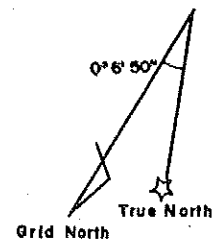
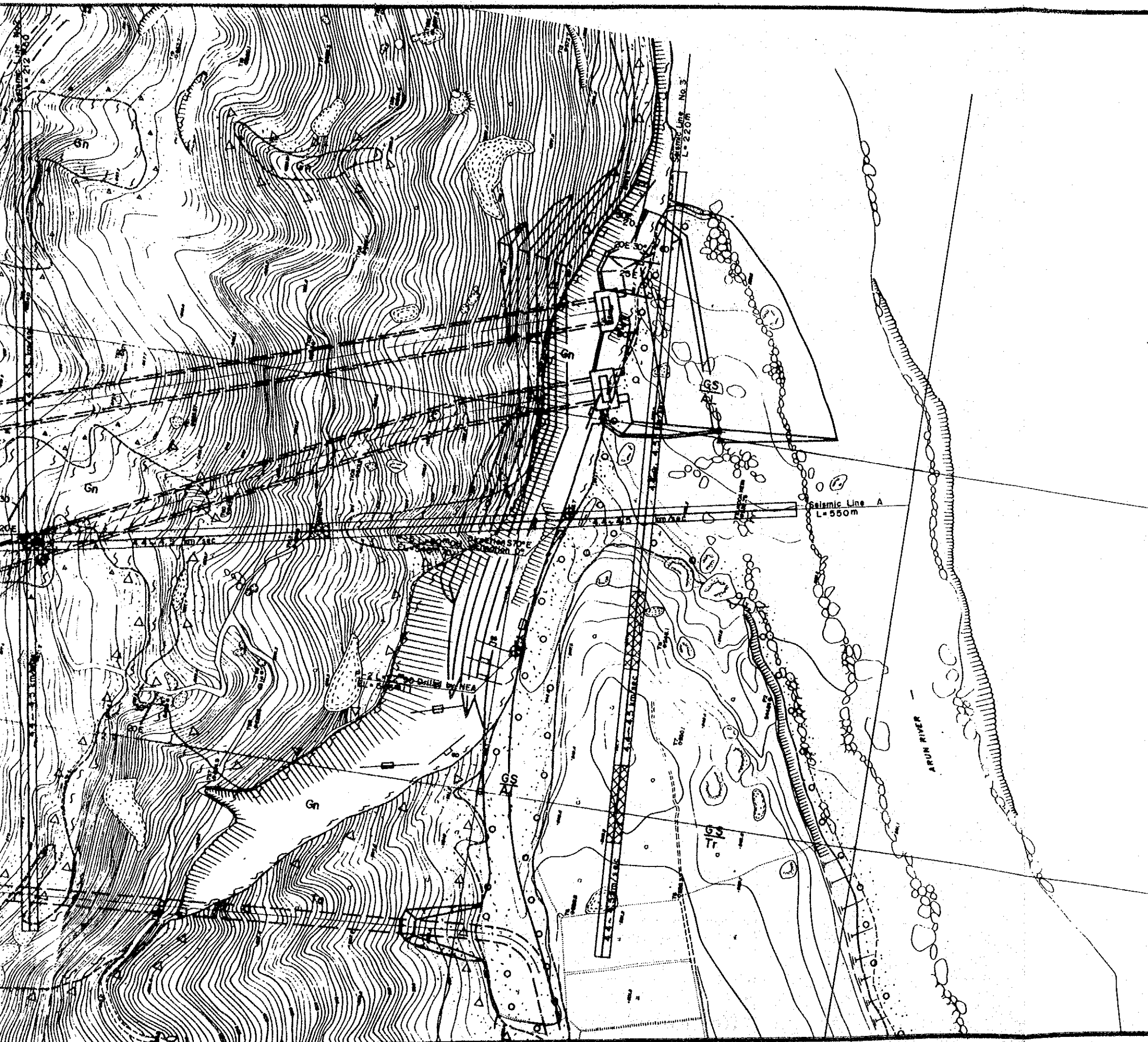


Seismic Line No. 3
L=220m

Seismic Line A
L=550m

Dotted by NEA

ARUN RIVER



Legend.

	Alluvium river deposit, Sand / Gravel.
	Terrace deposit, - do -
	Talus deposit, Sand/Clay with debris, -include huge stone.
	Augengneiss with thin mica schist.
	Granite fine grained and gneissosed.
	Amphibolite.
	Bedding, Gneissose structure.
	Joint.
	Drilling point.

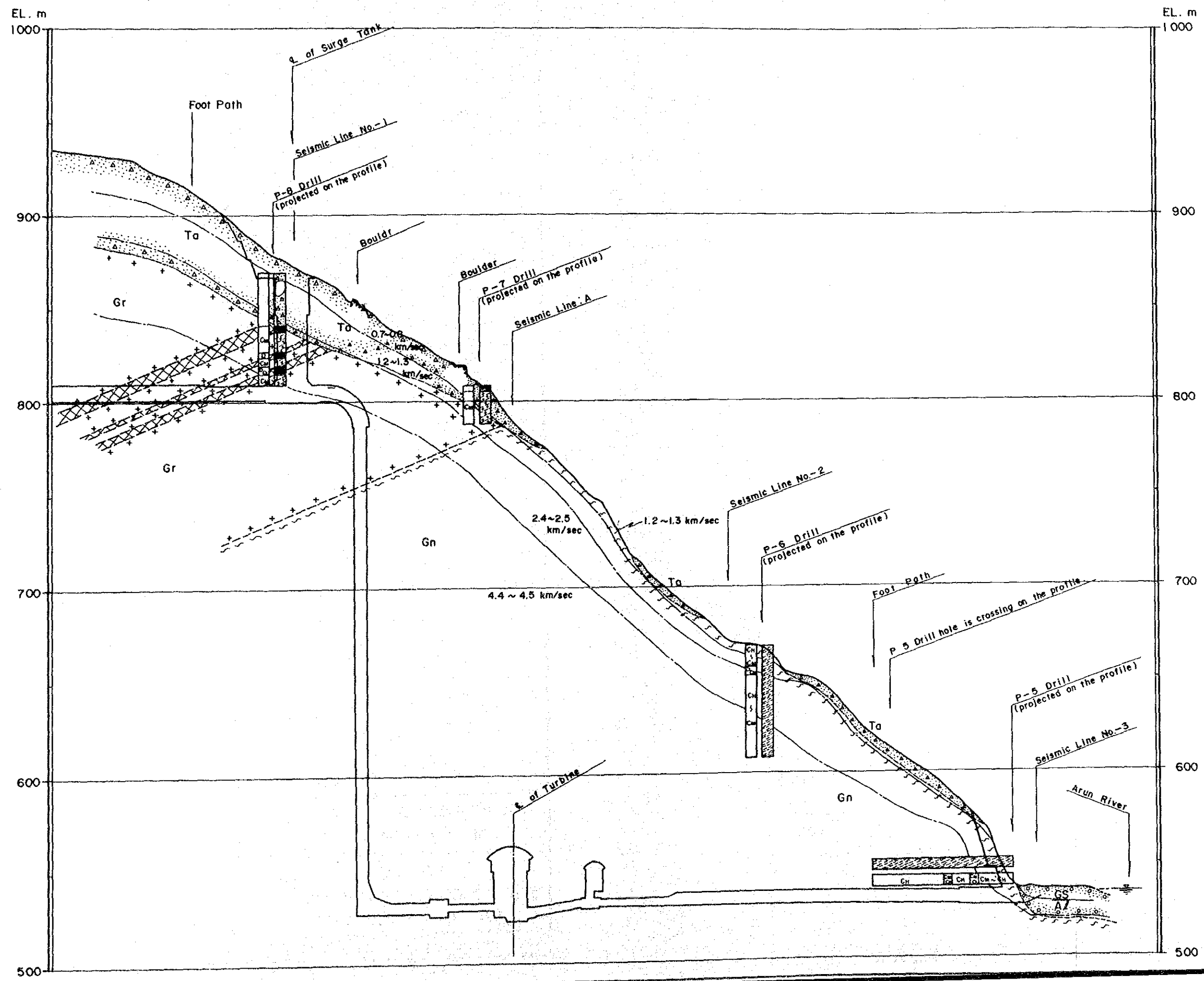
Seismic Line No. Length.
 P-wave velocity in basement layer.
 Low velocity layer in basement layer.
 Geological boundary.



ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

GEOLOGY
PIKHUWA POWERHOUSE SITE
PLAN

DWG-G-7 Date JUNE 1987



Legend

- : (GS), Alluvium deposit, Sand/Gr
- : (Ta), Talus deposit, Sand Clay include hug
- : (Gn), Augengneiss with thin mic
- : (Gr), Granite, fine grained and
- : Sheared zone and or strongly wea zone.
- : Assumed geological boundary.

Drilling data

- ① Drilling No. and Length.
- ② Elevation of drilling hole.
- ③ Rock quality classification
- ④ Geological symbol.
- ⑤ Underground water level.
- ⑥ Strongly weathered part sheared zone.

Seismic data

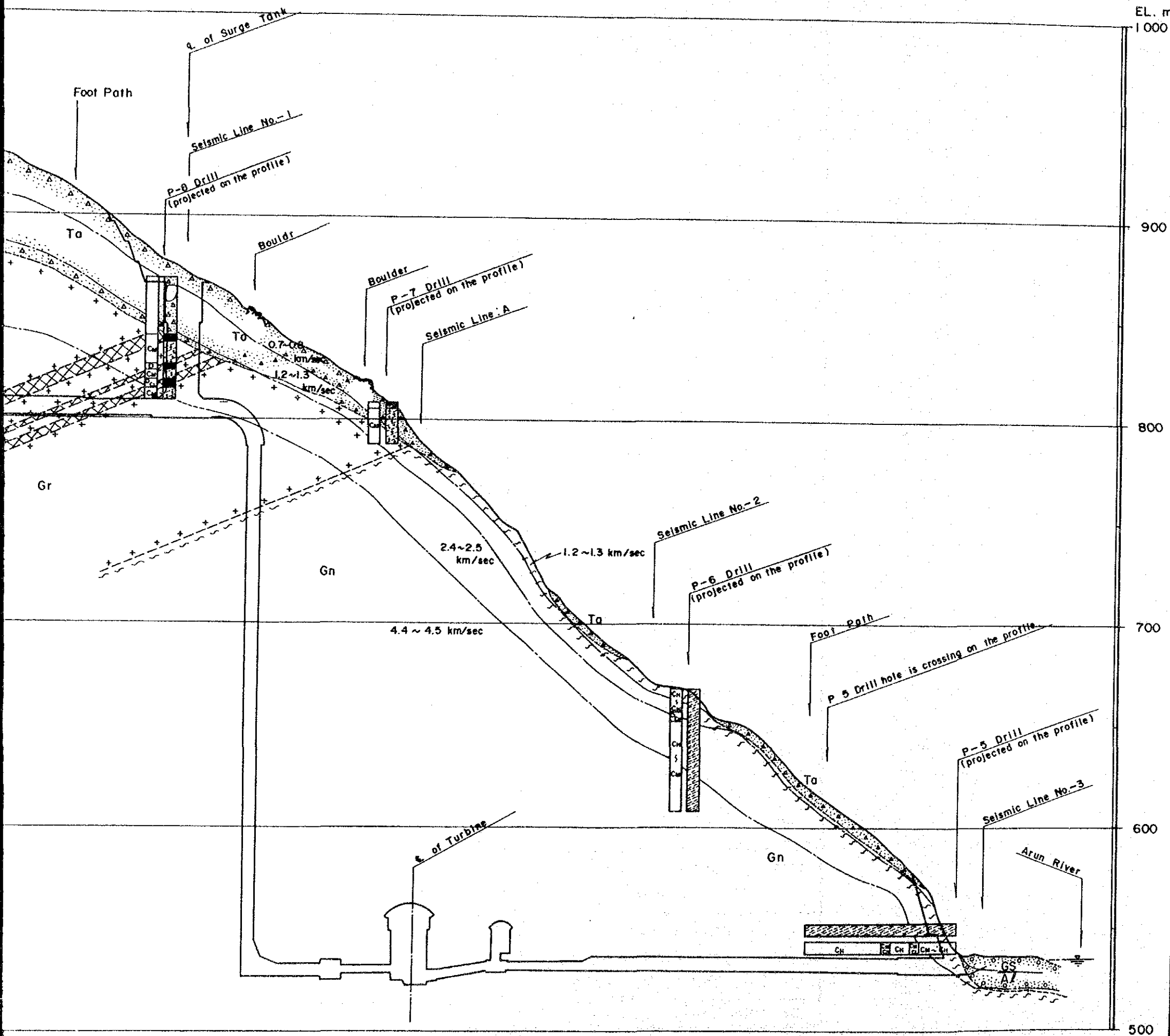
- (Ground surface)
- 0.6 ~ 0.8 km/sec : 1st velocity layer
- 1.2 ~ 1.3 km/sec : 2nd velocity layer
- 2.3 ~ 2.5 km/sec : 3rd velocity layer
- 4.4 ~ 4.5 km/sec : 4th velocity layer base layer

: Scheme of underground excavation.

ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

GEOLOGY
PIKHUWA POWERHOUSE
PROFILE

DWG. G-8 Date JUNE



EL. m
1000
900
800
700
600
500

Legend

- (GS) Alluvium deposit, Sand/Gravel
- (Ta) Talus deposit, Sand Clay with debris, include huge stone.
- (Gn) Augengneiss with thin mica schist.
- (Gr) Granite, fine grained and gneissoid.
- Sheared zone and or strongly weathered zone.
- Assumed geological boundary.

Drilling data

- ① Drilling No. and Length.
- ② Elevation of drilling hole.
- ③ Rock quality classification.
- ④ Geological symbol.
- ⑤ Underground water level.
- ⑥ Strongly weathered part and/or sheared zone.

Seismic data

(Ground surface)

- 0.6 ~ 0.8 km/sec : 1st velocity layer
- 1.2 ~ 1.3 km/sec : 2nd velocity layer
- 2.3 ~ 2.5 km/sec : 3rd velocity layer
- 4.4 ~ 4.5 km/sec : 4th velocity layer basement layer.

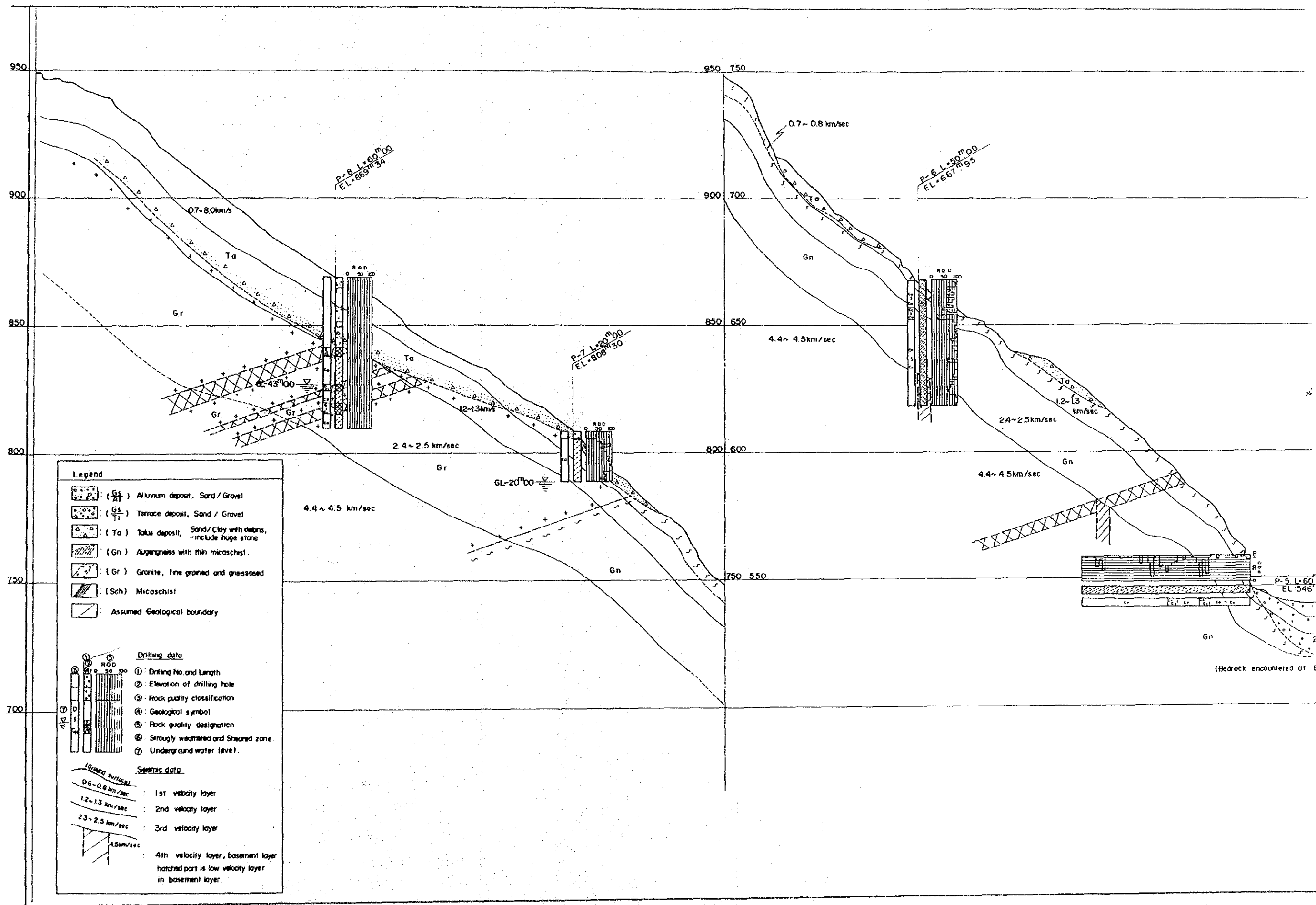
Scheme of underground excavation.

ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

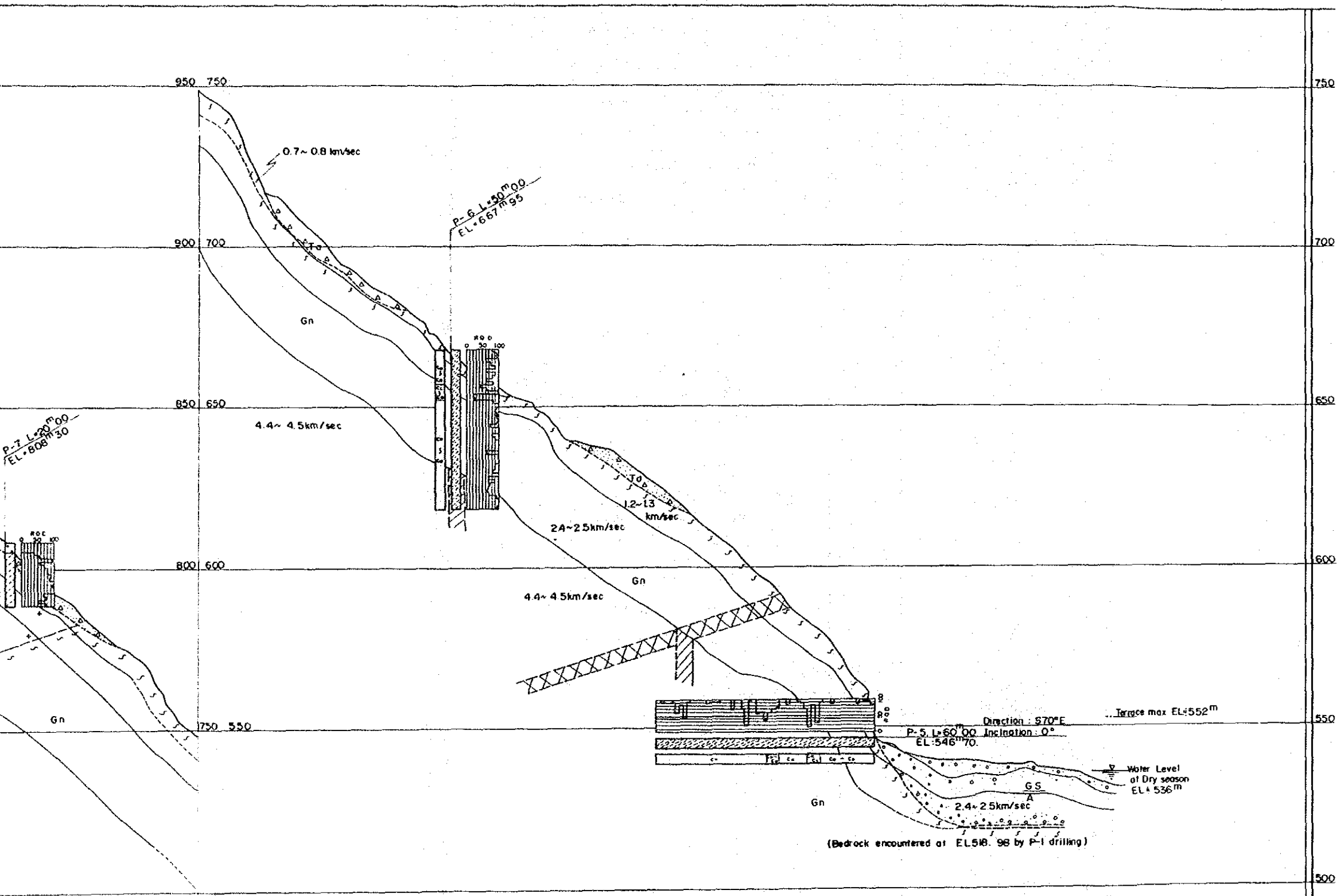
GEOLOGY
PIKHUWA POWERHOUSE SITE
PROFILE

DWG. G-8 Date JUNE 1987

Pikhuwa — A Line

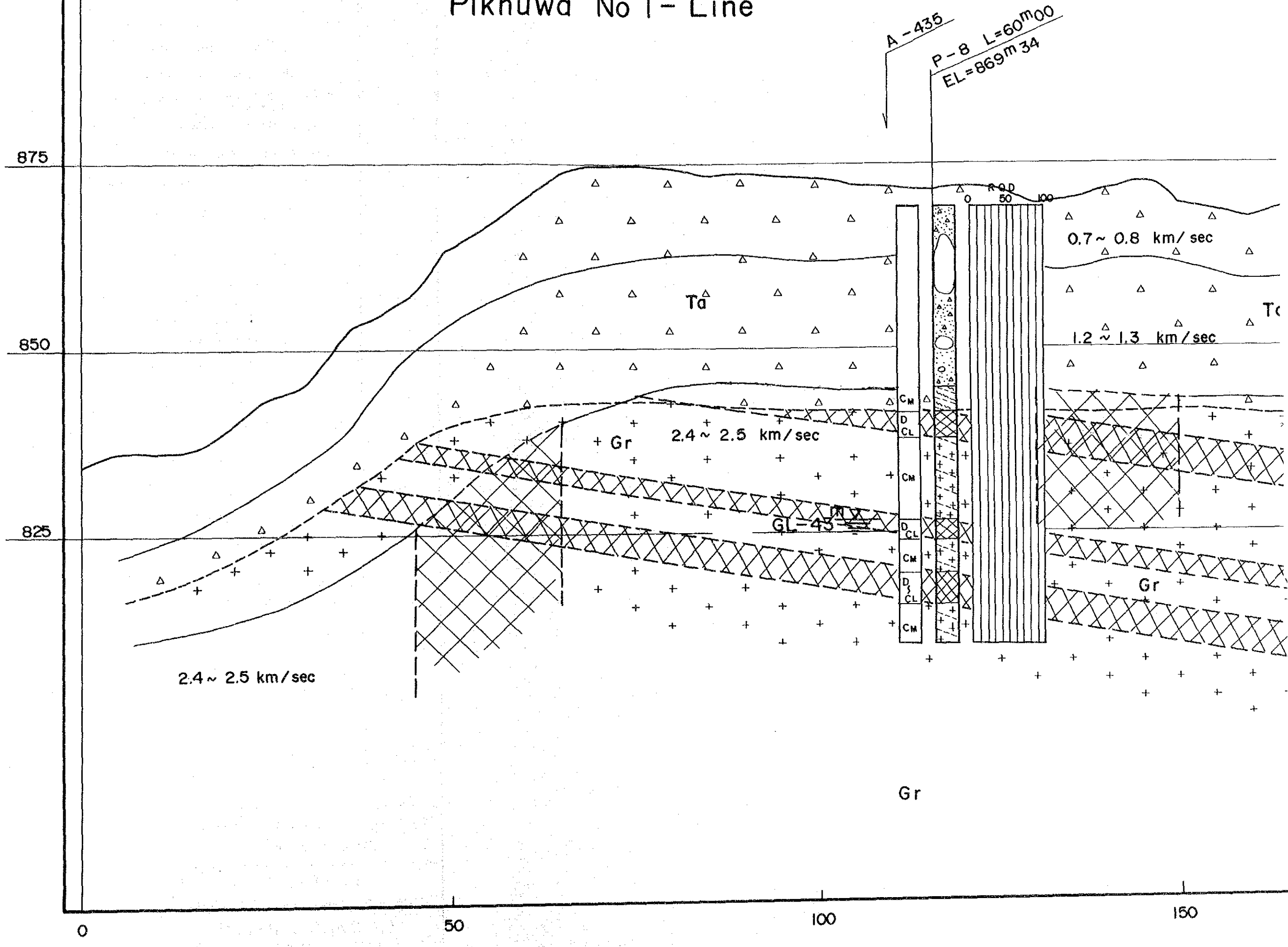


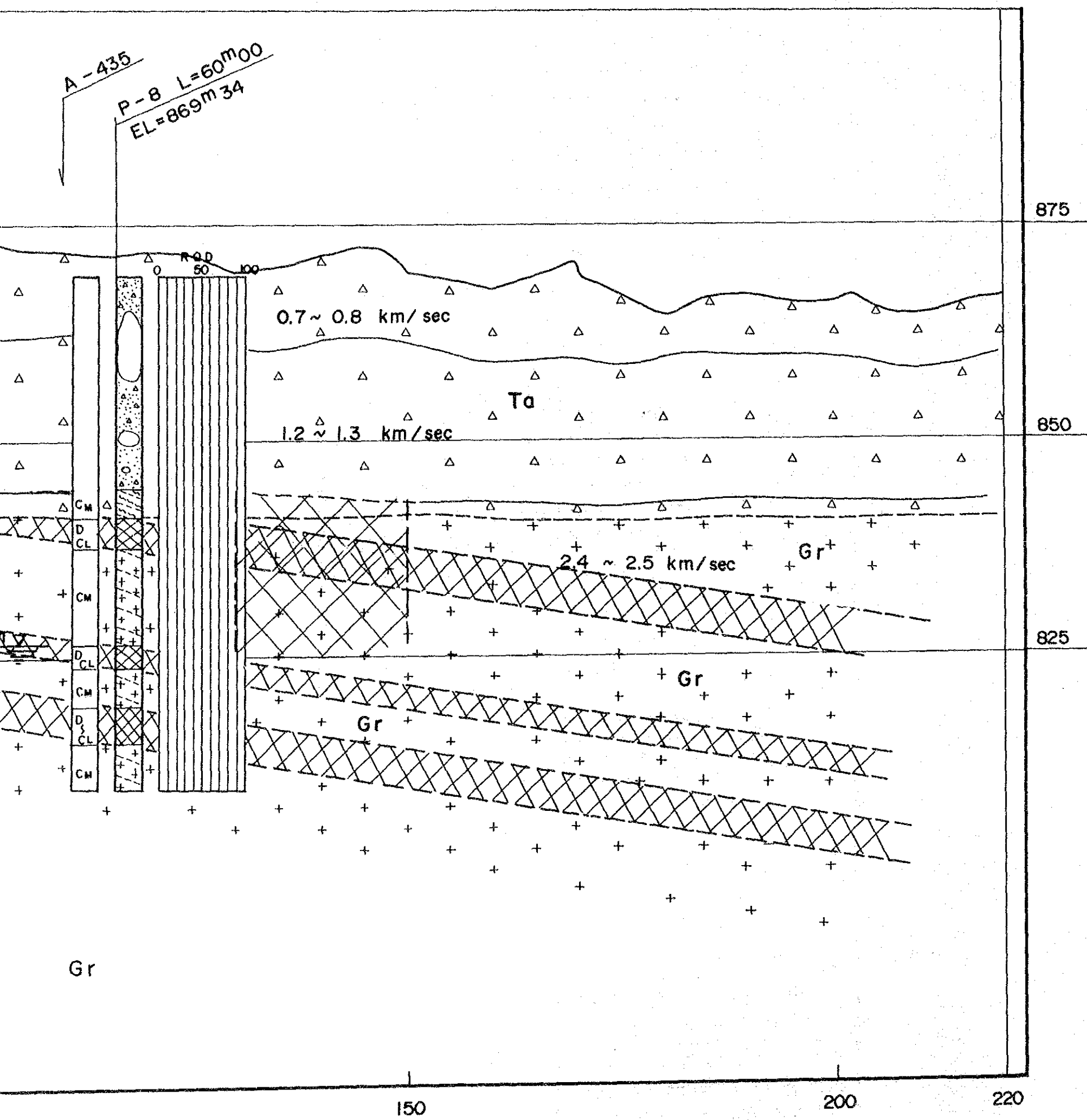
Pikhuwa — A Line



ARUN 3 HYDRO POWER PROJECT FEASIBILITY STUDY	
GEOLOGY PIKHUWA POWERHOUSE SITE PROFILE (LINE A)	
DWG. G - 9	Date JUNE 1987

Pikhuwa No 1 - Line





Legend

- : (Gs/Al), Alluvium deposit, Sand/Gravel.
- : (Gs/Tr), Terrace deposit, Sand/Gravel.
- : (Ta), Talus deposit, Sand/Clay with debris, -Include huge stone.
- : (Gn), Augengneiss with thin mica schist.
- : (Gr), Granite, fine grained and gneissosed
- : (Am), Amphibolite
- : Geological boundary

Drilling data

- ① : Drilling No. and Length.
- ② : Elevation of drilling hole
- ③ : Rock quality classification
- ④ : Geological symbol.
- ⑤ : Rock quality designation.
- ⑥ : Strongly weathered and/or sheared zone.
- ⑦ : Underground water table

Seismic data

(Ground surface)

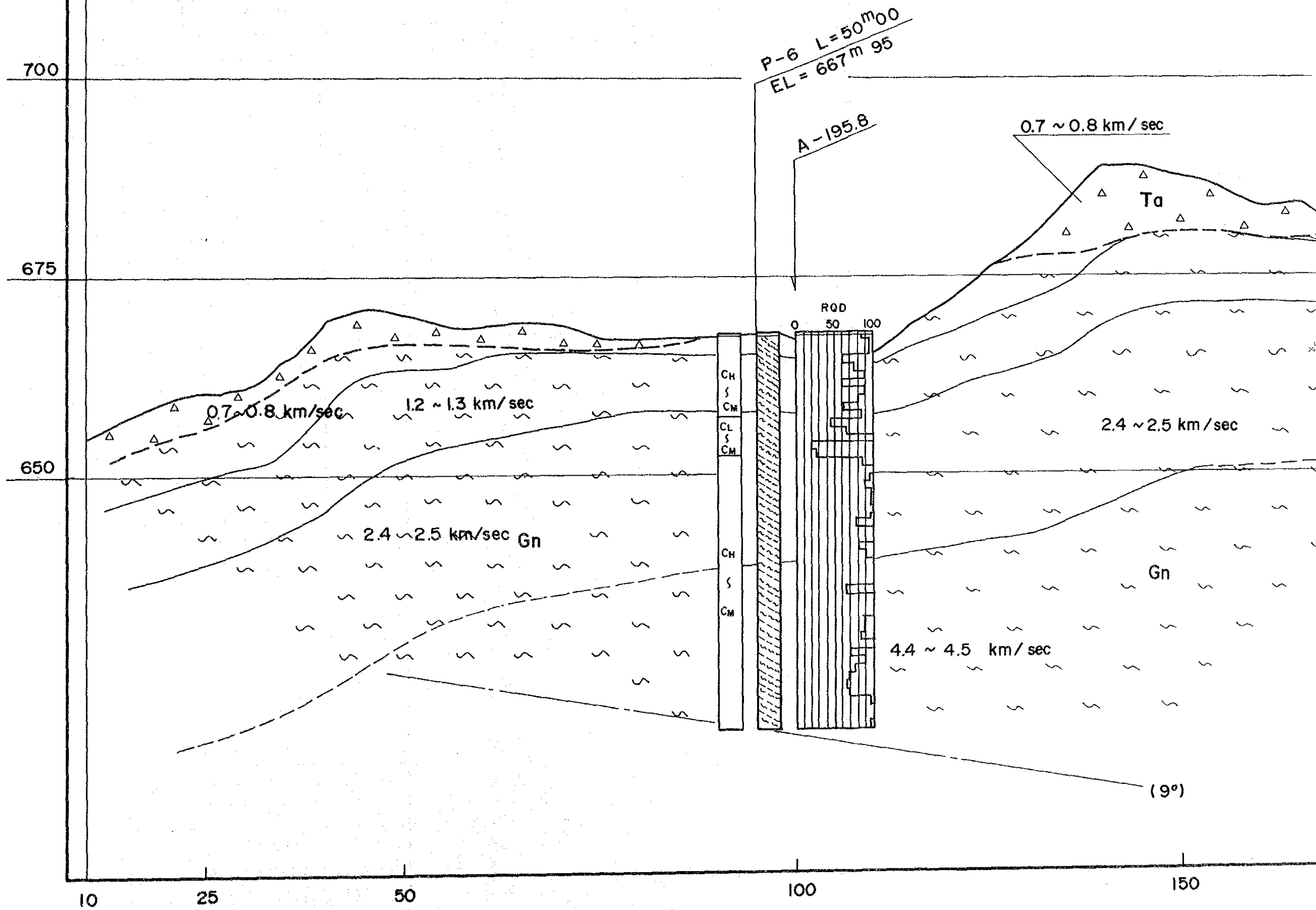
- 0.6 ~ 0.8 km/sec : 1st velocity layer
- 1.2 ~ 1.3 km/sec : 2nd velocity layer
- 2.3 ~ 2.5 km/sec : 3rd velocity layer
- 4.5 km/sec : 4th velocity layer basement layer
hatched part is low velocity layer in basement layer.

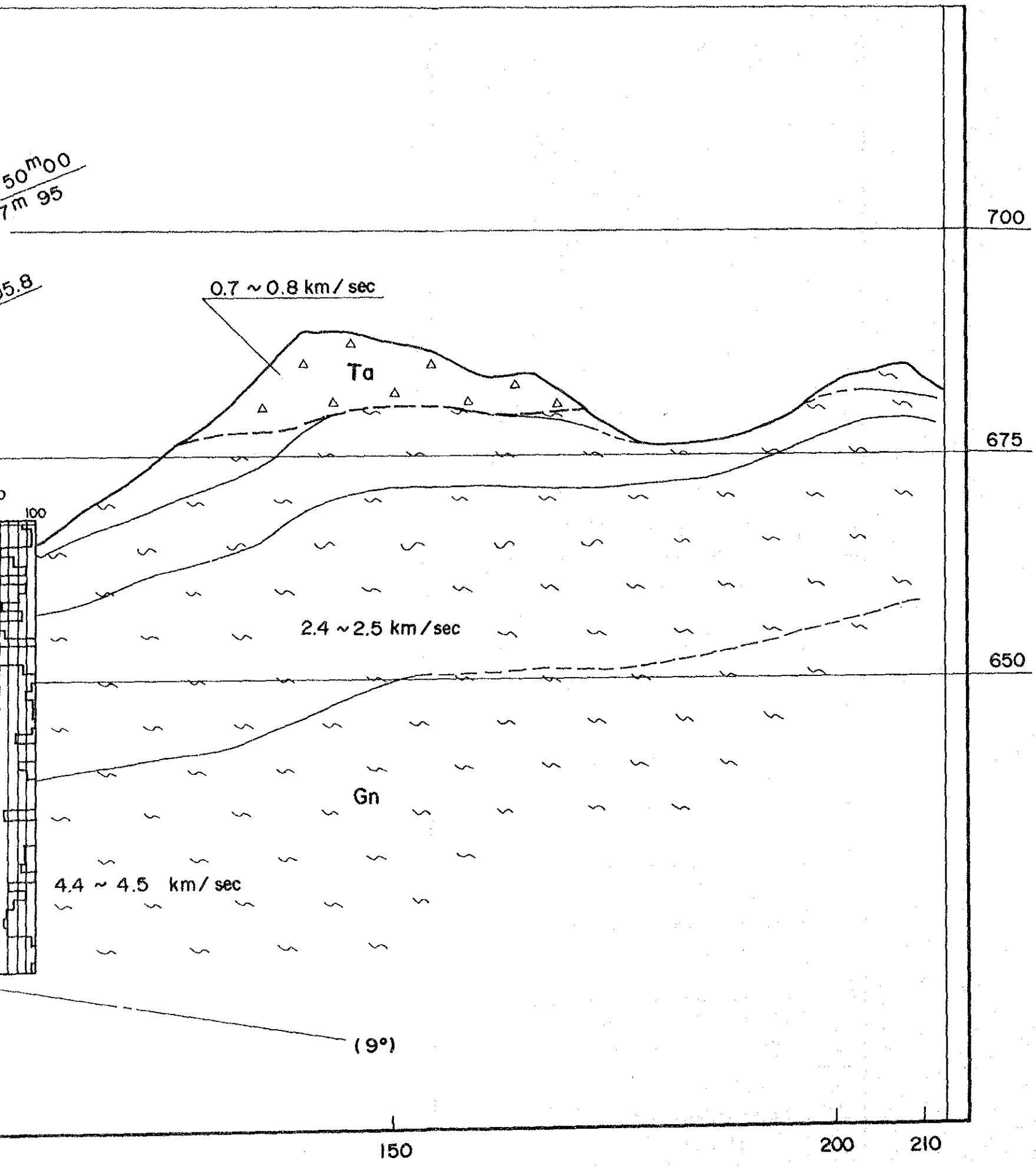
ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

GEOLOGY
PIKHUWA POWERHOUSE SITE
PROFILE (LINE 1)

DWG. G - 10 Date JUNE 1987

Pikhuwa No 2 - Line





Legend

- : (Gs / Ab), Alluvium deposit, Sand/Gravel.
- : (Gs / Tr), Terrace deposit, Sand/Gravel.
- : (Ta), Talus deposit, Sand/Clay with debris, -Include huge stone.
- : (Gn), Augengneiss with thin mica schist.
- : (Gr), Granite, fine grained and gneissosed.
- : (Am), Amphibolite.
- : Geological boundary.

Drilling data

- ①: Drilling No. and Length.
- ②: Elevation of drilling hole.
- ③: Rock quality classification.
- ④: Geological symbol.
- ⑤: Rock quality designation.
- ⑥: Strongly weathered part.

Seismic data

(Ground surface)

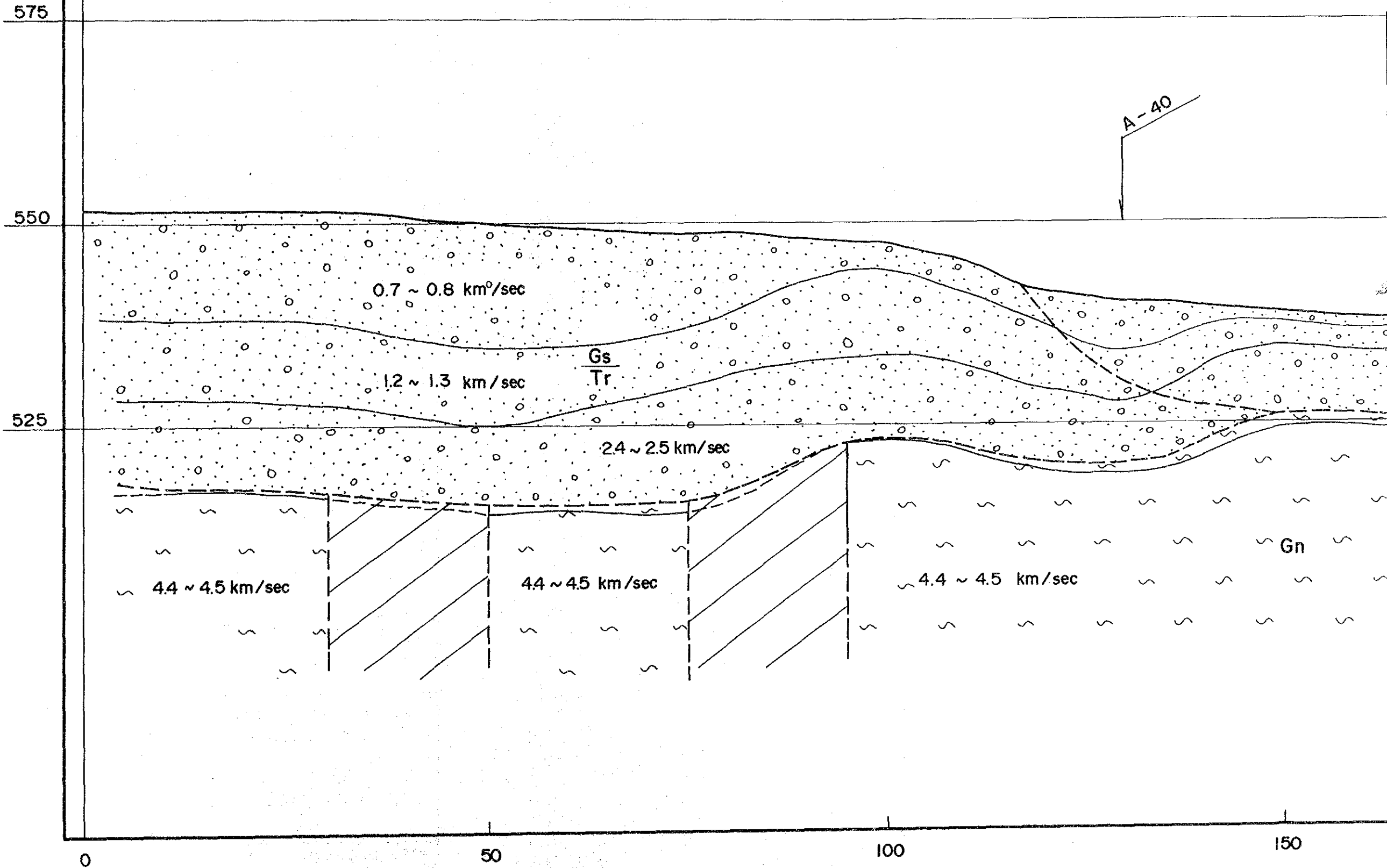
- 0.6 ~ 0.8 km/sec : 1st velocity layer
- 1.2 ~ 1.3 km/sec : 2nd velocity layer
- 2.3 ~ 2.5 km/sec : 3rd velocity layer
- 4.5 km/sec : 4th velocity layer basement layer
hatched part is low velocity layer in basement layer.

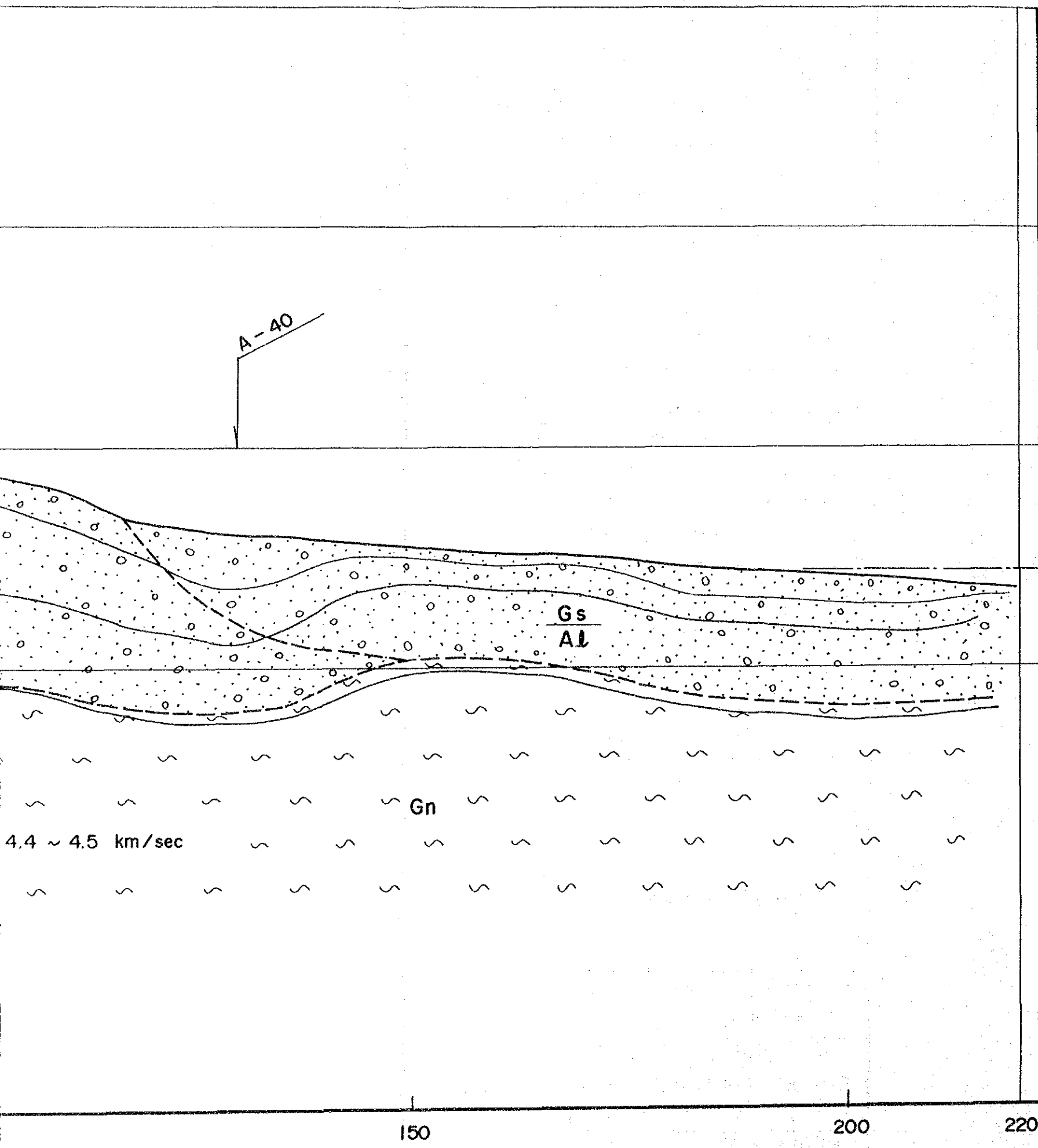
ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

GEOLOGY
PIKHUWA POWERHOUSE SITE
PROFILE (LINE 2)

DWG. G - 11 Date JUNE 1987

Pikhuwa No 3 - Line





Legend

- : (Gs/Al), Alluvium deposit, Sand/Gravel.
- : (Gs/Tr), Terrace deposit, Sand/Gravel.
- : (Ta), Talus deposit, Sand/Clay with debris, -include huge stone.
- : (Gn), Augengneiss with thin mica schist.
- : (Gr), Granite, fine grained and gneissosed.
- : (Am), Amphibolite.
- : Geological boundary

Drilling data

- ① : Drilling No. and Length.
- ② : Elevation of drilling hole
- ③ : Rock quality classification
- ④ : Geological symbol.
- ⑤ : Rock quality designation.
- ⑥ : Strongly weathered and/or sheared zone.

Seismic data

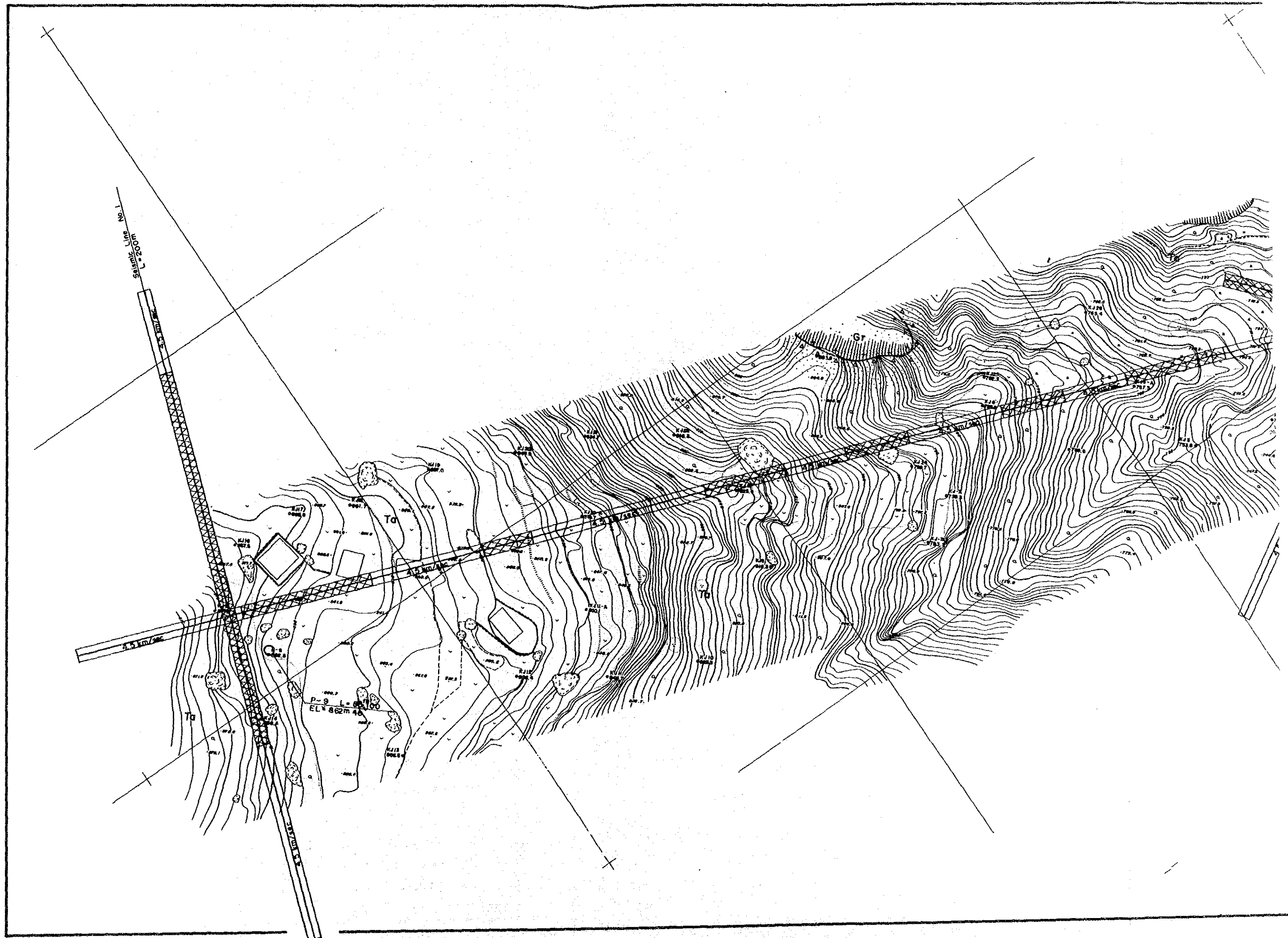
(Ground surface)

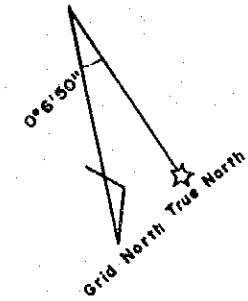
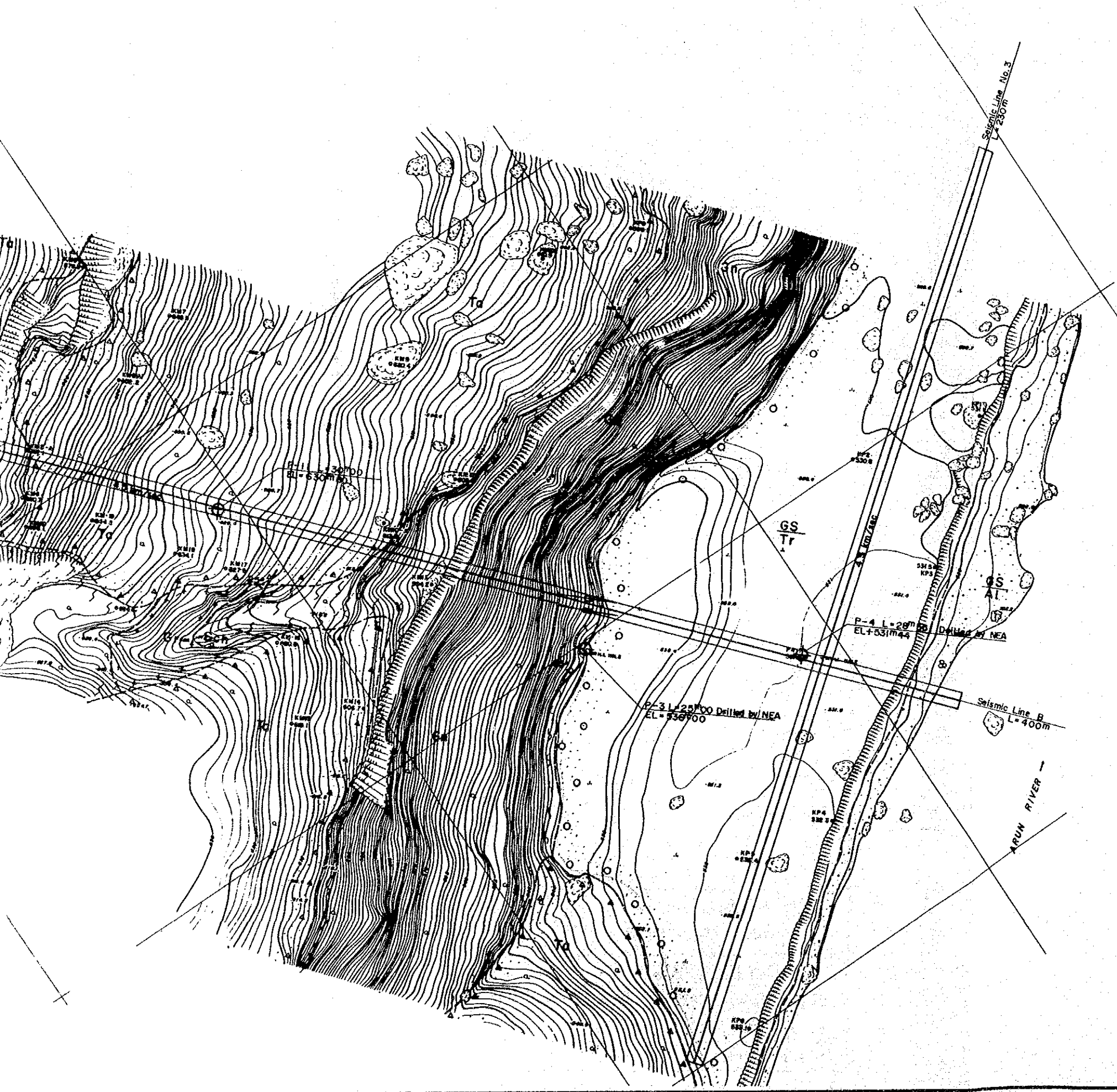
- 0.6 ~ 0.8 km/sec : 1st velocity layer
- 1.2 ~ 1.3 km/sec : 2nd velocity layer
- 2.3 ~ 2.5 km/sec : 3rd velocity layer
- 4.5 km/sec : 4th velocity layer basement layer
hatched part is low velocity layer in basement layer.

ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

GEOLOGY
PIKHUWA POWERHOUSE SITE
PROFILE (LINE 3)

DWG. G-12 | Date JUNE 1987





Legend.

	Alluvium river deposit, Sand / Gravel.
	Terrace deposit, - do -
	Talus deposit, Sand/Clay with debris, -include, huge stone.
	Augengneiss with thin mica schist.
	Granite fine grained and gneissoid.
	Amphibolite.
	Bedding, Gneissose structure.
	Joint.
	Drilling point.
	Seismic Line No. Length.
	P-wave velocity in basement layer
	Low velocity layer in basement layer.
	Geological boundary

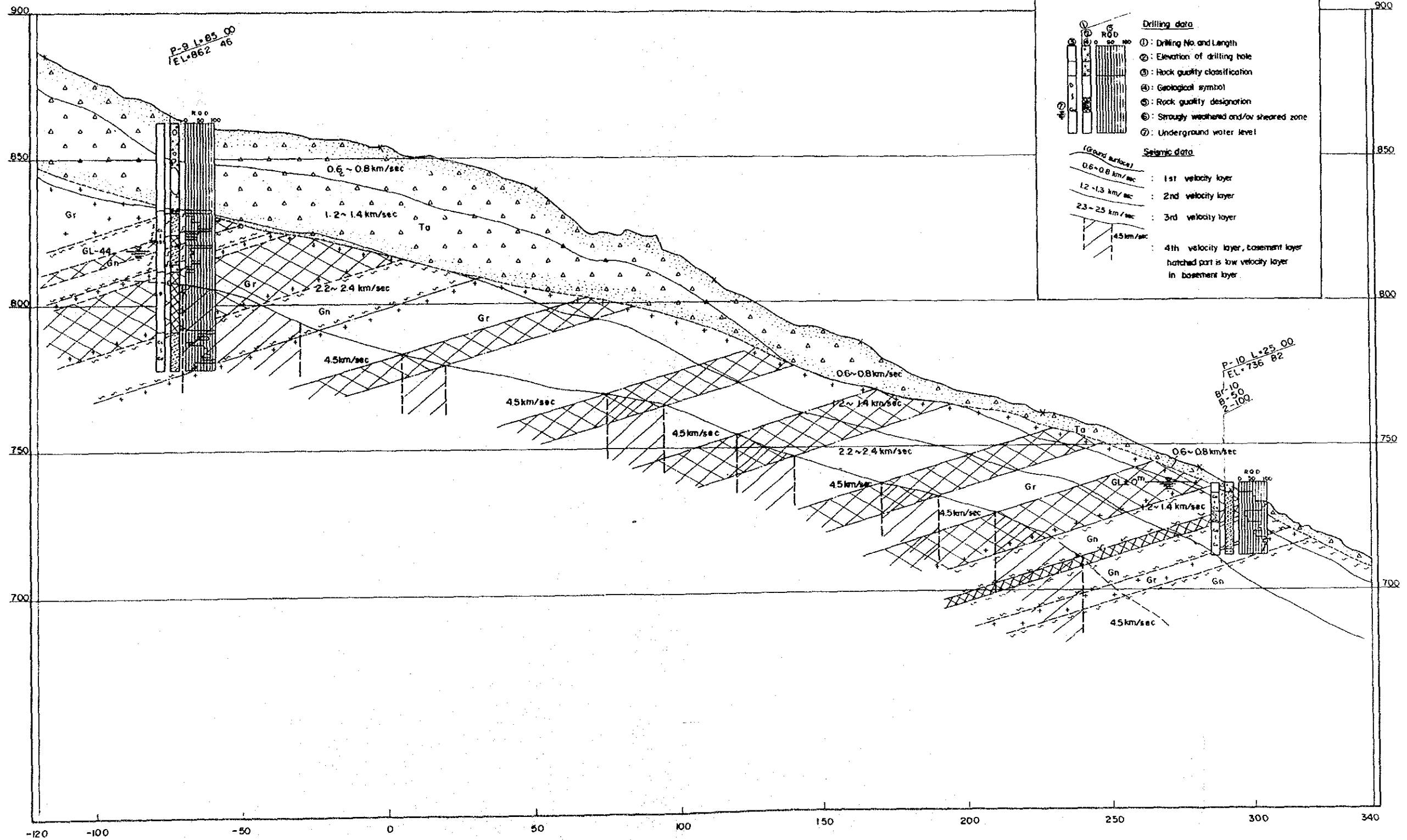


ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

GEOLOGY
KAGUWA POWERHOUSE SITE
PLAN

DWG. G - 13 Date JUNE 1987

Kaguwa A Line



Legend

- : (G_{AT}), Alluvium deposit, Sand / Gravel
- : (G_T), Terrace deposit, Sand / Gravel
- : (Ta), Taka deposit, Sand / Clay with debris, -include huge stone
- : (Gn), Augengraes with thin micaschist
- : (Gr), Granite, fine grained and gneissoid
- : (Am), Amphibolite
- : Geological boundary

Drilling data

- : Drilling No. and Length
- : Elevation of drilling hole
- : Rock quality classification
- : Geological symbol
- : Rock quality designation
- : Strongly weathered and/or sheared zone
- : Underground water level

Seismic data

(Ground surface)

- : 0.6-0.8 km/sec : 1st velocity layer
- : 1.2-1.4 km/sec : 2nd velocity layer
- : 2.2-2.4 km/sec : 3rd velocity layer
- : 4.5 km/sec : 4th velocity layer, basement layer

hatched part is low velocity layer in basement layer

ARUN 3 I.
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DWG-G-1

Kaguwa A Line

Legend

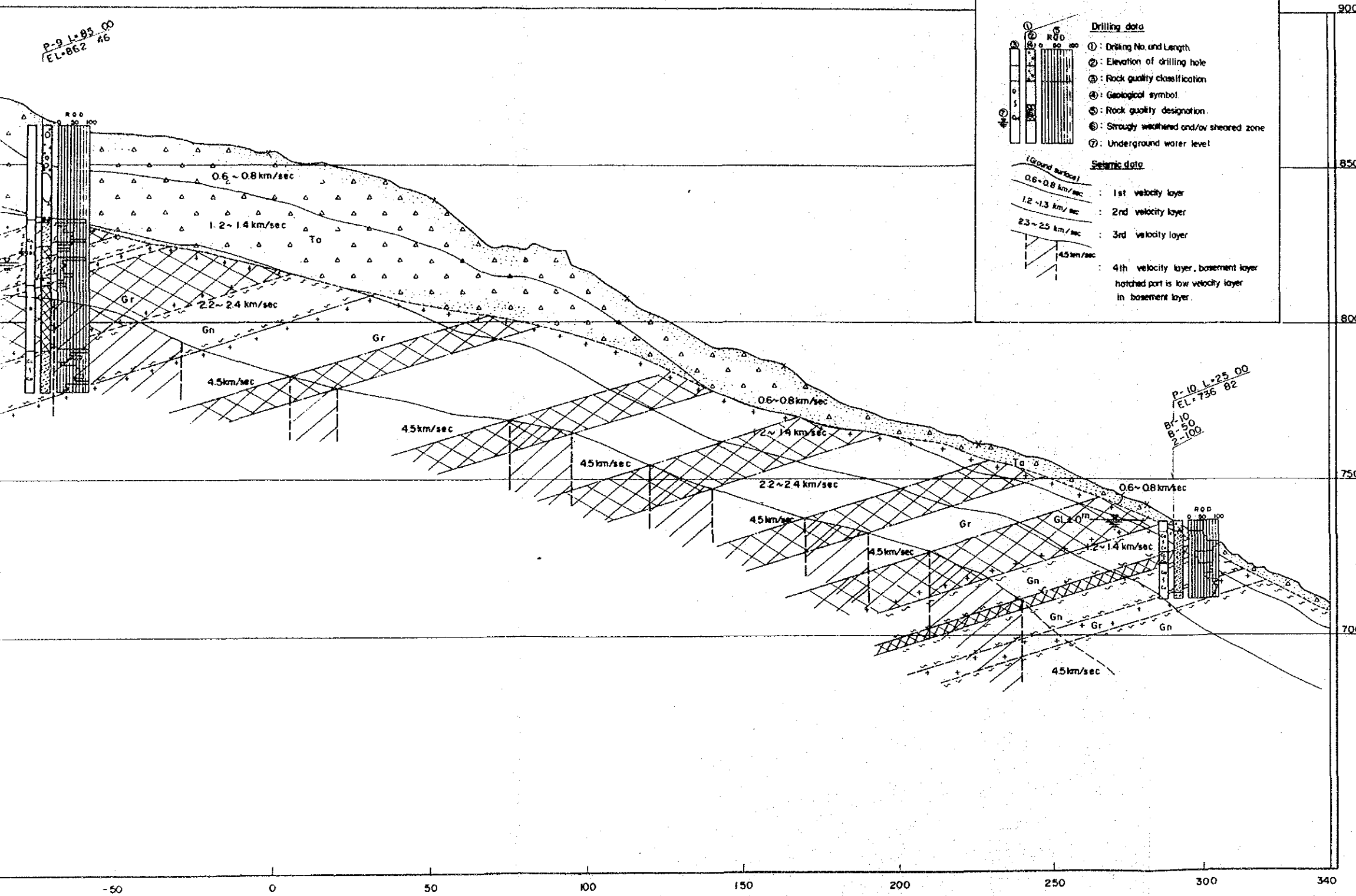
- (Ss), Alluvium deposit, Sand / Gravel
- (St), Terrace deposit, Sand / Gravel
- (To), Talus deposit, Sand / Clay with debris, -Include huge stone.
- (Gn), Augerites with thin micaceous
- (Gr), Granite, fine grained and gneissoid
- (Am), Amphibolite.
- Geological boundary

Drilling data

- ①: Drilling No. and Length
- ②: Elevation of drilling hole
- ③: Rock quality classification
- ④: Geological symbol
- ⑤: Rock quality designation
- ⑥: Strongly weathered and/or sheared zone
- ⑦: Underground water level

Seismic data

- (Ground surface)
- 0.6~0.8 km/sec : 1st velocity layer
- 1.2~1.4 km/sec : 2nd velocity layer
- 2.2~2.4 km/sec : 3rd velocity layer
- 4.5 km/sec : 4th velocity layer, basement layer
- hatched part is low velocity layer in basement layer.

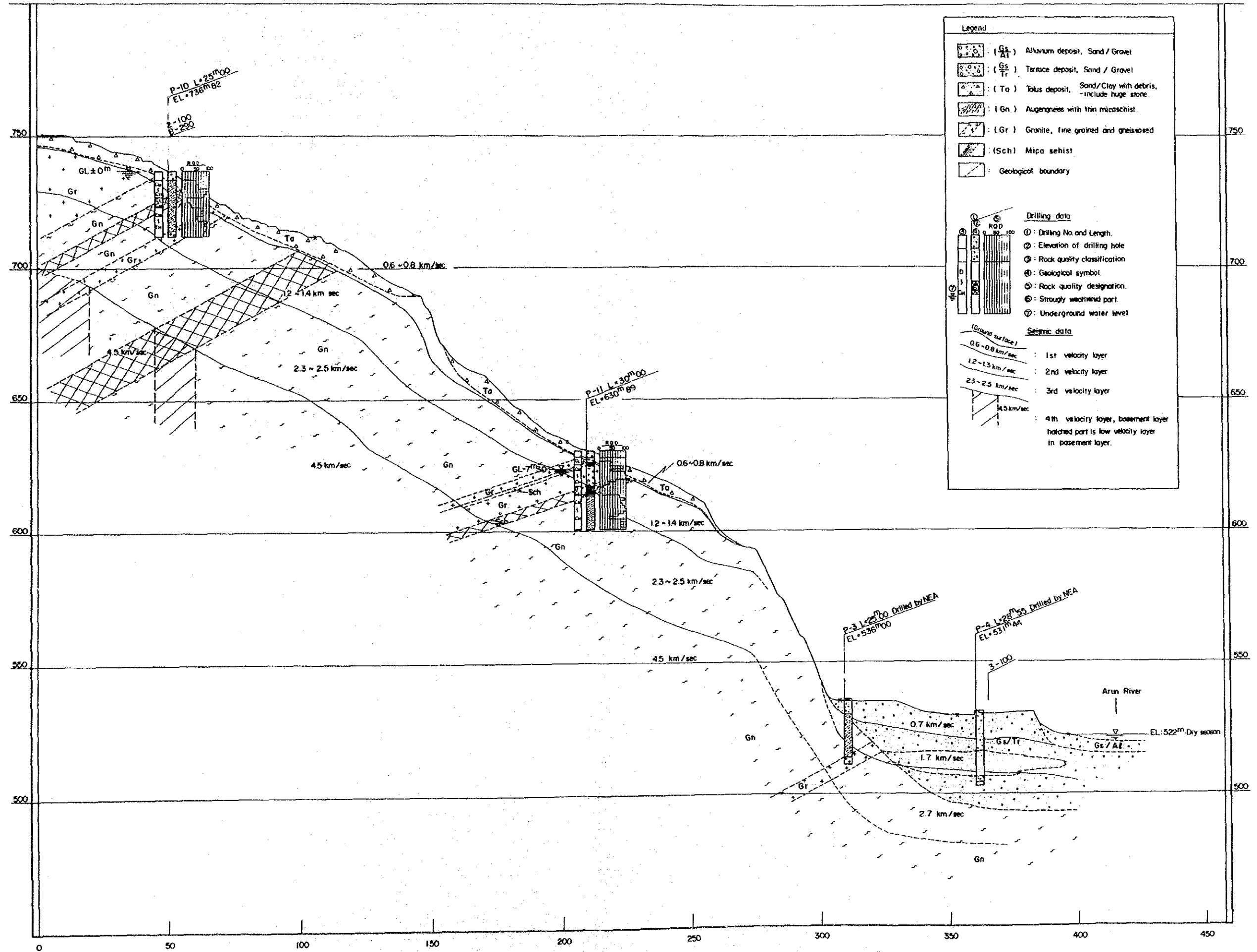


ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

GEOLOGY
KAGUWA POWERHOUSE SITE
PROFILE (LINE A)

DWG. G-14 Date JUNE 1987

Kaguwa B Line



Legend

- (G_sAl) Alluvium deposit, Sand / Gravel
- (G_sTr) Terrace deposit, Sand / Gravel
- (Ta) Talus deposit, Sand/Clay with debris, include huge stone.
- (Gn) Augengneiss with thin micaschist.
- (Gr) Granite, fine grained and gneissoid
- (Sch) Mica schist
- Geological boundary

Drilling data

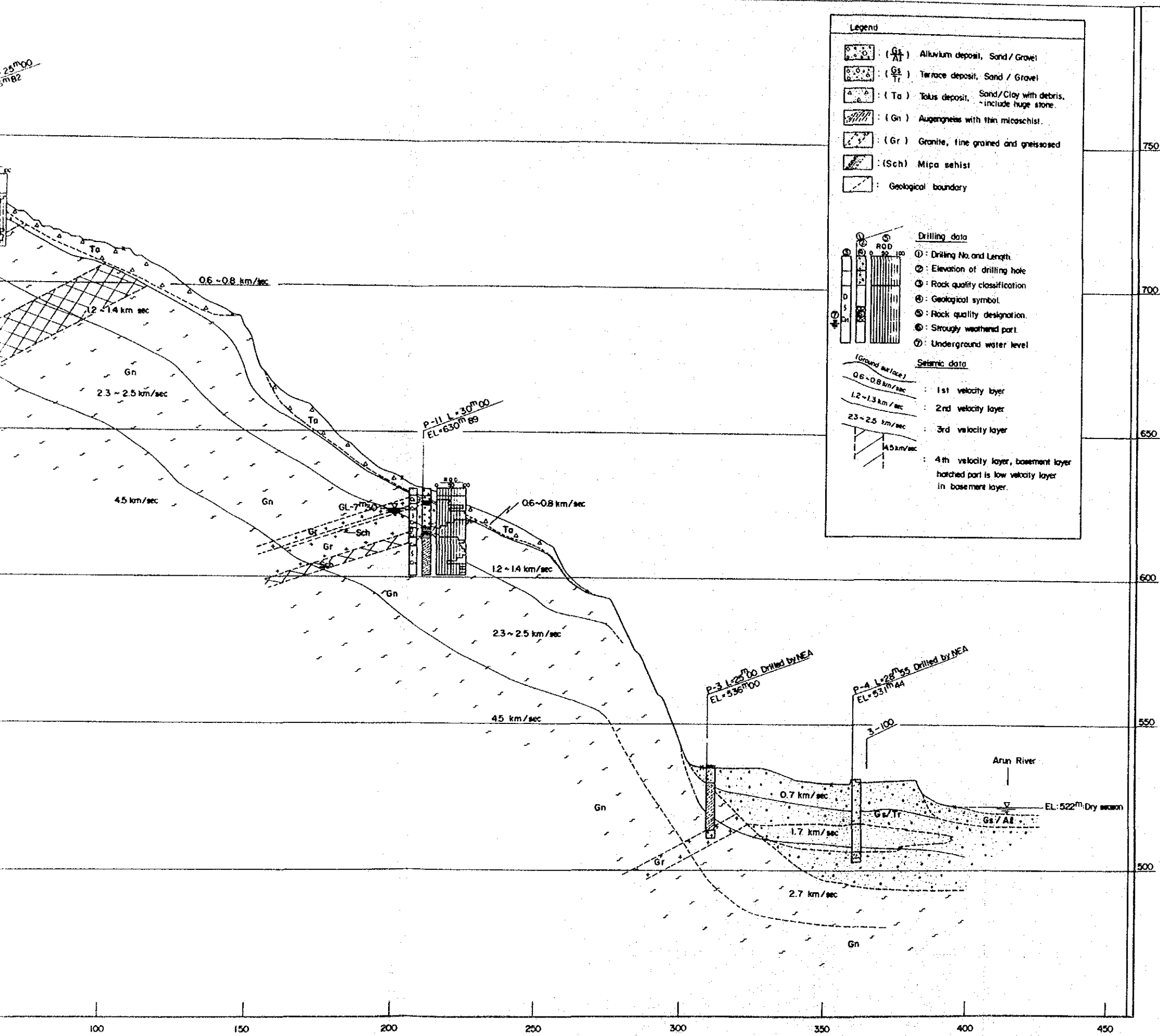
- ①: Drilling No and Length.
- ②: Elevation of drilling hole
- ③: Rock quality classification
- ④: Geological symbol.
- ⑤: Rock quality designation.
- ⑥: Strongly weathered part.
- ⑦: Underground water level

Seismic data

- (Ground surface)
- 0.6-0.8 km/sec : 1st velocity layer
- 1.2-1.4 km/sec : 2nd velocity layer
- 2.3-2.5 km/sec : 3rd velocity layer
- 4.5 km/sec : 4th velocity layer, basement layer
- hatched part is low velocity layer in basement layer.

ARUN 3 HYD
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KAGUWA P
PROFIL
DWG-G-15

Kaguwa B Line



Legend

- (Gs/Al) Alluvium deposit, Sand / Gravel
- (Gs/Tr) Terrace deposit, Sand / Gravel
- (Ta) Talus deposit, Sand/Clay with debris, include huge stone.
- (Gn) Augengneiss with thin micaschist.
- (Gr) Granite, fine grained and gneissosed
- (Sch) Mica schist
- Geological boundary

Drilling data

- ①: Drilling No. and Length.
- ②: Elevation of drilling hole
- ③: Rock quality classification
- ④: Geological symbol.
- ⑤: Rock quality designation.
- ⑥: Strongly weathered part.
- ⑦: Underground water level

Seismic data

- 0.6-0.8 km/sec : 1st velocity layer
- 1.2-1.3 km/sec : 2nd velocity layer
- 2.3-2.5 km/sec : 3rd velocity layer
- 4.5 km/sec : 4th velocity layer, basement layer
hatched part is low velocity layer in basement layer.

ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

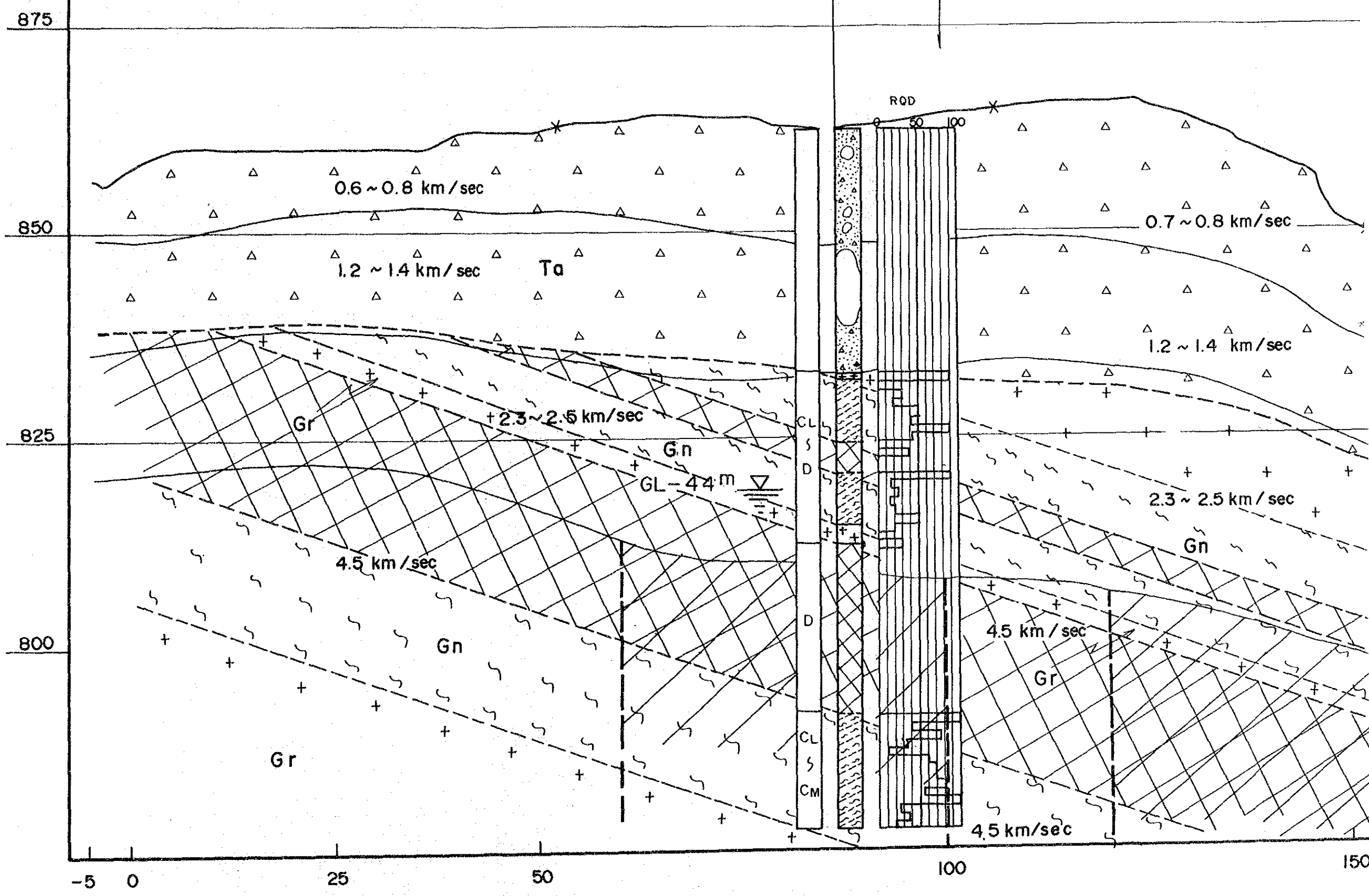
GEOLOGY
KAGUWA POWERHOUSE SITE
PROFILE (LINE B)

DWG-G-15 | Date JUNE 1987

Kaguwa No 1 - Line

P-9 L=85m00
EL=862m46

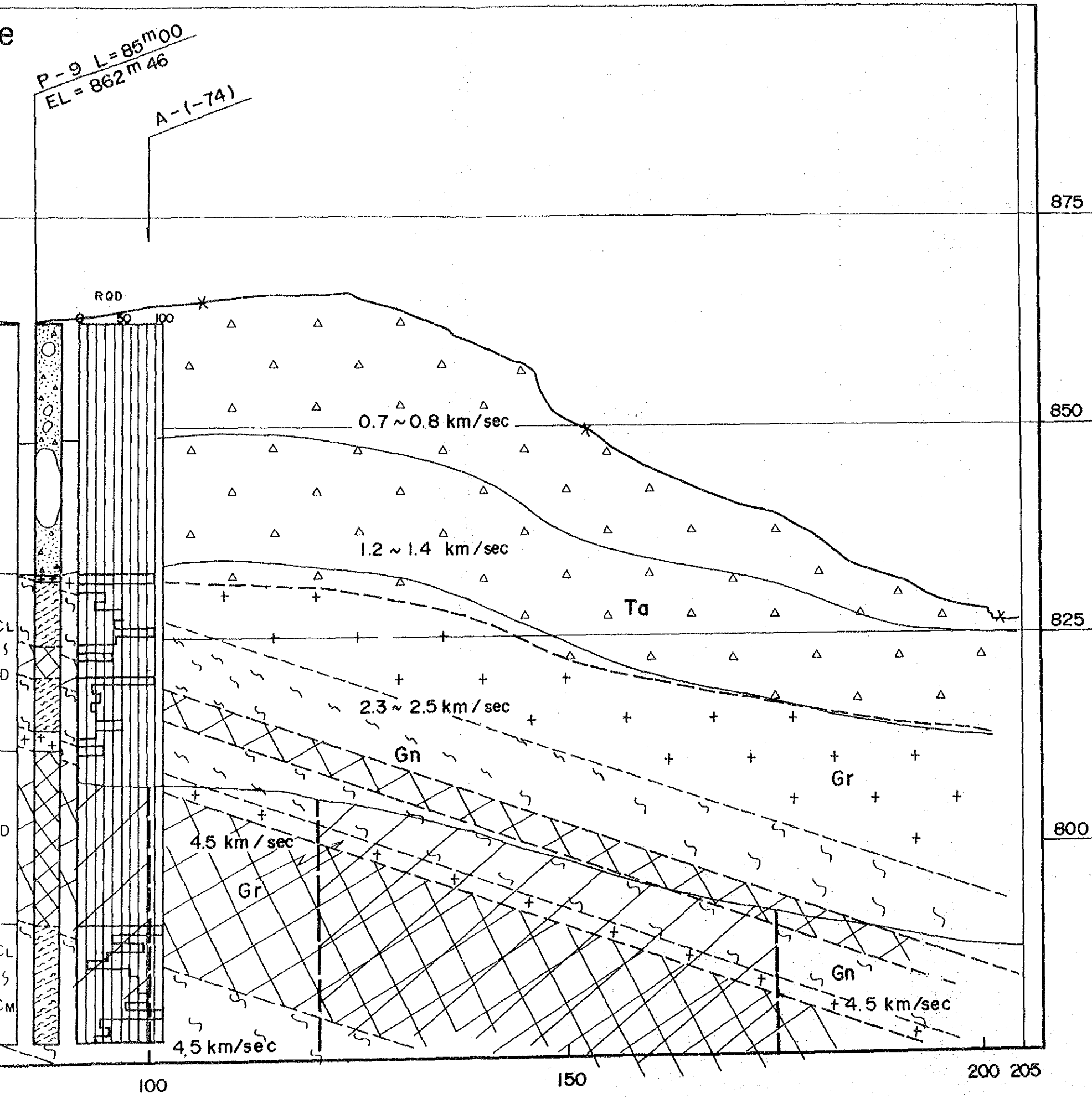
A-(-74)



e

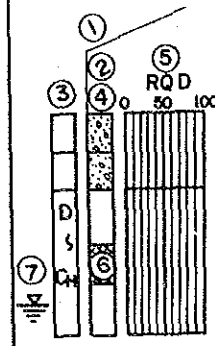
P-9 L=85m00
EL=862m46

A-(-74)



Legend

- : (G_s/A_l), Alluvium deposit, Sand/Gravel.
- : (G_s/T_r), Terrace deposit, Sand/Gravel.
- : (Ta), Talus deposit, Sand/Clay with debris, -include huge stone.
- : (Gn), Augengneiss with thin mica schist.
- : (Gr), Granite, fine grained and gneissosed.
- : (Am), Amphibolite.
- : Geological boundary



Drilling data

- ① : Drilling No. and Length.
- ② : Elevation of drilling hole
- ③ : Rock quality classification
- ④ : Geological symbol.
- ⑤ : Rock quality designation.
- ⑥ : Strongly weathered and/or sheared zone.
- ⑦ : Underground water table

Seismic data

- (Ground surface)
- 0.6 ~ 0.8 km/sec : 1st velocity layer
- 1.2 ~ 1.3 km/sec : 2nd velocity layer
- 2.3 ~ 2.5 km/sec : 3rd velocity layer
- 4.5 km/sec : 4th velocity layer basement layer
hatched part is low velocity layer in basement layer.

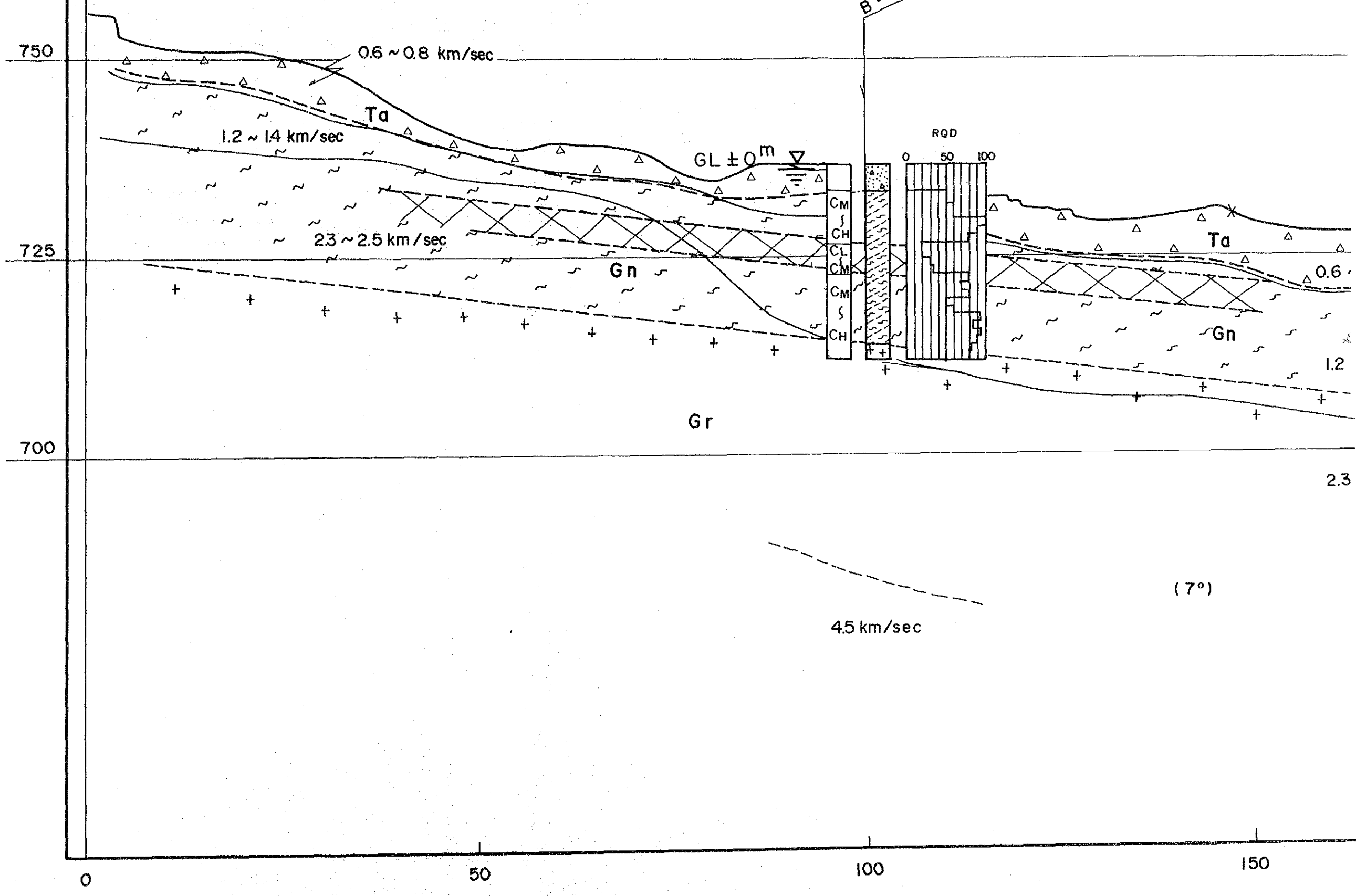
ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

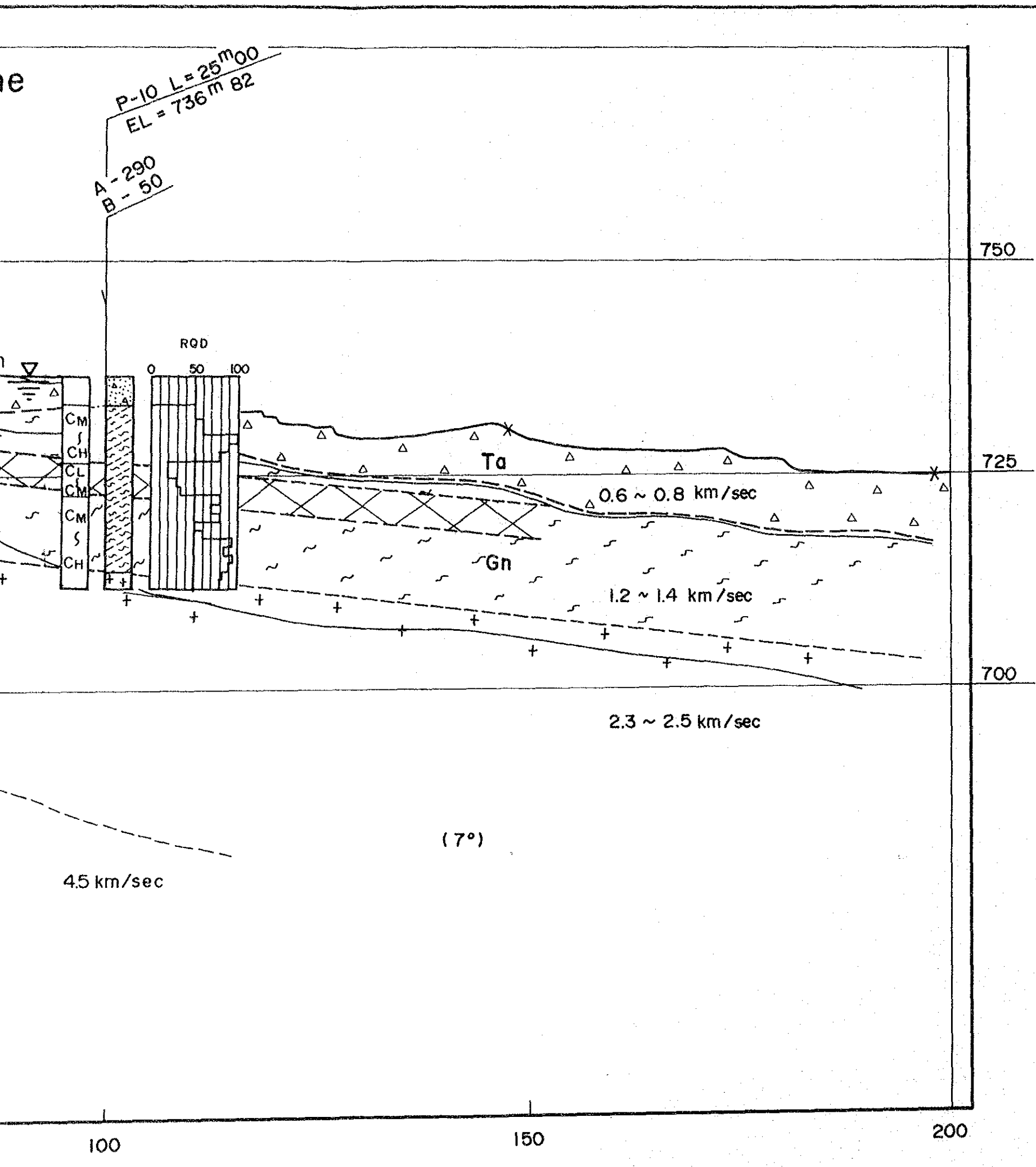
GEOLOGY
KAGUWA POWERHOUSE SITE
PROFILE (LINE 1)

DWG. G-16 Date JUNE 1987

Kaguwa No 2 - Line

P-10 L=25^m00
EL = 736^m82
A - 290
B - 50





Legend

- : (Gs/Ab), Alluvium deposit, Sand/Gravel.
- : (Gs/Tt), Terrace deposit, Sand/Gravel.
- : (Ta), Talus deposit, Sand/Clay with debris, -include huge stone.
- : (Gn), Augengneiss with thin mica schist.
- : (Gr), Granite, fine grained and gneissosed.
- : (Am), Amphibolite.
- : Geological boundary

Drilling data

- ① : Drilling No. and Length.
- ② : Elevation of drilling hole
- ③ : Rock quality classification
- ④ : Geological symbol.
- ⑤ : Rock quality designation.
- ⑥ : Strongly weathered and/or sheared zone.
- ⑦ : Underground water table

Seismic data

(Ground surface)

- 0.6 ~ 0.8 km/sec : 1st velocity layer
- 1.2 ~ 1.3 km/sec : 2nd velocity layer
- 2.3 ~ 2.5 km/sec : 3rd velocity layer
- 4.5 km/sec : 4th velocity layer: basement layer
hatched part is low velocity layer in basement layer.

ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

GEOLOGY
KAGUWA POWERHOUSE SITE
PROFILE (LINE 2)

DWG-G-17 Date JUNE 1987

Kaguwa No 3 - Line

P-4 L = 28m55 Drilled by NEA
EL = 351m44

550

B-365

525

0.7 km/sec

1.7 km/sec

Gs
Tr

500

2.7 km/sec

4.5 km/sec

Gn

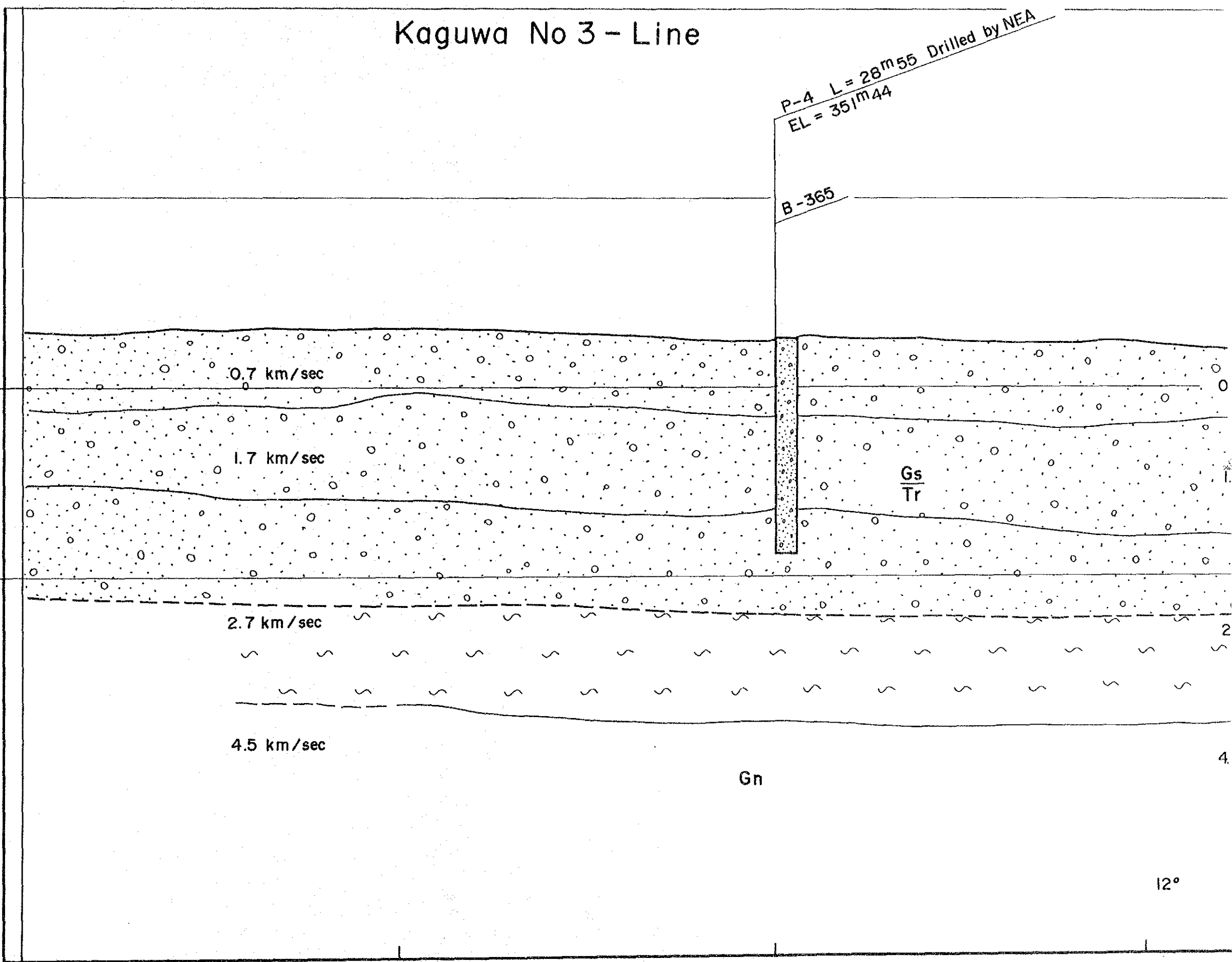
12°

0

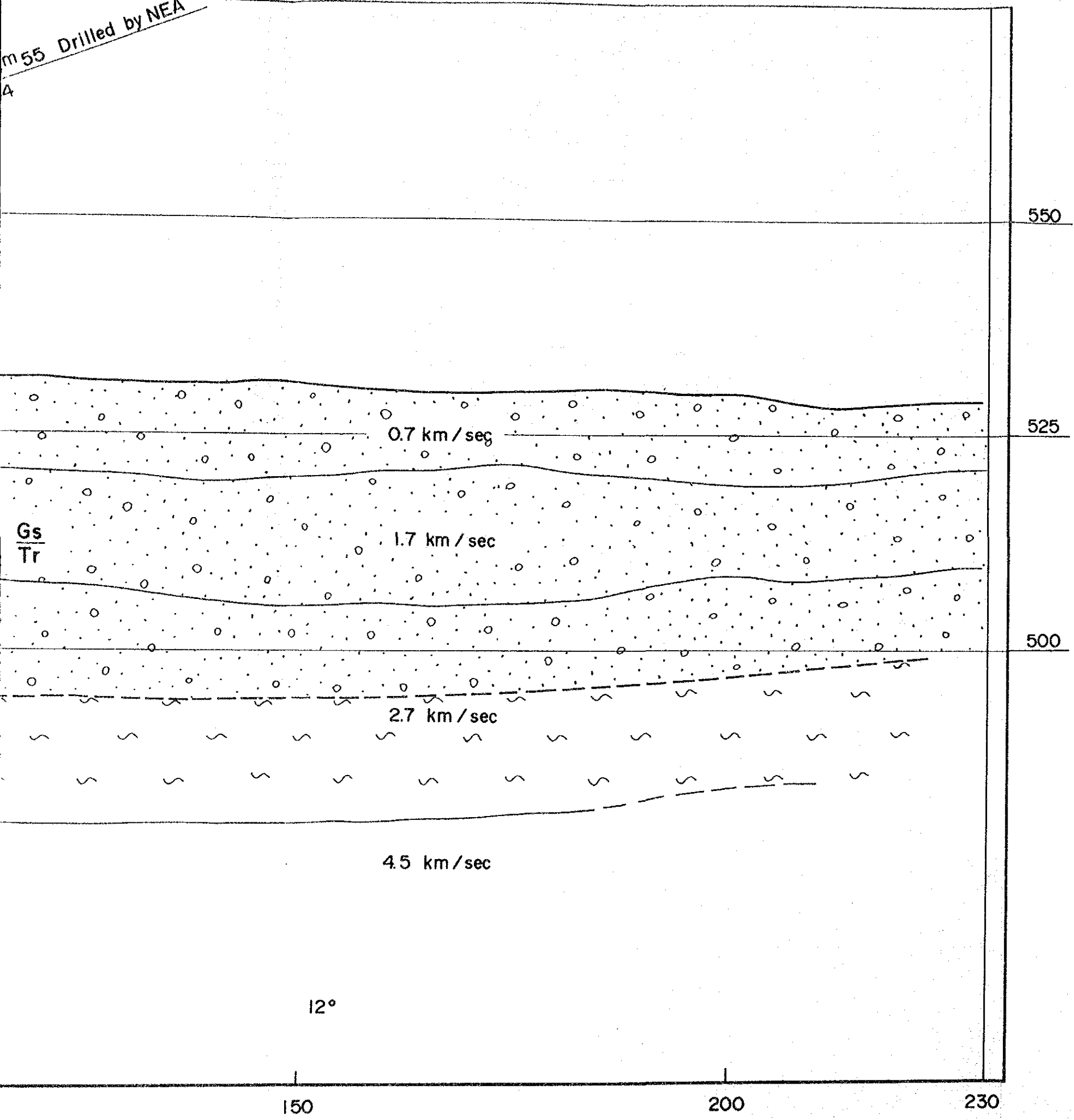
50

100

150



m 55 Drilled by NEA



Legend

- : (Gs / Al), Alluvium deposit, Sand/Gravel.
- : (Gs / Tr), Terrace deposit, Sand/Gravel.
- : (Ta), Talus deposit, Sand/Clay with debris, include huge stones.
- : (Gn), Augengneiss with thin mica schist.
- : (Gr), Granite, fine grained and gneissosed.
- : (Am), Amphibolite.
- : Geological boundary

Drilling data

- ①: Drilling No. and Length.
- ②: Elevation of drilling hole.
- ③: Rock quality classification.
- ④: Geological symbol.
- ⑤: Rock quality designation.
- ⑥: Strongly weathered part.

Seismic data

(Ground surface)

- 0.6 ~ 0.8 km/sec : 1st velocity layer
- 1.2 ~ 1.3 km/sec : 2nd velocity layer
- 2.3 ~ 2.5 km/sec : 3rd velocity layer
- 4.5 km/sec : 4th velocity layer basement layer

hatched part is low velocity layer in basement layer.

ARUN 3 HYDRO POWER PROJECT
FEASIBILITY STUDY

GEOLOGY
KAGUWA POWERHOUSE SITE
PROFILE (LINE 3)

DWG. G - 18 Date JUNE 1987

