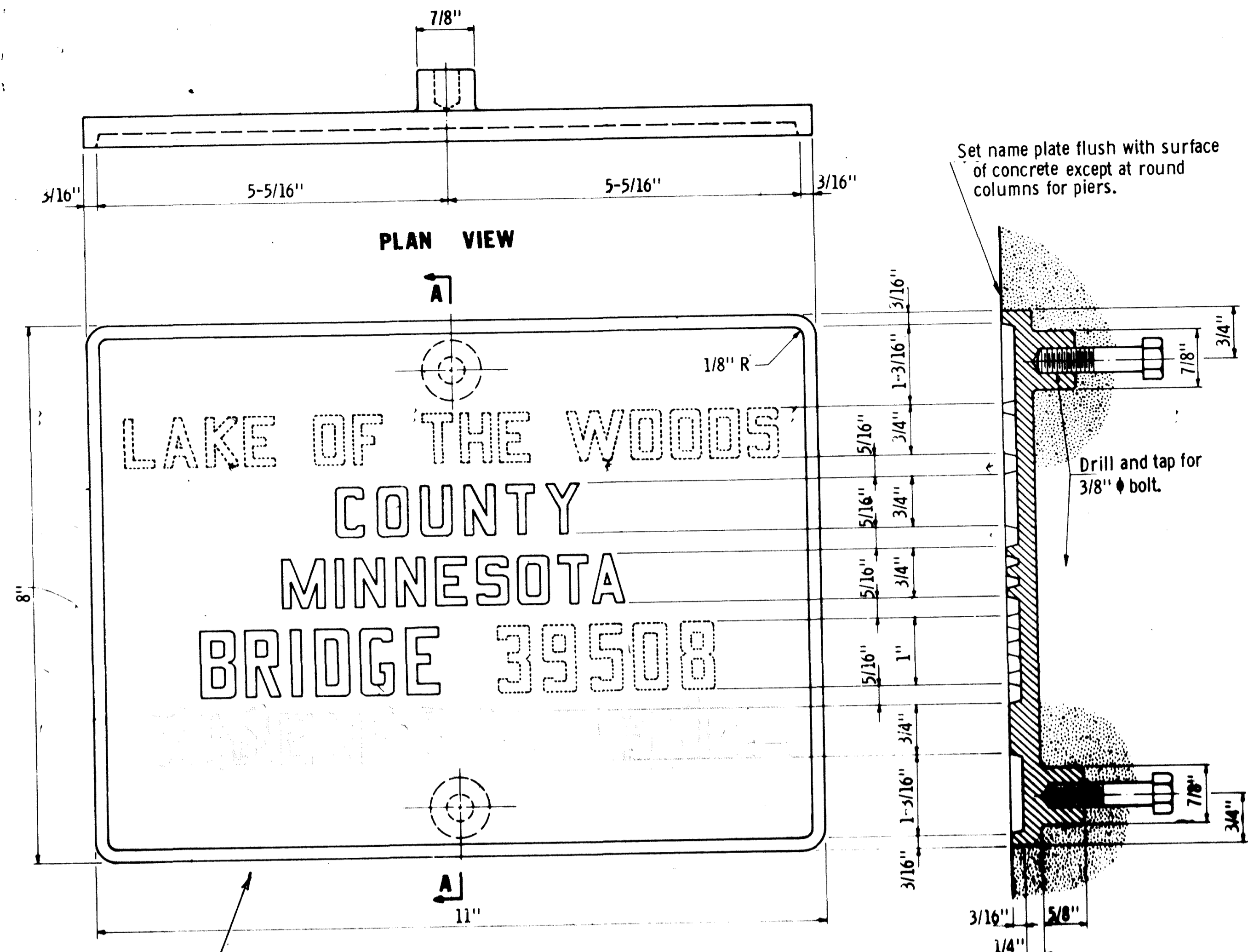


DETAIL F  
(Toe of Slope Paving for Waterway Condition)

FIG. 5-397.300  
Approved: August 6, 1984

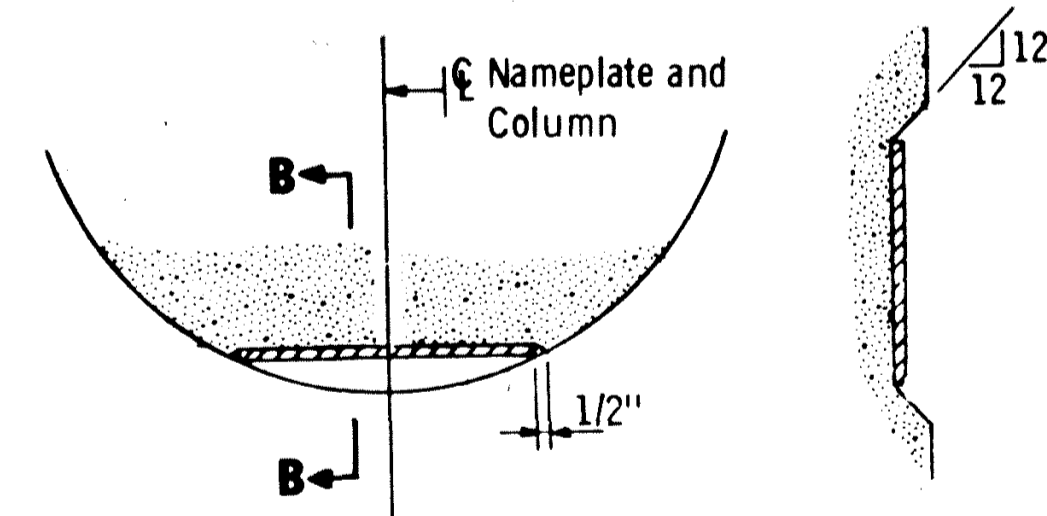
TITLE		DES:	DR:	APPROVED:	Bridge No.
GROUT INJECTED FABRIC-FORMED SLOPE PAVING		CHK:	CHK:		
S.P.No. 02-624-19		Sheet No. 21 of 27 Sheets			02501





BRIDGE 02501  
WIDENED  
1985  
S.P. 02-624-19

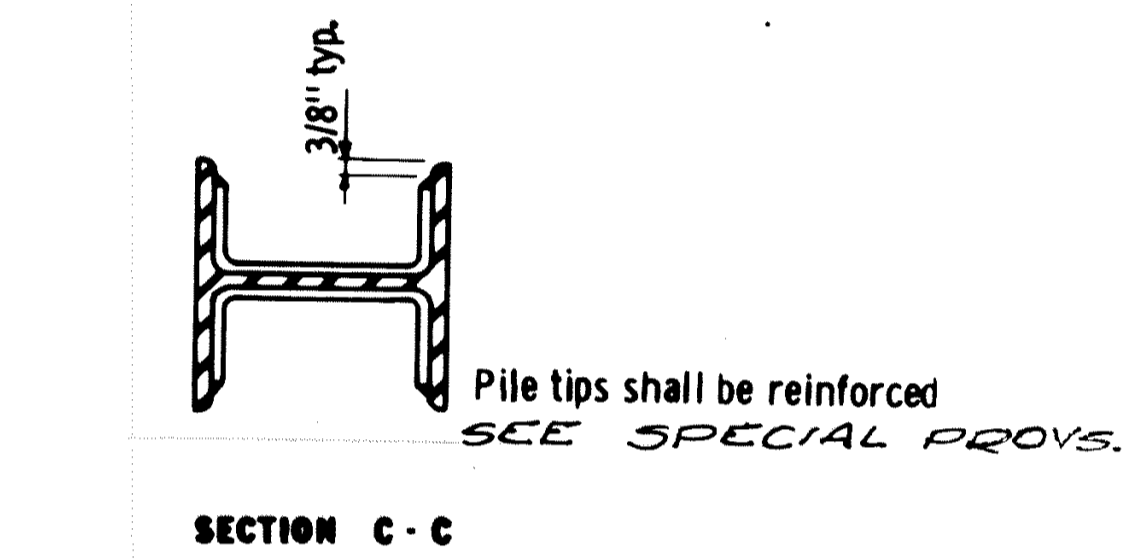
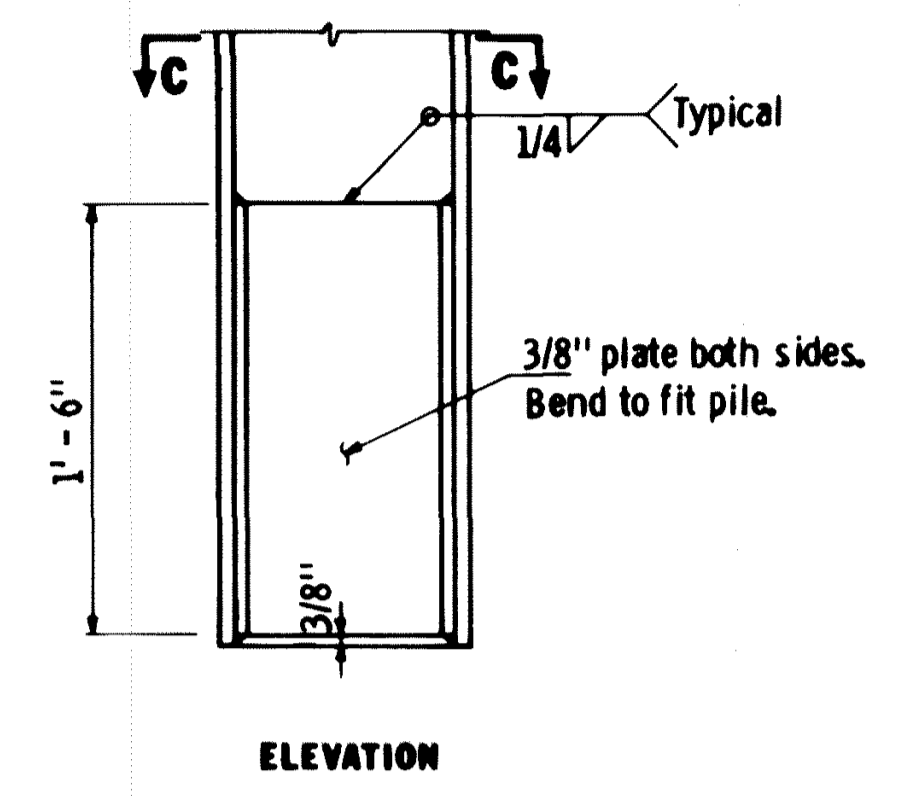
**ELEVATION**  
The numbers shown above are for illustration.  
Data to be shown on name plate is as follows:  
BRIDGE 02501  
YEAR 1985  
COUNTY ANOKA



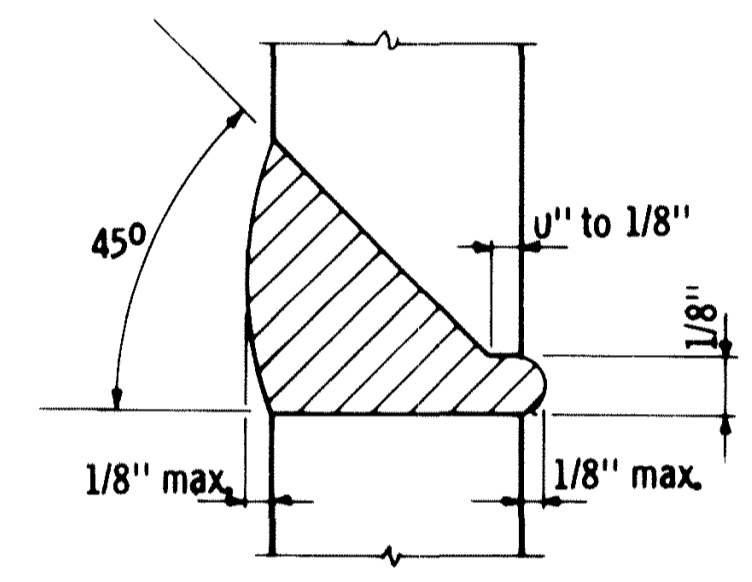
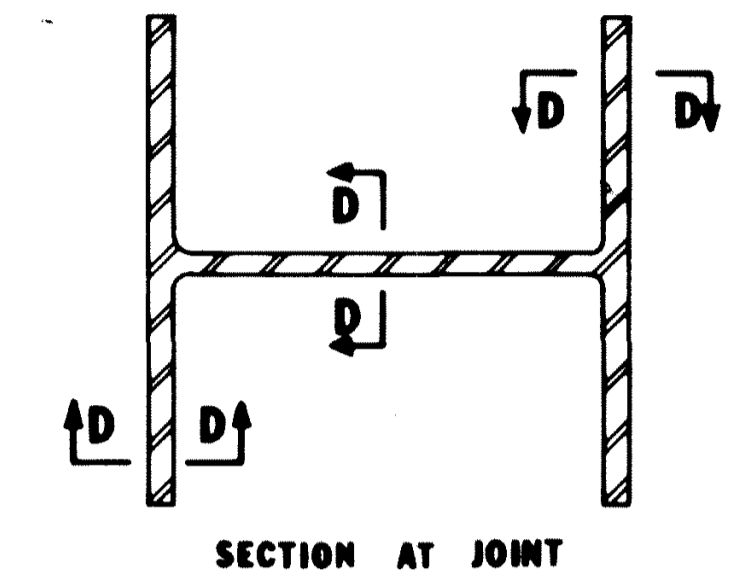
**SECTION B-B**  
**NAMEPLATE PLACEMENT**  
(Round Concrete Pier Columns)

LETTERS & NUMBERS FOR NAMEPLATES  
 ABCDEFGHIJKLMNOPQRSTUVWXYZ  
 1234567890

**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 furnished.  
 Furnish 2 steel bolts 3/8"  $\phi$  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.



**SECTION C-C**  
**DETAIL OF PILE TIP REINFORCEMENT**



**SECTION D-D**  
**100% BUTT WELDED PILE SPLICE**

**NOTES:**  
 A. W. S. Type E7016 or E7018 (low-hydrogen) electrodes shall be used for 100% butt welded splices.  
 A. W. S. Type E6010, E6011 electrodes, or E7016 or E7018 (low-hydrogen) electrodes, shall be used for the alternate plate type pile splice.  
 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.  
 Any type electrode which has become wet, soiled, or damaged shall not be used.  
 Welding shall not be done when the ambient temperature is lower than 32° 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.

Specification reference:  
247L 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

MINNESOTA  
 DEPARTMENT OF TRANSPORTATION  
**BRIDGE NAMEPLATE**  
 COUNTY BRIDGES

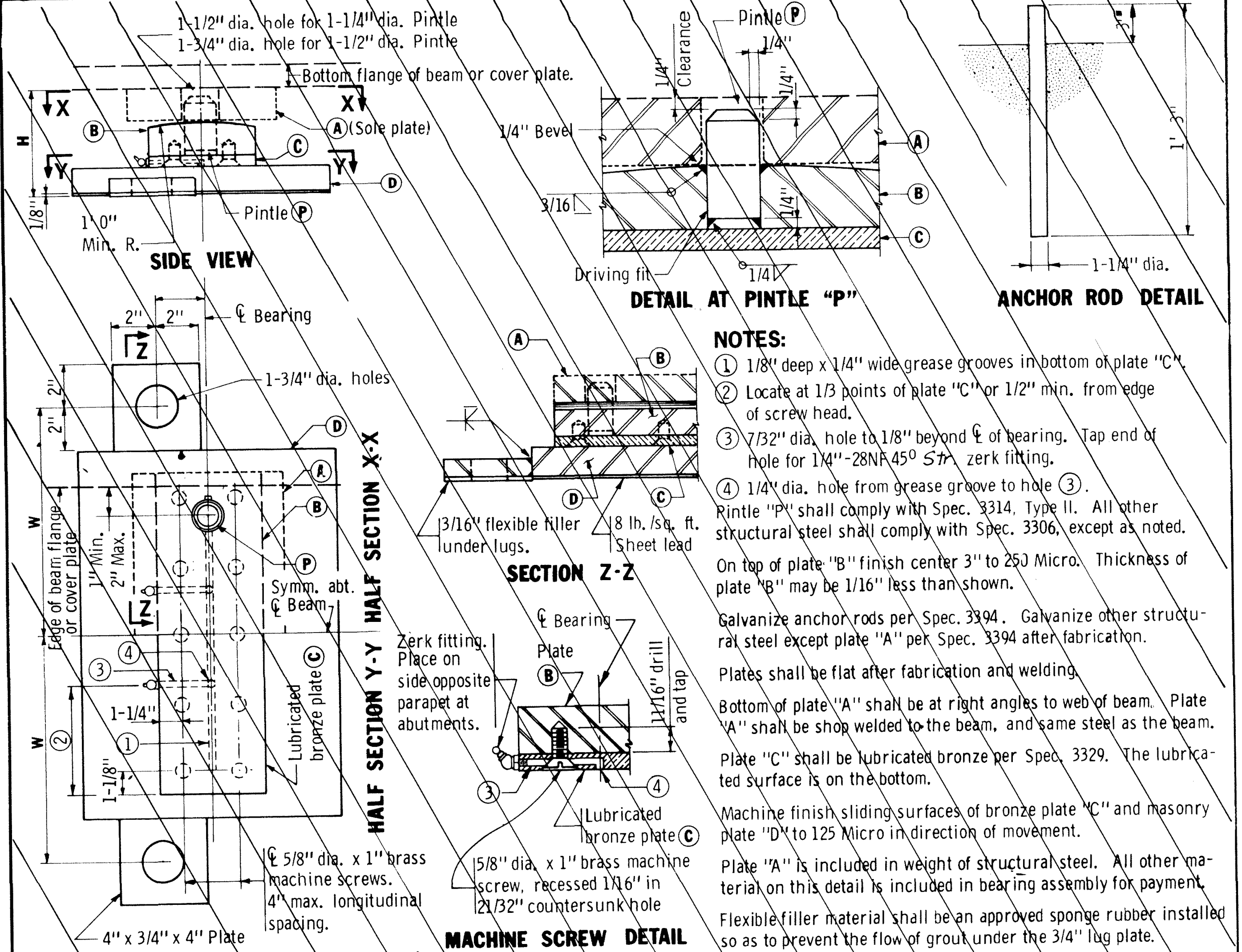
DETAIL NO.  
**B103**

APPROVED: November 5, 1979  
 Developed by: BRIDGE STANDARDS & BRIDGE AND STRUCTURES SECTION  
 Issued by: ENGINEERING STANDARDS SECTION

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION  
**PILE SPLICE and TIP REINFORCEMENT**  
 STEEL H BEARING PILES 10" TO 14"

DETAIL NO.  
**B202**





**NOTES:**

- 1/8" deep x 1/4" wide grease grooves in bottom of plate "C".
- Locate at 1/3 points of plate "C" or 1/2" min. from edge of screw head.
- 7/32" dia. hole to 1/8" beyond  $\phi$  of bearing. Tap end of hole for 1/4"-28NF 45° S7 zerk fitting.
- 1/4" dia. hole from grease groove to hole ③.

Pintle "P" shall comply with Spec. 3314, Type II. All other structural steel shall comply with Spec. 3306, except as noted.

On top of plate "B" finish center 3" to 250 Micro. Thickness of plate "B" may be 1/16" less than shown.

Galvanize anchor rods per Spec. 3394. Galvanize other structural steel except plate "A" per Spec. 3394 after fabrication.

Plates shall be flat after fabrication and welding.

Bottom of plate "A" shall be at right angles to web of beam. Plate "A" shall be shop welded to the beam, and same steel as the beam.

Plate "C" shall be lubricated bronze per Spec. 3329. The lubricated surface is on the bottom.

Machine finish sliding surfaces of bronze plate "C" and masonry plate "D" to 250 Micro in direction of movement.

Plate "A" is included in weight of structural steel. All other material on this detail is included in bearing assembly for payment.

Flexible filler material shall be an approved sponge rubber installed so as to prevent the flow of grout under the 3/4" lug plate.

LOAD (KIPS)	FOR BEAMS WITH 9" TO 10 1/2" FLANGES			PLATE D	PINTLE P	DIM. H	DIM. W	TOTAL MOV.
	PLATE A	PLATE B	PLATE C					
99	5" x 1-1/2" x 1' 0"	5" x 1-1/2" x 1' 0"	5" x 1/2" x 1' 0"	12" x 1-1/4" x 1' 2"	1-1/4" $\phi$ x 2-1/2"	4-7/8"	9"	2-1/2"
124	7" x 1-1/2" x 1' 3"	5" x 1-1/2" x 1' 3"	5" x 1/2" x 1' 3"	12" x 1-1/4" x 1' 5"	1-1/4" $\phi$ x 2-1/2"	4-7/8"	10-1/2"	2-1/2"
154	8" x 1-1/2" x 1' 3"	6" x 1-3/4" x 1' 3"	6" x 1/2" x 1' 3"	15" x 1-1/2" x 1' 5"	1-1/4" $\phi$ x 2-3/4"	5-3/8"	10-1/2"	2-1/2"
184	8" x 1-1/2" x 1' 3"	7" x 2-1/4" x 1' 3"	7" x 1/2" x 1' 3"	16" x 1-1/2" x 1' 5"	1-1/4" $\phi$ x 3-1/4"	5-7/8"	10-1/2"	2"

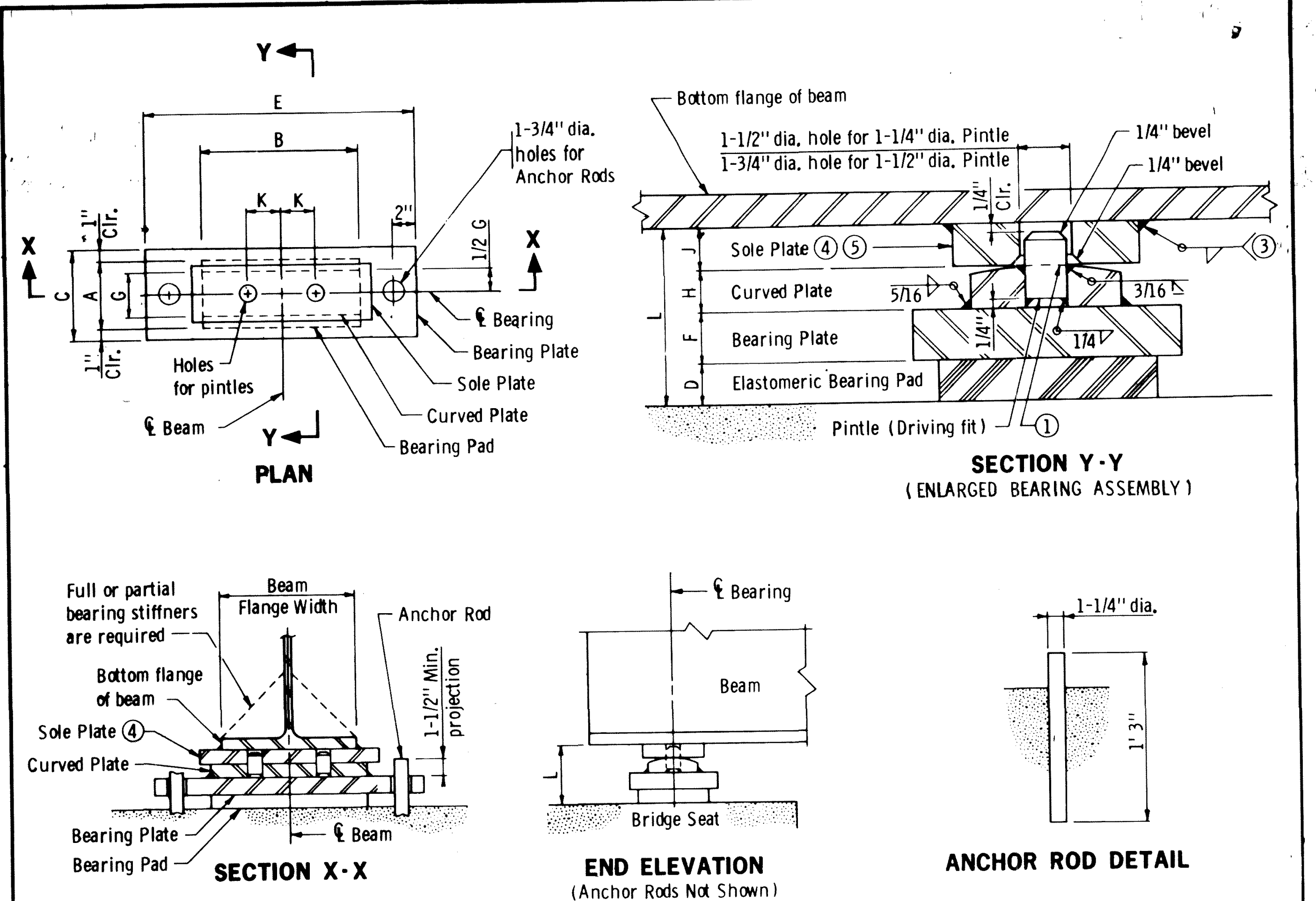
LOAD (KIPS)	FOR BEAMS WITH 11 1/2" TO 12" FLANGES			PLATE D	PINTLE P	DIM. H	DIM. W	TOTAL MOV.
	PLATE A	PLATE B	PLATE C					
118	5" x 1-1/2" x 1' 2"	5" x 1-1/2" x 1' 2"	5" x 1/2" x 1' 2"	12" x 1-1/4" x 1' 4"	1-1/4" $\phi$ x 2-1/2"	4-7/8"	10"	2-1/2"
152	7" x 1-1/2" x 1' 6"	5" x 1-1/2" x 1' 6"	5" x 1/2" x 1' 6"	12" x 1-1/2" x 1' 8"	1-1/4" $\phi$ x 2-1/2"	5-1/8"	12"	2-1/2"
188	8" x 1-1/2" x 1' 6"	6" x 1-3/4" x 1' 6"	6" x 1/2" x 1' 6"	15" x 1-1/2" x 1' 8"	1-1/4" $\phi$ x 2-3/4"	5-3/8"	12"	2-1/2"
224	8" x 1-1/2" x 1' 6"	7" x 2-1/4" x 1' 6"	7" x 1/2" x 1' 6"	16" x 1-1/2" x 1' 8"	1-1/2" $\phi$ x 3-1/4"	5-7/8"	12"	2"

LOAD (KIPS)	FOR BEAMS WITH 15" TO 16" FLANGES			PLATE D	PINTLE P	DIM. H	DIM. W	TOTAL MOV.
	PLATE A	PLATE B	PLATE C					
143	5" x 1-1/2" x 1' 5"	5" x 1-1/2" x 1' 5"	5" x 1/2" x 1' 5"	13" x 1-1/4" x 1' 7"	1-1/4" $\phi$ x 2-1/2"	4-7/8"	11-1/2"	3"
186	8" x 1-1/2" x 1' 10"	5" x 1-1/2" x 1' 10"	5" x 1/2" x 1' 10"	13" x 1-1/2" x 2' 0"	1-1/4" $\phi$ x 2-1/2"	5-1/8"	1' 2"	3"
230	8" x 1-1/2" x 1' 10"	6" x 1-3/4" x 1' 10"	6" x 1/2" x 1' 10"	15" x 1-1/2" x 2' 0"	1-1/2" $\phi$ x 2-3/4"	5-3/8"	1' 2"	3"
274	8" x 1-3/4" x 1' 10"	7" x 2-1/4" x 1' 10"	7" x 1/2" x 1' 10"	17" x 1-3/4" x 2' 0"	1-1/2" $\phi$ x 3-1/2"	6-3/8"	1' 2"	2-1/2"
307	8" x 2" x 1' 11"	7-1/2" x 2-1/4" x 1' 11"	7-1/2" x 1/2" x 1' 11"	19" x 2" x 2' 1"	1-1/2" $\phi$ x 3-1/4"	6-7/8"	1' 2-1/2"	2-1/2"

FOR BEAMS WITH	TO	FLANGES	TOTAL MOV.
18" x 1"	4 1/2" x 14" x 3 1/4"	12" x 16" x 1 7/8"	10" x 14" x 3 1/8"
			1 1/4" $\phi$ x 5 3/4"
			2 1/2"



**TABLE ②**

Beam Flange Size	Bearing Pad Size			Shape Factor	Bearing Plate Size			Curved Plate Size			Sole Plate Size		Pintle Dia.	Pintle Spacing	Assy. Height	Assembly Type	
	A	B	D		C	E	F	G	B	H	Width	Length					J ⑤
9" to 10-1/2"														2-3/4"			
11-1/2" to 12"																	
15" to 16"																	
18"	20"	20"	34"	6.7	22"	30"	2"	8"	20"	1 1/2"	10"	22"	1 1/4"	1 1/2"	2 3/4"	5 1/2"	PIER 2

**NOTES:**

For elastomeric materials and pad construction, see Spec. 3741 and special provisions, except as noted.

All steel plates & anchor rods shall comply with Spec. 3306, except as noted.

All plates shall be flat after fabrication and galvanizing.

Pintles shall comply with Spec. 3314, Type II

Galvanize structural steel bearing assembly after fabrication per Spec. 3394, except as noted.

Payment for bearing assembly shall include all material on this detail, except the Sole Plate.

- 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.
- See Bridge Design Manual for design requirements.
- 5/16" min. fillet weld for 3/4" up to & including 1-1/2" thick sole plates. 3/8" min. fillet weld for over 1-1/2" to 2-1/4" thick sole plates, except as noted in the plans.
- Sole plate may be tapered. See superstructure details.
- When the sole plate is tapered, dimension "J" is the minimum thickness of the plate.

APPROVED: January 29, 1979  
 Developed by: BRIDGE STANDARDS & BRIDGE AND STRUCTURES SECTION  
 Issued by: ENGINEERING STANDARDS SECTION

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION  
**BEARING ASSEMBLIES  
 STEEL BEAMS  
 (EXPANSION W/O GUIDE BARS)**

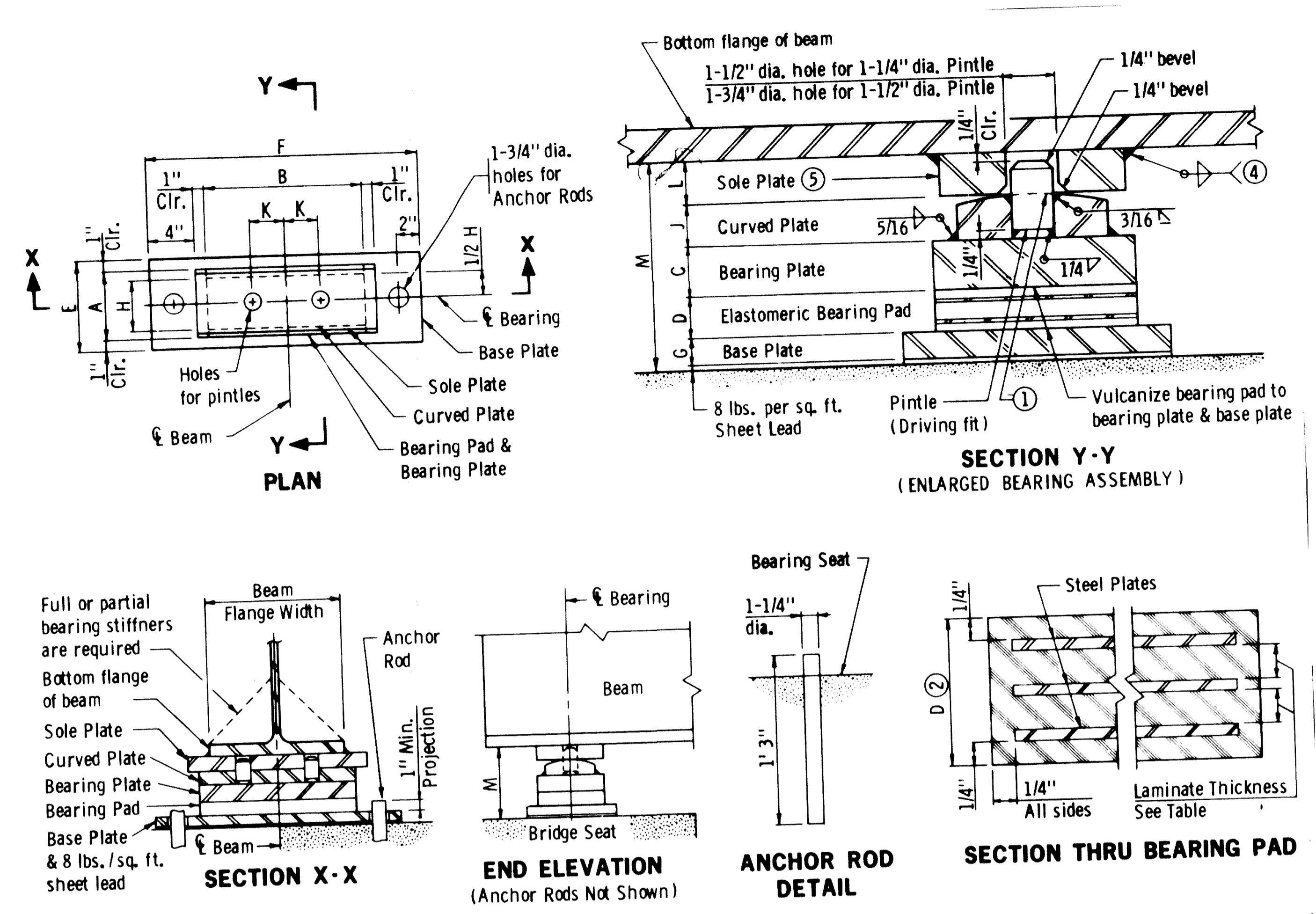
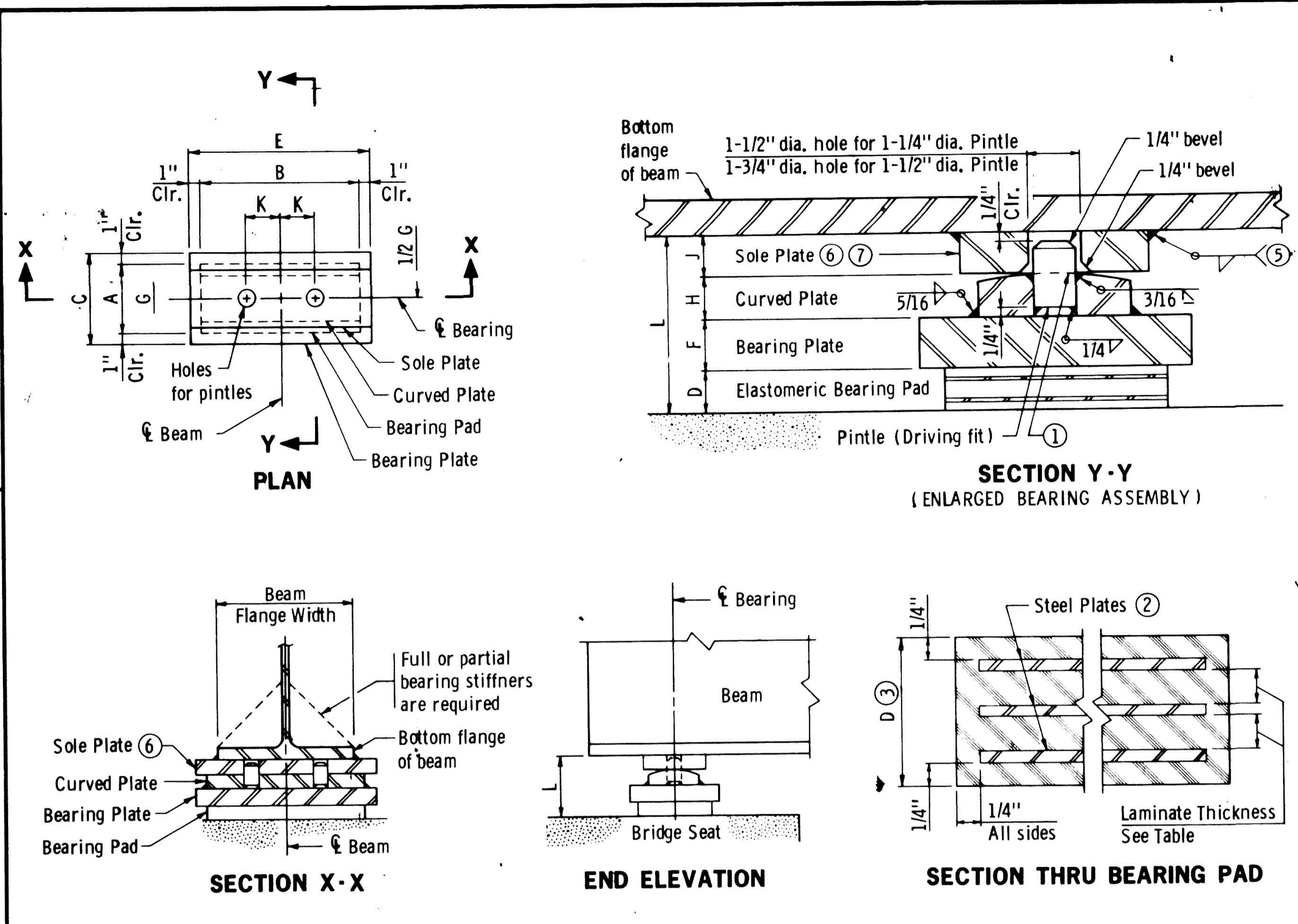
REVISION  
 DETAIL NO.  
**B353**

APPROVED: May 25, 1982  
 Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES  
 Issued by: OFFICE OF ENGINEERING STANDARDS

STATE OF MINNESOTA  
 DEPARTMENT OF TRANSPORTATION  
**CURVED PLATE BEARING ASSEMBLY  
 STEEL BEAMS  
 (FIXED)**

REVISION  
 DETAIL NO.  
**B354**





**TABLE ④**

Beam Flange Size	Bearing Pad Size			Steel Plates		Laminates		Shape Factor	Bearing Plate Size			Curved Plate Size			Sole Plate Size			Pintle Dia.	Pintle Spacing	Assy. Height	Assembly Type
	A	B	D	No.	Thick.	No.	Thick.		C	E	F	G	B	H	Width	Length	J				
9" to 10-1/2"																		2-3/4"			
11-1/2" to 12"	10"	14"	3 1/8"	6	1/8"	5	3/8"	7.8	12"	16"	7 1/8"	4 1/2"	14"	3 1/4"	6"	10"	1"	1 1/2"	2 3/4"	5 3/4"	1
15" to 16"																					
18"	20"	20"	3 1/4"	4	3/16"	3	3/4"	6.7	22"	22"	2"	8"	20"	1 1/2"	10"	22"	1 1/4"	1 1/2"	2 3/4"	8"	3

**NOTES:**  
 For elastomeric materials and pad construction, see Spec. 3741 and special provisions, except as noted.  
 All steel plates shall comply with Spec. 3306, except as noted.  
 All plates shall be flat after fabrication and galvanizing.  
 Pintles shall comply with Spec. 3314, Type II  
 Galvanize structural steel bearing assembly after fabrication per Spec. 3394, except as noted.  
 Payment for bearing assembly shall include all material on this detail, except the Sole Plate.

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 5/16" min. fillet weld for 3/4" up to & including 1-1/2" thick sole plates. 3/8" min. fillet weld for over 1-1/2" to 2-1/4" thick sole plates, except as noted in the plans.  
 ⑥ Sole plate may be tapered. See superstructure details.  
 ⑦ When sole plate is tapered, dimension "J" is min. thickness of plate.

APPROVED: May 25, 1982	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION <b>CURVED PLATE BEARING ASSEMBLY</b> STEEL BEAMS (EXPANSION)	REVISION	DETAIL NO.
Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES			<b>B355</b>
Issued by: OFFICE OF ENGINEERING STANDARDS			

**TABLE ③**

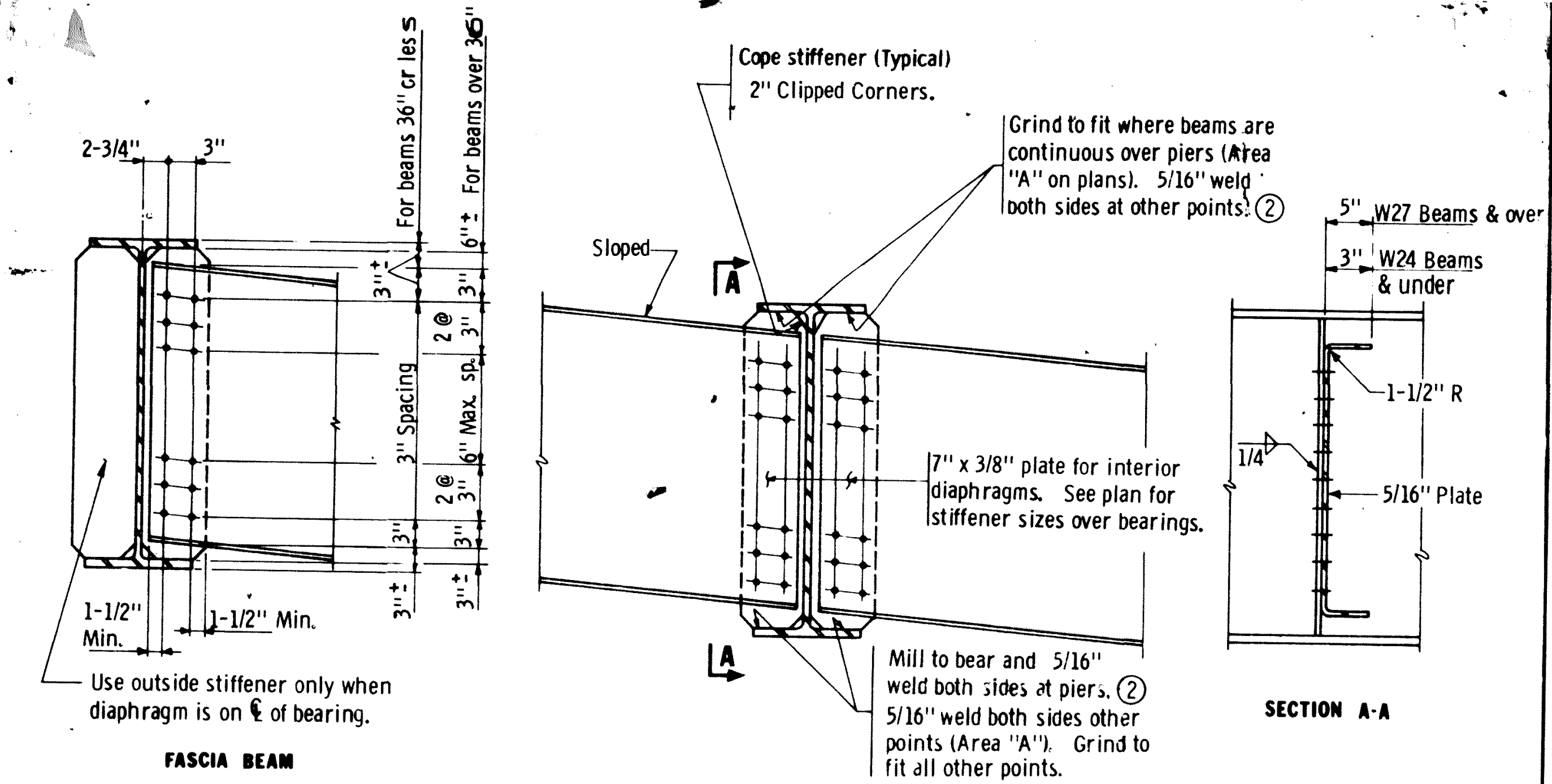
Beam Flange Size	Bearing Pad Size			Steel Plates		Laminates		Bearing Plate Size			Shape Factor	Base Plate Size			Curved Plate Size			Sole Plate Size			Pintle Dia.	Pintle Spacing	Assy. Height	Assembly Type
	A	B	D	No.	Thick.	No.	Thick.	A	B	C		E	F	G	H	B	J	Width	Length	Thick. L				
9" to 10-1/2"																						2-3/4"		
11-1/2" to 12"																								
15" to 16"																								
18"	14"	16"	5 5/8"	9	1/8"	8	1/2"	14"	16"	1 1/2"	7.5	16"	26"	6"	16"	1 1/4"	8"	20"	1"	1 1/2"	2 3/4"	10 1/4"	2	

**NOTES:**  
 For elastomeric materials and pad construction, see Spec. 3741 and special provisions, except as noted.  
 All steel plates shall comply with Spec. 3309, except as noted.  
 Anchor rods shall comply with Spec. 3306  
 All plates shall be flat after fabrication.  
 Pintles shall comply with Spec. 3314, Type II  
 Paint structural steel bearing assembly same as structural steel, except as noted.  
 Payment for bearing assembly shall include all materials on this detail, except sole plate. Sole plate to be included in weight of structural steel.  
 Galvanize anchor rods per Spec. 3394.

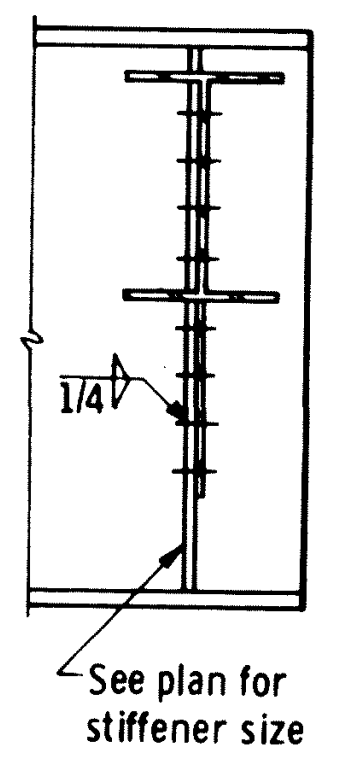
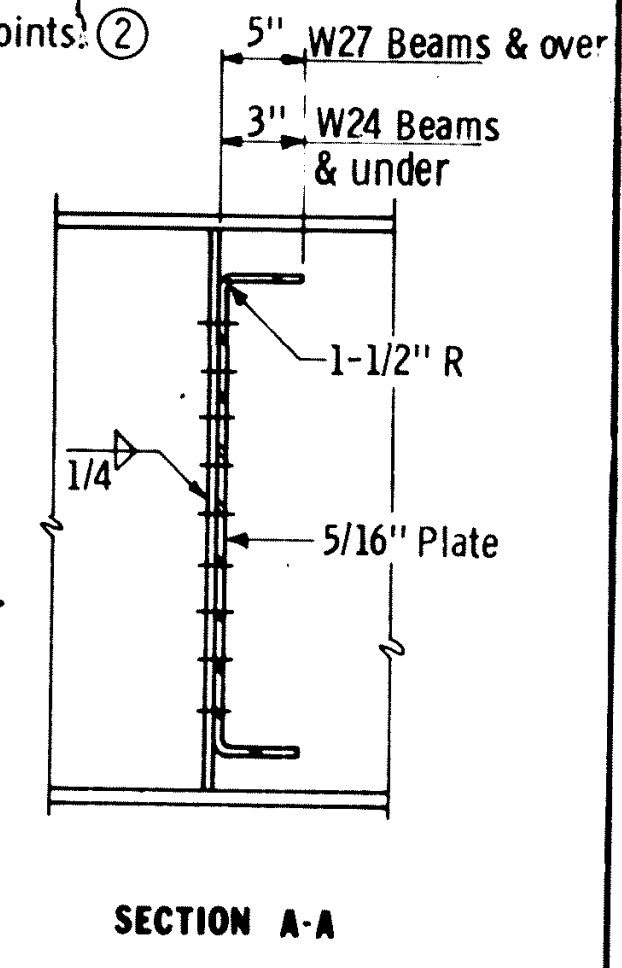
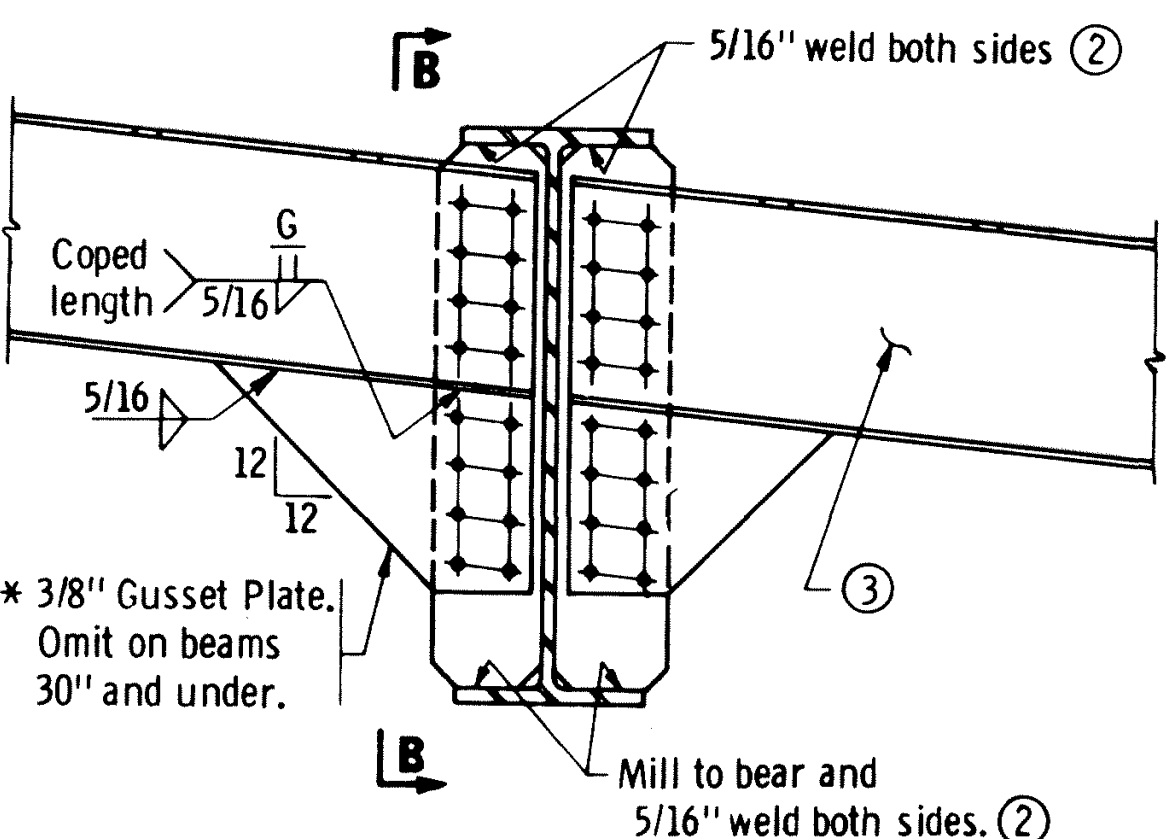
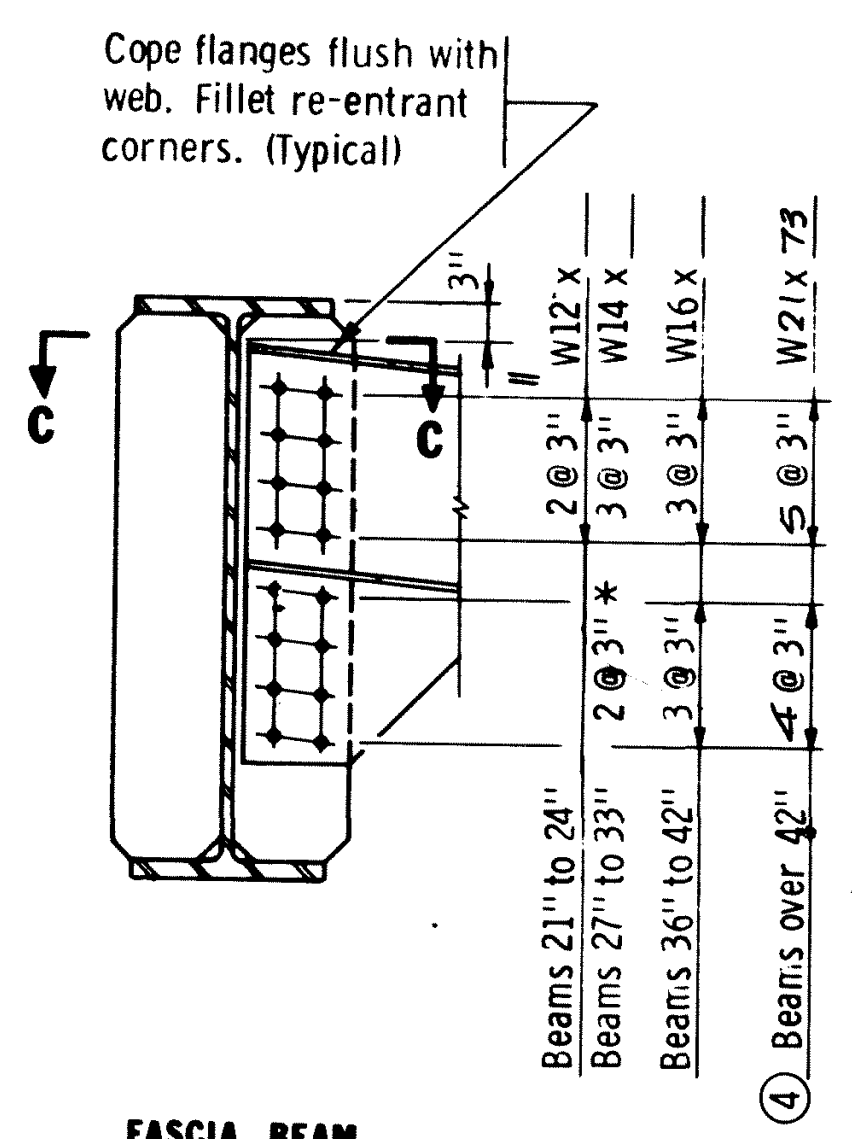
① The radius of the curved plate shall be 1' 0" min. and 1' 6" max. Finish to 250 Micro. The finished thickness of the plate may be 1/16" less than shown.  
 ② The total thickness shown includes the steel plates.  
 ③ See Bridge Design Manual for design requirements.  
 ④ 5/16" min. fillet weld for 3/4" up to & including 1-1/2" thick sole plates. 3/8" min. fillet weld for over 1-1/2" to 2-1/4" thick sole plates, except as noted in the plans.  
 ⑤ Sole plate may be tapered. See superstructure details. When sole plate is tapered, dimension "L" is min. thickness of plate.

APPROVED: October 18, 1982	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION <b>CURVED PLATE BEARING ASSEMBLY</b> STEEL BEAMS (VULCANIZED EXPANSION)	REVISION	DETAIL NO.
Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES			<b>B357</b>
Issued by: OFFICE OF ENGINEERING STANDARDS			

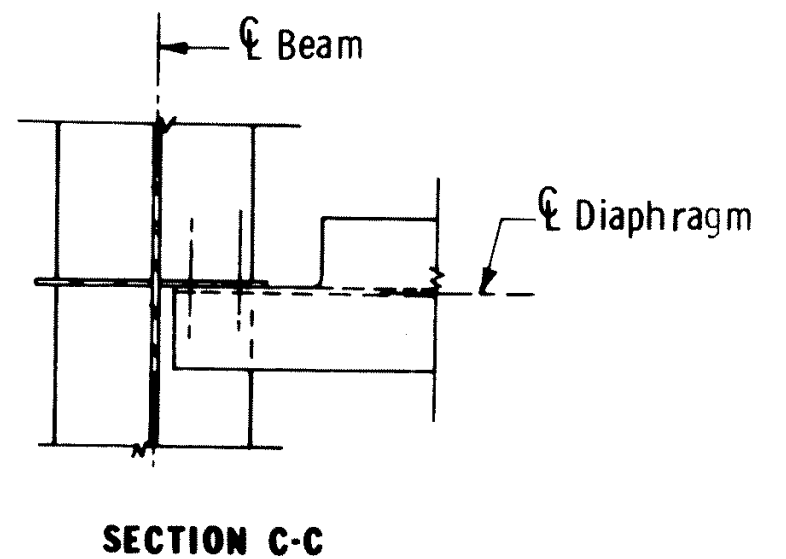
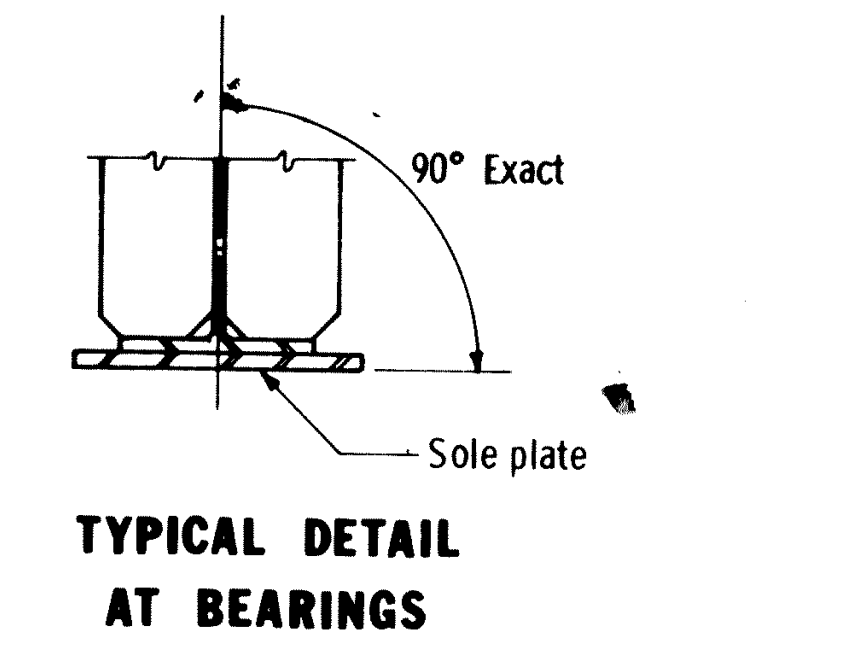




**INTERMEDIATE BEAMS  
INTERMEDIATE AND PIER DIAPHRAGMS**

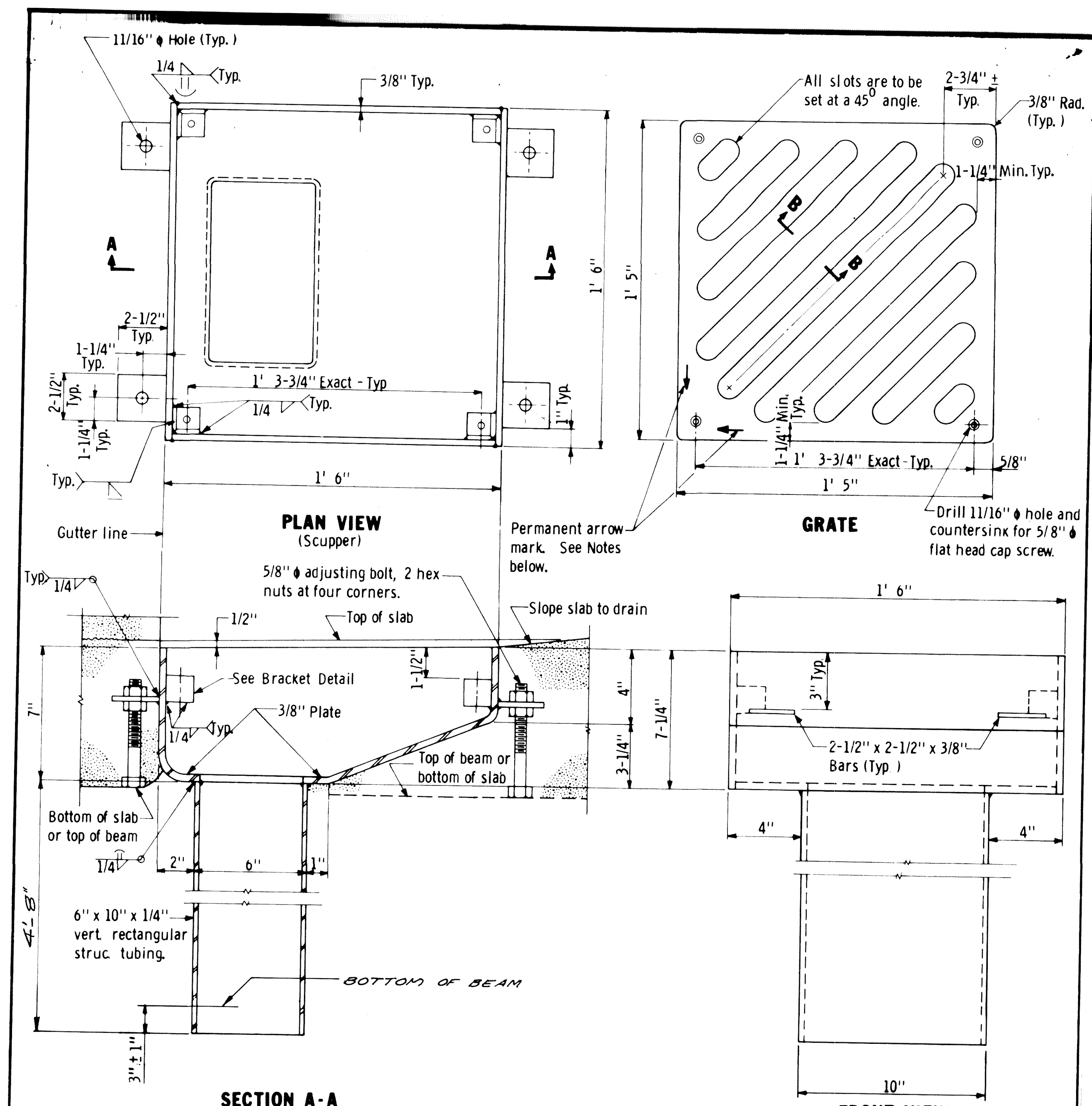


**INTERMEDIATE BEAMS  
ABUTMENT DIAPHRAGMS**



- NOTES**
- Use 7/8" high strength bolts or 7/8" pin bolts
  - For flange material over 1-1/2" thick, use 3/8" weld.
  - Where expansion device is bolted to end diaphragm, use W12 x 53 (for 21" to 24" beams), W14 x 61 (for 27" to 33" beams) and W16 x 71 (for 36" to 42" beams). For beam heights over 42", see framing plan for size of diaphragm.
  - For beam heights over 42", diaphragm to be at least 1/3 the beam height.

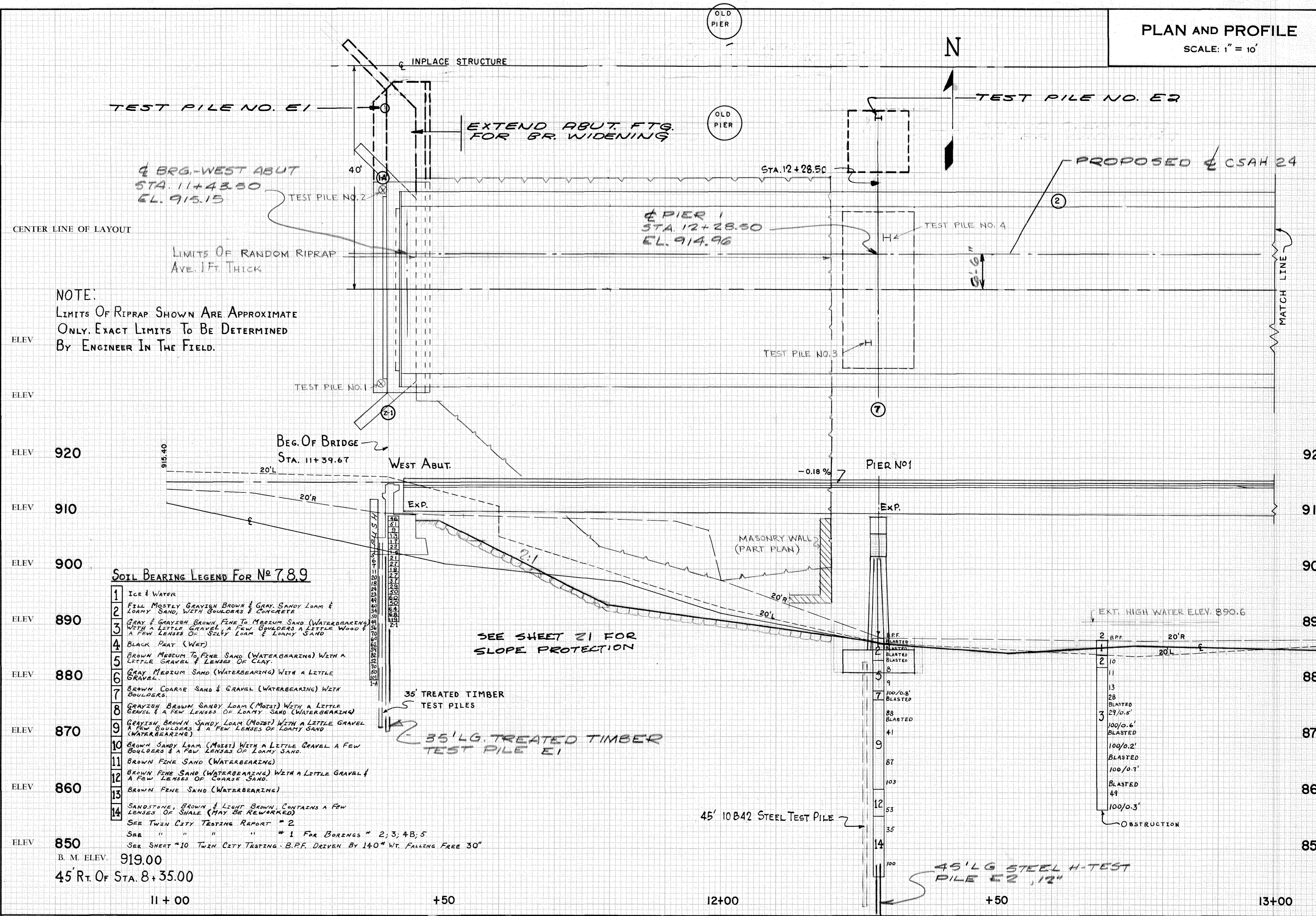
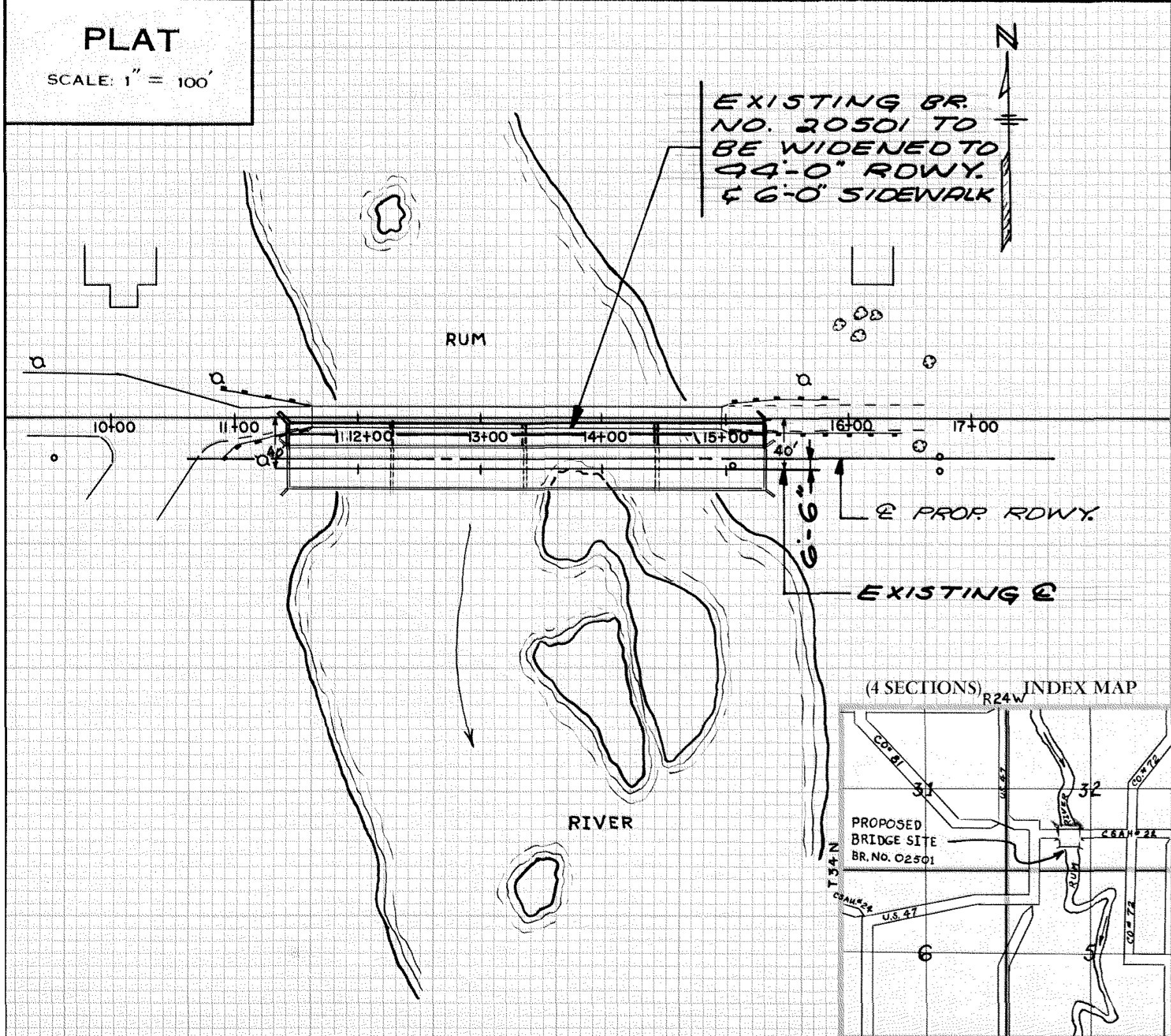
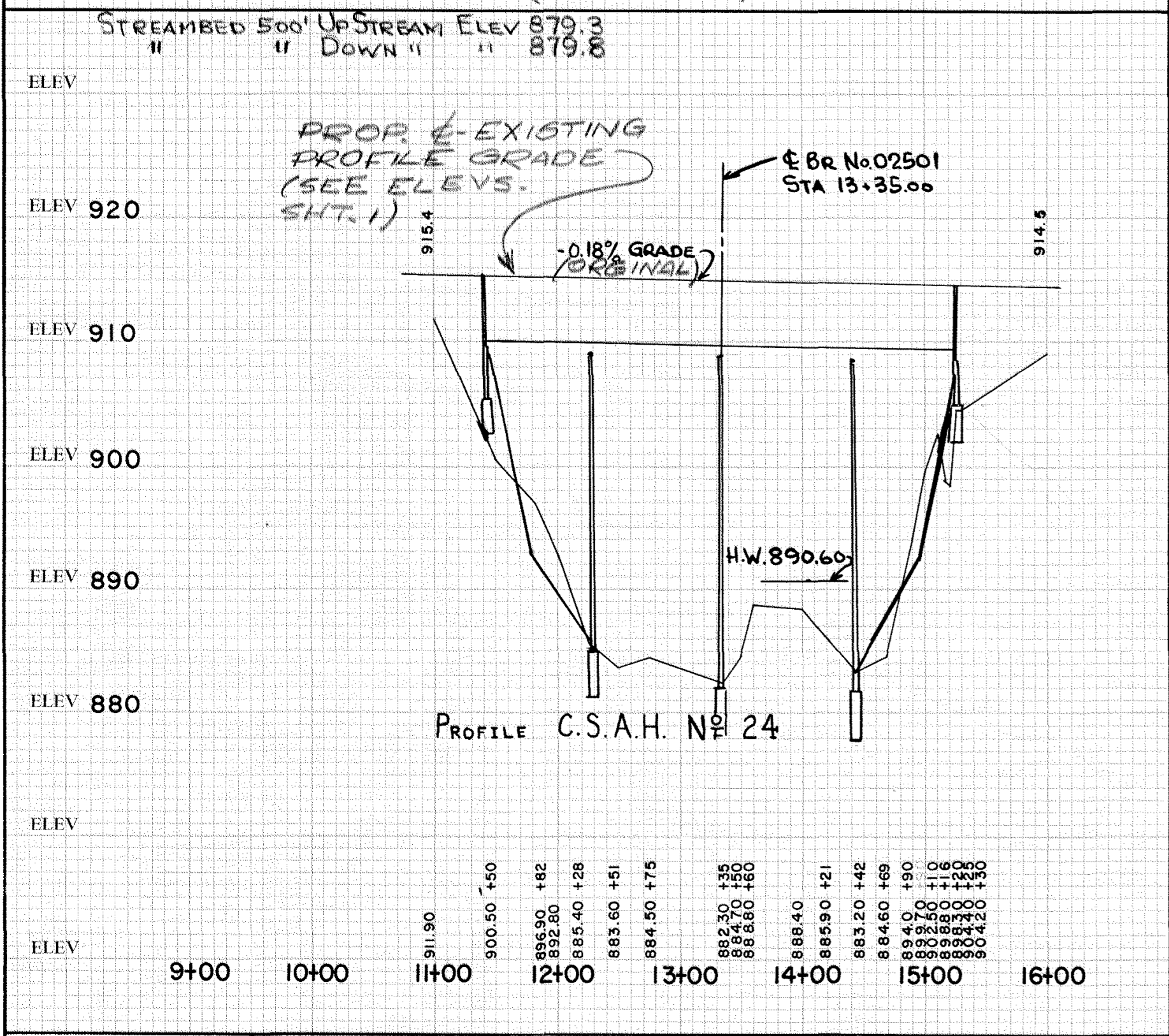
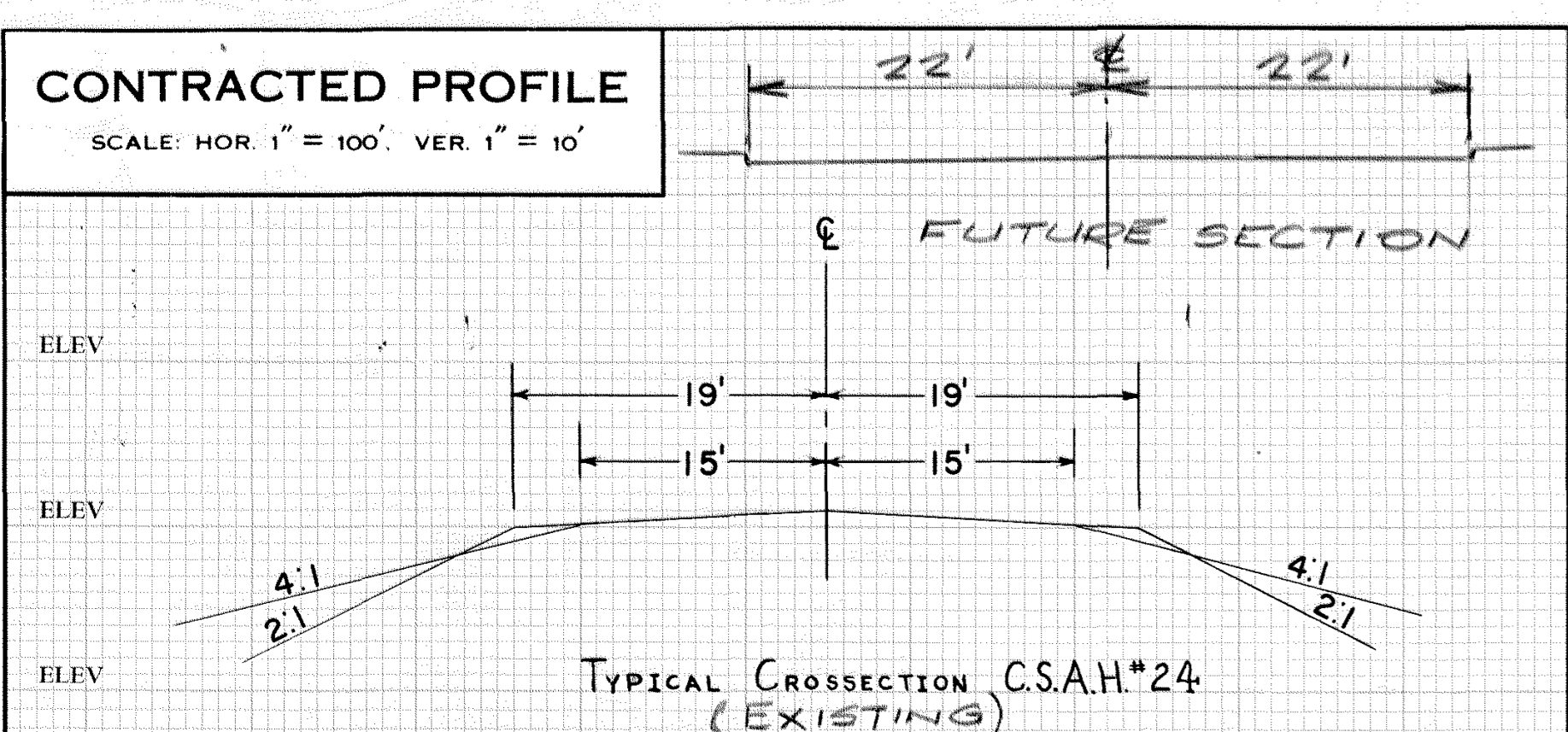
APPROVED: _____ Developed by: ENGINEERING STANDARDS, AND BRIDGES AND STRUCTURES Issued by: ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION <b>BOLTED DIAPHRAGMS FOR STEEL BEAMS</b>	REVISION Nov. 2, 1977	DETAIL NO. <b>B402</b>
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- NOTES**
- All steel plates per Spec. 3306. Fabricate grate using automatically controlled cutting torch. Malleable iron grate alternate per Spec. 3324 Grade 35018. Workmanship and fabrication per Spec. 2471. Blast clean scupper and grate after fabrication. Galvanize scupper and grate per Spec. 3394. Galvanize hardware per Spec. 3392. Install grate with arrow on curb side and in direction of flow. Payment for Floor Drain, Type \_\_\_\_\_ shall include all material shown on this detail. Grate opening area 110 sq. in.

APPROVED: Aug. 12, 1975 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN Issued by: OFFICE OF ENGINEERING STANDARDS	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION <b>BRIDGE FLOOR DRAIN WELDED BOX</b>	REVISION Feb. 13, 1979	DETAIL NO. <b>B701</b>
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#### DATA

1. Preliminary recommendations of Engineer in charge of Bridge Survey:

a. Net span length and type of bridge..... 85'-106'6" - 106'6" - 85'

b. Width of roadway on bridge..... 30' WIDEN TO 44'-0"

c. Number and width of sidewalks, if any..... 2-2'0" WIDE WALKS - NO SIDE

d. Locate center of bridge at station..... STA. 13+35.00

e. If a skew bridge is recommended, the angle of skew should be..... NONE

f. Is piling required?..... YES

2. Special features: Waterfalls, dams, exceptional floods, ice, driftwood, sliding banks, logging, etc.

3. Changes: In height or length from that of old bridge, and reasons why.....

#### DATA (Contd.)

4. Other bridges in vicinity:

a. Over same stream (particularly structures which carry high water without overflow of roadway); give location, length, height above water, net cross-sectional area at high water stage and estimated age.....

b. Over or under same highway or railroad; give location, length, horizontal and vertical clearances and estimated age..... NOT APPLICABLE

c. Reasons why these bridges are, or are not, fair indications of what length the proposed bridge should be.....

5. If structure is over a drainage ditch, is ditch gradient liable to be altered?..... NO

6. Navigation clearances required, if any..... NONE

7. Information and evidence in regard to high water stages was obtained as follows.....

8. Must contractor provide for traffic during construction of proposed bridge?..... NO

If so, by what means?..... SEE SPECIAL PROVISIONS

#### HIGH AND LOW WATER ELEVATIONS

Data obtained from LOCAL RESIDENTS reflects highest water elevation in the area of this construction to be 890.60 and the lowest water elevation to be DRY. The above figures are for informational purposes only. The state neither warrants nor represents that these figures for high water and low water are in any way indicative of the high water or low water to be expected or encountered during this construction.

#### SHIPPING POINT

Proposed Bridge is 14 miles NORTH of ANOKA, which is the nearest Railroad shipping point.

Date: 12/13/63  
Project or County Engineer: [Signature]  
District Engineer: [Signature]

#### STATE OF MINNESOTA DEPARTMENT OF HIGHWAYS BRIDGE SURVEY

FOR PROPOSED BRIDGE LOCATED 14 MILES NORTH OF ANOKA ON C.S.A.H. 24 (T.H. S.A.R. OR C.A.R. NUMBER)

SEC. 32 TWP. 34 N R. 24 W TOWNSHIP SAINT FRANCIS COUNTY ANOKA

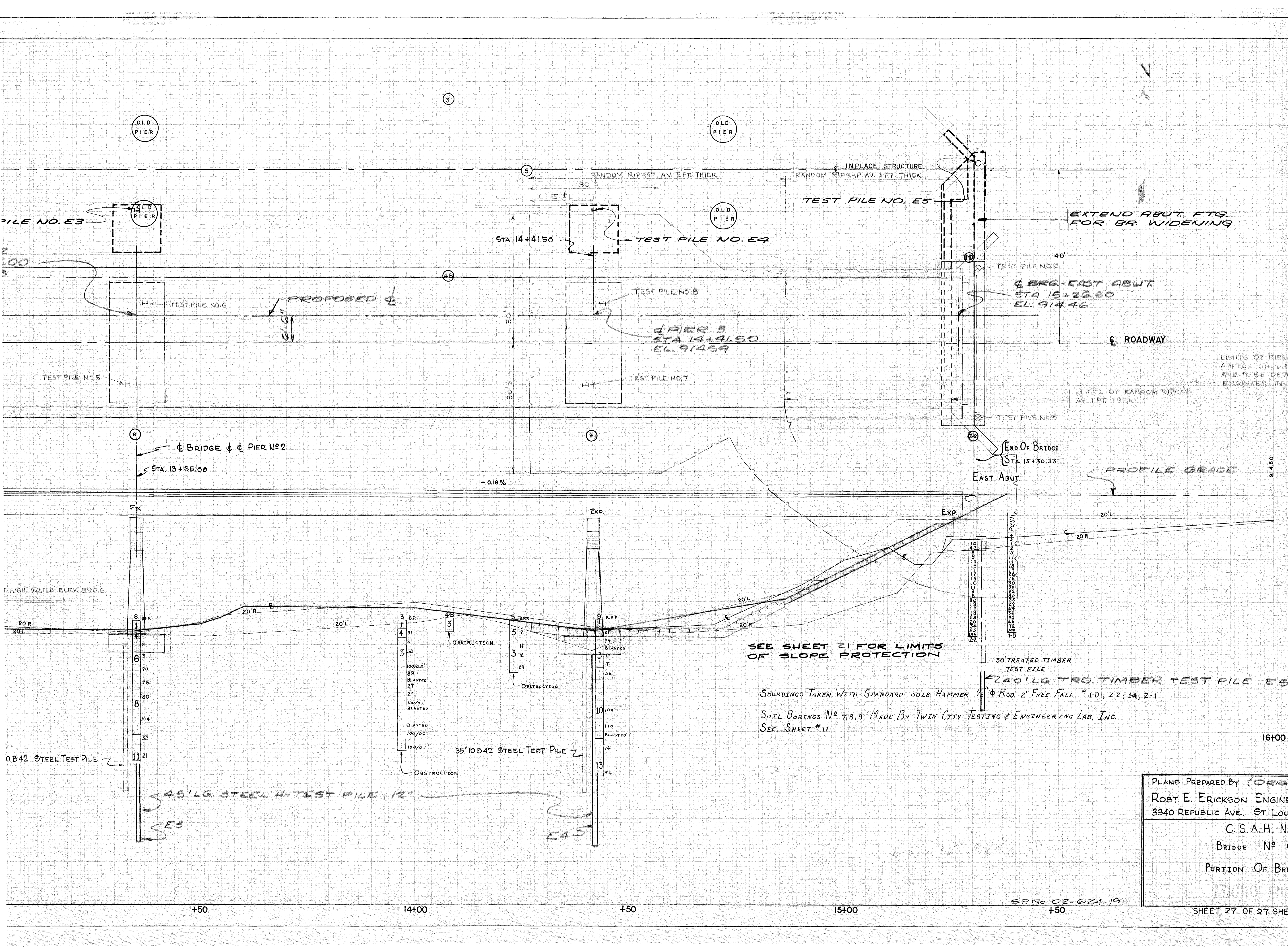
SURVEY MADE DURING MONTH OF AUG. 1959

SURVEY MADE BY.....

MICRO-FILMED

BRIDGE No. 02501





OLD PIER

OLD PIER

OLD PIER

PILE NO. E3

OLD PIER

RANDOM RIPRAP AV. 2 FT. THICK

IN PLACE STRUCTURE  
RANDOM RIPRAP AV. 1 FT. THICK

TEST PILE NO. E5

EXTEND ABUT. FTG.  
FOR BR. WIDENING

STA. 14+41.50

TEST PILE NO. E4

TEST PILE NO. 10

Ø BRG.-EAST ABUT.  
STA 15+26.50  
EL. 914.46

Ø ROADWAY

TEST PILE NO. 6

PROPOSED Ø

TEST PILE NO. 8

Ø PIER 3  
STA 14+41.50  
EL. 914.59

TEST PILE NO. 7

TEST PILE NO. 5

LIMITS OF RANDOM RIPRAP  
AV. 1 FT. THICK.

LIMITS OF RIPRAP  
APPROX. ONLY E  
ARE TO BE DET  
ENGINEER IN

Ø BRIDGE & Ø PIER NO. 2  
STA. 13+35.00

END OF BRIDGE  
STA 15+30.33

EAST ABUT.

PROFILE GRADE

-0.18%

Fix

Exp.

Exp.

HIGH WATER ELEV. 890.6

SEE SHEET 21 FOR LIMITS  
OF SLOPE PROTECTION

SOUNDINGS TAKEN WITH STANDARD 50LB. HAMMER 1/2" Ø ROD. 2' FREE FALL. # 1-D; Z-2; 1A; Z-1

SOIL BORINGS NO. 7, 8, 9, MADE BY TWIN CITY TESTING & ENGINEERING LAB, INC.  
SEE SHEET # 11

30' TREATED TIMBER  
TEST PILE

40' LG TRO. TIMBER TEST PILE E5

Ø B42 STEEL TEST PILE

35' Ø B42 STEEL TEST PILE 2

45' LG STEEL H-TEST PILE, 12"

E3

E4

PLANS PREPARED BY (ORIG)  
ROBT. E. ERICKSON ENGINE  
3340 REPUBLIC AVE. ST. LOU  
C. S. A. H. N  
BRIDGE NO  
PORTION OF BR

SP No. 02-024-19

+50

14+00

+50

15+00

+50

SHEET 27 OF 27 SHE