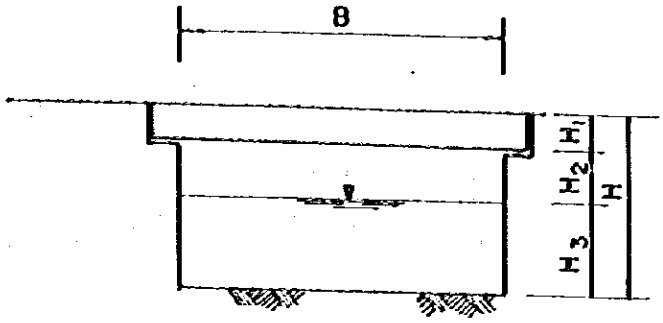
3. Schemes ofProposed Bridges in Section B

CONSTRUCTION COSTS OF BRIDGES IN SECTION B

STA. (KM)	BRIDGE NAME	TYPE	LENGTH (M)	DIRECT COST(₱)	₱/M2
174+25.0	ISI-ISI	RCDG	12.00	316400	3260
177+411.5	PONCAN(II)	PCG	75.00	2435000	4020
179+400.0	TAKTAK (I)	RCDG	12.00	714500	7370
181+300.0	TAKTAK(II)	RCDG	12.00	497400	6160
198+975.0	MINULI(I)	PCG	20.00	594800	3680
216+4000	SANTA FE	PCG	30.00	814800	3360

ALLOWABLE DISCHARGE



ALLOWABLE DISCHARGE

$$Q_o = \frac{H^{\frac{5}{3}} \times B \times \sqrt{I}}{N}$$

Where :

Q_o = Allowable Discharge (M^3/sec)
B = Effective Width (M)
I = Grade of River
N = Roughness (0.035)
H = Average River Depth (M)
H_1 = Girder Depth (M)
H_2 = Extra Clearance
H_3 = Effective Depth (M)

However, required depth (H_R) of the river against the maximum discharge of each bridge sites are given in the following equation.

$$H_R = \left[\frac{N \cdot Q\,max}{B\sqrt{I}}\right]^{\frac{3}{5}}$$

ALLOWABLE DISCHARGE CALCULATION

Moximum dischorge ot eoch Bridge Sites

$Q_{mox} = q . A$

Where :

Q_{mox} = Moximum discharge (M^3/sec)

q = Specific dischorge ($M^3/sec/KM^2$)

A = Catchment Areo (KM^2)

LIST OF MAXIMUM DISCHARGE

KM	BRIDGE NAME	I	A	q	Q_{mox}	REMARKS
166.0	TAYABO	—	—	—	—	IRRIGATION
171.64	LOMBOYBUKID	1/20	0.55	28	20	
173.30	NANLAGARIAN	1/20	0.69	28	20	
174.25	ISI - ISI	1/30	4.01	28	112	
177.26	PONCAN (I)	—	—	—	—	IRRIGATION
177.43	PONCAN (II)	1/25	38.28	20	770	
179.40	TAKTAK (I)	1/35	2.24	28	63	
181.30	TAKTAK (II)	1/15	1.27	28	36	
182.30	DIG DIG	1/55	139.90	20	2800	
195.45	POTLAN	1/40	37.25	20	750	
198.95	MINULI (I)	1/25	11.75	28	330	
199.05	MINULI (II)	1/35	3.00	28	84	
201.40	CAPINTALAN(I)	1/8	0.26	28	7	
203.10	CAPINTALAN(II)	1/20	5.25	28	147	
216.65	SANTA FE	1/66	25.00	20	500	
217.898	CONSUELO	1/5	0.49	28	14	

LIST OF ALLOWABLE DISCHARGE

KM	BRIDGE NAME	Q_{max}	B	I	H_3	Q_a	Judg.	H_R
166.00	ITAYABO	–	–	–	–	–	–	–
171.64	LOMBOYBUKIO	16	10.0	1/20	1.7	155	OK	0.4
173.30	NANLAGARIAN	20	12.5	1/20	2.7	418	OK	0.4
174.25	ISI – ISI	112	10.0	1/30	1.2	71	OUT	1.6
177.26	PONCAN (I)	–	–	–	–	–	–	–
177.43	PONCAN (II)	770	40.0	1/33	2.0	631	OUT	2.3
179.40	TAKTAK (I)	63	10.5	1/35	0.8	35	OUT	1.1
181.30	TAKTAK (II)	36	6.8	1/35	0.9	28	OUT	1.1
182.30	DIG DIG	2800	65.0	1/55	7.5	7200	OK	4.3
195.45	POTLAN	750	22.0	1/40	3.7	880	OK	3.4
198.95	MINULI (I)	330	10.0	1/25	1.2	77	OUT	2.9
199.05	MINULI (II)	84	13.0	1/35	2.0	199	OK	1.2
201.40	CAPINTALAN(I)	7	6.5	1/8	2.2	244	OK	0.3
203.10	CAPINTALAN(II)	147	14.0	1/20	4.2	978	OK	1.3
216.65	SANTA FE	500	24.0	1/66	2.2	314	OUT	2.9
217.898	CONSUELO	13	15.0	1/5	7.2	5146	OK	0.2

Where :

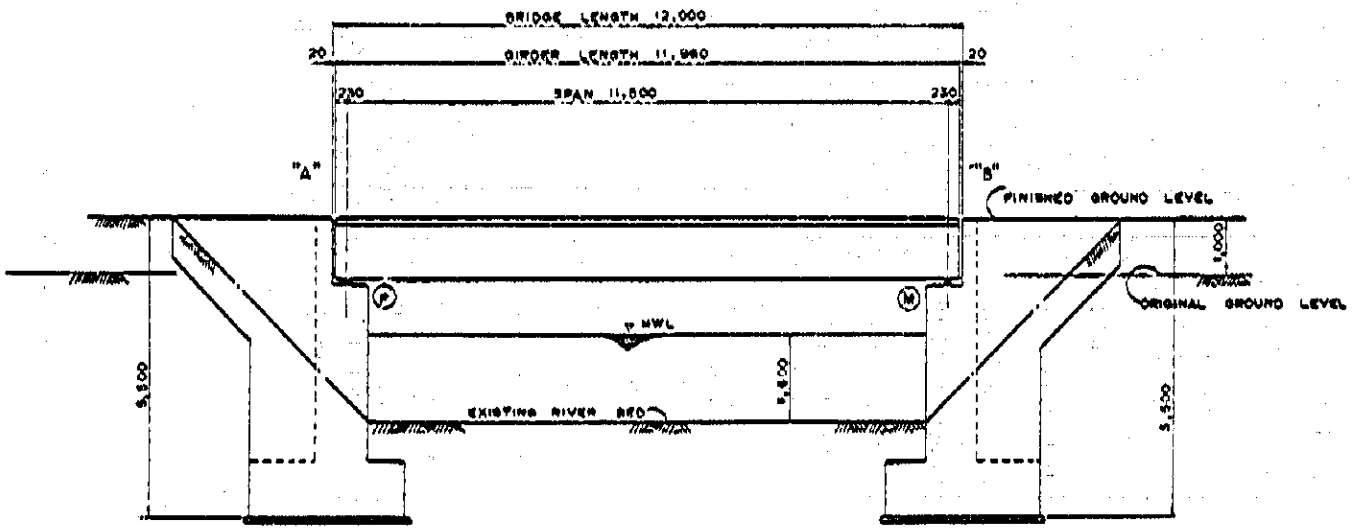
Judg. = Judgement
OK = $Q_{max} < Q_a$
OUT = $Q_{max} > Q_a$

PROPOSED BRIDGE

(1) STATION	174+250	(10)	AREA OF BRIDGE		96.96				ABUT. "A"	PIER	PIER	ABUT. "B"	TOTAL
(2) BRIDGE NAME	ISI-ISI	(11)	PCG	LENGTH	-	(19)	SUBSTRUCTURE	CONCRETE	80	-	-	80	160
(3) BRIDGE LENGTH	12.00	(12)		EACH	-	(20)		REIN. BAR	6400	-	-	6400	12800
(4) ROADWAY WIDTH	7.32	(13)		CONCRETE	-	(21)		PILE	-	-	-	-	-
(5) BRIDGE TYPE	RCDG	(14)	SUPERSTRUCTURE	CONCRETE	86.1	(22)		EXCAVATION	170	-	-	170	340
(6) ABUTMENT TYPE	INVERTED - T	(15)		REINFORCING BAR	6400	(23)		CONSTRUCTION COST	2 X 100000 = 200000 ₱				
(7) PIER TYPE	-	(16)		RAILING	24.0	(24)		(23) ÷ (10)	2060 ₱/M.²				
(8) FOUNDATION TYPE	SPREAD	(17)		CONST. COST	₱116400	(25)		TOTAL CONSTRUCTION COST	316,400 ₱				
(9) HEIGHT WATER LEVEL	1.6 M. Up from existing river bed	(18)		(17) ÷ (10)	1200 ₱/M.²	(26)		(25) ÷ (10)	3260 ₱/M.²				

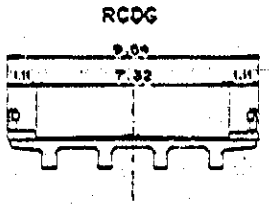
PROFILE

SCALE 1 : 100



TYPICAL CROSS SECTION

SCALE 1 : 200

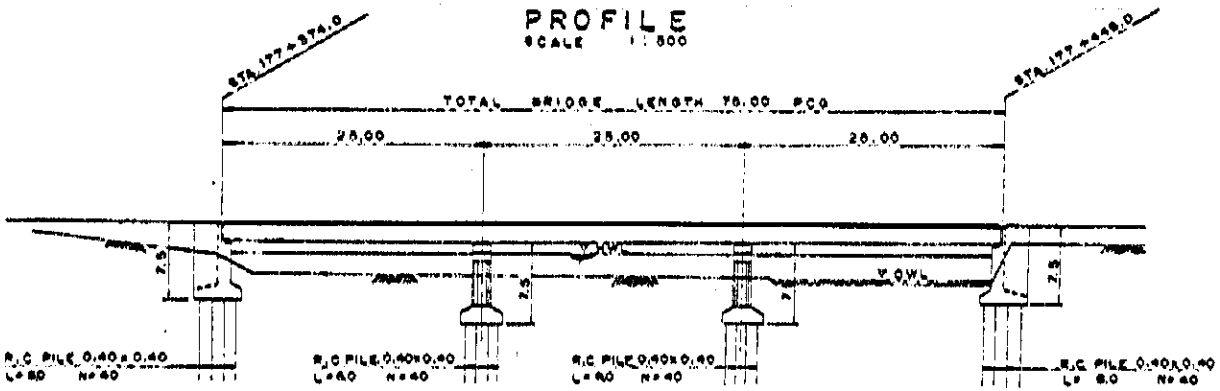


PROPOSED BRIDGE

(1) STATION	177+411.50	(10)	AREA OF BRIDGE		606.00				ABUT."A"	PIER	PIER	ABUT."B"	TOTAL
(2) BRIDGE NAME	PONCAN (II)	(11)	SUPERSTRUCTURE PCG	LENGTH	24.96	(19)	SUBSTRUCTURE	CONCRETE	130	20	80	130	420
(3) BRIDGE LENGTH	75.00	(12)		EACH	12	(20)		REIN. BAR	10400	7200	7200	10400	35200
(4) ROADWAY WIDTH	7.32	(13)		CONCRETE	163	(21)		PILE	320	240	240	320	1120
(5) BRIDGE TYPE	PCG	(14)		CONCRETE	240	(22)		EXCAVATION	240	170	170	240	820
(6) ABUTMENT TYPE	INVERTED-T	(15)		REINFORCING BAR	22000	(23)		CONSTRUCTION COST			2X145000+120000+1120X754 = 1374500		
(7) PIER TYPE	OVAL	(16)		RAILING	150.0	(24)		(23) ÷ (10)			2270 ₱/M.²		
(8) FOUNDATION TYPE	R.C PILE 0.40 X 0.40	(17)		CONST. COST	1060500 ₱	(25)	TOTAL CONSTRUCTION COST				2435000 ₱		
(9) HEIGHT WATER LEVEL	2.3 m. Up From Existing River Bed	(18)		(17) ÷ (10)	1750 ₱/M.²	(26)	(25) ÷ (10)				4020 ₱/M.²		

PROFILE

SCALE 1:500



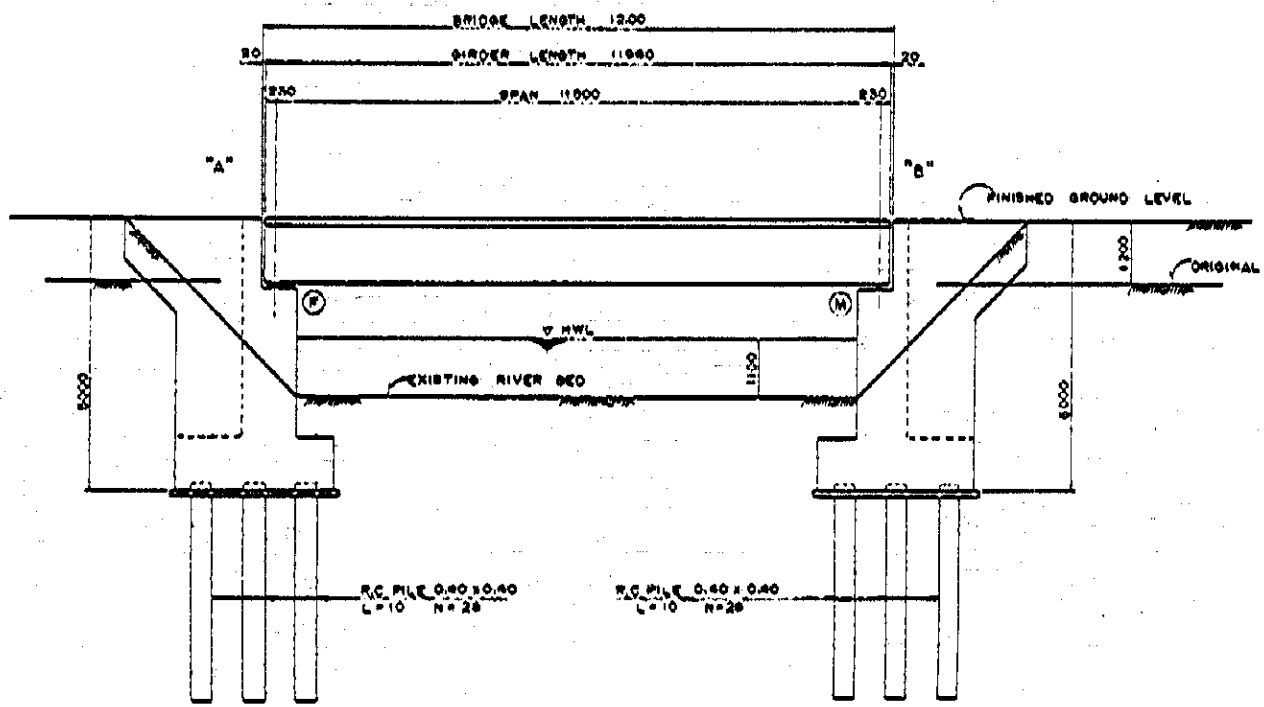
TYPICAL CROSS SECTION

PCG

PROPOSED BRIDGE

(1) STATION	179+400	(10)	AREA OF BRIDGE		96.96				ABUT."A"	PIER	PIER	ABUT."B"	TOTAL
(2) BRIDGE NAME	TAKTAK (I)	(11)	PCG	LENGTH	-	(19)	SUBSTRUCTURE	CONCRETE	75	-	-	75	150
(3) BRIDGE LENGTH	12.00	(12)		EACH	-	(20)		REIN. BAR	6000	-	-	6000	12000
(4) ROADWAY WIDTH	7.32	(13)		CONCRETE	-	(21)		PILE	280	-	-	280	560
(5) BRIDGE TYPE	RCDG	(14)	SUPERSTRUCTURE	CONCRETE	56.1	(22)		EXCAVATION	150	-	-	150	300
(6) ABUTMENT TYPE	INVERTED-T	(15)		REINFORCING BAR	6400	(23)		CONSTRUCTION COST	2X88,000+560X254 = 398,200 ₹				
(7) PIER TYPE	-	(16)		RAILING	24.0	(24)		(23) ÷ (10)	61.70 ₹/M.²				
(8) FOUNDATION TYPE	R.C PILE 0.40X0.40	(17)		CONST. COST	116400 ₹	(25)	TOTAL CONSTRUCTION COST		714600 ₹				
(9) HEIGHT WATER LEVEL	1.10 M. Up from existing river bed	(18)		(17) ÷ (10)	1200 ₹/M.²	(26)	(25) ÷ (10)		7370 ₹/M.²				

PROFILE
SCALE 1:100



TYPICAL CROSS SECTION
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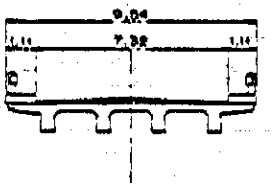

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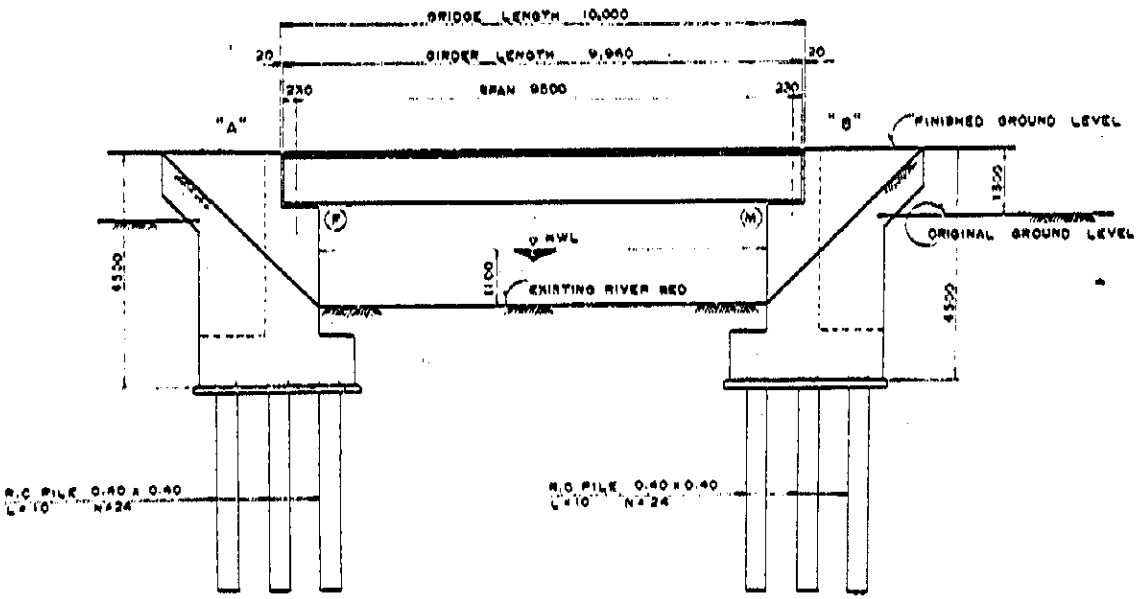
PROPOSED BRIDGE

(1) STATION	181+300	(10)	AREA OF BRIDGE	80.8 M.^{2}				ABUT."A"	PIER	PIER	ABUT."B"	TOTAL
(2) BRIDGE NAME	TAKTAK (II)	(11)	PCG	LENGTH	–	(19)	SUBSTRUCTURE	CONCRETE	65	–	–	65	130
(3) BRIDGE LENGTH	10.00	(12)		EACH	–	(20)		REIN. BAR	5200	–	–	5200	10400
(4) ROADWAY WIDTH	7.32	(13)		CONCRETE	–	(21)		PILE	240	–	–	240	480
(5) BRIDGE TYPE	RCDG	(14)	SUPERSTRUCTURE	CONCRETE	44.5	(22)		EXCAVATION	130	–	–	130	260
(6) ABUTMENT TYPE	INVERTED-T	(15)		REINFORCING BAR	50.30	(23)		CONSTRUCTION COST	2X77000+480X754 = 400400 ₹				
(7) PIER TYPE	–	(16)		RAILING	20	(24)		(23) ÷ (10)	4960 ₹/M.^{2}				
(8) FOUNDATION TYPE	R.C PILE 0.40X0.40	(17)		CONST. COST	97000	(25)	TOTAL CONSTRUCTION COST		497400 ₹				
(9) HEIGHT WATER LEVEL	1.10 M. Up from existing river bed	(18)		(17) ÷ (10)	1200 ₹/M.^{2}	(26)	(25) ÷ (10)		6160 ₹/M.^{2}				

PROFILE
SCALE 1:100



TYPICAL CROSS SECTION
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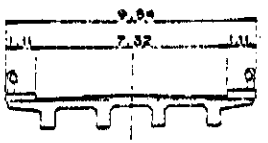
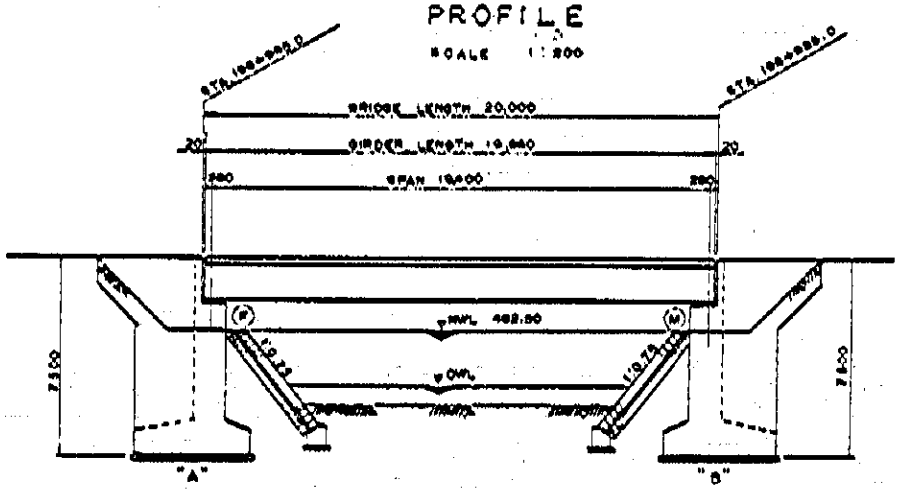


PROPOSED BRIDGE

① STATION	198+975	⑩	AREA OF BRIDGE		161.600				ABUT."A"	PIER	PIER	ABUT."B"	TOTAL
② BRIDGE NAME	MINULI (1)	⑪	PCG	LENGTH	19.960	⑲	SUBSTRUCTURE	CONCRETE	130	-	-	130	260
③ BRIDGE LENGTH	20.00	⑫		EACH	4	⑳		REIN. BAR	10400	-	-	10400	20800
④ ROADWAY WIDTH	7.32	⑬		CONCRETE	88.0	㉑		PILE	-	-	-	-	-
⑤ BRIDGE TYPE	PCG	⑭	SUPERSTRUCTURE	CONCRETE	67.0	㉒		EXCAVATION	300	-	-	300	600
⑥ ABUTMENT TYPE	INVERTED-T	⑮		REINFORCING BAR	5700	㉓		CONSTRUCTION COST			156000 X 2 = 312000 ₱		
⑦ PIER TYPE	-	⑯		RAILING	40	㉔		㉓ ÷ ⑩			1930 ₱/M.²		
⑧ FOUNDATION TYPE	SPREAD	⑰		CONST. COST	282800 ₱	㉕	TOTAL CONSTRUCTION COST				594800 ₱		
⑨ HEIGHT WATER LEVEL	482.50	⑱		⑰ ÷ ⑩	1750 ₱/M.²	㉖		㉓ ÷ ⑩			3680 ₱/M.²		

PROFILE

SCALE 1:200



TYPICAL CROSS SECTION

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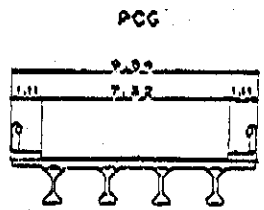
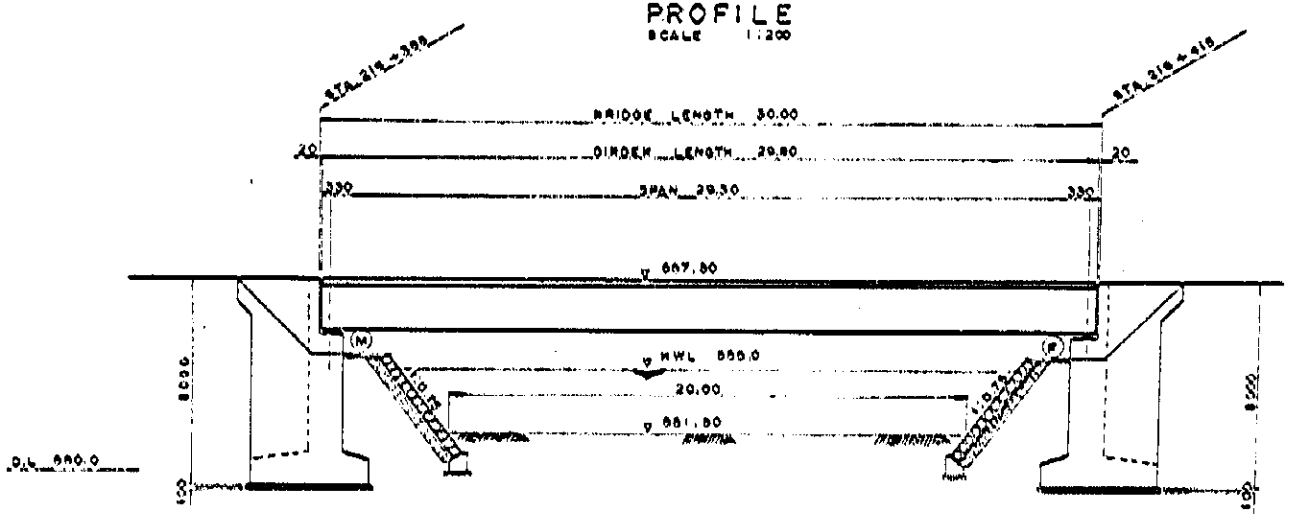


PROPOSED BRIDGE

(1) STATION	216+400	(10)	AREA OF BRIDGE	242.4 M.^{2}				ABUT."A"	PIER	PIER	ABUT."B"	TOTAL
(2) BRIDGE NAME	SANTA FE	(11)	PCG	LENGTH	29.80 M.	(19)	SUBSTRUCTURE	CONCRETE	140	—	—	140	280
(3) BRIDGE LENGTH	30.00 M.	(12)		EACH	4	(20)		REIN. BAR	11200	—	—	11200	22400
(4) ROADWAY WIDTH	7.32	(13)		CONCRETE	85 M.^{3}	(21)		PILE	—	—	—	—	—
(5) BRIDGE TYPE	PCG	(14)	SUPERSTRUCTURE	CONCRETE	95 M.^{3}	(22)		EXCAVATION	335	—	—	335	670
(6) ABUTMENT TYPE	INVERTED-T	(15)		REINFORCING BAR	9000 kg.	(23)		CONSTRUCTION COST		2 X 165000 = 330000			
(7) PIER TYPE	—	(16)		RAILING	60.0 M.	(24)		(23) ÷ (10)		1360 ₱/M.^{2}			
(8) FOUNDATION TYPE	SPREAD	(17)		CONST. COST	484800 ₱	(25)		TOTAL CONSTRUCTION COST		814800 ₱			
(9) HEIGHT WATER LEVEL	555.5 M.	(18)		(17) ÷ (10)	2000 ₱/M.^{2}	(26)		(25) ÷ (10)		3360 ₱/M.^{2}			

PROFILE

SCALE 1:200



TYPICAL CROSS SECTION

SCALE 1:200

PCG

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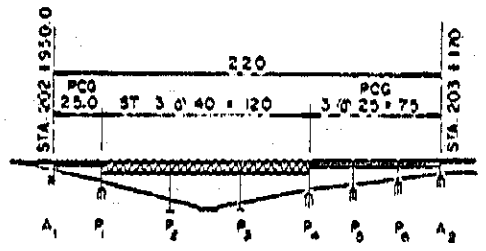
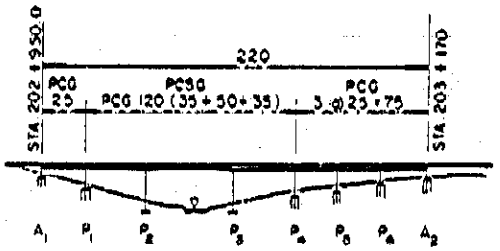
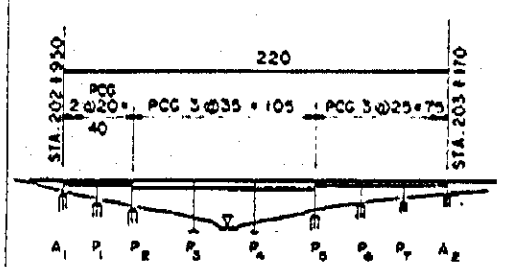
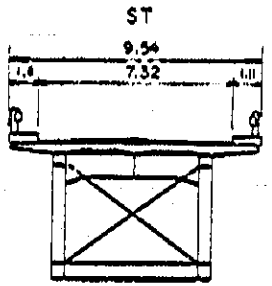
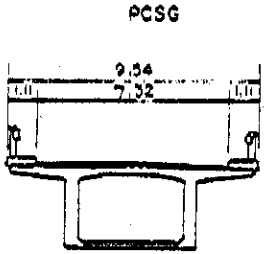
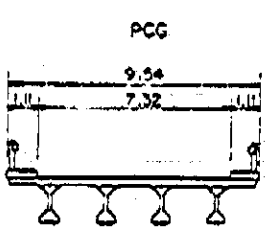
4. Comparative Studies on Bridges along Alternative Routes

CONSTRUCTION COST FOR BRIDGES

ROUTE		STATION OF BRIDGES	LENGTH(M)	TYPE	CONSTRUCTION COST(P)	UNIT COST (P/M²)
II	1	STA.2021950 – 2031170	220	PCG	7283000	4100
	2	STA.2031657.5 – 2031747.5	100	PCG	2474000	3060
	3	STA.2041135 – 2041225	90	PCG	2434000	3350
	4	STA.2051137.5 – 2051152.5	115	RCDG PCG	2737000	2950
	5	STA.2071872.5 – 20719325	60	PCG	1698000	3500
	6	STA.2031532 – 2091567	35	PCG	1182000	4180
	7	STA.2091770 – 2091790	20	PCG	843000	5220
	8	STA.2101090 – 2101180	90	PCG	2597000	3570
	9	STA.2101410 – 2101440	30	RCDG	706000	2910
	TOTAL				21954000	
II'	1	STA.2051035 – 2051110	75	RCDG	1629000	2690
	2	STA.2051518 – 2051558	40	PCG	1251000	3870
	TOTAL				2880000	
II'	1	STA.2051035 – 2051185	150	PCG	3808000	3140
V	1	STA.2051110 – 2051680	570	PCSG	29984000	6510
	2	STA.2051710 – 2051770	60	PCG	2205000	4550
	3	STA.2051805 – 2051940	75	PCG	2704000	4460
	4	STA.2061030 – 2061080	50	PCG	1769000	4380
	5	STA.2061155 – 2061335	180	PCG	6498000	4470
	6	STA.2061482.1 – 20615825	100	PCG	2824000	3500
	TOTAL				45984000	
V'	1	STA.2051505 – 2051605	100	PCSG	6320000	7820
	2	STA.2061565 – 2061605	40	PCG	1261000	3900
	TOTAL				7581000	
V''	1	STA.2051885 – 2061140	255	PCSG PCG	11179000	5430
V'''	1	STA.2051870 – 2051995	125	PCG	3814000	3780

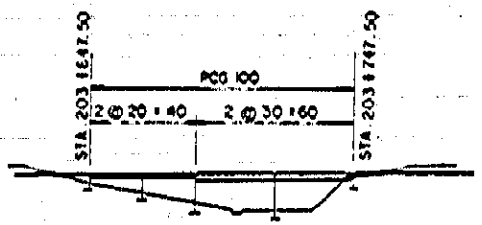
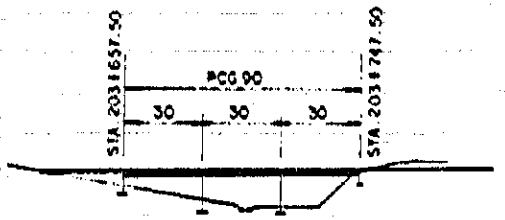
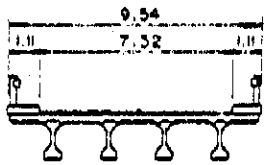
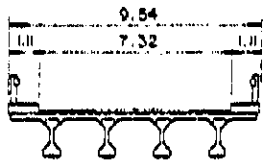
COMPARATIVE STUDY FOR BRIDGE II - 1

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			

CONSTRUCTION COST (¥)																
Super-Structure	TYPE	ST PCG					PCSG PCG					PCG				
	BRIDGE AREA (m²)	ST = (7.32+0.76)X120 = 969.6 , PCG(7.32+ 0.76)X25X4 = 808					PCSG = 969.6 PCG = 808					PCG-20 = 323.2 PCG-35 = 848.4 PCG-25 = 606.0				
	COST ①	969.6X 11500 + 808 X 1900 = 12678700					969.6 X 5950 + 808 X 1900 = 7304300					323.2X 1750 + 848.4 X 2200 + 606.0 X 900 = 3583500				
Sub-structure	ABUTMENT OR PIER	A_1+A_2	P_1+P_5	P_2+P_3	P_4	P_6	A_1+A_2	P_1+P_5	P_2+P_3	P_4	P_6	A_1+A_2	P_1+P_2	P_3+P_4	P_5	P_7
	HEIGHT (m.)	7.0	12.0	21.0	15.0	8.00	7.0	12.0	23.0	15.00	8.00	7.00	10.0 13.00	24.00	15.00	12.0 8.00
	COST	2X345000	200000 130000	2X335000	260000	135000	2X345000	200000 135000	2X455500	200000	135000	2X345000	143000 16000	2X270000	200000	135000 135000
	SUB-TOTAL ②	2110000					2340000					2025000				
FOUNDATION COST ③		RCP 0.40X0.40 1908 X 754 ¥/M = 1438600					RCP 0.40X0.40 1908 X 754 = 1438600					RCP 0.40X0.40 2218 X 754 = 1674400				
TOTAL ① + ② + ③		¥ 16227300 (9129 ¥/M²)					¥ 11082900 (6235 ¥/M²)					¥ 7282900 (4097 ¥/M²)				
COMMENT																
RECOMMENDATION RANKING		3					2					1				

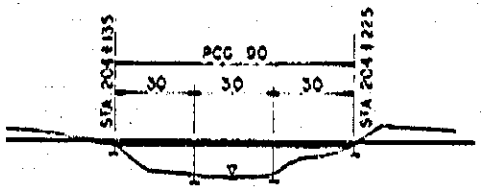
No.

COMPARATIVE STUDY FOR BRIDGE II-2

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			

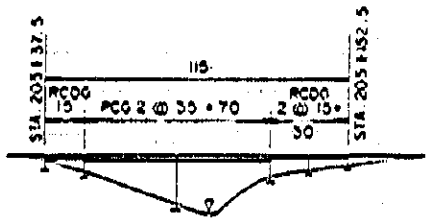
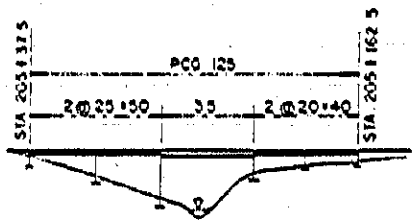
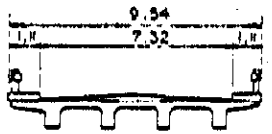
CONSTRUCTION COST (₩)																			
Super-Structure	TYPE	PCG					PCG												
	BRIDGE AREA (m²)	PCG-20=(7.32+0.76)X40=323.2, PCG-30=8.08X60=484.8					PCG-30=(7.32+.760)X90=727.2												
	COST ①	323.2 X 1750 + 484.8 X = 1535200					727.2 X 2000 = 1454400												
Sub-structure	ABUTMENT OR PIER	A_1	P_1	P_2	P_3	A_2	A_1	P_1	P_2	A_2									
	HEIGHT (m.)	6.00	8.00	13.00	14.00	5.00	6.00	13.00	14.00	5.00									
	COST	313000	125000	175000	185000	280000	380000	175000	185000	280000									
	SUB-TOTAL ②	1078000					1020000												
FOUNDATION COST ③		-					-												
TOTAL ① + ② + ③		2613200 (3234 ₩/m²)					2474400 (3062 ₩/m²)												
COMMENT																			
RECOMMENDATION RANKING		2					1												

COMPARATIVE STUDY FOR BRIDGE II - 3

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			

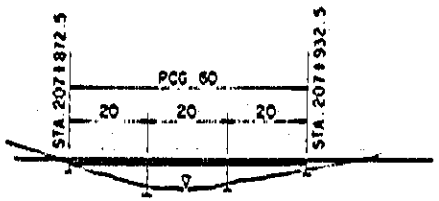
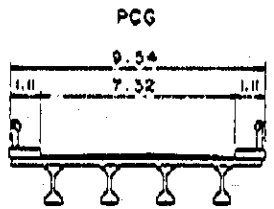
CONSTRUCTION COST (₱)																					
Superstructure	TYPE	PCG																			
	BRIDGE AREA (m²)	(7.32 + 0.76) X 90 = 727.2																			
	COST ①	727.2 X 2000 = 1454400																			
Substructure	ABUTMENT OR PIER	$A_1 + A_2$	P_1	P_2																	
	HEIGHT (m.)	5.00	16.0	16.0																	
	COST	2X280000	210000	210000																	
	SUB-TOTAL ②	980000																			
FOUNDATION COST ③		-																			
TOTAL ① + ② + ③		2434400 (3348 ₱ / M²)																			
COMMENT																					
RECOMMENDATION RANKING																					

COMPARATIVE STUDY FOR BRIDGE II – 4

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			

CONSTRUCTION COST (₱)																					
Super-Structure	TYPE	RCDG PCG					PCG														
	BRIDGE AREA (m²)	RCDG = (7.32+0.76) X 45 = 363.6 PCG = 8.08 X 70 = 565.6					PCG – 25 = 404.0 PCG – 35 = 282.8 PCG – 20 = 323.2														
	COST ①	363.6 X 1450 + 565.6 X 22000 = 1771540					404.0 X 1900 + 282.8 X 22000 + 323.2 X 1750 = 1955360														
Sub-Structure	ABUTMENT OR PIER	A1 A2	P1	P2	P3	P4	A1 A2	P1	P2	P3	P4										
	HEIGHT (m.)	5.0, 6.0	6.0	18.0	8.0	5.0	5.0	10.0	18.0	8.0	5.0										
	COST	200000 250000	100000	230000	125000	60000	2X95000	195000	230000	125000	95000										
	SUB-TOTAL ②	965000					835000														
FOUNDATION COST ③		–					–														
TOTAL ① + ② + ③		2736400 (2945 ₱/M²)					2790360 (2763 ₱/M²)														
COMMENT																					
RECOMMENDATION RANKING																					

COMPARATIVE STUDY FOR BRIDGE II-5

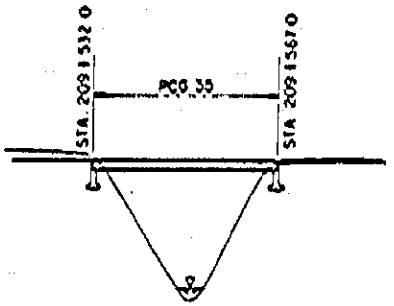
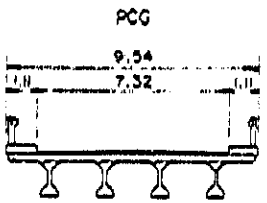
	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS. SECTION			

CONSTRUCTION COST (¥)																	
Super-Structure	TYPE	PCG															
	BRIDGE AREA (m^2)	(7.32+0.76) X 60 = 484.8															
	COST ①	484.8 X 1750 = 848400															
Substructure	ABUTMENT OR PIER	A_1	P_1	P_2	A_2												
	HEIGHT (m.)	5.00	11.00	9.00	5.00												
	COST	280000	155000	135000	280000												
	SUB-TOTAL ②	850000															
FOUNDATION COST ③		—															
TOTAL ① + ② + ③		1698400 (3503 ¥/m^2)															

COMMENT		
RECOMMENDATION RANKING		

COMPARATIVE STUDY FOR BRIDGE II-6

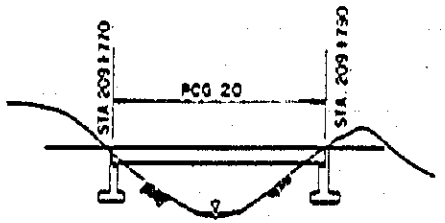
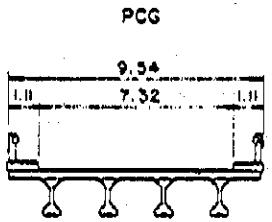
No.

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS. SECTION			

CONSTRUCTION COST (¥)																					
Super-Structure	TYPE	PCG																			
	BRIDGE AREA (m²)	(7.32 + 0.76) X 35 = 282.8																			
	COST ①	282.8 X 2200 = 622160																			
Sub-structure	ABUTMENT OR PIER	A_1	A_2																		
	HEIGHT (m.)	5.00	5.00																		
	COST	280000	280000																		
	SUB-TOTAL ②	560000																			
FOUNDATION COST ③		-																			
TOTAL ① + ② + ③		1182160 (4180 ¥/M²)																			
COMMENT																					
RECOMMENDATION RANKING																					

COMPARATIVE STUDY FOR BRIDGE II-7

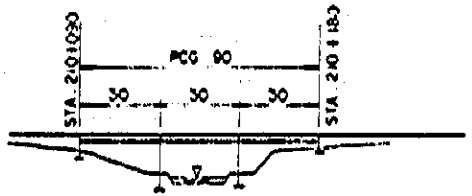
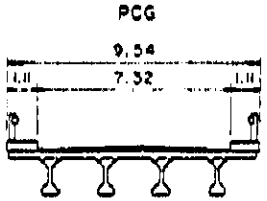
No.

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS. SECTION			

CONSTRUCTION COST (₱)																			
Super-Structure	TYPE	PCG																	
	BRIDGE AREA (m^2)	(7.32+0.76) X 20 = 161.6																	
	COST ①	161.6 X 1750 = 282800																	
Substructure	ABUTMENT OR PIER	A_1	A_2																
	HEIGHT (m.)	5.00	5.00																
	COST	280000	280000																
	SUB-TOTAL ②	560000																	
FOUNDATION COST ③		-																	
TOTAL ① + ② + ③		842800 (5215 ₱/m^2)																	
COMMENT																			
RECOMMENDATION RANKING																			

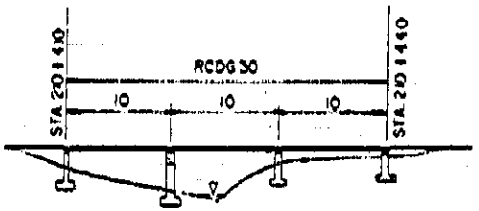
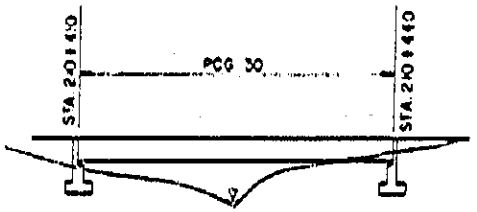
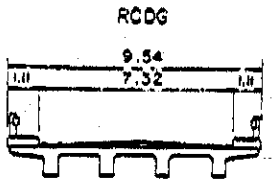
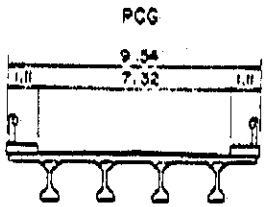
COMPARATIVE STUDY FOR BRIDGE II-8

No.

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			

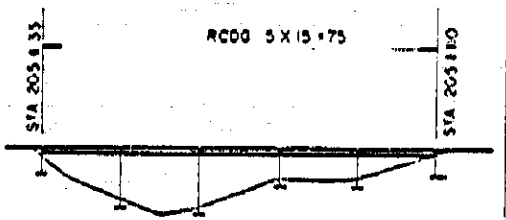
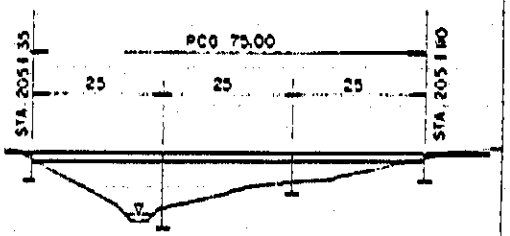
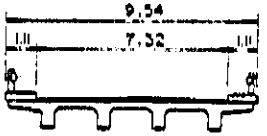
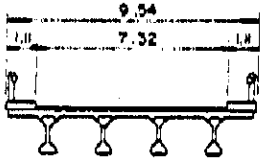
CONSTRUCTION COST (₱)																				
Super-Structure	TYPE	PCG																		
	BRIDGE AREA (m^2)	(7.32 +0.96) X 90 = 727.2																		
	COST ①	727.2 X 2000 = 1454400																		
Sub-structure	ABUTMENT OR PIER	A_1	P_1	P_2	A_2															
	HEIGHT (m.)	8.0	18.0	17.0	6.0															
	COST	380000	230000	220000	313000															
	SUB-TOTAL ②	1143000																		
FOUNDATION COST ③		-																		
TOTAL ① + ② + ③		2597600 (3572 ₱/m^2)																		
COMMENT																				
RECOMMENDATION RANKING																				

COMPARATIVE STUDY FOR BRIDGE II - 9

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			

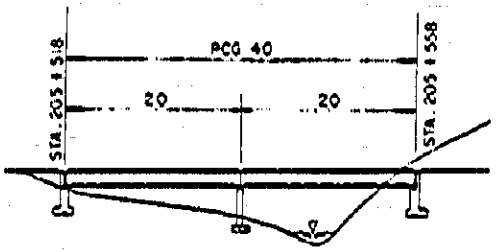
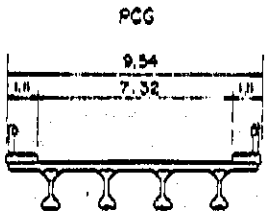
CONSTRUCTION COST (¥)																		
Super-Structure	TYPE	RCDG					PCG											
	BRIDGE AREA (m^2)	(7.32+0.76)X30+242.4					(7.32+0.76)X30+242.4											
	COST ①	242.4 X 1200 = 290880					242.4 X 2000 = 484800											
Sub-structure	ABUTMENT OR PIER	A_1	P_1	P_2	A_2		A_1	A_2										
	HEIGHT (m.)	4.0	5.0	3.0	4.0		5.0	5.0										
	COST	155000	60000	145000	155000		28000	28000										
	SUB-TOTAL ②	415000					560000											
FOUNDATION COST ③		-					-											
TOTAL ① + ② + ③		705880 (2912 ¥/m^2)					1044800 (4310 ¥/m^2)											
COMMENT																		
RECOMMENDATION RANKING		1					2											

COMPARATIVE STUDY FOR BRIDGE II'-1

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			
CONSTRUCTION COST (¥) Super-Structure TYPE	RCDG	PCG	
Super-Structure BRIDGE AREA (m²)	(7.32 + 0.76) X 75 = 606	606	
Super-Structure COST ①	606 X 1450 = 878700	606 X 1900 = 1151400	
Substructure ABUTMENT OR PIER	A_1 + A_2 | P_1 | P_2 | P_3 + P_4	A_1 + A_2 | P_1 | P_2	
Substructure HEIGHT (m.)	5.00 | 10.00 | 11.00 | 6.00	5.00 | 12.00 | 6.00	
Substructure COST	2X200000 | 95000 | 1050000 | 2X75000	2X260000 | 165000 | 100000	
Substructure SUB-TOTAL ②	750000	825000	
FOUNDATION COST ③	-	-	
TOTAL ① + ② + ③	1628700 (2690 ¥/M²)	1976400 (3260 ¥/M²)	
COMMENT			
RECOMMENDATION RANKING	1	2	

COMPARATIVE STUDY FOR BRIDGE III'-2

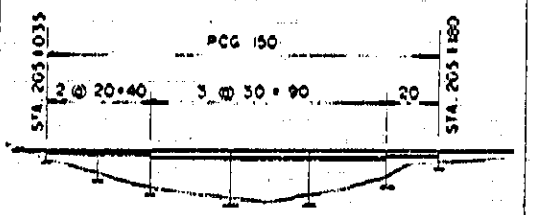
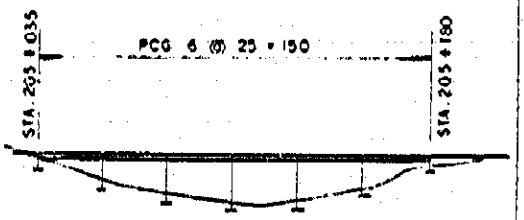
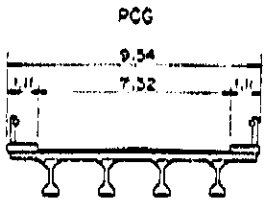
No.

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS. SECTION			

CONSTRUCTION COST (¥)																		
Super-Structure	TYPE	PCG																
	BRIDGE AREA (m²)	(7.32 +0.76)X40 = 323.2																
	COST ①	323.2 X 1750 = 565600																
Sub-Structure	ABUTMENT OR PIER	A_1	P_1	A_2														
	HEIGHT (m.)	5.00	6.00	5.00														
	COST	280000	125000	280000														
	SUB-TOTAL ②	685000																
FOUNDATION COST ③		-																
TOTAL ① + ② + ③		1250600 (3869 ¥/m²)																
COMMENT																		
RECOMMENDATION RANKING																		

COMPARATIVE STUDY FOR BRIDGE II"-1

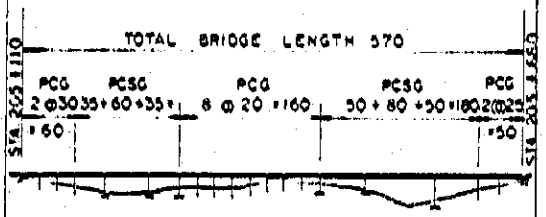
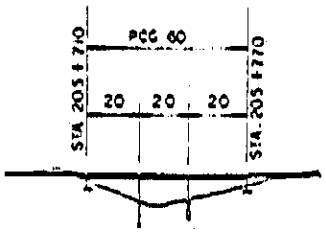
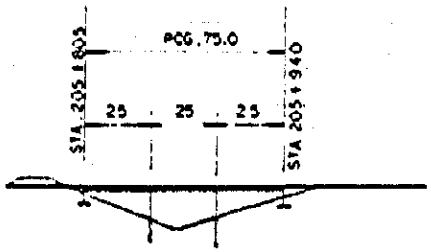
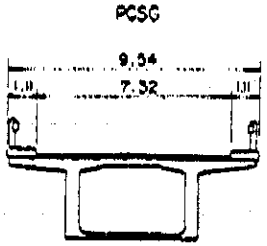
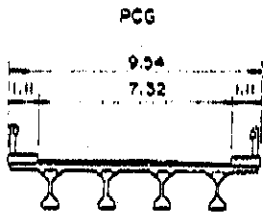
No.

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			

CONSTRUCTION COST (¥)																					
Super-Structure	TYPE	PCG					PCG														
	BRIDGE AREA (m²)	PCG-20 = 484.8		PCG-30 = 727.2			(7.32 +0.76) X 150 = 1212.0														
	COST ①	484.8 X 1750 + 727.2 X 2000 = 2302800					1212 X 1900 = 2302800														
Sub-structure	ABUTMENT OR PIER	A_1+A_2	P_1	P_2	P_3+P_4	P_5	A_1+A_2	P_1	P_2	P_3+P_4	P_5										
	HEIGHT (m.)	5.00	10.00	16.00	18.00	11.00	5.00	12.00	16.00	19.00	13.00										
	COST	2X280000	145000	185000	2X230000	155000	2X280000	165000	220000	2X240000	175000										
	SUB-TOTAL ②	1505000					1600000														
FOUNDATION COST ③		-					-														
TOTAL ① + ② + ③		3807800 (5142 ¥/M²)					3902,600 (3220 ¥/M²)														
COMMENT																					
RECOMMENDATION RANKING		1					2														

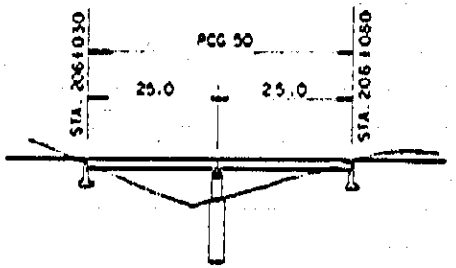
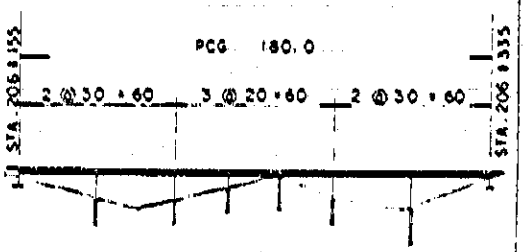
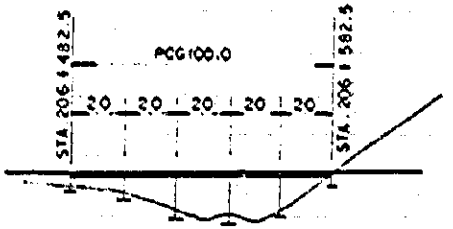
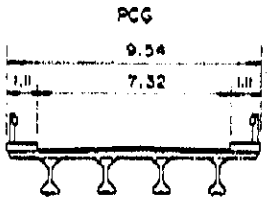
COMPARATIVE STUDY FOR ROUTE X

No.

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			

CONSTRUCTION COST (¥)																
Super-structure	TYPE	PCG PCSG					PCG					PCG				
	BRIDGE AREA (m²)	PCG=20×1777.6 PCG=25×404 PCSG=40×1969.6 PCSG=60×1454					(7.32+0.76)×60=484.8					(7.32+0.76)×75=606.0				
	COST ①	1777.6×1750+404×1900+969.6×5950+1456.4×7250=20,191,900					484.8×1750=848400					606.0×1900=1151400				
Sub-structure	ABUTMENT OR PIER	A_1 A_2	P_1 P_2 P_{12}=P_{13}	P_3 P_8 P_{14} P_{17}	P_4 P_9 P_{15} P_{16}	P_{18}	A_1	P_1	P_2	A_2		A_1	P_1	P_2	A_2	
	HEIGHT (m.)	5.0	3.0=12.0	9.0=2.0	19=32.0	5.0	5.0	8.0	5.0	6.0		6.0	10.0	10.0	7.0	
	COST	560000	662000	578000	2755000	62000	280000	84000	62000	313000		313000	90000	90000	345000	
	SUB-TOTAL ②	4617000					739000					838000				
FOUNDATION COST ③		96×32800+44×46700=5176800					19×32500=617500					22×32500=715000				
TOTAL ① + ② + ③		29983700 (6510 ¥/m²)					2204900 (4546 ¥/m²)					2704400 (4462 ¥/m²)				
COMMENT																
RECOMMENDATION RANKING																

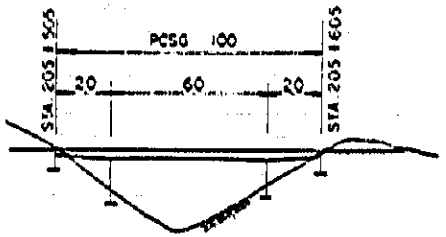
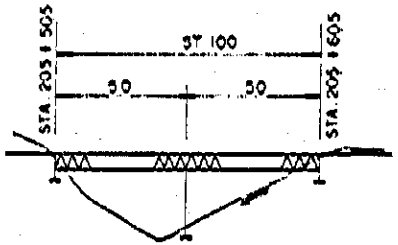
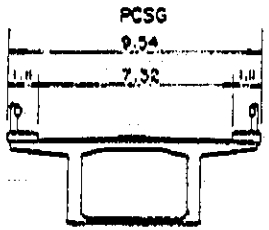
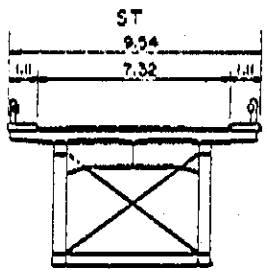
COMPARATIVE STUDY FOR ROUTE – V

	NO. 4 SCHEME	NO. 5 SCHEME	NO. 6 SCHEME
PROFILE			
TYPICAL CROSS. SECTION			

CONSTRUCTION COST (₩)															
Super-Structure	TYPE	PCG					PCG						PCG				
	BRIDGE AREA (m²)	(7.32+0.76)X50=404.0					PCG-30=969.6				PCG-20=484.8		(7.32+0.76)X100=808				
	COST ①	404X1900=767600					969.6X2000+484.8X1750=2787600						808X1750=1414000				
Substructure	ABUTMENT OR PIER	A_1	P_1	A_2			A_1	$P_1=P_2$	P_3	$P_5=P_6$	A_2		A_1	P_1	$P_2=P_4$	P_3	A_2
	HEIGHT (m.)	5.0	8.0	5.0			6.0	4.0	5.0	8.0 12.0	5.0		7.0	9.0	16.0	16.0	5.0
	COST	260000	84000	260000			313000	137000	62000	122000 152000	260000		345000	135000	2X240000	230000	280000
	SUB-TOTAL ②	644000					1066000						1410000				
FOUNDATION COST ③		32500X11=357500					46700X42+32500X21=2643900						-				
TOTAL ① + ② + ③		1769100 (4379 ₩/M²)					6497500 (4467 ₩/M²)						2824000 (3693 ₩/M²)				
COMMENT																	
RECOMMENDATION RANKING																	

COMPARATIVE STUDY FOR BRIDGE X' - 1

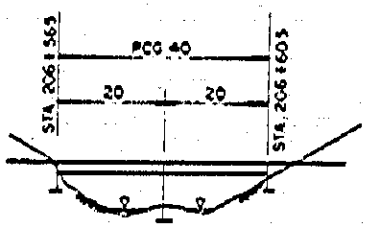
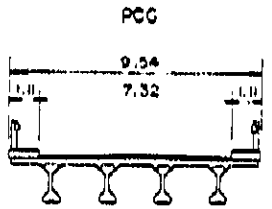
No.

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS. SECTION			

CONSTRUCTION COST (₹)																			
Super-Structure	TYPE	PCSG					ST												
	BRIDGE AREA (m²)	(7.32+0.76)X100=808					808												
	COST ①	808X5600=4524800					808X12050=9736400												
Sub-structure	ABUTMENT OR PIER	A_1	P_1	P_2	A_2		A_1	P_1	A_2										
	HEIGHT (m.)	8.00	17.00	13.00	8.00		10.00	25.00	10.00										
	COST	570000	370000	285000	570000		535000	400000	535000										
	SUB-TOTAL ②	1795000					14200000												
FOUNDATION COST ③		-																	
TOTAL ① + ② + ③		6319800 (7822 ₹/m²)					11206400 (13869 ₹/m²)												
COMMENT																			
RECOMMENDATION RANKING		1					2												

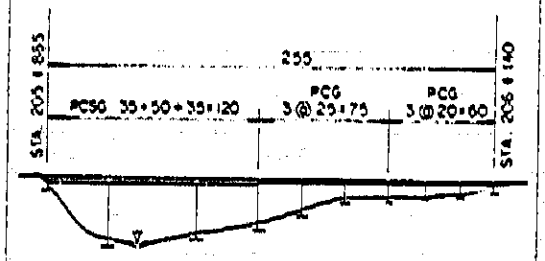
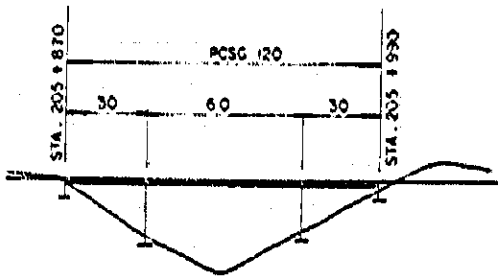
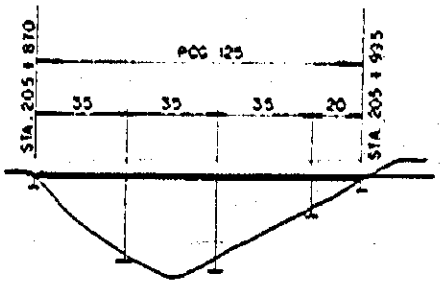
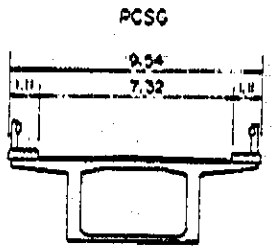
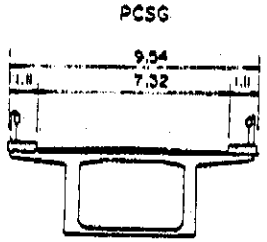
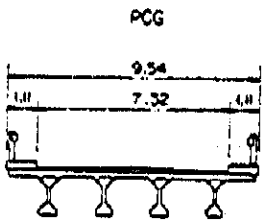
COMPARATIVE STUDY FOR BRIDGE V' – 2

No.

	NO. 1 SCHEME	NO. 2 SCHEME	NO. 3 SCHEME
PROFILE			
TYPICAL CROSS SECTION			

CONSTRUCTION COST (¥)																						
Super-Structure	TYPE	PCG																				
	BRIDGE AREA (m^2)	(7.32 + 0.76) × 40 + 325.2																				
	COST ①	325.2 × 1750 = 569600																				
Substructure	ABUTMENT OR PIER	A_1	P_1	A_2																		
	HEIGHT (m.)	5.00	8.00	5.00																		
	COST	280000	135000	280000																		
	SUB-TOTAL ②	695000																				
FOUNDATION COST ③		-																				
TOTAL ① + ② + ③		1260600 (13900 ¥/ M^2)																				
COMMENT																						
RECOMMENDATION RANKING																						

COMPARATIVE STUDY FOR ROUTE V"; V'''

	ROUTE V" NO. 1 BRIDGE	ROUTE V''' NO. 1 BRIDGE SCHEME (1)	ROUTE V''' NO. 1 BRIDGE SCHEME (2)
PROFILE			
TYPICAL CROSS. SECTION			

CONSTRUCTION COST (¥)

Super-Structure	TYPE	PCSG PCG					PCSG					PCG				
	BRIDGE AREA (m²)	PCSG = 969.6 PCG-25 = 606 PCG-20 = 464.8					(7.32+0.76) X 120 = 969.6					PCG-35 = 848.4 PCG-20 = 161.6				
	COST ①	969.6 X 5950 + 606 X 1900 + 464.8 X 1750 = 7,766,900					969.6 X 5950 = 5769100					848.4 X 2400 + 161.6 X 1750 = 2319000				
Sub-structure	ABUTMENT OR PIER	A_1	P_1 P_2 P_3	P_4 P_5	P_6 P_7 P_8	A_2	A_1	P_1	P_2	A_2		A_1	P_1	P_2	P_3	A_2
	HEIGHT (m.)	7.0	35,30,24	18, 10	9 7 6	5.0	7.0	24.0	22.0	6.0		5.0	30.0	34.0	14.0	5.0
	COST	520000	1870000	385000	355000	280000	520000	5 10000	470000	560000		280000	385000	395000	165000	280000
	SUB-TOTAL ②	3410000					2060000					1495000				
FOUNDATION COST ③		-					-					-				
TOTAL ① + ② + ③		11178900 (5426 ¥/m²)					7829100 (8075 ¥/m²)					3814000 (3776 ¥/m²)				
COMMENT																
RECOMMENDATION RANKING