

THE SOCIALIST REPUBLIC OF THE UNION OF BURMA

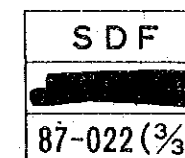
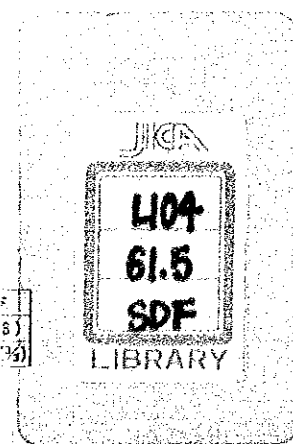
**FEASIBILITY STUDY
ON
IRRAWADDY RIVER BRIDGE
CONSTRUCTION PROJECT**

FINAL REPORT

DRAWINGS

MARCH 1987

JAPAN INTERNATIONAL COOPERATION AGENCY



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**FEASIBILITY STUDY
ON
IRRAWADDY RIVER BRIDGE
CONSTRUCTION PROJECT**

FINAL REPORT

DRAWINGS

MARCH 1987

JAPAN INTERNATIONAL COOPERATION AGENCY

国際協力事業団		
受入 月日	'87.5.1	L104
登録 No.	16300	61.5
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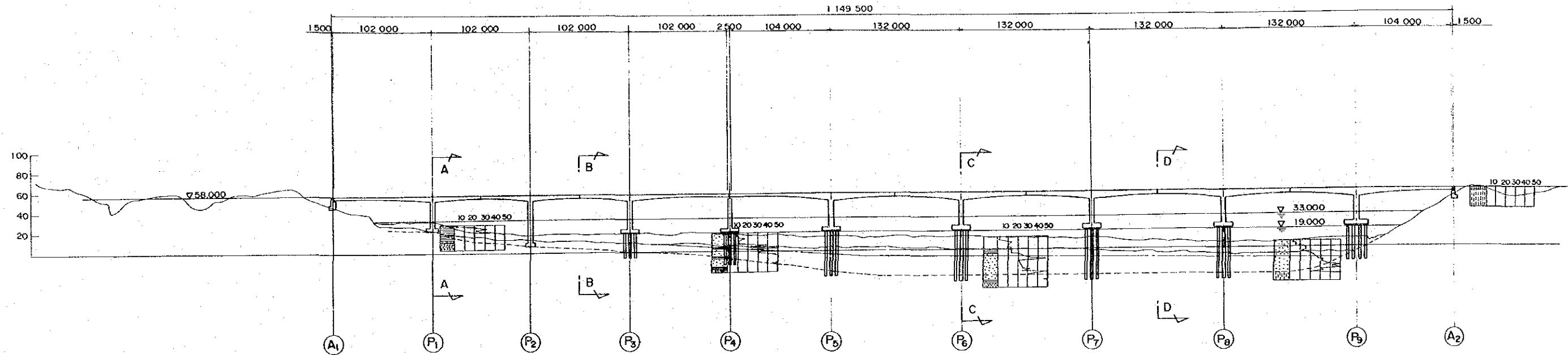
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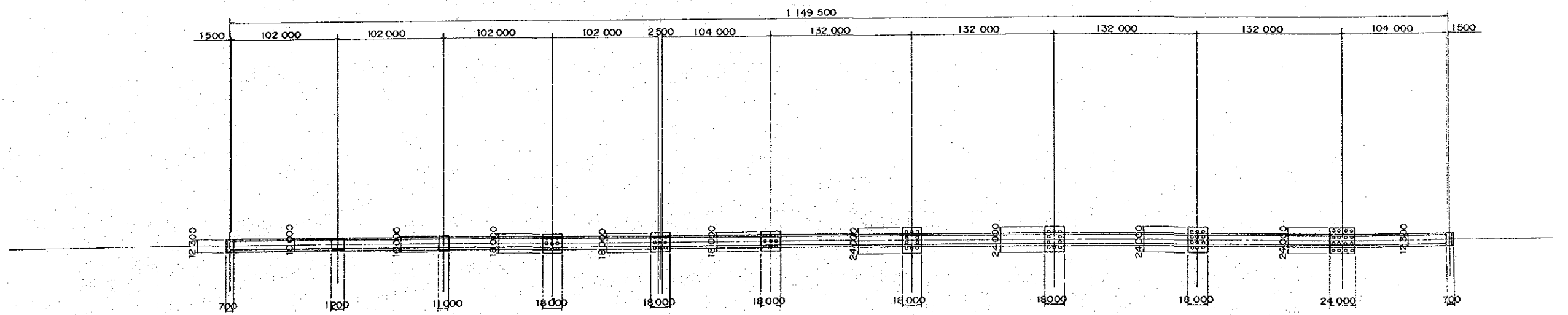
ROAD

GENERAL VIEW S = 1 : 4 000

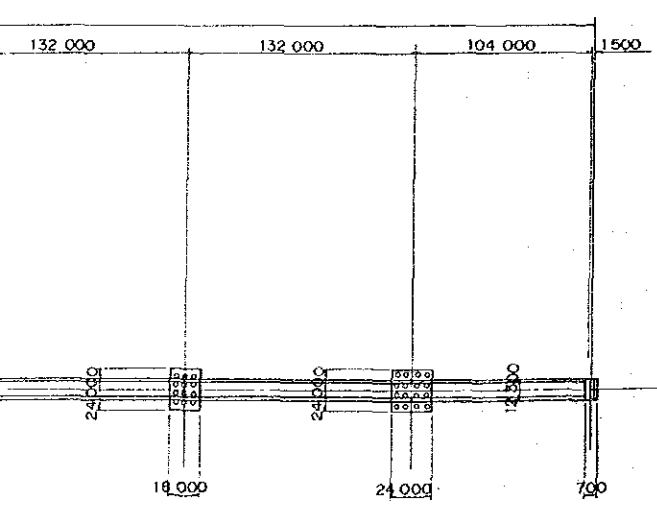
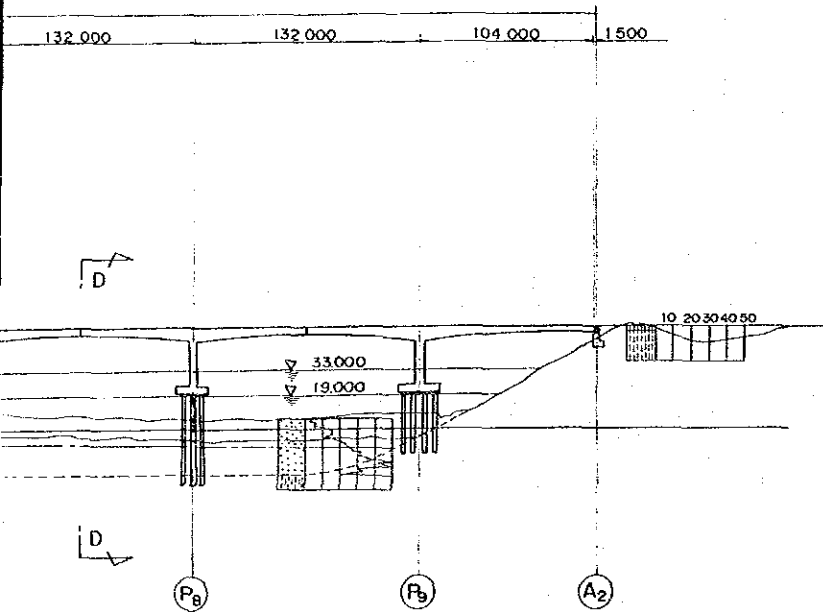
ELEVATION



PLAN

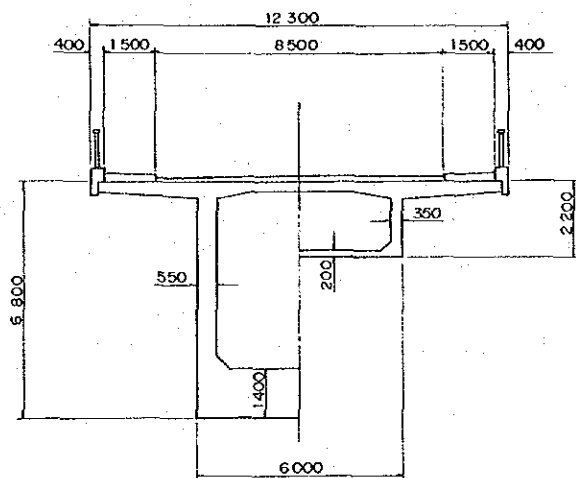


ROAD BRIDGE

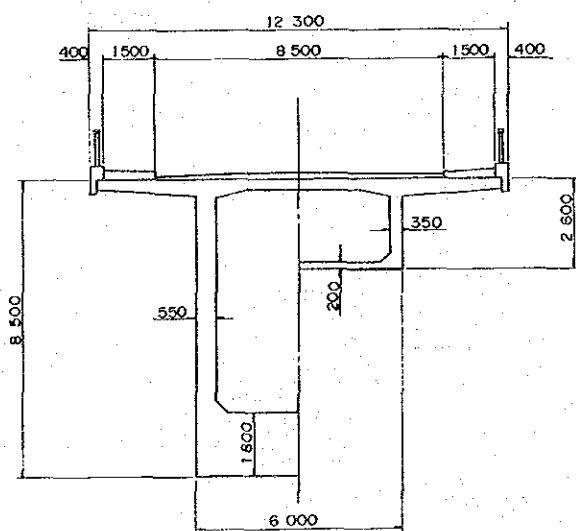


SECTION S=1:100

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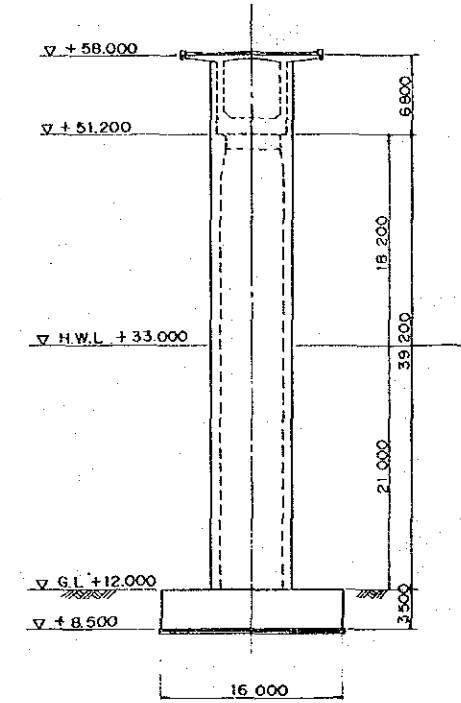


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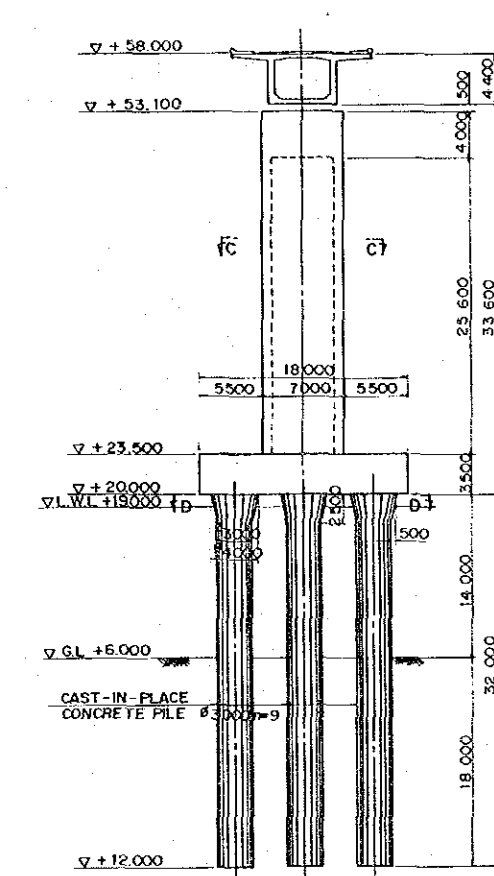
P₂ PIER S=1:300

FRONT ELEVATION



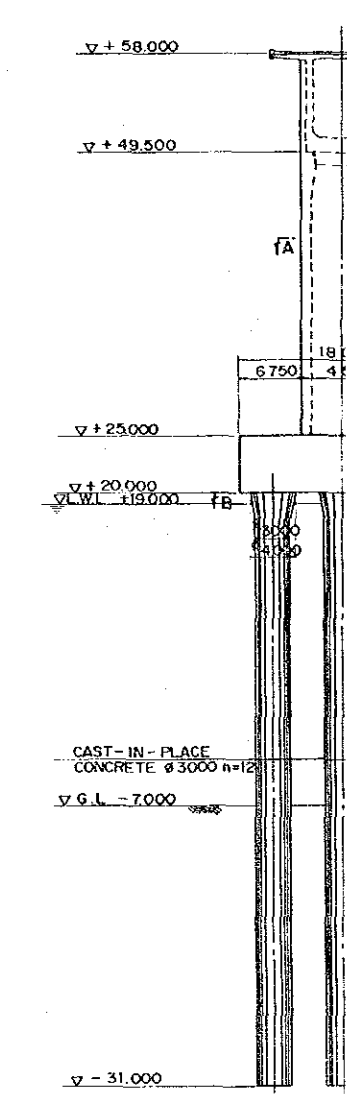
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FRONT ELEVATION



P₈ PIER

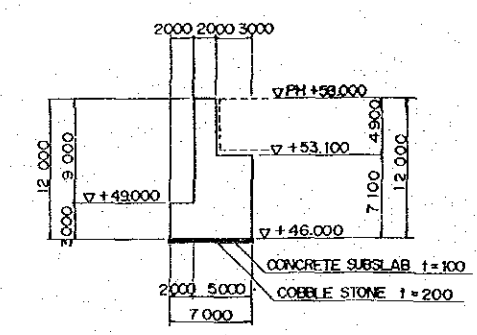
FRONT EL



A₁ ABUTMENT

S=1:300

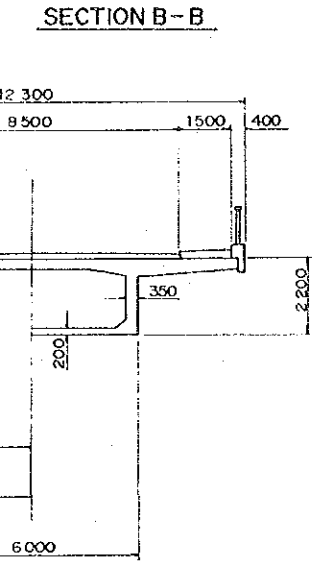
SIDE ELEVATION



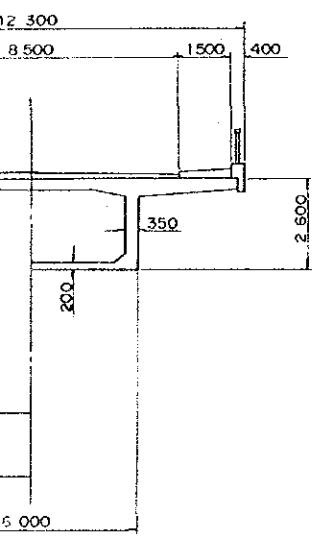
DESIGN CONDITIONS

BRIDGE NAME	IRRAWADDY RIVER BRIDGE
KIND OF BRIDGE	PRESTRESSED CONCRETE
PRESTRESSING SYSTEM	DYWIDAG SYSTEM
GIRDER LENGTH	4 @ 102 = 408M 104 + (4 @ 132 = 528) + 104 = 736M
WIDTH	ROADWAY 8.5M SIDEWALK 2 @ 1.50 = 3.0M
ANGLE OF SKEW	90°
SEISMIC COEFFICIENT	KH = 0.125
GRADE	LEVEL
SUPERELEVATION	ROADWAY 1.5%
RADIUS OF CURVE	R = ∞
LIVE LOAD	TL - 20
IMPACT FACTOR	1 = 10 / (25 + L) : GIRDER 1 = 20 / (50 + L) : SLAB

SECTION B-B S=1:100

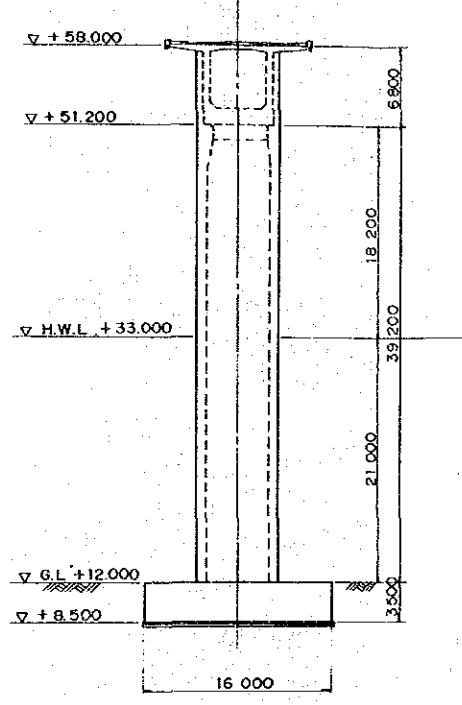


SECTION D-D



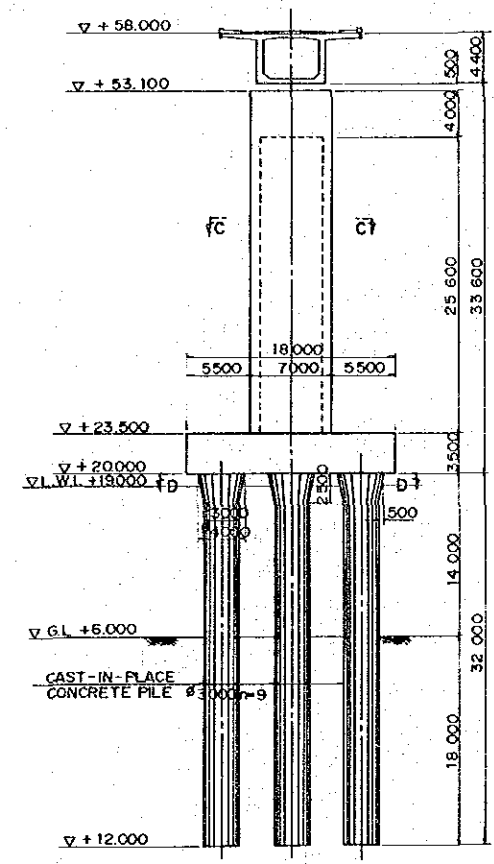
P₂ PIER S=1:300

FRONT ELEVATION



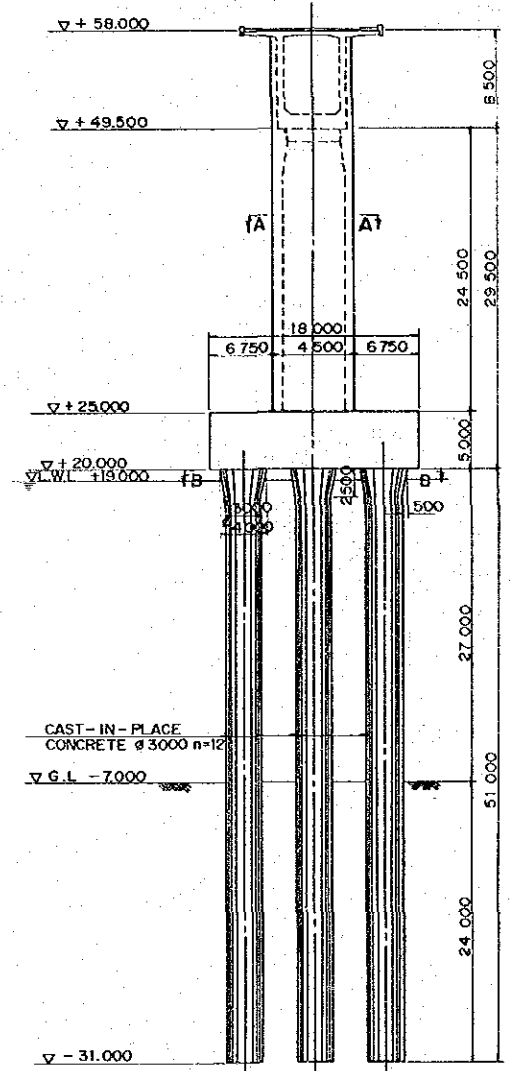
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FRONT ELEVATION



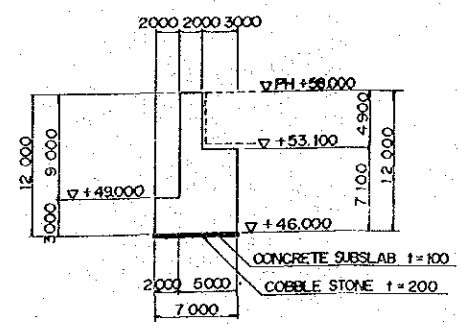
P₈ PIER S=1:300

FRONT ELEVATION



A₁ ABUTMENT S=1:300

SIDE ELEVATION



DESIGN CONDITIONS

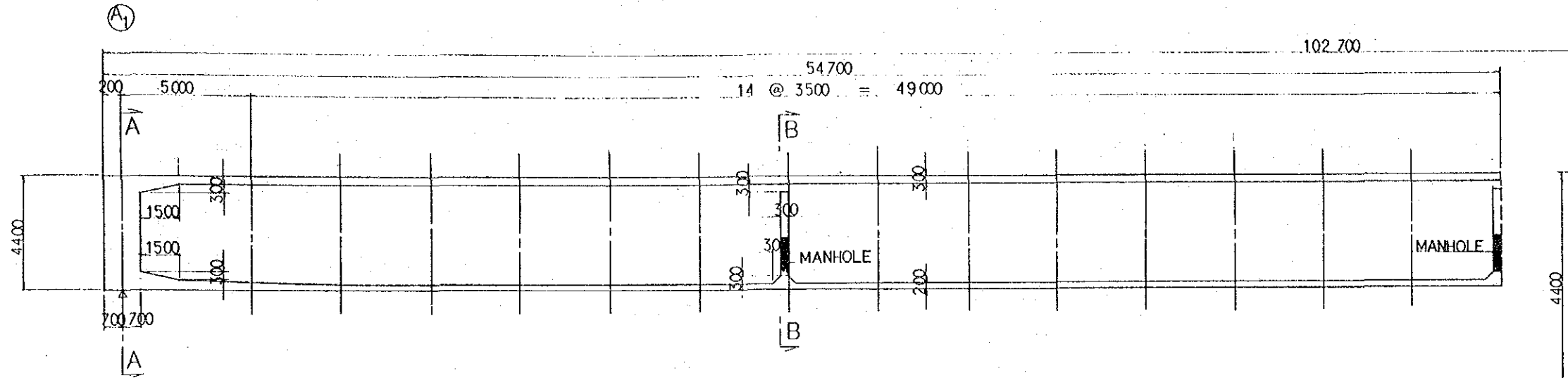
BRIDGE NAME	IRRAWADDY RIVER BRIDGE
KIND OF BRIDGE	PRESTRESSED CONCRETE
PRESTRESSING SYSTEM	DYWIDAG SYSTEM
GIRDER LENGTH	4 @ 102 = 408 M 104 + (4 @ 132 = 528) + 104 = 736 M
WIDTH	ROADWAY 8.5 M SIDEWALK 2 @ 1.50 = 3.0 M
ANGLE OF SKEW	90°
SEISMIC COEFFICIENT	KH = 0.125
GRADE	LEVEL
SUPERELEVATION	ROADWAY 1.5%
RADIUS OF CURVE	R = ∞
LIVE LOAD	TL - 20
IMPACT FACTOR	I = 10 / (25 + L) : GIRDER I = 20 / (50 + L) : SLAB

Road bridge

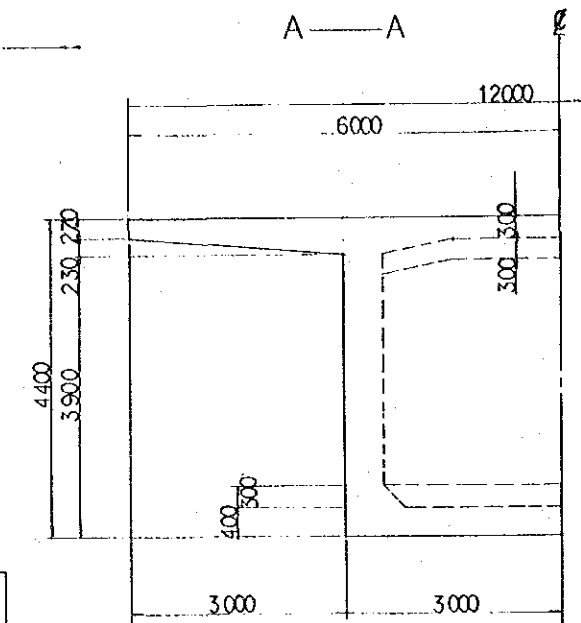
General View	No. 1
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GENERAL STRUCTURE OF GIRDER (4 SPAN-NO1)

SECTIONAL ELEVATION SCALE = 1:100

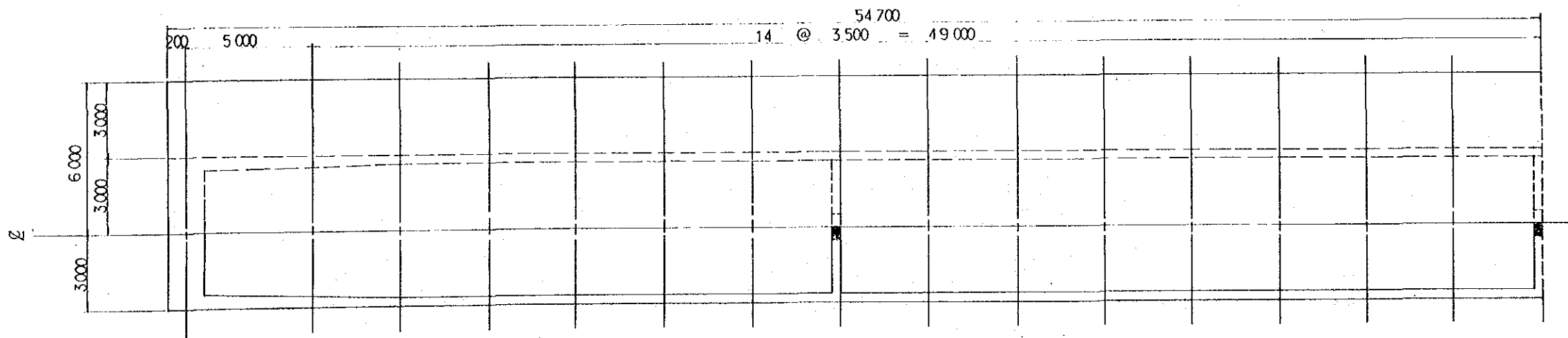


CROSS SECTION SCALE=1:50

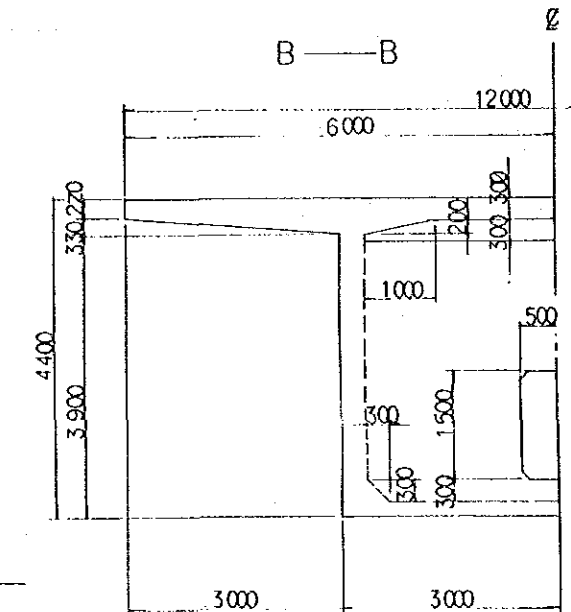


DEPTH OF GIRDER (H)	4400	4400	4400	4415
UPPER SLAB (T)	500	500	500	500
WEB (B)	550	432	350	350
LOWER SLAB (T)	400	282	200	200

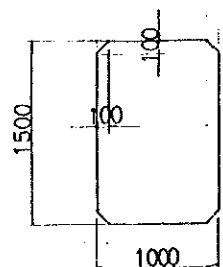
SECTIONAL PLAN SCALE = 1:100



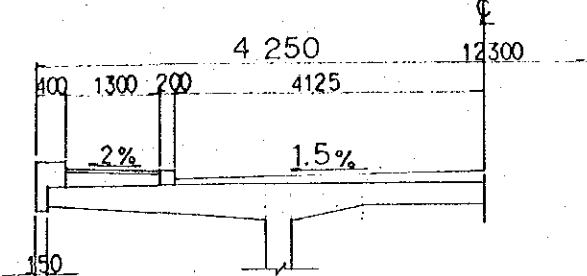
B—B



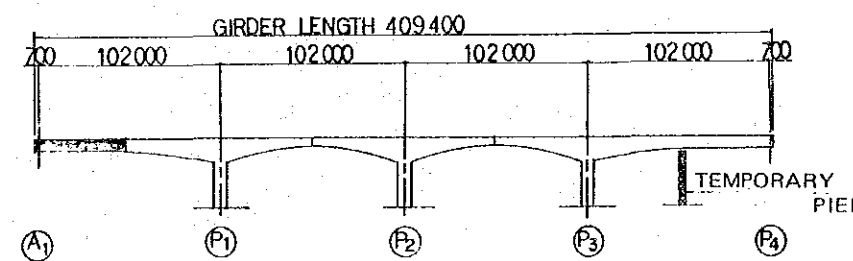
DETAIL OF MANHOLE SCALE=1:30



CROSS SECTION SCALE=1:50



KEY PLAN



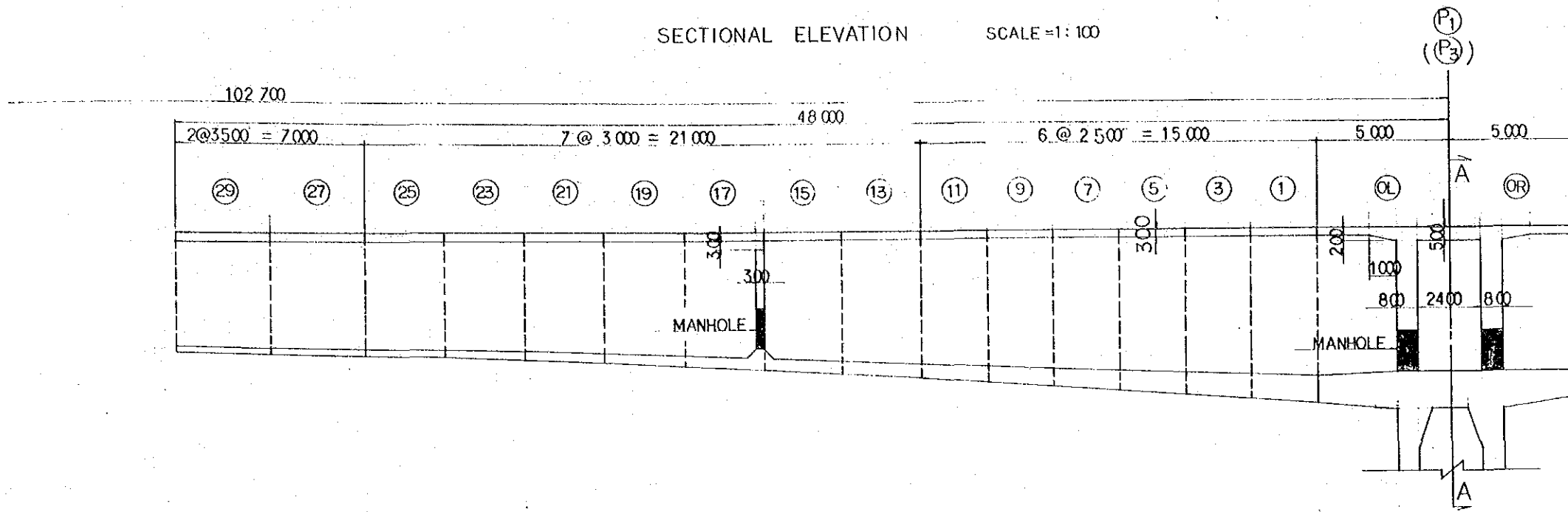
Road bridge

PC Box Girder (1)
(4 Spans - No. 1)

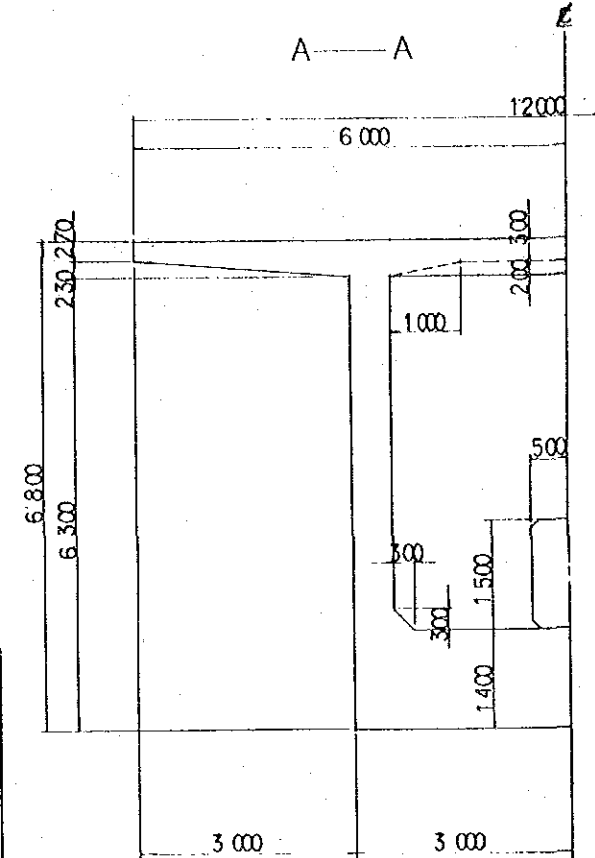
No. 2

GENERAL STRUCTURE OF GIRDER (4 SPAN-NO2)

SECTIONAL ELEVATION SCALE = 1:100

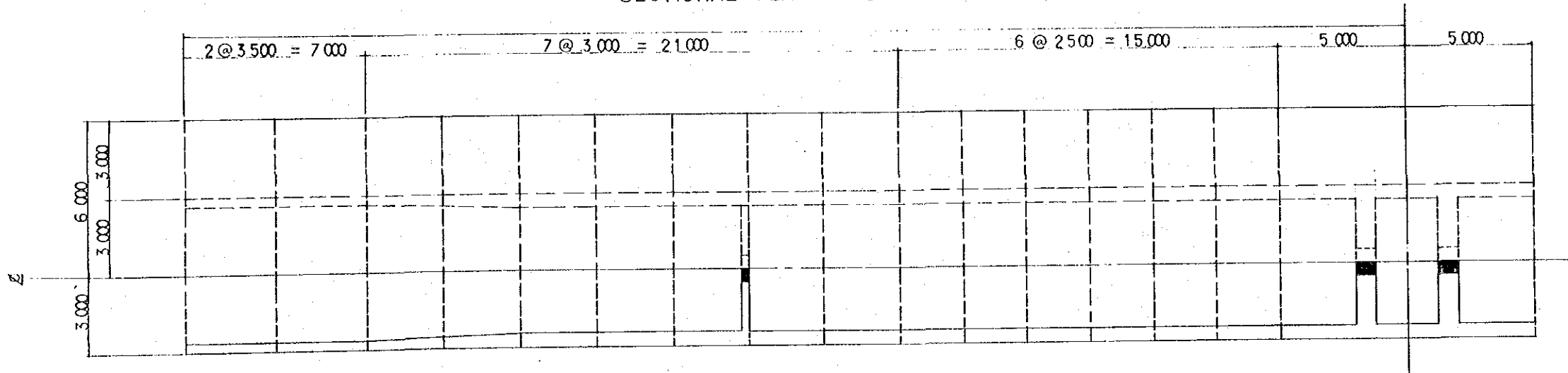


CROSS SECTION SCALE = 1:50

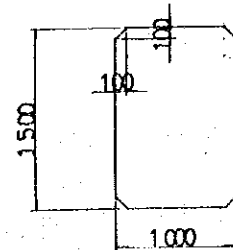


DEPTH OF GIRDER (H)	4415	4459	4532	4617	4722	4845	4986	5144	5316	5503	5667	5898	6015	6197	6383	6572	6800	6800	6800	6354
UPPER SLAB (T)	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
WEB (B)	350	350	350	450	550	550	550	550	550	550	550	550	550	550	550	550	550	550	550	550
LOWER SLAB (T)	200	200	200	250	300	350	400	450	500	550	600	680	760	840	920	1000	1400	1400	1400	1000

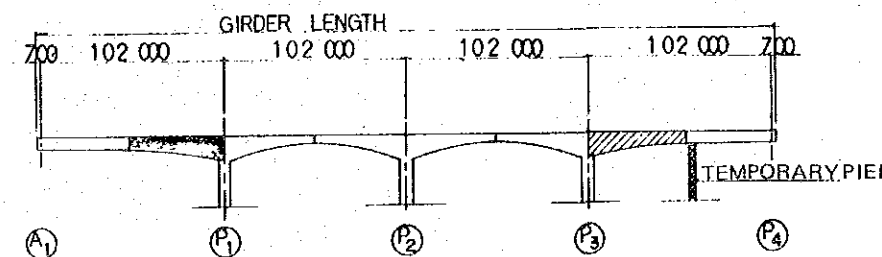
SECTIONAL PLAN SCALE = 1:100



DETAIL OF MANHOLE SCALE = 1:30



KEY PLAN



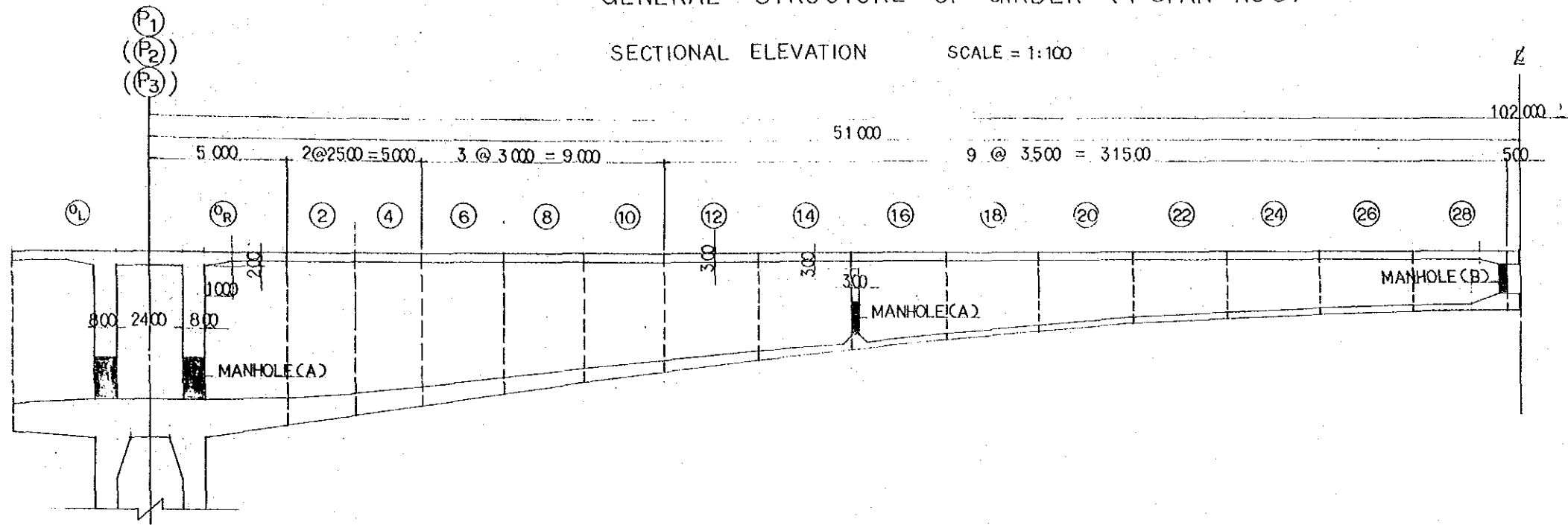
Road bridge

PC Box Girder (2)
(4 Spans - No. 2)

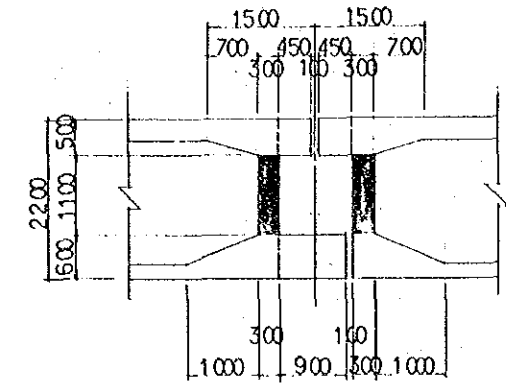
No. 3

GENERAL STRUCTURE OF GIRDER (4 SPAN-NO 3)

SECTIONAL ELEVATION SCALE = 1:100



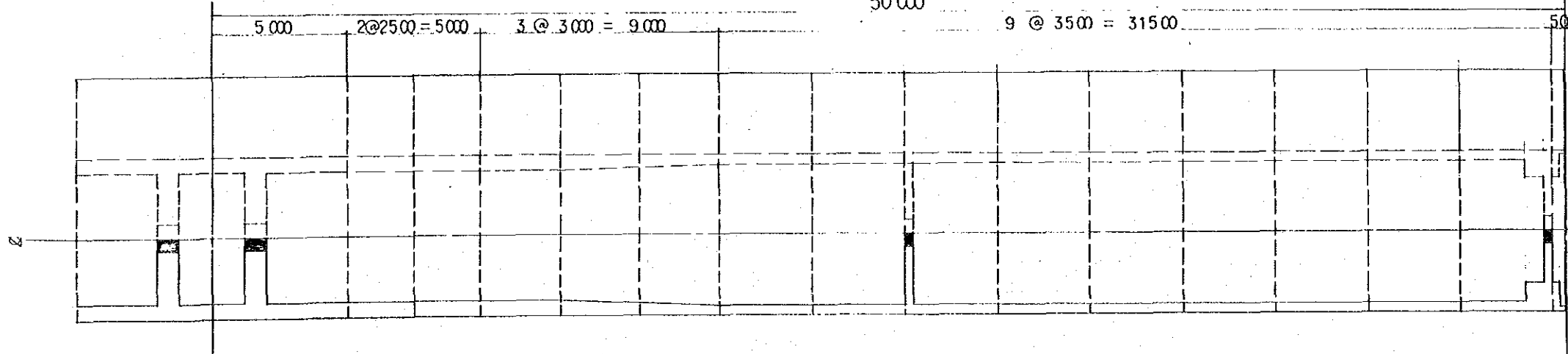
DETAIL OF HINGE SCALE=1:50
ELEVATION



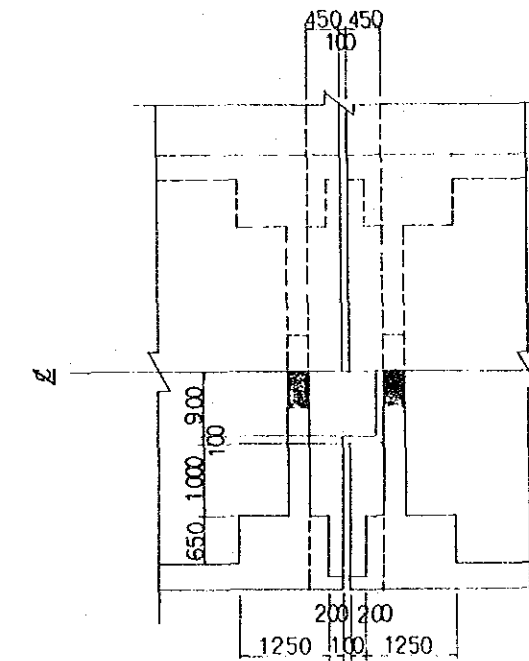
DEPTH OF GIRDER (H)	6800	6800	6354	5985	5621	5196	4785	4393	3965	3574	3224	2919	2665	2463	2318	2230	2200
UPPER SLAB (T)	300	300															300
WEB (B)	550	550				550	450	350									350
LOWER SLAB (T)	1400	1400	1000	800	700	600	500	400	300	200							200

SECTIONAL PLAN SCALE=1:100

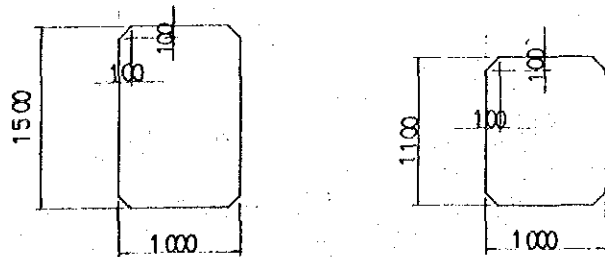
50 000



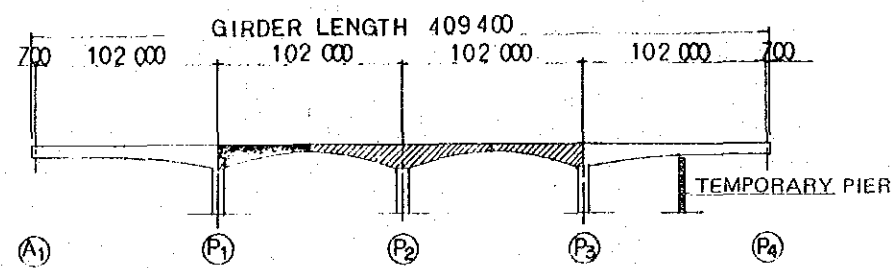
PLAN



DETAIL OF MANHOLE SCALE=1:30
TYPE (A) TYPE (B)



KEY PLAN



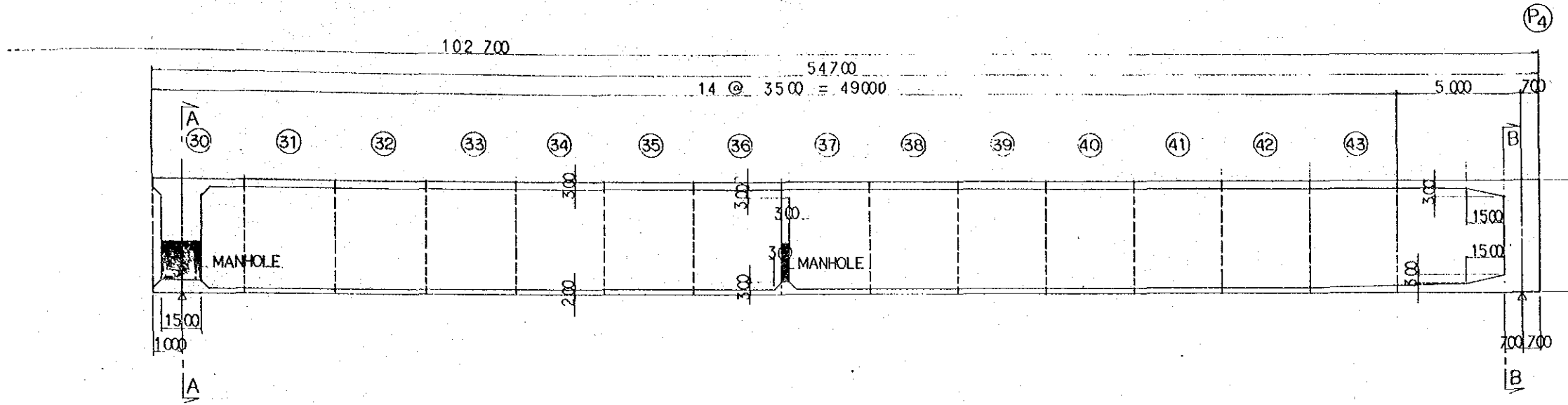
Road bridge

PC Box Girder (3)
(4 Spans - No. 3)

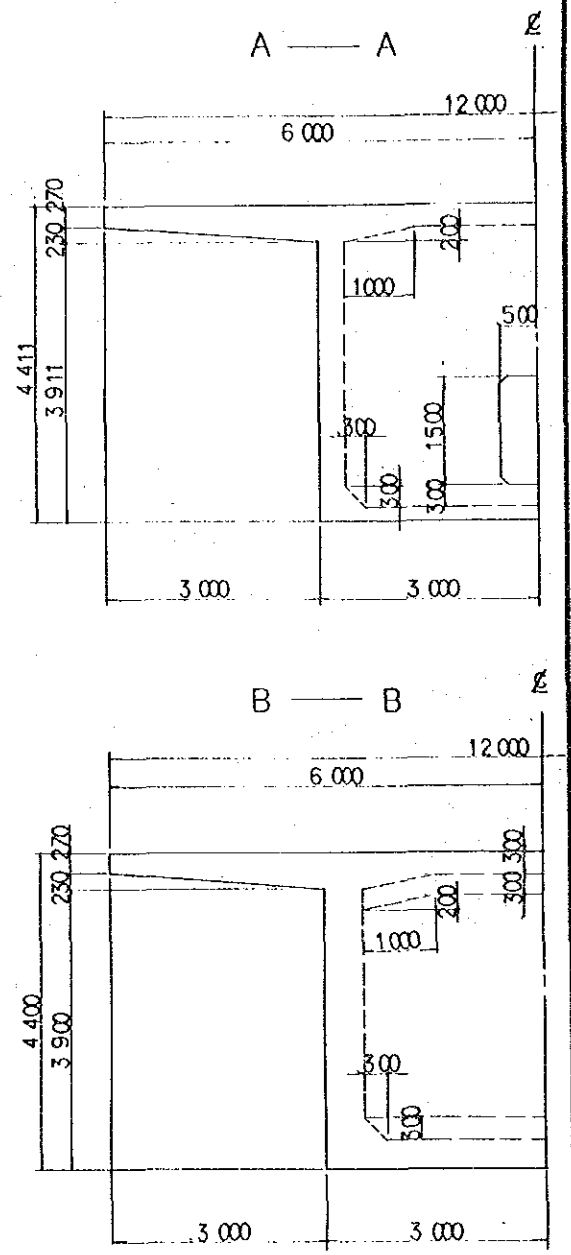
No. 4

GENERAL STRUCTURE OF GIRDER (4 SPAN-NO 4)

SECTIONAL ELEVATION SCALE = 1:100

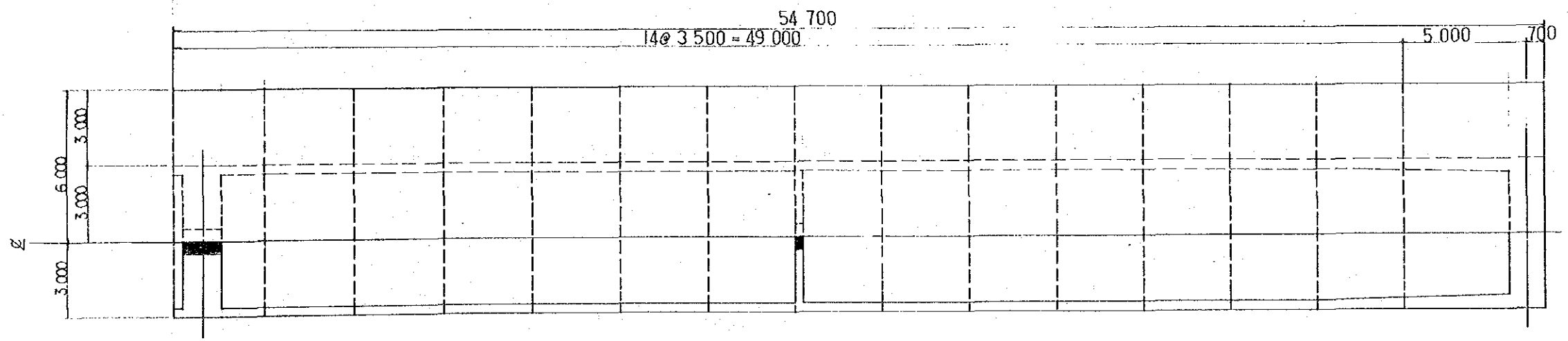


CROSS SECTION SCALE=1:50

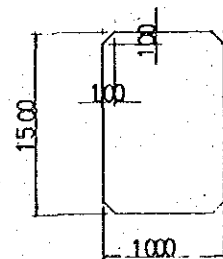


DEPTH OF GIRDER (H)	4415	4411	4400	4400
UPPER SLAB (T)	300	300	300	300
WEB (B)	350	350	432	550
LOWER SLAB (T)	200	200	282	400

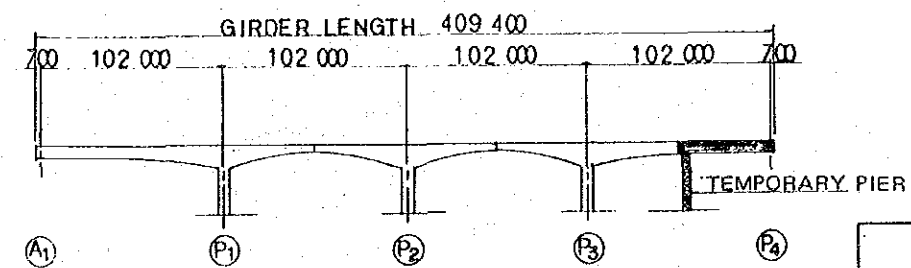
SECTIONAL PLAN SCALE = 1:100



DETAIL OF MANHOLE SCALE=1:30



MARKING OF DIA



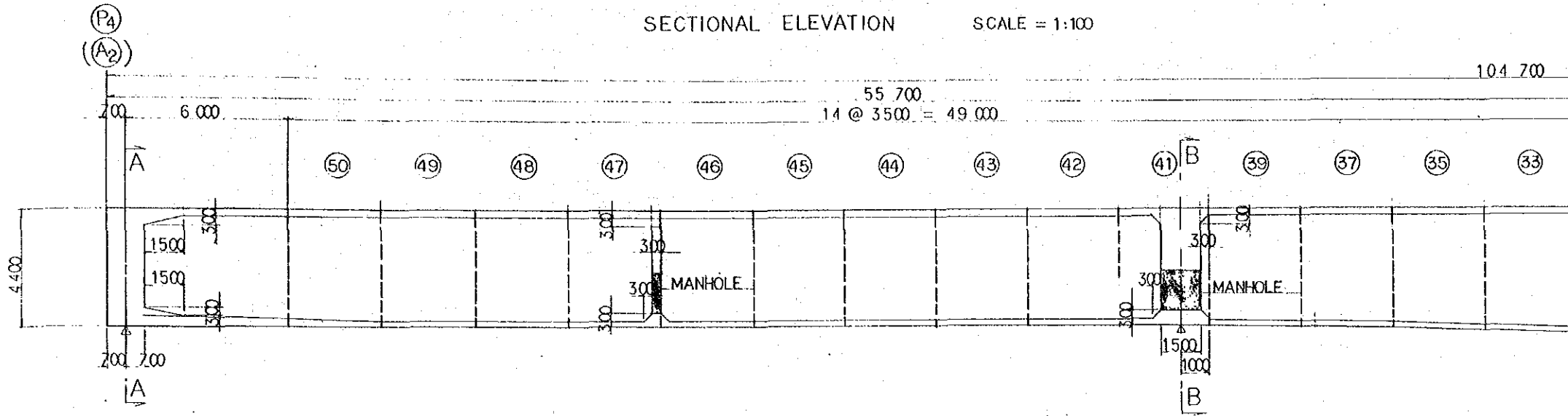
Road bridge

PC Box Girder (4)
(4 Spans - No. 4)

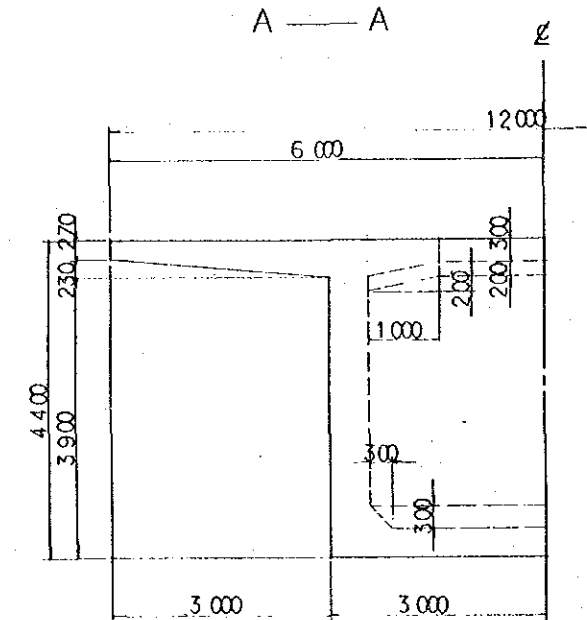
No. 5

GENERAL STRUCTURE OF GIRDER (6 SPAN-NO 1)

SECTIONAL ELEVATION SCALE = 1:100

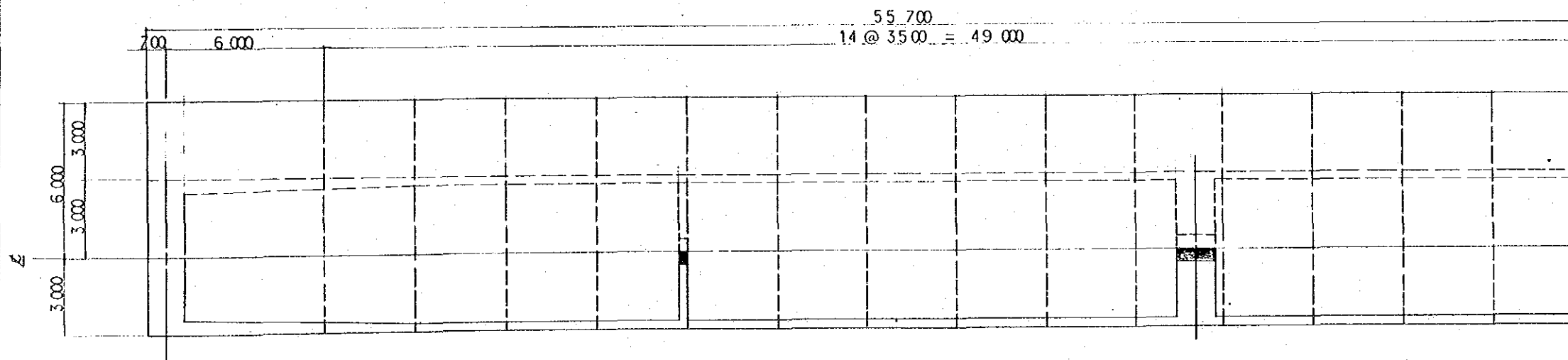


CROSS SECTION SCALE=1:50

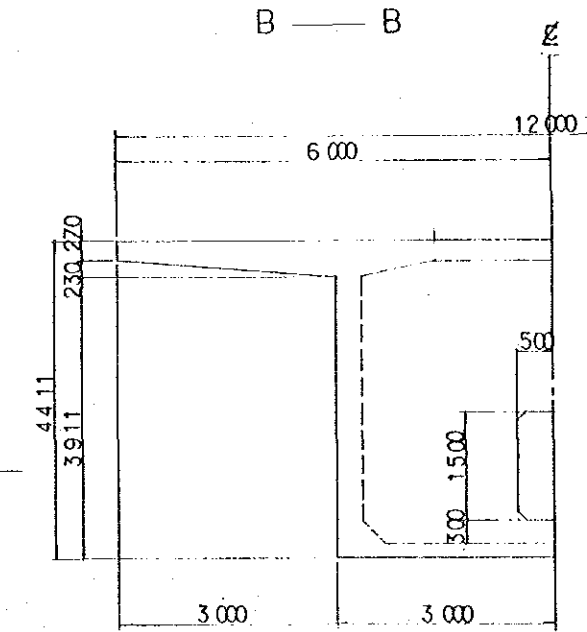


DEPTH OF GIRDER (H)	4400									4400	4415	4459	4533	4536	4767
UPPER SLAB (T)	300									300					300
WEB (B)	550	430	350							350					350
LOWER SLAB (T)	400	280	200							200					200

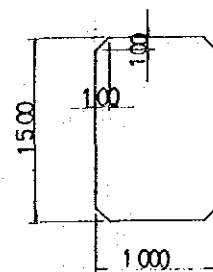
SECTIONAL PLAN SCALE = 1:100



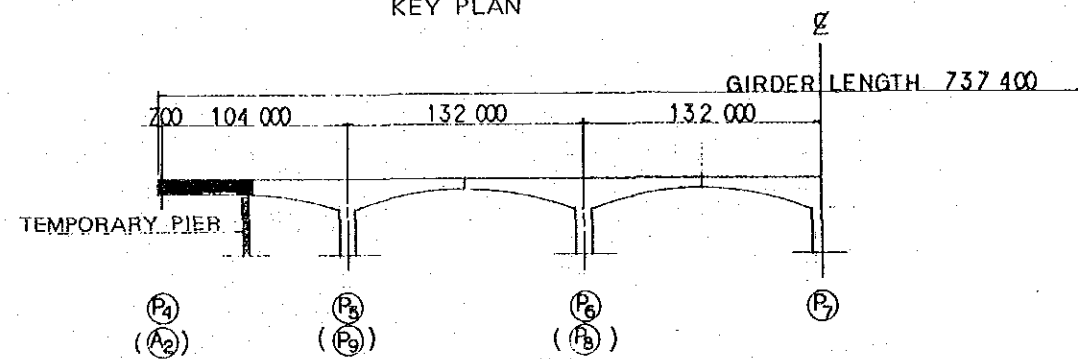
B — B



DETAIL OF MANHOLE SCALE=1:30



KEY PLAN



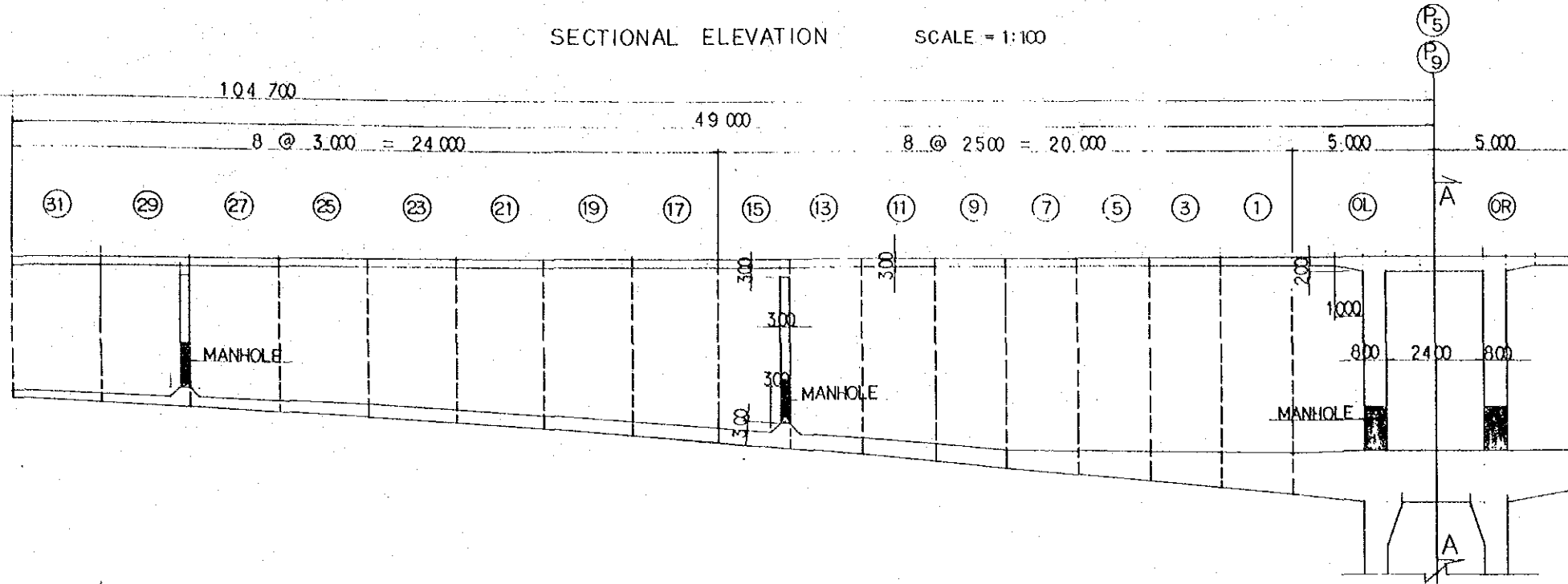
Road bridge

PC Box Girder (1)
(6 Spans — No. 1)

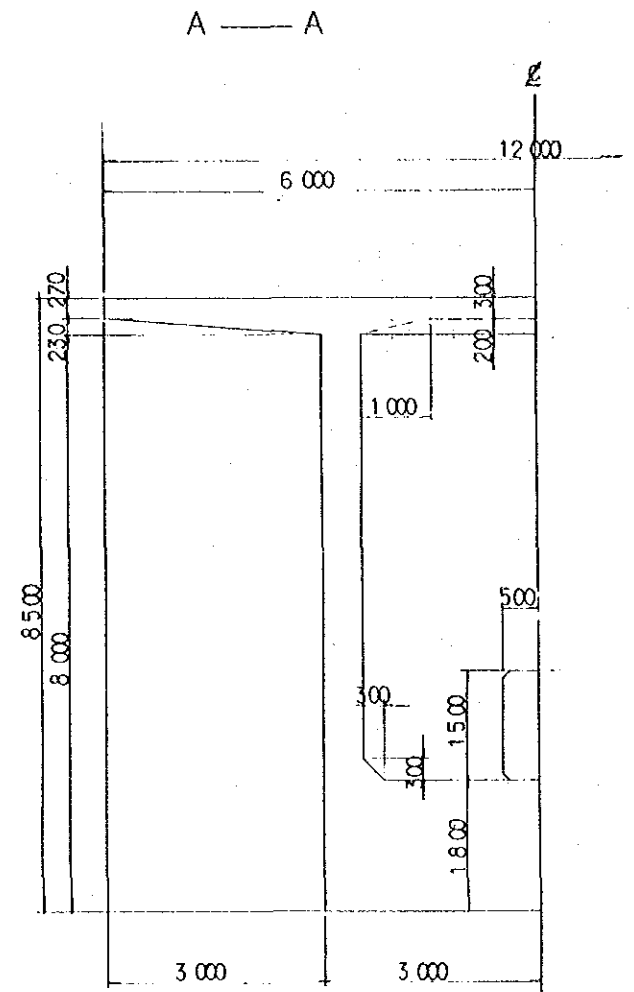
No. 6

GENERAL STRUCTURE OF GIRDER (6 SPAN-NO2)

SECTIONAL ELEVATION SCALE = 1:100

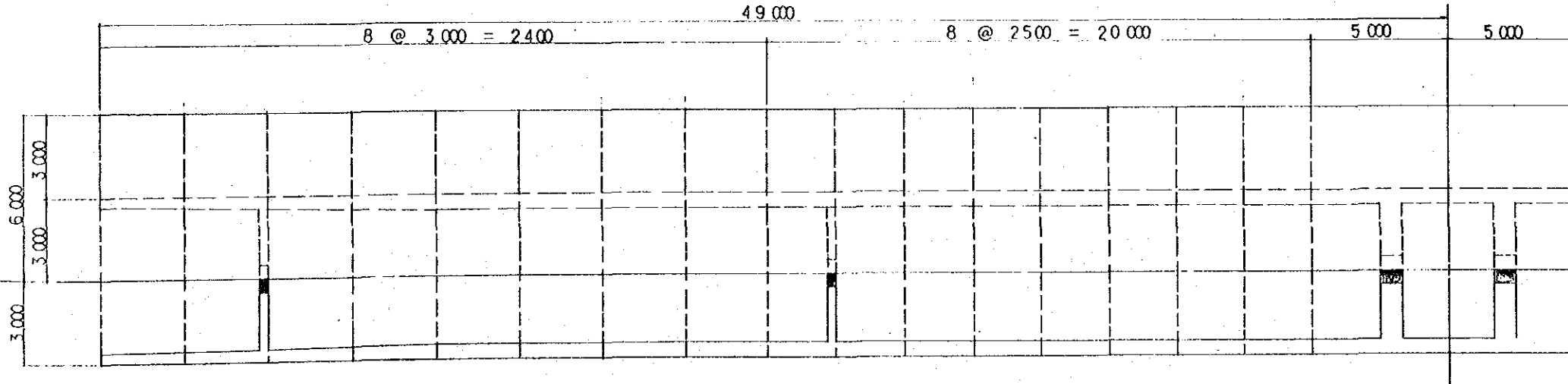


CROSS SECTION SCALE=1:50

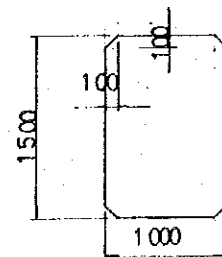


DEPTH OF GIRDER (H)	4767	4900	5053	5225	5413	5619	5839	6074	6322	6537	6760	6989	7224	7463	7706	7953	8201	8508	8059
UPPER SLAB (T)	300																	300	300
WEB (B)	350	400	450	500	550													550	550
LOWER SLAB (T)	200	250	300	350	400	425	450	475	500	525	550	575	600	800	1000	1200	1400	1800	1400

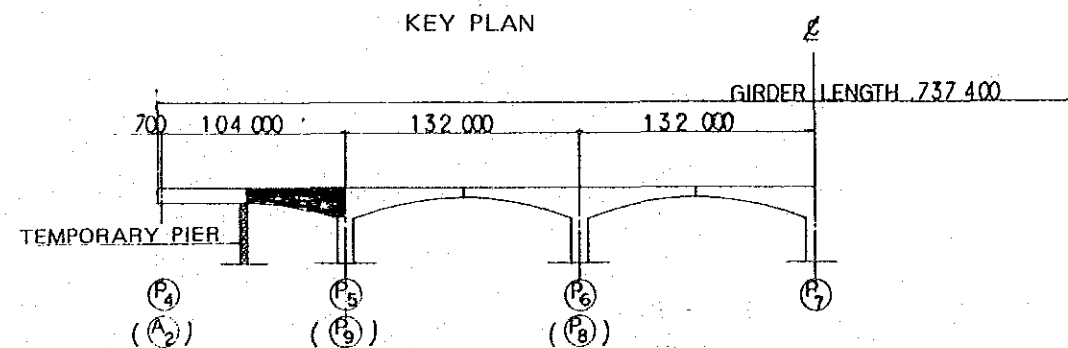
SECTIONAL PLAN SCALE = 1:100



DETAIL OF MANHOLE SCALE = 1:30



KEY PLAN



Road bridge

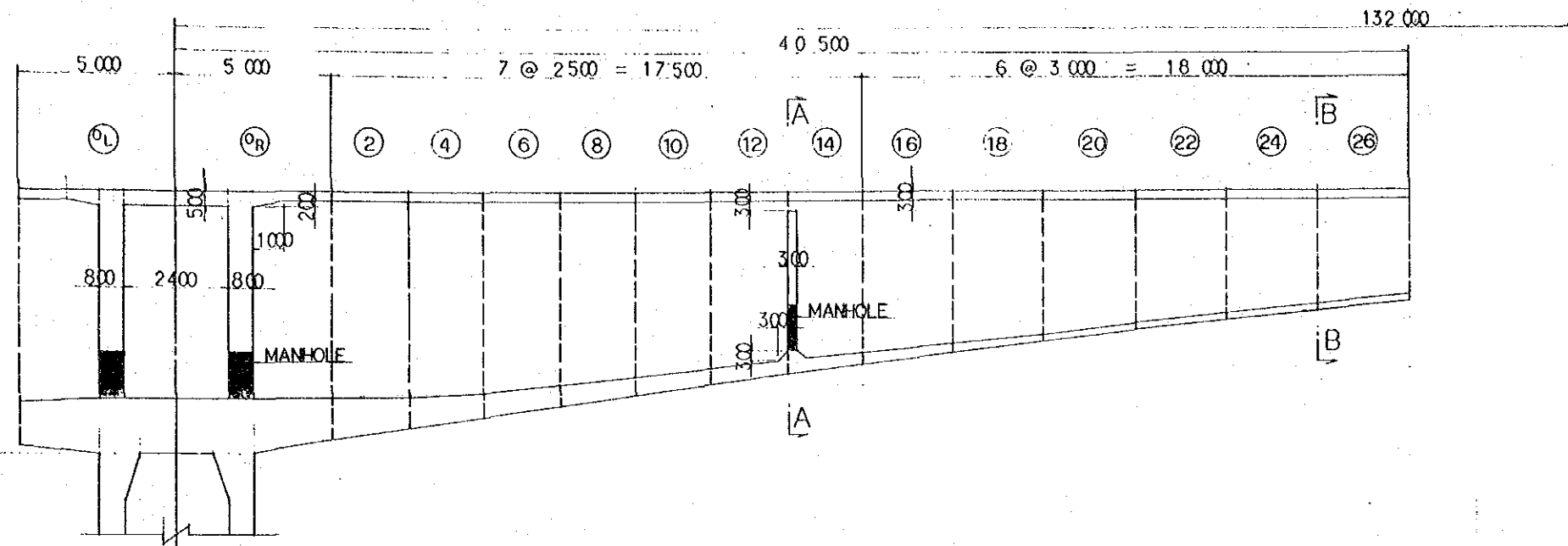
PC Box Girder (2)
(6 Spans - No. 2)

No. 7

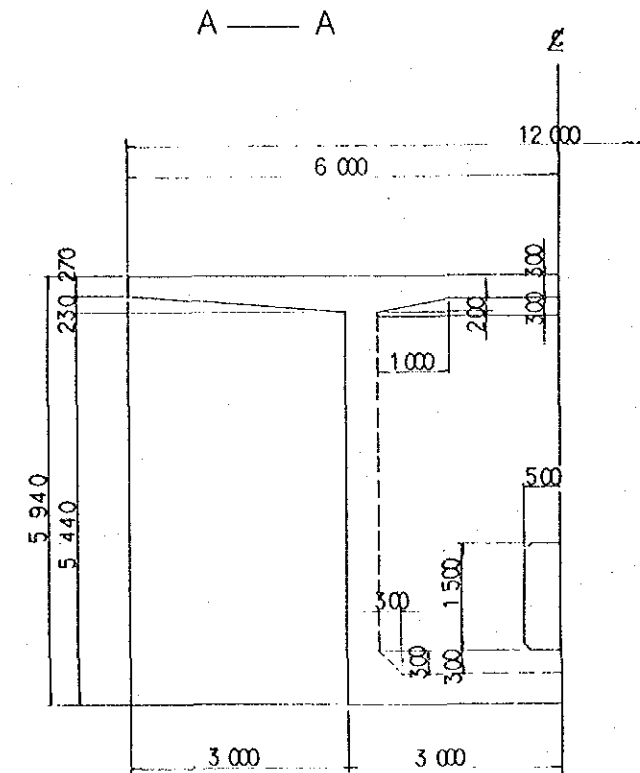
GENERAL STRUCTURE OF GIRDER (6 SPAN-NO3)

SECTIONAL ELEVATION

SCALE = 1:100



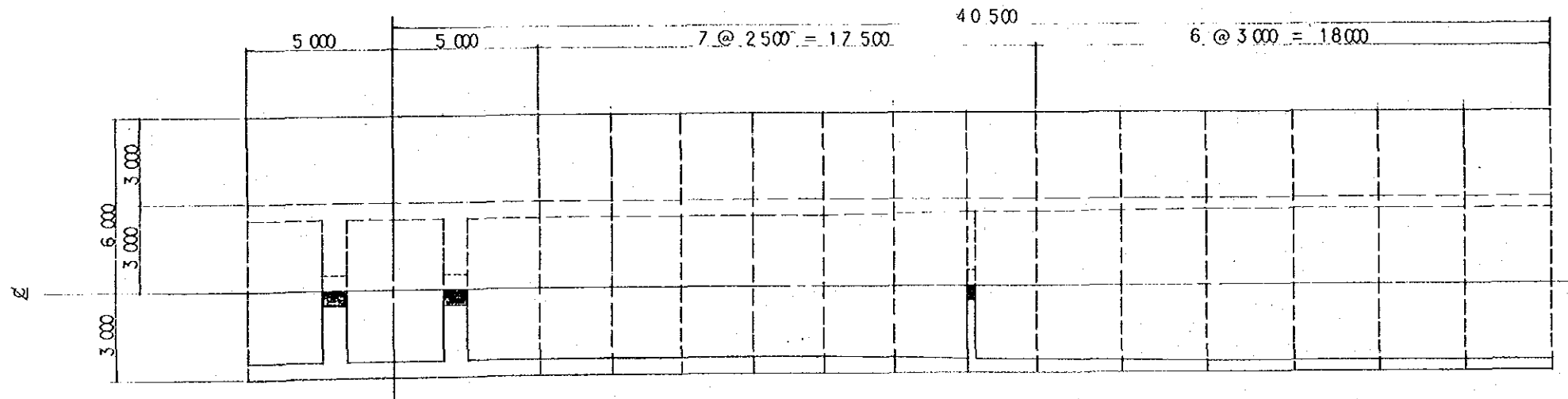
CROSS SECTION SCALE = 1:50



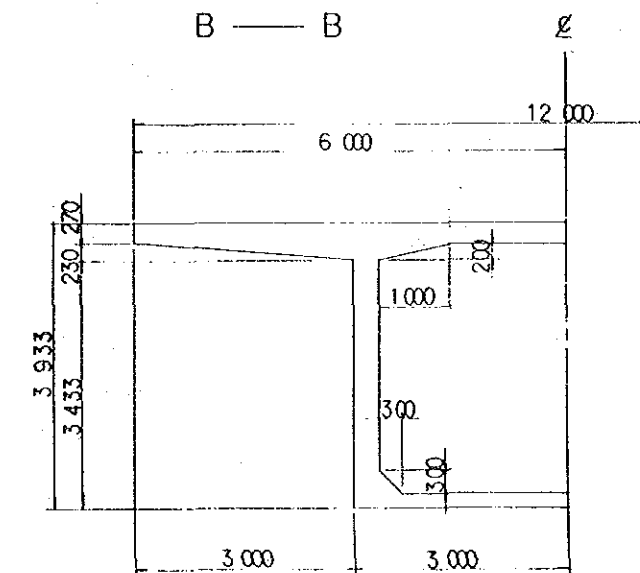
DEPTH OF GIRDER (H)	8201	8500	8059	7693	7331	6973	6621	6276	5940	5614	5237	4879	4541	4225	3933	3667
UPPER SLAB (T)	300	300														300
WEB (B)	550	550				550	500	450	450	400	350					350
LOWER SLAB (T)	1400	1800	1400	1000	800	700	600	520	440	360	280	200				200

SECTIONAL PLAN

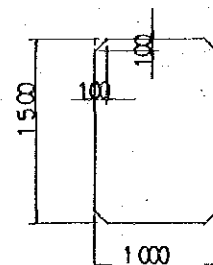
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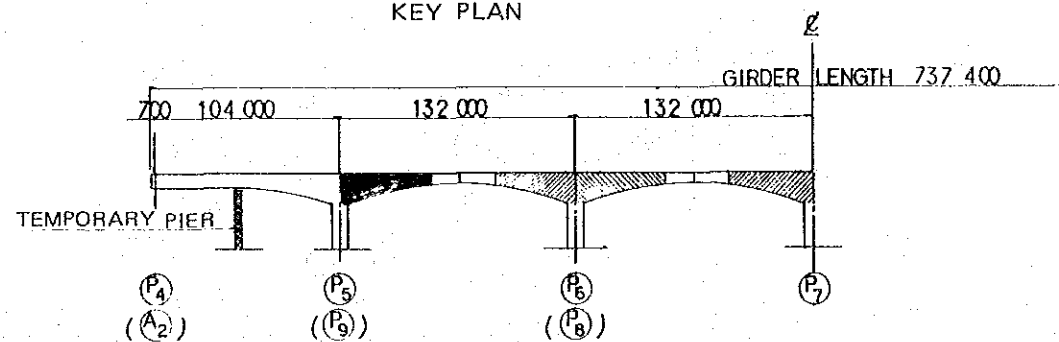
CROSS SECTION B-B



DETAIL OF MANHOLE SCALE = 1:30



KEY PLAN



Road bridge

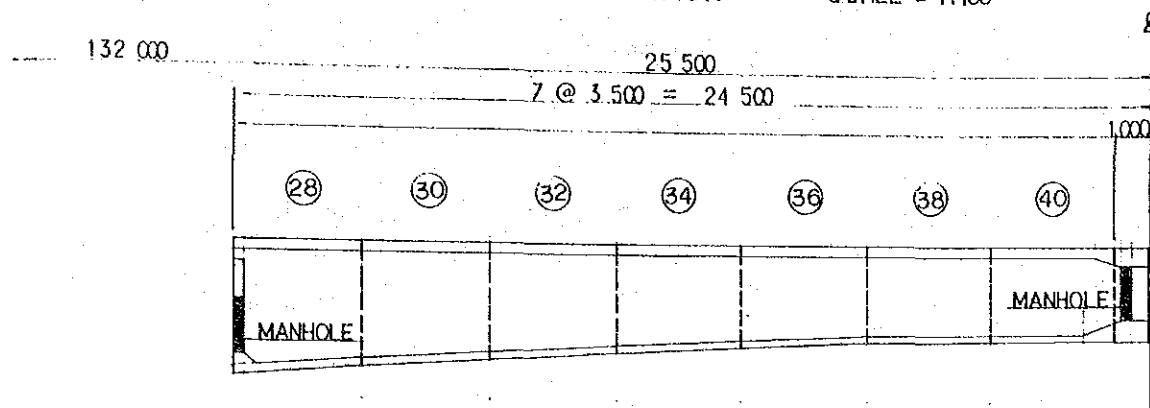
PC Box Girder (3)
(6 Spans - No. 3)

No. 8

GENERAL STRUCTURE OF GIRDER (6 SPAN-NO 4)

SECTIONAL ELEVATION

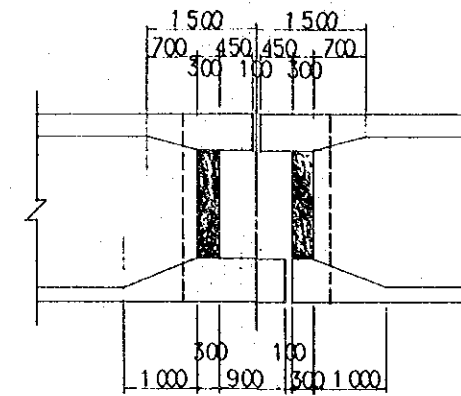
SCALE = 1:100



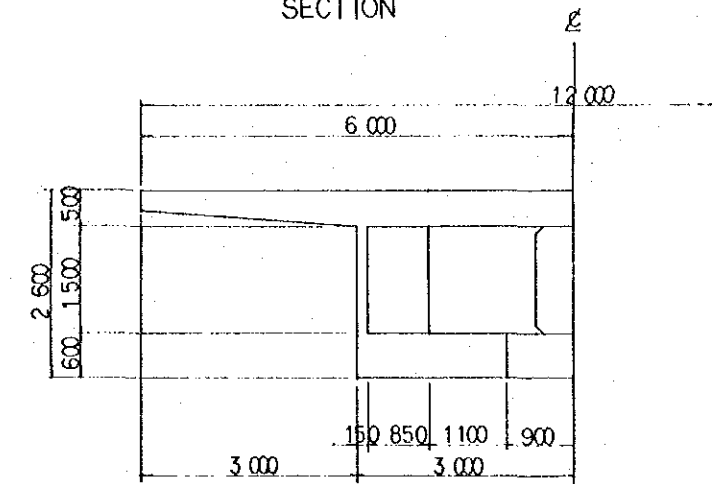
DETAIL OF HINGE

SCALE=1:50

ELEVATION

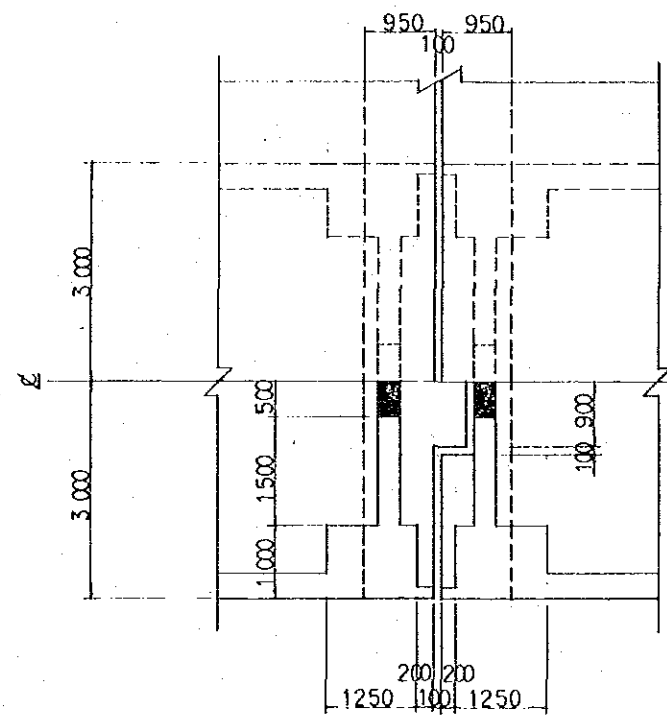


SECTION



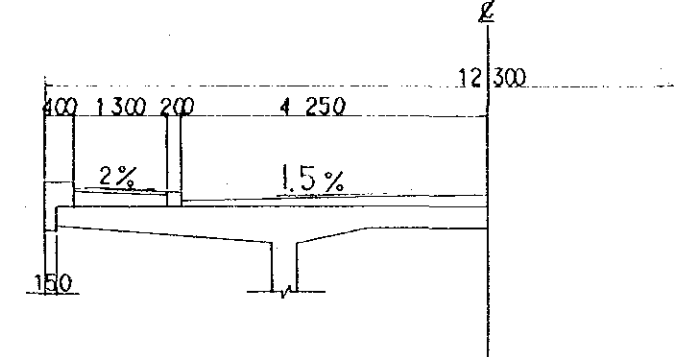
DEPTH OF GIRDER (H)	3667	3390	3153	2856	2801	2690	2622	2600	2600
UPPER SLAB (T)	300							300	300
WEB (B)	350							350	350
LOWER SLAB (T)	200							200	200

PLAN



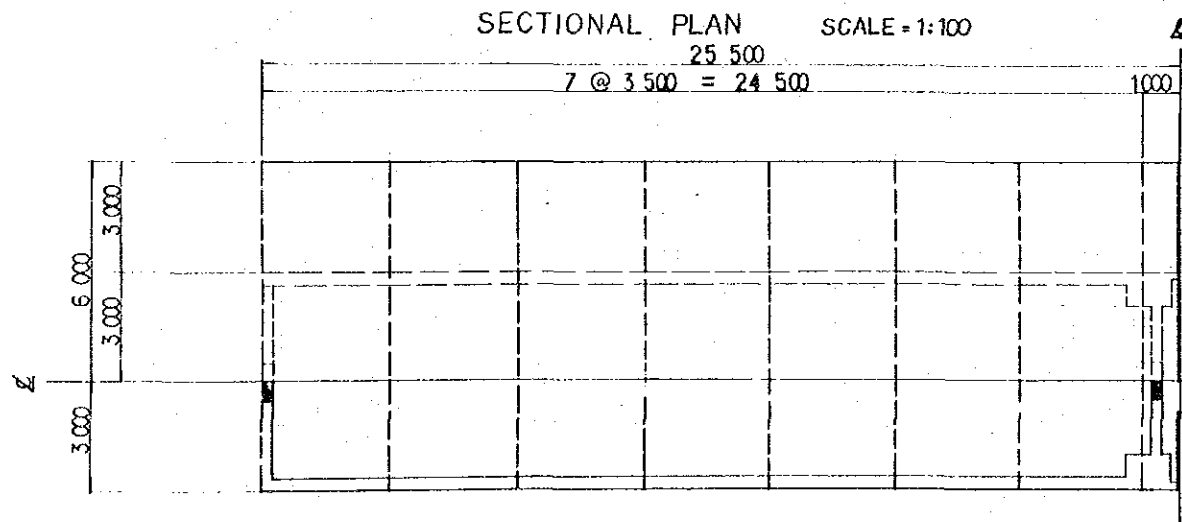
CROSS SECTION

SCALE=1:50



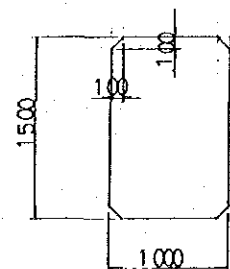
SECTIONAL PLAN

SCALE = 1:100

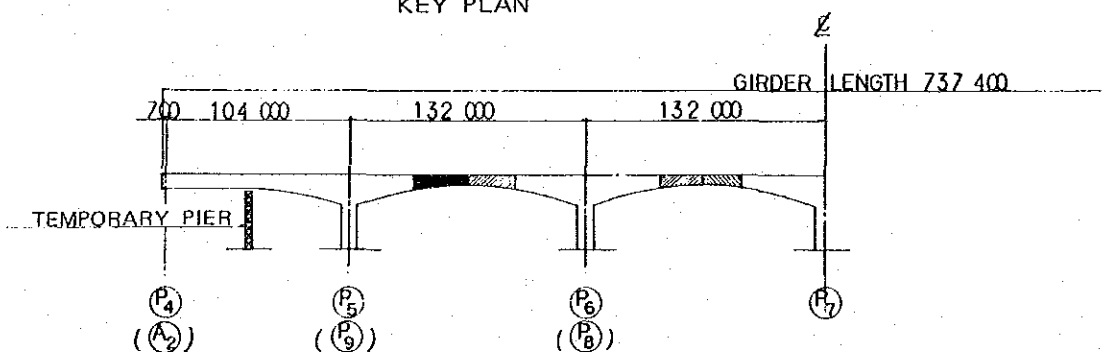


DETAIL OF MANHOLE

SCALE=1:30



KEY PLAN



Road bridge

PC Box Girder (4)
(6 Spans - No. 4)

No. 9

A₁ ABUTMENT

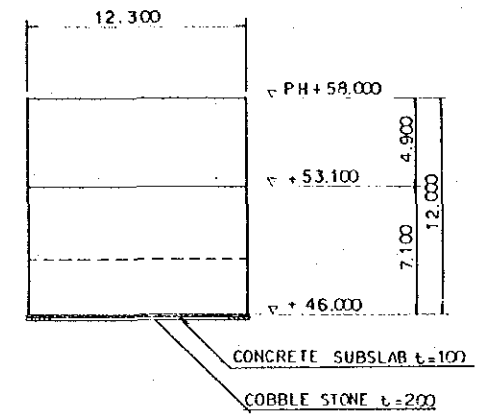
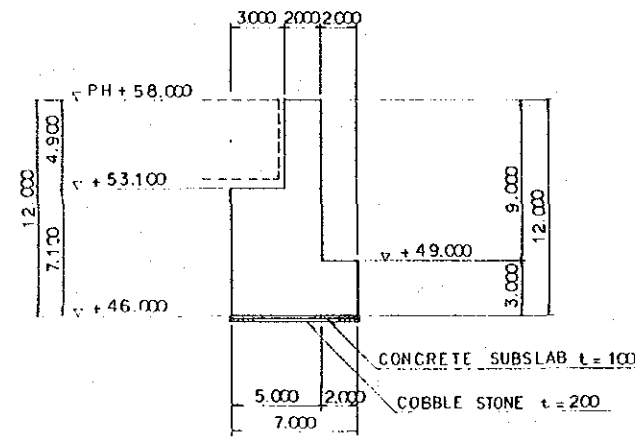
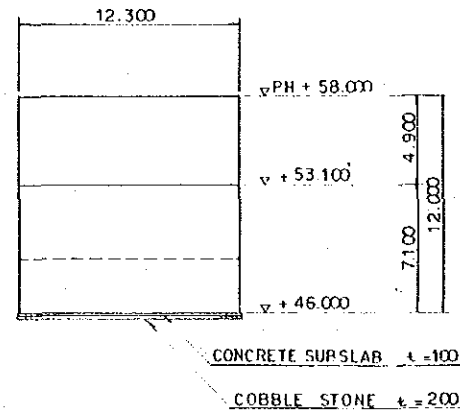
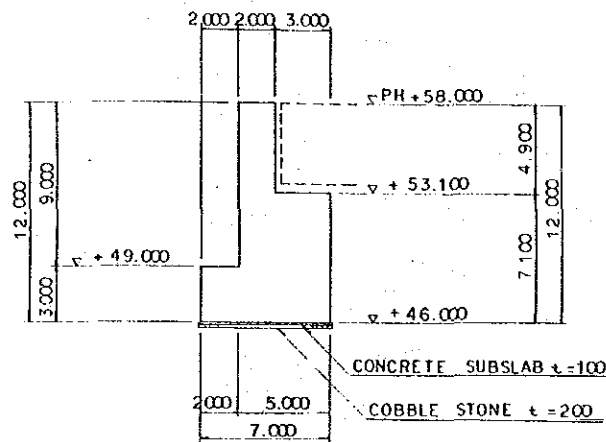
A₂ ABUTMENT

SIDE ELEVATION

FRONT ELEVATION

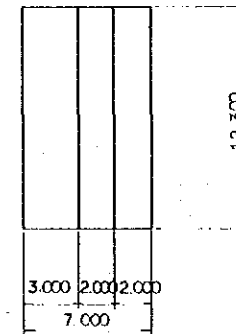
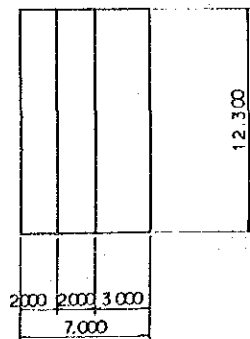
SIDE ELEVATION

FRONT ELEVATION



P L A N

P L A N

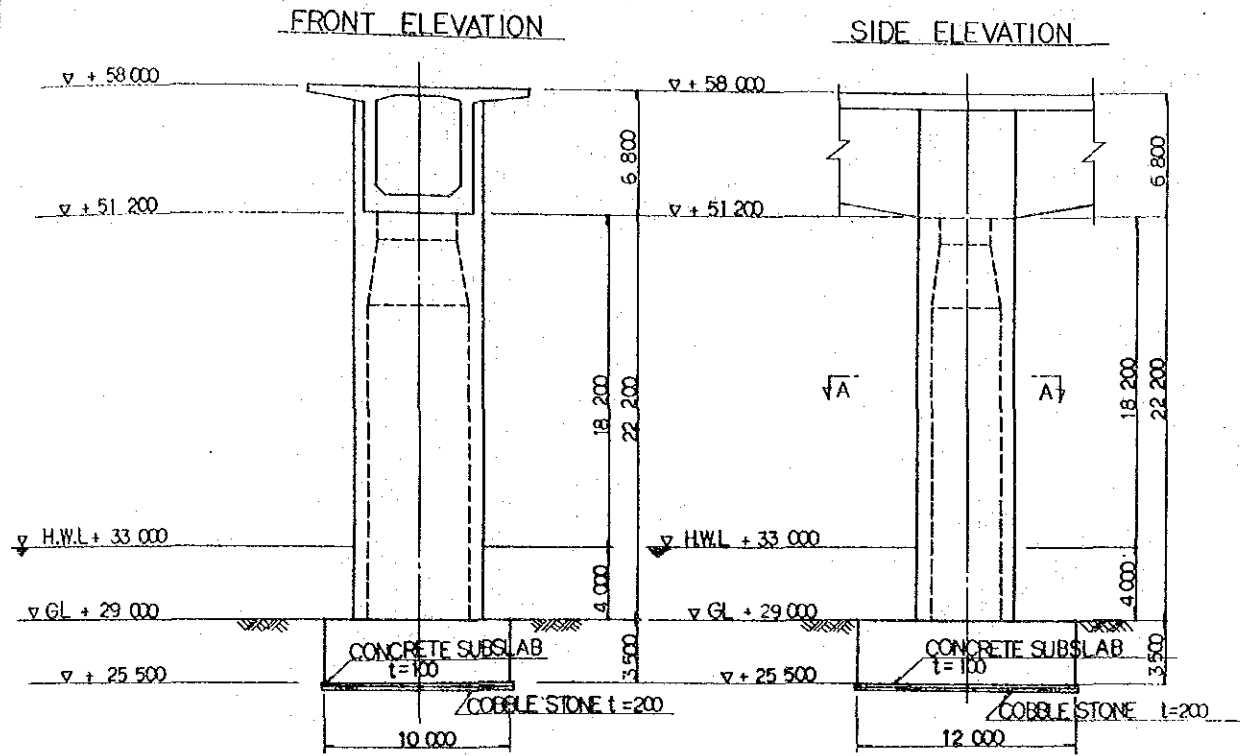


Road bridge

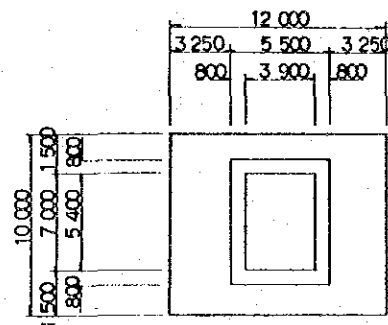
Abutments - A1, A2

No. 10

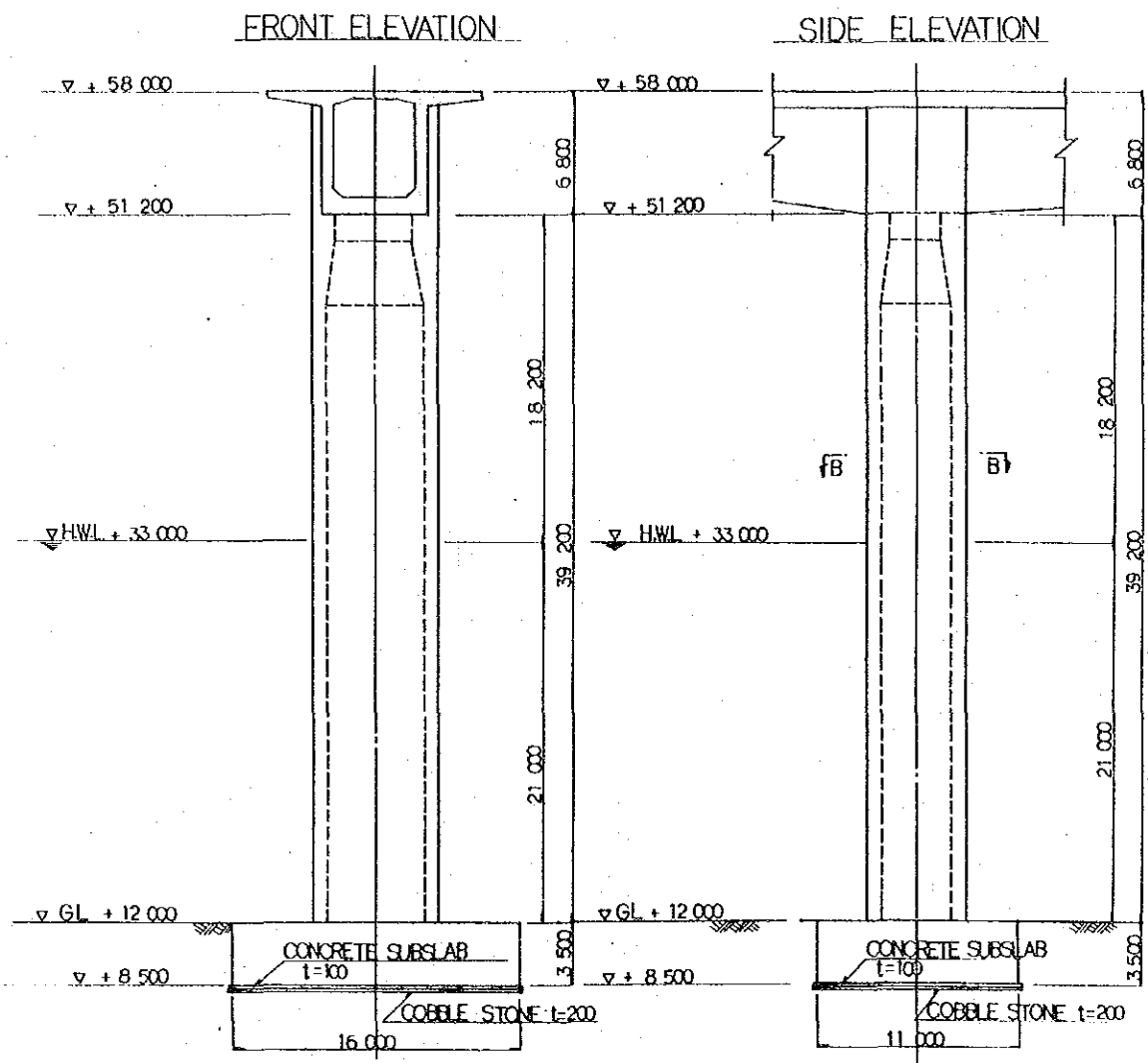
P1 PIER S=1/200



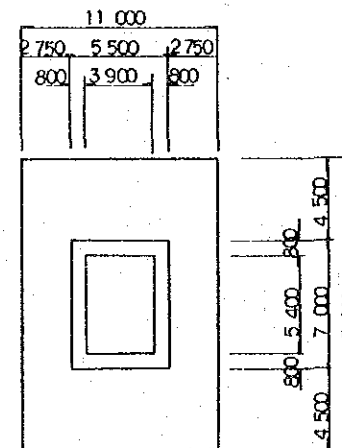
SECTION A-A



P2 PIER S=1/200



SECTION B-B



Road bridge

Piers - P1, P2

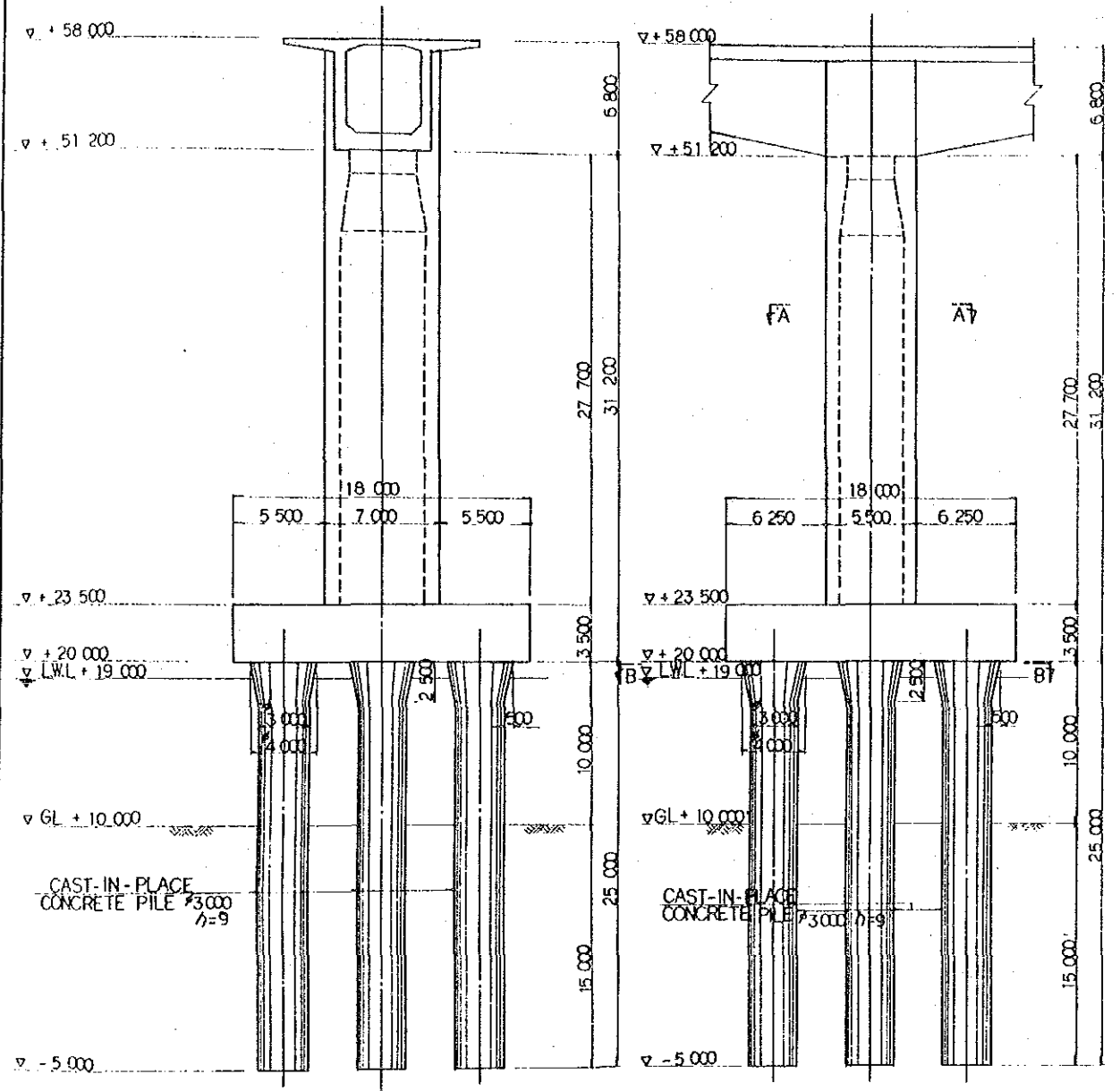
No. 11

P3 PIER S=1/200

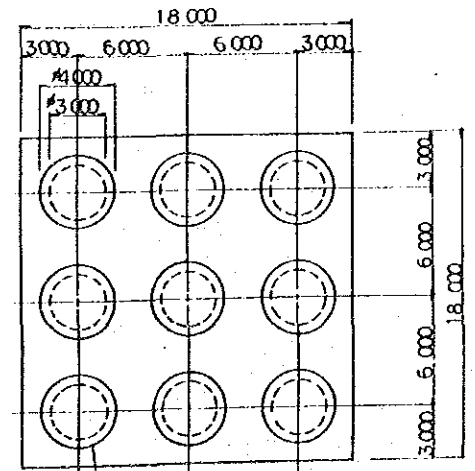
P4 PIER S=1/200

FRONT ELEVATION

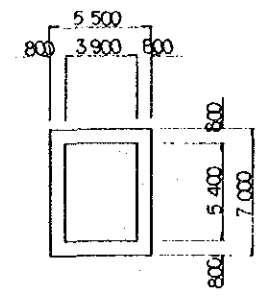
SIDE ELEVATION



SECTION B-B

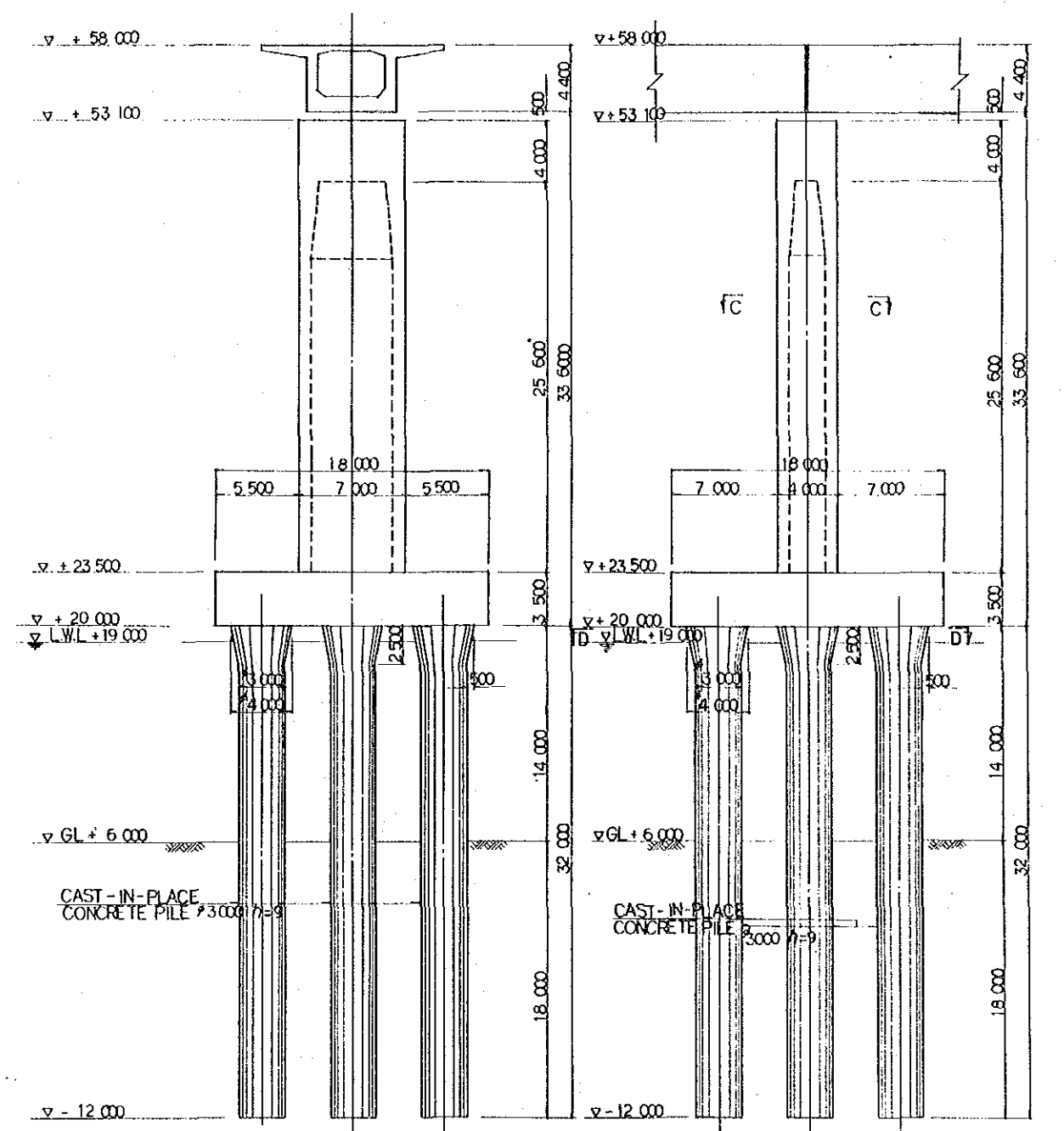


SECTION A-A

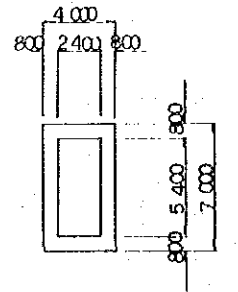


FRONT ELEVATION

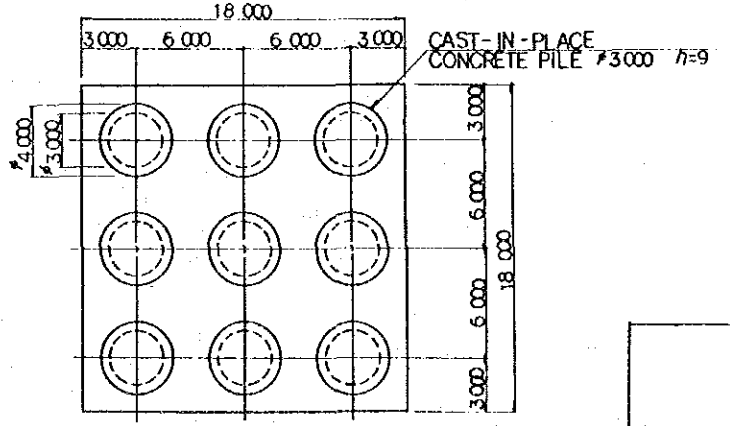
SIDE ELEVATION



SECTION C-C



SECTION D-D



Road bridge

Piers - P3, P4

No. 12

P5 PIER S=1/200

P6, P7 PIERS S=1/200

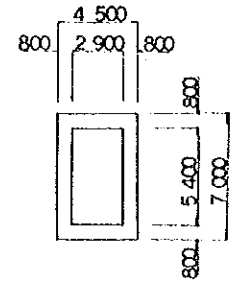
FRONT ELEVATION

SIDE ELEVATION

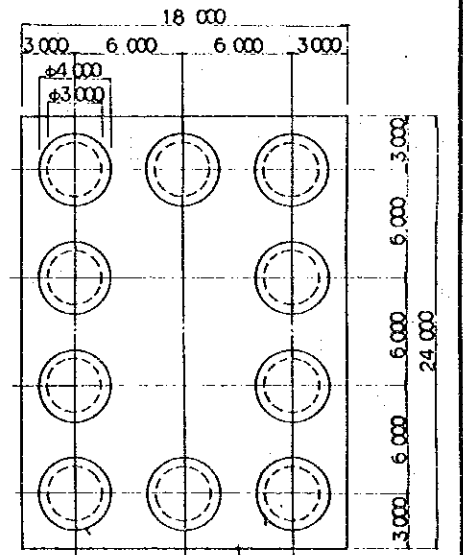
FRONT ELEVATION

SIDE ELEVATION

SECTION C-C



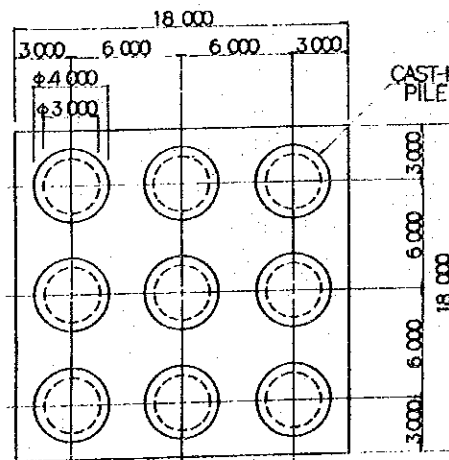
SECTION D-D



CAST-IN-PLACE CONCRETE PILE
φ3000 n=10

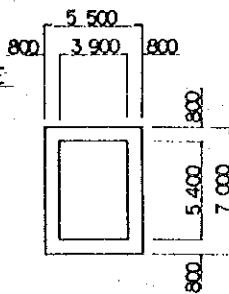
	GROUND HEIGHT H (m)	PILE BOTTOM H ₁ (m)	PILE LENGTH L (m)
P6	+2.000	-31.000	51.000
P7	-1.000	-31.000	51.000

SECTION B-B

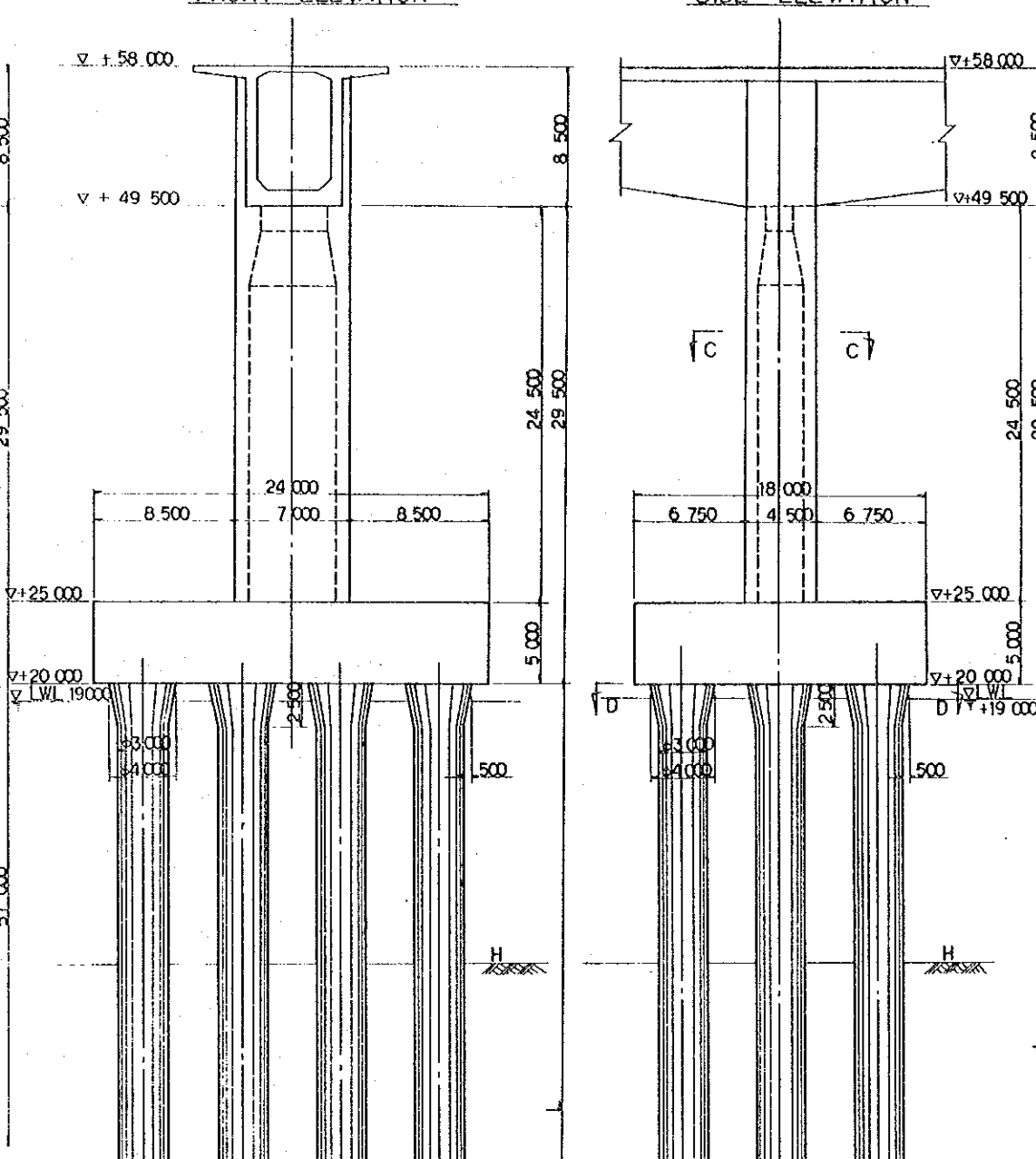
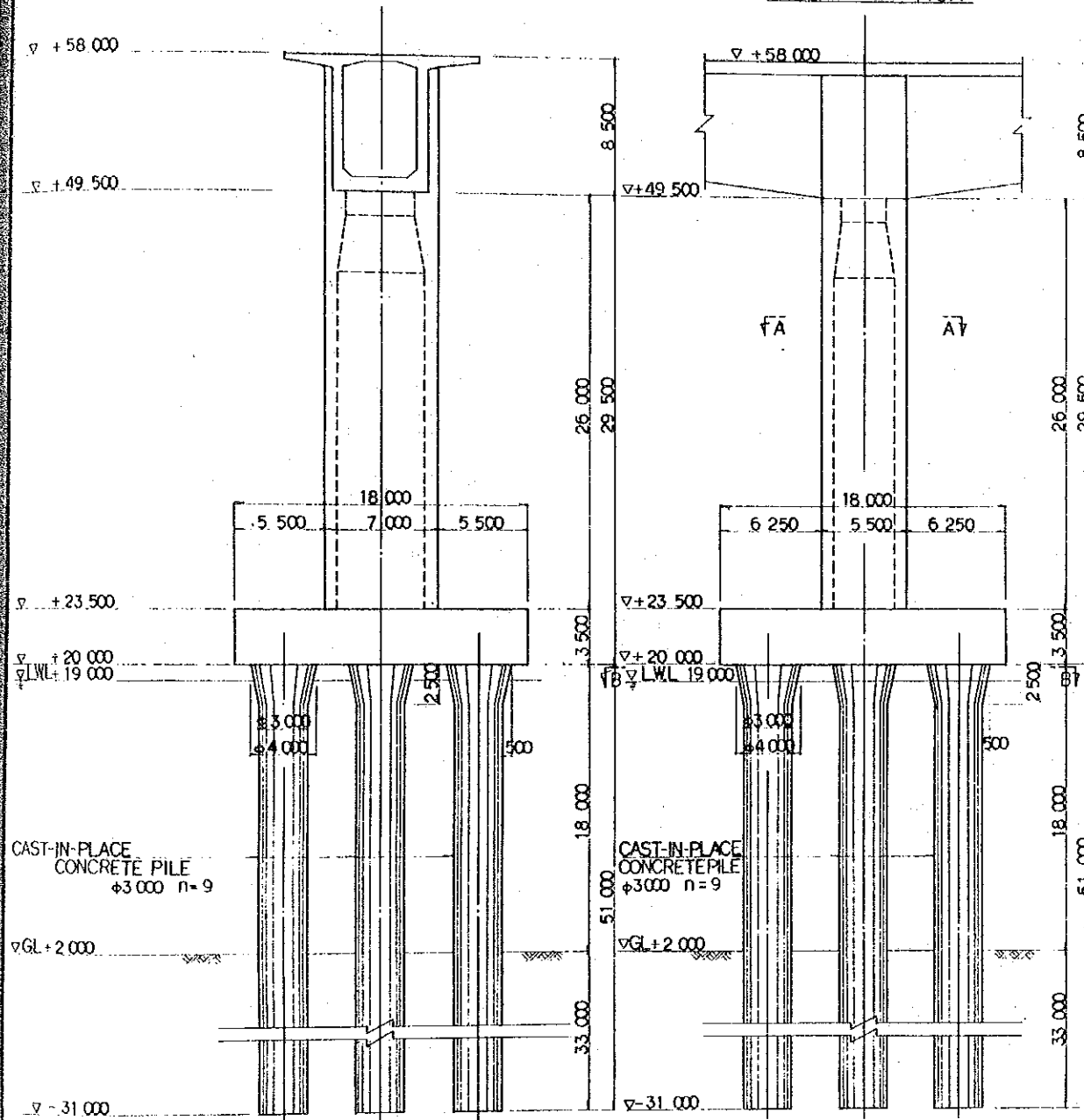


CAST-IN-PLACE CONCRETE PILE
φ3000 n=9

SECTION A-A



CAST-IN-PLACE CONCRETE PILE
φ3000 n=10



Road bridge

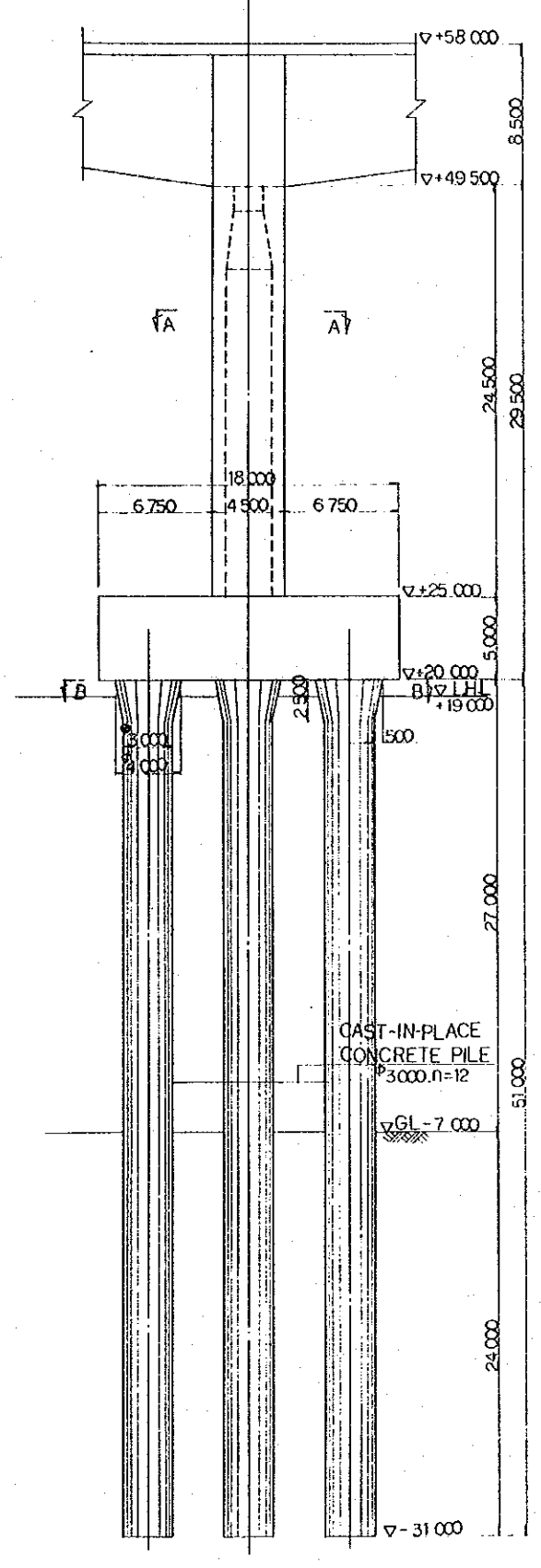
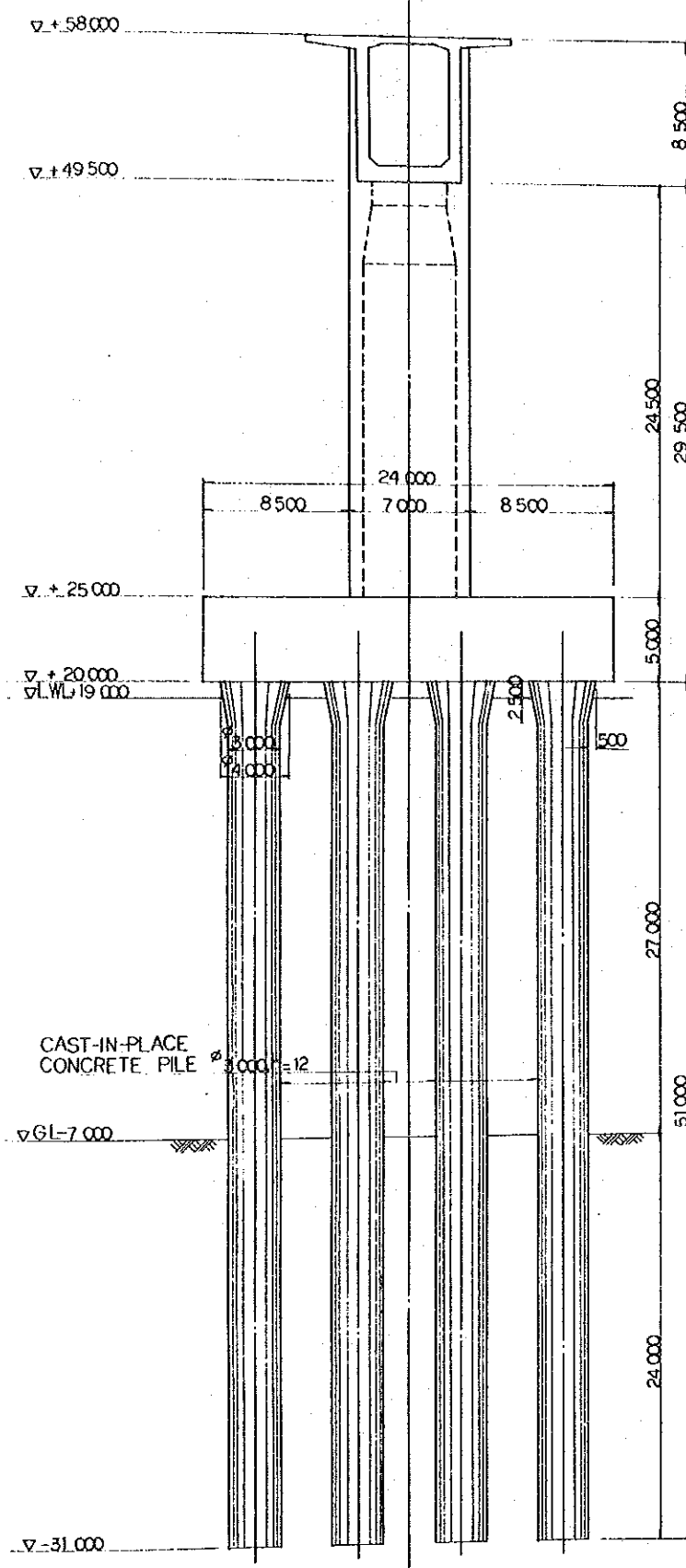
Piers - P5, P6, P7

No. 13

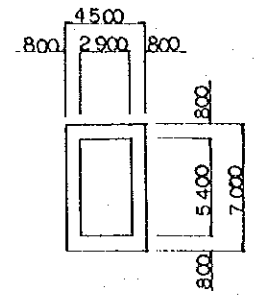
P8 PIER S=1/200

FRONT ELEVATION

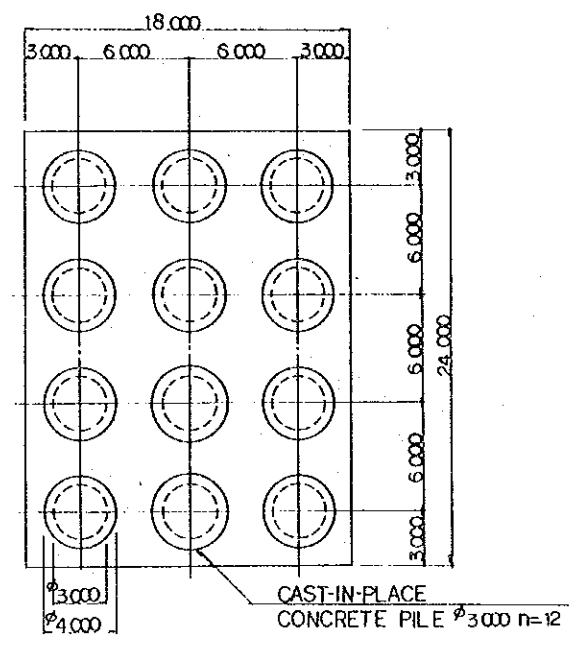
SIDE ELEVATION



SECTION A-A



SECTION B-B



Road bridge

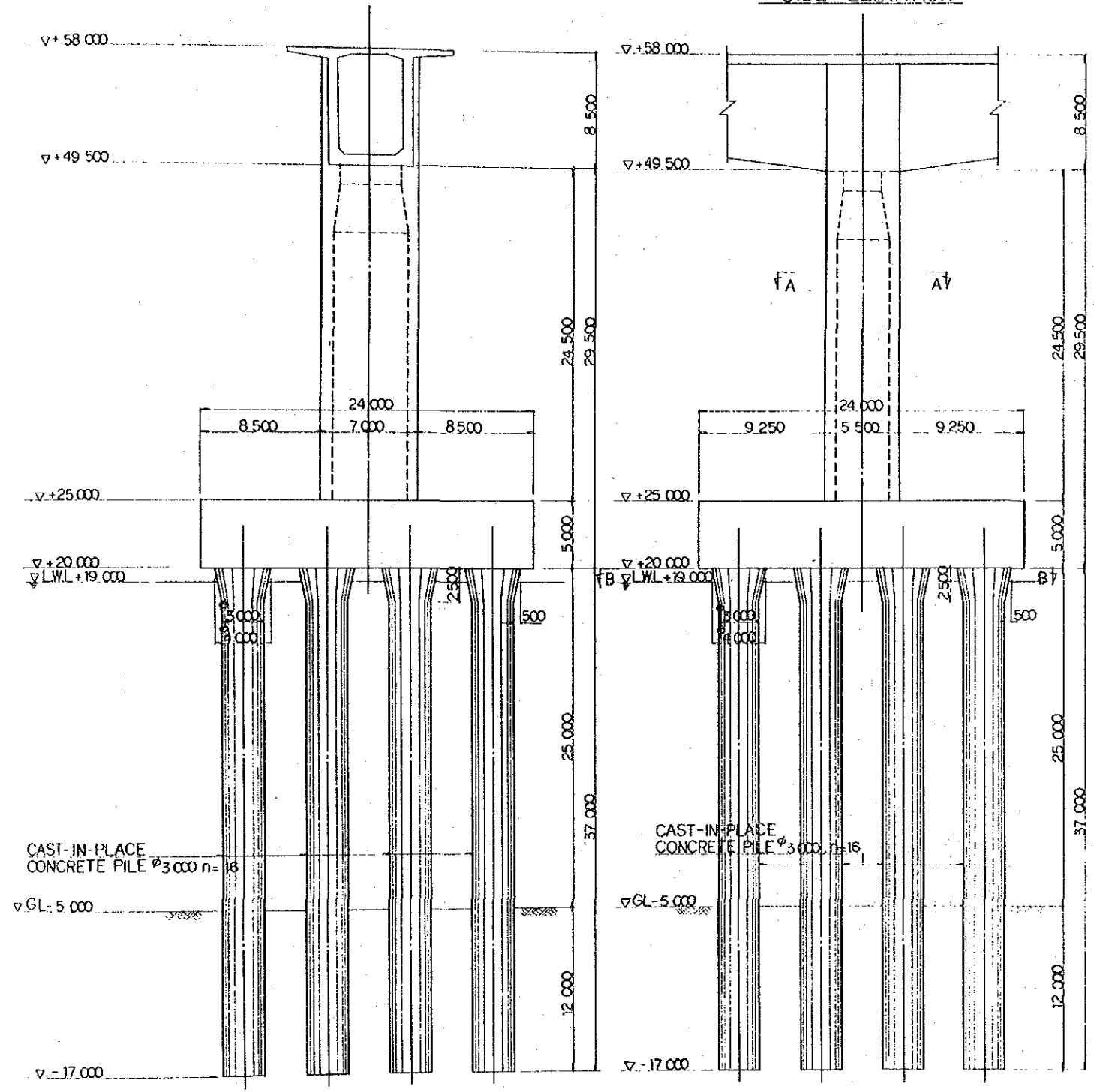
Piers - P8

No. 14

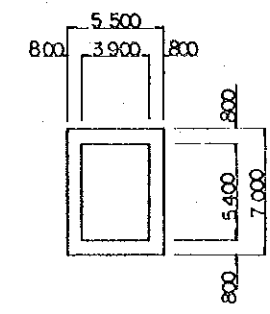
P9 PIER S=1/200

FRONT ELEVATION

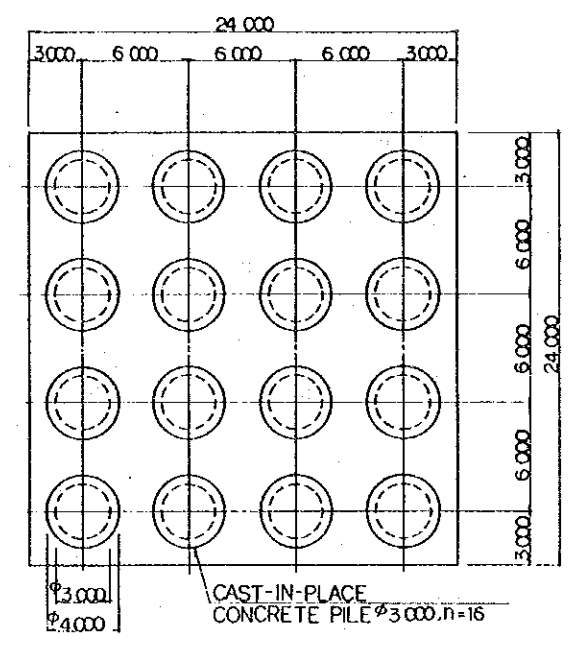
SIDE ELEVATION



SECTION A - A



SECTION B - B



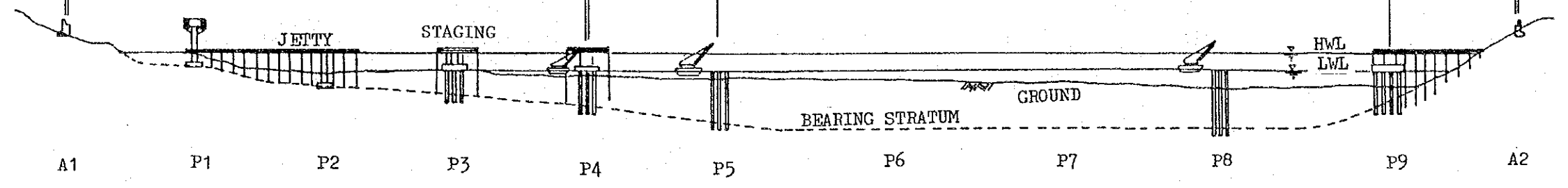
Road bridge

Piers - P9	No. 15
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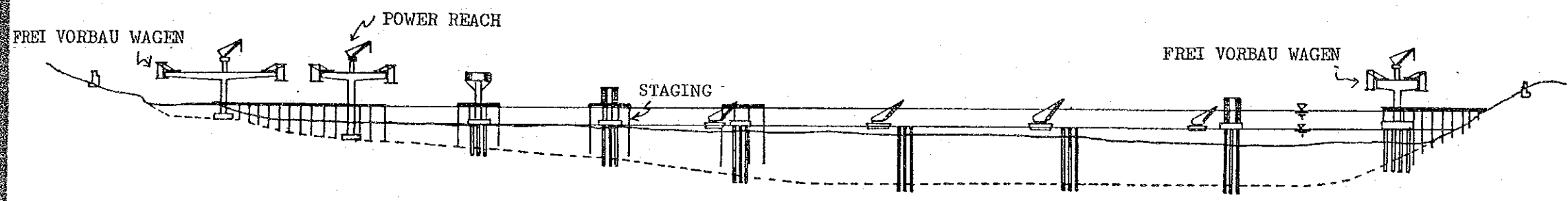
1 149 5000

1 500 4 x 102 000 = 408 000 2 500 104 000 4 x 132 000 = 528 000 104 000 1 500

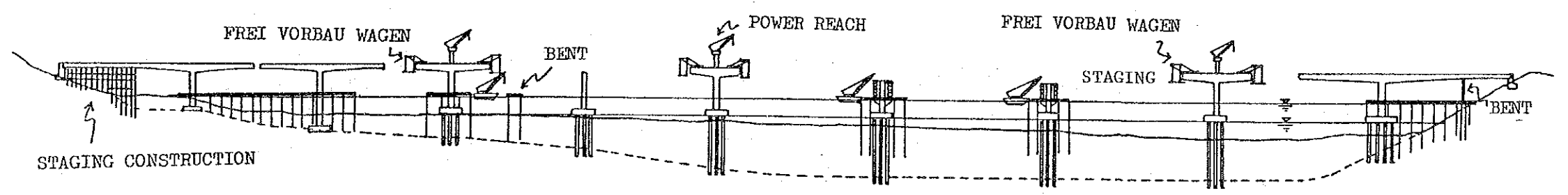
S T A G E 1



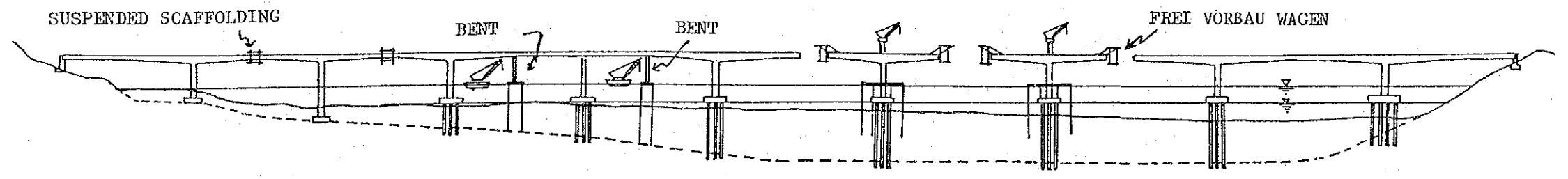
S T A G E 2



S T A G E 3



S T A G E 4



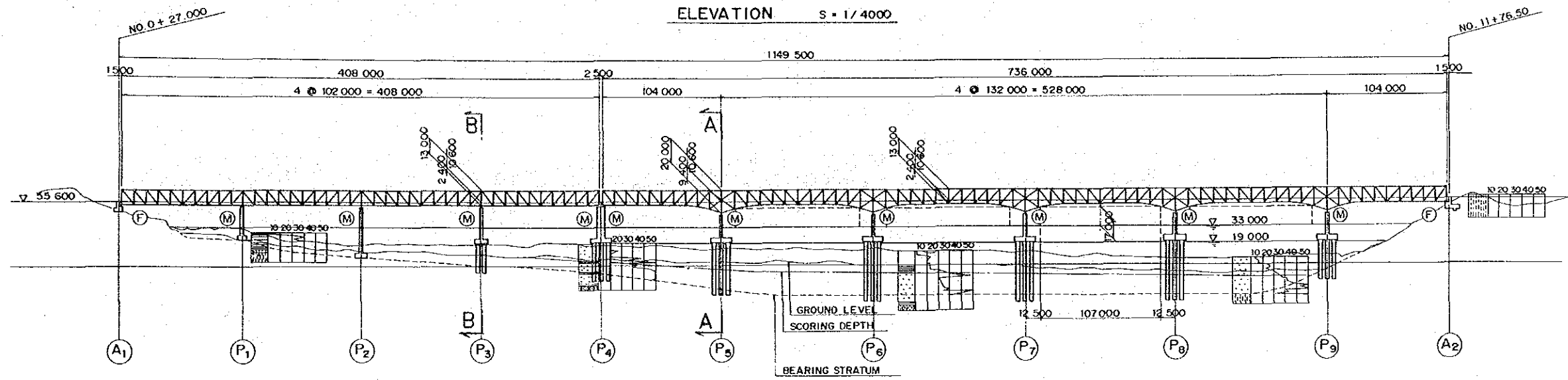
Road bridge

Erection	No. 16
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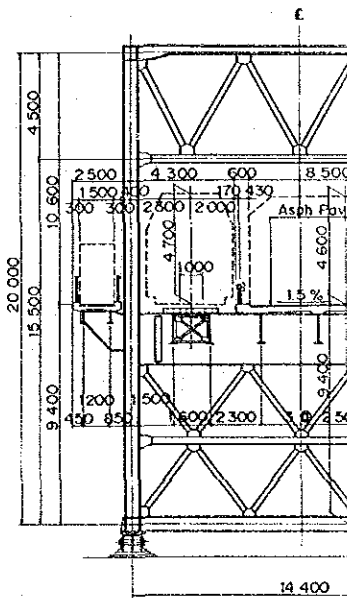
ROADWAY WITH RAILWAY BRIDGE

GENERAL VIEW

ELEVATION S = 1/4000

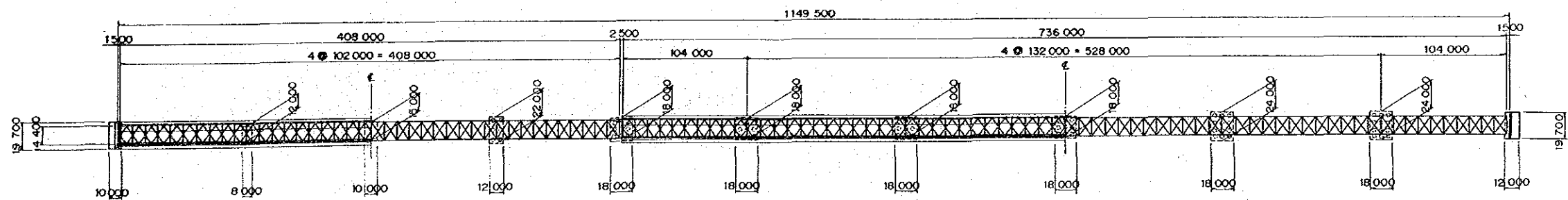


SECTION A-A

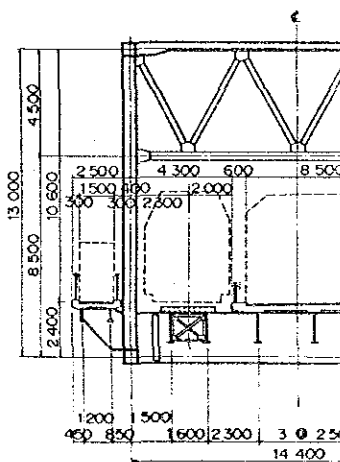


PLAN

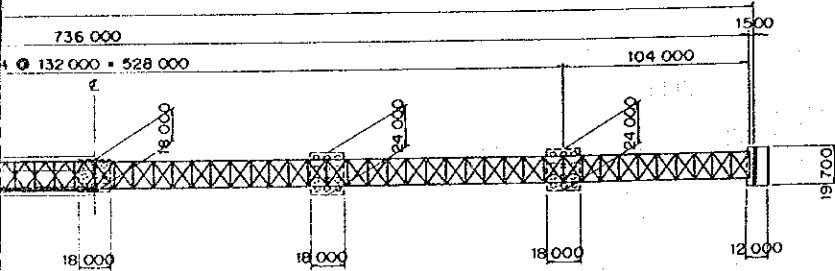
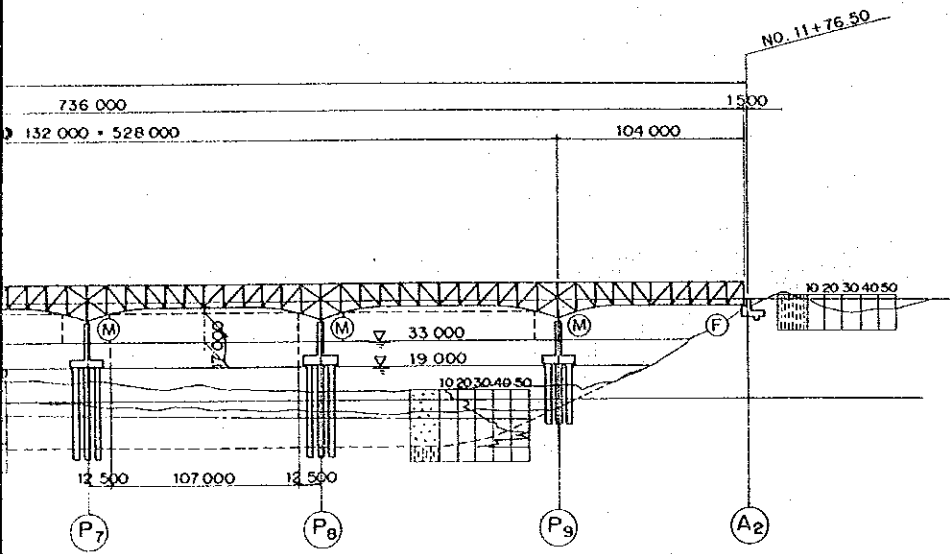
S = 1/4000



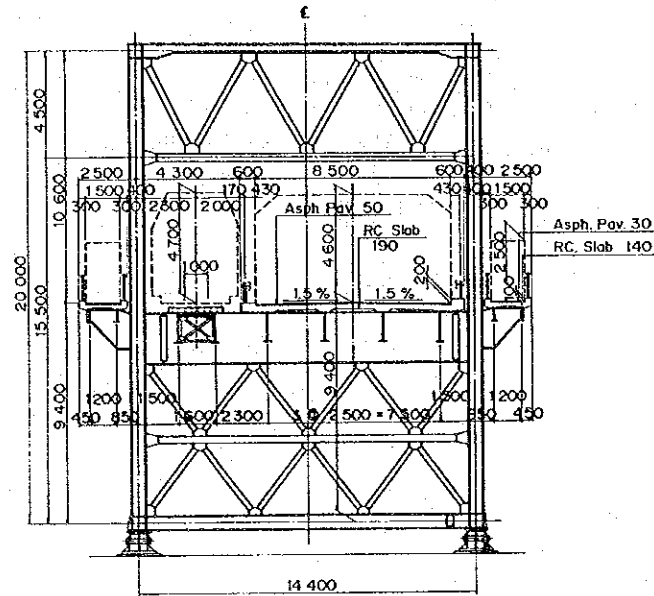
SECTION B-B



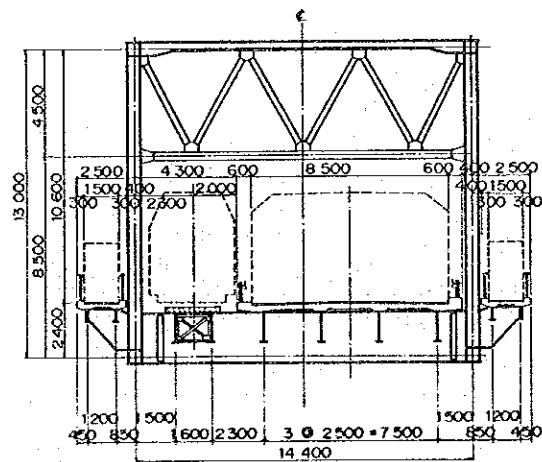
ROADWAY WITH RAILWAY BRIDGE



SECTION A-A s = 1/300

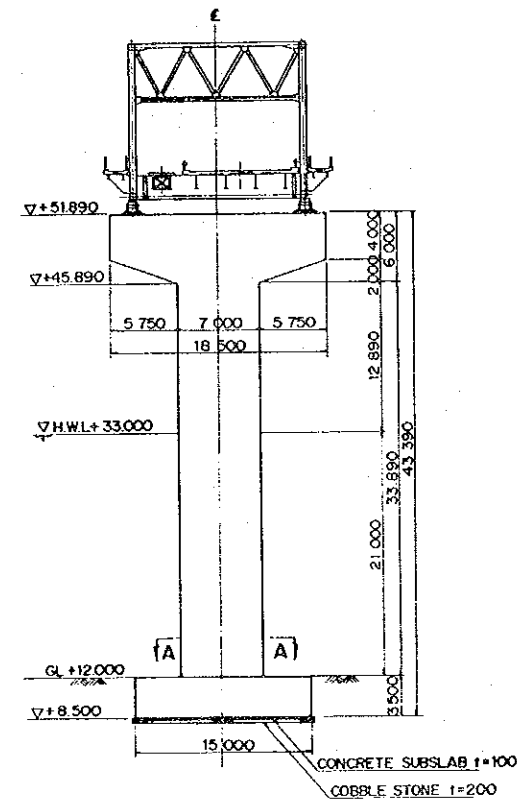


SECTION B-B s = 1/300



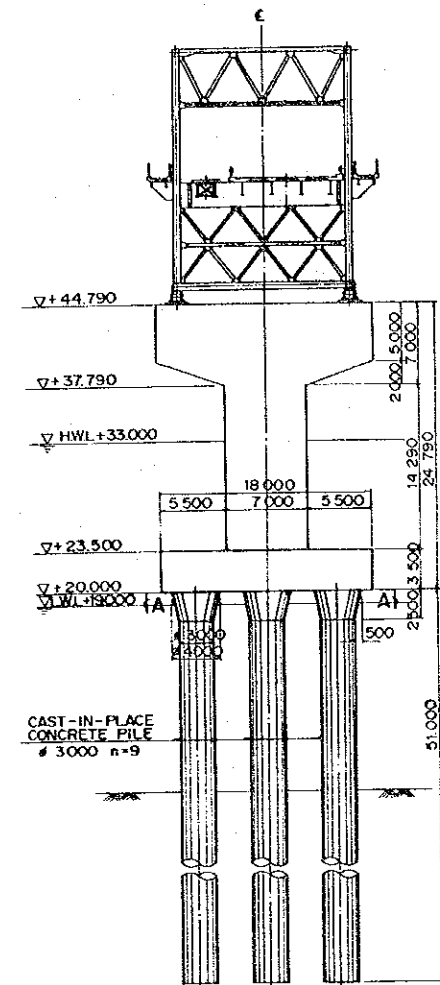
P2 PIER

FRONT ELEVATION



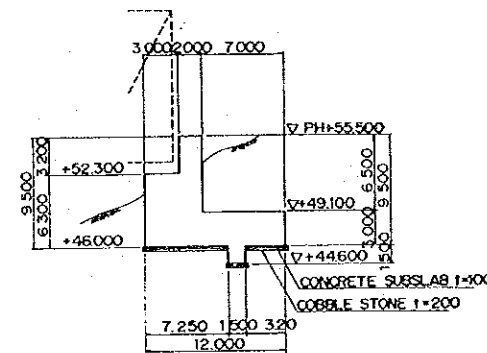
P5 (P6, P7) PIER s = 1/600

FRONT ELEVATION



A2 ABUTMENT

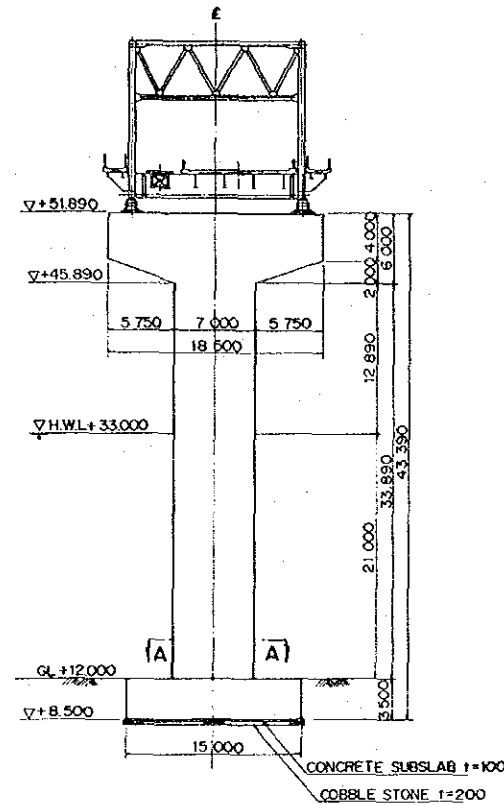
SIDE ELEVATION



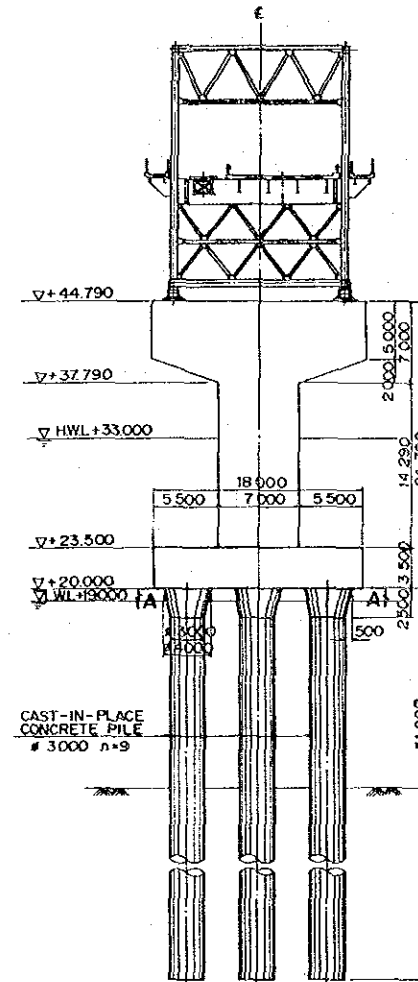
DESINGE CONDISION

BRIDGE NAME	IRRAWADDY RIVER BRIDGE
KIND OF BRIDGE	STEEL TRUSS BRIDGE
GIRDER LENGTH	4 @ 102 = 408M
WIDTH	ROADWAY 8.5M RAILWAY 3.81M SIDE WALK 2 @ 1.50 = 3.0M
ANGLE OF SKEW	90°
SEISMIC COEFFICIENT	KH = 0.125
GRADE	LEVEL
SUPERELEVATION	ROADWAY 1.5 % SIDEWALK 2.0 %
RADIUS OF CURVE	R = ∞
LIVE LOAD	1 TL-20, Indian Railway Standard
IMPACT FACTOR	1-20 / (50+L); ROADWAY 1-0.48 / (L²+10 / (65+L)); RAILWAY

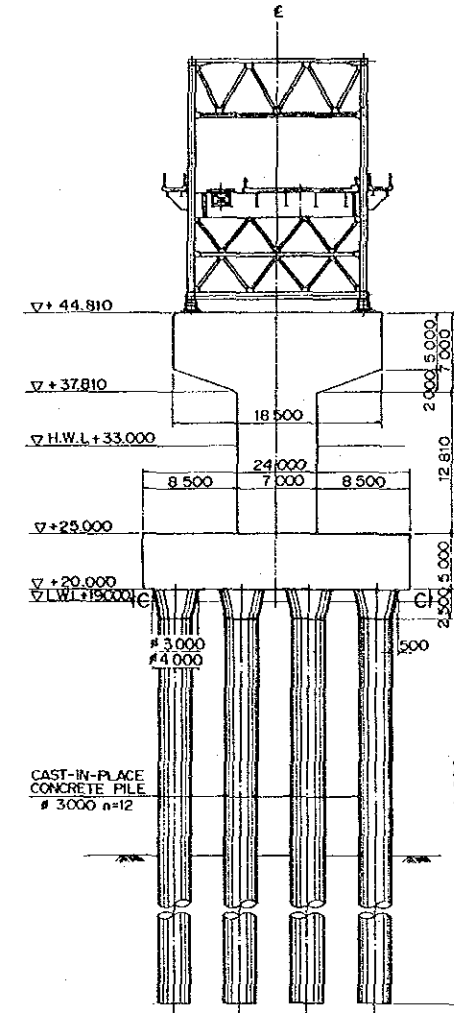
P2 PIER
FRONT ELEVATION



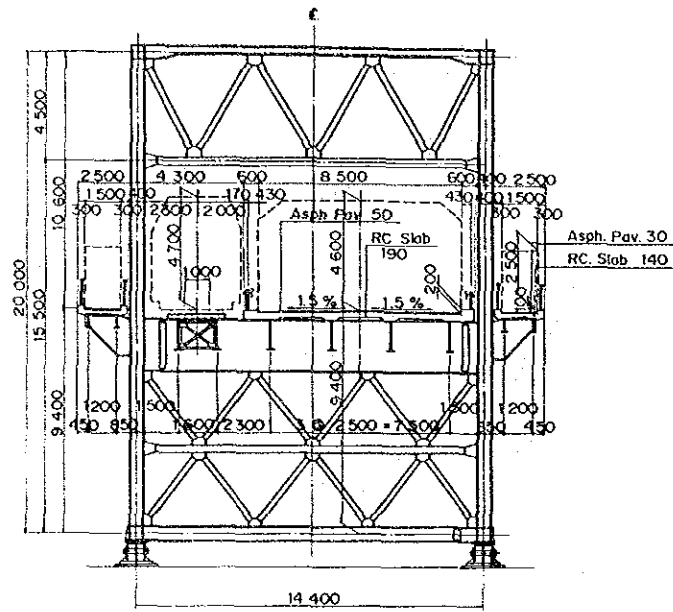
P5 (P6, P7) PIER s = 1/600
FRONT ELEVATION



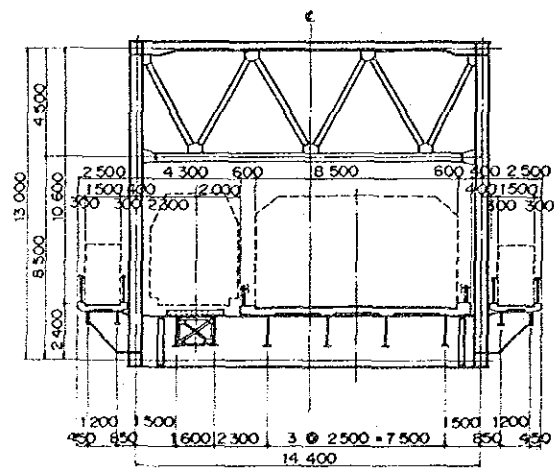
P8 (P9) PIER
FRONT ELEVATION



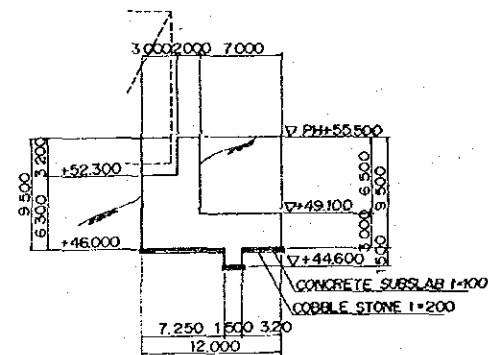
SECTION A-A s = 1/300



SECTION B-B s = 1/300



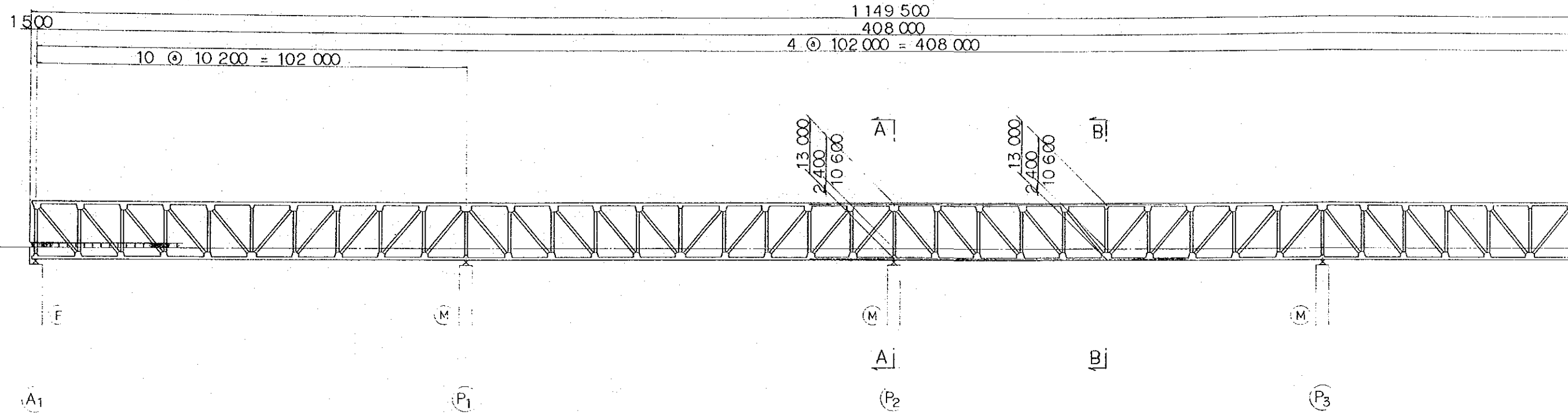
A2 ABUTMENT
SIDE ELEVATION



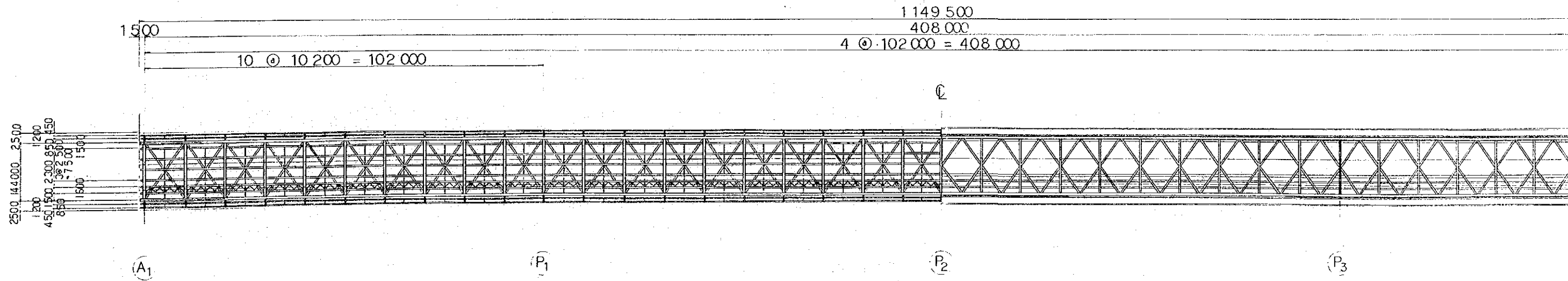
DESINGE CONDISION

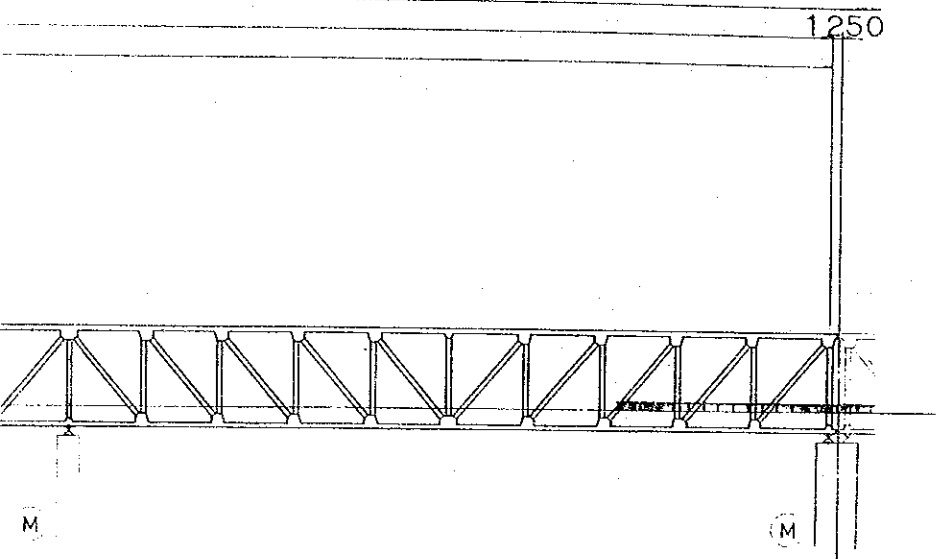
BRIDGE NAME	IRRAWADDY RIVER BRIDGE
KIND OF BRIDGE	STEEL TRUSS BRIDGE
GIRDER LENGTH	4 @ 102 = 408M 104 + (4 @ 132 = 528) + 104 = 736m
WIDTH	ROADWAY 8.5M RAILWAY 3.81M SIDE WALK 2 @ 1.50 = 3.0M
ANGLE OF SKEW	90°
SEISMIC COEFFICIENT	KH = 0.125
GRADE	LEVEL
SUPERELEVATION	ROADWAY 1.5 % SIDEWALK 2.0 %
RADIUS OF CURVE	R = ∞
LIVE LOAD	1 TL-20, Indian Railway Standard
IMPACT FACTOR	1/20 / (50 + L); ROADWAY 1/0.48 / (L² + 10) / (65 + L); RAILWAY

ELEVATION S = 1 / 500

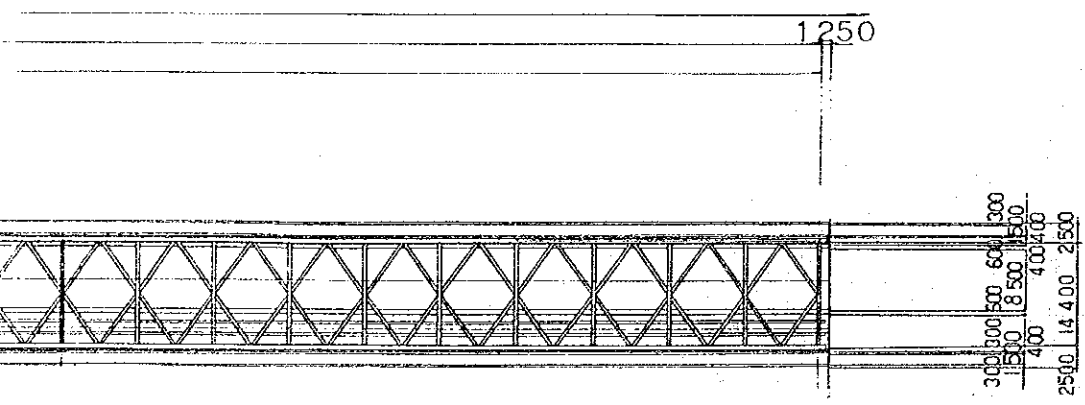


PLAN S = 1 / 500



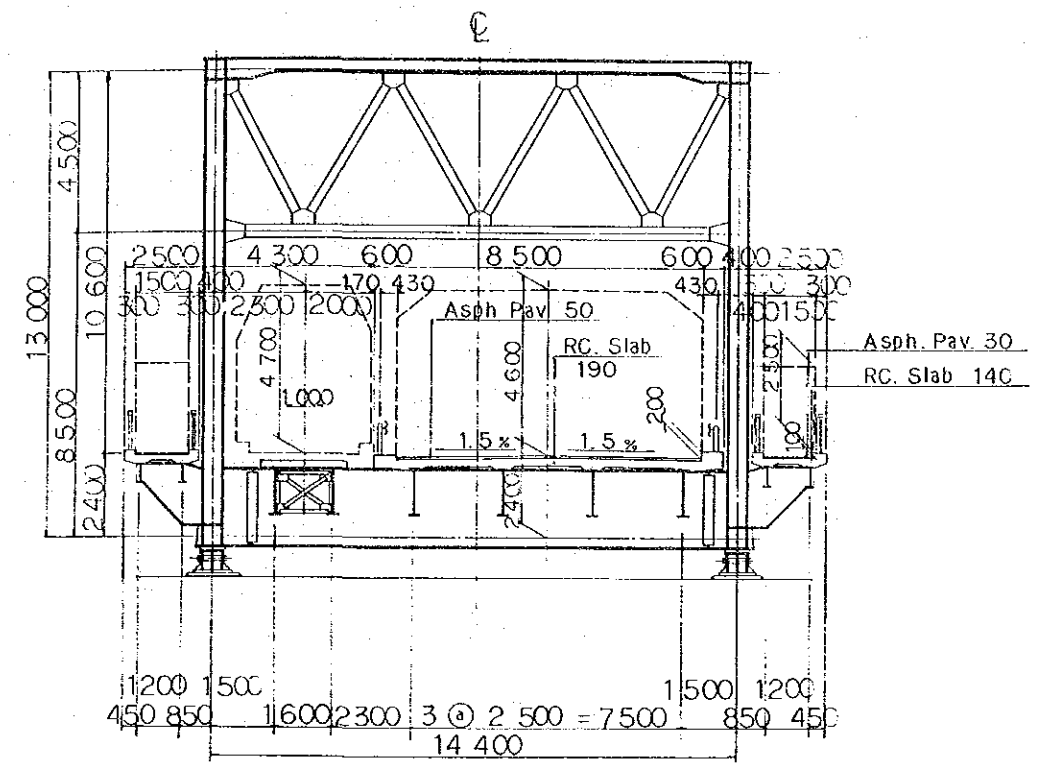


P₃ P₄

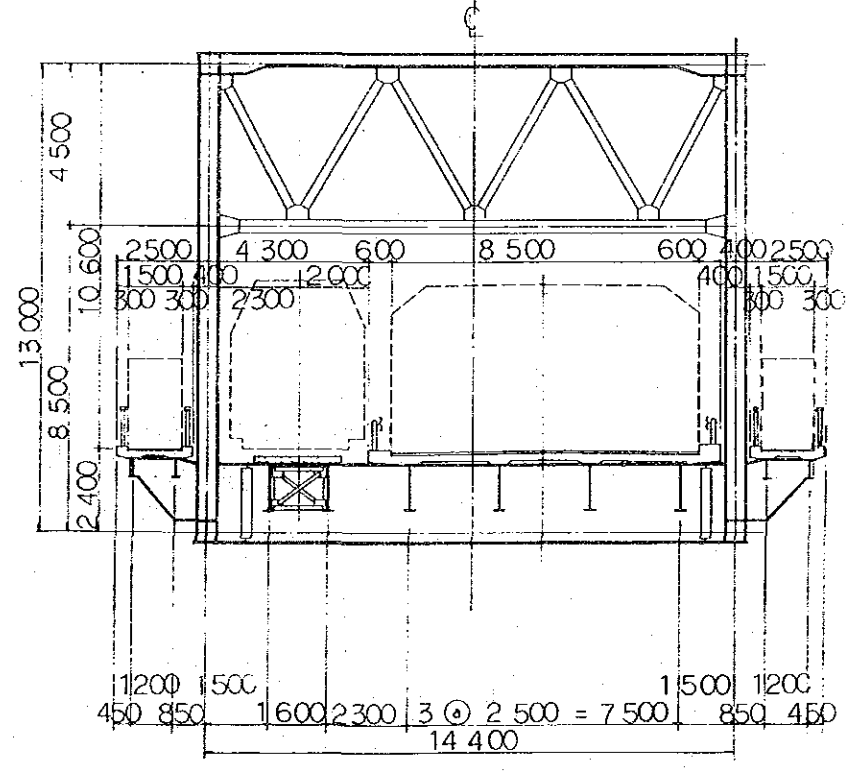


P₃ P₄

SECTION A - A S = 1/100



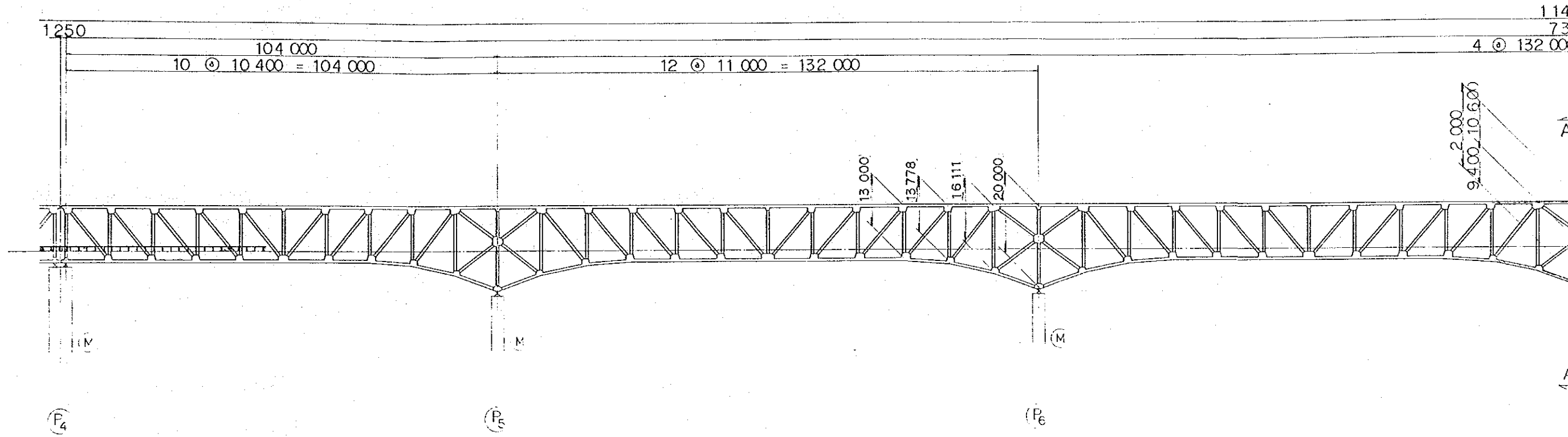
SECTION B - B S = 1/100



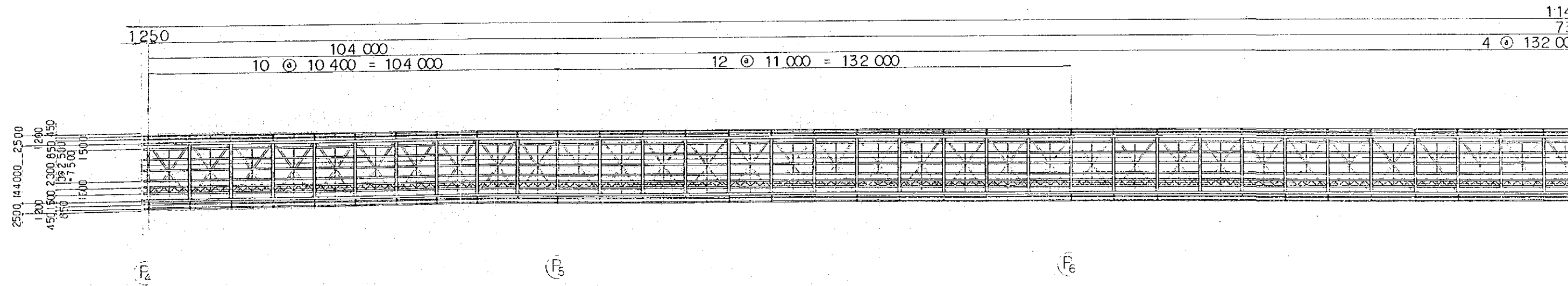
Rail-cum-Road Bridge

Truss (4 Spans)	No. 18
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ELEVATION



PLAN



ELEVATION S = 1/500

1 149 500
736 000
4 Ⓞ 132 000 = 528 000

104 000

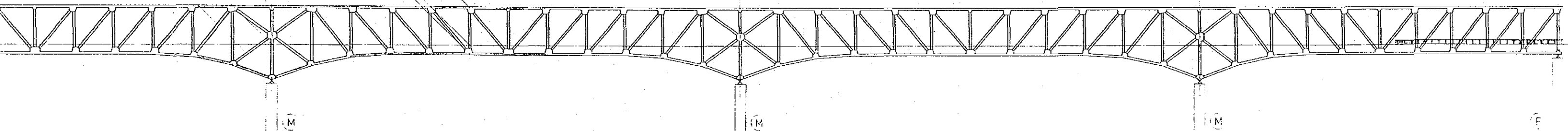
1500

2 000
9 400 10 600

A|

13 000
2 400
10 600

B|B



A|

B|B

P₇

P₈

P₉

A₂

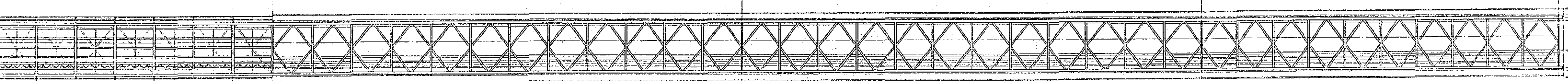
PLAN S = 1/500

1 149 500
736 000
4 Ⓞ 132 000 = 528 000

104 000

1500

C



P₇

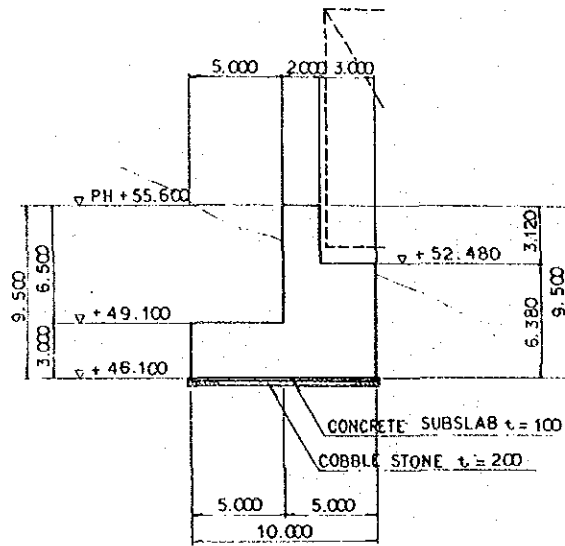
P₈

P₉

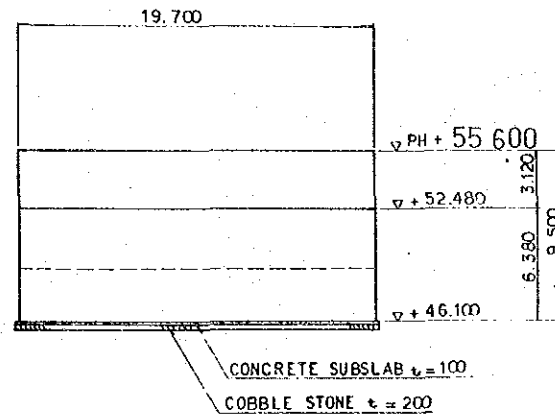
A₂

A1 ABUTMENT

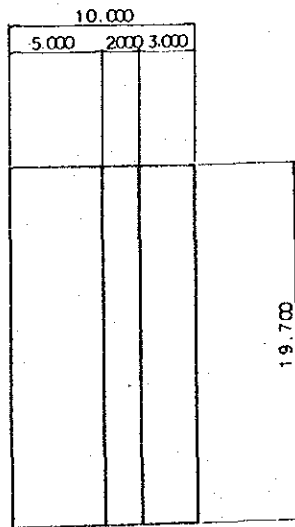
SIDE ELEVATION



FRONT ELEVATION

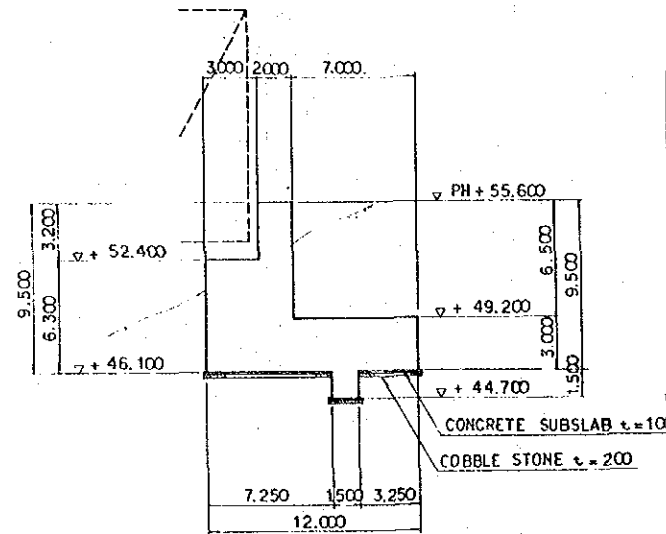


PLAN

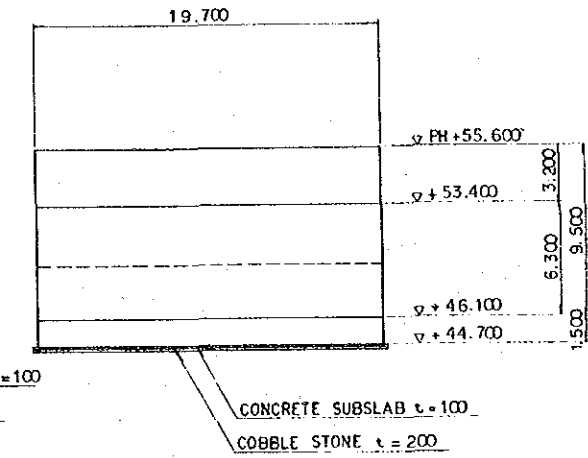


A2 ABUTMENT

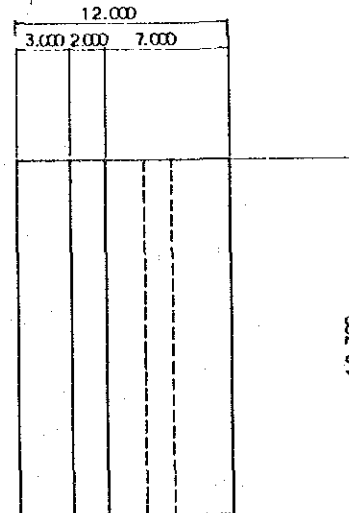
SIDE ELEVATION



FRONT ELEVATION



PLAN



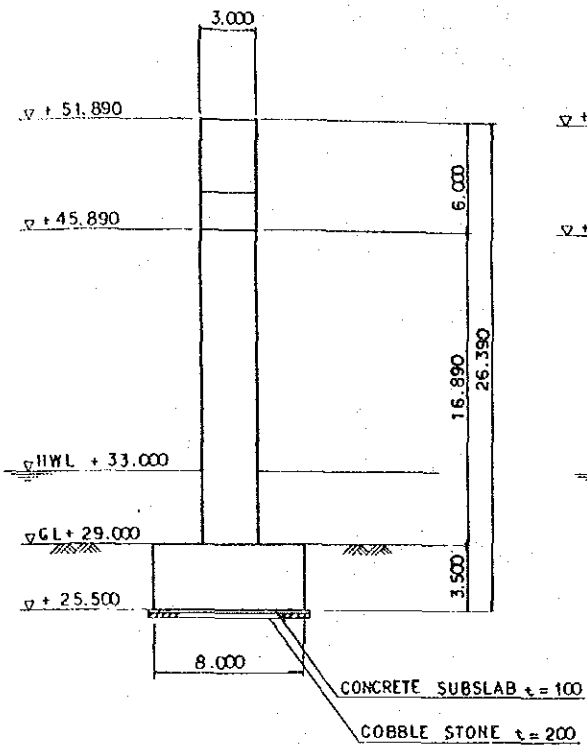
Rail-cum-Road Bridge

Abutments - A1, A2

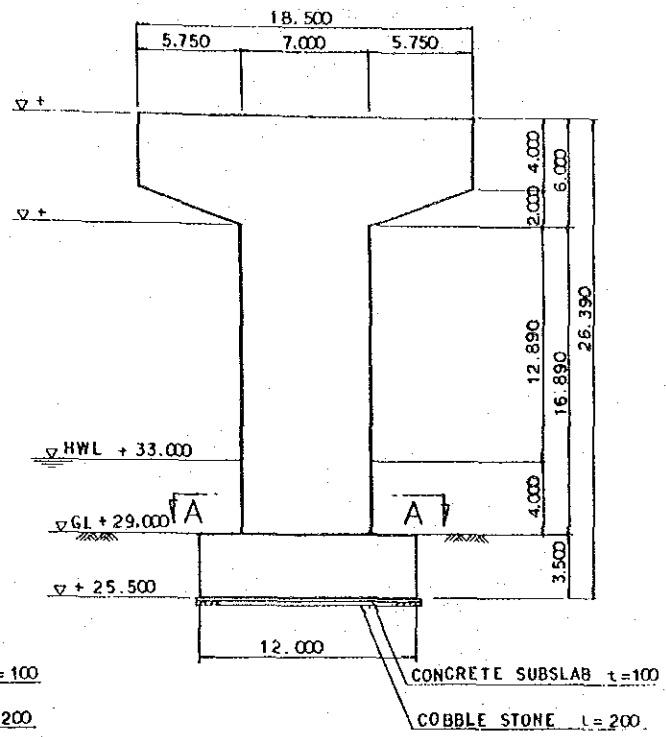
No. 20

P1 PIER

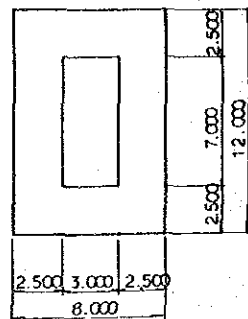
SIDE ELEVATION



FRONT ELEVATION

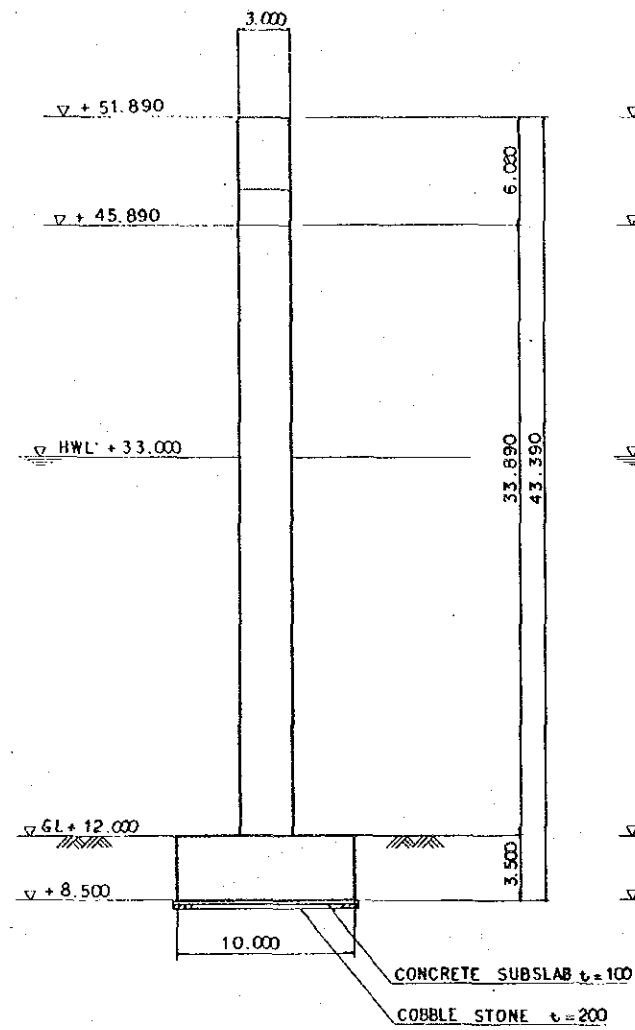


SECTION A - A

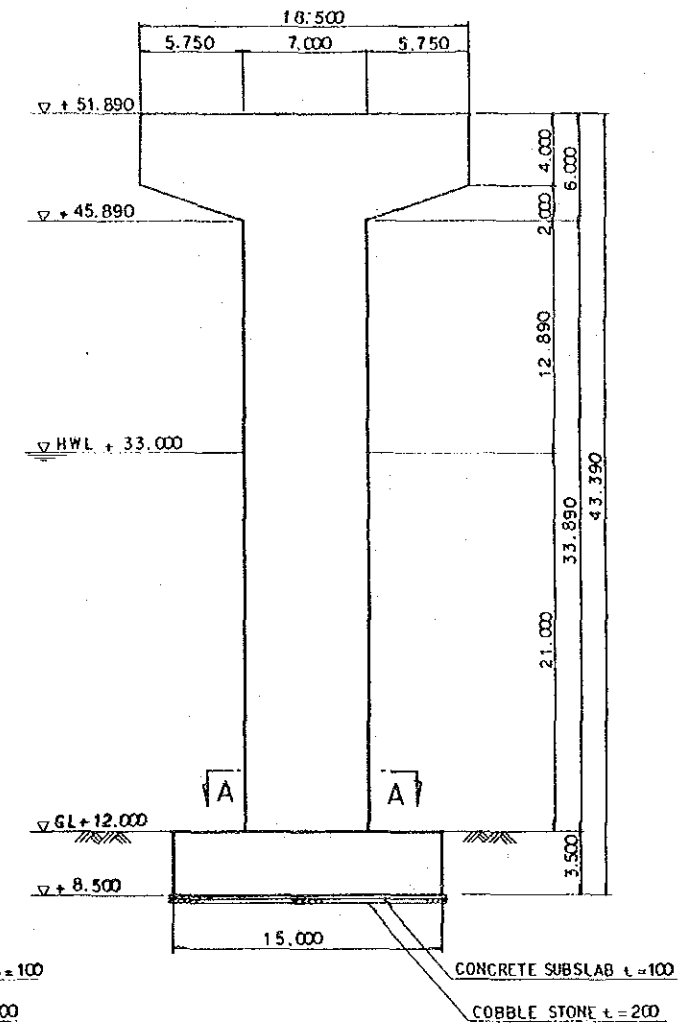


P2 PIER

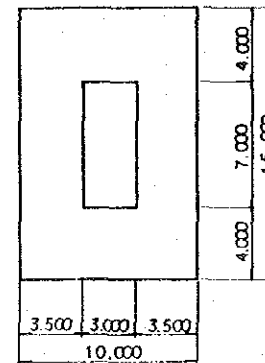
SIDE ELEVATION



FRONT ELEVATION



SECTION A - A



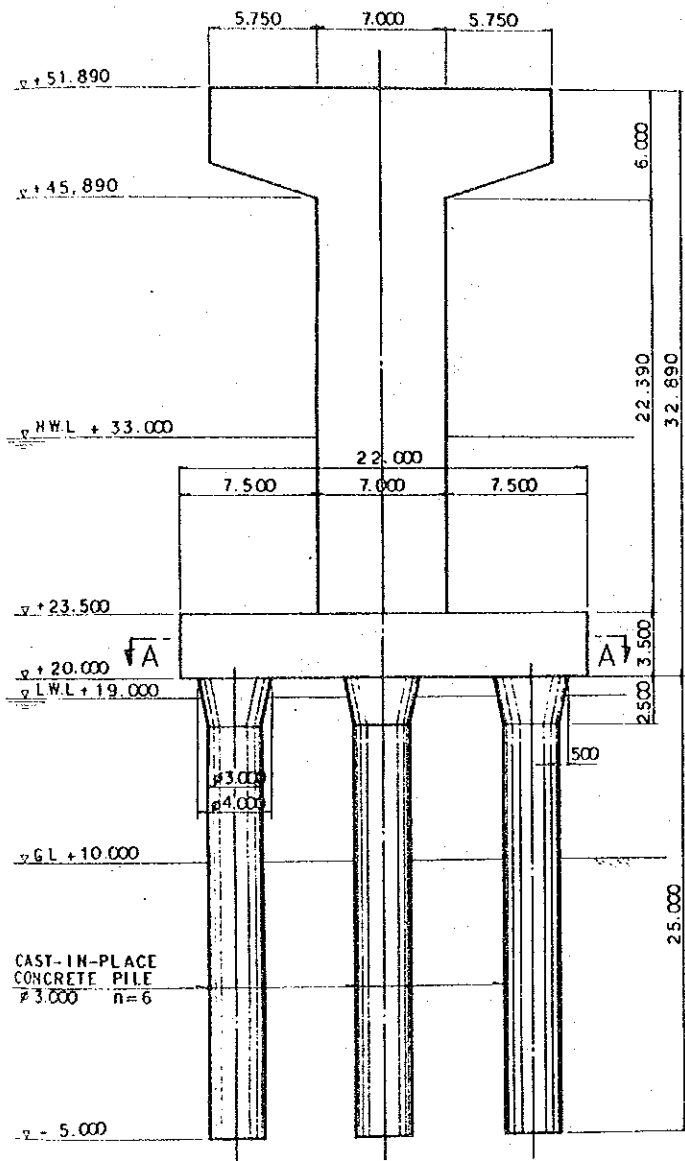
Rail-cum-Road Bridge

Piers - P1, P2

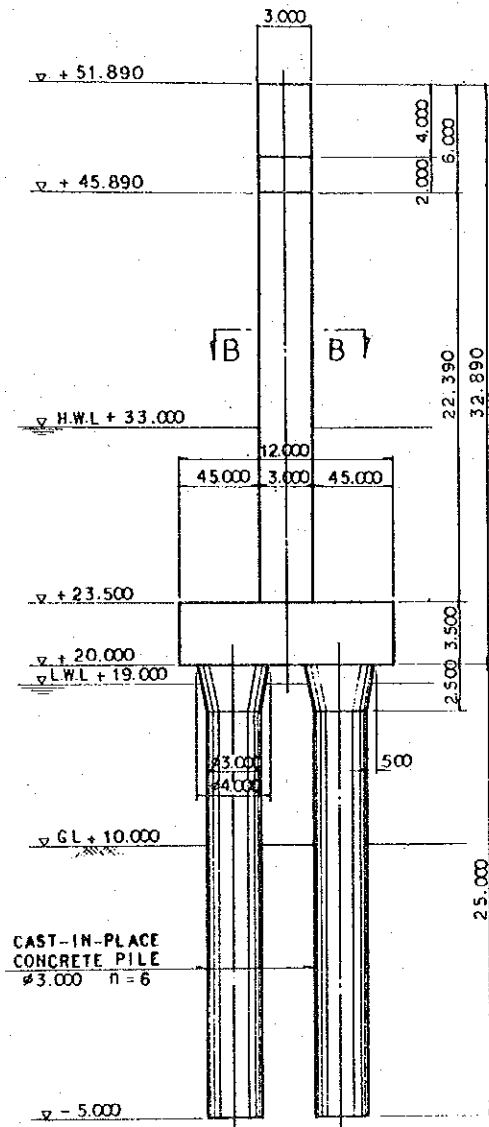
No. 21

P3 PIER

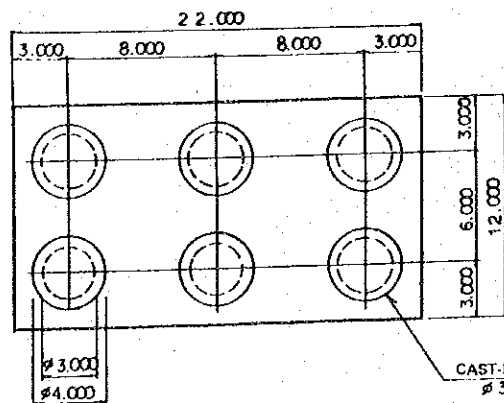
FRONT ELEVATION



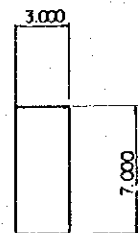
SIDE ELEVATION



SECTION A - A



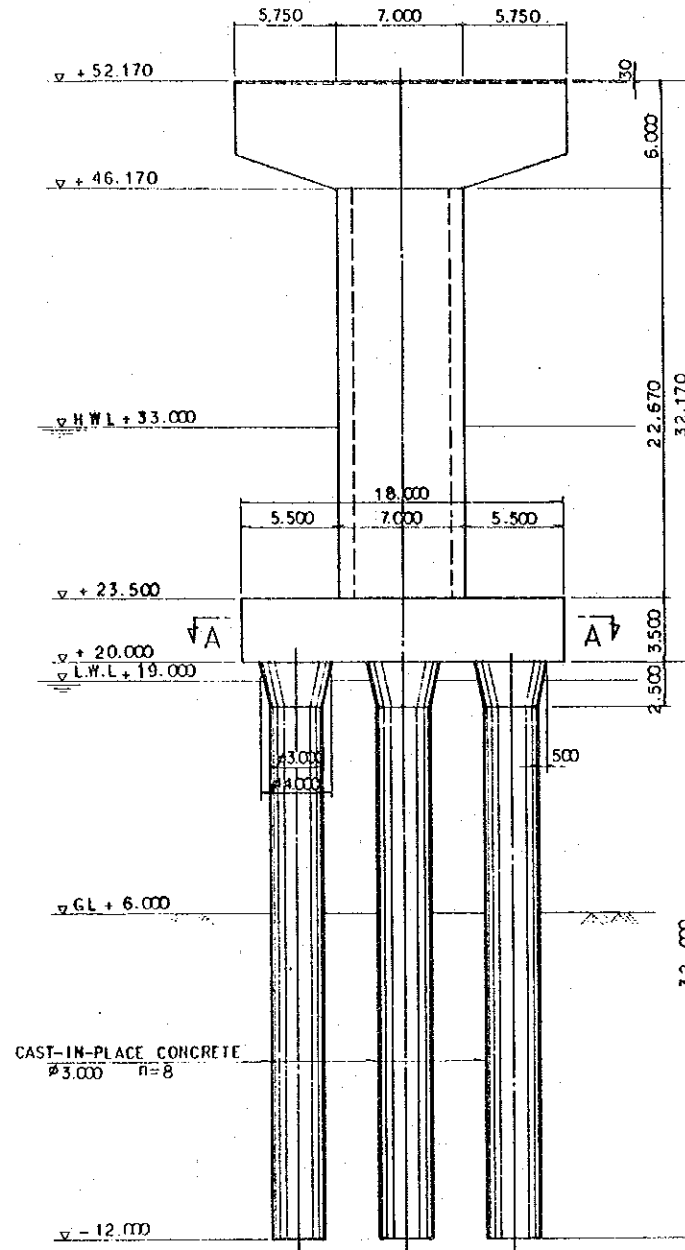
SECTION B - B



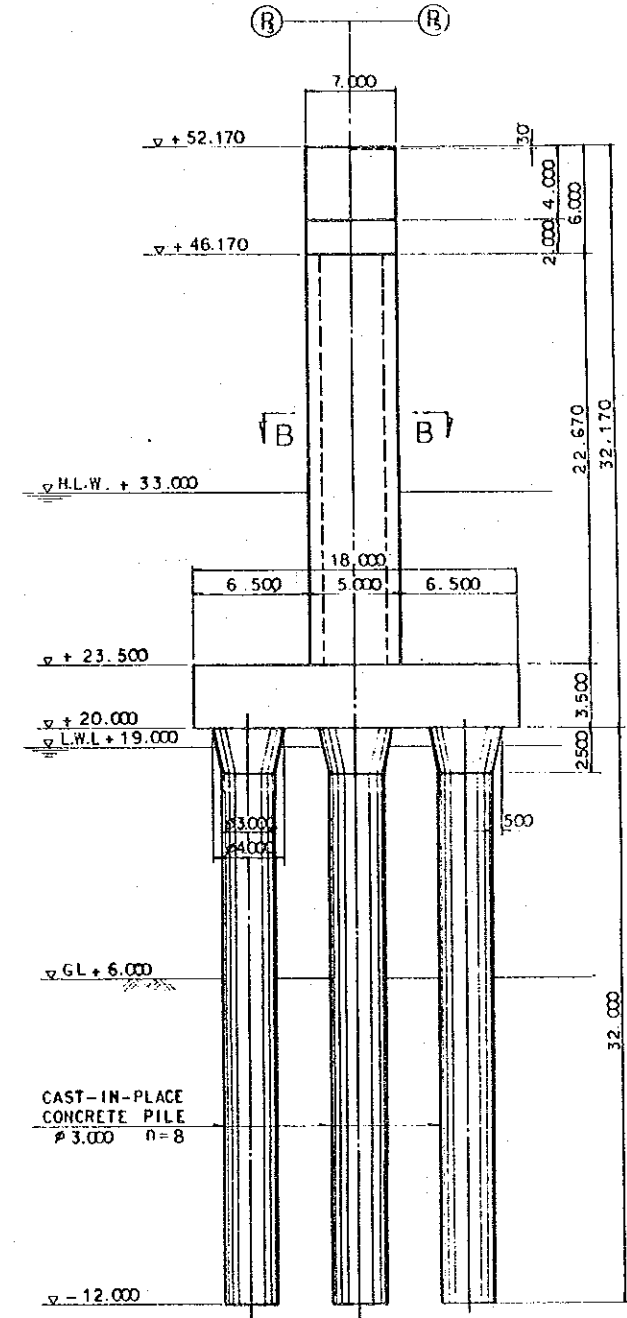
CAST-IN-PLACE CONCRETE PILE
 $\nabla 3.000$ $n=6$

P4 PIER

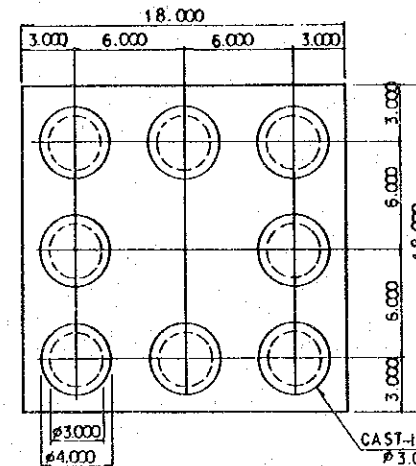
FRONT ELEVATION



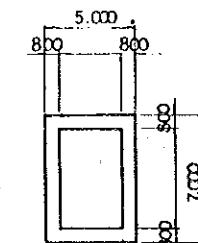
SIDE ELEVATION



SECTION A - A



SECTION B - B



CAST-IN-PLACE CONCRETE PILE
 $\nabla 3.000$ $n=8$

Rail-cum-Road Bridge

Piers - P3, P4

No. 22

P5, P6, P7, PIER

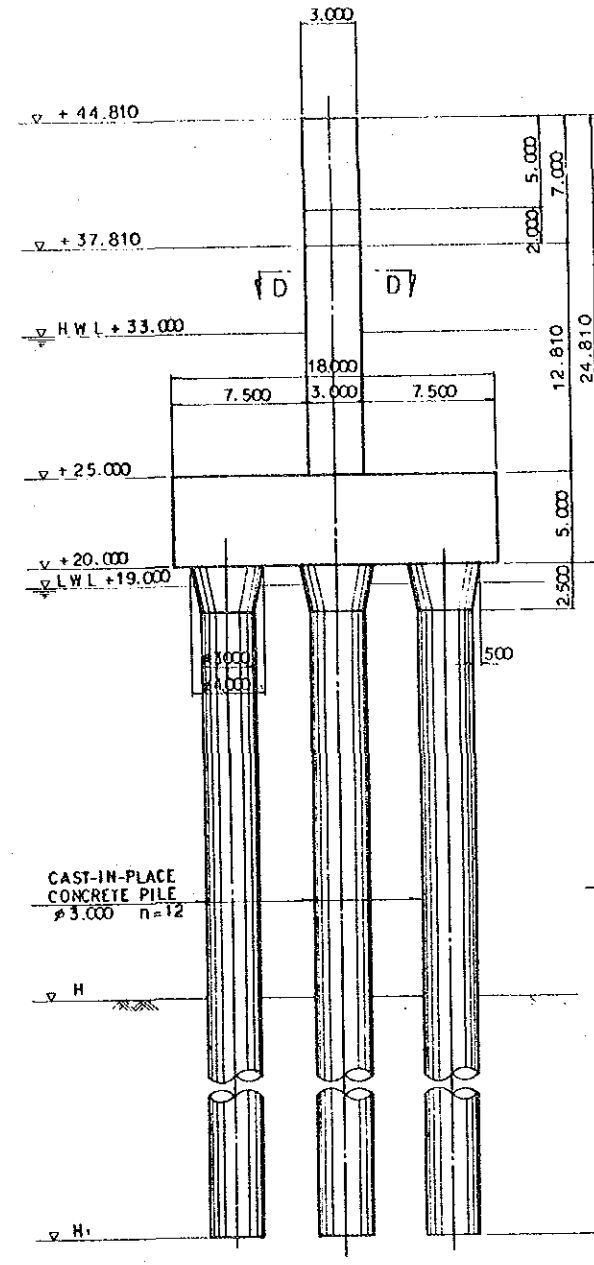
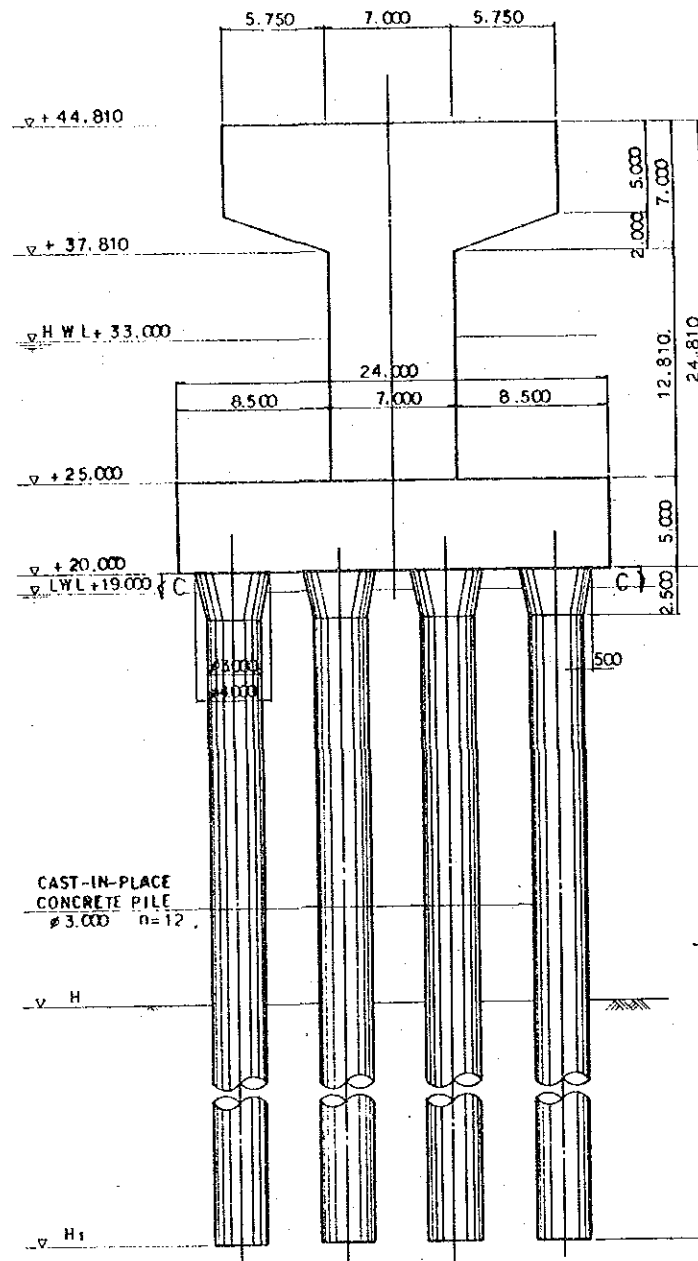
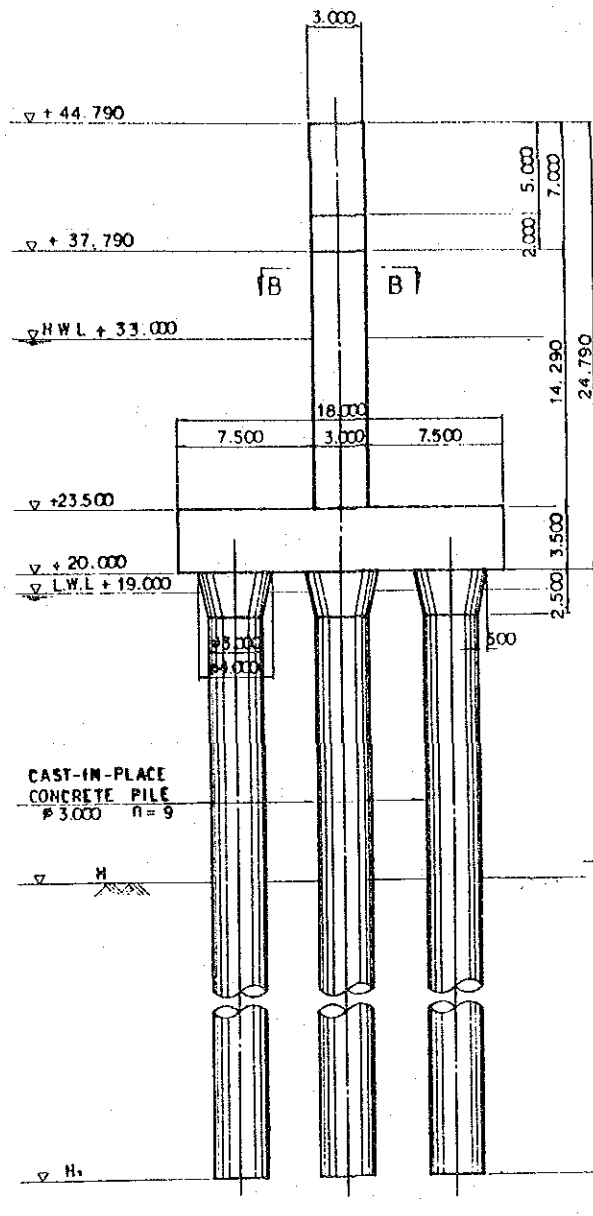
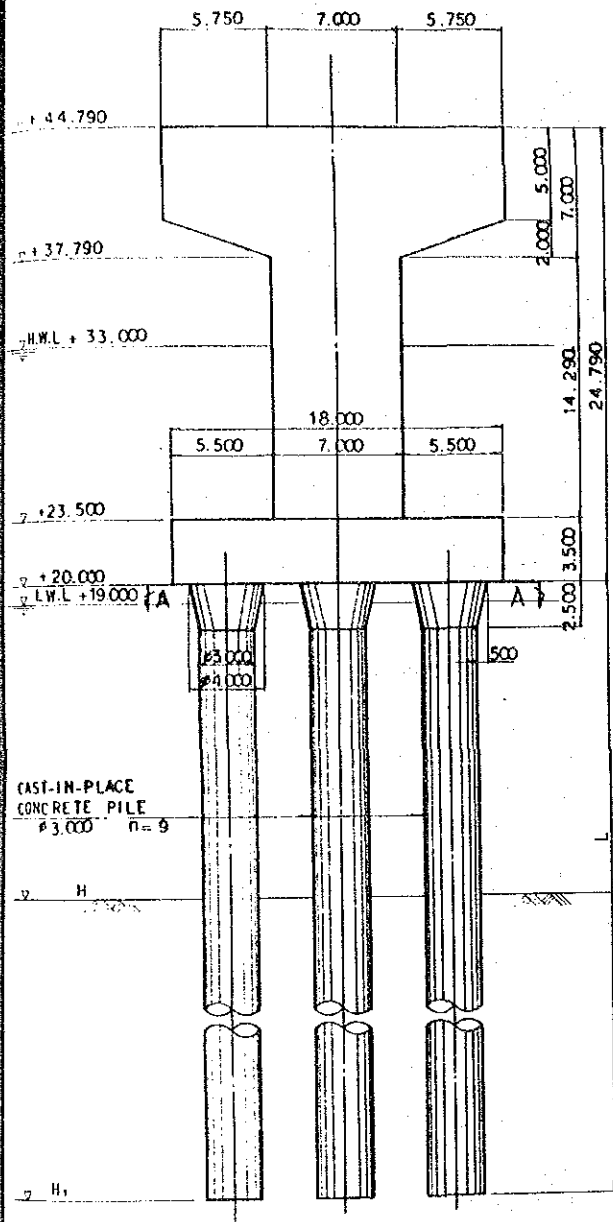
P8, P9, PIER

FRONT ELEVATION

SIDE ELEVATION

FRONT ELEVATION

SIDE ELEVATION

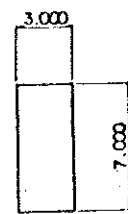
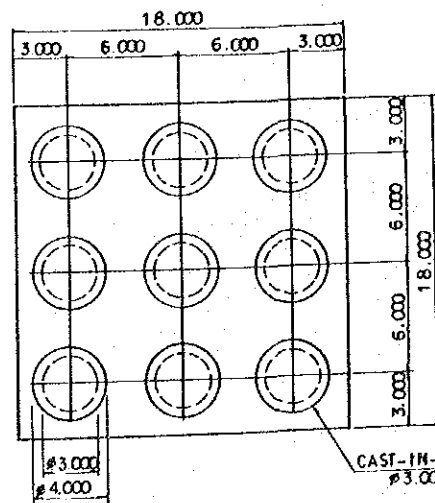


SECTION A - A

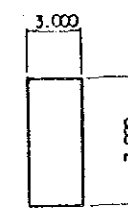
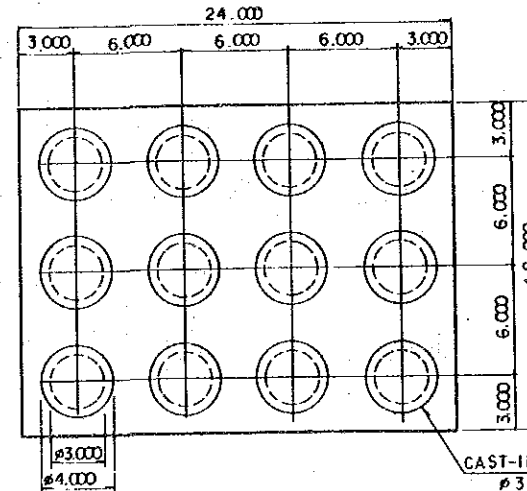
SECTION B - B

SECTION C - C

SECTION D - D



	GROUND HEIGHT H (m)	PILE BOTTOM H ₁ (m)	PILE LENGTH L (m)
P ₅	+2.000	-31.000	51.000
P ₆	+2.000	-31.000	51.000
P ₇	+1.000	-31.000	51.000

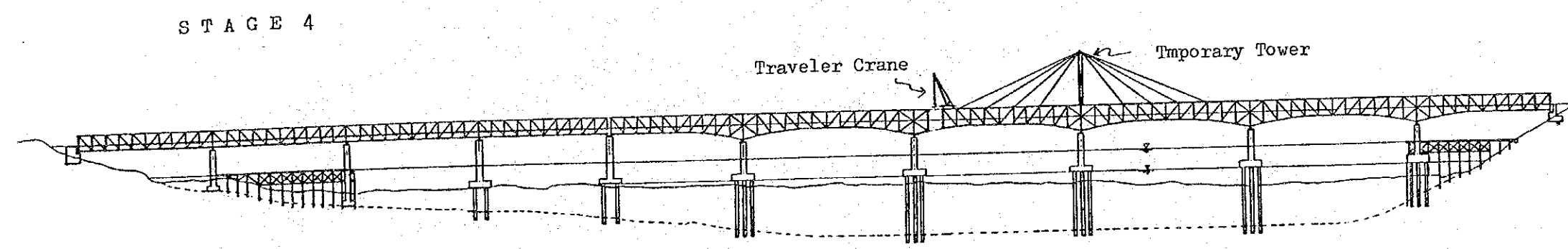
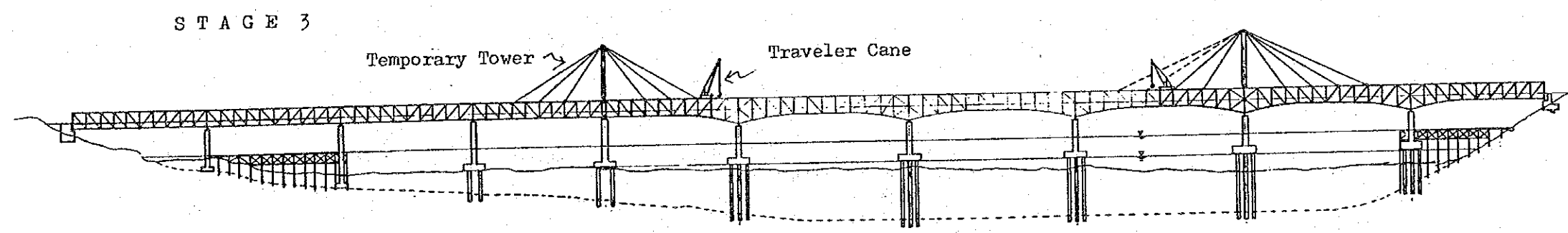
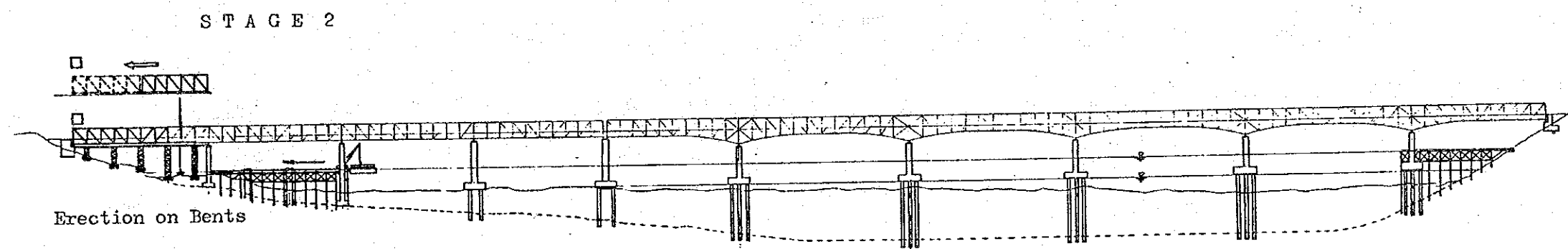
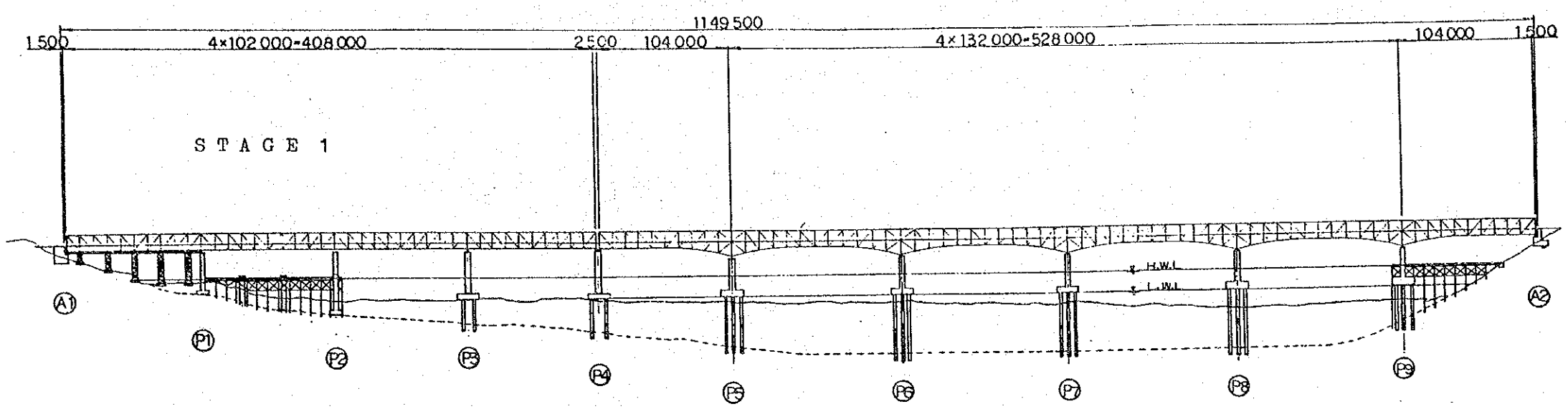


	GROUND HEIGHT H (m)	PILE BOTTOM H ₁ (m)	PILE LENGTH L (m)
P ₈	-7.000	-31.000	-51.000
P ₉	-5.000	-17.000	-37.000

Rail-cum-Road Bridge

Piers - P5, P6, P7, P8, P9

No. 23

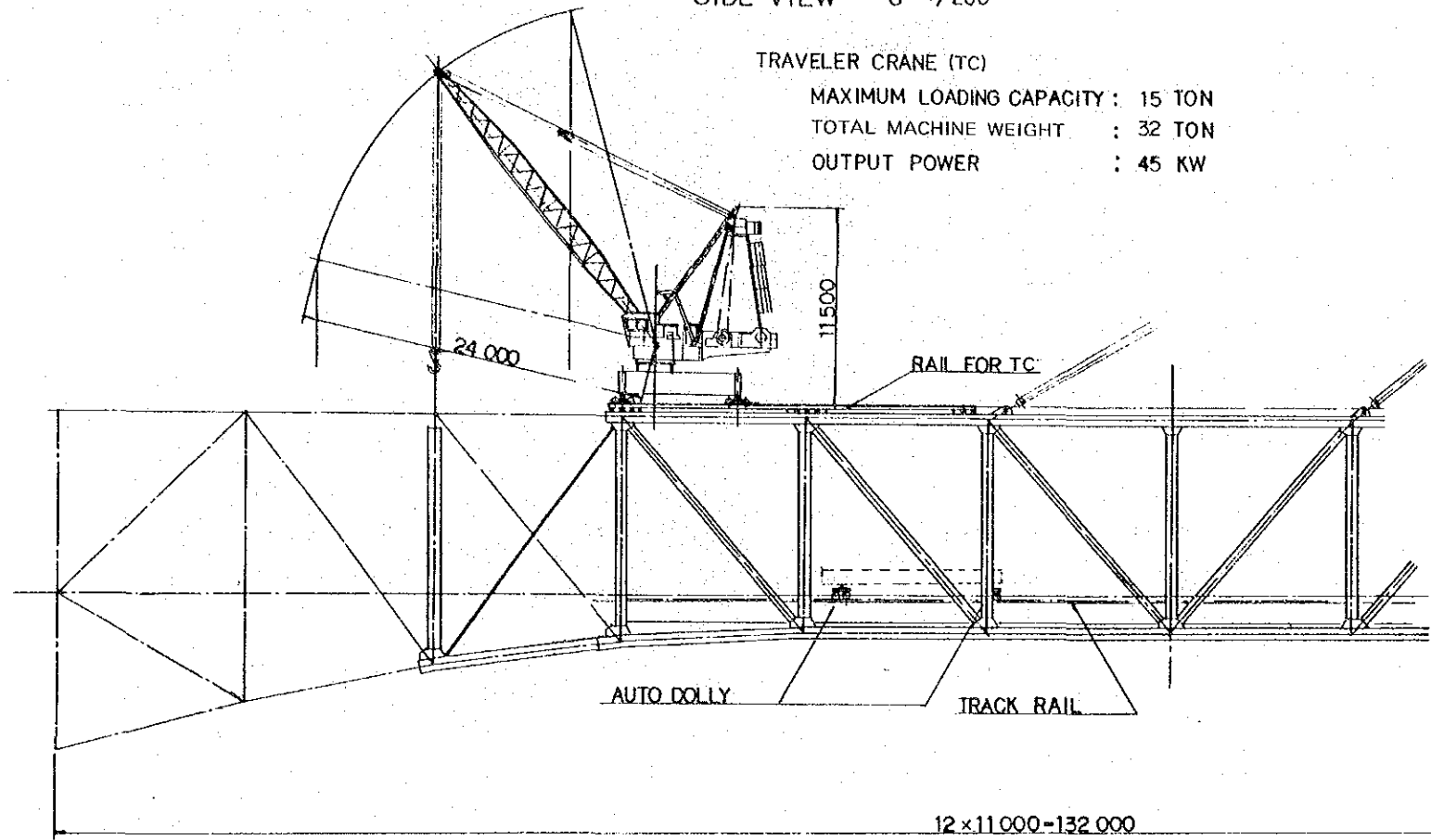


Rail-cum-Road Bridge

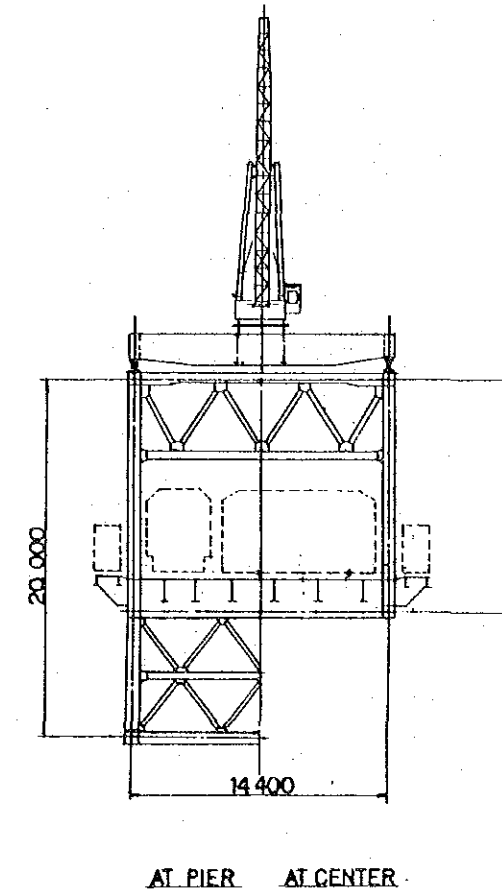
Erection (1)

No. 24

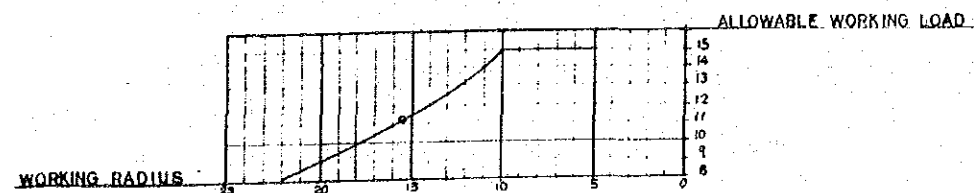
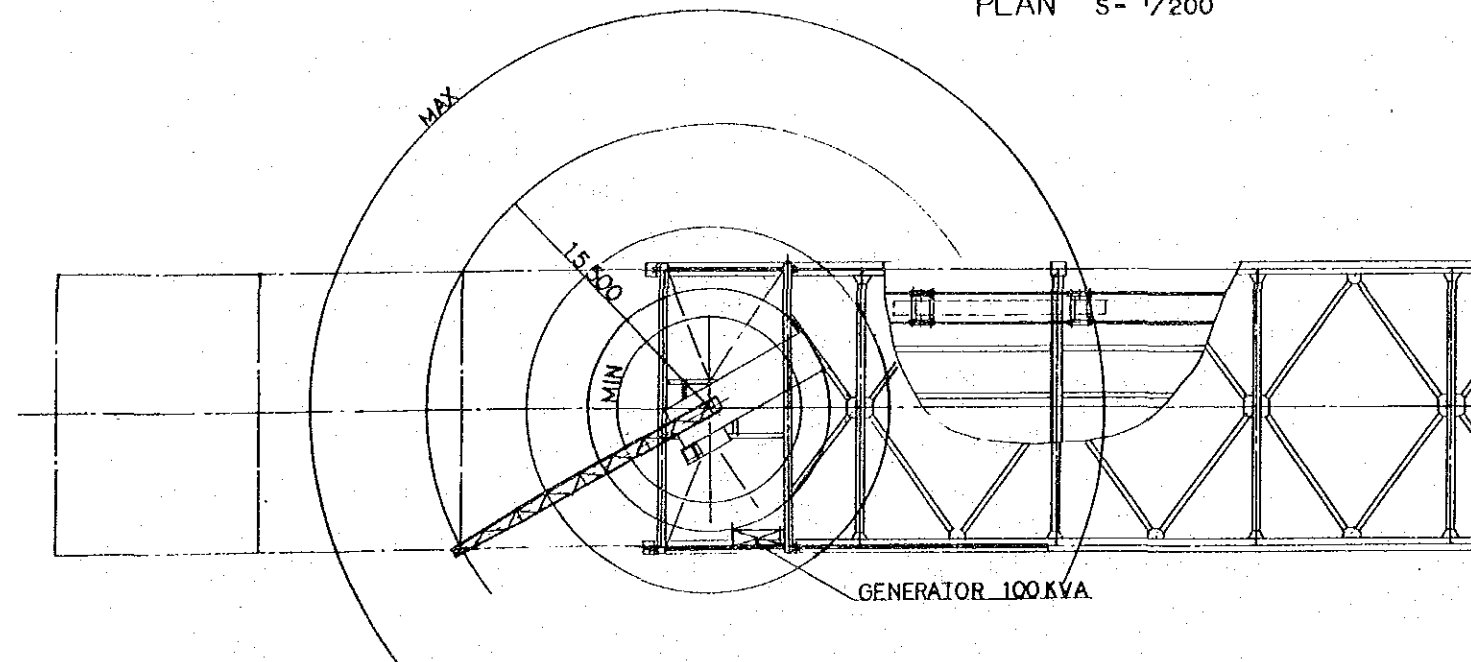
SIDE VIEW s-1/200



FRONT VIEW s-1/200



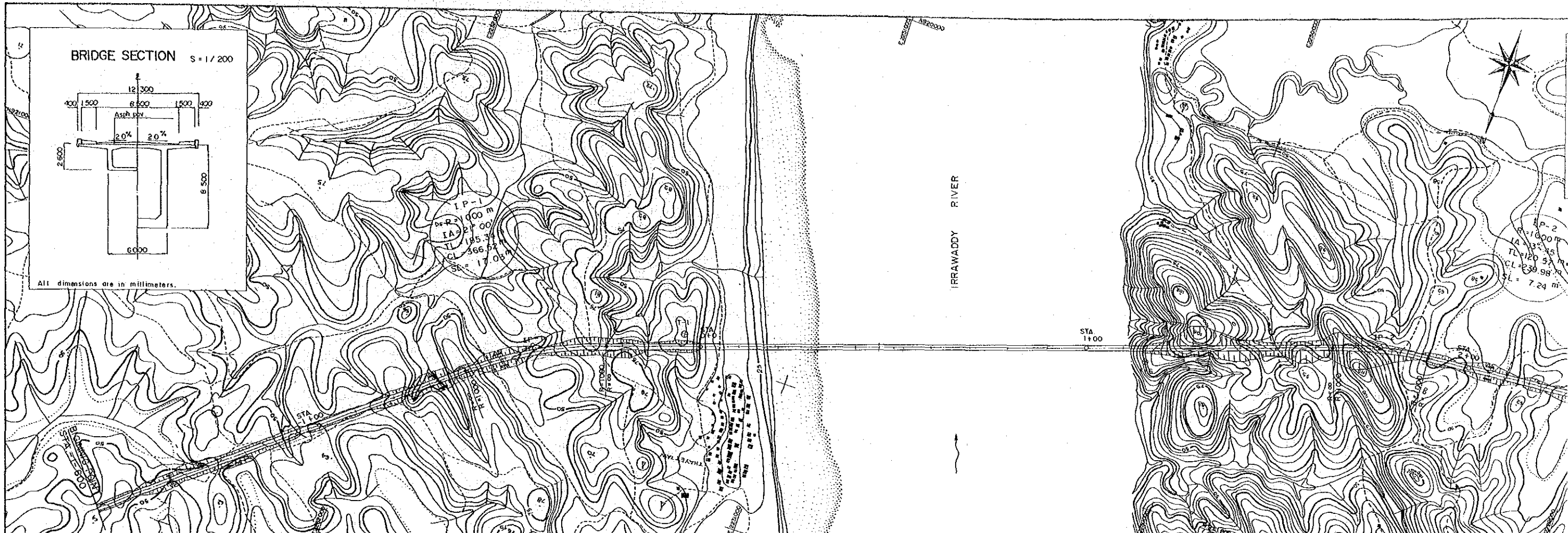
PLAN s-1/200

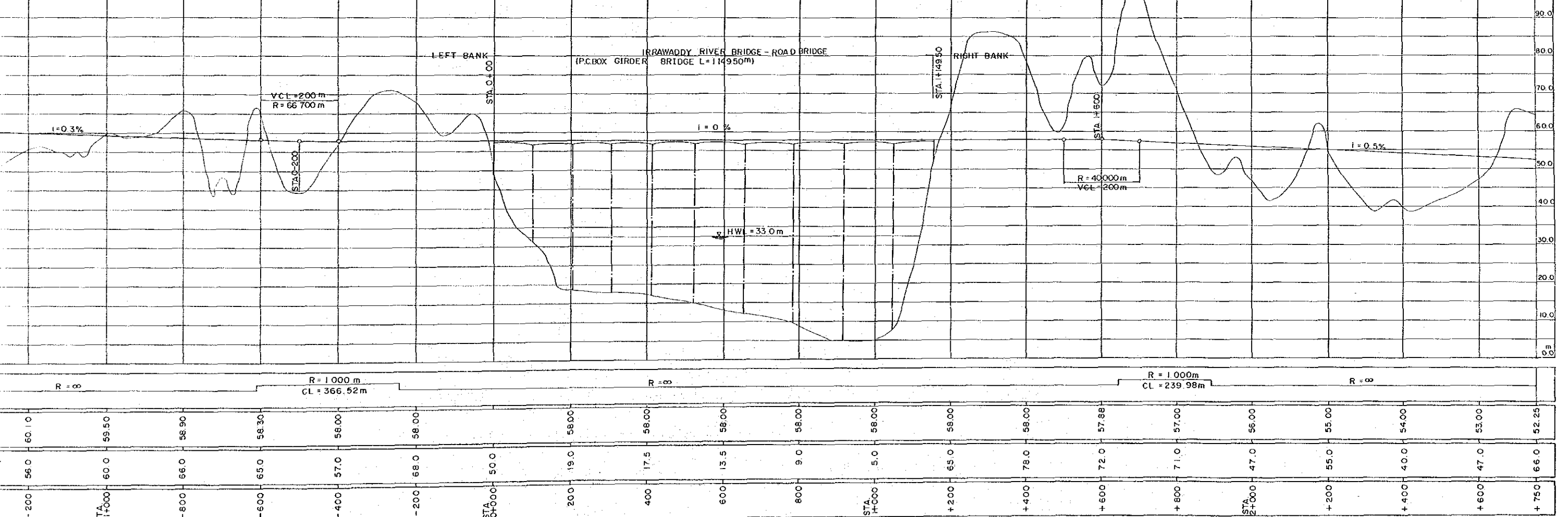
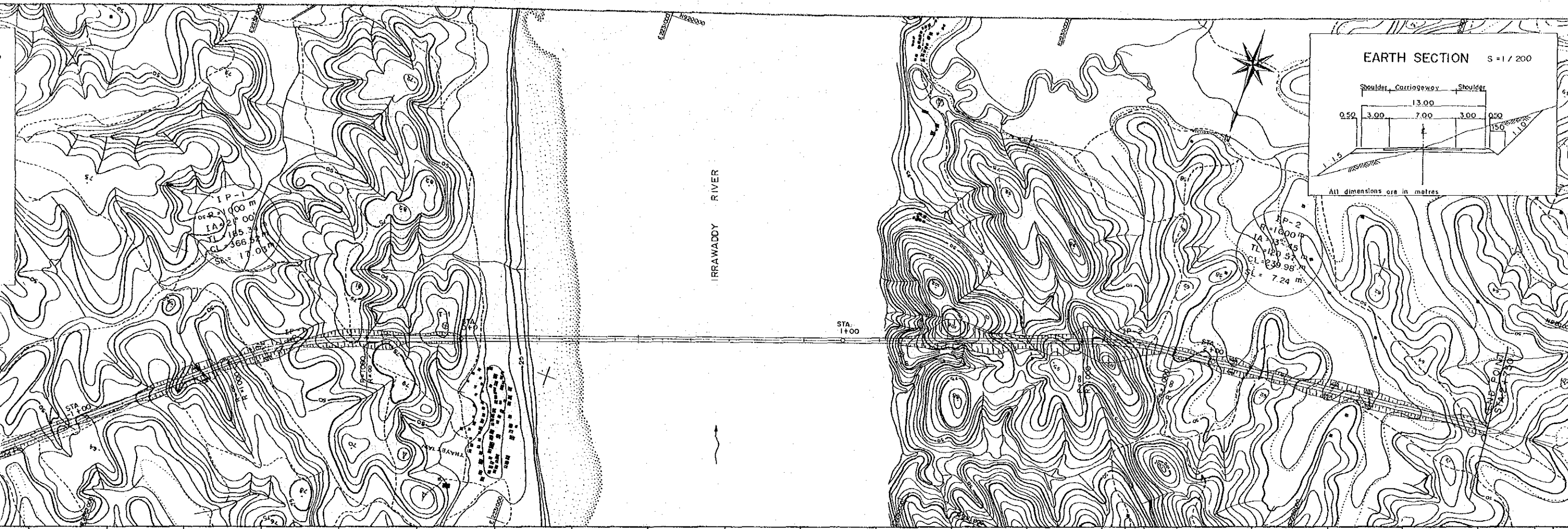


Rail-cum-Road Bridge

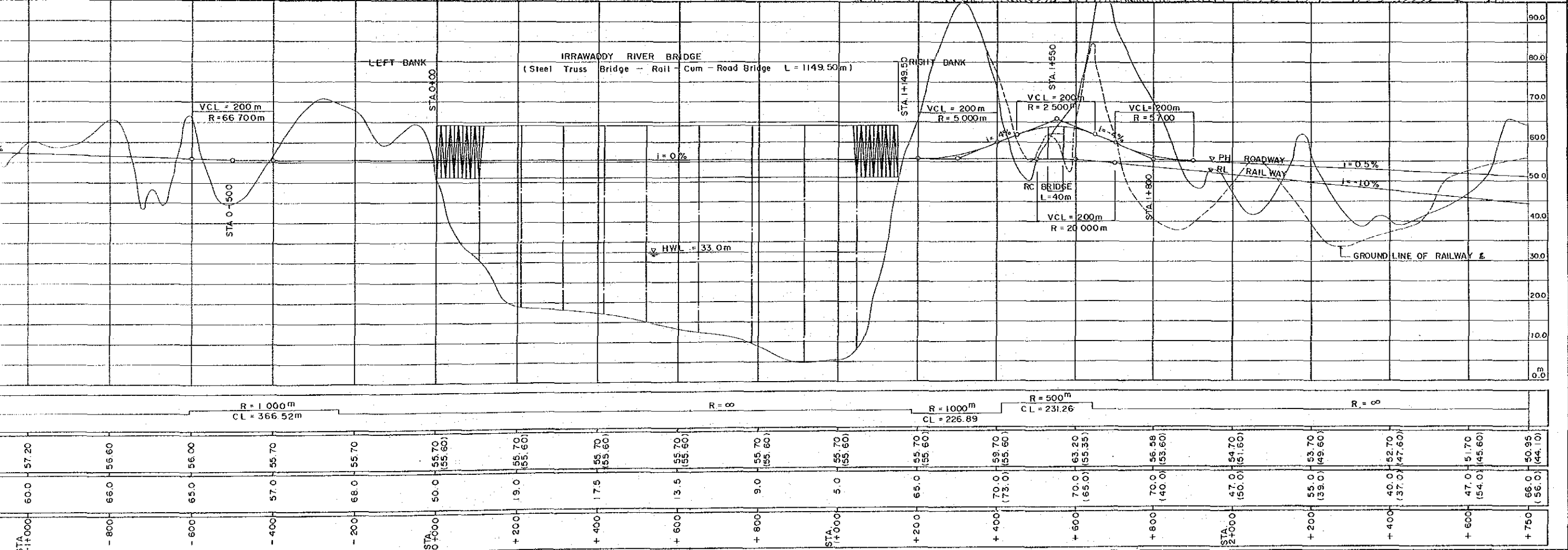
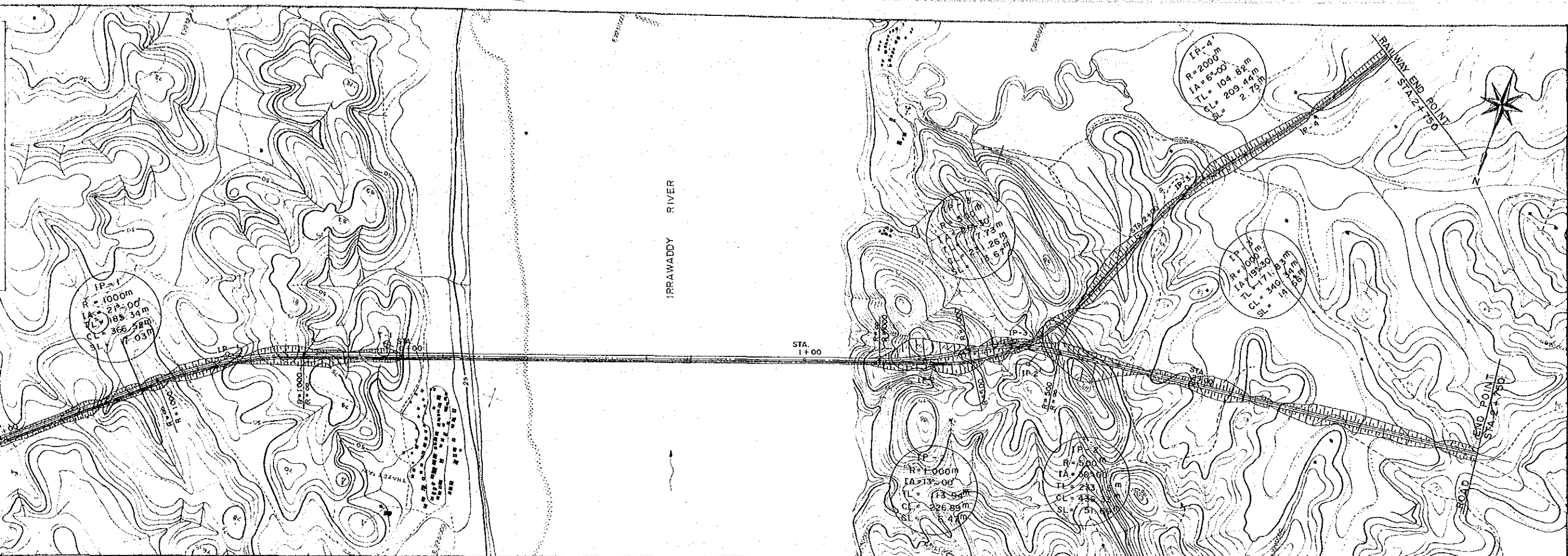
Erection (2)

No. 25





REV		DATE		JAPAN INTERNATIONAL COOPERATION AGENCY		FEASIBILITY STUDY ON		IRRRAWADDY RIVER BRIDGE CONSTRUCTION PROJECT		ALTERNATIVE A-1 ROAD BRIDGE		DESIGNED		SCALE		DRAWING NO	
										APPROACH ROAD		CHECKED		H = 1:5000			
										PLAN AND PROFILE		APPROVED		V = 1:500		DATE	



STA 1+000	-800	-600	-400	-200	STA 0+000	+200	+400	+600	+800	STA 1+000	+200	+400	+600	+800	STA 2+000	+200	+400	+600	+750
60.0	66.0	65.0	57.0	68.0	50.0	55.70	55.70	55.70	55.70	55.70	65.0	70.0	70.0	70.0	47.0	55.0	40.0	47.0	66.0
57.20	56.60	56.00	55.70	55.70	55.60	55.70	55.60	55.60	55.60	55.60	55.70	59.70	63.20	55.58	54.70	53.70	52.70	51.70	50.95
						(55.60)	(55.60)	(55.60)	(55.60)	(55.60)	(55.60)	(55.60)	(55.60)	(55.55)	(51.60)	(49.60)	(47.60)	(45.60)	(44.10)

JAPAN INTERNATIONAL COOPERATION AGENCY

FEASIBILITY STUDY ON
IRRAWADDY RIVER BRIDGE CONSTRUCTION PROJECT

ALTERNATIVE B-1 RAIL - CUM - ROAD BRIDGE
 (Roadway with railway at one side)
 APPROACH ROAD AND RAILWAY
PLAN AND PROFILE

DESIGNED
 CHECKED
 APPROVED

SCALE
 H = 1 : 5 000
 V = 1 : 500

DRAWING NO
 DATE

JICA