

REPORT ON INVESTIGATIONS
FOR
CONSTRUCTION OF THE CORAL RIVER BRIDGE
EAST PAKISTAN
SERIES I

NOV 1967

OVERSEAS TECHNICAL COOPERATION AGENCY
GOVERNMENT OF JAPAN

JICA LIBRARY

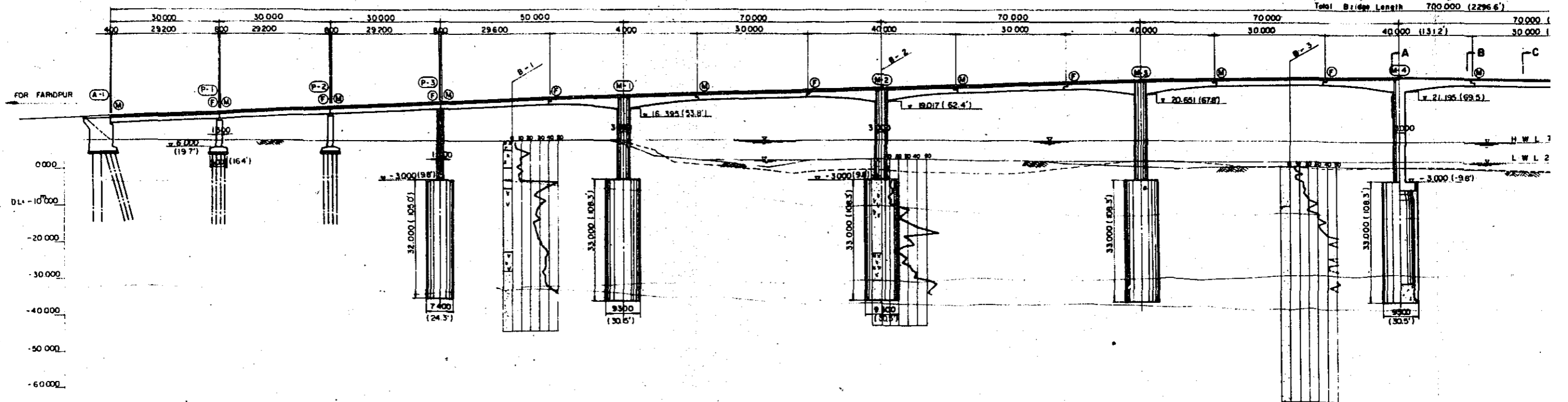


1011802[4]

國際協力事業団	
受入 月日 '84. 5. 19	101
登録No. 05928	61.5
	SD

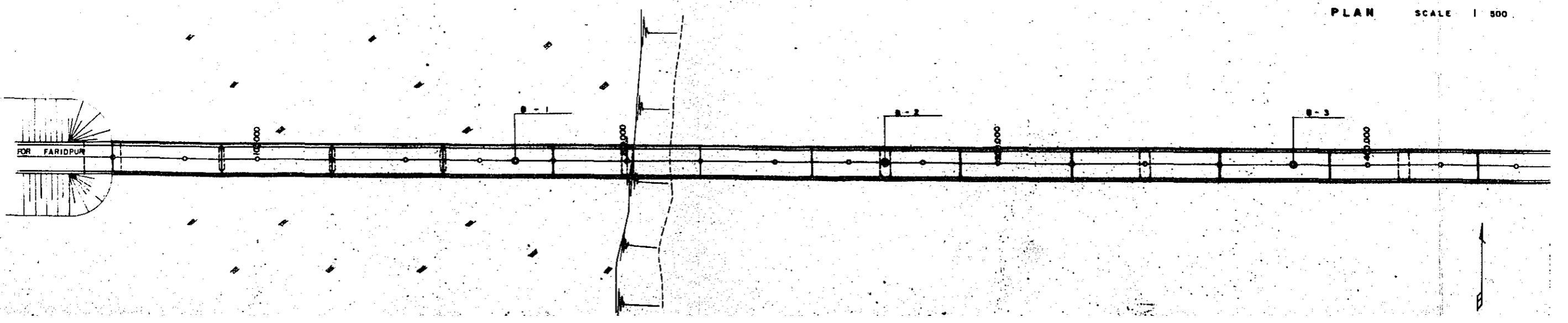
GENERAL PLAN OF GARAI RIVER BRIDGE

SIDE VIEW SCALE 1/500



ACCUM DISTANCE	GROUND HEIGHT	FORMATION HEIGHT	GRADE
60,000	7.841	14.400	1:400
80,000	7.902	15.600	
90,000	7.933	16.800	
100,000	7.933	18.000	
120,000	7.841		
140,000	7.782		
160,000	7.732		
170,000	7.680		
180,000	7.512		
190,000	7.452		
200,000	6.750	20,000	
202,400	5.800		
208,000	5.400		
220,000	2.500	20,800	
221,500	2.300		
230,000	0.550	21,200	
238,000	0.850		
240,000	0.850		
250,000	2.300	21,956	
260,000	2.550		
270,000	2.700	22.62	
280,000	2.850		
290,000	2.320	23,200	
300,000	2.320		
314,500	2.200		
320,000	1.450	23,900	
340,000	0.700	24,286	
351,000	0.050		
360,000	0.700	24.522	
380,000	0.840		
390,000	0.850	24.756	
400,000	0.850		
410,000	0.560	24.800	
420,000	0.560		
430,000	0.300	24.756	
440,000	0.300		

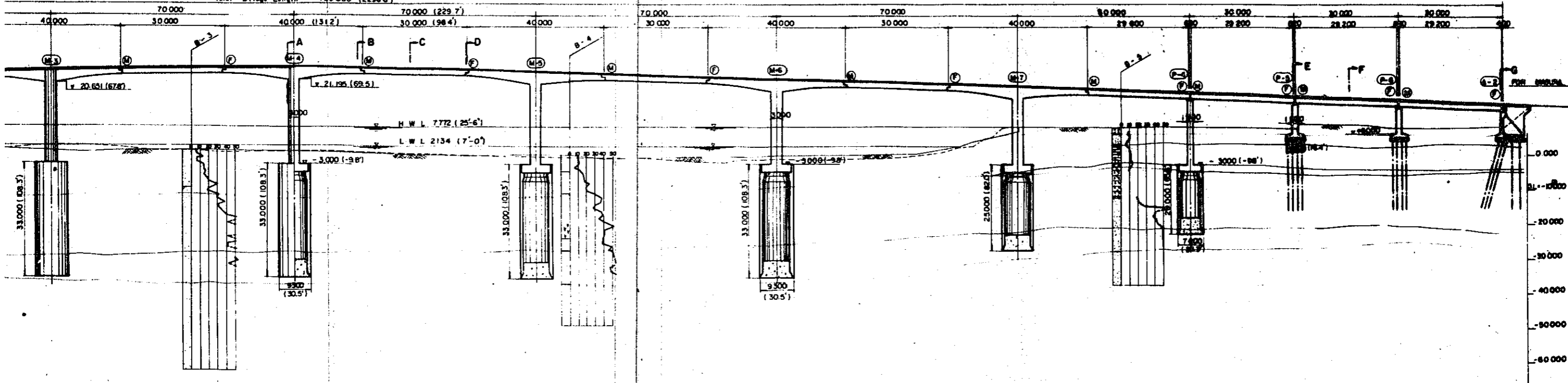
PLAN SCALE 1/500



GENERAL PLAN OF GARAI RIVER BRIDGE

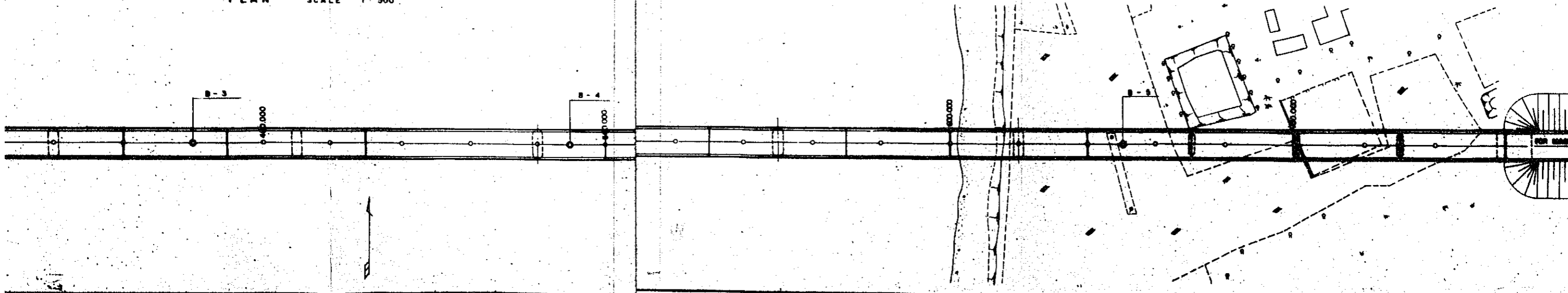
SIDE VIEW SCALE 1/500

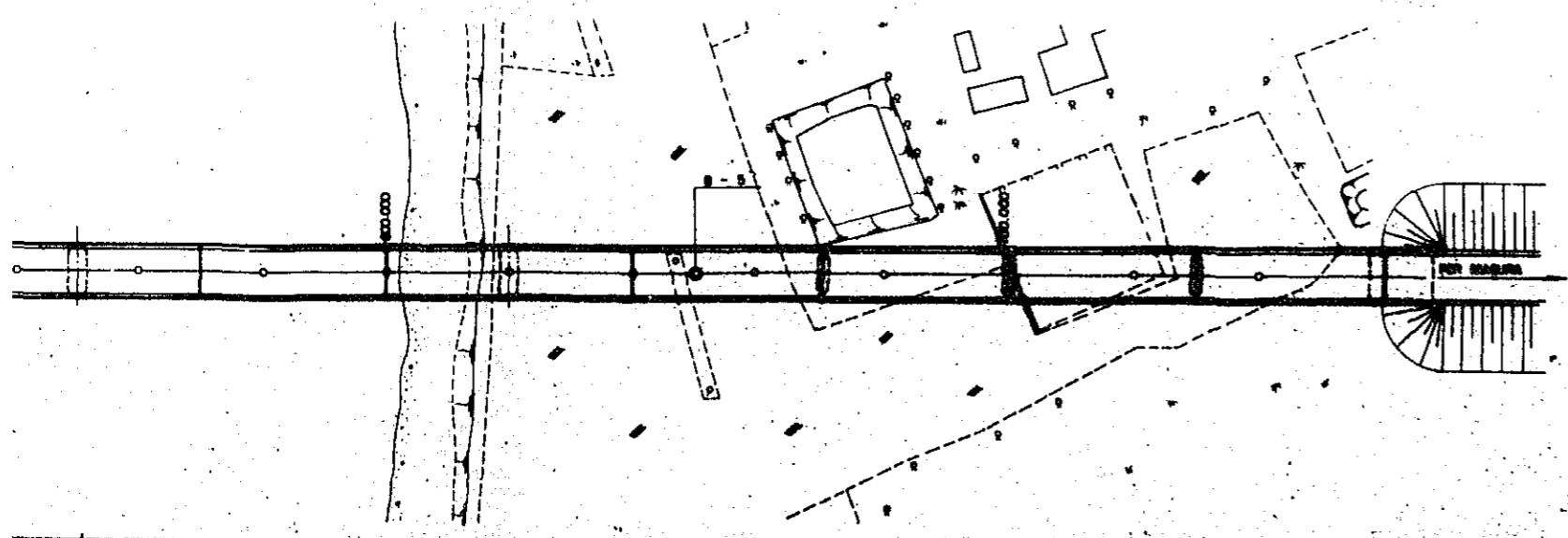
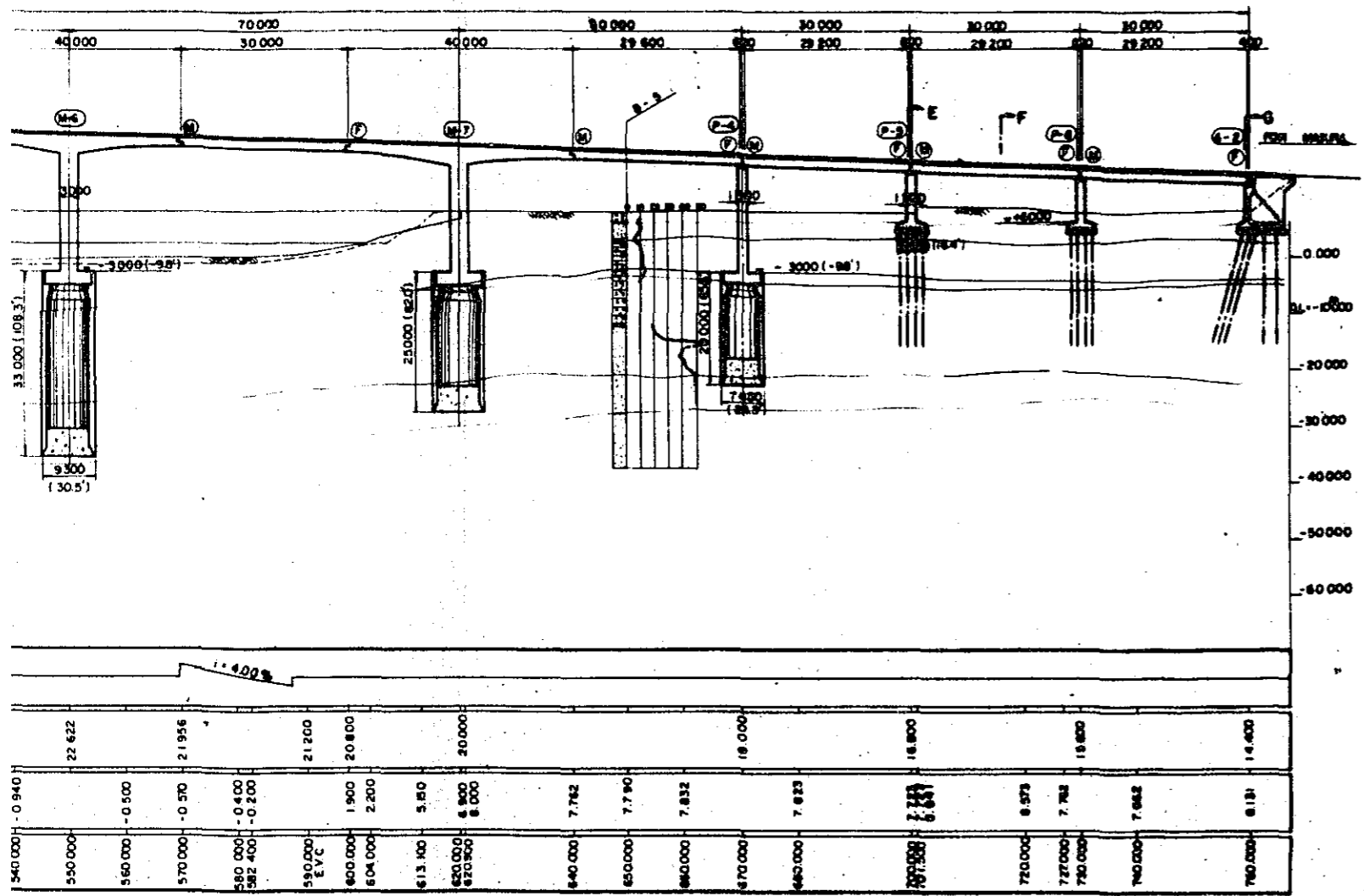
Total Bridge Length 700.000 (2296.6')



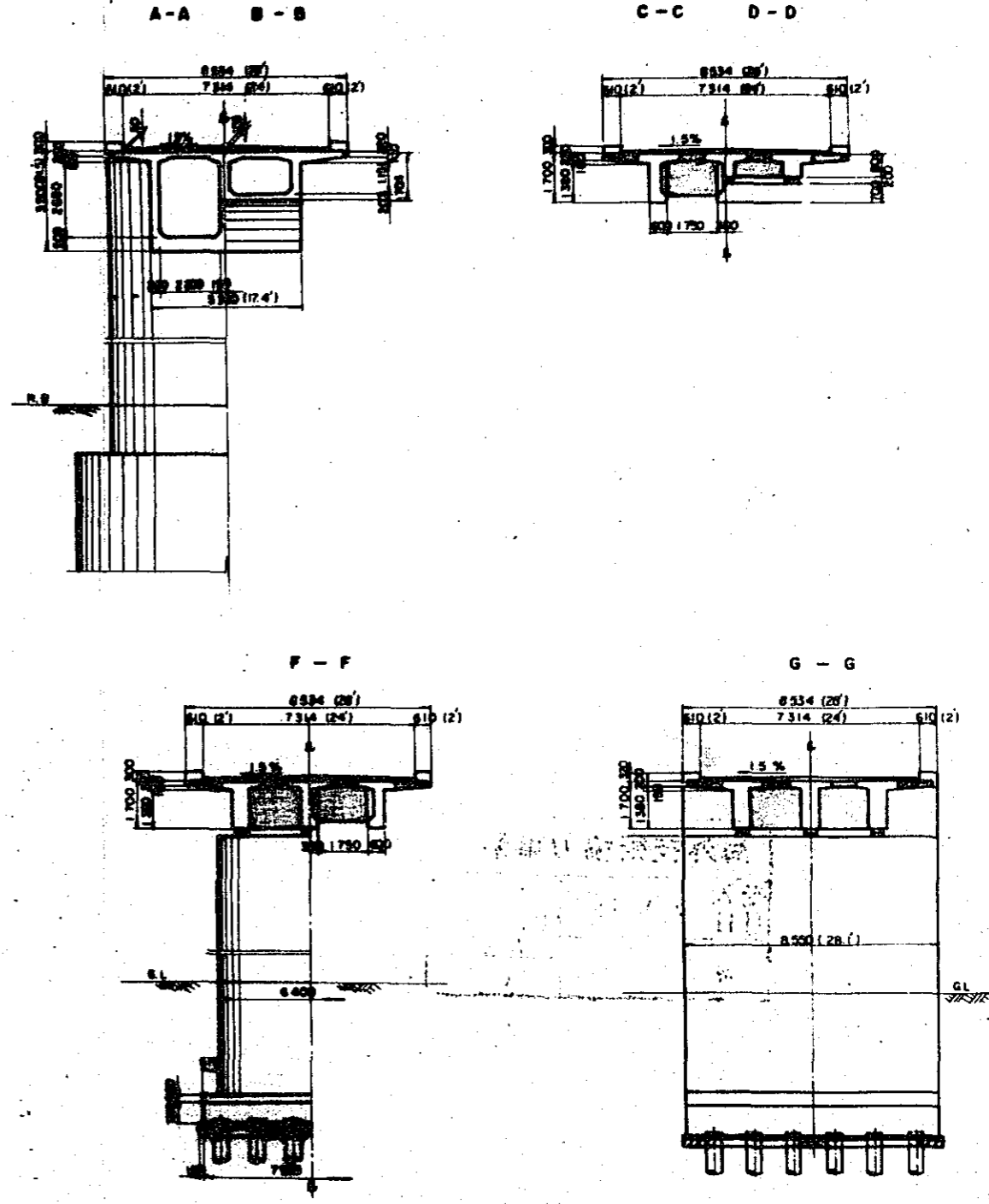
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0.700	0.050	0.770	0.940	0.850	0.560	-0.300	-0.680	-0.550	-0.380	-1.300	-1.000	-0.940	-0.500	-0.570	-0.400	-0.200	1.900	2.200	5.850	4.900	8.000	7.782	7.790	7.832	7.823	7.782	7.790	7.832	7.823	7.782	7.790	7.832	7.823	7.782	7.790	7.832	7.823	8.131			
24.256	24.522	24.756	24.800	24.756	24.522	24.256	23.900	23.200	22.622	21.956	21.200	20.800	20.000	18.000	16.800	15.600	14.400	13.200	12.000	10.800	9.600	8.400	7.200	6.000	4.800	3.600	2.400	1.200	0.000	-1.200	-2.400	-3.600	-4.800	-6.000	-7.200	-8.400	-9.600	-10.800	-12.000	-13.200	-14.400

PLAN SCALE 1/500



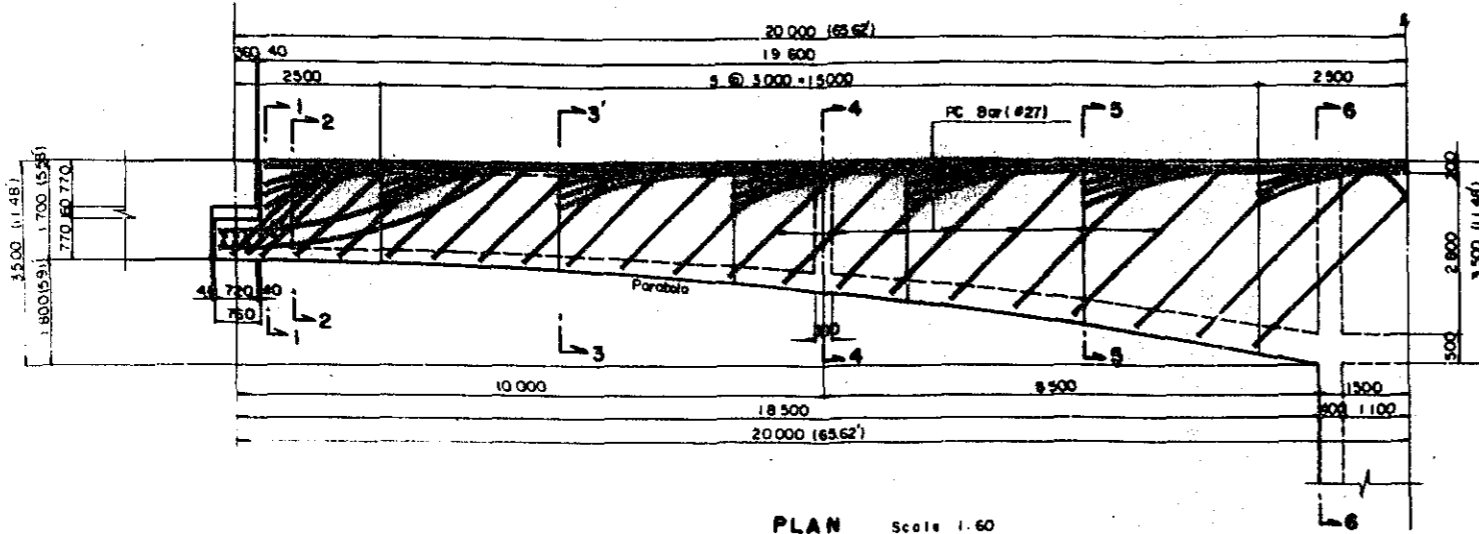


CROSS SECTION
SCALE 1:100

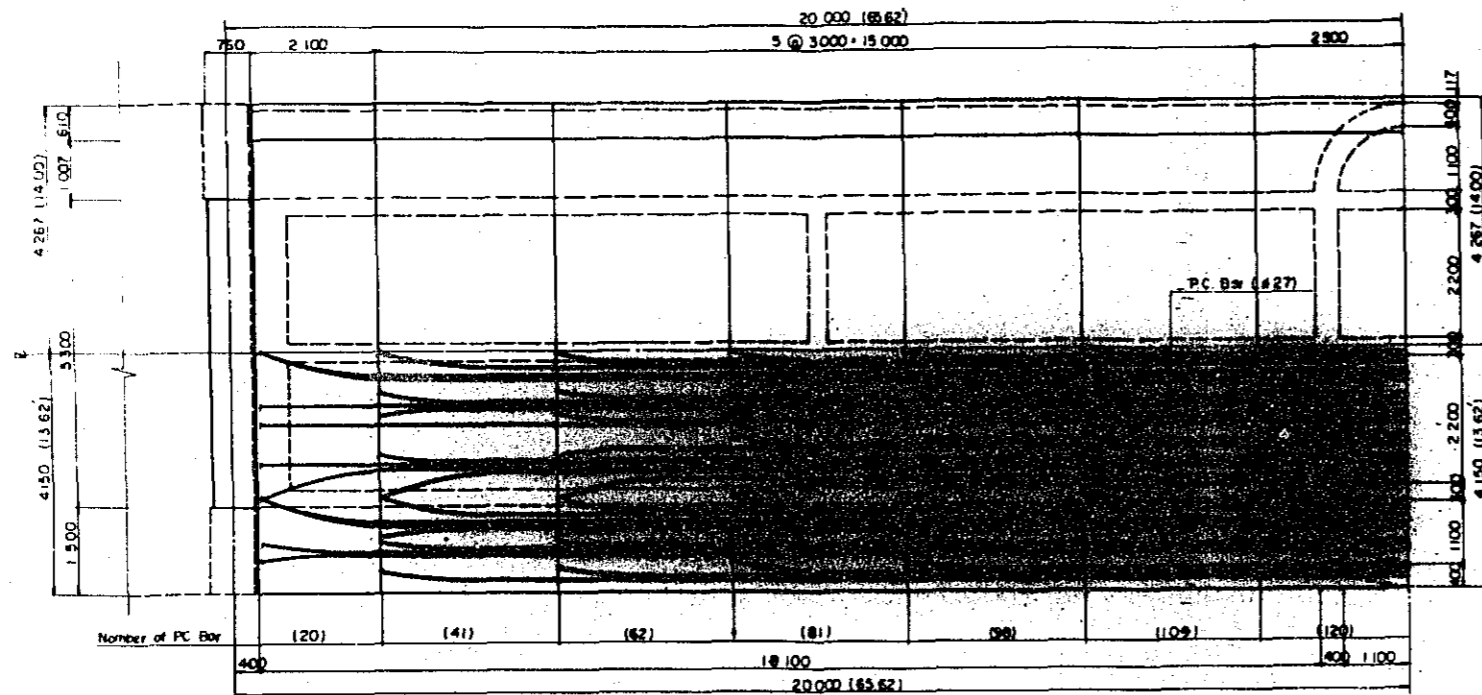


OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PUBLIC CONSULTANTS, TOKYO, JAPAN	
EAST, PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DECK P.C. BRIDGE	
GENERAL VIEW	
SCALE	1:500
SHEET NO.	1
DATE	Aug 1971

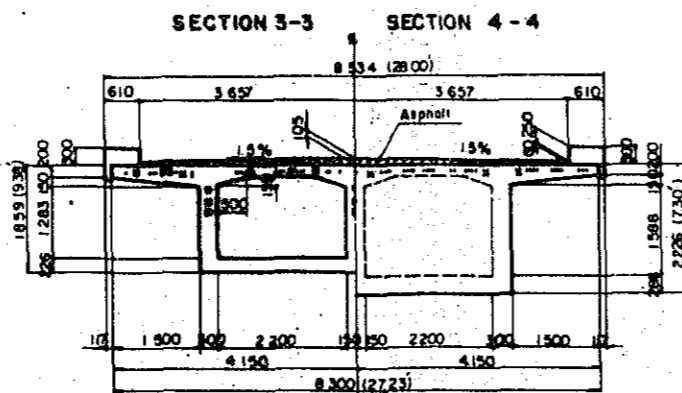
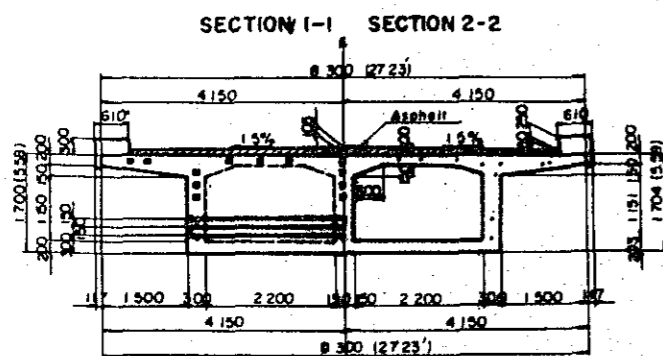
SIDE VIEW Scale 1:60



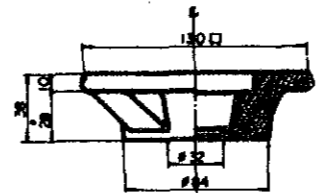
PLAN Scale 1:60



ELEVATION Scale 1:60

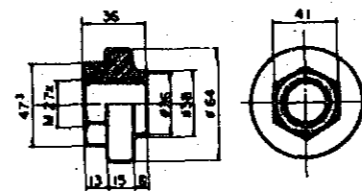


ANCHORAGE Scale 1:20



ANCHOR PLATE S35C

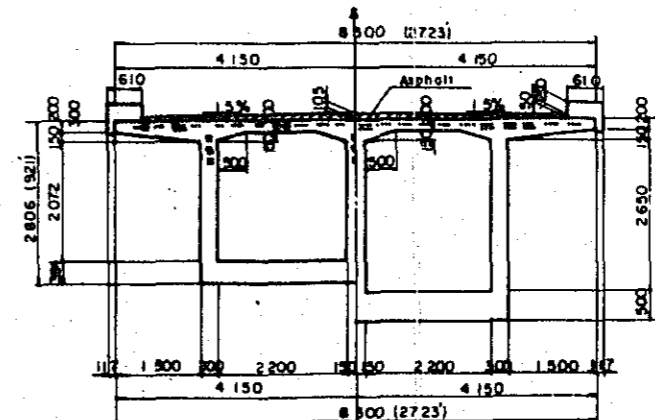
NUT #27 mm S35C



DESIGN DATA

1. TYPE	POST TENSIONING CONCRETE CANTI-LEVER GIRDER IN DYWIDAG METHOD
2. SPAN LENGTH	70.000 m
3. SUSPENDED SPAN	30.000 m
4. EFFECTIVE WIDTH	7.314 m
5. LIVE LOAD	H-20
6. IMPACT COEFFICIENT	$1 + \frac{V}{L}$ L in feet
7. CROSS GRADE	1.5 %
8. CONCRETE	
COMPRESSIVE STRENGTH AT 28 DAYS	350 kg/cm ²
COMPRESSIVE STRENGTH AT PRESTRESSING	200 kg/cm ²
ALLOWABLE COMPRESSIVE STRESS DUE TO BENDING UNDER DESIGN LOAD	115 kg/cm ²
ALLOWABLE COMPRESSIVE STRESS DUE TO BENDING AT PRESTRESSING	150 kg/cm ²
ALLOWABLE TENSILE STRESS DUE TO BENDING UNDER DESIGN LOAD	13.5 kg/cm ²
ALLOWABLE TENSILE STRESS DUE TO BENDING AT PRESTRESSING	13.5 kg/cm ²
ALLOWABLE DIAGONAL TENSILE STRESS UNDER DESIGN LOAD	18 kg/cm ²
9. PC BAR	#27
ULTIMATE TENSILE STRENGTH	$\sigma_{pu} = 105 \text{ kg/mm}^2$
YIELDING POINT	$\sigma_{py} = 80 \text{ kg/mm}^2$
ALLOWABLE TENSILE STRESS UNDER DESIGN LOAD	$0.75 \times \sigma_{pu} = 60 \text{ kg/mm}^2$
ALLOWABLE TENSILE STRESS AT PRESTRESSING	$0.9 \times \sigma_{py} = 72 \text{ kg/mm}^2$
10. BAR	SS 41
ULTIMATE TENSILE STRENGTH	4100 kg/cm ²
ALLOWABLE TENSILE STRENGTH	1400 kg/cm ²
11. SAFETY FACTOR	
BREAKING	$1.75 \frac{(M_o + M_L)}{M_o}$
12. MAXIMUM SIZE OF AGGREGATE	25 mm

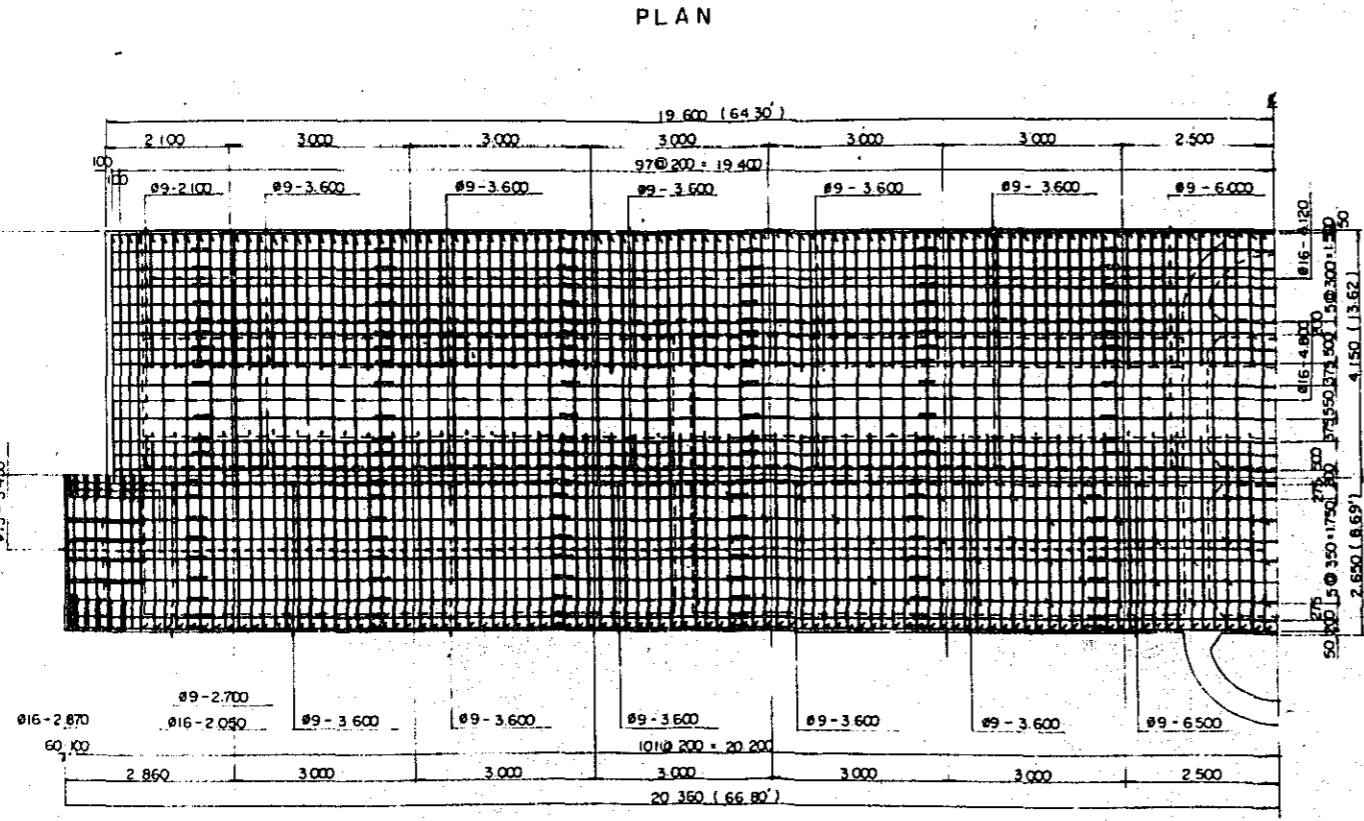
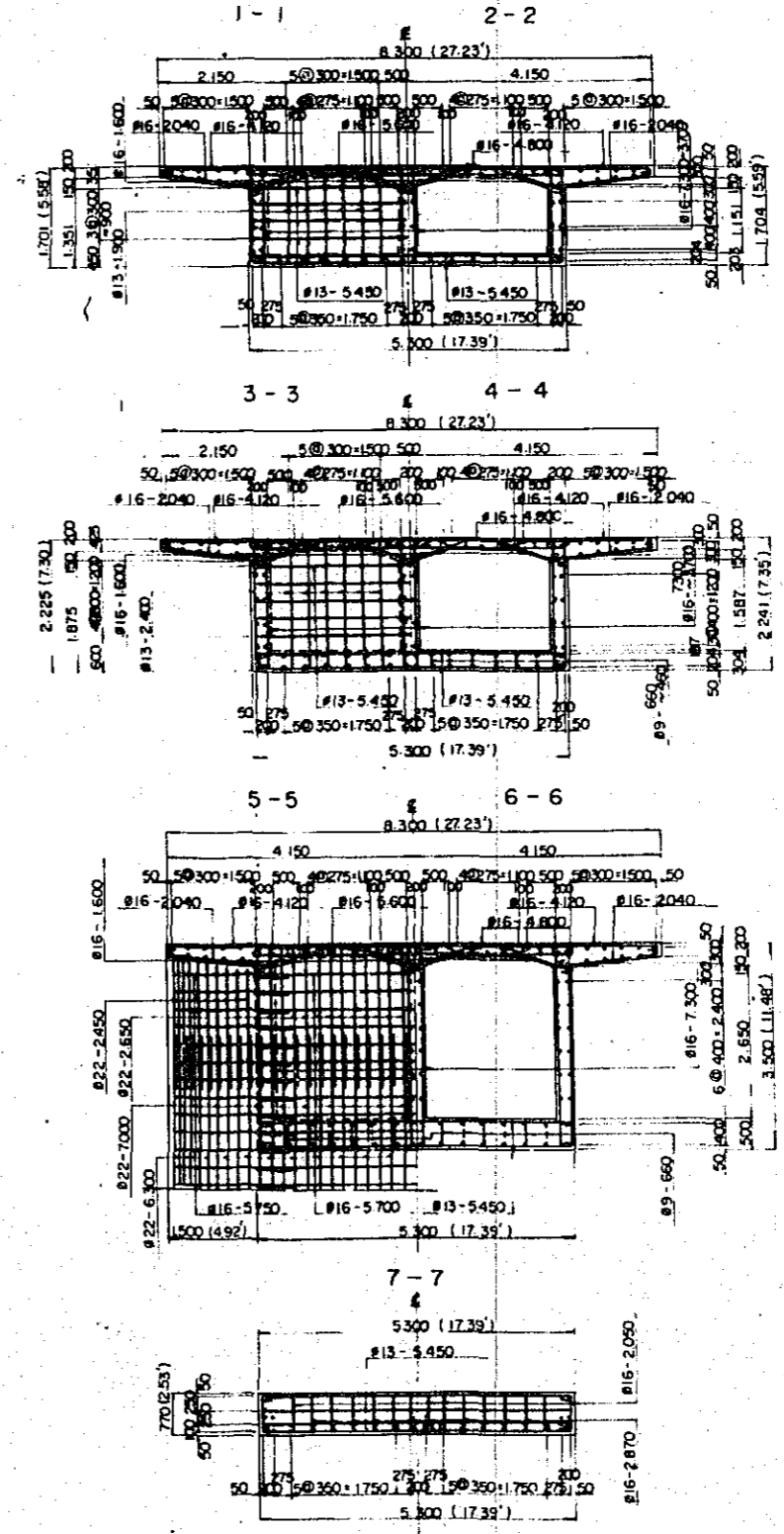
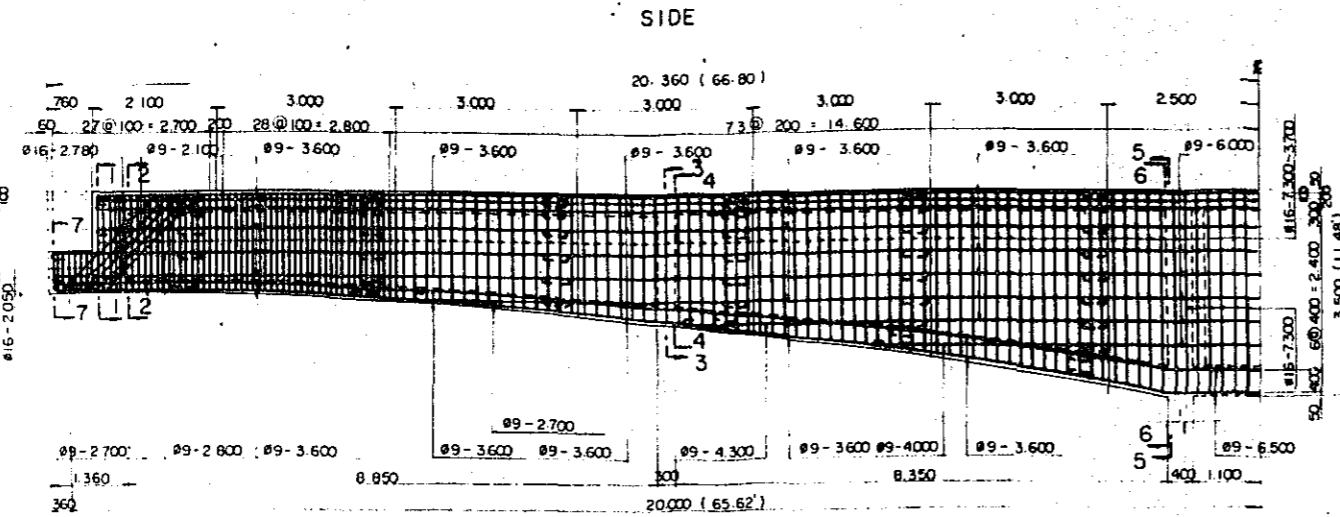
SECTION 5-5 SECTION 6-6



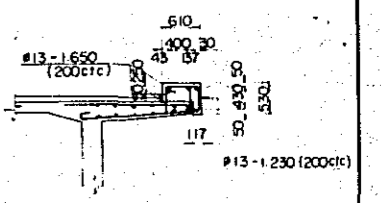
OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO, JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL PC BRIDGE GIRDER	
CHECKED BY: [Signature]	SCALE: 1:20 1:60
DESIGNED BY: [Signature]	DRAWING NO: 2
DATE: [Signature]	DATE: Aug. 1967

BAR ARRANGEMENT SCALE 1:60

SECTION SCALE 1:60

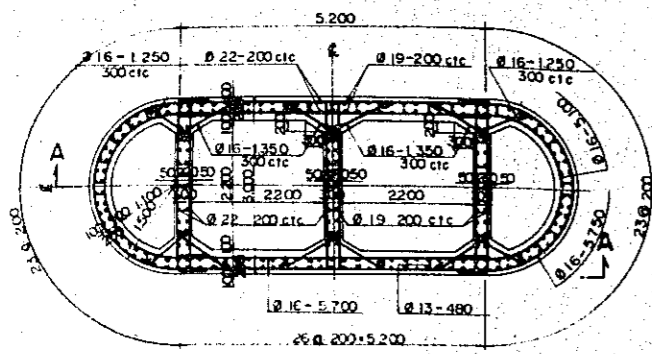


DETAIL OF CURB SCALE 1:60

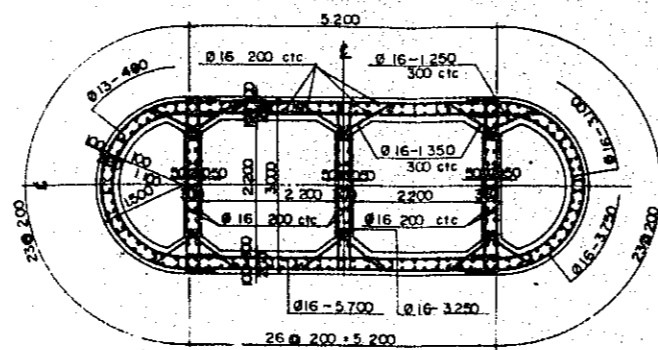


OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO JAPAN	
EAST PAKISTAN GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL R.C. BRIDGE GIRDER	
CHEF ENG. <i>[Signature]</i>	SCALE 1:60
CHECKED BY <i>[Signature]</i>	SHEET NO 3
DESIGNED BY <i>[Signature]</i>	DATE <i>[Date]</i>
DRAWN BY <i>[Signature]</i>	

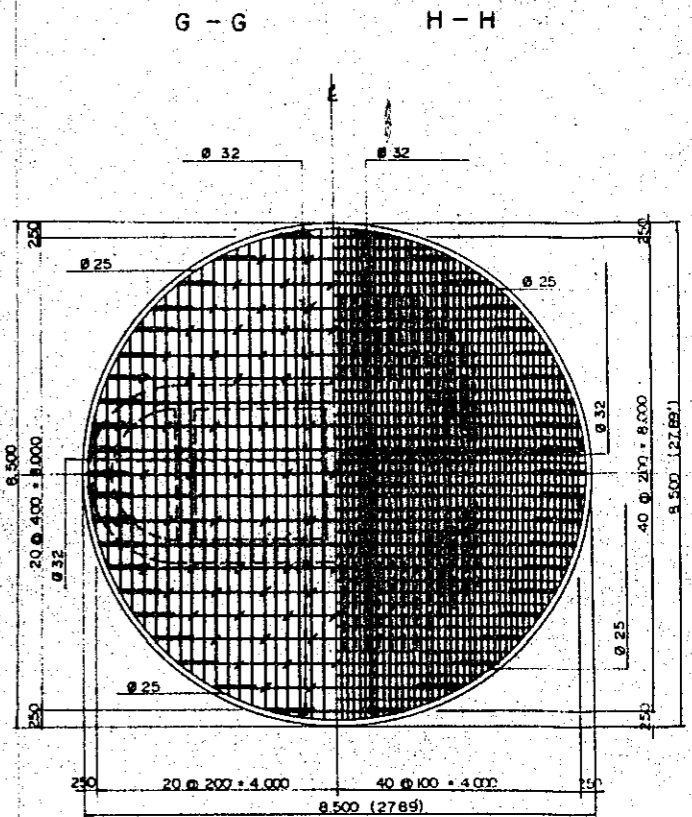
SECTION D-D E-E



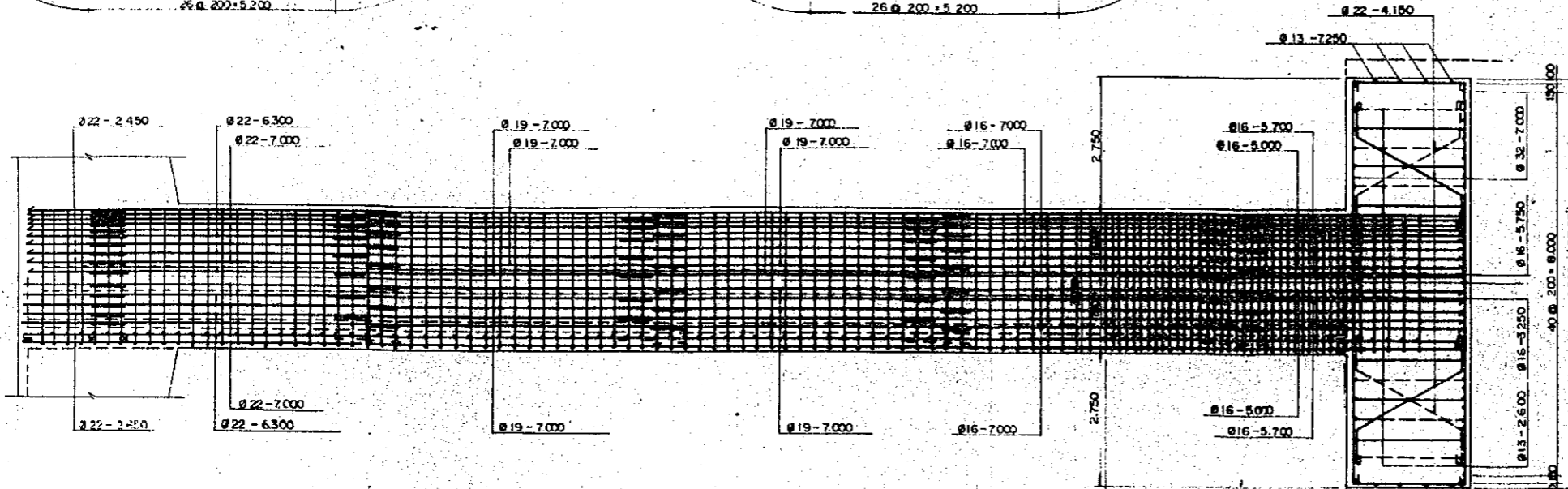
SECTION F-F



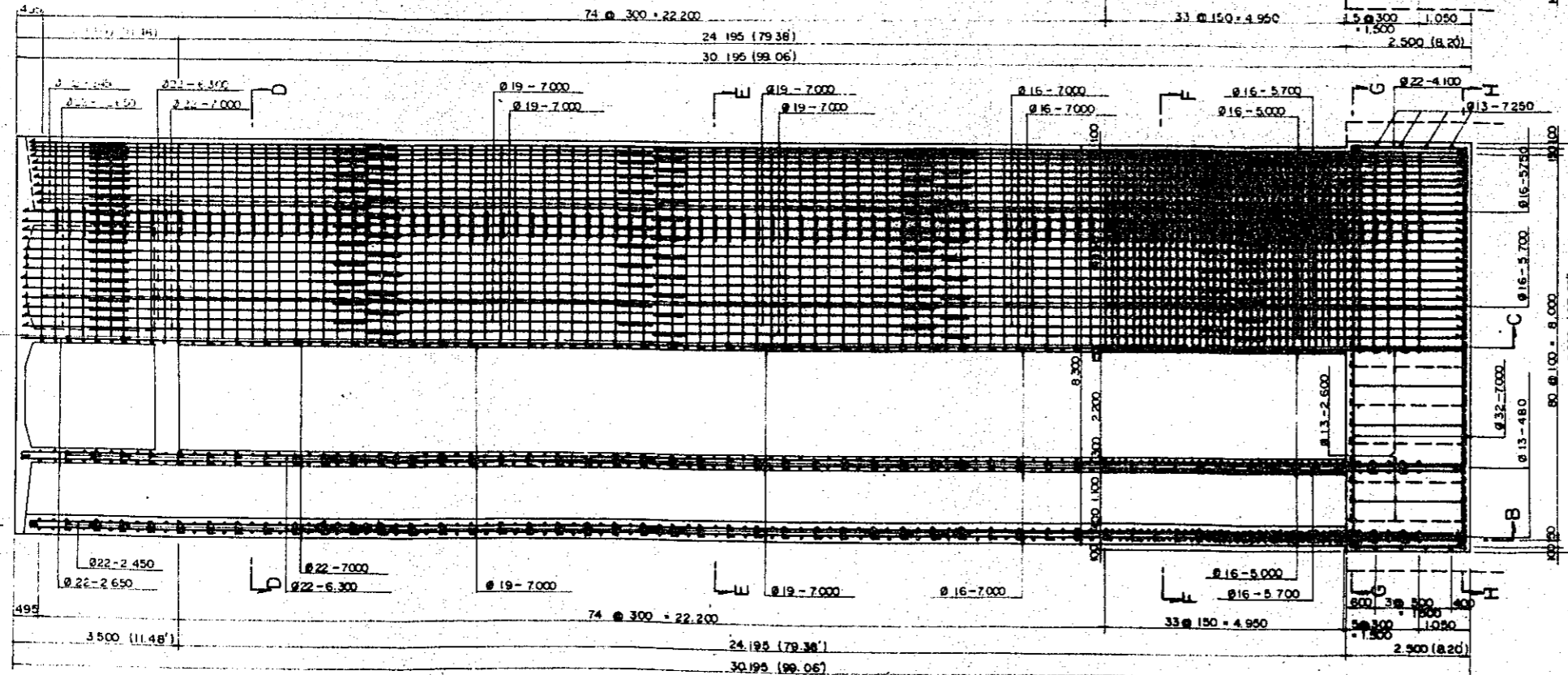
SECTION G-G H-H



DETAIL OF M-1-7 Scale 1:60 SECTION C-C SECTION B-B



SECTION A-A

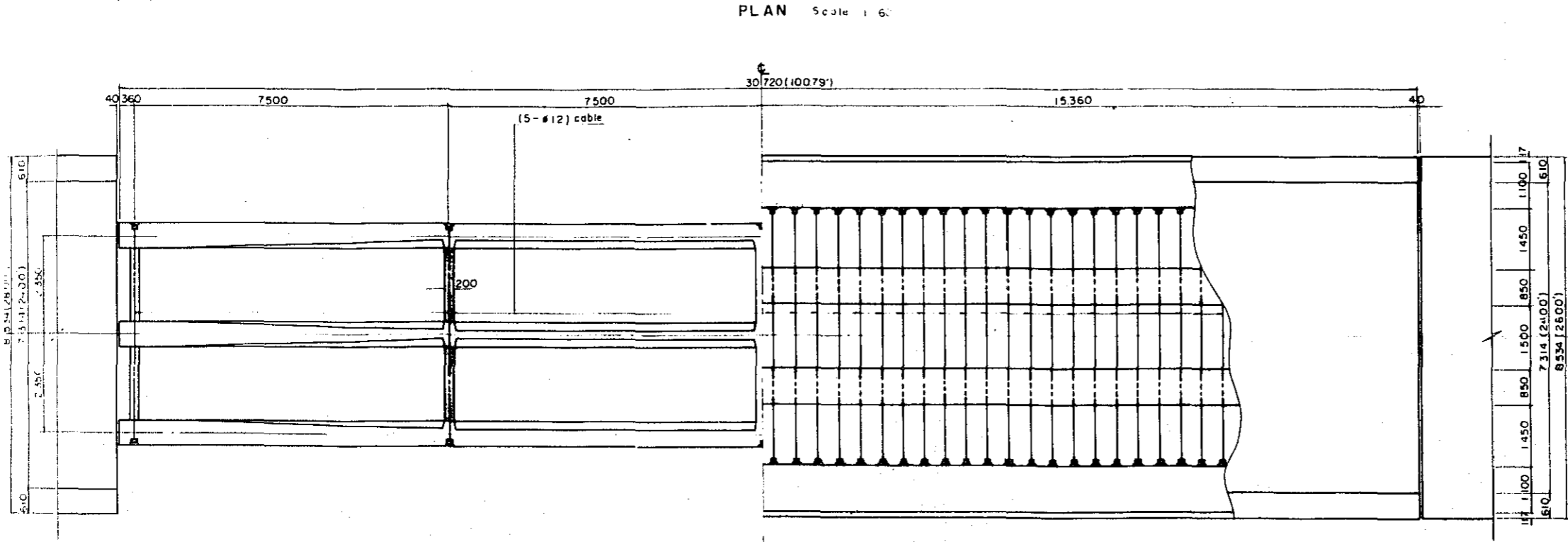
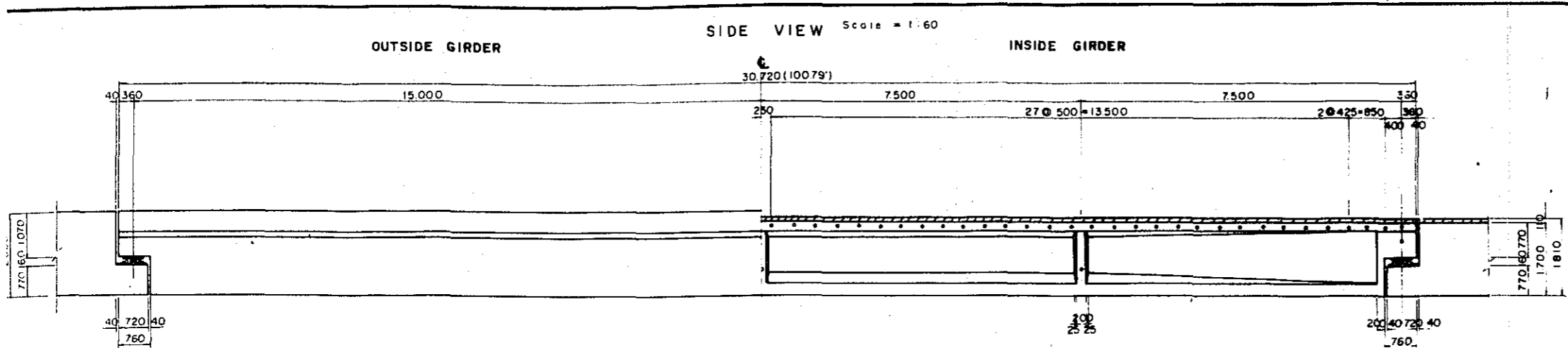


LENGTH OF PIERS

Pier No.	H 1	H 2
M-1 (M-7)	22.895	19.395
M-2 (M-6)	25.517	22.017
M-3 (M-5)	27.151	23.651
M-4	27.695	24.195

OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN
 PACIFIC CONSULTANTS K. K., TOKYO JAPAN
 EAST PAKISTAN
 GARAI RIVER BRIDGE PROJECT
 TYPICAL DETAIL RC. BRIDGE
 PIER M-1-7

SCALE 1:60
 SHEET NO. 4
 DATE Aug 1961

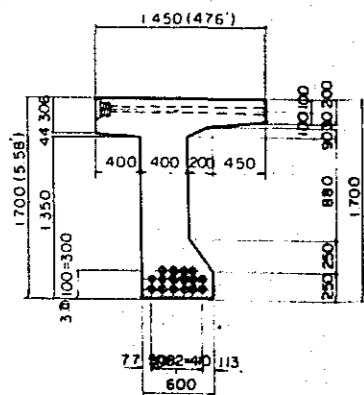


MATERIAL STRENGTH

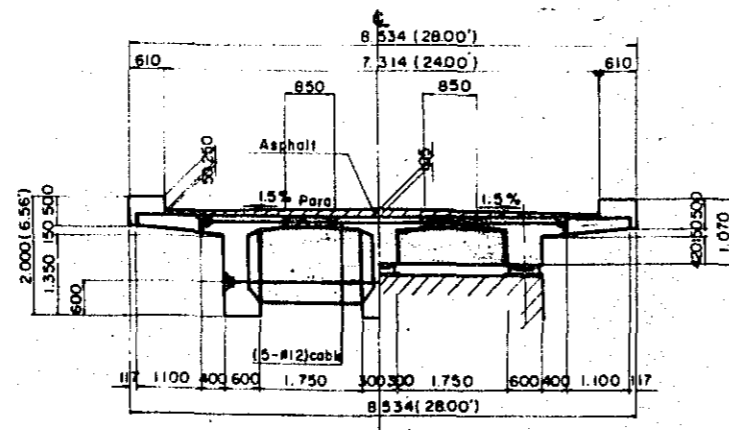
CONCRETE	PRESTRESSED CONCRETE SUSPENDED CANTILEVER GIRDER
COMPRESSIVE STRENGTH AT 28 DAYS	350 kg/cm ²
ALLOWABLE BENDING COMPRESSIVE STRESS	115
ALLOWABLE BENDING TENSILE STRESS	-135
COMPRESSIVE STRENGTH AT TIME INITIAL STRESS	300
MAXIMUM SIZE OF GRAVEL	25 mm

PC WIRE	PRESTRESSING WIRE d 7 mm
ULTIMATE TENSILE STRENGTH	155 kg/mm ²
YIELD POINT STRESS	135
ALLOWABLE TENSILE STRESS UNDER DESIGN LOAD	93
ALLOWABLE TENSILE STRESS AT PRESTRESSING	121.5

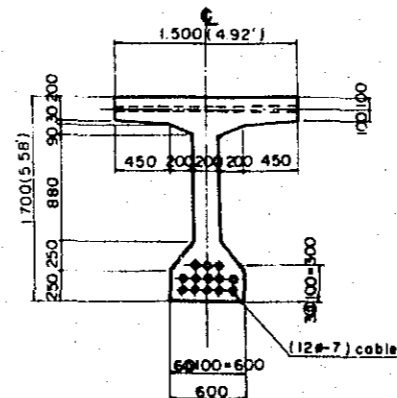
DETAIL SECTION OF OUTSIDE GIRDER Scale 1:30



CROSS SECTION Scale 1:60



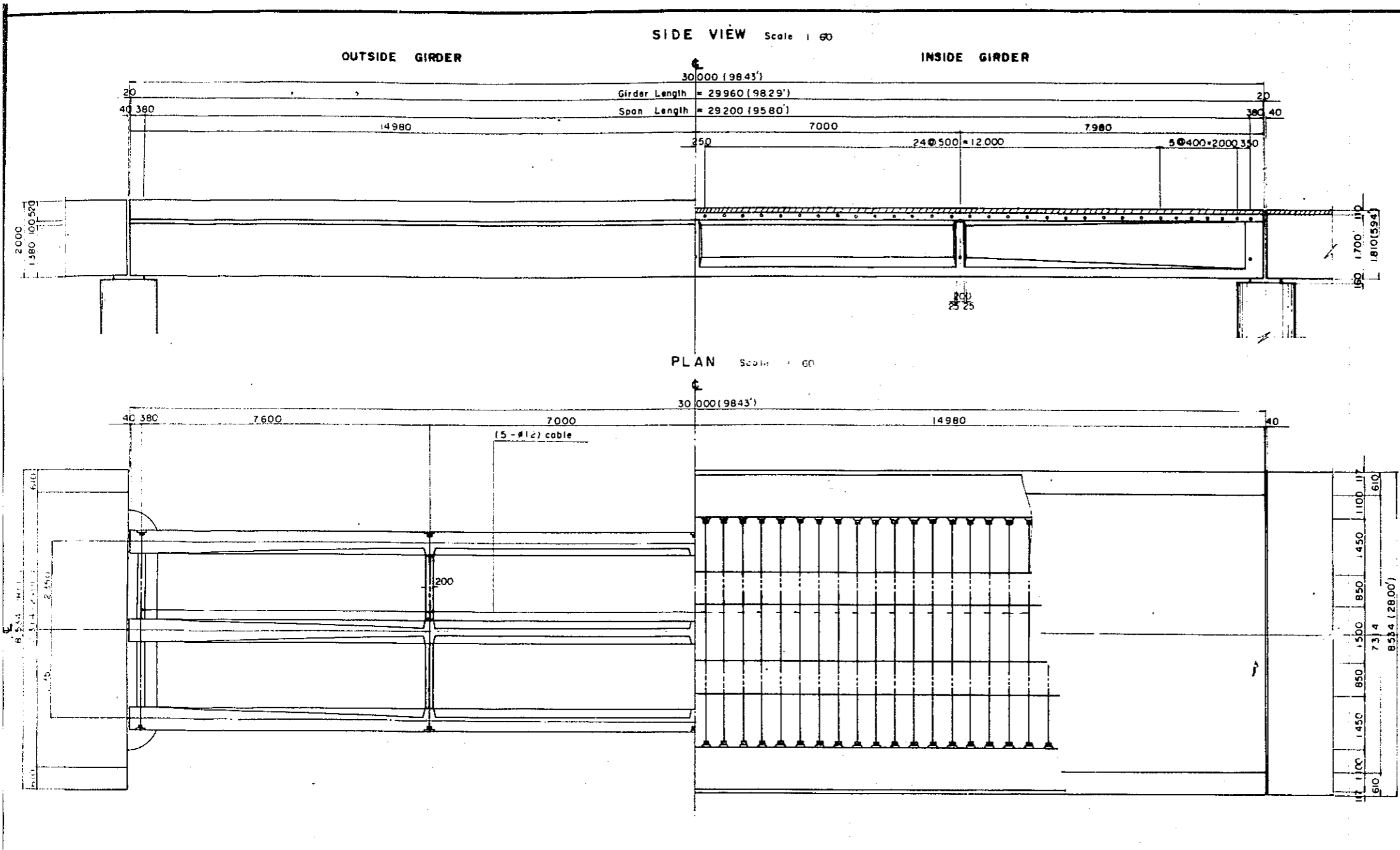
DETAIL SECTION OF INSIDE GIRDER Scale 1:30



OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN
 PACIFIC CONSULTANTS K.K. TOKYO JAPAN
 EAST PAKISTAN GARAJI RIVER BRIDGE PROJECT
 TYPICAL DETAIL P.C. BRIDGE GENERAL VIEW

CHEF. ENG. [Signature]
 CHECKED BY [Signature]
 DESIGNED BY [Signature]
 DRAWN BY [Signature]

SCALE 1:60
 SHEET NO. 5
 DATE Aug. 1967

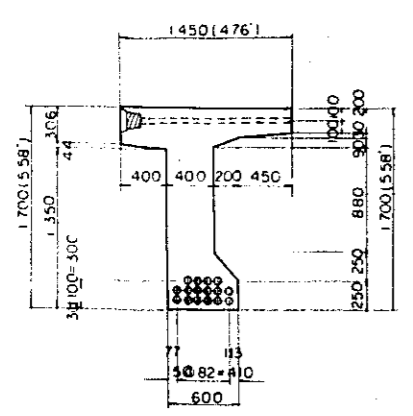


MATERIAL STRENGTH

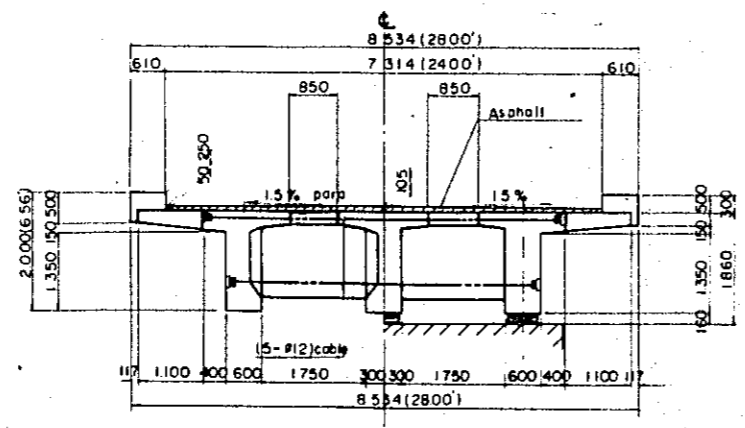
CONCRETE	PRESTRESSED CONCRETE SUSPENDED CANTILEVER GIRDER
COMPRESSIVE STRENGTH AT 28 DAYS	350 kg/cm ²
ALLOWABLE BENDING COMPRESSIVE STRESS	115
ALLOWABLE BENDING TENSILE STRESS	-13.5
COMPRESSIVE STRENGTH AT TIME INITIAL STRESS	300
MAXIMUM SIZE OF GRAVEL	25 mm

PC WIRE	PRESTRESSING WIRE (#7) mm
ULTIMATE TENSILE STRENGTH	155 kg/mm ²
YIELD POINT STRESS	135
ALLOWABLE TENSILE STRESS UNDER DESIGN LOAD	93
ALLOWABLE TENSILE STRESS AT PRESTRESSING	121.5

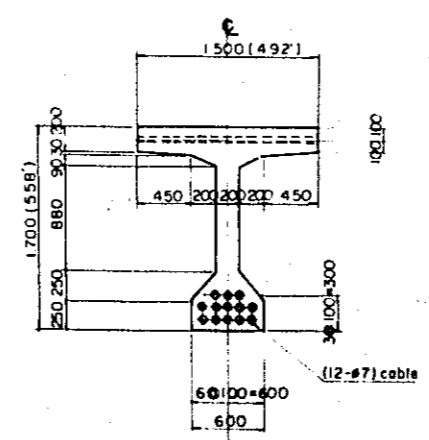
DETAIL SECTION OF OUTSIDE GIRDER Scale 1:30



CROSS SECTION Scale 1:60



DETAIL OF INSIDE GIRDER Scale 1:30

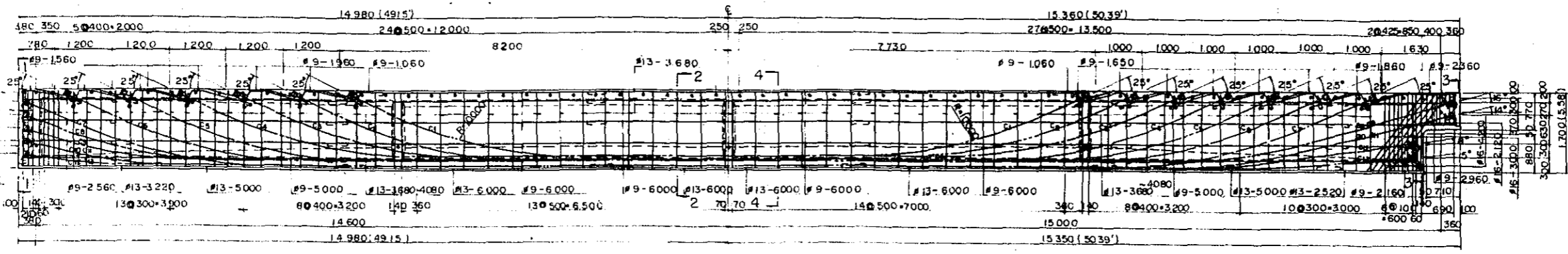


OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K. K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL P.C. BRIDGE GENERAL VIEW	
CHIEF ENGINEER	SCALE 1:30 1:60
CHECKED BY	SHEET NO 6
DESIGNED BY	DATE
DRAWN BY	DATE

BAR ARRANGEMENT SCALE 1:50

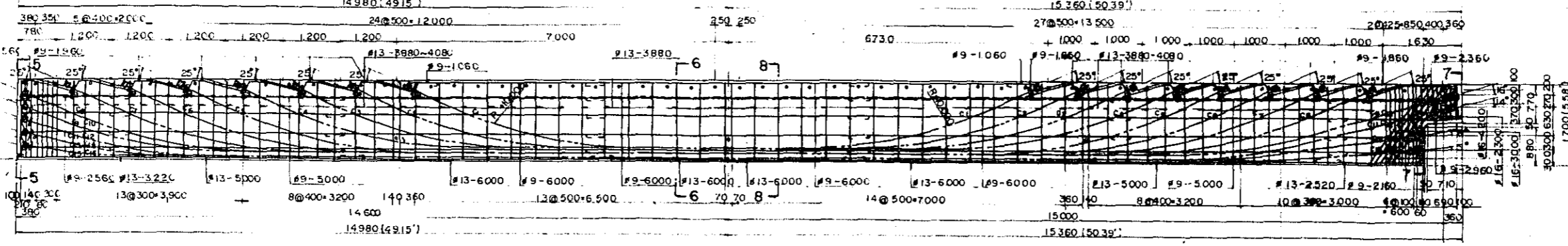
APPROACH
INSIDE GIRDER

SUSPENSION
INSIDE GIRDER

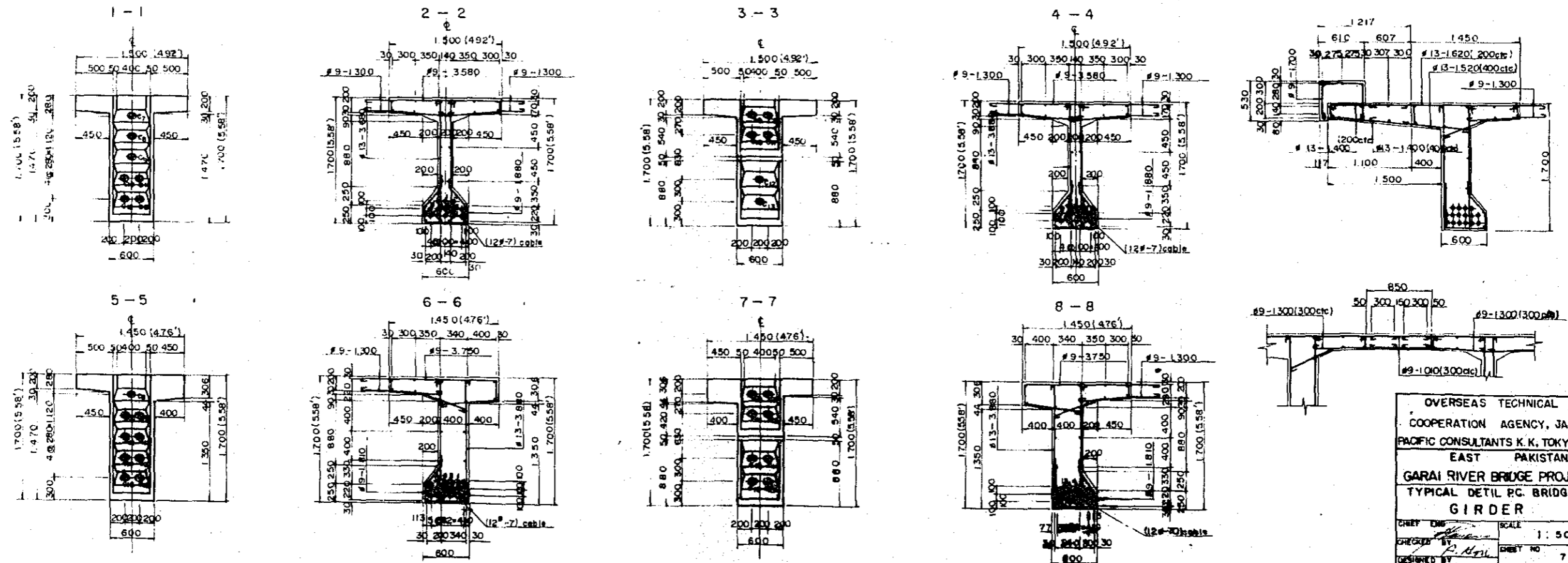


OUTSIDE GIRDER

OUTSIDE GIRDER



SECTION SCALE 1:30



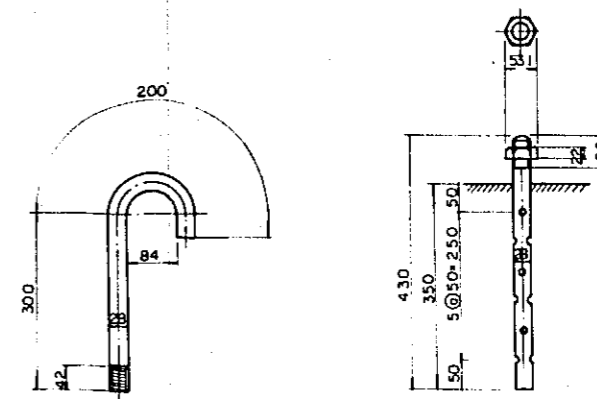
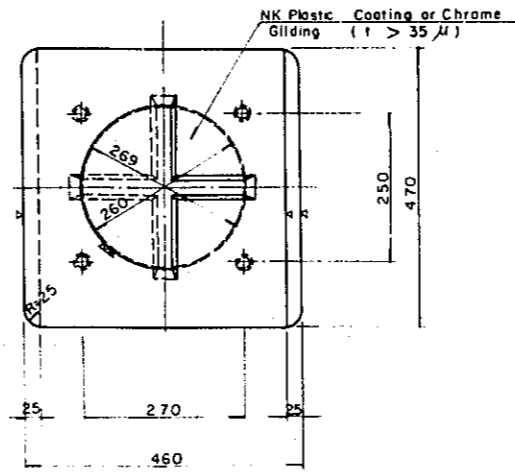
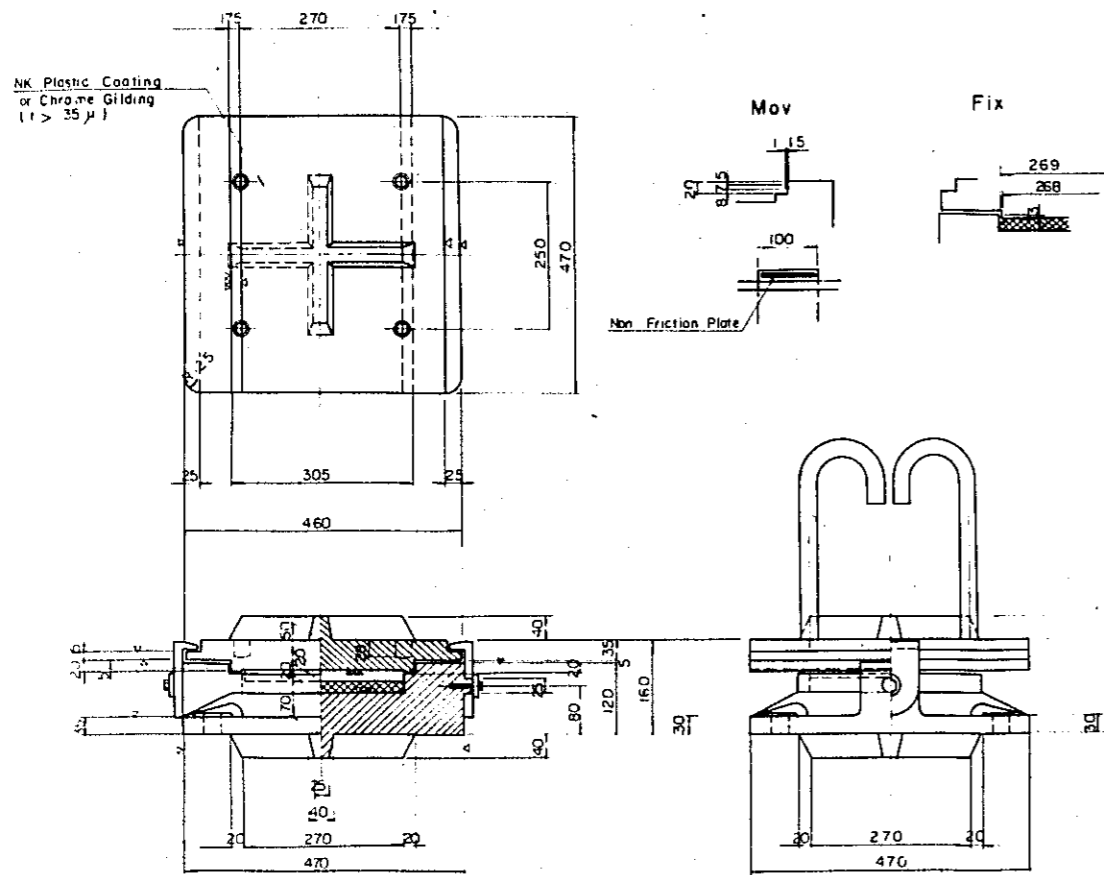
OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL RC BRIDGE GIRDER	
CHECKED BY: <i>[Signature]</i>	SCALE: 1:50
DESIGNED BY: <i>[Signature]</i>	SHEET NO: 7
DRAWN BY: <i>[Signature]</i>	DATE: 6-9-1972

SHOE Scale 1:60

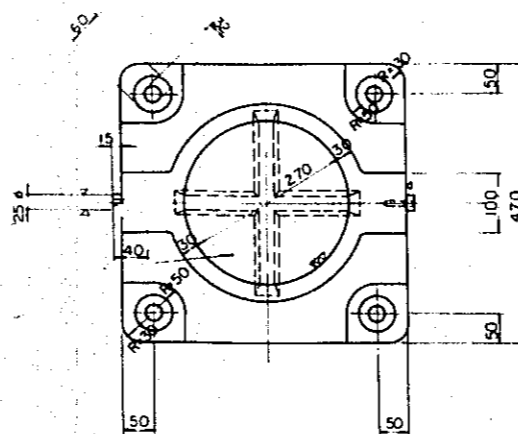
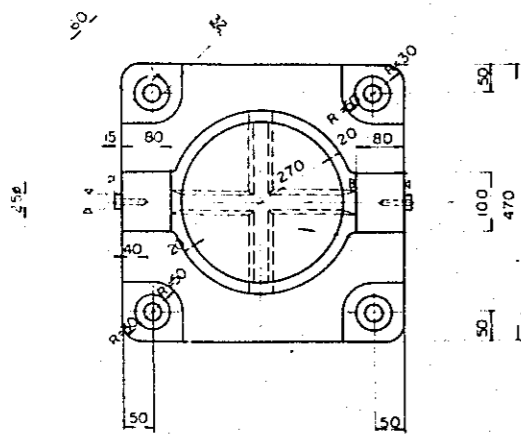
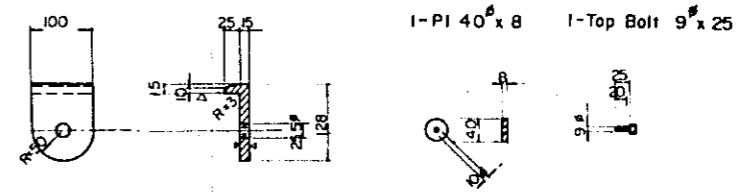
MOVABLE SHOE SC-46

FIXED SHOE SC-46

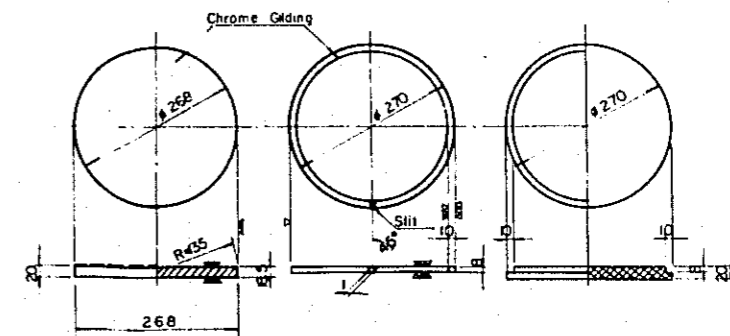
ANCHOR BOLT SS-41



PRESS. MEMBER SC-46



NK-SLIDING PLATE COMPRESSION RING NEOPRENE GUM SS-41 SS-41



TOTAL WEIGHT

Fixed Shoe	232 kg/set
Movable Shoe	224 kg/set

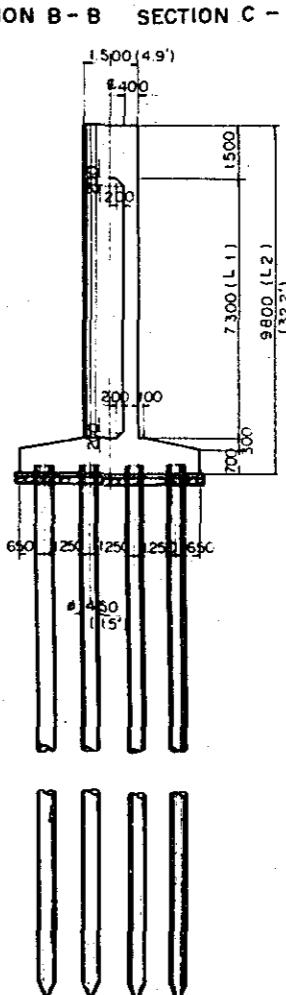
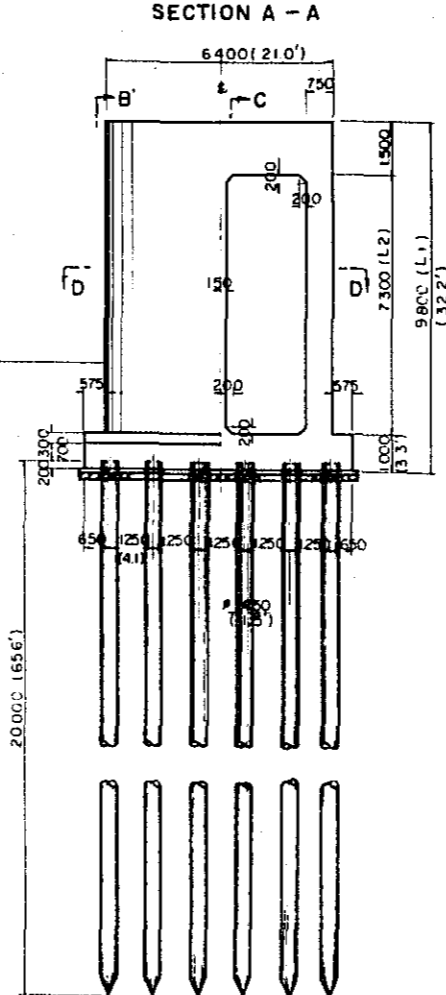
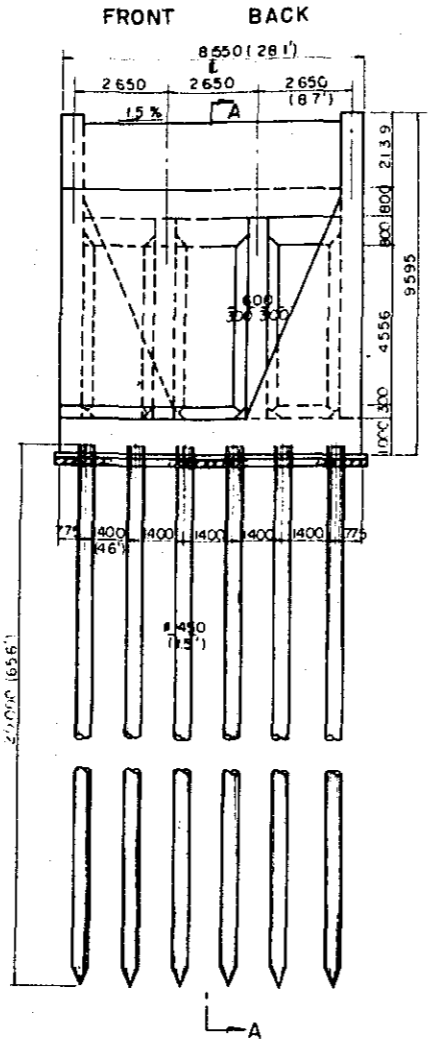
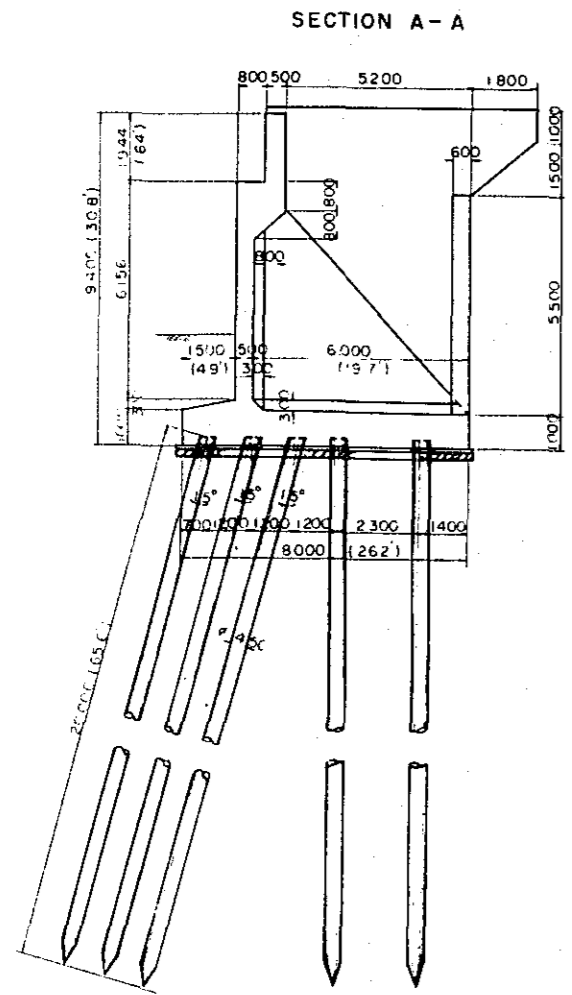
OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K, TOKYO JAPAN	
EAST PAKISTAN GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL P.C. BRIDGE SHOE	
CHIEF ENG. <i>[Signature]</i>	SCALE 1:60
CHECKED BY <i>[Signature]</i>	SHEET NO 8
DESIGNED BY <i>[Signature]</i>	DATE
DRAWN BY <i>[Signature]</i>	

GENERAL VIEW (FOR P.C. BRIDGE)

SCALE 1:100

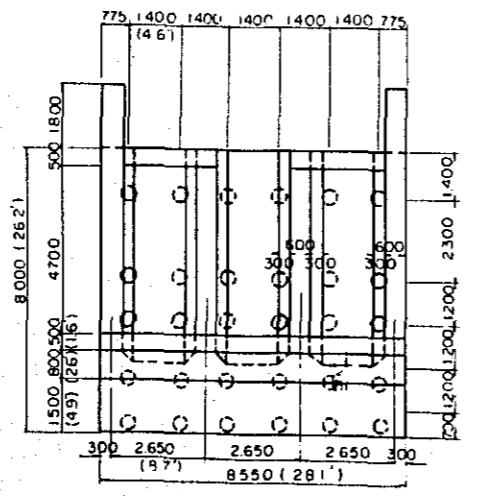
A - 1.2

P - 2.5 (P - 1.6)

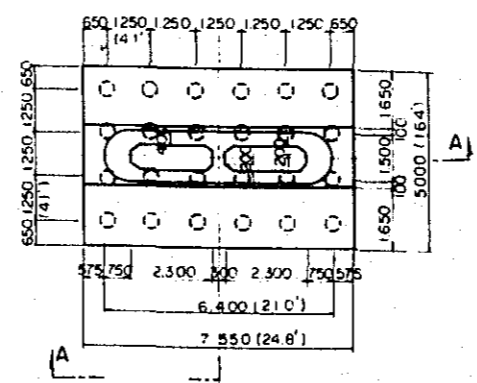


LENGTH OF PIERS (m)		
PIER NO	L ₁	L ₂
P - 1	5140	7640
P - 6	5140	7640

PLAN



SECTION D-D



OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL P.C. BRIDGE	
GENERAL VIEW	
CHIEF ENG. <i>[Signature]</i>	SCALE 1:100
CHECKED BY <i>[Signature]</i>	SHEET NO 9
DESIGNED BY <i>[Signature]</i>	DATE
DRAWN BY <i>[Signature]</i>	

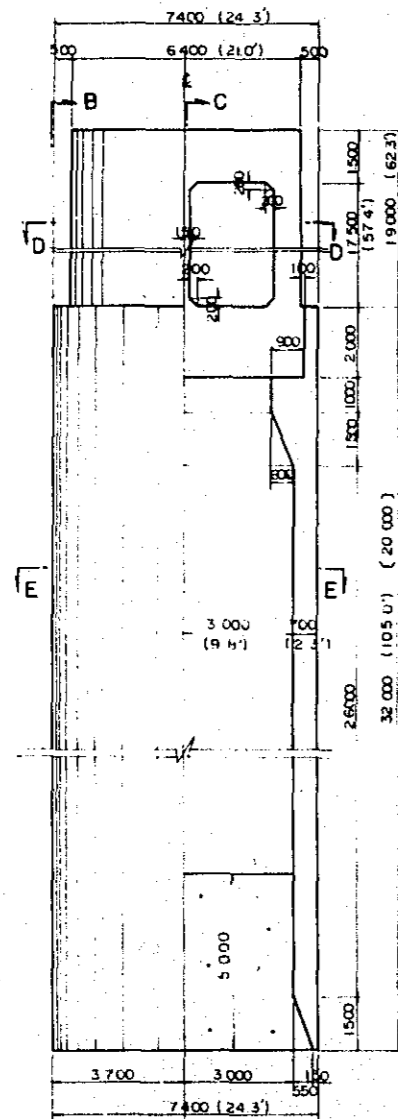
GENERAL VIEW (FOR P.C. BRIDGE)

S = 1 : 100

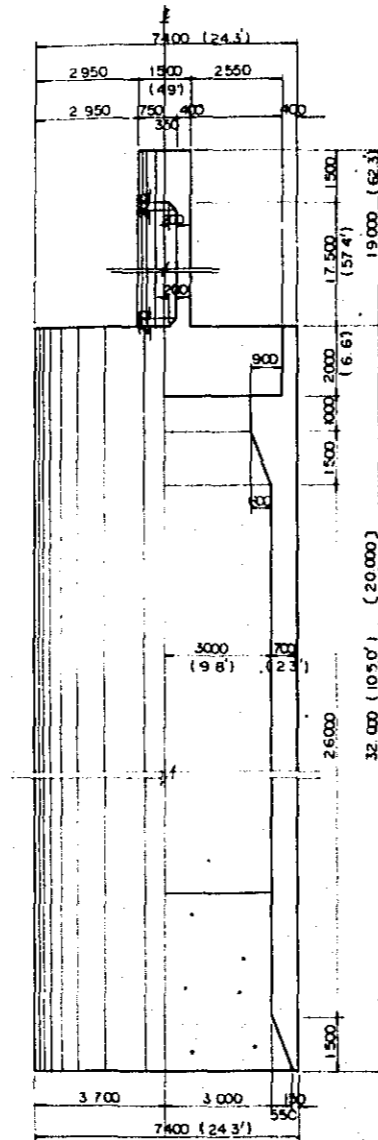
P-3.4

M-1.2.3.4.5.6.7

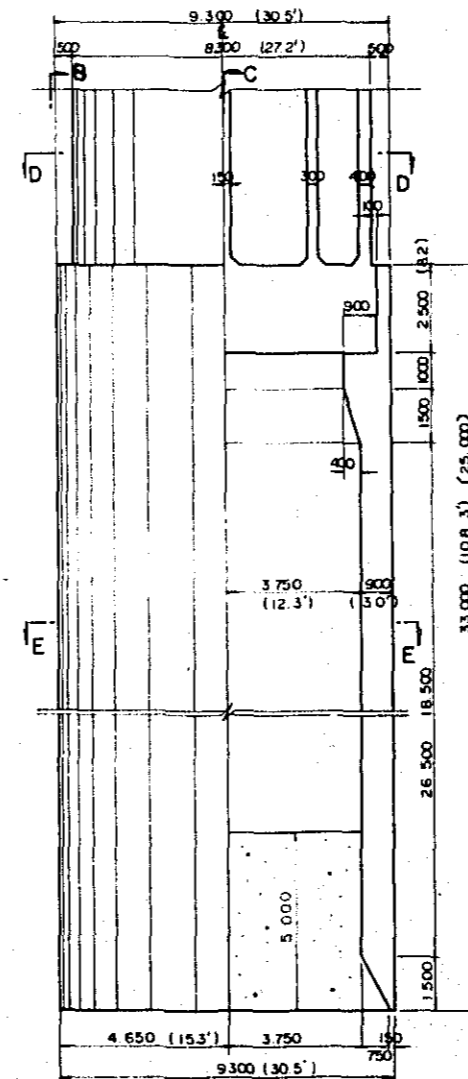
SECTION A-A



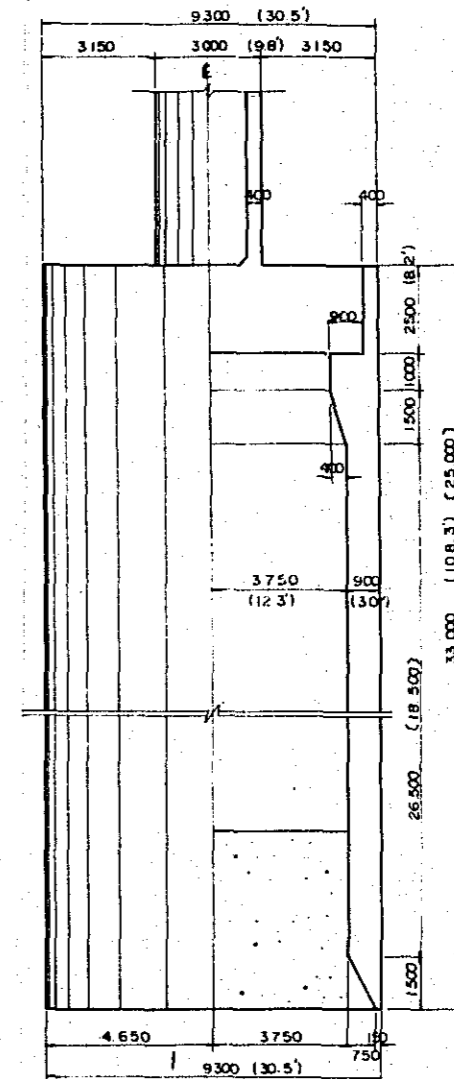
SECTION B-B SECTION C-C



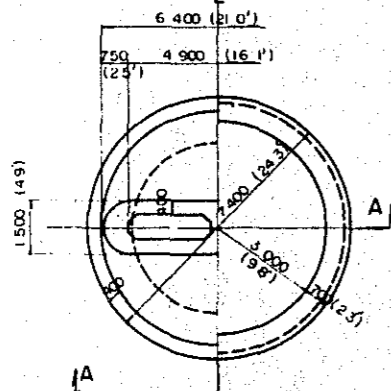
SECTION A-A



SECTION B-B SECTION C-C

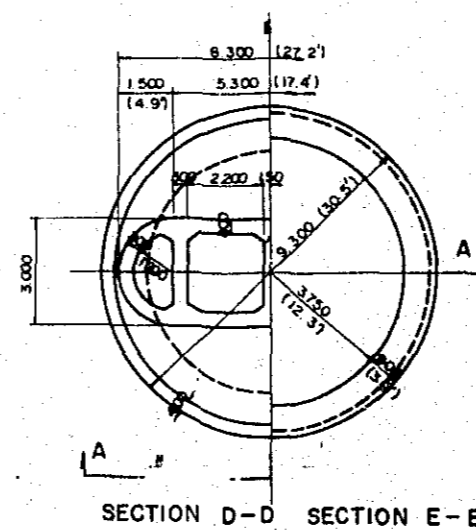


SECTION D-D SECTION E-E



Note:

Figure in () is WELL P-4



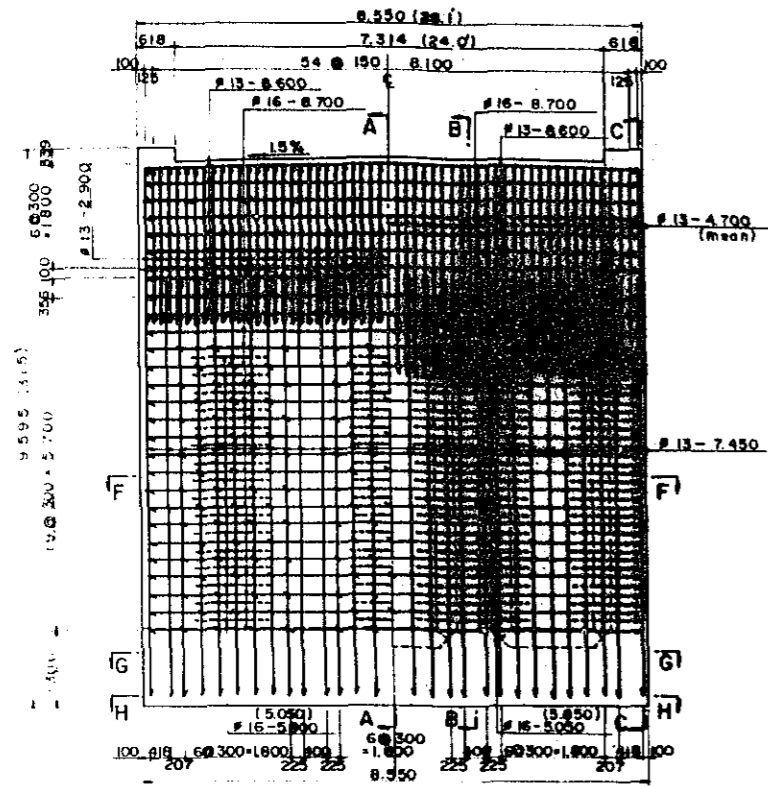
SECTION D-D SECTION E-E

Note:

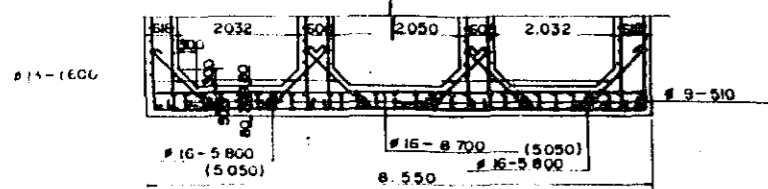
Figure in () is WELL M-7

OVERSEAS TECHNICAL COOPERATION AGENCY JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL P.C. BRIDGE	
GENERAL VIEW	
DESIGNED BY	SCALE 1:100
CHECKED BY	SHEET NO. 10
DATE	DATE

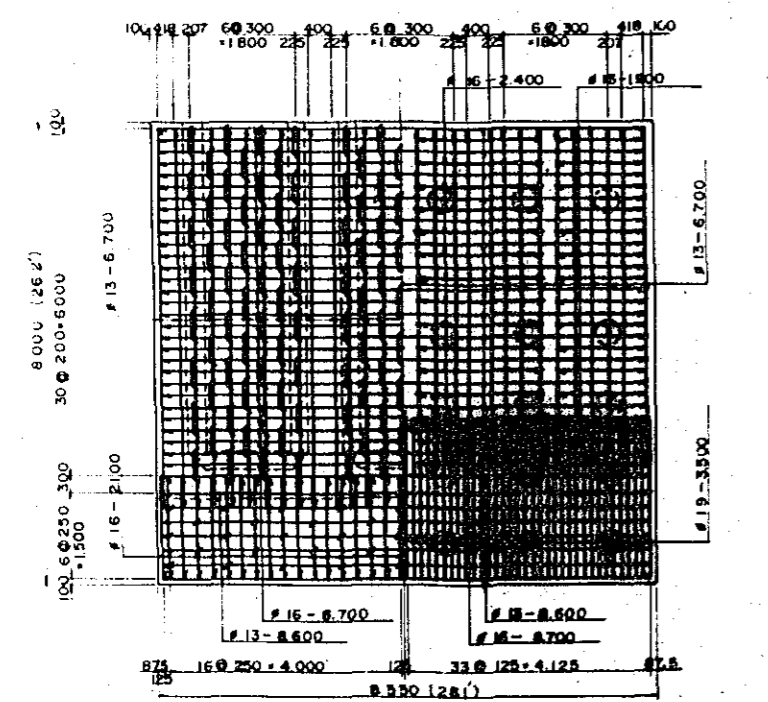
SECTION D-D SECTION E-E



SECTION F-F



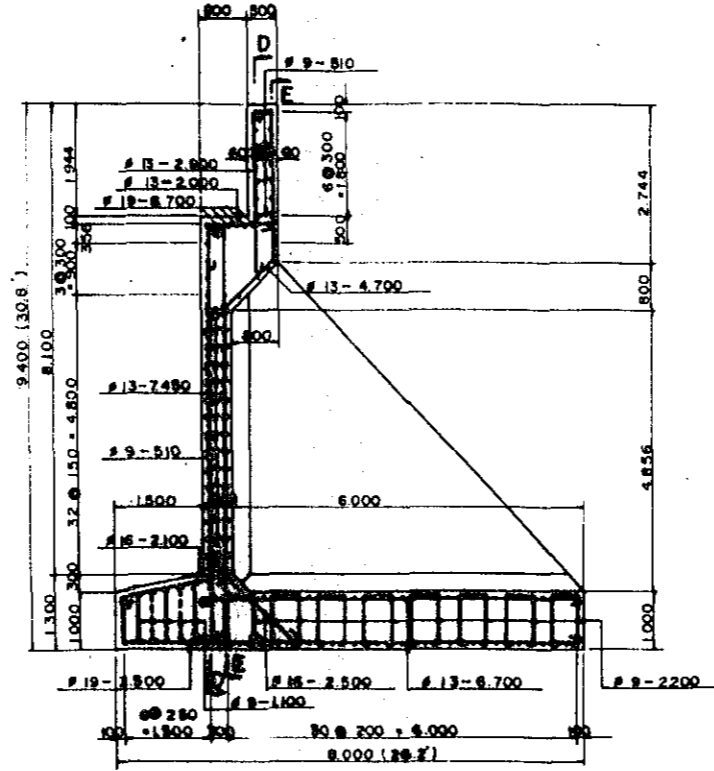
SECTION G-G & SECTION H-H



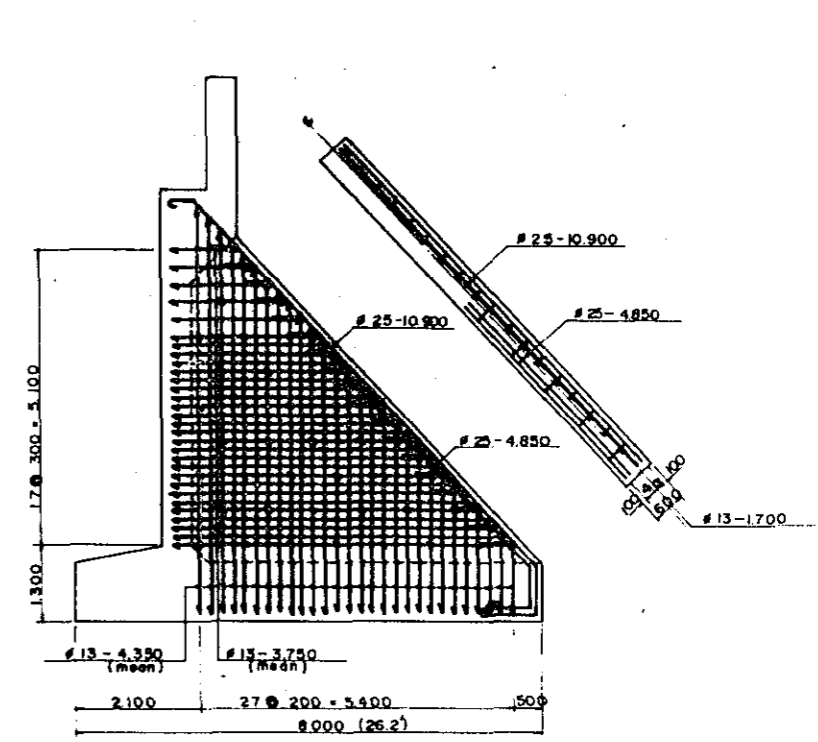
DETAIL OF ABUTMENT A-1, 2 (FOR P.C. BRIDGE)

SCALE 1:60

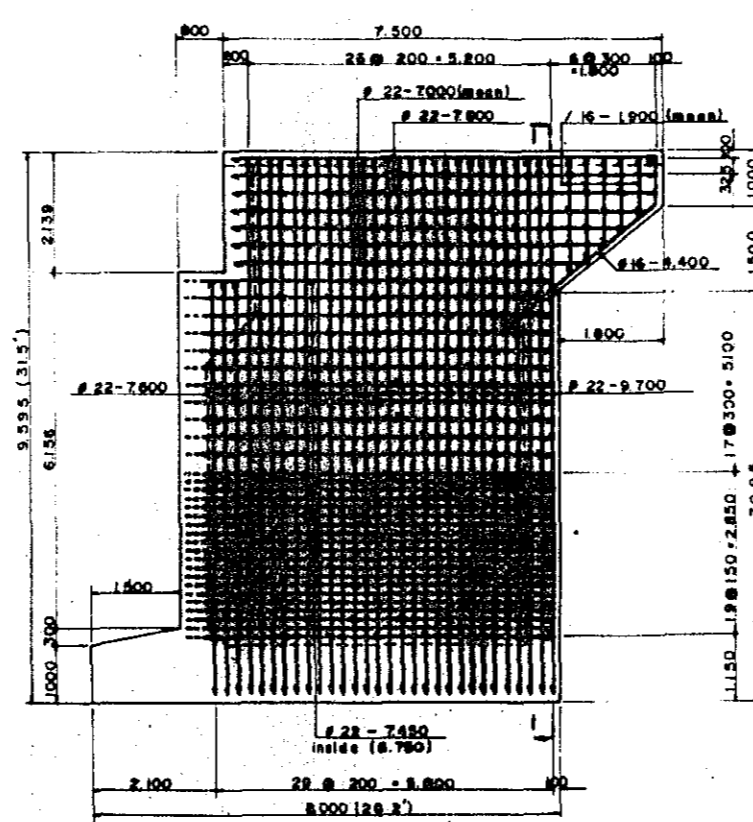
SECTION A-A



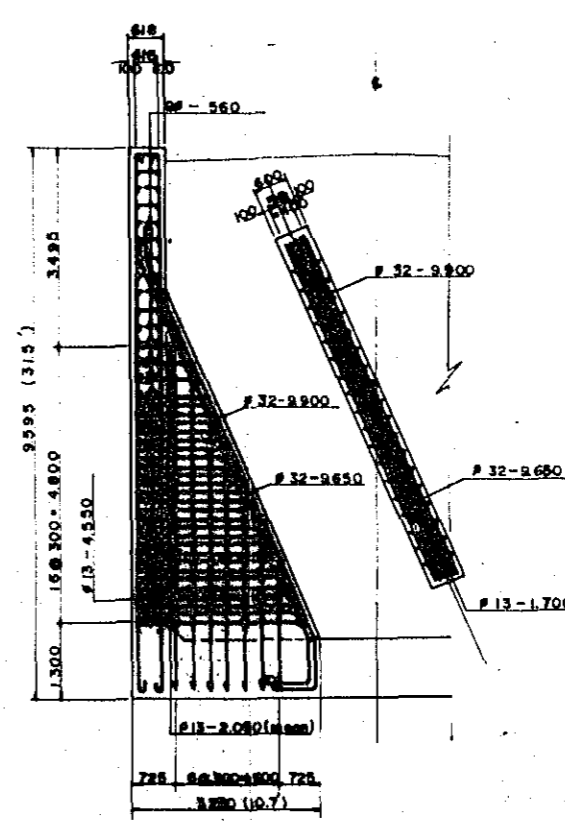
SECTION B-B



SECTION C-C



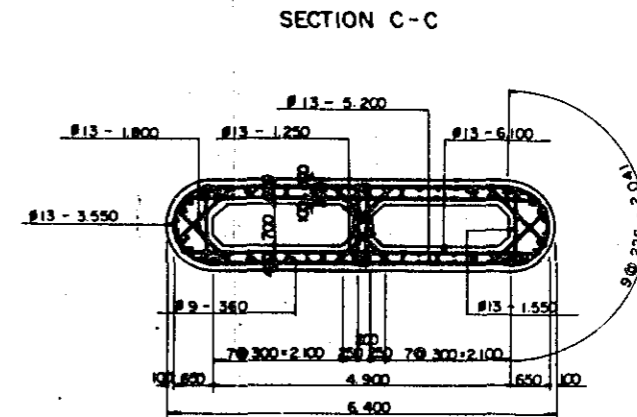
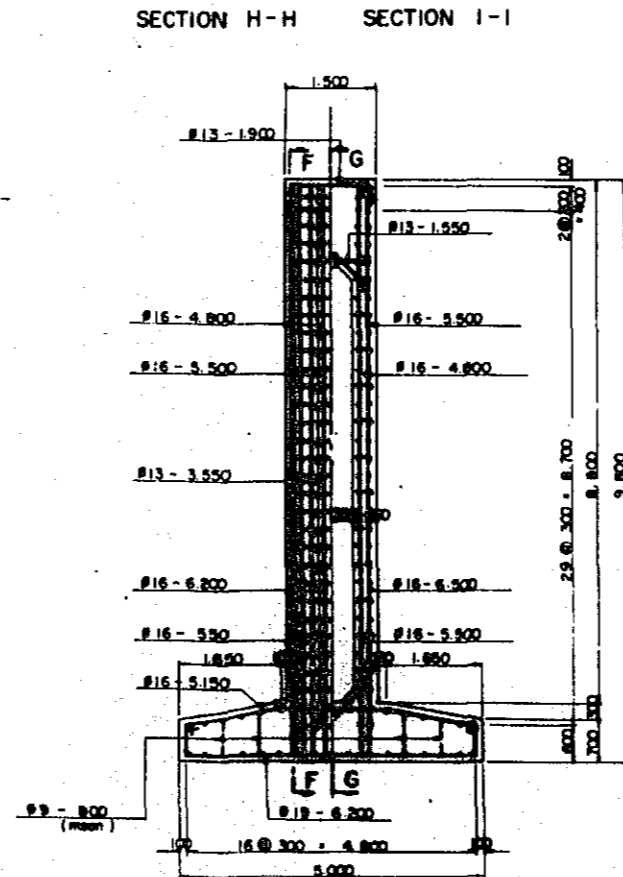
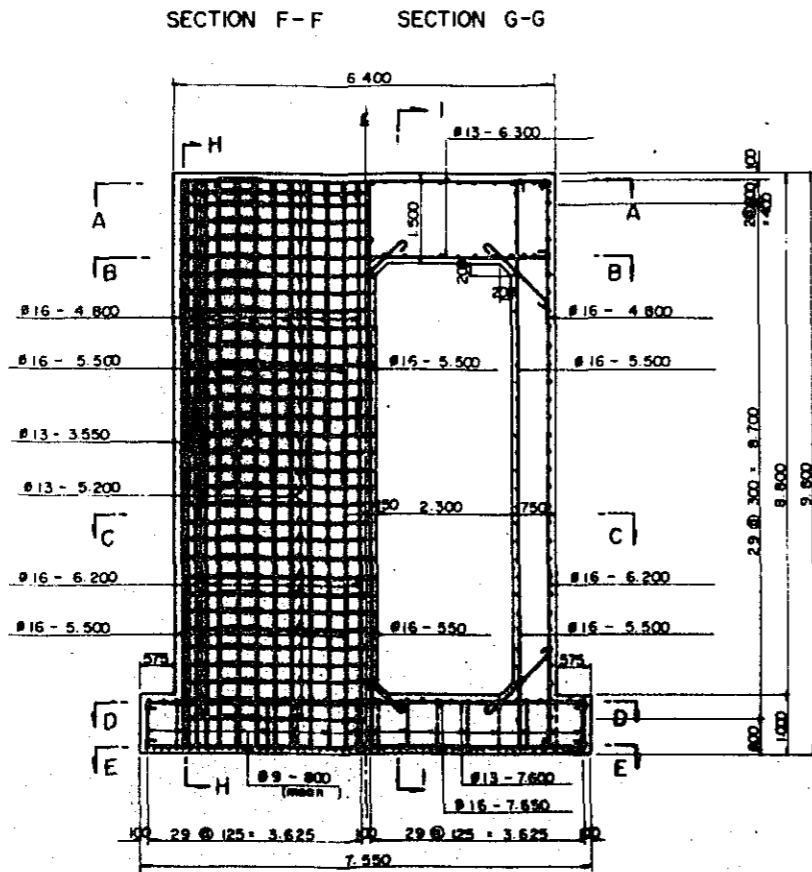
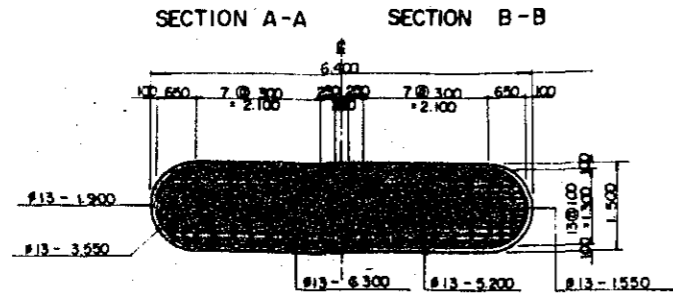
SECTION I-I



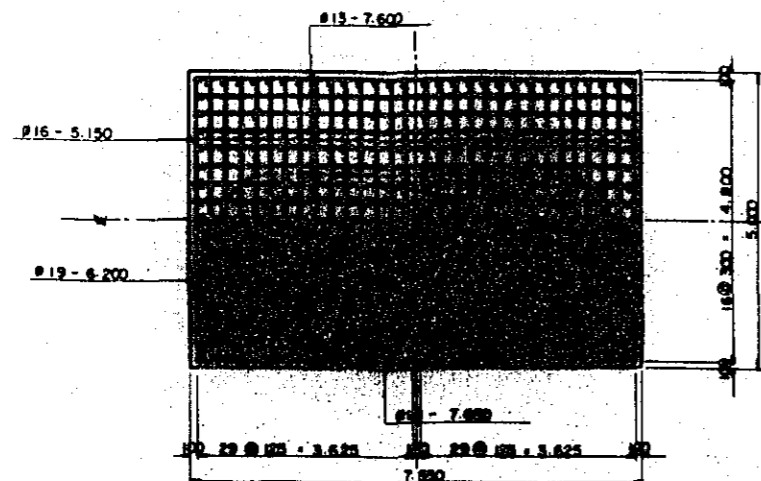
OVERSEAS TECHNICAL COOPERATION AGENCY JAPAN	
PROFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL P.C. BRIDGE ABUTMENT A-1, 2	
SCALE	1:60
SHEET NO	11
DATE	Aug 1962

DETAIL OF PIER P-1, 2, 5, 6 (FOR P.C BRIDGE)

SCALE 1:60

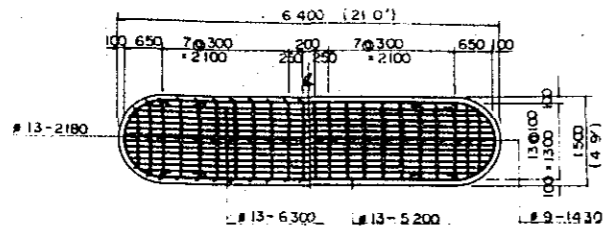


SECTION E-E SECTION D-D



OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO, JAPAN	
EAST PAKISTAN GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL P.C BRIDGE PIER P-1, 2, 5, 6	
DESIGNED BY <i>(Signature)</i>	SCALE: 1:60
CHECKED BY <i>(Signature)</i>	DRAWING NO. 12
DATE: <i>(Date)</i>	

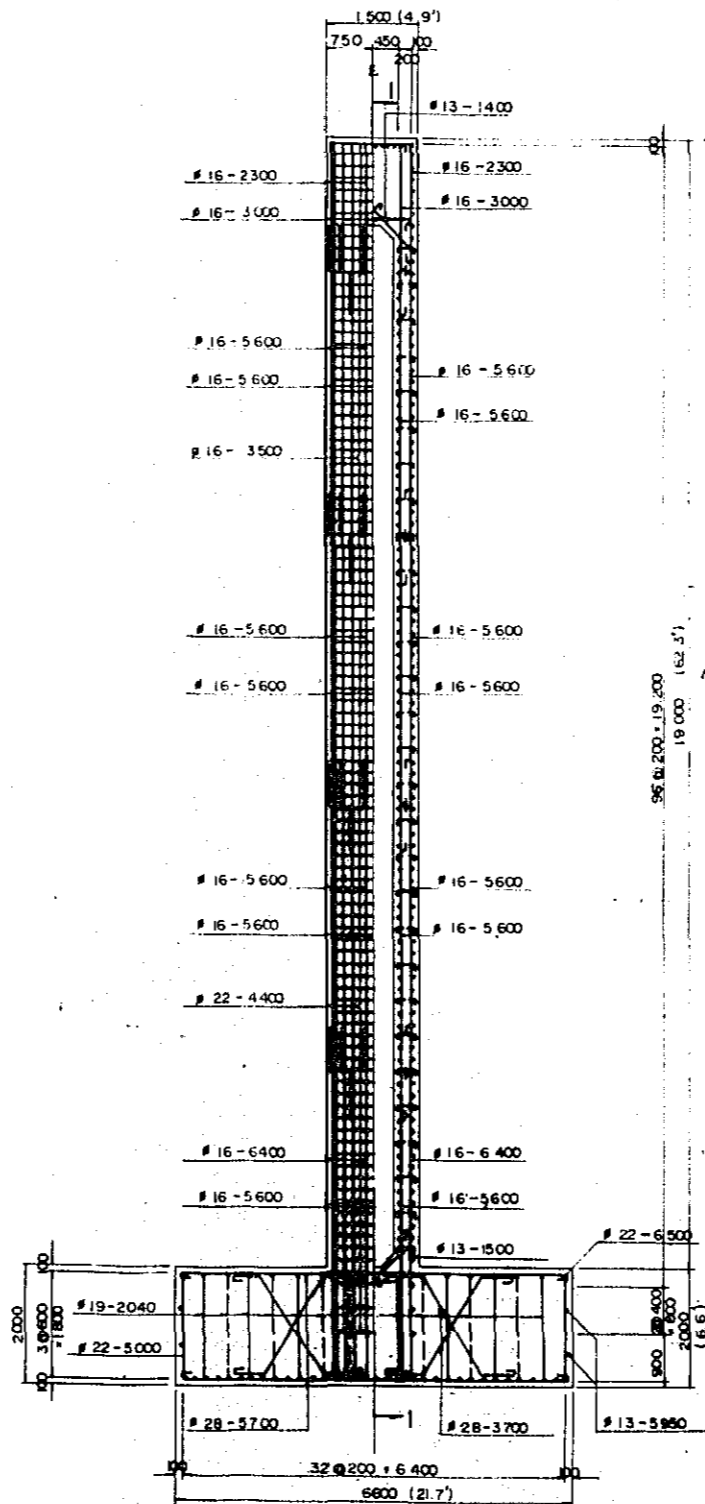
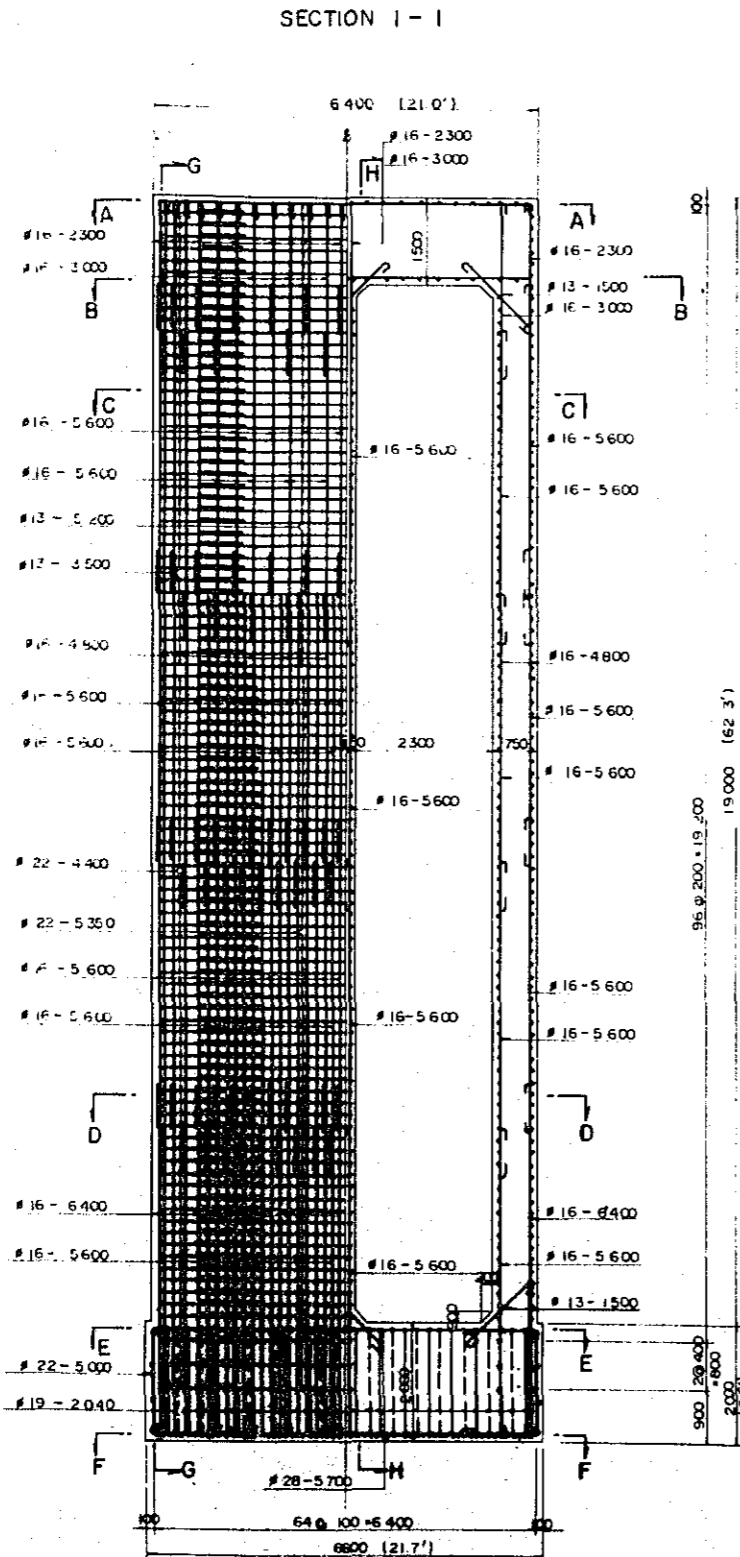
SECTION A-A SECTION B-B



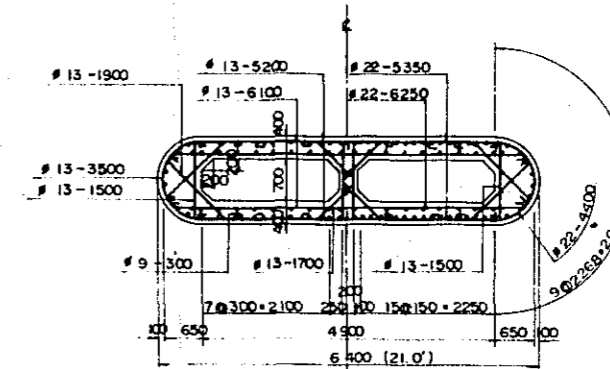
DETAIL OF PIER P-3,4 (FOR PC. BRIDGE)

SCALE 1:60

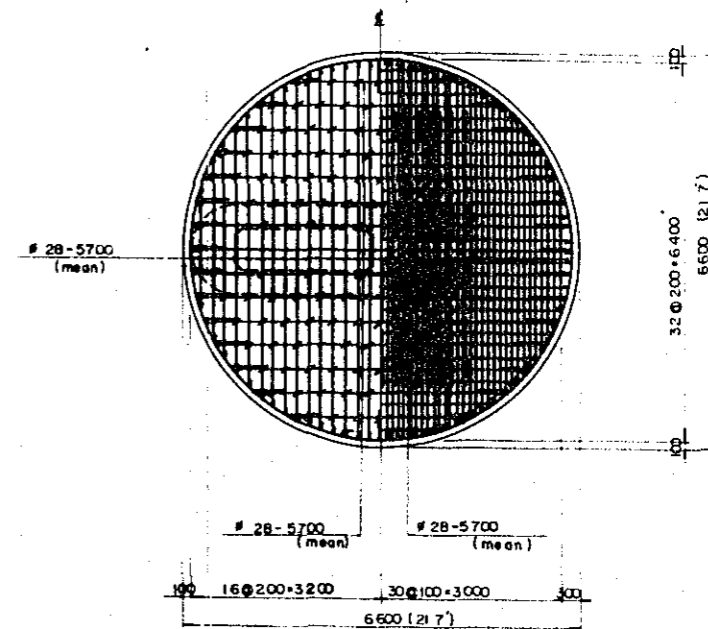
SECTION G-G SECTION H-H



SECTION C-C SECTION D-D



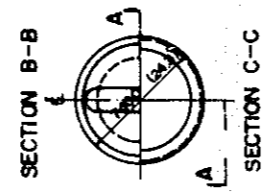
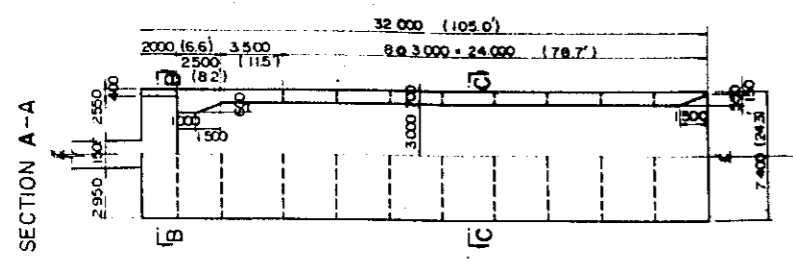
SECTION E-E SECTION F-F



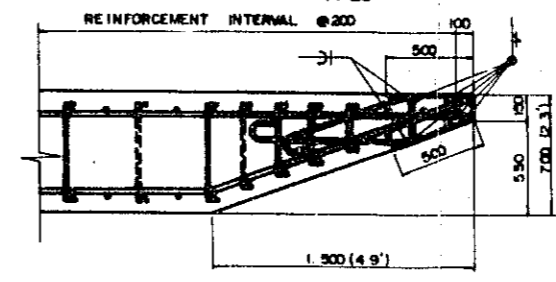
OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL PC. BRIDGE	
PIER P-3, 4	
CHECKED BY	SCALE 1:60
DESIGNED BY	SHEET NO 13
DRAWN BY	DATE

DETAIL OF WELL P-3 (P-4) (FOR PC BRIDGE)
SCALE: 60

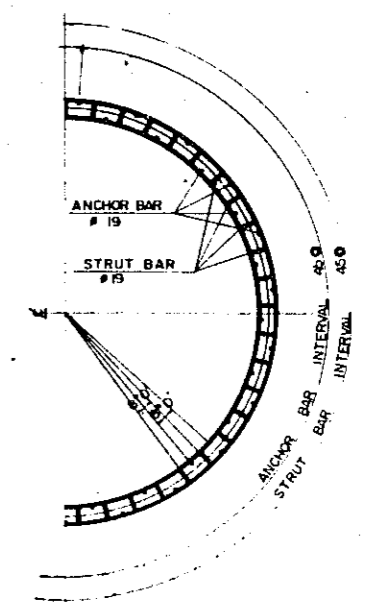
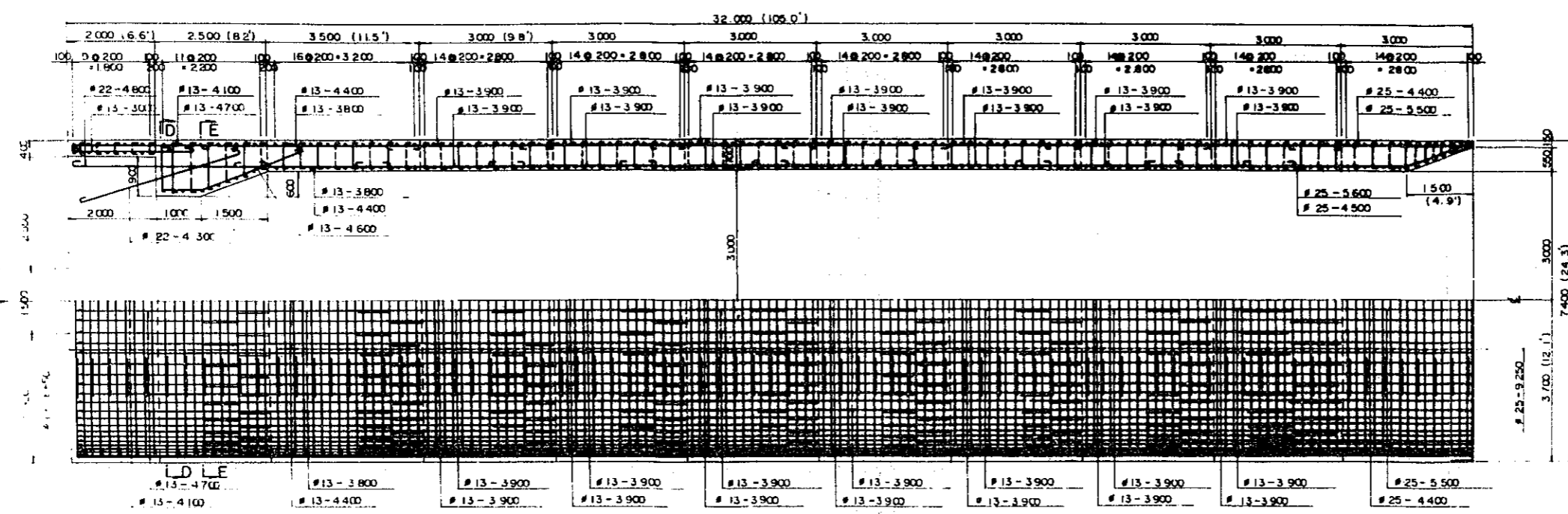
GENERAL VIEW
S = 1: 200



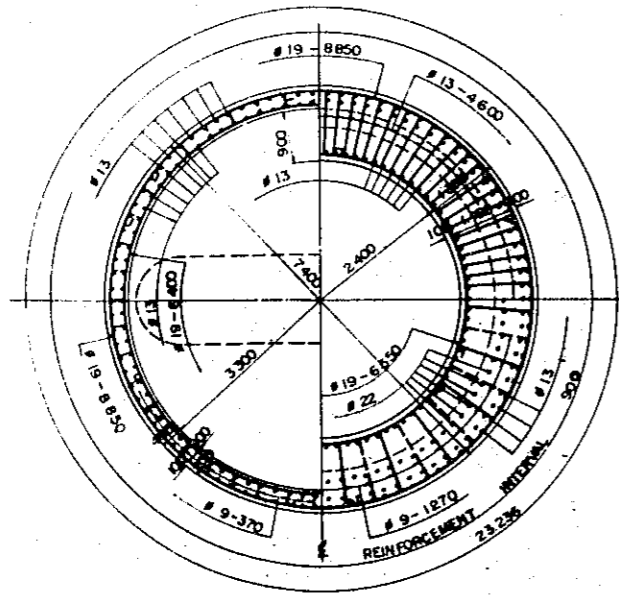
DETAIL OF CUTTING EDGE
1: 20



SECTION A-A

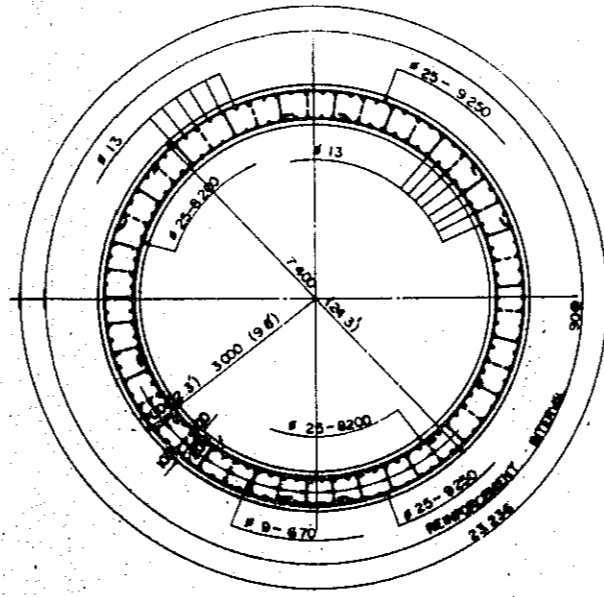


SECTION B-B



SECTION E-E

SECTION C-C



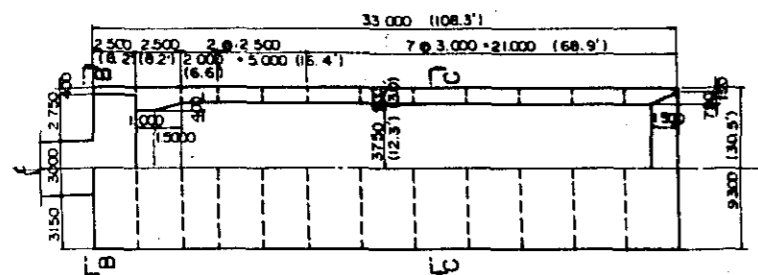
OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL PC BRIDGE	
WELL P-3 (P-4)	
DRAWN BY	SCALE 1: 60
CHECKED BY	SHEET NO 14
DESIGNED BY	DATE

DETAIL OF WELL M-4 (1,2,3,5,6,7)
(FOR PC. BRIDGE) SCALE: 1:60

DETAIL OF CUTTING EDGE S=1:80

GENERAL VIEW
S=1:200

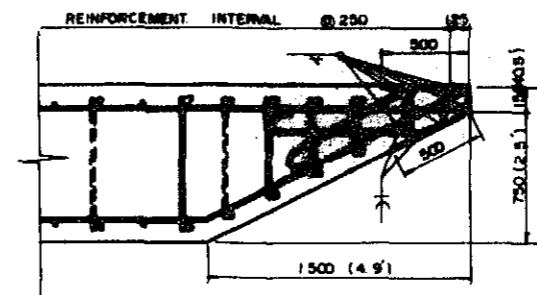
SECTION A-A



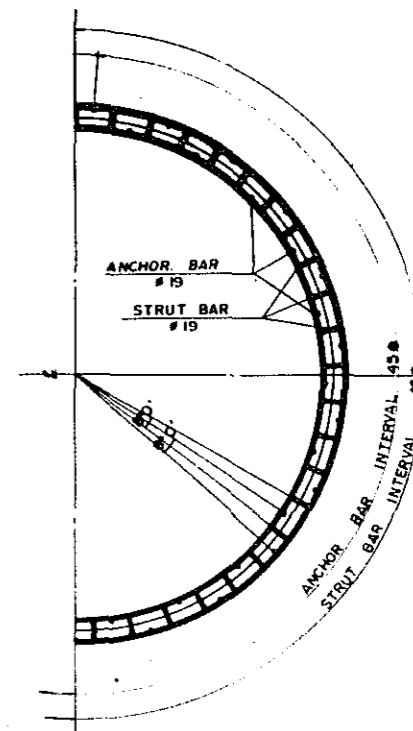
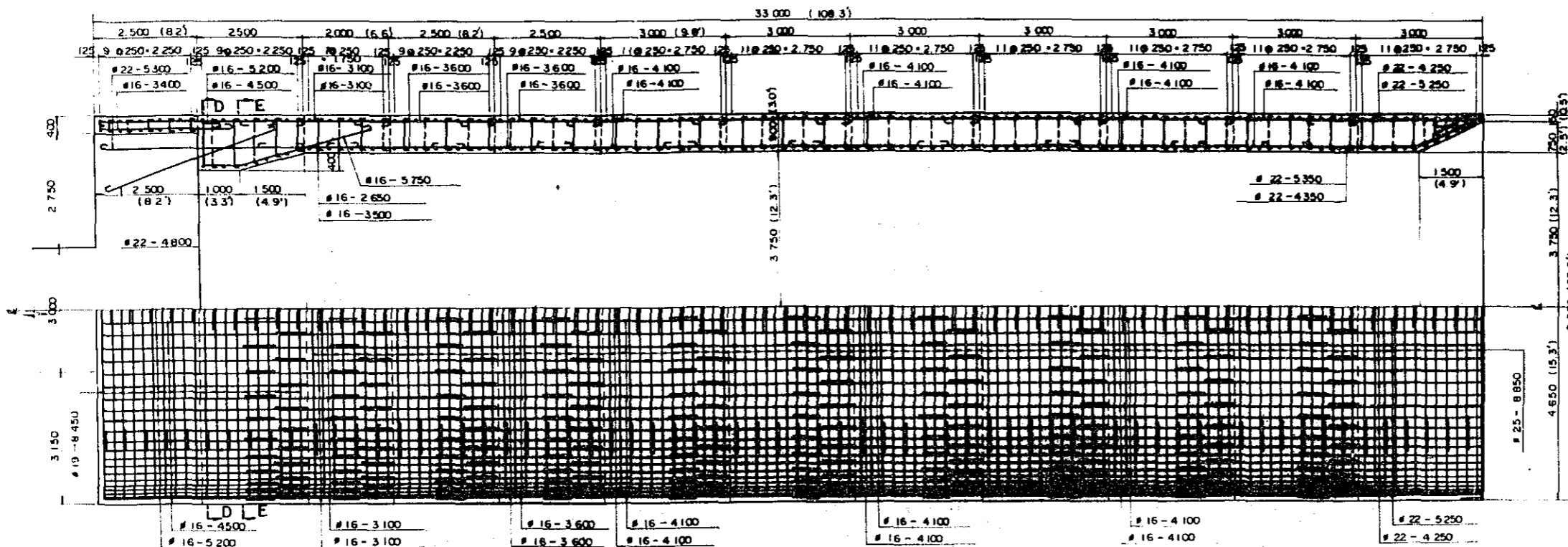
SECTION B-B



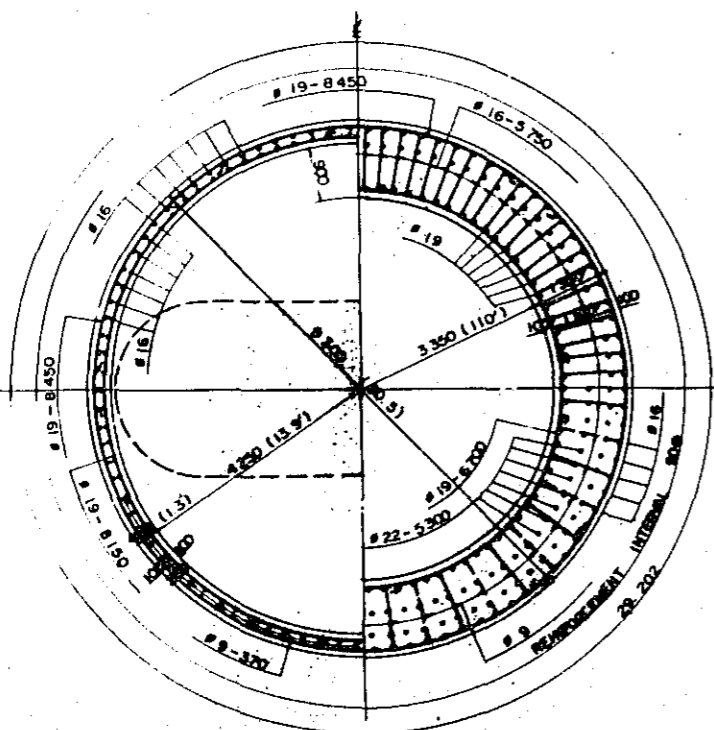
SECTION C-C



SECTION A-A



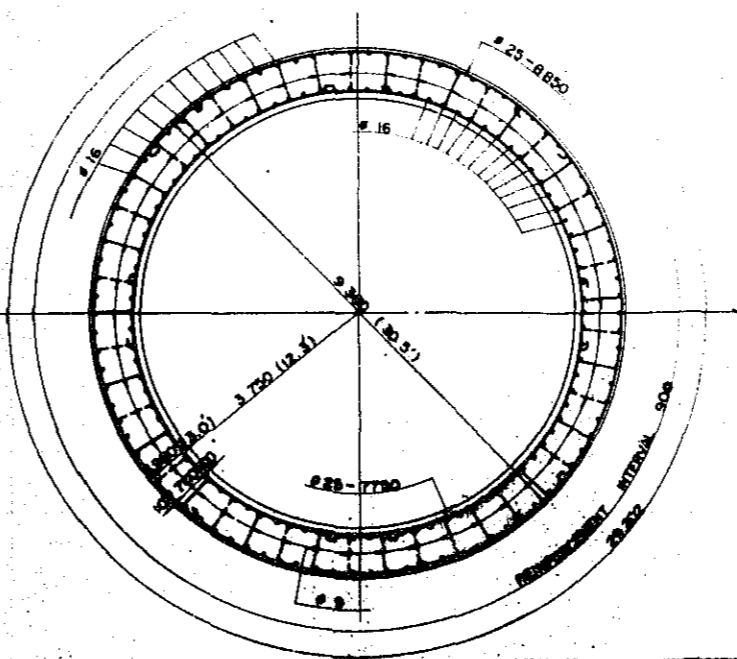
SECTION B-B



SECTION E-E

SECTION D-D

SECTION C-C

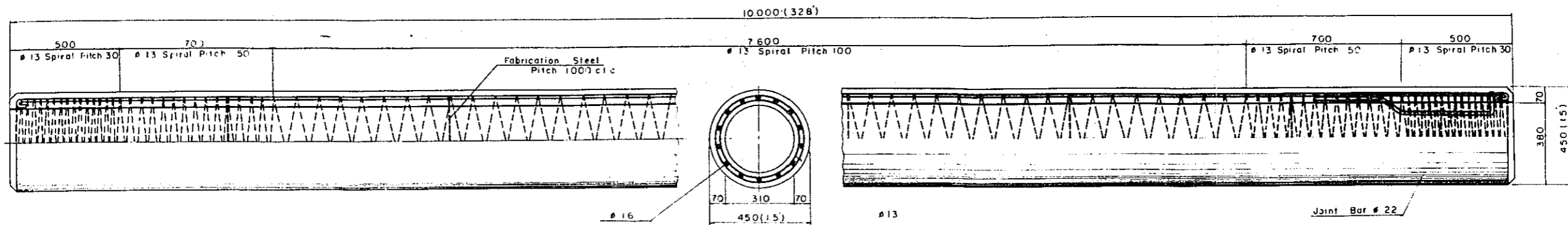


OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO, JAPAN	
EAST PAKISTAN GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL P.C. BRIDGE	
WELL M-4 (1,2,3,5,6,7)	
CHECKED BY	SCALE 1:60
DRAWN BY	SHEET NO 15
DESIGNED BY	DATE
DATE	2 Aug 1971

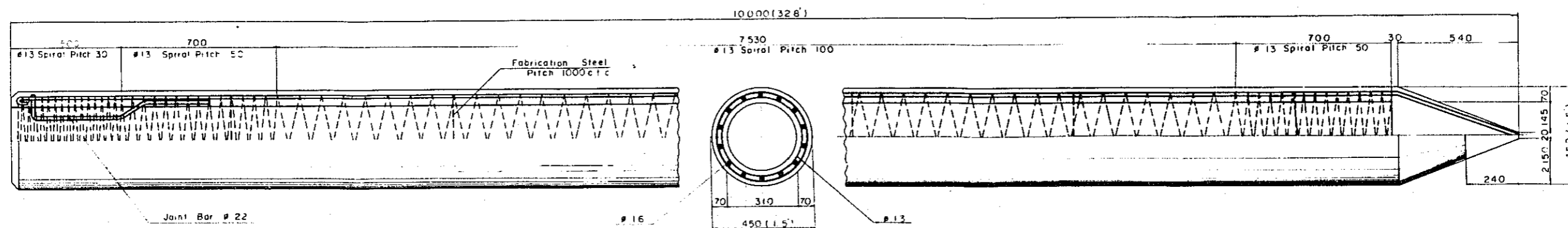
FOUNDATION PILE

SCALE 1 : 10

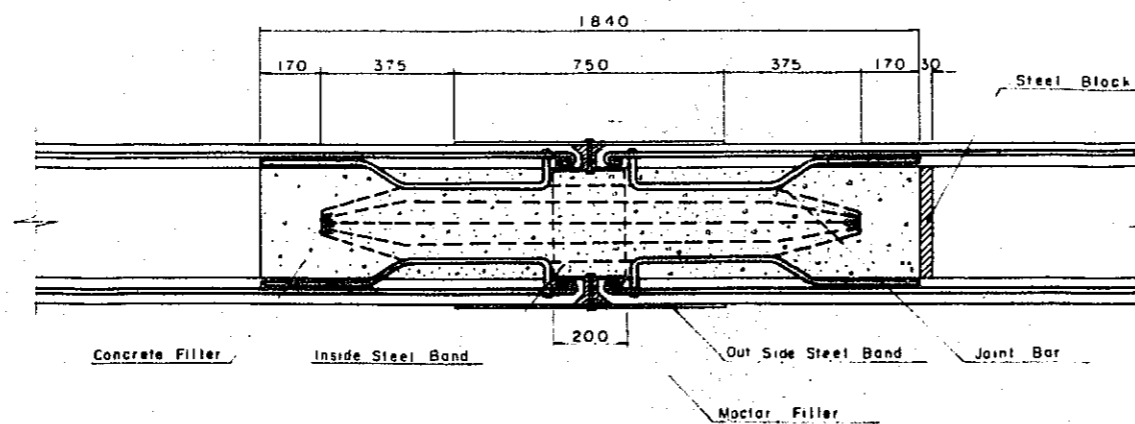
UPPER PILE



LOWER PILE



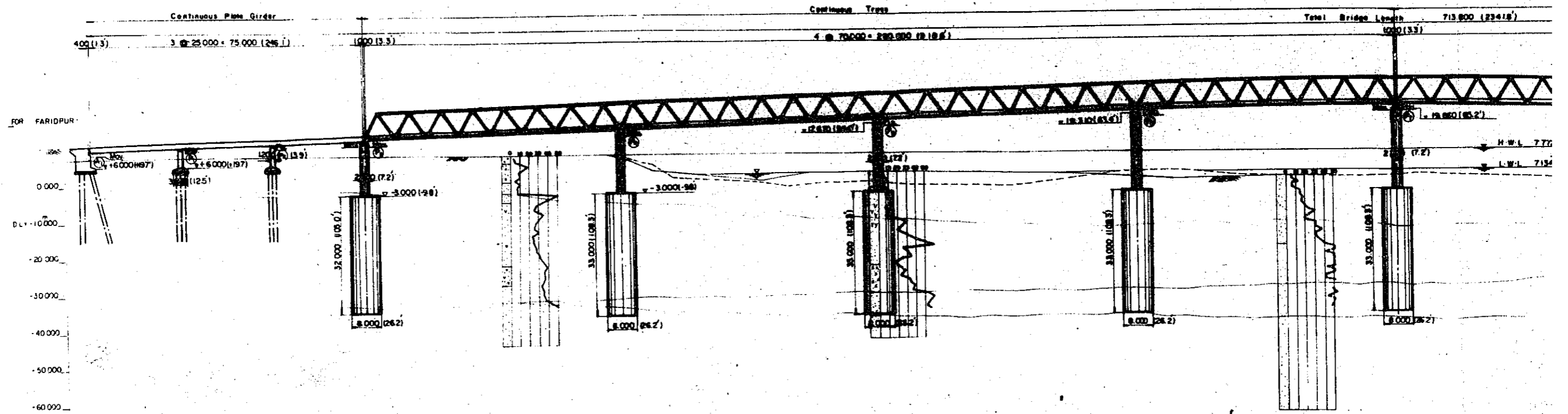
DETAIL OF JOINT



OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL RC ST. BRIDGE FOUNDATION PILE	
CHECKED BY: <i>A. H. ...</i>	SCALE: 1 : 10
DESIGNED BY: <i>M. ...</i>	SHEET NO: 16
DRAWN BY: <i>T. ...</i>	DATE: <i>12.29.1961</i>

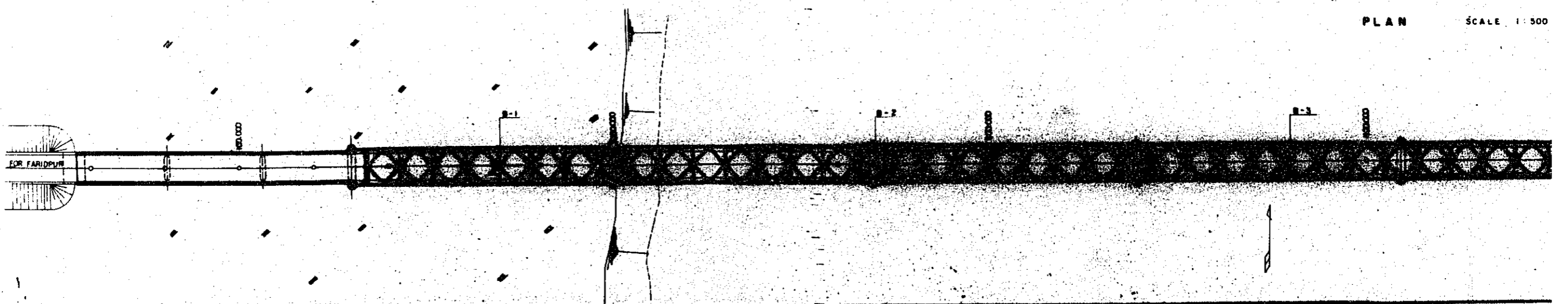
GENERAL PLAN OF GARAI RIVER

SIDE VIEW SCALE 1



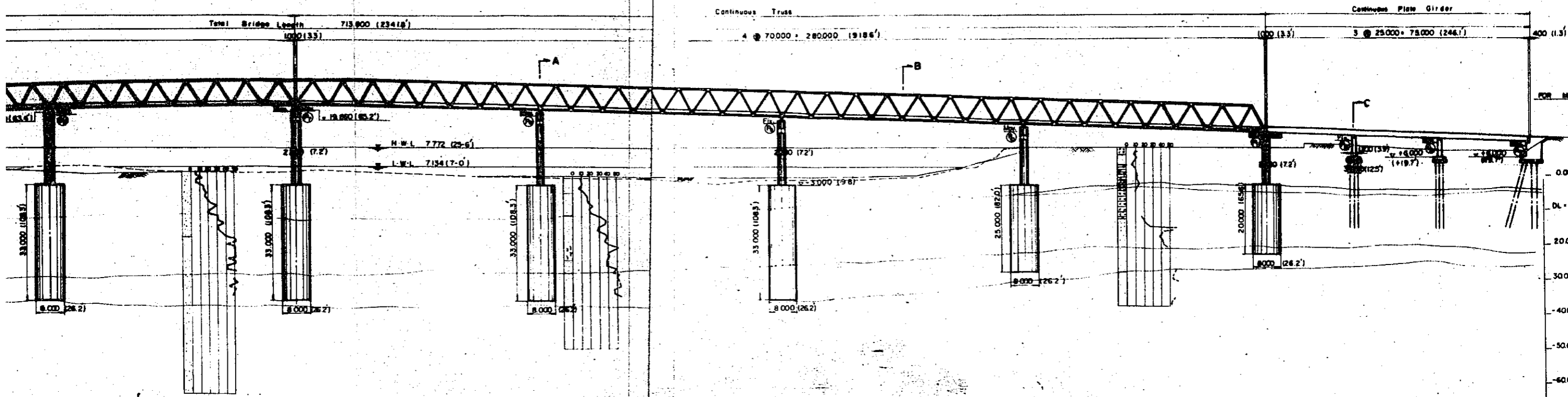
ACTUAL DISTANCE	GROUND HEIGHT	FORMATION HEIGHT	GRADE
53.000	7.841	13.293	
60.000	7.902	13.855	
78.300	7.933	14.800	
80.000	7.841	15.970	
100.000	7.762		
103.300	7.752		
120.000	7.620		
128.000	7.512		
140.000	7.422		
160.000	6.750		
170.000	5.800		
180.000	3.400		
196.000	2.900		
208.000	0.350		
221.000	0.850		
240.000	2.180		
260.000	2.700		
270.000	2.680		
280.000	2.350		
300.000	2.200		
314.900	1.480		
330.000	0.700		
338.000	0.680		
340.000	0.720		
360.000	0.940		
400.000	0.880		
410.000	0.660		
420.000	0.300		
440.000			

PLAN SCALE 1:500



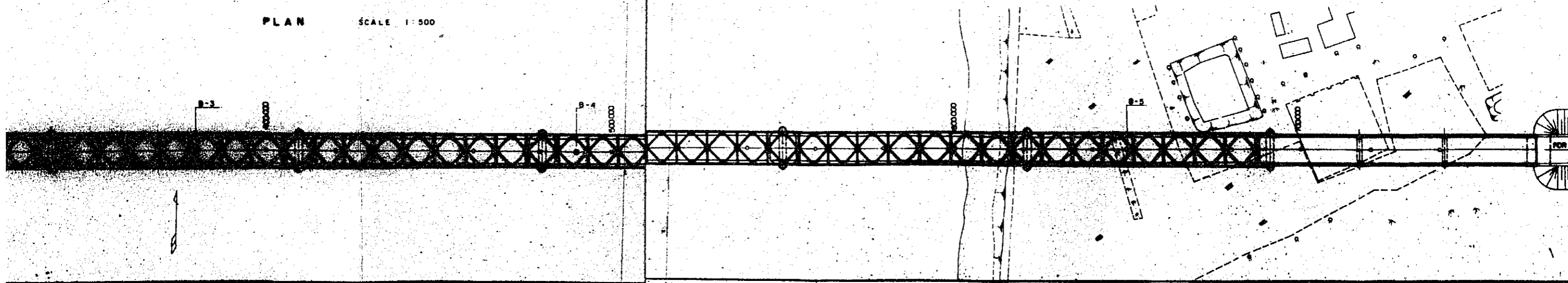
GENERAL PLAN OF GARAI RIVER BRIDGE

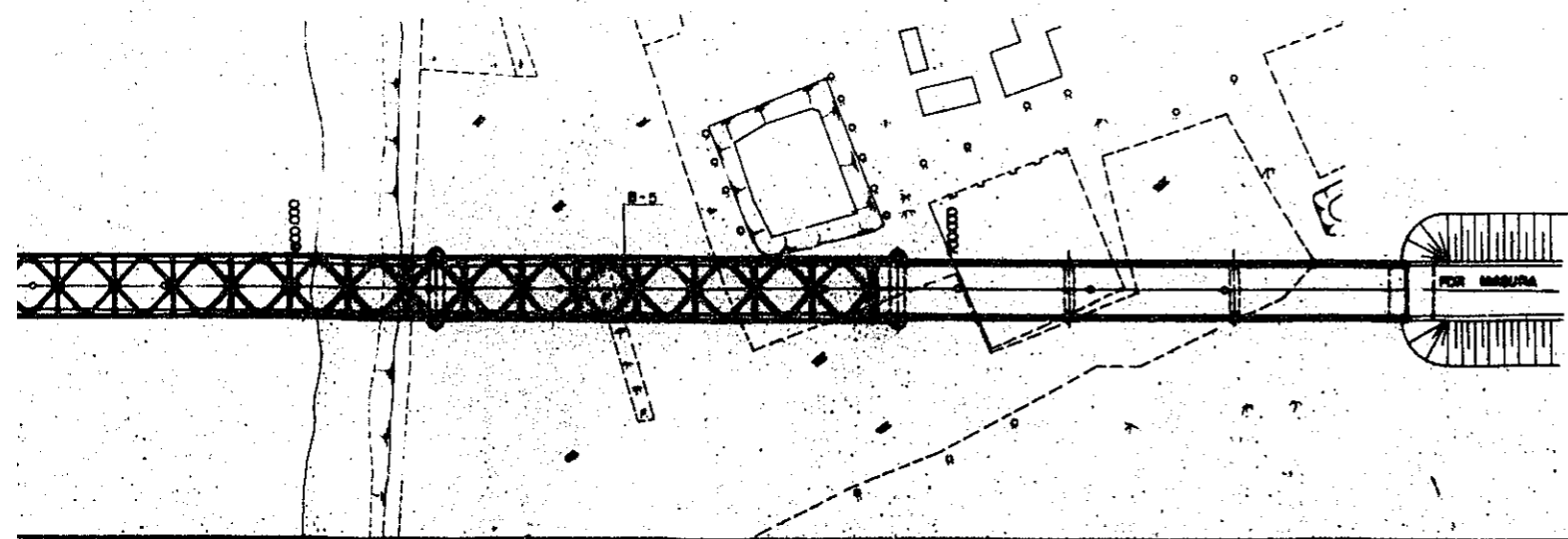
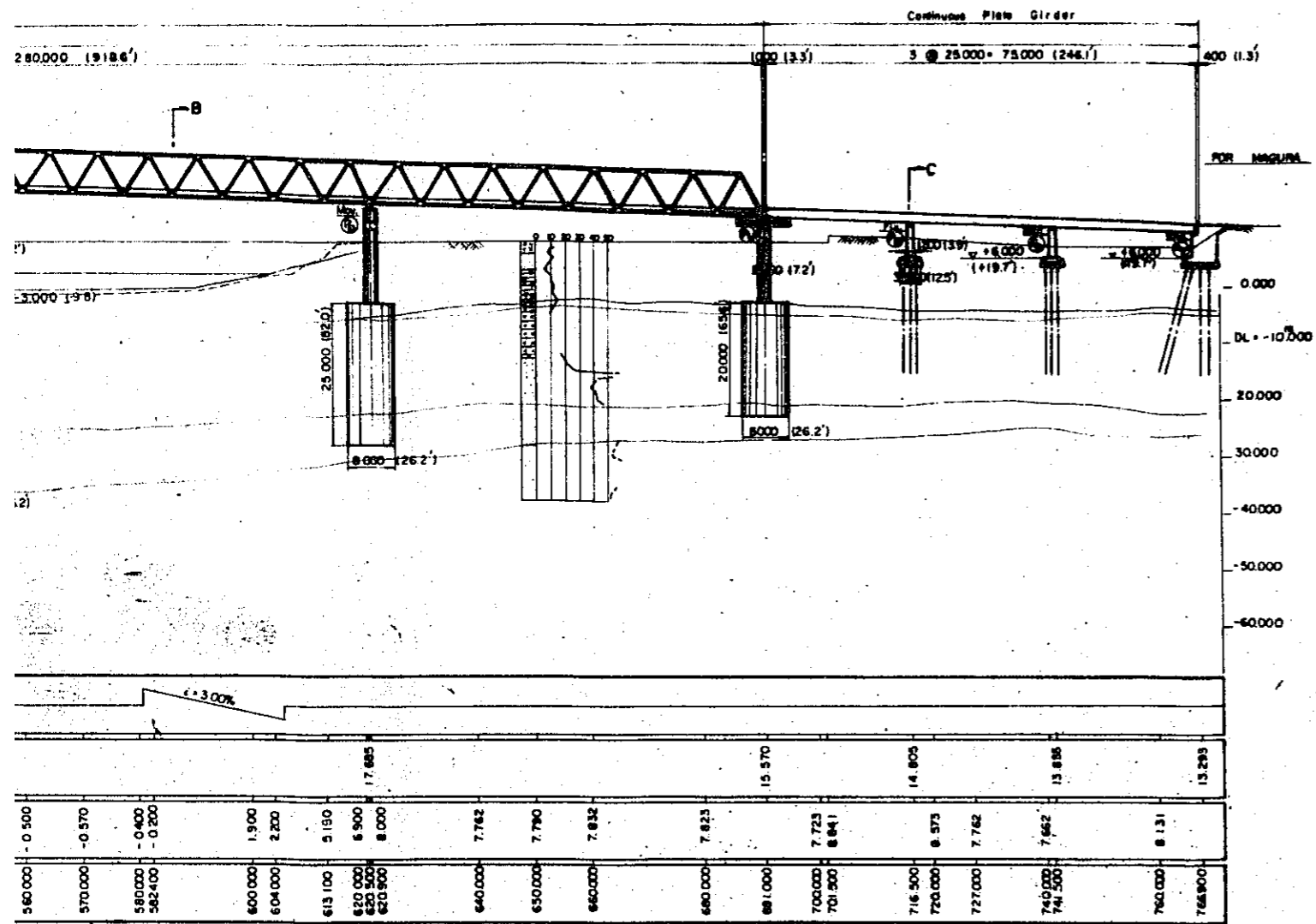
SIDE VIEW SCALE 1:500



21.428	21.875	21.428	19.950	19.785	17.885	15.970	14.805	13.885	13.293
0.700	0.000	0.720	0.940	0.850	0.660	0.300	0.680	-0.420	-0.360
330,000	340,000	360,000	390,000	400,000	410,000	420,000	440,000	460,000	480,000
500,000	520,000	540,000	550,500	560,000	570,000	580,000	582,400	600,000	604,000
613,100	620,000	630,500	650,900	680,000	690,000	7.762	7.790	7.832	7.823
700,000	701,500	716,500	720,000	727,000	740,000	741,500	760,000	768,900	

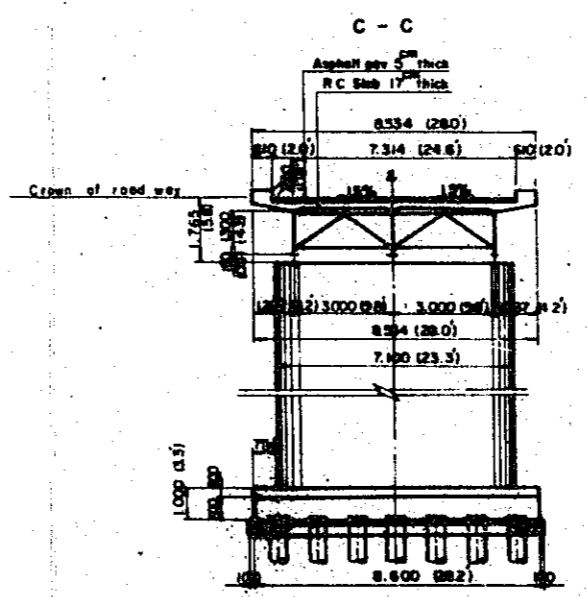
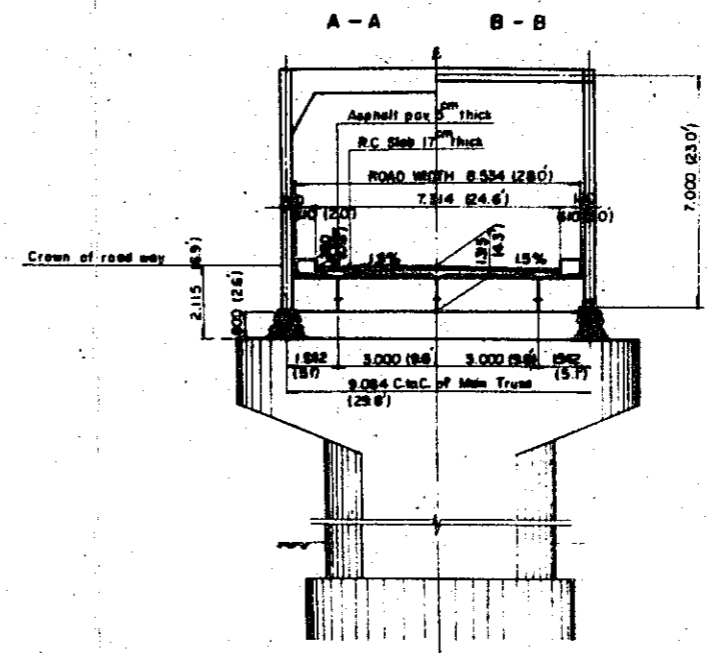
PLAN SCALE 1:500





CROSS SECTION SECTION

SCALE 1:100

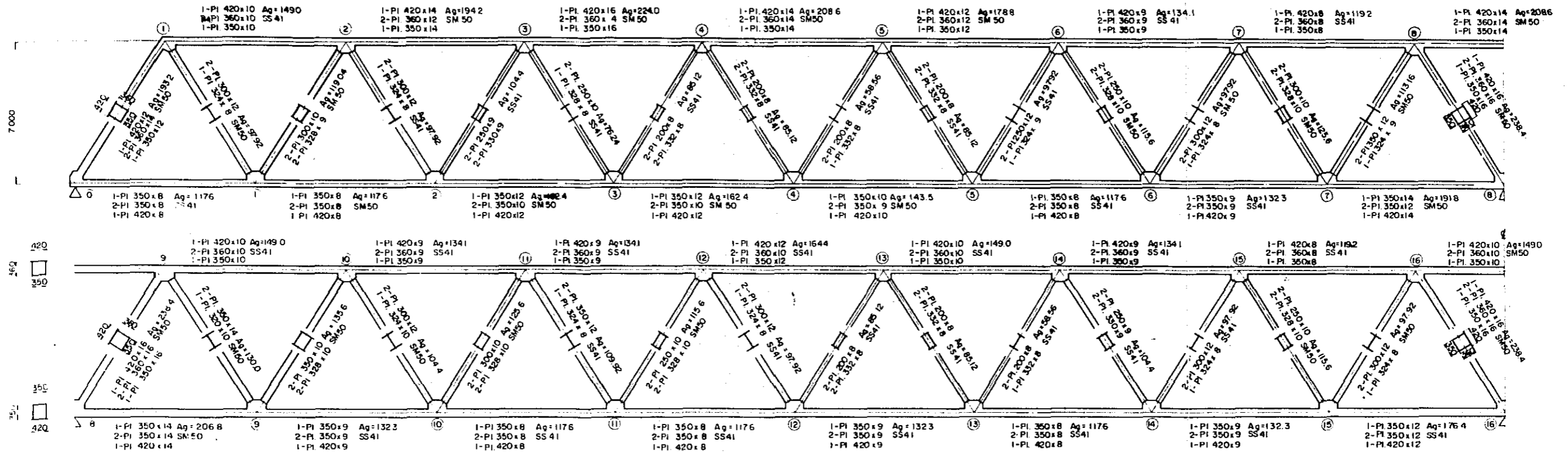


OVERSEAS TECHNICAL
 COOPERATION AGENCY, JAPAN
 PACIFIC CONSULTANTS, K. TOKYO, JAPAN
 EAST PAKISTAN
 GARAI RIVER BRIDGE PROJECT
 TYPICAL DETAIL STEEL BRIDGE
 GENERAL VIEW

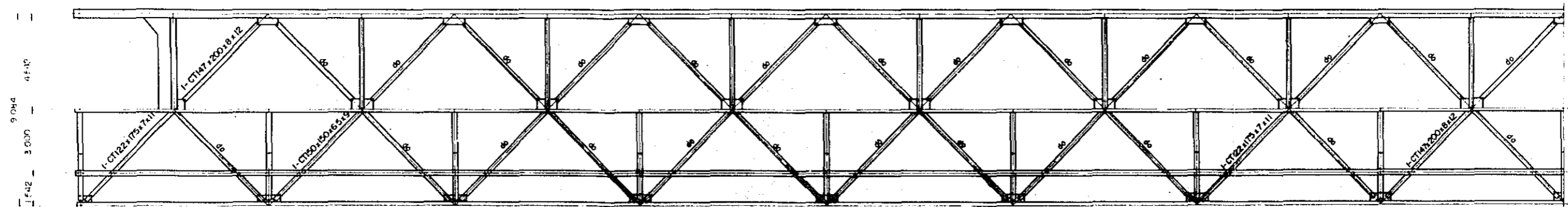
SCALE 1:100 1:500

DATE Aug 1967

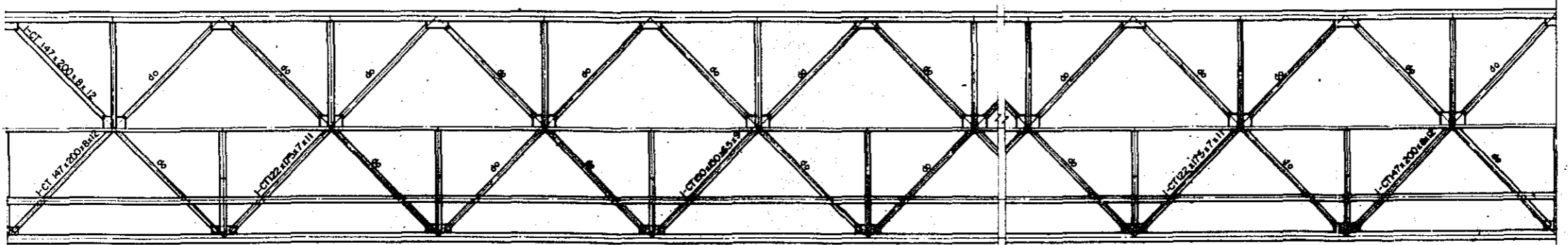
MAIN TRUSS SCALE 1:100



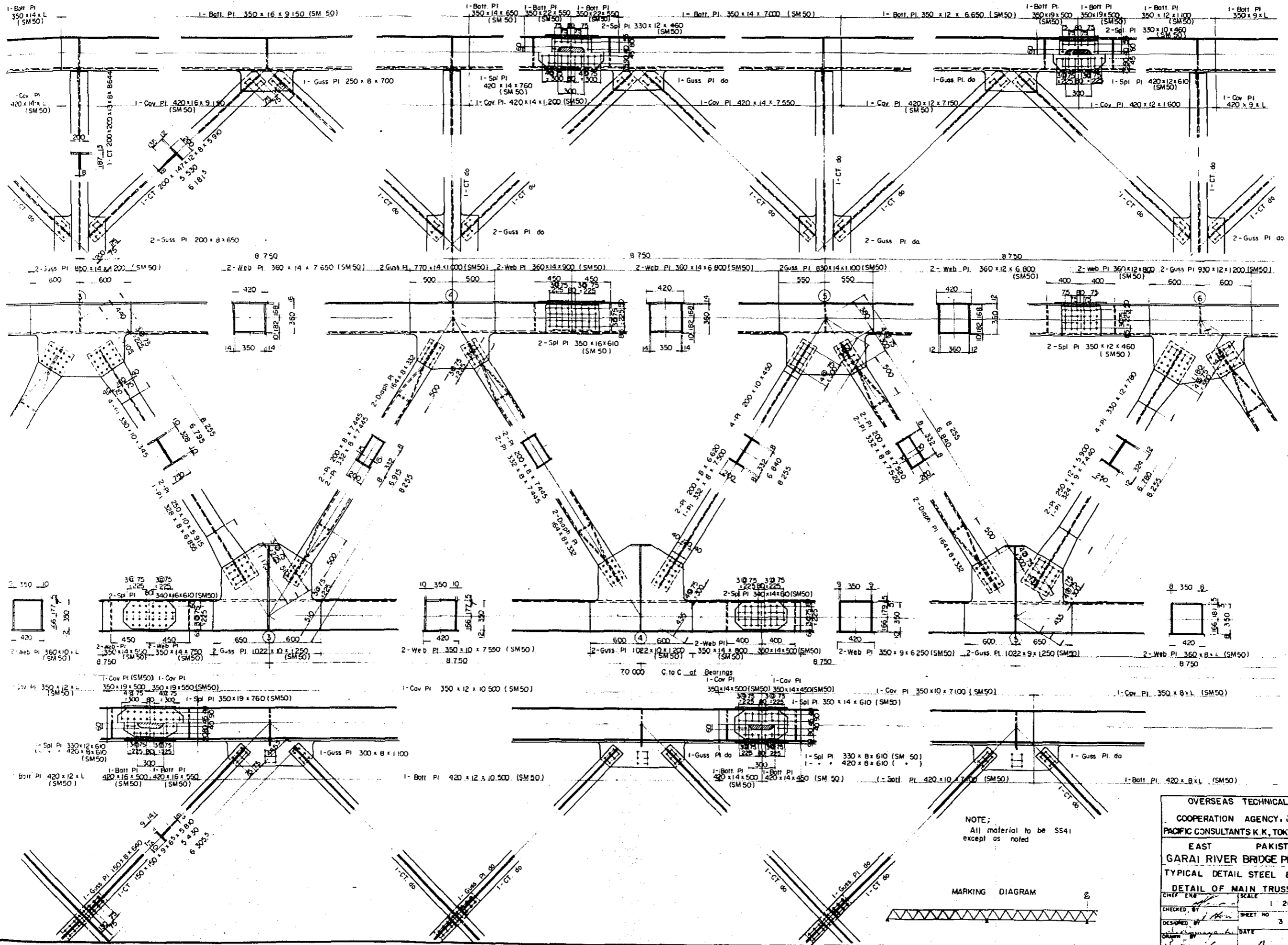
LATERAL BRACING and FLOOR SYSTEM SCALE 1:100



END SPAN		OUTSIDE STRINGER		INTERMEDIATE SUPPORT		END SPAN		INTERMEDIATE STRINGER		INTERMEDIATE SUPPORT		END FLOOR BEAM		INTERMEDIATE FLOOR BEAM	
		INTERMEDIATE SPAN		INTERMEDIATE SPAN		INTERMEDIATE SPAN		INTERMEDIATE SPAN		INTERMEDIATE SPAN		QUARTER OF SPAN		QUARTER OF SPAN	
1-Pl 240x16	Ag=120.0	1-Pl 240x14	Ag=110.4	1-Pl 240x14	Ag=110.4	1-Pl 240x16	Ag=120.0	1-Pl 240x14	Ag=110.4	1-Pl 240x14	Ag=110.4	1-Pl 230x25	Ag=200.3	1-Pl 230x22	Ag=168.6
1-Pl 600x8	SM50	1-Pl 600x8	SM50	1-Pl 600x8	SM50	1-Pl 600x8	SM50	1-Pl 600x8	SM50	1-Pl 600x8	SM50	1-Pl 1000x8	SM50	1-Pl 1000x8	SM50
1-Pl 240x14		1-Pl 240x12		1-Pl 240x12		1-Pl 240x14		1-Pl 240x12		1-Pl 240x12		1-Pl 240x22		1-Pl 200x19	



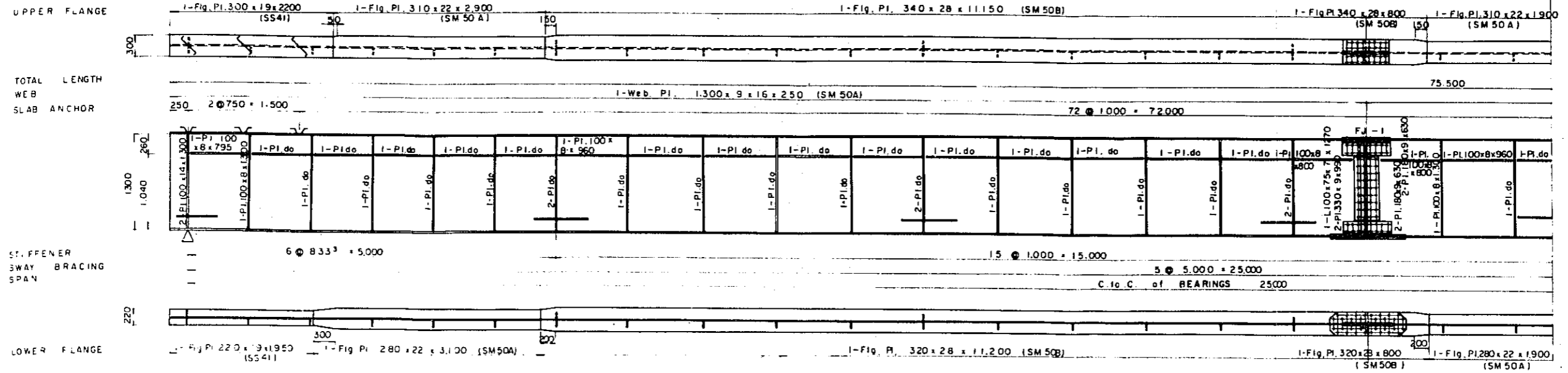
OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO, JAPAN	
EAST PAKISTAN GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE MAIN TRUSS	
CHECKED BY	SCALE 1:100
DESIGNED BY	SHEET NO. 2
DATE	DATE



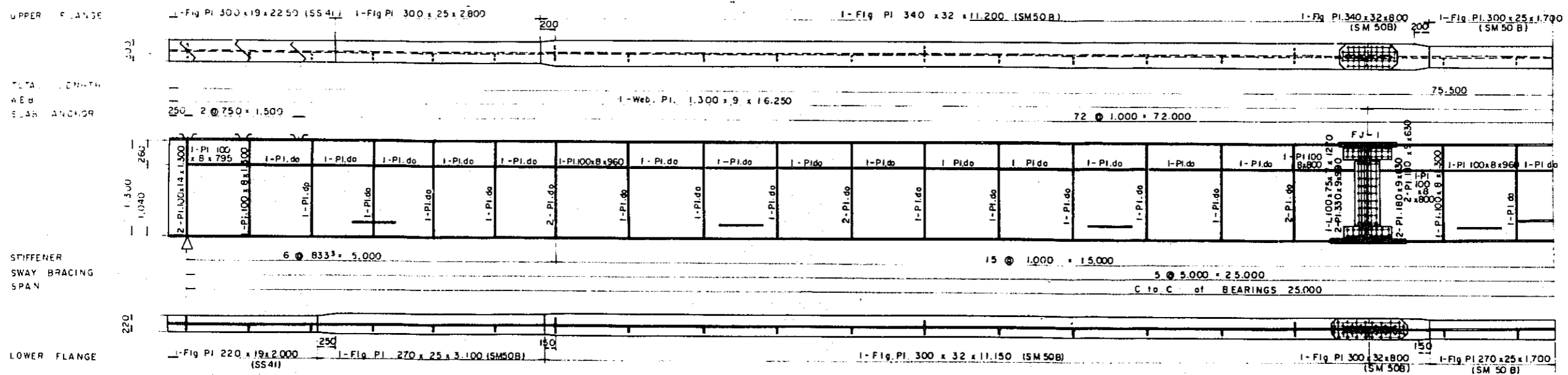
OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO, JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
DETAIL OF MAIN TRUSS	
CHIEF ENGR	SCALE 1:20
CHECKED BY	SHEET NO 3
DESIGNED BY	DATE
DRAWN BY	

MAIN GIRDER (I)

OUTSIDE GIRDER SCALE 1:30



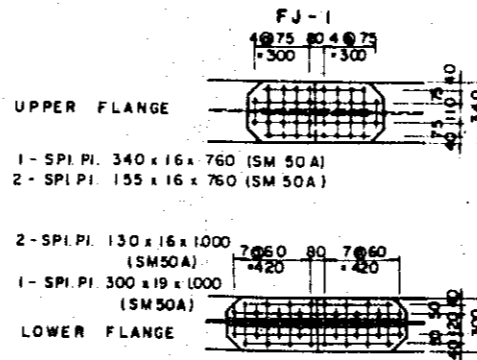
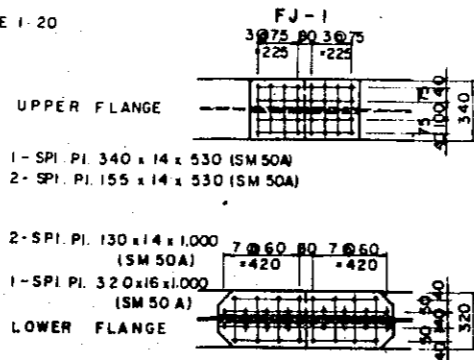
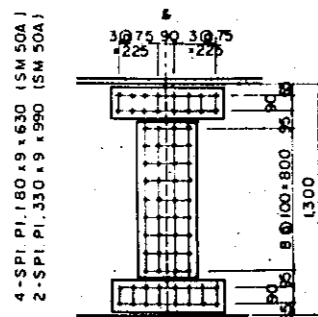
INSIDE GIRDER SCALE 1:30



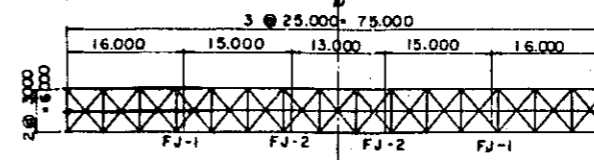
DETAIL of SPLICE SCALE 1:20

OUTSIDE GIRDER INSIDE GIRDER

SPLICE of WEB PLATE SCALE 1:20



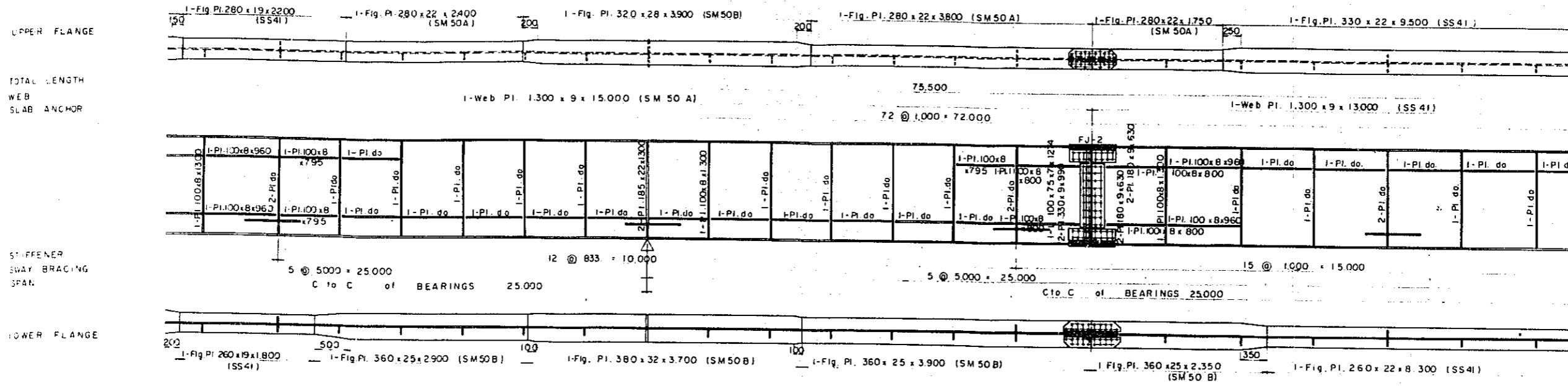
MARKING DIAGRAM SCALE 1:500



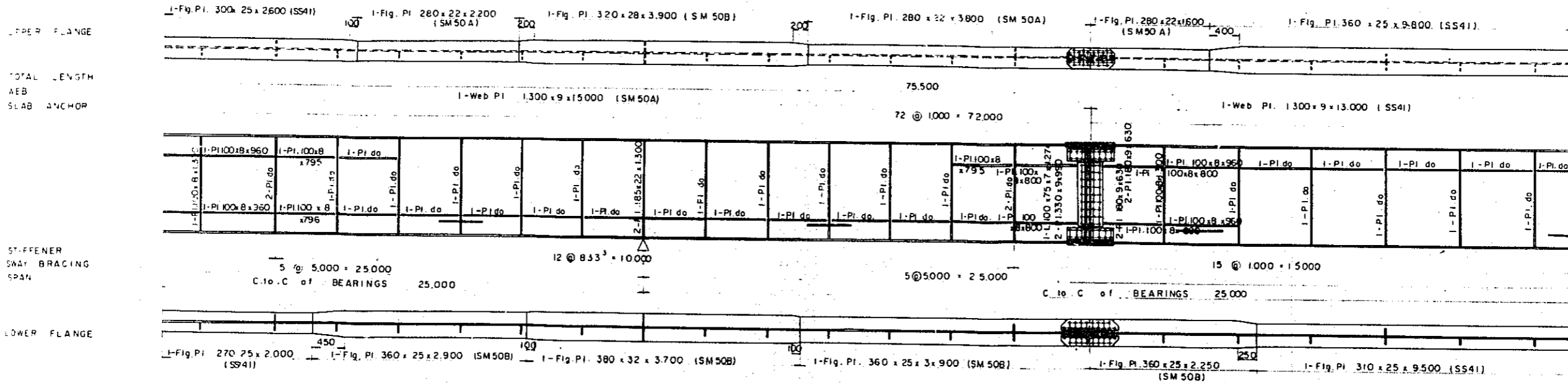
OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K. K., TOKYO, JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
MAIN GIRDER (I)	
CHECKED BY	SCALE 1:30
DESIGNED BY	SHEET NO. 4
DATE	DATE

MAIN GIRDER (2)

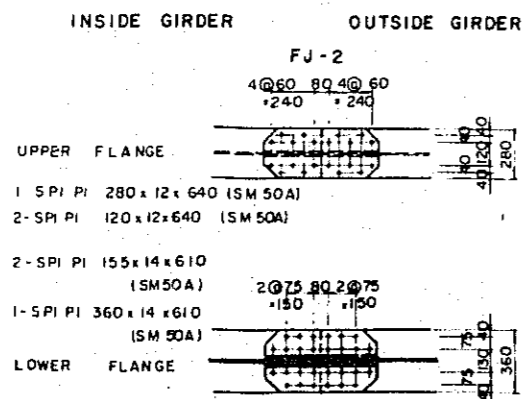
OUTSIDE GIRDER SCALE 1/30



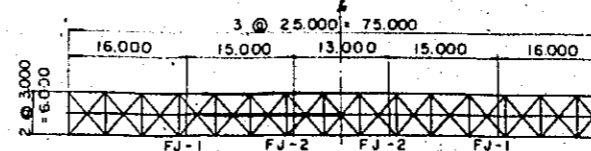
INSIDE GIRDER



DETAIL of SPLICE SCALE 1/20



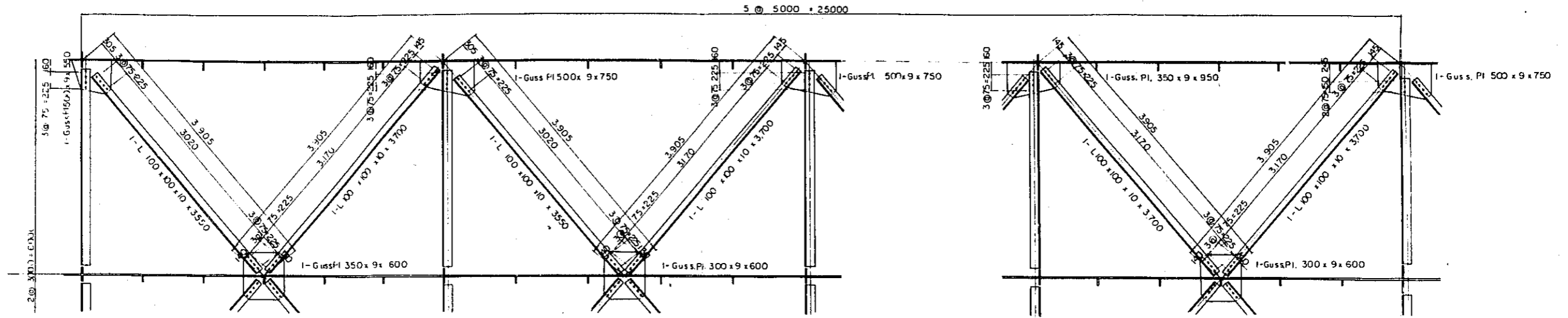
MARKING DIAGRAM SCALE 1/500



OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
MAIN GIRDER (2)	
CHIEF ENG. <i>[Signature]</i>	SCALE 1/30 1/500
CHECKED BY <i>[Signature]</i>	SHEET NO. 5
DESIGNED BY <i>[Signature]</i>	DATE <i>[Date]</i>
DRAWN BY <i>[Signature]</i>	

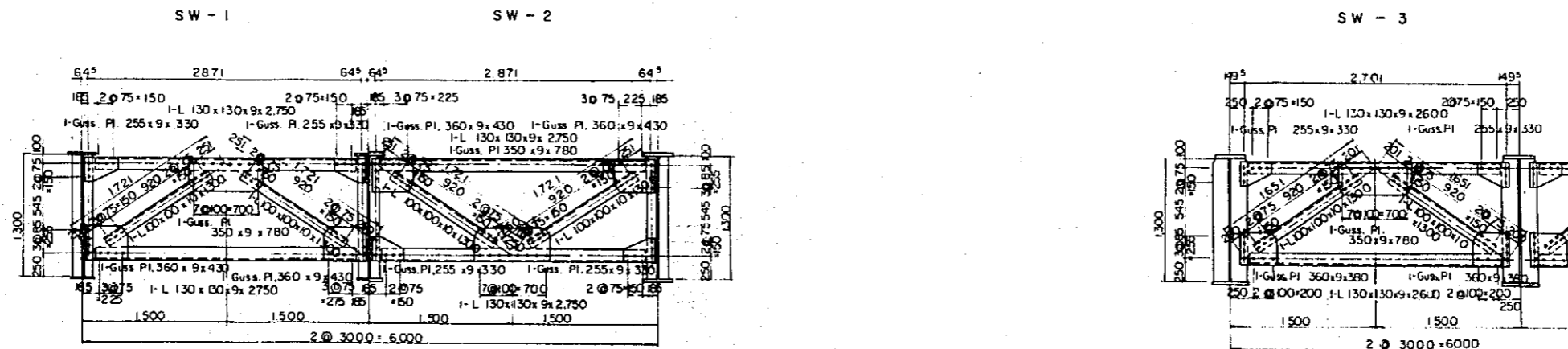
LATERAL BRACING

SCALE 1:30



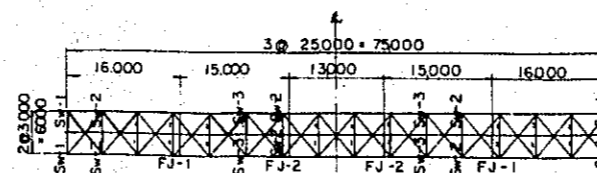
SWAY BRACING

SCALE 1:30

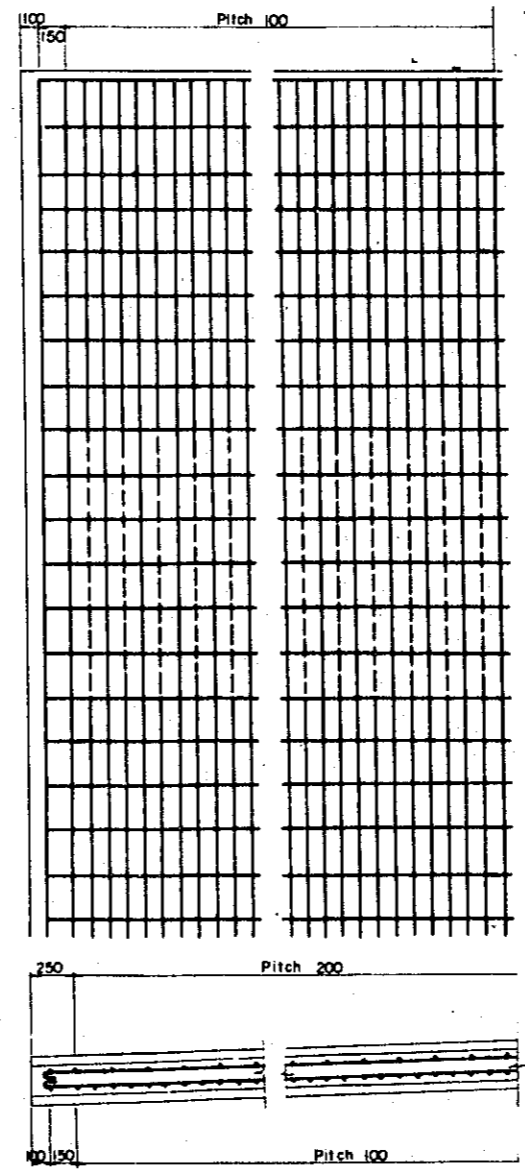
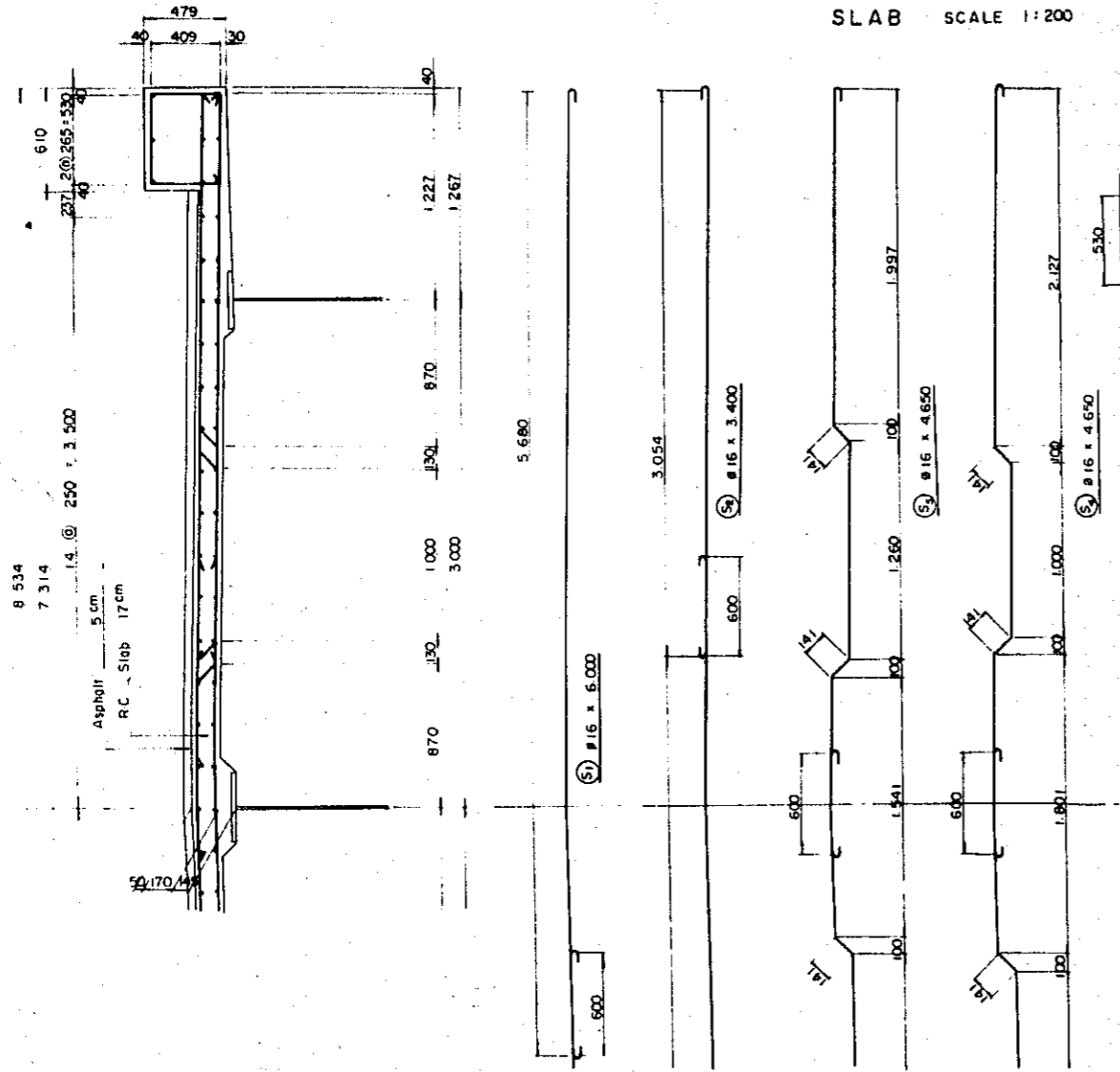


MARKING DIAGRAM

SCALE 1:500

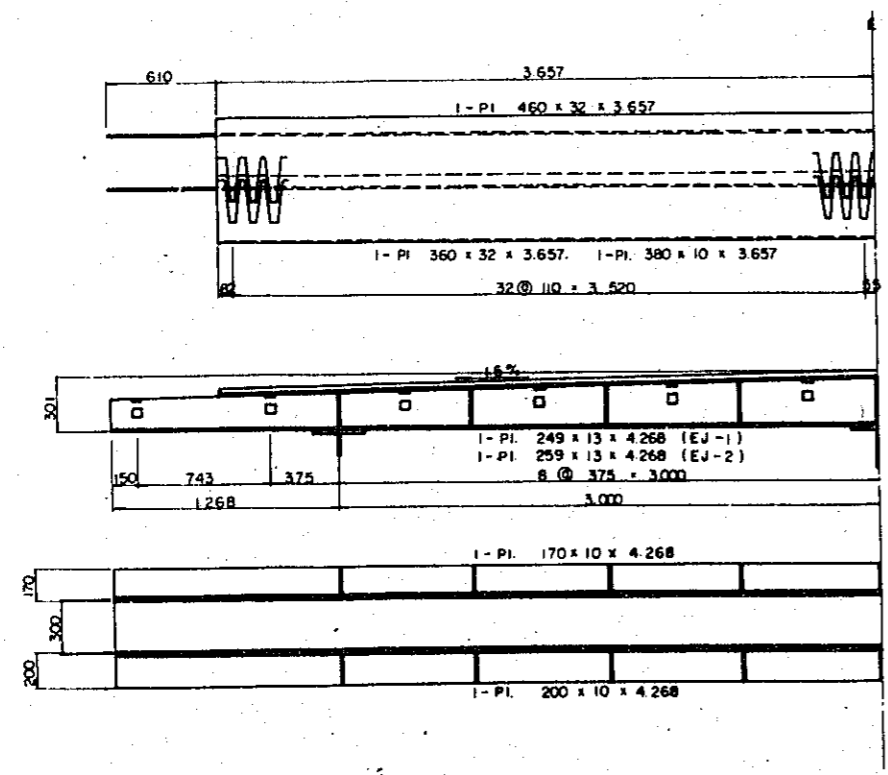
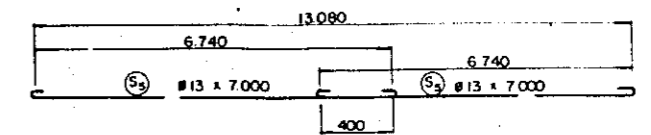


OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO, JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
LATERAL AND SWAY BRACING	
CHEF. ENG.	SCALE 1:30
CHECKED BY	SHEET NO. 6
DESIGNED BY	DATE
DRAWN BY	



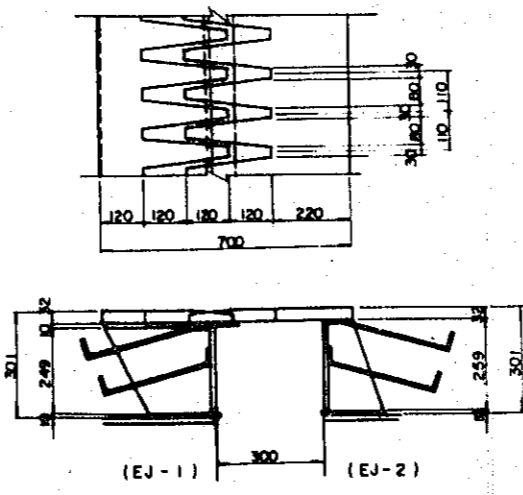
LIST OF MATERIALS (PER 1000 m²)

MARK	SECTION	EACH	LENGTH	WEIGHT/ONE	WEIGHT	REMARKS
S1	#16	10	6.000	1.58	95	
S2	#16	10	3.400	.	54	
S3	#16	5	4.650	.	37	
S4	#16	5	4.650	.	37	
S5	#13	76	1.000	1.04	79	
S6	#13	10	1.650	.	17	
TOTAL					319 kg/m²	



TYPICAL EXPANTION JOINT SCALE 1:10

- EJ-1**
 1-Rib Pl. 300 x 9 x 249
 2-F-B 50 x 9 x 400
- EJ-2**
 1-Rib Pl. 150 x 9 x 259
 2-F-B 50 x 9 x 400

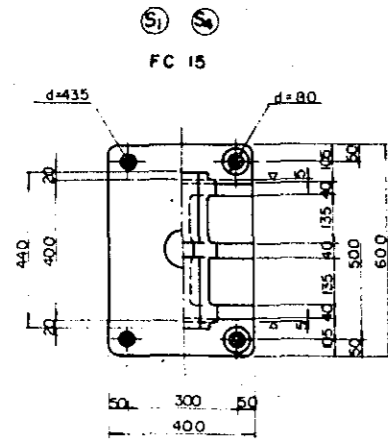
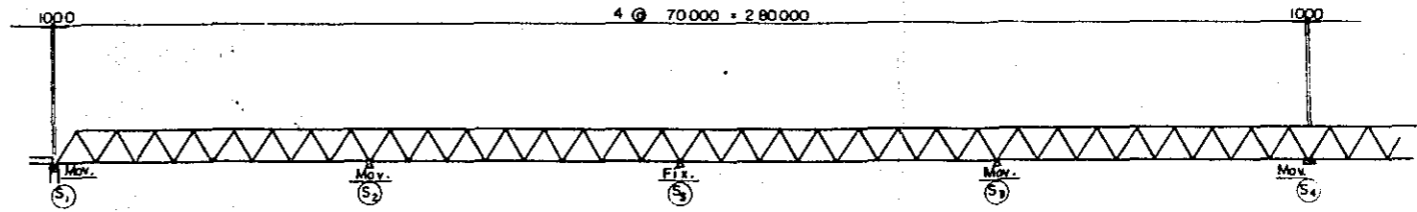


OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K. K., TOKYO JAPAN	
EAST	PAKISTAN
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
SLAB & EXPANTION JOINT	
CHECKED BY: <i>[Signature]</i> DRAWN BY: <i>[Signature]</i> DATE: <i>[Date]</i>	SCALE: 1:200 1:10 SHEET NO: 7 DATE: <i>[Date]</i>

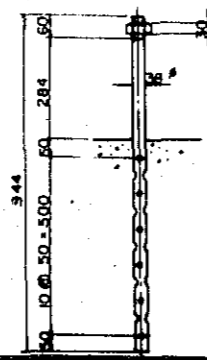
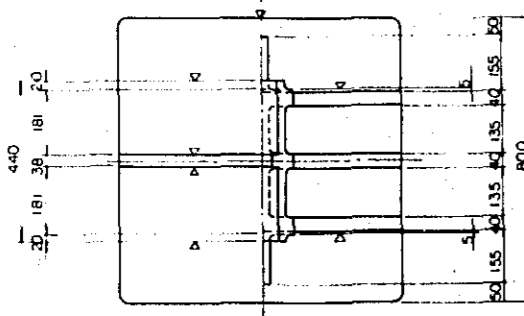
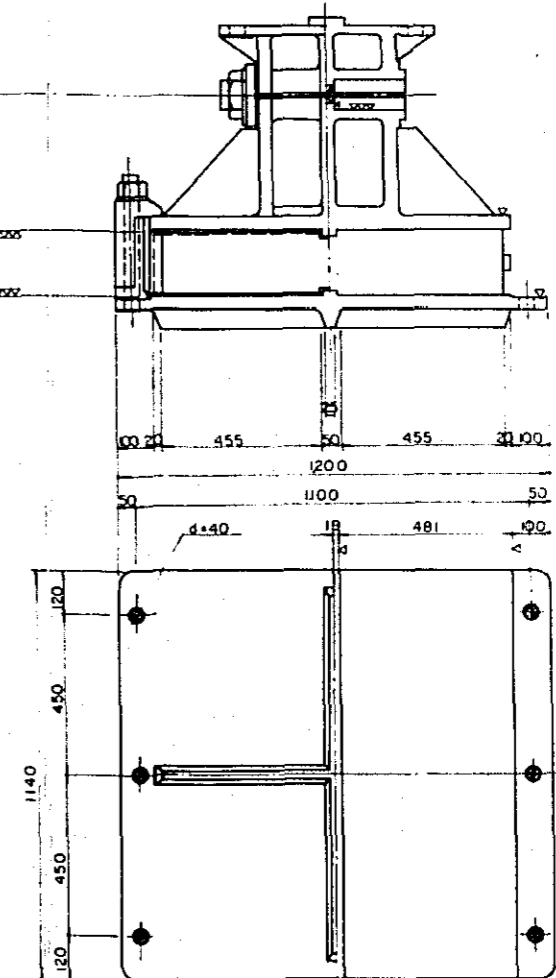
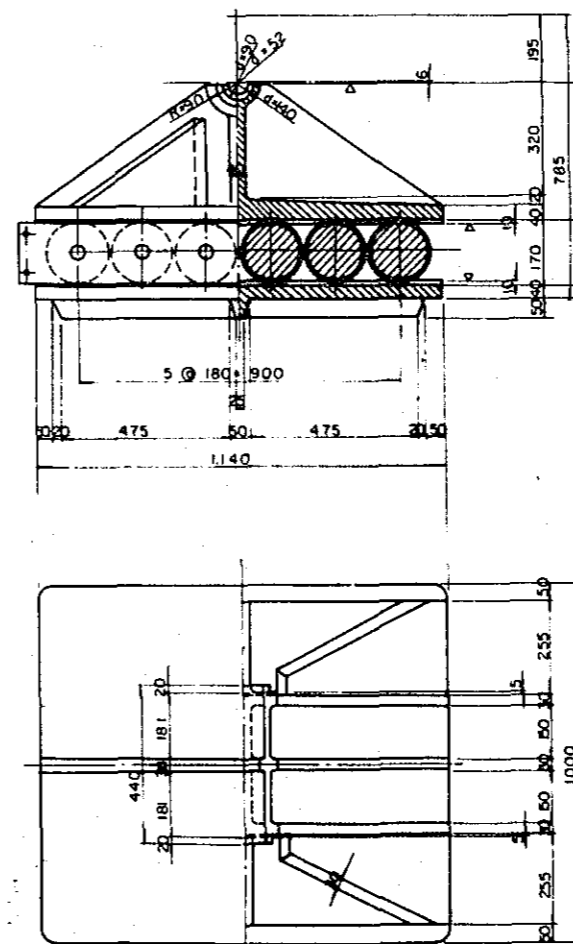
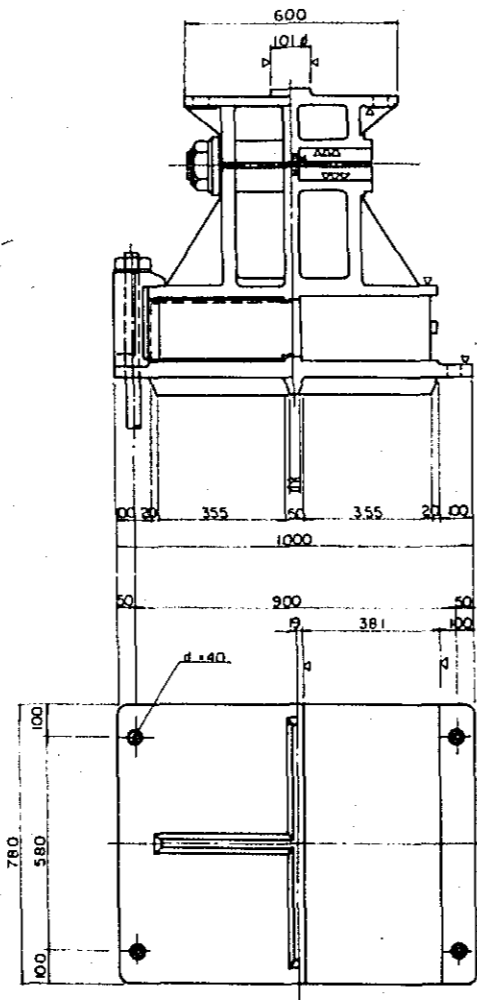
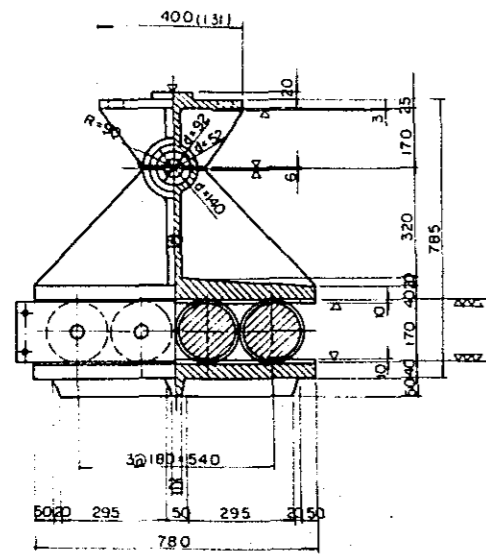
SHOE (1)

SCALE 1 : 10

MARKING DIAGRAM



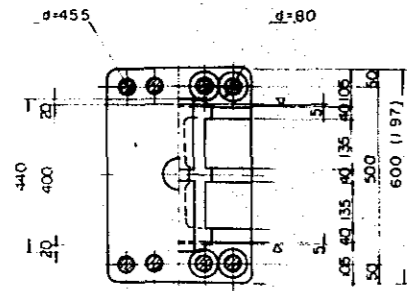
FC 15



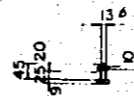
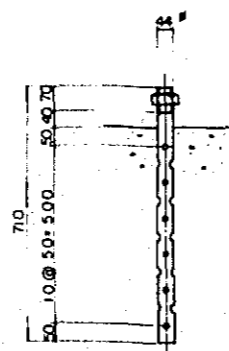
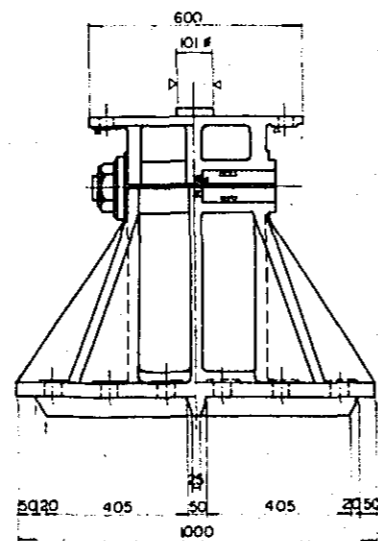
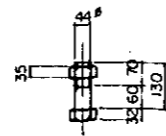
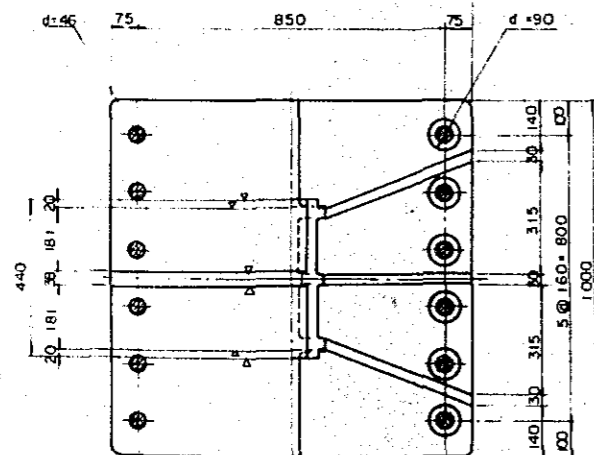
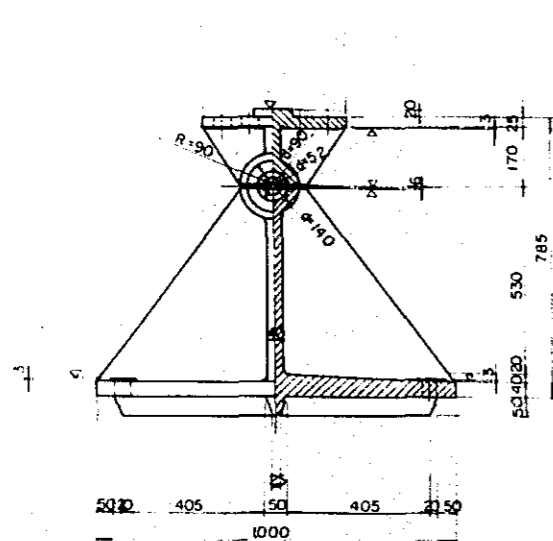
OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
SHOE (1)	
CHECKED BY	SCALE 1 : 10
DRAWN BY	SHEET NO 8
DATE	

SHOE (2) S 1:10

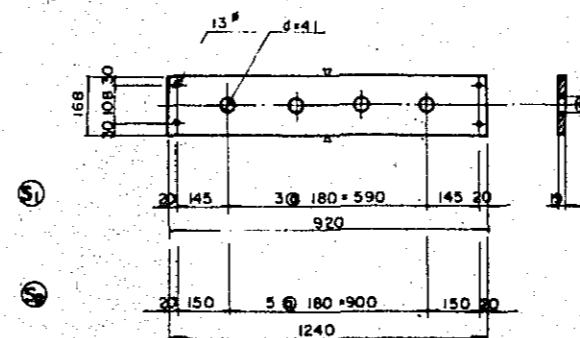
FC 15



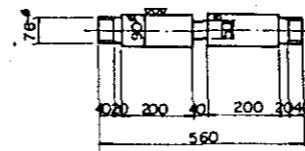
50 60 140 80 50
400



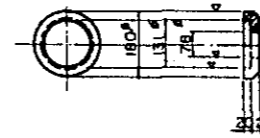
SIDE PLATE (SS41)



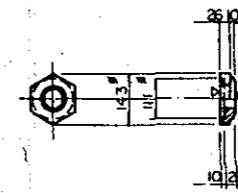
PIN (FC 15)



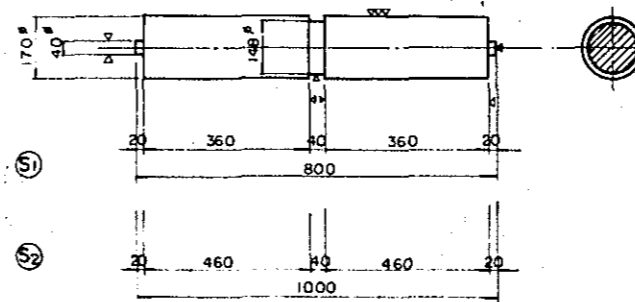
COLLAR (SS41)



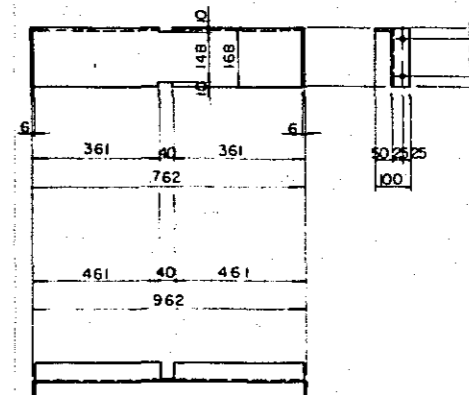
NUT (SS41)



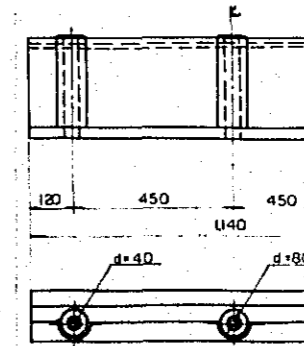
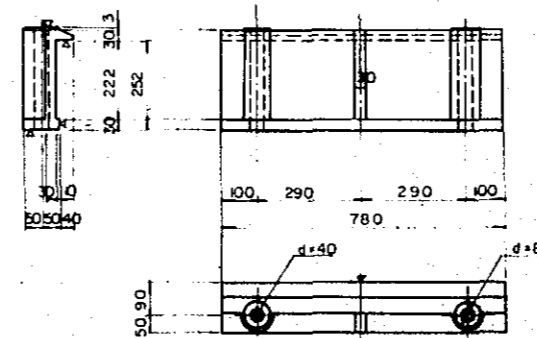
ROLLER (FC 15)



DUSTPLATE (SS41)



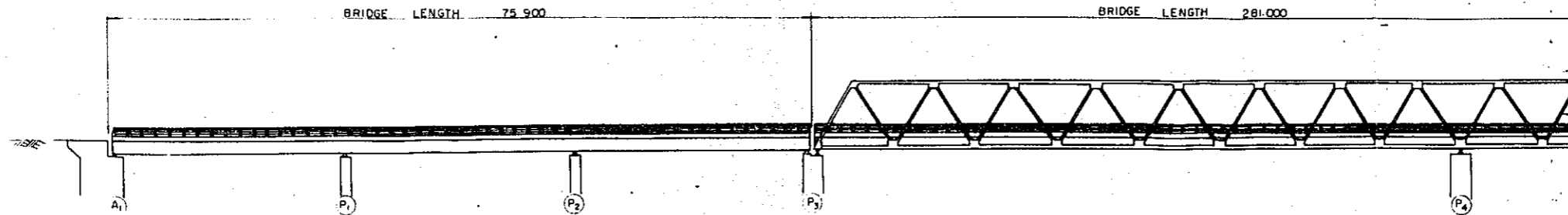
ANCHOR BLOCK (SC 46)



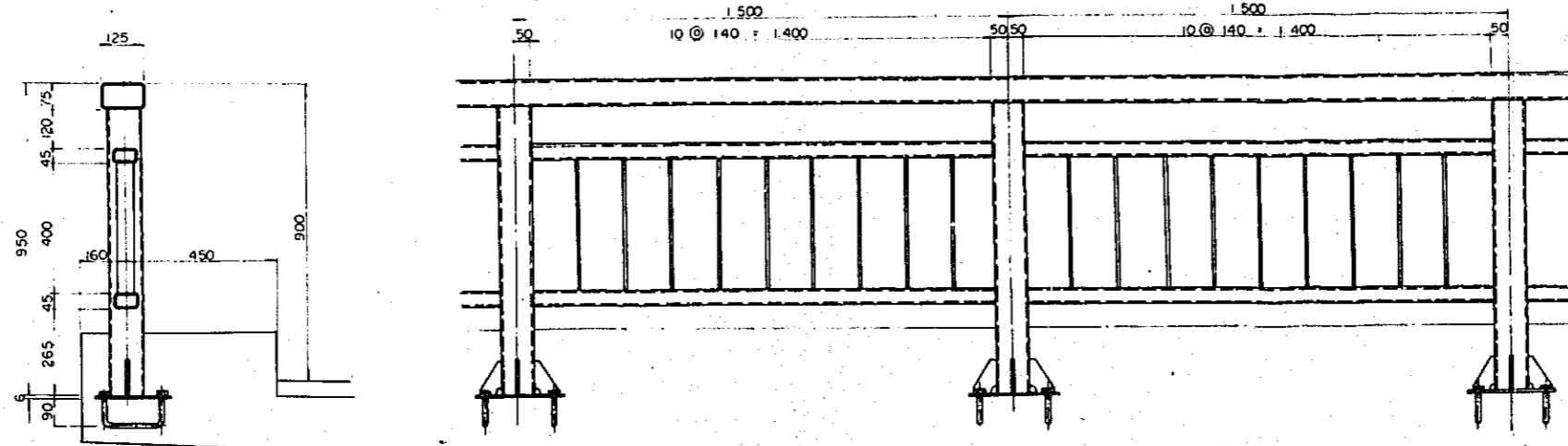
OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO, JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
SHOE (2)	
CHECKED BY	SCALE 1:10
DESIGNED BY	SHEET NO 9
DATE	Aug 1961

HAND RAIL

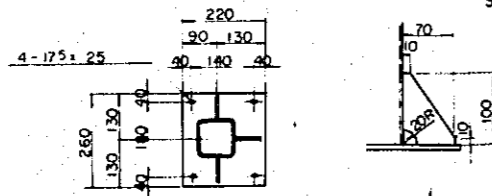
SIDE VIEW SCALE 1:300



SCALE 1:10



SCALE 1:5



POST

- 1 - □ 100 x 100 x 3.2 x 875
- 1 - PL 220 x 6 x 260
- 3 - PL 70 x 6 x 100
- 2 - Anchor Bolt 16# x 320

LIST of MATERIAL (PER 1500^m)

MATERIAL	SECTION	LENGTH	NUMBER	REMARKS
SS 41	100 x 100 x 3.2	875	1	POST
"	220 x 6	260	1	"
"	70 x 6	100	3	"
"	125 x 75 x 3.2	1.500	1	"
"	75 x 45 x 2.3	1.400	2	"
(F.B)	50 x 6	400	9	"
SR 24	16 #	320	2	Anchor Bolt

OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO, JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
HAND RAIL	
CHIEF ENG.	SCALE
CHECKED BY	1:300, 1:10, 1:5
DESIGNED BY	SHEET NO. 10
DRAWN BY	DATE

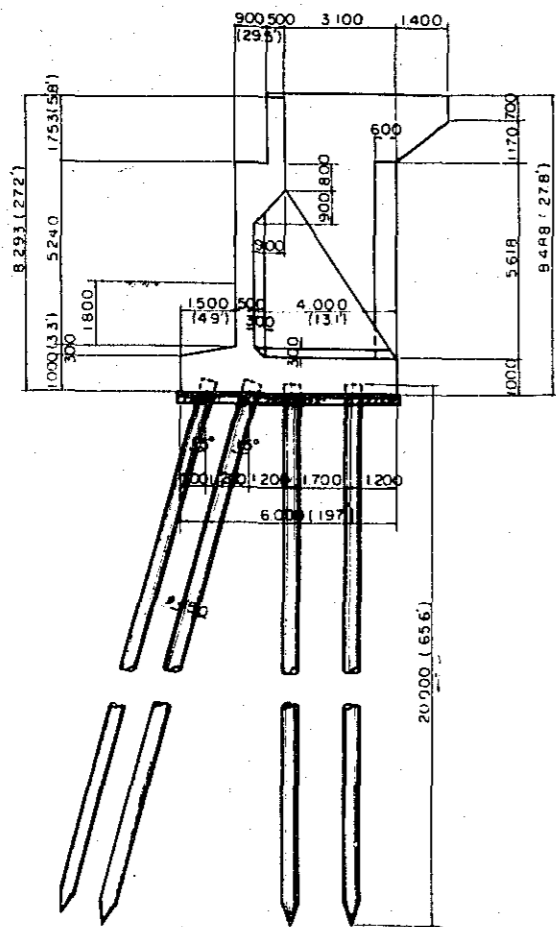
GENERAL VIEW (FOR STEEL BRIDGE)

SCALE 1:100

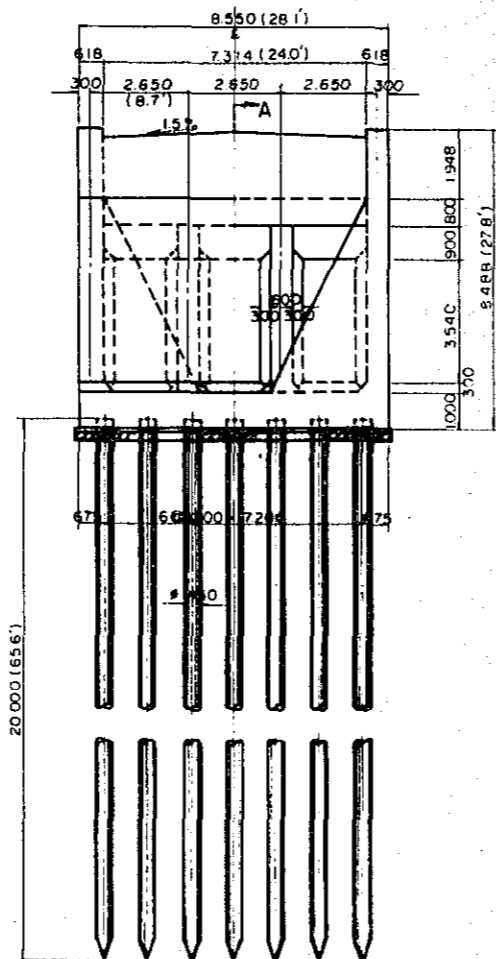
A - 1.2

P-2,12 (P-1,13)

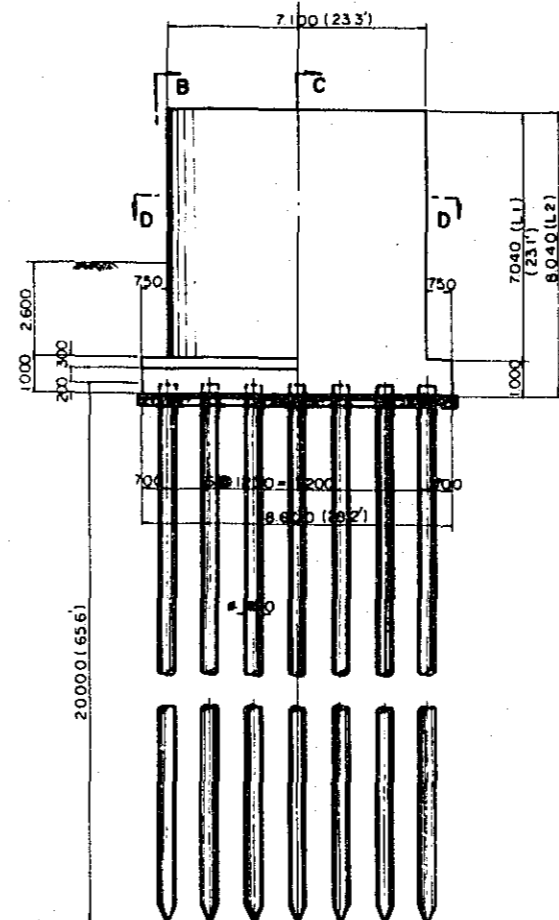
SECTION A - A



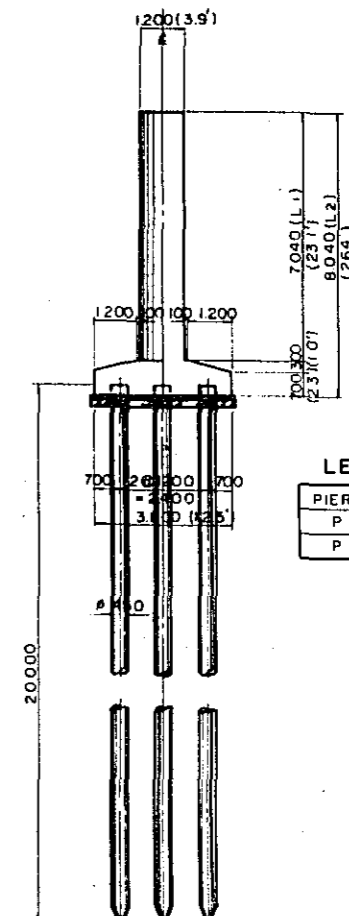
FRONT BACK



SECTION A - A



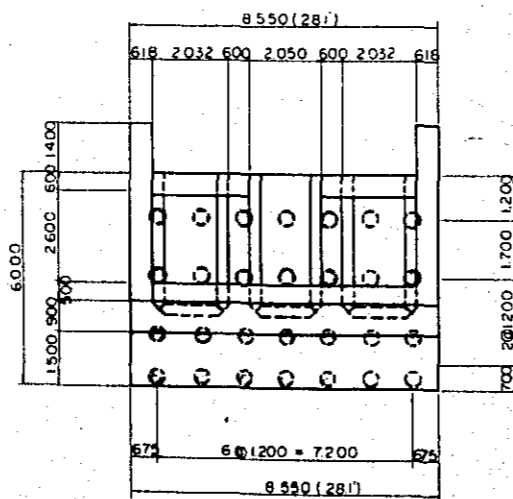
SECTION B - B SECTION C - C



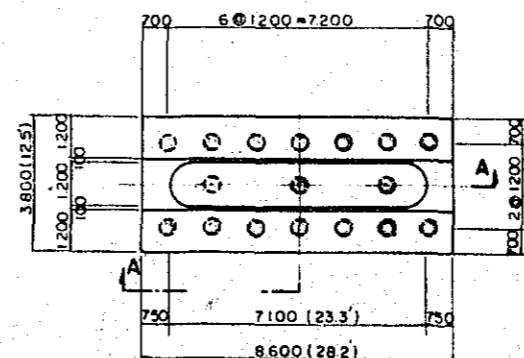
LENGTH OF PIERS

PIER NO	L1	L2
P - 1	6 090	7 090
P - 13	6 090	7 090

PLAN



SECTION D - D



OVERSEAS TECHNICAL
 COOPERATION AGENCY, JAPAN
 PACIFIC CONSULTANTS K.K, TOKYO JAPAN
 EAST PAKISTAN
 GARAI RIVER BRIDGE PROJECT
 TYPICAL DETAIL STEEL BRIDGE
 GENERAL VIEW

CHECKED BY	SCALE
DESIGNED BY	SHEET NO
DRAWN BY	DATE

SCALE 1:100
 SHEET NO 11
 DATE

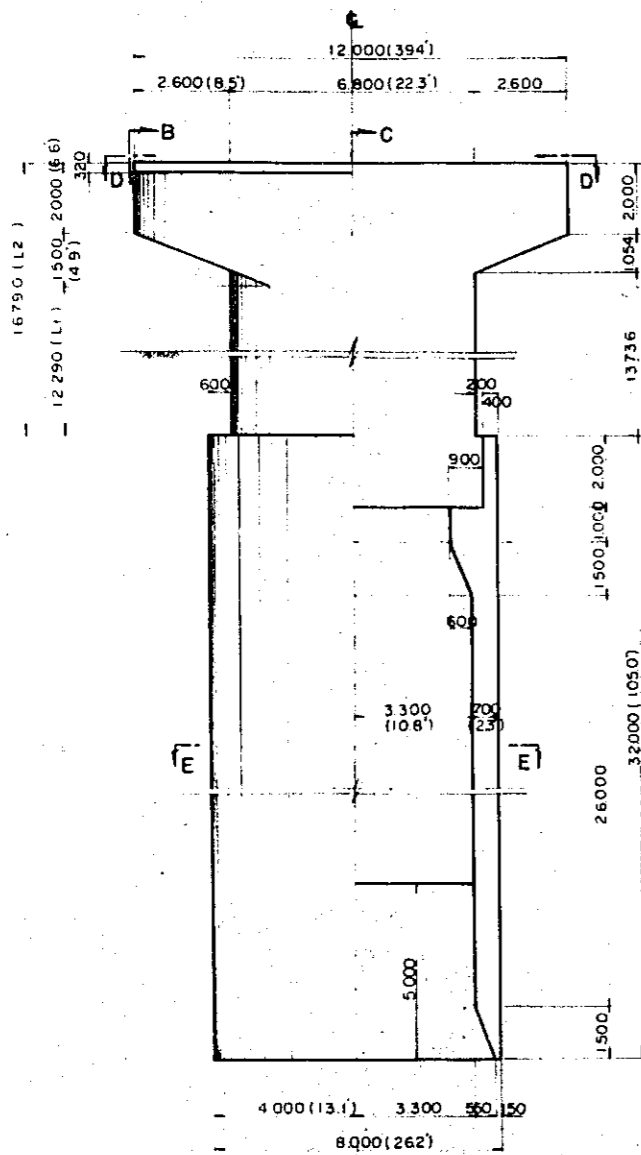
GENERAL VIEW (FOR STEEL BRIDGE)

P-3.11

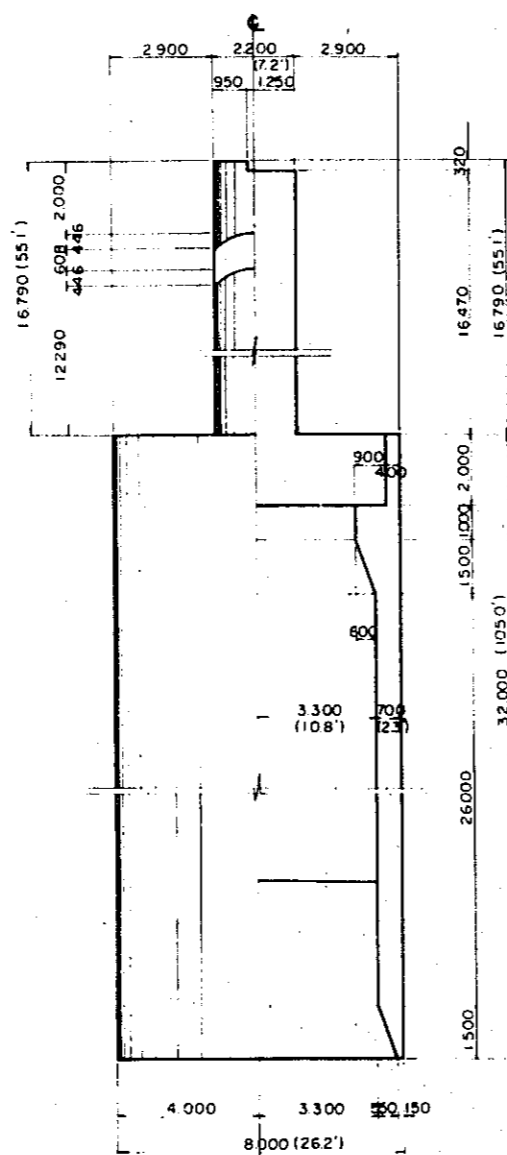
SCALE 1:100

P-6.8 (P-4.5.7.9.10)

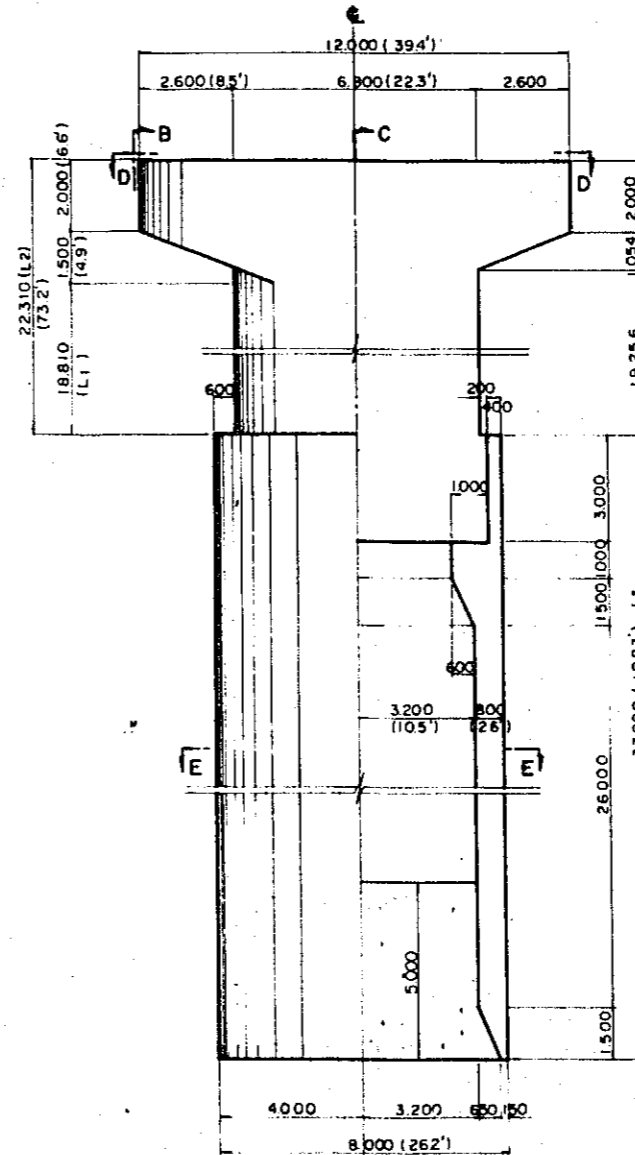
SECTION A - A



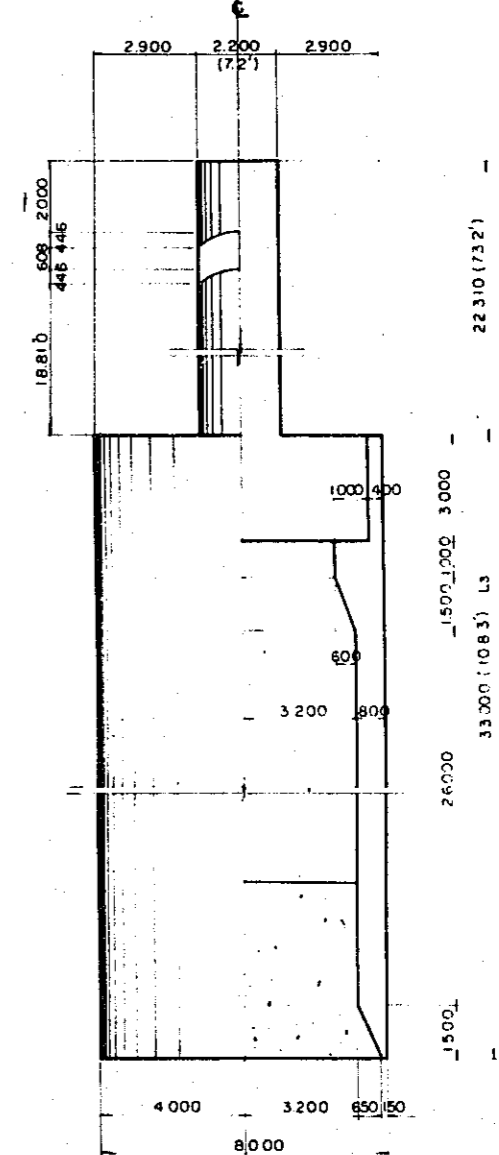
SECTION B - B SECTION C - C



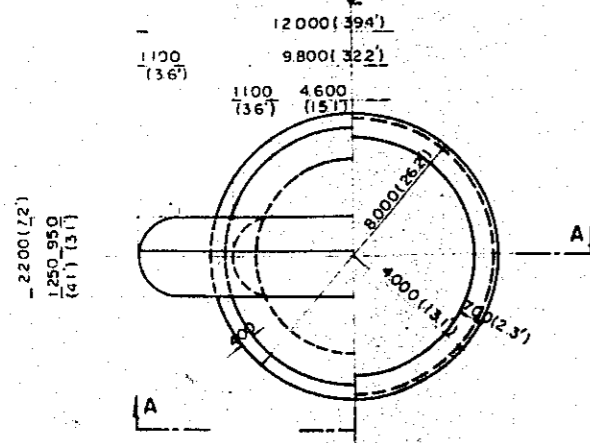
SECTION A - A



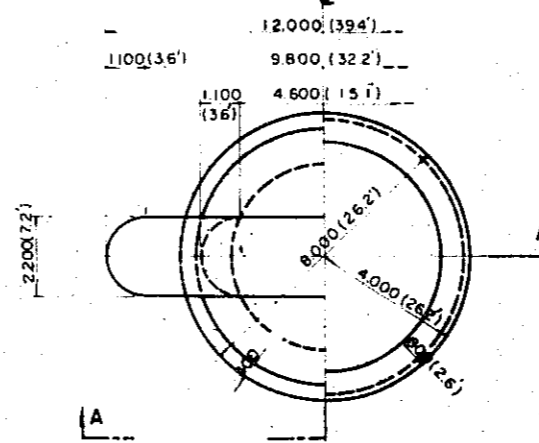
SECTION B - B SECTION E - E



SECTION D - D SECTION E - E



SECTION D - D SECTION E - E



LENGTH OF PIERS (m)

PIER NO	L ₁	L ₂	L ₃
P-4	15.070	18.570	33.000
P-5	17.170	20.670	33.000
P-7	19.360	22.860	33.000
P-9	17.170	20.670	33.000
P-10	15.070	18.570	25.000

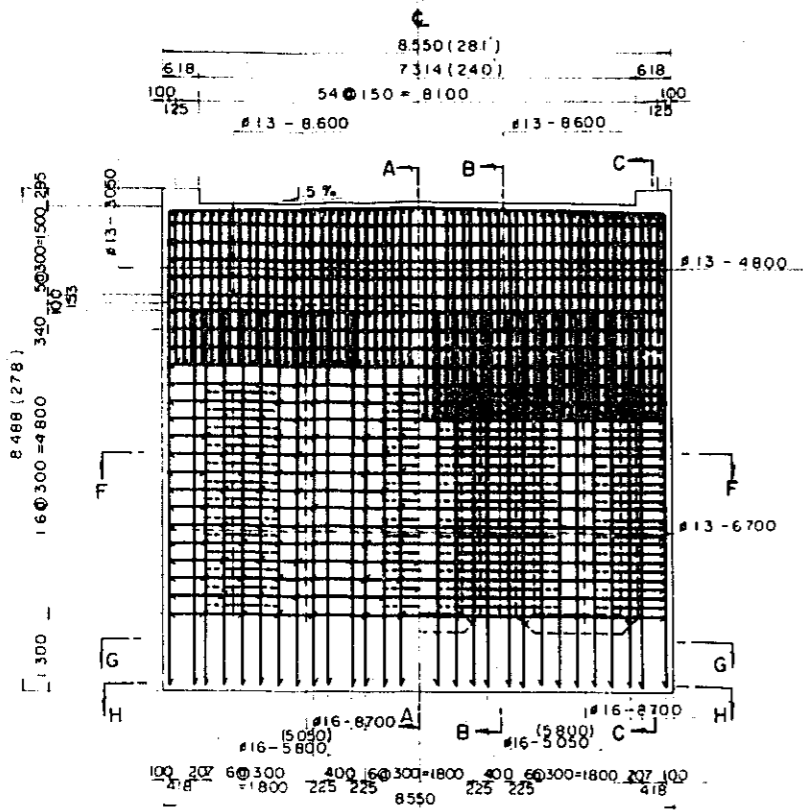
OVERSEAS TECHNICAL
 COOPERATION AGENCY, JAPAN
 PACIFIC CONSULTANTS K.K. TOKYO JAPAN
 EAST PAKISTAN
 GARAI RIVER BRIDGE PROJECT
 TYPICAL DETAIL STEEL BRIDGE
 GENERAL VIEW

CHIEF ENG.	SCALE 1:100
CHECKED BY	SHEET NO 12
DESIGNED BY	DATE

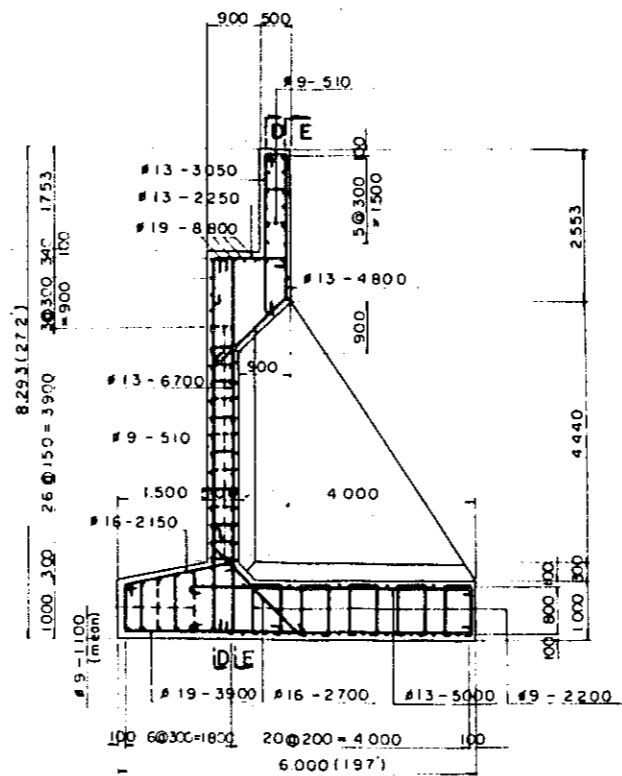
DETAIL OF ABUTMENT A - 1.2 (FOR STEEL BRIDGE)

SCALE 1:60

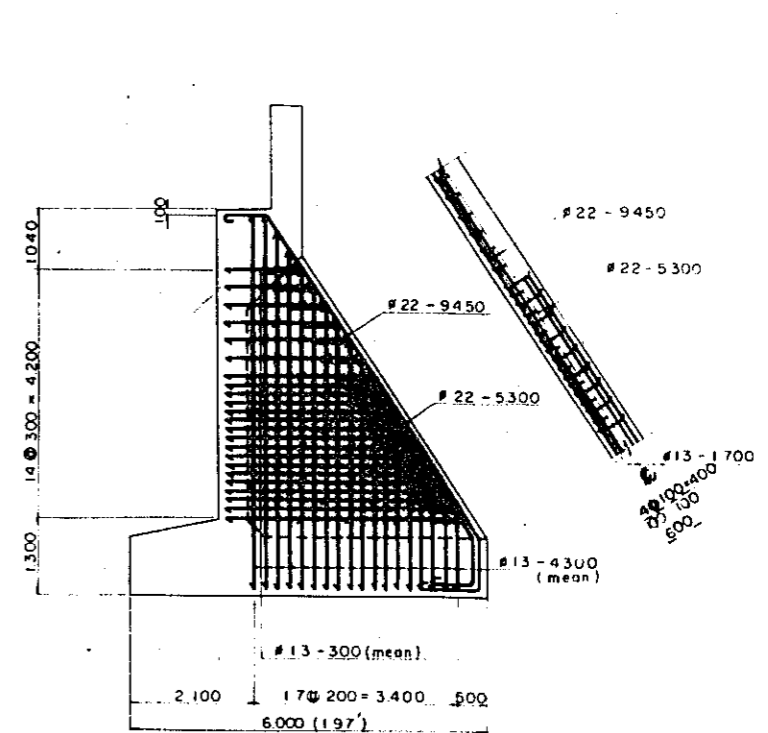
SECTION D - D SECTION E - E



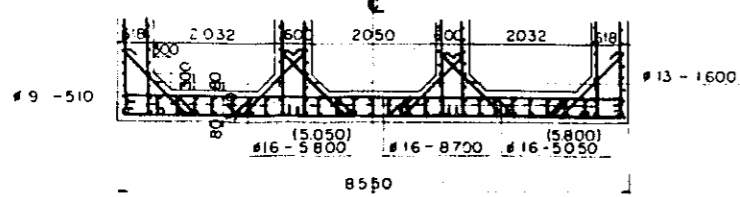
SECTION A - A



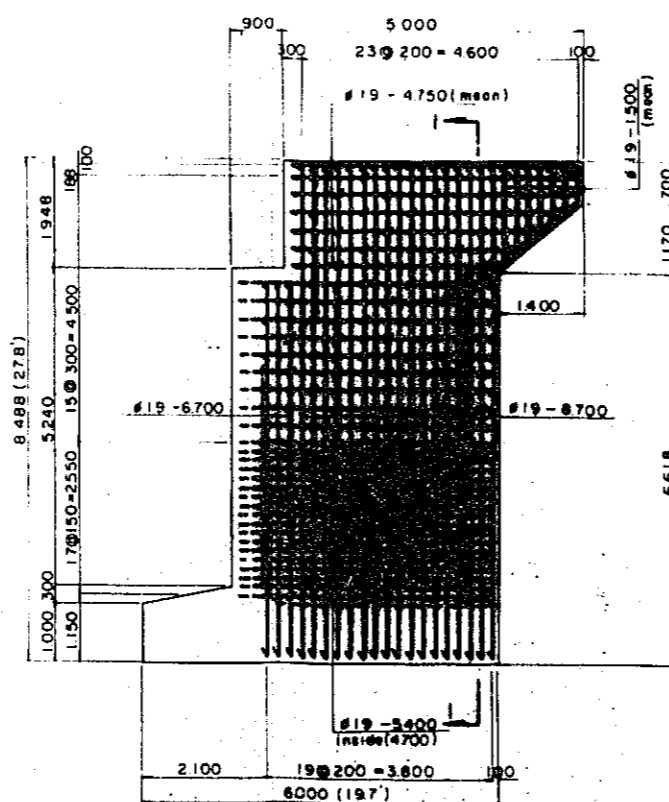
SECTION B - B



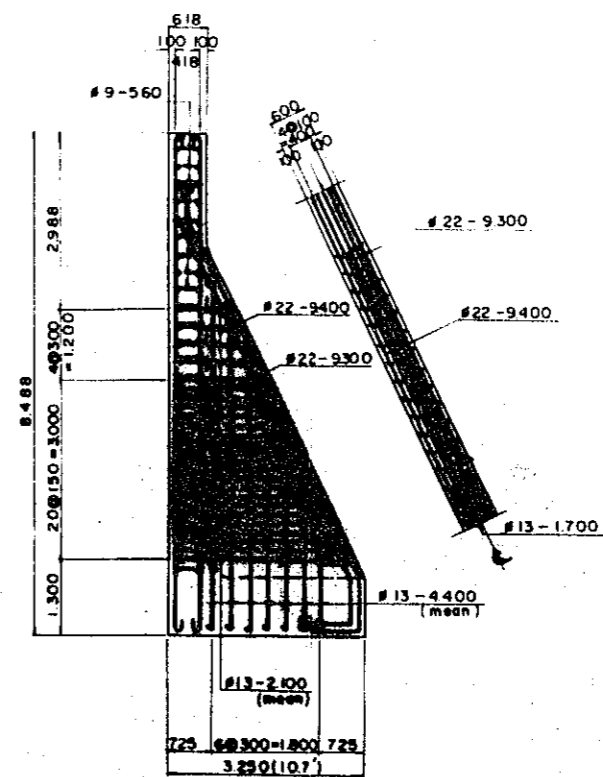
SECTION F - F



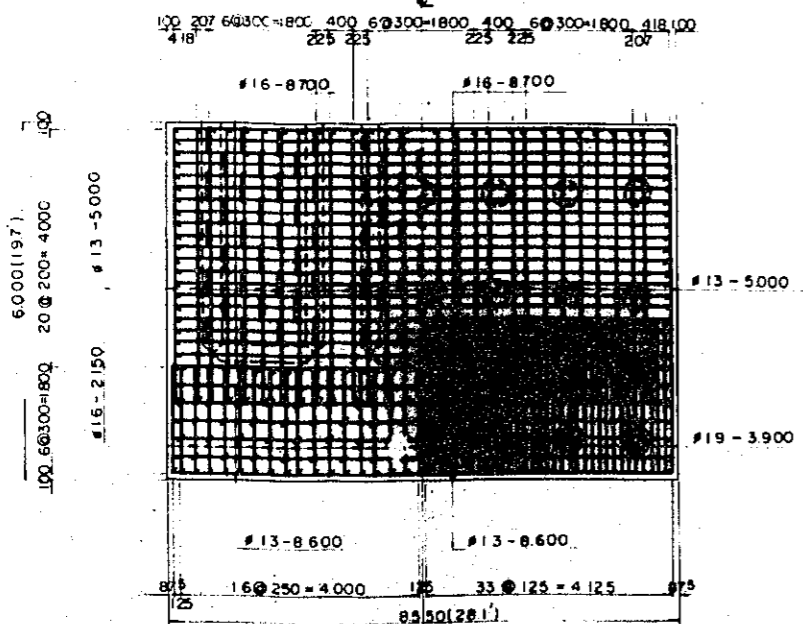
SECTION C - C



SECTION I - I



SECTION G - G SECTION H - H

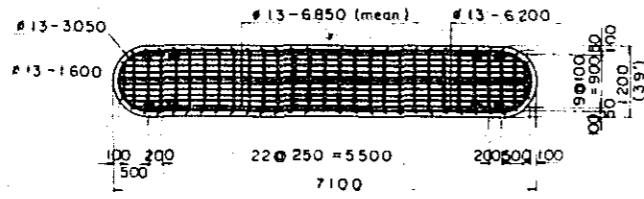


OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PROFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
ABUTMENT A - 1, 2	
CHECKED BY	SCALE 1:60
DESIGNED BY	SHEET NO 13
DRAWN BY	DATE

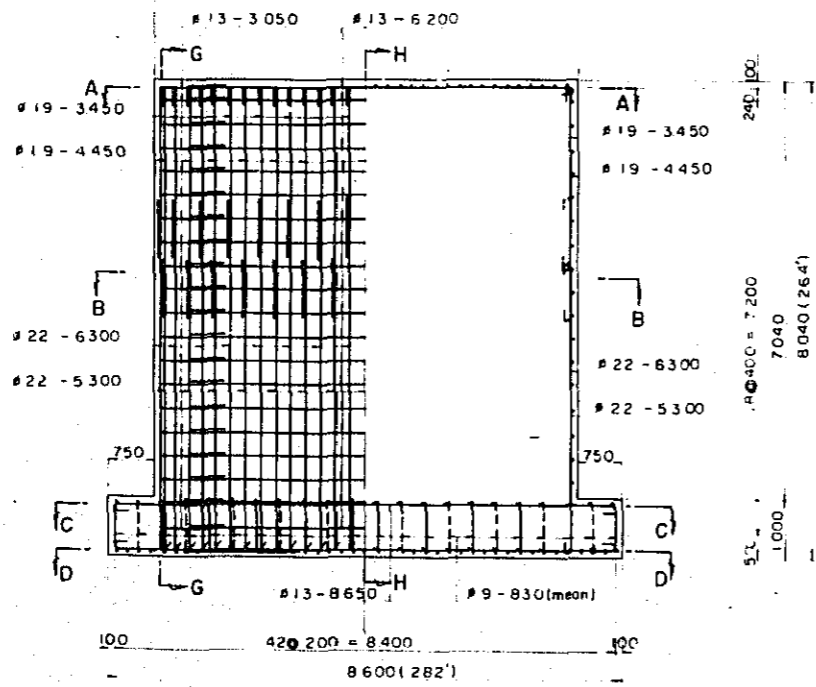
DETAIL OF PIER P-1, 2, 12, 13 (FOR STEEL BRIDGE)

SCALE 1 : 60

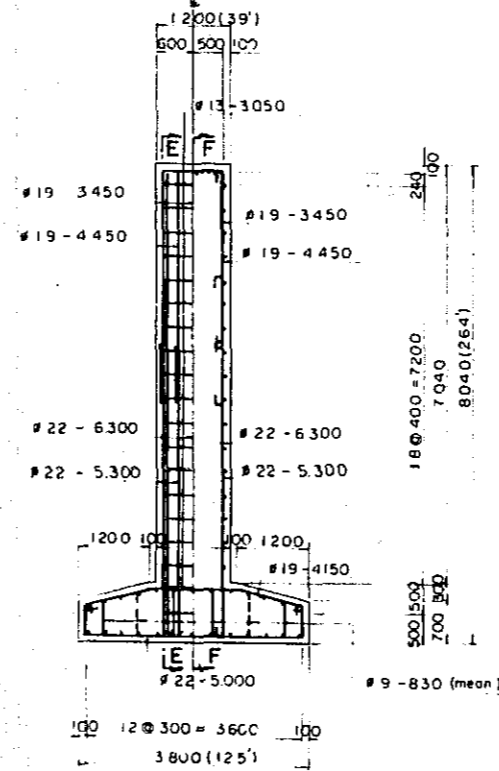
SECTION A - A



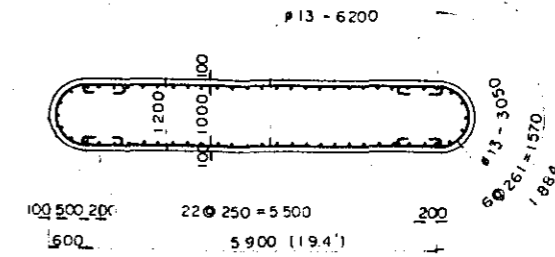
SECTION E - E SECTION F - F
7100 (233')



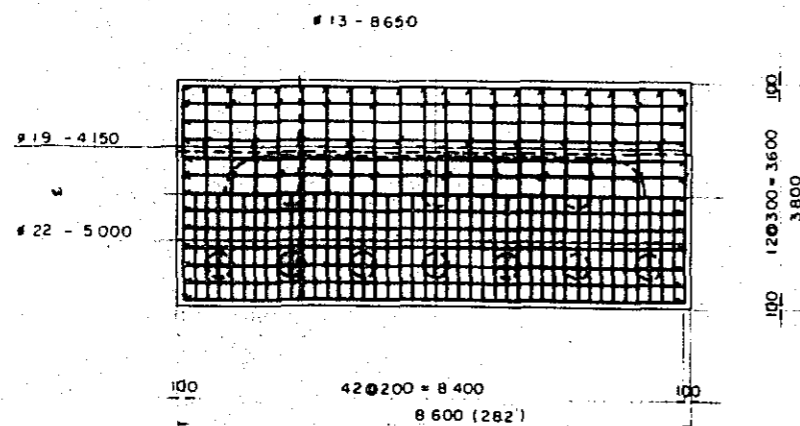
SECTION G - G SECTION H - H



SECTION B - B

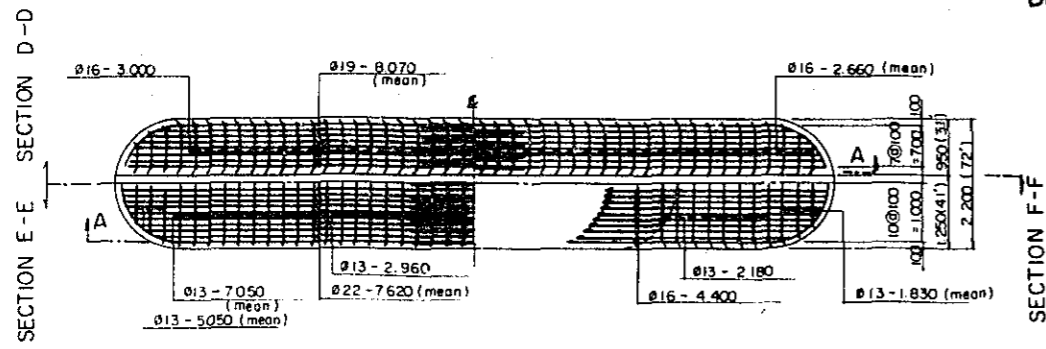


SECTION D - D SECTION C - C

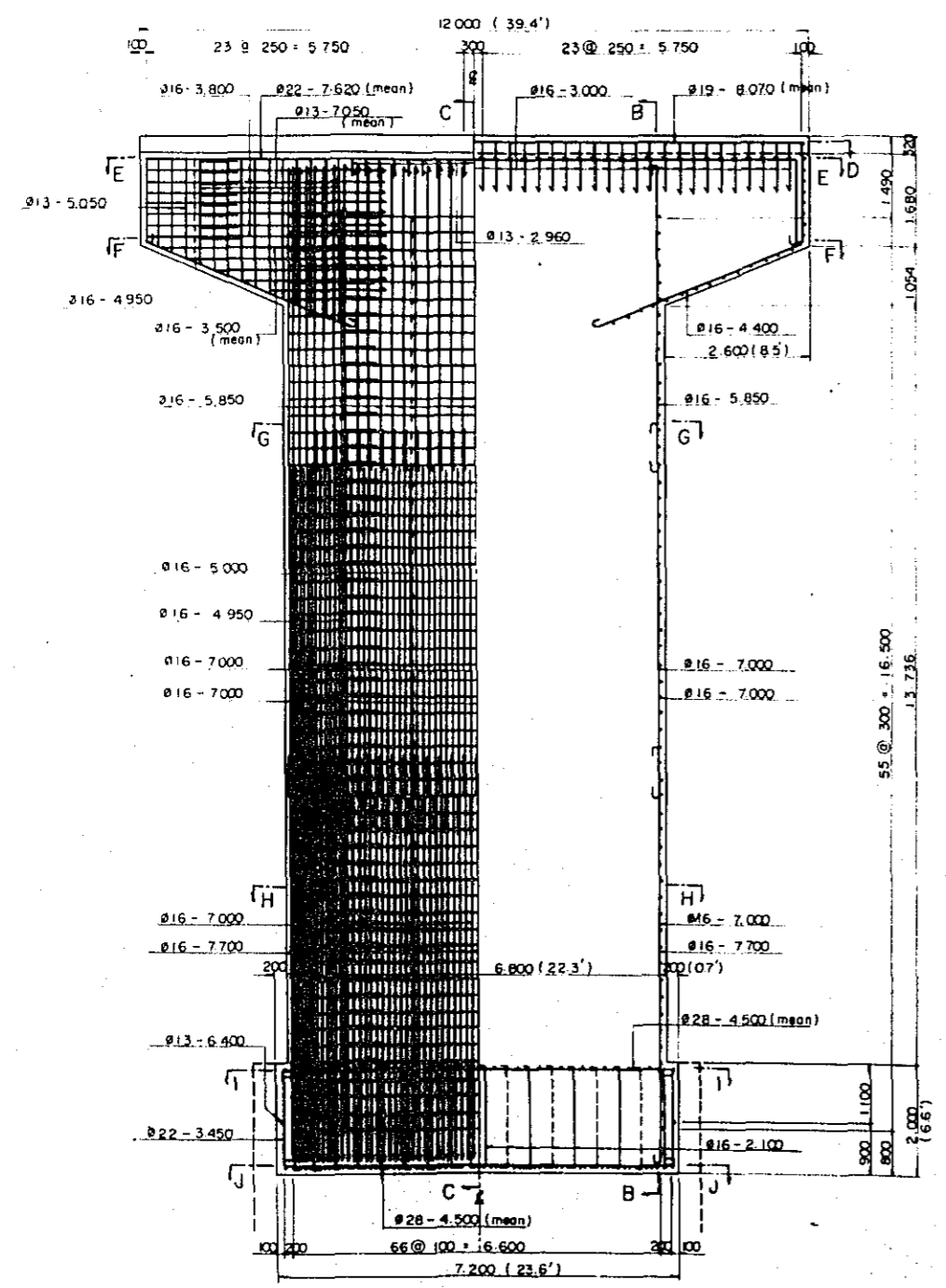


OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K., TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
PIER P-1, 2, 12, 13	
CHIEF ENGR	SCALE 1 : 60
CHECKED BY	SHEET NO 14
DESIGNED BY	DATE
DATE	1964

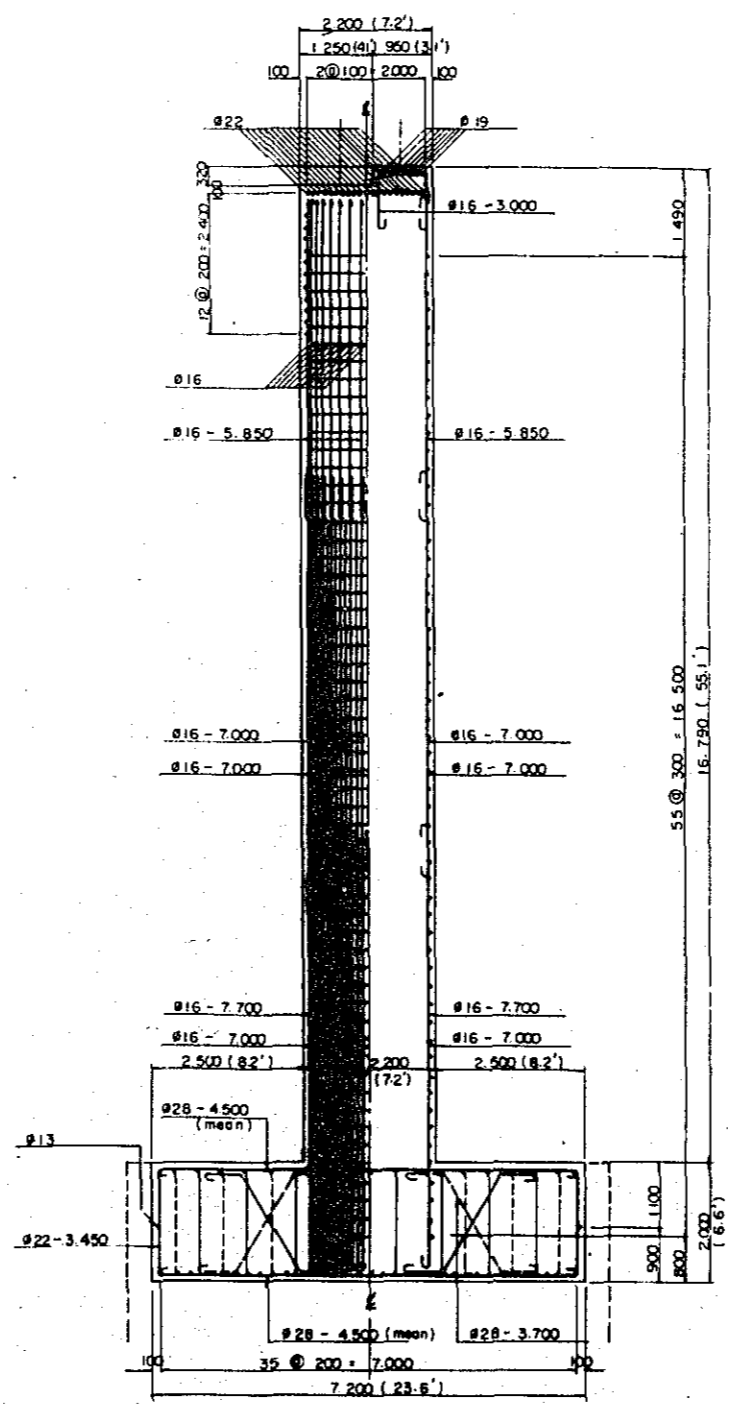
DETAIL OF PIER P-3.11 (FOR STEEL BRIDGE)
SCALE 1:60



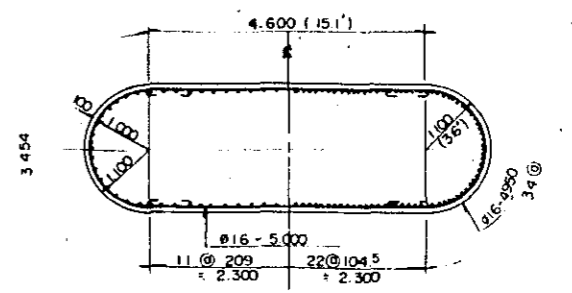
SECTION A - A



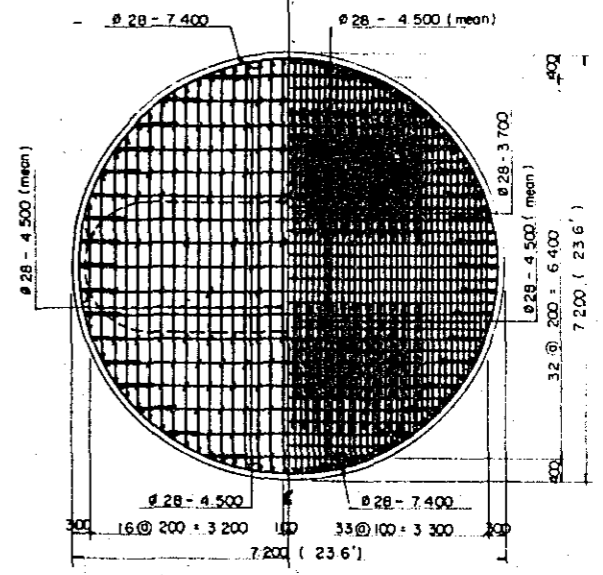
SECTION B-B SECTION C-C



SECTION G-G SECTION H-H

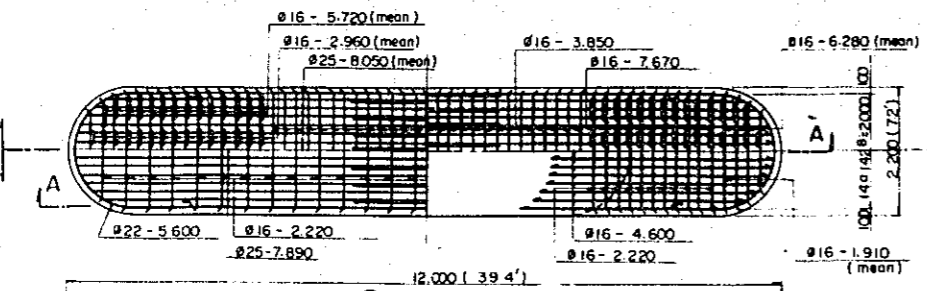


SECTION I-I SECTION J-J



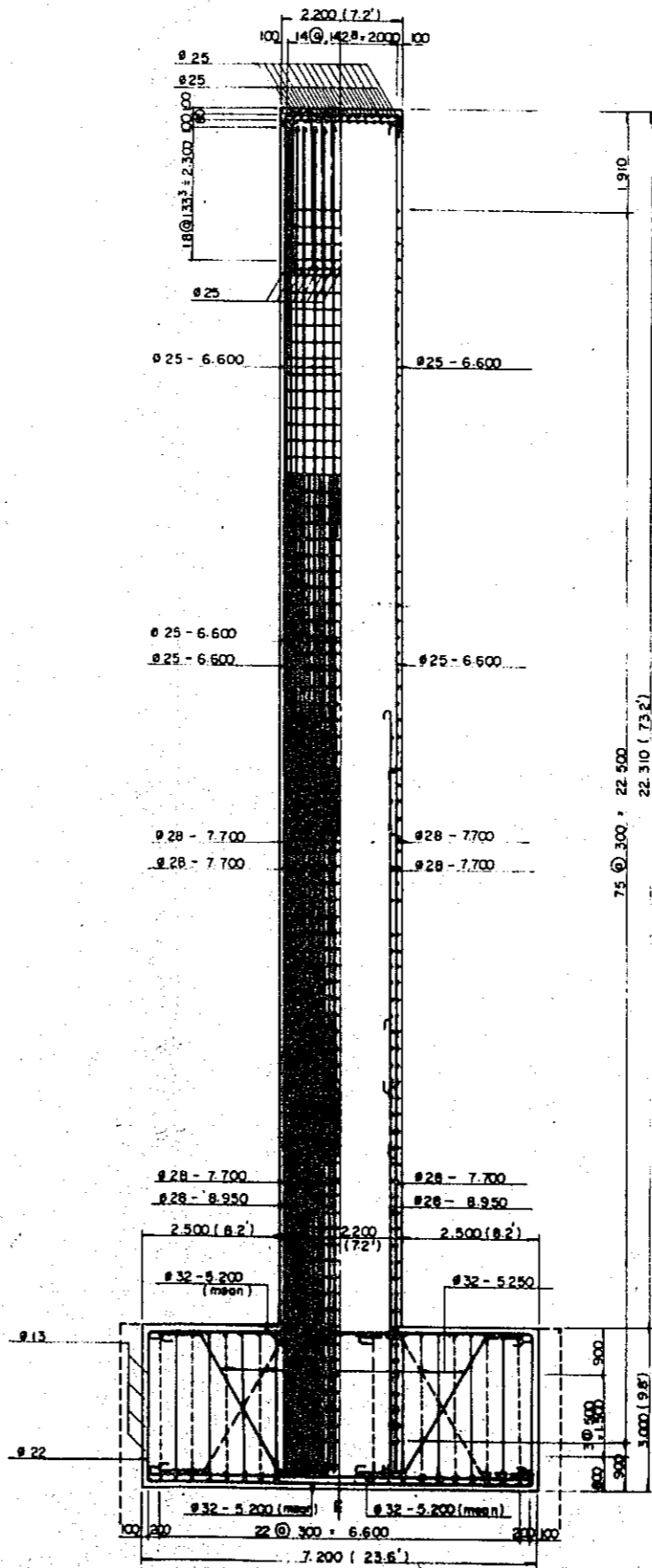
OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
PIER P - 3, 11	
SCALE	1:60
SHEET NO	15
DATE	

SECTION E-E SECTION D-D

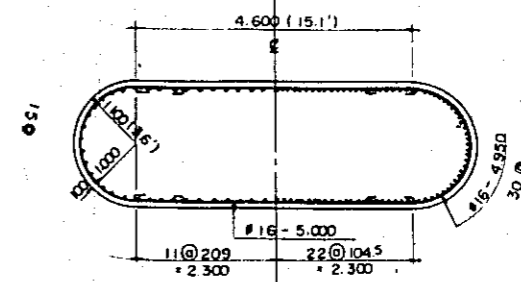


DETAIL OF PIER P-6.8 (P-4.5,7,9,10)
(FOR STEEL BRIDGE) SCALE 1:60

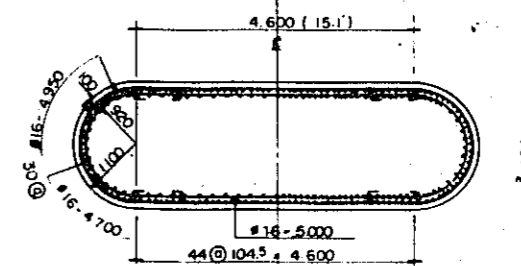
SECTION B-B SECTION C-C



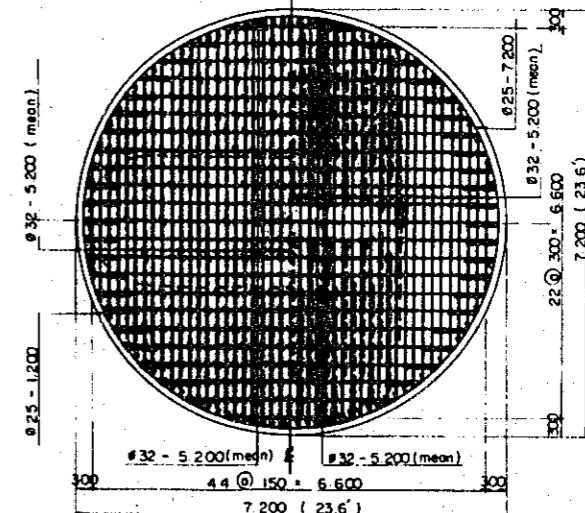
SECTION G-G SECTION H-H



SECTION I-I SECTION J-J



SECTION K-K SECTION L-L



OVERSEAS TECHNICAL COOPERATION AGENCY, JAPAN	
PROFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
PIER P-6.8	
CHECKED BY: <i>[Signature]</i>	SCALE: 1:60
DESIGNED BY: <i>[Signature]</i>	SHEET NO: 16
DRAWN BY: <i>[Signature]</i>	DATE: August 1967

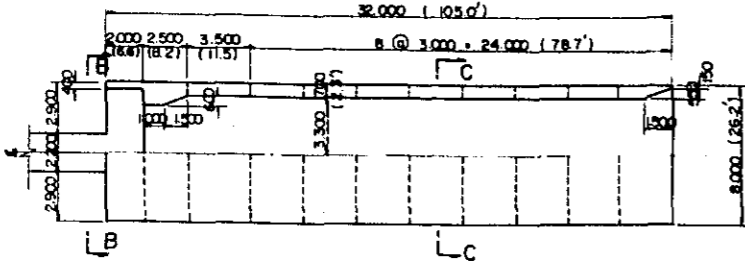
DETAIL OF WELL P-3, 11 (FOR STEEL BRIDGE)

SCALE 1:60

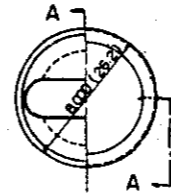
DETAIL OF CUTTING EDGE
SCALE 1:20

GENERAL VIEW

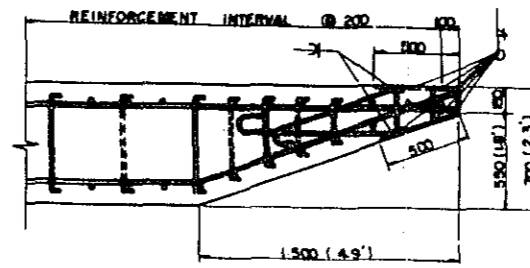
SECTION A-A



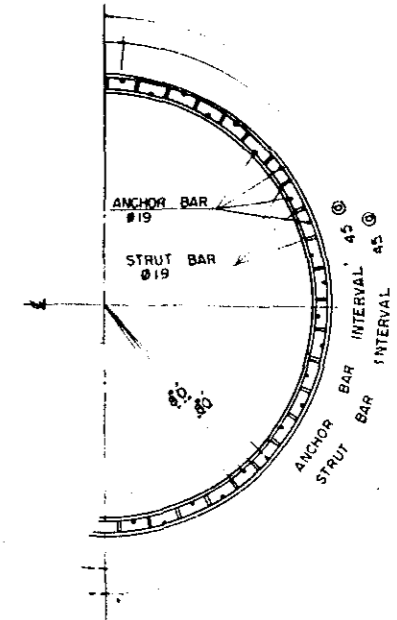
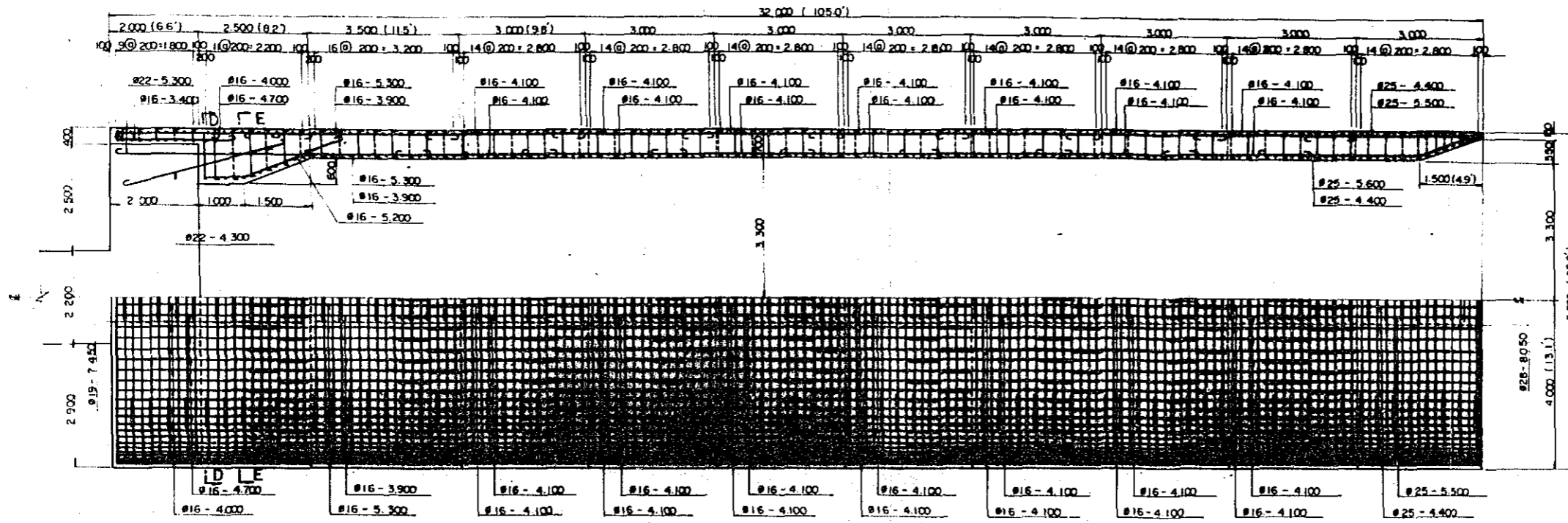
SECTION B-B



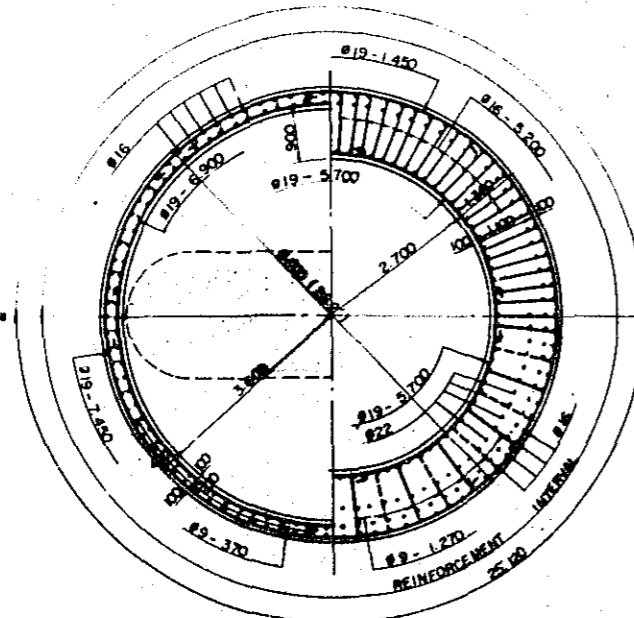
SECTION C-C



SECTION A-A

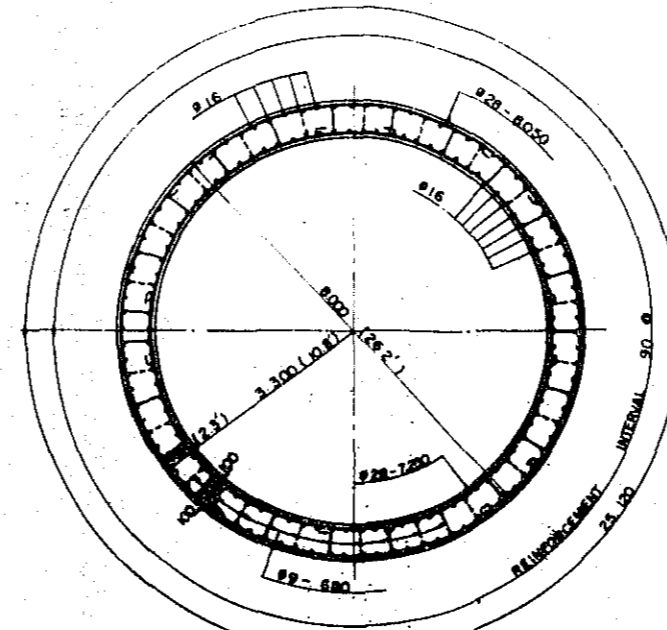


SECTION B-B



SECTION D-D

SECTION C-C



OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
WELL P-3, 11	
CHEF ENG. <i>[Signature]</i>	SCALE 1:60
CHECKED BY <i>[Signature]</i>	SHEET NO. 17
DESIGNED BY <i>[Signature]</i>	DATE <i>[Date]</i>
DRAWN BY <i>[Signature]</i>	

DETAIL OF WELL P-6.6
(FOR STEEL BRIDGE)

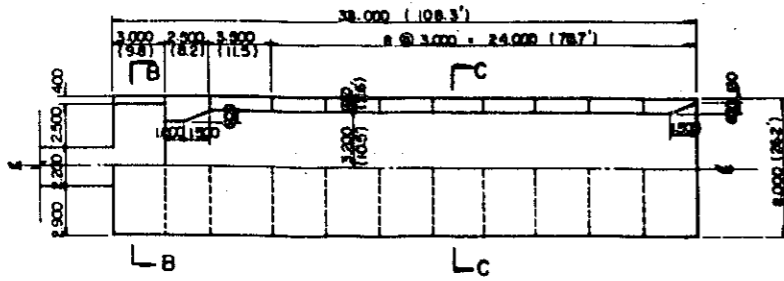
SCALE 1:60

DETAIL OF CUTTING EDGE

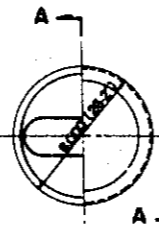
SCALE 1:20

GENERAL VIEW
SCALE 1:200

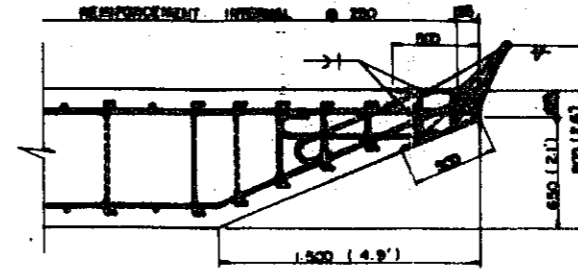
SECTION A - A



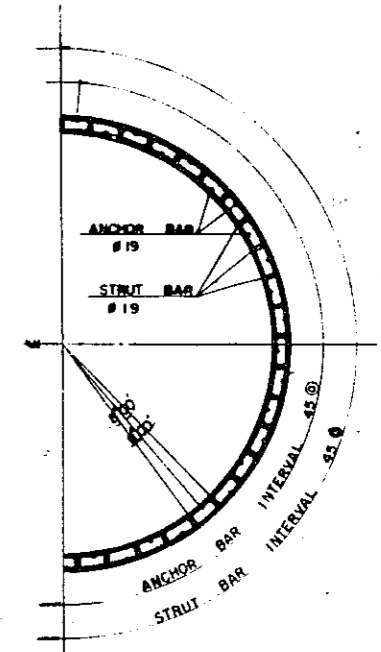
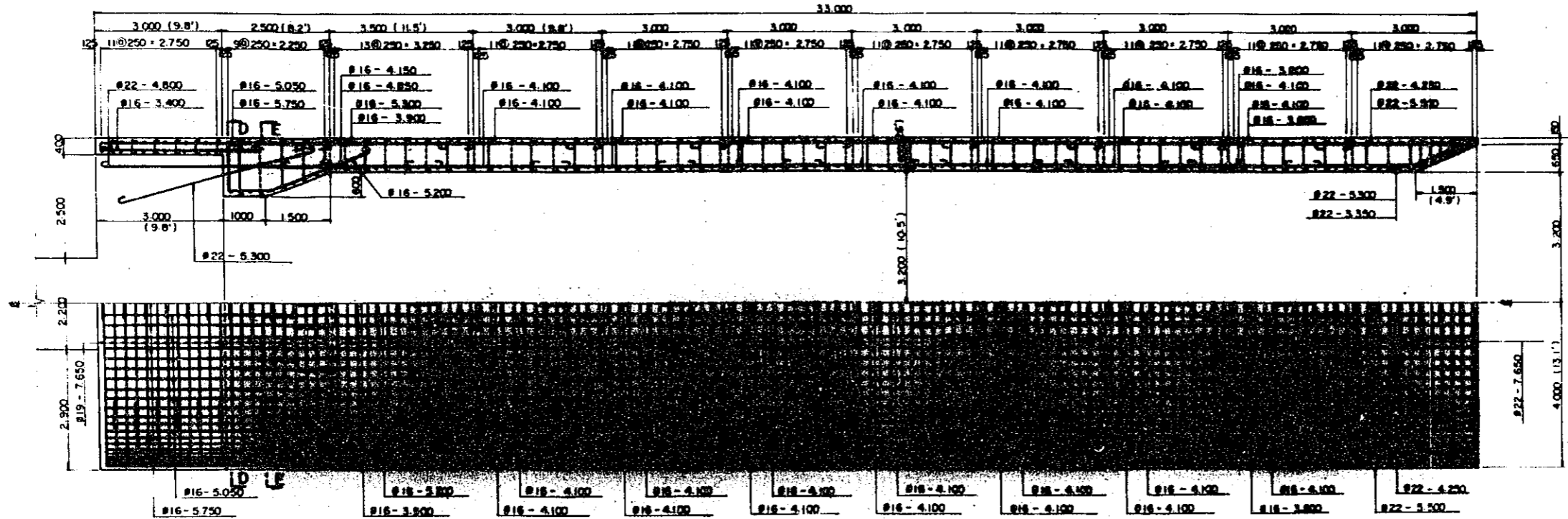
SECTION B - B



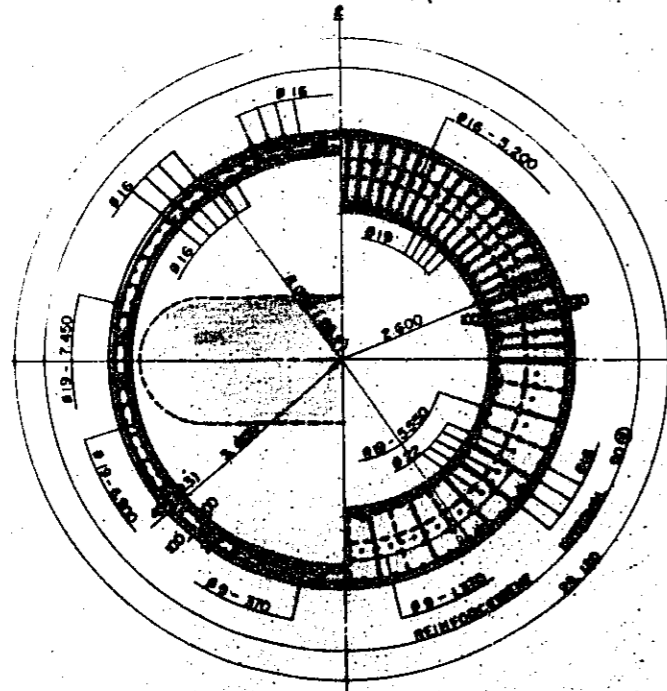
SECTION C - C



SECTION A - A



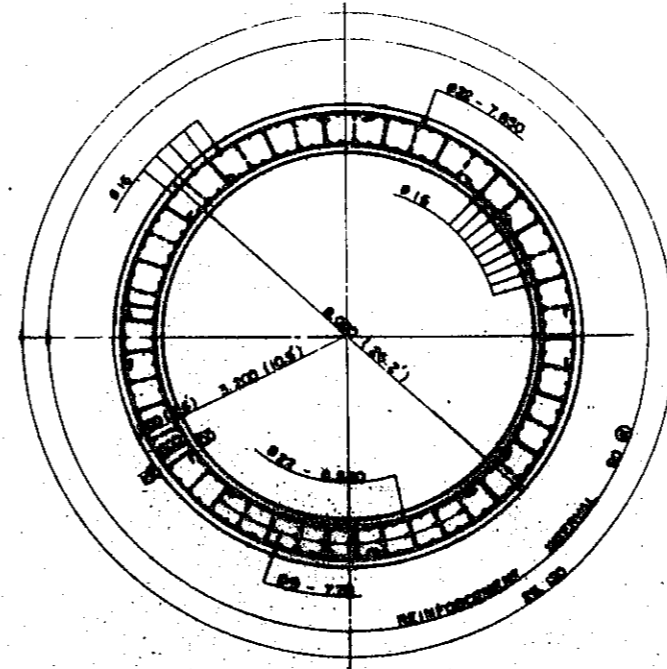
SECTION B - B



SECTION E - E

SECTION D - D

SECTION C - C



OVERSEAS TECHNICAL	
COOPERATION AGENCY, JAPAN	
PACIFIC CONSULTANTS K.K. TOKYO JAPAN	
EAST PAKISTAN	
GARAI RIVER BRIDGE PROJECT	
TYPICAL DETAIL STEEL BRIDGE	
WELL P - 6.6	
SCALE	1:60
DATE	18
Aug 1967	

