

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
CONSTRUCTION PLAN FOR **BRIDGE 02533**
COUNTY ROAD 52

1.0 MILES NORTH OF JUNCTION COUNTY ROAD 116
SEC. 28 T32N R23W

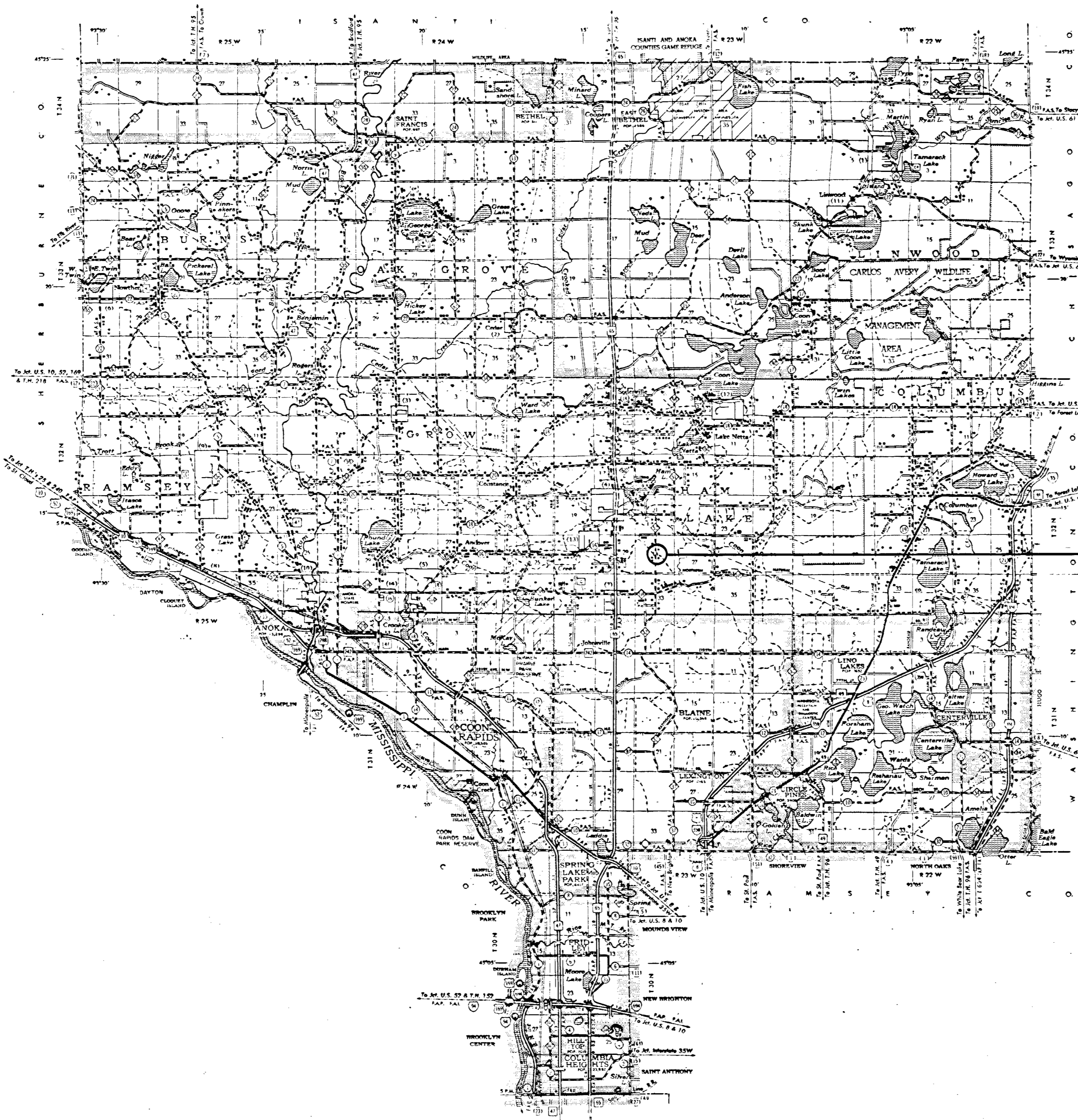
GROSS LENGTH 616.67 FEET 0.117 MILES
BRIDGES-LENGTH 66.67 FEET 0.013 MILES
EXCEPTIONS-LENGTH _____ FEET _____ MILES
NET LENGTH 616.67 FEET 0.117 MILES

INDEX OF SHEETS

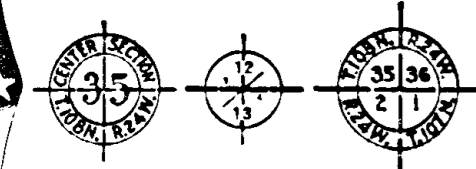
Sheet No. Title Sheet & Layout Map
1-15 BRIDGE PLANS

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 (Chain Line)
- VACATED 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
- SOLVENT
- PROP. MELY
- GUARD RAIL
- BARBED WIRE FENCE
- WOODEN WIRE FENCE
- CHAIN LINK FENCE
- RAILROAD SNOW FENCE
- STONE WALL OR FENCE
- WATER PIPE
- SEWER PIPE
- DRAIN TILE
- SPRINGS
- WAPSH
- 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 C-CONCRETE
- S-STONE T-TILE
- B-BRICK ST-STUCCO
- IRON PIPE OR ROD
- MONUMENT (STONE, CONCRETE, OR METAL)
- WOODEN PILE
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY
- MEANDER CORNER



BRIDGE 02533
BEG. STA. 9+66.75
END STA. 10+33.25



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

DESIGN DESIGNATION

ADT (CURRENT YEAR) 800

ADT (FUTURE YEAR) _____

T (HEAVY COMMERCIAL)

_____ Ton Design

Design Speed 30 MPH

Design Speed not achieved at:

STA. _____ TO STA. _____ MPH _____

STA. _____ TO STA. _____ MPH _____

SPECIFICATIONS
THE "STANDARD" SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 1978 EDITION, SHALL GOVERN.

PLANS & R/W APPROVED _____
Paul K. Linn
 COUNTY ENGINEER DATE 1-2-82

ANOKA COUNTY REG. NO. _____

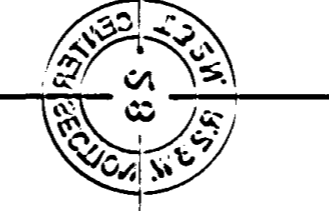
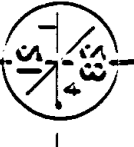
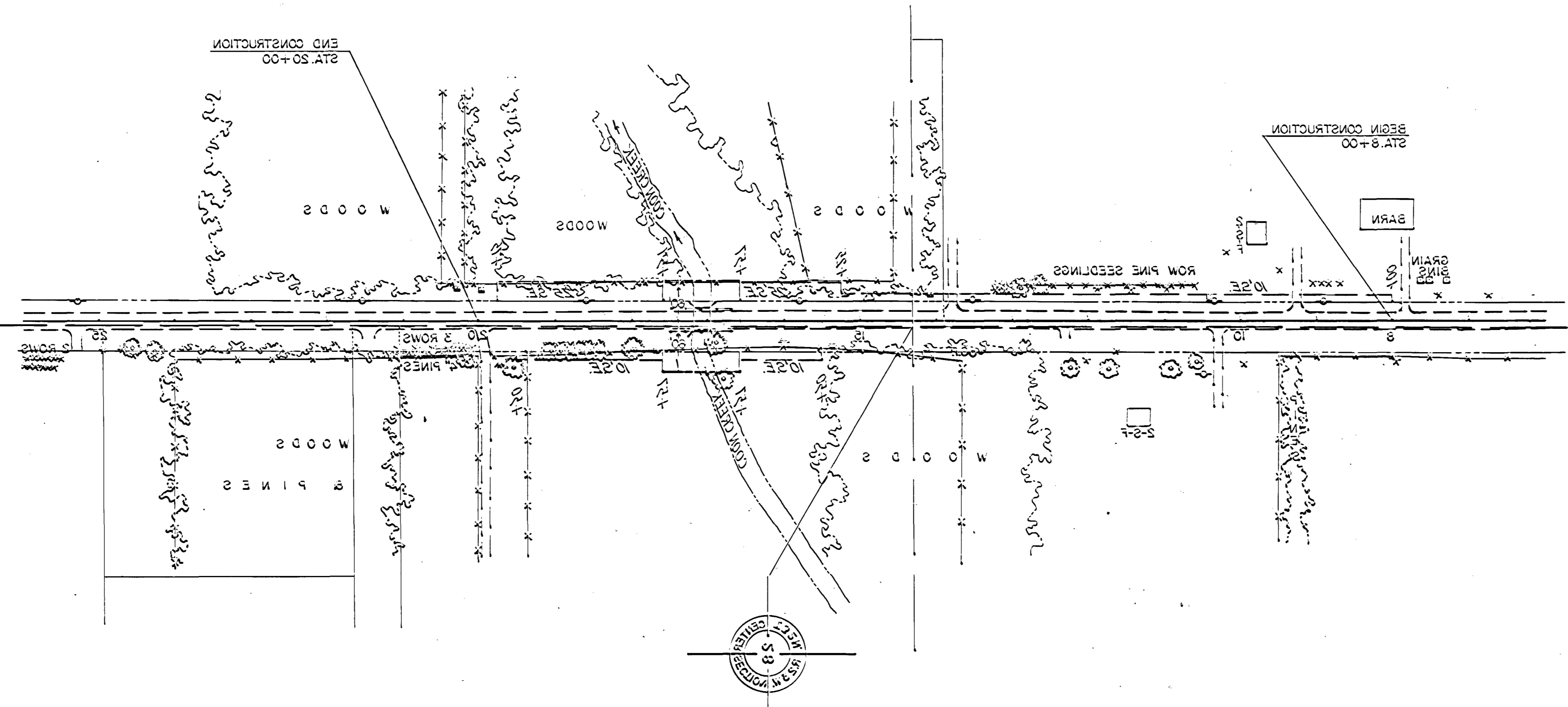
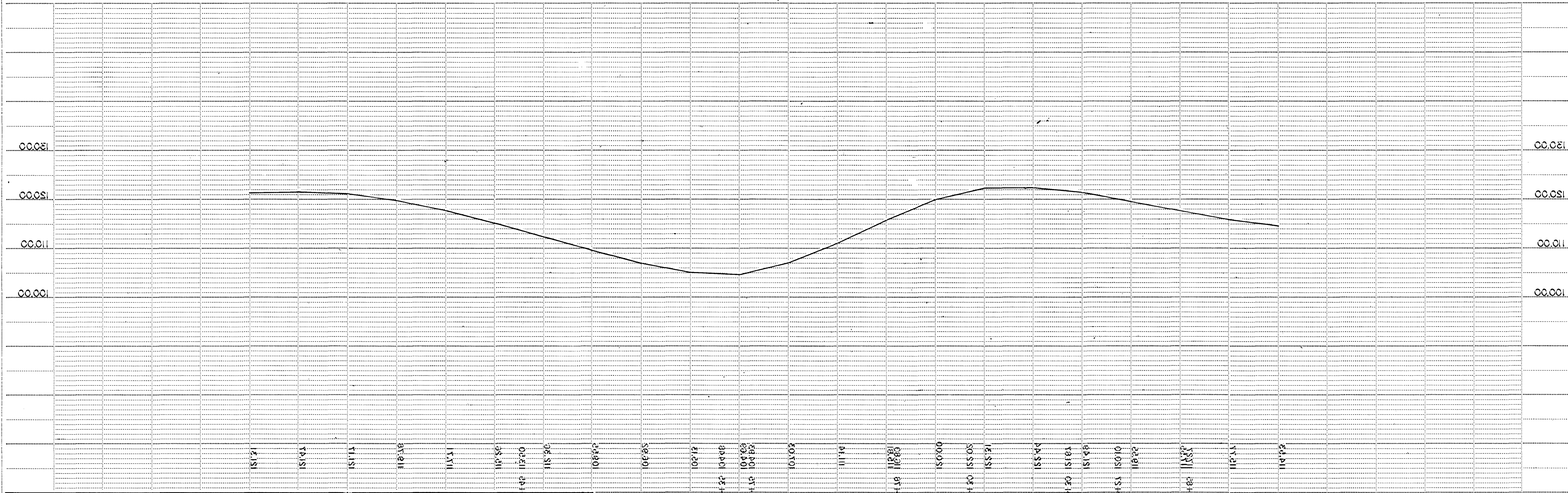
RECOMMENDED FOR APPROVAL CC H. Beckman 11-9 1982
 DISTRICT ENGINEER, STATE AID

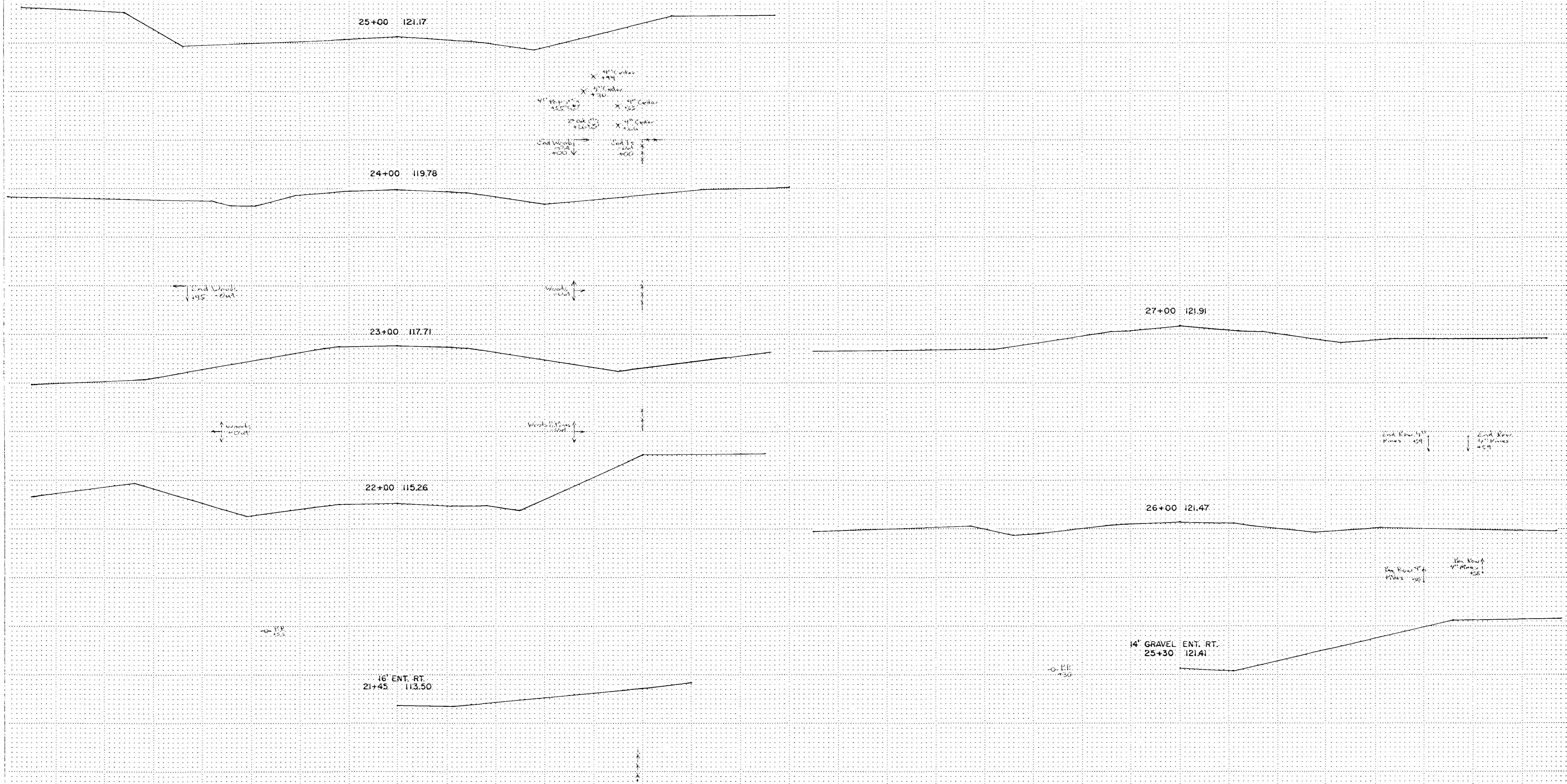
RECOMMENDED FOR APPROVAL H. H. Bentler 11-9 1982
 BRIDGE ENGINEER

APPROVED 11-18 1982 Paul K. Linn
 STATE AID ENGINEER

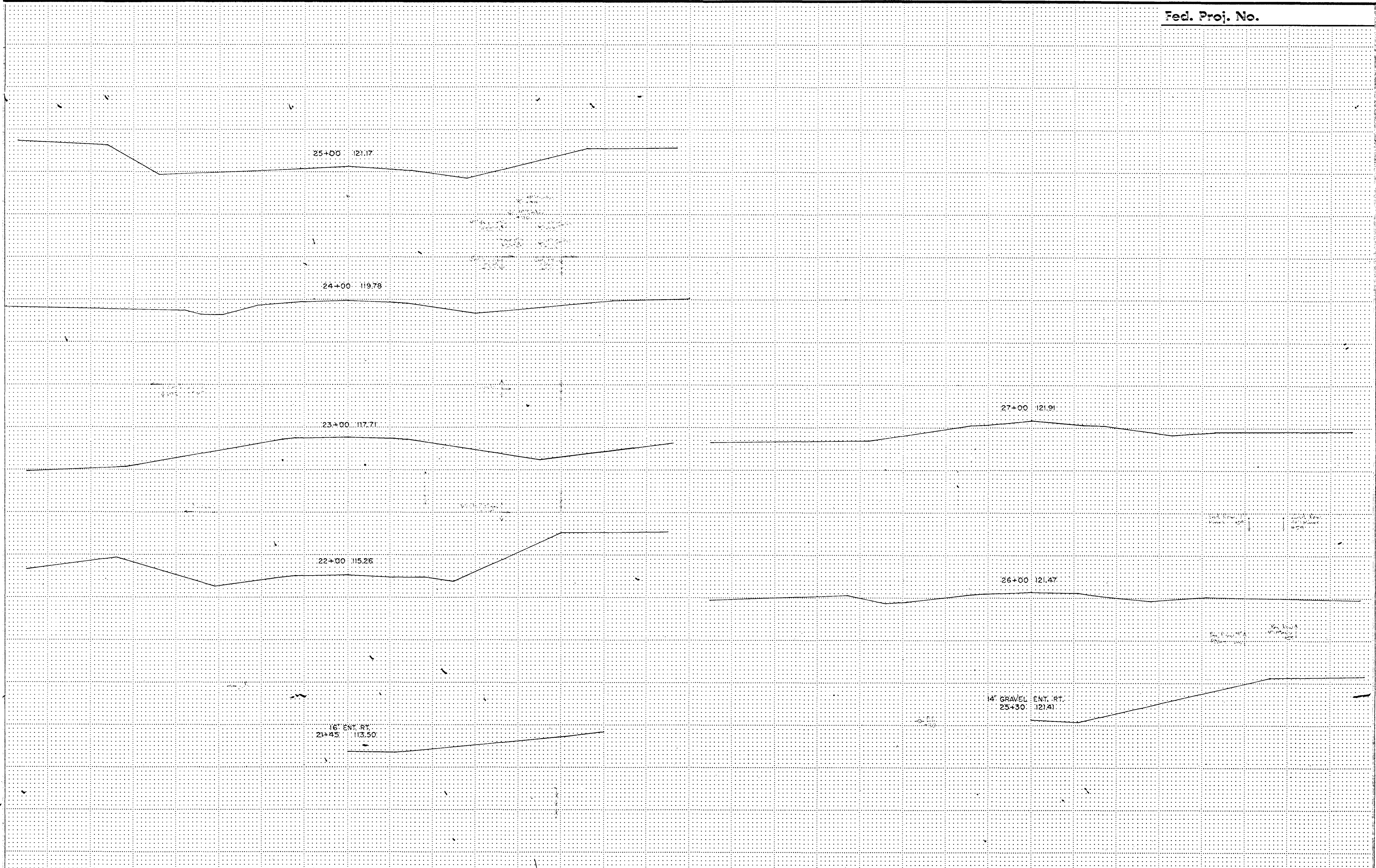
Minn. Proj. No. _____ County Proj. No. _____
State Proj. No. _____ S.A.P. 02-598-02

Sheet No. 02 of 02
 State Proj. No. SP-05-288-02

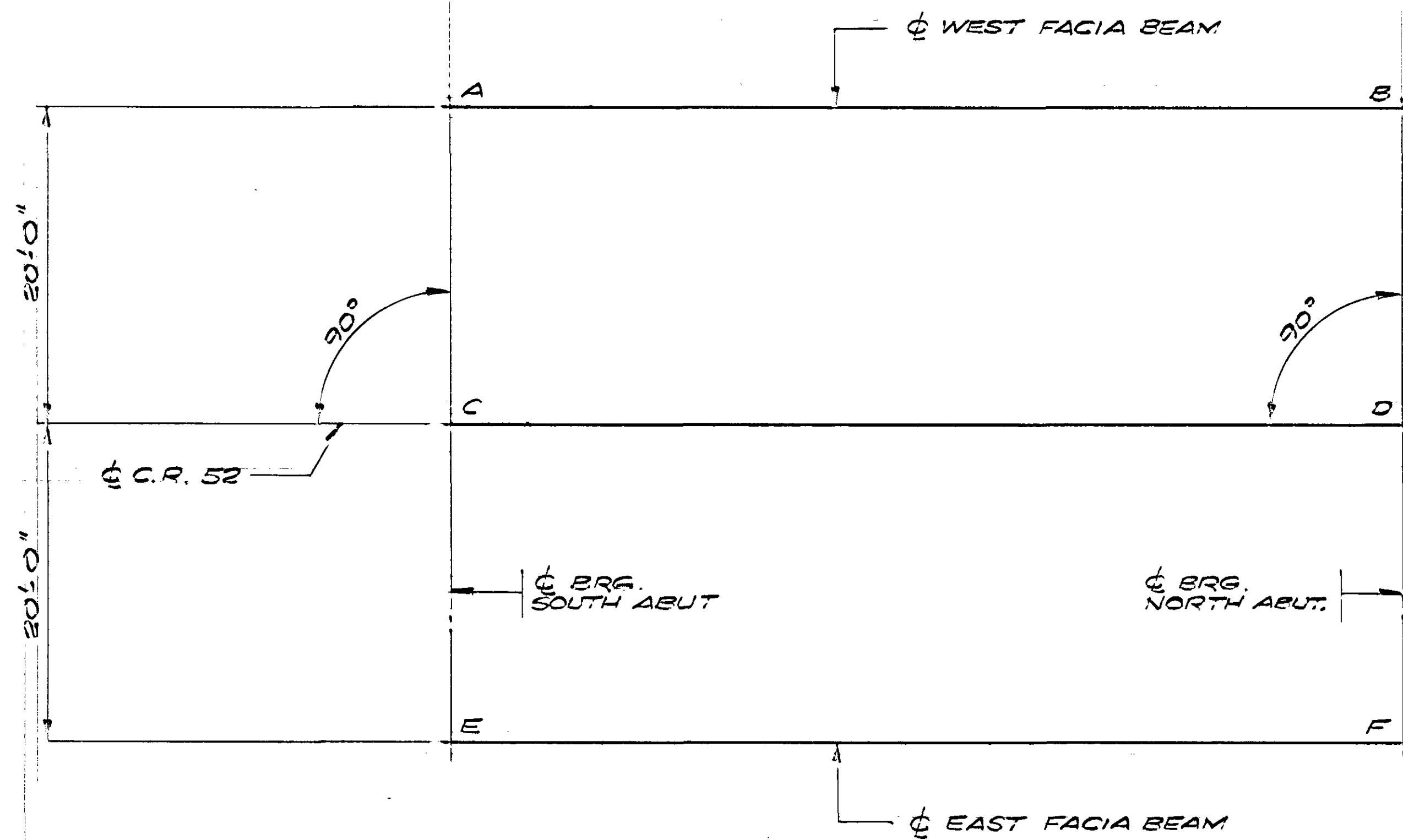




ELEVATION POINT CROSS SECTION 101 976

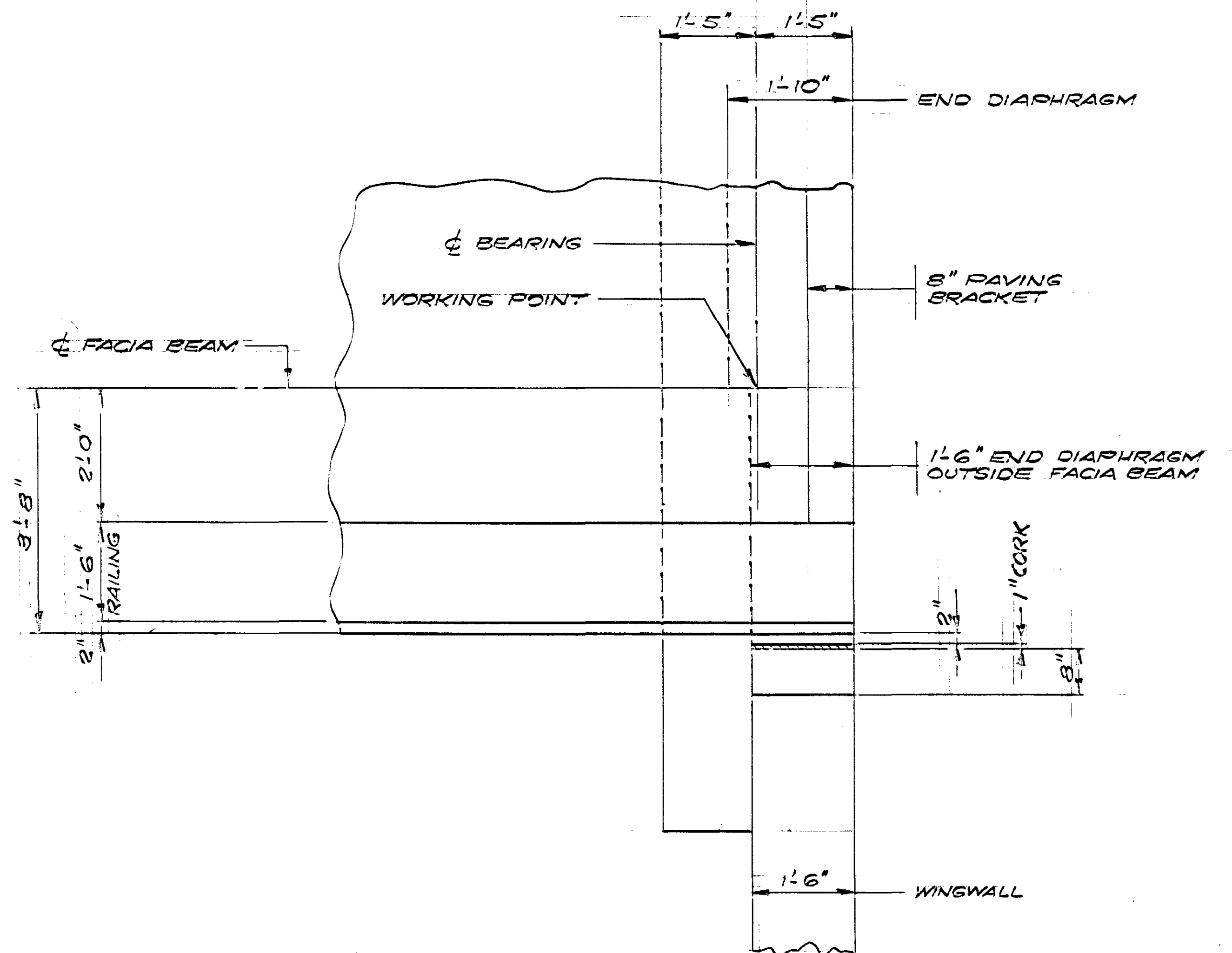


TELEPHONE POST CROSS SECTION (DOT 878) 8/63



WORKING POINT LAYOUT

NO SCALE



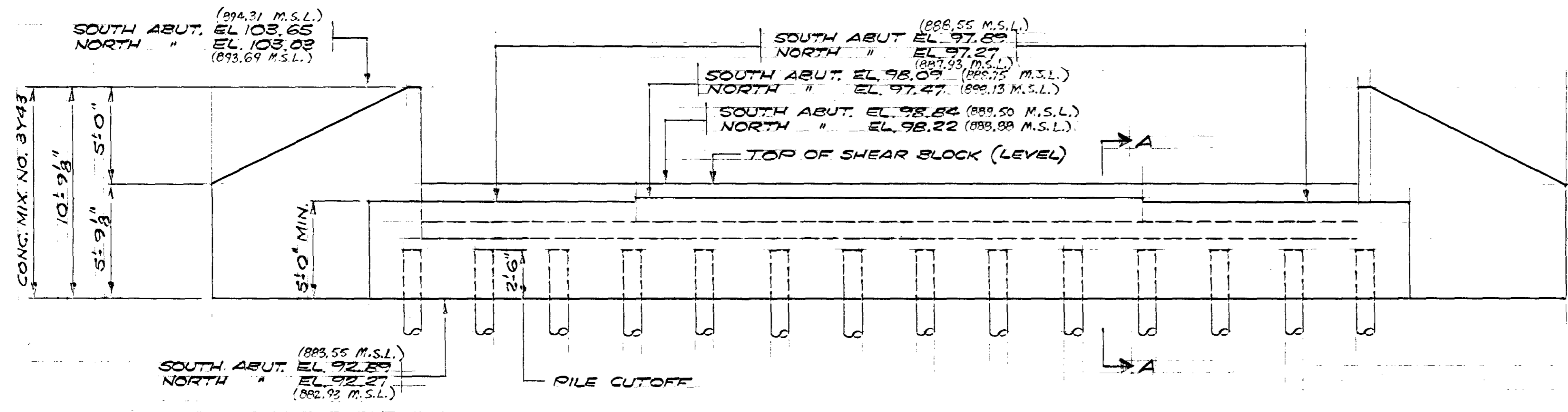
TYPICAL CORNER DETAILS

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

DIMENSIONS BETWEEN WORKING POINTS							ELEVATION				
POINT	STATION	A	B	C	D	E	F	TOP OF SLAB	SLAB TO BR. SEAT	BRIDGE SEAT	POINT
A	9+67.50		65.00	20.00	68.01	40.00	76.32	103.68	5.79	97.89	A
B	10+32.50			68.01	20.00	76.32	40.00	103.06	5.79	97.27	B
C	9+67.50				65.00	20.00	68.01	103.98			C
D	10+32.50					68.01	20.00	103.36			D
E	9+67.50						65.00	103.68	5.79	97.89	E
F	10+32.50							103.06	5.79	97.27	F

TOP OF SLAB TO BRIDGE SEAT	
DESCRIPTION	SOUTH ABUTMENT # NORTH "
SLAB THICKNESS	10"
STOOL HEIGHT	2"
BEAM HEIGHT	4'-6"
BRG. ASSY HEIGHT	3 1/2"
TOTAL	5'-9 1/2"

BRIDGE LAYOUT S.A.P. 02-598-02	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED 11-7-72	BRIDGE NO. 02533
	SHEET 2 OF 14 SHEETS			



ELEVATION

SUMMARY OF QUANTITIES FOR 2 ABUTMENTS

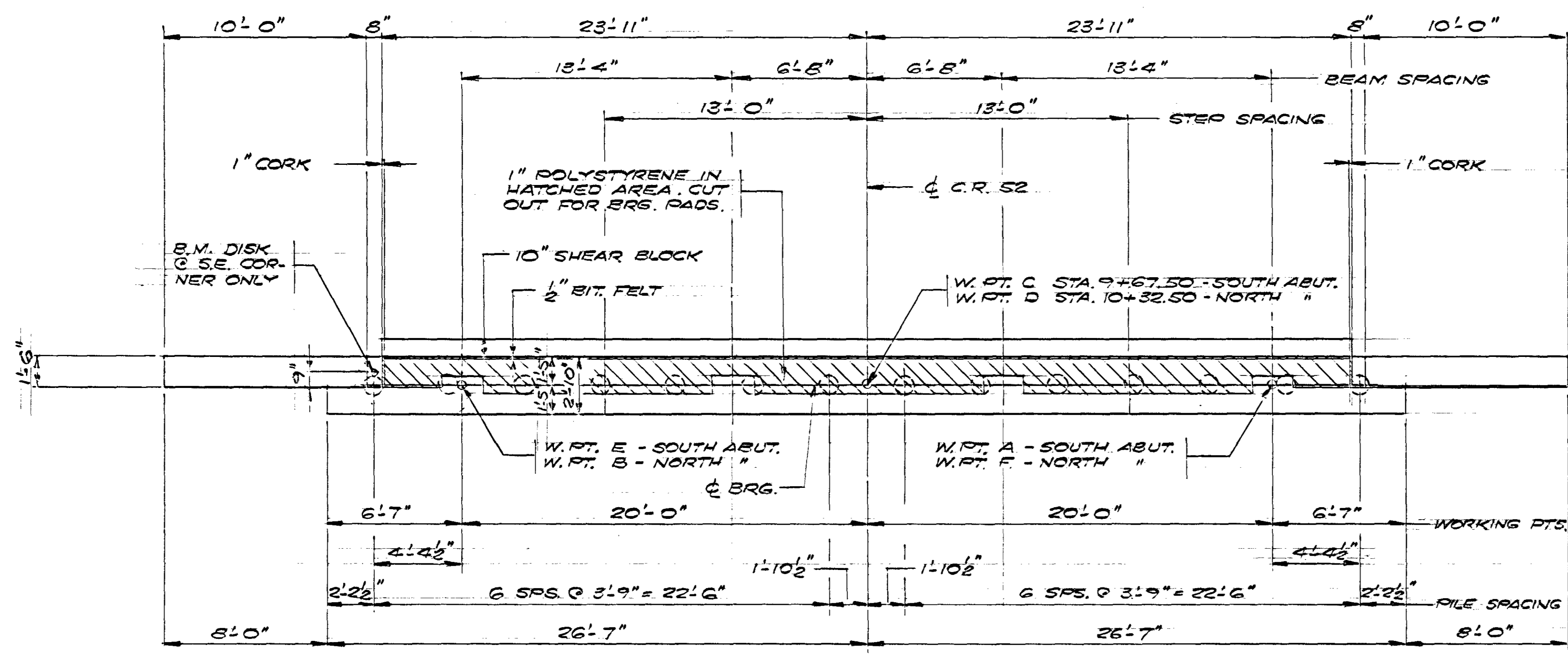
CONCRETE MIX. NO. 3Y43	82 CU. YD.
REINFORCEMENT BARS	6225 POUND
STRUCTURE EXCAVATION	1 LUMP SUM
TREATED TIMBER PILING DELIVERED	780 LIN. FT.
TREATED TIMBER PILING DRIVEN	780 LIN. FT.
TREATED TIMBER TEST PILES 40 FT. LG.	2 EACH
B.M. DISK (STD. # NO. 9300)	ONE

- ① DOES NOT INCLUDE TEST PILES.
- ② COUNTY WILL FURNISH DISK. PAYMENT FOR PLACING TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS. SEE STD. # NO. 9301 FOR PLACING.
- ③ SEE SPECIAL PROVISIONS

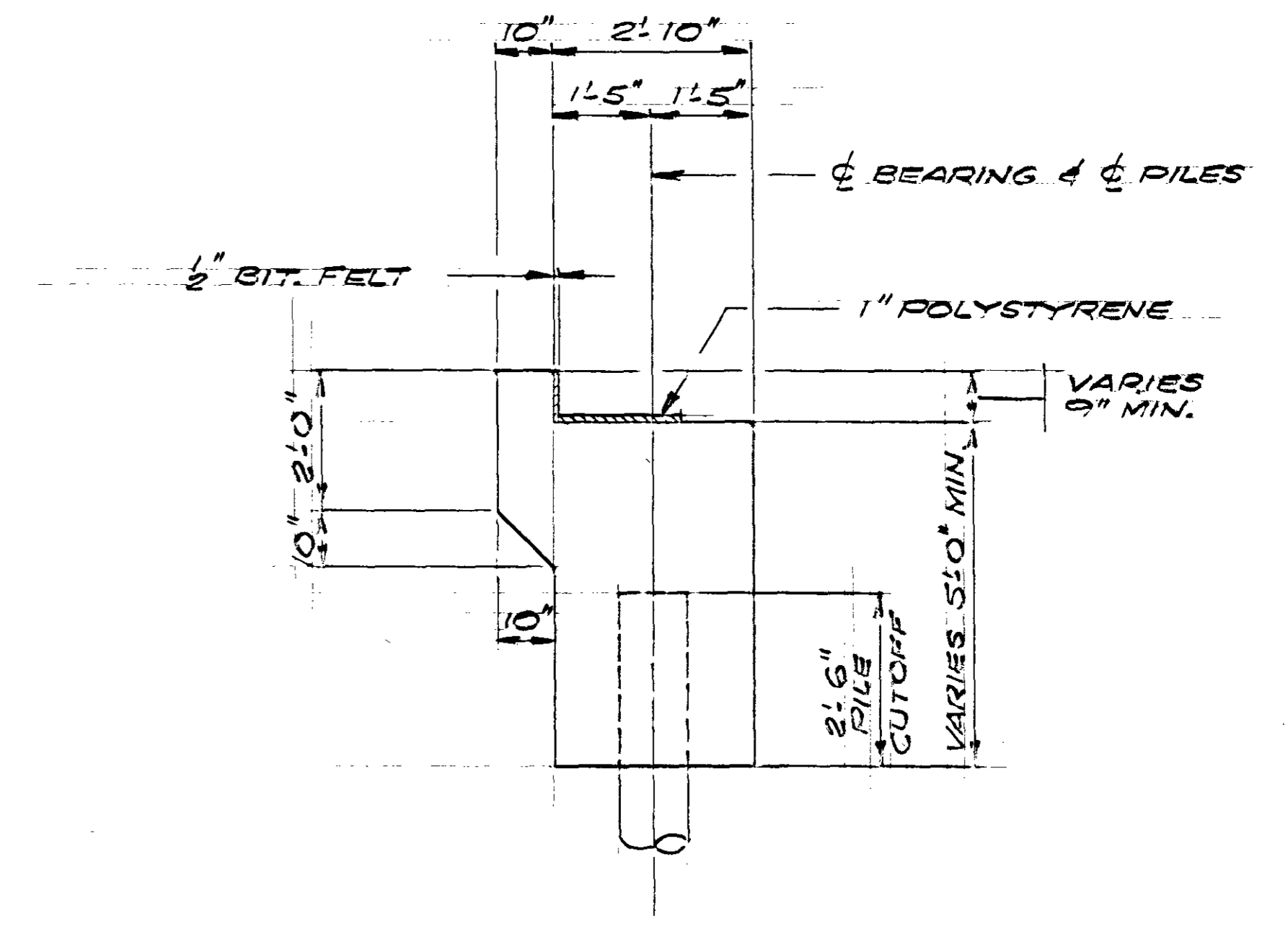
- FILE NOTES
- * 2- TREATED TIMBER TEST PILES 40 FT. LONG.
 - 26- " " PILES EST. LENGTH 30 FT.
 - 28- " " " " REQ'D FOR 2 ABUTMENTS.
 - * FOR TEST PILE LOCATIONS - SEE SURVEY SHEET

COMPUTED PILE LOADS - TONS PER PILE - ABUTMENTS.

DEAD LOAD	21.1
LIVE LOAD	6.6
TOTAL	27.7



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



SECTION A-A

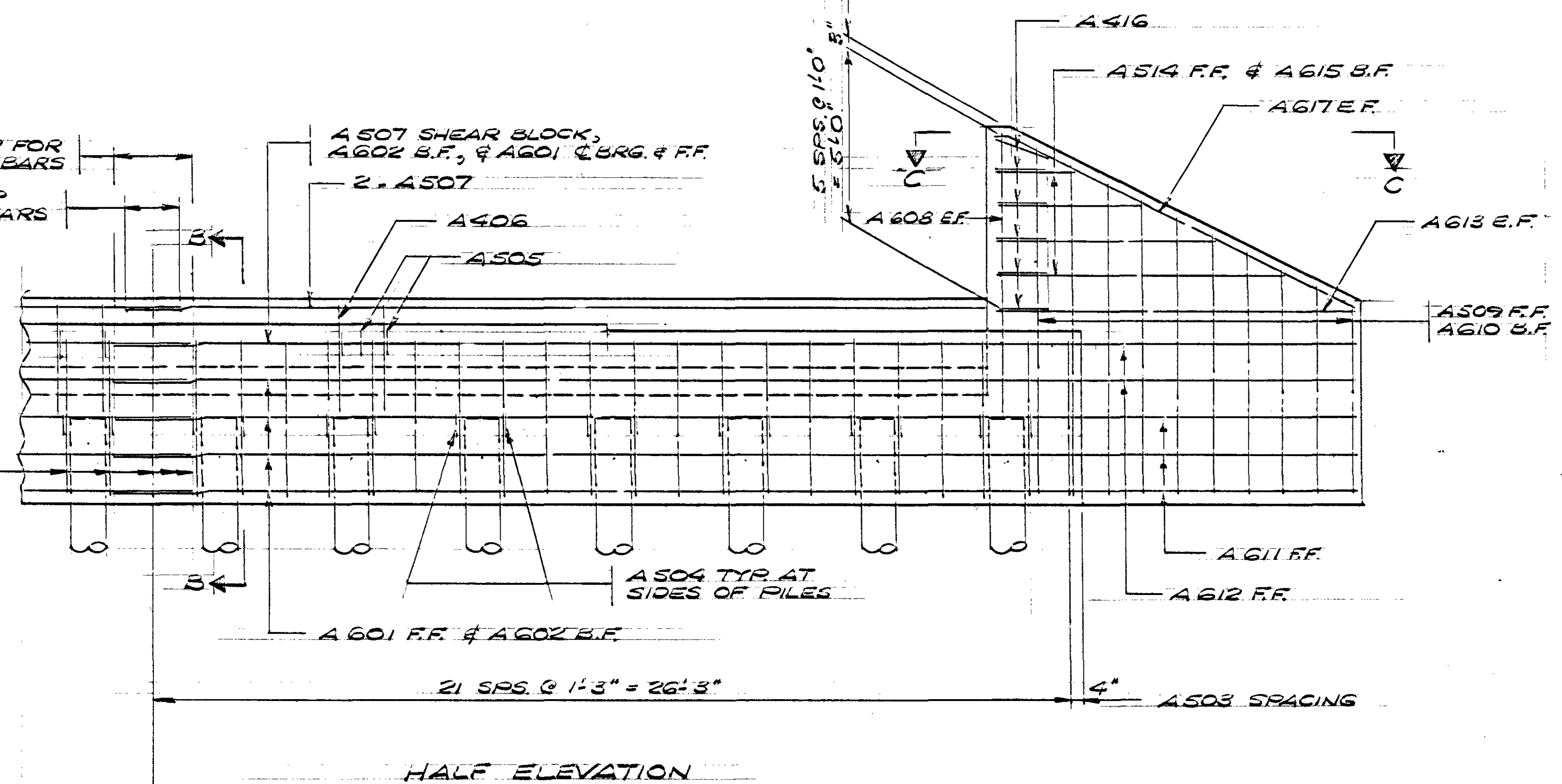
ABUTMENT DETAILS	DRAWN	CHECKED	APPROVED	BRIDGE NO.
	W.N.J.	R.R.T.	11-7-52	
S.A.P. 02-598-02	SHEET 3 OF 14 SHEETS			02533

BILL OF REINFORCEMENT FOR 2 ABUTMENTS.

BAR	NO	LENGTH	SHAPE	LOCATION
A601	24	27'-7"	STR	CAP - LONG
A602	20	35'-7"	"	" - "
A503	86	12'-7"	BENT	" - STIRRUPS
A504	64	3'-6"	"	" - TIES
A505	90	4'-8"	"	" - "
A406	74	6'-4"	"	SHEAR BLOCK - TIES
A507	12	24'-9"	STR.	" - LONG
A608	8	7'-11"	"	WINGWALL - VERT.
A509	20	15'-6"	"	" - "
A610	20	15'-6"	"	" - "
A611	12	10'-2"	BENT	" - LONG
A612	8	10'-2"	STR.	" - "
A613	8	10'-4"	"	" - "
A514	8	10'-8"	"	" - "
A615	8	10'-8"	"	" - "
A416	24	4'-2"	BENT	" - TIES
A617	8	11'-6"	"	" - TOP

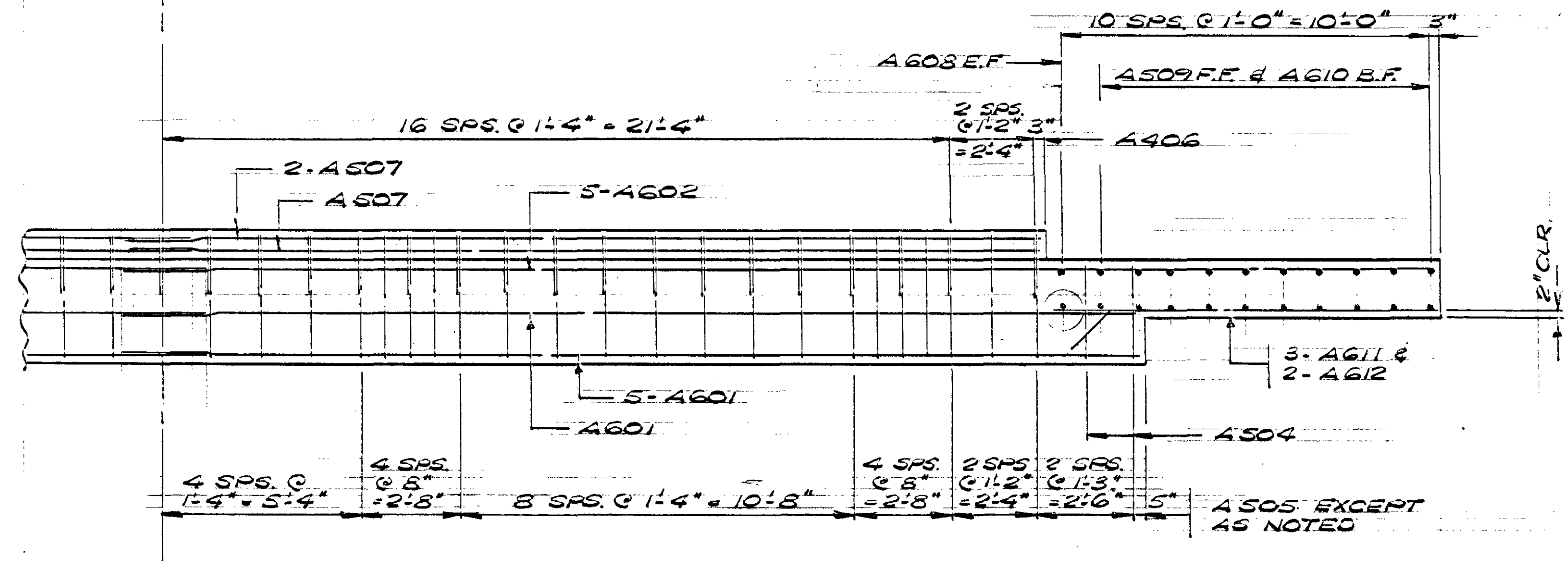
- ① 2 LINES, MIN. LAP 2'-3"
- ② 2 " , MIN. LAP 1'-11"
- ③ CUT 2 FROM 1

2'-3" MIN. LAP FOR A601 & A602 BARS
1'-11" MIN. LAP FOR A507 BARS



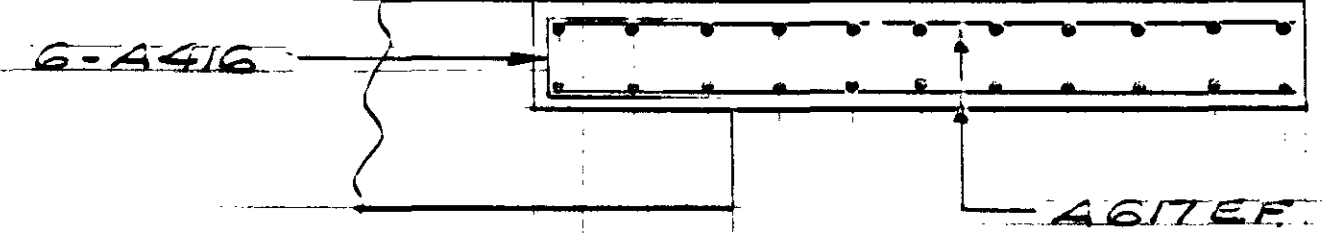
HALF ELEVATION

REINFORCEMENT SYM. ABOUT C.R. 52

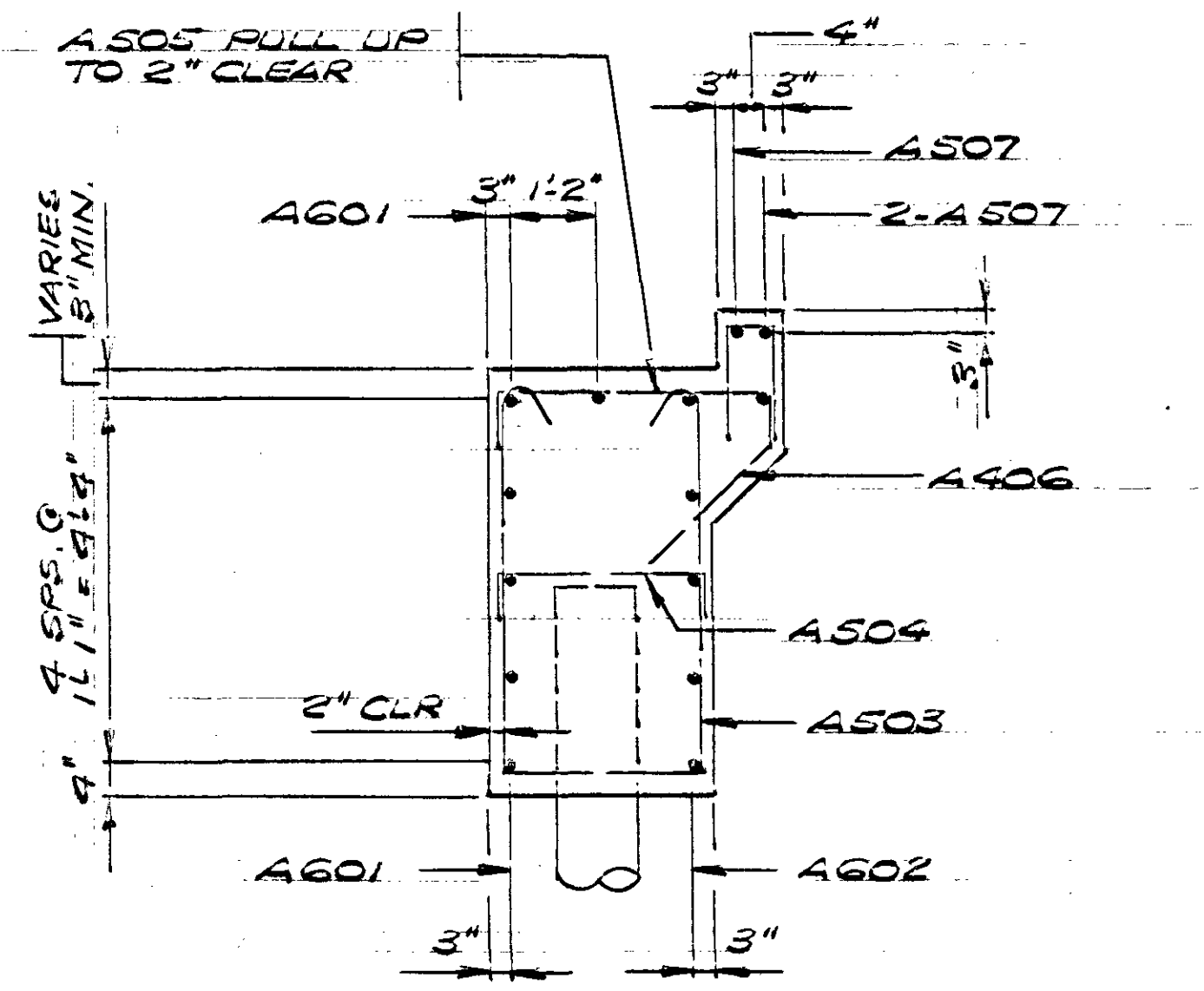
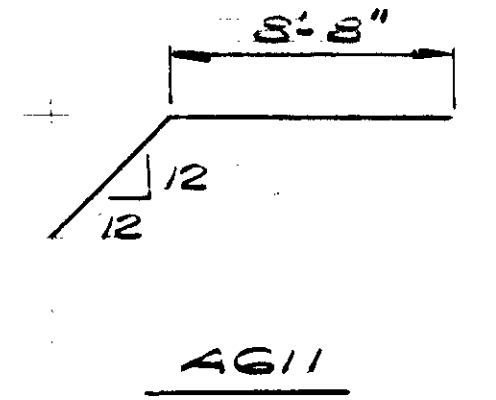
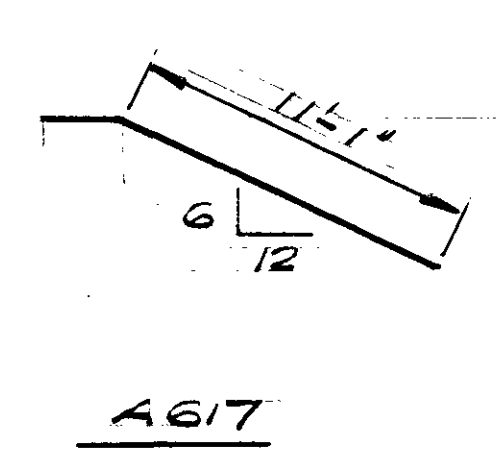
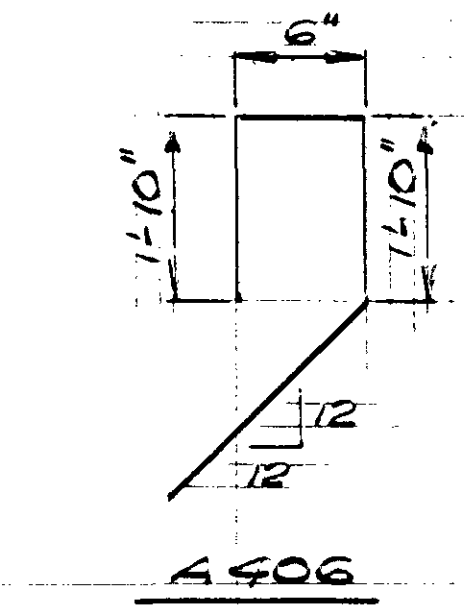
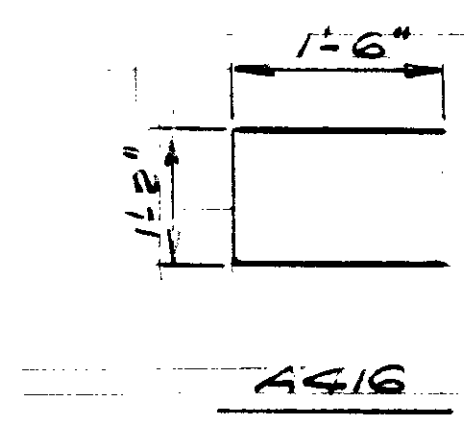
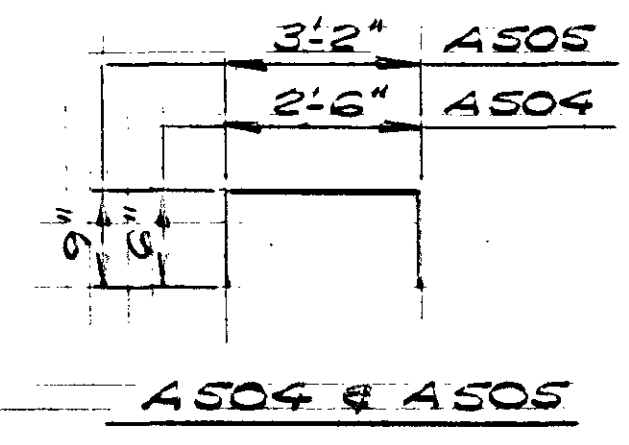
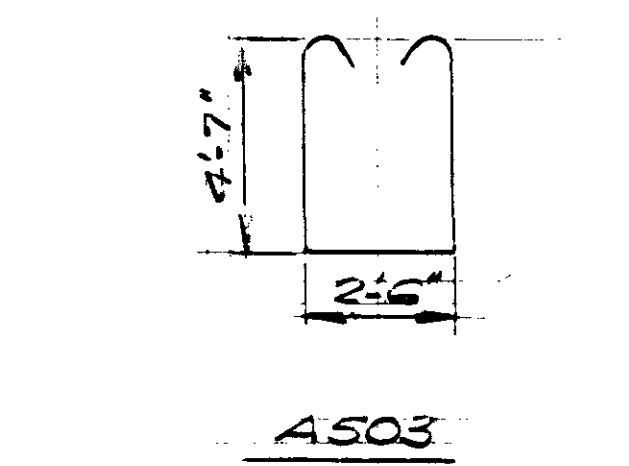


HALF PLAN

NOTE:
FF = FRONT FACE
B.F. = BACK FACE
E.F. = EACH FACE

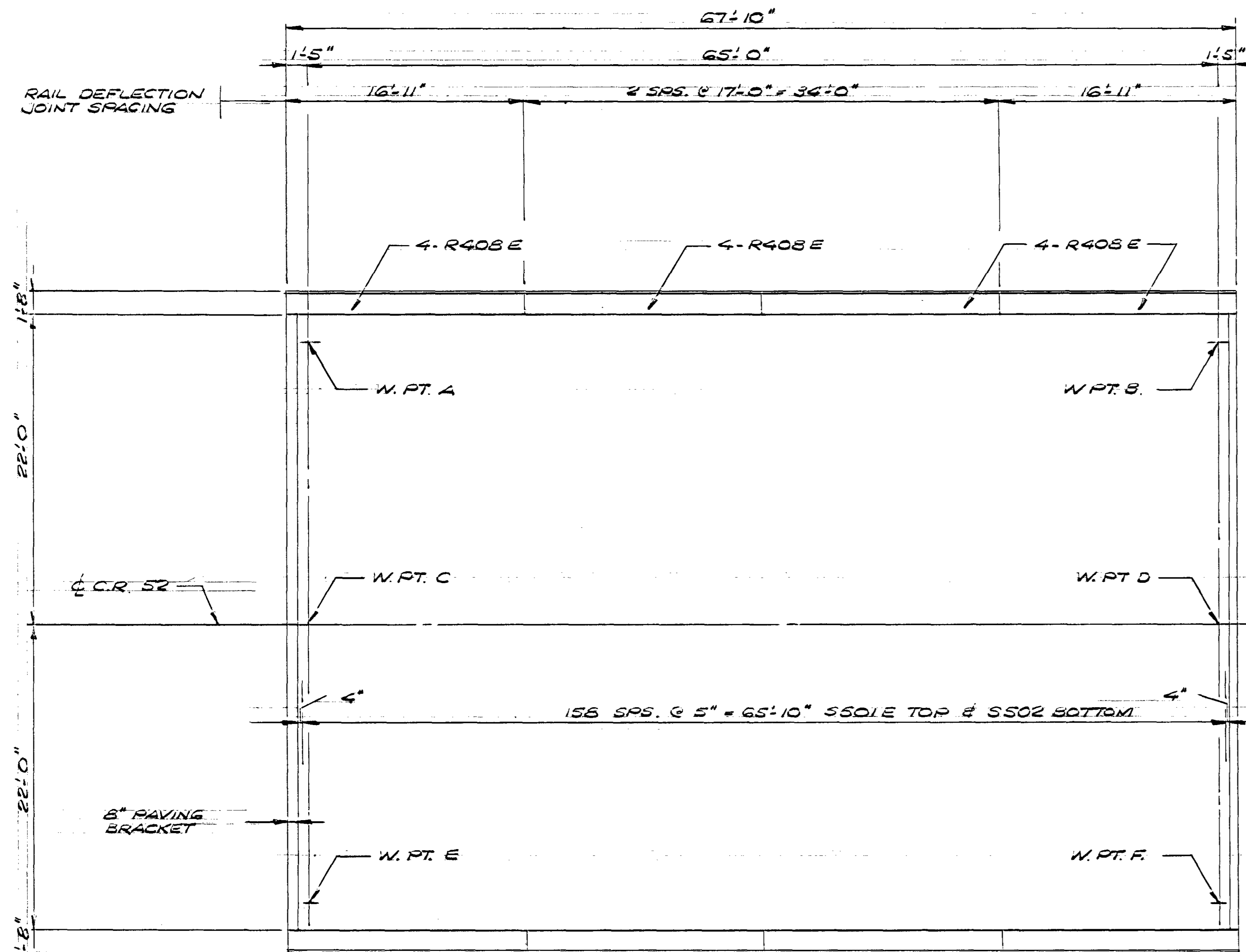


VIEW C-C

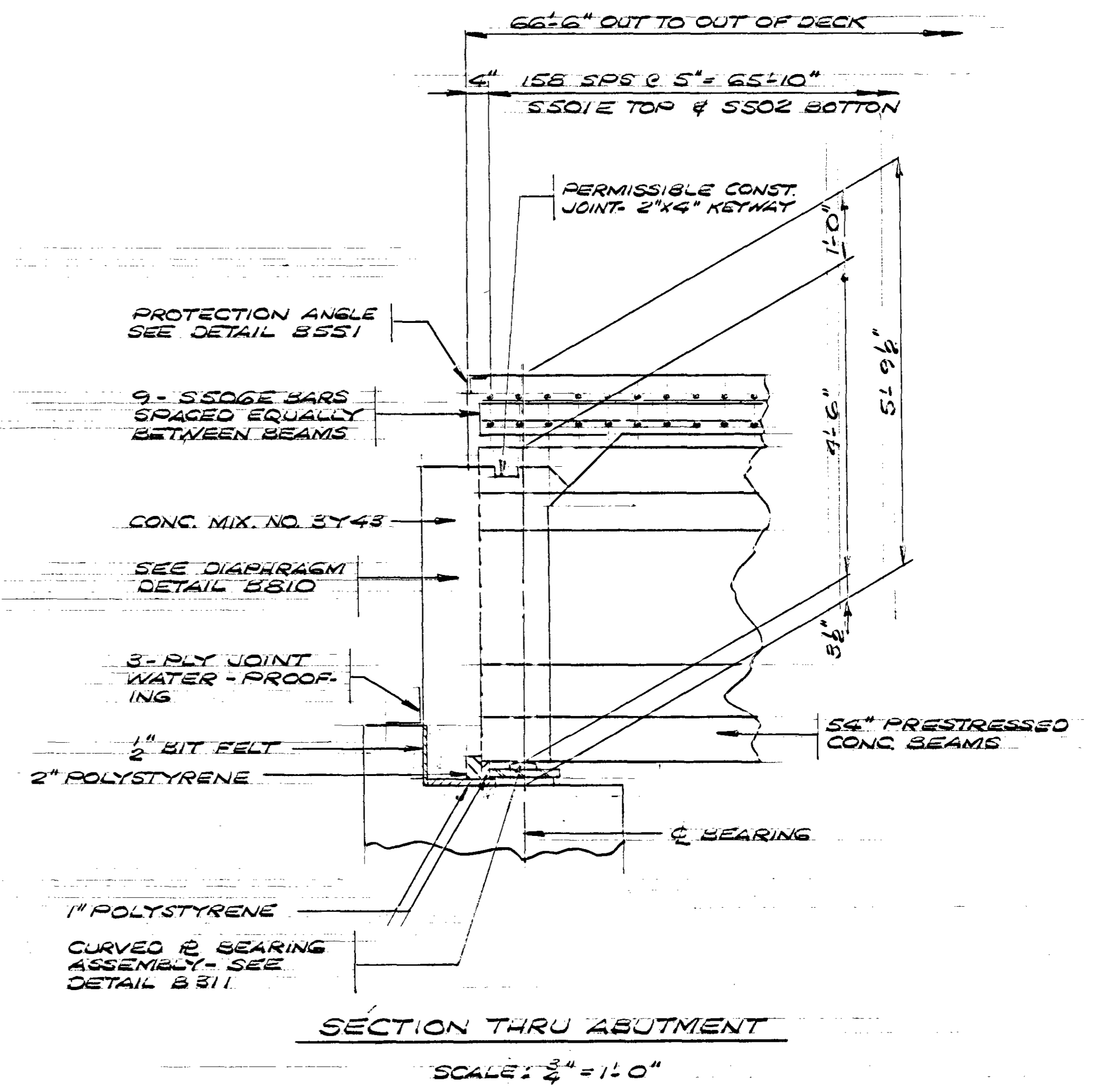


SECTION B-B

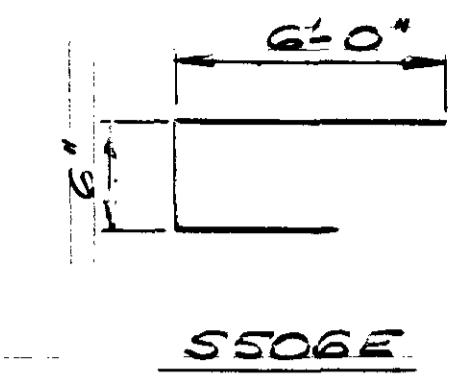
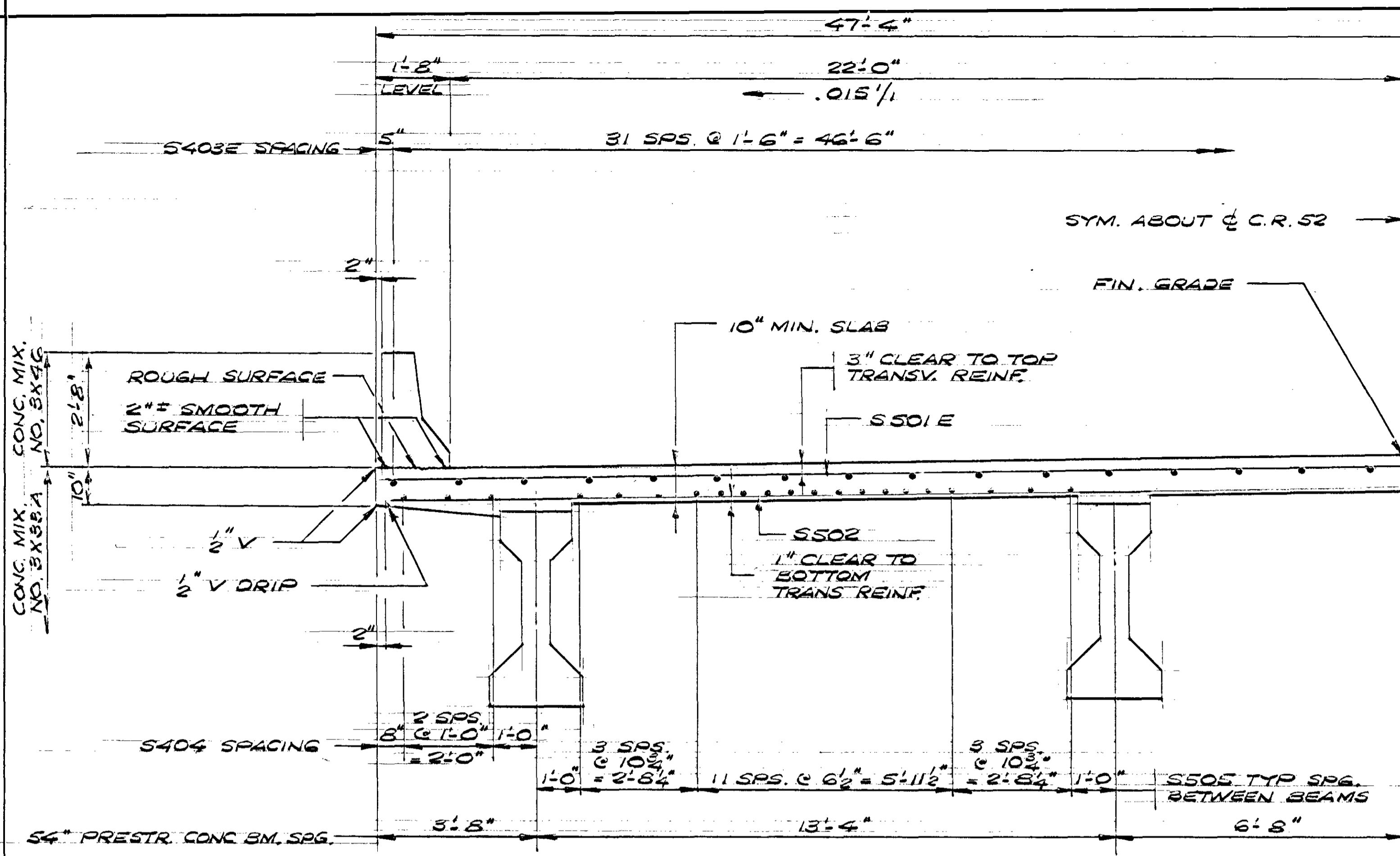
ABUTMENT REINFORCEMENT	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED 11-9-32	BRIDGE NO. 02533
S.A.P. 02-598-02	SHEET 4 OF 14 SHEETS			



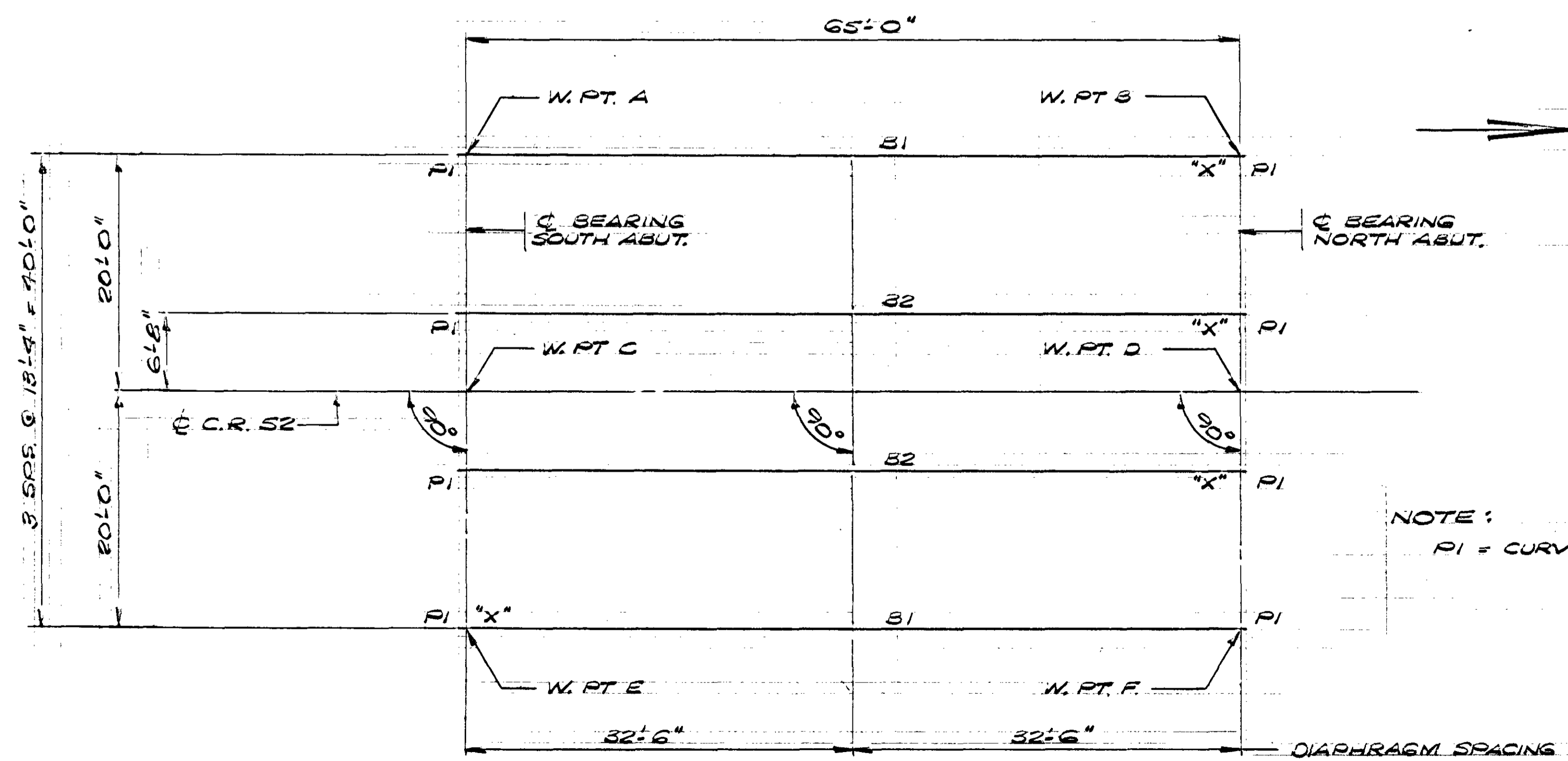
PLAN
SCALE: $\frac{3}{16}'' = 1'-0''$



SUPERSTRUCTURE DETAILS S.A.P. 02-598-02	DRAWN W.N.J.	CHECKED R.R.T.	APPROVED 11-9-82	BRIDGE NO. 02533
	SHEET 5 OF 14 SHEETS			



HALF TRANSVERSE SECTION THRU DECK
SCALE: 1/2" = 1'-0"



FRAMING PLAN
SCALE: 1/8" = 1'-0"

NOTE:
P1 = CURVED PLATE BEARING ASSEMBLY, TYPE 1

BILL OF REINFORCEMENT FOR SUPERSTRUCTURE				
BAR	NO.	LENGTH	SHAPE	LOCATION
SS01E	159	46'-10"	STR	SLAB - TRANSVERSE - TOP
SS02	159	46'-10"	"	" " " - BOTTOM
S403E	96	28'-3"	"	" - LONG - TOP
S404	18	28'-3"	"	" - BOTTOM
SS05	108	34'-3"	"	" " " "
SS06E	54	8'-1"	BENT	" - BETWEEN BEAMS & ENDS
SS07	8	6'-0"	STR	END DIAPHRAGM - LONG
S408E	54	6'-4"	BENT	" " - TIE
S409E	54	12'-1"	"	" " - "
S410E	12	11'-9"	"	" " - "
S411	20	24'-5"	STR	" " - LONG
S412	12	12'-4"	"	" " - "
S413	4	2'-4"	"	" " - "
S414	6	10'-9"	"	" " - "
S415	6	11'-3"	"	" " - "
S416	4	2'-7"	"	" " - "
SS17	8	5'-0"	"	" " - "

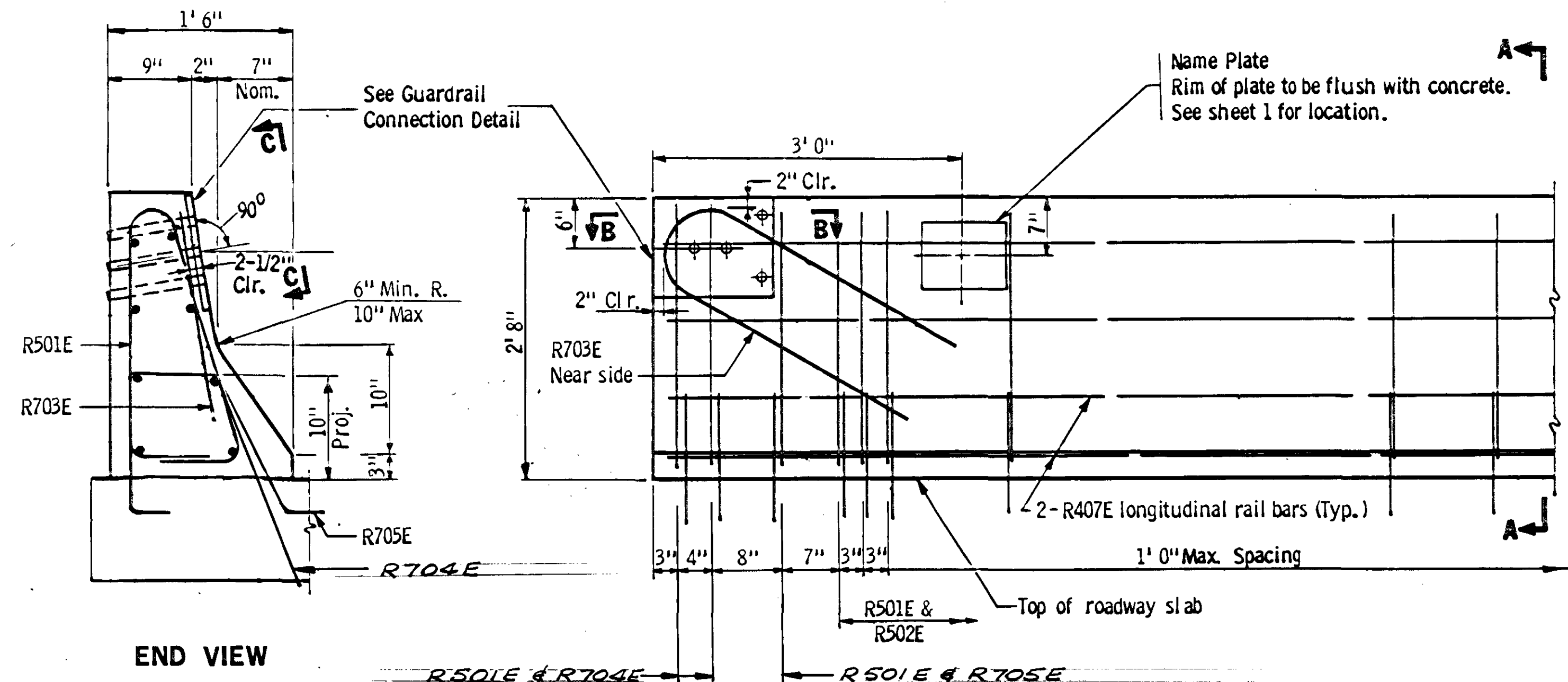
- ① 3 LINES, 1'-6" MIN. LAP
- ② 2 LINES, 1'-11" MIN. LAP
- ③ 2 LINES, 1'-6" MIN. LAP
- ④ SEE SHEET 11 FOR BENDING DETAILS.

SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE	
CONCRETE MIX. NO. 3X33A	3148 SQ. FT.
CONCRETE MIX. NO. 3X46	14 CU. YD.
CONCRETE MIX. NO. 3Y43	26 CU. YD.
REINFORCEMENT BARS	12525 POUND
REINFORCEMENT BARS, EPOXY COATED 13310 POUND	530 POUND
STRUCTURAL STEEL, (3306)	530 POUND
PRESTRESSED CONC. BEAMS, TYPE 54-67	4 EACH
DIAPHRAGMS FOR CONC. BEAMS, TYPE 54	40 LIN. FT.
CURVED PLATE BEARING ASSEMBLY, TYPE 1	8 EACH
PROTECTION ANGLE (SEE DETAIL B551)	
NAME PLATE (SEE DETAIL B103)	
3-PLY JOINT WATERPROOFING	115 LIN. FT.
PREFORMED JOINT FILLER (SEE TABLE BELOW)	

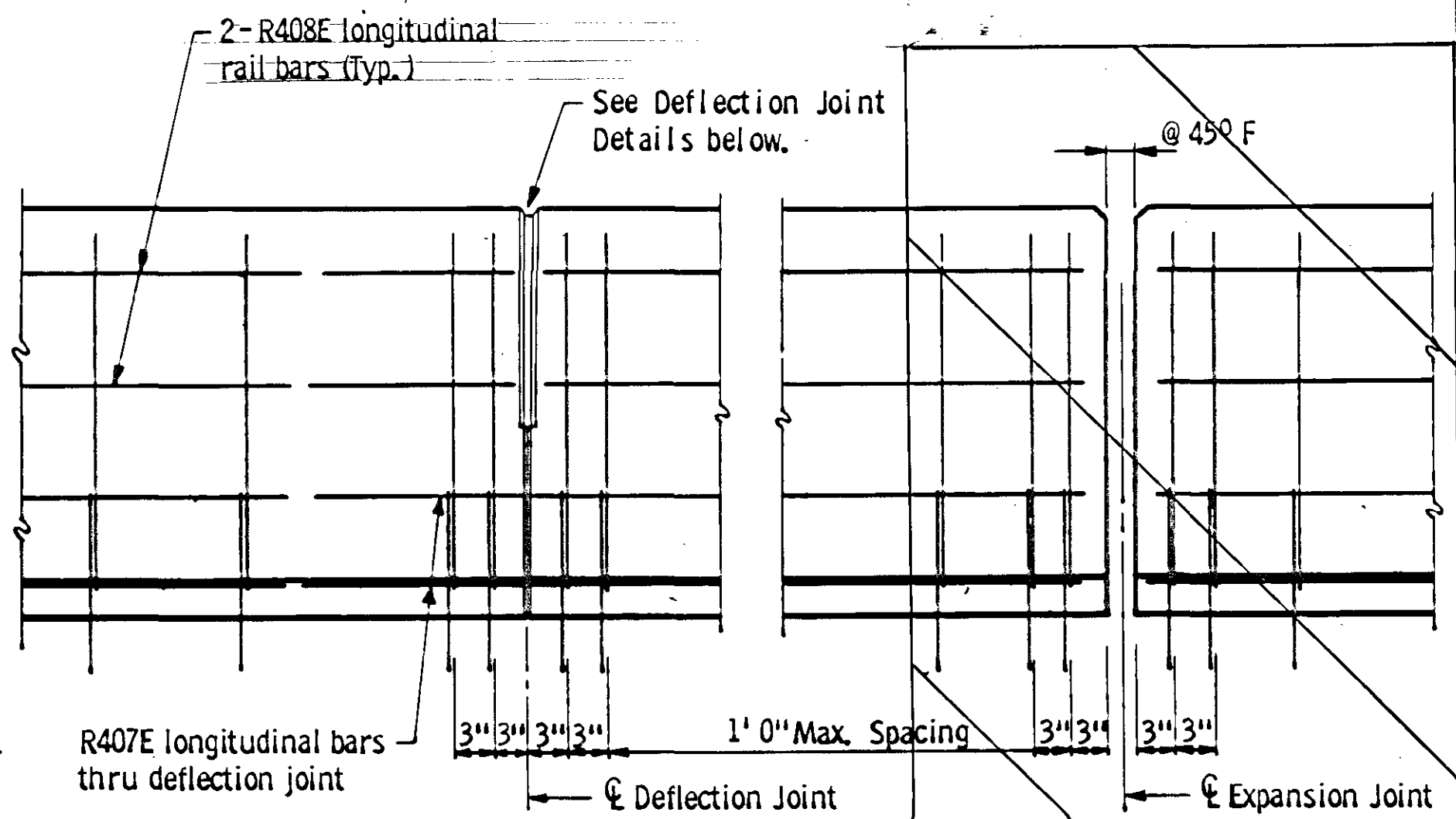
- ⑤ INCLUDES RAILING QUANTITIES
- ⑥ DECK CONCRETE 3X33A VOLUME APPROX. 104 CU. YDS. THE VOLUME OF DECK CONC. IS COMPUTED USING AN AVERAGE STOOL HEIGHT OF 12".
- ⑦ END DIAPHRAGM CONCRETE
- ⑧ SEE SPECIAL PROVISIONS.
- ⑨ INCLUDED IN STRUCTURAL STEEL, 3306
- ⑩ INCLUDED IN PRICE BID FOR OTHER ITEMS.
- ⑪ SEE SHEET 11 FOR END DIAPHRAGM REINF.

LIST OF PREFORMED JOINT FILLER	
4 - PCS.	11" X 1" X 1'-7" CORK - RAILING DEFLECTION JOINTS
4 - PCS.	1'-6" X 1" X 5'-11" - ABUTMENT WINGWALLS
2 - PCS.	1'-10" X 1" X 47'-10" POLYSTYRENE BR. SEAT
15 - "	" " 1" X 2" POLYSTYRENE - AT SIDES OF BRG
13 - "	" " 2" X 2" " " " " " "
20 - "	" " 1" X 3" " " " " " "
20 - "	" " 2" X 4" " " " " " "
2 - PCS.	1/2" X 9" X 26'-0" BIT FELT - SHEAR BLOCK
4 - "	1/2" X 11 1/2" X 10'-10" " " " " " "

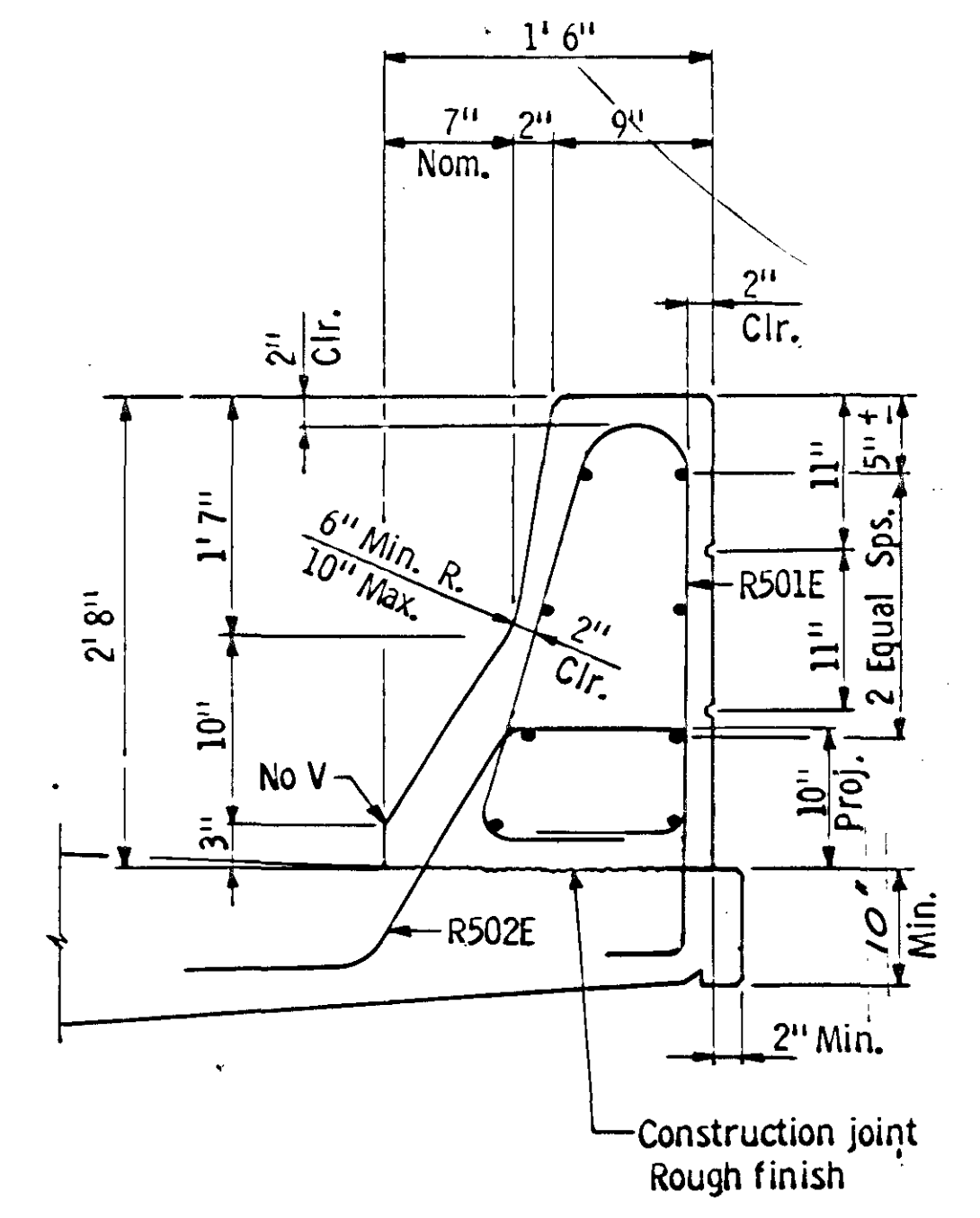
SUPERSTRUCTURE DETAILS	DRAWN	CHECKED	APPROVED	BRIDGE NO.
S.A.P. 02-598-02	W.N.J.	R.R.T.	11-9-86	02533
	SHEET 6 OF 14 SHEETS			



END VIEW



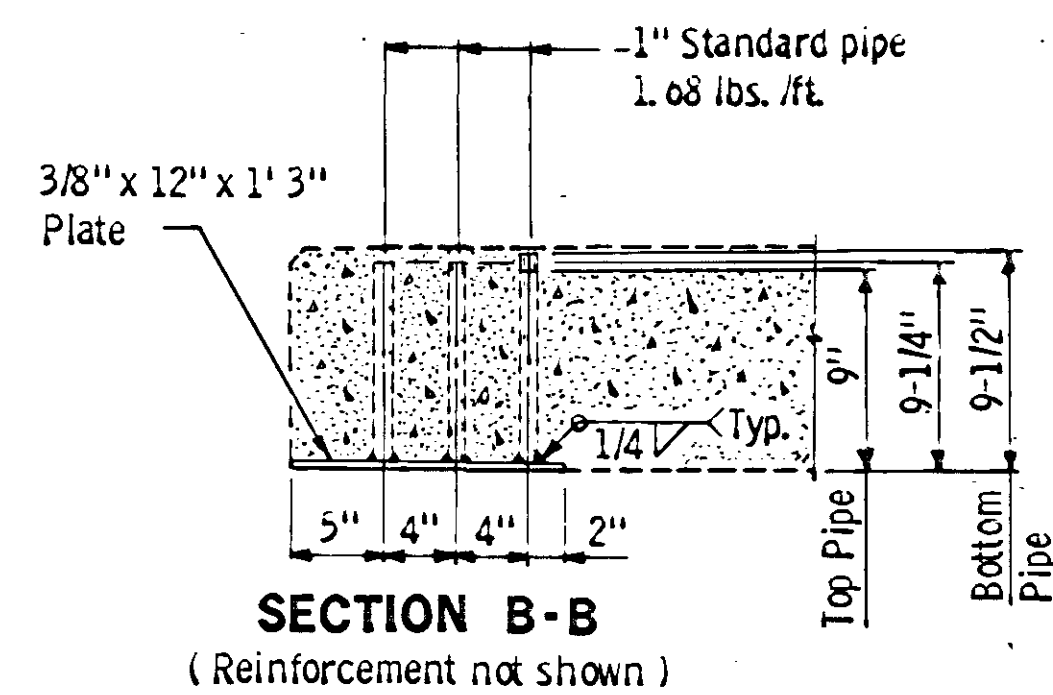
INSIDE ELEVATION OF RAILING



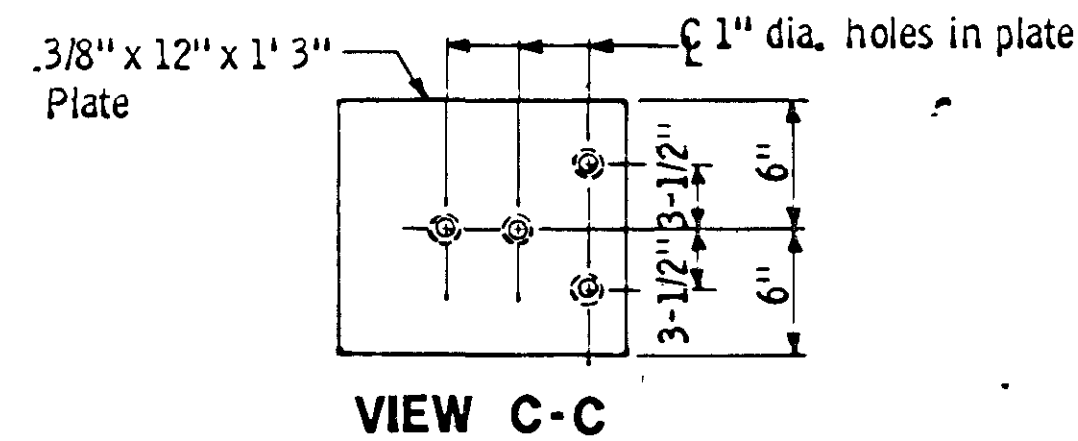
SECTION A-A

BILL OF REINFORCEMENT FOR RAILING				
BAR	NO.	LENGTH	SHAPE	LOCATION
R501E	124	6' 1"	Bent	Rail Vertical
R502E	152	5' 7"	Bent	Rail Vertical
R703E	4	6' 6"	Bent	End Post
R704E	8	5' 7"	-	-
R705E	4	5' 7"	Bent	End Post
R407E	16	34'-6"	Str't	Rail Long.
R408E	32	16'-8"	Str't	Rail Long.

① 2 LINES, 1'-6" MIN. LAP

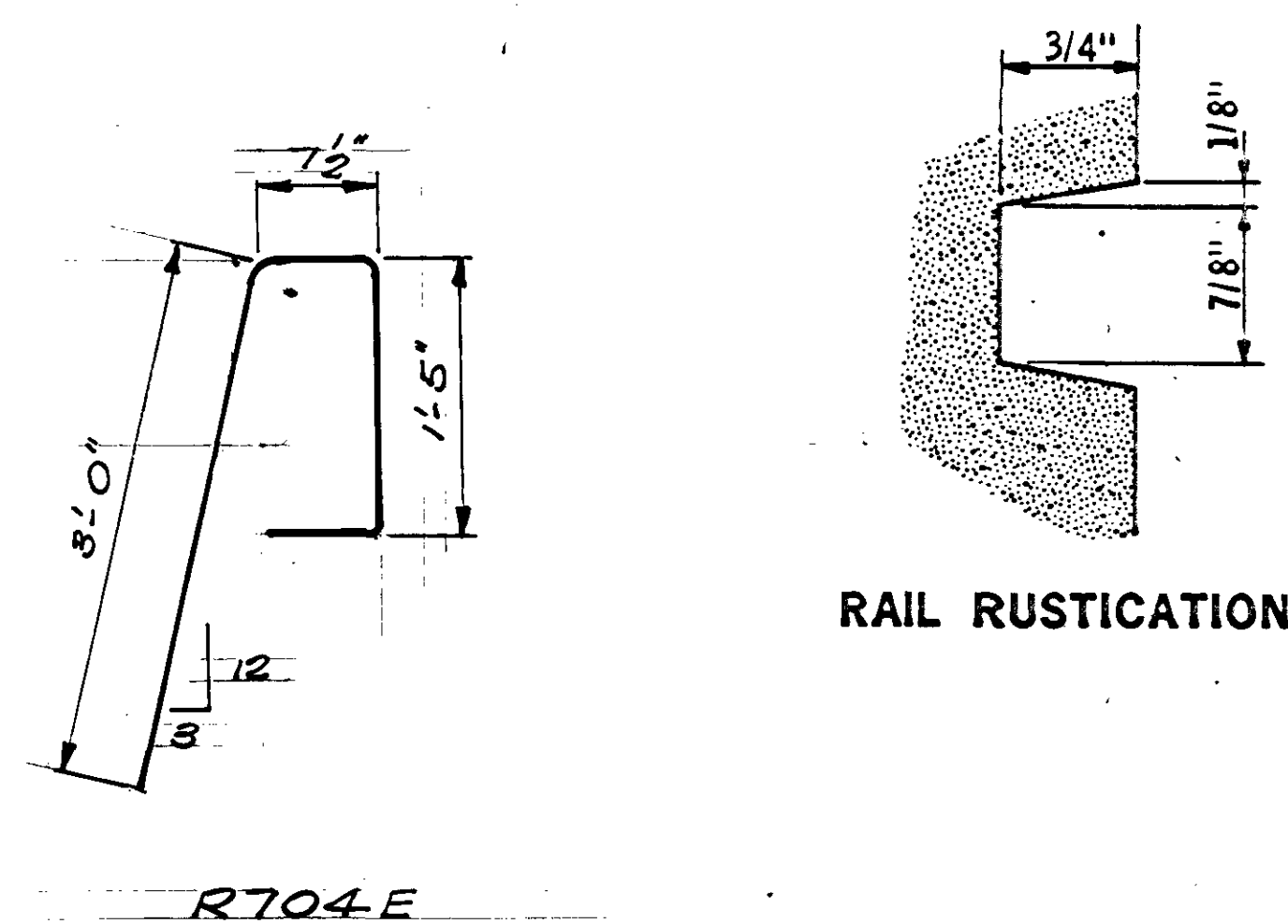


SECTION B-B
(Reinforcement not shown)

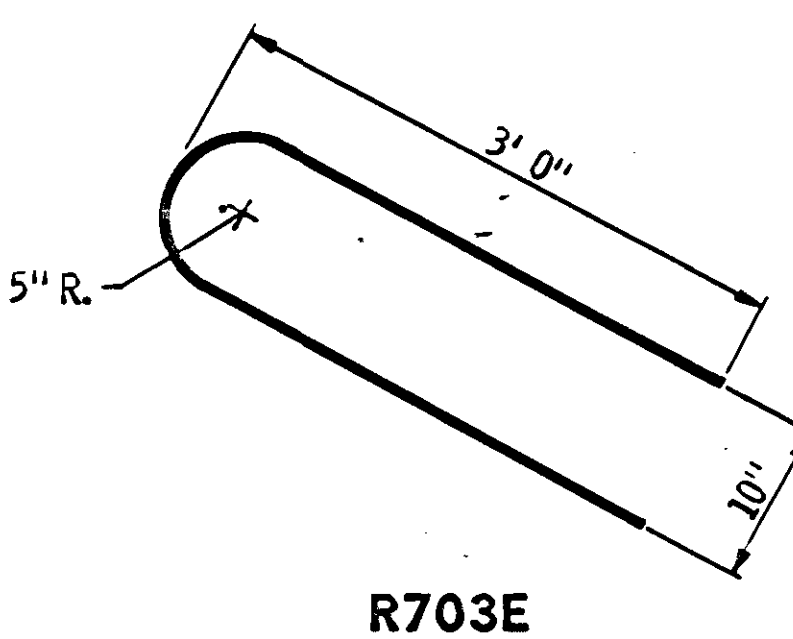


VIEW C-C

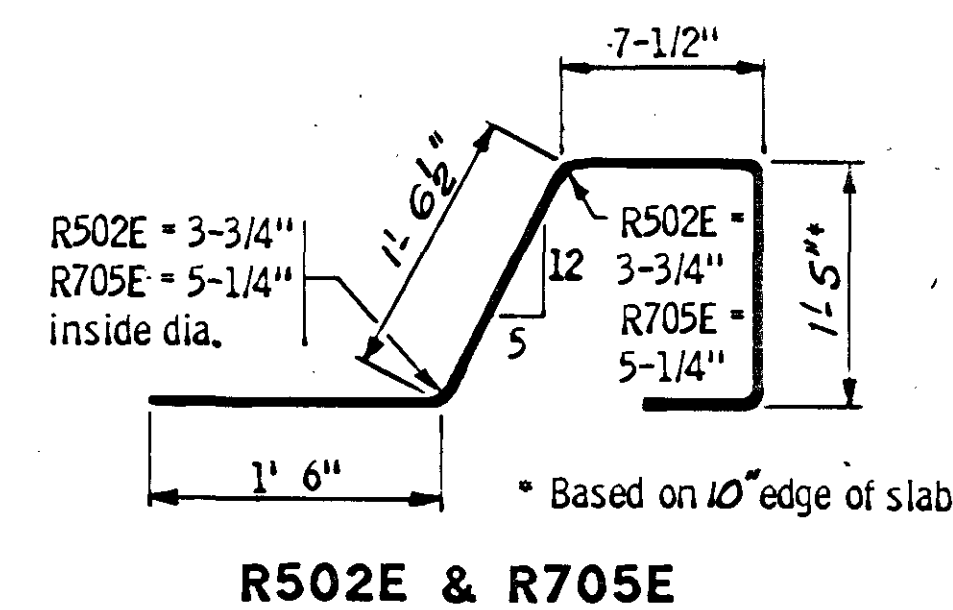
GUARDRAIL CONNECTION DETAIL
Galvanize after fabrication per Spec. 3394
Estimated Weight = 23 lbs.



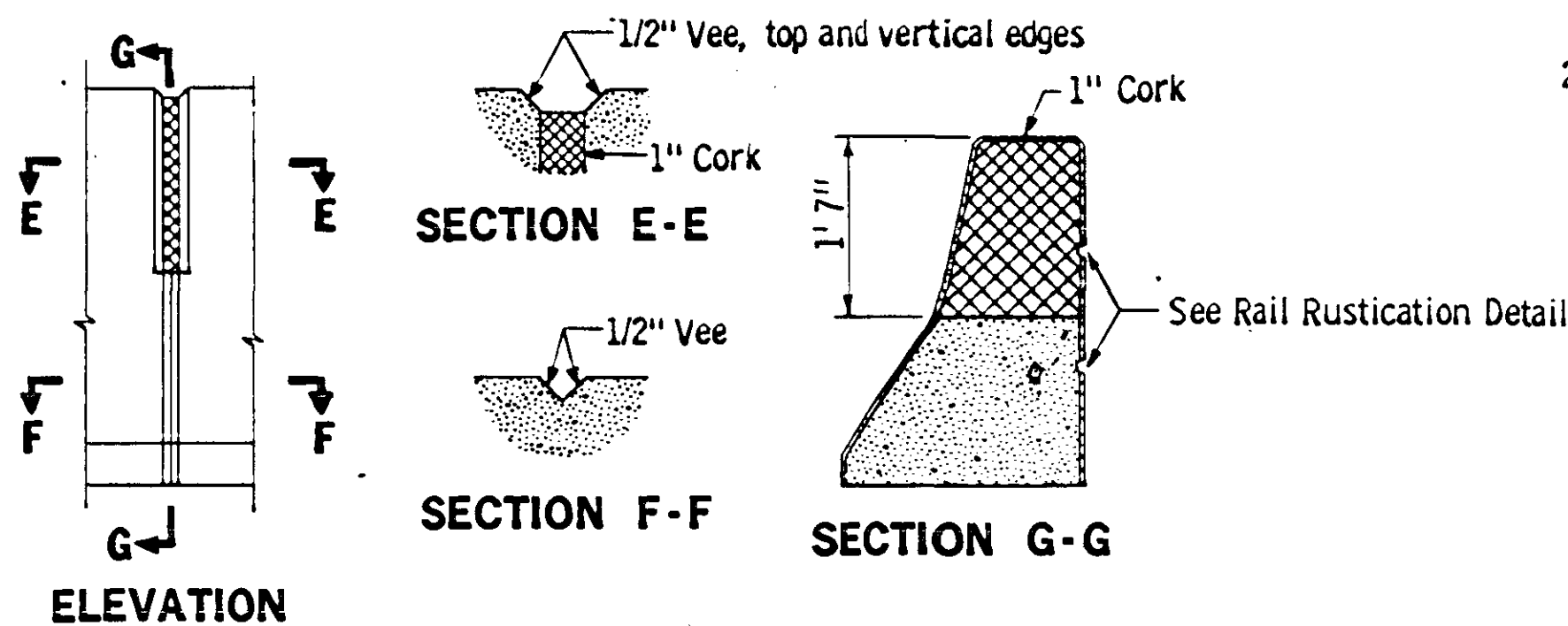
RAIL RUSTICATION



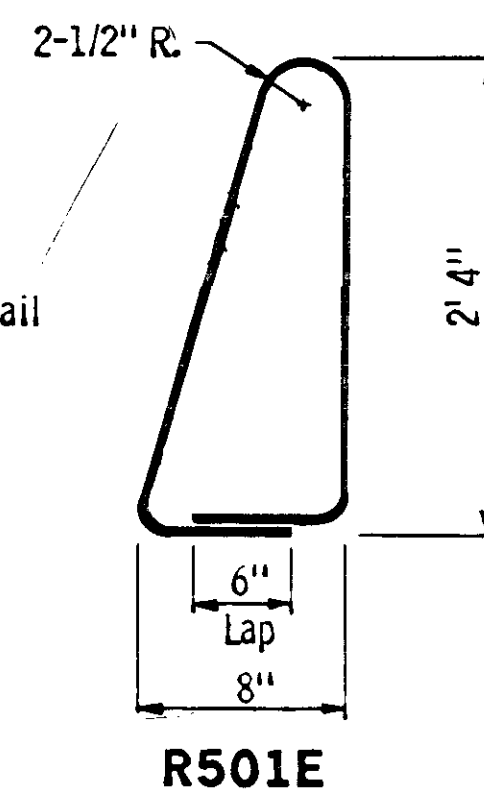
R703E



R502E & R705E



CONCRETE JOINT DEFLECTION JOINT DETAILS



R501E

GENERAL NOTES:

Bars marked with the suffix 'E' shall be epoxy coated in accordance with the special provisions.

Concrete Railing = 405 lbs./ft.
Concrete Railing = .100 cu.yds./ft.

Rail to be Concrete Mix No. 3X46

Guardrail connection to be Structural Steel, Spec. 3306

Finish all edges of rail 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.

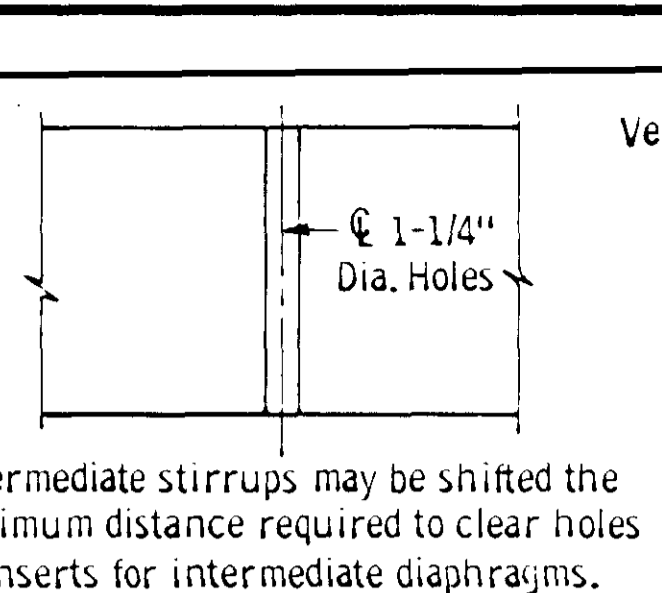
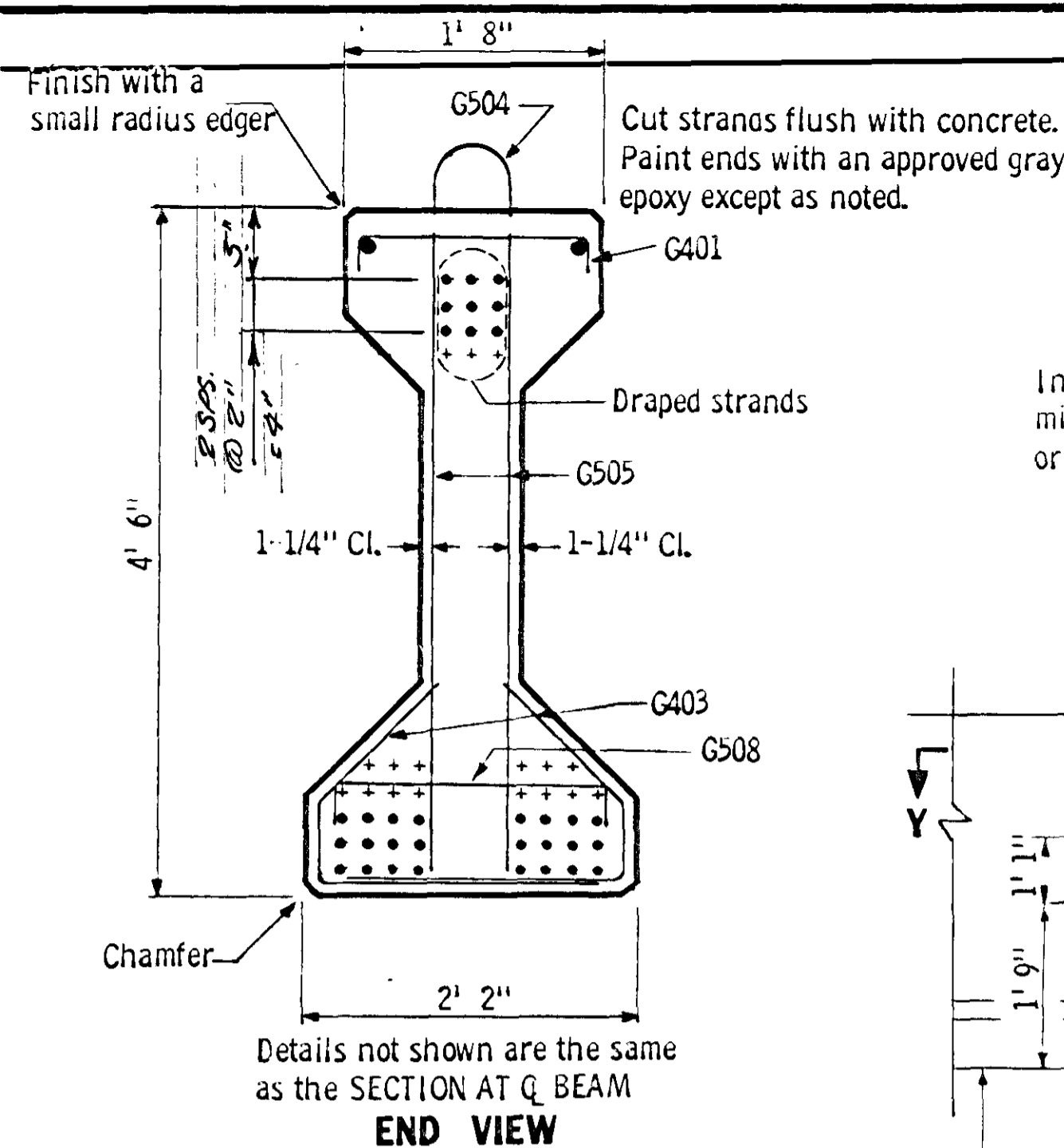
Rail quantities are included in summary of quantities for superstructure.

Length of railing concrete to be measured for payment between outside faces of end posts.

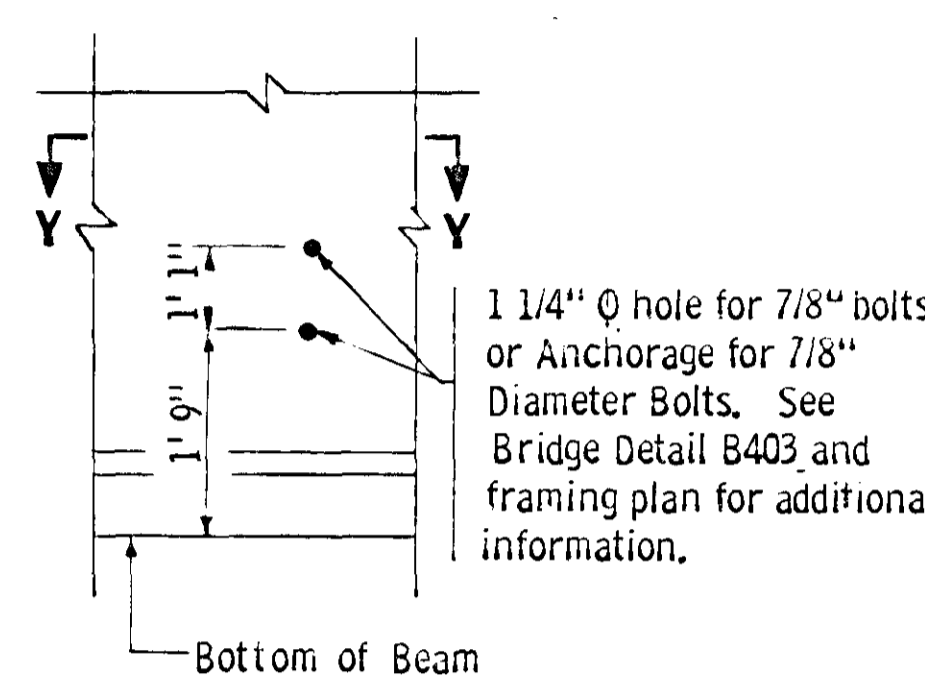
Fig. 5-397.115

Approved: April 23, 1980

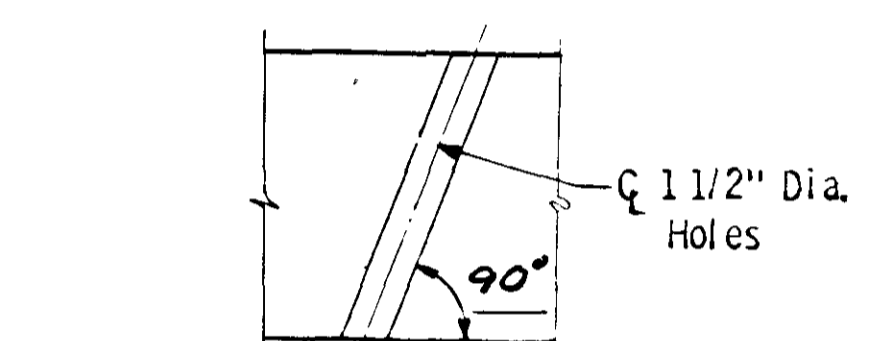
S.A.R. 02-598-02		APPROVED: 11-9-82		Bridge No. 02533
TITLE: CONCRETE RAILING (TYPE J) WITH INTEGRAL END POST (Without Wearing Course)	DES: /	DR: /	CHK: /	
Sheet No. 7 of 14 Sheets				



SECTION Y-Y
USE AT INTERIOR BEAM
WITH STEEL DIAPHRAGM

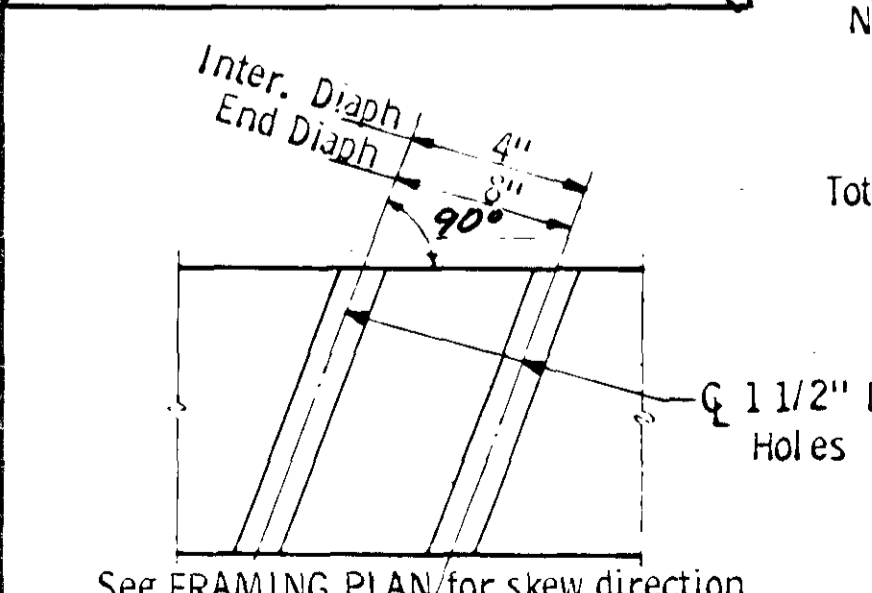
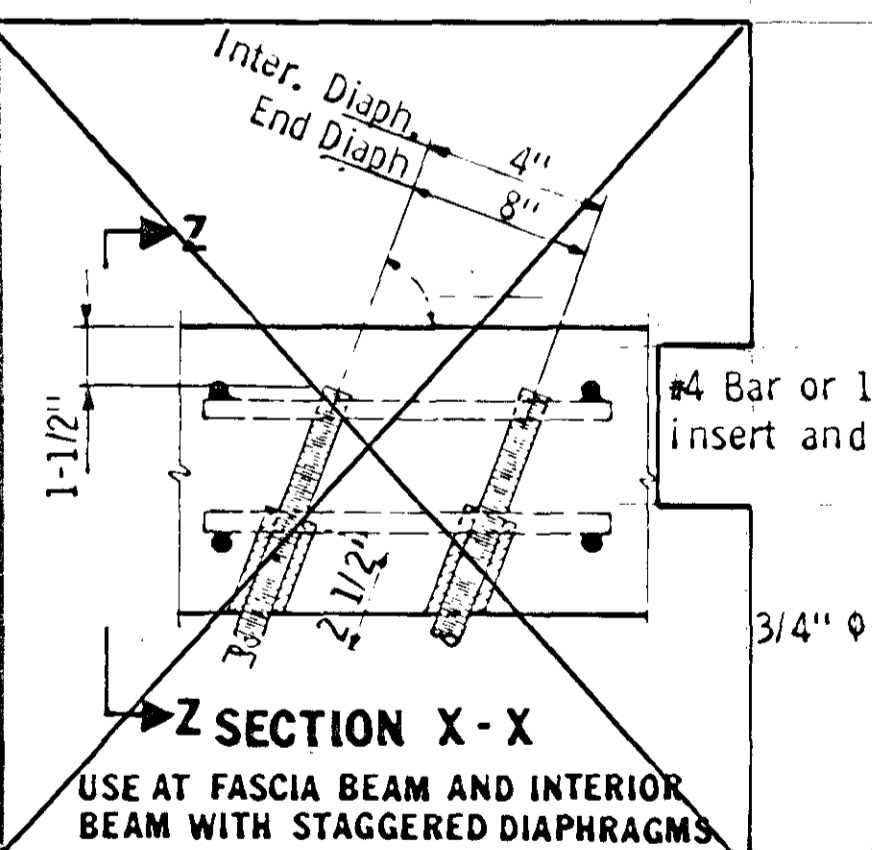


FOR USE WITH STEEL
INTERMEDIATE DIAPHRAGM

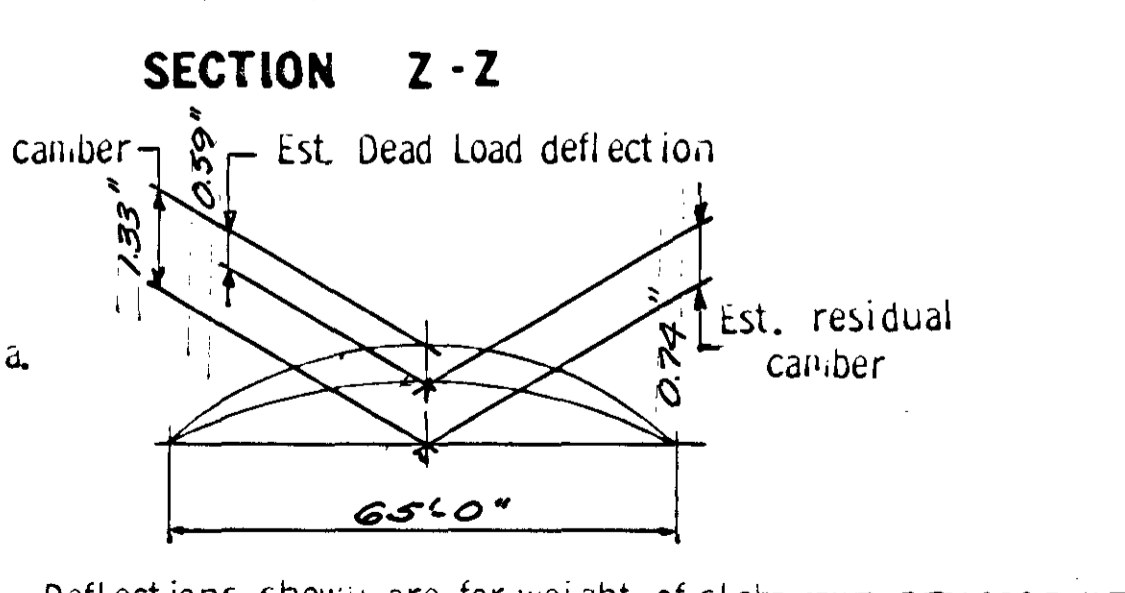
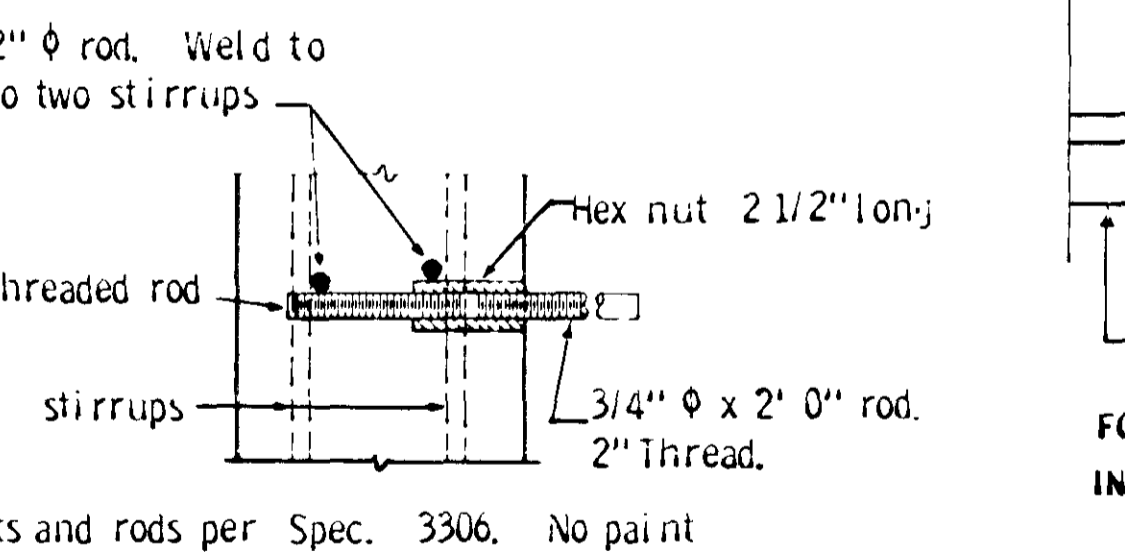
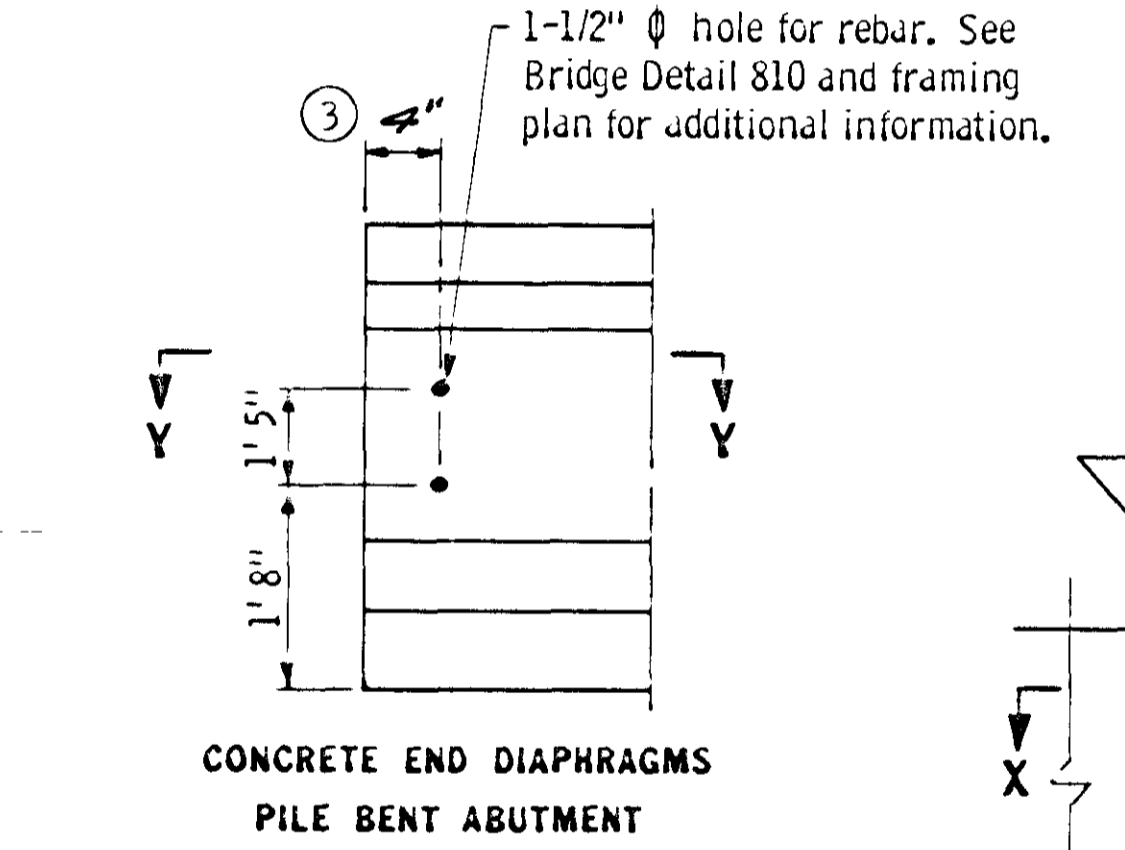


END VIEW
Details not shown are the same as the SECTION AT Q BEAM

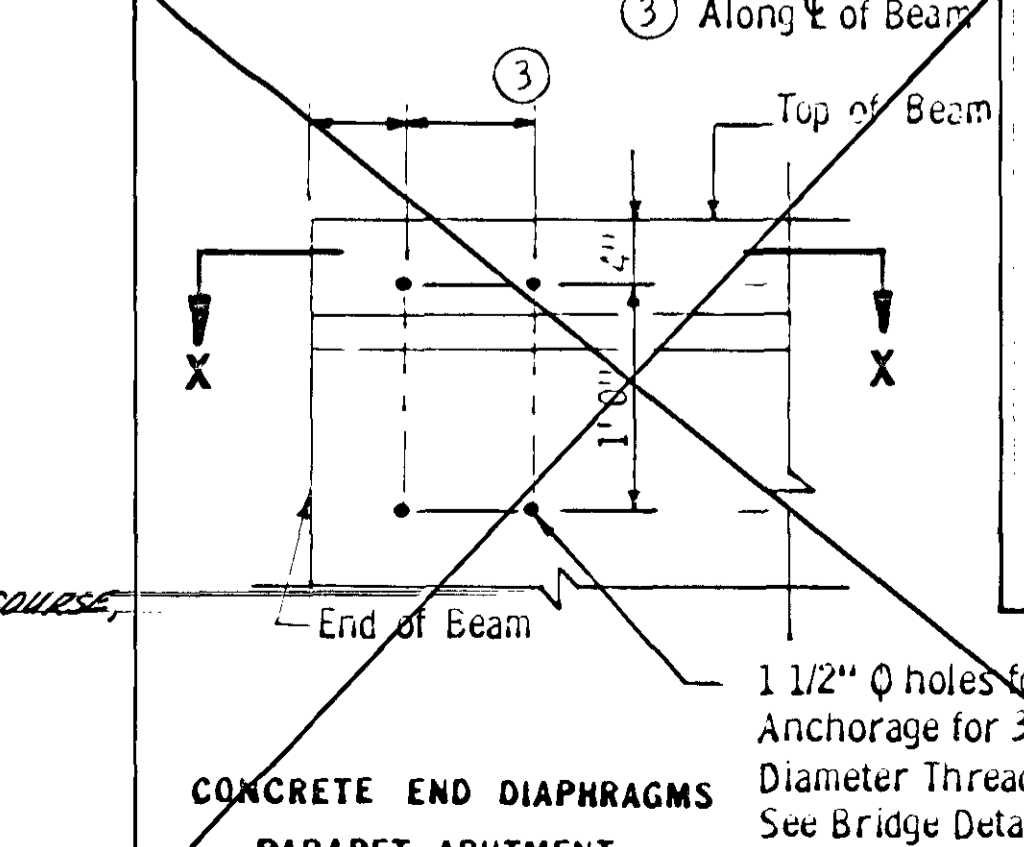
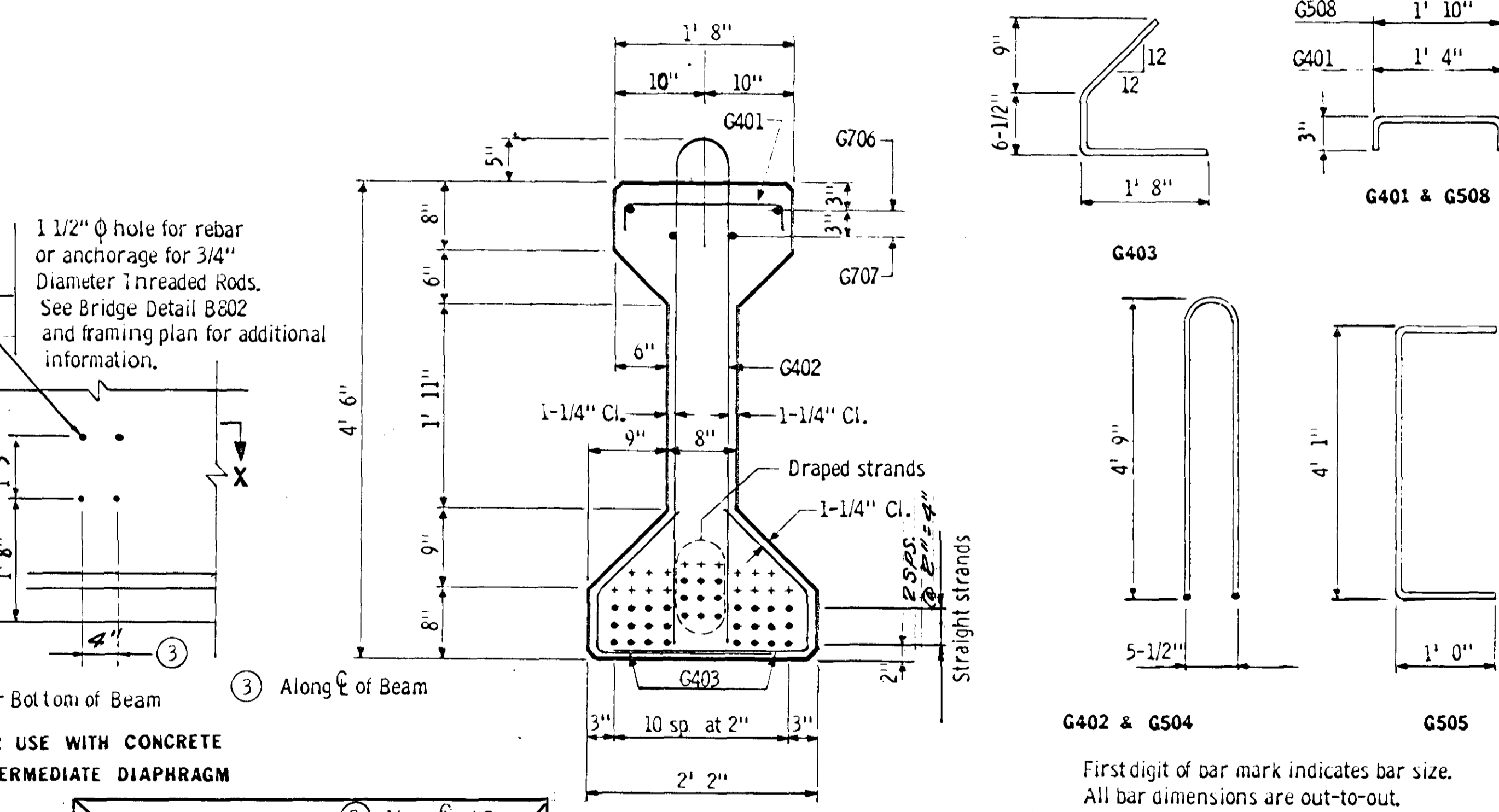
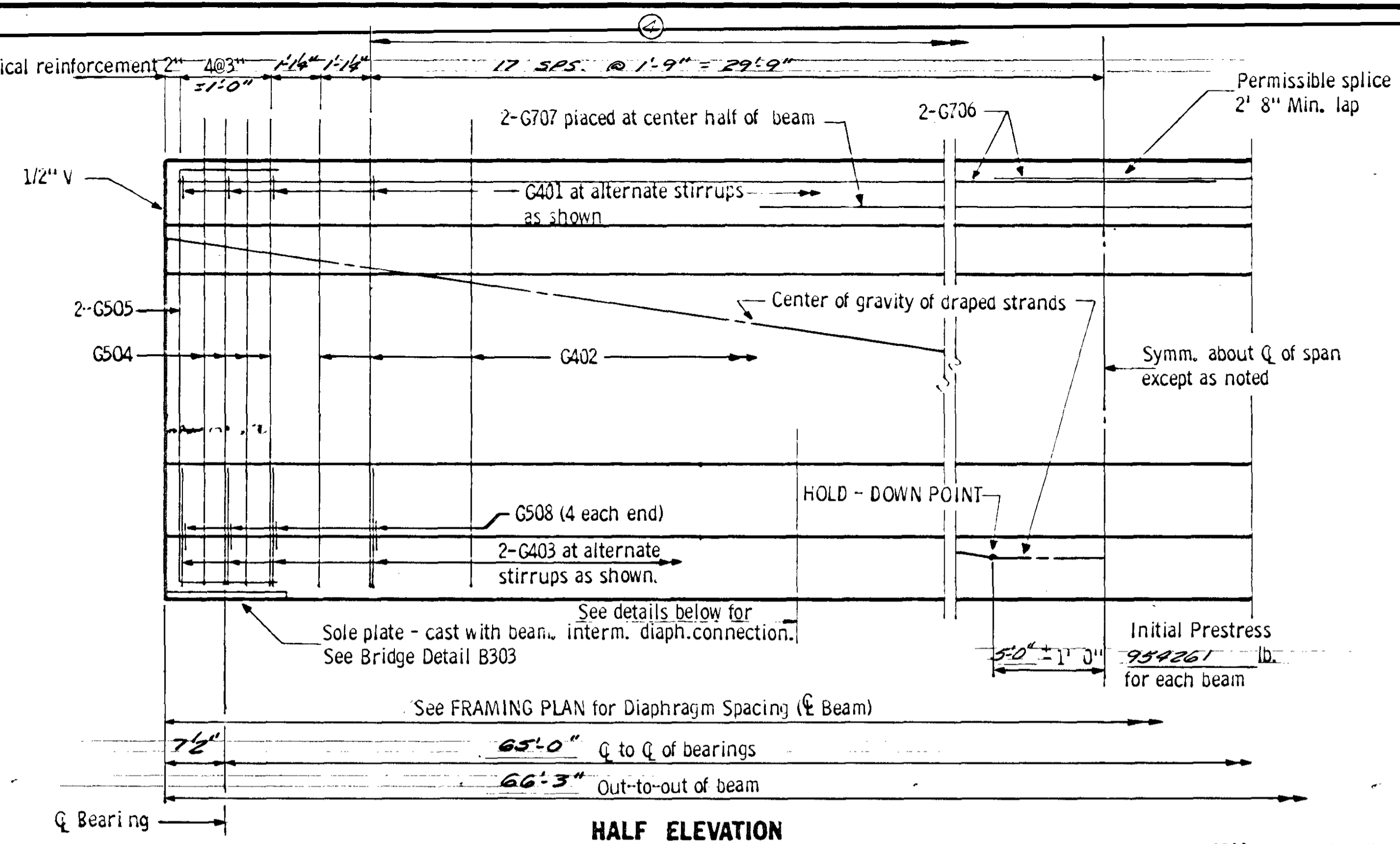
SECTION Y-Y
FOR USE WITH CONCRETE END
DIAPHRAGMS WITH PILE BENT ABUTMENTS



SECTION X-X
USE AT INTERIOR BEAM WITH
CONTINUOUS CONCRETE DIAPHRAGM



SECTION Z-Z
CAMBER DIAGRAM



CONCRETE END DIAPHRAGMS
PARAPET ABUTMENT

Ear	Wt.	Girder Section Data	
G401	1.22 lb.	Wt./ft. = 822 lbs.	
G402	6.62 lb.	Cross sec. area at Q of span = 789 in. ²	
G403	2.17 lb.	C. G. (from bottom) = 24.73 in.	
G504	10.34 lb.	I = 260,730 in. ⁴	
G505	6.34 lb.	S _E = 10,543 in. ³	
G706		1/2" Ø 270k strand wt./ft. = .525 lb.	
G707		1/2" Ø 270k strand area = .1531 sq. in.	
G508	2.43 lb.		

④ ADDITIONAL G402 BARS ARE REQUIRED WHEN VERTICAL REINFORCEMENT SPACING IS GREATER THAN 2'-0". SPACE ADDITIONAL G402 BARS MIDWAY BETWEEN G401 & G403 BARS.

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 = 27.2 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.

Y DISTANCES (IN INCHES)			
	NO.	Q SPAN	END
Straight strands	24	4.00	
Draped strands	9	5.00	47.00
Total strands	33	4.27	

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" Ø 270 kip, ultimate strength.

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

MINIMUM CONCRETE STRENGTH - P.S.I.		
	① f'ci	② f'c
Required min. Concrete Strength	4000	5000

① Minimum concrete strength at time of prestress transfer.

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

BEAMS B1 & B2
S.A.P. 02-598-02

TITLE: 54" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 54-67

DES: DR: APPROVED: 11-9-82

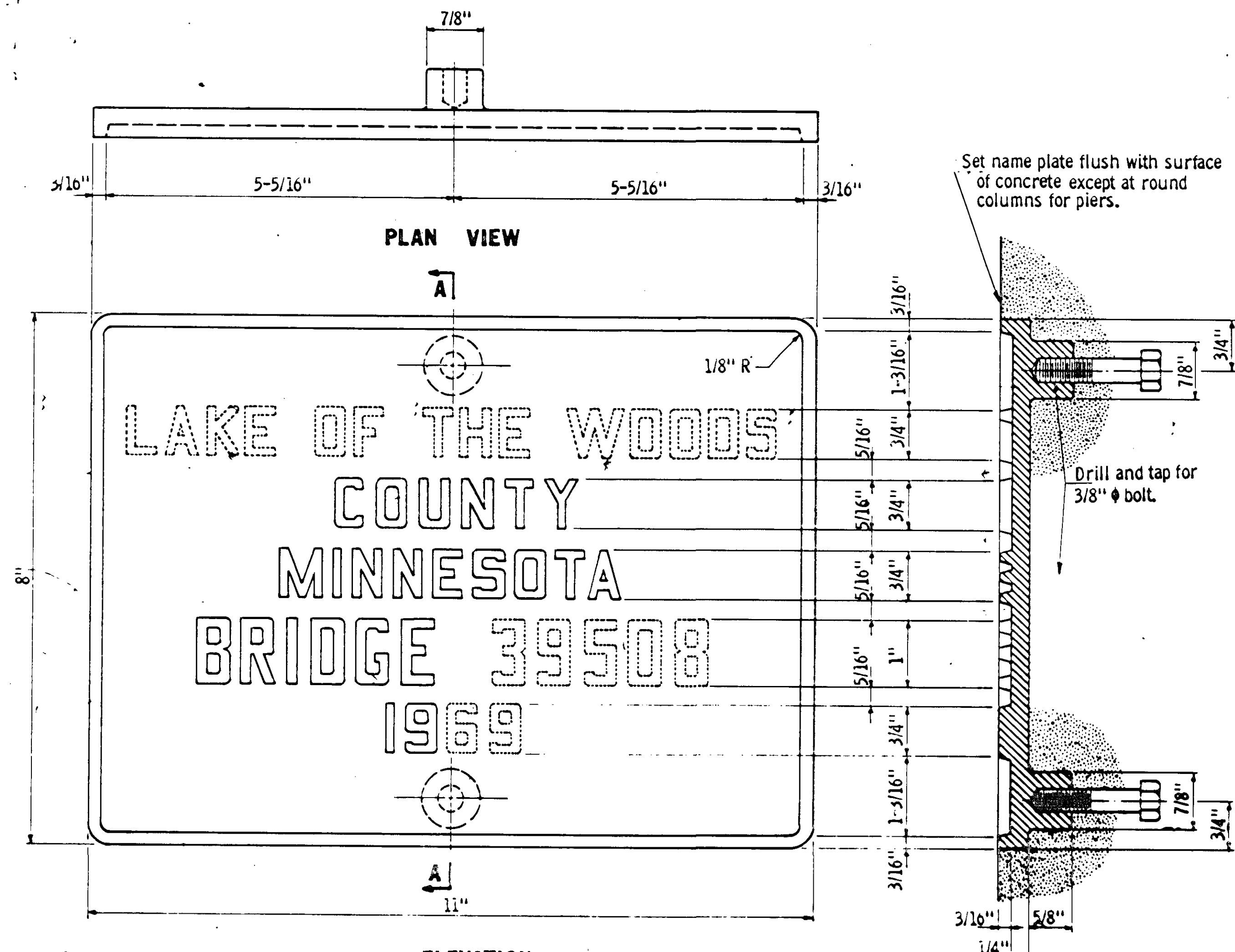
CHK: CHK:

Bridge No. 02533

Sheet No. 8 of 14 Sheets

Approved: 2-22-80

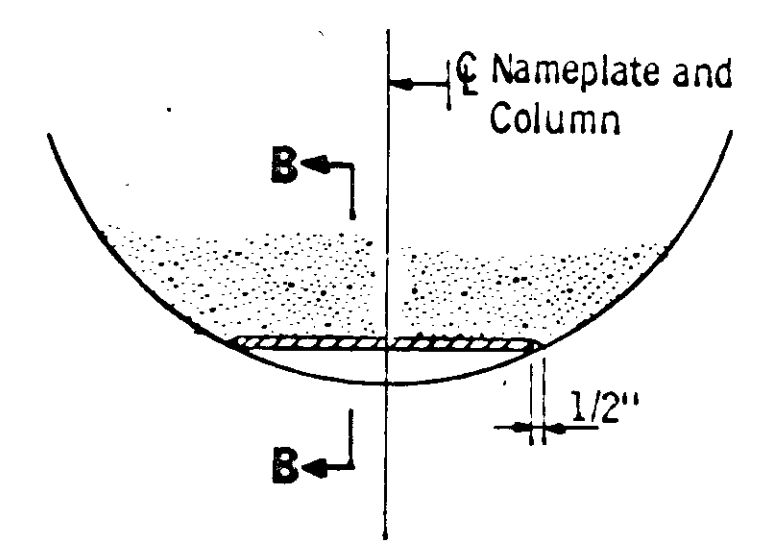
Fig. 5-397.505



ELEVATION

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

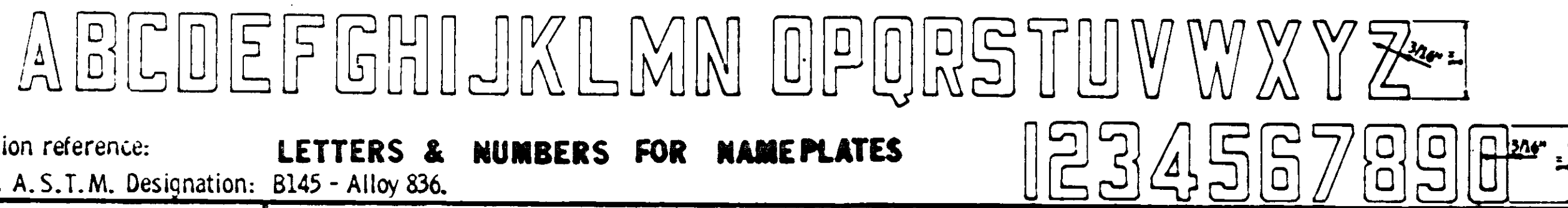
BRIDGE 02533
 YEAR 1969
 ANOKA COUNTY



SECTION B-B

NAMEPLATE PLACEMENT

(Round Concrete Pier Columns)



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

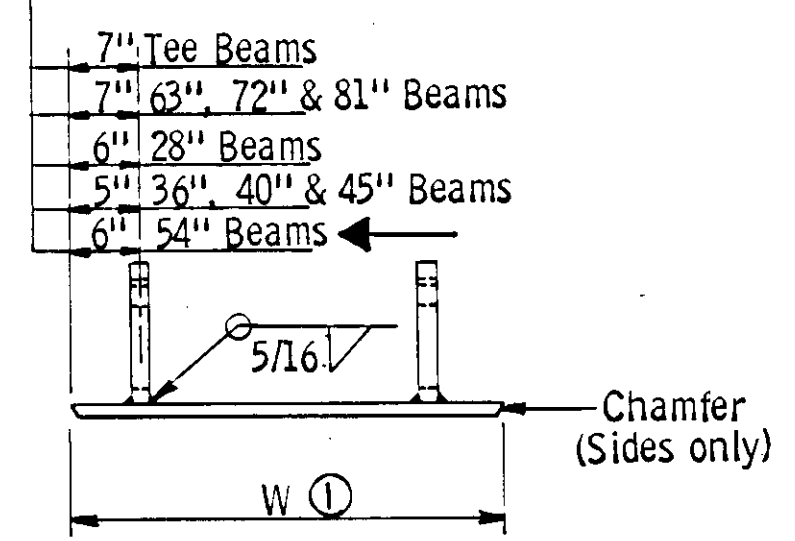
MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NAMEPLATE
 COUNTY BRIDGES

DETAIL NO.
B103

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" 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.

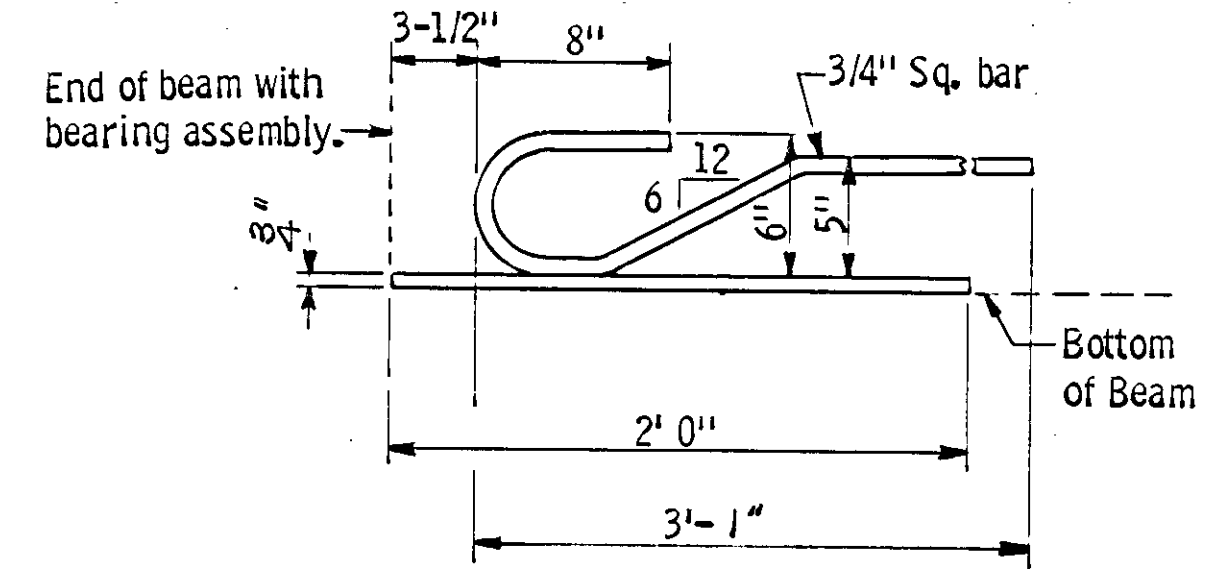
These dimensions may be modified to clear post tensioning tubes or prestressing strands. Changes must be approved by the Engineer.



FRONT VIEW

① Dimension "W" to be the width at the bottom flange of the beam. - 1/4"

SOLE PLATE FOR B305 BEARING

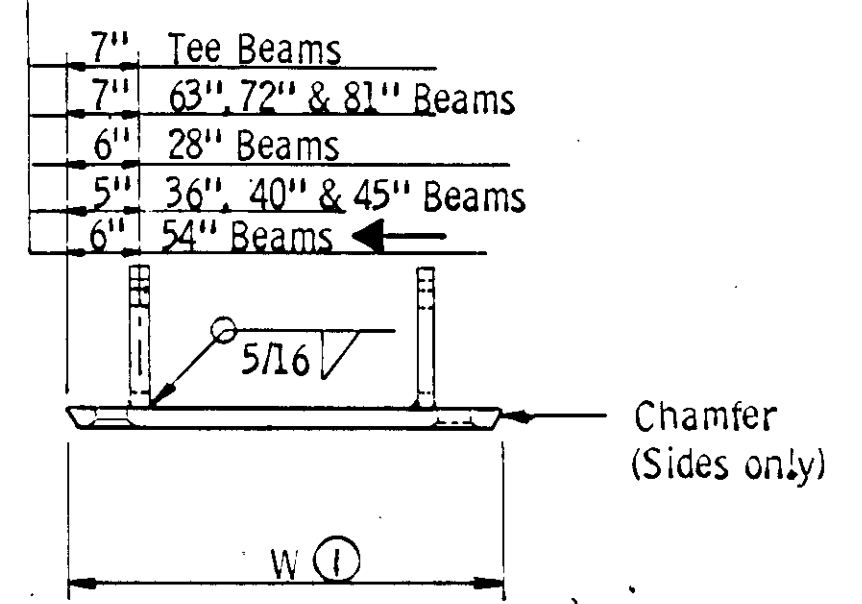


SIDE VIEW

NOTES

Material to be Structural Steel per SPEC 3306
 Sole plate for Bearing Assembly to be hot dipped galvanized as per SPEC 3394 after fabrication.
 Payment for sole plates to be included in price bid for Prestressed Concrete Beams.

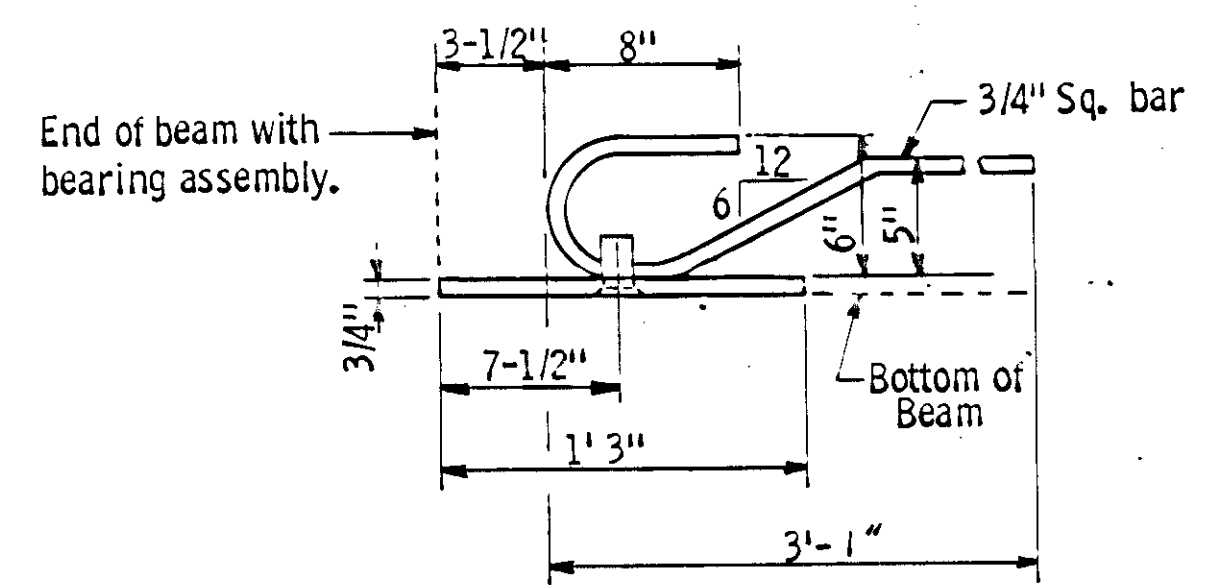
These dimensions may be modified to clear post tensioning tubes or prestressing strands. Changes must be approved by the Engineer.



FRONT VIEW

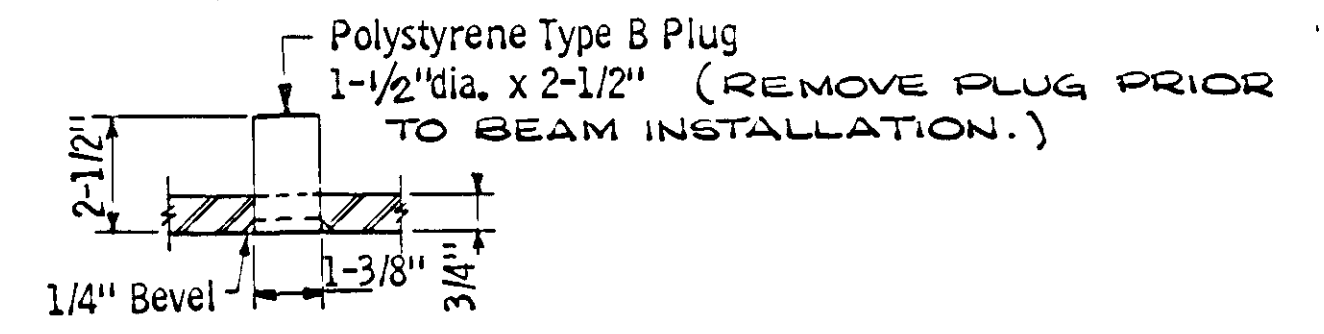
① Dimension "W" to be the width at the bottom flange of the beam. - 1/4"

SOLE PLATE FOR B302. & B304 BEARING ASSEMBLY



SIDE VIEW

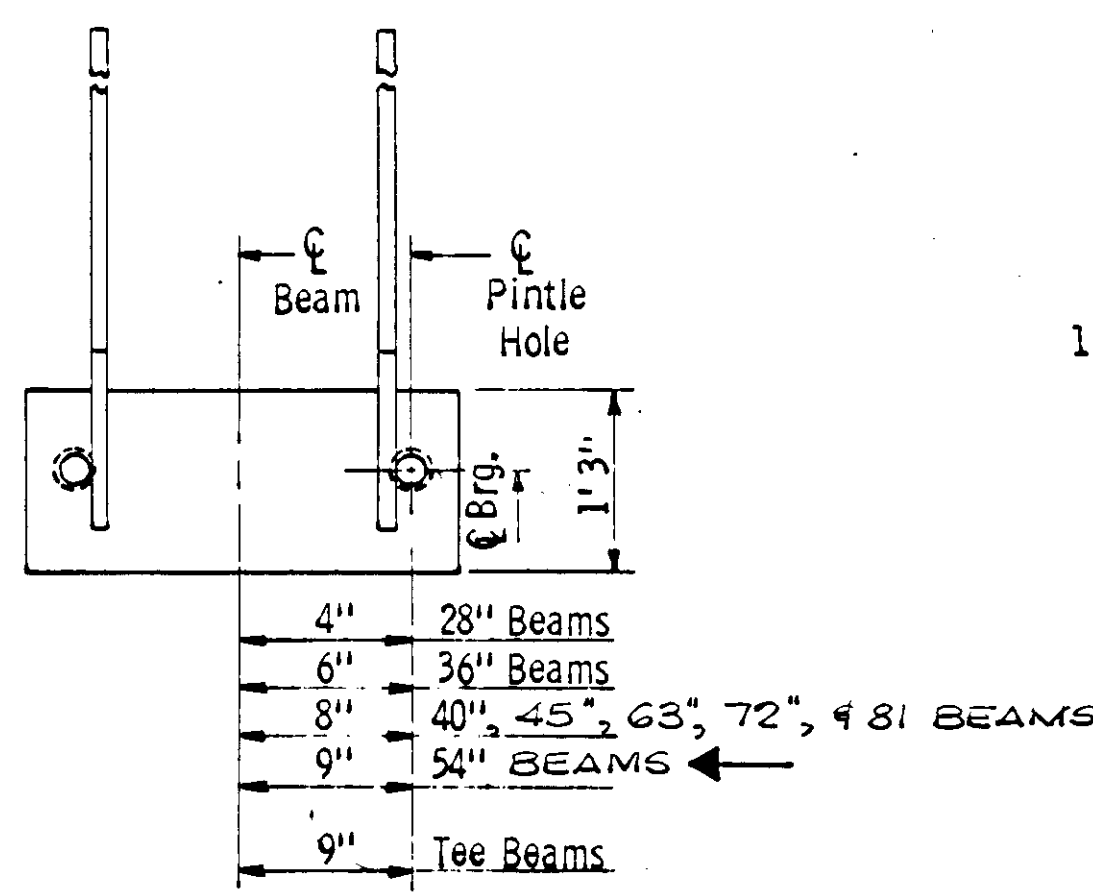
Showing placement in beam



PINTLE HOLE DETAIL
 (2 Required)

NOTES

Material to be Structural Steel per SPEC 3306
 Sole plate for Bearing Assembly to be hot dipped galvanized as 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



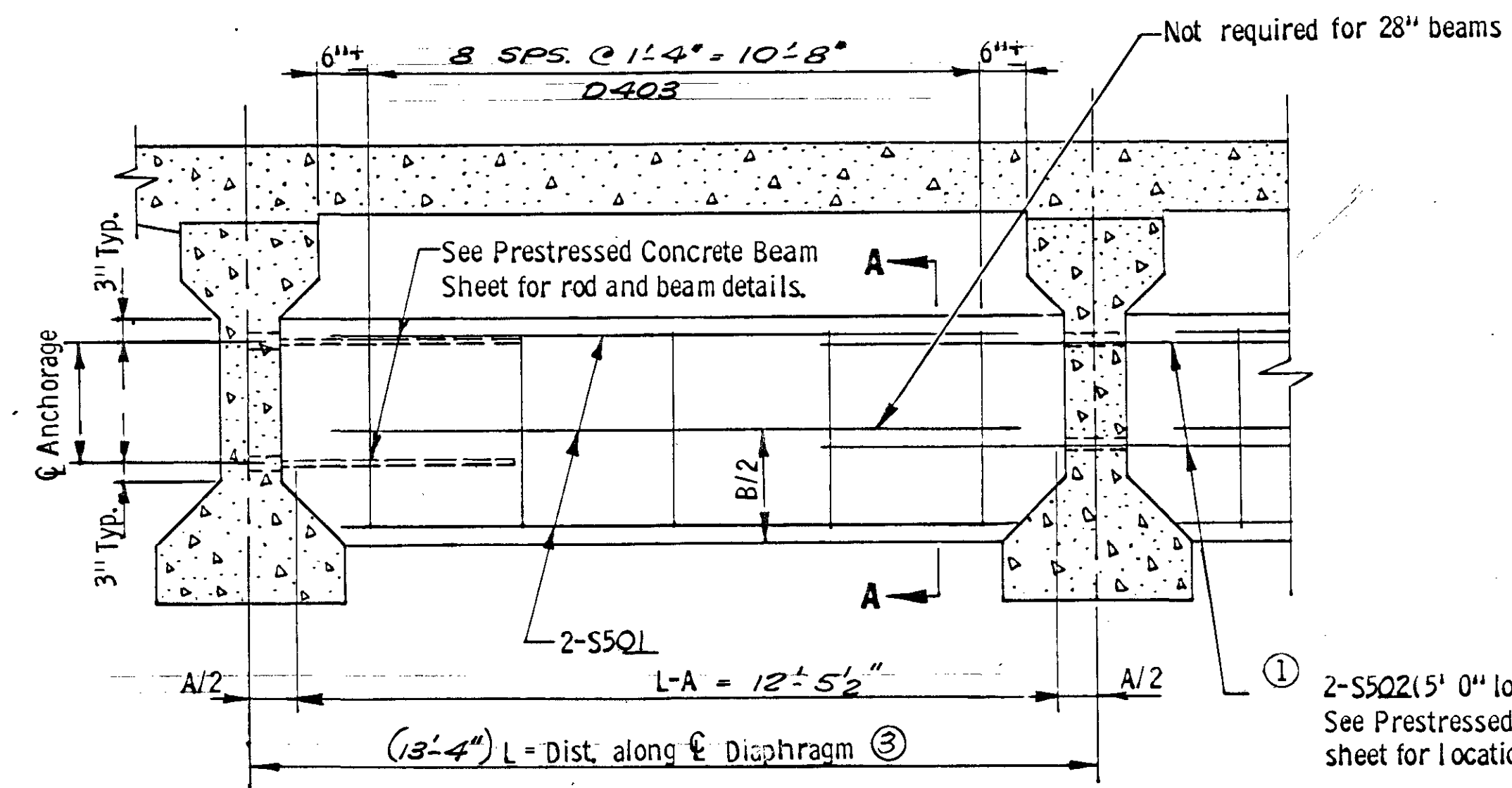
PLAN VIEW

APPROVED: Sept. 17, 1976
 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN
 Issued by: OFFICE OF ENGINEERING STANDARDS

MINNESOTA DEPARTMENT OF TRANSPORTATION
SOLE PLATES
 PRESTRESSED CONCRETE BEAMS

REVISION SEPT. 7, 1978

DETAIL NO.
B303

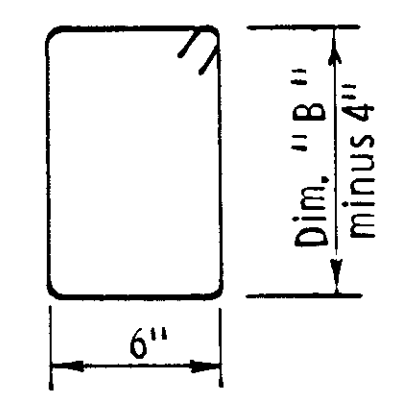


PART TRANSVERSE SECTION

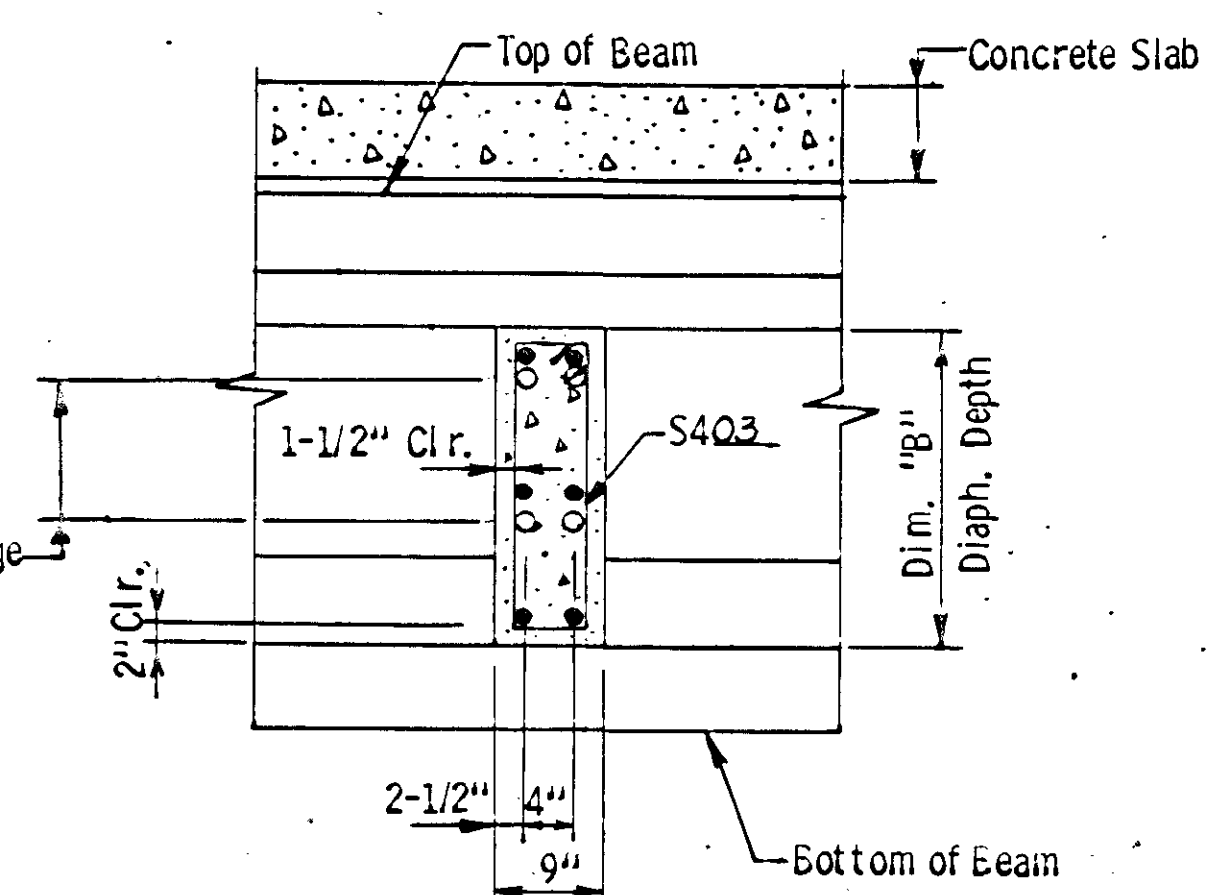
Bm. Ht.	Dim. "A" For comp. volume	Diaph. Dim. "B"	S403 Length
28"	7-1/2"	1'-4"	3'-9"
36"	7-3/4"	1'-9"	4'-7"
40"	8-3/4"	1'-11"	4'-11"
45"	9"	2'-2 1/2"	5'-6"
54"	10-1/2"	2'-8"	6'-5"

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

BAR	NO	LENGTH	SHAPE	LOCATION
D501	18	11'-2"	STR.	DIAPH. HORIZ.
D502	8	5'-0"	STR.	DIAPH. HORIZ.
D403	27	6'-5"	BENT	DIAPH. VERT.



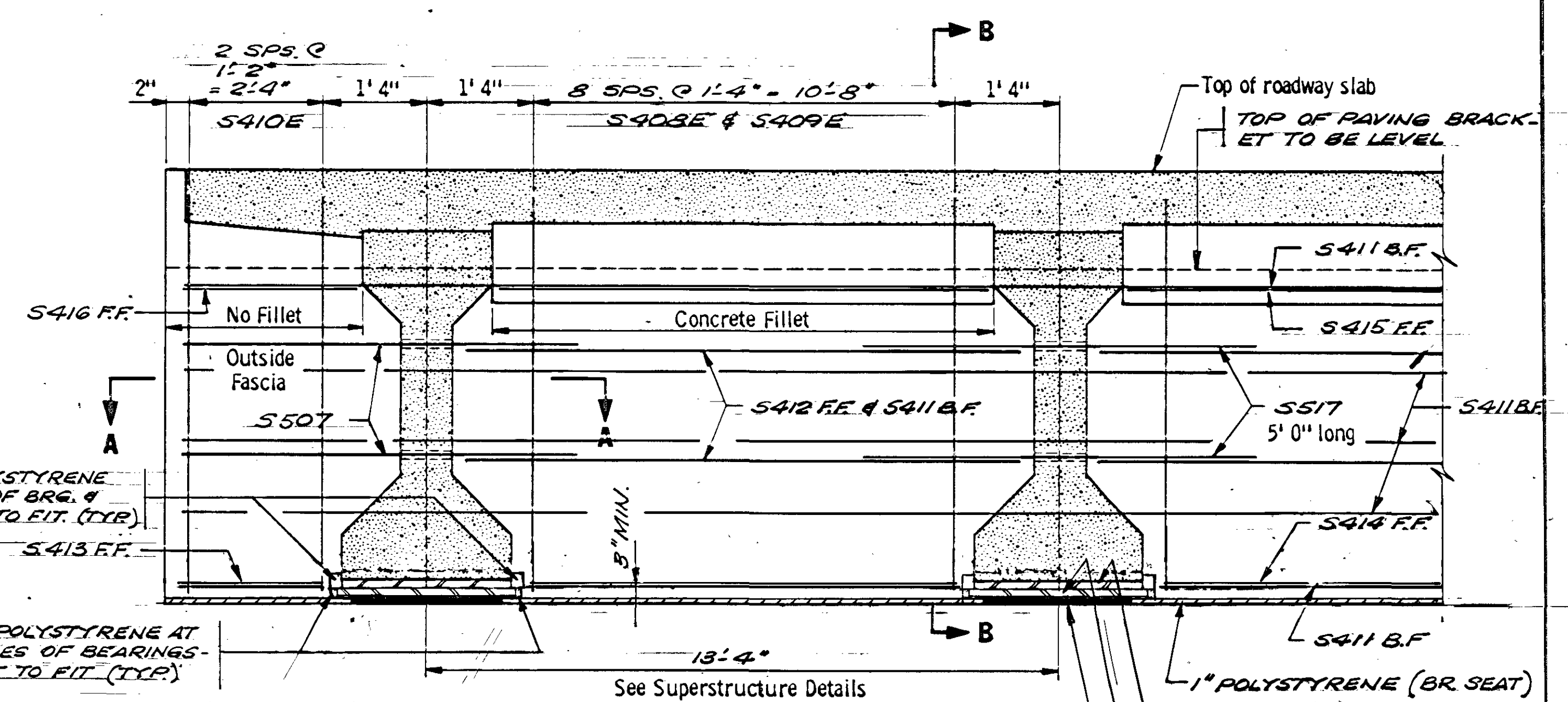
S403



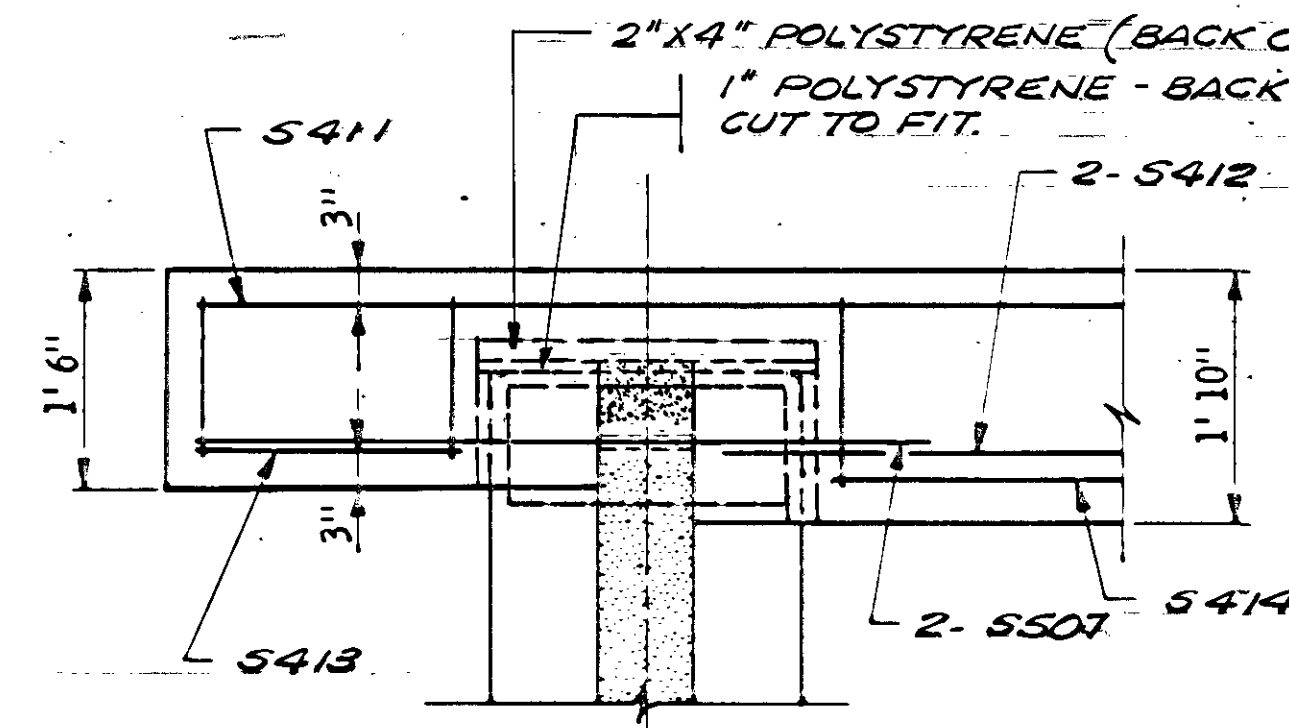
SECTION A-A

GENERAL NOTES

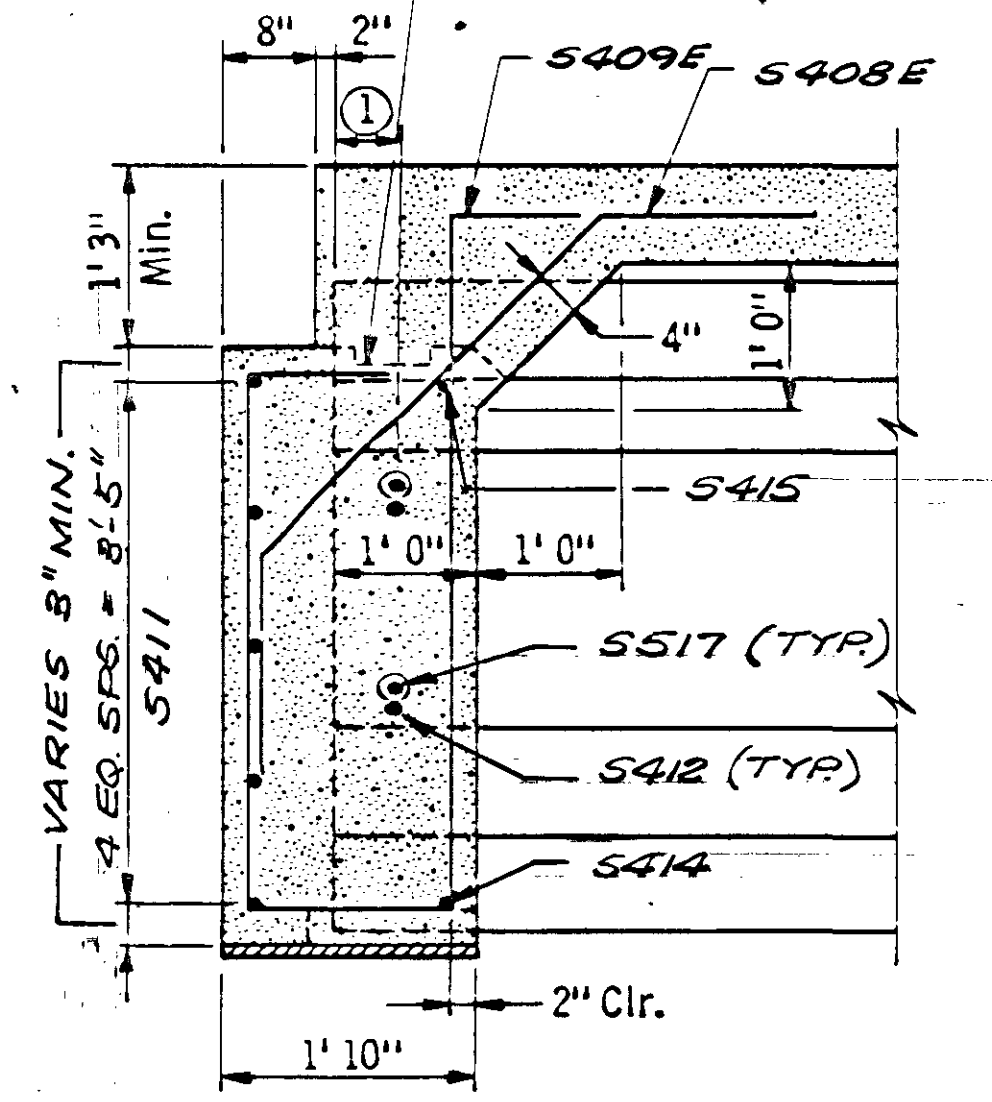
- For Diaphragms 200 and over, use threaded rods as shown on standard prestressed concrete beam sheet.
- All diaphragm concrete and reinforcement bars shown on this detail to be included in payment for diaphragms for prestressed beams. Threaded rods are included in payment for prestressed concrete beams.
- PAYMENT LENGTH FOR DIAPHRAGMS.



PART TRANSVERSE SECTION AT END DIAPHRAGM



SECTION A-A



SECTION B-B

* May be eliminated for small beam heights

① See plans for dimensions

NOTE
 All diaphragm bars shown are listed with the superstructure reinforcement. Diaphragm concrete and reinforcement quantities are included in superstructure quantities.
 To be used at abutment end only.

APPROVED: MARCH 27, 1979
 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN
 Issued by: OFFICE OF ENGINEERING STANDARDS

MINNESOTA
 DEPARTMENT OF TRANSPORTATION

CONCRETE INTERMEDIATE DIAPHRAGM
 (FOR 28"-54" PRESTRESSED CONCRETE BEAM SPANS)

DETAIL NO.
B802

APPROVED: Oct. 20, 1976
 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN
 Issued by: OFFICE OF ENGINEERING STANDARDS

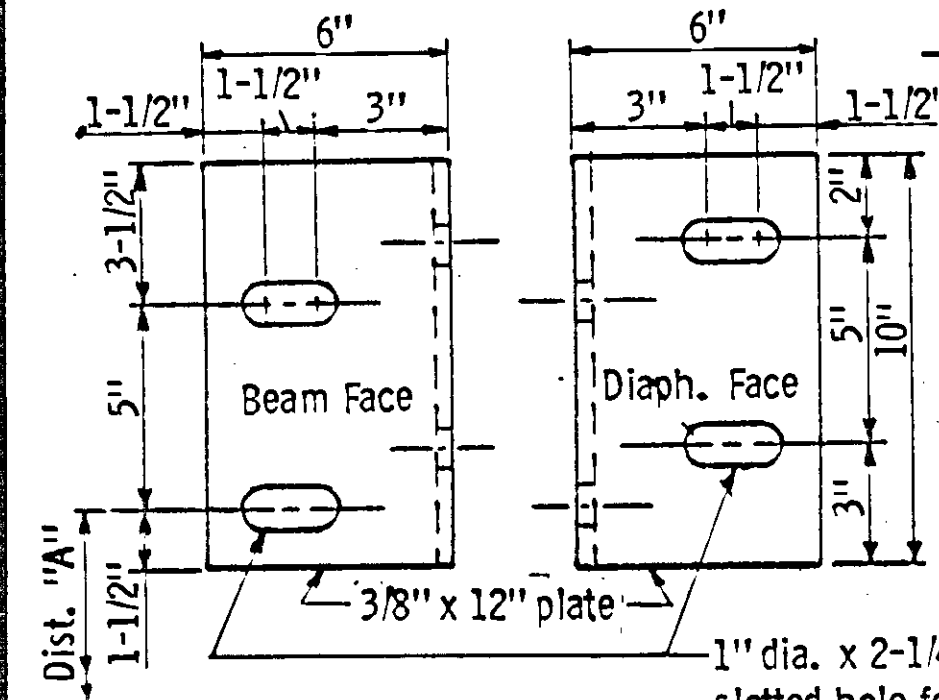
STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION

CONCRETE END DIAPHRAGM
 (28"-54" PRESTRESSED CONCRETE BEAM SPAN WITH PILE BENT ABUTMENT)

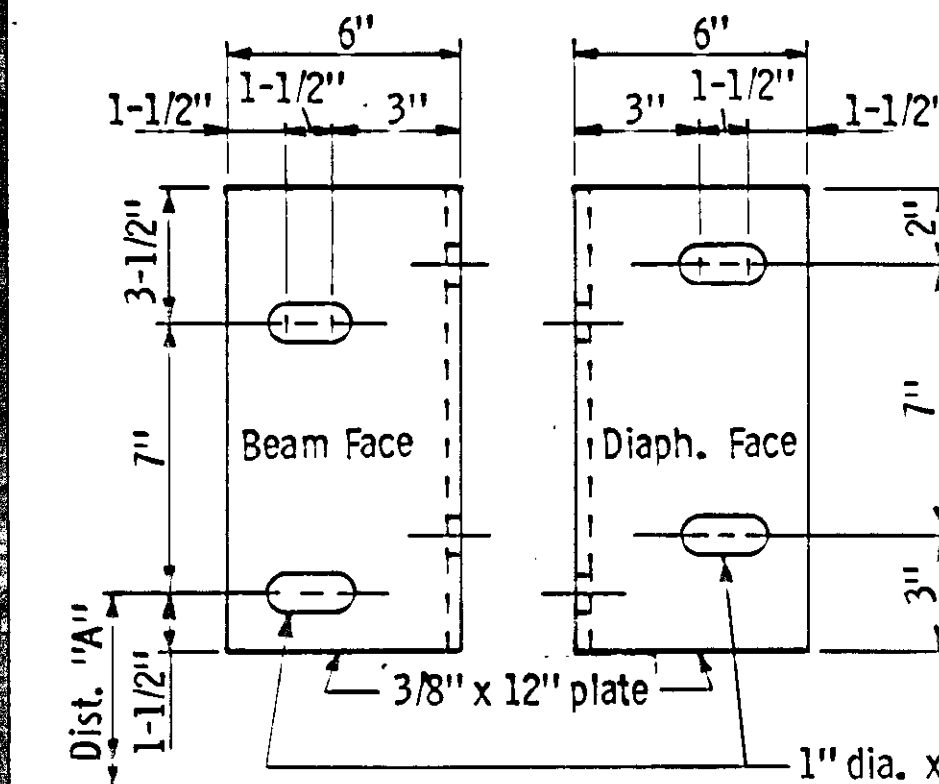
REVISION
 July 25, 1980

DETAIL NO.
B810

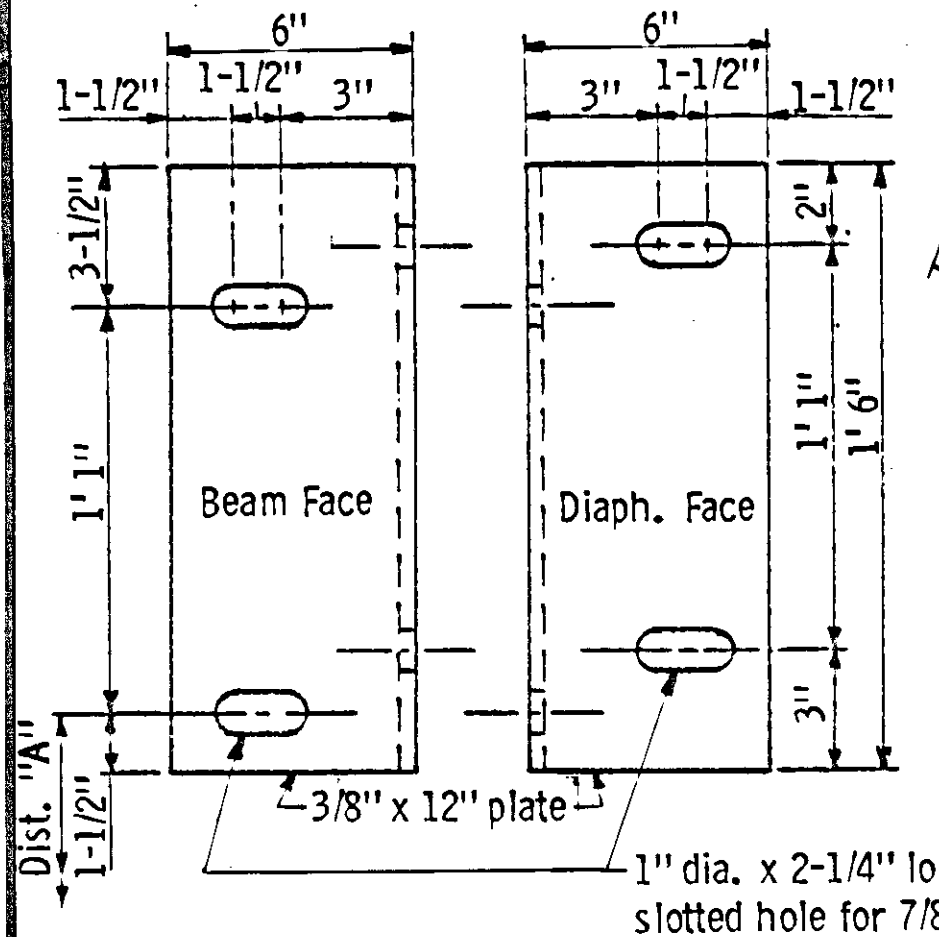
Beam Ht.	Distance "A"
28"	1' 0"
30"	1' 1-1/2"
36"	1' 3"
40"	1' 5"
45"	1' 4-1/2"
54"	1' 9"



DIAPHRAGM SUPPORT FOR 28" BEAMS



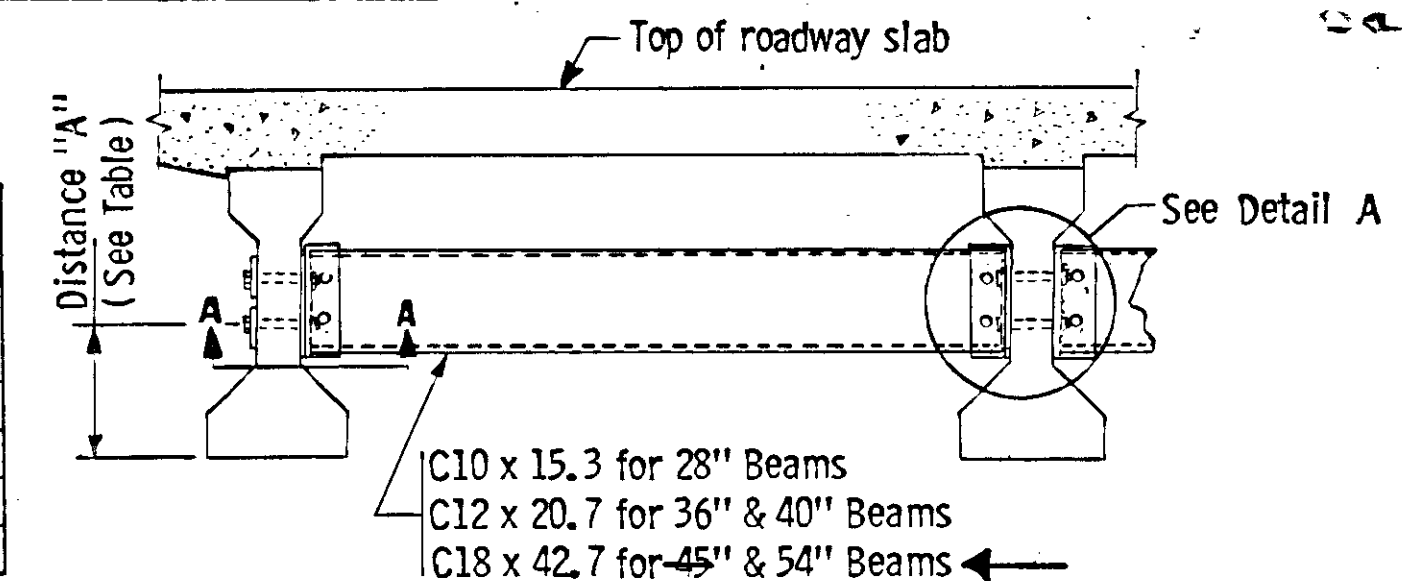
DIAPHRAGM SUPPORT FOR 36" & 40" BEAMS AND 30" BULB TEES



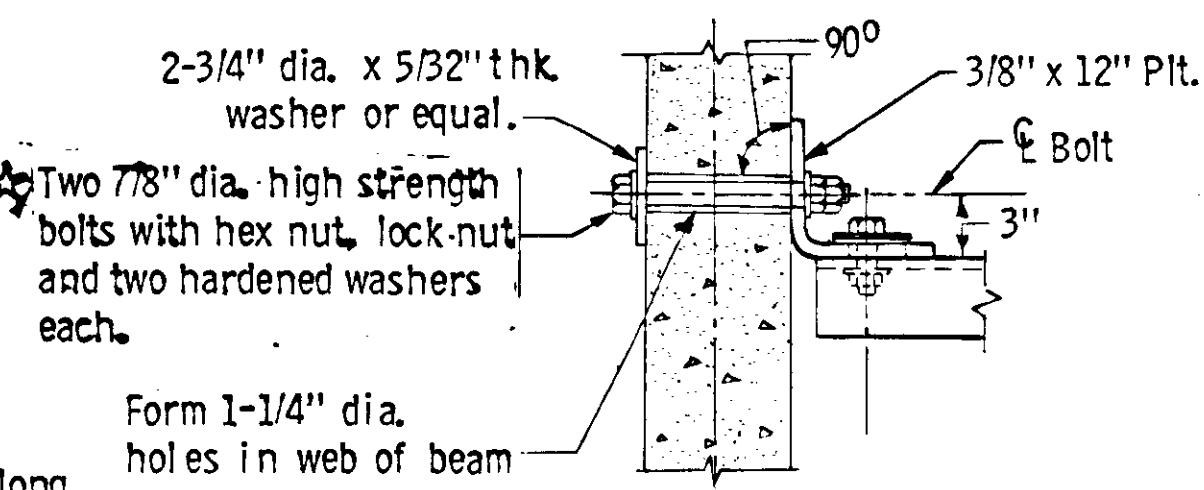
DIAPHRAGM SUPPORT FOR 45" & 54" BEAMS

TABLE

2-3/4" dia. x 5/32" thk washer or equal.
 *Two 7/8" dia. high strength bolts with hex nut, lock-nut and two hardened washers each.
 Form 1-1/4" dia. holes in web of beam.

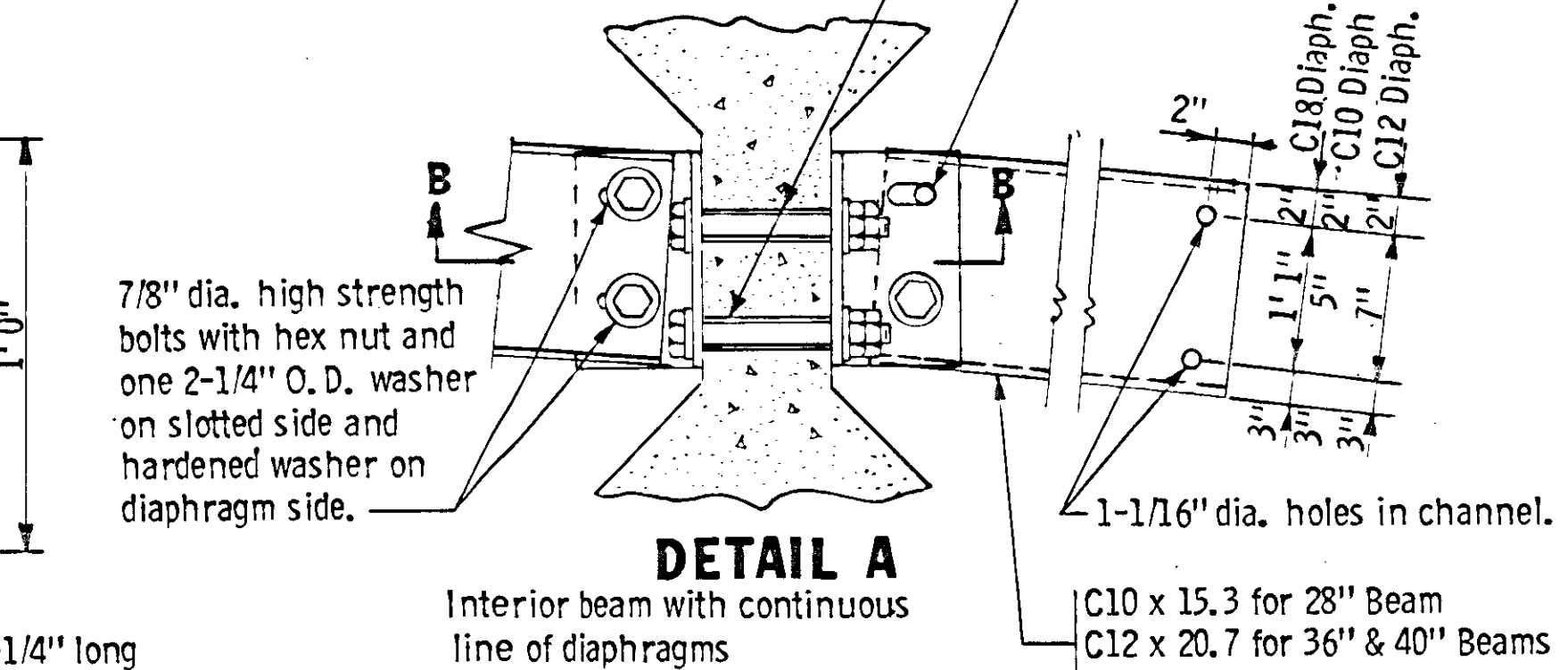


PART TRANSVERSE SECTION AT DIAPHRAGM



SECTION A-A

Section A-A applies at all fascia beams and at interior diaphragms & at piers with over 20° skews.



DETAIL A

Interior beam with continuous line of diaphragms

Conc. Diaphragm. See Framing Plan.

GENERAL NOTES:

The leg of the 12" plate shall be shop bent to conform to diaphragm line. When the θ angle is less than 30°, shop bends will not be required and a 3/8" x 6" x 6" angle may be used.

★ 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.

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 to be included in payment for diaphragms for prestressed beams.

Diaphragms over piers considered to be intermediate if slab is continuous.

SECTION B-B

Typ. Section for Skews under 20°

APPROVED: July 8, 1976
 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN
 Issued by: OFFICE OF ENGINEERING STANDARDS

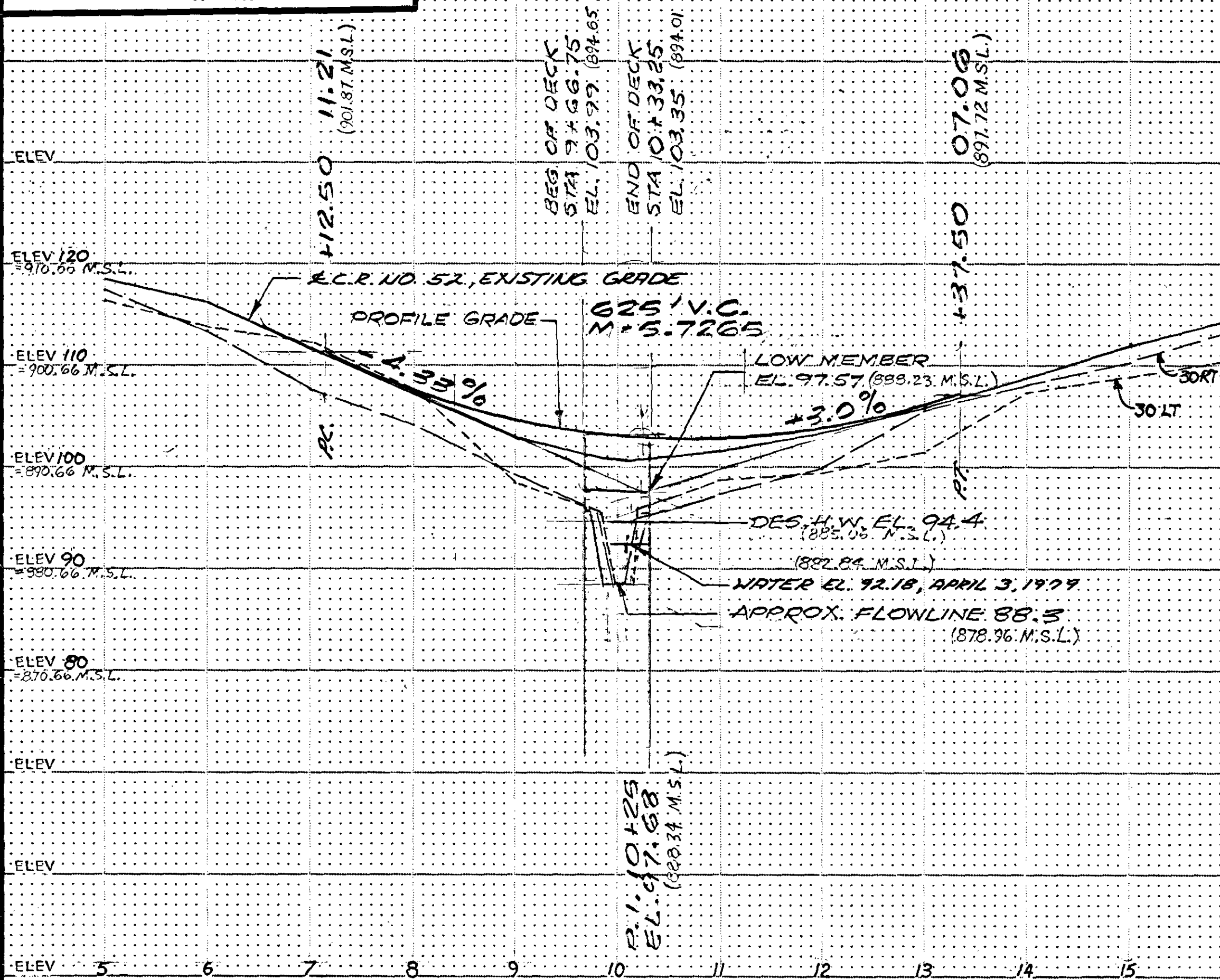
STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION
STEEL INTERMEDIATE DIAPHRAGM
 (FOR 28"-54" PRESTRESSED CONCRETE BEAM SPANS AND 30" BULB TEE BEAMS)

REVISION:
 May 2, 1978
 Sept. 28, 1978

DETAIL NO.
B403

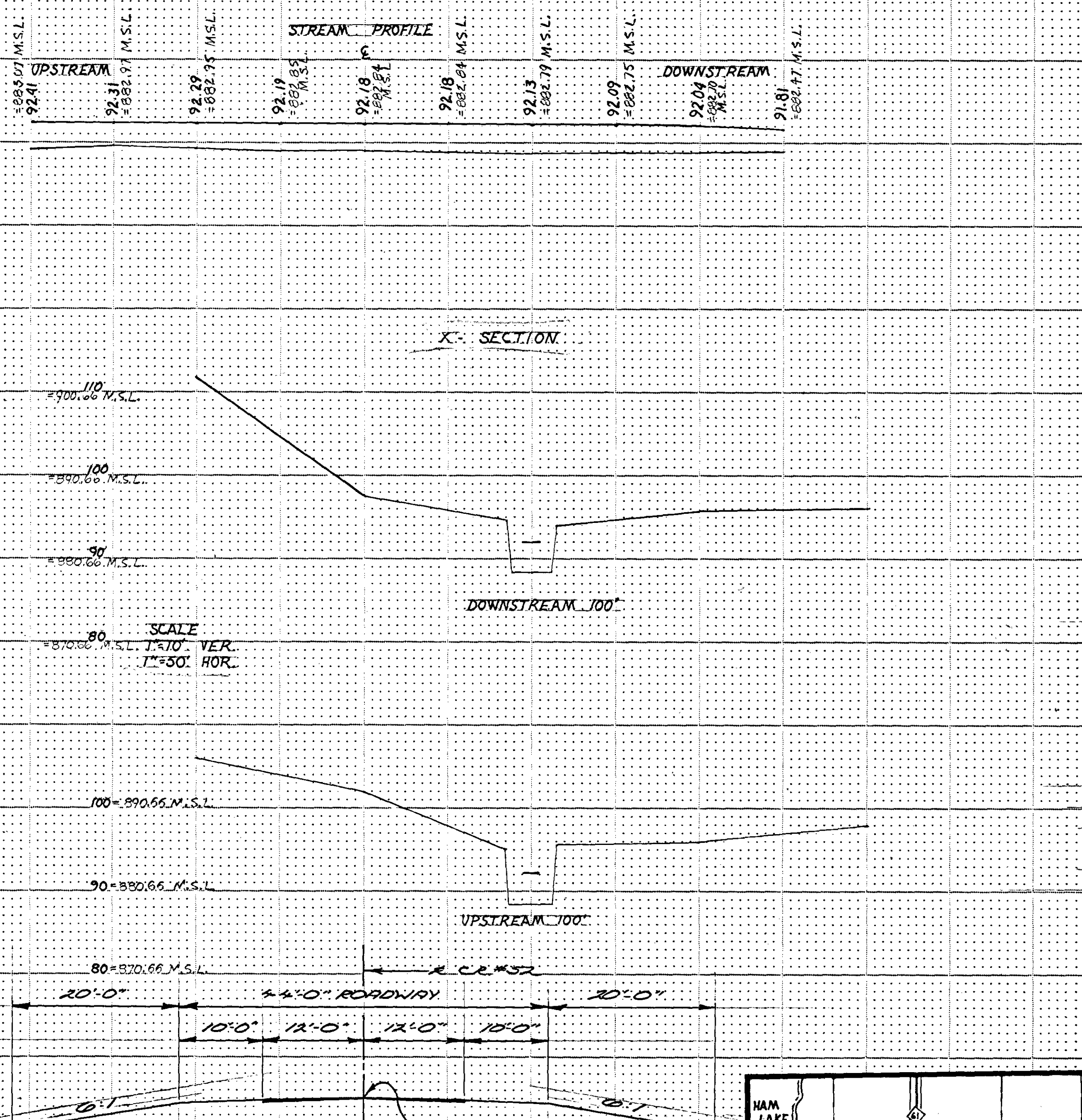
CONTRACTED PROFILE

SCALE: HOR. 1"=50' VER. 1"=10'



TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN



Fed. Proj. No.

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating. GAGING STATION ON UPSTREAM SIDE OF BRIDGE.
- Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway): Given location, type, length, height above high water, cross-sectional area etc.
- Apparent highwater elevation..... Obtained from.....
- Other data: Approx. velocity of water at time of survey. 2.5 F.P.S.

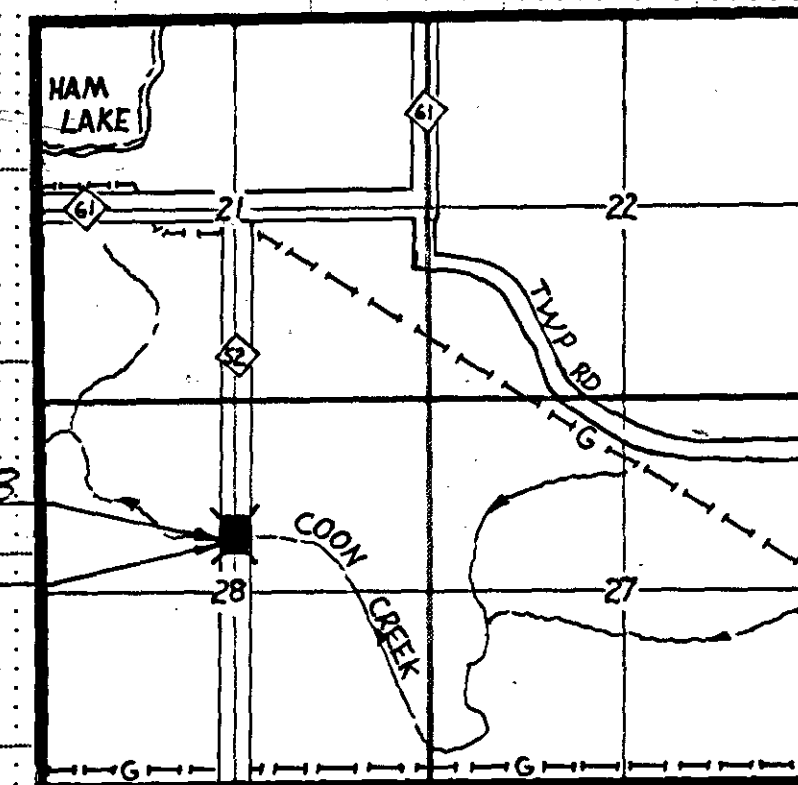
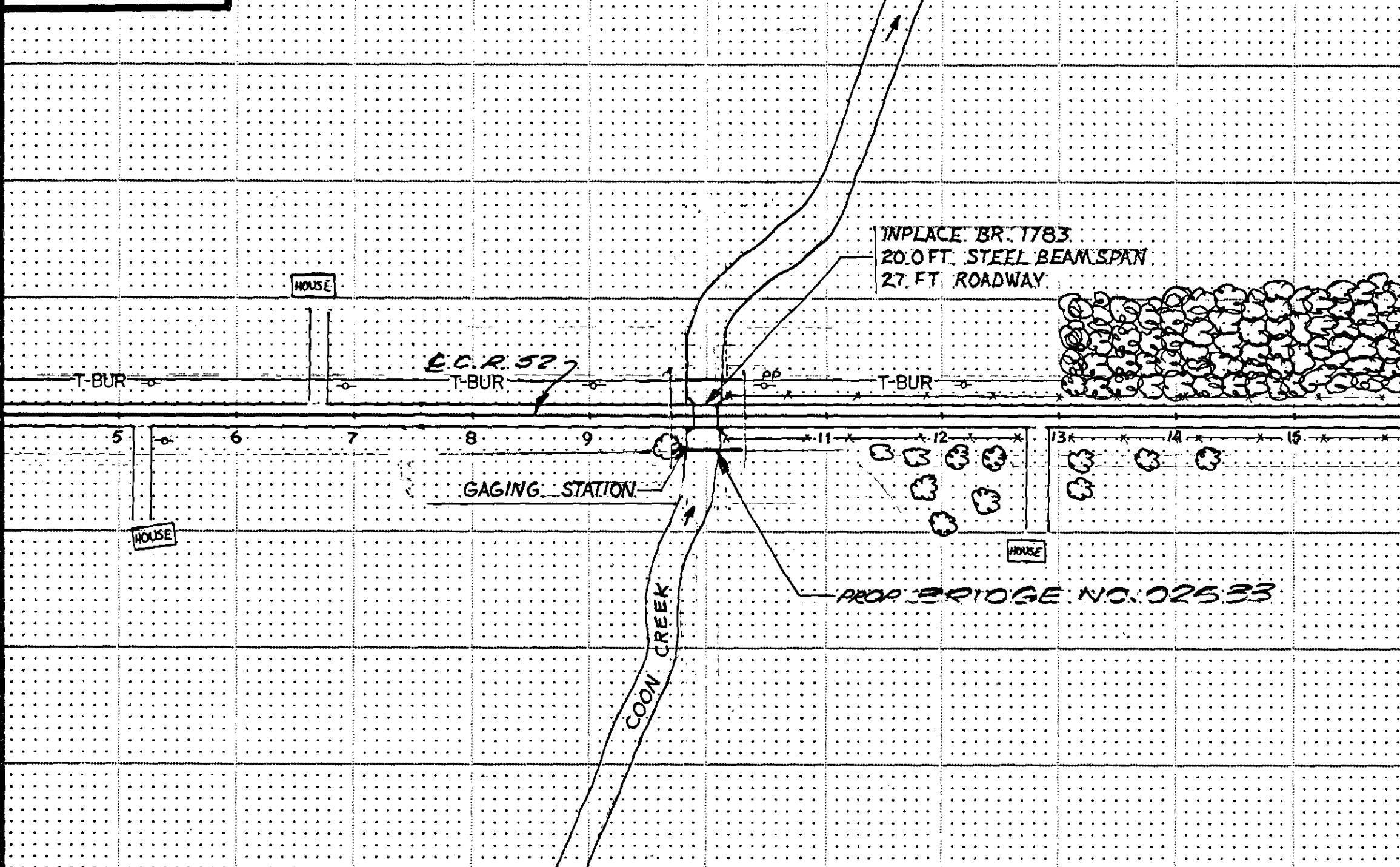
HYDRAULIC ENGINEERS RECOMMENDATION

DATE: 7-23-79

Stream or ditch designation COON CREEK
 Drainage area 25.60 SQ. MI.
 Max. flood on record. UNK. Design flood (.50 yr. freq.) 430 C.F.S.
 Max. observed highwater elevation UNK. Design highwater elevation 94.4
 Design mean velocity through structure 1.8 F.P.S.
 Low superstructure at or above elevation 97.4 = 888.06
 Flowline elevation 88.30 Skew angle NONE
 Waterway area req'd. below elevation 94.4 = 237 Sq. Ft. at Rt. angles to channel = 885.06 M.S.L.
 In the interest of flood plain zoning the regional flood (100 yr. freq.) is 520 C.F.S. at stage 95.2 and mean velocity of 1.9 F.P.S. with NEG. Ft. swellhead = 885.96 M.S.L.
 The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

PLAT

SCALE: 1"=50'



Bridge survey sheets made from: ERICKSON ENGINEERING SURVEY NOTES
 Bench mark elevation 100 (ASSUMED)
 Location: TOP OF S.W. WING WALL

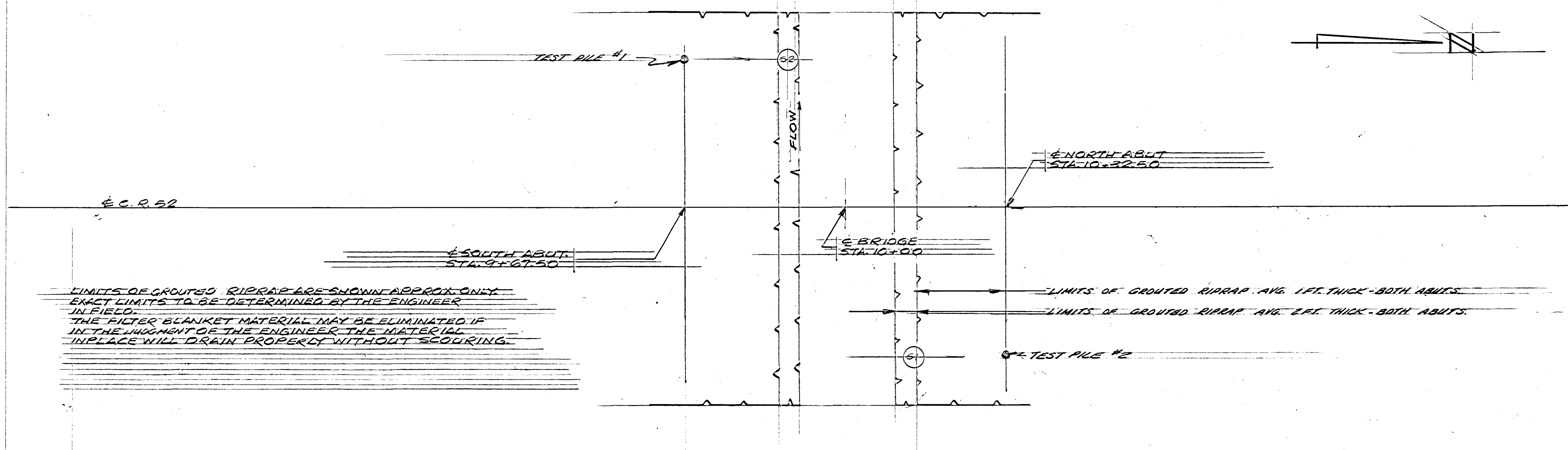
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

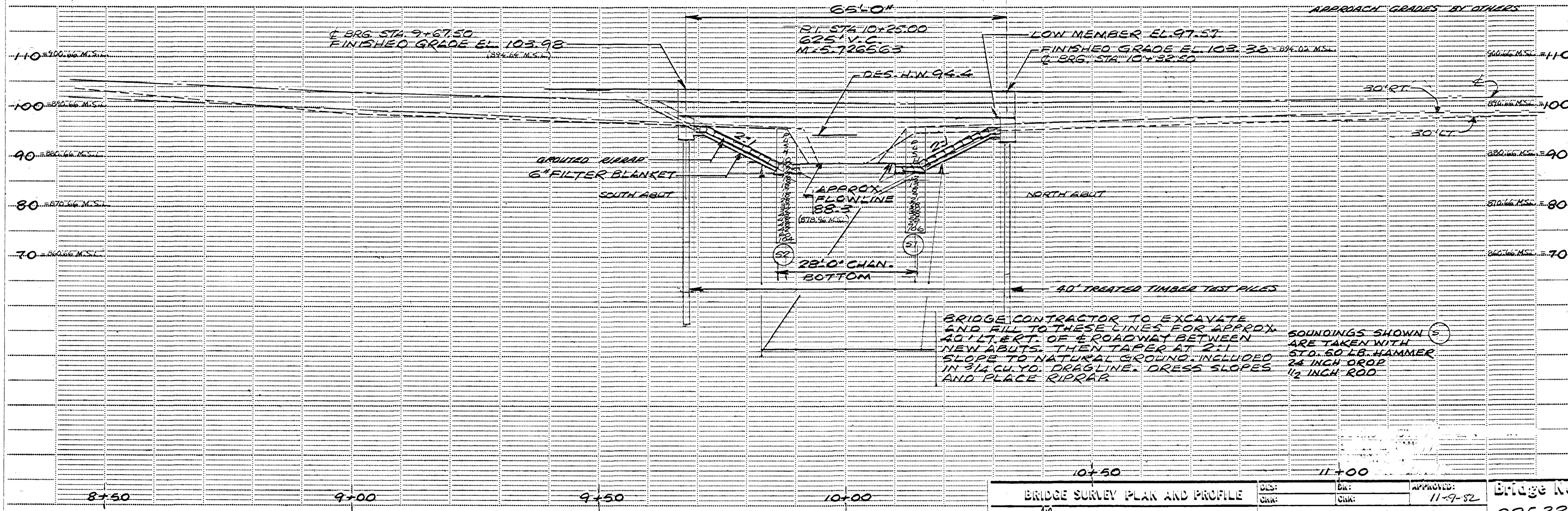
AT MILE POINT..... ON CR 52
 (T.H. C.S.A.H., C.R. etc.)
 PROPOSED BRIDGE LOCATED 1.0 MILES NORTH OF
JCT CR 116
 SEC. 28 TWP. 32 N R. 23 W
 TOWNSHIP HAM LAKE COUNTY ANOKA

BRIDGE NO. 02533

TELETYPE POST BRIDGE SURVEY (BC-2) 7/76



LIMITS OF GROUTED RIPRAP ARE SHOWN APPROX. ONLY. EXACT LIMITS TO BE DETERMINED BY THE ENGINEER IN FIELD. THE FILTER BLANKET MATERIAL MAY BE ELIMINATED IF IN THE JUDGMENT OF THE ENGINEER THE MATERIAL IN PLACE WILL DRAIN PROPERLY WITHOUT SCOURING.



BRIDGE CONTRACTOR TO EXCAVATE AND FILL TO THESE LINES FOR APPROX. 40' L.T. OF ROADWAY BETWEEN NEW ABUTS. THEN TAPER AT 2:1 SLOPE TO NATURAL GROUND. INCLUDED IN 3/4 CU. YD. DRAGLINE. DRESS SLOPES AND PLACE RIPRAP.

SOUNDINGS SHOWN ARE TAKEN WITH ST. 50 LB. HAMMER 24 INCH DROP 1/2 INCH ROD