

DESIGN DATA

1988 & INTERIM A.A.S.H.T.O. DESIGN SPECIFICATIONS

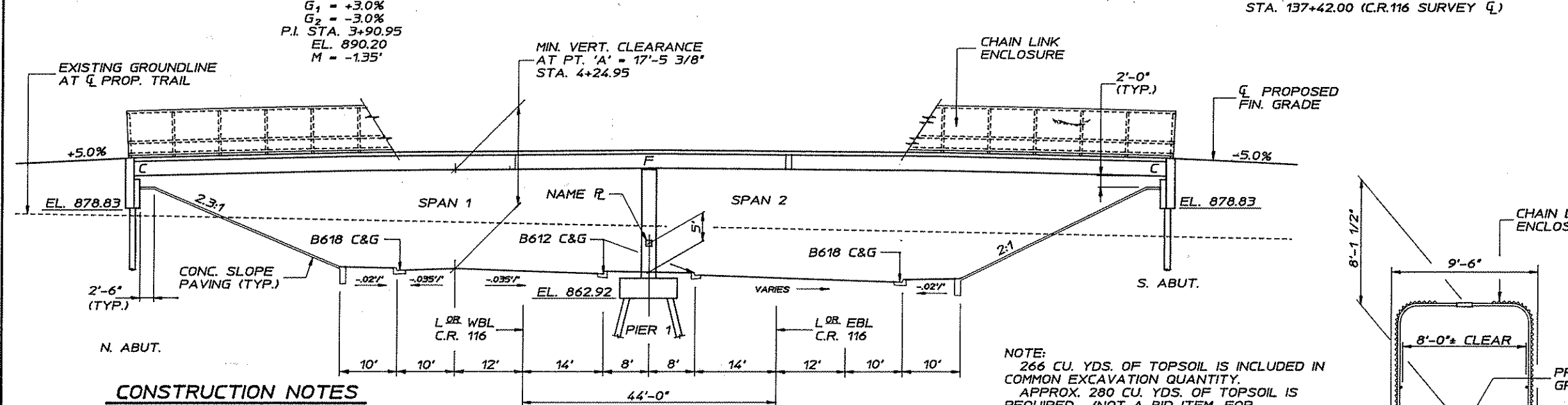
SIDEWALK LOADING: 85 p.s.f.

MAXIMUM ALLOWABLE DESIGN STRESSES:
 REINFORCED CONCRETE:
 f_c = 4000 PSI n = 8
 f_y = 60000 PSI REINFORCEMENT
 STRUCTURAL STEEL:
 f_y = 50000 PSI SPEC. 3309

19,150 PROJ. A.D.T. FOR YR. 2009 (UNDER)
 DECK AREA = 1734 SQ. FT.

LIST OF SHEETS

NO.	TITLE
1	GENERAL PLAN & ELEVATION
2	ABUTMENT DETAILS
3	PIER DETAILS
4	PIER REINFORCEMENT
5-6	SUPERSTRUCTURE DETAILS
7	CHAIN LINK ENCLOSURE DETAILS
8	CONCRETE SLOPE PAVING
9-12	DETAILS
13	BRIDGE SURVEY
14	BRIDGE SURVEY ~ PLAN & PROFILE
15	APPROACHES ~ PLAN & PROFILE
16-17	CROSS SECTIONS



B.M. ELEV. 873.23
 LOCATION: S.E. CORNER OF SIDEWALK AT S.E. CORNER OF ICE ARENA.

① SEE SHEET 13 FOR LIMITS & STD. PLATE 9322 I FOR DETAILS.

CONSTRUCTION NOTES

THE 1988 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

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.

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

CONSTRUCTION OF EACH ABUTMENT SHALL NOT BE STARTED UNTIL THE APPROACH FILL AT THAT ABUTMENT HAS BEEN CONSTRUCTED TO THE FULL HEIGHT AND CROSS SECTION.

ELEVATION
 SCALE: 3/32"=1'-0"

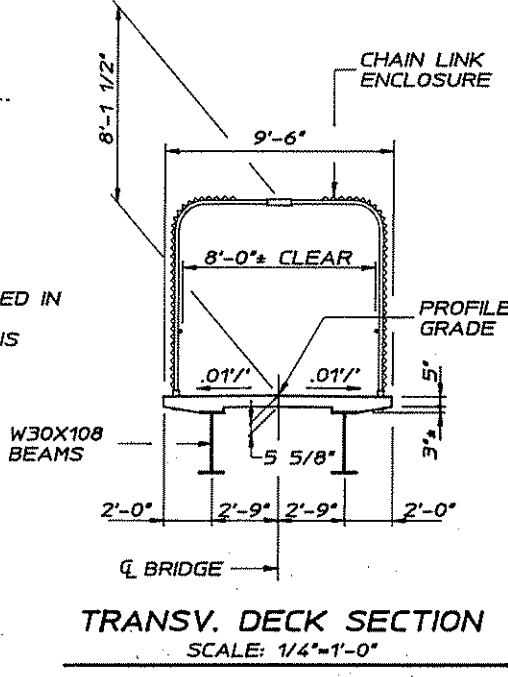
BASIS OF PLANNED QUANTITIES:

2341 PLANT MIXED WEARING COURSE BITUMINOUS MIXTURE 110 LBS./SQ. YD. PER 1" THICKNESS BITUMINOUS MATERIAL FOR MIXTURE 5.8% BY WEIGHT

2575 COMMERCIAL FERTILIZER, ANALYSIS 10-10-10 500 LBS./ACRE ON ALL SEED AND SOD AREAS

2575 ROADSIDE SEEDING BASED ON HORIZ. MEASUREMENT PLUS 10% SEED MIXTURE NO. 500, @ 50 LBS./ACRE

NOTE: ALL PILES ARE TO BE TREATED TIMBER PILES.



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.

Robert R. Jorgensen
 REG. NO. 6924

DATE: 3-23-90

PLANS PREPARED BY:
ERICKSON ENGINEERING
 3340 REPUBLIC AVENUE
 ST. LOUIS PARK, MN 55426

CO. RD. 116 ANOKA COUNTY
 MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02555

LOCATED ON THE TRAIL OVER CO. RD. 116 EXTENSION BETWEEN CO. RD. 47 AND C.S.A.H. 7 IN ANOKA COUNTY.

2 - 90' CONTINUOUS STEEL BEAM SPANS
 8' PEDESTRIAN WALKWAY
 SPAN IDENTIFICATION NO. 401

GENERAL PLAN & ELEVATION

SEC. 30 TWP. 32N R 24W

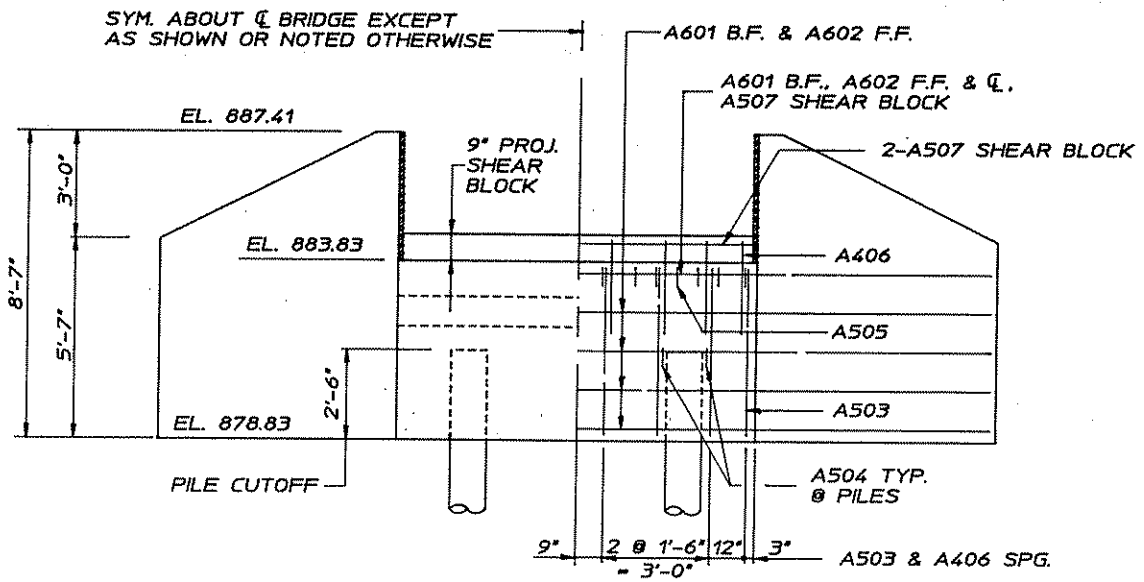
TOWNSHIP: ANDOVER
 COUNTY: ANOKA

APPROVED: *Tane K. [Signature]*
 ANOKA CO. HIGHWAY ENGINEER

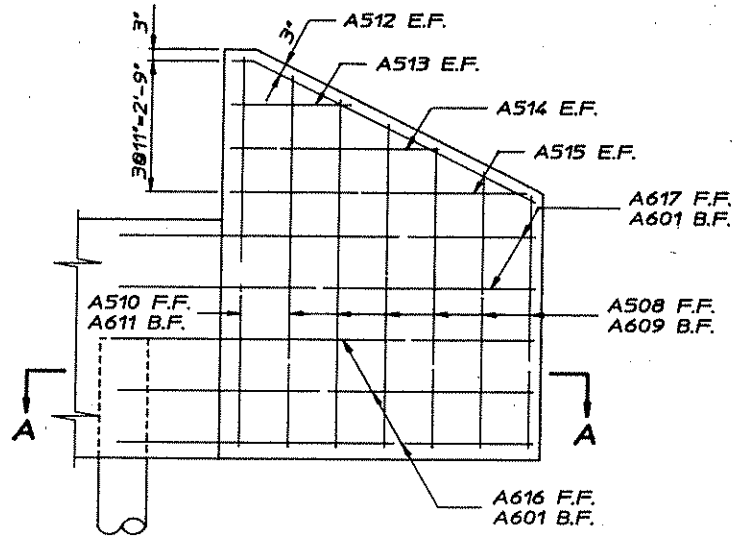
PROJ. 85-05-116 02555 RMT
 SHEET 1 OF 17 SHEETS RRT

SCHEDULE OF QUANTITIES ~ PEDESTRIAN BRIDGE & RAMPS

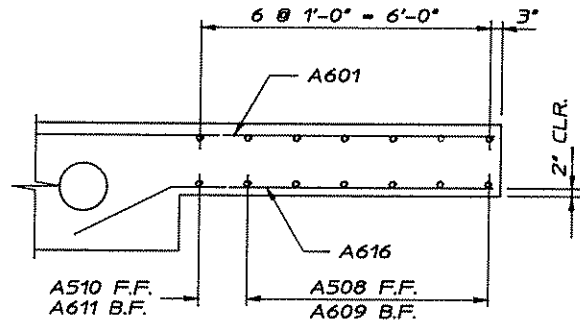
ITEM NO.	2401.501	2401.501	2401.512	2401.541	2401.541	2402.521	2402.595	0557.603	2477.503	2452.517	2452.503	2452.504	2514.501	0401.601	2021.501
ITEM	STRUCTURE CONCRETE (3Y43)	STRUCTURE CONCRETE (1A43)	BRIDGE SLAB CONCRETE (3Y46)	REIN-FORCEMENT BARS, EPOXY COATED	REIN-FORCEMENT BARS	STRUCTURAL STEEL (3309)	BEARING ASSEMBLY	CHAIN LINK ENCLOSURE	ZINC-RICH PAINT SYSTEM (NEW)	TREATED TIMBER TEST PILE, 65 FT. LONG	TREATED TIMBER PILING DELIVERED	TREATED TIMBER PILING DRIVEN	CONCRETE SLOPE PAVING	STRUCTURE EXCAVATION	MOBILIZATION
QUANTITY	35 (P)	9 (P)	1734 (P)	1890 (P)	7375 (P)	45690 (P)	6	183	3205	3	495	495	118	1	1
UNIT	CU. YD.	CU. YD.	SQ.FT.	POUND	POUND	POUND	EACH	LIN. FT.	SQ. FT.	EACH	LIN. FT.	LIN. FT.	SQ. YD.	LUMP SUM	LUMP SUM
ITEM NO.	2105.501	0105.603	2211.503	2341.508	2575.501	2575.502	2575.523	2575.532	2557.501						
ITEM	COMMON EXCAVATION	SALVAGED EMBANKMENT MAT'L FROM STOCKPILE	AGGREGATE BASE PLACED, CLASS 5A	WEARING COURSE MIXTURE	SEEDING	SEED, MIXTURE 500	WOOD FIBER BLANKETS, TYPE REGULAR	COMMERCIAL FERTILIZER, ANALYSIS 10-10-10	WIRE FENCE DESIGN 5-1						
QUANTITY	266 (P)	7958 (P)	95 (P)	74 (P)	0.7	35	3382	350	70						
UNIT	CU. YD.	CU. YD.	CU. YD.	TON	ACRE	POUND	SQ. YD.	POUND	LIN. FT.						



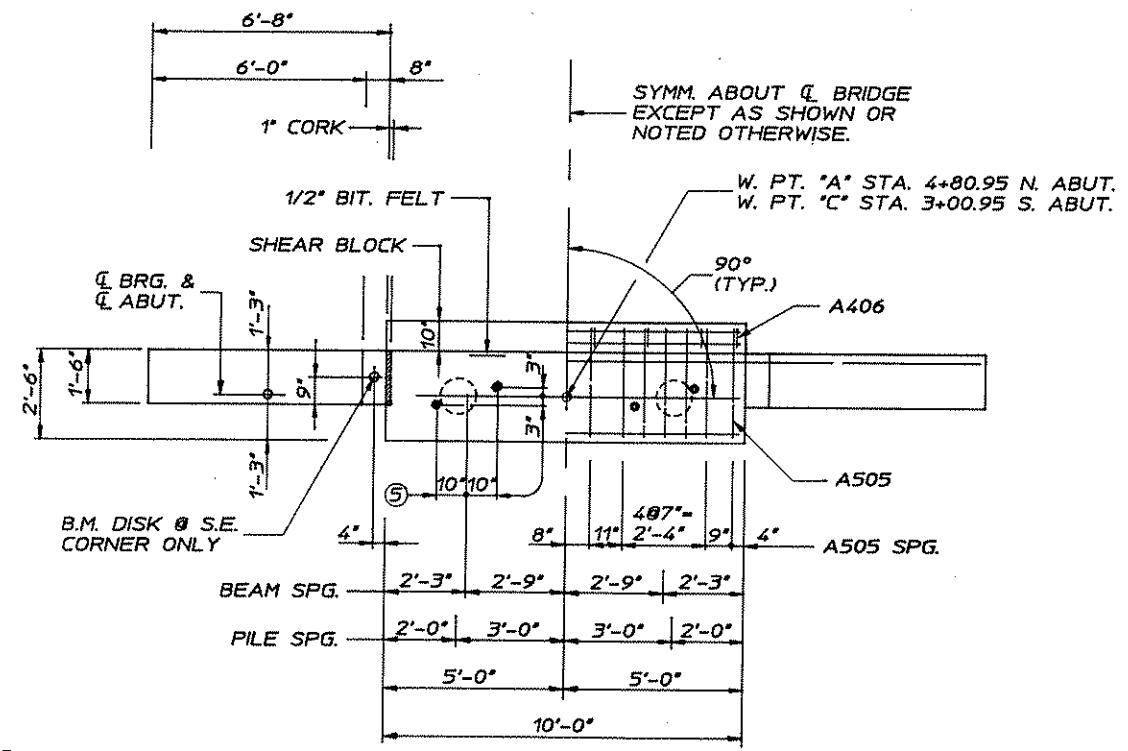
ELEVATION
SCALE: 3/8" = 1'-0"



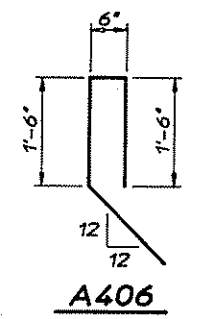
WINGWALL ELEVATION
SCALE: 1/2" = 1'-0"



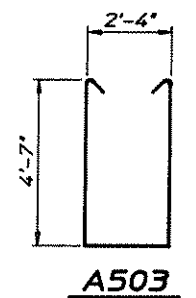
SECTION A-A
SCALE: 1/2" = 1'-0"



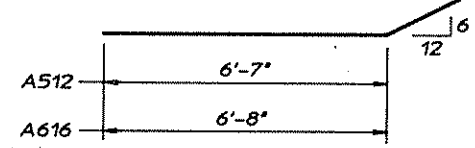
PLAN
SCALE: 3/8" = 1'-0"



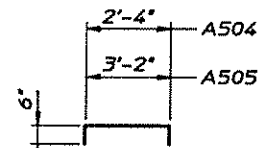
A406



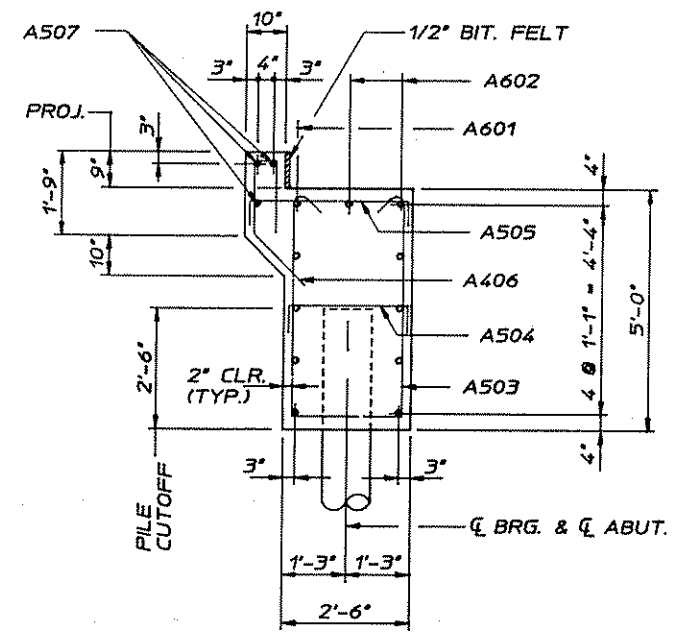
A503



A512 & A616



A504 & A505



SECTION THRU ABUTMENT
SCALE: 1/2" = 1'-0"

BILL OF REINFORCEMENT ~ 2 ABUTMENTS				
BAR	NO.	LENGTH	SHAPE	LOCATION
A601	10	23'-0"	STRT.	CAP ~ HORIZONTAL
A602	12	9'-8"	"	"
A503	16	12'-5"	BENT	" ~ STIRRUP
A504	8	3'-4"	"	" ~ TIE @ PILES
A505	28	4'-2"	"	" ~ TIE @ BRIDGE SEAT
A406	16	5'-0"	"	SHEAR BLOCK ~ TIE
A507	6	9'-8"	STRT.	" ~ HORIZONTAL
A508	12	13'-0"	"	WINGWALL ~ VERTICAL
A609	12	13'-0"	"	"
A510	4	8'-2"	"	"
A611	4	8'-2"	"	"
A512	8	7'-0"	BENT	" ~ HORIZONTAL
A513	8	2'-5"	STRT.	"
A514	8	4'-3"	"	"
A515	8	6'-1"	"	"
A616	12	8'-11"	BENT	"
A617	8	8'-9"	STRT.	"

① CUT 2 FROM 1.

SUMMARY OF QUANTITIES ~ 2 ABUTMENTS	
STRUCTURE CONCRETE (3Y43)	22 CU. YD.
REINFORCEMENT BARS	1900 POUND
STRUCTURE EXCAVATION	1 LUMP SUM
B.M. DISK (STANDARD PLATE NO. 9300)	
TREATED TIMBER PILING DELIVERED	110 LIN. FT.
TREATED TIMBER PILING DRIVEN	110 LIN. FT.
TREATED TIMBER TEST PILES, 65' LG.	2 EACH

- ② COUNTY WILL FURNISH DISK. PAYMENT FOR PLACING IS TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS. SEE STANDARD PLATE NO. 9301 FOR PLACING.
- ③ DOES NOT INCLUDE TEST PILES.
- ④ SEE SPECIAL PROVISIONS.

COMPUTED PILE LOADS ~ TONS PER PILE AT ABUTMENTS	
DEAD LOAD	19
LIVE LOAD	6
TOTAL	25

PILE NOTES:
 2 - TRTD. TBR. PILES, 55' EST. LGTH.
 2 - TRTD. TBR. TEST PILES, 65' LONG
 4 - TRTD. TBR. PILES REQ'D FOR 2 ABUTS.

FOR TEST PILE LOCATIONS, SEE SURVEY SHEET.

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02555

ABUTMENT DETAILS

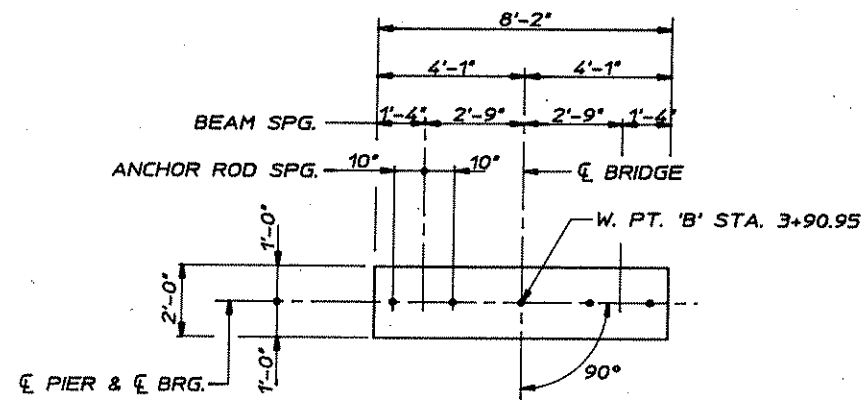
APPROVED:

PROJ. 85-05-116
SHEET 2 OF 17 SHEETS

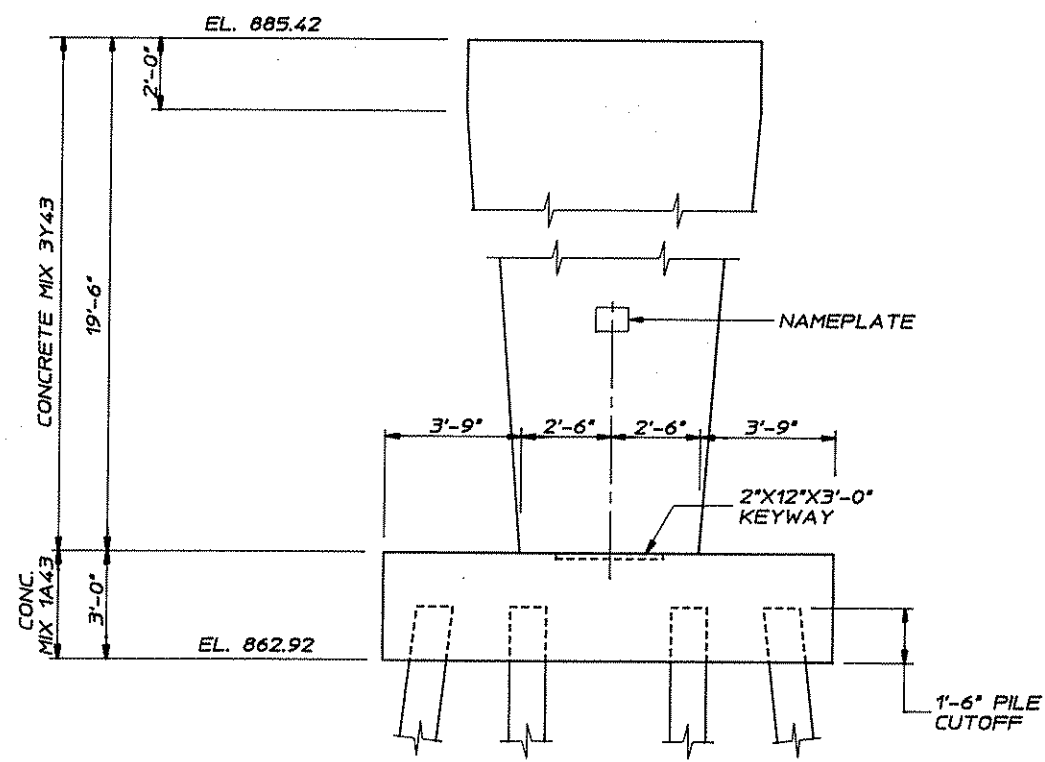
02555 RMT RRT

⑤ ANCHOR ROD SPG. SEE DETAIL B357.

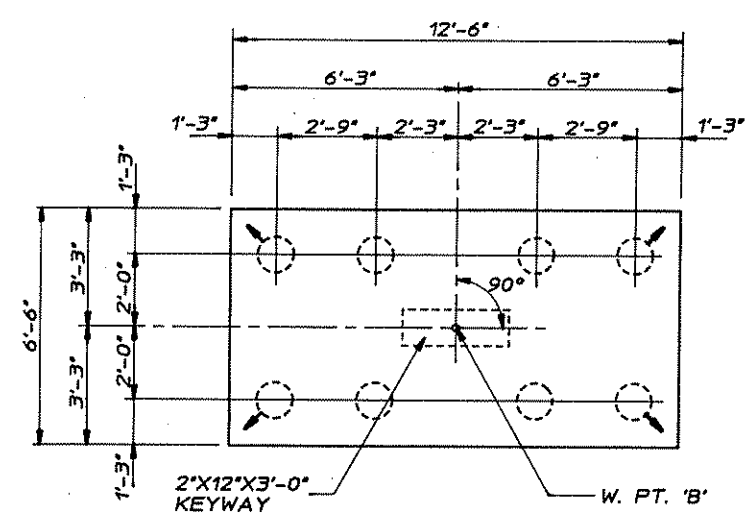
NOTE:
 F.F. = FRONT FACE
 B.F. = BACK FACE
 E.F. = EACH FACE



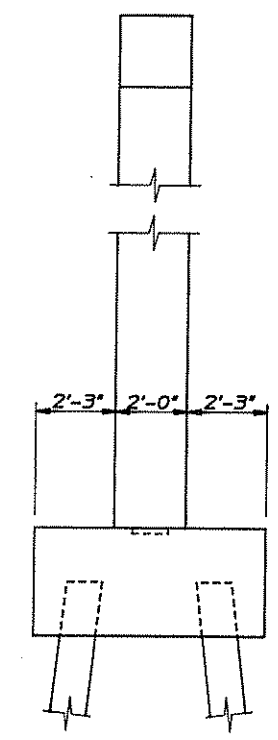
PLAN
SCALE: 3/8"=1'-0"



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



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



SIDE VIEW
SCALE: 3/8"=1'-0"

SUMMARY OF QUANTITIES ~ 1 PIER

STRUCTURE CONCRETE (1A43)	9	CU. YD.
STRUCTURE CONCRETE (3Y43)	10	CU. YD.
REINFORCEMENT BARS	415	POUND
REINFORCEMENT BARS (EPOXY COATED)	1890	POUND
NAMEPLATE	1	
TREATED TIMBER PILING DELIVERED	385	LIN. FT.
TREATED TIMBER PILING DRIVEN	385	LIN. FT.
TREATED TIMBER TEST PILES, 65' LG.	1	EACH

- ① DOES NOT INCLUDE TEST PILES.
- ② BRIDGE NO. 02555, DATED 1990. INCLUDED IN PRICE BID FOR OTHER ITEMS.

COMPUTED PILE LOADS ~ TONS PER PILE AT PIER	
DEAD LOAD	19.0
LIVE LOAD	
OVERTURNING	37.5
* TOTAL	22.6

* $\frac{56.5}{1.25} = 22.6$ T/P (REDUCTION PER A.A.S.H.T.O. 1.2.22 GROUP II LOADING)

PILE NOTES:

- 7 - TRTD. TBR. PILE, 55' EST. LGTH.
- 1 - TRTD. TBR. TEST PILES, 65' LONG
- 8 - TRTD. TBR. PILES REQ'D FOR 1 PIER

FOR TEST PILE LOCATIONS, SEE SURVEY SHEET.

PILES MARKED THUS $\odot \rightarrow$ TO BE BATTERED 2' PER FOOT IN DIRECTION SHOWN.

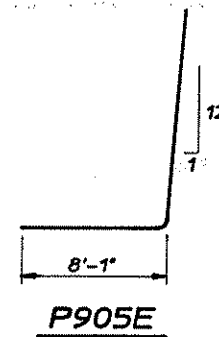
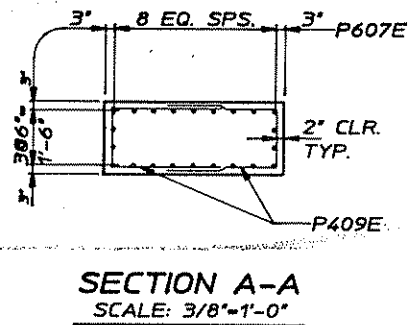
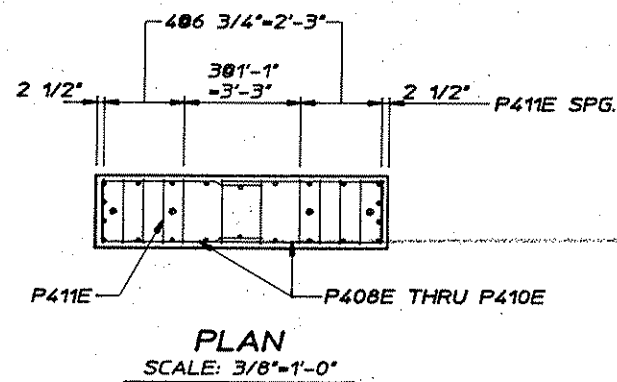
PILE SPG. SHOWN IS AT BOTTOM OF FOOTING.

MINNESOTA DEPARTMENT OF TRANSPORTATION

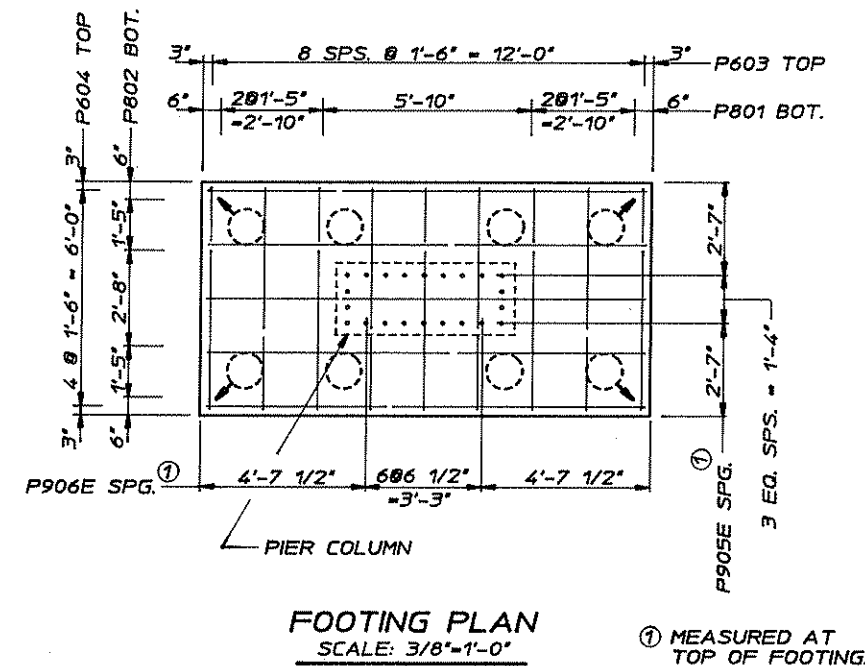
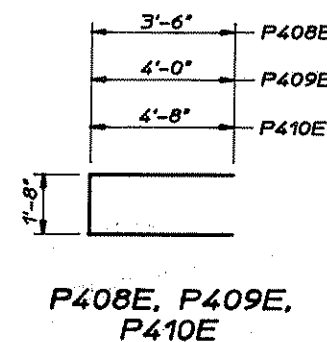
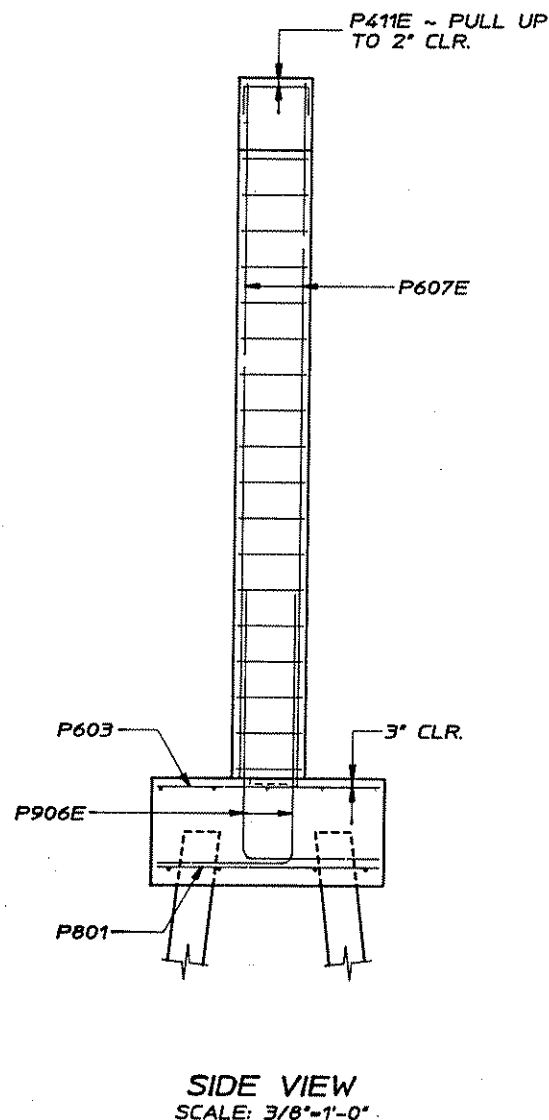
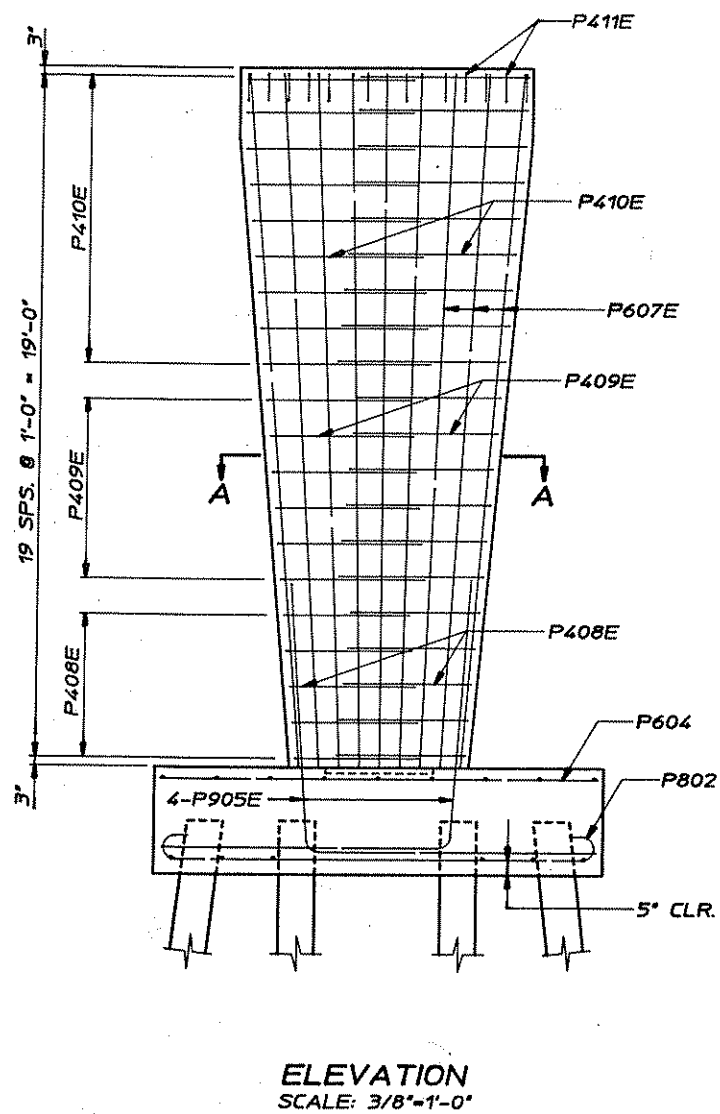
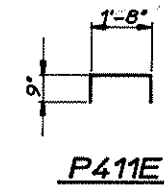
BRIDGE NO. 02555

PIER DETAILS

APPROVED:



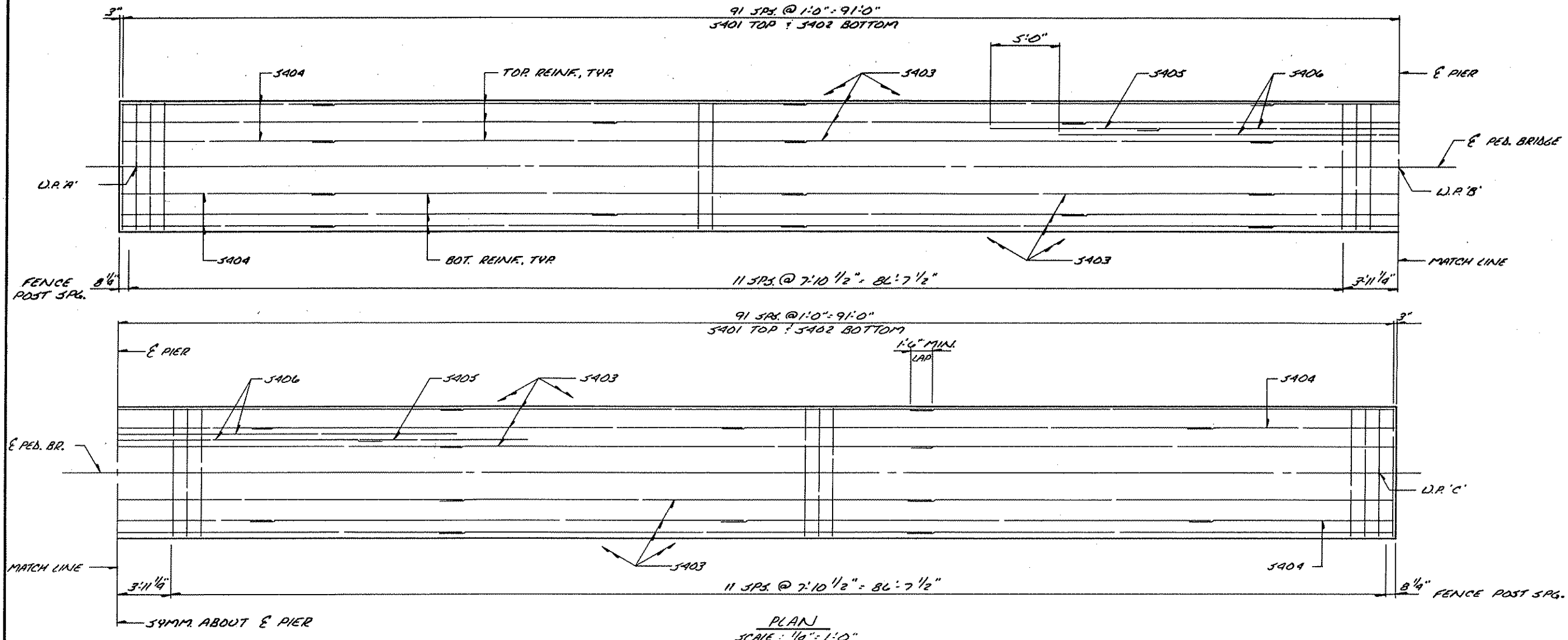
BILL OF REINFORCEMENT ~ 2 ABUTMENTS				
BAR	NO.	LENGTH	SHAPE	LOCATION
P801	6	6'-0"	STRT.	FOOTING ~ TRANSV. BOT.
P802	4	13'-10"	BENT	FOOTING ~ LONGIT. BOT.
P603	9	6'-0"	STRT.	FOOTING ~ TRANSV. TOP
P604	5	12'-0"	STRT.	FOOTING ~ LONGIT. TOP
P905E	8	15'-7"	BENT	FOOTING ~ DOWEL
P906E	14	11'-1"	BENT	FOOTING ~ DOWEL
P607E	22	19'-4"	STRT.	CAP ~ VERTICAL
P408E	10	8'-8"	BENT	CAP ~ TIE
P409E	12	9'-8"	BENT	CAP ~ TIE
P410E	18	11'-0"	BENT	CAP ~ TIE
P411E	12	3'-2"	BENT	BR. SEAT



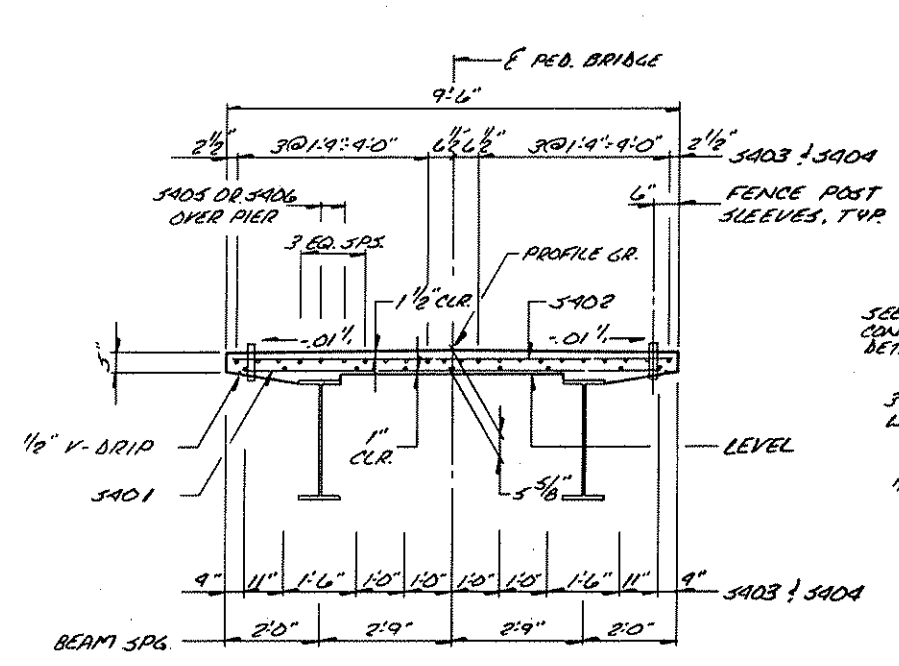
MINNESOTA DEPARTMENT OF TRANSPORTATION
BRIDGE NO. 02555
PIER REINFORCEMENT

APPROVED:
PROJ. 85-05-116
SHEET # OF 17 SHEETS

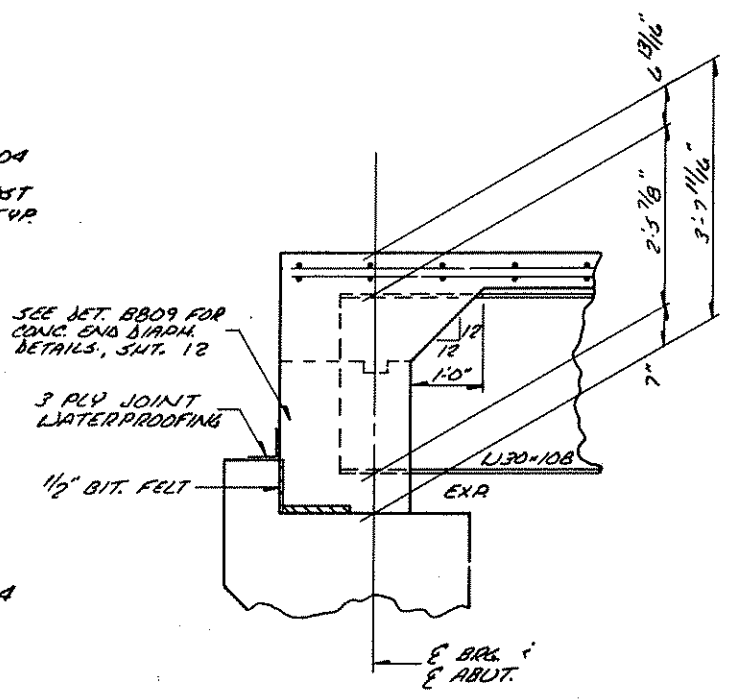
02555 RMT
RRT



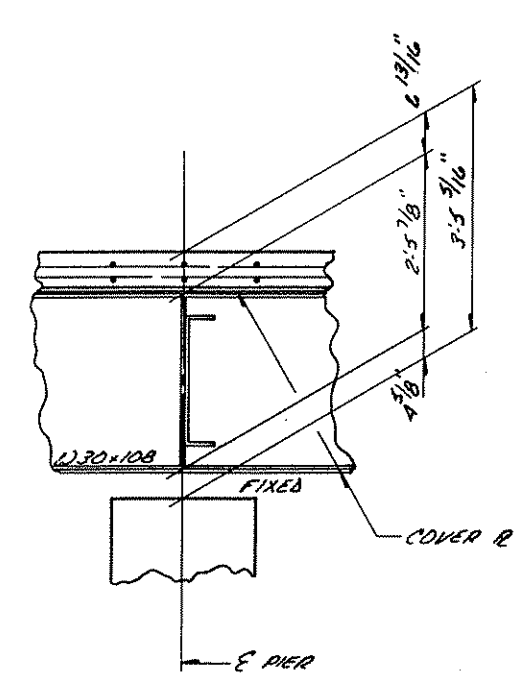
PLAN
SCALE: 1/4" = 1'-0"



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

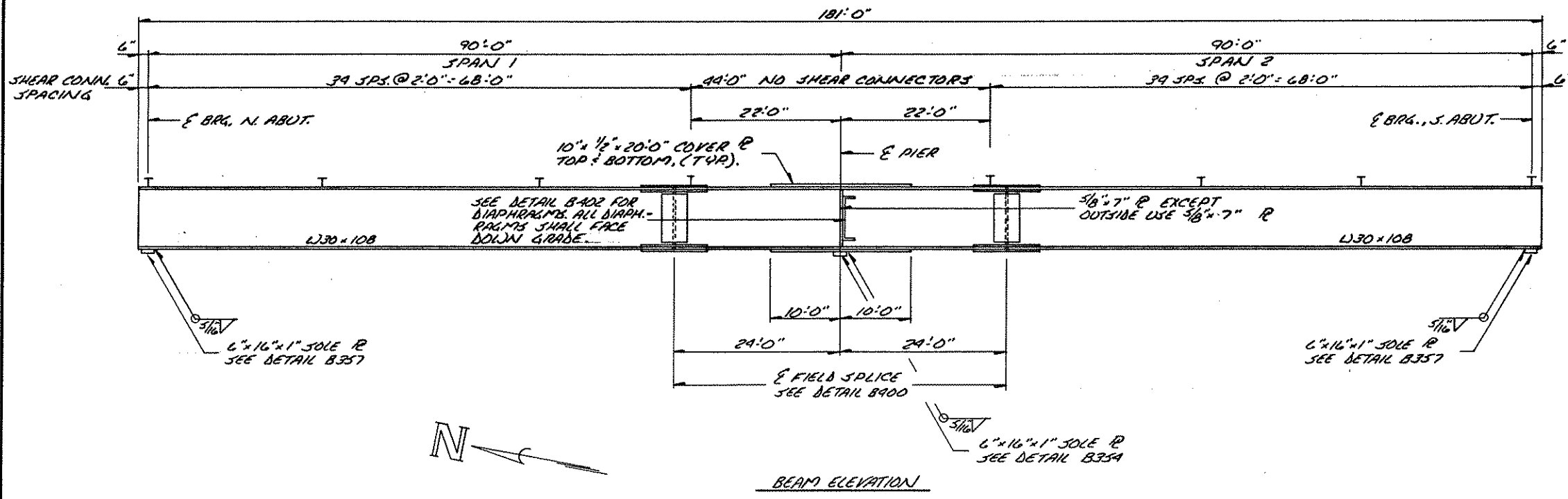


ABUTMENTS, TYP.

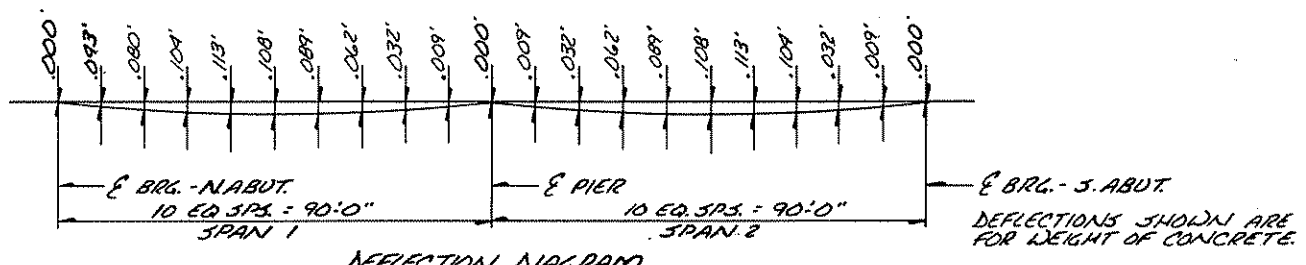


PIER
PART. LONGITUDINAL SECTION
SCALE: 3/8" = 1'-0"

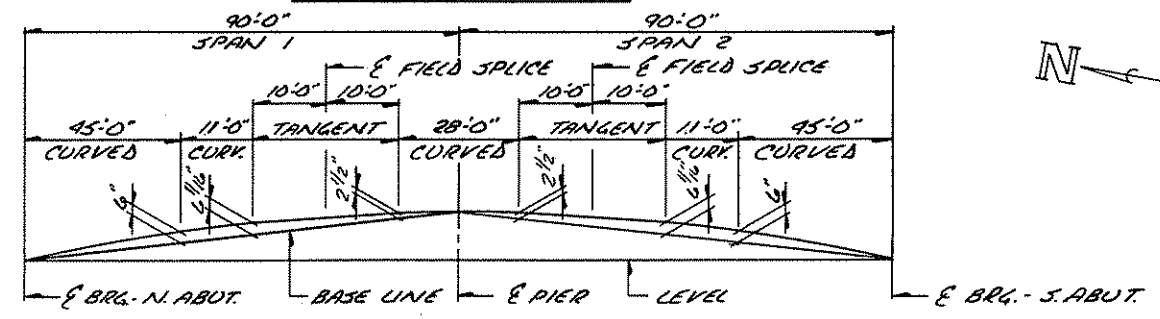
MINNESOTA DEPARTMENT OF TRANSPORTATION		
BRIDGE NO. 02555		
SUPERSTRUCTURE DETAILS		
APPROVED		
C.P. 85-05-116	02555	DM
SHEET 5 OF 17 SHEETS		RM7



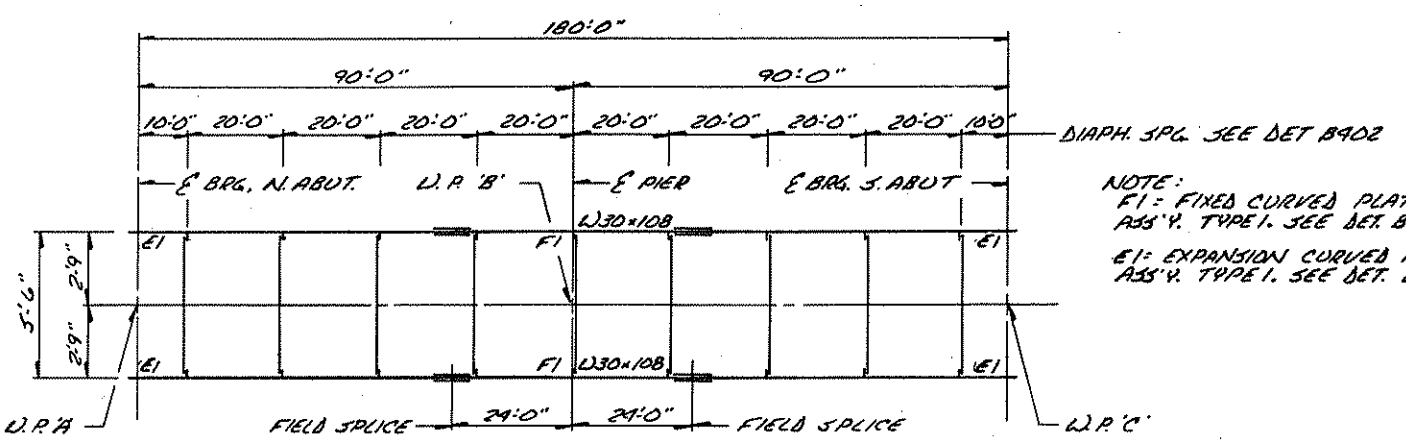
BEAM ELEVATION



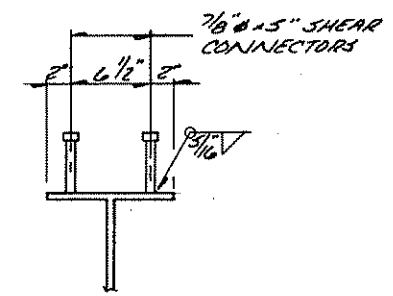
DEFLECTION DIAGRAM



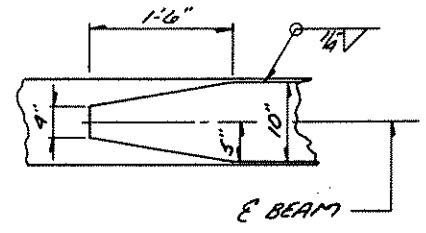
CAMBER DIAGRAM



FRAMING PLAN NO SCALE



SHEAR CONNECTION DETAIL



COVER PLATE DETAIL

BILL OF REINFORCEMENT - SUPERSTRUCTURE				
BAR	NO.	LENGTH	SHAPE	LOCATION
3401	183	9'-2"	STRT.	SLAB - TRANSVERSE
3402	183	8'-8"	"	"
3403	85	35'-0"	"	" - LONGIT.
3404	17	15'-0"	"	" @ ENDS
3405	14	13'-6"	"	" OVER PIER
3406	14	40'-0"	"	"
3407	12	9'-2"	"	END DIAPHRAGM
3408	6	5'-1"	"	"
3409	12	1'-10"	"	"
3410	8	9'-6"	BENT	"
3411	6	9'-10"	"	"
3412	6	4'-10"	"	"

- ① 5 LINES, 1/6" MIN. LAP
- ② 1/6" MIN. LAP
- ③ SEE SHEET 12.

SUMMARY OF QUANTITIES - SUPER.	
PEDESTRIAN BRIDGE SLAB CONC. (3446)	1734 SQ. FT.
STRUCTURE CONCRETE (3443)	3 CU. YD.
REINFORCEMENT BARS	5060 POUNDS
STRUCTURAL STEEL (3309)	45,690 POUNDS
CHAIN LINK ENCLOSURE	183 LIN. FT.
3-PLY JOINT WATERPROOFING	35 LIN. FT.
PREFORMED JOINT FILLER (SEE LIST)	
FIXED CURVED PLATE BEARING ASS'Y.	2 EACH
EXPANSION CURVED PLATE BEARING ASS'Y	4 EACH
BEARING ASSEMBLY	6 EACH

- ④ INCLUDES END DIAPHRAGM QUANTITIES.
- ⑤ APPROX. 32 CU. YDS., BASED ON 1" STOOD HEIGHT.
- ⑥ END DIAPHRAGM CONCRETE.
- ⑦ INCLUDED IN PAYMENT FOR OTHER ITEMS.
- ⑧ SEE SPECIAL PROVISIONS.
- ⑨ INCLUDED IN PAYMENT FOR BEARING ASSEMBLY. SEE SPECIAL PROVISIONS.

LIST OF PREFORMED JOINT FILLER			
TYPE	NO.	SIZE	LOCATION
CORK	4	1" x 18" x 3"	ABUTMENT LINKS
BIT. FELT	2	1/2" x 9" x 10'-0"	SHEAR BLOCK
POLYSTYRENE	2	1" x 18" x 10'-0"	ABUTMENT BR. SEAT
"	4	2" x 7" x 14"	ABUT. BRG.
"	8	1" x 7" x 8"	"

MINNESOTA DEPARTMENT OF TRANSPORTATION

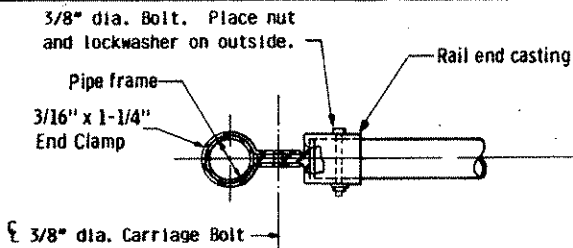
BRIDGE NO. 02555

SUPERSTRUCTURE & STRUCTURAL STEEL DETAILS

APPROVED

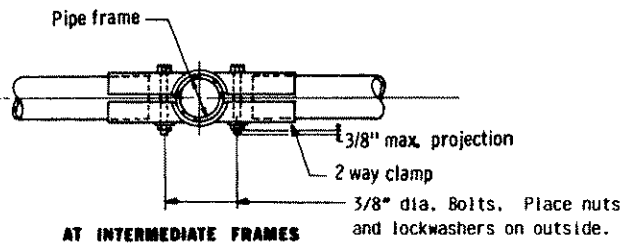
C.R. 85-05-116 | 02555 | DM

SHEET 6 OF 17 SHEETS | RPT



AT END FRAMES
(PLAN VIEW)

JUNCTION "Z"

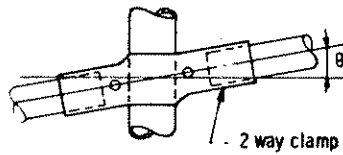


AT INTERMEDIATE FRAMES
(PLAN VIEW)

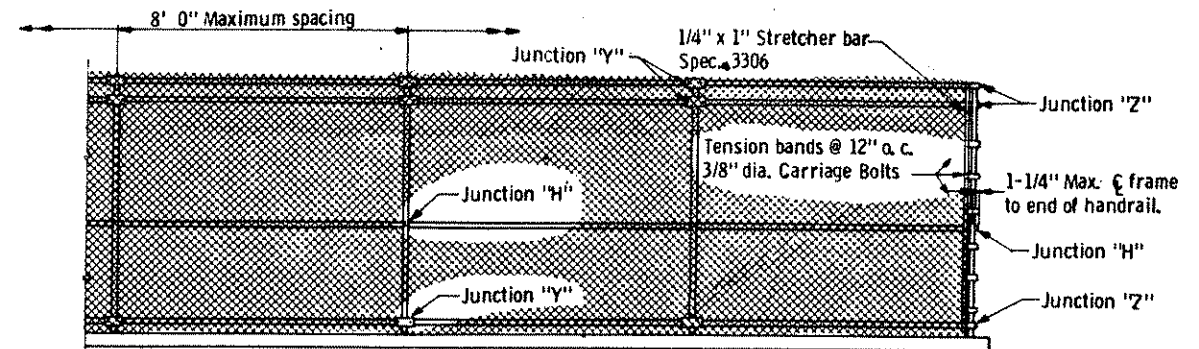
JUNCTION "Y"

2-WAY CLAMP
BENDING TABLE

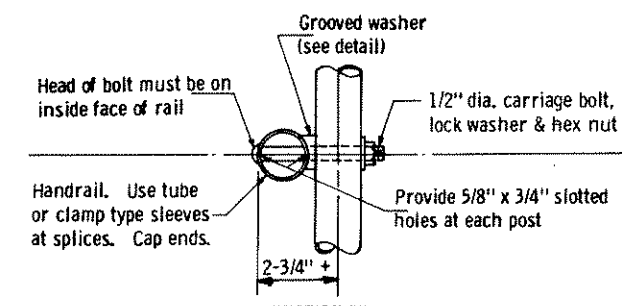
GRADE OF ENCLOSURE	θ
0° to 2°	0°
2° to 6°	4°
6° to 10°	8°



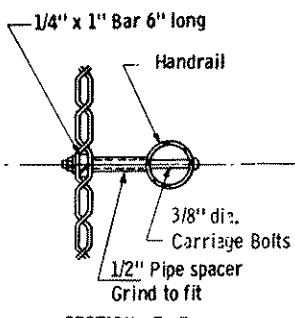
AT INTERMEDIATE FRAMES
(ELEVATION)



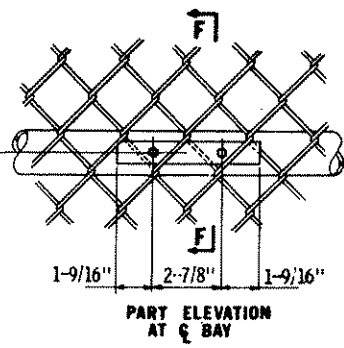
PART ELEVATION



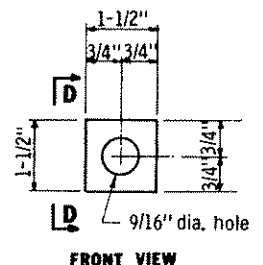
JUNCTION "H"



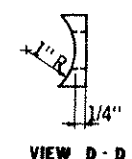
SECTION F-F



PART ELEVATION
AT BAY

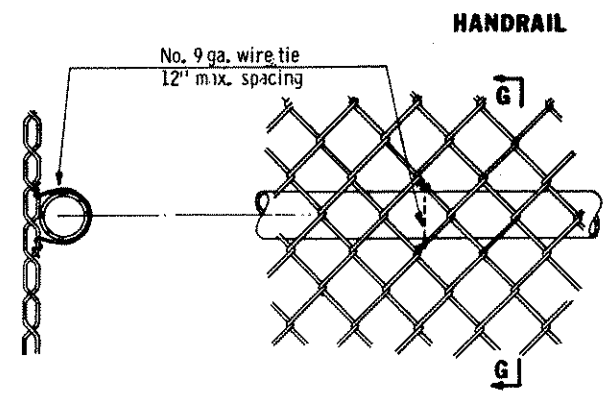


FRONT VIEW



VIEW D-D

GROOVED WASHER
An approved alternate will be considered.

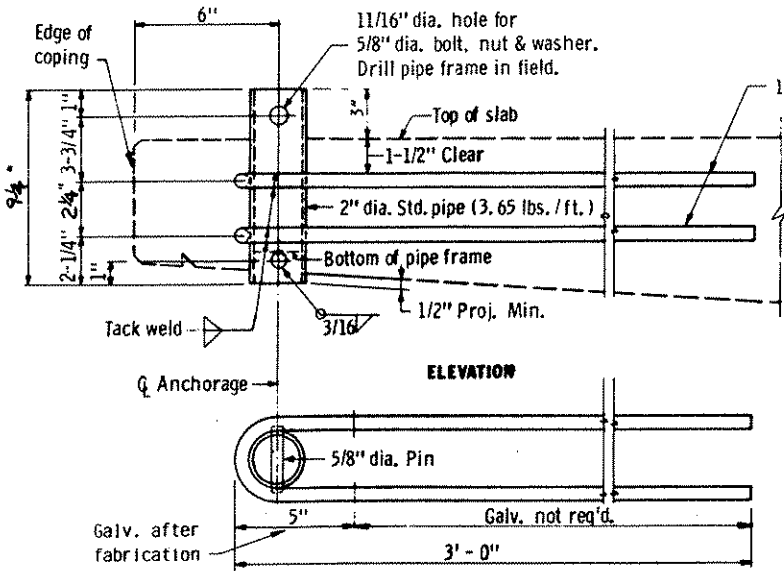


HANDRAIL

SECTION G-G

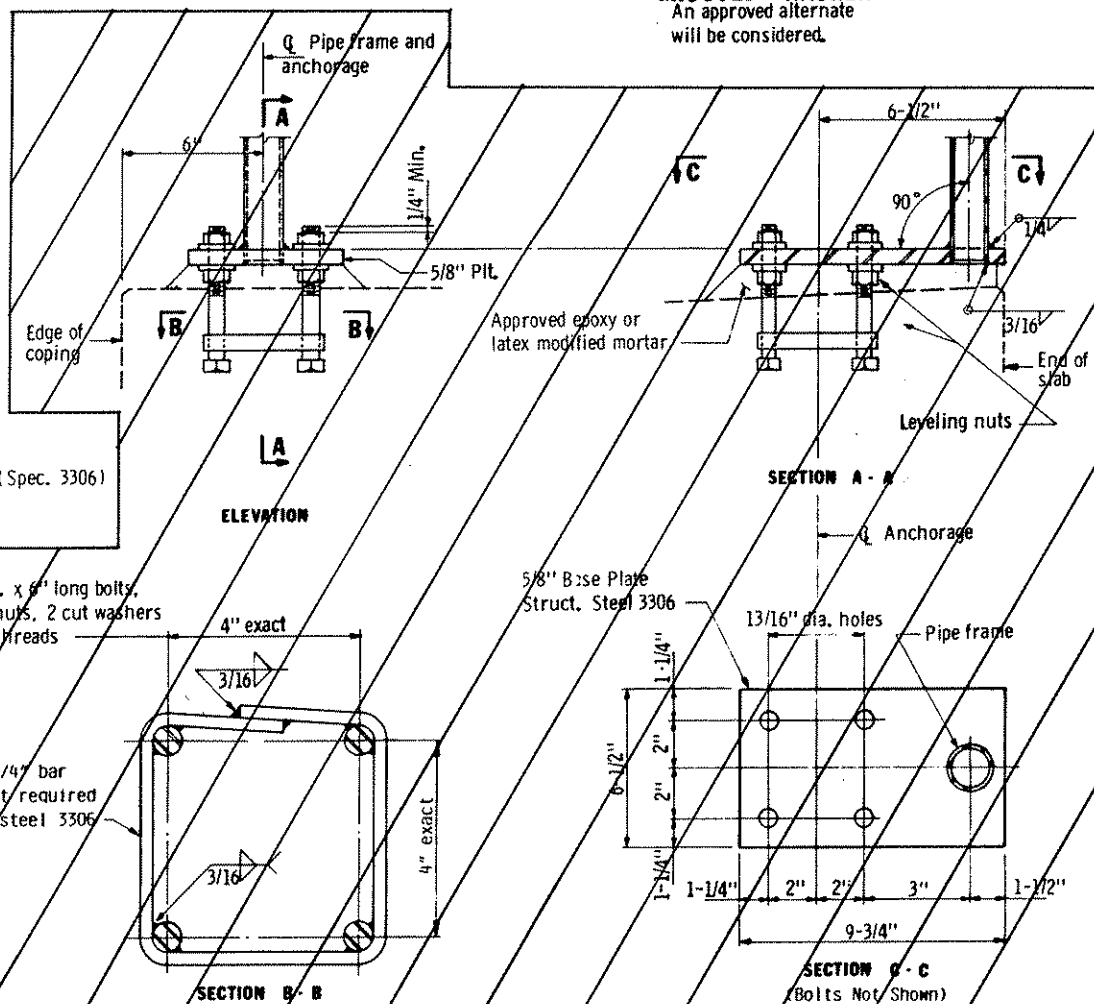
PART ELEVATION

FABRIC TIE



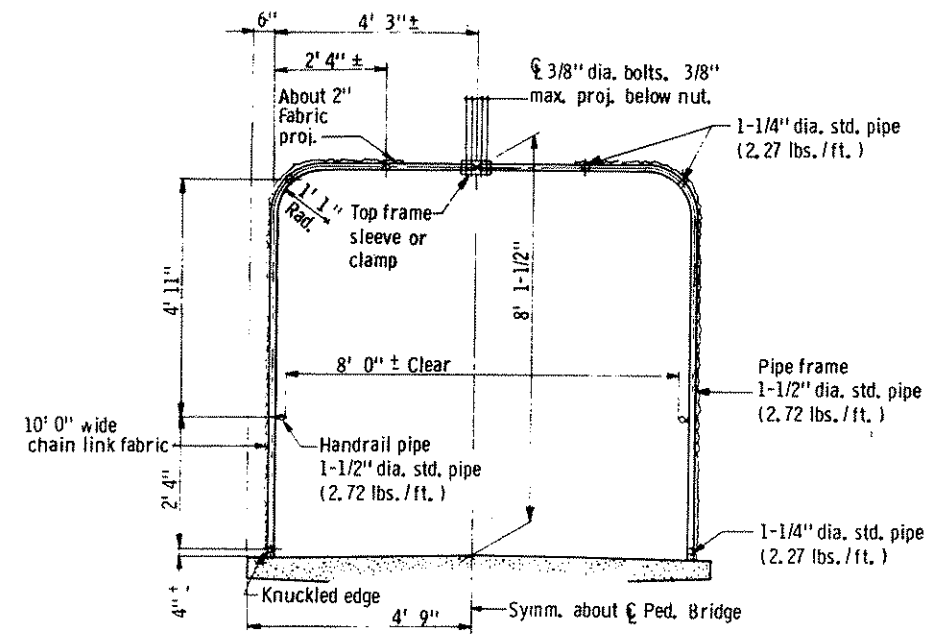
PLAN VIEW

PIPE ANCHORAGE FOR PIPE FRAMES
TYPE 1



SECTION B-B

BOLT ANCHORAGE FOR PIPE FRAMES
TYPE 2

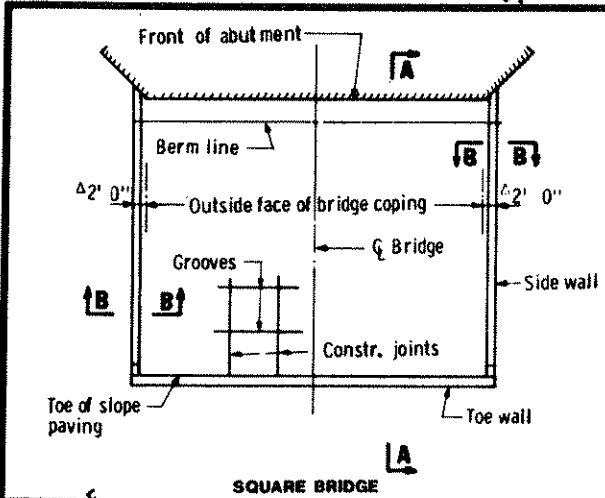


TYPICAL SECTION THRU WALKWAY

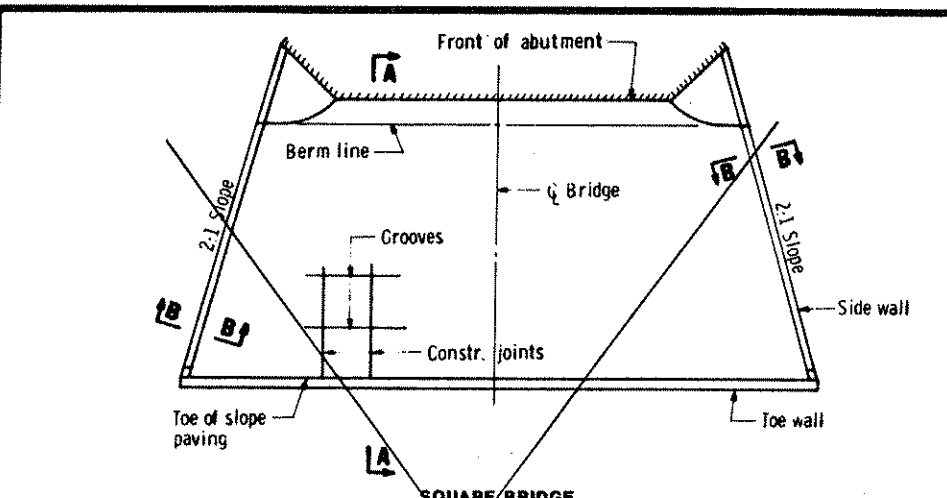
GENERAL NOTES:

- For alternate to Type 1 anchorages, see Detail No. 8905, Type C Intermediate Posts.
- See special provisions for requirements not included on this sheet and for basis of payment.
- All pipe diameters are nominal.
- Pipe frames shall be vertical.
- For spacing of pipe frames, location, type of anchorages and other details see Sheet No. 5.
- Set all anchorages vertical. At bolt type anchorages pack space between base plate and concrete with approved mortar after nuts have been adjusted and tightened.

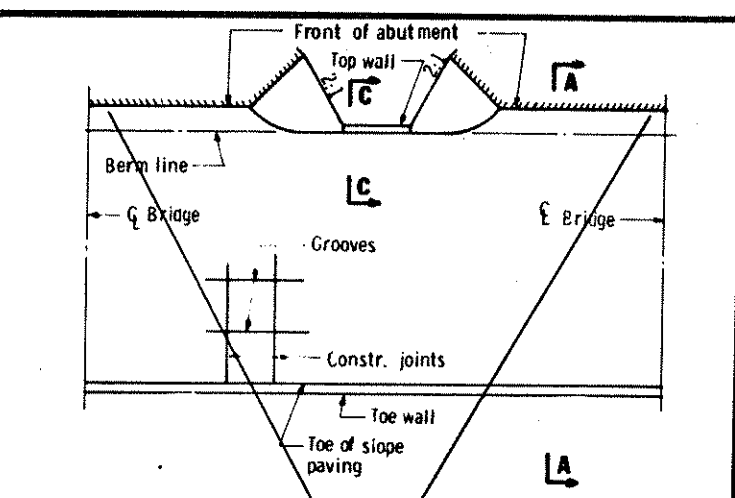
REVISED:	APPROVED: Nov. 26, 1985	FIG. 5-397.201
DES: CHK:	DR: CHK:	APPROVED:
TITLE: CHAIN LINK ENCLOSURE FOR PEDESTRAIN BRIDGES		Bridge No. 02555
Sheet No. 7 of 17 Sheets		



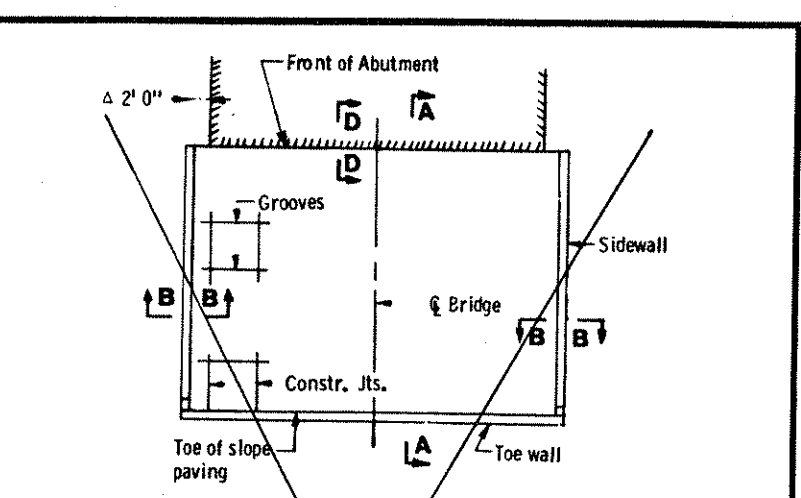
SQUARE BRIDGE



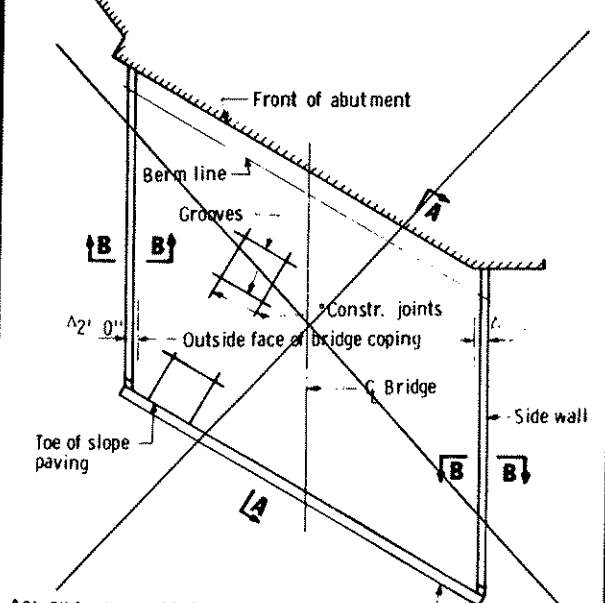
SQUARE BRIDGE



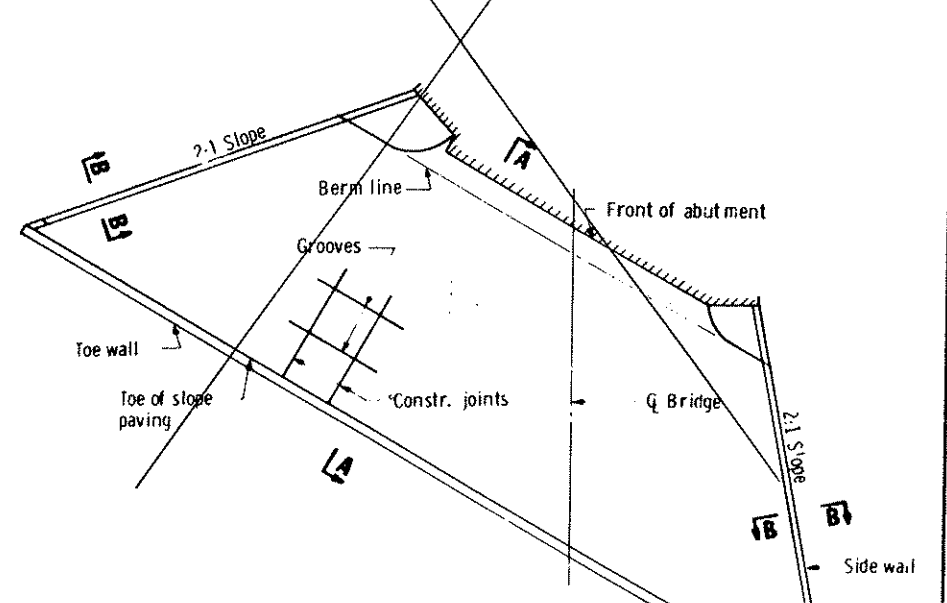
SQUARE BRIDGE



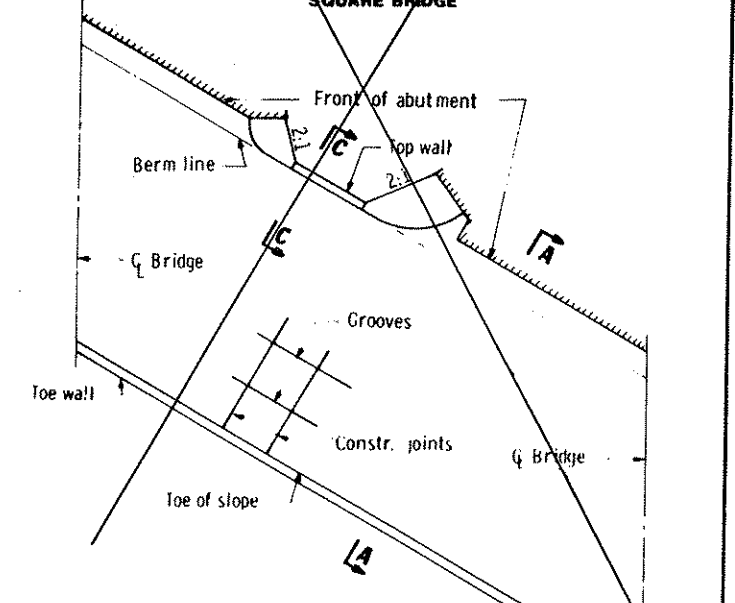
SQUARE BRIDGE



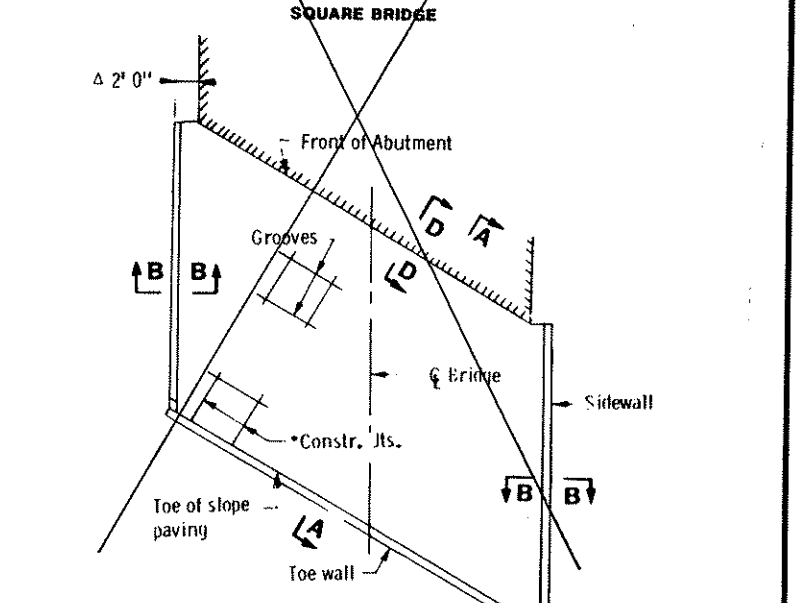
**SKEWED BRIDGE
LAYOUTS FOR SLOPES 2:1 OR FLATTER**



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



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



**SKEWED BRIDGE
LAYOUTS FOR SLOPES AT HIGH ABUTMENTS**

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

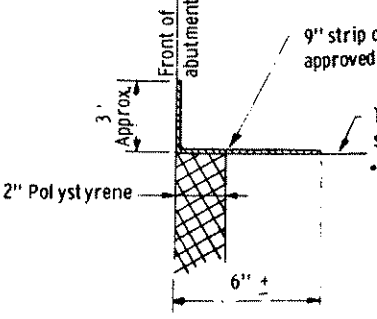
*Vertical construction joints may be constructed parallel to G of bridge for skews to 10° only.

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

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

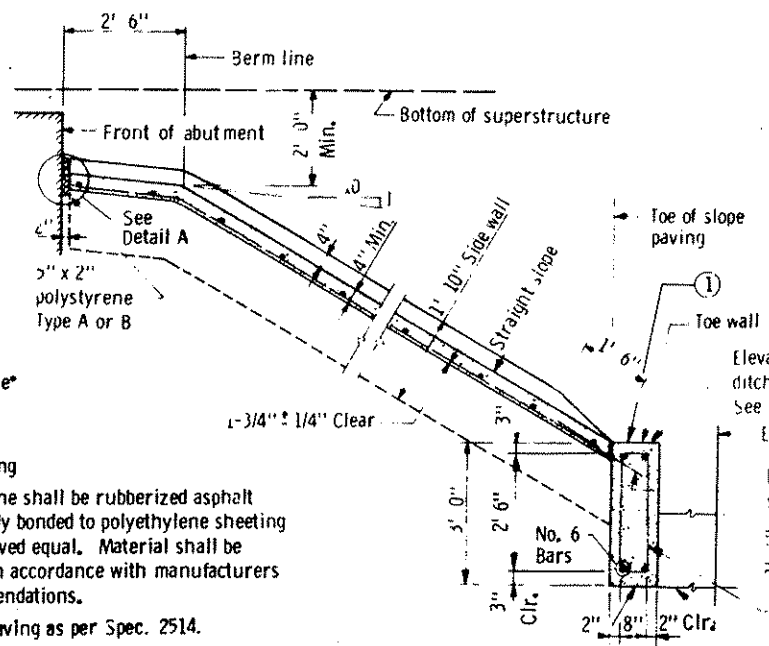
CONCRETE & REINFORCEMENT UNIT QUANTITIES

1. 3.00 Sq. Ft. of concrete/Lin. Ft.
1.41 Lbs. of reinforcement/Lin. Ft.
2. 1.23 Sq. Ft. of concrete/Lin. Ft.
4.46 Lbs. of reinforcement/Lin. Ft.
3. 1.56 Sq. Ft. of concrete/Lin. Ft.
3.70 Lbs. of reinforcement/Lin. Ft.
Based on a slope of 2:1
4. .33 Cu. Ft. of concrete/Sq. Ft.
.50 Lbs. of reinforcement/Sq. Ft.

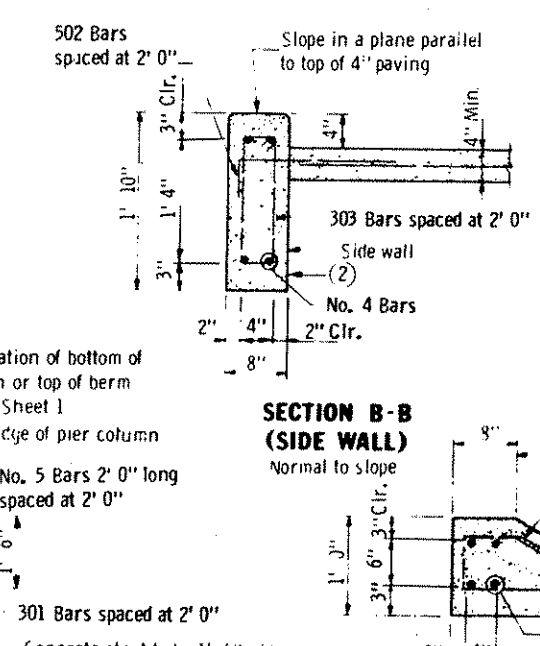


DETAIL A

Membrane shall be rubberized asphalt integrally bonded to polyethylene sheeting or approved equal. Material shall be placed in accordance with manufacturers recommendations.
Slope Paving as per Spec. 2514.

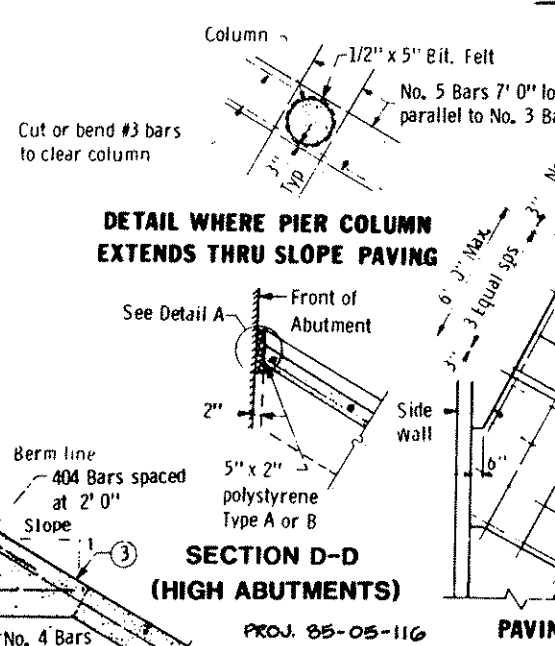


SECTION A-A

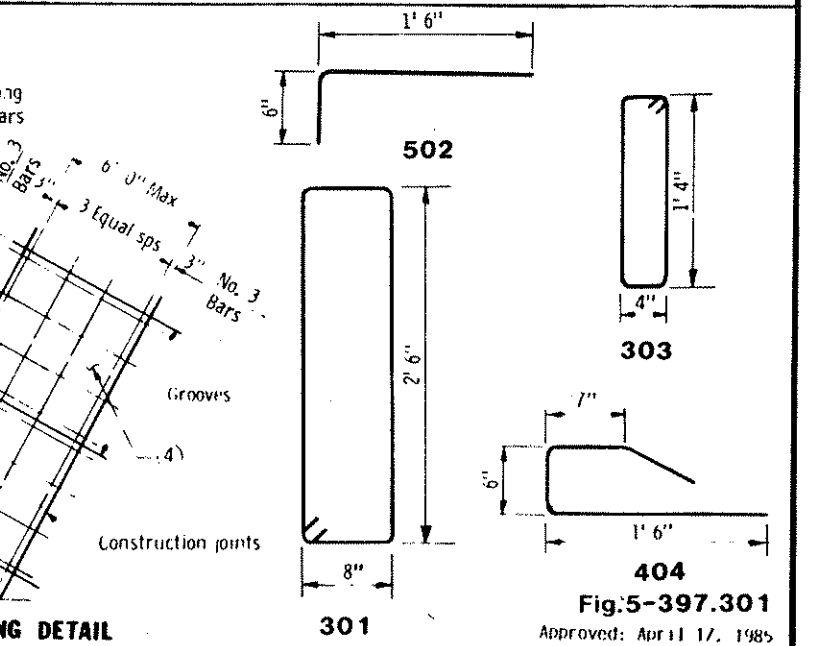


**SECTION B-B
(SIDE WALL)**

Concrete strut to be 1' 6" wide use only where toe wall is less than 5' 0" from pier column.



**SECTION C-C
(STEEPER THAN 2:1)**



DETAIL WHERE PIER COLUMN EXTENDS THRU SLOPE PAVING

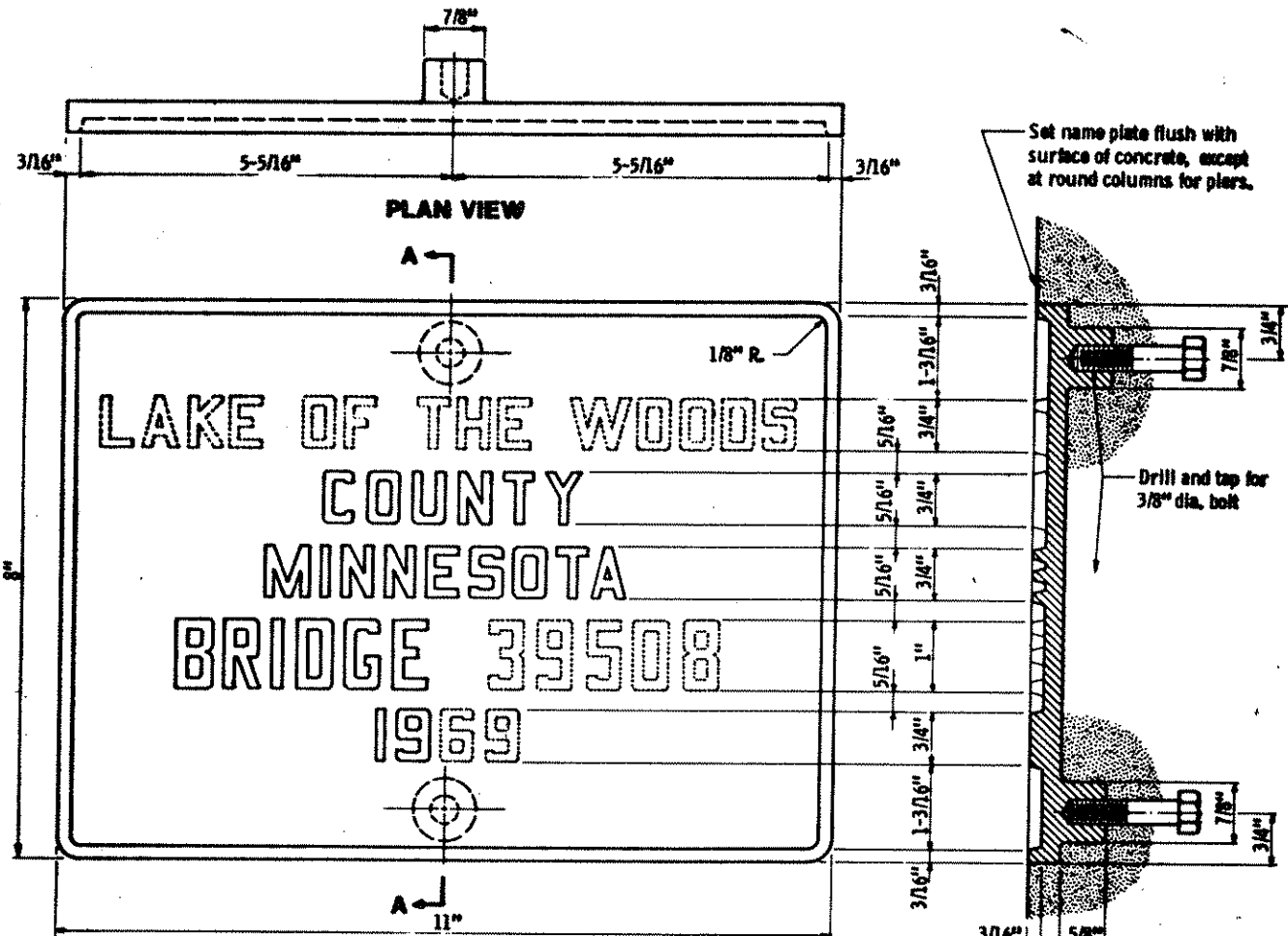
**SECTION D-D
(HIGH ABUTMENTS)**

PROJ. 85-05-116

PAVING DETAIL

TITLE	DES.	DR.	APPROVED.	Bridge No.
CONCRETE SLOPE PAVING UNDER BRIDGES	CHK	CHK		02555
	Sheet No. 8 of 17 Sheets			

Fig. 5-397.301
Approved: April 17, 1985



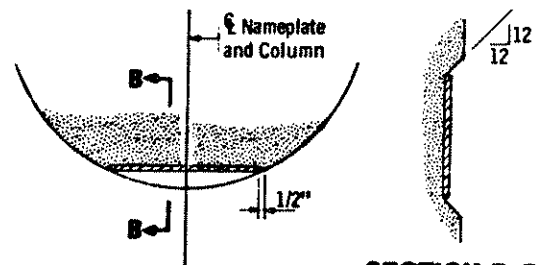
ELEVATION
The dotted letters & numbers shown above are for illustration.
Data to be shown on name plate is as follows:

COUNTY ANOKA
BRIDGE 02555
YEAR 1990

1234567890

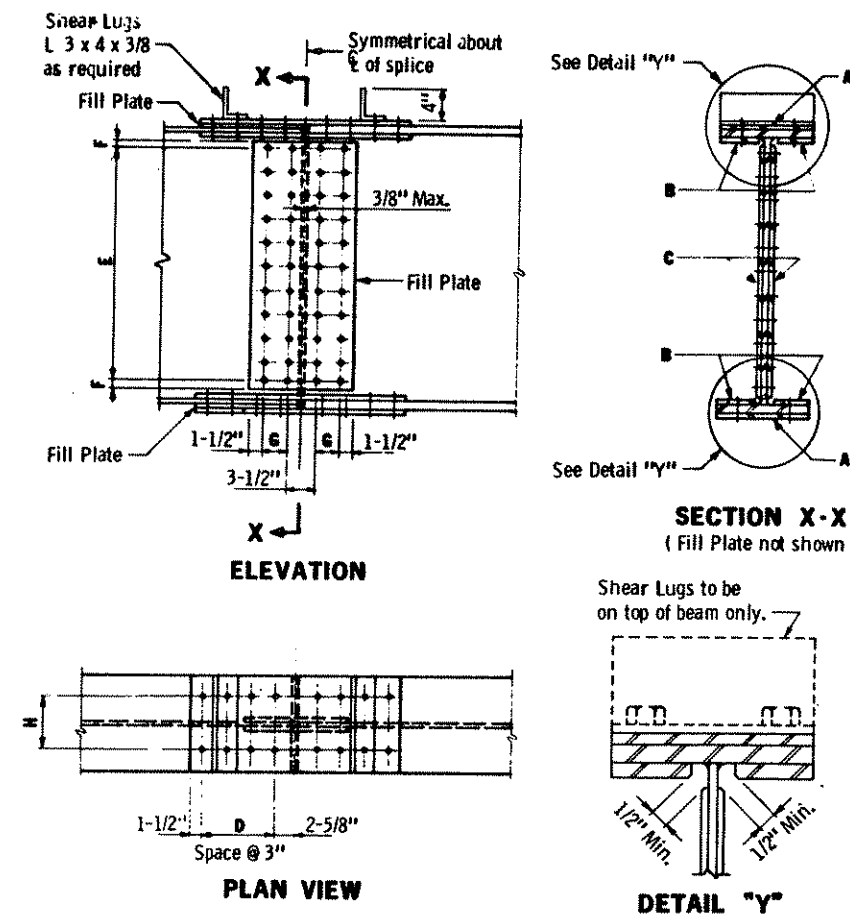
ABCDEFGHIJKLMNOPQRSTUVWXYZ

LETTERS & NUMBERS FOR NAMEPLATES



NAMEPLATE PLACEMENT
(Round Concrete Pier Columns)

NOTES:
No shop drawing required.
Material shall comply with Spec. 3327
Letters and numbers shall conform to those shown.
Draft on letters and numbers shall not be more than 3" in 12".
Horizontal spacing of letters and numbers shall produce a balanced layout in proportion to spacing shown.
Top surface of letters, numbers and frames shall be burnished.
Furnish 2 steel bolts 3/8" dia. 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.



DESIGN DATA:
Load Factor Design Method
 $F_y = 50$ k. s. i.
12.6^k allowable "shear" per bolt at $DL + S_3(L + D)$
Splice develops ult. moment M_u simultaneously with ult. shear V_u .
 $M_u = F_y S_x$ noncompact sec., $M_u = F_y Z_x$ compact sec.
 $V_u = .55 F_y d T_w$
Area of holes in excess of 15% of gross area are deducted

NOTES:
Splice design is for structural steel Spec. 3309.
When $F = 1-1/4"$, top and bottom edge of plate C must be rolled or gas cut and finished as per Spec. 2471.3C4
When beams are of unequal weight, use design for lighter beam.
Use 7/8" high strength bolts, or 7/8" pin bolts.
Fills shall be structural steel, minimum thickness 1/16". Where the difference in web thickness is 1/8" or more, place fills of same thickness on both sides of thinner web. Where difference in web thickness is less than 1/16" omit fills.

BEAM SIZE	A (In.)	B (In.)	C (In.)	D	E	F	G	H	FLANGE FILL PLATE	WEB FILL PLATE
W21 x 44	7/16 x 6-1/2 x 26-1/4	7/16 x 2-1/2 x 26-1/4	5/16 x 17-1/2 x 12-1/2	3	5 Sps. @ 3"	1-1/4"	3"	4"		
W21 x 50	7/16 x 6-1/2 x 26-1/4	7/16 x 2-1/2 x 26-1/4	5/16 x 17-1/2 x 12-1/2	3	5 Sps. @ 3"	1-1/4"	3"	4"		
W21 x 57	1/2 x 6-1/2 x 26-1/4	5/8 x 2-1/2 x 26-1/4	5/16 x 17-1/2 x 12-1/2	3	5 Sps. @ 3"	1-1/4"	3"	4"		
W21 x 62	7/16 x 8-1/4 x 32-1/4	1/2 x 3-1/4 x 32-1/4	5/16 x 17-1/2 x 12-1/2	4	5 Sps. @ 3"	1-1/4"	3"	5-1/2"		
W21 x 68	7/16 x 8-1/4 x 32-1/4	11/16 x 3-1/4 x 32-1/4	5/16 x 17-1/2 x 12-1/2	4	5 Sps. @ 3"	1-1/4"	3"	5-1/2"		
W21 x 73	1/2 x 8-1/4 x 38-1/4	3/4 x 3-1/4 x 38-1/4	5/16 x 16-7/8 x 12-1/2	5	5 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W21 x 83	9/16 x 8-1/2 x 44-1/4	7/8 x 3-1/4 x 44-1/4	5/16 x 16-7/8 x 12-1/2	6	5 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W21 x 93	11/16 x 8-1/2 x 50-1/4	15/16 x 3-1/4 x 50-1/4	5/16 x 16-1/4 x 12-1/2	7	5 Sps. @ 2-3/4"	1-1/4"	3"	5-1/2"		
W24 x 55	7/16 x 7 x 26-1/4	7/16 x 2-1/2 x 26-1/4	5/16 x 20-1/2 x 12-1/2	3	6 Sps. @ 3"	1-1/4"	3"	4-1/2"		
W24 x 62	1/2 x 7 x 32-1/4	1/2 x 2-1/2 x 32-1/4	5/16 x 20-1/2 x 12-1/2	4	6 Sps. @ 3"	1-1/4"	3"	4-1/2"		
W24 x 68	7/16 x 9 x 32-1/4	1/2 x 3-1/2 x 32-1/4	5/16 x 20-1/2 x 12-1/2	4	6 Sps. @ 3"	1-1/4"	3"	5-1/2"		
W24 x 76	7/16 x 9 x 38-1/4	5/8 x 3-1/2 x 38-1/4	5/16 x 20-1/2 x 12-1/2	5	6 Sps. @ 3"	1-1/4"	3"	5-1/2"		
W24 x 84	1/2 x 9 x 44-1/4	3/4 x 3-1/2 x 44-1/4	5/16 x 19-3/4 x 12-1/2	6	6 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W24 x 94	9/16 x 9 x 50-1/4	15/16 x 3-1/2 x 50-1/4	5/16 x 19-3/4 x 12-1/2	7	6 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W24 x 104	7/16 x 12-3/4 x 50-1/4	9/16 x 5-1/4 x 50-1/4	5/16 x 19-3/4 x 12-1/2	7	6 Sps. @ 2-7/8"	1-1/4"	3"	6-1/2"		
W24 x 117	9/16 x 12-3/4 x 68-1/4	3/4 x 5-1/4 x 68-1/4	5/16 x 19-3/4 x 12-1/2	10	6 Sps. @ 2-7/8"	1-1/4"	3"	6-1/2"		
W27 x 84	7/16 x 10 x 38-1/4	1/2 x 4 x 38-1/4	5/16 x 23-1/2 x 12-1/2	5	7 Sps. @ 3"	1-1/4"	3"	5-1/2"		
W27 x 94	1/2 x 10 x 50-1/4	13/16 x 4 x 50-1/4	5/16 x 22-5/8 x 12-1/2	7	7 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W27 x 102	9/16 x 10 x 50-1/4	7/8 x 4 x 50-1/4	5/16 x 22-5/8 x 12-1/2	7	7 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W27 x 114	5/8 x 10 x 56-1/4	15/16 x 4 x 56-1/4	5/16 x 21-3/4 x 18-1/2	8	5 Sps. @ 3-3/4"	1-1/2"	2 Sps. @ 3"	5-1/2"		
W27 x 124	7/16 x 10 x 56-1/4	9/16 x 4 x 56-1/4	5/16 x 21-3/4 x 18-1/2	8	5 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W30 x 108	9/16 x 10 x 50-1/4	3/4 x 4-1/4 x 50-1/4	5/16 x 25-1/2 x 12-1/2	7	8 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W30 x 116	9/16 x 10 x 62-1/4	7/8 x 4-1/4 x 62-1/4	5/16 x 24-18-1/2	9	8 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W30 x 124	5/8 x 10 x 62-1/4	15/16 x 4-1/4 x 62-1/4	5/16 x 24 x 18-1/2	9	8 Sps. @ 2-7/8"	1-1/4"	3"	5-1/2"		
W30 x 132	11/16 x 10 x 68-1/4	1 x 4-1/4 x 68-1/4	5/16 x 24 x 18-1/2	10	6 Sps. @ 3-1/2"	1-1/2"	2 Sps. @ 3"	5-1/2"		
W33 x 118	11/16 x 11 x 50-1/4	5/8 x 4-1/2 x 50-1/4	5/16 x 27-3/4 x 18-1/2	7	6 Sps. @ 4-1/8"	1-1/2"	2 Sps. @ 3"	6-1/2"		
W33 x 130	5/8 x 11 x 68-1/4	13/16 x 4-1/2 x 68-1/4	5/16 x 27 x 18-1/2	10	6 Sps. @ 4"	1-1/2"	2 Sps. @ 3"	6-1/2"		
W33 x 141	11/16 x 11 x 68-1/4	1 x 4-1/2 x 68-1/4	5/16 x 27 x 18-1/2	10	6 Sps. @ 4"	1-1/2"	2 Sps. @ 3"	6-1/2"		
W33 x 152	3/4 x 11 x 74-1/4	15/16 x 4-3/4 x 74-1/4	3/8 x 27-1/2 x 18-1/2	11	7 Sps. @ 3-1/2"	1-1/2"	2 Sps. @ 3"	6-1/2"		
W36 x 135	9/16 x 12 x 62-1/4	3/4 x 4-3/4 x 62-1/4	3/8 x 31 x 18-1/2	9	8 Sps. @ 3-1/2"	1-1/2"	2 Sps. @ 3"	6-1/2"		
W36 x 150	5/8 x 12 x 68-1/4	7/8 x 4-3/4 x 68-1/4	3/8 x 31 x 18-1/2	10	8 Sps. @ 3-1/2"	1-1/2"	2 Sps. @ 3"	6-1/2"		
W36 x 160	3/4 x 12 x 80-1/4	1 x 4-3/4 x 80-1/4	3/8 x 30-1/2 x 18-1/2	12	8 Sps. @ 3-1/2"	1-1/4"	2 Sps. @ 3"	6-1/2"		
W36 x 170	3/4 x 12 x 86-1/4	1 x 4-3/4 x 86-1/4	3/8 x 30 x 18-1/2	13	8 Sps. @ 2-3/8"	1-1/2"	2 Sps. @ 3"	6-1/2"		
W36 x 182	11/16 x 12 x 92-1/4	1-1/8 x 4-3/4 x 92-1/4	3/8 x 29 x 18-1/2	14	8 Sps. @ 3-1/4"	1-1/2"	2 Sps. @ 3"	6-1/2"		
W36 x 194	13/16 x 12 x 98-1/4	1-5/16 x 4-3/4 x 98-1/4	3/8 x 30 x 18-1/2	15	9 Sps. @ 3"	1-1/2"	2 Sps. @ 3"	6-1/2"		

*Non-Compact Section

APPROVED: May 1, 1985
Developed by: ENGINEERING STANDARDS & BRIDGES AND STRUCTURES OFFICES
Issued by: OFFICE OF ENGINEERING STANDARDS

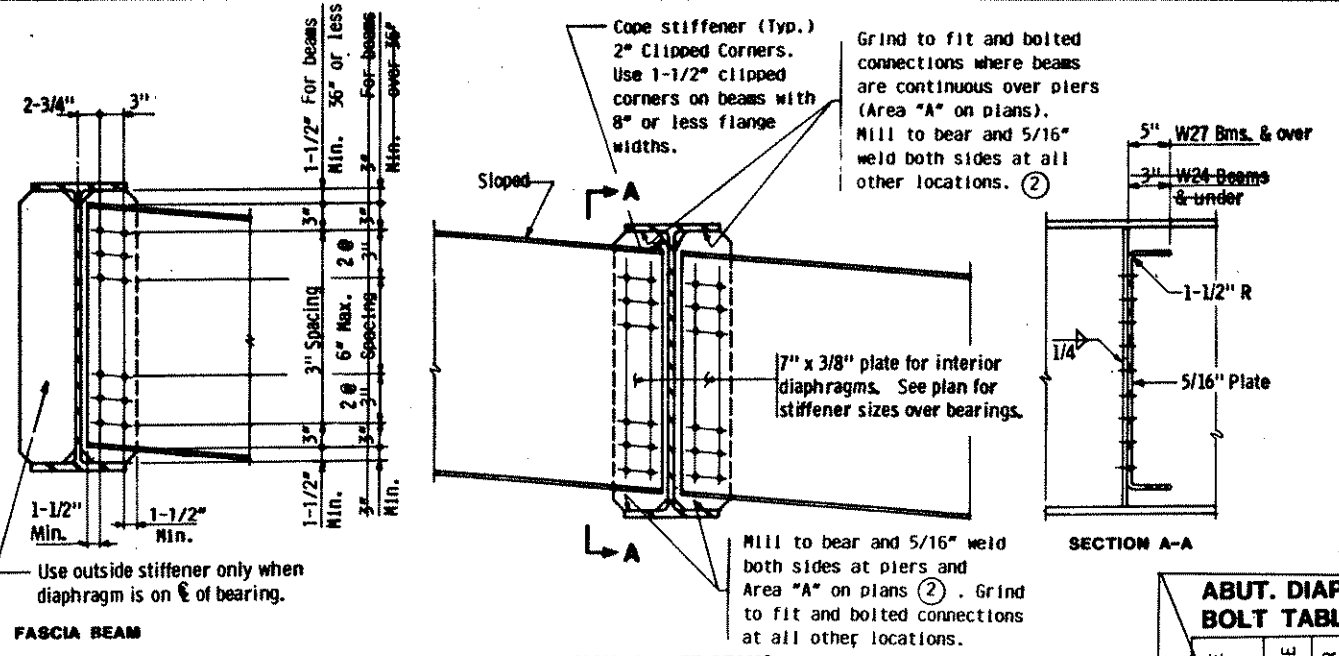
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
BRIDGE NAMEPLATE
COUNTY BRIDGES

REVISION
DETAIL NO.
B103

APPROVED: April 24, 1979
Developed by: ENGINEERING STANDARDS, AND BRIDGES AND STRUCTURES
Issued by: ENGINEERING STANDARDS

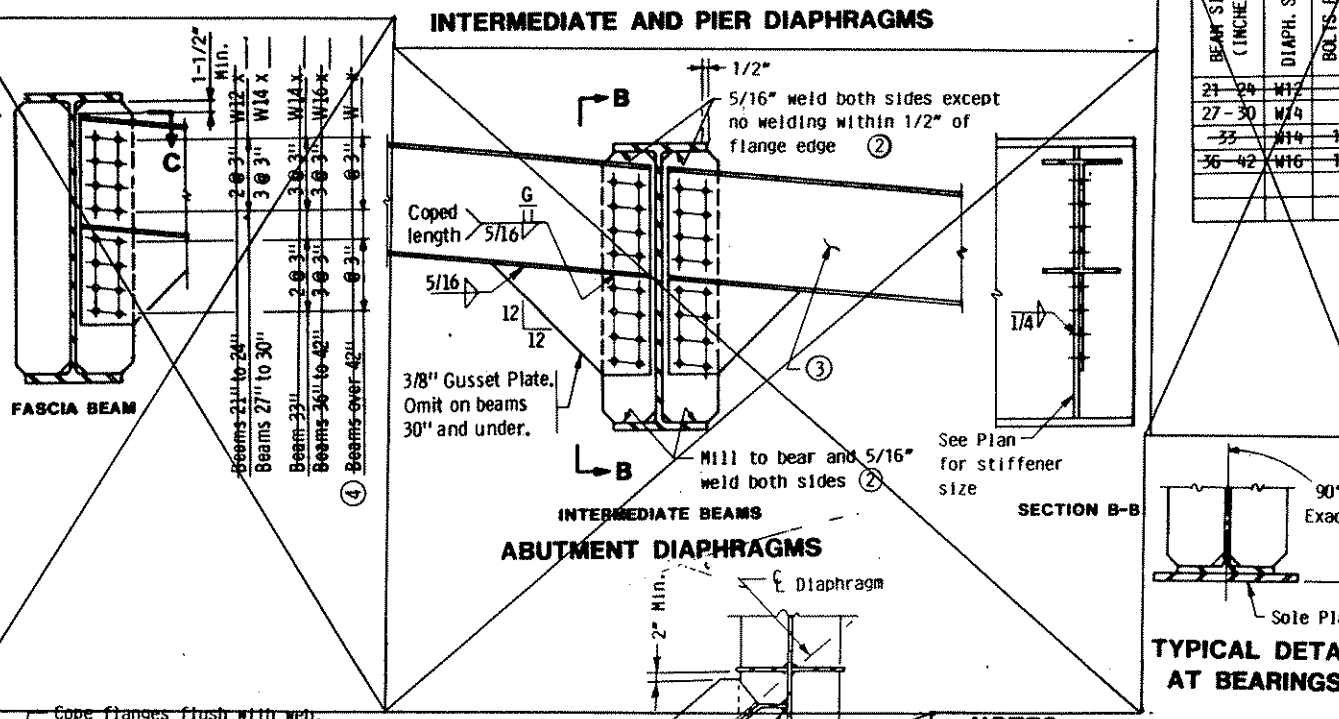
STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
BEAM SPLICES FOR W BEAMS
(3309 STEEL)

REVISION
DETAIL NO.
B400

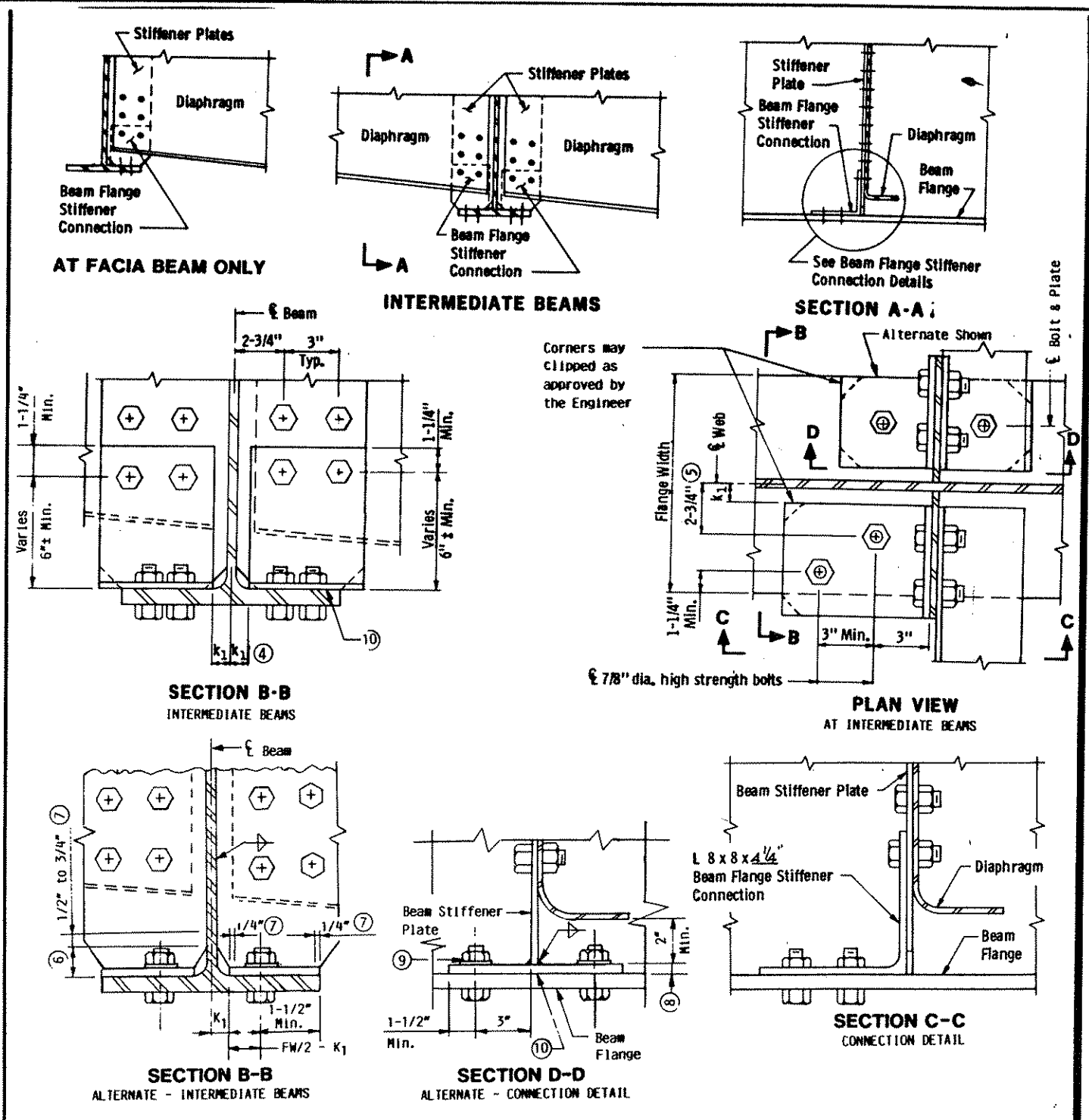
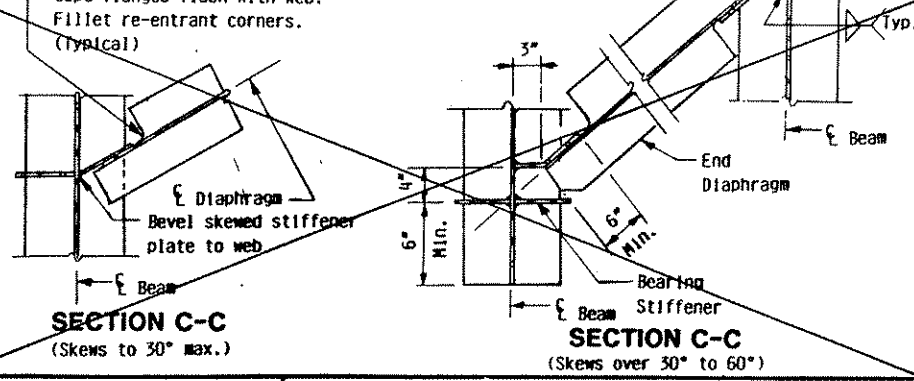


ABUT. DIAPH. BOLT TABLE

BEAM SIZE (INCHES)	DIAPH. SIZE	BOLTS PER CONNECTION
24-26	W12	6
27-30	W14	8
33-36	W16	10
36-42	W16	16



- NOTES:**
- Use 7/8" high strength 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.
 - Diaphragms may be placed horizontal, providing minimum clearances are met, and bridge superstructures are not super-elevated.



- NOTES:**
- This bolted beam flange stiffener connection detail to be used as noted.
 - Structural steel to be the same as diaphragms. See plans.
 - Use 7/8" dia. high strength bolts per Spec. 3391.
 - k_1 = Distance from ϵ of web to toe of fillet on rolled beams (See A.I.S.C. Steel Manual) and 1-1/4" on welded beams.
 - When flange widths are less than 8-1/2", use 1-3/4".
 - Distance is 4 times web thickness or 2" min.
 - Do not weld in this area.
 - Minimum plate thickness to be 3/4" inch.
 - Bolt plate to beam flange prior to welding plate to beam stiffener plate.
 - Remove loose scale and rust from contact area at diaphragm connection. Surface must be flat and primed.

APPROVED: June 5, 1989

Developed by: ENGINEERING STANDARDS and BRIDGES & STRUCTURES

Issued by: ENGINEERING STANDARDS

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BOLTED DIAPHRAGMS FOR STEEL BEAMS

REVISION

DETAIL NO. **B402**

1 OF 2

APPROVED: June 5, 1989

Developed by: ENGINEERING STANDARDS and BRIDGES & STRUCTURES

Issued by: ENGINEERING STANDARDS

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BOLTED DIAPHRAGMS FOR STEEL BEAMS

REVISION

DETAIL NO. **B402**

2 OF 2

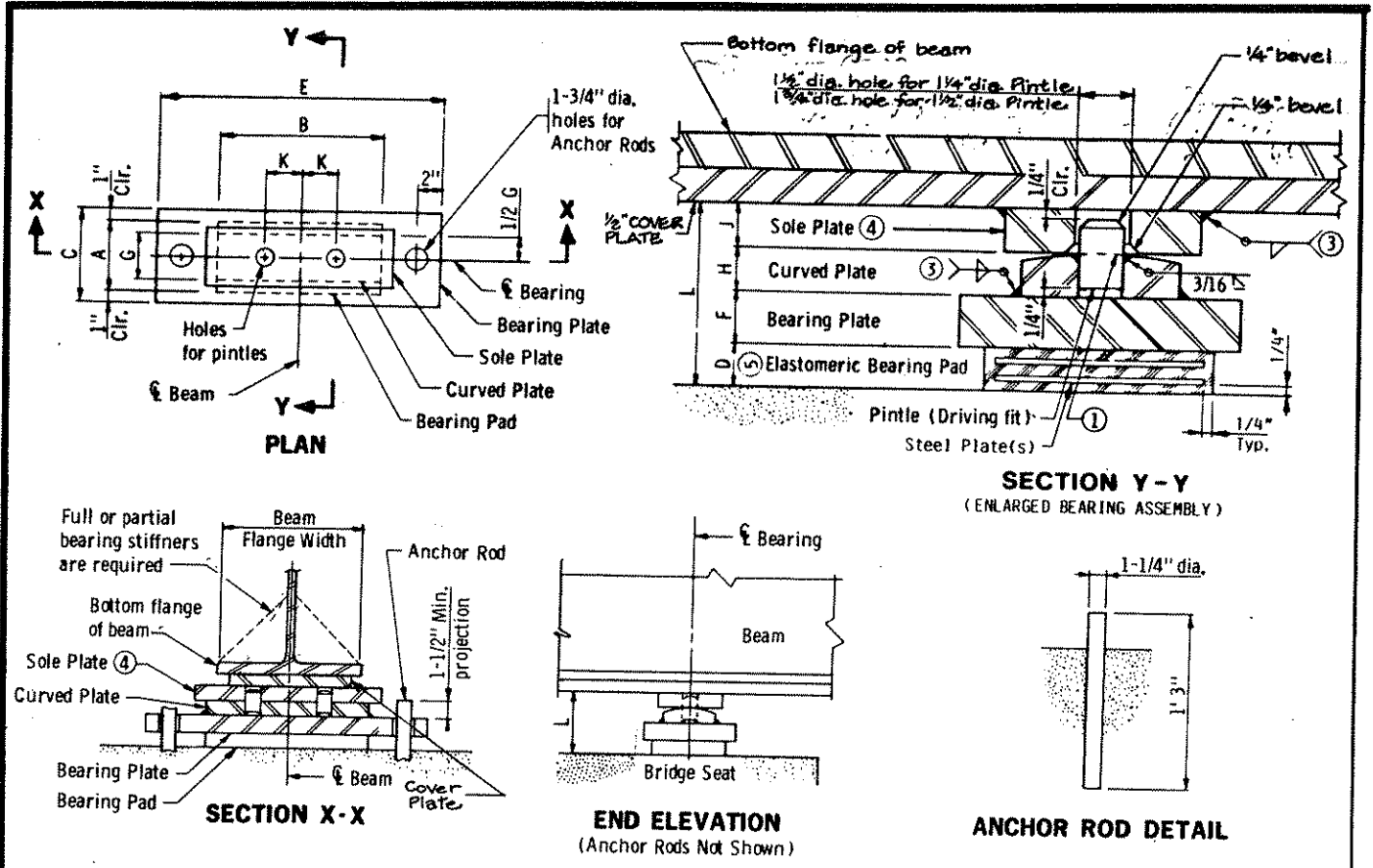


TABLE (2)

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.			C	E	F	G	B	H	Width	Length	J				
9" to 10-1/2"																	2-3/4"			
11-1/2" to 12"	8"	14"	1 1/8"	2	.125"	1	.375"	6.8	10"	24"	1"	4 1/2"	14"	1"	16"	6"	1"	1 1/4"	4 1/8" FI	
15" to 16"																				

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. Welding distortion of the bearing plates shall be straightened to within 1/16" of flatness by mechanical means without damage to the zinc coating.
 Pintles shall comply with Spec. 3314, Type II
 Galvanize anchor rods and 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. & 1' 6" max. Finish to 250 Micro. The finished thickness of the plate may be 1/16" less than shown.
- ② See Bridge Design Manual for design requirements.
- ③ For sole plate or bearing plate thicknesses up to 1-1/2", use 5/16" fillet welds; for thicknesses over 1-1/2" to 2-1/4", use 3/8" fillet welds; for thicknesses over 2-1/4", use 1/2" fillet welds with minimum preheat of 300°.
- ④ The sole plate may be tapered, only as shown on superstructure details. When the sole plate is tapered, dimension "J" is the minimum thickness of the plate.
- ⑤ The total thickness "D" includes the steel plates required. Do not galvanize these plates.

APPROVED: AUG. 4, 1987
 Developed by: ENGINEERING STANDARDS and BRIDGES & STRUCTURES
 Issued by: ENGINEERING STANDARDS

STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION
CURVED PLATE BEARING ASSEMBLY
 STEEL BEAMS @ PIER
 (FIXED)
 REVISION
 DETAIL NO.
B354

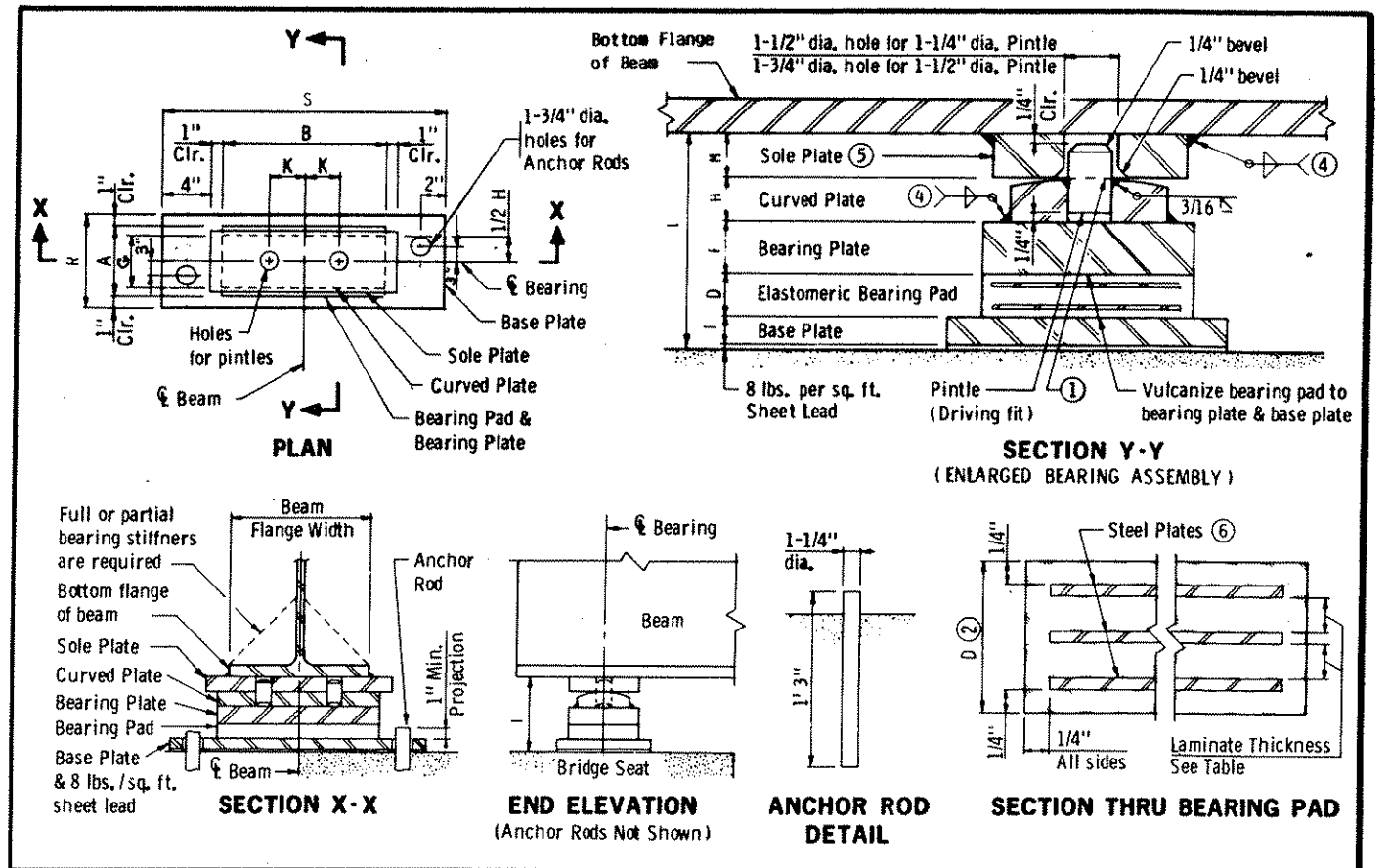


TABLE (3)

Beam Flange Size	Bearing Pad Size			Steel Plates		Laminates	Shape Factor	Bearing Plate Size			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	F	R	S	T	G	B	H	Width					Length
9" to 10-1/2"																								
11-1/2" to 12"	8"	14"	3/8"	6	.125"	5	.375"	6.8	8"	14"	1"	10"	24"		4 1/2"	14"	1"	16"	6"	1"	1 1/4"		7"	CI
15" to 16"																								

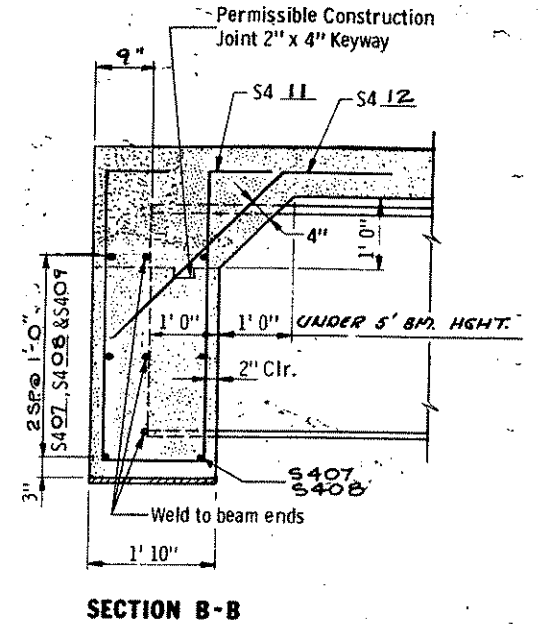
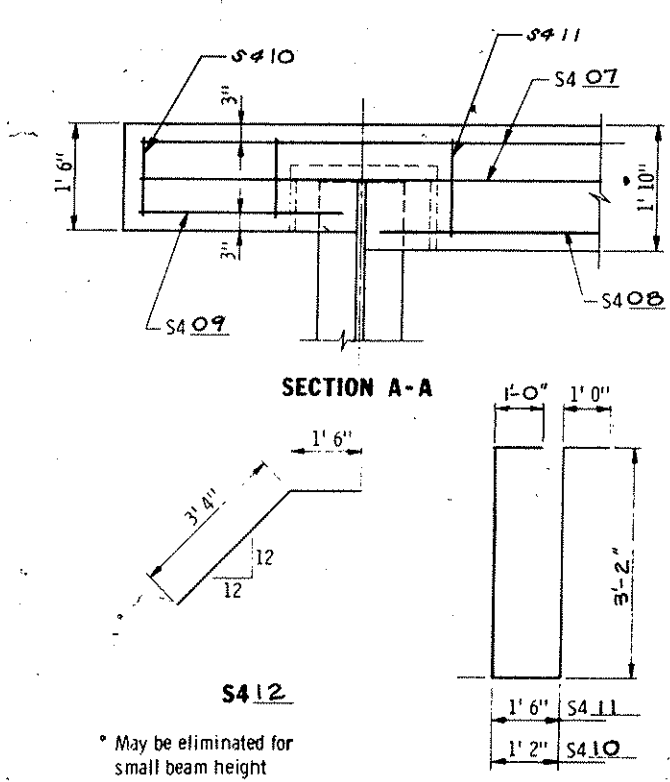
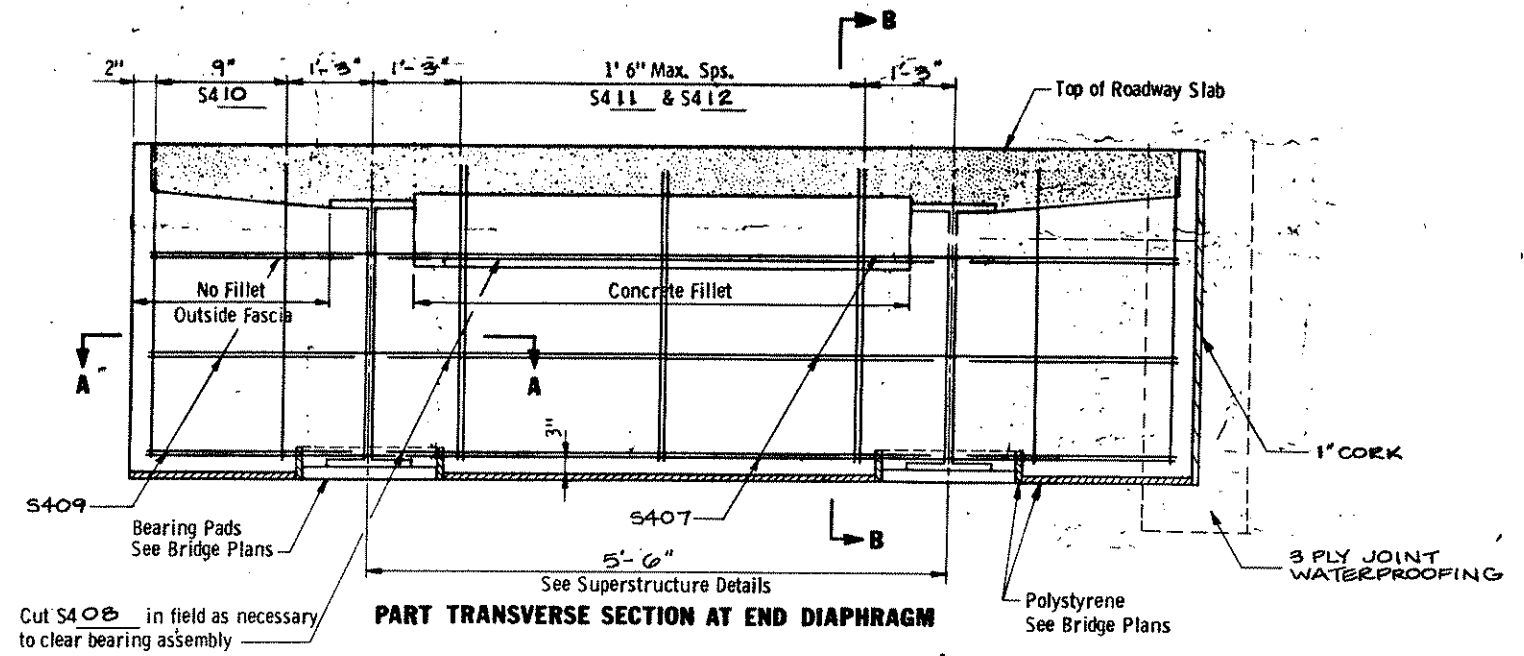
NOTES:

For elastomeric materials and pad construction, see Spec. 3741 and special provisions, except as noted.
 All plates shall be flat after fabrication, welding distortion of bearing plates shall be straightened to within 1/16" of flatness by mechanical means.
 Pintles shall comply with Spec. 3314, Type II.
 Galvanize anchor rods and 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 total thickness "D" includes the the steel plates required. Do not galvanize plates.

- ① The radius of the curved plate shall be 1' 0" min. & 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 For sole plate or bearing plate thicknesses up to 1-1/2", use 5/16" fillet welds; for thicknesses over 1-1/2" to 2-1/4", use 3/8" fillet welds; for thicknesses over 2-1/4", use 1/2" fillet welds with minimum preheat of 300°.
- ⑤ The sole plate may be tapered, only as shown on superstructure details. When the sole plate is tapered, dimension "M" is the minimum thickness of the plate.
- ⑥ Do not galvanize these plates.

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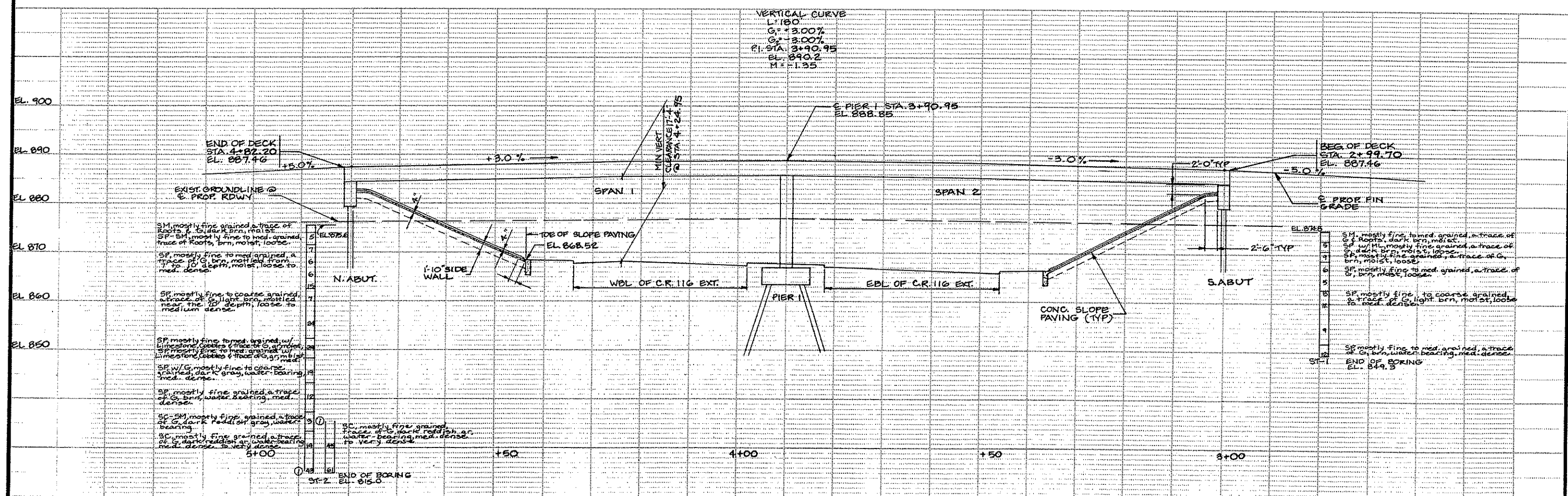
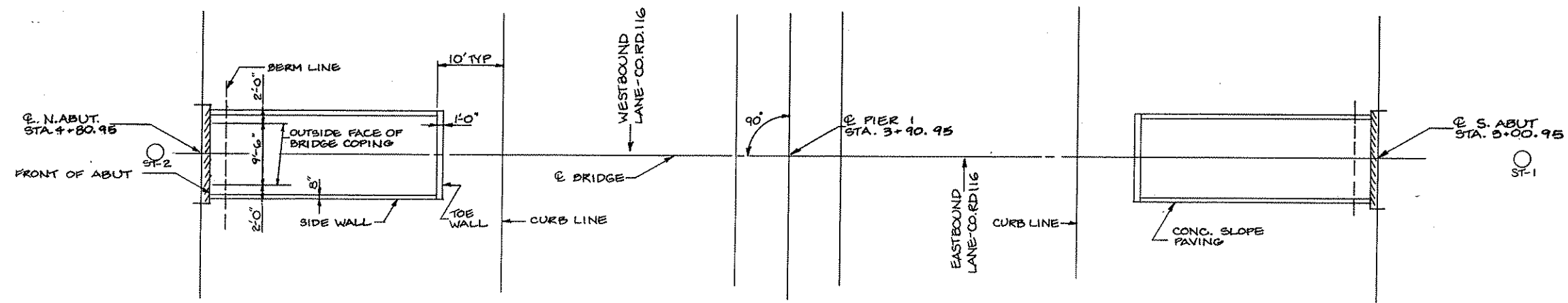
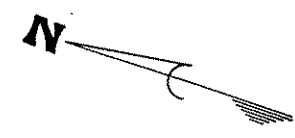
STATE OF MINNESOTA
 DEPARTMENT OF TRANSPORTATION
CURVED PLATE BEARING ASSEMBLY
 STEEL BEAMS @ ABUT.
 (VULCANIZED EXPANSION)
 REVISION
 DETAIL NO.
B357



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: Oct. 20, 1976 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN Issued by: OFFICE OF ENGINEERING STANDARDS	MINNESOTA DEPARTMENT OF TRANSPORTATION CONCRETE END DIAPHRAGM (FOR STEEL BEAMS WITH PILE BENT ABUTMENT)	REVISION: JULY 25, 1980	DETAIL NO. B809
PROJ. 85-05-116 SHEET 12 OF 17 SHEETS	DETAILS	BR. NO. 02555	



Copy Equipment Form #2

END PROJECT
STA. 8+00.00



P.I. STA 7+06.00
 $\Delta = 46^{\circ}30'$
 $D = 26'$
 $R = 220.37'$
 $T = 94.68'$
 $L = 178.85'$

P.I. STA 5+50.00
 $\Delta = 65^{\circ}$
 $D = 63^{\circ}30'$
 $R = 90.23'$
 $T = 57.98'$
 $L = 102.36'$

P.I. STA 2+16.00
 $\Delta = 19^{\circ}30'$
 $D = 19'$
 $R = 409.26'$
 $T = 70.32'$
 $L = 139.29'$

P.T. STA 7+20.17

P.C. STA 6+11.32

P.T. STA 5+99.88

P.C. STA 4+92.52

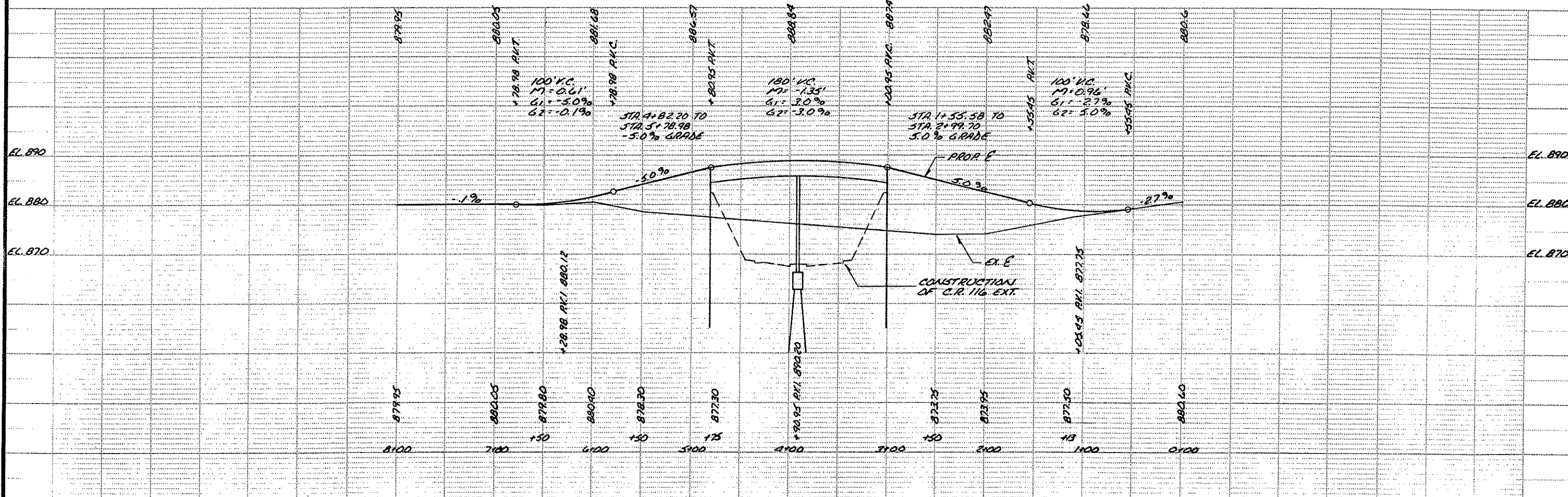
P.T. STA 2+86.32

P.C. STA 1+97.03

BEG. PROJECT
STA. 0+50.00

PROP. BRIDGE #02553

E PROP. TRAIL



City Equipment Form 21

878.3 5+50 883.66

3:1 3:1

167 3777

873.75 2+50 884.56

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32 774

873.95 2+00 882.06

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30 519

877.5 1+13 878.40

880.6 + 0 880.6

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880.05 7+00 879.63

4 2

879.8 6+50 879.89

7 46

879.1 6+00 881.26

3:1 3:1

15 192

