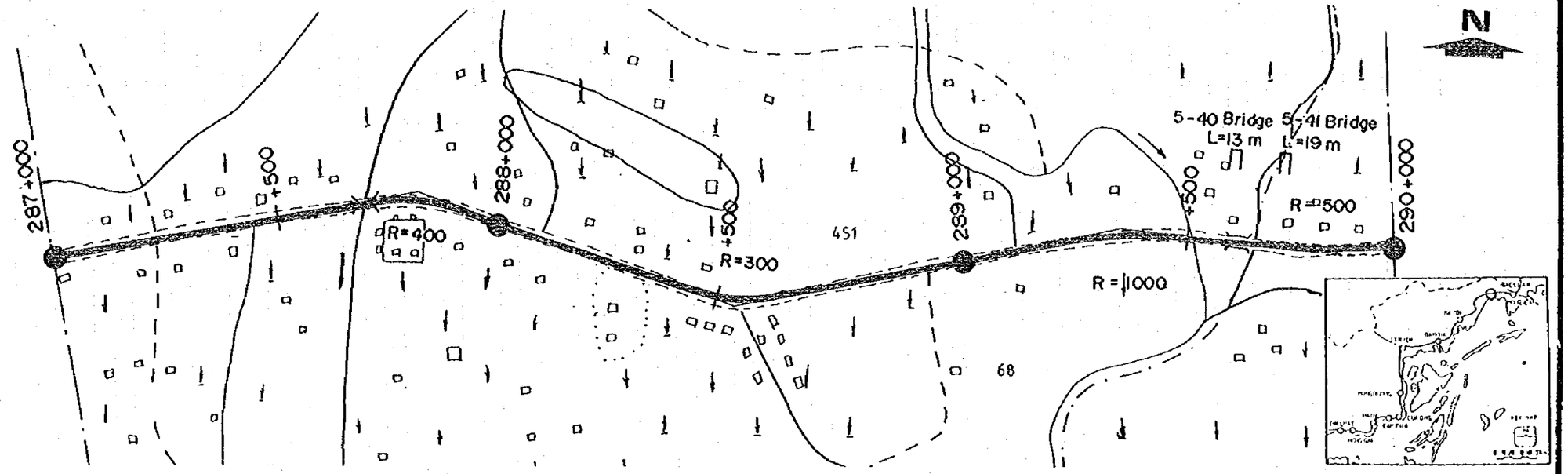
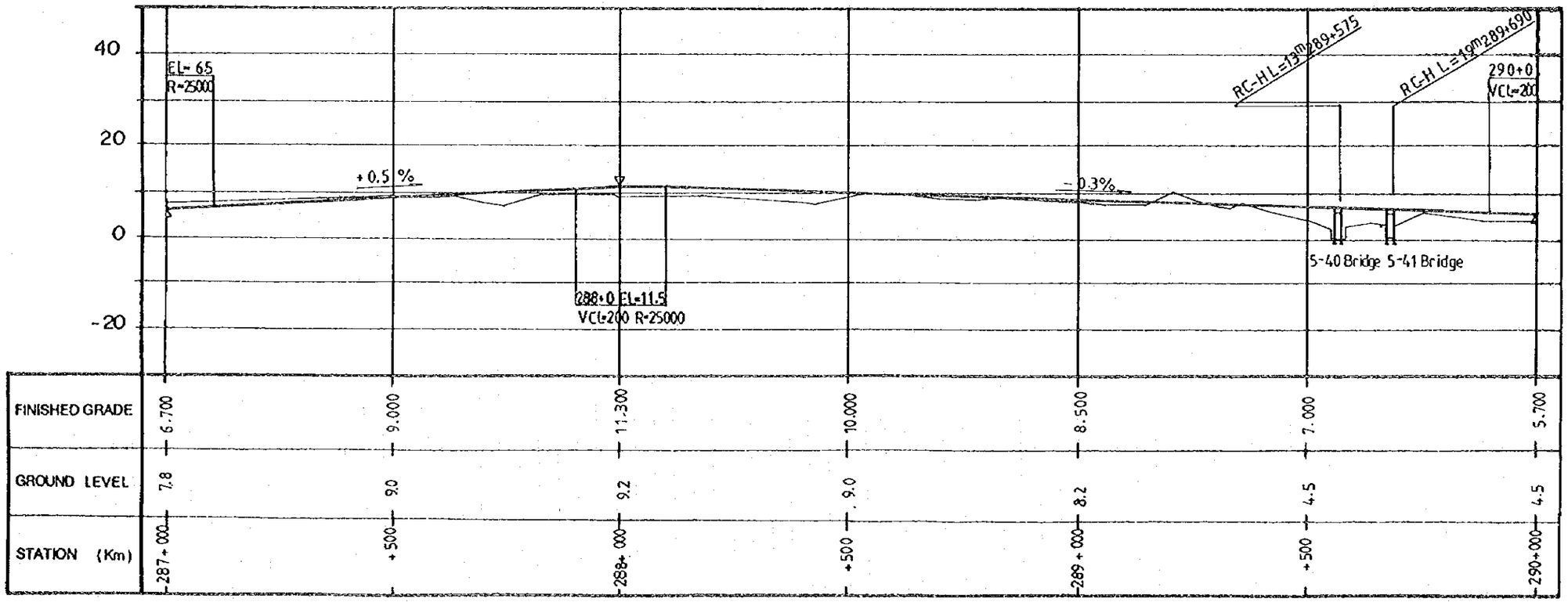
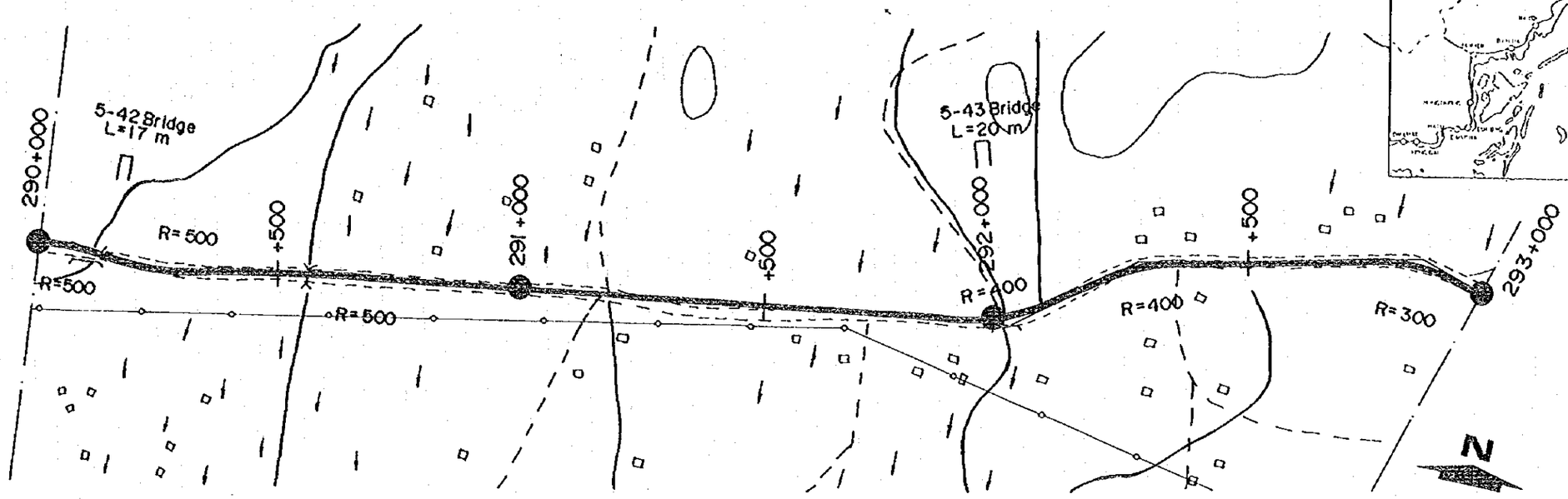
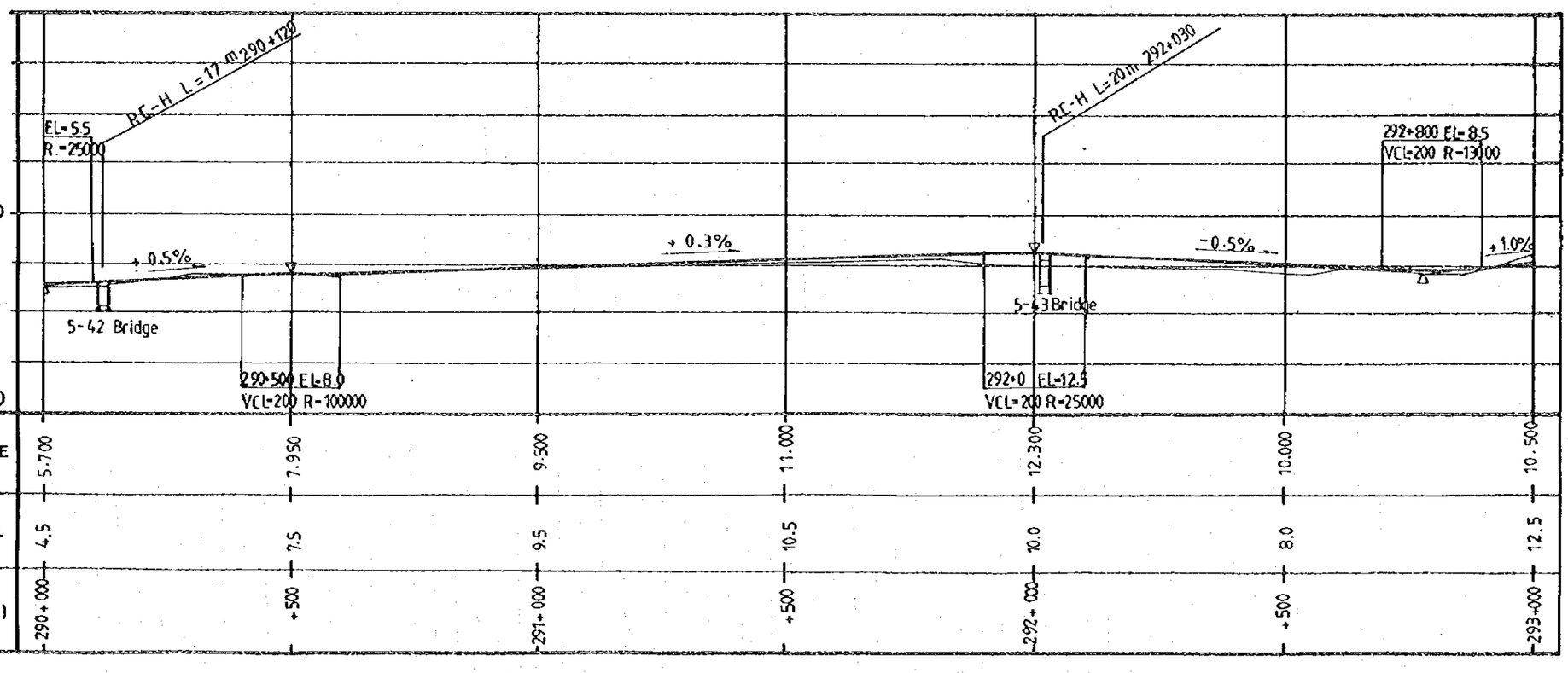


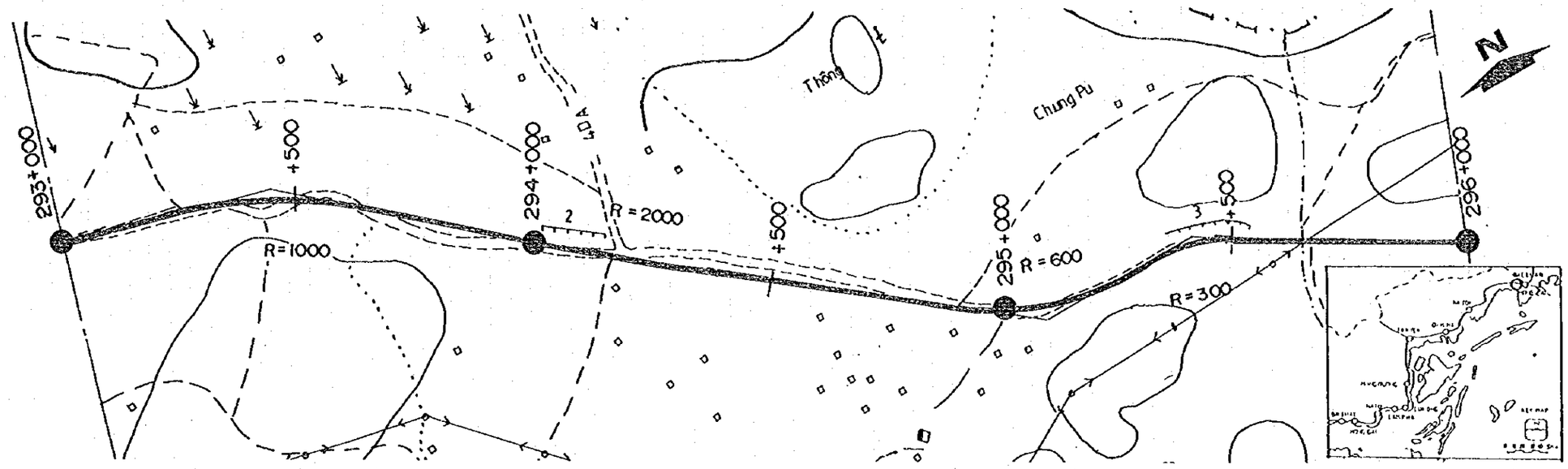


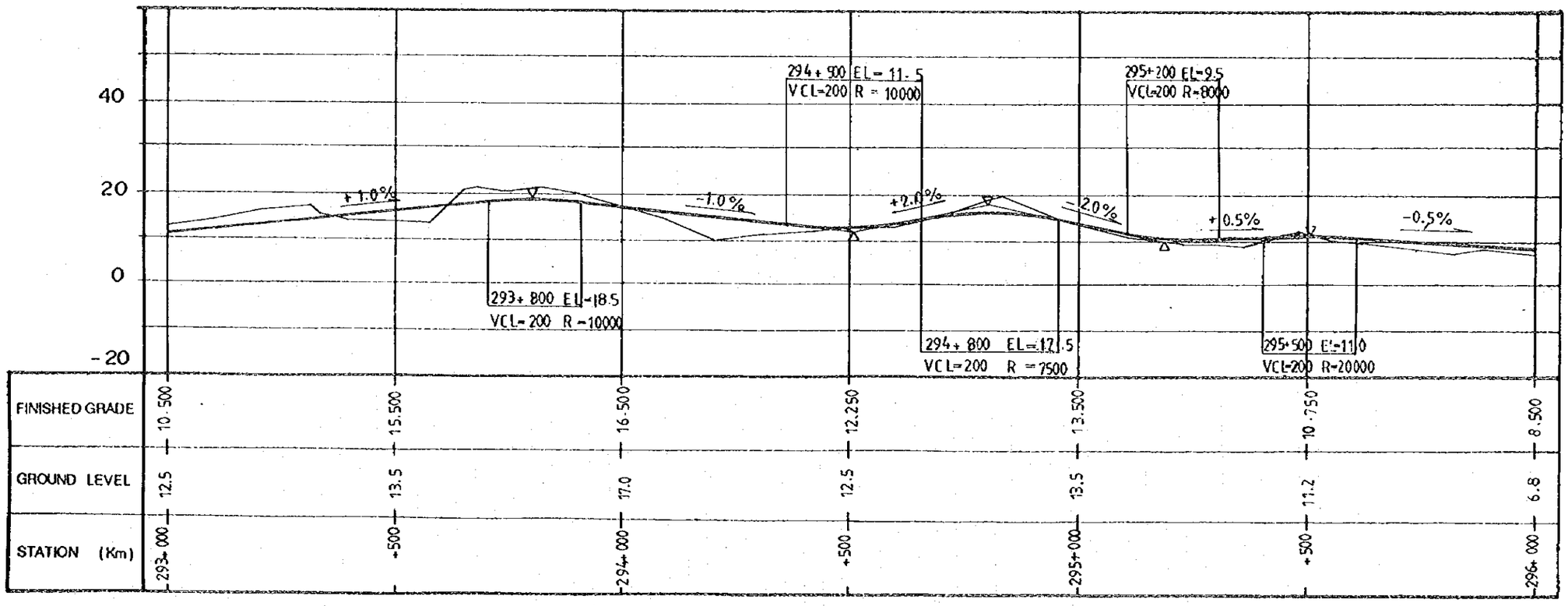
HIGHWAY NO.18 IMPROVEMENT	PLAN AND PROFILE OF CUA ONG - BAC LUAN SECTION (49) (TIEN YEN - BAC LUAN SECTION - 34)	SCALE	HORIZONTAL 1:10000 VERTICAL 1:1000	SHEET NO. 134



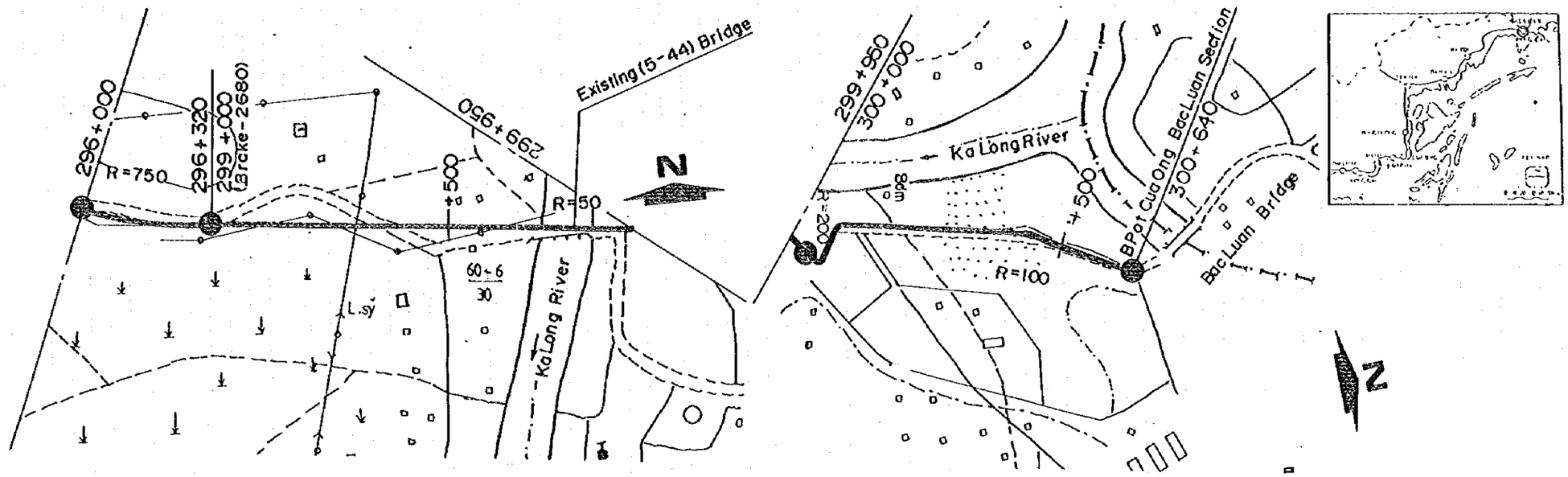


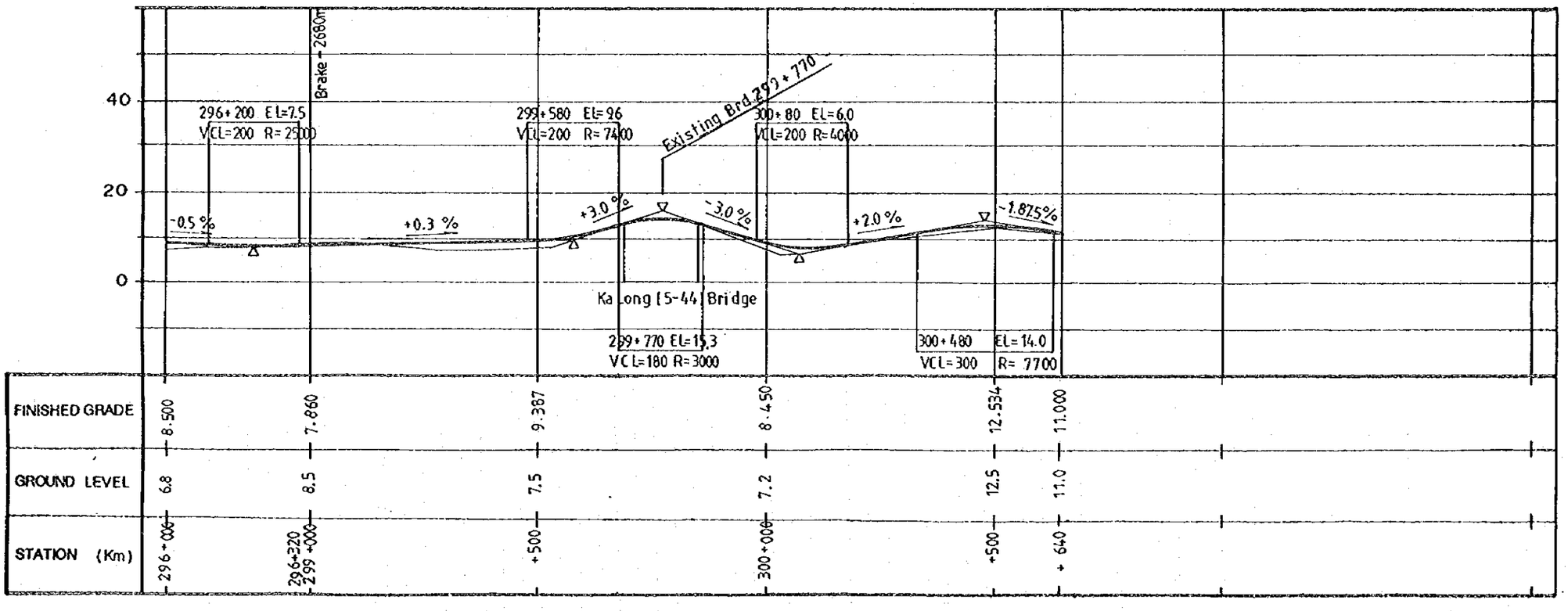
HIGHWAY NO.18 IMPROVEMENT	PLAN AND PROFILE OF CUA ONG - BAC LUAN SECTION (50) (TIEN YEN - BAC LUAN SECTION - 35)	SCALE	HORIZONTAL 1:10000 VERTICAL 1:1000	SHEET NO. 135





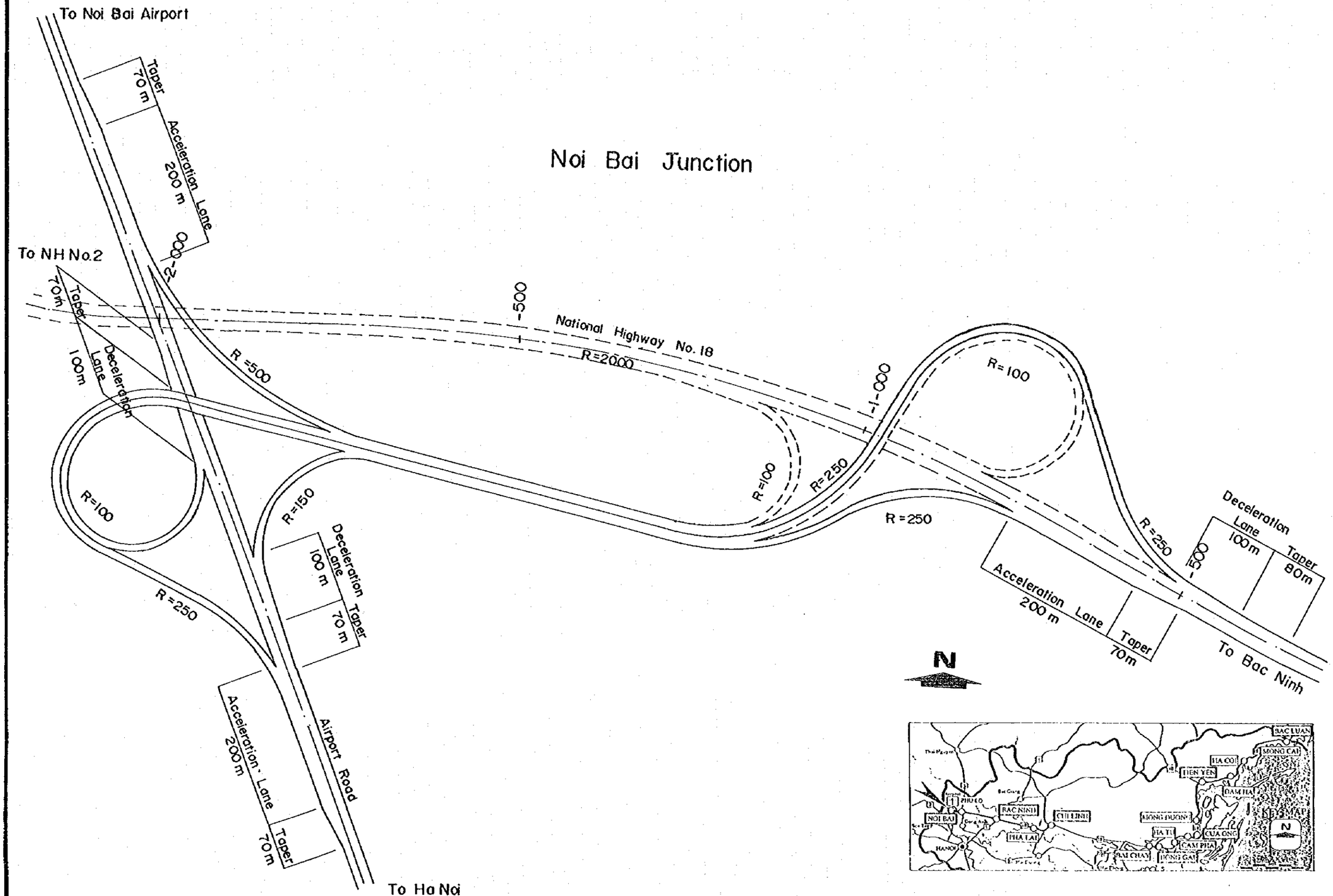
HIGHWAY NO.18 IMPROVEMENT	PLAN AND PROFILE OF CUA ONG - BAC LUAN SECTION (51) (TIEN YEN - BAC LUAN SECTION - 36)	SCALE HORIZONTAL 1:10000 VERTICAL 1:1000	SHEET NO. 136





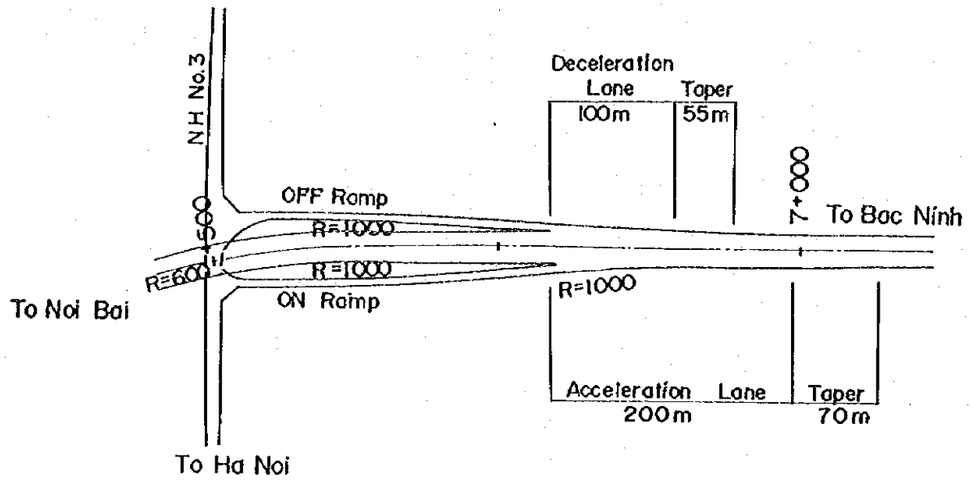
HIGHWAY NO.18 IMPROVEMENT	PLAN AND PROFILE OF CUA ONG - BAC LUAN SECTION (52) (TIEN YEN - BAC LUAN SECTION - 37)	SCALE HORIZONTAL 1:10000 VERTICAL 1:1000	SHEET NO. 137

Noi Bai Junction

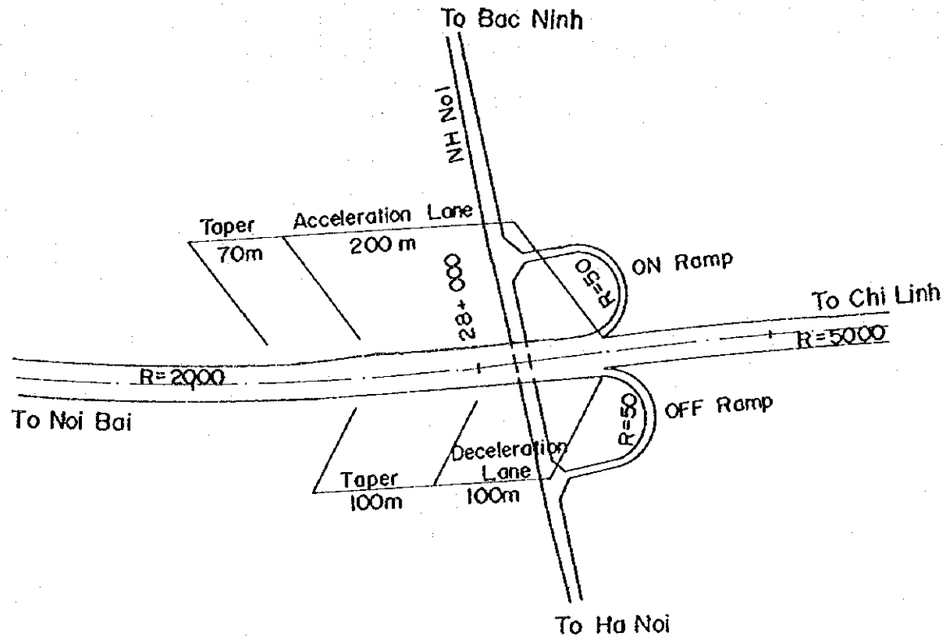


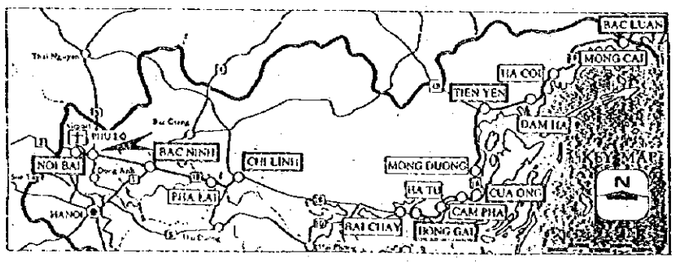
HIGHWAY NO.18 IMPROVEMENT	INTERCHANGE (1) NOI BAI JUNCTION	SCALE	1 : 5,000	SHEET NO. 138

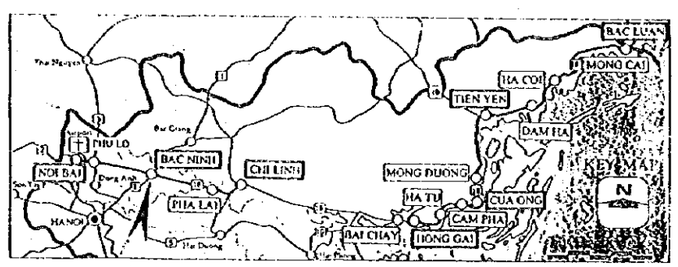
Phu Lo Interchange



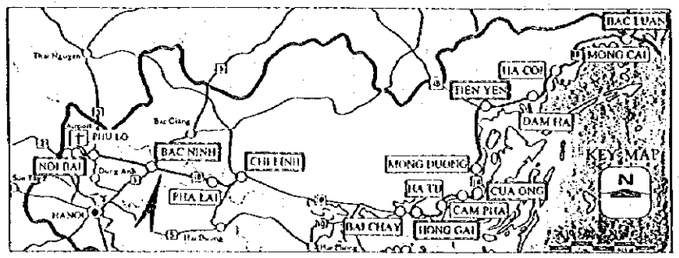
NH No.1 Interchange



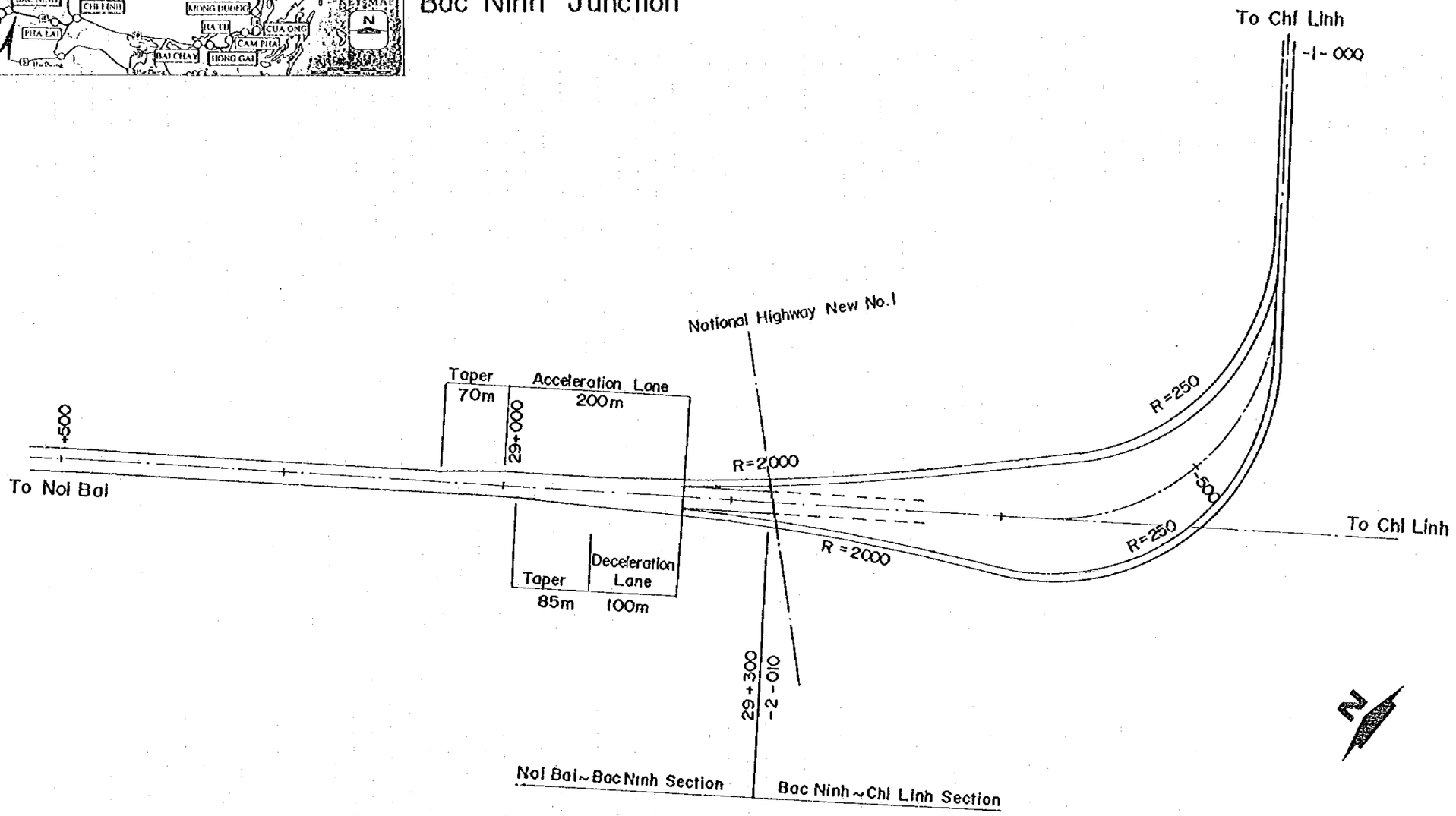




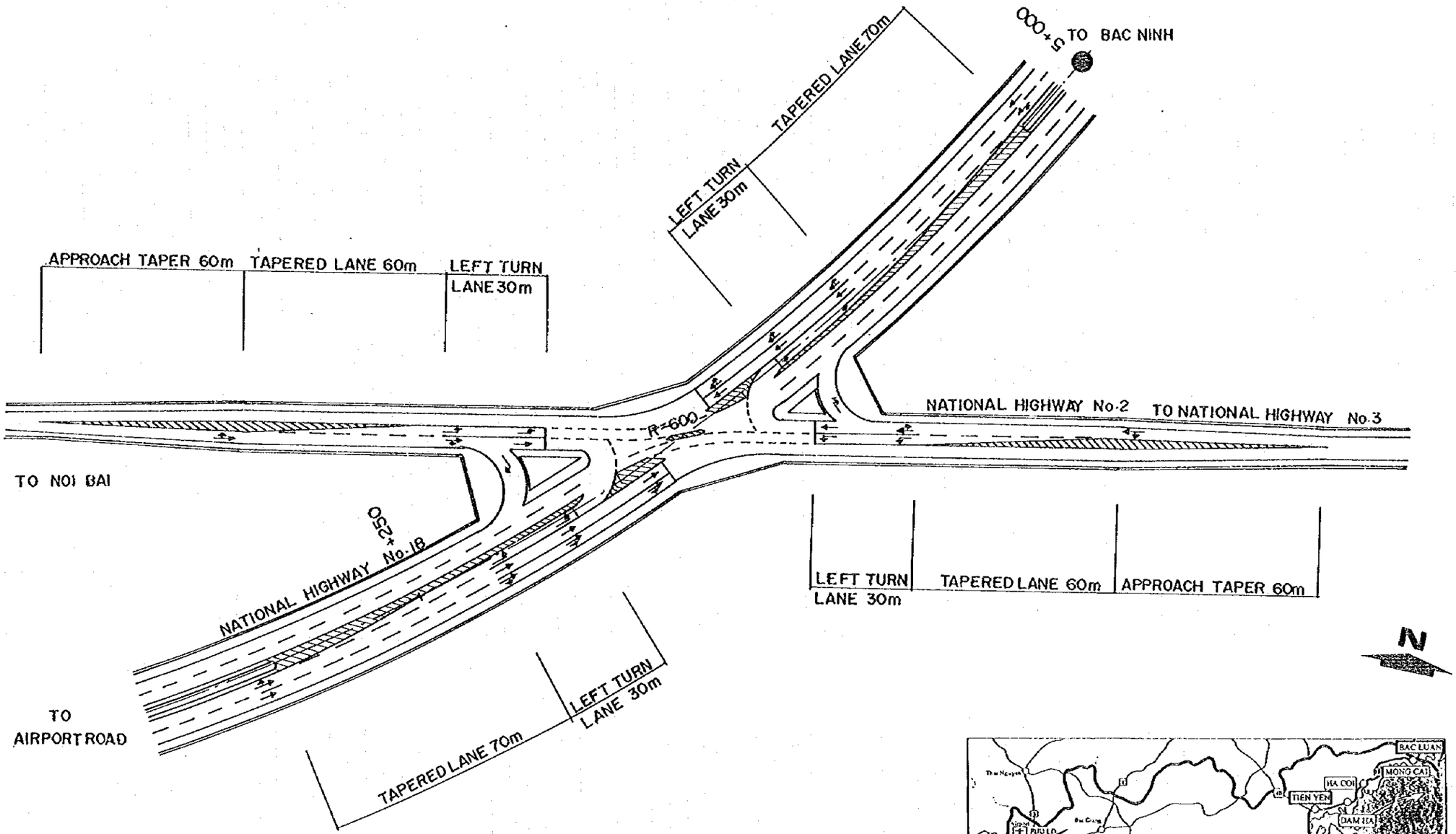
HIGHWAY NO.18 IMPROVEMENT	INTERCHANGE (2) PHU LO & NATIONAL HIGHWAY No.1 INTERCHANG	SCALE	1 : 5,000	SHEET NO. 139



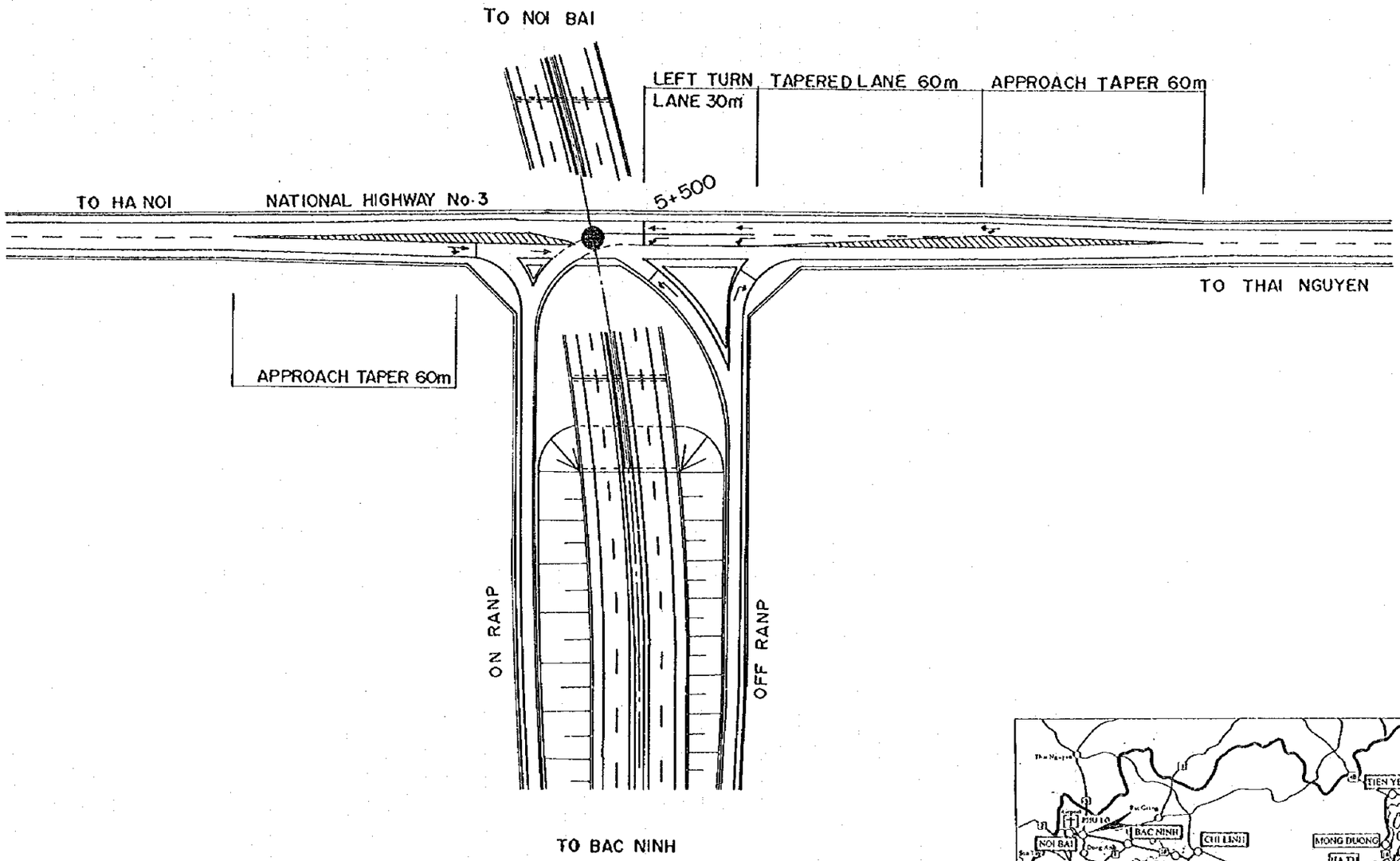
Bac Ninh Junction



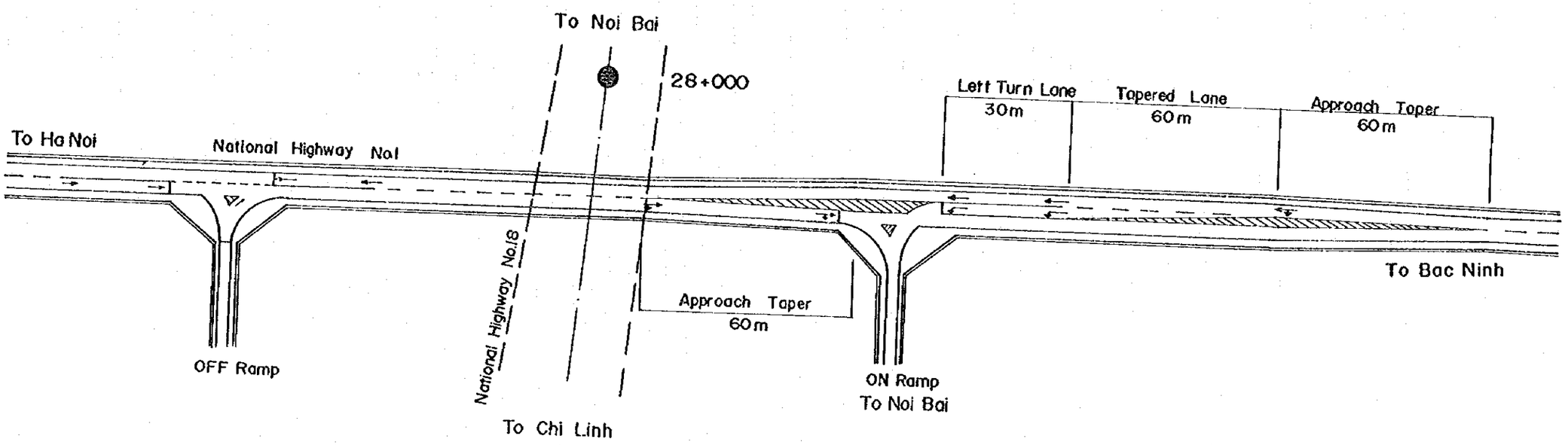
HIGHWAY NO.18 IMPROVEMENT	INTERCHANGE (3) BAC NINH JUNCTION	SCALE	1 : 5,000	SHEET NO. 140

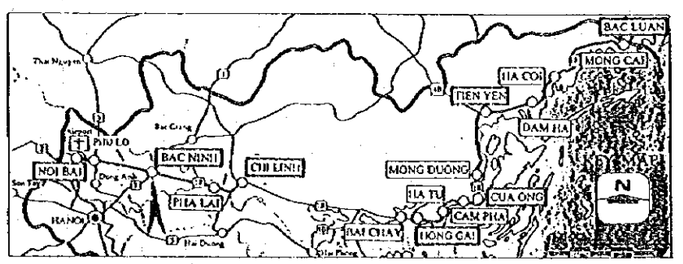


HIGHWAY NO.18 IMPROVEMENT	INTERSECTION (1) NATIONAL HIGHWAY No. 2	SCALE	1 : 1,250	SHEET NO. 141

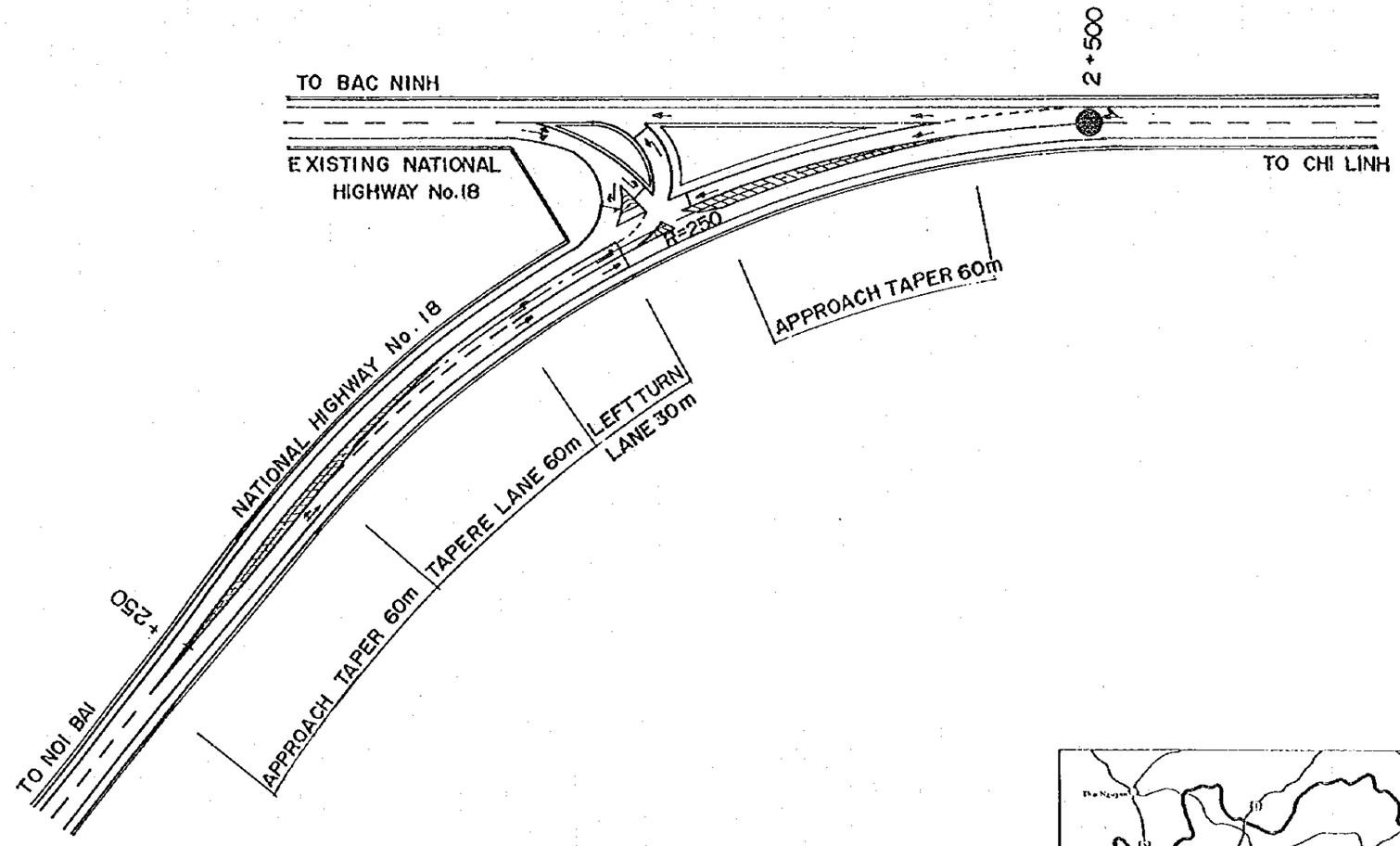


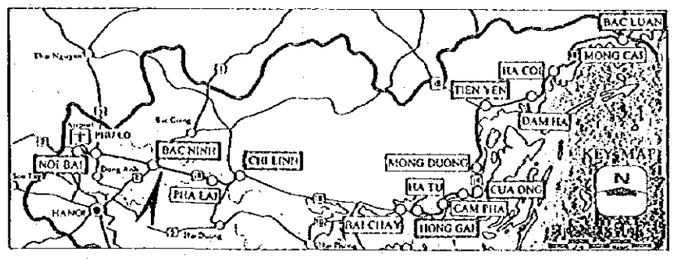
HIGHWAY NO.18 IMPROVEMENT	INTERSECTION (2) NATIONAL HIGHWAY No.3 PHU LO INTERCHANGE	SCALE	1 : 1,250	SHEET NO. 142



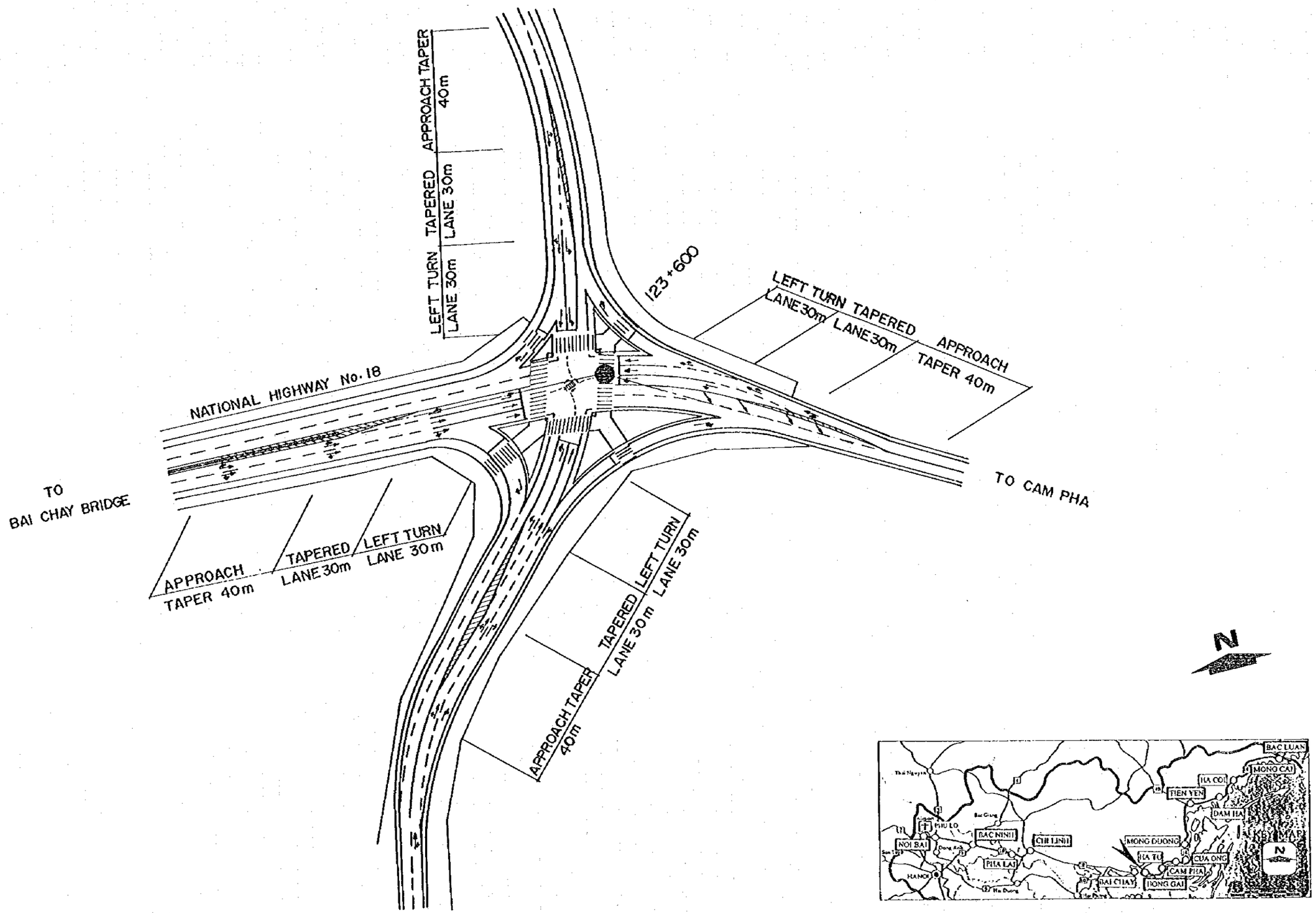


HIGHWAY NO.18 IMPROVEMENT	INTERSECTION (3) NATIONAL HIGHWAY No. 1 INTERCHANGE	SCALE	1 : 1,250	SHEET NO. 143

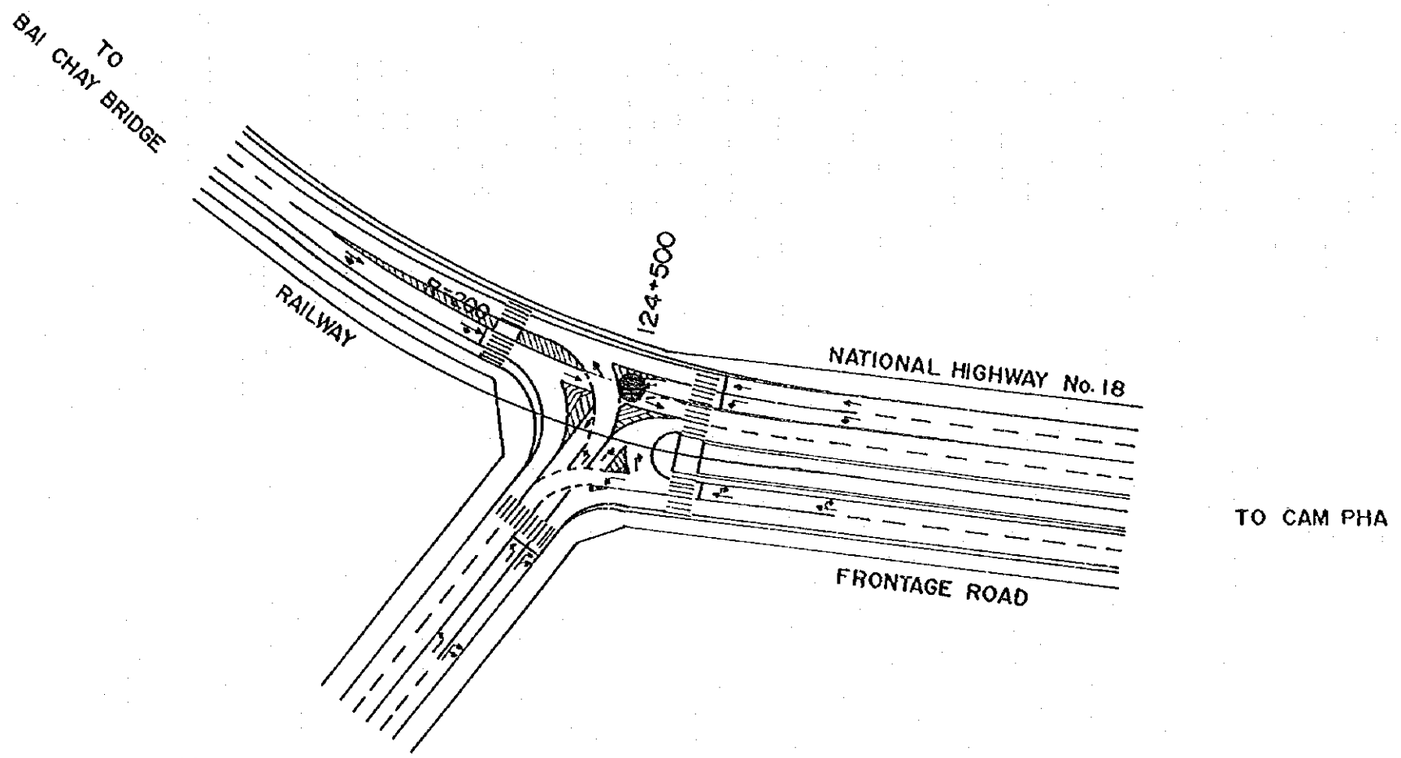


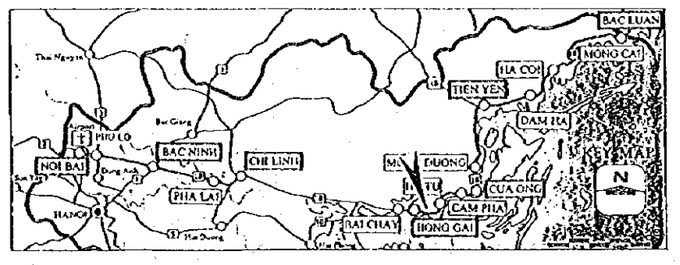


HIGHWAY NO.18 IMPROVEMENT	INTERSECTION (4) EXISTING NATIONAL HIGHWAY No.18(STA.2+400)	SCALE	1 : 1,250	SHEET NO. 144

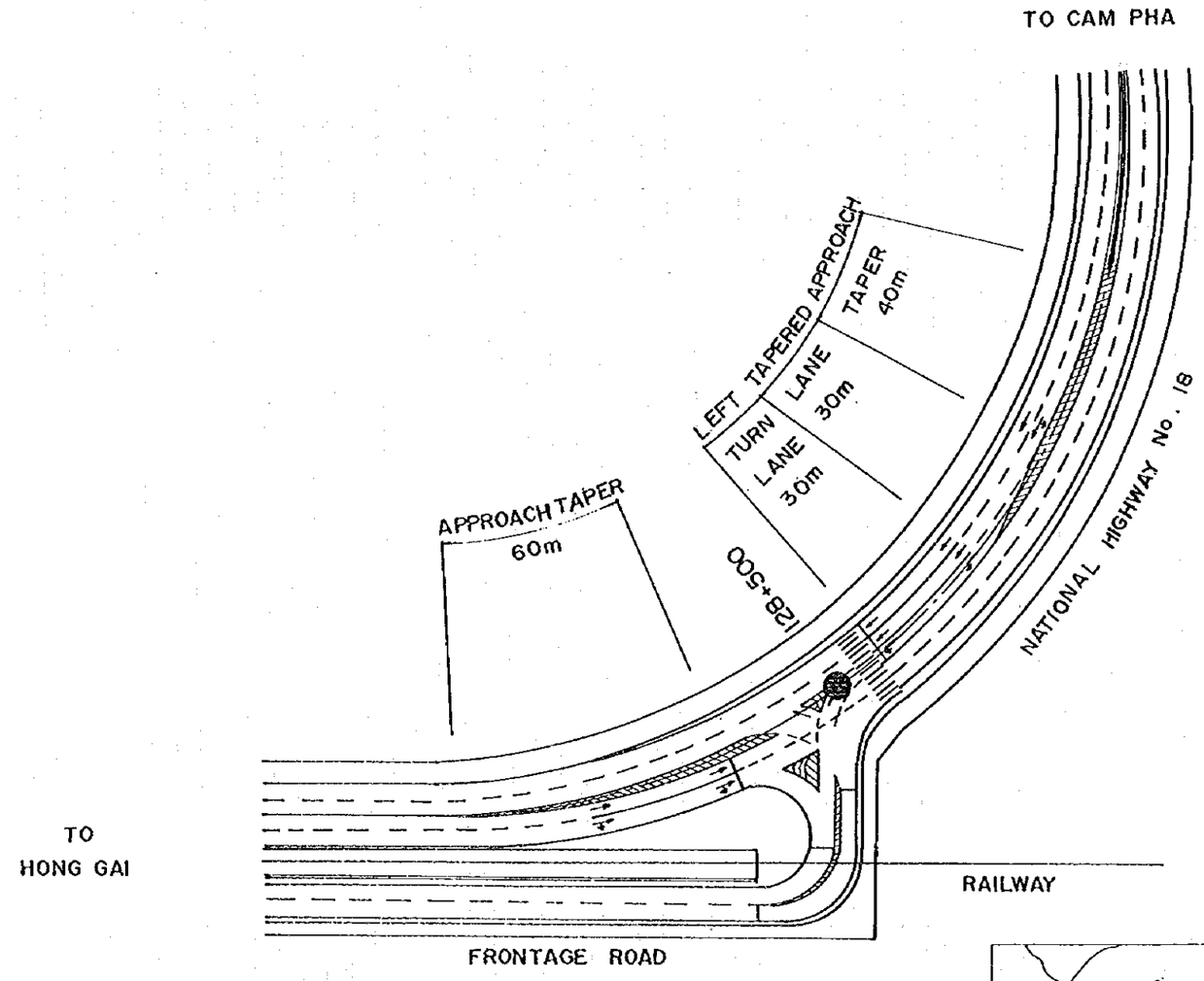


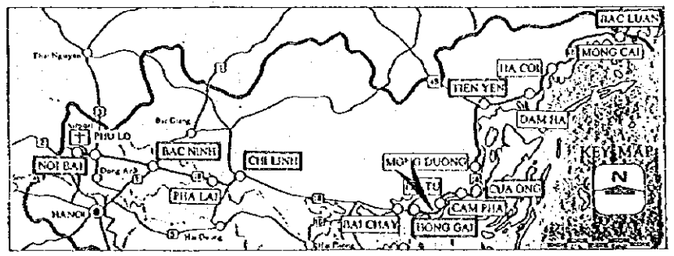
HIGHWAY NO.18 IMPROVEMENT	INTERSECTION (5) BAI CHAI ACCESS ARTERIAL ROAD	SCALE	1 : 1,250	SHEET NO. 145



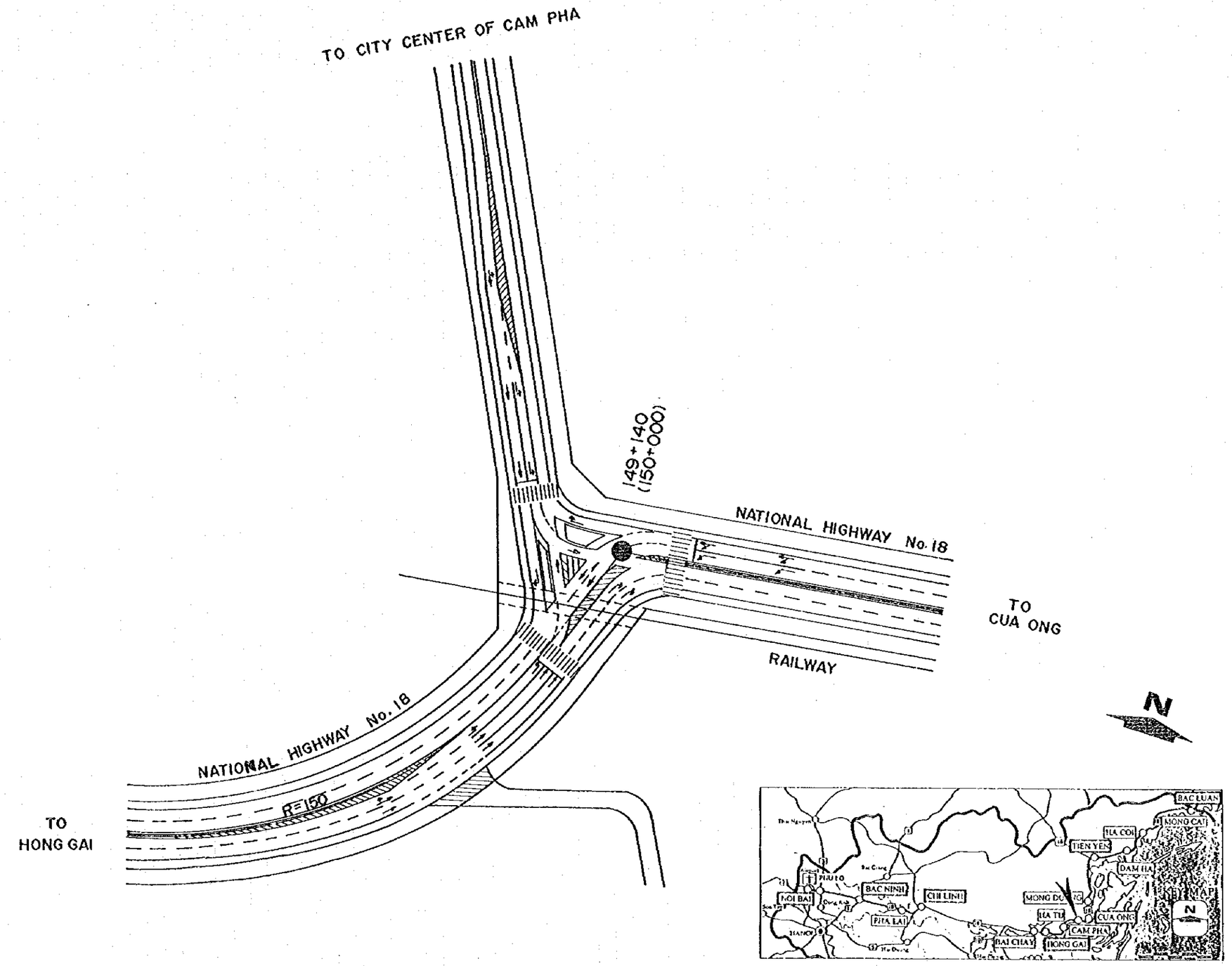


HIGHWAY NO.18 IMPROVEMENT	INTERSECTION (6) HONG GAI ARTERIAL ROAD (STA. 124 + 500)	SCALE	1 : 1,250	SHEET NO. 146

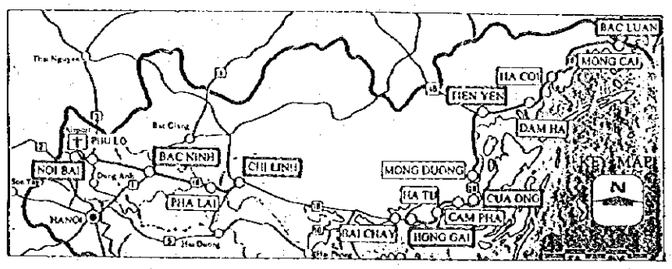




HIGHWAY NO.18 IMPROVEMENT	INTERSECTION (7) HONG GAI FRONTAGE ROAD (STA. 128 + 500)	SCALE	1 : 1,250	SHEET NO. 147



HIGHWAY NO.18 IMPROVEMENT	INTERSECTION (8) EXISTING NATIONAL HIGHWAY No.18(STA.150+000)	SCALE	1 : 1,250	SHEET NO. 148



TO CITY CENTER OF MONG CAI

TO BINH NGOC

N

LEFT TURN	TAPERED	APPROACH TAPER
LANE 30m	LANE 30m	40m

TO DOWN TOWN OF MONG CAI

300+000

NATIONAL HIGHWAY No.18

R=200

R=50

+250

TO BAC LUAN
NATIONAL HIGHWAY No. 18

APPROACH TAPER
45m

APPROACH TAPER	TAPERED	LEFT TURN
40m	LANE 30m	LANE 30m

TO DOWN TOWN OF MONG CAI

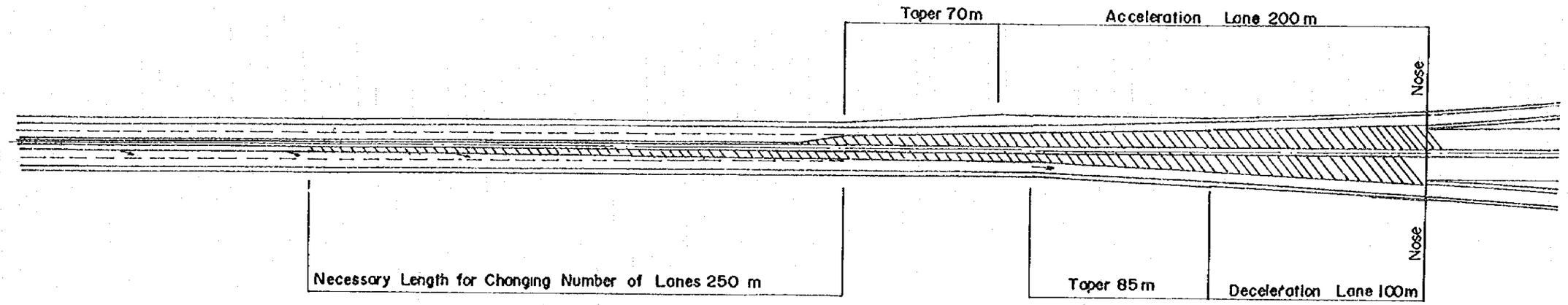
NATIONAL HIGHWAY No.18

KA LONG BRIDGE

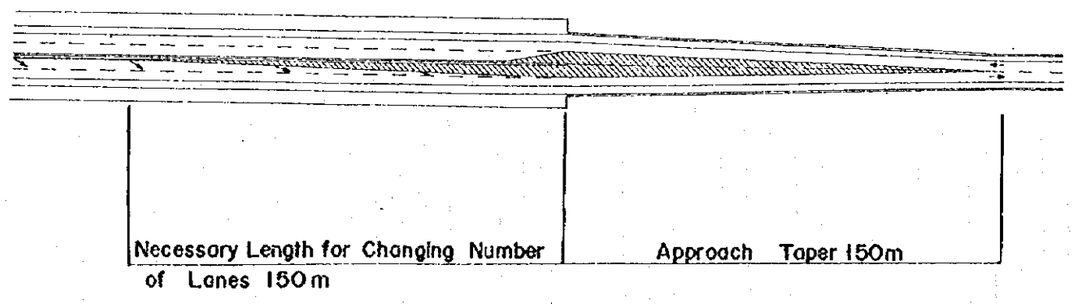
TO HA COI

HIGHWAY NO.18 IMPROVEMENT	INTERSECTION (9) MONG CAI ARTERIAL ROAD (STA. 300 + 000)	SCALE	1 : 1,250	SHEET NO. 149

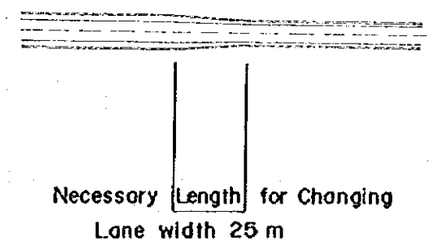
4 Lanes (TYPE D) ⇨ 2 Lanes



TYPE C-2 ⇨ TYPE A-1



TYPE A-1 ⇨ TYPE B



HIGHWAY NO.18 IMPROVEMENT	TYPICAL METHOD OF RUN - OFF	SCALE	1 : 200	SHEET NO. 150

Summary of Major Box Culvert

1. Section 1 (Noibai - Bac Ninh)

No.	Station (km)	Dimension (m) B	Dimension (m) H	Length (m)	Culvert Type
1	0 + 230	2.5	2.5	30.0	Type-A
2	3 + 150	2.5	2.5	30.0	Type-A
3	6 + 180	1.5	1.5	40.0	Type-A
4	10 + 40	2.5	2.5	30.0	Type-A
5	15 + 300	2.5	2.5	30.0	Type-A
6	19 + 220	2.5	2.5	30.0	Type-A
7	20 + 730	2.5	2.5	30.0	Type-A
8	22 + 70	2.5	2.5	30.0	Type-A
9	23 + 420	2.5	2.5	30.0	Type-A
10	27 + 220	2.5	2.5	30.0	Type-A
11	Others	(2.5 x 2.5)		450.0	

2. Section 2 (Bac Ninh - Chi Lin)

No.	Station (km)	Dimension (m) B	Dimension (m) H	Length (m)	Culvert Type
1	-1 - 470	2.5	2.5	15.0	Type-A
2	10 + 230	1.5	1.5	9.0	Type-B
3	Others	(2.5 x 2.5)		117.0	

3. Section 4 (Hong Gai - Cua Ong)

No.	Station (km)	Dimension (m) B	Dimension (m) H	Length (m)	Culvert Type
1	156 + 530	2.5	2.5	31.0	Type-A
2	158 + 530	2.5	2.5	31.0	Type-A
3	159 + 300	2.5	2.5	31.0	Type-A
4	159 + 870	1.5	1.5	31.0	Type-B
5	160 + 210	2.5	2.5	31.0	Type-A
6	Others	(1.5 x 1.5)		36.0	
7	Others	(2.5 x 2.5)		296.0	

4. Section 4 (Cua Ong - Tien Yen)

No.	Station (km)	Dimension (m) B	Dimension (m) H	Length (m)	Culvert Type
1	171 + 440	1.5	1.5	17.0	Type-A
2	185 + 320	1.5	1.5	15.0	Type-A
3	185 + 870	1.5	1.5	10.0	Type-A
4	188 + 890	1.5	1.5	17.0	Type-A
5	193 + 70	1.5	1.5	12.0	Type-A
6	194 + 900	1.5	1.5	17.0	Type-A
7	199 + 520	1.5	1.5	12.0	Type-A
8	199 + 970	1.5	1.5	12.0	Type-A
9	203 + 500	1.5	1.5	9.0	Type-A
10	204 + 360	1.5	1.5	9.0	Type-A
12	Others	(1.5 x 1.5)		50.0	

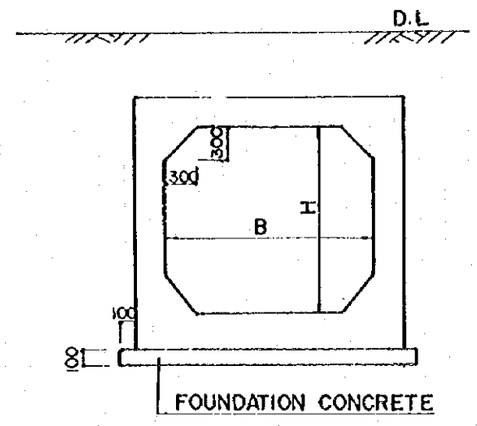
5. Section 5 (Tien Yen - Bac Luan)

No.	Station (km)	Dimension (m) B	Dimension (m) H	Length (m)	Culvert Type
1	207 + 200	1.5	1.5	11.0	Type-A
2	208 + 890	2.5	2.5	13.0	Type-A
3	212 + 50	2.5	2.5	15.0	Type-A
4	215 + 100	2.5	2.5	9.0	Type-A
5	223 + 520	1.5	1.5	10.0	Type-A
6	241 + 0	1.5	1.5	12.0	Type-B
7	250 + 150	1.5	1.5	9.0	Type-B
8	250 + 550	1.5	1.5	15.0	Type-B
9	254 + 550	1.5	1.5	20.0	Type-A
10	272 + 570	1.5	1.5	10.0	Type-A
11	292 + 280	1.5	1.5	10.0	Type-A
12	294 + 130	1.5	1.5	15.0	Type-A
13	Others	(1.5 x 1.5)		908.0	
14	Others	(2.5 x 2.5)		40.0	

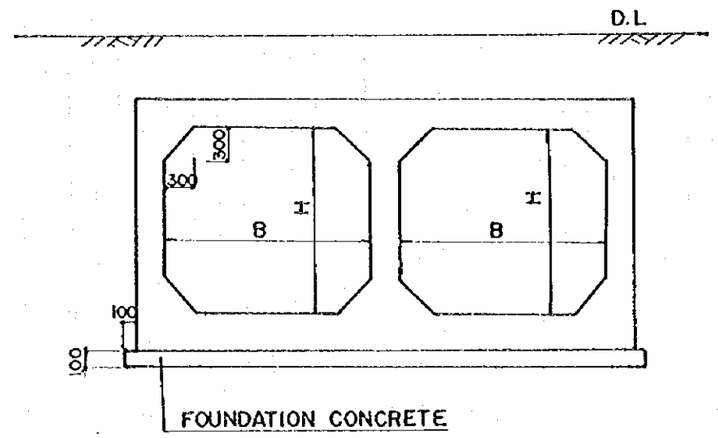
TYPICAL BOX CULVERTS

GENERAL VIEW

TYPE - A



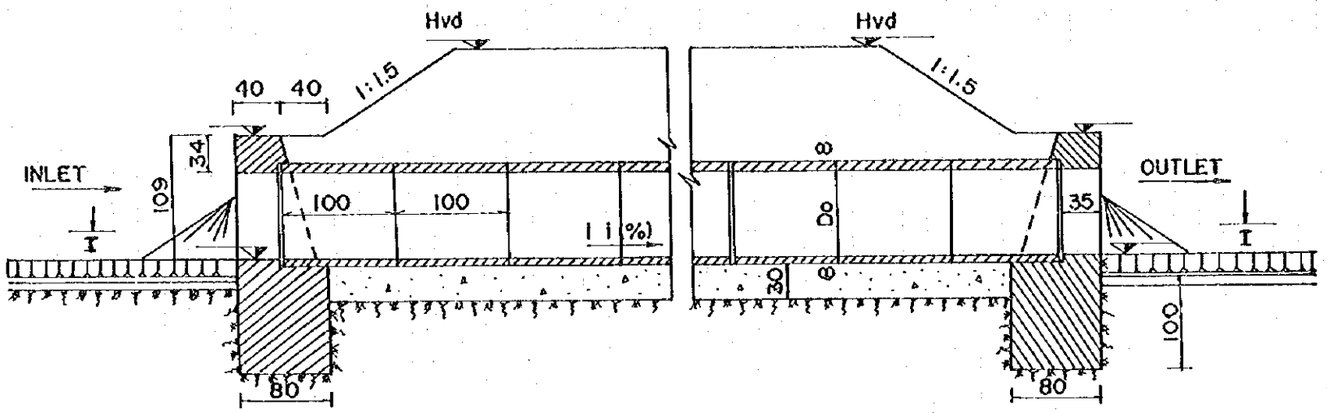
TYPE - B



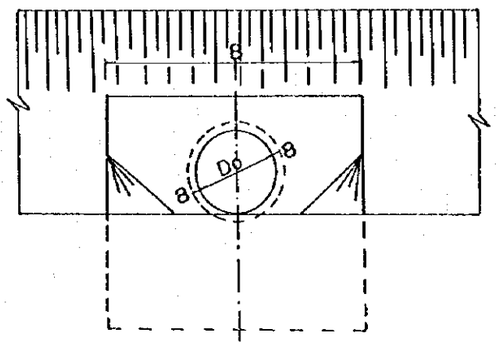
PLAN VIEW

HIGHWAY NO.18 IMPROVEMENT	TYPICAL BOX CULVERTS	SCALE	NONE SCALE	SHEET NO. 152

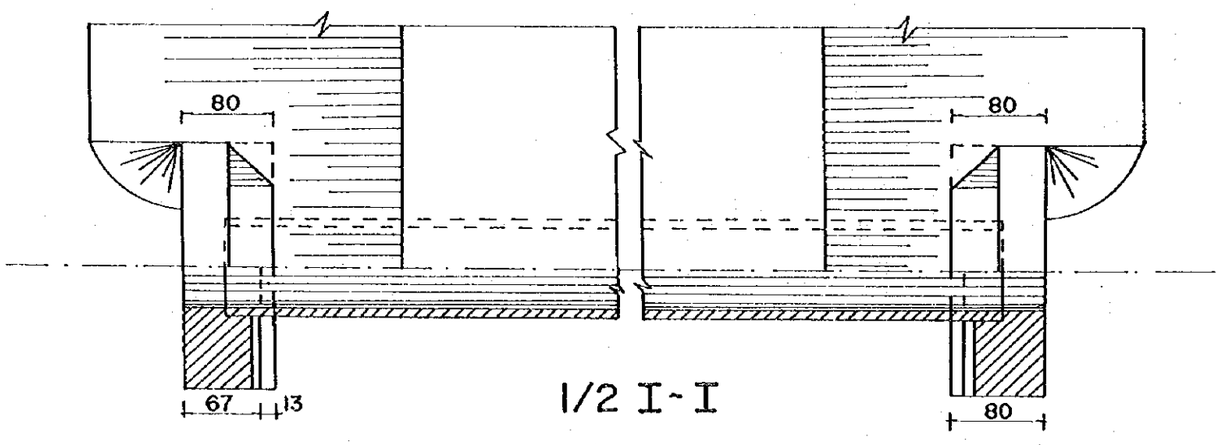
VERTICLE SECTION OF CULVERT CENTERLINE



MAIN FACADE OF CULVERT



1/2 PLAN



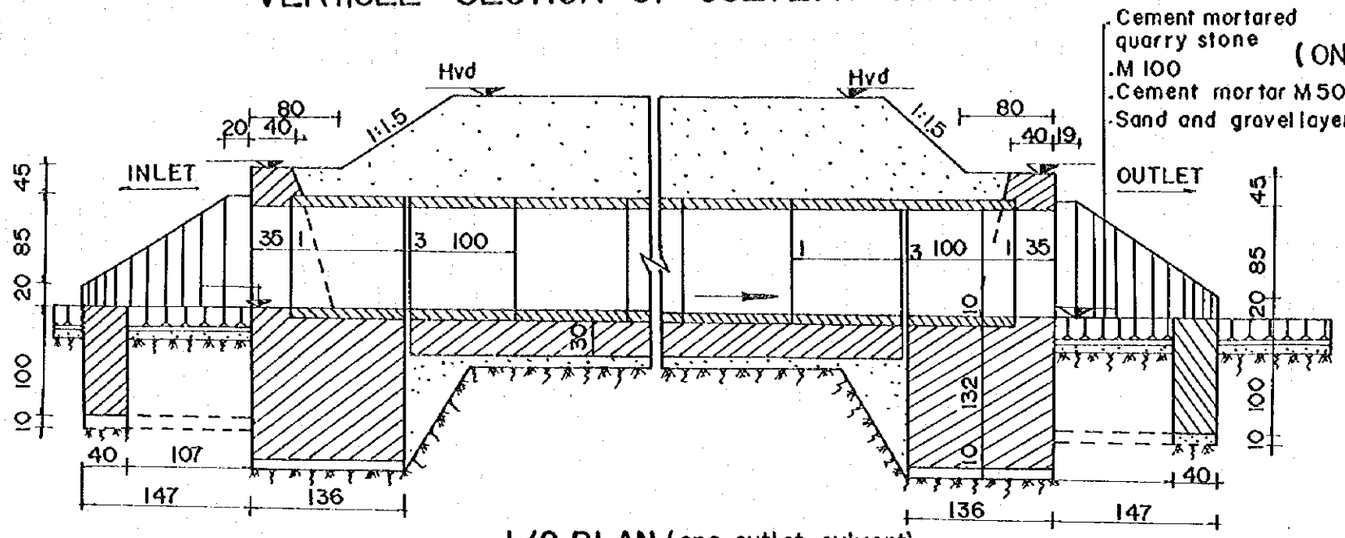
1/2 I-I

NOTE :

- This drawing designs for cast-in-situ RC pipe culvert, straight wall, one-outlet, Ø = 0.50m and 0.75m .
- End of culvert is mortared stone or brick and uses for all kinds of culverts foundations
- See detailed drawing for embankment and culvert reinforcement .

HIGHWAY NO.18 IMPROVEMENT	TYPICAL PIPE CULVERTS (1)	SCALE	NONE SCALE	SHEET NO. 153

VERTICLE SECTION OF CULVERT CENTER-LINE

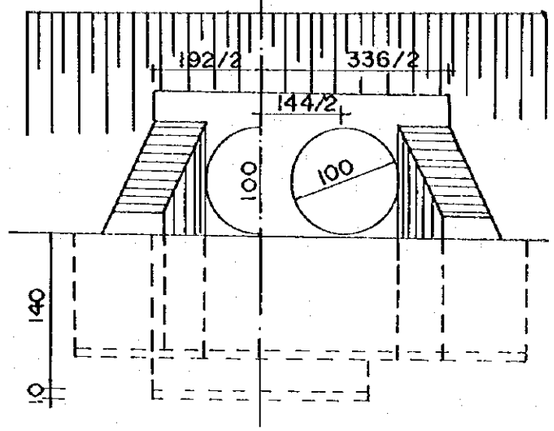


1/2 PLAN (one-outlet culvert)

(Embankment is not included here)

MAIN FACADE OF CULVERT

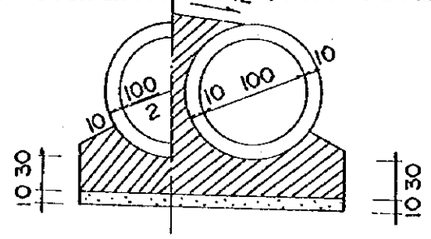
(ONE- OUTLET CULVERT) (TWO-OUTLET CULVERT)

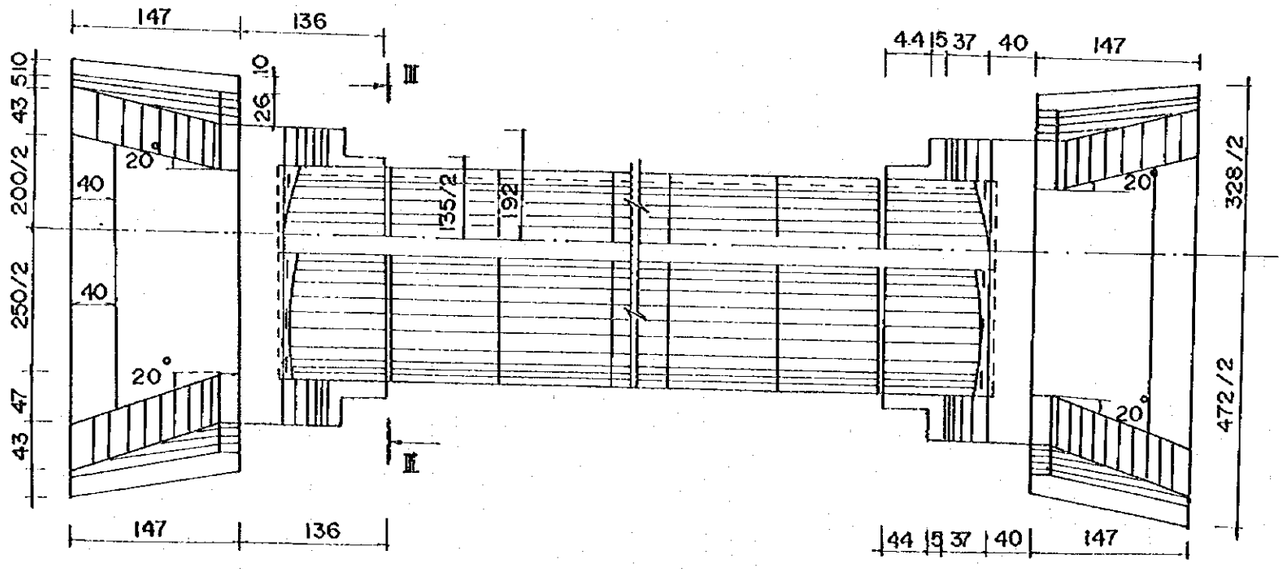


1/2 II - II 1/2 II - II

(NO SOIL FILLING)

(ONE-OUTLET CULVERT) 0.042 (TWO-OUTLET CULVERT)



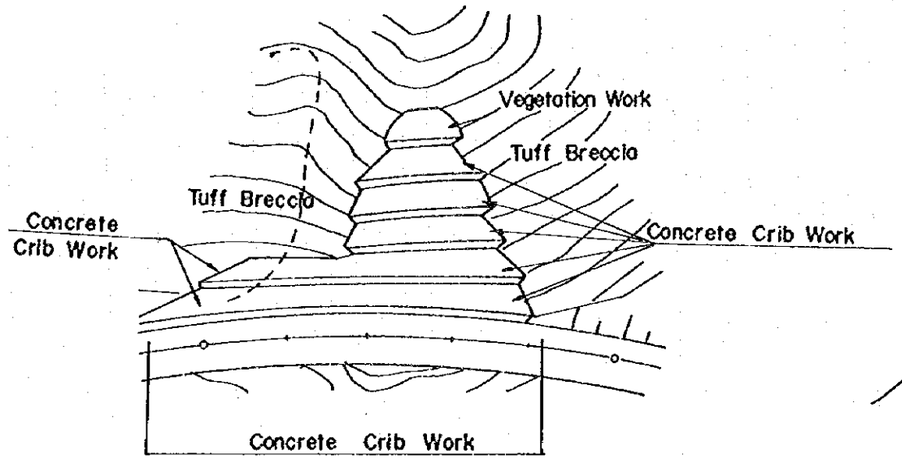


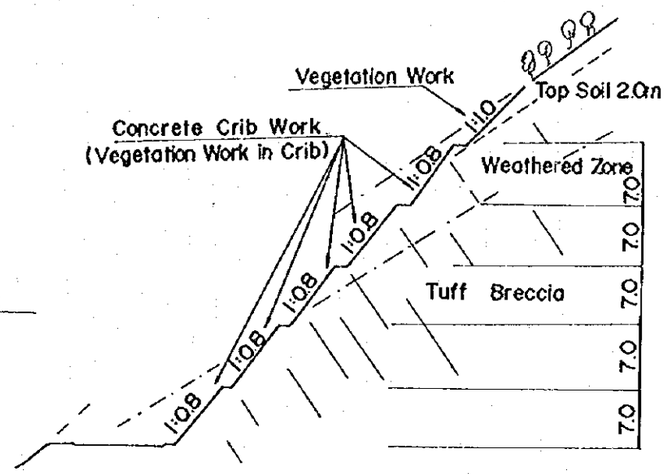
1/2 PLAN (two-outlet culvert)

NOTE: - This drawing designs for cast-in-situ RC pipe culvert, wing wall, one and two - outlet, Ø = 1m.
- End of culvert is mortared stone and uses for all kinds of culvert's foundations. This drawing is for culvert of class III foundation.

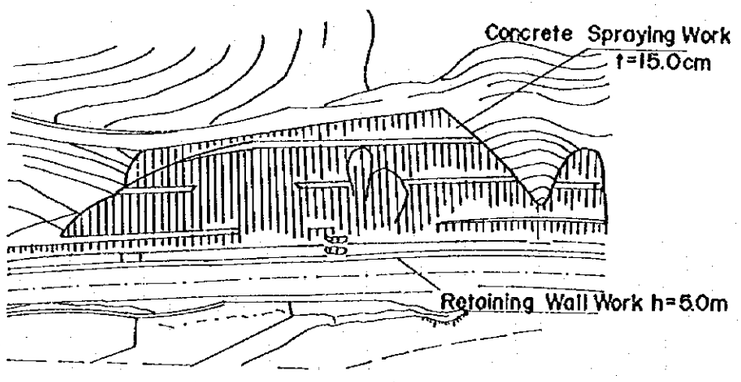
HIGHWAY NO.18 IMPROVEMENT	TYPICAL PIPE CULVERTS (2)	SCALE	NONE SCALE	SHEET NO. 154

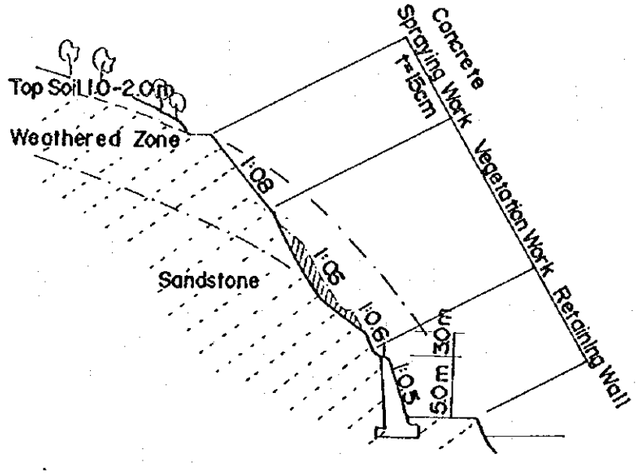
CONCRETE CRIB WORKS AND VEGETATION WORK





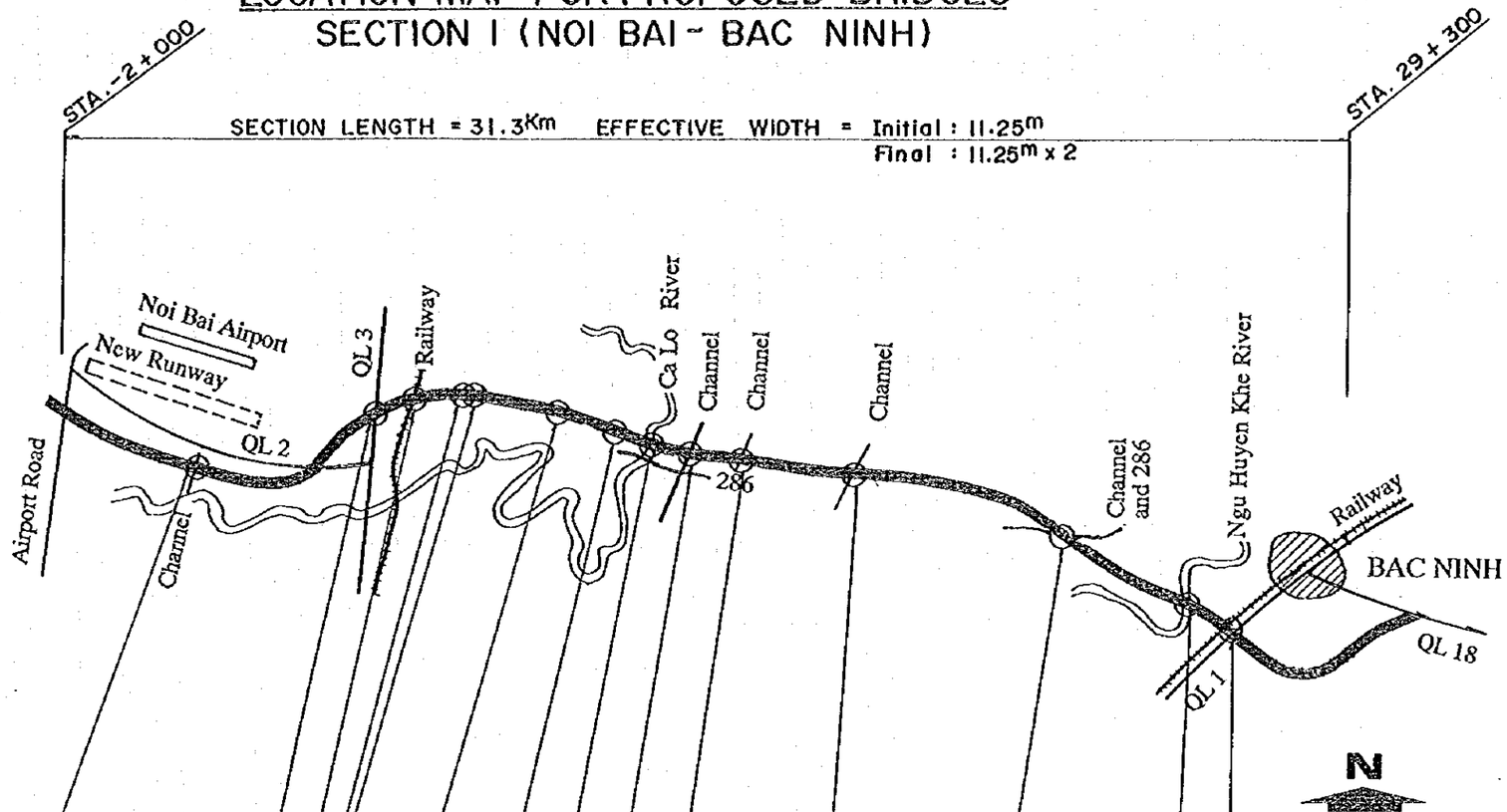
CONCRETE SPRAYING WORKS AND VEGETATION WORK





HIGHWAY NO.18 IMPROVEMENT	TYPICAL SLOPE PROTECTION WORKS	SCALE	NONE SCALE	SHEET NO. 155

LOCATION MAP FOR PROPOSED BRIDGES
SECTION I (NOI BAI - BAC NINH)



TOTAL NUMBER AND LENGTH OF BRIDGE BY IMPROVED TYPE

SECTION I

IMPROVEMENT TYPE	NOS.	LENGTH(m)
New Construction	14	1950.0
Replacement	0	0.0
Widening	0	0.0
Use as it is	0	0.0
TOTAL	14	1950.0

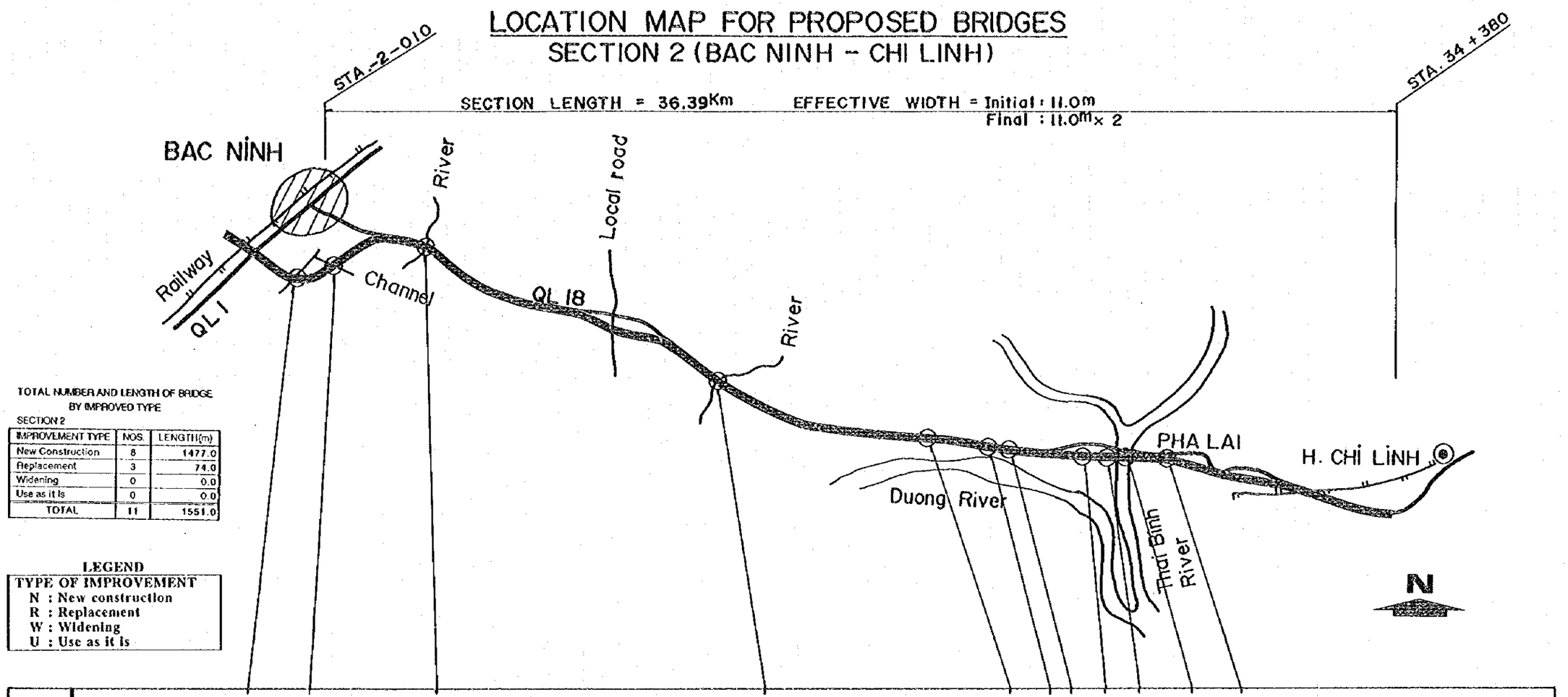
LEGEND

TYPE OF IMPROVEMENT
- N : New construction
- R : Replacement
- W : Widening
- U : Use as it is

BRIDGE NO	STATION	TYPE OF IMPROVE	BRIDGE LENGTH
1 - 1	1+980	N	15.0
1 - 2	6+500	N	150.0
1 - 3	7+370	N	390.0
1 - 4	8+300	N	10.0
1 - 5	8+410	N	6.0
1 - 6	10+290	N	10.0
1 - 7	12+170	N	6.0
1 - 8	13+410	N	180.0
1 - 9	14+650	N	25.0
1 - 10	15+960	N	20.0
1 - 11	19+260	N	20.0
1 - 12	23+000	N	10.0
1 - 13	26+750	N	150.0
1 - 14	27+820	N	950.0

HIGHWAY NO.18 IMPROVEMENT	LOCATION MAP FOR PROPOSED BRIDGES (NOI BAI - BAC NINH)	SCALE	SHEET NO. 156

LOCATION MAP FOR PROPOSED BRIDGES
SECTION 2 (BAC NINH - CHI LINH)



TOTAL NUMBER AND LENGTH OF BRIDGE BY IMPROVED TYPE

SECTION 2

IMPROVEMENT TYPE	NOS.	LENGTH(m)
New Construction	8	1477.0
Replacement	3	74.0
Widening	0	0.0
Use as it is	0	0.0
TOTAL	11	1551.0

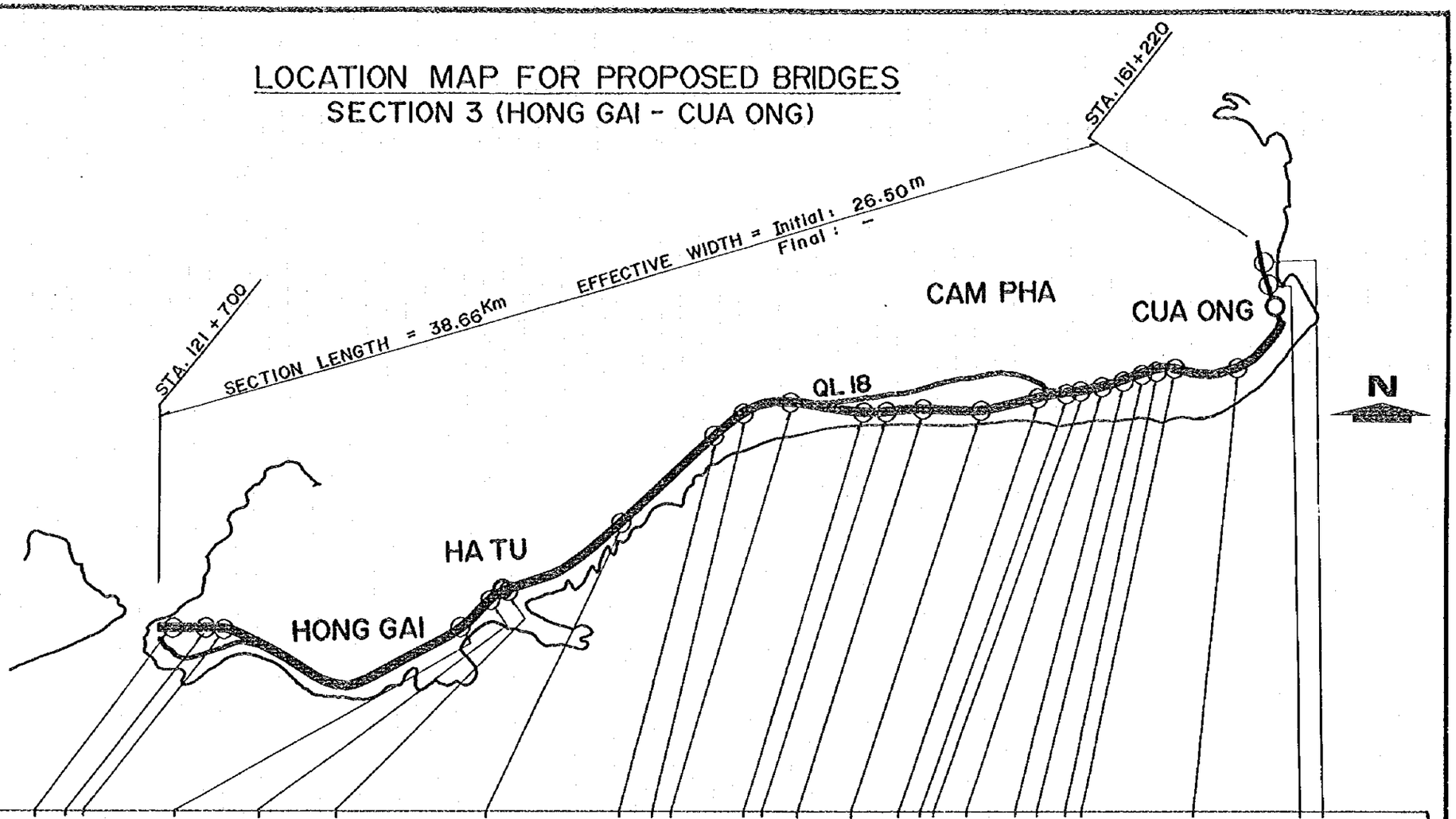
LEGEND

TYPE OF IMPROVEMENT
- N : New construction
- R : Replacement
- W : Widening
- U : Use as it is

BRIDGE NO	STATION	TYPE OF IMPROVE	BRIDGE LENGTH
2-1	-1+785	N	20.0
2-2	0+020	N	20.0
2-3	3+790	R	11.0
2-4	13+680	R	30.0
2-5	20+850	N	46.0
2-6	22+670	N	46.0
2-7	23+300	N	46.0
2-8	24+300	N	60.0
2-9	25+300	N	660.0
2-10	25+860	N	579.0
2-11	26+990	R	36.0

HIGHWAY NO.18 IMPROVEMENT	LOCATION MAP FOR PROPOSED BRIDGES (BAC NINH - CHI LINH)	SCALE	SHEET NO. 157

LOCATION MAP FOR PROPOSED BRIDGES
SECTION 3 (HONG GAI - CUA ONG)



TOTAL NUMBER AND LENGTH OF BRIDGE BY IMPROVED TYPE

SECTION 3

IMPROVEMENT TYPE	NOS.	LENGTH(m)
New Construction	8	490.0
Replacement	5	78.0
Widening	12	134.7
Use as it is	0	0.0
TOTAL	25	702.7

LEGEND

TYPE OF IMPROVEMENT
- N : New construction
- R : Replacement
- W : Widening
- U : Use as it is

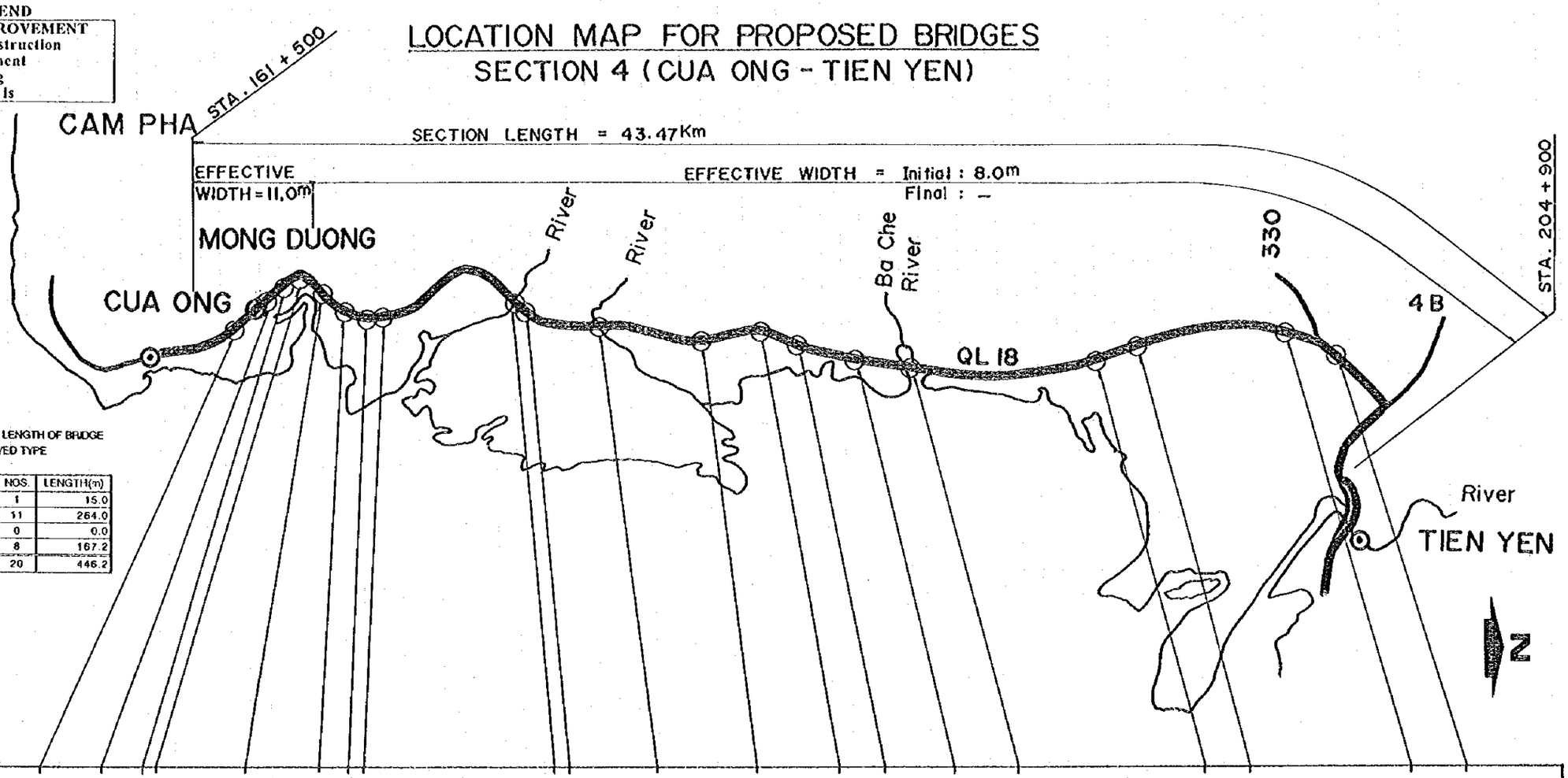
BRIDGE NO	STATION	TYPE OF IMPROVE	BRIDGE LENGTH
3 - 1	121+880	N	99.0
3 - 2	122+380	N	120.0
3 - 3	122+840	N	210.0
3 - 4	130+260	R	31.0
3 - 5	132+470	R	6.0
3 - 6	133+540	R	29.2
3 - 7	137+600	R	9.0
3 - 8	141+580	R	6.0
3 - 9	142+440	R	6.0
3 - 10	143+150	W	5.5
3 - 11	144+860	N	17.0
3 - 12	145+750	N	9.0
3 - 13	146+480	N	9.0
3 - 14	147+710	N	17.0
3 - 15	149+010	N	9.0
3 - 16	150+040	W	17.0
3 - 17	150+610	W	17.0
3 - 18	151+585	W	8.5
3 - 19	152+815	W	8.5
3 - 20	153+360	W	25.5
3 - 21	154+215	W	6.7
3 - 22	154+550	W	8.5
3 - 23	157+490	W	12.6
3 - 24	160+210	W	4.7
3 - 25	160+930	W	11.2

HIGHWAY NO.18 IMPROVEMENT	LOCATION MAP FOR PROPOSED BRIDGES (HONG GAI - CUA ONG)	SCALE	SHEET NO. 158

LOCATION MAP FOR PROPOSED BRIDGES
SECTION 4 (CUA ONG - TIEN YEN)

LEGEND

TYPE OF IMPROVEMENT
N : New construction
R : Replacement
W : Widening
U : Use as it is



TOTAL NUMBER AND LENGTH OF BRIDGE BY IMPROVED TYPE

SECTION 4

IMPROVEMENT TYPE	NOS.	LENGTH(m)
New Construction	1	15.0
Replacement	11	264.0
Widening	0	0.0
Use as it is	8	167.2
TOTAL	20	446.2

BRIDGE NO	STATION	TYPE OF IMPROVE	BRIDGE LENGTH
4 – 1	165+170	U	–
4 – 2	166+840	U	–
4 – 3	167+830	U	37.0
4 – 4	168+130	R	
4 – 5	170+530	U	–
4 – 6	171+650	N	15.0
4 – 7	172+220	R	5.0
4 – 8	172+935	R	9.0
4 – 9	173+320	U	–
4 – 10	178+035	U	–
4 – 11	178+460	R	13.0
4 – 12	180+705	R	20.5
4 – 13	183+510	R	9.0
4 – 14	185+405	U	–
4 – 15	188+165	U	–
4 – 16	190+330	R	129.0
4 – 17	195+570	R	6.0
4 – 18	196+730	R	6.0
4 – 19	201+285	R	21.0
4 – 20	202+740	R	9.5

HIGHWAY NO.18 IMPROVEMENT	LOCATION MAP FOR PROPOSED BRIDGES (CUA ONG - TIEN YEN)	SCALE		SHEET NO. 159

LEGEND

TYPE OF IMPROVEMENT
- N : New construction
- R : Replacement
- W : Widening
- U : Use as it is

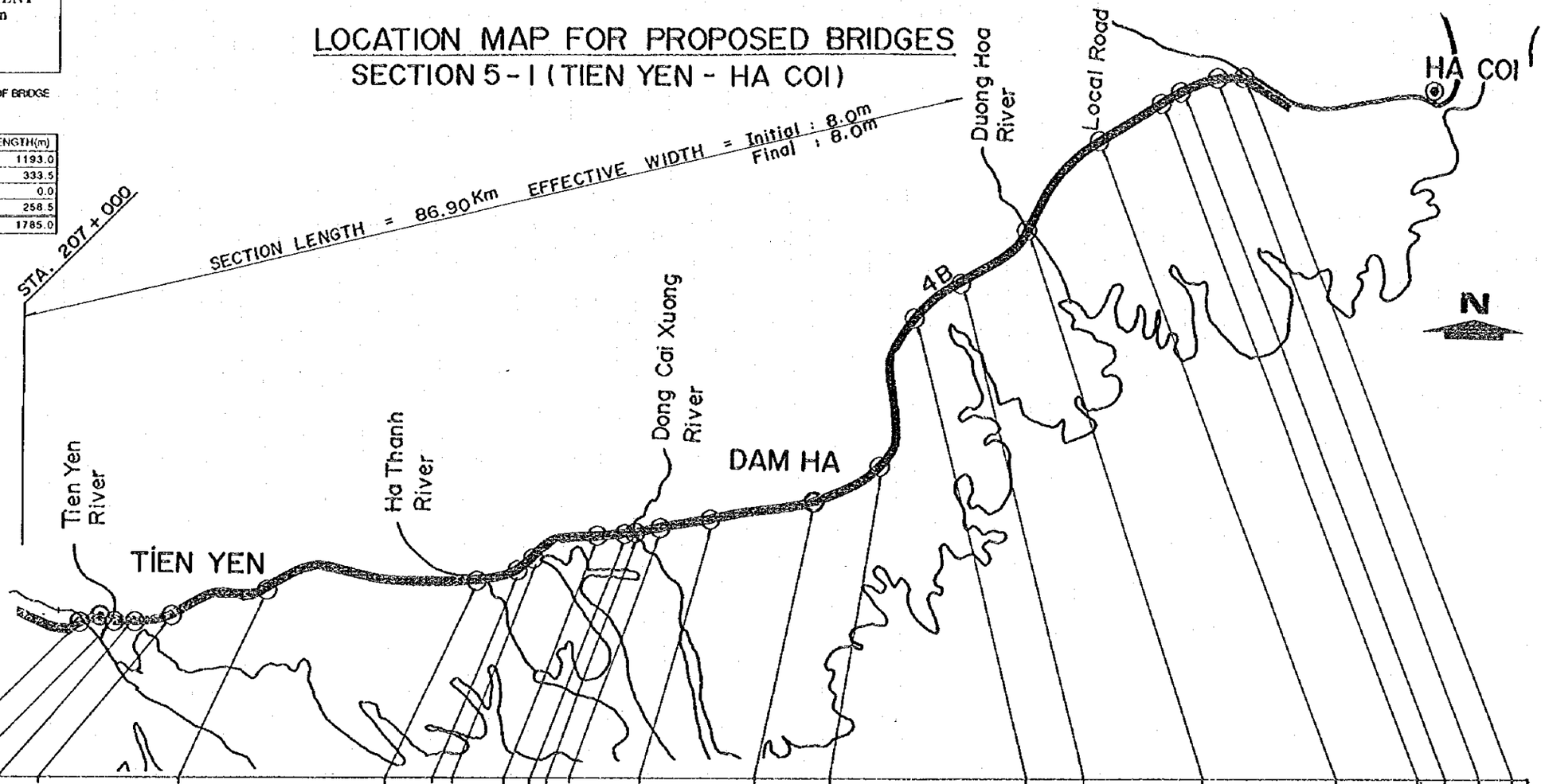
TOTAL NUMBER AND LENGTH OF BRIDGE BY IMPROVED TYPE

SECTION 5

IMPROVEMENT TYPE	NOS.	LENGTH(m)
New Construction	12	1193.0
Replacement	26	333.5
Widening	0	0.0
Use as it is	6	258.5
TOTAL	44	1785.0

LOCATION MAP FOR PROPOSED BRIDGES
SECTION 5 - 1 (TIEN YEN - HA COI)

SECTION LENGTH = 86.90Km EFFECTIVE WIDTH = Initial : 8.0m Final : 8.0m



BRIDGE NO	STATION	TYPE OF IMPROVE	BRIDGE LENGTH
5 - 1	209+515	N	99.0
5 - 2	211+300	N	150.0
5 - 3	216+765	R	6.0
5 - 4	217+690	R	6.0
5 - 5	221+050	N	50.0
5 - 6	226+345	N	50.0
5 - 7	227+800	R	13.0
5 - 8	228+330	R	9.0
5 - 9	231+170	R	6.0
5 - 10	231+745	R	6.0
5 - 11	232+080	N	50.0
5 - 12	232+750	R	6.0
5 - 13	234+660	R	9.0
5 - 14	237+320	R	40.0
5 - 15	238+870	N	40.0
5 - 16	244+550	R	20.0
5 - 17	245+835	N	50.0
5 - 18	248+650	N	75.0
5 - 19	251+690	R	28.0
5 - 20	253+450	R	18.0
5 - 21	253+970	R	8.0
5 - 22	254+840	R	6.0
5 - 23	256+000	R	6.0

HIGHWAY NO.18 IMPROVEMENT	LOCATION MAP FOR PROPOSED BRIDGES (TIEN YEN - HA COI)	SCALE	SHEET NO. 160

LOCATION MAP FOR PROPOSED BRIDGES
SECTION 5 - 2 (HA COI - BAC LUAN)

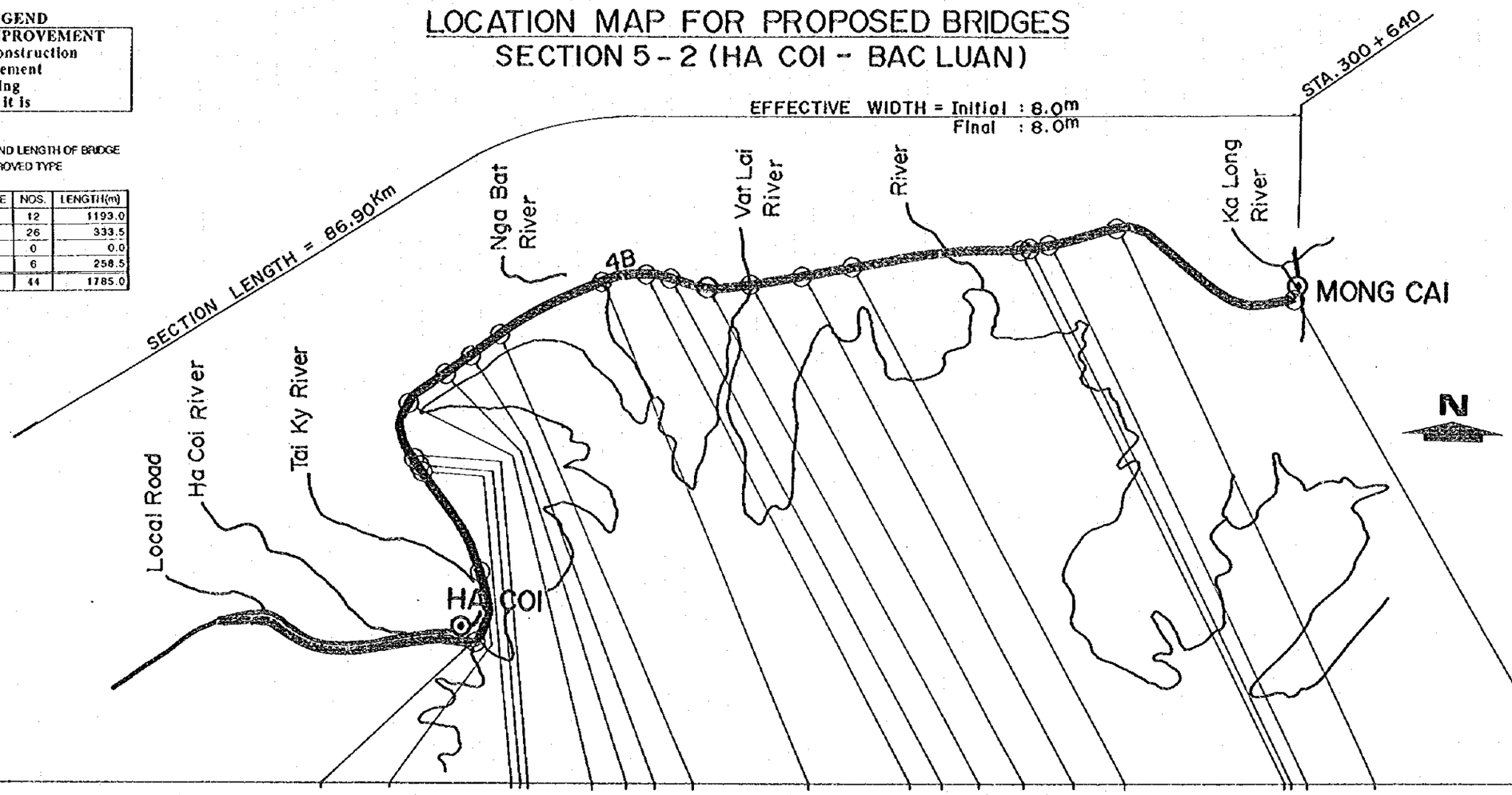
LEGEND

TYPE OF IMPROVEMENT
N : New construction
R : Replacement
W : Widening
U : Use as it is

TOTAL NUMBER AND LENGTH OF BRIDGE BY IMPROVED TYPE

SECTION 5

IMPROVEMENT TYPE	NOS.	LENGTH(m)
New Construction	12	1193.0
Replacement	26	333.5
Widening	0	0.0
Use as it is	6	258.5
TOTAL	44	1785.0



BRIDGE NO	STATION	TYPE OF IMPROVE	BRIDGE LENGTH
5 - 24	264+920	N	300.0
5 - 25	266+400	R	13.0
5 - 26	269+750	R	6.0
5 - 27	270+800	R	12.0
5 - 28	271+000	U	
5 - 29	272+875	U	-
5 - 30	273+700	U	-
5 - 31	274+980	N	20.0
5 - 32	275+935	R	6.0
5 - 33	278+150	N	99.0
5 - 34	279+740	R	10.0
5 - 35	280+645	U	-
5 - 36	281+645	U	-
5 - 37	282+885	N	210.0
5 - 38	284+100	R	6.0
5 - 39	285+410	R	27.0
5 - 40	289+675	R	13.0
5 - 41	289+690	R	19.0
5 - 42	290+120	R	17.0
5 - 43	292+300	R	20.0
5 - 44	299+850	U	-

HIGHWAY NO.18 IMPROVEMENT	LOCATION MAP FOR PROPOSED BRIDGES (HA COI - BAC LUAN)	SCALE	SHEET NO. 161

SUMMARY OF PROPOSED BRIDGES (1/4)

Section 1 (From Noi Bai To Bac Ninh)

Bridge No.	Station	Crossing Structure	* Type of Improve.	Total Length (m)	Superstructure				Abutment							Pier							*** Construction Stage
					Span (m)	Nos. of Span	Effective Width (m)	** Type	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	
1-1	1 + 480	Channel	N	15.0	15.0	1	11.25 * 2	RC-T	Gravity	2	3.0	Pile	0.4	20.0	24 * 4								I, F
1-2	6 + 500	QL3	N	150.0	30.0	5	11.25 * 2	PC-I	Reversed-T	2	7.0	Pile	0.4	20.0	45 * 4	Rigid Frame	6	6-8	Pile	0.4	25.0	23 * 12	I, F
1-3	7 + 370	Railway	N	390.0	30.0	13	11.25 * 2	PC-I	Reversed-T	2	7.0	Pile	0.4	25.0	40 * 4	Rigid Frame	13	6-11	Pile	0.4	25.0	19 * 12	I, F
1-4	8 + 300	Channel	N	10.0	10.0	1	11.25 * 2	RC-T	Reversed-T	2	7.0	Pile	0.4	20.0	34 * 4								I, F
1-5	8 + 410	Pond	N	10.0	10.0	1	11.25 * 2	RC-T	Reversed-T	2	7.0	Pile	0.4	20.0	34 * 4								I, F
1-6	10 + 290	Channel	N	10.0	10.0	1	11.25 * 2	RC-T	Gravity	2	3.0	Pile	0.4	20.0	24 * 4								I, F
1-7	12 + 170	Pond	N	10.0	10.0	1	11.25 * 2	RC-T	Gravity	2	3.0	Pile	0.4	20.0	24 * 4								I, F
1-8	13 + 410	Ca Lo riv.	N	180.0	30.0	6	11.25 * 2	PC-I	REversed-T	2	7.0	Pile	0.4	27.0	45 * 4	Wall	5	12.0	Pile	-	20.0	33 * 6	I, F
1-9	14 + 650	Channel	N	25.0	25.0	1	11.25 * 2	PC-I	Gravity	2	3.0	Pile	0.4	20.0	29 * 4								I, F
1-10	15 + 960	Channel	N	20.0	20.0	1	11.25 * 2	RC-I	Gravity	2	5.0	Pile	0.4	20.0	24 * 4								I, F
1-11	19 + 260	Channel	N	20.0	20.0	1	11.25 * 2	PC-I	Gravity	2	3.0	Pile	0.4	20.0	24 * 4								I, F
1-12	23 + 000	Channel	N	10.0	10.0	1	11.25 * 2	RC-T	Gravity	2	5.0	Pile	0.4	20.0	21 * 4								I, F
1-13	26 + 750	Khe riv.	N	150.0	30.0	5	11.25 * 2	PC-I	Reversed-T	2	7.0	Pile	0.4	22.0	45 * 4	Wall	4	11.0	Pile	0.4	20.0	33 * 6	I, F
1-14	27 + 790	Rail.+QL1	N	950.0	25-30	34	11.25 * 2	PC-I	Reversed-T	2	7.0	Pile	0.4	37.0	45 * 4	Rigid Frame	20	6-15	Pile	0.4	37.0	24 * 40	I, F

Section 2 (From Bac Ninh To Chi Linh)

Bridge No.	Station	Crossing Structure	* Type of Improve.	Total Length (m)	Superstructure				Abutment							Pier							*** Construction Stage
					Span (m)	Nos. of Span	Effective Width (m)	** Type	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	
2-1	-1-785	Channel	N	20.0	20.0	1	11.00	PC-I	Gravety	2	3.0	Pile	0.4	20.0	24 * 4								I, F
2-2	0 -020	Channel	N	20.0	20.0	1	11.00	PC-I	Gravity	2	5.0	Pile	0.4	20.0	24 * 4								I, F
2-3	3 +790	River	R	11.0	11.0	1	11.00	RC-T	Gravity	2	4.0	Pile	0.4	12.0	27 * 2								I, F
2-4	13+680	River	R	30.0	30.0	1	11.00	PC-I	Reversed-T	2	7.0	Pile	0.4	7.0	56 * 2								I, F
2-5	20+850	Raddy	N	46.0	23.0	2	11.00	PC-I	Reversed-T	2	7.5	Pile	0.4	20.0	56 * 2	Wall	1	6.0	Pile	0.4	20.0	19 * 1	I, F
2-6	22+670	Raddy	N	46.0	23.0	2	11.00	PC-I	Reversed-T	2	7.5	Pile	0.4	15.0	40 * 2	Wall	1	6.0	Pile	0.4	15.0	19 * 1	I, F
2-7	23+300	Raddy	N	46.0	23.0	2	11.00	PC-I	Reversed-T	2	8.5	Pile	0.4	30.0	40 * 2	Wall	1	6.5	Pile	0.4	30.0	19 * 1	I, F
2-8	24+300	Raddy	N	60.0	20.0	3	11.00	PC-I	Reversed-T	2	10.0	Pile	0.4	25.0	53 * 2	Wall	2	8.0	Pile	0.4	25.0	19 * 2	I, F
2-9	25+300	Swamp	N	660.0	30.0	22	11.00	PC-I	Reversed-T	1	10.0	Pile	0.4	20.0	53 * 1	Rigid Frame	22	9.0	Pile	0.4	20.0	22 *22	I, F
2-10	25+860	Thai Binh River	N	579.0	43-105	10	11.00	PC-Box	Reversed-T	1	7.0	Pile	0.4	15.0		Wall	10		Pile	0.4-1.5	9-35		I, F
2-11	26+990	Canal	R	36.0	36.0	1	11.00	PC-I	Reversed-T	2	10.0	Pile	0.4	20.0	59 * 2								I, F

* Type of Improvement; N : New Construction, R : Replacement, W : Widennig, U : Use as it is

** Superstructure Type ; PC-I:PC I-Girder, RC-T:RC T-Girder, RC-H:RC Hollow Slab, RC-S:RC Slab

*** Construction Stage; I : Initial Stage, F : Fainal Stage

SUMMARY OF PROPOSED BRIDGES (2/4)

Section 3 (From Hong Gai To Cua Ong)

Bridge No.	Station	Crossing Structure	* Type of Improve.	Total Length (m)	Superstructure				Abutment							Pier							*** Construction Stage
					Span (m)	Nos. of Span	Effective Width (m)	** Type	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	
3-1	121 + 880	Valley	N	99.0	33.0	3	26.50	PC-I	Gravity	2	4.0	Spread				Wall	1	20.0	Spread	-	-		I
3-2	122 + 380	Valley	N	120.0	30.0	4	26.50	PC-I	Gravity	2	4.0	Spread				Wall	1	17.0	Spread	-	-		I
3-3	122 + 840	Valley	N	210.0	30.0	7	26.50	PC-I	Reversed-T	2	10.0	Pile	0.4	9.0	164 * 1	Rigid Frame	6	12.0	Pile	0.4	9.0	73 * 6	I
3-4	130 + 260	Road	R	31.0	31.0	1	26.50	PC-I	Reversed-T	2	10.0	Spread											I
3-5	132 + 470	River	R	6.0	6.0	1	26.50	RC-S	Reversed-T	2	7.0	Spread											I
3-6	133 + 540	River	R	29.0	29.0	1	26.50	PC-I	Reversed-T	2	12.0	Spread											I
3-7	137 + 600	Stream	W	9.0	9.0	1	26.50 (17.3)	RC-S	Reversed-T	2	6.5	Spread											I
3-8	141 + 580	Stream	R	6.0	6.0	1	26.50	RC-S	Gravity	2	3.0	Spread											I
3-9	142 + 440	Stream	R	6.0	6.0	1	26.50	RC-S	Gravity	2	3.0	Spread											I
3-10	143 + 150	Stream	W	5.5	5.5	1	26.50 (16.5)	RC-S	Gravity	2	3.0	Spread											I
3-11	144 + 860	River	N	17.0	17.0	1	26.50	RC-H	Gravity	2	6.0	Pile	0.4	9.0	110 * 2								I
3-12	145 + 750	River	N	9.0	9.0	1	26.50	RC-S	Reversed-T	2	7.0	Pile	0.4	6.0	95 * 2								I
3-13	146 + 480	River	N	9.0	9.0	1	26.50	RC-S	Gravity	2	6.0	Pile	0.4	12.0	95 * 2								I
3-14	147 + 710	River	N	17.0	17.0	1	26.50	RC-H	Gravity	2	6.0	Pile	0.4	15.0	110 * 2								I
3-15	149 + 010	River	N	9.0	9.0	1	26.50	RC-S	Reversed-T	2	7.0	Pile	0.4	6.0	95 * 2								I
3-16	150 + 040	River	W	17.0	8.5	1	26.50 (18.3)	RC-T	Reversed-T	2	7.0	Pile	0.4	7.0	64 * 2	Wall	1	6.0	Pile	0.4	7.0	36 * 1	I
3-17	150 + 610	River	W	17.0	8.5	1	26.50 (18.3)	RC-T	Reversed-T	2	7.0	Pile	0.4	7.0	64 * 2	Wall	1	6.0	Pile	0.4	7.0	36 * 1	I
3-18	151 + 585	River	W	8.5	8.5	1	26.50 (18.3)	RC-S	Reversed-T	2	7.0	Pile	0.4	7.0	64 * 2								I
3-19	152 + 815	River	W	8.5	8.5	1	26.50 (18.3)	RC-S	Reversed-T	2	7.0	Pile	0.4	7.0	64 * 2								I
3-20	153 + 360	River	W	25.5	8.5	3	26.50 (18.3)	RC-T	Reversed-T	2	7.0	Pile	0.4	7.0	64 * 2	Wall	2	6.0	Pile	0.4	7.0	36 * 2	I
3-21	154 + 215	River	W	6.7	6.7	1	26.50 (17.5)	RC-S	Gravity	2	4.0	Pile	0.4	7.0	38 * 2								I
3-22	154 + 550	River	W	8.5	8.5	1	26.50 (18.3)	RC-T	Gravity	2	4.0	Pile	0.4	7.0	40 * 2								I
3-23	157 + 490	River	W	12.6	12.6	1	26.50 (16.8)	RC-T	Gravity	2	5.0	Pile	0.4	7.0	68 * 2								I
3-24	160 + 210	River	W	4.7	4.7	1	26.50 (18.3)	RC-S	Gravity	2	3.5	Spread											I
3-25	160 + 930	River	W	11.2	11.2	1	26.50 (18.3)	RC-T	Gravity	2	4.0	Pile	0.4	6.0	40 * 2								I

* Type of Improvement; N : New Construction, R : Replacement, W : Widennig, U : Use as it is

** Superstructure Type ; PC-I:PC I-Girder, RC-T:RC T-Girder, RC-H:RC Hollow Slab, RC-S:RC Slab

*** Construction Stage; I : Initial Stage, F : Fainal Stage

**** The value into ( ) shows the necessary Effective Width for widenning.

SUMMARY OF PROPOSED BRIDGES (3/4)

Section 4 (From Hong Gai To Cua Ong)

Bridge No.	Station	Crossing Structure	* Type of Improve.	Total Total Length (m)	Superstructure				Abutment							Pier							*** Construction Stage
					Span (m)	Nos. of Span	Effective Width (m)	** Type	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	
4-1	165 + 170	Railway	U	-	-	-	-	-	-	-	-	-										-
4-2	166 + 840	River	U	-	-	-	-	-	-	-	-	-										-
4-3	167 + 830	River	U	-	-	-	-	-	-	-	-	-										-
4-4	168 + 130	River	R	37.0	18.5	2	11.00	RC-H	Reversed-T	2	9.0	Pile	0.4	8.0	67 * 2	Wall	1	6.0	Pile	0.4	9.0	24 * 1	I
4-5	170 + 530	River	U	-	-	-	-	-	-	-	-	-										-
4-6	171 + 650	River	N	15.0	15.0	1	8.00	RC-H	Gravity	2	6.0	Spread										I
4-7	172 + 220	River	R	5.0	5.0	1	8.00	RC-S	Reversed-T	2	10.0	Spread										I
4-8	172 + 935	River	R	9.0	9.0	1	8.00	RC-S	Gravity	2	6.0	Spread										I
4-9	173 + 320	River	U	-	-	-	-	-	-	-	-	-										-
4-10	178 + 035	River	U	-	-	-	-	-	-	-	-	-										-
4-11	178 + 460	River	R	13.0	13.0	1	8.00	RC-T	Reversed-T	2	7.5	Spread										I
4-12	180 + 705	River	R	20.5	20.5	1	8.00	PC-I	Reversed-T	2	10.0	Spread										I
4-13	183 + 510	River	R	9.0	9.0	1	8.00	RC-S	Reversed-T	2	6.5	Spread										I
4-14	185 + 405	River	U	-	-	-	-	-	-	-	-	-										-
4-15	188 + 165	River	U	-	-	-	-	-	-	-	-	-										-
4-16	190 + 330	River	R	129.0	33.0	4	8.00	PC-I	Reversed-T	2	12.0	Spread				Wall	3	14.0	Spread				I
4-17	195 + 570	River	R	6.0	6.0	1	8.00	RC-S	Gravity	2	6.0	Spread											I
4-18	196 + 730	River	R	6.0	6.0	1	8.00	RC-S	Gravity	2	4.0	Spread											I
4-19	201 + 285	River	R	21.0	21.0	1	8.00	PC-I	Reversed-T	2	10.0	Spread											I
4-20	202 + 740	River	R	9.5	9.5	1	8.00	RC-S	Reversed-T	2	10.0	Spread											I

Section 5 (From Tien Yen To Bac Luan) (1/2)

Bridge No.	Station	Crossing Structure	* Type of Improve.	Total Length (m)	Superstructure				Abutment							Pier							*** Construction Stage
					Span (m)	Nos. of Span	Effective Width (m)	** Type	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	Type	Nos.	Hight (m)	Founda. Type	Pile Dia. (m)	Pile L (m)	Nos. of Pile	
S-1	209 + 515	River	N	99.0	33.0	3	8.00	PC-I	Reversed-T	2	8.0	Pile	0.4	12.0	42 * 2	Wall	2	15.0	Pile	0.4	12.0	31 * 2	I
S-2	211 + 300	River	N	150.0	30.0	5	8.00	PC-I	Reversed-T	2	8.0	Spread				Wall	4	12.0	Spread				F
S-3	216 + 765	River	R	6.0	6.0	1	8.00	RC-S	Reversed-T	2	7.0	Spread											I
S-4	217 + 690	River	R	6.0	6.0	1	8.00	RC-S	Gravity	2	6.0	Spread											I
S-5	221 + 050	River	N	50.0	25.0	2	8.00	PC-I	Reversed-T	2	7.0	Spread				Wall	1	5.5	Spread				F
S-6	226 + 345	River	N	50.0	25.0	2	8.00	PC-I	Reversed-T	2	12.0	Spread				Wall	1	12.0	Spread				F
S-7	227 + 800	River	R	13.0	13.0	1	8.00	RC-T	Reversed-T	2	10.0	Spread											I
S-8	228 + 330	River	R	9.0	9.0	1	8.00	RC-S	Reversed-T	2	8.0	Spread											I
S-9	231 + 170	River	R	6.0	6.0	1	8.00	RC-S	Reversed-T	2	6.5	Spread											I
S-10	231 + 745	River	R	6.0	6.0	1	8.00	RC-S	Reversed-T	2	6.5	Spread											I

* Type of Improvement; N : New Construction, R : Replacement, W : Widennig, U : Use as it is

** Superstructure Type ; PC-I:PC I-Girder, RC-T:RC T-Girder, RC-H:RC Hollow Slab, RC-S:RC Slab

*** Construction Stage; I : Initial Stage, F : Fainal Stage

SUMMARY OF PROPOSED BRIDGES (4/4)

Section 5 (From Tien Yen To Bac Luan) (2/2)

No.	Station	Structure	Improve.	(m)	Superstructure (m)	Span	(m)	Type	Abutment Type	Nos.	(m)	Type	(m)	(m)	Pile	Pier Type	Nos.	(m)	Type	(m)	(m)	of Pile	Stage
S-11	232 + 080	River	N	50.0	25.0	2	8.00	PC-I	Reversed-T	2	9.0	Spread				Wall	1	11.0	Spread				F
S-12	232 + 750	River	R	6.0	6.0	1	8.00	RC-S	Reversed-T	2	6.5	Spread											I
S-13	234 + 660	River	R	9.0	9.0	1	8.00	RC-S	Reversed-T	2	7.0	Spread											I
S-14	237 + 320	River	R	40.0	20.0	2	8.00	PC-I	Gravity	2	5.0	Spread				Wall	1	8.0	Spread				I
S-15	238 + 870	River	N	40.0	20.0	2	8.00	PC-I	Gravity	2	4.0	Spread				Wall	1	5.0	Spread				F
S-16	244 + 550	River	R	20.0	20.0	1	8.00	PC-I	Reversed-T	2	8.0	Spread											I
S-17	245 + 835	River	N	50.0	25.0	2	8.00	PC-I	Reversed-T	2	6.5	Spread				Wall	1	7.5	Spread				F
S-18	248 + 650	River	N	75.0	25.0	3	8.00	PC-I	Gravity	2	6.0	Spread				Wall	2	7.0	Spread				F
S-19	251 + 690	River	R	28.0	28.0	1	8.00	PC-I	Reversed-T	2	10.0	Spread											I
S-20	253 + 450	River	R	18.0	18.0	1	8.00	RC-H	Reversed-T	2	12.0	Spread											I
S-21	253 + 970	River	R	8.0	8.0	1	8.00	RC-S	Gravity	2	6.0	Spread											I
S-22	254 + 840	River	R	6.0	6.0	1	8.00	RC-S	Reversed-T	2	6.5	Spread											I
S-23	256 + 000	Cannel	R	6.0	6.0	1	8.00	RC-S	Gravity	2	6.0	Spread											I
S-24	264 + 920	River	N	300.0	30.0	10	8.00	PC-I	Reversed-T	2	12.0	Spread				Wall	9	11.0	Spread				F
S-25	266 + 400	River	R	13.0	13.0	1	8.00	RC-H	Gravity	2	3.0	Spread											I
S-26	269 + 750	River	R	6.0	6.0	1	8.00	RC-S	Reversed-T	2	6.5	Spread											I
S-27	270 + 800	River	R	12.0	12.0	1	8.00	RC-H	Reversed-T	2	7.0	Spread											I
S-28	271 + 000	River	U	-	-	-	-	-	-	-	-	-											-
S-29	272 + 875	River	U	-	-	-	-	-	-	-	-	-											-
S-30	273 + 700	River	U	-	-	-	-	-	-	-	-	-											-
S-31	274 + 980	River	N	20.0	20.0	1	8.00	PC-I	Gravity	2	4.0	Spread											F
S-32	275 + 935	River	R	6.0	6.0	1	8.00	RC-S	Gravity	2	4.0	Spread											I
S-33	278 + 150	River	N	99.0	33.0	3.0	8.00	PC-I	Gravity	2	4.0	Spread				Wall	2	6.0	Spread				I
S-34	279 + 740	River	R	10.0	10.0	1	8.00	RC-H	Gravity	2	4.0	Spread											I
S-35	280 + 645	River	U	-	-	-	-	-	-	-	-	-											-
S-36	281 + 645	River	U	-	-	-	-	-	-	-	-	-											-
S-37	282 + 885	River	N	210.0	30.0	7	8.00	PC-I	Reverse-T	2	8.0	Spread				Wall	6	6.5	Spread				F
S-38	284 + 100	River	R	6.0	6.0	1	8.00	RC-S	Gravity	2	5.0	Spread											I
S-39	285 + 410	River	R	27.0	27.0	1	8.00	PC-I	Gravity	2	5.5	Spread											I
S-40	289 + 575	River	R	13.0	13.0	1	8.00	RC-H	Reverse-T	2	6.5	Spread											I
S-41	289 + 690	River	R	19.0	19.0	1	8.00	RC-H	Reverse-T	2	6.5	Spread											I
S-42	290 + 120	River	R	17.0	17.0	1	8.00	RC-H	Gravity	2	6.0	Spread											I
S-43	292 + 300	River	R	20.0	20.0	1	8.00	PC-I	Gravity	2	5.0	Spread											I
S-44	299 + 850	River	U	-	-	-	-	-	-	-	-	-											-

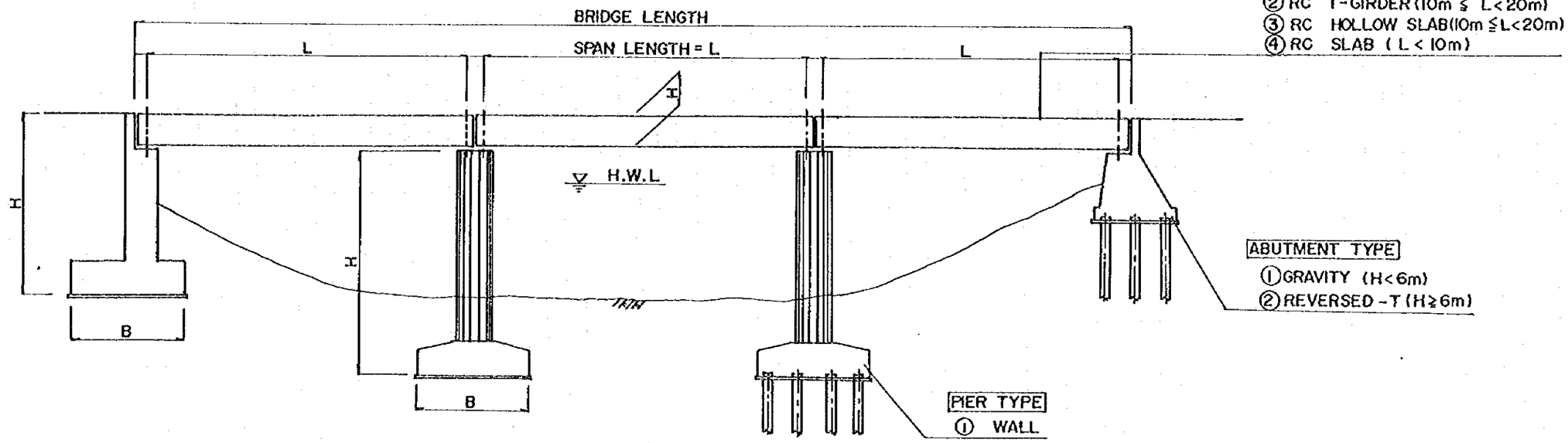
* Type of Improvement; N : New Construction, R : Replacement, W : Widennig, U : Use as it is

** Superstructure Type ; PC-I:PC I-Girder, RC-T:RC T-Girder, RC-H:RC Hollow Slab, RC-S:RC Slab

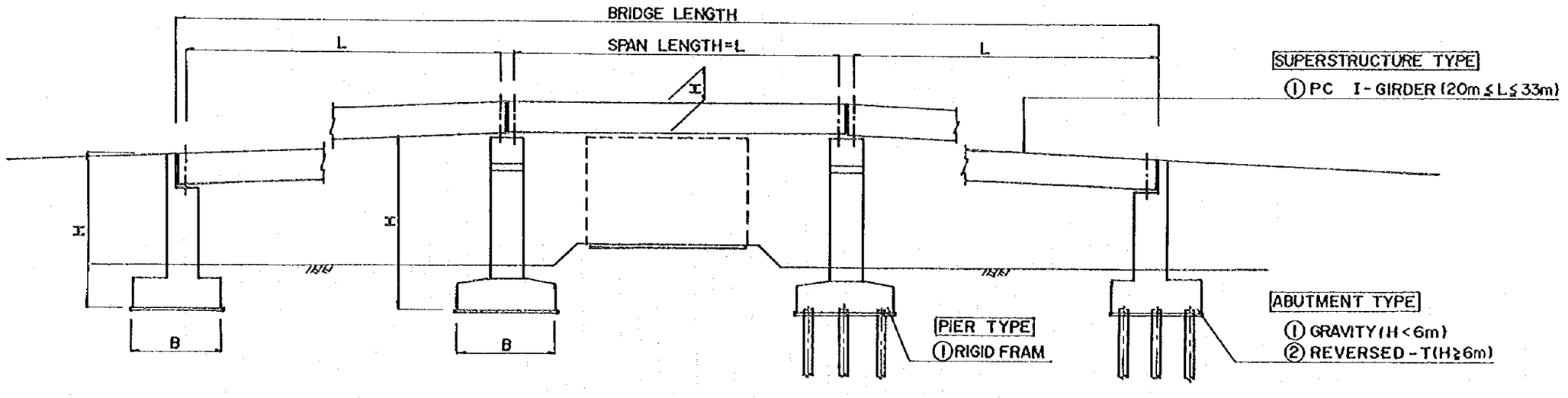
*** Construction Stage; I : Initial Stage, F : Fainal Stage

APPLICATION OF STANDARD DESIGN FOR BRIDGES

RIVER BRIDGE



FLYOVER



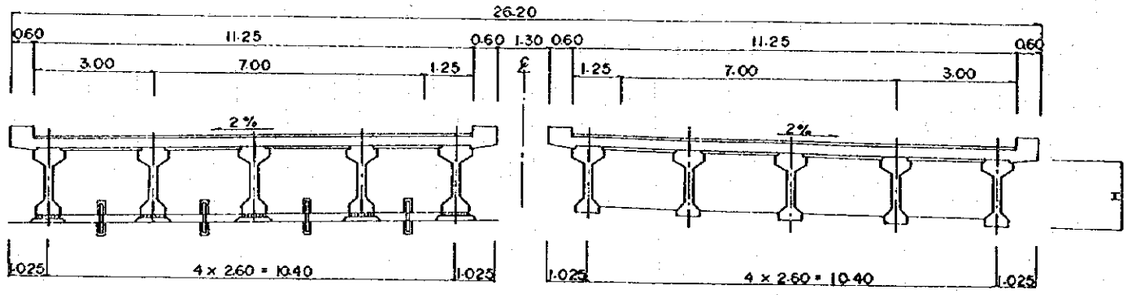
HIGHWAY NO.18 IMPROVEMENT	**APPLICATION OF STANDARD DESIGN FOR BRIDGES**	SCALE	SHEET NO. 166

STANDARD DESIGN FOR SUPERSTRUCTURE

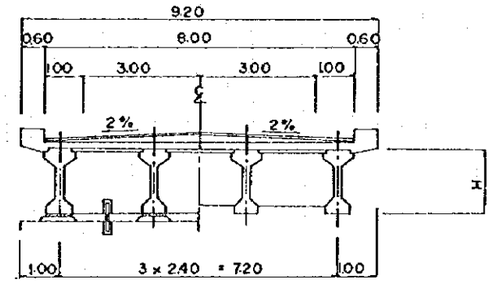
(PC I-GIRDER TYPE : 20m≤Span Length≤33m)

CROSS SECTION

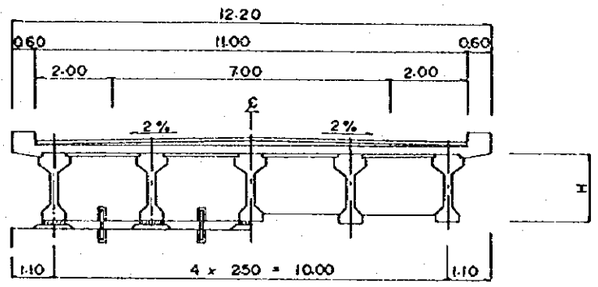
NOI BAI - BAC NINH SECTION



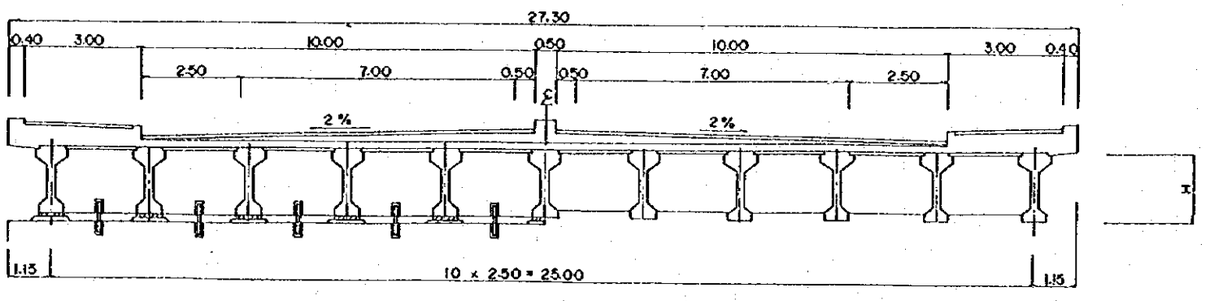
MONG DUONG - BAC LUAN SECTION



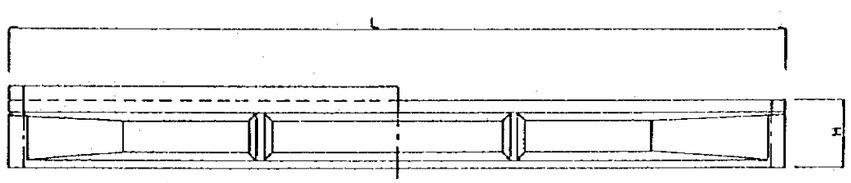
BACH NINH - CHI LINH SECTION
CUA ONG - MONG DUONG SECTION



HONG GAI - CUA ONG SECTION



ELEVATION



GIRDER DEPTH BY SPAN LENGTH

(UNIT : m)

L	H
20 ≤ L ≤ 25	1.45
25 < L ≤ 33	1.65

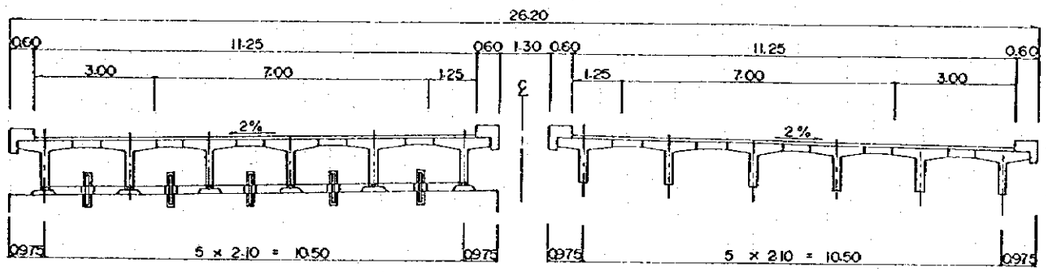
HIGHWAY NO.18 IMPROVEMENT	STANDARD DESIGN FOR SUPERSTRUCTURE (PC I-GIRDER TYPE)	SCALE	1:150	SHEET NO. 167

STANDARD DESIGN FOR SUPERSTRUCTURE

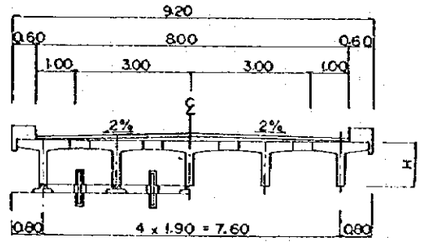
(RC T-GIRDER TYPE : 10m≤Span Length<20m)

CROSS SECTION

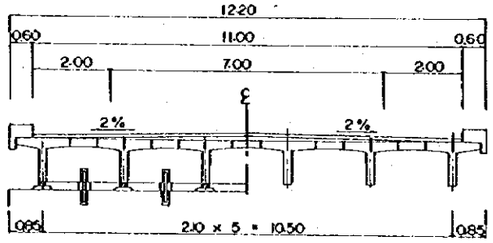
NOI BAI - BAC NINH SECTION



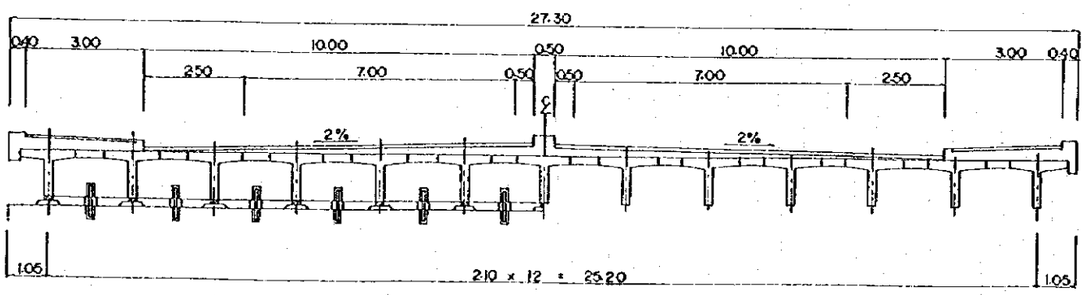
HONG GAI - CUA ONG SECTION



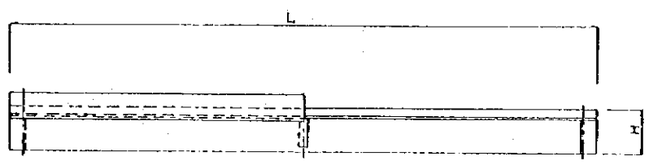
BACH NINH - CHI LINH SECTION
CUA ONG - MONG DUONG SECTION



MONG DUONG - BAC LUAN SECTION



ELEVATION



GIRDER DEPTH BY SPAN LENGTH

(UNIT: m)

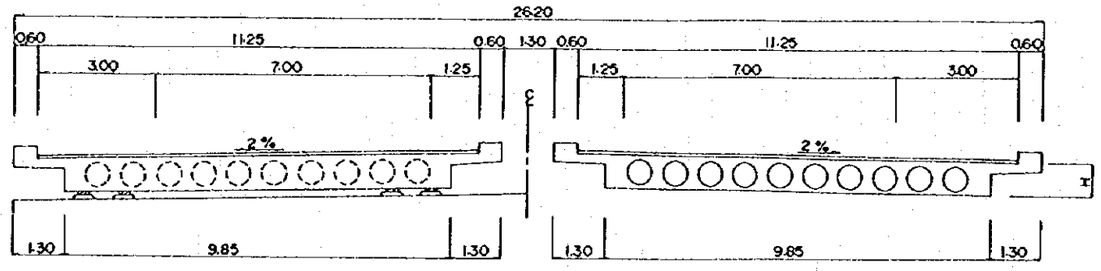
L	H
10 ≤ L ≤ 15	1.00
15 < L < 20	1.20

HIGHWAY NO.18 IMPROVEMENT	STANDARD DESIGN FOR SUPERSTRUCTURE (RC T-GIRDER TYPE)	SCALE	1:150	SHEET NO. 168

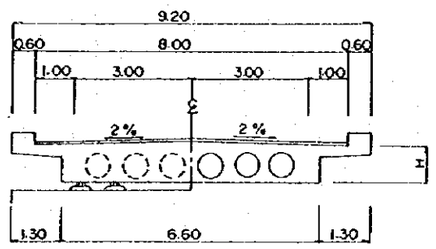
STANDARD DESIGN FOR SUPERSTRUCTURE
(RC HOLLOW SLAB TYPE : 10m≦Span Length<20m)

CROSS SECTION

NOI BAI - BAC NINH SECTION

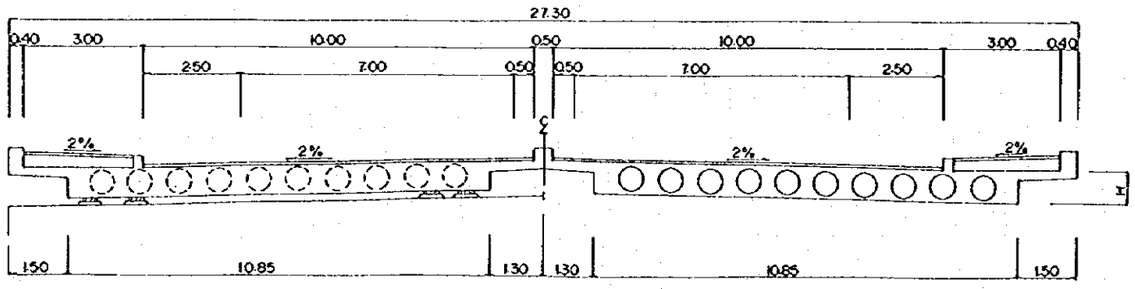


MONG DUONG - BAC LUAN SECTION



BACH NINH - CHI LINH SECTION
CUA ONG - MONG DUONG SECTION

HONG GAI - CUA ONG SECTION



ELEVATION

GIRDER DEPTH BY SPAN LENGTH

(UNIT : m)

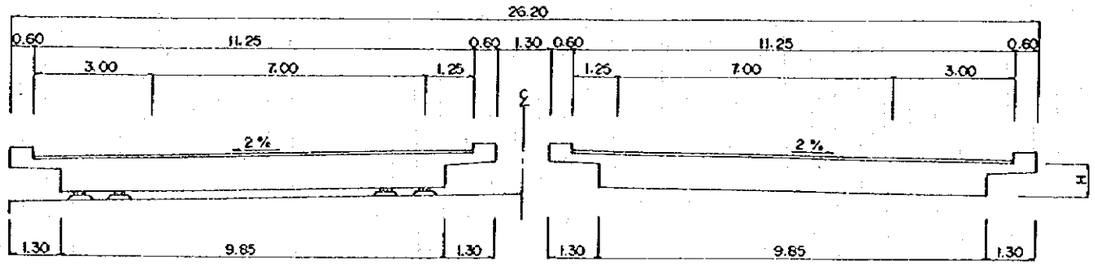
L	H
10 ≦ L ≦ 15	0.85
15 < L < 20	1.00

HIGHWAY NO.18 IMPROVEMENT	STANDARD DESIGN FOR SUPERSTRUCTURE (RC HOLLOW SLAB TYPE)	SCALE	1:150	SHEET NO. 169

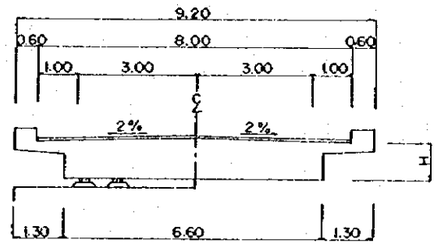
STANDARD DESIGN FOR SUPERSTRUCTURE
(RC SLAB TYPE : Span Length<10m)

CROSS SECTION

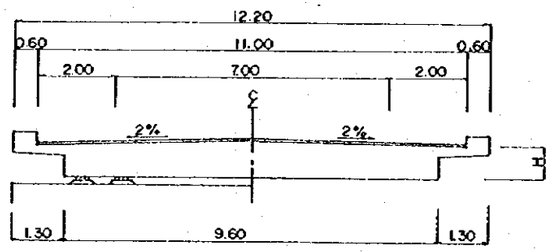
NOI BAI - BAC NINH SECTION



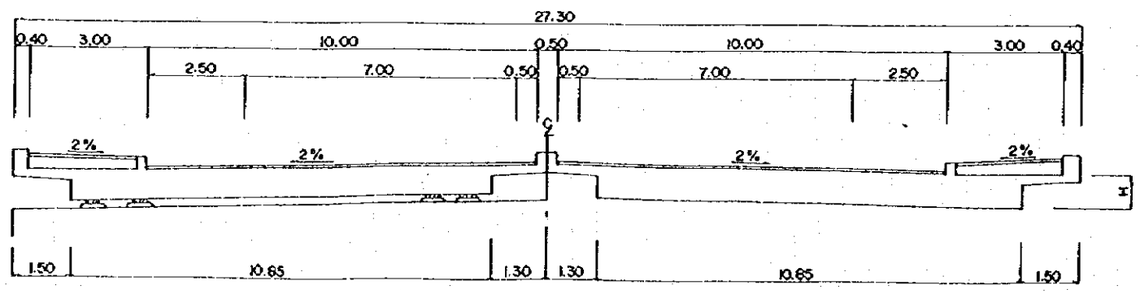
MONG DUONG - BAC LUAN SECTION



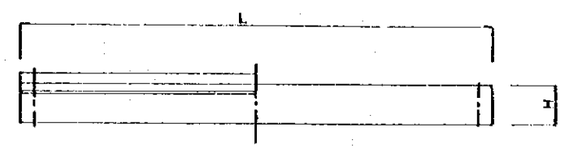
BACH NINH - CHI LINH SECTION
CUA ONG - MONG DUONG SECTION



HONG GAI - CUA ONG SECTION



ELEVATION



GIRDER DEPTH BY SPAN LENGTH

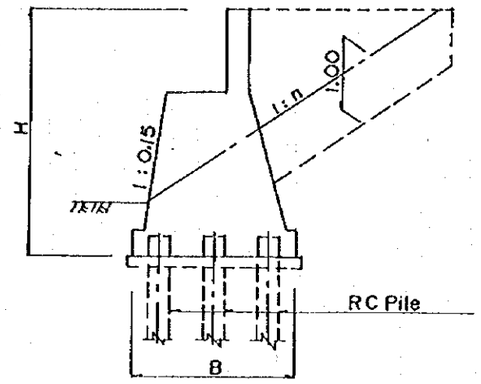
(UNIT : m)

L	H
L ≤ 6	0.40
6 < L < 10	0.60

HIGHWAY NO.18 IMPROVEMENT	STANDARD DESIGN FOR SUPERSTRUCTURE (RC SLAB TYPE)	SCALE	1:150	SHEET NO. 170

STANDARD DESIGN FOR ABUTMENT

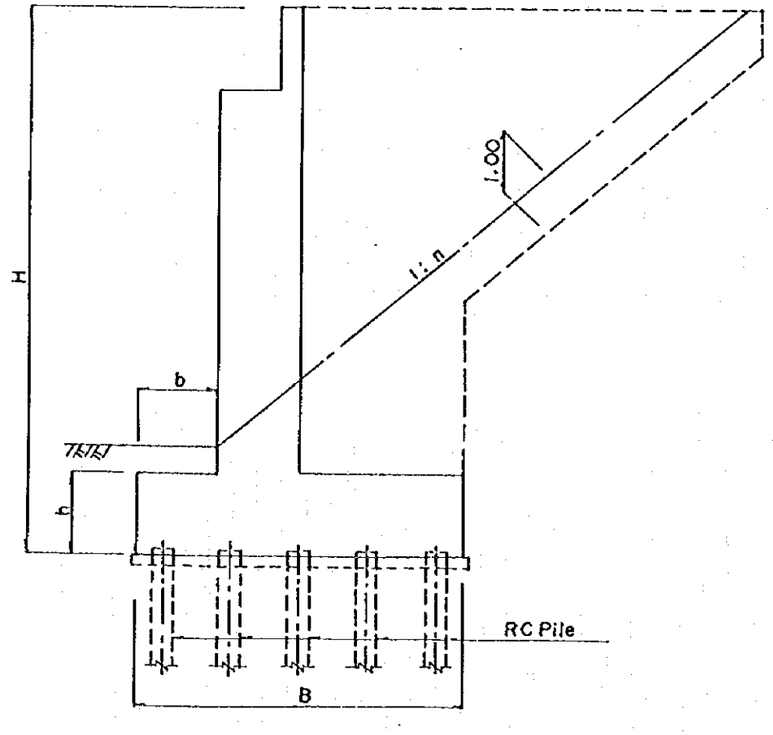
GRAVITY TYPE (Height<6m)



DEMENSION TABLE FOR GRAVITY TYPE

H (m)	B (m)
6.0	4.5
4.0	3.0

REVERSED-T TYPE (6m≤Height)



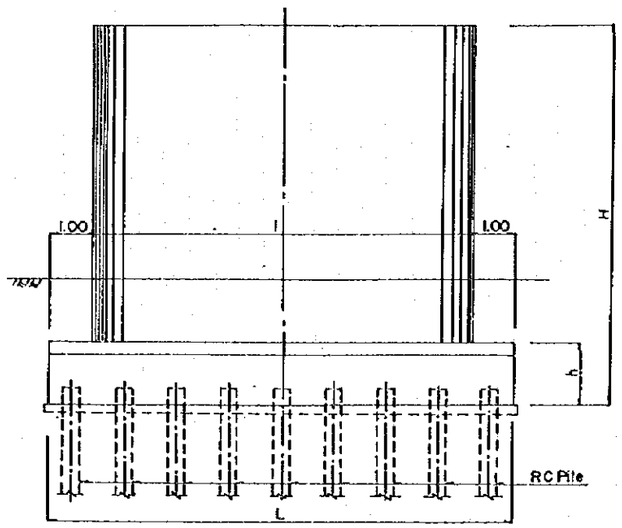
DEMENSION TABLE FOR REVERSED-T TYPE

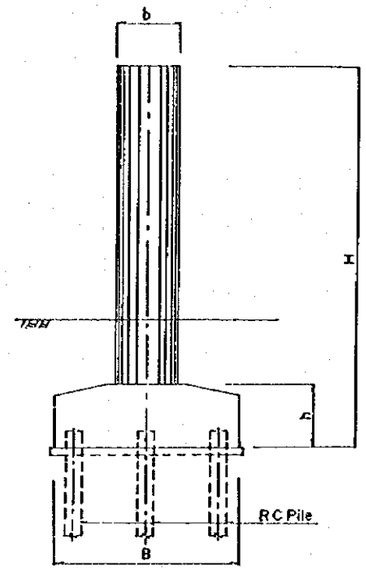
H (m)	h (m)	B (m)	b (m)
12.0	1.5	7.5	2.0
10.0	1.0	6.0	1.5
8.0	1.0	5.0	1.5

HIGHWAY NO.18 IMPROVEMENT	STANDARD DESIGN FOR ABUTMENT	SCALE		SHEET NO. 171

STANDARD DESIGN FOR PIER

PIER IN THE RIVER



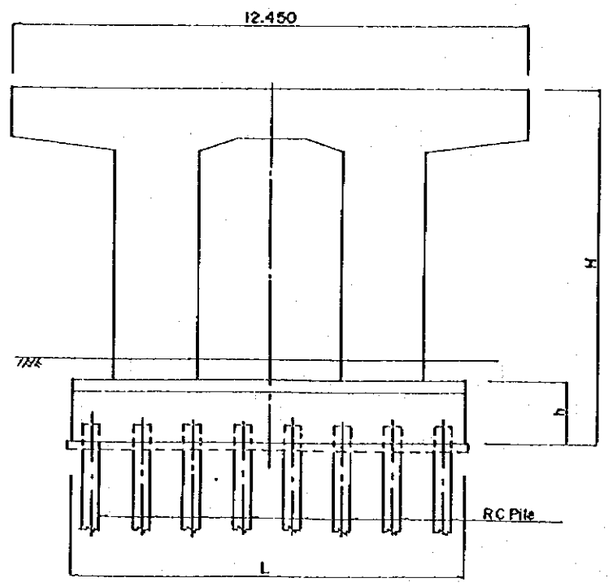


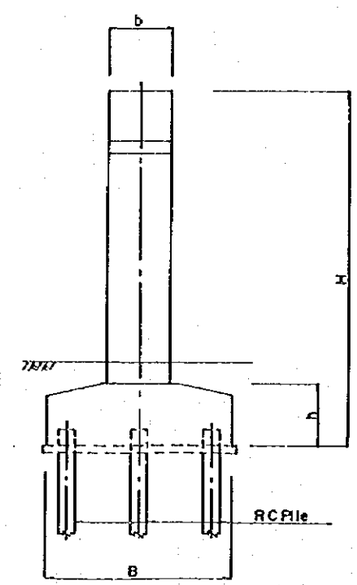
DEMENSION TABLE FOR PIER IN THE RIVER

(UNIT: m)

H	Bridge Span	h	B	b
12.0	30	1.50	5.50	1.50
	20	1.50	5.00	1.50
10.0	30	1.50	5.00	1.50
	20	1.50	4.50	1.50
8.0	30	1.00	4.50	1.50
	20	1.00	4.00	1.50
6.0	30	1.00	4.00	1.50
	20	1.00	3.50	1.50

PIER FOR FLYOVER





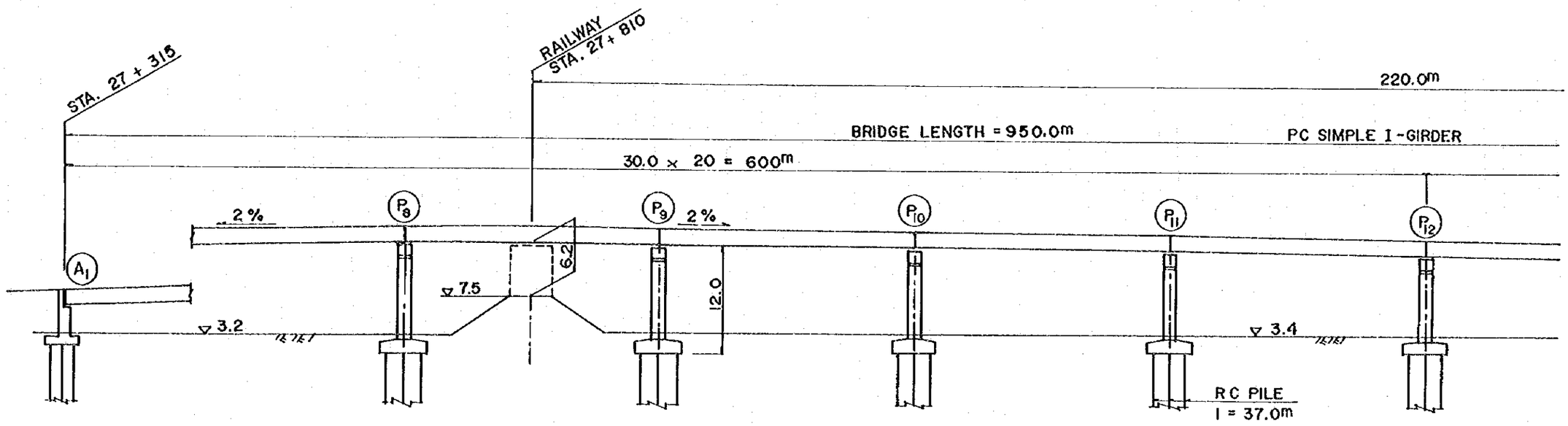
DEMENSION TABLE FOR PIER OF FLYOVER

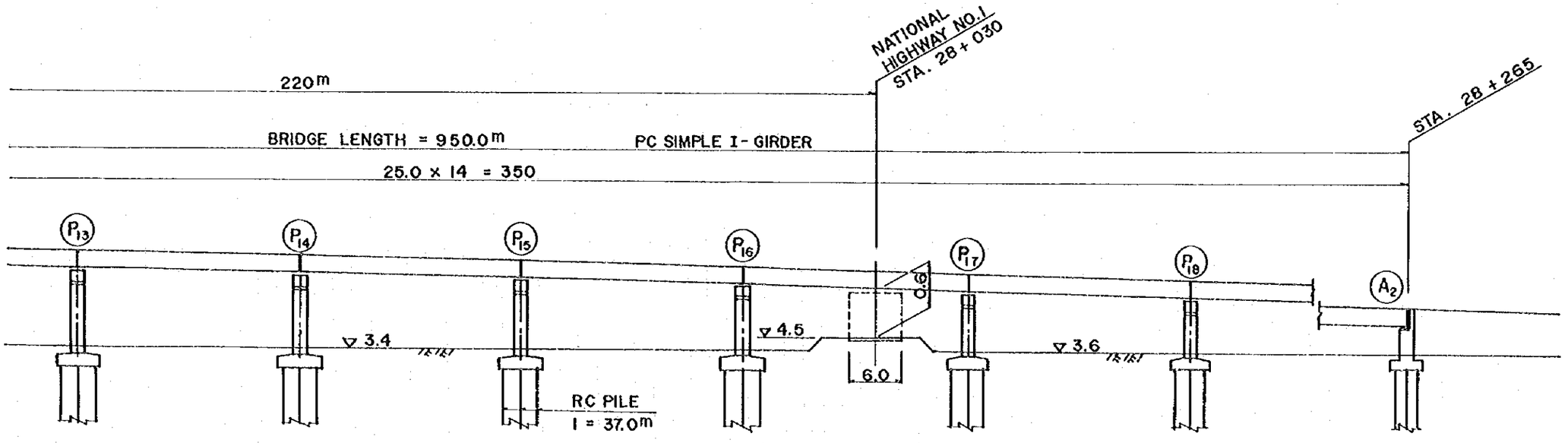
(UNIT: m)

H	Bridge Span	h	B	b
12.0	30	1.50	5.50	1.50
	20	–	–	1.50
10.0	30	1.50	5.00	1.50
	20	–	–	1.50
8.0	30	1.50	4.50	1.50
	20	–	–	1.50
6.0	30	1.50	4.00	1.50
	20	–	–	1.50

HIGHWAY NO.18 IMPROVEMENT	STANDARD DESIGN FOR PIER	SCALE	SHEET NO. 172

RAILWAY AND NATIONAL HIGHWAY NO. 1 FLYOVER (1 - 14 BRIDGE)





HIGHWAY NO.18 IMPROVEMENT	**RAILWAY AND NATIONAL HIGHWAY NO.1 FLYOVER (1-14 BRIDGE)**	SCALE	1:500	SHEET NO. 173

Pha Lai APPROACH

30.0 x 22 = 660.0

STA 25+570

43.0 x 4 = 172.0

+20.0

+10.0

0.0

-10.0

-20.0

-30.0

A_1 P_1 P_2 P_3

2%

2

3

13.0

12.0

13.0

14.5

RC Pile
l = 19.0m

RC Pile
l = 18.0m

RC Pile
l = 20.0m

RC Pile
l = 31.0m

	A_1	P_1	P_2	P_3
FINISHED GRADE	11.36	13.08	14.45	15.71
GROUND LEVEL	0.70	0.90	0.90	1.80
STATION (Km)	25+570	25+613	25+656	25+699

43.0 x 4 = 172.0

1.0

0.7

A_1 P_1 P_2 P_3

ELEVATION

BRIDGE LENGTH = 579.0m

43.0 x 4 = 172.0 | 65.0 | 105.0

2%

P2 | P3 | P4 | P5

13.0 | 14.5 | 22.0 | 21.0

RC Pile
l = 20.0m

RC Pile
l = 31.0m

Bored Pile φ1.5m
l = 24.0m

Bored Pile φ1.5m
l = 23.0m

+ 7.05 H.W.L. = + 7.94

L.W.L. = - 0.24

BED ROCK

	P2	P3	P4	P5
	14.45	15.71	16.66	17.56
	0.90	1.80	0.80	4.20
	25+656	25+699	25+742	25+807

PLAN

BRIDGE LENGTH = 579.0m

43.0 x 4 = 172.0 | 65.0 | 105.0

1.0 | 1.8 | 0.8 | -5.2 | -3.6

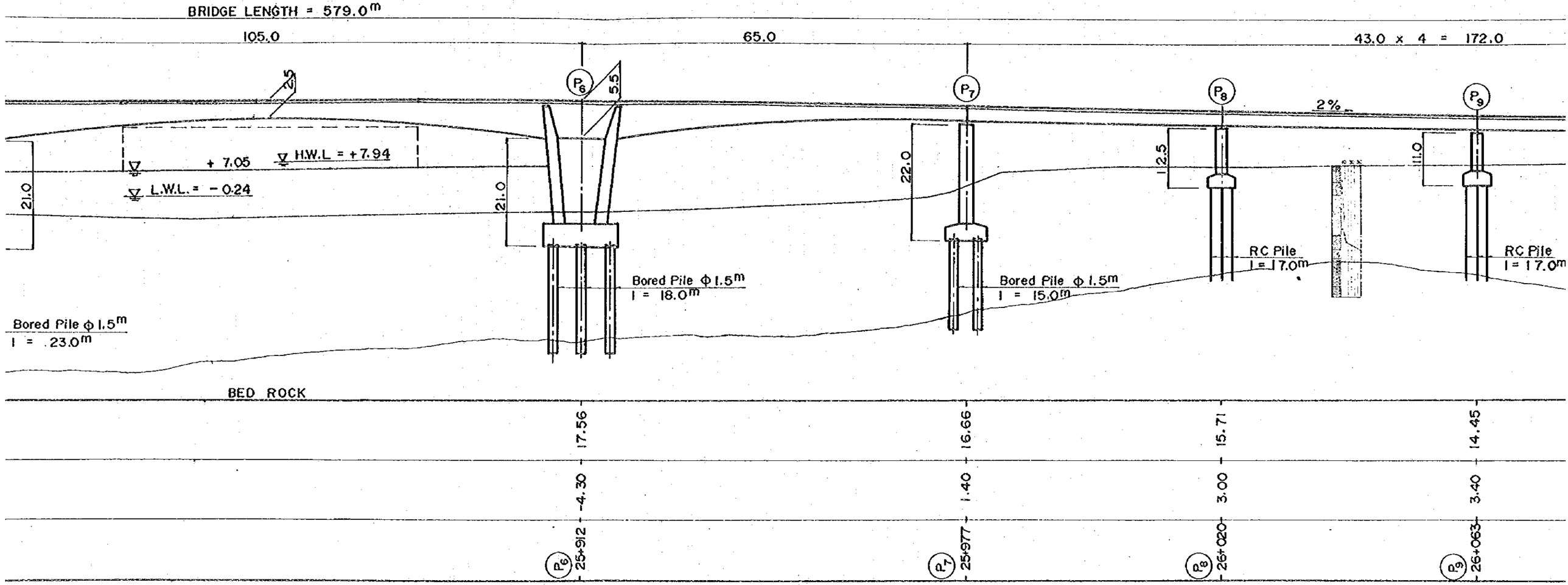
1 0 -2 -4 -4

PHA LAI BRIDGE

ELEVATION

BRIDGE LENGTH = 579.0 m

105.0 | 65.0 | 43.0 x 4 = 172.0

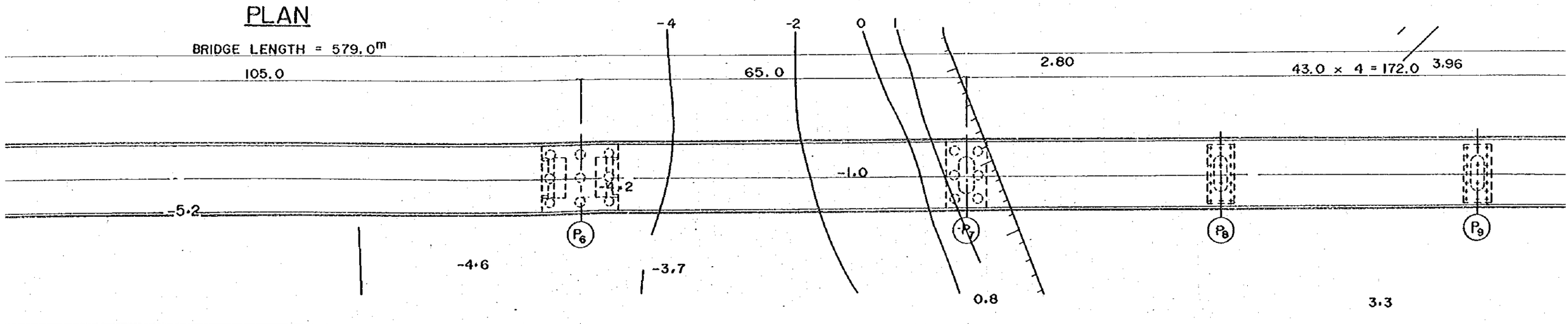


	P6	P7	P8	P9
	17	16	15	14
	-4.30	1.40	3.00	3.40
	25+912	25+977	26+020	26+063

PLAN

BRIDGE LENGTH = 579.0 m

105.0 | 65.0 | 43.0 x 4 = 172.0



STA. 26 + 149

43.0 × 4 = 172.0

P_8 P_9 P_{10} P_{11}

2%

12.5 11.0 9.5 9.5

RC Pile
l = 17.0m

RC Pile
l = 17.0m

RC Pile
l = 20.0m

RC Pile
l = 20.0m

ile φ 1.5m
.0m

15.71 14.45 13.08 11.36

3.00 3.40 3.60 3.40

26+020 26+063 26+106 26+149

P_8 P_9 P_{10} A_2

2.80

43.0 × 4 = 172.0 3.96

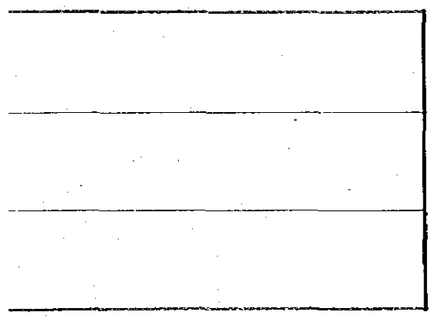
3.30 3.40 3.17

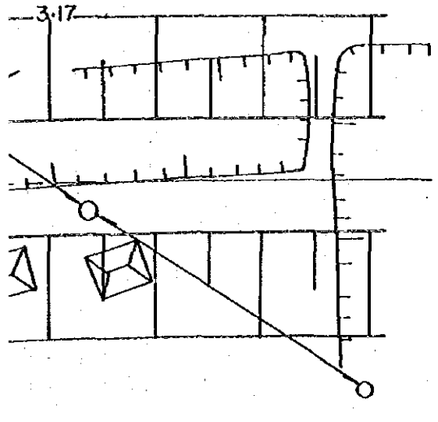
P_8 P_9 P_{10} A_2

3.3 3.5

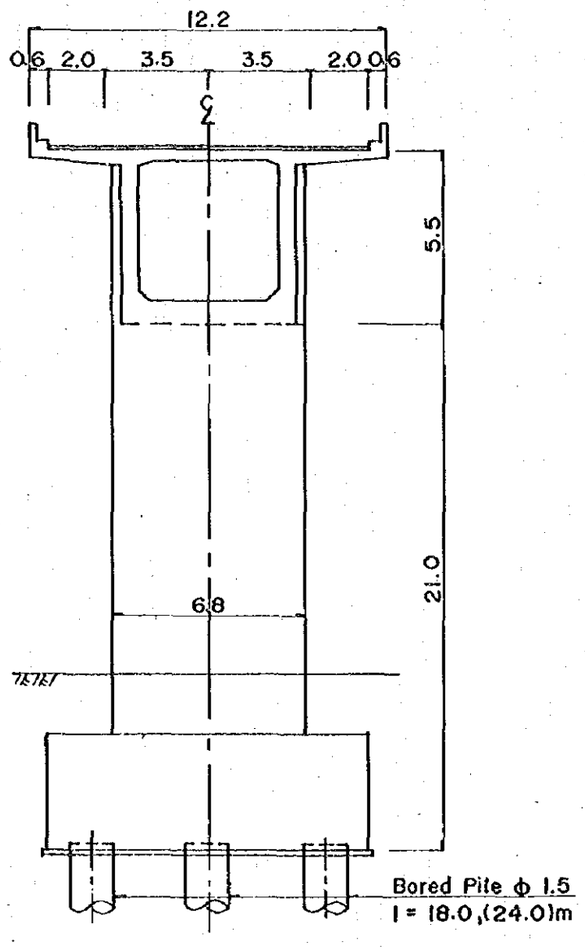
0.6 2.0 3.5

CROSS SECTION



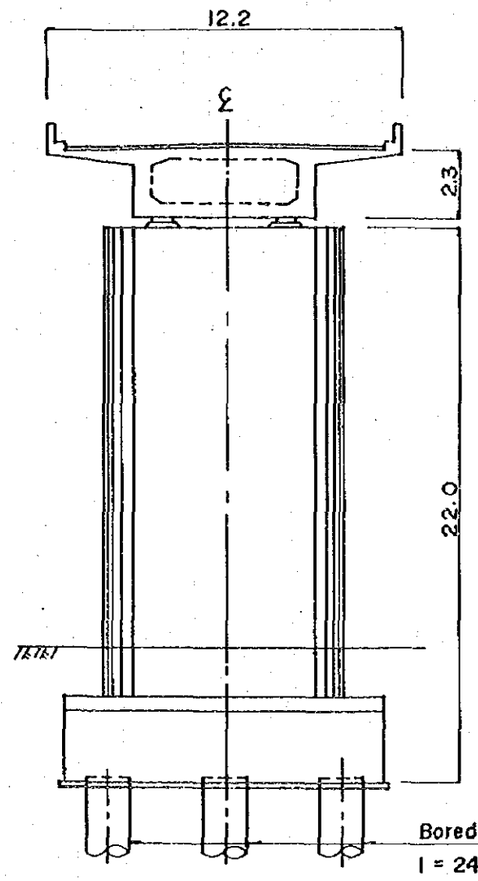


(P3)((P6))



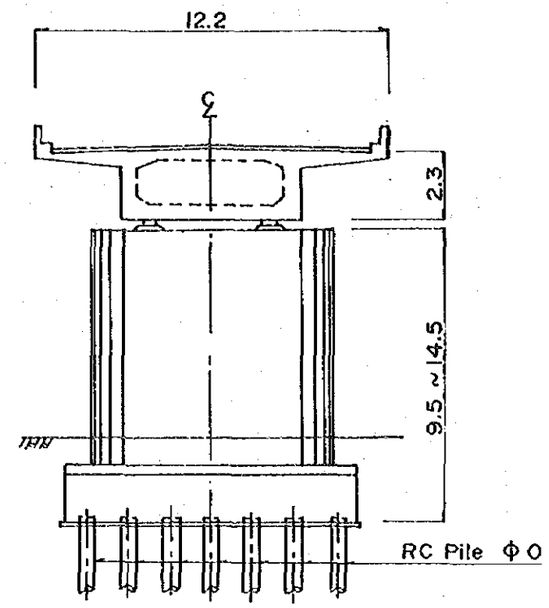
Bored Pile ϕ 1.5
l = 18.0,(24.0)m

(P4) ((P7))



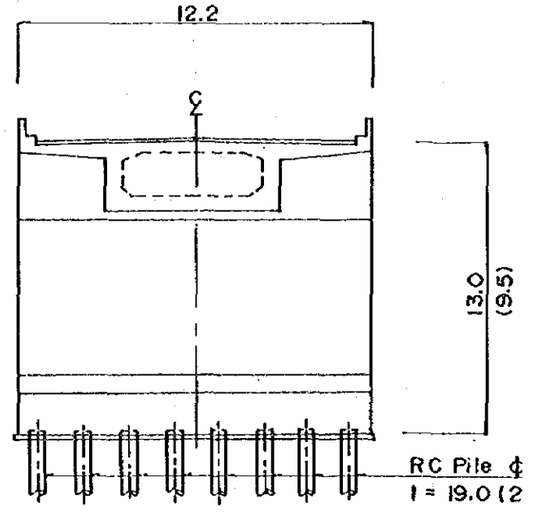
Bored Pile ϕ 1.5
l = 24.0,(15.0)m

(P1)~(P3),(P8)~(P10)



RC Pile Φ 0

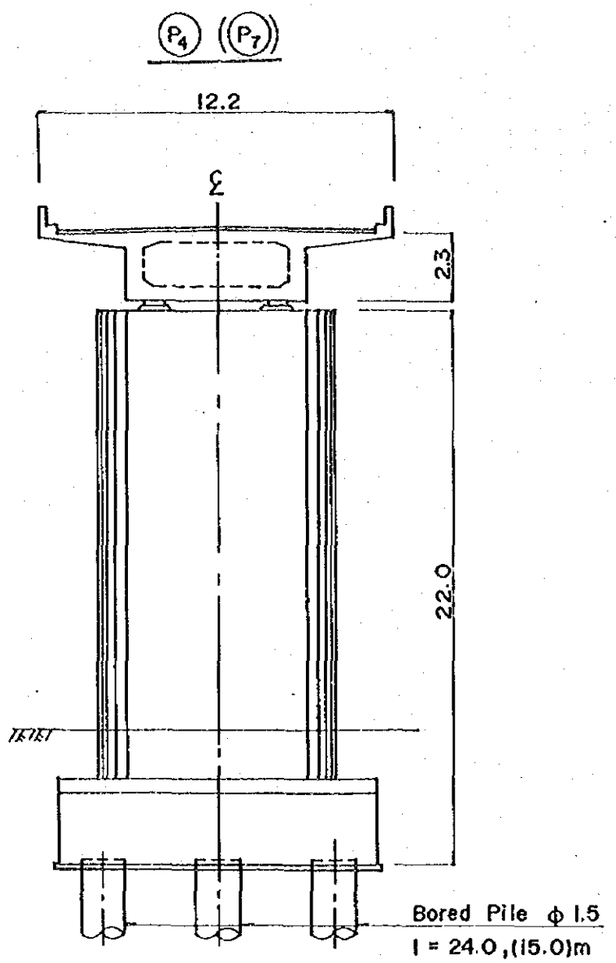
(A1)((A2))



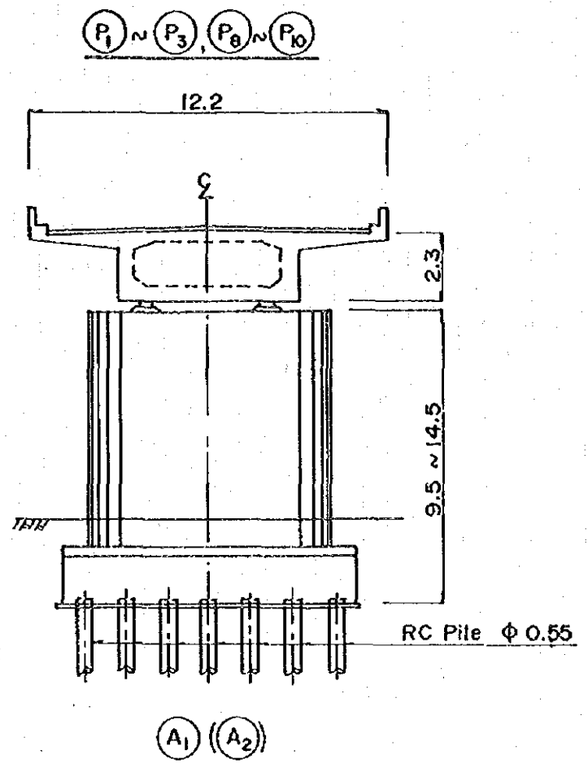
RC Pile ϕ
l = 19.0 (2

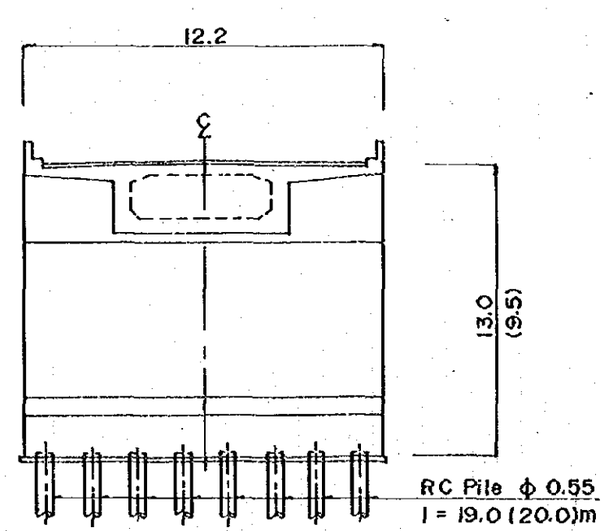
HIGHWAY NO.18 IMPROVEMENT	PHA LAI BRIDGE

CROSS SECTION



Pile ϕ 1.5
),(24.0)m



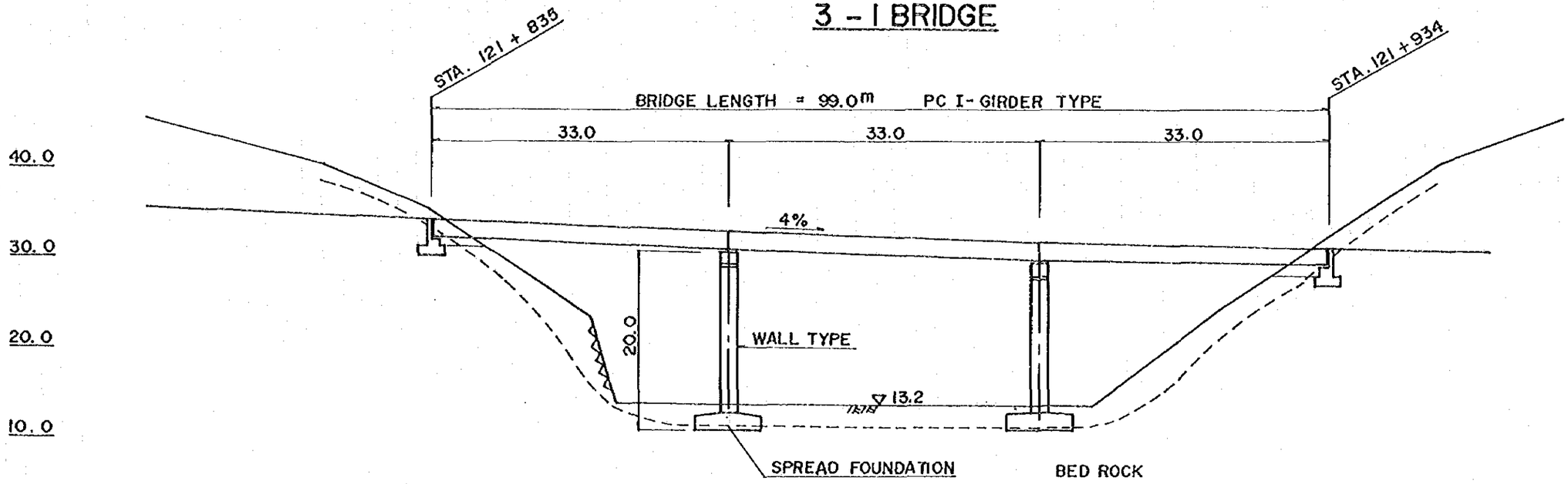


Design Conditions	
1. Bridges length	579m (43.0x3 + 65.0 + 105.0 + 65.0 + 43.3x3)
2. Effective Width	11.0m (2.0 + 3.5x2 + 2.0)
3. Design Live Load	1.25 x HS 20 - 44 (ASSHOT)
4. Seismic Coefficient	Horizontal : 0.10 ; Vertical : 0.0
5. Bearing Layer	Sandstone
6. Crossing Structure	
1) Name	Thai Binh river
2) H.W.L. (100 years frequency)	7.94
3) Clearance against H.W.L.	0.50
4) Navigation Clearance	Horizontal : 50.0m ; Vertical : 7.0m
7. Substructure Type	
1) Main	PC Continuous Rigid Frame Box Girder
2) Approach	PC Simple Box Girder
8. Substructure Type	
1) A_1 , A_2	Reversed - T
2) P_1 ~ P_{10}	Wall
9. Foundation Type	
1) P_4 ~ P_7	Bored Pile Ø 1.5
2) A_1 ~ P_3 ; A_8 ~ A_2	RC Pile Ø 0.55

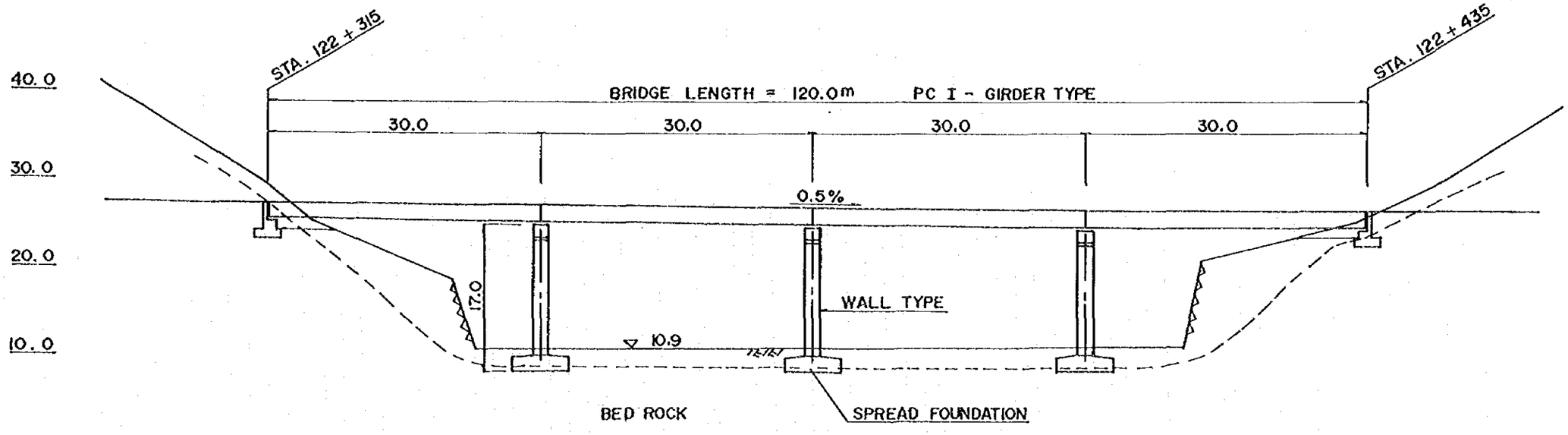
HIGHWAY NO.18 IMPROVEMENT	PHA LAI BRIDGE	SCALE	1:600	SHEET NO. 174

APPROACH BRIDGES FOR BAI CHAY BRIDGE

3 - 1 BRIDGE

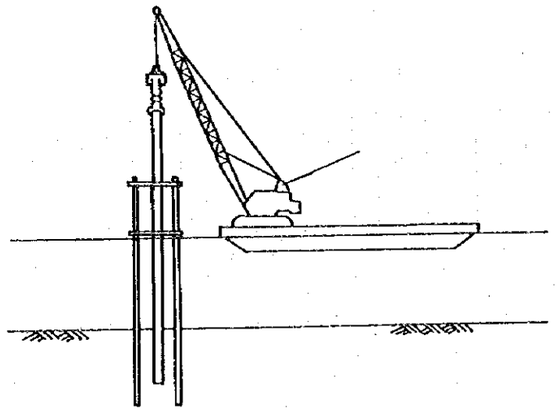


3 - 2 BRIDGE

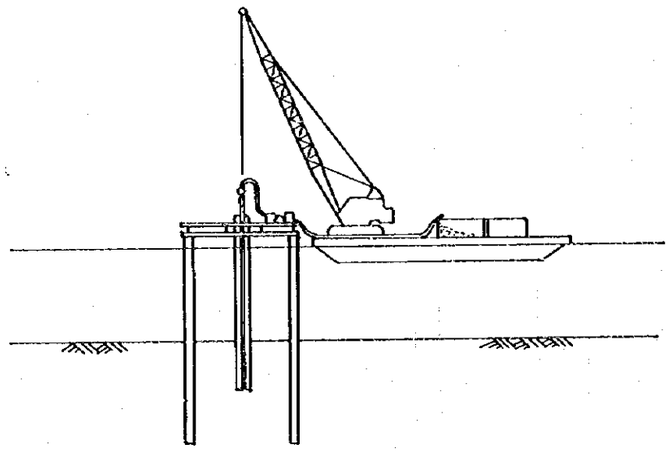


HIGHWAY NO.18 IMPROVEMENT	APPROACH BRIDGES FOR BAI CHAY BRIDGE	SCALE	1:500	SHEET NO. 175

1. Sheet pile for construction

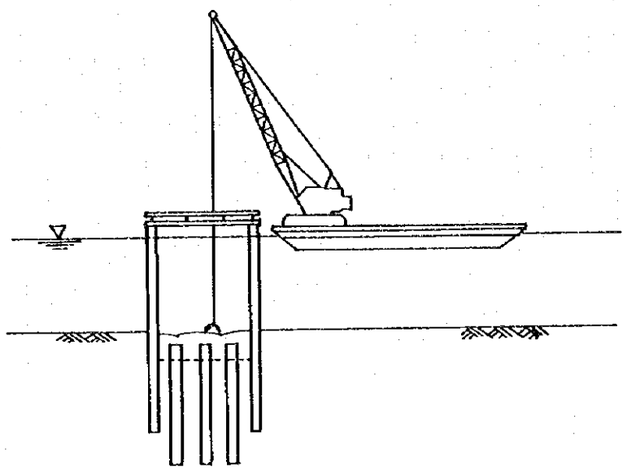


2. Reverse circulation drill pile construction

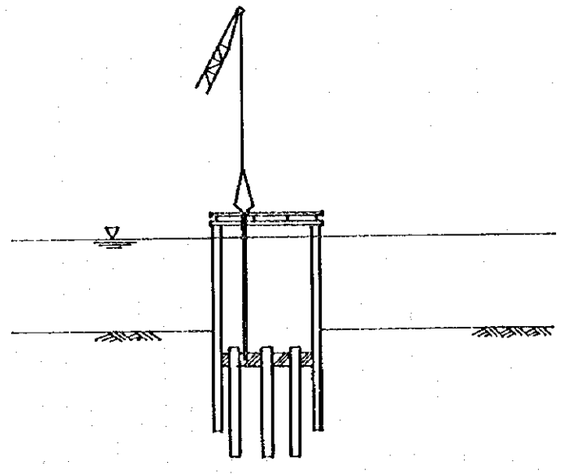


3. Excavation viverbed and concreting

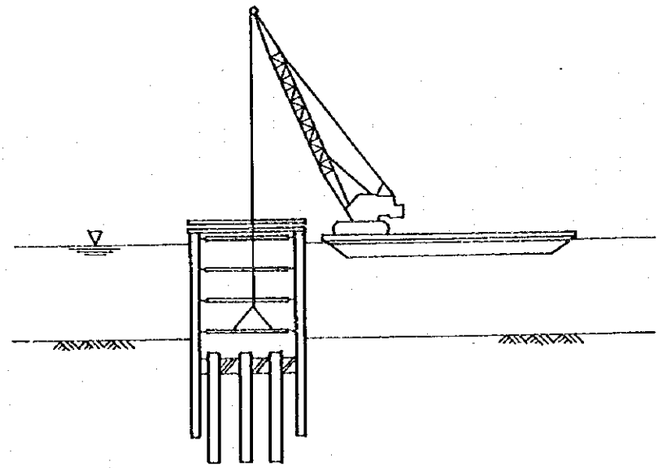
(a) Excavation



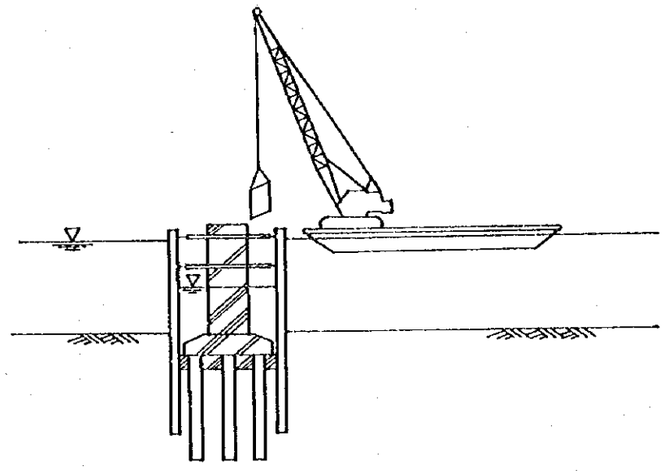
(b) Sheal concrete



4. Construction of steel support



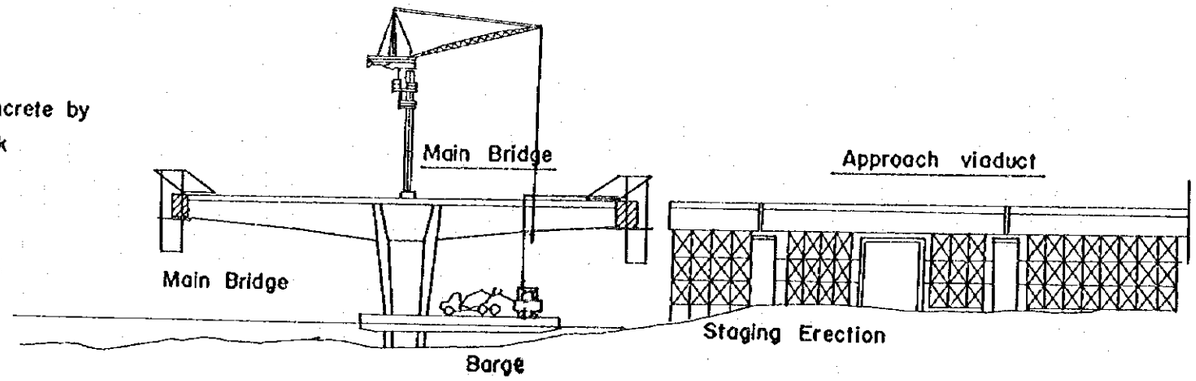
5. Construction of pier Body



HIGHWAY NO.18 IMPROVEMENT	Construction procedure of bored pile by reverse circulation method and pier body	SCALE	SHEET NO. 176

Alternative A

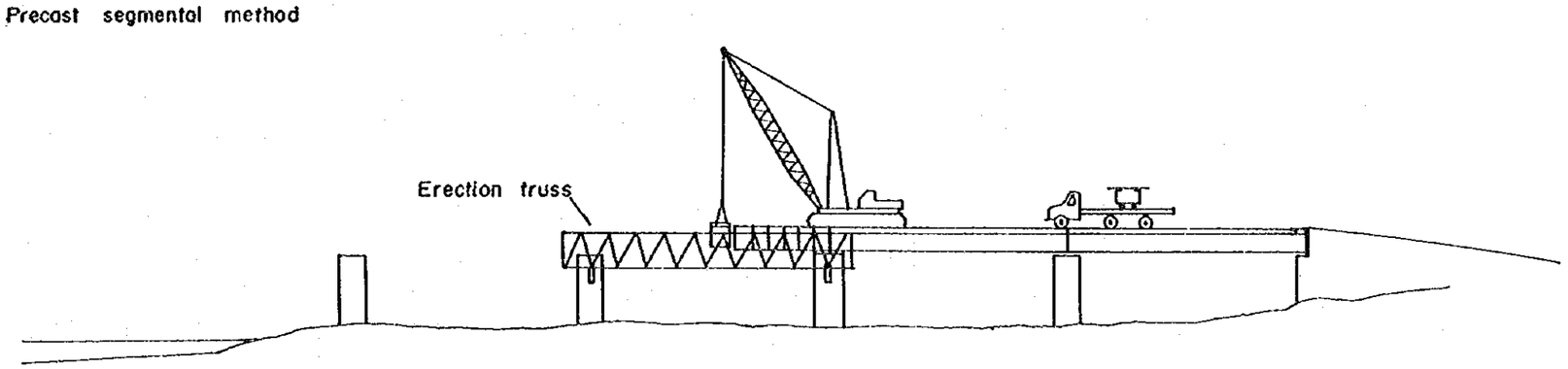
Cast in situ concrete by moving falsework



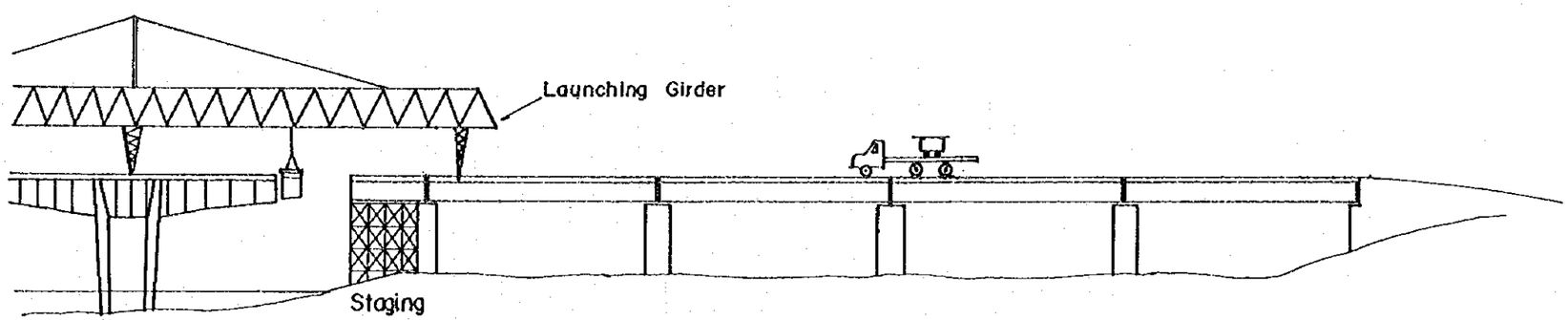
Alternative B

Precast segmental method

Approach viaduct erection



Main bridge erection



HIGHWAY NO.18 IMPROVEMENT	ERECTION METHOD OF SUPERSTRUCTURE	SCALE		SHEET NO. 177