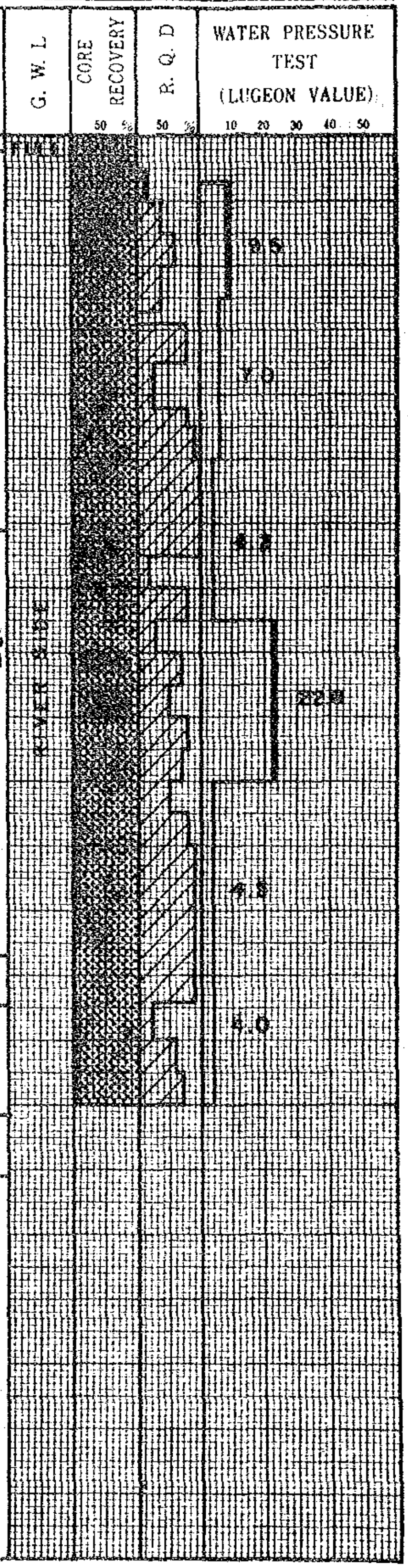
Fig. A - 15

PROJECT Main dam site

SUMMARY OF DRILL LOG

HOLE NO. BM-11

DEPTH	ELEVATION	THICKNESS	COLUMN SECTION	ROCK TYPE OR FORMATION	DESCRIPTION
0.40	51.12	0.40		Sand	Fine to coarse river sand
12.20	39.82	11.80		Conglomerate	0.4 - 0.6 m Brownish, severely weathered, fractured. 0.6 - 11.7 m Bluish grey, poorly to moderately fractured fresh coarse grained conglomerate. Diameter of fragments are 3 cm in maximum. 5.4 - 5.8 m ; Fractured and cracky zone.
25.40	26.72	13.20		Sandstone and Thin conglomerate	Alternation of grey sand stone and bluish grey thin conglomerate. 12.8 - 14.3 m, 15.1 - 15.6 m; Fractured conglomerate and sandstone. 17.4 - 18.1 m moderately cracky. Other part are cylindrical and stable sandstone, conglomerate.
26.90	25.22	1.50		Conglomerate	Bluish grey conglomerate. Cylindrical and stable core.
30.32	21.82	3.42		Alternation of gritty sandstone and sandstone	Grey, moderately fractured gritty sandstone and sandstone.
30.62	21.52	0.30		Conglomerate	Grey, poorly to moderately fractured.



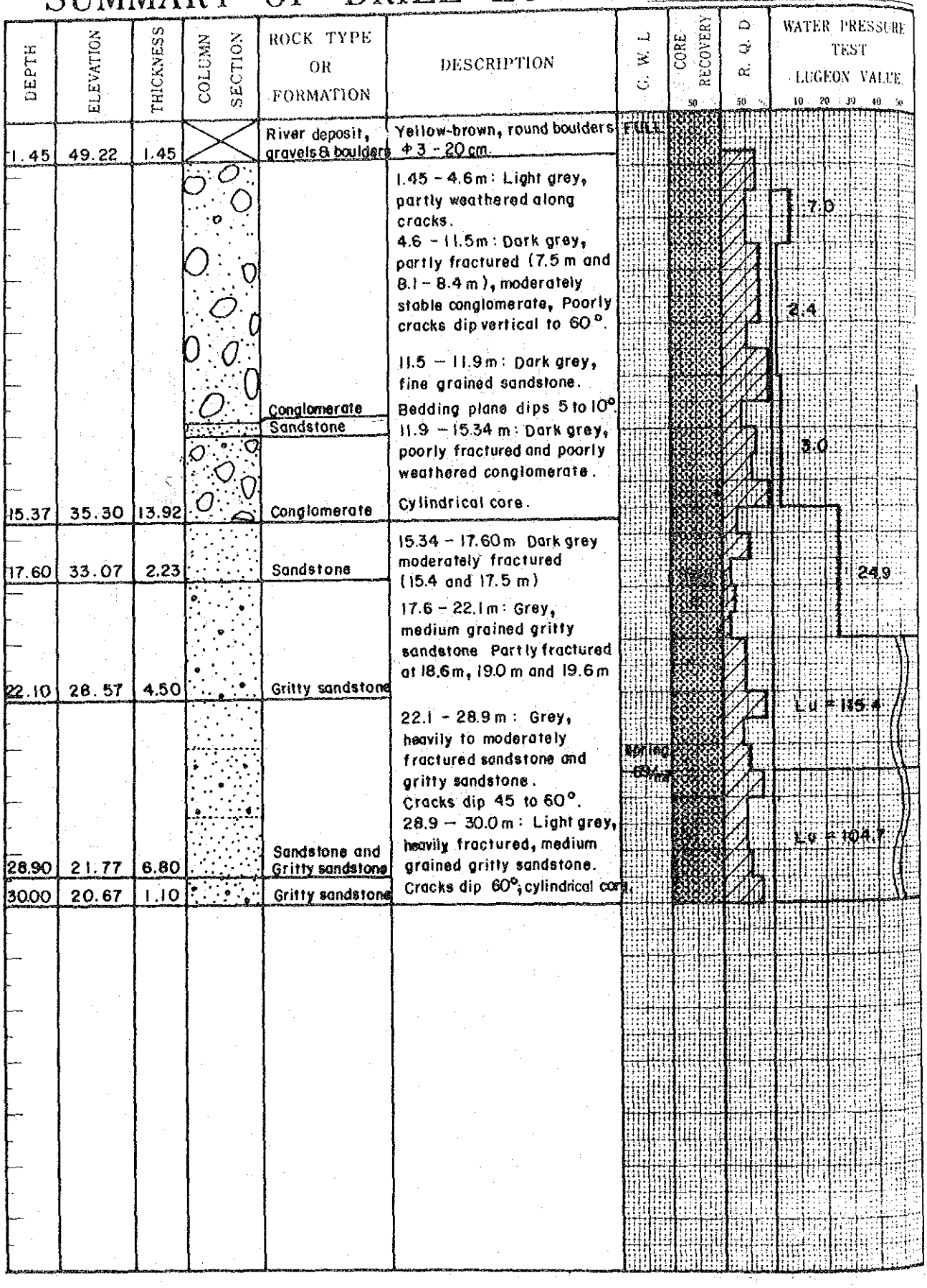
LOG FORM-A

Fig. A - 16

PROJECT Main dam site

SUMMARY OF DRILL LOG

HOLE NO. BM-12



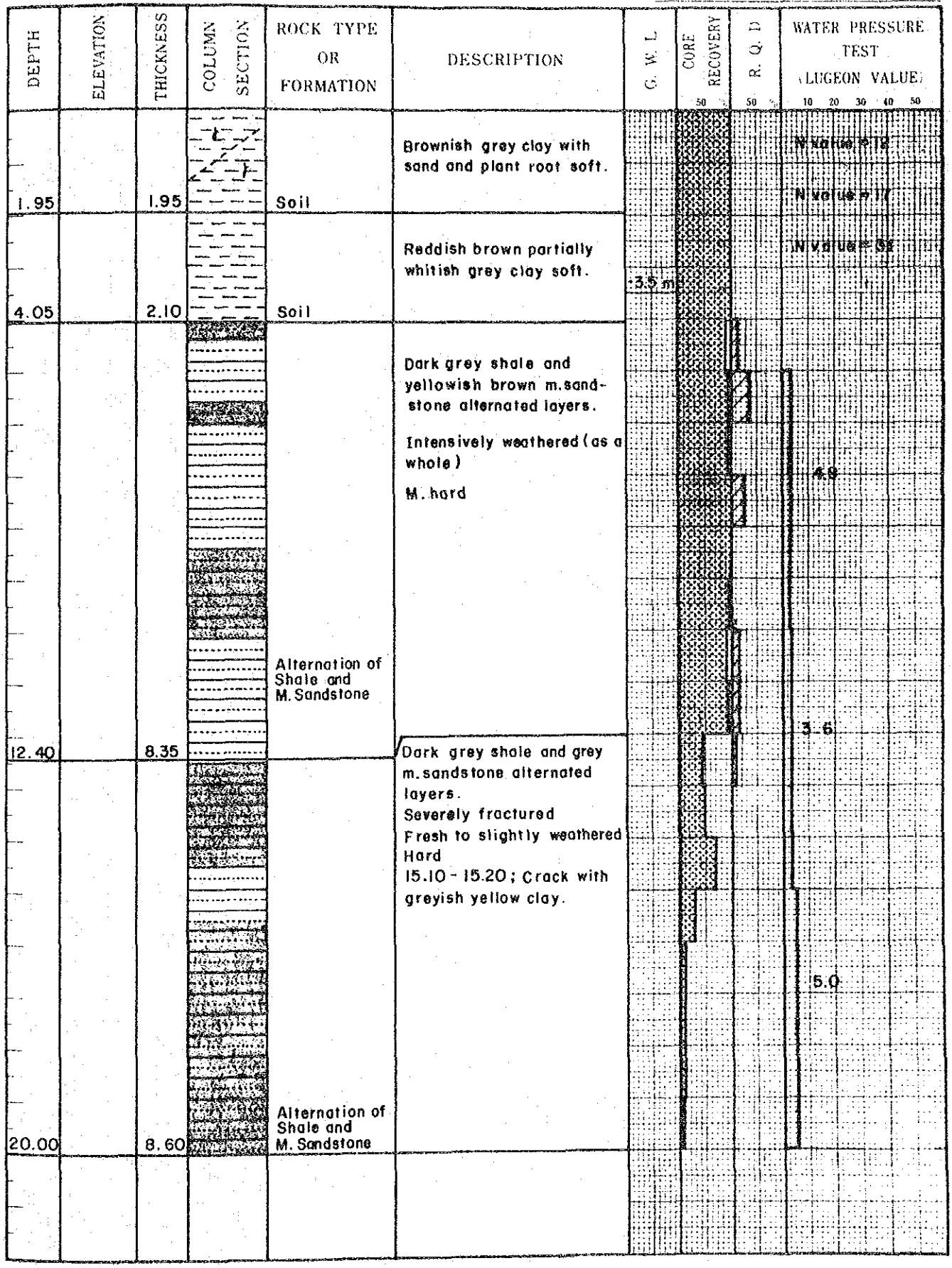
LOG FORM-A

Fig. A - 17

PROJECT Saddle dam site

SUMMARY OF DRILL LOG

HOLE NO. BRS - 1



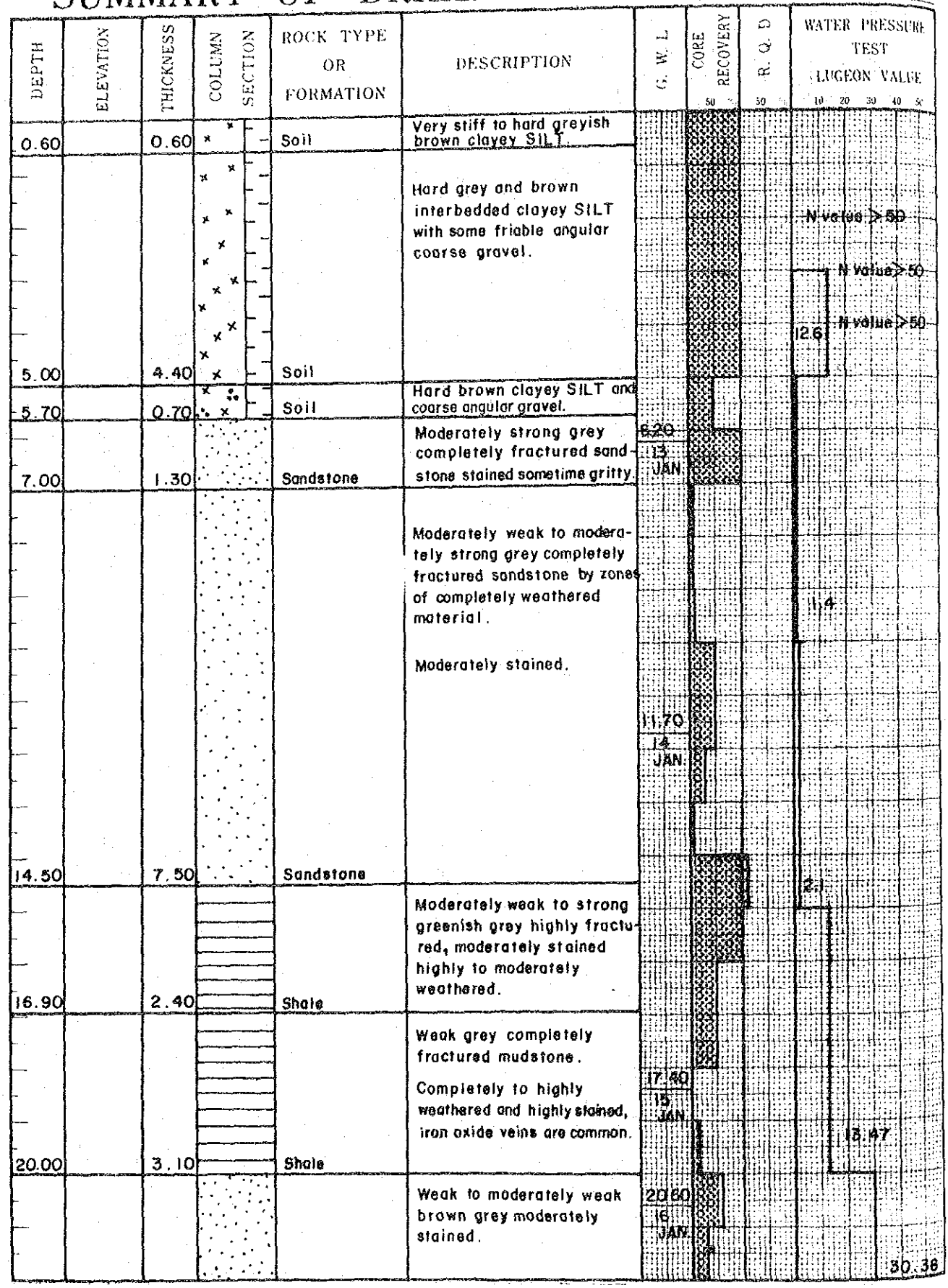
LOG FORM A

Fig. A - 18

PROJECT Saddle dam site

SUMMARY OF DRILL LOG

HOLE NO. BSS - 2(1/2)



LOG FORM-A

Fig. A - 19

PROJECT Saddle dam site

SUMMARY OF DRILL LOG

HOLE NO. BSS-2(2/2)

DEPTH	ELEVATION	THICKNESS	COLUMN SECTION	ROCK TYPE OR FORMATION	DESCRIPTION
23.60		3.60		Sandstone	Completely to highly fractured; average 3 cm angular fragment.
24.90		1.30		Conglomerate	Moderately strong to strong grey brown moderately to lightly weathered, poorly fractured, stained.
30.00		5.10		Sandstone	Moderately strong grey with stained brown sandstone with trace of grit highly fractured, moderately stained angular fracture, with average size 2 - 3 cm in length wedge like fractured moderately to slightly weathered. END OF BORE HOLE

G. W. L

CORE RECOVERY (50)

R. Q. D (50)

WATER PRESSURE TEST (LUGEON VALUE) 10 20 30 40 50

30.38

Lu = 56.4

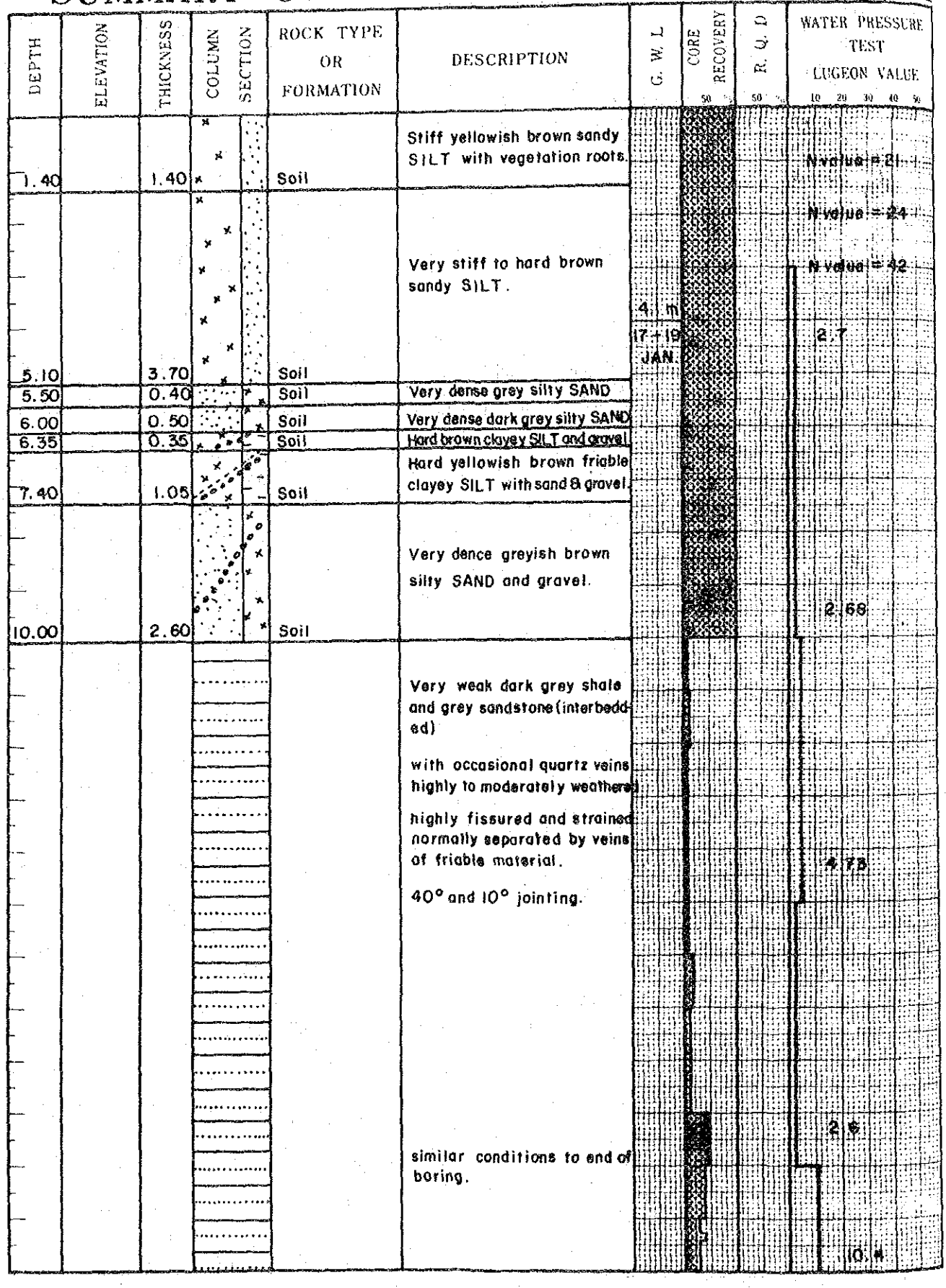
LOG FORM A

Fig. A-20

PROJECT Saddle dam site

SUMMARY OF DRILL LOG

HOLE NO. BSS-3(1/2)



LOG FORM-A

Fig. A - 21

PROJECT Saddle dam site

SUMMARY OF DRILL LOG

HOLE NO. BSS-3(2/2)

DEPTH	ELEVATION	THICKNESS	COLUMN SECTION	ROCK TYPE OR FORMATION	DESCRIPTION	G. W. L	CORE RECOVERY (50)	R. Q. D (50)	WATER PRESSURE TEST (LUGEON VALUE) (10 20 30 40 50)
30.00		20.00		Interbedded shale and sandstone	END OF BORE HOLE				10 ft 7 ft

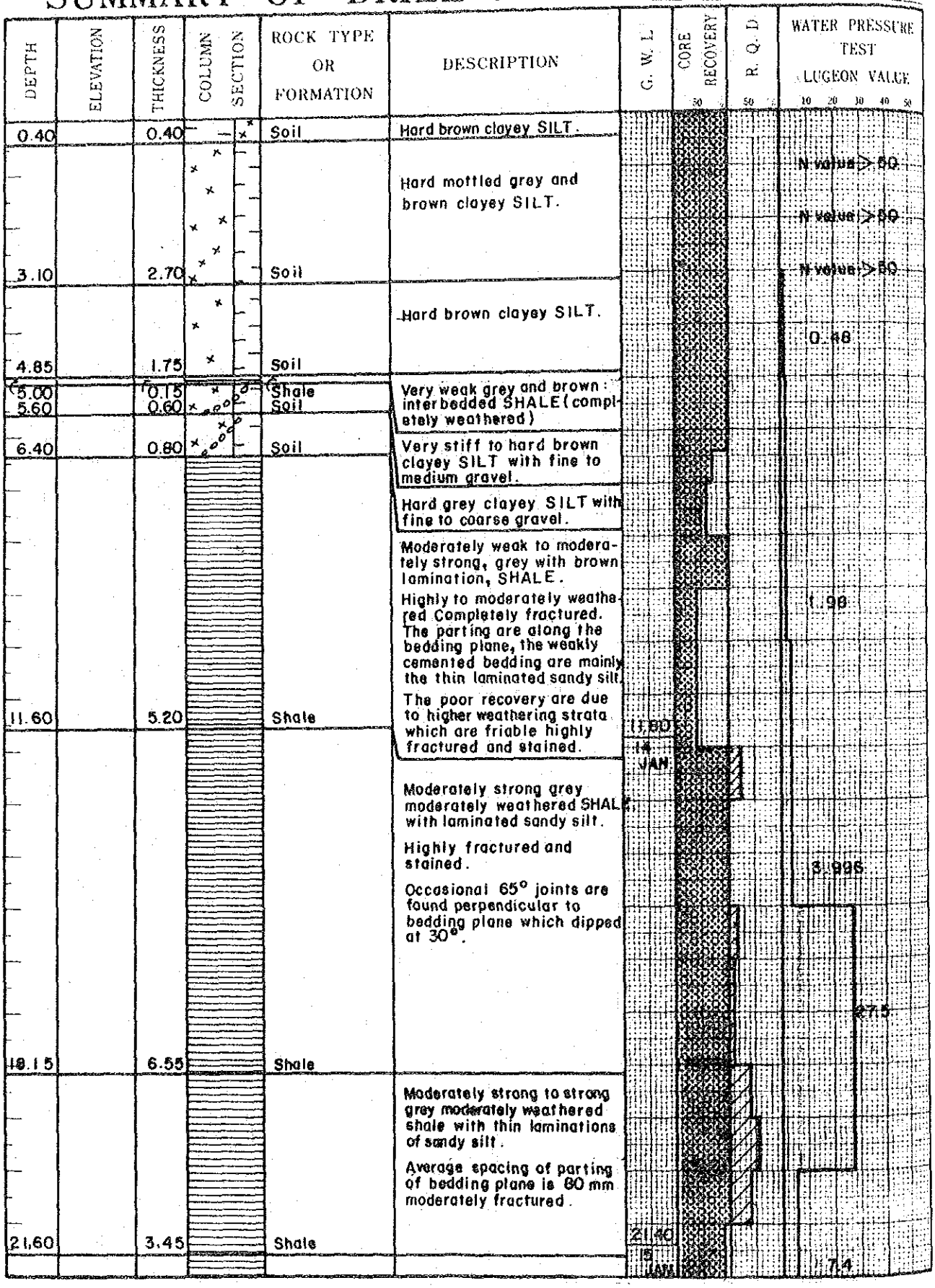
LOG FORM A

Fig. A - 22

PROJECT Saddle dam site

SUMMARY OF DRILL LOG

HOLE NO. BSS-4 (1/2)



LOG FORM-A

Fig. A - 23

PROJECT Saddle dam site

SUMMARY OF DRILL LOG

HOLE NO. BSS - 4 (2/2)

DEPTH	ELEVATION	THICKNESS	COLUMN SECTION	ROCK TYPE OR FORMATION	DESCRIPTION	G. W. L	CORE RECOVERY 50 %	R. Q. D 50 %	WATER PRESSURE TEST (LUGEON VALUE) 10 20 30 40 50
24.50		2.90		Shale	Moderately weak to moderately strong grey highly weathered SHALE. Highly fractured and stained. The angular fractures are interlocked and sometimes containing higher weathered friable material.	22.70 16 JAN.			7.4
27.15		2.65		Shale	Moderately strong grey moderately weathered SHALE Average 12 cm spacing parting plane fructured zone : 24.85 m, 25.5, 28.0 m.				13.0
29.50		2.35		Shale	Moderately weak highly weathered grey with stained highly fractured SHALE.				
30.00		0.50		Shale	Moderately strong to strong grey moderately weathered, with average parting space 10 cm.				
					END OF BORE HOLE				

LOG FORM-A

Fig. A – 24

PROJECT Quarry-3 site

SUMMARY OF DRILL LOG

HOLE NO. BQ-1 (1/2)

DEPTH	ELEVATION	THICKNESS	COLUMN SECTION	ROCK TYPE OR FORMATION	DESCRIPTION
1.30		1.30		Colluvium	Medium stiff greyish brown fine sandy SILT.
3.25		1.95		Soil	Very dense brown silty sand with gravel.
4.15		0.90		Conglomerate	Very weak to weak grey brown completely to highly weathered subrounded fractured recovery.
7.10		2.95		Sandstone	Strong light grey. Slightly weathered moderately fractured stained 45° joints.
10.20		3.10		Conglomerate	Strong light grey. Slightly weathered moderately fractured lightly stained 60° and 30° jointing.
11.70		1.50		Interbedded S.S. and conglomerate	Weak light grey with stained fractured surface. Completely fractured highly to moderately weathered.
14.60		2.90		Interbedded sandstone and conglomerate	Moderately weak light grey severely fractured moderately weathered, stained.
18.80		4.20		Conglomerate	Moderately strong to strong light grey moderately to slightly weathered angular fractured slightly stained 70° and 40° jointing severely fractured.
21.80		3.00		Conglomerate	Moderately strong to strong light grey slightly weathered moderately fractured 20.4 – 20.8 m completely fractured zone (conglomerate zone)

G. W. L. 6.60m 5-7 JAN.

CORE RECOVERY 50

R. Q. D 50

WATER PRESSURE TEST LUGEON VALUE 10 20 30 40 50

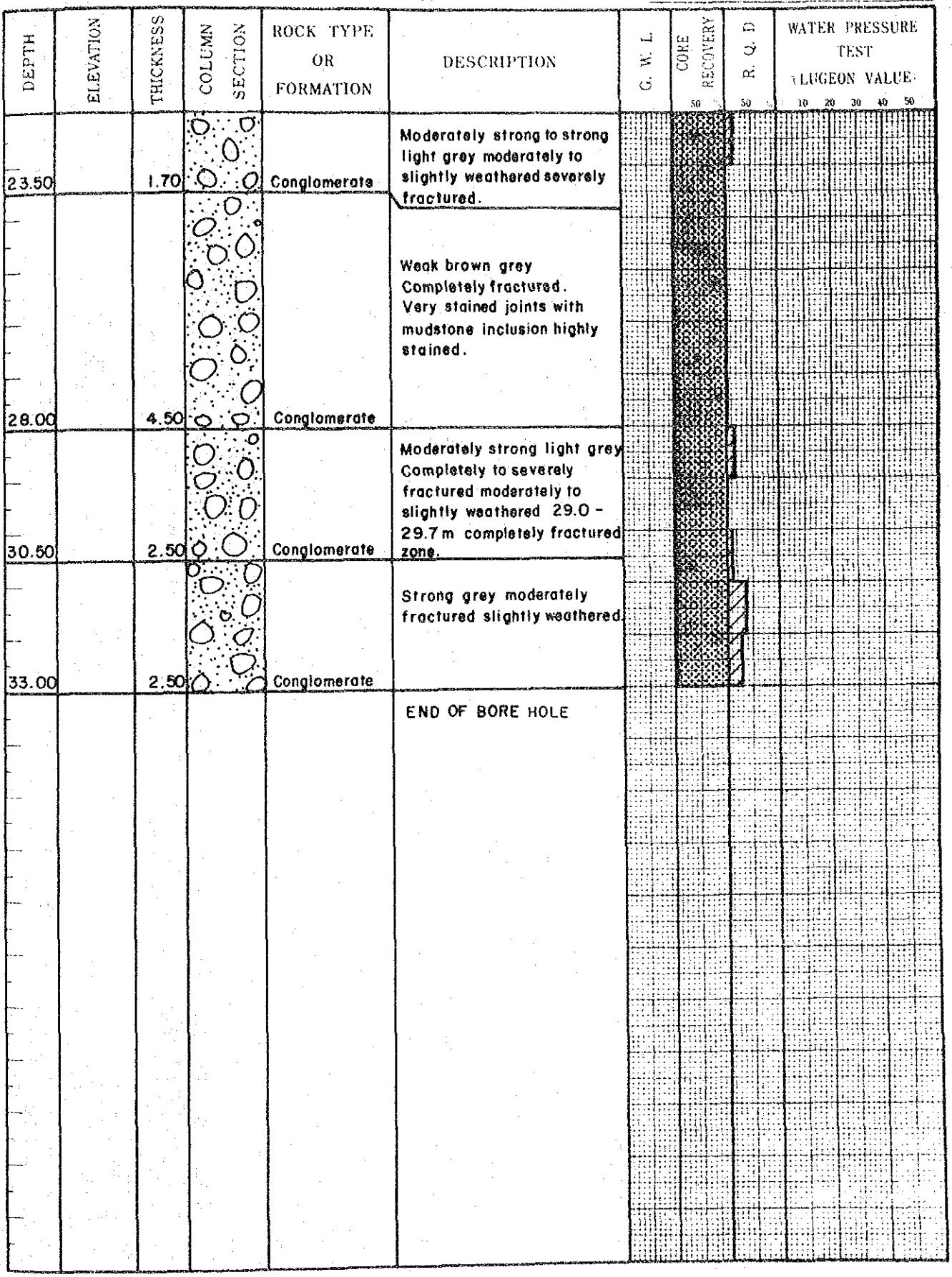
LOG FORM-A

Fig. A - 25

PROJECT Quarry-3 site

SUMMARY OF DRILL LOG

HOLE NO. BQ-1 (2/2)



LOG FORM A

Fig. A - 26

PROJECT Quarry - I site

SUMMARY OF DRILL LOG

HOLE NO. BQ - 2

DEPTH	ELEVATION	THICKNESS	COLUMN SECTION	ROCK TYPE OR FORMATION	DESCRIPTION
0.80		0.80		Colluvium	Soft dark grey sandy silt.
2.20		1.40		Completely weathered soil	Very dense brown completely to highly weathered silty sand and conglomerate stone.
3.00		0.80		Conglomerate	Strong light grey moderately to slightly weathered.
4.20		1.20		Conglomerate	Moderately weak to moderately strong light grey, severely fractured.
5.00		0.80		Conglomerate	Strong light grey slightly weathered, moderately fractured.
5.60		0.60		Conglomerate	Moderately strong light grey moderately to lightly weathered completely fractured.
6.70		1.10		Sandstone	Moderately strong to strong light grey moderately to slightly weathered severely fractured, highly stained.
8.60		1.90		Conglomerate	Strong light grey slightly weathered severely fractured, angular fractured.
12.40		3.80		Conglomerate	Strong light grey slightly weathered, moderately fractured: slightly stained 45° dipping joints.
14.50		2.10		Conglomerate	Moderately weak light grey severely fractured; angular fractured.
19.00		4.50		Interbedded S.S. & conglomerate	Moderately strong light grey moderately to slightly weathered stained angular fracture completely fractured.
20.00		1.00		Conglomerate	Strong light grey slightly weathered severely fractured, slightly stained.
22.00		2.00		Conglomerate	Moderately strong light grey moderately to slightly weathered stained angular fracture completely fractured.

G. W. L. 6.80m 28-31 JAN

CORE RECOVERY 50

R. Q. D 50

WATER PRESSURE TEST (LUGEON VALUE) 10 20 30 40 50

N value > 50

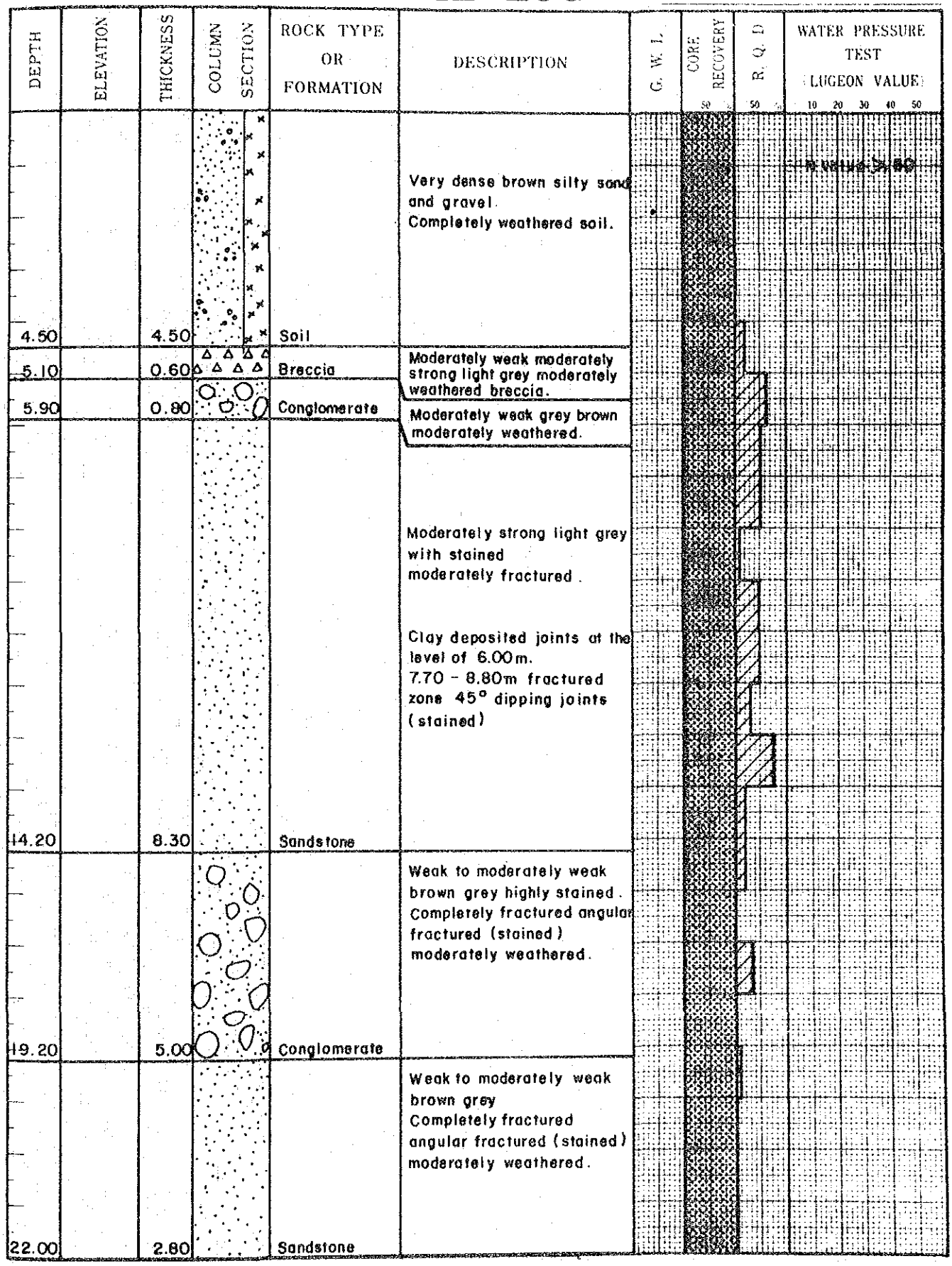
LOG FORM-A

Fig. A－27

PROJECT Quarry-I site

SUMMARY OF DRILL LOG

HOLE NO. BQ-3 (1/2)



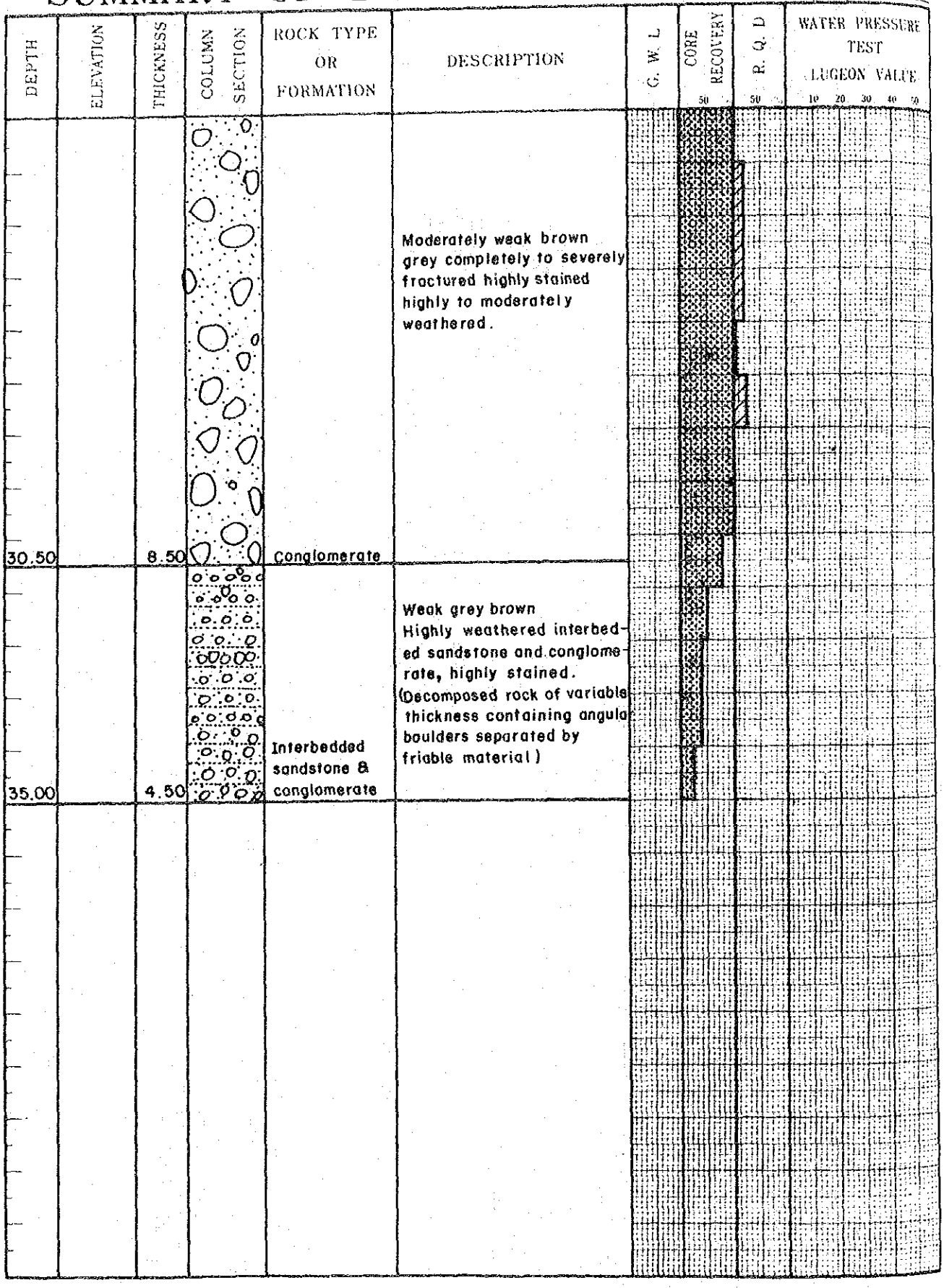
LOG FORM A

Fig. A - 28

PROJECT Quarry-I site

SUMMARY OF DRILL LOG

HOLE NO. BQ-3(2/2)



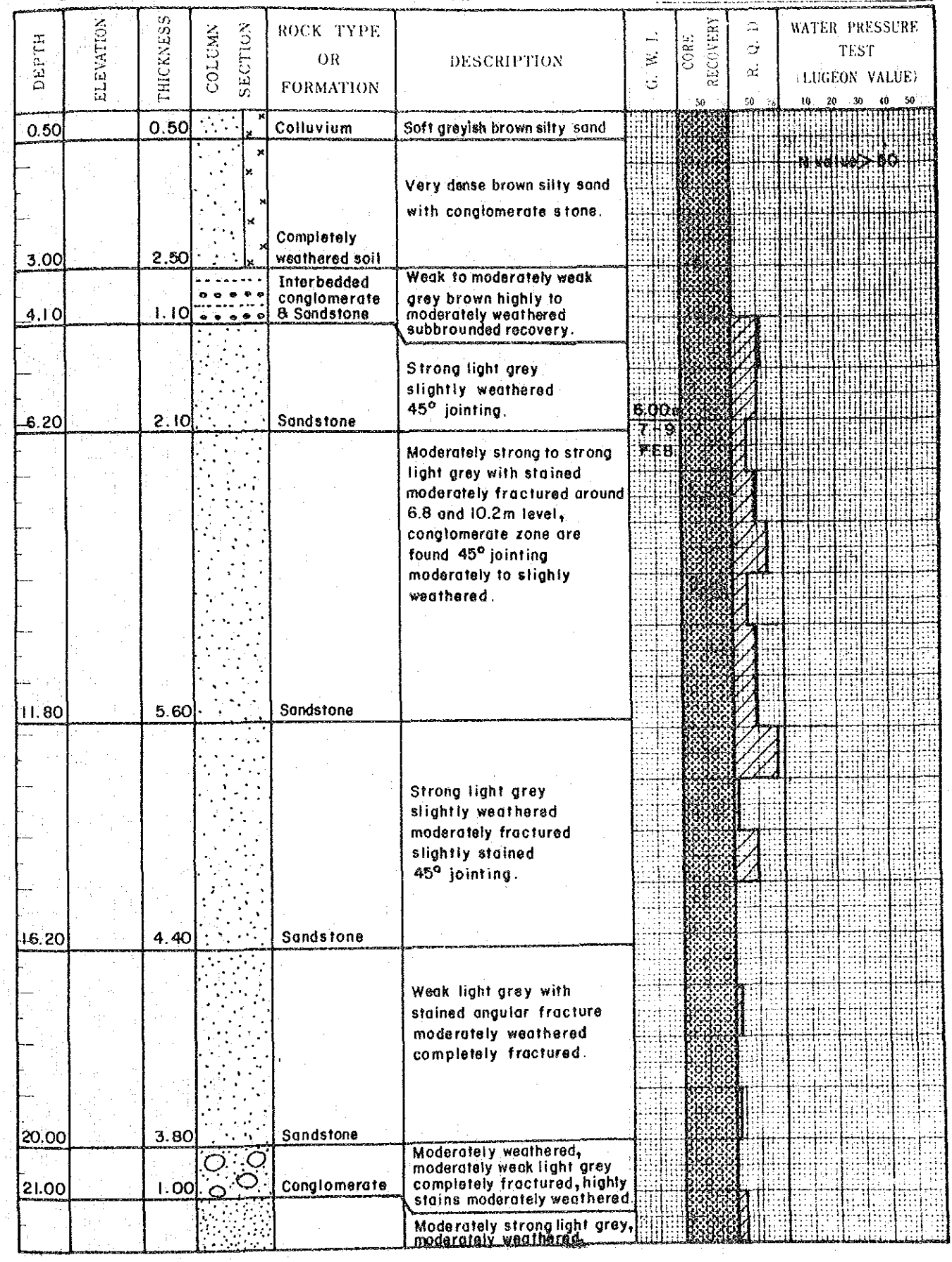
LOG FORM-A

Fig. A - 29

PROJECT Quarry-3 site

SUMMARY OF DRILL LOG

HOLE NO. BQ-4 (1/2)



LOG FORM-A

Fig. A - 30

PROJECT Quarry - 3 site

SUMMARY OF DRILL LOG

HOLE NO. BQ-4 (2/2)

DEPTH	ELEVATION	THICKNESS	COLUMN SECTION	ROCK TYPE OR FORMATION	DESCRIPTION
22.30		1.30		Sandstone	completely fractured, highly stained angular fractured.
24.00		1.70		Conglomerate	Moderately strong light grey completely fractured, highly stained moderately weathered.
27.00		3.00		Conglomerate	Moderately strong light grey moderately weathered with some mudstone inclusion completely fractured.
30.00		3.00		Conglomerate	Moderately strong light grey moderately weathered completely fractured, highly stained angular fractured : 50° and 30° jointing with mudstone inclusion.
					END OF BORE HOLE

C. W. L | CORE RECOVERY (50) | R. Q. D (50) | WATER PRESSURE TEST LUGEON VALUE (10 20 30 40 50)

LOG FORM-A

Fig. A-31

PROJECT Quarry-2 site

SUMMARY OF DRILL LOG

HOLE NO. BQ-5

DEPTH	ELEVATION	THICKNESS	COLUMN SECTION	ROCK TYPE OR FORMATION	DESCRIPTION
1.30		1.30		Residual soil	Yellow brown, loose clay silt.
2.50	130.73	1.20		Decomposed conglomerate	Completely decomposed, weathered.
7.35	125.88	4.85		Conglomerate	2.6 – 3.1 m Strongly weathered 3.1 – 7.5 m Grey, reddish, black spotted, poorly fractured conglomerate. Cracks dip 45° to 60°. 6.75 to 6.86m: core loss.
10.13	123.10	2.78		Sandstone	Grey, poorly crack, fresh, hard sandstone. Cracks dip 70° and horizontal.
25.90	107.33	15.77		Conglomerate	Grey with reddish, black spotted, poorly fractured, fresh conglomerate with partly dark grey thin shale (max. thickness is 10 cm). Interval of each cracks are 50 to 100 cm. Weakly weathered, reddish brown along cracks.
27.50	105.73	1.60		Sandstone	25.5 – 27.6 Dark grey to light grey, poorly fractured sandstone Cylindrical core.
29.90	103.33	2.40		Conglomerate	Dark grey to reddish grey fresh, very hard conglomerate

G. W. L: NO G.W.L

CORE RECOVERY: 50 %

R. Q. D: 50 %

WATER PRESSURE TEST (LUGEON VALUE): 10 20 30 40 50

N value = 50

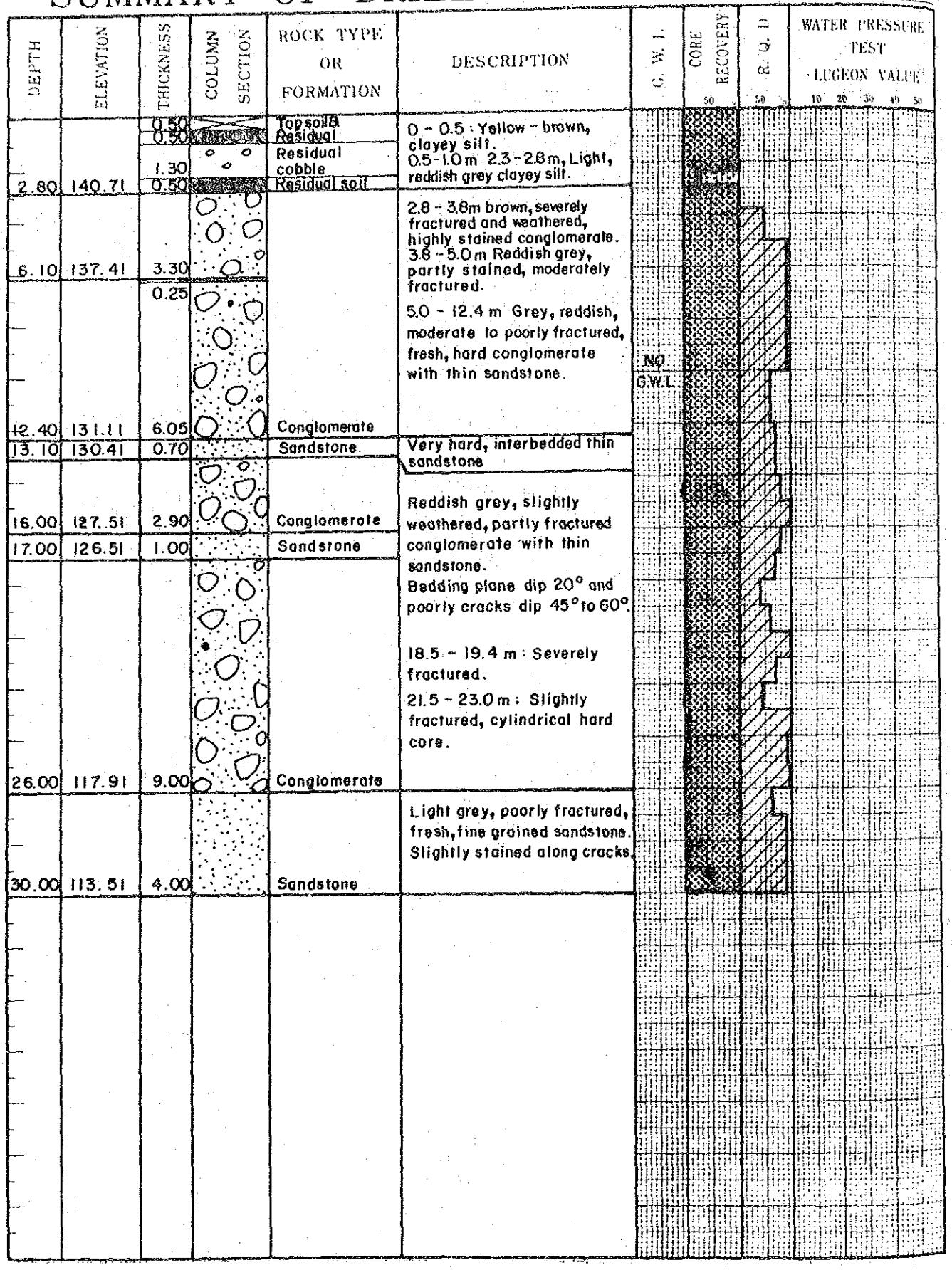
LOG FORM A

Fig. A - 32

PROJECT Quarry - 2 site

SUMMARY OF DRILL LOG

HOLE NO. BQ - 6



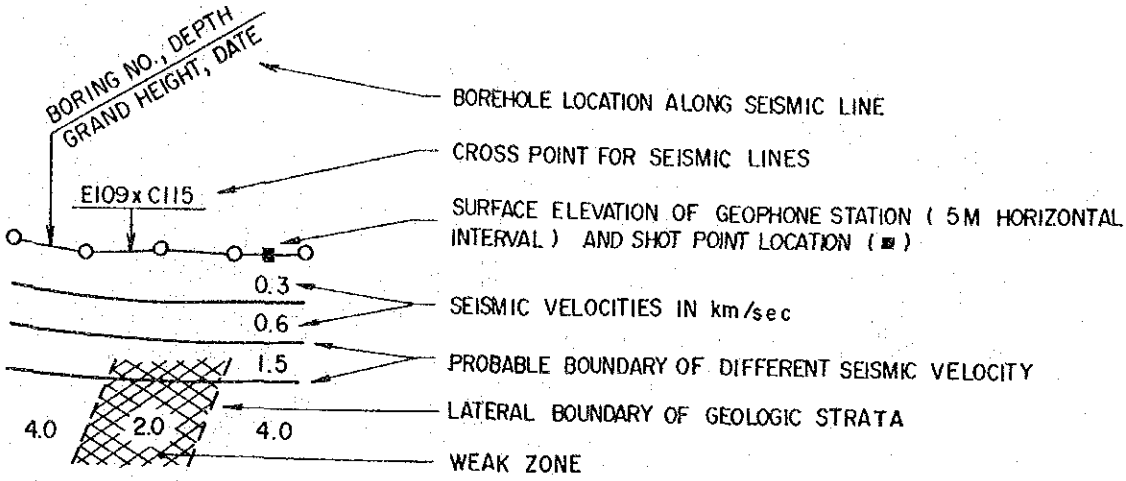
LOG FORM-A

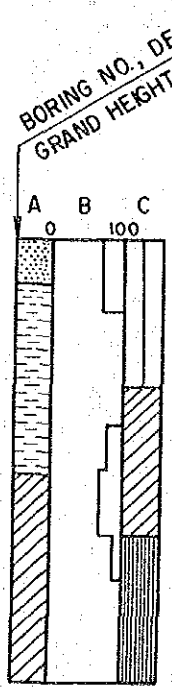
APPENDIX B

SEISMIC EXPLORATION

LIST OF FIGURES

LEGEND





A. ROCK

- RESIDUAL SOIL ALLUVIAL DEPOSIT
- SHALE
- SHALE AND SANDSTONE ALTERNATION
- SANDSTONE
- INTENSIVELY WEATHERED
- MODERATELY WEATHERED
- GRITTY SANDSTONE CONGLOMERATE
- WATER TABLE IN BOREHOLE

B. ROCK QUALITY DESIGNATION (%)

D. CORE RECOVERY (%)

C. PERMEABILITY IN LUGEON UNIT (Lu)

- $5 \geq Lu$
- $20 \geq Lu > 5$
- $40 \geq Lu > 20$
- $100 \geq Lu > 40$
- $Lu \geq 100$

Fig.B-1 Legend for Seismic Exploration Results

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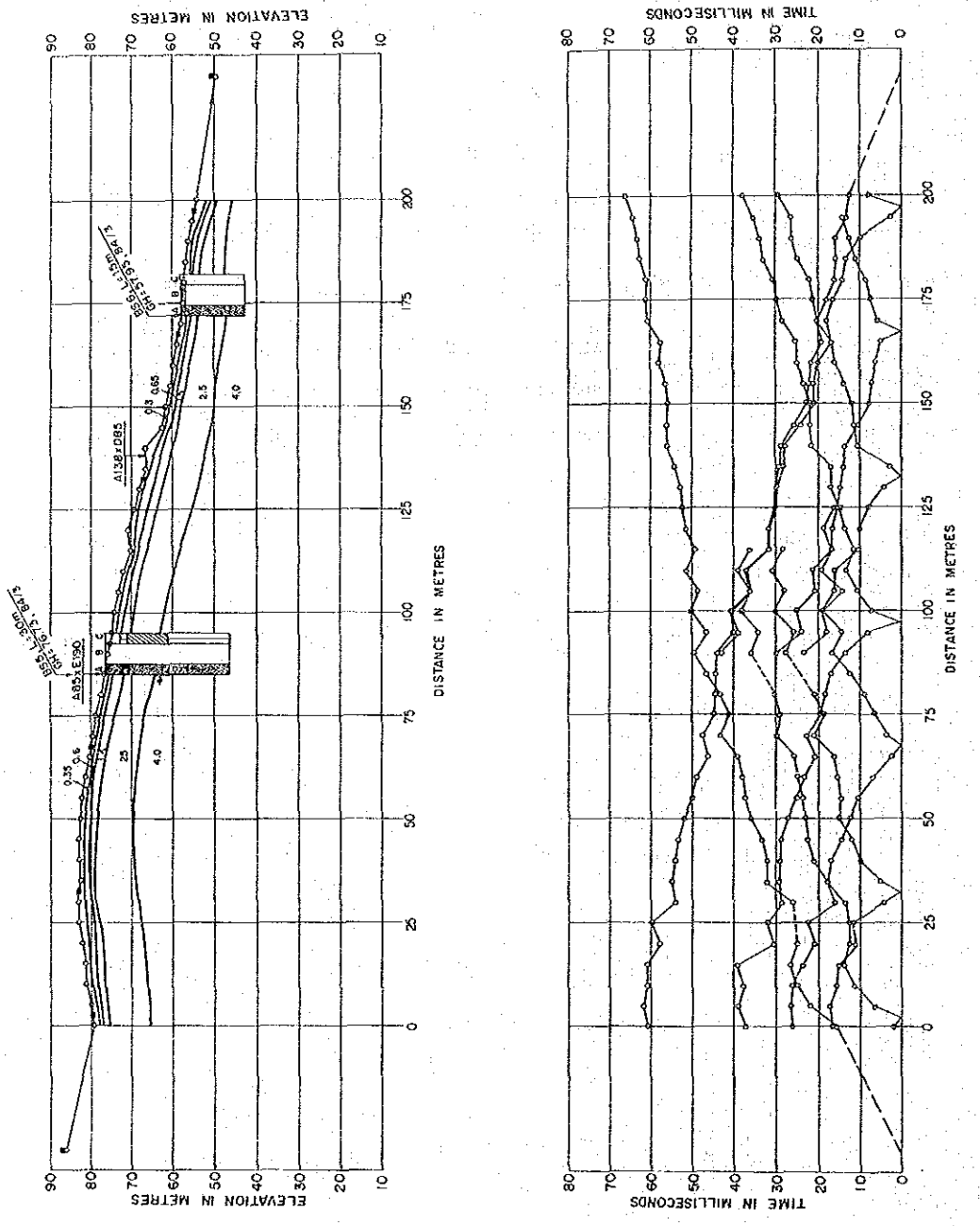

Fig.B-2 Seismic Exploration Results, Main Dam - Line A

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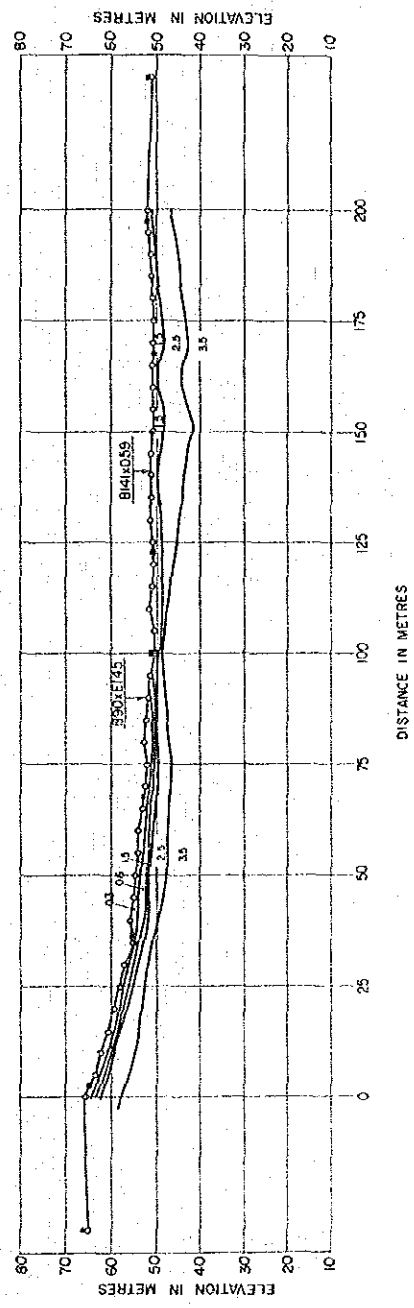

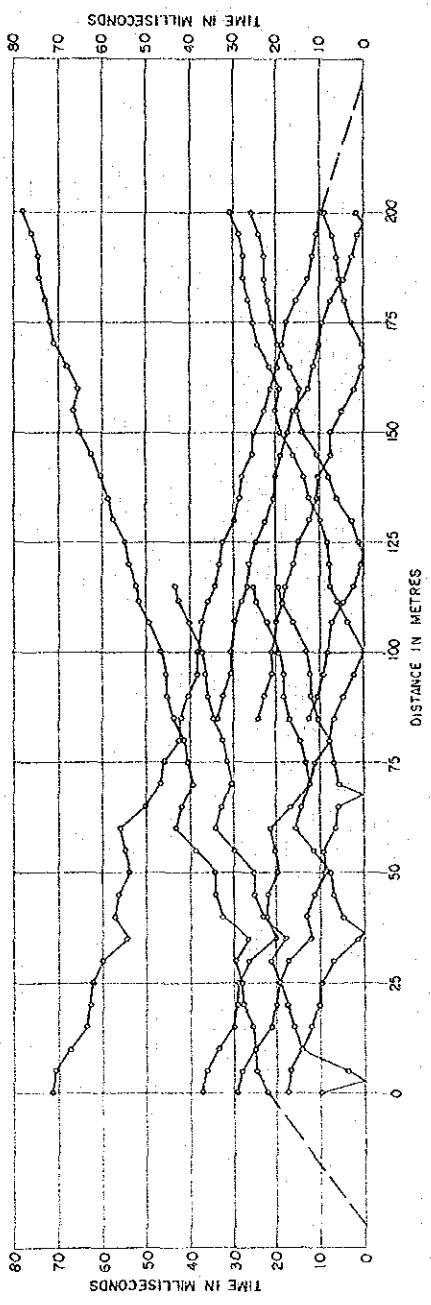

Fig.B-3 Seismic Exploration Results, Main Dam - Line B

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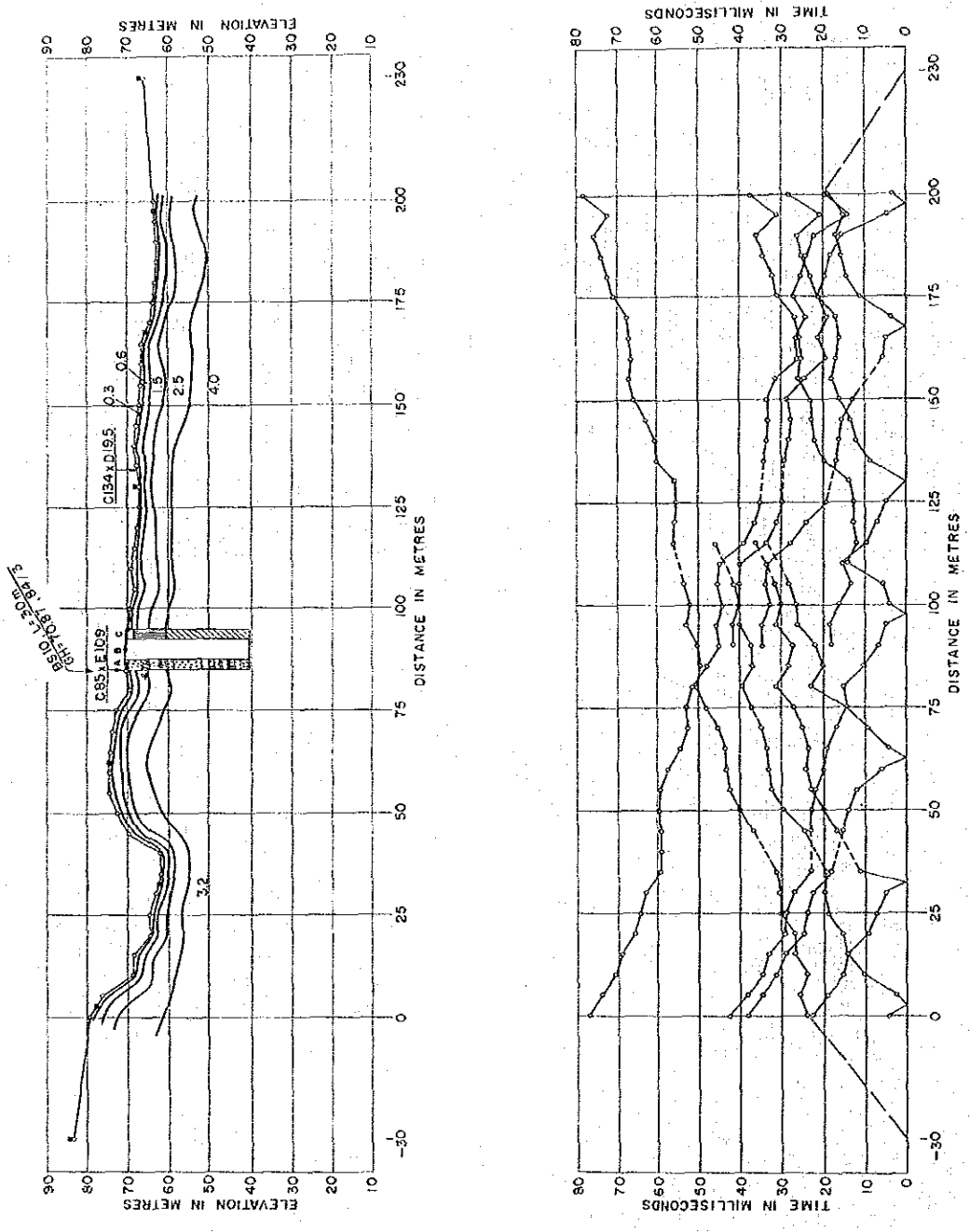

Fig.B-4 Seismic Exploration Results, Main Dam - Line C

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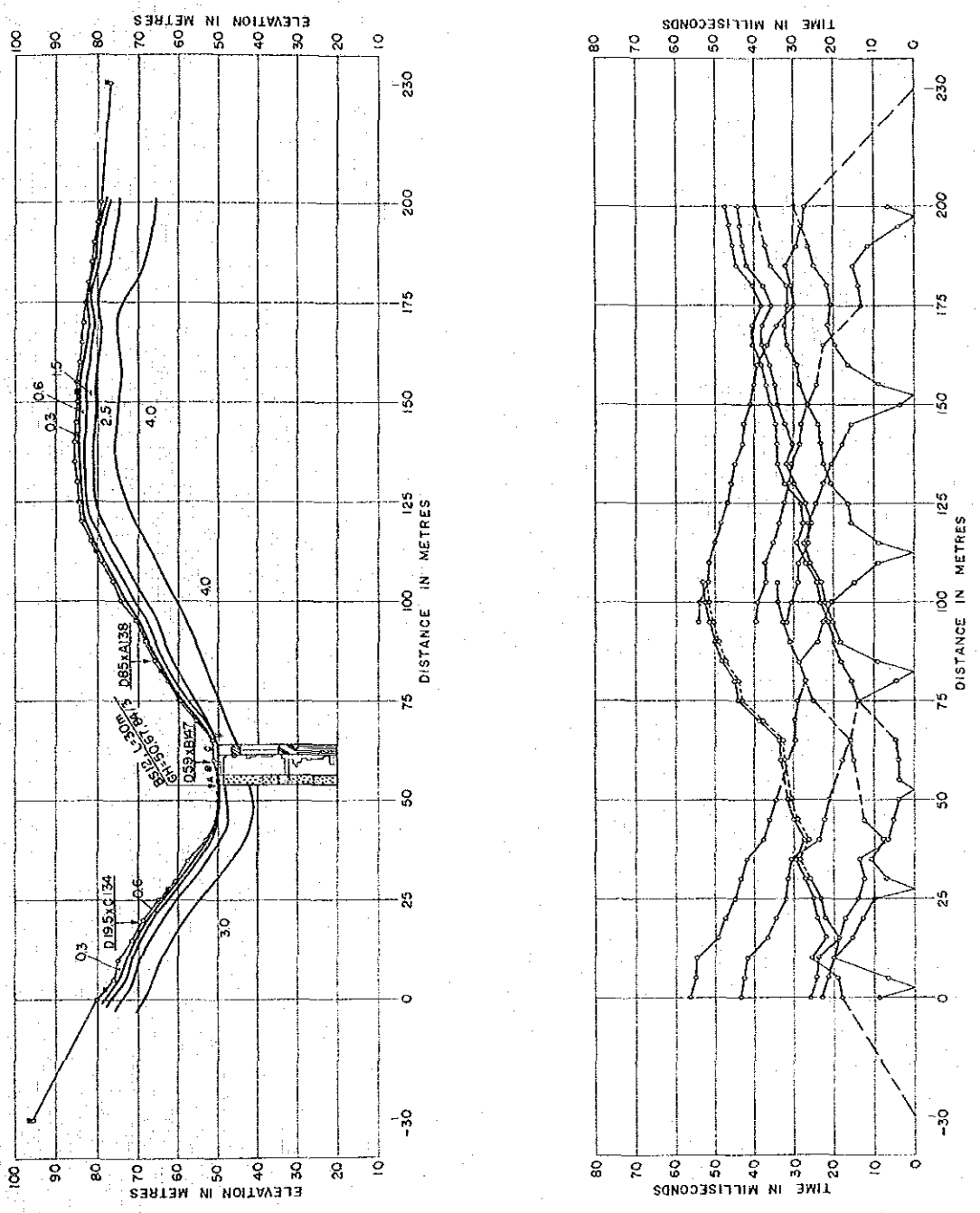

Fig.B-5 Seismic Exploration Results, Main Dam - Line D

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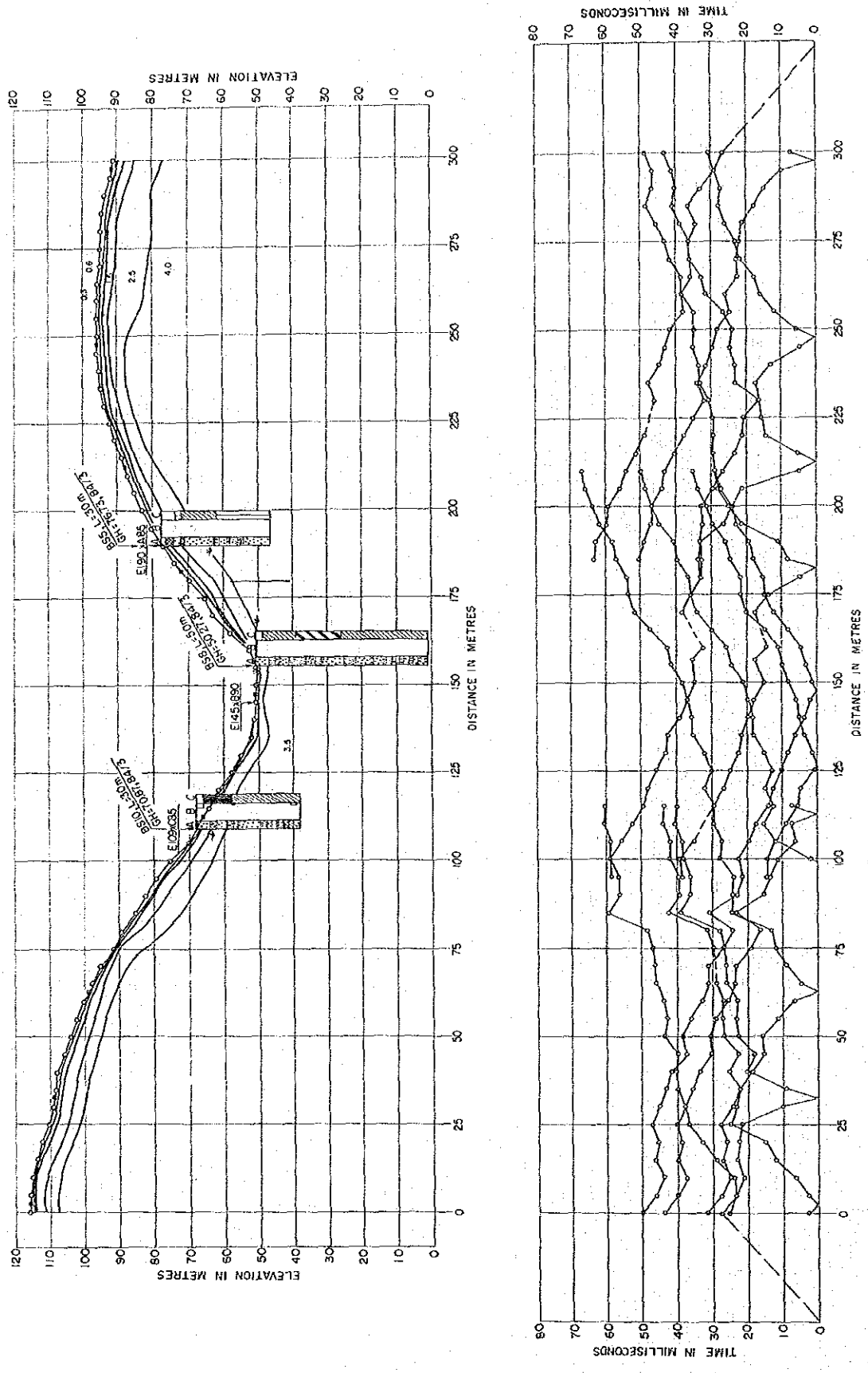

Fig.B-6 Seismic Exploration Results, Main Dam - Line E

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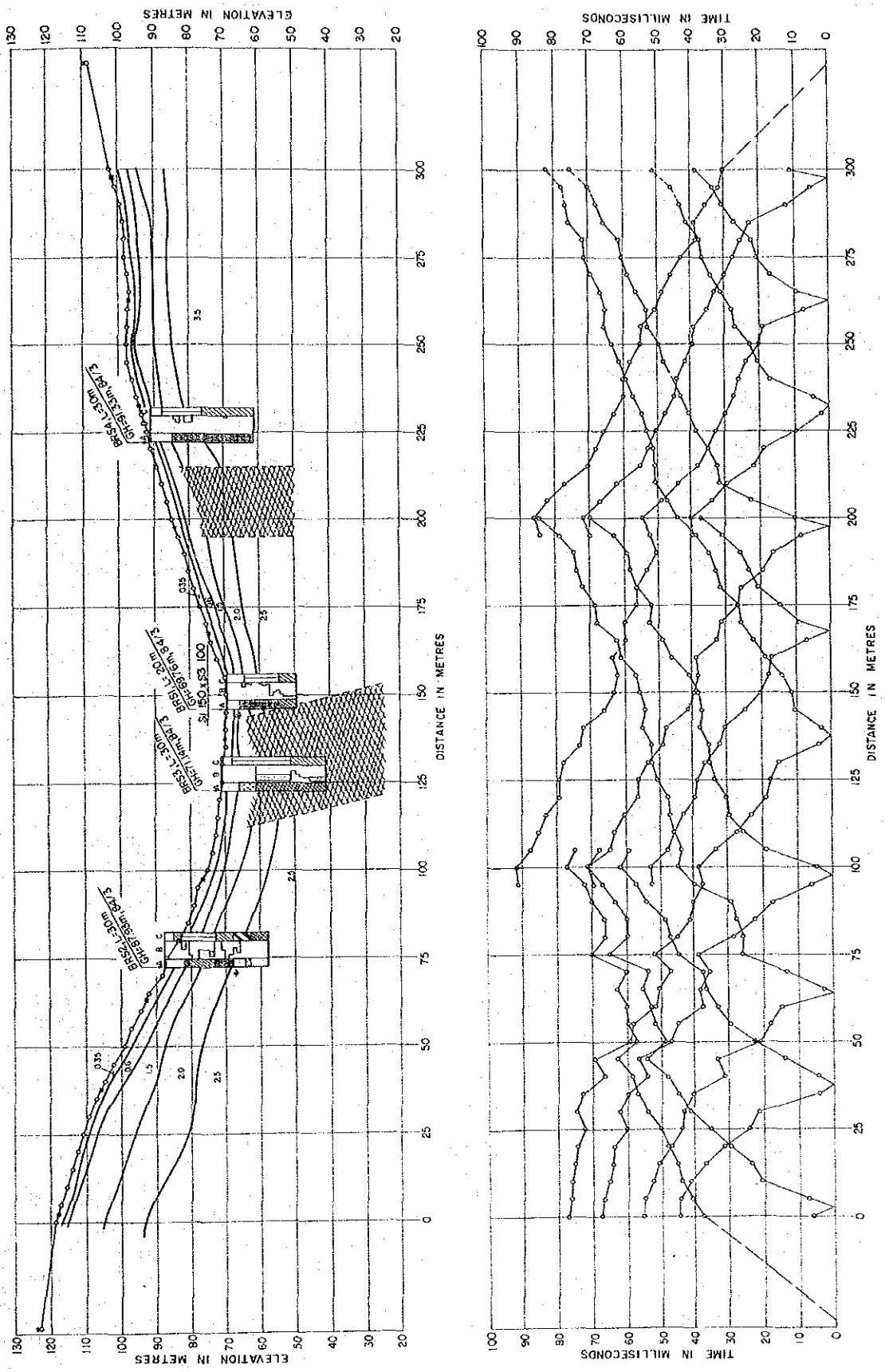

Fig.B-7 Seismic Exploration Results, Saddle Dam - Line S1

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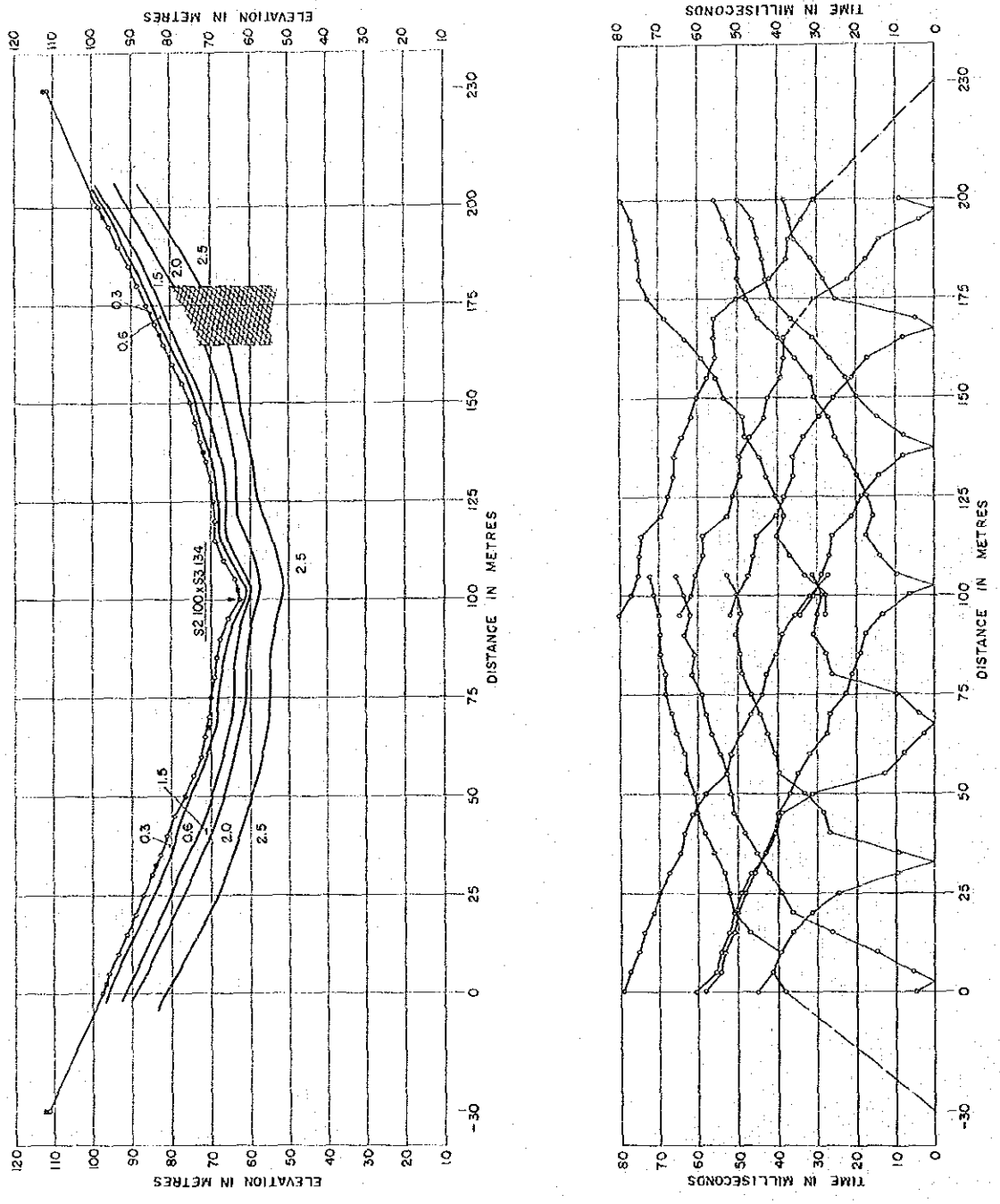

Fig.B-8 Seismic Exploration Results, Saddle Dam - Line S2

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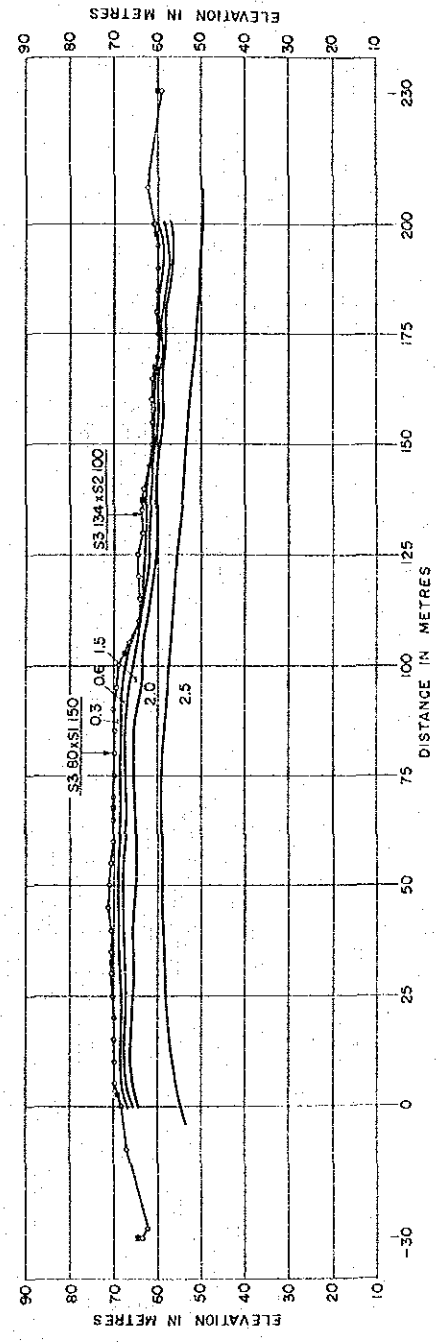

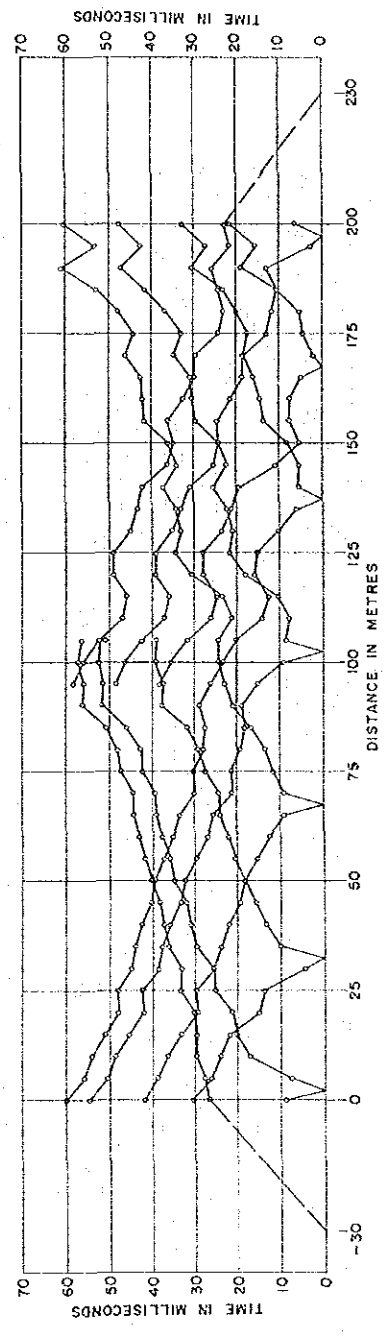

Fig.B-9 Seismic Exploration Results, Saddle Dam - Line S3

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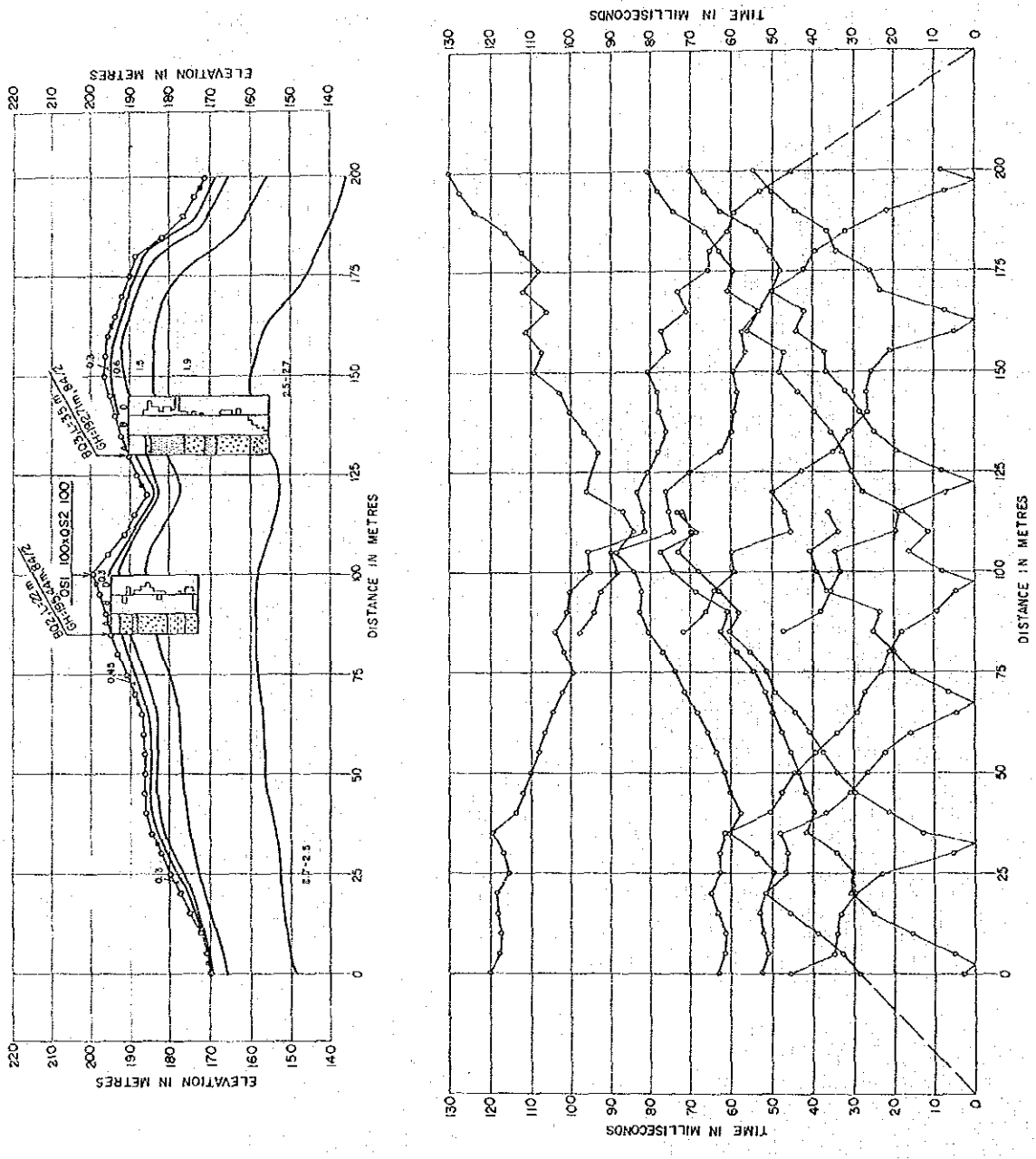

Fig.B-10 Seismic Exploration Results, Quarry Site 1-Line QS1

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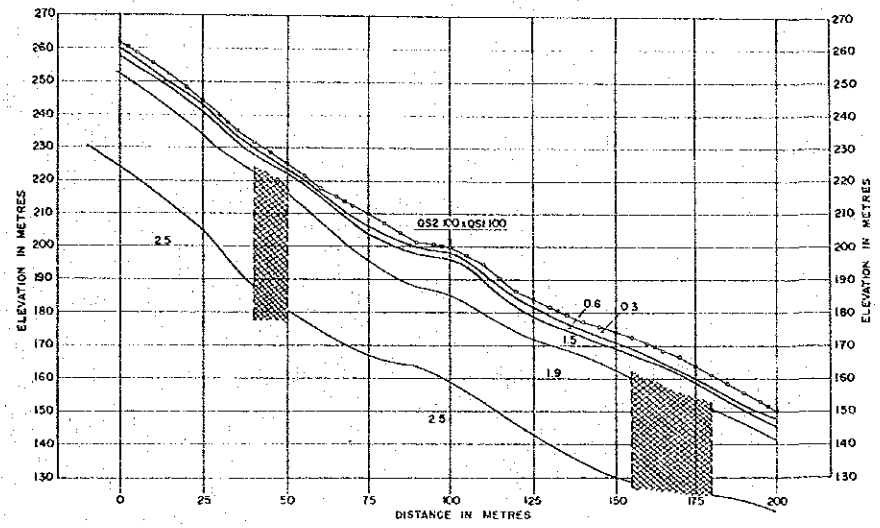

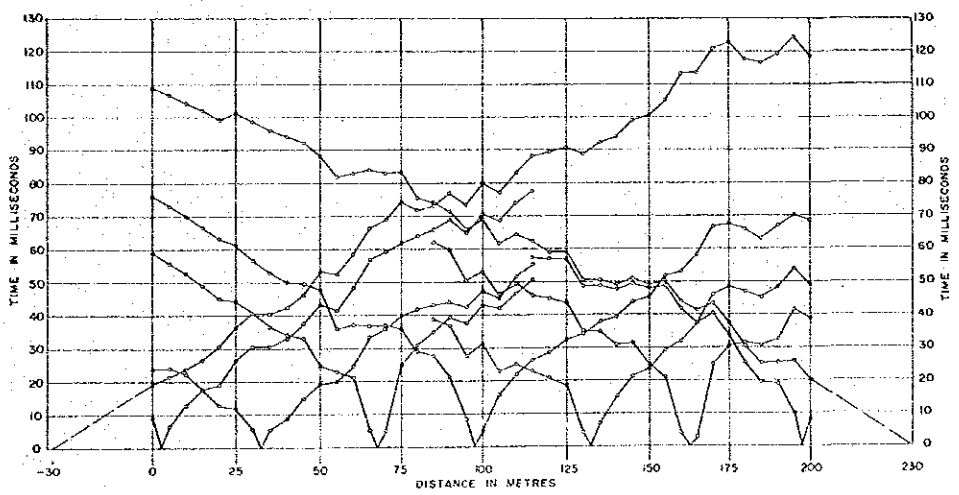

Fig.B-11 Seismic Exploration Results, Quarry Site 1 – Line QS2

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