(Geological Strata)

Age		Formation and Strata Name	
Quaternary	Holocene	Riverbed deposit	
		Talus deposit	
Tertiary-Quaternary	Pliocene-Pleistocene	Damar	Upper Sedimentary Rock Unit
			Upper Pyroclastic Rock Unit
			Middle Sedimentary Rock Unit

(LOCATION OF BORE HOLE

(LOCATUON OF BORING H

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.
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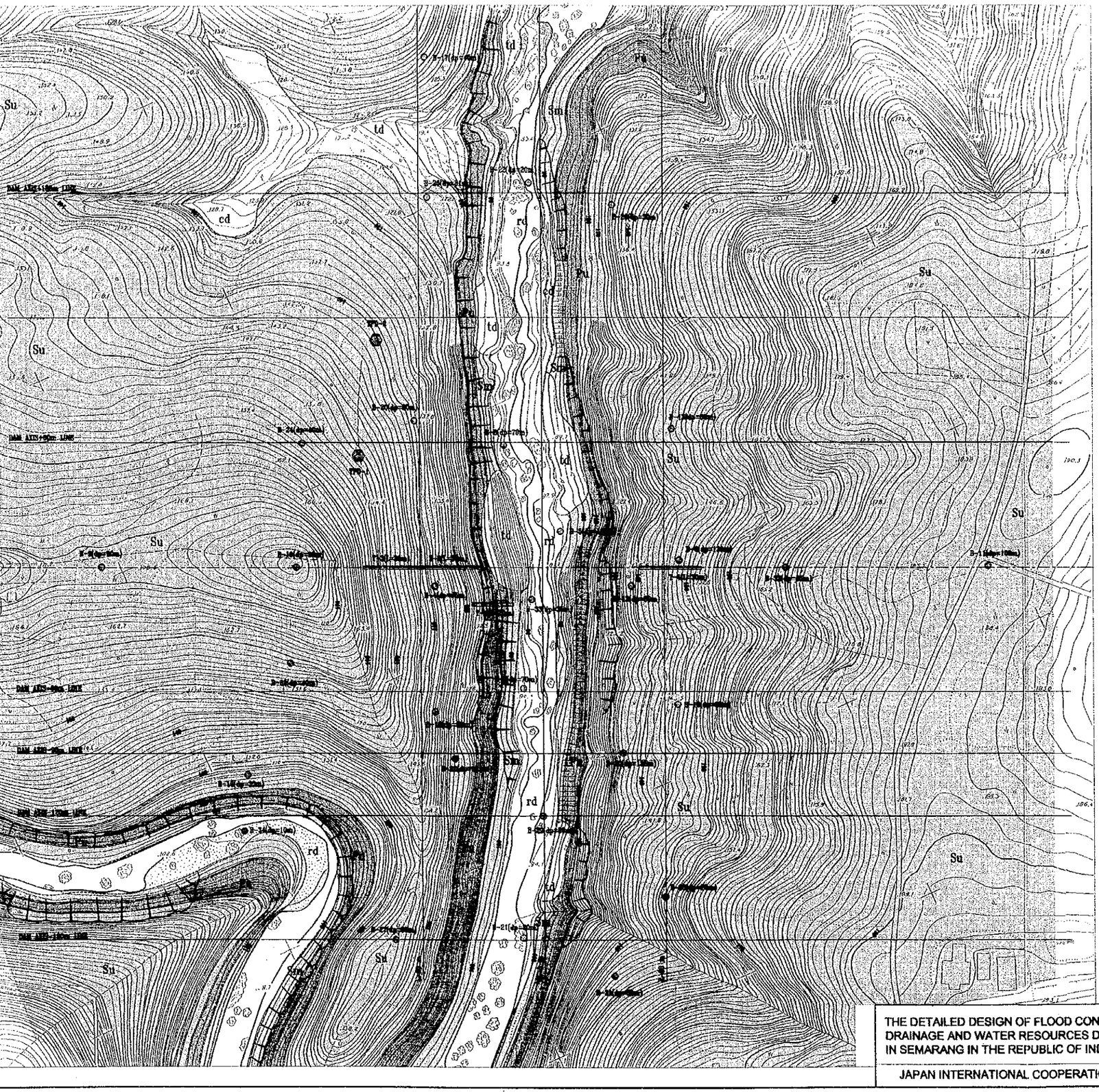
Su
td
rd
Sm
Pu
Pt-1
Pt-2
B-1(qu=70m)
B-2(qu=70m)
B-3(qu=70m)
B-4(qu=70m)
B-5(qu=70m)
B-6(qu=70m)
B-7(qu=70m)
B-8(qu=70m)
B-9(qu=70m)
B-10(qu=70m)
B-11(qu=70m)
B-12(qu=70m)
B-13(qu=70m)
B-14(qu=70m)
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B-16(qu=70m)
B-17(qu=70m)
B-18(qu=70m)
B-19(qu=70m)
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B-33(qu=70m)
B-34(qu=70m)
B-35(qu=70m)
B-36(qu=70m)
B-37(qu=70m)
B-38(qu=70m)
B-39(qu=70m)
B-40(qu=70m)

El.(m)

PARAPET El.157.000m

SURCHARGE WATER LEVEL El.154.000m

NORMAL WATER LEVEL El.148.000m

B-10 dp=90.00m EL=178.12

B-4 dp=35.00m EL=137.77m

B-33 dp=33.00m EL=87.10m

B-5 dp=100.00m EL=87.52m

B-12 dp=40.00m EL=137.07m

B-6 dp=130.00m EL=148.10m

B-32 dp=85.00m El=171.14m

T-3(L=30.0m,EL=140.03m)

T-4(L=30.0m,EL=138.97m)

T-2(L=30.0m,EL=117.87m)

T-1(L=20.0m,EL=92.75m)

td

L-130m L-60m EL.-0m R-60m

0 10 20 30 40 50m

LEGEND

(Geological Strata)

Age		Symbol	Formation and Strata Name
Quaternary	Holocene	rd	Riverbed deposit
		td	Talus deposit
Tertiary-Quaternary	Pliocene-Pleistocene	Su	Upper Sedimentary Rock Unit
		Pu	Upper Pyroclastic Rock Unit
		Sm	Middle Sedimentary Rock Unit
		Pl	Lower Pyroclastic Rock Unit
		Sl	Lower Sedimentary Rock Unit

Damar

(Note)

Boundary of Geological Unit

Boundary of Rock Class

(SYMBOLS

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5
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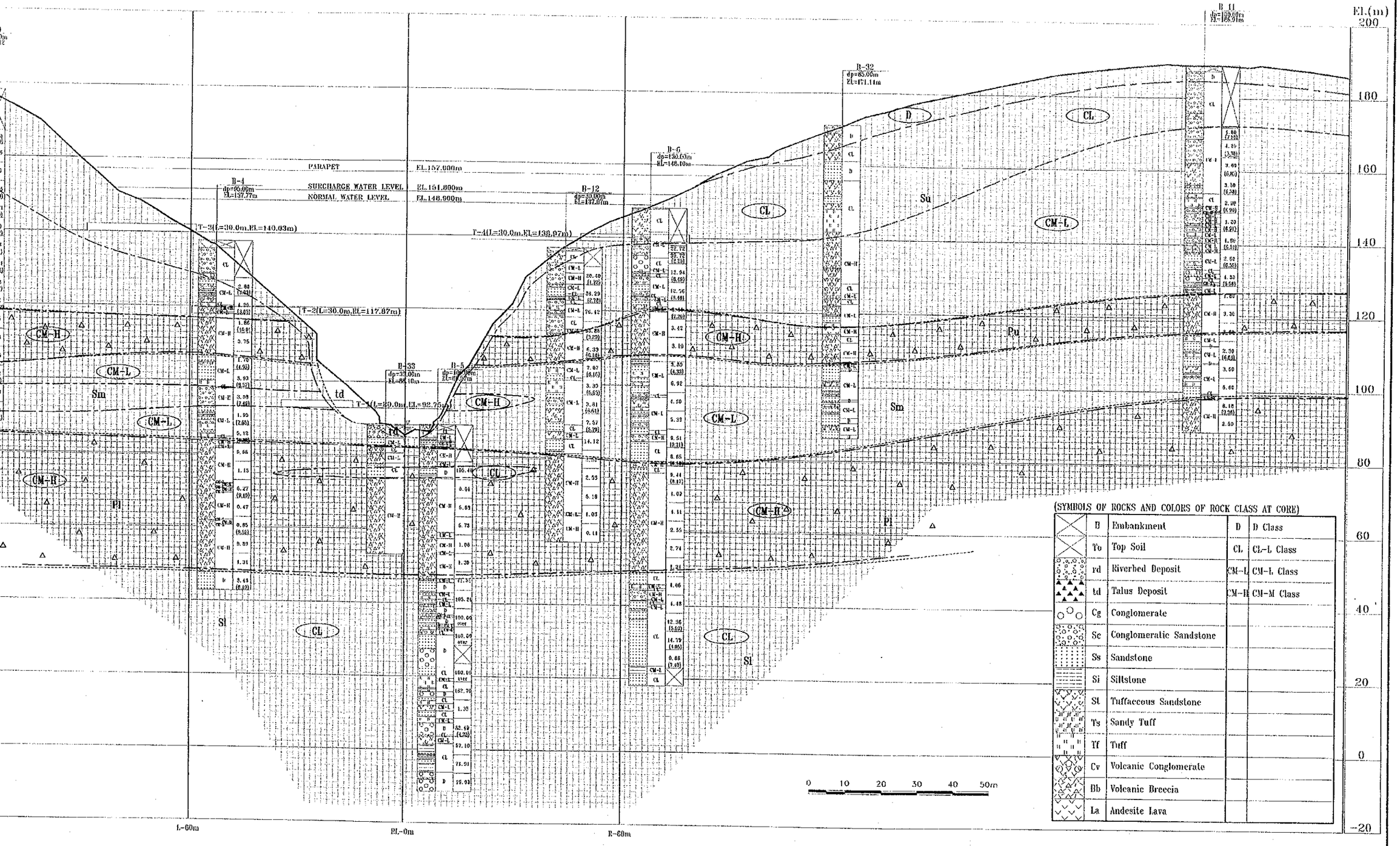


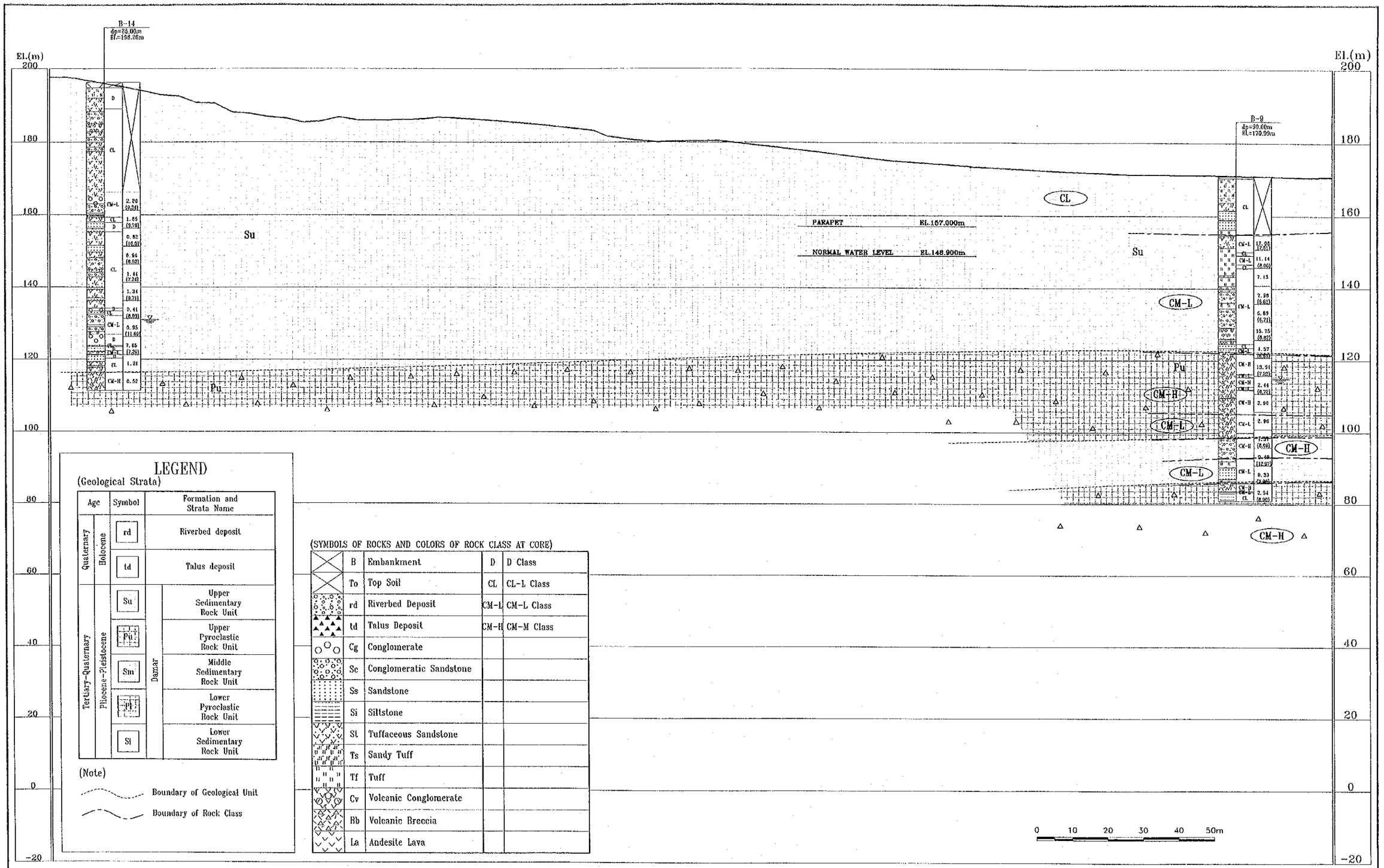
(SYMBOLS OF ROCKS AND COLORS OF ROCK CLASS AT CORE)

	B	Embankment	D	D Class
	To	Top Soil	CL	CL-L Class
	rd	Riverbed Deposit	CM-L	CM-L Class
	td	Talus Deposit	CM-H	CM-M Class
	Cg	Conglomerate		
	Sc	Conglomeratic Sandstone		
	Ss	Sandstone		
	Si	Siltstone		
	St	Tuffaceous Sandstone		
	Ts	Sandy Tuff		
	Tf	Tuff		
	Cv	Volcanic Conglomerate		
	Bb	Volcanic Breccia		
	La	Andesite Lava		

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.1.2 (1/2)
GEOLOGICAL PROFILE ALONG DAM AXIS



LEGEND

(Geological Strata)

Age		Symbol	Formation and Strata Name
Quaternary	Holocene	rd	Riverbed deposit
		td	Talus deposit
Tertiary-Quaternary	Pliocene-Pleistocene	Su	Upper Sedimentary Rock Unit
		Pu	Upper Pyroclastic Rock Unit
		Sm	Middle Sedimentary Rock Unit
		Pl	Lower Pyroclastic Rock Unit
		Sl	Lower Sedimentary Rock Unit

Damar

(Note)

Boundary of Geological Unit

Boundary of Rock Class

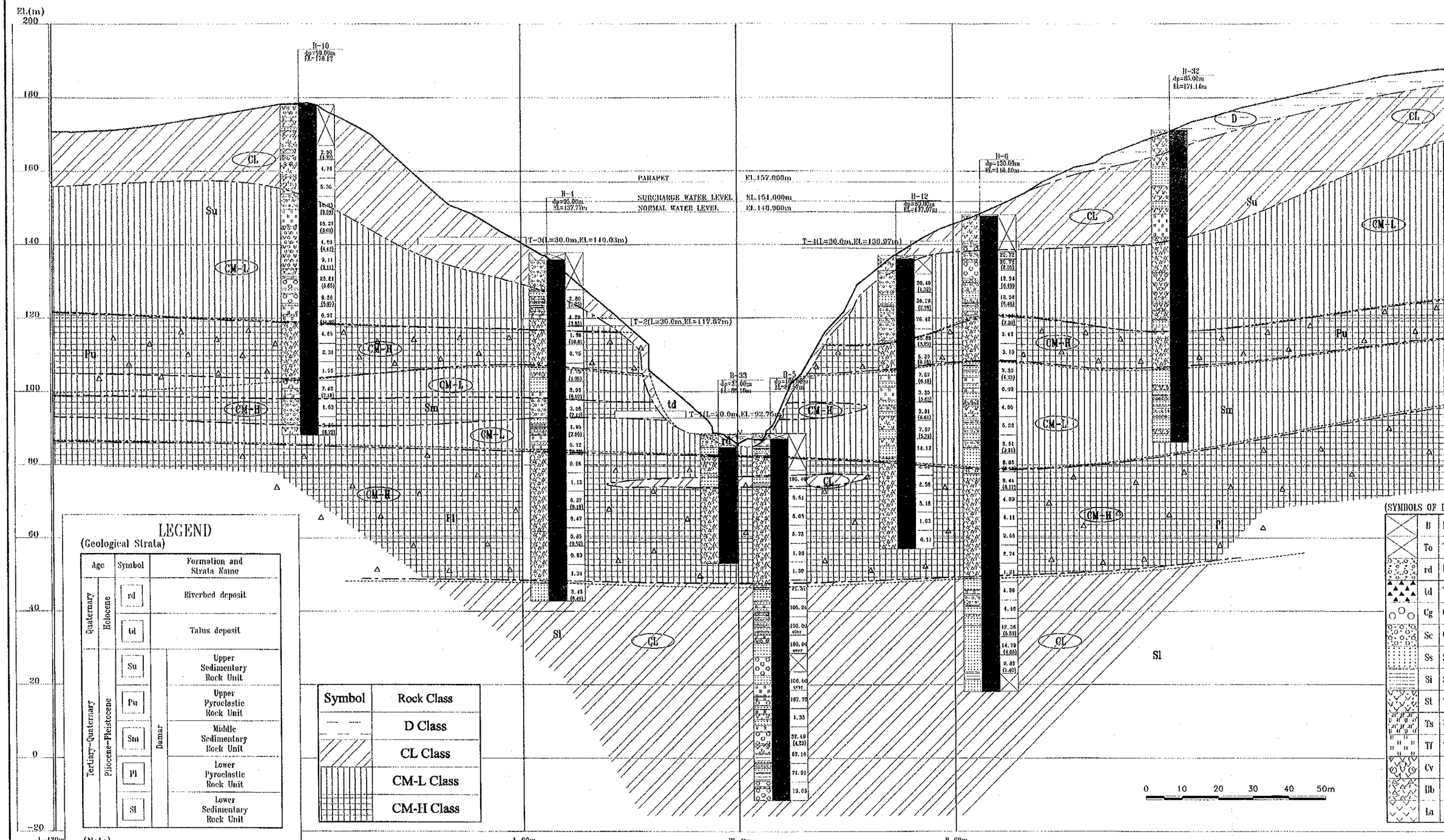
(SYMBOLS OF ROCKS AND COLORS OF ROCK CLASS AT CORE)

	B	Embankment	D	D Class
	To	Top Soil	CL	CL-L Class
	rd	Riverbed Deposit	CM-L	CM-L Class
	td	Talus Deposit	CM-H	CM-M Class
	Cg	Conglomerate		
	Sc	Conglomeratic Sandstone		
	Ss	Sandstone		
	Si	Siltstone		
	St	Tuffaceous Sandstone		
	Ts	Sandy Tuff		
	Tf	Tuff		
	Cv	Volcanic Conglomerate		
	Bb	Volcanic Breccia		
	La	Andesite Lava		

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.1.2 (2/2)
GEOLOGICAL PROFILE ALONG DAM AXIS
(LEFT BANK RIDGE)



LEGEND

(Geological Strata)

Age		Symbol		Formation and Strata Name
Quaternary	Holocene	rd		Riverbed deposit
		td		Talus deposit
Tertiary–Quaternary	Pliocene–Pleistocene	Su	Damar	Upper Sedimentary Rock Unit
		Pu		Upper Pyroclastic Rock Unit
		Sm		Middle Sedimentary Rock Unit
		Pl		Lower Pyroclastic Rock Unit
		Sl		Lower Sedimentary Rock Unit

Symbol	Rock Class
	D Class
	CL Class
	CM-L Class
	CM-H Class

(Note)

Boundary of Geological Unit

Boundary of Rock Class

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

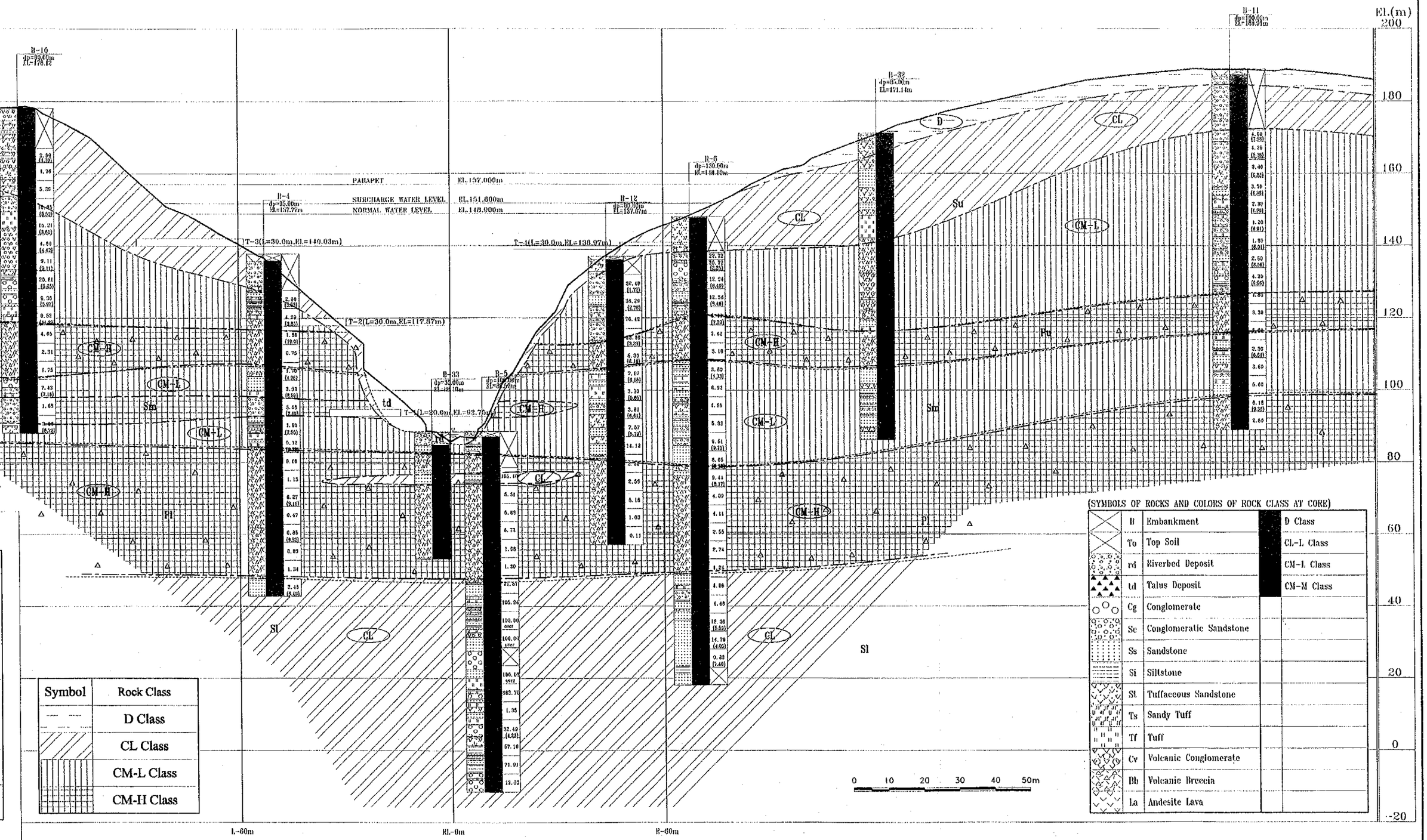
Fig. 5.1.3
GEOL
ALON

Symbol	Rock Class
	D Class
	CL Class
	CM-L Class
	CM-H Class

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

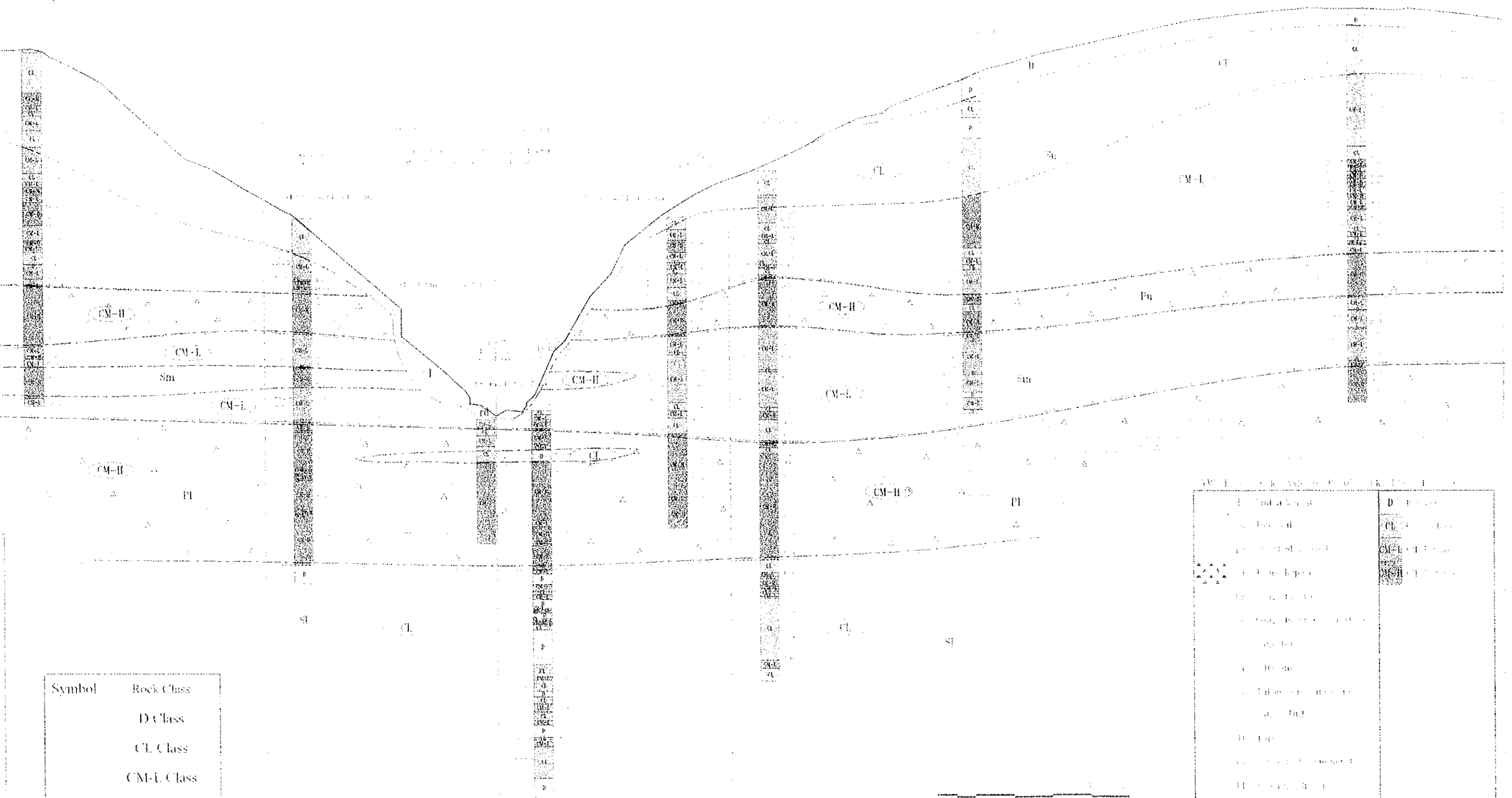
Fig. 5.1.3
GEOL
ALON



THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.1.3
GEOLOGICAL PROFILE FOR ROCK CLASSIFICATION ALONG DAM AXIS

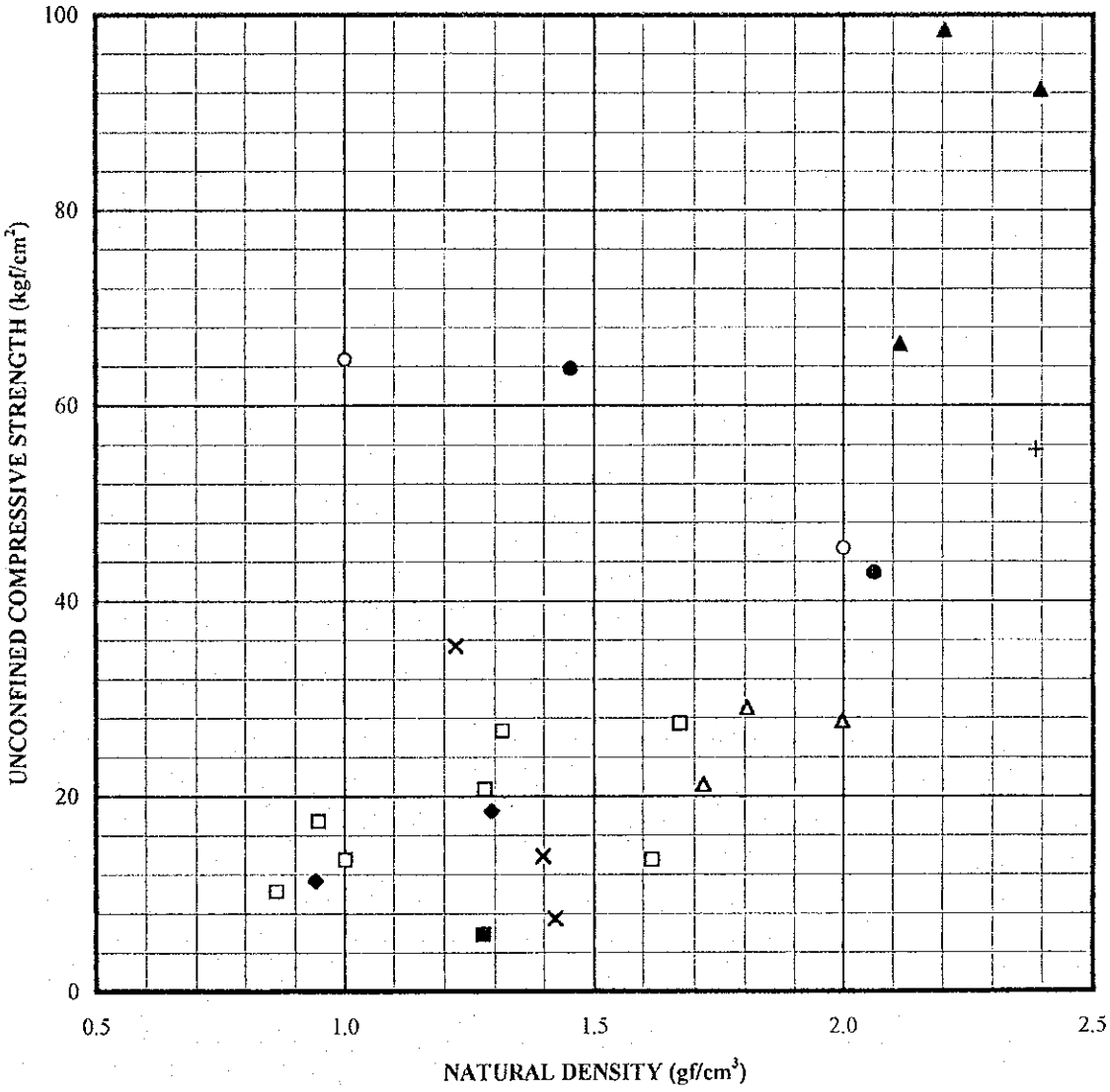


Symbol	Rock Class
	D Class
	CL Class
	CM-L Class
	CM-H Class

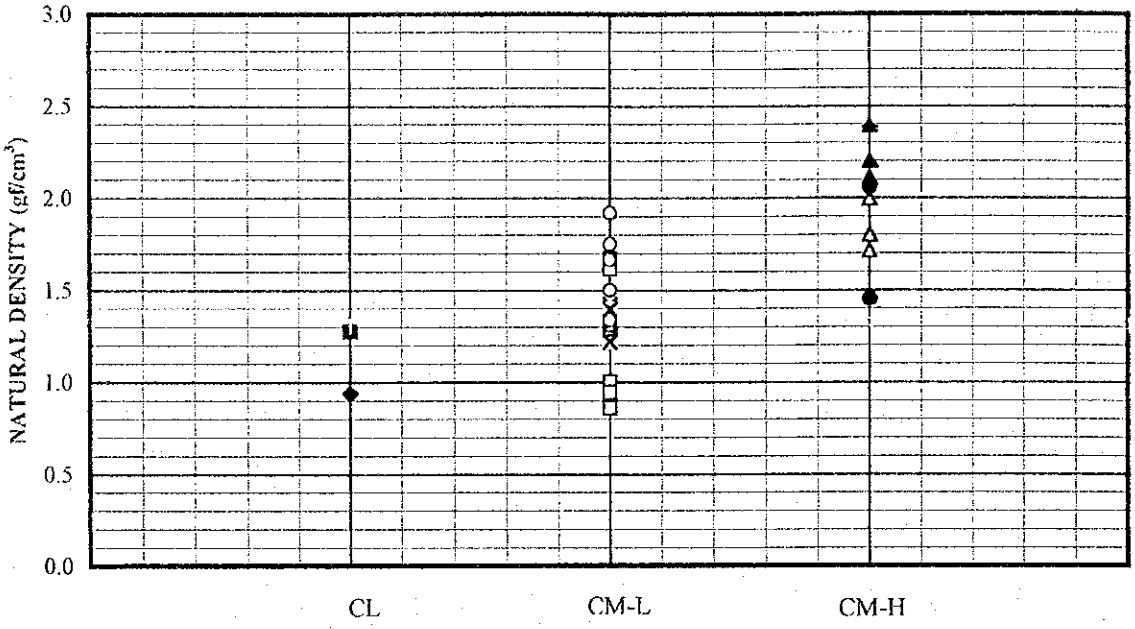
THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

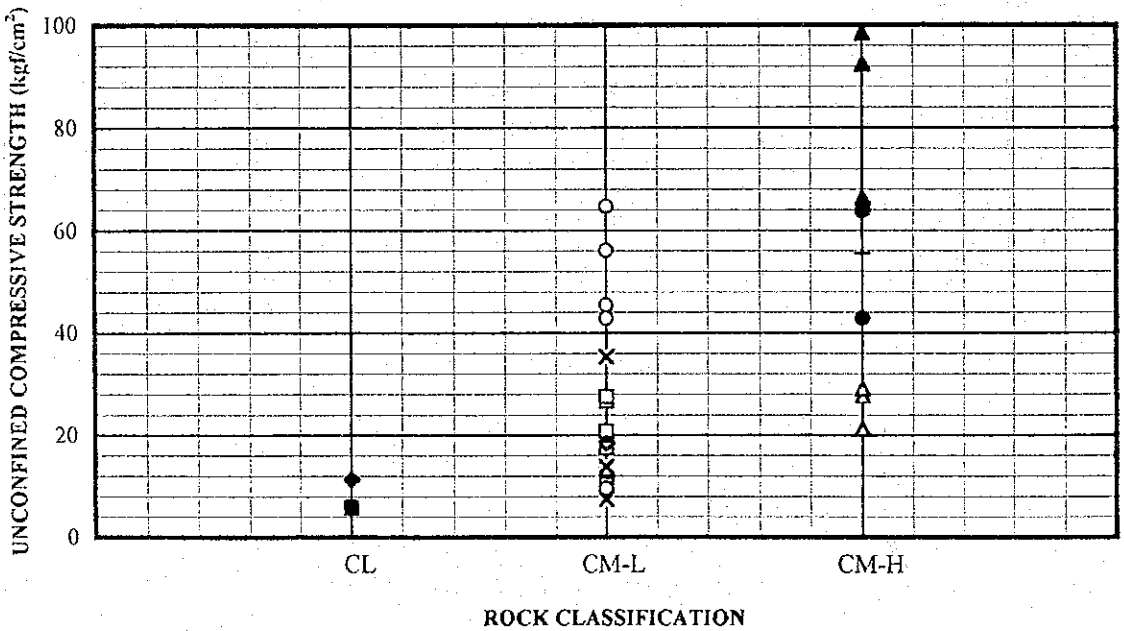
Fig. 5.1.3
GEOLOGICAL PROFILE FOR ROCK CLASSIFICATION ALONG DAM AXIS



THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 5.1.4 RELATIONSHIP BETWEEN NATURAL DENSITY AND COMPRESSIVE STRENGTH OF BORING CORE SAMPLES FROM FOUNDATION ROCK
JAPAN INTERNATIONAL COOPERATION AGENCY	



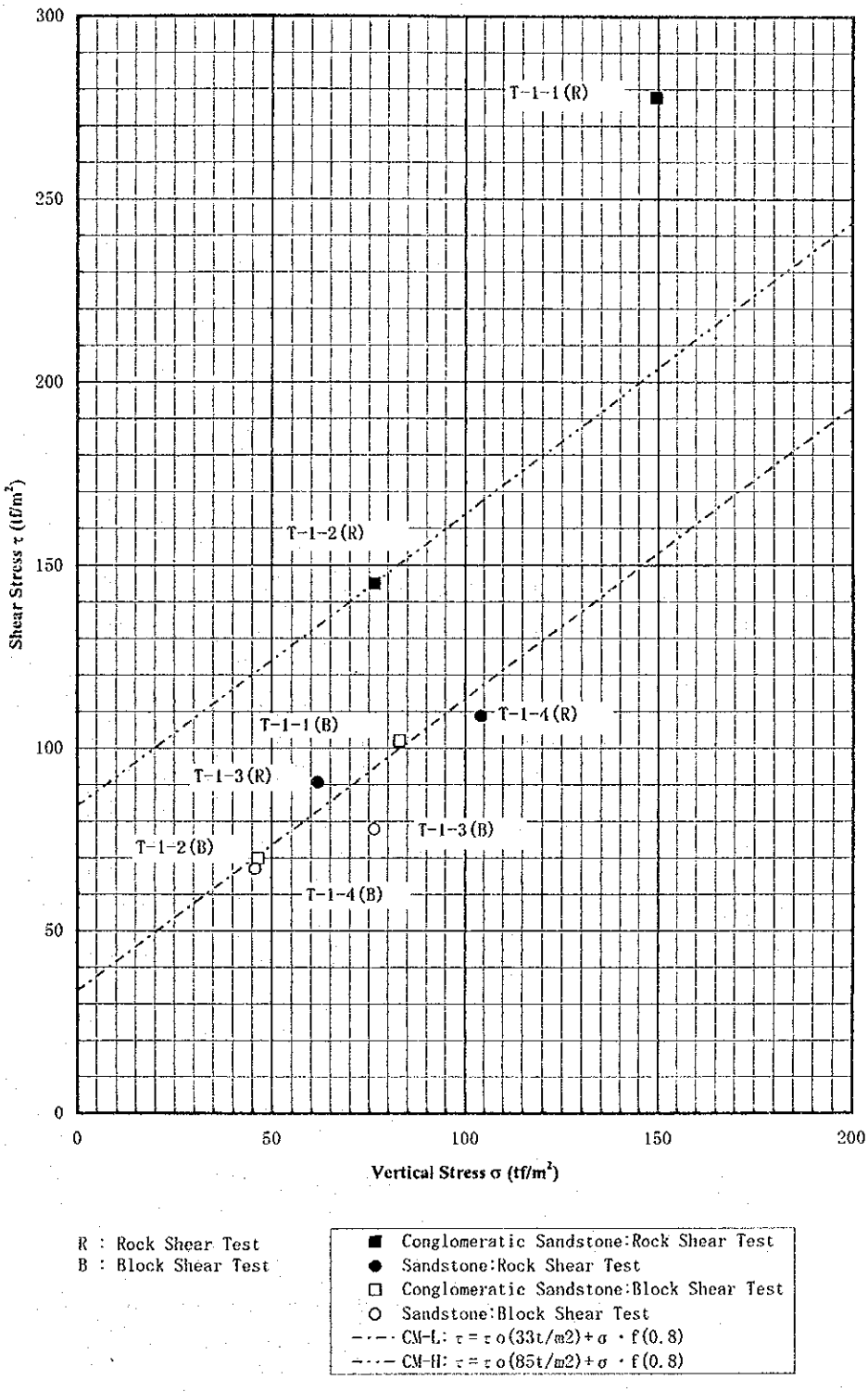
RELATIONSHIP BETWEEN ROCK CLASSIFICATION AND NATURAL DENSITY



RELATIONSHIP BETWEEN ROCK CLASSIFICATION AND
UNCONFINED COMPRESSIVE STRENGTH

■ Tuff : CL	□ Tuff : CM-L	× Tuffaceous Sandstone : CM-L
◆ Sandstone : CL	◇ Sandstone : CM-L	○ Conglomeratic Sandstone : CM-L
● Conglomeratic Sandstone : CM-H	+ Conglomerate : CM-H	▲ Volcanic Breccia(upper) : CM-H
△ Volcanic Breccia(lower) : CM-H		

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 5.1.5 RELATIONSHIP BETWEEN ROCK CLASSIFICATION AND OTHER PROPERTIES OF BORING CORE SAMPLES FROM FOUNDATION ROCK
JAPAN INTERNATIONAL COOPERATION AGENCY	



THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

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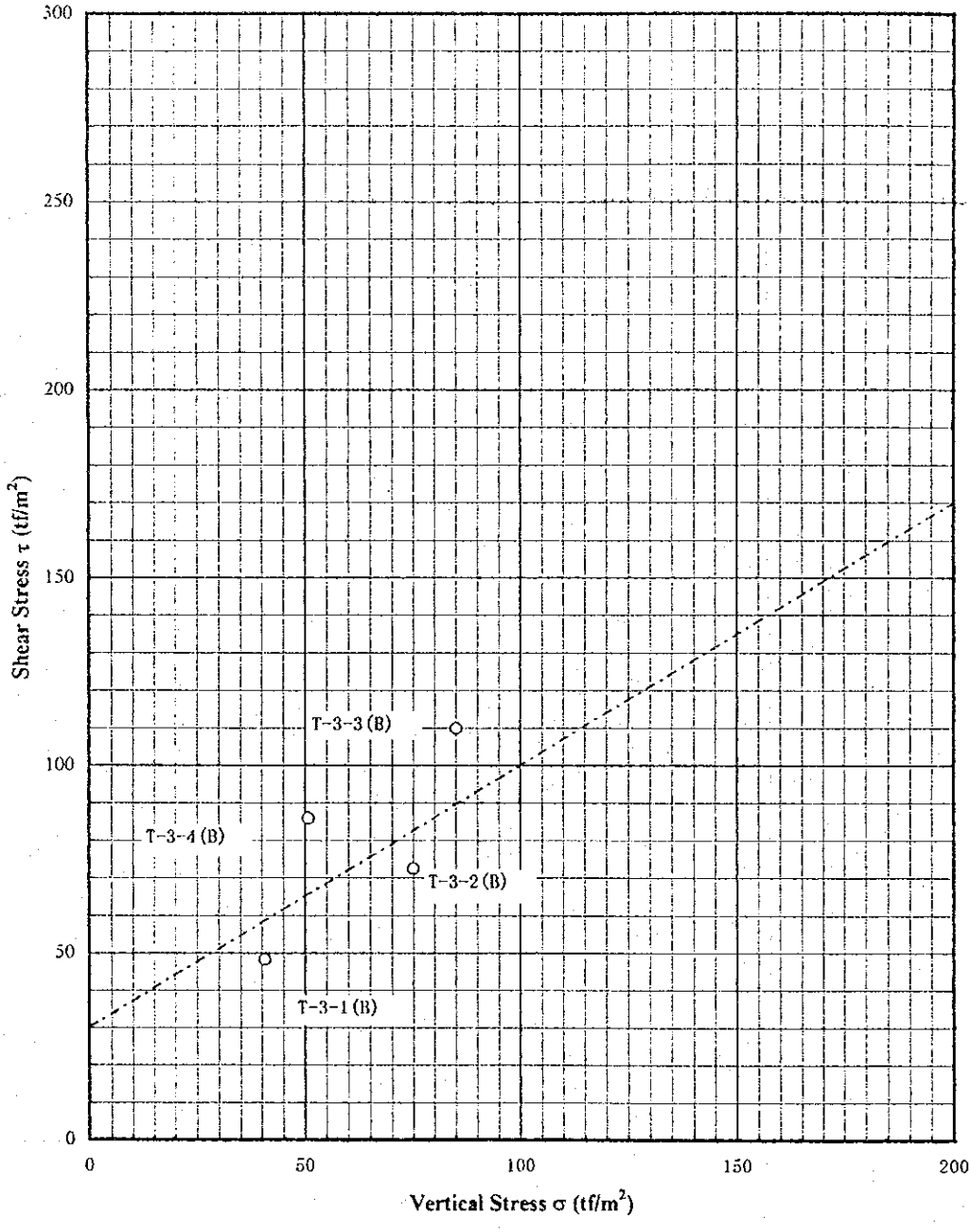
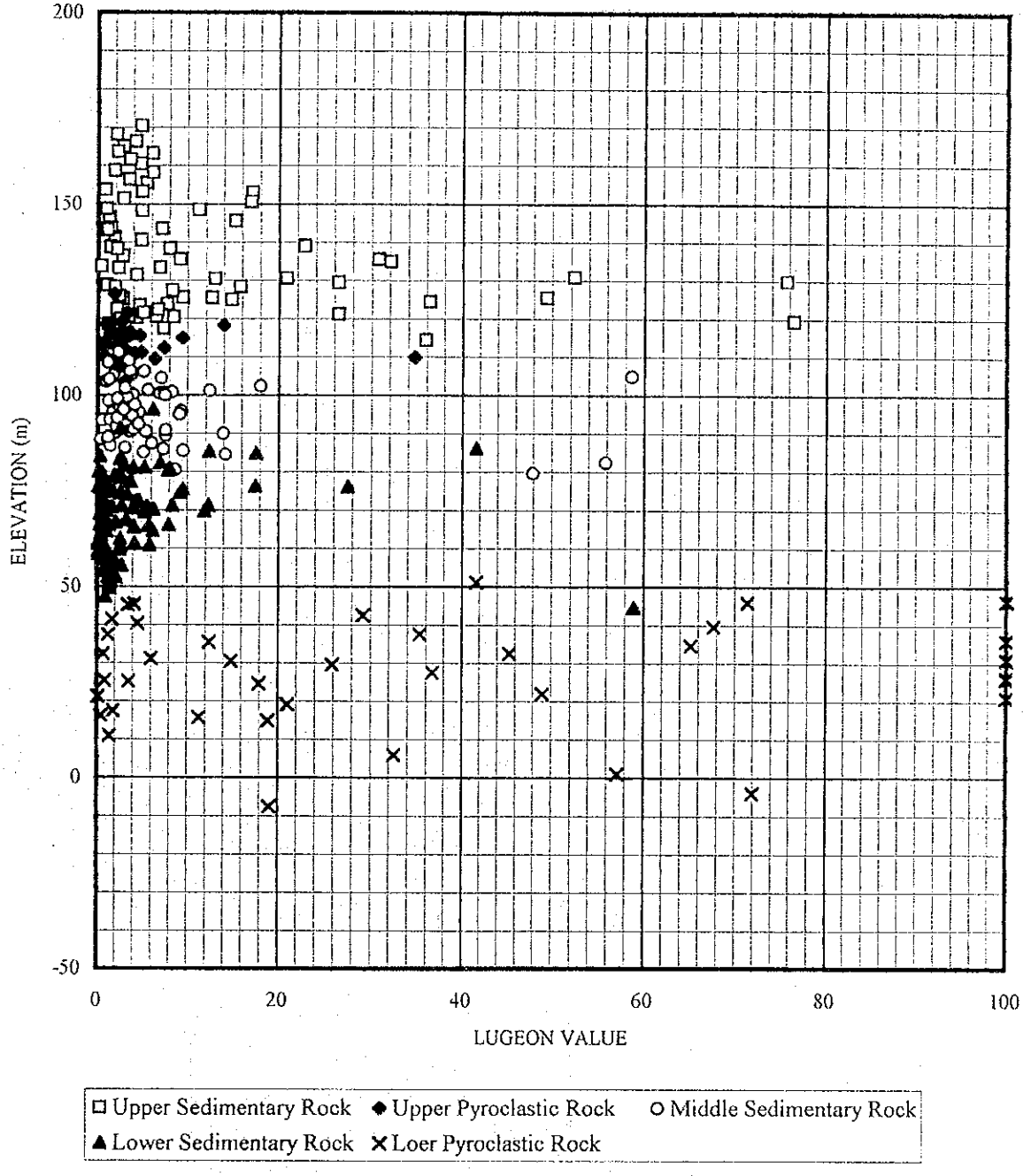
Fig. 5.1.6
IN-SITU SHEARING TEST RESULT OF CM-L CLASS AND CM-H CLASS AT DAMSITE

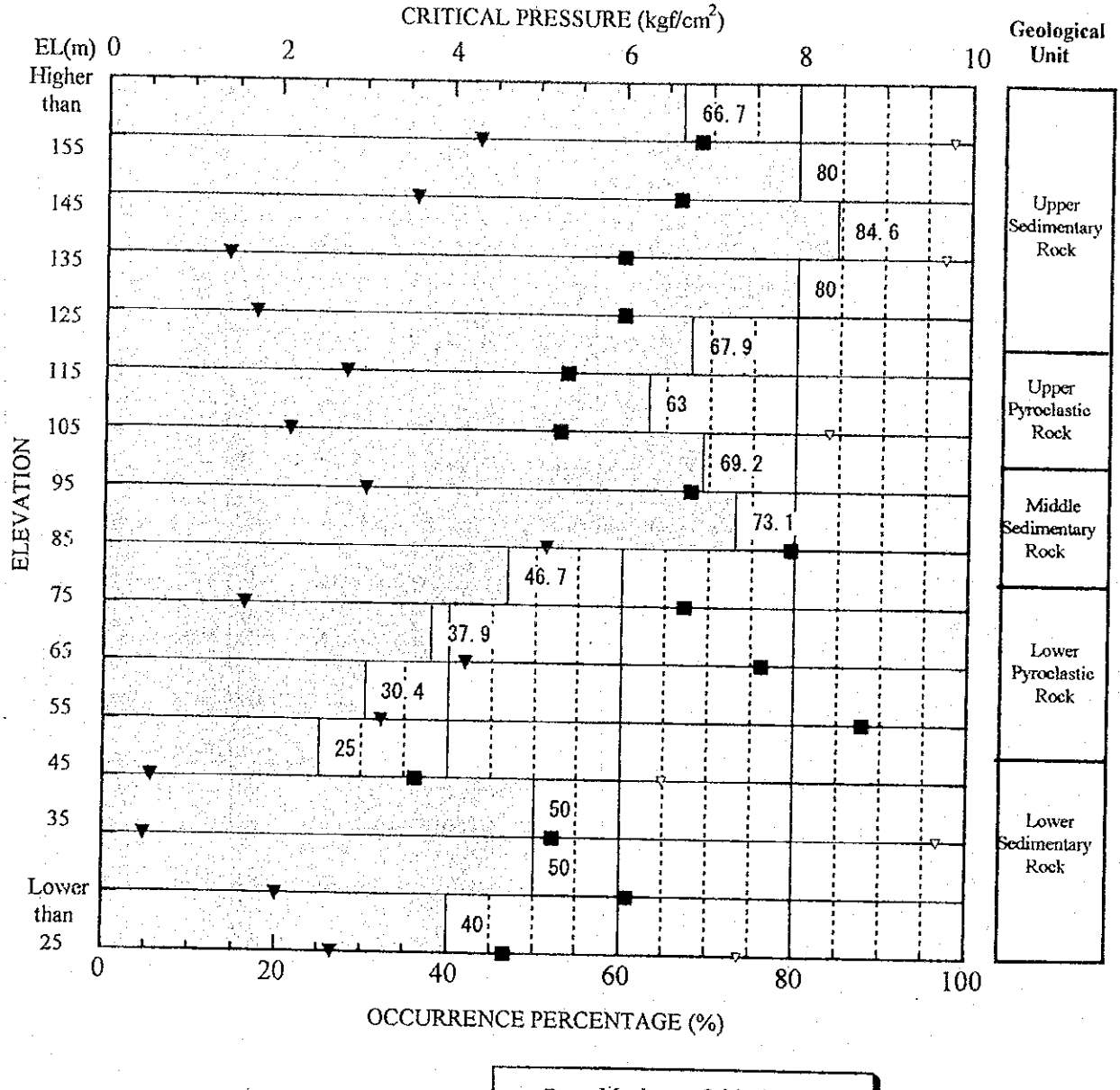


THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 5.1.7 IN-SITU SHEARING TEST RESULT OF CL CLASS AT DAMSITE
JAPAN INTERNATIONAL COOPERATION AGENCY	



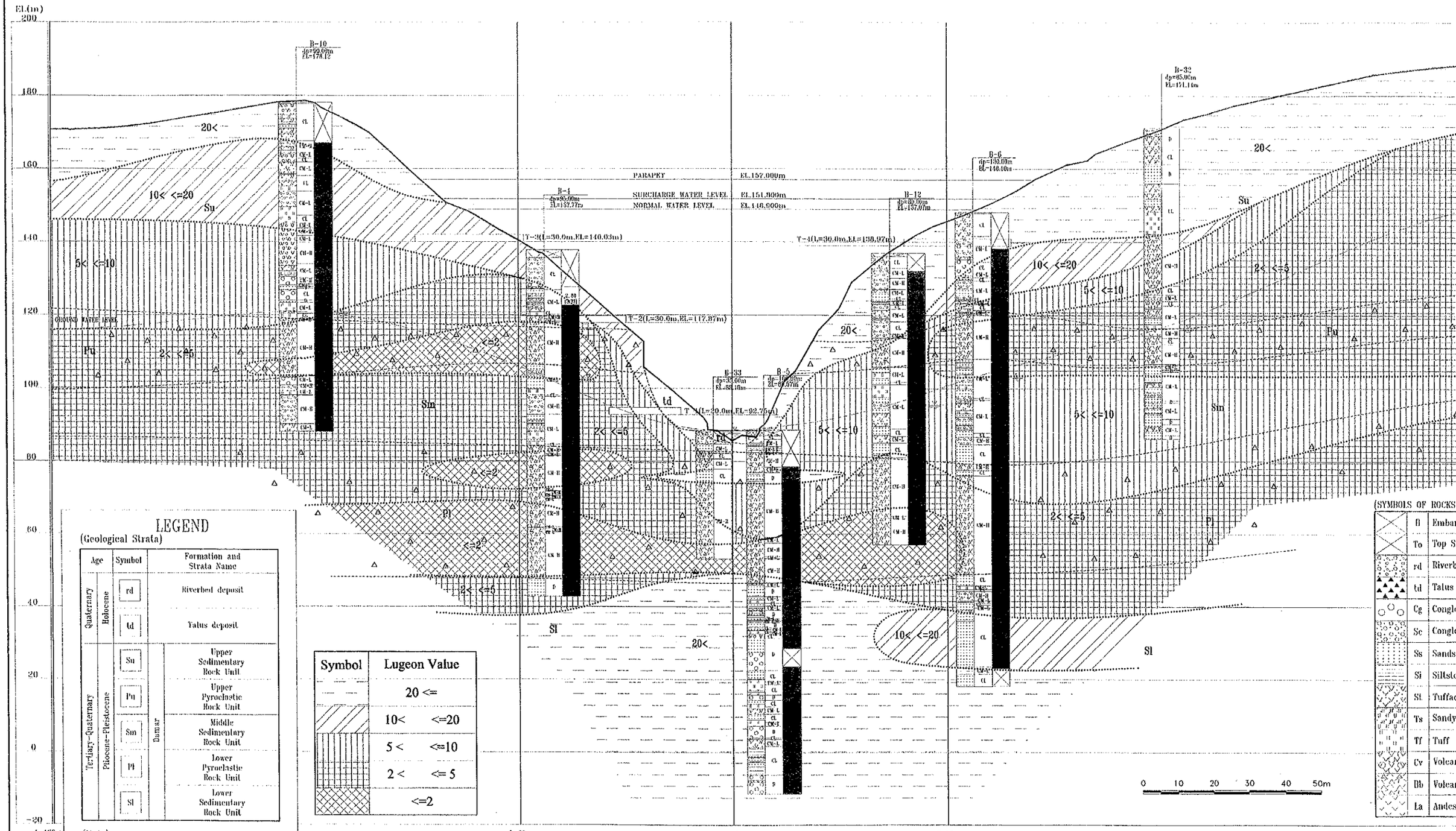
Note : Elevation of each point shows middle point of each test section.

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 5.1.8 RELATIONSHIP BETWEEN LUGEON VALUE AND ELEVATION AT DAMSITE
JAPAN INTERNATIONAL COOPERATION AGENCY	



Note : Figures show percentage of occurence frequency of critical points

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA	Fig. 5.1.9 OCCURRENCE PERCENTAGE OF CRITICAL POINT OF LUGEON TEST AT DAMSITE
JAPAN INTERNATIONAL COOPERATION AGENCY	



LEGEND

(Geological Strata)

Age		Symbol		Formation and Strata Name
Quaternary	Holocene	rd		Riverbed deposit
		td		Talus deposit
Tertiary-Quaternary	Pliocene-Pleistocene	Su	Damar	Upper Sedimentary Rock Unit
		Pu		Upper Pyroclastic Rock Unit
		Sm		Middle Sedimentary Rock Unit
		Pl		Lower Pyroclastic Rock Unit
		Sl		Lower Sedimentary Rock Unit

(Note)

Boundary of Geological Unit

Boundary of Lugeon Value

Symbol	Lugeon Value
	20 <=
	10< <=20
	5 < <=10
	2 < <= 5
	<=2

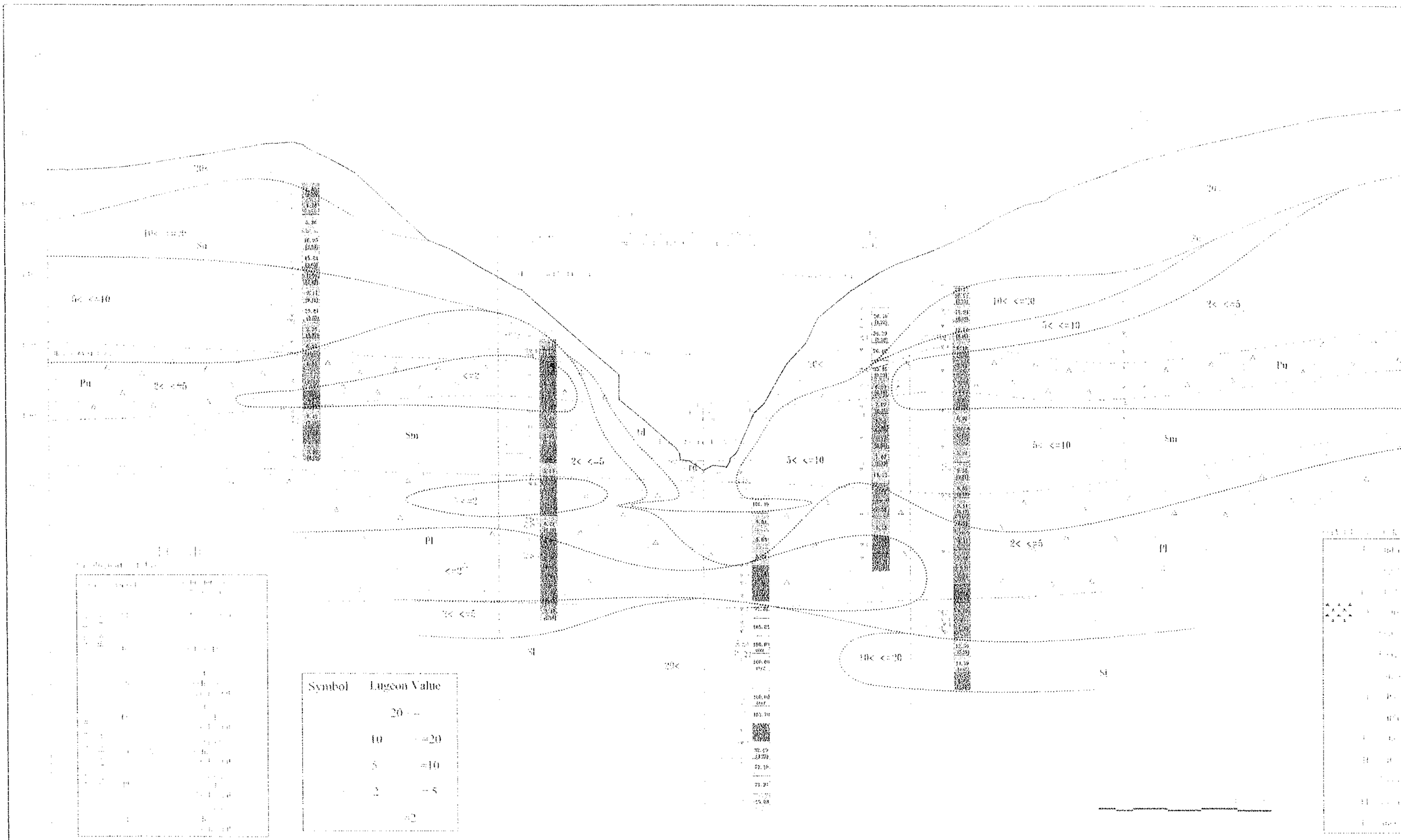
(SYMBOLS OF ROCKS

fl	Emban
To	Top S
rd	Riverb
td	Talus
Cg	Congl
Sc	Congl
Ss	Sands
Si	Siltsto
St	Tuffac
Ts	Sandy
Tf	Tuff
Cv	Volcar
Bb	Volcar
La	Andes

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig. 5.1.10 (1/2)
LUGEON M



Symbol	Lugeon Value
	20 <
	10 < =20
	5 < =10
	2 < =5
	=2

THE DETAILED DESIGN OF FLOOD CONTROL, URBAN DRAINAGE AND WATER RESOURCES DEVELOPMENT IN SEMARANG IN THE REPUBLIC OF INDONESIA

JAPAN INTERNATIONAL COOPERATION AGENCY

Fig 5.1.10 (1/2
LUGEON