

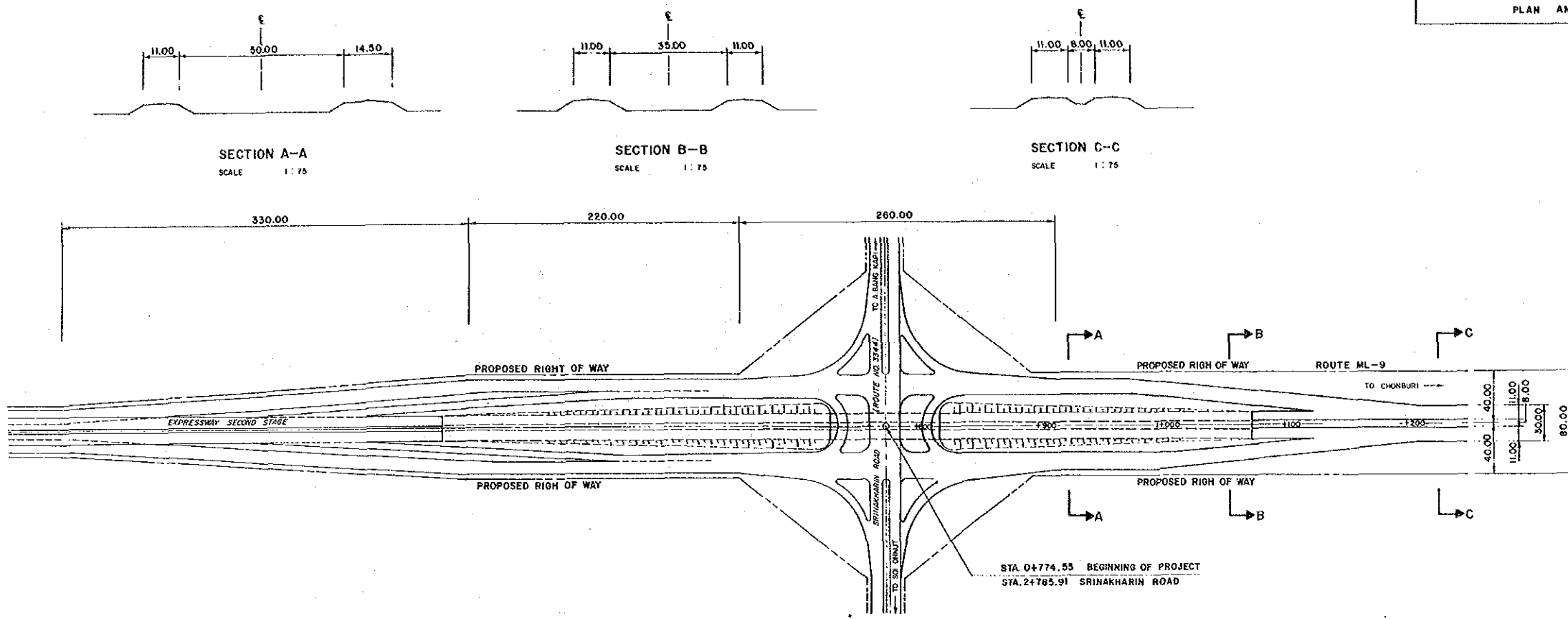


TERRAIN	MODERATELY ROLLING	
PAVEM'T	Type / Length	—
	Condition	—
FLOODING	Length (Km) Height (m)	—
RIGHT OF WAY (m.)	L	40.00
	R	40.00
ROUTE NO. AGENCIES	NEW HIGHWAY (DOH)	
CURVA-TURE BAND	Existing Alignment	
	Proposed Alignment	L = 1,821.69 R = 2,500.00
STATION (Km) 81+000		82+000 82+523.969

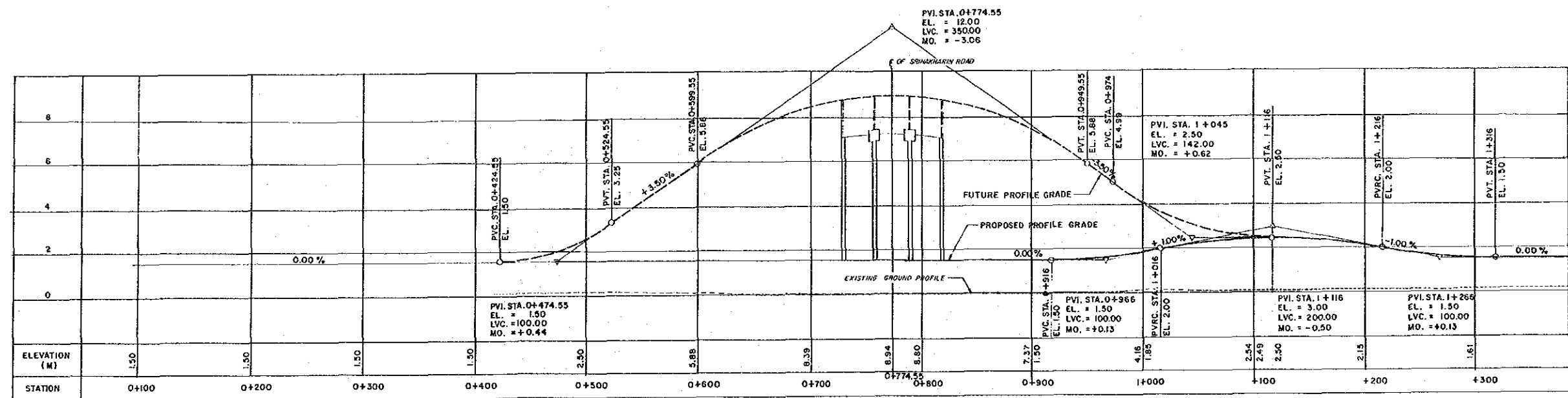
  

ELEVATION ( m. )	PROPOSED PROFILE GRADE (L&R) OF ROADWAY		60
	EXISTING GROUND PROFILE		50
			40

STA. 81+500 INSTALL P.C.P. 2' 8" 100' x 16.00  
 STA. 81+500 INSTALL P.C.P. 2' 16.00' x 10.16.00  
 STA. 82+523.97 END OF PROJECT (NET LENGTH 81.72 M.)

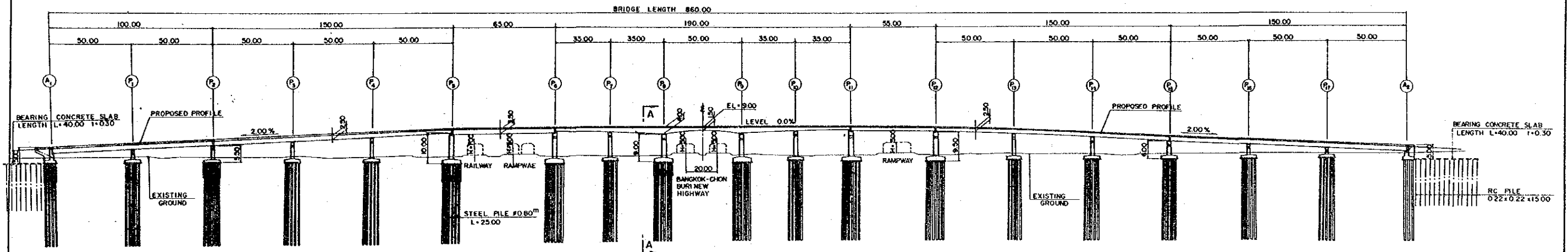


LAYOUT OF INTERSECTION  
 SCALE 1:2,000



PROFILE OF MAIN RAMP  
 SCALE HORIZ 1:2,000, VERT 1:100

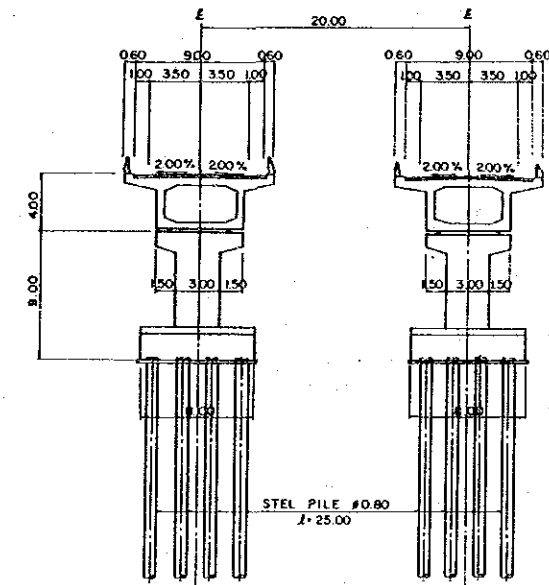
OUTER RING ROAD GENERAL VIEW



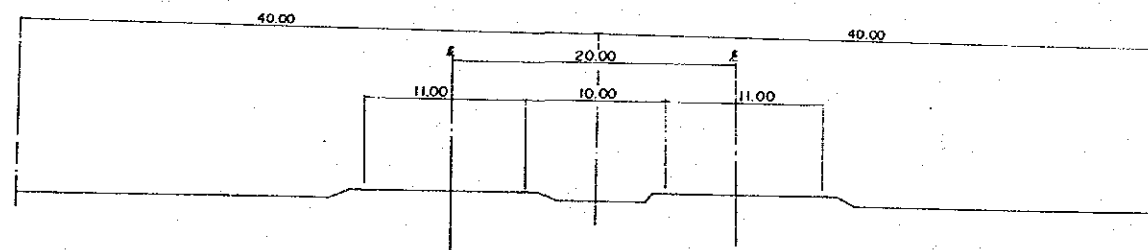
GENERAL ELEVATION  
Scale 1:1000

TABLE OF MAIN BRIDGE SUPERSTRUCTRE (ONE-WAY)

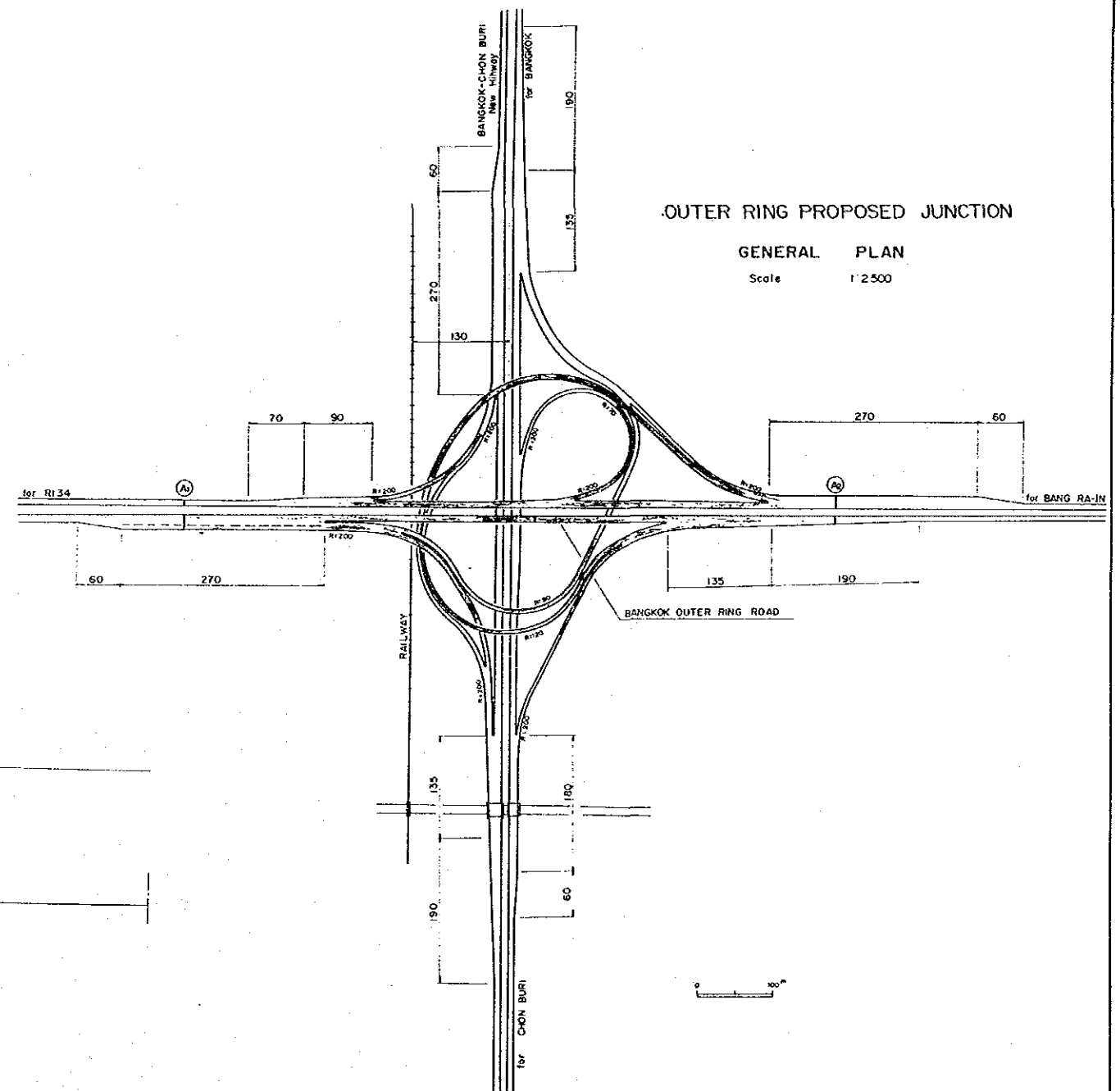
BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION
100	2	PC-Box continuous	2.50	3.00~5.00
150	9		2.50	
65	1	PC-Box simple	3.50	9.00
55	1		3.50	9.00
190	5	PC-Box continuous	4.00~1.50	9.00



A-A SECTION  
Scale 1:200



BANGKOK-CHONBURI NEW HIGHWAY  
Scale 1:200

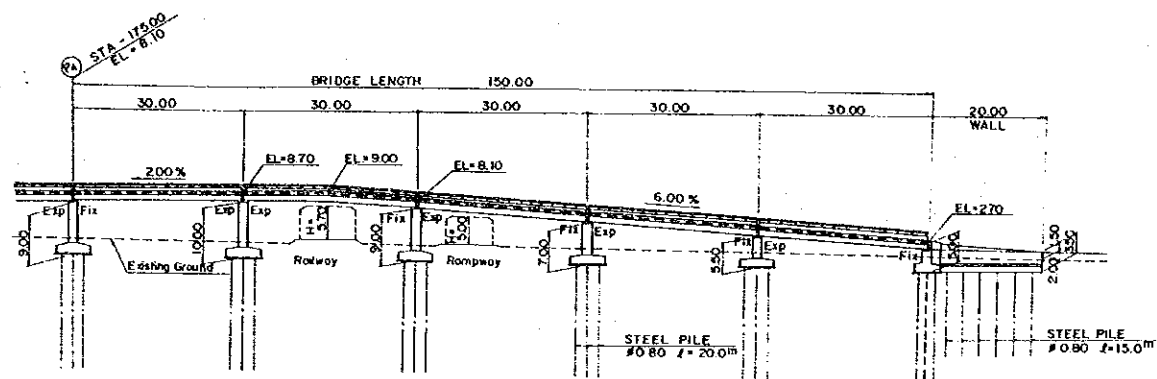


OUTER RING PROPOSED JUNCTION

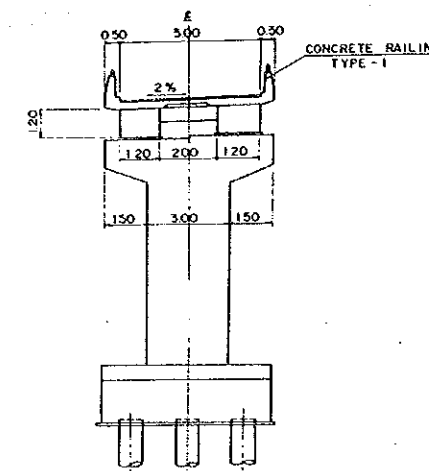
GENERAL PLAN

Scale 1:2500

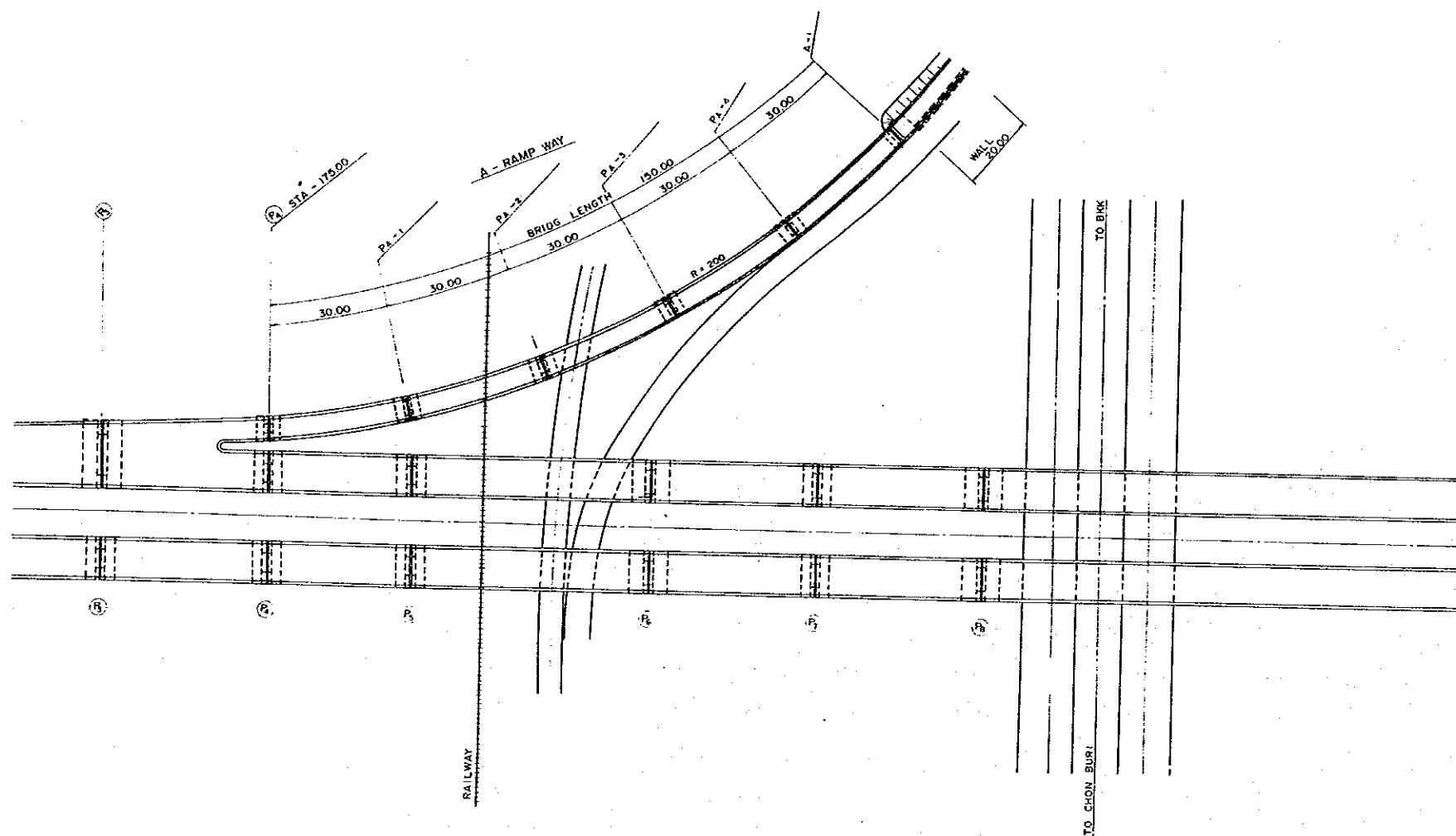
A - RAMP GENERAL VIEW



GENERAL ELEVATION  
 Scale 1:500



A-RAMPWAY CROSS SECTION  
 Scale 1:100



GENERAL PLAN  
 Scale 1:500

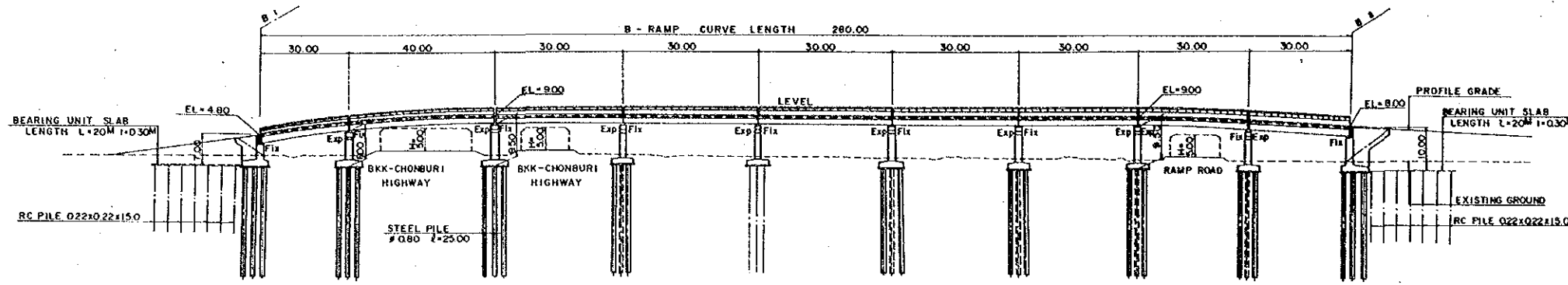
TABLE OF A-RAMP SUPERSTRUCTURE

NAME	BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION
A. RAMP	150	Spans 5 @ 30	STEEL 2-Box Girders	1.40	9.00

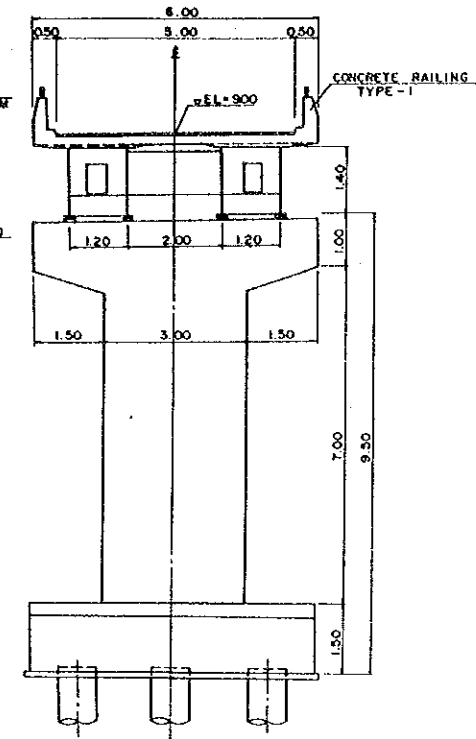
A - RAMP BRIDGE

ITEM	UNIT	QUANTITY
1. CONCRETE		
CLASS SPECIAL B(1/2) FOR RC SLAB	m <sup>3</sup>	180
CLASS B(1/2) FOR PIER & ABUTMENT	m <sup>3</sup>	1211
CLASS B(1/2) FOR BEARING UNIT SLAB	m <sup>3</sup>	36
CLASS B(1/2) FOR WALL	m <sup>3</sup>	-
2. STEEL REINFORCEMENT		
	T	248
3. RC PILE 0.22 x 0.22 <sup>M</sup>		
	LM	315
4. STEEL PILE 0.80 <sup>M</sup>		
	LM	1350
5. CONCRETE RAILING TYPE-1		
	LM	150
CONCRETE RAILING TYPE-3		
	LM	150

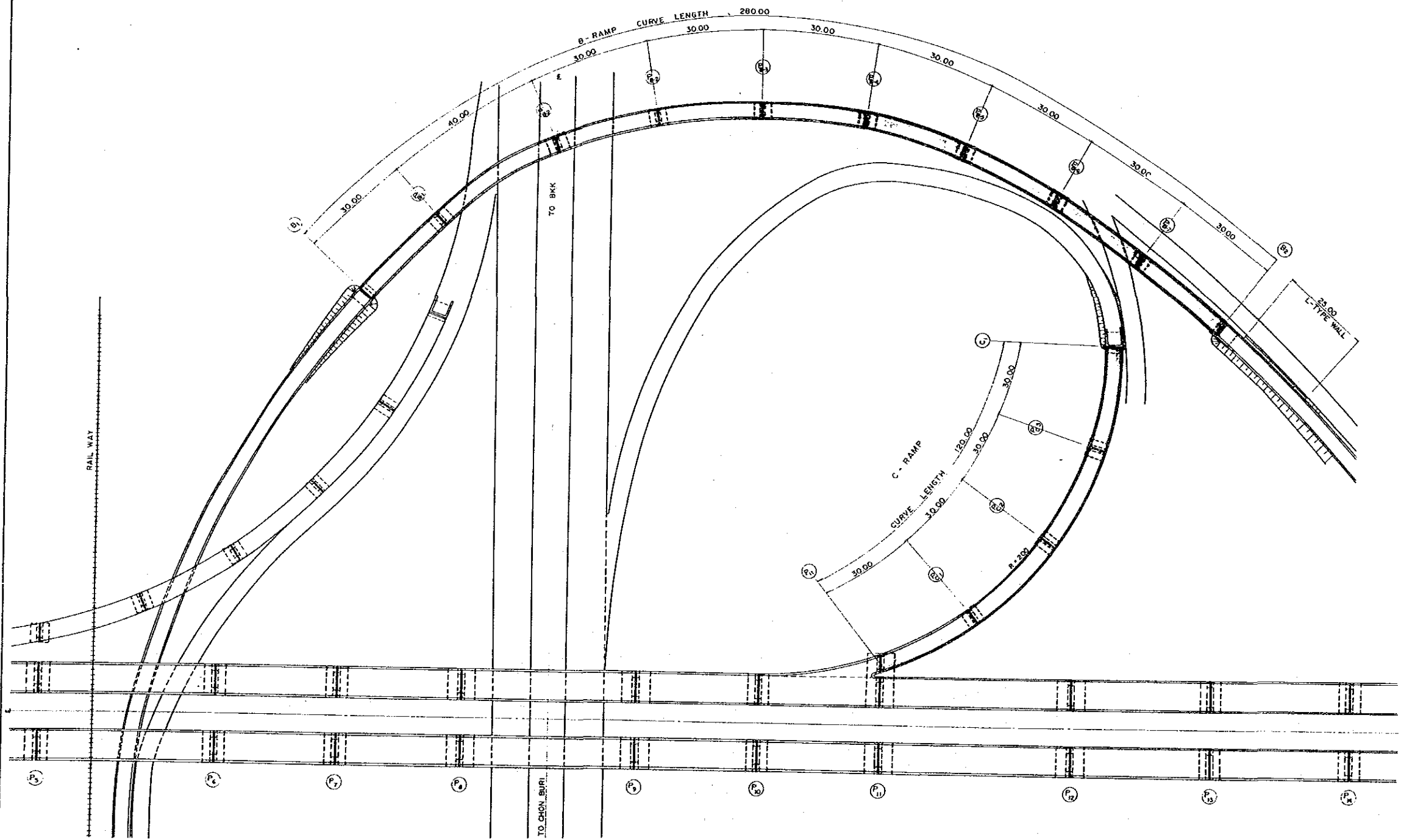
B & C - RAMP BRIDGE GENERAL VIEW



GENERAL ELEVATION  
Scale 1:500



PB-2 CROSS SECTION  
Scale 1:60



GENERAL PLAN  
Scale 1:500

TABLE OF B-C - RAMP SUPERSTRUCTURE

NAME	BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION
B - RAMP	280	9 Spans 40 + 8x30	STEEL 2-Box Girder	1.60 1.40	9.00
C - RAMP	120	4 x 30	STEEL 2-Box Girder	1.40	9.00

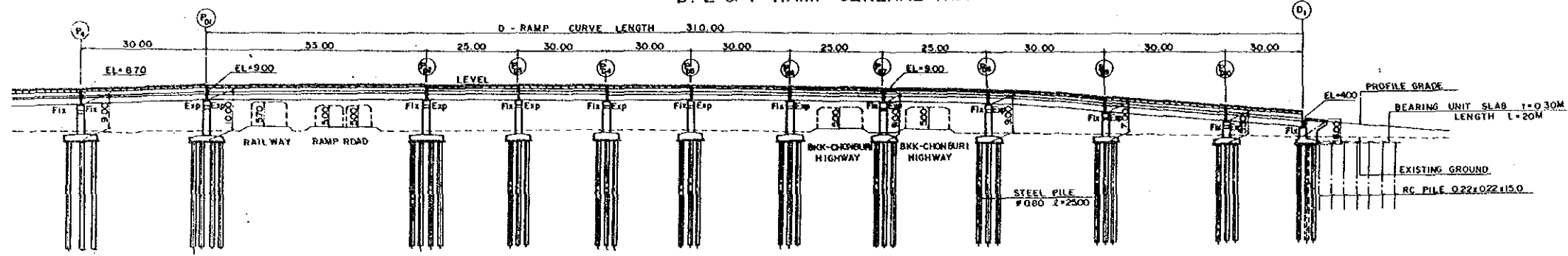
B - RAMP BRIDGE

ITEM	UNIT	QUANTITY
1. CONCRETE		
CLASS SPECIAL B(1/2) FOR RC SLAB	m <sup>3</sup>	336
CLASS B(1/2) FOR PIER & ABUTMENT	m <sup>3</sup>	1534
CLASS B(1/2) FOR BEARING UNIT SLAB	m <sup>3</sup>	60
CLASS B(1/2) FOR WALL	m <sup>3</sup>	400
2. STEEL REINFORCEMENT	T	402
3. RC PILE 0.22 x 0.22 <sup>M</sup>	LM	840
4. STEEL PILE 0.80 <sup>M</sup>	LM	2250
5. CONCRETE RAILING TYPE-1	LM	280
CONCRETE RAILING TYPE-3	LM	280

C - RAMP BRIDGE

ITEM	UNIT	QUANTITY
1. CONCRETE		
CLASS SPECIAL B(1/2) FOR RC SLAB	m <sup>3</sup>	144
CLASS B(1/2) FOR PIPE & ABUTMENT	m <sup>3</sup>	682
CLASS B(1/2) FOR BEARING UNIT SLAB	m <sup>3</sup>	36
CLASS B(1/2) FOR WALL	m <sup>3</sup>	-
2. STEEL REINFORCEMENT	T	149
3. RC PILE 0.22 x 0.22 <sup>M</sup>	LM	315
4. STEEL PILE 0.80 <sup>M</sup>	LM	900
5. CONCRETE RAILING TYPE-1	LM	120
CONCRETE RAILING TYPE-3	LM	120

D, E & F RAMP GENERAL VIEW



GENERAL ELEVATION  
Scale 1:500

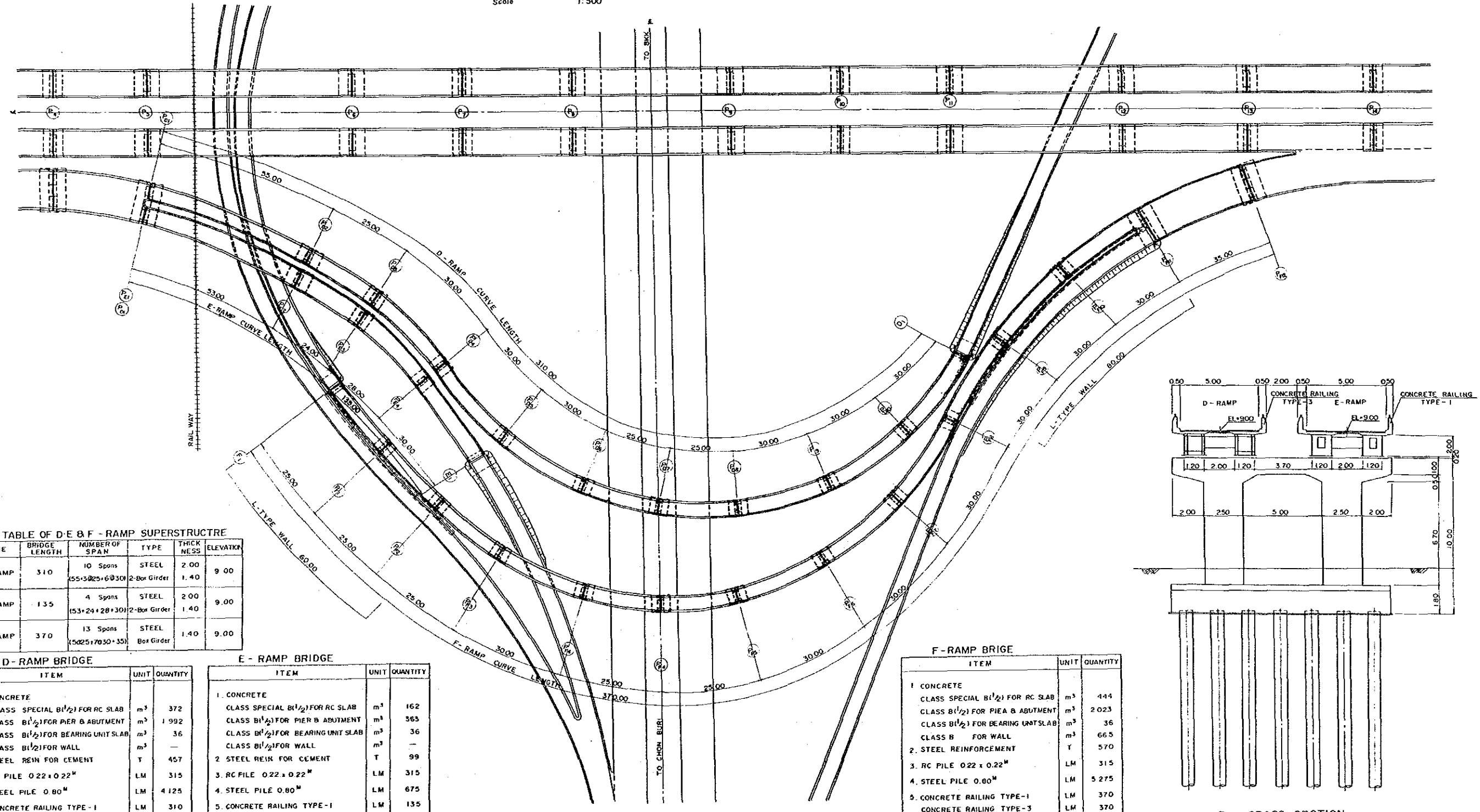


TABLE OF D-E & F - RAMP SUPERSTRUCTURE

NAME	BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION
D - RAMP	310	10 Spans (55+30+25+6+30)	STEEL 2-Box Girder	2.00 1.40	9.00
E - RAMP	135	4 Spans (53+24+28+30)	STEEL 2-Box Girder	2.00 1.40	9.00
F - RAMP	370	13 Spans (50+25+70+30+35)	STEEL Box Girder	1.40	9.00

D - RAMP BRIDGE

ITEM	UNIT	QUANTITY
1. CONCRETE		
CLASS SPECIAL B <sup>1 1/2</sup> FOR RC SLAB	m <sup>3</sup>	372
CLASS B <sup>1 1/2</sup> FOR PIER & ABUTMENT	m <sup>3</sup>	1 992
CLASS B <sup>1 1/2</sup> FOR BEARING UNIT SLAB	m <sup>3</sup>	36
CLASS B <sup>1 1/2</sup> FOR WALL	m <sup>3</sup>	-
2. STEEL REIN FOR CEMENT	T	457
3. RC PILE 0.22 x 0.22 <sup>m</sup>	LM	315
4. STEEL PILE 0.80 <sup>m</sup>	LM	4 125
5. CONCRETE RAILING TYPE-1	LM	310
CONCRETE RAILING TYPE-3	M	310

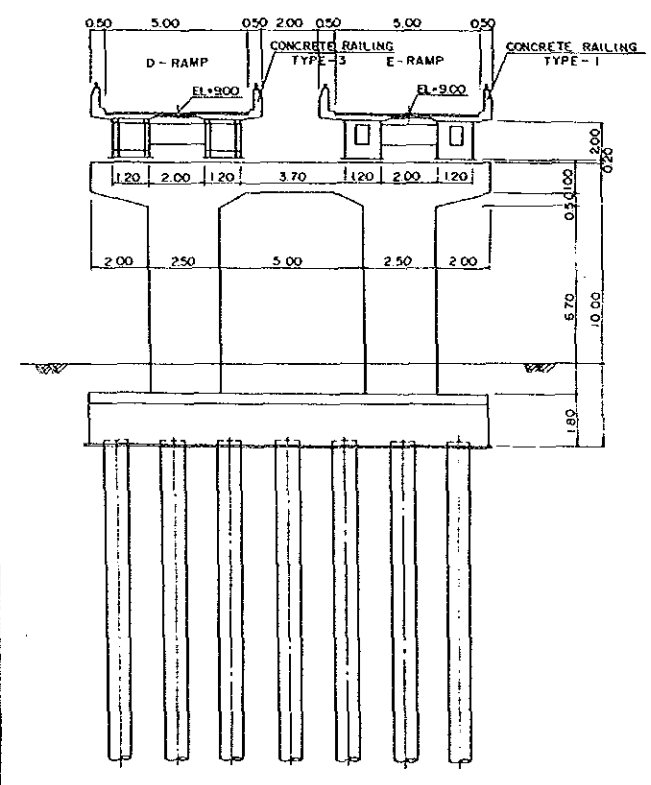
E - RAMP BRIDGE

ITEM	UNIT	QUANTITY
1. CONCRETE		
CLASS SPECIAL B <sup>1 1/2</sup> FOR RC SLAB	m <sup>3</sup>	162
CLASS B <sup>1 1/2</sup> FOR PIER & ABUTMENT	m <sup>3</sup>	565
CLASS B <sup>1 1/2</sup> FOR BEARING UNIT SLAB	m <sup>3</sup>	36
CLASS B <sup>1 1/2</sup> FOR WALL	m <sup>3</sup>	-
2. STEEL REIN FOR CEMENT	T	99
3. RC PILE 0.22 x 0.22 <sup>m</sup>	LM	315
4. STEEL PILE 0.80 <sup>m</sup>	LM	675
5. CONCRETE RAILING TYPE-1	LM	135
CONCRETE RAILING TYPE-3	M	135

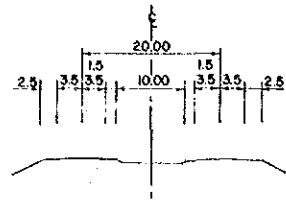
F - RAMP BRIDGE

ITEM	UNIT	QUANTITY
1. CONCRETE		
CLASS SPECIAL B <sup>1 1/2</sup> FOR RC SLAB	m <sup>3</sup>	444
CLASS B <sup>1 1/2</sup> FOR PIER & ABUTMENT	m <sup>3</sup>	2 023
CLASS B <sup>1 1/2</sup> FOR BEARING UNIT SLAB	m <sup>3</sup>	36
CLASS B FOR WALL	m <sup>3</sup>	66.5
2. STEEL REINFORCEMENT	T	570
3. RC PILE 0.22 x 0.22 <sup>m</sup>	LM	315
4. STEEL PILE 0.80 <sup>m</sup>	LM	5 275
5. CONCRETE RAILING TYPE-1	LM	370
CONCRETE RAILING TYPE-3	LM	370

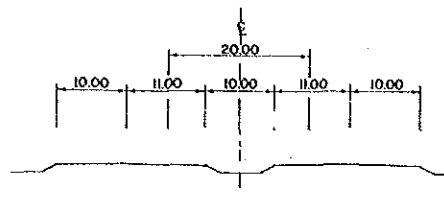
PDI CROSS SECTION  
Scale 1:100



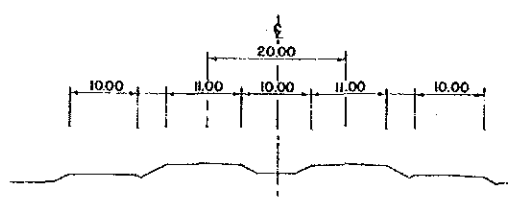
GENERAL PLAN  
Scale 1:500



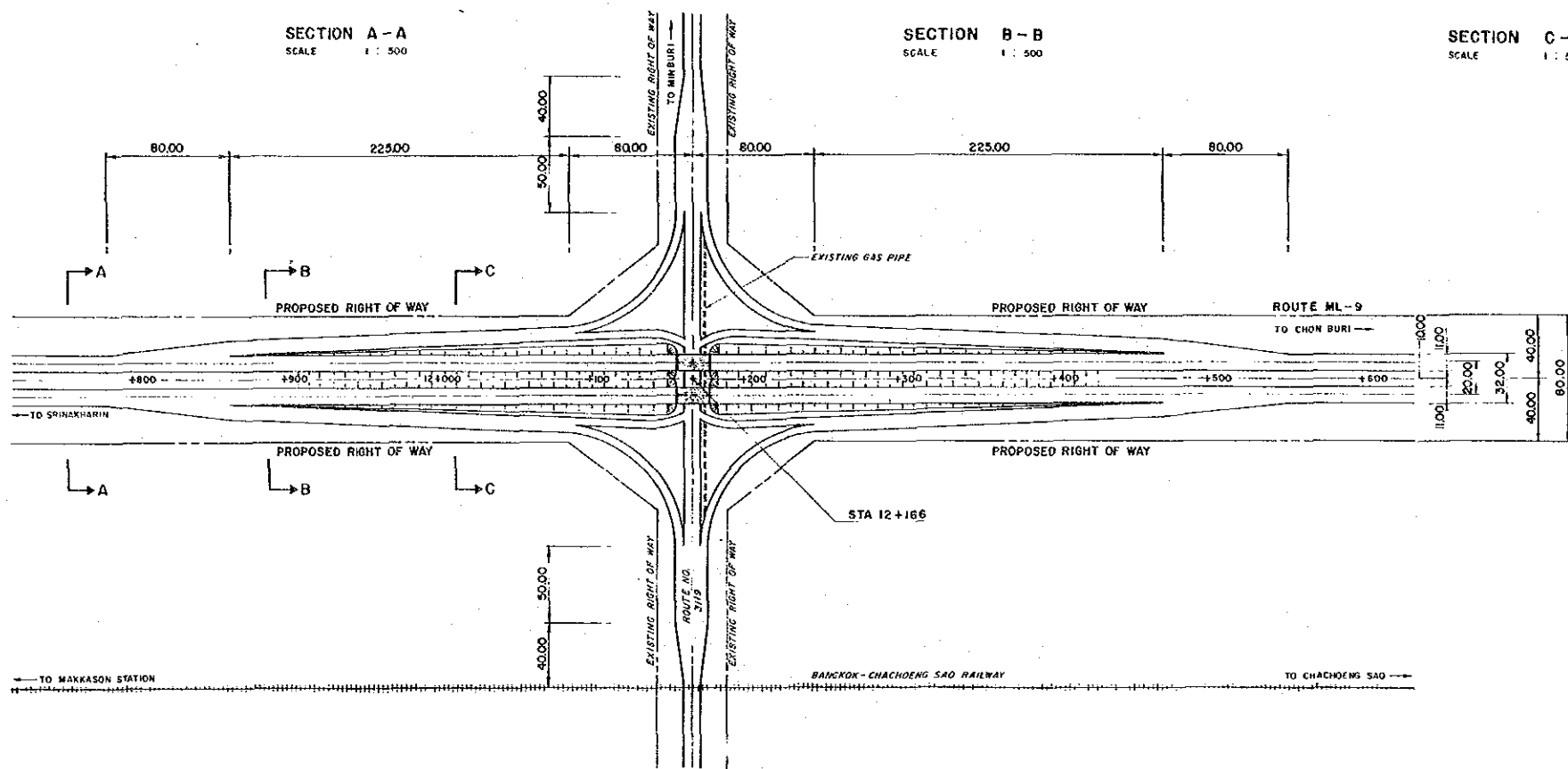
SECTION A-A  
 SCALE 1 : 500



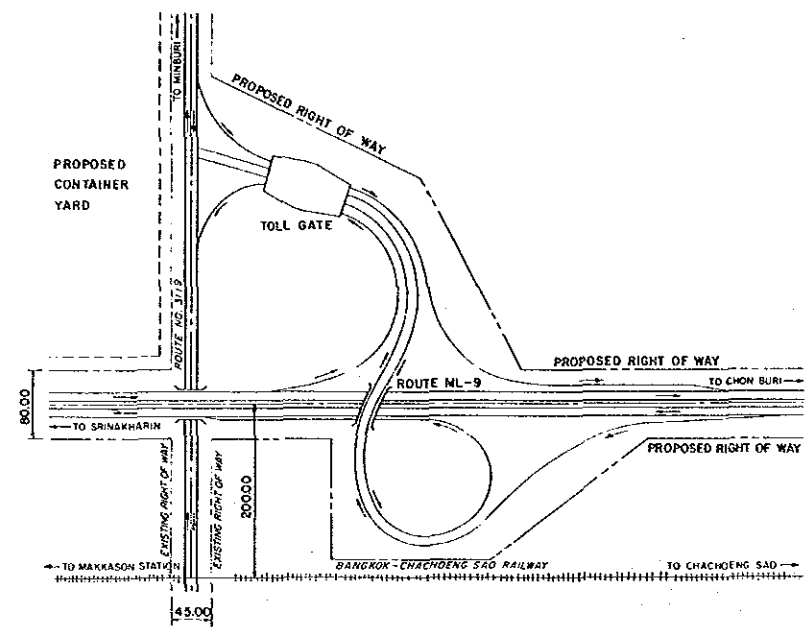
SECTION B-B  
 SCALE 1 : 500



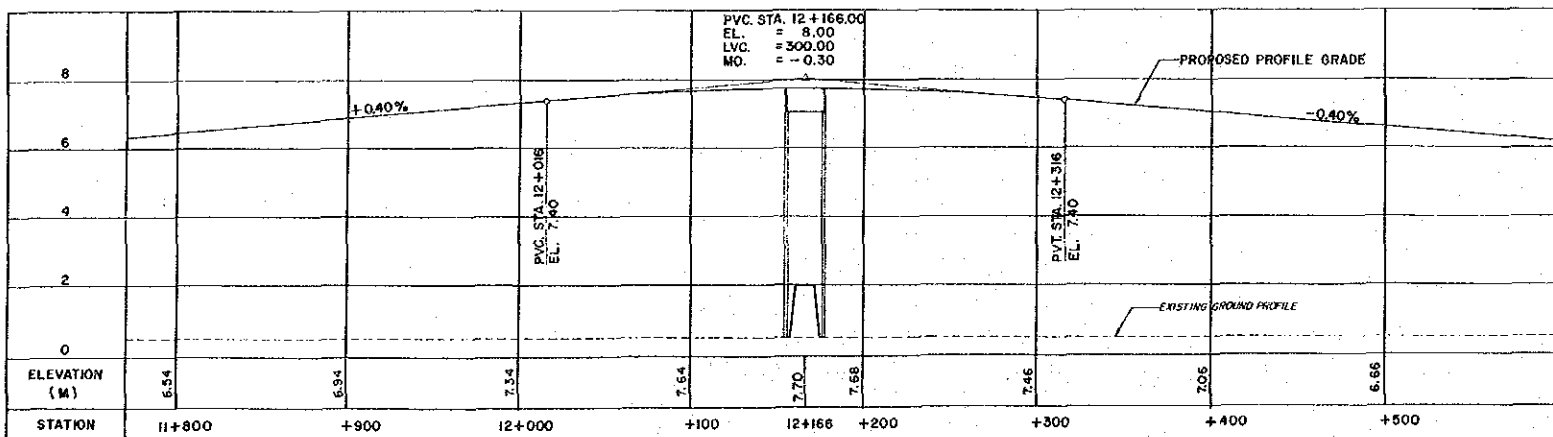
SECTION C-C  
 SCALE 1 : 500



LAYOUT OF INTERSECTION STAGE I  
 SCALE 1 : 2,000

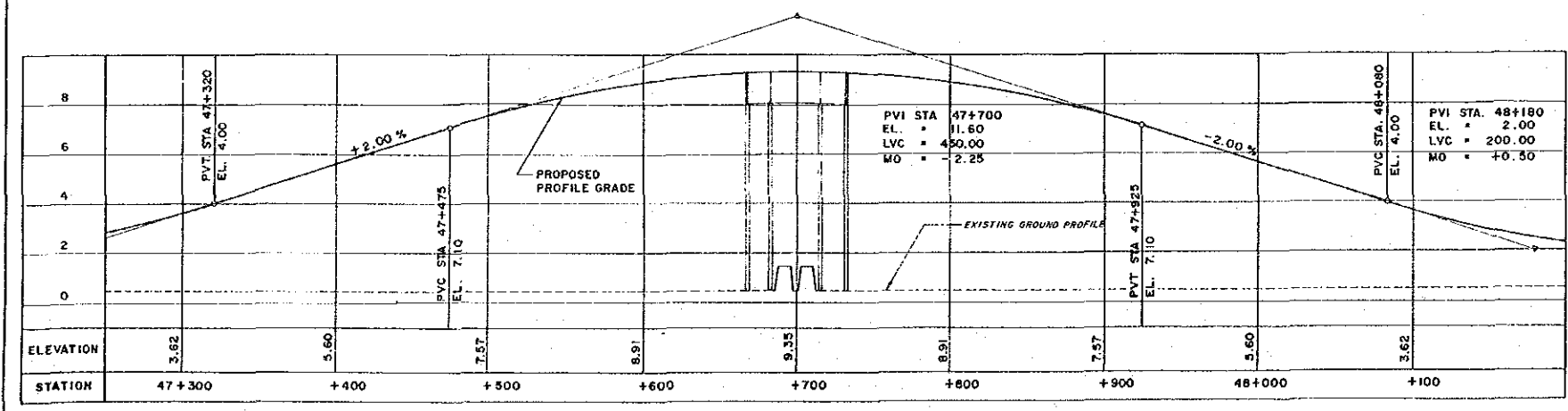
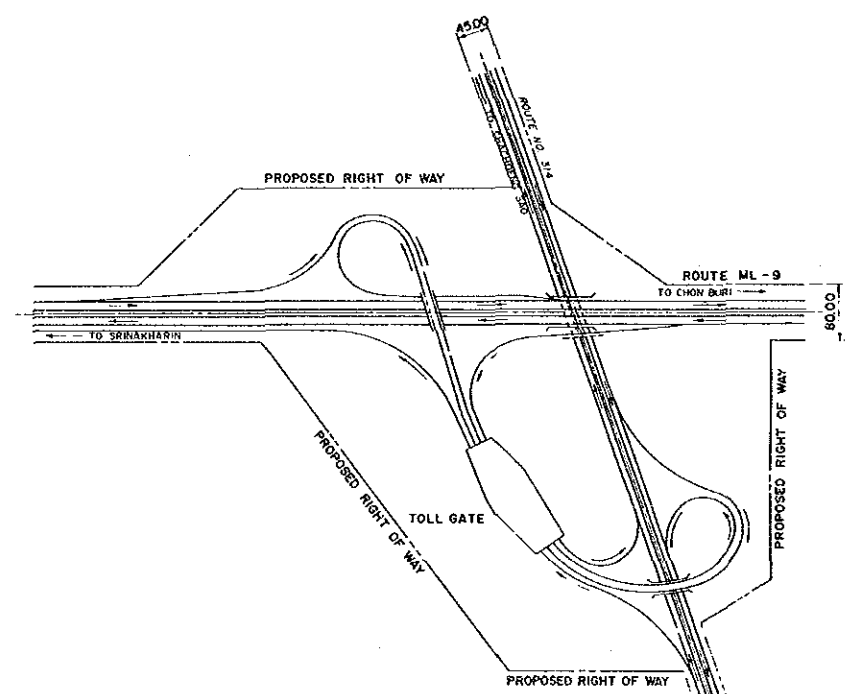
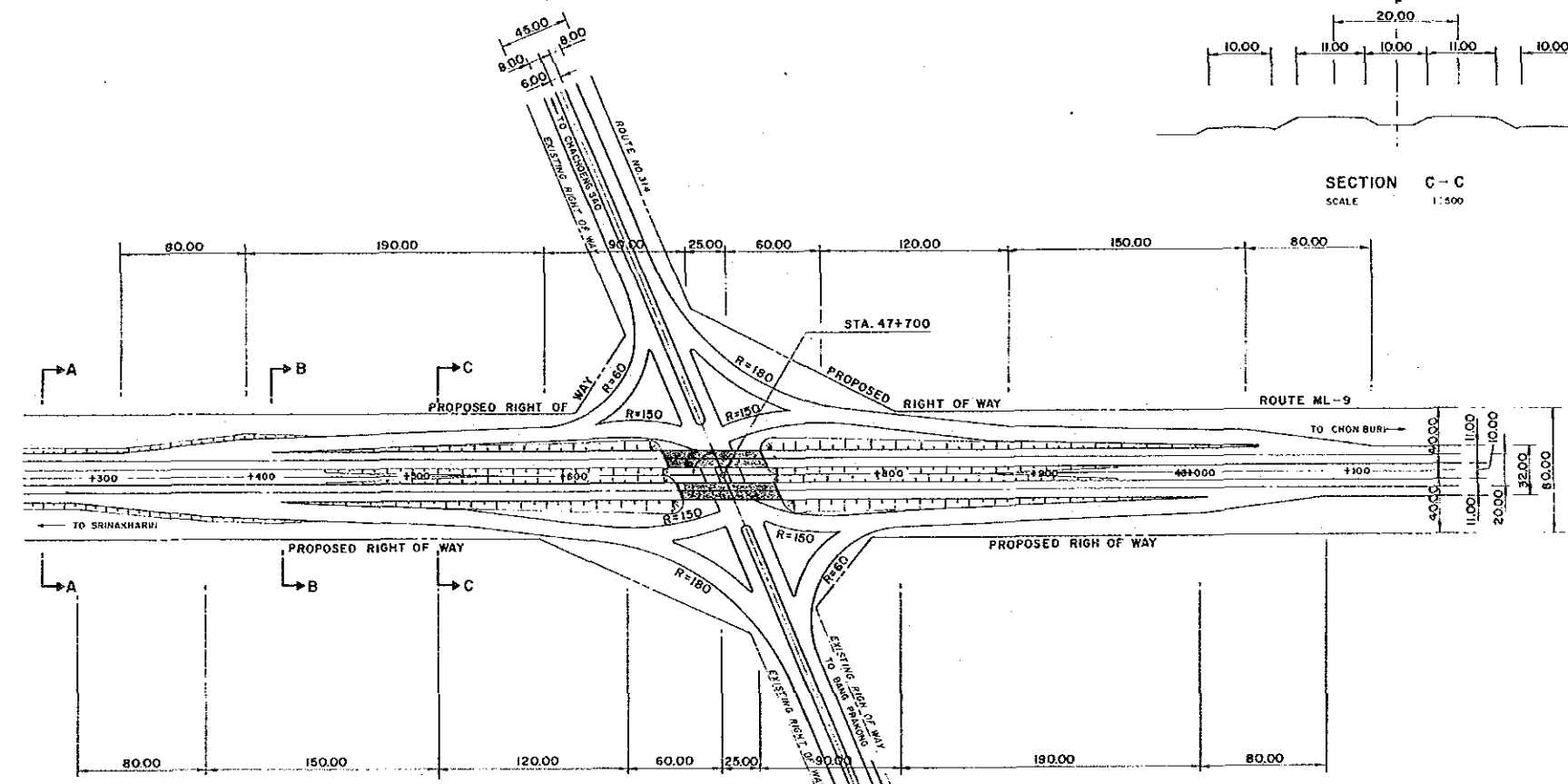
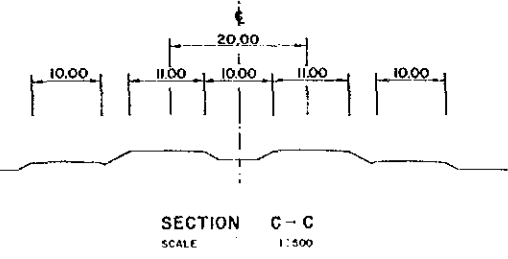
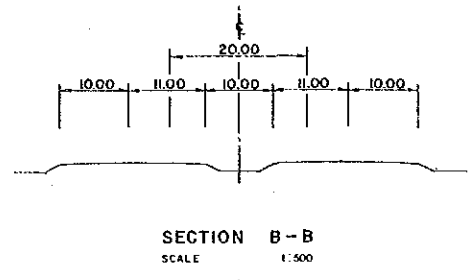
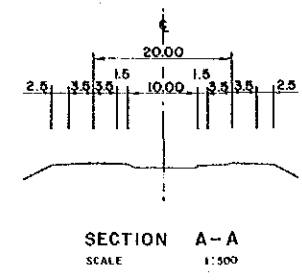


LAYOUT OF INTERSECTION STAGE II  
 SCALE 1 : 4,000



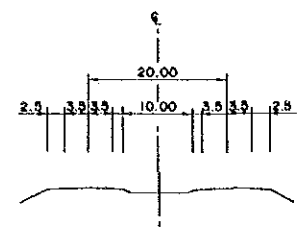
PROFILE OF MAIN RAMP  
 SCALE HORIZ 1 : 2,000, VERT 1 : 100



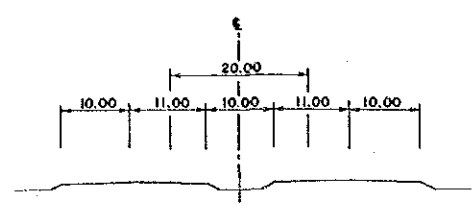


PVI STA. 47+700  
 EL. = 11.60  
 LVC = 450.00  
 MO = -2.25

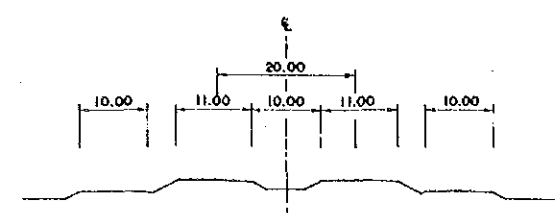
PVI STA. 48+180  
 EL. = 2.00  
 LVC = 200.00  
 MO = +0.50



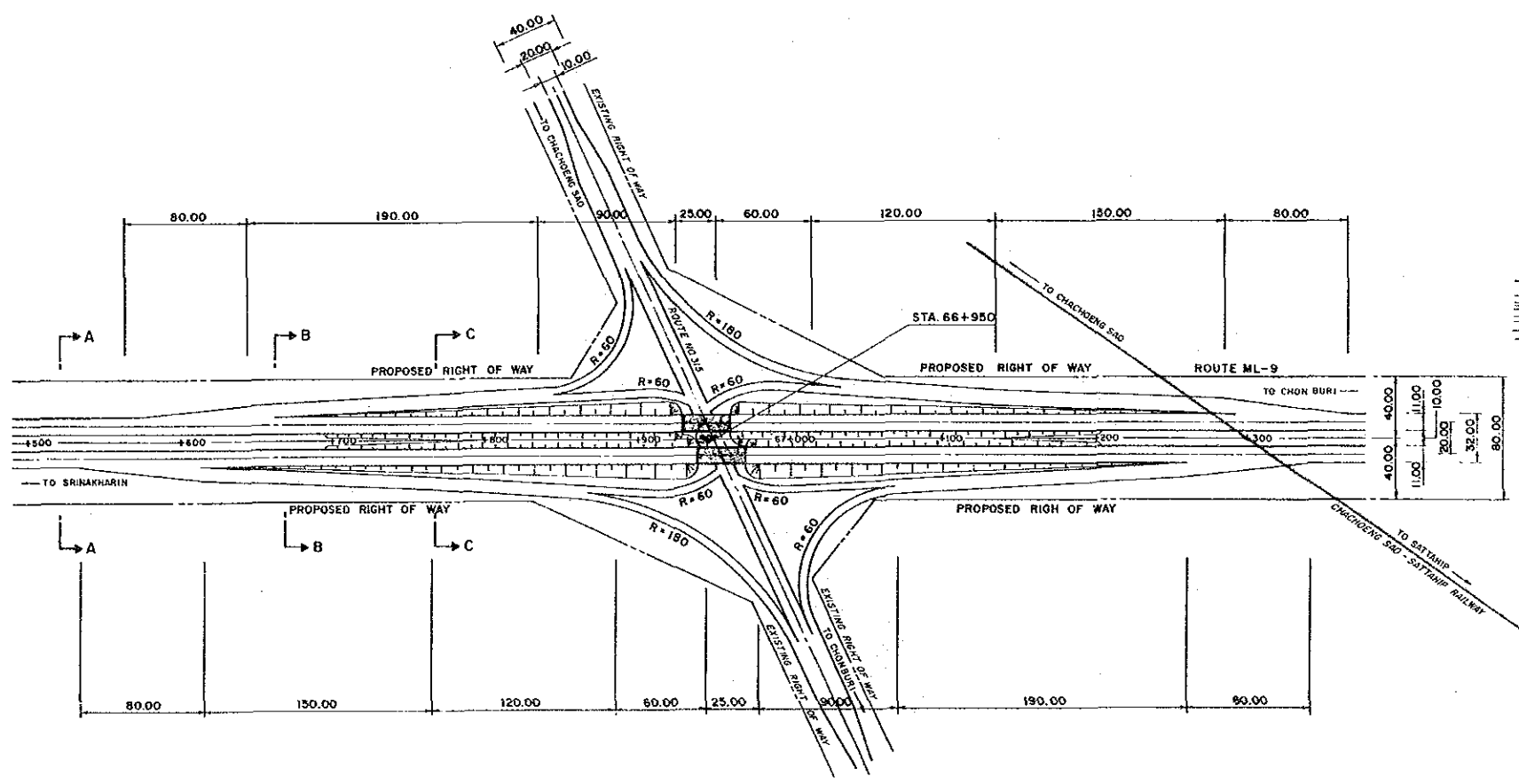
SECTION A-A  
 SCALE 1:500



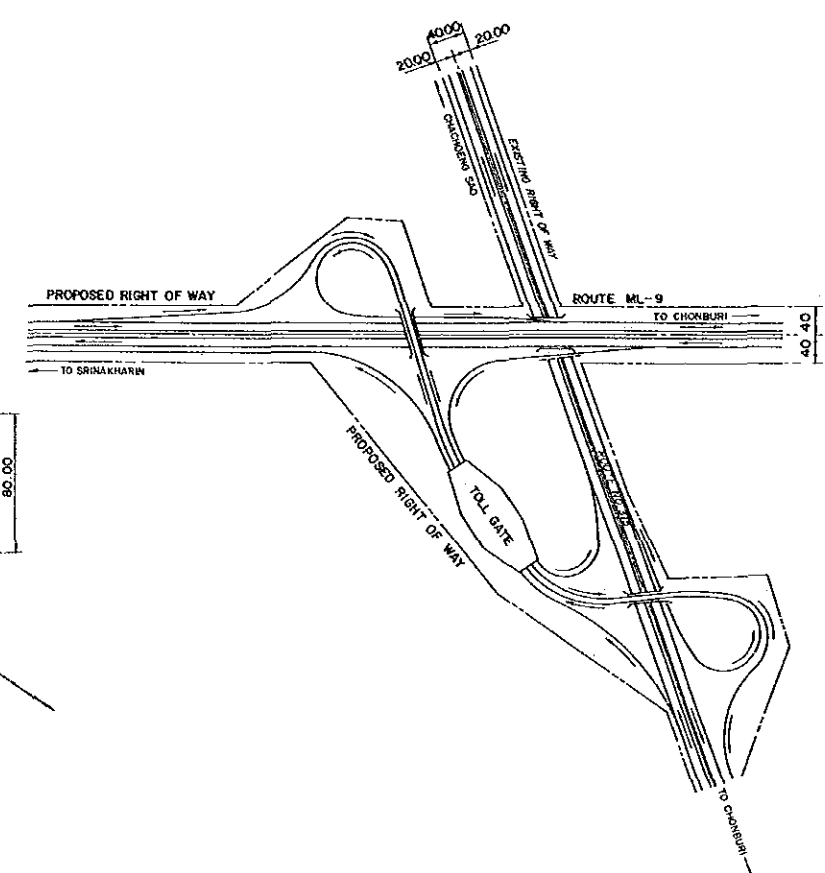
SECTION B-B  
 SCALE 1:500



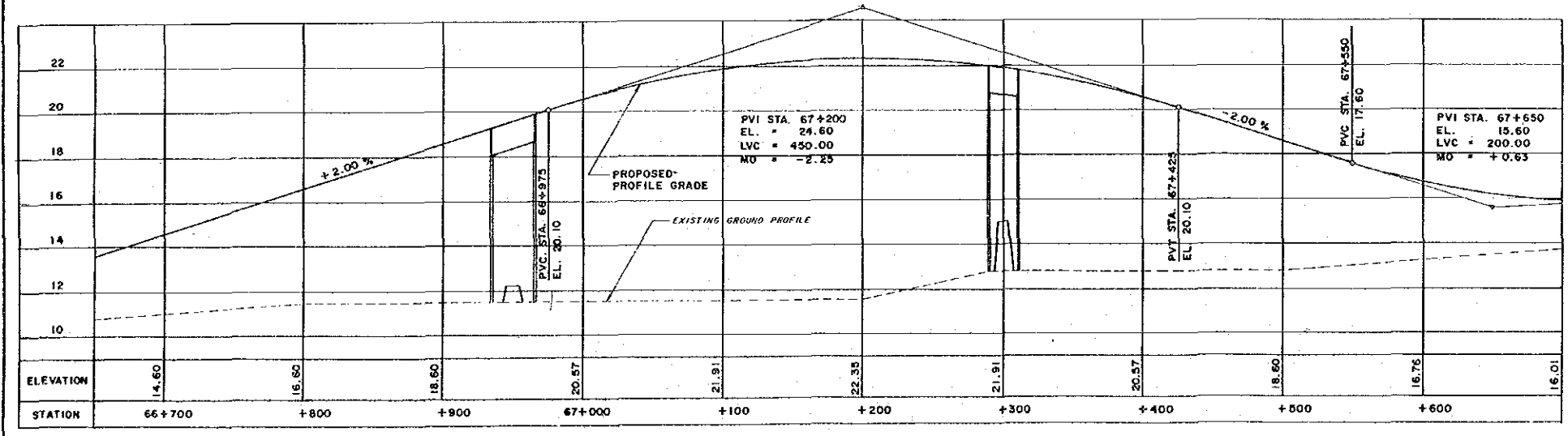
SECTION C-C  
 SCALE 1:500



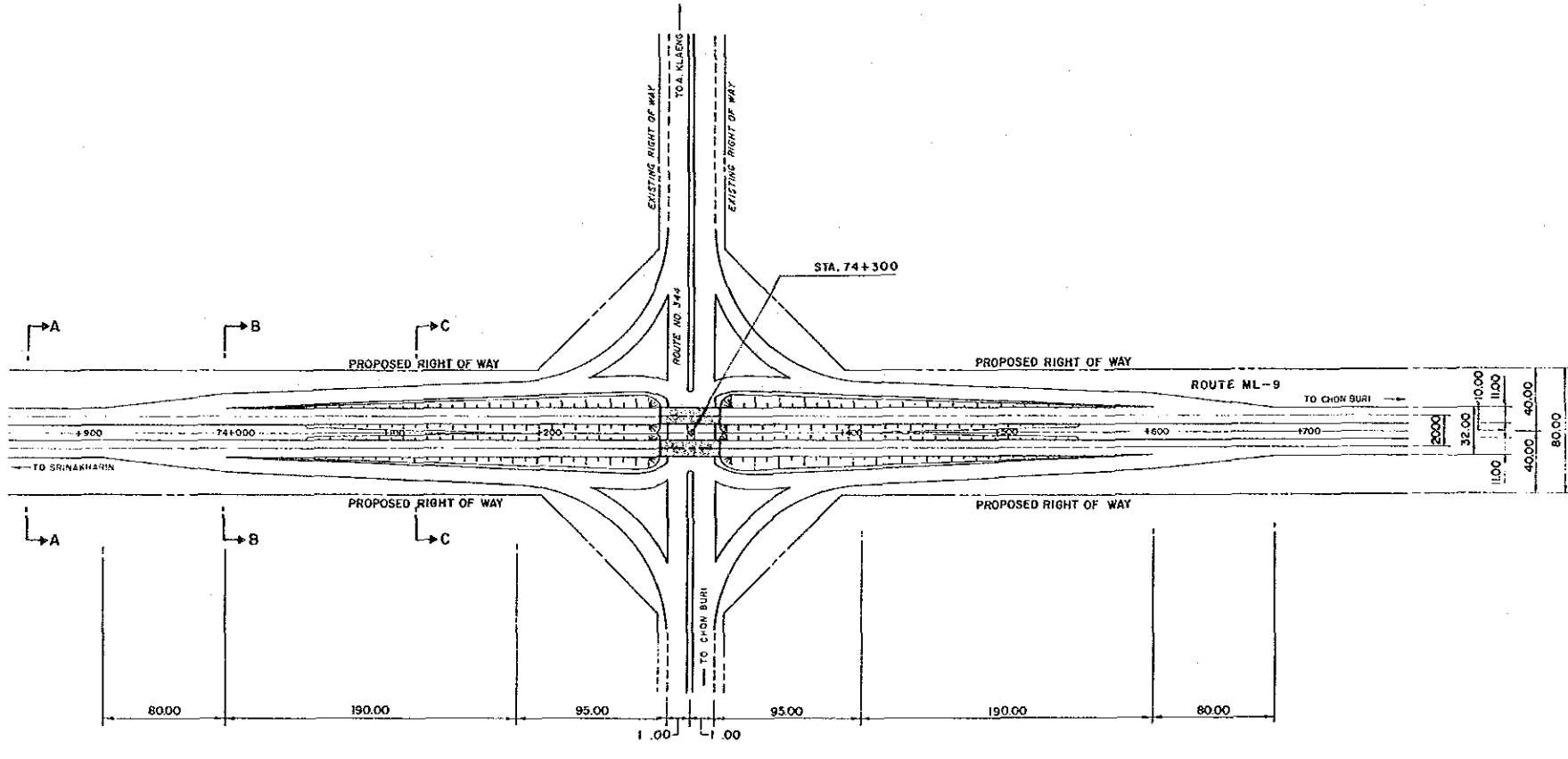
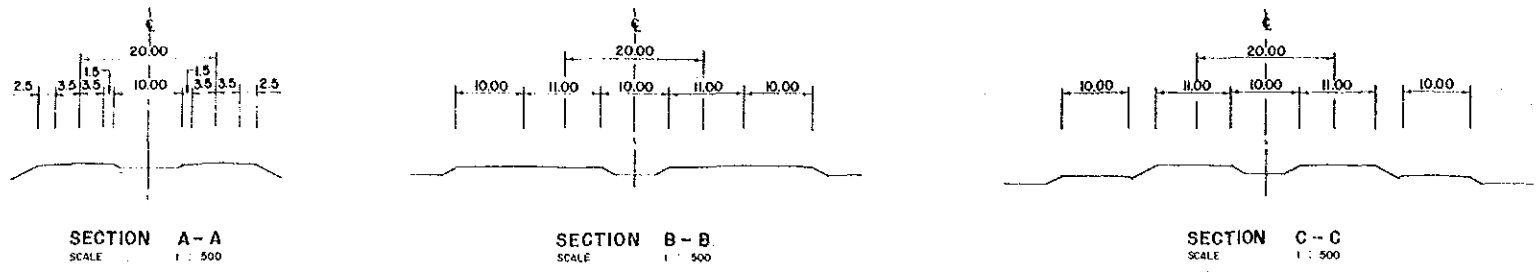
LAYOUT OF INTERSECTION STAGE I  
 SCALE 1:2,000



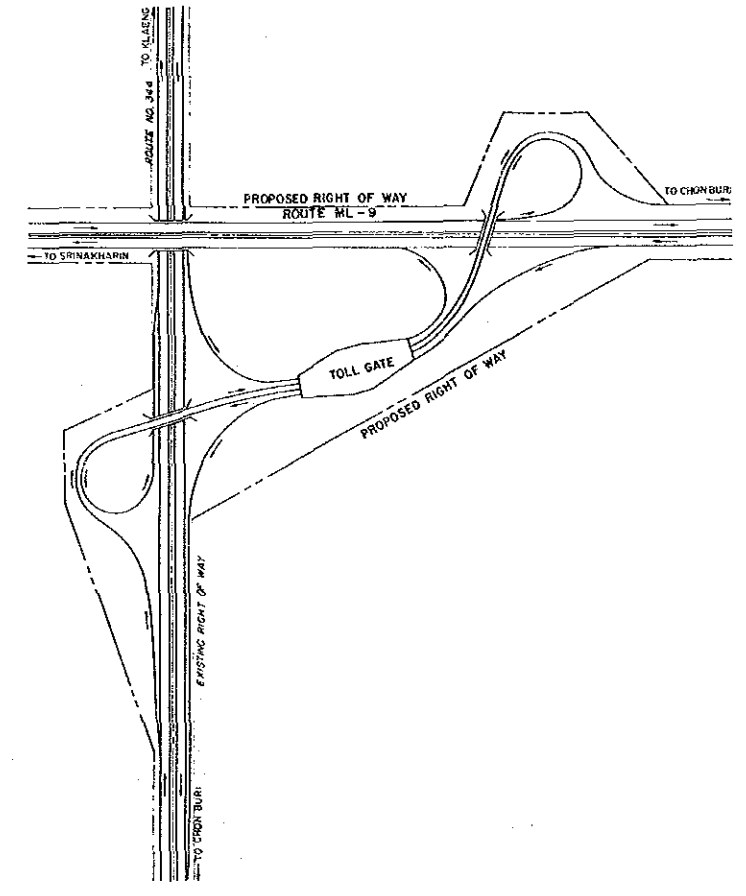
LAYOUT OF INTERSECTION STAGE II  
 SCALE 1:5,000



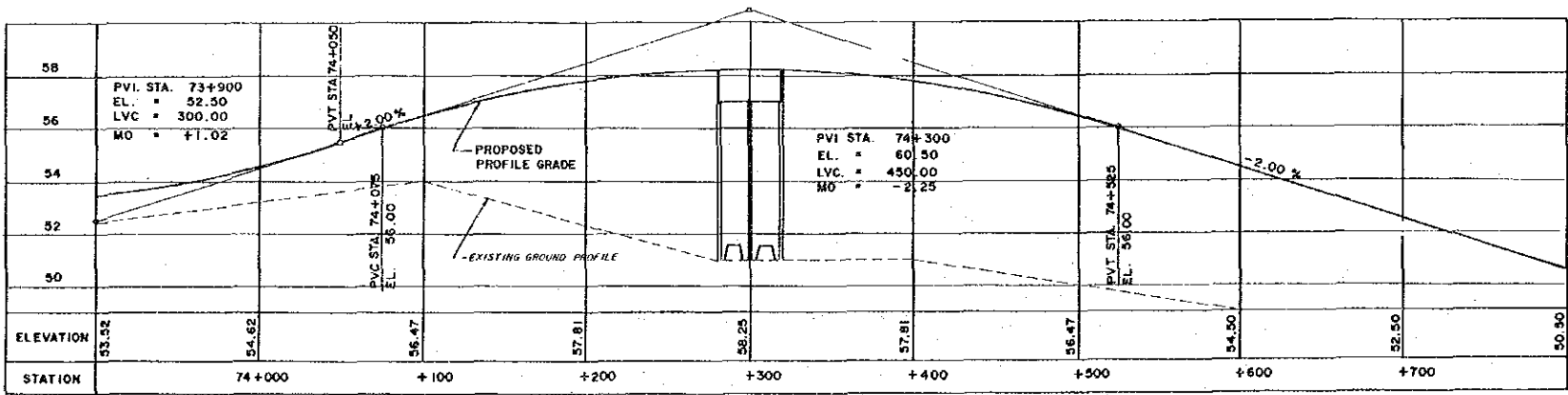
PROFILE OF MAIN RAMP  
 SCALE HORIZ 1:2,000, VERT 1:125



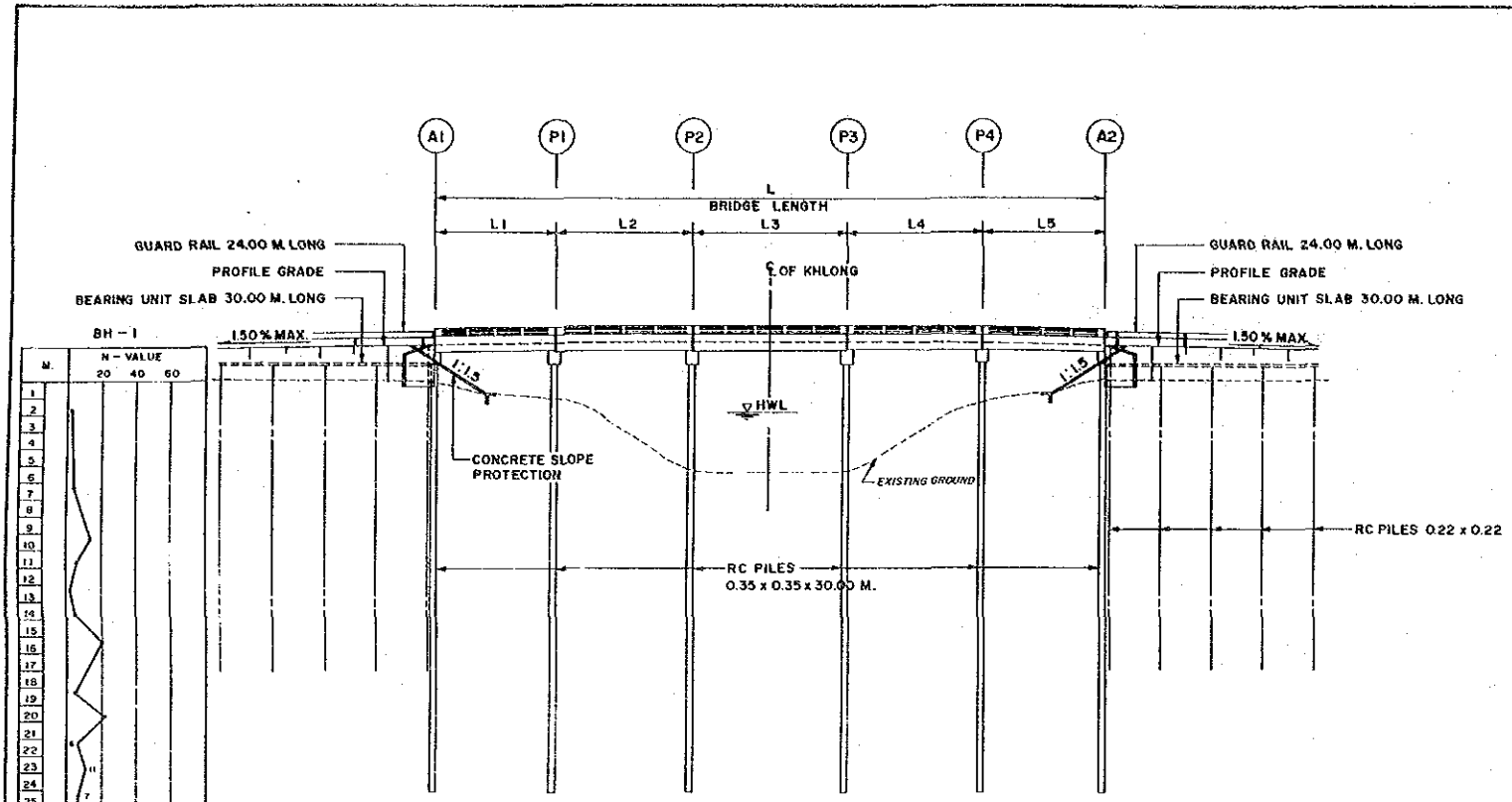
LAYOUT OF INTERSECTION STAGE I  
 SCALE 1:2,000



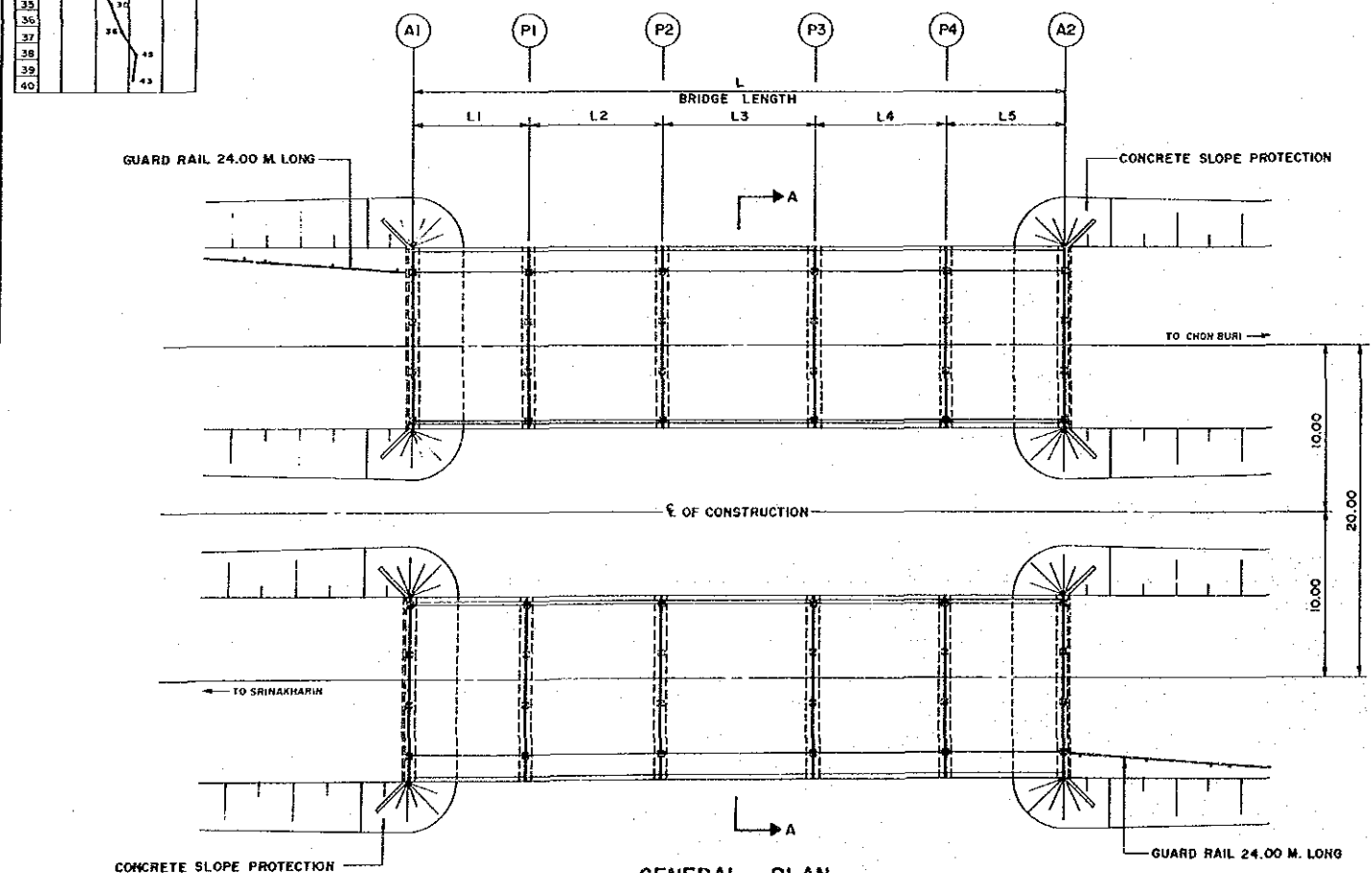
LAYOUT OF INTERSECTION STAGE II  
 SCALE 1:5,000



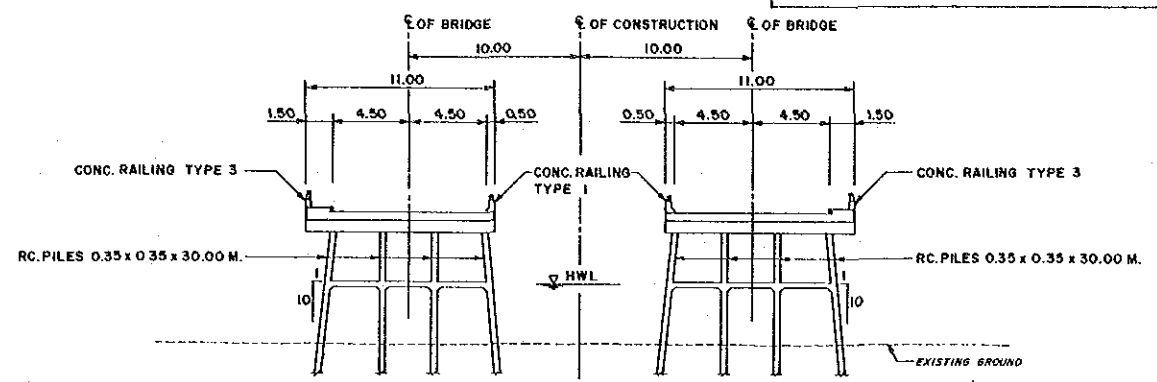
PROFILE OF MAIN RAMP  
 SCALE HORIZ 1:2,000, VERT 1:125



GENERAL ELEVATION  
SCALE 1 : 200



GENERAL PLAN  
SCALE 1 : 200



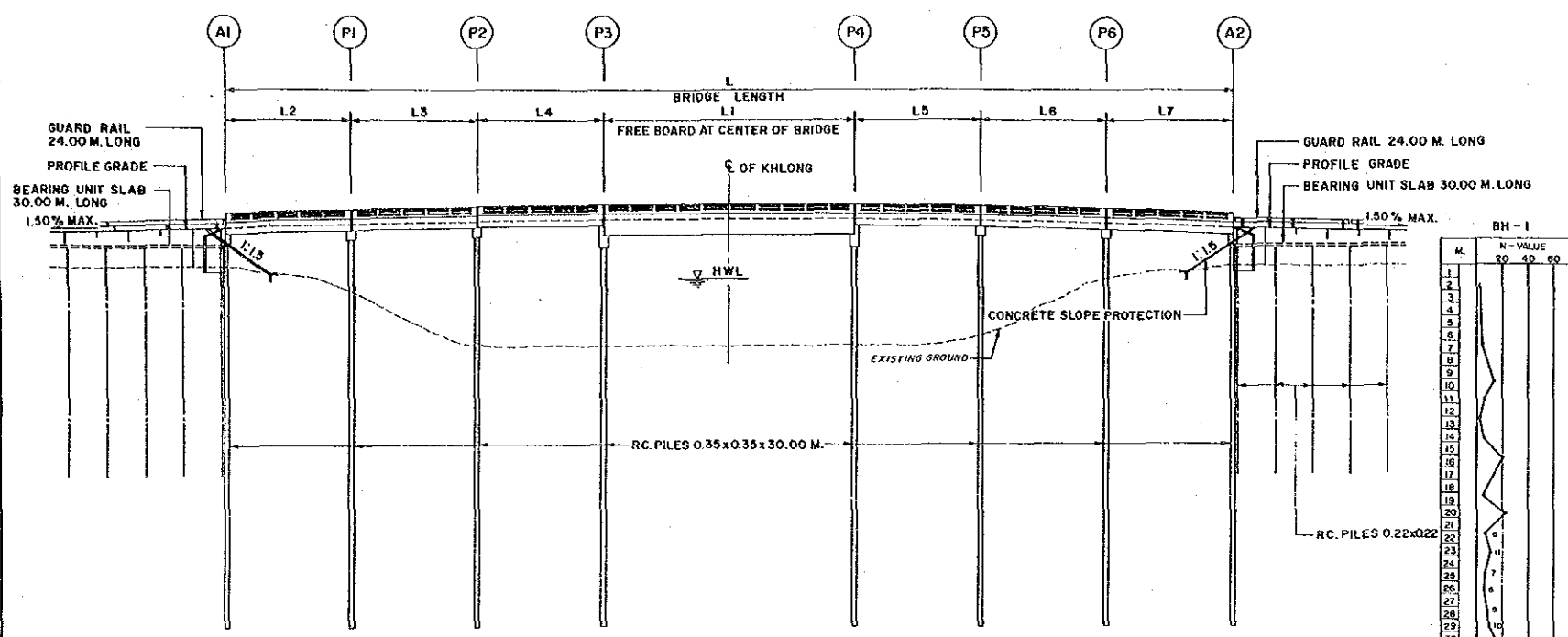
SECTION A-A  
SCALE 1 : 200

TABLE OF SUPERSTRUCTURE

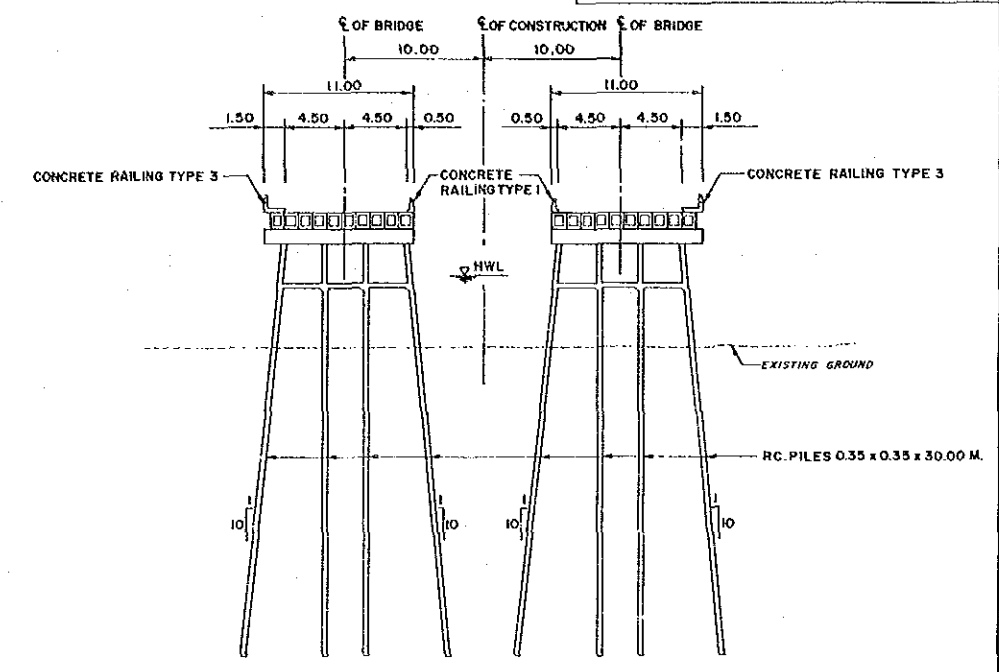
STA. NO.	BRIDGE LENGTH	NUMBER OF SPAN	SPAN LENGTH					THICKNESS					TYPE	ELEV.	HWL.
			L1	L2	L3	L4	L5	L1	L2	L3	L4	L5			
1 + 116	12.00	2	6.00	6.00	-	-	-	0.36	0.36	-	-	-	RC SLAB	2.50	0.29
2 + 626	10.00	1	10.00	-	-	-	-	0.53	-	-	-	-	RC SLAB	2.50	0.29
3 + 325	12.00	2	6.00	6.00	-	-	-	0.36	0.36	-	-	-	RC SLAB	2.50	0.29
4 + 358	12.00	2	6.00	6.00	-	-	-	0.36	0.36	-	-	-	RC SLAB	2.50	0.29
5 + 768	10.00	1	10.00	-	-	-	-	0.53	-	-	-	-	RC SLAB	2.50	0.29
6 + 606	26.00	3	8.00	10.00	8.00	-	-	0.43	0.53	0.43	-	-	RC SLAB	2.50	0.29
8 + 013	13.00	2	6.00	7.00	-	-	-	0.36	0.39	-	-	-	RC SLAB	2.50	0.29
9 + 710	21.00	3	7.00	7.00	7.00	-	-	0.39	0.39	0.39	-	-	RC SLAB	4.59	0.29
11 + 353	18.00	2	9.00	9.00	-	-	-	0.47	0.47	-	-	-	RC SLAB	4.74	0.29
12 + 985	12.00	2	6.00	6.00	-	-	-	0.36	0.36	-	-	-	RC SLAB	4.71	0.29
14 + 634	12.00	2	6.00	6.00	-	-	-	0.36	0.36	-	-	-	RC SLAB	4.69	0.71
21 + 500	40.00	5	8.00	8.00	8.00	8.00	8.00	0.43	0.43	0.43	0.43	0.43	RC SLAB	4.78	-
24 + 400	39.00	5	7.00	8.00	9.00	8.00	7.00	0.39	0.43	0.47	0.43	0.39	RC SLAB	2.61	-
27 + 800	24.00	3	8.00	8.00	8.00	-	-	0.43	0.43	0.43	-	-	RC SLAB	4.50	-
33 + 850	40.00	5	8.00	8.00	8.00	8.00	8.00	0.43	0.43	0.43	0.43	0.43	RC SLAB	4.50	-
34 + 650	12.00	2	6.00	6.00	-	-	-	0.36	0.36	-	-	-	RC SLAB	3.20	-
35 + 300	35.00	7	7.00	7.00	7.00	7.00	7.00	0.39	0.39	0.39	0.39	0.39	RC SLAB	5.00	-
37 + 300	33.00	4	8.00	8.00	9.00	8.00	-	0.43	0.43	0.47	0.43	-	RC SLAB	5.30	-
39 + 350	32.00	4	8.00	8.00	8.00	8.00	-	0.43	0.43	0.43	0.43	-	RC SLAB	5.50	-
41 + 900	18.00	2	9.00	9.00	-	-	-	0.47	0.47	-	-	-	RC SLAB	3.38	-
45 + 350	19.00	3	6.00	7.00	6.00	-	-	0.36	0.39	0.36	-	-	RC SLAB	3.64	-
45 + 600	31.00	5	6.00	6.00	7.00	6.00	6.00	0.36	0.36	0.39	0.36	0.36	RC SLAB	3.64	-
51 + 550	7.00	1	7.00	-	-	-	-	0.39	-	-	-	-	RC SLAB	3.11	-
51 + 800	10.00	1	10.00	-	-	-	-	0.53	-	-	-	-	RC SLAB	3.19	-
54 + 600	8.00	1	8.00	-	-	-	-	0.43	-	-	-	-	RC SLAB	4.45	-
54 + 900	10.00	1	10.00	-	-	-	-	0.53	-	-	-	-	RC SLAB	4.45	-
55 + 700	14.00	2	7.00	7.00	-	-	-	0.39	0.39	-	-	-	RC SLAB	4.75	-
57 + 200	6.00	1	6.00	-	-	-	-	0.43	-	-	-	-	RC SLAB	4.75	-
58 + 200	8.00	1	8.00	-	-	-	-	0.43	-	-	-	-	RC SLAB	4.00	-
60 + 800	40.00	5	8.00	8.00	8.00	8.00	8.00	0.43	0.43	0.43	0.43	0.43	RC SLAB	5.69	-

TABLE OF QUANTITY ( PER I.E.A. )

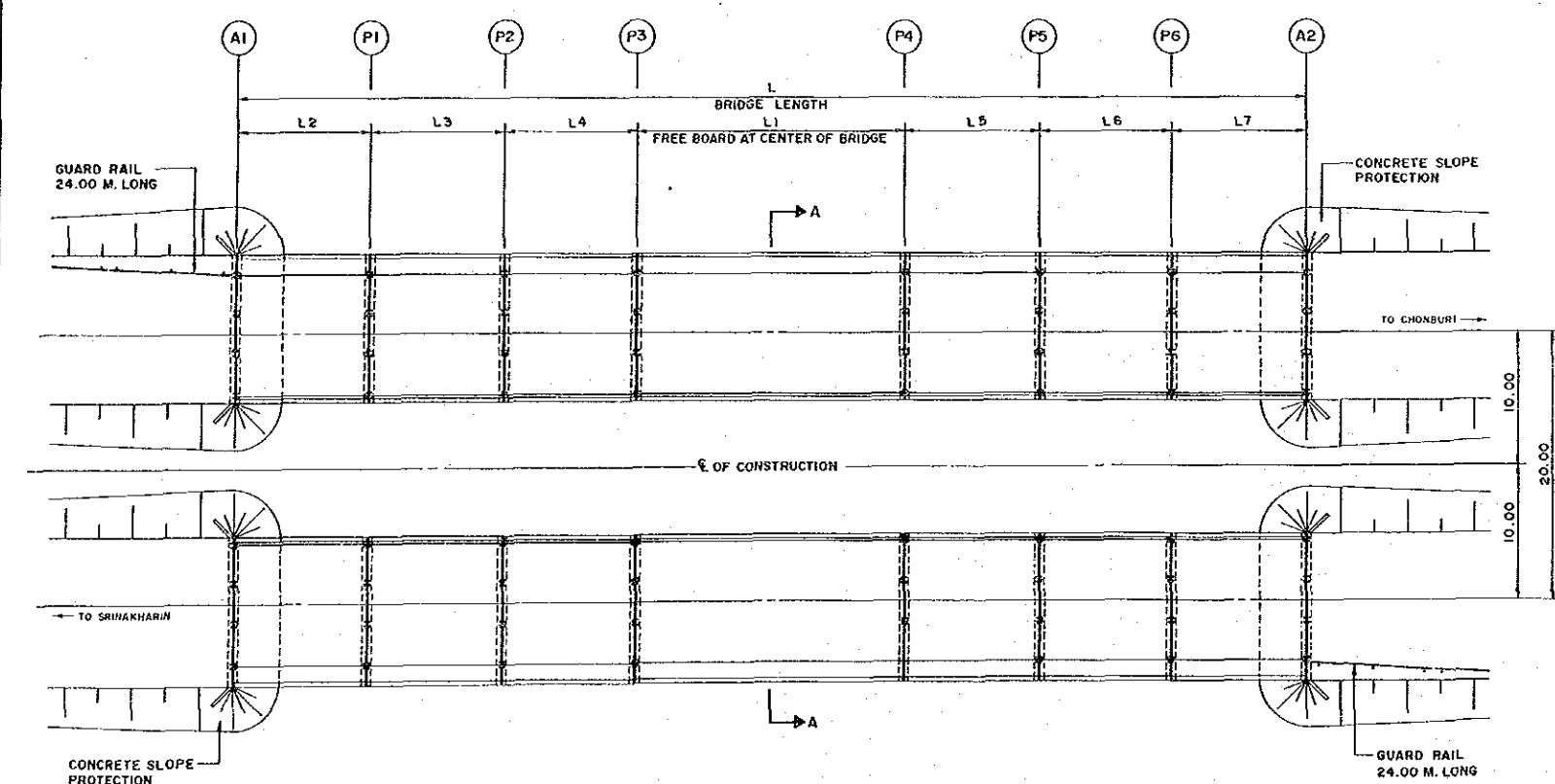
STA. NO.	CONCRETE B (1/2) (M <sup>3</sup> )			STEEL REINF. (T.)	RC. PILE (LM)		CONC. RAILING (LM)		CONC. SLOPE PROTECTION (M <sup>2</sup> )	STEEL GUARD RAIL (LM)
	BRIDGE DECK	PIER & ABUT.	BEARING UNIT		0.22x0.22	0.35x0.35	TYPE-1	TYPE-3		
1 + 116	44	45	83	14	1,656	360	12	12	110	24
2 + 626	53	40	83	14	1,656	240	10	10	110	24
3 + 325	44	45	83	14	1,656	360	12	12	110	24
4 + 358	44	45	83	14	1,656	360	12	12	110	24
5 + 768	53	40	83	14	1,656	240	10	10	110	24
6 + 606	122	51	83	21	1,656	480	26	26	110	24
8 + 013	49	45	83	14	1,656	360	13	13	110	24
9 + 710	82	63	83	18	1,656	480	21	21	220	24
11 + 353	85	56	83	18	1,656	360	18	18	220	24
12 + 985	44	56	83	15	1,656	360	12	12	220	24
14 + 634	44	56	83	15	1,656	360	12	12	220	24
21 + 500	172	78	83	27	1,656	720	40	40	220	24
24 + 400	166	61	83	25	1,656	720	39	39	110	24
27 + 800	104	63	83	20	1,656	480	24	24	220	24
33 + 850	172	85	83	27	1,656	720	40	40	230	24
34 + 650	44	45	83	14	1,656	360	12	12	110	24
35 + 300	137	85	83	24	1,656	720	35	35	250	24
37 + 300	146	71	83	24	1,656	600	33	33	220	24
39 + 350	138	71	83	23	1,656	600	32	32	220	24
41 + 900	85	45	83	17	1,656	360	18	18	110	24
45 + 350	71	50	83	16	1,656	480	19	19	110	24
45 + 600	114	61	83	21	1,656	720	31	31	110	24
51 + 550	28	40	83	12	1,656	240	7	7	60	24
51 + 800	53	40	83	14	1,656	240	10	10	60	24
54 + 600	35	40	83	13	1,656	240	8	8	110	24
54 + 900	53	40	83	14	1,656	240	10	10	110	24
55 + 700	55	45	83	15	1,656	360	14	14	110	24
57 + 200	35	40	83	13	1,656	240	8	8	110	24
58 + 200	35	40	83	13	1,656	240	8	8	60	24
60 + 800	172	78	83	27	1,656	720	40	40	250	24
<b>TOTAL</b>	<b>2,479</b>	<b>1,620</b>	<b>2,450</b>	<b>630</b>	<b>49,680</b>	<b>12,960</b>	<b>586</b>	<b>588</b>	<b>4,450</b>	<b>720</b>



GENERAL ELEVATION  
 SCALE 1 : 250



SECTION A - A  
 SCALE 1 : 250

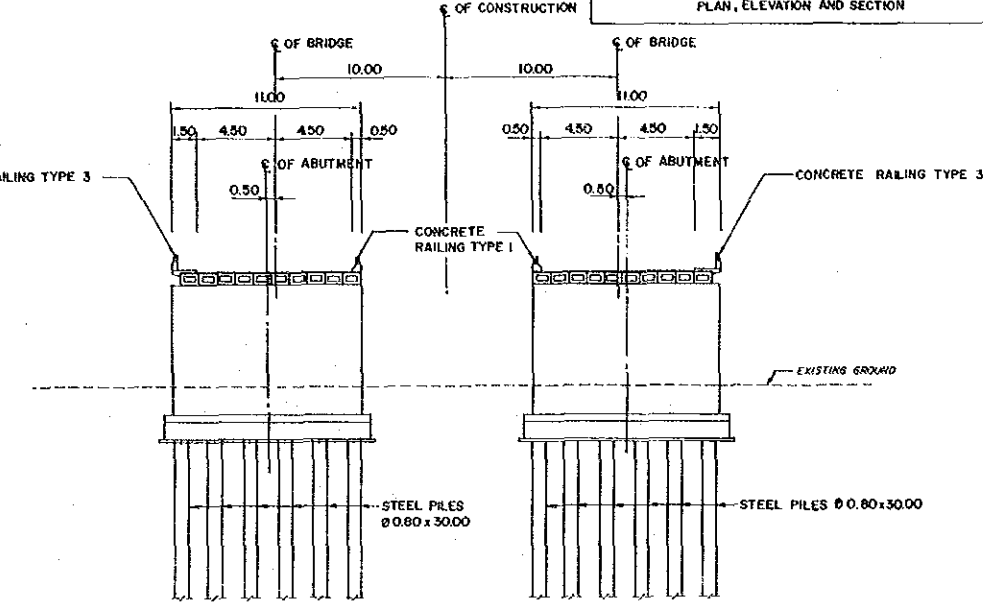
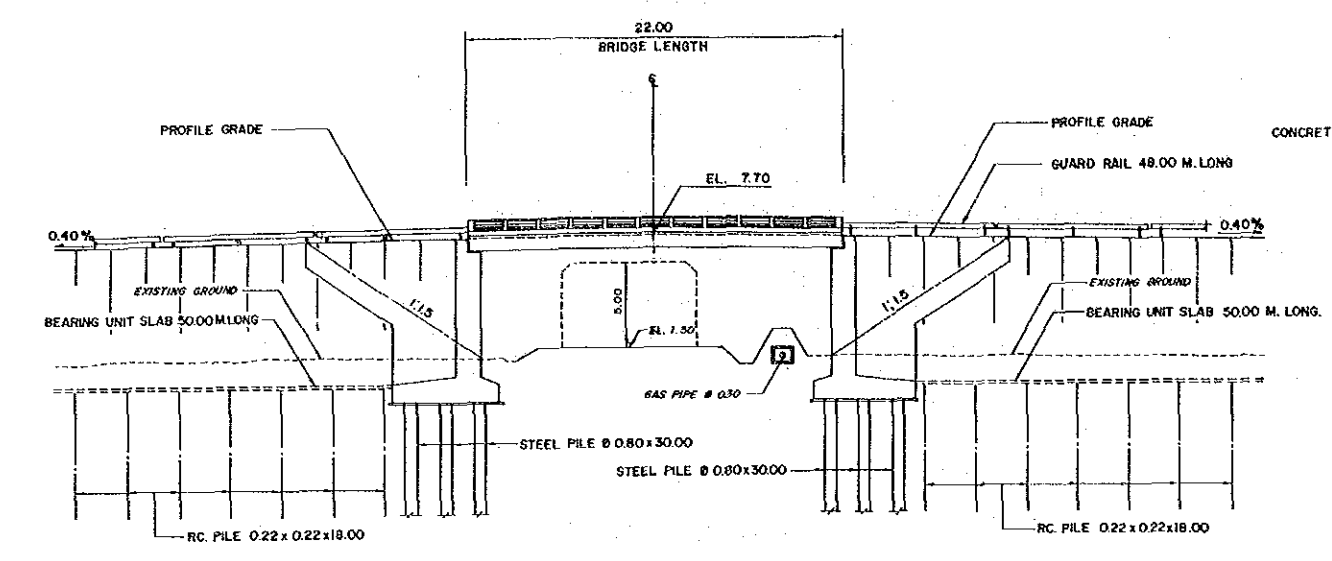


GENERAL PLAN  
 SCALE 1 : 250

TABLE OF SUPERSTRUCTURE

STA. NO.	BRIDGE LENGTH	NUMBER OF SPAN	SPAN LENGTH							THICKNESS							ELEV.	HWL.
			L1 PC BOX	L2 RC SLAB	L3 RC SLAB	L4 RC SLAB	L5 RC SLAB	L6 RC SLAB	L7 RC SLAB	L1 PC BOX	L2 RC SLAB	L3 RC SLAB	L4 RC SLAB	L5 RC SLAB	L6 RC SLAB	L7 RC SLAB		
17+300	52.00	5	20.00	8.00	-	8.00	8.00	-	8.00	1.20	0.43	-	0.43	0.43	-	0.43	5.59	1.30
24+950	55.00	5	20.00	7.00	-	10.00	10.00	-	8.00	1.20	0.39	-	0.53	0.53	-	0.43	4.61	-
29+600	80.00	7	20.00	10.00	10.00	10.00	10.00	10.00	10.00	1.20	0.53	0.53	0.53	0.53	0.53	0.53	5.60	0.88
32+850	42.00	5	20.00	5.00	-	6.00	6.00	-	5.00	1.20	0.32	-	0.36	0.36	-	0.32	6.30	1.55

ITEM	UNIT	QUANTITY (PER I.E.A.)				TOTAL
		STA. 17+300	STA. 24+950	STA. 29+600	STA. 32+850	
1. CONCRETE						
CLASS SPECIAL (A) PC BOX GIRDER	M <sup>3</sup>	122	122	122	122	488
CLASS B(1/2) FOR BRIDGE DECK	M <sup>3</sup>	148	178	328	86	740
CLASS B(1/2) FOR PILE BENT PIER & ABUTMENT	M <sup>3</sup>	89	89	115	98	391
CLASS SPECIAL B(1/2) FOR BEARING UNIT SLAB	M <sup>3</sup>	83	83	83	83	332
2. STEEL REINFORCEMENT	T	60	64	88	53	265
3. RC. PILE 0.22 x 0.22 M.	LH	1,656	1,656	1,656	1,656	6,624
4. RC. PILE 0.35 x 0.35 M.	LM	720	720	960	720	3,120
5. CONCRETE RAILING TYPE 1	LM	52	55	80	42	229
CONCRETE RAILING TYPE 3	LM	52	55	80	42	229
6. CONCRETE SLOPE PROTECTION	M <sup>2</sup>	445	335	445	445	1,670
7. STEEL GUARD RAIL	LM	24	24	24	24	96



BH-1  
 N-VALUE

M.	20	40	60	80
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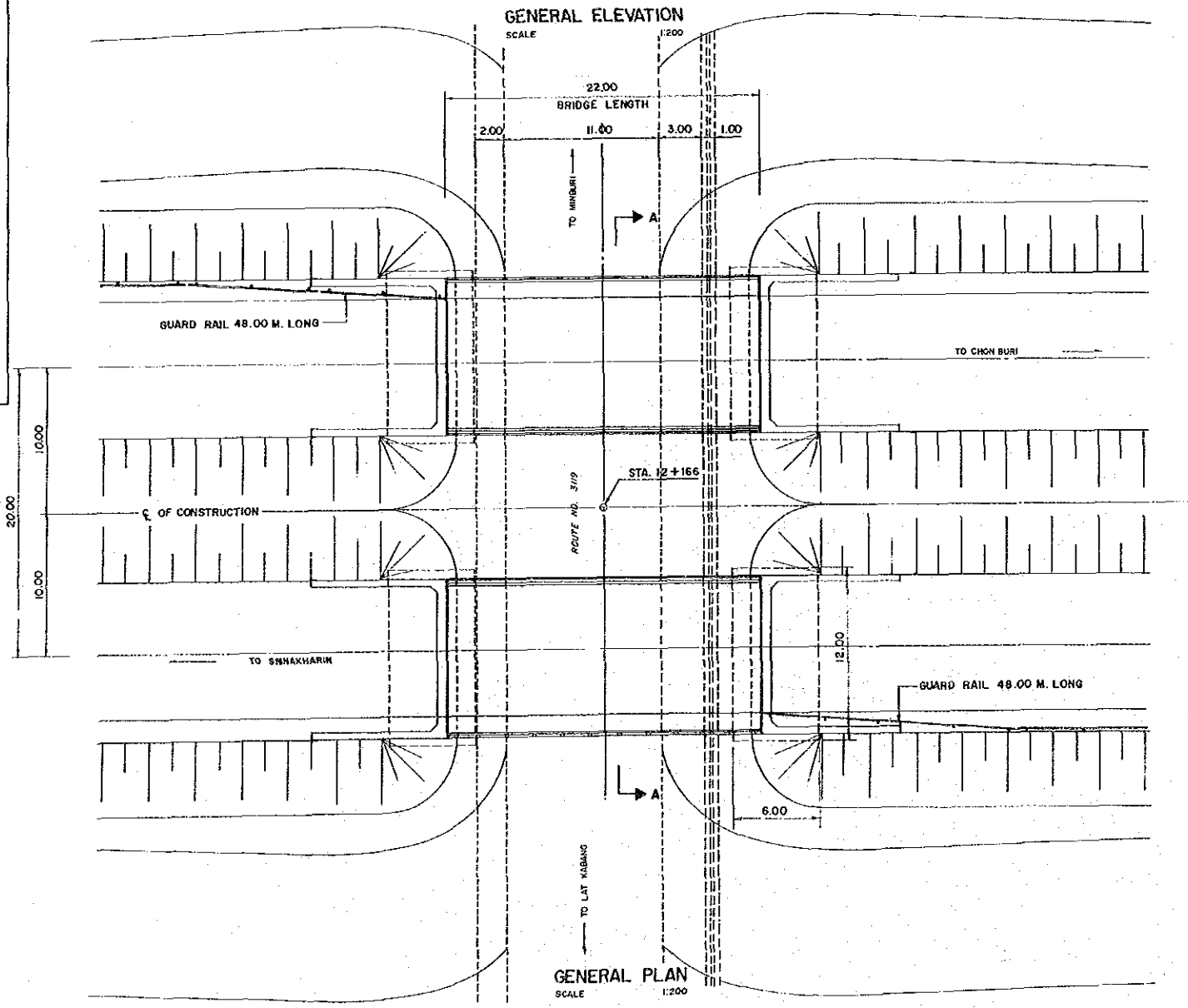


TABLE OF SUPERSTRUCTURE

STA. NO.	BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION	H.W.L.
12+166	22	1	@ 22.00-22 PC. BOX GIRDER	1.20	7.70	-

ITEM	UNIT	QUANTITY (PER I EA)
1. CONCRETE		
CLASS SPECIAL (A) FOR PC. BOX GIRDER	M <sup>3</sup>	211
CLASS B(1/2) FOR PILE BENT PIER & ABUTMENT	M <sup>3</sup>	400
CLASS SPECIAL B(1/2) FOR BEARING UNIT SLAB	M <sup>3</sup>	276
2. STEEL REINFORCEMENT	T	120
3. RC. PILE 0.22x0.22 M.	LM	3,328
4. STEEL PILE 0.80 M.	LM	1,080
5. CONCRETE RAILING TYPE-1	LM	22
CONCRETE RAILING TYPE-3	LM	22
6. CONCRETE SLOPE PROTECTION	M <sup>2</sup>	430
7. STEEL GUARD RAIL	LM	48

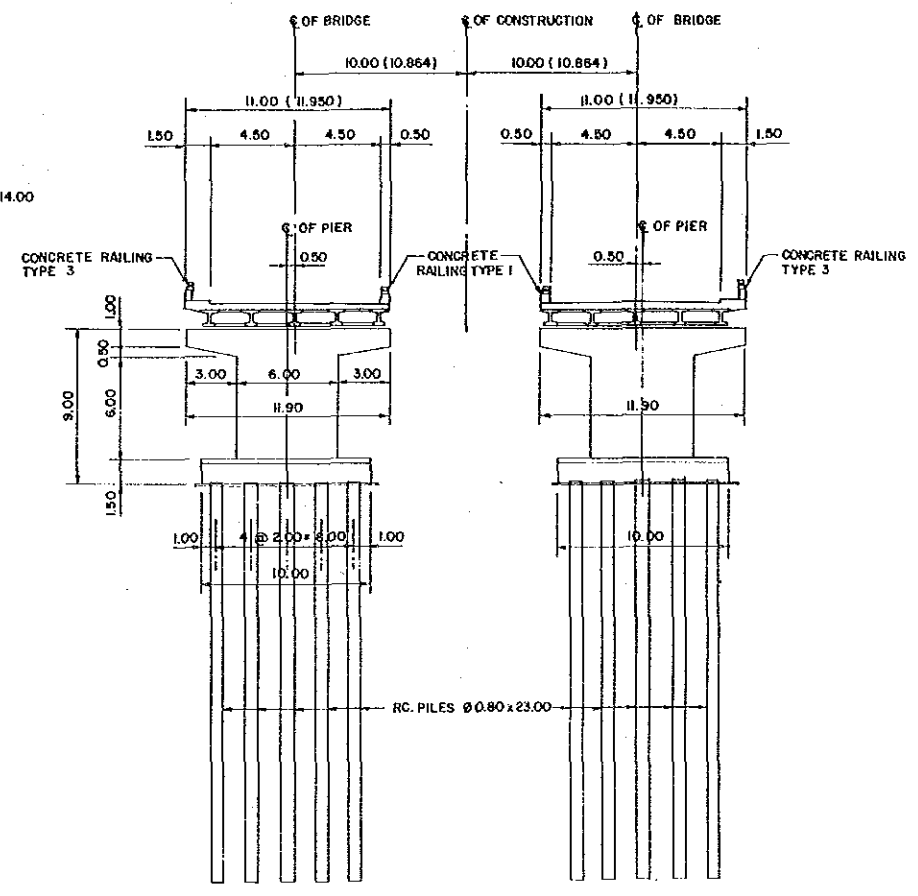
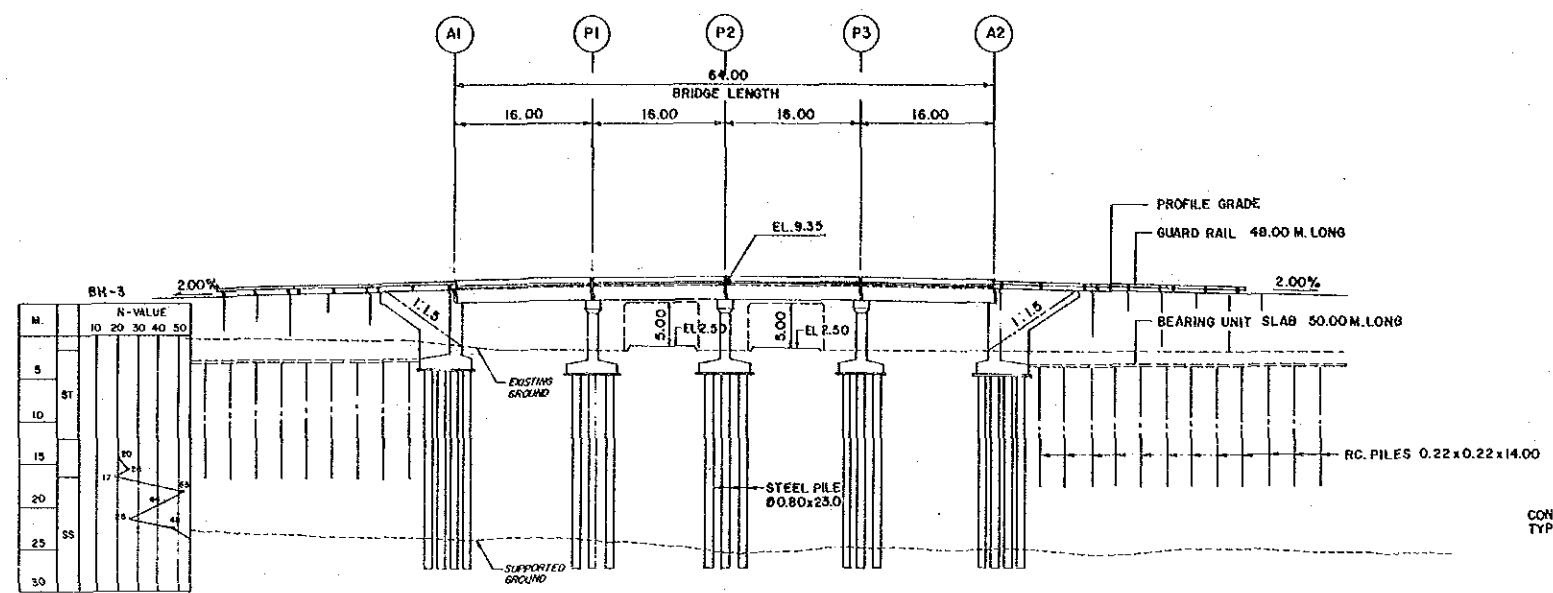
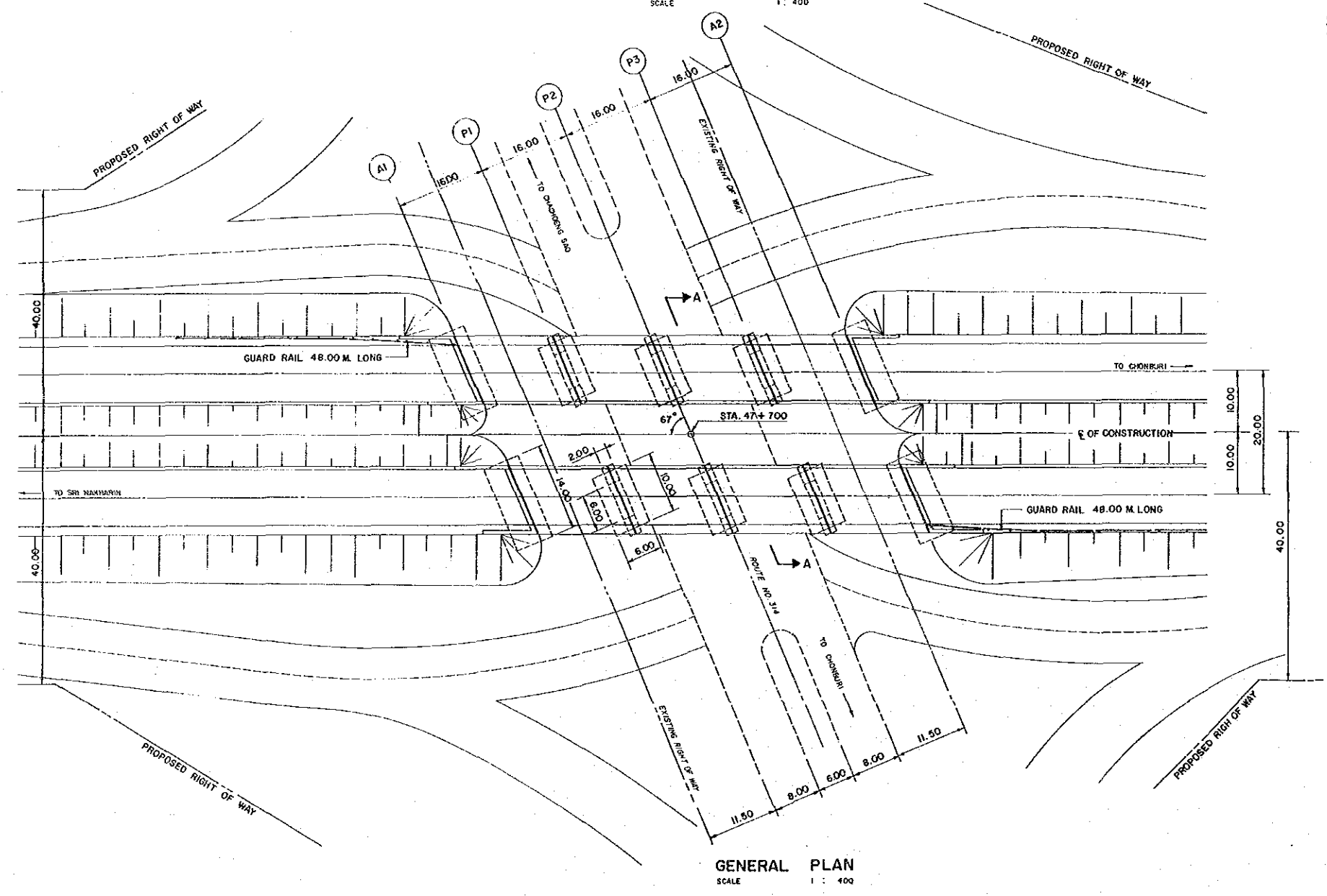


TABLE OF SUPERSTRUCTURE

STA. NO.	BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION	H.W.L.
47+700	64	4 @ 16.00 = 64.00	PC GIRDER	1.40	9.35	-

ITEM	UNIT	QUANTITY (PER 1 EA)
1. CONCRETE		
CLASS SPECIAL (A) FOR PC GIRDER	M <sup>3</sup>	135
CLASS B(1½) FOR PILE BENT PIER & ABUTMENT	M <sup>3</sup>	970
CLASS SPECIAL II(1½) FOR BEARING UNIT SLAB	M <sup>3</sup>	276
2. STEEL REINFORCEMENT	T	186
3. RC. PILE 0.22 x 0.22 M.	LM	3,084
4. STEEL PILE Ø 0.80 M.	LM	1,955
5. CONCRETE RAILING TYPE - 1	LM	64
CONCRETE RAILING TYPE - 3	LM	64
6. CONCRETE SLOPE PROTECTION	M <sup>2</sup>	435
7. STEEL GUARD RAIL	LM	48



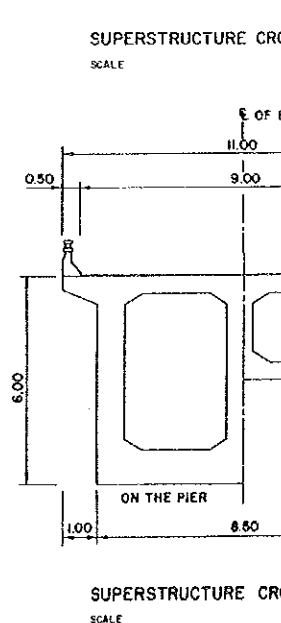
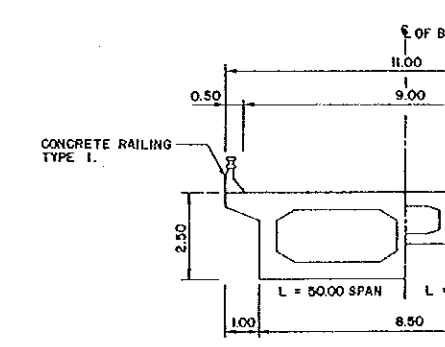
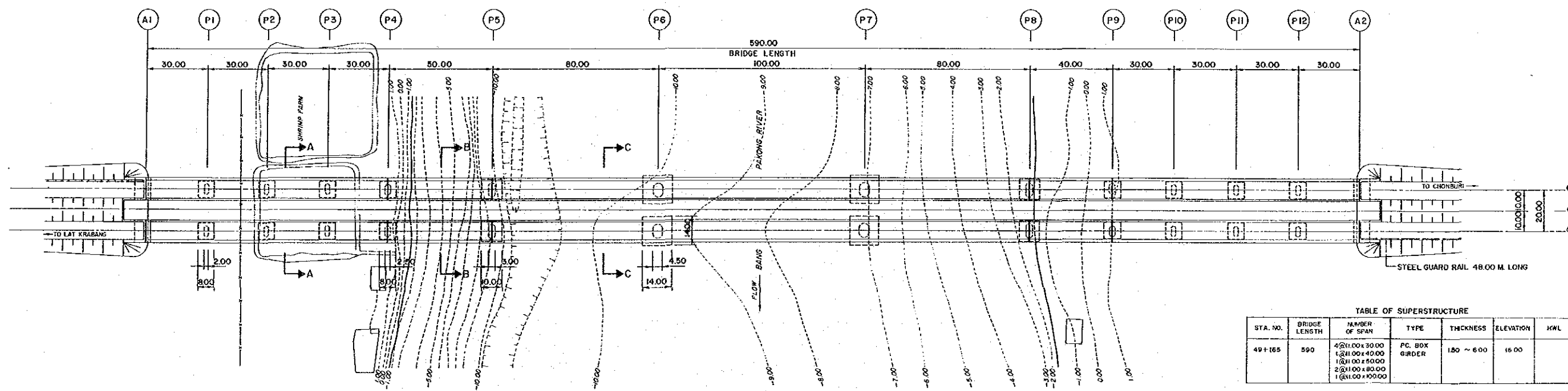
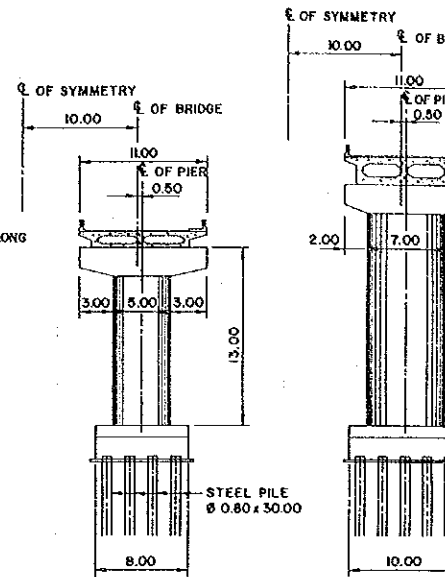
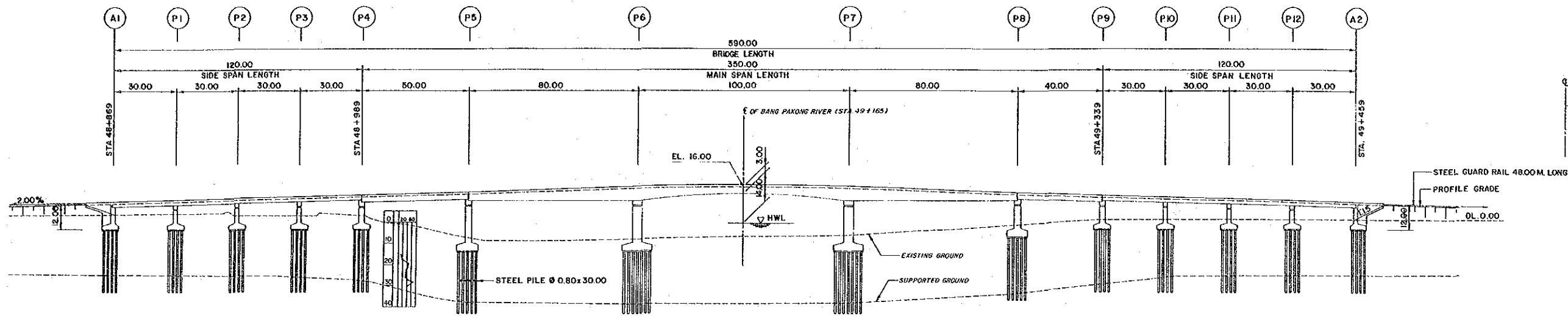
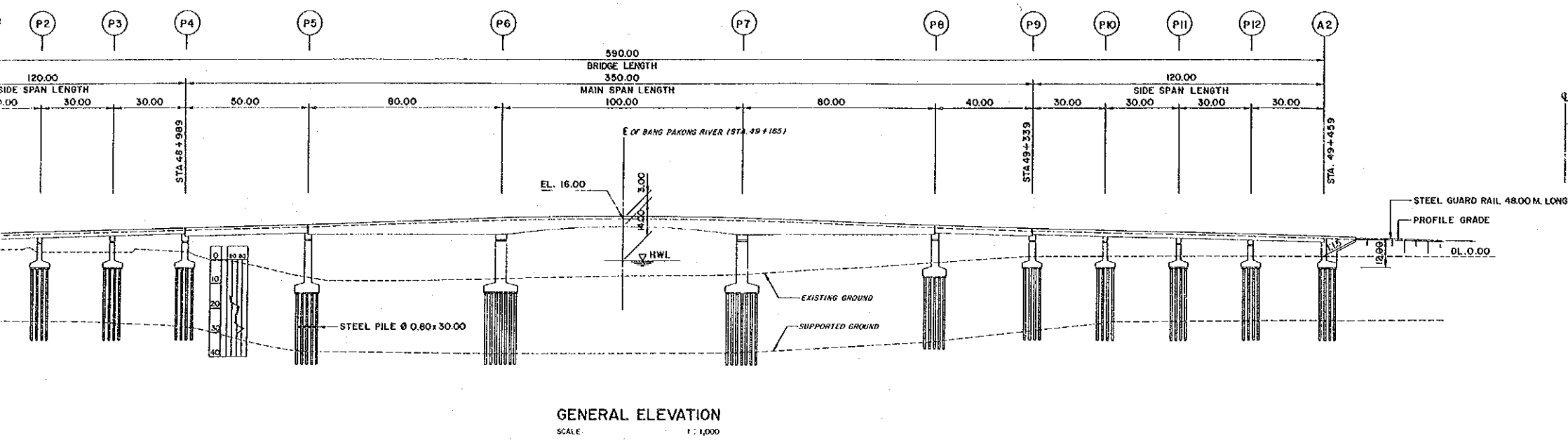


TABLE OF SUPERSTRUCTURE

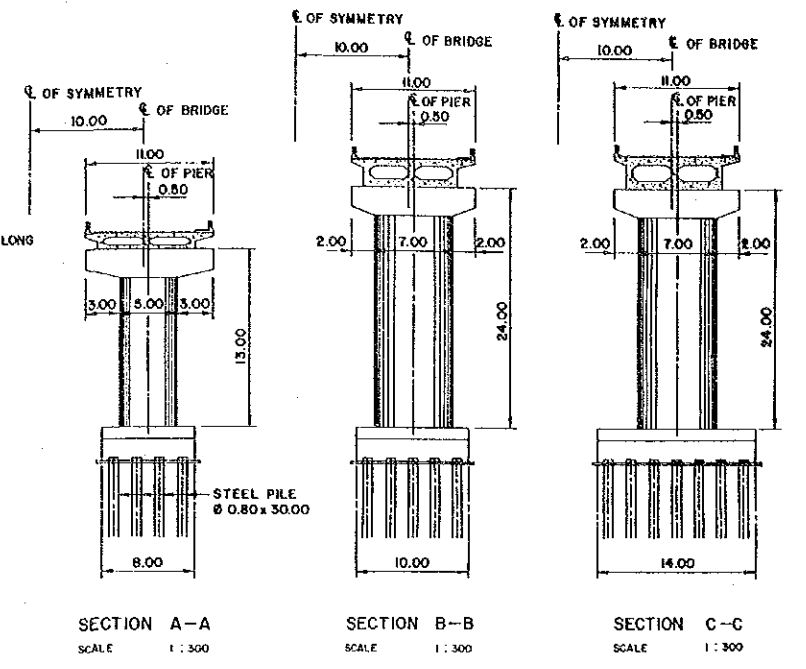
STA. NO.	BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION	KWL
49+165	590	2(Ø11.00x30.00) 1(Ø11.00x40.00) 2(Ø11.00x50.00) 1(Ø11.00x80.00) 1(Ø11.00x100.00)	PC BOX GIRDER	150 ~ 600	16.00	

ITEM	UNIT	QUANTITY (PER EA)
1. CONCRETE		
CLASS SPECIAL (A) FOR PC BOX GIRDER	m <sup>3</sup>	8,188
CLASS (B)(1) FOR PILE BENT PIER & ABUTMENT	m <sup>3</sup>	8,250
CLASS SPECIAL (B)(1) FOR BEARING UNIT	m <sup>3</sup>	278
2. STEEL REINFORCEMENT	T	2,655
3. RC. PILE Ø 22 x 0.22 M	LM	3,720
4. STEEL PILE Ø 0.80 M	LM	8,240
5. CONCRETE RAILING TYPE 1	LM	890
CONCRETE RAILING TYPE 3	LM	890
6. CONCRETE SLOPE PROTECTION	m <sup>2</sup>	720
7. STEEL GUARD RAIL	LM	48

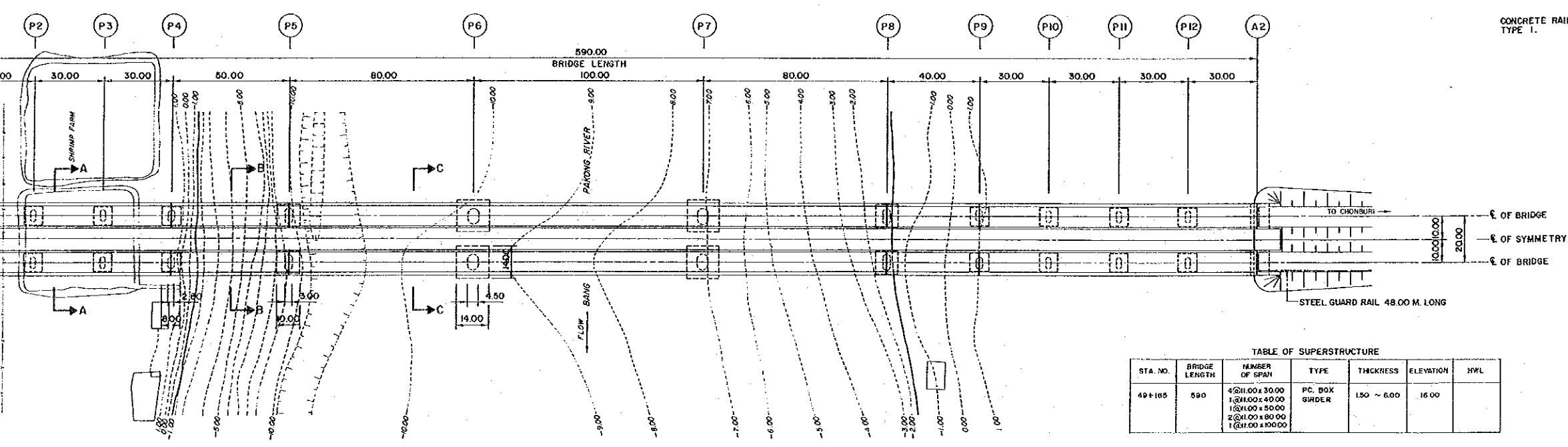




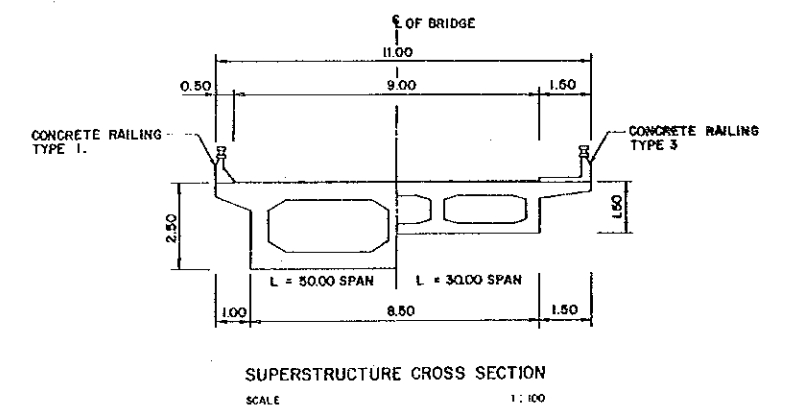
GENERAL ELEVATION  
 SCALE 1 : 1,000



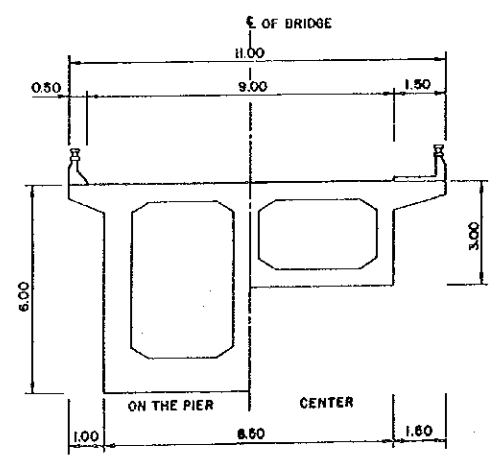
SECTION A-A SCALE 1 : 300  
 SECTION B-B SCALE 1 : 300  
 SECTION C-C SCALE 1 : 300



GENERAL PLAN  
 SCALE 1 : 1,000



SUPERSTRUCTURE CROSS SECTION  
 SCALE 1 : 100



SUPERSTRUCTURE CROSS SECTION  
 SCALE 1 : 100

TABLE OF SUPERSTRUCTURE

STA. NO.	BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION	HWL
49+165	590	4@110.00x30.00 1@210.00x40.00 1@110.00x50.00 2@110.00x80.00 1@110.00x100.00	PC. BOX GIRDER	150 ~ 6.00	16.00	

ITEM	UNIT	QUANTITY (PER 1 EA)
1. CONCRETE		
CLASS SPECIAL (A) FOR PC BOX GIRDER	M <sup>3</sup>	9,158
CLASS D(1 1/2) FOR PILE BENT PIER & ABUTMENT	M <sup>3</sup>	9,250
CLASS SPECIAL B(1 1/2) FOR BEARING UNIT	M <sup>3</sup>	276
2. STEEL REINFORCEMENT	T	2,585
3. RC. PILE Ø 22 x 0.22 M	LM	3,720
4. STEEL PILE Ø 0.80 M	LM	9,240
5. CONCRETE RAILING TYPE 1	LM	590
CONCRETE RAILING TYPE 3	LM	590
6. CONCRETE SLOPE PROTECTION	M <sup>2</sup>	720
7. STEEL GUARD RAIL	LM	48

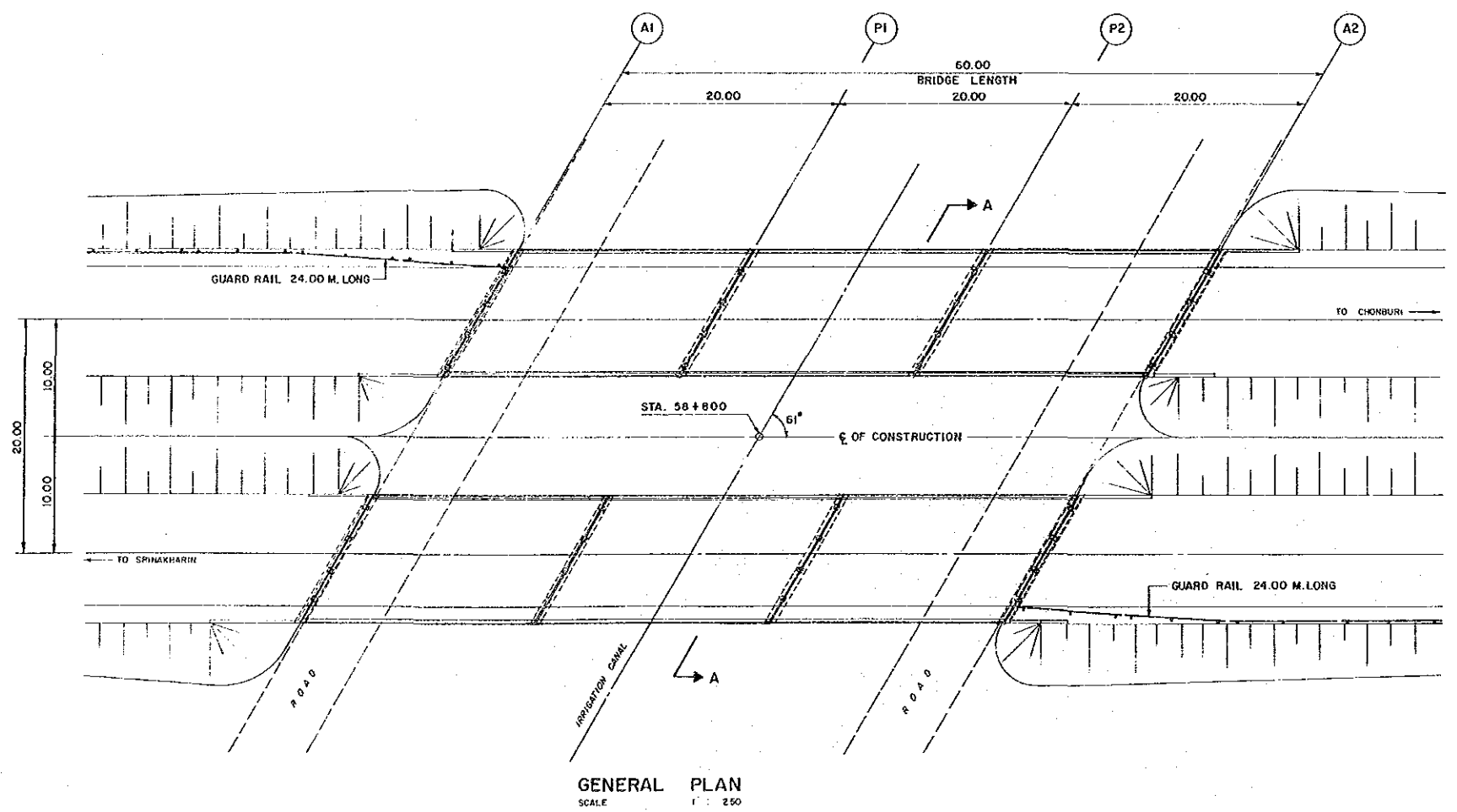
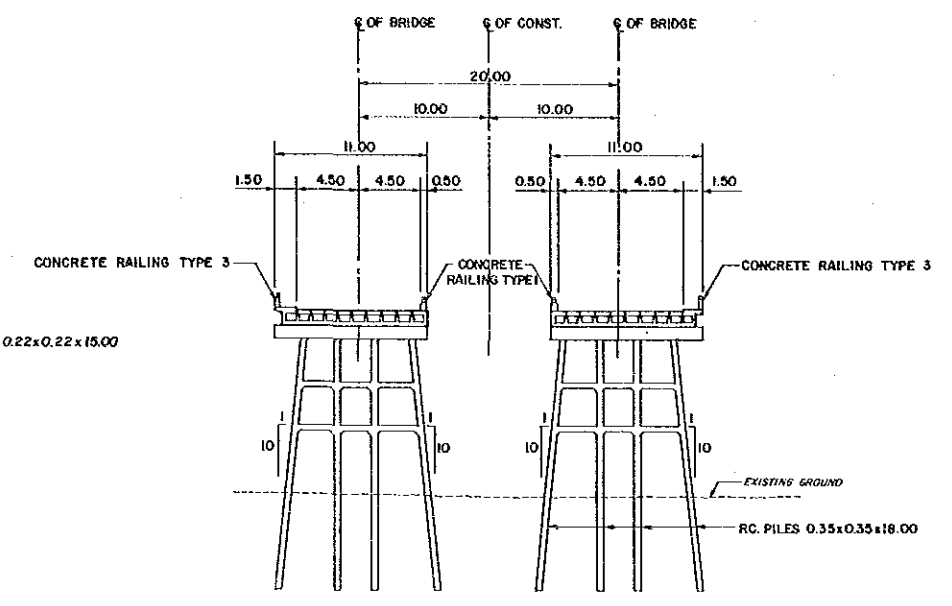
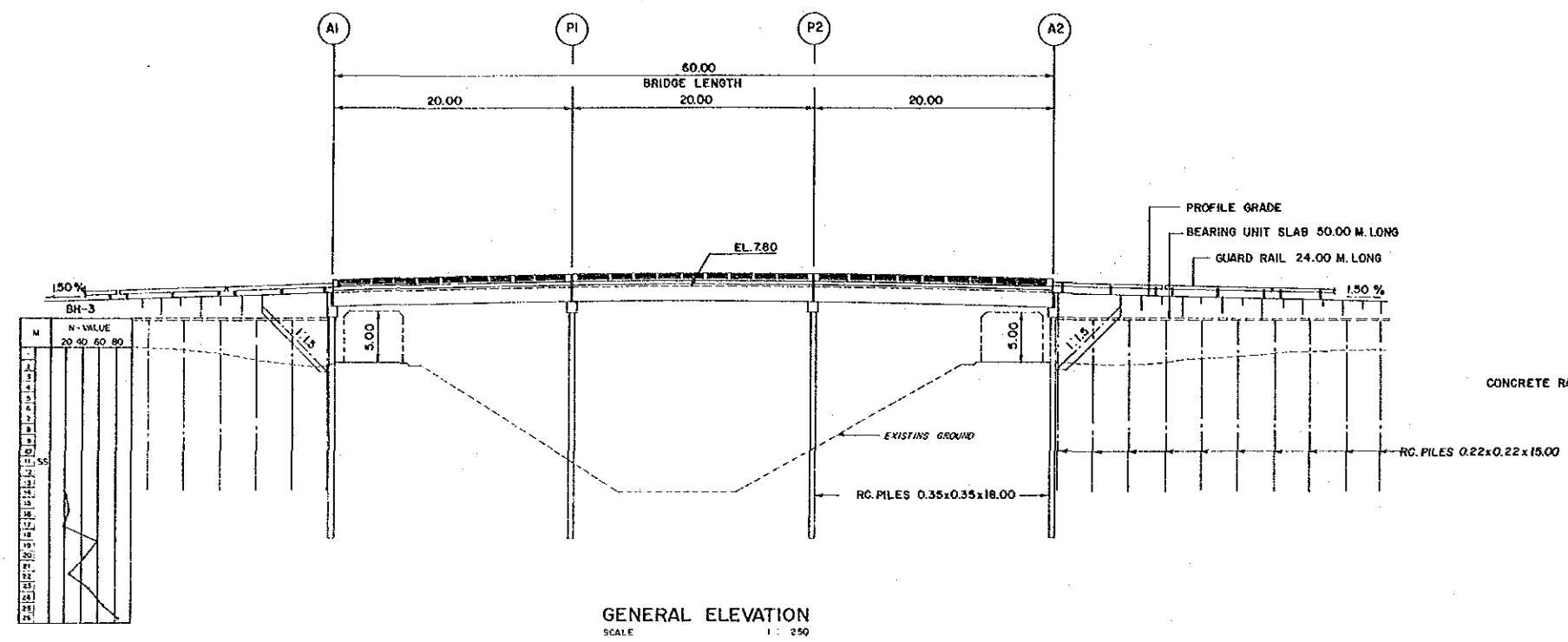


TABLE OF SUPERSTRUCTURE

STA. NO.	BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION	HWL.
58+800	60	3 @ 20.00=60.0	PC BOX GIRDER	1.20	7.80	-

ITEM	UNIT	QUANTITY (PER IEA)
1. CONCRETE		
CLASS SPECIAL (A) FOR PC BOX GIRDER	M <sup>3</sup>	365
CLASS B (1 1/2) FOR PILE BENT PIER & ABUTMENT	M <sup>3</sup>	118
CLASS SPECIAL B (1 1/2) FOR BEARING UNIT SLAB	M <sup>3</sup>	276
2. STEEL REINFORCEMENT	T	104
3. RC PILE 0.22 x 0.22 M.	LM	3,252
4. RC PILE 0.35 x 0.35 M.	LM	304
5. CONCRETE RAILING TYPE - 1	LM	60
CONCRETE RAILING TYPE - 3	LM	60
6. CONCRETE SLOPE PROTECTION	M <sup>2</sup>	360
7. STEEL GUARD RAIL	LM	24



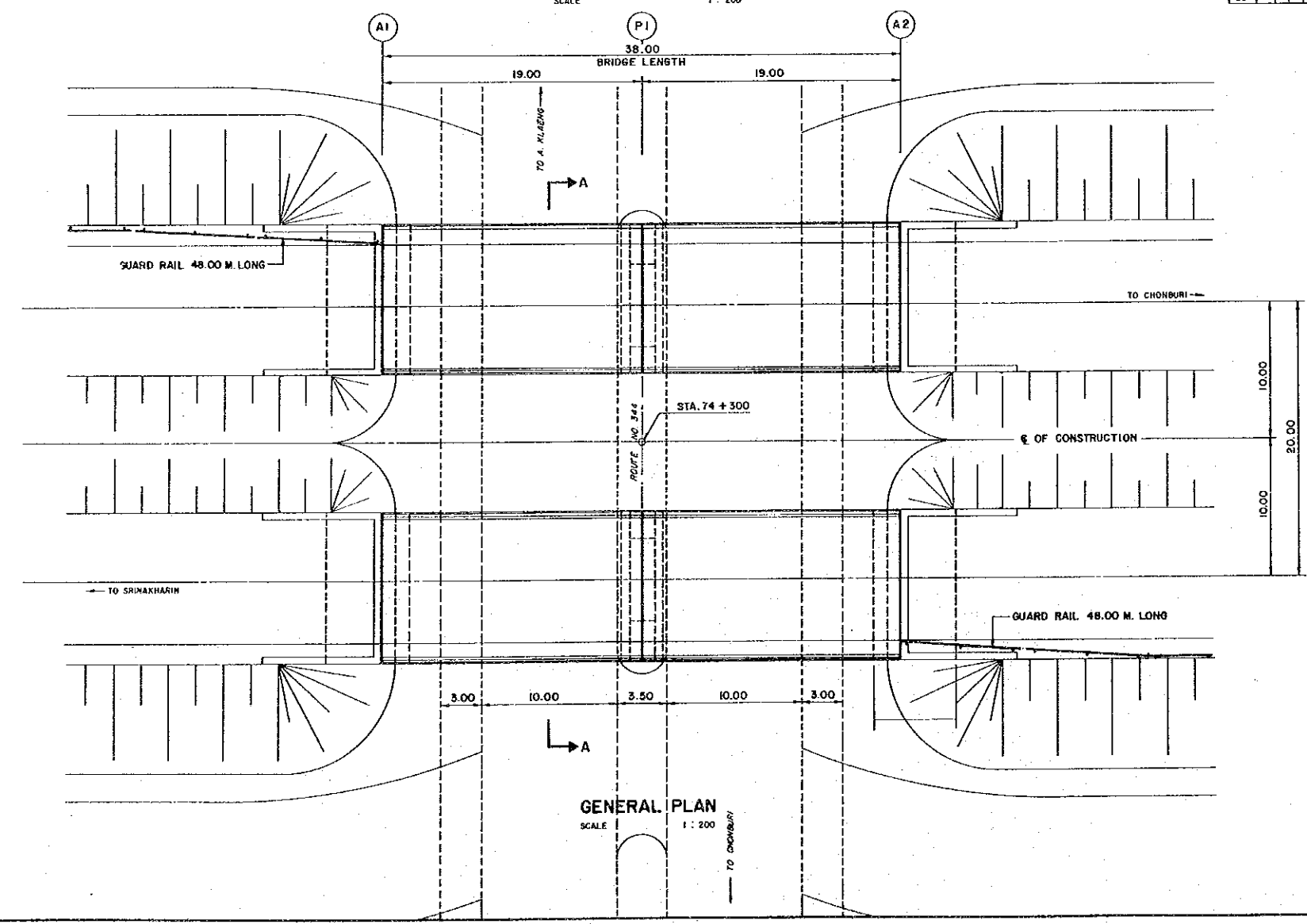
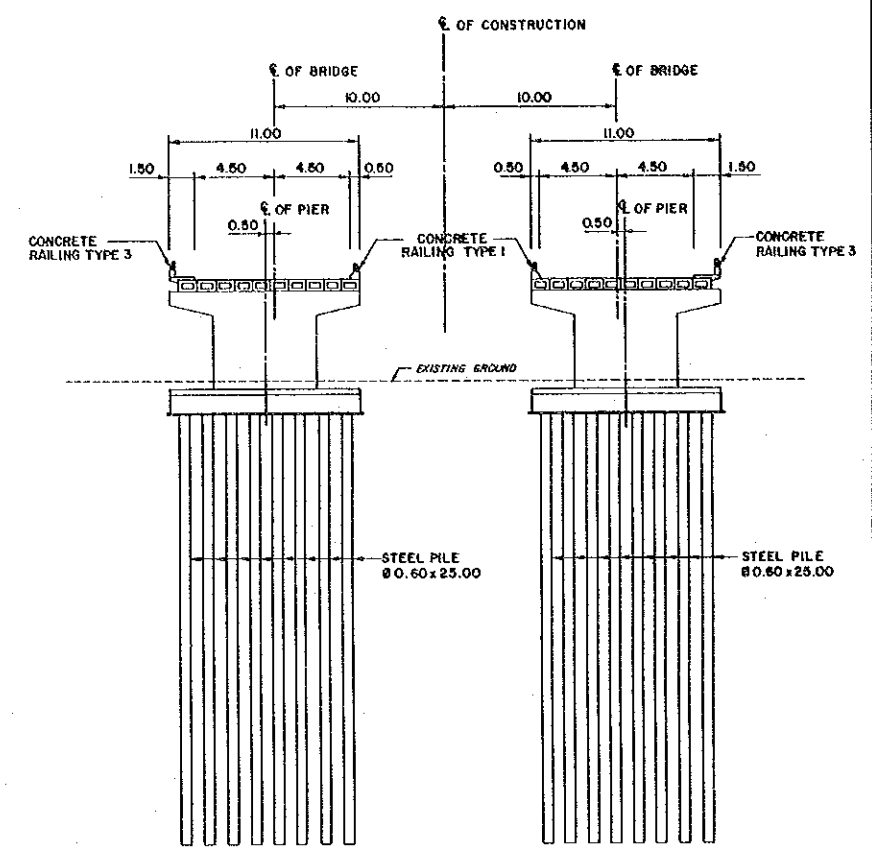
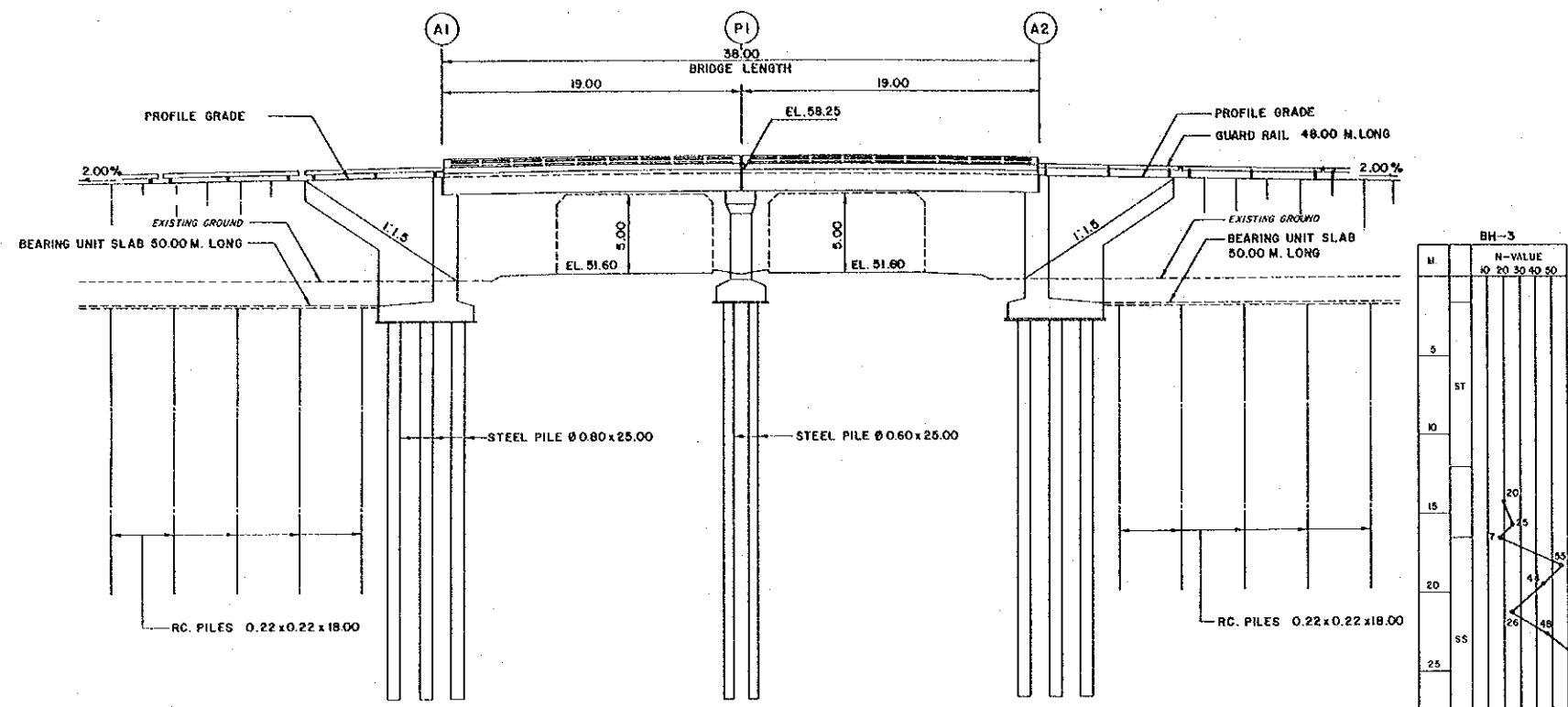


TABLE OF SUPERSTRUCTURE

STA. NO	BRIDGE LENGTH	NUMBER OF SPAN	TYPE	THICKNESS	ELEVATION	HWL.
74+300	38	2@19.00=38.0	PC BOX GIRDER	1.10	58.25	-

ITEM	UNIT	QUANTITY (PER I EA)
1. CONCRETE		
CLASS SPECIAL (A) FOR PC BOX GIRDER	M <sup>3</sup>	345
CLASS B(1/2) FOR PILE BENT PIER & ABUTMENT	M <sup>3</sup>	640
CLASS SPECIAL B(1/2) FOR BEARING UNIT SLAB	M <sup>3</sup>	276
2. STEEL REINFORCEMENT	T	172
3. RC. PILE 0.22x0.22 M.	LM	3,528
4. STEEL PILE Ø 0.60	LM	400
5. STEEL PILE Ø 0.80	LM	1,200
6. CONCRETE RAILING TYPE - 1	LM	38
CONCRETE RAILING TYPE - 3	LM	38
7. CONCRETE SLOPE PROTECTION	M <sup>2</sup>	430
8. STEEL GUARD RAIL	LM	48

**PROJECT IM - 1**

**Changwat : Nakhon Pathom**

**A. Bang Len - B. Bang Noi Nai**

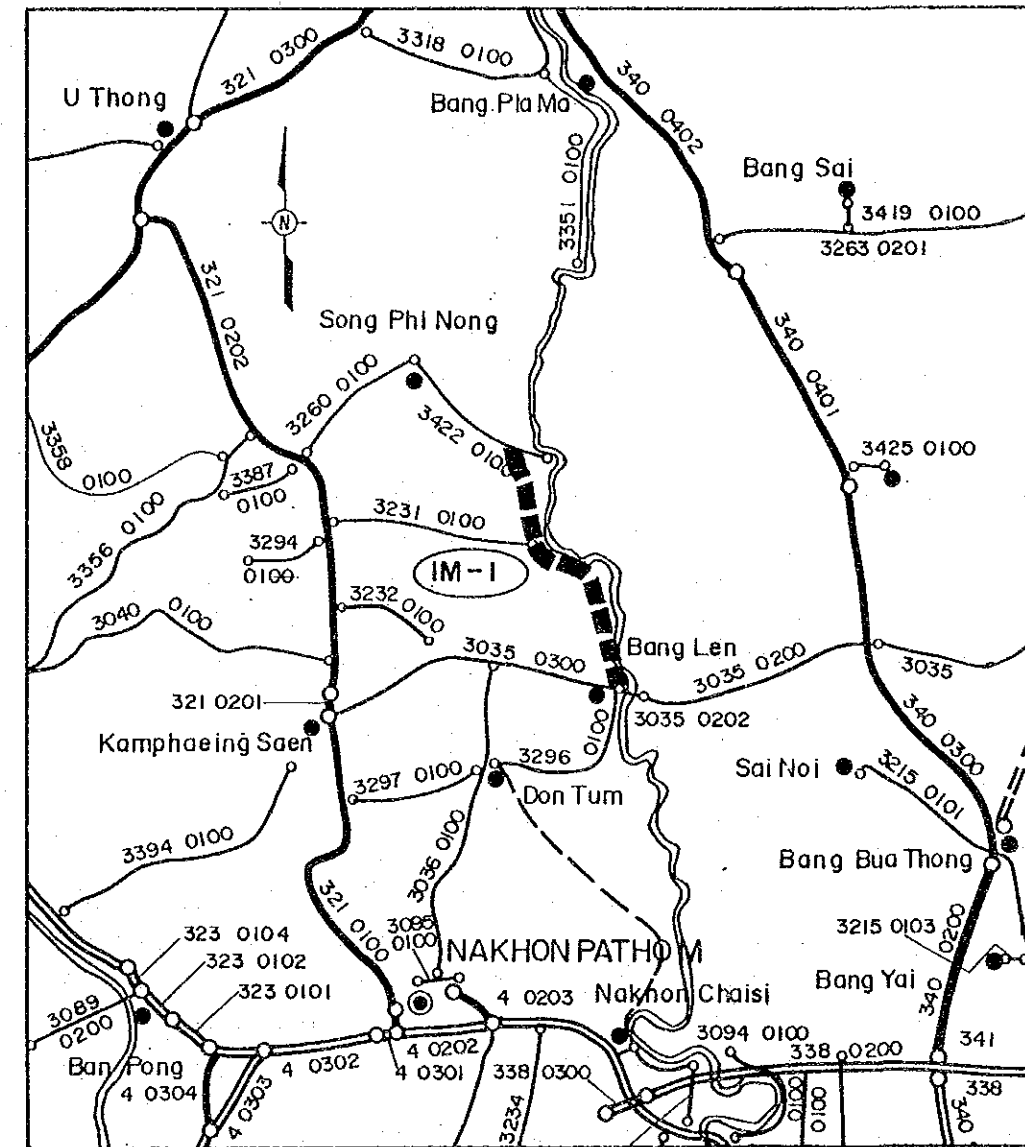
**Length : 18.7 km**

SUMMARY

PROJECT IM-1

ITEM	DESCRIPTION
Changwat	Nakhon Pathom
Origin	A. Bang Len
Destination	B. Bang Noi Nai
Route No.	PWD
Project Length	18.7 km
Standard	
- Existing	—
- Proposed	F4
Traffic	
- Base	275 ~ 526
- 2000	600 ~ 1,000
- 2008	800 ~ 1,400
Pavement Type	
- Existing	Laterite
- Proposed	AC pavement (t = 5 cm)
Bridges	
- New Construction	3 sites, 37 m
- Replacement	—
Construction Costs	
- Financial	49,294,000 Baht
- Economic	43,295,000 Baht
Economic Evaluation	
- IRR	26.7%
- B/C	2.46

LOCATION OF PROJECT ROUTE



SCALE  
5 0 10 Km.

LEGEND :

- ▬▬▬▬▬ PROJECT ROUTE
- ▬▬▬▬▬ DIVIDED HIGHWAYS
- ▬▬▬▬▬ NATIONAL HIGHWAYS
- ▬▬▬▬▬ PROVINCIAL HIGHWAYS
- ▬▬▬▬▬ PROVINCIAL HIGHWAYS (Unpaved)
- , ● CHANGWAT, AMPHOE

## 1. GENERAL

The proposed route lies entirely in Changwat Nakhon Pathom.

It originates in Amphoe Bang Len at the junction with Route 346, runs northward paralleling the winding Tha Chin River and ends at the junction with Route 3422 in Ban Bang Noi Nai. Its total length is 18.7 km.

The road is currently under the responsibility of the Public Works Department. PWD is planning to pave this road with a pavement width of 5 m and 1.5 m wide shoulders.

However, the plan has not been supported by any PWD budget and PWD is willing to remove this road from their list of roads to be improved, provided that DOH carries out its study and implements the results. Therefore, in this study design, work was done applying the DOH standards of Road Class F4.

The terrain is flat. Land alongside is well cultivated with paddy and sugarcane, occasional beans and chili. The existing road is of laterite except for a short section at Km 14 where it joins Route 3231. Horizontal alignments at some points are poor. Many sugarmills, rice mills and alcohol plants dot both sides of the road. Ban Bang Luang, located at the junction with Route 3231, at a point about two-thirds along the route, is a relatively large village and has a small bus terminal. Most passengers take buses to visit Amphoe Bang Len.

The surface condition of the short SBST section and the remaining laterite sections is poor.

There are nine concrete bridges, of which three are narrow.

As for the two sharp curves at STA 12+000 to STA 13+000 and STA 16+000 to STA 17+000, it was found by site surveys that the former could be improved by a shortcut, but that a shortcut at the latter location was not possible due to the topography and the existence of houses along the road. Therefore, the design for the latter location was limited to an improvement in the curve lines.

The road surface height was determined at H.W.L. plus 0.70 m, an improvement from the existing road which has its surface height at the same level as the H.W.L. of 3.04 m – 3.06 m.

The 500 m section from STA 14+000 is in the built-up area of Ban Bang Luang and is already applied with a concrete pavement. No improvement was planned for this section despite insufficient side clearance because: a) most traffic using this road has its origin or destination in Ban Bang Luang, b) right-of-way acquisition and moving of houses along the road were thought to be very difficult, and c) no appropriate alternative can be conceived.

The three narrow bridges at STA 9+949, STA 10+430 and STA 13+853 were decided to be replaced, since their width is less than 5 m.

Upon completion, the improved road will act as a connector to Routes 346, 3231 and 3422.

## 2. TRAFFIC FORECAST

### Base Traffic Volume

(Unit: Vehicles/Day)

Project Code	Section	Year	Traffic Volume							ADT
			MC	PC	LB	HB	LT	MT	HT	
IM-1	PWD-N	1988	399	21	54	25	299	35	92	526
	PWD-S	1988	257	8	14	4	191	24	34	275

### Traffic Growth Rate

(Unit: Percent)

Project	Section	Period	MC	PC	LB	HB	LT	MT	HT
IM-1	PWD-N	-1993	5.02	6.52	5.70	5.74	4.52	4.51	4.52
		1994-2000	4.56	5.79	5.10	5.05	4.11	4.11	4.11
		2000-2008	4.63	5.80	5.10	5.08	4.15	4.17	4.15
	PWD-S	-1993	5.02	6.52	5.70	5.74	4.52	4.51	4.52
		1994-2000	4.56	5.79	5.10	5.05	4.11	4.11	4.11
		2000-2008	4.63	5.80	5.10	5.08	4.15	4.17	4.15

### Induced Traffic Volume

(Unit: Vehicles/Day)

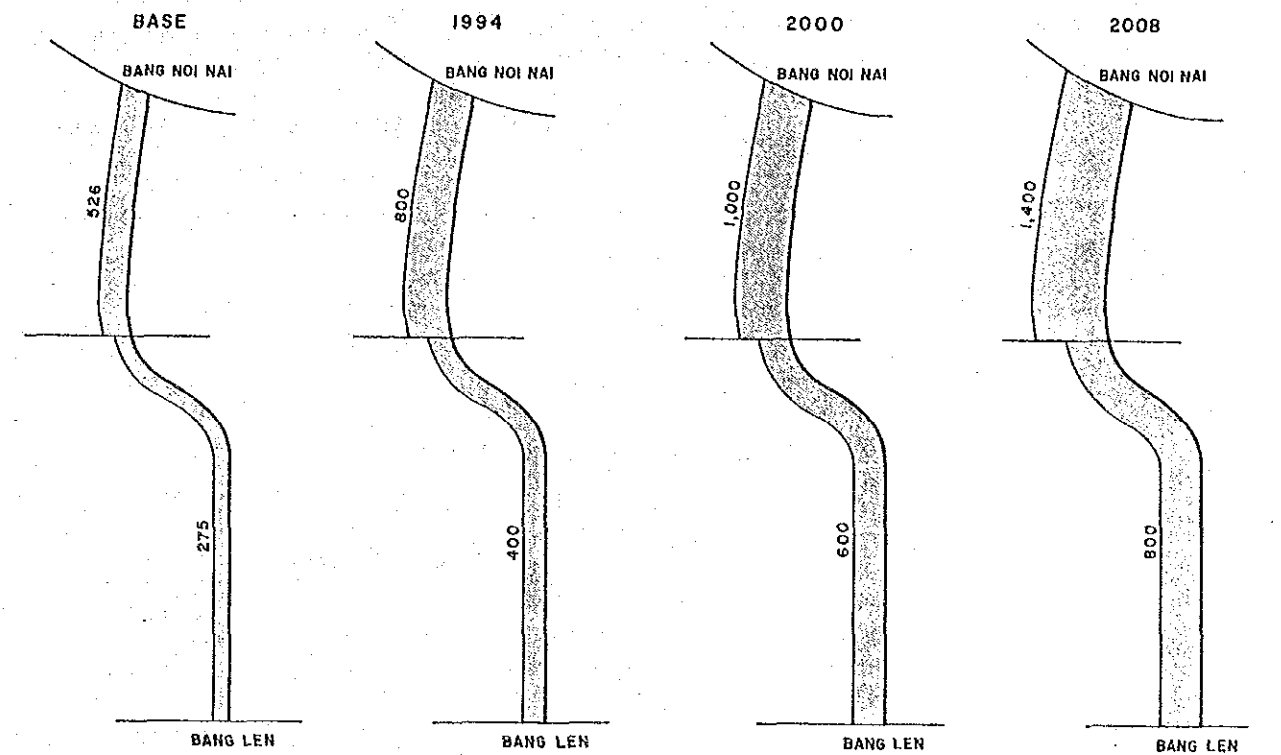
Project	Section	Year	MC	PC	LB	HB	LT	MT	HT	ADT
IM-1	PWD-N	1994	48	5	9	3	46			63
		2000	64	7	13	4	59			83
		2008	91	11	19	5	81			116
	PWD-S	1994	80	7	6	1	70			84
		2000	105	11	8	1	89			109
		2008	151	16	12	2	123			153

### Future Traffic Volume

(Unit: Vehicles/Day)

Project	Section	Year	MC	PC	LB	HB	LT	MT	HT	ADT
IM-1	PWD-N	1994	581	47	84	37	424	45	119	756
		2000	761	66	114	50	540	58	152	980
		2008	1092	104	169	75	747	80	211	1386
	PWD-S	1994	423	34	25	7	305	31	44	446
		2000	554	47	34	9	389	40	56	575
		2008	795	74	61	13	538	55	78	809

Note. N: North section S: South section



PROJECT IM - 1

UNIT : VEHICLE / DAY



### 3. ENGINEERING

#### 3.1 Materials and Boring Results

##### (1) Materials

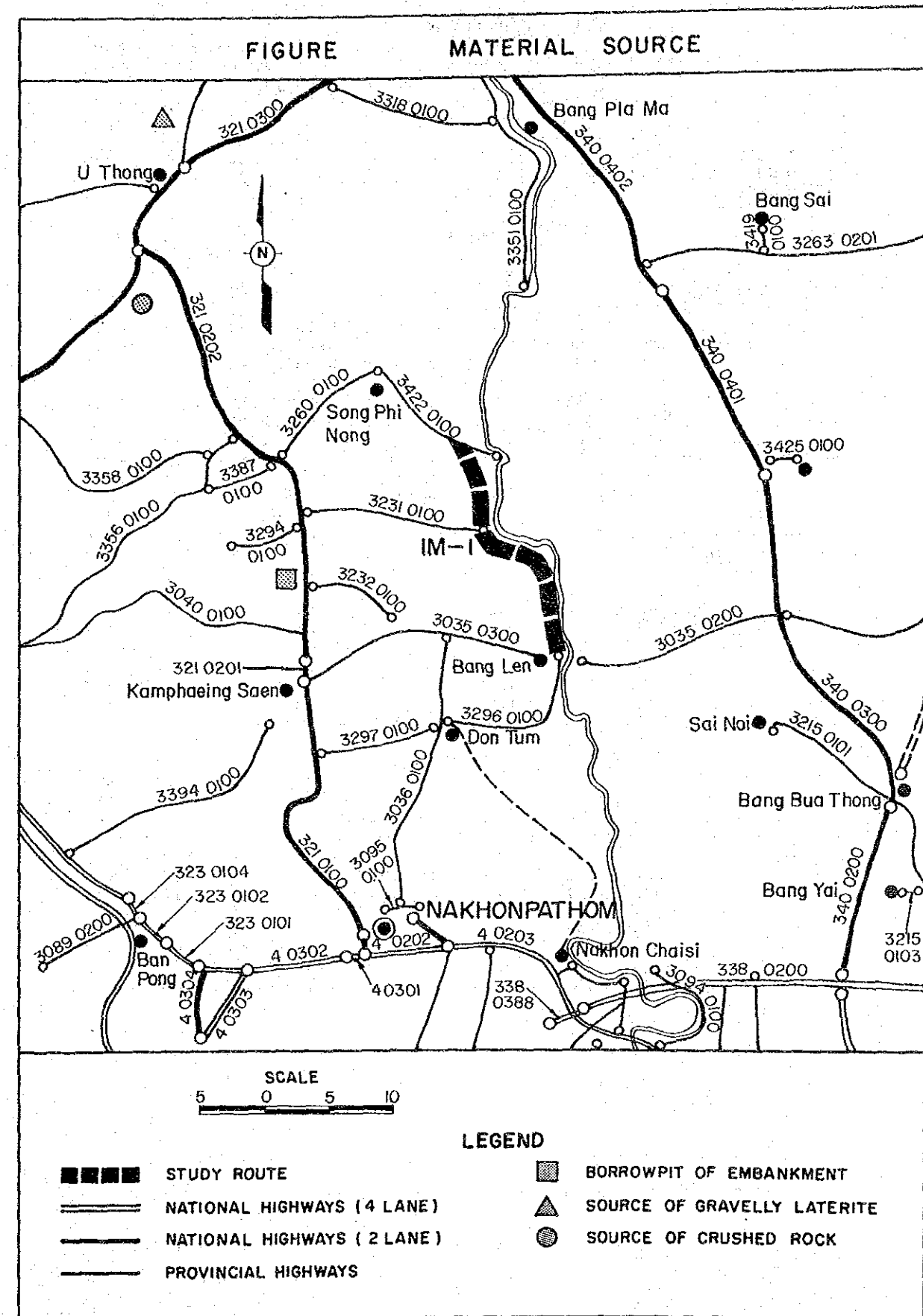
#### DESCRIPTION OF MATERIAL SOURCES

Material	Source	Description of Sample	Estimated Quantity cu.m.	Hauling Distance (km)
Soil	Route 3060 Km 5+600 Right Side 0.1 Km	Silty Fine Sand	Plentiful	31
Laterite	Route 3230 Km 0+000 Left Side 0.1 Km	Gravelly Laterite	75,000	53
Crushed Rock	Route 324 Km 48+800 Right Side 1.2 Km	Lime Stone	>80,000	62

#### RESULTS OF LABORATORY TESTS

	Sieve Analysis % Passing						Plasticity		Comp. DH-T Stand.		Lab. C.B.R.			
	50.0	25.0	19.0	9.5	#4	#10	#40	#200	LL	PI	Opt. 95%	gn/cc	CBR 95%	Swell %
Soil						100	71	51	-	NP	11.5	1.57	11.9	-0.3
Laterite	100	97	84	58	29	17	12	22.2	4.4	6.43	2.24	75	-	
Crushed Rock												>80	-	

Note : Abrasion test result of Crushed Rock 26.5 %



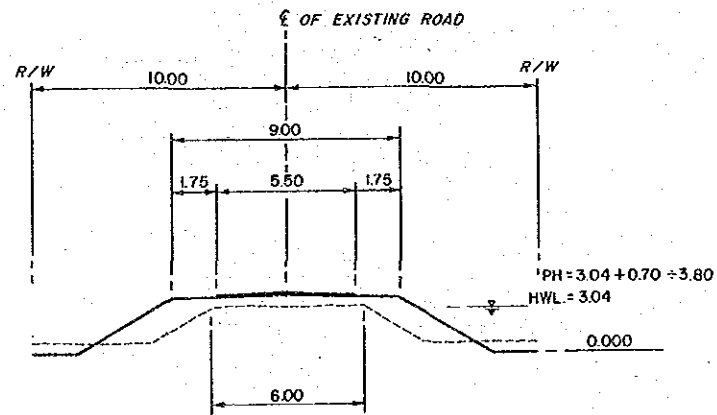
3.2 Preliminary Design

(1) Geometric Design Criteria

Design Standard : F-4  
 Design Speed : 60 km/h

Geometric Design Criteria

Description	Design Speed (km/h)
	60
Minimum Radius & Curvature (m)	120
Minimum Stopping Sight Distance (m)	75
Maximum Gradient (%)	8



STA. 0+000 TO STA. 13+930  
 STA. 14+590 TO STA. 18+713  
 TYPICAL CROSS SECTION  
 IM-1 ROAD CLASS F4

(2) Pavement Design

Design CBR of Subgrade	Cumulative No. of ESA W18 x 10 (10 years)	Thickness of Pavement Structure (cm)
4.0	530	Surface 5 Base 20 Subbase 20

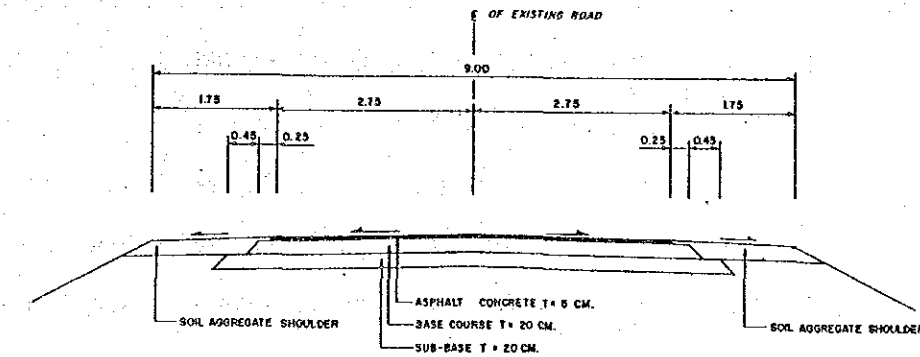


FIGURE TYPICAL PAVEMENT STRUCTURE FOR FLEXIBLE PAVEMENT IM-1

## (3) Culverts

NO.	CHAINAGE	EXISTING CULVERT	NEW CULVERT
1	1+190	RCP 1-Dia 0.80x14.00	EXTEND 1-Dia 0.80x 2.00
2	1+438	RCP 1-Dia 0.40x16.00	RCP 1-Dia 0.60x16.00
3	6+412	RCP 1-Dia 0.40x12.60	RCP 1-Dia 0.60x17.00
4	8+146	RCP 1-Dia 0.80x14.50	EXTEND 1-Dia 0.80x 4.00
5	8+400	RCP 1-Dia 0.40x19.00	RCP 1-Dia 0.60x19.00
6	8+741	RCP 1-Dia 1.00x16.00	EXTEND 1-Dia 1.00x 4.00
7	9+535	RCP 1-Dia 0.40x13.00	RCP 1-Dia 0.60x16.00
8	11+782	RCP 1-Dia 1.00x15.00	EXTEND 1-Dia 1.00x 4.00
9	12+212	RCP 1-Dia 1.00x11.00	EXTEND 1-Dia 1.00x 8.00
10	15+000	RCP 1-Dia 0.80x14.00	EXTEND 1-Dia 0.80x 4.00
11	15+564	RCP 1-Dia 0.80x14.00	EXTEND 1-Dia 0.80x 4.00
12	16+060	BOX 1-1.50x2.50x15.00	REMAIN
13	16+416	RCP 1-Dia 1.00x14.00	EXTEND 1-Dia 1.00x 4.00
14	17+190	RCP 1-Dia 0.80x13.00	EXTEND 1-Dia 0.80x 4.00
15	18+962	RCP 1-Dia 1.00x14.00	EXTEND 1-Dia 1.00x 4.00

## (4) Bridges

NO	CHAINAGE	EXISTING BRIDGE	PROPOSED BRIDGE
1	0+113	7x35 SLAB TYPE W/LIFT CENTRAL SPAN	REMAIN
2	2+807	7x10 SLAB TYPE	REMAIN
3	3+591	7x10 SLAB TYPE	REMAIN
4	4+830	7x10 SLAB TYPE	REMAIN
5	5+994	7x10 SLAB TYPE	REMAIN
6	6+800	7x10 SLAB TYPE	REMAIN
7	9+949	5x 7 SLAB TYPE	9x 7 SLAB TYPE
8	10+430	5x10 SLAB TYPE	9x10 SLAB TYPE
9	13+853	4x20 SLAB TYPE	9x20 SLAB TYPE

### 3.3 Quantities and Construction and Road Maintenance Costs

#### (1) CONSTRUCTION QUANTITIES AND COSTS

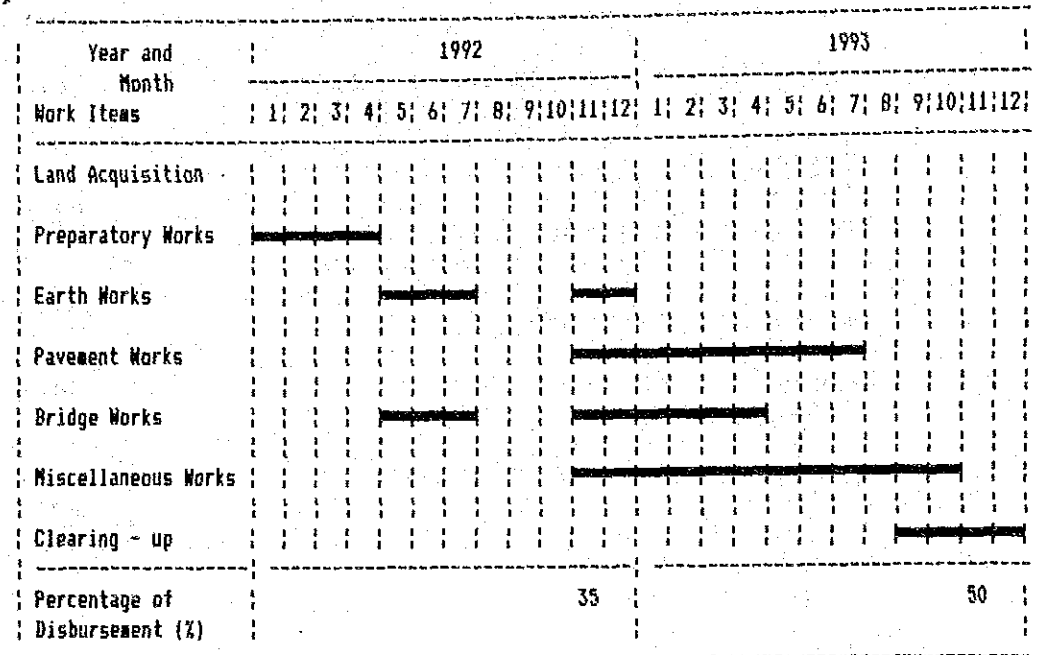
(Project IM-1 Length = 18.7 km)

Item	Unit	Financial Unit Rate Baht	Quantity	Financial Total Cost 1000 Baht	Economic Cost		Residual Value		
					%	1000 Baht	%	1000 Baht	
<b>EARTHWORK</b>									
Clearing & Grubbing	ha	10,000	14	140	85	119	90	107	
Roadway Excavation (Unclassified)	m <sup>3</sup>	18	10,100	182	84	153	90	138	
Roadway Excavation (Classified Unsuitable Material below Grade)	m <sup>3</sup>	38	-	-	84	-	90	-	
Embankment (Common)	m <sup>3</sup>	33	-	-	86	-	90	-	
Embankment (Borrow)	m <sup>3</sup>	127	69,300	8,801	86	7,569	90	6,812	
Removal of Existing Structure	each	60,000	3	180	84	151	90	136	
Sub Total				9,303		7,992		7,193	
<b>SUBBASE and BASE COURSES</b>									
Subbase	m <sup>3</sup>	194	16,000	3,104	83	2,576	50	1,288	
Aggregate base	m <sup>3</sup>	350	25,000	8,750	84	7,350	50	3,675	
Shoulder (Soil Aggregate)	m <sup>3</sup>	225	10,200	2,295	83	1,905	50	953	
Sub Total				14,149		11,831		5,916	
<b>SURFACE COURSES</b>									
Asphaltic Prime Coat	m <sup>2</sup>	11	121,400	1,335	93	1,242	50	621	
Asphaltic Tack Coat	m <sup>2</sup>	5	-	-	93	-	50	-	
Double Bituminous Surface Treatment	m <sup>2</sup>	33	-	-	91	-	50	-	
Asphalt Concrete Surfacing	ton	925	12,000	11,100	90	9,990	50	4,995	
Portland Cement Concrete Pavement	m <sup>3</sup>	1,675	-	-	90	-	50	-	
Sub Total				12,435		11,232		5,616	
<b>STRUCTURES (Equivalent)</b>									
RC Pipe Culvert (D=1.00 m)	m	1,800	75	135	88	119	50	60	
RC Box Culvert (2-2.40x 2.40 m)	m	10,000	-	-	90	-	50	-	
RC Bridge (W=9.0 m)	m	54,000	37	1,998	87	1,738	50	869	
PC Bridge (W=9.0 m)	m	78,500	-	-	87	-	50	-	
Bearing Unit	m <sup>2</sup>	1,600	-	-	87	-	50	-	
Sub Total				2,133		1,857		929	
<b>Total (a)</b>				38,020		32,912		19,654	
Miscellaneous Work ( (a) x 7% )				1s	2,661	87	2,315	0	0
<b>CONTRACT AMOUNT (b)</b>				40,681		35,227		19,654	
PHYSICAL CONTINGENCIES ( (b) x 10% ) (c)				1s	4,068		3,523		1,965
ENGINEERING AND SUPERVISION ( ((b) + (c)) x 10% ) (d)				1s	4,475	100	4,475	0	0
<b>LAND ACQUISITION</b>									
Developed Land	ha	50,000	-	-					
Less Developed Land	ha	35,000	2	70					
Total (e)				70	100	70	100	70	
<b>PROJECT COST ( (b) + (c) + (d) + (e) )</b>				49,294		43,295		21,689	
<b>AVERAGE COST PER KM</b>				2,636					

(2) Road Maintenance Costs

(Unit : Baht/Year)		
	Without Project	With Project
1994	318,423	180,235
2004	326,202	314,261

3.4 Construction Schedule



#### 4. BENEFITS

##### ROAD CONDITIONS

(unit : km)

Section	Without Project									With Project					
	Road Length	Paved			Laterite			No. of Narrow Bridge	No. of Wooden Bridge	Road Length	Road Paved	No. of Narrow Bridge	No. of Wooden Bridge		
		Good	Fair	Poor	Good	Fair	Poor							Good	Fair
PWD-N	14.2	0.2	-	-	-	-	-	-	14.0	-	-	13.8	13.8	-	-
PWD-S	4.9	0.5	-	-	-	-	-	-	4.4	-	-	4.9	4.9	-	-

##### VOC AND TIME SAVINGS

(1000 BAHT)

Year	VOC Savings			Time Savings			Total Savings		
	Normal Traffic	Induced Traffic	Total	Normal Traffic	Induced Traffic	Total	Normal Traffic	Induced Traffic	Total
1994	9,596	390	9,986	3,005	1,022	4,027	12,601	1,412	14,013
2000	12,422	514	12,936	3,947	1,351	5,298	16,369	1,865	18,234
2008	17,627	723	18,350	5,762	1,901	7,663	23,390	2,624	26,013

5. ECONOMIC EVALUATION

COST AND BENEFIT STATEMENT







(1000 BAHT)

YEAR	COST		BENEFITS			DISCOUNTED (12%)	
	CONST. COST	VOC SAVING	TIME SAVING	MAINT. SAVING	TOTAL	COST	BENEFIT
1992	15,153				0	19,008	0
1993	28,142				0	31,519	0
1994		9,986	4,027	138	14,151	0	12,635
1995		10,478	4,239	129	14,846	0	11,835
1996		10,969	4,450	120	15,539	0	11,060
1997		11,461	4,662	111	16,234	0	10,317
1998		11,953	4,874	102	16,929	0	9,606
1999		12,444	5,086	93	17,623	0	8,928
2000		12,936	5,298	84	18,318	0	8,286
2001		13,613	5,594	75	19,282	0	7,788
2002		14,289	5,889	66	20,244	0	7,300
2003		14,966	6,185	57	21,208	0	6,828
2004	11,036	15,643	6,481	48	22,172	3,553	6,374
2005		16,320	6,776	39	23,135	0	5,938
2006		16,997	7,072	30	24,099	0	5,523
2007		17,673	7,368	21	25,062	0	5,128
2008	(21,689)	18,350	7,663	12	26,025	(4,438)	4,755
TOTAL	32,642	208,078	85,664	1,125	294,867	49,642	122,301

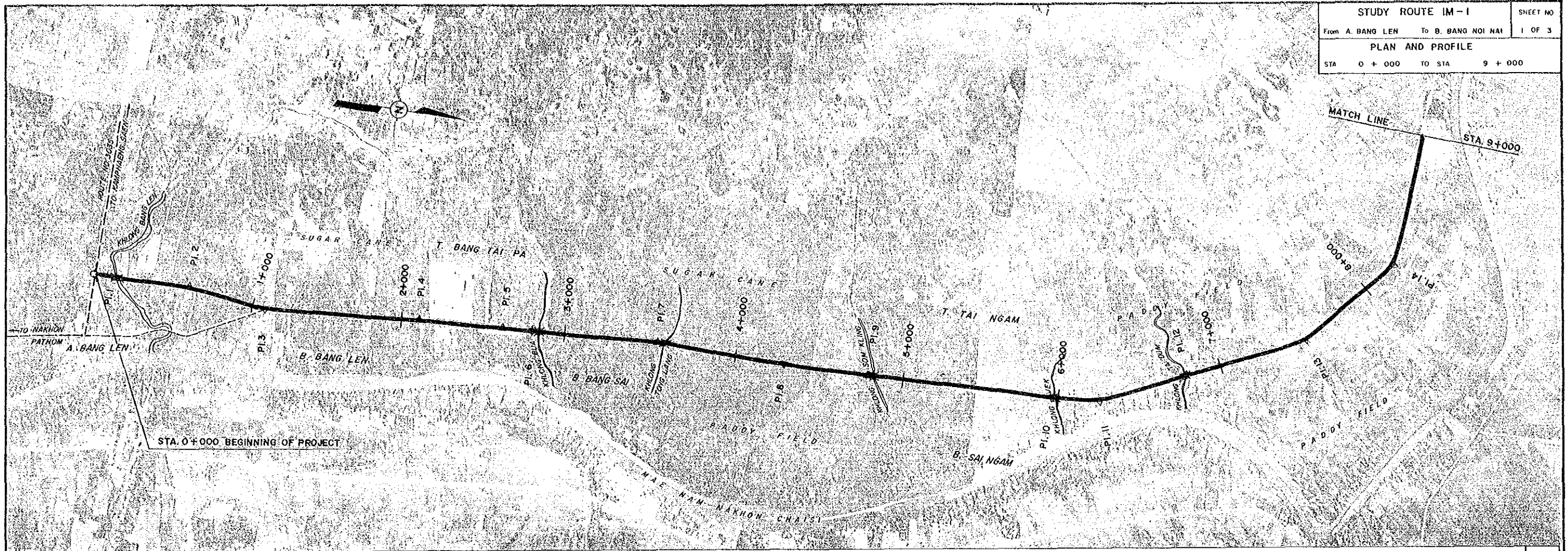
NET PRESENT VALUE : 72,659  
 BENEFIT COST RATIO : 2.46  
 INTERNAL RATE OF RETURN : 26.7%  
 FIRST YEAR RATE OF RETURN : 25.0%

## 6. DRAWINGS

### ABBREVIATIONS and SYMBOLS for PLAN and PROFILE

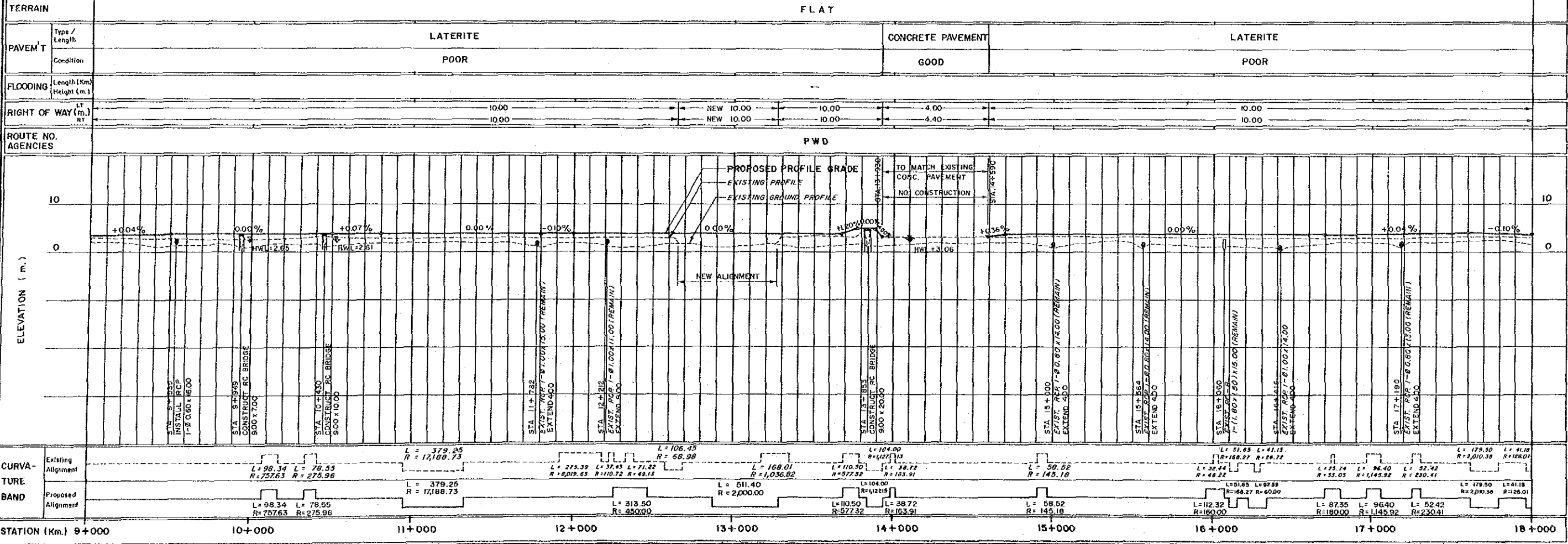
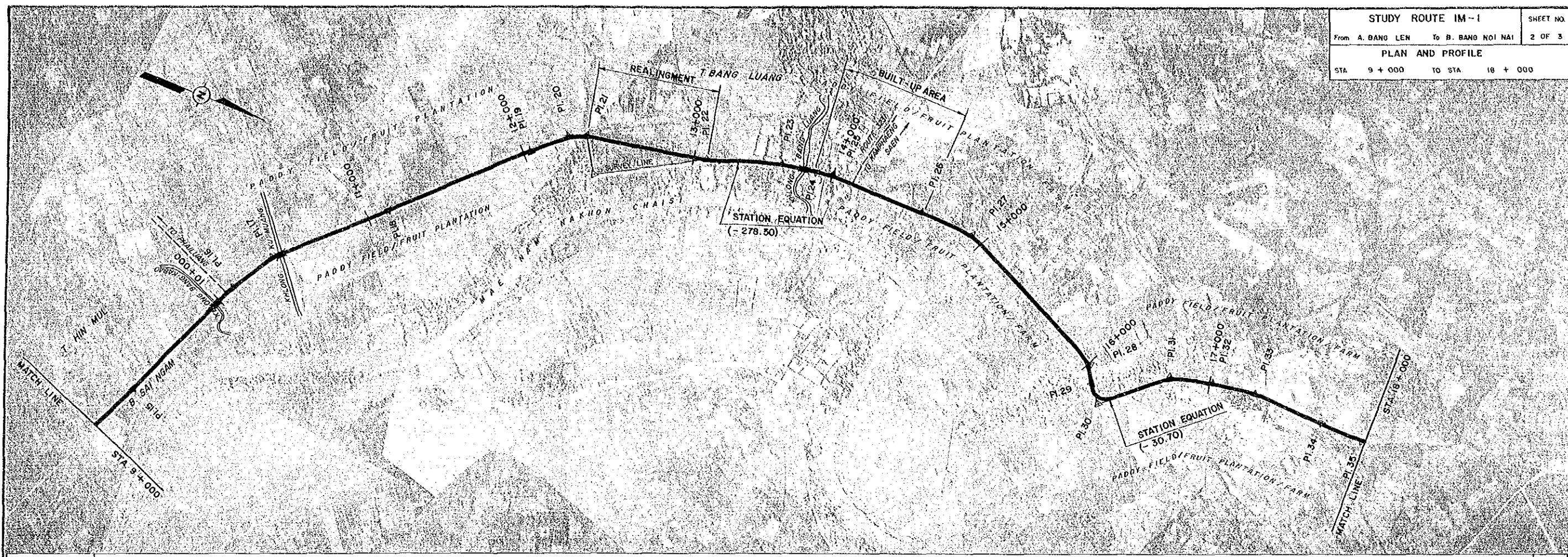
	NEW CONSTRUCTION SECTION OF STUDY ROUTE
	IMPROVEMENT SECTION OF STUDY ROUTE
	BRIDGE (PROPOSED, EXISTING)
	BOX CULVERT (PROPOSED, EXISTING)
	PIPE CULVERT (PROPOSED, EXISTING)
	HIGH WATER LEVEL
HWY	HIGHWAY
PI	POINT OF HORIZONTAL INTERSECTION
NO. or #	NUMBER
$\Delta$	DEFLECTION ANGLE
R	RADIUS OF CURVATURE
T	TANGENT LENGTH
L	LENGTH OF CURVE
RT	RIGHT
LT	LEFT
EXIST.	EXISTING
EXTD.	EXTEND
RC-P-n- $\phi a \times l$	PIPE CULVERT, n (ROW), $\phi a$ (DIAMETER, m), l (LENGTH, m)
RC-B-n-a $\times b \times l$	BOX CULVERT, n (NO. OF CELLS), a $\times b \times l$ (CLEAR SPAN $\times$ DEPTH $\times$ LENGTH, m)
BR-T-a $\times l - n$	TIMBER BRIDGE, a $\times l$ (WIDTH $\times$ LENGTH, m), n (NO. OF SPANS)
BR-RC-a $\times l - n$	CONCRETE BRIDGE, a $\times l$ (ROADWAY WIDTH $\times$ LENGTH, m) n (NO. OF SPANS)



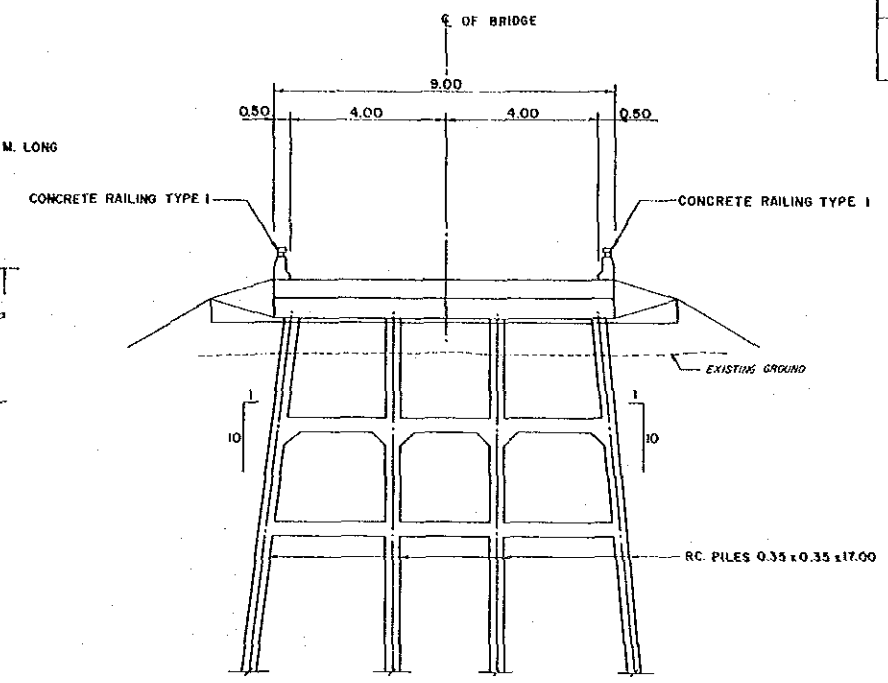
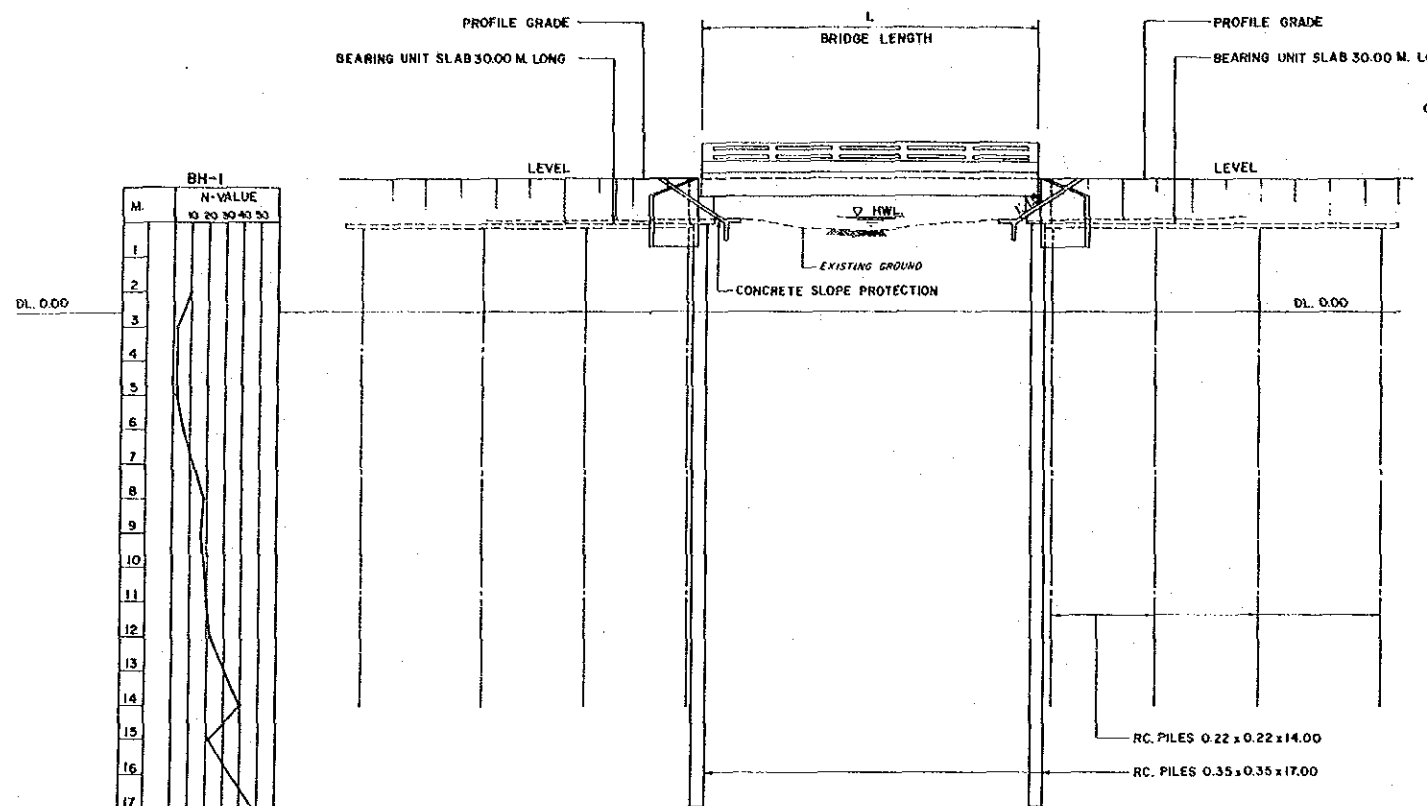


TERRAIN	FLAT	
PAVEMENT	Type / Length	LATERITE
	Condition	POOR
FLOODING	Length (Km) Height (m.)	-
RIGHT OF WAY (m.)	RT	10.00
RT	LT	10.00
ROUTE NO. AGENCIES	PWD	
ELEVATION (m.)	PROPOSED PROFILE GRADE	10
	EXISTING PROFILE EXISTING GROUND PROFILE	0
CURVA-TURE BAND	Existing Alignment	L = 94.31 R = 617.56
	Proposed Alignment	L = 81.75 R = 336.12
STATION (Km.)	0+000	1+000
	2+000	3+000
	4+000	5+000
	6+000	7+000
	8+000	9+000

STATION (Km.)	0+000	1+000	2+000	3+000	4+000	5+000	6+000	7+000	8+000	9+000
PROPOSED PROFILE GRADE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EXISTING PROFILE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EXISTING GROUND PROFILE	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
VERTICAL CURVE DATA	L = 94.31 R = 617.56	L = 81.75 R = 336.12	L = 245.50 R = 8,594.37	L = 342.33 R = 5,774.49	L = 145.32 R = 411.51	L = 117.91 R = 467.41	L = 181.31 R = 265.14	L = 145.32 R = 411.51	L = 117.91 R = 467.41	L = 181.31 R = 265.14







BH-1  
 N-VALUE  
 TO 20 30 40 50

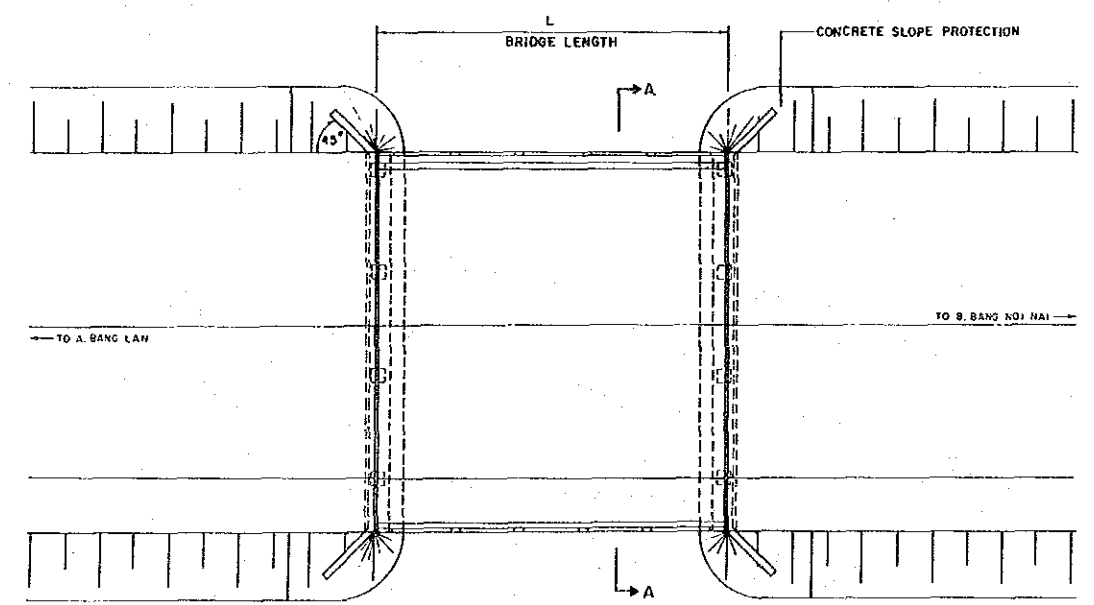
M.	1	
	2	
	3	
	4	
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TABLE OF SUPERSTRUCTURE

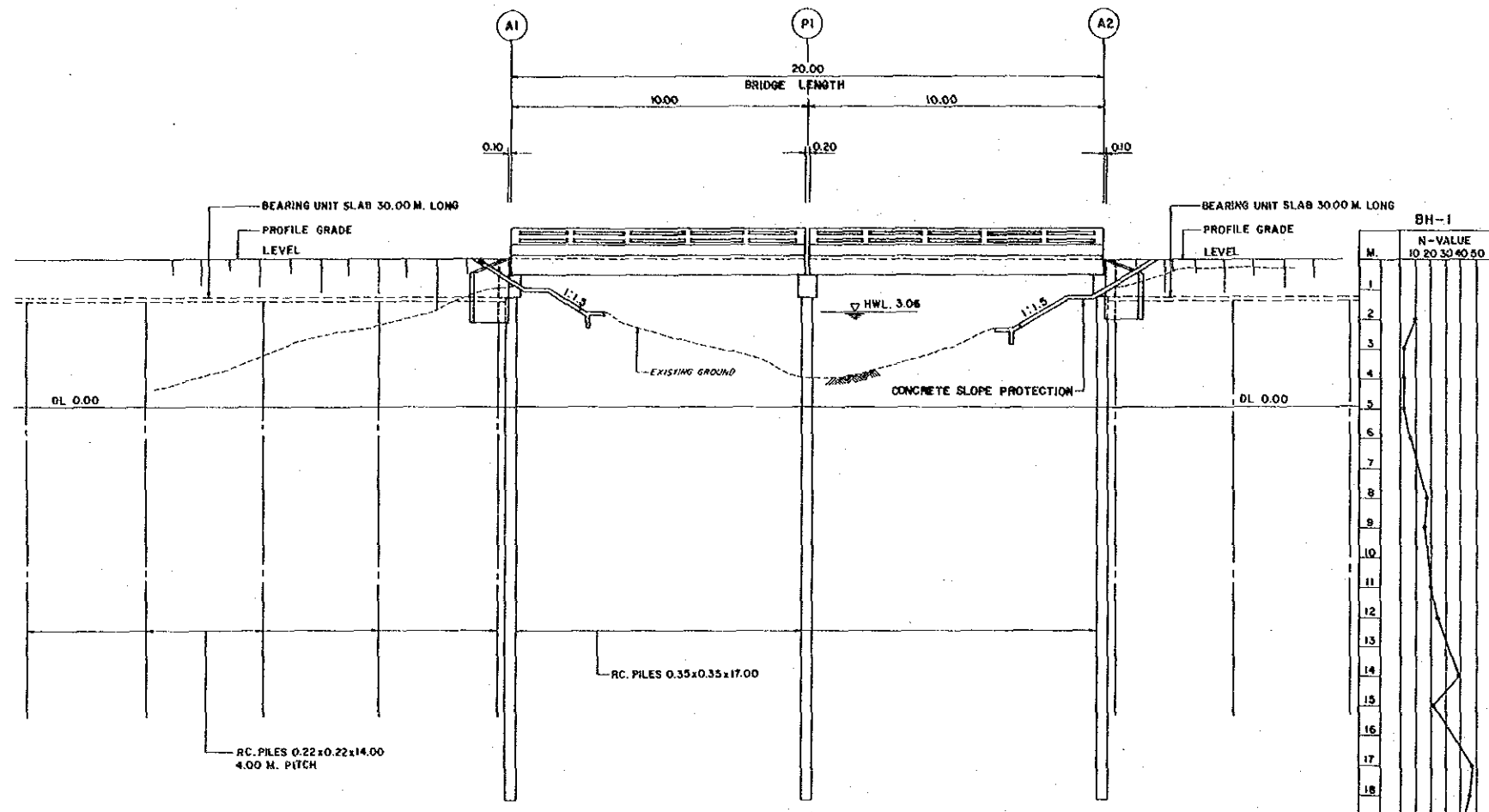
STA. NO.	WIDTH & LENGTH (M)	THICKNESS OF SLAB (CM)	H.W.L (M)
9+949	9.0 x 7.0	39	2.65
10+430	9.0 x 10.0	53	2.81

LIST OF EXISTING BRIDGE

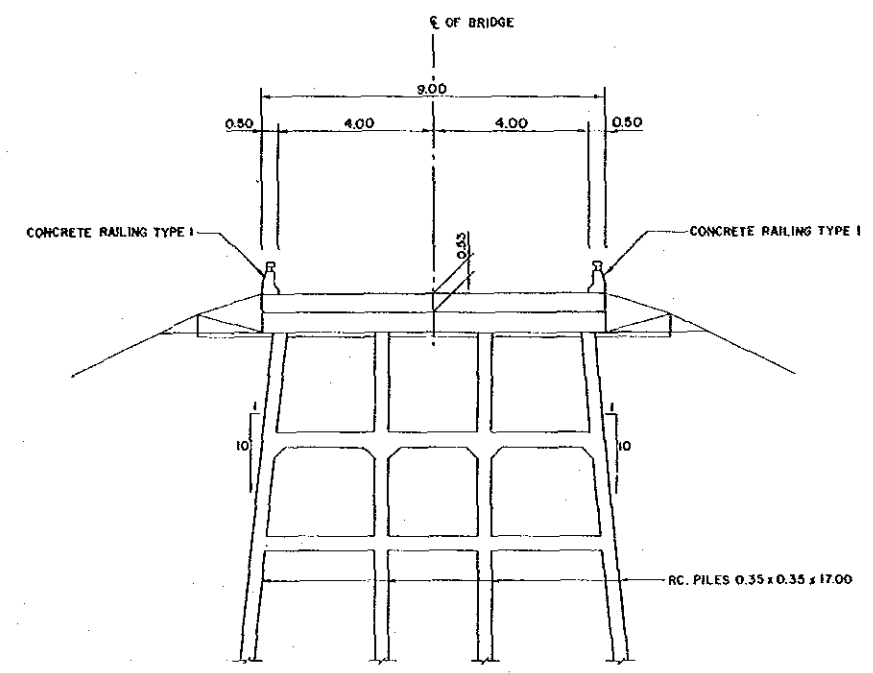
STA. NO.	WIDTH & LENGTH	WITHDRAW (M)
9+949	SLAB TYPE 5.0 x 7.0	14
10+430	SLAB TYPE 5.0 x 10.0	27
TOTAL		41



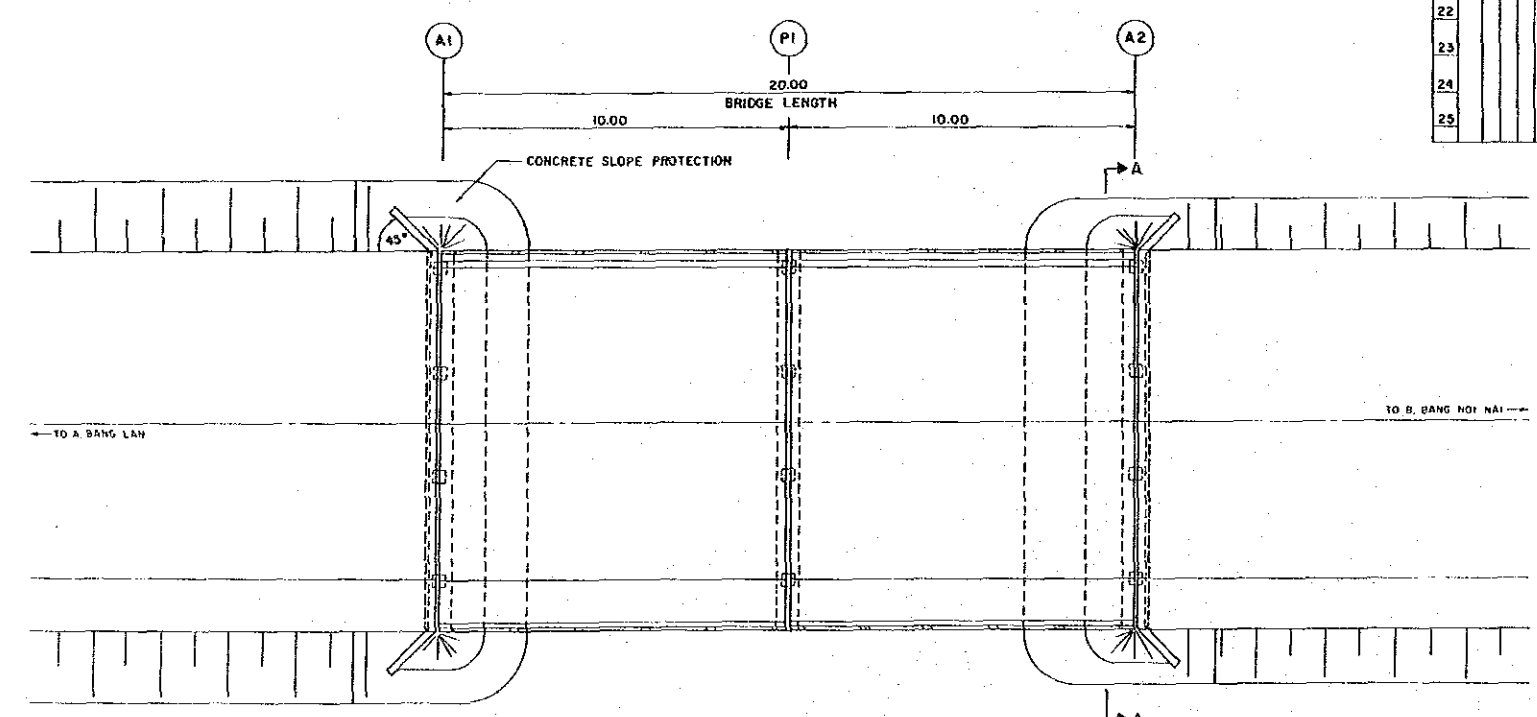
ITEM	UNIT	QUANTITY		TOTAL
		STA. 9+949	STA. 10+430	
<b>1. CONCRETE</b>				
CLASS B (1 1/2) FOR BRIDGE DECK	M <sup>3</sup>	25	48	73
CLASS B (1 1/2) FOR PILE BENT ABUTMENT	M <sup>3</sup>	33	40	73
CLASS SPECIAL B (1 1/2) FOR BEARING UNIT SLAB	M <sup>3</sup>	162	162	324
<b>2. STEEL REINFORCEMENT</b>				
	T	17	20	37
<b>3. RC PILE 0.35 x 0.35 M</b>				
	LM	186	186	372
<b>4. RC PILE 0.22 x 0.22 M</b>				
	LM	544	544	1088
<b>5. CONCRETE RAILING TYPE 1</b>				
	LM	7	10	17
<b>CONCRETE RAILING TYPE 3</b>				
	LM	7	10	17
<b>6. CONCRETE SLOPE PROTECTION</b>				
	M <sup>2</sup>	46	43	89



GENERAL ELEVATION  
 SCALE 1 : 100



SECTION A-A  
 SCALE 1 : 100



GENERAL PLAN  
 SCALE 1 : 100

ITEM	UNIT	QUANTITY
1. CONCRETE CLASS B (1 1/2) FOR BRIDGE DECK CLASS B (1 1/2) FOR PILE BENT PIER AND ABUTMENT CLASS SPECIAL B (1 1/2) FOR BEARING UNIT SLAB	M <sup>3</sup>	96 50 162
2. STEEL REINFORCEMENT	T	25
3. RC PILE 0.35 x 0.35 M.	LM	278
4. RC PILE 0.22 x 0.22 M.	LM	896
5. CONCRETE RAILING TYPE 1 TYPE 3	LM LM	20 20
6. CONCRETE SLOPE PROTECTION	M <sup>2</sup>	198

LIST OF EXISTING BRIDGE

STA. NO.	WIDTH & LENGTH (M.)	WITHDRAW (M <sup>3</sup> )
13+853	4.00 x 20	45

TABLE OF SUPERSTRUCTURE

STA. NO.	WIDTH & LENGTH	THICKNESS	H.W.L.
13+853	9.0 x 20.0	0.53	3.06

**PROJECT IM - 2**

**Changwat : Kanchanaburi**

**B. Nong Pru - A. Lao Khwan**

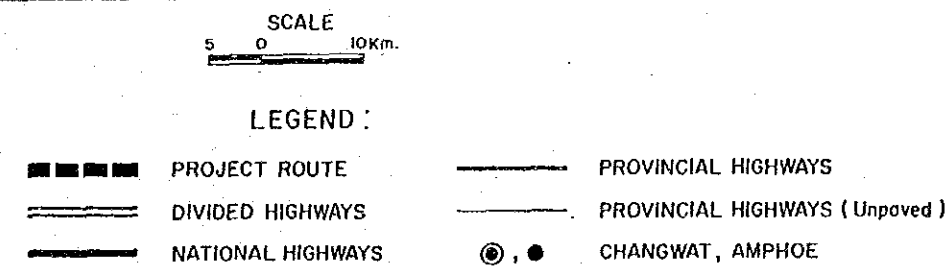
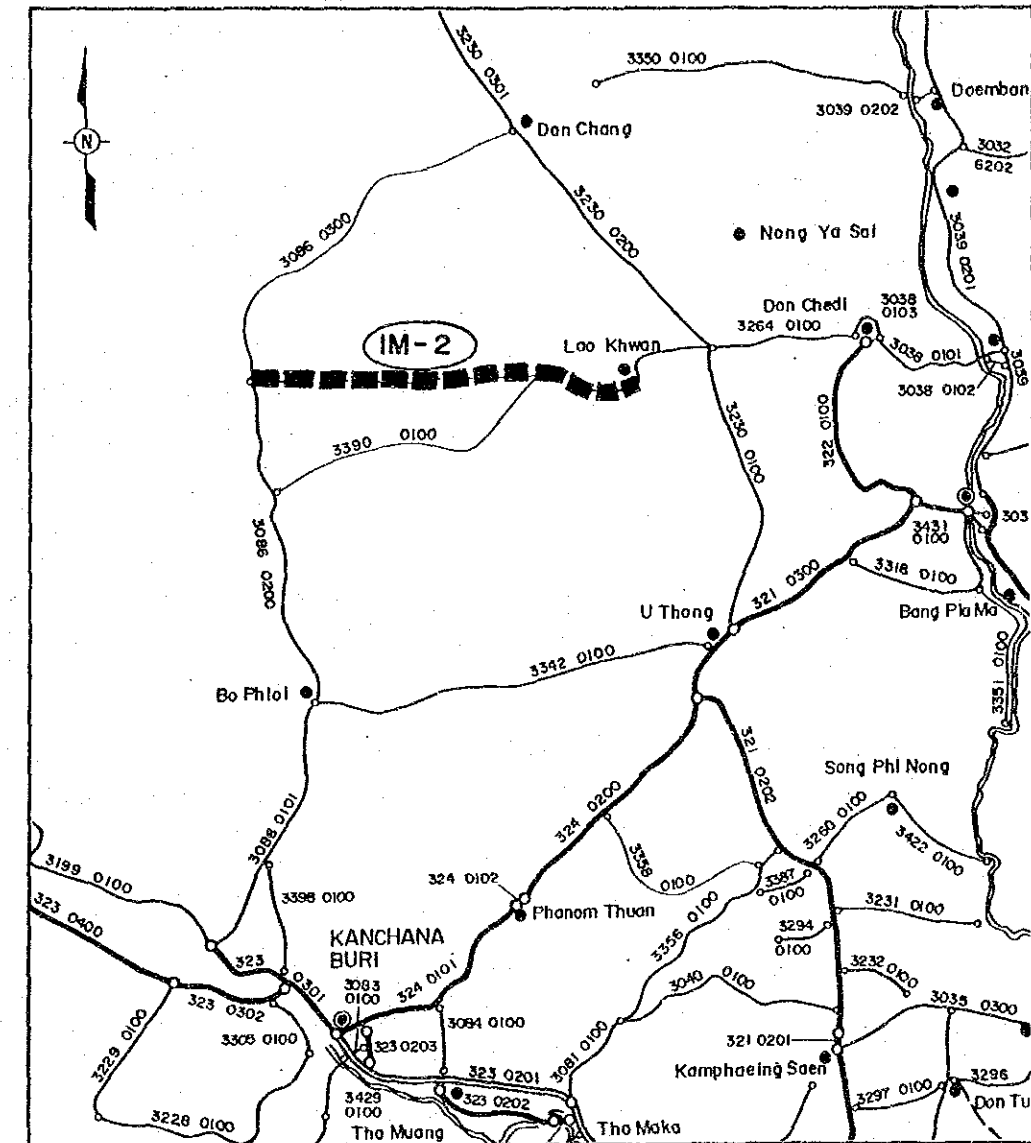
**Length : 35.9 km**

**SUMMARY**

**PROJECT IM-2**

ITEM	DESCRIPTION
Changwat	Kanchanaburi
Origin	B. Nong Pru (J.R. 3086)
Destination	A. Lao Khwan
Route No.	Rt. 3306
Project Length	35.90 km
Standard	
- Existing	—
- Proposed	F4
Traffic	
- Base	254 ~ 255
- 2000	500 ~ 600
- 2008	700 ~ 800
Pavement Type	
- Existing	Laterite
- Proposed	DBST
Bridges	
- New Construction	—
- Replacement	—
Construction Costs	
- Financial	46,437,000 Baht
- Economic	40,627,000 Baht
Economic Evaluation	
- IRR	28.1%
- B/C	2.72

**LOCATION OF PROJECT ROUTE**



## 1. GENERAL

The proposed route lines entirely in Changwat Kanchanaburi.

It originates at the junction with Route 3086 in Ban Nong Pru, runs eastward and ends in Amphoe Lao Khwan. Its total length is 36 km.

The terrain is rolling except for the last 4 km approach to Amphoe Lao Khwan. SBST is applied for a length of 3 km from Km 4 + 700 where two adjoining Bans form a relatively dense cluster of farmhouses. The remaining parts are of laterite. Seven Bans are located along the road excluding both ends, all of them relatively small. The dominant crop along the road is sugarcane, followed by cassava. Some paddies and pineapples are also grown. During the peak sugar harvesting season, traffic is heavy with overloaded sugarcane trucks, which can make only 20 km/h because of the poor road surface, which in turn is a result of their own making. There are no bridges but six box culverts of 8-12 m in width.

The condition of the SBRT section was fair, at least at the time of the Study Team's inspection. However, the condition of the laterite sections, which are the vast majority, is poor.

The horizontal alignment of this road does not require any improvement. There are some sections where the vertical alignment could be improved but can be left as they are without much problem. DOH has carried out improvement work for some structures such as box culverts at several locations. In this study this road was decided to be improved to the F4 standard.

Upon completion, the road will not only provide better transport facility to area residents but will also become a major approach channel to Amphoe Lao Khwan for the people in the area west of the Amphoe.



2. TRAFFIC FORECAST

Base Traffic Volume

(Unit: Vehicles/Day)

Project Code	Section	Year	Traffic Volume							ADT
			MC	PC	LB	HB	LT	MT	HT	
IM-2	3306-0100-W	1988	205	1	5	4	176	66	2	254
	3306-0100-E	1988	271	1	6	4	171	70	3	255

Traffic Growth Rate

(Unit: Percent)

Project Code	Section	Period	MC	PC	LB	HB	LT	MT	HT
			IM-2	3306-0100-W	-1993	5.09	6.49	5.65	5.74
		1994-2000	4.64	5.80	5.20	5.05	4.12	4.12	3.66
		2000-2008	4.71	5.81	5.00	5.02	4.15	4.16	4.19
	3306-0100-E	-1993	5.09	6.49	5.65	5.74	4.52	4.52	4.92
		1994-2000	4.64	5.80	5.20	5.05	4.12	4.12	3.66
		2000-2008	4.71	5.81	5.00	5.02	4.15	4.16	4.19

Induced Traffic Volume

(Unit: Vehicles/Day)

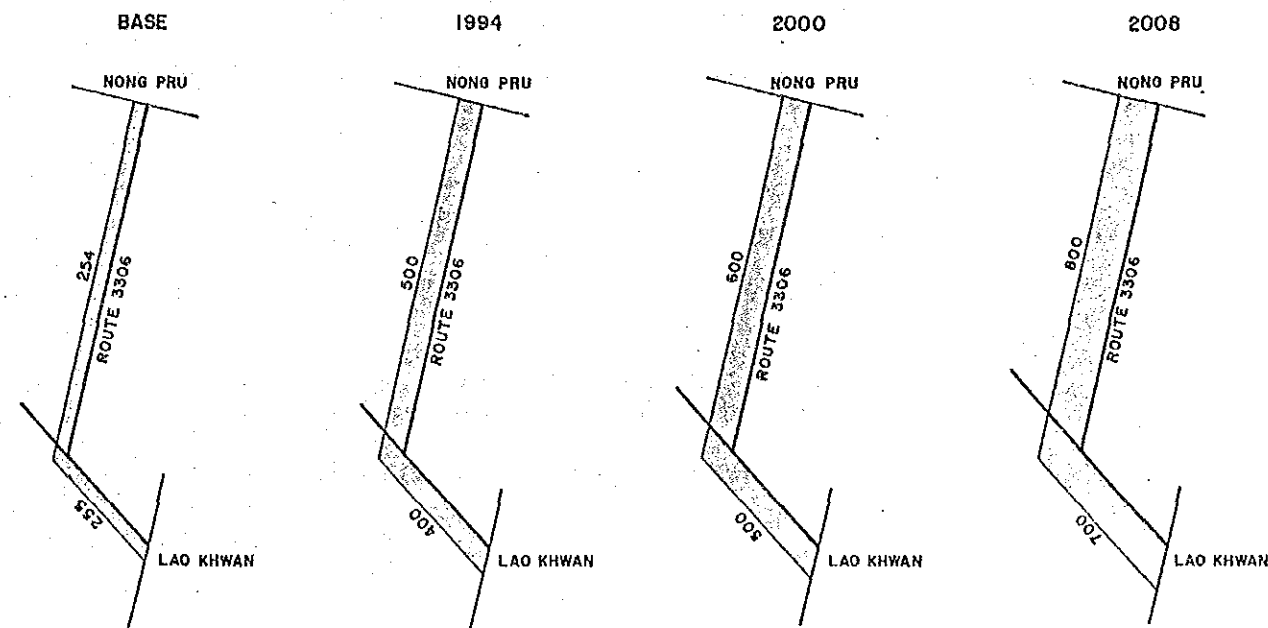
Project Code	Section	Year	MC	PC	LB	HB	LT	MT	HT	ADT
			IM-2	3306-0100-W	1994	100	11	4	2	104
		2000	131	16	5	2	132			155
		2008	188	24	7	3	183			217
	3306-0100-E	1994	38	3	1	1	30			35
		2000	51	5	2	1	38			46
		2008	73	7	3	1	53			64

Future Traffic Volume

(Unit: Vehicles/Day)

Project Code	Section	Year	MC	PC	LB	HB	LT	MT	HT	ADT
			IM-2	3306-0100-W	1994	375	34	10	7	313
		2000	492	48	14	10	399	109	3	583
		2008	710	76	21	14	562	151	5	819
	3306-0100-E	1994	401	27	10	6	233	91	4	371
		2000	528	37	13	8	297	116	5	476
		2008	763	58	19	12	411	160	7	667

Note. W: West section E: East section



UNIT : VEHICLE / DAY

PROJECT IM - 2