

***APPENDIX-4***

***LABOTATORY TEST DATA***

Table 1. Laboratory Test Result

Project: The Study on Earthquake Disaster Mitigation in Kathmandu Valley

Location: New Road

Sample No.	Depth (m)	Water Content	Grain Size Distribution (%)					Specific Gravity	Atterberg's Limits (%)			Unconfined Compression Test (UC) Shear Strength (kN/m <sup>2</sup> )	Remarks
			Boulder	Gravel	Sand	Silt & Clay	Silt		Clay	LL	PL		
<b>Borehole No. 1</b>													
SPT # 2	2.0		0	0	92	8							
SPT # 3	3.0		0	0	86	4							
SPT # 4	4.0		0	0	100	0							
SPT # 5	5.0		0	0	86	12							
SPT # 6	6.0		0	0	37	63							
SPT # 7	7.0		0	0	28	72							
SPT # 8	8.0		0	0	67	33							
SPT # 9	9.0		0	0	89	11							
SPT # 10	10.0		0	0	78	22							
SPT # 11	11.0		0	0	21	79							
SPT # 12	12.0		0	0	23	77							
SPT # 13	13.0		0	0	49	51							
SPT # 14	14.0		0	0	4	96							
SPT # 15	15.0		0	0	81	19							
UD # 1	15.5	53.25	0	0	18	82	66	16	2.719	50.6	32.7	17.9	1.30
SPT # 16	16.0		0	0	28	72							
SPT # 17	17.0		0	0	17	83							
SPT # 18	18.0		0	0	5	95							
SPT # 19	19.0		0	0	13	87							
UD # 2	19.5	59.63	0	0	2	98	56	42	2.702	47.6	29.8	17.8	39.00
SPT # 20	20.0		0	0	2	98							
SPT # 21	21.0		0	0	3	97							
SPT # 22	22.0		0	0	2	98	44	54		48.1	31.2	16.9	
SPT # 23	23.0		0	0	5	95							
SPT # 24	24.0		0	0	2	98							
UD # 3	24.5	63.41	0	0	2	98	65	33	2.707	38.5	25.7	12.8	8.50
SPT # 25	25.0		0	0	1	99							
SPT # 26	26.0		0	0	1	99			2.708				
SPT # 27	27.0		0	0	1	99	49	50	2.714	49.2	34.3	14.9	
SPT # 28	28.0		0	0	3	97							
SPT # 29	29.0		0	0	3	97			2.721				
UD # 4	29.5	69.19	0	0	2	98	46	52	2.720	46	31.5	16.5	UC could not be due to very loose sample
SPT # 30	30.0		0	0	3	97			2.643				

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Table 2. Laboratory Test Result

Project: The Study on Earthquake Disaster Mitigation in Kathmandu Valley

Location: Singh Durbar

Sample No.	Depth (m)	Water Content	Grain Size Distribution (%)					Specific Gravity	Atterberg's Limits (%)			Unconfined Compression Test (UC) Shear Strength (kN/m <sup>2</sup> )	Remarks
			Boulder	Gravel	Sand	Silt & Clay	Silt		Clay	LL	PL		
<b>Borehole No. 2</b>													
SPT # 2	2.0		0	16	71	13							
SPT # 3	3.0		0	2	13	86	61	24		41.3	28.4	12.9	
SPT # 4	4.0		0	2	77	21			2.648				
SPT # 5	5.0		0	2	82	16							
SPT # 6	6.0		0	2	82	8							
SPT # 7	7.0		0	0	77	23							
SPT # 8	8.0		0	8	84	8							
SPT # 9	9.0		0	0	45	55							
SPT # 10	10.0		0	0	92	8							
SPT # 11	11.0		0	1	94	5			2.625				
SPT # 12	12.0		0	1	89	10							
SPT # 13	13.0		0	0	98	2							
SPT # 14	14.0		0	0	95	5			2.612				
SPT # 15	15.0		0	3	88	9							
SPT # 16	16.0		0	0	92	8							
SPT # 17	17.0		0	0	79	21			2.685	26.5	NP	NP	
SPT # 18	18.0		0	0	82	18							
SPT # 19	19.0		0	0	46	54							
SPT # 20	20.0		0	0	76	24							
SPT # 21	21.0		0	0	63	37							
UD # 1	21.5	41.77	0	0	1	99	42	57	2.614	50.6	32.7	17.9	30.95
SPT # 22	22.0		0	0	35	65	37	28	2.719				
SPT # 23	23.0		0	0	4	96	56	40	2.701				
SPT # 24	24.0		0	0	8	92	54	38	2.684				
SPT # 25	25.0		0	0	10	90	50	40	2.717	40.5	27.9	12.6	
SPT # 26	26.0		0	0	3	97	66	31	2.711				
UD # 2	26.5	44.2	0	0	2	98	49	49	2.610	47.4	32.2	15.2	40.15
SPT # 27	27.0		0	0	1	99	59	40	2.716	29.5	22.4	7.1	
SPT # 28	28.0		0	0	3	97	59	38	2.729				
SPT # 29	29.0		0	0	1	99	53	46	2.721				
SPT # 30	30.0		0	0	2	98	55	43	2.702	42.0	29.7	12.3	

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Table 3. Laboratory Test Result

Project: The Study on Earthquake Disaster Mitigation in Kathmandu Valley

Location: Jawalakhel

Sample No.	Depth (m)	Water Content	Grain Size Distribution (%)					Specific Gravity	Atterberg's Limits (%)			Unconfined Compression Test (UC) Shear Strength (kN/m <sup>2</sup> )	Remarks	
			Boulder	Gravel	Sand	Silt & Clay	Silt		Clay	LL	PL			PI
<b>Borehole No. 3</b>														
SPT # 2	2.0		0	14	72	14								
SPT # 3	3.0		0	66	24	10								
SPT # 5	5.0		0	28	17	55								
SPT # 6	6.0		0	28	47	25								
UD - 1	14.5	23.38	0	0	4	96	78	18	2.718	25.3	NP	NP	UC couldn't be done due to very loose sample	
SPT # 11	11.0		0	0	11	89	75	14	2.712					
SPT # 17	17.0		0	0	3	97	79	18	2.717					
UD - 2	19.5	32.15	0	0	5	95	78	17	2.710	28.3	NP	NP	15.60	
SPT # 23	23.0		0	0	4	96								
UD - 3	24.5	64.15	0	0	4	96	76	20	2.740	28.5	22.6	5.9	UC couldn't be done due to very loose sample	
SPT # 27	27.0		0	0	2	98			2.700					
UD - 4	29.5	30.26	0	0	3	97	77	20	2.722	28.6	21.6	7.0	40.30	

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Table 4. Laboratory Test Result

Project: The Study on Earthquake Disaster Mitigation in Kathmandu Valley

Location: Madyapur, Thimi

Sample No.	Depth (m)	Water Content	Grain Size Distribution (%)					Specific Gravity	Atterberg's Limits (%)			Unconfined Compression Test (UC) Shear Strength (kN/m <sup>2</sup> )	Remarks	
			Boulder	Gravel	Sand	Silt & Clay	Silt		Clay	LL	PL			PI
<b>Borehole No. 4</b>														
SPT # 2	2.0		0	6	88	6								
SPT # 5	4.0		0	0	98	2								
SPT # 8	6.0		0	0	2	98								
UD - 1	10.5	58.39	0	0	1	99	63	36	2.731	42.2	25.7	16.5	42.21	
UD - 2	14.5	44.20	0	0	1	99	69	30	2.704	54.2	33.6	20.6	55.60	
SPT # 17	17.0		0	0	1	99								
UD - 3	19.5	60.08	0	0	1	99	74	25	2.715	56.2	37.3	18.8	60.35	
UD - 4	22.5	58.16	0	0	1	99	75	24	2.713	65.5	40.0	26.5	9.70	
UD - 5	27.5	69.28	0	0	1	99	84	15	2.717	61.2	39.2	22.0	59.50	
UD - 6	29.5	66.95	0	0	1	99	76	24	2.703	58.0	39.2	18.8	41.00	

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Table 5. Laboratory Test Result

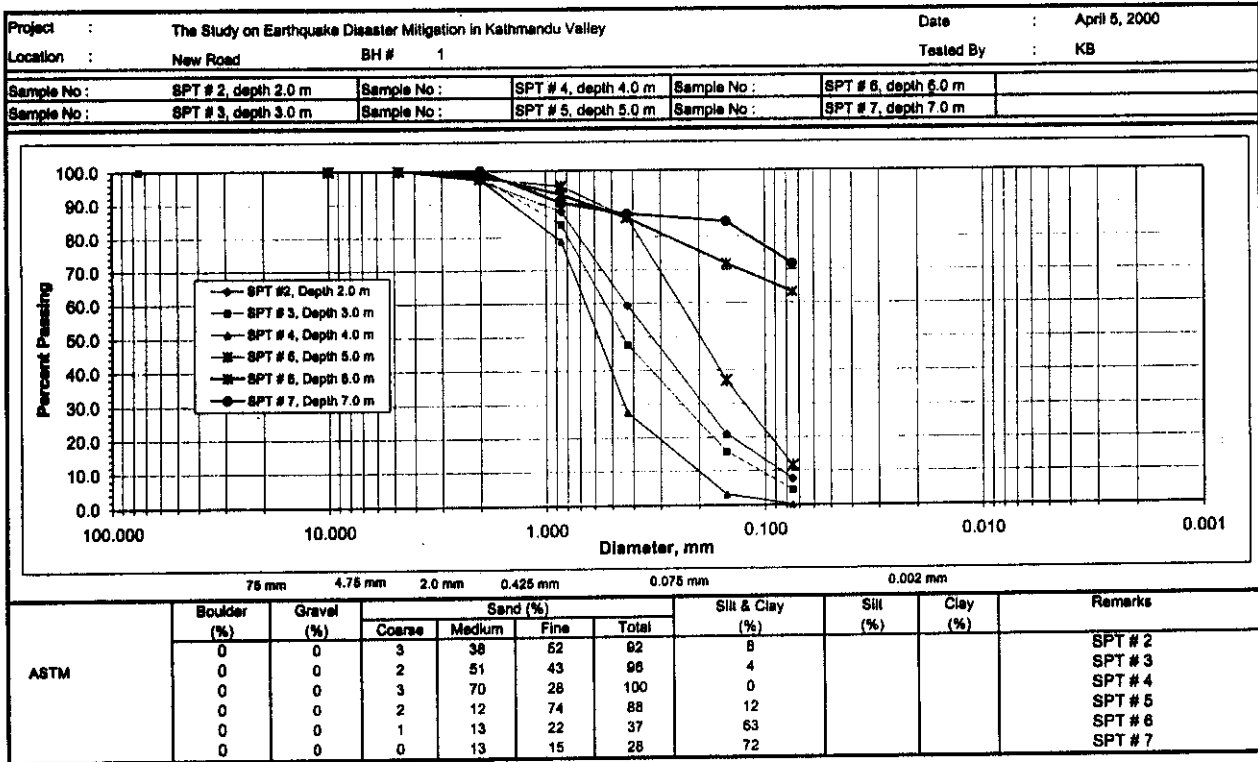
Project: The Study on Earthquake Disaster Mitigation in Kathmandu Valley

Location: Bhaktapur

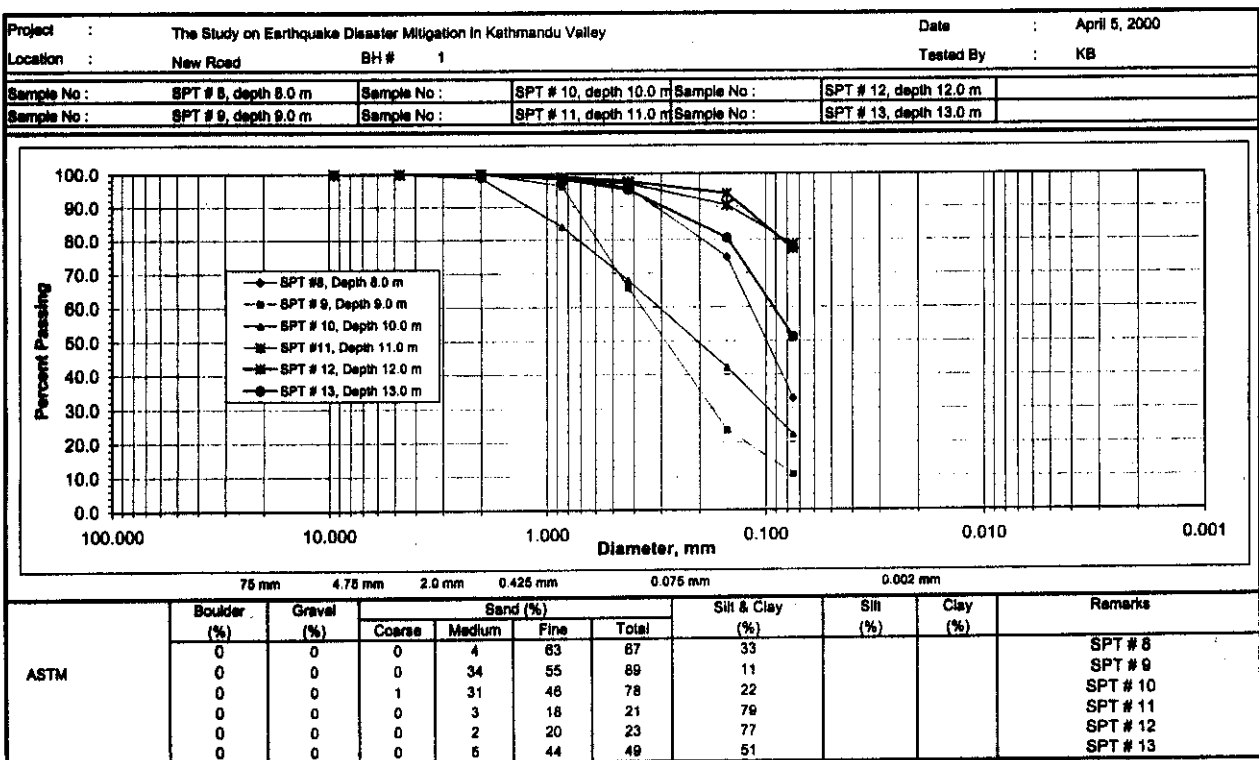
Sample No.	Depth (m)	Water Content	Grain Size Distribution (%)					Specific Gravity	Atterberg's Limits (%)			Unconfined Compression Test (UC) Shear Strength (kN/m <sup>2</sup> )	Remarks	
			Boulder	Gravel	Sand	Silt & Clay	Silt		Clay	LL	PL			PI
<b>Borehole No. 5</b>														
SPT # 2	2.0		0	0	14	86			2.712					
SPT # 3	3.0		0	0	13	87								
SPT # 4	4.0		0	0	33	67								
SPT # 5	5.0		0	1	34	65								
SPT # 6	6.0		0	1	14	85								
SPT # 7	7.0		0	0	22	78								
SPT # 8	8.0		0	0	19	81			2.685					
SPT # 9	9.0		0	0	46	52								
SPT # 10	10.0		0	0	73	27								
SPT # 11	11.0		0	1	75	24								
SPT # 12	12.0		0	0	78	22								
SPT # 13	13.0		0	0	68	32								
SPT # 14	14.0		0	1	80	19			2.673					
SPT # 15	15.0		0	3	44	56								
SPT # 16	16.0		0	0	70	30								
SPT # 17	17.0		0	0	69	31								
SPT # 18	18.0		0	0	64	36								
SPT # 19	19.0		0	0	49	51								
SPT # 20	20.0		0	0	6	94								
SPT # 21	21.0		0	0	1	99	81	18	2.716	34.2	NP	NP		
SPT # 22	22.0		0	0	5	95								
SPT # 23	23.0		0	0	2	98				33	NP	NP		
SPT # 24	24.0		0	0	2	98	73	25	2.722					
SPT # 25	25.0		0	0	1	99								
SPT # 26	26.0		0	0	1	99	67	32	2.732	59.8	37.1	22.7		
SPT # 27	27.0		0	0	1	99								
UD # 1	27.5	65.11	0	0	1	99	87	12	2.714	63.2	41.2	22	36.20	
SPT # 28	28.0		0	0	2	98								
SPT # 29	29.0		0	0	2	98								
UD # 2	29.5	64.19	0	0	1	99	88	11	2.710	53.6	34.5	18.1	36.80	
SPT # 30	30.0		0	0	1	99	81	18	2.709	67.5	41.2	26.3		

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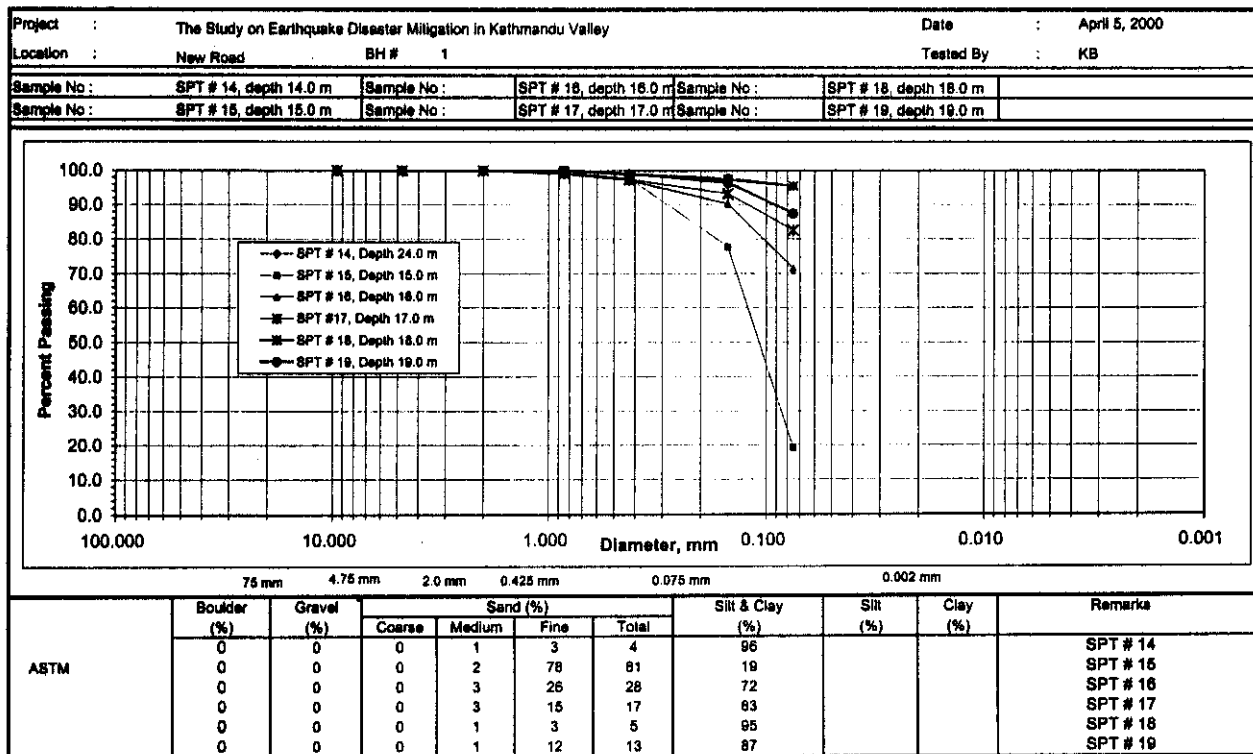
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GRAIN SIZE DISTRIBUTION**



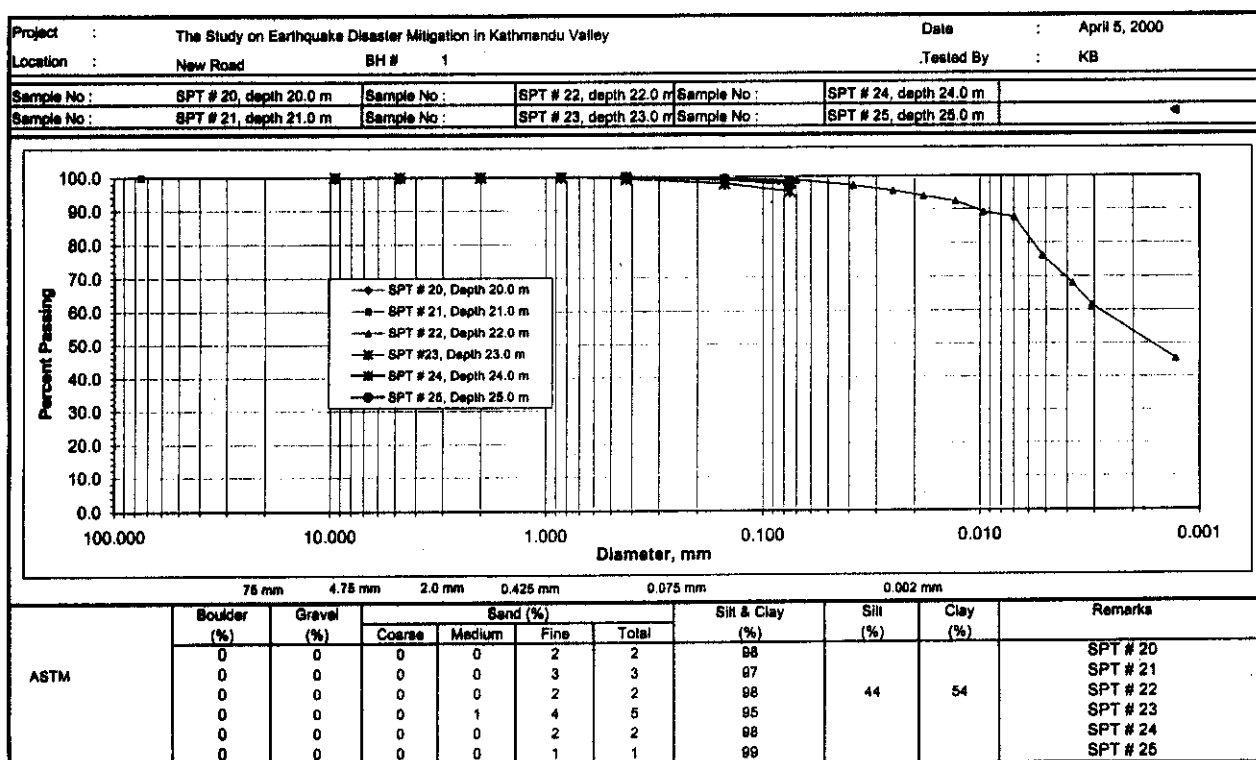
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GRAIN SIZE DISTRIBUTION**



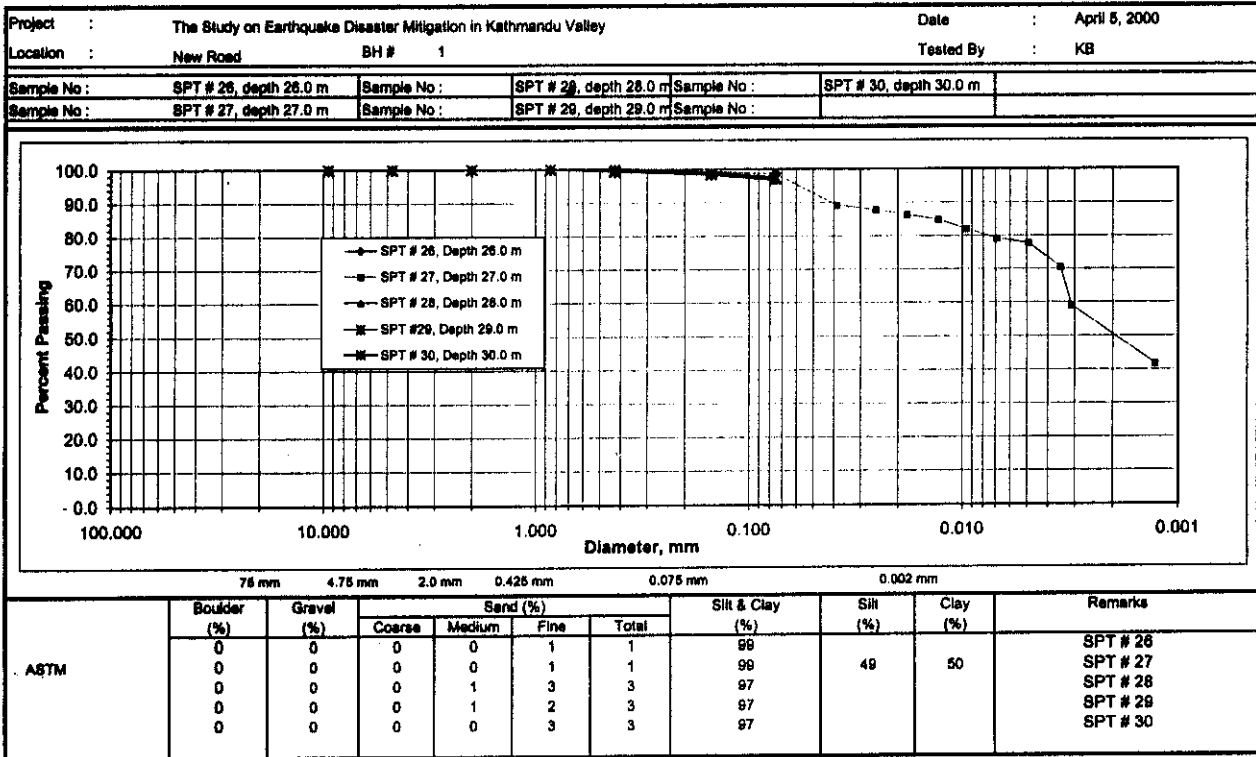
**GEOCE CONSULTANTS (P) LTD.  
GRAIN SIZE DISTRIBUTION**



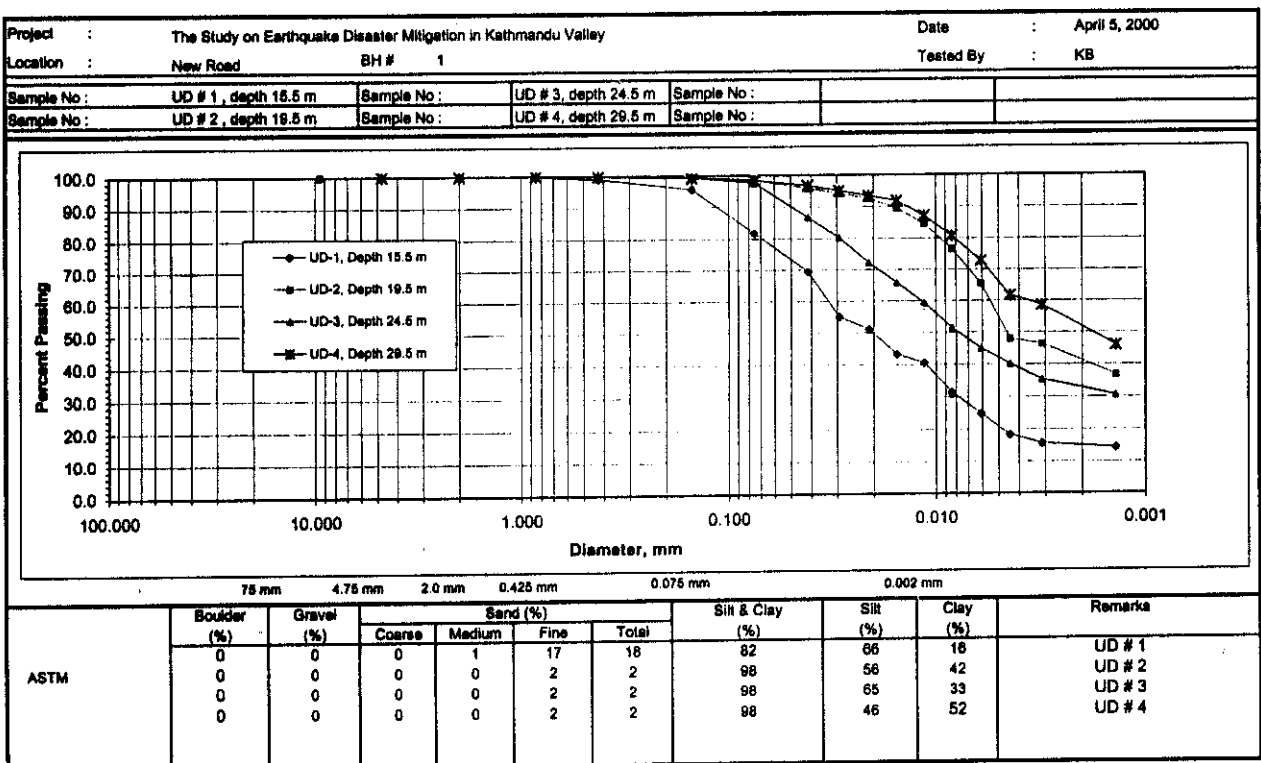
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ATTERBERG LIMITS TEST

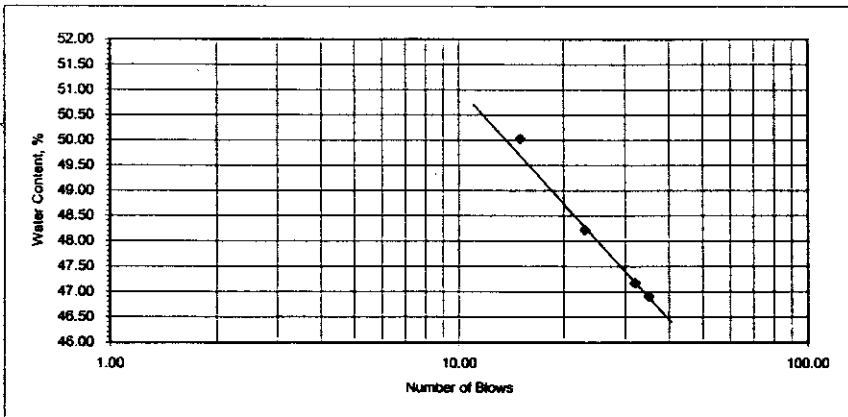
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley Date: May 1, 2001  
 Location: New Road Tested By : KB  
 BH: 1 Sample No: SPT - 22 Depth: 22.0 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	32.0900	30.7600		
Weight of dry soil + container	g	31.4932	30.1032		
Weight of water	g	0.5968	0.6568		
Weight of container	g	29.6241	27.9511		
Weight of dry soil	g	1.8691	2.1521		
Water content	%	31.93	30.52		
Average	%		31.22		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	39.7403	46.5000	44.3334	47.3471
Weight of dry soil + container	g	36.0760	43.5746	40.4325	42.4791
Weight of water	g	3.6643	2.9254	3.9009	4.8680
Weight of container	g	28.7523	37.5084	32.1633	32.1018
Weight of dry soil	g	7.3237	6.0662	8.2692	10.3773
Number of Blows		15.00	23.00	32.00	35.00
Water content	%	50.03	48.22	47.17	46.91



Liquid Limit: 48.1 Plastic Limit: 31.2 Plasticity Index: 16.9

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ATTERBERG LIMITS TEST

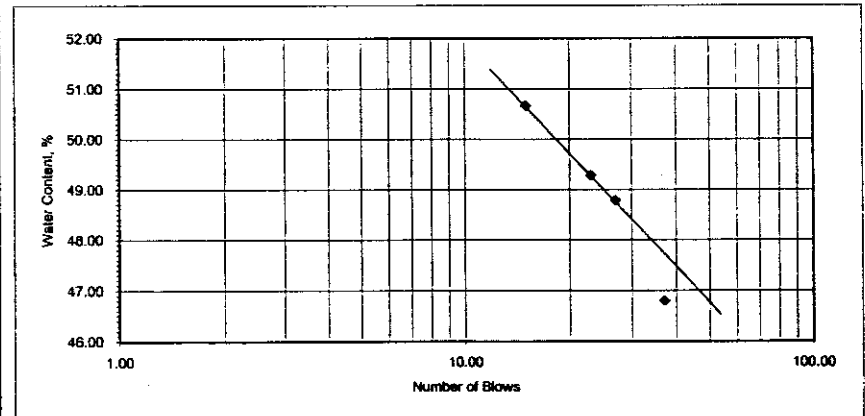
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley Date: May 1, 2001  
 Location: New Road Tested By : KB  
 BH: 1 Sample No: SPT - 27 Depth: 27.0 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	37.5632	39.9706		
Weight of dry soil + container	g	36.4800	38.9461		
Weight of water	g	1.0832	1.0245		
Weight of container	g	33.3300	35.9522		
Weight of dry soil	g	3.1500	2.9939		
Water content	%	34.39	34.22		
Average	%		34.30		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	50.1737	42.1048	42.5242	43.0177
Weight of dry soil + container	g	45.8645	38.1843	39.0550	39.0176
Weight of water	g	4.3092	3.9205	3.4692	4.0001
Weight of container	g	37.3600	30.2300	31.9447	30.4700
Weight of dry soil	g	8.5045	7.9543	7.1103	8.5476
Number of Blows		15.00	23.00	27.00	37.00
Water content	%	50.67	49.29	48.79	46.80



Liquid Limit: 49.2 Plastic Limit: 34.30 Plasticity Index: 14.90

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ATTERBERG LIMITS TEST

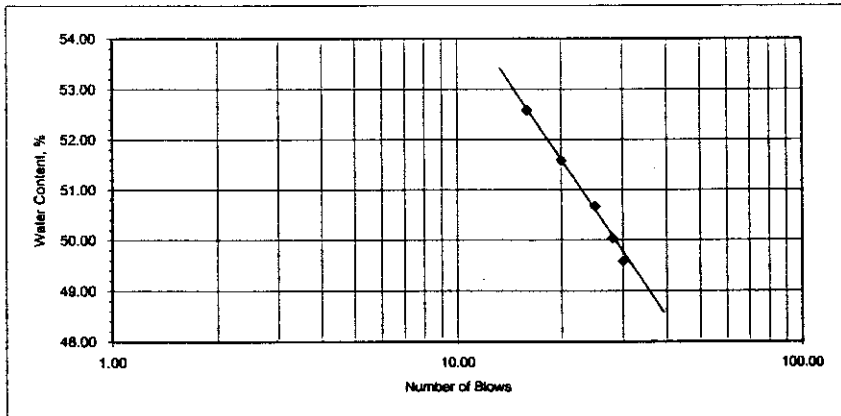
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: May 1, 2001  
 Location: New Road      Tested By KB  
 BH: 1      Sample No: UD - 1      Depth: 15.5 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	39.9820	32.2335	35.1918	32.4986
Weight of dry soil + container	g	39.3642	31.3937	34.4457	31.7404
Weight of water	g	0.6178	0.8398	0.7461	0.7582
Weight of container	g	37.5084	28.7523	32.1633	29.4414
Weight of dry soil	g	1.8558	2.6414	2.2824	2.2990
Water content	%	33.29	31.79	32.69	32.98
Average	%		32.69		

LIQUID LIMIT

Container No						
Weight of wet soil + container	g	42.4309	41.3361	35.5568	38.7455	41.0055
Weight of dry soil + container	g	39.0962	38.1400	33.7654	35.1455	38.0540
Weight of water	g	3.3347	3.1961	1.7914	3.6000	2.9515
Weight of container	g	32.7547	31.9447	30.2300	27.9511	32.1018
Weight of dry soil	g	6.3415	6.1953	3.5354	7.1944	5.9522
Number of Blows		16.00	20.00	25.00	28.00	30.00
Water content	%	52.59	51.59	50.67	50.04	49.59



Liquid Limit: 50.6 Plastic Limit: 32.7 Plasticity Index: 17.9

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ATTERBERG LIMITS TEST

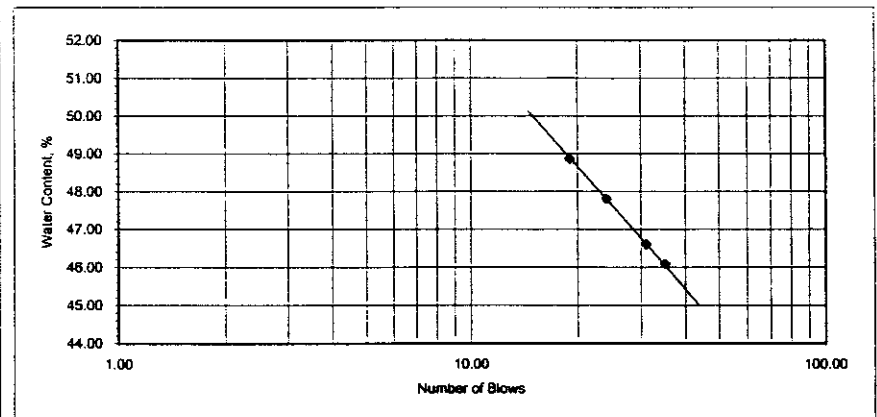
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: May 1, 2001  
 Location: New Road      Tested By KB  
 BH: 1      Sample No: UD - 2      Depth: 26.5 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	36.7743	41.6120		
Weight of dry soil + container	g	35.6442	40.6866		
Weight of water	g	1.1301	0.9254		
Weight of container	g	31.9447	37.5084		
Weight of dry soil	g	3.6995	3.1782		
Water content	%	30.55	29.12		
Average	%		29.83		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	37.6800	41.0410	43.0740	39.5048
Weight of dry soil + container	g	34.7073	36.8070	38.7400	36.1124
Weight of water	g	2.9727	4.2340	4.3340	3.3924
Weight of container	g	28.6241	27.9511	29.4414	28.7523
Weight of dry soil	g	6.0832	8.8559	9.2986	7.3601
Number of Blows		19.00	24.00	31.00	25.00
Water content	%	48.87	47.81	46.61	46.09



Liquid Limit: 47.6 Plastic Limit: 29.8 Plasticity Index: 17.8



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ATTERBERG LIMITS TEST

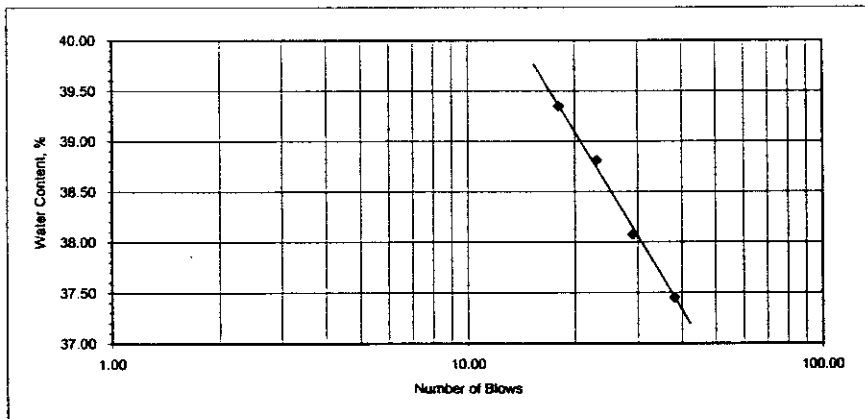
**Project :** The Study on Earthquake Disaster Mitigation in Kathmandu Valley **Date:** May 1, 2001  
**Location:** New Road **Tested By :** KB  
**BH:** 1 **Sample No:** UD - 3 **Depth:** 24.5 m

PLASTIC LIMIT

Test No	1	2	3	4
Container No				
Weight of wet soil + container	g 36.1522	28.3159		
Weight of dry soil + container	g 35.4531	27.5431		
Weight of water	g 0.6991	0.7728		
Weight of container	g 32.7547	24.5162		
Weight of dry soil	g 2.6984	3.0269		
Water content	% 25.91	25.53		
Average	%	25.72		

LIQUID LIMIT

Test No	1	2	3	4
Weight of wet soil + container	g 49.6352	46.7811	47.4600	44.7500
Weight of dry soil + container	g 45.7713	42.1532	43.2419	41.3038
Weight of water	g 3.8639	4.6279	4.2181	3.4462
Weight of container	g 35.9522	30.2300	32.1633	32.1018
Weight of dry soil	g 9.8191	11.9232	11.0786	9.2020
Number of Blows	18.00	23.00	29.00	38.00
Water content	% 39.35	38.81	38.07	37.45



Liquid Limit: 38.5 Plastic Limit: 25.7 Plasticity Index: 12.8

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ATTERBERG LIMITS TEST

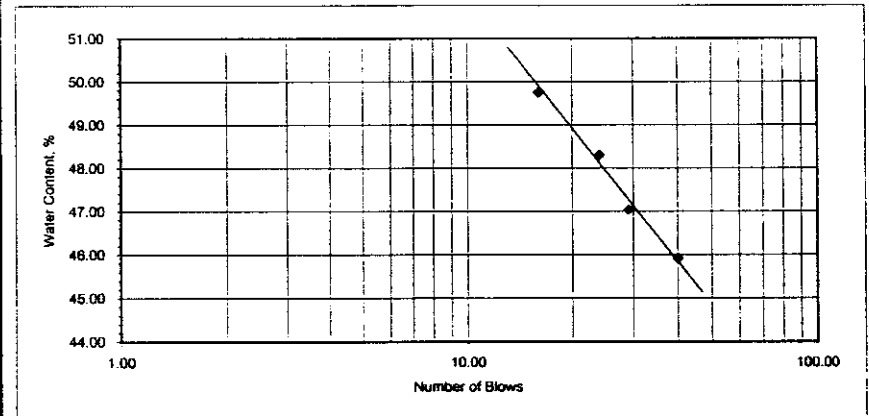
**Project :** The Study on Earthquake Disaster Mitigation in Kathmandu Valley **Date:** May 1, 2001  
**Location:** New Road **Tested By KB**  
**BH:** 1 **Sample No:** UD - 4 **Depth:** 29.5 m

PLASTIC LIMIT

Test No	1	2	3	4
Container No				
Weight of wet soil + container	g 33.7220	37.8717	40.6058	
Weight of dry soil + container	g 32.4713	36.7807	39.7107	
Weight of water	g 1.2507	1.0910	0.8951	
Weight of container	g 28.5200	33.3300	36.8400	
Weight of dry soil	g 3.9513	3.4507	2.8707	
Water content	% 31.65	31.62	31.18	
Average	%	31.48		

LIQUID LIMIT

Container No				
Weight of wet soil + container	g 48.1300	44.9764	42.5226	38.9037
Weight of dry soil + container	g 44.5518	40.6238	38.6665	34.8837
Weight of water	g 3.5782	4.3526	3.8561	4.0200
Weight of container	g 37.3600	31.6139	30.4700	26.1300
Weight of dry soil	g 7.1918	9.0099	8.1965	8.7537
Number of Blows	16.00	24.00	29.00	40.00
Water content	% 49.75	48.31	47.05	45.92

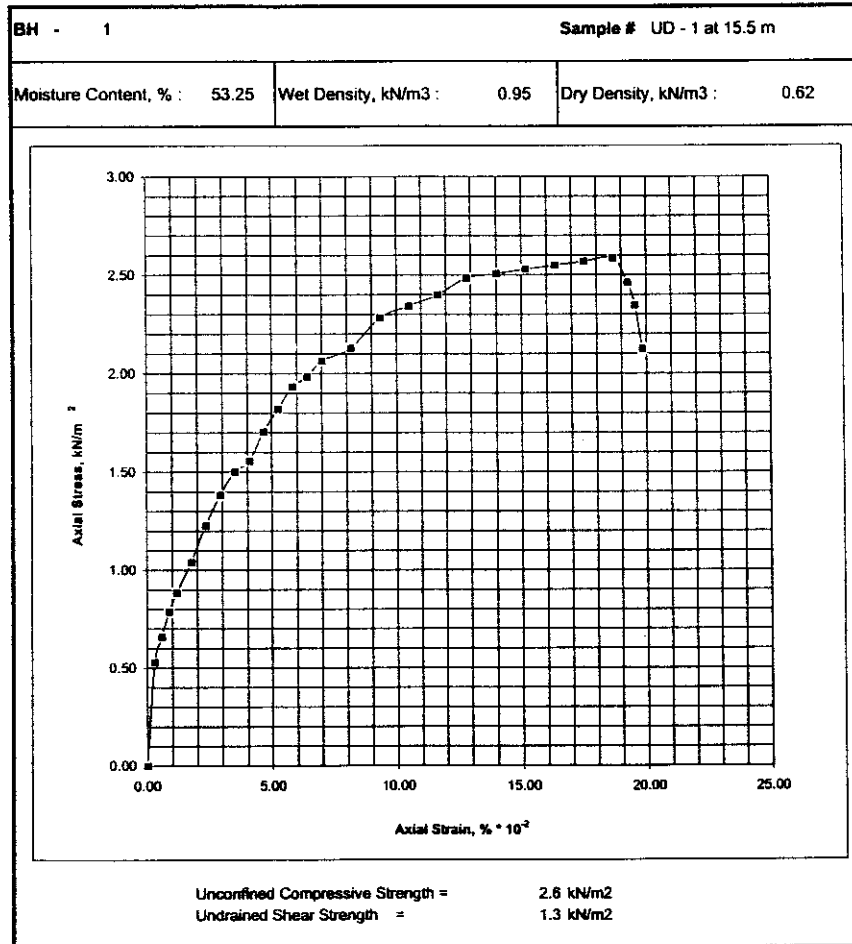


Liquid Limit: 48.0 Plastic Limit: 31.5 Plasticity Index: 16.5

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**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: New Road

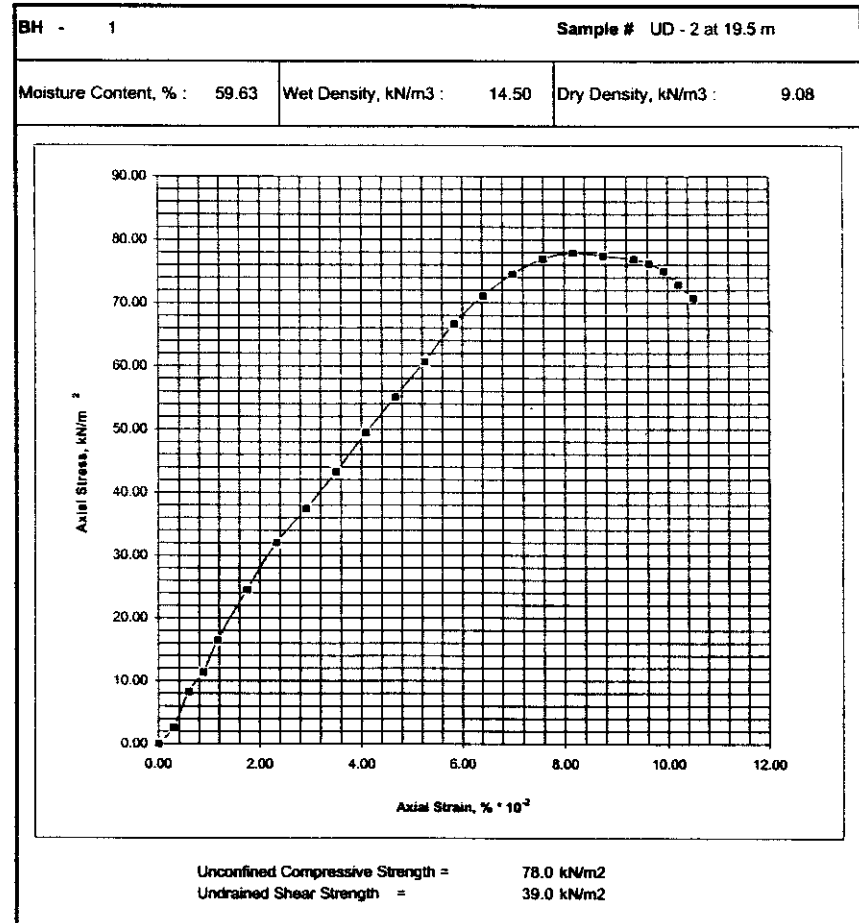
Date: April 18, 2001  
 Tested By : KB



GEOCE CONSULTANTS (P) LTD.  
**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: New Road

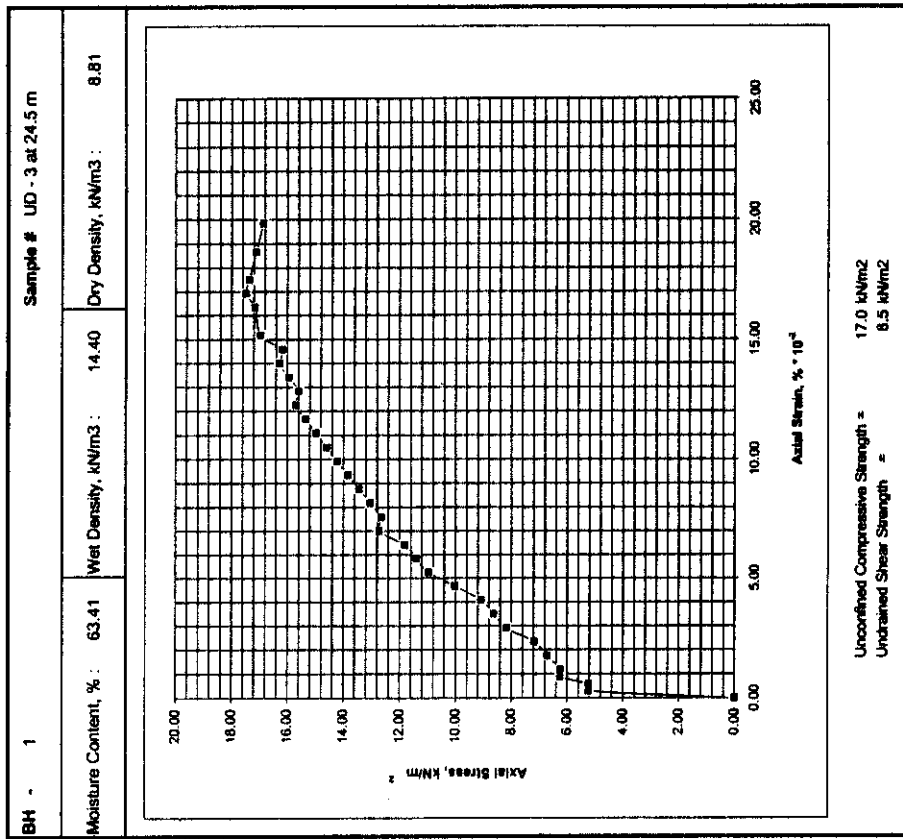
Date: April 18, 2001  
 Tested By : KB



**GEOCE CONSULTANTS (P) LTD.**

**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: New Road  
 Date: April 18, 2001  
 Tested By : KB



**GEOCE CONSULTANTS (P) LTD.**  
**SPECIFIC GRAVITY TEST OF SOILS**

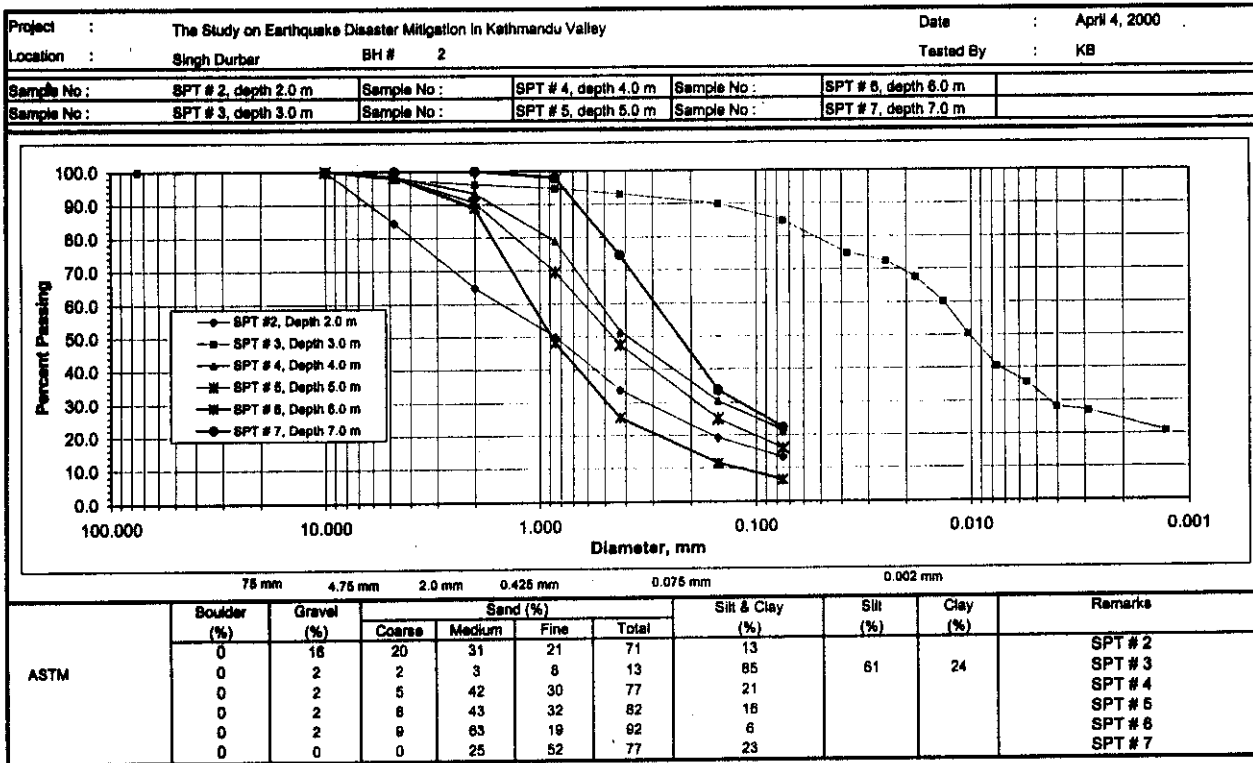
Project :

The Study on Earthquake Disaster Mitigation in Kathmandu Valley

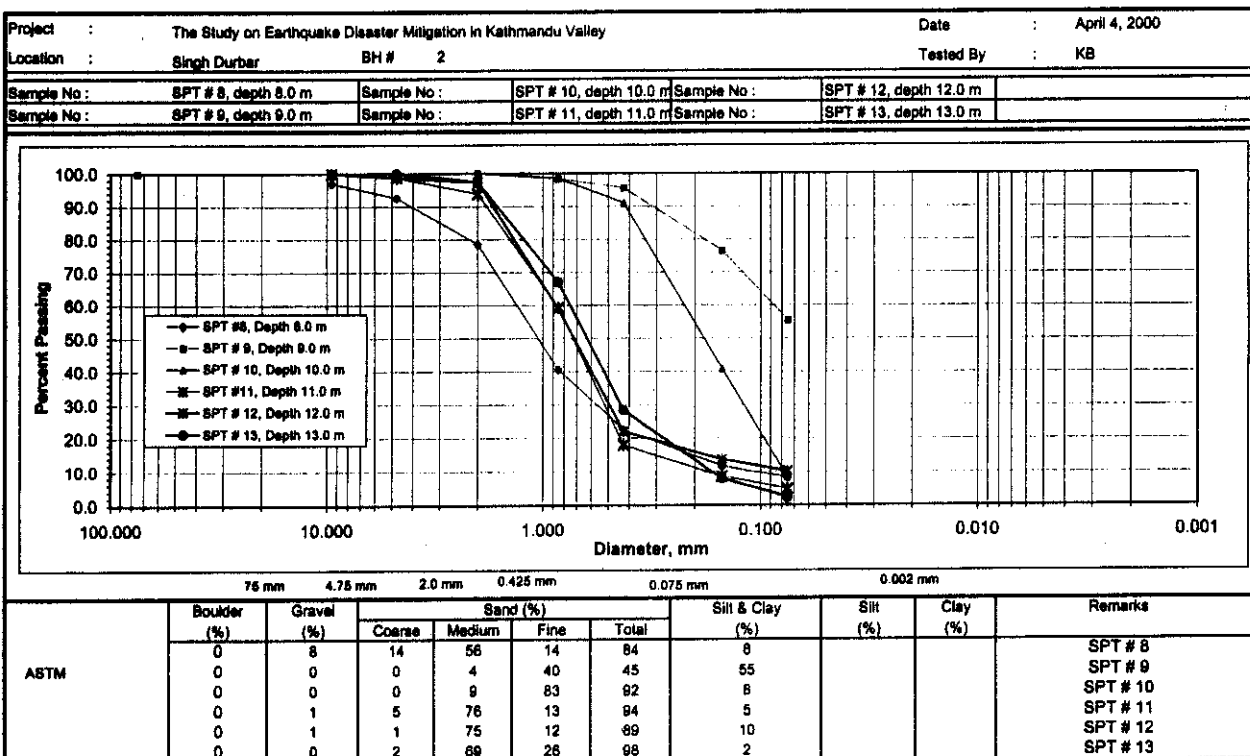
Borehole No : 1

Sample No.	SPT - 2			SPT - 7			SPT - 28			SPT - 30		
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °C	55	44	36	63	55	45	58	51	48	56	46	39
2 Wt. Of Flask + Water + Soil	731.6	733.4	734.7	754.3	756	758.1	746.1	748.1	749.6	733.6	734.4	735.4
3 Wt. Of Flask + Water (From Calib)	701.4	703.1	704.4	722.5	724.3	726.5	714.2	716	717.4	701.3	702.9	703.9
4 Wt. Of Dry Soil + Container	228			229.3			205			223.6		
5 Wt. Of Container	179.1			179.1			154.5			173.2		
6 Wt. Of Dry Soil	48.9			50.2			50.5			50.4		
7 Sp. Gr. Of water at 10 c	0.9857	0.9907	0.9937	0.9817	0.9857	0.9902	0.9842	0.9876	0.9898	0.9852	0.9898	0.9926
8 Sp. Gr. Of soils = (6 x 7)/(3+6-2)	2.8054	2.6048	2.6125	2.7078	2.7039	2.7015	2.6722	2.7105	2.7314	2.7433	2.8395	2.8489
9 Average Sp. Gr.		2.607			2.704		X	2.721		X	2.643	
Sample No.	SPT - 26			SPT - 27			SPT - 28			SPT - 30		
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °C	55	47	41	63	53	45	58	51	48	56	46	39
2 Wt. Of Flask + Water + Soil	757	758.6	759.9	747.1	749.2	750.7	746.1	748.1	749.6	733.6	734.4	735.4
3 Wt. Of Flask + Water (From Calib)	724.3	726.1	727.4	715.2	717.3	719	714.2	716	717.4	701.3	702.9	703.9
4 Wt. Of Dry Soil + Container	187.9			203.2			205			223.6		
5 Wt. Of Container	136.5			153.2			154.5			173.2		
6 Wt. Of Dry Soil	51.4			50			50.5			50.4		
7 Sp. Gr. Of water at 10 c	0.9857	0.9994	0.9919	0.9817	0.9867	0.9902	0.9842	0.9876	0.9898	0.9852	0.9898	0.9926
8 Sp. Gr. Of soils = (6 x 7)/(3+6-2)	2.7094	2.7179	2.6976	2.7119	2.7257	2.7055	2.6722	2.7105	2.7314	2.7433	2.8395	2.8489
9 Average Sp. Gr.		2.708			2.714		X	2.721		X	2.643	
Sample No.	UD - 1			UD - 2			UD - 3			UD - 4		
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °C	60	50	40	54	48	36	51	42	36	61	48	40
2 Wt. Of Flask + Water + Soil	755.8	758	760	749.3	750.6	752.6	747.9	750.1	751.6	732.6	734.4	735.5
3 Wt. Of Flask + Water (From Calib)	723.2	725.4	727.6	717.1	718.3	720.5	718.1	718.4	720	700.5	702.5	703.8
4 Wt. Of Dry Soil + Container	195.5			210.3			205.8			228.6		
5 Wt. Of Container	144.4			159.5			155.8			178.5		
6 Wt. Of Dry Soil	51.1			50.8			50			50.1		
7 Sp. Gr. Of water at 10 c	0.9832	0.9881	0.9922	0.9862	0.9890	0.9930	0.9876	0.9915	0.9937	0.9827	0.9890	0.9922
8 Sp. Gr. Of soils = (6 x 7)/(3+6-2)	2.7158	2.7293	2.7113	2.6935	2.7157	2.6976	2.7132	2.7090	2.7003	2.7352	2.7225	2.7016
9 Average Sp. Gr.		2.719			2.702			2.707			2.720	

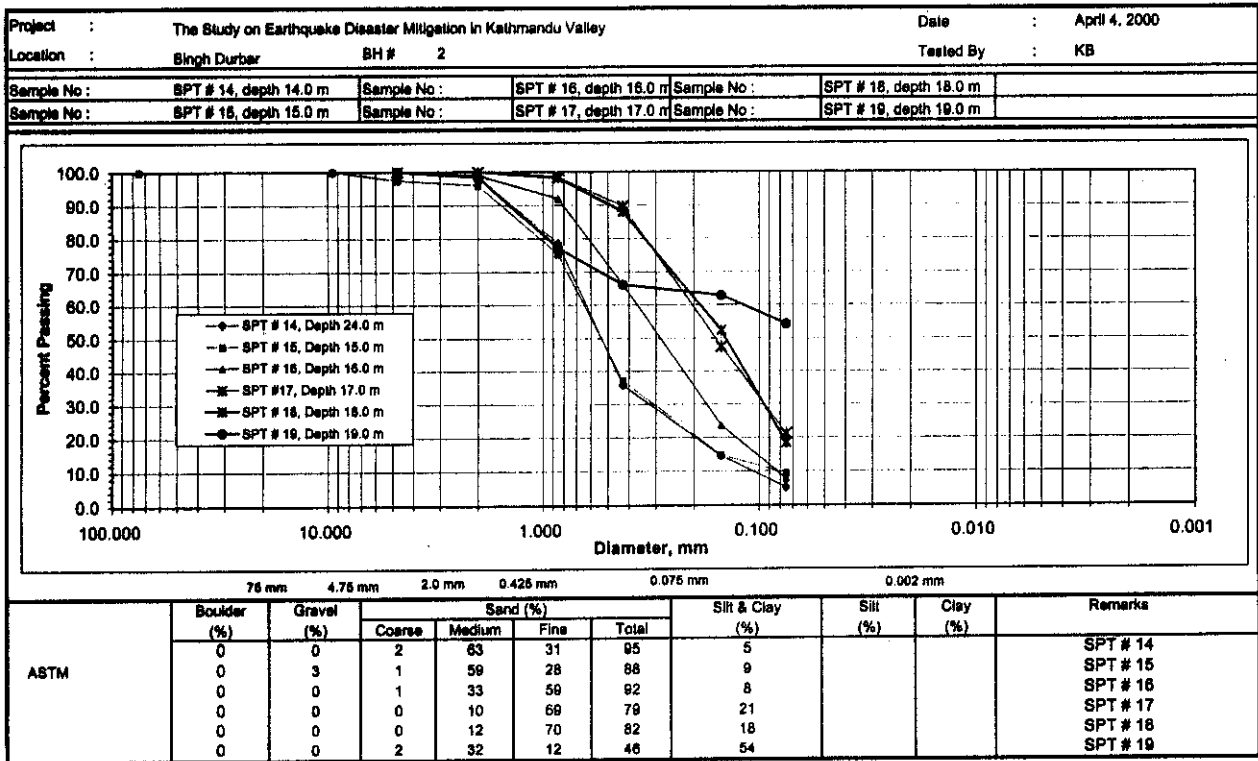
**GEOCE CONSULTANTS (P) LTD.  
GRAIN SIZE DISTRIBUTION**



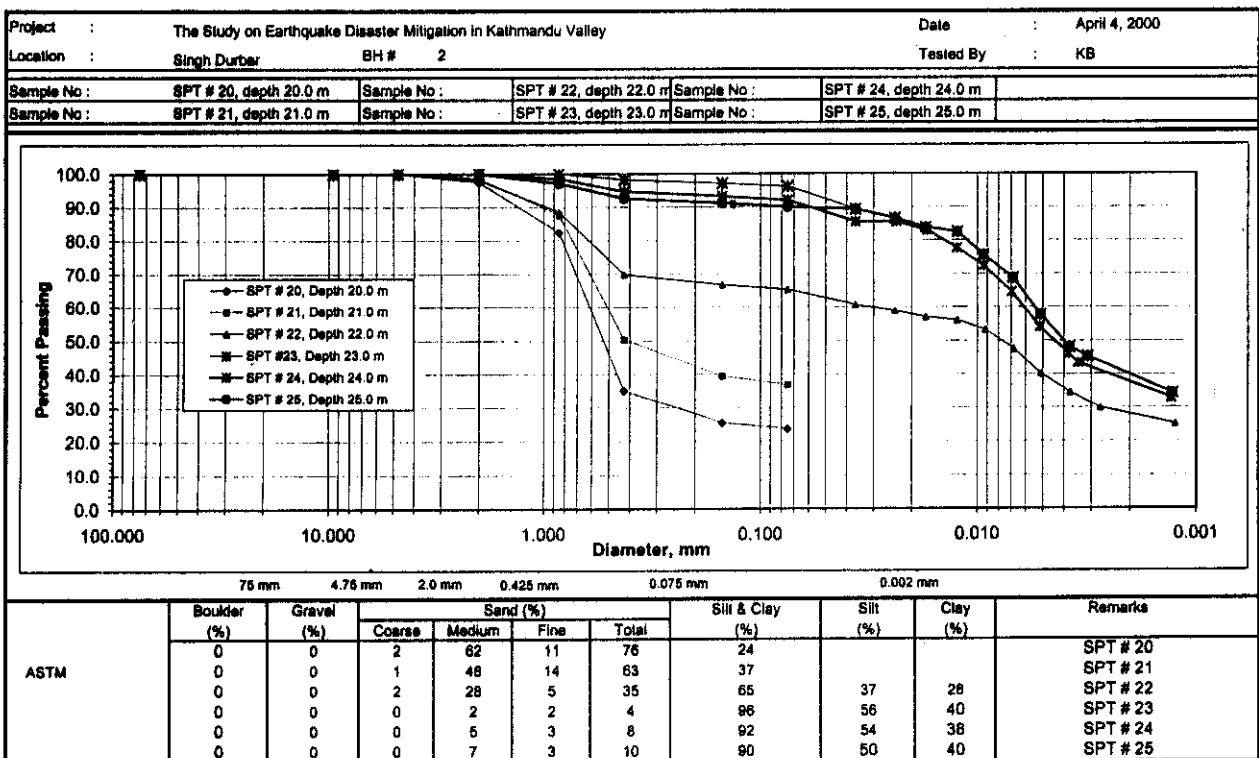
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GRAIN SIZE DISTRIBUTION**



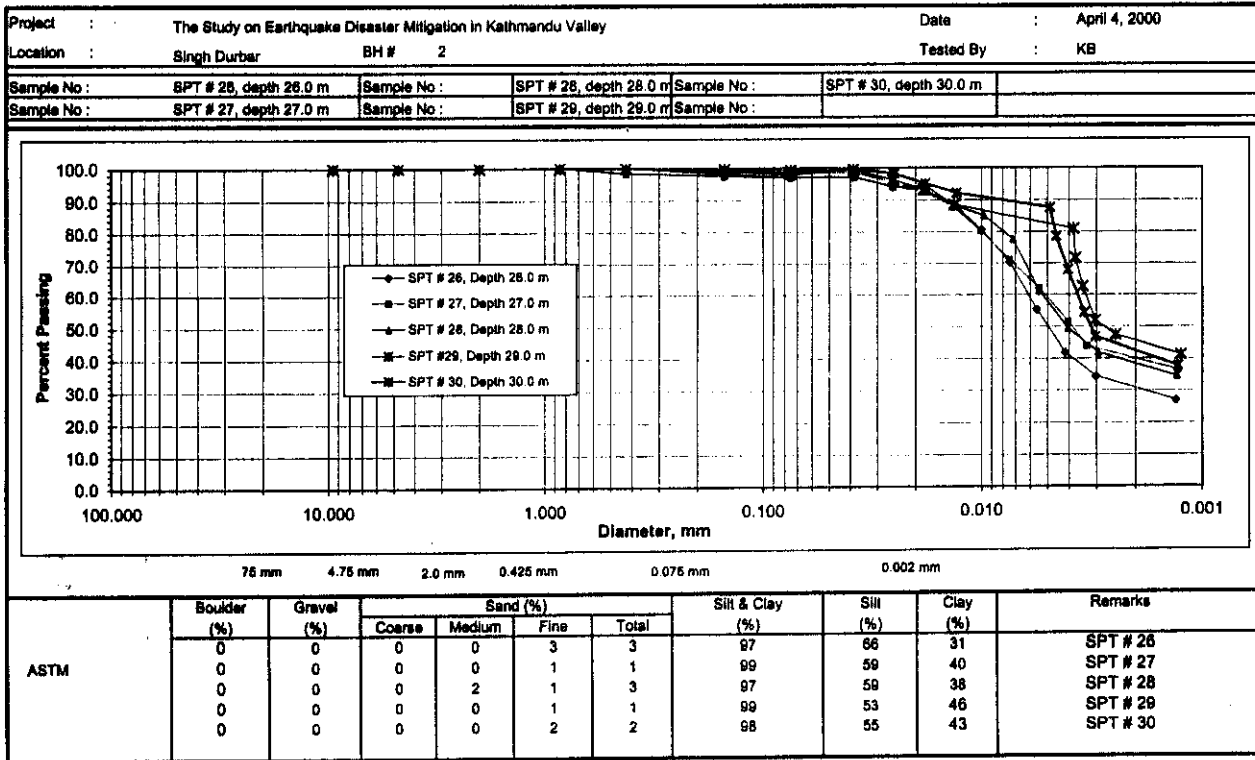
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GRAIN SIZE DISTRIBUTION**



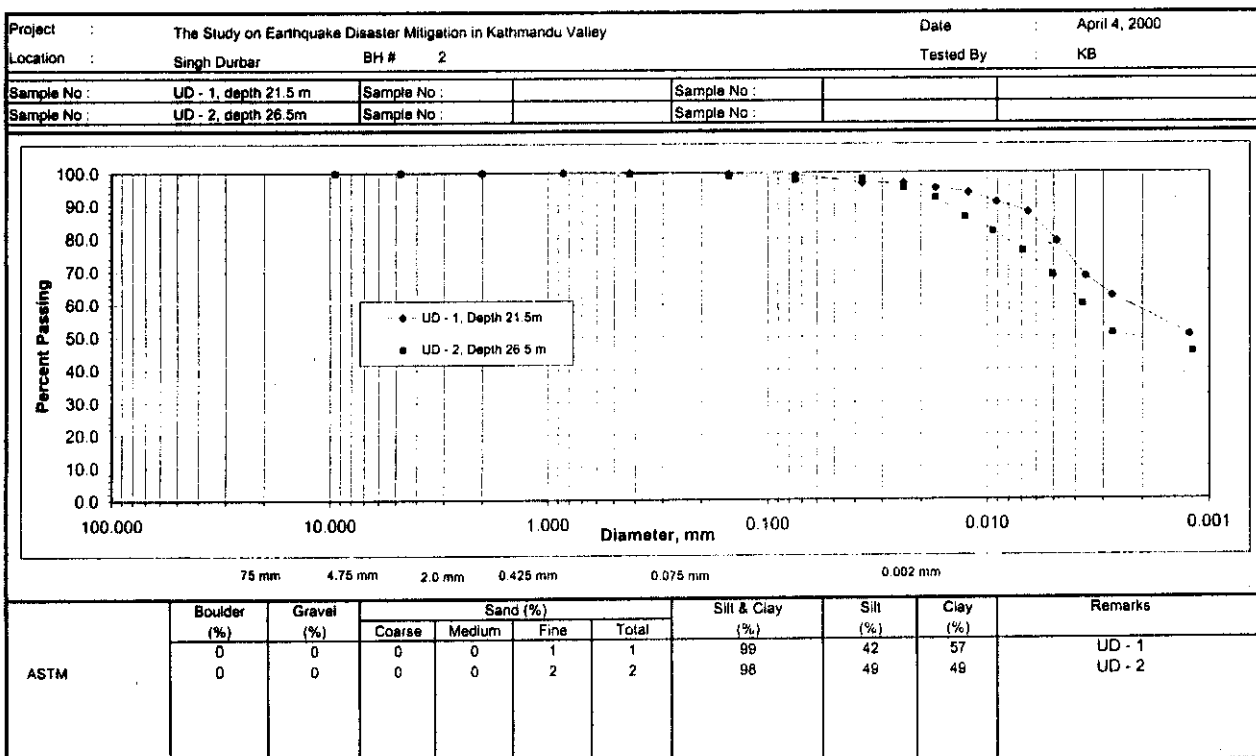
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GRAIN SIZE DISTRIBUTION**



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GRAIN SIZE DISTRIBUTION**



**GEOCE CONSULTANTS (P) LTD.  
GRAIN SIZE DISTRIBUTION**

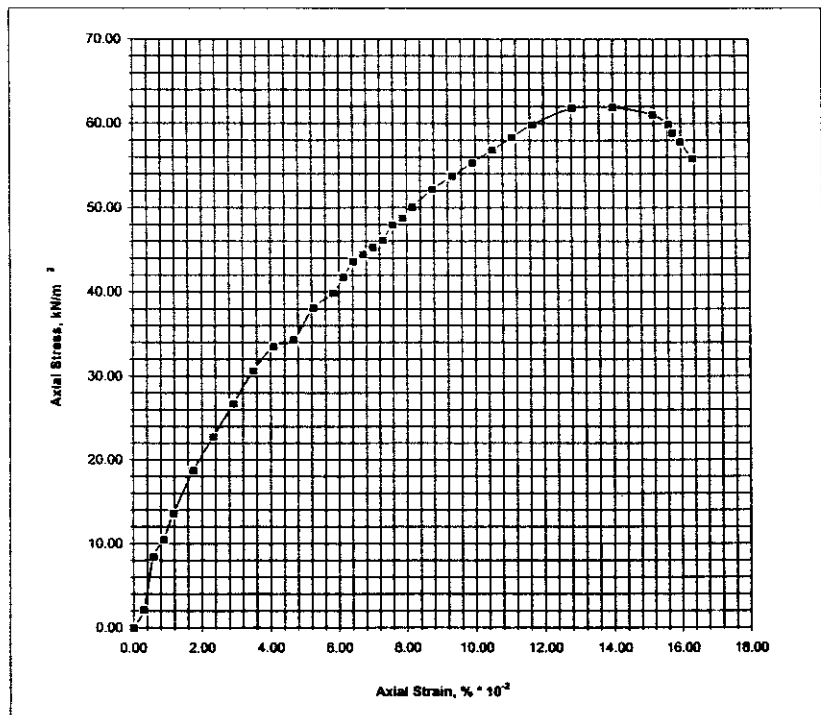


GEOCE CONSULTANTS (P) LTD.  
**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Singh Durbar

Date: April 8, 2001  
 Tested By : KB

BH - 2	Sample # UD - 1 at 21.5 m		
Wet Density, kN/m <sup>3</sup> :	15.81	Moisture Content, % :	41.77
		Dry Density, kN/m <sup>3</sup> :	11.15



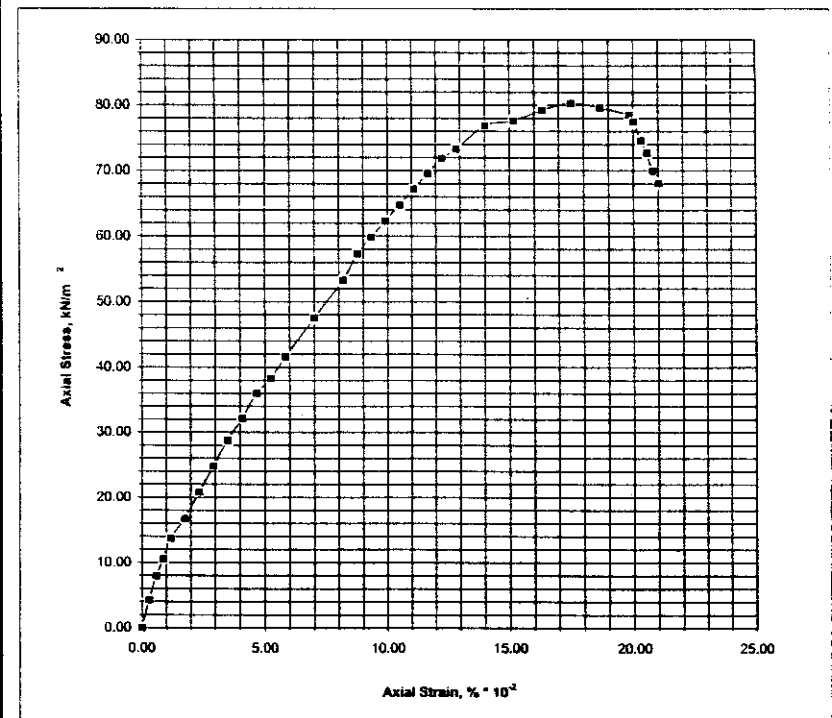
Unconfined Compressive Strength = 61.9 kN/m<sup>2</sup>  
 Undrained Shear Strength = 30.95 kN/m<sup>2</sup>

GEOCE CONSULTANTS (P) LTD.  
**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Singh Durbar

Date: April 8, 2001  
 Tested By : KB

BH - 2	Sample # UD - 2 at 26.5 m		
Moisture Content, % :	44.20	Wet Density, kN/m <sup>3</sup> :	15.60
		Dry Density, kN/m <sup>3</sup> :	10.82



Unconfined Compressive Strength = 80.3 kN/m<sup>2</sup>  
 Undrained Shear Strength = 40.15 kN/m<sup>2</sup>

GEOCE CONSULTANTS (P) LTD

ATTERBERG LIMITS TEST

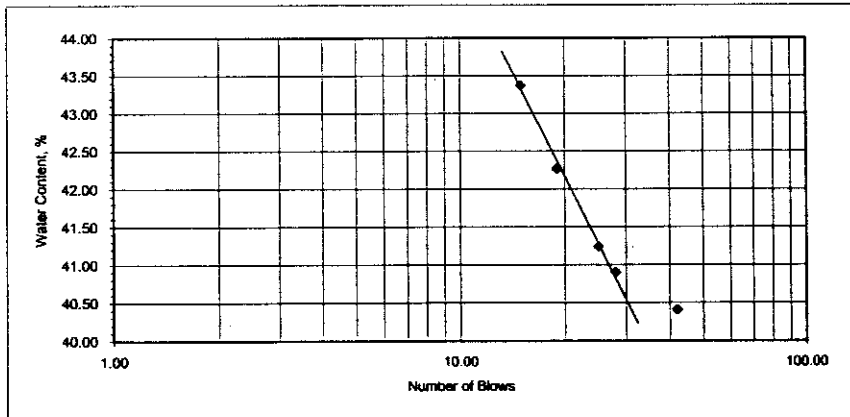
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: April 8, 2001  
 Location: Singh Durbar      Tested By KB  
 BH: 2      Sample No: SPT - 3      Depth: 3.0 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	32.6700	36.1650		
Weight of dry soil + container	g	31.9534	35.2826		
Weight of water	g	0.7166	0.8824		
Weight of container	g	29.4414	32.1633		
Weight of dry soil	g	2.5120	3.1193		
Water content	%	28.53	28.29		
Average	%		28.41		

LIQUID LIMIT

Container No						
Weight of wet soil + container	g	38.0449	40.9729	45.7366	41.8383	40.6965
Weight of dry soil + container	g	35.1851	37.7726	43.3341	38.5382	38.0826
Weight of water	g	2.8598	3.2003	2.4025	3.3001	2.6139
Weight of container	g	28.5915	30.2007	37.5084	30.4700	31.6139
Weight of dry soil	g	6.5936	7.5719	5.8257	8.0682	6.4687
Number of Blows		15.00	19.00	25.00	28.00	42.00
Water content	%	43.37	42.27	41.24	40.90	40.41



Liquid Limit: 41.3 Plastic Limit: 28.41 Plasticity Index: 12.89

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ATTERBERG LIMITS TEST

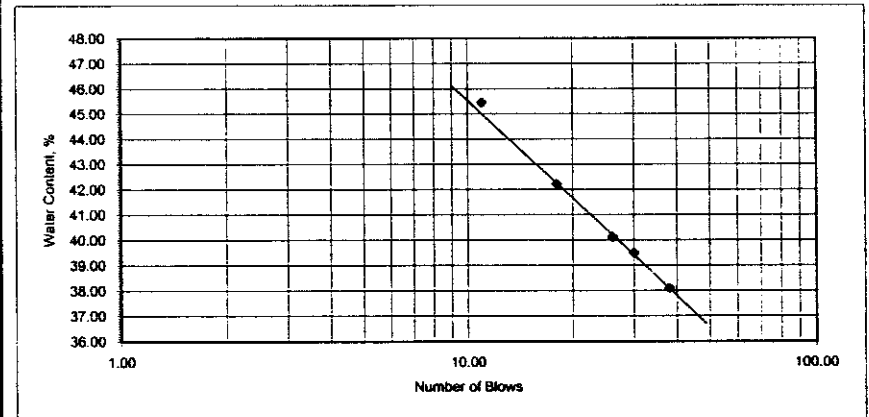
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: April 8, 2001  
 Location: Singh Durbar      Tested By KB  
 BH: 2      Sample No: SPT - 25      Depth: 25.0 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	36.0815	27.7522	33.0757	
Weight of dry soil + container	g	35.3575	27.0538	32.7528	
Weight of water	g	0.7240	0.6984	0.3229	
Weight of container	g	32.7547	24.5162	31.6139	
Weight of dry soil	g	2.6028	2.5376	1.1389	
Water content	%	27.82	27.52	28.35	
Average	%		27.90		

LIQUID LIMIT

Container No						
Weight of wet soil + container	g	41.8653	37.0463	38.4700	41.9511	36.4820
Weight of dry soil + container	g	38.7651	34.5844	36.1105	39.1626	34.3143
Weight of water	g	3.1002	2.4619	2.3595	2.7885	2.1677
Weight of container	g	31.9447	28.7523	30.2300	32.1018	28.6241
Weight of dry soil	g	6.8204	5.8321	5.8805	7.0608	5.6902
Number of Blows		11.00	18.00	26.00	30.00	38.00
Water content	%	45.45	42.21	40.12	39.49	38.10



Liquid Limit: 40.5 Plastic Limit: 27.90 Plasticity Index: 12.60



GEOCE CONSULTANTS (P) LTD

ATTERBERG LIMITS TEST

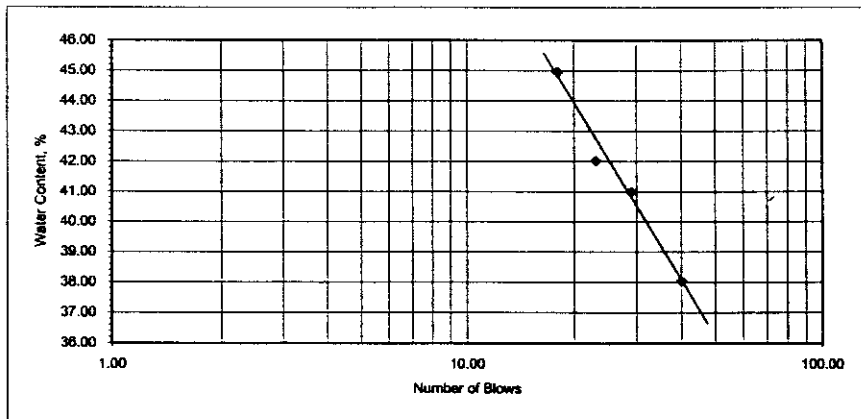
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: April 8, 2001  
 Location: Singh Durbar      Tested By : KB  
 BH: 2      Sample No: SPT - 30      Depth: 30.0 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	33.3453	41.3141		
Weight of dry soil + container	g	32.6842	40.4454		
Weight of water	g	0.6611	0.8687		
Weight of container	g	30.4700	37.5084		
Weight of dry soil	g	2.2142	2.9370		
Water content	%	29.86	29.58		
Average	%		29.72		

LIQUID LIMIT

Test No		1	2	3	4
Weight of wet soil + container	g	38.5700	41.4000	46.9670	42.9016
Weight of dry soil + container	g	35.2771	38.6670	43.7645	39.1921
Weight of water	g	3.2929	2.7330	3.2025	3.7095
Weight of container	g	27.9511	32.1633	35.9522	29.4414
Weight of dry soil	g	7.3260	6.5037	7.8123	9.7507
Number of Blows		18.00	23.00	29.00	40.00
Water content	%	44.95	42.02	40.99	38.04



Liquid Limit: 42.0      Plastic Limit: 29.72      Plasticity Index: 12.28

GEOCE CONSULTANTS (P) LTD  
 Geotechnical Engineering Division  
 ATTERBERG LIMITS TEST

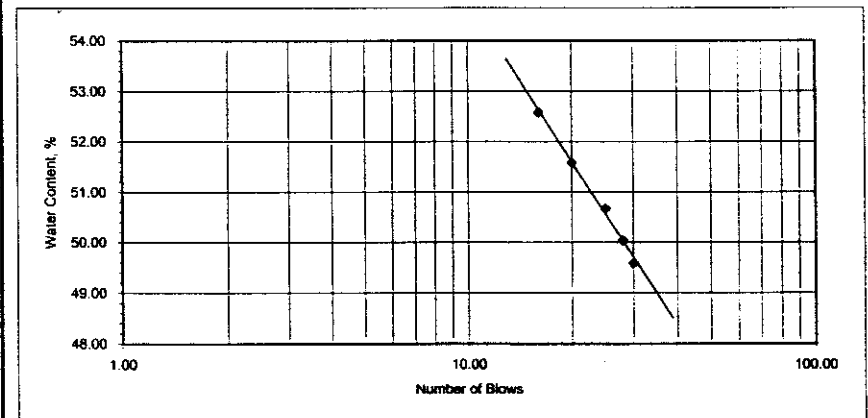
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: May 8, 2001  
 Location: Singh Durbar      Tested By KB  
 BH: 2      Sample No: UD - 1      Depth: 21.5 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	39.9820	32.2335	35.1918	32.4986
Weight of dry soil + container	g	39.3642	31.3937	34.4457	31.7404
Weight of water	g	0.6178	0.8398	0.7461	0.7582
Weight of container	g	37.5084	28.7523	32.1633	29.4414
Weight of dry soil	g	1.8558	2.6414	2.2824	2.2990
Water content	%	33.29	31.79	32.69	32.98
Average	%		32.69		

LIQUID LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	42.4309	41.3361	35.5568	38.7455
Weight of dry soil + container	g	39.0962	38.1400	33.7654	35.1455
Weight of water	g	3.3347	3.1961	1.7914	3.6000
Weight of container	g	32.7547	31.9447	30.2300	27.9511
Weight of dry soil	g	6.3415	6.1953	3.5354	7.1944
Number of Blows		16.00	20.00	25.00	28.00
Water content	%	52.59	51.59	50.67	50.04



Liquid Limit: 50.6      Plastic Limit: 32.7      Plasticity Index: 17.9

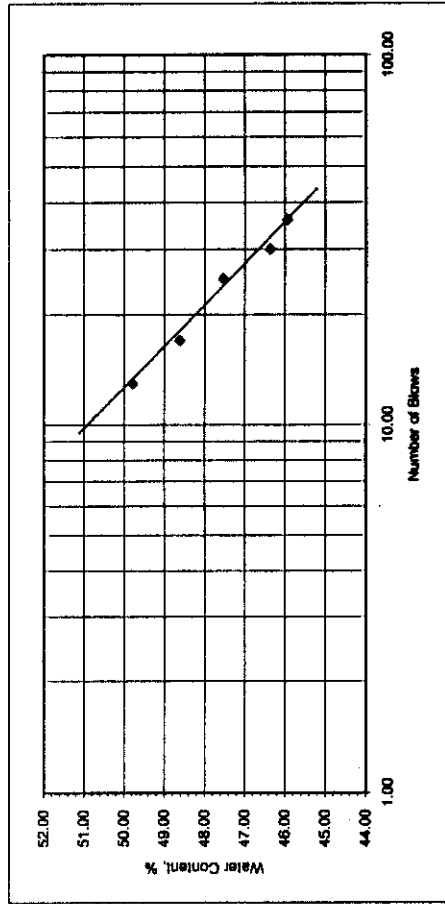
**GEOE CONSULTANTS (P) LTD**  
**Geotechnical Engineering Division**  
**ATTERBERG LIMITS TEST**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Date: May 8, 2001  
 Location: Singh Durbar  
 Tested By: KB  
 Depth: 26.5 m  
 BH: 2  
 Sample No: UD - 2

Test No	PLASTIC LIMIT				Average
	1	2	3	4	
Container No					
Weight of wet soil + container	34.4142	35.5657	40.8757		
Weight of dry soil + container	33.3900	34.7400	39.9069		
Weight of water	1.0242	0.8257	0.7688		
Weight of container	30.2300	32.1633	37.5084		
Weight of dry soil	3.1600	2.5767	2.3985		
Water content	32.41	32.04	32.05		
Average		32.17			

Test No	LIQUID LIMIT				Average
	1	2	3	4	
Container No					
Weight of wet soil + container	37.2400	40.5726	38.4464	44.2960	47.4538
Weight of dry soil + container	34.1524	37.7500	35.2616	40.6400	43.8335
Weight of water	3.0876	2.8226	3.1848	3.6560	3.6203
Weight of container	27.9511	31.9447	28.6241	32.7547	35.9522
Weight of dry soil	6.2013	5.8053	6.6575	7.8853	7.8813
Number of Blows	13.00	17.00	25.00	30.00	36.00
Water content	49.79	48.62	47.54	46.36	45.94



Liquid Limit: 47.4 Plastic Limit: 32.2 Plasticity Index: 15.2

**GEOE CONSULTANTS (P) LTD.**  
**SPECIFIC GRAVITY TEST OF SOILS**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Singh Durbar  
 Borehole No : 2

Sample No	SPT - 22			SPT - 23			SPT - 24			SPT - 25		
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °C	51	45	38	51	46	39	51	45	40	53	46	39
2 Wt. Of Flask + Water + Soil	758.9	758	759.7	749.1	749.9	751.3	747.6	748.9	750.2	733.4	734.4	735.4
3 Wt. Of Flask + Water (From Calib)	725.2	728.5	728.1	717.7	718.8	720.3	716.1	717.6	718.9	701.8	702.9	703.9
4 Wt. Of Dry Soil + Container	203.1			227.6			205.3			190		
5 Wt. Of Container	153.4			178.7			155.6			140.4		
6 Wt. Of Dry Soil	49.7			49.2			49.7			49.6		
7 Sp. Gr. Of water at 10 c	0.9876	0.9902	0.9930	0.9876	0.9898	0.9926	0.9878	0.9902	0.9922	0.9867	0.9898	0.9926
8 Sp. Gr. Of soils = (8 x 7)/(3+6-2)	2.7269	2.7040	2.7266	2.7298	2.8905	2.6833	2.6969	2.6746	2.6800	2.7189	2.7124	2.7201
9 Average Sp. Gr	2.719			2.701			2.684			2.717		

Sample No	SPT - 26			SPT - 27			SPT - 28			SPT - 29		
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °C	55	45	40	56	51	42	51	47	41	53	48	44
2 Wt. Of Flask + Water + Soil	755.9	757.6	759	747.4	748.3	750.1	748	749.1	750.5	732.8	733.5	734.2
3 Wt. Of Flask + Water (From Calib)	724.3	728.5	727.6	718.7	717.7	719.6	718.1	717.1	718.6	701.8	702.4	703.1
4 Wt. Of Dry Soil + Container	168.5			221.6			205.3			208.4		
5 Wt. Of Container	137			173.6			155.2			150.8		
6 Wt. Of Dry Soil	49.5			48.1			50.1			48.8		
7 Sp. Gr. Of water at 10 c	0.9857	0.9902	0.9922	0.9852	0.9876	0.9915	0.9878	0.9894	0.9919	0.9867	0.9885	0.9907
8 Sp. Gr. Of soils = (8 x 7)/(3+6-2)	2.7258	2.8631	2.7135	2.7235	2.7145	2.7097	2.7188	2.7386	2.7304	2.7051	2.7254	2.7314
9 Average Sp. Gr	2.711			2.718			2.729			2.721		

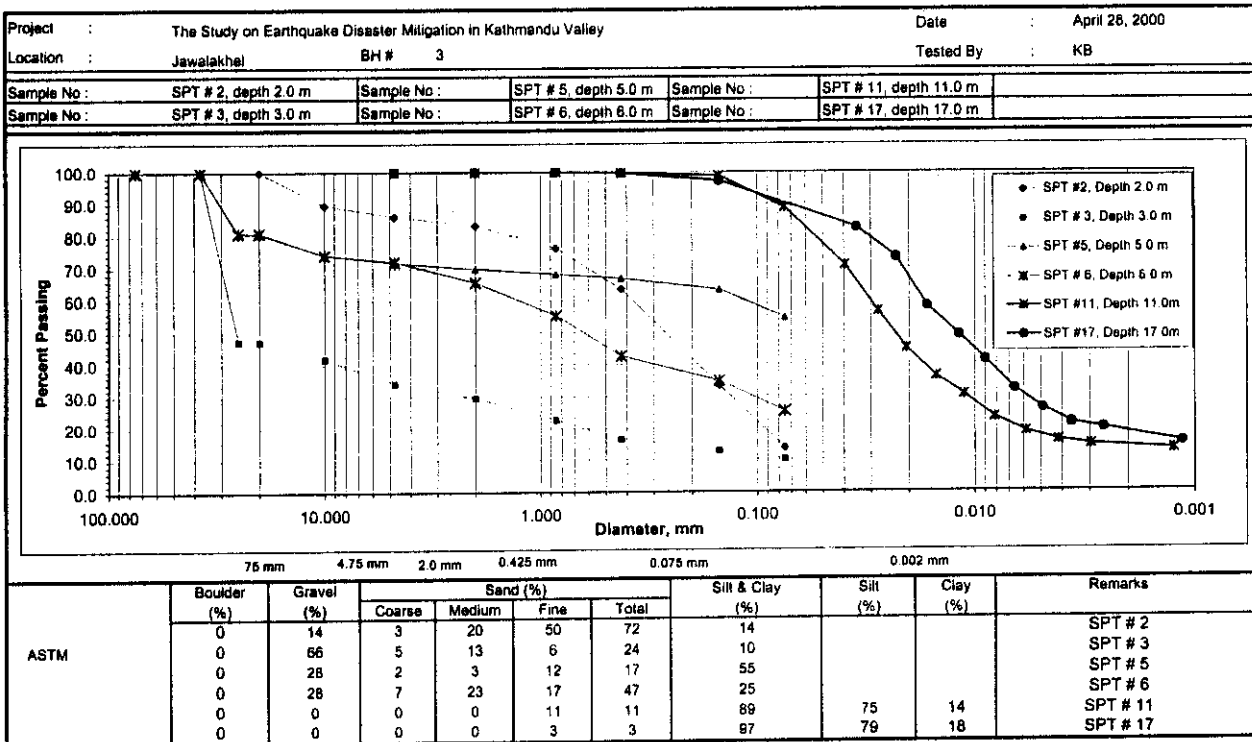
  

Sample No	SPT - 30			UD - 1			UD - 2			SPT - 4		
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °C	55	47	39	53	44	39	55	47	41	61	54	41
2 Wt. Of Flask + Water + Soil	755.4	757.1	758.7	751.3	753.1	753.2	747.6	748.9	751.1	748.3	749.2	752
3 Wt. Of Flask + Water (From Calib)	724.3	728.1	727.6	719.3	721.2	721.3	715.7	717.1	719.4	715.6	717.1	719.9
4 Wt. Of Dry Soil + Container	207.4			223.7			205.8			186.2		
5 Wt. Of Container	158.5			172.3			154.6			136.5		
6 Wt. Of Dry Soil	48.9			51.4			51.2			49.7		
7 Sp. Gr. Of water at 10 c	0.9857	0.9894	0.9926	0.9867	0.9907	0.9926	0.9857	0.9894	0.9919	0.9827	0.9882	0.9919
8 Sp. Gr. Of soils = (8 x 7)/(3+6-2)	2.7079	2.7029	2.8068	2.6142	2.6114	2.6164	2.6149	2.6112	2.6044	2.6400	2.6436	2.6569
9 Average Sp. Gr	2.702			2.614			2.610			2.648		

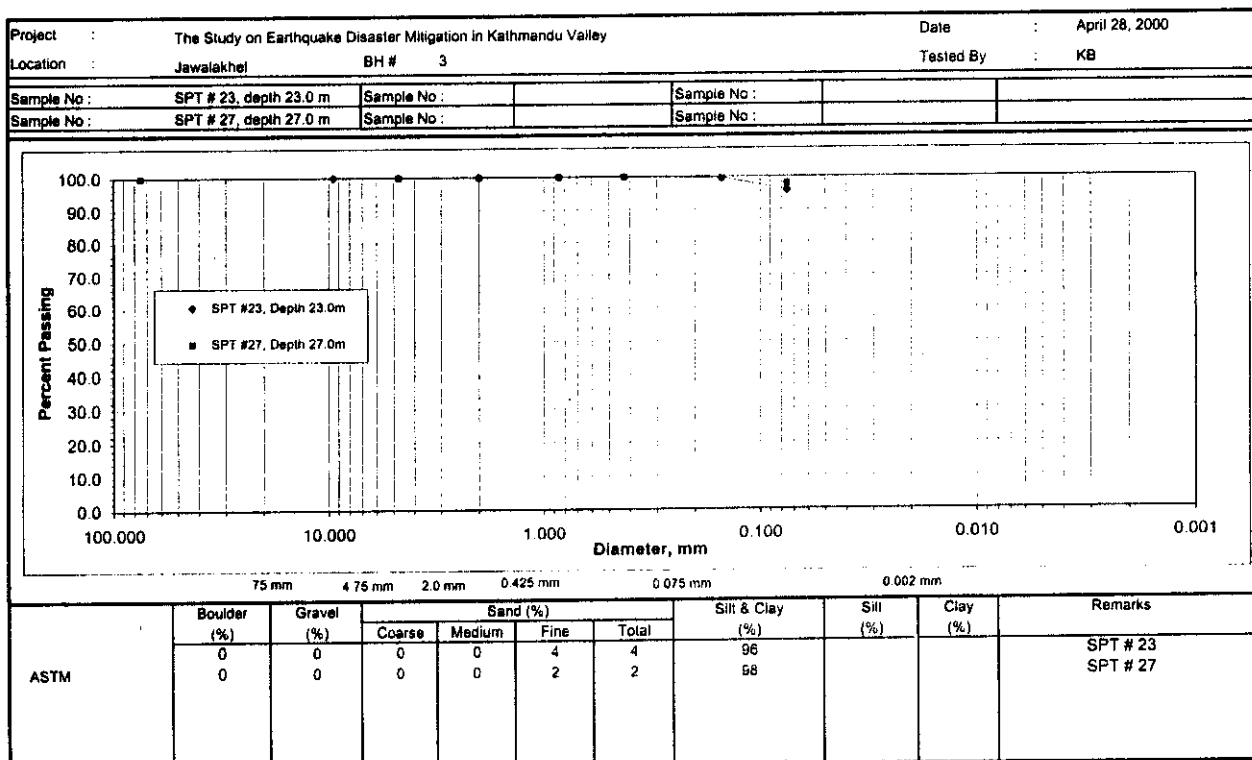
  

Sample No	SPT - 11			SPT - 17			SPT - 14		
Determination No	1	2	3	1	2	3	1	2	3
1 Temperature, °C	60	46	40	55	47	37	65	52	42
2 Wt. Of Flask + Water + Soil	745.6	749.2	750.3	732.5	733.8	735.2	754	758.8	758.5
3 Wt. Of Flask + Water (From Calib)	713.8	717.4	718.9	701.4	702.7	704.2	722.1	724.9	726.7
4 Wt. Of Dry Soil + Container	185.9			204.6			223.8		
5 Wt. Of Container	145			155.3			172.6		
6 Wt. Of Dry Soil	50.9			49.2			51.2		
7 Sp. Gr. Of water at 10 c	0.9832	0.9898	0.9922	0.9857	0.9894	0.9934	0.9808	0.9872	0.9915
8 Sp. Gr. Of soils = (8 x 7)/(3+6-2)	2.6202	2.6377	2.6167	2.6794	2.6894	2.6855	2.6014	2.6189	2.6167
9 Average Sp. Gr	2.625			2.685			2.612		

**GEOCE CONSULTANTS (P) LTD.  
GRAIN SIZE DISTRIBUTION**



**GEOCE CONSULTANTS (P) LTD.  
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**GEOCE CONSULTANTS (P) LTD.  
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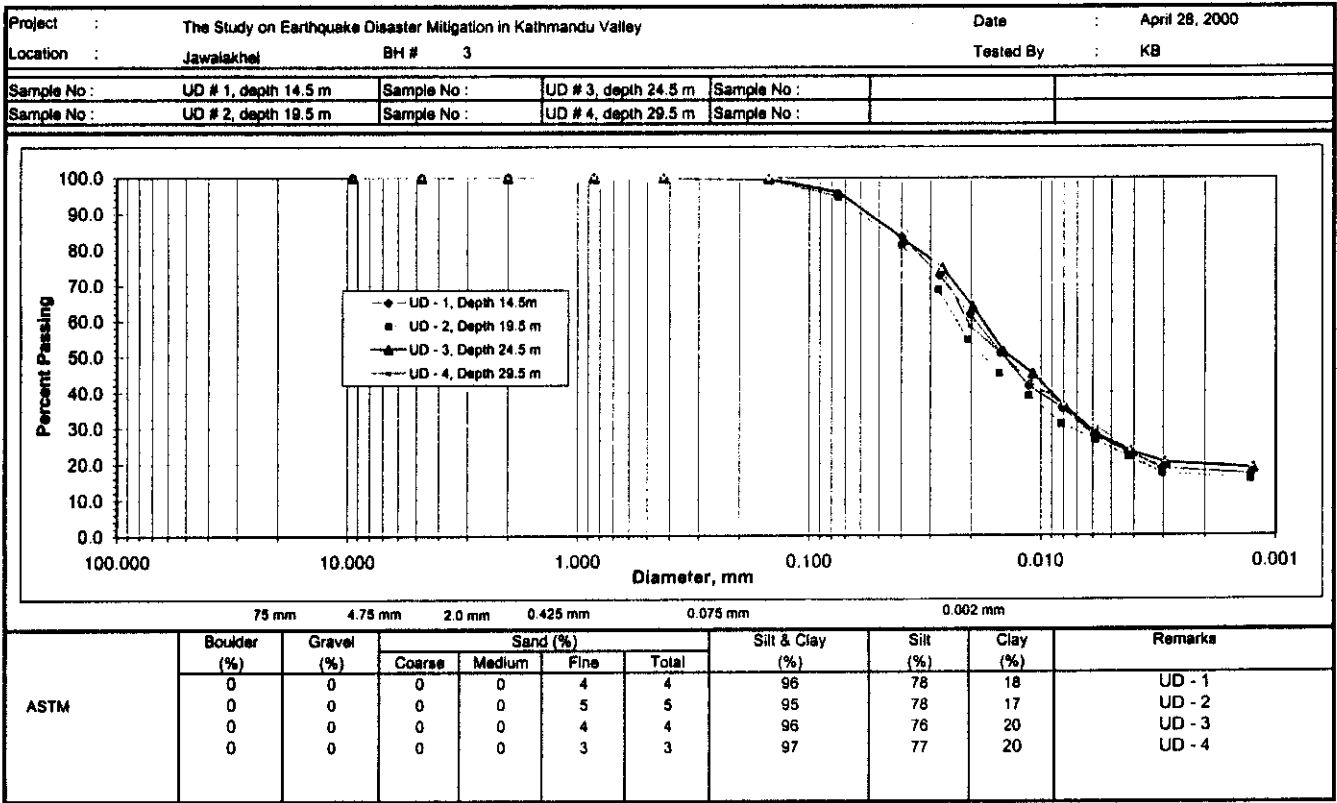
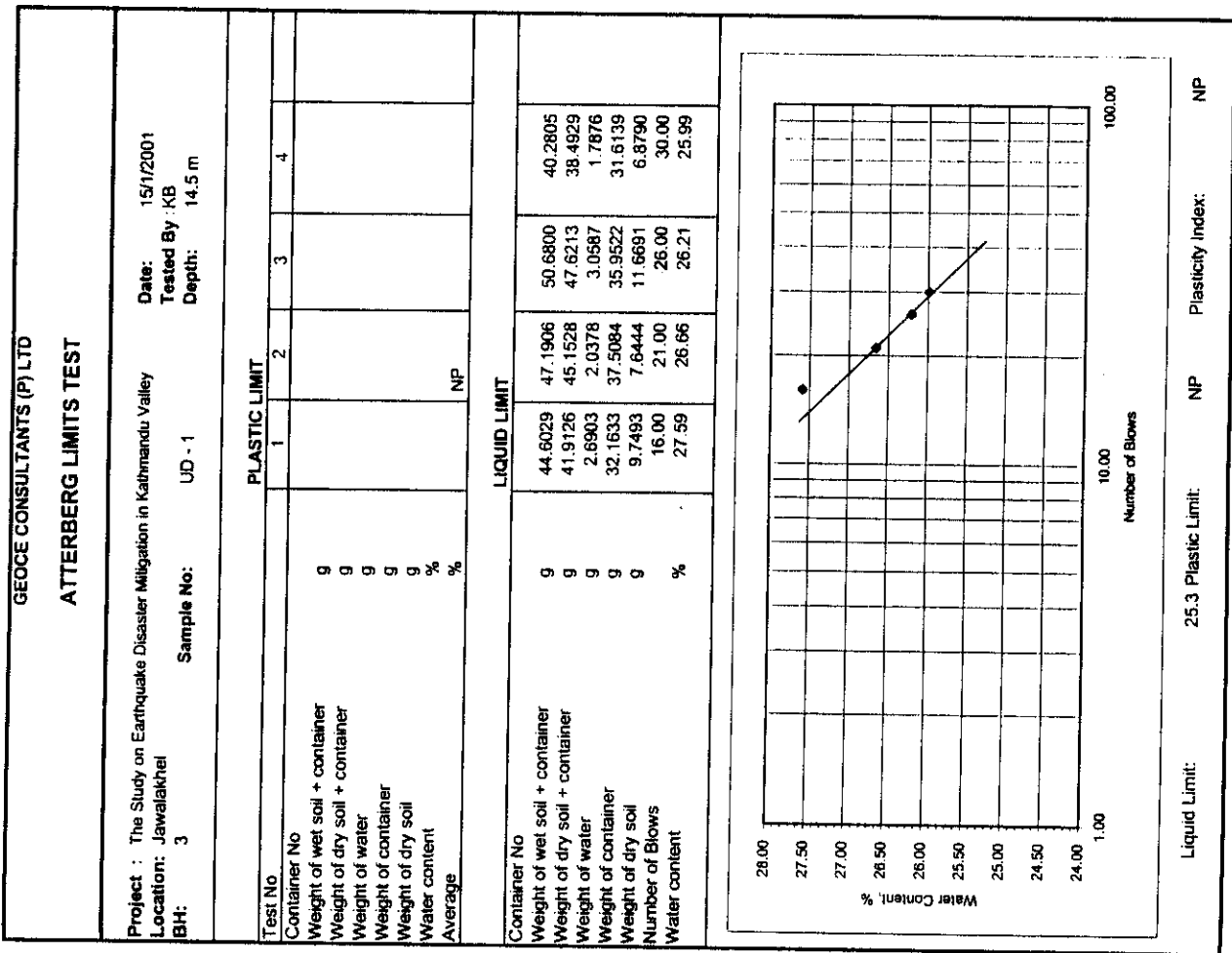


Figure 1



GEOCE CONSULTANTS (P) LTD

ATTERBERG LIMITS TEST

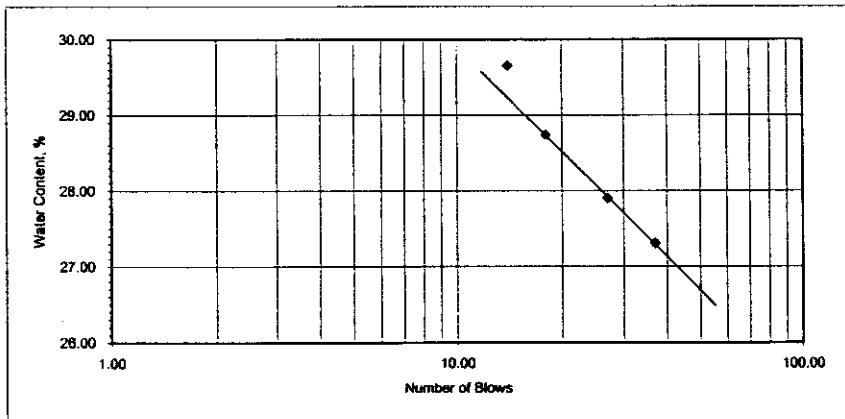
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: 15/1/2001  
 Location: Jawalakhel      Tested By KB  
 BH: 3      Sample No: UD - 2      Depth: 19.5 m

PLASTIC LIMIT

Test No	1	2	3	4
Container No				
Weight of wet soil + container	g			
Weight of dry soil + container	g			
Weight of water	g			
Weight of container	g			
Weight of dry soil	g			
Water content	%			
Average	%	NP		

LIQUID LIMIT

Container No	1	2	3	4	
Weight of wet soil + container	g	46.6005	45.9200	49.1405	43.3600
Weight of dry soil + container	g	42.3348	42.2411	44.6649	39.6640
Weight of water	g	4.2657	3.6789	4.4756	3.6960
Weight of container	g	27.9511	29.4414	28.6241	26.1300
Weight of dry soil	g	14.3837	12.7997	16.0408	13.5340
Number of Blows		14.00	18.00	27.00	37.00
Water content	%	29.66	28.74	27.90	27.31



Liquid Limit: 28.3 Plastic Limit: NP Plasticity Index: NP

GEOCE CONSULTANTS (P) LTD

ATTERBERG LIMITS TEST

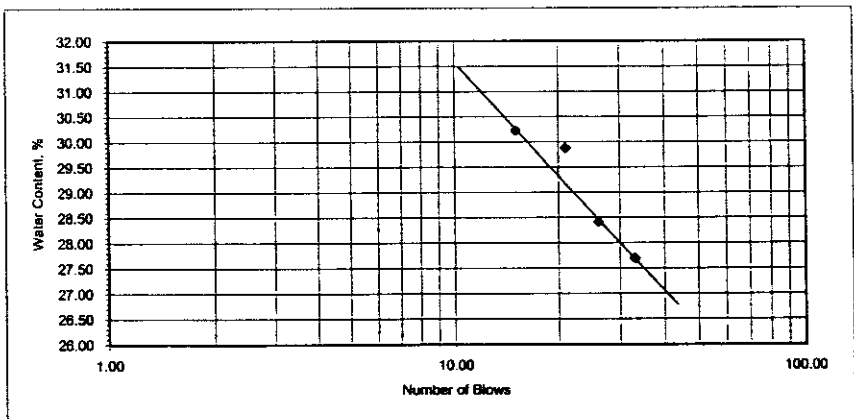
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: 15/1/2001  
 Location: Jawalakhel      Tested By KB  
 BH: 3      Sample No: UD - 3      Depth: 24.5 m

PLASTIC LIMIT

Test No	1	2	3	4
Container No				
Weight of wet soil + container	g	35.4017	35.4429	
Weight of dry soil + container	g	34.9037	35.0606	
Weight of water	g	0.4980	0.3823	
Weight of container	g	32.7547	33.3300	
Weight of dry soil	g	2.1490	1.7306	
Water content	%	23.17	22.09	
Average	%		22.63	

LIQUID LIMIT

Container No	1	2	3	4	
Weight of wet soil + container	g	48.5262	56.2855	45.0714	43.8654
Weight of dry soil + container	g	43.8820	51.9316	42.2016	40.9600
Weight of water	g	4.6442	4.3539	2.8698	2.9054
Weight of container	g	28.5200	37.3600	32.1018	30.4700
Weight of dry soil	g	15.3620	14.5716	10.0998	10.4900
Number of Blows		15.00	21.00	26.00	33.00
Water content	%	30.23	29.88	28.41	27.70



Liquid Limit: 28.5 Plastic Limit: 22.6 Plasticity Index: 5.9

GEOCE CONSULTANTS (P) LTD

ATTEBERG LIMITS TEST

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Jawalakhel  
 BH: 3

Date: 15/1/2001  
 Tested By KB  
 Depth: 29.5 m

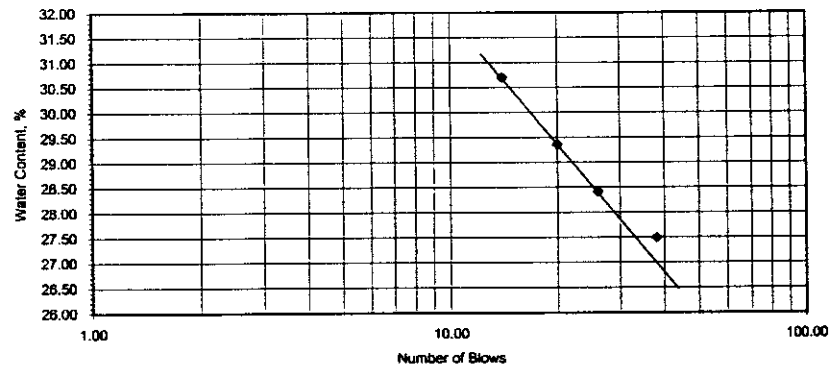
Sample No: UD - 4

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	34.3549	40.4600		
Weight of dry soil + container	g	33.7200	39.8275		
Weight of water	g	0.6349	0.6325		
Weight of container	g	30.8445	36.8400		
Weight of dry soil	g	2.8755	2.9875		
Water content	%	22.08	21.17		
Average	%		21.63		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	45.1629	46.7900	40.1524	43.6906
Weight of dry soil + container	g	41.6549	42.6962	36.6921	41.1576
Weight of water	g	3.5080	4.0938	3.4603	2.5330
Weight of container	g	30.2300	28.7523	24.5162	31.9447
Weight of dry soil	g	11.4249	13.9439	12.1759	9.2129
Number of Blows		14.00	20.00	26.00	38.00
Water content	%	30.70	29.36	28.42	27.49



Liquid Limit: 28.6 Plastic Limit: 21.6 Plasticity Index: 7.0

GEOCE CONSULTANTS (P) LTD

ATTEBERG LIMITS TEST

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Jawalakhel  
 BH: 3

Date: 15/1/2001  
 Tested By KB  
 Depth: 19.5 m

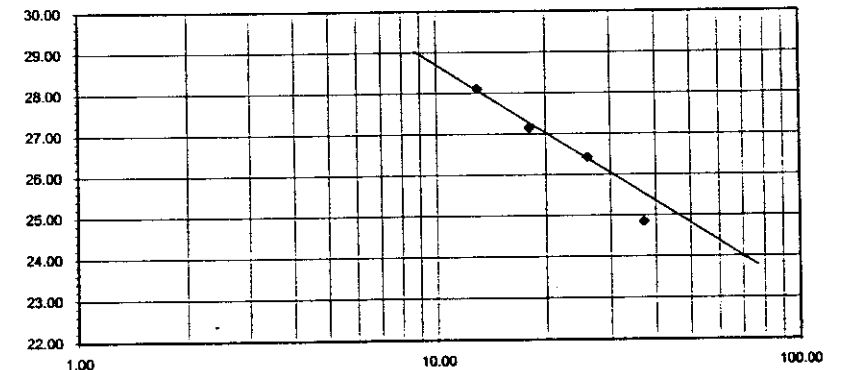
Sample No: SPT - 17

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g				
Weight of dry soil + container	g				
Weight of water	g				
Weight of container	g				
Weight of dry soil	g				
Water content	%				
Average	%		NP		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	39.8700	36.2780	43.6084	31.4752
Weight of dry soil + container	g	38.1653	34.6710	42.3333	30.4112
Weight of water	g	1.7047	1.6070	1.2751	1.0640
Weight of container	g	32.1018	28.7523	37.5084	26.1300
Weight of dry soil	g	6.0635	5.9187	4.8249	4.2812
Number of Blows		13.00	18.00	26.00	37.00
Water content	%	28.11	27.15	26.43	24.85



Liquid Limit: 26.5 Plastic Limit: NP Plasticity Index: NP

GEOCE CONSULTANTS (P) LTD

ATTERBERG LIMITS TEST

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Jawalakhel  
 BH: 3 Sample No: SPT - 27

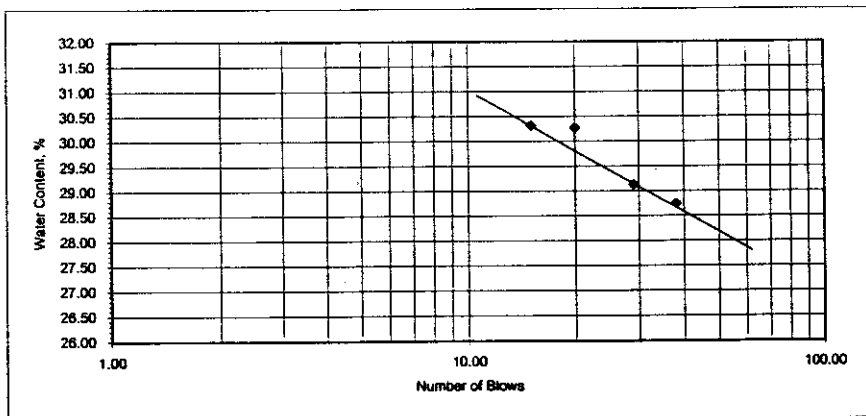
Date: 15/1/2001  
 Tested By KB  
 Depth: 27.0 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	27.2331	41.6306		
Weight of dry soil + container	g	26.7373	40.8445		
Weight of water	g	0.4958	0.7861		
Weight of container	g	24.5162	37.3600		
Weight of dry soil	g	2.2211	3.4845		
Water content	%	22.32	22.56		
Average	%		22.44		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	40.1355	41.3826	42.7656	48.2500
Weight of dry soil + container	g	37.2309	38.7909	40.2500	45.7021
Weight of water	g	2.9046	2.5917	2.5156	2.5479
Weight of container	g	27.6511	30.2300	31.6139	36.8400
Weight of dry soil	g	9.5798	8.5609	8.6361	8.8621
Number of Blows		15.00	20.00	29.00	38.00
Water content	%	30.32	30.27	29.13	28.75



Liquid Limit: 29.5 Plastic Limit: 22.4 Plasticity Index: 7.1

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Unconfined Compression Test

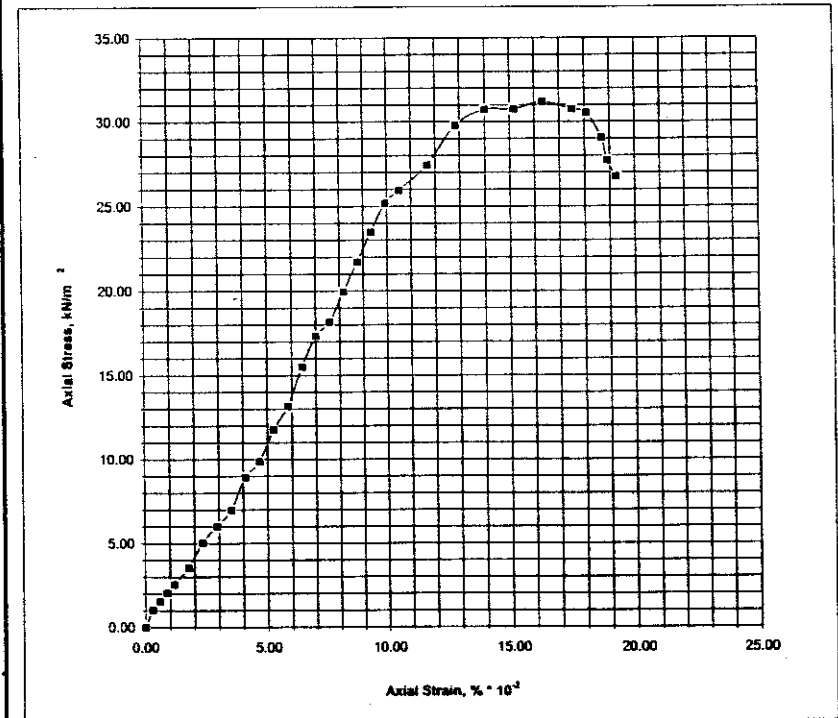
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Jawalakhel

Date: April 8, 2001  
 Tested By : KB

BH - 3

Sample # UD - 2 at 19.5 m

Wet Density, kN/m<sup>3</sup> : 16.47 Moisture Content, % : 32.15 Dry Density, kN/m<sup>3</sup> : 12.46



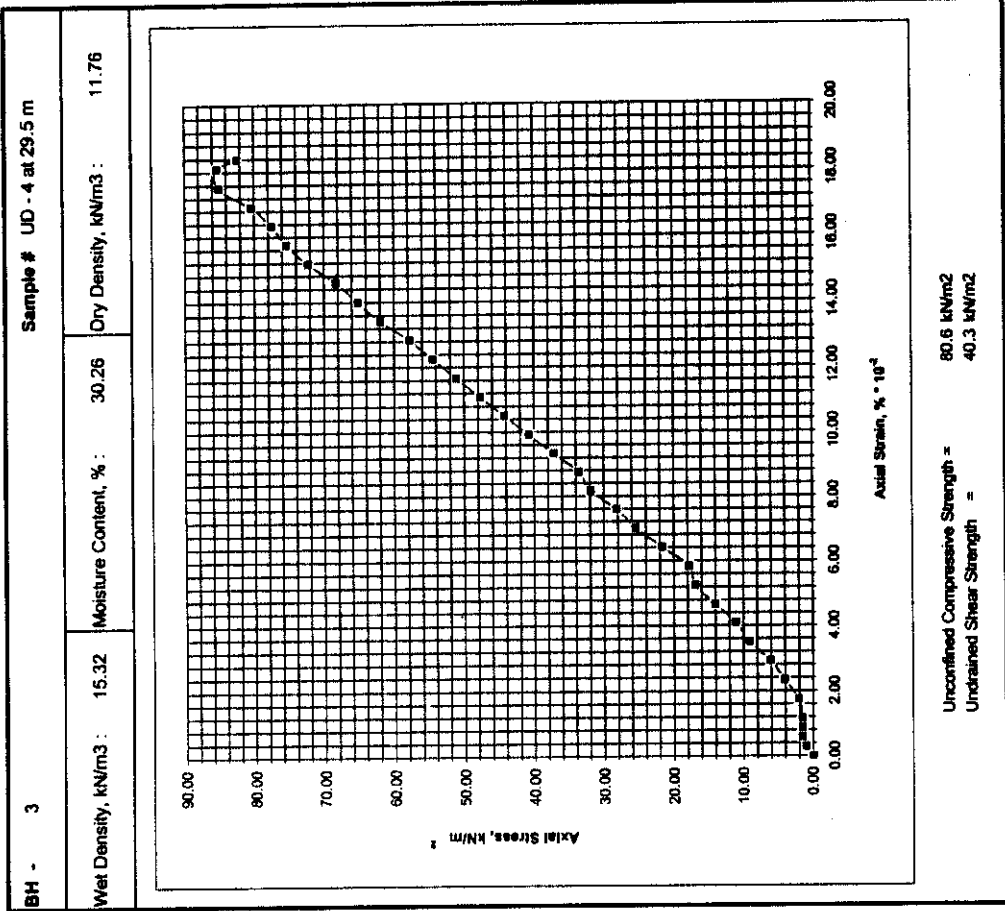
Unconfined Compressive Strength = 31.2 kN/m<sup>2</sup>  
 Undrained Shear Strength = 15.6 kN/m<sup>2</sup>

**GEOCE CONSULTANTS (P) LTD.**

**Unconfined Compression Test**

**Project :** The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
**Location:** Jawalakhel

**Date:** April 8, 2001  
**Tested By :** KB



**GEOCE CONSULTANTS (P) LTD.**  
**SPECIFIC GRAVITY TEST OF SOILS**

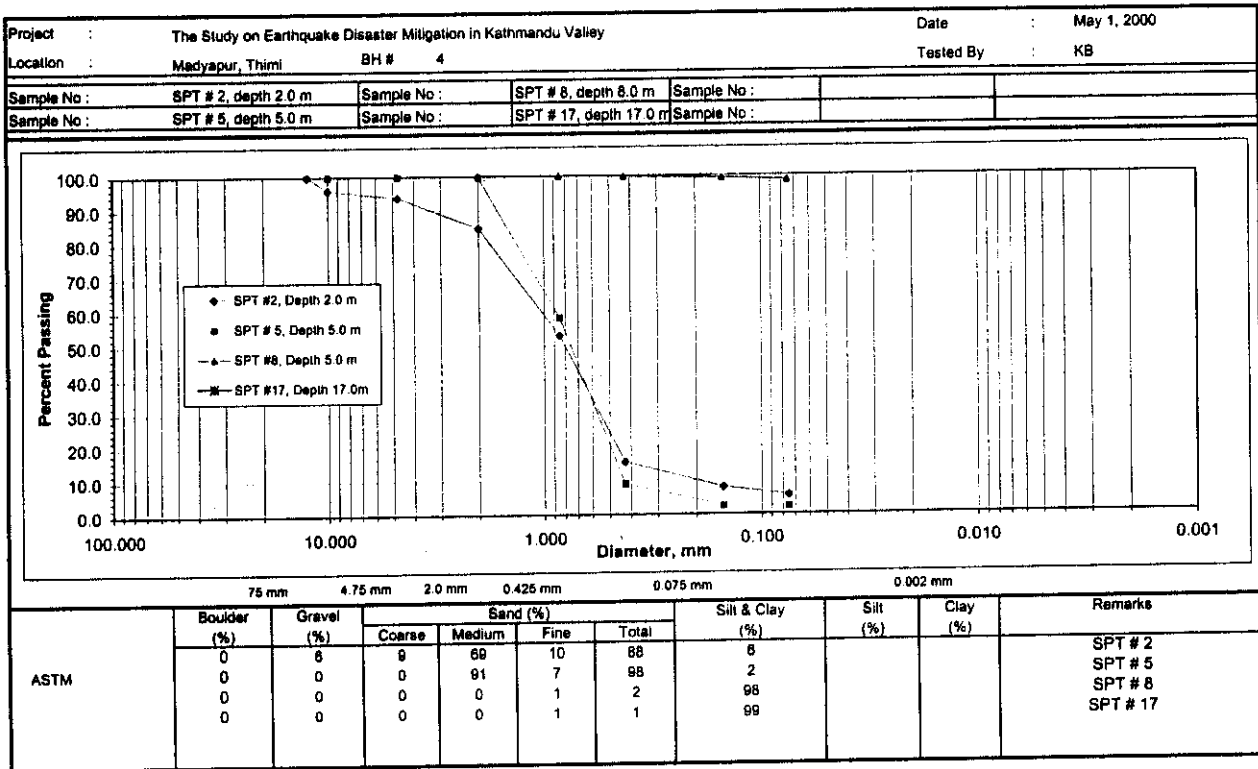
**Project :** The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
**Location:** Jawalakhel

**Borehole No :** 3

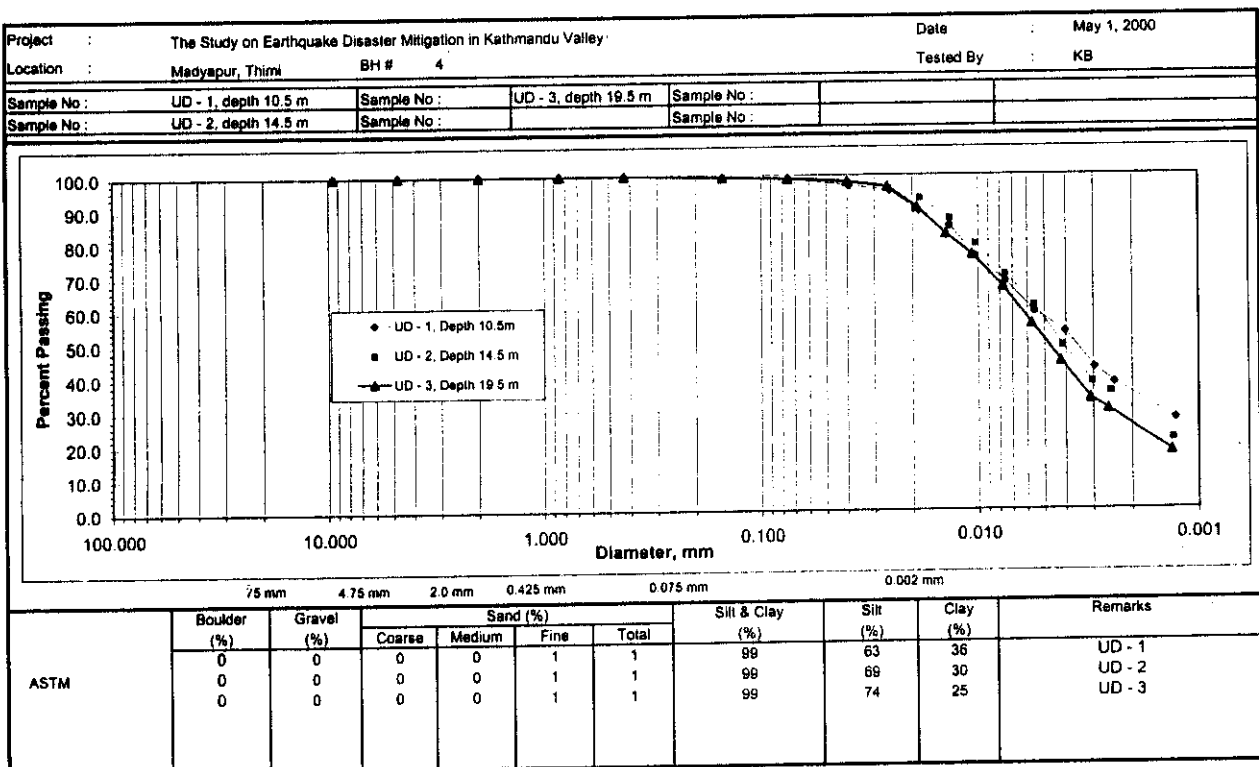
Sample No.	UD - 1			UD - 2			UD - 3			UD - 4		
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °c	54	48	41	51	45	41	48	43	38	58	49	45
2 Wt. Of Flask + Water + Soil	750.5	751.5	753.3	748	749.4	751.3	732.5	733.4	734.5	754.8	756.6	757.4
3 Wt. Of Flask + Water (From Calib)	717.1	718.3	719.9	718.1	717.6	719.6	702.5	703.3	704.4	723.8	725.6	726.5
4 Wt. Of Dry Soil + Container	191.4			195.1			202.7			227.7		
5 Wt. Of Container	139			145			155.6			179.1		
6 Wt. Of Dry Soil	52.4			50.1			47.1			48.6		
7 Sp. Gr. Of water at 10 c	0.9862	0.9890	0.9919	0.9878	0.9902	0.9919	0.9890	0.9911	0.9930	0.9842	0.9885	0.9902
8 Sp. Gr. Of soils = (6 x 7)/(3+6-2)	2.7198	2.6991	2.7356	2.7186	2.7109	2.7008	2.7241	2.7459	2.7512	2.7177	2.7296	2.7189
9 Average Sp. Gr.		2.718			2.710			2.740			2.722	
Sample No.	SPT - 2			SPT - 6			SPT - 11			SPT - 17		
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °c	61	52	42	58	52	44	51	40	35	57	51	37
2 Wt. Of Flask + Water + Soil	754.9	756.7	758.8	748	749.2	750.8	757.5	759.8	760.9	748.5	749.6	752.2
3 Wt. Of Flask + Water (From Calib)	723	724.9	727.2	718.3	717.5	719.2	725.2	727.6	728.7	716.5	717.7	720.3
4 Wt. Of Dry Soil + Container	223.5			205.0			187.3			205.5		
5 Wt. Of Container	172.6			155.6			136.5			155.3		
6 Wt. Of Dry Soil	50.9			49.4			50.8			50.2		
7 Sp. Gr. Of water at 10 c	0.9827	0.9872	0.9915	0.9842	0.9872	0.9907	0.9876	0.9922	0.9941	0.9848	0.9876	0.9934
8 Sp. Gr. Of soils = (6 x 7)/(3+6-2)	2.6326	2.6306	2.6149	2.7489	2.7552	2.7495	2.7119	2.7099	2.7151	2.7163	2.7092	2.7251
9 Average Sp. Gr.		2.626			2.751			2.712			2.717	
Sample No.	SPT - 27											
Determination No	1	2	3									
1 Temperature, °c	59	51	45									
2 Wt. Of Flask + Water + Soil	745.3	747.4	749.2									
3 Wt. Of Flask + Water (From Calib)	714	716	717.9									
4 Wt. Of Dry Soil + Container	205											
5 Wt. Of Container	155.6											
6 Wt. Of Dry Soil	49.4											
7 Sp. Gr. Of water at 10 c	0.9838	0.9876	0.9907									
8 Sp. Gr. Of soils = (6 x 7)/(3+6-2)	2.6851	2.7104	2.7039									
9 Average Sp. Gr.		2.700										



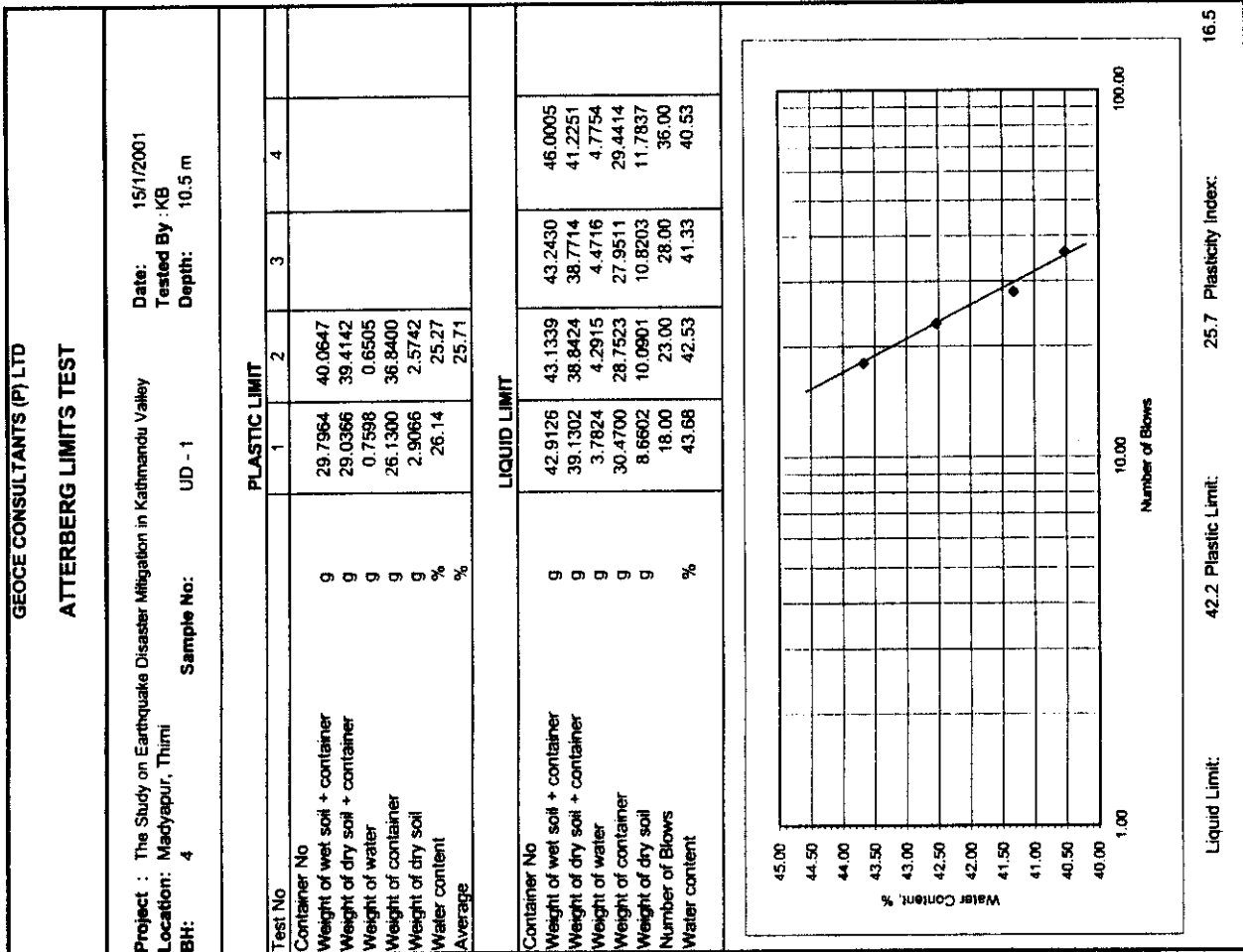
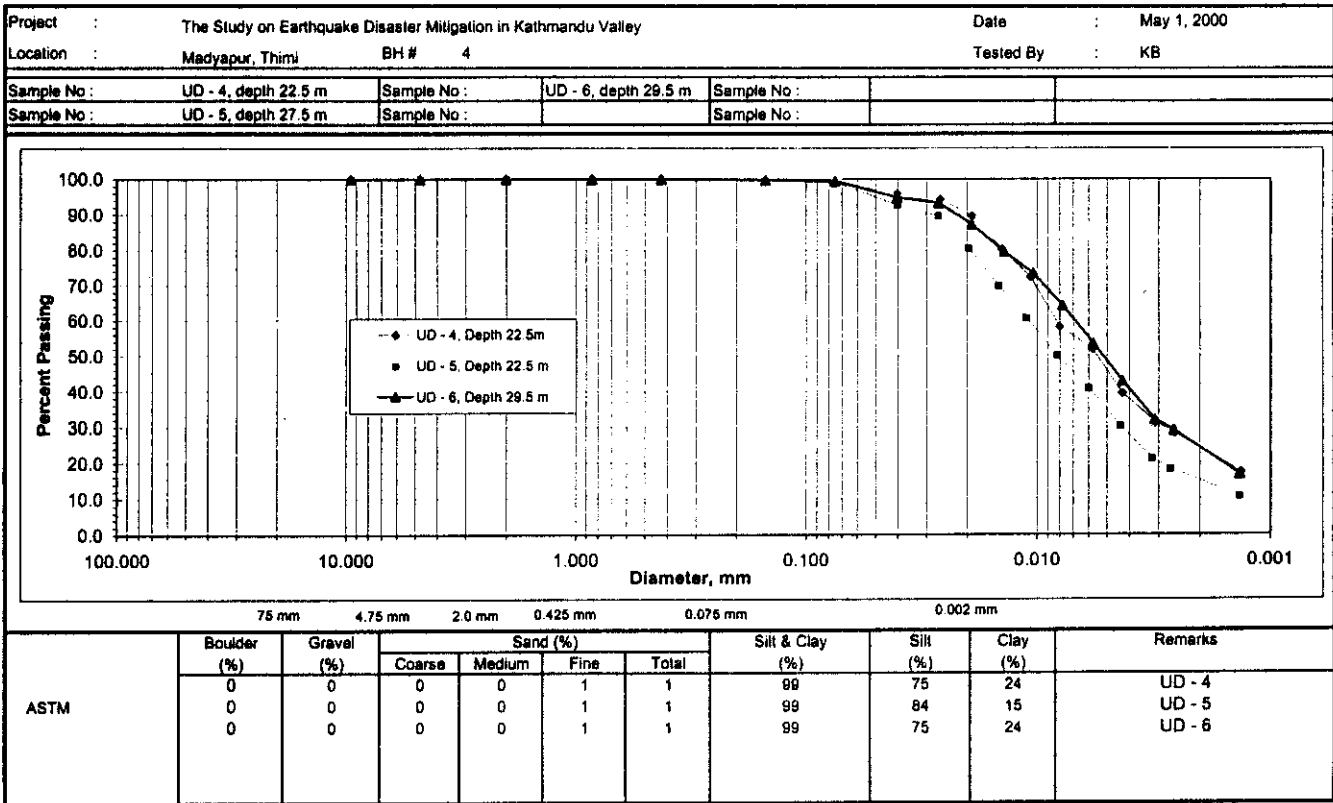
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ATTERBERG LIMITS TEST

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Madyapur, Thimi  
 BH: 4

Date: 15/1/2001  
 Tested By KB  
 Depth: 14.5 m

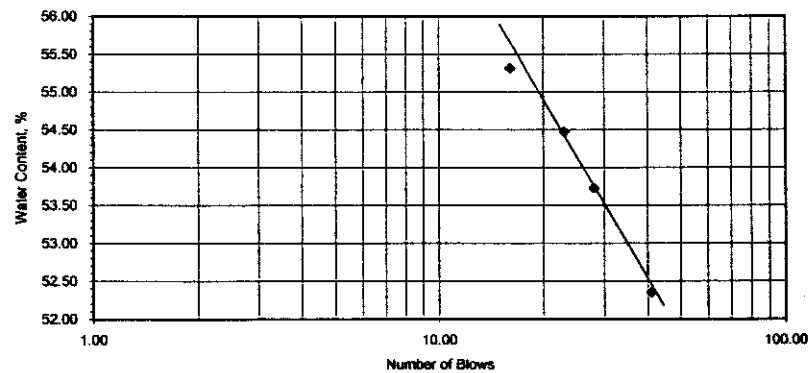
Sample No: UD - 2

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	35.1657	35.7378		
Weight of dry soil + container	g	34.2800	34.8300		
Weight of water	g	0.8857	0.9078		
Weight of container	g	31.6139	32.1633		
Weight of dry soil	g	2.6661	2.6667		
Water content	%	33.22	34.04		
Average	%		33.6		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	49.6012	46.2844	44.2160	41.2145
Weight of dry soil + container	g	44.7400	41.2275	40.4112	35.4764
Weight of water	g	4.8612	5.0569	3.8048	5.7381
Weight of container	g	35.9522	31.9447	33.3300	24.5162
Weight of dry soil	g	8.7878	9.2828	7.0812	10.9602
Number of Blows		16.00	23.00	28.00	41.00
Water content	%	55.32	54.48	53.73	52.35



Liquid Limit: 54.2 Plastic Limit: 33.6 Plasticity Index: 20.6

GEOCE CONSULTANTS (P) LTD

ATTERBERG LIMITS TEST

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Madyapur, Thimi  
 BH: 4

Date: 15/1/2001  
 Tested By : KB  
 Depth: 22.5 m

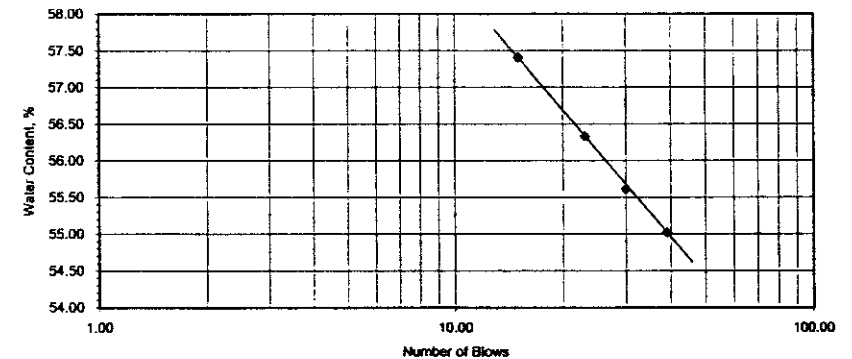
Sample No: UD - 4

PLASTIC LIMIT

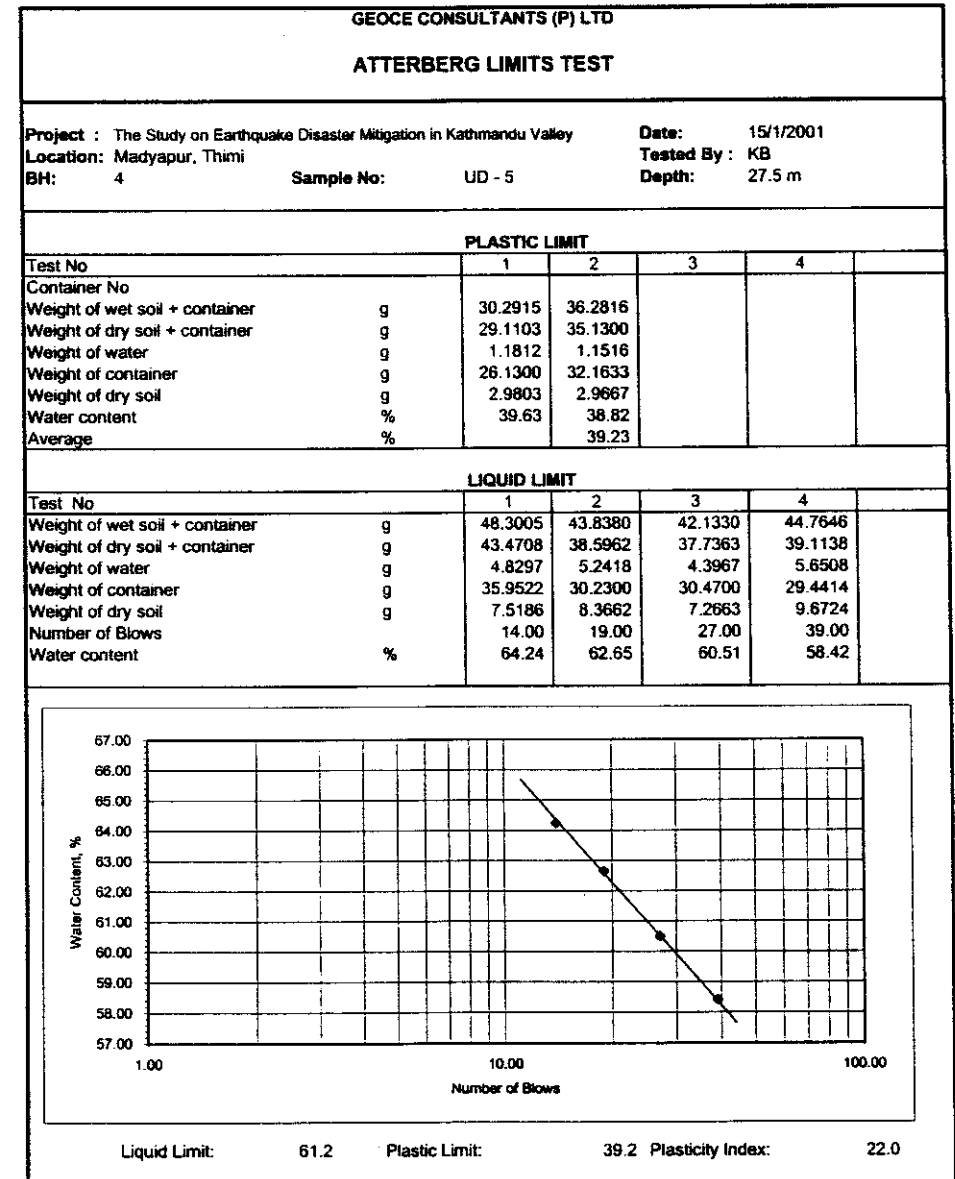
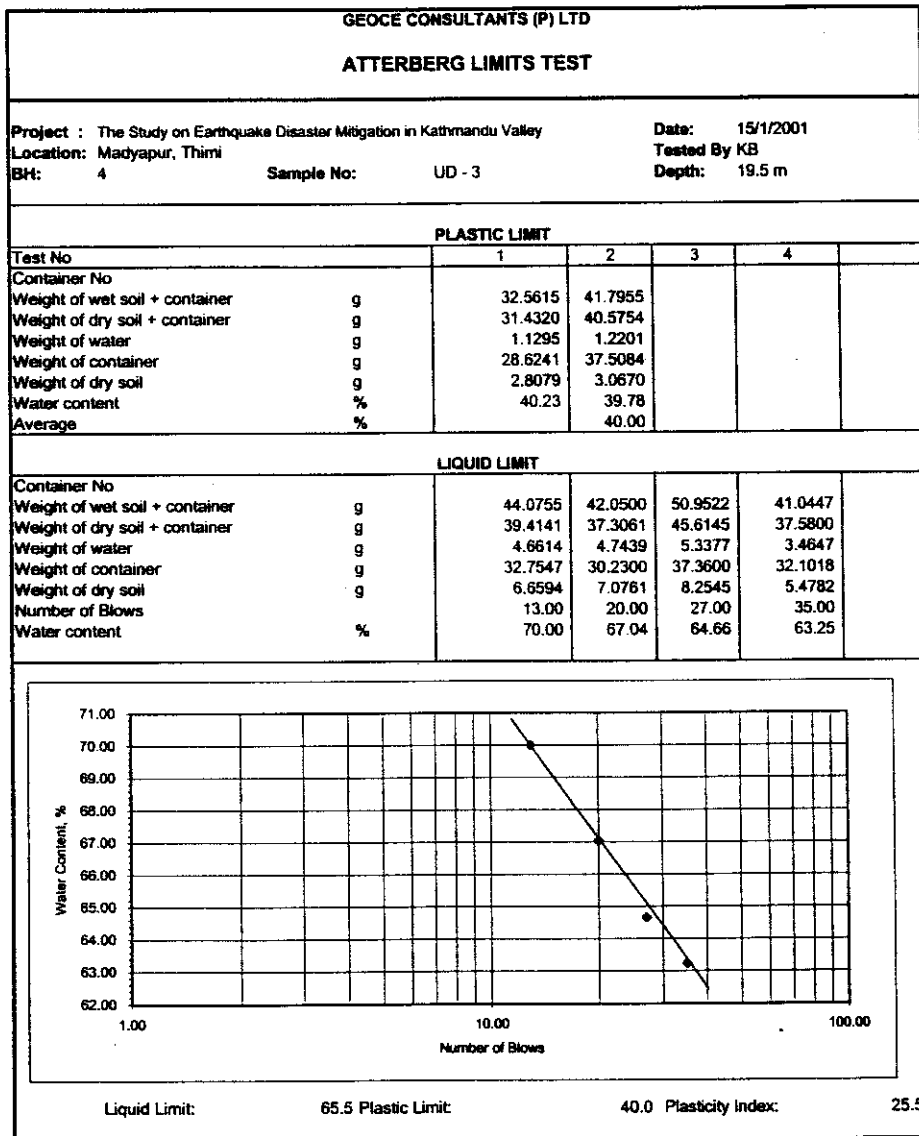
Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	36.5600	41.7911		
Weight of dry soil + container	g	35.5245	40.6311		
Weight of water	g	1.0355	1.1600		
Weight of container	g	32.7547	37.5084		
Weight of dry soil	g	2.7698	3.1227		
Water content	%	37.39	37.15		
Average	%		37.27		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	38.0007	39.5600	49.6064	47.2120
Weight of dry soil + container	g	34.5810	35.3769	45.2300	42.2649
Weight of water	g	3.4197	4.1831	4.3764	4.9271
Weight of container	g	28.6241	27.9511	37.3600	33.3300
Weight of dry soil	g	5.9569	7.4258	7.8700	8.9549
Number of Blows		15.00	23.00	30.00	39.00
Water content	%	57.41	56.33	55.61	55.02



Liquid Limit: 56.2 Plastic Limit: 37.3 Plasticity Index: 18.9



GEOCE CONSULTANTS (P) LTD

ATTERBERG LIMITS TEST

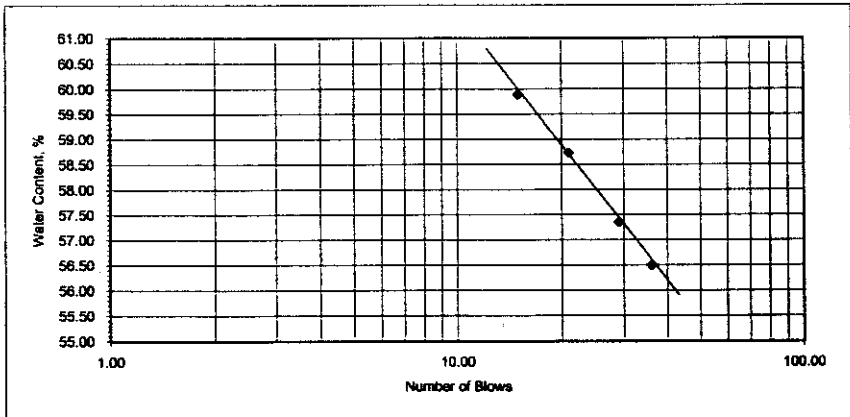
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: 15/1/2001  
 Location: Madyapur, Thimi      Tested By KB  
 BH: 4      Sample No: UD - 6      Depth: 29.5 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	36.3361	29.0552		
Weight of dry soil + container	g	35.1357	27.7833		
Weight of water	g	1.2004	1.2719		
Weight of container	g	32.1018	24.5162		
Weight of dry soil	g	3.0339	3.2671		
Water content	%	39.57	38.93		
Average	%		39.25		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	42.1500	44.3642	49.8227	45.2000
Weight of dry soil + container	g	37.1313	39.6465	45.0907	40.4148
Weight of water	g	5.0187	4.7177	4.7320	4.7852
Weight of container	g	28.7523	31.6139	36.8400	31.9447
Weight of dry soil	g	8.3790	8.0326	8.2507	8.4701
Number of Blows		15.00	21.00	29.00	36.00
Water content	%	59.90	58.73	57.35	56.50



Liquid Limit: 58.0 Plastic Limit: 39.2 Plasticity Index: 18.8

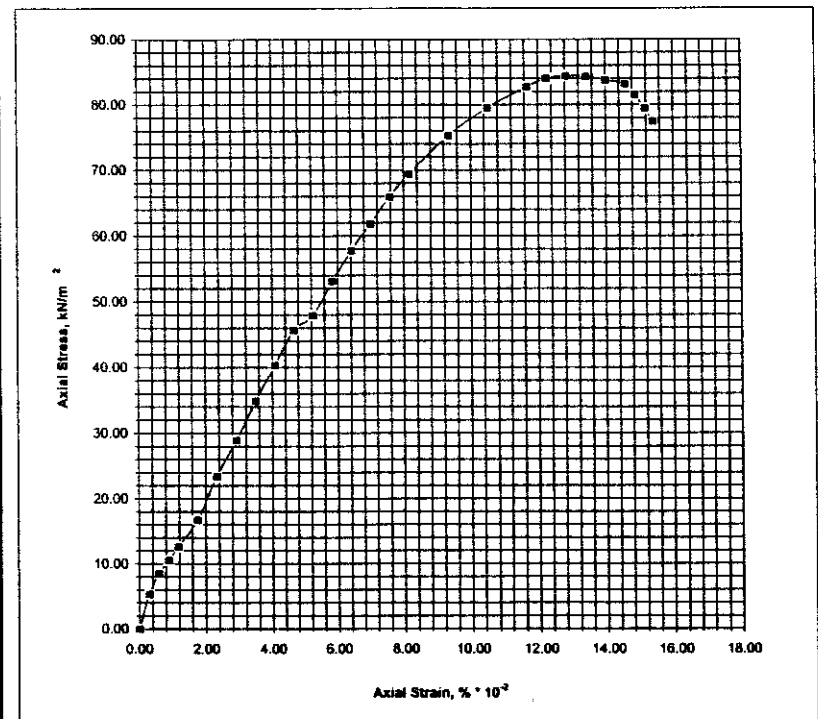
GEOCE CONSULTANTS (P) LTD.

Unconfined Compression Test

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: May 18, 2001  
 Location: Thimi      Tested By : KB

BH - 4      Sample # UD - 1 at 10.5 m

Wet Density, kN/m<sup>3</sup> : 15.52      Moisture Content, % : 58.39      Dry Density, kN/m<sup>3</sup> : 9.80



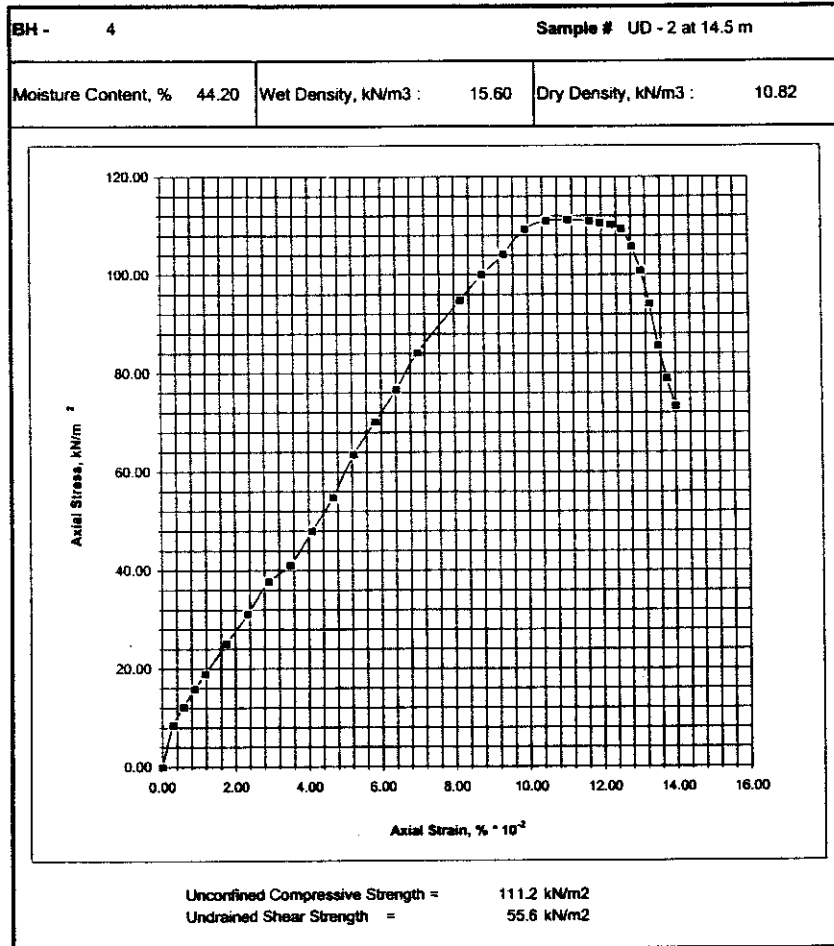
Unconfined Compressive Strength = 84.42 kN/m<sup>2</sup>  
 Undrained Shear Strength = 42.21 kN/m<sup>2</sup>

GEOCE CONSULTANTS (P) LTD.

**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
Location: Thimi

Date: May 18, 2001  
Tested By : KB

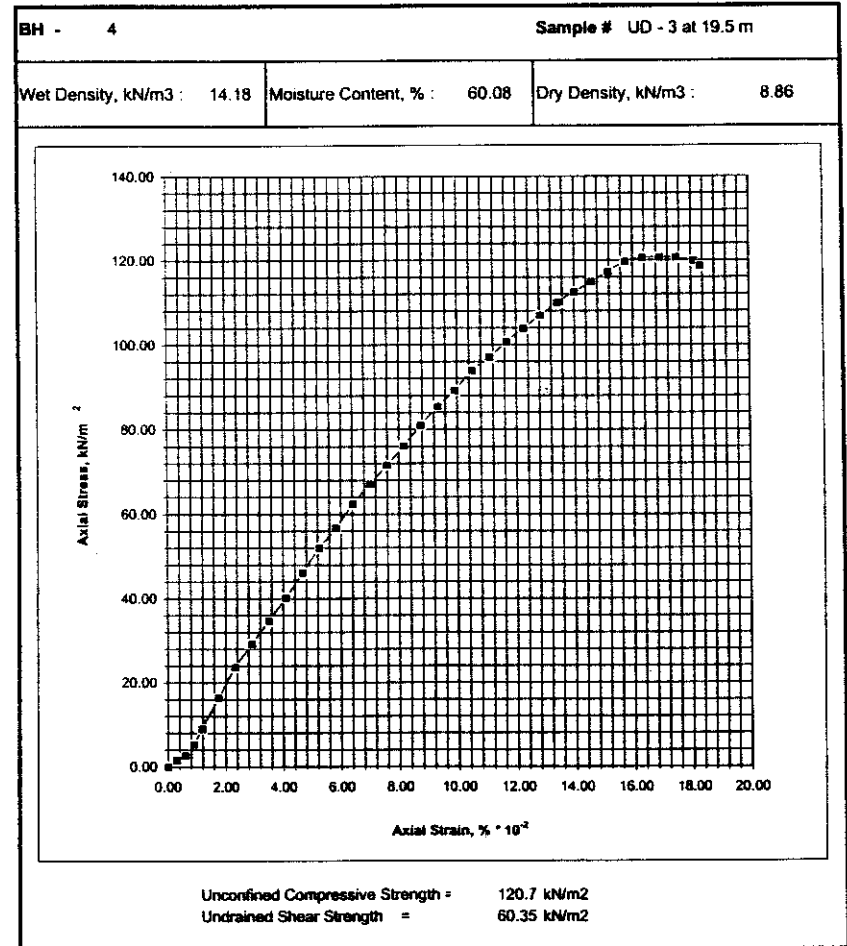


GEOCE CONSULTANTS (P) LTD.

**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
Location: Thimi

Date: May 18, 2001  
Tested By : KB

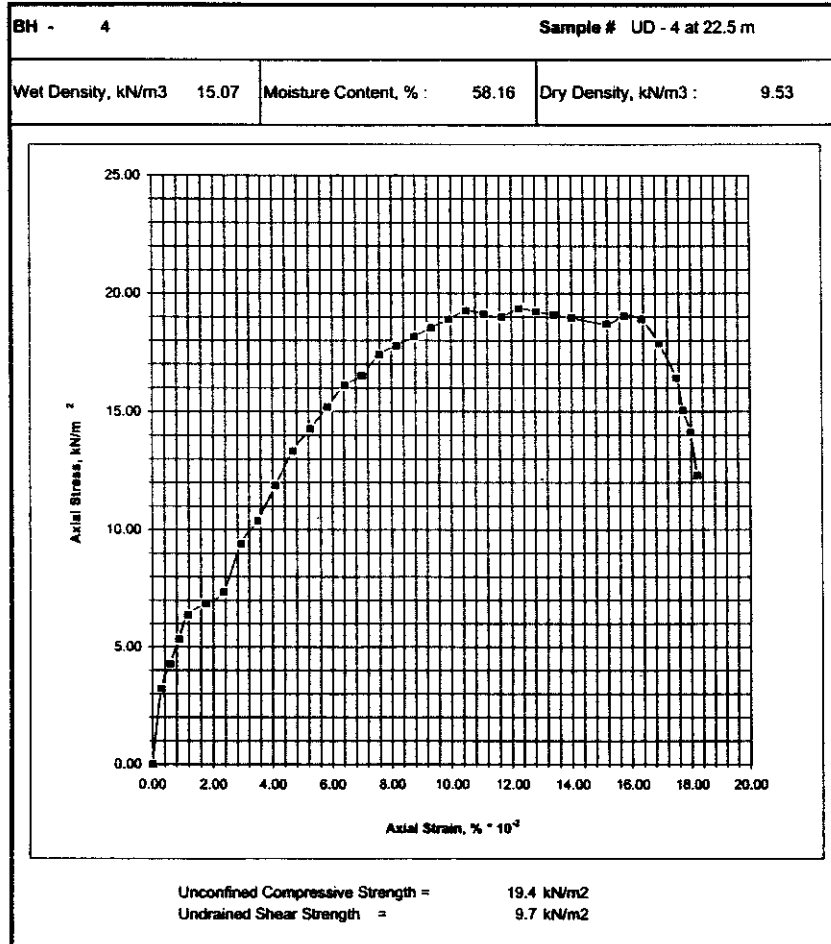


GEOCE CONSULTANTS (P) LTD.

**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Thimi

Date: May 20, 2001  
 Tested By : KB

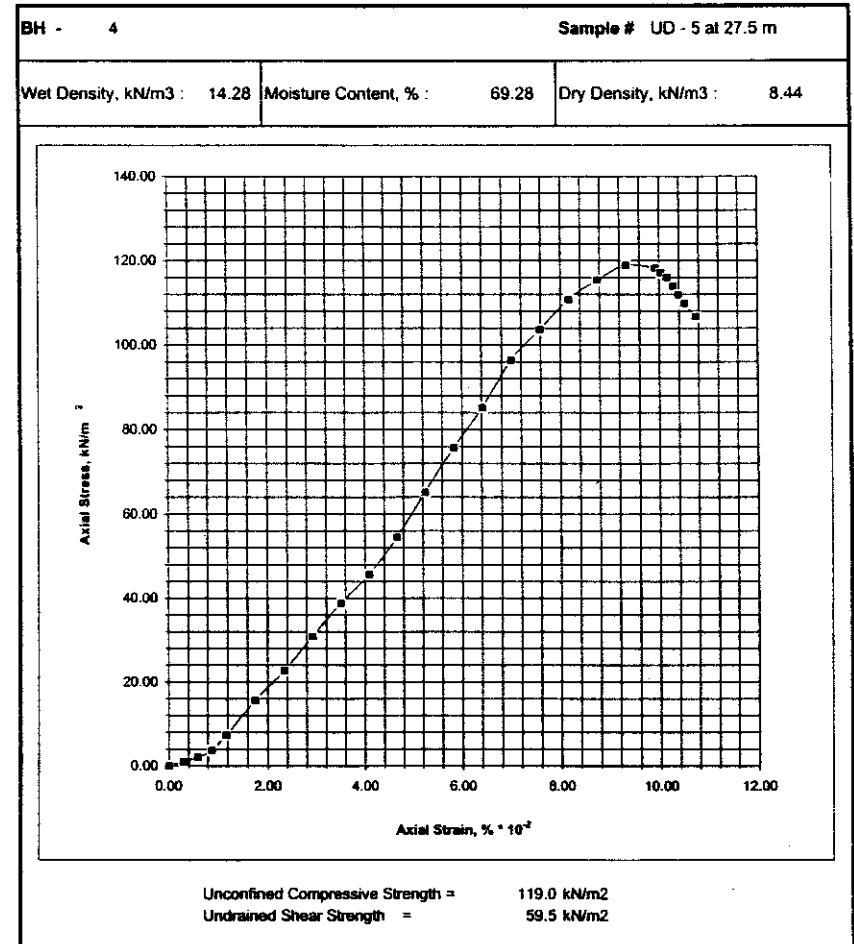


GEOCE CONSULTANTS (P) LTD.

**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Thimi

Date: May 20, 2001  
 Tested By : KB

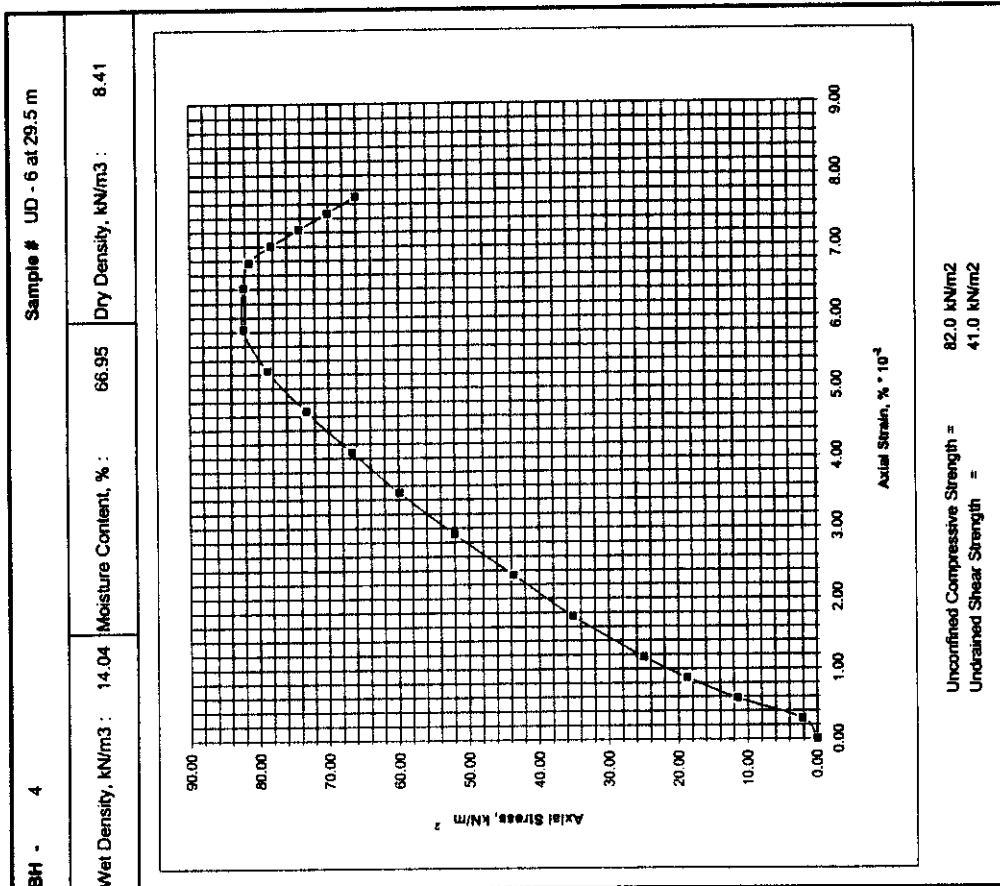


**GEOCE CONSULTANTS (P) LTD.**

**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Thimi

Date: May 20, 2001  
 Tested By : KB



**GEOCE CONSULTANTS (P) LTD.**  
**SPECIFIC GRAVITY TEST OF SOILS**

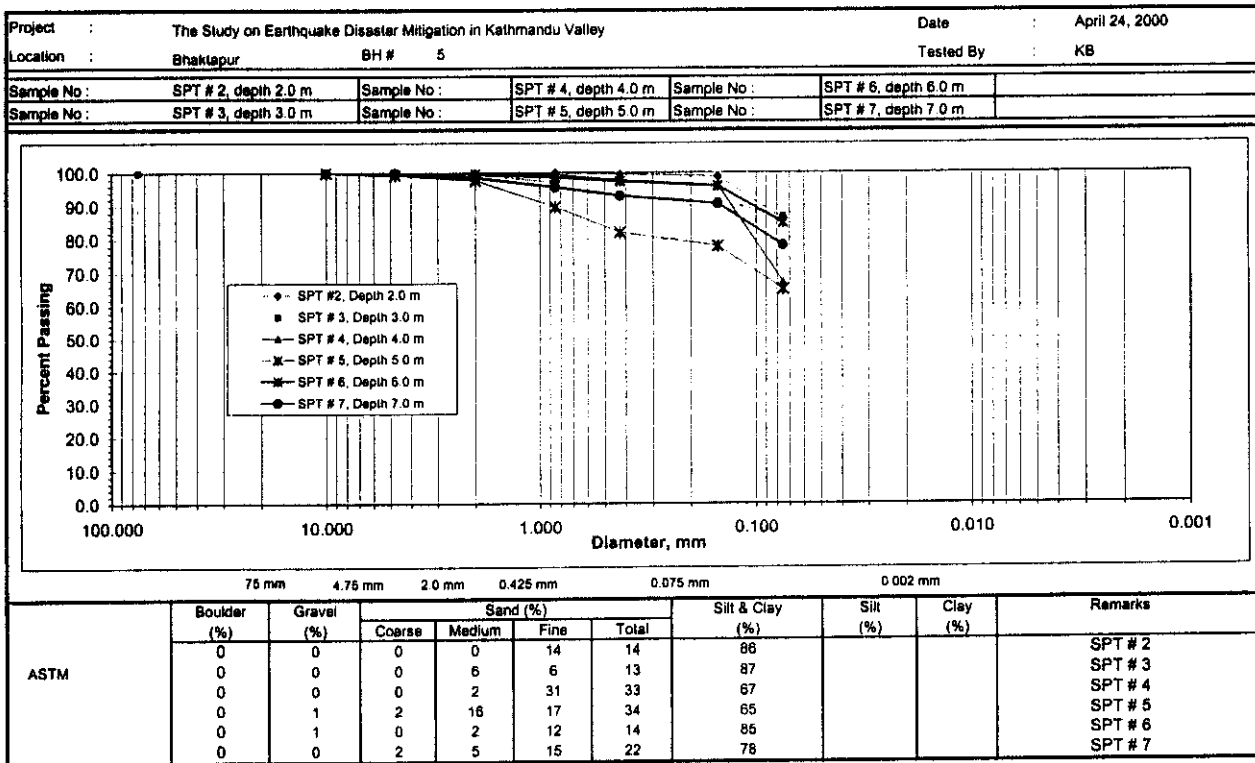
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Madyapur, Thimi

Borehole No : 4

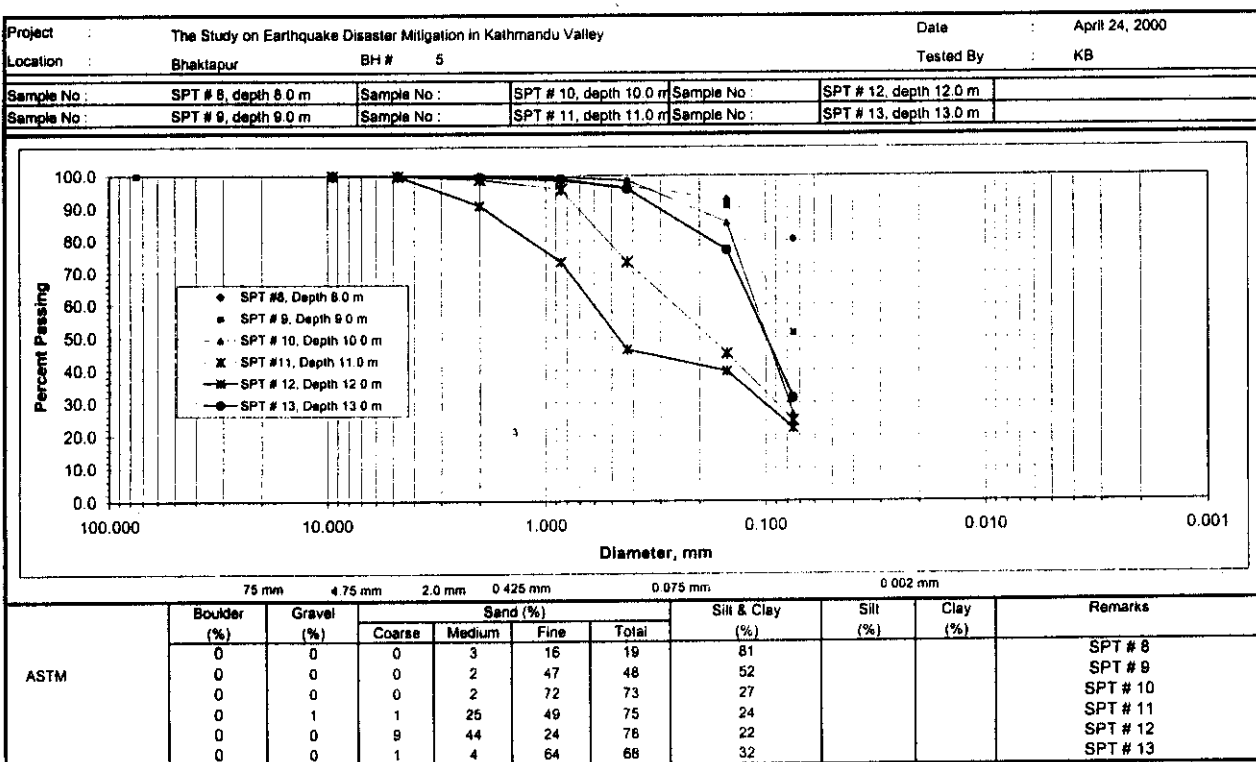
Sample No.	UD - 1			UD - 2			UD - 3			UD - 4		
	1	2	3	1	2	3	1	2	3	1	2	3
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °c	59	46	38	52	44	38	56	45	37	54	44	37
2 Wt. Of Flask + Water + Soil	755.2	758.2	759.7	749	750.7	752	746.1	748.7	750.9	733.2	734.6	735.6
3 Wt. Of Flask + Water (From Calib.	723.4	726.5	728.1	717.5	719.2	720.5	714.8	717.6	719.7	701.6	703.1	704.2
4 Wt. Of Dry Soil + Container	228.8			205.0			221.7			186.1		
5 Wt. Of Container	179.1			155.3			172.6			136.5		
6 Wt. Of Dry Soil	49.7			49.7			49.1			49.6		
7 Sp. Gr. Of water at t 0 c	0.9838	0.9902	0.9930	0.9872	0.9907	0.9930	0.9852	0.9902	0.9934	0.9862	0.9907	0.9934
8 Sp. Gr. Of soils = (6 x 7)/(3+6-2)	2.7316	2.7341	2.7266	2.6958	2.7054	2.7117	2.7176	2.7010	2.7249	2.7175	2.7148	2.7073
9 Average Sp. Gr.		2.731			2.704			2.715			2.713	
Sample No.	UD - 5			UD - 6			SPT - 2			SPT - 5		
Determination No	1	2	3	1	2	3	1	2	3	1	2	3
1 Temperature, °c	60	51	45	56	48	45	57	48	40	54	47	38
2 Wt. Of Flask + Water + Soil	752.9	755	758.2	747.6	749.1	750.1	746.8	748.9	750.5	733.2	734.3	735.6
3 Wt. Of Flask + Water (From Calib.	723.2	725.2	726.5	716.7	718.3	719.3	714.5	716.8	718.4	701.6	702.7	704.1
4 Wt. Of Dry Soil + Container	219.3			203.9			134.1			210.5		
5 Wt. Of Container	172.6			155.3			82.8			159.7		
6 Wt. Of Dry Soil	46.7			48.6			51.3			50.8		
7 Sp. Gr. Of water at t 0 c	0.9832	0.9876	0.9902	0.9852	0.9890	0.9902	0.9848	0.9890	0.9922	0.9862	0.9907	0.9930
8 Sp. Gr. Of soils = (6 x 7)/(3+6-2)	2.7009	2.7290	2.7201	2.7051	2.7003	2.7036	2.6590	2.6425	2.6510	2.6093	2.6212	2.6137
9 Average Sp. Gr.		2.717			2.703			2.651			2.615	



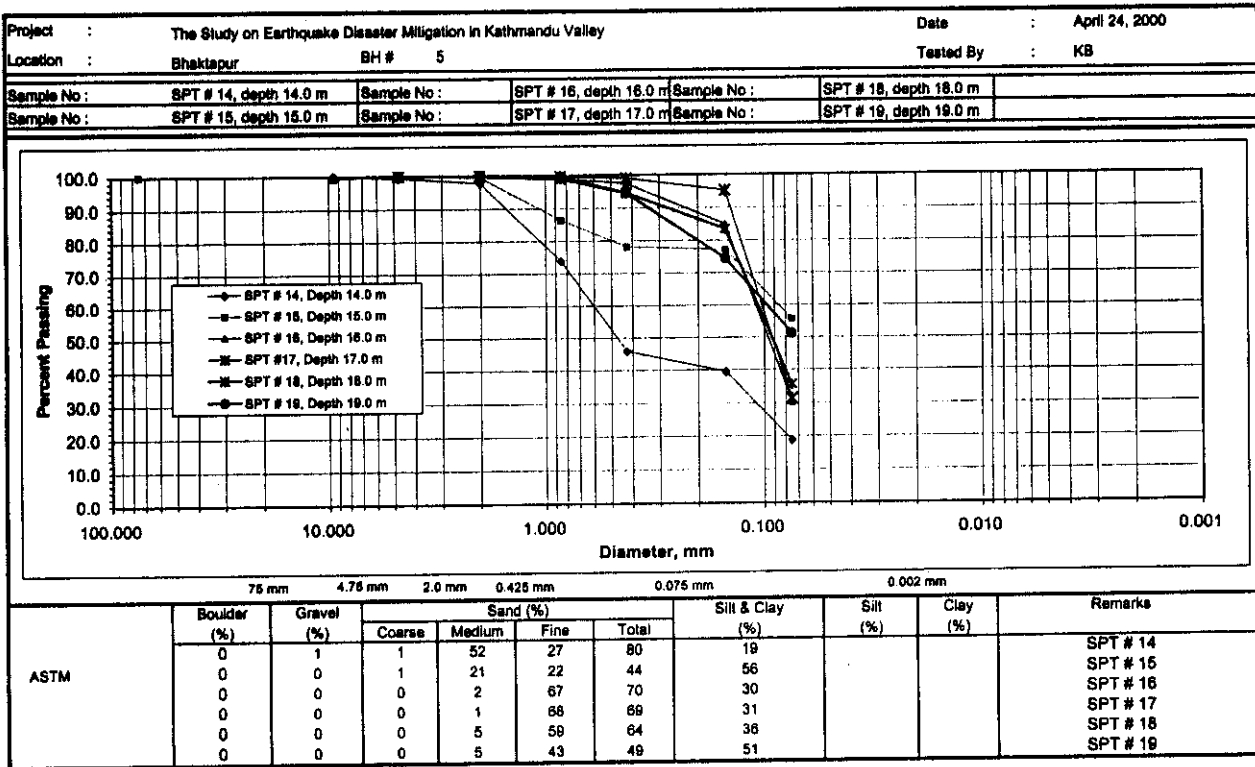
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GRAIN SIZE DISTRIBUTION**



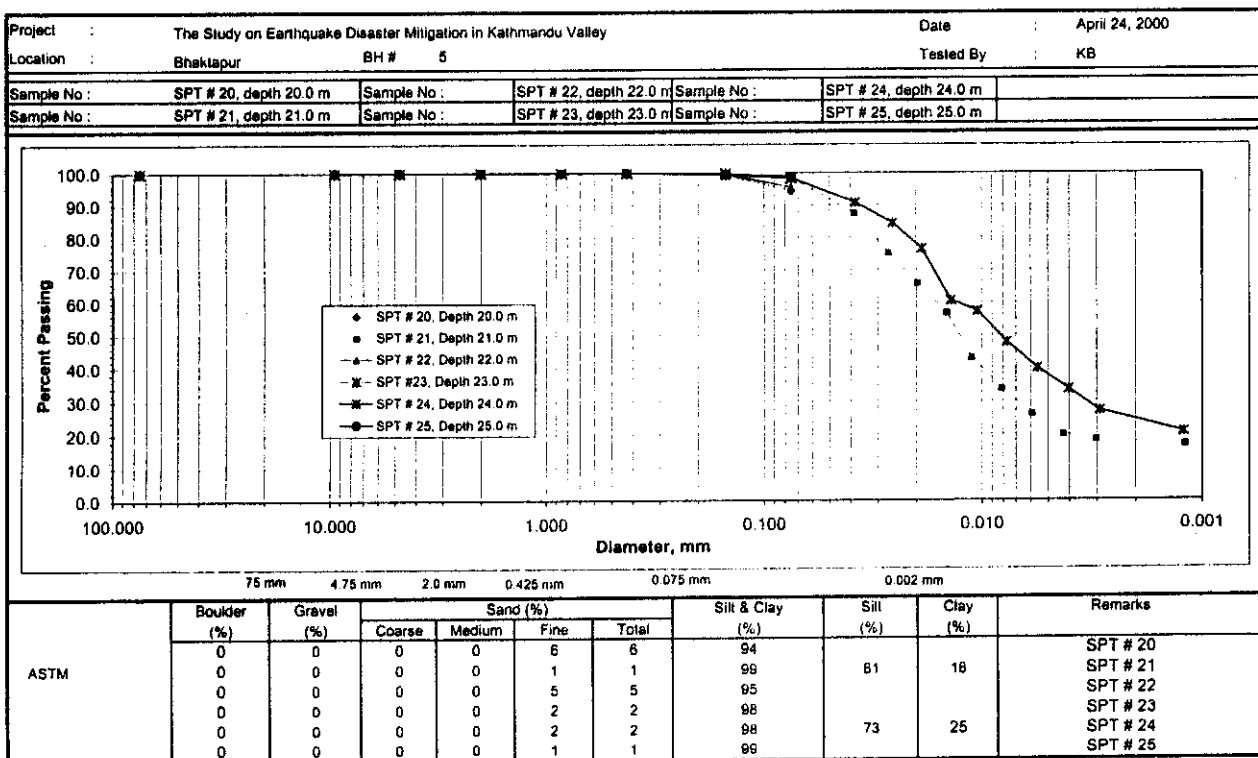
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GRAIN SIZE DISTRIBUTION**



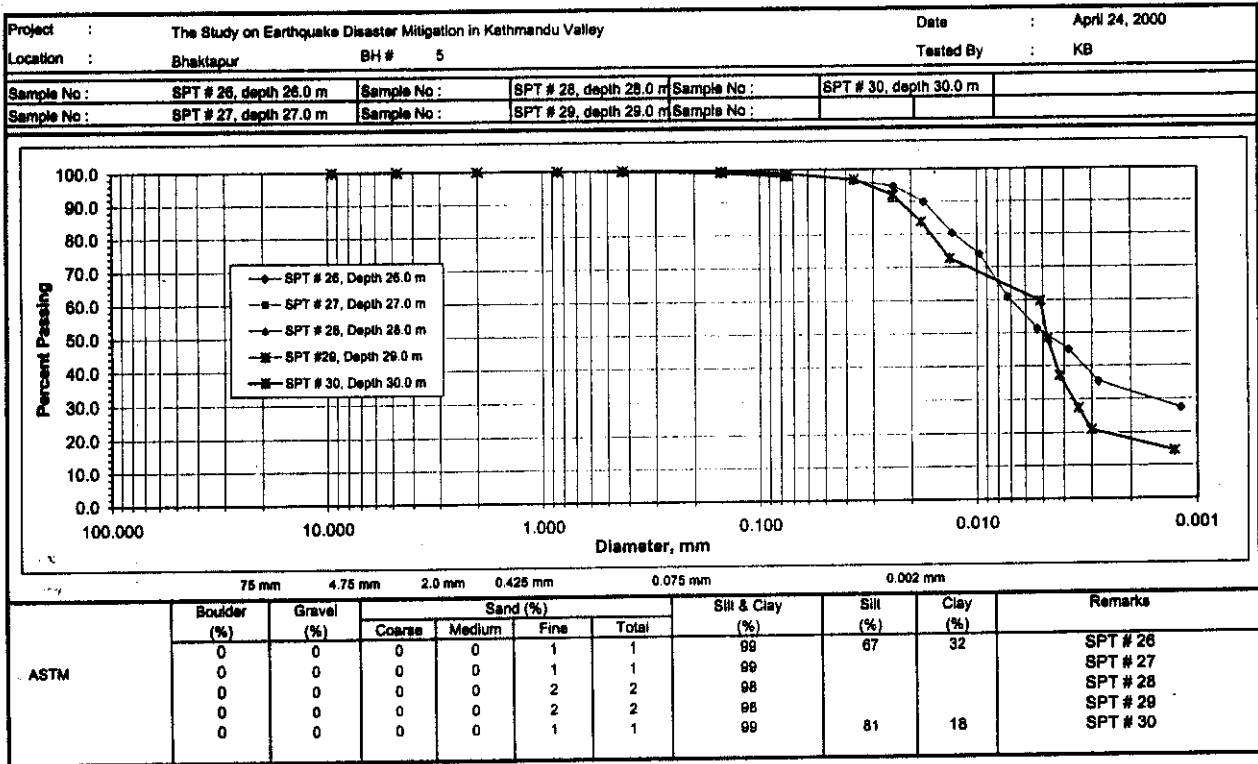
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GRAIN SIZE DISTRIBUTION**



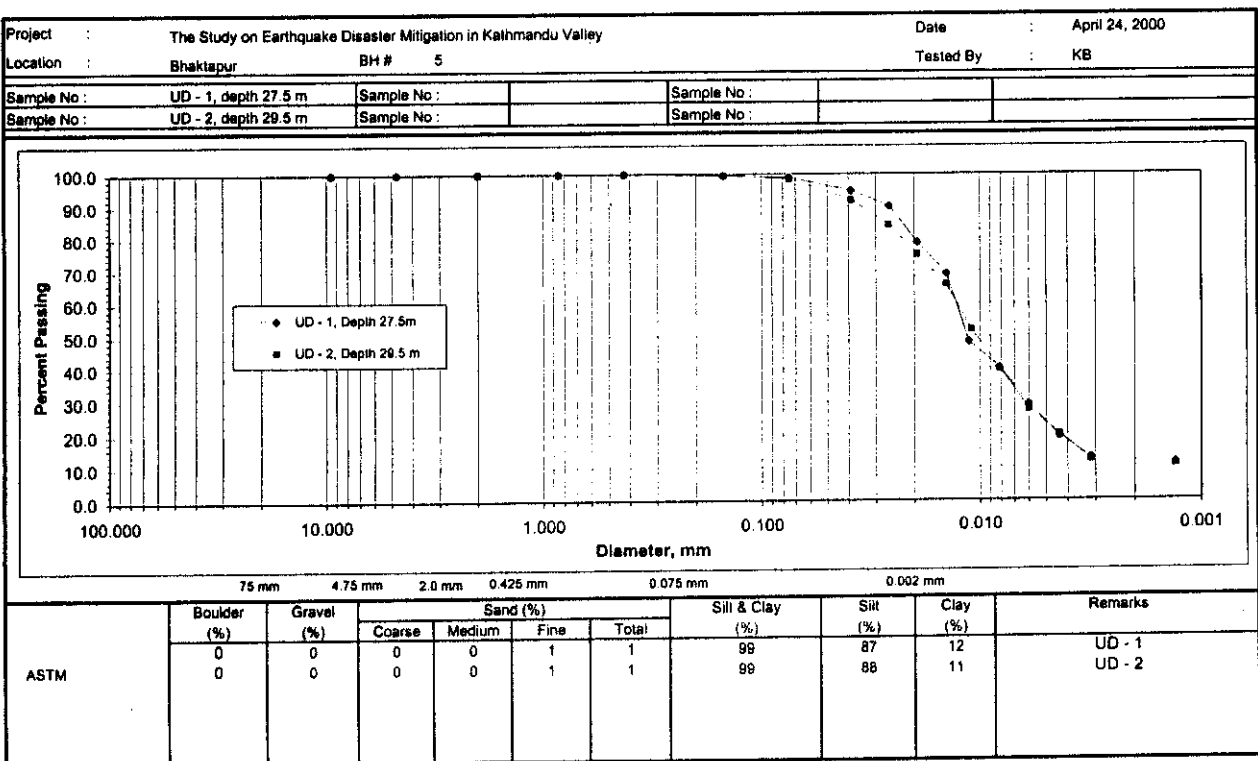
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GRAIN SIZE DISTRIBUTION**



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GEOCE CONSULTANTS (P) LTD

ATTERBERG LIMITS TEST

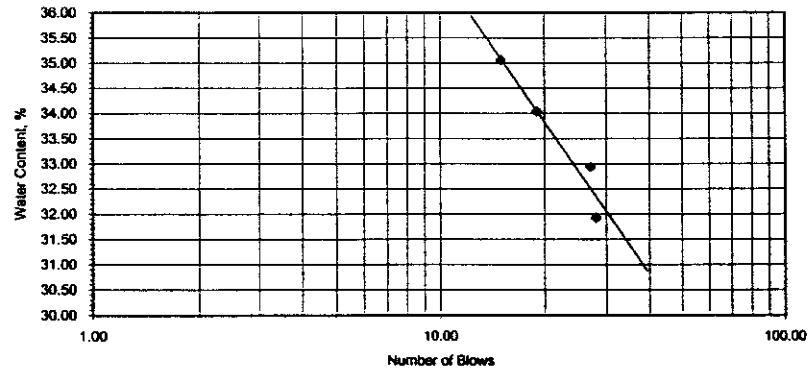
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: May 8, 2001  
 Location: Bhaktapur      Tested By : KB  
 BH: 5      Sample No: SPT - 23      Depth: 23.0 m

PLASTIC LIMIT

Test No	1	2	3	4
Container No				
Weight of wet soil + container	g			
Weight of dry soil + container	g			
Weight of water	g			
Weight of container	g			
Weight of dry soil	g			
Water content	%			
Average	%	NP		

LIQUID LIMIT

Container No	1	2	3	4	
Weight of wet soil + container	g	40.6627	47.2407	42.1143	44.8869
Weight of dry soil + container	g	38.4564	44.7311	38.7717	41.7927
Weight of water	g	2.2063	2.5096	3.3426	3.0942
Weight of container	g	32.1633	37.3600	28.6241	32.1018
Weight of dry soil	g	6.2931	7.3711	10.1476	9.6909
Number of Blows		15.00	19.00	27.00	28.00
Water content	%	35.06	34.05	32.94	31.93



Liquid Limit: 33.0 Plastic Limit: NP Plasticity Index: NP

GEOCE CONSULTANTS (P) LTD

ATTERBERG LIMITS TEST

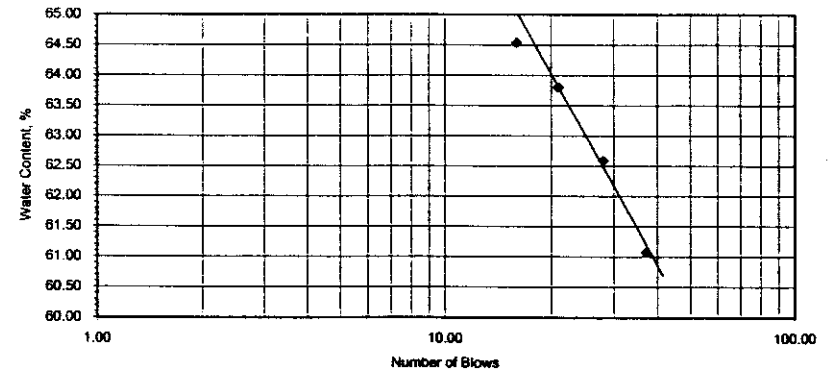
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: May 8, 2001  
 Location: Bhaktapur      Tested By : KB  
 BH: 5      Sample No: UD - 1      Depth: 27.5 m

PLASTIC LIMIT

Test No	1	2	3	4
Container No				
Weight of wet soil + container	g	28.6610	36.1139	
Weight of dry soil + container	g	27.9236	35.3000	
Weight of water	g	0.7374	0.8139	
Weight of container	g	26.1300	33.3300	
Weight of dry soil	g	1.7936	1.9700	
Water content	%	41.11	41.31	
Average	%		41.21	

LIQUID LIMIT

Container No	1	2	3	4	
Weight of wet soil + container	g	41.2710	42.9000	47.2503	37.5416
Weight of dry soil + container	g	36.3606	38.6326	43.2427	33.9051
Weight of water	g	4.9104	4.2674	4.0076	3.6365
Weight of container	g	28.7523	31.9447	36.8400	27.9511
Weight of dry soil	g	7.6083	6.6879	6.4027	5.9540
Number of Blows		16.00	21.00	28.00	37.00
Water content	%	64.54	63.81	62.59	61.08



Liquid Limit: 63.2 Plastic Limit: 41.2 Plasticity Index: 22.0

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ATTERBERG LIMITS TEST

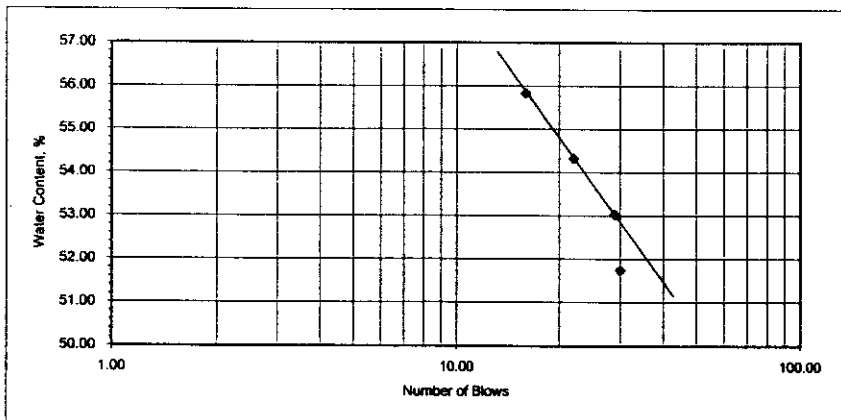
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: May 8, 2001  
 Location: Bhaktapur      Tested By : KB  
 BH: 5      Sample No: UD - 2      Depth: 29.5 m

PLASTIC LIMIT

Test No	1	2	3	4
Container No				
Weight of wet soil + container	g 28.4114	32.6849		
Weight of dry soil + container	g 27.4132	31.8538		
Weight of water	g 0.9982	0.8311		
Weight of container	g 24.5162	29.4414		
Weight of dry soil	g 2.8970	2.4124		
Water content	% 34.46	34.45		
Average	%	34.45		

LIQUID LIMIT

Container No	1	2	3	4
Weight of wet soil + container	g 45.6086	45.2177	45.3143	47.7707
Weight of dry soil + container	g 40.1846	39.9419	40.5666	43.7410
Weight of water	g 5.4240	5.2758	4.7477	4.0297
Weight of container	g 30.4700	30.2300	31.6139	35.9522
Weight of dry soil	g 9.7146	9.7119	8.9527	7.7888
Number of Blows	16.00	22.00	29.00	30.00
Water content	% 55.83	54.32	53.03	51.74



Liquid Limit: 53.6 Plastic Limit: 34.5 Plasticity Index: 19.1

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ATTERBERG LIMITS TEST

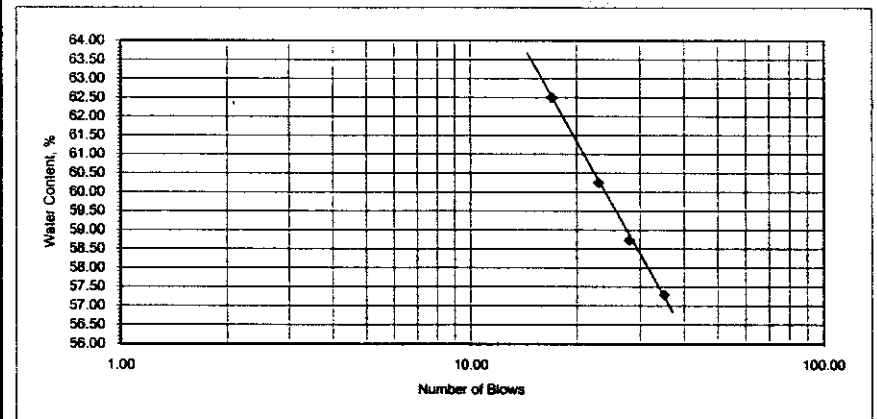
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley      Date: May 18, 2001  
 Location: Bhaktapur      Tested By : KB  
 BH: 5      Sample No: SPT - 26      Depth: 23.0 m

PLASTIC LIMIT

Test No	1	2	3	4
Container No				
Weight of wet soil + container	g 35.7761	43.2300		
Weight of dry soil + container	g 34.8005	41.6800		
Weight of water	g 0.9756	1.5500		
Weight of container	g 32.1633	37.5084		
Weight of dry soil	g 2.6372	4.1716		
Water content	% 36.99	37.16		
Average	%	37.1		

LIQUID LIMIT

Container No	1	2	3	4
Weight of wet soil + container	g 40.6951	46.9637	42.0956	41.3923
Weight of dry soil + container	g 36.0122	41.8377	37.4135	37.5503
Weight of water	g 4.6829	5.1260	4.6821	3.8420
Weight of container	g 28.5200	33.3300	29.4414	30.8445
Weight of dry soil	g 7.4922	8.5077	7.9721	6.7058
Number of Blows	17.00	23.00	28.00	35.00
Water content	% 62.50	60.25	58.73	57.29



Liquid Limit: 59.8 Plastic Limit: 37.1 Plasticity Index: 22.7

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ATTERBERG LIMITS TEST

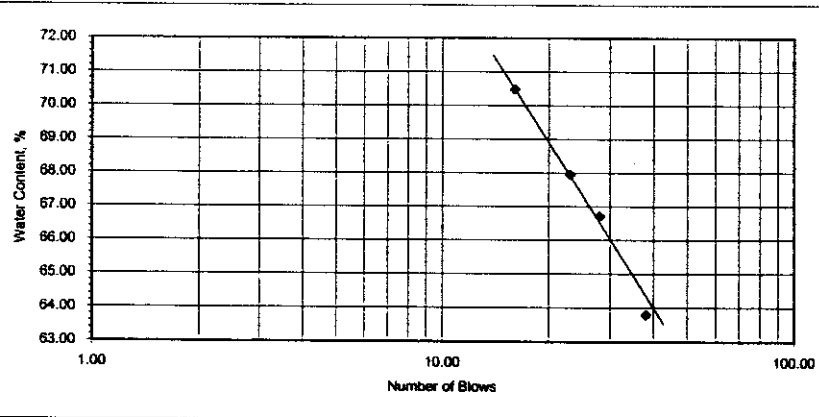
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley Date: May 18, 2001  
 Location: Bhaktapur Tested By : KB  
 BH: 5 Sample No: SPT - 30 Depth: 23.0 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g	34.7102	35.9728		
Weight of dry soil + container	g	33.9110	35.0233		
Weight of water	g	0.7992	0.9495		
Weight of container	g	31.9447	32.7547		
Weight of dry soil	g	1.9663	2.2686		
Water content	%	40.64	41.85		
Average	%		41.2		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	43.8654	34.2714	40.5549	49.7771
Weight of dry soil + container	g	39.0018	30.3243	35.8319	44.3537
Weight of water	g	4.8636	3.9471	4.7230	5.4234
Weight of container	g	32.1018	24.5162	28.7523	35.8522
Weight of dry soil	g	6.9000	5.8081	7.0796	8.5015
Number of Blows		16.00	23.00	28.00	38.00
Water content	%	70.49	67.96	66.71	63.79



Liquid Limit: 67.5 Plastic Limit: 41.2 Plasticity Index: 26.3

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ATTERBERG LIMITS TEST

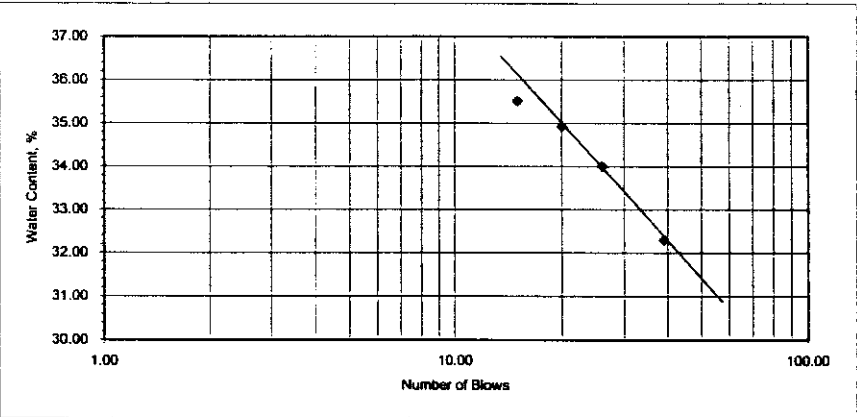
Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley Date: May 18, 2001  
 Location: Bhaktapur Tested By : KB  
 BH: 5 Sample No: SPT - 21 Depth: 23.0 m

PLASTIC LIMIT

Test No		1	2	3	4
Container No					
Weight of wet soil + container	g				
Weight of dry soil + container	g				
Weight of water	g				
Weight of container	g				
Weight of dry soil	g				
Water content	%				
Average	%		NP		

LIQUID LIMIT

Container No					
Weight of wet soil + container	g	44.7104	44.1424	50.8040	43.7232
Weight of dry soil + container	g	40.4945	40.6031	47.3921	39.4279
Weight of water	g	4.2159	3.5393	3.4119	4.2953
Weight of container	g	28.6241	30.4700	37.3600	26.1300
Weight of dry soil	g	11.8704	10.1331	10.0321	13.2979
Number of Blows		15.00	20.00	26.00	39.00
Water content	%	35.52	34.93	34.01	32.30



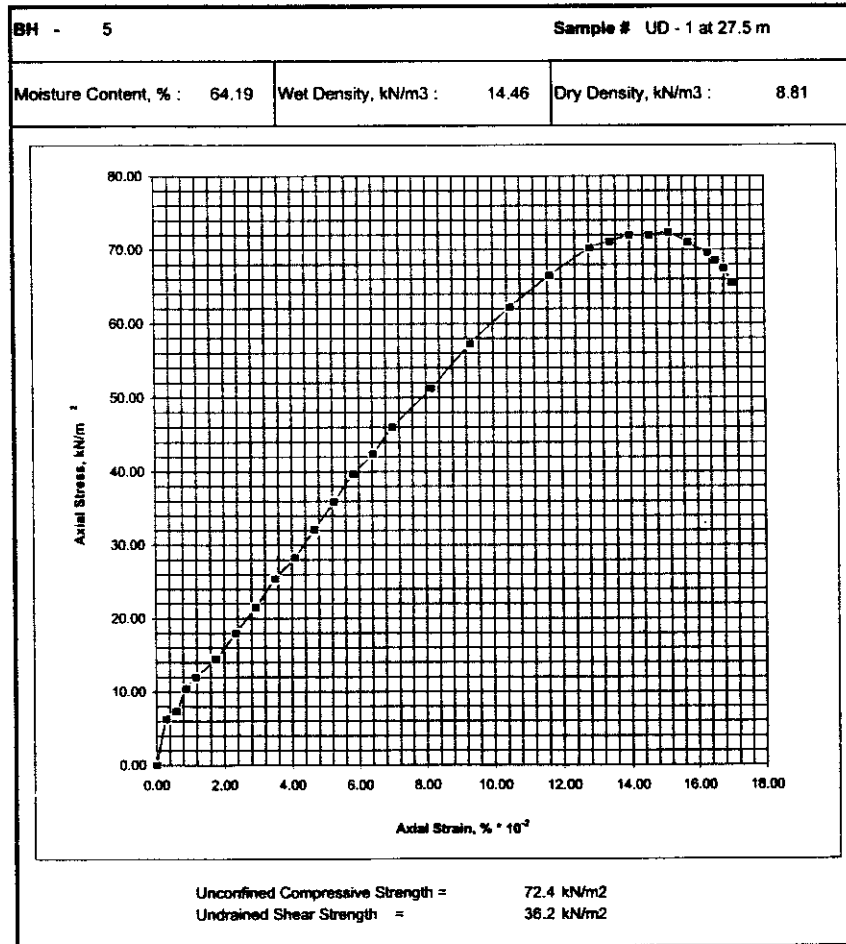
Liquid Limit: 34.2 Plastic Limit: NP Plasticity Index: NP

GEOCE CONSULTANTS (P) LTD.

**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Bhaktapur

Date: April 18, 2001  
 Tested By : KB



GEOCE CONSULTANTS (P) LTD.

**Unconfined Compression Test**

Project : The Study on Earthquake Disaster Mitigation in Kathmandu Valley  
 Location: Bhaktapur

Date: April 18, 2001  
 Tested By : KB

