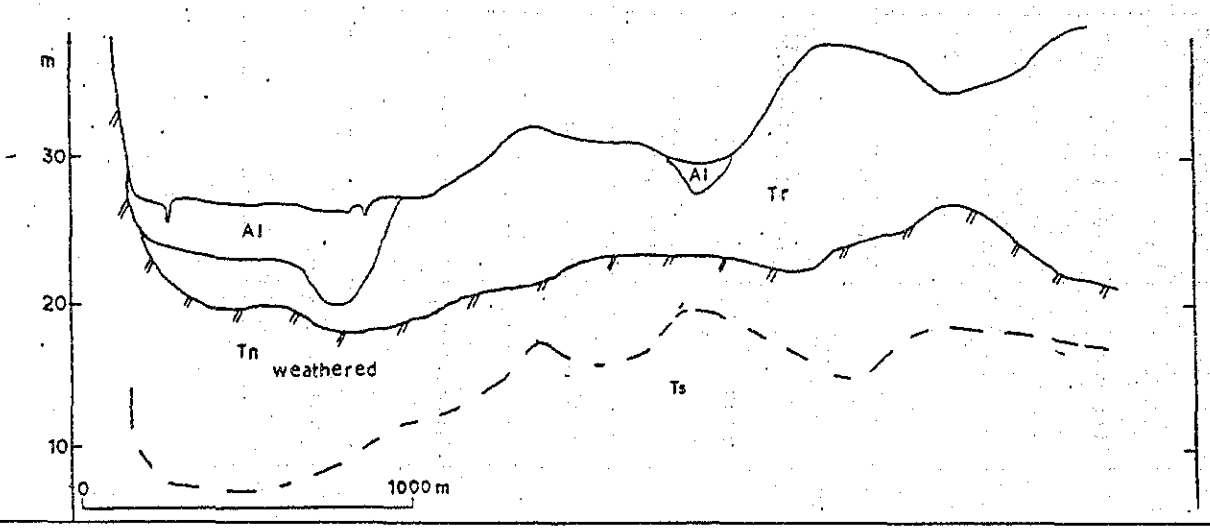
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (1/22)

Name of Dam: Khlong Luang No 1

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
Lower Bangpakong	Khlong Luang	528	25.4	25	0.4	3	Fill Type	5	Blanket

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness (m)	Lithology				
River Bed	Al and Tr clay, silt, sand and gravel	5 - 9	Ts Weathered shale and schist	Thickness of heavily weathered bedrock ranges 3 to 12 m.	Soil	Weathered schist, sandy clay and sandy silt.	
Right Abutment	Tr clay, silt, sand and gravel	11 +	Ts Weathered shale, phyllite, schist and gneiss		Rock	Metamorphic rocks	
Left Abutment	Colluvial Dep. clay, silt, sand and gravel	1	Ts Weathered shale and schist		Name of Quarry Site	Khobo Kwang Thon Quarry	
					Distance to Site (km)	25	

Geologic Profile of Dam Axis



Al: Riverbed and flood plain deposits
Tr: Colluvial & terrace deposits
Ts: Thung Song Group

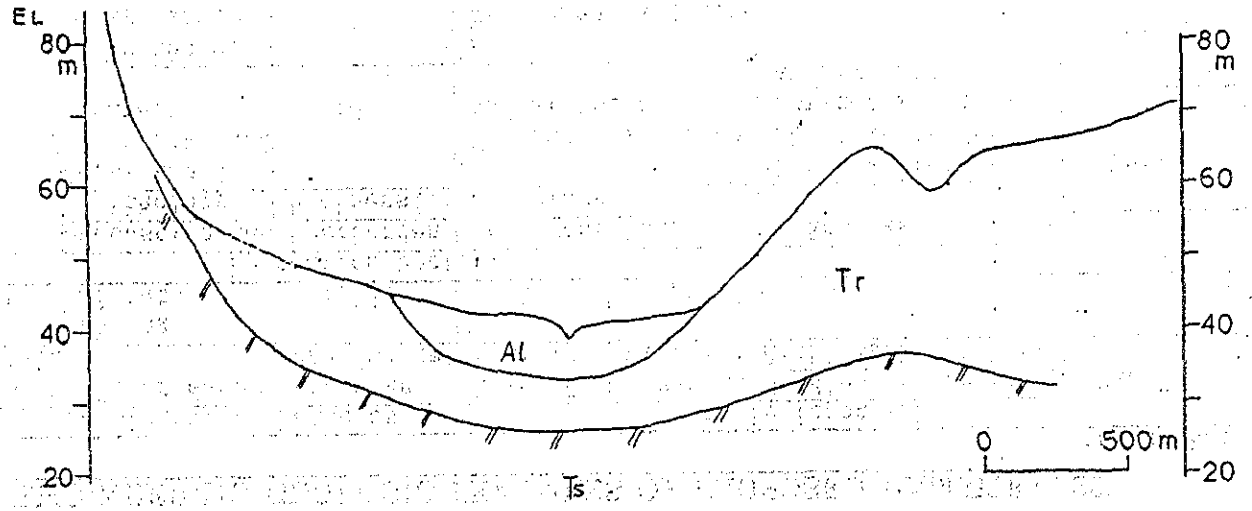
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (2/22)

Name of Dam: Upper Khlong Luang No 2

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
Lower Bangpakong	Khlong Luang	344	39	20	0.7	1	Fill Type	5	Blanket

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness (m)	Lithology				
River Bed	Al and Tr clay, silt sand and gravel	5	Ts Weathered shale and schist	Thickness of heavily weathered bedrock ranges 3 to 12 m.	Soil	Weathered schist, sandy clay and sandy silt.	
Right Abutment	Tr clay, silt sand and gravel	10	Ts Weathered shale, phyllite, schist and gneiss		Rock	Metamorphic rocks	
Left Abutment	Colluvial Dep. clay, silt sand and gravel	1	Ts Weathered shale and schist		Name of Quarry Site	Khobo Kwang Thon Quarry	
					Distance to Site (km)	25	

Geologic Profile of Dam Axis



Al: Riverbed and flood plain deposits
Tr: Colluvial & terrace deposits
Ts: Thung Song Group

C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (3/22)

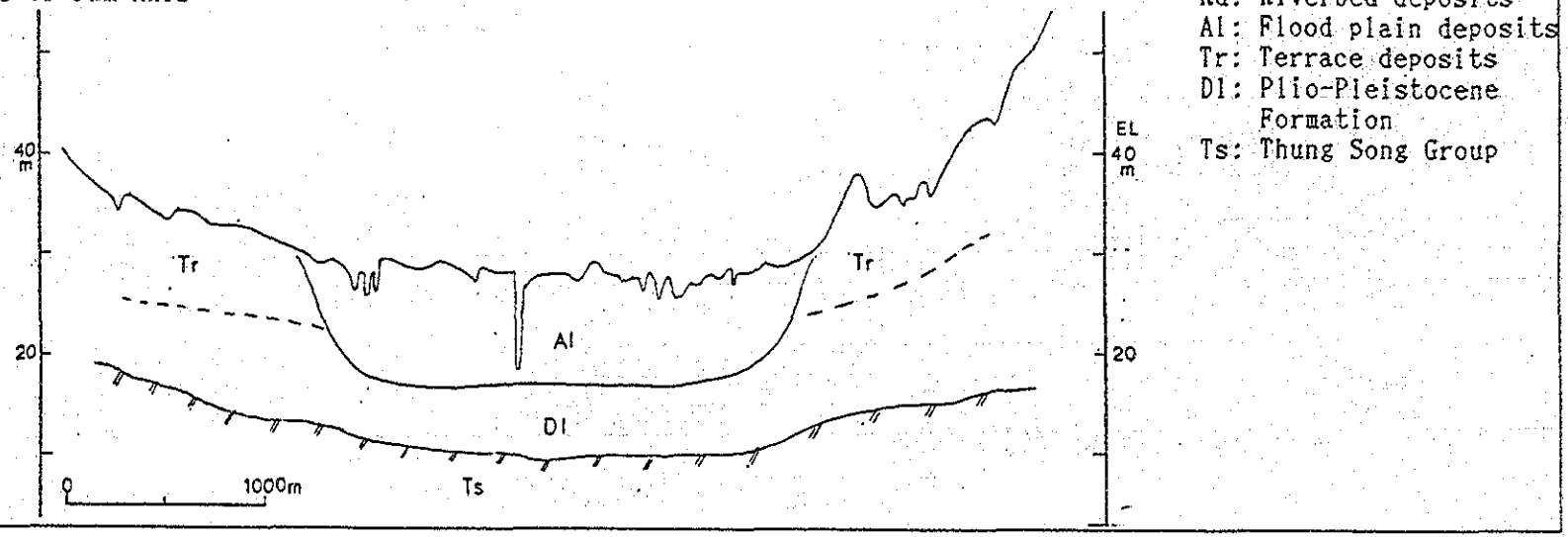
Name of Dam: Khlong Si Yat No 1 No 3

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Khlong Tha Lat	Khlong Si Yat	1,371	18.6	25	0.7	0.5	Fill Type	6	Blanket

Foundation Geology				
	Unconsolidated Overburden		Basement Rock	Remarks
	Lithology	Thickness(m)	Lithology	
River Bed	Rd, Al and Dl clay, sand and gravel	10	Ts Weathered sandstone and siltstone	Layer w/ less than 20 blows of SPT estimetes 6 m thick at riverbed
Right Abutment	Al, Tr and Dl clay, sand, and gravel	15	Ts Weathered sandstone and siltstone	
Left Abutment	Al, Tr and Dl clay, sand, and gravel	15	Ts Weathered sandstone and siltstone	

Construction Materials		
	Lithology	Remarks
Soil	clay and sandy silt.	
Rock	Granite	
Name of Quarry Site	Khao Bo Ra Run Quarry Site	
Distance to Site(km)	20	

Geologic Profile of Dam Axis



Rd: Riverbed deposits
Al: Flood plain deposits
Tr: Terrace deposits
Dl: Plio-Pleistocene Formation
Ts: Thung Song Group

C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (4/22)

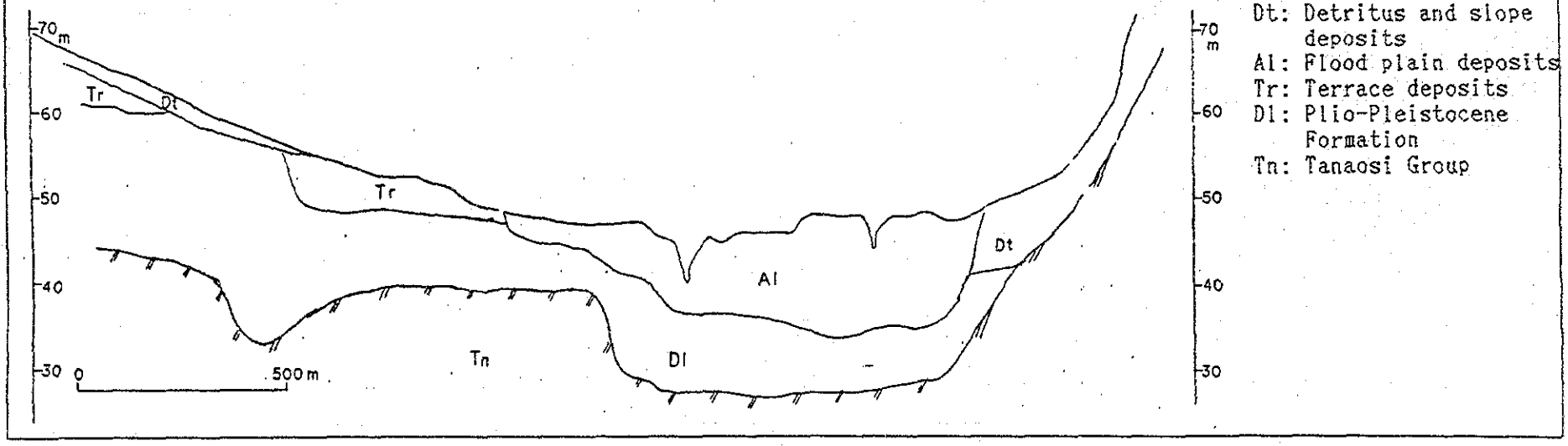
Name of Dam: Khlong Si Yat No 2 No 4

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Khlong Tha Lat	Khlong Si Yat	976	40	20	6	1	Fill Type	6	Blanket

Foundation Geology				
	Unconsolidated Overburden		Basement Rock	Remarks
	Lithology	Thickness(m)	Lithology	
River Bed and Flood Plain	Rd, Al and Dl clay, sand, gravel and rock fragment	10 - 17	Tn Weathered sandstone siltstone and limestone	-Layer w/ less than 20 blows of SPT estimetes 6 m thick at riverbed -Layer of high permeability(≧0.01) underlies in flood plain at right bank with 5 m thick
Right Abutment	Dt clay, sand, gravel and rock fragment	7	Tn Weathered sandstone and conglomerate	
Left Abutment	Dt, Tr and Dl clay, sand, gravel and rock fragment	7 - 15	Tn Weathered sandstone and siltstone	

Construction Materials		
	Lithology	Remarks
Soil	clay and sandy silt.	
Rock	Granite and rhyolite	-Granite shows good quality for riprap
Name of Quarry Site	Khao Bo Ra Run and Khao Yai Mo Noi sites	
Distance to Site(km)	4 and 8 km respectively	

Geologic Profile of Dam Axis



Rd: Riverbed deposits
Dt: Detritus and slope deposits
Al: Flood plain deposits
Tr: Terrace deposits
Dl: Plio-Pleistocene Formation
Tn: Tanaosi Group

C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (5/22)

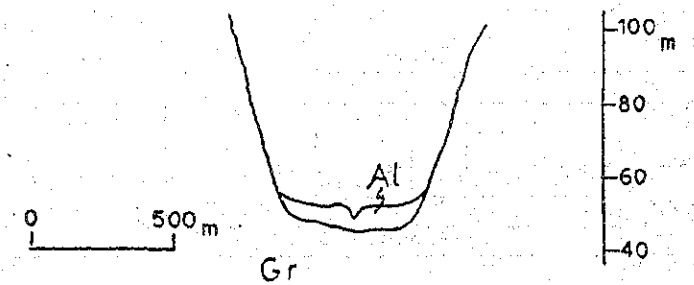
Name of Dam: Upper Khlong Si Yat No 5

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
Khlong Tha Lat	Khlong Si Yat	585	48	15	15	8	Fill Type	6	Curtain grouting

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness (m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	4	Granite Well consolidated coarse grained granite		Soil	clay and sandy silt.	
Right Abutment	Dt clay, sand and rock fragments	1	Granite Well consolidated coarse grained granite		Rock	Granite	Granite shows good quality for riprap and coars aggregate
Left Abutment	Dt clay, sand and rock fragments	1	Granite Well consolidated coarse grained granite		Name of Quarry Site	Near the site	
					Distance to Site (km)		

Geologic Profile of Dam Axis

Al: Flood plain deposits
Gr: Granite



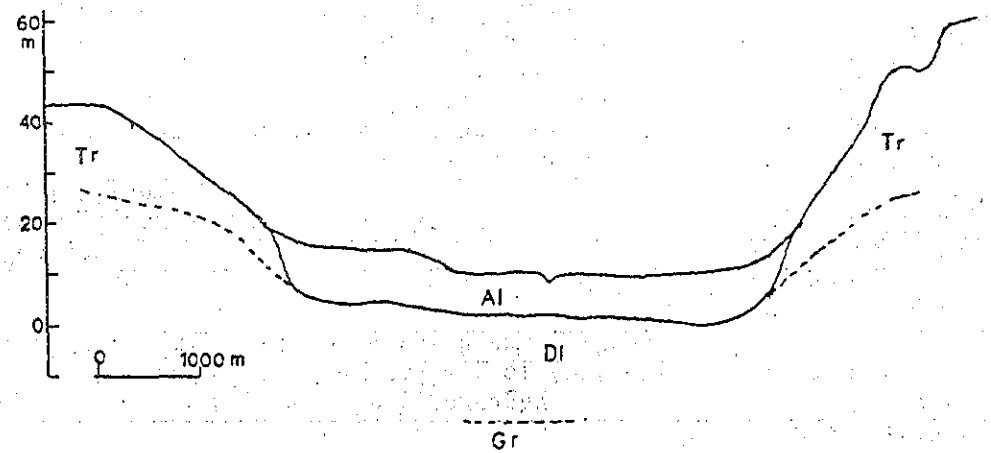
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (6/22)

Name of Dam: Lower Khlong Rabom No 6

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
Khlong Tha Lat	Khlong Rabom	798	8	20	0.5	0.4	Fill Type	7	Blanket

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness (m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	15	Granite Heavily weathered granite		Soil	clay and sandy silt.	
Right Abutment	Tr and Dl clay, sand and gravel	15	Granite Heavily weathered granite		Rock	Sandstone	Qualitative assessment is required for materials
Left Abutment	Tr and Dl clay, sand and gravel	15	Granite Heavily weathered granite		Name of Quarry Site	Near existing Rabom dam	
					Distance to Site (km)	10	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Tr: Colluvial & terrace deposits
Dl: Plio-Pleistocene Formation
Gr: Granite

C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (7/22)

Name of Dam: Khlong Phra Sathung No 7

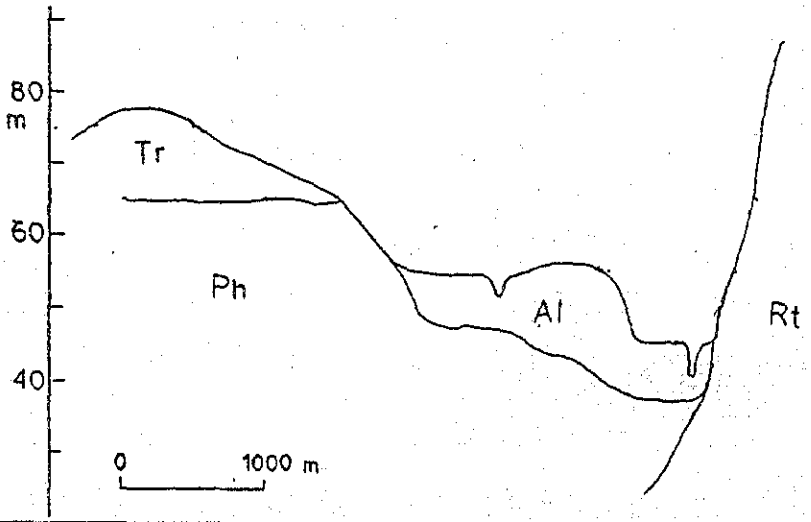
Physiographic Features				Damsite Topography		
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank
K. Phra Sathung	Khlong Phra Sathung	2,254	40	30	0.4	0.5

Foundation Geology				
	Unconsolidated Overburden		Basement Rock	Remarks
	Lithology	Thickness (m)	Lithology	
River Bed and Flood Plain	Al clay, sand, and gravel	10	Ph Weathered conglomerate	-Limestone shows cavernous and well fractured lithology -Right abutment extend to low hill east of limestone ridge
Right Abutment	Dt clay, sand and rock fragments	1	Ph Weathered conglomerate	
Left Abutment	Tr and Dl clay, sand and gravel	15	Rt Fresh limestone	

Dam Type	Depth of Cutoff (m)	Foundation Treatment
Fill Type	5	Blanket

Construction Materials		
	Lithology	Remarks
Soil	clay, silt and gravelly clay	
Rock	Andesite and limestone	-Qualitative assessment is required for materials
Name of Quarry Site	East of site	
Distance to Site (km)	10	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Tr: Colluvial & terrace
Dl: Plio-Pleistocene Formation
Ph: Phong Nam Ron Formation
Rt: Ratburi Formation

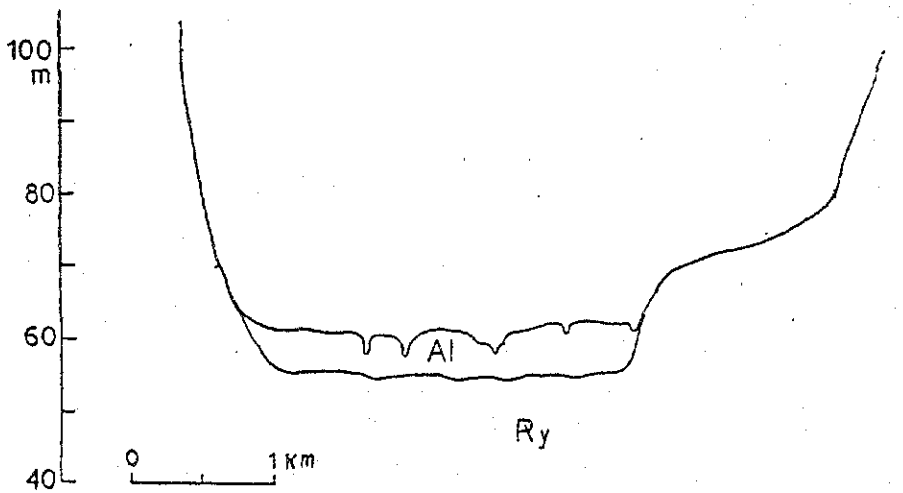
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (8/22)

Name of Dam: Middle K. Phra Sathung No 8

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
K. Phra Sathung	Khlong Phra Sathung	1,453	56	25	1.2	6	Fill Type	6	Curtain grouting and/or blanket

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness (m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	5	Ry Weathered and fractured rhyolite	-Rhyolite shows fractured lithology -Permeabilty estimates high -Dam axis links on remnants	Soil	clay, silt and gravelly clay	
Right Abutment	Dt clay, sand and rock fragments	1	Ry Weathered and fractured rhyolite		Rock	Andesite and limestone	-Qualitative assessment is required for materials
Left Abutment	Dt clay, sand and rock fragments	1	Ry Weathered and fractured rhyolite		Name of Quarry Site	North of site	
					Distance to Site (km)	20	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Ry: Rhyolite

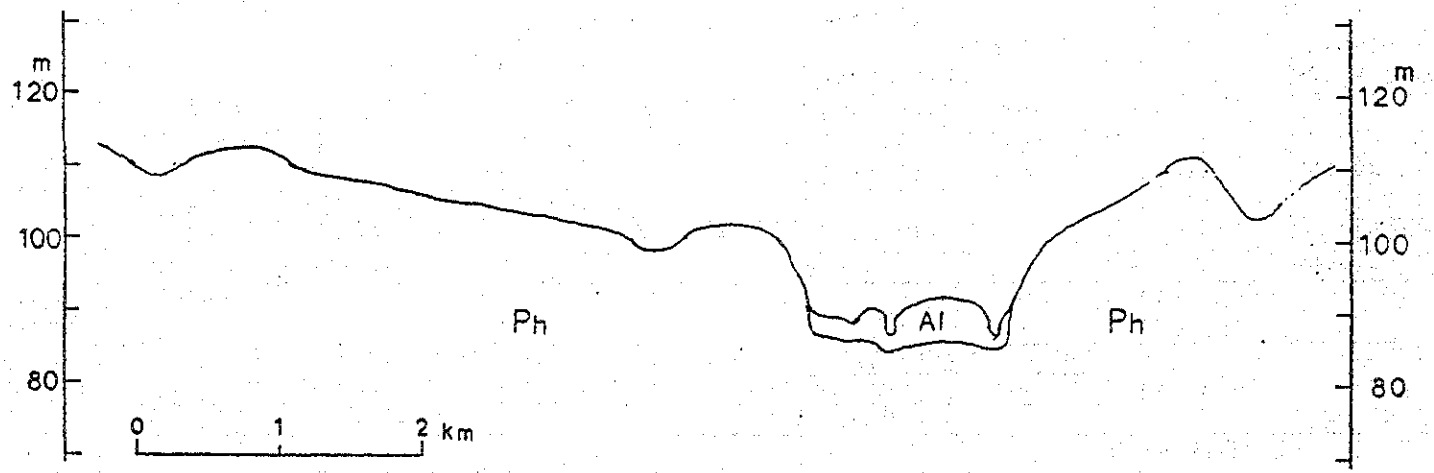
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (9/22)

Name of Dam: Upper K. Phra Sathung No 9

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Gradient of Abutment Left Bank			
K. Phra Sathung	Khlong Phra Sathung	614	86	25	1	0.4	Fill Type	4	curtain grouting and/or blanket

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness (m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	3	Ph Sandstone and chert		Soil	clay, silt and gravelly clay	
Right Abutment	Dt clay, sand and rock fragments	1	Ph Sandstone and chert		Rock	Limestone	Qualitative assessment is required for materials
Left Abutment	Dt clay, sand and rock fragments	1	Ph Sandstone and chert		Name of Quarry Site	North of site	
					Distance to Site (km)	5	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Ph: Phong Nam Ron Formation

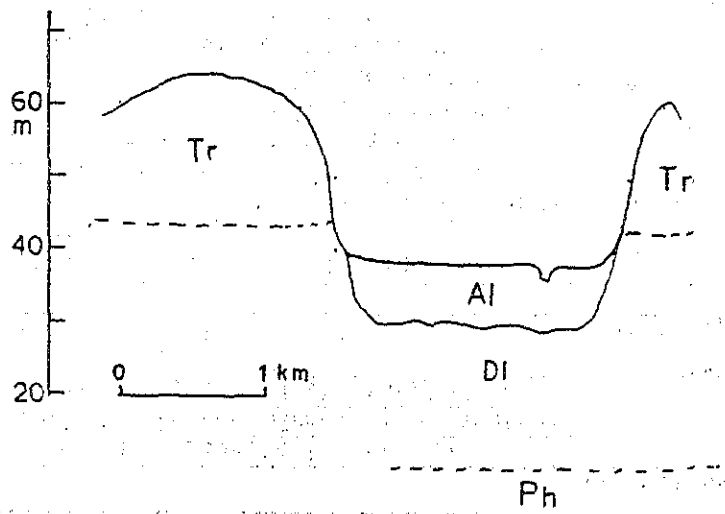
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (10/22)

Name of Dam: Khlong Phra Prong No 10

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Upper Phra Prong	Khlong Phra Prong	1,041	36	20	3	3	Fill Type	10	Blanket

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness(m)	Lithology				
River Bed and Flood Plain	Al and Dl clay, sand, and gravel	20 +	Ph Sandstone and chert	-Depth to basement rocks estimates more than 30m -Lithology of Dl is enough for foundation for fill dam in terms of permeability annd bearing capacity	Soil	clay, silt and sandy clay	
Right Abutment	Tr and Dl clay, sand, and gravel	20 +	Ph Sandstone and chert		Rock	Sandstone	-Qualitative assessment is required for materials
Left Abutment	Tr and Dl clay, sand, and gravel	20 +	Ph Sandstone and chert		Name of Quarry Site	North of site	
					Distance to Site(km)	15	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Tr: Colluvial and Terrace deposits
Dl: Plio-Pleistocene Formation
Ph: Phong Nam Ron Formation

C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (11/22)

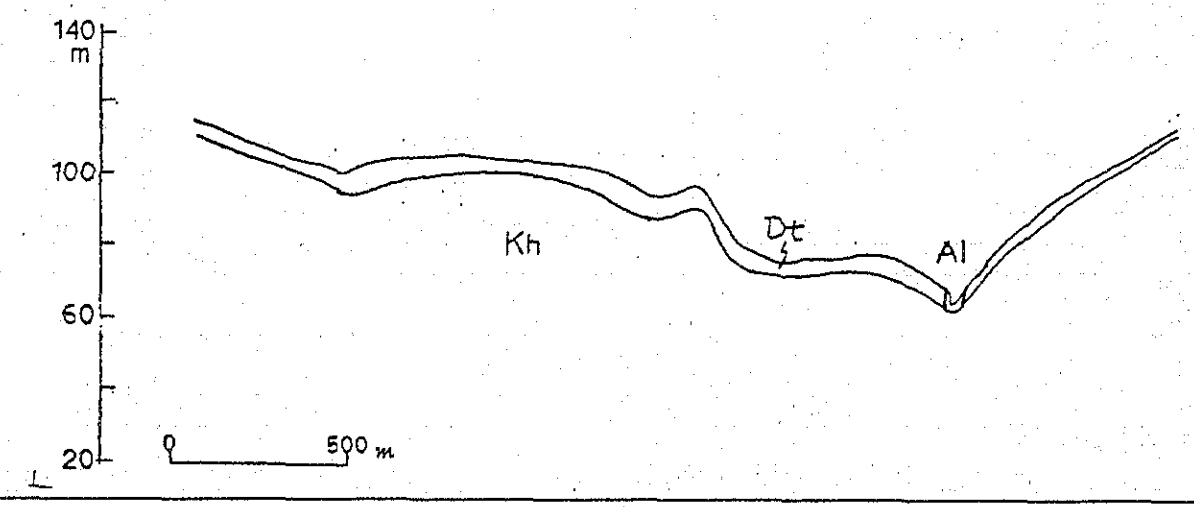
Name of Dam: Upper K. Phra Prong No 11

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
Upper Phra Prong	Khlong Phra Prong	266	65	15	5	2	Fill Type	2 ~ 8	Curtain grouting

Foundation Geology				
	Unconsolidated Overburden		Basement Rock	Remarks
	Lithology	Thickness (m)	Lithology	
River Bed and Flood Plain	Al clay, sand, and gravel	8	Kh Sandstone, siltstone and mudstone	-Lithology of sandstone indicates quartzose -Flat joints develop in the sandstone and it shows permeable
Right Abutment	Dt clay, sand, and rock fragments	6	Kh Sandstone, siltstone and mudstone	
Left Abutment	Dt clay, sand, and rock fragments	7	Kh Sandstone, siltstone and mudstone	

Construction Materials		
	Lithology	Remarks
Soil	gravelly and sandy silt	
Rock	Sandstone	-Qualitative assessment is required for materials
Name of Quarry Site	In the site	
Distance to Site (km)		

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group

C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (12/22)

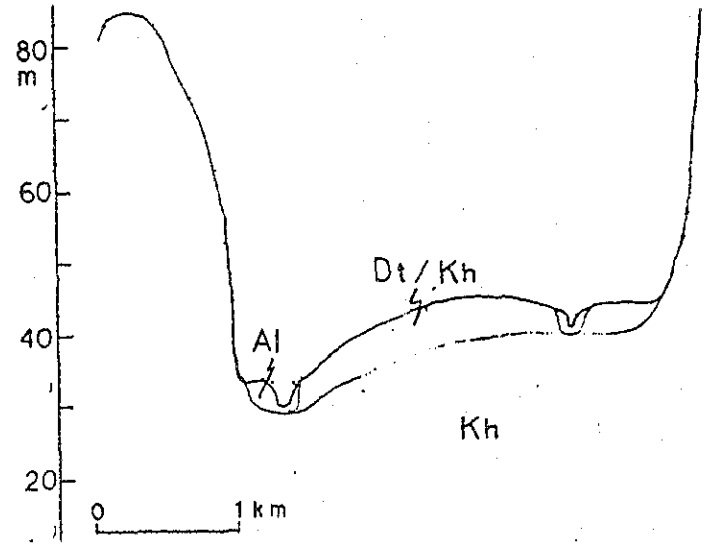
Name of Dam: Huai Samong No 12

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
Maenum Hanuman	Huai Samong	443	30	15	4	0.8	Fill Type	3	Curtain grouting

Foundation Geology				
	Unconsolidated Overburden		Basement Rock	Remarks
	Lithology	Thickness (m)	Lithology	
River Bed and Flood Plain	Al clay, sand, and gravel	3	Kh Sandstone, siltstone and mudstone	-Lithology of sandstone indicates quartzose -Flat joints develop in the sandstone and it shows permeable
Right Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone	
Left Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone	

Construction Materials		
	Lithology	Remarks
Soil	gravelly and sandy silt	-Soil materials indicate permeable
Rock	Sandstone	-Qualitative assessment is required for materials
Name of Quarry Site	In the site	
Distance to Site (km)		

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group

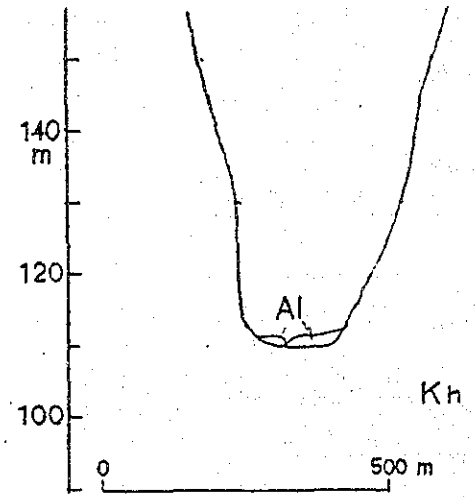
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (13/22)

Name of Dam: Upper Huai Samong No 13

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Maenum Hanuman	Huai Samong	147	110	20	9	30	Fill Type	2	Curtain grouting

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness(m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	2	Kh Sandstone, siltstone and mudstone	-Lithology of sandstone indicates quartzose -Flat joints develop in the sandstone and it shows permeable	Soil	gravelly and sandy silt	-Soil materials indicate permeable
Right Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Rock	Sandstone	-Qualitative assessment is required for materials
Left Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Name of Quarry Site	Rocks in site Soils in downstream	
					Distance to Site(km)	10	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group

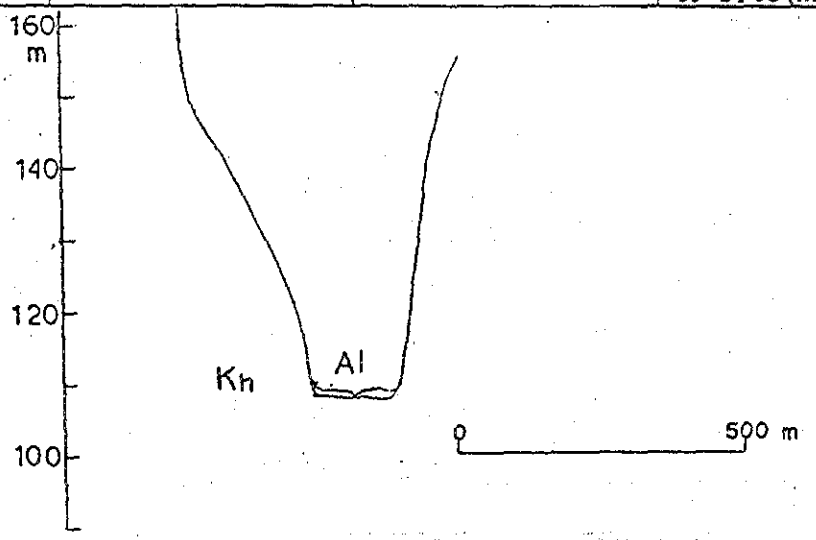
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (14/22)

Name of Dam: Huai Kham Pku No 14

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
Maenum Hanuman	Huai Kham Pku	64	110	10	25	20	Fill Type	2	Curtain grouting

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness (m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	2	Kh Sandstone, siltstone and mudstone	-Lithology of sandstone indicates quartzose -Flat joints develop in the sandstone and it shows permeable	Soil	gravelly and sandy silt	-Soil materials indicate permeable
Right Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Rock	Sandstone	-Qualitative assessment is required for materials
Left Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Name of Quarry Site	Rocks in site Soils in downstream	
					Distance to Site (km)	6	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group

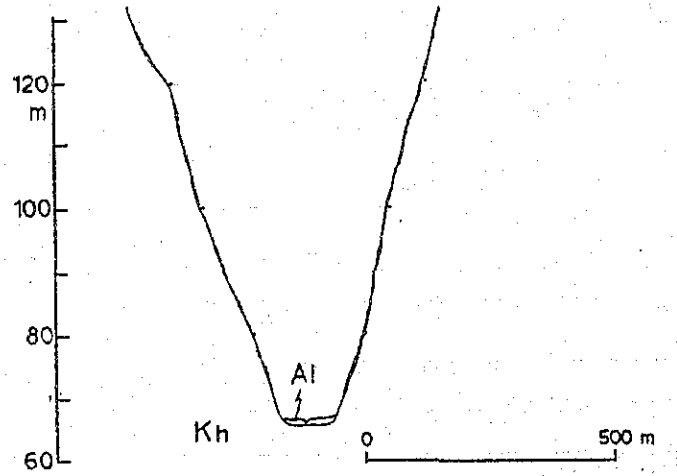
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (15/22)

Name of Dam: Lam Phraya Than No 15

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Maenum Hanuman	Lam Phraya Than	338	66	15	26	14	Fill Type	2	Curtain grouting

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness(m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	2	Kh Sandstone, siltstone and mudstone	-Lithology of sandstone indicates quartzose -Flat joints develop in the sandstone and it shows permeable	Soil	gravelly and sandy silt	-Soil materials indicate permeable
Right Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Rock	Sandstone	-Qualitative assessment is required for materials
Left Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Name of Quarry Site	Rocks in site Soil in upper stream	
					Distance to Site(km)	2	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group

C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (16/22)

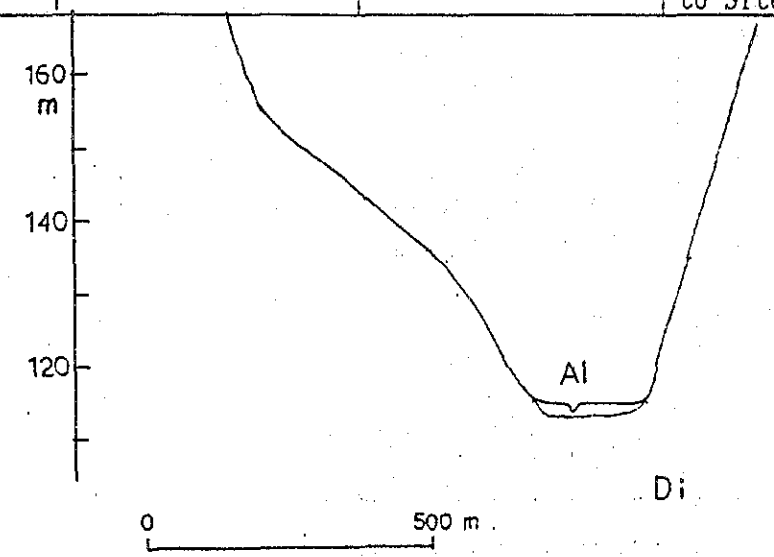
Name of Dam: Huai Wang Mut No 16

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
Maenum Hanuman	Huai Wang Mut	96	114	10	5	17	Fill Type	2	Curtain grouting

Foundation Geology				
	Unconsolidated Overburden		Basement Rock	Remarks
	Lithology	Thickness (m)	Lithology	
River Bed and Flood Plain	Al clay, sand, and gravel	2	Di Diorite or Granite	-Diorite shows comparatively fresh
Right Abutment	Dt clay, sand, and rock fragments	1	Di Diorite or Granite	
Left Abutment	Dt clay, sand, and rock fragments	1	Di Diorite or Granite	

Construction Materials		
	Lithology	Remarks
Soil	gravelly and sandy silt	
Rock	Diorite	-Qualitative assessment is required for materials
Name of Quarry Site	Rocks in site Soils in downstream	
Distance to Site (km)	5	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Di: Diorite or granite

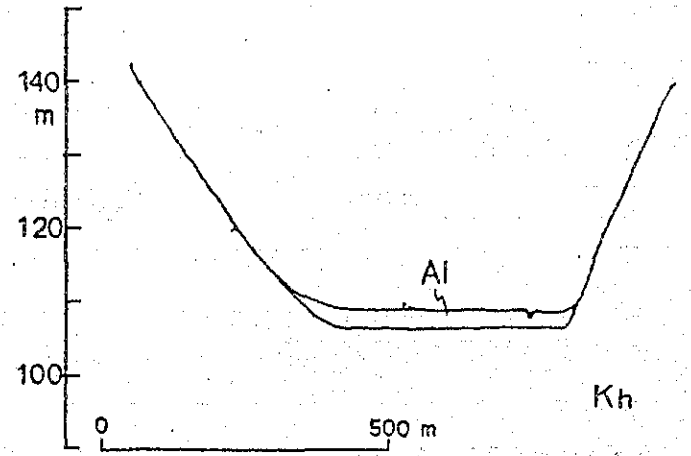
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (17/22)

Name of Dam: Upper Lam Phraya Than No 17

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Maenum Hanuman	Lam Phraya Than	68	108	10	6	4	Fill Type	3	Curtain grouting

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness(m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	2	Kh Sandstone, siltstone and mudstone	-Lithology of sandstone indicates quartzose -Flat joints develop in the sandstone and it shows permeable	Soil	gravelly and sandy siit	-Soil materials indicate permeable
Right Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Rock	Sandstone	-Qualitative assessment is required for materials
Left Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Name of Quarry Site	Rocks in site Soils in downstream	
					Distance to Site(km)	7	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group

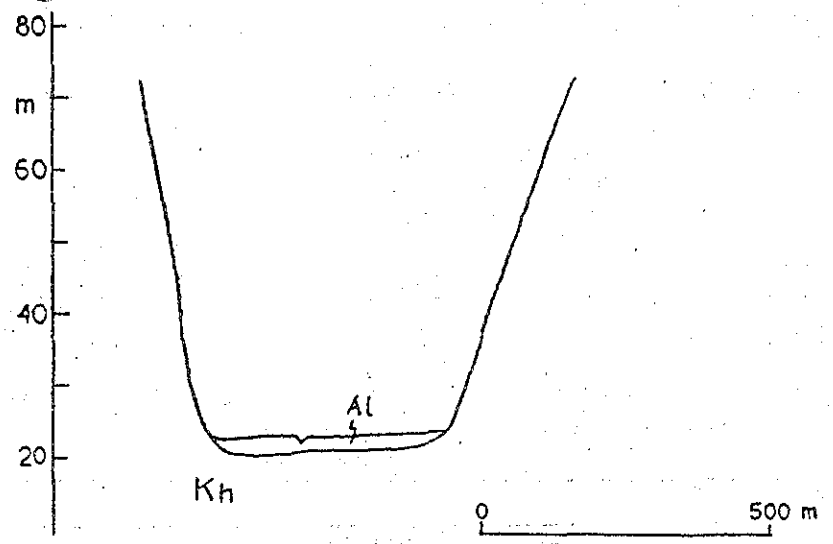
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (18/22)

Name of Dam: Huai Sai Noi No 18

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Maenum Hanuman	Huai Sai Noi	159	22	-	23	11	Fill Type	3	Curtain grouting

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness(m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	2	Kh Sandstone, siltstone and mudstone	-Lithology of sandstone indicates quartzose -Flat joints develop in the sandstone and it shows permeable -Water can be utilized by linkage with Huai Sai Yai reservoir	Soil	gravelly and sandy silt	-Soil materials indicate permeable
Right Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Rock	Sandstone	-Qualitative assessment is required for materials
Left Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Name of Quarry Site	Rocks in site Soils in downstream	
					Distance to Site(km)	10	

.Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group

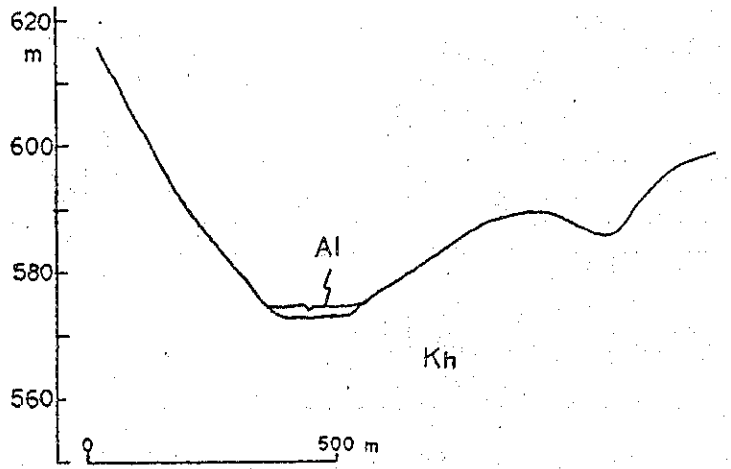
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (19/22)

Name of Dam: Huai Sai Yai No 19

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Maenum Hanuman	Huai Sai Yai	273	574	-	3	10	Fill Type	5	Curtain grouting

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness(m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	5	Kh Siltstone and mudstone	-Weathered siltstone underlies at right abutment and riverbed -Stored water can be utilized at Huai Sai Noi Dam by importation works at a col located 4 km west of site	Soil	Silt and clay	
Right Abutment	Dt clay, sand, and rock fragments	3	Kh Siltstone and mudstone		Rock	Sandstone	-Qualitative assessment is required for materials
Left Abutment	Dt clay, sand, and rock fragments	2	Kh Sandstone, siltstone and mudstone		Name of Quarry Site	Soil in site Rock in downstream	
					Distance to Site(km)	5	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group

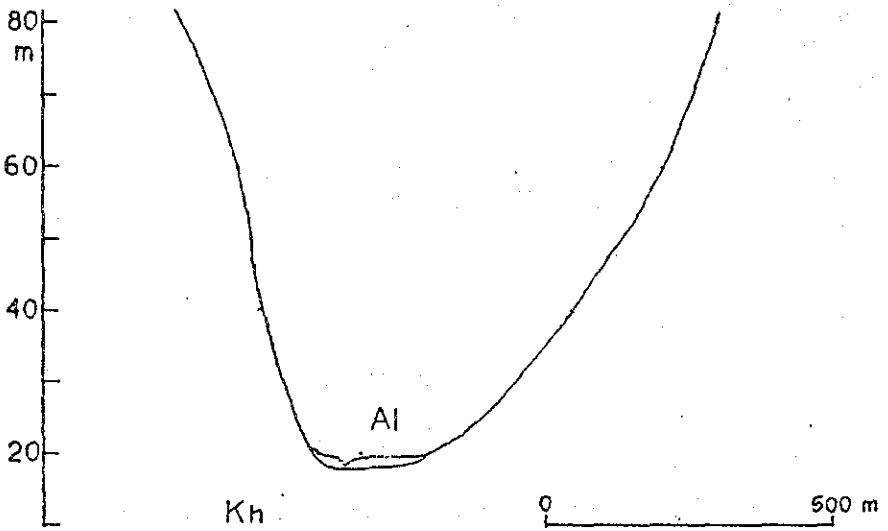
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (20/22)

Name of Dam: Khlong Nong Kaeo No 20

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area (sq.km)	Riverbed Alti. (m)	Riverbed Width (m)	Gradient of Abutment Right Bank	Left Bank			
Upper Bangpakong	Khlong Nong Kaeo	107	20	35	15	11	Fill Type	2	Curtain grouting

Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness (m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	2	Kh Sandstone, siltstone and mudstone	-Lithology of sandstone indicates quartzose. -Flat joints develop in the sandstone and it shows permeable	Soil	gravelly and sandy silt	-Soil materials indicate permeable
Right Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Rock	Sandstone	-Qualitative assessment is required for materials
Left Abutment	Dt clay, sand, and rock fragments	1	Kh Sandstone, siltstone and mudstone		Name of Quarry Site	Rocks in site Soils in downstream	
					Distance to Site (km)	3	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group

C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (21/22)

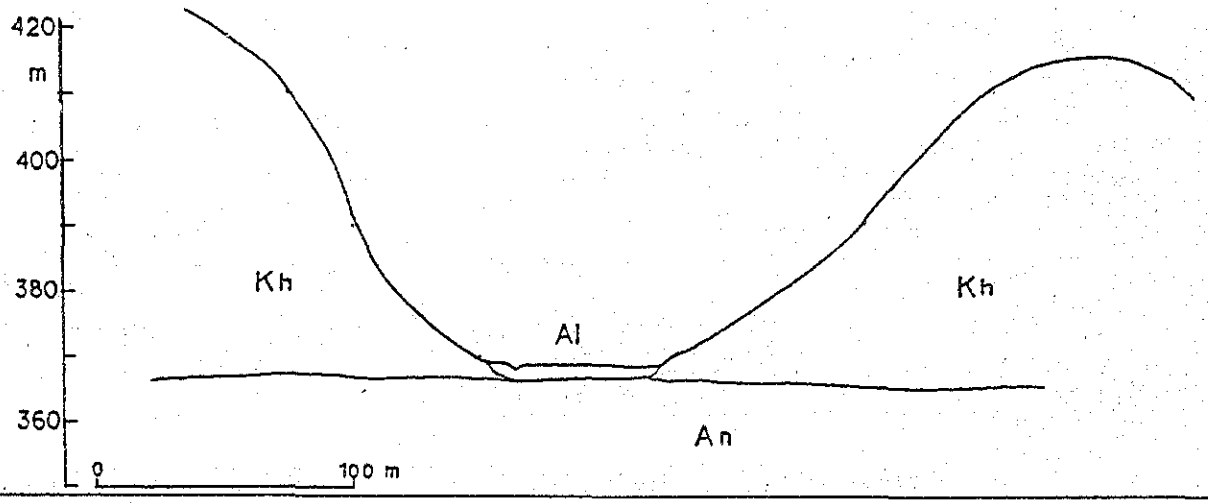
Name of Dam: Khlong Tha Dan No 21

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Nakhon Nayok	Khlong Tha Dan	151	370	20	21	11	Fill Type	5	Curtain grouting

Foundation Geology				
	Unconsolidated Overburden		Basement Rock	Remarks
	Lithology	Thickness(m)	Lithology	
River Bed and Flood Plain	Al clay, sand, and gravel	5	An Fresh andesite	-Andesite show fresh but joint rich -Siltstone in both abutments subjected weathering -Difference of physical properties between andesite & siltstone count into consideration for stability analysis of dam body
Right Abutment	Dt clay, sand, and rock fragments	3	Kh Siltstone and mudstone	
Left Abutment	Dt clay, sand, and rock fragments	3	Kh Sandstone, siltstone and mudstone	

Construction Materials		
	Lithology	Remarks
Soil	Silt and clay	
Rock	Andesite	-Qualitative assessment is required for materials
Name of Quarry Site	Soil and rock near the site	
Distance to Site(km)		

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Kh: Khorat Group
An: Andesite

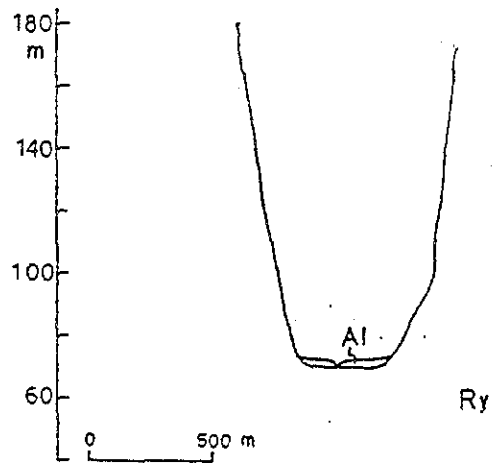
C.1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (22/22)

Name of Dam: Khlong Ban Na No 22

Physiographic Features				Damsite Topography			Dam Type	Depth of Cutoff (m)	Foundation Treatment
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right Bank	Left Bank			
Nakhon Nayok	Khlong Ban Na	114	70	15	7	4.5	Fill Type	4	Curtain grouting

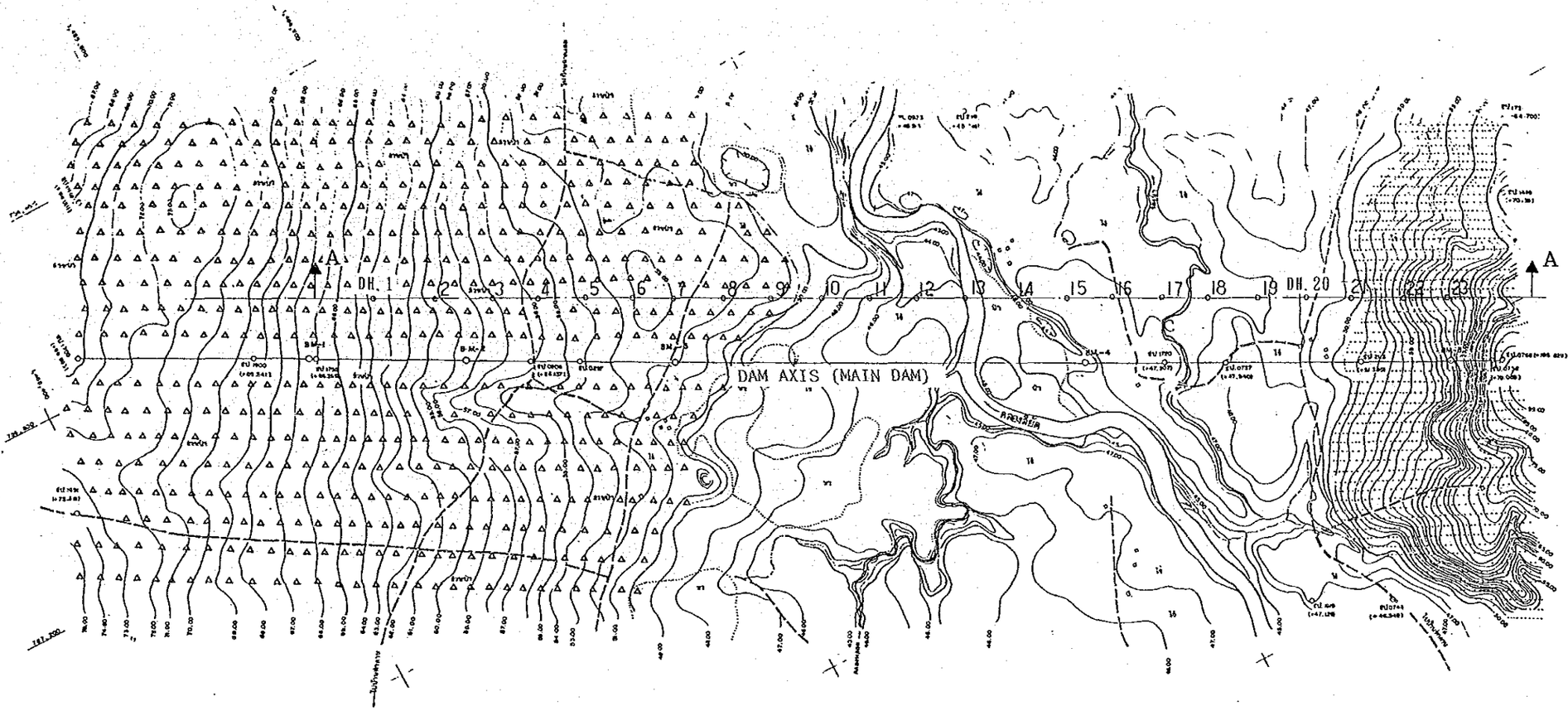
Foundation Geology					Construction Materials		
	Unconsolidated Overburden		Basement Rock	Remarks		Lithology	Remarks
	Lithology	Thickness(m)	Lithology				
River Bed and Flood Plain	Al clay, sand, and gravel	3	Ry Rhyolite, volcanic breccia and dacite	-Rhyolite show joint rich and cracky	Soil	Silt, clay and gravelly silt	
Right Abutment	Dt clay, sand, and rock fragments	1	Ry Rhyolite, volcanic breccia and dacite		Rock	Rhyolite or dacite	-Qualitative assessment is required for materials
Left Abutment	Dt clay, sand, and rock fragments	1	Ry Rhyolite, volcanic breccia and dacite		Name of Quarry Site	Rock locates stream of site	
					Distance to Site(km)	2	

Geologic Profile of Dam Axis



Al: Flood plain deposits
Dt: Colluvial deposits
Ry: Rhyolite, volcanic breccia and dacite

C.1.3. GEOLOGIC MAP OF DAMSITE (MAIN DAM)



SCALE 1 : 10,000

EXPLANATION

Terrace deposit ; Silt , Gravel , lateritic soil

Alluvial deposit ; Silty sand , Silt

Boulder of Sandstone , Sandstone

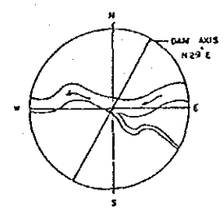
LEGEND

Contour line

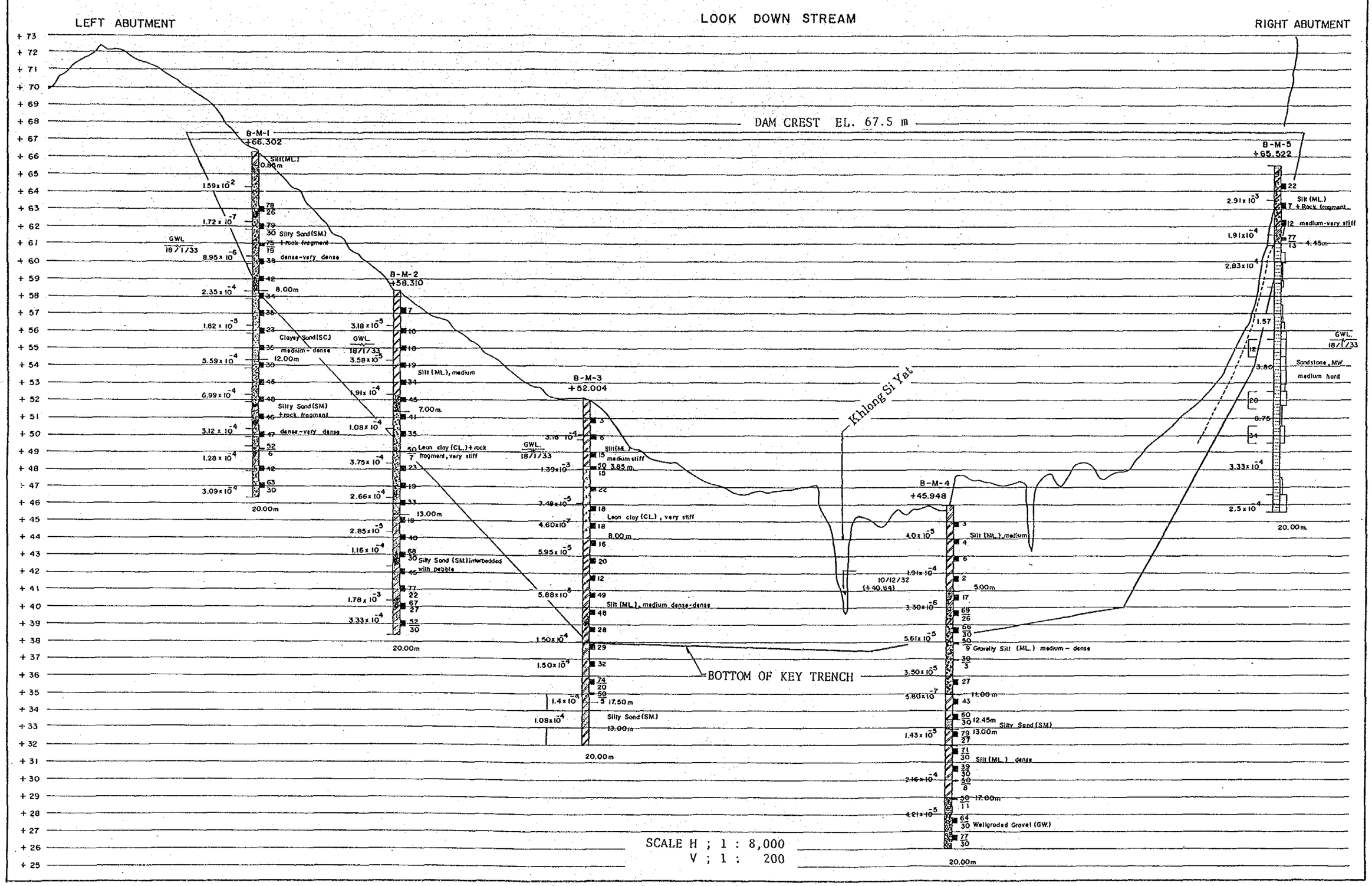
Strike and dip angle of rock unit

Intermittent stream (Huai)

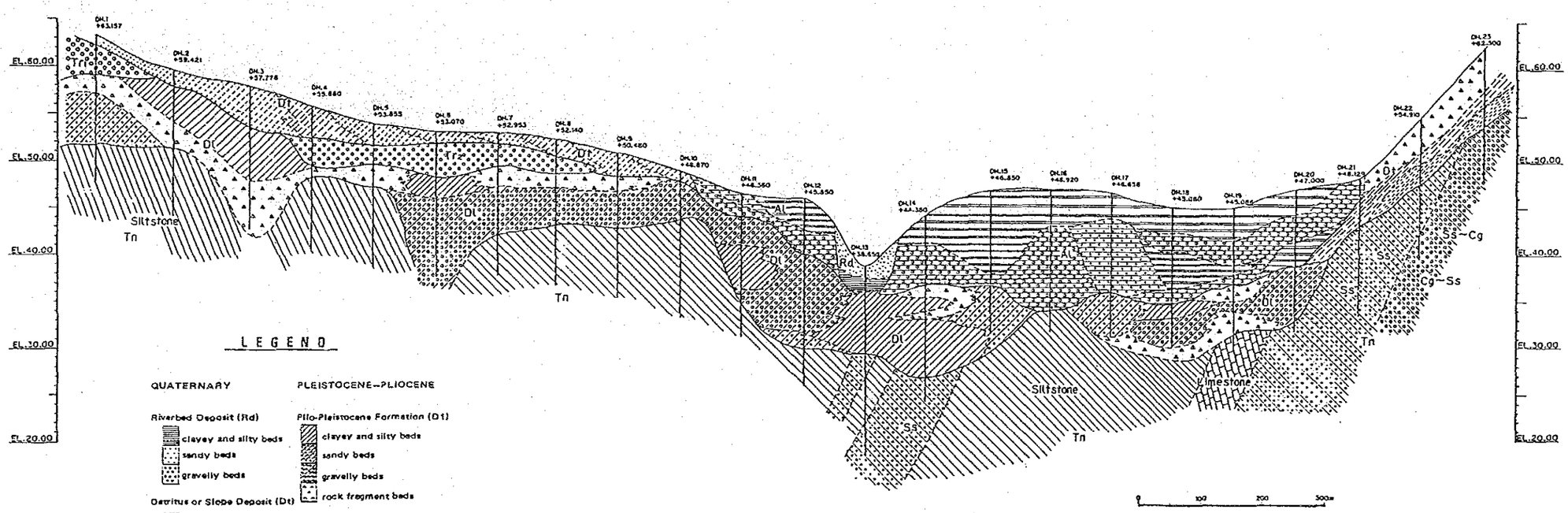
ORIENTATION



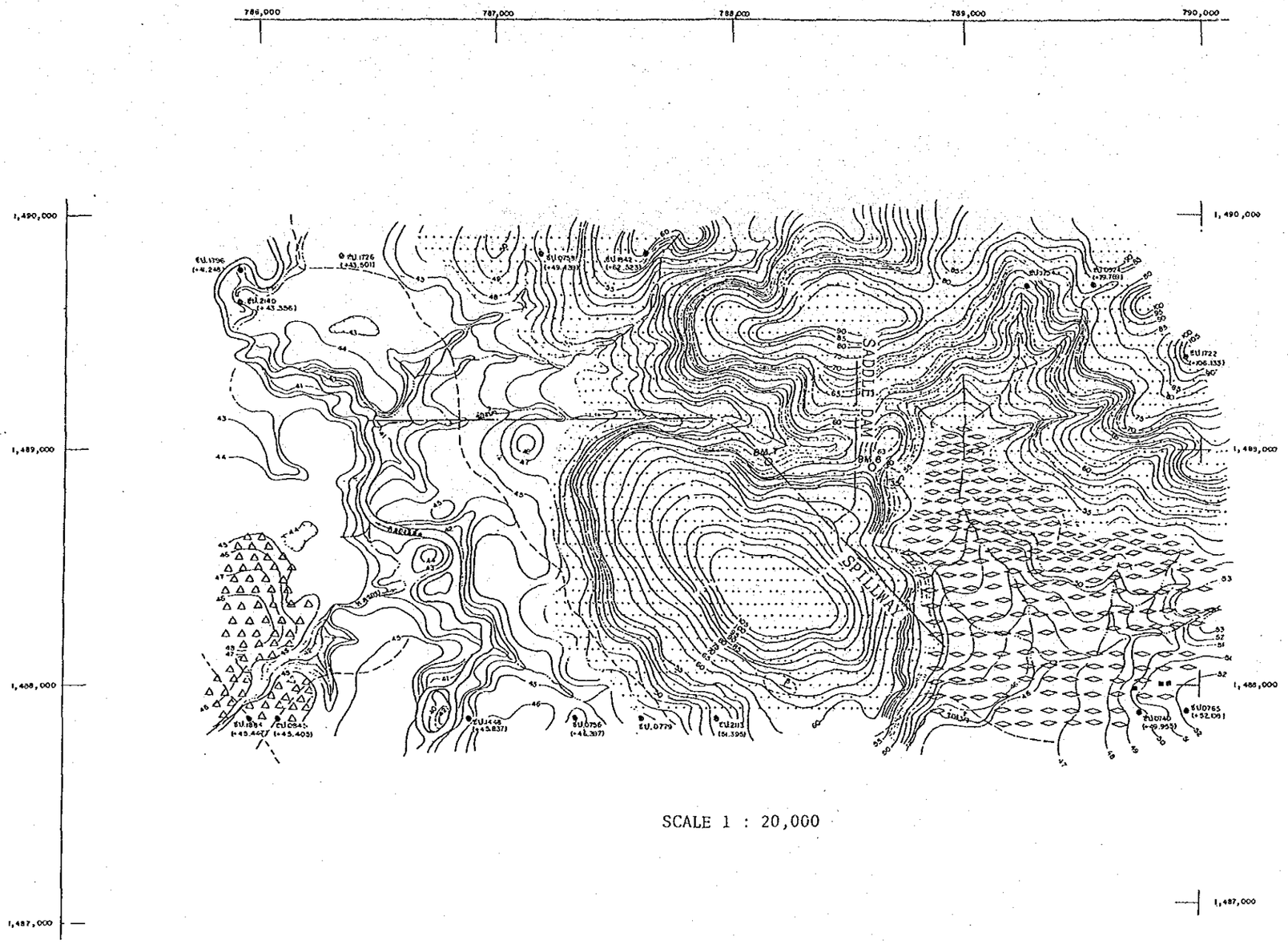
C.1.4. GEOLOGIC PROFILE OF DAMSITE (MAIN DAM)



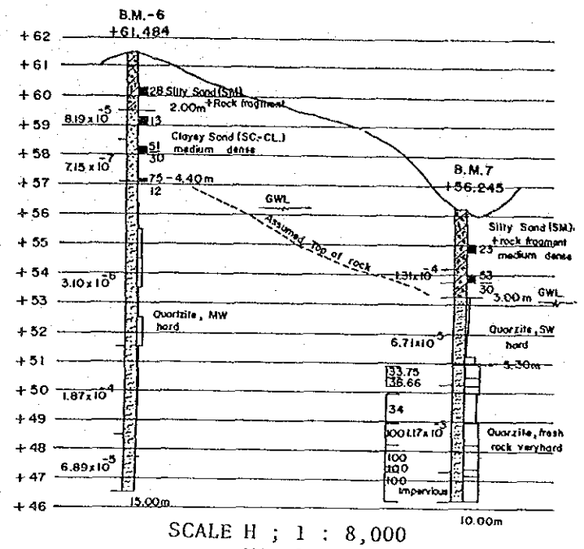
C.1.5. GEOLOGIC PROFILE OF SECTION A - A



C.1.6. GEOLOGIC MAP OF SPILLWAY SITE



SCALE 1 : 20,000



SCALE H ; 1 : 8,000
V ; 1 : 200

EXPLANATION

- Terrace deposit ; Silt, Gravel, lateritic soil
- Alluvial deposit ; Silty sand, Silt
- Boulder of Sandstone, Sandstone
- Residual soil ; Silt, Silty sand

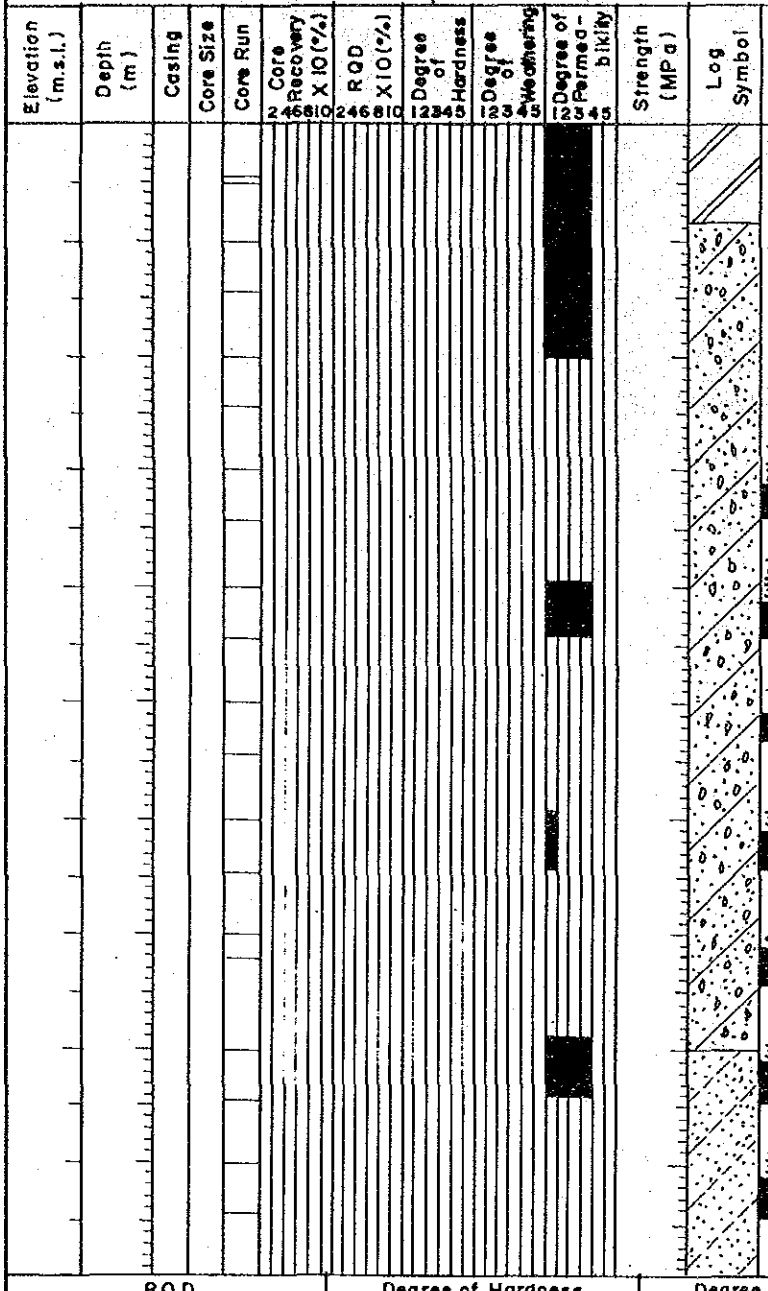
LEGEND

- Contour line
- Strike and dip angle of rock unit
- Intermittent stream (Hual)

C.1.7. GEOLOGIC LOG OF DRILL HOLE

GEOLOGIC LOG OF DRILL HOLE

Project: Khlong Si Yat	Logged By: S. Teerawut	Hole No.: B.M - 1
Changwat: Chachoengsao	Logged Date: 23 / 1 / 33	Total Depth: 20.45 m
Site: ¢. Qdm	Drilling Method: Rotary	Angle From Vertical: 0°
Location: Left Abutment	Drilling Started: 10 / 1 / 33	Bearing of Angle Hole:
Elevation: ± 66.302	Drilling Finished: 18 / 1 / 33	Elevation of Groundwater: ± 60.852



Description

0.00 - 0.85 m
Silt (ML)
About 85% non plasticity fines, about 15% very fine sand, reddish brown, dry, roots.

0.85 - 8.00 m
Silty sand + rock fragment (latteritic soil)
About 70% low-slightly plasticity fines, about 20% fine sand, about 10% rock fragment, brown, moist.
(3.50-3.60 m, 7.45-7.60 m Interval of gravel)

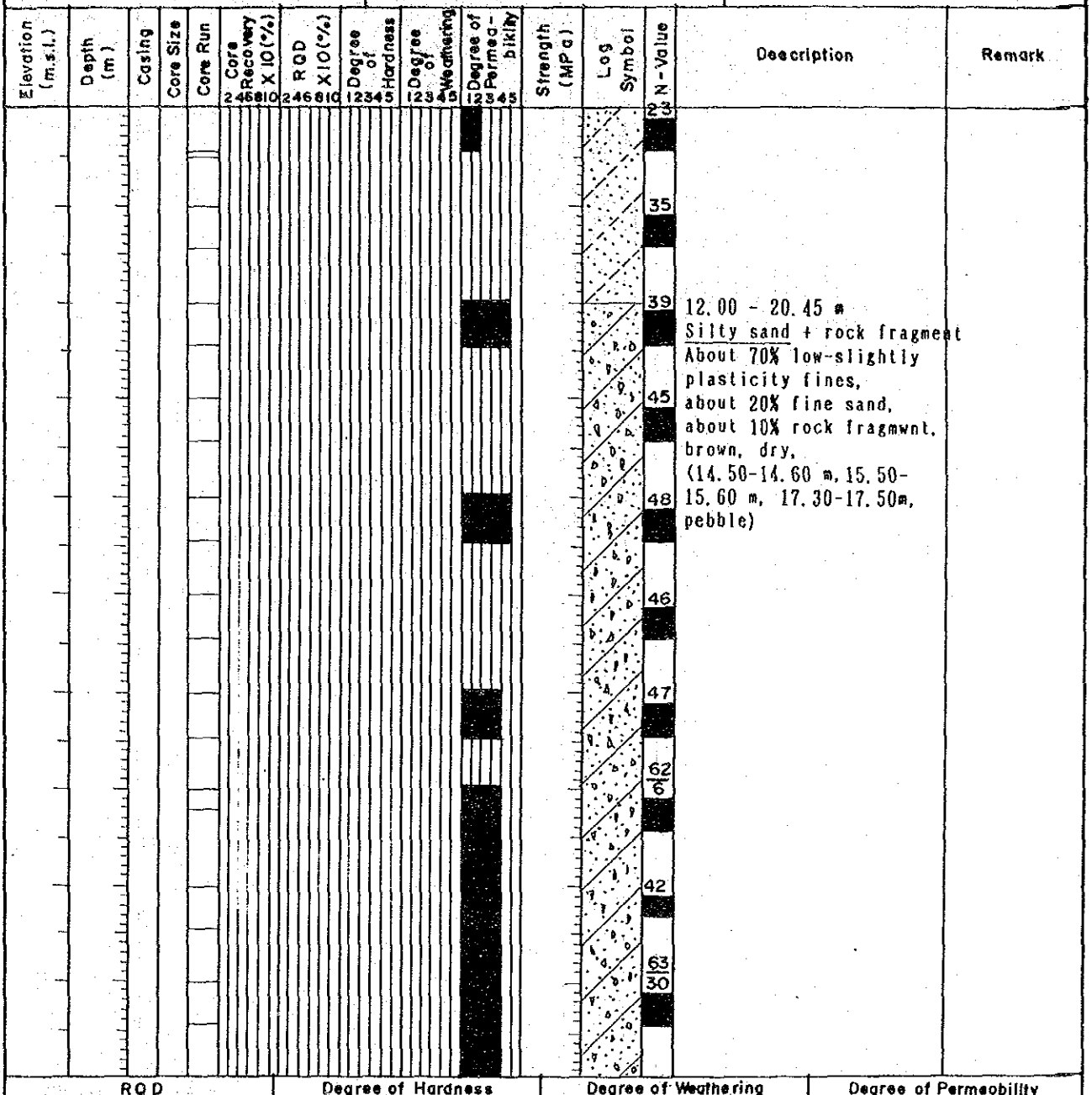
8.00 - 12.00 m
Clayey sand (SC)
About 75% predominantly fine sand, about 25% medium plasticity fines, brown, moist.

Remark

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< -25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5} - 5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5} - 10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4} - 5×10^{-4} "
90 - 100% = Very Good Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project: Khlong Si Yat	Logged By: S. Teerawui	Hole No.: B. M. - 1
Changwat: Chachoengsao	Logged Date: 23/1/33	Total Depth: 20.45 m
Site: ℄ Dam	Drilling Method: Rotary	Angle From Vertical: 0°
Location: Left Abutment	Drilling Started: 10/1/33	Bearing of Angle Hole:
Elevation: + 66.302	Drilling Finished: 18/1/33	Elevation of Groundwater: +60.852



RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< - 25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5} - 5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5} - 10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4} - 5×10^{-4} "
90 - 100% = Very GOOd Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project Khlong Si Yat	Logged By S. Teerawut	Hole No. B.M-1
Changwat Chachoengsao	Logged Date / /	Total Depth 20.45 m
Site	Drilling Method Rotary	Angle From Vertical 0°
Location	Drilling Started / /	Bearing of Angle Hole
Elevation	Drilling Finished / /	Elevation of Groundwater

Elevation (m.s.l.)	Depth (m)	Casing	Core Size	Core Run	Core Recovery X 10(%) 2 4 6 8 10	RQD X 10(%) 2 4 6 8 10	Degree of Hardness 1 2 3 4 5	Degree of Weathering 1 2 3 4 5	Degree of Permeability 1 2 3 4 5	Strength (MPa)	Log Symbol	N-Value	Description	Remark

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< 25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5} - 5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5} - 10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4} - 5×10^{-4} "
90 - 100% = Very GOOd Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project Khlong Si Yat	Logged By S. Teerawut	Hole No. B.M.-2
Changwat Chachoengsao	Logged Date 11/1/32	Total Depth 20.00 m
Site ℄ Dam	Drilling Method Rotary	Angle From Vertical 0°
Location Left Abutment	Drilling Started 16/12/32	Bearing of Angle Hole
Elevation +58.310	Drilling Finished 21/12/32	Elevation of Groundwater +585.230

Elevation (m.s.l.)	Depth (m)	Casing	Core Size	Core Run	Core Recovery X10(%) 2 4 6 8 10	RQD X10(%) 2 4 6 8 10	Degree of Hardness 1 2 3 4 5	Degree of Weathering 1 2 3 4 5	Degree of Permeability 1 2 3 4 5	Strength (MPa)	Log Symbol	N-Value	Description	Remark
												7	0.00 - 7.00 m Silt (ML) About 75% low plasticity fines, about 25% fine sand, pale brown-brown, dry (6.00-7.00 m silt + pebble)	
												10		
												10		
												19		
												34		
												45		
												41	7.00 - 13.0 m Clay (CL) + rock fragment About 85% high plasticity fines, about 15% rock fragment, brown, moist. (9.70-10.00 m, 11.70-12.00 m Interbeded with pebble)	
												35		
												50/7		

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< - 25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5}-5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5}-10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4}-5×10^{-4} "
90 - 100% = Very Good Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project: Khlong Si Yat
Changwat: Chachoengsao
Site: ţ Dam
Location: Left Abutment
Elevation: ± 58.310

Logged By: S. Teerawut
Logged Date: 11/1/32
Drilling Method: Rotary
Drilling Started: 16/12/32
Drilling Finished: 21/12/32

Hole No.: B.M. – 2
Total Depth: 20.00 m
Angle From Vertical: 0°
Bearing of Angle Hole:
Elevation of Groundwater: +55.230

Elevation (m.s.l.)	Depth (m)	Casing	Core Size	Core Run	Core Recovery X 10 (%) 2 4 6 8 10	RQD X 10 (%) 2 4 6 8 10	Degree of Hardness 1 2 3 4 5	Degree of Weathering 1 2 3 4 5	Degree of Permeability 1 2 3 4 5	Strength (MPa)	Log Symbol	N-Value	Description	Remark
												23	13.00 – 19.45 m Silty sand (SM) About 70% predominantly fine sand, about 20% non plasticity fines, about 10% gravel, brown, (interbeded with gravel)	
												19		
												33		
												18		
												40		
												68/30		
												43		
												77/22		
												67/27		
												22/30		

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< – 25 % = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 – 50 % = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 – 5 〃 10^{-5} – 5×10^{-5} 〃
50 – 75 % = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 – 10 〃 5×10^{-5} – 10^{-4} 〃
75 – 90 % = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 – 50 〃 10^{-4} – 5×10^{-4} 〃
90 – 100 % = Very Good Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 〃 > 5×10^{-4} 〃

GEOLOGIC LOG OF DRILL HOLE

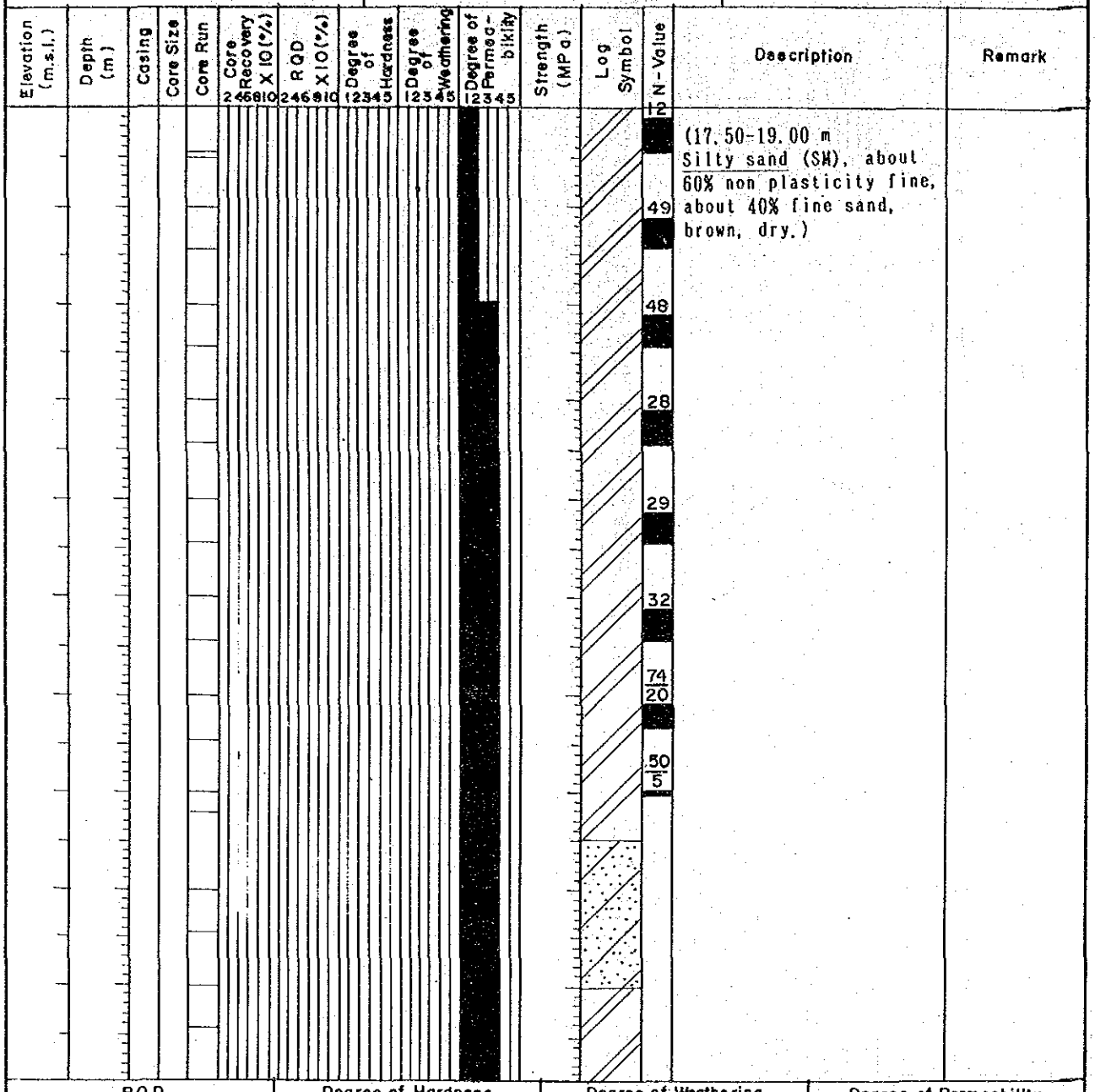
Project: Khlong Si Yat	Logged By: S. Teerawut	Hole No.: B.M. - 3
Changwat: Chachoengsao	Logged Date: 11/1/33	Total Depth: 20.00 m
Site: ℄ Dam	Drilling Method: Rotary	Angle From Vertical: 0°
Location: Left Abutment	Drilling Started: 9/12/32	Bearing of Angle Hole:
Elevation: +52.004	Drilling Finished: 14/12/32	Elevation of Groundwater: +49.324

Elevation (m.s.l.)	Depth (m)	Casing	Core Size	Core Run	Core Recovery X 10(%) 2 4 6 8 10	RQD X10(%) 2 4 6 8 10	Degree of Hardness 1 2 3 4 5	Degree of Weathering 1 2 3 4 5	Degree of Permeability 1 2 3 4 5	Strength (MPa)	Log Symbol	N-Value	Description	Remark
												3	0.00 - 3.85 m Silt (ML) About 75% low plasticity fines, about 25% very fine sand, pale brown-brown dry.	
												6		
												15		
												50/15		
												22	3.85 - 8.00 m Clay (CL) About 90% medium plasticity fines, about 10% fine sand, brown, dry.	
												18		
												18		
												16	8.00 - 20.00 m Silt (ML) About 75% low plasticity fines, about 25% very fine sand, reddish brown, dry. (12.70-13.00 m pebble)	
												20		

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< -25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5} - 5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5} - 10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4} - 5×10^{-4} "
90 - 100% = Very GOOd Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project Khlong Si Yat	Logged By S. Teerawut	Hole No. B.M. -3
Changwat Chachoengsao	Logged Date 11/1/33	Total Depth 20.00 m
Site ℄ Dam	Drilling Method Rotary	Angle From Vertical 0°
Location Left Abutment	Drilling Started 9/12/32	Bearing of Angle Hole
Elevation +52.004	Drilling Finished 14/12/32	Elevation of Groundwater +49.324



Description

Remark

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< -25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5}-5X10^{-5} "
50 -75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5X10^{-5}-10^{-4} "
75 - 90%= Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 =10-50 " 10^{-4}-5X10^{-4} "
90-100% = Very GOOd Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5X10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project: Khlong Si Yat	Logged By: S. Teerawut	Hole No.: B.M.-4
Changwat: Chachoengsao	Logged Date: 12/1/33	Total Depth: 20.00 m
Site: ℄ Dam	Drilling Method: Rotary	Angle From Vertical: 0°
Location: Right Abutment	Drilling Started: 17/12/32	Bearing of Angle Hole:
Elevation: +45.948	Drilling Finished: 21/12/32	Elevation of Groundwater:

Elevation (m.s.l.)	Depth (m)	Casing	Core Size	Core Run	Core Recovery X 10(%) 2 4 6 8 10	RQD X10(%) 2 4 6 8 10	Degree of Hardness 1 2 3 4 5	Degree of Weathering 1 2 3 4 5	Degree of Permeability 1 2 3 4 5	Strength (MPa)	Log Symbol	N-Value	Description	Remark
												3	0.00 - 5.00 m Silt (ML) About 85% low plasticity fines, about 15% fine sand, brown, moist.	
												4		
												6		
												2		
												17	5.00 - 11.00 m Gravelly silt (ML) About 75% very fine sand, about 25% gravel, brown, moist.	
												69/26		
												66/30		
												50/9		
												30/3		

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< - 25 % = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50 % = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5} - 5×10^{-5} "
50 - 75 % = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5} - 10^{-4} "
75 - 90 % = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4} - 5×10^{-4} "
90 - 100 % = Very GOOd Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

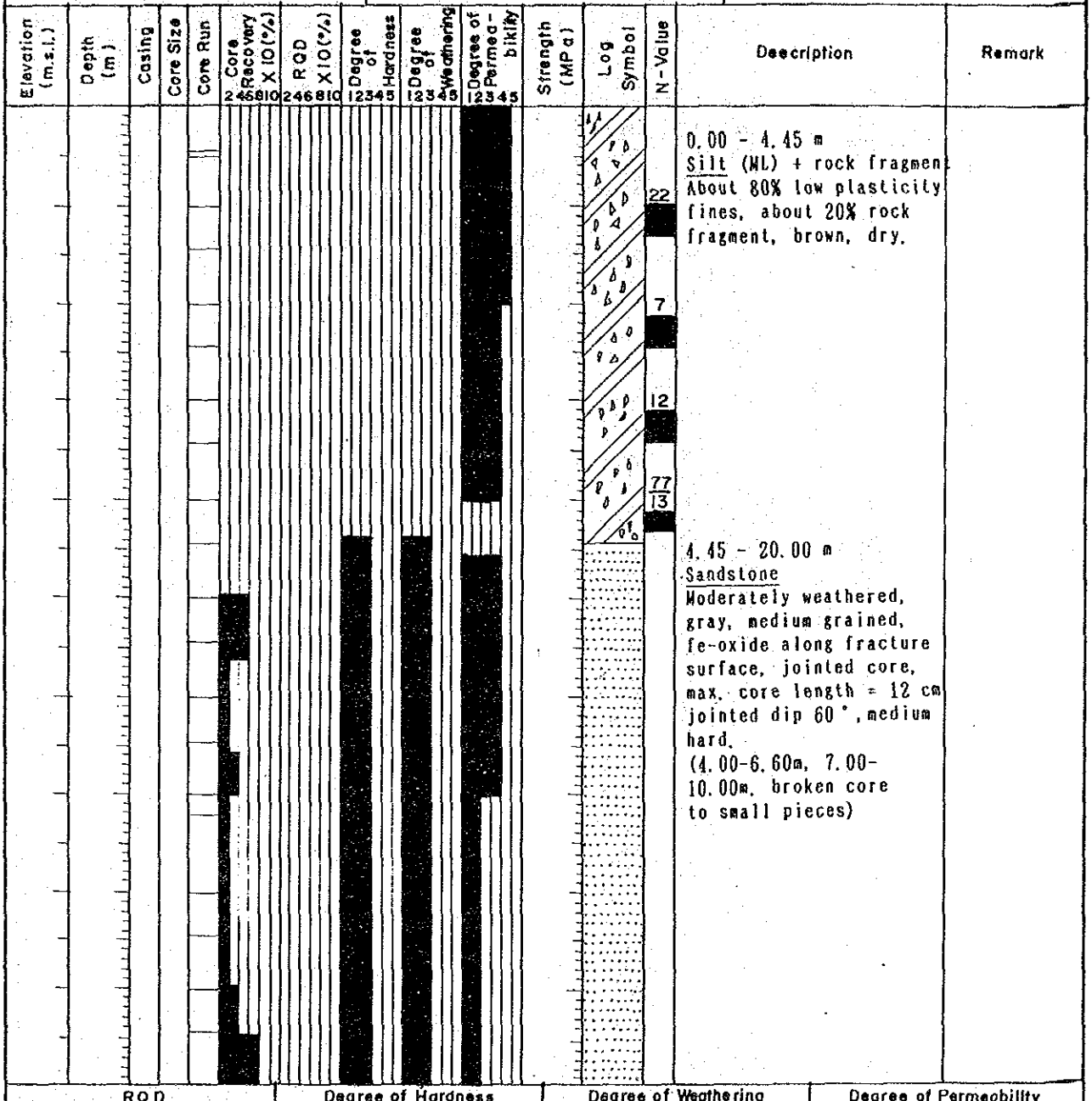
Project: Khlong Si Yat	Logged By: S. Teerawut	Hole No.: B.M.-4
Changwat: Chachoengsao	Logged Date: 12/1/33	Total Depth: 20.00 m
Site: ℄ Dam	Drilling Method: Rotary	Angle From Vertical: 0°
Location: Right Abutment	Drilling Started: 17/12/32	Bearing of Angle Hole:
Elevation: +45.948	Drilling Finished: 21/12/32	Elevation of Groundwater:

Elevation (m.s.l.)	Depth (m)	Casing	Core Size	Core Run	Core Recovery X 10(%) 2 4 6 8 10	RQD X10(%) 2 4 6 8 10	Degree of Hardness 1 2 3 4 5	Degree of Weathering 1 2 3 4 5	Degree of Permeability 1 2 3 4 5	Strength (MPa)	Log Symbol	N-Value	Description	Remark
												27		
												43	11.00 - 17.00 m Silt (ML) About 85% low plasticity fines, about 15% fine sand, brown, moist. (12.45-13.00 m, Silty sand (SM))	
												60/30		
												79/27		
												71/30		
												39/30		
												30/8		
												50/11	17.00 - 19.00 m Interval of gravel	
												64/30		
												77/30		

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< 25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5} - 5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5} - 10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4} - 5×10^{-4} "
90 - 100% = Very GOOd Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project Khlong Si Yat	Logged By S. Teerawut	Hole No. B.M.-5
Changwat Chachoengsao	Logged Date 12/1/33	Total Depth 20.00 m
Site t. Dom	Drilling Method Rotary	Angle From Vertical 0°
Location Right Abutment	Drilling Started 23/12/32	Bearing of Angle Hole
Elevation +65.522	Drilling Finished 25/12/32	Elevation of Groundwater +55.422



Description

0.00 - 4.45 m
Silt (ML) + rock fragment
About 80% low plasticity fines, about 20% rock fragment, brown, dry.

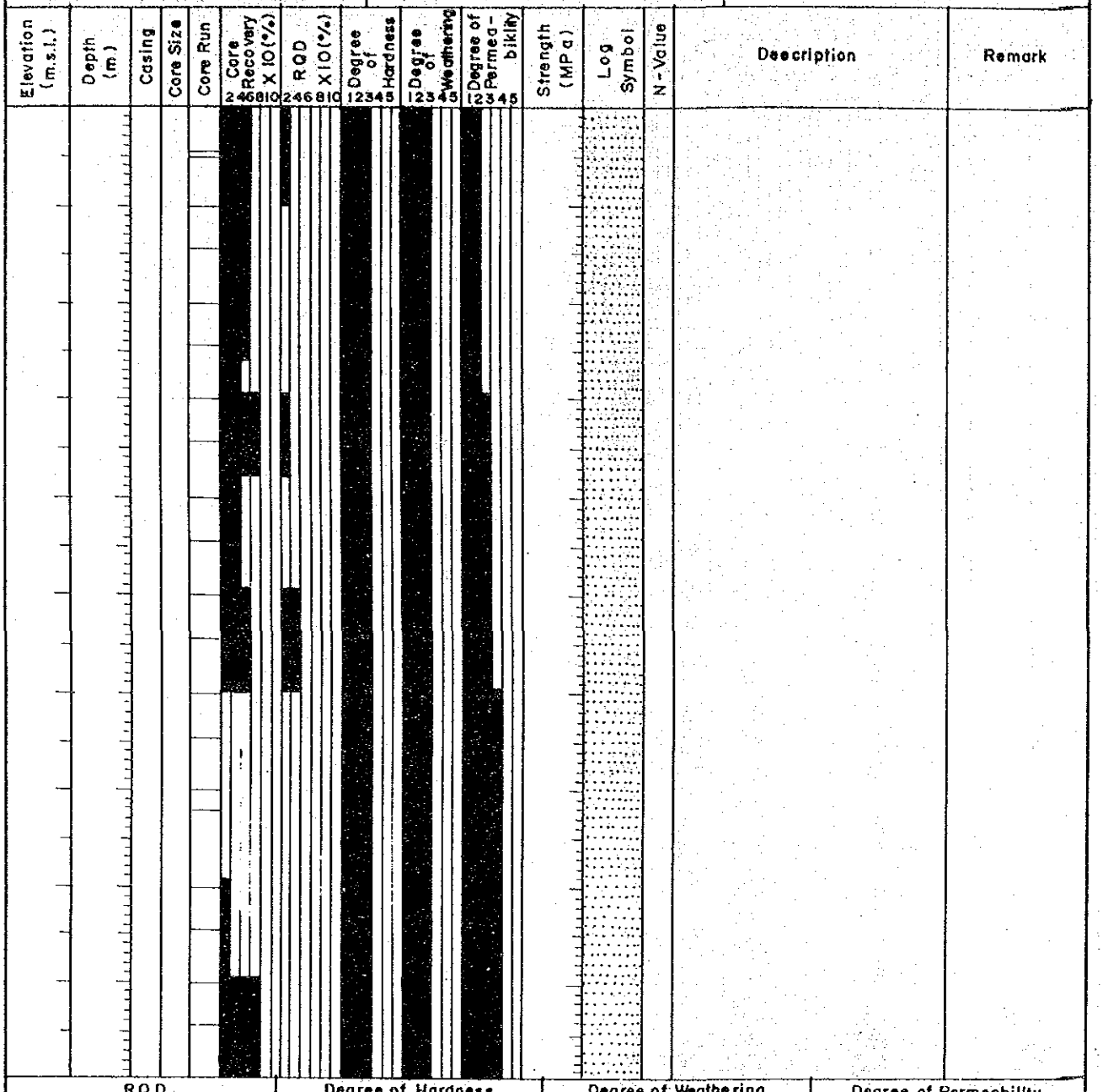
4.45 - 20.00 m
Sandstone
Moderately weathered, gray, medium grained, fe-oxide along fracture surface, jointed core, max. core length = 12 cm jointed dip 60°, medium hard.
(4.00-6.60m, 7.00-10.00m, broken core to small pieces)

Remark

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< -25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5}-5×10^{-3} "
50 -75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5}-10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4}-5×10^{-4} "
90-100% = Very GOOd Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project: Khlong Si Yat	Logged By: S. Teerawut	Hole No.: B.M.-5
Changwat: Chachoengsao	Logged Date: 12/1/33	Total Depth: 20.00 m
Site: Dam	Drilling Method: Rotary	Angle From Vertical: 0°
Location: Right Abutment	Drilling Started: 23/12/32	Bearing of Angle Hole:
Elevation: +65.522	Drilling Finished: 25/12/32	Elevation of Groundwater: +55.422



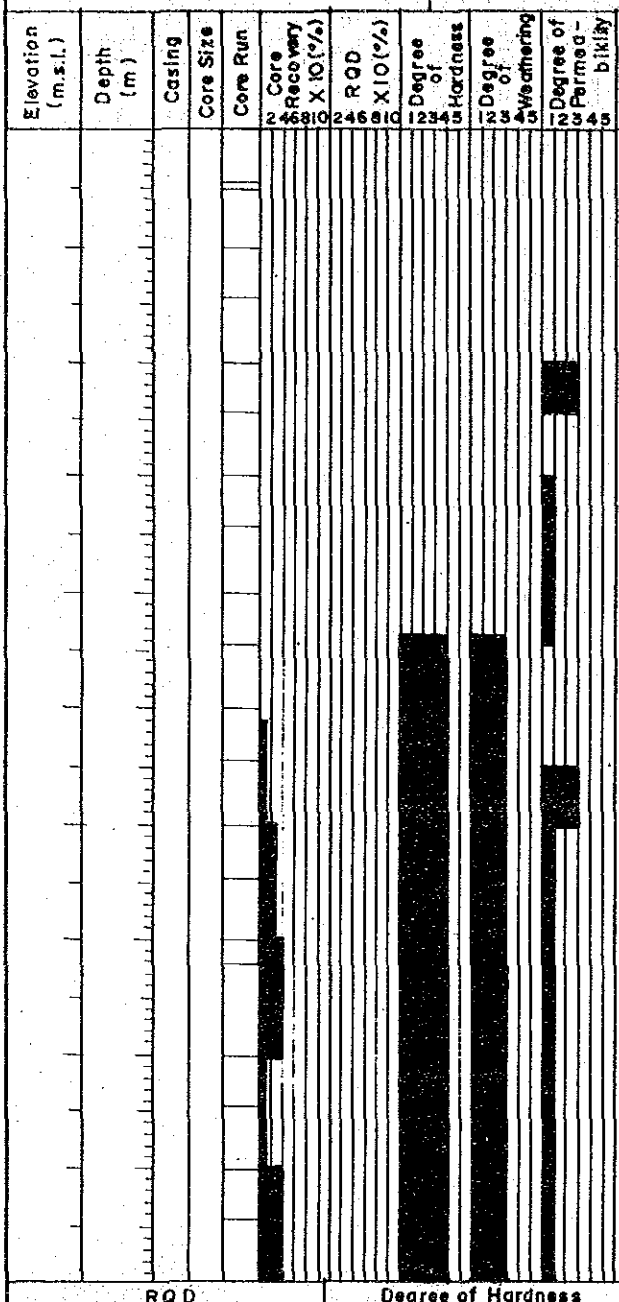
RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< -25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5} - 5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5} - 10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4} - 5×10^{-4} "
90 - 100% = Very Good Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project: Khlong Si Yat
Changwat: Chachoengsao
Site: Spillway
Location: Up stream
Elevation: +61.484

Logged By: S. Teerawut
Logged Date: 6/2/32
Drilling Method: Rotary
Drilling Started: 31/1/33
Drilling Finished: 3/2/33

Hole No.: B.M.-6
Total Depth: 15.00 m
Angle From Vertical: 0°
Bearing of Angle Hole:
Elevation of Groundwater: +56.224



Description

0.00 - 2.00 m
Silty sand (SM) + rock fragment
About 80% non plasticity fines, about 20% rock fragment, reddish brown, dry.

2.00 - 4.40 m
Clayey sand (SC-CL)
About 50% fine sand, about 50% slightly-medium plasticity fines, light gray, moist.

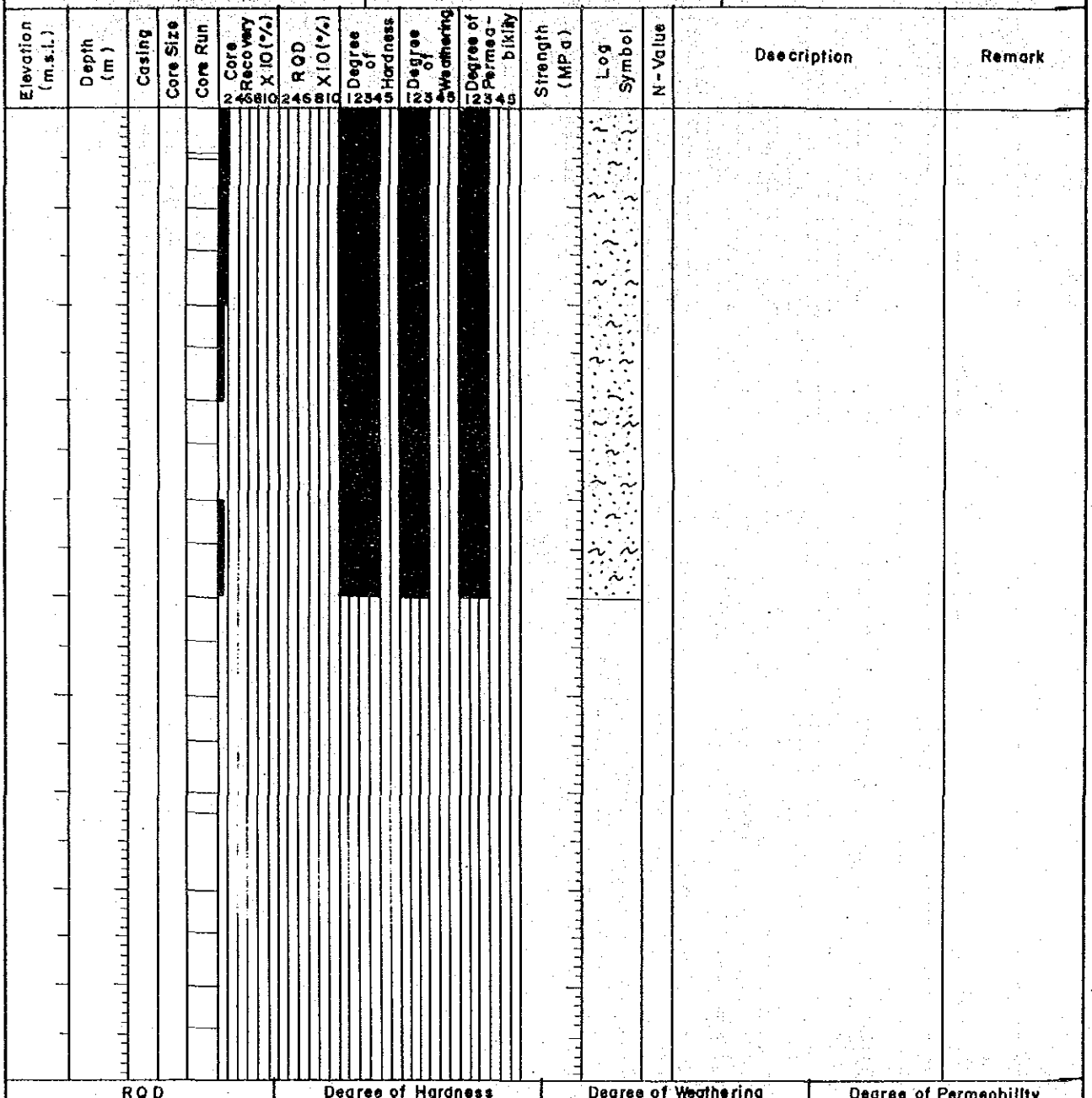
4.40 - 15.00 m
Quartzite
Moderately weathered, light gray, medium grained, well cements, broken core and loss sample, fe-oxide on fracture surface, max. core length 5 cm, jointed dip 80°, hard.

Remark

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< -25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5} - 5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5} - 10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4} - 5×10^{-4} "
90 - 100% = Very Good Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

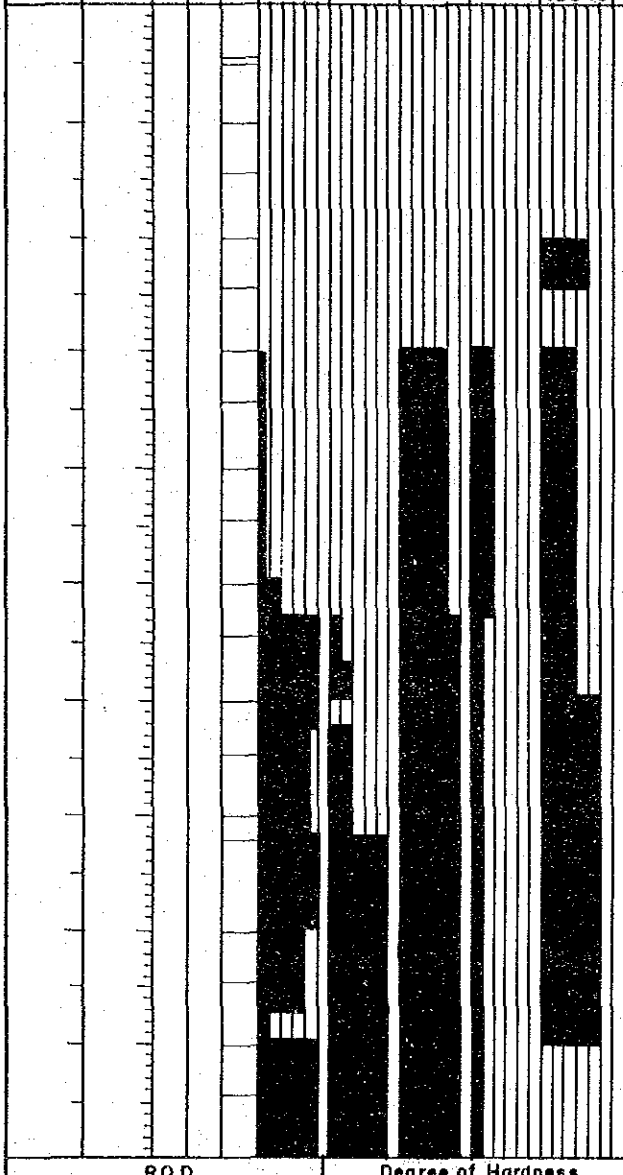
Project Khlong Si Yat	Logged By S. Teerawut	Hole No. B. M. - 6
Changwat Chachoengsao	Logged Date 6/2/32	Total Depth 15.00 m
Site Spillway	Drilling Method Rotary	Angle From Vertical 0°
Location Up stream	Drilling Started 31/1/33	Bearing of Angle Hole
Elevation +61.484	Drilling Finished 3/2/33	Elevation of Groundwater +56.224



RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< -25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5} - 5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5} - 10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4} - 5×10^{-4} "
90 - 100% = Very GOOd Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

GEOLOGIC LOG OF DRILL HOLE

Project Khlong Si Yat	Logged By S. Teerawut	Hole No. B.M-7
Changwat Chachoengsao	Logged Date 8/2/33	Total Depth 10.00 m
Site Spillway	Drilling Method Rotary	Angle From Vertical 0°
Location Down stream	Drilling Started 5/2/33	Bearing of Angle Hole
Elevation +56.245	Drilling Finished 7/2/33	Elevation of Groundwater +53.009



Description

0.00 - 3.00 m
Silty sand + rock fragment
About 80% non plasticity fines, about 20% rock fragment, dish brown, brown, dry.

3.00 - 5.30 m
Quarzite, SW.
Gray, medium quartz grains, well cements, broken core and loss sample fe-oxide on fracture surface max. core length 3 cm, hard.

5.30 - 10.00 m
Quartzite, Fresh
Gray, medium quartz grains, well cements, good percentage of core recovery and RQD, dense slightly jointed core very hard.

Remark

RQD	Degree of Hardness	Degree of Weathering	Degree of Permeability
< - 25% = Very Poor Rock	1 = Very Soft Rock	1 = Fresh Rock	1 = < 1 Lugeon or < 10^{-5} cm/sec
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered Rock	2 = 1 - 5 " 10^{-5}-5×10^{-5} "
50 - 75% = Fair Rock	3 = Medium Hard Rock	3 = Moderately Weathered Rock	3 = 5 - 10 " 5×10^{-5}-10^{-4} "
75 - 90% = Good Rock	4 = Hard Rock	4 = Highly Weathered Rock	4 = 10 - 50 " 10^{-4}-5×10^{-4} "
90 - 100% = Very Good Rock	5 = Very Hard Rock	5 = Completely Weathered Rock	5 = > 50 " > 5×10^{-4} "

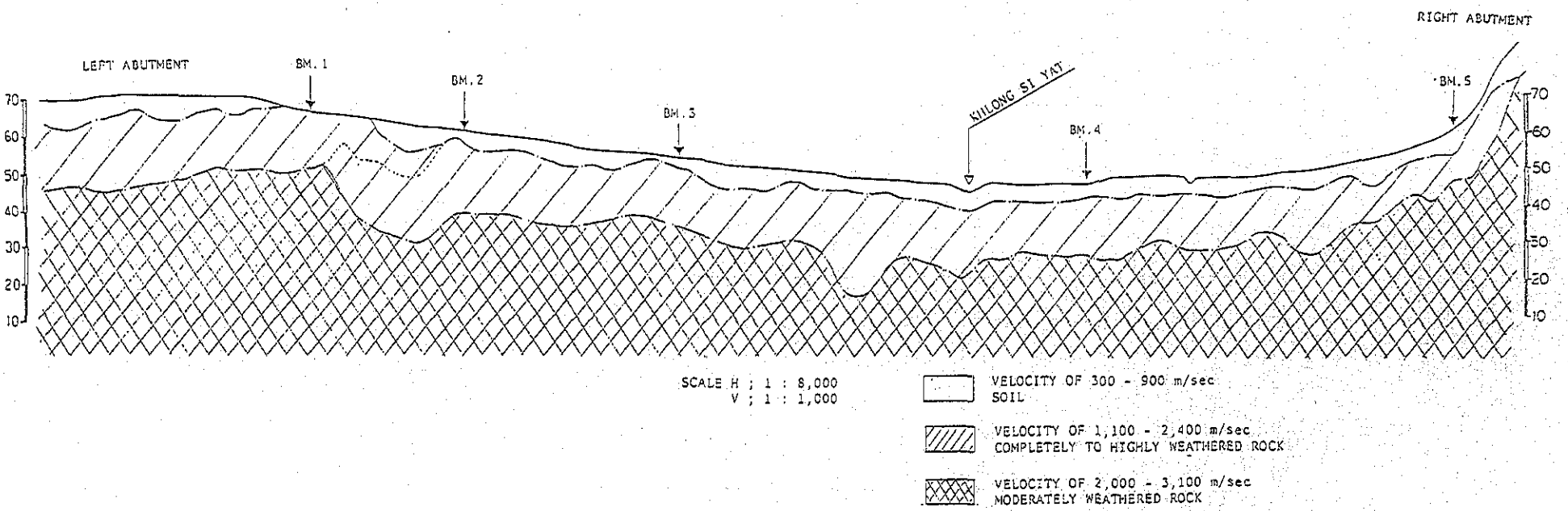
C.1.8. PERMEABILITY TEST IN DRILL HOLE

Number of drill hole	Total depth of drill hole (m)	Interval of testing (m)	Permeability		Method of test
			Value	Units	
B-M 1	20.00	2.00 - 2.00	1.59×10^{-2}	cm/sec	Gravity test
		4.00 - 4.45	1.72×10^{-4}	"	"
		6.00 - 6.45	8.95×10^{-6}	"	"
		8.00 - 8.45	2.35×10^{-4}	"	"
		10.00 - 10.45	1.82×10^{-5}	"	"
		12.00 - 12.45	5.59×10^{-4}	"	"
		14.00 - 14.45	6.99×10^{-4}	"	"
		15.00 - 16.45	3.12×10^{-4}	"	"
		17.00 - 18.45	1.28×10^{-4}	"	"
		18.45 - 20.45	3.09×10^{-4}	"	"
B-M 2	20.00	2.00 - 2.00	3.18×10^{-5}	"	"
		4.00 - 4.00	3.58×10^{-5}	"	"
		6.00 - 6.00	1.91×10^{-4}	"	"
		8.00 - 8.00	1.08×10^{-4}	"	"
		10.00 - 10.00	3.75×10^{-4}	"	"
		12.00 - 12.00	2.66×10^{-4}	"	"
		14.00 - 14.00	2.85×10^{-5}	"	"
		14.00 - 16.00	1.16×10^{-4}	"	"
		18.00 - 18.00	1.78×10^{-3}	"	"
		18.00 - 20.00	3.33×10^{-4}	"	"

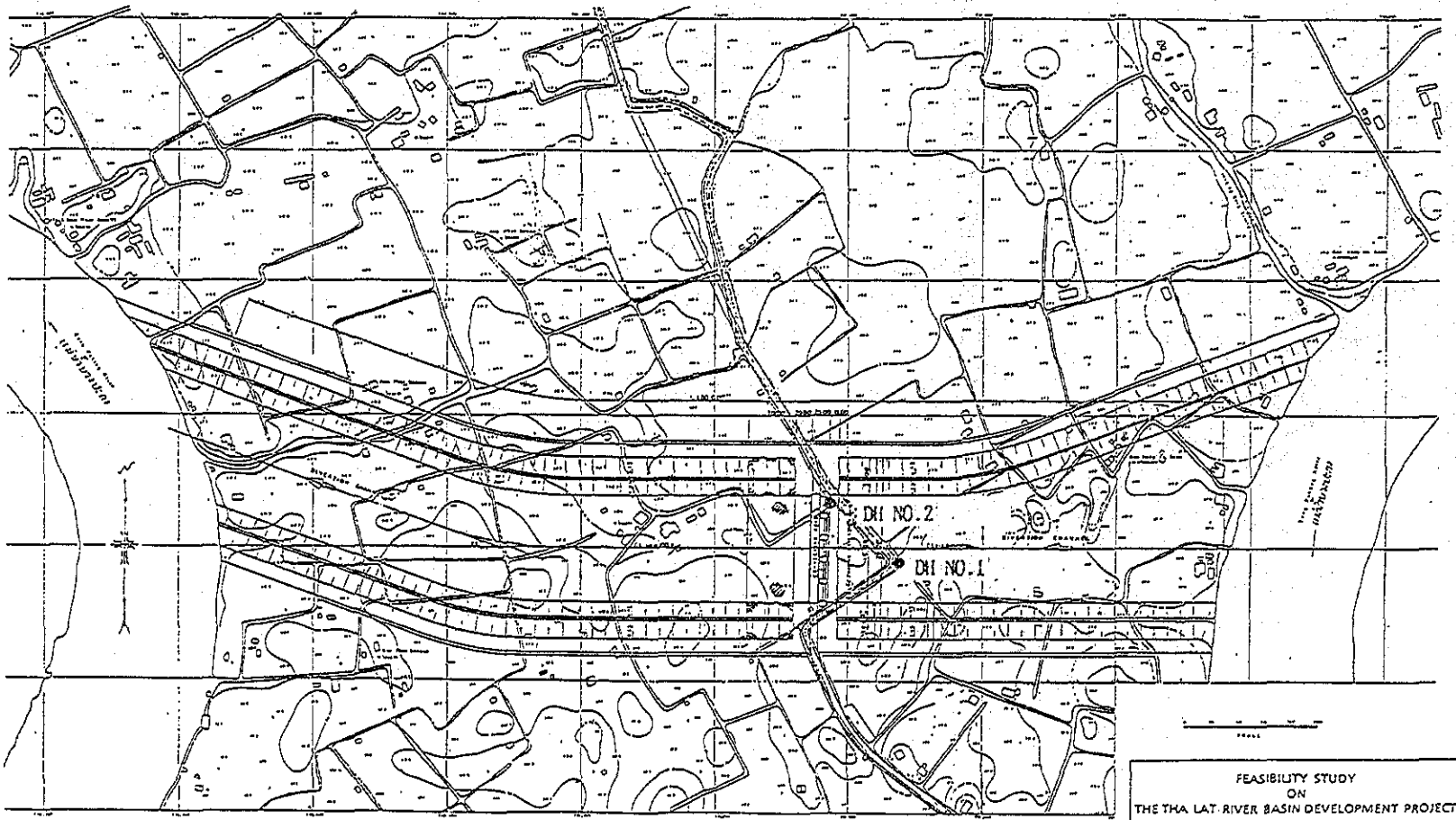
Number of drill hole	Total depth of drill hole (m)	Interval of testing (m)	Permeability		Method of test
			Value	Units	
B-M 3	20.00	2.00 - 2.30	3.16×10^{-4}	cm/sec	Gravity test
		4.00 - 4.00	1.39×10^{-3}	"	"
		6.00 - 6.00	3.48×10^{-5}	"	"
		6.00 - 8.00	4.60×10^{-7}	"	"
		8.00 - 10.00	5.95×10^{-5}	"	"
		10.00 - 12.00	5.88×10^{-5}	"	"
		14.00 - 14.00	1.50×10^{-4}	"	"
		14.00 - 16.00	1.50×10^{-4}	"	"
		16.00 - 18.00	1.41×10^{-4}	"	"
		17.00 - 20.00	1.08×10^{-4}	"	"
B-M 4	20.00	2.00 - 2.00	4.0×10^{-5}	"	"
		4.00 - 4.00	1.91×10^{-4}	"	"
		6.00 - 6.00	3.39×10^{-6}	"	"
		8.00 - 8.00	5.61×10^{-5}	"	"
		10.00 - 10.00	3.50×10^{-5}	"	"
		10.00 - 12.00	5.80×10^{-7}	"	"
		12.00 - 14.00	1.43×10^{-5}	"	"
		16.00 - 16.00	2.16×10^{-4}	"	"
		18.00 - 18.00	4.21×10^{-5}	"	"

Number of drill hole	Total depth of drill hole (m)	Interval of testing (m)	Permeability		Method of test
			Value	Units	
B-M 5	20.00	2.00 - 2.00	2.91×10^{-3}	cm/sec	Gravity test
		4.00 - 4.00	1.91×10^{-4}	"	"
		4.60 - 7.00	2.83×10^{-4}	"	"
		7.00 - 10.00	1.57	luqeon	luqeon test
		10.00 - 13.00	3.81	"	"
		13.00 - 16.00	8.75	"	"
		16.00 - 19.00	3.33×10^{-4}	cm/sec	Gravity test
		19.00 - 20.00	2.5×10^{-4}	"	"
B-M 6	15.00	2.00 - 2.45	8.19×10^{-5}	cm/sec	Gravity test
		4.00 - 4.45	7.15×10^{-7}	"	"
		5.50 - 6.00	1.01×10^{-4}	"	"
		6.00 - 10.00	3.10×10^{-6}	"	"
		10.00 - 13.00	1.87×10^{-4}	"	"
		13.00 - 15.00	6.89×10^{-5}	"	"
B-M 7	10.00	2.00 - 2.45	1.31×10^{-4}	cm/sec	Gravity test
		3.00 - 6.00	6.71×10^{-5}	"	"
		6.00 - 9.00	1.17×10^{-3}	"	"
		9.00 - 10.00	Impervious	-	-

C.1.9. SEISMIC REFRACTION SURVEY OF DAMSITE (MAIN DAM)



C.1.10. LOCATION OF DRILL HOLES FOR BANG PAKONG DIVERSION DAM



FEASIBILITY STUDY
ON
THE THA LAT RIVER BASIN DEVELOPMENT PROJECT

BANG PAKONG DIVERSION DAM

DRAWING NO.

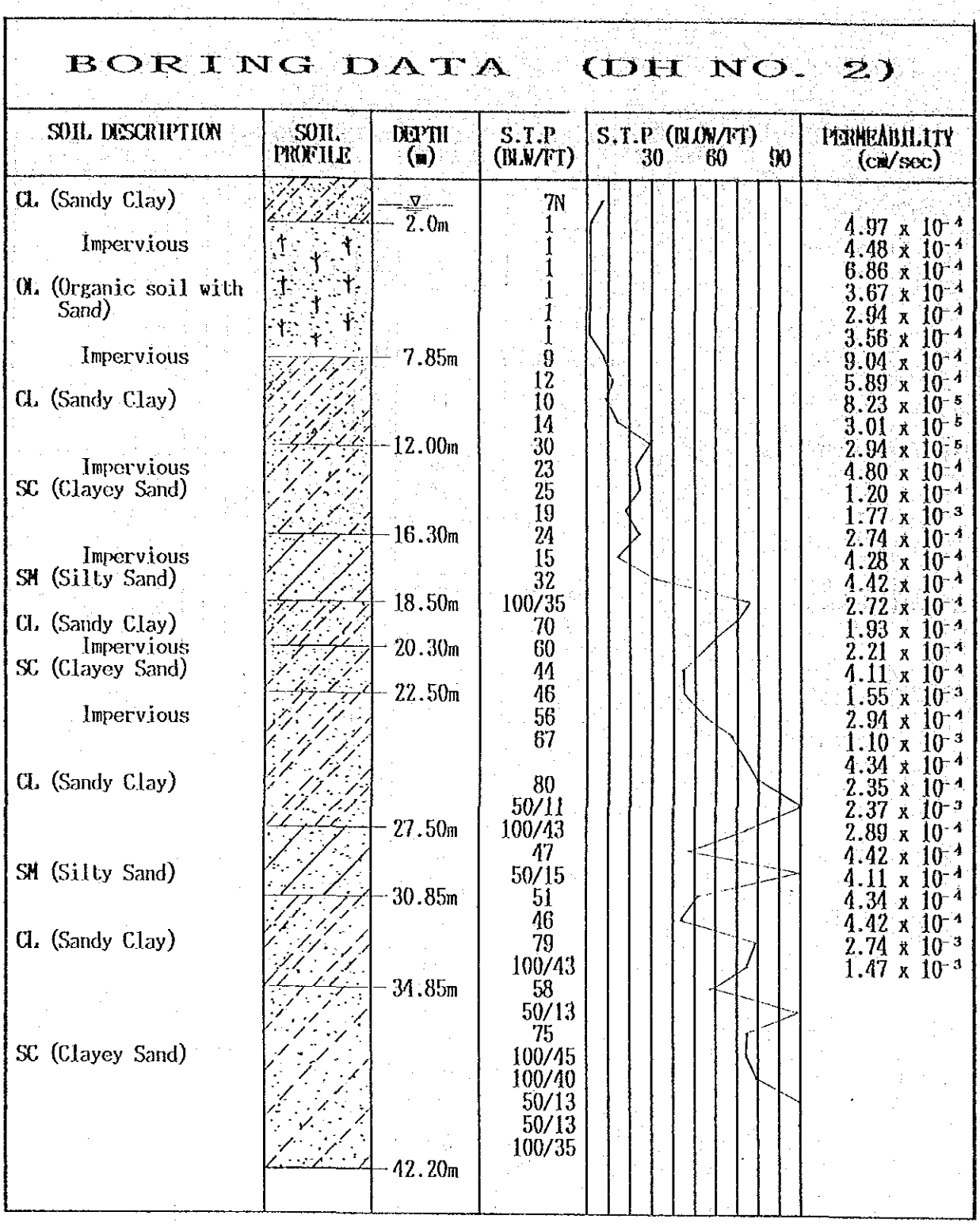
JAPAN INTERNATIONAL COOPERATION AGENCY

C.1.11. GEOLOGIC LOG OF DRILL HOLE FOR BANG PAKONG DIVERSION DAM

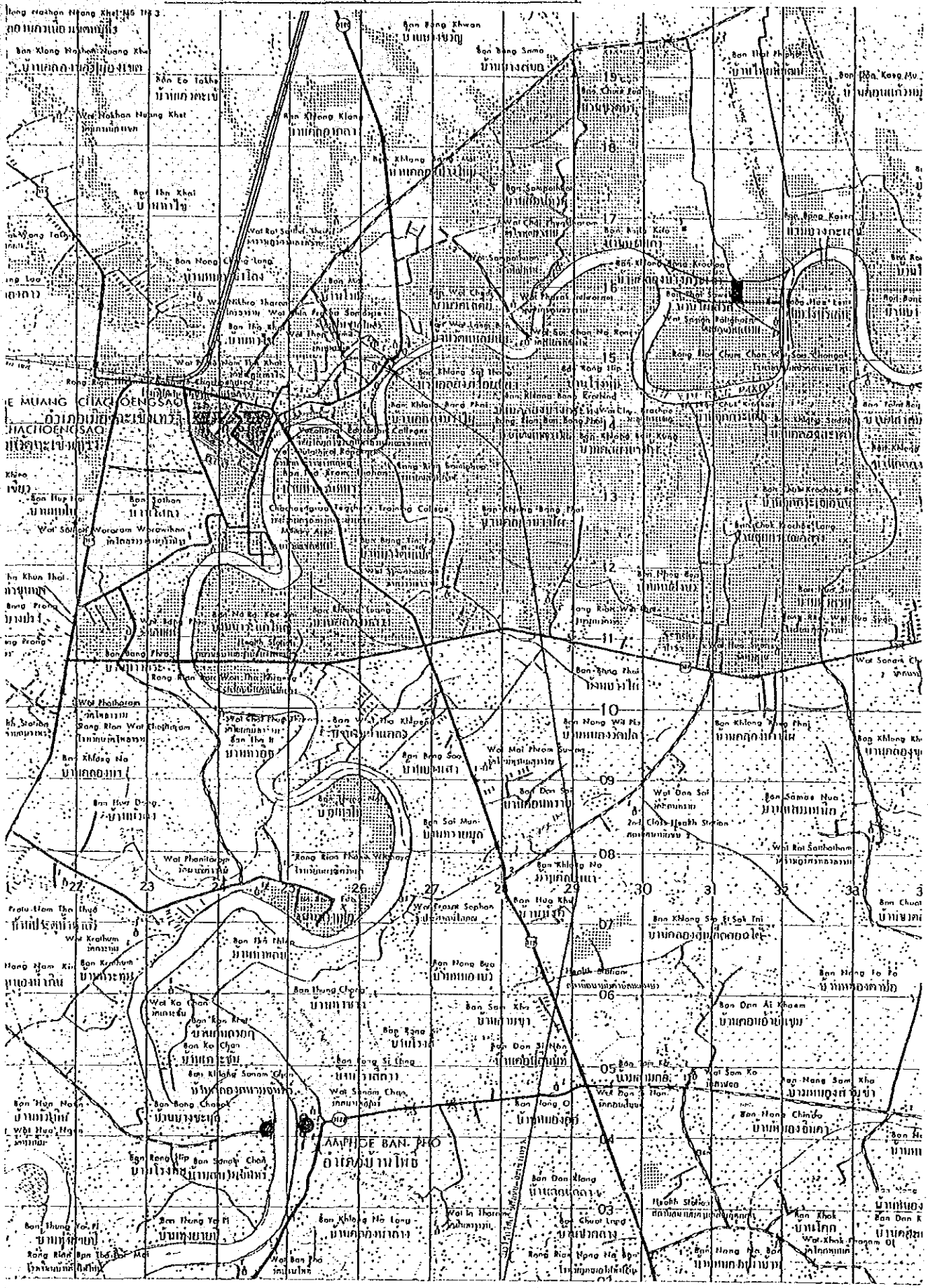
BORING DATA (DH NO. 1)

SOIL DESCRIPTION	SOIL PROFILE	DEPTH (m)	S.T.P (BLW/FT)	S.T.P (BLOW/FT) 30 60 90	PERMEABILITY (cm/sec)
CL (Sandy Clay)			20N		
		2.0m			
Impervious			1		
Impervious		7.5m	6		
			8		
			11		
CL (Sandy Clay)					
Impervious			28		
			24		
			27		
Impervious			29		
SM (Silty Sand)		18.85m	22		
CL (Sandy Clay)		19.50m	50		
		20.30m			
Impervious					
SC (Clayey Sand)					
		23.30m	74		
Impervious			52		
SM (Silty Sand)		26.85m			
		27.85m	32		5.73×10^{-4}
			100/41		3.28×10^{-3}
SC (Clayey Sand)			33		1.13×10^{-3}
		30.30m	60		9.53×10^{-5}
			100/35		2.46×10^{-4}
CL (Sandy Clay)			51		4.85×10^{-4}
			57		5.50×10^{-5}
		34.30m	55		1.59×10^{-3}
			100/40		
			100/41		2.28×10^{-4}
			50/12		7.28×10^{-4}
			100/42		4.66×10^{-4}
SC (Clayey Sand)			100/43		2.80×10^{-4}
			100/37		5.50×10^{-4}
			50/14		4.72×10^{-4}
			50/11		3.80×10^{-4}
		43.30m	50/13		3.48×10^{-4}

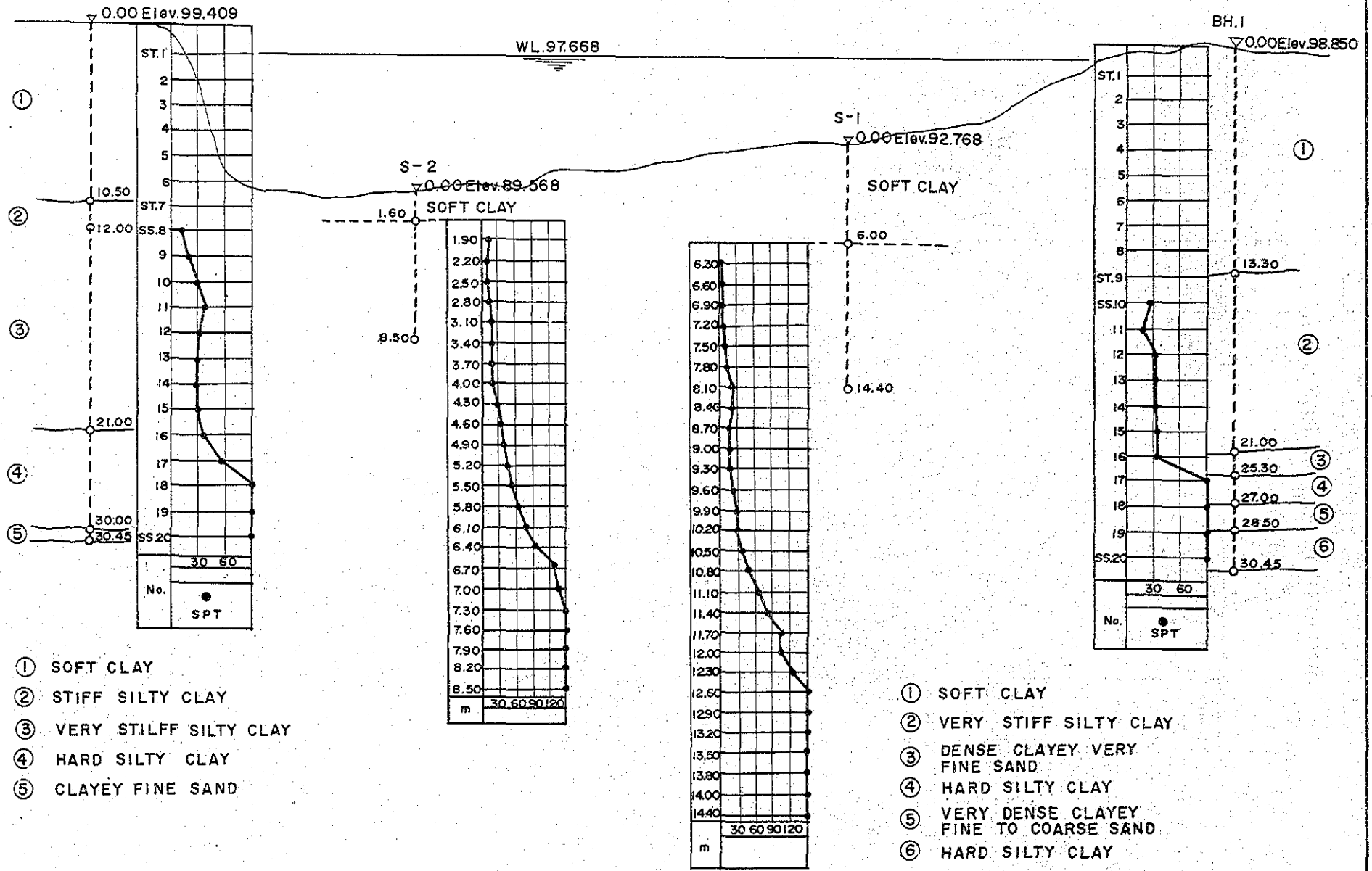
BORING DATA (DH NO. 2)



C.1.12. LOCATION OF DRILL HOLES FOR BANG PAKONG BRIDGE (REFERENCE DATA)



C.1.13. GEOLOGIC PROFILE OF BANG PAKONG RIVER



① SOFT CLAY
② STIFF SILTY CLAY
③ VERY STILFF SILTY CLAY
④ HARD SILTY CLAY
⑤ CLAYEY FINE SAND

① SOFT CLAY
② VERY STIFF SILTY CLAY
③ DENSE CLAYEY VERY FINE SAND
④ HARD SILTY CLAY
⑤ VERY DENSE CLAYEY FINE TO COARSE SAND
⑥ HARD SILTY CLAY

C.1.14. GEOLOGIC LOG OF DRILL HOLE FOR BANG PAKONG BRIDGE

สะพานข้ามแม่น้ำบางปะกง

FIG. 3

GROUND WATER OBSERVATION.				W.A.C. BORING LOG	BORING NO. 1
DATE	TIME	EL. of HOLE	EL. of WATER		SURFACE ELV. +98.850
				LOCATION. ต. สนามจันทร์ – ต. บ้านโพธิ์ อ. บ้านโพธิ์ จ. ฉะเชิงเทรา	DATE START
24 HR. AFTER BORING.			0.82 M		DATE FINISH

SOILS DESCRIPTION...	SOIL PROFILE	SAMPLE TYPE NO.	DEPTH, M.	STANDARD PENETRATION. BLOWS/FT.	LIQUID LIMIT. PLASTIC LIMIT. NATURAL MOISTURE CONTENT. %	One half Unconfined Compressive Strength. peak.., remolded... INSITU VANE SHEAR..... One half Pocket Penetrometer Rdg. SENSITIVITY KSC.	TOTAL DENSITY. γ_d, γ_w T/M.³
			0.00	30 60	20 40 60 80	1 2 3	1 2
Filled materials 0.30		ST.1					
		ST.2					
Very soft to soft dark grey silty clay, occasional very fine sand.		ST.3	5.00				
		ST.4					
ML-OL, CL & ML		ST.5					
		ST.6					
		ST.7	10.00				
		ST.8					
13.30		ST.9					
		SS.10	15.00	27			
Very stiff light grey, yellowish and reddish brown silty clay, occasional very fine sand.		SS.11		21			
		SS.12		31			
CH & CL		SS.13	20.00	33			
		SS.14		32			
		SS.15		35			
24.00		SS.16		36			
Dense yellowish brown clayey very fine sand. SC 25.30		SS.17	25.00		102		
Hard light grey and brown silty clay, trace of very fine sand. CL 27.00		SS.18			130		
Very dense brownish red and grey clayey fine to coarse sand. SC 28.50		SS.19			161		
Hard greyish and yellowish brown silty clay, occasional sand and gravels. 30.45		SS.20	30.00		170		
END OF BORING			35.00				

สะพานข้ามแม่น้ำบางประกง

FIG. 4

GROUND WATER OBSERVATION.			
DATE	TIME	EL.of HOLE	EL.of WATER
24 HR. AFTER BORING.			1.04 M.

W.A.C. BORING LOG

LOCATION. ต.บ้านโพธิ์ – ต.สนามจันทร์ อ.บ้านโพธิ์ จ.ฉะเชิงเทรา

BORING NO. 2
SURFACE ELV. +99.409
DATE START
DATE FINISH

SOILS DESCRIPTION...

SOIL PROFILE | SAMPLE TYPE NO. | DEPTH, M. | STANDARD – PENETRATION. BLOWS/FT. | LIQUID LIMIT. PLASTIC LIMIT. NATURAL MOISTURE CONTENT. % | One half Unconfined – Compressive Strength. peak..., remolded... INSITU VANE SHEAR..... One half Pocket – Penetrometer Rdg. SENSITIVITY KSC. | TOTAL – DENSITY. γ_d, γ_w T/M.³

Filled lateritic soils. 0.20

Very soft to medium dark grey silty clay, occasional very fine sand and organic matters.

ML-OL & CL

10.50

Stiff greyish brown silty clay, trace of pea gravels. CL

12.00

Very stiff light grey, yellowish and reddish brown silty clay.

CH, CL & MH-OH

24.00

Hard light grey, yellowish brown and brown silty clay, occasional gravels and very fine sand.

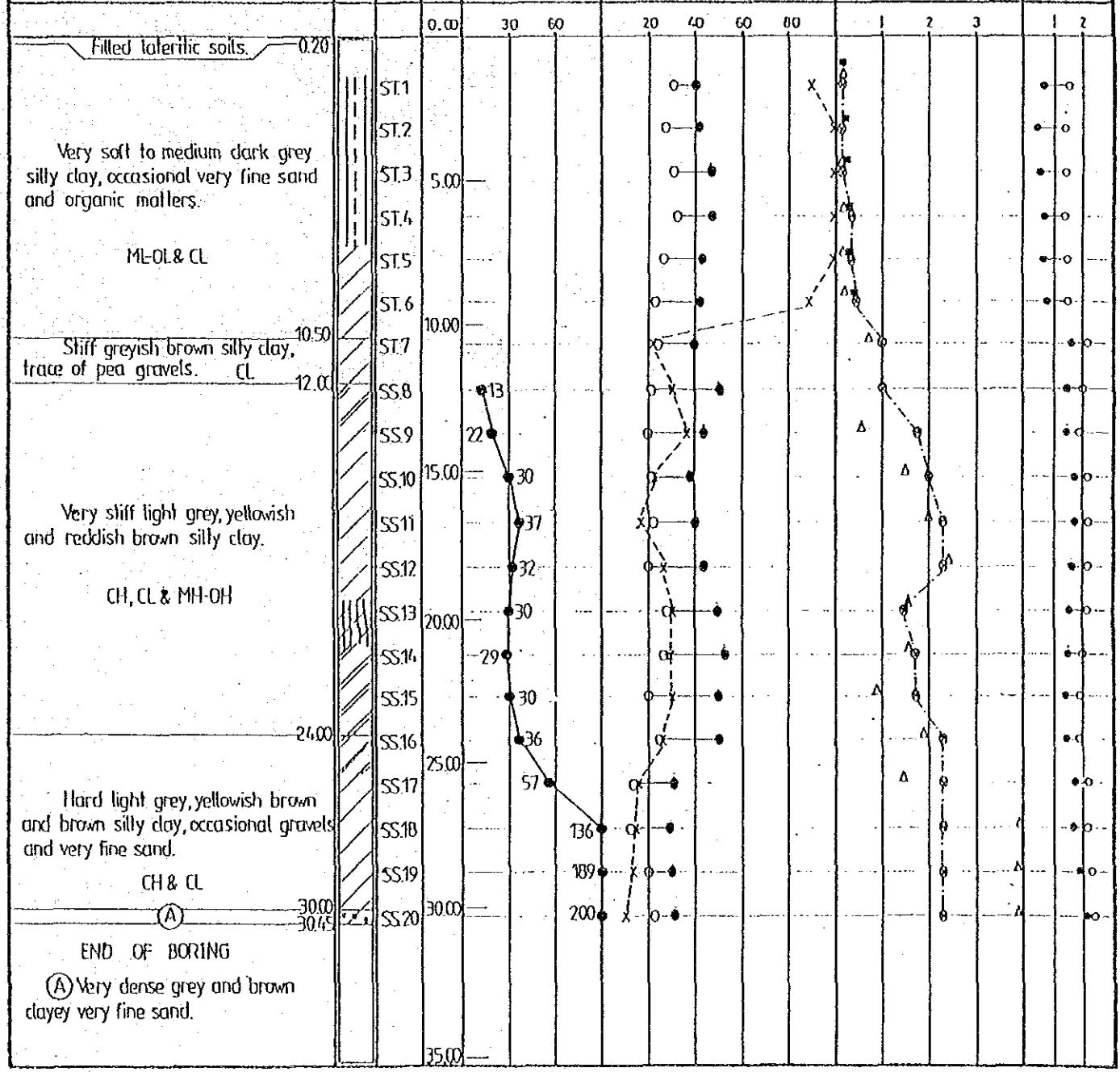
CH & CL

30.00

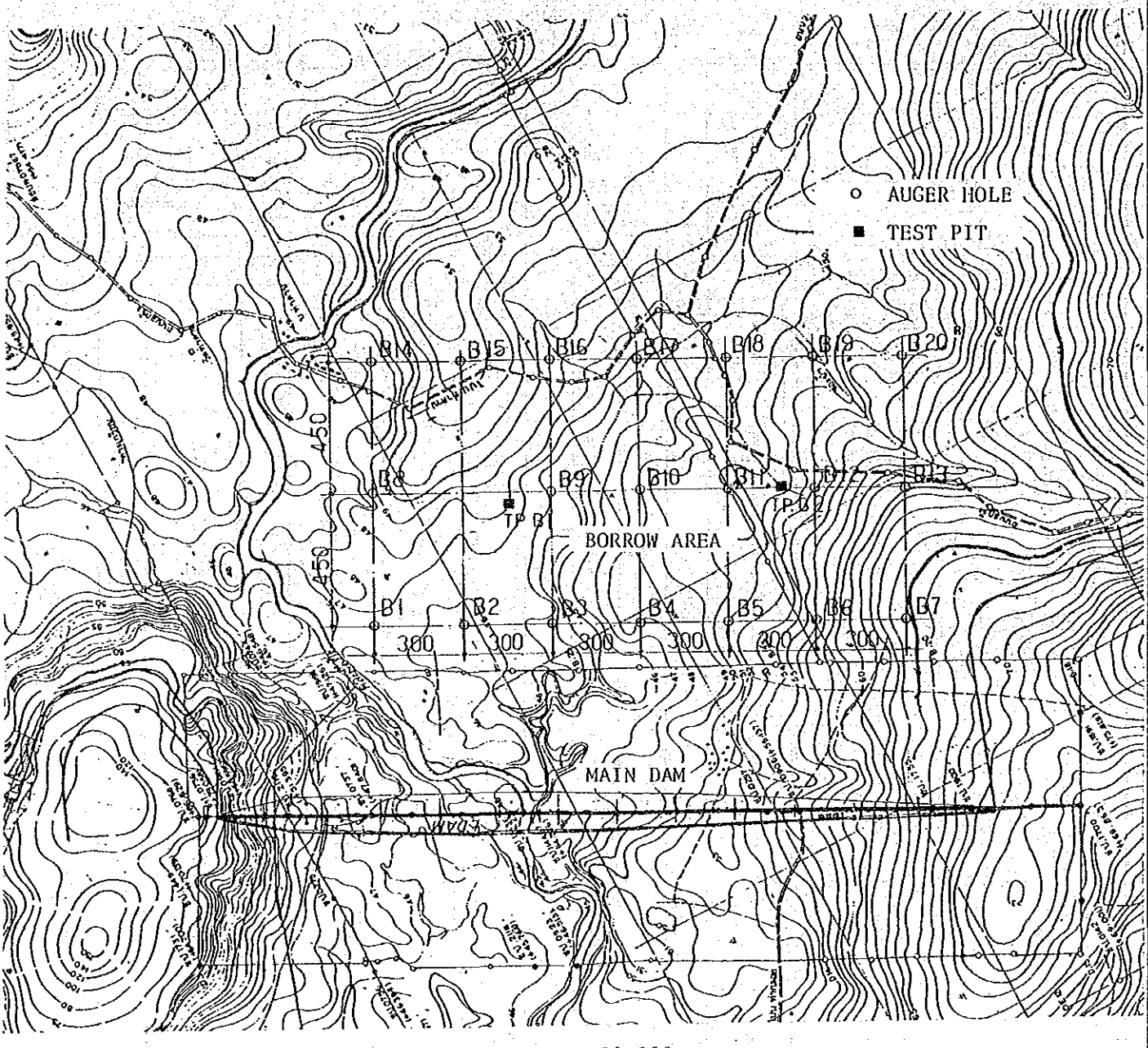
(A) 30.45

END OF BORING

(A) Very dense grey and brown clayey very fine sand.



C.2.1. LOCATION OF SOIL SAMPLING



SCALE 1 ; 20,000

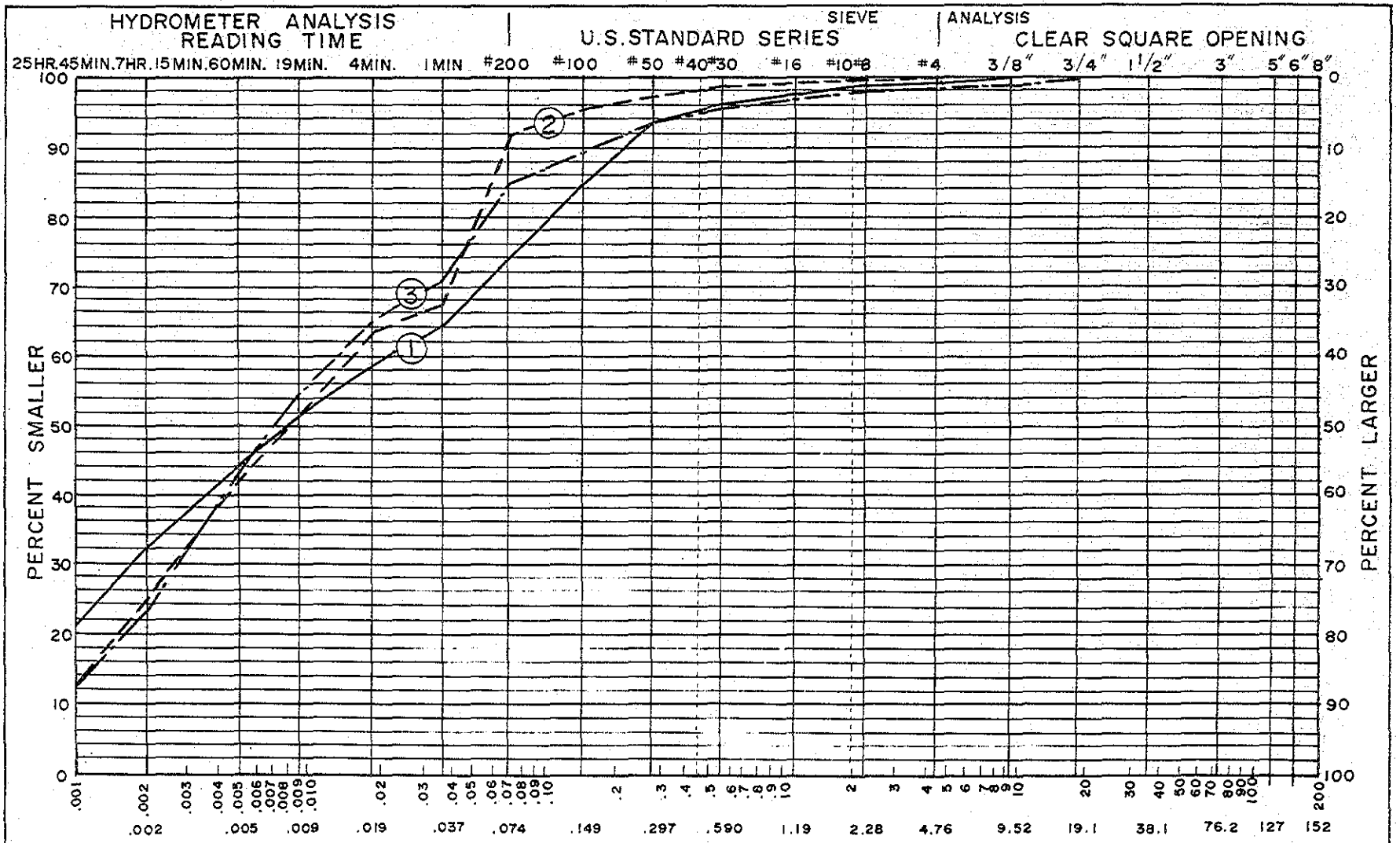
C.2.2. RESULTS OF LABORATORY SOIL TEST

Sample No.	Boring No.	Depth (m)	Gs (t/m³)	Wn (%)	Atterberg Limits			Soil Classification	Gradation Test	Compaction Test	Permeability Test	Triaxial Shear Test
					L.L.	P.L.	P.I.					
①	B.1	1.6-4.0	-	-	25.2	17.9	7.3	CL	○	-	-	-
②	B.2	0.0-4.0	-	-	29.5	20.0	9.5	CL	○	-	-	-
③	B.3	0.0-2.0	-	-	30.5	19.5	11.0	CL	○	-	-	-
④	B.3	2.3-3.2	-	-	25.5	15.8	9.7	SC	○	-	-	-
⑤	B.4	0.0-2.0	-	-	40.0	20.8	19.2	CL	○	-	-	-
⑥	B.8	0.3-2.2	-	-	52.3	22.1	30.2	CH	○	-	-	-
⑦	B.8	2.2-3.2	-	-	32.3	19.5	12.8	SC	○	-	-	-
⑧	B.9	0.0-3.2	-	-	36.8	21.1	15.7	CL	○	-	-	-
⑨	B.10	1.5-4.0	-	-	31.7	18.6	13.1	CL	○	-	-	-
⑩	B.11	0.0-1.0	-	-	26.6	17.0	9.6	SC	○	-	-	-
⑪	B.16	0.6-1.2	-	-	35.9	20.0	15.9	SC	○	-	-	-
⑫	B.17	0.7-2.2	-	-	53.9	26.5	27.4	CH	○	-	-	-
⑬	B.18	1.4-4.0	-	-	27.0	16.6	10.4	CL	○	-	-	-
⑭	B.19	0.3-4.0	-	-	32.2	18.4	13.8	CL	○	-	-	-
⑮	TP.B1	0.0-1.4	2.73	5.3	24.2	16.3	7.9	SC	○	○	-	-
⑯	TP.B1	1.4-1.9	2.69	4.6	21.5	14.4	7.1	GC	○	○	-	-
⑰	TP.B1	1.9-5.5	2.70	11.8	40.7	22.4	18.3	CL	○	○	○	○
⑱	TP.B2	0.0-4.0	2.70	4.3	36.2	21.8	14.4	GC	○	○	○	○

Note :
(1) Gs ····· Specific gravity Wn ····· Field moisture L.L. ····· Liquid limit P.L. ····· Plastic limit P.I. ····· Plasticity index
(2) For results of gradation test, see C.2.3
For results of compaction test, see C.2.4
For results of permeability test, see C.2.5
For results of triasial shear test, see C.2.6

C.2.3. GRADATION TEST

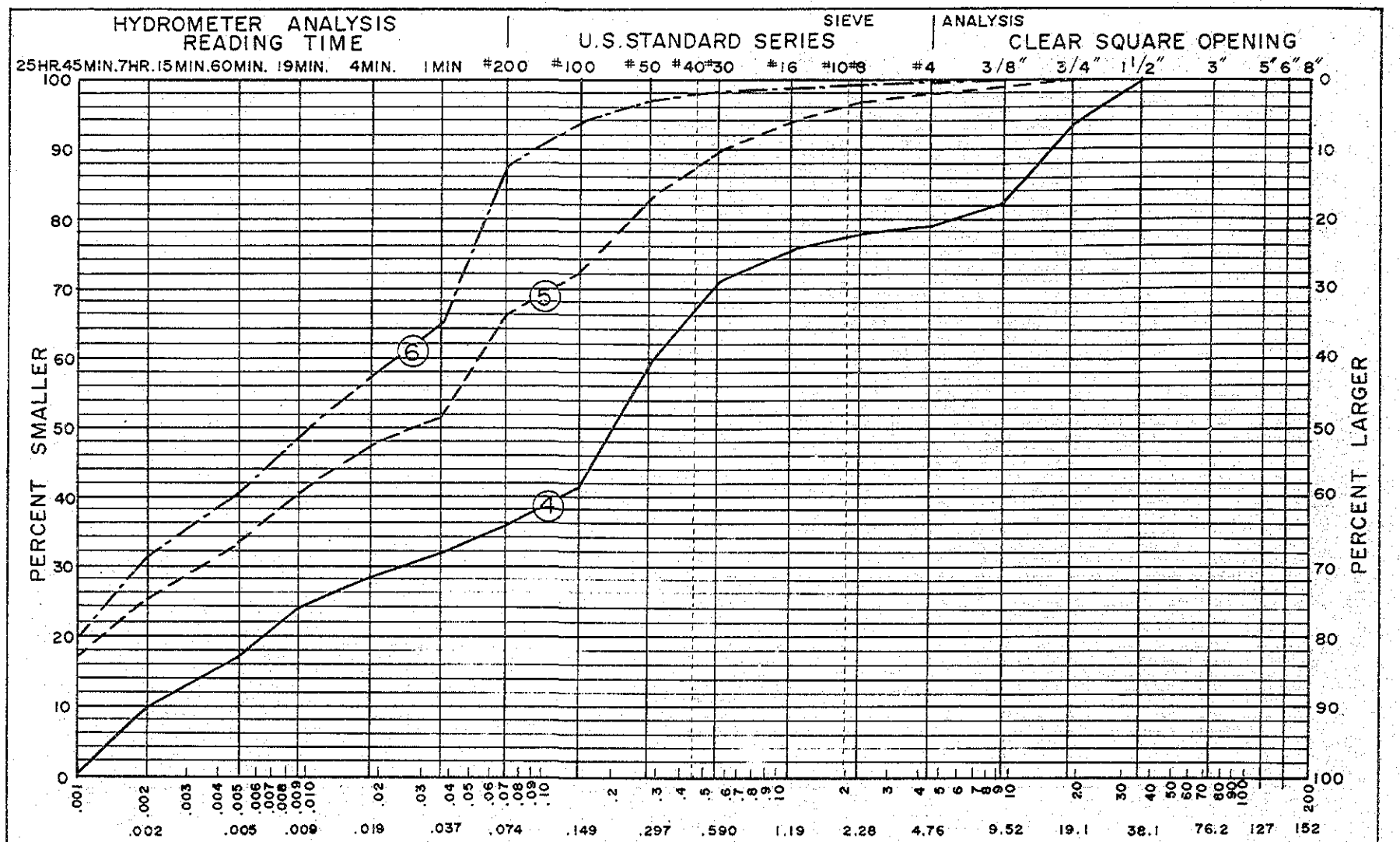
GRADATION TEST



Notes	No.	Sample No.	Depth (M.)	Attevberg Limit L.L.	P.L.	P.I.	Wn, %	Gs.	Soil Group
	①	B – 1	1.60 – 4.00	25.2	17.9	7.3			CL
	②	B – 2	0.00 – 4.00	29.5	20.0	9.5			CL
	③	B – 3	0.00 – 2.00	30.5	19.5	11.0			CL

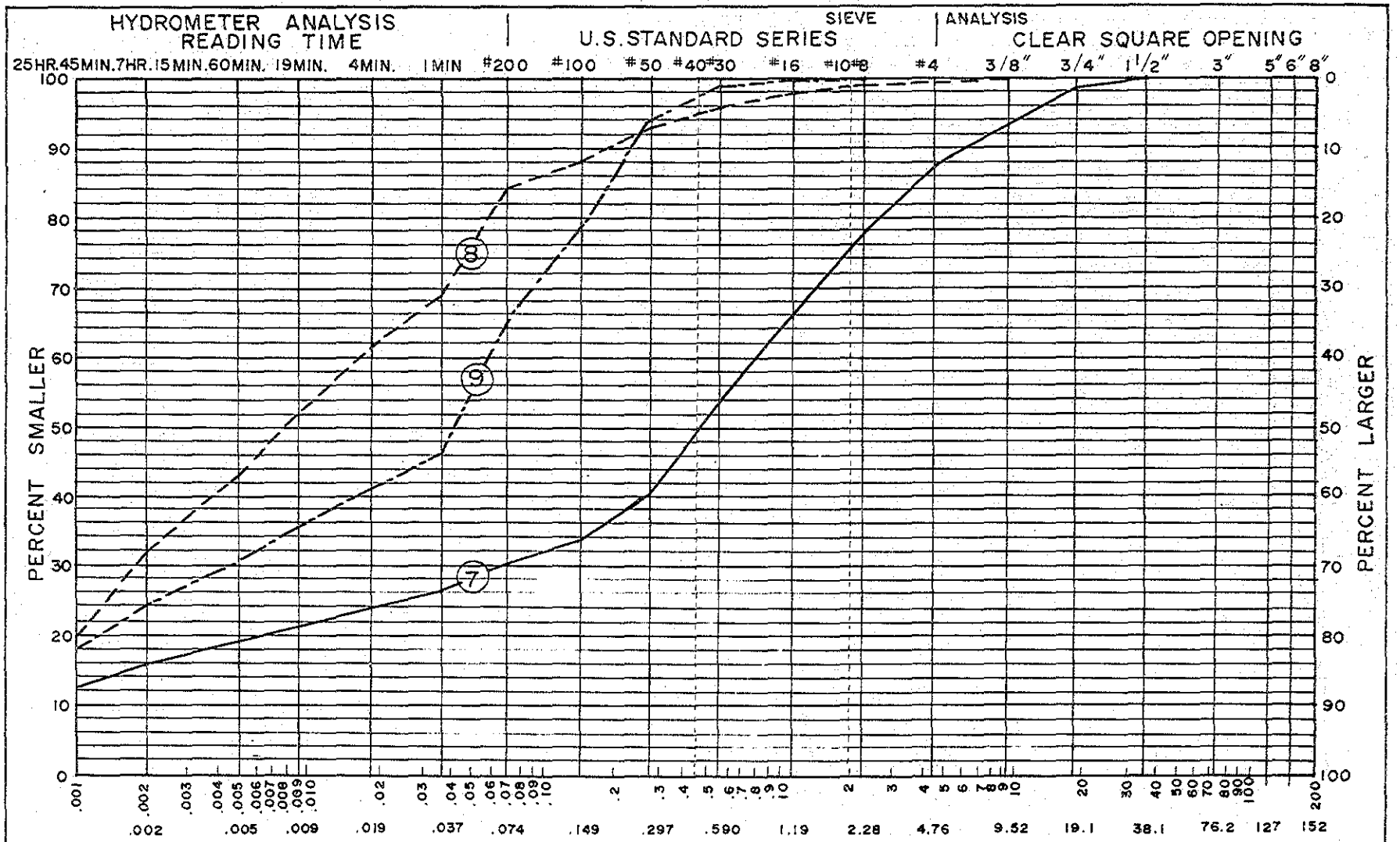
C-60

GRADATION TEST



Notes	No.	Sample No.	Depth (M.)	Attevberg Limit L.L.	P.L.	P.I.	Wn,%	Gs.	Soil Group
	④	B – 3	2.80 – 3.20	25.5	15.8	9.7			SC
	⑤	B – 4	0.00 – 2.00	40.0	20.8	19.2			CL
	⑥	B – 8	0.30 – 2.20	52.3	22.1	30.2			CH

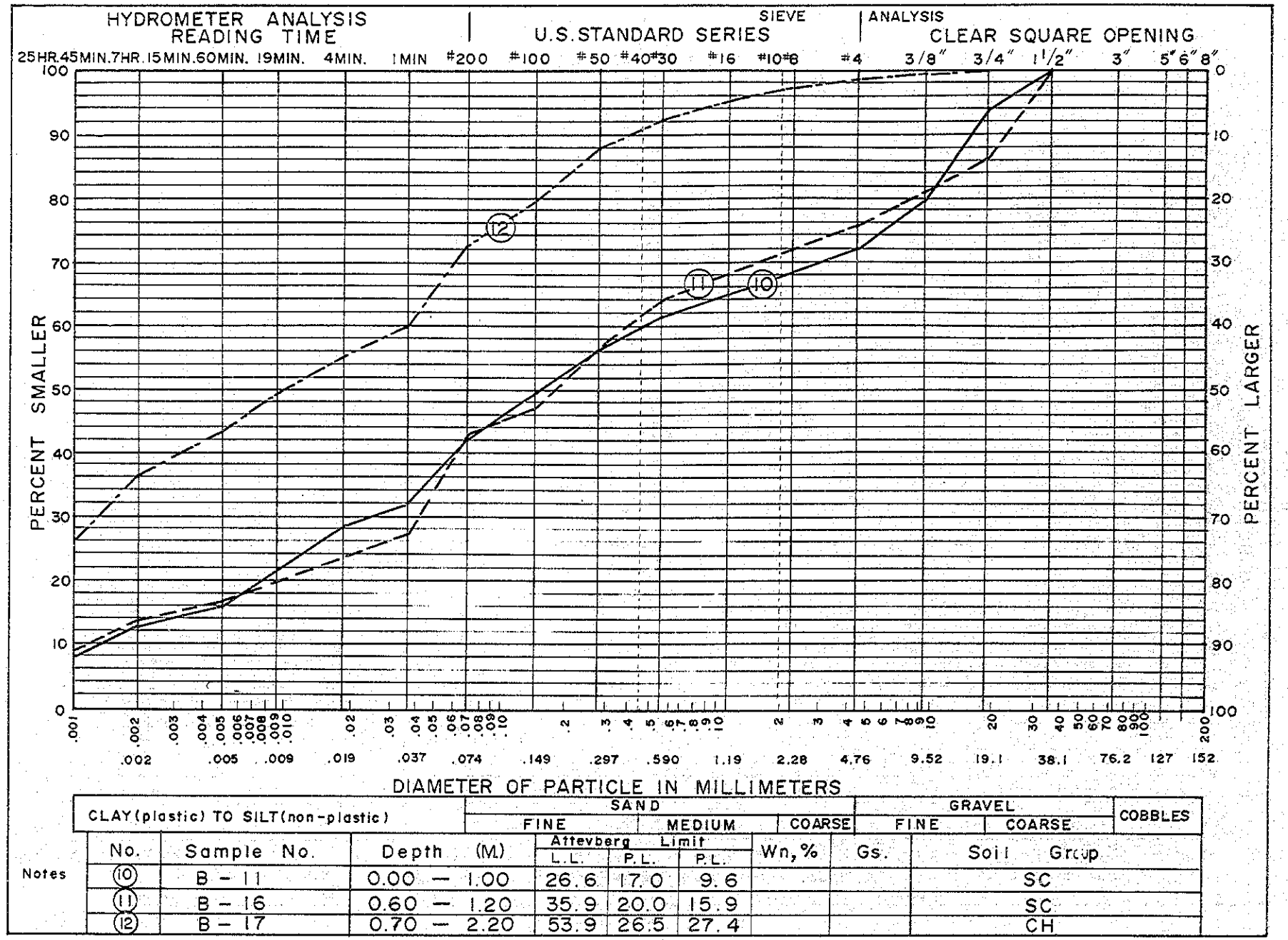
GRADATION TEST



CLAY (plastic) TO SILT (non-plastic)	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

Notes	No.	Sample No.	Depth (M.)	Atterberg Limit L.L.	P.L.	P.I.	Wn,%	Gs.	Soil Group
	⑦	B – 8	2.20 – 3.20	32.3	19.5	12.8			SC
	⑧	B – 9	0.00 – 3.20	36.8	21.1	15.7			CL
	⑨	B – 10	1.50 – 4.00	31.7	18.6	13.1			CL

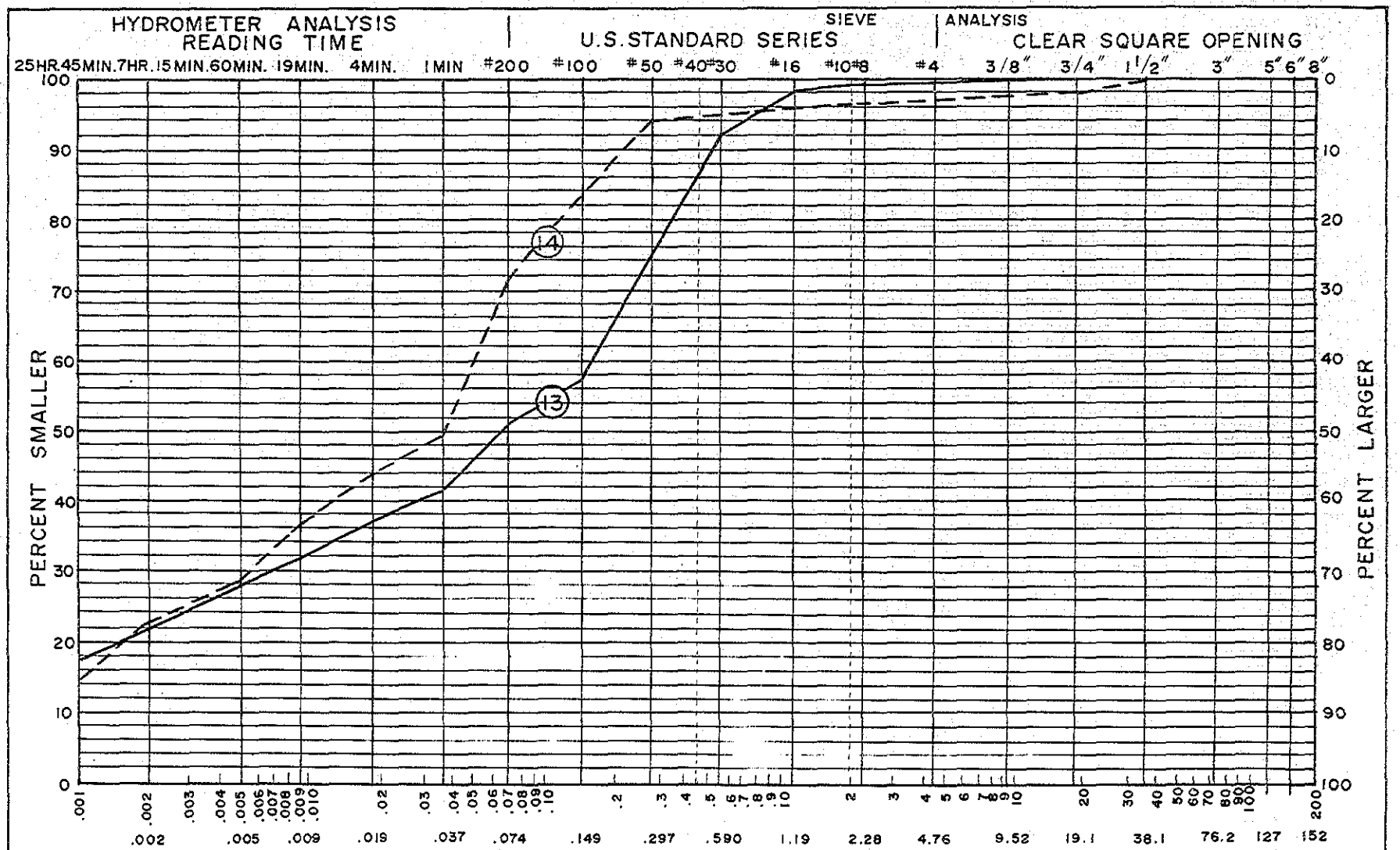
GRADATION TEST



CLAY (plastic) TO SILT (non-plastic)	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

Notes	No.	Sample No.	Depth (M)	Atterberg Limit L.L.	P.L.	P.I.	Wn, %	Gs.	Soil Group
	(10)	B – 11	0.00 – 1.00	26.6	17.0	9.6			SC
	(11)	B – 16	0.60 – 1.20	35.9	20.0	15.9			SC
	(12)	B – 17	0.70 – 2.20	53.9	26.5	27.4			CH

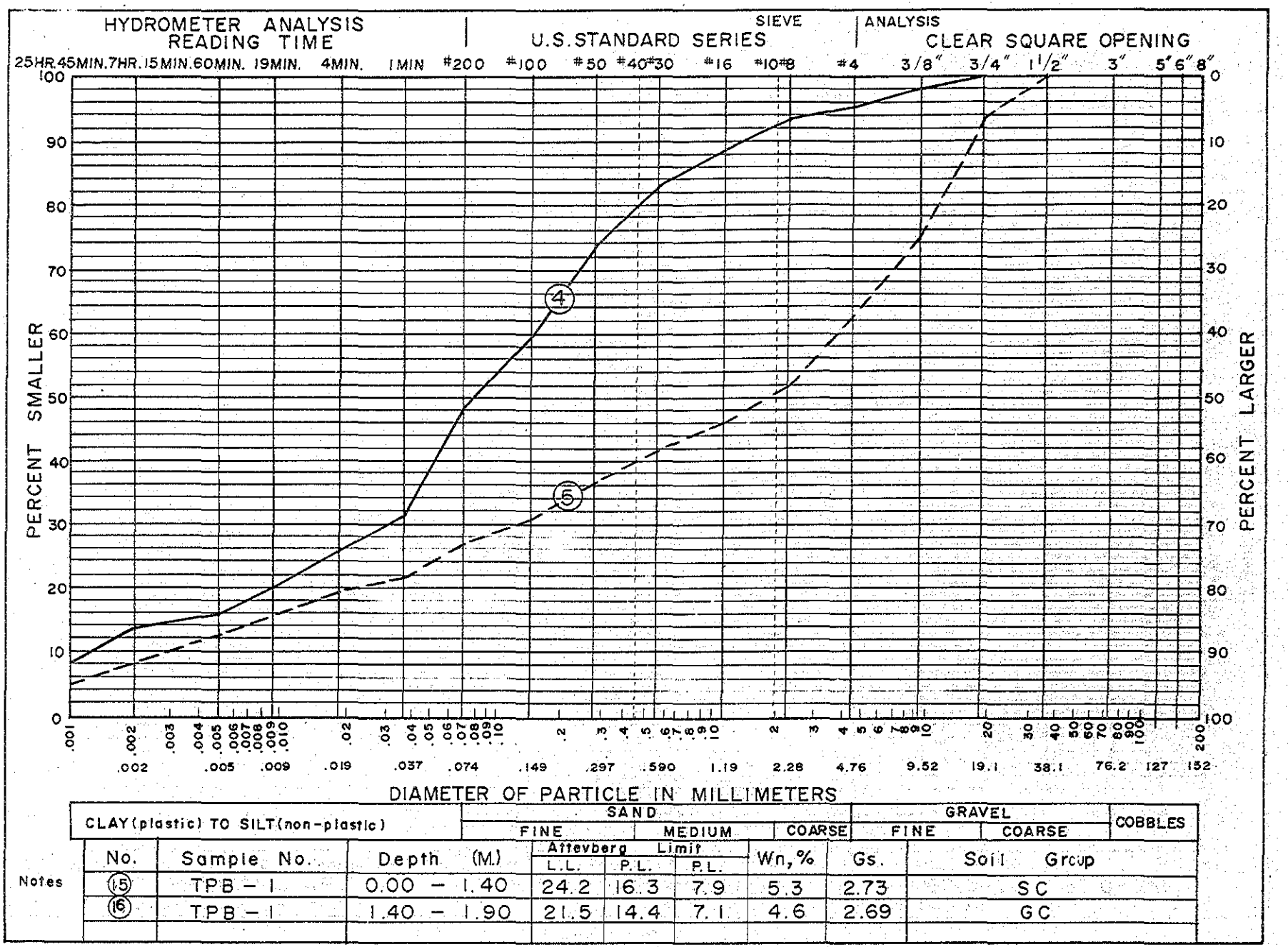
GRADATION TEST



CLAY (plastic) TO SILT (non-plastic)	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

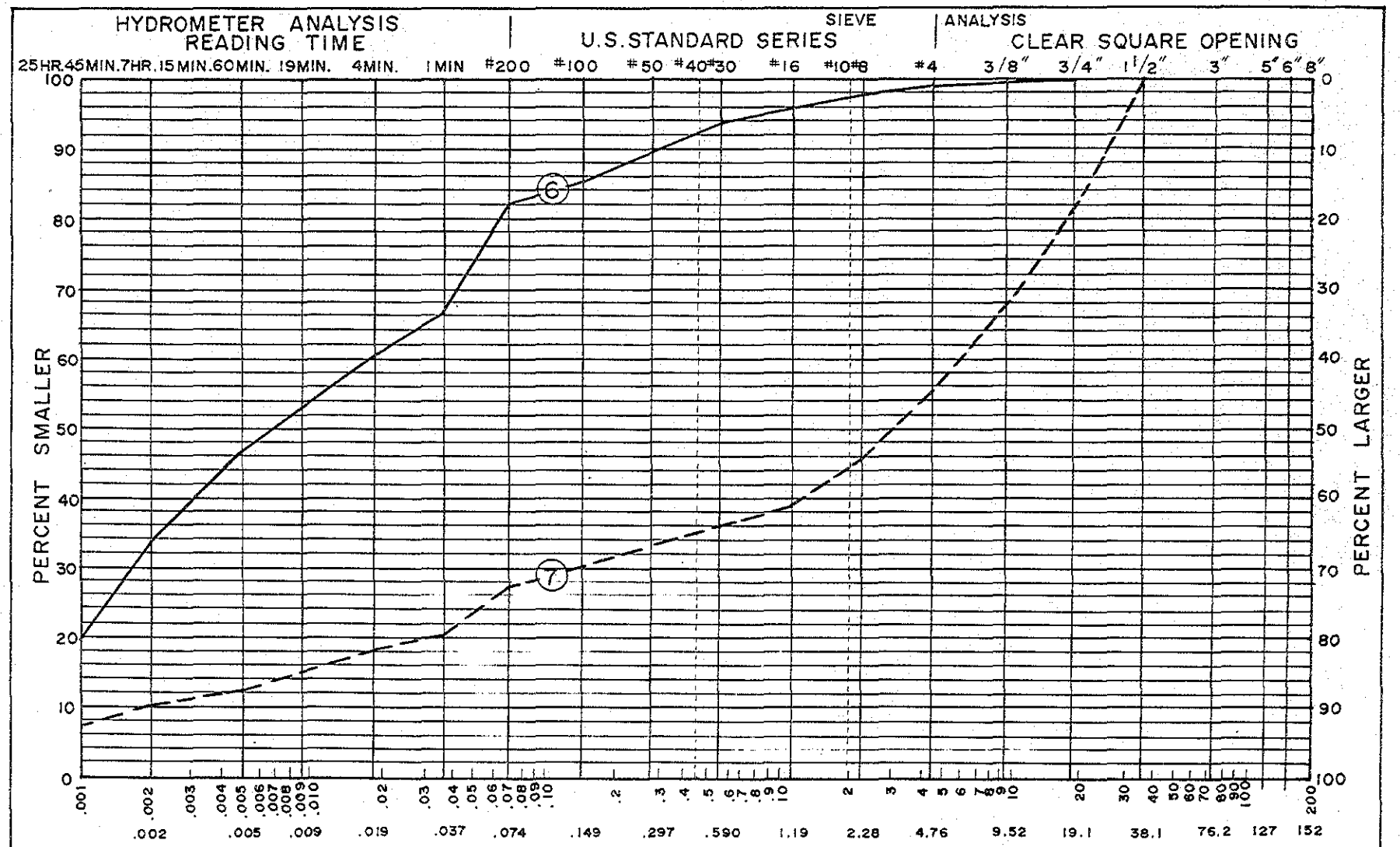
Notes	No.	Sample No.	Depth (M)	Atterberg Limit L.L.	P.L.	P.L.	Wn, %	Gs.	Soil Group
	(13)	B – 18	1.40 – 4.00	27.0	16.6	10.4			CL
	(14)	B – 19	0.30 – 4.00	32.2	18.4	13.8			CL

GRADATION TEST



Notes	No.	Sample No.	Depth (M.)	Attevberg Limit L.L.	P.L.	P.I.	Wn,%	Gs.	Soil Group
	(15)	TPB – 1	0.00 – 1.40	24.2	16.3	7.9	5.3	2.73	SC
	(16)	TPB – 1	1.40 – 1.90	21.5	14.4	7.1	4.6	2.69	GC

GRADATION TEST



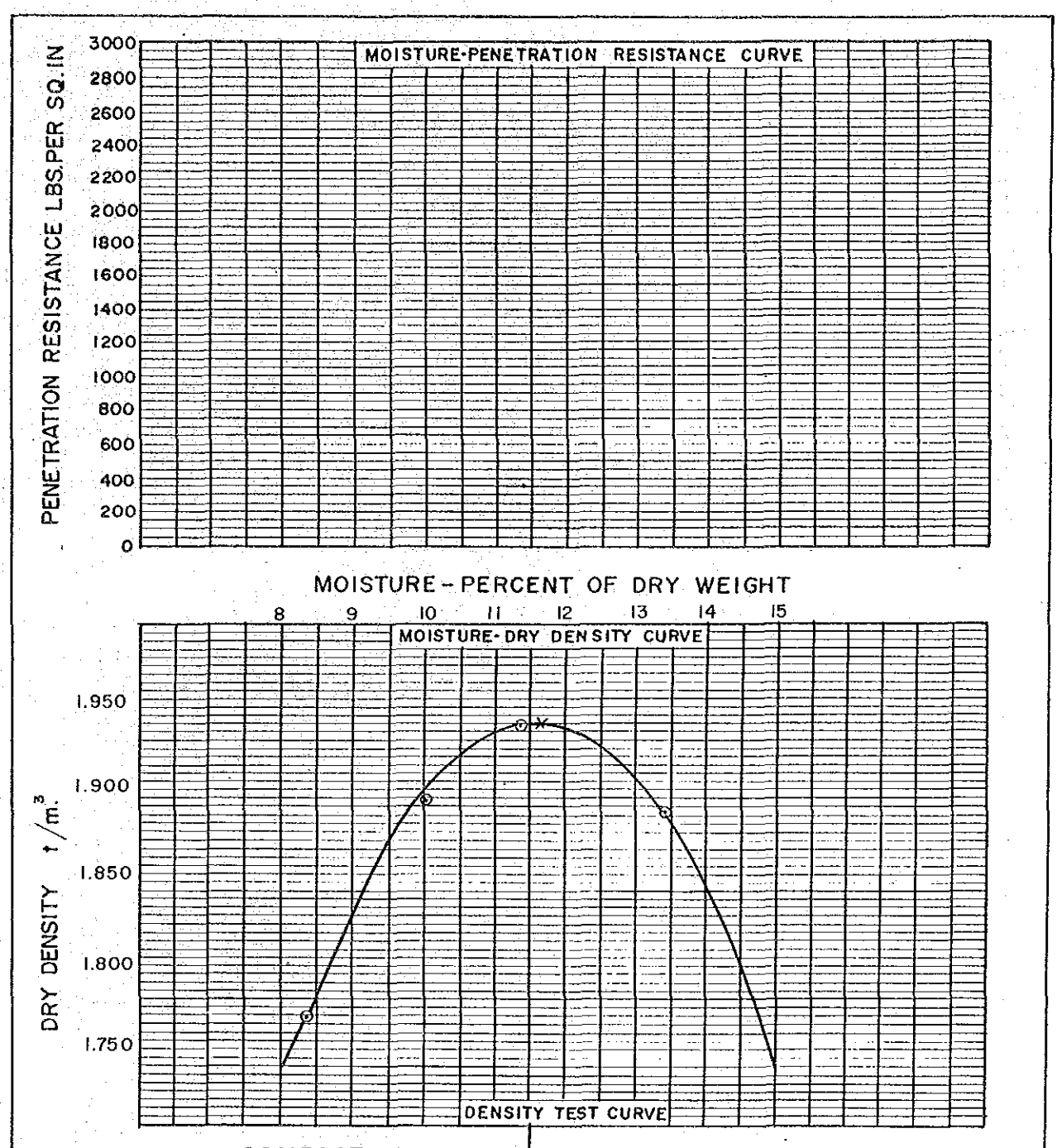
CLAY (plastic) TO SILT (non-plastic)	SAND			GRAVEL		COBBLES
	FINE	MEDIUM	COARSE	FINE	COARSE	

Notes	No.	Sample No.	Depth (M.)	Atterberg Limit L.L.	P.L.	P.I.	Wn,%	Gs.	Soil Group
	(17)	TPB-1	1.90 – 5.50	40.7	22.4	18.3	11.8	2.70	CL
	(18)	TPB-2	0.00 – 4.00	36.2	21.8	14.4	4.3	2.70	GC

C.2.4. COMPACTION TEST

COMPACTION TEST CURVE

Sample No. TP8 - 1 (0.00 - 1.40) Memo. 72/33



COMPACTION

25 BLOWS PER LAYER 12 IN. DROP

3 LAYER 1/30 CU.FT

5.5 LB. HAMMER

SOIL PROPERTIES

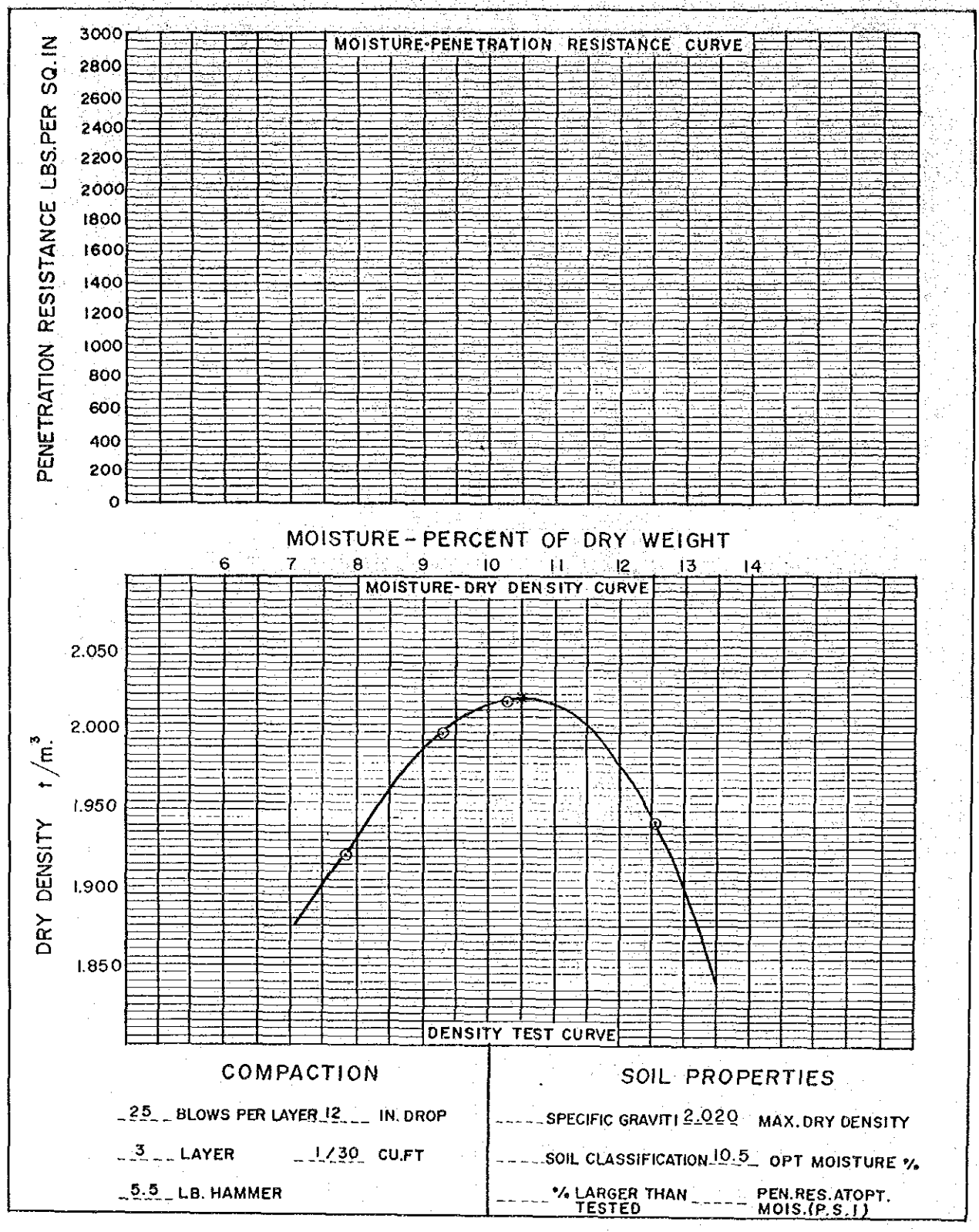
SPECIFIC GRAVITI 1.938 MAX. DRY DENSITY

SOIL CLASSIFICATION 11.7 OPT MOISTURE %

% LARGER THAN TESTED PEN.RES.ATOPT. MOIS.(P.S.I)

COMPACTION TEST CURVE

Sample No. TPB-1(1.40-1.90) Memo. 72/33



COMPACTION

25 BLOWS PER LAYER 12 IN. DROP

3 LAYER 1/30 CU.FT

5.5 LB. HAMMER

SOIL PROPERTIES

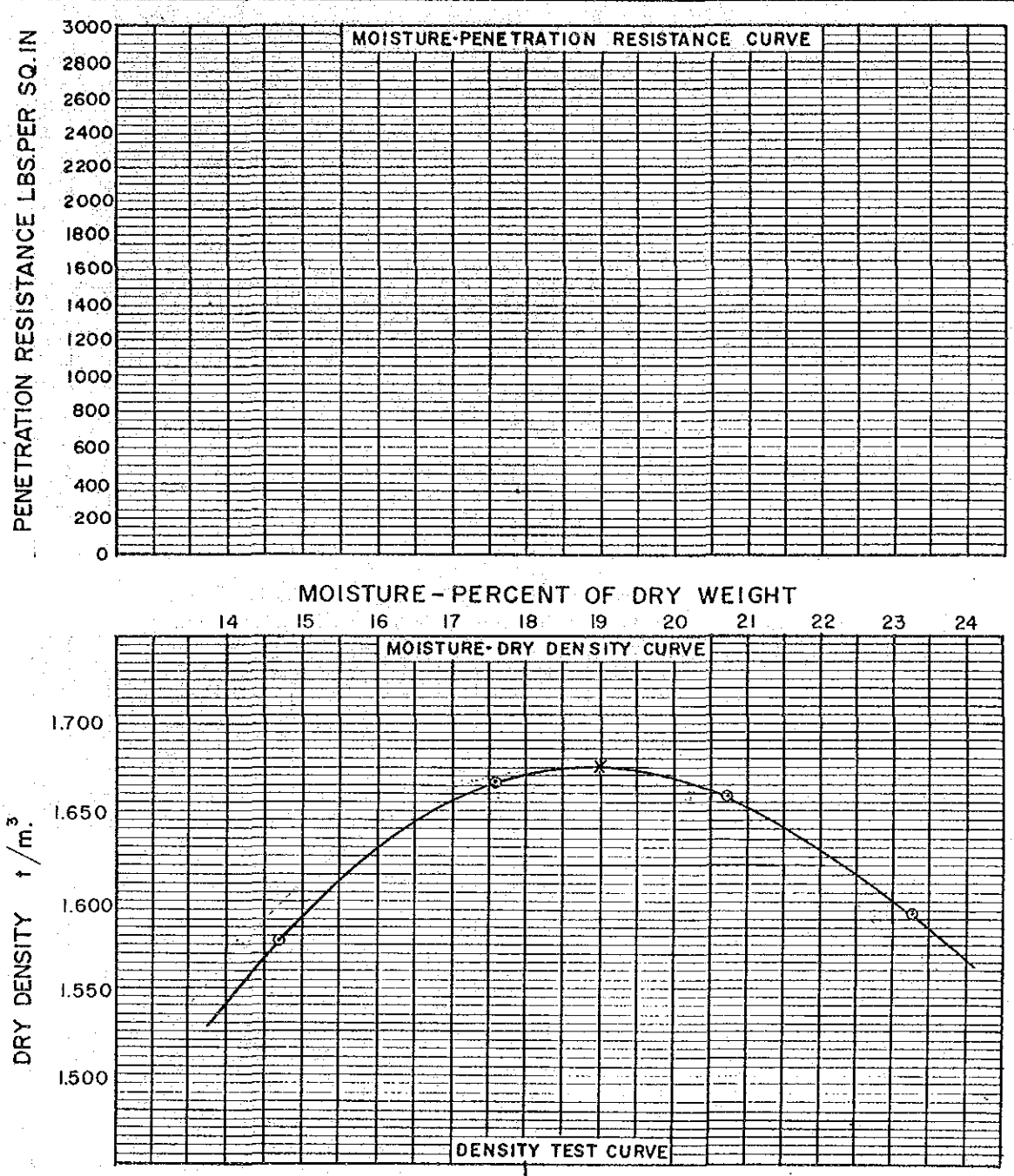
SPECIFIC GRAVITI 2.020 MAX. DRY DENSITY

SOIL CLASSIFICATION 10.5 OPT MOISTURE %

% LARGER THAN TESTED PEN.RES.ATOPT. MOIS.(P.S.I)

COMPACTION TEST CURVE

Sample No. TPB-1 (1.90-5.50) Memo. 72/33



COMPACTION

25 BLOWS PER LAYER 12 IN. DROP

3 LAYER 1/30 CU.FT

5.5 LB. HAMMER

SOIL PROPERTIES

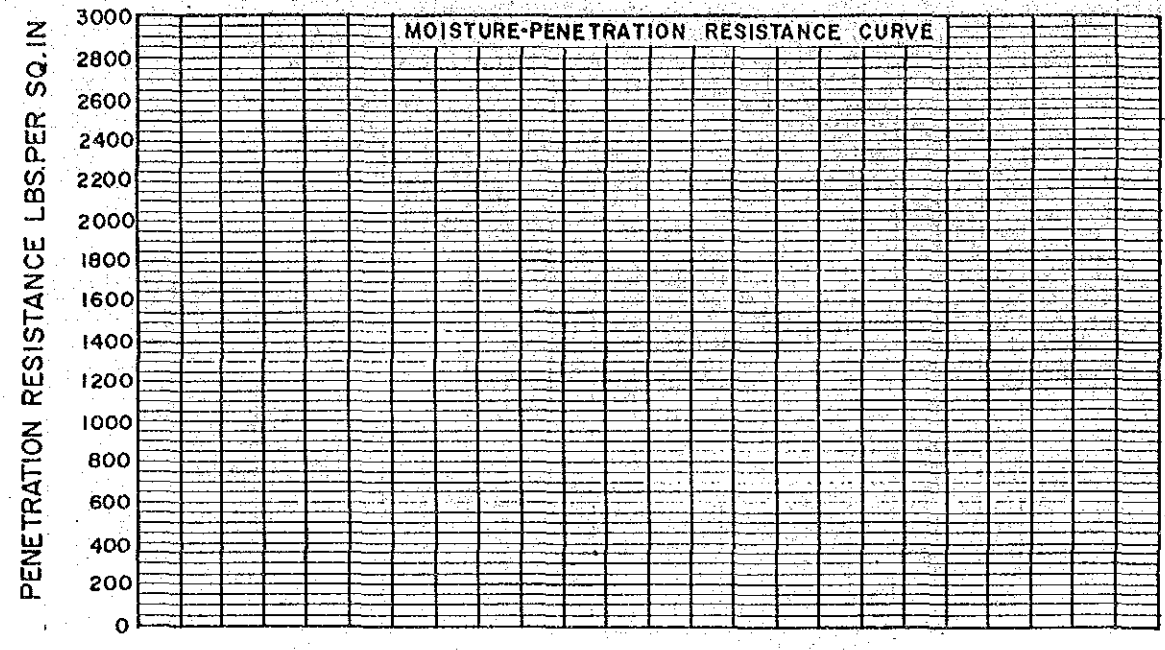
SPECIFIC GRAVITY 1.675 MAX. DRY DENSITY

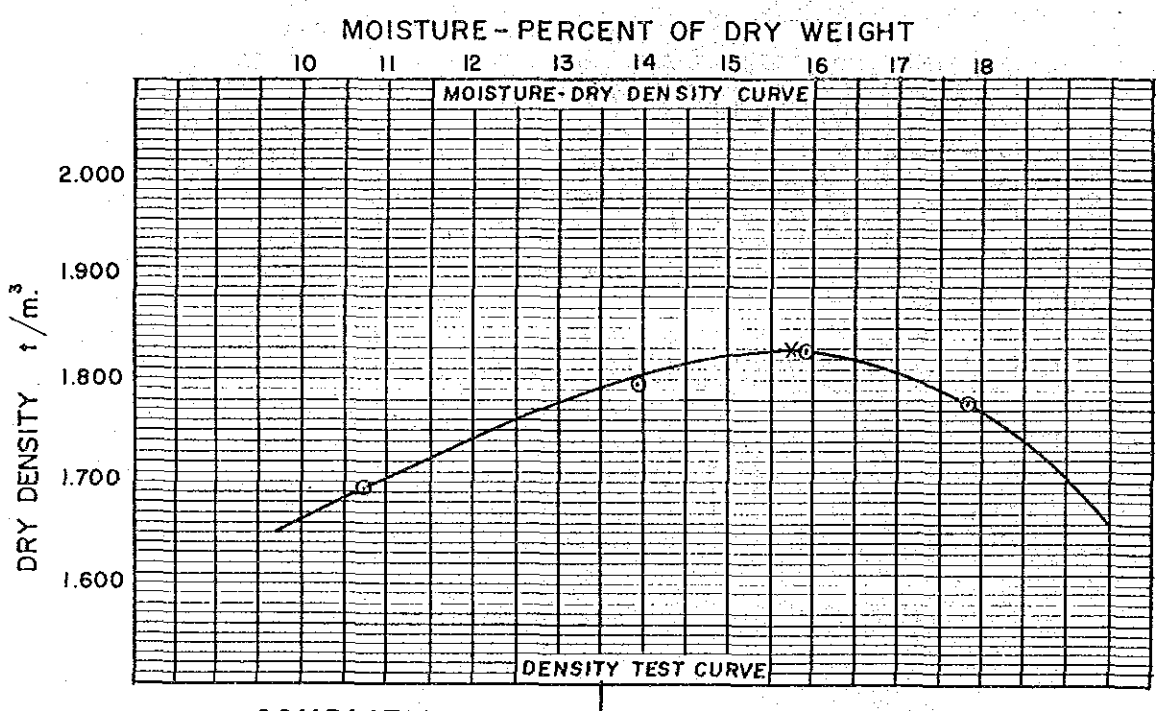
SOIL CLASSIFICATION 19.0 OPT MOISTURE %

% LARGER THAN TESTED PEN.RES.AT OPT. MOIS.(P.S.I)

COMPACTION TEST CURVE

Sample No. TPB-2 (0.00-4.00) Memo. 72/33





COMPACTION

25 BLOWS PER LAYER 12 IN. DROP

3 LAYER 1/30 CU.FT

5.5 LB. HAMMER

SOIL PROPERTIES

SPECIFIC GRAVITI 1.828 MAX. DRY DENSITY

SOIL CLASSIFICATION 15.8 OPT MOISTURE %

% LARGER THAN TESTED PEN.RES.ATOPT. MOIS.(P.S.I)