## **BORING LOG**

ENG	INEEF	RING	THE	PROJEC IN NO	CTFOR IMPROVEMENT	OF RURA	L BR	IDGI	ES	3RIC	OGES OF LAO CAI PRO	OVINCE
			· · · · · · · · · · · · · · · · · · ·	<u> </u>	TECHNICAL DESIGN PH	ASE			-	:	SOI TRAT BRIDGE	<del></del>
Bora				K_P1	Co-or. X≃	Y= Station: km2+027.00						
Elev.:	-,	194.91		Elev. of un	derwaler level: +0.00	Drilli	ng date	:			08/06/2006 - 10/06/2006	
Corre	clor;		<del></del>		Nguyen Cong Sinh	Chec	ker:				Tran Viet Han	
Layer	Ê	Ξ	E) SS	PROFILE		<del></del>	STAN	DARE	PEN		ATION TEST (SPT)	\$ (E)
Fa	Elev. (m)	(w) undag	Thickness (m)	Scale 1/100	DESCRIPTION	Depth (m)	Bk N1	W No.J N2	N3	N/30cm	Chart 0 10 20 30 40 60 N	Sampling depth for test (m)
. 1			4.50		Fine sand is in brownish grey, moist state, spongy structure.	1.00-1.45 2.00-2.45 3.00-3.45	1	2 2	3	4 5		
	190,41	4.60	<u> </u>		en and sold and by the	4.00-4.45	2	3	3	6		
2			1.70		Sand with grit is in yellowish grey, blackish	6.00-5,45	8	12	16	30		
	168.71	6,20			grey, saturate state, closed structure.	5.70-6.15	10	· 15	20	35		
5	179.91	15,00	8.80		Sandstone is in blackish grey, weathered, cracked. Hardness is in level VI-VII				•			U1 10.00-10.20
				·	•	•				z		

# TEST FOR UNCONFINED COMPRESSIVE STRENGTH OF ROCK (22 TCN 57 - 84)

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

#### SOI TRAT BRIDGE

P1'		
V1		
10-10,25		***************************************
	. :	
<sup>2</sup> ) 130,0		
n²) 88,0		
0,68		**** **** * * * * * * * * * * * * * * *
2,367		
2,681		,
	U1 10-10,25 130,0 130,0 0,68 2,367	U1 10-10,25 130,0 130,0 0,68 2,367

Tested by

Nguyễn Văn Hạnh

Checker hy

VILAS 129 Toan

		<del></del> -			BURING		<del></del>							
ENGI	NEER		THE		T FOR IMPROVEMENT ( RTHERN MOUNTAINOUS			IDGE	ES∣E	BRIDO				
		$\dashv$		<u> </u>	TECHNICAL DESIGN PHA			:	4		BAN NGHIEN BRIDGE	<u> </u>		
Bore h				K_T2	Co-or. X=	····			Slalion:					
Elev.:		9.67		Elev, of un	Elev. of underwater level: +0.00 Ortiling date:						08/06/2006 - 10/06/2006			
Сопес	tor.	· 			Ho Nhat Dang		cker:		_		Ngo Duc Hung			
Layer	E	Depth (m)	Thickness (m)	PROFILE Scale	, DESCRIPTION		,,	W No./			ATION TEST (SPT)	mp <b>ling</b> depi for tæst (m)		
3	Eler. (m)	G.	Thick	1/100	OESERIE HEN	Depth (m)	N1		N3	W30cm	Charl 0 10 20 30 40 50 N	Sampling depth for tast (m)		
		•=-,		000				-				•		
				100	Cabbia graph of the salicules	1.0-1.01	30/1cr	3						
1			2.8	100	brown, whilish grey, closed structure.	2.0-2.01	32/1cr							
				500	structure.							•		
	86,87	2.5		====						1				
,				2			1.					Tt		
					Clay shale is blackish grey, brownish grey, cracked.				•			4.5-4.7		
2			3.4		Hardness is 4 with RQD=60			ŀ						
				3==	%, TCR =45%			1	١.					
EK3	83.47 83.44	8.2 6.23	o na		Clay mixes with chips,									
		<b>!</b>		===	brownish grey.			1			, , , , , , , , , , , , ,	7.0-7.1		
				====								7,00-3.1		
					Shale is blownish grey, light		l				, , , , , , , , , , ,			
4			5,07	====	pink with hardness of 6-7, RQD=70%, TCR=55%	ļ				ł	,			
		·		===								T3		
									1			9.0-9.1		
						1		Ì						
	78.37	11.30	<u> </u>	1 1 2 2 2 2	<u> </u>	4								
				'			-							
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		L				<u>,                                     </u>				نـــــــــــــــــــــــــــــــــــــ	<u> </u>			

## **BORING LOG**

NĠINEERINO	THE		CT FOR IMPROVEMENT ( RTHERN MOUNTAINOUS TECHNICAL DESIGN PHA	PROVIN		IDGI	ES 1	BRIDG	SES OF TUYEN QUANG PROBAN NGHIEN BRIDG	
lore hole		LK_T3	Co-or. X=	Y≂			. [	Station:		
lev.: +89.80		Elev. of un	derwater fevel: +0.00	Drille	Drilling date:				10/06/2006 - 11/06/2006	
onector:	Ho Nhat Dang			Che	ker:	•			Ngo Due Hung	
Layer nv. (m) pth (m)	(m) ss	PROFILE	·						ATION TEST (SPT)	depth (m)
Layer Elav. (m) Depth (m)	Thickness (m)	:Scale	DESCRIPTION	Depth (m)	<del></del>	w No./ N2.	N3	N/30cm	Chart O 10 20 30 40 50 N	Sampling depth for lest (m)
1 847 3.1	3.1	I A O	Cobbie, gravel, grit is yellowish brown, whilish grey, closed structure.	1.0-1.45 2.0-2.45 3.0-3.45	10 16	15 22 25	19 28	34 46 55		
2 839 838 60	2.8	χ χ	Clay shale is blackish grey, brownish grey, cracked. Hardnéss is 4 with RQD=60 %, TCR =45%			-				71 4.5-4.7
4	5.20		Clay mixes with chips, brownish grey.  Shale is blownish grey, light pink with hardness of 6-7, RQD=70%, TCR=55%							72-74 7.2-74 73 .9.0-9.2
78.6 11.2										

# TEST FOR UNCONFINED COMPRESSIVE STRENGTH OF ROCK

(22 TCN 57 - 84)

## THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

#### **BAN NGHIEN BRIDGÉ**

LK_ T2	LK_T2	LK_T2
T1	T2	Т3
4,5-4,7	7,0-7,1	9,0-9,1
	,	
451,0	750,0	781,0
305,0	598,0	635,0
0,68	0,80	0,81
2,39	2,41	2,40
2,69	2,71	2,71
Addison to the second of the s	destination able -	And the second s
	T1 4,5-4,7  ) 451,0  305,0  0,68  2,39	T1 T2 4,5-4,7 7,0-7,1  451,0 750,0  305,0 598,0  0,68 0,80  2,39 2,41

Tested by

Nguyên Văn Hạnh

VILAS 128 pan

1

# TEST FOR UNCONFINED COMPRESSIVE STRENGTH OF ROCK (22 TCN 57 - 84)

#### THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

#### BAN NGHIEN BRIDGE

Bore hole	,	LK_T3	LK_T3	LK_T3
Sample N <sub>o</sub>	* * * * * * * * * * * * * * * * * * * *	T1	T2	Т3
Depth (m)		4,5-4,7	7,2-7,4	9,0-9,2
Test Items	-	<b>\$</b> į		
Dry unconfined compressive strength	σ <sub>n</sub> (kG/cm²)	45 <b>5.0</b>	760,0	795,0
Saturated unconfined compressive strength	σ <sub>bh</sub> (kG/cm²)	310,0	610,0	650,0
index of softening	k	0,68	0,80	. 0,82
Natural unit welght	γ <sub>w</sub> (g/cm <sup>3</sup> )	2,375·	2,410	2,410
Spesific gravily	Δ (g/cm <sup>3</sup> )	2,690	2,720	2,725
Andrew Co.		, <del></del> ,		
<u> </u>		<u> </u>	<u></u>	<u> </u>

Tested by

Nguyên Văn Hạnh

Checked by

Checked by

VILAS 129

## **BORING LOG**

NGI	NEEF				RTHERN MOUNTAINOU TECHNICAL DESIGN PH	S PROVIN			-	BRIDGES OF TUYEN QUANG PROVINCE TRINH BRIDGE				
ore h	ole		L	K_T2	Co-or, X=	Y# ·		•	٤	Siglion;				
iov.:	+6	7,0		Elev. of unc	ferwater lavel: +0.00	Diff	ing date;		]		13/08/2008 - 14/06/2008			
uioc	lor:			. :	I to Nito! Dang	Che	cker:				Ngo Dua Hung			
, i	É	(m)	(m) 88	PROFILE						ENETRATION TEST (SPT)				
Jake	E3-v. (m)	Decri (m)	Thiconess (m)	Scolo 1/100	DESCRIPTION	Depth (in)	Blo N1	w No.J N2	N3	Naden	Chart 0 10 20 30 40 50 N	Sampling depth for test (m)		
1		. !	2.5		Sand, gravel, grit mixes with cobble, yellowish brown, spongy	1,0-1,45	5	7	15	,22		PH1 0,5-1.		
	84.56	2.5	0.5	000	structure.  Gravel cobble mixes with	2.0-2.45	7	11	17	28				
2	84,00	3.0	0.5	7.76	sendy clay, greenish grey, eleacd structure. Grit is closed structure	3.0-3,45	12	18	19	37		PH2 3.0-4.1		
3	81.8	6.2	2.2		resulting from weathered clay shale.	5.0-5.02	15	.17	20	37				
4.			2.4	E ;-	Weathered clay shale, broken in tiny, blackish	6.0-5.02	50/2cm	· .				PH3		
_	78,40	7.6			grey, very closed structure.	7.0-7,02	50/2cm					5.2-7		
5	-		3.10	<b>1</b> 2.2	Weathered clay shale, broken in tiny, blackish grey, very closed structure. It is shorted of water during	6.0-8.2	7	14	20	34				
	·		3,10		drilling in this layer.	9.0-9.2	8	15	19	34		9.0-10		
-	76.30	10.70		  	·	10.0-10.2	7	13	17	30				
•			-			11.5-11.8	25	40	30/1cm	<b>1</b>		PH:		
					Weathered clay shale,	13.5-13.8	36	46	30/1cm			PHS		
6			8.00		broken in tiny, blackish grey, very closed structure	. 15,0-15.02	50/2cm					14,0-1		
	,	,			-	16 5-15.51	50/2cm							
				3 7								PH 17,0-1		
<del> </del>	68.30	18.70	<del> </del>	h	<u> </u>									

	INEE	i	THE	PROJE	CT FOR IMPROVEMENT	OF RURA	L BF	RIDG	ES	BRID	GÉS OF TUYEN QUANG PR	OVINCE
ENG	INCE	KING		IN NU	RTHERN MOUNTAINOUS TECHNICAL DESIGN PH		CES				TRINH BRIDGE	
Bore	hole		1	LK_T3	Co-or. X=	Y= .			_	Slation		
Elev.:	4	87,80 		Elev. of un	derwaler level: +0.00	Dritt	ng date	:		,	15/06/2006 - 16/06/2006	
Cone	clor:		,		Ho Nhet Dang	Che	cker:			•	Ngo Duc Hung	•_
<b>a</b> s.	· F	Ē	E	PROFILE			STAN	DAR	4 <b>3</b> 9 C	NETR/	ation test (SPT)	fig (F)
Layer	Elev. (m)	Depth (m)	Thickmess (rii)	Scale 1/100	DESCRIPTION	Depth (m)	Bk N1	w No./ N2	15cm N3	N/30cm	Chart	Sampling depth for bost (m)
1	66.20	1.8	1,6	0000	Sand, gravel, grit mixes with cobble, yellowish brown, spongy structure.	1.5-1,95	3	4	8	8		
2			3.6		Gravel cobble mixes with sandy clay, greenish gray,	2.0-2.45 3.0-3.45	· 15	15 15	17 _20_	32	)21-	. PH1 3.0-4.0
				800	. closed structure	4.0-4.45	20	22	24	46	)	•
,	<b>02.60</b>	5.2			-	505.62	) <b>14</b>	15	18_	33		
3 .			2.2		Grit is closed structure resulting from weathered clay shale.	7.0-7.45	15 14	23	25 26	45		PH2 6.6-7.4
4	80,40	7.4	1.8	<u> </u>	Weathered clay shale, broken in tiny, blackish .	8,0-8,05	50/5cm					PH3 6.0-9.0
	78.60	9.2			grey, very closed structure.  Weathered clay shate, broken in tiny, blackish	9.0-9.02	30/1cm					
5	76.70	11.1	1,9		grey, very closed structure. It is shorted of water during drilling in this layer.	10.5-10.95	10	15	<b>20</b>	<b>35</b>		
	•		•			11.6-11.55	45/5cm 45/2cm					PH5 11.0-13.0
6	•		7.4		Weathered clay shale,		50/10 <i>a</i> 50/10 <i>a</i>					PH8
	• .		1,4		broken in tiny, blackish grey, very closed structure.	15.5-15.52	50/1Dc	,				15.0-16.5
							50/10 <del>0</del> 50/1cm	'	-			
	59.30	18.5		-42								,
				· · ·								

No: 230606.01.1/CLD

#### SUMMARY OF TEST RESULTS

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES
TRINH BRIDGE

PH2 3.0 4 4. 597  0 100.0 6 85.6 7 1.1 0 66.6 6 63.5 57.5 54.0 29.0 17.0	598 100.0 85.6 66.2 54.3 42.8 25.5 9.5	PH4- 9.0 + 10.0 899 100.0 85.2 65.3 52.7 37.8 22.8 4.9	PH5 12.0 ÷ 13.0 600	PH6 14.0 + 15.0 601 100.0 86.7 57.8 42.2 51.4 30.1 22.0 21.0 10.0 6.5	F117 17.0 ÷ 18.0 802 100.0 97.8 89.0 73.8 51.7 34.6 26.4 25.0 11.0 8.0
597  0 100.0 6 85.6 71.1 0 66.6 6 63.5 57.5 54.0 29.0 17.0	598 100.0 85.6 66.2 54.3 42.8 25.5 9.5	100.0 85.2 65.3 52.7 37.6 22.8 4.9	100.0 87.7 78.5 04.1 51.1 42.2 37.7 35.0 16.3 9.5	601 100.0 86.7 57.8 42.2 51.4 30.1 22.0 21.0 10.0 6.5	100.0 97.8 89.0 73.8 51.7 34.6 26.4 25.0 11.0 8.0
0 100.0 6 85.6 7 1.1 6 66.6 6 63.5 57.5 54.0 29.0 17.0	100.0 85.6 66.2 54.3 42.8 25.5 9.5	100.0 85.2 85.3 52.7 37.6 22.8 4.9	.100.0 87.7 78.5 64.1 51.1 42.2 37.7 35.0 16.3 9.5	100.0 86.7 57.8 42.2 51.4 30.1 22.0 21.0 10.0 6.5	100.0 97.8 89.0 73.8 51.7 34.6 26.4 25.0 11.0 8.0
85.6 71.1 66.6 63.5 60.5 57.5 54.0 29.0 17.0	85.6 66.2 54.3 42.8 25.5 9.5	85.2 65.3 52.7 37.6 22.8 4.9	.100.0 87.7 78.5 64.1 51.1 42.2 37.7 35.0 16.3 9.5	100.0 86.7 57.8 42.2 51.4 30.1 22.0 21.0 10.0 6.5	100.0 97.8 89.0 73.8 51.7 34.6 26.4 25.0 11.0 8.0
85.6 71.1 66.6 63.5 60.5 57.5 54.0 29.0 17.0	85.6 66.2 54.3 42.8 25.5 9.5	85.2 65.3 52.7 37.6 22.8 4.9	,100.0 87.7 78.5 64.1 51.1 42.2 37.7 35.0 16.3 9.5	86.7 57.8 42.2 51.4 30.1 22.0 21.0 10.0 6.5	97.8 89.0 73.8 51.7 34.6 26.4 25.0 11.0 8.0
85.6 71.1 66.6 63.5 60.5 57.5 54.0 29.0 17.0	85.6 66.2 54.3 42.8 25.5 9.5	85.2 65.3 52.7 37.6 22.8 4.9	,100.0 87.7 78.5 64.1 51.1 42.2 37.7 35.0 16.3 9.5	86.7 57.8 42.2 51.4 30.1 22.0 21.0 10.0 6.5	97.8 89.0 73.8 51.7 34.6 26.4 25.0 11.0 8.0
71.1 66.6 63.5 60.5 57.5 54.0 29.0 17.0	9 2.690 82.5	65.3 52.7 37.8 22.8 4.9	78.5 04.1 51.1 42.2 37.7 35.0 16.3 9.5	57.8 42.2 51.4 30.1 22.0 21.0 10.0 6.5	97.8 89.0 73.8 51.7 34.6 26.4 25.0 11.0 8.0
66.6 63.5 60.5 57.5 54.0 29.0 17.0	54,3 42.8 25.5 9.5 2.690 82.5	2.690	04.1 51.1 42.2 37.7 35.0 16.3 9.5	42.2 51.4 30.1 22.0 21.0 10.0 6.5	89.0 73.8 51.7 34.6 26.4 25.0 11.0 8.0
63.5 60.5 57.5 54.0 29.0 17.0	42.8 25.5 9.5 2.690 82.5	37.6 22.8 4.9	51.1 42.2 37.7 35.0 16.3 9.5	51.4 30.1 22.0 21.0 10.0 6.5	51.7 34.6 26.4 25.0 11.0 8.0
3 .60.5 57.5 54.0 29.0 17.0	25.5 9.5 2.690 82.5	22.8 4.9	42.2 37.7 35.0 16.3 9.5	30.1 22.0 21.0 10.0 6.5	51.7 34.6 26.4 25.0 11.0 8.0
57.5 54.0 29.0 17.0 	9.5 2.690 82.5	2.690	37.7 35.0 16.3 9.5	22.0 21.0 10.0 6.5	34.6 26.4 25.0 11.0 8.0
54,0 29.0 17.0 	2,690	2.690	35.0 16.3 9.5	21.0 10.0 6.5	25.0 11.0 8.0
29.0 17.0  70 2.690	2.690	1 •	16.3 9.5	10.0 6.5	11.0 8.0 ,
17.0  70 2.690	2,690	1 •	9,5	6.5	8.0
2.690	2.690	1 •			,
70 2.690 0	82.5	1 •	2.690	2.690	2 690
0	82.5	1 •	2.690	2.690	2 690
0	82.5	1 •	2.690	2.690	2 690
0	82.5	1 •	2.690	2.690	2 690
1	•	59.2	1		6.000
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39.4		··-	31.7	27,6	29,6
24.4	1		21.1	19.7	20.5
t t				•	9.1
10.0		<del> </del>	10.0	1.8	9,1
		~			
		1	·		
od C	. Bad	Good			
I Clay-gi	n -	•			Clay-grit - GC
~ : <i>C</i> C	' \ landiene far	: Ladatedate	1 00		
	od Clay-gr	Clay-gnt -	od Clay-grit - Bad Good	od Clay-grit - Bad Good Clay-grit -	ord Bad Good

COLECTED BY

Eng. Nguyen Thi Khanh Ha

Magabrial Van Toan

POENTER ...

No: 230606.01.2/CLĐ

#### SUMMARY OF TEST RESULTS

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES
TRINI BRIDGE

Percent finer (%)	No: n): n): lysis 0.8 (mm) 5.4 (mm) 9.0 (mm) 9.5 (mm) 0.75 (mm) 0.00 (mm) 0.75 (mm) 0.75 (mm) 0.75 (mm) 0.75 (mm)	90.9 87.7 82.8 62.5 17.7	100.0 96.9 80.0 69.8 58.6 44.8 43.8 42.4	100.0 92.2 62.6 49.4 23.3	3 PIM 10.0: 11.0 506	F1 (5 11.0 : 13.0 607 100.0 98.3 92.1 76.2 57.0 38.4	PH6 15.0 : 16.5 608 100.0 92.2 69.0 53.5 37.0 26.7
Depth (  Test No  Tes	n): III  Nysis % 0.8 (mm) 5.4 (mm) 9.0 (mm) 9.5 (mm) .75 (mm) .00 (mm) 125 (mm) 075 (mm) 005 (mm)	3.0 ± 4.0 603 	6.6 : 7.4 604 100.0 96.9 80.0 69.8 58.6 44.8 43.8 42.4	8.0 + 9.0 605 100.0 92.2 62.6 49.4 34.7 23.3	10.0 : 14.0 506 100.0 88.8 70.3 58.4 44.7	11.0 : 13.0 607 100.0 98.3 92.1 76.2 57.0 38.4	15.0 : 16.5 608 100.0 92.2 69.0 53.5 37.0
Test No Grain size and Size an	lysis % 0.8 (mm) 5.4 (mm) 9.0 (mm) 9.5 (mm) .75 (mm) .00 (mm) 125 (mm) 075 (mm) 050 (mm)	100.0 90.9 87.7 82.8 62.5	100.0 96.9 80.0 69.8 58.6 44.8 43.8 42.4	100.0 92.2 62.6 49.4 34.7 23.3	100.D 88.8 70.3 58.4 44.7	100,0 98.3 92.1 76.2 57.0 38.4	100.0 92.2 69.0 53.5 37.0
Staln size and  5 2 2 1 6 2 2 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	lysis % 0.8 (mm) 5.4 (mm) 9.0 (mm) 9.5 (mm) .75 (mm) .00 (mm) 125 (mm) 075 (mm) 005 (mm)	100.0 90.9 87.7 82.8 62.5 17.7	100.0 96.9 80.0 69.8 58.6 44.8 43.8 42.4	100.0 92.2 62.6 49.4 34.7 23.3	100.0 88.8 70.3 58.4 44.7	100.0 98.3 92.1 76.2 57.0	100.0 92.2 69.0 53.5 37.0
Specificient of Coefficient Of Coeff	0.8 (mm) 5.4 (mm) 9.0 (mm) 9.5 (mm) .75 (mm) .00 (mm) 125 (mm) 075 (mm) 060 (mm) 005 (mm)	90.9 87.7 82.8 62.5 17.7	96.9 80.0 69.8 58.6 44.8 43.8 42.4	92.2 62.6 49.4 34.7 23.3	88.8 70.3 58,4 44.7	98.3 92.1 76.2 57.0 38.4	92.2 69.0 53.5 37.0
Valural water Valural unit woigh Specific gravit Coefficient of Co	5.4 (mm) 9.0 (mm) 9.5 (mm) .75 (mm) .00 (mm) 125 (mm) 075 (mm) 005 (mm)	90.9 87.7 82.8 62.5 17.7	96.9 80.0 69.8 58.6 44.8 43.8 42.4	92.2 62.6 49.4 34.7 23.3	88.8 70.3 58,4 44.7	98.3 92.1 76.2 57.0 38.4	92.2 69.0 53.5 37.0
Notional water Valural water Valural weigh Specific gravit Coefficient of	9.0 (mm) 9.5 (mm) .75 (mm) .00 (mm) 125 (mm) 075 (mm) 000 (mm) 000 (mm)	90.9 87.7 82.8 62.5 17.7	96.9 80.0 69.8 58.6 44.8 43.8 42.4	92.2 62.6 49.4 34.7 23.3	88.8 70.3 58,4 44.7	98.3 92.1 76.2 57.0 38.4	92.2 69.0 53.5 37.0
Valural water Valural water Valural water Valural weigh Specific gravit Coefficient of	9.5 (mm) .75 (mm) .00 (mm) .125 (mm) .75 (mm) .050 (mm) .005 (mm)	87.7 82.8 62.5 17.7	80.0 69.8 58.6 44.8 43.8	62.6 49.4 34.7 23.3	70.3 - 58,4 - 44.7 - 34.7	92.1 76.2 57.0 38.4	69.0 53.5 37.0
0.0 0.0 Valural water Valural unit woigh Dry unit weigh Specific gravit Coefficient of	.75 (mm) .00 (mm) .25 (mm) .75 (mm) .050 (mm) .005 (mm)	82.8 62.5 17.7	69.8 58.6 44.8 43.8 42.4	49.4 34.7 23.3	58,4 44.7 34.7	76.2 57.0 38.4	53.5 37.0
0.0 0.0 Valural water Valural unit woigh Dry unit weigh Specific gravit Coefficient of	.00 (mm) 125 (mm) 275 (mm) 260 (mm) 205 (mm)	62.5	58.6 44.8 43.8 42.4	34.7	34.7	57.0 38.4	37.0
0.0 0.0 Valural water Valural unit woigh Dry unit weigh Specific gravit Coefficient of	225 (mm) 275 (mm) 250 (mm) 205 (mm) 202 (mm)	17.7	44.8 43.8 42.4	23.3	34.7	38.4	
0.0 0.0 Valural water Valural unit woigh Dry unit weigh Specific gravit Coefficient of	975 (mm) 960 (mm) 905 (mm) 902 (mm)		43.8 42.4	23.3		1	26.7
0.0 0.0 Valural water Valural unit woigh Dry unit weigh Specific gravit Coefficient of	050 (mm) 005 (mm) 002 (mm)	3.1	42.4	4.3	30.2		
0.9 Natural water Vatural unit wigh Dry unit weigh Specific gravit Coefficient of	005 (mm) 002 (mm)			1	<b>)</b>	28.6	21.2
O.  Notural water Valural unit wo Dry unit weigh Specific gravit Coefficient of	002 (mm) -		ne o		28.5	27.4	20.0
Valural water Valural unit wo Dry unit woigh Specific gravit Coefficient of		1.	25.0		14.0	12.5	· 10.0
Vatural unit wo Dry unit weigh Specific gravit Coefficient of Coefficient of	conlenl W 🤉		16.3		10.5	<b>9.</b> D	8.5
Dry unit weigh Specific gravit Coefficient of Coefficient of							
Specific gravit Coefficient of Coefficient of	- ,., ,,	າກ'	1				•
Coefficient of	l γ <sub>k</sub> g/c	m <sup>a</sup> .		" "			
Coefficient of			2.690	2,890	2.690	2.690	2.690
	informity C <sub>ir</sub>	10.6	Ţ	60.3	1		,
n Dry condisk	padation C <sub>c</sub>	1.3		1.1	l :	*	
	m a k		" '			···	• • •
n Saluration o		·	}		• • • • • •		
Void Ratio	e <sub>0</sub>		-		·	• • • • • • • • • • • • • • • • • • • •	٠.
Porosily	n %	1	1.		<del> </del>		
Degree of Sat	• • •			*** ****			
Liquid Limits	WI '		38,6		32.0	24 5	20.0
Plastic Limits	Wp	5 477 Ave   61,200,41 6 6 76	23.5		20.7	31.5 20.9	30.6
lasticity Inde	•	• ••	15.1		11.3	10,6	20.1
nternal friction						10,0	10,5
Cohesion		/cm²					
		· 1 — · · · · · · · · · · · · · · · · ·					
Compressibili	y Index a <sub>1.2</sub> cn	Good		Cand			<u></u>
Soil classificat	ion ASTM - 17 24		g i Clay-grit -	Good nggregale	Clay-gril -	Clay-grit -	Clay-grit -
		sand - St		grit - GW	GC	VI, GC	GC
			<del></del>	4		Dates 17/0	2-166

COLECTED BY

Eng. Nguyen Thi Khanh Ha

Eng. Tran Van Toan

VILAS 129

ASTM - I) 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

Sample No: Depth (m):

PH1

0:5 + 1.5

Tets No : 596

Date:

30/6/2006

SIZE ANALYSIS	• •				Weight o	f dry soil	(g):	1900.0	
Sizo (nim)	50,8	25.4	19,0	9.5	4.75	2.00	0.425	0.075	< 0.075
Wt. Soil rotained (g)	0.00	0,00	45.1	120.1	179.0	555,4	8,000	260.2	78.7
Percent retained (%)	0.0	0.0	2.4	6.3	9.5	29.2	34.8	13.7	4.1
Percen finer (%)	100.0	100.0	97.6	91.3	81.8	52.6	17.8	4.1	

RESULT

 $D_{60} = 2.40$ 

.C<sub>a</sub> = | ნ.0

Soil classification (ASTM - D 2487)

 $D_{30} = 0.72$ 

 $C_c = 1.4$ 

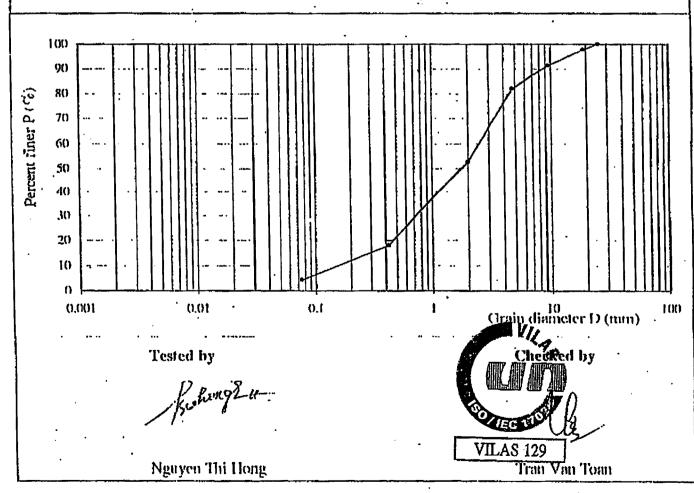
Group symbol:

**GW** 

 $D_{10} = 0.15$ 

Group nâme : 🗻 Good aggregate grit

Size (mm)	50.8	25,4	19.0	9,5	4.75	2	0.425	0.075	< 0,075
Percent retained (%)	0,0	0.0	2.4	6.3	9,5	29.2	34.8	13.7	4.1



ASTM - 1) 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES
TRINII BRIDGE

Borehole:

T2

Sample No : Depth (m): PH1

 $0.0 \div 4.0$ 

Tets No :

597

Date:

29/6/2006

SIZE ANALYSIS

1

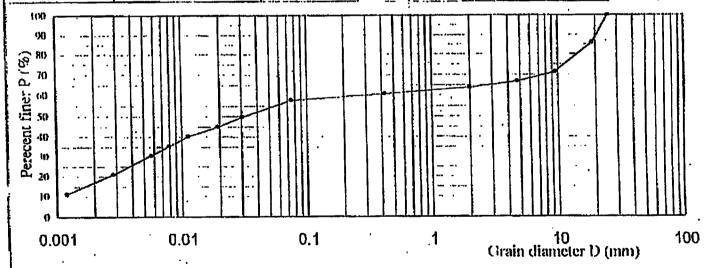
Weight of dry soil (g): 1005.0

ISIZE ANALTOIS		Troight on any than (B) receive										
Grain diameter (mm)	50.8	. 25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khối lượng riêng			
Weight soil retained (g)	0.00	0.00	145,10	145.50		30.61	30,23	0.98	(g/cm²) .			
Percent rotalned (%)	0.0	0.0	14.4	14.5	1.5	3.0	3.0	3,0	2.690			
Peercen (iner (%)	100.0	100.0	85.6	71,1	66.6	63.5	60.5	57.6	•			

HYDROMETER ANALYSIS

Weight of dry soil (g): 20.00 Temperature in (OC) 30.0

	Actual Hydromater	Con	ection		Effective depth	Diameter	Percent
Elapsed time (min)	Reading	Temporalure	Zero	Hyd. Reagin	f L (cm)	D (mm)	passing P ( %)
2	· 7.0·	2.3	1.0	10.3	12.86	0.0305	49.6
- 5	6.0	2.3	1.0	9.3	13.01	0.0194	44.8
15	5.0	2.3	1.0	8.3	13,16	0.0113	40.0
30	4,0	2.3	1.0	7.3	13.31	0800.0	35.2
80	3.0	2.3	1.0	6.3	13.46	0.0057	30.3
250	1,0	2,3	1.0	4.3	13.76	0 0028	20.7
1440	-1.0	2.3	1.0	2,3	14.06	0.0012	11.1



RESULT												
Size (mm)	< 0.002	0 002	0.005	0 05	0.075	0.425	2.00	4.75	9.5	19.0	25.4	50,8
Percent (%)	17.0	12.0	25,0	3.6	3,0	3.0	· 3.0	4.5	14.5	14.4	0.0	0,0
Peercen finer (%)		17.0	29,0	54,0	57.6.	60.5	63,5	Ģ.	1441	85,6	100.0	100.0
	·									3		

Tested by

Keetway 20

ASTM - 1) 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

T2

Sample No: Depth (m): 🕝 PH3

6.2 + 7.6

Tets No : 598

Date: 28/6/2006

SIZE ANALYSIS

Weight of dry soil (g):

1390.0

				· · · · · · · · · · · · · · · · · · ·			₹€3Z ·		
Sizo (mm)	50.8	25,4	19.0	9.5	4.75	2.00	0.425	0.075	< 0.075
Wt. Soil retained (g)	0.00	0,00	200,10	270.23	165.00	160,00	240.80	220.10	133.97
Parcent retained (%)	0,0	0.0	14.4	19.4	11.9	11.5	17.3	15.8	9.6
Percen finer (%)	100.0	100.0	85,6	66.2	54.3	42.8	25.5	9.6	

RESULT

 $D_{60} = 6.60$ 

 $-C_{y} = 82.5$ 

Soil classification (ASTM - D 2487)

 $D_{30} = 0.63$ 

 $C^{c} = 0.8$ 

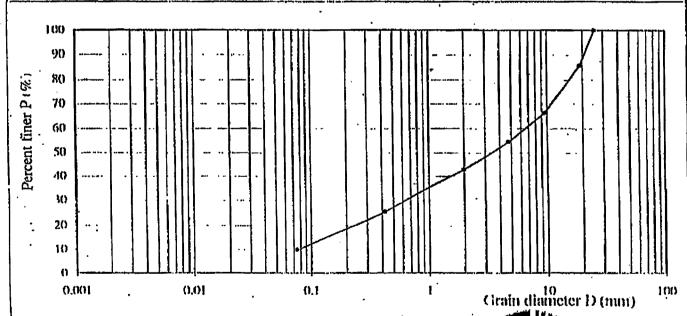
Group symbol:

Bad aggregate grit

 $D_{10} = 0.08$ 

Group name:

Sizo (nim)	50.8	25.4	19,0	9.5	4.75	2	0.425	0.075	< 0.075
Parcent retained (%)	0.0	0.0	14.4	19.4	11.9	11.5	17.3	15.8	9.6
		-							•



Tested by

Nguyen Thi Hong

VILAS 129

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINII BRIDGE

Borehole:

**T2** 

Sample No : Depth (m):

PH4

1.

9.0 + 10.0

Tets No : 599

Date:

28/6/2006

SIZE ANALYSIS	:	·			Weight'o	dry soil	dry soil (g): 1.355.0		
Size (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0,425	0.075	< 0.075
W!. Soil retained (g)	0.00	0.00	200.10	270.20	170,00	205.60	200.00	242.46	66.64
Percent retained (%)	0.0	0.0	14.8	19,9	12.5	15.2	. 14.8	17.9	4.9
Percen liner (%)	100.0	100.0	85.2	65.3	52.7	37.6	22.8	4.9	<b>,</b>

RESULT

 $D_{60} = 7.10$ 

 $C_u = 59.2$ 

Soil classification (ASTM - D 2487)

 $D^{30} = 0.90$ .

 $C_c = 1.0$ 

Group symbol:

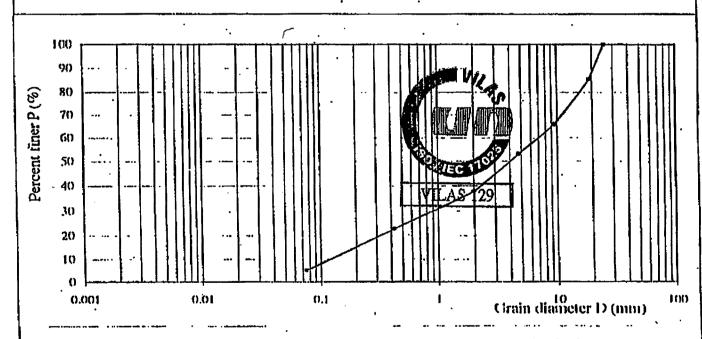
GW

 $D_{10} = 0.12$ 

Group name:

Good aggregate grit

Size (mm)	50.8	25,4	19.0	9.5	4.75	2	0.425	0.075	< 0.075
Porcent retained (%)	0.0	0.0	14.8	19.9	12,5 .	15.2	14.8	17.9	4.9



Tested by

Checked by

Nguyen Thi Hong

ASTM - 1) 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

**T2** 

Sample No:

PH5

Depth (m):

12.0 + 13.0

Tots No:

600

Date:

29/6/2006

SIZE ANALYSIS

Grain diameter (mm) 50.8 25.4 19.0 9.5 4.75 Weight soil retained (g) 135.14 ().00 0,00 180,30 211.13 Percent retained (%) 0.0 0.0 12.3 9.2 14.4 100,0 Peercen finer (%) 100.0 64.1 87.7 78.5

Weight of dry soil (g): 1465.0 2.00 0.425 0.075 190.21 130.21 2.14

Khối lượng riêng (g/cm³)

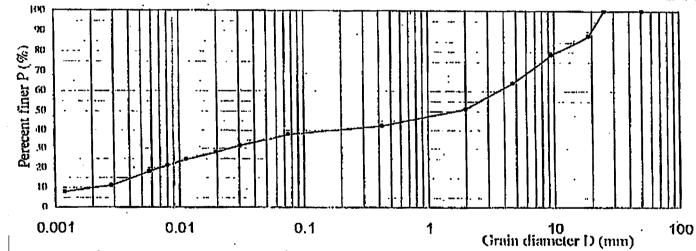
13.0 8.9 4.5 51.1 12.2 37.7 2.690

HYDROMETER ANALYSIS

Weight of dry solf (g): 20.00

Temperature in ( OC )

Elapsed time	Actual Hydrometer	Con	eclion		Effective depth	Diameter	Percent
(mln)	Reading	Temperature	Zero	l lyd, Reagin	l (cm)	D (num)	passing P ( %)
2	6.0	2.3	1.0	9,3	13.01	0 0307	31.2
5	5.0	2.3	1.0	8.3	13.16	0.0195	27.9
15	4.0	2,3	1.0	7.3	13.31	0.0113	24.5
30	3.0	2.3	1.0	6.3	13,46	1,500.0	21.2
60	2.0	2.3	1.0	5.3	13.61	0.0057	17,8
250	0.0	2.3	1.0	3.3	13.91	0.0028	11.1
1440	-1.0	2.3	1.0	2.3	14.08	0.0012	7.7



RESULT		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,										
Size (mm)	< 0.002	\$00,0	0.005	0.05	0 075	0.425	2.00	4,75	Ω,6	10.0	25.4	8,03
Percent (%)	9.5	6.8	18.7	2.7	4.5	8.9	13.0	1	9.2	12.3	0.0	0.0
Peercen finer (%)		9.5	16.3	35.0	37.7	12.2	51.1	64.1	Ago	87.7	100.0	100.0

Tested by

fy hong 24

Nguyen Thi Hong

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole :

**T2** 

Sample No: Depth (m):

**PH6** 

14.0 + 15.0

Tets No:

601

¿ Date :

29/6/2006

SIZE ANALYSIS

022111121010	er Cigitt	m any a	vvii (R)					
Grain diameter (mm)	50.8	25.4	19,0	9.5	4.75	2.00	0.425	0.075
Weight soil retained (g)	0.00	0.00	164.41	361.14	190.63	10.41	140.18	5,40
Percent retained (%)	0.0	Ö.Ö	13.3	29.1	15.4	ō.ē ·	†1.3	8,1
Peercen finer (%)	100.0	100.0	86.7	57.6	42.2	41.4	30. i	22.0

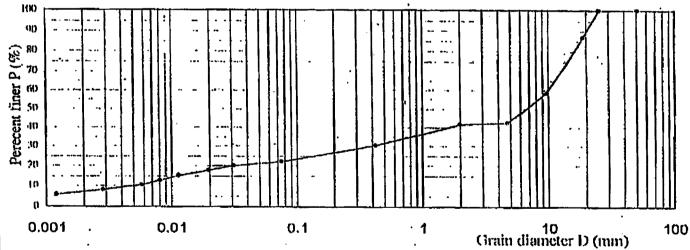
Weight of dry soil (g): 1240.0

Khối kượng tiếng (g/cm<sup>1</sup>) , 2,690

HYDROMETER ANALYSIS

Weight of dry soil (g): 20.00 Temperature in ( OC ) 30.9

Elapsed time	Actual Hydrometer	Corr	ection	4	Effective depth	Diameter	Percen
(min)	Reading	Temporature	Zero	Hyd. Reagin	l (cm)	D ( mm )	passing P (%)
2	5,0	2.3	1.0	8.3 .	13.16	190CO.O	19.9
5	4.0	2.3	1.0	7.3	13.31	D.D 196	17.5
15	3.0.	2.3	1.0	6.3	13.46	D.0114	15.1
30	2.0	2.3	1.0	5.3	13.61	0.0061	12.7
60	1.0	2.3	1.0	4.3	13.76	0.0058	10.3
.250 . <u>.</u> .	0.0	2.3	1,0	3.3	13.91	0.0028	7.9
1440	-1.0	2.3	1.0	2.3	14.06	0.0012	5.5



RESULT

Size (mm)	< 0.002	0.002	0.005	0.05	0.075	0.425	2.00	4.75	9.5	19.0	25.4	50.8
Percent (%)	6.5	3.5	11.0	1.0	8.1	11.3	8,0	150	1/29.1	13.3	0.0	0.0
Peercen finer (%)		6.5	10.0	21.0	22.0	30.1	41.4	42.2	5/m	86.7	100.0	100,0

Tested by

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Botehole:

T2

Sample No: Depth (m):

PH7

17.0 + 18.0

Tets No:

602

Date:

29/6/2006 -

SIZE ANALYSIS	••			•	,	Weight	of dry s	oil (g):	1585.0
Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khố
Weight soil retained (g)	0.00	0.00	35,20	139.10	241.00	350:35	271.00	4.75	1
Percent retained (%)	0.0	0.0	2.2	8,8	15.Z	22.1	17.1	6,2	1
factoria de la constante de la	1		1	T .	1				

Khối lượng tiếng (g/cm<sup>3</sup>)

Peacen finer (%)

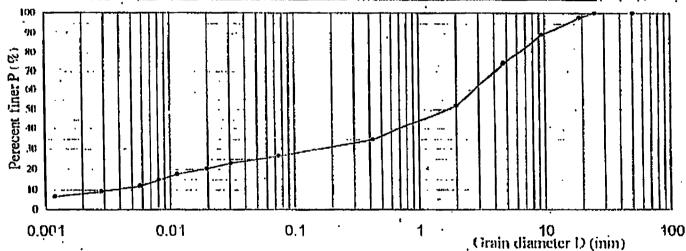
100.0 100.0 97 8 89.0 73.8 51.7 34.6 26.4

2,690

HYDROMETER ANALYSIS

Weight of dry soil (g): 20,00 Temperature in (°C') 30.0

Finpsed time	Actual Hydrometer	Corr	ection	•	Effective depth	Diameter	Potcont
(min)	Reading	Temperature	Zata	i-lyd. Reagin	L (cm)	D ( mm )	passing 12 ( %)
2	5.0	2.3	1.0	8.3	. 13.16	0.0309	22.9
5	4.0	2.3	1.0	7.3	13.31	0,0196	20.1
15	3.0	2.3	1.0	6.3	13.46	0.0114	17.3
30	2.0	2.3	1.0	5.3	13.61	0.0081	14.6
60	1.0	2.3	1.0	4.3	13.76	0.0058	11.8
250	0.0	2.3	1.0	3.3	13.91	0.0028	9.1
1440	-1.0	2.3	1.0	2.3	14.06	0.0012	6.3



RESULT

P-1-1-1	<b>*</b>									<u> </u>		
Sizo (mm)	< 0.002	0,002	0.005	0,0%	0.075	0 425	2.00	4.75	9.5	0,01	25.4	50.8
Percent (%)	8.0	3.0	14.0	1.4	8.2	17.1	22.1	15.2	3.8	2.2	0.0	0,0
Pearcen finer (%)		8.0	11,0	25.0	26.4	34.8	51.7	3	89.09	<b>4</b> 97,8	100.0	100.0

Tested by

Nguyen Thi Hong

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ASTM - 1) 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES
TRINH BRIDGE

Borehale:

T3

Sample No : Depth (m): PH1

3.0 ÷ 4.0

Tets No : 603

Date:

28/6/2006

SIZE ANALYSIS

SIZE MINNETSIS				• • • • • • • • • • • • • • • • • • • •	Weight c	i ary son	1775.0		
Size (mm)	50.8	25,4	19.0	9,5	4.75	2,00	0.425	0.075	< 0.075
Wt. Soil relained (g)	0.00	0.00	160.91	55.18	89.19	360,14	794.96	259.91	54.71
Percent retained (%)	0.0	0,0	9.1	3.1	5.0	20.3	44.8	14.0	3.1
i <sup>3</sup> ercen finer (%)	100.0	100.0	. 80'8	87.8	82,8	62.5	17.7	3.1	•

RESULT

 $D_{60} = 1.80$  $D_{30} = 0.63$   $C_u = 10.6$ 

St ... 10:0

 $C_c = 1.3$ 

 $D_{10} = 0.17$ 

Soil classification (ASTM - D 2487)

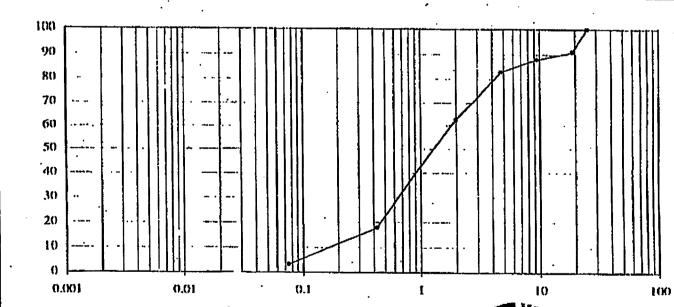
Group symbol:

SW

Group name:

Good aggregate sand

Size (mm)	50.8	25.4	19.0	9.5	4.75	2	0.425	0.075	< 0.075
Percent retained (%)	0.0	0.0	9.1	3.1	5.0	20,3	44.8	14.6	3.1



Tested by

profrang 2 ...

Nguyen Thi Hong

Checkerly

VILAS 129 Tran Van Toan

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES
TRINH BRIDGE

Borehole:

Т3

Sample No : Depth (m): PH2

6.6 + 7.4

Tets No:

604

Date:

30/6/2006

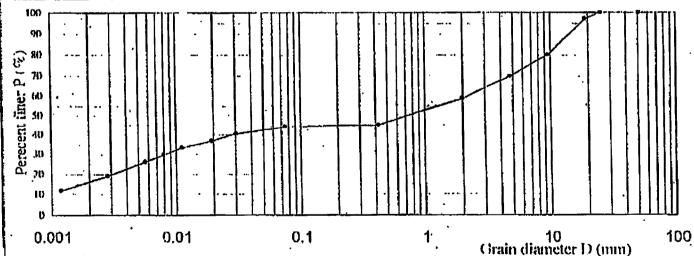
SIZE ANALYSIS Weight of dry soil (g): 1125.0

SIVE WINDE I DID	•							· · · · · · · · · · · · · · · · · · ·	
Grain diameter (mm)	50.8	25.4	19,0	9.5	4.75	2.00	0.425	0.075	Khối lượng tiông
Weight soil retained (g)	0.00	0.00	35.23		114.30	128.20			(g/cm²)
Percent relained (%)	ดี.ตั	~ ő.ö	કં, i	า้ตี.ติ	10.2	11.2	13.8	i.ö	2.690
Penteen finer (%)	100.0	100.0	กด.ก	80.0	<u>69.8</u>	68.6	14.8	43.0	

#### HYDROMETER ANALYSIS

Weight of dry soil (g): 20.00 Temperature in (°C) 30.0

Element three	Actual Hydrometer	Con	ection		Effective depth	Diameter	Percent
Elapsed time (min)	Reading	Temporative	7.010	Hyd. Reagin	L (cm)	D (mm )	pássing 12 ( %)
2	8.0	2.3	1.0	11.3	12.71	0.0303	40.3
5	7.0	2.3	1.0	10.3	12.86	0.0193	36.7
15	6.0	2.3	1.0	9,3	13.01	0.0112	33.2
30	5.0	2.3	1.0	8.3	13.16	0.000.0	29.6
60	4.0	2.3	1.0	7,3	13.31	0.0057	26.0
250	2.0	2.3	1.0	5.3	13.61	0.0028	18.9
1440	0.0	2.3	1.0	3.3	13.91	0.0012	11.8



RESULT

1.1000												
Size (mm)	< 0.002	0.002	0.005	0.05	0.075	0.425	2.00	4.75	9.5	19.0	25.4	50 8
Percent (%)	16.3	8.7	17.4	1.4	1.0	13.8	11.2	10.2	16,9	3.1	0.0	0,0
Pecreen liner (%)		16.3	25.0	42.4	43.8	44.8	58.6	8.	80.07	96.9	100.0	100.0

Tested by

18wing -

Nguyen Thi Hong

VILAS 129

ASTM - 1) 422 - 63

#### THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

ŤЭ

Sample No : Depth (m):

РНЗ 😤

8,0 : 9,0

Tets No : 605

Date:

28/6/2006

SIZE ANALYSIS	:		•		Weight o	rdry soil	1285.0		
Size (mm)	50,8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	< 0.075
Wt. Soil retained (g)	0.00	0,00	80.001	379.93	169.68	189.84	145.60	244.78	55.Q9
Percent retained (%)	0.0	0.0	7.8	29.6	13.2	14.8	11.3	19.0	4.3
Percen finer (%)	100.0	100.0	92,2	62.6	49.4	, 34.7	23.3	4.3	

RESULT

 $D_{60} = 8.20$ 

 $C_0 = 68.3$ 

Soil classification (ASTM - D 2487)

 $D_{30} = 1.05$ 

C<sub>0</sub> = 1.1

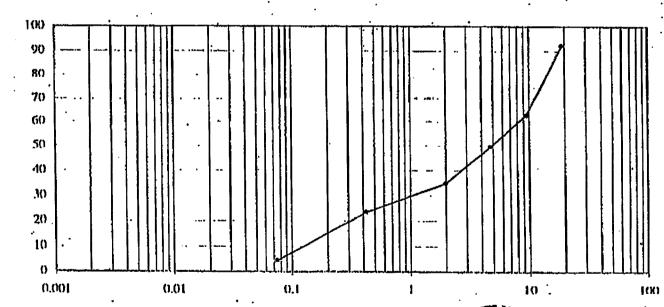
Group symbol:

 $D_{10} = 0.12$ 

Group name:

Good aggregate grit

Size (mm)	50.8	25.4	19.0	9.5	4.75	' 2	0.425	0.075	< 0.075
Percent retained (%)	0.0	0.0	7.8	· 29.6	13.2	14.8	11.3	19.0	4.3



Tested by



ASTM - 1) 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

T3 .

Sample No; Depth (m):

PH4

 $10.0 \div 11.0$ 

100.0 100.0 88.8 70.3

Teis No:

606

Date:

135.01

10.0

34.7

2.00

185.10

13.7

44.7

58.4

30/6/2006

SIZE ANALYSIS

Pecicen liner (%)

D					
Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75
Weight soil retained (g)	0:00	0.00	151,10	249.30	160.60
Percent retained (%)	0.0	0.0	11,2	18.5	11.9

Khối lượng tiếng

(g/cm<sup>3</sup>)

2,690

HYDROMETER ANALYSIS

Weight of dry soil (g): 20.00 Temperature in (°C) 30.0

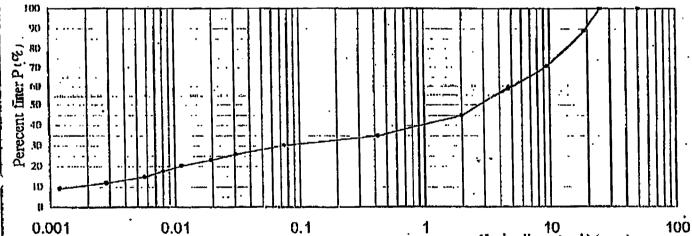
Weight of dry soil (g): 1350.0 0.425 | 0.075

2.60

4.5

30.2

Elapsed time	Actual Hydrometer	Corr	eclion		Effective depth	Diamatar	Percen
(min)	Reading	3 emperature	Zero	1 lyd. Reagin	1 (cm)	0.0307 0.0195 0.0113 0.0081 0.0057	passing P ( %)
2	6,0.	2.3	1.0	9.3	13.01	0.0307	25.7
5	5:0	2.3	1.0	8.3	13.16	0.0195	22.9
15	4.0	2.3	1.0	7.3	13.31	0,0113	20.2
30	3.0	2.3	1.0	6.3	13.46	0.0081	17.4
60	2:0:	2.3	1.0	5.3	13.61	0.0057	14.7
250	1.0	2.3	1.0	4.3	13.76	0,0028	11.9
1440	0.0	2.3	1.0	3,3	13.91	0,0012	9.1



Grain diameter D (mm) RESULT

Size (mm) < 0.002 0.002 0.005 0.05 0.075 0.425 2,00 10.5 3,5 14.5 1.7 4.5 10,0 13.7 Percent (%) 28.5 44.7 Peacen finer (%) 10.5 14.0 30.2 34.7

4.75 19.0 25.4 50.8 11,9 11.2 0.0 0.0100.0 100,0

Tested by

footungs-11-

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

Т3

Sample No: Depth (m):

PH<sub>5</sub>

11.0 + 13.0

Tets No:

607

Date:

30/6/2006

SIZE ANALYSIS	•		•		•	Weight	of dry s	oil (g):	1455.0
Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khố
Weight soil retained (g)	0.00	0.00	25 30	89.91	230,61	280.40	270,61	5.10	j ,
Percent relained (%)	0.0.	0,0	1.7	6.2	16.8	19.3	18.6	ច.ច	
Peercen finer (%)	100.0	100.0	98.3	92.1	76.2	57.0	38.4	28.B	1

Khối lượng riêng (g/cm )

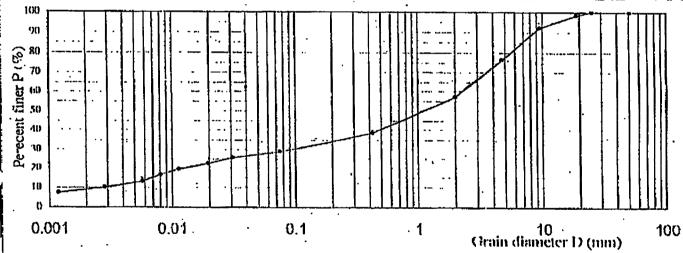
2.090

HYDROMETER ANALYSIS

Weight of dry soil (g): 20.00 Temperature in (OC)

30.0

Elapsed time	Actual Hydrometer	Corr	ection	•	Effective depth	Diameler	Percent
(min)	Reading	Temporature	Zaro	' Hyd. Reagin	Lieni	D ( mm )	passing P ( %)
2	5,0	2.3	1.0	8,3	13.18	0,0309	25.3
5	4.0	2.3	1.0	7.3	13.31	0.0106	22.3
15	3.0	2.3	1.0	8.3	13.46	K110,0	19.2
30	2.0	2.3	1.0	5.3	13.61	0.0081	16.2
60	1.0	2.3	1.0	4.3	13:78	0.0058	13.1
250	0.0	2.3	1.0	3.3	13.91	0.0028	10.1
1440	-1.0 .	2.3 ·	1.0	2.3	14.06	0.0012	7.0



RESULT

Size (mm)	< 0.002	0.002	0.005	0.05	0.075	0.425	2.00	4,75	9.5	19,0	25.4	50.8
Percent (%)	9,0	3.5	14,9	1.2	9.8	18.6	19.3	15.8	<u> 6.2</u>	1.7	0,0	0.0
Peercen finer (%)		9,0	12.5	27.4	28.6	38.4	57.0	70	92!4	98,3	100.0	100,0

Tested by

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

Depth (m):

T3 .

Sample No :

PH6

 $15.0 \pm 16.5$ 

Tets No:

608

Date:

30/6/2006

GITT ANALYON	•					*** * ***			
SIZE ANALYSIS						Weight	ol dry s	oil (g):	1465.0
Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khốl
Weight soll retained (g)	0,00	0.00	1.4.19	340.08	229.30	239.93	149.68	4.15	. (
Percent retained (%)	0.0	0.0	7.8	23.2	15.7	16.4	10.2	5.5	
Depres fluor (9/1)	486.5	7555	64.5	rö ö	25.5	744 5	584	äiä	Í

Khối lượng riêng (g/cm<sup>1</sup>)

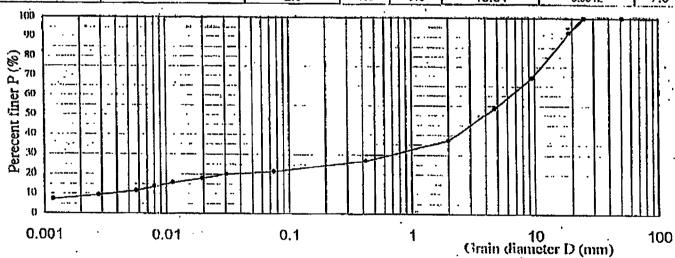
2.590

HYDROMETER ANALYSIS:

Weight of dry soil (g): 20.00

Temperature in ("C")

Elapsed time	Actual`I lydrometer	Corr	ection		Effective depth	Dlameter	Percen
(min)	Reading	Temperalure	Zero	Hyd. Reagin	L (cm)	D ( mm )	passing P (%)
2	6.0	2.3	1.0	9.3	13.01	0.0307	19,8
5	5.0	2.3	1.0	8.3	13,16	0.0195	17.7
. 15	4.0	2.3	1.0	7.3	13.31	0.0113	15.5
30	3,0	2.3	1.0	6.3	13.46	0.0081	13.4
. 60	2.0	2.3	1.0	5.3	13,61	0.0057	11.3
250	1.0	2.3	1.0	. 4.3	13.76	0.0028	9.2
1440	0.0	2.3	1.0	3.3	13.91	0.0012	7.0



RESULT

Size (mm)	< 0.002	0.002	0.005	0.05	0.075	0.425	2.00	4.7!5	9.5	19.0	25.4	50.8
Porcent (%)	8.5	1.5	10.0	1.2	5.5	10,2	16.4	15.7	23.2	7.8	0,0	0.0
Peercen liner (%)		8.5	10.0	20.0	21.2	26.7	37,0	53,2	16.4.44	92.2	100.0	100.0

Tested by

Nguyen Thi Hong

VILVan199m Toan

資. 8-5-158

ASTM - D 4318 - 84.

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehola:

Sample No: PH2

3.0 + 4.0Depth (m):

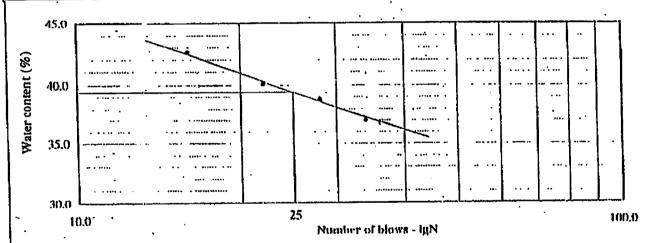
Tets No:

597

Date:

28/6/2006

		FIOUID FI	MIT (WL)	· · · · · · · · · · · · · · · · · · ·	PLATIC LIMIT (W <sub>I</sub> , )		
Container number	HN31	HNO3	HN07	HN08	HN41	1-11/10/1	
Weight of wet (g)	39.00	35.55	36.74	34.35	36.47	35,35	
Weight of dry (g)	34.25	31.74	33.09	31.50	33.65	32,70	
Weight of container (g)	23.09	22.22	23.67	23,79	22.05	21.84	
Waterr content (%)	12.6	40.0	38.7	37.0	24.3	24.4,	
Average waterr content (%)	<del></del>				24	1,4	
Number of blows ( N )	16	22	28	. 34			



RESULT:

Liquid limit:

39.4 η,

ıχ,

Platic limit:

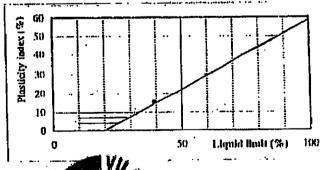
24.4

Plasticity index:

15.0

Tested by

Nguyen Thi Lien





ASTM - D 4318 - 84

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Barehole:

Sample No : PHS

Tets No :

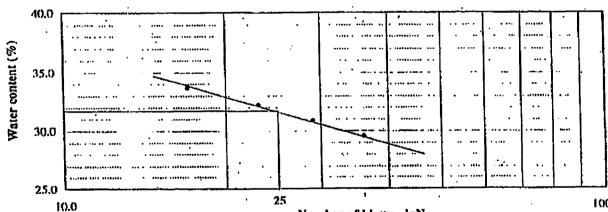
800

Depth (m): 12.0 + 13.0

Date:

27/6/2006

		LIQUID LI	MIT (W <sub>L</sub> )		PLATIC LIMIT (Wp.)		
Container number	IN19	IN03	C16	C19	HN41	HN50	
Welght of wet (g)	88.87	89.10	64.60	65.84	36.83	37.24	
Weight of dry (g)	82.75	83.31	58.29	59.26	34.26	34,62	
Weight of container (g)	64.55	65.32	37.84	36.97	22.05	22.25	
Waterr content (%)	33.6	32.2	30,9.	29.5	21.0	21.2	
Average waterr content (%)		·	., '		2:	1.1	
Number of blows ( N )	17	23	29	36			



Number of blows - IgN

0,001

**RESULT:** 

Liquid limit:

 $W_1 =$ 31.7 Çο,

Platic limit:

 $W_p =$ 21.1 (1/0)

Plasticity index: **\**p = 10.6

50 Š0 Liquid limit (%)

Tested by

Nguyen Thi Lien

ASTM - D 4318 - 84

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

Sample No : PH6

Depth (m): 14.0 + 15.0

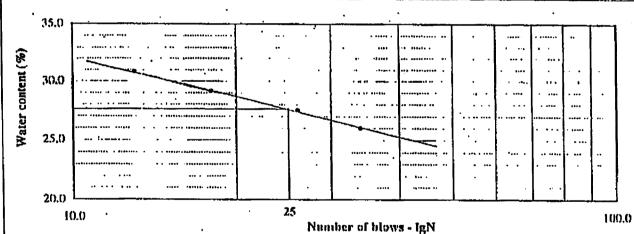
Tets No:

Date:

601

27/6/2006

		LIQUID L	IMIT (WL)	· · · · · · · · · · · · · · · · · · ·	PLATIC LIMIT (Wp.)		
Container number	IN29	IN31	C17 ·	HNU4	HN36	HN49	
Walght of wet (g)	86.83	· `85,56 ^	61.38	43.65	38.10	36.23	
Weight of dry (g)	81.70	80.89	56.24	39.15	35.70	34.13	
Welght of container (g)	65.03	64.85	37.55	21.84	23.64	23.38	
Waterr content (%)	30.8	29.1	. 27.5	26.0	19.9	19.5	
Average waterr content (%)	<del></del>				· 19	9.7	
Number of blows ( N )	13	18	26	34			



RESULT: .

Liquid limit: 🕟 27.6 Platic limit:  $W_P =$ 19.7 ĸ.

Plasticity index : In =

60 Ð **5**0 Liquid Smit (%) (8)

Tested by

Nguyen Thi Licn

VILAS 129 Tran Van Toan

ASTM - D 4318 - 84

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

Sample No : PH7

Depth (m):

17.0 + 18.0

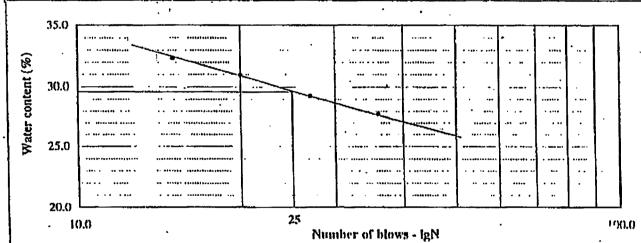
Tets No:

602

. Date :

. 27/6/2006

		LIQUID LI	MIT (WL)	•	PLATIC LIMIT (Wp.).		
Container number -	IN11	IN04	C2	C10	HN06	HN03	
Weight of wet (g)	88.38	. 87.00	63.29	64.15	37.20	37.36	
Weight of dry (g)	82.68	81.73	57.53	58.36	34.70	34.82	
Weight of container (g)	65.04	64.68	37.84	37.48	22.65	22.22	
Waterr content (%)	32.3	30.9	29.3	27.7	. 20.7	20.2	
Average waterr content (%)					20	),5 · ·	
Number of blows ( N )	15	20	27 ·	36			



**RESULT:** 

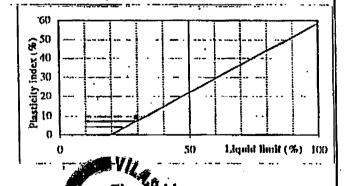
Liquid limit:

29.6

Platic limit:

20.5 eg,

Plasticity index: 9.1



Tested by

Nguyen Thi Lien

ASTM - D 4318 - 84

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borehole:

Sample No : PH2

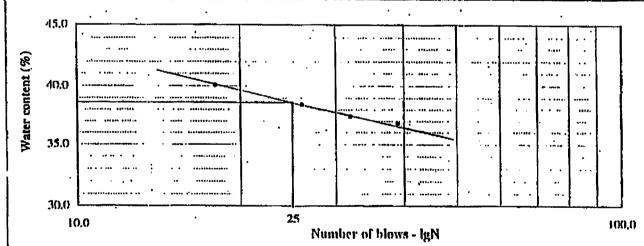
6.6 + 7.4Depth (m):

Tets No:

604

28/6/2006

		LIQUID LI	MIT (WL)		PLATIC LIMIT ( Wp. )		
Container number	C20	IN12	1N31	IN04	HN39 .	HN36	
Weight of wet (g)	58,24	86.00	83.16	84.16	40.04	41.34	
Weight of dry (g)	52.45	80.28	78.18	78.92	36.84	38.00	
Weight of container (g)	37.98	65.39	64.85	64.68	23.41	23.64	
Waterr content (%)	40,0	38.4	37.4	36.8	23.8	23.3	
Average waterr content (%)	•			•	53	3.5	
Number of blows ( N )	18	26	32 · ·	39			



RESULT:

Liquid limit:

 $W_1 =$ 38.6 %.

Platic limit:

 $W_P =$ 23.5

Plasticity index:

15.1

%

ιχ,

Plasticity index (%) 50 40 30 20 10 (47) thail blupki

Tested by

Thai Thi Lien



ASTM - 13 4318 - 84

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

TRINH BRIDGE

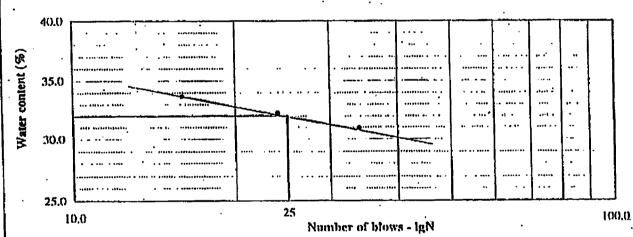
Borghole: T3
Sample No: PH4

Tels No: 606

Depth (m): 10.0 + 11.0

. Date: 28/6/2006

		LIQUID LI	MIT (WL)		PLATIC LIMIT (Wp.)		
Container number	IŅ07	IN29	IN10		HN26	HN19	
Welght of wet (g)	80.57	81.60	81.41		38.32	39.24	
Weight of dry (g)	76.54	77.56	77.43		35.53	36.44	
Welght of container (g)	64.56	65,03	64.55		21.77	23.21	
Waterr content (%)	33.6	32.2	30.9	:	20.3	. 21.2	
Average waterr content (%)					2.9	0.7	
Number of blows ( N )	16	24	. 34				



RESULT:

Liquid limit:  $W_L = 32.0 \%$ 

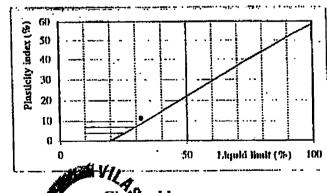
Platic limit:  $W_P = 20.7$  %

Plasticity index :  $l_P = 11.3$  %

Tested by

2 front

Thai Thi Lien





VILAS 129

ASTM - D 4318 - 84

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

TRINH BRIDGE

Borehole: T3

Sample No: PH5

Depth (m): 11.0 + 13.0

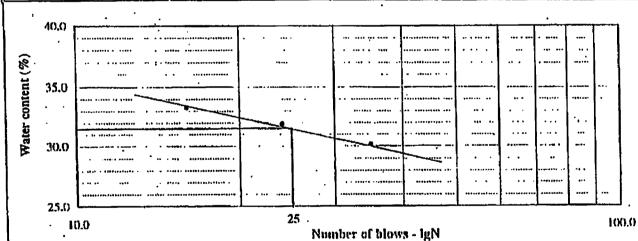
Tets No :

607

Date :

28/6/2006

		Fighib Fi	MIT (WL)		PLATIC LIMIT (Wp.)		
Container number	HN20	HN40	IN23		HN37	. HN49	
Walght of wet (g)	40,73	46,58	88.65		41.67	40.39	
Weight of dry (g)	36.12	40.87	83.40		38.34	37.46	
Weight of container (g)	22.25	22.95	65.96	-3	22.46	23.38	
Water content (%)	33.2	31.9	30,1		21.0	20,8	
Averago waterr content (%)					20	).9	
Number of blows ( N )	16	. 21	35 ;				



RESULT:

Liquid limit :

 $W_t = 31.5$ 

Platic limit:  $W_P = 20.9$ 

Plasticity index: lp = 10.6 %

60 50 50 50 50 50 1.4quid italit (%-) 100

Tested by

Thai Thi Lien

VILAS 129 Tran Van Toan

ASTM - I) 4318 - 84

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TRINH BRIDGE

Borefiole:

Sample No : PH6

Tets No:

608

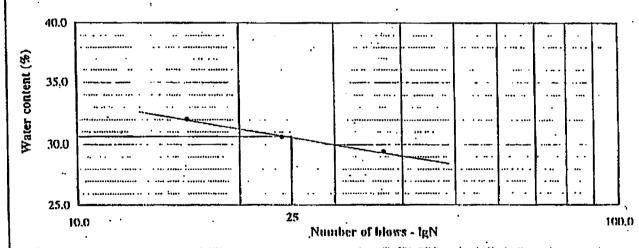
Depth (m):

15.0 + 16.5

Date:

29/6/2006

		LIQUID LI	PLATIC LIMIT (Wp.)					
Container number	IN10	· 1N01	C20	•	HN39	HN26		
Weight of wet (g)	88.19	89.00	64.12		12.66	41.28		
vieight of dry (g)	82.46	83.32	58.18		39.44	38.00		
Welght of container (g)	64.55	64.73	37,98		23.41	21.77		
Water content (%)	32.0	30.6	29.4	1.	20.1	20.2		
Average waterr content (%)					20	20.1		
Number of blows ( N )	. 16	24	37			,, <u>, , , , , , , , , , , , , , , , , ,</u>		



RESULT:

Liquid limit:

30.6 %:

Platic limit:

Plasticity index:

20.1

W. 10.5 % Plasticity index (%) 40 30 20 ](1 (%) (%) thatt blopla

Tested by

Nguyen Thi Lien

# **BORING LOG**

ENG	INEEI		1 HE	IN NO	CT FOR IMPROVEMENT ORTHERN MOUNTAINOUS TECHNICAL DESIGN PH	PROVIŅ	CES	וטטו	=3	BRIDG	NA NHAM BRIDGE	JVINCE				
Boré l	hôle .			LK_T2	Co-or. X=	Y=	1		Ţ	Station:						
lev.:	+7	79.54 Elev. of underwater level: +0.00				Dail	ng dale:	:	·		18/08/2006 - 19/06/2006					
orre	clor:	•				Che	cker:				Ngo Duc Hung					
	_	<b>*</b>	E	PROFIL			STAN	DARI	PEN	IETR/	ATION TEST (SPT)	Sampling depth for test (m)				
Layer	(m)	Depth (m)	Thickness (m)	Scale	DESCRIPTION	Daplh (m)	Blow No./15cr			M30cm	npling x test					
	10	Ę.	達	1/100	· ·	00000000	N1	N2	N3	ž	0 10 20 30 40 50 N	8 **				
				00	,					-						
			2.7	000	) Volkowich brown arit sand, cobbie	1.5-1.95	5	10	17	27	\\	•				
1			2.1	00	I mivee with vereign i mumus	2.5-2.95	12	15	17	32	· · · · · · · · ·					
	78.84	2.7		00		\		{								
						3.5-3.95	5	12	18	30						
							'	ŀ		.		PHI				
2			4.1	1	Grit sand is closed structure resulting from weathered	4.5-4.95	15	20	25	45		3,0-5.				
					ioli.	5.5-5.95	<b>37</b>	22	24	46						
				:. •			""			1	\ \ \					
•	١.		١.			5.3-6.75	19	27	29	58	Y	PH2				
	72.74	6.8	Г	+ +	+							7.0-8.0				
		1		^	+	7.0-7.01	32/1cm									
					Weathered dolite is broken						, 1					
3			5,4	+ +	In tiny, brownish grey,											
		!		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	blackish grey, very closed structure.	· ·						PH3				
			1	* *		,										
				1 + 2	(P)	1				-						
				1 + +	+											
	<b>\$7.34</b>	12.20	$\vdash$	<del>                                     </del>	<u> </u>	-				1						
						1				1						
				}	•		·	ļ								
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# **BORING LOG**

NG	NEER	ING		IN NO	RTHERN MOUNTAINOUS TECHNICAL DESIGN PHA	S PROVIN	CES			NA NHAM BRIDGE					
iore l	tole		1	_K_T3	Co-or. Xel	Y≃			8	Station:					
lov.;	+8	4.04		Elov. of un	derwater level: +0.00	Drilli	ng date:		Ŀ	19/08/2006 - 20/06/2008					
orrec	:tor:				Ho Nhat Dang	Che	cker:				Ngo Duc Hung				
		官	E	PROFILE			STANI	DARD	PEN	VIETR/	ATION TEST. (SPT)	· · · · · · · · · · · · · · · · · · ·			
Layer	'Elev. (m)	Depth (m)	Thickness (m)	Scele 1/100	DESCRIPTION .	Depth (m)	Blo N1	NO.j1	5cm N3	M2002M	Chert 0 10 20 30 40 50 N	Sampling depth for the form			
•				0000	ح	1.0-1.45	5	10	15	25		Posta			
1		-	4,5	500	Yəlkowish brown gift sand, cobble mixes with vegetant humus.	2.0-2.45	9	11.	17	28		PH1 2.0-3.0			
	79.54	4,5		000	}  .	3,0-3,45	10	13	18	31					
•			•		Grit sand is closed structure	4.2-4.65 5.0-5.15	15 30/15cr	20	25	45		PH2			
2			3.1		resulting from weathered riolit.	6.2-6.65	19	28	29	57		5.5-7.0			
	78.44	7.8		+ +		7.2-7.05	22	28	30	58					
		]   		<del>  *</del>	* + e	10.6-0.6	50/1cm	•				PH3 8.0-9.0			
3			5.0	+ + + + + + + +	* Wealhered riolite is broken in tiny, brownish grey, blackish grey, very closed structure.							`mu			
	7144	12.50		+ * +   +	*							10.0-11			
•															
-	•					· ·									
									,			•			
:						.	1	ŀ							

No: 230606.01.3/CLD

#### SUMMARY OF TEST RESULTS

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

#### NA NHAM BRIDGE

Boreliole:	٠	LK	1'2	· · · · · · · · · · · · · · · · · · ·	·	LK - 13	)	
Sample No :		배역	PH2	PH3	PH1	PH2	PH3	PH4
Depth (m):	911	3.0 + 5.0	7.0 a B.O	10.0 + 11.0	2.0 + 3.0	5.6 + 7.0	0.0 + 9.0	10.0 : 11.0
Test No.	·	800	610	611	812	<u> 613</u>	814	815
Grain size enalysis	••							
	(min)					.		• • •
25.4 (		l						
19.0		91.6	.10.1	20.0	59.4	97.7	2.7	7.7
%) 9.5 ( 4.75 ( 2.00 ( 0.425 ( 0.075 (	(mm)	78.2	3,4	3.9	_ 50.3	87.2	1.5	5.9
<u> </u>	(mm)	65.7		0.6	37.4	74,6	1.2	4.6
2.00	(mm)	41.3		0.4	17.5	42.6	0.6	3.2
0.425		10.6	 	0.1	4.2	10.0	0.4	1.8
	***** ** ****** * ***** *	0.3				0.1		Ĺ
0.050			i					
0.005								
0.002		<u> </u>				<u> </u>		<u> </u>
Natural water cont		-	1			,,	,	
Natural unit weigh	t yw g/cin <sup>3</sup>		<b>,</b>	_				
Dry unit weight	γ <sub>k</sub> g/cm <sup>3</sup>	*****			<b> </b>		<b>.</b>	
Specific diamin	ը ն/ciii.		1					
Confficient of unifo	ormity C <sub>n</sub>	10.3	2.2	3,1	23.8	7.5	2.0	2.1
Coefficient of grad	lation C <sub>c</sub>	0.8	0.9	1.1	0.8	0.9	0.8	8.0
In Dry condision	αk	"  <u> </u>						
In Saturation cond	dision aw							•••••
Void Ratio	60			ļ · ·		} .		,
	. n %	-	,"		************		. —/	<b>l</b> .
Degree of Satural		-					two	
Liquid Limits	WI %			1		•		<b>!</b> .
Plastic Limits.	Wp %	.	1		]			
Plasticity Index	1p %	1				4	:	. "
Internal friction ar		<del></del>			<del> </del>	<del> </del>	ļ	
Cohesion ,	C KG/cm <sup>2</sup>	ā   ;	-		<b> </b>			
Compressibility II		ł		ļ ,			•••••	
Compressionly "	dex appoint		·	·	<del> </del>		<del> </del>	- <del></del>
Soil classification	ACTM _ () 2/87	Bad	Bad	Bad	Bad	Bad	Bad	Bad
30# ผิสออมเผลน <b>ง</b> ก	MOTINE DISTOR	aggregale sønd - Sh		aggregale gill - GP		aggregate style SP		aggragate grit - GP
	- ·-	90114 - 15.	Sin - ~	] y₁11 - ∪₁	B''' ARE	周末の神経治 ニー・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	you - we	.) York - 👓

COLECTED BY

Eng. Nguyen Thi Khanh Ha

VILAS 129

Eng. Tran Van Toan

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES **NA NHAM BRIDGE** 

Boreliole:

Т3

Sample No: Depth (m):

PH4

10.0 ± 11.0

Tets No : 615

Date:

30/6/2006

SIZE ANALYSIS					. 446	signt of ory	/ son (g):	7797.8	4 <del></del>
Size (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	< 0.075
Wt. Soll relained (g)	0.00	0,00	1100,61	20,41	15.82	16.29	17.33	21.34	0.00
Percent retained (%)	0.0	0.0	92.3	1.7	1.3	1.4	1.5	1.8	0.0
Percen finer (%)	100.0	100.0	7.7	5.9	4.6	3.2	1.8	0.0	

RESULT.

 $D^{60} =$ 

. .41.0

 $C_0 = 2.1$ 

Soil classification (ASTM - D 2487)

GP

 $D_{30} =$ 26.0  $C_{c} = 0.8$ 

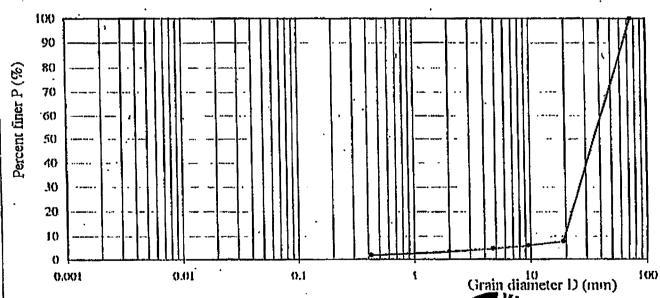
Group symbol:

Bad aggregate gilt

$D_{10} =$	•	•	20.0
- IU			

Group name :

Size (mm)	50,8	25,4	1"	9.5	4.75	2.00	0,425	0.075	< 0.075
Percent retained (%)	0.0	0.0	92.3	1.7	1.3	1.4	1.5	1:8	0.0



Tested by

Nguyen Thi Hong

VILAS 129 Van Toan

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES
NA NHAM BRIDGE

Borehole:

T3:

Sample No : Depth (m): PH3

B.0 : 9.0

Tels No: 614

Date:

30/6/2006

SIZE ANALYSIS					We	alght of dry	(g):	935.4	
Size (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	< 0.075
Wt. Soil retained (g)	0.00	0.00	910.41	10.64	3,52	_ 4.78	2.64	3.43	0.00
Percent retained (%)	0:0	0.0	97.3	1.1	0.4	0.5	0.3	0.4	0.0
S (N)	403.0	400.0	1 22	4.5	10	0.6	ا م	0.0	1

RESULT

D<sub>60</sub> ≠

42.0 27.0  $C^0 = 0.8 \quad .$  $C^0 = 5.0$ 

Soil classification (ASTM - D 2487)

Group symbol:

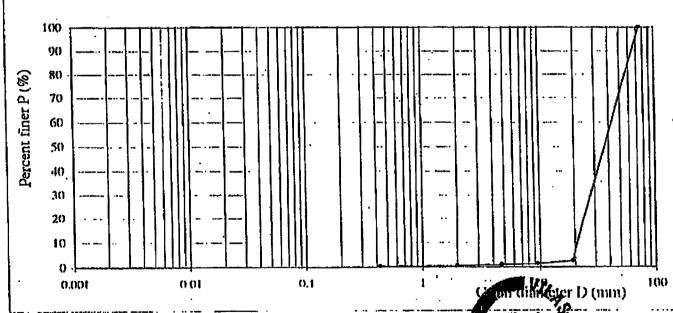
G₽

 $D_{10} = . 20.5$ 

Group name:

Bad aggregate grit

Size (mm)	50.8	25.4	19	9.5	4,75	2.00	0.425	·0.075	< 0.075
Percent retained (%).	0.0	. 0,0	97.3	1,1	. 0.4	0,5	0.3	0.4	0.0



Tested by

facturg2-4

Nguyen Thi Hong

VILAS 1202

ASTM - I) 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES NA NHAM BRIDGE

Borehole:

T3 .

Sample No : Depth (m):

PH2

5.5 : 7.0

Tets No : 613

30/6/2006

SIZE ANALYSIS					We	olghi of dry	1710.0		
Sizo (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	< 0.075
Wt. Soll relained (g)	0,00	0.00	. 40.28	180.31	215.61	550.14	560.14	109.14	2.38
Percent retained (%)	0.0	0.0	2.3	10.5	12.6	32.0	32.6	9.8	0.1
Percen tiner (%)	100,0	100.0	97.7	87.2	74,6	42,6	10.0	0.1	

RESULT

 $D_{00} =$ 

3.2

 $C_0 = 7.5$ 

Soil classification (ASTM - D 2487)

 $D_{30} =$ 

1.1

 $C_{c} = 0.9$ 

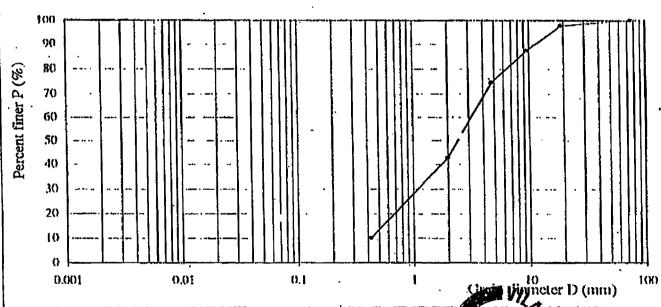
Group symbol:

0.425

Group name:

Bad aggregate sand

Size (mm)	50.8	25.4	19	9.5	4.75	2.00	0.425	0,075	< 0.075
Percent retained (%)	0.0	0,0	2.3	10.5	12,6	32.0	32.6	9.8	0,1



Tested by

Nguyen Thi Hong

Checken by VILAS 129

Tran Van Toan

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES NA NHAM BRIDGE

Borehole:

Depth (m):

Sample No :

' PH1 2.0 + 3.0 \* Tels No : 612

Date: / 30/6/2006

SIZE ANALYSIS .				weight of dry soil (g): 1562.6									
Size (mm)	50.8	25.4	19.0	9,5	4.75	2,00	0.425	0.075	< 0.075				
Wt. Soil relained (g)	. 0 00	0.00	675.60	150.40	215.60	330.18	220.18	70.64	0.00				
Percent retained (%)	0.0	0.0	40.6	9.0	13.0	19.9	. 13.2	4.2	0.0				
Percen liner (%)	100 0	100.0	59.4	50.3	37.4	17.5	4.2	0.0					

RESULT

Dan =

3.4

C<sub>0</sub> = 23.8

Soil classification (ASTM - D 2487)

 $D^{30} =$ 

 $D^{10} =$ 

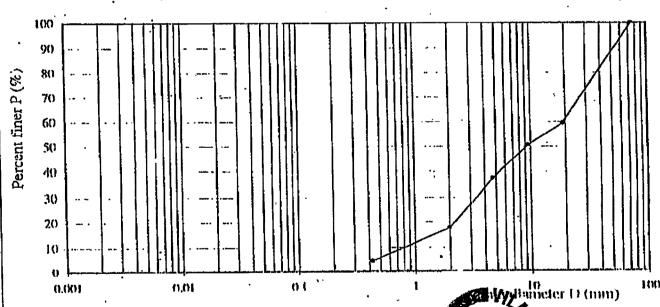
9.0

 $C_0 = 0.8$  • Group symbol :

Group name :

Bad aggregate grit

k		·	·					<del>, ———</del> ,	
Size (mm)	50,8	25,4	19	. 9.5	4:75	2.00	0.425	0.075	< 0.075
Percent retained (%)	0.0	0.0	40,6	9.0	13.0	19.9	13.2	4,2.	0.0



Tested by

Nguyen Thi Hong

Cheeked by

**VILAS 129** Tran Van Toau

ASTAL - 1) 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES ADDING MAIIN AN

Boreliole :

T2

Sample No: Depth (m):

PH3

10.0 + 11.0

़ Tets No : 61 l

Date:

30/6/2006

SIZE ANALYSIS

Weight of dry soil (a): 1257.2

0.22,							0011 (9).		
Size (mm)	. 50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	< 0.075
Wt. Soil retained (g)	0.00	0.00	1005.60	202.29	41.32	-2.61	4.08	1.31	0.00
Percent rotained (%)	0.0	0.0	80.0	16.1	'3,3 <sub>-</sub>	0.2	0.3	0.1	0,0
Porcen finer (%)	100.0	100.0	20.0	3.9	0.6	0.4	0.1	0.0	1

RESULT

D<sub>60</sub> = D<sub>30</sub> =

D<sub>10</sub> =

37,0

 $C_{tr} = 3.1$ 

Soil classification (ASTM - D 2487)

22.0

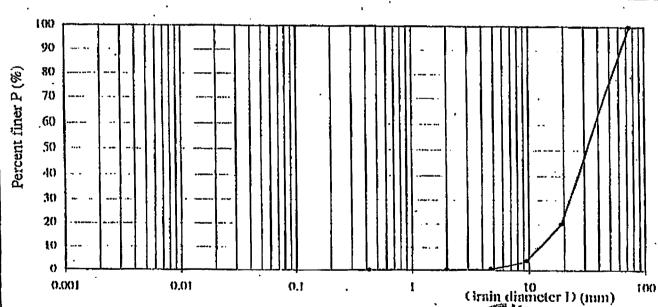
12,0

Cn = 1.1

Group symbol: Group name :

Bad aggregate grit

Size (mm)	50.8	25.4	19	9,5	4.75	2,00	0.425	0.075	< 0.075
Percent retained (%)	0.0	0.0	80.0	. 16.1	3.3	0.2	0,3	0.1	0.0



Tested by

Nguyen Thi Hong

VILAS 1290 1koan

ASTM - D 422 - 63

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS I ROVINCES NA NHAM BRIDGE

Borehole:

T2

Sample No : Depth (m):

PH2'

7.0 : 8.0

Tets No : 610

Date:

30/6/2006

S17	E	A	N	۸I.,	٧	18	18
••••		_			•	-	_

SIZE ANALYSIS					Ws	ight of thy	noli (5)):	1126,0	•
Siza (mm)	50.6	25,4	10.0	ប ម	4.76	2.00	0,428	0.076	# 0.07B
Wt. Soil retained (g)	0.00	0.00	1012,14	75.42	38.00	0.00	•		
Percent retained (%)	0.0	0.0	89.9	6.7	3 <u>.</u> 4	0.0			
Percen finer (%)	100.0	100.0	10.1	3.4	0,0				

RESULT

 $D_{60} =$ D<sub>30</sub> = 40.0 25.0  $C_0 = 2.2$  $C_c = 0.9$  Soil classification (ASTM - D 2487)

Group symbol:

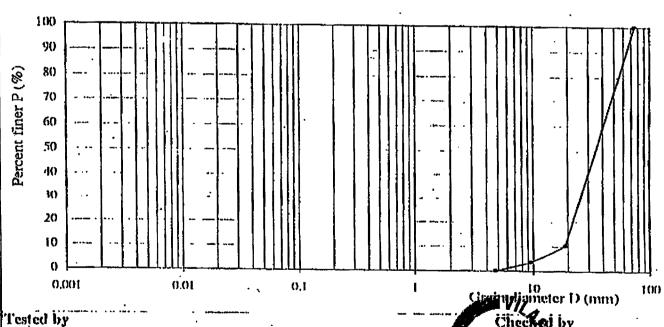
D10 =

18.0

Group name:

Bad aggregate grit

Sizo (min)	50,0	25.4	19	9.5	4.75	2.00	0.425	0.075	< 0.075
Percent retained (%)	0,0	0.0	89.9	8.7	3.4	0,0			



Swhergh\_u-

Nguyen Thi Hong -

# NA LAN BRIDGE

BORING LOG: P1

Station:

Center: 0.00

GROUND ELEVATION:

189.70

STARTING DATE:

7/6/2006

WATER TABLE:

COMPLETED DATE:

9/6/2006

	NOIL						SPT	TE	ST	
LAYER NUMBER	BOTTOM ELEVATION	воттом рертн	THICKNESS	BORING LOG	SOIL DESCRIPTION	DEPTH	BLOWS /15cm	N/30	SPT CHART	SAMPLE NO DEPTH
LAYE	BOTT	BOTT	THIC	SCALE: 1/100		1			0 25 50 75	SA
1			0.80	V	White sand with gravel					
TK	188.90 188.20		0.70	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Free stone, grit stone with gravel and san	q				
1			1.60	)	White sand with grave!					
2	186.60		3.00	X X X X X X X X X X X X X X X X X X X	Grey grit stone					

DỰ ÂN XÂY DỤNG CẦU GIAO THÔNG THÔN CÁC TÍNH MIÊN NÚI PHÍA BẮC

TổNG HỢP CHỈ TIÊU CƠ LÝ CÁC MẪU ĐẤT (RESULTS OF PHYSICAL AND MECHANICAL PROPERTIES OF SAMPLE) THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGE IN NORTHERN MOUNTAINOUS PROVINCES

1									Г	<u> </u>	Т			T	T	T	T	7	
		SOIL DESCRIPTION TÊN DÂT	ASTM D2487		Blackish grey schoolsyey sand	Stackish gray sliff Clayey sand												The state of the s	
			ASTI.	Γ	Π	×	Г	Γ							1		Π	TEN S	'
		tàg lọại báh Classification		一		ļ	H	H	-	H	十	<u> </u>	<u> </u>	i	i	1		3-g / P. 3	
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	) ast	Lyc dich Son Yi Cohesion	ď	ğ														1/10	7
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	Н	ritgnents benanconU	3	~	1	H			Ė	┪	<u> </u>			T	Ť	十	1	育	i
	$\vdash$	Swell liews	┢		-	$\vdash$	H	_	<u> </u>	L	L	_	Н	Н	+			ō	
	lest	On ground 8s LAD	ರ	┝		L	L		<u> </u>	<u> </u>	<u> </u>				4	+		1	
	Consolidation test	Compression index	ర	1	L		L					Ŀ						İ	
	neolic	Coefficient of	50,73	2 E					١,										
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CẦU NÀ LAN - NA LẠN BRIDGE	L	îậ≥ ộG	3	L	0492	88	L	L	L	Ĺ	Ļ	L	Ľ		_		Ш	CHECKED BY - NGLO KIÉM TRA From Grueng Ha	
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	L	gnởi če ệH	8	L	ä	L	L	L	L	L	L	L		<u> </u>	_		Ш	·	
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		KL thể thh khố Cry đensky	×	F.		Γ	Γ	Ī	Ī	Ī	Γ	Γ	Г	П	7			1 '	
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**Bridge No.36** 

DŲ ÂN XÂY DŲNG CẦU GIAO THÔNG THÔN CÁC TẬNH MIÊN NŰI PHÍA BẮC

TỔNG HỢP CHỈ TIỆU CƠ LÝ LỚP ĐẮT (RESULTS OF PHYSICAL AND MECHANICAL PROPERTIES OF LAYER) THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGE IN NORTHERN MOUNTAINOUS PROVINCES

CÂU NÀ LAN - NA LAN BRIDGE

1.yd N91_   1.00		<del>1</del>		487																			
Create   C			SOIL DESCRIPTION			Blackish grey stiff Clayery sand	Blackish grey stiff Clayey sand	Backlish grey stiff Clayiny sand													NG TÂW TN		
Control   Cont				AASHTO ASTA		Г	1	1											1	<u> </u>			
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% L sàng

% Finer

DỰ ÁN XÂY DỰNG CẦU GIAO THÔNG NÔNG THÔN CÁC TỈNH MIỀN NÚI PHÍA BẮC THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGE IN NORTHERN MOUNTAINOUS PROVINCES

### THÍ NGHIỆM PHÂN TÍCH THÀNH PHẦN HẠT PARTICLE SIZE ANALYSIS

(AASHTOT88 - ASTM D420-422)

Sàng số

2'

Vitri - Location:

Na Lan bridge

Số hiệu mẫu - Sample number :

M87

SH Ið khoan - Boring No

A1A

số hiệu TN - Test number:

4274

Độ sấu - Depth (m)

1.8-2.0

Ngày thí nghiệm - Testing date :

ĐK sàng

76.2

50.8

Sieve No Sieve size

10/2006

Cumulative

%

PHÂN TÍCH BẰNG SÀNG - SIEVE ANALYSIS

KL đất khô - Weight of Dry Soil (g)

100

% TLŪV

% T sàna

retained

PHÂN TÍCH BẰNG TỶ TRONG KẾ - HYDROMETER ANALYSIS

KL riêng - Specific Gravity (g/cm³):

2.73

KL đất khô - Weight of Dry Soil (g)

50

SH tỷ trọng kế - Hydrometer No :

151H

HC mặt cong - Meniscus Correction R<sub>w</sub> -1

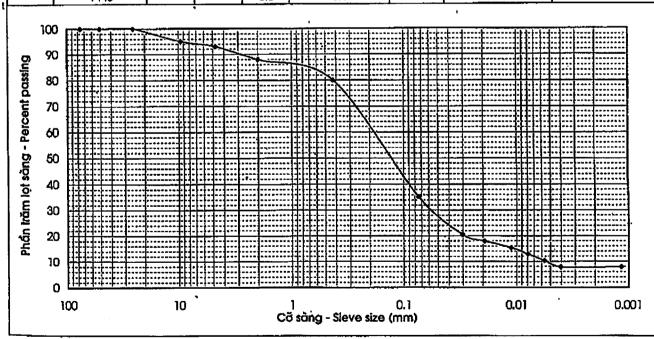
1.	25.4				100.00
0.375*	9.52	5.00	5.00	5,00	95.00
4.	4.76	2,00	2.00	7.00	93.00
10	2.00	5.00	5.00	12.00	88.0

KL sàna

Wi soil

retained

Kı	a.	D <sub>10</sub>	D <sub>30</sub>	D <sub>60</sub>	Cu	Cc	40	0.425	8.000	8.00	20.00	80.0
32.12	0.9825						200	0.074	28.000	44,80	64.80	35.2
	1 .	sed time min	ť°C	T°C corrected	R	R-R	w+R <sub>ct</sub> .	L (cm)	D (i	nm)	P(	%)
•		2	29	2.1	5.0		3.1	12.66	0.0	303	20	.45
		5			4.0		<del>7.</del> 1	12.82	0.0	193	17	.93
	1	15			3.0	7	5.1	12.98	0.0	112	15	.40
	3	XO OX			2.0		5.1	13.14	0.0080 12		.88	
	6	io Oc			1.0	4.1.		13.30			10.35	
<u> </u>		20			0.0		3.1	13.46	0,0	040	7.	83
<del> </del>		40			0.0		3.1	13.46	0,0	012	7.	83



### **TEST RESULT**

Cỡ sảng - Sieve size	76.2	50.8	25.4	9.52	4.76	2.00	0.425	0.074	0.005	0.002
% lot sang- Percent finer			100	95	93	88.0	80.0	35.2	9.3	7.8

Người TN - Tested by:

Nguyen Hong Liën

Người KT - Checked by: Lê Hiep Van

TRƯỞNG PHẨ IN - CHIEF OF LAB

### DỰ ÁN XÂY ĐỰNG CẦU GIAO THÔNG NÔNG THÔN CÁC TỈNH MIỀN NÚI PHÍA BẮC THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGE IN NORTHERN MOUNTAINOUS PROVINCES

### THÍ NGHIỆM PHÂN TÍCH THÀNH PHẦN HẠT PARTICLE SIZE ANALYSIS

(AASHTOT88 - ASTM D420-422)

Vitri - Location:

Na Lan bridge

Số hiệu mẫu - Sample number :

М5

SH iỗ khoan - Boring No

A2A

Số hiệu TN - Test number :

4275

Độ său - Depth (m)

0.3-0.5

PHÂN TÍCH BẰNG SÀNG - SIEVE ANALYSIS

KL đất khô - Weight of Dry Soil (g)

100

10/2006 Ngày thí nghiệm - Testing đạte: % TLQy KL sàng % T sàng

PHÂN TÍCH BẰNG TY TRỌNG KẾ - HYDROMETER ANALYSIS

KL riêng - Specific Gravity (g/cm³):

2.72

KL đất khô - Weight of Dry Soil (g) .

50

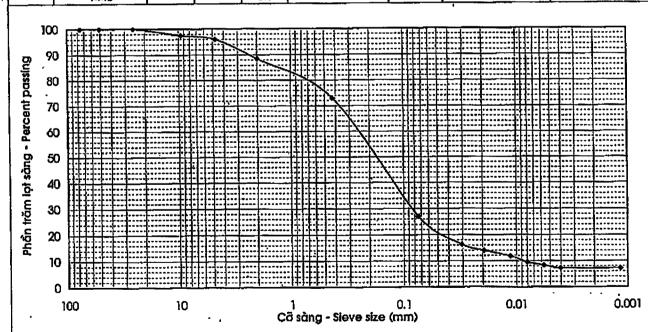
SH tỷ trọng kế - Hydrometer No:

151H

HC mặt cong - Meniscus Correction R <sub>w</sub> -1	HC	mặt	cong -	Meniscus	Correction R <sub>w</sub>	-1
---	----	-----	--------	----------	---------------------------	----

İ	_	Sieve size	Wi soil retained	% retained	Cumulative %	% Finer
	3,	76.2				
İ	2*	50.8				
I	1'	25.4				100.00
	0.375°	9.52	2.50	2.50	2.50	97.50
١	4	4.76	1.50	1.50	4.00	96.00
I	10	2.00	7.50	7.50	11.50	88.5
	40	0.425	15.500	15.50	27.00	73.0
١			T	15.00	=====	

$K_1$	a	D <sub>10</sub>	D <sub>30</sub>	D <sub>60</sub>	Cu	Cc	40	0.425	15.500	15,50	27.00	73.0
32.12	0.9846	<del></del>					200	0.074	31,500	45,99	72.99	27.0
Ngày Date	1 .	sed time mln	T°C	T°C corrected	R	R-R	w + R <sub>CT</sub>	L (cm)	D (	mm)	PC	%)
-		2	29	2.1	4.0		7.1 .	12.82 0.0306		0.0306 16.39		.39
<b>—</b>	<u> </u>	5			3.0		5.1	12.98	0.0	194	14.	.08
		15			2.0		5.1 . 13.14		0.0	113	11.	.77
	<del></del>	30			1.0	-	4.1	, 13,30	0.0	080	9.	47
	1	50		- · ·	0.5	: ;	3.6	13.38	0:0	057	·8.	31.
		20			0.0		3.1	13.46	0.0	040	7.	16 -
<b>—</b>		140			0.0	j ;	3.1	13.46	0,0	012	7.	16



### **TEST RESULT**

Cā sảng - Sieve size	76.2	50.8	25.4	9.52	4.76	2.00	0.425	0.074	0.005	0.002
% lot sång- Percent finer			100	97.5	96	88.5	73.0	· 27.0	7.9	7.2

Người TN - Tested by:

Nguyen Hong Liên

Người KT - Checked by: Lê Hiep Van



### DỰ ÁN XÂY DỤNG CẦU GIAO THÔNG NÔNG THÔN CÁC TỈNH MIỀN NÚI PHÍA BẮC THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGE IN NORTHERN MOUNTAINOUS PROVINCES

### THÍ NGHIỆM XÁC ĐỊNH ĐỘ ẨM & CÁC GIỚI HẠN ATTERBERG MOISTURE CONTENT & ATTERBERG LIMITS TEST

(AASHTO T265-93-T89-90, ASTM D)

Vi tri - Location:

Na Lan bridge

Số hiệu mẫu - Sample number:

M87

Số hiệu LK - Boring No

AlA

Số hiệu TN - Test number :

4274

Độ sãu - Depth (m)

1.8-2.0

Ngày thí nghiệm - Téting date :

10/2006

		ÔNG SỐ XÁC I	-	1 '	TỰ NHIÊN CONTENT			) LIMIT (%)		<b>b</b>	TC LIMIT /p(%)		
St	nộp	ner number		1	11	٦٠	2	3		lx .	2x		
Sc	i län (	aáb				36.	22	וו	•		-		
- Bi	ow ni ong li	imber iong đã ám+h	op g	53.654	47.912	22.958	21.515	22.456		13.551	14,495		
		of wet soil and long đã khô+ì	içb izconidiner	<del>- </del>	. 41.589	19.763	18.324	18.786	_	12.542	13.414		
Tre	ọng l	of dry soll and rong hộp	i container -		14.977	7.413	7.059	7.547		7.345	7.714		
Tre	ong k	of container	9	7.367	6.323	3.195	3,191	3.670		1.009	1.081		
Ð	ộ ăm		. %	23.12	23.76	25.87	28.33	32.65		19.42	18.96		
TĐ	ộ ám	e content trung binh 1e molsture co		23	J.44					1	9.19		
DÔ ÂM - MOISTURE CONTENT (%)	30 20	27.83											
!	0	0			25						100		
	GI	ÓI HẠN CHÀY	- LIQUID LIMIT	QUID LIMIT GIỚI HẠN ĐỆO - PLASTIC LIMIT CHỈ SỐ ĐỀO -							- PLASTICITY INDEX		
		W <sub>L</sub> =	27.83		W <sub>e</sub> =	19.19			l <sub>P</sub> =	8.64			

Ýguði TN - Tested by: Mai Van Son Ýguði klém tra - Checked by: Dang Thanh Hai TRUÖNG PHÒNG IN - CHIEF OF LAB

資. 8-5-181

**Bridge No.36** 

DỤ ÂN XÂY DỰNG CẦU GIAO THÔNG NÔNG THÔN CÁC TỈNH MIỀN NÚI PHÍA BẮC
THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGE IN NORTHERN MOUNTAINOUS PROVINCES

### THÍ NGHIỆM XÁC ĐỊNH ĐỘ ẨM & CÁC GIỚI HẠN ATTERBERG MOISTURE CONTENT & ATTERBERG LIMITS TEST

(AASHTO 1265-93-189-90, ASTM D)

Vitil - Location :

Na Lan bridge

Số hiệu mẫu - Sample number :

M5

Số hiệu LK - Boring No

A2A

Số hiệu TN - Test number:

4275

Độ sâu - Depth (m)

0.3-0.5

Ngày thí nghiệm - Téting date:

10/2006

	ÔNG SỐ XÁC ĐỊNH ĐỘ ẨN MOISTURE DETERMINATION		ĐỘ ẨM T MOISTURE	-			) LIMIT (%)			NSTIC LIMIT W <sub>P</sub> (%)
số hộp			3	4	4	5	6		3x	4x
Contal	ner number đặp								<u> </u>	<u> </u>
so ian a Blow nu					36	22	וו			
îrong lu	nàua qa aw+µòb	g	58,981	56,299	23,173	21.631	22.860		13.830	14.36
Welaht	<u>r of wet soil and container</u> ượng đã khô+hộp									
	of dry soil and container	g	51.232	48.785	20.169	18.736	19.582	,	12.863	13.41
îrong li	doug hộp	g	15.072	14.678	7,396	7.377	7,501		7.316	7.768
Welaht	of container Liong dat khō	- 3	· · · ·							
	of dry soil	9	7.749	7.514	3.004	2.895	3.278		0.967	0.952
Độ ám		%	21.43	22.03	23.52	25.49	27.13		17.43	16.87
Moistur Dá ám	re content h trung bình			L,						
	de moisture content		21	.73					Ì	17.15
⊋ 40					*************					
\$ 40 30										
% 40 30 30	24.80									
OSTURE CONTENT (%)	24.80									
MOISTURE CONTENT (%)	24.80									
64 - MOISTURE CONIENT (8) 30 50 50 50 50 50 50 50 50 50 50 50 50 50	24.80									
O AM - MOISTURE CONTENT (%)	24.80									
STURE CONTENT (5	24.80									
DO AM - MOISTURE CONTENT (%)	24.80									
DO AM - MOISTURE CONTENT (\$ 100 MILE)	24.80									
DO AM - MOISTURE CONTENT (\$ 0.000)	24.80			25						10
DO AM - MOISTURE CONTENT (\$ 0 0 10 0 1		ĮT	1		) - PLASTIC	LIMIT	CH	số đệo -	PLASTIC	10

Người TN - Tested by: Mal Van Son Người kiểm tra - Checked by: Dang Thanh Hai TRUÒNG PHÒNG IN - CHIEF OF LAB

## NA LAN BRIDGE BORING LOG: Ala

Station:

Center: 0.00

GROUND ELEVATION:

202.10

STARTED DATE:

26/9/2006

WATER TABLE:

COMPLETED DATE:

27/9/2006

	TION.			•	•				SPT	TE	ST		
LAYER NUMBER	BOTTOM ELEVATION	воттом рертн	THICKNESS	BORING LOG SCALE: 1/100	SOIL DESCRIPTION	DEPTH	1	LOW 5cm		NGO		 1ART	SAMPLE NO DEPTH
1	199.40	2.70	2.70		Blackish grey stiff clayey sand (SC)	2.00 2:43	34	.5	6				M87
3a	198.10		1.30		Yellowich grey whethered mica schist								-
, 3			5.00		Yellowich grey mica schist RQD=64%, TCR=77%								R1 4.20-4.43 R2 6.20-6.42 R3 7.10-8.15

# NA LAN BRÍDGE

**BORING LOG: A2a** 

Station:

Center: 0.00

GROUND ELEVATION:

202.40

STARTED DATE:

23/9/2006

WATER TABLE:

COMPLETED DATE:

25/9/2006

	WAIER					OMITE				•		<i>77</i>		
	TION								SPT	TE	ST			
LAYER NUMBER	BOTTOM ELEVATION	нь воттом рертн	THICKNESS	BORING LOG SCALE: 1/100	SOIL DESCRIPTION	DEPTH	Į	LOV Sen		N/30		<del></del>	ART ) 75	SAMPLE NO DEPTH
ſ	200.40	2.00	2.00		Blackish grey stiff clayey sand (SC)									M5 0.30-0.50
2			3.50		Brownish green medium dense gravel grit with pebbles	2:49 4:49 4:45	6	7		14	G		and the second s	
, 3a	196.90 195.40		1,50	\$ \$ \$ \$ 2\$ \$ \$	Yellowich grey whethered mica schist	6:00 6:45			>30	)>30		0		94 5.80-6.00
3	190.40		5.00		Yellowich grey mica schist RQD=65%, TCR=76%									R1 7.20-7.35 R2 8.50-8.65 R3 0.20-10.35 R4 1.40-11.60

DỰ ÂN XÂY DỰNG CẦU GIAO THỚNG NÓNG THỚN CÁC TẦNH MIÊN NÚI PHÍA BẮC

# TÔNG HỢP CHỈ TIỀU CƠ LÝ CÁC MẪU ĐẤT (RESULTS OF PHYSICAL AND MECHANICAL PROPERTIES OF SAMPLE) THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGE IN NORTHERN MOUNTAINOUS PROVINCES

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·		, Soll description Tèn bât	ASTM D2487		Blackish gray stiff-Clayer sand	Blacklish gray saft Clayery sand													STAMTIN STAMTIN	
		PHÂN LOẠI ĐẤT CLASSIFICATION	AASHTO ASTU		A-1(0) SC	A-2-4 (0) SC											1			
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