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

No 1	oundation	Treatment		Blanket Wateriale	Remarks									-		Riverbed and flood	plain deposits	Colluvial & terrace	deposits	ng Song Group									
Dam:Khlong Luang				Construction Mate	-		schist, sandy	ciay and sandy silt.	Metamorphic	rocks		Khobo Kwang	Thon		25	A1:	o Pla	Tr: Col	1.5	Is: Ihung					•				
Name of Dam:		Dam Type	1 .	rili Iype			Soil			Rock		Name of	Quarry Site		Distance to Site(km)		- 1		\				/	<i></i>	1	!		:	
	e Topography	Gradient of Abutment Right BankLeft Bank		0.4	Remarks		Thickness of heavi-	rock ranges 3 to 12	· E										<i>)</i>		VIA.	(}	1	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			
	Damsite	Riverbed Width(m)	Ĺ	[C7]	t Rock			schist			d shale, schist and				schist	,	; -	w.		1					'\	\ \ !	• •		
		Riverbed Alti.(m)	C	4.62	asemen		TS	shale and		S.	weathered ohvllite.s	gneiss	Ts.	r.	shale and				-					-	1		X.		
	Features	Drainage Area(sq.km)	- C L	Roundation Geol	Overburden	Thickness (m)		ري ا ا		•	+	-	v-4			Dam Axis	• •		•	•		2	Į į			Tn weathered	:	\ \ :	`
	ان	River Name	74.1	Riniong Luang	Unconsolidated	Lithology A	Al and Fr	sand and	gravel		clay, silt,	gravel	Colluvial Dep.	clay, silt,	sand and	le of		 E			30		_	- I		-		101	-
		Name of Sub Basin	Lower	pangpakong			Dog would	75			Aoutment		$\overline{}$	Abutment		Geologic													

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

Dam Axis Branched Riverbed Gradient of Abutment Dam Type Cutoff			Physiographic	Features		Damsit	Damsite Topography		Name of Dam:	ong l	No 2 Foundation	Г
Foundation Geology		of Basin		Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed (Width(m)	Gradient of Right Ban세		Dam Type	Cutoff (m)	Treatment	<u> </u>
Foundation Geology Remarks Remarks Lithology Thickness(m) Lithology Thickness(m) Lithology Thickness of heaviland Lithology Lithol		wer ngpakong	Khlong		39		2.0		Fill Type	2	Blanket	
Unconsolidated Overburden Basement Rock Remarks Lithology Thickness of heavi Soil				indation Geol)gy					ction	Materials	
Lithology Thickness(m) Lithology Thickness of heavil Soil Bed Clay, silt The stand and schist Thickness of heavil Soil Sand and Shale and schist Thickness of heavil Thi			Unconsolidated	Overburden	aseme	Rock	Remarks			Lithology	Remarks	
All and Tr. Bed clay, silt Sand and Schale and schist Sand and Schale and schist Trock ranges 3 to 12 Sand and and Sand and Schist sand sand schist sand and Schist sand schist sand and Schist sand schief schief schist sand schist sand schist sand schist sand			Lithology	Thickness (m)	Lithology			-	:	Weathered		
sand and shale and schist rock ranges 3 to 12 Fravel Ts Int Clay, silt 10 Weathered shale, sand and send and schist and gneiss Colluvial Dep. 1 Ts Sand and shale and schist by shale and schist shale and schist by shall be shall b		hon nov:	-		bathor.		-Thickness	of o		Schist, sandy		
Stave Rock Wetamorphi Rock Rock Rocks Ro				In	shale and	schist	rock range	ຸ້ພ		silt.		
Tr Tr Tr Tr Tr Tr Tr Tr			gravel	•			.	<u> </u>		Metamorphic		
And and sand and gneiss sand and shale and schist sand and sand and shale and schist to Site(km) 25 sand and gravel shale and schist to Site(km) 25 sand and sand and shale and schist sand and sand and shale and schist to Site(km) 25 sand and shale and schist sand and shale and schist to Site(km) 25 sand and shale and schist sand and shale and sha	- •	4]r.		#			· ·	Rock	rocks		
Rang-of Rhobo Kwan Colluvial Dep. 1	_	on cmen c	sand and	2								
Colluvial Dep. 1 Fs ment Clay, silt			gravel		gneiss				Name of	Khobo Kwang		Γ
sand and shale and schist Distance sand and schist c Profile of Dam Axis Tr Au Au Tr O 500 m -25		eft	Colluvial Dep.		S				Quarry Site			
of Dam Axis of Dam Axis Tr O 500m 25		Ducment	Clay, Silt		Weathered	, , , , , , , , , , , , , , , , , , ,		. L÷	C. C			T
of Dam Axis -80 -60 -60 -70 -70 -70 -70 -70 -70			grave]		מווס שווס	301136			Distance to Site(km)	25		 ,
10- 10- 10- 10- 10- 10- 10- 10- 10- 10-		Geologi	f.							A1:	Riverbed and flood	
- 60 - 60 - 40 - 70 - 70		m T								į	osi	
-60 -60 -40 -40 -20		85	ر سند 1 ق			`•			08 L_	\$-4 	Colluvial & terrace	9
Tr 40 40 500 m 20 500 m 20		- - -								S. S.	deposits Thung Song Group	
Tr. O SOOm									\		0	
Tr. O		Ú	<i>//</i>			•			09-			··
Tr. Tr.		9				:			; ; ;			
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		V) 1 (4)			

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

-	Physiographic	Features		Damsite	Topography	Name of Dam:	Dam:Khlong Si Yat Depth of	No 1 No 3	-
Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	1 2 1 2 2	Dam Type		Treatment	
Khlong Tha Lat	Khlong Si Yat	1,371	18.6	• •	7	Fill Type	9	Blanket	Т
	Fou		ogy				Construction M	Materials	<u> </u>
	ted	Overburden	Basement Rock	Rock	Remarks		hology	Remarks	γ
		Inickness(⊞)	LITHOIORY				clay and sandy		4.
River Bed	Rd, Al and Dl d clay, sand and gravel	Ç	Ts Weathered and siltst	d sandstone stone	-Layer w/ less than 20 blows of SPT estimetes 6 m thick	Soil	si1t.		
					; ; ;		Granite		
Right Abutment	Al, Tr and Dl clay, sand,	15	Ts Weathered san	sandstone		Rock			
-	1000)		Name of	Khag Bo Ba Bun		-1
Left Abutment	Al, Tr and Dl clay, sand,	15	Ts Weathered	s Weathered sandstone		Site	Quarry Sit		
:	and gravel		and siltstone	tone		Distance to Site(km)	20		Γ
Geolog	Geologic Profile of D	Dam Axis					Rd:	Riverbed deposits	
							¥	Flood plain deposits	70
			-				L	Terrace deposits	
							 	Filo-Fleistocene	
	104		• .				_ EL _ TS:	rormation Thung Song Group	
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C. 1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (4/22)

				j			Name	οţ	Dam: Khlong Si Y	Yat No 2	No 4	
لبسا		Physiographic	Features		Damsite	e Topography			٥		Foundation	[
	of tsin	River Name	Orainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Riverbed Gradient of Abutment Width(m) Right BankLeft Bank		Dam Type	Cutoff (m)	Treat	Treatment	
1,3	Khlong Tha Lat	Khlong Si Yat	976	40	20	6 1	Fi	Fill Type	9	Blanket	et.	1
_		Fou	Foundation Geology	089					Construction	n Materials	S	
		Unconsolidated	Overbur	Basement	Rock	Renarks			Lithology	Rene	Remarks	
لبيي		Lithology	Thickness(m)	Lithology					and	sandy		
	Biver Red	Rd, Al and Dl	10 - 17	Tn Westhered	sandstone	-Layer w/ less	han	Soil	silt.			
	and Flood	and Flood gravel and		siltstone	and	estimetes 6	m thick					
	Plain	rock fragment		limestone		at riverbed			Granite and	<u> </u>		ođ
·	Right	Dt	1	Tn		-Layer of high		Rock	rhyolite	quality	ty for riprap	d d
	Abutment	clay, sand,		Weathered sandst	sandstone	meability(≦U	.U1) flood					1 1
		sigvel and rock fragment		101100 11110) o e T) m/	at righ	bank Name	of	Khao Bo Ra Run	Run		T
. C-	Left	Dt, Tr and D1		Tn		with 5 m		arry Site		•		
-5	Abutment	clay, sand,	7 - 15	Weathered	sandstone		<u></u>		Mo Noi sites	S		
	•	gravel and rock fragment		and siltstone	tone		Dis	Distance to Site(km)	4 and 8 km respectively	<u> </u>		
-	Geologic	Profile of	Dam Axis						H	Rd: Riverbed	ed deposits	
	L ₂₀				-				÷			ov.
	E/					-) E		ts.	
	// 	,					•		¥ 	Al: Flood	Flood plain deposits	t.
,	/ <u>-</u>	19									Terrace deposits	
	09_		-					\	C 09	DI: Plio-P	lelstocene.	
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C. 1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (5/22)

Name of Dam:Upper Khlong Si Yat No 5	Depth of	of River Name Drainage Riverbed Riverbed <u>Gr</u> Basin Area(sq.km) Alti.(m) Width(m) Ri	t Si Yat 585 48 15 15 8 Fill Type	Constr	asement Rock Remarks Remarks Remarks	hickness(m) Lithology		er Bed clay, sand, 4 Well consolidated Flood and gravel coarse grained	granite	Dt Granite quality for ri	clay, sand 1 Well consolidated and coar	and rock coarse grained same of Near the site	Ot Granite	clay, sand 1 Well consolidated	ck	Profile of Dan Axis	Grant Canal Control of the Canal Can			The second of th			
	Phys	Name of RI Sub Basin	Khlong Kh Tha Lat Si		Unc		¥.				Abutment cla	e +	Left	Abutment cla	19.	Geologic Pi	,						

•	<u> </u>	C. I - 2 ENGINEERING GEOLOGIC FEATOR	מפטדטמוט	TENIOUS.	S OF FRU	AND OF FROPOND DAMOLLE (9/42)	Notice (or	of	Iong	Rabom No 6
		Physiographic	Features		اددا	e Topography			Depth of	Foundation
	Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right BankLeft Bank	Abutment ft Bank	Dam Type	Cutoff (m)	Treatment
	Khlong Tha Lat	Khlong Rabom	298	œ	, , ,	0.5	0.4	Fill Type	7	Blanket
			Foundation Geology	ļ	,				Construction M	Materials
		Unconsolidated	Overburden	Basement	Rock	Remarks			Lithology	Remarks
		Lithology		Li thology					clay and sandy	
	River Bed	A1 C	<u>.</u>	Granite Heavily w	weathered			Soil	silt.	
	and Flood									
	Plain						<u> </u>		Sandstone	-Qualitative assess
		Tr and Di		Granite				Rock	- - - -	ment is required
	Abutment	clay, sand	15	Heavily w	weathered				:	for materials
		and gravel		granite						
								Name of	Near existing	
C-1	Left Abutment	fr and 01 clay sand	r T	Granite Heavily w	west hered			Quarry Site	SiteRabom dam	
7-		and gravel)))			Distance +0 Si+e(km)	10	
	Geologi	Geologic Profile of D	Dam Axis							1.0
			1	• .					ב \	Coiluvial & terrace
		-	3 E		·					deposits
			<u>.J .</u>	-	•				10	Fire Stocking Formation
			9		•		-	,	/_ Gr:	Granite
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C. 1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (7/22)

						•	2	Name of Dam:	Dam:Khlong Phra Sa	Sathung No 7	
		ریا	Features		4~1	e Topography	Y		of	Foundation	Ţ
	Name of Sub Basin	River	Orainage Area(sq.km)	Riverbed Alti.(m)	Riverbed Width(m)	Gradient of Abutment Right BankLeft Bank	Abutment eft Bank	Dam Type	Cutoff (m)	Treatment	:
	K. Phra Sathung	Khlong Phr Sathung	2,254	40	30	0.4	0.5	Fill Type	ž	Blanket	<u> </u>
			reol	089					ction	Materials]
		Unconsolidated	Overburden	Basement	Rock	Remarks				Remarks	
	-	Lithology	Thickness(m)	Lithology			-		clay, silt		Γ
	3000	A	0	Ph Handahadh	2 2 2 2 2 2		Shows	Soil	and gravelly		
	and Flood	and Flood and gravel	2	merate	0.180.00	fractured lithology	and well lithology	:	cray		
	Plain					-Right abutment	ment ~_		Andesite and	-Qualitative assess	S.S.
		Dt		Ph			to low hill	Rock	limestone	•	
	Abutment	clay, sand		Weathered	conglo-)Į	Imestone			for materials	
		and rock		merate		ridge	L				
1		fragments				: 	7.	Name of	East of site		
C-8	Left	Tr and Dl		-	-			Quarry Site			
8	Abutment	clay, sand	ព្	rresn lime	mes cone		1				-
		and gravel						Distance to Site(km)			
	Geologic	Profile of	Dan Axis						AI:	Flood plain deposits	i ts
			. .L.						• •	Colluvial & terrace	ုမ္
	•			-	٠		<i>)</i>		. IO	Plio-Pleistocene	- <u> </u>
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C. 1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (9/22)

•							Name of Dam:Upper K	. Phra	Sathung No 9
		Physiographic	Features		Damsite	Topogra).f	Foundation
-	Name of Sub Basin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	Riverbed (Width(m)	Gradient of Abutment Right BankLeft Bank	nt Dam Type	Cutoff (m)	Treatment
•	K. Phra Sathung	Khlong Phra Sathung	614		25		Fill Type	*	curtain grouting and/or blanket
			Foundation Geology	ogy				Construction !	100
		Unconsolidated	1 Overburden	aseme	nt Rock	Remarks		Lithology	Remarks
		Lithology	Thickness (m)	tho!				clay, silt	
	River Bed and Flood	Al C		Ph Sandstone	and chert		Soi 1	and gravelly clay	
	Plain	- [`	•			Limestone	-Qualitative assess-
	Right Abutment	Dt clay, sand and rock	₽-1	Ph Sandstone and chert	and chert		Rock		ment is required for materials
		fragments					Name of	North of site	
C-10	Left Abutment	Dt clay, sand	ş-~l	Ph Sandstone and c	and chert		Quarry Site		
		and rock fragments					Distance to Site(km)	ın	
	Geologi	οf	Dam Axis					A1:	Flood plain deposits
									Colluvial deposits Phong Nam Ron
	120 -								Formation
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ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (10/22)

Name of River Sub Basin Apper Phra Khlong Prong Unconsolithol	raphic r Name Phra	-	י משינט דשמע	OF PRO	POSED D.	ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (10/22)	of	hra	Prong No 10
	g Phra	Features Drainage Area(sq.km)	Riverbed Alti.(m)	verbed for the dth(m) R	Topograp Fradient o Sight Bank	Name is a second of the second	Dam Type	Depth of Cutoff (m)	Foundation Treatment
		1,041	36	20	m	m	Fill Type		Blanket
Uncons		Foundation Geology	ogy					Construction	Materials
Litt	solidated	Unconsolidated Overburden	Basement Rock	ck	Remarks				Remarks
	Lithology I	Inickness (m)	Lithology Dh		-Nonth to	+ omoo.c.	1.00	clay, silt	
River Bed clay,	clay, sand,	70 +	Sandstone and	nd chert	rocks estimates	imates	1	מייי ליייי ליייי	
	· · · · · · · · · · · · · · · · · · ·			<u></u>	-i thology			Sandstone	-Orialitative assess
الم الم الم	r and Dl clay, sand,	20 +	Ph Sandstone and	chert		fill dam	Rock		ment is required for materials
				•	bility annd	bearing	Name of	North of site	
Left Trand Abutment clay,	r and Dl clay, sand,	20 +	Ph Sandstone an	and chert	capacity	· · · · · · · · · · · · · · · · · · ·	Quarry Site		
7,113	;						to Site(km)	15	
Geologic Profile	file of Dam	um Axis	_1					A1:	Flood plain deposits
								in the second se	
			109				<	D1:	Plio-Pleistocene
			-	٠ ٢				Ph:	Phong Nam Ron
-			L.		<u>. </u>		<u>. </u>		Formation
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C. 1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (11/22)

Prong No 11	Foundation	Treatment	Curtain grouting	Materials	Remarks				-Qualitative assess-		for materials						Flood plain deposits	Colluvial deposits	Anorat Group									
Dam: Upper K. Phra	jo	Cutoff (m)	2 ~ 8	5	Lithology	gravelly and	sandy silt	-	Sandstone			In the cite) II .					 	140 Kn:	 1	100	2		\ - -	3	1		J 20 .
Name of Dam:		Dam Type	Fill Type				Soil			Rock		Name of	Orarry Site		Distance	00 31 CC \NIII												
	Topography	Gradient of Abutment Right BankLeft Bank	5		Remarks		-Lithology of sand-	quartzose	-Flat joints develop			meanie										,	\$ (t					
	Damsite	Riverbed Width(m)	15		: Rock	,	11+0+0	stone	-		Sandstone, siltstone	one		s, siltstone	mudstone			٠	i.))	췯					
1		Riverbed	65	ogy	Basement Rock	Lithology	Kh Sandat on	and mudst		. чи	Sandstone	and mudscone	Кħ	Ë	and mudst								又				3	É
	Features	Orainage Area(sq.km)	266	Foundation Geol	Overbur	Thickness(π)	o	o			.			~			บลต Axis)					500	
	ပ	Name	Khlong Phra Prong		Inconsolidated	Lithology	A]	and Flood and gravel)t	clay, sand,	fragments	0.1	clay, sand,	and rock	Des Care	c rrollle of D	(,	5 E	 	1001	· · ·	_1_	109		_1_	0	
	1-1-4	Name of Sub Basin	Upper Phra Prong				200000000000000000000000000000000000000	and Flood and	Plain	-	Abutment	2.2	Left.	- Abutment			4e010810		· -				-				******	

								:	·.									,	<u> </u>	
	No 12	Foundation Treatment	Curtain grouting	Materials	Remarks	-Soil materials	indicate permeable	-Qualitative assess-					1	Colluvial deposits Khorat Group						
	Dam: Huai Samong	Depth of Cutoff (用)	ď)	Construction Materials	Lithology	gravelly and	sandy silt	Sandstone		In the Rite		(II	A1:	Dt: Kh:						
12/22)	Name of Dan	Dam Type	Fill Type				Soil		Rock	Name of	Quarry Site	Distance to Site(km)		·				_	·	
PROPOSED DAMSITE (12/22)		msite Topography bed Gradient of Abutment (m) Right BankLeft Bank	4 0.8		Remarks		1	quartzose -Flat_joints_develop		meable	ı a						Dt/Kh		አ ቴ	
O.F.		Riverbed Riverbed Alti. (m) Width (m)		989	Basement Rock	Lithology	Kh Sandstone, siltstone	and mudstone	Kh Sandstone,siltstone	and mudstone	Kh Sandstone siltstone	and mudstone			, , ,			₹"		0 X X
GEOLOGIC		Features Drainage Area(sq.km)	443	ieo1	Overburden	Thickness(m)	m	-	•		,-	•	Dam Axis	& E		09		. 40	-	20
ENGINEERING GEOLOGIC FEATURES	- 1	Physiographic River Name	Huai Samong		Unconsolidated	Lithology	41 c1a3	and gravel	Dt clay, sand,	and rock fragments	Dt clav sand	and rock fragments	o. €				· .	e e		
C. 1 - 2 EN		Name of Sub Basin	m an		<u></u>		r Bed	000	Right D Abutment		Left Abutment	· · · ·	Geologic				_			
						.*					C-1	3								

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

Name of River Name Prainage Riverbed Gradient of Abutment Construction Water Name of River Name Prainage Riverbed Gradient of Abutment Prainage Riverbed Gradient of Abutment Lithology of Sand Name Of Remarks Inthology Introducing Remarks Inthology of Sand Inthology Inthology of Sand Inthology Inthology of Sand Inthology I		ı			-	- 1	N.	Name of Dam:		Samong No 13
110 20 9 30 Fill Type 2	River	Į.	reatures Drainage Area(sq.km)	Riverbed Alti.(m)	ഥ	lopograpny radient of ight BankLe	Abutment ft Bank		Veptn or Cutoff (m)	roundation Treatment
Modelon Geology Overburden Basement Rock Overburden Basement Rock Overburden Basement Rock I ithology of sand- Sandstone, siltstone stone indicates and mudstone I Sandstone, siltstone and it shows per- and mudstone I Sandstone, siltstone and mudstone I Sandstone I Sand	<u> </u>	Samong	147	110	l · ·	6	30		2	Curtain grouting
Overburden Basement Rock Remarks Diskness (m) Lithology of Sand- Soil Sandvily and Sandstone Sandstone Flat joints develop Rock Sandstone Flat joints develop Rock Sandstone Sandstone Rock Sandstone I Sandstone Sandstone I Sandstone Sandstone I I I I I I I I I			Geol	083					1	Materials
logy Thickness(m) Lithology of sand- sand, 2 Sandstone, siltstone stone indicates avel 2 Sandstone, siltstone stone indicates and mudstone	Uncon	solidated	Overburden	asenei	Rock	Remarks			Lithology	Remarks
sand, 2 Sandstone, siltstone store indicates and mudstone store indicates and mudstone and it shows per- ck sand, 1 Sandstone, siltstone and it shows per- ck and mudstone meable duarry SiteSoils in down- ck sand, 1 Sandstone, siltstone and it shows per- ck and mudstone and it shows per- duarry SiteSoils in down- ck and mudstone and mudstone to siltstone ck and mudstone and mudstone to siltstone ck and mudstone to Dam Axis 120- Al 100- 500 m	Lit	hology	Thickness(m)	Lithology						-Soil materials
All Sandstone, siltstone and it shows pervock and mudstone meable meable ham of Rocks in Sandstone, siltstone and it shows pervock and mudstone meable ham of Rocks in Quarry SiteSoils in Sandstone, siltstone and mudstone for the sand mudstone and mudstone for the stream of the stre	Al clay	/, sand, gravel	2	Kh Sandstone and mudst	siltstone, one	1	· -	Soil	sandy silt	indicate permeable
sand, 1 Sandstone, siltstone and it shows per- and mudstone and it shows per- and mudstone sable meable name of Rocks in quarry SiteSoils in Sandstone, siltstone and mudstone to for Dam Axis 120- 120- Al Kh Tho- Tho- Tho- Tho- Tho- Tho- Tho- Th		•		,		-Flat joints	develop		Sandstone	-Qualitative assess
Name of Rocks in Quarry SiteSoils in Sandstone, siltstone and mudstone bistance bistance 100 mm 140 mm 120 mm Axis 120	Ot clay	y, sand,	r1	Kh Sandstone	siltstone,	in the and it		Rock		ment is required for materials
Sandstone, siltstone and mudstone Dam Axis 120 Al Kh 100 0 5500 m	fra	gments))))) ;	• • • • • • • • • • • • • • • • • • •		Name of	E	
Dam Axis IAO TAO TOO TOO Soo m	9t	2	-	Kh	0.0+2+1:3			Quarry Site	C	
of Dam Axis 140 120 120 AL Kh 100 100 100	end Pad	rock	- 4	and mudst	one		<u>-l</u>	Distance		
120- 120- 100- 100- 500 m	0	of	am Axis	`				00 01 CC (NILL)	0.7	Flood plain deposits
A K K K									Dt:	Colluvial deposits
					سست				Kh:	Khorat Group
				140						
W A A										
				120	· . <u></u> 1		· · · · · · · · · · · · · · · · · · ·			
- C					1					
0 200 1				100			ᄌ 로			
	 -				0-	05 -	E			

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

Name of Dam: Huai Kham Pku	Damsite Topography Depth of	of River Name Drainage Riverbed Riverbed Gradient of Abutment Dam Type Cutoff Treatment asin Area(sq.km) Alti.(m) Width(m) Right BankLeft Bank (m)	Huai Kham Pku 64 110 10	Foundation Geology	asement Rock Remarks Lithology	Thickness (m) Lithology	Al Kh Lithology of sand- Soil clay, sand, 2 Sandstone, siltstone stone indicates and mudstone and grayel		Dt Rock I Sandstone, siltstone and it shows perand rock and mudstone meable	f Rocks	₽	and rock and mudstone fragments	Profile of Dam Axis 1604	m) , Dt: Colluvial de		140-			Kn	m 0550 m	
	Physiogr	Name of River	m an Huai		Unconsol	Lithol	40	;	Dt int clay, and ro		lav.	and ro	Geologic Profil		·						

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

Unconsolidated Lithology Al clay, sand, and rock fragments Ot clay, sand, and rock fragments Clay, sand, clay, cond, and rock fragments credite of D
and gravel t clay, sand, and rock fragments of and rock fragments rolay, sand, and rock fragments rock fragments rock fragments

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

No 16	Foundation	Treatment	Curtain grouting	Materials	Remarks			-Qualitative assess-	ment is required for materials		1			Flood plain deposits	Colluvial d	Diorite or granite			-						
Dam:Huai Wang Mut	Depth of	Cutoff (m)	2	Construction	Lithology	gravelly and	sandy silt	Diorite		Rocks in site	eSoils in down-	Stream	ı,		Dt:	 9					•				:
Name of Dam		Dam Type	Fill Type				Soil		Rock	Name of	Quarry SiteSoils		Distance to Site(km)	_	_	_		_		•		·			·
	Topography	Gradient of Abutment Right BankLeft Bank	5 17		Remarks		-Diorite shows com- paratively fresh											٠.		:					# 005
	\vdash	Riverbed Riverbed Alti.(m) Width(m)	4 10		Basement Rock	Lithology)i)iorite or Granite		i iorite or Granite	-		Diorite or Granite													0
•	Features	Drainage Riv Area(sq.km) Alt	L	Foundation Geology	Overburden	Thickness(m) Lit	pa.		I Dior		D.i	l Dior	-	Dam Axis	160	E	1_		140		<u>.</u>	120-		-	
	raphic	River Name	Huai Wang Mut		Unconsolidated	Lithology	Al clay, sand, and gravel		Dt clay, sand, and rock	fragments	a C		and rock fragments	Profile of											
		Name of Sub Basin	Maenum Hanuman				River Bed and Flood	Plain	Right Abutment			1 Abutment	7	Geologic		• .									:

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

L		Physiographic	Features		Dams: to	Topography	Name of Dam:	Dam: Upper Lam Phraya	ya Than No 17
	f Sin	River Name	Drainage Area(sq.km)	Riverbed Alti.(m)	·[1 1	Dan Type	Cutoff (m)	Treatment
	Maenum Hanuman	Lam Phraya Than	68	108	10	6	Fill Type	8	Curtain grouting
		Fou	ndation Geol	80				Construction M	Materials
		Unconsolidated	Overburden	Basement	Rock	Remarks			Remarks
		Lithology	Thickness(m)	Lithology				gravelly and	-Soil materials
	River Bed	Al clay, sand,		Kh Sandstone,	h Sandstone, siltstone	-Lithology of sand- stone indicates	Soil		indicate permeable
	and Flood			and mudstone	one			- *	
	Right	+6		7.5		-rlat joints develop		Sandstone	-Uualitative assess
	ent.	clay, sand.	p	Sandstone.siltstone	siltstone		A DOCK	s	for materials
		and rock		and mudsto	tone	e			
		fragments						Rocks in site	
C-:		Ð.	•	Кћ	-		Quarry Site	 	
	Abutment	ciay, sand,	-	sandstone,	siltstone			stream	
		and rock fragments		and mudstone	ne		Distance to Site(km)	_	
-	Geologi	c Profile of	Dam Axis					A1:	Flood plain deposits
	.*							Dt:	Colluvial deposits
				1				Kh:	Khorat Group
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C. 1-2 ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (18/22)

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

No 19	Foundation	Treatment	Curtain grouting	Materials	Remarks			-Qualitative assess-	- 23 - −4					Flood plain deposits	Colluvial deposits	Khorat Group								
Dam:Huai Sai Yai	th o	Cutoff (m)	ح	Construction	Lithology	Silt and clay		Sandstone	· · · · ·	Soil in site	=	stream	ſ	A1:	9t:	Kh:								
Name of Dam:		Dam Type	Fill Type				Soi1		Rock	Name of	Quarry SiteRock		Distance to Site(km)						V					
	e Topography	Gradient of Abutment Right BankLeft Bank	3 10		Remarks		-Weathered siltstone underlies at right abutment and river-	, ,	-Stored water can be utilized at Huai	Sai Noi Dam by im- portation works at		west of site										궃		
	Damsit	Riverbed Riverbed Alti.(m) Width(m)	574		Basement Rock	Lithology	Kh Siltstone and mudstone		Kh Siltstone	and mudstone	Kh	Sandstone, siltstone	and mudstone							 ,	₹ ~			m 005
	Features	Drainage Area(sq.km)	273	Foundation Geology	Overburden	Thickness(m)	ເດ		8			7		Dam Axis		620 	E	.1	900	 	580	I	- 299	ى ₀ ك
	Physiographic	River Name	Huai Sai Yai	Fou	Unconsolidated	Lithology	0 e	3	Dt clay, sand,	and rock fragments	Dt	clay, sand,	and rock fragments	J.			٠.							
,		Name of Sub Basin	Maenum Hanuman				River Bed	Plain	Right Abutment		1	Abutment		Geologi						:				

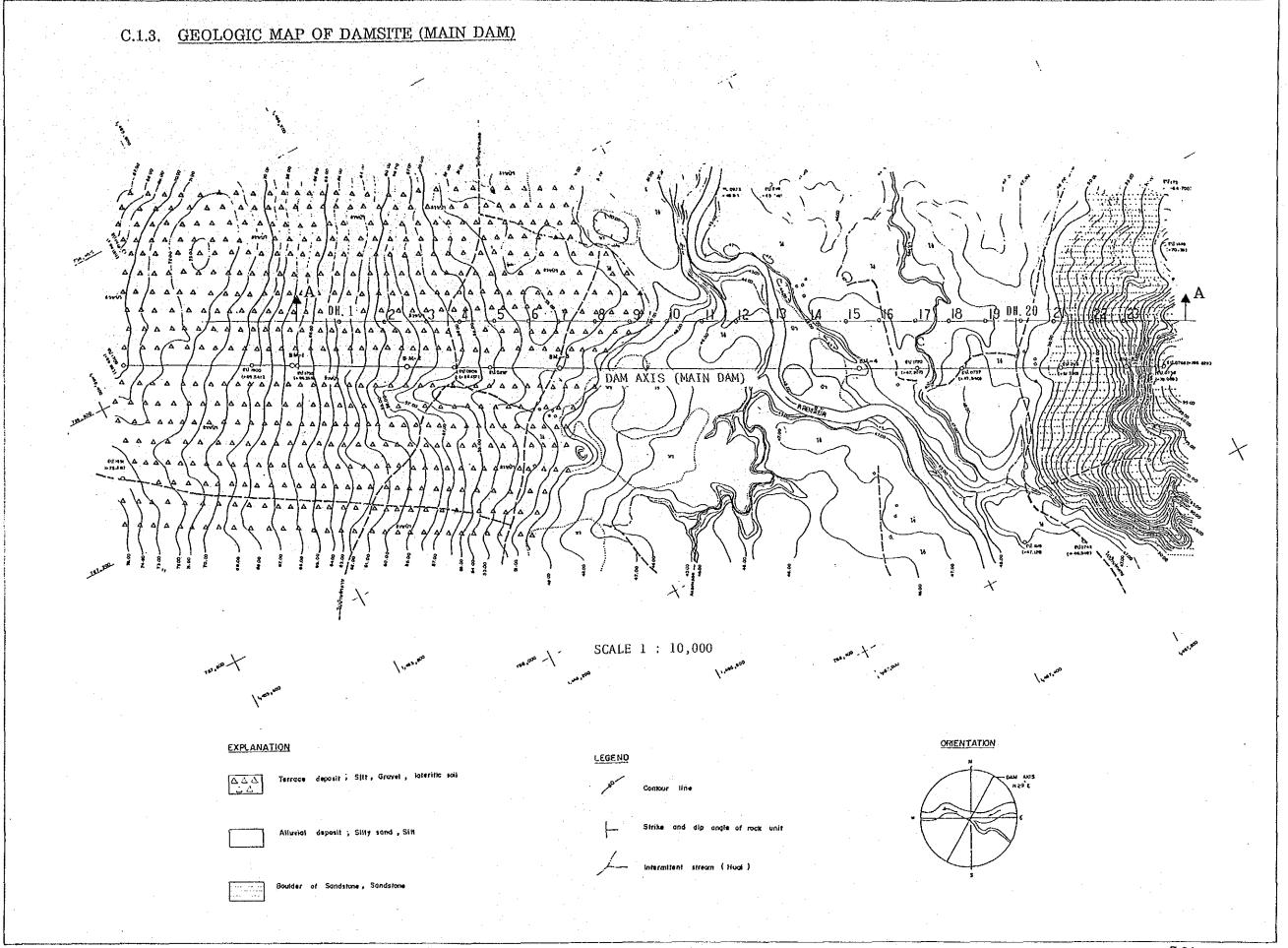
ENGINEERING GEOLOGIC FEATURES OF PROPOSED DAMSITE (20/22) C.1-2

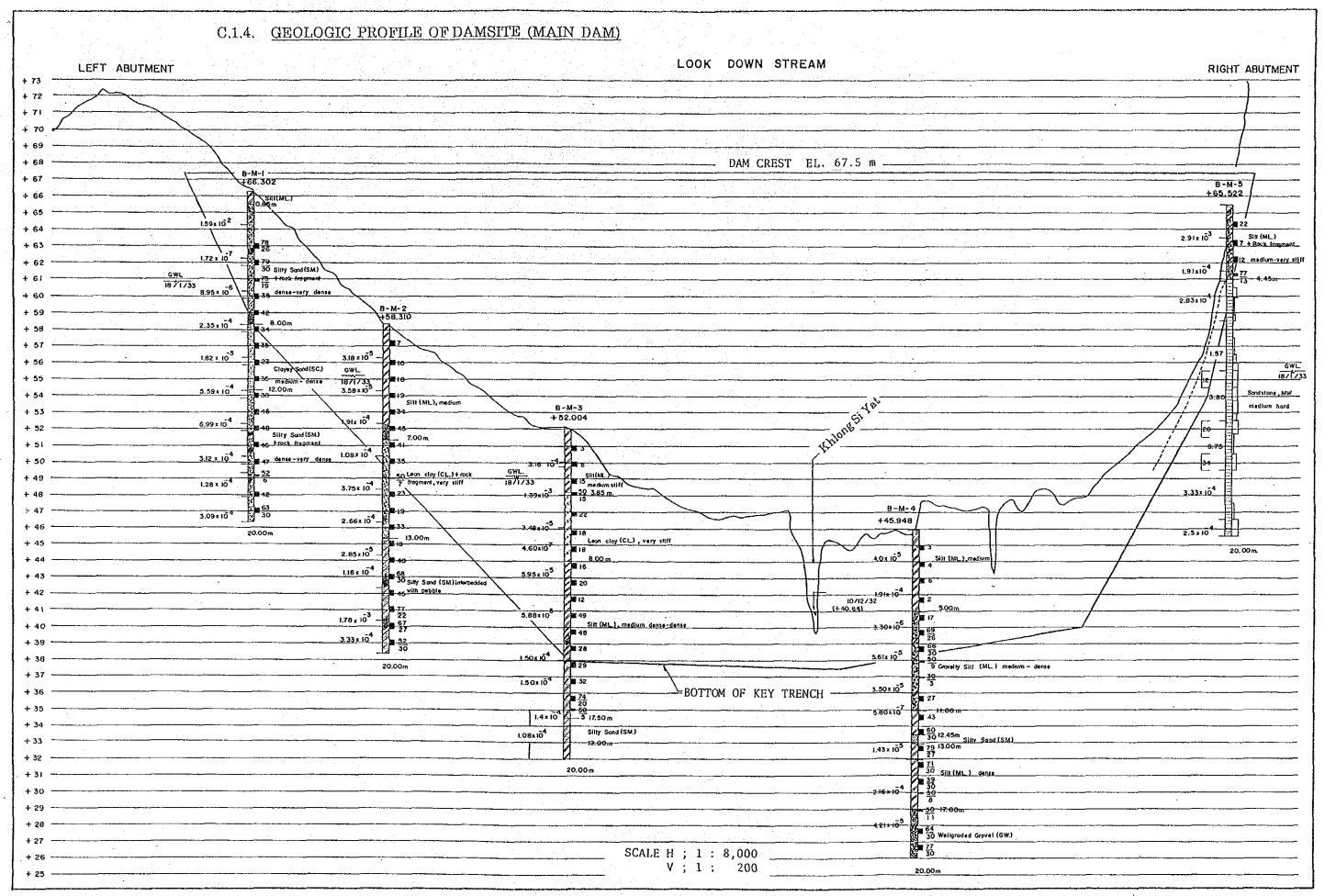
Kaeo No 20	Foundation	Treatment	Curtain grouting	Materials	Remarks	-So	indicate permeable	-Qualitative assess-		for materials	Q.	u			Al: Flood plain deposits										•	
Dam:Khlong Nong	Depth of	Cutoff (m)	2	Construction	Lithology	gravelly and	sandy silt	Sandstone			Rocks in site	=	stream	3	V	Ā	Kh:									E 000
Name of Dam		Dam Type	Fill Type				Soil		Rock		Name of	Quarry Site		Distance to Site(km)	,	· .		_	_	_						ริ
	Topography	Gradient of Abutment Right BankLeft Bank	15 11		Remarks		-Lithology of sand- stone indicates	-flat joints develop	in the sandstone	and it shows per- meable														AI	,	01
	Damsite	Riverbed Riverbed (Alti. (m) Width(m)	20 35	У	Basement Rock		andstone, siltstone			Sandstone, siltstone and mudstone			Sandstone, siltstone	and mudstone							~~~~			Ì		大市
1	Features	е . km)	107	Foundation Geology		Thickness(m) [*		Kh			ZX.		······································	Dam Axis	L		1	Č) D		404	 . I .	20-	***************************************	
	Physiographic	River Name	Khlong Nong Kaeo	Fou	ted	Lithology	sand,	3	10	clay, sand, and rock	fragments	0t	clay, sand,	and rock fragments	Profile of	:					•					
		Name of Sub Basin	Upper Bangpakong		-		River Bed clay,	Plain		Abutment		Left	2 Abutment		Geologic							 <u>.:_</u>	 		- . ,	

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

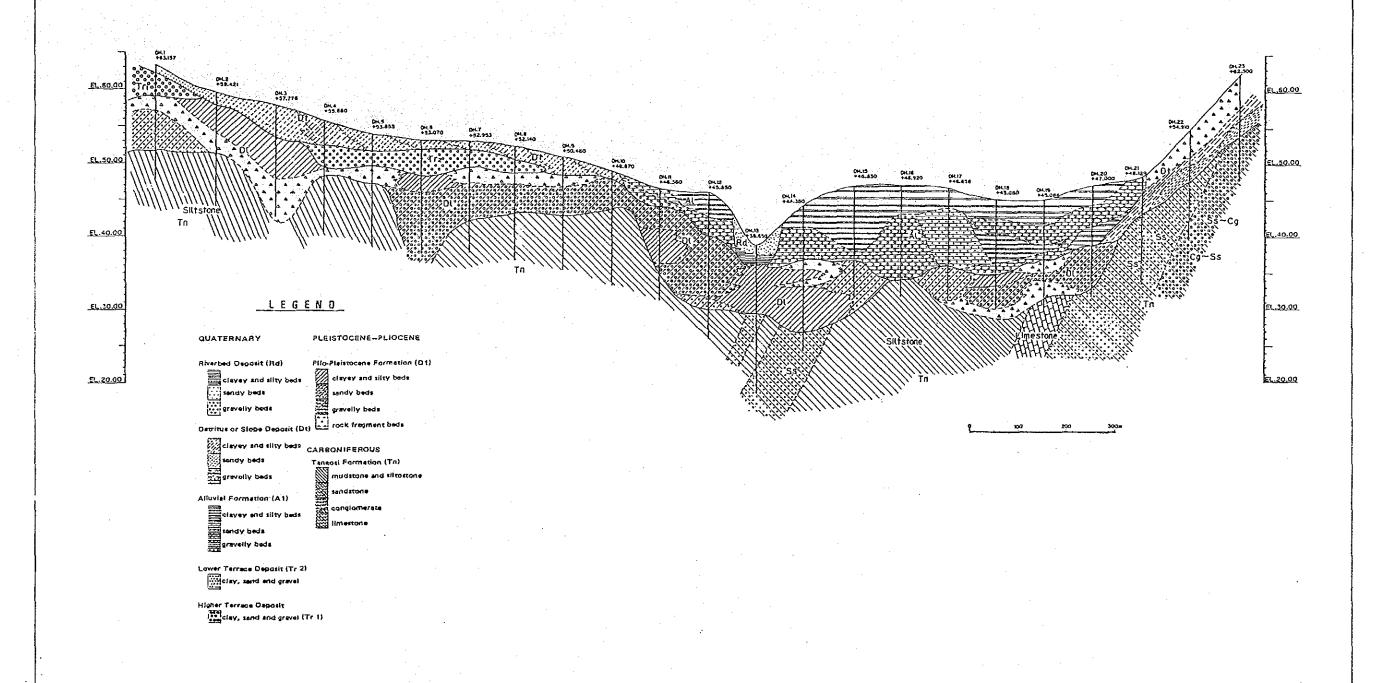
in No 21		reatment	Curtain grouting	Materials	Remarks				-Qualitative assess-	ment is required	for materials						Flood plain deposits	Colluvial de		Andesite											
Dam:Khlong Tha Dan	h of	cutoii (π)	ın	Construction	Lithology	Silt and clay			Andesite					enear the site			A	Dt.	Kh:	An:	/										
Name of Dam;	£	id Dam iype	Fill Type				sh Soil		- Pi	Rock				1-Quarry Sitenear	- 1	Distance to Site(km)				,		\ \ 				7					
	aphy	Gradient of Abutment Right BankLeft Bank	21 11		Remarks			out joint rich -Siltstone in both		weathering	-Difference of phy-	es	between andesite &	Sil	ပ ဂ	for stability anal-				•								A		A	
	Dansi	n kiverbed Width(m)	20		t Rock	žy.		ides i ce		-)e	mudstone			Sandstone, S11tstone	mudstone						٠					/				
	- G	n) Alti.(m)	370	ology		n) Litholog	<	Fresh andesice		Kh	Siltstone	spnm pue	-	X L L	Sandstor	and muds					/				,,,,,	/ - X			\ \ \ \		
	Features	brainage Area(sq.km)	151	Foundation Geol	1 Overburde	Thickness (m)	ι				m			r	ኅ		Dam Axis		/	/		4									
	Physiographic		Khlong Tha Dan		Unconsolidated Overburden	Lithology	I ≪	and gravel		Dt	clay, sand,	and rock	fragments	D.t.	clay, sand,	and rock fragments	140		420F	!	_ _		400 1	· · · · · · · · · · · · · · · · · · ·	- 	00%	1000	- 1		360	•
		Sub Basin	Nakhon Nayok				6	and Flood	Plain	Right	Abutment		1	C-2	ADUTMent		Geologi					•									

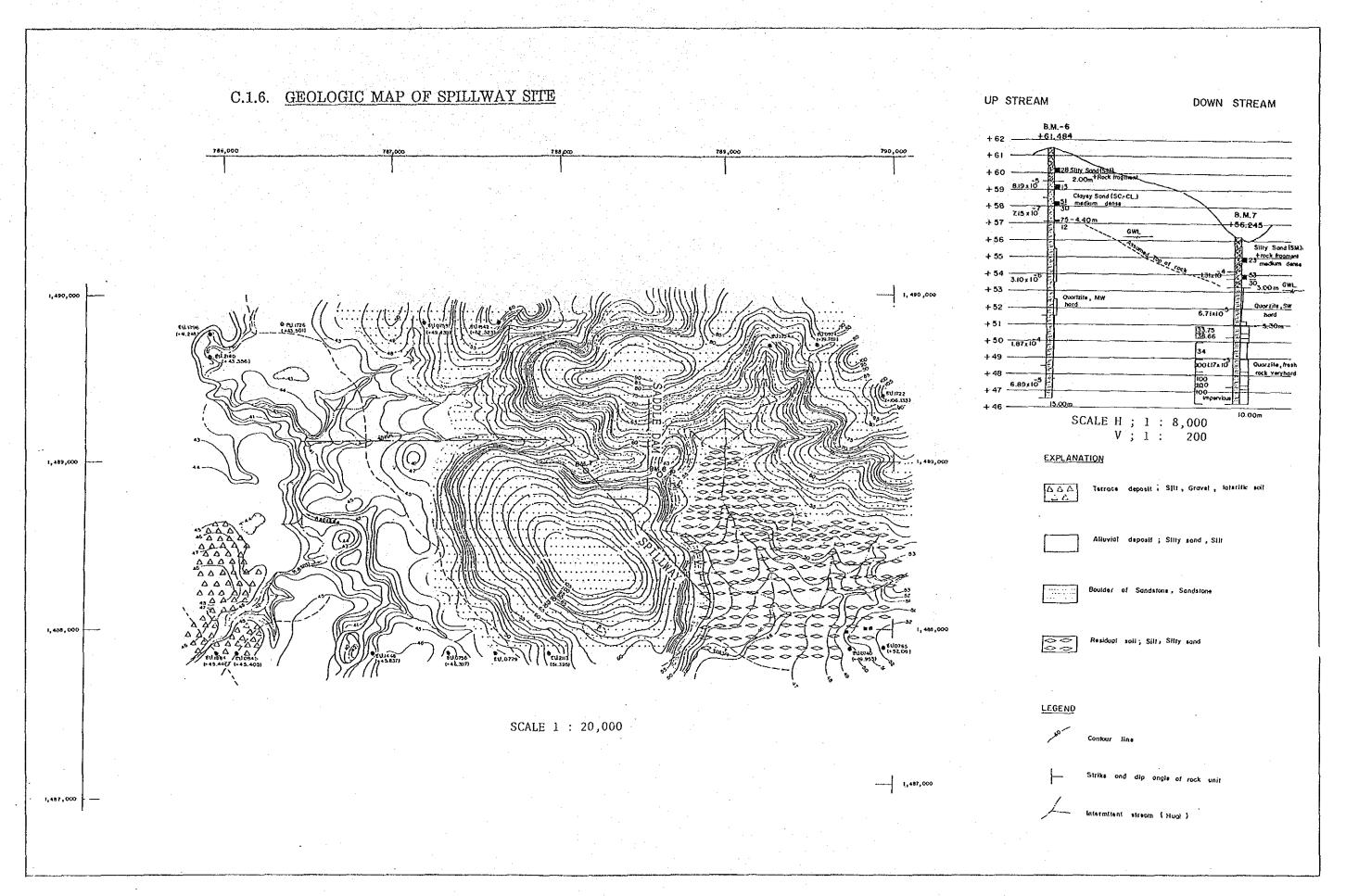
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						Jam Axis	of	Geologi
2	Distance to Site(km)						,,	
Ö	Quarry Site					91	Dt clay, sand,	C-3 Left Abutment
Rock locates	Name of			ind daci te			fragments	
dacite	Rock				hyolite	← -1	Dt clay, sand,	Right Abutment
Rhyolite or			7		3		- 14	Plain
and gravelly silt	Soil		-Rhyo rich	> 4	Ry Rhyolite, breccia	m	< €	River Bed
Silt clay		S)	Kemar	- 1 -		Thickness(m)	Unconsolidated Lithology	
Construction M					ogy	Indation Geo	Fot	
*7"	Fill Type	4.5		15	70	114		Nakhon Nayok
	Dam Type	of Abutment		Riverbed Width(m)	Riverbed Alti.(m)	Drainage Area(sq.km)	River Name	Name of Sub Basin
Khlong Ban Na	of	vho	te Topogra	Damsi		Features	Physiographic	
	22/22)	DAMSITE (OPOSED	ES OF PR	FEATUR	GEOLOGIC	NGINEERING	C.1-2 E
	11 To 12 To	. •	244 					
	Khlong Ban Depth of Cutoff (m) Constructio Lithology Silt, clay and gravell Silt Rhyolite or dacite 2 A B B B B B B B B B B B B B B B B B	of Dam: I Type ck ck ck in Type inte(km)	of Dam: Type ck ck ck in inte(km)	of Dam:	of Dam:	of Dam: I Type ck ck ck in Type inte(km)	of Dam: I Type ck ck ck ance ite(km)	WEINEERING GEOLOGIC FEATURES OF PROPOSED DAMSTIE (22/22) Rate of Dam: River Name Drainage Riverbed Riverbed Gradient of Abutament Dam Type Niver Name Drainage Riverbed Gradient of Abutament Dam Type Niver Name Drainage Riverbed Gradient of Abutament Dam Type Niver Name Drainage Riverbed Gradient of Abutament Dam Type Niver Name Drainage Riverbed Gradient of Abutament Dam Type Niver Name Of Scill Sean Na. Foundation Geology Lithology Thickness(a) Lithology Thickness(a) Lithology Thickness(a) Lithology Thickness(a) Rhyolite, volcanic rich and cracky and and gravel Brecia and dacite Breadents Brecia Breci





C.1.5. GEOLOGIC PROFILE OF SECTION A - A





C.1.7. GEOLOGIC LOG OF DRILL HOLE

Project Khlong Si. Ya	at I e	Toogramit	D 14 . 1	
Chachoenes	at Logged By S.	the first of the control of the cont	Hole No B_M [
Changwat Chachoengs	ao Logged Date		Total Depth 20,45	
Sitet_Odm			Angle From Vertical _	
Location <u>Left Abutment</u>		and the second s	Bearing of Angle Hole	
Elevation _ ± 66 3Q2	Drilling Finished	_I8_/ L	Elevation of Groundwat	er± 50.852
5 - 5 5 5 5	100 H 12345 12345 12345	- <u>-</u>		
(m.s.l.) Depth (m) Casing Core Size Core Run Core Run	0 7 00 N	(MPa) Log Symbol	Description	Remark
		# E 7 % 1		
W 2468i0	0246810 12345 12345 12345	n o n z		
1 1 3 1 1 [1]]][0.0	0 - 0,85 m	
1			t (NL)	
]		Abo	ut 85% non plasticity	
		fine	es, about 15% very fi	ne
		san	d, reddish brown, dry	
		1.0.0 LOO	ts.	•
		1/4.0		
│			F 8 00	
			5 - 8,00 m	.
			ty sand + rock fragme	ht
		78 Abo	tteritic soil) ut 70% low-slightly	• • • •
		20 nlas	sticity fines, about	
<u> </u>		0. 20x	fine sand, about 10%	
		100	k fragment, brown,	
		b 79 mois		
			50-3.60 m, 7.45-7.60 i	
		Inte	erval of gravel)	
		1:0.9	g. u. u.,	
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]			ey sand (SC)	
			t 75% predominantly	
			sand, about 25%	
]			um plasticity fines,	
		brow	n, moist.	
]		1/11		
RQD	Degree of Hardness	Degree of Weath	ering Degree of F	Permaphility
(-25% = Very Poor Rock	I = Very Soft Rock	i = Fresh Rock	I = < 1 Lugeon	
25 - 50 % = Poor Rock	2 = Soft Rock	i = Fresh Rock 2 = Slightly Weathers	·	10-2 X 10 2 4
50 -75 % = Fair Rock	3 = Medium Hard Rock	1		5 X 10 - 10 4 #
75 -90 %= Good Rock	4 = Hard Rock	3 = Moderately Weath		10-5 X 10 "
90-100% = Very GOOd Rock	5= Very Hard Rock	4 = Highly Weathered	Rock 4=10-50 " ered Rock 5= > 50 "	10-5 X 10 // /
20-100 /4- fall 3000 NOCK	10- Anià Unin Uncy	n - combining Mediu	electrocals=1 SO "	/ 4/10 //

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	iunyn 16	<u> </u>	_	Da	ım				77						Rc						ertical _		
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1	Elevation (m.s.l.) Depth (m.) Casing Core Size Core Run Core Size	A CONTROL OF STATE OF	Strength (MP a) Log Symbol N-Value	Deecription	Remark
75 - 90 %= Good Rock 4 = Hard Rock 4 = Highly Weathered Rock 4 = 10 - 50 " 10 - 5 x 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10	RQD <-25% = Very Poor Rock 25 - 50% = Poor Rock 50 - 75% = Fair Rock	Degree of Hardness 1 = Very Soft Rock 2 = Soft Rock	Joseph January Sill About Sand dry Sill About Sill Abou	t (ML) ut 75% low plasticity es, about 25% fine d, pale brown-brown, (6.00-7.00 m t + pebble) es, about 15% rock gment, brown, moist (0-10.00 m, 11.70- 00 m Interbeded r pebble) ering Degree of F	Permeobility or < 10 5m/sec 10 5 x 10 7 5 x 10 4 #
free resistants from the case from the complete transfer and the combiners of the complete co	75 - 90 %= Good Rock 90-100%= Very GOOd Rock				10-5 X 10 " / > 5 X 10 " /

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Project Khlong Changwat Chack	oengsao	<u>' </u>	Logged By S.		Hole No. B.M. — 4 Total Depth 20	00 m
Site L Dan	Ω		Orilling Method		Angle From Vertical _	
Location Right Elevation + 45.9	ABUTMEN 48		Drilling Started _ Drilling Finished _		Bearing of Angle Hole Elevation of Groundwa	
Elevation (m.s.l.) Depth (m.) Casing	(%) OI X COL.	(%) 0 0 X 0 X 2468(0 1234	Aging of the control	(MPa) Log Symbol	Description	Remark
				50 fine 30 sand (12. Silt 30 sand 30 s	OO - 17.00 m (ML) It 85% low plasticity es, about 15% fine l, brown, moist. 45-13.00 m, ey sand (SM))	
RQD		Degree	of Hardness	Degree of Weath	ering Degree of	Permeobility
< -25% = Very Peo	,	l = Very Sof		I = Fresh Rock		or (_10 cm/sec
25 - 50 % = Poor Roc	i -	2 = Soft Roc		2 = Slightly Weathere	d Rock 2=1-5 "	10-5 x 10 7
50 -75 % = Fair Rock		3 = Medium i		3 = Moderately Weath		5 X 10 - 10 /
75-90%= Good Ros		4 = Hard Roc		4 = Highly Weathered		10°-5 X 10° ″
€ 0-100% = Very GOO	O ROCK	5= Very Har	u rock	5 = Completely Weath	ered Rock 5 = > 50 "	> 5 X IO 7 /

Project Khlong Si Ya Changwat Chachoengsa Site L Dom Location Right Abutme Elevation +65.522	Drilling Method Drilling Started Drilling Finished	2/1/33 Rotary 23/12/32	Hole No. B. M5 Total Depth 20.6 Angle From Vertical Bearing of Angle Hole Elevation of Groundwat	00 <u>m</u>
Elevation (m.s.l.) Depth (m.) Casing Core Size Core Run N. Core Run X. Core	746810 15345 Pegree of Parameter of Paramete	Sirengin (MPa) Log Symbol N-Value	Deecription	Remark
RQD (-25.% = Very Poor Rock	Degree of Hardness I = Very Soft Rock	5 11 1 About fine frag	0-6,60m, 7.00- 10m, broken core small pieces)	² ermeobility
25 - 50% = Poor Rock 50 - 75% = Fair Rock	2 = Soft Rock 3 = Medium Hard Rock	2 = Slightly Weathere	d Rock 2=1-5 "	10-5 x 10 4 7 5 x 10 5 7
75 -90 % Good Rock	4 = Hard Rock	3 = Moderately Weath 4 = Highly Weathered	Rock 4=10-50 "	10 5 X 10 4 /
90-100% = Very GOOd Rock	5= Very Hard Rock	5 = Completely Weath	ered Rock 5 = > 50 "	> 5 X 10 " //

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Project Khlong Si Ya Changwat Chachoengsa Site Spillway Location Up stream Elevation + 61 484	Drilling Method Orilling Started Orilling Finished	6/2/32 Rotary 31/1/33	Hole No B.M.— Total Depth I5.1 Angle From Vertical _ Bearing of Angle Hole_ Elevation of Groundwat	00 m
Elevation (m.s.l.) Depth (m.) Casing Core Size Core Run Core Run Size Core Run	(%) OIX GENERAL CONTRO	(MP a) Log Symbol N-Value	Description	Remark
RQD (-25% = Very Poor Rock	Degree of Hardness 1 = Very Soft Rock	0.00 Silt Irag About Irag brow about medi ligh grain brok samp frac core	y sand (SM) + rock ment (SM) + rock ment (SM) rock ment, reddish (SC-CL) (SC-C	Permeobillty
25 - 50% = Poor Rock	2 = Soft Rock	2 = Slightly Weathered	f Rock 2=1-5 #	10-5 X 10 "
50 -75% = Fair Rock 75 -90% = Good Rock	3 = Medium Hard Rock 4 = Hard Rock	3 = Moderately Weathe 4 = Highly Weathered		5 X 10 5 - 10 4 // 10 5 - 5 X 10 5 4 //
90-100% = Very GOOd Rock	5= Very Hard Rack	5 = Completely Weathe		> 5 X 10 4 //

Chan Site Loca	ect ngwat _ tion _ ation_	 Spl Up	ha Iiw sti	chod gy reom	engsa		1 C C	Logged Orilling Orilling Orilling	By S Date Method Started Finished	6/2 Ro	2 / 32 otary / 1 / 3	~ — 3		Total D Angle Bearing	B. epth From Verti of Angle on of Grou	_15. Q ical _ Hole_	Q _m _ o*		
Elevation (m.s.l.)	Depth (m)	Casing	Core Size	Core Run	X 10 (%)	(%) 000 00 X 246810	9 Jo 10 11 12545	S. Degree	S Degree of & Permed - c bikility	Strength (MP a)	Log Symbol	N-Value		Deecr	iption		Rer	nark	
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-	-	305					egree	of Hardi			Degree	of	Weathe	ring	Degr	ee of F	ermeob	illty	_
25 - 5 50 - 7	5*% = 1 60 % = 75 % =	Very Poo Fair	r Ro	ock ick	lock	l = Vei 2 = So	ry Sof It Roc dium l	t Rock k lard Ro		2 = 5 3 = 1	Fresh F Slightly	Rock We bely	c atherec Weath c	I Rock ared Rock	1 = (Lu 2 = - 5	geon (im /s 10 ⁵ -10 ⁴	86 H H
1	00%=				Rock			d Rock						red Rock			> 5 X		7

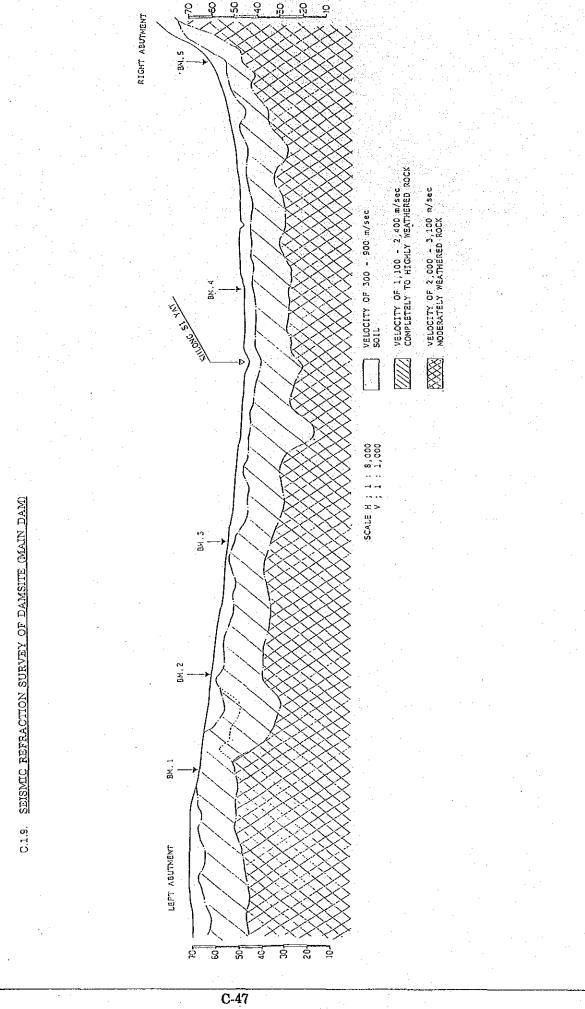
Chan Site Local Eleva	ct gwat tion!	Ci pli Dow 56.	hac Iwo In 24	hoe y stre	ngsa			Log Drill Drill Drill	ged ing ling ling	Date Metho Starte Finish	d d _	8/2 Ro 5/	owut 2 / 33 tary / 2 / 3	3		Total D Angle I Bearing	b. B.M-7 epth IO.OO From Vertical _ of Angle Hole on of Groundwal	
Elevation (m.s.l.)	Depth (m)	Casing	Core Size	Core Run	245810	00 H X	00 1254 0 1254	o Hardness	Girento MAS	N Degree of	D (Kill	Strength (MP a)	Log Symbol	N - Value	ių.	Deecr	iption	Remark
		QD					Degree				0		43/	2.3	Silt About fine frag brown 3.00 Quar Gray grai brok samp frac core 5.30 Quar gra gra goo core and gra gra goo core har	it 80% notes, about the core sure sure sure sure sure sure sure su	m l. quartz l cements. and loss cide on face max. 3 cm, hard. O m Fresh m quartz l cements, tage of ry and slightly e very	
	5*/• = Y	өту			ock	1 = V	ery So	ft Ro				1 = 1	Fresh R	łock				or {_10 cm/sec
	0 % = P				,		oft Ro edium		d Pa	cir		ļ				d Rock	2=1-5 "	10-5 x 105 "
	5% = F 0% = 6					1	ealum ard Ro		. 170	LR		1		-		ered Rock Book	3=5-10 " 4=10-50 "	5 X I O 5 1 O 6 / / I O 5 X I O 7 / /
1	0 % = V				lock		arako ary Ha		ock	•			lighly V Complete			носк ered Rock	· ·	> 5 X 10 "

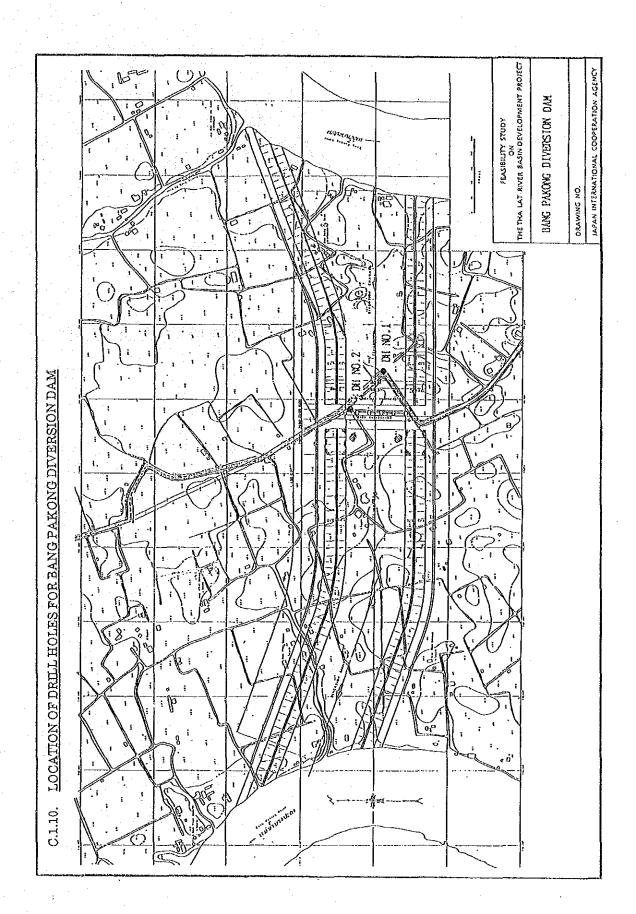
C.1.8. PERMEABILITY TEST IN DRILL HOLE

Number of	Total depth	Interval of	Permeab	ility	Method of
drill hole	of drill hole (m)	testing (m)	Value	Units	test
B-M 1	20.00	2.00 - 2.00:	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	cm/sec	Gravity tes
•		4.00 - 4.45	1.72 × 10 ⁻⁴	, n	н
•		6.00 - 6.45	8.95 x 10 ⁻⁶	-	н
		8.00 - 8.45	2.35 x 10 ⁻⁴	. 4	*
		10.00 - 10.45	1.82 x 10 ⁻⁵	ı,	4
		12.00 - 12.45	5.59 x 10 ⁻⁴	4	ri
		14.00 - 14.45	6.99 x 10 ⁻⁴	-	н
		15.00 - 16.45	3.12 x 10 ⁻⁴	* .	п
		17.00 - 18.45	1.28 x 10 ⁻⁴	N	м
		18.45 - 20.45	3.09 x.10 ⁻⁴	*	*
В-М 2	20.00	2.00 - 2.00	3.18 x 10 ⁻⁵	-	n
		4.00 - 4.00	3.58 x 10 ⁻⁵	ъ	r
		6.00 ~ 6.00	1.91 x 10 ⁻⁴	ц	11
		8.00 - 8.00	1.08 x 10 ⁻⁴	н	н
		10.00 - 10.00	3.75 x 10 ⁻⁴	"	*
		12.00 - 12.00	2.66 x 10 ⁻⁴	H	19
		14.00 - 14.00	2.85 x 10 ⁻⁵	н	, n
	·	14.00 - 16.00	1.16 x 10 ⁻⁴	# ·	71
		18.00 - 18.00	1.78 x 10 ⁻³	н	n
		18.00 - 20.00	3.33 × 10 ⁻⁴	h	¥
:					

Number of	Total depth	Interval of	Permeab	ility	Method of
drill hole	of drill hole (m)	testing (m)	Value	Units	test
в-м з	20.00	2.00 - 2.30	3.16 × 10 ⁻⁴	cm/sec	Gravity tes
		4.00 - 4.00	1.39 x 10 ⁻³		,
		6.00 - 6.00	3.48 x 10 ⁻⁵	"	Ħ
		6.00 - 8.00	4.60×10^{-7}	pt	Ħ
		8.00 - 10.00	5.95 x 10 ⁻⁵	*	· स
		10.00 - 12.00	5.88 x 10 ⁻⁵	#	н
٠.		14.00 - 14.00	1.50 x 10 ⁻⁴		ч
		14.00 - 16.00	1.50 x 10 ⁻⁴	Я	# -
		16.00 - 18.00	1.41 x 10 ⁻⁴		#
·		17.00 - 20.00	1.08 x 10 ⁻⁴		H .
`.					
B-M 4	20.00	2.00 - 2.00	4.0 x 10 ⁻⁵	н	*
		4.00 4.00	1.91 x 10 ⁻⁴	н -	*
		6.00 - 6.00	3.39 x 10 ⁻⁶	ı,	n
		8.00 - 8.00	5.61 x 10 ⁻⁵	u	· n
		10.00 - 10.00	3.50 x 10 ⁻⁵	-	н .
		10.00 - 12.00	5.80 x 10 ⁻⁷	'n	
		12.00 - 14.00	1.43 x 10 ⁻⁵	*	н .
		16.00 - 16.00	2.16 x 10 ⁻⁴	, ,	w
		18.00 - 18.00	4.21 x 10 ⁻⁵	*	D

Number of	Total depth	Interval of	Permeat	oility	Method of
drill hole	of drill hole (m)	testing (m)	Value	Units	test
B-M 5	20.00	2.00 - 2.00	2.91 x 10 ⁻³	cm/sec	Gravity test
		4.00 - 4.00	1.91 × 10 ⁻⁴	-	. "
		4.60 - 7.00	2.83 x 10 ⁻⁴	, u	п
		7.00 - 10.00	1.57	lugeon	lugeon test
		10.00 - 13.00	3.81		,
		13.00 - 16.00	8.75	H	,
		16.00 - 19.00	3.33·x 10 ⁻⁴	cm/sec	Gravity test
		19.00 - 20.00	2.5 × 10 ⁻⁴	-	H
,	i				
в-м б	15.00	2.00 - 2.45	8.19 × 10 ⁻⁵	cm/sec	Gravity test
		4.00 - 4.45	7.15×10^{-7}	н	н
		5.50 - 6.00	1.01 × 10 ⁻⁴	*	*
		6.00 - 10.00	3.10 x 10 ⁻⁶	#1	н
		10.00 - 13.00	1.87 x 10 ⁻⁴	в	N
		13.00 - 15.00	6.89 × 10 ⁻⁵		и
B-M 7	10.00	2.00 - 2.45	1.31 × 10 ⁻⁴	cm/sec	Gravity test
		3.00 - 6.00	6.71 x 10 ⁻⁵	, ,	π
		6.00 - 9.00	1.17×10^{-3}	н	-
		9.00 - 10.00	Impervious	<u>.</u>	-



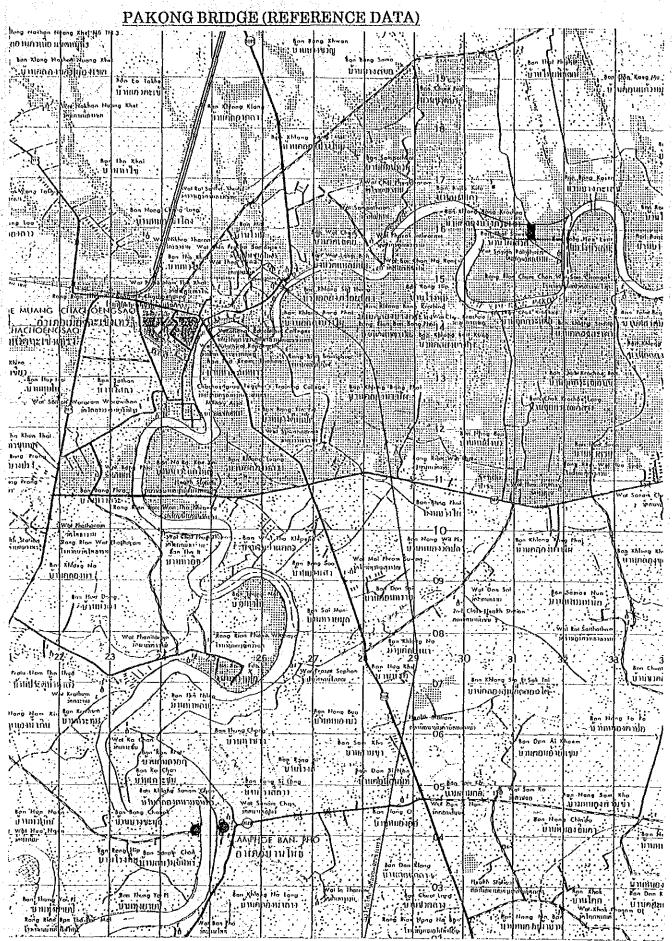


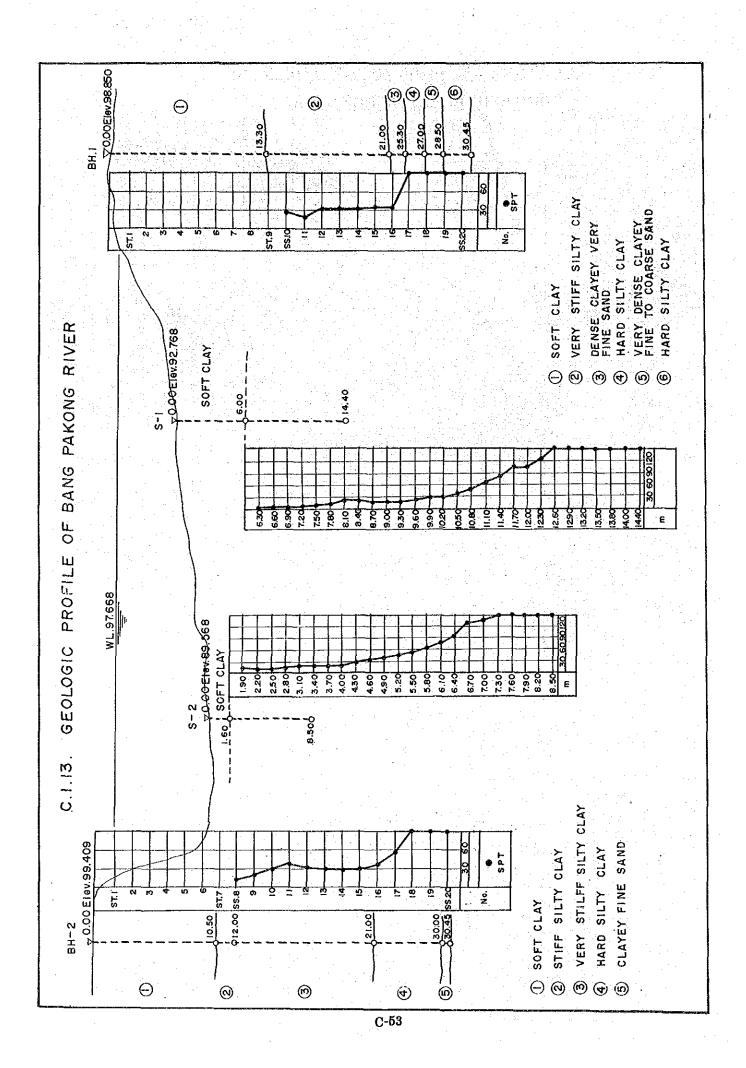
C.1.11. GEOLOGIC LOG OF DRILL HOLE FOR BANG PAKONG DIVERSION DAM

SOIL DESCRIPTION	SOIL PROFILE	DEPTH (m)	S.T.P (BLW/FT)	S.T.P (BLOW/FT) 30 60 90	PIRHEABILITY (cm/sec)
CL (Sandy Clay) Impervious CL (Sandy Clay) Impervious		— 2.0m — 7.5m	20N 1 6 8 11 28 24 27 29 22		(CR/SOC)
SM (Silty Sand) CL (Sandy Clay) Impervious SC (Clayey Sand) Impervious SM (Silty Sand) SC (Clayey Sand) CL (Sandy Clay) SC (Clayey Sand)		— 18.85m — 19.50m — 20.30m — 23.30m — 26.85m — 27.85m — 30.30m	22 50 74 52 32 100/41 33 60 100/35 51 57 55 100/40 100/41 50/12 100/42 100/43 100/37 50/14		5.73 x 10 3.28 x 10 1.13 x 10 9.53 x 10 2.46 x 10 4.85 x 10 5.50 x 10 1.59 x 10 2.28 x 10 4.66 x 10 2.80 x 10 5.50 x 10 3.80 x 10

CL (Sandy Clay) Impervious OL (Organic soil with Sand)	Ž ∑ 2.0m	7N 1	/	
M. (Organic soil with T	2.Um		<i> </i>	t in the second of the second
		1		4.97 x 10 4.48 x 10
The same of the sa	Š	1		6.86 x 10 3.67 x 10 2.94 x 10
Impervious	7.85m			3.56 x 10 9.04 x 10
L (Sandy Clay)		12 10		5.89 x 10 8.23 x 10
Impervious C (Clayey Sand)	-12.00m	14 30 23 25		3.01 x 10 2.94 x 10 4.80 x 10 1.20 x 10
Impervious M (Silty Sand)	16.30m	19 24 15 32 100/35		1.77 x 10 2.74 x 10 4.28 x 10 4.42 x 10
L (Sandy Clay) Impervious C (Clayey Sand)	20.30m	70 70 60 44		2.72 x 10 1.93 x 10 2.21 x 10
Impervious	22.50m	46 56 67		1.11 x 10 1.55 x 10 2.94 x 10 1.10 x 10
L (Sandy Clay)		80 50/11		4.34 x 10 2.35 x 10 2.37 x 10
M (Silty Sand)	27.50m - 30.85m	100/43 47 50/15 51		2.89 x 10 4.42 x 10 4.11 x 10 4.34 x 10
L (Sandy Clay)		46 79 100/43		4.42 x 10 2.74 x 10 1.47 x 10
	- 34.85m	58 50/13		
C (Clayey Sand)		75 100/45 100/40 50/13 50/13		

C.1.12. LOCATION OF DRILL HOLES FOR BANG

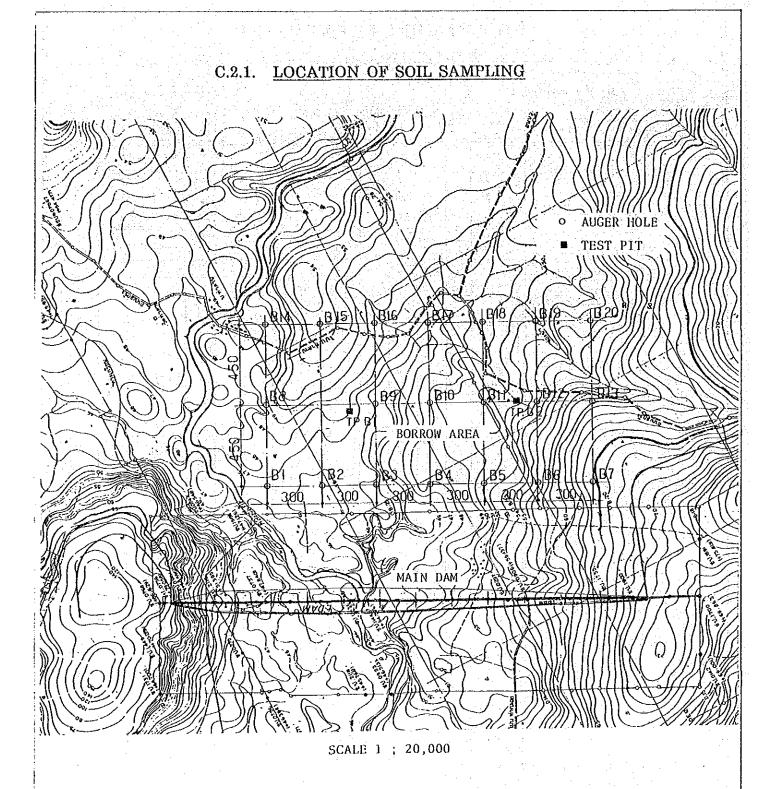




C.1.14. GEOLOGIC LOG OF DRILL HOLE FOR BANG PAKONG BRIDGE

Section 2002 and a section of the se			7.1 :	w	u	ij		n)	ĭ	Un	UU) 5:	FNU)				IG. 3		Name of States
GR	OUND		епилки.		W	Λ	`	BOR	NIC	1	LOG				<u></u>	YG NO	ئـــــــــــــــــــــــــــــــــــــ	1	**************************************	****
DAIE	TIME	EL.of HOLE	EL. of WATER						9	a ji		່ າ ປົ່າ	Tin≝			ACE I		+ 98.8	50	
24 HR, A	TER D	QRING.	0.82 M	LO	CATI	ON.		น. (เ อ. บ ั	านโพร	, 11. 5 7.	, _ (ฉ:เป็	งเทร	11W2		1	FINI				
SC)ILS	DESCRI	PTON	PROFILE	-iÖv Wdy-	x	100	O NDARD				LIMI			Cor pec	npress ak, (U VAN	Uncon ke St remo E SHI Pock	ength. Ided AR	1 .	IAL ~ Sliy .
	/1 L O		. 11014	1	SAMPLE	оветн.,	Pene	HOTH	urt.		ТАИ	URAL.			Ø Pei	retrom	eter	Rdg.	α.	
				ž	\$	087	ni	DWS /		Х м	OISTU	RE CO	HIENT		• 50	NSITI	/ITY 50.		l	, Zw 7MJ
					====	 0.0		0 6		7	0		0 (00				3		7 m.s
	₹ Fill	ed materials	0.30					Ī										ļ	П	1
			:		ST.1 ST.2						0			X.	A				•-	-0 -0
		to soft dan at very fine :			ST.4	5,00	<u></u>		,	<u>-</u>	0		,	¥	8			,		-0 -0
					ST5	·					- 0		x /							-0
	Mt-C	L,CL & ML			51.6					_					1					o
					51.7	10.00				0	- 6				/18 					-0
		-	13 30	1/1	518 ST9	-					0 X	0		X	4					÷0
					SS.10	15.00	~27	:		O-	x-	•					ΔΔ			- • p-
\{	ery stif	f light grey, ;	yellowish		SS11		21			0-5						4,		·		••
		brown silly ine sand.	clay, occa		SS:12			∳ 31 ∥		0-3						٨			-	- è p-
3.3.MA	, ,	CH & CL			SS.13	1	: <u>.</u>	33		0-)•	-) -			• - p -
					SS:14	1		32		. 0	×-•					7. 1 44	6			•••
		-	ot co		SS15	1		+35		0	10			-	1					e 0-
		llowish brown				2500	· ·	434			•									• (
	and lin	ht grey and very fine s	brown silly and, CL		SS:17				102		y ●						8			- • 0
V(ry cen	se brownish i coarse sand,	sed and alich	0 .	55.18			-	130	0-y	-•			·				'		•
H	ard gre	eyish and yel usional sand		1	SS.19	1			161		ŀ							, 4		
	END	OF BORIN	30 <u>4</u> 5		22.20	JU.U.	-		170 •	CX-	-•	1					6			•
		or bornin	~																	
						3500														

	-		#	# F#	* # N#	C a		JCA	<i>y</i> -	1 46					FIG. 4				
GROUND WATER OBSERVATION.		E			<u> </u>							l noni	NG N		7		-		
DATE TIME EL. OF HOLE EL. OF WATER		W.	Α,	C.	BOR	ING		LOG				SURI	9						
	-	OAT!			າ. ປັກ	นโพรี	<u>. </u>	า สเ	มามรั	วินท		DATE	<u></u>						
24 HR. ANTER BORNES. 1,04 M.	W	CATI	UN.					. ด:เปิ				DATE							
					•			LIQUID				δ ^{Ork}		-					
	121	8,					<u> </u>					■ pe	αk,	O remo	olded	TOTAL			
SOILS DESCRIPTION	PROFILE	TYPE	ž		VIDARI ETRATIC		0-	PLASTI	C LIM	HT.		One half Pocket =				DEN	15		
		SIGHTS	OEPTH.				NATURAL					Penetrometer Rdg. • SENSITIVITY				જ₫,			
	ž	3	Ä				X MOISTURE CONTENT.												
		<u> </u>		D	LOWS/	FY.			•/•				K	SC.			1 /		
Filled taleritic soils. —0.20	 		<u>0.0</u>		30 6 1	0		20 4	0 6	io (10	ļ	 	?	3		 -		
rilled idlering soils.												ě.							
		ST1						0-	•		X,	1				•	ľ		
		ST.2		ļ				0-	•							•	ļ.		
Very soft to medium dark grey silty clay, occasional very fine sand		ST.3		 			}) _o _				j.	1			•	١.		
and organic matters.		31.5	5.00	<u> </u>					•		•						ľ		
		ST.4						0-	- 6	· ·		(1)				•	P		
MLOL&CL		ST.5	٠.					0-	•		,	/·•				•	 -c		
		ST.6						:			x'	Δ,]]		_ر		
40.50			10.00		ĺ			_ ا			-^	1					ľ		
Stiff greyish brown silty clay,	\mathbb{Z}	ST7						0							-		٠. ١		
trace of pea gravels. (L. 12.0)		55.8		• • 13				5- }		ļ			k	ļ			- 6		
		55.0		\int_{∞}] /				Δ	\ \ <u>`</u>				ė		
	ا ہا	55.9		22				/					9				ľ		
		55.10	15.00		30			þ—•					٥	•			-		
Very stiff light grey, yellowish		SS1i			37		ر ا	b						Į\ ∳ė					
and reddish brown silly clay.				1	/ / 1														
cu cu s suu oul		55.12			32			Ф- Х	9	· '				8.]	Ì		
CH, CL & MH-OH	HÁ	SS.13	żom		30		/	-d-	è ·				4,		-		•		
	N	5514	20.00	29				04-]	<u> </u>	- 1/0]			i		
		•		. 29	1				•			١.	Ĭ						
		55.15			₹30	Ì.	·	γ -	•				9				•		
2400	4	55.16		ļ	36		ļ	g	•					P			١.		
	1	SS:17	25,00	_	57		_ ا	<u>_</u>	_			1	۵	l i					
Hard light grey, yellowish brown					′′ "		ľ												
and brown silly day, occasional gravels and very fine sand.		55.18				136	CX				. ·			6	. , 6	"	-		
		SS.19	}	 		- 189	 x	 φ–•…						\ \ \	b		_		
CH & CL 3000		ļ.	1	_		200	.			İ					1.				
(A) 30.00 30.45	2.0	2230		[1	700	X-	0-•						8	\		-		
END OF BORING																			
(A) Very dense grey and brown	\\ \	1	ì	1	}	1	F	1	i	1	1	1	1	}	1	1 1	•		



... C-57

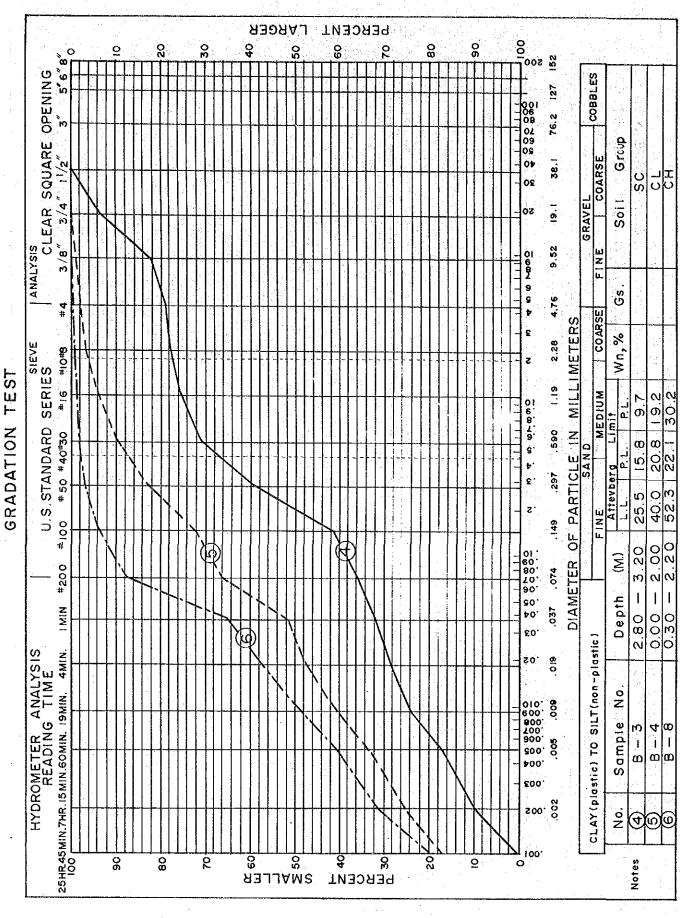
TEST	
SOL	
LABORATORY	
RESULTS OF	
C.2.2.	

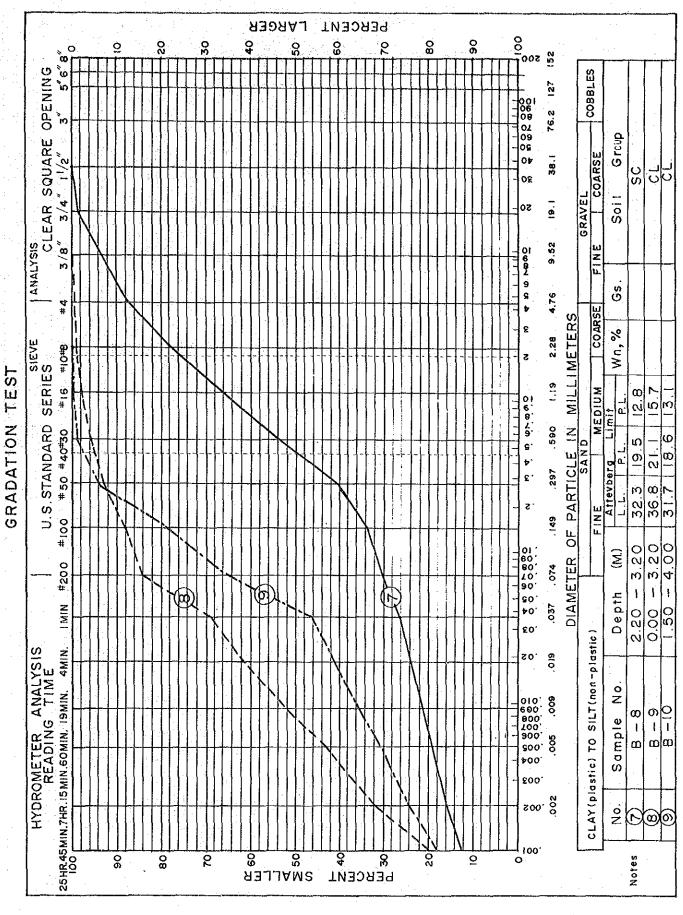
	Triaxial	Shear Test	•	•		•		ı			•	•	•		•	ı			0	0
	Permeability	Test		•	1	.1				•			•	•		•	,		0	0
	Compaction	Test	•	r	•		ŧ		•	•		•		٠	٠	•	0	0	0	0
	Gradation	Test	0	0	0	0	0	0	0	0	0	0	0	0	ó	0	Ò	0	0	0
	Soii	Classification	25	당	OL	SS	g	CH	SC	GE .	ಕ	SS	SS	· #0	ö	ដ	SC	ပ္ပ	o	ပ္ပ
	S	PI	7.3	10,	11.0	£.0	19.2	30.2	12.8	15.7	13.1	9.6	15.9	27.4	10.4	13.8	7.9	7.1	18.3	14.4
•	Atterberg Limits	P.L.	17.9	20.0	19.5	15.8	20.8	22.1	19.5	21.1	18.6	17.0	20.0	26.5	16.6	18.4	16.3	14.4	22.4	21.8
:	Atte	17.7	25.2	29.5	30.5	25.5	40.0	52.3	32.3	36.8	31.7	26.8	35.9	53.9	27.0	32.2	24.2	21.5	40.7	36.2
	Wn	(%)		4	•	•								•		ı	ທີ່	4.6	11.8	4. w
	చ	(£m2)		r	•		•	,	•					i	7	,	2.73	2.69	2.70	2.70
	Depth	(H)	1.6-4.0	0.0-4.0	0.0-2.0	2.8-3.2	0.0-2.0	0.3-2.2	2.2-3.2	0.0-3.2	1.5-4.0	0.0-1.0	0.6-1.2	0.7-2.2	1.4-4.0	0.3-4.0	0.0-1.4	1.4-1.9	1.9-5.5	0.04.0
	Boring	, Z	B.1	3.2	B.3	E 23	4.8	8.8	8.8	න. ල	B.10	8.11	B.16	B.17	B.18	8:18	TP.BI	TP.31	TP.B1	TP.B2 .
			f .																	

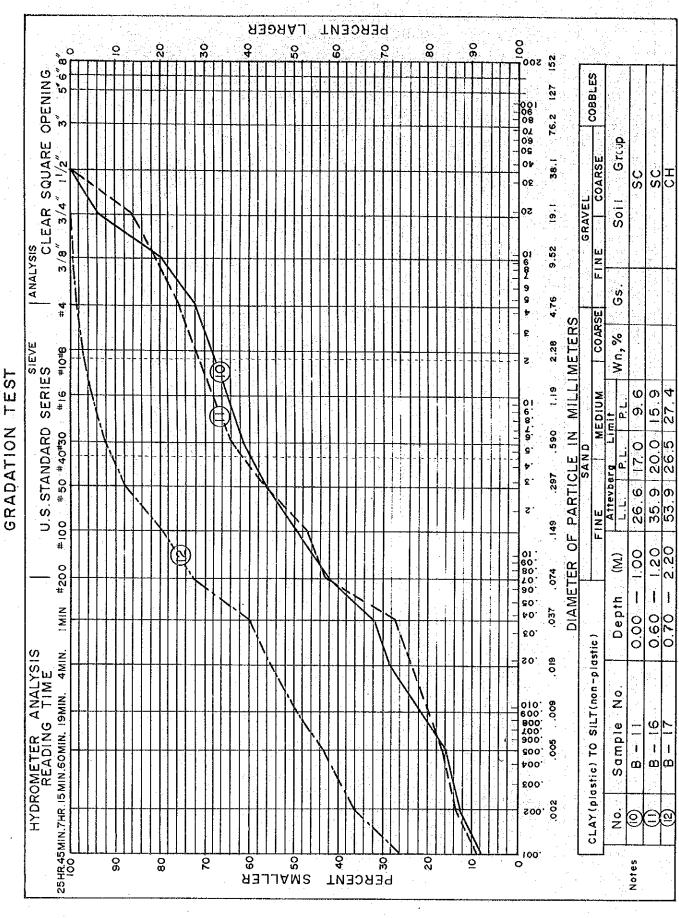
L.L. Liquid limit P.L. Plastic limit P.I. Plasticity index Note:
(1) Gs Specific gravity Wn Field moisture
(2) For results of gradation test, see C.2.3
For results of compaction test, see C.2.4
For results of permeability test, see C.2.5
For results of triasial shear test, see C.2.5

C.2.3. GRADATION TEST

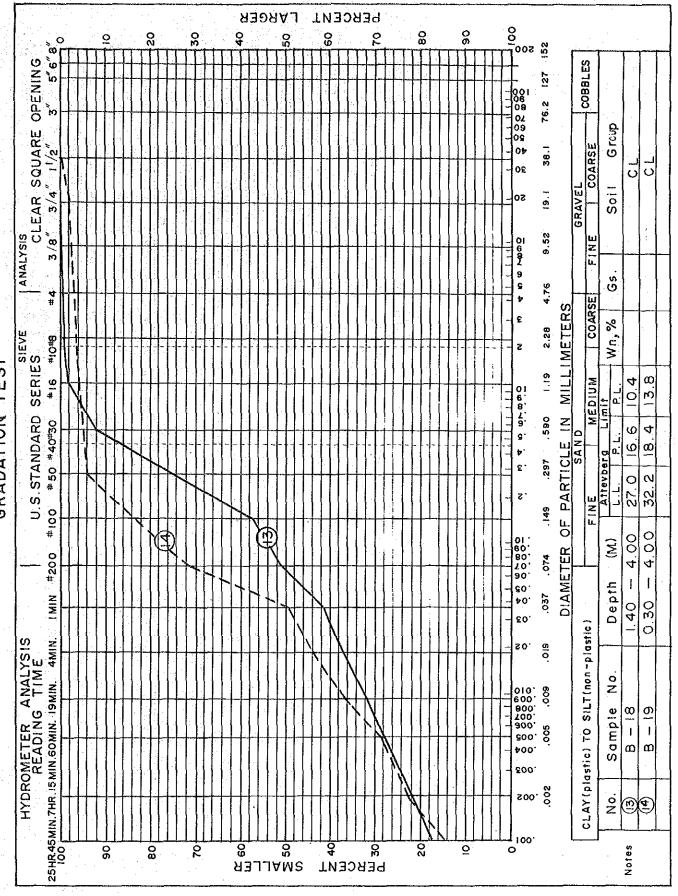
C-60











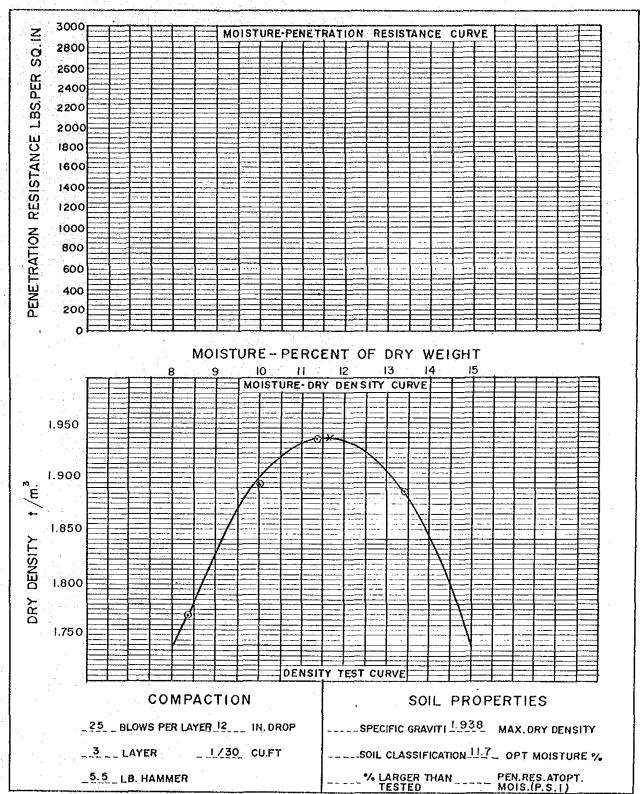
LARGER **PERCENT** 1002 g 80 90 **4** 20 20 ၀) | | | | OPENING COBBLES 76.2 127 Group SQUARE 38.1 ၁၁ ၁၁ 02 Soil <u>--</u> GRAVE CLEAR 0Z 3/8" 9.52 ANALYSIS 7 . T 4 5 6 7890 69 2.73 SS. 4.76 **♥** N COARSE MILLIMETERS Wn,% SERIES 2,28 Ø M 9#O[# Ŋ 4 S GRADATION TEST 6 <u>9</u> 6 P. L. 6 8 7.0 0 1 OF PARTICLE IN U.S.STANDARD 590 #50 #40#30 4 ۵ 4 762 24.2 Ŋ N .149 # 00 # 90 1.40 \$0. 50. 50. 50. 80. 80. $\widehat{\mathbf{z}}$ DIAMETER #200 470. i 1 Depth 750. N N 0.00 40 ٤٥. CLAY (plastic) TO SILT (non-plastic) HYDROMETER ANALYSIS READING TIME 4MIN. . 0 0.5 Sample No. 25HR.45MIN.7HR.15MIN.60MIN. 19MIN. 200, 200, 700, 800, 600, 800 I i ТРВ TPB 900 004 500. 900 200. S C 100 SMALLER % % 8 80 30 2 Notes **PERCENT**

RESER PERCENT -100s % 4 06 120 80 ဝ 5,6"8" OPENING COBBLES 127 001 000 000 000 000 000 000 76.2 G roup CLEAR SOUARE 3/4" 11/2" 38.1 COARSE ၁၅ CL OΕ Soil GRAVEL -61 SO 3/8″ 9.55 ANALYSIS A N I 01684 9 9 2.70 2.70 Gs. 4.76 COARSE OF PARTICLE IN MILLIMETERS % ω ... 2.28 3 U.S.STANDARD SERIES #i0# ٧n 4 GRADATION TEST 9 # 4 MEDIUM 6. 8. 9. 9. 4 . 590 # 50 # 40#30 22.4 ω 2 FINE Affeyberg L.L. P. 297 36.2 40.7 #100 5.50 00 80. 80. 80. 01. $\widehat{\Xi}$ DIAMETER #200 .074 4 1 1 Depth 40, .037 Σ 0 00.0 £0, CLAY (plastic) TO SILT (non-plastic) HYDROMETER ANALYSIS READING TIME 25HR46MIN.7HR.15MIN.60MIN. 19MIN. 4MIN. é 200, 300, 700, 800, 600, Sample TPB-2 TPB - I ₽00° 200 \$00. 8 200 O --- 100. 9 90 80 7 20 ဓ္က Notes SMALLER PERCENT

C.2.4. COMPACTION TEST

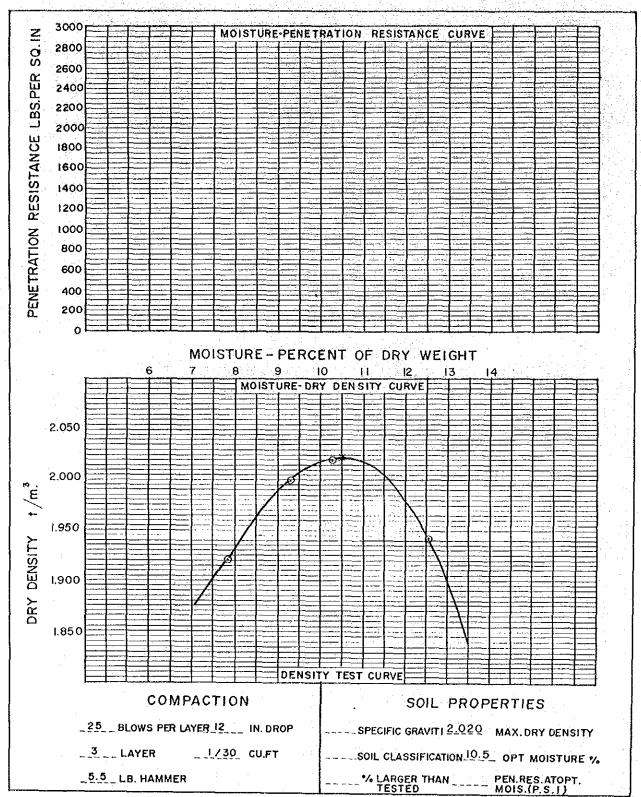
Sample No. TPB-1(0.00-1.40)

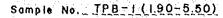
Memo. 72/33



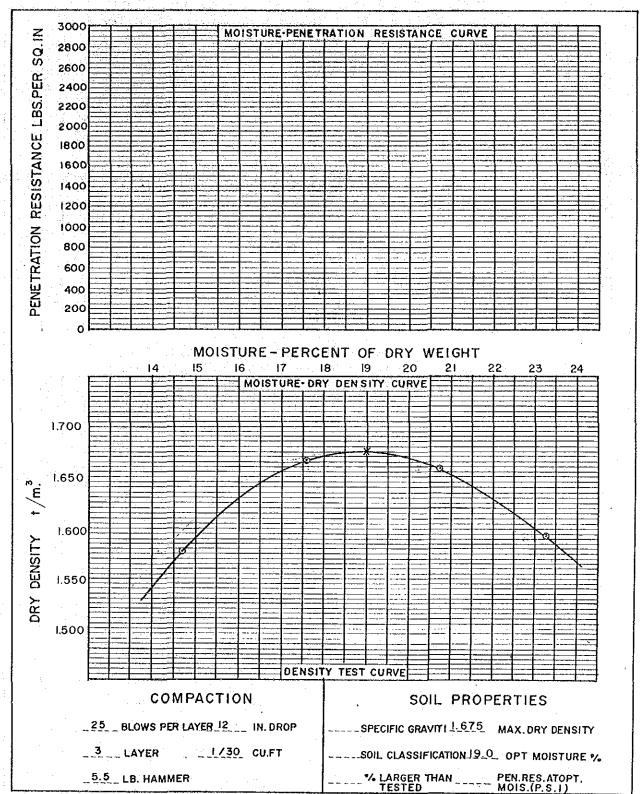


Memo. 72/33





Memo, 72/33





Memo, 72/33

