

BORING LOG

ENGINEERING		THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TECHNICAL DESIGN PHASE				BRIDGES OF LAO CAI PROVINCE SOI TRAT BRIDGE					
Bora hole		LK_P1		Co-ord. X=		Y=		Station: km2+027.00			
Elev.: +194.91		Elev. of underwater level: +0.00		Drilling date:		08/06/2006 - 10/06/2006					
Contractor:		Nguyen Cong Sinh		Checker:		Tran Viet Han					
Layer	Elev. (m)	Depth (m)	PROFILE Scale 1/100	DESCRIPTION	STANDARD PENETRATION TEST (SPT)				Sampling depth for test (m)		
					Depth (m)	Blow No./15cm				Chart	
						N1	N2	N3	N30cm		0 10 20 30 40 60 N
1	190.41	4.50		Fine sand is in brownish grey, moist state, spongy structure.	1.00-1.45	1	2	2	4		
					2.00-2.45	1	2	3	5		
					3.00-3.45	1	2	3	5		
					4.00-4.45	2	3	3	6		
2	168.71	6.20		Sand with grit is in yellowish grey, blackish grey, saturate state, closed structure.	6.00-6.45	8	12	18	30		
					5.70-6.15	10	15	20	35		
5	178.91	15.00		Sandstone is in blackish grey, weathered, cracked. Hardness is in level VI-VII							

U1
10.00-10.20

ZV

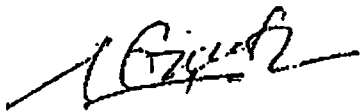
TEST FOR UNCONFINED COMPRESSIVE STRENGTH OF ROCK
(22 TCN 57 - 84)

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

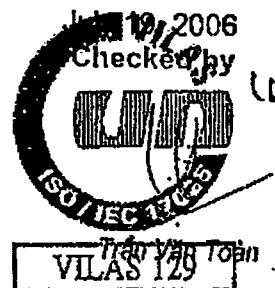
SOI TRAT BRIDGE

Bore hole		P1		
Sample No.		U1		
Depth (m)		10-10,25		
Test Items				
Dry unconfined compressive strength	σ_n (kG/cm ²)	130,0		
Saturated unconfined compressive strength	σ_{bh} (kG/cm ²)	88,0		
Index of softening	k	0,68		
Natural unit weight	γ_w (g/cm ³)	2,367		
Specific gravity	Δ (g/cm ³)	2,681		

Tested by


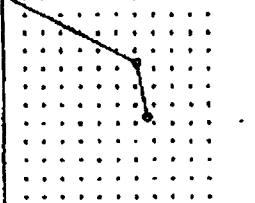





Nguyễn Văn Hạnh



BORING LOG

Bridge No.30

ENGINEERING		THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TECHNICAL DESIGN PHASE				BRIDGES OF TUYEN QUANG PROVINCE											
						BAN NGHIEN BRIDGE											
Bore hole		LK_T2		Co-ord. X=		Y=		Station:									
Elev.: +89.87		Elev. of underwater level: +0.00		Drilling date:		08/06/2006 - 10/06/2006											
Contractor:		Ho Nhat Dang				Checker:		Ngo Duc Hung									
Layer	Elev. (m)	Depth (m)	PROFILE Thickness (m)	PROFILE Scale 1/100	DESCRIPTION	STANDARD PENETRATION TEST (SPT)							Sampling depth for test (m)				
						Depth (m)	Blow No./15cm			N30cm	Chart						
							N1	N2	N3			0	10	20	30	40	50
1			2.8		Cobble, gravel, grit is yellowish brown, whitish grey, closed structure.	1.0-1.01	30/1cm										
						2.0-2.01	32/1cm										
2	86.87	2.8	3.4		Clay shale is blackish grey, brownish grey, cracked. Hardness is 4 with RQD=60%, TCR=45%											T1 4.6-4.7	
4	TK2 83.47 83.44	6.2 6.23	0.02		Clay mixes with chips, brownish grey.											T2 7.0-7.1	
4			5.07		Shale is brownish grey, light pink with hardness of 6-7, RQD=70%, TCR=55%											T3 9.0-9.1	
	74.37	11.30															

BORING LOG

Bridge No.30

ENGINEERING		THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TECHNICAL DESIGN PHASE				BRIDGES OF TUYEN QUANG PROVINCE											
						BAN NGHIEN BRIDGE											
Bore hole		LK_T3		Co-ord. X=		Y=		Station:									
Elev.: +89.80		Elev. of underwater level: +0.00		Drilling date:		10/06/2006 - 11/06/2006											
Contractor:		Ho Nhat Dang		Checker:		Ngo Duc Hung											
Layer	Elev. (m)	Depth (m)	Thickness (m)	PROFILE Scale 1/100	DESCRIPTION	STANDARD PENETRATION TEST (SPT)							Sampling depth for test (m)				
						Depth (m)	Blow No./15cm			N300m	Chart						
							N1	N2	N3			0	10	20	30	40	50
1	84.7	3.1	3.1		Cobble, gravel, grit is yellowish brown, whitish grey, closed structure.	1.0-1.45	10	15	19	34							
						2.0-2.45	16	22	28	46							
						3.0-3.45	19	25	32	55							
2	83.9 83.8	5.9 6.0	2.8 0.4		Clay shale is blackish grey, brownish grey, cracked. Hardness is 4 with RQD=60%, TCR=45%											T1 4.5-4.7	
																T2 7.2-7.4	
4	78.6	11.20	5.20		Shale is brownish grey, light pink with hardness of 6-7, RQD=70%, TCR=55%											T3 9.0-9.2	

TEST FOR UNCONFINED COMPRESSIVE STRENGTH OF ROCK
(22 TCN 67 - 84)

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

BAN NGHIEN BRIDGE

Bore hole	LK_ T2	LK_ T2	LK_ T2
Sample No.	T1	T2	T3
Depth (m)	4,5-4,7	7,0-7,1	9,0-9,1
Test items			
Dry unconfined compressive strength σ_n (kG/cm ²)	451,0	750,0	781,0
Saturated unconfined compressive strength σ_{bh} (kG/cm ²)	305,0	598,0	635,0
Index of softening k	0,88	0,80	0,81
Natural unit weight γ_w (g/cm ³)	2,39	2,41	2,40
Specific gravity Δ (g/cm ³)	2,69	2,71	2,71

Tested by



Nguyễn Văn Hạnh



VILAS.128
Trần Văn Toàn

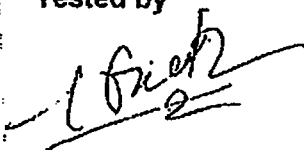
TEST FOR UNCONFINED COMPRESSIVE STRENGTH OF ROCK
(22 TCN 57 - 84)

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

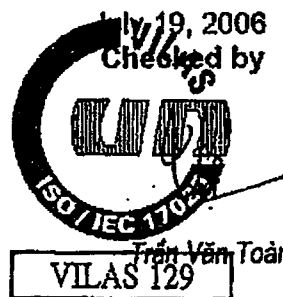
BAN NGHIEN BRIDGE

	LK_T3	LK_T3	LK_T3
Bore hole	T1	T2	T3
Sample No.			
Depth (m)	4,5-4,7	7,2-7,4	9,0-9,2
Test Items			
Dry unconfined compressive strength σ_n (kG/cm ²)	455,0	760,0	795,0
Saturated unconfined compressive strength σ_{bh} (kG/cm ²)	310,0	610,0	650,0
Index of softening k	0,68	0,80	0,82
Natural unit weight γ_w (g/cm ³)	2,375	2,410	2,410
Specific gravily Δ (g/cm ³)	2,690	2,720	2,725

Tested by



Nguyễn Văn Hạnh



BORING LOG

ENGINEERING		THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES				BRIDGES OF TUYEN QUANG PROVINCE												
		TECHNICAL DESIGN PHASE				TRINH BRIDGE												
Bore hole		LK_T2	Co-ord. X=		Y=	Station:												
Elev.: +67.0		Elev. of underwater level: +0.00			Drilling date:		13/06/2008 - 14/06/2008											
Conductor:		Ho Nhoi Dang			Checker:		Ngo Duc Hung											
Layer	Elev. (m)	Depth (m)	Thickness (m)	PROFILE Scm 1/100	DESCRIPTION	STANDARD PENETRATION TEST (SPT)						Sampling depth for test (m)						
						Depth (m)	Blow No./15cm			N30cm	Chart							
							N1	N2	N3			0	10	20	30	40	50	N
1			2.5		Sand, gravel, grit mixes with cobbles, yellowish brown, spongy structure.	1.0-1.45	5	7	15	22								PH1 0.5-1.5
2	84.50	2.5	0.5		Gravel cobbles mixes with sandy clay, greenish grey, closed structure.	2.0-2.45	7	11	17	28								
3	84.00	3.0			Grit is closed structure resulting from weathered clay shale.	3.0-3.45	12	18	19	37								PH2 3.0-4.0
			2.2		Grit is closed structure resulting from weathered clay shale.	4.0-4.45	15	17	20	37								
	81.8	6.2			Weathered clay shale, broken in tiny, blackish grey, very closed structure.	5.0-5.02	50/2cm											
4			2.4		Weathered clay shale, broken in tiny, blackish grey, very closed structure.	6.0-6.02	50/2cm											
					Weathered clay shale, broken in tiny, blackish grey, very closed structure.	7.0-7.02	50/2cm											
	78.40	7.6			Weathered clay shale, broken in tiny, blackish grey, very closed structure. It is shorted of water during drilling in this layer.	8.0-8.2	7	14	20	34								PH3 8.2-7.6
5			3.10		Weathered clay shale, broken in tiny, blackish grey, very closed structure. It is shorted of water during drilling in this layer.	9.0-9.2	8	15	19	34								PH4 9.0-10.0
					Weathered clay shale, broken in tiny, blackish grey, very closed structure.	10.0-10.2	7	13	17	30								
	76.30	10.70			Weathered clay shale, broken in tiny, blackish grey, very closed structure.	11.5-11.8	25	40	30/1cm									PH5 12.0-13.0
					Weathered clay shale, broken in tiny, blackish grey, very closed structure.	13.5-13.8	30	45	30/1cm									
6			8.00		Weathered clay shale, broken in tiny, blackish grey, very closed structure.	15.0-15.02	50/2cm											
					Weathered clay shale, broken in tiny, blackish grey, very closed structure.	16.5-16.51	50/2cm											
	68.30	18.70			Weathered clay shale, broken in tiny, blackish grey, very closed structure.													PH6 14.0-15.0
					Weathered clay shale, broken in tiny, blackish grey, very closed structure.													
					Weathered clay shale, broken in tiny, blackish grey, very closed structure.													PH7 17.0-16.76

BORING LOG

ENGINEERING		THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TECHNICAL DESIGN PHASE				BRIDGES OF TUYEN QUANG PROVINCE							
Bore hole		LK_T3	Co-or. X=		Y=	Station:							
Elev.: +87.80		Elev. of underwater level: +0.00		Drilling date:		15/06/2006 - 16/06/2006							
Corrector:		Ho Nhat Dang				Checker:		Ngo Duc Hung					
Layer	Elev. (m)	Depth (m)	Thickness (m)	PROFILE Scale 1/100	DESCRIPTION	STANDARD PENETRATION TEST (SPT)					Sampling depth for test (m)		
						Depth (m)	Blow No./15cm			Chart			
						N1	N2	N3	M30cm		0 10 20 30 40 50 N		
1	86.20	1.5	1.6		Sand, gravel, grit mixes with cobble, yellowish brown, spongy structure.	1.5-1.95	3	4	4	8			
2	82.50	5.2	3.6		Gravel cobble mixes with sandy clay, greenish grey, closed structure	2.0-2.45	15	15	17	32			PH1
						3.0-3.45	15	15	20	40			3.0-4.0
						4.0-4.45	20	22	24	46			
3	80.40	7.4	2.2		Grit is closed structure resulting from weathered clay shale.	5.0-5.92	14	15	18	33			PH2
						6.0-6.45	15	20	25	45			6.6-7.4
4	78.50	9.2	1.8		Weathered clay shale, broken in tiny, blackish grey, very closed structure.	7.0-7.45	14	23	26	49		PH3	
						8.0-8.05	50/5cm					8.0-9.0	
5	75.70	11.1	1.9		Weathered clay shale, broken in tiny, blackish grey, very closed structure. It is shorted of water during drilling in this layer.	9.0-9.02	30/1cm					PH4	
						10.5-10.95		10	15	20	35		10.0-11.0
6	80.30	16.5	7.4		Weathered clay shale, broken in tiny, blackish grey, very closed structure.	11.6-11.55	45/5cm					PH5	
						12.5-12.55	45/2cm						11.0-13.0
						13.5-13.60	50/10cm						
						14.5-14.52	50/10cm						PH6
						15.5-15.52	50/10cm						15.0-16.5
						16.5-16.52	50/10cm						
						18.49-18.50	50/1cm						

No: 230606.01.1/CLD

SUMMARY OF TEST RESULTS

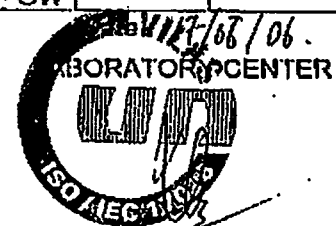
THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES
TRINH BRIDGE

Borehole :		LK - T2						
Sample No :		PH1	PH2	PH3	PH4	PH5	PH6	PH7
Depth (m):	m	0.5 + 1.5	3.0 + 4.0	8.2 + 7.8	9.0 + 10.0	12.0 + 13.0	14.0 + 15.0	17.0 + 18.0
Test No.		596	597	598	599	600	601	602
Grain size analysis								
Percent finer (%)	50.8 (mm)							
	25.4 (mm)	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	19.0 (mm)	97.6	85.6	85.6	85.2	87.7	86.7	97.8
	9.5 (mm)	91.3	71.1	66.2	65.3	78.5	67.8	89.0
	4.75 (mm)	81.8	66.8	54.3	52.7	64.1	42.2	73.8
	2.00 (mm)	52.6	63.5	42.8	37.6	51.1	51.4	51.7
	0.425 (mm)	17.8	60.5	25.5	22.8	42.2	30.1	34.6
	0.075 (mm)	4.1	57.5	9.5	4.9	37.7	22.0	26.4
	0.050 (mm)		54.0			35.0	21.0	25.0
	0.005 (mm)		29.0			16.3	10.0	11.0
0.002 (mm)		17.0			9.5	6.5	8.0	
Natural water content	W %							
Natural unit weight	γ_w g/cm ³							
Dry unit weight	γ_k g/cm ³							
Specific gravity	ρ g/cm ³	2.670	2.690	2.690	2.690	2.690	2.690	2.690
Coefficient of uniformity	C_u	16.0		82.5	59.2			
Coefficient of gradation	C_g	1.4		0.8	1.0			
In Dry condition	α_k							
In Saturation condition	α_w							
Void Ratio	e_0							
Porosity	n %							
Degree of Saturation	S %							
Liquid Limits	W _L %		39.4			31.7	27.6	29.6
Plastic Limits	W _p %		24.4			21.1	19.7	20.5
Plasticity Index	I _p %		15.0			10.6	7.9	9.1
Internal friction angle	ϕ^0							
Cohesion	C KG/cm ²							
Compressibility Index	$a_{1,2}$ cm ² /KG							
Soil classification ASTM - D 2487		Good aggregate grit - GW	Clay-grit - GC V	Bad aggregate grit - GP	Good aggregate grit - GW	Clay-grit - GC	Clay-grit - GC	Clay-grit - GC

COLECTED BY

NCHP

Eng. Nguyen Thi Khanh Ha



VIAS 120
Eng. Tran Van Toan

No: 230606.01.2/CLB

SUMMARY OF TEST RESULTS

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

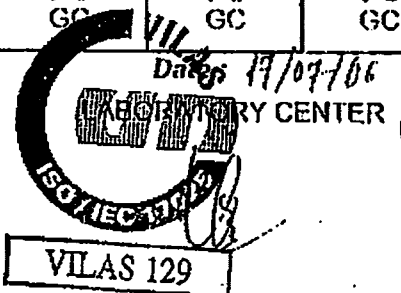
TRINH BRIDGE

Borehole :		LK - T3					
Sample No :		PH1	PH2	PH3	PH4	PH5	PH6
Depth (m):		3.0 + 4.0	6.6 + 7.4	8.0 + 9.0	10.0 + 11.0	11.0 + 13.0	15.0 + 16.5
Test No.		603	604	605	606	607	608
Grain size analysis	50.8 (mm)						
	25.4 (mm)	100.0	100.0	100.0	100.0	100.0	100.0
	19.0 (mm)	90.9	96.9	92.2	88.8	98.3	92.2
	9.5 (mm)	87.7	80.0	62.6	70.3	92.1	69.0
	4.75 (mm)	82.8	69.8	49.4	58.4	76.2	53.5
	2.00 (mm)	62.5	58.6	34.7	44.7	57.0	37.0
	0.425 (mm)	17.7	44.8	23.3	34.7	38.4	26.7
	0.075 (mm)	3.1	43.8	4.3	30.2	28.6	21.2
	0.060 (mm)		42.4		28.5	27.4	20.0
	0.005 (mm)		25.0		14.0	12.5	10.0
	0.002 (mm)		16.3		10.5	9.0	8.5
Natural water content	W %						
Natural unit weight	γ_w g/cm ³						
Dry unit weight	γ_k g/cm ³						
Specific gravity	ρ g/cm ³	2.670	2.690	2.690	2.690	2.690	2.690
Coefficient of uniformity	C_u	10.8		60.3			
Coefficient of gradation	C_c	1.3		1.1			
In Dry condition	α_k						
In Saturation condition	α_w						
Void Ratio	e_0						
Porosity	n %						
Degree of Saturation	S %						
Liquid Limits	W _L %		38.8		32.0	31.5	30.6
Plastic Limits	W _p %		23.5		20.7	20.9	20.1
Plasticity Index	I _p %		15.1		11.3	10.6	10.5
Internal friction angle	φ''						
Cohesion	C KG/cm ²						
Compressibility Index	$a_{1.2}$ cm ² /KG						
Soil classification ASTM - D 2487		Good aggregate sand - SW	Clay-grit - GC	Good aggregate grit - GW	Clay-grit - GC	Clay-grit - GC	Clay-grit - GC

COLLECTED BY

NCHP

Eng. Nguyen Thi Khanh Ha



Eng. Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T2
Sample No : PH1
Depth (m): 0.5 + 1.5

Tets No : 596
Date : 30/6/2006

SIZE ANALYSIS

Weight of dry soil (g): 1900.0

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	45.1	120.1	179.0	555.4	660.8	260.2	78.7
Percent retained (%)	0.0	0.0	2.4	6.3	9.5	29.2	34.8	13.7	4.1
Percent finer (%)	100.0	100.0	97.6	91.3	81.8	52.6	17.8	4.1	

RESULT

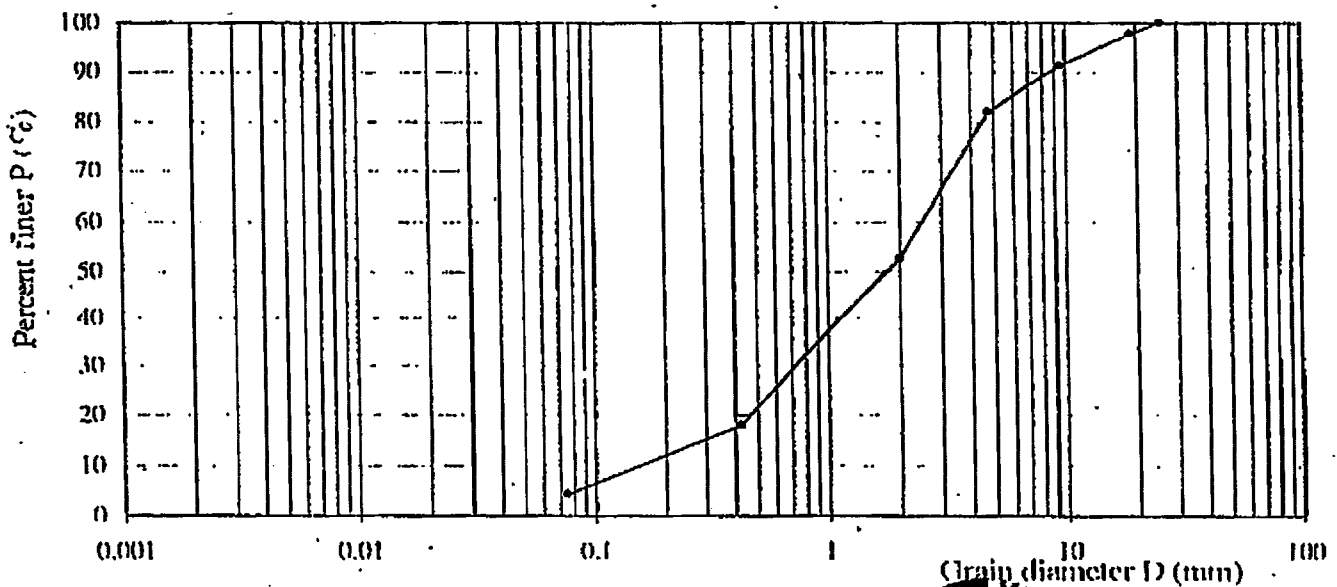
$D_{60} = 2.40$ $C_u = 16.0$
 $D_{30} = 0.72$ $C_c = 1.4$
 $D_{10} = 0.15$

Soil classification (ASTM - D 2487)

Group symbol : GW

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	2.4	6.3	9.5	29.2	34.8	13.7	4.1



Tested by

Signature of Nguyen Thi Hong

Nguyen Thi Hong



VILAS 129

Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T2
Sample No : PH1
Depth (m): 3.0 + 4.0

Tets No : 597
Date : 29/6/2006

SIZE ANALYSIS

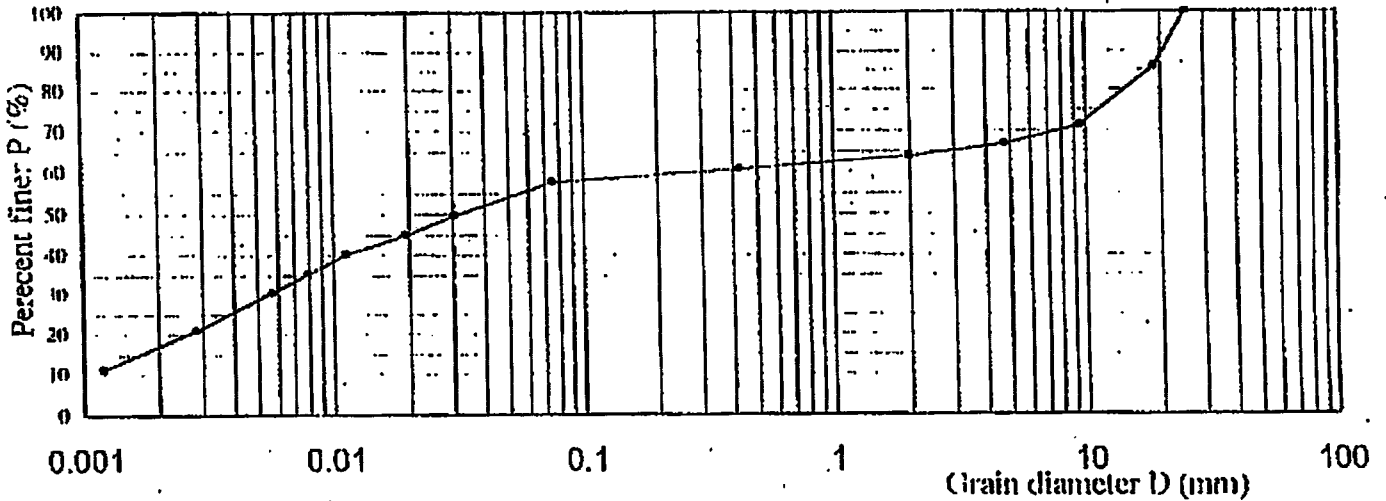
Weight of dry soil (g): 1005.0

Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khối lượng riêng (g/cm ³)
Weight soil retained (g)	0.00	0.00	145.10	145.50	45.30	30.61	30.23	0.98	2.690
Percent retained (%)	0.0	0.0	14.4	14.5	4.5	3.0	3.0	3.0	
Percent finer (%)	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 (°C): 30.0

Elapsed time (min)	Actual Hydrometer Reading	Correction			Effective depth L (cm)	Diameter D (mm)	Percent passing P (%)
		Temperature	Zero	Hyd. Reagin			
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	0.0080	35.2
60	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

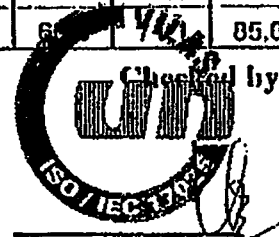


RESULT

Size (mm)	<0.002	0.002	0.005	0.005	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
Percent finer (%)		17.0	29.0	54.0	57.6	60.5	63.5	68.0	82.5	85.6	100.0	100.0

Tested by

Nguyễn Thị Hồng



VILAS 129
Trần Văn Toàn

Nguyễn Thị Hồng

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T2
Sample No : PH3
Depth (m): 6.2 + 7.6

Tests No : 598
Date : 28/6/2016

SIZE ANALYSIS

Weight of dry soil (g): 1390.0

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	200.10	270.23	165.00	160.00	240.80	220.10	133.97
Percent retained (%)	0.0	0.0	14.4	19.4	11.9	11.5	17.3	15.8	9.6
Percent finer (%)	100.0	100.0	85.6	66.2	54.3	42.8	25.5	9.6	

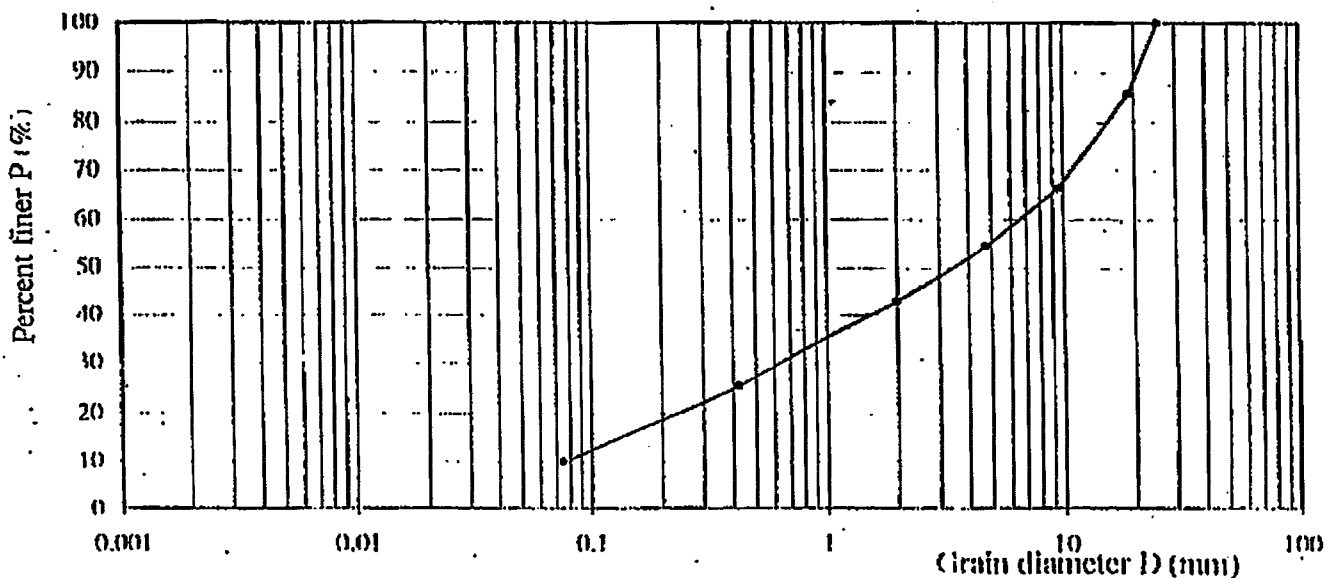
RESULT

$D_{60} = 6.60$ $C_u = 82.5$
 $D_{30} = 0.63$ $C_c = 0.8$
 $D_{10} = 0.08$

Soil classification (ASTM - D 2487)

Group symbol : GP
Group name : Bad aggregate grit

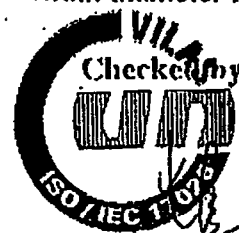
Size (mm)	50.8	25.4	19.0	9.5	4.75	2	0.425	0.075	< 0.075
Percent retained (%)	0.0	0.0	14.4	19.4	11.9	11.5	17.3	15.8	9.6



Tested by

Nguyen Thi Hong

Nguyen Thi Hong



VILAS 129

Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T2
Sample No : PH4
Depth (m): 9.0 ± 10.0

Tets No : 599
Date : 28/6/2006

SIZE ANALYSIS

Weight of dry soil (g): 1355.0

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	200.10	270.20	170.00	205.60	200.00	242.46	66.64
Percent retained (%)	0.0	0.0	14.8	19.8	12.5	15.2	14.8	17.9	4.9
Percent finer (%)	100.0	100.0	85.2	65.3	52.7	37.6	22.8	4.9	

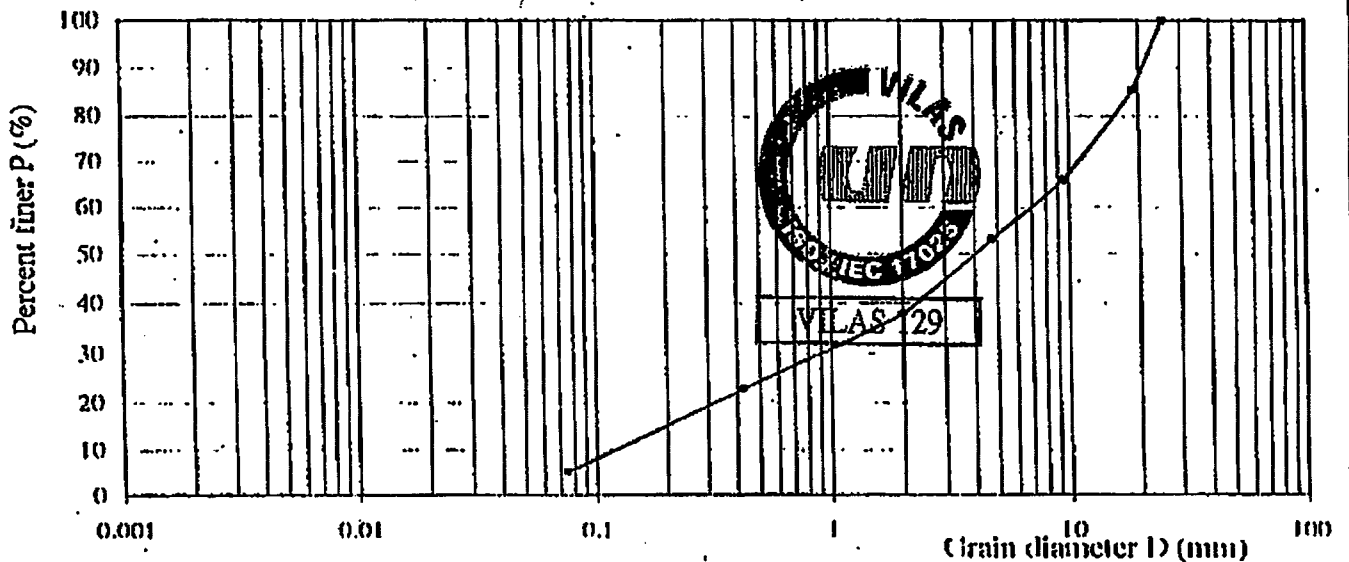
RESULT

$D_{60} = 7.10$ $C_u = 59.2$
 $D_{30} = 0.90$ $C_c = 1.0$
 $D_{10} = 0.12$

Soil classification (ASTM - D 2487)

Group symbol : GW
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	14.8	19.9	12.5	15.2	14.8	17.9	4.9



Tested by

Checked by

Nguyen Thi Hong

Nguyen Thi Hong

Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 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

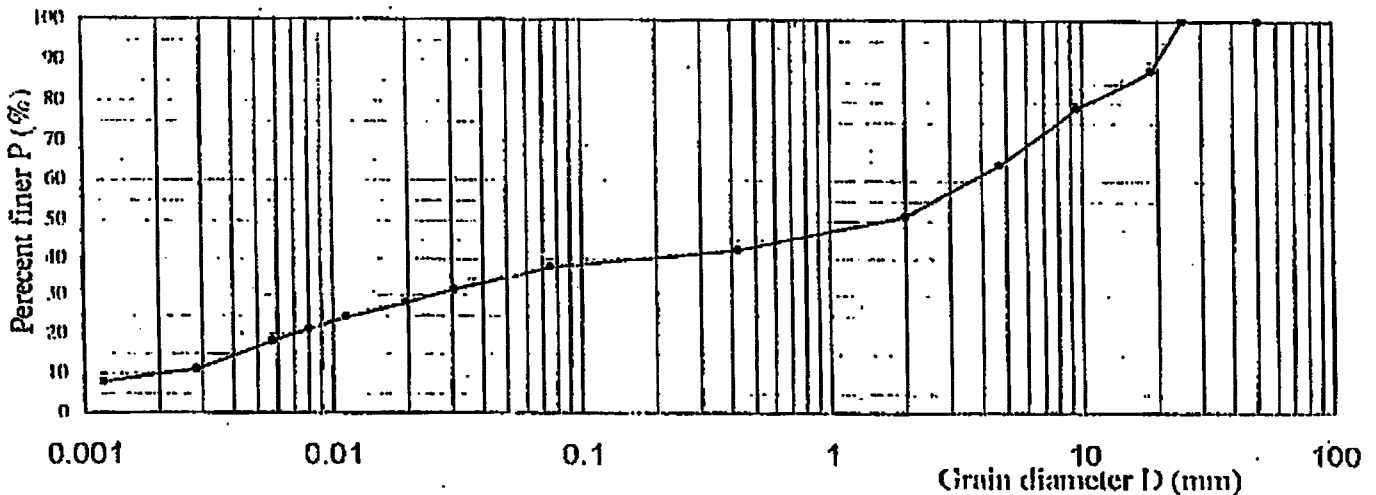
Weight of dry soil (g): 1465.0

Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khối lượng riêng (g/cm ³) 2.690
Weight soil retained (g)	0.00	0.00	180.30	135.14	211.13	190.21	130.21	2.14	
Percent retained (%)	0.0	0.0	12.3	9.2	14.4	13.0	8.9	4.5	
Percent finer (%)	100.0	100.0	87.7	78.5	64.1	51.1	42.2	37.7	

HYDROMETER ANALYSIS

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

Elapsed time (min)	Actual Hydrometer Reading	Correction			Effective depth l (cm)	Diameter D (mm)	Percent passing P (%)
		Temperature	Zero	Hyd. Reagin			
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	5.3	13.46	0.0081	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	0.002	0.005	0.05	0.075	0.425	2.00	4.75	0.6	19.0	25.1	60.0
Percent (%)	9.5	6.8	18.7	2.7	4.5	8.9	13.0	9.2	12.3	0.0	0.0	0.0
Percent finer (%)		9.5	16.3	35.0	37.7	42.2	51.1	64.1	76.6	87.7	100.0	100.0

Tested by

Nguyen Thi Hong

Nguyen Thi Hong

Tested by

 VILAS 129

Tran Van Toan
Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T2
Sample No : PH6
Depth (m): 14.0 + 15.0

Tets No : 601
Date : 29/6/2006

SIZE ANALYSIS

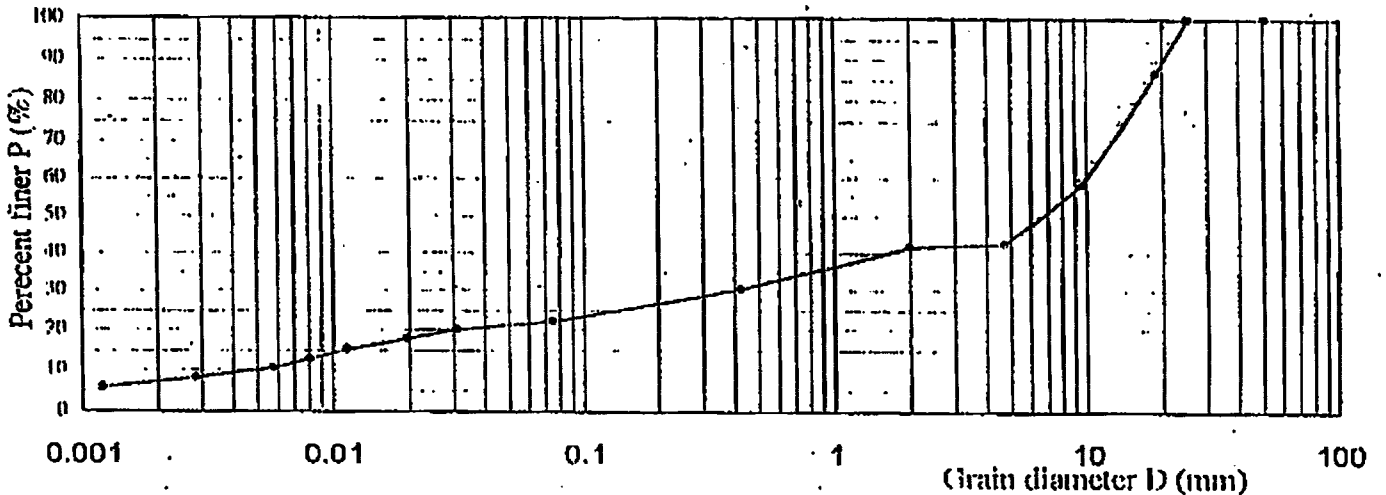
Weight of dry soil (g): 1240.0

Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khối lượng riêng (g/cm ³) 2.690
Weight soil retained (g)	0.00	0.00	164.41	361.14	190.63	10.41	140.18	5.40	
Percent retained (%)	0.0	0.0	13.3	29.1	15.4	0.8	11.3	8.1	
Percent finer (%)	100.0	100.0	86.7	57.6	42.2	41.4	30.1	22.0	

HYDROMETER ANALYSIS

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

Elapsed time (min)	Actual Hydrometer Reading	Correction			Effective depth L (cm)	Diameter D (mm)	Percent passing P (%)
		Temperature	Zero	Hyd. Reagin			
2	5.0	2.3	1.0	8.3	13.16	0.0309	19.9
5	4.0	2.3	1.0	7.3	13.31	0.0196	17.5
15	3.0	2.3	1.0	6.3	13.46	0.0114	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	0.0	2.3	1.0	3.3	13.91	0.0026	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	0.8	15.4	29.1	13.3	0.0	0.0
Percent finer (%)		6.5	10.0	21.0	22.0	30.1	41.4	42.2	57.6	86.7	100.0	100.0

Tested by
Nguyễn Thị Hồng

Recorded by
Trần Văn Toàn
VILAS 129

Nguyễn Thị Hồng

Trần Văn Toàn

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T2
Sample No : PH7
Depth (m): 17.0 + 18.0

Tets No : 602
Date : 29/6/2006

SIZE ANALYSIS

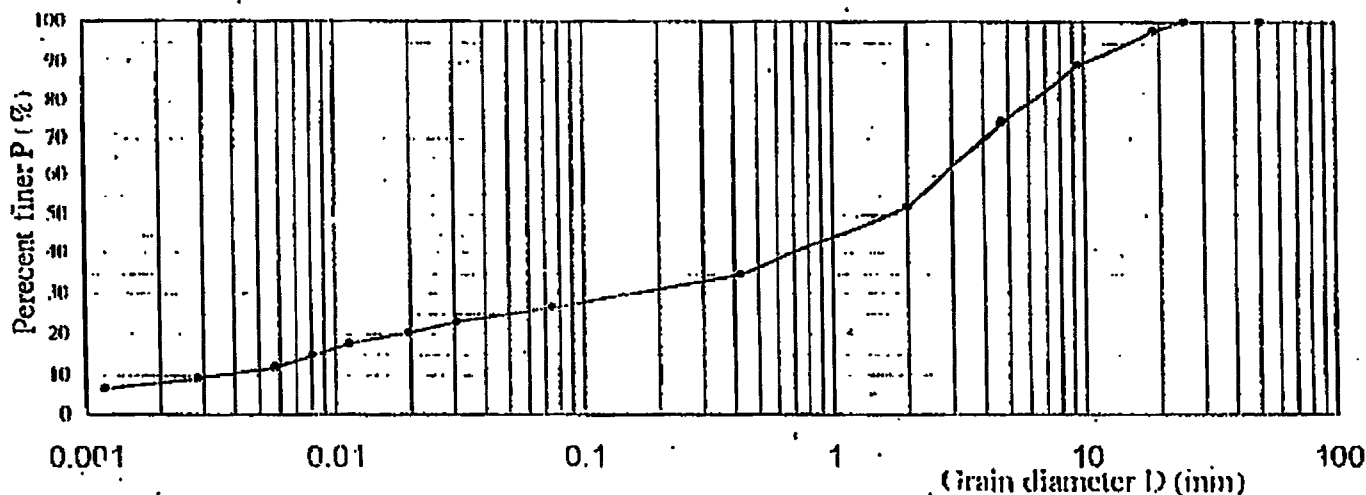
Weight of dry soil (g): 1585.0

Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khối lượng riêng (g/cm ³) 2.680
Weight soil retained (g)	0.00	0.00	35.20	139.10	241.00	350.35	271.00	4.75	
Percent retained (%)	0.0	0.0	2.2	8.8	15.2	22.1	17.1	6.2	
Percent finer (%)	100.0	100.0	97.8	89.0	73.8	51.7	34.6	26.4	

HYDROMETER ANALYSIS

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

Elapsed time (min)	Actual Hydrometer Reading	Correction			Effective depth L (cm)	Diameter D (mm)	Percent passing P (%)
		Temperature	Zero	Hyd. Reagin			
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	0.0017	6.3



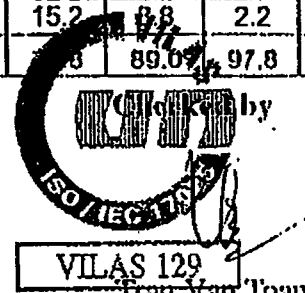
RESULT

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 (%)	8.0	3.0	14.0	1.4	8.2	17.1	22.1	15.2	8.8	2.2	0.0	0.0
Percent finer (%)		8.0	11.0	25.0	26.4	34.6	51.7	66.9	89.0	97.8	100.0	100.0

Tested by

Handwritten signature

Nguyen Thi Hong



GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T3
Sample No : PH1
Depth (m): 3.0 ± 4.0

Tets No : 603
Date : 28/6/2006

SIZE ANALYSIS

Weight of dry soil (g): 1775.0

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	160.91	55.18	89.19	360.14	794.90	259.91	54.71
Percent retained (%)	0.0	0.0	9.1	3.1	5.0	20.3	44.8	14.6	3.1
Percent finer (%)	100.0	100.0	90.9	87.8	82.8	62.5	17.7	3.1	

RESULT

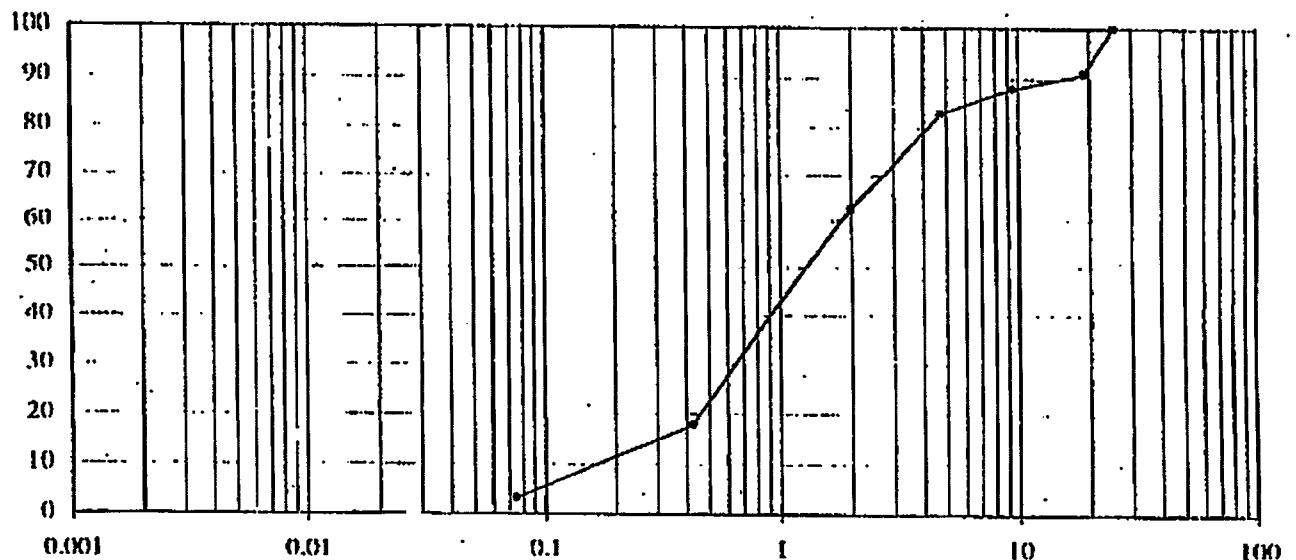
$D_{60} = 1.80$ $C_u = 10.6$
 $D_{30} = 0.63$ $C_c = 1.3$
 $D_{10} = 0.17$

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



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VILAS 129
Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T3
Sample No : PH2
Depth (m) : 6.6 + 7.4

Tets No : 604
Date : 30/6/2006

SIZE ANALYSIS

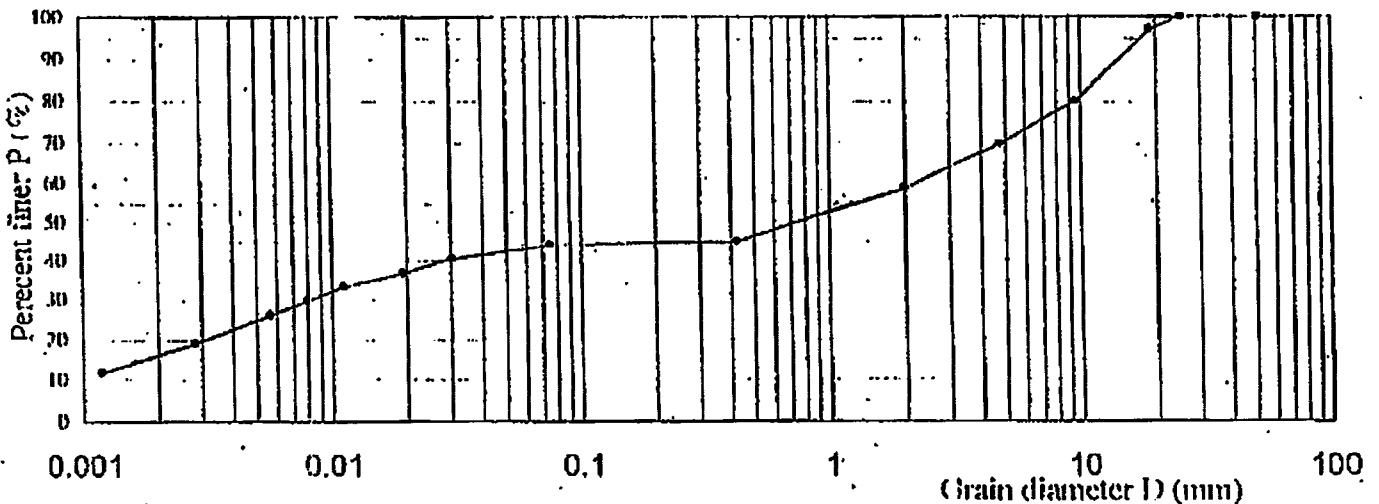
Weight of dry soil (g): 1125.0

Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khối lượng riêng (g/cm ³) 2.690
Weight soil retained (g)	0.00	0.00	35.23	190.14	114.30	128.20	155.10	0.46	
Percent retained (%)	0.0	0.0	3.1	16.9	10.2	11.2	13.8	1.0	
Percent finer (%)	100.0	100.0	96.9	80.0	69.8	58.6	44.8	43.0	

HYDROMETER ANALYSIS

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

Elapsed time (min)	Actual Hydrometer Reading	Correction			Effective depth l (cm)	Diameter D (mm)	Percent passing P (%)
		Temperature	Zero	Hyd. Reagin			
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	0.0080	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	0.0020	18.9
1440	0.0	2.3	1.0	3.3	13.91	0.0012	11.8



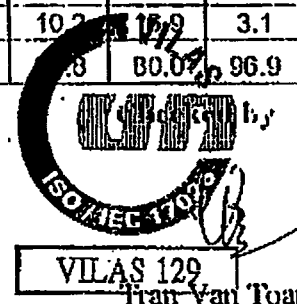
RESULT

Size (mm)	<0.002	0.002	0.005	0.009	0.075	0.425	2.00	4.75	9.5	19.0	25.4	50.8
Percent (%)	15.3	8.7	17.4	1.4	1.0	13.8	11.2	10.2	13.8	3.1	0.0	0.0
Percent finer (%)		16.3	25.0	42.4	43.8	44.8	58.6	68.8	80.0	96.9	100.0	100.0

Tested by

Signature

Nguyen Thi Hong



GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T3
Sample No : PH3
Depth (m) : 8.0 - 9.0

Test No : 605
Date : 28/6/2006

SIZE ANALYSIS

Weight of dry soil (g): 1285.0

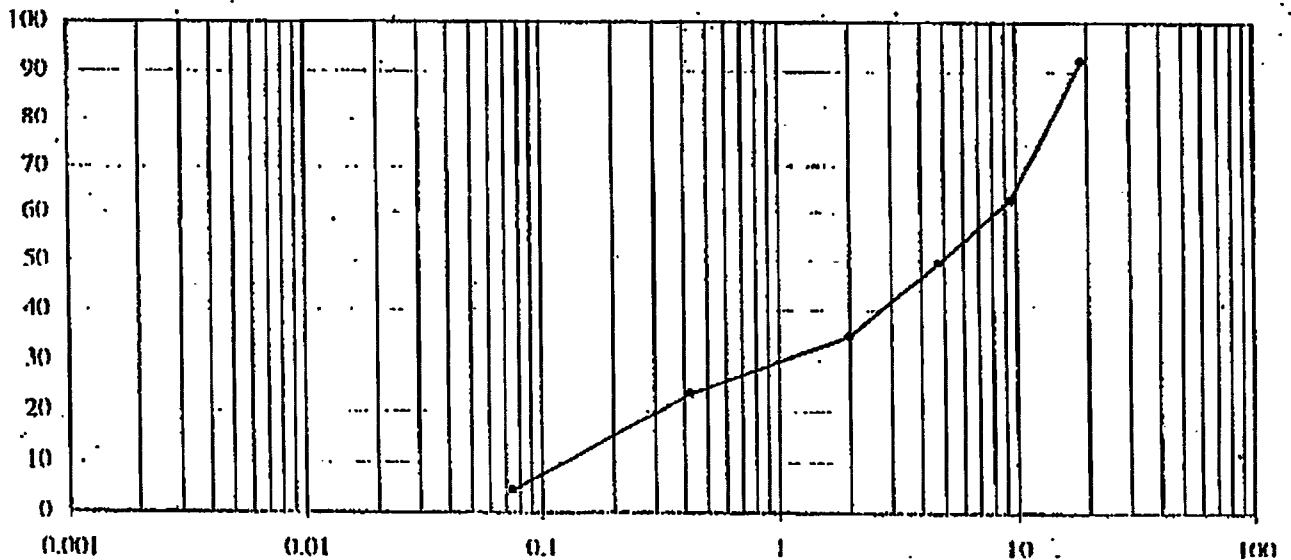
Size (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	< 0.075
Wt. Soil retained (g)	0.00	0.00	100.08	379.93	169.08	189.84	145.60	244.78	55.09
Percent retained (%)	0.0	0.0	7.8	29.6	13.2	14.8	11.3	19.0	4.3
Percent finer (%)	100.0	100.0	92.2	62.6	49.4	34.7	23.3	4.3	

RESULT

$D_{60} = 8.20$ $C_u = 68.3$
 $D_{30} = 1.05$ $C_c = 1.1$
 $D_{10} = 0.12$

Soil classification (ASTM - D 2487)
Group symbol : GW
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



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Signature

Nguyen Thi Hong



VILAS 129
Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T3
Sample No : PH4
Depth (m): 10.0 + 11.0

Test No : 606
Date : 30/6/2006

SIZE ANALYSIS

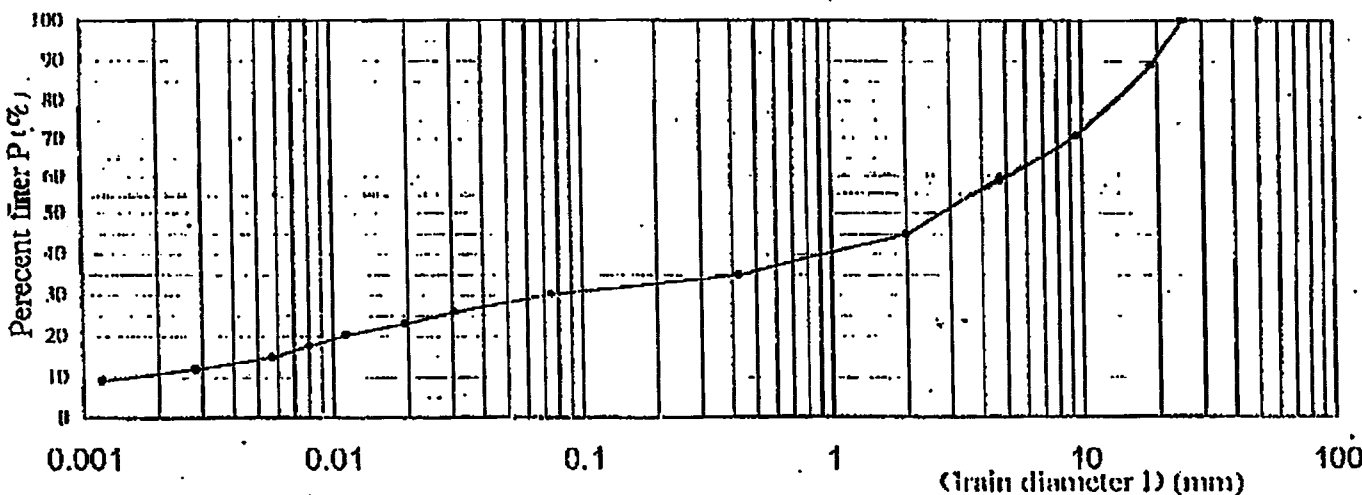
Weight of dry soil (g): 1350.0

Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khối lượng riêng (g/cm ³) 2.690
Weight soil retained (g)	0.00	0.00	151.10	249.30	160.60	185.10	135.01	2.60	
Percent retained (%)	0.0	0.0	11.2	18.5	11.9	13.7	10.0	4.5	
Percent finer (%)	100.0	100.0	88.8	70.3	58.4	44.7	34.7	30.2	

HYDROMETER ANALYSIS

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

Elapsed time (min)	Actual Hydrometer Reading	Correction			Effective depth L (cm)	Diameter D (mm)	Percent passing P (%)
		Temperature	Zero	Hyd. Reagin			
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



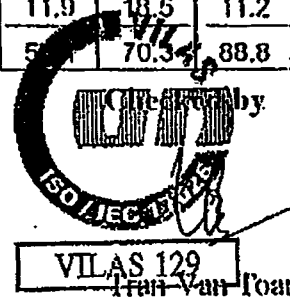
RESULT

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 (%)	10.5	3.5	14.5	1.7	4.5	10.0	13.7	11.9	18.5	11.2	0.0	0.0
Percent finer (%)		10.5	14.0	28.5	30.2	34.7	44.7	56.6	70.3	88.8	100.0	100.0

Tested by

Signature

Nguyen Thi Hong



VILAS 129
Tran Van Loan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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 : 30/6/2006

SIZE ANALYSIS

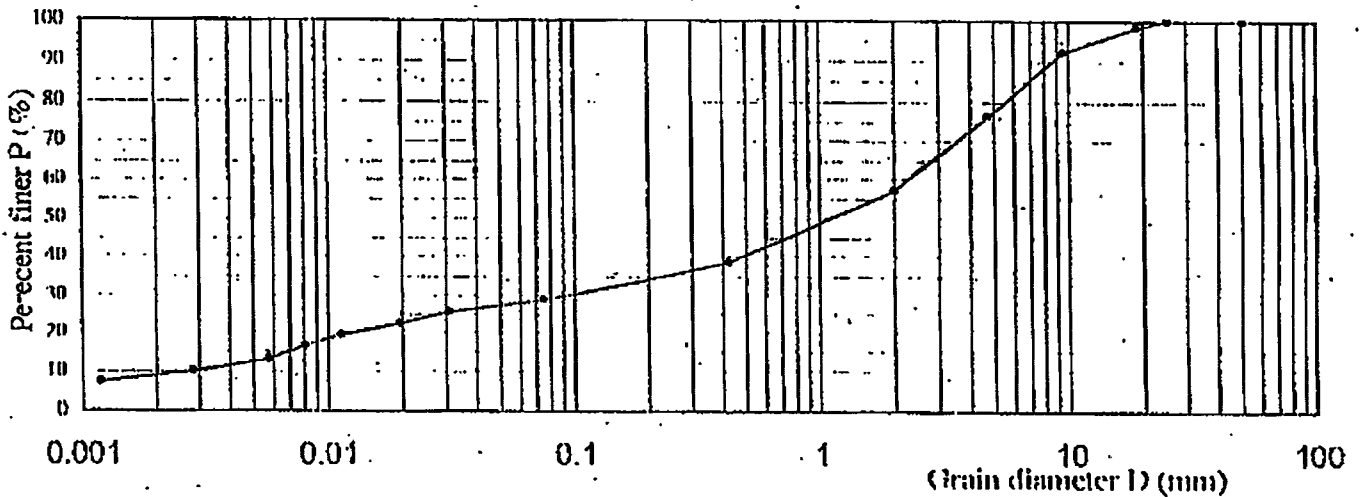
Weight of dry soil (g): 1455.0

Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khối lượng riêng (g/cm ³) 2.000
Weight soil retained (g)	0.00	0.00	25.30	89.91	230.61	280.10	270.81	5.10	
Percent retained (%)	0.0	0.0	1.7	6.2	15.8	19.3	18.6	0.8	
Percent finer (%)	100.0	100.0	98.3	92.1	76.2	57.0	38.4	28.8	

HYDROMETER ANALYSIS

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

Elapsed time (min)	Actual Hydrometer Reading	Correction			Effective depth L (cm)	Diameter D (mm)	Percent passing P (%)
		Temperature	Zero	Hyd. Reagin			
2	5.0	2.3	1.0	8.3	0.0300	25.3	
5	4.0	2.3	1.0	7.3	0.0100	22.3	
15	3.0	2.3	1.0	6.3	0.0114	19.2	
30	2.0	2.3	1.0	5.3	0.0081	16.2	
60	1.0	2.3	1.0	4.3	0.0058	13.1	
250	0.0	2.3	1.0	3.3	0.0029	10.1	
1440	-1.0	2.3	1.0	2.3	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	10.0	25.4	50.0
Percent (%)	9.0	3.5	14.9	1.2	9.8	18.6	19.3	15.0	6.2	1.7	0.0	0.0
Percent finer (%)		9.0	12.5	27.4	28.6	38.4	57.0	72.0	92.1	98.3	100.0	100.0

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Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole: T3
Sample No: PH6
Depth (m): 15.0 + 16.5

Tets No: 608
Date: 30/6/2006

SIZE ANALYSIS

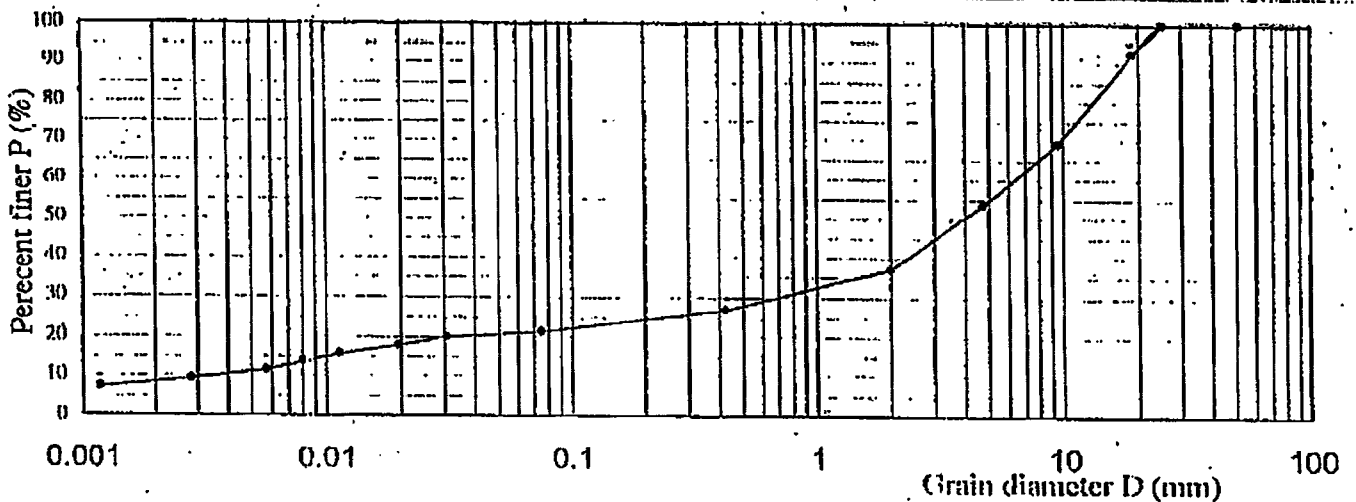
Weight of dry soil (g): 1465.0

Grain diameter (mm)	50.8	25.4	19.0	9.5	4.75	2.00	0.425	0.075	Khối lượng riêng (g/cm ³) 2.590
Weight soil retained (g)	0.00	0.00	1.1.19	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	
Percent finer (%)	100.0	100.0	92.2	69.0	53.3	37.0	26.7	21.2	

HYDROMETER ANALYSIS

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

Elapsed time (min)	Actual Hydrometer Reading	Correction			Effective depth L (cm)	Diameter D (mm)	Percent passing P (%)
		Temperature	Zero	Hyd. Reagin			
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	0.0143	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



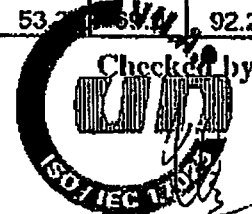
RESULT

Size (mm)	< 0.002	0.002	0.005	0.05	0.075	0.425	2.00	4.75	9.5	19.0	25.4	50.8
Percent (%)	8.5	1.5	10.0	1.2	5.5	10.2	16.4	15.7	23.2	7.8	0.0	0.0
Percent finer (%)		8.5	10.0	20.0	21.2	26.7	37.0	53.3	76.7	92.2	100.0	100.0

Tested by

Nguyễn Thị Hồng

Nguyễn Thị Hồng



VILAM 1200 Tran

ATTERBERG LIMITS

ASTM - D 4318 - 84

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

Borehole : T2

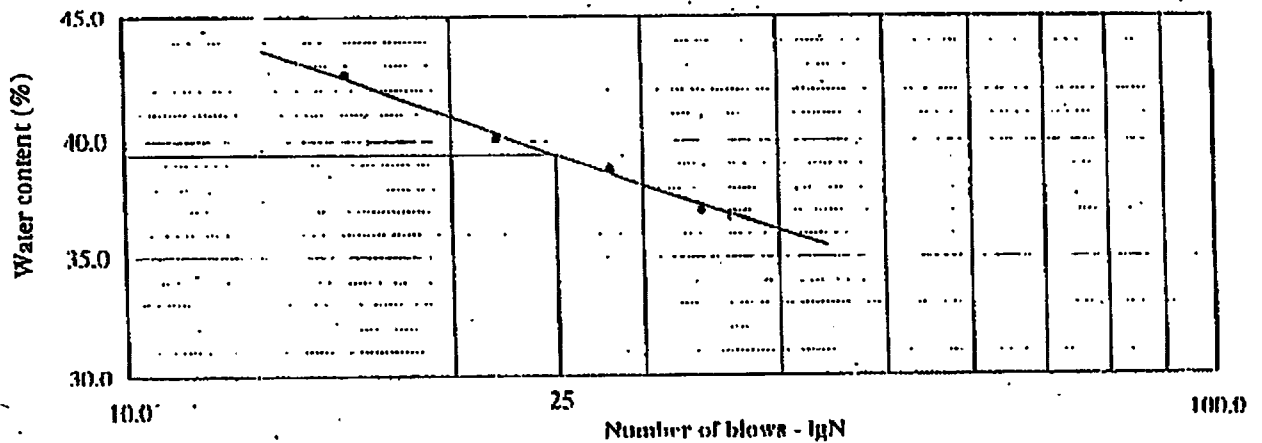
Sample No : PH2

Depth (m): 3.0 + 4.0

Tests No : 597

Date : 28/6/2006

Container number	LIQUID LIMIT (W_L)				PLATIC LIMIT (W_p)		
	HN31	HN03	HN07	HN08	HN41	HN04	
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	
Water content (%)	42.6	40.0	38.7	37.0	24.3	24.4	
Average water content (%)						24.4	
Number of blows (N)	16	22	28	34			

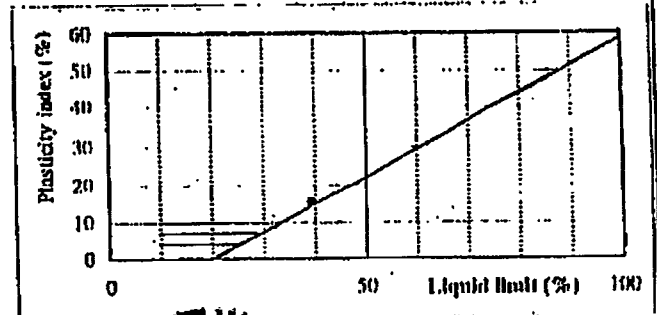


RESULT:

Liquid limit : $W_L = 39.4$ %

Platic limit : $W_p = 24.4$ %

Plasticity index : $I_p = 15.0$ %



Tested by

(Signature)

Nguyen Thi Lien



VILAS 129

Tran Van Toan

ATTERBERG LIMITS

ASTM - D 4318 - 84

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

Borehole : T2

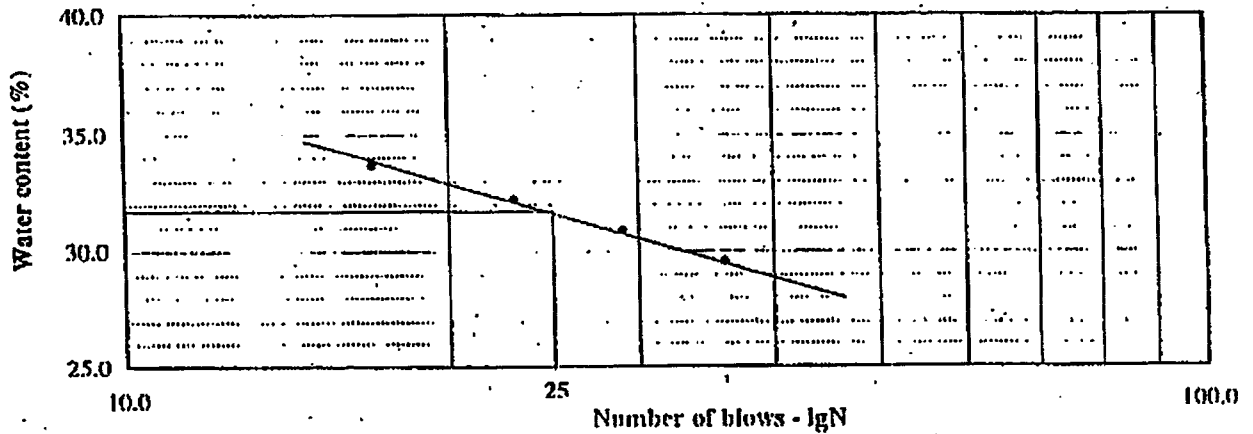
Sample No : PH5

Depth (m): 12.0 + 13.0

Tests No : 800

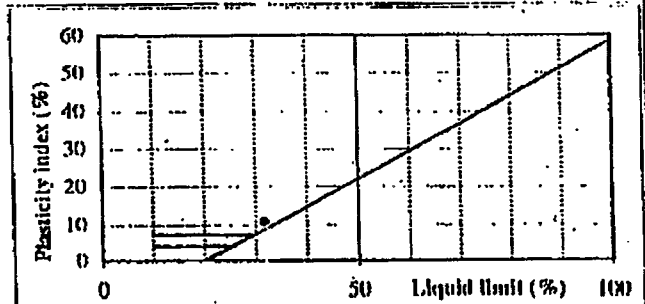
Date : 27/6/2006

Container number	LIQUID LIMIT (W_L)				PLATIC LIMIT (W_P)		
	IN19	IN03	C16	C19	HN41	HN50	
Weight of wet (g)	88.87	89.10	64.60	65.84	36.83	37.24	
Weight of dry (g)	62.75	63.31	58.29	59.26	34.26	34.62	
Weight of container (g)	64.55	65.32	37.84	36.97	22.05	22.25	
Water content (%)	33.6	32.2	30.9	29.5	21.0	21.2	
Average water content (%)						21.1	
Number of blows (N)	17	23	29	36			



RESULT:

Liquid limit : $W_L = 31.7$ %
 Plastic limit : $W_P = 21.1$ %
 Plasticity index : $I_P = 10.6$ %



Tested by

Nguyen Thi Lien

Nguyen Thi Lien



VILAS 129

Tran Van Toan

ATTERBERG LIMITS

ASTM - D 4318 - 84

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

Borehole : T2

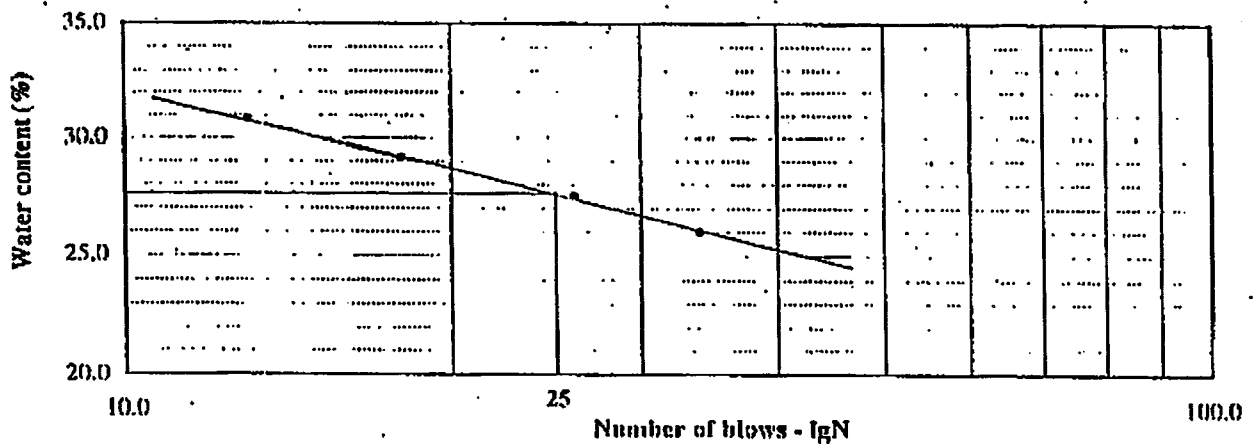
Sample No : PH8

Depth (m): 14.0 + 15.0

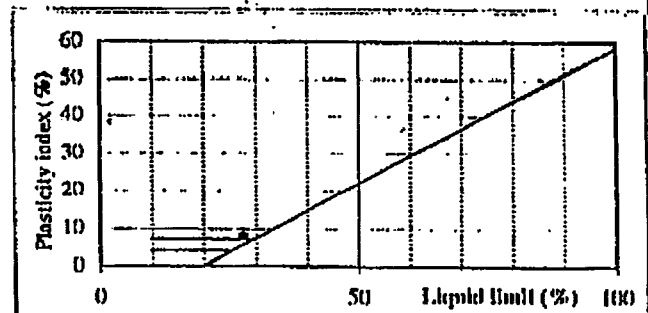
Tests No : 601

Date : 27/6/2006

Container number	LIQUID LIMIT (W_L)				PLATIC LIMIT (W_P)		
	IN29	IN31	C17	HN04	HN36	HN49	
Weight 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	
Weight of container (g)	65.03	64.85	37.55	21.84	23.64	23.38	
Water content (%)	30.8	29.1	27.5	26.0	19.9	19.5	
Average water content (%)						19.7	
Number of blows (N)	13	18	26	34			



RESULT:
 Liquid limit : $W_L = 27.6$ %
 Platic limit : $W_P = 19.7$ %
 Plasticity index : $I_p = 7.9$ %



Tested by

Nguyen Thi Lien

Nguyen Thi Lien



VILAS 129
Tran Van Toan

ATTERBERG LIMITS

ASTM - D 4318 - 84

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

TRINH BRIDGE

Borehole : T2

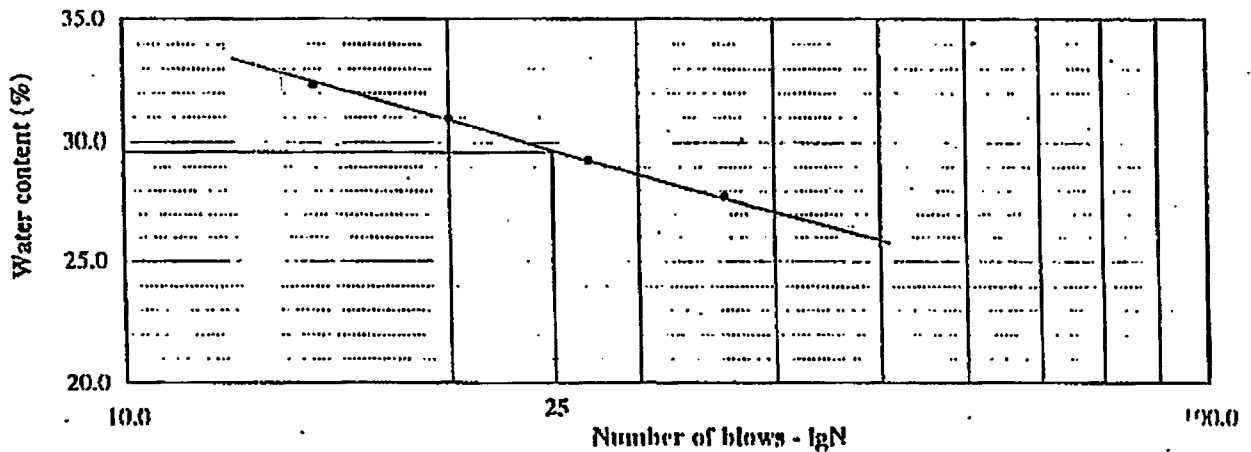
Sample No : PH7

Depth (m): 17.0 + 18.0

Tests No : 602

Date : 27/6/2006

Container number	LIQUID LIMIT (W _L)				PLASTIC LIMIT (W _P)		
	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	
Water content (%)	32.3	30.0	29.3	27.7	20.7	20.2	
Average water content (%)						20.5	
Number of blows (N)	15	20	27	36			

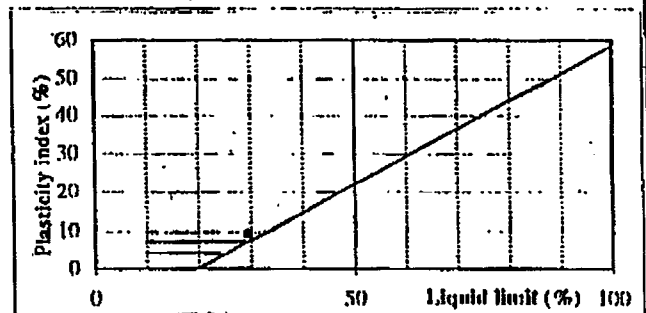


RESULT:

Liquid limit : W_L = 29.6 %

Plastic limit : W_P = 20.5 %

Plasticity index : I_P = 9.1 %



Tested by

Nguyen Thi Lien
 Nguyen Thi Lien

Checked by

 VILAS 129
 Tran Van Toan

ATTERBERG LIMITS

ASTM - D 4318 - 84

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

Borehole : T3

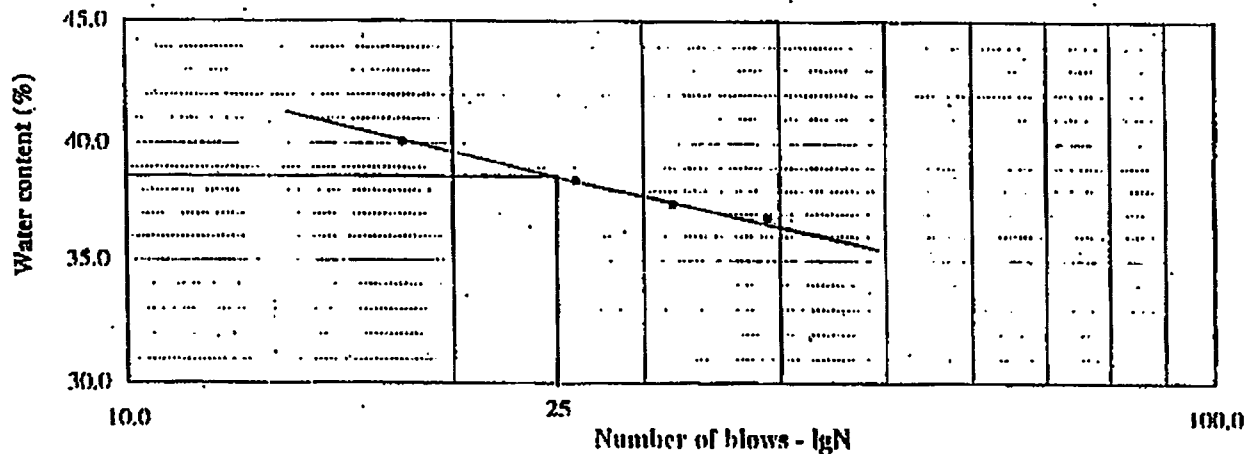
Sample No : PH2

Depth (m): 6.6 + 7.4

Tests No : 804

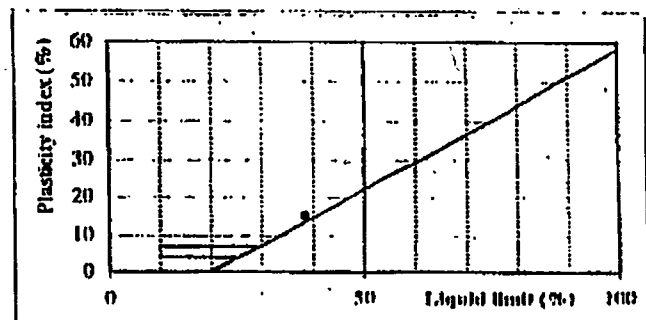
Date : 28/6/2006

Container number	LIQUID LIMIT (W_L)				PLATIC LIMIT (W_P)		
	C20	IN12	IN31	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	
Water content (%)	40.0	38.4	37.4	36.8	23.8	23.3	
Average water content (%)						23.5	
Number of blows (N)	18	26	32	39			



RESULT:

Liquid limit : $W_L = 38.6$ %
 Platic limit : $W_P = 23.5$ %
 Plasticity index : $I_P = 15.1$ %



Tested by

Thi Lien

Thai Thi Lien



VILAS 129
Phan Van Loan

ATTERBERG LIMITS

ASTM - D 4318 - 84

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

Borehole : T3

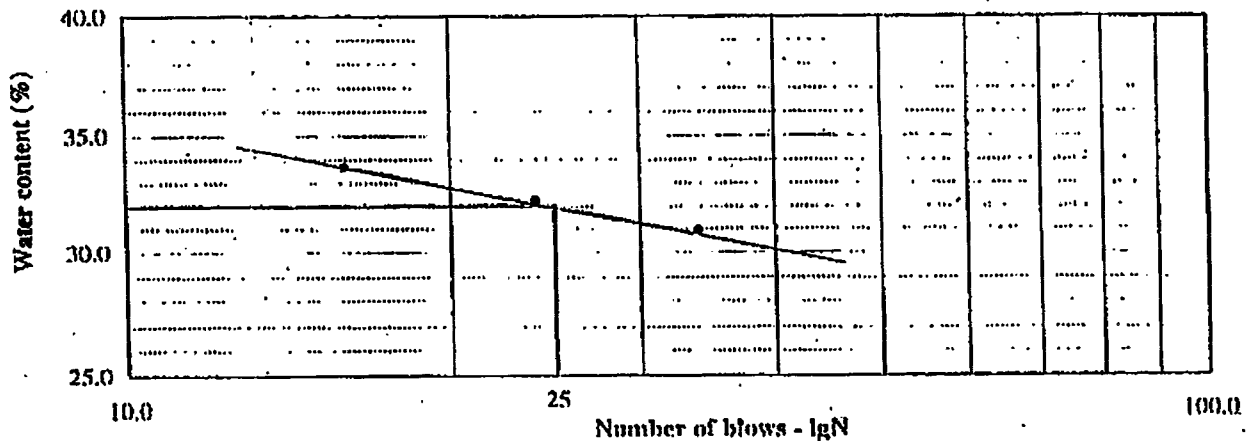
Sample No : PH4

Depth (m): 10.0 + 11.0

Test No : 606

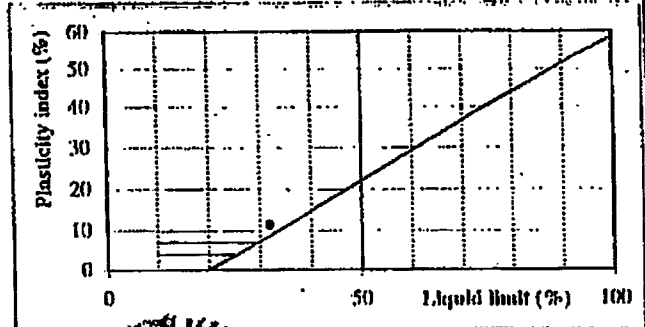
Date : 28/6/2006

Container number	LIQUID LIMIT (W_L)			PLATIC LIMIT (W_P)	
	IN07	IN29	IN10	HN26	HN19
Weight 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
Weight of container (g)	64.56	65.03	64.55	21.77	23.21
Water content (%)	33.6	32.2	30.9	20.3	21.2
Average water content (%)					20.7
Number of blows (N)	16	24	34		



RESULT:

Liquid limit : $W_L = 32.0$ %
 Platic limit : $W_P = 20.7$ %
 Plasticity index : $I_p = 11.3$ %



Tested by

Handwritten signature

Thai Thi Lien



VILAS 129

Tran Van Toan

ATTERBERG LIMITS

ASTM - D 4318 - 84

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

Borehole : T3

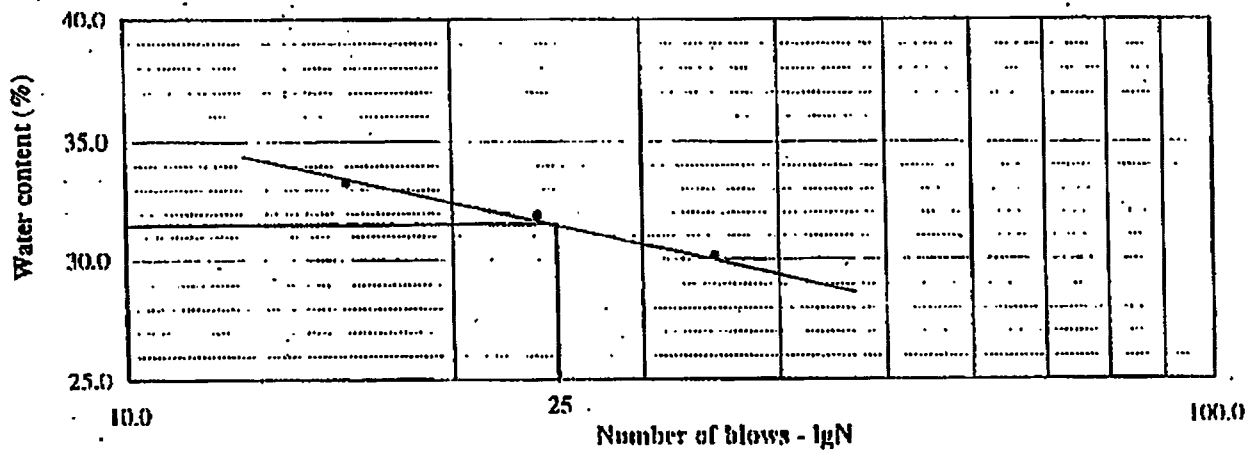
Sample No : PH5

Depth (m): 11.0 + 13.0

Tets No : 607

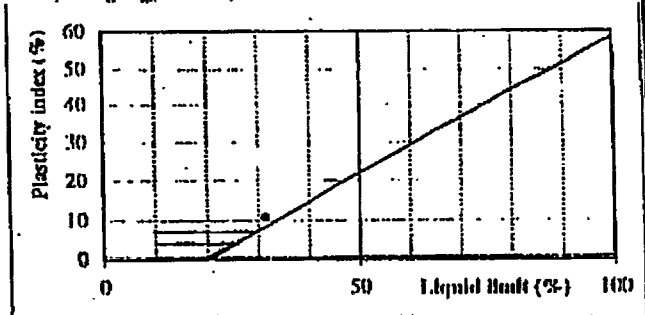
Date : 28/8/2006

Container number	LIQUID LIMIT (W_L)			PLATIC LIMIT (W_P)	
	HN20	HN40	IN23	HN37	HN49
Weight 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	22.46	23.38
Water content (%)	33.2	31.0	30.1	21.0	20.8
Average water content (%)					20.9
Number of blows (N)	16	24	35		



RESULT:

Liquid limit : $W_L = 31.5$ %
 Platic limit : $W_P = 20.9$ %
 Plasticity index : $I_p = 10.6$ %



Tested by

Thai Thi Lien

Thai Thi Lien



VILAS 129
Tran Van Toan

ATTERBERG LIMITS

ASTM - D 4318 - 84

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

TRINI BRIDGE

Borehole : T3

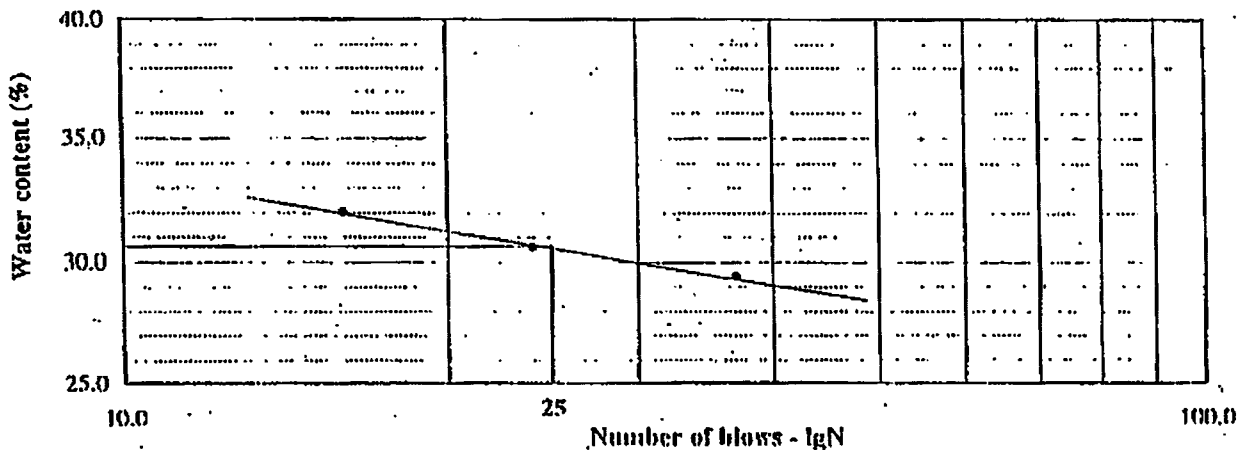
Sample No : PH6

Depth (m): 15.0 + 16.5

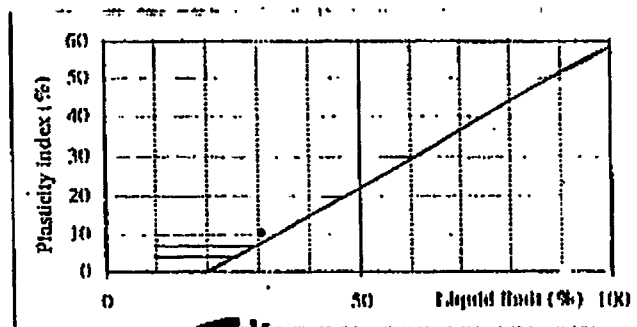
Tests No : 608

Date : 29/6/2006

Container number	LIQUID LIMIT (W _L)			PLATIC LIMIT (W _P)	
	IN10	IN01	C20	HN39	HN26
Weight of wet (g)	88.19	89.00	64.12	42.66	41.28
Weight of dry (g)	82.46	83.32	58.18	39.44	38.00
Weight of container (g)	64.55	64.73	37.98	23.41	21.77
Water content (%)	32.0	30.6	29.4	20.1	20.2
Average water content (%)	20.1				
Number of blows (N)	16	24	37		



RESULT:
 Liquid limit : $W_L = 30.6$ %
 Plastic limit : $W_P = 20.1$ %
 Plasticity index : $I_P = 10.5$ %



Tested by

Nguyen Thi Lien

Nguyen Thi Lien



VILAS 129
Tran Van Toan

BORING LOG

Bridge No.32

ENGINEERING		THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TECHNICAL DESIGN PHASE				BRIDGES OF TUYEN QUANG PROVINCE															
		LK_T2		Co-ord. X= Y= 1		Station: NA NHAM BRIDGE															
Elev.: +79.54		Elev. of underwater level: +0.00		Drilling date: 18/08/2006 - 19/06/2006		Corrector: Ngo Duc Hung															
Layer	Elev. (m)	Depth (m)	Thickness (m)	PROFILE Scale 1/100	DESCRIPTION	STANDARD PENETRATION TEST (SPT)					Sampling depth for test (m)										
						Depth (m)	Blow No./15cm			N60/cm		Chart									
							N1	N2	N3			0	10	20	30	40	50	N			
1	76.84	2.7	2.7		Yellowish brown grit sand, cobble mixes with vegetal humus.	1.5-1.95	5	10	17	27											
						2.5-2.95	12	15	17	32											
2	72.74	6.8	4.1		Grit sand is closed structure resulting from weathered rholite.	3.5-3.95	5	12	16	30											
						4.5-4.95	15	20	25	45											
						5.5-5.95	17	22	24	46											
						6.3-6.75	19	27	29	58											
3	67.34	12.20	5.4		Weathered rholite is broken in tiny, brownish grey, blackish grey, very closed structure.	7.0-7.01	32/1cm														

BORING LOG

ENGINEERING		THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES TECHNICAL DESIGN PHASE				BRIDGES OF TUYEN QUANG PROVINCE											
Bore hole		LK_T3	Co-ox. X#	Y#	Station:												
Elev.: +84.04		Elev. of underwater level: +0.00		Drilling date:		19/08/2006 - 20/08/2006											
Corrector:		Ho Nhat Dang		Checker:		Ngo Duc Hung											
Layer	Elev. (m)	Depth (m)	Thickness (m)	PROFILE Scale 1/100	DESCRIPTION	STANDARD PENETRATION TEST (SPT)						Sampling depth for test (m)					
						Depth (m)	Blow No./15cm			N _{60cm}	Chart						
							N1	N2	N3			0	10	20	30	40	50
1	78.54	4.5	4.5		Yellowish brown grit sand, cobbles mixes with vegetant humus.	1.0-1.45	5	10	15	25		PH1 2.0-3.0					
						2.0-2.45	9	11	17	28							
						3.0-3.45	10	13	18	31							
4.2-4.65	15	20	25	45													
5.0-5.15	30/15cm																
6.2-6.65	19	28	29	57													
2	78.44	7.0	3.1		Grit sand is closed structure resulting from weathered rholite.	7.2-7.85	22	28	30	58	PH2 5.5-7.0						
						9.0-9.01	50/1cm										
3	71.44	12.50	5.0		Weathered rholite is broken in tiny, brownish grey, blackish grey, very closed structure.					PH3 8.0-9.0							

No: 230806.01.3/CLB

SUMMARY OF TEST RESULTS

THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGES IN NORTHERN MOUNTAINOUS PROVINCES

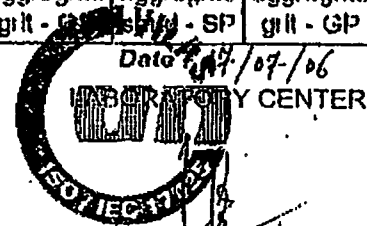
NA NHAM BRIDGE

Borehole :		LK - T2			LK - T3			
Sample No :		PH1	PH2	PH3	PH1	PH2	PH3	PH4
Depth (m):	m	3.0 + 5.0	7.0 + 8.0	10.0 + 11.0	2.0 + 3.0	5.5 + 7.0	8.0 + 9.0	10.0 + 11.0
Test No.		B09	B10	B11	B12	B13	B14	B15
Grain size analysis P %								
Percent finer (%)	50.8 (mm)							
	25.4 (mm)							
	19.0 (mm)	91.6	10.1	20.0	59.4	97.7	2.7	7.7
	9.5 (mm)	78.2	3.4	3.9	50.3	87.2	1.5	5.9
	4.75 (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 (mm)	10.6		0.1	4.2	10.0	0.4	1.8
	0.075 (mm)	0.3				0.1		
	0.050 (mm)							
	0.005 (mm)							
0.002 (mm)								
Natural water content	W %							
Natural unit weight	γ_w g/cm ³							
Dry unit weight	γ_k g/cm ³							
Specific gravity	ρ g/cm ³							
Coefficient of uniformity	C_u	10.3	2.2	3.1	23.8	7.5	2.0	2.1
Coefficient of gradation	C_c	0.8	0.9	1.1	0.8	0.9	0.8	0.8
In Dry condision	α_k							
In Saturation condision	α_w							
Void Ratio	e_0							
Porosity	n %							
Degree of Saturation	S %							
Liquid Limits	WL %							
Plastic Limits	Wp %							
Plasticity Index	Ip %							
Internal friction angle	ϕ^n							
Cohesion	C KG/cm ²							
Compressibility Index	$a_{1,2}$ cm ² /KG							
Soil classification ASTM - D 2487		Bad aggregate sand - SP	Bad aggregate grit - GP	Bad aggregate grit - GP	Bad aggregate grit - GP	Bad aggregate grit - GP	Bad aggregate grit - GP	Bad aggregate grit - GP

COLLECTED BY

TKH

Eng. Nguyen Thi Khanh Ha



Date: 24/07/06

VILAS 129

Eng. Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T3
 Sample No : PH4
 Depth (m) : 10.0 - 11.0

Tets No : 615
 Date : 30/6/2006

SIZE ANALYSIS

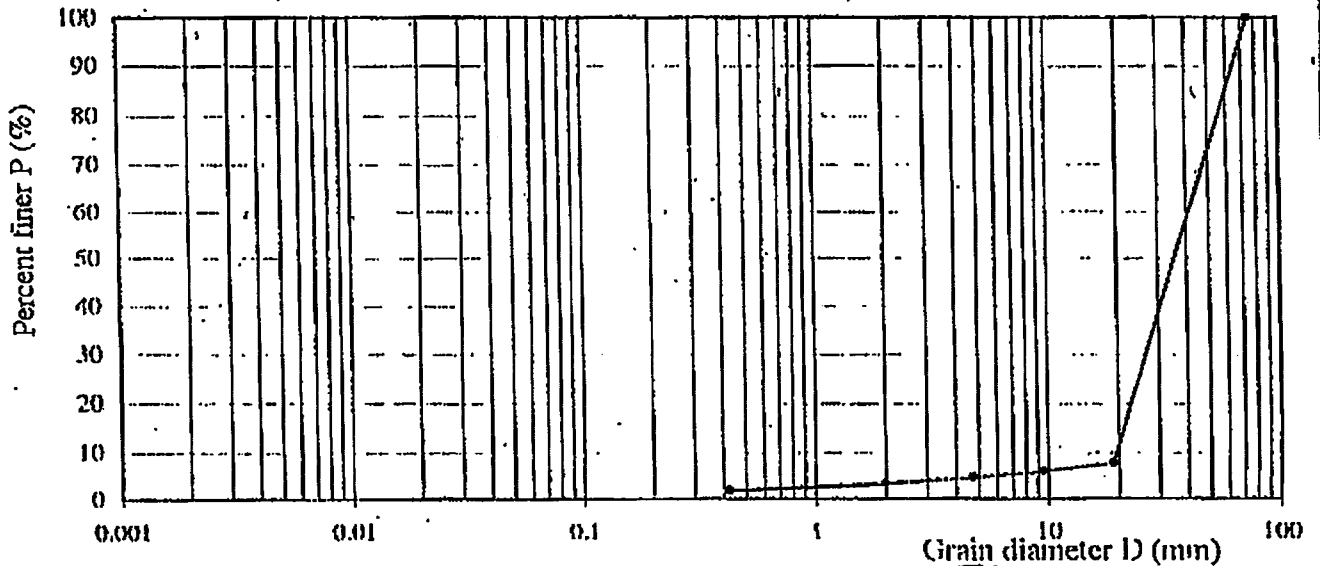
Weight of dry soil (g): 1191.8

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	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
Percent finer (%)	100.0	100.0	7.7	5.9	4.6	3.2	1.8	0.0	

RESULT

$D_{60} = 41.0$ $C_u = 2.1$ Soil classification (ASTM - D 2487) :
 $D_{30} = 26.0$ $C_c = 0.8$ Group symbol : GP
 $D_{10} = 20.0$ Group name : Bad aggregate grit

Size (mm)	50.8	25.4	19.0	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

Handwritten signature

Nguyen Thi Hong

Checked by



VILAS 129 Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T3
Sample No : PH3
Depth (m) : 8.0 + 9.0

Tels No : 614
Date : 30/6/2006

SIZE ANALYSIS

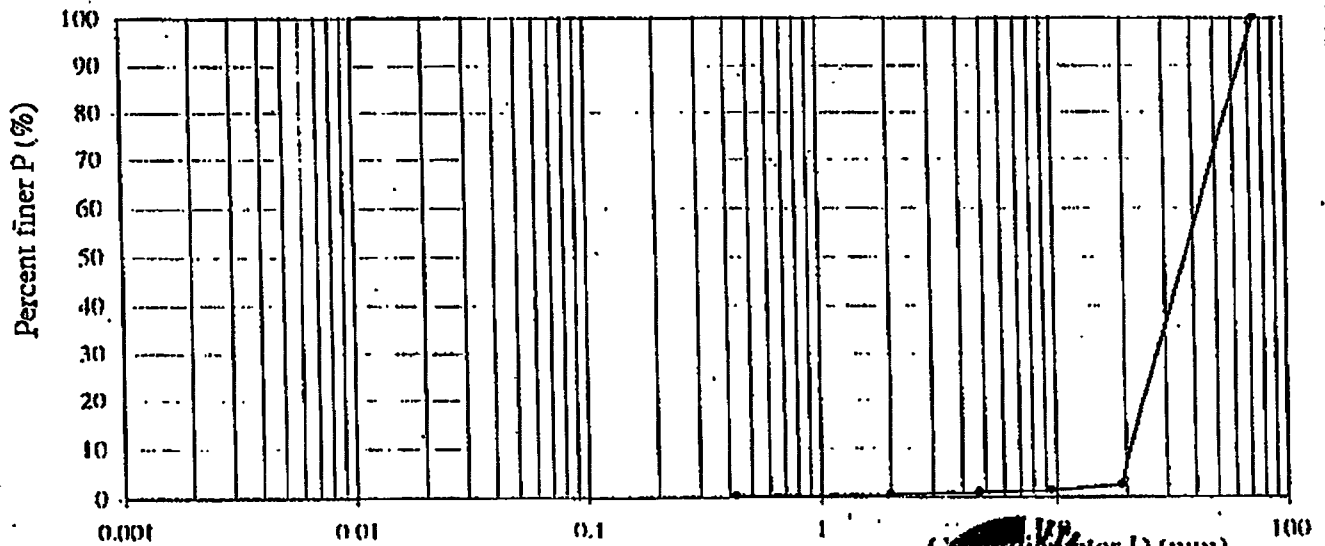
Weight of dry soil (g): 936.4

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	4.76	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
Percent finer (%)	100.0	100.0	2.7	1.5	1.2	0.6	0.4	0.0	

RESULT

$D_{60} = 42.0$ $C_u = 2.0$ Soil classification (ASTM - D 2487)
 $D_{30} = 27.0$ $C_c = 0.8$ Group symbol : GP
 $D_{10} = 20.5$ Group name : Bad aggregate grlt

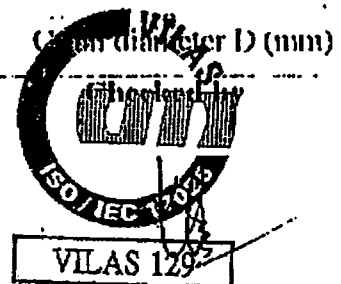
Size (mm)	50.8	25.4	19	9.5	4.75	2.00	0.425	0.075	< 0.075
Percent retained (%)	0.0	0.0	97.3	1.1	0.4	0.5	0.3	0.4	0.0



Tested by

Handwritten signature

Nguyen Thi Hong



Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T3
Sample No : PH2
Depth (m) : 5.5 - 7.0

Tests No : 613
Date : 30/6/2006

SIZE ANALYSIS

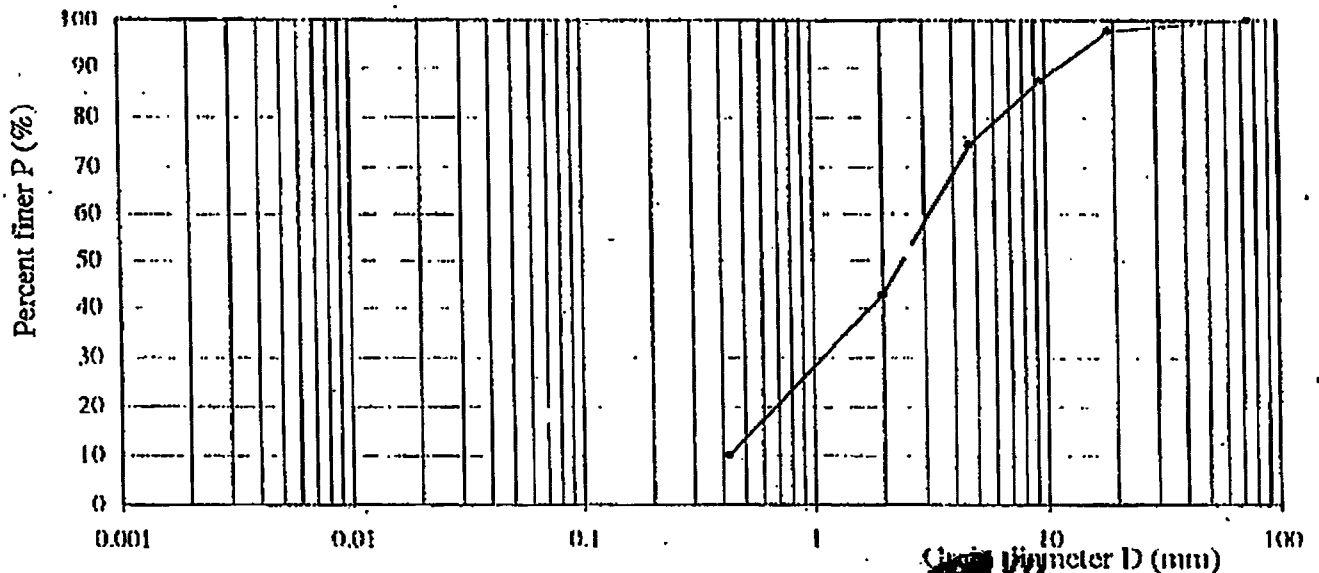
Weight of dry soil (g): 1710.0

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	40.28	180.31	215.01	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
Percent finer (%)	100.0	100.0	97.7	87.2	74.6	42.6	10.0	0.1	

RESULT

$D_{60} = 3.2$ $C_u = 7.5$ Soil classification (ASTM - D 2487)
 $D_{30} = 1.1$ $C_c = 0.9$ Group symbol : SP
 $D_{10} = 0.425$ Group name : Bad aggregate sand

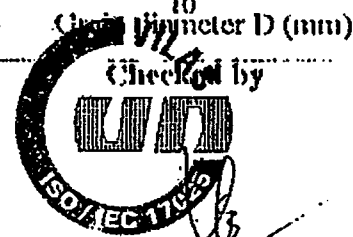
Size (mm)	50.8	25.4	19	9.5	4.75	2.00	0.425	0.075	< 0.075
Percent retained (%)	0.0	0.0	2.3	10.5	12.6	32.0	32.6	9.8	0.1



Tested by

Nguyen Thi Hong

Nguyen Thi Hong



VILAS 129
Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T3
Sample No : PH1
Depth (m) : 2.0 ± 3.0

Tele No : 612
Date : 10/6/2016

SIZE ANALYSIS

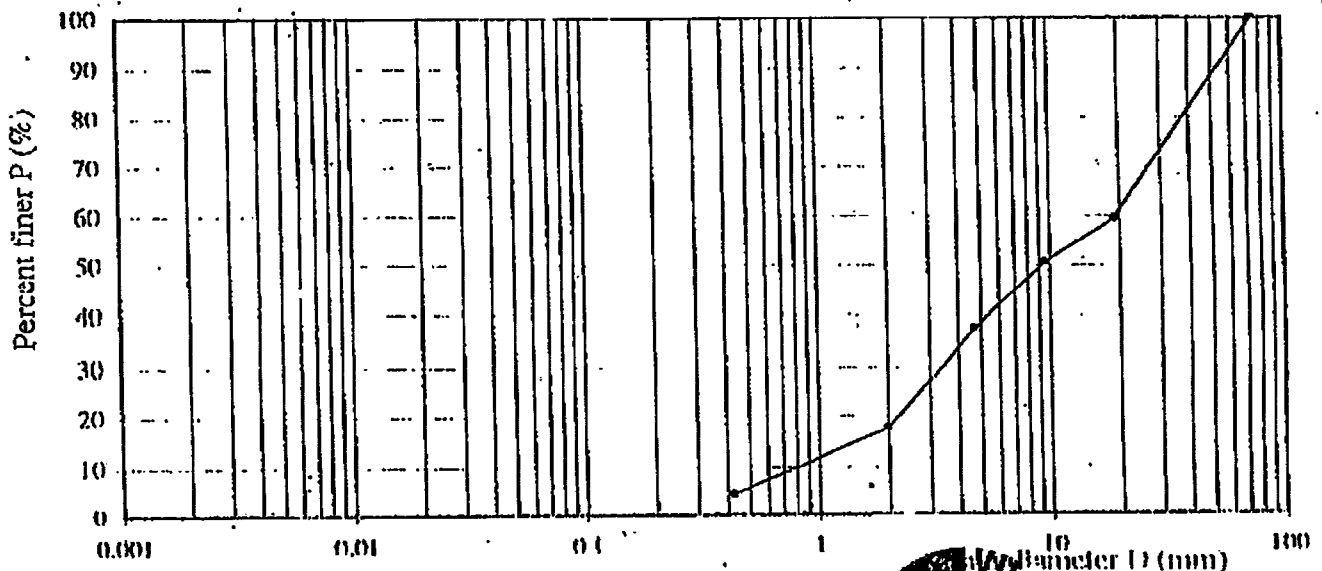
Weight of dry soil (g): 1662.6

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	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
Percent finer (%)	100.0	100.0	59.4	50.3	37.4	17.5	4.2	0.0	

RESULT

$D_{60} = 19.0$ $C_u = 23.8$ Soil classification (ASTM - D 2487)
 $D_{30} = 3.4$ $C_c = 0.8$ Group symbol : GP
 $D_{10} = 0.8$ 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	40.6	9.0	13.0	19.9	13.2	4.2	0.0



Tested by

Signature

Nguyen Thi Hong



VILAS 129

Tran Van Toan

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T2
Sample No : PH3
Depth (m): 10.0 + 11.0

Tests No : 611
Date : 30/6/2006

SIZE ANALYSIS

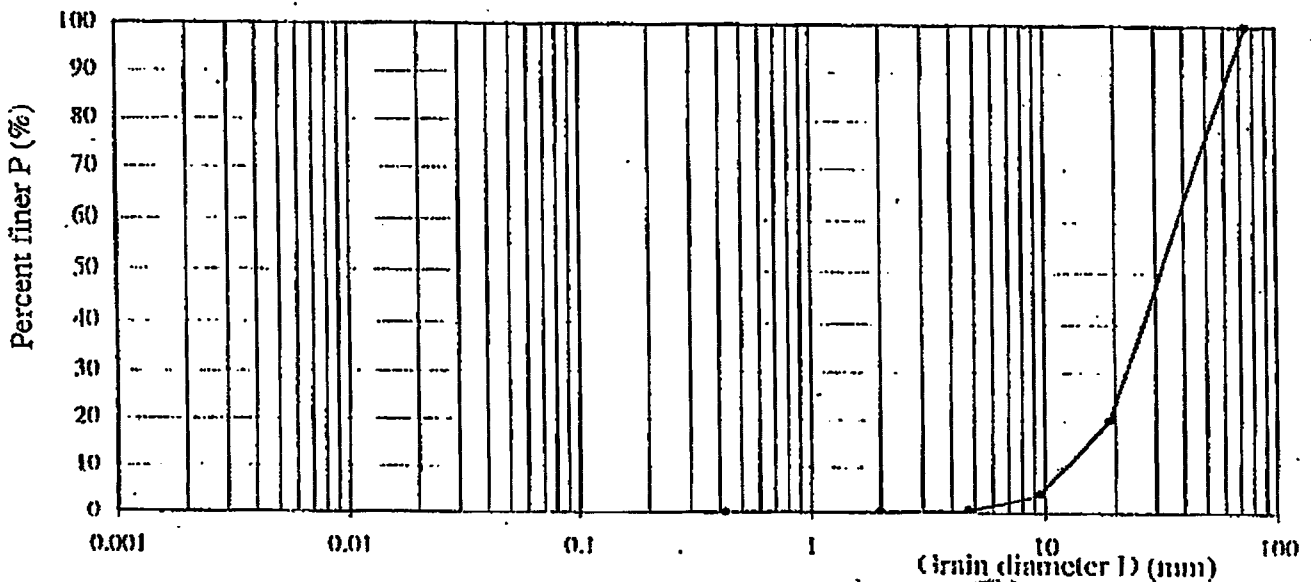
Weight of dry soil (g): 1257.2

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 retained (%)	0.0	0.0	80.0	16.1	3.3	0.2	0.3	0.1	0.0
Percent finer (%)	100.0	100.0	20.0	3.9	0.6	0.4	0.1	0.0	

RESULT

$D_{90} = 37.0$ $C_u = 3.1$ Soil classification (ASTM - D 2487)
 $D_{30} = 22.0$ $C_c = 1.1$ Group symbol : GP
 $D_{10} = 12.0$ 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

Signature of Nguyen Thi Hong

Nguyen Thi Hong



VILAS 129
Trần Văn Hoàn

GRAIN SIZE ANALYSIS

ASTM - D 422 - 63

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

Borehole : T2
Sample No : PH2
Depth (m) : 7.0 : 8.0

Tests No : 610
Date : 30/6/2006

SIZE ANALYSIS

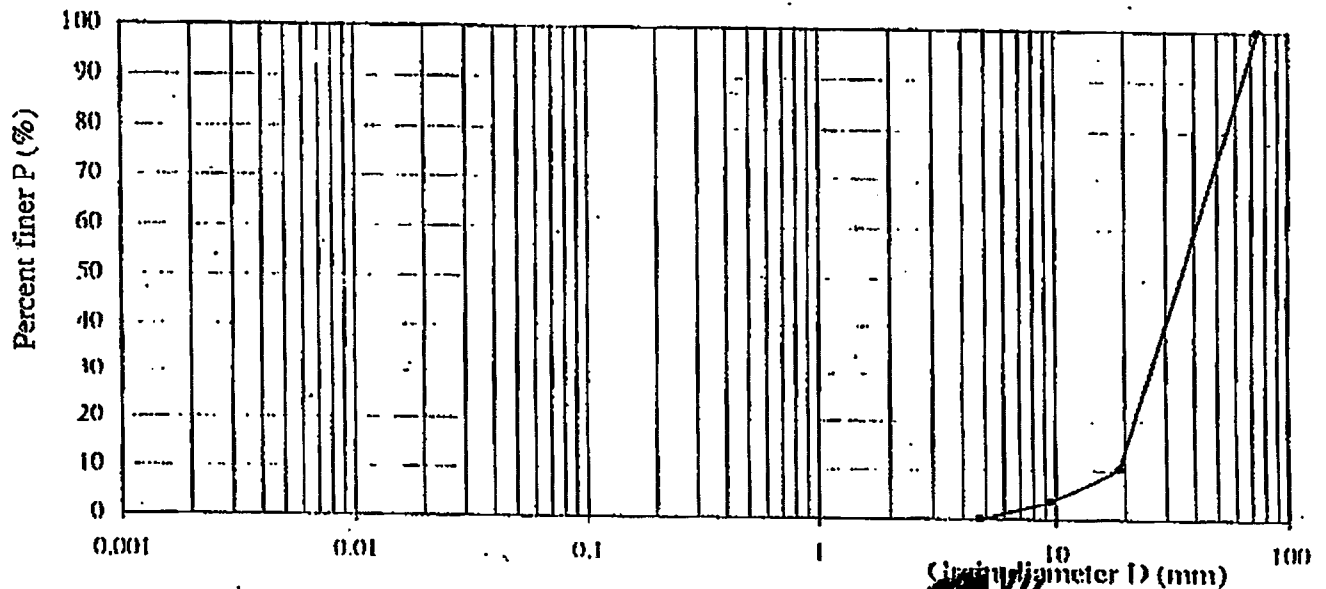
Weight of dry soil (g): 1125.0

Size (mm)	60.0	25.4	10.0	0.5	4.75	2.00	0.425	0.075	< 0.075
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	3.4	0.0			
Percent finer (%)	100.0	100.0	10.1	3.4	0.0				

RESULT

$D_{60} = 40.0$ $C_u = 2.2$ Soil classification (ASTM - D 2487)
 $D_{30} = 25.0$ $C_c = 0.9$ Group symbol : GP
 $D_{10} = 18.0$ Group name : Bad aggregate grt

Size (mm)	60.0	25.4	10	0.5	4.75	2.00	0.425	0.075	< 0.075
Percent retained (%)	0.0	0.0	89.9	6.7	3.4	0.0			



Tested by

Signature

Nguyen Thi Hong



VILAS 129

Tran Van Loan

**NA LAN BRIDGE
BORING LOG: P1**

Station:

Center: 0.00

GROUND ELEVATION: 189.70
WATER TABLE:

STARTING DATE: 7/6/2006
COMPLETED DATE: 9/6/2006

LAYER NUMBER	BOTTOM ELEVATION	BOTTOM DEPTH	THICKNESS	BORING LOG SCALE: 1/100		SOIL DESCRIPTION	SPT TEST				SAMPLE NO DEPTH								
							DEPTH	BLOWS /15cm	N/30	SPT CHART									
										0		25	50	75					
1	188.90	0.80	0.80			White sand with gravel													
TK	188.20	1.50	0.70			Free stone, grit stone with gravel and sand													
1	186.60	3.10	1.60			White sand with gravel													
2	183.60	6.10	3.00			Grey grit stone													

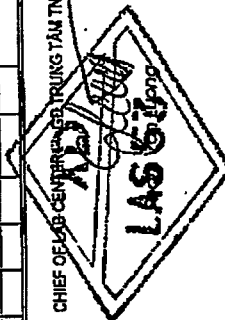
ĐI AN XAY DUNG CẦU GIAO THÔNG RỪNG THÔN CÁC TỈNH MIỀN NÚI PHÍA BẮC
THE PROJECT FOR IMPROVEMENT OF RURAL BRIDGE IN NORTHERN MOUNTAINOUS PROVINCES
TỔNG HỢP CHỈ TIÊU CƠ LÝ LỚP ĐẤT (RESULTS OF PHYSICAL AND MECHANICAL PROPERTIES OF LAYER)

CẦU NÀ LAN - NA LAN BRIDGE

Layer 1: Blackish grey stiff clayey sand (SC)

No	Số mẫu thí nghiệm	Số Hố khoan	Số Mẫu	Sample number	Độ sâu (m)	Sample depth	% hạt sàng - Percent finer				Moisture content	W _o	Y _e	Y _d	G	e	P	S	LL	PL	PI	LI	Cu	Cc	Coefficient of gradation		U _s	U _u	C _u	Consolidation test				GU test			CLASSIFICATION	SOIL DESCRIPTION															
							D ₁₅	D ₃₀	D ₄₅	D ₆₀															P _h	C _h				P _u	C _u	U _s	U _u	C _u	C _c	e _{max}			e _{min}	U _{min}	U _{max}	C _u	C _c	C _u	C _c	U _{min}	U _{max}	C _u	C _c	U _{min}	U _{max}	C _u	C _c
1	4274	A1	M7	1.8-2.0	100.0	95.0	91.0	88.0	80.0	32.2	8.3	7.8	22.44	1.71	1.39	2.72	0.971	49.06	85.00	27.03	29.13	0.64	0.62																			A-1 (0)	Blackish grey stiff Clayey sand										
2	4275	A2	M5	0.3-0.5	100.0	97.5	95.0	88.5	73.0	27.0	7.9	7.2	21.73		2.72				24.00	17.45	7.65	0.59																				A-2-4 (0)	Blackish grey stiff Clayey sand										
		Average value						94.5	81.3	76.5	31.1	8.5	7.5	22.59	1.71	1.39	2.72	0.957	49.04	64.44	26.22	18.17	0.62																				A-2-4 (0)	Blackish grey stiff Clayey sand									

CHIEF OF LAB CENTER NG TRUNG TAN TN



CHECKED BY - NGƯỜI KIỂM TRA

[Signature]

Trần Quang Hà

PREPARED BY - NGƯỜI TỔNG HỢP

[Signature]

Le Hiep Van

8/11-4-8

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)

Vị trí - Location : Na Lan bridge
SH lỗ khoan - Boring No A1A
Độ sâu - Depth (m) 1.8-2.0

Số hiệu mẫu - Sample number : M87
Số hiệu TN - Test number : 4274
Ngày thí nghiệm - Testing date : 10/2006

PHÂN TÍCH BẰNG SÀNG - SIEVE ANALYSIS

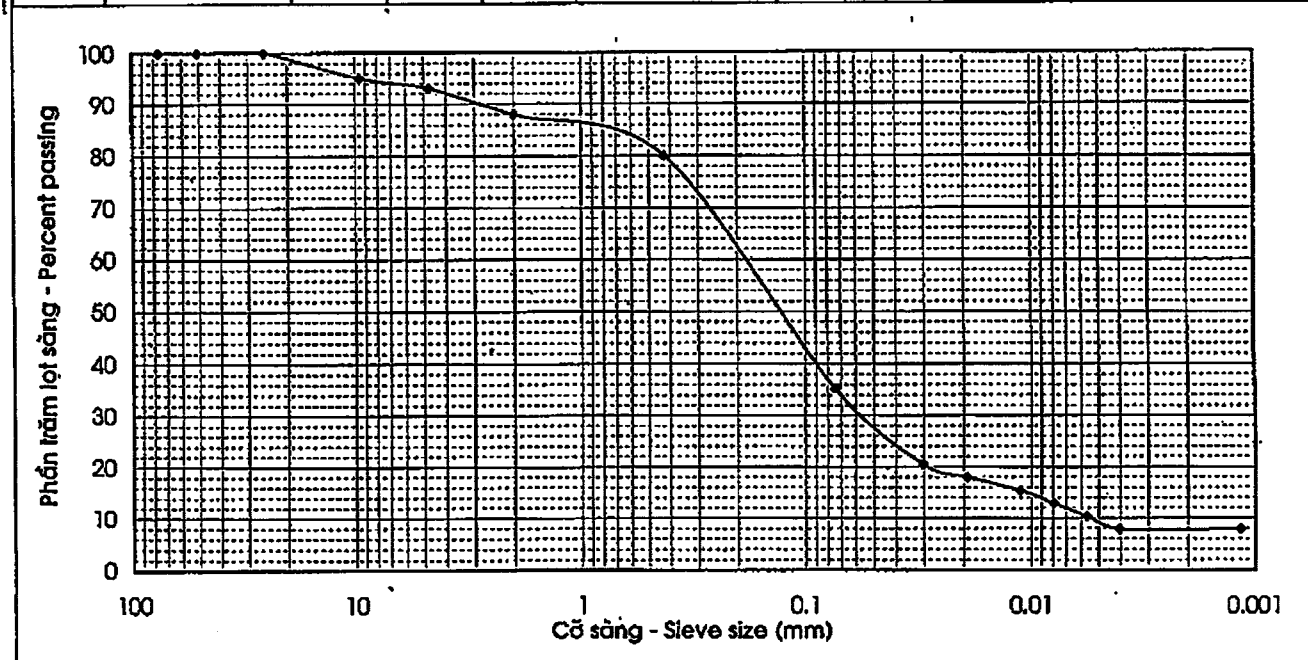
KL đất khô - Weight of Dry Soil (g) 100

Sàng số Sieve No	ĐK sàng Sieve size	KL sàng Wt soil retained	% T sàng % retained	% TLũy Cumulative %	% L sàng % Finer
3"	76.2				
2"	50.8				
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
40	0.425	8.000	8.00	20.00	80.0
200	0.074	28.000	44.80	64.80	35.2

PHÂN TÍCH BẰNG TỶ TRỌNG 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 một cong - Meniscus Correction R_w -1

K ₁	a	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	L (cm)	D (mm)	P (%)
32.12	0.9825						12.66	0.0303	20.45
Ngày Date	TG -Elapsed time in min	T ^o C	T ^o C corrected	R	R - R _w + R _{cr.}				
	2	29	2.1	5.0	8.1		12.82	0.0193	17.93
	5			4.0	7.1		12.98	0.0112	15.40
	15			3.0	6.1		13.14	0.0080	12.88
	30			2.0	5.1		13.30	0.0057	10.35
	60			1.0	4.1		13.46	0.0040	7.83
	120			0.0	3.1		13.46	0.0012	7.83
	1440			0.0	3.1				



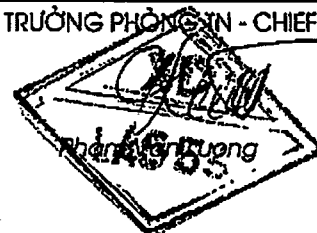
TEST RESULT

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

Người TN - Tested by : Nguyen Hong Lien

TRƯỞNG PHÒNG TN - CHIEF OF LAB

Người KT - Checked by : Lê Hiep Van



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)

Vị trí - Location : Na Lan bridge
SH lỗ khoan - Boring No A2A
Độ sâu - Depth (m) 0.3-0.5

Số hiệu mẫu - Sample number : M5
Số hiệu TN - Test number : 4275
Ngày thí nghiệm - Testing date : 10/2006

PHÂN TÍCH BẰNG SÀNG - SIEVE ANALYSIS

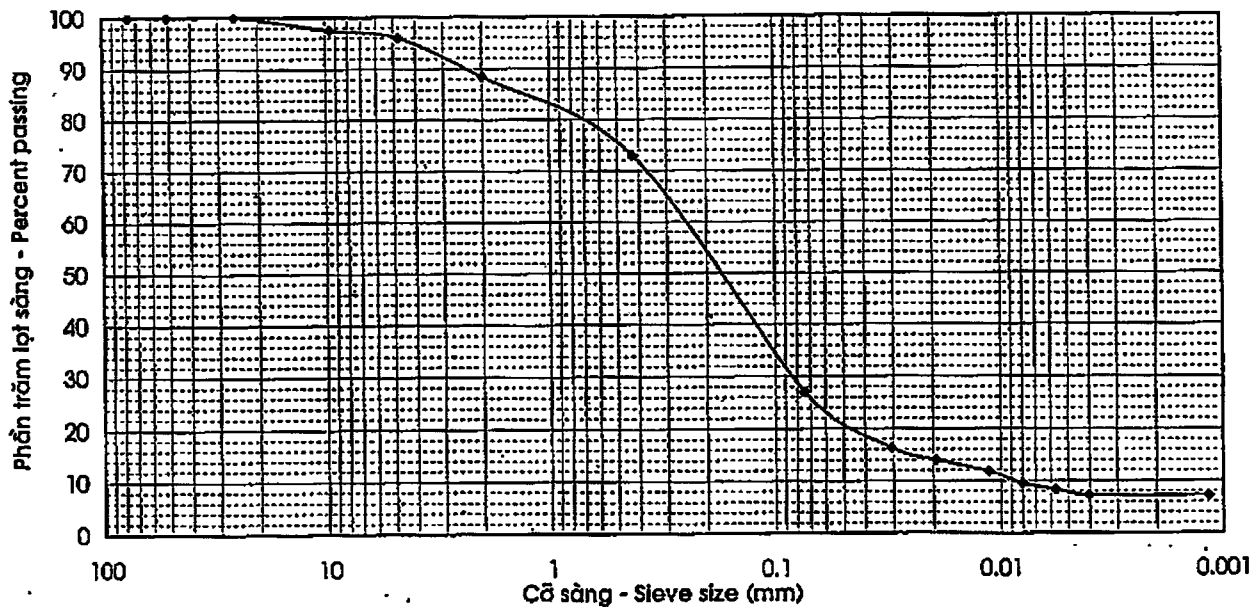
KL đất khô - Weight of Dry Soil (g) 100

PHÂN TÍCH BẰNG TỶ 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 một cong - Meniscus Correction R_w -1

Sàng số Sieve No	ĐK sàng Sieve size	KL sàng Wt soil retained	% T sàng % retained	% TLũy Cumulative %	% L sàng % Finer
3"	76.2				
2"	50.8				
1"	25.4				100.00
0.375"	9.52	2.50	2.50	2.50	97.50
4	4.76	1.50	1.50	4.00	96.00
10	2.00	7.50	7.50	11.50	88.5
40	0.425	15.500	15.50	27.00	73.0
200	0.074	31.500	45.99	72.99	27.0

K ₁	α	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Ngày Date	TG - Elapsed time In min	T ^o C	T ^o C corrected	R	R - R _w + R _{cr}	L (cm)	D (mm)	P (%)
32.12	0.9846														
								2	29	2.1	4.0	7.1	12.82	0.0306	16.39
								5			3.0	6.1	12.98	0.0194	14.08
								15			2.0	5.1	13.14	0.0113	11.77
								30			1.0	4.1	13.30	0.0080	9.47
								60			0.5	3.6	13.38	0.0057	8.31
								120			0.0	3.1	13.46	0.0040	7.16
								1440			0.0	3.1	13.46	0.0012	7.16



TEST RESULT

Cỡ sàng - Sieve size	76.2	50.8	25.4	9.52	4.76	2.00	0.425	0.074	0.005	0.002
% lọt sàng - Percent finer			100	97.5	96	88.5	73.0	27.0	7.9	7.2

Người TN - Tested by : Nguyen Hong Lien

TRƯỞNG PHÒNG TN - CHIEF OF LAB

Người KT - Checked by : Lê Hiep Van



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 XÁC ĐỊNH ĐỘ ẨM & CÁC GIỚI HẠN ATTERBERG

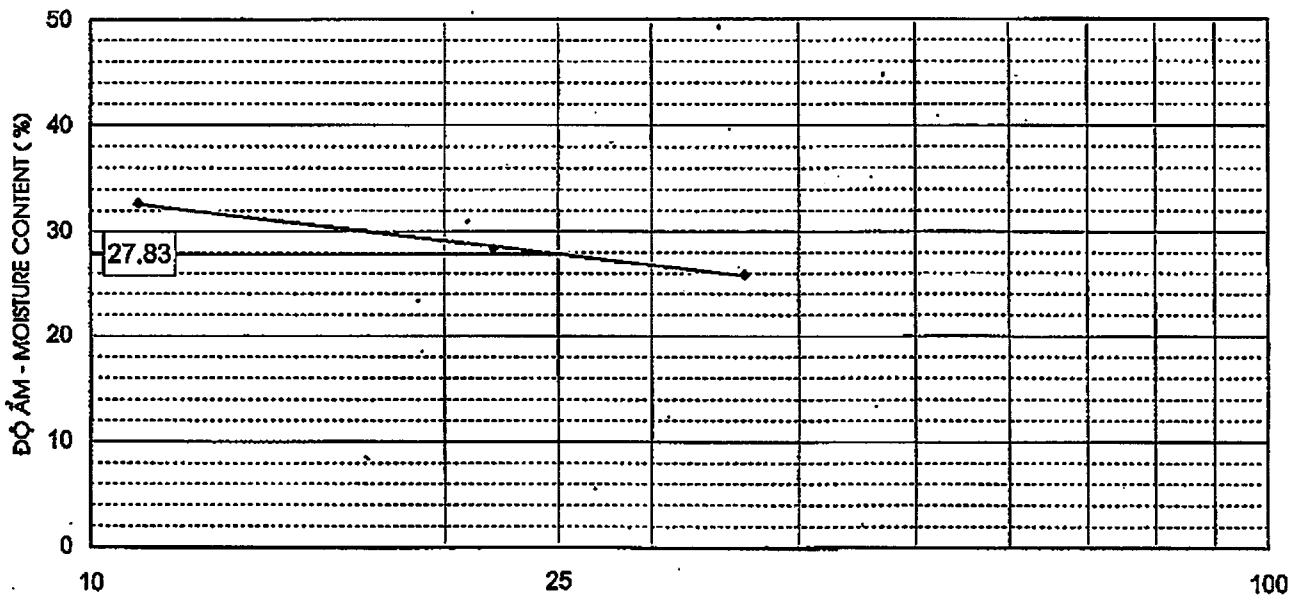
MOISTURE CONTENT & ATTERBERG LIMITS TEST

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

Vị trí - Location : Na Lan bridge Số hiệu mẫu - Sample number : M87
 Số hiệu LK - Boring No A1A Số hiệu TN - Test number : 4274
 Độ sâu - Depth (m) 1.8-2.0 Ngày thí nghiệm - Testing date : 10/2006

THÔNG SỐ XÁC ĐỊNH ĐỘ ẨM MOISTURE DETERMINATION	ĐỘ ẨM TỰ NHIÊN MOISTURE CONTENT		LIQUID LIMIT W _L (%)			PLASTIC LIMIT W _p (%)	
	I	II	1	2	3	1x	2x
Số hộp Container number							
Số lần đập Blow number			36	22	11		
Trọng lượng đất ẩm+hộp Weight of wet soil and container	g 53.654	47.912	22.958	21.615	22.456	13.551	14.495
Trọng lượng đất khô+hộp Weight of dry soil and container	g 46.287	41.589	19.763	18.324	18.786	12.542	13.414
Trọng lượng hộp Weight of container	g 14.423	14.977	7.413	7.059	7.547	7.345	7.714
Trọng lượng đất khô Weight of dry soil	g 7.367	6.323	3.195	3.191	3.670	1.009	1.081
Độ ẩm Moisture content	% 23.12	23.76	25.87	28.33	32.65	19.42	18.96
Độ ẩm trung bình Average moisture content	23.44					19.19	

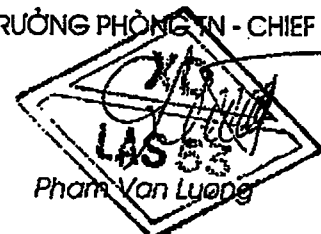
SỐ LẦN ĐẬP - BLOWS



GIỚI HẠN CHẢY - LIQUID LIMIT W _L = 27.83	GIỚI HẠN DẸO - PLASTIC LIMIT W _p = 19.19	CHỈ SỐ DẸO - PLASTICITY INDEX I _p = 8.64
--	--	--

Người TN - Tested by: Mai Van Son
 Người kiểm tra - Checked by: Dang Thanh Hai

TRƯỞNG PHÒNG TN - CHIEF OF LAB



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 XÁC ĐỊNH ĐỘ ẨM & CÁC GIỚI HẠN ATTERBERG

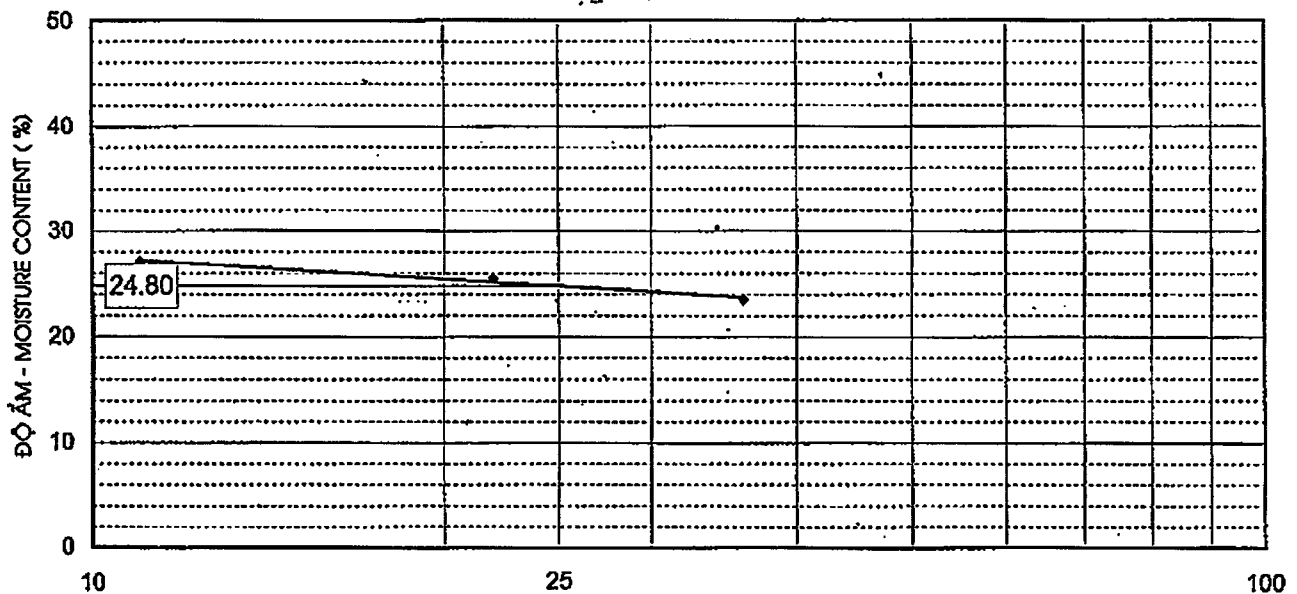
MOISTURE CONTENT & ATTERBERG LIMITS TEST

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

Vị trí - 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 - Testing date : 10/2006

THÔNG SỐ XÁC ĐỊNH ĐỘ ẨM MOISTURE DETERMINATION	ĐỘ ẨM TỰ NHIÊN MOISTURE CONTENT		LIQUID LIMIT W _L (%)				PLASTIC LIMIT W _p (%)	
	3	4	4	5	6		3x	4x
Số hộp Container number								
Số lần đập Blow number			36	22	11			
Trọng lượng đất ẩm+hộp Weight of wet soil and container	g	58.981	56.299	23.173	21.631	22.860	13.830	14.366
Trọng lượng đất khô+hộp Weight of dry soil and container	g	51.232	48.785	20.169	18.736	19.582	12.863	13.414
Trọng lượng hộp Weight of container	g	15.072	14.678	7.396	7.377	7.501	7.316	7.768
Trọng lượng đất khô Weight of dry soil	g	7.749	7.514	3.004	2.895	3.278	0.967	0.952
Độ ẩm Moisture content	%	21.43	22.03	23.52	25.49	27.13	17.43	16.87
Độ ẩm trung bình Average moisture content		21.73					17.15	

SỐ LẦN ĐẬP - BLOWS



GIỚI HẠN CHẢY - LIQUID LIMIT W _L = 24.80	GIỚI HẠN DÈO - PLASTIC LIMIT W _p = 17.15	CHỈ SỐ DÈO - PLASTICITY INDEX I _p = 7.65
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Người TN - Tested by: Mai Van Son
Người kiểm tra - Checked by: Dang Thanh Hai

TRƯỜNG PHÒNG TN - CHIEF OF LAB
LAS 5
Phạm Văn Lương

NA LAN BRIDGE

BORING LOG: A1a

Station:

Center: 0.00

GROUND ELEVATION: 202.10

STARTED DATE: 26/9/2006

WATER TABLE:

COMPLETED DATE: 27/9/2006

LAYER NUMBER	BOTTOM ELEVATION	BOTTOM DEPTH	THICKNESS	BORING LOG SCALE: 1/100	SOIL DESCRIPTION	SPT TEST				SAMPLE NO DEPTH					
						DEPTH	BLOWS /15cm	N/30	SPT CHART						
									0		25	50	75		
1	199.40	2.70	2.70		Blackish grey stiff clayey sand (SC)	2.00 2.45	34.5	6	11	0					M87 1.80-2.00
3a	198.10	4.00	1.30		Yellowish grey weathered mica schist										R1 4.20-4.43
3	193.10	9.00	5.00		Yellowish grey mica schist RQD=64%, TCR=77%										R2 6.20-6.42
															R3 7.10-8.15

NA LAN BRIDGE

BORING LOG: A2a

Station:

Center: 0.00

GROUND ELEVATION: 202.40

STARTED DATE: 23/9/2006

WATER TABLE:

COMPLETED DATE: 25/9/2006

LAYER NUMBER	BOTTOM ELEVATION	BOTTOM DEPTH	THICKNESS	BORING LOG SCALE: 1/100	SOIL DESCRIPTION	SPT TEST				SAMPLE NO DEPTH		
						DEPTH	BLOWS /15cm	N/30	SPT CHART			
									0 25 50 75			
1	200.40	2.00	2.00		Blackish grey stiff clayey sand (SC)						M5 0.30-0.50	
2	196.90	5.50	3.50		Brownish green medium dense gravel grit with pebbles	2.00	3	5	6	11		
						4.00 4.45	6	7	7	14		
3a	195.40	7.00	1.50		Yellowish grey whethereed mica schist	6.00 6.45			>30	>30		94 5.80-6.00
3	190.40	12.00	5.00		Yellowish grey mica schist RQD=65%, TCR=76%							R1 7.20-7.35
												R2 8.50-8.65
												R3 10.20-10.35
												R4 11.40-11.60

