

CHAPTER 9

CONCLUSION AND RECOMMENDATION

CHAPTER 9 CONCLUSION AND RECOMMENDATION

9-1 Conclusion

As a main point of its economic policy, the Government of Sri Lanka with the aid of foreign countries is implementing large scale public investments referred to as "Lead Projects" such as The MAHAVELI River Development Project, The Housing City Development Project, and The Improvement Project for the Investment Promotion Zone.

The improvement of the traffic network is necessary to smoothly carry forward these projects as well as to handle the growing traffic accompanying the success of these projects and economic development. From this point of view, the Government of Sri Lanka has set a five-year programme for road improvements and is aggressively implementing the improvement of its road traffic network. Among the various projects, the Victoria Bridge Project has been accorded such great importance and urgency that it has been given top priority.

Since the restriction of traffic on the Victoria Bridge started in 1986, only the New Kelani Bridge has been available for heavy vehicle traffic passing over the Kelani River. Considering the heavy traffic volume crossing the Kelani River, the heavy traffic congestion, the limit to handling future growth, in traffic volume, the Kelani Bridge's structural defects that need repair, and the doubtfulness of the Victoria

Bridge's durability, it is clearly necessary to construct a new bridge to replace the current one and restore the functions of the Victoria Bridge.

The preparations in Sri Lanka to implement the concerned project have been made and they are ready to start at any time.

As mentioned above, considering the current situation in Sri Lanka and the impact of the Project, the implementation of the concerned project under grant-aid assistance from the Government of Japan will be significantly worthwhile, and will also contribute to the development of the economy of Sri Lanka. Consequently it should by all means be realized.

9-2 Recommendations

We recommend the following for the immediate realization of the Project.

- (1) The immediate implementation of the work to be done by Sri Lanka -

For the early commencement of the works, it is desirable that the work to be done by Sri Lanka should be carried out. In particular, problems such as site purchasing, compensation problems, and customs clearance procedures for construction materials that are to be brought from Japan must be solved.

(2) The acceleration of the implementation procedure -

As mentioned in the conclusion, it is necessary to immediately construct a new bridge to replace the current one immediately and the preparation to do that have been done the Sri Lanka. Consequently, it is desirable to carry out the remaining procedures smoothly and promptly so that early commencement of the work will be possible.

ANNEXED DATA

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1-1 Minutes (July 1988)

THE MINUTES OF DISCUSSIONS ON
THE BASIC DESIGN STUDY ON
THE PROJECT FOR RECONSTRUCTING
THE VICTORIA BRIDGE IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF
SRI LANKA

In response to the request of the Government of the Democratic Socialist Republic of Sri Lanka, the Government of Japan decided to conduct a basic design study on the Project for Reconstructing the Victoria Bridge (hereinafter referred to as "the Project"), and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA"). JICA sent the Basic Design Study Team headed by Mr. Shoichi Saeki, Director, Structure and Bridge Dept., Public Works Research Institute, Ministry of Construction to carry out the study from July 9 to August 4, 1988.


The Japanese Team had a series of discussions on the Project with the officials concerned of Sri Lanka, and conducted the field survey at the Project Site.

As a result of the study, both parties agreed to recommend to their respective Government authorities that the major points of understanding reached between them, attached herewith, should be examined towards the realization of the Project.

July 15, 1988



Shoichi Saeki
Leader,
Basic Design Study Team;
JICA



R. Paskaralingam,
Chairman,
Road Development Authority and
Secretary, Ministry of Highways

ATTACHMENT

1. Objective of the Project

The objective of the Project is to reconstruct the Victoria Bridge close to the existing old bridge in order to smoothen and improve the safety of the traffic flow.

2. Implementing Body

Ministry of Highways is responsible for the implementation of the Project.

3. Construction Site of the Project

The Construction site of the Project is down side of existing Victoria Bridge located at the Kelani River, eastern part of Colombo City as shown in Annex I.

4. Outline of the Project is as follows.

(1) New Victoria Bridge

length: About 240m

carriage way width: 7.5m

pedestrian way width: 3.0m

(2) Approach road: About 350m (total length of both sides including some improvement work of existing roads)

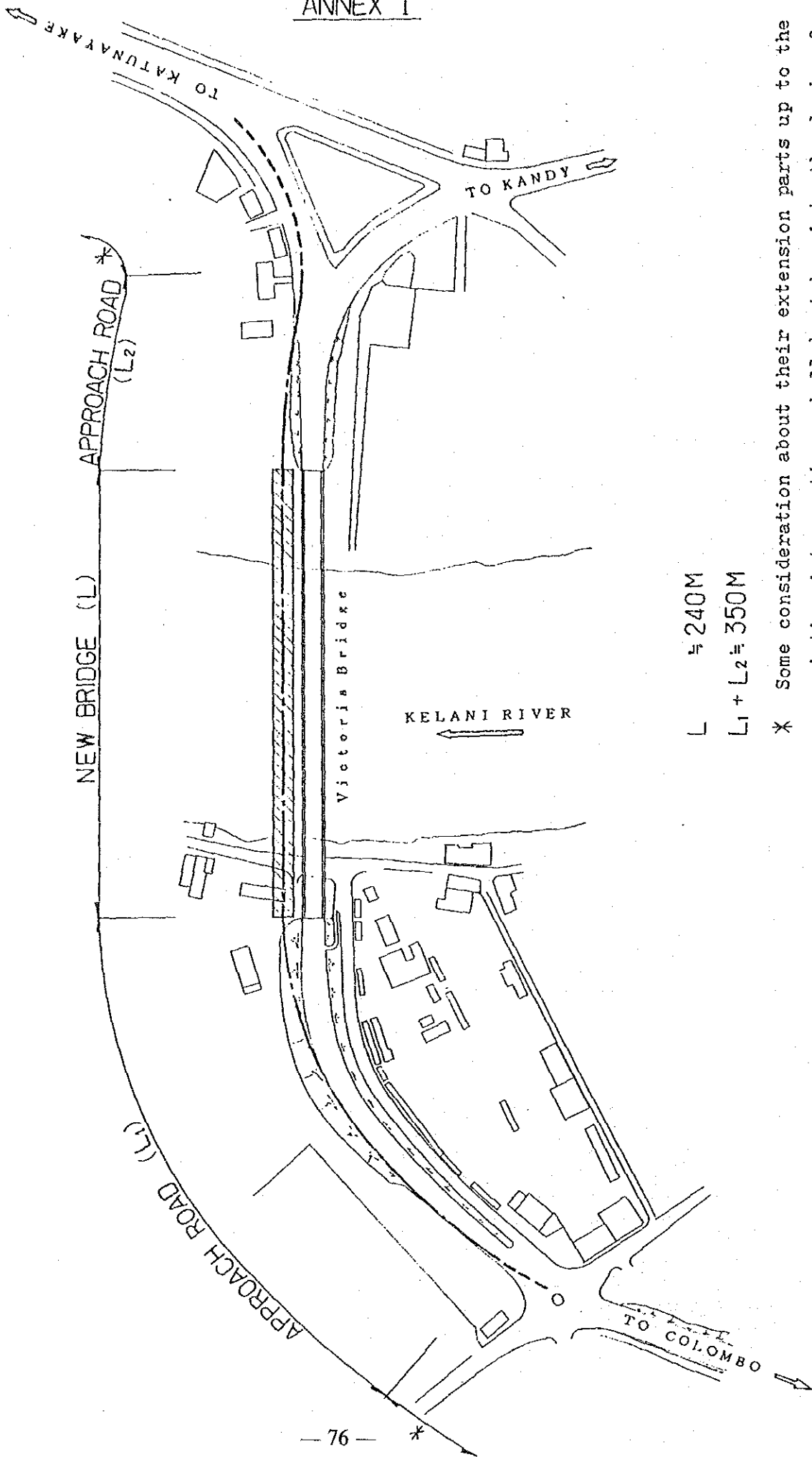
5. The Government of the Democratic Socialist Republic of Sri Lanka will take the necessary measures listed in Annex II on condition that the Grant Aid by the Government of Japan is extended to the Project.

6. Both sides confirmed that the Japanese Study Team explained the Japanese Grant Aid Programme and the Sri Lanka side understood it.

7. Sri Lanka side insisted on the necessity that the number of the lanes of new Victoria Bridge be increased to four or more in the future in accordance with the growth of traffic flow. Japanese Study Team understood the future necessity. Both sides agreed that the Basic Design for the Project should not interrupt the above possibility.

8. Sri Lanka side mentioned the second stage cooperation of additional bridge (2 or 4 lanes) construction to Japanese team and the team promised to report their expectations to the Government of Japan.

ANNEX I



L ≈ 240M

L1 + L2 ≈ 350M

* Some consideration about their extension parts up to the existing intersections shall be taken into the design for their smooth continuity.

ANNEX II

Necessary measures to be taken by the Government of the Democratic Socialist Republic of Sri Lanka.

1. To secure land necessary for the execution of the Project and provide enough space for such construction as temporary offices, working area, stockyard and others.
2. To ensure that river area necessary for the construction of the facilities be freely accessible.
3. To provide necessary facilities for construction such as electricity, water supply, telephone and other incidental facilities up to the Project site.
4. To ensure prompt unloading, tax exemption, customs clearance at ports of disembarkation in Sri Lanka and prompt internal transportation. to be paid under the Grant, therein of the products purchased under the Grant.
5. To exempt Japanese nationals from customs duties, international taxes and other fiscal levies which may be imposed in Sri Lanka with respect to the supply of the products and services under the verified contracts.
6. To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into Sri Lanka and stay herein for the performance of their work.
7. To maintain and use properly and effectively the facilities constructed provided under the Grant Aid.
8. To vacate all existing buildings inside the Project site (see ANNEX-I) and clean the site by the start of the Project.

THE MINUTES OF DISCUSSIONS ON
THE BASIC DESIGN STUDY ON
THE PROJECT FOR RECONSTRUCTING
THE VICTORIA BRIDGE IN
THE DEMOCRATIC SOCIALIST REPUBLIC OF
SRI LANKA

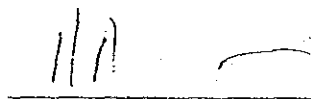
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As a result of the study, JICA prepared a draft report and despatched a team headed by Mr. Shoichi Saeki to explain and discuss it from September 24 to October 2, 1988.

Both parties had a series of discussions on the report and agreed to recommend to their respective Governments that the major points of understandings reached between them on September 29, 1988, attached herewith should be examined towards the realization of the Project.



Shoichi Saeki
Leader
Basic Design Study Team
Japan International
Co-operation Agency



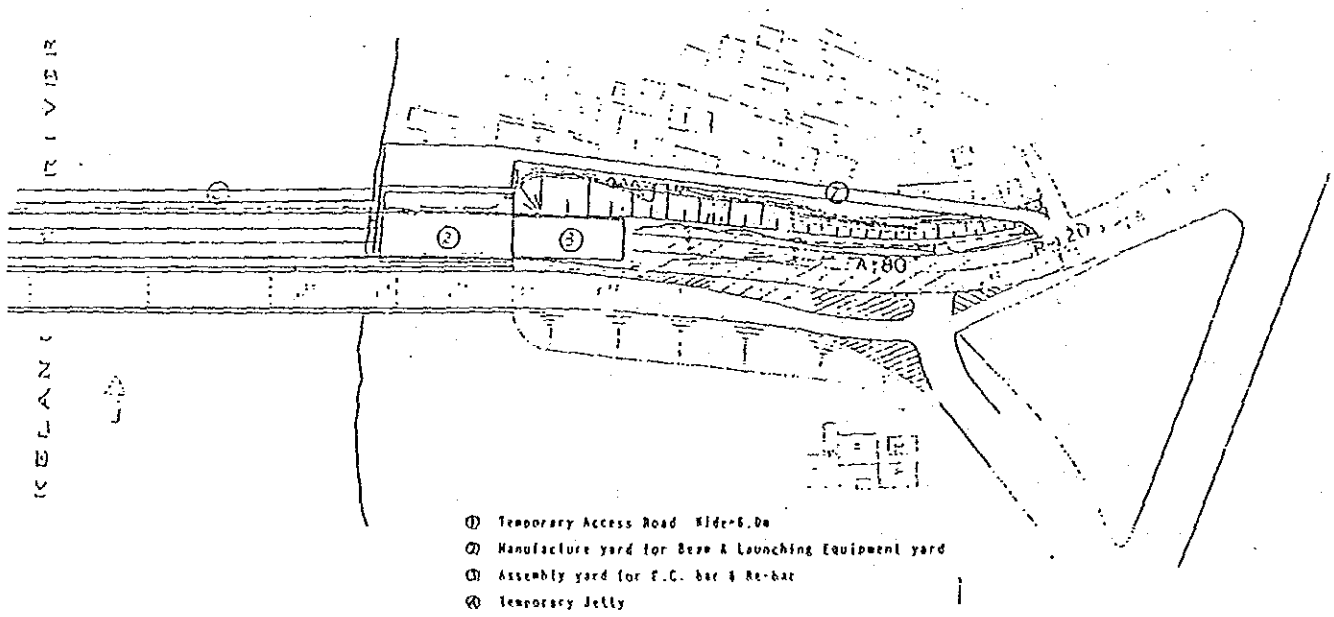
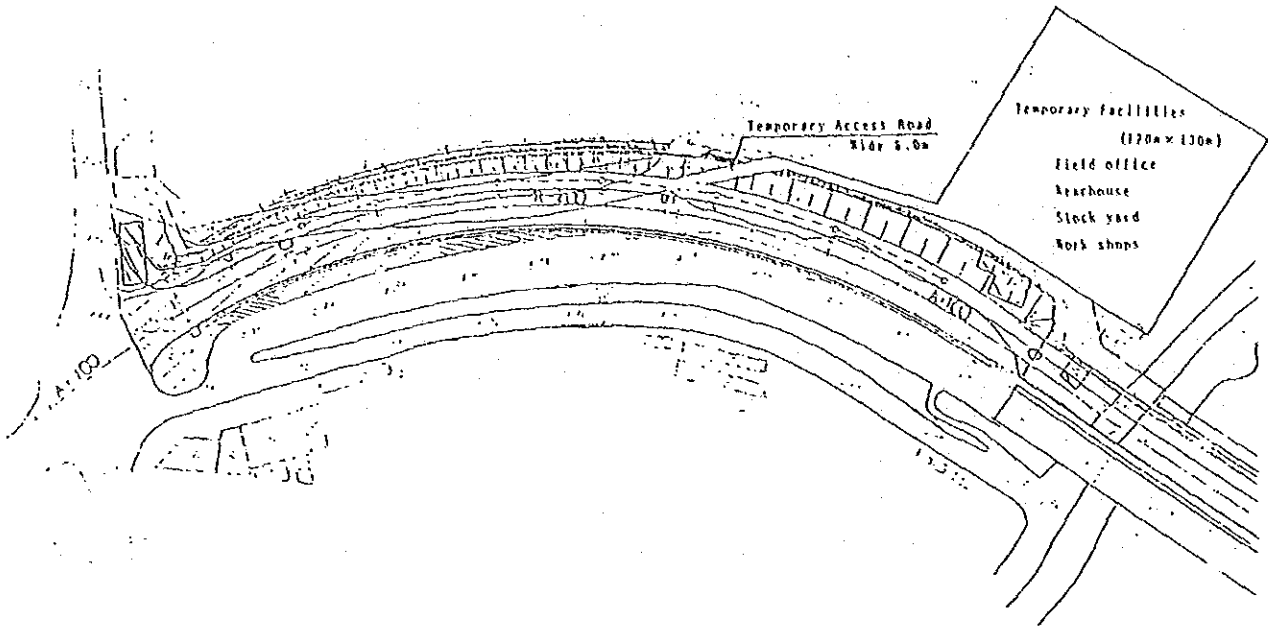
R. Paskaralingam
Chairman
Road Development Authority
and Secretary, Ministry of
Highways

29th September, 1988

ATTACHMENT

1. The Government of Sri Lanka agreed in principle to the basic design proposed in the Draft Final Report.
2. The Government of Sri Lanka has reconfirmed the Minutes of the meetings held from 11th to 15th July, 1988 and signed on 15th July, 1988.
3. The Government of Sri Lanka assured the provision of the necessary budget for the adequate works such as site clearance, etc. for the project execution and the personnel services, maintenance and operation expenses for the new bridge.
4. The Government of Sri Lanka has agreed to be responsible for the undertaking of works as shown in Annex I, such as provision of power and water supply to the site, space for workshop, etc.
5. The Government of Sri Lanka has agreed to obtain the right-of-way for the Project and report the situation to the Embassy of Japan in Sri Lanka by the end of November, 1988.
6. The Final Report (10 copies in English) will be submitted to the Government of Sri Lanka in November, 1988.

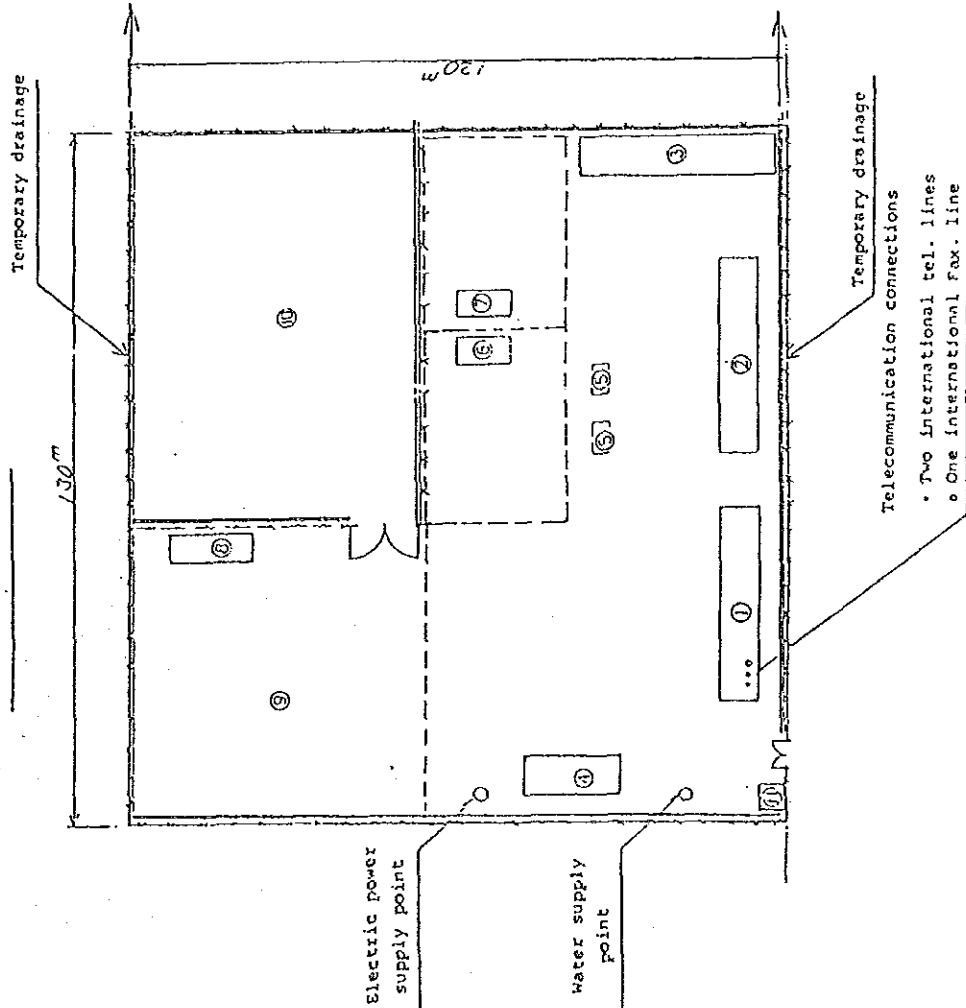
ANNEX I
(A) LOCATION



Handwritten initials/signature.

(B) Arrangement for Temporary Facilities

Left Bank Side



- | | | |
|----------------------------------|------------|------|
| ① Office | 7.2 x 21.6 | 1No |
| ② Warehouse | 7.2 x 21.6 | 1No |
| ③ Warehouse | 7.2 x 21.6 | 1No |
| ④ Office for local subcontractor | 7.2 x 14.4 | 1No |
| ⑤ Container for Material & Tools | 6Fed | 2Nos |
| ⑥ Carpenter's shop | 5 x 10 | 1No |
| ⑦ Bar-bender's shop | 5 x 10 | 1No |
| ⑧ Repair shop | 15 x 5 | 1No |
| ⑨ Mortar Pool | 55 x 55 | |
| ⑩ Materials stock yard | 55 x 75 | |
| ⑪ Guard Box | 3.6 x 4.5 | 1No |

1-3 Member List of Study Team

(1) On-site study of basic design

Name	Assignment	Affiliation
Shoichi Saeki	Team leader	Ministry of Construction
Yoshitaka Yoshida	Construction plan supervisor	Honshu and Shikoku Bridge Authority
Shigeyuki Seto	Project Coordinator	JICA
Shunji Inomata	Bridge planner	Japan Bridge & Structure Institute, Inc. (JBSI)
Masahisa Komiya	Bridge designer	JBSI
Kiminori Matsumoto	Construction planner	JBSI
Shoji Yamaguchi	Road designer	JBSI
Junji Anai	Geological surveyer	Kokusai Kogyo Co., Ltd.

(2) On-site explanation of final draft report

Shoichi Saeki	Team Leader	Ministry of Construction
Shunji Inomata	Bridge planner	JBSI
Masahisa Komiya	Bridge designer	JBSI
Kiminori Matsumoto	Construction planner	JBSI
Shoji Yamaguchi	Road designer	JBSI

1-4 Record of First Site Visit

July	9	Sat.	PM	0: 00	Leave Narita Airport
	10	Sun.			Arrive in Sri Lanka.
	11	Mon.	AM	9: 00	JICA
				10: 00	Embassy
				11: 00	External Resources
			PM	3: 00	RDA
	12	Tue.	AM	9: 00	RDA
			PM	1: 00	Bridge Site
	13	Wed.	AM	9: 00	RDA
			PM	1: 00	Visit the Kalutara Bridge.
	14	Thu.	AM	9: 00	RDA
			PM	3: 00	External Resources
	15	Fri.	PM	1: 00	Sign the minutes.
	16	Sat.			Japanese government survey team returns to Japan.
	17	Sun.			No. 5 boring work starts.
	18	Mon.	AM	9: 00	RDA
	19	Tue.	AM	9: 00	RDA Survey the bridge site.
			PM	1: 00	Visit a ready-fixed concrete plant.
	20	Wed.	AM	9: 00	RDA No. 5 boring work completed. 21
					Thu. AM 10:00 Visit the SDCC. No. 6
					boring work starts.
				11: 00	Visit the Civil Engineering Research
					Center
					Fabricate a platform.
	22	Fri.	AM	9: 00	RDA
	23	Sat.			
	24	Sun.			
	25	Mon.	AM	9: 00	RDA Install a platform for No. 6
					boring
	26	Tue.	AM	9: 00	RDA No. 6 boring work starts.
	27	Wed.	AM	9: 00	RDA
	28	Thu.			Holiday No. 6 boring work completed.
	29	Fri.	AM	9: 00	RDA
	30	Sat.			
	31	Sun.			Visit the Kalutara Bridge.
		Aug.			
	1	Mon.	AM	9: 00	RDA
			PM	3: 00	Visit the embassy.
	2	Tue.	PM	1: 00	RDA
	3	Wed.	PM	1: 00	Leave Sri Lanka.
	4	Thu.	PM	7: 30	Arrive at Narita.

RDA: Road Development Authority

SDCC: State Development Construction Corporation 1-4 Visitor List

Record of Second Site Visit

Sept. 24	Sat.	Leave Narita Airport
25	Sun.	Arrive in Sri Lanka.
26	Mon.	Meetings with N.P.E.R., M.O.H., R.D.A.
27	Tue.	Explanation of the Draft Final Report and Check of Project Site
28	Wed.	Discussions on the Draft Final Report with RDA
29	Thu.	Signing of Minutes
30	Fri.	Team Leader Leaves for Tokyo, remaining members Continue technical discussions
Oct. 1	Sat.	Remaining members leave Colombo
2	Sun.	Arrive in Narita Airport

1-5 List of Concerned Personage Met During Visits

1. ROAD DEVELOPMENT AUTHORITY (R.D.A)

- Mr. B.M. de Soysa
(General Manager)
- Mr. G.S. Hattotuwegama
(Director/Engineering Services)
- Dr. Asoka de Silva
(Deputy Director/Bridge Design)
- Mrs. N.D. Peiris
(Assistant Director/Bridge Design)
- Mrs. M.G.S. Perera
(Deputy Director/Highway Design)
- Mr. S.R. Somaskandan
(Senior Engineer/Highway Design)

2. MINISTRY OF HIGHWAYS

- Mr. R. Paskaralingam
(Secretary/Highways)
- Mr. D.J. Amarasinghe
(Addi Secretary/Highways)

3. DEPARTMENT OF EXTERNAL RESOURCES

- Mr. M.A. Mohamed
(Director/External Resources)
- Mr. S. Weeraparna
(Additional Director/External Resources)

4. URBAN DEVELOPMENT AUTHORITY

- N.D. Dickson
(Director Planning)

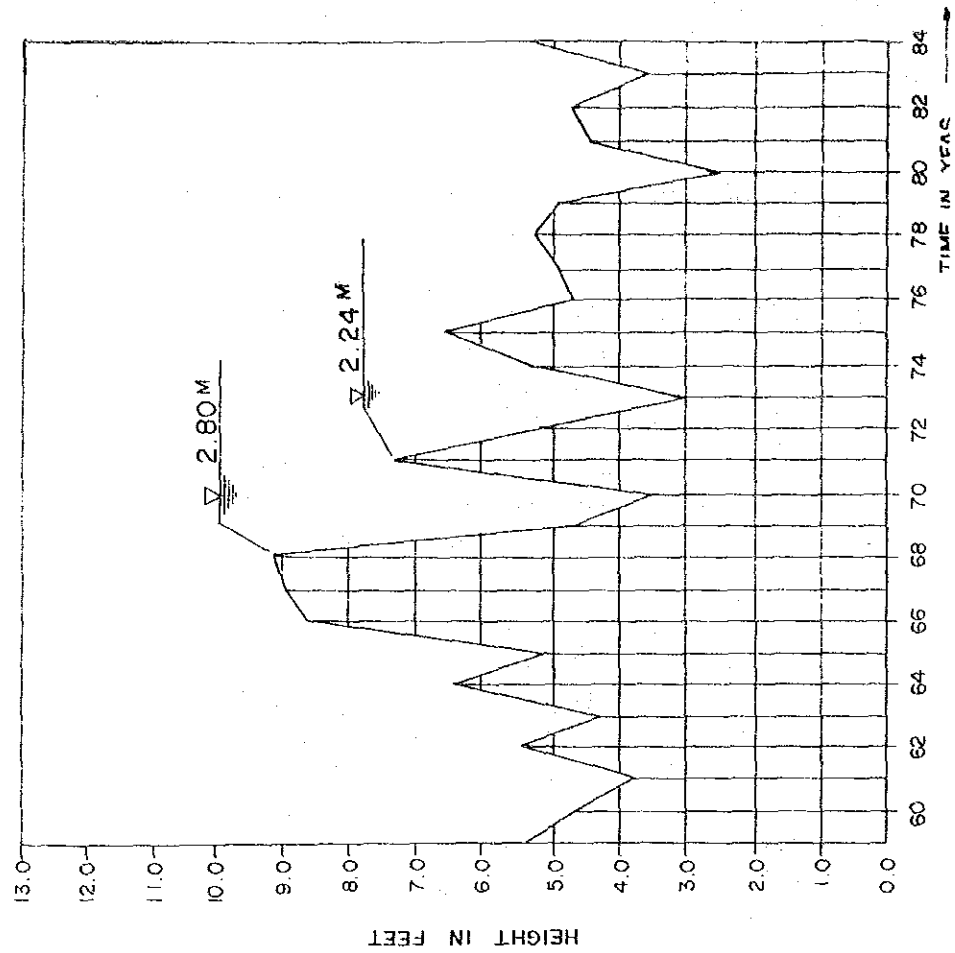
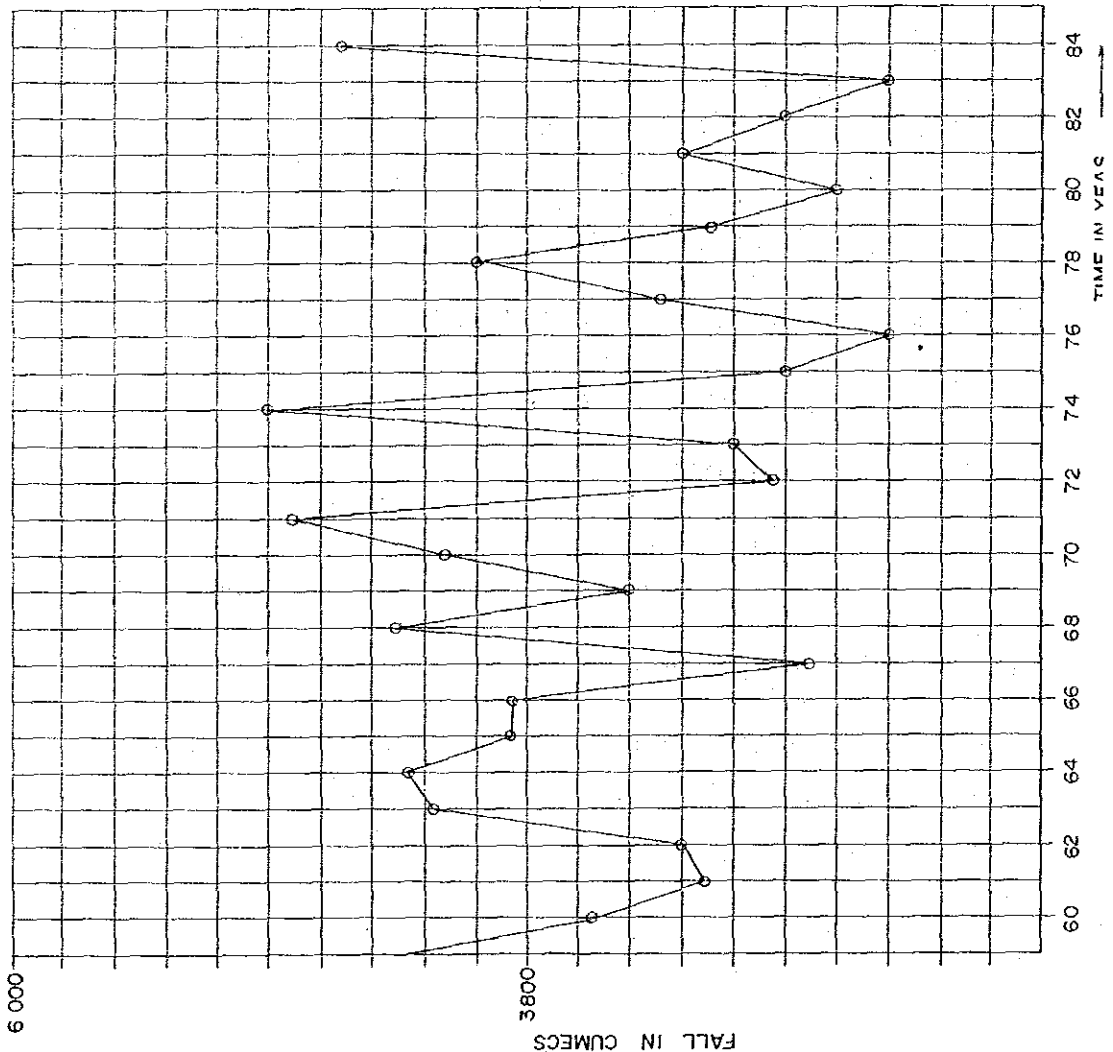
5. EMBASSY OF JAPAN

- | | |
|-------------------|-----------------------|
| • Ambassador | Mr. Yasuya Hamamoto |
| • Counsellor | Mr. Toshihisa Takada |
| • First Secretary | Mr. Kazuhiko Maruyama |

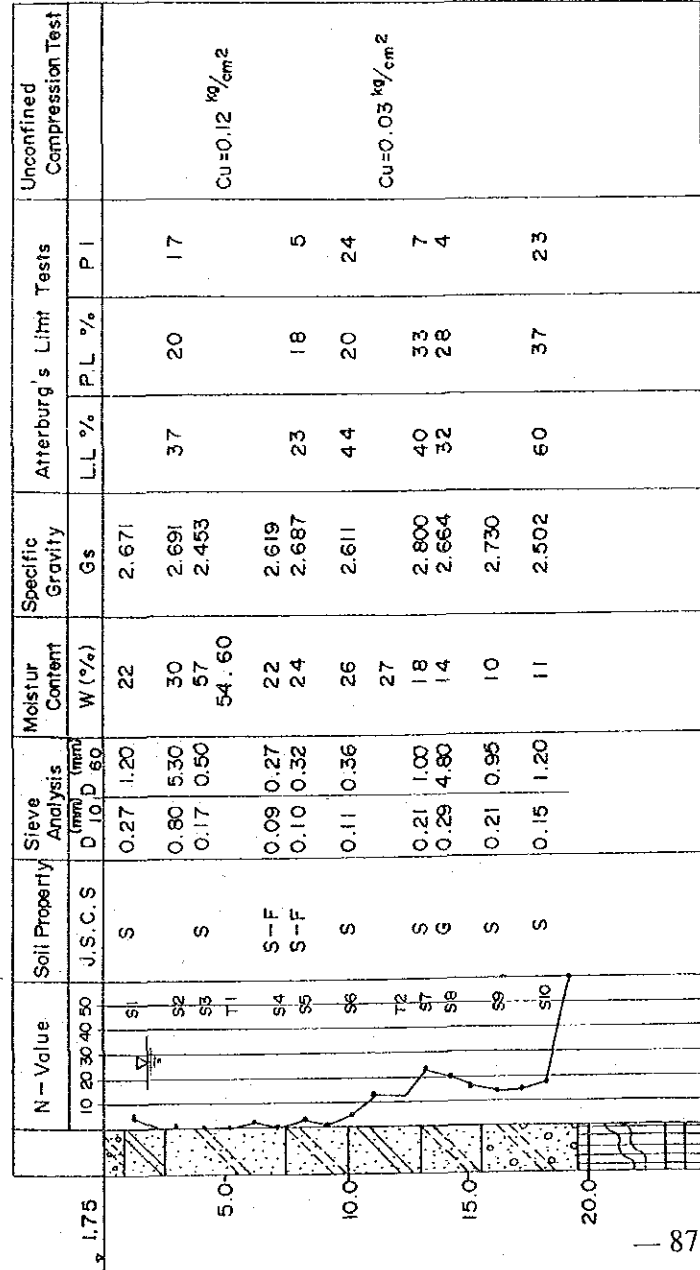
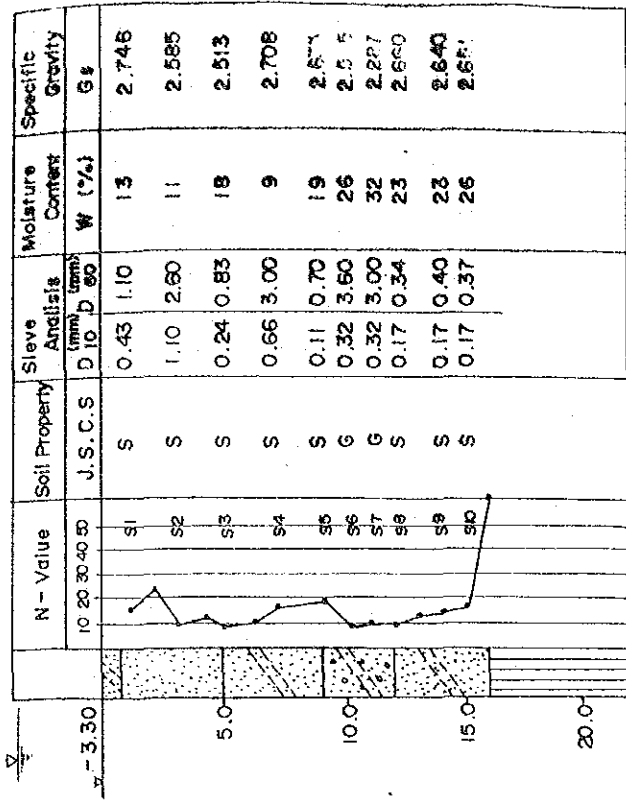
6. JICA SRI LANKA OFFICE

- | | |
|---------------------------|---------------------|
| • Resident Representative | Mr. Jiro Hashiguchi |
| • Staff | Mr. Hiroshi Niino |

1-6 Natural Conditions



1-7 Geological Data



N-Value : Standard Penetration Test J.S.C.S : Japan unified Soil Classification System

D10 : Effective Grain Size Deo

W : Moisture Content (%) Gs : Specific Gravity

LL : Liquid Limit (%) PL : Plastic Limit (%)

PI : Plasticity Index (%) S : Disturbed Samples

T : Undisturbed Samples

GROUP ENGINEERING LABORATORIES LTD

SOIL INVESTIGATION OF VICTORIA BRIDGE - KELANIYA

B.H. NO. 5

RESULTS OF MOISTURE CONTENT TESTS

<u>Depth (m)</u>	<u>Elevation</u>	<u>M.C. %</u>
1.00	+ 0.75	22
3.00	- 1.25	30
4.00	- 2.25	57
7.00	- 5.25	22
8.00	- 6.25	24
10.00	- 8.25	26
13.00	- 11.25	18
14.00	- 12.25	14
16.00	- 14.25	10
18.00	- 16.25	11

GROUP ENGINEERING LABORATORIS LTD

SOIL INVESTIGATION FOR RECONSTRUCTION OF VICTORIA BRIDGE

RESULTS OF SPECIFIC GRAVITY TESTS

B.H. NO. 5

<u>Depth (m)</u>	<u>Elevation</u>	<u>Specific Gravity</u>
1.00	+ 0.75	2.671
3.00	- 1.25	2.691
4.00	- 2.25	2.453
7.00	- 5.25	2.619
8.00	- 6.25	2.687
10.00	- 8.25	2.611
13.00	- 11.25	2.800
14.00	- 12.25	2.664
16.00	- 14.25	2.730
18.00	- 16.25	2.502

GROUP ENGINEERING LABORATORIES LTD

SOIL INVESTIGATION OF VICTORIA BRIDGE - KELANIYA

B.H.NO. 5

RESULTS OF ATTERBURG'S LIMIT TESTS :

<u>Depth (m)</u>	<u>Elevation</u>	<u>L.L. %</u>		<u>P.L. %</u>	<u>P.I. %</u>
1.00	+ 0.75	-	Non	Plastic	-
3.00	- 1.25	37		20	17
4.00	- 2.25	-	Non	Plastic	-
7.00	- 5.25	-	Non	Plastic	-
8.00	- 6.25	23		18	05
10.00	- 8.25	44		20	24
13.00	- 11.25	40		33	07
14.00	- 12.25	32		28	04
16.00	- 14.25	-	Non	Plastic	-
18.00	- 16.25	60		37	23

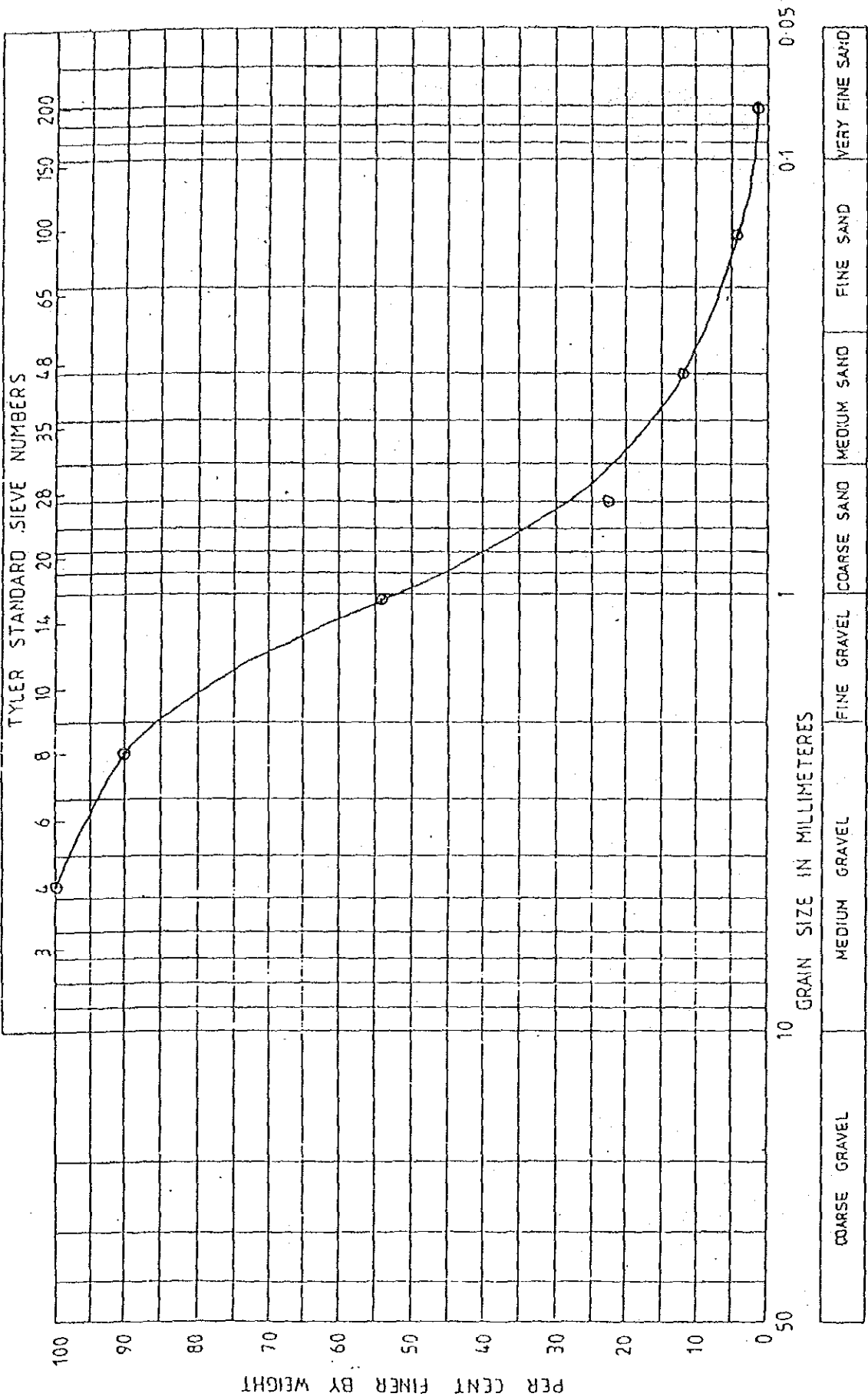
GROUP ENGINEERING LABORATOIRES LTD

SOIL INVESTIGATION OF VICTORIA BRIDGE

B.H. NO. 5

RESULTS OF SIEVE ANALYSIS

<u>Depth (m)</u>	<u>Elevation</u>	<u>Remarks</u>
1.00	+ 0.75	Curve attached
3.00	- 1.25	- do -
4.00	- 2.25	- do -
7.00	- 5.25	- do -
8.00	- 6.25	- do -
10.00	- 8.25	- do -
13.00	-11.25	- do -
14.00	-12.25	- do -
16.00	-14.25	- do -
18.00	-16.25	- do -



PROJECT Re-Construction Victoria Bridge BORING NO. 5 SAMPLE NO. _____
 DEPTH 1 m ELEVATION _____ REMARKS _____

GRAIN SIZE DISTRIBUTION DIAGRAM

GROUP ENGINEERING LABORATORIES, COLOMBO, SRI LANKA

GROUP ENGINEERING LABORATORIES LTD

SOIL INVESTIGATION FOR RECONSTRUCTION OF VICTORIA BRIDGE

RESULTS OF UNCONFINED COMPRESSION TEST

BOREHOLE NO. 5

DEPTH 5.00 m

TEST NO. 1+ 2

Sample Description :- Clayey, silty fine sand.
Black in colour.

		Test No. 1	Test No. 2
Unconfined Compressive Strength	lbs/in ²	3.25	3.84
	kN/m ²	22	26
Failure Strain %		10	11
Shear Stress	lbs/in ²	1.62	1.92
	kN/m ²	11	13
Moisture Content	%	54	60
Wet Density	lbs/ft ³	100.5	99.05
	Mg/m ²	1.608	1.584
Dry Density	lbs/ft ³	65	61.77
	Mg/m ²	1.039	0.988

GROUP ENGINEERING LABORATORIES LTD

SOIL INVESTIGATION FOR RECONSTRUCTION OF VICTORIA BRIDGE

RESULTS OF UNCONFINED COMPRESSION TEST

BOREHOLE NO. 5

DEPTH - 12 m

TEST NO. - 1

Sample Description :- Moist soft lateritic clay with
fine sand. Brown in colour.

Test No. 1

Unconfined Compressive Strength	lbs/in ²	0.85
	kN/m ²	6
Failure Strain %		6
Shear Stress	lbs/in ²	0.45
	kN/m ²	3
Moisture Content %		27
Wet Density	lbs/ft ³	128
	Mg/m ³	2.05
Dry Density	lbs/ft ³	98
	Mg/m ³	1.57

GROUP ENGINEERING LABORATORIES LTD

RE CONSTRUCTION OF VICTORIA BRIDGE - KELANIYA

RESULTS OF MOISTURE CONTENT TESTS

B.H.NO. 6

<u>Depth (m)</u>	<u>Elevation</u>	<u>Moisture Content%</u>
1.00	- 4.30	13
3.00	- 6.30	11
5.00	- 8.30	18
7.00	- 10.30	09
9.00	- 12.30	19
10.00	- 13.30	26
11.00	- 14.30	32
12.00	- 15.30	23
14.00	- 17.30	23
15.00	- 18.30	26

GROUP ENGINEERING LABORATORIES LTD

RECONSTRUCTION OF VICTORIA BRIDGE - KELANIYA
RESULTS OF SPECIFIC GRAVITY TESTS

B.H.No. 6

<u>Depth (m)</u>	<u>Elevation</u>	<u>Specific Gravity</u>
1.00	- 4.30	2.746
3.00	- 6.30	2.585
5.00	- 8.30	2.513
7.00	- 10.30	2.708
9.00	- 12.30	2.635
10.00	- 13.30	2.545
11.00	- 14.30	2.287
12.00	- 15.30	2.660
14.00	- 17.30	2.640
15.00	- 18.30	2.651

GROUP ENGINEERING LABORATORIES LTD

SOIL INVESTIGATION OF VICTORIA BRIDGE

B.H.No. 6

RESULTS OF ATTERBURG LIMITS

<u>Depth (m)</u>	<u>Elevation</u>	<u>Remarks</u>
1.00	- 4.30	Non plastic
3.00	- 6.30	-- do --
5.00	- 8.30	-- do --
7.00	- 10.30	-- do --
9.00	- 12.30	-- do --
10.00	- 13.30	-- do --
11.00	- 14.30	-- do --
12.00	- 15.30	-- do --
14.00	- 17.30	-- do --
15.00	- 18.30	-- do --

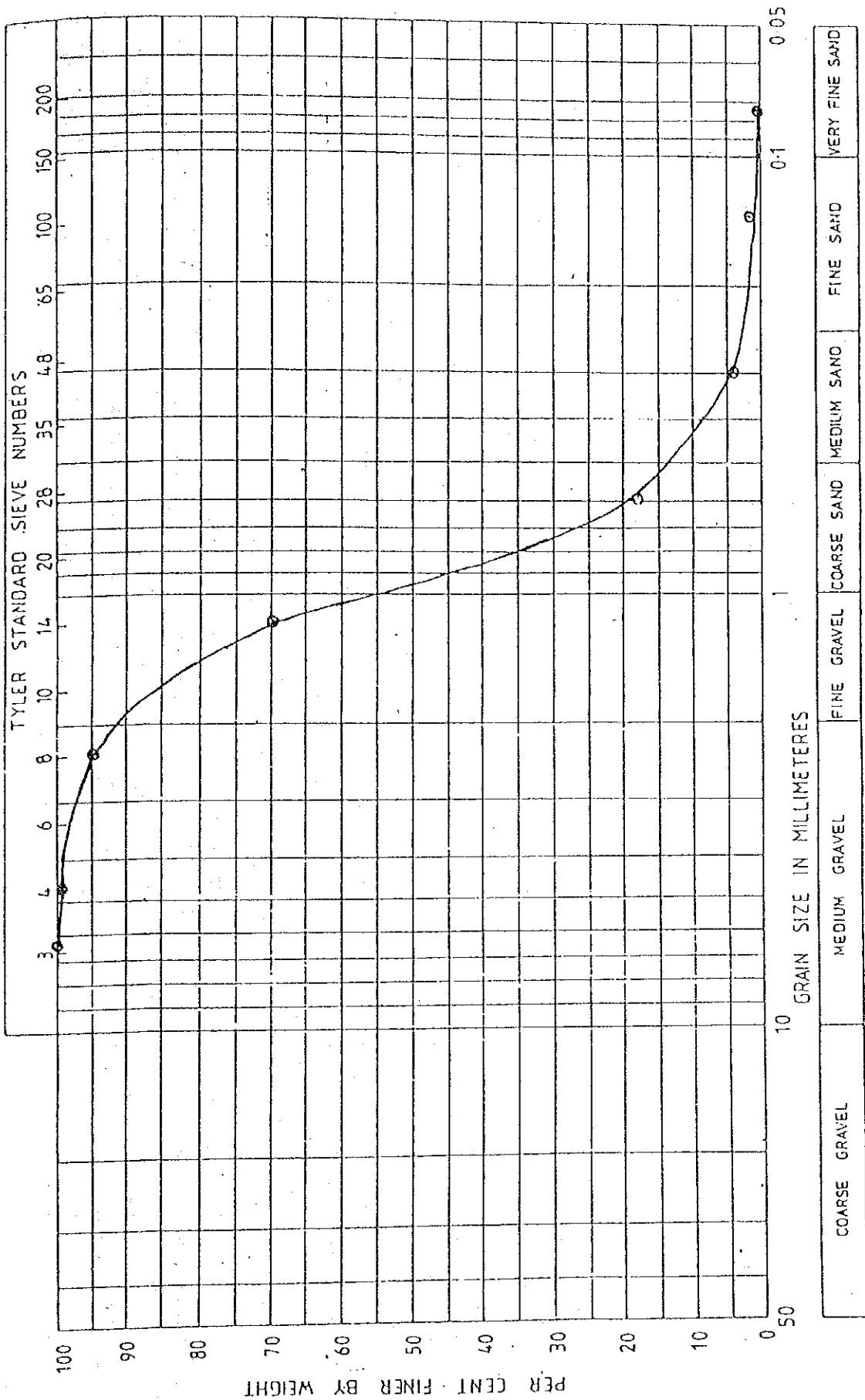
GROUP ENGINEERING LABORATORIES LTD

SOIL INVESTIGATION OF VICTORIA BRIDGE

B.H.No. 6

RESULTS OF SIEVE ANALYSIS

<u>Depth (m)</u>	<u>Elevation</u>	<u>Remarks</u>
1.00	- 4.30	Curve attached
3.00	- 6.30	- do -
5.00	- 8.30	- do -
7.00	- 10.30	- do -
9.00	- 12.30	- do -
10.00	- 13.30	- do -
11.00	- 14.30	- do -
12.00	- 15.30	- do -
14.00	- 17.30	- do -
15.00	- 18.30	- do -



PROJECT Reconstruction of Victoria Bridge - Kelonya Boring No. 6 SAMPLE NO. _____

DEPTH 1.00 m ELEVATION _____ REMARKS _____

GRAIN SIZE DISTRIBUTION DIAGRAM

GROUP: ENGINEERING LABORATORIES, COLOMBO, SRI LANKA

California bearing ratio test

(Basis BS 1377:1975)

Site J.P.C.
 Sample no. A1-12 A1-2 (Vol. 0 1:1)

Depth
 Specimen no.
 Description Cathodic Soil

Operator
 Date 02/10/87

Test on recompacted specimen

quantities required
 Dry density required 1.16 Mg/m³
 Moisture content required 21.0 %
 mass of soil required g
 total mass of water required g
 existing mass of water in specimen g
 mass of water to be added g

Method of compaction
 dynamic
 static

Density calculations

unsoaked
 Bulk density $\rho = \frac{m_1 + m_2}{V_m}$ Mg/m³
 Dry density $\rho_d = \frac{100\rho}{100 + W_1}$ Mg/m³

soaked
 Bulk density $\rho = \frac{m_1 + m_2}{V_m}$ Mg/m³
 Dry density $\rho_d = \frac{100\rho}{100 + W_2}$ Mg/m³

Equipment

Mould no.
 Size - length 152.8 - 610 mm
 diameter 152.8 mm
 Volume (V_m) cm³
 Mass of mould and baseplate g
 Machine or load ratio
 Calibration

Test on undisturbed specimen

unsoaked
 Mass of mould, baseplate and soil (m₁) g
 Mass of mould and baseplate (m₂) g
 Mass of soil (m₃ - m₂) g
 Final moisture content if not soaked (W₁) %

soaked
 Mass of mould, baseplate and soil after soaking (m₁) g
 Mass of soil after soaking (m₁ - m₂) g
 Final moisture content after soaking (W₂) %

quantities used

Mass of mould, baseplate and wet soil (m₁) 18582 g
 Mass of mould and baseplate (m₂) 14137 g
 Mass of wet soil (m₃ - m₂) 4445 g
 Final moisture content (W) %
 Mass of mould, baseplate and soil after soaking (m₁) 18574 g
 Mass of soil after soaking (m₁ - m₂) 4437 g
 Final moisture content after soaking (W₂) %

CBR test

Soaking stage (where applicable) **5.5** kg
 unsoaked
 soaked

penetration of plunger (mm)	top		bottom	
	load drops	MT	load drops	MT
0.25	73	6	6	6
0.5	143	160	160	160
1.0	220	232	232	232
1.5	238	263	263	263
2.0	270	300	300	300
2.5	346	333	333	333
3.0	372	354	354	354
3.5	400	350	350	350
4.0	422	361	361	361
4.5	445	430	430	430
5.0	473	446	446	446
5.5	502	453	453	453
6.0	512	474	474	474
6.5	538	470	470	470
7.0	541	503	503	503
7.5	574	510	510	510
8.0	578	523	523	523
8.5	609	533	533	533
9.0	626	548	548	548
9.5	642	560	560	560
10.0	653	578	578	578
10.5	670	610	610	610
11.0	679	638	638	638
11.5	678	642	642	642
12.0	709	670	670	670
12.5	724	680	680	680
13.0	733	672	672	672
13.5	747	710	710	710
14.0	719	712	712	712
14.5	764	732	732	732

Soaking stage (where applicable)

Surcharge **5.5** kg
 date _____
 time _____
 moisture (mm) _____
 size _____

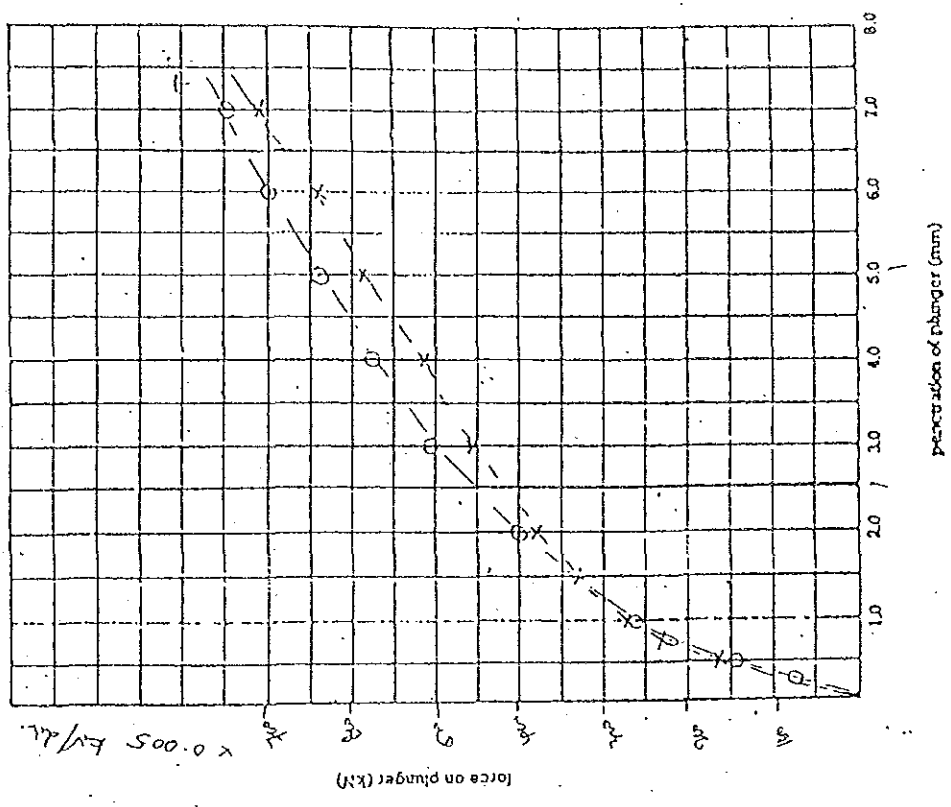
CBR results

- undisturbed
- recompacted
- unsoaked
- soaked

	penetration (mm)	force (kN)	standard force (kN)	CBR (%)
top	2.5	1.876	132	13.7
	8.0	3.165	200	15.8
bottom	2.5	1.452	132	10.9
	8.0	2.851	200	14.2

Force penetration curves

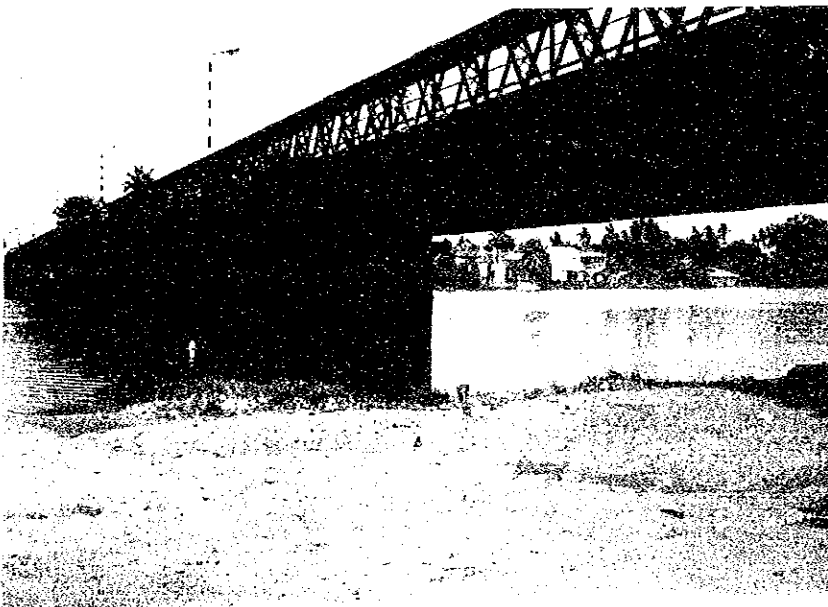
small = 0.1 + 7 dia



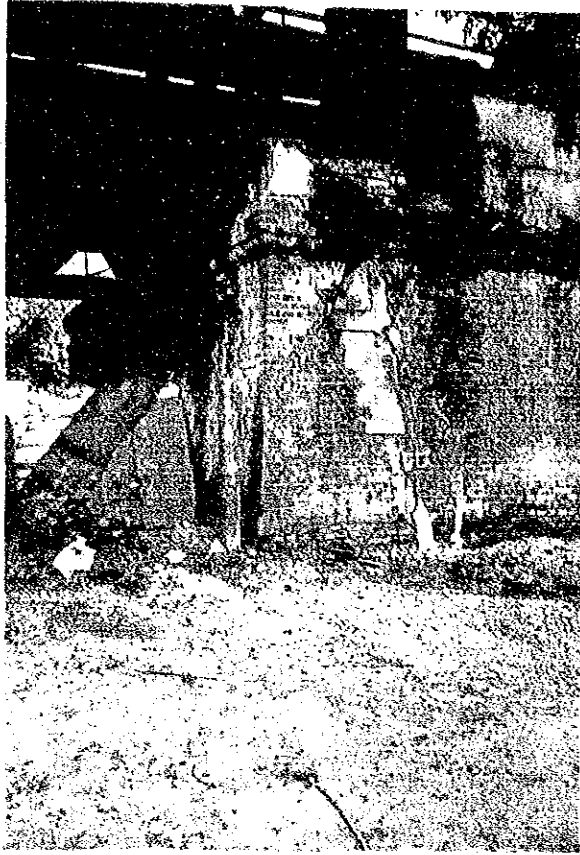
1-9 Photos



Victoria Bridge



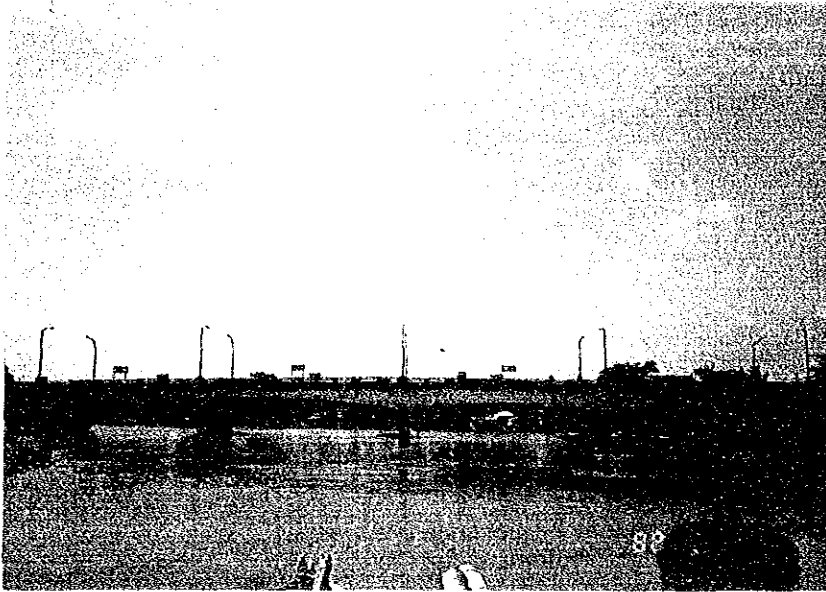
Victoria Bridge



Victoria Bridge



Victoria Bridge



New Kelani Bridge



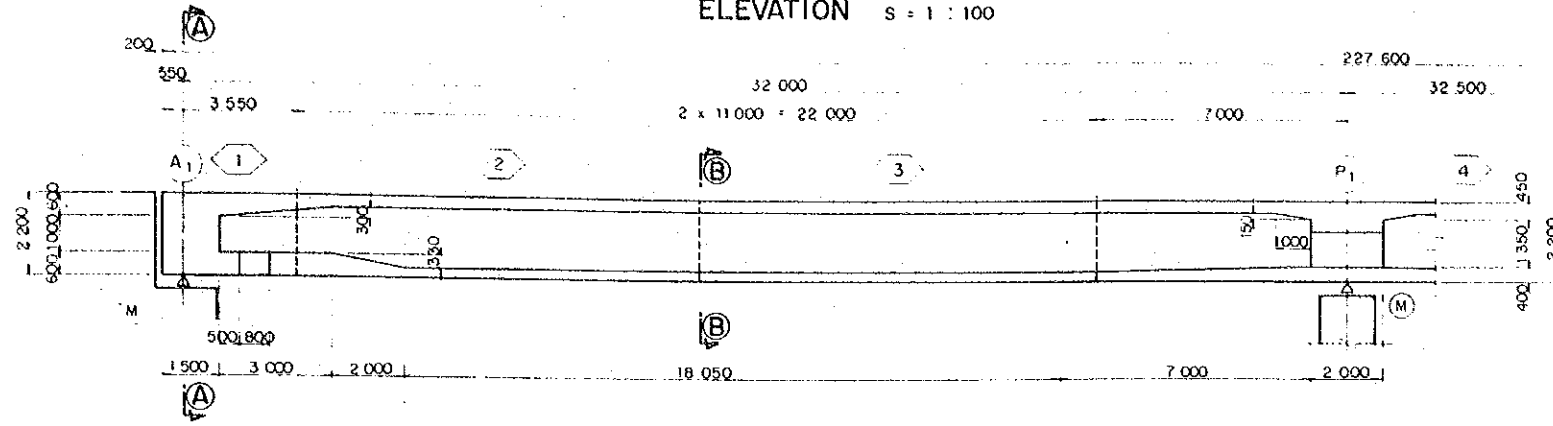
New Kelani Bridge

2-1 Drawings

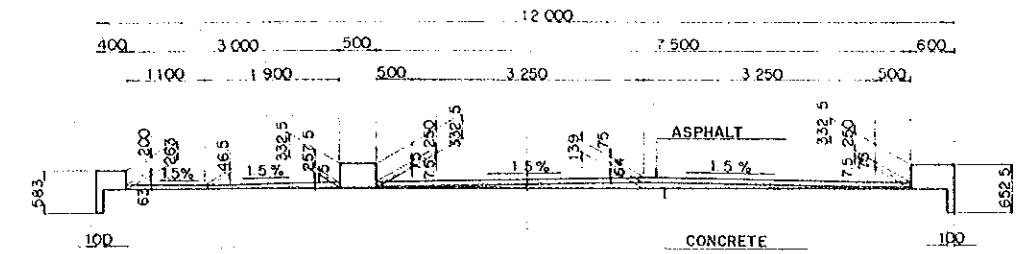
List of Drawings	
Dimension Details (No.1 No. 2)	111
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Arrangement of Prestressing Cables	117
Sectional View of Approach Road	119
Proposed Drainage System of the Approach Road	127
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DIMENSIONAL DETAILS (No. 1)

ELEVATION $s = 1 : 100$

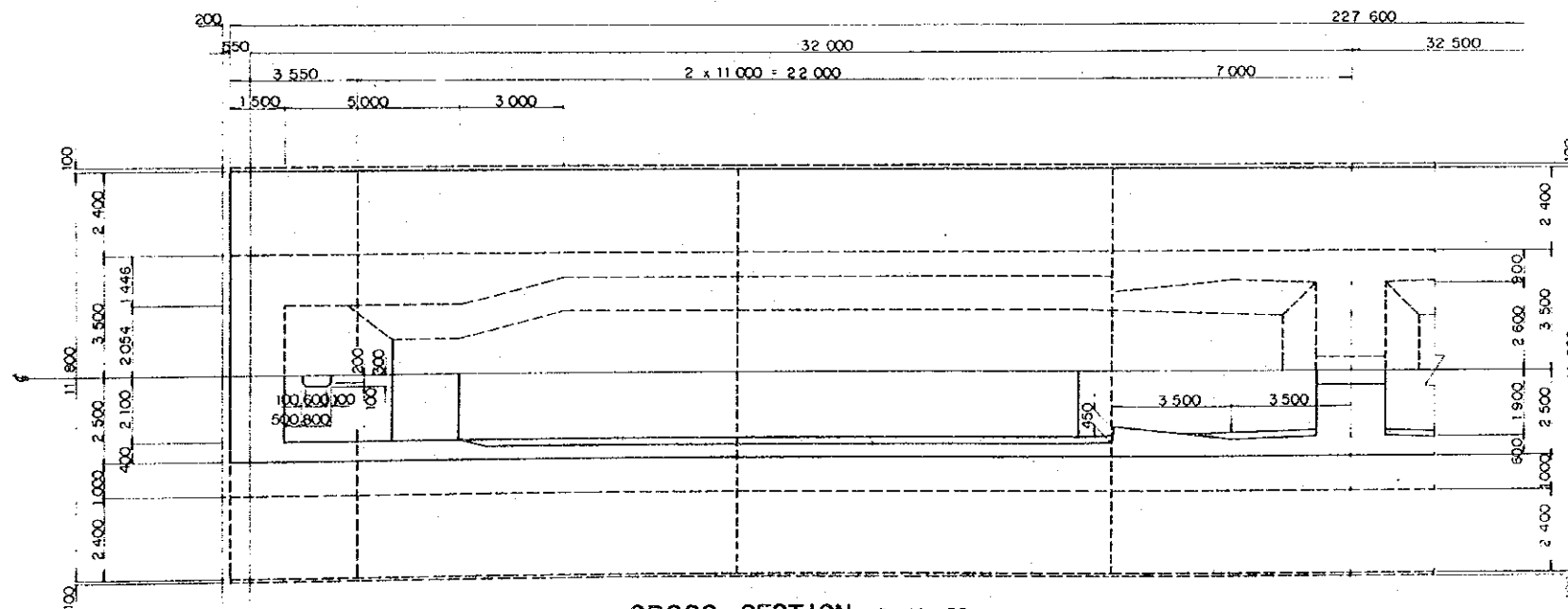


ROADWAY CROSS SECTION $s = 1 : 50$

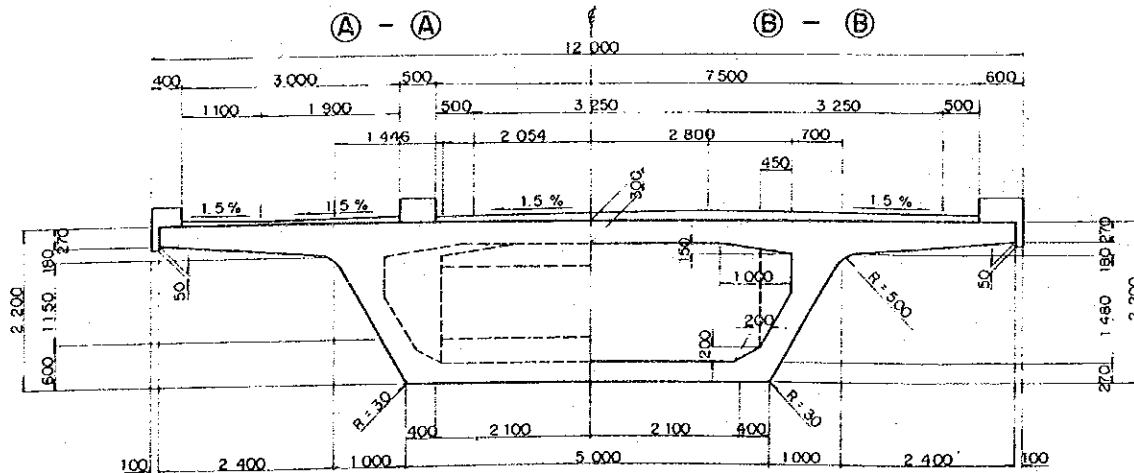


UPPER SLAB	600	395	300			400	450	450
WEB	1446		1446	400		400	429	600
LOWER SLAB	600	600	270			270	289	400
DEPTH	2200							2200

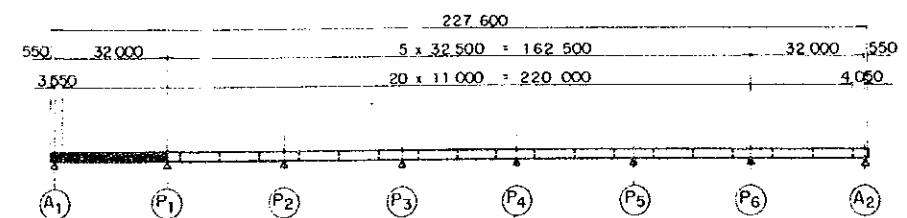
P L A N $s = 1 : 100$



CROSS SECTION $s = 1 : 50$



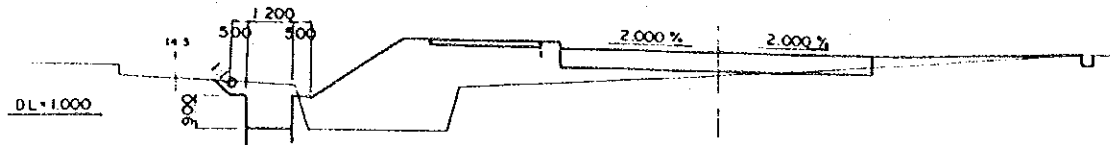
KEY PLAN



Sectional View of Approach Road

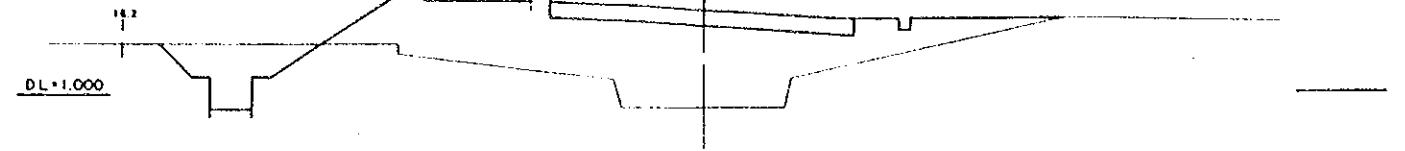
NO. - 11

GH = 2.15
FH = 2.790



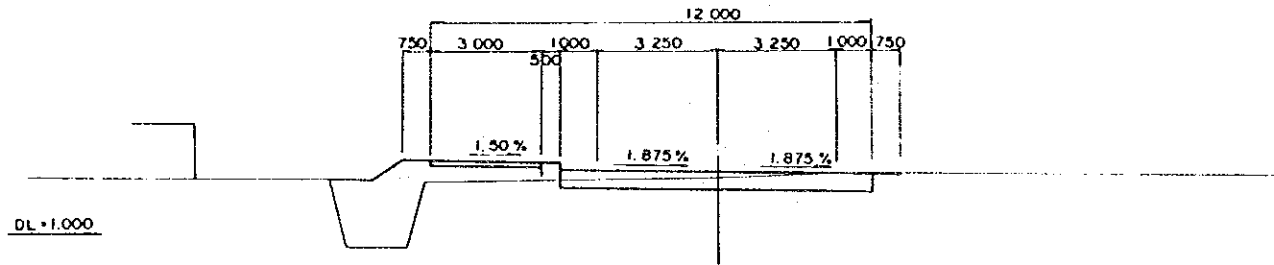
NO. - 8

GH = 0.60
FH = 3.310



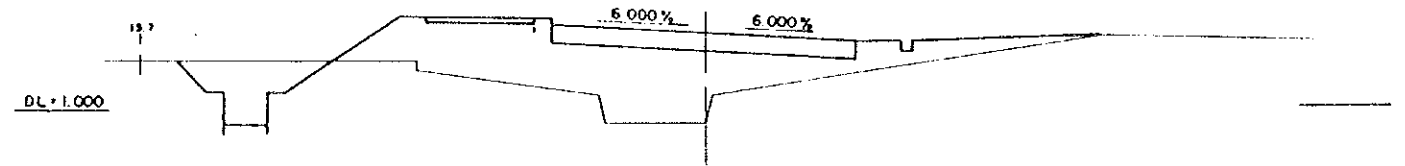
NO. - 12

GH = 2.50
FH = 2.670



NO. - 9

GH = 0.60
FH = 3.070



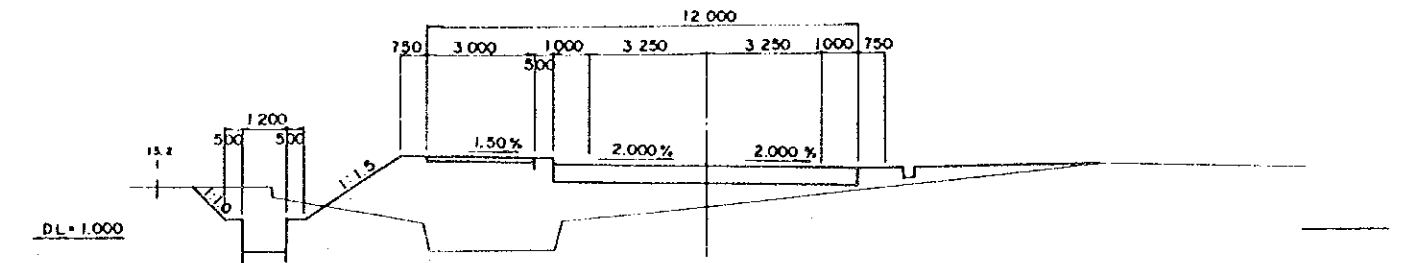
NO. - 13

GH = 2.55
FH = 2.550

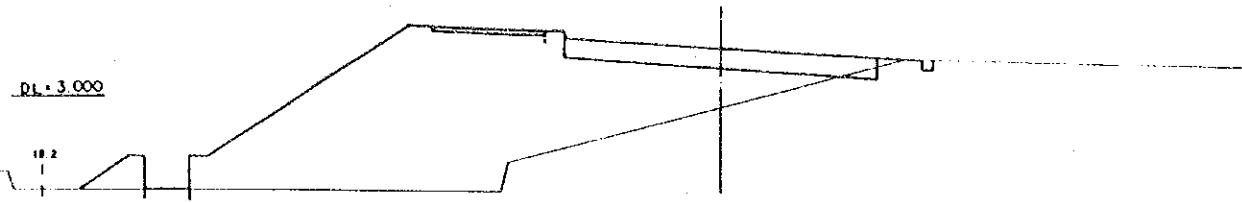


NO. - 10

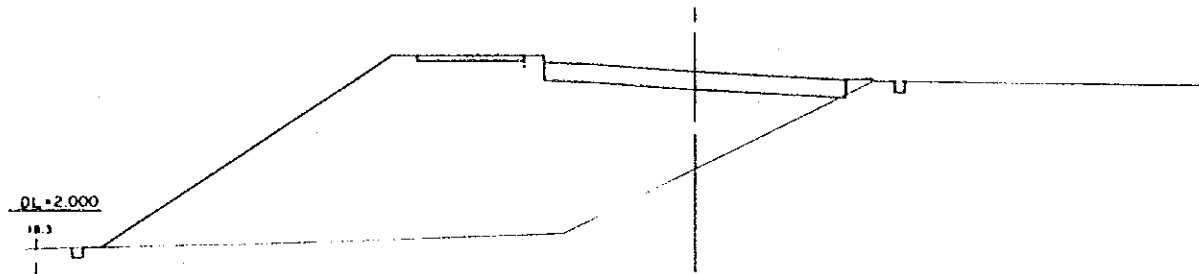
GH = 1.75
FH = 2.910



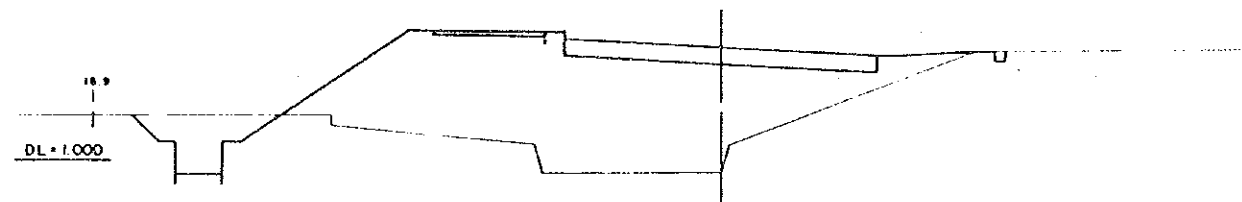
NO. - 5
GH = 2.90
FH = 4.470



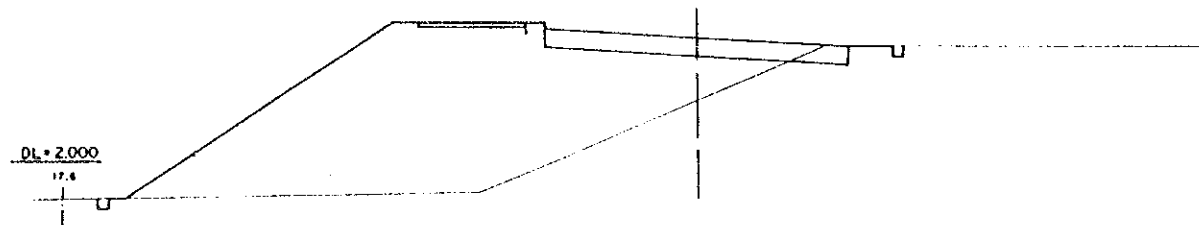
NO. - 2
GH = 3.10
FH = 5.79



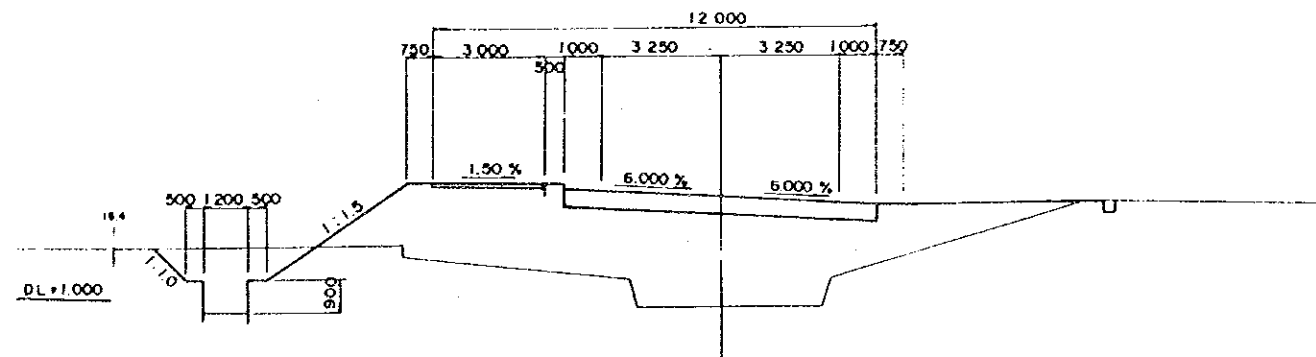
NO. - 6
GH = 0.59
FH = 4.030



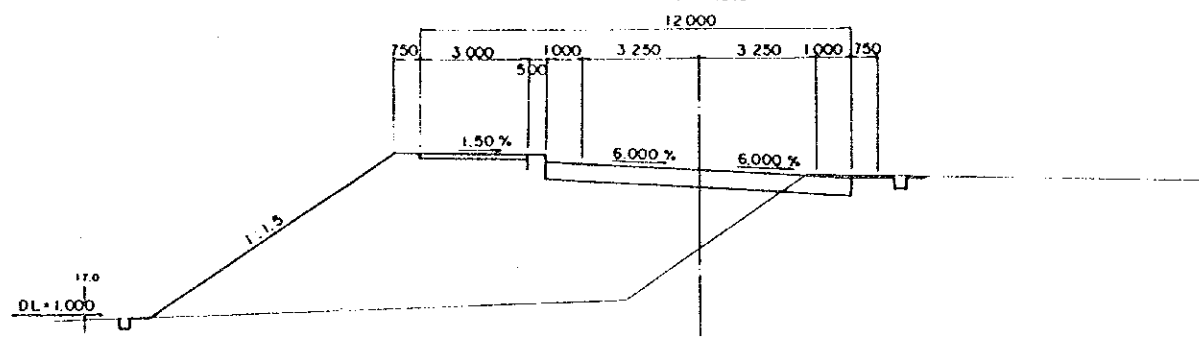
NO. - 3
GH = 3.60
FH = 5.350



NO. - 7
GH = 0.06
FH = 3.630

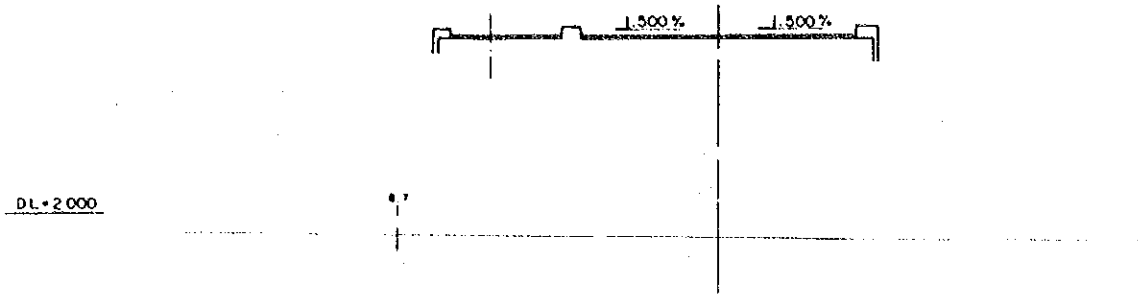


NO. - 4
GH = 2.70
FH = 4.910



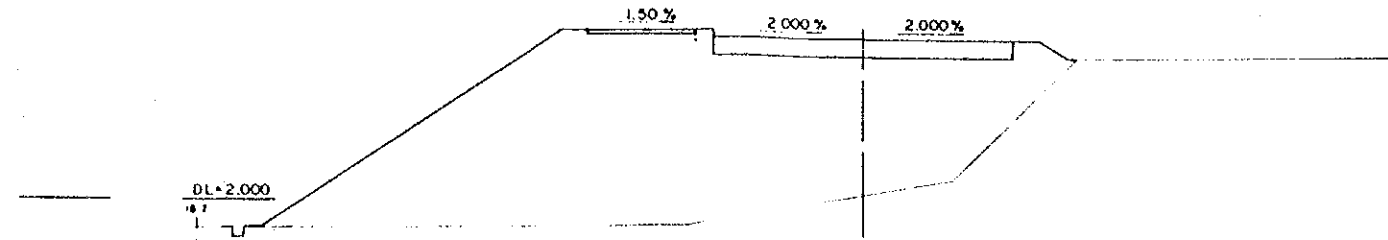
NO. 1

GH = 1.47
FH = 7.035



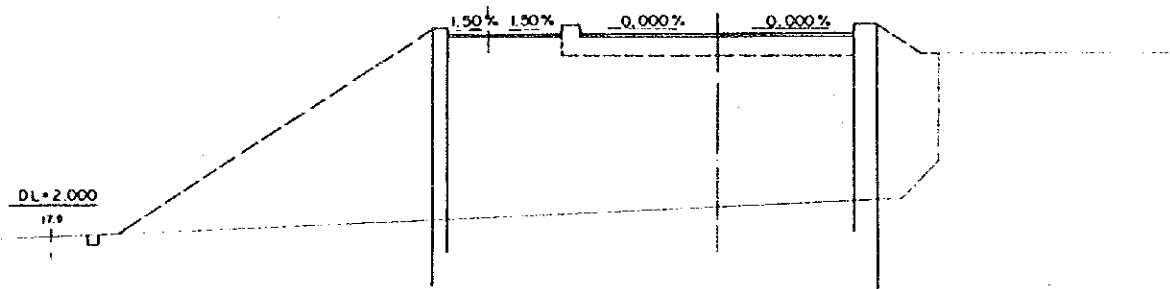
NO. 12

GH = 2.05
FH = 6.433



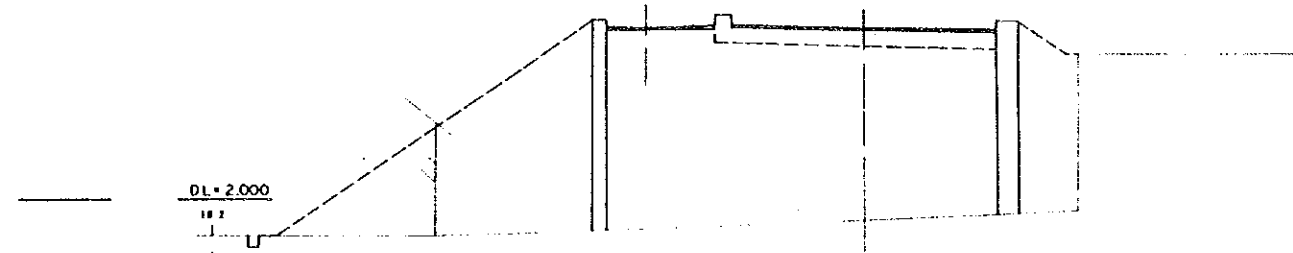
NO. 0

GH = 1.86
FH = 6.661



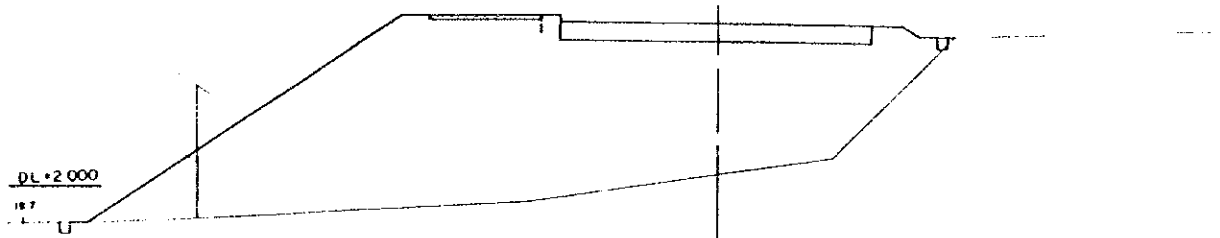
NO. 11 + 4.0

GH = 1.40
FH = 6.765



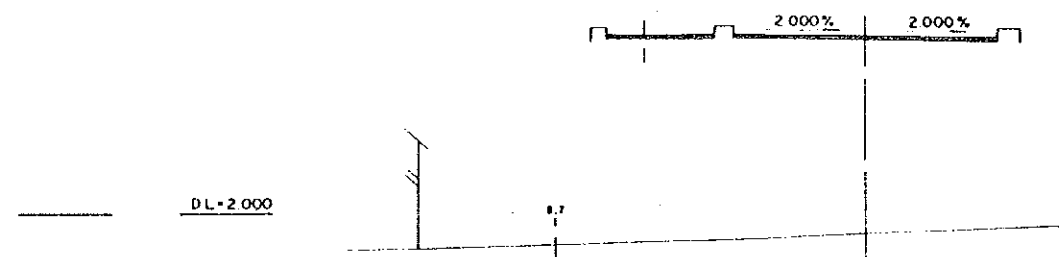
NO. - 1

GH = 2.05
FH = 6.230



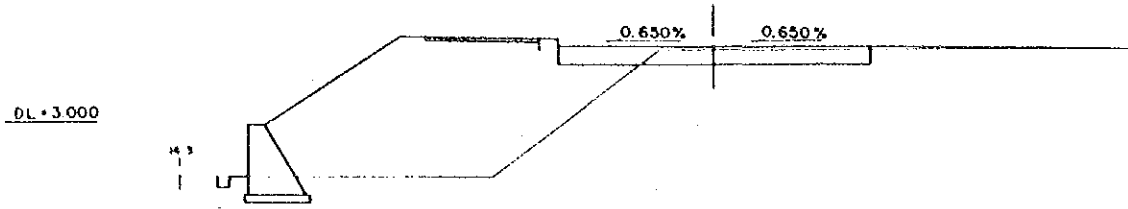
NO. 11

GH = 1.35
FH = 6.841



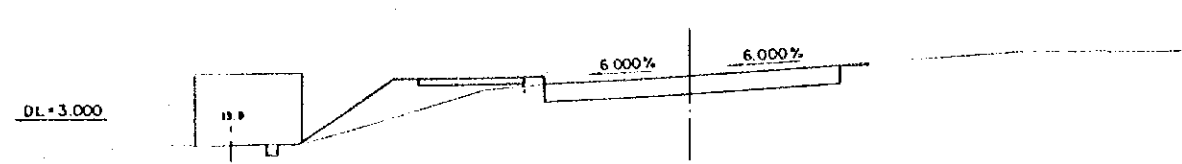
NO. 15

GH = 5.00
FH = 5.095



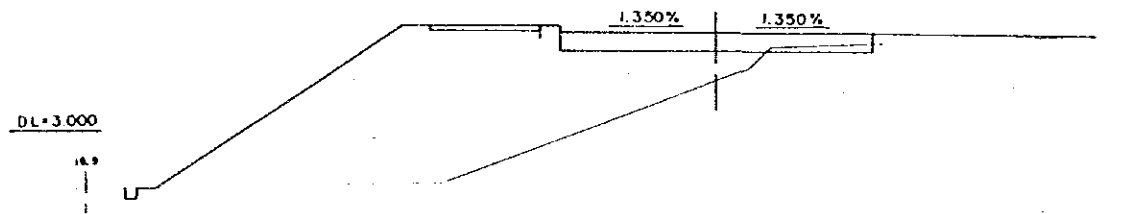
NO. 18

GH = 4.10
FH = 4.100



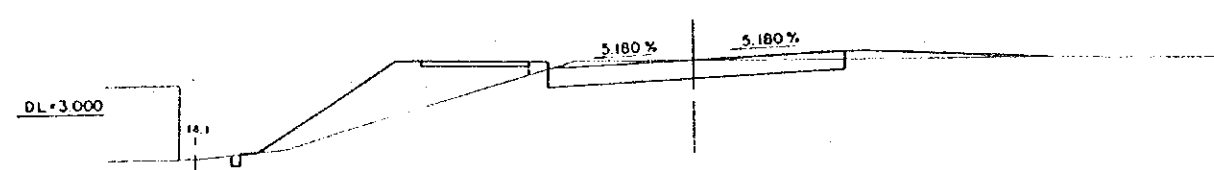
NO. 14

GH = 4.20
FH = 5.508



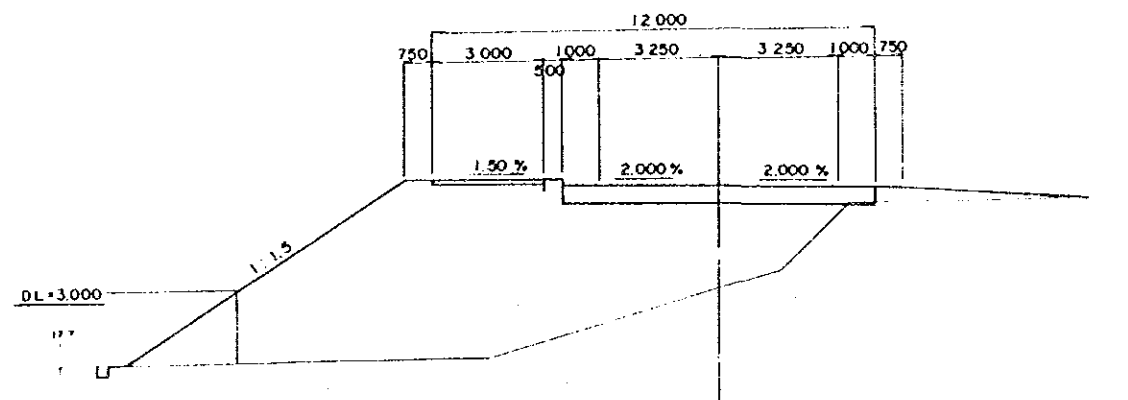
NO. 17

GH = 4.40
FH = 4.400



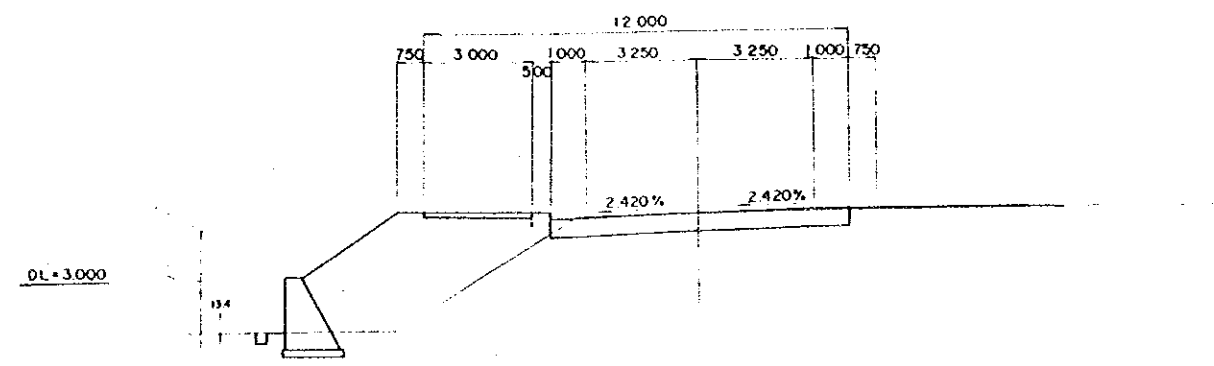
NO. 13

GH = 3.10
FH = 5.964

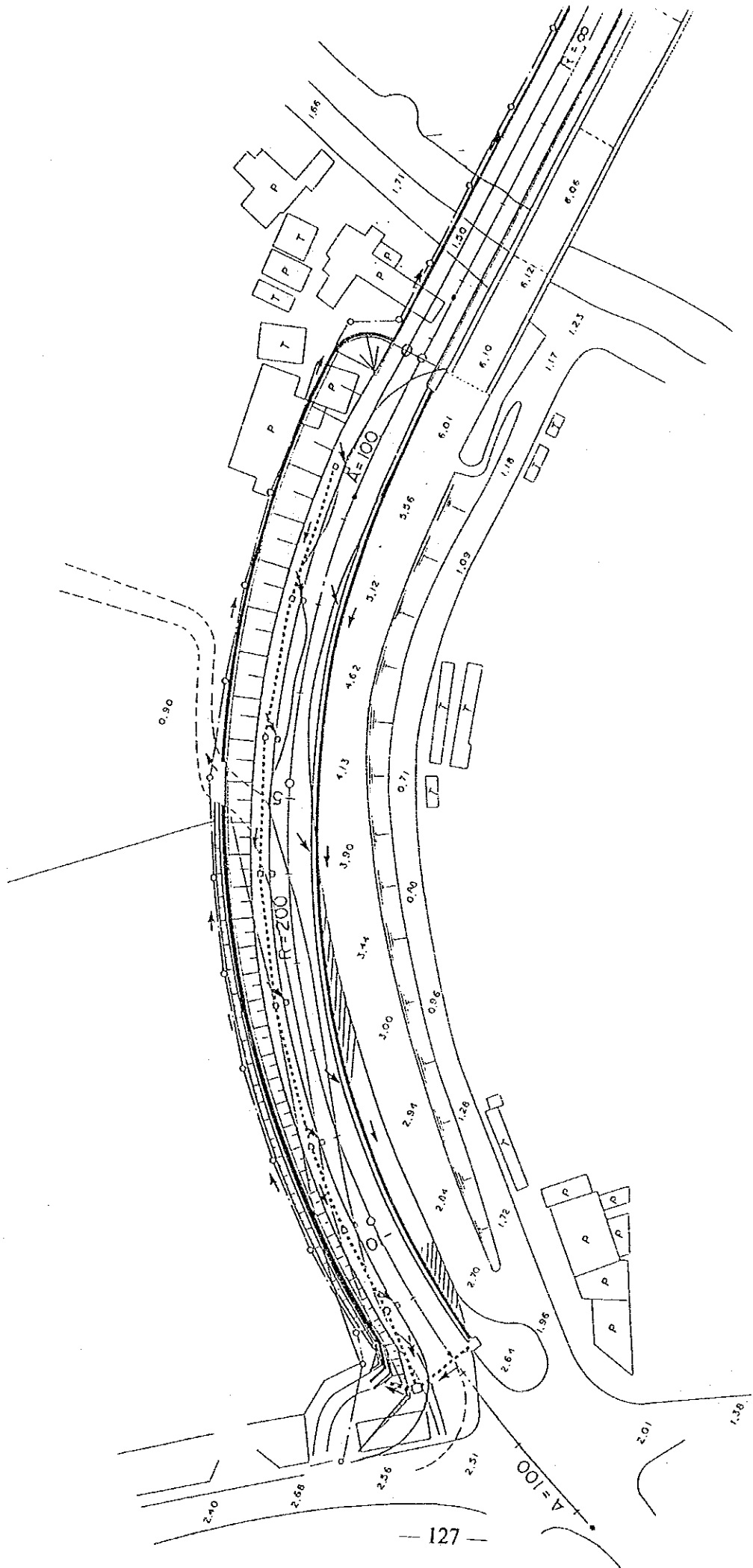


NO. 16

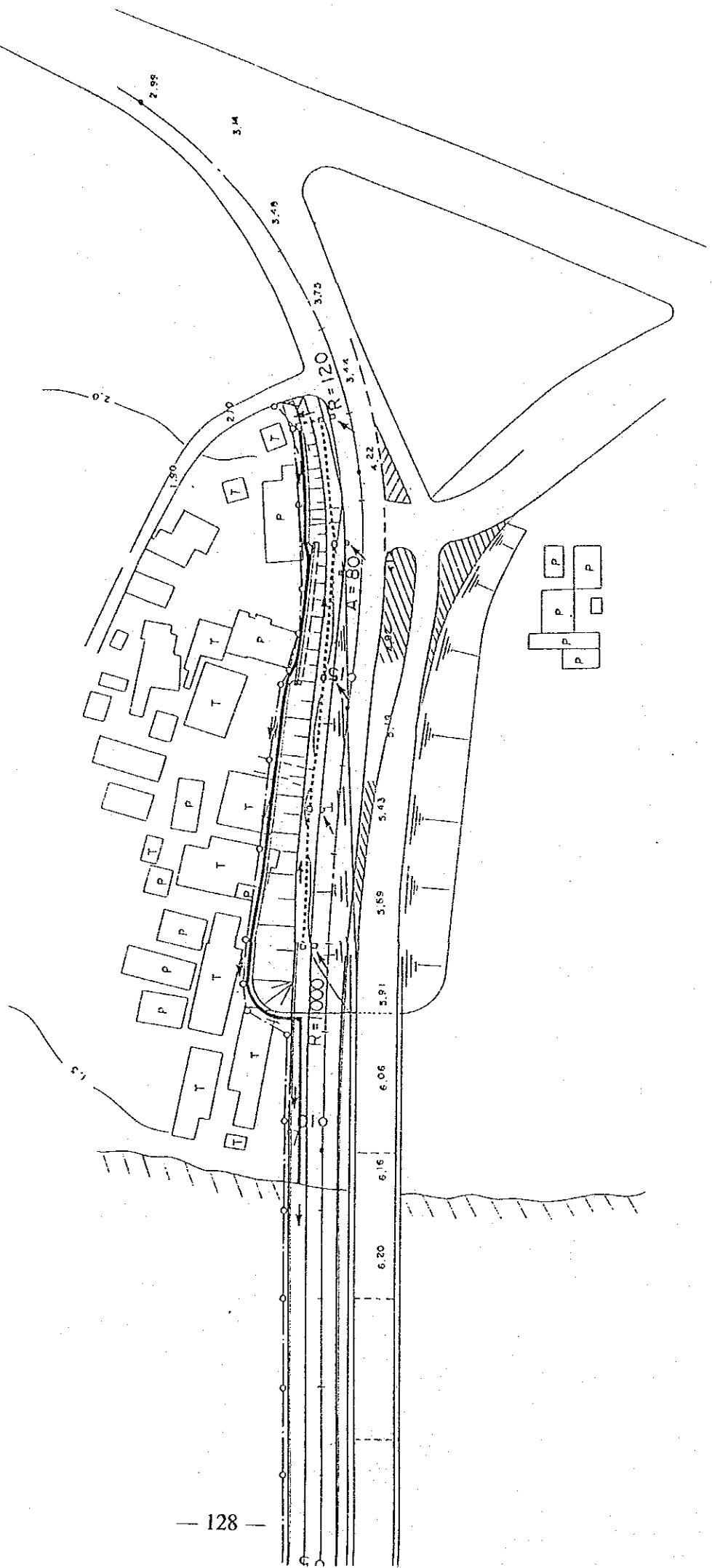
GH = 4.76
FH = 4.726



Proposed Drainage System Of The Approach Road (Colombo Side)

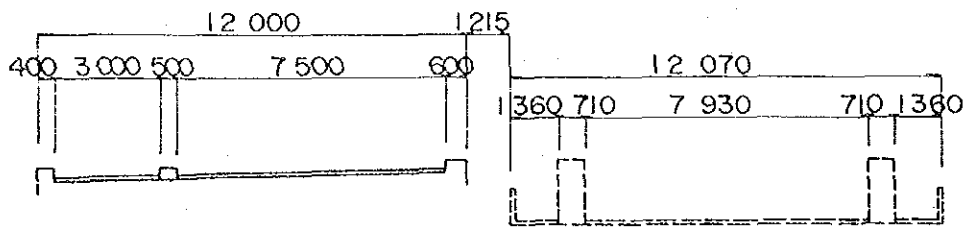


Proposed Drainage System Of The Approach Road (Peliyagoda Side)

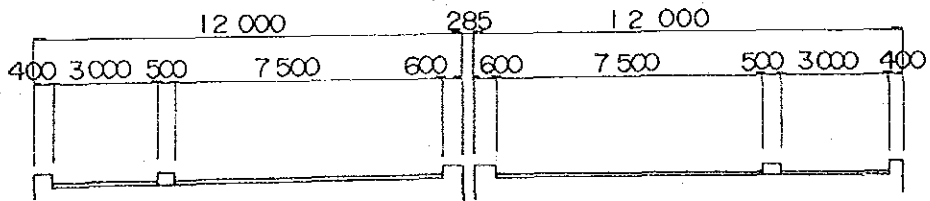


Stage Construction

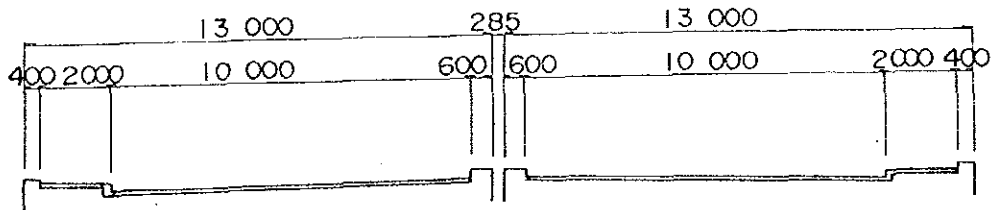
Phase I



Phase II



Phase III



2-2 Data List

1. ANNUAL REPORT FOR THE YEAR 1986 (RDA)
(RDA PROJECT BUDGET EXPENSES REPORT)
2. ANNUAL REPORT FOR THE YEAR 1987 (RDA)
(RDA PROJECT BUDGET EXPENSES REPORT)
3. BUDGET ESTIMATE-1989,1988,1987
4. DAYWORK RATES AND ELEMENTS
5. KALUTARA BRIDGES PROJECT SRI LANKA
DATA ON MACHINERY LEASE
6. METEOROLOGICAL DATA ON COLOMBO
7. CONCRETE PRODUCT UNIT PRICE
8. GOVERNMENT ORGANIZATIONAL CHART
• RDA • MOH
• ORGANIZATIONAL CHART OF PROJECT
9. MANUFACTURES ANALYSIS & TEST CERTIFICATE
10. UTILITY PLAN
11. DRAFT STANDARD SPECIFICATION FOR CONSTRUCTION AND MAIN-
TENANCE OF ROADS AND BRIDGES
12. SRI LANKA ROAD BRIDGE REHABILITATION PROJECT TEMPER DOCU-
MENTS
13. SRI LANKA ROAD AND BRIDGE REHABILITATION PROJECT BILL OF
QUANTITIES
(FINANCE BY THE INTERNATIONAL BANK FOR RECONSTRUCTION
AND DEVELOPMENT)
14. PUBLIC UTILITY SERVICE TO BE LAID ON BRIDGE

JICA