FORM 129 A REV. '64

Minn. Proj. No. BR 05 9502(1)

STATE OF MINNESOTA

DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR BRIDGE NO. 02531

County State Aid Highway No. 30

SEC. 6 TWP. 31N R 24W

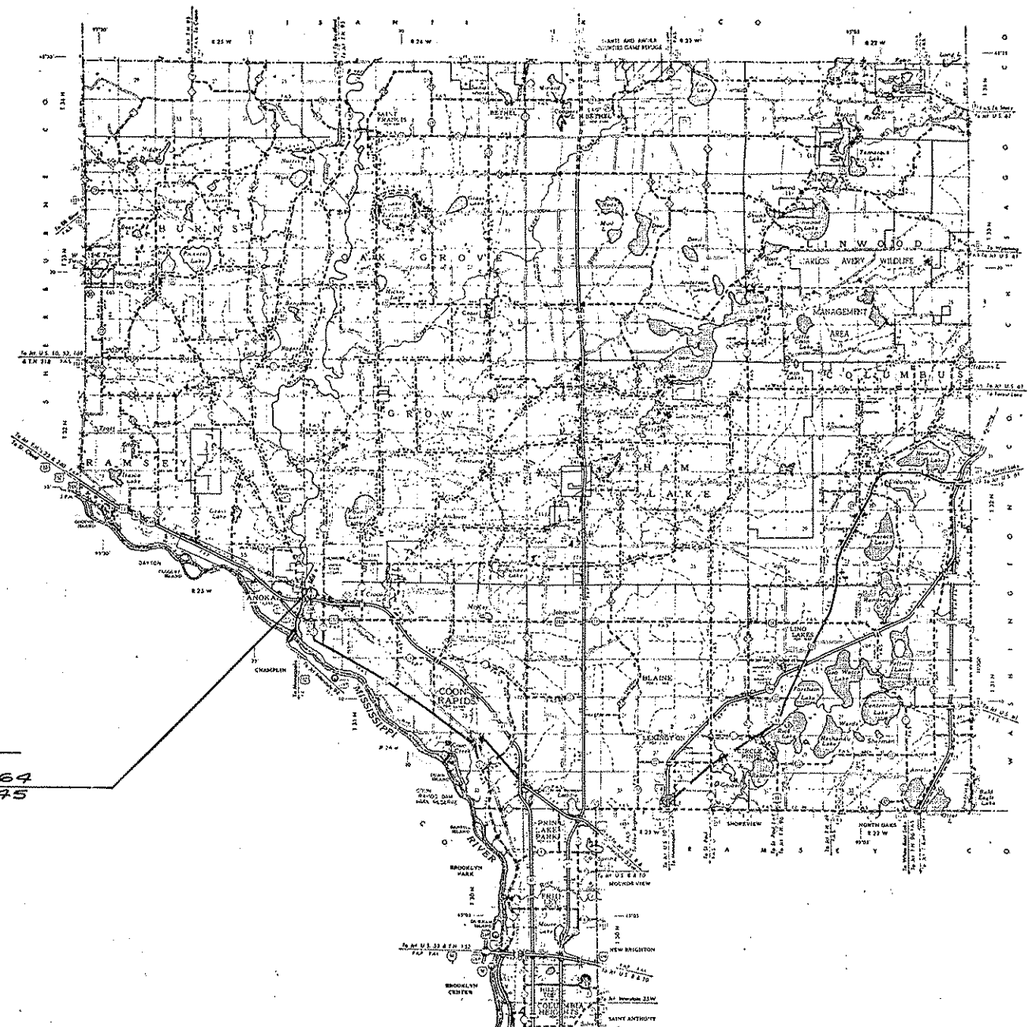
C.S.A.H. 30 (PLEASANT STREET) IN THE CITY OF ANOKA

Give proper reference for Sections, Township and Range

GROSS LENGTH 320.81 FEET .061 MILES
BRIDGES-LENGTH 320.81 FEET .061 MILES
EXCEPTIONS-LENGTH FEET MILES
NET LENGTH 320.81 FEET .061 MILES

CONVENTIONAL SIGNS

STATE LINE
COUNTY LINE
TOWNSHIP OR RANGE LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
RIGHT OF WAY LINE
PRESENT PART OF WAY LINE
CONTROL OF ACCESS LINE
PROPERTY LINE (Except Land Lines)
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
HEDGE
WATER PIPE
SEWER PIPE
DRAIN TILE
SPRINGS
MARSH
TIMBER
ORCHARD
BRUSH
NURSERY
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 STAKE
GRAVEL PIT
SAND PIT
BORROW PIT
ROCK QUARRY
MEANDER CORNER



BRIDGE NO. 02531

BEG. OF DECK - STA. 10+86.64
END OF DECK - STA. 14+07.45

DESIGN DESIGNATION

ADT (CURRENT YEAR) 4,000
ADT (FUTURE YEAR) 6,800
T (HEAVY COMMERCIAL) 1%
9 Ton Design Soil Factor A-3
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.

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

R/W & PLAN APPROVED: Paul K. Lund COUNTY ENGINEER DATE 5-11-80

Anoka COUNTY REG. NO. 6549

RECOMMENDED FOR APPROVAL C.C. Wuchsel DISTRICT STATE AID ENGINEER 3/26 1980

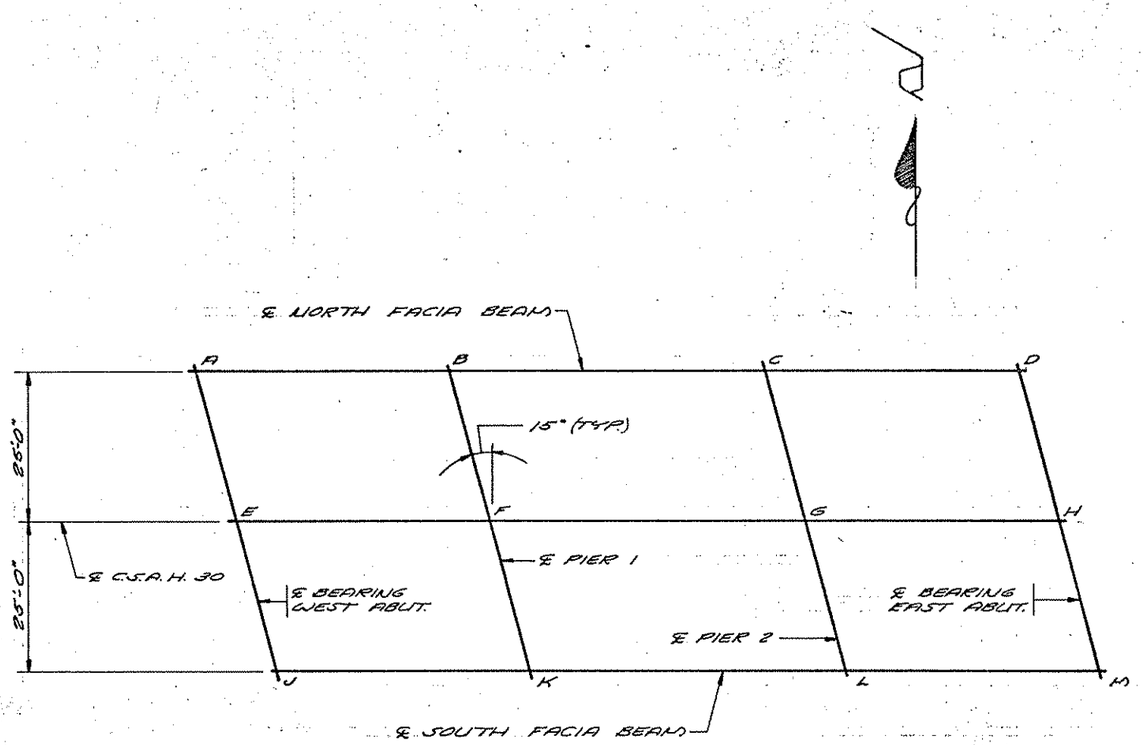
RECOMMENDED FOR APPROVAL [signature] BRIDGE ENGINEER 3-14 1980

APPROVED [signature] STATE AID ENGINEER 1980

Minn. Proj. No. County Proj. No.
State Proj. No. 02-630-01 S.A.P.

ANOKA County, Minnesota. Plan No. 02531

DAHMS PHOTO PRINT CO. MINNEAPOLIS 1, MINN.



LAYOUT SHOWING WORKING POINTS
(NO SCALE)

POINT	STATION	DIMENSIONS BETWEEN WORKING POINTS A	B	C	D	E	F	G	H	J	K	L	M	ELEVATIONS *TOP OF SLAB	SLAB TO BR SEAT	BRIDGE SEAT	POINT
A	10+83.30		109.96			25.88	113.93	217.76			128.02	228.56		863.14	8.38	854.76	A
B	11+87.76			105.17		100.91	25.88	119.62	217.76	103.88		128.68	228.56	861.94	8.09	853.35	B
C	10+92.90				109.96	209.96	101.59	25.88	113.93	203.50	104.51		128.02	861.07	8.02	853.05	C
D	13+97.38						209.96	100.91	25.88		202.50	103.88		862.03	8.09	853.94	D
E	10+90.00						109.96			25.88	113.93	217.76		863.32			E
F	11+94.46							105.17		100.91	25.88	119.62	217.76	861.71			F
G	12+99.62								109.96	209.96	101.59	25.88	113.93	861.92			G
H	14+09.08										209.96	100.91	25.88	862.47			H
J	10+96.70										109.96			862.85	8.38	854.47	J
K	12+01.16											105.17		861.32	8.09	853.23	K
L	13+06.32												109.96	861.12	8.02	853.10	L
M	14+10.78													862.25	8.09	854.16	M

* SEE SHEET 19 FOR LOCATION OF WORKING POINT ELEVATIONS @ FASCIA BEAMS.

C.S.A.H. 30 ANOKA COUNTY
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02531

BRIDGE LAYOUT

APPROVED: 3-14-80

SURFACE TO CONFORM TO PROFILE OF FINISHED ROADWAY AND SIDEWALK

A

Ⓠ BOTTOM OF BRIDGE SEAT TO BE LEVEL OVER WALL. SEE SUPERSTRUCTURE SHT. 19 FOR DETAIL B

CONC. MIX NO. 3X33 IN WATCHED AREA INCLUDED IN SUPERSTRUCTURE QUANTITIES

CONSTRUCTION JOINT 2"x6" KEYWAY

EL. 861.58 TOP OF PARAPET WALL TO BE LEVEL.

WINGWALL HEIGHT VARIES - SEE DETAIL B-B - SHEET 4

NOTE: SEE SHEETS 5 & 24 FOR LOCATION OF SLEEVES FOR UTILITIES

EL. 854.47

EL. 854.63

EL. 854.84

EL. 854.89

EL. 854.80

EL. 854.76

WINGWALL HEIGHT VARIES - SEE VIEW B-B, SHEET 4

CONTRACTION JOINT SEE DETAIL B801

5'-0" (min)

3'-0"

CONSTRUCTION JOINT 2"x6" KEYWAY

EL. 846.47

LEVEL

A

NOTE: PAINT BR. SEAT WITH PROTECTIVE COATING SEE SPECIAL PROVISIONS

ELEVATION
SCALE: 4" = 1'-0"

B

5'-0"

4'-0"

8'-0"

4'-0"

6'-6"

32'-6"

10'-0"

6'-6"

RAILING END POST

8" SIDEWALK BRACKET

1'-8" WINGWALL

2" COPING

EDGE OF SIDEWALK

105°

22'-0"

24'-0"

10'-4"

10'-4"

10'-4"

10'-4"

STEP SPG.

15° (TYP.)

2'-0" x 2'-0" FILLET

8" PAVING BRACKET

2'-0"

1'-6" WALL

6½" CANTILEVER

℄ ROWY.

4" PROJ. TYP. BOTH SIDES OF WALL CAP SLEEVES @ B.F.

W.P. "E" STA. 10+90.00

2"x4" KEYWAY

2'-0" x 2'-0" FILLET

75°

10'-2½" KEYWAY

B.M. DISK

1'-3"

1'-9"

5"

9"

W.P. "J"

℄ BRG.

W.P. "A"

2'-11"

9'-10½"

5'-0"

10'-0"

10'-0"

5'-0"

1'-8"

EDGE OF SLAB

4'-0"

① 5'-9"

② 7'-7"

10'-0"

10'-0"

5'-0"

SPG. FOR TELEPHONE LINE SLEEVES THRU ABUT WALL. SEE SHT. 24 FOR VERT. TIES.

WINGWALL EXTENSION (TYP.)

EDGE OF SLAB

B

6'-1⅜" 10'-4½" 10'-4½" 5'-2⅜" 5'-2⅜" 10'-4½" 10'-4½" 6'-1⅜" — BEAM SPG.

6'-1⅜" 25'-10⅝" 25'-10⅝" 6'-1⅜" — W.P. SPG.

32'-0" 32'-0"

64'-0"

PLAN
SCALE: 4" = 1'-0"

① SPG. FOR GASMAIN SLEEVE THRU ABUT. WALL. SEE SHT. 24 FOR VERT. TIES. 4" PROJ. ALONG ℄ SLEEVE TYP BOTH SIDES OF WALL. CAP SLEEVES @ B.F.

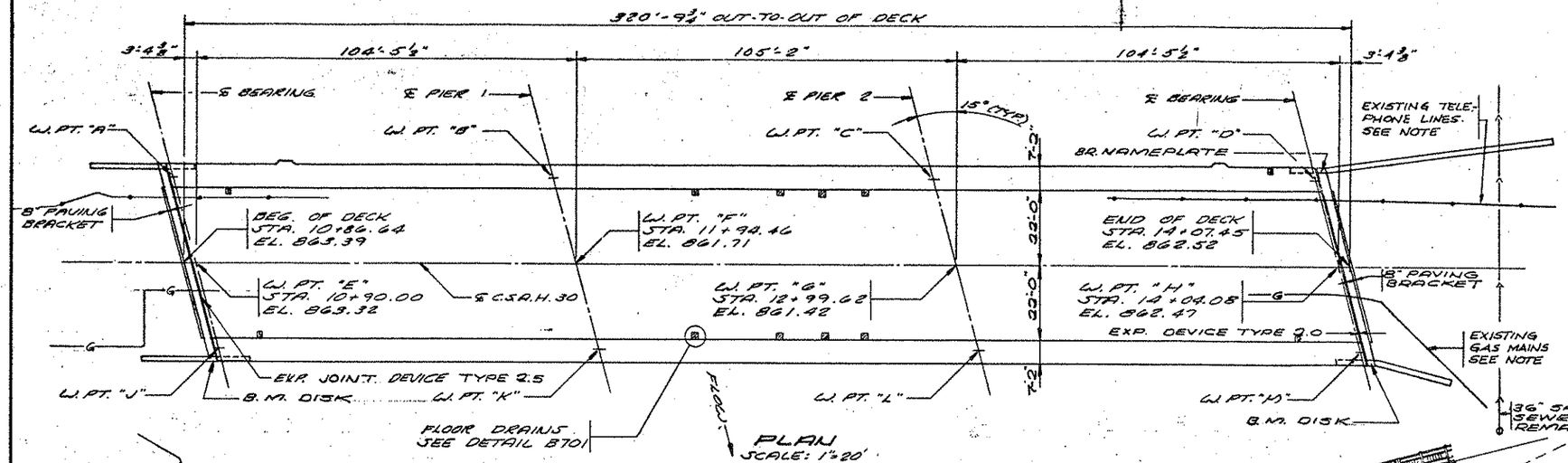
② SPG. FOR WATERMAIN SLEEVE THRU ABUT. WALL. SEE SHEET 24 FOR VERT. TIES. 4" PROJ. ALONG ℄ SLEEVES TYP. BOTH SIDES OF WALL. CAP SLEEVES @ B.F.

MINNESOTA DEPARTMENT OF TRANSPORTATION

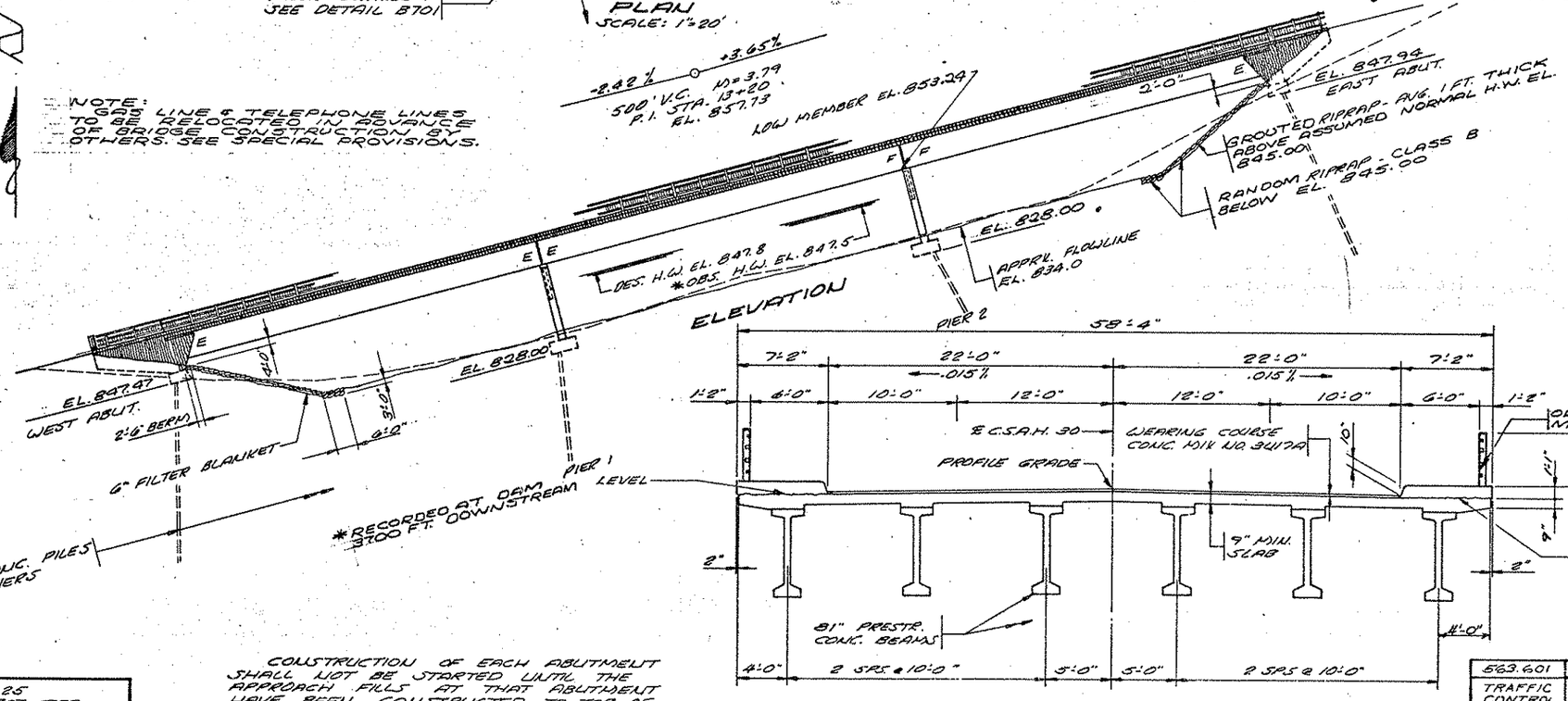
BRIDGE NO. 02531

WEST ABUTMENT DETAILS

APPROVED: 3-11-80



NOTE:
GAS LINE & TELEPHONE LINES TO BE RELOCATED IN ADVANCE OF BRIDGE CONSTRUCTION BY OTHERS. SEE SPECIAL PROVISIONS.



TRANSVERSE SECTION THRU DECK
SCALE: 3/16"=1'-0"

CONSTRUCTION OF EACH ABUTMENT SHALL NOT BE STARTED UNTIL THE APPROACH FILLS AT THAT ABUTMENT HAVE BEEN CONSTRUCTED TO TOP OF SUBGRADE.

B.M. ELEV. 869.25
S.E.L. CORNER BOT. STEP HOUSE #33 STA 9+70, LT. 52'

DESIGN DATA

1977 & INTERIM A.A.S.H.T.O. DESIGN SPECIFICATIONS
LOAD FACTOR DESIGN METHOD - HS 20 LOADING
INCLUDES 17 P.S.F. D.L. ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS

REINFORCED CONCRETE: f'_c = 4000 P.S.I. n=8
f_y = 60000 P.S.I. REINF. (GRADE 60)

PRESTRESSED CONCRETE: f'_c = 5000 P.S.I. n=6
f'_s = 270000 P.S.I. 270" STRANDS

STRUCTURAL STEEL: f_y = 36000 P.S.I. SPEC. 3306

A.D.T. (PROJECTED 1999) = 6800 DECK AREA= 18714 SQ.FT.

CONSTRUCTION NOTES

THE 1978 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" SHALL GOVERN.

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

LIST OF SHEETS

NO.	TITLE
1	GENERAL PLAN & ELEVATION
2	BRIDGE LAYOUT
3&4	WEST ABUTMENT DETAILS
5-7	WEST ABUTMENT REINFORCEMENT
8&9	EAST ABUTMENT DETAILS
10-12	EAST ABUTMENT REINFORCEMENT
13-15	RETAILING WALL DETAILS & REINF.
16	PIER DETAILS & REINFORCEMENT
17-19	SUPERSTRUCTURE DETAILS & REINF.
20&21	PRESTRESSED CONC. BEAMS
22&23	ORNAMENTAL METAL RAILING
24	UTILITIES
25	CONDUIT SYSTEM (LIGHTING)
26-32	BRIDGE DETAILS
33-35	BRIDGE SURVEY-PLAN & PROFILE
36	TRAFFIC CONTROL PLAN

APPROVED:
COUNTY ENGINEER
ANOKA COUNTY
DATE: 2-6-80

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.
REG. NO. 6924
DATE: 1-7-80

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

C.S.A.H. 30 ANOKA COUNTY
MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02531

C.S.A.H. 30 (PLEASANT STREET) OVER THE RUM RIVER IN ANOKA.
103'-105'-105' PRESTRESSED CONC. BEAM SPANS - 40° ROWY - 15° SKEW
2- 6' SIDEWALKS
SPAN IDENT. NO. 501

GENERAL PLAN & ELEVATION

SEC. 6 TWP 31N RGW
CITY OF ANOKA
ANOKA COUNTY

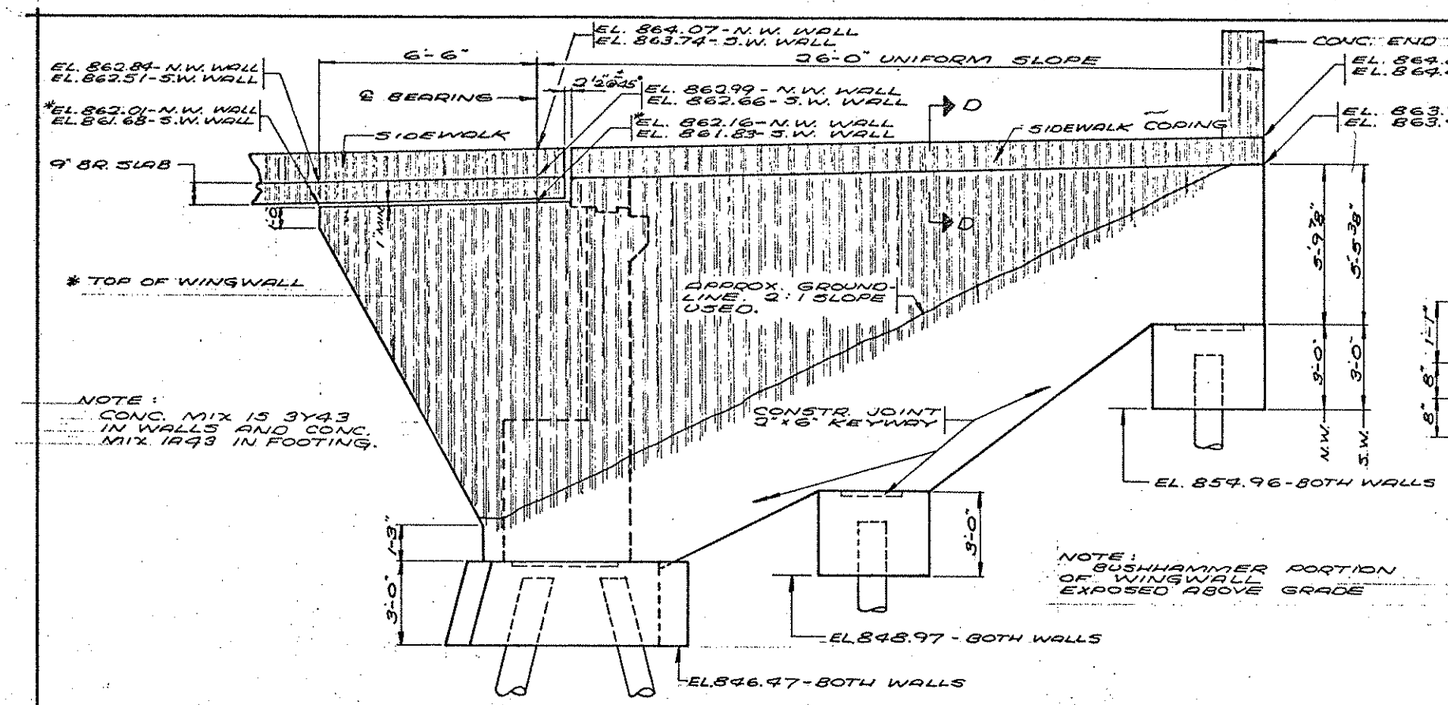
APPROVED: M Y Beam 3-14-80
BRIDGE ENGINEER

ITEM NO.	401.601	2401.501	2401.501	2402.521	401.605	401.605	2401.541	2401.541	2401.501	401.601	401.601	2402.590	2545.509	504.601	504.601	2405.501	2545.509	2511.501
ITEM	STRUCTURE EXCAVATION	CONC. MIX NO. 1243	CONC. MIX NO. 3Y43	STRUCTURAL STEEL (3306)	BRIDGE SLAB CONC. MIX NO. 3x33	WEARING COURSE CONC. MIX NO. 3U17A	REINFORCEMENT BARS	REINF. BARS (EPOXY COATED)	CONCRETE MIX NO. 3X46	FOUNDATION PREPARATION (PIER 1)	FOUNDATION PREPARATION (PIER 2)	ELASTOMERIC BRG. PAD TYPE 1	CONDUIT SYSTEM (POWER)	WATER MAIN PROVISIONS	GAS MAIN PROVISIONS	PRESTR. CONC. BEAMS, TYPE 81-105	CONDUIT SYSTEM (LIGHTING)	RANDOM RIPRAP, CLASS B
QUAN.	1	272 (P)	392 (P)	580 (P)	18607 (P)	14116 (P)	128065 (P)	66540 (P)	172 (P)	1	1	6	1	1	1	18	1	330
UNIT	LUMP SUM	CU. YD.	CU. YD.	POUND	SQ. FT.	SQ. FT.	POUND	POUND	CU. YD.	LUMP SUM	LUMP SUM	EACH	LUMP SUM	LUMP SUM	LUMP SUM	EACH	LUMP SUM	CU. YD.

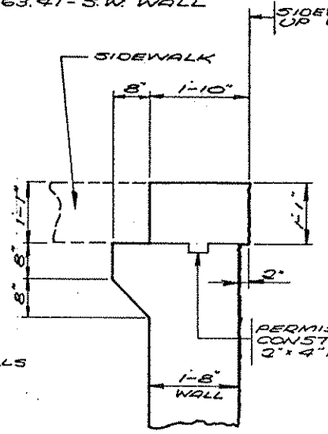
ITEM NO.	2402.590	2402.590	2402.592	2401.543	2402.591	2402.591	2402.596	2442.501	2123.506	2511.504	2511.503	2452.507	2452.508	2452.519	2452.519	2405.511	2402.583	2545.509
ITEM	ELASTOMERIC BRG. PAD, TYPE 2	ELASTOMERIC BRG. PAD, TYPE 3	ELASTOMERIC BRG. ASSEMBLIES, TYPE 1	SPIRAL REINFORCEMENT	EXPANSION JOINT DEVICES, TYPE 2.5	EXPANSION JOINT DEVICES, TYPE 2.0	FLOOR DRAINS, TYPE 1	REMOVE OLD BRIDGE (1)	3/4 CU. YARD DRAGLINE	FILTER BLANKET, TYPE 1	GROUTED RIPRAP	C.I.P. CONC. PILING DELIVERED	C.I.P. CONC. PILING DRIVEN	C.I.P. CONC. TEST PILES, 65 FT. LG.	C.I.P. CONC. TEST PILES, 95 FT. LG.	DIAPHRAGM FOR TYPE 81 PRESTR. BEAMS	ORNAMENTAL METAL RAILING	CONDUIT SYSTEM PROVISIONS (TELEPHONE)
QUAN.	12	6	10	2333 (P)	60 (P)	58 (P)	12	1	40	120	98	6540	6540	4	4	660 (P)	750 (P)	1
UNIT	EACH	EACH	EACH	POUND	LIN. FT.	LIN. FT.	EACH	LUMP SUM	HOURS	CU. YD.	CU. YD.	LIN. FT.	LIN. FT.	EACH	EACH	LIN. FT.	LIN. FT.	LUMP SUM

563.601	2021.501
TRAFFIC CONTROL	MOBILIZATION
1	1
LUMP SUM	LUMP SUM

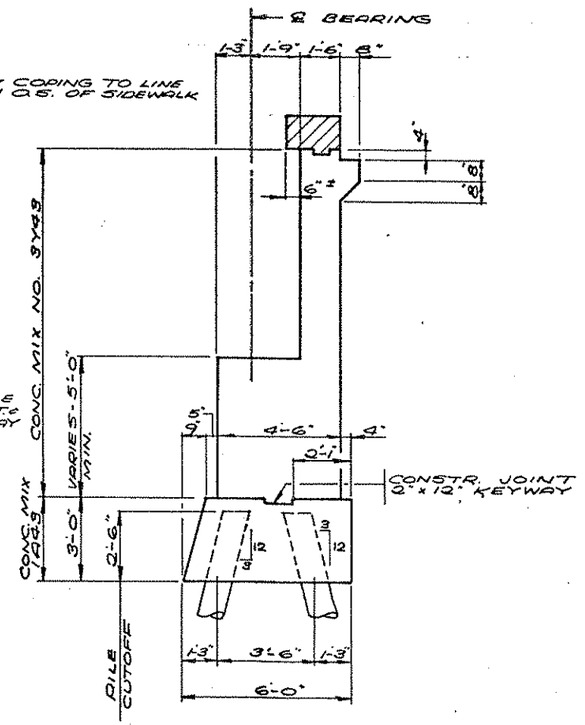
(1) STA. 12+47.00 (P) DENOTES PLAN QUANTITY PAY ITEM PER SPEC. 1901



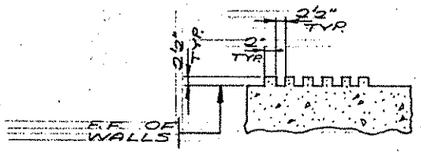
VIEW B-B - WINGWALL ELEVATIONS
SCALE: ⅜" = 1'-0"



SECTION D-D



SECTION A-A
SCALE: ⅜" = 1'-0"



PROTUSION DETAIL

NOTE:
FORM PROTRUSIONS ON OUTSIDE OF DECK WINGWALLS, SIDEWALK END POSTS. PROTUSIONS SHALL BE FORMED INTREGRALLY WITH DECK WINGWALLS, SIDEWALK & END POSTS. BUSHHAMMER PROTRUSIONS AFTER CONC. HARDENS TO ACHIEVE A RANDOM PATTERN. CARRY OUT UNDER ENGINEERS SUPERVISION. TO BE INCLUDED IN PRICE BID FOR 3Y43 CONC. MIX

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

COMPUTED PILE LOADS - TONS PER PILE	
DEAD LOAD + O.T.	36.0
LIVE LOAD	4.0
TOTAL =	40.0

PILE NOTES

2 - 12"φ C.I.P. CONC. TEST PILES 65 FT. LONG
36 - 12"φ C.I.P. CONC. PILES EST. LENGTH 55 FT.
38 - 12"φ C.I.P. CONC. PILES REQ'D. FOR 1 ABUT.

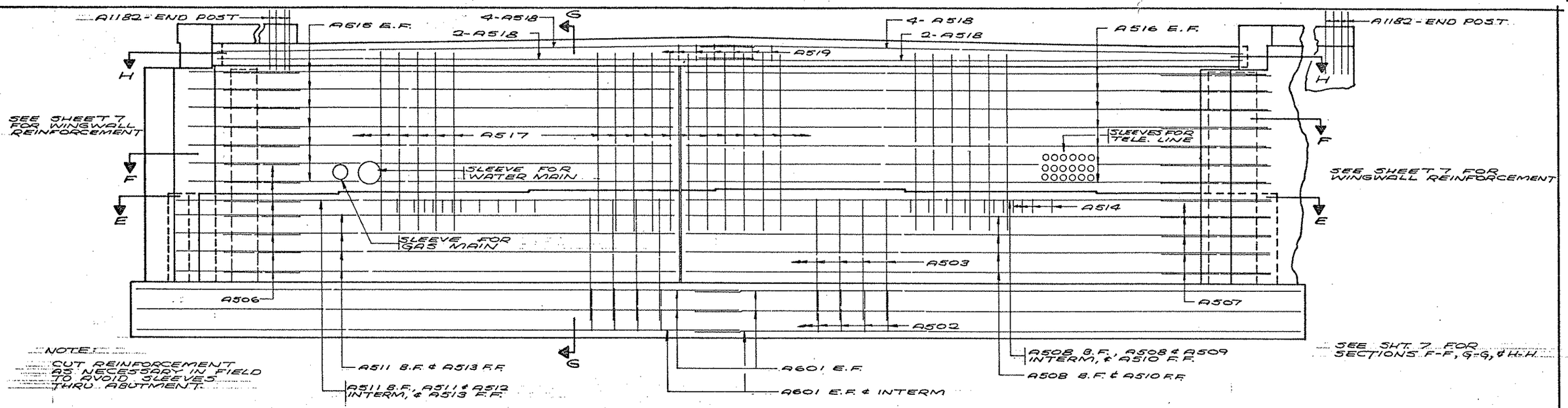
PILES MARKED THUS ▷ TO BE BATTERED 3" PER FOOT IN DIRECTION SHOWN. PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
FOR SPLICES SEE DETAIL 8201
ALL PILES TO BE 12"φ CAST-IN-PLACE CONC. PILES.

SUMMARY OF QUANTITIES - WEST ABUT.		
CONCRETE MIX NO. 1R43	49	CU. YD.
CONCRETE MIX NO. 3Y43	115	CU. YD.
STRUCTURE EXCAVATION	40%	LUMP SUM
REINFORCEMENT BARS	11,590	POUND
(1) 12"φ C.I.P. CONC. PILING DRIVEN	1980	LIN. FT.
(1) 12"φ C.I.P. CONC. PILING DELIVERED	1980	LIN. FT.
12"φ C.I.P. CONC. TEST PILES 65' LONG	2	EACH

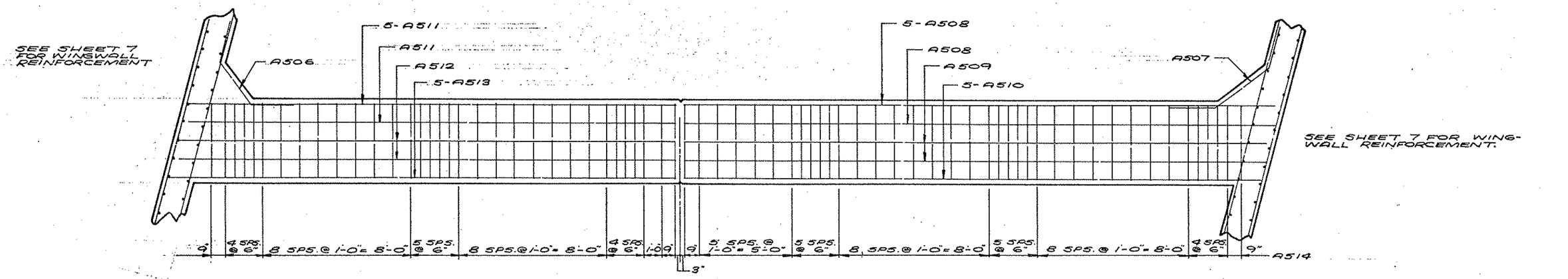
(1) DOES NOT INCLUDE TEST PILES

WEST ABUTMENT DETAILS	DRAWN: O.J.V.	CHECKED: R.R.T.	APPROVED: 3-14-80	BRIDGE NUMBER 02531
	SHEET 4 OF 36 SHEETS			

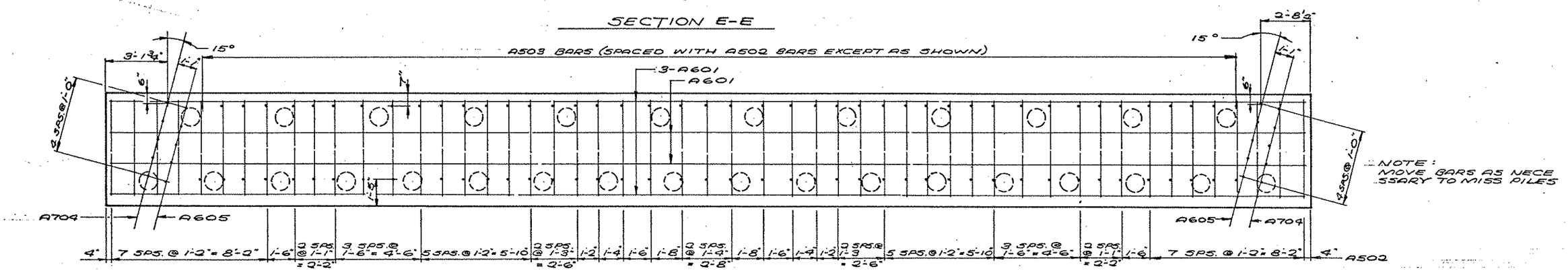
S.P. 02-630-01



ELEVATION



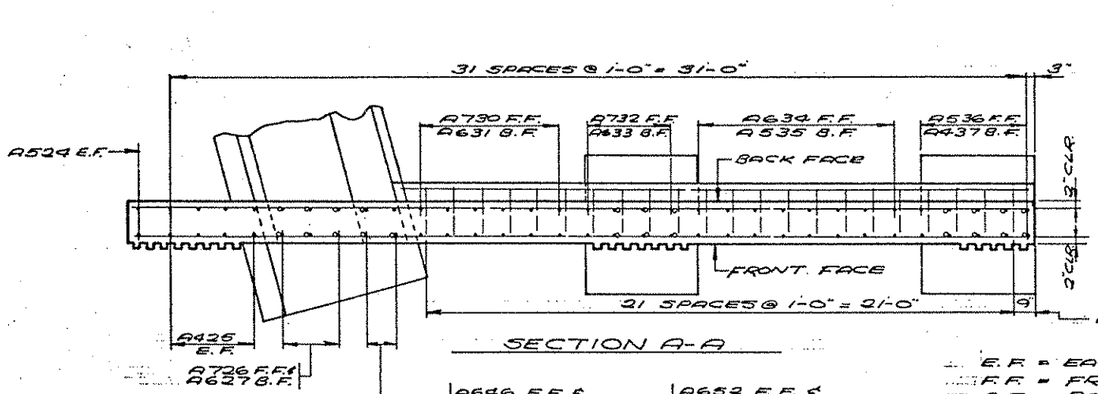
SECTION E-E



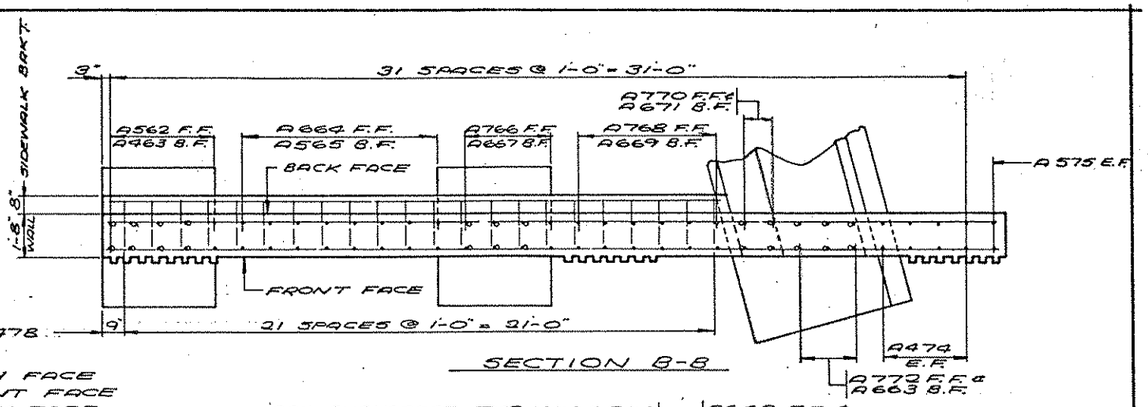
FOOTING PLAN
SCALE: 3/8" = 1'-0"

WEST ABUTMENT DETAILS	DRAWN D.J.V.	CHECKED R.R.T.	APPROVED: 3-14-80	BRIDGE NUMBER 02531
	SHEET 5 OF 36 SHEETS			

S.P. 02-630-01

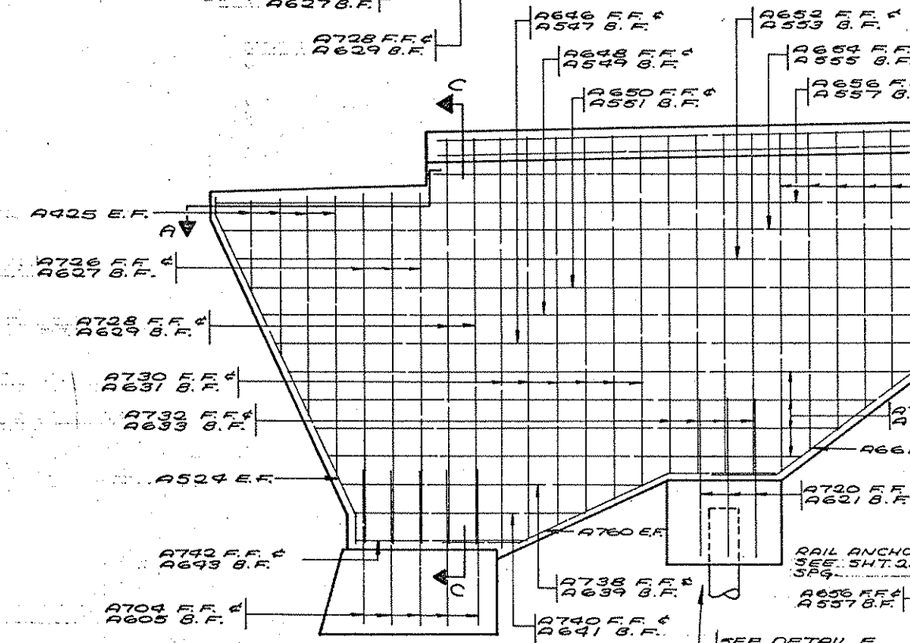


SECTION A-A

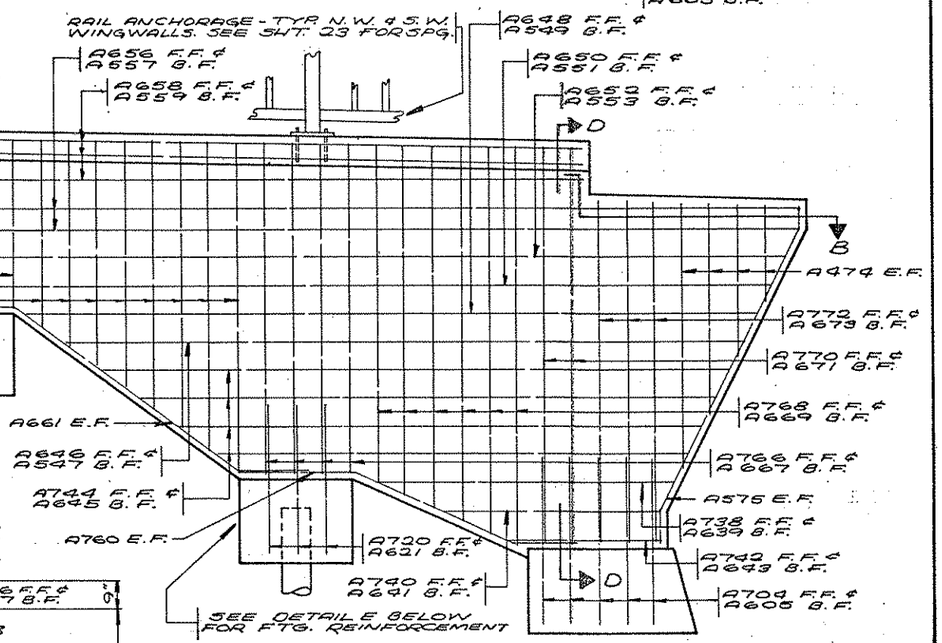


SECTION B-B

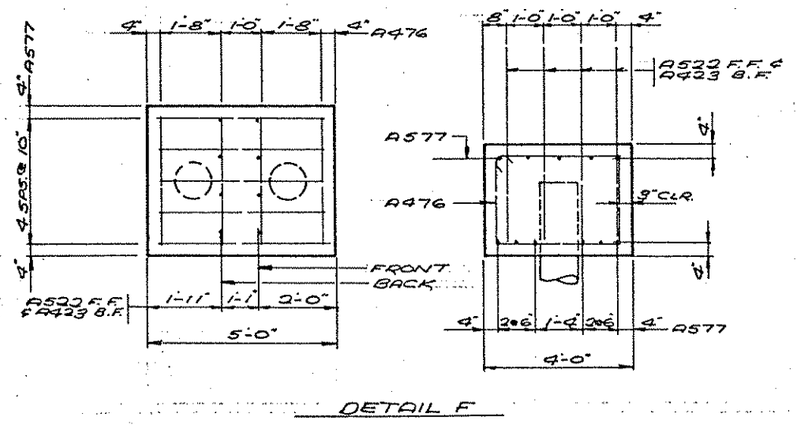
E.F. = EACH FACE
F.F. = FRONT FACE
B.F. = BACK FACE



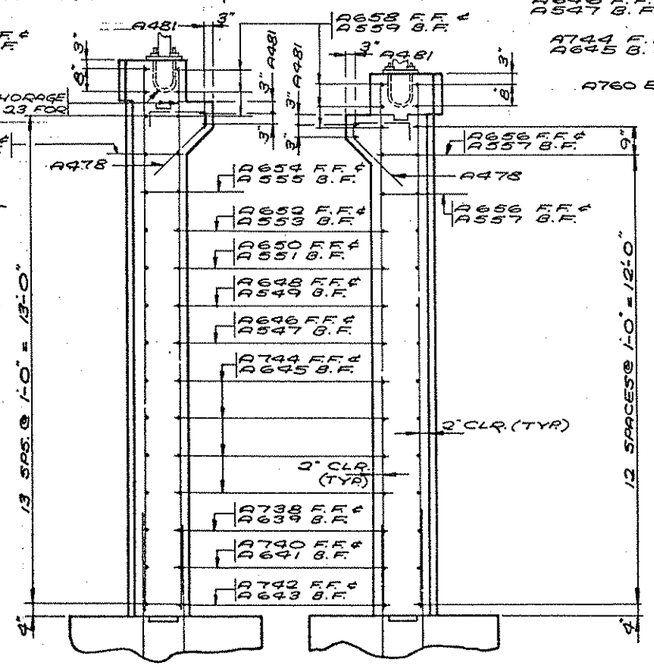
N.W. WINGWALL
SCALE: 3/8" = 1'-0"



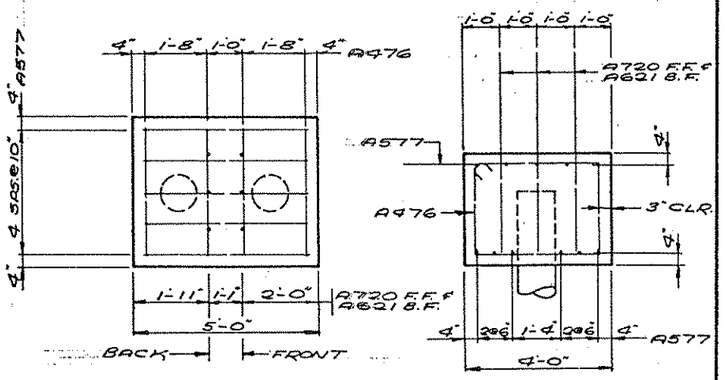
S.W. WINGWALL
SCALE: 3/8" = 1'-0"



DETAIL F



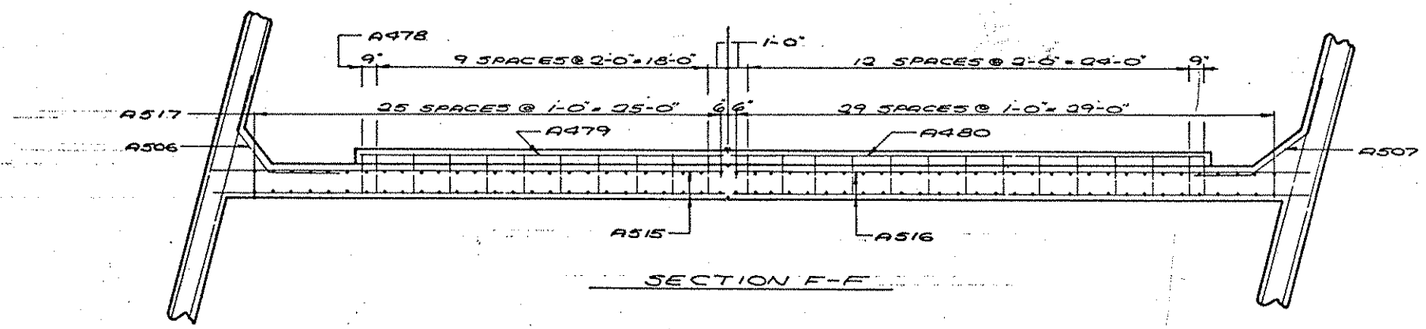
SECTION C-C SECTION D-D



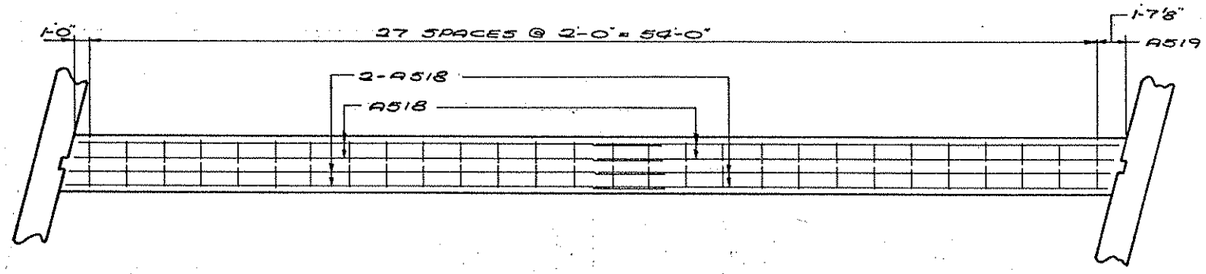
DETAIL E

N.W. & S.W. WINGWALL REINFORCEMENT	DRAWN O.J.V.	CHECKED R.R.T.	APPROVED 3-14-10	BRIDGE NUMBER 02531
	SHEET 6 OF 36 SHEETS			

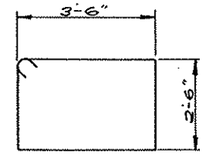
S.P. 02-630-01



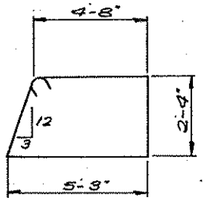
SECTION F-F



SECTION H-H



A476



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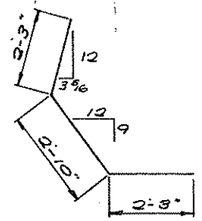

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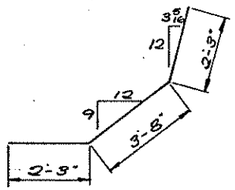

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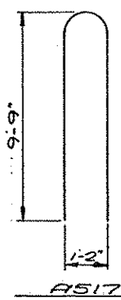

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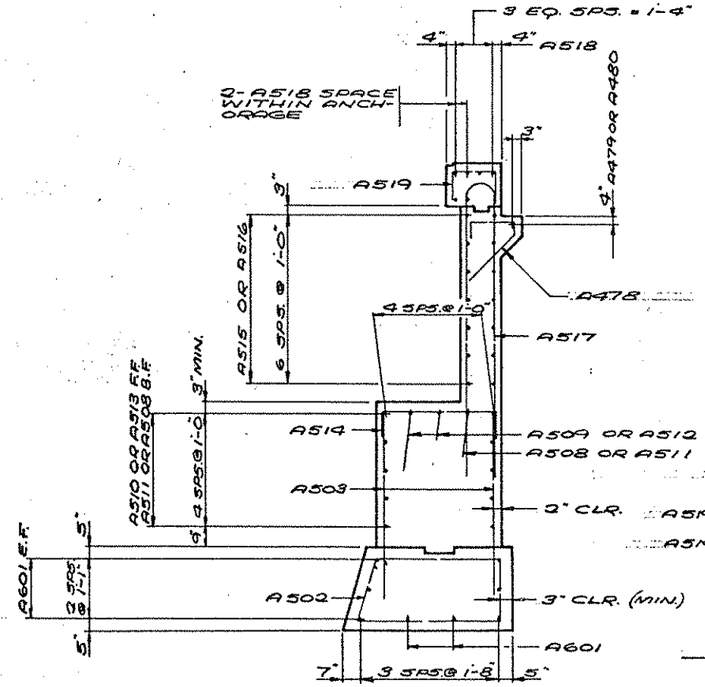
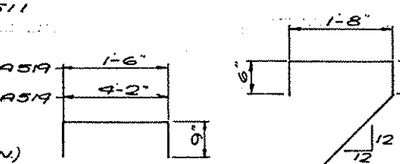


SECTION G-G



A519 & A519

A478

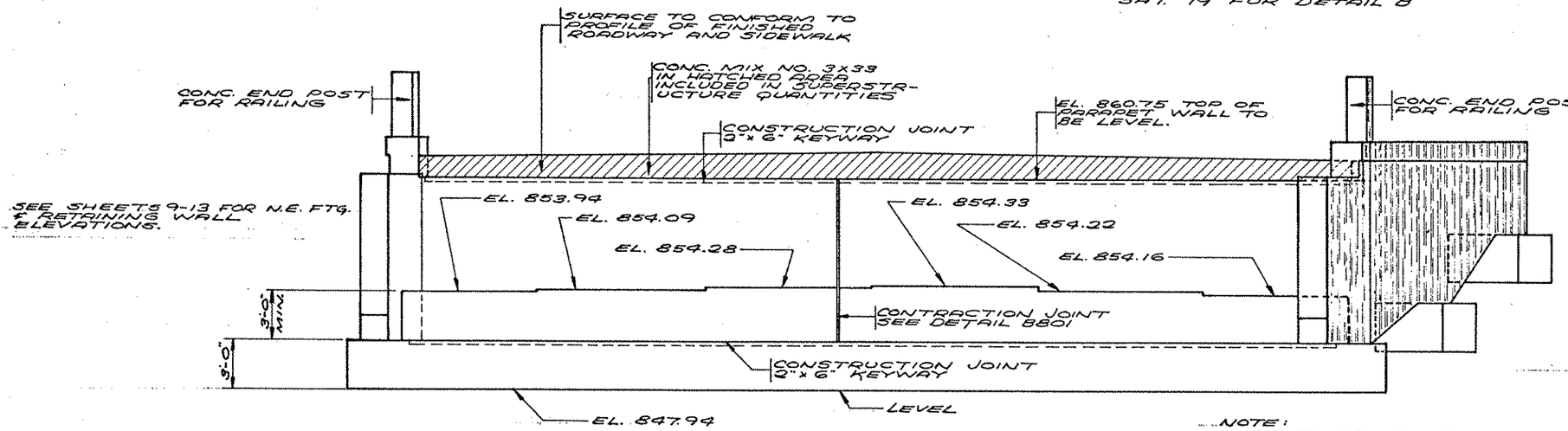
BILL OF REINFORCEMENT - WEST ABUTMENT

BAR	NO.	LENGTH	SHAPE	LOCATION
A601	16	32'-11"	STR.	ABUT. FTG. - LONG
A502	51	15'-7"	BENT	" " - STIRRUP
A503	88	7'-0"	STR.	" " - TO CAP
A704	10	5'-6"	STR.	" " - TO WING.
A605	10	4'-8"	STR.	" " - " "
A506	12	7'-4"	BENT	BACK OF WINGWALL
A507	12	8'-2"	BENT	" " "
A508	6	31'-11"	STR.	BR. SEAT - LONGIT.
A509	2	31'-4"	STR.	" " - "
A510	5	31'-2"	STR.	" " - "
A511	6	26'-5"	STR.	" " - "
A512	2	26'-11"	STR.	" " - "
A513	5	27'-6"	STR.	" " - "
A514	71	5'-8"	BENT	" " - TIES
A515	14	26'-5"	STR.	PARAPET WALL
A516	14	31'-11"	STR.	" "
A517	56	30'-2"	BENT	" " - VERT.
A518	10	29'-1"	STR.	ROADWAY SLAB
A519	28	3'-0"	BENT	" "
A720	6	5'-6"	STR.	FTG. TO WINGWALL
A621	6	4'-8"	STR.	" " "
A522	8	4'-0"	STR.	" " "
A423	8	3'-2"	STR.	" " "
(2) A524	2	13'-5"	STR.	N. W. WING. - VERT.
(1) A425	4	13'-2"	STR.	" " "
A726	3	12'-4"	STR.	" " "
A627	3	12'-4"	STR.	" " "
A728	2	14'-4"	STR.	" " "
A629	2	14'-4"	STR.	" " "
(1) A730	3	26'-11"	STR.	" " "
(1) A631	3	26'-11"	STR.	" " "
A732	4	12'-0"	STR.	" " "
A633	4	12'-0"	STR.	" " "
(1) A634	4	19'-1"	STR.	" " "
(1) A535	4	19'-1"	STR.	" " "
A536	5	6'-6"	STR.	" " "
A437	5	6'-6"	STR.	" " "
A738	2	10'-11"	STR.	BOTH WINGS. - HOR2.
A639	2	10'-11"	STR.	" " "
A740	2	8'-1"	STR.	" " - "
A641	2	8'-1"	STR.	" " "
A742	2	5'-9"	STR.	" " "
A643	2	5'-9"	STR.	" " "
(1) A744	4	39'-10"	STR.	" " "
(1) A645	4	39'-10"	STR.	" " "
A646	2	24'-6"	STR.	" " "
A547	2	24'-6"	STR.	" " "
A648	2	26'-4"	STR.	" " "
A549	2	26'-4"	STR.	" " "
A650	2	31'-0"	STR.	" " "
A551	2	31'-0"	STR.	" " "
A652	2	31'-6"	STR.	" " "
A553	2	31'-6"	STR.	" " "
A654	1	31'-10"	STR.	N. W. WING - HOR2.
A555	1	31'-10"	STR.	" " "
A656	3	32'-0"	STR.	BOTH WINGS - HOR2.
A557	3	32'-0"	STR.	" " "
A658	6	24'-4"	STR.	" " "
A559	6	24'-4"	STR.	" " "
(2) A760	4	12'-8"	STR.	" " "
(2) A661	4	16'-2"	STR.	" " "
A562	5	6'-1"	STR.	S. W. WING. - VERT.
A463	5	6'-1"	STR.	" " "
(1) A664	4	18'-6"	STR.	" " "
(1) A565	4	18'-6"	STR.	" " "
A766	4	11'-9"	STR.	" " "
A667	4	11'-9"	STR.	" " "
(1) A768	3	26'-0"	STR.	" " "
(1) A669	3	26'-0"	STR.	" " "
A770	2	12'-0"	STR.	" " "
A671	2	14'-0"	STR.	" " "
A772	3	12'-0"	STR.	" " "
A673	3	12'-0"	STR.	" " "
(1) A774	4	12'-5"	STR.	" " "
(2) A575	2	13'-0"	STR.	" " "
A476	16	12'-9"	BENT	FTG. STIRRUPS
A577	44	9'-6"	STR.	" TOP & BOT.
A478	69	4'-6"	BENT	PDVING BRKT.-TIES
A479	1	19'-8"	STR.	" " - LONGIT.
A480	1	25'-8"	STR.	" " - "
A481	4	22'-6"	STR.	SIDEWALK BRKT.
A1182	8	7'-1"	STR.	END POST - DOWELS

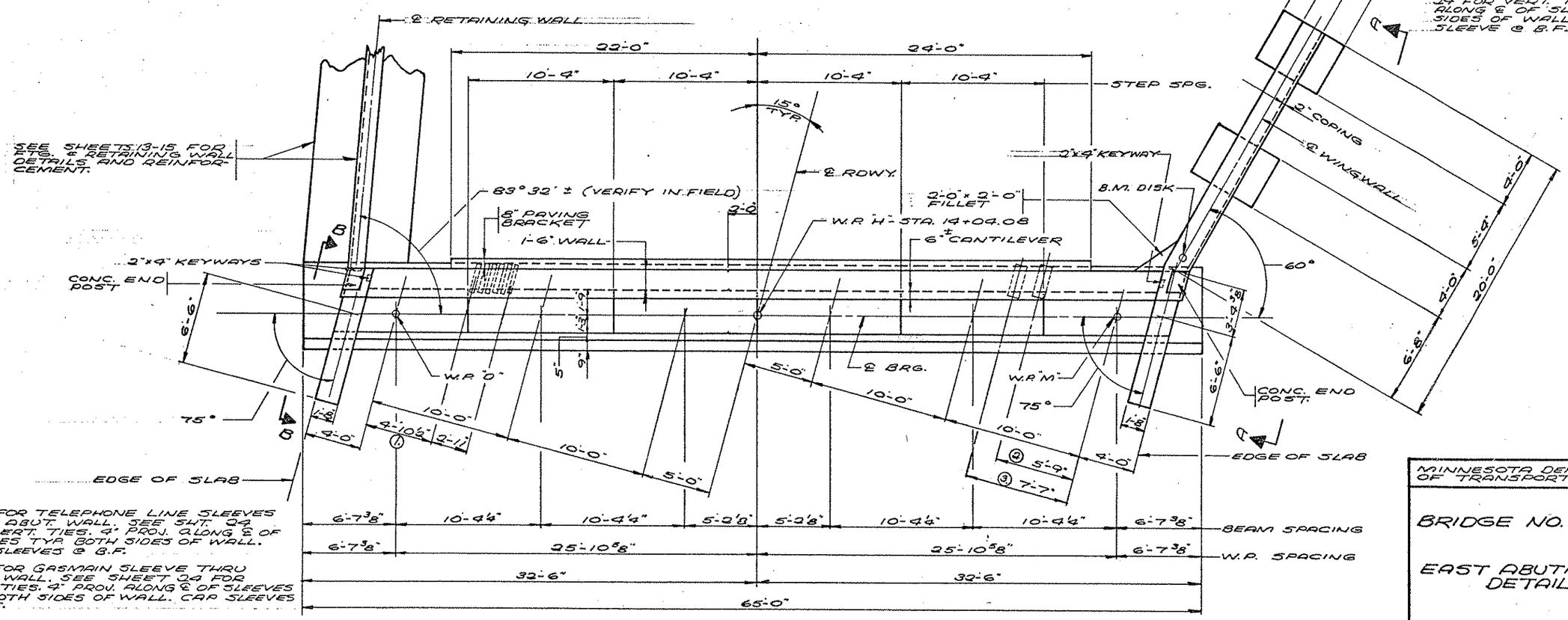
(1) CUT 2 FROM 1
(2) BEND IN FIELD

WEST ABUTMENT REINFORCEMENT	DRAWN: D.J.V	CHECKED: R.R.T.	APPROVED: 3-14-78	BRIDGE NUMBER 02531
	SHEET 7 OF 36 SHEETS			

S.P. 012-630-01



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



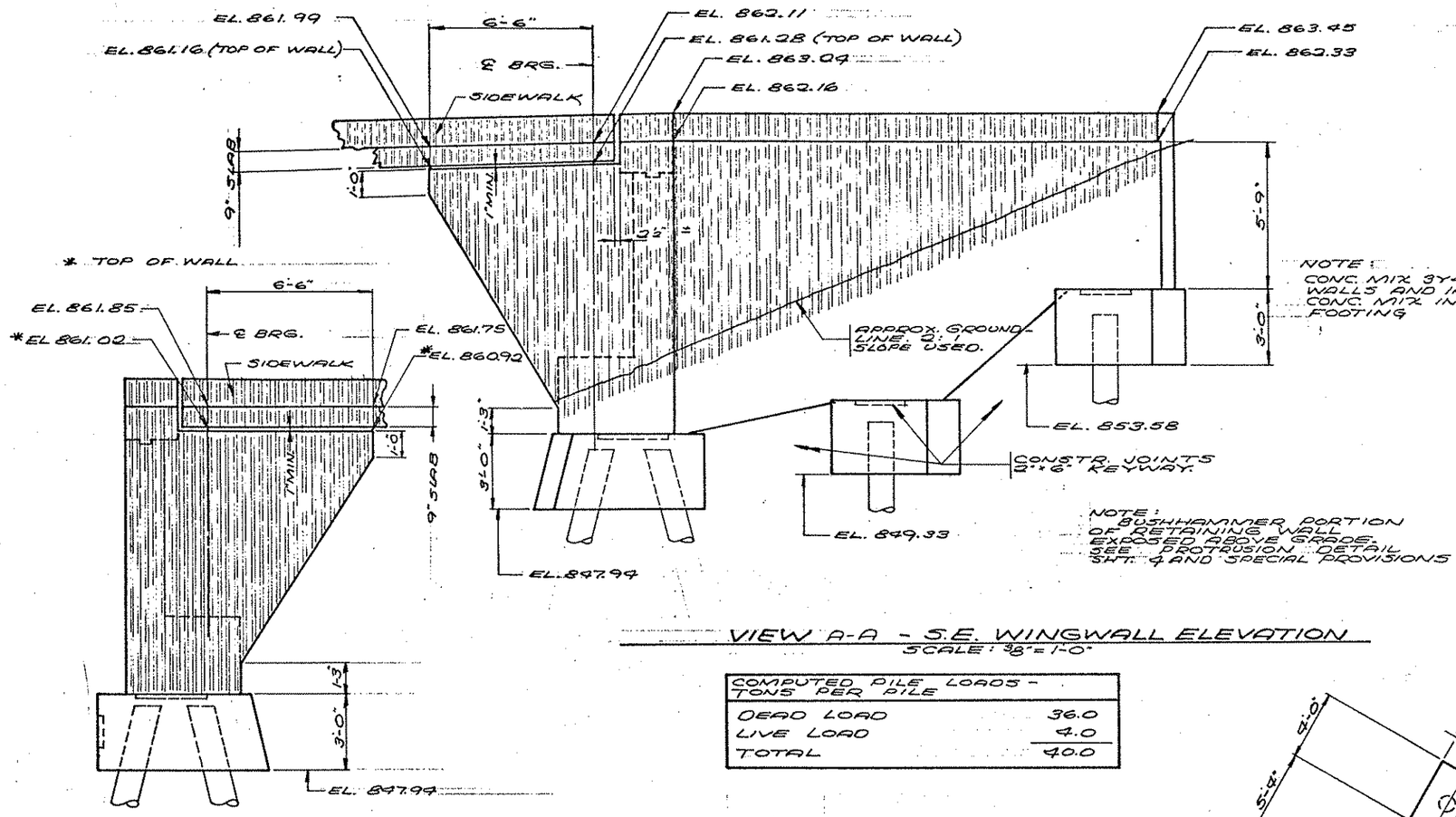
PLAN
SCALE: 1/4" = 1'-0"

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02531

EAST ABUTMENT DETAILS

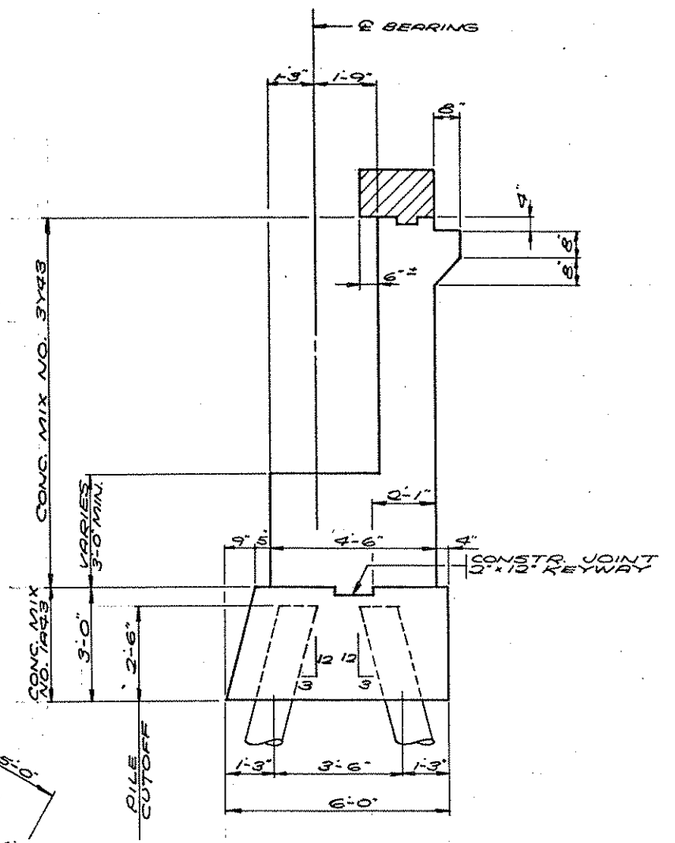
APPROVED: 3-14-80



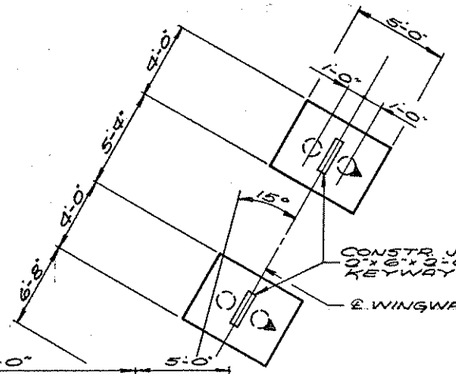
NOTE:
BUSHHAMMER PORTION OF RETAINING WALL EXPOSED ABOVE GROOVE. SEE PROTRUSION DETAIL SHT. 4 AND SPECIAL PROVISIONS

VIEW A-A - S.E. WINGWALL ELEVATION
SCALE: 3/8" = 1'-0"

COMPUTED PILE LOADS - TONS PER PILE	
DEAD LOAD	36.0
LIVE LOAD	4.0
TOTAL	40.0



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

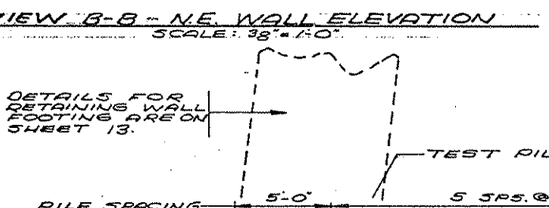


PILE NOTES

2-12"ϕ C.I.P. CONC. TEST PILES 65 FT. LONG
32-12"ϕ C.I.P. CONC. PILES EST. LENGTH 55 FT.
34-12"ϕ C.I.P. CONC. PILES REQ'D FOR 1 ABUT.

PILES MARKED THUS ◯ TO BE BATTERED 3" PER FOOT IN THE DIRECTION SHOWN.
PILE SPACING SHOWN IS AT BOTTOM OF FOOTING.
FOR SPLICES SEE DETAIL 630.
ALL PILES TO BE 12-ϕ CAST-IN-PLACE CONC. PILES.

VIEW B-B - N.E. WALL ELEVATION
SCALE: 3/8" = 1'-0"



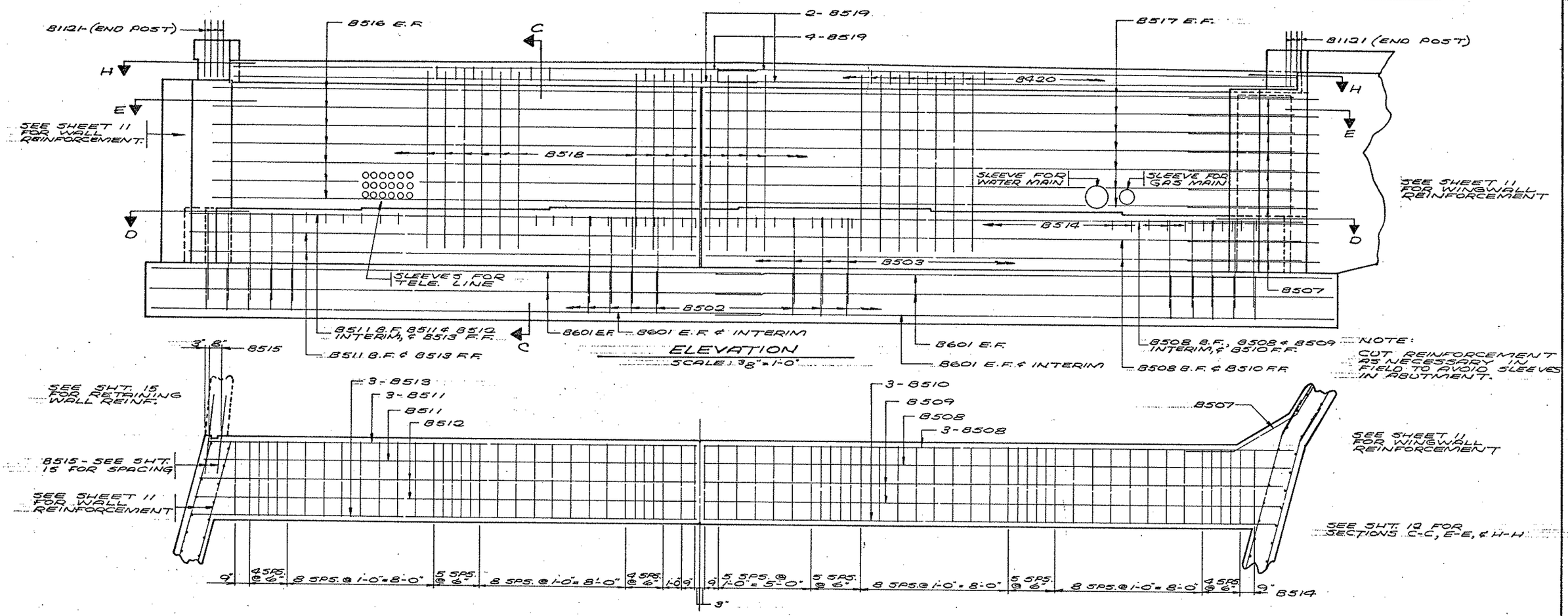
FOOTING PLAN
SCALE: 1/4" = 1'-0"

SUMMARY OF QUANTITIES - EAST ABUT.		
CONCRETE MIX NO. 1A43	46	CU.YD.
CONCRETE MIX NO. 3Y43	76	CU.YD.
STRUCTURE EXCAVATION	90%	LUMP SUM
REINFORCEMENT BARS	8700	POUND
(1) 12" ϕ C.I.P. CONC. PILING DRIVEN	1760	LIN. FT.
(1) 12" ϕ C.I.P. CONC. PILING DELIVERED	1760	LIN. FT.
12" ϕ C.I.P. CONC. TEST PILES 65' LONG	2	EACH

(1) DOES NOT INCLUDE TEST PILES

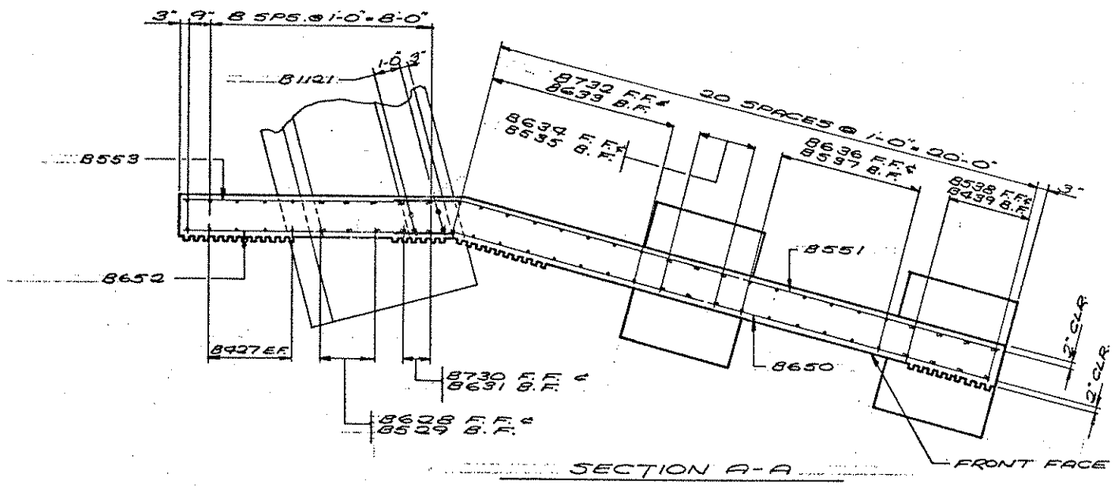
EAST ABUTMENT DETAILS	DRAWN: D.J.V.	CHECKED: R.R.T.	APPROVED: 3-14-00	BRIDGE NUMBER 02531
	SHEET 9 OF 36 SHEETS			

S.P. 02-630-01

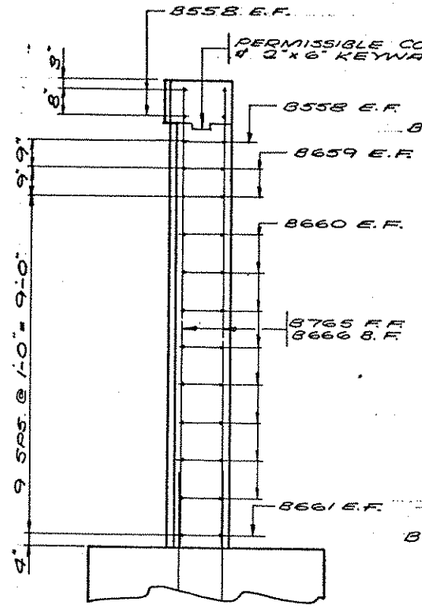


EAST ABUTMENT DETAILS	DRAWN: D.J.V.	CHECKED: R.R.T.	APPROVED 3-14-80	BRIDGE NUMBER 02531
	SHEET 10 OF 36 SHEETS			

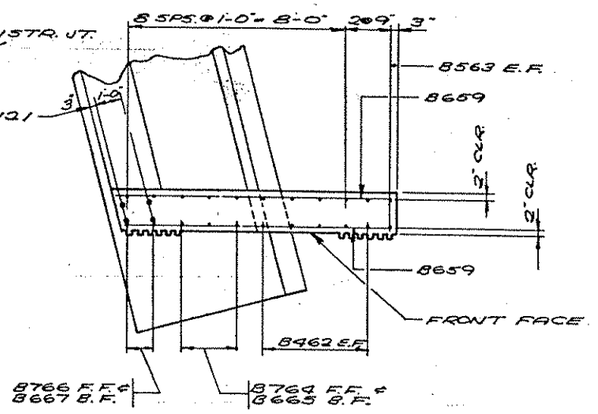
I.R. 02-630-01



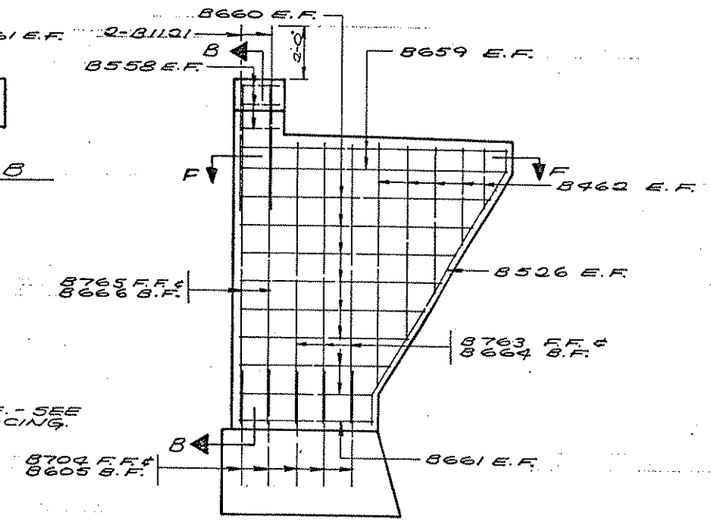
SECTION A-A



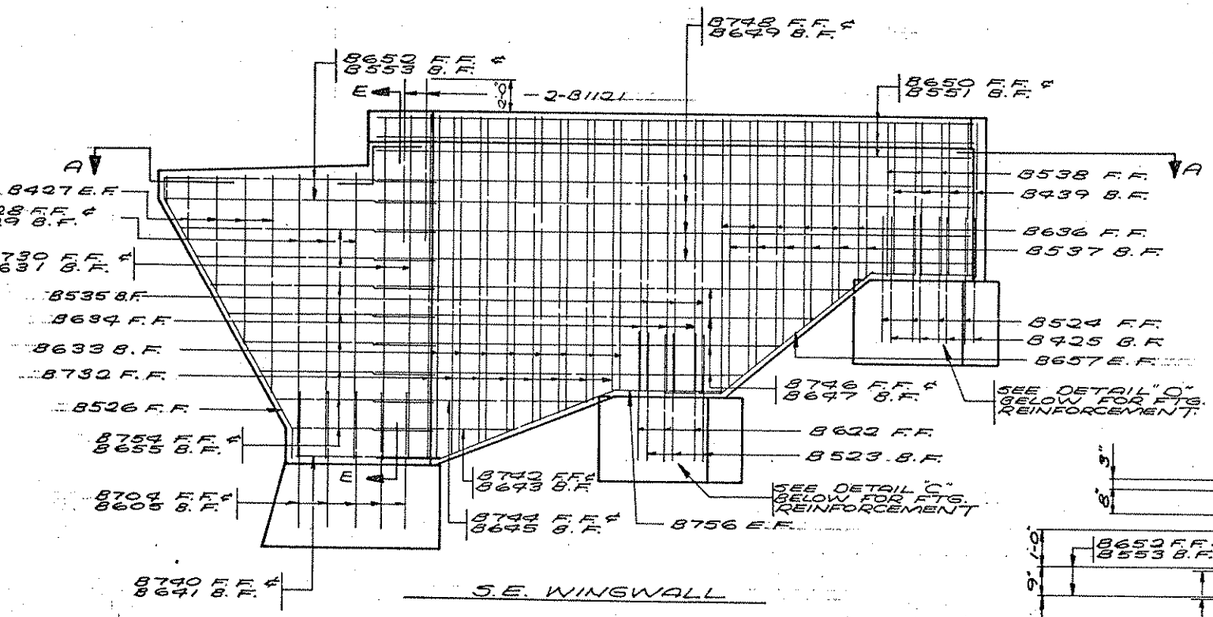
SECTION B-B



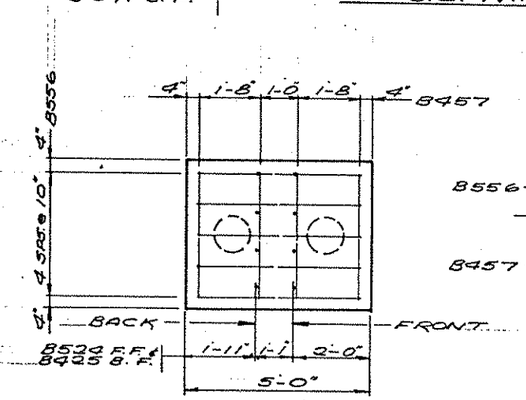
SECTION F-F

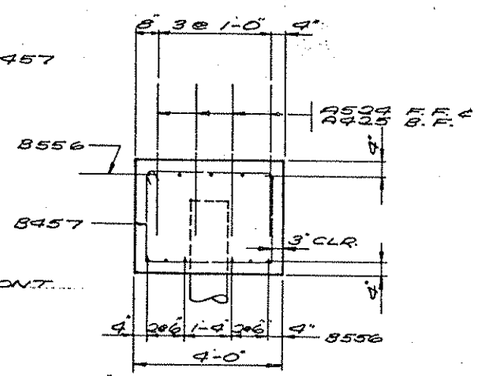


WINGWALL EXTENSION

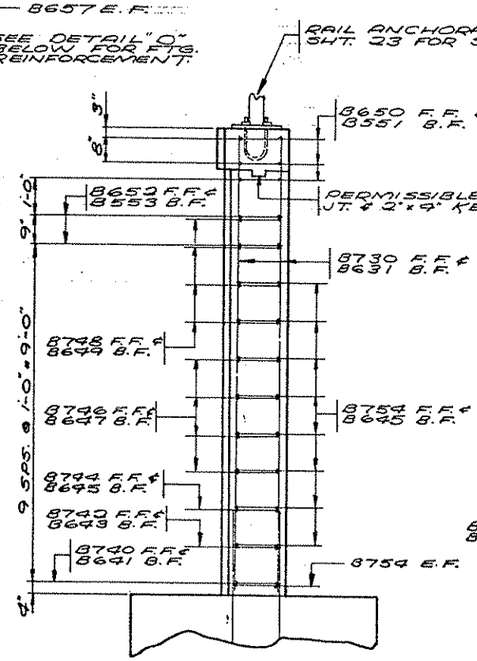


S.E. WINGWALL

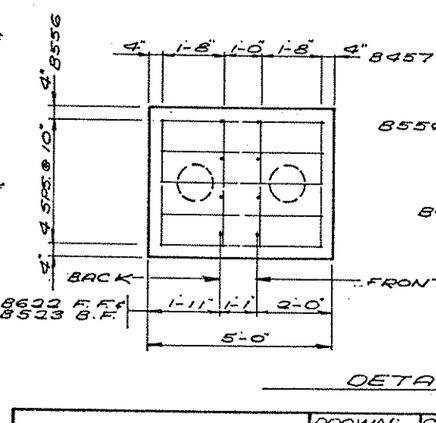


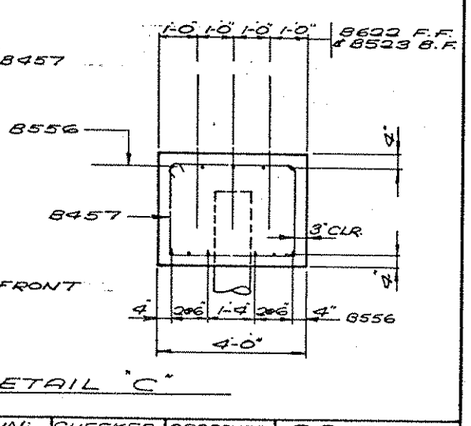


DETAIL "D"



SECTION E-E

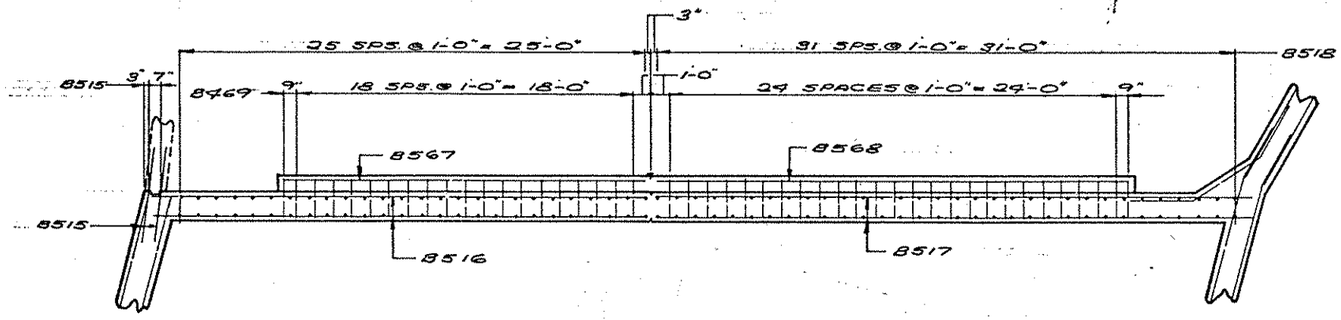




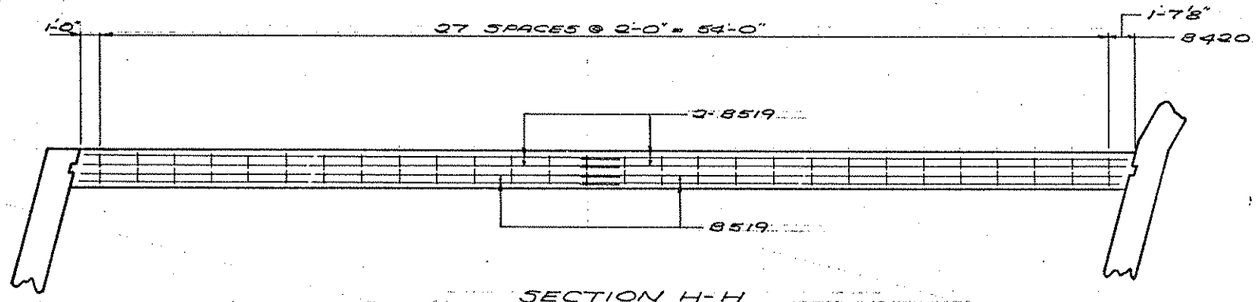
DETAIL "C"

S.E. & N.E. WINGWALL REINFORCEMENT	DRAWN: D.J.V.	CHECKED: R.R.T.	APPROVED: J.M.T.D.	BRIDGE NUMBER 02531
	SHEET 11 OF 36 SHEETS			

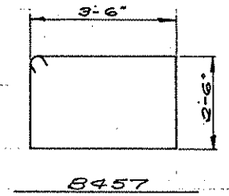
SP 02-630-01



SECTION E-E



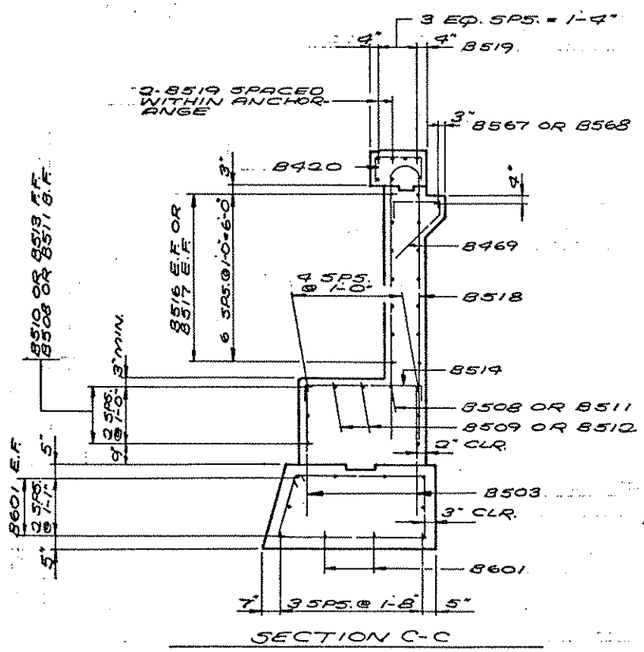
SECTION H-H



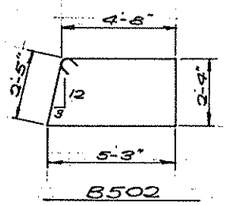
8457

BILL OF REINFORCEMENT - EAST ABUT.				
BAR	NO.	LENGTH	SHAPE	LOCATION
8601	20	33'-6"	STR.	FOOTING LONG.
8502	51	15'-7"	BENT	" - TIES
8503	88	9'-9"	STR.	" - VERT.
8704	10	5'-6"	STR.	FTG. TO WING - STR.
8605	10	4'-8"	STR.	" " " - "
(1) 8506	12	4'-2"	STR.	" " RETAIN WALL
8507	10	8'-0"	BENT	FILLET @ B.F. PARA.
8508	4	32'-0"	STR.	ABUT. BR. SEAT
8509	2	31'-6"	STR.	" " "
8510	3	31'-0"	STR.	" " "
8511	4	26'-7"	STR.	" " "
8512	2	27'-1"	STR.	" " "
8513	3	27'-7"	STR.	" " "
8514	71	5'-2"	BENT	BR. SEAT - TIES
8515	12	4'-6"	BENT	ABUT. TO RETAIN.
8516	14	26'-6"	STR.	PARAPET WALL
8517	14	32'-0"	STR.	" "
8518	58	18'-6"	BENT	" - VERT.
8519	12	29'-2"	STR.	ROADWAY SLAB
8420	28	3'-0"	BENT	" - TIES
81121	8	7'-1"	STR.	END POST - DOWELS
8622	3	4'-8"	STR.	S.E. WING - FTG.
8523	3	4'-0"	STR.	" " "
8524	4	4'-0"	STR.	" " "
8425	4	3'-2"	STR.	" " "
8526	4	11'-2"	STR.	S.E. WINGWALL
(2) 8427	4	9'-9"	STR.	" " - VERT.
8628	3	9'-10"	STR.	" " "
8529	3	9'-10"	STR.	" " "
8730	2	11'-11"	STR.	" " "
8631	2	11'-11"	STR.	" " "
(2) 8732	4	2'-6"	STR.	" " "
(2) 8633	4	2'-6"	STR.	" " "
8634	3	9'-7"	STR.	" " "
8535	3	9'-7"	STR.	" " "
(2) 8636	3	15'-3"	STR.	" " "
(2) 8537	3	15'-3"	STR.	" " "
8538	4	5'-5"	STR.	" " "
8439	4	5'-5"	STR.	" " - HORZ.
8740	1	5'-3"	STR.	" " "
8641	1	5'-3"	STR.	" " "
(1) 8742	1	6'-2"	STR.	" " "
(1) 8643	1	5'-9"	STR.	" " "
(1) 8744	1	8'-10"	STR.	" " "
(1) 8645	1	8'-5"	STR.	" " "
(2) (1) 8746	2	32'-10"	STR.	" " "
(2) (1) 8647	2	32'-0"	STR.	" " "
(1) 8748	4	22'-6"	STR.	" " "
(1) 8649	4	22'-1"	STR.	" " "
(1) 8650	3	22'-3"	STR.	" " "
(1) 8551	3	21'-9"	STR.	" " "
8652	2	9'-8"	STR.	" " "
8553	2	9'-10"	STR.	" " "
(2) 8754	4	14'-0"	STR.	" " "
(2) 8655	4	14'-6"	STR.	" " "
8756	2	13'-5"	BENT	" " "
8657	2	12'-7"	BENT	" " "
8558	6	2'-0"	STR.	N.E. WALL - HORZ.
8659	4	9'-8"	STR.	" " "
(2) 8660	8	13'-10"	STR.	" " "
8661	2	9'-10"	STR.	" " "
(2) 8462	5	10'-9"	STR.	" " - VERT.
8763	3	10'-0"	STR.	" " "
8664	3	10'-0"	STR.	" " "
8765	2	12'-0"	STR.	" " "
8666	2	12'-0"	STR.	" " "
8567	1	19'-8"	STR.	SHEAR BLOCK
8568	1	25'-8"	STR.	" "
8469	46	4'-6"	BENT	" "

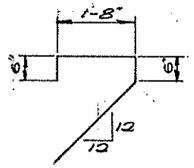
(1) BEND IN FIELD
(2) CUT 2 FROM 1



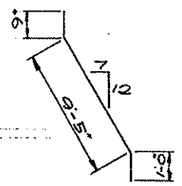
SECTION C-C



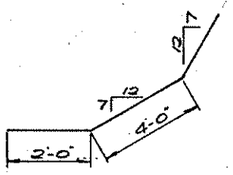
8502



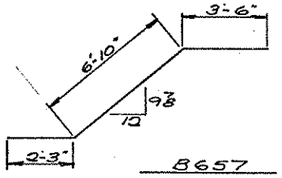
8469



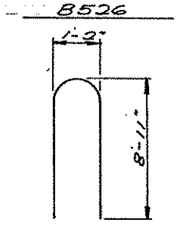
8526



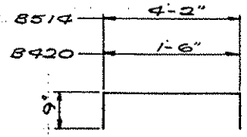
8507



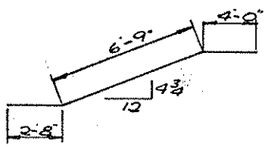
8657



8518



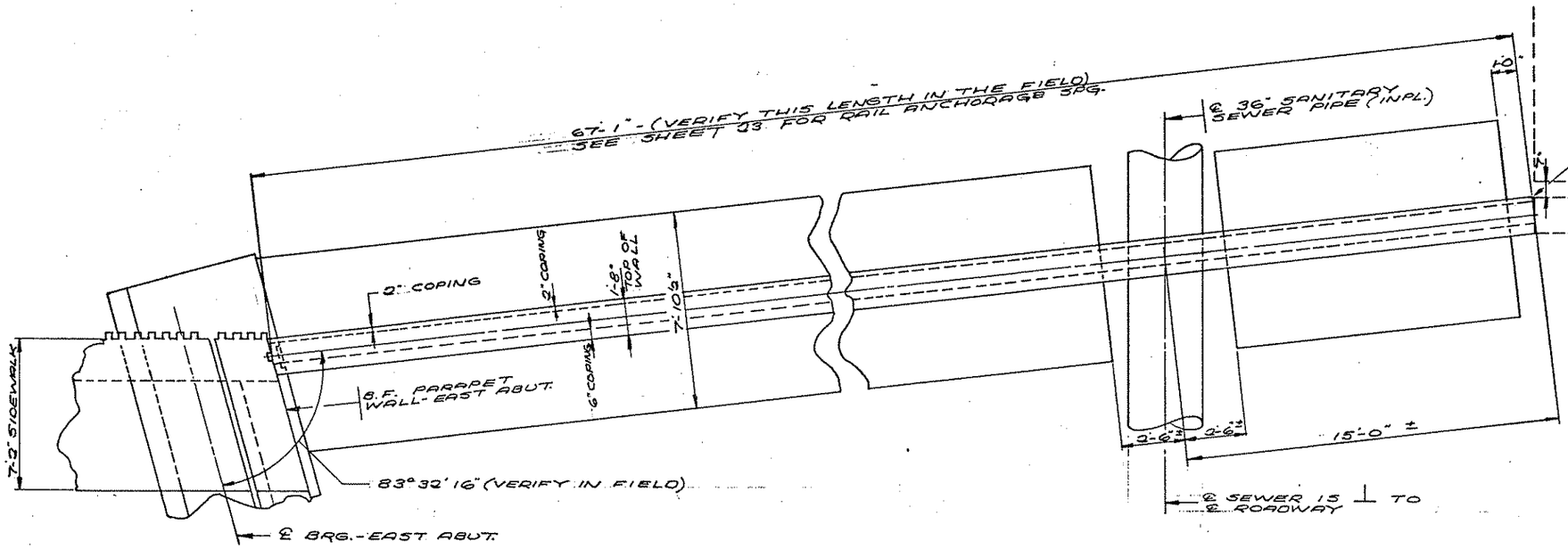
8514 & 8420



8756

EAST ABUTMENT REINFORCEMENT	DRAWN: D.J.V.	CHECKED: R.R.T.	APPROVED: J.M.S.	BRIDGE NUMBER 02531
	SHEET 12 OF 36 SHEETS			

S.R. 02-630-0.1



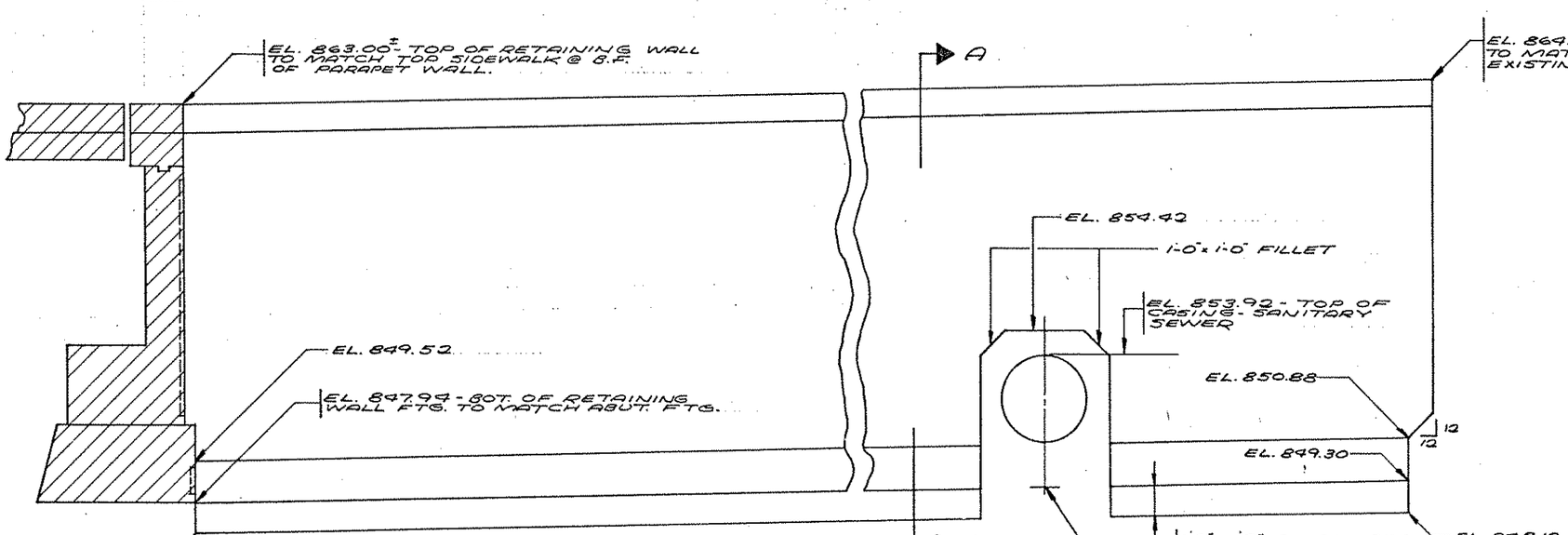
NOTES:
INPLACE REINFORCEMENT EXTENDING THROUGH A CUTLINE SHOULD BE RETAINED FOR A MINIMUM OF 36 BAR DIAMETERS FROM THE CUT LINE AND CLEANED AND STRAIGHTED AS DIRECTED BY THE ENGINEER.

MAX. TOE PRESSURE = 2.77 K / SQ. FT.

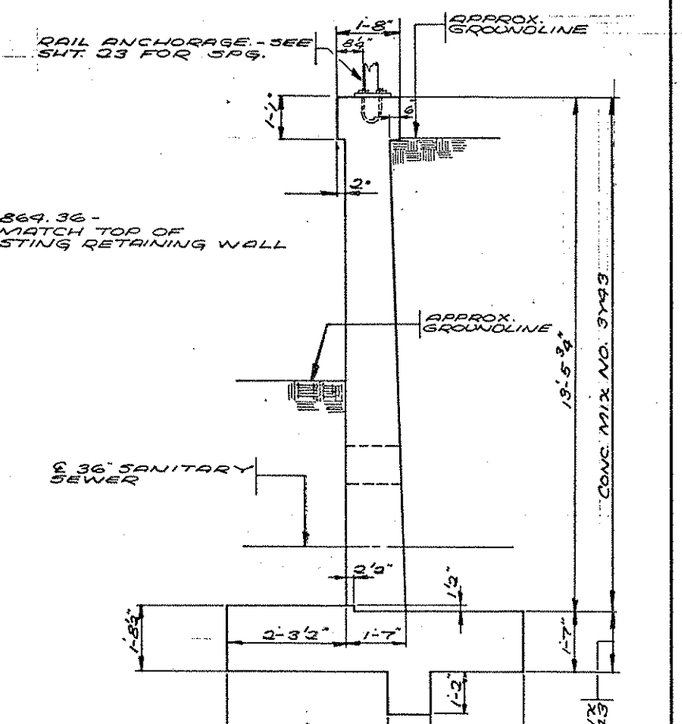
CUT EXISTING RETAINING WALL AT FACE OF BUILDING. REMOVE EXISTING END POST AND PATCH.

TEMPORARY TELEPHONE LINES ARE LOCATED IN EXISTING RETAINING WALL - SEE SPECIAL PROVISION.

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



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



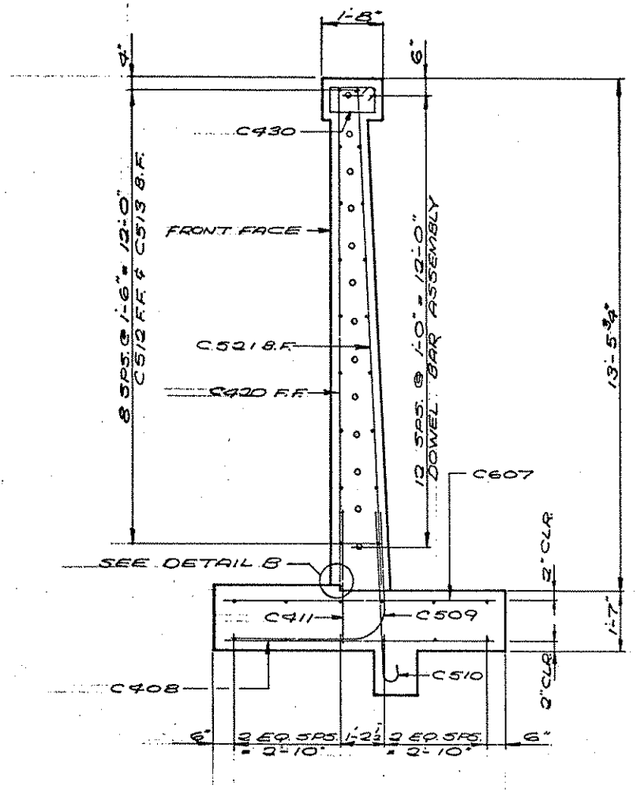
SECTION A-A
SCALE: 1/2" = 1'-0"

RETAINING WALL DETAILS	DRAWN: D.J.V.	CHECKED: R.R.T.	APPROVED: 3-17-80	BRIDGE NUMBER 02531
	SHEET 13 OF 36 SHEET			

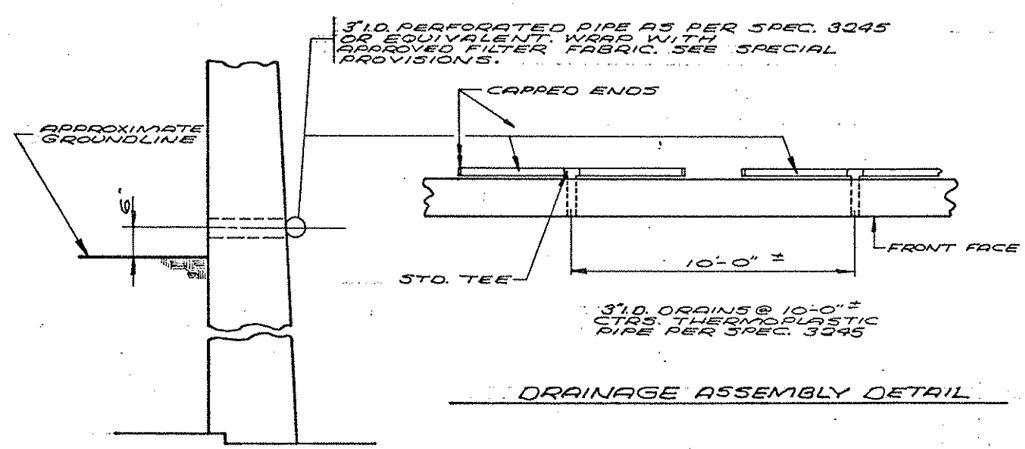
S.R. 02-630-01

BILL OF REINFORCEMENT				
BAR	NO	LEN.	SHAPE	LOCATION
C501	2	49'-10"	STR.	FTG.- LONGIT.
C502	2	49'-7"	STR.	" "
C503	2	49'-4"	STR.	" "
C504	2	49'-2"	STR.	" "
C505	2	48'-11"	STR.	" "
C506	2	48'-8"	STR.	" "
C607	100	6'-0"	STR.	" - TRANS.
C408	100	6'-0"	STR.	" - "
C509	50	7'-6"	BENT	" - DOWELS
C510	49	5'-2"	BENT	" - "
C411	52	3'-6"	STR.	" - "
C512	25	21'-10"	STR.	WALL- LONGIT.
C513	25	21'-10"	STR.	" - "
C414	2	4'-4"	STR.	" - "
C515	2	4'-4"	STR.	" - "
C416	2	12'-0"	STR.	" - "
C517	2	12'-0"	STR.	" - "
C518	4	10'-4"	BENT	" - "
C519	8	4'-6"	STR.	" - VERT.
① C420	53	13'-1"	STR.	" - "
① C521	53	13'-1"	STR.	" - "
C522	4	9'-0"	STR.	" - "
C623	4	9'-0"	STR.	" - "
C424	11	5'-0"	STR.	" - DOWELS
C525	11	5'-0"	STR.	" - "
C526	12	11'-0"	STR.	FTG- LONGIT.
C527	4	13'-2"	STR.	VERT.@ JOINTS
C628	20	2'-8"	BENT	HORZ.@ JOINTS
C629	16	3'-0"	BENT	" " "
C430	57	9'-11"	BENT	WALL- STIRRUP

① 4 EXTRA BARS FOR LENGTH ADJUSTMENT IF NEEDED.

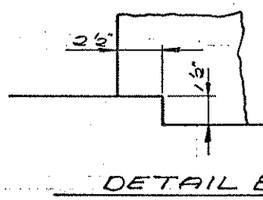


SECTION B-B

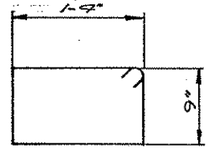


DRAINAGE ASSEMBLY DETAIL

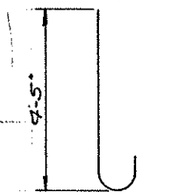
DRAINAGE DETAIL



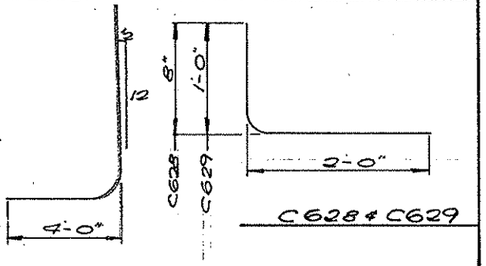
DETAIL B



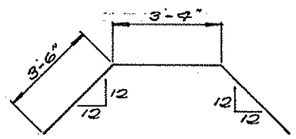
C430



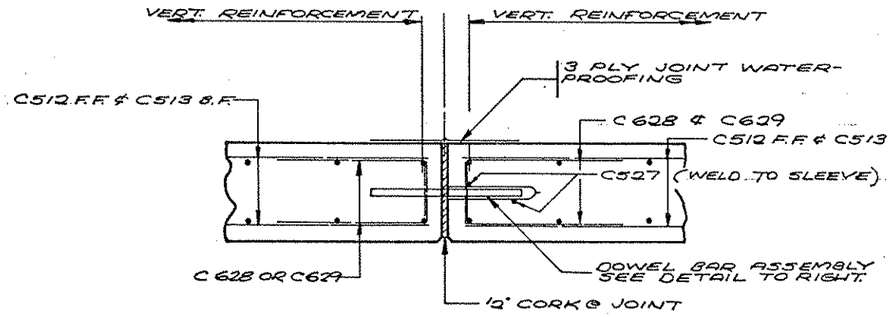
C510



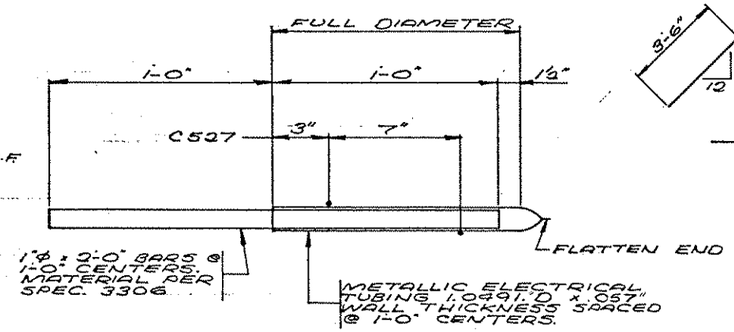
C628 & C629



C518



SECTION THRU STEM JOINT



DOWEL BAR ASSEMBLY

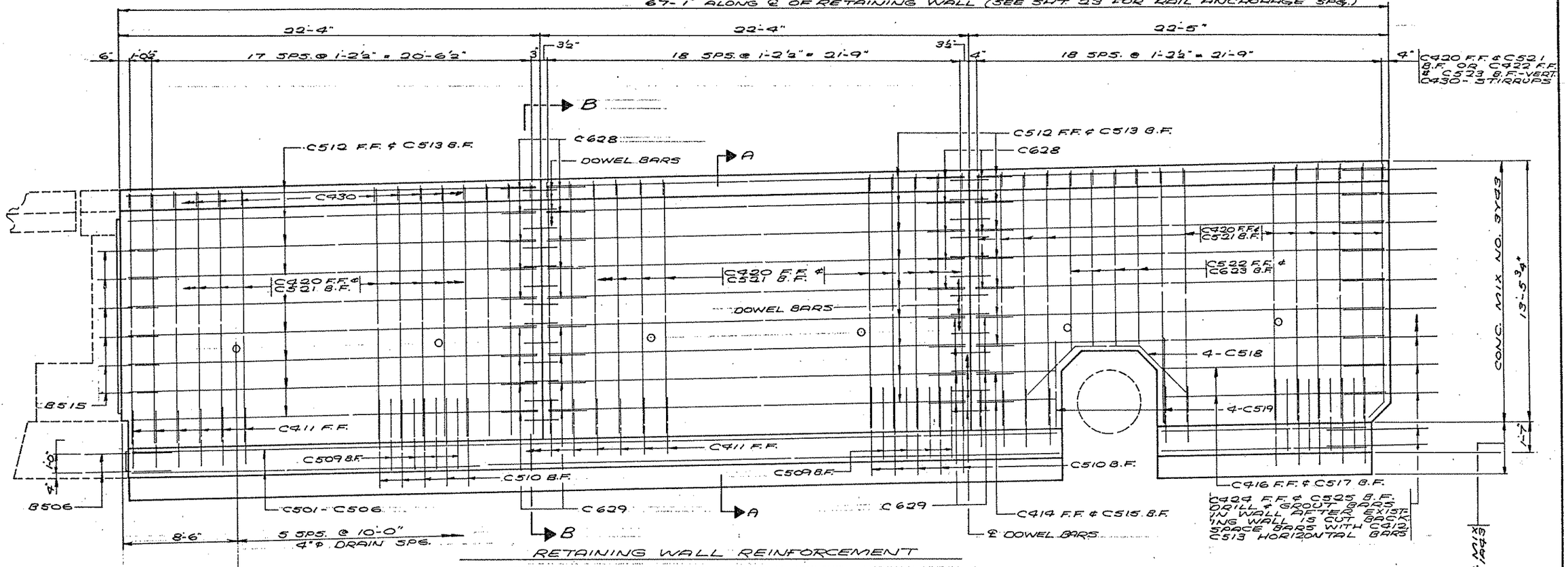
② SCHEDULE OF QUANTITIES - RETAINING WALL		
CONCRETE MIX NO. 1A43	33	CU. YD.
CONCRETE MIX NO. 3Y43	45	CU. YD.
REINFORCEMENT BARS	5775	POUND
STRUCTURE EXCAVATION	20 %	LUMP SUM
③ DOWEL BAR ASSEMBLIES	36	EACH
③ DRAINAGE ASSEMBLIES	5	EACH
③ PREFORMED CORK JOINT FILLER		

② QUANTITIES ARE FIGURED FOR A RETAINING WALL 67'-1" IN LENGTH. EXACT WALL LENGTH MUST BE VERIFIED IN THE FIELD

③ INCLUDED IN PRICE BID FOR OTHER ITEMS.

RETAINING WALL DETAILS	DRAWN: D.J.V.	CHECKED: R.R.T.	APPROVED: 5-14-80	BRIDGE NUMBER 02531
	SHEET 14 OF 36 SHEETS			

S.P. 02-630-01



RETAINING WALL REINFORCEMENT	DRAWN D.J.V.	APPROVED 3-14-18	CHECKED R.R.T.	BRIDGE NUMBER 02531
	SHEET 15 OF 36 SHEETS			

S.P. 02-630-01

PILE NOTES

4- CAST-IN-PLACE CONC. TEST PILES 45' LG.
80- CAST-IN-PLACE CONC. PILES EST. LEN. 35'
84- CAST-IN-PLACE CONC. PILES REQ'D FOR 2 PIERS

PILE SPG. SHOWN IS AT BOTTOM OF FTG.
PILES TO HAVE A NOMINAL DIAMETER OF 12"
PILES MARKED THUS ◇ TO BE BATTERED 2" PER FOOT IN THE DIRECTION SHOWN.

COMPUTED PILE LOADS- TONS / PILE	
LIVE LOAD	4.0
DEAD LOAD	31.0
OVERTURNING	13.0
TOTAL	48.0
*DIVIDE BY 1.25	= 38.40

* GROUP III LOADING PER A.A.S.H.T.O.

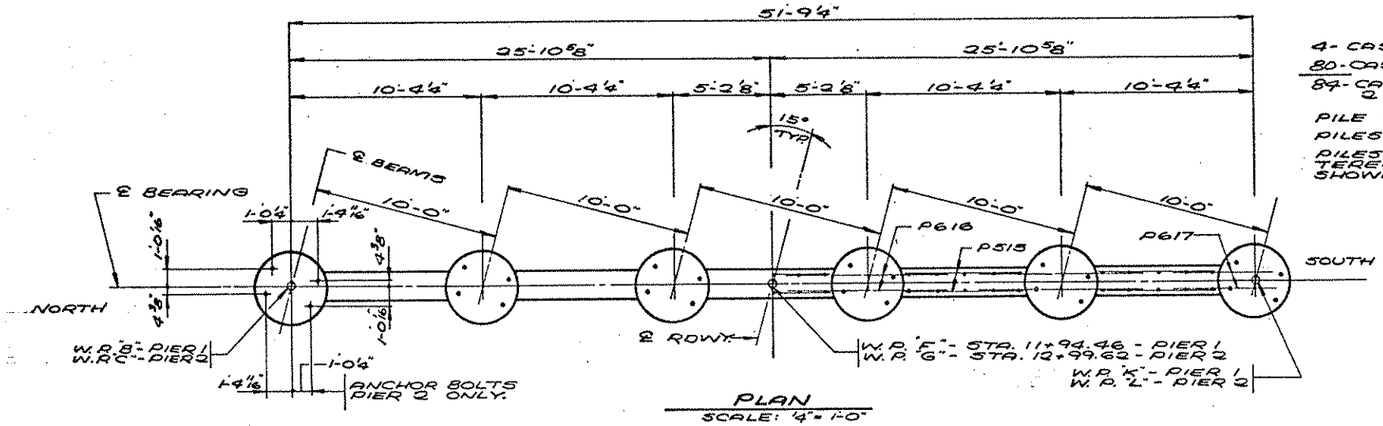
SUMMARY OF REINFORCEMENT FOR 2 PIERS				
BAR	NO.	LEN.	SHAPE	LOCATION
P601	344	8'-10"	BENT	FOOTING
P602	64	31'-10"	BENT	"
P1003	216	8'-3"	BENT	" DOWELS
P904	72	21'-2"	STR.	COLUMN - VERTICAL
P905	36	20'-10"	STR.	" "
P906	18	21'-3"	STR.	" "
P907	54	21'-0"	STR.	" "
P908	36	21'-4"	STR.	" "
P311	5	———	SPIRAL	COLUMN SPIRAL
P312	4	———	SPIRAL	" "
P313	2	———	SPIRAL	" "
P314	1	———	SPIRAL	" "
P515	180	6'-0"	STR.	WEB
P616	144	8'-10"	STR.	"
P617	72	5'-6"	STR.	"
P518	100	9'-8"	STR.	"

SPIRAL DATA				
	P311	P312	P313	P314
OUTSIDE DIA.	3'-8"	3'-8"	3'-8"	3'-8"
HEIGHT	21'-0"	20'-10"	21'-2"	21'-1"
PITCH	6"	6"	6"	6"
SPIRAL ROD SIZE PLAIN ROUND	3/8"	3/8"	3/8"	3/8"
EST. WEIGHT EA.	195	192	197	196

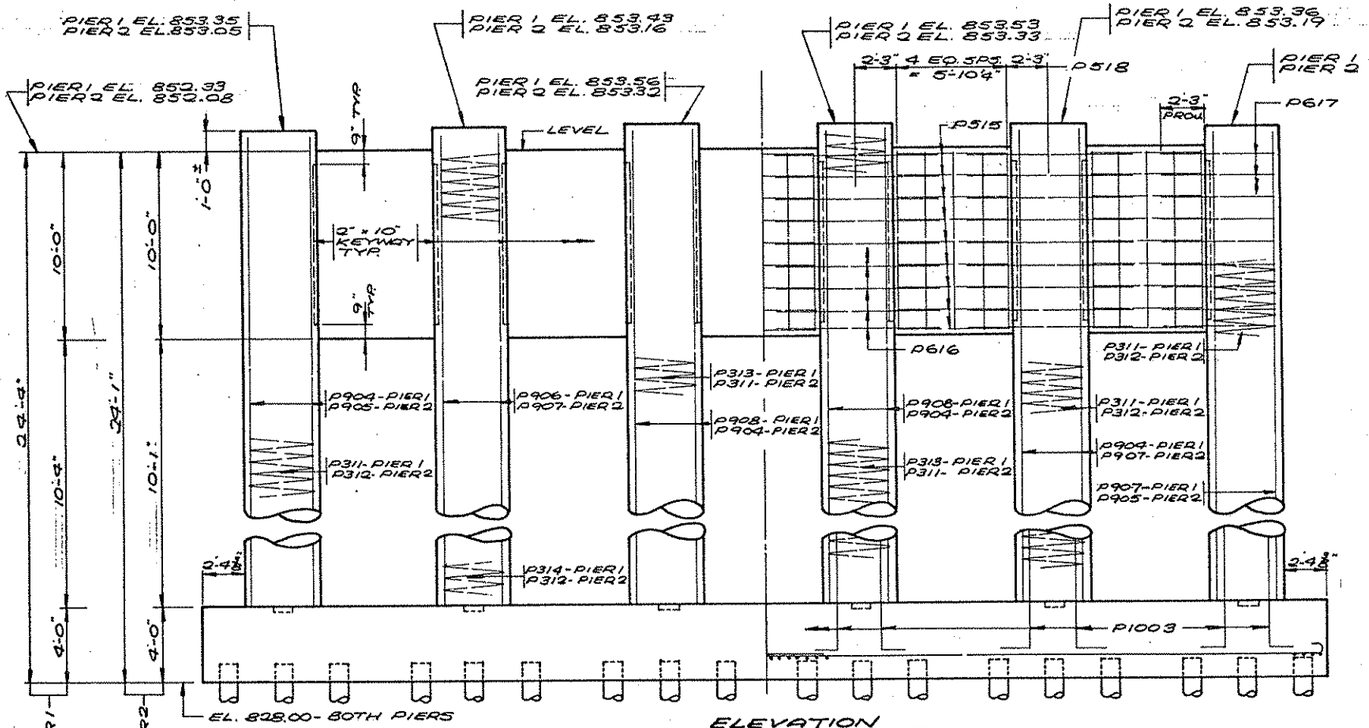
① DOES NOT INCLUDE TEST PILES

SUMMARY OF QUANTITIES FOR 2 PIERS		
CONCRETE MIX NO. 1043	144	CU. YD.
CONCRETE MIX NO. 3Y43	156	CU. YD.
REINFORCEMENT BARS	34,130	POUND
SPIRAL REINFORCEMENT	2333	POUND
C.I.P. CONC. TEST PILES 45' LG.	4	EA.
① C.I.P. CONC. PILING DELIVERED	3800	L.F.
① C.I.P. CONC. PILING DRIVEN	3800	L.F.
② FOUNDATION PREPARATION - PIER 1	1	LUMP SUM
② FOUNDATION PREPARATION - PIER 2	1	LUMP SUM

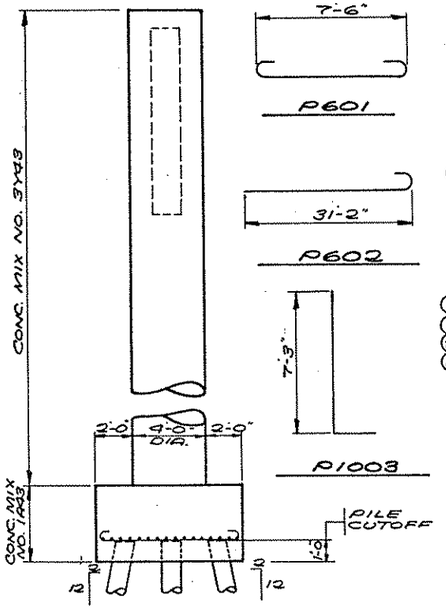
② SEE SPEC. PROVISIONS



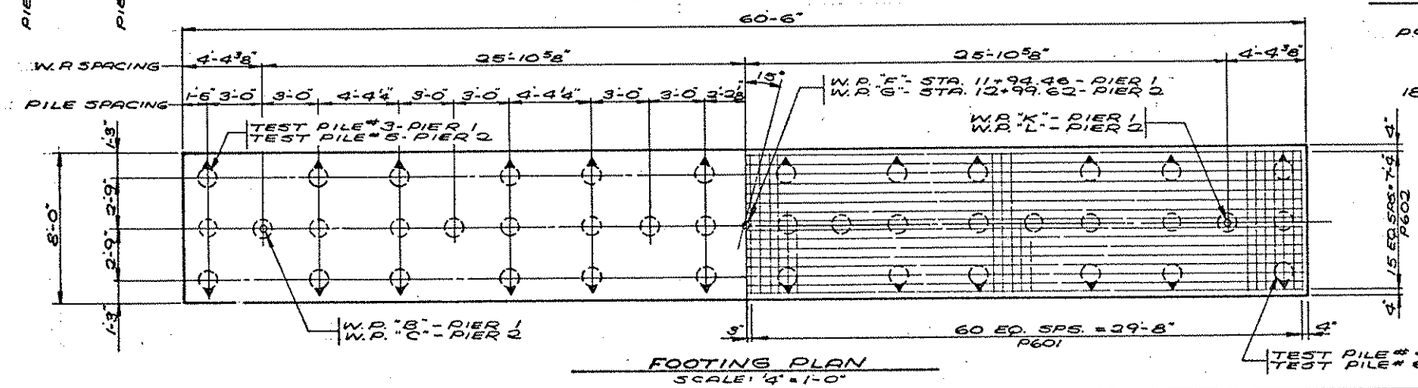
PLAN
SCALE: 4" = 1'-0"



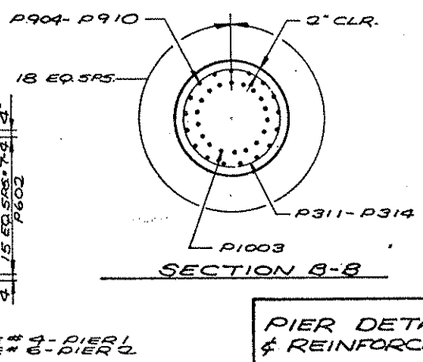
ELEVATION



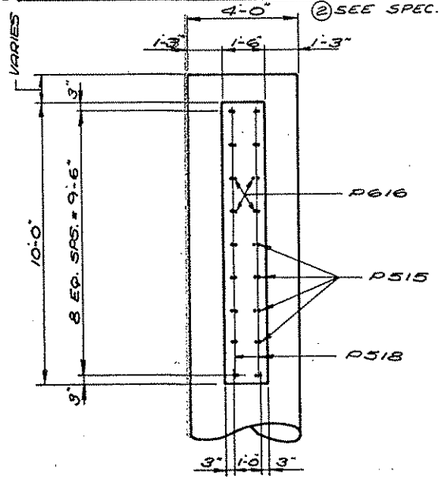
END ELEVATION



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



SECTION B-B

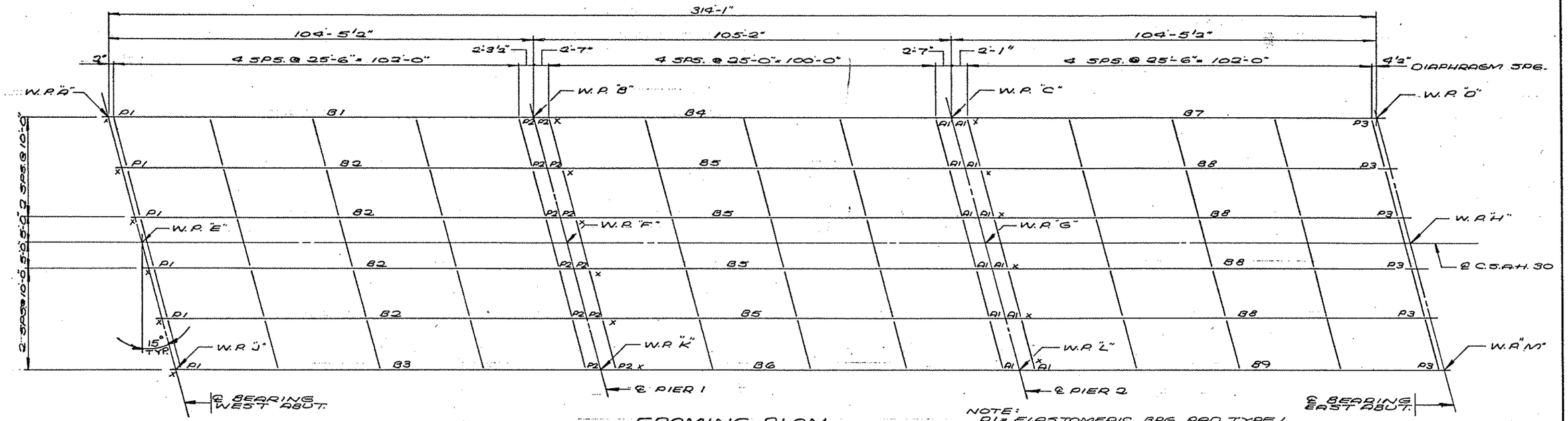


SECTION A-A

PIER DETAILS & REINFORCEMENT

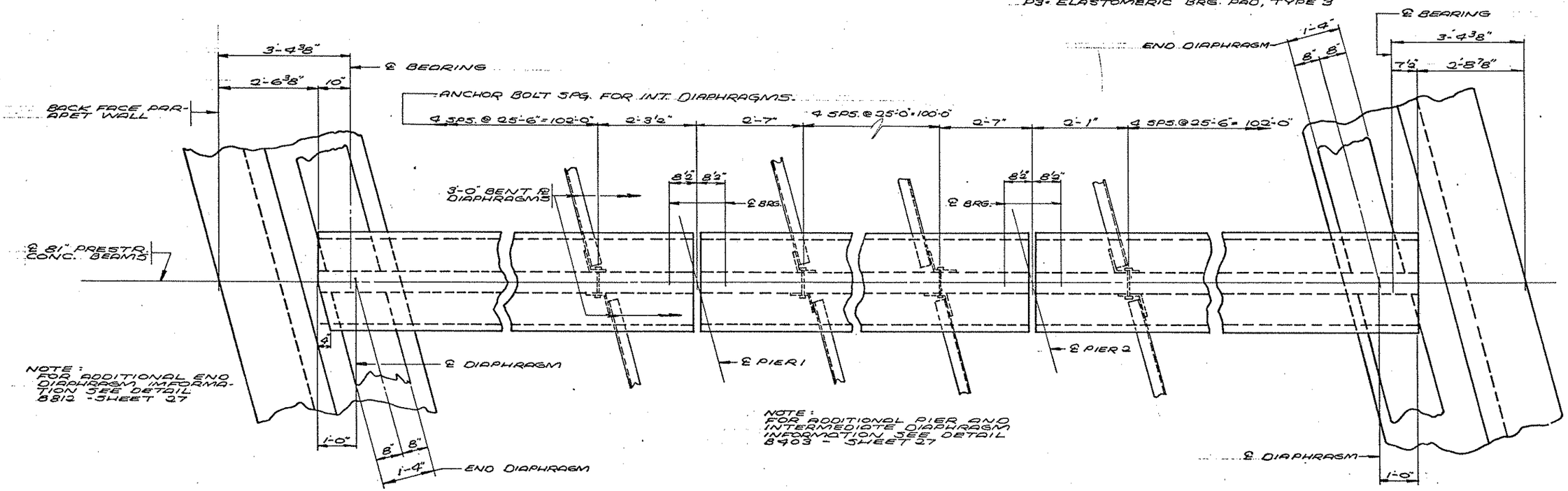
DRAWN: D. J. V.	CHECKED: R. R. T.	BRIDGE NUMBER 02531
SHEET 16 OF 36 SHEETS		

S. P. 02-630-01



FRAMING PLAN
NO SCALE

NOTE:
P1 = ELASTOMERIC BRG. PAD, TYPE 1
P2 = ELASTOMERIC BRG. PAD, TYPE 2
A1 = ELASTOMERIC BRG. ASSEMBLY, TYPE 1
P3 = ELASTOMERIC BRG. PAD, TYPE 3

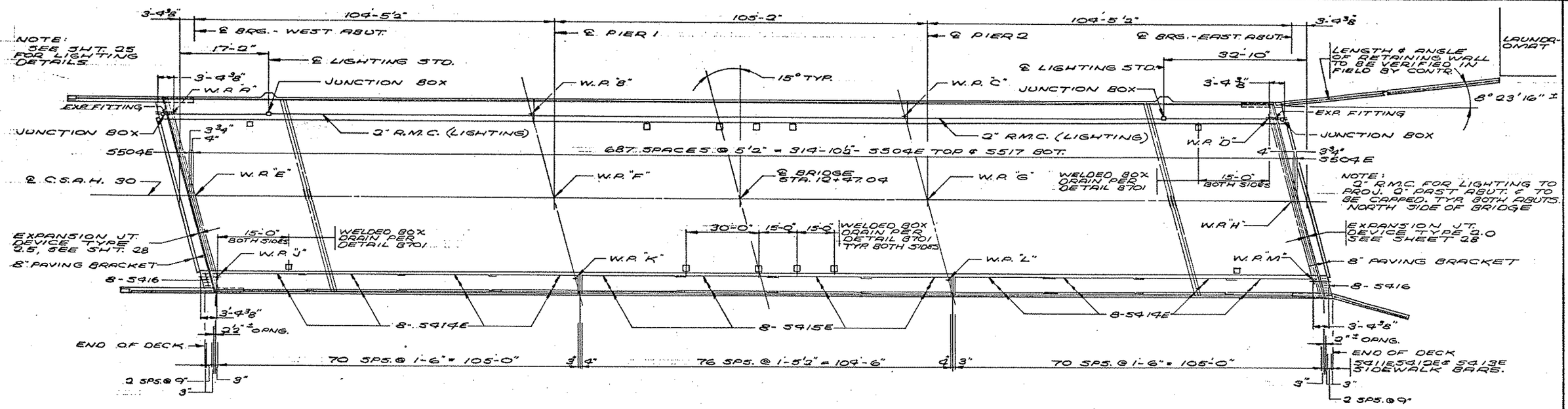


WEST ABUTMENT — PIER 1 — PIER 2 — EAST ABUTMENT

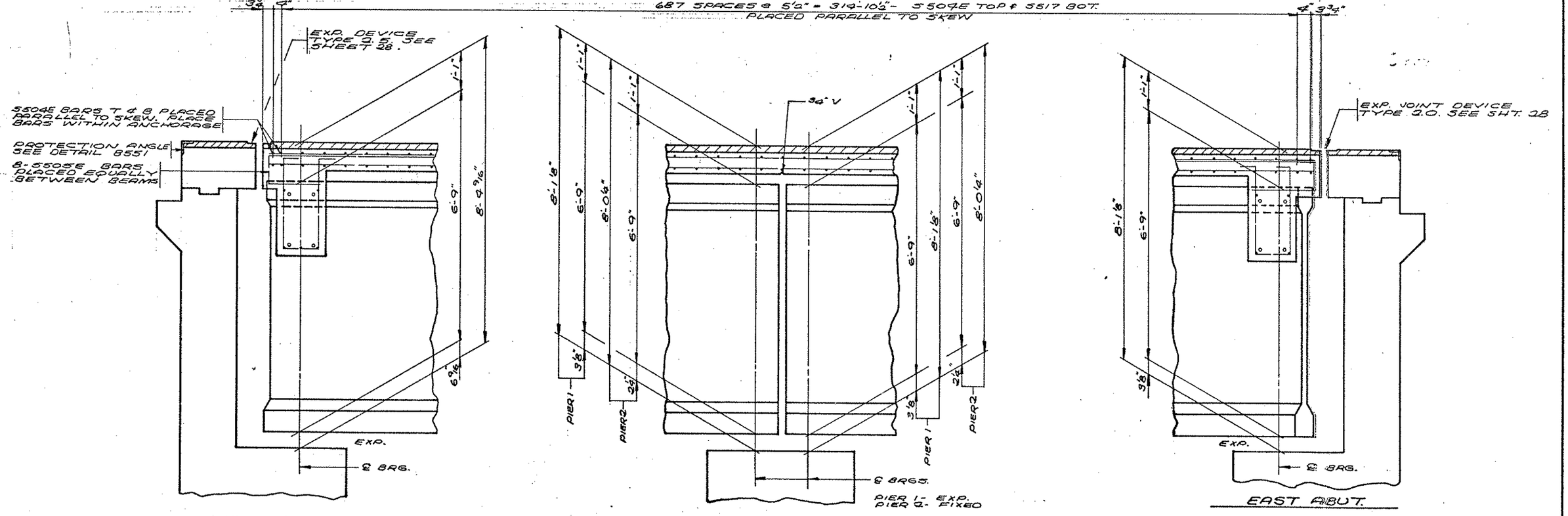
PART PLAN SHOWING DIAPHRAGMS
NO SCALE

SUPERSTRUCTURE DETAILS	DRAWN: O.J.V.	CHECKED R.R.T.	APPROVED 3-17-80	BRIDGE NUMBER 02531
	SHEET 17 OF 36 SHEETS			

S.P. 02-630-01

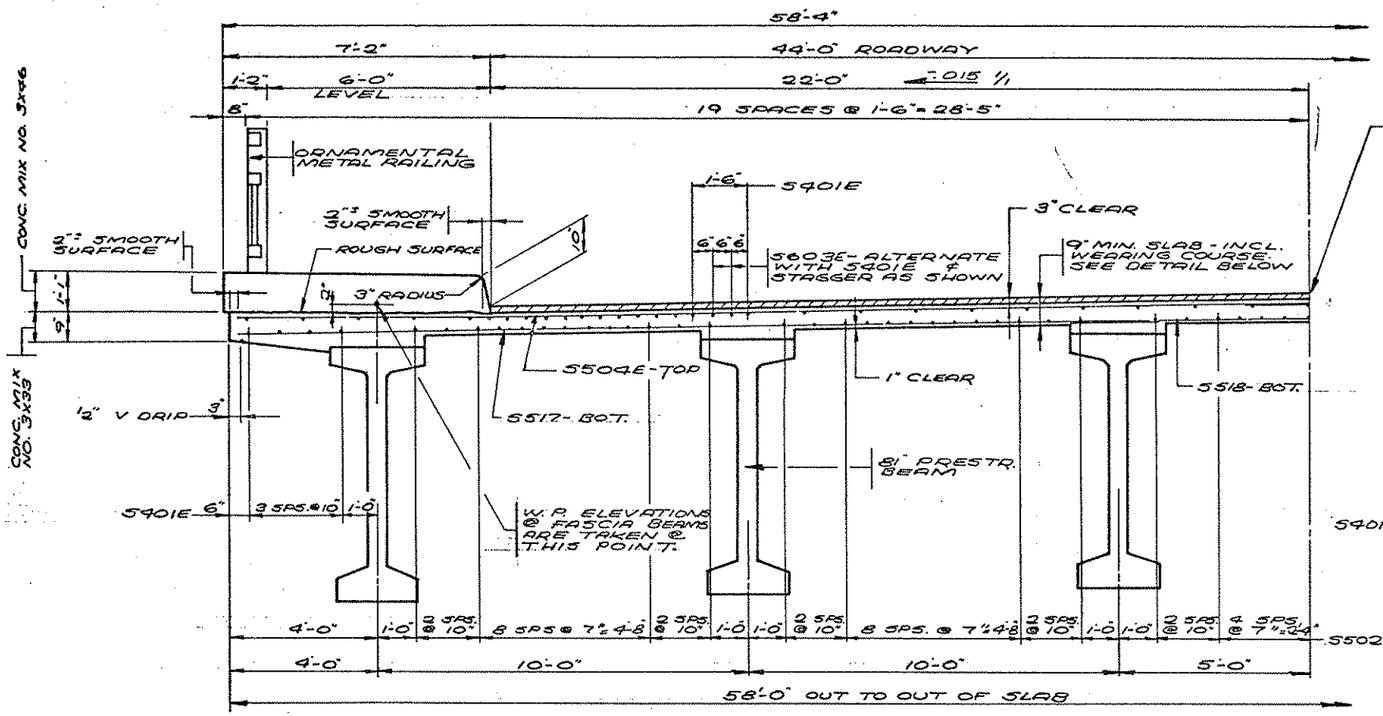


PLAN OF DECK
NO SCALE

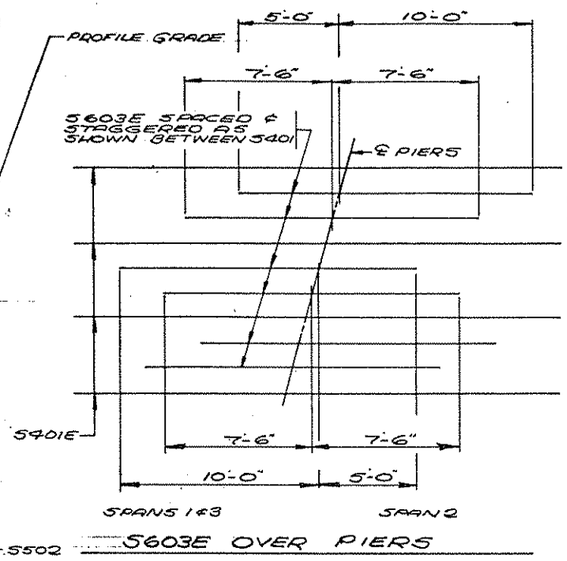


SUPERSTRUCTURE DETAILS	DRAWN D.J.W.	CHECKED R.R.T.	APPROVED 3-14-00	BRIDGE NUMBER 02531
	SHEET 18 OF 36 SHEETS			

S.P. 02-630-01



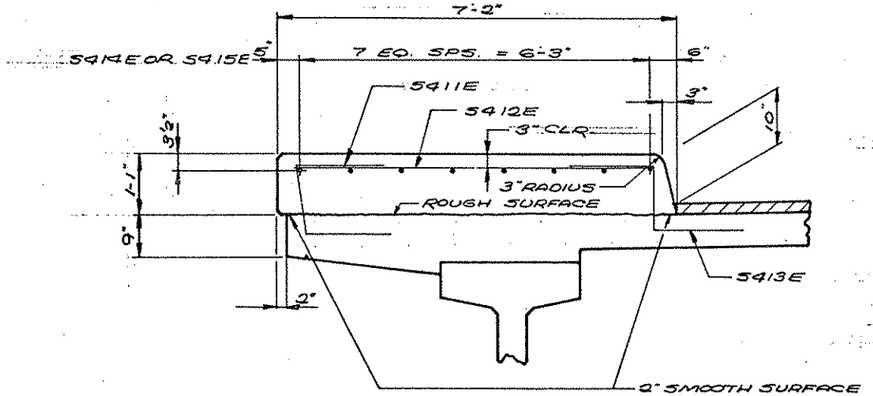
HALF TRANS. SECTION THRU DECK



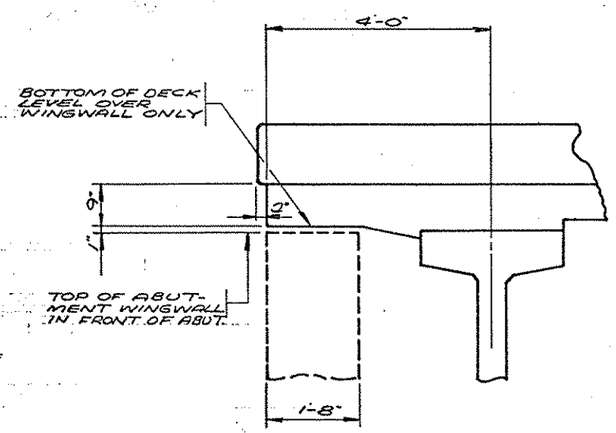
5603E OVER PIERS

BILL OF REINFORCEMENT - SUPER.				
BAR	NO.	LEN.	SHAPE	LOCATION
(1) 5401E	423	36'-6"	STR.	SLAB - TOP LONG.
(2) 5502	520	41'-3"	STR.	" - BOT. LONG.
5603E	120	15'-0"	STR.	" @ PIERS
5504E	1380	31'-0"	STR.	TRANS. - TOP
5505E	80	7'-2"	BENT	BET'WN. BEAMS
(12) 5406	60	6'-6"	BENT	ABUT. DIAPH.
5707	20	8'-6"	STR.	" "
5908	20	7'-0"	STR.	" "
(12) 5609	10	18'-0"	BENT	" "
5710	16	5'-0"	STR.	" "
5911E	450	4'-4"	BENT	SIDEWALK
5912E	450	6'-6"	STR.	"
5913E	450	4'-2"	BENT	"
(10) 5914E	128	28'-0"	STR.	"
(10) 5915E	64	27'-6"	STR.	"
5916E	32	1'-8"	STR.	"
5517	690	25'-10"	STR.	SLAB - TRANS. - BOT.
5518	690	35'-10"	STR.	" - " "

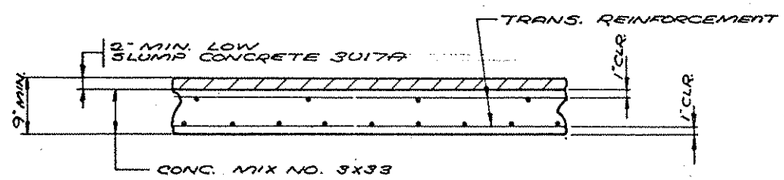
(1) 9 LINES WITH 1'-6" MIN. LAP
(3) 8 LINES WITH 1'-11" MIN. LAP
(10) 4 LINES WITH 1'-6" MIN. LAP
(12) SEE ABUT. DIAPH. DETAIL B8102, SHT. 27 FOR BAR DETAILS.



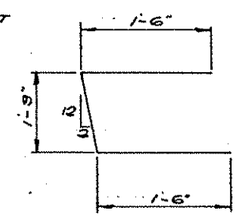
SECTION THRU SIDEWALK



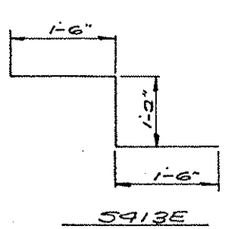
DETAIL B



LOW SLUMP CONCRETE WEARING COURSE



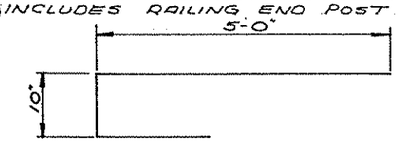
5911E



5913E

(3)	SUMMARY OF QUANTITIES FOR SUPERSTRUCTURE	
(6)(7)	CONCRETE MIX NO. 3X46	18,607 SQ. FT.
(6)	CONCRETE MIX NO. 3X46	172 CU. YD.
	REINFORCEMENT BARS	67,880 POUND
(11)	INT. DIAPHS. FOR 81" PRESTR. CONC. BEAMS	660 L.F.
	STRUCTURAL STEEL (3306)	580 POUND
(5)	NAME PLATE (SEE DETAIL B103)	
(8)	B.M. DISK SEE (STANDARD R NO. 9300)	2 UNITS
(6)	EXPANSION JT. DEVICE, TYPE 2.5	60 LIN. FT.
(6)	ELASTOMERIC BRG. PAD, TYPE 1	6 EACH
(6)	ELASTOMERIC BRG. PAD, TYPE 2	12 EACH
(6)	ELASTOMERIC BRG. ASSEMBLY, TYPE 1	12 EACH
	FLOOR DRAINS, TYPE 1 (SEE DETAIL B701)	12 EACH
	ORNAMENTAL METAL RAILING	750 LIN. FT.
(6)	EXPANSION JT. DEVICE, TYPE 2.0	58 LIN. FT.
(9)	PROTECTION ANGLE (SEE DETAIL B551)	
(13)(6)	REINFORCEMENT BARS (EPOXY COATED)	66,540 POUND
(4)(6)	WEARING COURSE CONC. MIX NO 3017A	19,116 SQ. FT.
(6)	ELASTOMERIC BRG. PAD, TYPE 3	6 EACH
	PRESTRESSED CONCRETE BEAMS, TYPE B1-105	18 EACH

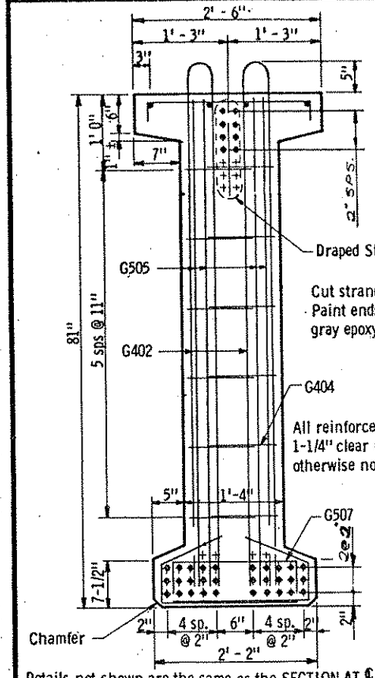
(3) INCLUDES RAILING QUANTITIES
(4) APPROX. VOLUME: 88 CU. YDS.
(5) INCLUDED IN PRICE BID FOR OTHER ITEMS
(6) SEE SPECIAL PROVISIONS
(7) APPROX. VOLUME: 457 CU. YD. BASED ON AVERAGE STOOL HEIGHT OF 2'4"
(8) COUNTY WILL FURNISH DISKS. PAYMENT FOR PLACING TO BE INCLUDED IN PRICE BID FOR OTHER ITEMS. SEE STD. R2 NO. 9301 FOR PLACING.
(9) INCLUDED IN WEIGHT OF STRUCTURAL STEEL 3306
(11) DOES NOT INCLUDE ABUTMENT DIAPHRAGMS
(13) INCLUDES RAILING END POST REINFORCEMENT



5505E

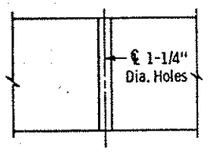
S.P. 02-630-01

SUPERSTRUCTURE DETAILS	DRAWN BY: D.J.V.	CHECKED BY: R.R.T.	BRIDGE NUMBER 02531
	SHEET 19 OF 365 SHEETS		

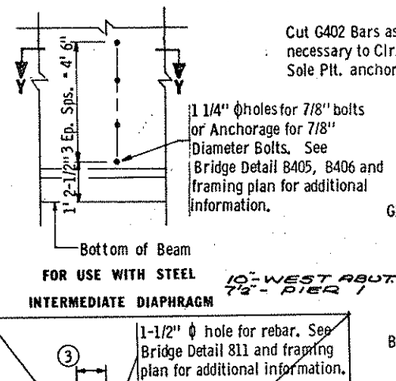


Details not shown are the same as the SECTION AT ℄ BEAM.

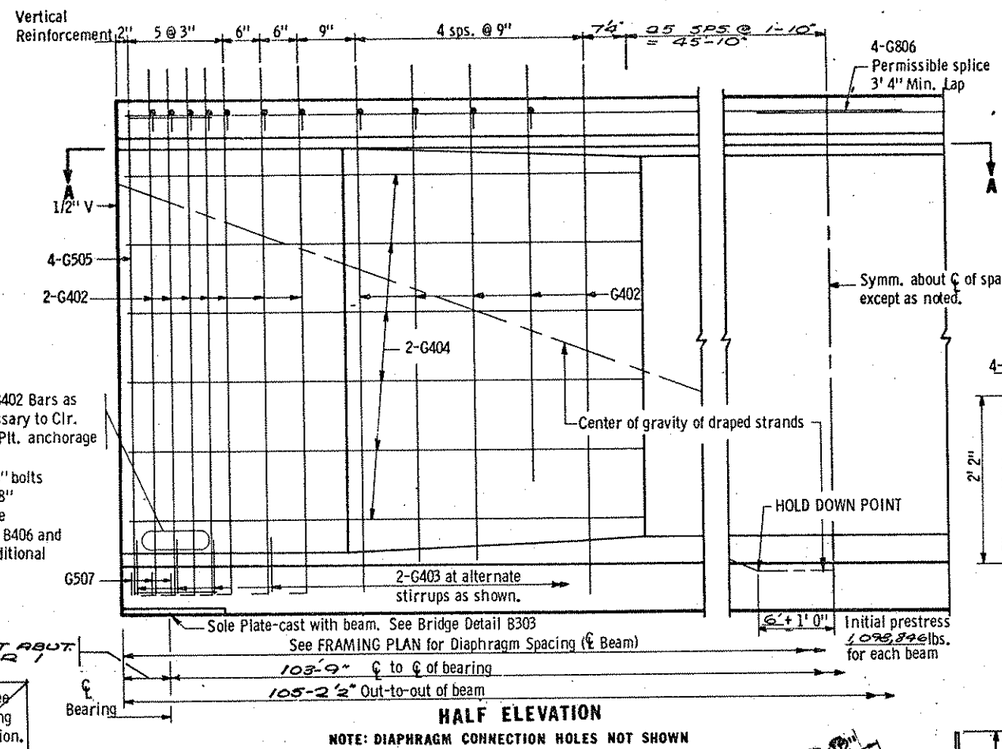
END VIEW



④ SECTION Y-Y
USE AT INTERIOR BEAM WITH STEEL DIAPHRAGM



FOR USE WITH STEEL INTERMEDIATE DIAPHRAGM



HALF ELEVATION

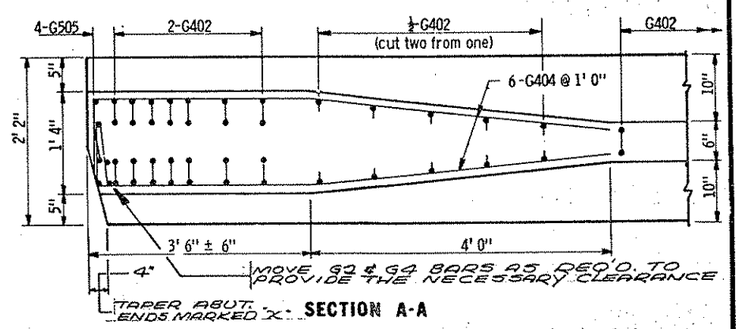
NOTE: DIAPHRAGM CONNECTION HOLES NOT SHOWN SEE DETAILS BELOW

BAR	WT.
G301	1.00 lb.
G402	9.69 lb.
G403	2.17 lb.
*G404	5.47 lb.
G505	8.69 lb.
G806	
G507	2.61 lb.

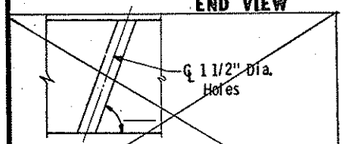
* Min.

Beam Section Data

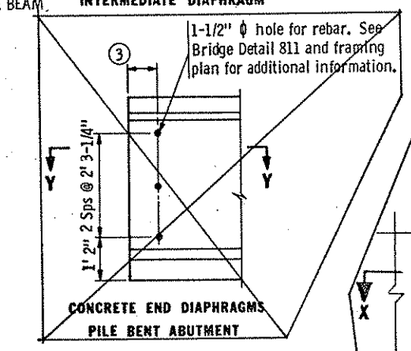
Wt. = 7230 lbs. + 875 lbs./ft.
Cross Sec Area at ℄ Of span = 840 in.^{2}
C. G. (from bottom) = 40.04in.
I = 735,614 in.^{4}
S_B = 18,371 in.^{3}
1/2" ϕ 270k strand wt./ft. = .525 lb.
1/2" ϕ 270k strand area = .1531 sq. in.
End Area = 1472 in.^{2}



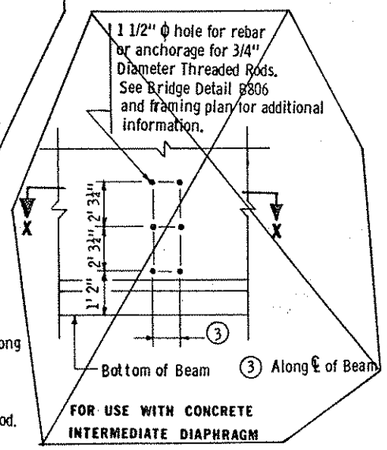
SECTION A-A



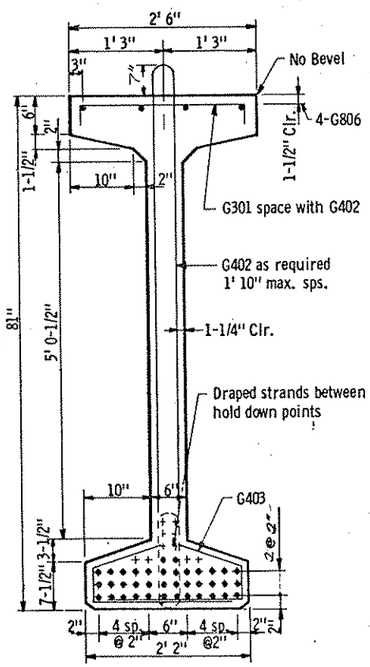
④ SECTION Y-Y
FOR USE WITH CONCRETE END DIAPHRAGMS WITH PILE BENT ABUTMENTS



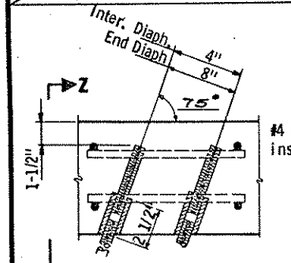
CONCRETE END DIAPHRAGMS PILE BENT ABUTMENT



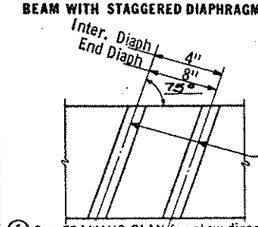
FOR USE WITH CONCRETE INTERMEDIATE DIAPHRAGM



SECTION AT ℄ BEAM

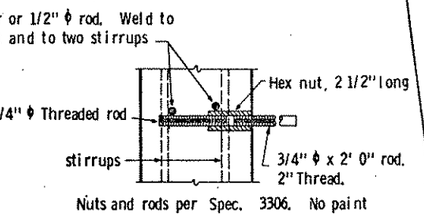


Z SECTION X-X
USE AT FASCIA BEAM AND INTERIOR BEAM WITH STAGGERED DIAPHRAGMS



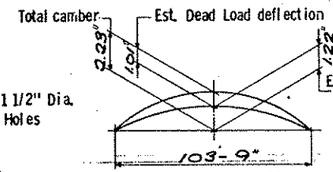
④ See FRAMING PLAN for skew direction. Intermediate stirrups may be shifted the minimum distance required to clear holes or inserts for intermediate diaphragms.

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



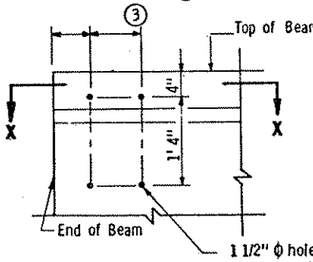
Nuts and rods per Spec. 3306. No paint

SECTION Z-Z

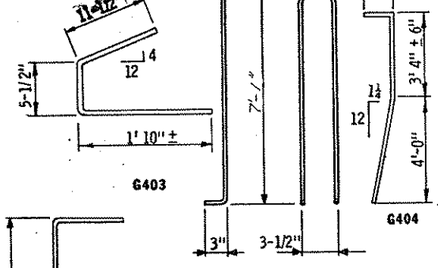


Deflections shown are for weight of slab, wearing course, railing, sidewalk, AND DIAPHRAGMS ONLY. Engineer will take elevations at top of beams after erection and will allow for deflections shown to enable contractor to build forms to correct grade and specified slab thickness.

CAMBER DIAGRAM



CONCRETE END DIAPHRAGMS PARAPET ABUTMENT



Y DISTANCES (IN INCHES)	NO.	℄ SPAN	END
Straight strands	30	4.00	
Draped strands	8	6.00	73.00 °
Total strands	38	4.42	

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

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

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

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 49.64 tons.

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

MINIMUM CONCRETE STRENGTH - P.S.I.	① f'ci	② f'c
Required min. Concrete Strength	4500	5000

① Minimum concrete strength at time of prestress transfer.

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

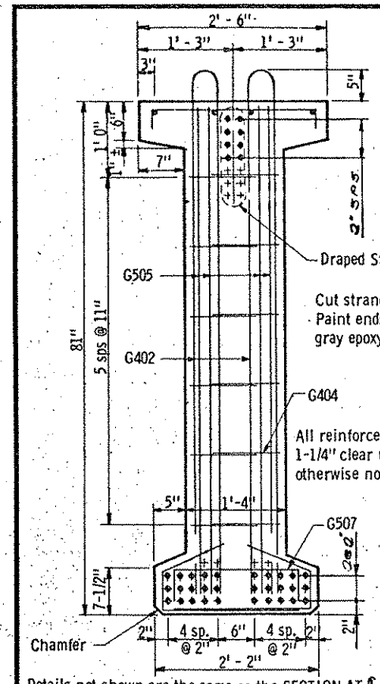
FIG 5-397.513

Revised: May 4, 1978 Approved: May 18, 1977

BEAMS B1, B2, & B3

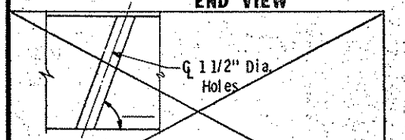
TITLE: 81" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 81-106	DES:	DR:	APPROVED: 3-14-80	Bridge No. 02531
	CHK:	CHK:	Sheet No. 20 of 36 Sheets	

S.P. 02-630-01

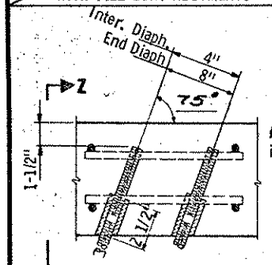


Details not shown are the same as the SECTION AT ℄ BEAM

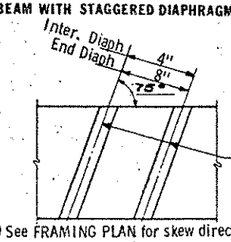
END VIEW



④ **SECTION Y-Y**
FOR USE WITH CONCRETE END DIAPHRAGMS WITH PILE BENT ABUTMENTS

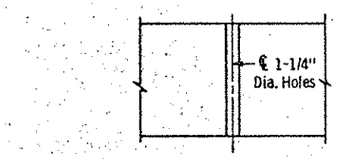


Z SECTION X-X
USE AT FASCIA BEAM AND INTERIOR BEAM WITH STAGGERED DIAPHRAGMS

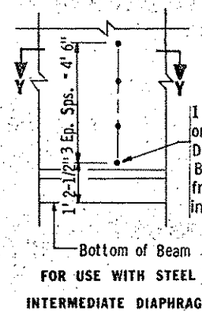


④ See FRAMING PLAN for skew direction. Intermediate stirrups may be shifted the minimum distance required to clear holes or inserts for intermediate diaphragms.

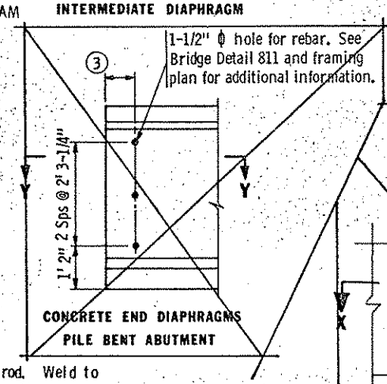
SECTION X-X
USE AT INTERIOR BEAM WITH CONTINUOUS CONCRETE DIAPHRAGM



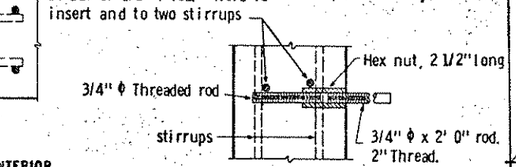
④ **SECTION Y-Y**
USE AT INTERIOR BEAM WITH STEEL DIAPHRAGM



FOR USE WITH STEEL INTERMEDIATE DIAPHRAGM

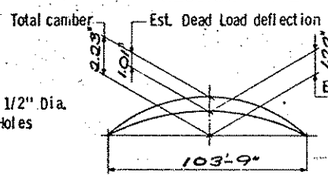


CONCRETE END DIAPHRAGMS PILE BENT ABUTMENT



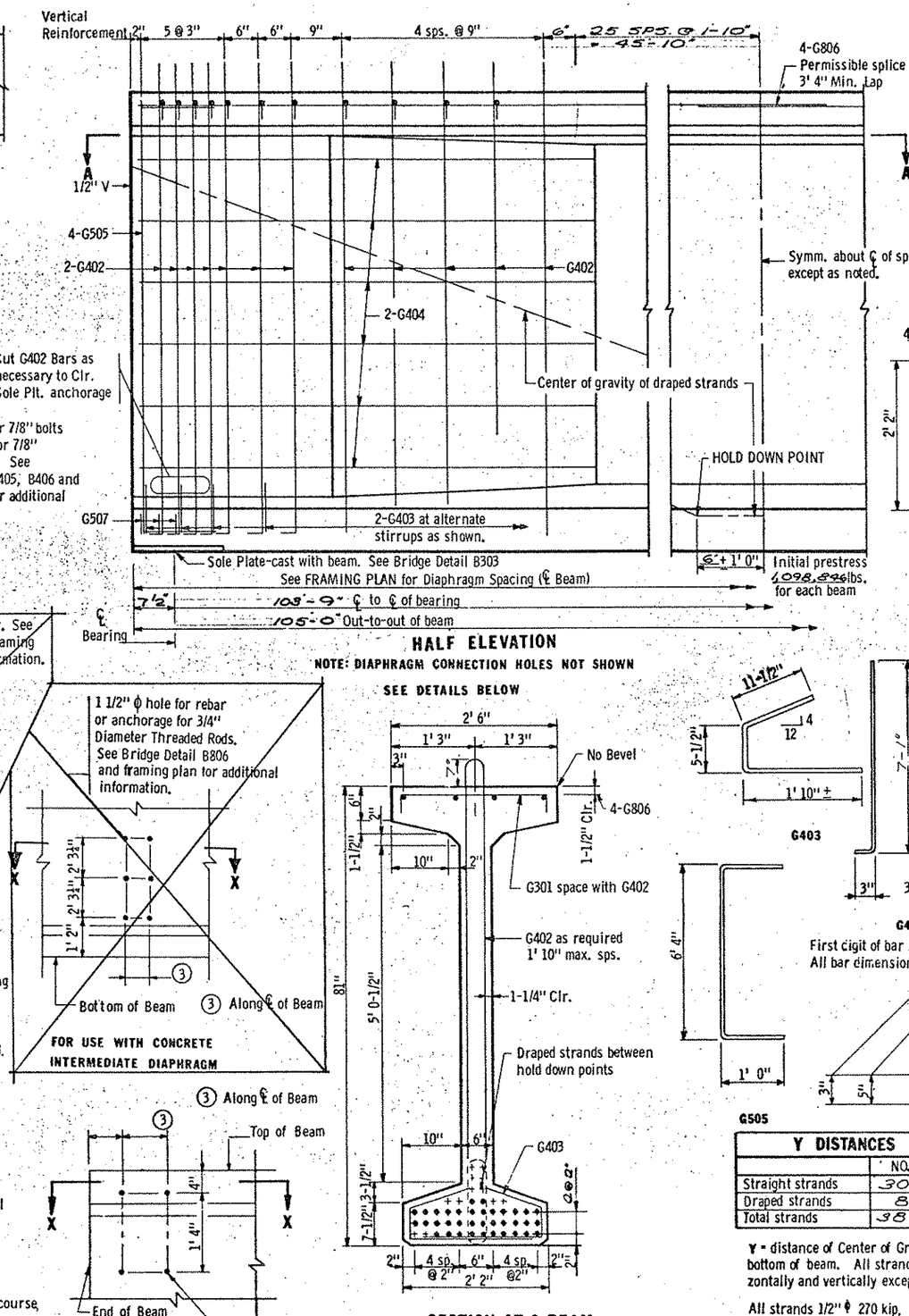
Nuts and rods per Spec. 3306. No paint

SECTION Z-Z



Deflections shown are for weight of slab, wearing course, railing, sidewalk and Diaphragms only. Engineer will take elevations at top of beams after erection and will allow for deflections shown to enable contractor to build forms to correct grade and specified slab thickness.

CAMBER DIAGRAM



HALF ELEVATION

NOTE: DIAPHRAGM CONNECTION HOLES NOT SHOWN SEE DETAILS BELOW

FOR USE WITH CONCRETE INTERMEDIATE DIAPHRAGM

CONCRETE END DIAPHRAGMS PARAPET ABUTMENT

SECTION AT ℄ BEAM

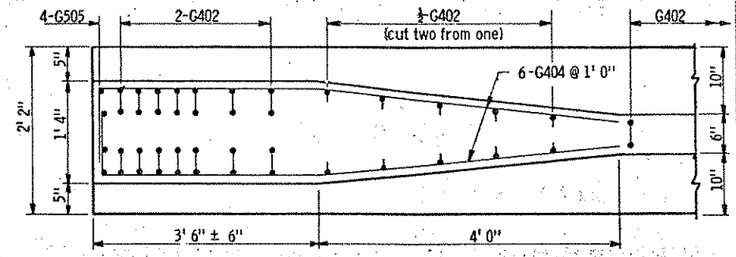
BEAMS 84-89

BAR	WT.
G301	1.00 lb.
G402	9.69 lb.
G403	2.17 lb.
*G404	5.47 lb.
G505	8.69 lb.
G806	
G507	2.61 lb.

* Min.

Beam Section Data

Wt. = 7230 lbs. + 875 lbs./ft.
Cross Sec Area at ℄ Of span = 840 in.^{2}
C. G. (from bottom) = 40.04in.
I = 735,614 in.^{4}
S_B = 18,371 in.^{3}
1/2" ϕ 270k strand wt./ft. = .525 lb.
1/2" ϕ 270k strand area = .1531 sq. in.
End Area = 1472 in.^{2}



SECTION A-A

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.

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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 49.55 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.	℄ SPAN	END
Straight strands	30	4.00	
Draped strands	8	6.00	73.00 [a]
Total strands	38	4.42	

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

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

[a] 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	4500	5000

① Minimum concrete strength at time of prestress transfer.

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

FIG 5-397.513

Revised: May 4, 1978 Approved: May 18, 1977

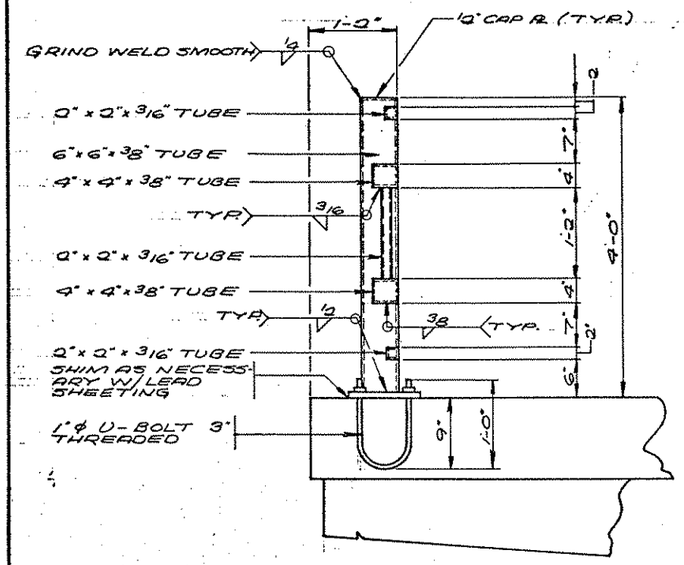
TITLE: 81" PRESTRESSED CONCRETE BEAM (PRETENSIONED) TYPE 81-105'-0"

DES: DR: CHK: CHK: APPROVED: 3-17-80

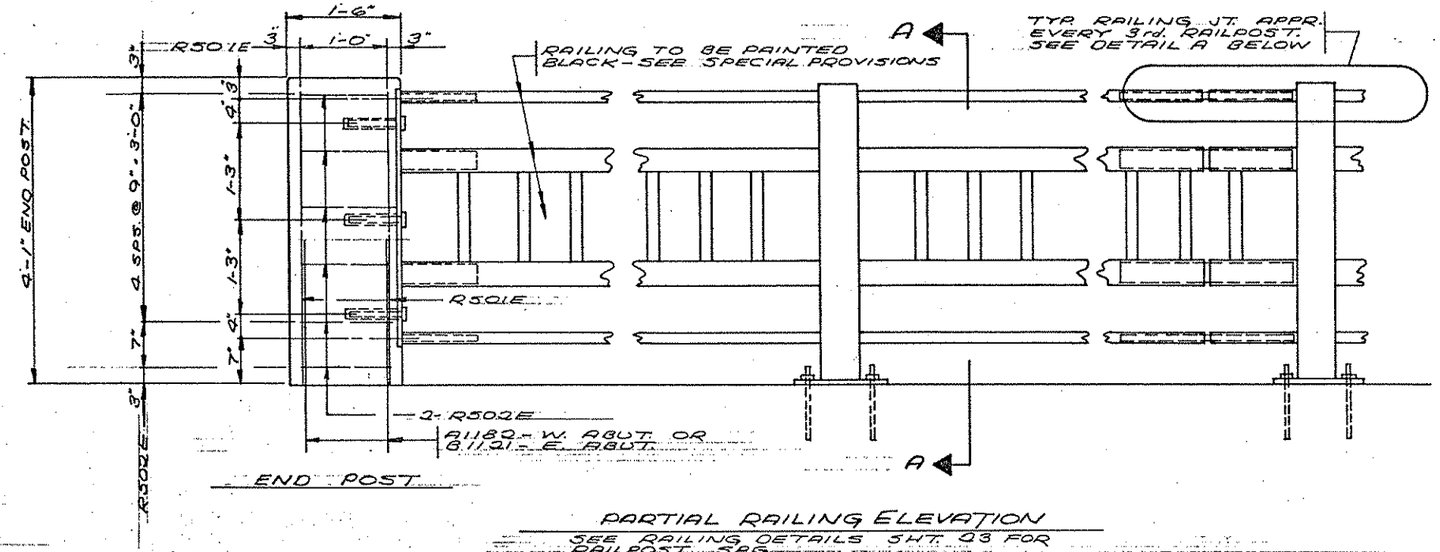
Sheet No. 21 of 36 Sheets

Bridge No. 02531

S.P. 02-650-01

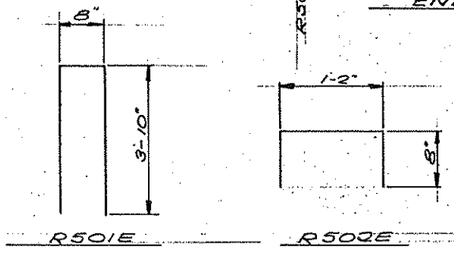


SECTION A-A
SCALE: 1/2" = 1'-0"



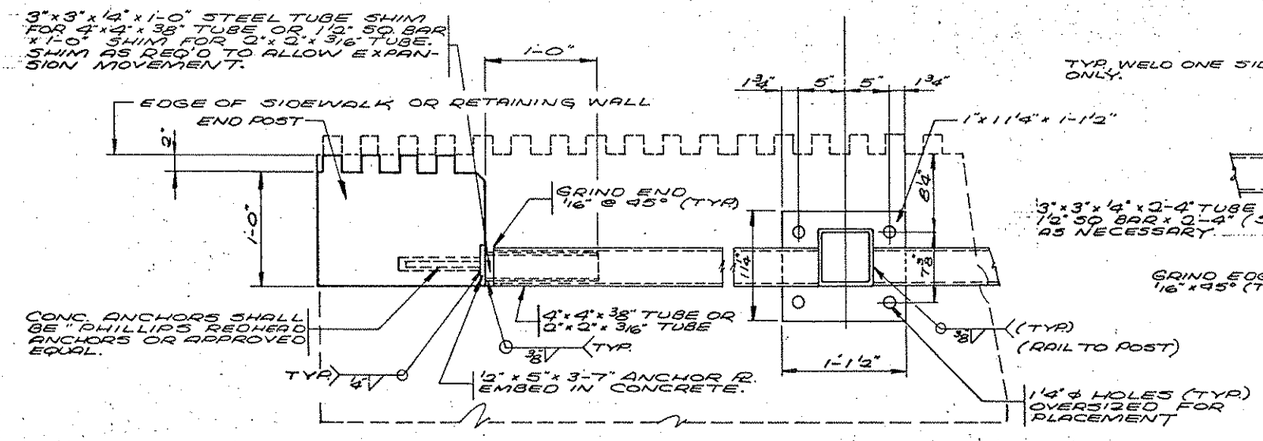
END POST

PARTIAL RAILING ELEVATION
SEE RAILING DETAILS SHT. 93 FOR RAILPOST SPG.

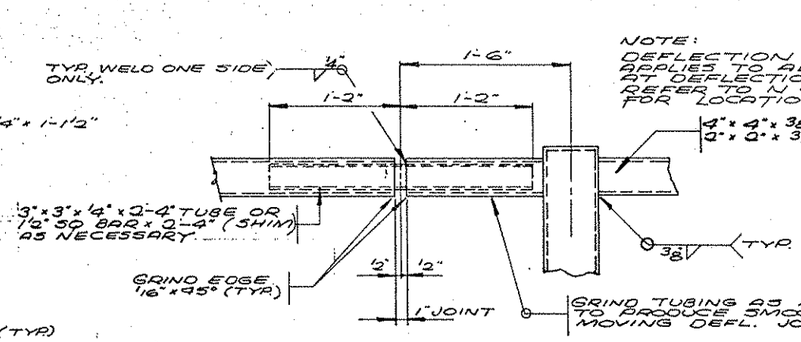


R501E

R502E



PART PLAN - RAILING



DETAIL A
SCALE: 3/4" = 1'-0"

NOTE:
DEFLECTION JOINT DETAILS APPLIES TO ALL FOUR RAILS AT DEFLECTION JOINT PANELS. REFER TO N 4.3 RAILING ELEVATIONS FOR LOCATIONS.

BILL OF REINFORCEMENT - RAILING				
BAR	NO.	LEN.	SHAPE	LOCATION
R501E	8	8'-4"	BENT	END POST
R502E	48	2'-6"	"	" "

REINFORCEMENT BARS FOR ENDPOST TO BE INCLUDED IN SUPERSTR. QUANTITY FOR EPOXY REINFORCEMENT

SUMMARY OF QUANTITIES - RAILING (750 L.F.)		
ITEM	UNIT	QUANT.
STRUCTURAL STEEL (A 500)	POUND	10590
② 1" ϕ U-BOLTS WITH NUTS	EACH	200
1" x 11/4" x 1'-1/2" BASE PL. - 100 REQ'D	POUND	1125
① STRUCTURAL STEEL (3306)	POUND	37,960

① DOES NOT INCLUDE U-BOLTS & NUTS.
② EST WEIGHT OF U-BOLT WITH NUTS = 7.30# EACH

RAILING NOTES:

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF RAILING.

GALVANIZE POSTS, ALL RAILINGS & PLATES PER SPEC. 3394

GALVANIZE BOLTS & ANCHORAGES PER SPEC. 3392

RAILING SHALL BE PAINTED BLACK. SEE SPECIAL PROVISIONS

ALL MATERIAL AND PLACING OF RAILING IS TO BE PAID FOR IN THE PRICE BID FOR ORNAMENTAL METAL RAILING.

STRUCTURAL STEEL FOR POSTS SHALL MEET THE REQUIREMENTS OF ASTM A500, GRADE B.

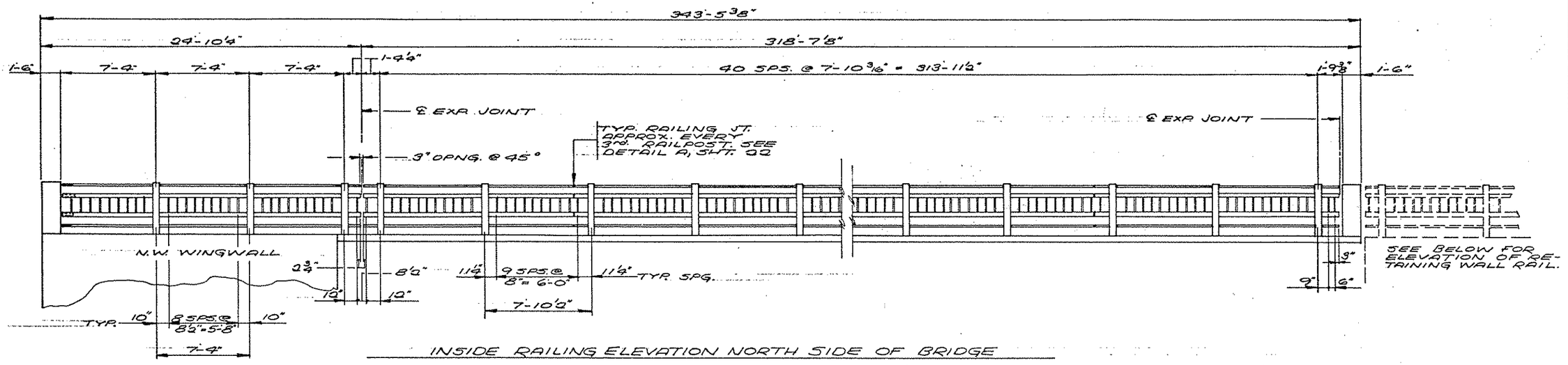
ALL OTHER STEEL SHALL BE PER SPEC. (3306)

RAILING DETAILS

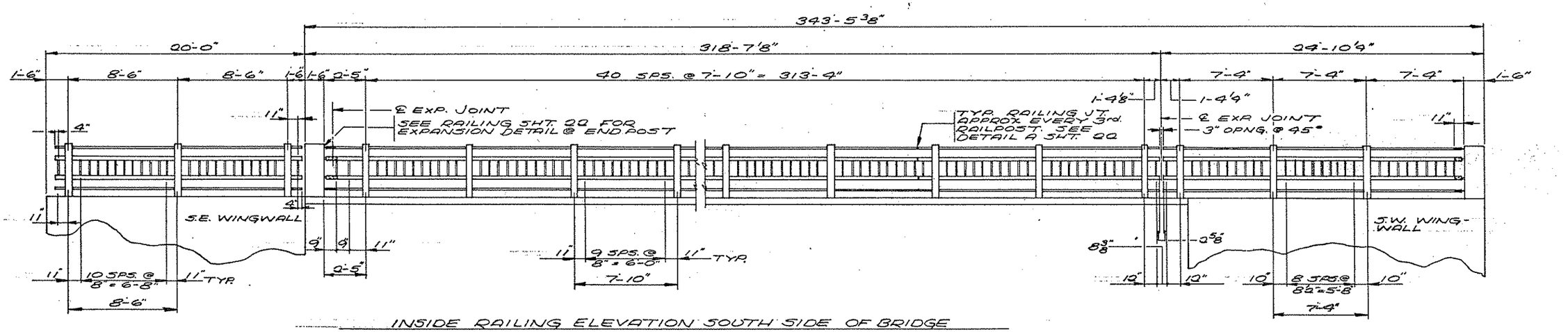
DRAWN	CHECKED	APPROVED	BRIDGE NUMBER
D.J.V.	R.R.T.	2-14-80	02531

SHEET 220 OF 365 SHEETS

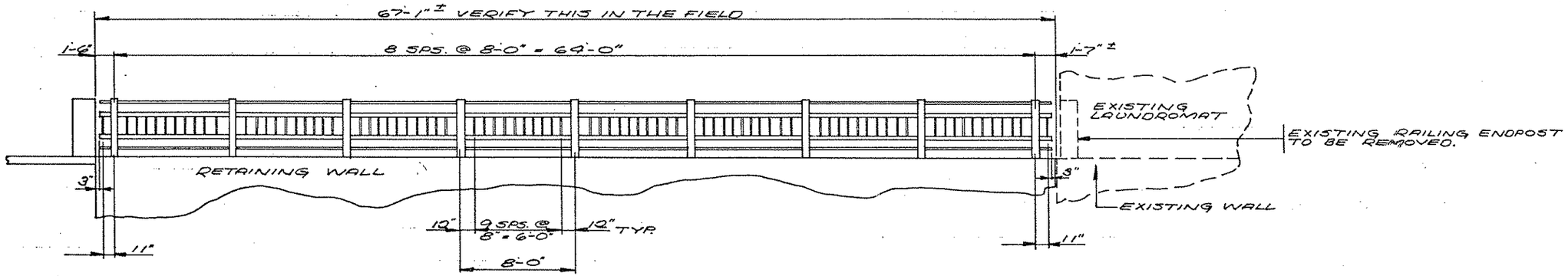
S.P. 02-630-01



INSIDE RAILING ELEVATION NORTH SIDE OF BRIDGE



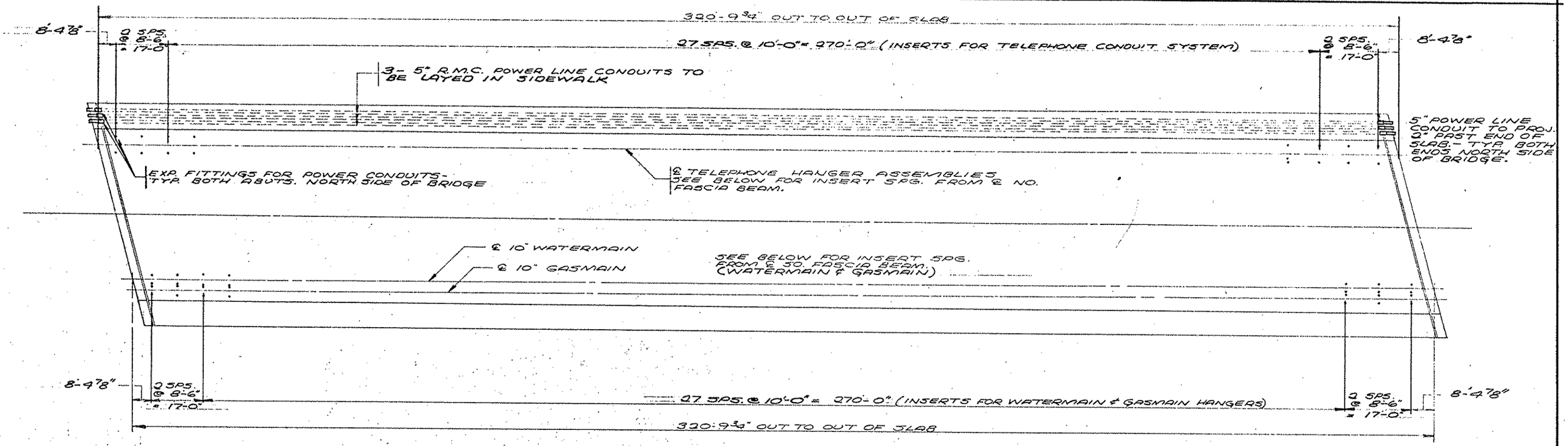
INSIDE RAILING ELEVATION SOUTH SIDE OF BRIDGE



RETAINING WALL RAILING ELEVATION

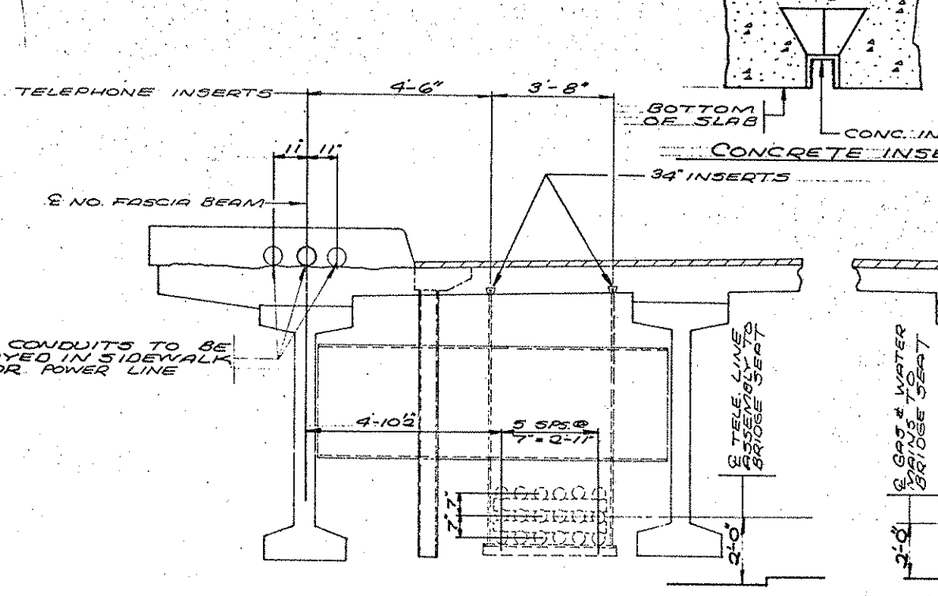
RAILING DETAILS	DRAWN D. J. V.	CHECKED R. R. T.	APPROVED 3-14-80	BRIDGE NUMBER 02531
	SHEET 23 OF 36 SHEETS			

S.P. 02-680-01

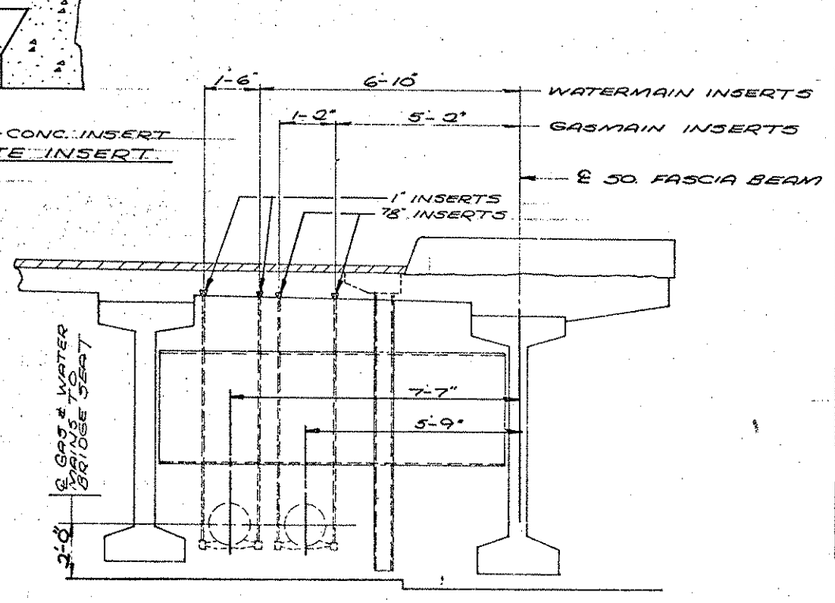


PLAN SHOWING INSERT SPACING

CONC. INSERTS, ABUT. SLEEVES, POWER LINE CONDUITS, CAPS, & EXP. FITTINGS TO BE INCLUDED IN BRIDGE CONTRACT. HANGER ASSEMBLIES, ETC. ARE FUTURE ADDITIONS AND ARE NOT IN BRIDGE CONTRACT.



SECTION SHOWING FUTURE TELEPHONE & POWER CONDUIT



SECTION SHOWING FUTURE 10" WATERMAIN & 10" GASMAIN

QUANTITIES FOR TELEPHONE CONDUIT SYSTEM		
34" INSERTS	64	UNIT
4" SLEEVE (THREADED BOTH ENDS)	36	UNIT
CAPS FOR 4" SLEEVES	36	UNIT

QUANTITIES FOR POWER CONDUIT SYSTEM		
5" R.M.C. CONDUIT	965	LIN. FT.
EXPANSION FITTINGS	6	UNITS
CAPS FOR 5" CONDUIT	6	UNITS

QUANTITIES FOR WATERMAIN PROVISIONS		
1" INSERTS	64	UNIT
18" SLEEVE FOR WATERMAIN	2	UNIT
CAPS FOR 18" WATERMAIN SLEEVES	2	UNIT

QUANTITIES FOR GAS MAIN PROVISIONS		
⅞" INSERTS	64	UNIT
12" SLEEVE FOR GASMAIN	2	UNIT
CAPS FOR 12" GASMAIN SLEEVES	2	UNIT

NOTES

CONCRETE INSERTS SHALL BE AN APPROVED TYPE MALLEABLE IRON, MATERIALS AS PER SPEC. 3354 GRADE 35018. TAP AFTER GALVANIZING.

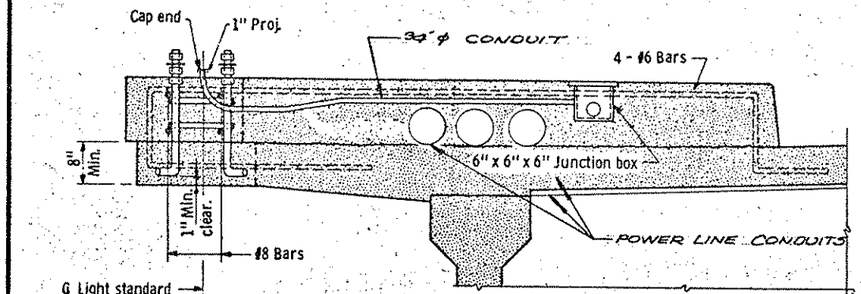
SEE ABUTMENT SHEETS FOR SLEEVES THRU ABUTMENTS.

PIPE SLEEVES & CAPS SHALL COMPLY WITH SPEC. 3362.

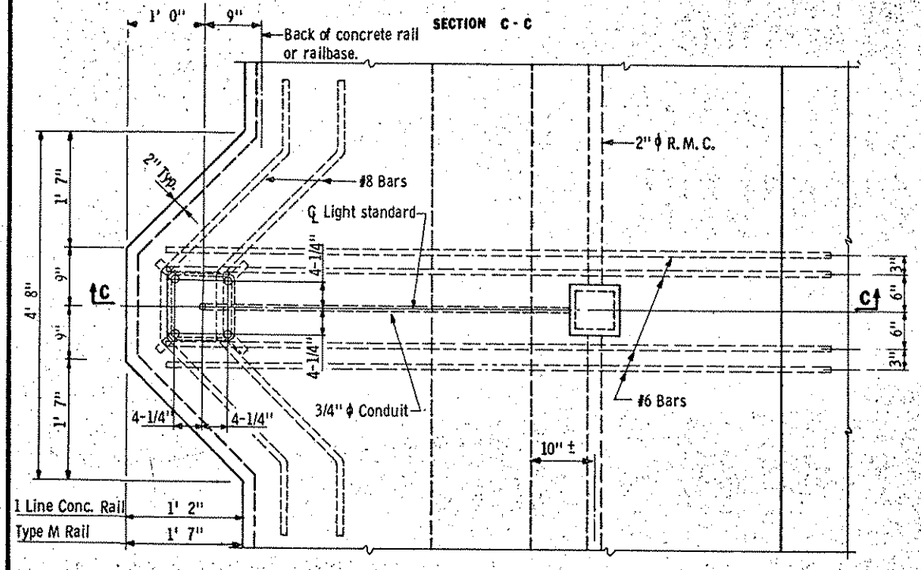
UTILITY DETAILS

DRAWN	CHECKED	APPROVED	BRIDGE NUMBER
O.J.V.	R.R.T.	3-14-80	02531
SHEET 24 OF 36 SHEETS			

S.P. 02-630-01

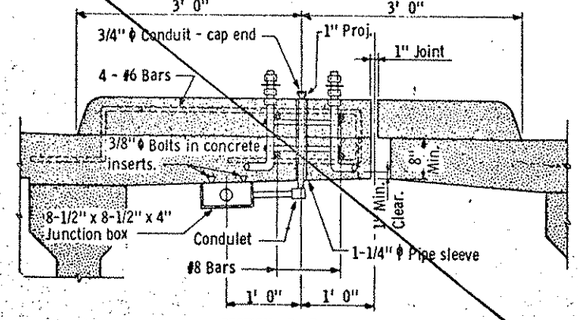


SECTION C - C

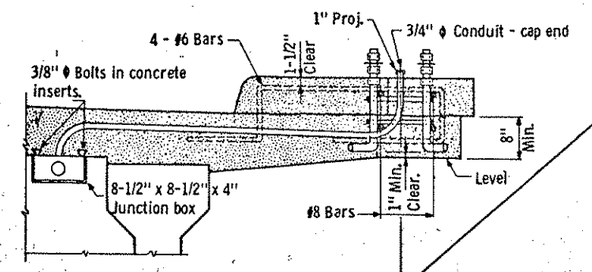


PLAN VIEW

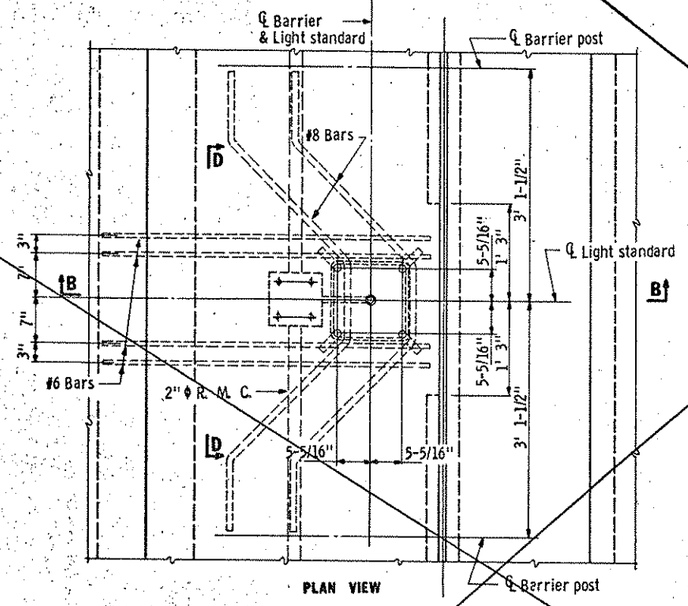
LIGHT STANDARD ON SIDEWALK (NO SIDE ONLY)



SECTION B - B

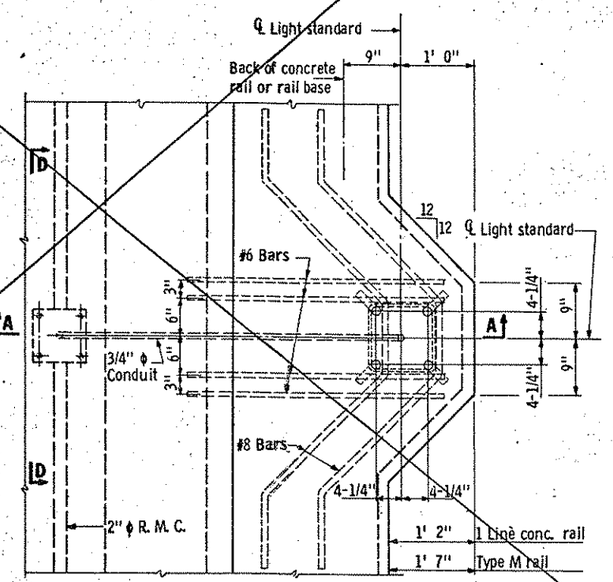


SECTION A - A



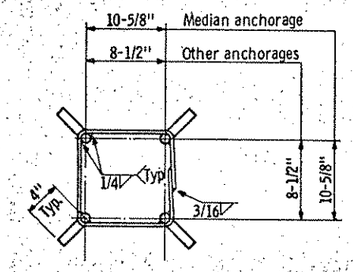
PLAN VIEW

LIGHT STANDARD ON MEDIAN

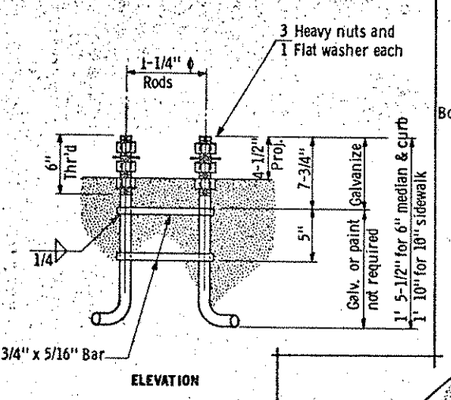


PLAN VIEW

LIGHT STANDARD ON CURB

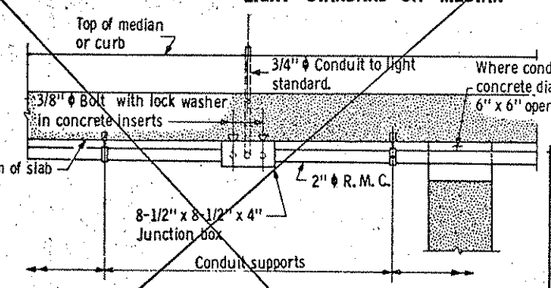


PLAN

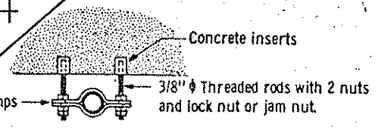


ELEVATION

LIGHT STANDARD ANCHORAGES
(For 40' light standard)



SECTION D - D
Anchorage and reinforcement not shown



CONDUIT SUPPORT ASSEMBLY

NOTES:

Flat bars and anchorages as per Spec. 3306.

Concrete inserts shall be an approved type malleable iron. Material as per Spec. 3324 Grade 35018 ~~Tap after galvanizing.~~

Galvanize bolts, nuts, washers, rods and inserts as per Spec. 3392. Galvanize other material as per Spec. 3394 after fabrication.

Pipe sleeves shall comply with Spec. 3362.

~~Curb blisters to be located about midway between railposts. Conduit and junction boxes must clear diaphragms.~~

Bend conduit down at abutments and provide expansion fitting.

LIGHT STANDARDS TO BE FURNISHED BY CITY.

SUMMARY OF QUANTITIES
CONDUIT SYSTEM (LIGHTING)

~~Precast Head Holes (Std. Plate 8117)~~		~~Units~~
~~8-1/2" x 8-1/2" x 4" C. I. Jct. Box & Supports~~		~~Units~~
6" x 6" x 6" Cast Iron Junction Box	4	Units
~~Light Standard Anchorage (Median)~~		~~Units~~
Light Standard Anchorage (Sidewalk)	2	Units
~~Light Standard Anchorage (Curb)~~		~~Units~~
Expansion Fittings	2	Units
3/4" ϕ Rigid Steel Conduit	12	Lin. Ft.
2" ϕ Rigid Steel Conduit	350	Lin. Ft.
~~1-1/4" ϕ Pipe Sleeves~~		~~Units~~
~~2" ϕ Pipe Sleeves~~		~~Units~~
~~Conduit Support Assembly (Includes inserts)~~		~~Units~~
3/4" ϕ Conduit Caps	2	Units
~~Drainage Tees~~		~~Units~~
~~Conduiet~~		~~Units~~

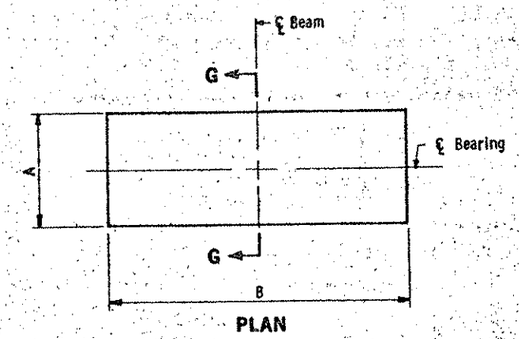
All material listed above is included in "CONDUIT SYSTEM (LIGHTING,)"

~~⊕ See Abutment Sheets for locations and details.~~

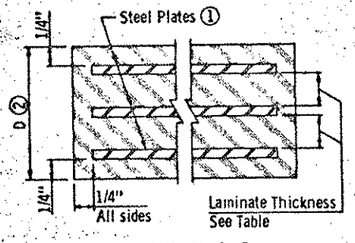
Fig. 5-397.401
Feb. 9, 1970

TITLE: CONDUIT SYSTEM FOR BRIDGE LIGHTING	DES:	DR:	APPROVED: 3-14-80
	CHK:	CHK:	Sheet No. 25 of 36 Sheets
			Bridge No. 02531

S.P. 02-630-01

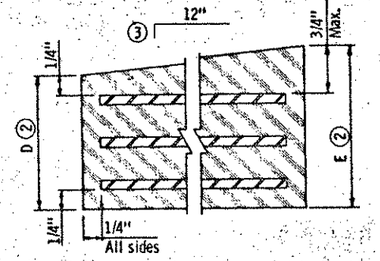


PLAN



SECTION G-G
(Section Thru Level Pad)

① Do not galvanize these plates.
② The total thickness shown includes the steel plates.



SECTION G-G
(Section Thru Sloped Pad)

③ Slopes to be made in 1/8" increments per foot.
④ Mark high side of sloped pads with an "E" for field placement.

ELASTOMERIC BEARING PAD TABLE ⑤

Beam Size	A	B	Pad Thickness D	Pad Thickness E	Steel Plates No.	Steel Plates Thickness	Laminates No.	Laminates Thickness	Shape Factor	Pad Type
28"										
↓										
36"										
↓										
40"										
↓										
45"										
↓										
54"										
↓										
63"										
↓										
72"										
↓										
81"	20"	24"	6 5/16"	6 13/16"	7	3/16"	6	3/4"	7.3	P1
	14"	24"	3 1/8"	3 1/8"	5	1/8"	4	1/2"	8.8	P2
↓	14"	24"	3 1/8"	3 3/8"	5	1/8"	4	1/2"	8.8	P3
30" Bulb										
↓										

⑤ See Bridge Design Manual for design requirements.

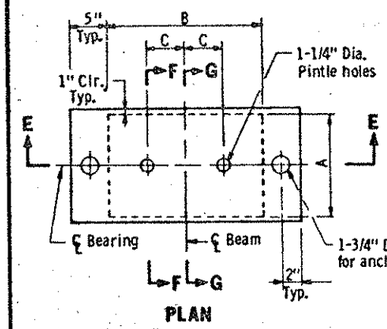
P1 - WEST ABUTMENT
20" x 24" x 6 5/16" ELASTOMERIC BEARING PAD

P2 - PIER 1
14" x 24" x 3 1/8" ELASTOMERIC BEARING PAD

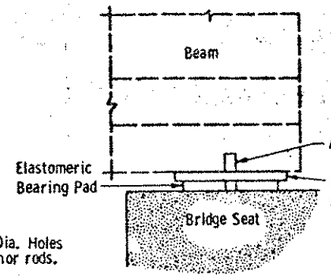
P3 - EAST ABUTMENT
14" x 24" x 3 3/8" ELASTOMERIC BEARING PAD

NOTES:
For elastomeric materials and pad construction, see Spec. 3741.
All steel plates shall comply with Spec. 3306.

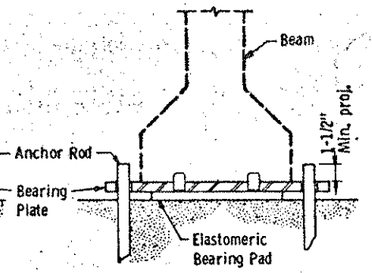
APPROVED: May 8, 1979	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by: BRIDGE STANDARDS & BRIDGE AND STRUCTURES SECTION	**ELASTOMERIC BEARING PAD** PRESTRESSED CONCRETE BEAMS (EXPANSION)		**B305**
Issued by: ENGINEERING STANDARDS SECTION			



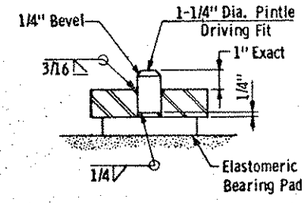
PLAN



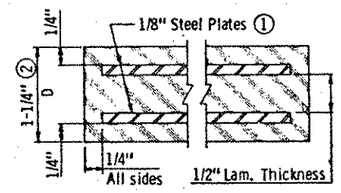
END ELEVATION



SECTION E-E

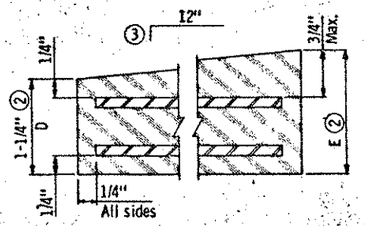


SECTION F-F
(ENLARGED)



SECTION G-G
(Section Thru Level Pad)

① Do not galvanize these plates.
② The total thickness shown includes the steel plates.



SECTION G-G
(Section Thru Sloped Pad)

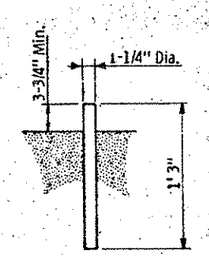
③ Slopes to be made in 1/8" increments per foot.
④ Mark high side of sloped pads with an "E" for field placement.

ELASTOMERIC BEARING PAD TABLE ⑤

Beam Size	A	B	C	D	E	Bearing Plate Size	Assembly Type	DL + LL Min. (Kips)	DL Max. (Kips)	DL + LL Max. (Kips)	Shape Factor
28"	10"	14"	4"			12" x 24" x 1"		28	69	110	5.7
↓	12"	↓	↓			14" x 24" x 1"		33	83	132	6.4
↓	14"	↓	↓			16" x 24" x 1"		39	97	155	6.9
36"	10"	16"	6"			12" x 26" x 1"		32	79	126	6.1
↓	12"	↓	↓			14" x 26" x 1"		38	95	152	6.8
↓	14"	↓	↓			16" x 26" x 1"		44	111	177	7.4
40" & 45"	10"	20"	8"			12" x 30" x 1"		40	99	158	6.6
↓	12"	↓	↓			14" x 30" x 1"		48	119	190	7.4
↓	14"	↓	↓			16" x 30" x 1"		56	139	222	8.2
54"	10"	24"	9"			12" x 34" x 1"		48	118	190	7.0
↓	12"	↓	↓			14" x 34" x 1"		57	143	228	7.9
↓	14"	↓	↓			16" x 34" x 1"		67	167	267	8.8
63" - 81"	10"	↓	8"			12" x 34" x 1"		48	118	190	7.0
↓	12"	↓	↓			14" x 34" x 1"		57	143	228	7.9
↓	14"	↓	↓	14"	14"	16" x 34" x 1"	A1	67	167	267	8.8
30" Bulb	10"	22"	9"			12" x 32" x 1"		44	109	174	6.8
↓	12"	↓	↓			14" x 32" x 1"		52	131	209	5.7
↓	14"	↓	↓			16" x 32" x 1"		61	153	244	8.5
↓	16"	↓	↓			18" x 32" x 1"		70	175	280	9.2

⑤ See Bridge Design Manual for additional information.

A1 - PIER 2 = 14" x 24" x 14" ELASTOMERIC BEARING PAD



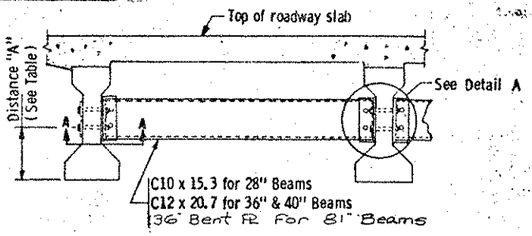
ANCHOR ROD DETAIL

NOTES:
For elastomeric materials and pad construction, see Spec. 3741.
All steel plates and anchor rods shall comply with Spec. 3306.
Pintles shall comply with Spec. 3314, Type II.
Galvanize structural steel bearing plate and pintle after assembly as per Spec. 3394.
Payment for bearing assembly shall include all material on this detail.

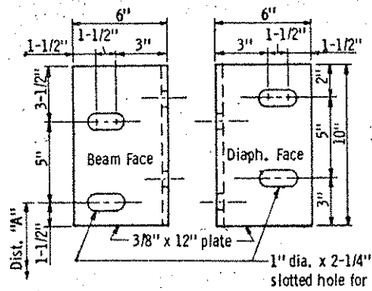
APPROVED: May 8, 1979	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION	DETAIL NO.
Developed by: BRIDGE STANDARDS & BRIDGE AND STRUCTURES SECTION	**ELASTOMERIC BEARING ASSEMBLY** PRESTRESSED CONCRETE BEAMS (FIXED)		**B304**
Issued by: ENGINEERING STANDARDS SECTION			

3-M.80

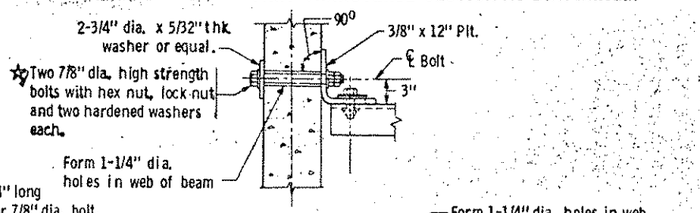
TABLE	
Beam Ht.	Distance "A"
28"	1' 0"
30"	1' 1-1/2"
36"	1' 3"
40"	1' 5"
45"	1' 4-1/2"
54"	1' 9"
81"	3'-11"



PART TRANSVERSE SECTION AT DIAPHRAGM

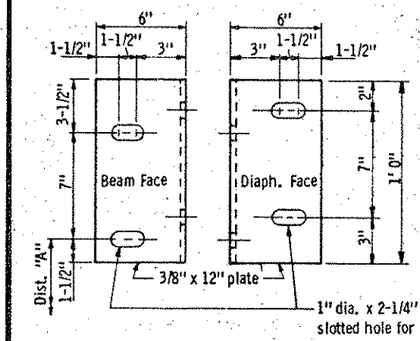


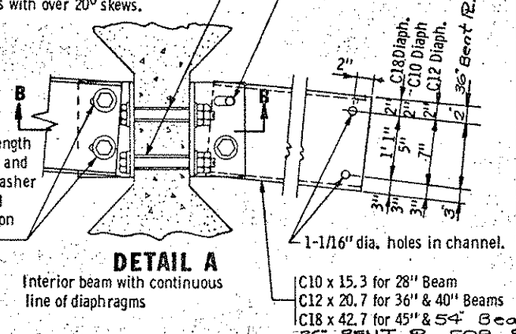
DIAPHRAGM SUPPORT FOR 28" BEAMS



SECTION A-A

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



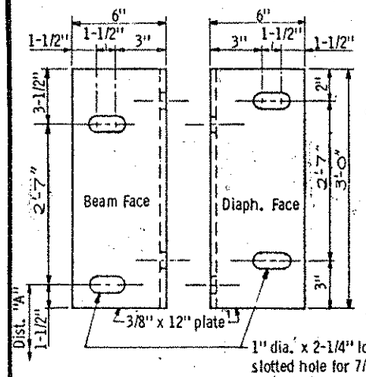


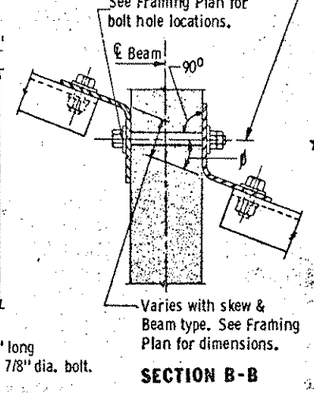
DETAIL A

Interior beam with continuous line of diaphragms

C10 x 15.3 for 28" Beam
C12 x 20.7 for 36" & 40" Beams
C18 x 42.7 for 45" & 54" Beams
36" BENT ℄ FOR 81" Beams

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





SECTION B-B

Typ. Section for Skews under 20°

GENERAL NOTES:

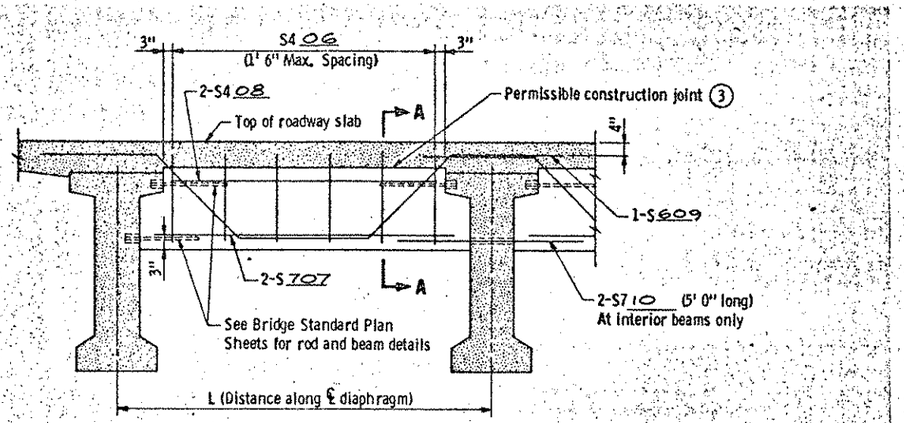
The leg of the 12" plate shall be shop bent to conform to diaphragm line. When the ∅ angle is less than 3°, shop bends will not be required and a 3/8" x 6" x 6" angle may be used.

☆ 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.

All structural steel shown on this detail including bolts and washers to be included in payment for diaphragms for prestressed beams.

DIAPHRAGM SUPPORT FOR 81 BEAMS

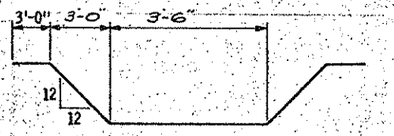
APPROVED: July 8, 1976	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION May 2, 1978 Sept. 28, 1978	DETAIL NO.
Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN	**STEEL INTERMEDIATE DIAPHRAGM**		**B403**
Issued by: OFFICE OF ENGINEERING STANDARDS	(FOR 28"-54" PRESTRESSED CONCRETE BEAM SPANS AND 30" BULB TEE BEAMS)		



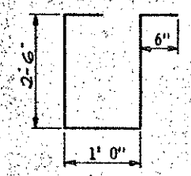
PART TRANSVERSE SECTION AT END DIAPHRAGM

LONGITUDINAL REINFORCEMENT IN BOTTOM OF DIAPHRAGM

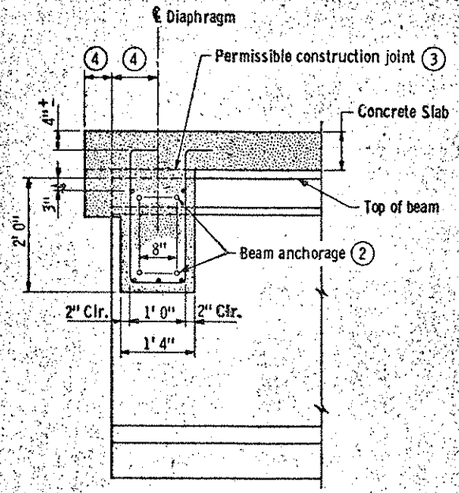
BEAM SPACING ℄ TO ℄ (1)	BARS REQUIRED			
	STRAIGHT		BENT	
	NO.	SIZE	NO.	SIZE
Up to 8'	2	6	1	5
Over 8' to 11'	2	7	1	6
Over 11' to 13'	2	8	1	8
Over 13' to 15'	2	9	1	10
Over 15' to 18'	2	11	1	11



S 609



S4 06



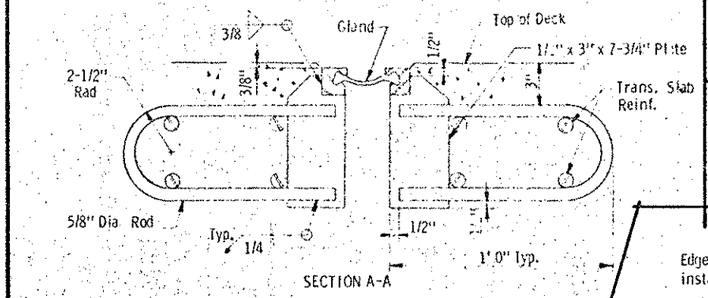
SECTION A-A

NOTE:

(1) Distance measured along ℄ of diaphragm.
(2) BEAM ANCHORAGES
Fascia beams only: Four 3/4" dia. threaded rods.
Interior beams: Two 3/4" dia. threaded rods on top two No. 7 bars on bottom.
(3) When construction joint is used at this location, diaphragm falsework shall remain in place until completion of slab curing period.
(4) See plans for dimensions.
(5) All diaphragm bars shown are listed with the superstructure reinforcement. Diaphragm concrete and reinforcement quantities are included in superstructure quantities (except threaded rods are included in payment for prestressed beams).

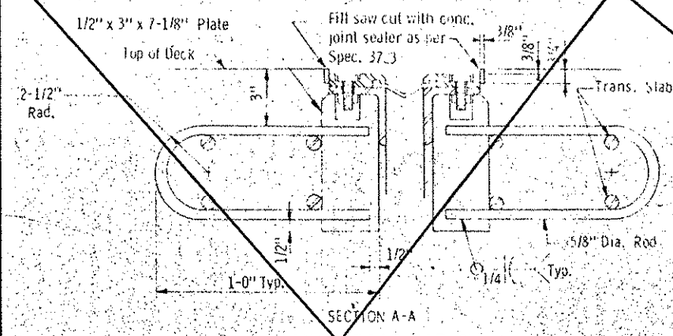
APPROVED: July 26, 1977	STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION	REVISION AUG. 23, 1978	DETAIL NO.
Developed by ENGINEERING STANDARDS AND BRIDGES AND STRUCTURES	**END DIAPHRAGM**		**B812**
Issued by: ENGINEERING STANDARDS	(63"-81" PRESTRESSED CONCRETE BEAM SPAN WITH PARAPET ABUTS.)		

3-14-80



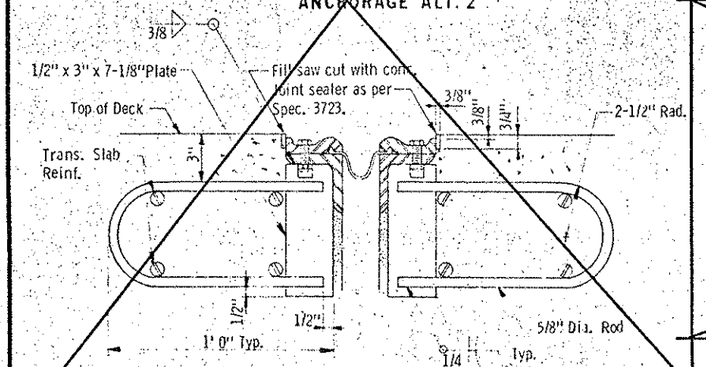
SECTION A-A

ANCHORAGE ALT. 1



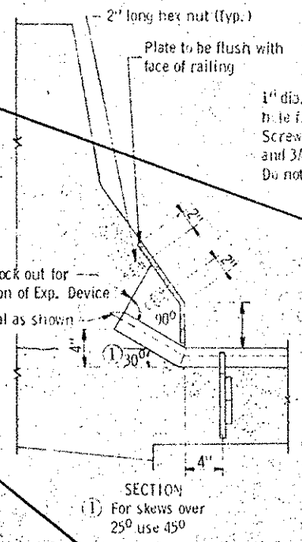
SECTION A-A

ANCHORAGE ALT. 2



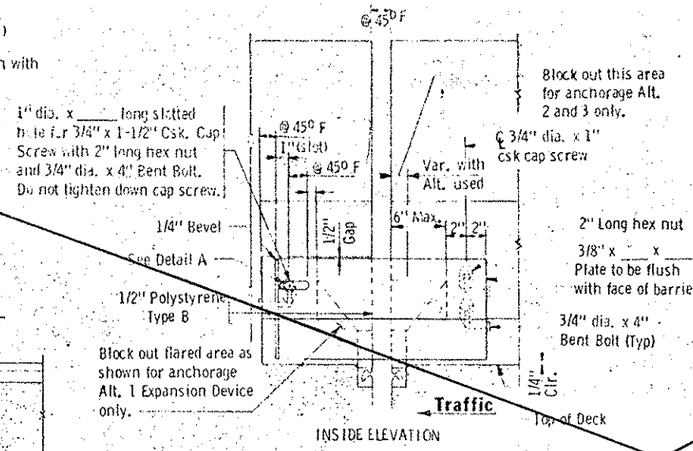
SECTION A-A

ANCHORAGE ALT. 3



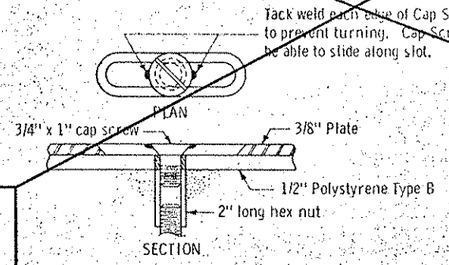
SECTION

(1) For skews over 25° use 45°



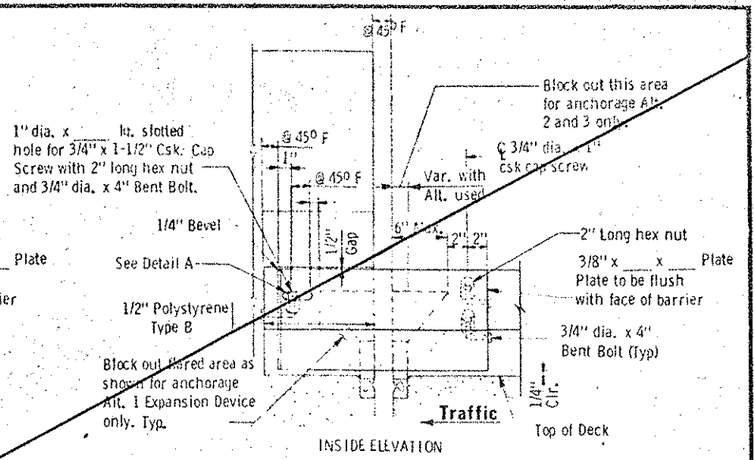
INSIDE ELEVATION

TYPE J RAILING OR MEDIAN



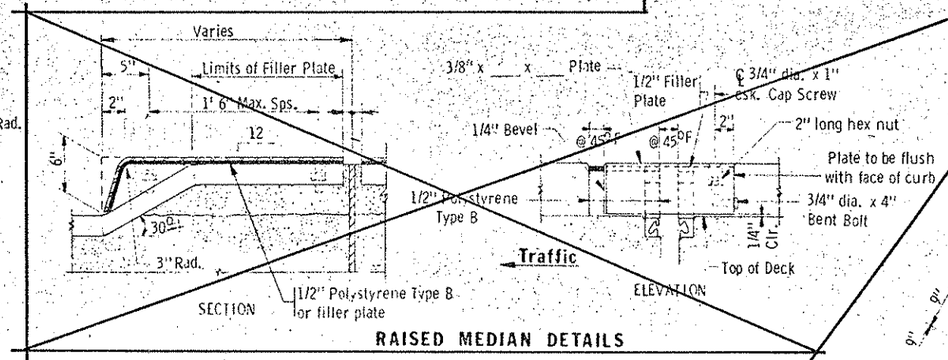
SECTION

DETAIL A



INSIDE ELEVATION

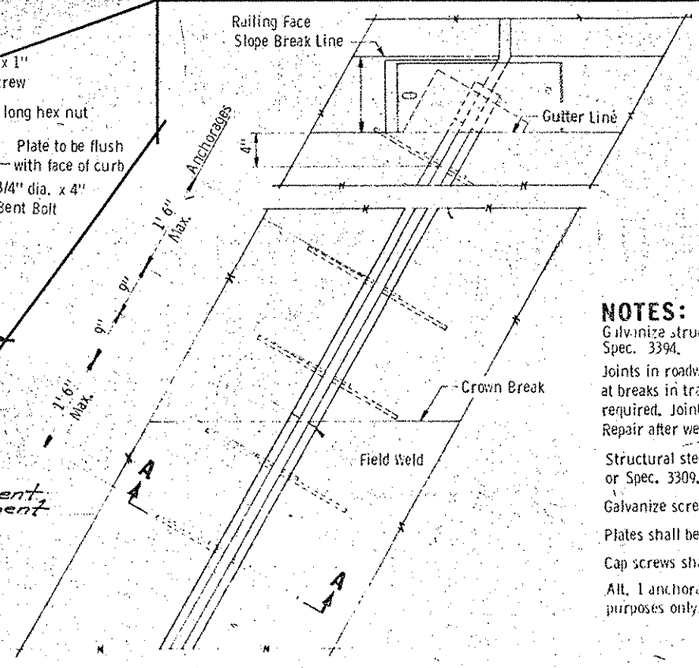
TYPE J RAILING AT CURB TRANSITION



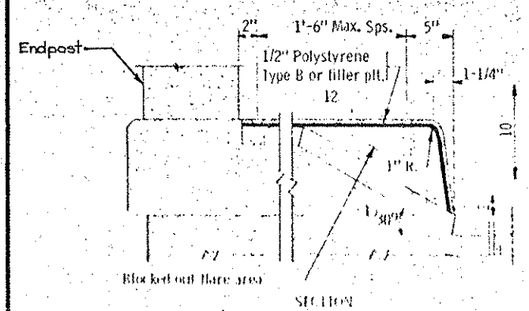
SECTION

ELEVATION

RAISED MEDIAN DETAILS

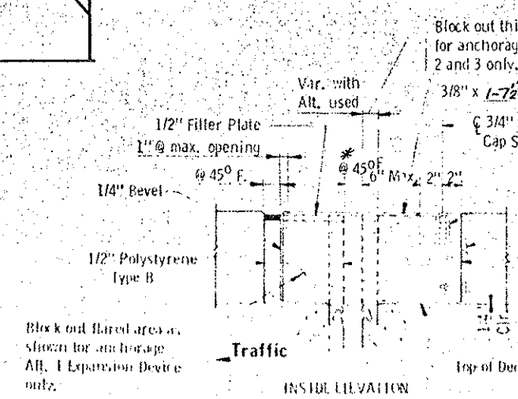


PLAN VIEW AT EXPANSION DEVICE



SECTION

(1) For skews over 25° use 45°



INSIDE ELEVATION

SIDEWALK DETAILS

* 2½" - West Abutment
2" - East Abutment

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. or Spec. 3309.

Galvanize screws and nuts as per Spec. 3392

Plates shall be flat after galvanizing.

Cap screws shall be csk. 1/16" below top of plate

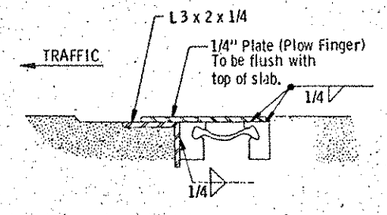
Alt. 1 anchorage is shown for illustration purposes only.

Fig. 5 397.627

Revised: March 16, 1978 Approved: December 5, 1977

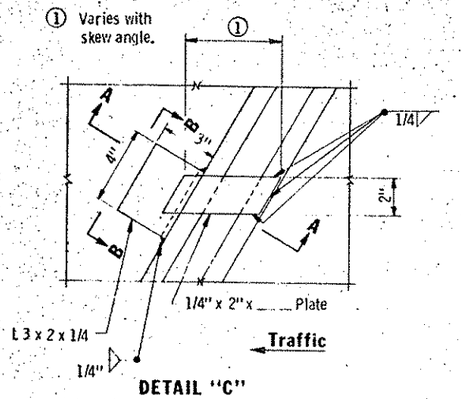
S.P 02-630-01

TITLE	DES	DR	APPROVED	Bridge No.
WATERPROOF EXPANSION DEVICE	CNK	CHK	3-17-78	02531
	Sheet No. 28 of 36 Sheets			



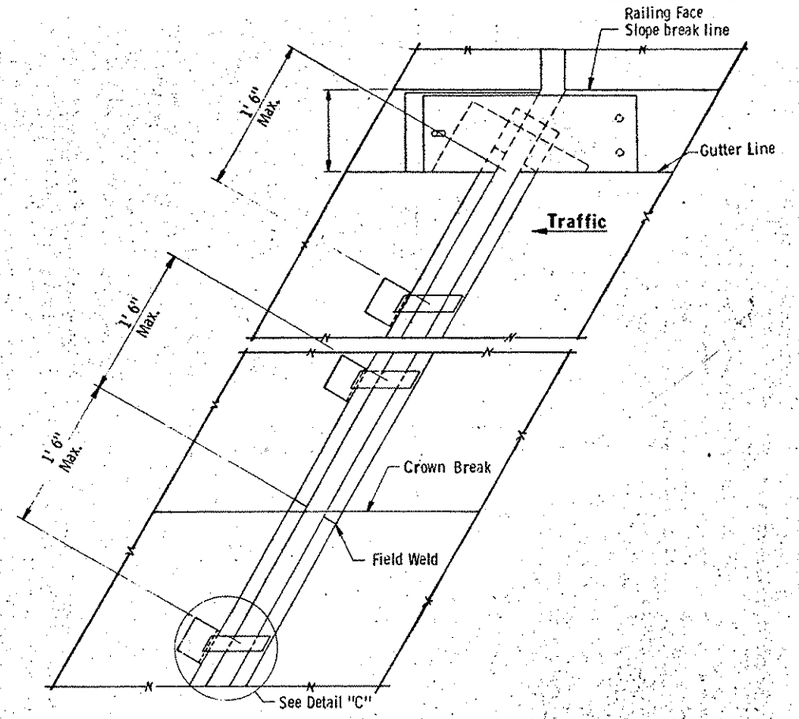
Section A - A

ALT. 1 FINGER



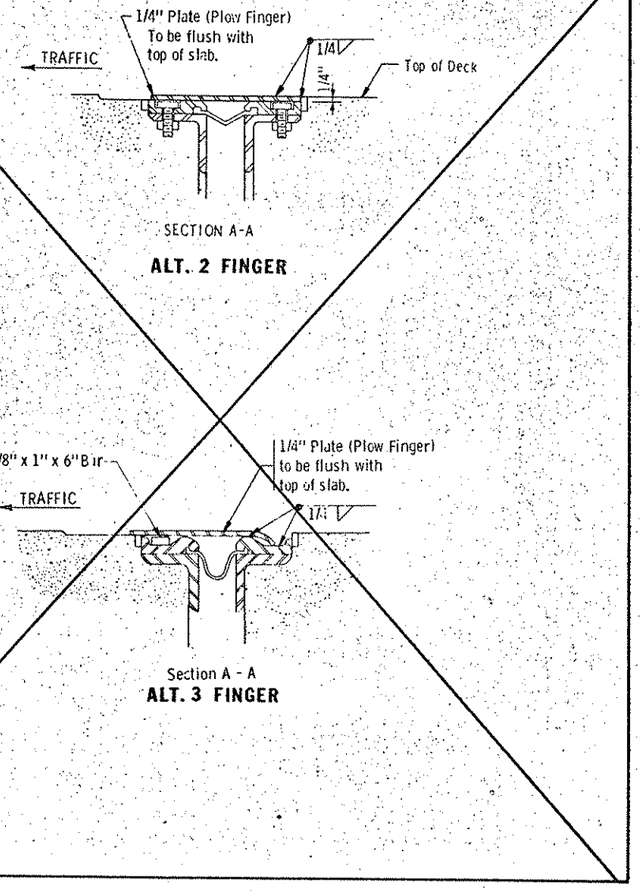
DETAIL "C"

(Alternate 1 Shown)



PLAN VIEW AT EXPANSION JOINT

Max. spacing of plow fingers to be 4' 0" except as noted.

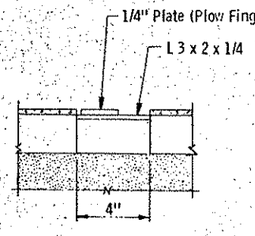


SECTION A-A

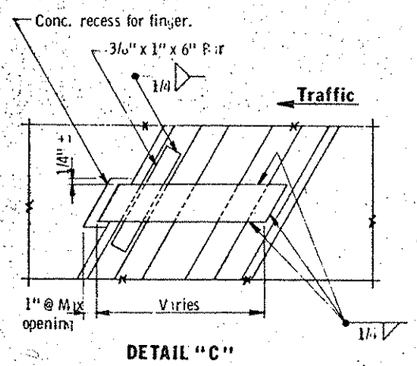
ALT. 2 FINGER

Section A - A

ALT. 3 FINGER



VIEW B-B



DETAIL "C"

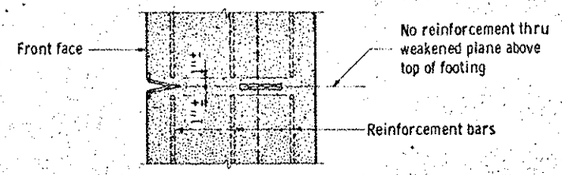
(Alternate 3 Shown)

Fig. 5-397.628

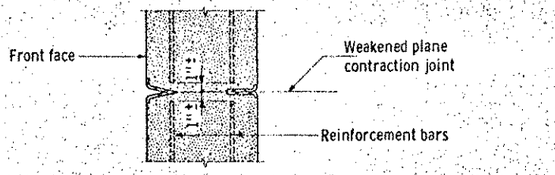
Approved: December 5, 1977

TITLE: **WATERPROOF EXPANSION DEVICE** SNOW PLOW PROTECTION (Use on skews over 10^0 and less than 45^0)	DES:	DR:	APPROVED: 3-14-80
	CHK:	CHK:	**Sheet No. 29 of 36 Sheets**
			Bridge No. 02531

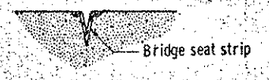
S.P 02-630-01



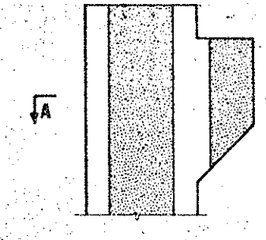
SECTION A - A



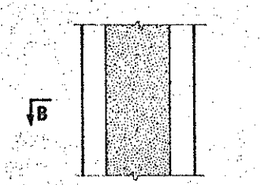
SECTION B - B



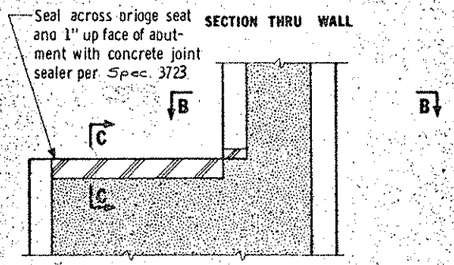
SECTION C - C



SECTION THRU PAVING BRACKET

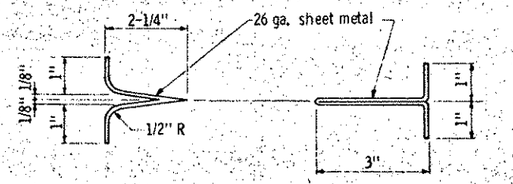


SECTION THRU WALL



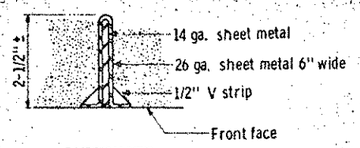
SECTION THRU BRIDGE SEAT

PART SECTION THRU ABUTMENT AT JOINT



BRIDGE SEAT and FRONT STRIP
6" wide

BACK STRIP
8" wide



ALTERNATE BRIDGE SEAT and FRONT STRIP

NOTES:

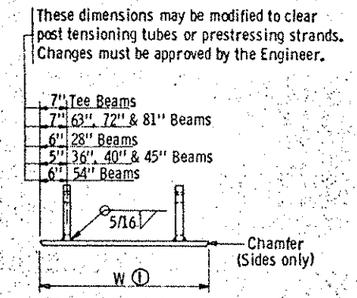
The methods and materials indicated hereon shall be considered as suggested only. Variations will be permitted, subject to approval by the Engineer, but must provide dummy joints of a depth not less than the depth shown, and a width at the front face of the abutment of not greater than 5/16". The separation of the horizontal reinforcement bars shall be not less than 1-1/2" nor more than 3", centered as shown, regardless of the procedure used for forming the dummy joint.

Front and bridge seat strips shall be removed with forms, except if a suitable plastic or other durable material, satisfactory to the Engineer, is used the material may be left in place. Back strip to remain in place.

Back metal strips to be galvanized sheet metal. Fasten to forms with 7/8" roofing nails about 6" centers.

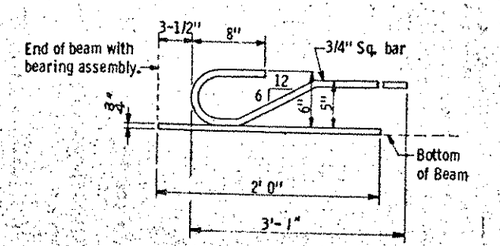
Cost of forming joint to be included in price bid for other items.

APPROVED Feb 15, 1972	MINNESOTA DEPARTMENT OF TRANSPORTATION		DETAIL NO.
Douglas Differt, Engineering Standards Engineer, RESEARCH AND STANDARDS DIVISION	CONTRACTION JOINT		B801



FRONT VIEW

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



SIDE VIEW

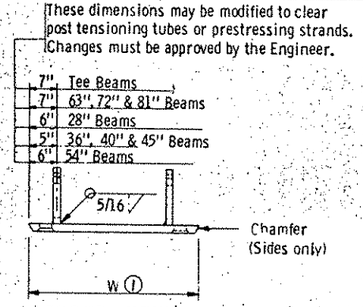
SOLE PLATE FOR B305 BEARING

NOTES

Material to be Structural Steel per Spec. 3306

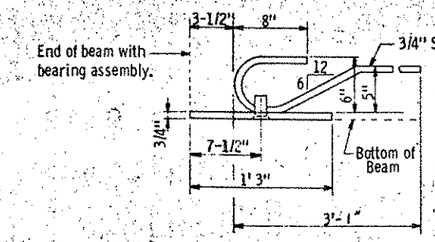
Sole plate for Bearing Assembly to be hot dipped galvanized as per Spec. 3394 after fabrication.

Payment for sole plates to be included in price bid for Prestressed Concrete Beams.



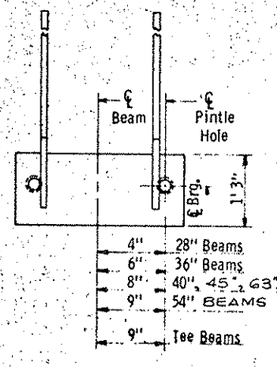
FRONT VIEW

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

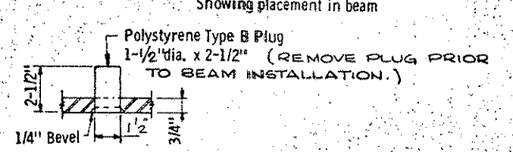


SIDE VIEW

Showing placement in beam



PLAN VIEW



PINTLE HOLE DETAIL
(2 Required)

SOLE PLATE FOR B302, & B304 BEARING ASSEMBLY

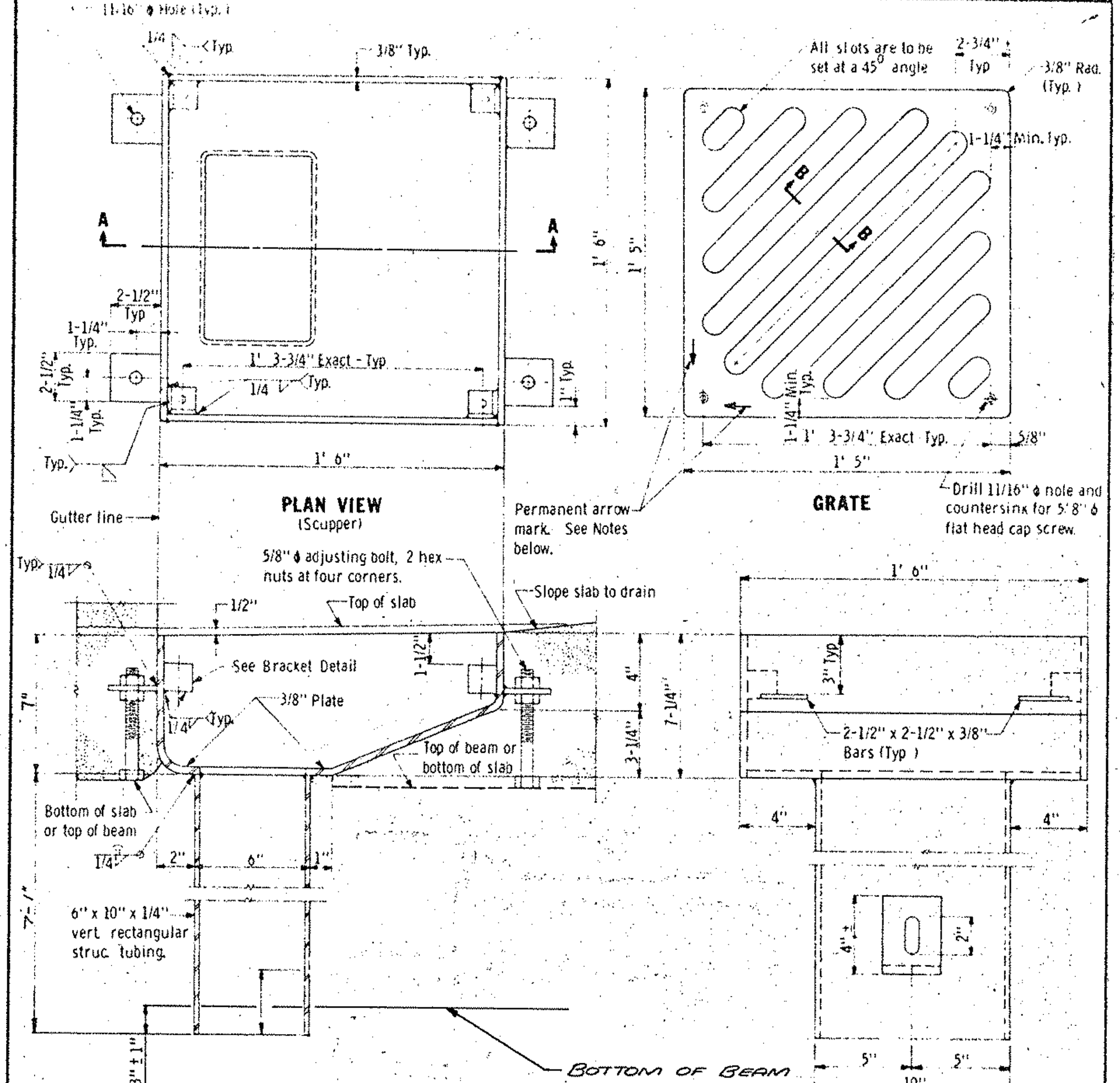
NOTES

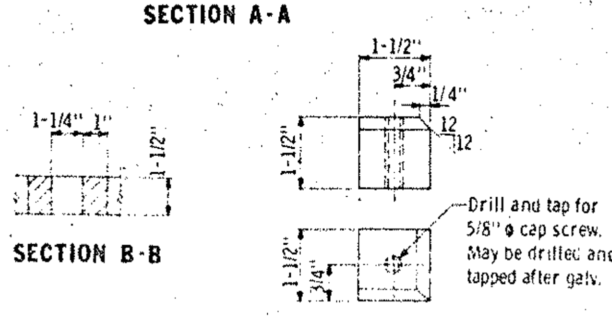
Material to be Structural Steel per Spec. 3306

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

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





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.

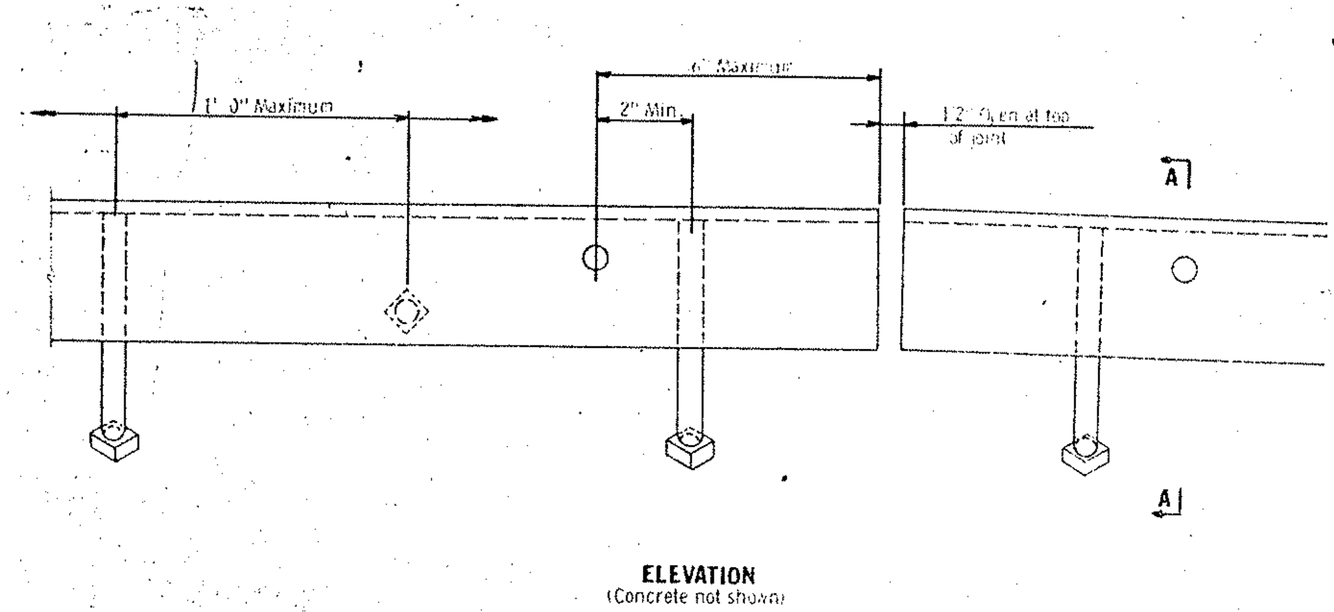
Galvanize hardware per Spec. 3392.

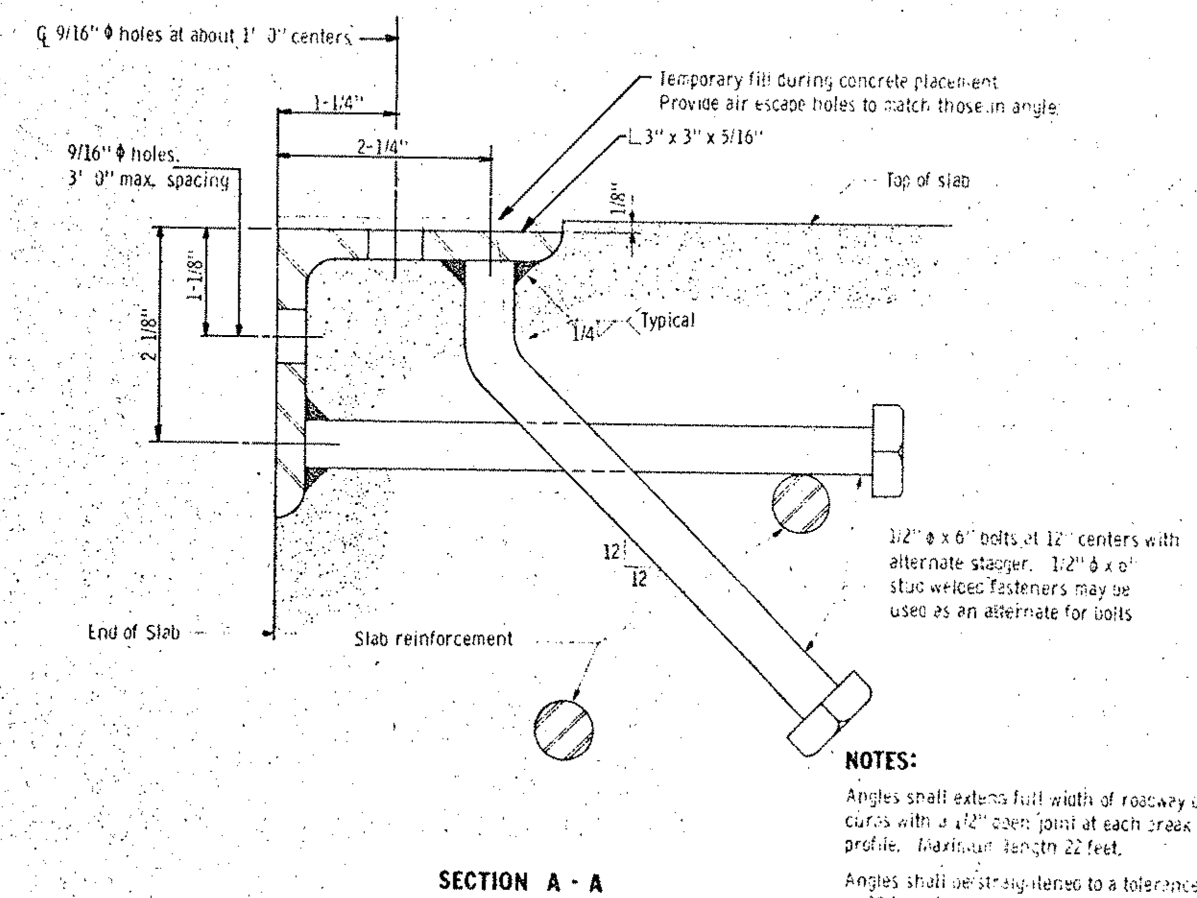
Install grate with arrow on curb side and in direction of flow.

Payment for Floor Drain, Type I 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 **BRIDGE FLOOR DRAIN** **WELDED BOX**	REVISION Feb. 13, 1979	DETAIL NO. **B701**





NOTES:

Angles shall extend full width of roadway between curbs with a 1/2" open joint at each break in crown profile. Maximum length 22 feet.

Angles shall be straightened to a tolerance of 1/16" in 10 feet after galvanizing

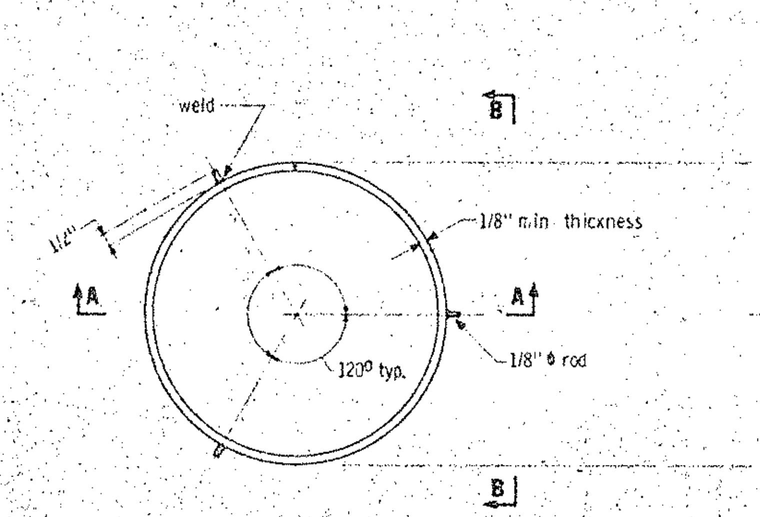
Material: Structural steel per Spec. 3306. Galvanize after fabrication per Spec. 3394

Set angle to proper grade and crown.

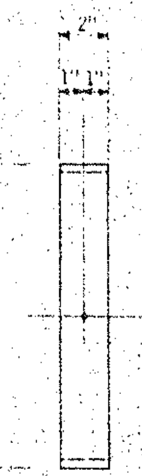
All material will be paid for as structural steel Spec. 2402

APPROVED May 10, 1972 [signature] RESEARCH AND STANDARDS DIVISION	MINNESOTA DEPARTMENT OF TRANSPORTATION **PROTECTION ANGLE** **FOR END OF SLAB**		DETAIL NO. **B551**

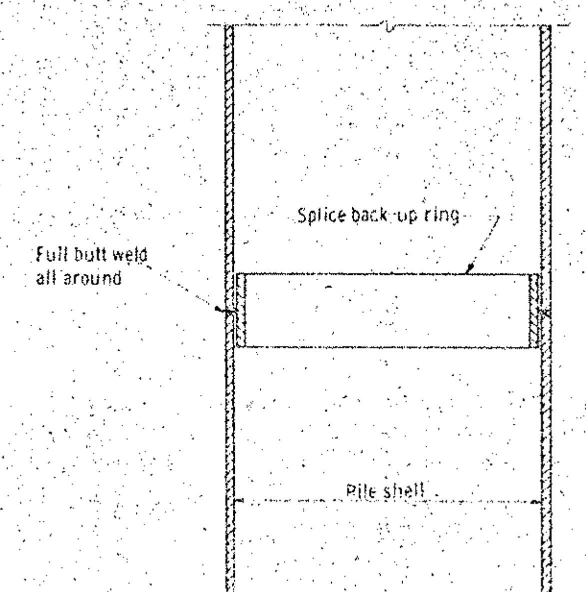
S.P. 02-630-01 2-14-80



PLAN VIEW
(Pile not shown)



SECTION B - B
(Pile not shown)



SECTION A - A

NOTES:

Approved commercial pile splice back-up ring may be used in lieu of the type detailed. Back-up ring shall have a tight fit.

Welding electrodes shall be A.W. S. Type E701o or E7018 (low-hydrogen).

Low-hydrogen electrodes shall be supplied in hermetically (air-tight) sealed containers.

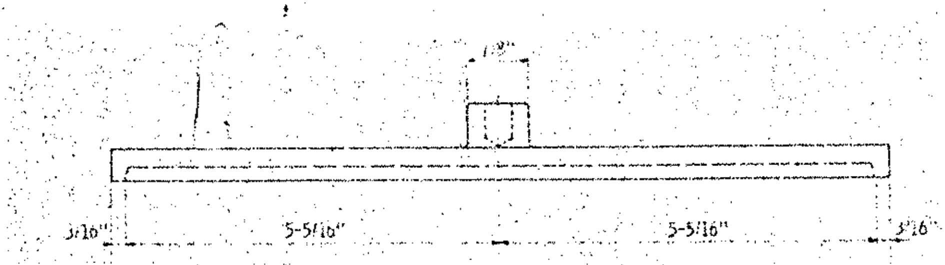
Low-hydrogen electrodes shall be stored in holding ovens at a temperature of not less than £50° F.

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 4 hours.

Electrodes which have become wet, soiled or damaged shall not be used.

Welding shall not be done when the ambient temperature is lower than 0° F. or when the pile is wet or exposed to falling rain or snow. When the pile metal temperature is below 32° F., the pile metal in the area of the weld shall be heated to a minimum temperature of 70° F. and maintained at this temperature during welding.

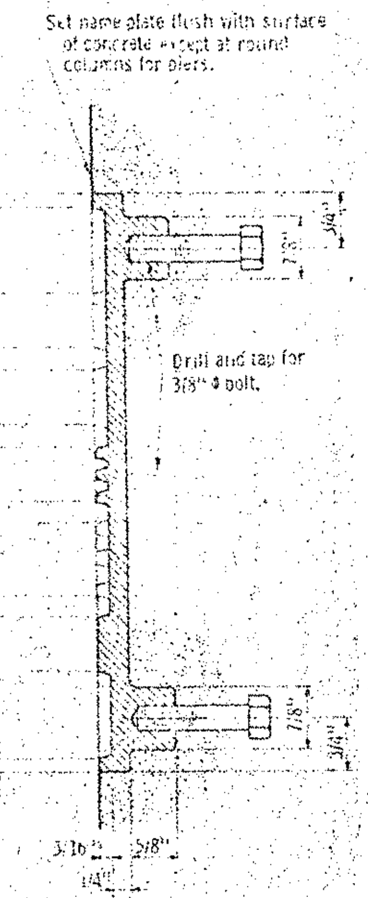
APPROVED July 13, 1972 [illegible]	MINNESOTA DEPARTMENT OF TRANSPORTATION PILE SPLICE CAST-IN-PLACE CONCRETE PILES	DETAIL NO. B201



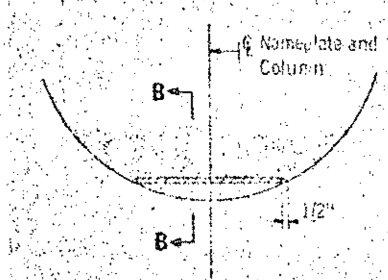
PLAN VIEW

ELEVATION

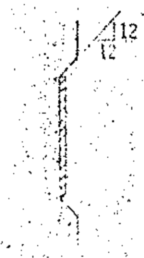
The numbers shown above are for illustration. Data to be shown on name plate is as follows:
BRIDGE 02531
YEAR 1980



SECTION A - A



NAMEPLATE PLACEMENT
(Round Concrete Pier Columns)



SECTION B-B

NOTES:

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

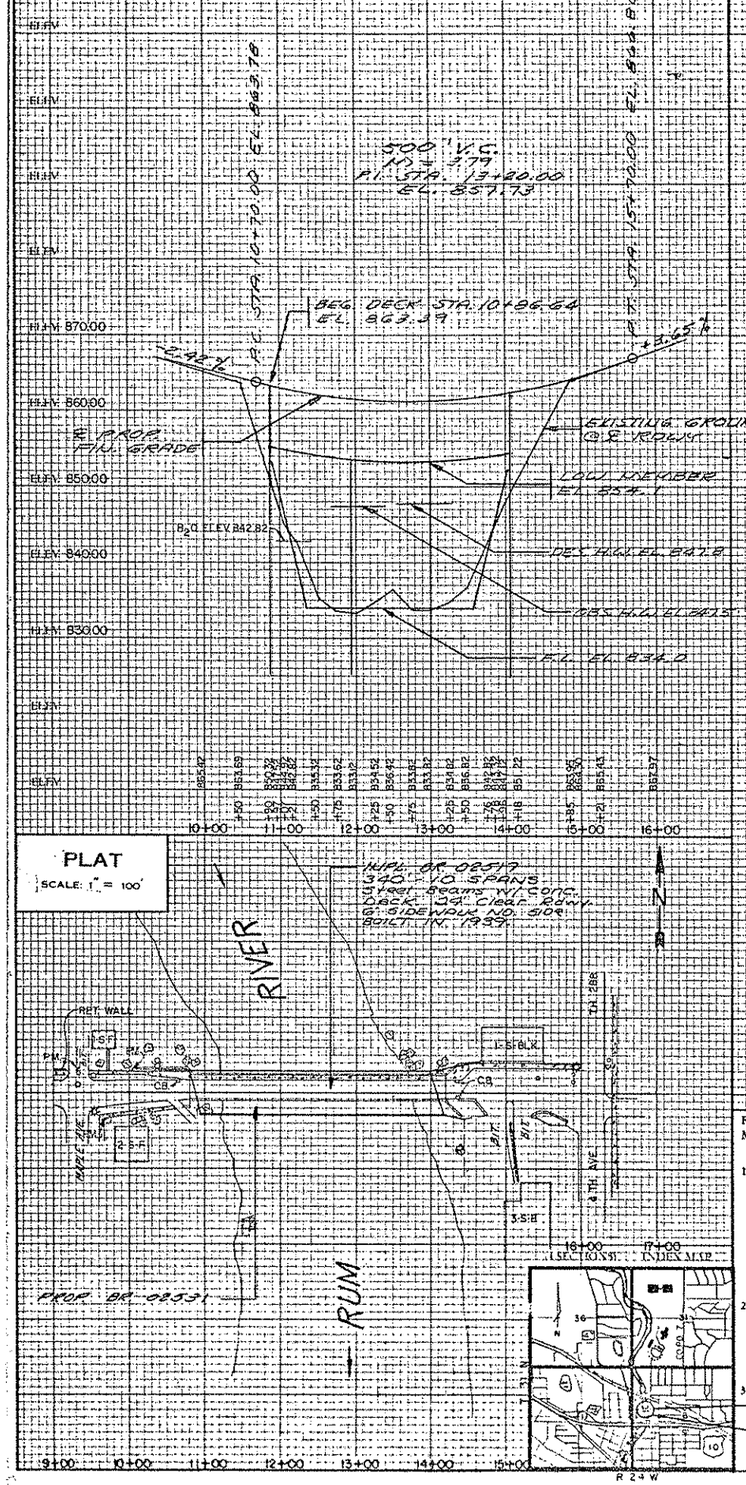
LETTERS & NUMBERS FOR NAMEPLATES

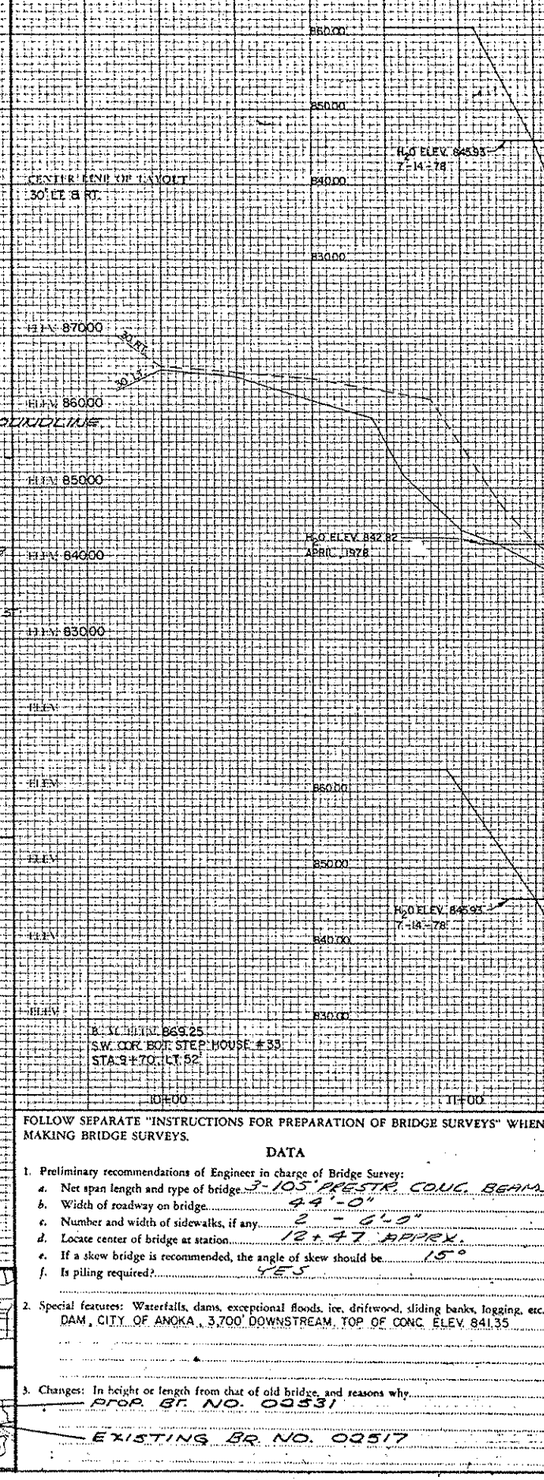
Specification reference:
2471.3? A.S.T.M. Designation B?4? Alloy ?

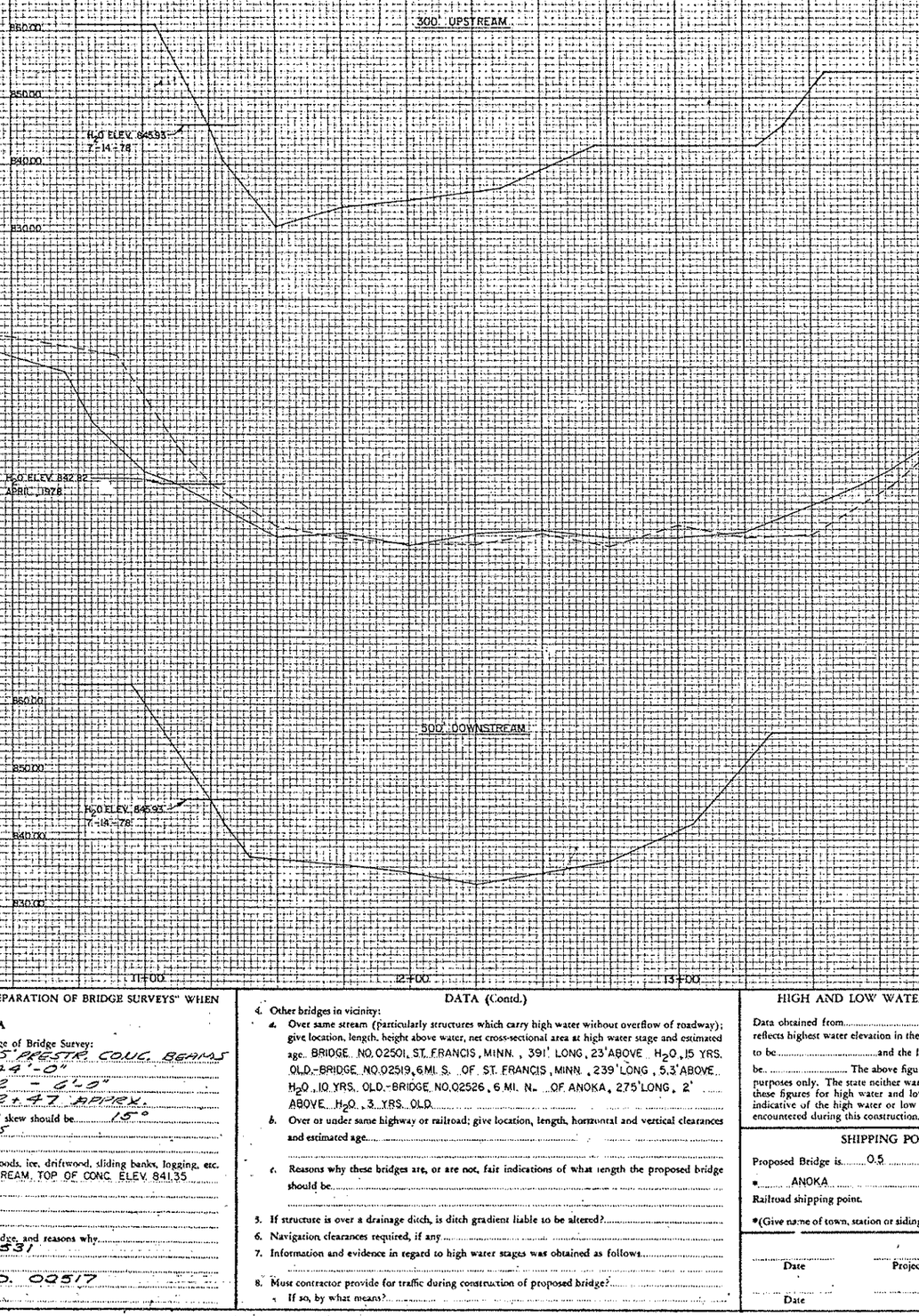
APPROVED: March 12, 1976 Developed by: OFFICE OF ENGINEERING STANDARDS AND BRIDGE DESIGN Issued by: OFFICE OF ENGINEERING STANDARDS	MINNESOTA DEPARTMENT OF TRANSPORTATION BRIDGE NAMEPLATE COUNTY BRIDGES	DETAIL NO B103

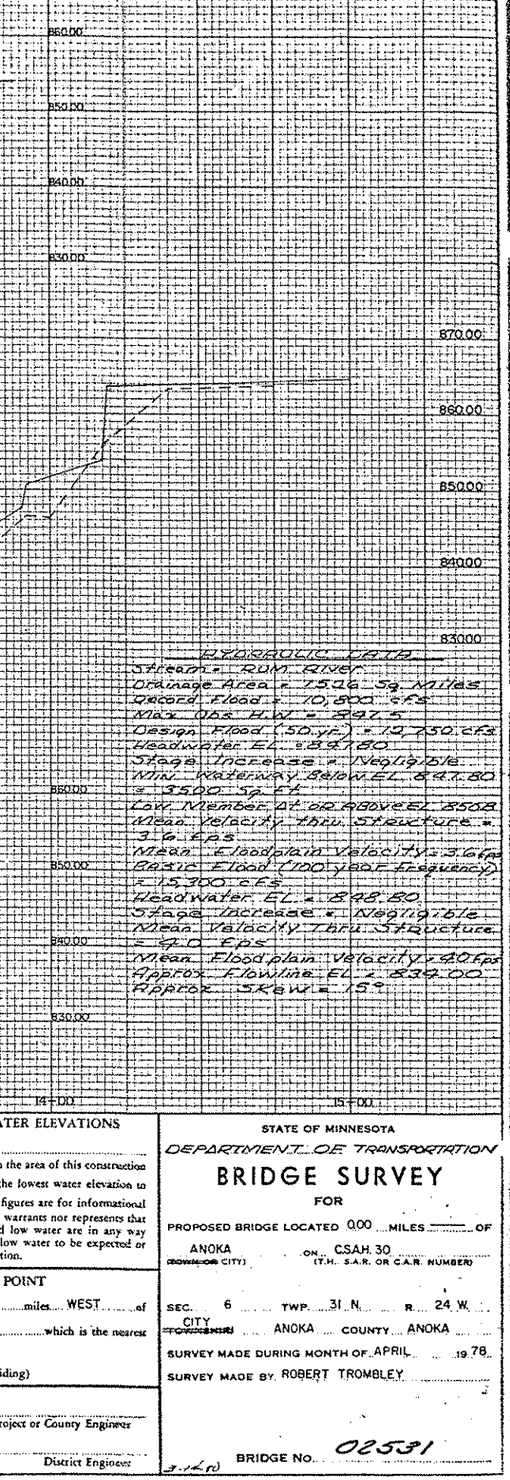
CONTRACTED PROFILE

SCALE: HOR. 1" = 100', VER. 1" = 10'









HYDRAULIC DATA

Stream - RUM RIVER
Drainage Area = 153.6 Sq. Miles
Record Flood = 10,500 cfs
Max. Obs. H.W. = 841.5
Design Flood (50 yr.) = 12,450 cfs
Headwater EL. = 844.80
Stage Increase = Negligible
Min. Waterway Below EL. 841.80 = 3500 Sq. Ft.
Low Member at or above EL. 850.2
Mean Velocity thru Structure = 3.6 fps
Mean Floodplain Velocity = 3.6 fps
Basic Flood (100 year frequency) = 15,300 cfs
Headwater EL. = 845.80
Stage Increase = Negligible
Mean Velocity thru Structure = 4.0 fps
Mean Floodplain Velocity = 2.0 fps
Approx. Flowline EL. = 839.00
Approx. Skew = 15°

FOLLOW SEPARATE "INSTRUCTIONS FOR PREPARATION OF BRIDGE SURVEYS" WHEN MAKING BRIDGE SURVEYS.

DATA

1. Preliminary recommendations of Engineer in charge of Bridge Survey:
   a. Net span length and type of bridge 3-105' PRESTR. CONC. BEAMS
   b. Width of roadway on bridge 42'-0"
   c. Number and width of sidewalks, if any 2 - 6'-0"
   d. Locate center of bridge at station 12+47 APPROX.
   e. If a skew bridge is recommended, the angle of skew should be 15°
   f. Is piling required? YES
2. Special features: Waterfalls, dams, exceptional floods, ice, driftwood, sliding banks, logging, etc. DAM, CITY OF ANOKA, 3,700' DOWNSTREAM. TOP OF CONC. ELEV. 841.35
3. Changes: In height or length from that of old bridge, and reasons why. PROP. BR. NO. 02531 EXISTING BR. NO. 02517

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. BRIDGE NO. 02501, ST. FRANCIS, MINN., 391' LONG, 23' ABOVE H_2O, 15 YRS. OLD.-BRIDGE NO. 02519, 6 MI. S. OF ST. FRANCIS, MINN., 239' LONG, 5.3' ABOVE H_2O, 10 YRS. OLD.-BRIDGE NO. 02526, 6 MI. N. OF ANOKA, 275' LONG, 2' ABOVE H_2O, 3 YRS. OLD.
   b. Over or under same highway or railroad; give location, length, horizontal and vertical clearances and estimated age.
   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?
6. Navigation clearances required, if any
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?
   If so, by what means?

HIGH AND LOW WATER ELEVATIONS

Data obtained from ..... reflects highest water elevation in the area of this construction to be ..... and the lowest water elevation to be ..... 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 0.5 miles WEST of ANOKA which is the nearest Railroad shipping point.

*(Give name of town, station or siding)

Date ..... Project or County Engineer .....

Date ..... District Engineer .....

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

FOR

PROPOSED BRIDGE LOCATED 0.00 MILES ____ OF ANOKA (DOWN OR CITY) ON C.S.A.H. 30 (T.H., S.A.R. OR C.A.R. NUMBER)

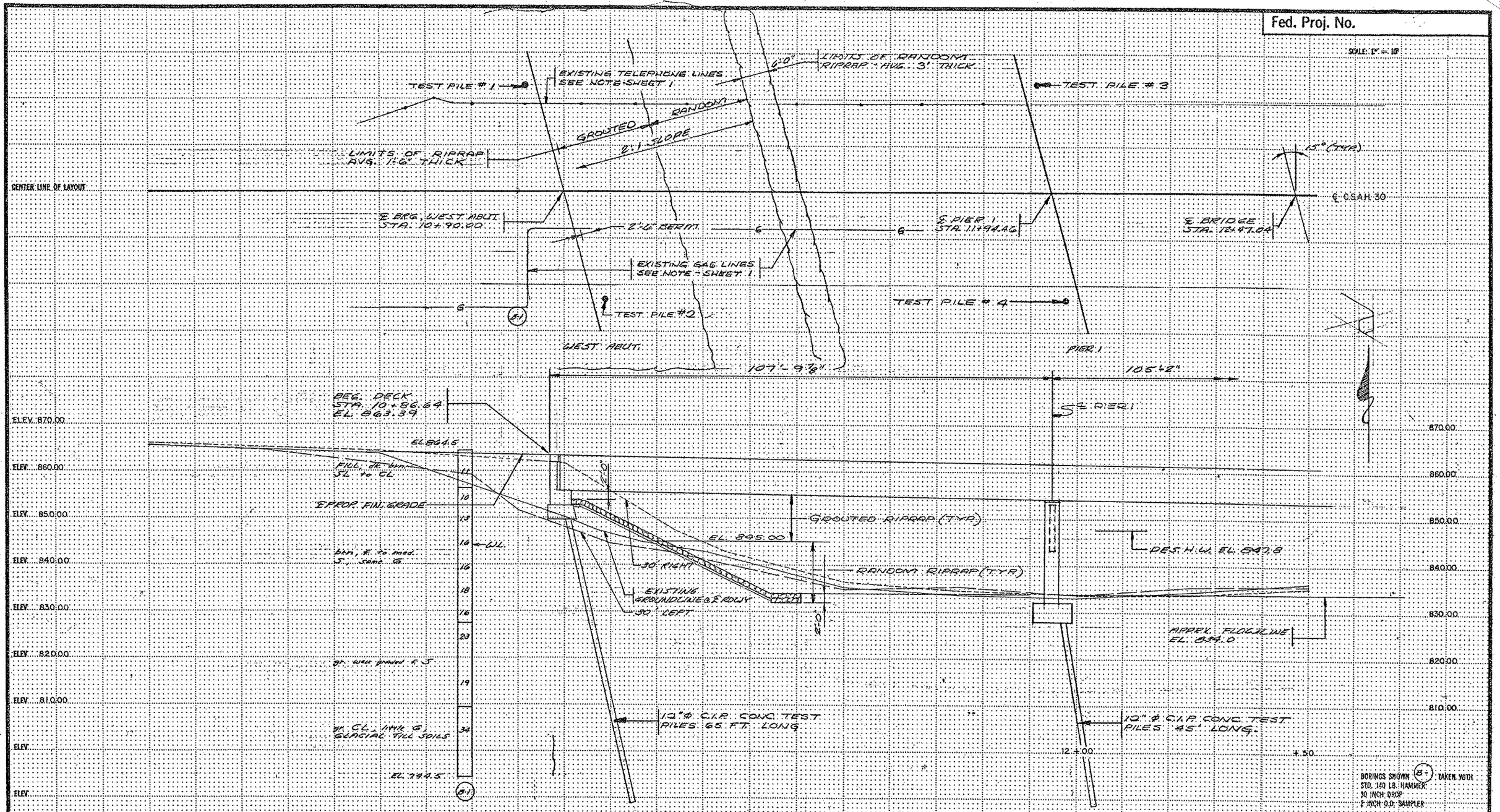
SEC. 6 TWP. 31 N. R. 24 W.
CITY (TOWNSHIP) ANOKA COUNTY ANOKA
SURVEY MADE DURING MONTH OF APRIL 1978
SURVEY MADE BY ROBERT TROMBLEY

BRIDGE NO. 02531

State Proj. No. S. P. 02-630-01 Sheet No. 33 of 36 Sheets

Fed. Proj. No.

SCALE: 1" = 10'



BORINGS SHOWN (B-1) TAKEN WITH
STD. 140 LB. HAMMER
30 INCH DROP
2 INCH O.D. SAMPLER

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN

For the design of the structure foundation, to obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing with the log of such exploration data as interpreted for such design purpose as shown. The explorations were made by ordinary and conventional methods and care deemed adequate for such purpose. However, since it is a matter of common knowledge that the exact character of any material and its reaction is difficult to determine from such subsurface exploration and that the kind and character of material at the site where the foundations are built may vary substantially from that indicated by the log they are made available to the bidders simply for what they are worth, without any warranty, expressed or implied that the material to be encountered in building the foundation will conform therewith, if the log is used by the contractor in making his bid, it is hereby expressly agreed that the Highway Department accepts no responsibility for said use.

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02531

BRIDGE SURVEY

PLAN AND PROFILE

SEE SHEET NO. FOR ADDITIONAL INFORMATION

State Proj. No. 02-630-01 Sheet No. 34 of 36 Sheets

Bridge Survey Sheet (Sheet 2 of 2)

Fed. Proj. No.

SCALE 1" = 10'

TEST PILE # 5

EXISTING TELEPHONE LINES SEE NOTE - SHEET 1

LIMITS OF RANDOM RIPRAP - AVG. 3' THICK

6.0"

GROUTED

LIMITS OF RIPRAP AVG. 1'-6" THICK

TEST PILE # 7

RANDOM

2:1 SLOPE

2'-0" BERM

LIMITS OF RANDOM RIPRAP SHOWN ARE APPROX ONLY. EXACT LIMITS ARE TO BE DETERMINED BY THE ENGINEER IN THE FIELD.

15° (TYP.)

℄ BRIDGE STA. 12+47.04

CENTER LINE OF LAYOUT

℄ PIER 2 STA. 12+99.62

℄ C.S.A.H. 30

℄ BRG. EAST ABUT. STA. 14+04.08

EXISTING GAS LINES SEE NOTE - SHEET 1

TEST PILE # 6

TEST PILE # 8

PIER 2

EAST ABUT.

105'-2½"

107'-9⅞"

℄ PIER 2

MHO

END DECK STA. 14+07.45 EL. 862.52

ELEV. 870.00

ELEV. 860.00

EXISTING GROUNDLINE @ ℄ ROUT.

30' RIGHT

30' LEFT

ELEV. 850.00

EL. 851.0

GROUTED RIPRAP (TYP.)

4x bm. SL

EL. 845.00

℄ PROP. FIN. GRADE

DES. H.W. EL. 847.8

LOW MEMBER EL. 853.09

RANDOM RIPRAP (TYP.)

bm. L to med S some G

ELEV. 840.00

bm. CL

bm. L to med S

ELEV. 830.00

APPROX. FLOWLINE EL. 834.0

℄ FILTER BLANKET

gr. med to coarse S. with G

gr. CL little G special fill soils

ELEV. 820.00

ELEV. 810.00

THE PLACING OF FILTER BLANKET MATERIAL MAY BE ELIMINATED IF IN THE JUDGEMENT OF THE ENGINEER THE MATERIAL IN PLACE WILL DRAIN PROPERLY WITHOUT SCOURING.

BRIDGE CONTRACTOR TO EXCAVATE & FILL TO THESE LINES FOR APPROX. 40 FT. LEFT AND RIGHT OF ℄ ROUT BETWEEN NEW ABUTMENTS. THEN TAPER AT A 2:1 SLOPE TO NATURAL CHANNEL SLOPES. INCLUDED IN PRICE BID FOR ¾ CU. YD. DRAGLINE. DRESS SLOPES & PLACE RIPRAP.

12"ϕ C.I.P. CONC. TEST PILES - 45' LONG - (PIERS)

12"ϕ C.I.P. CONC. TEST PILES - 65' LONG (ABUTS)

+5.0

13+00

+5.0

14+00

+5.0

15+00

EL. 791.0

BORINGS SHOWN (B-) TAKEN WITH STD. 140 LB. HAMMER 30 INCH DROP 2 INCH O.D. SAMPLER

SUBSURFACE EXPLORATION FOR FOUNDATION DESIGN

For the design of the structure foundation, to obtain relative data concerning the character of material in and upon which the foundation might be built, borings and/or soundings were made at points approximately as indicated on this drawing with the log of such exploration data as interpreted for such design purpose as shown. The explorations were made by ordinary and conventional methods and care deemed adequate for such purpose. However, since it is a matter of common knowledge that the exact character of any material and its reaction is difficult to determine from such subsurface exploration and that the kind and character of material at the site where the foundations are built may vary substantially from that indicated by the log they are made available to the bidders simply for what they are worth, without any warranty, expressed or implied that the material to be encountered in building the foundation will conform therewith. If the log is used by the contractor in making his bid, it is hereby expressly stipulated that the Highway Department accepts no responsibility for said use.

MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE NO. 02531

BRIDGE SURVEY

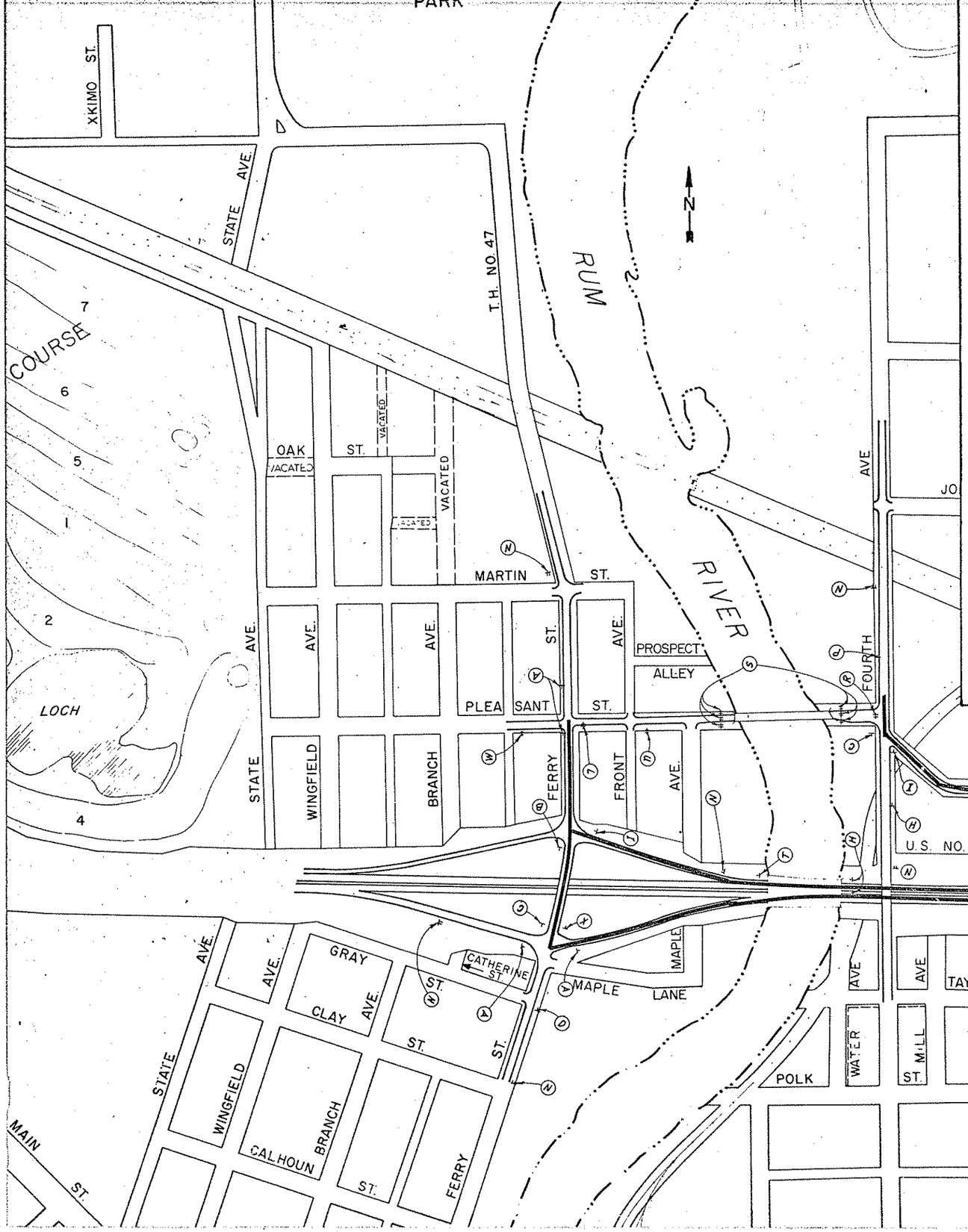
PLAN AND PROFILE

SEE SHEET NO. _____ FOR ADDITIONAL INFORMATION

State Proj. No. 02-630-01 Sheet No. 35 of 36 Sheets

Bridge Survey Sheet (Sheet 2 of 2)

B.M. ELEV. (M.S.L. DT. ADJ.)

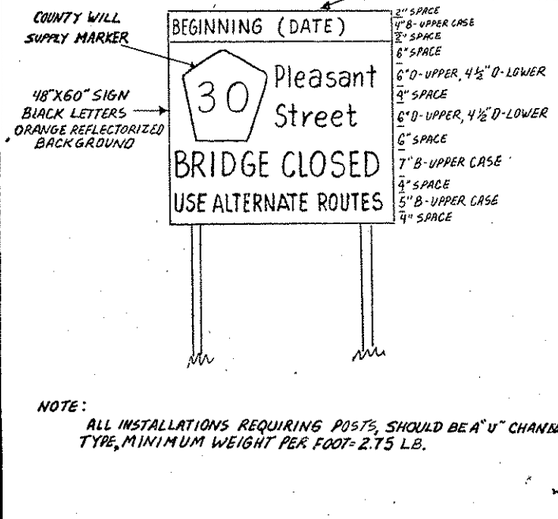


M.U.T.C.D. CODE	SIZE		INSTALLATION CODE	QUANTITY
M4-8	24"X12"		A	4
M3-2	24"X12"		D	3
M1-5	24"X24"		B	4
BLACK SERIES	4"B 8"X24"		C	5
M5, M6 SERIES	21"X15"		X	2
M4-8	24"X12"		T	1
M3-4	24"X12"		H	3
M1-5	24"X24"		I	4
BLACK SERIES	4"B 8"X24"		P	1
M5, M6 SERIES	21"X15"			
FLASHER R11-2	48"X30"	ROAD CLOSED DETOUR	R	1
M4-10L	48"X18" TYPE III 8FT BARR			
FLASHER R11-2	48"X30" TYPE III 8FT BARR	ROAD CLOSED	S	6
FLASHER W20-3	48"X48" TYPE III 8FT BARR	ROAD CLOSED AHEAD	U	1
FLASHER W20-2	48"X48" TYPE III 8FT BARR	DETOUR AHEAD	M	1
M.U.T.C.D. CODE	SIZE		INSTALLATION CODE	QUANTITY
R11-9	60"X30"	ROAD CLOSED TO THRU TRAFFIC DETOUR AHEAD	L	1
M4-10R	48"X18"			
TYPE III	8FT BARR			
			N	7

8"X60" REMOVABLE PANEL
BLACK LETTERS-NUMERALS
ORANGE REFLECTORIZED BACKGROUND

COUNTY WILL SUPPLY MARKER

48"X60" SIGN
BLACK LETTERS
ORANGE REFLECTORIZED BACKGROUND



NOTE:
ALL INSTALLATIONS REQUIRING POSTS, SHOULD BE A "U" CHANNEL TYPE, MINIMUM WEIGHT PER FOOT = 2.75 LB.

DETOUR SIGN DETAILS

3-14-80

S.P. 02-630-01 Sheet No. 36 of 36 Sheets