



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK1

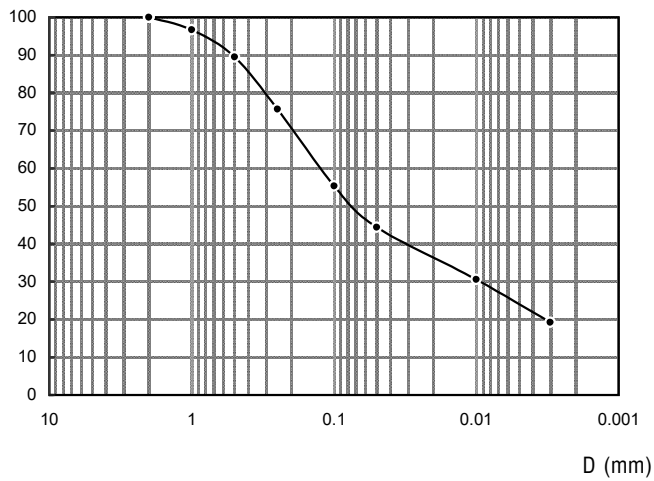
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng, trạng thái dẻo cứng / Stiff, yellowish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	22.34	19.4	15.9	86.0	41.3	0.704	27.1	30.00	17.06	12.94	0.41

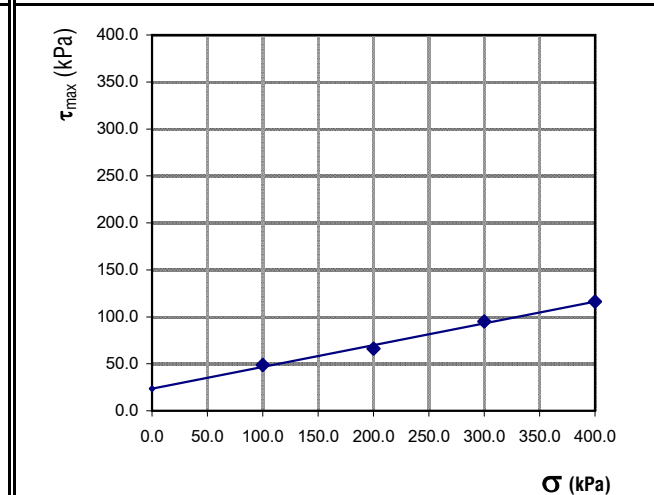
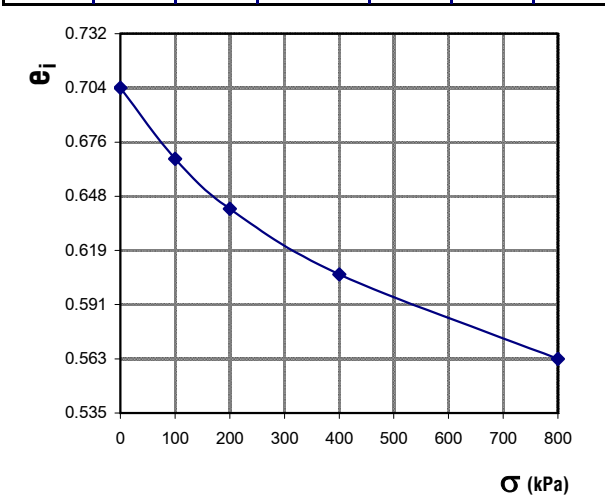
KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	49.04g					
	Nhiệt độ TN/Temp.	30.0°C	0.135	0.009	*	*

Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2		100.0
2.0		2-1	3.3	100.0
1.0	1.61	1-0.5	7.2	96.7
0.5	3.52	0.5-0.25	13.8	89.5
0.25	6.75	0.25-0.1	20.4	75.7
0.1	10.00	0.1-0.05	10.9	55.3
		0.05-0.01	13.8	44.4
		0.01-0.005	6.5	30.6
		Sét/Clay	<0.005	24.1



Thí nghiệm nén lún/Compression test						
m <sub>k</sub> = 4.55		Hộp nén số/Test box No.: 1		e <sub>0</sub> : 0.704		
β = 0.62		Số đọc sau 24h/Reading after 24h: 182.5		h <sub>0</sub> : 20mm		
σ <sub>i</sub>	Δh <sub>n</sub>	Δh <sub>m</sub>	e <sub>i</sub>	a	E	E <sub>0</sub> = E*m <sub>k</sub> *β
kPa	Vạch/Div.	Vạch/Div.	-	kPa <sup>-1</sup> x10 <sup>-2</sup>	kPa	kPa
0			0.704			
100	50.0	8.4	0.667	0.037	4605.4	12977.6
200	84.0	11.9	0.641	0.026	6411.5	18067.1
400	125.0	13.7	0.607	0.017	9652.9	27201.0
800	178.0	17.6	0.563	0.011	14609.1	41167.0

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.9	1.686	48.7
200	39.4	1.678	66.1
300	54.8	1.736	95.1
400	66.9	1.739	116.3
$\tan \varphi = 0.2318$ $\varphi = 13^\circ 03'$ C      23.6 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK1

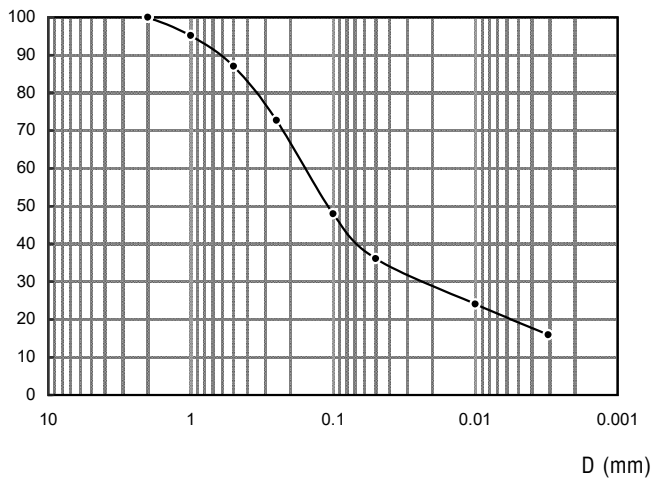
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ - xám trắng, trạng thái dẻo cứng / Stiff, reddish brown - whitish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.28	19.9	16.4	89.4	39.0	0.640	26.9	28.77	16.99	11.78	0.36

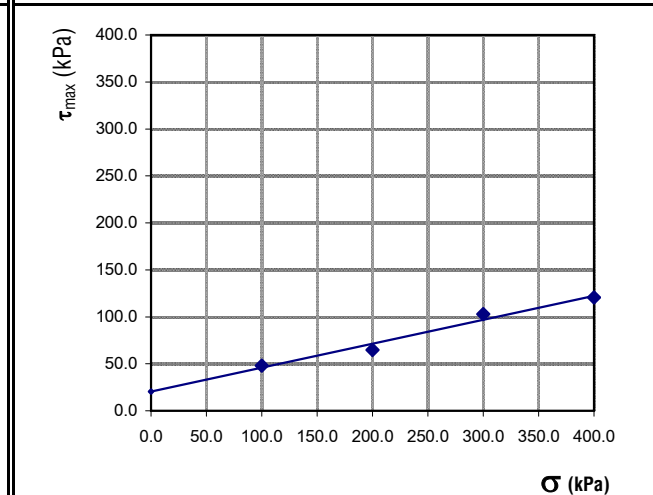
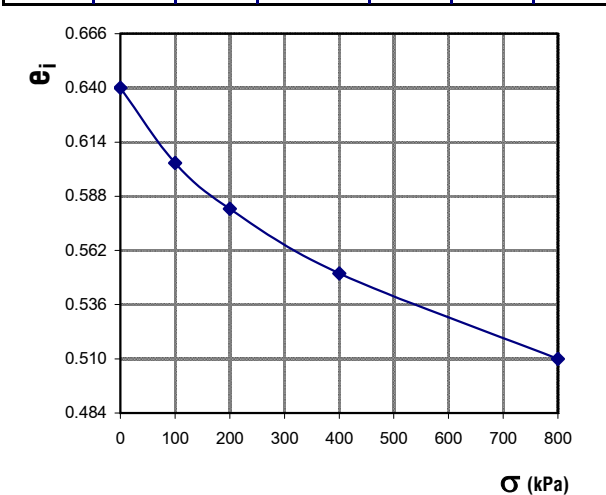
KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	49.74g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.173	0.025	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.8	100.0
			1-0.5	8.2	95.2
			0.5-0.25	14.3	87.0
			0.25-0.1	24.7	72.7
			0.1-0.05	11.9	48.0
10.0		Bụi/Silt	0.05-0.01	12.0	36.1
5.0			0.01-0.005	4.8	24.1
2.0					
1.0	2.40				
0.5	4.10				
0.25	7.10	Sét/Clay			
0.1	12.30		<0.005	19.3	19.3



Thí nghiệm nén lún/Compression test						
$m_k = 4.84$	Hộp nén số/Test box No.: 2		$e_0 = 0.640$			
$\beta = 0.62$	Số đọc sau 24h/Reading after 24h: 177.3		$h_0 = 20mm$			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.640			
100	53.0	9.8	0.604	0.036	4555.6	13670.3
200	82.0	13.3	0.582	0.022	7290.9	21878.6
400	121.0	15.5	0.551	0.016	9887.5	29670.4
800	173.0	19.1	0.510	0.010	15510.0	46542.4

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.6	1.686	48.2
200	38.5	1.678	64.6
300	59.3	1.736	102.9
400	69.3	1.739	120.5
$\tan \phi = 0.2552$ $\phi = 14^\circ 19'$ C      20.3 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

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Tên mẫu/Sample: HK1-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK1

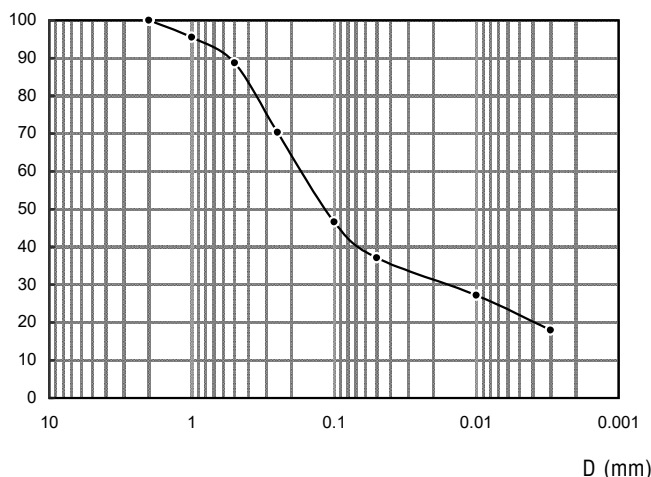
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ - xám trắng, trạng thái dẻo cứng / Stiff, reddish brown - whitish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.91	18.8	15.3	80.9	43.3	0.765	27.0	30.80	17.36	13.44	0.41

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	61.44g					
	Nhiệt độ TN/Temp.	30.0°C	0.185	0.017	*	*

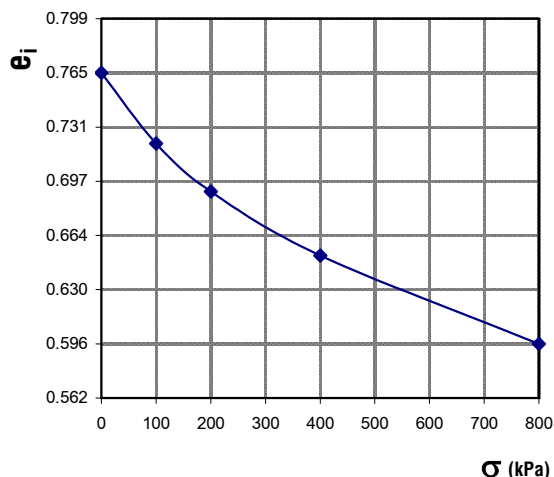
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1	4.5	100.0
2.0			1-0.5	6.8	95.5
1.0	2.75		0.5-0.25	18.4	88.7
0.5	4.17	Bụi/Silt	0.25-0.1	23.7	70.3
0.25	11.30		0.1-0.05	9.5	46.6
0.1	14.54		0.05-0.01	9.9	37.1
		Sét/Clay	0.01-0.005	5.4	27.2
			<0.005	21.8	21.8



## Thí nghiệm nén lún/Compression test

$m_k = 4.30$  Hộp nén số/Test box No.: 3  $e_0 = 0.765$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 210.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.765			
100	58.0	9.1	0.721	0.044	4011.4	10681.9
200	94.0	12.6	0.691	0.030	5736.7	15276.2
400	140.0	14.7	0.651	0.020	8455.0	22514.8
800	205.0	18.6	0.596	0.014	11792.9	31403.2

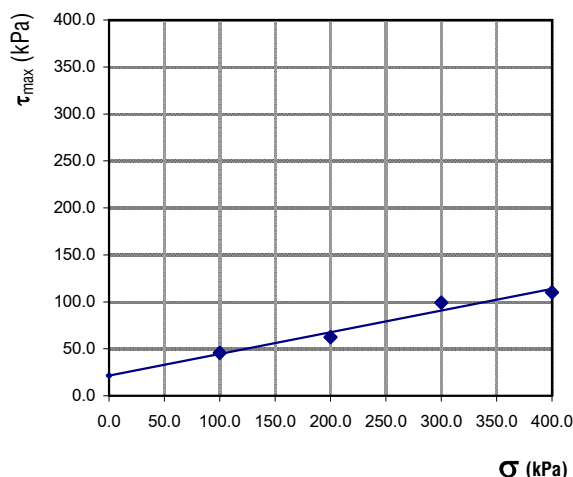


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.0	1.686	45.5
200	37.1	1.678	62.3
300	57.0	1.736	99.0
400	63.3	1.739	110.1

$\tan \phi = 0.2305$   $\phi = 12^\circ 59'$  C 21.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK1

Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

nguyên dạng/Un dis	W	γ	γ <sub>d</sub>	S <sub>r</sub>	n	e <sub>0</sub>	G <sub>s</sub>	W <sub>L</sub>	W <sub>p</sub>	I <sub>p</sub>	I <sub>L</sub>
	20.71	20.0	16.6	91.5	37.6	0.602	26.6	23.65	18.17	5.48	0.46

KQTN HẠT/Test results from sieve-hydrometer analysis

KL đất khô/Dry wei

99.41g

D<sub>60</sub>(mm)

D<sub>30</sub>(mm)

D<sub>10</sub>(mm)

C<sub>c</sub>

C<sub>u</sub>

Nhiệt độ TN/Temp.

30.0°C

0.227

0.103

0.007

6.7

32.4

Khối lượng đất

Mass of soil

>0.1mm

D

(mm)

m<sub>i</sub>

(g)

Cấp hạt

Grain grade

D<sub>10-2</sub>

(mm)

P<sub>i</sub>

%

P

%

Silt/san / Gravel

>10

100.0

10-5

100.0

5-2

100.0

Cát/Sand

2-1

3.7

100.0

1-0.5

10.3

96.3

0.5-0.25

20.3

86.0

0.25-0.1

36.4

65.7

0.1-0.05

11.1

29.3

Bụi/Silt

0.05-0.01

6.2

18.2

0.01-0.005

3.1

12.0

Sét/Clay

<0.005

8.9

8.9

100

90

80

70

60

50

40

30

20

10

0

10

1

0.1

0.01

0.001

D (mm)

100

95

85

65

30

18

12

7

10

1

0.1

0.01

0.001

D (mm)

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 3.99$		Hộp nén số/Test box No.: 4		$e_0 = 0.602$			PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.74$		Số đọc sau 24h/Reading after 24h: 124.0		$h_p = 20\text{mm}$			Hệ số vòng lực/Proving ring calibration factor: Cr			

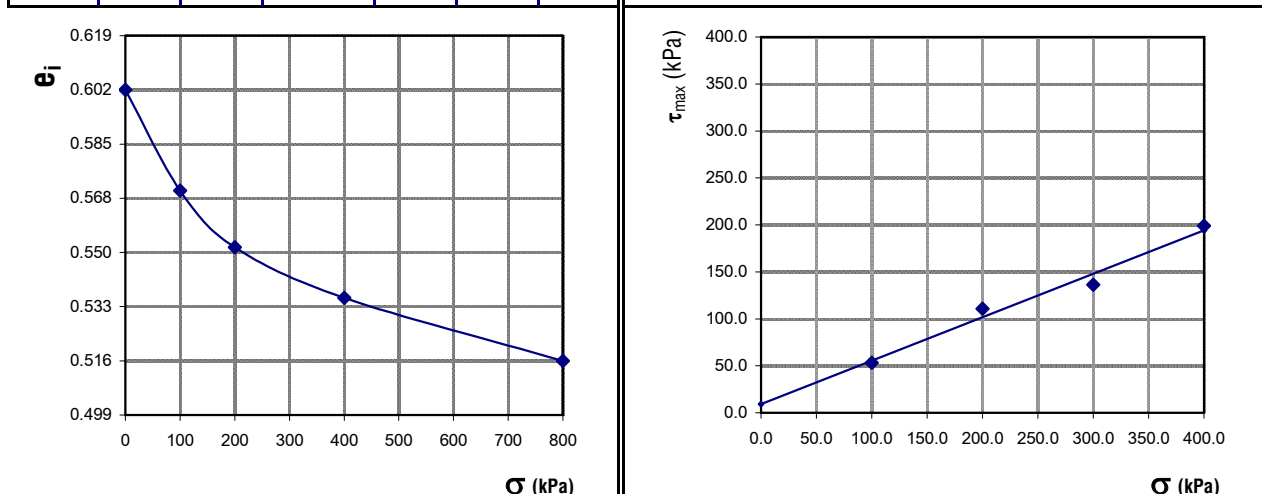
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.602			
100	48.0	8.8	0.570	0.032	5006.3	14781.5
200	72.0	11.9	0.552	0.018	8722.2	25753.2
400	94.0	14.0	0.536	0.008	19400.0	57280.4
800	121.0	17.5	0.516	0.005	30720.0	90703.9

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.6	1.686	53.3
200	65.9	1.678	110.6
300	78.6	1.736	136.4
400	114.4	1.739	198.9

$\tan \varphi = 0.4626$        $\varphi = 24^\circ 50'$       C      9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

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Tên mẫu/Sample: HK1-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK1

Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_p$	$I_p$	$I_L$
	19.60	20.5	17.1	93.8	35.7	0.556	26.6	22.54	16.72	5.82	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	99.28g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.239	0.103	0.007	6.3	34.1

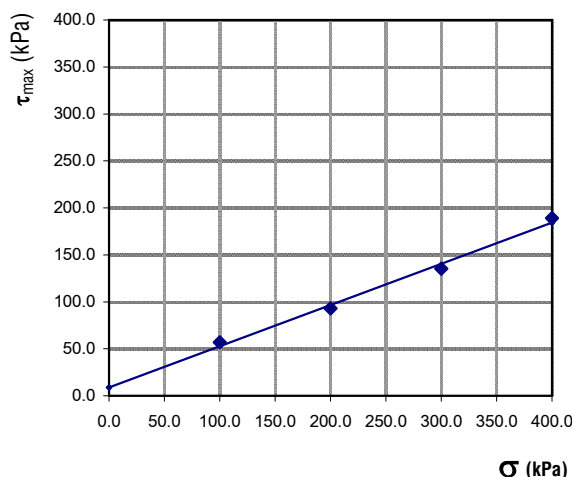
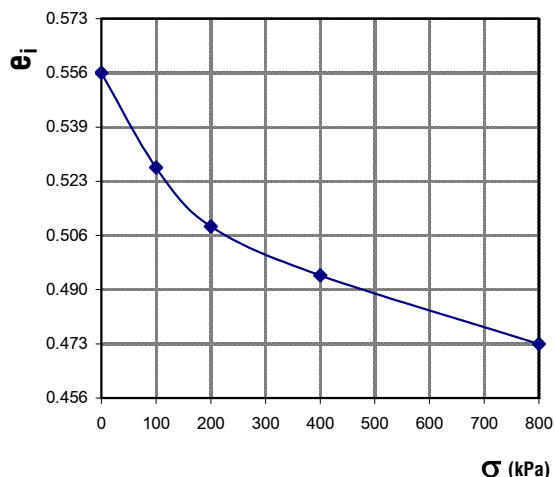
  

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{i-1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
Cát/Sand	20.0	Cát/Sand	2-1	2.8	100.0
	10.0		1-0.5	5.9	97.2
	5.0		0.5-0.25	28.9	91.3
	2.0		0.25-0.1	33.1	62.4
	1.0		0.1-0.05	12.8	29.3
0.5	2.76	Bụi/Silt	0.05-0.01	5.8	16.5
0.25	5.86		0.01-0.005	1.6	10.7
0.1	28.68	Sét/Clay	<0.005	9.1	9.1

D (mm)

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 4.00$		Hộp nén số/Test box No.: 5		$e_0 = 0.556$			PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.74$		Số đọc sau 24h/Reading after 24h: 123.0		$h_p = 20\text{mm}$			Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$	$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa	kPa	Vạch/Div.	kPa/0.01mm	kPa
0			0.556				100	33.7	1.686	56.8
100	43.0	7.4	0.527	0.029	5365.5	15881.9	200	55.5	1.678	93.1
200	69.0	10.5	0.509	0.018	8483.3	25110.7	300	77.8	1.736	135.1
400	90.3	12.6	0.494	0.008	18862.5	55833.0	400	108.8	1.739	189.2
800	120.0	15.8	0.473	0.005	29880.0	88444.8	$\tan \phi = 0.4392$ $\phi = 23^\circ 43'$ C    8.8 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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Tên mẫu/Sample: HK1-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK1

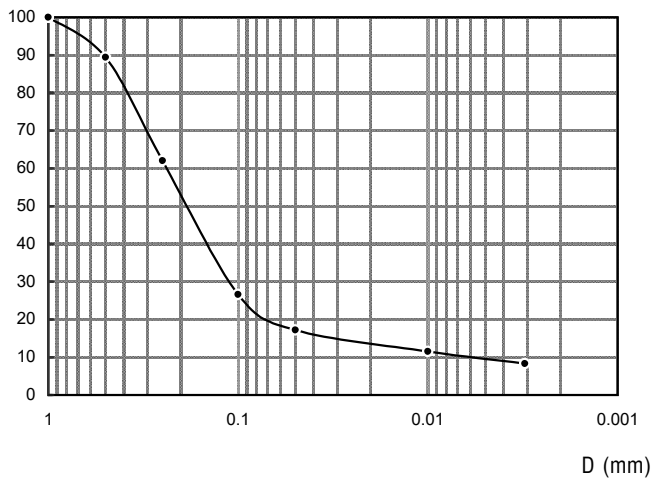
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.87	19.8	16.4	88.2	38.8	0.634	26.8	23.91	17.75	6.16	0.51

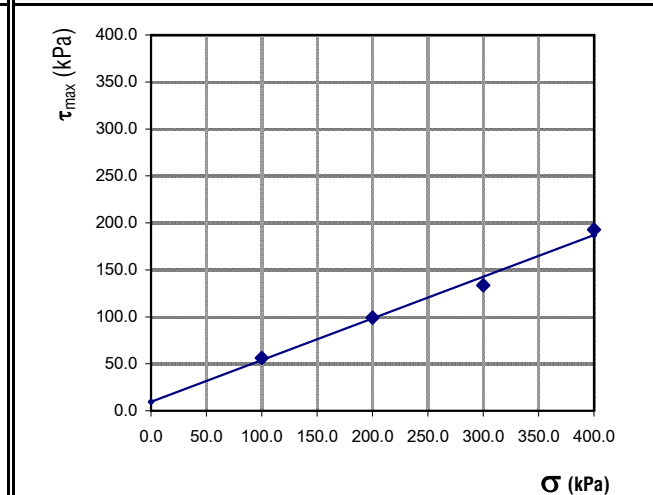
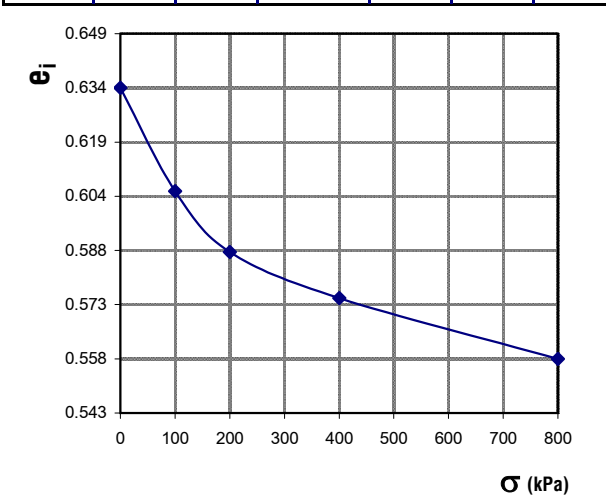
KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	95.86g					
Nhiệt độ TN/Temp.	30.0°C	0.242	0.114	0.005	10.7	48.4

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	10.6	100.0
1.0			0.5-0.25	27.4	89.4
0.5	10.20	Bụi/Silt	0.25-0.1	35.4	62.0
0.25	26.30		0.1-0.05	9.4	26.6
0.1	33.90		0.05-0.01	5.7	17.2
		Sét/Clay	0.01-0.005	1.7	11.5
			<0.005	9.8	9.8



Thí nghiệm nén lún/Compression test						
$m_v = 3.81$	Hộp nén số/Test box No.: 6	$e_0 = 0.634$				
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 112.8	$h_p = 20\text{mm}$				
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.634			
100	45.0	10.2	0.605	0.029	5634.5	15885.9
200	68.0	14.0	0.588	0.017	9441.2	26618.5
400	86.0	16.1	0.575	0.007	22685.7	63960.1
800	110.0	20.0	0.558	0.004	39375.0	111013.9

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.3	1.686	56.1
200	59.2	1.678	99.3
300	76.9	1.736	133.5
400	110.8	1.739	192.7
$\tan \phi = 0.4440$ $\phi = 23^\circ 56'$ C      9.4 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK1

Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.82	19.9	16.5	90.5	38.0	0.612	26.6	23.97	18.01	5.96	0.47

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	107.60g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.647	0.290	0.008	16.2	80.9

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-20}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	2.3	100.0
20.0		Cát/Sand	2-1	8.0	97.7
10.0			1-0.5	42.1	89.7
5.0			0.5-0.25	21.0	47.6
2.0	2.47		0.25-0.1	7.3	26.6
1.0	8.62		0.1-0.05	2.6	19.3
0.5	45.27	Bụi/Silt	0.05-0.01	5.5	16.7
0.25	22.58		0.01-0.005	2.6	11.2
0.1	7.86	Sét/Clay	<0.005	8.6	8.6

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 3.88$		Hộp nén số/Test box No.: 7		$e_0 = 0.612$			PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.74$		Số đọc sau 24h/Reading after 24h: 96.4		$h_p = 20\text{mm}$			Hệ số vòng lực/Proving ring calibration factor: Cr			

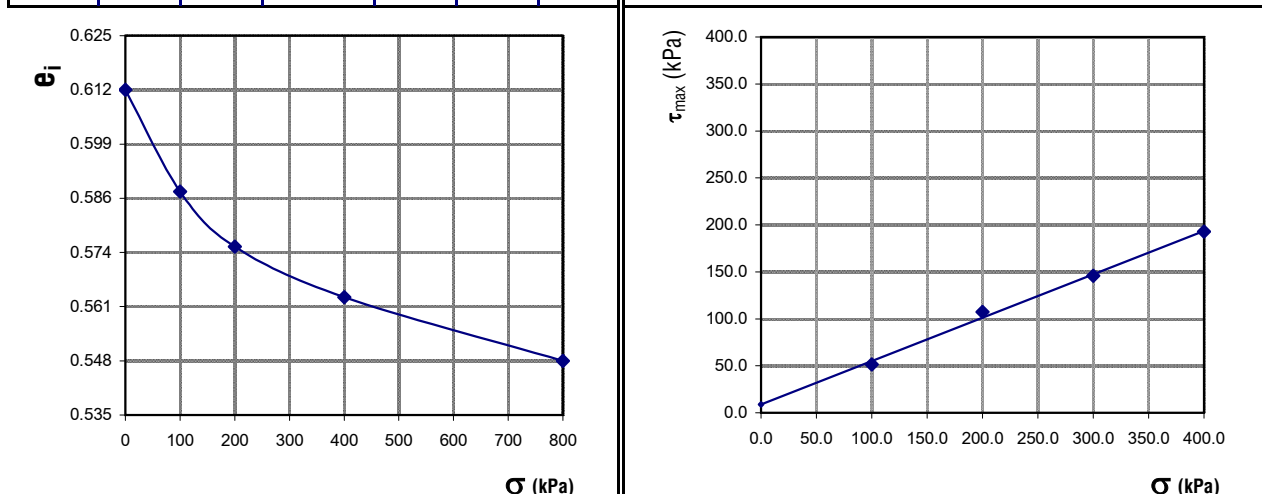
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.612			
100	37.0	8.4	0.588	0.024	6716.7	19260.0
200	56.0	11.9	0.575	0.013	12215.4	35027.6
400	73.0	14.0	0.563	0.006	26250.0	75271.9
800	94.0	17.2	0.548	0.004	39075.0	112047.6

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.6	1.686	51.6
200	64.0	1.678	107.4
300	84.0	1.736	145.8
400	110.8	1.739	192.7

$\tan \varphi = 0.4617$        $\varphi = 24^\circ 47'$       C      9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK1

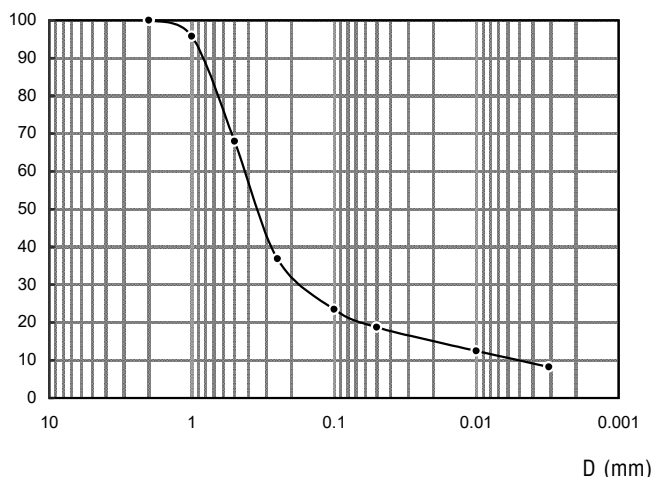
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.60	20.2	16.9	90.8	36.5	0.574	26.6	22.58	16.77	5.81	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	96.99g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
Nhiệt độ TN/Temp.				30.0°C		0.436	0.173	0.006	11.4	72.7

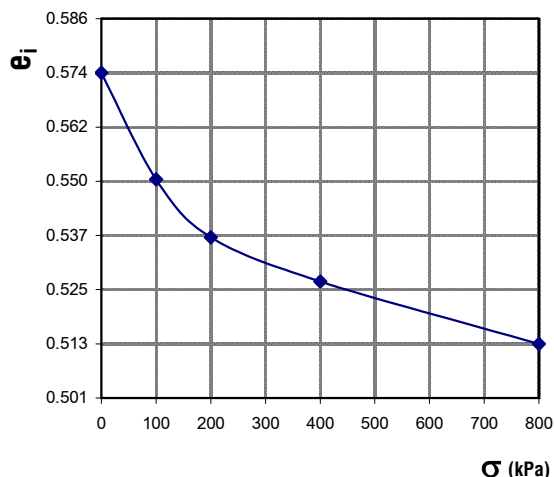
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.2	100.0
10.0			1-0.5	27.8	95.8
5.0			0.5-0.25	31.1	68.0
2.0			0.25-0.1	13.4	36.9
1.0	4.10		0.1-0.05	4.8	23.5
0.5	27.00	Bụi/Silt	0.05-0.01	6.2	18.7
0.25	30.20		0.01-0.005	3.0	12.5
0.1	13.00	Sét/Clay	<0.005	9.5	9.5



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 8  $e_0 = 0.574$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.574			
100	38.0	8.8	0.550	0.024	6558.3	19412.7
200	58.0	12.6	0.537	0.013	11923.1	35292.3
400	73.0	15.1	0.527	0.005	30740.0	90990.4
800	94.0	18.5	0.513	0.004	38175.0	112998.0

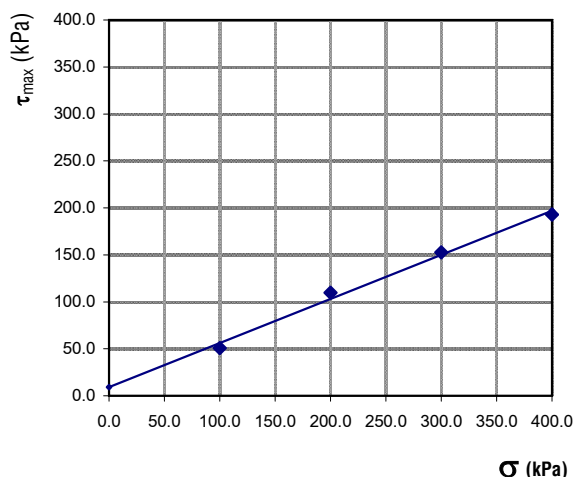


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.1	1.686	50.7
200	65.3	1.678	109.6
300	88.0	1.736	152.8
400	110.8	1.739	192.7

$\tan \varphi = 0.4692$   $\varphi = 25^\circ 08'$  C 9.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK1

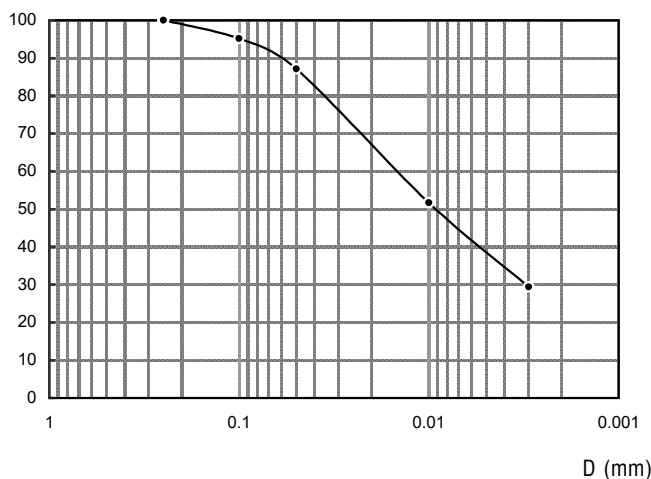
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	28.64	19.1	14.8	92.2	46.0	0.851	27.4	45.18	22.51	22.67	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.014	0.003	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	4.8	100.0
0.25			0.1-0.05	8.1	95.2
0.1	1.80	Bụi/Silt	0.05-0.01	35.4	87.1
			0.01-0.005	15.7	51.7
		Sét/Clay	<0.005	36.0	36.0



## Thí nghiệm nén lún/Compression test

$m_k = 5.83$

Hộp nén số/Test box No.: 9

$e_0 = 0.851$

$\beta = 0.40$

Số đọc sau 24h/Reading after 24h: 182.5

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.851			
100	49.0	7.7	0.812	0.039	4746.2	11058.5
200	80.0	10.9	0.785	0.027	6711.1	15636.9
400	121.0	12.6	0.748	0.019	9394.7	21889.7
800	178.0	15.5	0.696	0.013	13446.2	31329.5

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

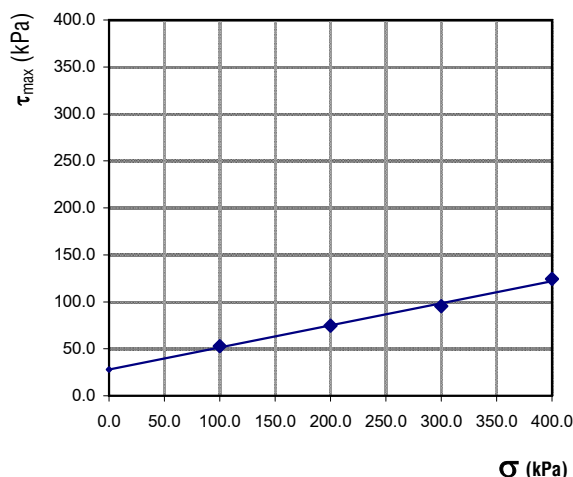
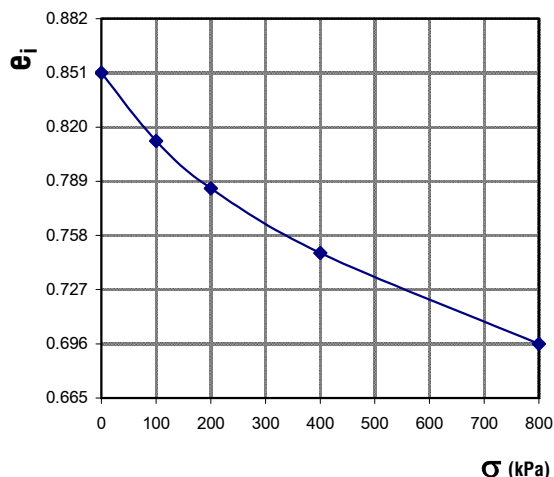
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.4	1.686	52.9
200	44.5	1.678	74.7
300	55.0	1.736	95.5
400	71.5	1.739	124.3

$\tan \phi = 0.2350$

$\phi = 13^\circ 13'$

C 28.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK1

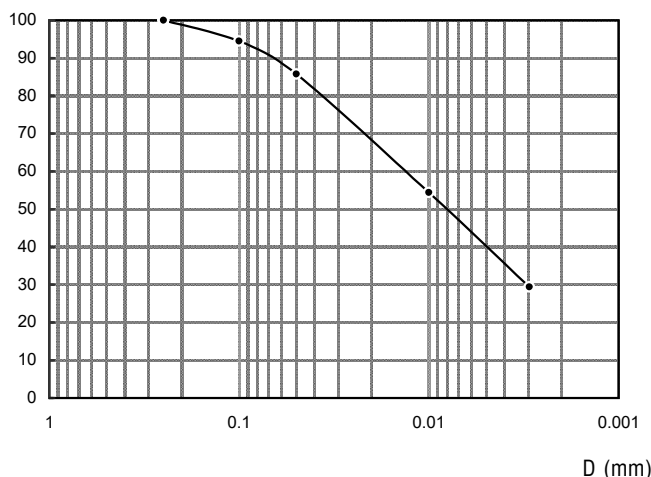
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.34	19.0	15.0	87.7	45.1	0.820	27.3	41.47	20.09	21.38	0.29

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.013	0.003	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	5.5	100.0
1.0			0.1-0.05	8.7	94.5
0.5		Bụi/Silt	0.05-0.01	31.4	85.8
0.25			0.01-0.005	18.3	54.4
0.1	2.30	Sét/Clay	<0.005	36.1	36.1



## Thí nghiệm nén lún/Compression test

$m_k = 5.98$  Hộp nén số/Test box No.: 10  $e_0 = 0.820$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 188.6  $h_0 = 20\text{mm}$

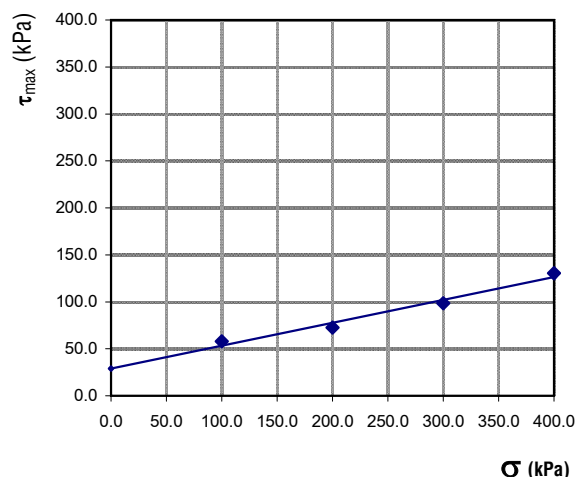
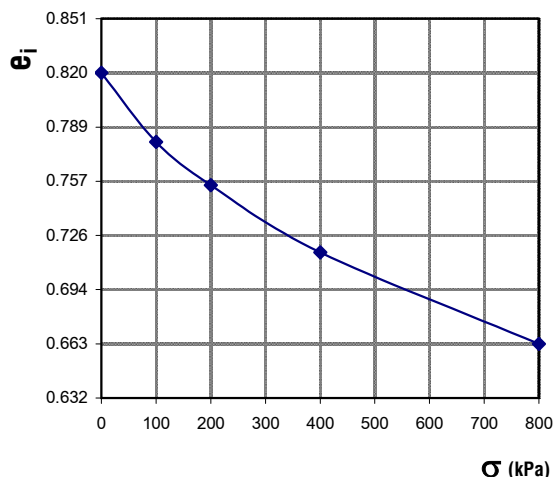
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.820			
100	50.0	7.7	0.780	0.040	4550.0	10874.5
200	80.0	10.5	0.755	0.025	7120.0	17016.8
400	123.3	12.3	0.716	0.020	8775.0	20972.3
800	184.0	15.5	0.663	0.013	13200.0	31548.0

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.3	1.686	57.8
200	43.2	1.678	72.5
300	56.7	1.736	98.4
400	75.0	1.739	130.4

$\tan \phi = 0.2437$   $\phi = 13^\circ 42'$  C 28.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK1

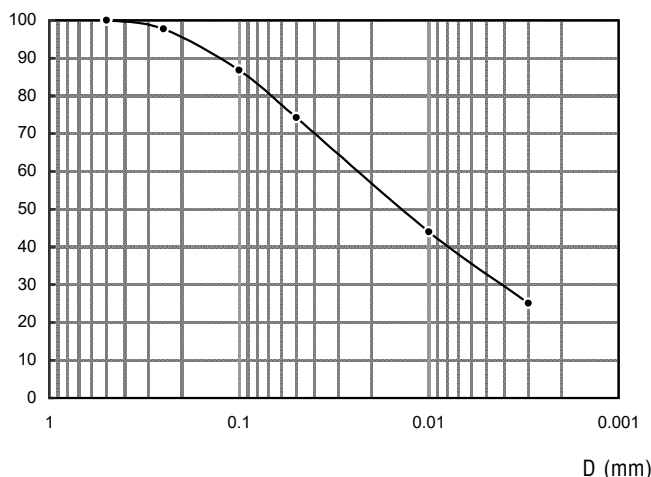
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám tro - xám xanh, trạng thái dẻo cứng / Stiff, ashgrey - bluish grey, Clay

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	28.46	18.9	14.7	91.1	46.0	0.850	27.2	41.62	23.44	18.18	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					43.87g	0.022	0.005	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

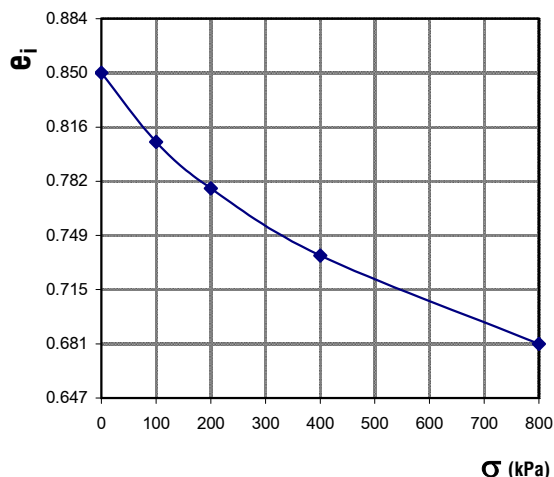
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25	2.3	100.0
0.5		Bụi/Silt	0.25-0.1	10.9	97.7
0.25	1.01		0.1-0.05	12.6	86.8
0.1	4.80		0.05-0.01	30.2	74.2
		Sét/Clay	0.01-0.005	13.4	44.0
			<0.005	30.6	30.6



## Thí nghiệm nén lún/Compression test

$m_k = 5.86$  Hộp nén số/Test box No.: 11  $e_0 = 0.850$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 198.9  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.850			
100	54.3	8.4	0.807	0.043	4302.3	10084.7
200	87.0	11.2	0.778	0.029	6231.0	14605.5
400	133.0	13.3	0.736	0.021	8466.7	19845.9
800	194.0	16.3	0.681	0.014	12400.0	29065.6

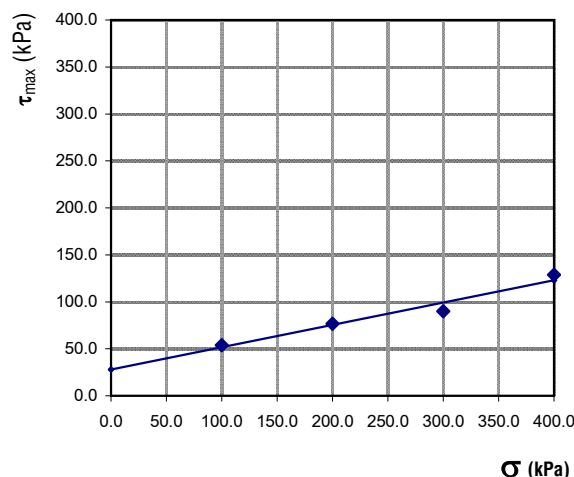


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	32.0	1.686	54.0
200	45.7	1.678	76.7
300	51.8	1.736	89.9
400	74.0	1.739	128.7

$\tan \phi = 0.2373$   $\phi = 13^\circ 21'$  C 28.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK1

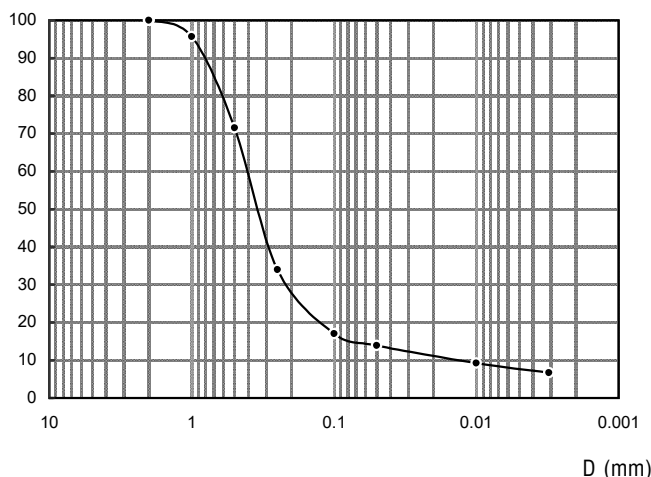
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.40	19.8	16.3	90.1	38.7	0.632	26.6	24.38	18.56	5.82	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	118.20g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.423	0.215	0.014	7.8	30.2

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	D <sub>11-2</sub> (mm)	P <sub>i</sub> %	P %
D (mm)	m <sub>i</sub> (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.3	100.0
10.0			1-0.5	24.2	95.7
5.0			0.5-0.25	37.5	71.5
2.0			0.25-0.1	17.0	34.0
1.0	5.10		0.1-0.05	3.1	17.0
0.5	28.64	Bụi/Silt	0.05-0.01	4.7	13.9
0.25	44.29		0.01-0.005	1.5	9.2
0.1	20.10		Sét/Clay	<0.005	7.7



## Thí nghiệm nén lún/Compression test

$m_k = 3.79$  Hộp nén số/Test box No.: 12  $e_0 = 0.632$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_0 = 20\text{mm}$

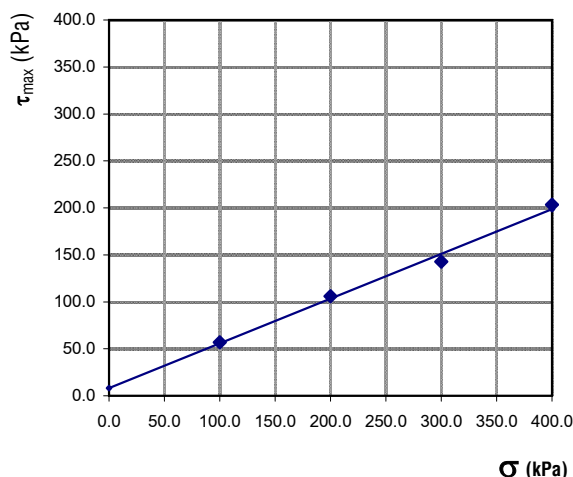
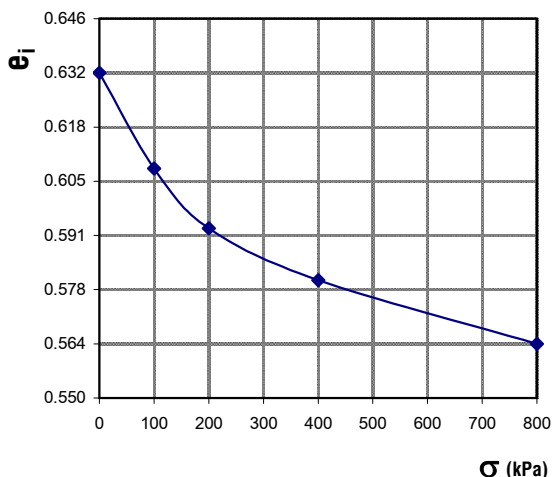
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.632			
100	35.0	6.3	0.608	0.024	6800.0	19046.1
200	56.0	9.5	0.593	0.015	10720.0	30025.6
400	74.0	11.6	0.580	0.007	22757.1	63740.5
800	94.0	13.7	0.564	0.004	39500.0	110635.6

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.8	1.686	57.0
200	63.1	1.678	105.9
300	82.2	1.736	142.7
400	116.9	1.739	203.3

$\tan \varphi = 0.4757$   $\varphi = 25^\circ 26'$  C 8.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK1

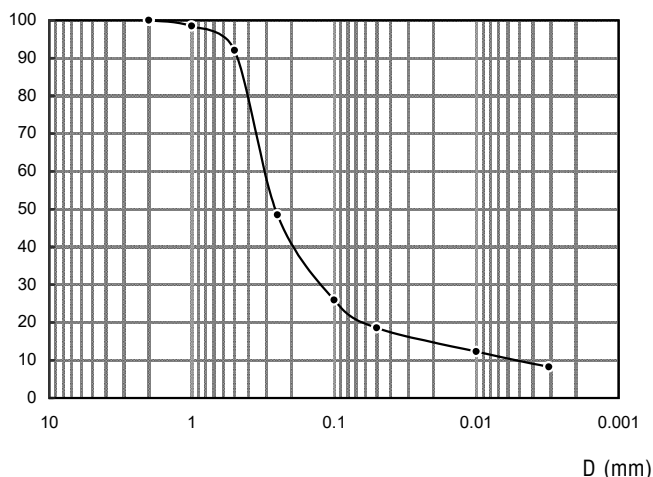
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.53	19.8	16.6	85.8	37.8	0.608	26.7	22.35	16.80	5.55	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	96.96g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.316	0.127	0.006	8.5	52.7

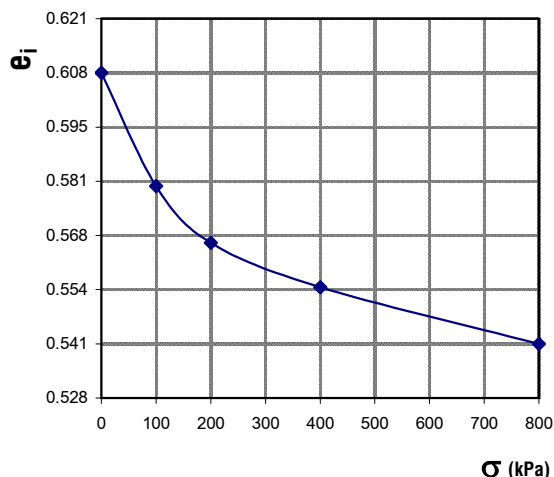
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	1.5	100.0
			1-0.5	6.5	98.5
			0.5-0.25	43.5	92.0
			0.25-0.1	22.6	48.5
			0.1-0.05	7.3	25.9
10.0		Bụi/Silt	0.05-0.01	6.3	18.6
5.0			0.01-0.005	2.9	12.3
2.0					
1.0	1.50	Sét/Clay	<0.005	9.4	9.4
0.5	6.33				
0.25	42.20				
0.1	21.88				



## Thí nghiệm nén lún/Compression test

$m_k = 3.92$  Hộp nén số/Test box No.: 13  $e_0 = 0.608$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.608			
100	41.0	7.4	0.580	0.028	5742.9	16658.9
200	61.0	10.2	0.566	0.014	11285.7	32737.6
400	75.0	10.9	0.555	0.005	31320.0	90853.1
800	94.0	13.7	0.541	0.004	38875.0	112768.6

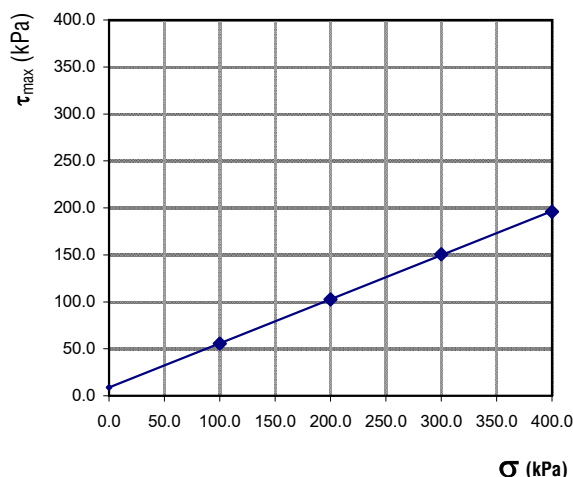


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.0	1.686	55.6
200	61.2	1.678	102.7
300	86.8	1.736	150.7
400	112.7	1.739	196.0

$\tan \varphi = 0.4692$   $\varphi = 25^\circ 08'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK1

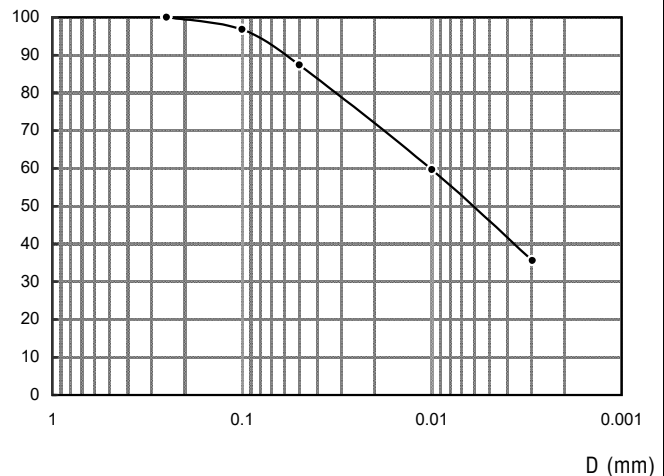
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu hồng, trạng thái dẻo cứng / Stiff, pinkish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	28.04	19.1	14.9	92.0	45.4	0.832	27.3	45.18	21.63	23.55	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	35.30g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.010	*	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	3.2	100.0
1.0			0.1-0.05	9.4	96.8
0.5		Bụi/Silt	0.05-0.01	27.7	87.4
0.25			0.01-0.005	14.7	59.7
0.1	1.13	Sét/Clay	<0.005	45.0	45.0



## Thí nghiệm nén lún/Compression test

$m_k = 5.96$  Hộp nén số/Test box No.: 14  $e_0 = 0.832$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 196.8  $h_p = 20\text{mm}$

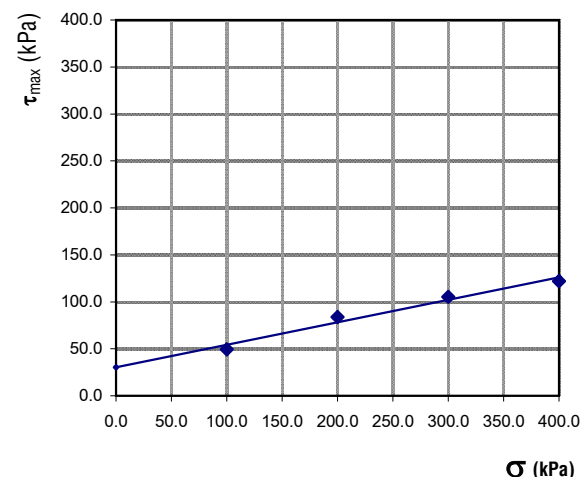
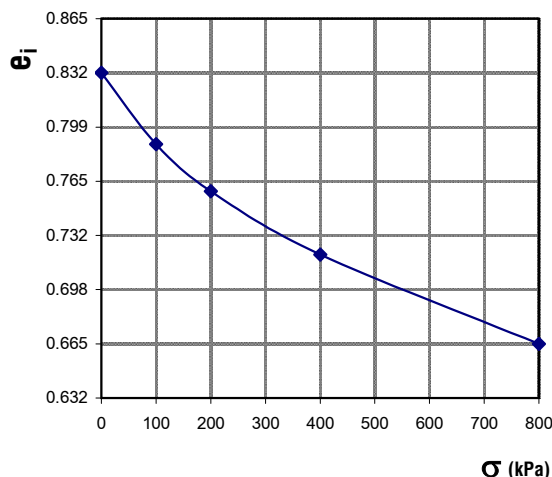
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.832			
100	54.5	8.1	0.788	0.044	4163.6	9917.8
200	88.0	10.5	0.759	0.029	6165.5	14686.3
400	130.2	11.6	0.720	0.020	8795.0	20949.7
800	192.0	14.8	0.665	0.014	12285.7	29264.6

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.3	1.686	49.4
200	50.0	1.678	83.9
300	60.7	1.736	105.4
400	70.1	1.739	121.9

$\tan \phi = 0.2390$   $\phi = 13^\circ 26'$  C 30.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK1-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK1

Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám nâu, trạng thái dẻo / Plasticity, brownish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.16	20.3	16.9	93.4	36.5	0.574	26.6	23.00	17.47	5.53	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	103.47g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.269	0.126	0.009	6.6	29.9

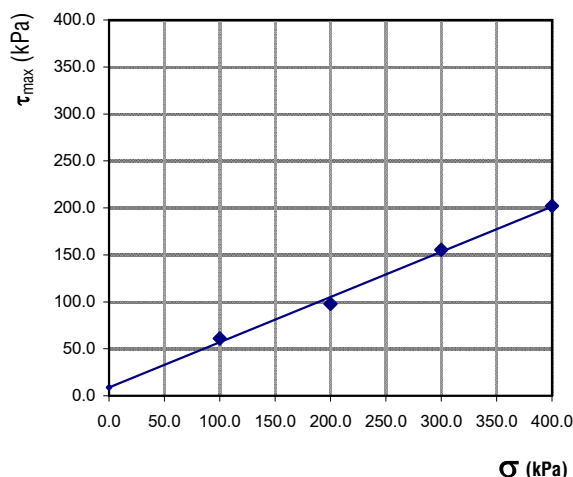
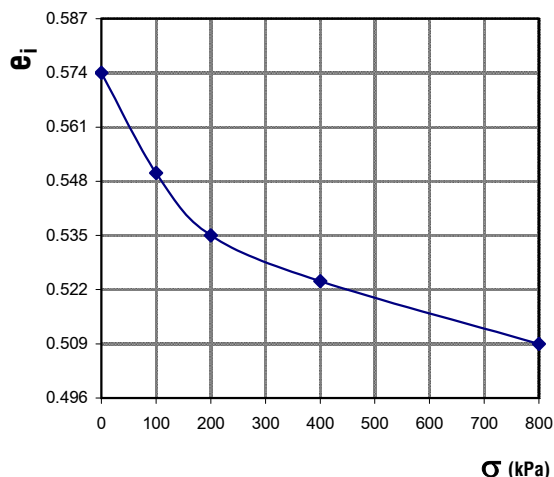
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	2.1	100.0
20.0		Cát/Sand	2-1	6.1	97.9
10.0			1-0.5	9.3	91.8
5.0			0.5-0.25	24.4	82.5
2.0	2.19		0.25-0.1	34.1	58.1
1.0	6.36		0.1-0.05	10.7	24.0
0.5	9.63	Bụi/Silt	0.05-0.01	3.0	13.3
0.25	25.28		0.01-0.005	1.5	10.3
0.1	35.29	Sét/Clay	<0.005	8.8	8.8

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 4.00$		Hộp nén số/Test box No.: 15		$e_0 = 0.574$			PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.74$		Số đọc sau 24h/Reading after 24h: 96.4		$h_p = 20\text{mm}$			Hệ số vòng lực/Proving ring calibration factor: Cr			

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$	$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa	kPa	Vạch/Div.	kPa/0.01mm	kPa
0			0.574				100	36.1	1.686	60.9
100	35.0	6.3	0.550	0.024	6558.3	19412.7	200	58.2	1.678	97.7
200	57.0	9.1	0.535	0.015	10333.3	30586.7	300	89.6	1.736	155.5
400	72.0	10.9	0.524	0.006	25583.3	75726.7	400	116.2	1.739	202.1
800	94.0	13.7	0.509	0.004	38100.0	112776.0	tan $\phi = 0.4814$ $\phi = 25^\circ 42'$ C    8.7 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK2

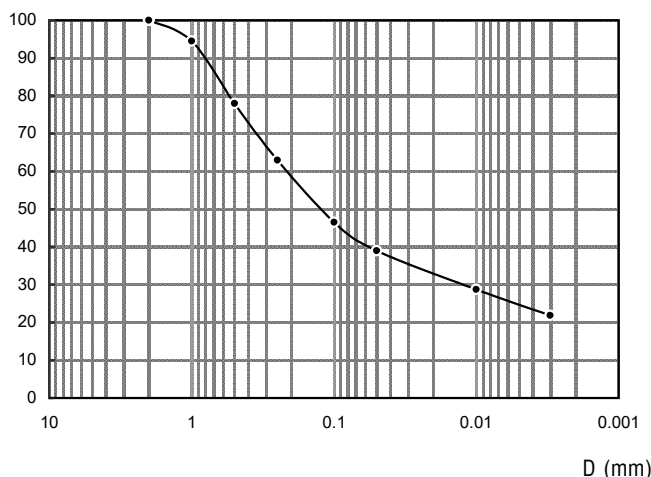
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	23.32	19.8	16.1	92.5	40.6	0.683	27.1	30.74	17.85	12.89	0.42

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	43.16g					
Nhiệt độ TN/Temp.	30.0°C	0.223	0.012	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	5.5	100.0
10.0			1-0.5	16.5	94.5
5.0			0.5-0.25	15.0	78.0
2.0			0.25-0.1	16.5	63.0
1.0	2.38		0.1-0.05	7.5	46.5
0.5	7.13	Bụi/Silt	0.05-0.01	10.3	39.0
0.25	6.48		0.01-0.005	4.1	28.7
0.1	7.12	Sét/Clay	<0.005	24.6	24.6



## Thí nghiệm nén lún/Compression test

$m_k = 4.76$  Hộp nén số/Test box No.: 16  $e_0 = 0.683$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 248.1  $h_0 = 20\text{mm}$

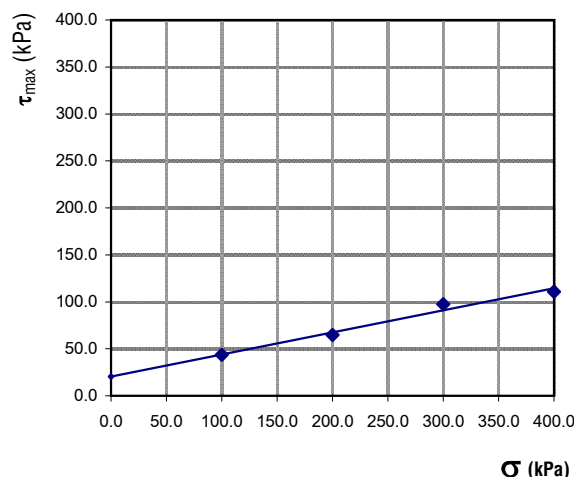
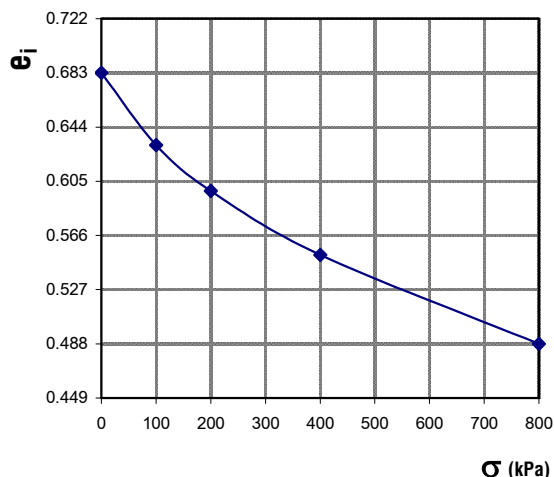
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.683			
100	68.0	8.1	0.631	0.052	3236.5	9551.7
200	109.7	11.2	0.598	0.033	4942.4	14586.1
400	164.0	12.6	0.552	0.023	6947.8	20504.4
800	242.0	16.5	0.488	0.016	9700.0	28626.6

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.8	1.686	43.5
200	38.5	1.678	64.6
300	56.1	1.736	97.4
400	63.8	1.739	110.9

$\tan \varphi = 0.2350$   $\varphi = 13^\circ 13'$  C 20.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK2

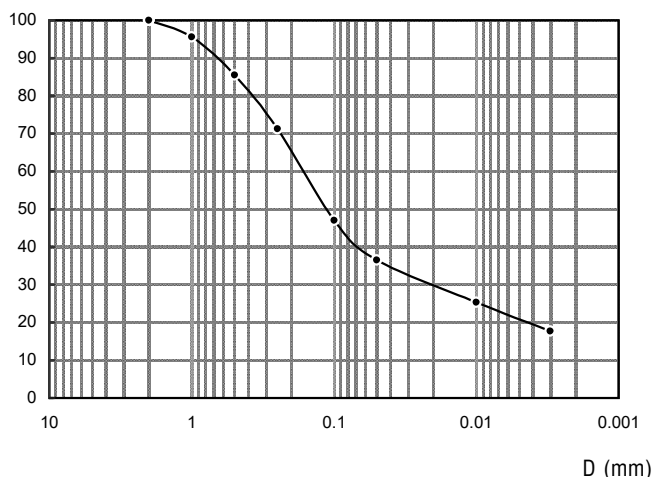
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.52	19.6	16.1	85.8	40.4	0.677	27.0	28.63	17.45	11.18	0.36

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					53.49g					
					Nhiệt độ TN/Temp.	30.0°C	0.180	0.022	*	*

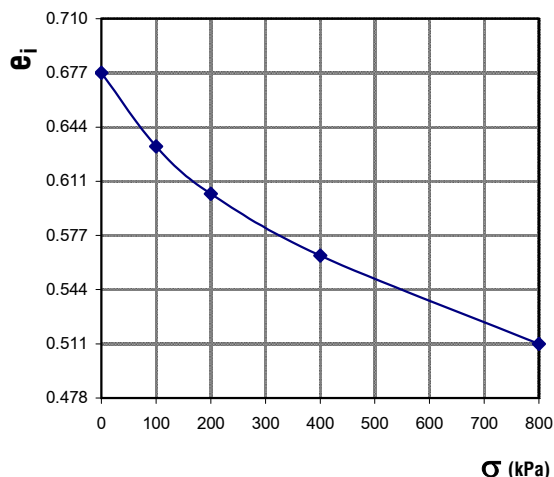
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1	4.4	100.0
2.0			1-0.5	10.1	95.6
1.0	2.36		0.5-0.25	14.2	85.5
0.5	5.40		0.25-0.1	24.3	71.3
0.25	7.60		0.1-0.05	10.5	47.0
0.1	13.00	Bụi/Silt	0.05-0.01	11.2	36.5
			0.01-0.005	3.9	25.3
		Sét/Clay	<0.005	21.4	21.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.74$  Hộp nén số/Test box No.: 17  $e_0 = 0.677$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 214.3  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.677			
100	61.4	8.4	0.632	0.045	3726.7	10940.4
200	97.0	11.6	0.603	0.029	5627.6	16520.9
400	142.0	13.0	0.565	0.019	8436.8	24768.0
800	209.1	16.5	0.511	0.014	11178.6	32816.9

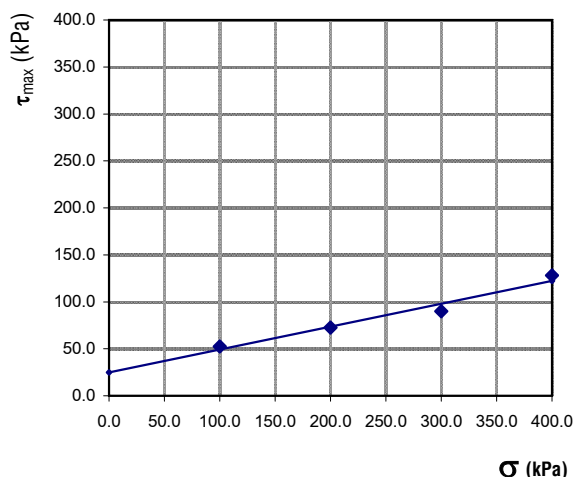


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.2	1.686	52.6
200	43.3	1.678	72.7
300	51.7	1.736	89.8
400	73.7	1.739	128.2

$\tan \phi = 0.2439$   $\phi = 13^\circ 42'$  C 24.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK2

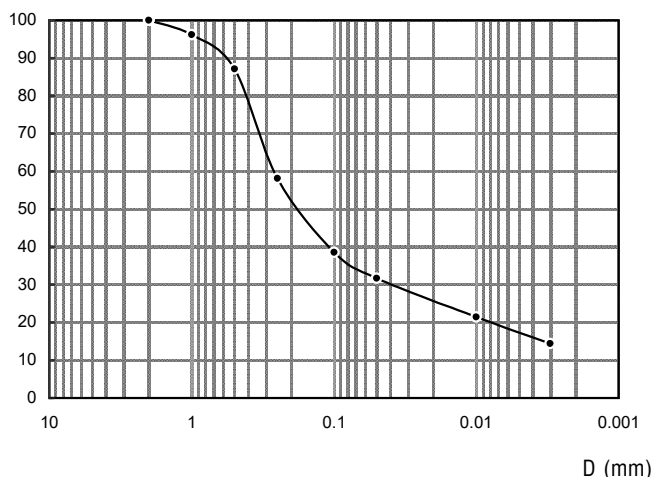
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.33	20.0	16.5	90.0	39.1	0.642	27.1	31.49	17.65	13.84	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					63.45g					
					Nhiệt độ TN/Temp.	30.0°C	0.266	0.045	*	*

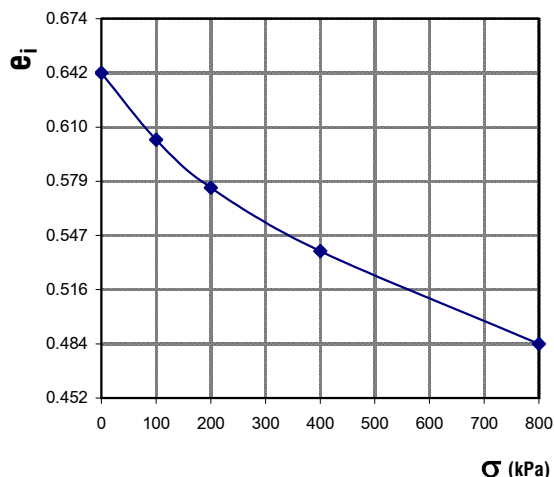
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	D <sub>11-12</sub> (mm)	P <sub>i</sub> %	P %
D (mm)	m <sub>i</sub> (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	3.8	100.0
10.0			1-0.5	9.1	96.2
5.0			0.5-0.25	29.0	87.1
2.0			0.25-0.1	19.5	58.1
1.0	2.44		0.1-0.05	6.9	38.6
0.5	5.78	Bụi/Silt	0.05-0.01	10.3	31.7
0.25	18.40		0.01-0.005	3.9	21.4
0.1	12.36		Sét/Clay	<0.005	17.5



## Thí nghiệm nén lún/Compression test

$m_k = 4.88$  Hộp nén số/Test box No.: 18  $e_0 = 0.642$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 207.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.642			
100	54.0	7.7	0.603	0.039	4210.3	12725.5
200	90.0	10.2	0.575	0.028	5725.0	17303.8
400	135.0	11.6	0.538	0.019	8289.5	25054.9
800	202.0	14.8	0.484	0.014	10985.7	33204.3

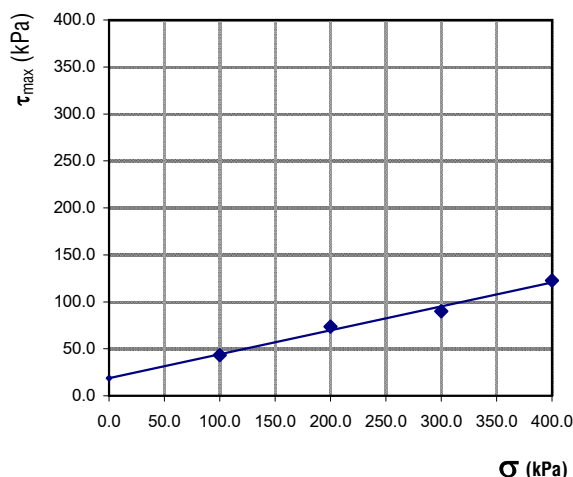


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.6	1.686	43.2
200	43.9	1.678	73.7
300	51.7	1.736	89.8
400	70.5	1.739	122.6

$\tan \phi = 0.2543$   $\phi = 14^\circ 16'$  C 18.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK2

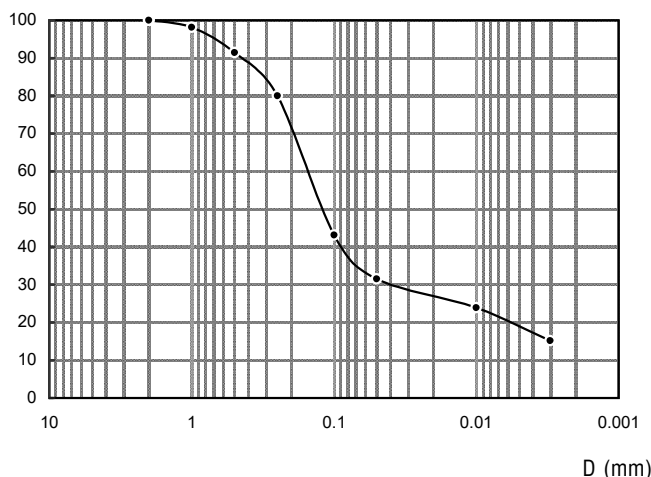
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng, trạng thái dẻo cứng / Stiff, whitish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.44	19.9	16.5	86.8	38.9	0.636	27.0	29.00	17.45	11.55	0.26

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					62.27g					
					Nhiệt độ TN/Temp.	30.0°C	0.169	0.042	*	*

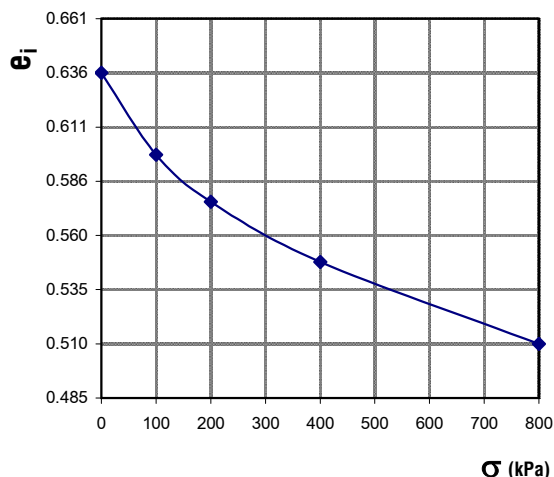
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	1.9	100.0
			1-0.5	6.7	98.1
			0.5-0.25	11.4	91.4
			0.25-0.1	36.9	80.0
			0.1-0.05	11.6	43.1
10.0		Bụi/Silt	0.05-0.01	7.6	31.5
5.0			0.01-0.005	4.9	23.9
2.0					
1.0	1.20	Sét/Clay	<0.005	19.0	19.0
0.5	4.20				
0.25	7.10				
0.1	23.00				



## Thí nghiệm nén lún/Compression test

$m_k = 4.87$  Hộp nén số/Test box No.: 19  $e_0 = 0.636$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 171.2  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.636			
100	53.0	8.4	0.598	0.038	4305.3	12999.3
200	82.0	11.2	0.576	0.022	7263.6	21931.8
400	118.0	13.3	0.548	0.014	11257.1	33989.8
800	167.0	16.8	0.510	0.010	15480.0	46740.3

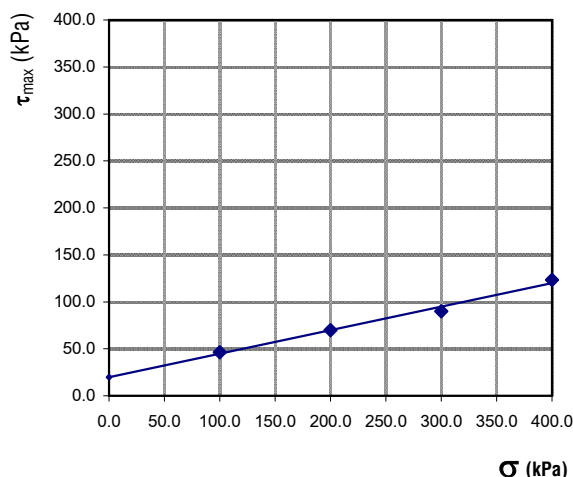


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.6	1.686	46.5
200	41.7	1.678	70.0
300	51.9	1.736	90.1
400	70.9	1.739	123.3

$\tan \phi = 0.2505$   $\phi = 14^\circ 04'$  C 19.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK2

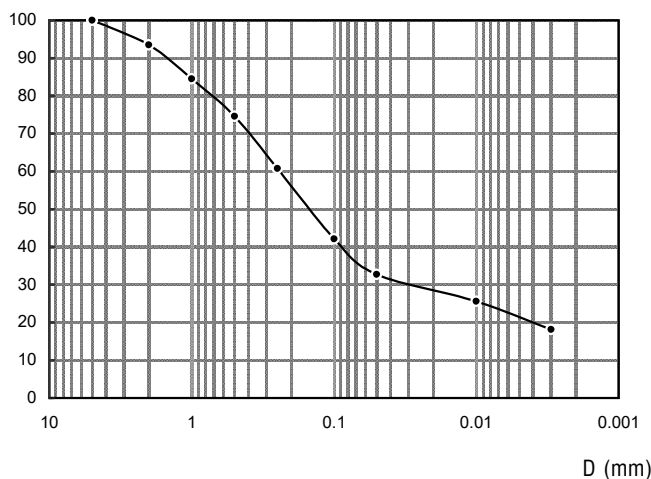
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng, trạng thái dẻo cứng / Stiff, whitish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.90	20.2	16.6	94.3	38.5	0.627	27.0	28.42	17.15	11.27	0.42

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					69.65g					
					Nhiệt độ TN/Temp.	30.0°C	0.244	0.034	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	6.5	100.0
20.0		Cát/Sand	2-1	9.0	93.5
10.0			1-0.5	9.9	84.5
5.0			0.5-0.25	13.8	74.6
2.0	4.50		0.25-0.1	18.7	60.8
1.0	6.30		0.1-0.05	9.4	42.1
0.5	6.87	Bụi/Silt	0.05-0.01	7.1	32.7
0.25	9.60		0.01-0.005	4.0	25.6
0.1	13.00	Sét/Clay	<0.005	21.6	21.6



## Thí nghiệm nén lún/Compression test

$m_k = 4.92$  Hộp nén số/Test box No.: 20  $e_0 = 0.627$

$\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 203.0  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.627			
100	52.0	8.8	0.591	0.036	4519.4	13772.1
200	84.0	11.6	0.567	0.024	6629.2	20201.1
400	128.0	13.7	0.531	0.018	8705.6	26528.4
800	198.0	17.9	0.477	0.014	10935.7	33324.4

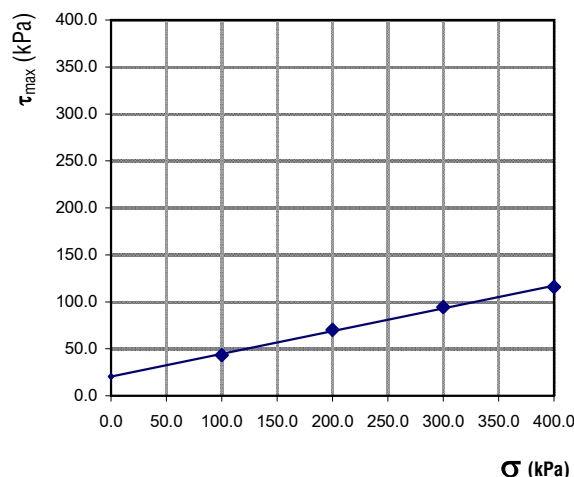
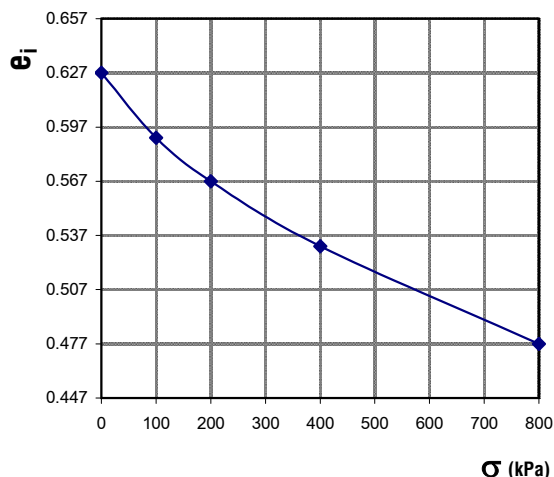
## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.6	1.686	43.2
200	41.8	1.678	70.1
300	54.4	1.736	94.4
400	66.6	1.739	115.8

$\tan \phi = 0.2421$   $\phi = 13^\circ 37'$  C 20.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK2

Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng, trạng thái dẻo cứng / Stiff, whitish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	24.79	19.6	15.7	92.5	42.1	0.726	27.1	32.87	18.90	13.97	0.42

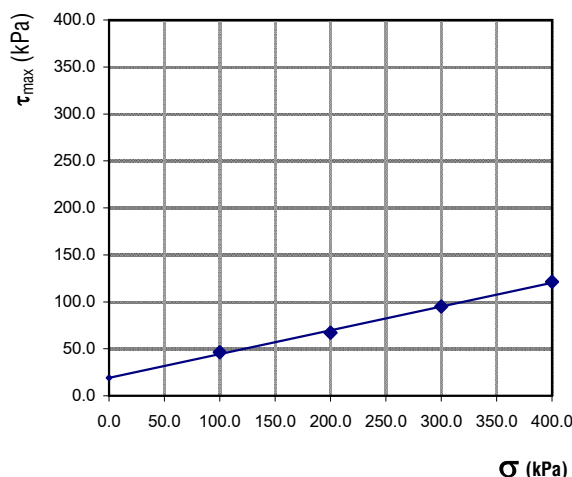
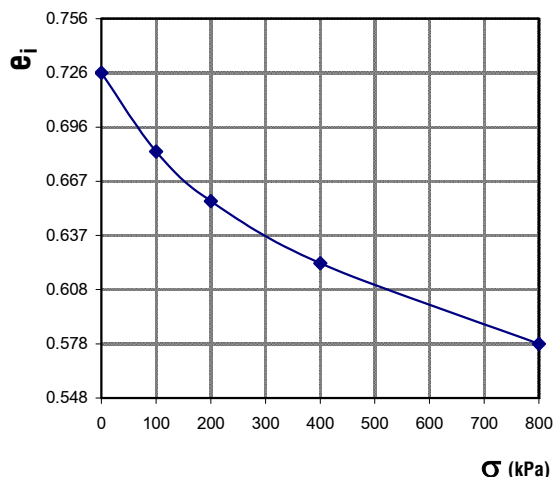
KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	72.92g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.199	0.058	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	10.1	100.0
1.0			0.5-0.25	19.2	89.9
0.5	7.40		0.25-0.1	31.5	70.7
0.25	14.00		0.1-0.05	10.2	39.2
0.1	23.00	Bụi/Silt	0.05-0.01	8.3	29.0
			0.01-0.005	3.0	20.7
		Sét/Clay	<0.005	17.7	17.7

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 4.47$ Hộp nén số/Test box No.: 21 $e_0 = 0.726$							PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.62$ Số đọc sau 24h/Reading after 24h: 188.6 $h_p = 20\text{mm}$							Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$	$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa	kPa	Vạch/Div.	kPa/0.01mm	kPa
0			0.726				100	27.4	1.686	46.2
100	58.0	9.1	0.683	0.043	4014.0	11124.3	200	40.0	1.678	67.1
200	91.0	11.9	0.656	0.027	6233.3	17275.1	300	54.8	1.736	95.1
400	132.0	14.0	0.622	0.017	9741.2	26996.7	400	69.7	1.739	121.2
800	184.0	17.5	0.578	0.011	14745.5	40865.6	$\tan \phi = 0.2530$ $\phi = 14^\circ 12'$ C 19.2 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK2

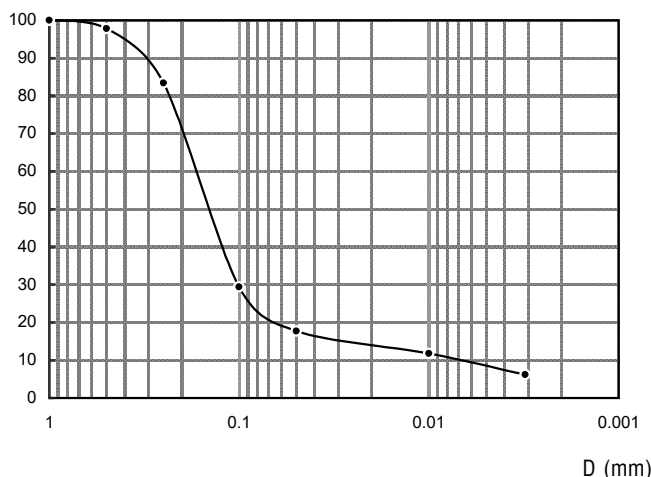
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.67	19.7	16.2	88.8	39.6	0.654	26.8	24.54	18.73	5.81	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	100.93g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.185	0.102	0.007	8.0	26.4

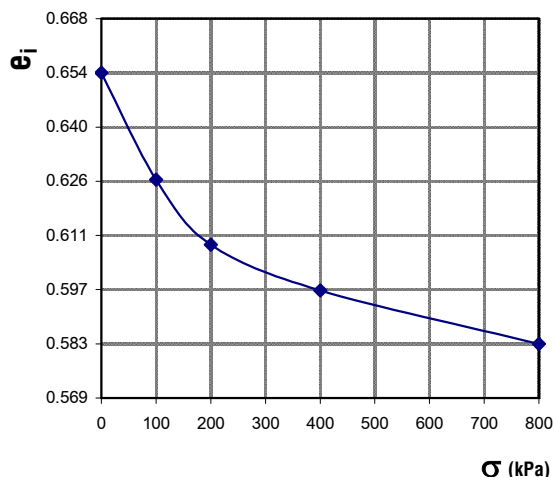
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{11-12}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	2.2	100.0
1.0			0.5-0.25	14.4	97.8
0.5	2.17		0.25-0.1	54.0	83.4
0.25	14.50		0.1-0.05	11.7	29.4
0.1	54.50	Bụi/Silt	0.05-0.01	5.9	17.7
			0.01-0.005	2.9	11.8
		Sét/Clay	<0.005	8.9	8.9



## Thí nghiệm nén lún/Compression test

$m_k = 3.71$  Hộp nén số/Test box No.: 22  $e_o = 0.654$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 103.5  $h_p = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_o = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.654			
100	43.0	9.8	0.626	0.028	5907.1	16195.6
200	65.0	11.6	0.609	0.017	9564.7	26223.6
400	80.0	13.3	0.597	0.006	26816.7	73523.3
800	101.0	17.2	0.583	0.004	39925.0	109462.4

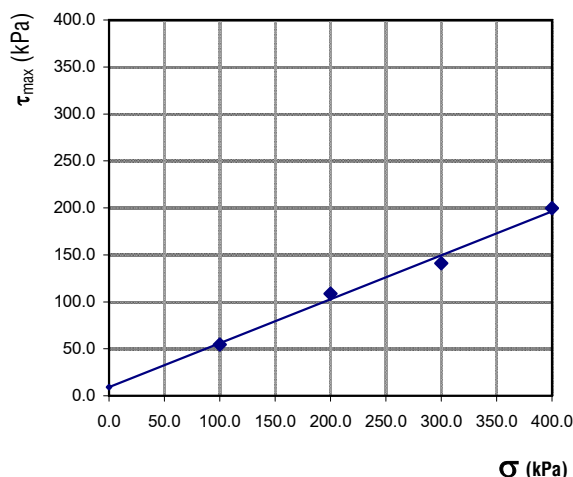


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.4	1.686	54.6
200	64.8	1.678	108.7
300	81.3	1.736	141.1
400	114.8	1.739	199.6

$\tan \phi = 0.4674$   $\phi = 25^\circ 03'$  C 9.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK2

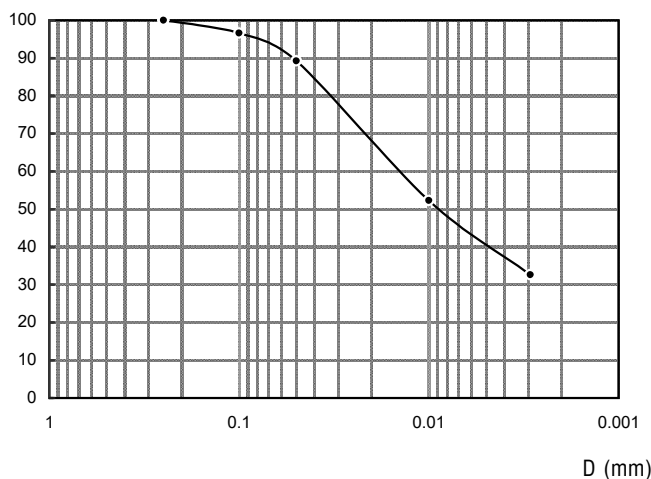
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	33.70	18.4	13.8	93.6	49.6	0.986	27.4	48.49	25.83	22.66	0.35

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					43.28g	0.015	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

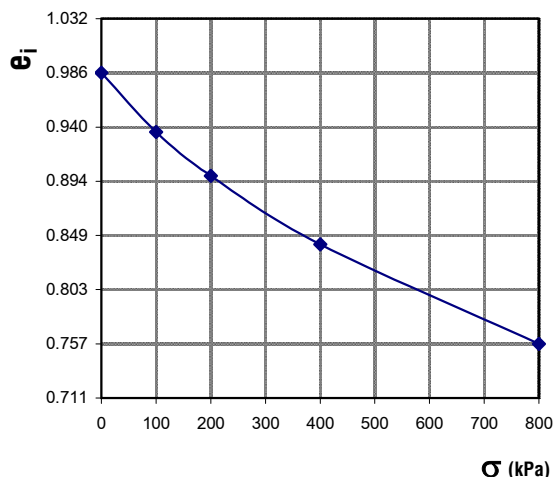
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	3.4	100.0
1.0			0.1-0.05	7.4	96.6
0.5		Bụi/Silt	0.05-0.01	36.9	89.2
0.25			0.01-0.005	13.9	52.3
0.1	1.49	Sét/Clay	<0.005	38.4	38.4



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 23  $e_0 = 0.986$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 248.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.986			
100	56.6	8.1	0.936	0.050	3972.0	8738.4
200	96.6	11.2	0.899	0.037	5232.4	11511.4
400	155.2	13.0	0.841	0.029	6548.3	14406.2
800	242.0	17.2	0.757	0.021	8766.7	19286.7

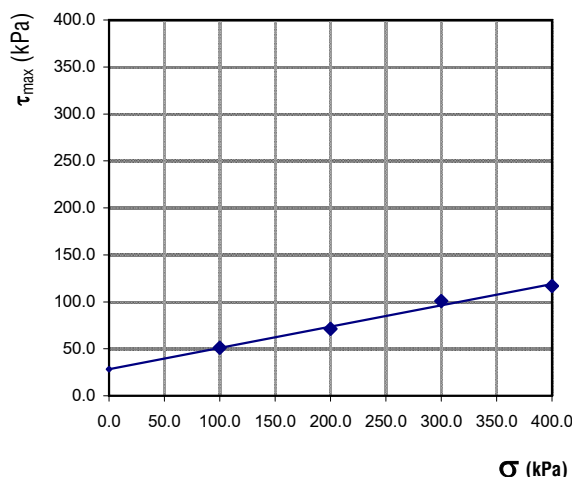


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.3	1.686	51.1
200	42.4	1.678	71.1
300	58.2	1.736	101.0
400	67.1	1.739	116.7

$\tan \phi = 0.2267$   $\phi = 12^\circ 46'$  C 28.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK2

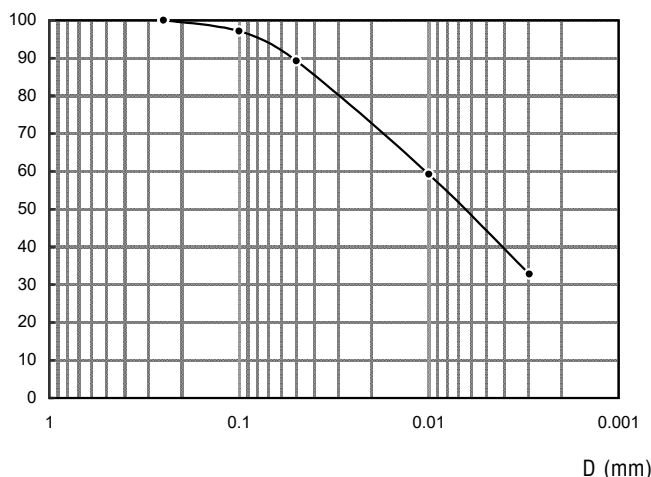
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám xanh đen, trạng thái dẻo cứng / Stiff, blackish blue grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	36.03	18.1	13.3	93.4	51.3	1.053	27.3	51.45	25.73	25.72	0.40

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	38.23g	0.010	*	*	*
						30.0°C				

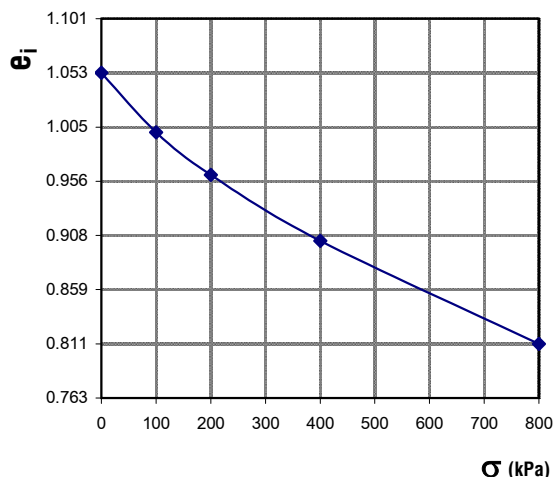
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	2.9	100.0
0.25			0.1-0.05	7.9	97.1
0.1	1.10	Bụi/Silt	0.05-0.01	30.0	89.2
			0.01-0.005	19.9	59.2
		Sét/Clay	<0.005	39.3	39.3



## Thí nghiệm nén lún/Compression test

$m_k = 4.50$  Hộp nén số/Test box No.: 24  $e_0 = 1.053$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 251.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			1.053			
100	58.0	7.4	1.000	0.053	3873.6	6972.5
200	96.6	10.2	0.962	0.038	5263.2	9473.7
400	154.0	12.3	0.903	0.030	6540.0	11772.0
800	245.0	15.5	0.811	0.023	8273.9	14893.0

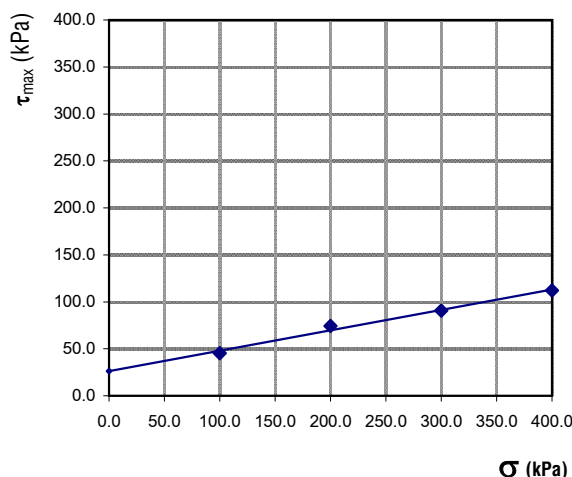


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.8	1.686	45.2
200	44.3	1.678	74.3
300	52.3	1.736	90.8
400	64.4	1.739	112.0

$\tan \phi = 0.2169$   $\phi = 12^\circ 14'$  C 26.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK2

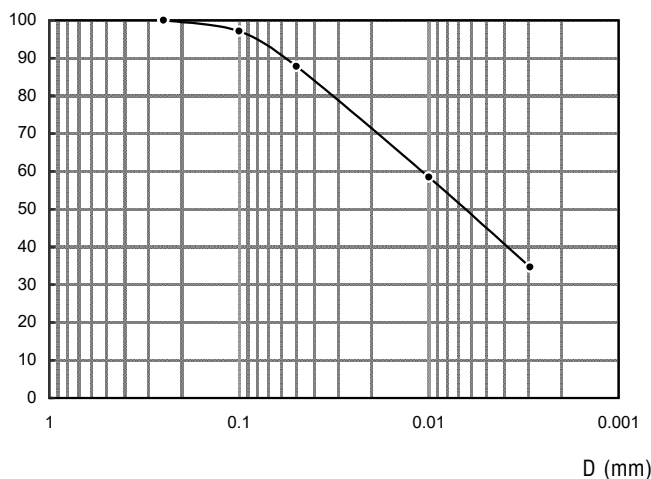
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám xanh đen, trạng thái dẻo cứng / Stiff, blackish blue grey, Clay

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	33.42	18.5	13.9	94.6	49.1	0.964	27.3	49.22	25.49	23.73	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				40.70g	0.010	*	*	*	*
				Nhiệt độ TN/Temp. 30.0°C					

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	2.9	100.0
1.0			0.1-0.05	9.3	97.1
0.5		Bụi/Silt	0.05-0.01	29.3	87.8
0.25			0.01-0.005	17.6	58.5
0.1	1.16	Sét/Clay	<0.005	40.9	40.9



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$

Hộp nén số/Test box No.: 25

$e_0 = 0.964$

$\beta = 0.40$

Số đọc sau 24h/Reading after 24h: 226.5

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.964			
100	56.0	6.9	0.915	0.049	4008.2	8818.0
200	95.0	10.4	0.879	0.036	5319.4	11702.8
400	148.0	12.7	0.828	0.026	7226.9	15899.2
800	221.0	16.4	0.758	0.018	10155.6	22342.2

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

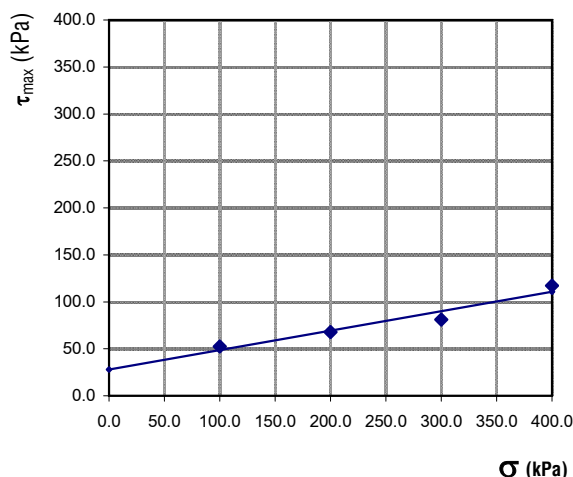
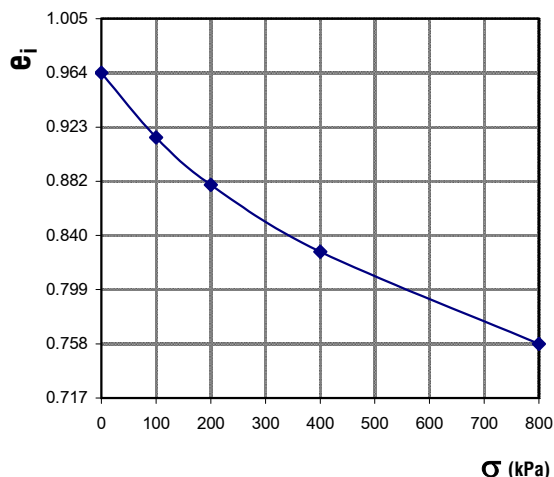
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.2	1.686	52.6
200	40.4	1.678	67.8
300	46.7	1.736	81.1
400	67.4	1.739	117.2

$\tan \varphi = 0.2071$

$\varphi = 11^\circ 42'$

C 27.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK2

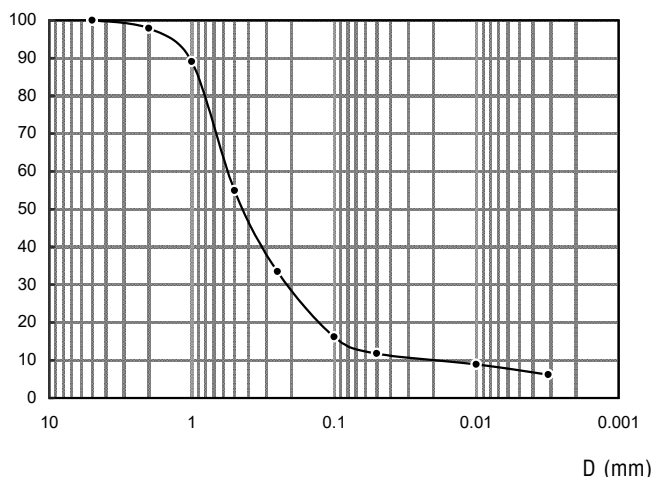
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám hồng, trạng thái dẻo / Plasticity, pinkish grey, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.12	20.0	16.7	90.3	37.2	0.593	26.6	23.13	17.44	5.69	0.47

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	101.54g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.575	0.220	0.019	4.4	30.3

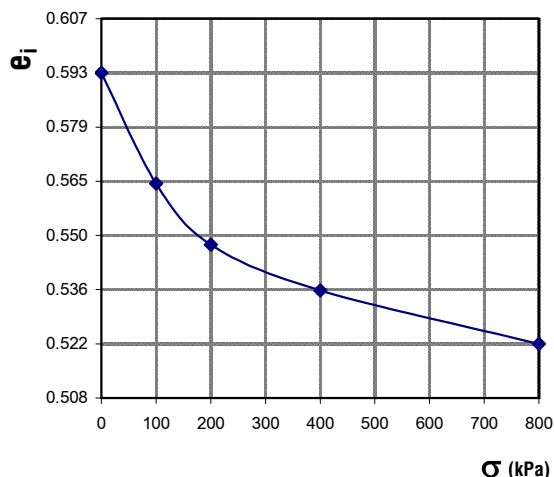
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2	2.1	100.0
5.0			2-1	8.8	97.9
2.0	2.10		1-0.5	34.2	89.1
1.0	8.93		0.5-0.25	21.4	54.9
0.5	34.71	Bụi/Silt	0.25-0.1	17.3	33.5
0.25	21.75		0.1-0.05	4.4	16.2
0.1	17.55	Sét/Clay	0.05-0.01	2.9	11.8
			0.01-0.005	1.6	8.9
			<0.005	7.3	7.3



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 26  $e_0 = 0.593$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 104.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.593			
100	43.0	7.6	0.564	0.029	5493.1	16259.6
200	65.0	10.6	0.548	0.016	9775.0	28934.0
400	82.0	12.6	0.536	0.006	25800.0	76368.0
800	102.0	15.4	0.522	0.004	38400.0	113664.0

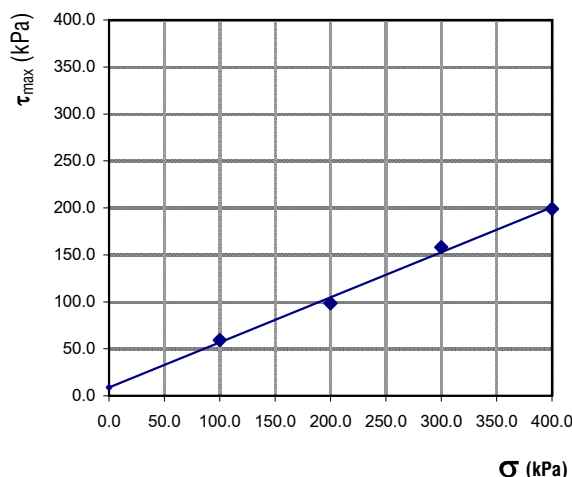


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	35.1	1.686	59.2
200	58.6	1.678	98.3
300	91.0	1.736	158.0
400	114.5	1.739	199.1

$\tan \varphi = 0.4794$   $\varphi = 25^\circ 37'$  C 8.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK2

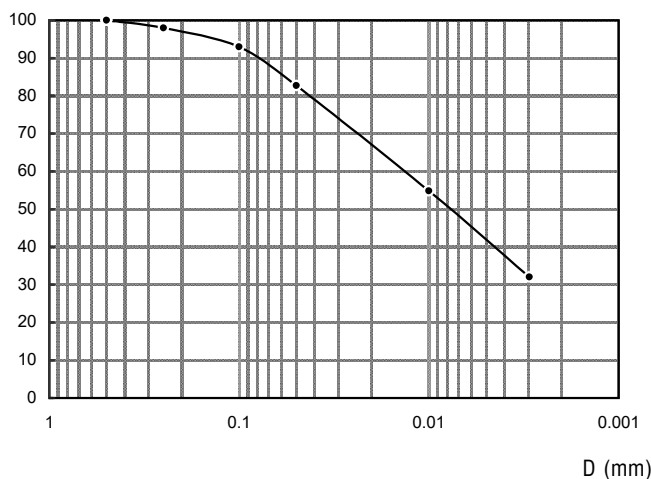
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám vàng, trạng thái dẻo cứng / Stiff, yellowish grey, Clay

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	24.07	19.8	16.0	93.1	41.4	0.706	27.3	39.48	18.52	20.96	0.26

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					39.30g	0.014	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

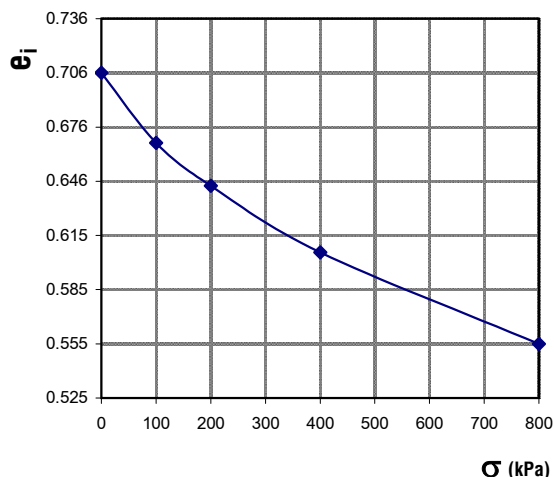
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25	2.0	100.0
2.0			0.25-0.1	5.0	98.0
1.0			0.1-0.05	10.3	93.0
0.5		Bụi/Silt	0.05-0.01	27.9	82.7
0.25	0.77		0.01-0.005	12.5	54.8
0.1	1.98	Sét/Clay	<0.005	42.3	42.3



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 27  $e_0 = 0.706$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 192.7  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.706			
100	53.0	7.8	0.667	0.039	4374.4	10498.5
200	82.6	10.2	0.643	0.024	6945.8	16670.0
400	127.0	13.1	0.606	0.019	8647.4	20753.7
800	188.0	15.5	0.555	0.013	12353.8	29649.2

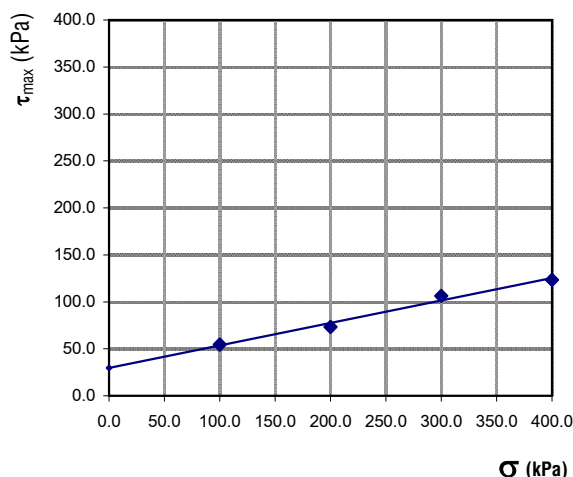


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.3	1.686	54.5
200	43.6	1.678	73.2
300	61.2	1.736	106.2
400	70.9	1.739	123.3

$\tan \phi = 0.2394$   $\phi = 13^\circ 28'$  C 29.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK2

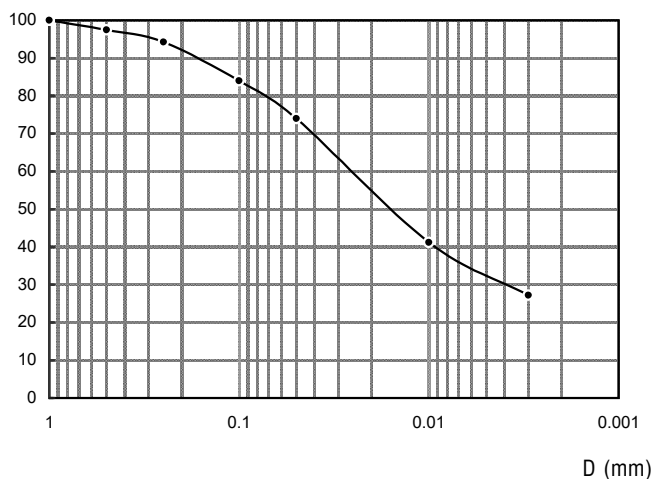
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.84	19.1	14.9	91.7	45.2	0.826	27.2	42.02	22.66	19.36	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				40.54g					
				Nhiệt độ TN/Temp.	30.0°C	0.024	0.004	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	2.5	100.0
1.0			0.5-0.25	3.3	97.5
0.5	1.03	Bụi/Silt	0.25-0.1	10.2	94.2
0.25	1.32		0.1-0.05	10.0	84.0
0.1	4.14		0.05-0.01	32.8	74.0
		Sét/Clay	0.01-0.005	8.1	41.2
			<0.005	33.1	33.1



## Thí nghiệm nén lún/Compression test

$m_k = 5.97$

Hộp nén số/Test box No.: 28

$e_0 = 0.826$

$\beta = 0.40$

Số đọc sau 24h/Reading after 24h: 194.8

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.826			
100	54.0	8.3	0.783	0.043	4246.5	10140.7
200	86.0	11.3	0.756	0.027	6603.7	15769.6
400	130.0	13.0	0.716	0.020	8780.0	20966.6
800	190.0	16.1	0.663	0.013	13200.0	31521.6

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

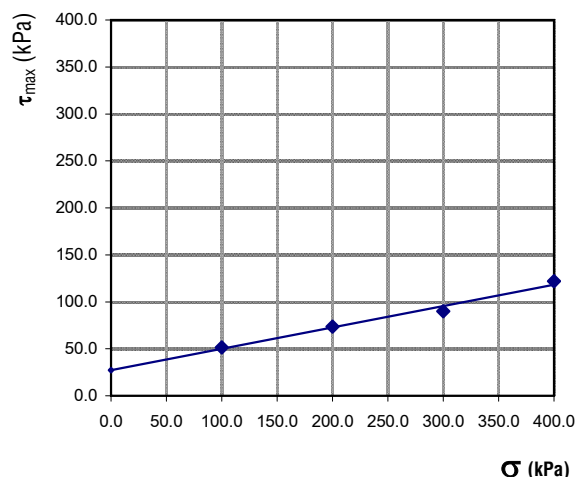
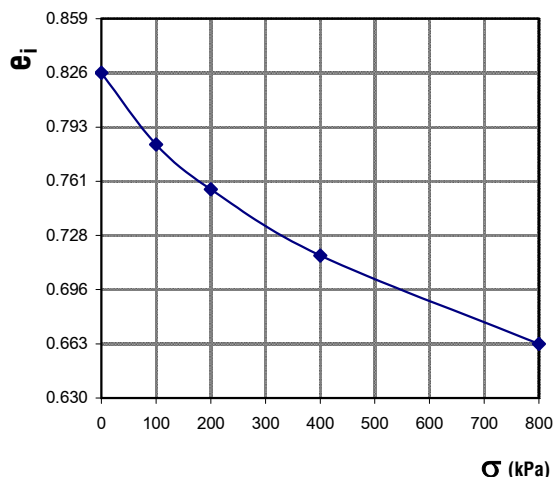
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.5	1.686	51.4
200	43.8	1.678	73.5
300	51.8	1.736	89.9
400	70.1	1.739	121.9

$\tan \phi = 0.2279$

$\phi = 12^\circ 50'$

C 27.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK2

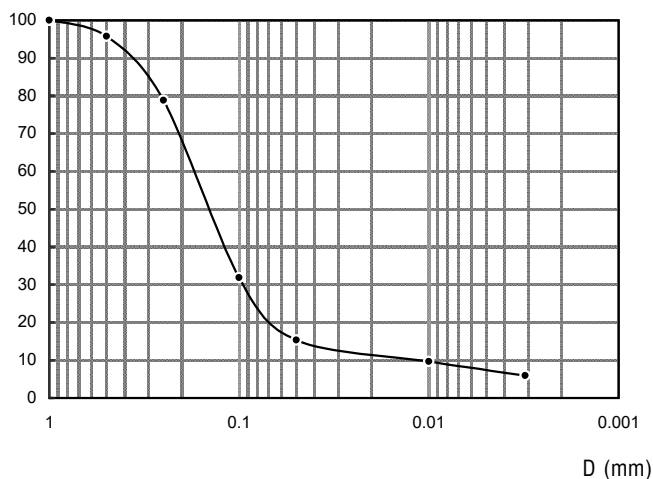
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám hồng, trạng thái dẻo / Plasticity, pinkish grey, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.21	19.8	16.2	91.0	39.6	0.654	26.8	25.00	19.35	5.65	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	106.54g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.190	0.096	0.011	4.4	17.3

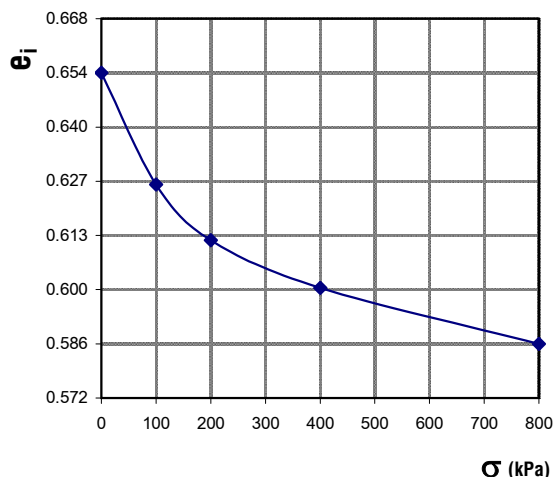
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	4.2	100.0
1.0			0.5-0.25	17.0	95.8
0.5	4.44	Bụi/Silt	0.25-0.1	46.9	78.8
0.25	18.07		0.1-0.05	16.6	31.9
0.1	50.00		0.05-0.01	5.6	15.3
		Sét/Clay	0.01-0.005	2.0	9.7
			<0.005	7.7	7.7



## Thí nghiệm nén lún/Compression test

$m_v = 3.69$  Hộp nén số/Test box No.: 29  $e_o = 0.654$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 97.9  $h_o = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_o = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.654			
100	42.0	8.6	0.626	0.028	5907.1	16130.0
200	61.0	11.6	0.612	0.014	11614.3	31714.0
400	76.0	13.3	0.600	0.006	26866.7	73362.1
800	95.5	16.2	0.586	0.004	40000.0	109224.0

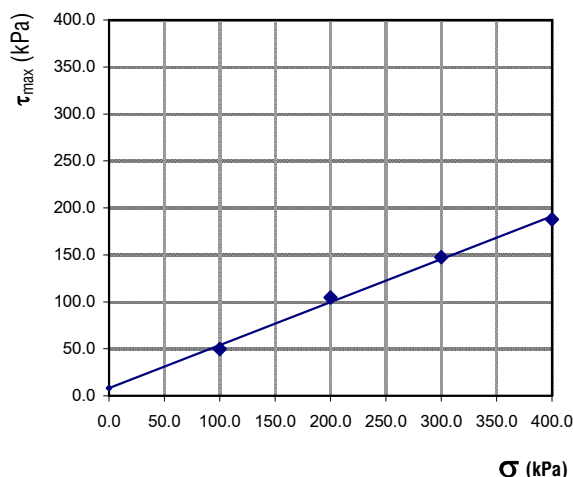


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.4	1.686	49.6
200	62.4	1.678	104.7
300	85.1	1.736	147.7
400	107.9	1.739	187.6

$\tan \phi = 0.4570$   $\phi = 24^\circ 34'$  C 8.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK2-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK2

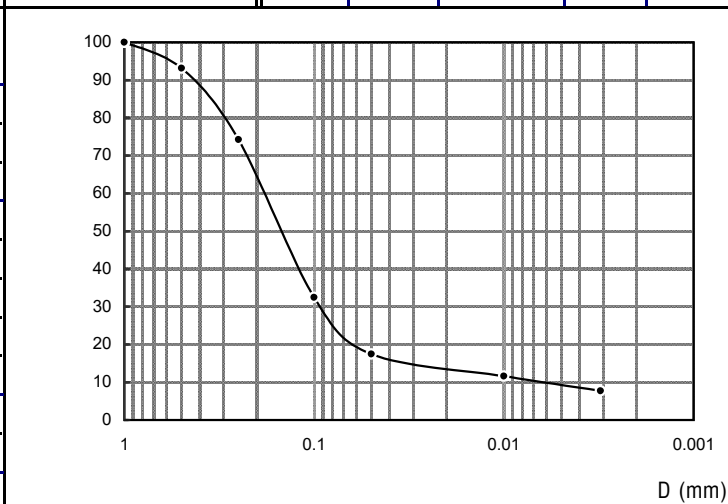
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.27	20.0	16.6	89.6	37.6	0.602	26.6	23.00	17.47	5.53	0.51

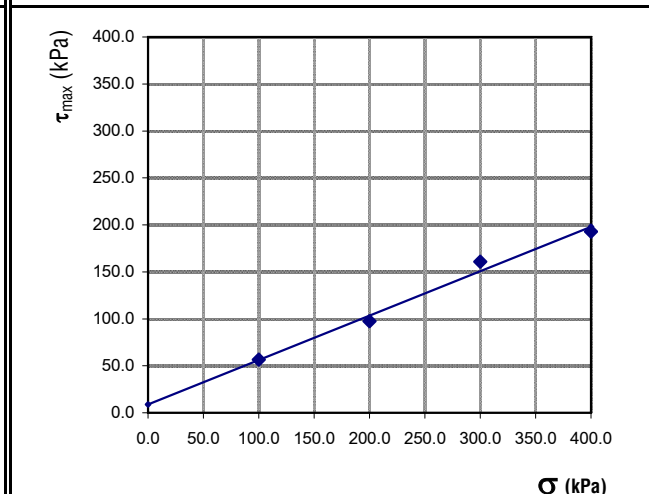
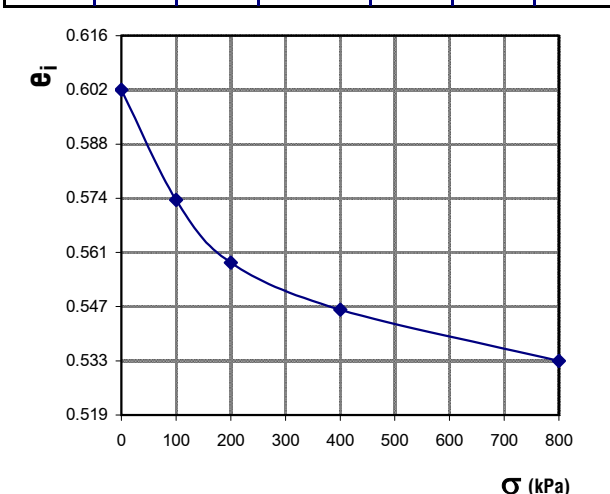
KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	103.10g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.199	0.093	0.007	6.2	28.4

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	6.9	100.0
1.0			0.5-0.25	18.9	93.1
0.5	7.14		0.25-0.1	41.7	74.2
0.25	19.52	Bụi/Silt	0.1-0.05	15.0	32.5
0.1	43.00		0.05-0.01	5.9	17.5
		Sét/Clay	0.01-0.005	2.8	11.6
			<0.005	8.8	8.8



Thí nghiệm nén lún/Compression test						
$m_k = 3.96$	Hộp nén số/Test box No.: 30	$e_0 = 0.602$				
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 102.5	$h_p = 20\text{mm}$				
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.602			
100	41.0	6.8	0.574	0.028	5721.4	16766.1
200	65.0	12.0	0.558	0.016	9837.5	28827.8
400	81.0	13.4	0.546	0.006	25966.7	76092.7
800	100.0	16.3	0.533	0.003	51533.3	151013.3

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.5	1.686	56.5
200	58.1	1.678	97.5
300	92.7	1.736	160.9
400	110.9	1.739	192.9
$\tan \varphi = 0.4726$ $\varphi = 25^\circ 18'$ C      8.8 kPa			



Đại diện TN/ Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK3

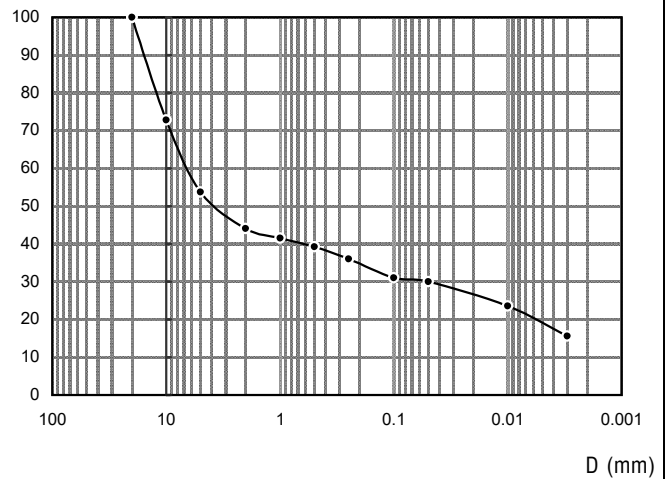
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn dăm sạn laterit, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay with laterite gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	23.88	19.5	15.7	89.6	41.9	0.720	27.0	32.24	18.54	13.70	0.39

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	70.55g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	6.649	0.051	*	*	*

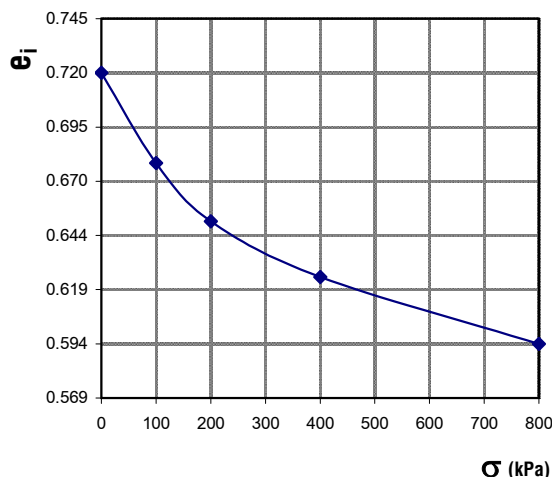
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10	27.2	100.0
20.0		Cát/Sand	10-5	19.1	72.8
10.0	19.22		5-2	9.6	53.7
5.0	13.45		2-1	2.6	44.1
2.0	6.78		1-0.5	2.3	41.5
1.0	1.82		0.5-0.25	3.2	39.2
0.5	1.65	Bụi/Silt	0.25-0.1	5.0	36.0
0.25	2.23		0.1-0.05	1.0	31.0
0.1	3.50	Sét/Clay	0.05-0.01	6.4	30.0
			0.01-0.005	4.6	23.6
			<0.005	19.0	19.0



## Thí nghiệm nén lún/Compression test

$m_k = 4.50$  Hộp nén số/Test box No.: 31  $e_0 = 0.720$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 164.0  $h_0 = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.720			
100	55.0	7.1	0.678	0.042	4095.2	11413.0
200	89.0	11.4	0.651	0.027	6214.8	17320.1
400	121.0	14.1	0.625	0.013	12700.0	35393.6
800	160.0	16.8	0.594	0.008	20312.5	56608.9

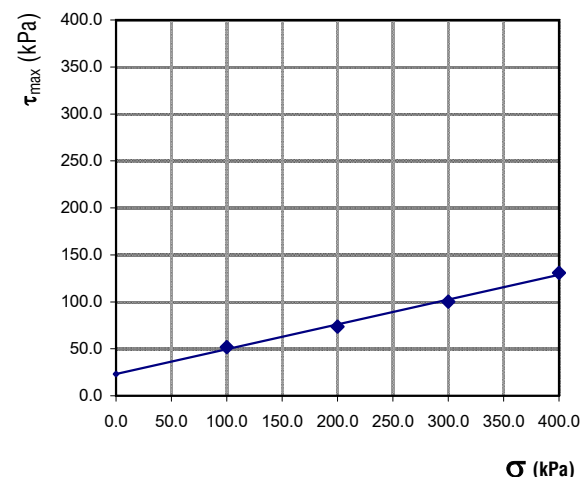


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.8	1.686	51.9
200	43.8	1.678	73.5
300	57.7	1.736	100.2
400	75.3	1.739	130.9

$\tan \phi = 0.2637$   $\phi = 14^\circ 46'$  C 23.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK3

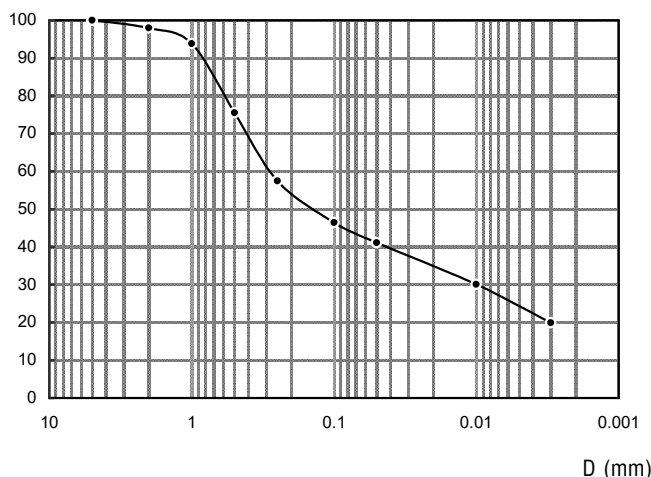
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ - xám xanh, trạng thái dẻo cứng / Stiff, reddish brown - bluish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.78	20.0	16.4	90.5	39.5	0.652	27.1	30.05	18.45	11.60	0.29

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	55.45g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.285	0.010	*	*	*

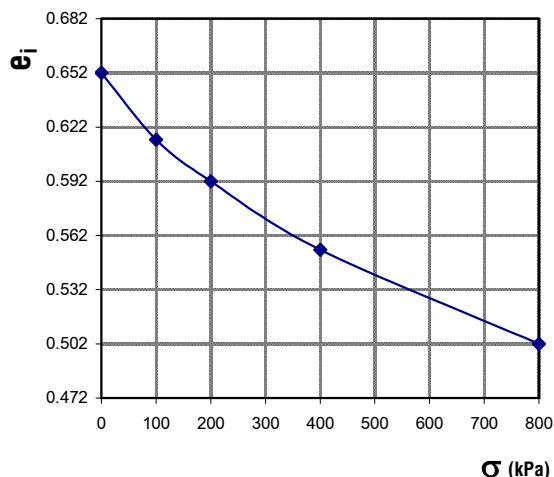
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2	2.0	100.0
20.0		Cát/Sand	2-1	4.2	98.0
10.0			1-0.5	18.3	93.8
5.0			0.5-0.25	18.0	75.5
2.0	1.09		0.25-0.1	11.1	57.5
1.0	2.33		0.1-0.05	5.3	46.4
0.5	10.15	Bụi/Silt	0.05-0.01	11.0	41.1
0.25	10.00		0.01-0.005	5.9	30.1
0.1	6.15	Sét/Clay	<0.005	24.2	24.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.79$  Hộp nén số/Test box No.: 32  $e_0 = 0.652$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 198.9  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.652			
100	51.0	7.4	0.615	0.037	4464.9	13259.8
200	84.0	13.0	0.592	0.023	7021.7	20853.2
400	130.0	14.5	0.554	0.019	8378.9	24883.8
800	194.0	17.8	0.502	0.013	11953.8	35500.5

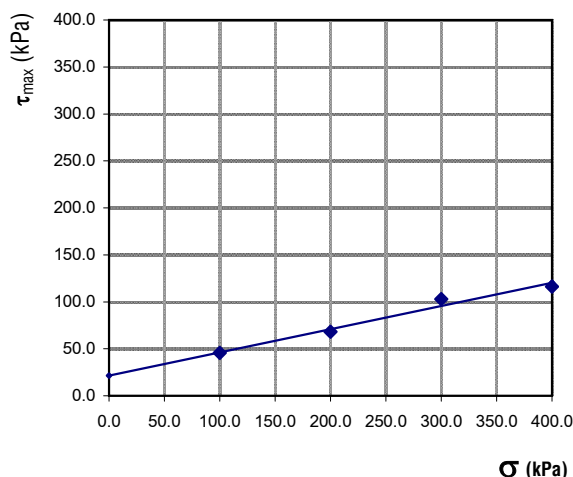


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.0	1.686	45.5
200	40.5	1.678	68.0
300	59.3	1.736	102.9
400	66.9	1.739	116.3

$\tan \phi = 0.2473$   $\phi = 13^\circ 53'$  C 21.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK3

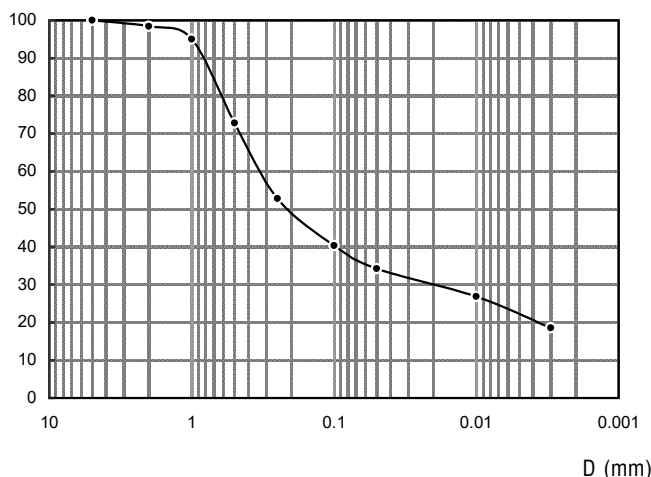
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ - xám xanh, trạng thái dẻo cứng / Stiff, reddish brown - bluish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.70	19.6	16.0	89.7	40.5	0.681	26.9	30.74	19.63	11.11	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis		KL đất khô/Dry wei	68.16g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
		Nhiệt độ TN/Temp.	30.0°C	0.340	0.019	*	*	*

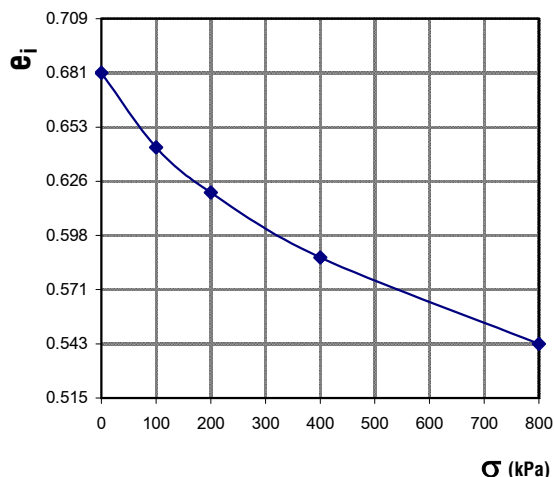
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	1.6	100.0
20.0		Cát/Sand	2-1	3.4	98.4
10.0			1-0.5	22.2	95.0
5.0			0.5-0.25	20.0	72.8
2.0	1.09		0.25-0.1	12.5	52.8
1.0	2.30		0.1-0.05	6.1	40.3
0.5	15.13	Bụi/Silt	0.05-0.01	7.3	34.2
0.25	13.64		0.01-0.005	4.7	26.9
0.1	8.53	Sét/Clay	<0.005	22.2	22.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.65$  Hộp nén số/Test box No.: 33  $e_0 = 0.681$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 182.5  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.681			
100	50.0	6.5	0.643	0.038	4423.7	12753.5
200	84.6	13.4	0.620	0.023	7143.5	20594.6
400	124.2	15.1	0.587	0.017	9529.4	27473.3
800	178.0	18.7	0.543	0.011	14427.3	41593.8

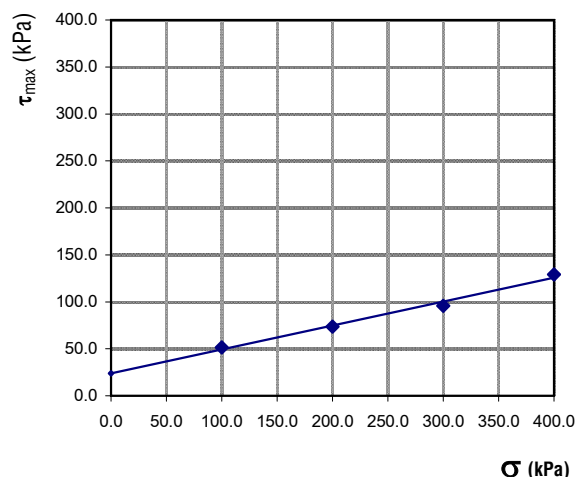


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.6	1.686	51.6
200	43.8	1.678	73.5
300	55.2	1.736	95.8
400	74.2	1.739	129.0

$\tan \phi = 0.2545$   $\phi = 14^\circ 17'$  C 23.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK3

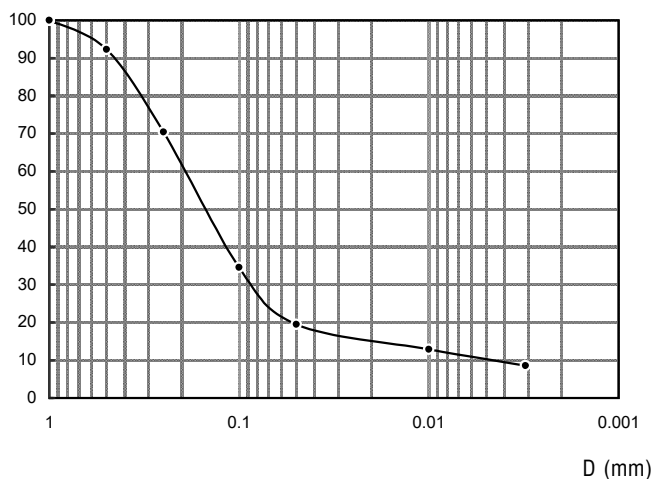
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.40	20.3	16.7	96.0	37.2	0.593	26.6	24.40	18.88	5.52	0.46

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	92.26g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.206	0.088	0.005	7.5	41.2

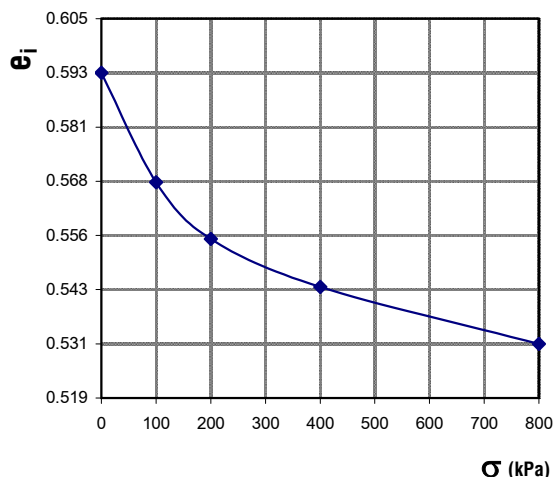
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	7.7	100.0
5.0			0.5-0.25	21.9	92.3
2.0			0.25-0.1	35.8	70.4
1.0			0.1-0.05	15.1	34.6
0.5	7.15	Bụi/Silt	0.05-0.01	6.6	19.5
0.25	20.20		0.01-0.005	3.0	12.9
0.1	33.00	Sét/Clay	<0.005	9.9	9.9



## Thí nghiệm nén lún/Compression test

$m_v = 3.98$  Hộp nén số/Test box No.: 34  $e_0 = 0.593$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.593			
100	36.0	6.3	0.568	0.025	6372.0	18743.2
200	60.0	13.3	0.555	0.013	12061.5	35479.0
400	75.0	15.6	0.544	0.006	25916.7	76233.9
800	94.0	18.7	0.531	0.003	51466.7	151389.2

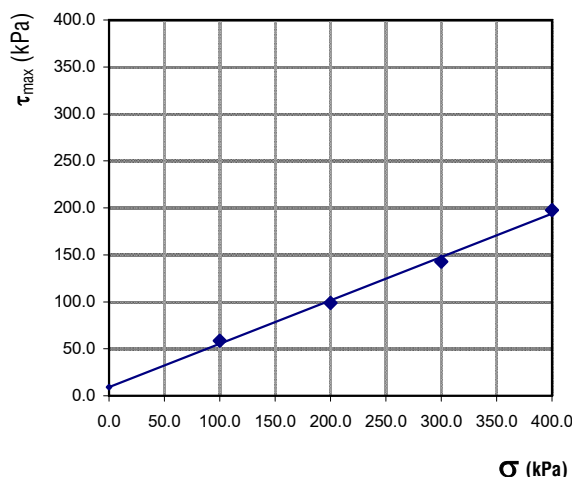


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.7	1.686	58.5
200	58.9	1.678	98.8
300	82.2	1.736	142.7
400	113.7	1.739	197.7

$\tan \phi = 0.4615$   $\phi = 24^\circ 46'$  C 9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK3

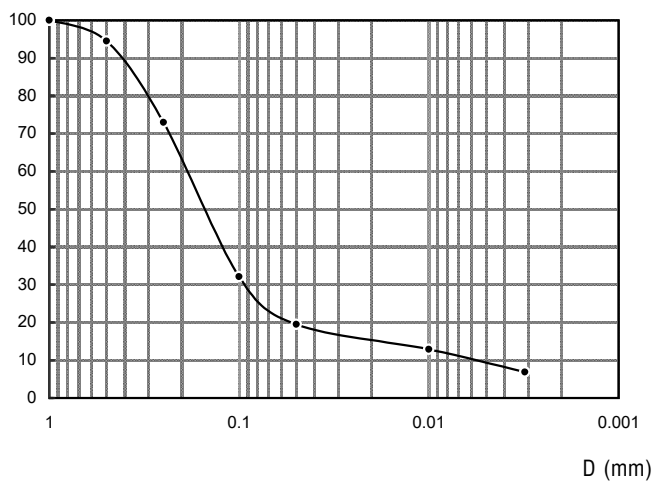
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.99	20.0	16.5	91.2	38.0	0.612	26.6	23.85	17.84	6.01	0.52

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	92.82g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.202	0.093	0.006	7.1	33.7

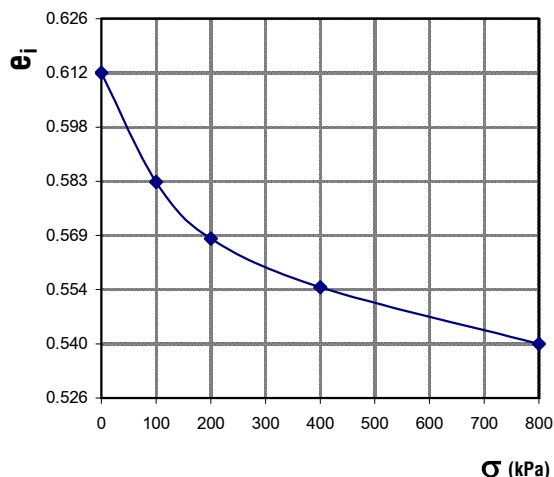
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	5.5	100.0
1.0			0.5-0.25	21.5	94.5
0.5	5.14	Bụi/Silt	0.25-0.1	40.9	73.0
0.25	20.00		0.1-0.05	12.6	32.1
0.1	38.00		0.05-0.01	6.6	19.5
		Sét/Clay	0.01-0.005	3.5	12.9
			<0.005	9.4	9.4



## Thí nghiệm nén lún/Compression test

$m_k = 3.91$  Hộp nén số/Test box No.: 35  $e_0 = 0.612$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 106.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.612			
100	41.0	6.2	0.583	0.029	5558.6	16083.3
200	64.0	11.0	0.568	0.015	10553.3	30535.0
400	84.0	14.8	0.555	0.006	26133.3	75614.2
800	104.0	17.6	0.540	0.004	38875.0	112480.9

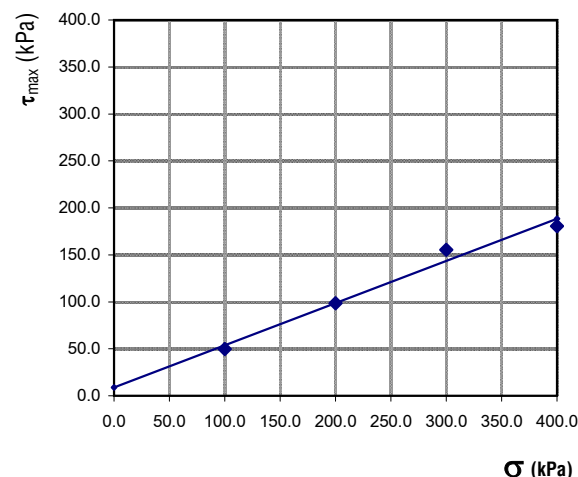


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	29.6	1.686	49.9
200	58.7	1.678	98.5
300	89.4	1.736	155.2
400	103.8	1.739	180.5

$\tan \phi = 0.4485$   $\phi = 24^\circ 09'$  C 8.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK3

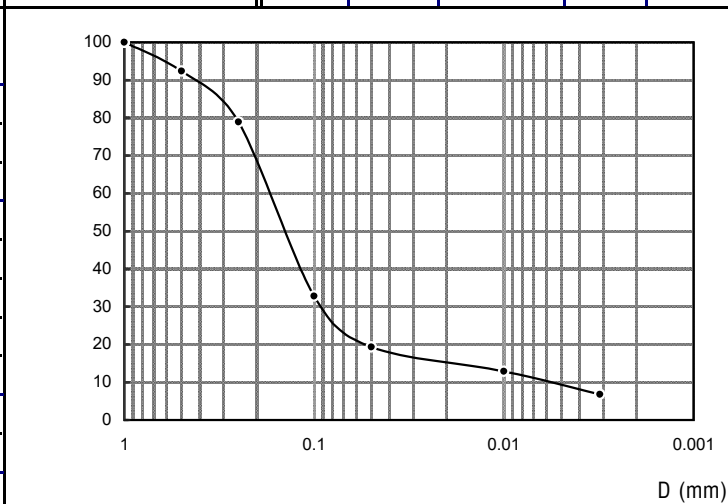
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ, trạng thái dẻo / Plasticity, reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	18.07	20.1	17.0	85.1	36.1	0.565	26.6	21.12	15.17	5.95	0.49

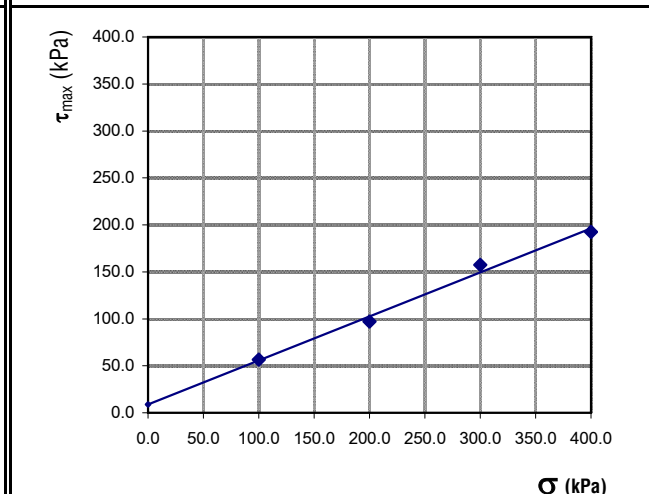
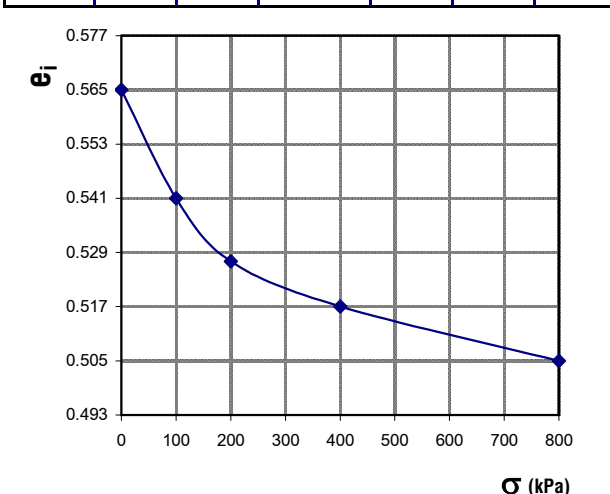
KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	93.33g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
Nhiệt độ TN/Temp.				30.0°C		0.189	0.092	0.006	7.5	31.5

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	7.6	100.0
1.0			0.5-0.25	13.5	92.4
0.5	7.10	Bụi/Silt	0.25-0.1	46.1	78.9
0.25	12.60		0.1-0.05	13.5	32.8
0.1	43.00		0.05-0.01	6.4	19.3
		Sét/Clay	0.01-0.005	3.7	12.9
			<0.005	9.2	9.2



Thí nghiệm nén lún/Compression test						
$m_k = 4.00$	Hộp nén số/Test box No.: 36	$e_0 = 0.565$				
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 94.3	$h_p = 20\text{mm}$				
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.565			
100	36.0	6.1	0.541	0.024	6520.8	19301.7
200	58.0	11.4	0.527	0.014	11007.1	32581.1
400	74.0	14.4	0.517	0.005	30540.0	90398.4
800	92.0	17.4	0.505	0.003	50566.7	149677.3

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.6	1.686	56.6
200	57.9	1.678	97.2
300	90.7	1.736	157.5
400	110.7	1.739	192.5
$\tan \varphi = 0.4680$ $\varphi = 25^\circ 05'$ C      9.0 kPa			



Đại diện TN/ Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK3

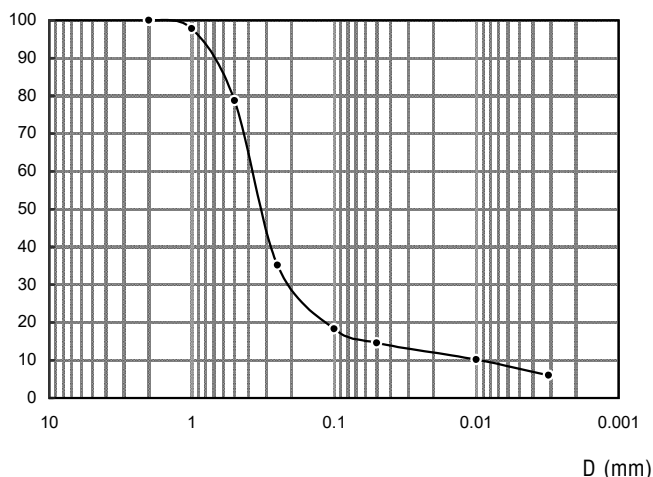
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ, trạng thái dẻo / Plasticity, reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.43	20.4	17.1	92.5	36.0	0.561	26.7	22.73	16.69	6.04	0.45

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	115.30g					
Nhiệt độ TN/Temp.	30.0°C	0.393	0.204	0.010	10.6	39.3

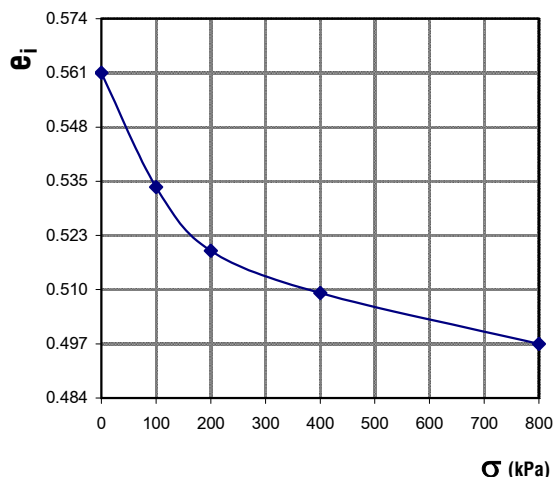
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1	2.2	100.0
2.0			1-0.5	19.1	97.8
1.0	2.58		0.5-0.25	43.5	78.7
0.5	21.99	Bụi/Silt	0.25-0.1	16.9	35.2
0.25	50.10		0.1-0.05	3.7	18.3
0.1	19.44	Sét/Clay	0.05-0.01	4.4	14.6
			0.01-0.005	2.4	10.2
			<0.005	7.8	7.8



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 37  $e_0 = 0.561$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 100.5  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.561			
100	41.0	6.7	0.534	0.027	5781.5	17113.2
200	65.0	12.5	0.519	0.015	10226.7	30270.9
400	80.0	15.6	0.509	0.005	30380.0	89924.8
800	98.0	18.8	0.497	0.003	50300.0	148888.0

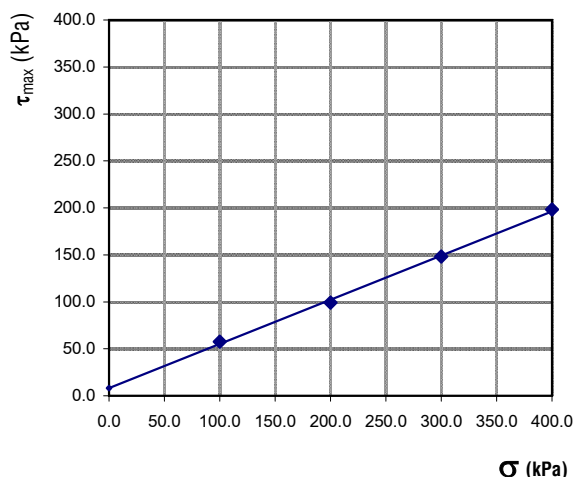


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	34.2	1.686	57.7
200	59.1	1.678	99.2
300	85.3	1.736	148.1
400	114.0	1.739	198.2

$\tan \phi = 0.4704$   $\phi = 25^\circ 12'$  C 8.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK3

Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undis

W

$\gamma$

$\gamma_d$

$S_r$

n

$e_o$

$G_s$

$W_L$

$W_p$

$I_p$

$I_L$

21.12

20.0

16.5

91.8

38.0

0.612

26.6

24.00

18.35

5.65

0.49

KQTN HẠT/Test results from sieve-hydrometer analysis

KL đất khô/Dry wei 97.42g

Nhiệt độ TN/Temp. 30.0°C

$D_{60}(\text{mm})$

$D_{30}(\text{mm})$

$D_{10}(\text{mm})$

$C_c$

$C_u$

0.307

0.108

0.006

6.3

51.2

Khối lượng đất  
Mass of soil  
>0.1mm

D  
(mm)

$m_i$   
(g)

Cấp hạt  
Grain grade

Silt/san / Gravel

Cát/Sand

Bụi/Silt

Sét/Clay

$D_{10-20}$   
(mm)

$P_i$   
%

P  
%

>10

10-5

5-2

2-1

1-0.5

0.5-0.25

0.25-0.1

0.1-0.05

0.05-0.01

0.01-0.005

<0.005

100.0

100.0

100.0

100.0

14.4

33.2

23.6

10.3

6.3

3.3

8.9

100.0

100.0

85.6

52.4

28.8

18.5

12.2

8.9

100

90

80

70

60

50

40

30

20

10

0

1

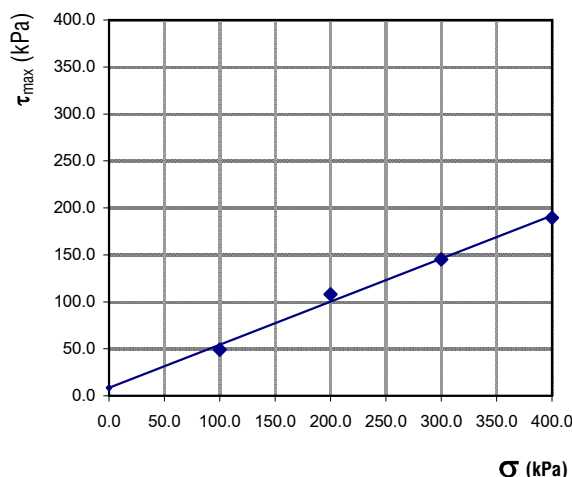
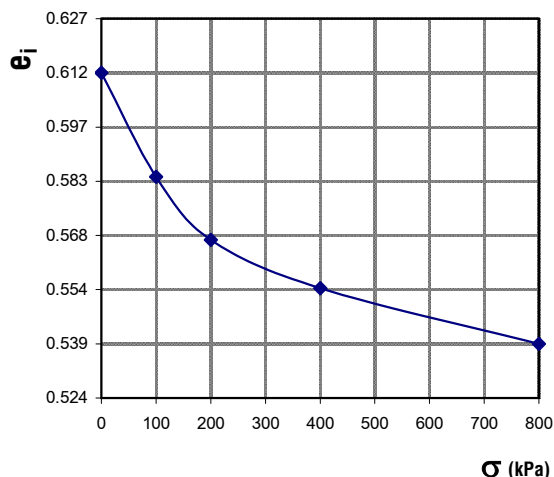
0.1

0.01

0.001

D (mm)

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 3.92$	Hộp nén số/Test box No.: 38		$e_0 = 0.612$				PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 107.6		$h_p = 20\text{mm}$				Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$	$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa	kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
0			0.612				100	29.2	1.686	49.2
100	41.0	6.9	0.584	0.028	5757.1	16679.0	200	64.3	1.678	107.9
200	65.1	10.9	0.567	0.017	9317.6	26994.2	300	83.7	1.736	145.3
400	84.0	13.7	0.554	0.006	26116.7	75662.6	400	108.9	1.739	189.4
800	105.0	16.4	0.539	0.004	38850.0	112552.3	$\tan \phi = 0.4580$ $\phi = 24^\circ 36'$ C    8.5 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK3

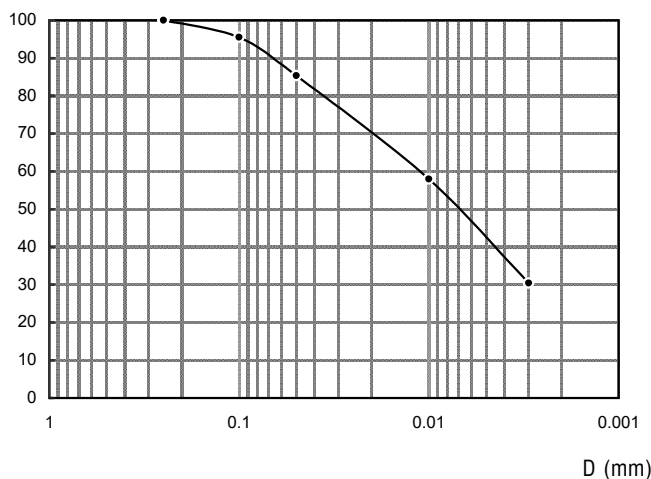
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	32.75	18.7	14.1	95.5	48.4	0.936	27.3	45.12	25.73	19.39	0.36

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	36.16g	0.011	*	*	*
						30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	4.5	100.0
1.0			0.1-0.05	10.2	95.5
0.5		Bụi/Silt	0.05-0.01	27.3	85.3
0.25			0.01-0.005	21.0	58.0
0.1	1.61	Sét/Clay	<0.005	37.0	37.0



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 39  $e_0 = 0.936$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 210.1  $h_p = 20\text{mm}$

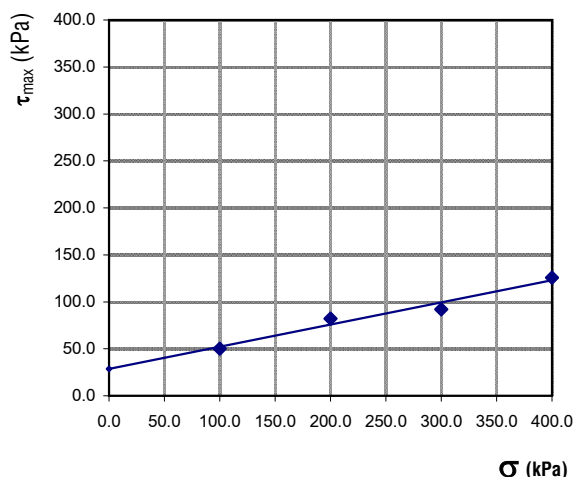
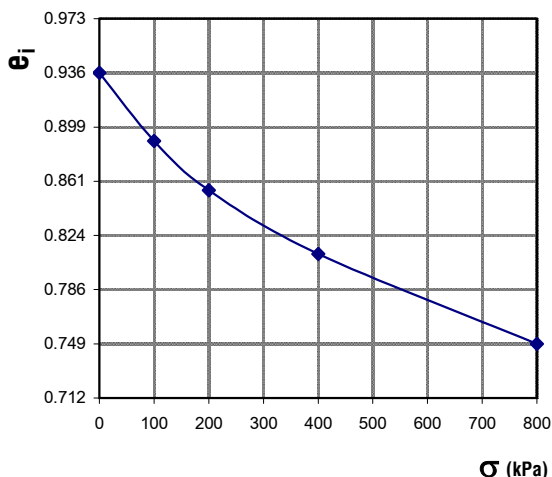
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.936			
100	55.0	7.1	0.889	0.047	4119.1	9062.1
200	92.0	10.4	0.855	0.034	5555.9	12222.9
400	140.0	14.4	0.811	0.022	8431.8	18550.0
800	205.0	17.2	0.749	0.016	11318.8	24901.3

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.8	1.686	50.2
200	49.0	1.678	82.2
300	53.0	1.736	92.0
400	72.2	1.739	125.6

$\tan \phi = 0.2360$   $\phi = 13^\circ 17'$  C 28.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngộ



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK3

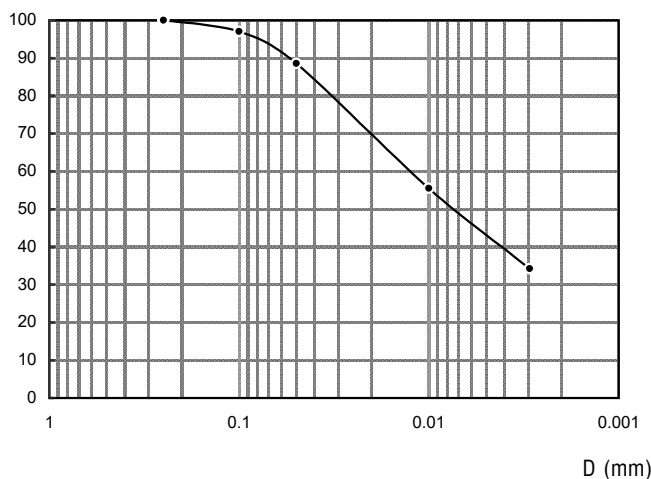
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu hồng, trạng thái dẻo cứng / Stiff, pinkish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	31.13	18.3	14.0	89.1	48.9	0.957	27.4	44.00	21.18	22.82	0.44

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	36.60g	0.013	*	*	*
						30.0°C				

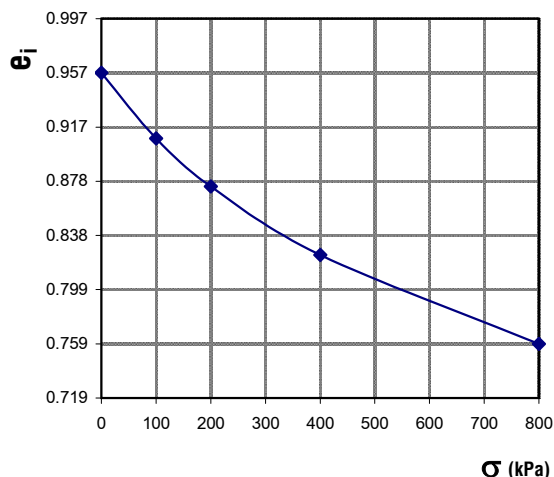
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	3.0	100.0
1.0			0.1-0.05	8.4	97.0
0.5		Bụi/Silt	0.05-0.01	33.1	88.6
0.25			0.01-0.005	14.5	55.5
0.1	1.10	Sét/Clay	<0.005	41.0	41.0



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 40  $e_0 = 0.957$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 216.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.957			
100	54.0	6.8	0.909	0.048	4077.1	8969.6
200	92.0	9.5	0.874	0.035	5454.3	11999.4
400	146.0	13.2	0.824	0.025	7496.0	16491.2
800	211.0	14.7	0.759	0.016	11400.0	25080.0

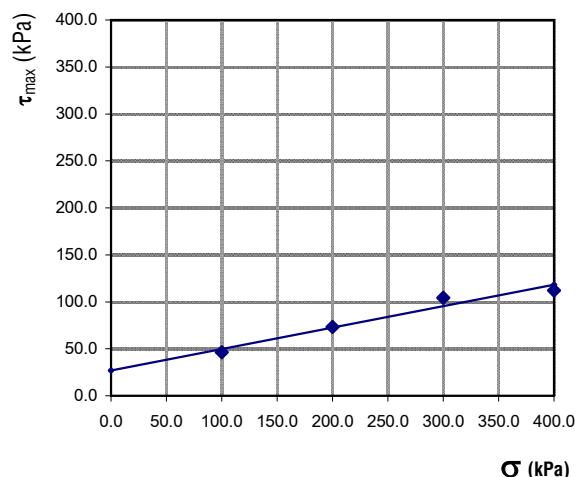


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.4	1.686	46.2
200	43.7	1.678	73.3
300	60.1	1.736	104.3
400	64.4	1.739	112.0

$\tan \phi = 0.2284$   $\phi = 12^\circ 52'$  C 26.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK3

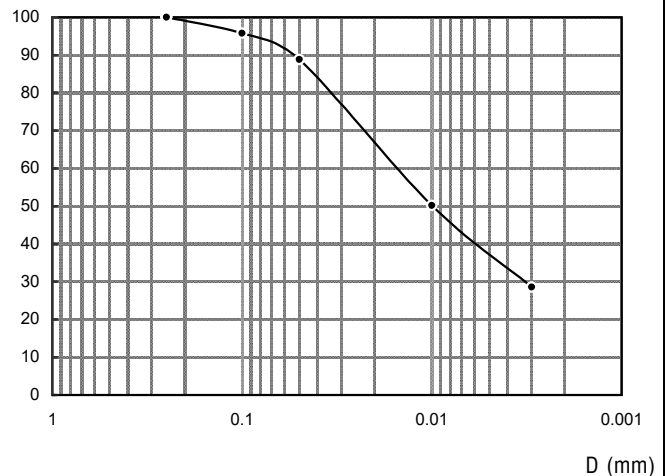
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	34.85	18.3	13.6	94.5	50.2	1.007	27.3	48.24	26.36	21.88	0.39

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.015	0.003	*	*

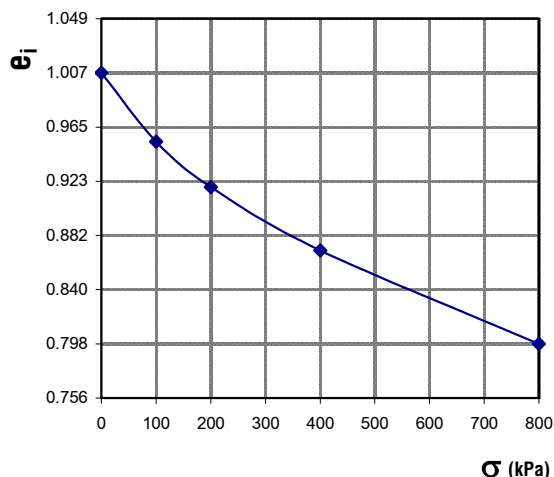
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5		Bụi/Silt	0.25-0.1	4.2	100.0
0.25			0.1-0.05	7.0	95.8
0.1	1.60	Sét/Clay	0.05-0.01	38.6	88.8
			0.01-0.005	15.3	50.2
			<0.005	34.9	34.9



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 41  $e_0 = 1.007$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 222.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			1.007			
100	58.0	6.5	0.954	0.053	3786.8	8330.9
200	96.0	10.2	0.919	0.035	5582.9	12282.3
400	145.5	12.5	0.870	0.025	7676.0	16887.2
800	217.0	14.8	0.798	0.018	10388.9	22855.6

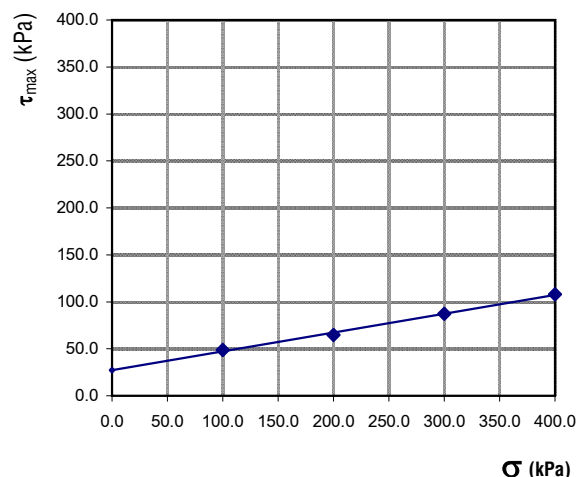


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.9	1.686	48.7
200	38.6	1.678	64.8
300	50.2	1.736	87.1
400	62.1	1.739	108.0

$\tan \varphi = 0.2002$   $\varphi = 11^\circ 19'$  C 27.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK3

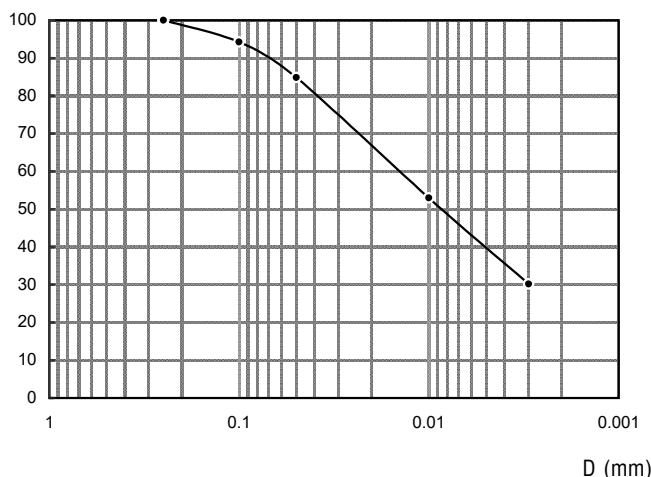
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	34.70	18.2	13.5	92.7	50.5	1.022	27.3	47.50	23.58	23.92	0.46

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	36.38g	0.014	*	*	*
						30.0°C				

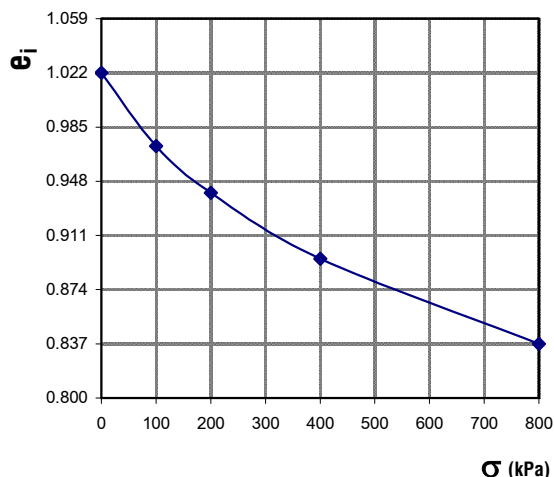
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	5.8	100.0
0.25		Bụi/Silt	0.1-0.05	9.4	94.2
0.1	2.10		0.05-0.01	31.8	84.8
			0.01-0.005	16.2	53.0
		Sét/Clay	<0.005	36.8	36.8



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 42  $e_0 = 1.022$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 198.9  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			1.022			
100	54.0	6.6	0.972	0.050	4044.0	8896.8
200	89.0	9.8	0.940	0.032	6162.5	13557.5
400	135.0	12.8	0.895	0.023	8434.8	18556.5
800	194.0	15.6	0.837	0.015	12633.3	27793.3

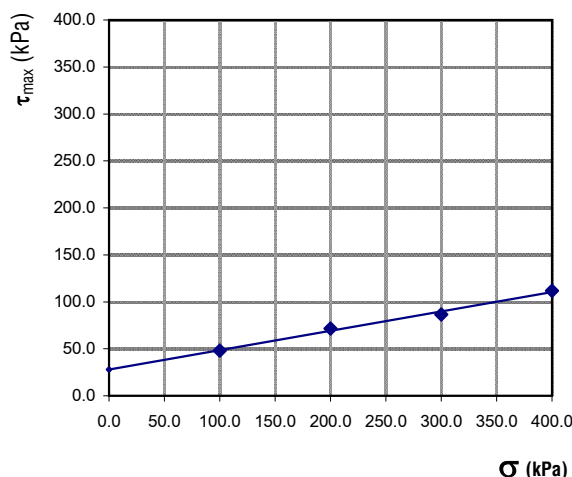


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.5	1.686	48.1
200	42.6	1.678	71.5
300	49.9	1.736	86.6
400	64.3	1.739	111.8

$\tan \phi = 0.2062$   $\phi = 11^\circ 39'$  C 28.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK3

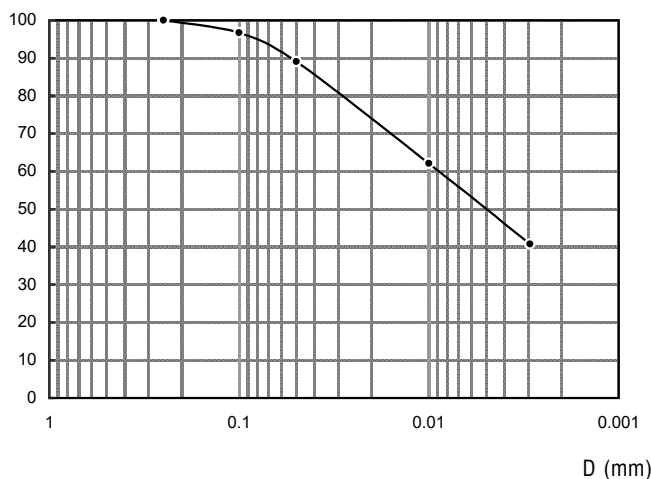
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	29.74	19.0	14.6	93.7	46.3	0.863	27.2	43.87	21.35	22.52	0.37

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	34.68g	0.009	*	*	*
						30.0°C				

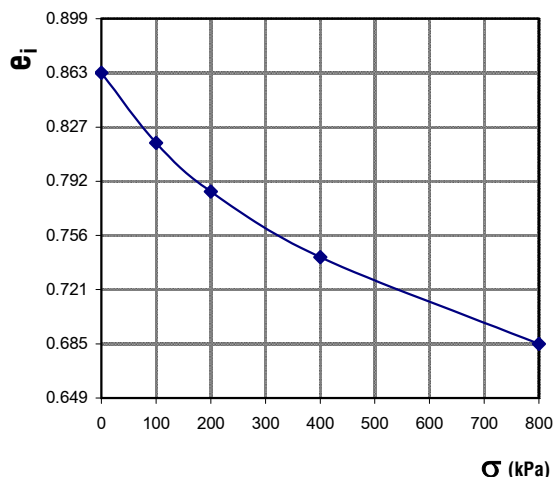
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	3.3	100.0
0.25			0.1-0.05	7.6	96.7
0.1	1.13	Bụi/Silt	0.05-0.01	27.0	89.1
			0.01-0.005	14.0	62.1
		Sét/Clay	<0.005	48.1	48.1



## Thí nghiệm nén lún/Compression test

$m_k = 5.83$  Hộp nén số/Test box No.: 43  $e_0 = 0.863$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 206.0  $h_p = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.863			
100	54.5	7.0	0.817	0.046	4050.0	9436.5
200	92.0	10.0	0.785	0.032	5678.1	13230.0
400	140.0	13.3	0.742	0.022	8113.6	18904.8
800	201.0	14.9	0.685	0.014	12442.9	28991.9

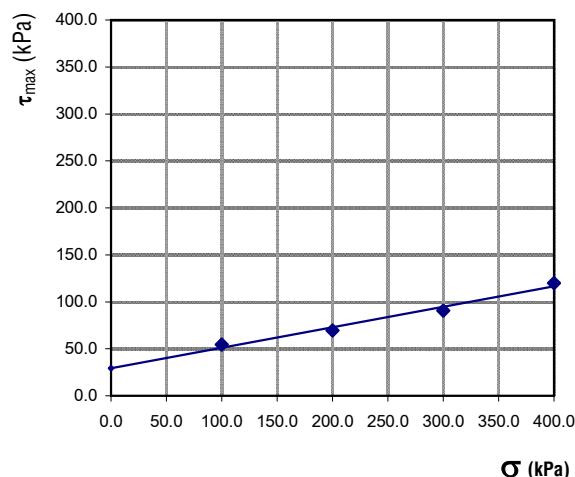


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.4	1.686	54.6
200	41.5	1.678	69.6
300	52.3	1.736	90.8
400	69.0	1.739	120.0

$\tan \phi = 0.2174$   $\phi = 12^\circ 16'$  C 29.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK3

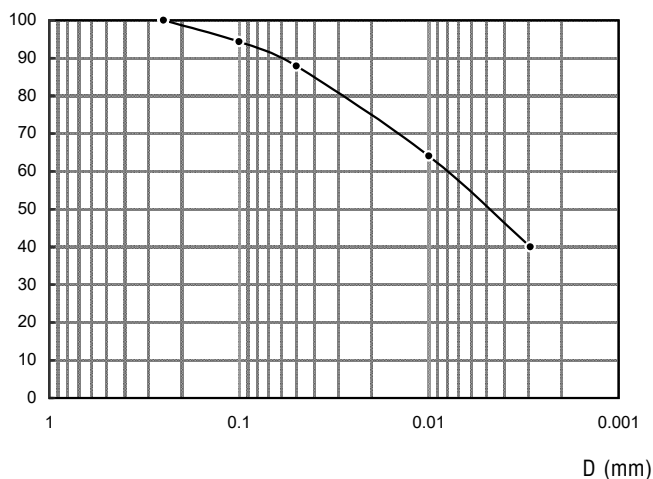
Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.63	19.1	15.0	91.5	45.3	0.827	27.4	43.55	20.14	23.41	0.32

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.009	*	*	*

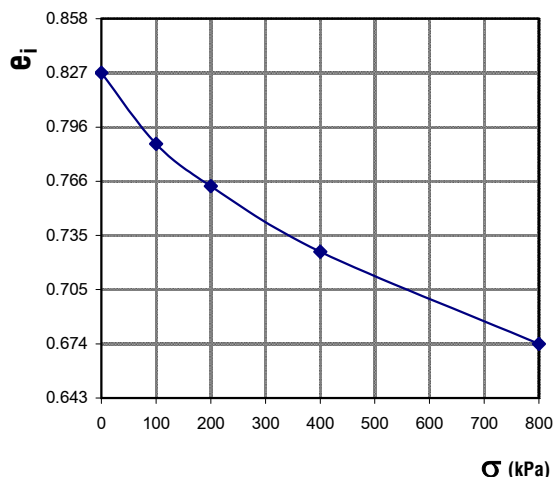
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5		Bụi/Silt	0.25-0.1	5.7	100.0
0.25			0.1-0.05	6.4	94.3
0.1	2.00		0.05-0.01	23.8	87.9
		Sét/Clay	0.01-0.005	16.8	64.1
			<0.005	47.3	47.3



## Thí nghiệm nén lún/Compression test

$m_v = 5.94$  Hộp nén số/Test box No.: 44  $e_0 = 0.827$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 181.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.827			
100	50.0	7.2	0.787	0.040	4567.5	10843.2
200	78.0	10.3	0.763	0.024	7445.8	17676.4
400	120.0	12.0	0.726	0.019	9278.9	22028.2
800	177.0	14.4	0.674	0.013	13276.9	31519.4

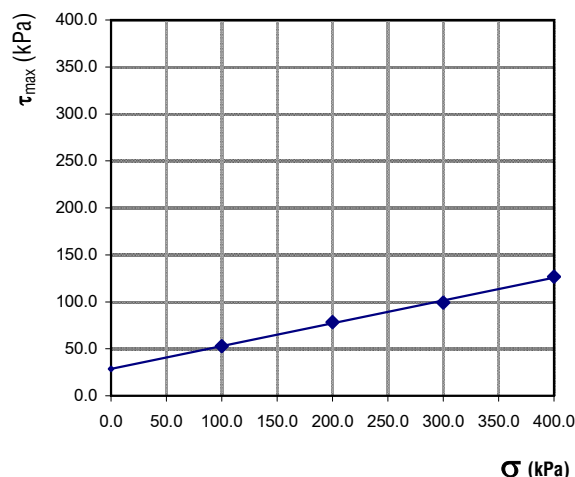


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.3	1.686	52.8
200	46.6	1.678	78.2
300	57.0	1.736	99.0
400	73.0	1.739	126.9

$\tan \phi = 0.2431$   $\phi = 13^\circ 40'$  C 28.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK3-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK3

Ngày TN/Date test: 02-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Undis

W	γ	γ <sub>d</sub>	S <sub>r</sub>	n	e <sub>0</sub>	G <sub>s</sub>	W <sub>L</sub>	W <sub>p</sub>	I <sub>p</sub>	I <sub>L</sub>
21.99	20.1	16.5	95.6	38.0	0.612	26.6	24.75	19.72	5.03	0.45

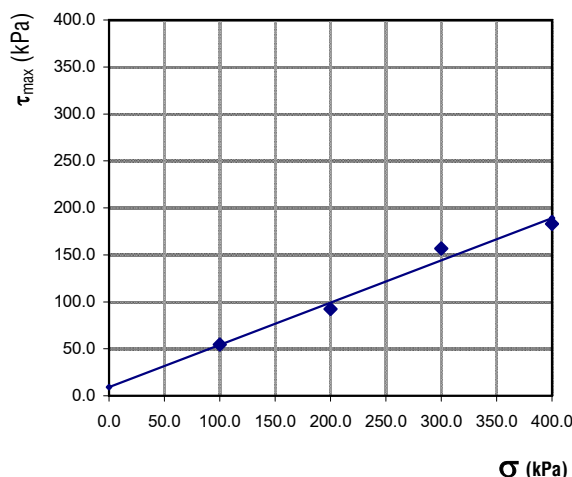
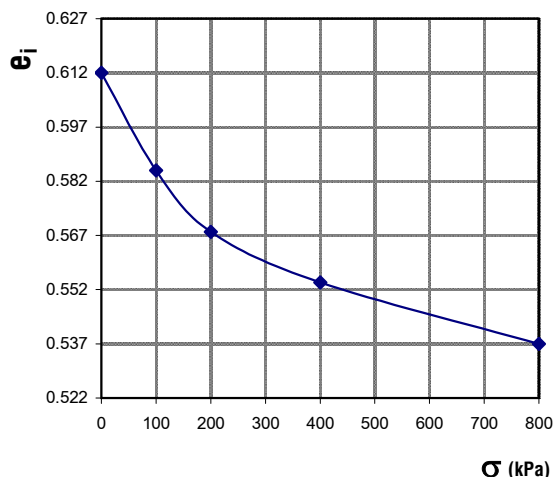
KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	94.73g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
					Nhiệt độ TN/Temp.	30.0°C	0.208	0.104	0.006	8.7	34.7

Khối lượng đất  
Mass of soil  
>0.1mm

D (mm)	m <sub>i</sub> (g)	Cấp hạt Grain grade	D <sub>10-2</sub> (mm)	P <sub>i</sub> %	P %
20.0 10.0 5.0 2.0 1.0	0.65 0.83	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	0.7	100.0
20.0 10.0 5.0 2.0 1.0	0.65 0.83	Cát/Sand	2-1	0.9	99.3
			1-0.5	4.5	98.4
			0.5-0.25	21.9	93.9
			0.25-0.1	43.1	72.0
0.5 0.25 0.1	4.30 20.73 40.87	Bụi/Silt	0.1-0.05	14.4	28.9
			0.05-0.01	3.2	14.5
0.5 0.25 0.1	4.30 20.73 40.87	Sét/Clay	0.01-0.005	1.7	11.3
			<0.005	9.6	9.6

D (mm)	% passing
10	100
5	100
2.5	100
1.25	100
0.6	99.3
0.3	98.4
0.15	72.0
0.075	28.9
0.0375	14.5
0.015	11.3
0.0075	9.6

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 3.91$		Hộp nén số/Test box No.: 45		$e_0 = 0.612$			PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.74$		Số đọc sau 24h/Reading after 24h: 107.6		$h_p = 20\text{mm}$			Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$	$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa	kPa	Vạch/Div.	kPa/0.01mm	kPa
0			0.612				100	32.3	1.686	54.5
100	39.3	7.5	0.585	0.027	5970.4	17274.7	200	55.0	1.678	92.3
200	63.0	10.5	0.568	0.017	9323.5	26976.7	300	90.3	1.736	156.8
400	82.0	11.7	0.554	0.007	22400.0	64812.2	400	105.1	1.739	182.8
800	105.0	14.7	0.537	0.004	38850.0	112408.6	$\tan \phi = 0.4494$ $\phi = 24^\circ 12'$ C    9.3 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK4

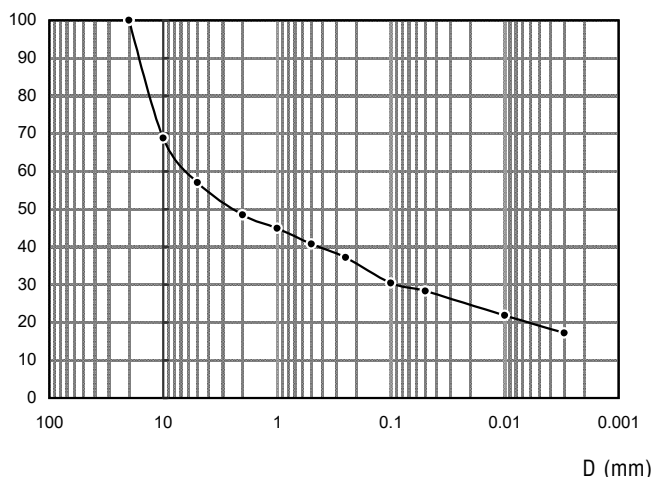
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn dăm sạn laterit, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay with laterite gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	23.05	19.3	15.7	86.0	42.1	0.726	27.1	31.07	19.42	11.65	0.31

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	59.37g					
	Nhiệt độ TN/Temp.	30.0°C	6.271	0.088	*	*

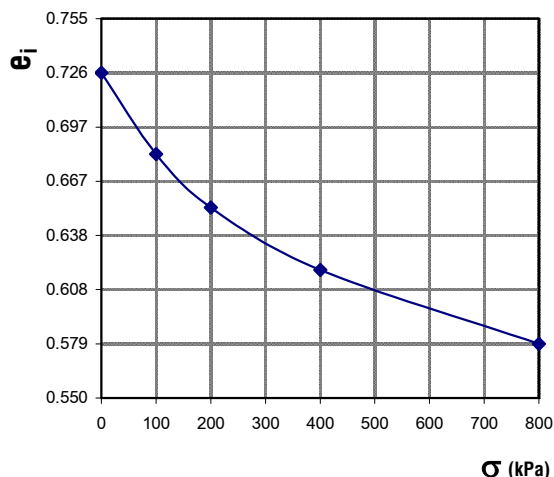
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10	31.2	100.0
20.0			10-5	11.8	68.8
10.0	18.52		5-2	8.5	57.0
5.0	7.00	Cát/Sand	2-1	3.6	48.5
2.0	5.02		1-0.5	4.1	44.9
1.0	2.14		0.5-0.25	3.6	40.8
0.5	2.46		0.25-0.1	6.8	37.2
0.25	2.11	Bụi/Silt	0.1-0.05	2.1	30.4
0.1	4.04		0.05-0.01	6.4	28.3
			0.01-0.005	2.7	21.9
		Sét/Clay	<0.005	19.2	19.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.49$  Hộp nén số/Test box No.: 31  $e_0 = 0.726$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 186.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.726			
100	57.0	7.1	0.682	0.044	3922.7	10907.9
200	94.0	11.4	0.653	0.029	5800.0	16128.1
400	135.0	14.1	0.619	0.017	9723.5	27038.2
800	182.0	16.8	0.579	0.010	16190.0	45019.5

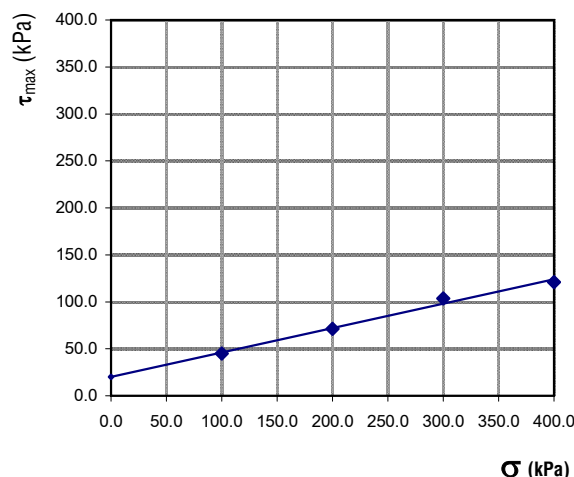


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.7	1.686	45.0
200	42.4	1.678	71.1
300	59.7	1.736	103.6
400	69.5	1.739	120.9

$\tan \phi = 0.2602$   $\phi = 14^\circ 35'$  C 20.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK4

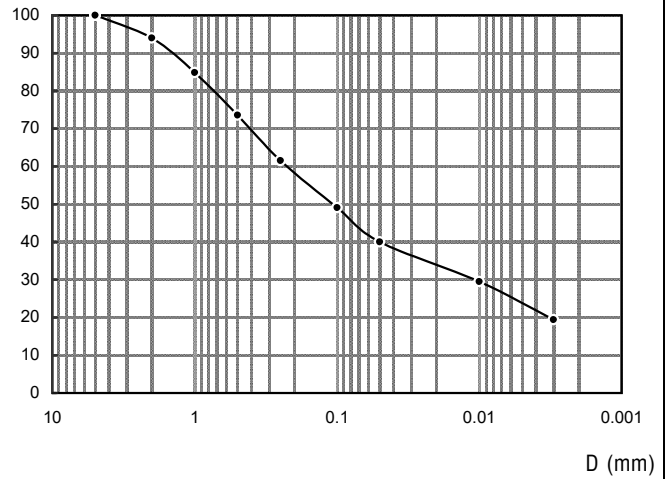
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám tro, trạng thái dẻo cứng / Stiff, ashgrey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.26	19.3	15.9	82.2	41.1	0.698	27.0	29.74	15.26	14.48	0.41

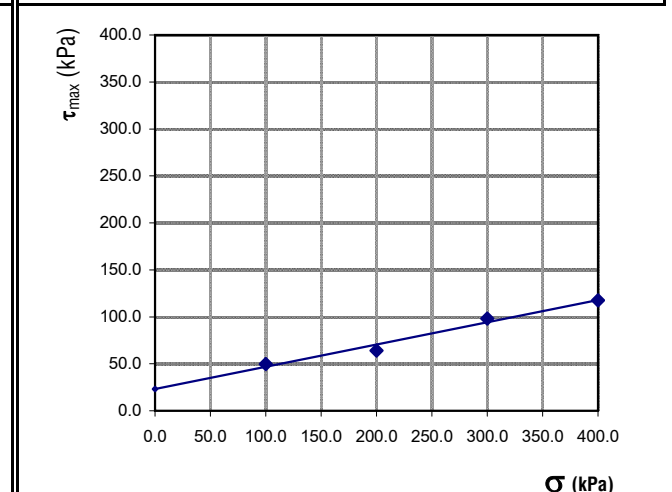
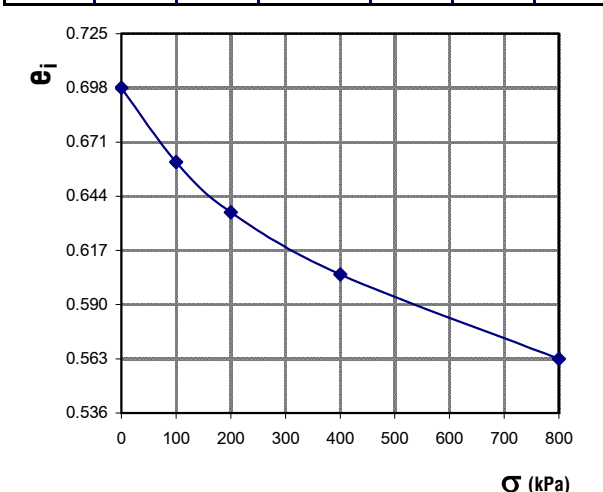
KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					57.07g	0.232	0.011	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	6.0	100.0
20.0		Cát/Sand	2-1	9.2	94.0
10.0			1-0.5	11.2	84.8
5.0			0.5-0.25	12.1	73.6
2.0	3.45		0.25-0.1	12.4	61.5
1.0	5.27		0.1-0.05	9.1	49.1
0.5	6.38	Bụi/Silt	0.05-0.01	10.5	40.0
0.25	6.90		0.01-0.005	5.9	29.5
0.1	7.10	Sét/Clay	<0.005	23.6	23.6



Thí nghiệm nén lún/Compression test						
$m_k = 4.57$	Hộp nén số/Test box No.: 32		$e_0 = 0.698$			
$\beta = 0.62$	Số đọc sau 24h/Reading after 24h: 176.3		$h_0 = 20\text{mm}$			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.698			
100	50.0	7.4	0.661	0.037	4589.2	13003.0
200	84.0	13.0	0.636	0.025	6644.0	18825.1
400	121.0	14.5	0.605	0.016	10225.0	28971.5
800	172.0	17.8	0.563	0.011	14590.9	41341.9

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.5	1.686	49.7
200	38.2	1.678	64.1
300	56.5	1.736	98.1
400	67.5	1.739	117.4
$\tan \phi = 0.2371$ $\phi = 13^\circ 20'$ C      23.1 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK4

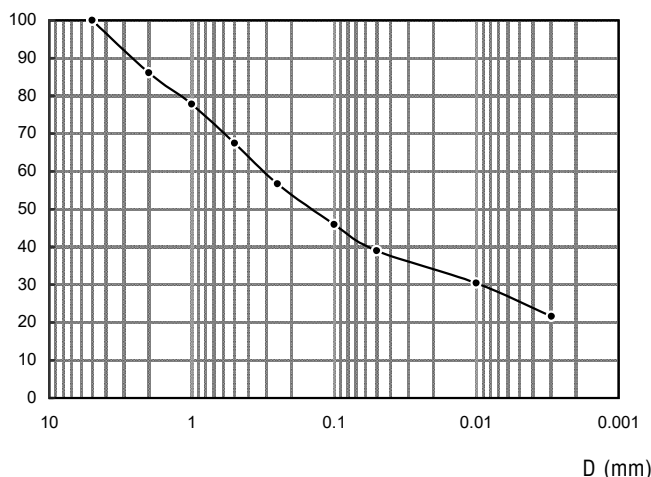
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám tro, trạng thái dẻo cứng / Stiff, ashgrey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.83	19.7	16.2	89.0	39.8	0.660	26.9	30.75	18.22	12.53	0.29

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					66.10g					
					Nhiệt độ TN/Temp.	30.0°C	0.326	0.010	*	*

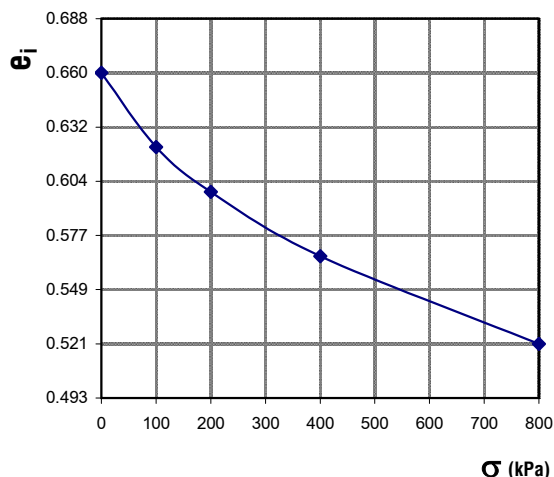
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	13.9	100.0
20.0		Cát/Sand	2-1	8.3	86.1
			1-0.5	10.3	77.8
			0.5-0.25	10.8	67.5
			0.25-0.1	10.8	56.7
			0.1-0.05	6.9	45.9
10.0		Cát/Sand	2-1	8.3	86.1
5.0			1-0.5	10.3	77.8
2.0	9.21		0.5-0.25	10.8	67.5
1.0	5.48		0.25-0.1	10.8	56.7
0.5	6.84		0.1-0.05	6.9	45.9
0.25	7.14	Bụi/Silt	0.05-0.01	8.6	39.0
0.1	7.16	Bụi/Silt	0.01-0.005	5.0	30.4
		Sét/Clay	<0.005	25.4	25.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.76$  Hộp nén số/Test box No.: 33  $e_0 = 0.660$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 186.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.660			
100	51.0	6.5	0.622	0.038	4368.4	12878.5
200	84.0	13.4	0.599	0.023	7052.2	20790.5
400	125.0	15.1	0.566	0.017	9405.9	27729.5
800	182.0	18.7	0.521	0.011	14236.4	41970.2

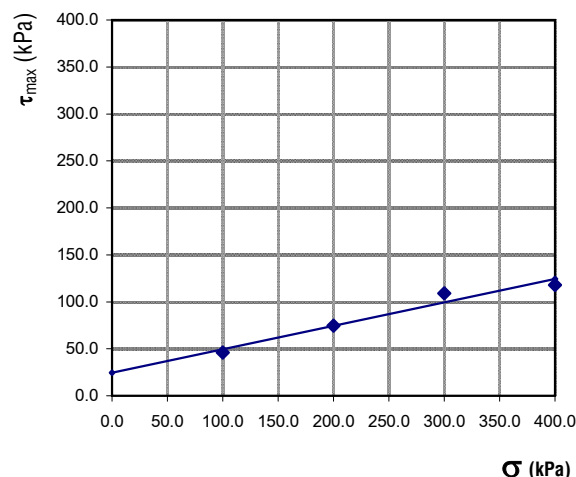


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.3	1.686	46.0
200	44.5	1.678	74.7
300	62.8	1.736	109.0
400	67.8	1.739	117.9

$\tan \phi = 0.2500$   $\phi = 14^\circ 02'$  C 24.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK4

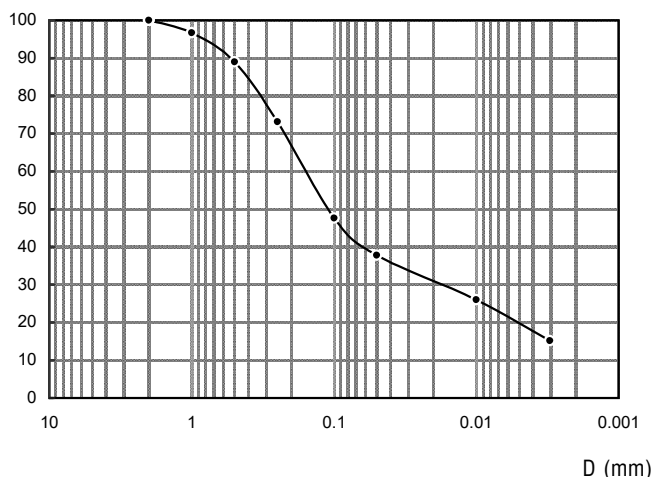
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng, trạng thái dẻo cứng / Stiff, yellowish grey, Sandy clay

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	29.55	19.0	14.7	94.9	45.8	0.844	27.1	36.27	25.41	10.86	0.38

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	51.72g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.173	0.019	*	*	*

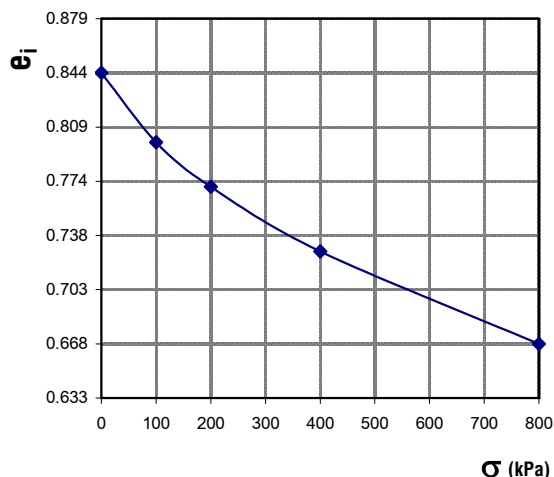
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	3.3	100.0
10.0			1-0.5	7.7	96.7
5.0			0.5-0.25	15.9	89.0
2.0			0.25-0.1	25.5	73.1
1.0	1.70		0.1-0.05	9.8	47.6
0.5	4.00	Bụi/Silt	0.05-0.01	11.8	37.8
0.25	8.24		0.01-0.005	6.1	26.0
0.1	13.20	Sét/Clay	<0.005	19.9	19.9



## Thí nghiệm nén lún/Compression test

$m_v = 3.80$  Hộp nén số/Test box No.: 34  $e_o = 0.844$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 210.1  $h_o = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_o = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.844			
100	54.0	6.3	0.799	0.045	4097.8	9654.4
200	91.2	13.3	0.770	0.029	6203.4	14615.3
400	138.0	15.6	0.728	0.021	8428.6	19857.7
800	205.0	18.7	0.668	0.015	11520.0	27141.1

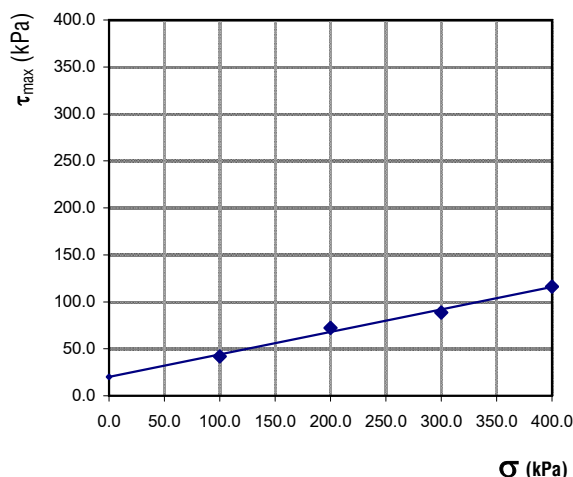


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	24.9	1.686	42.0
200	43.1	1.678	72.3
300	51.1	1.736	88.7
400	66.9	1.739	116.3

$\tan \phi = 0.2393$   $\phi = 13^\circ 27'$  C 20.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK4

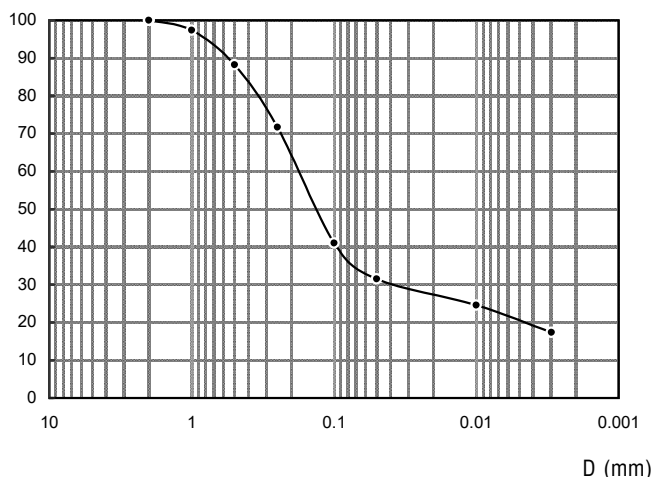
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng, trạng thái dẻo cứng / Stiff, yellowish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.90	20.0	16.4	91.0	39.5	0.652	27.1	30.97	16.08	14.89	0.39

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	72.23g	0.193	0.040	*	*
						30.0°C				

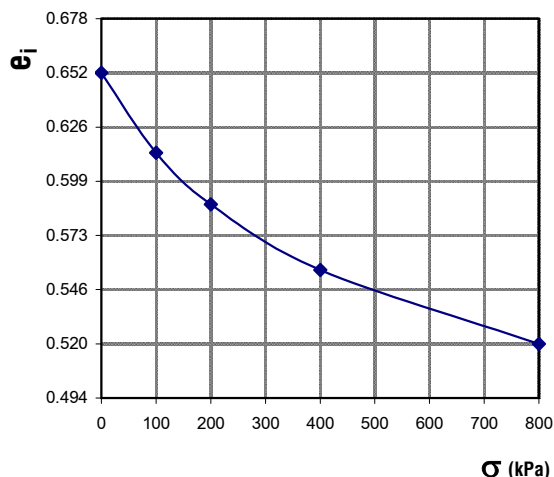
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	2.6	100.0
10.0			1-0.5	9.2	97.4
5.0			0.5-0.25	16.5	88.2
2.0			0.25-0.1	30.7	71.7
1.0	1.85		0.1-0.05	9.5	41.0
0.5	6.65	Bụi/Silt	0.05-0.01	6.9	31.5
0.25	11.89		0.01-0.005	3.8	24.6
0.1	22.15	Sét/Clay	<0.005	20.8	20.8



## Thí nghiệm nén lún/Compression test

$m_k = 4.81$  Hộp nén số/Test box No.: 35  $e_0 = 0.652$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 177.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.652			
100	52.3	6.2	0.613	0.039	4235.9	12632.3
200	86.0	11.0	0.588	0.025	6452.0	19241.2
400	128.0	14.8	0.556	0.016	9925.0	29598.3
800	173.0	17.6	0.520	0.009	17288.9	51558.9

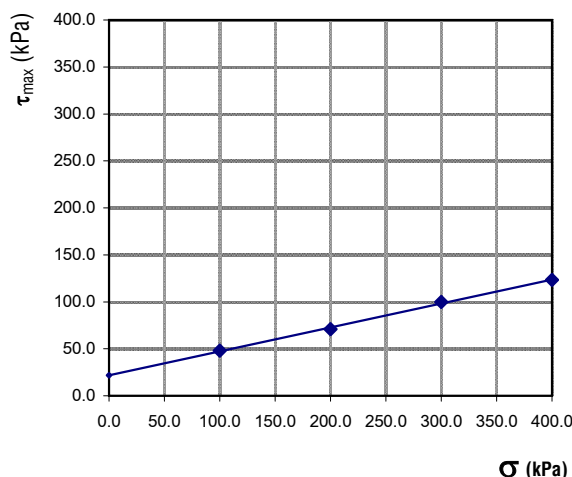


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.4	1.686	47.9
200	42.2	1.678	70.8
300	57.5	1.736	99.8
400	70.9	1.739	123.3

$\tan \phi = 0.2552$   $\phi = 14^\circ 19'$  C 21.7 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK4

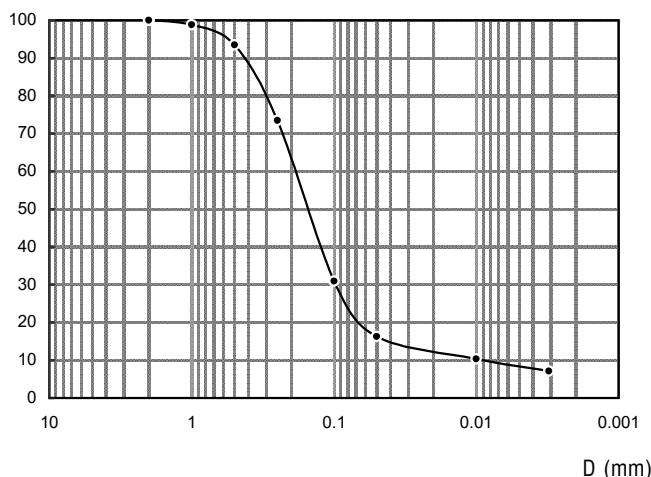
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.07	19.7	16.4	84.8	38.8	0.634	26.8	22.95	17.21	5.74	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	99.94g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.202	0.098	0.009	5.3	22.4

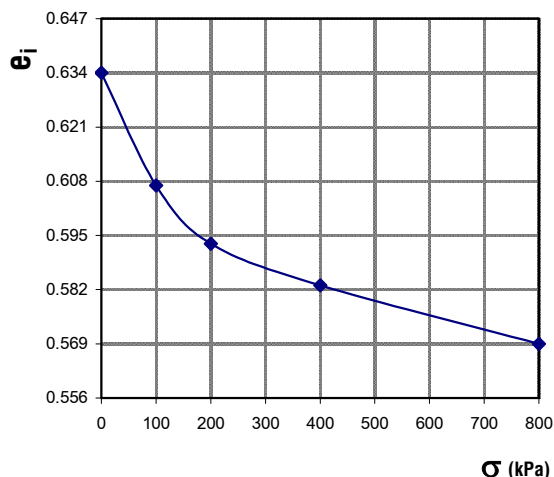
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	1.2	100.0
			1-0.5	5.3	98.8
			0.5-0.25	20.0	93.5
			0.25-0.1	42.6	73.5
			0.1-0.05	14.6	30.9
10.0		Bụi/Silt	0.05-0.01	6.0	16.3
5.0			0.01-0.005	2.1	10.3
2.0					
1.0	1.20				
0.5	5.30				
0.25	20.00	Sét/Clay	<0.005	8.2	8.2
0.1	42.53				



## Thí nghiệm nén lún/Compression test

$m_k = 3.79$  Hộp nén số/Test box No.: 36  $e_0 = 0.634$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.634			
100	38.0	6.1	0.607	0.027	6051.9	16950.6
200	60.0	11.4	0.593	0.014	11478.6	32150.3
400	75.0	14.4	0.583	0.005	31860.0	89236.7
800	94.0	17.4	0.569	0.004	39575.0	110845.6

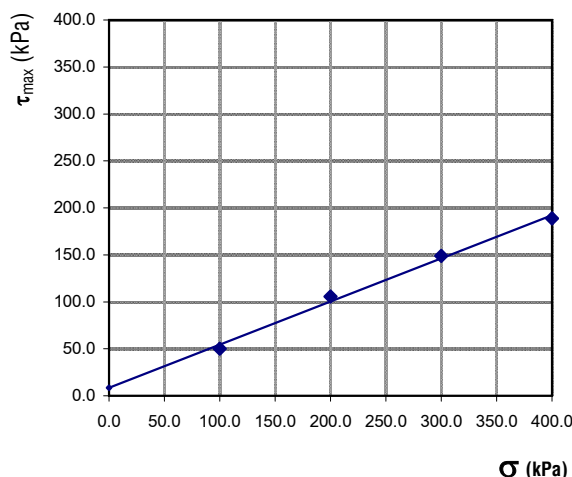


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.7	1.686	50.1
200	63.0	1.678	105.7
300	85.8	1.736	148.9
400	108.5	1.739	188.7

$\tan \phi = 0.4590$   $\phi = 24^\circ 39'$  C 8.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK4

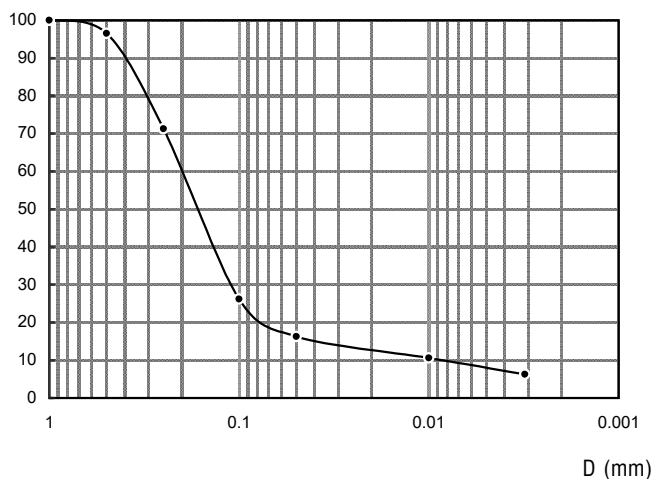
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	22.02	19.3	15.8	85.6	40.6	0.684	26.6	24.97	19.23	5.74	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	99.88g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.212	0.113	0.009	6.7	23.6

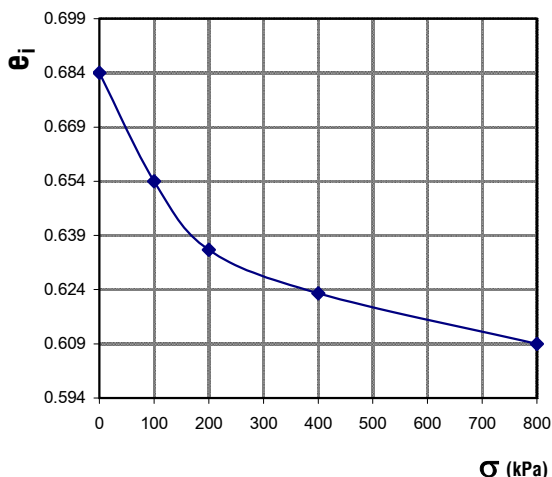
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-20}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	3.5	100.0
5.0			0.5-0.25	25.2	96.5
2.0			0.25-0.1	45.1	71.3
1.0			0.1-0.05	9.9	26.2
0.5	3.46	Bụi/Silt	0.05-0.01	5.7	16.3
0.25	25.13		0.01-0.005	2.2	10.6
0.1	45.00	Sét/Clay	<0.005	8.4	8.4



## Thí nghiệm nén lún/Compression test

$m_k = 3.58$  Hộp nén số/Test box No.: 37  $e_0 = 0.684$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 107.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.684			
100	42.0	6.7	0.654	0.030	5613.3	14850.1
200	69.0	12.5	0.635	0.019	8705.3	23029.8
400	85.0	15.6	0.623	0.006	27250.0	72089.9
800	105.0	18.8	0.609	0.004	40575.0	107341.2

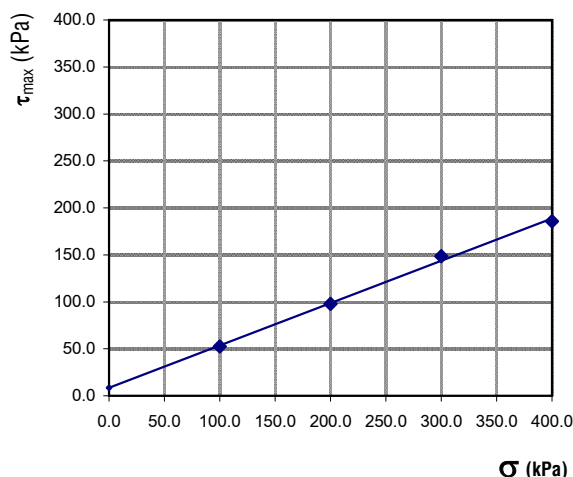


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.1	1.686	52.4
200	58.2	1.678	97.7
300	85.5	1.736	148.4
400	106.7	1.739	185.6

$\tan \phi = 0.4503$   $\phi = 24^\circ 15'$  C 8.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK4

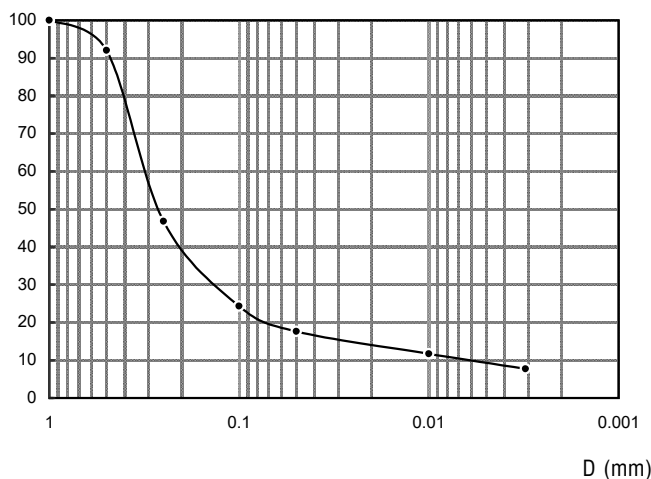
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.95	19.6	16.1	89.6	39.5	0.652	26.6	24.60	18.97	5.63	0.53

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	102.50g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.323	0.138	0.007	8.4	46.1

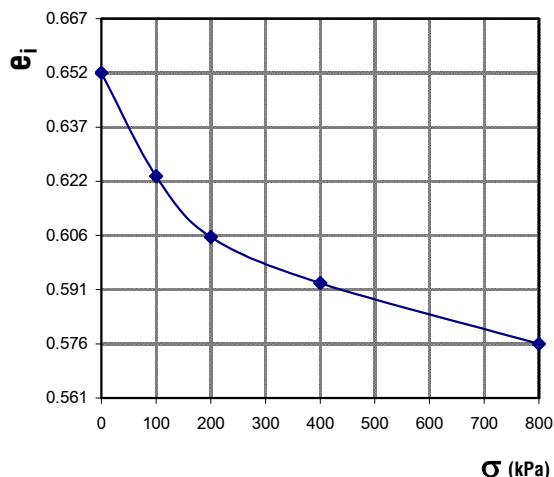
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	8.0	100.0
1.0			0.5-0.25	45.2	92.0
0.5	8.24		0.25-0.1	22.5	46.8
0.25	46.30	Bụi/Silt	0.1-0.05	6.7	24.3
0.1	23.02		0.05-0.01	5.9	17.6
		Sét/Clay	0.01-0.005	2.9	11.7
			<0.005	8.8	8.8



## Thí nghiệm nén lún/Compression test

$m_k = 3.72$  Hộp nén số/Test box No.: 38  $e_0 = 0.652$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 108.7  $h_0 = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.652			
100	41.0	6.9	0.623	0.029	5696.6	15681.5
200	65.0	10.9	0.606	0.017	9547.1	26281.1
400	84.0	13.7	0.593	0.007	22942.9	63157.1
800	106.0	16.4	0.576	0.004	39825.0	109630.3

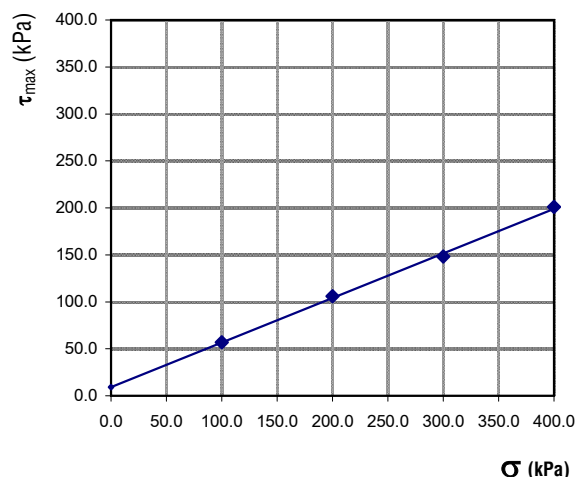


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.7	1.686	56.8
200	63.2	1.678	106.0
300	85.4	1.736	148.3
400	115.5	1.739	200.9

$\tan \phi = 0.4746$   $\phi = 25^\circ 23'$  C 9.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK4

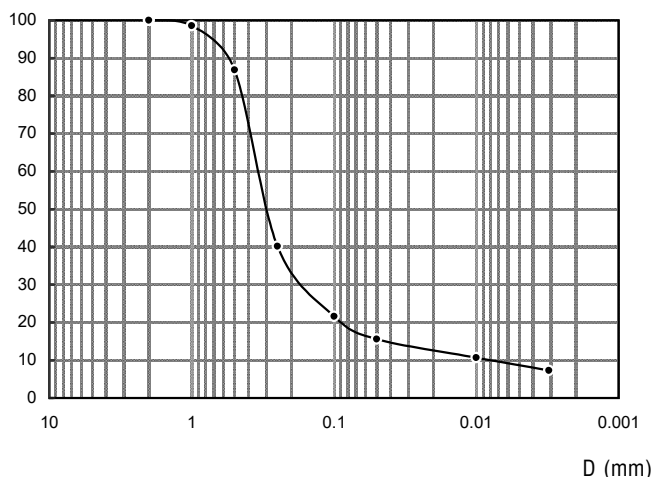
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.90	20.3	16.9	92.2	36.5	0.574	26.6	22.63	17.08	5.55	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	115.72g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.356	0.168	0.008	9.9	44.5

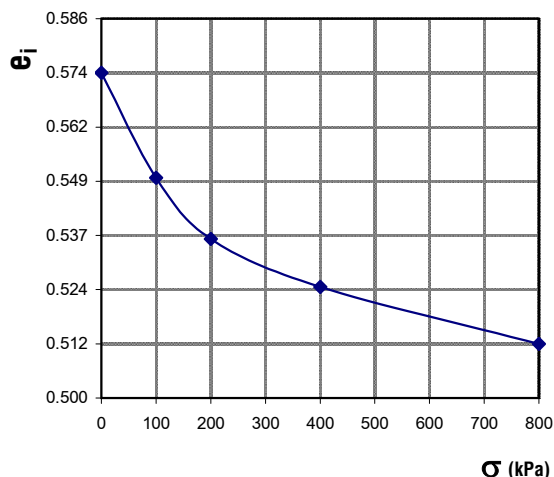
Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2		100.0
2.0		2-1	1.4	100.0
1.0	1.65	1-0.5	11.7	98.6
0.5	13.52	0.5-0.25	46.7	86.9
0.25	54.02	0.25-0.1	18.6	40.2
0.1	21.53	0.1-0.05	6.0	21.6
		0.05-0.01	4.9	15.6
		0.01-0.005	2.0	10.7
		Sét/Clay	<0.005	8.7



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 39  $e_0 = 0.574$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.574			
100	36.0	7.1	0.550	0.024	6558.3	19412.7
200	57.0	10.4	0.536	0.014	11071.4	32771.4
400	74.0	14.4	0.525	0.006	25600.0	75776.0
800	94.0	17.2	0.512	0.003	50833.3	150466.7

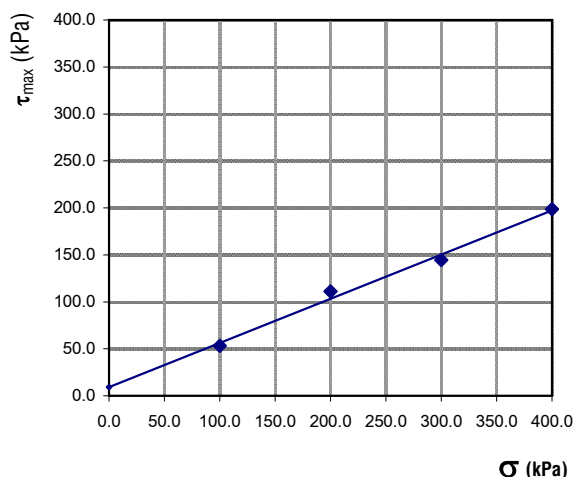


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.5	1.686	53.1
200	66.2	1.678	111.1
300	83.3	1.736	144.6
400	114.3	1.739	198.8

$\tan \phi = 0.4706$   $\phi = 25^\circ 12'$  C 9.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK4

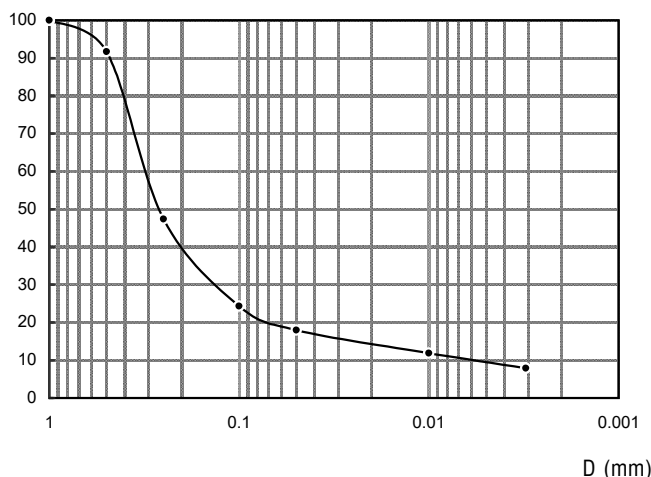
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.50	20.0	16.6	90.0	37.8	0.608	26.7	23.37	17.60	5.77	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	99.83g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.321	0.137	0.007	8.4	45.9

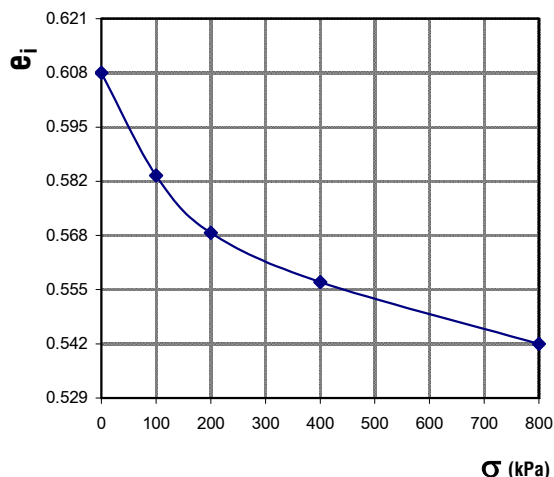
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	8.3	100.0
1.0			0.5-0.25	44.3	91.7
0.5	8.30	Bụi/Silt	0.25-0.1	23.1	47.4
0.25	44.23		0.1-0.05	6.3	24.3
0.1	23.02		0.05-0.01	6.1	18.0
		Sét/Clay	0.01-0.005	2.9	11.9
			<0.005	9.0	9.0



## Thí nghiệm nén lún/Compression test

$m_k = 3.91$  Hộp nén số/Test box No.: 40  $e_0 = 0.608$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.608			
100	37.0	6.8	0.583	0.025	6432.0	18586.6
200	56.0	9.5	0.569	0.014	11307.1	32674.3
400	75.0	13.2	0.557	0.006	26150.0	75565.7
800	94.0	14.7	0.542	0.004	38925.0	112481.6

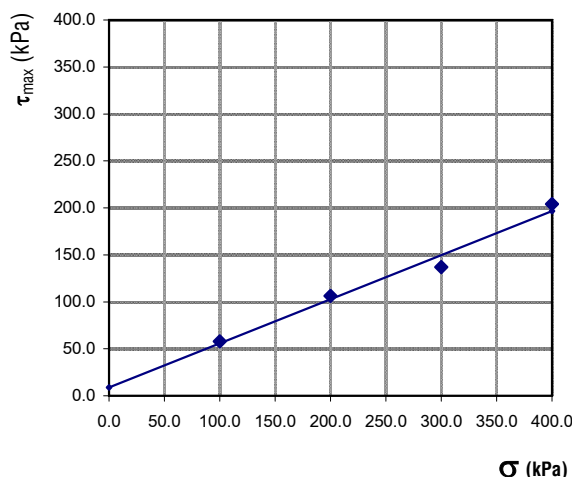


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.3	1.686	57.8
200	63.4	1.678	106.4
300	78.8	1.736	136.8
400	117.3	1.739	204.0

$\tan \phi = 0.4690$   $\phi = 25^\circ 08'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK4

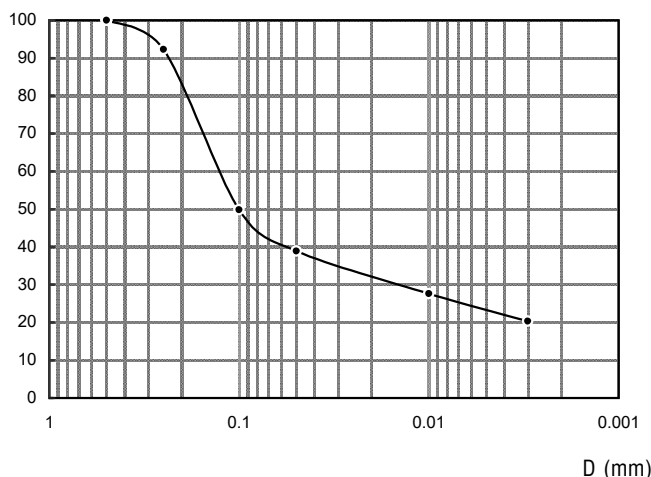
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	25.44	19.5	15.5	92.6	42.6	0.742	27.0	31.89	20.56	11.33	0.43

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	54.54g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.136	0.014	*	*	*

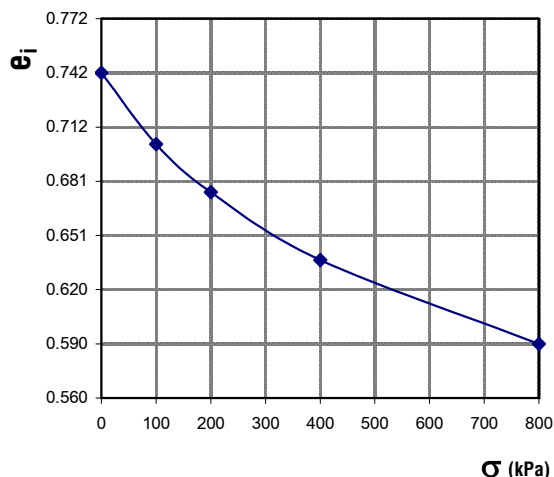
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25	7.7	100.0
2.0			0.25-0.1	42.5	92.3
1.0			0.1-0.05	10.9	49.8
0.5		Bụi/Silt	0.05-0.01	11.3	38.9
0.25	4.20		0.01-0.005	3.7	27.6
0.1	23.19	Sét/Clay	<0.005	23.9	23.9



## Thí nghiệm nén lún/Compression test

$m_k = 4.38$  Hộp nén số/Test box No.: 41  $e_0 = 0.742$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 188.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.742			
100	51.0	6.5	0.702	0.040	4355.0	11812.9
200	85.5	10.2	0.675	0.027	6303.7	17098.8
400	130.2	12.5	0.637	0.019	8815.8	23912.8
800	184.0	14.8	0.590	0.012	13641.7	37003.0

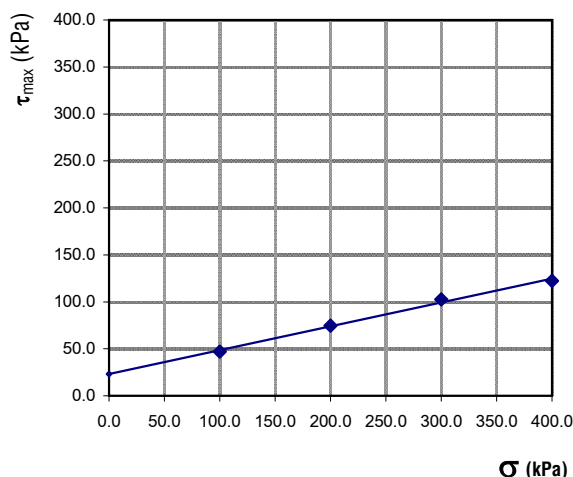


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.9	1.686	47.0
200	44.4	1.678	74.5
300	59.1	1.736	102.6
400	70.3	1.739	122.3

$\tan \phi = 0.2540$   $\phi = 14^\circ 15'$  C 23.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK4

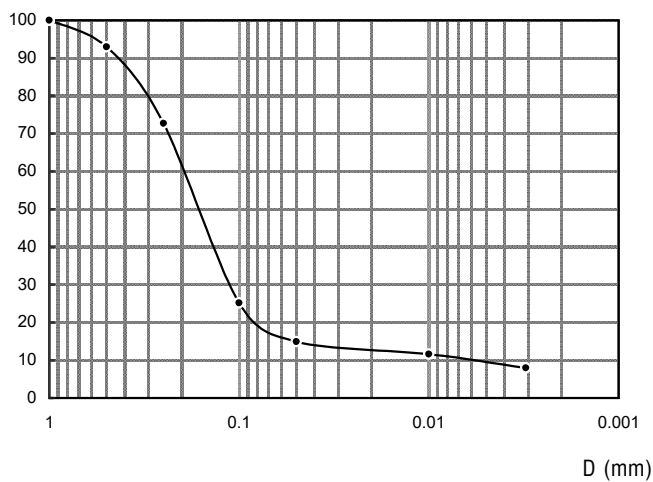
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.71	19.9	16.5	88.9	38.4	0.624	26.8	23.83	17.67	6.16	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	99.41g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.210	0.115	0.005	12.6	42.0

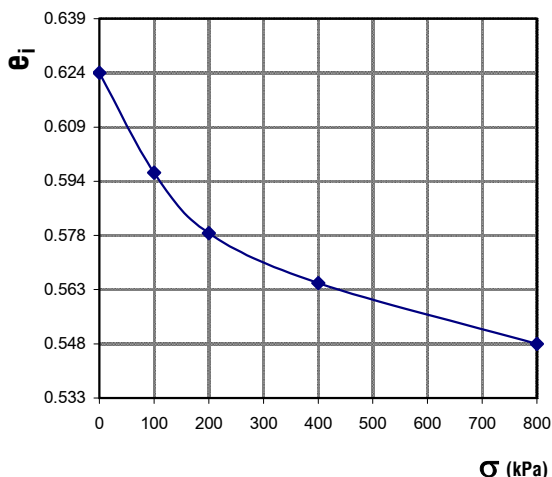
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	7.0	100.0
1.0			0.5-0.25	20.3	93.0
0.5	7.00	Bụi/Silt	0.25-0.1	47.5	72.7
0.25	20.15		0.1-0.05	10.3	25.2
0.1	47.20		0.05-0.01	3.3	14.9
		Sét/Clay	0.01-0.005	1.7	11.6
			<0.005	9.9	9.9



## Thí nghiệm nén lún/Compression test

$m_k = 3.86$  Hộp nén số/Test box No.: 42  $e_0 = 0.624$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 108.7  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.624			
100	41.0	6.6	0.596	0.028	5800.0	16545.7
200	63.0	9.8	0.579	0.017	9388.2	26781.8
400	84.0	12.8	0.565	0.007	22557.1	64348.8
800	106.0	15.6	0.548	0.004	39125.0	111611.9

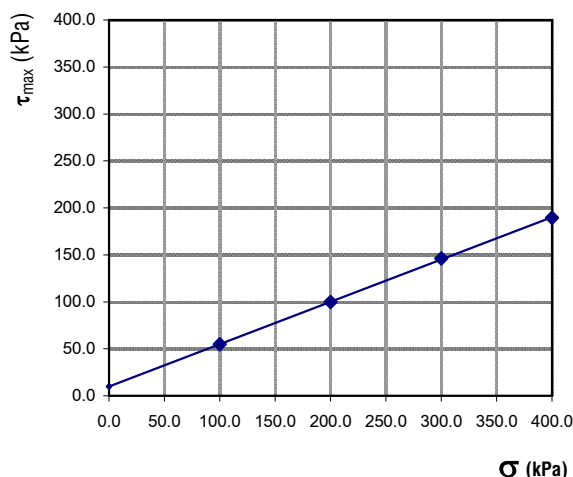


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.5	1.686	54.8
200	59.6	1.678	100.0
300	84.2	1.736	146.2
400	109.0	1.739	189.6

$\tan \phi = 0.4506$   $\phi = 24^\circ 15'$  C 10.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK4

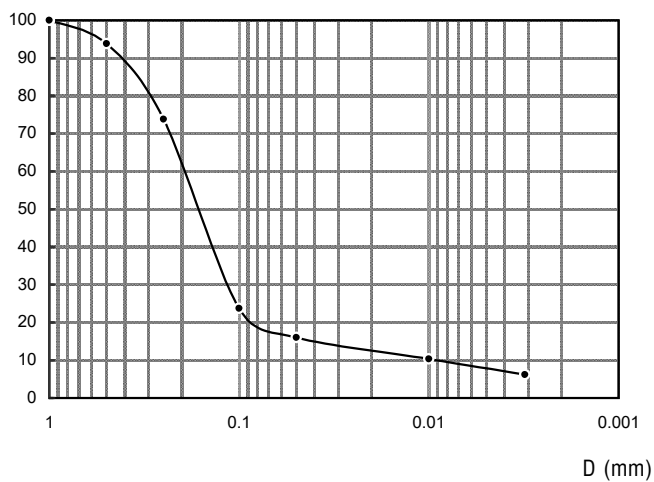
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ - vàng nâu, trạng thái dẻo / Plasticity, reddish brown - brownish yellow, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.25	20.1	16.7	90.8	37.2	0.593	26.6	23.27	17.45	5.82	0.48

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	103.07g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.209	0.119	0.009	7.5	23.2

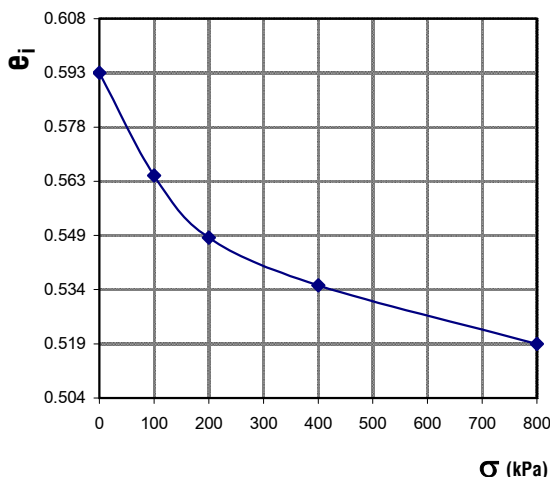
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	D <sub>11-12</sub> (mm)	P <sub>i</sub> %	P %
D (mm)	m <sub>i</sub> (g)	Sỏi/san / gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	6.2	100.0
5.0			0.5-0.25	20.0	93.8
2.0			0.25-0.1	50.1	73.8
1.0			0.1-0.05	7.7	23.7
0.5	6.35	Bụi/Silt	0.05-0.01	5.7	16.0
0.25	20.62		0.01-0.005	1.9	10.3
0.1	51.68	Sét/Clay	<0.005	8.4	8.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 43  $e_0 = 0.593$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 107.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.593			
100	41.0	7.0	0.565	0.028	5689.3	16840.3
200	65.0	10.0	0.548	0.017	9205.9	27249.4
400	84.0	13.3	0.535	0.007	22114.3	65458.3
800	105.0	14.9	0.519	0.004	38375.0	113590.0

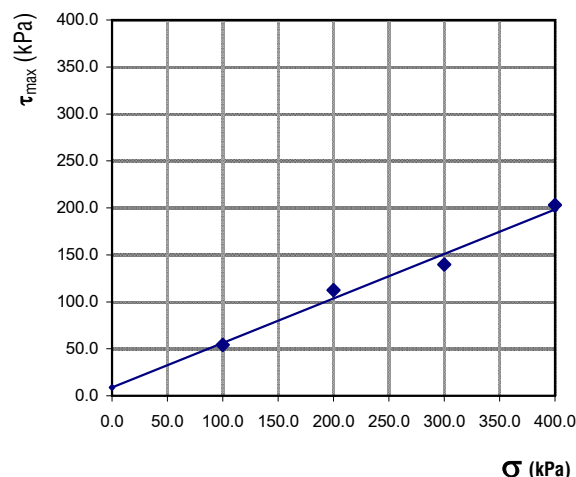


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.2	1.686	54.3
200	67.1	1.678	112.6
300	80.5	1.736	139.7
400	116.8	1.739	203.1

$\tan \phi = 0.4735$   $\phi = 25^\circ 20'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK4

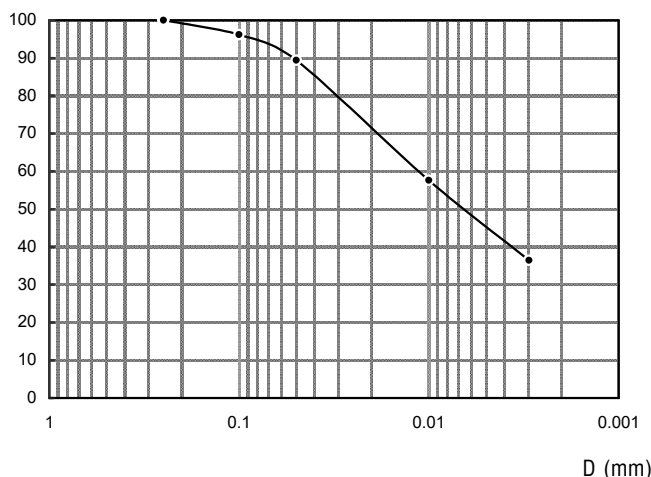
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	31.91	18.7	14.2	94.9	47.8	0.915	27.2	44.56	25.73	18.83	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					34.57g	0.012	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

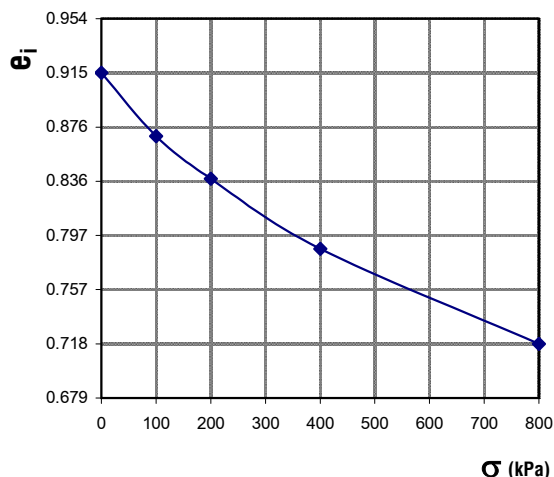
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5		Bụi/Silt	0.25-0.1	3.8	100.0
0.25			0.1-0.05	6.8	96.2
0.1	1.30	Sét/Clay	0.05-0.01	31.8	89.4
			0.01-0.005	14.1	57.6
			<0.005	43.5	43.5



## Thí nghiệm nén lún/Compression test

$m_k = 5.56$  Hộp nén số/Test box No.: 44  $e_0 = 0.915$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 220.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.915			
100	53.6	7.2	0.869	0.046	4163.0	9258.6
200	88.0	10.3	0.838	0.031	6029.0	13408.6
400	142.0	12.0	0.787	0.026	7069.2	15722.0
800	215.0	14.4	0.718	0.017	10511.8	23378.2

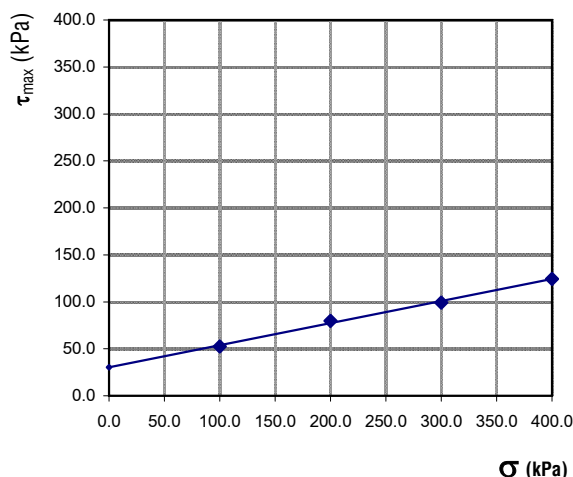


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	31.1	1.686	52.4
200	47.5	1.678	79.7
300	57.2	1.736	99.3
400	71.4	1.739	124.2

$\tan \phi = 0.2350$   $\phi = 13^\circ 13'$  C 30.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK4-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK4

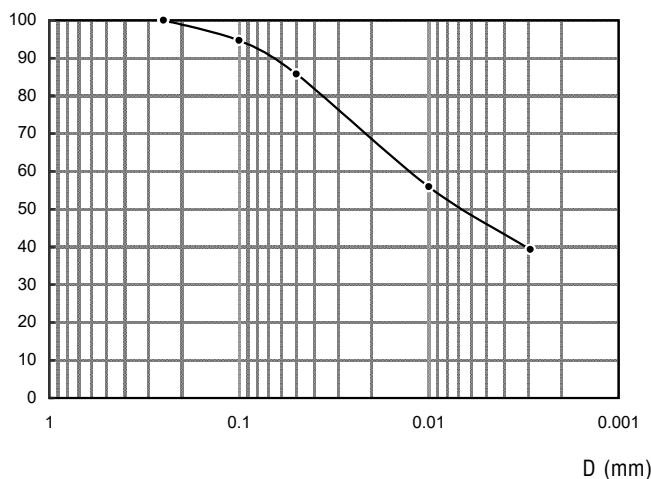
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	33.76	18.2	13.6	91.1	50.4	1.015	27.4	47.25	23.90	23.35	0.42

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	35.89g	0.013	*	*	*
						30.0°C				

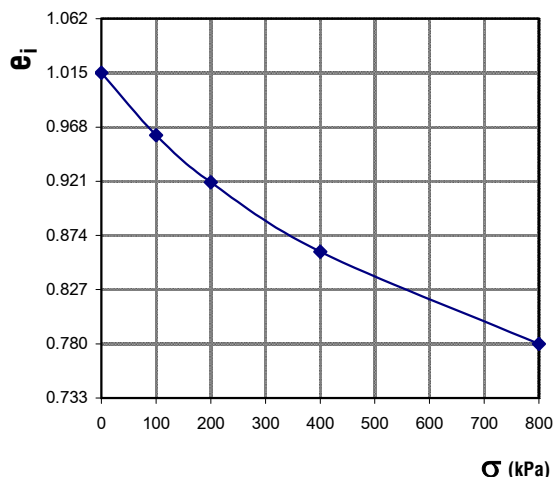
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	5.3	100.0
0.25		Bụi/Silt	0.1-0.05	8.9	94.7
0.1	1.90		0.05-0.01	29.9	85.8
			0.01-0.005	9.6	55.9
		Sét/Clay	<0.005	46.3	46.3



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 45  $e_0 = 1.015$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 248.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			1.015			
100	60.0	7.5	0.961	0.054	3731.5	8209.3
200	102.0	10.5	0.920	0.041	4782.9	10522.4
400	162.0	11.7	0.860	0.030	6400.0	14080.0
800	242.0	14.7	0.780	0.020	9300.0	20460.0

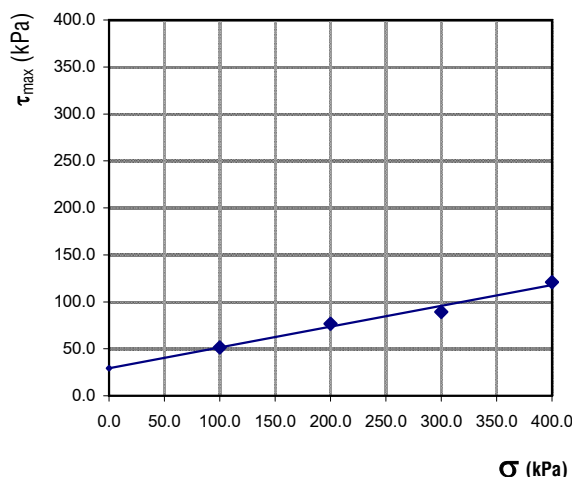


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.4	1.686	51.3
200	45.7	1.678	76.7
300	51.4	1.736	89.2
400	69.5	1.739	120.9

$\tan \phi = 0.2213$   $\phi = 12^\circ 29'$  C 29.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK5

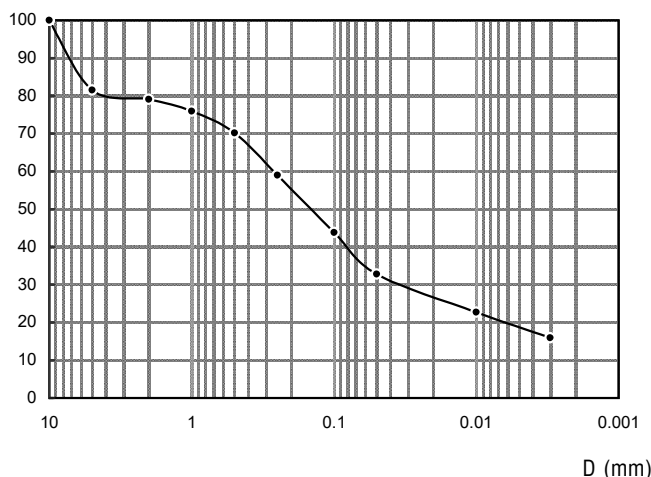
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn sỏi sạn laterit, nâu đỏ - xám trắng, trạng thái dẻo cứng / Stiff, reddish brown - whitish grey, Sandy clay with gravel

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.65	19.5	16.0	85.0	40.7	0.688	27.0	28.54	15.73	12.81	0.46

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	59.56g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.272	0.036	*	*	*

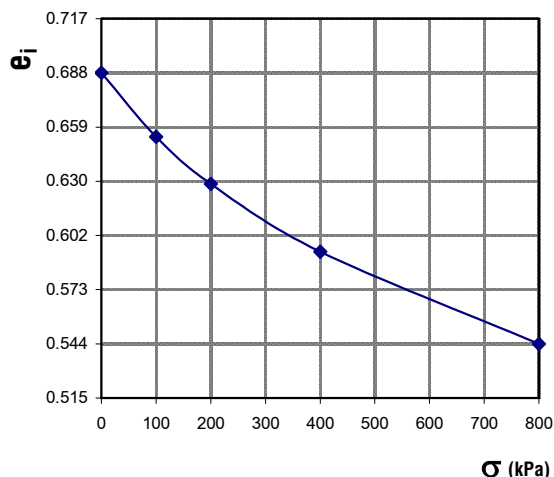
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Sỏi/sand / Gravel	>10		100.0
			10-5	18.5	100.0
			5-2	2.4	81.5
		Cát/Sand	2-1	3.2	79.1
			1-0.5	5.7	75.9
			0.5-0.25	11.2	70.2
			0.25-0.1	15.2	59.0
			0.1-0.05	11.0	43.8
		Bụi/Silt	0.05-0.01	10.1	32.8
			0.01-0.005	4.6	22.7
		Sét/Clay	<0.005	18.1	18.1



## Thí nghiệm nén lún/Compression test

$m_k = 4.61$  Hộp nén số/Test box No.: 1  $e_0 = 0.688$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 188.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.688			
100	47.0	8.4	0.654	0.034	4964.7	14174.7
200	80.0	11.9	0.629	0.025	6616.0	18889.3
400	123.0	13.7	0.593	0.018	9050.0	25838.7
800	184.0	17.6	0.544	0.012	13275.0	37901.5

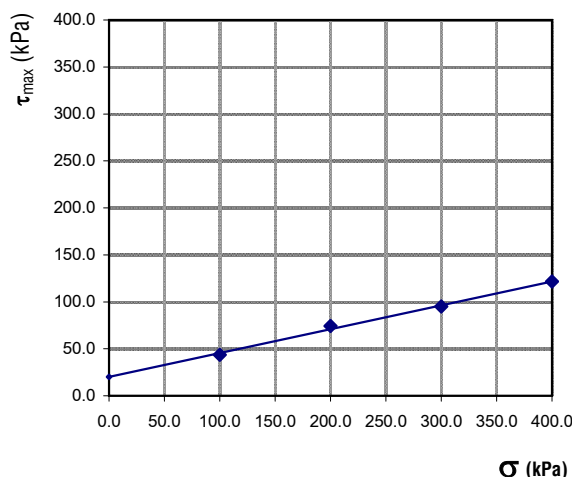


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.9	1.686	43.7
200	44.2	1.678	74.2
300	54.7	1.736	95.0
400	69.9	1.739	121.6

$\tan \phi = 0.2545$   $\phi = 14^\circ 17'$  C 20.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK5

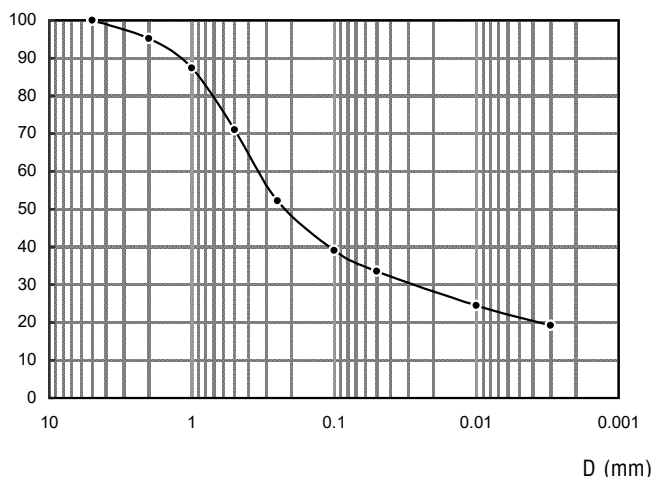
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ - xám trắng, trạng thái dẻo cứng / Stiff, reddish brown - whitish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.01	20.0	16.7	87.0	38.4	0.623	27.1	27.50	14.16	13.34	0.44

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	53.33g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.354	0.034	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	4.8	100.0
20.0		Cát/Sand	2-1	7.8	95.2
10.0			1-0.5	16.4	87.4
5.0			0.5-0.25	18.8	71.0
2.0	2.54		0.25-0.1	13.1	52.2
1.0	4.16		0.1-0.05	5.5	39.1
0.5	8.74	Bụi/Silt	0.05-0.01	9.1	33.6
0.25	10.05		0.01-0.005	3.1	24.5
0.1	7.00	Sét/Clay	<0.005	21.4	21.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.92$  Hộp nén số/Test box No.: 2  $e_0 = 0.623$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 164.0  $h_p = 20\text{mm}$

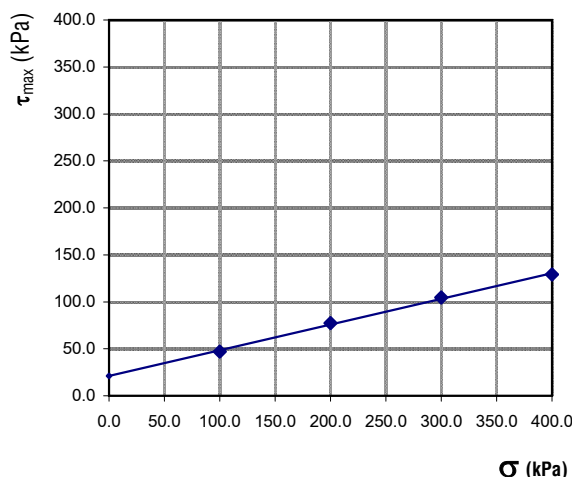
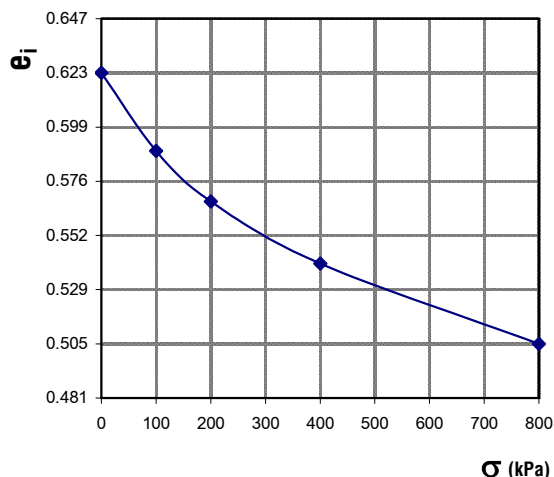
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.623			
100	51.0	9.8	0.589	0.034	4773.5	14546.4
200	80.0	13.3	0.567	0.022	7222.7	22009.8
400	115.0	15.5	0.540	0.014	11192.9	34108.0
800	160.0	19.1	0.505	0.009	17111.1	52142.7

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.8	1.686	46.9
200	46.0	1.678	77.2
300	60.3	1.736	104.7
400	74.2	1.739	129.0

$\tan \phi = 0.2738$   $\phi = 15^\circ 19'$  C 21.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK5

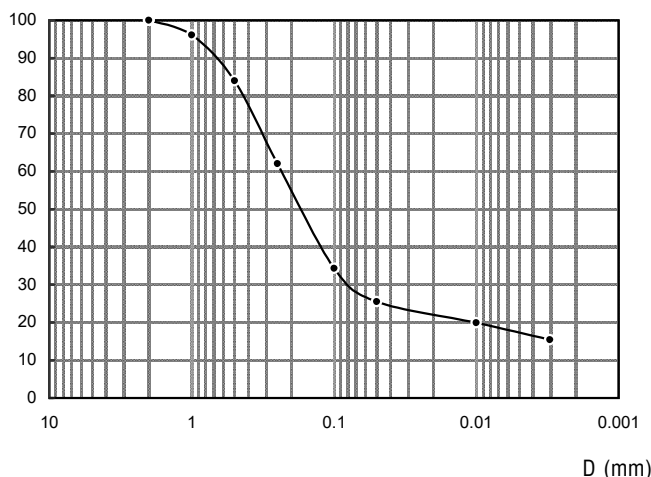
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng - nâu đỏ, trạng thái dẻo cứng / Stiff, whitish grey - reddish brown, Sandy clay

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.03	19.6	16.1	88.3	40.1	0.671	26.9	30.52	17.40	13.12	0.35

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.239	0.074	*	*

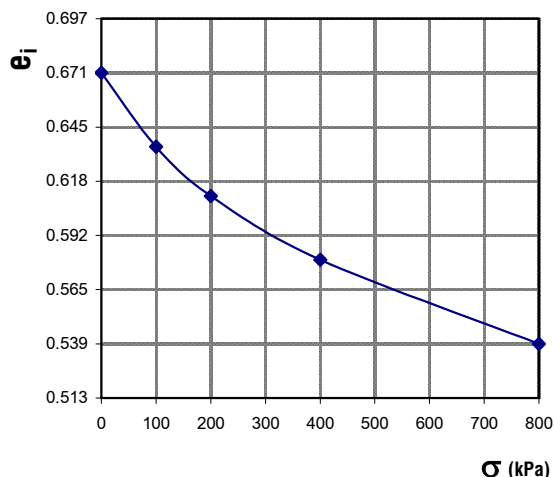
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	3.9	100.0
10.0			1-0.5	12.1	96.1
5.0			0.5-0.25	22.0	84.0
2.0			0.25-0.1	27.7	62.0
1.0	2.40		0.1-0.05	8.8	34.3
0.5	7.42	Bụi/Silt	0.05-0.01	5.6	25.5
0.25	13.52		0.01-0.005	2.6	19.9
0.1	17.00	Sét/Clay	<0.005	17.3	17.3



## Thí nghiệm nén lún/Compression test

$m_k = 4.70$  Hộp nén số/Test box No.: 3  $e_0 = 0.671$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 176.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.671			
100	51.0	9.1	0.635	0.036	4641.7	13511.4
200	83.0	12.6	0.611	0.024	6812.5	19830.5
400	121.0	14.7	0.580	0.016	10068.8	29309.1
800	172.0	18.6	0.539	0.010	15800.0	45992.2

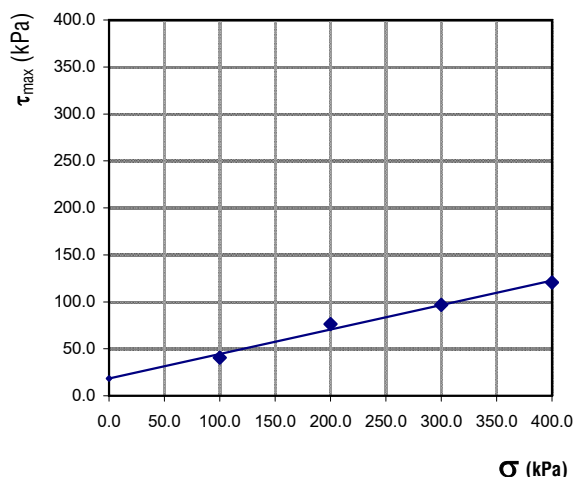


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	24.0	1.686	40.5
200	45.5	1.678	76.3
300	55.7	1.736	96.7
400	69.3	1.739	120.5

$\tan \varphi = 0.2604$   $\varphi = 14^\circ 36'$  C 18.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK5

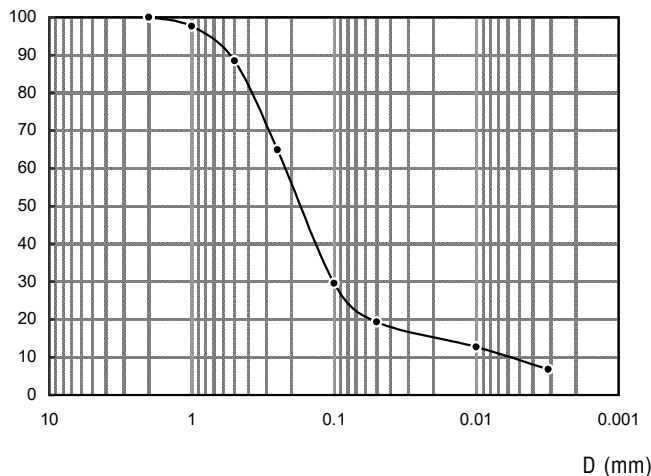
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng - nâu đỏ, trạng thái dẻo / Plasticity, whitish grey - reddish brown, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.94	20.5	17.0	98.6	36.1	0.565	26.6	23.78	18.14	5.64	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	93.43g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.229	0.102	0.006	7.6	38.2

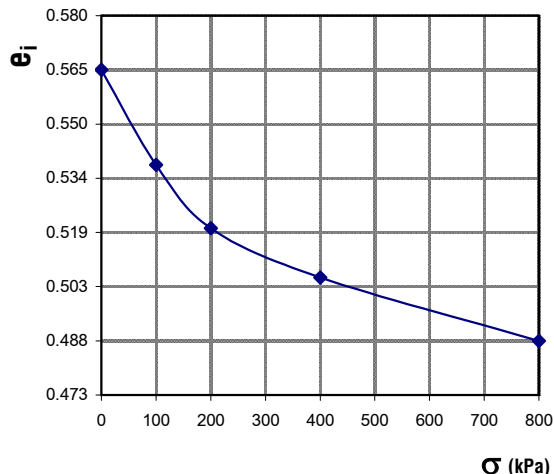
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1	2.4	100.0
2.0			1-0.5	9.1	97.6
1.0	2.27		0.5-0.25	23.6	88.5
0.5	8.46	Bụi/Silt	0.25-0.1	35.3	64.9
0.25	22.05		0.1-0.05	10.3	29.6
0.1	33.00		0.05-0.01	6.6	19.3
		Sét/Clay	0.01-0.005	3.5	12.7
			<0.005	9.2	9.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 4  $e_0 = 0.565$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 116.9  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.565			
100	42.0	8.8	0.538	0.027	5796.3	17157.0
200	67.0	11.9	0.520	0.018	8544.4	25291.6
400	88.0	14.0	0.506	0.007	21714.3	64274.3
800	114.0	17.5	0.488	0.005	30120.0	89155.2

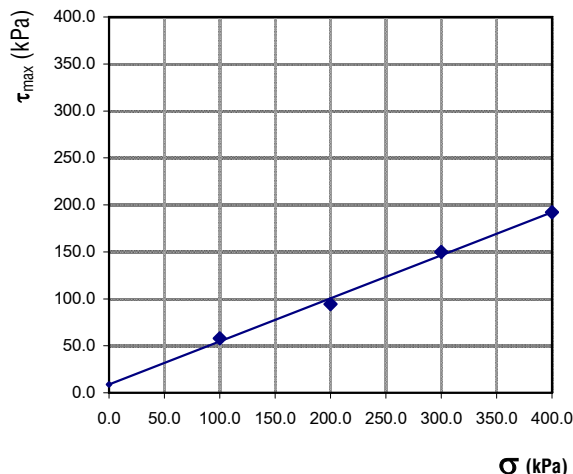


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.3	1.686	57.8
200	56.2	1.678	94.3
300	86.4	1.736	150.0
400	110.4	1.739	192.0

$\tan \varphi = 0.4583$   $\varphi = 24^\circ 37'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK5

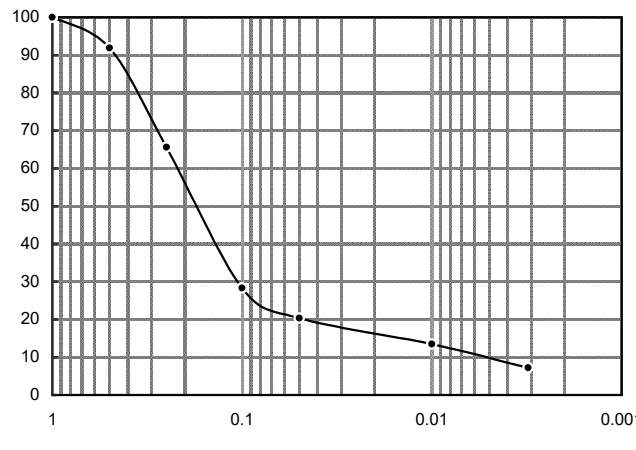
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.11	20.2	17.0	88.9	36.6	0.576	26.8	22.06	16.28	5.78	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis		KL đất khô/Dry wei	88.41g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
		Nhiệt độ TN/Temp.	30.0°C	0.227	0.107	0.005	10.1	45.4

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	8.1	100.0
1.0			0.5-0.25	26.3	91.9
0.5	7.20		0.25-0.1	37.3	65.6
0.25	23.26		0.1-0.05	8.0	28.3
0.1	33.00	Bụi/Silt	0.05-0.01	6.8	20.3
			0.01-0.005	3.6	13.5
		Sét/Clay	<0.005	9.9	9.9

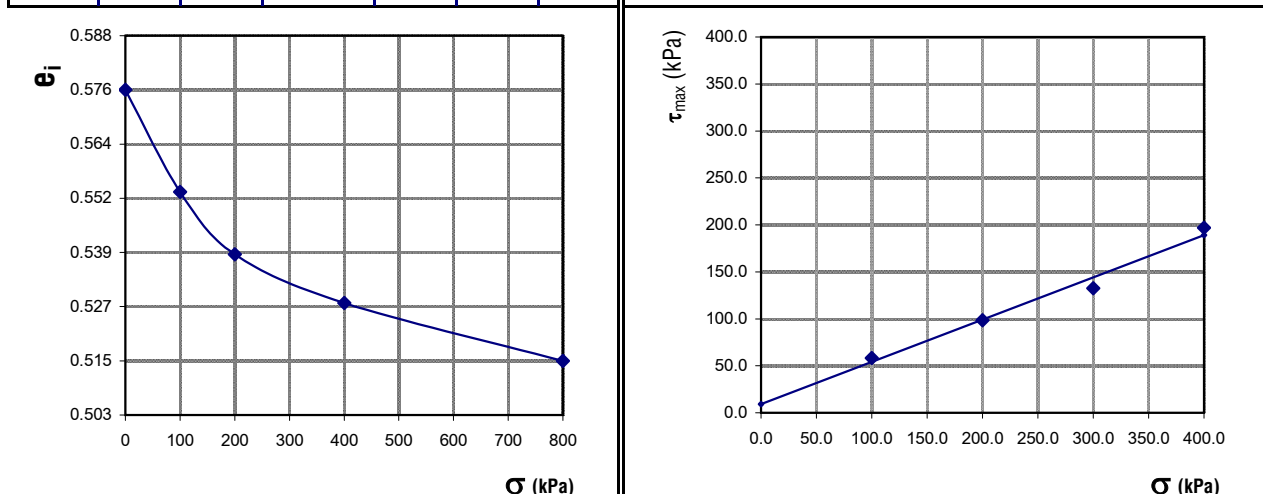


Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 4.00$		Hộp nén số/Test box No.: 5		$e_0 = 0.576$			PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.74$		Số đọc sau 24h/Reading after 24h: 92.3		$h_p = 20\text{mm}$			Hệ số vòng lực/Proving ring calibration factor: Cr			

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.576			
100	35.0	7.4	0.553	0.023	6852.2	20282.4
200	56.0	10.5	0.539	0.014	11092.9	32834.9
400	72.0	12.6	0.528	0.006	25650.0	75924.0
800	90.0	15.8	0.515	0.003	50933.3	150762.7

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.6	1.686	58.3
200	58.7	1.678	98.5
300	76.3	1.736	132.5
400	113.3	1.739	197.0

$\tan \varphi = 0.4501$        $\varphi = 24^\circ 14'$       C      9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK5

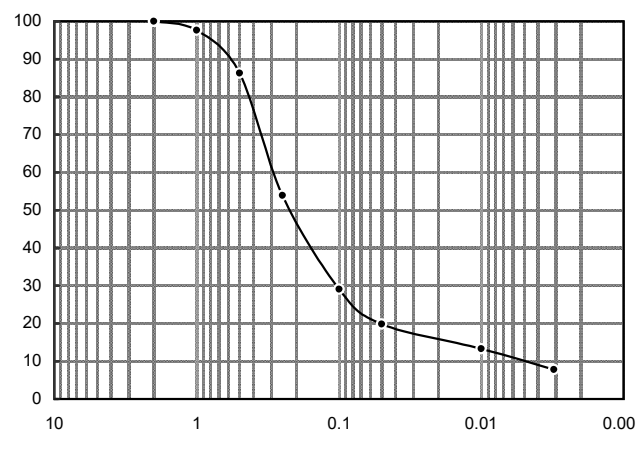
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

nguyên dạng/Undis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_p$	$I_p$	$I_L$
	21.65	19.8	16.3	90.6	39.0	0.638	26.7	24.50	18.78	5.72	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	101.93g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.297	0.105	0.006	6.2	49.5

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{11-12}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	2.4	100.0
10.0			1-0.5	11.3	97.6
5.0			0.5-0.25	32.4	86.3
2.0			0.25-0.1	24.8	53.9
1.0	2.40		0.1-0.05	9.3	29.1
0.5	11.53	Bụi/Silt	0.05-0.01	6.5	19.8
0.25	33.07		0.01-0.005	3.7	13.3
0.1	25.30	Sét/Clay	<0.005	9.6	9.6



D (mm)	Percentage Passing (%)
10	100
5	100
2.5	100
1.5	97.6
1.0	86.3
0.75	53.9
0.5	29.1
0.25	13.3
0.1	6.5
0.075	3.7
0.06	1.3

D (mm)

## Thí nghiệm nén lún/Compression test

$m_k = 3.78$

Hộp nén số/Test box No.: 6

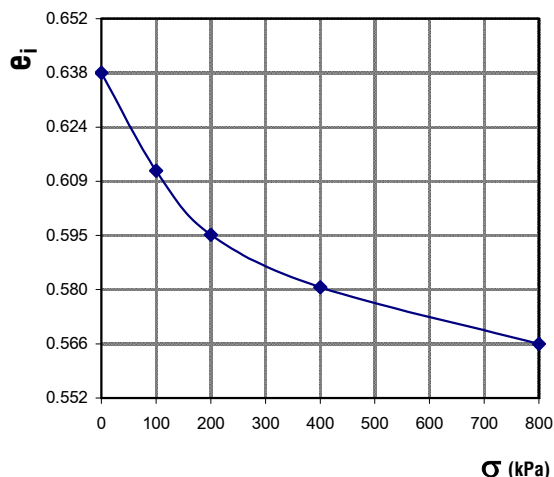
$e_0 = 0.638$

$\beta = 0.74$

Số đọc sau 24h/Reading after 24h: 107.6

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.638			
100	41.0	10.2	0.612	0.026	6300.0	17599.1
200	65.0	14.0	0.595	0.017	9482.4	26489.0
400	84.0	16.1	0.581	0.007	22785.7	63651.9
800	105.0	20.0	0.566	0.004	39525.0	110413.1



## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

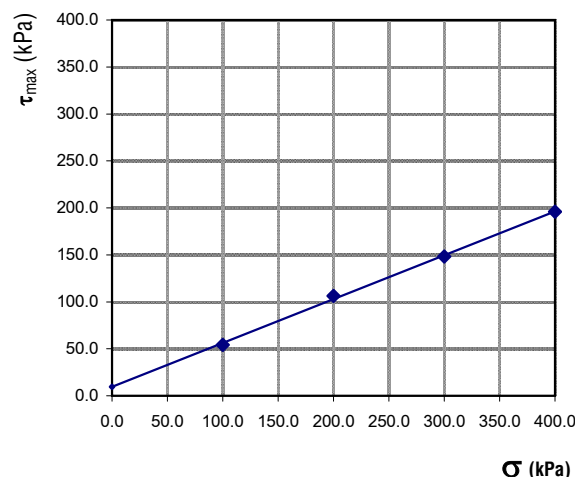
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.2	1.686	54.3
200	63.3	1.678	106.2
300	85.3	1.736	148.1
400	112.7	1.739	196.0

$\tan \varphi = 0.4670$

$\varphi = 25^\circ 02'$

C

9.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK5

Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.42	19.5	16.1	86.3	39.9	0.665	26.8	25.12	18.93	6.19	0.40

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	92.49g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.238	0.112	0.007	7.5	34.0

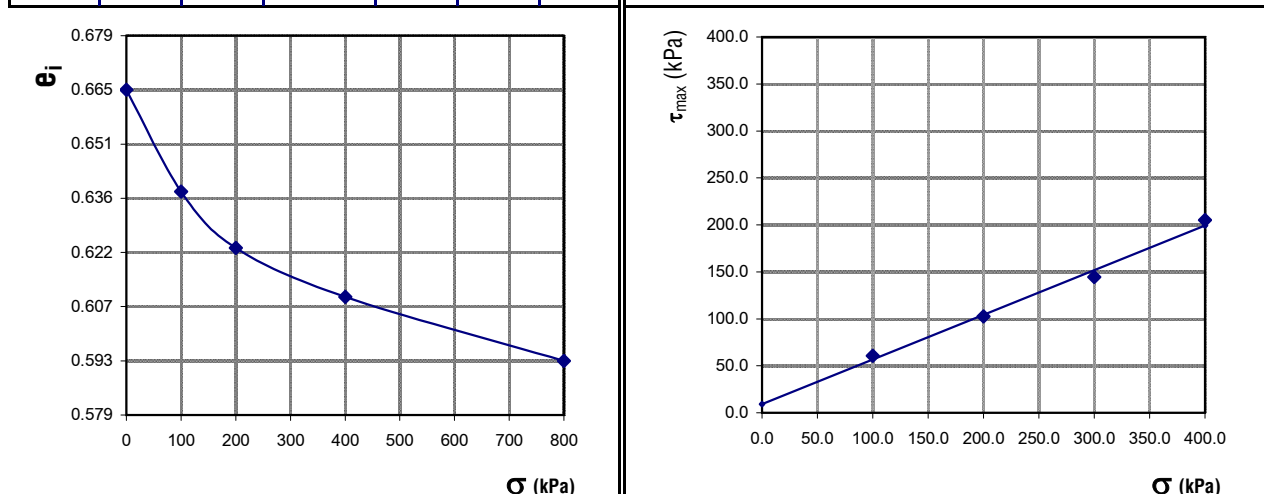
Khối lượng đất/Mass of soil		Cấp hạt/Grain grade	$D_{10-20}(mm)$	$P_i$	P
>0.1mm				%	%
D (mm)	$m_i$ (g)	Silt/sand/Gravel			
20.0		Cát/Sand	2-1	4.3	100.0
10.0			1-0.5	7.7	95.7
5.0			0.5-0.25	25.2	88.0
2.0			0.25-0.1	35.7	62.8
1.0	4.00		0.1-0.05	9.3	27.1
0.5	7.14	Bụi/Silt	0.05-0.01	6.2	17.8
0.25	23.30		0.01-0.005	2.7	11.6
0.1	33.00	Sét/Clay	<0.005	8.9	8.9

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 3.64$		Hộp nén số/Test box No.: 7		$e_0 = 0.665$			PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.74$		Số đọc sau 24h/Reading after 24h: 103.5		$h_p = 20mm$			Hệ số vòng lực/Proving ring calibration factor: Cr			

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$	$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa	kPa	Vạch/Div.	kPa/0.01mm	kPa
0			0.665				100	35.9	1.686	60.5
100	40.0	8.4	0.638	0.027	6166.7	16587.7	200	61.1	1.678	102.5
200	61.0	11.9	0.623	0.015	10920.0	29373.7	300	83.2	1.736	144.4
400	78.0	14.0	0.610	0.007	23185.7	62367.3	400	117.9	1.739	205.0
800	101.0	17.2	0.593	0.004	40250.0	108268.5	tan $\phi = 0.4754$ $\phi = 25^\circ 26'$ C    9.3 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK5

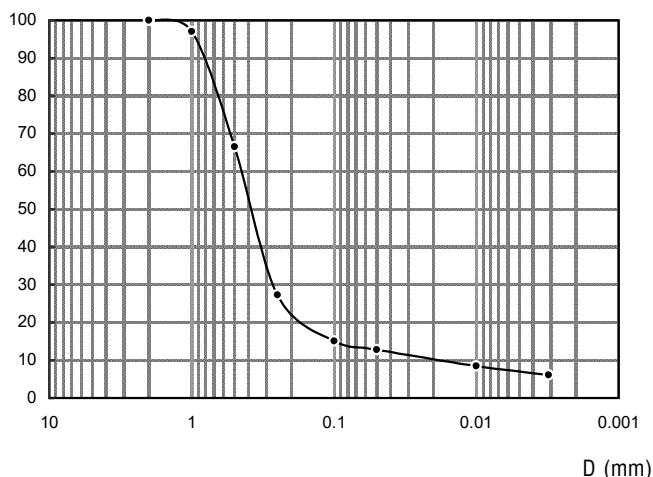
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ, trạng thái dẻo / Plasticity, reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.71	20.1	16.8	89.9	36.8	0.583	26.6	22.57	16.92	5.65	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	117.27g					
Nhiệt độ TN/Temp.	30.0°C	0.459	0.267	0.024	6.5	19.1

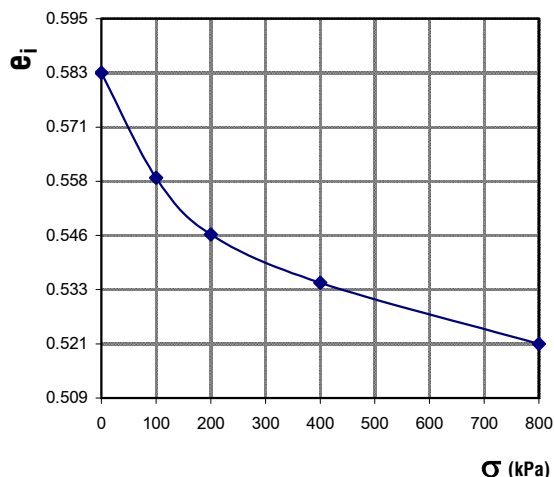
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Sieve size			
20.0		>10			100.0
10.0		10-5			100.0
5.0		5-2			100.0
2.0		2-1		3.0	100.0
1.0	3.56	1-0.5		30.5	97.0
0.5	35.80	0.5-0.25		39.2	66.5
0.25	46.00	0.25-0.1		12.2	27.3
0.1	14.33	0.1-0.05		2.3	15.1
		0.05-0.01		4.3	12.8
		0.01-0.005		1.4	8.5
		Sét/Clay	<0.005	7.1	7.1



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 8  $e_0 = 0.583$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.583			
100	38.0	8.8	0.559	0.024	6595.8	19523.7
200	58.0	12.6	0.546	0.013	11992.3	35497.2
400	74.0	15.1	0.535	0.006	25766.7	76269.3
800	94.0	18.5	0.521	0.004	38375.0	113590.0

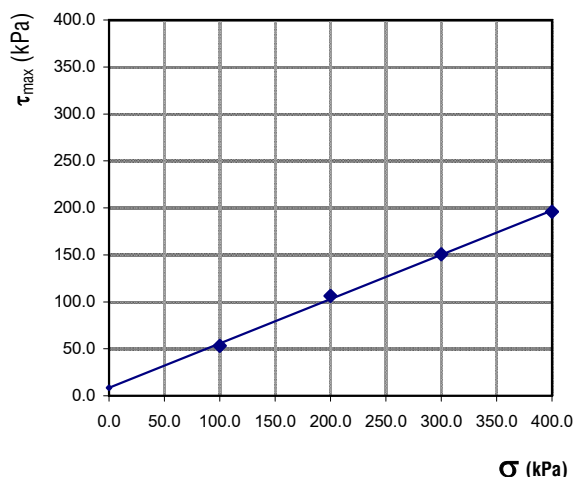


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.6	1.686	53.3
200	63.4	1.678	106.4
300	86.7	1.736	150.5
400	112.7	1.739	196.0

$\tan \varphi = 0.4722$   $\varphi = 25^\circ 17'$  C 8.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK5

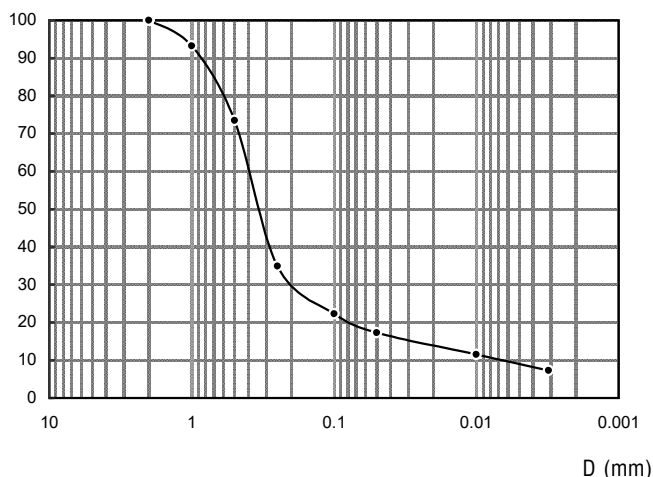
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	18.76	20.5	17.3	92.8	35.0	0.538	26.6	21.47	15.85	5.62	0.52

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	103.57g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.413	0.192	0.007	12.8	59.0

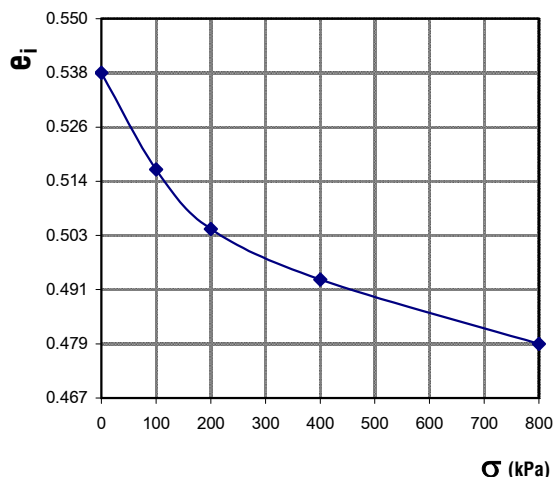
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)				
20.0		Silt/sand / Gravel	>10		100.0
10.0			10-5		100.0
5.0			5-2		100.0
2.0		Cát/Sand	2-1	6.8	100.0
1.0	7.00		1-0.5	19.7	93.2
0.5	20.36		0.5-0.25	38.6	73.5
0.25	40.00		0.25-0.1	12.6	34.9
0.1	13.00		0.1-0.05	5.0	22.3
		Bụi/Silt	0.05-0.01	5.8	17.3
			0.01-0.005	2.8	11.5
		Sét/Clay	<0.005	8.7	8.7



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 9  $e_0 = 0.538$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 92.3  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.538			
100	34.0	7.7	0.517	0.021	7323.8	21678.5
200	54.0	10.9	0.504	0.013	11669.2	34540.9
400	70.0	12.6	0.493	0.006	25066.7	74197.3
800	90.0	15.5	0.479	0.004	37325.0	110482.0

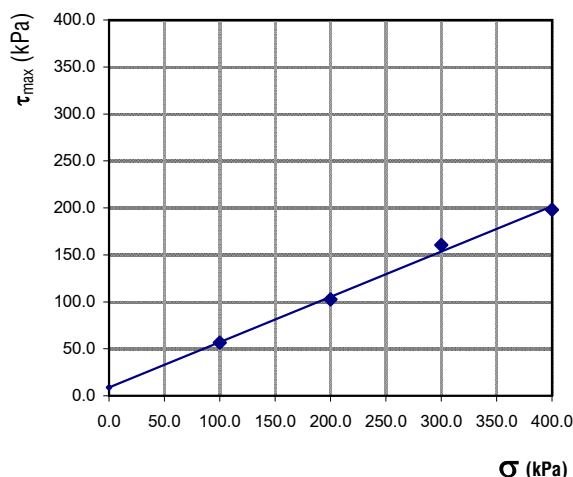


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.6	1.686	56.6
200	61.1	1.678	102.5
300	92.4	1.736	160.4
400	113.9	1.739	198.1

$\tan \phi = 0.4824$   $\phi = 25^\circ 45'$  C 8.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK5

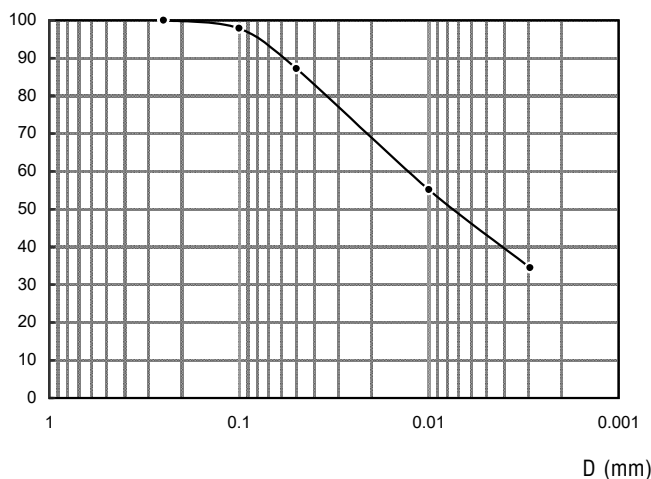
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám vàng, trạng thái dẻo cứng / Stiff, yellowish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.49	19.0	15.0	88.2	45.1	0.820	27.3	40.71	20.24	20.47	0.31

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					40.98g	0.013	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

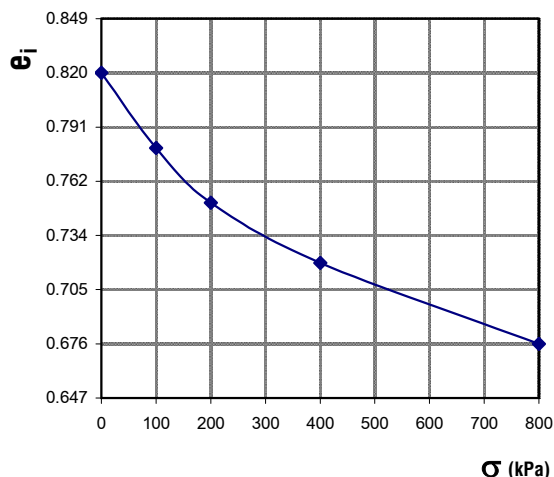
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	2.1	100.0
0.25		Bụi/Silt	0.1-0.05	10.7	97.9
0.1	0.87		0.05-0.01	32.0	87.2
		Sét/Clay	0.01-0.005	14.6	55.2
			<0.005	40.6	40.6



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 10  $e_0 = 0.820$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 173.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.820			
100	50.0	7.7	0.780	0.040	4550.0	10910.9
200	84.0	10.5	0.751	0.029	6137.9	14718.8
400	120.0	12.3	0.719	0.016	10943.8	26243.1
800	169.4	15.5	0.676	0.011	15627.3	37474.2

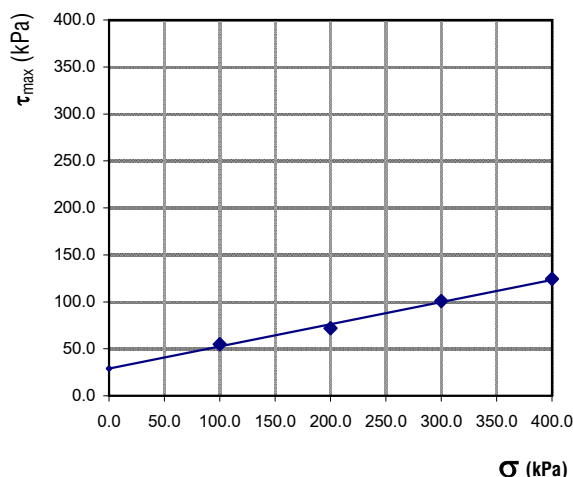


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.6	1.686	55.0
200	42.8	1.678	71.8
300	58.1	1.736	100.9
400	71.4	1.739	124.2

$\tan \varphi = 0.2367$   $\varphi = 13^\circ 19'$  C 28.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK5

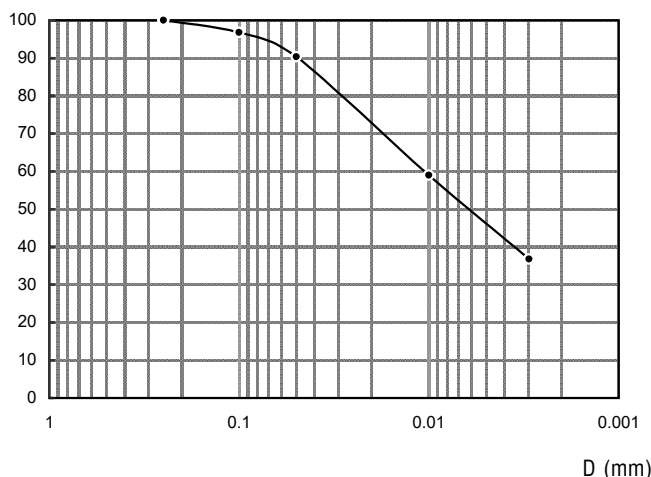
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	31.49	18.7	14.2	93.6	47.8	0.915	27.2	42.36	22.49	19.87	0.45

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					34.22g	0.010	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	3.2	100.0
0.25		Bụi/Silt	0.1-0.05	6.5	96.8
0.1	1.10		0.05-0.01	31.3	90.3
			0.01-0.005	15.1	59.0
		Sét/Clay	<0.005	43.9	43.9



## Thí nghiệm nén lún/Compression test

$m_k = 5.55$  Hộp nén số/Test box No.: 11  $e_0 = 0.915$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 207.1  $h_p = 20\text{mm}$

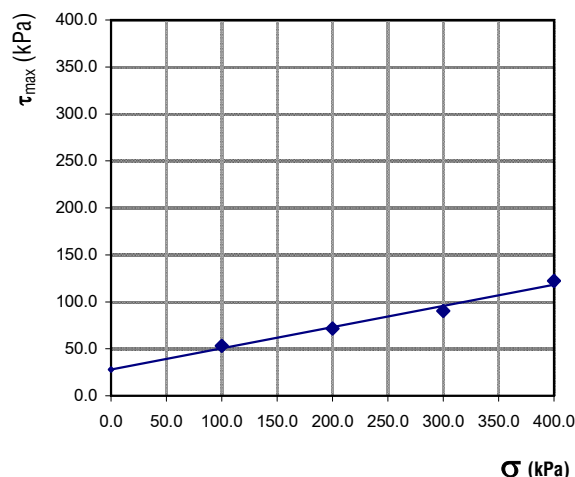
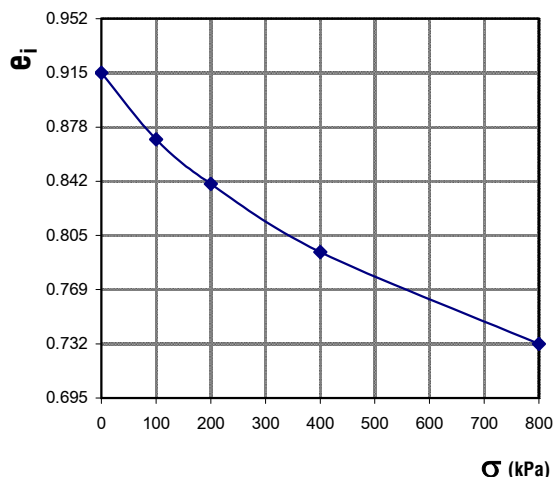
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.915			
100	54.0	8.4	0.870	0.045	4255.6	9447.3
200	87.0	11.2	0.840	0.030	6233.3	13838.0
400	136.0	13.3	0.794	0.023	8000.0	17760.0
800	202.0	16.3	0.732	0.016	11212.5	24891.8

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.6	1.686	53.3
200	42.7	1.678	71.7
300	52.0	1.736	90.3
400	70.4	1.739	122.4

$\tan \phi = 0.2259$   $\phi = 12^\circ 44'$  C 28.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK5

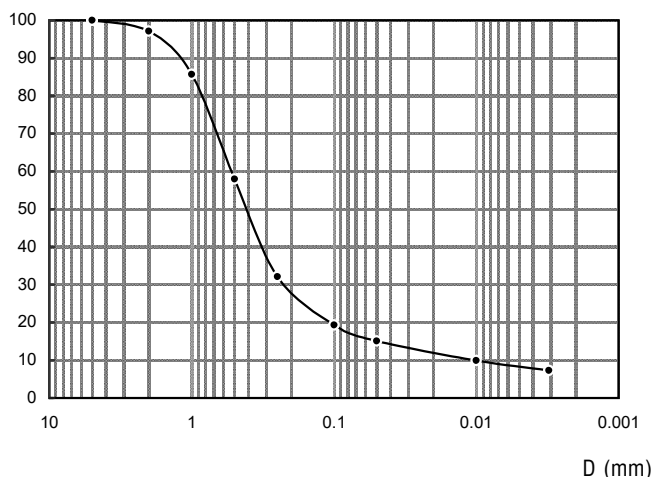
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ, trạng thái dẻo / Plasticity, reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.53	20.5	17.2	95.0	35.3	0.547	26.6	22.30	16.65	5.65	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	109.01g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.536	0.225	0.010	9.4	53.6

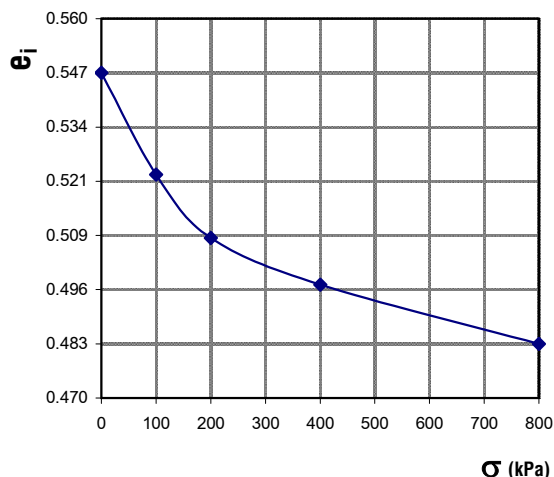
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	2.9	100.0
20.0		Cát/Sand	2-1	11.4	97.1
10.0			1-0.5	27.7	85.7
5.0			0.5-0.25	25.9	58.0
2.0	3.20		0.25-0.1	12.8	32.1
1.0	12.40		0.1-0.05	4.2	19.3
0.5	30.20	Bụi/Silt	0.05-0.01	5.2	15.1
0.25	28.20		0.01-0.005	1.6	9.9
0.1	14.00	Sét/Clay	<0.005	8.3	8.3



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 12  $e_0 = 0.547$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.547			
100	36.0	6.3	0.523	0.024	6445.8	19079.7
200	58.0	9.5	0.508	0.015	10153.3	30053.9
400	75.0	11.6	0.497	0.006	25133.3	74394.7
800	94.0	13.7	0.483	0.004	37425.0	110778.0

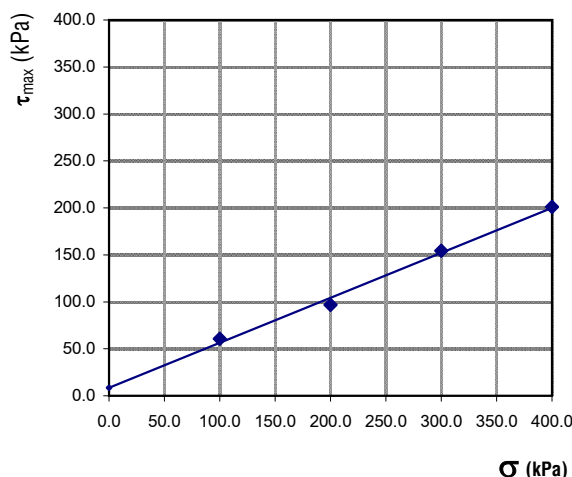


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.0	1.686	60.7
200	57.7	1.678	96.8
300	89.0	1.736	154.5
400	115.5	1.739	200.9

$\tan \phi = 0.4783$   $\phi = 25^\circ 34'$  C 8.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK5

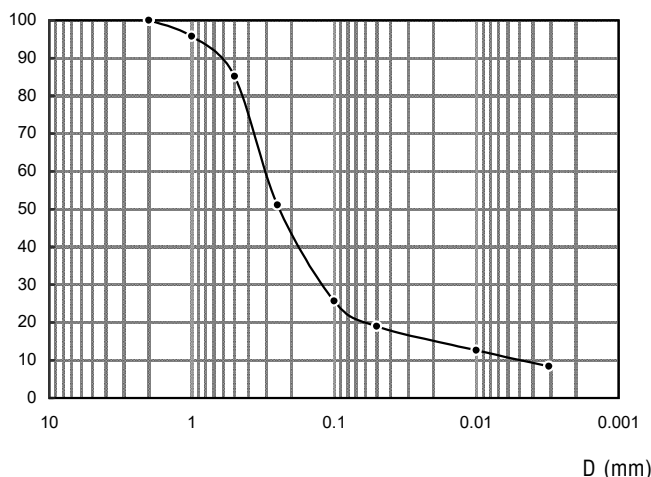
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ, trạng thái dẻo / Plasticity, reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.65	20.2	16.7	92.0	37.5	0.599	26.7	23.50	17.42	6.08	0.53

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	94.49g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.315	0.125	0.006	8.3	52.5

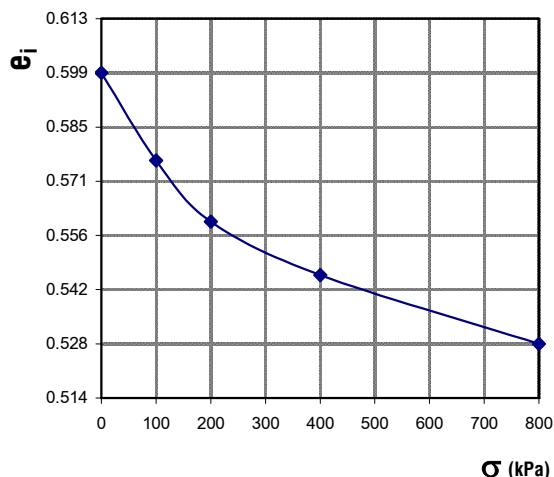
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.2	100.0
10.0			1-0.5	10.6	95.8
5.0			0.5-0.25	34.1	85.2
2.0			0.25-0.1	25.4	51.1
1.0	4.00		0.1-0.05	6.7	25.7
0.5	10.00	Bụi/Silt	0.05-0.01	6.4	19.0
0.25	32.20		0.01-0.005	3.0	12.6
0.1	24.00	Sét/Clay	<0.005	9.6	9.6



## Thí nghiệm nén lún/Compression test

$m_k = 3.95$  Hộp nén số/Test box No.: 13  $e_0 = 0.599$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 102.5  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.599			
100	36.0	7.4	0.576	0.023	6952.2	20321.2
200	58.0	10.2	0.560	0.016	9850.0	28791.6
400	75.0	10.9	0.546	0.007	22285.7	65141.1
800	100.0	13.7	0.528	0.005	30920.0	90379.2

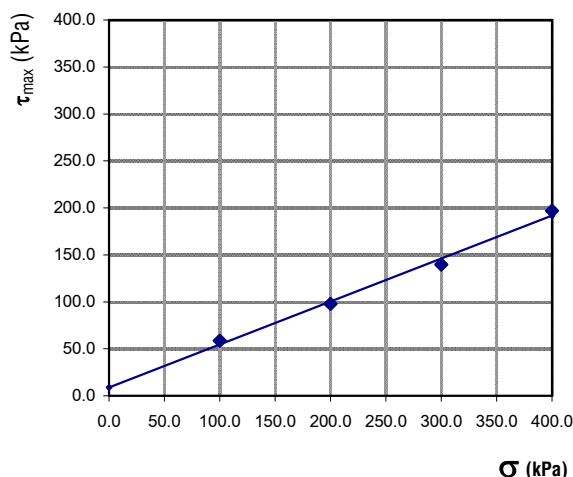


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.7	1.686	58.5
200	58.2	1.678	97.7
300	80.5	1.736	139.7
400	113.3	1.739	197.0

$\tan \phi = 0.4575$   $\phi = 24^\circ 35'$  C 8.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK5

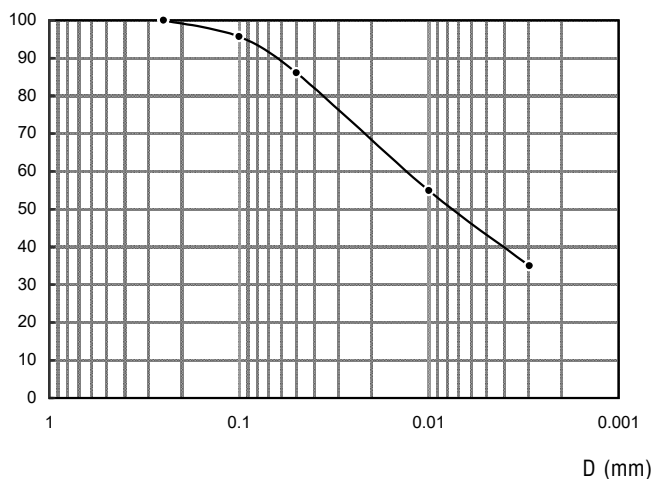
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	32.34	18.6	14.1	94.3	48.4	0.936	27.3	44.43	21.90	22.53	0.46

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	35.85g	0.013	*	*	*
						30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	4.3	100.0
0.25			0.1-0.05	9.6	95.7
0.1	1.55	Bụi/Silt	0.05-0.01	31.2	86.1
			0.01-0.005	13.0	54.9
		Sét/Clay	<0.005	41.9	41.9





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK5-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK5

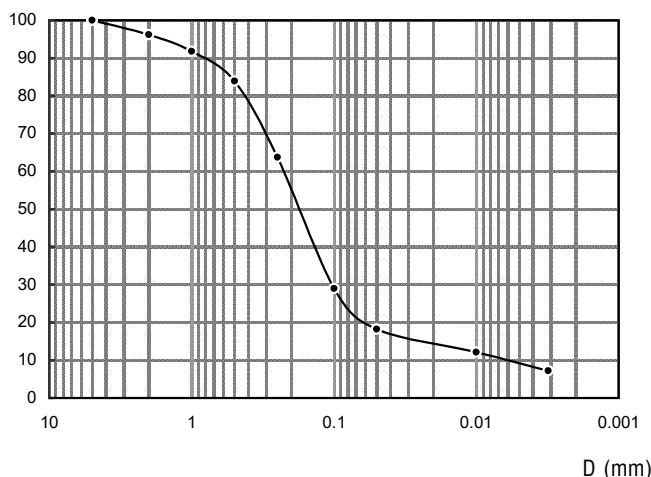
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ, trạng thái dẻo / Plasticity, reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	24.78	19.3	15.5	92.1	41.7	0.716	26.6	27.74	21.82	5.92	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	88.72g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.234	0.104	0.005	9.2	46.8

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2	3.8	100.0
		Cát/Sand	2-1	4.4	96.2
			1-0.5	7.9	91.8
			0.5-0.25	20.2	83.9
			0.25-0.1	34.7	63.7
			0.1-0.05	10.8	29.0
		Bụi/Silt	0.05-0.01	6.1	18.2
			0.01-0.005	2.4	12.1
		Sét/Clay	<0.005	9.7	9.7



## Thí nghiệm nén lún/Compression test

$m_k = 3.16$

Hộp nén số/Test box No.: 15

$e_0 = 0.716$

$\beta = 0.74$

Số đọc sau 24h/Reading after 24h: 96.4

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.716			
100	36.0	6.3	0.689	0.027	6355.6	14838.3
200	58.0	9.1	0.673	0.016	10556.3	24645.7
400	74.0	10.9	0.660	0.007	23900.0	55799.3
800	94.0	13.7	0.645	0.004	41500.0	96890.1

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

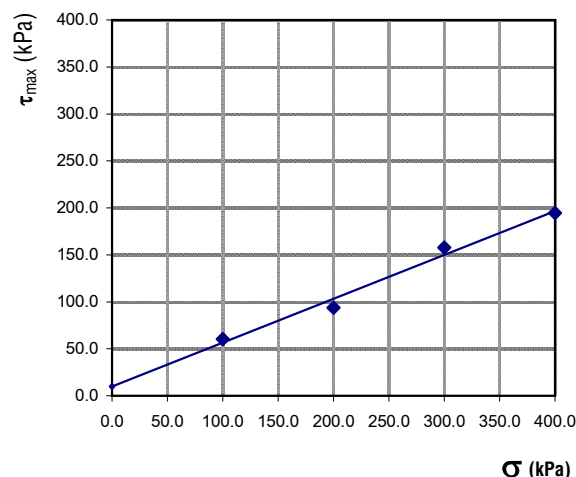
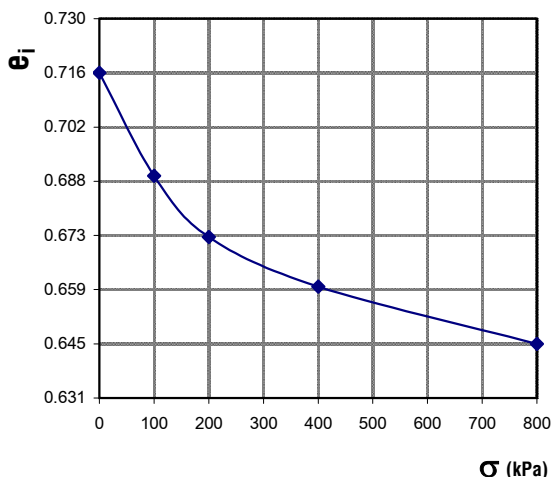
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	35.8	1.686	60.4
200	55.9	1.678	93.8
300	90.9	1.736	157.8
400	111.9	1.739	194.6

$\tan \varphi = 0.4666$

$\varphi = 25^\circ 01'$

C 10.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK6

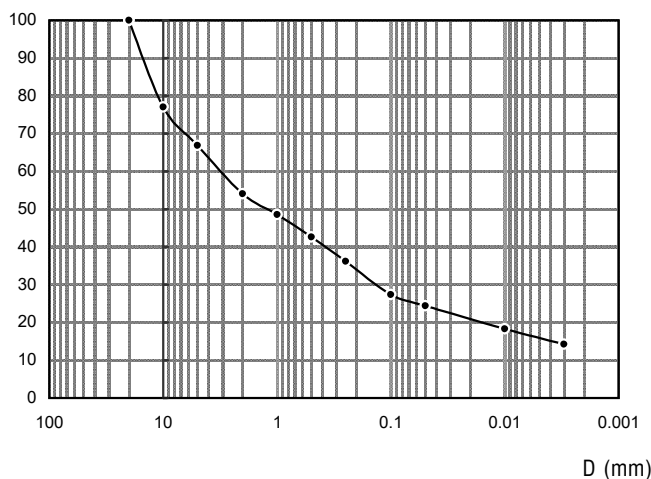
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn dăm sạn laterit, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay with laterite gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.97	19.8	16.2	88.5	40.2	0.673	27.1	30.01	15.23	14.78	0.46

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					66.78g					
					Nhiệt độ TN/Temp.	30.0°C	3.383	0.144	*	*

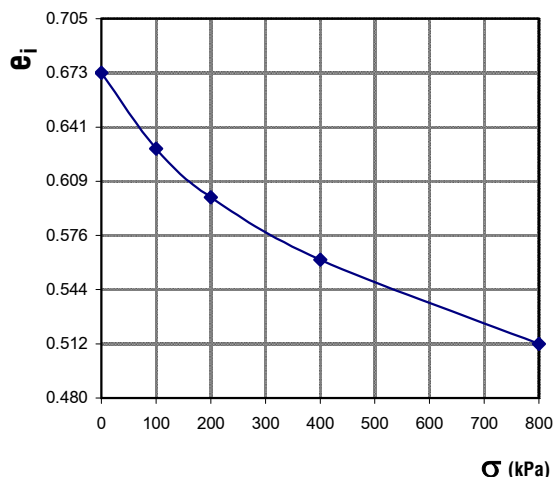
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10	23.0	100.0
			10-5	10.1	77.0
			5-2	12.8	66.9
20.0		Cát/Sand	2-1	5.5	54.1
10.0	15.39		1-0.5	6.0	48.6
5.0	6.72		0.5-0.25	6.4	42.6
2.0	8.58		0.25-0.1	8.8	36.2
1.0	3.67		0.1-0.05	3.0	27.4
0.5	4.01	Bụi/Silt	0.05-0.01	6.1	24.4
0.25	4.30		0.01-0.005	2.3	18.3
0.1	5.85	Sét/Clay	<0.005	16.0	16.0



## Thí nghiệm nén lún/Compression test

$m_k = 4.76$  Hộp nén số/Test box No.: 16  $e_0 = 0.673$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 209.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.673			
100	61.0	8.1	0.628	0.045	3717.8	10960.4
200	97.7	11.2	0.599	0.029	5613.8	16550.0
400	142.0	12.6	0.562	0.019	8415.8	24810.6
800	204.0	16.5	0.512	0.013	12015.4	35422.6

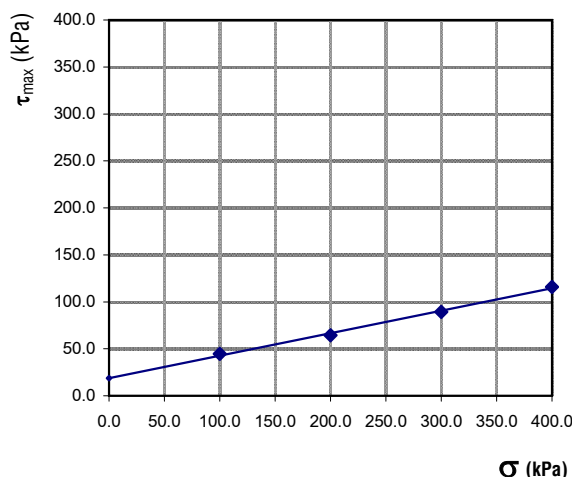


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.5	1.686	44.7
200	38.4	1.678	64.4
300	51.3	1.736	89.1
400	66.7	1.739	116.0

$\tan \phi = 0.2386$   $\phi = 13^\circ 25'$  C 18.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK6

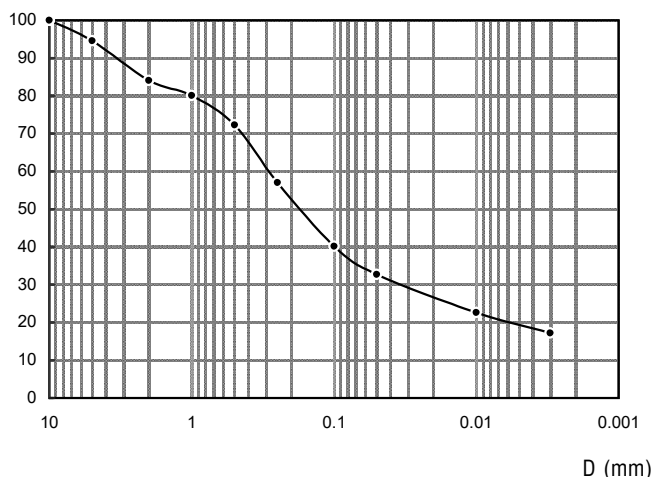
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn sỏi sạn thạch anh, nâu đỏ - vàng nâu, trạng thái dẻo cứng / Stiff, reddish brown - brownish yellow, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.89	20.0	16.5	88.7	38.9	0.636	27.0	31.29	17.32	13.97	0.26

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	59.56g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.299	0.036	*	*	*

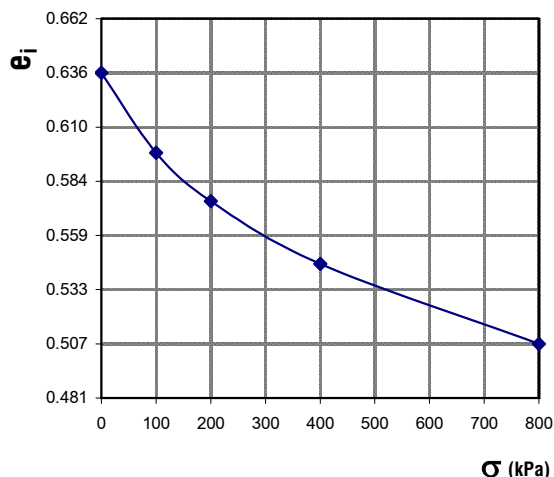
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5	5.4	100.0
			5-2	10.5	94.6
20.0		Cát/Sand	2-1	4.0	84.1
10.0			1-0.5	7.8	80.1
5.0	3.20		0.5-0.25	15.3	72.3
2.0	6.24		0.25-0.1	16.8	57.0
1.0	2.40		0.1-0.05	7.5	40.2
0.5	4.63	Bụi/Silt	0.05-0.01	10.1	32.7
0.25	9.10		0.01-0.005	3.4	22.6
0.1	10.00	Sét/Clay	<0.005	19.2	19.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.88$  Hộp nén số/Test box No.: 17  $e_0 = 0.636$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 174.3  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.636			
100	53.0	8.4	0.598	0.038	4305.3	13012.7
200	84.0	11.6	0.575	0.023	6947.8	20999.8
400	121.0	13.0	0.545	0.015	10500.0	31736.3
800	170.0	16.5	0.507	0.010	15450.0	46697.6

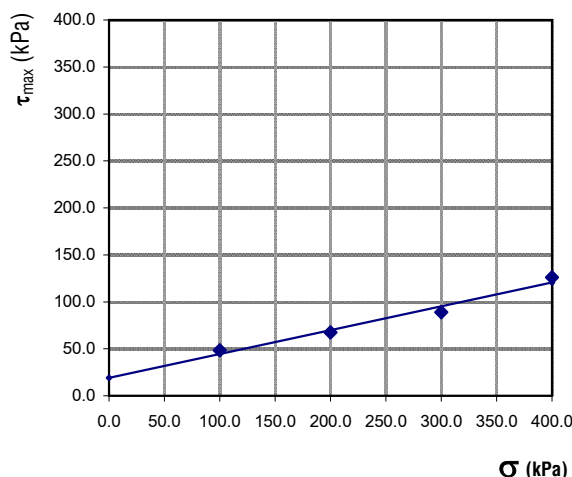


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.7	1.686	48.4
200	40.2	1.678	67.5
300	51.2	1.736	88.9
400	72.4	1.739	125.9

$\tan \phi = 0.2539$   $\phi = 14^\circ 15'$  C 19.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK6

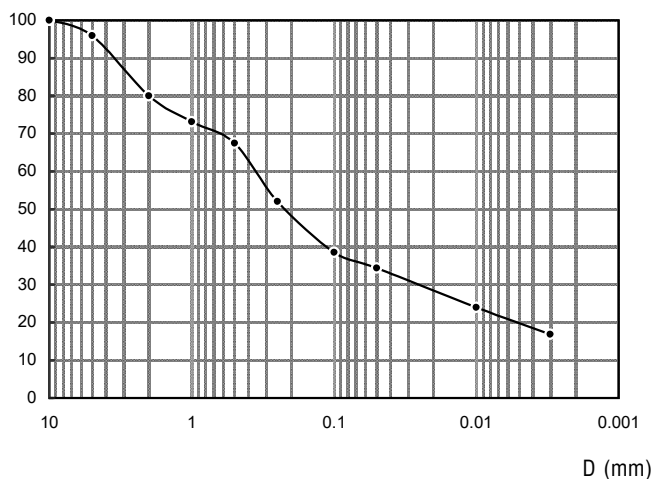
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn sỏi sạn thạch anh, nâu đỏ - vàng nâu, trạng thái dẻo cứng / Stiff, reddish brown - brownish yellow, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.87	19.6	16.0	89.3	41.0	0.694	27.1	28.86	18.27	10.59	0.43

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	55.93g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.379	0.027	*	*	*

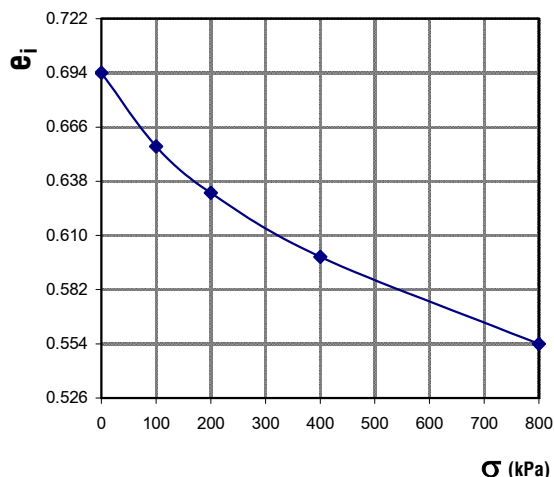
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5	4.1	100.0
			5-2	15.9	95.9
20.0		Cát/Sand	2-1	6.9	80.0
10.0			1-0.5	5.6	73.1
5.0	2.30		0.5-0.25	15.5	67.5
2.0	8.90		0.25-0.1	13.4	52.0
1.0	3.85		0.1-0.05	4.2	38.6
0.5	3.12	Bụi/Silt	0.05-0.01	10.4	34.4
0.25	8.66		0.01-0.005	3.6	24.0
0.1	7.51	Sét/Clay	<0.005	20.4	20.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.59$  Hộp nén số/Test box No.: 18  $e_0 = 0.694$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 179.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.694			
100	51.0	7.7	0.656	0.038	4457.9	12686.3
200	81.0	10.2	0.632	0.024	6900.0	19636.0
400	121.0	11.6	0.599	0.017	9600.0	27319.7
800	175.0	14.8	0.554	0.011	14536.4	41367.6

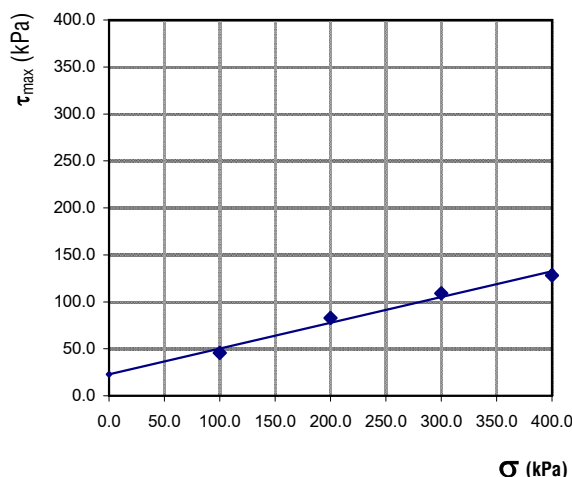


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	27.0	1.686	45.5
200	49.4	1.678	82.9
300	62.8	1.736	109.0
400	73.7	1.739	128.2

$\tan \phi = 0.2742$   $\phi = 15^\circ 20'$  C 22.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK6

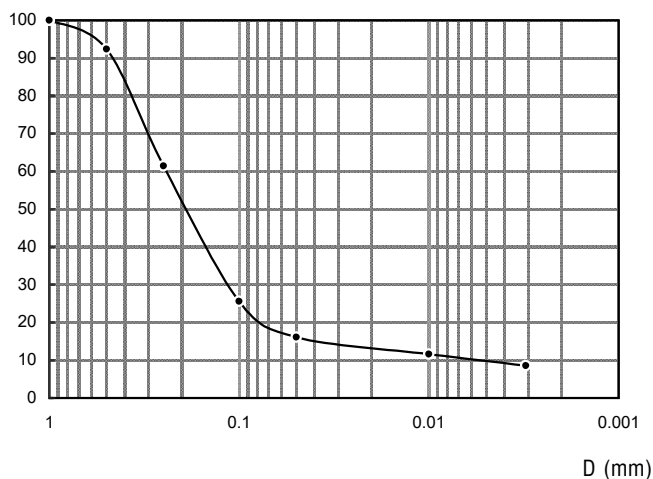
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.53	20.0	16.5	93.0	38.2	0.618	26.7	24.45	18.61	5.84	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	92.16g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.244	0.118	0.005	11.4	48.8

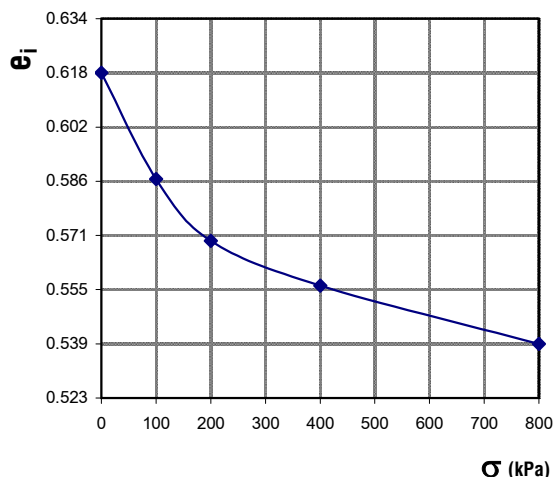
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	7.6	100.0
1.0			0.5-0.25	31.0	92.4
0.5	7.00	Bụi/Silt	0.25-0.1	35.8	61.4
0.25	28.60		0.1-0.05	9.5	25.6
0.1	33.00		0.05-0.01	4.5	16.1
		Sét/Clay	0.01-0.005	1.7	11.6
			<0.005	9.9	9.9



## Thí nghiệm nén lún/Compression test

$m_k = 3.91$  Hộp nén số/Test box No.: 19  $e_0 = 0.618$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 114.8  $h_p = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.618			
100	45.0	8.4	0.587	0.031	5219.4	15082.4
200	70.0	11.2	0.569	0.018	8816.7	25477.5
400	88.0	13.3	0.556	0.006	26150.0	75565.7
800	112.0	16.8	0.539	0.004	38900.0	112409.3

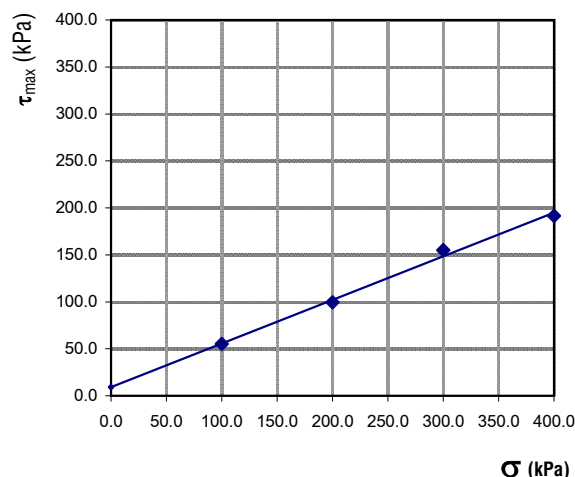


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.7	1.686	55.1
200	59.3	1.678	99.5
300	89.3	1.736	155.0
400	110.1	1.739	191.5

$\tan \phi = 0.4647$   $\phi = 24^\circ 55'$  C 9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK6

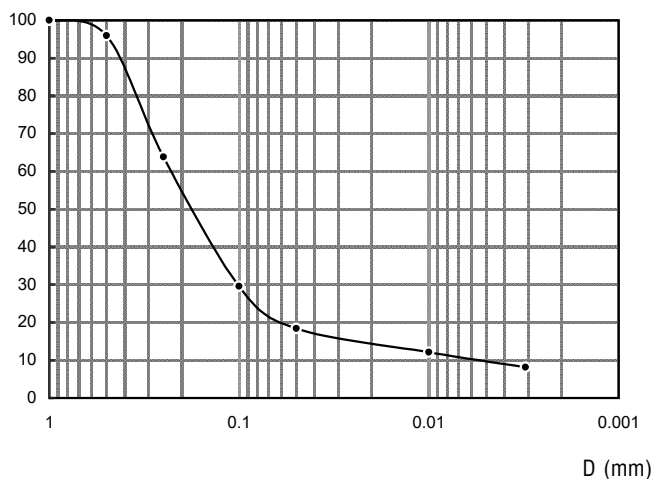
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.68	20.2	16.7	92.8	37.2	0.593	26.6	23.74	18.23	5.51	0.44

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	97.94g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.233	0.102	0.006	7.4	38.8

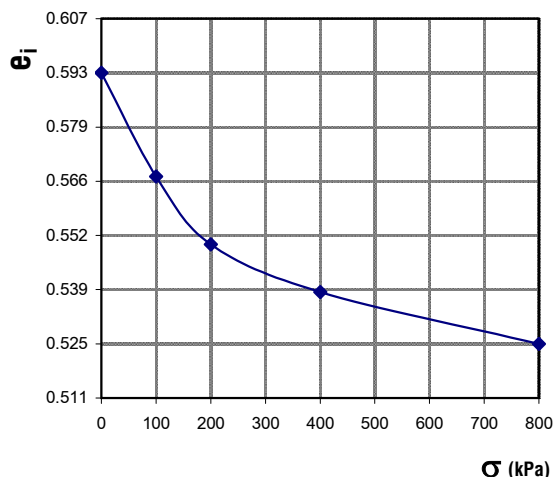
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	4.1	100.0
5.0			0.5-0.25	32.1	95.9
2.0			0.25-0.1	34.2	63.8
1.0			0.1-0.05	11.2	29.6
0.5	4.00	Bụi/Silt	0.05-0.01	6.3	18.4
0.25	31.48		0.01-0.005	2.7	12.1
0.1	33.50	Sét/Clay	<0.005	9.4	9.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 20  $e_0 = 0.593$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 102.5  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.593			
100	41.0	8.8	0.567	0.026	6126.9	18135.7
200	64.0	11.6	0.550	0.017	9217.6	27284.2
400	81.0	13.7	0.538	0.006	25833.3	76466.7
800	100.0	17.9	0.525	0.003	51266.7	151749.3

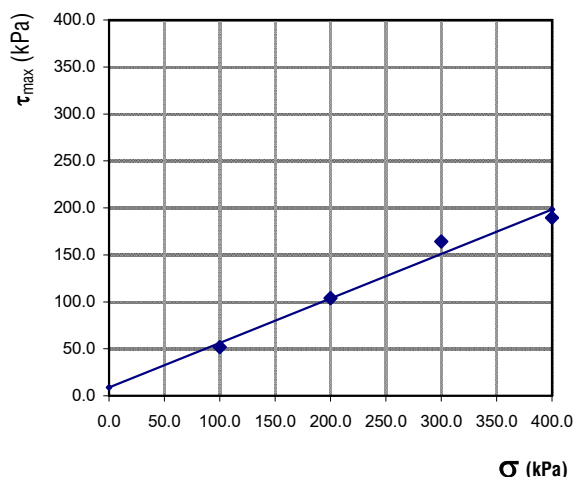


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.7	1.686	51.8
200	61.9	1.678	103.9
300	94.6	1.736	164.2
400	108.9	1.739	189.4

$\tan \phi = 0.4731$   $\phi = 25^\circ 19'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK6

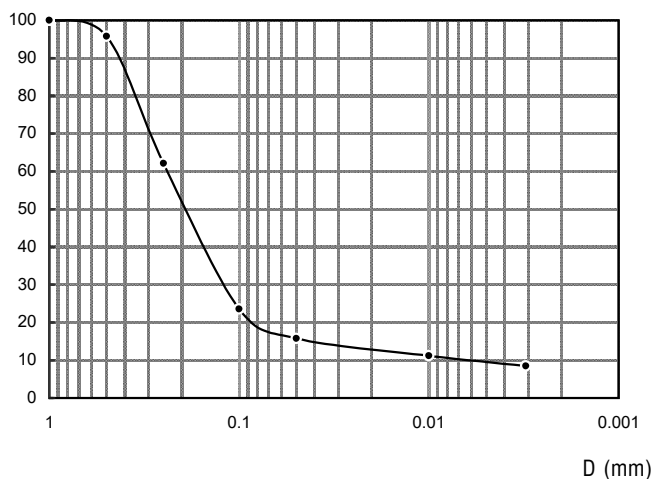
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	18.50	19.7	16.6	81.7	37.6	0.602	26.6	21.30	15.64	5.66	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	103.80g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.242	0.125	0.006	10.8	40.3

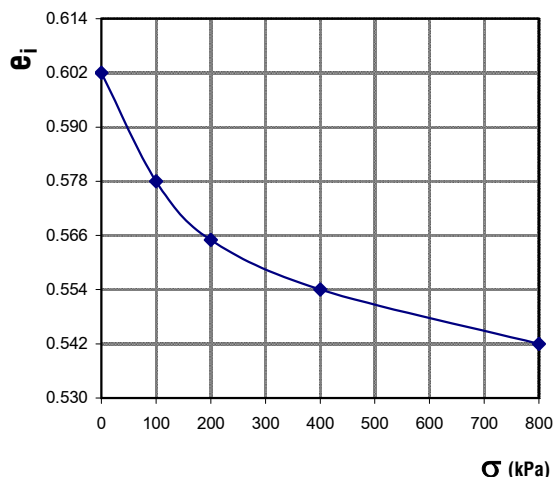
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	4.2	100.0
5.0			0.5-0.25	33.7	95.8
2.0			0.25-0.1	38.5	62.1
1.0			0.1-0.05	7.8	23.6
0.5	4.40	Bụi/Silt	0.05-0.01	4.6	15.8
0.25	35.00		0.01-0.005	1.7	11.2
0.1	40.00	Sét/Clay	<0.005	9.5	9.5



## Thí nghiệm nén lún/Compression test

$m_k = 3.93$  Hộp nén số/Test box No.: 21  $e_0 = 0.602$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 92.3  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.602			
100	38.0	9.1	0.578	0.024	6675.0	19387.5
200	56.0	11.9	0.565	0.013	12138.5	35256.2
400	72.0	14.0	0.554	0.005	31300.0	90910.9
800	90.0	17.5	0.542	0.003	51800.0	150453.1

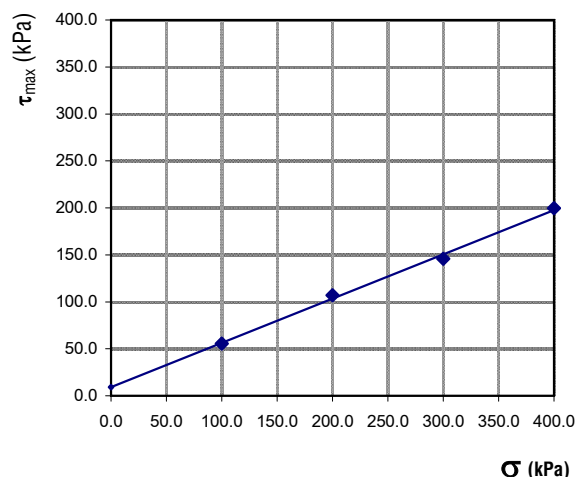


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.9	1.686	55.5
200	63.7	1.678	106.9
300	84.0	1.736	145.8
400	114.8	1.739	199.6

$\tan \phi = 0.4712$   $\phi = 25^\circ 14'$  C 9.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngò



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK6

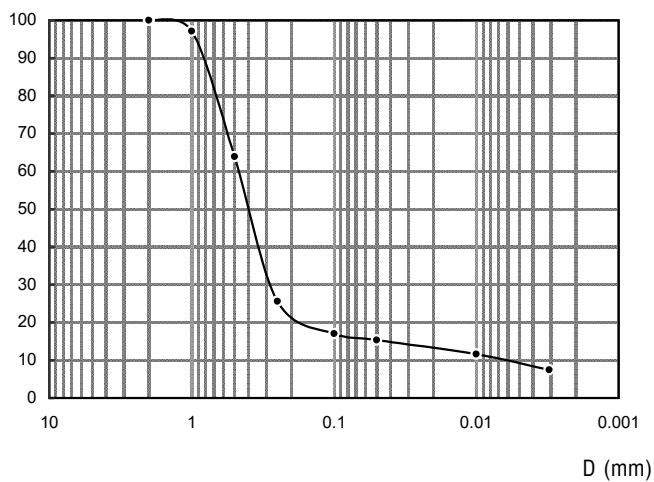
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.12	20.4	17.0	93.6	36.6	0.576	26.8	23.21	17.35	5.86	0.47

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	104.90g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.475	0.279	0.005	32.8	95.0

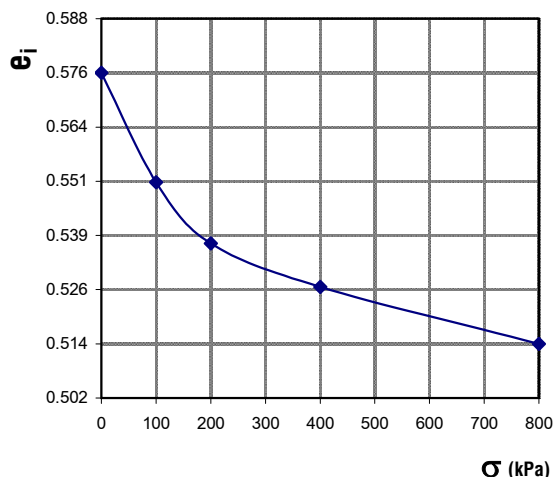
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
Cát/Sand			2-1	2.9	100.0
			1-0.5	33.2	97.1
			0.5-0.25	38.3	63.9
			0.25-0.1	8.6	25.6
			0.1-0.05	1.7	17.0
Bụi/Silt			0.05-0.01	3.7	15.3
			0.01-0.005	1.9	11.6
Sét/Clay			<0.005	9.7	9.7



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 22  $e_0 = 0.576$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.576			
100	41.0	9.8	0.551	0.025	6304.0	18659.8
200	60.0	11.6	0.537	0.014	11078.6	32792.6
400	73.0	13.3	0.527	0.005	30740.0	90990.4
800	94.0	17.2	0.514	0.003	50900.0	150664.0

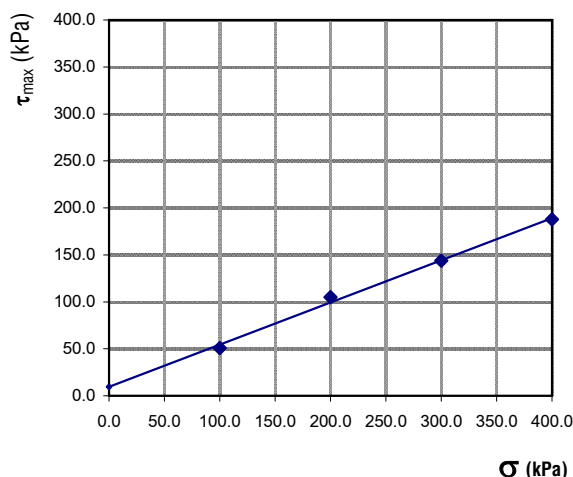


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.2	1.686	50.9
200	62.5	1.678	104.9
300	82.8	1.736	143.7
400	108.0	1.739	187.8

$\tan \phi = 0.4495$   $\phi = 24^\circ 12'$  C 9.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK6

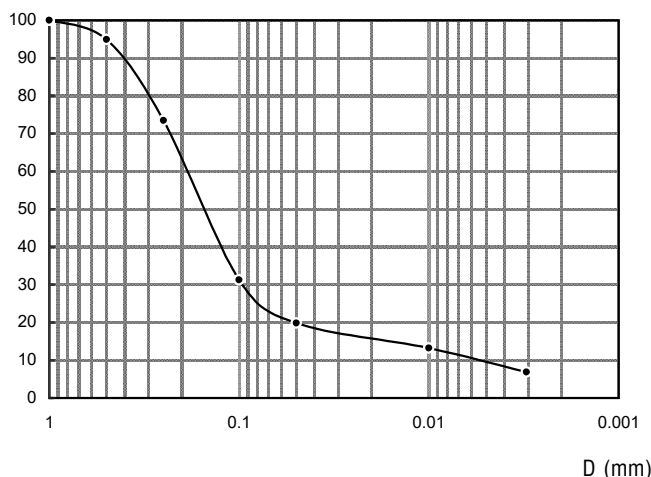
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ - vàng nâu, trạng thái dẻo / Plasticity, reddish brown - brownish yellow, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	24.38	19.2	15.4	86.1	43.6	0.773	27.3	27.38	21.29	6.09	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	90.05g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.202	0.095	0.005	8.9	40.4

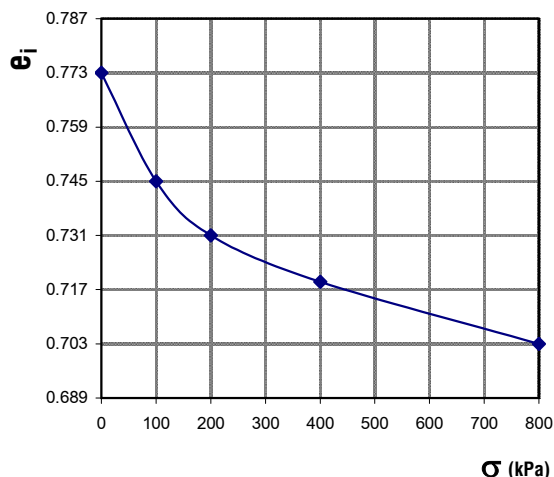
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1+2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	5.1	100.0
1.0			0.5-0.25	21.4	94.9
0.5	4.56		0.25-0.1	42.2	73.5
0.25	19.27		0.1-0.05	11.5	31.3
0.1	38.00	Bụi/Silt	0.05-0.01	6.6	19.8
			0.01-0.005	3.4	13.2
		Sét/Clay	<0.005	9.8	9.8



## Thí nghiệm nén lún/Compression test

$m_k = 2.29$  Hộp nén số/Test box No.: 23  $e_0 = 0.773$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.773			
100	39.0	8.1	0.745	0.028	6332.1	10707.0
200	57.0	11.2	0.731	0.014	12464.3	21075.9
400	72.0	13.0	0.719	0.006	28850.0	48782.5
800	94.0	17.2	0.703	0.004	42975.0	72666.4

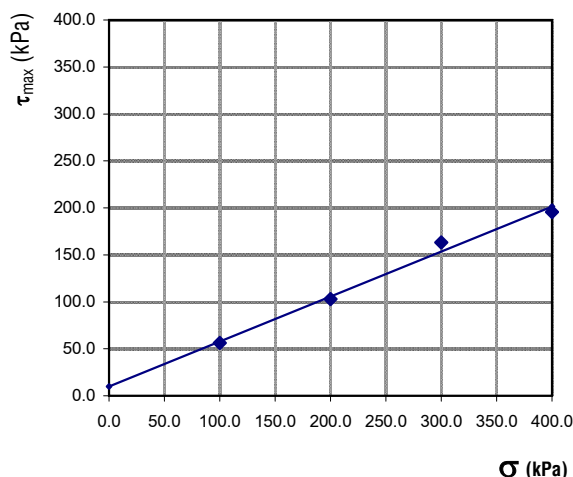


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.4	1.686	56.3
200	61.3	1.678	102.9
300	94.0	1.736	163.2
400	112.5	1.739	195.6

$\tan \phi = 0.4782$   $\phi = 25^\circ 33'$  C 10.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK6

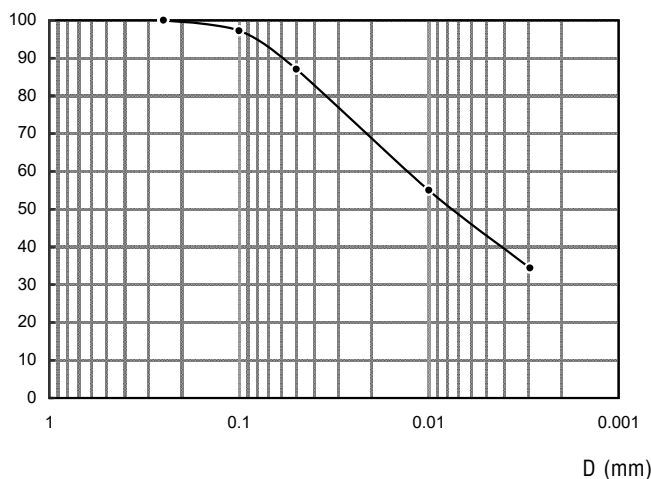
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	29.84	18.8	14.5	92.7	46.7	0.876	27.2	45.10	20.98	24.12	0.37

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	41.20g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.013	*	*	*	*

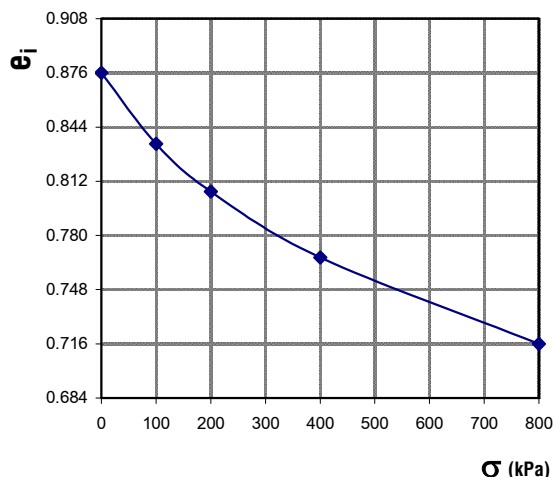
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5		Bụi/Silt	0.25-0.1	2.8	100.0
0.25			0.1-0.05	10.2	97.2
0.1	1.17	Sét/Clay	0.05-0.01	32.0	87.0
			0.01-0.005	14.5	55.0
			<0.005	40.5	40.5



## Thí nghiệm nén lún/Compression test

$m_k = 5.72$  Hộp nén số/Test box No.: 24  $e_0 = 0.876$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 186.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.876			
100	51.0	7.4	0.834	0.042	4466.7	10219.7
200	83.0	10.2	0.806	0.028	6550.0	14986.4
400	125.0	12.3	0.767	0.020	9030.0	20660.6
800	182.0	15.5	0.716	0.013	13592.3	31099.2

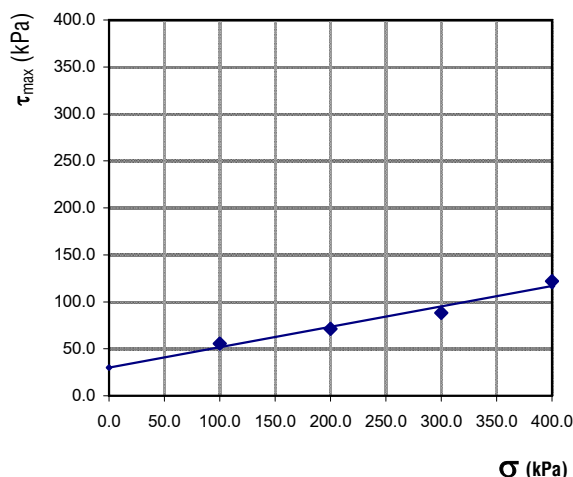


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.9	1.686	55.5
200	42.5	1.678	71.3
300	50.8	1.736	88.2
400	70.2	1.739	122.1

$\tan \phi = 0.2167$   $\phi = 12^\circ 14'$  C 30.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK6

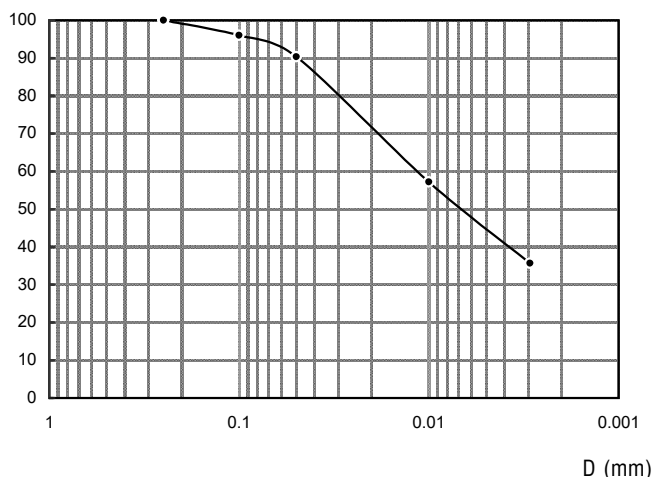
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	34.06	18.5	13.8	95.1	49.5	0.978	27.3	48.34	22.61	25.73	0.45

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					39.61g	0.011	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

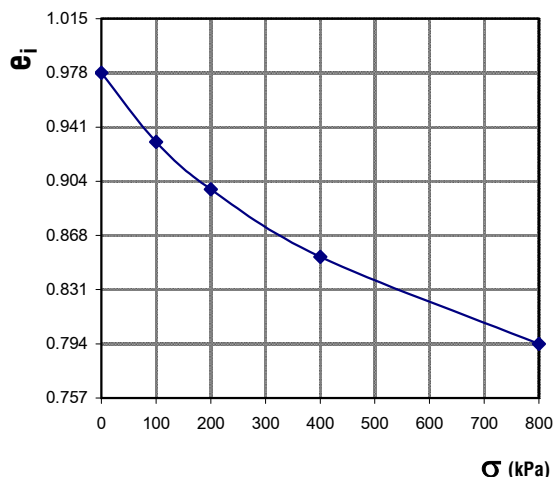
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	4.0	100.0
0.25			0.1-0.05	5.7	96.0
0.1	1.60	Bụi/Silt	0.05-0.01	33.1	90.3
			0.01-0.005	15.2	57.2
		Sét/Clay	<0.005	42.0	42.0



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 25  $e_0 = 0.978$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 201.9  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.978			
100	54.0	6.9	0.931	0.047	4208.5	9258.7
200	88.0	10.4	0.899	0.032	6034.4	13275.6
400	135.2	12.7	0.853	0.023	8256.5	18164.3
800	197.0	16.4	0.794	0.015	12353.3	27177.3

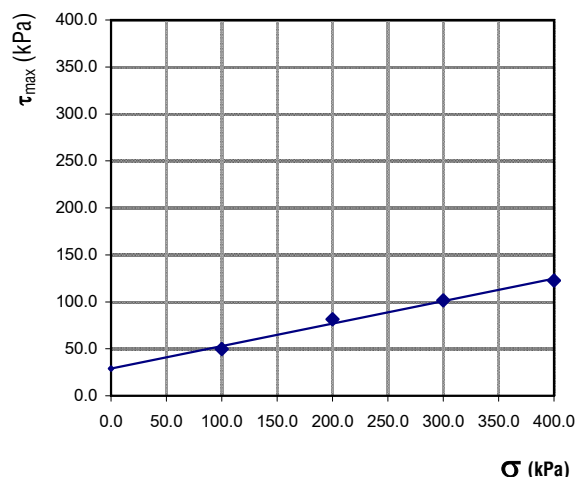


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.5	1.686	49.7
200	48.5	1.678	81.4
300	58.6	1.736	101.7
400	70.5	1.739	122.6

$\tan \varphi = 0.2390$   $\varphi = 13^\circ 26'$  C 29.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK6

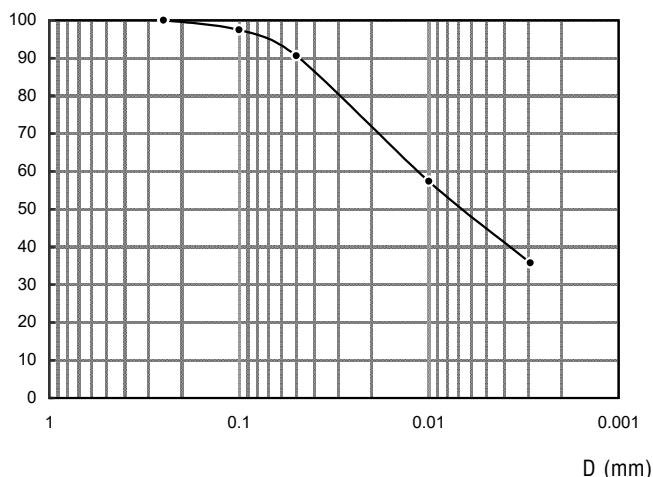
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám hồng, trạng thái dẻo cứng / Stiff, pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	33.49	18.4	13.8	93.1	49.6	0.986	27.4	50.74	20.05	30.69	0.44

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					39.41g	0.011	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

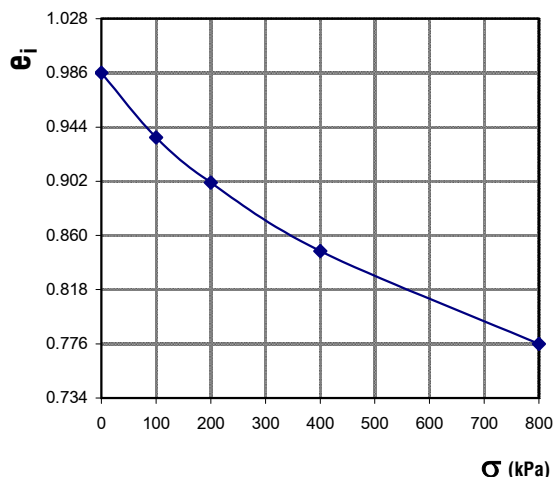
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	2.5	100.0
1.0			0.1-0.05	6.9	97.5
0.5		Bụi/Silt	0.05-0.01	33.2	90.6
0.25			0.01-0.005	15.2	57.4
0.1	1.00	Sét/Clay	<0.005	42.2	42.2



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 26  $e_0 = 0.986$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 226.5  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.986			
100	56.0	7.6	0.936	0.050	3972.0	8738.4
200	94.0	10.6	0.901	0.035	5531.4	12169.1
400	148.0	12.6	0.848	0.027	7040.7	15489.6
800	221.0	15.4	0.776	0.018	10266.7	22586.7

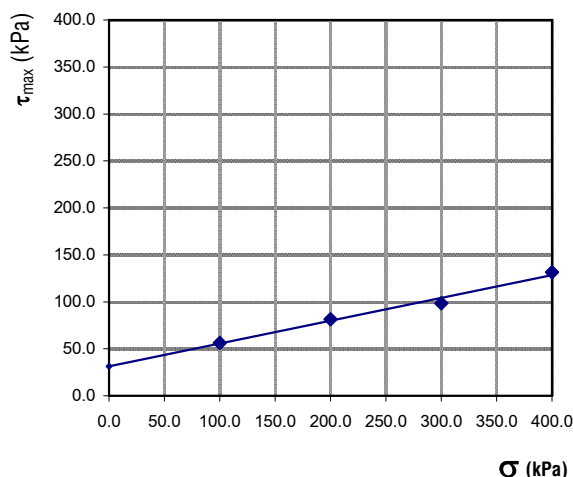


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.3	1.686	56.1
200	48.6	1.678	81.6
300	56.7	1.736	98.4
400	75.6	1.739	131.5

$\tan \phi = 0.2430$   $\phi = 13^\circ 39'$  C 31.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK6

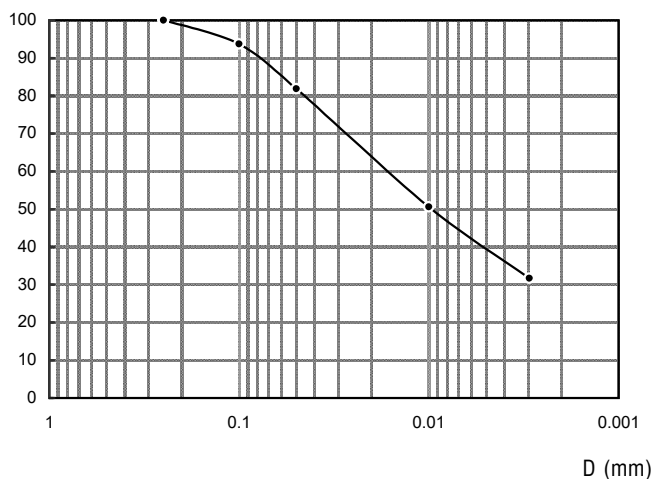
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám hồng, trạng thái dẻo cứng / Stiff, pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	31.07	18.3	14.0	89.3	48.7	0.950	27.3	48.35	21.93	26.42	0.35

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.016	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	6.3	100.0
1.0			0.1-0.05	11.8	93.7
0.5		Bụi/Silt	0.05-0.01	31.3	81.9
0.25			0.01-0.005	12.8	50.6
0.1	2.50	Sét/Clay	<0.005	37.8	37.8

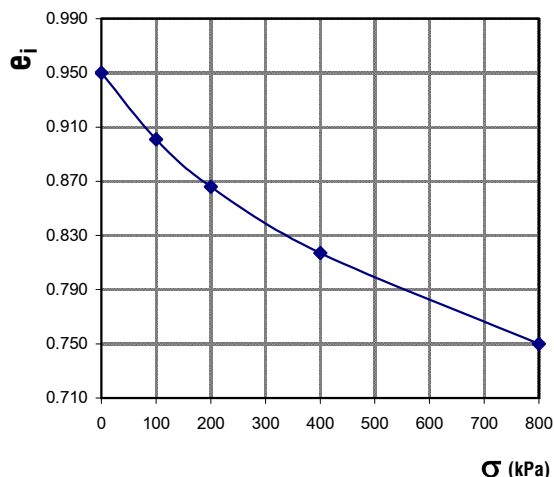


## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 27  $e_0 = 0.950$

$\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 220.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.950			
100	56.0	7.8	0.901	0.049	3979.6	8755.1
200	94.0	10.2	0.866	0.035	5431.4	11949.1
400	145.0	13.1	0.817	0.025	7464.0	16420.8
800	215.0	15.5	0.750	0.017	10688.2	23514.1



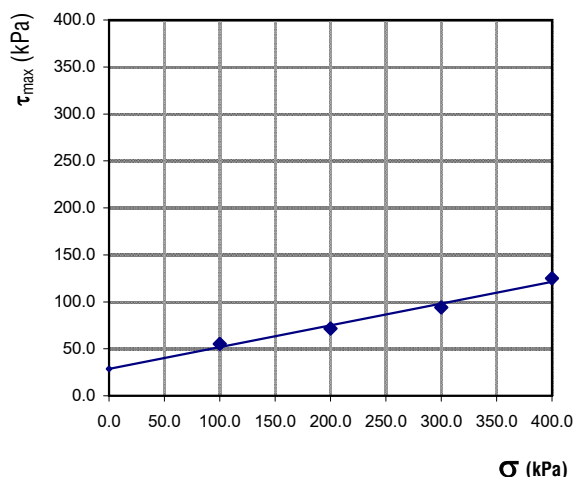
## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.8	1.686	55.3
200	42.7	1.678	71.7
300	54.2	1.736	94.1
400	71.8	1.739	124.9

$\tan \phi = 0.2312$   $\phi = 13^\circ 01'$  C 28.7 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK6

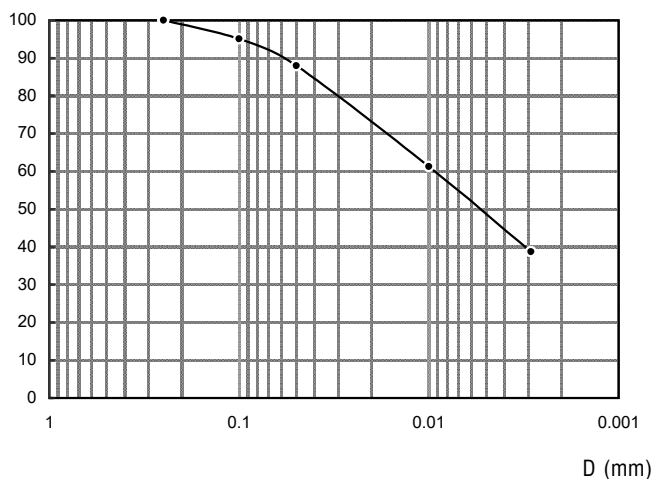
Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám vàng - xám hồng, trạng thái dẻo cứng / Stiff, yellowish grey - pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	30.68	19.0	14.5	94.5	47.1	0.890	27.4	48.76	23.52	25.24	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					40.56g	0.009	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

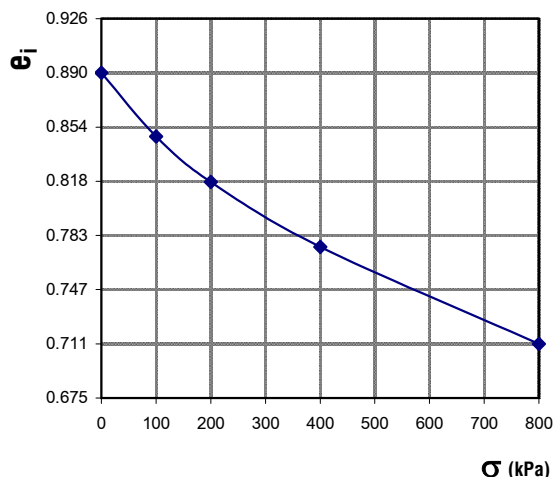
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	4.9	100.0
0.25			0.1-0.05	7.1	95.1
0.1	2.00	Bụi/Silt	0.05-0.01	26.7	88.0
			0.01-0.005	13.8	61.3
		Sét/Clay	<0.005	47.5	47.5



## Thí nghiệm nén lún/Compression test

$m_k = 5.66$  Hộp nén số/Test box No.: 28  $e_0 = 0.890$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 205.0  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.890			
100	51.0	8.3	0.848	0.042	4500.0	10188.0
200	85.0	11.3	0.818	0.030	6160.0	13946.2
400	132.0	13.0	0.775	0.022	8263.6	18708.9
800	200.0	16.1	0.711	0.016	11093.8	25116.3

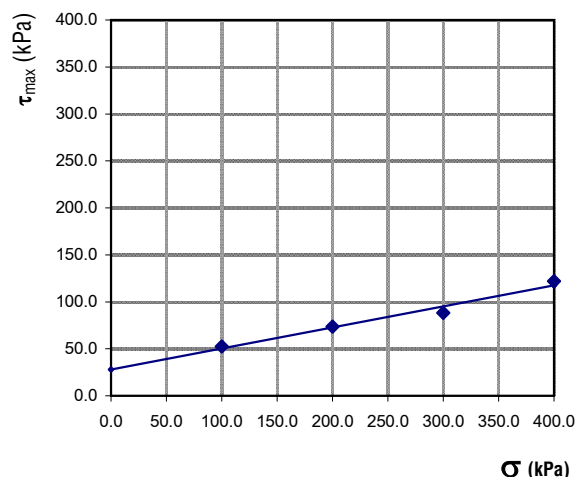


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.0	1.686	52.3
200	43.8	1.678	73.5
300	50.8	1.736	88.2
400	70.2	1.739	122.1

$\tan \phi = 0.2241$   $\phi = 12^\circ 38'$  C 28.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK6-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK6

Ngày TN/Date test: 27-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám xanh, trạng thái dẻo cứng / Stiff, bluish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	33.28	18.2	13.7	91.5	49.8	0.993	27.3	46.25	28.04	18.21	0.29

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					33.76g	0.011	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	3.6	100.0
1.0			0.1-0.05	9.9	96.4
0.5		Bụi/Silt	0.05-0.01	28.9	86.5
0.25			0.01-0.005	13.4	57.6
0.1	1.20	Sét/Clay	<0.005	44.2	44.2

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 5.50$ Hộp nén số/Test box No.: 29 $e_0 = 0.993$							PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.40$ Số đọc sau 24h/Reading after 24h: 217.3 $h_p = 20\text{mm}$							Hệ số vòng lực/Proving ring calibration factor: Cr			

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.993			
100	51.0	8.6	0.949	0.044	4529.5	9965.0
200	84.0	11.6	0.919	0.030	6496.7	14292.7
400	135.0	13.3	0.868	0.026	7380.8	16237.7
800	212.0	16.2	0.793	0.019	9831.6	21629.5

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.5	1.686	48.1
200	46.6	1.678	78.2
300	59.7	1.736	103.6
400	69.2	1.739	120.3

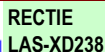
$\tan \phi = 0.2420$   $\phi = 13^\circ 36'$  C 27.1 kPa

Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



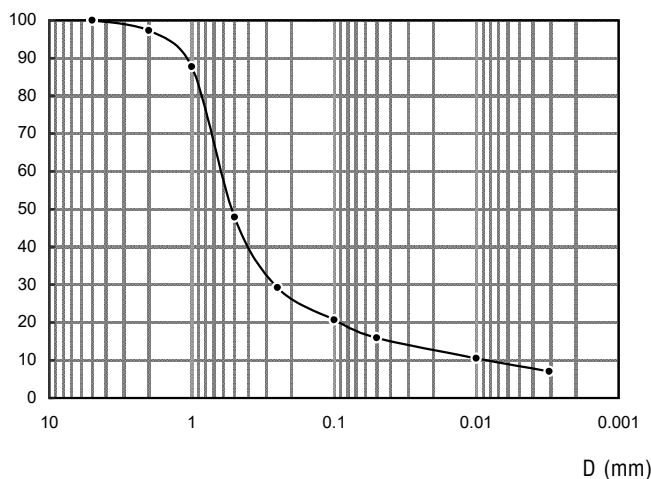
## TT04-BM16

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám xanh, trạng thái dẻo / Plasticity, bluish grey, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_p$	$I_L$
	20.21	20.0	16.6	88.2	38.1	0.614	26.8	23.13	17.42	5.71	0.49

<b>KQTN HẠT/Test results from sieve-hydrometer analysis</b>	KL đất khô/Dry wei 112.30g	<b>D<sub>60</sub>(mm)</b>	<b>D<sub>30</sub>(mm)</b>	<b>D<sub>10</sub>(mm)</b>	<b>C<sub>c</sub></b>	<b>C<sub>u</sub></b>
	Nhiệt độ TN/Temp. 30.0°C	0.652	0.261	0.009	11.6	72.4

<b>Khối lượng đất</b>		<b>Cấp hạt</b>	<b>D<sub>1-12</sub></b>	<b>P<sub>i</sub></b>	<b>P</b>
<b>Mass of soil</b>		<b>Grain grade</b>	<b>(mm)</b>	<b>%</b>	<b>%</b>
<b>&gt;0.1mm</b>		<b>Sỏi/san/Gravel</b>	<b>&gt;10</b>		<b>100.0</b>
<b>D</b>	<b>m<sub>i</sub></b>		<b>10-5</b>		<b>100.0</b>
<b>(mm)</b>	<b>(g)</b>		<b>5-2</b>	<b>2.7</b>	<b>100.0</b>
<b>20.0</b>		<b>Cát/Sand</b>	<b>2-1</b>	<b>9.6</b>	<b>97.3</b>
<b>10.0</b>			<b>1-0.5</b>	<b>39.8</b>	<b>87.7</b>
<b>5.0</b>			<b>0.5-0.25</b>	<b>18.7</b>	<b>47.9</b>
<b>2.0</b>	<b>3.00</b>		<b>0.25-0.1</b>	<b>8.5</b>	<b>29.2</b>
<b>1.0</b>	<b>10.76</b>		<b>0.1-0.05</b>	<b>4.8</b>	<b>20.7</b>
<b>0.5</b>	<b>44.66</b>	<b>Bụi/Silt</b>	<b>0.05-0.01</b>	<b>5.4</b>	<b>15.9</b>
<b>0.25</b>	<b>21.00</b>		<b>0.01-0.005</b>	<b>2.5</b>	<b>10.5</b>
<b>0.1</b>	<b>9.50</b>	<b>Sét/Clay</b>	<b>&lt;0.005</b>	<b>8.0</b>	<b>8.0</b>

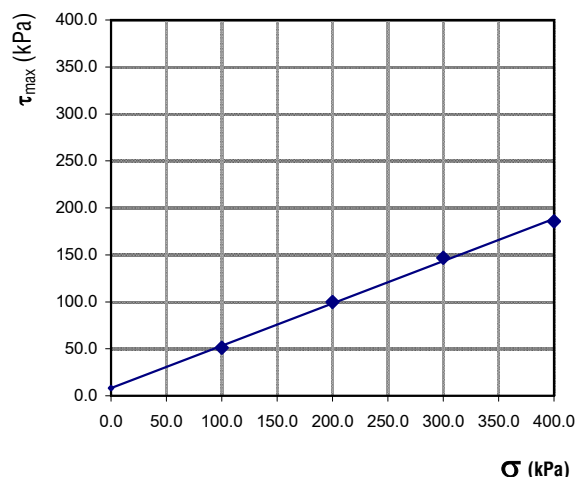
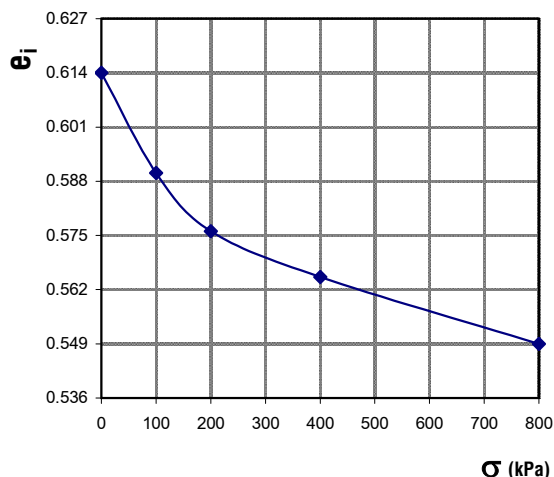


### Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
 Hệ số vòng lục/Proving ring calibration factor: Cr

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	$a$	$E$	$E_0 = E^* m_k \cdot \beta$
kPa	V <sub>ach</sub> /Div.	V <sub>ach</sub> /Div.	-	kPa <sup>-1</sup> ·x10 <sup>-2</sup>	kPa	kPa
0			0.614			
100	36.0	6.8	0.590	0.024	6725.0	19259.1
200	58.0	12.0	0.576	0.014	11357.1	32524.6
400	73.0	13.4	0.565	0.006	26266.7	75222.5
800	94.0	16.3	0.549	0.004	39125.0	112046.2

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	V <sub>ach</sub> /Div.	kPa/0.01mm	kPa
100	30.3	1.686	51.1
200	59.6	1.678	100.0
300	84.5	1.736	146.7
400	106.7	1.739	185.6

$$\tan \phi = 0.4502 \quad \phi = 24^{\circ}14' \quad C \quad 8.3 \text{ kPa}$$


Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngộ



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK7

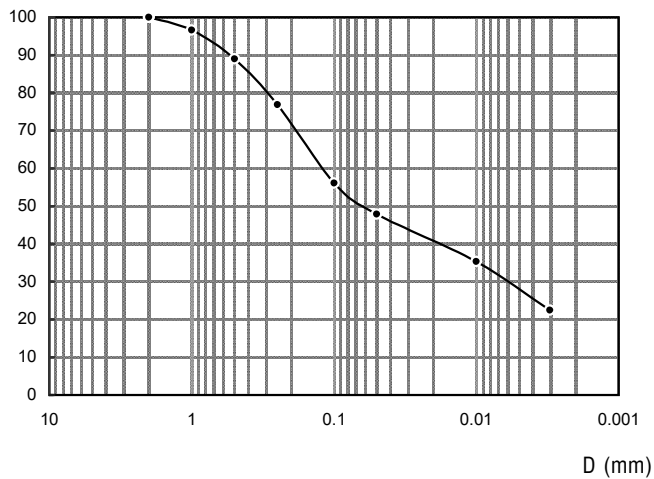
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.67	20.0	16.4	90.1	39.5	0.652	27.1	30.59	17.03	13.56	0.34

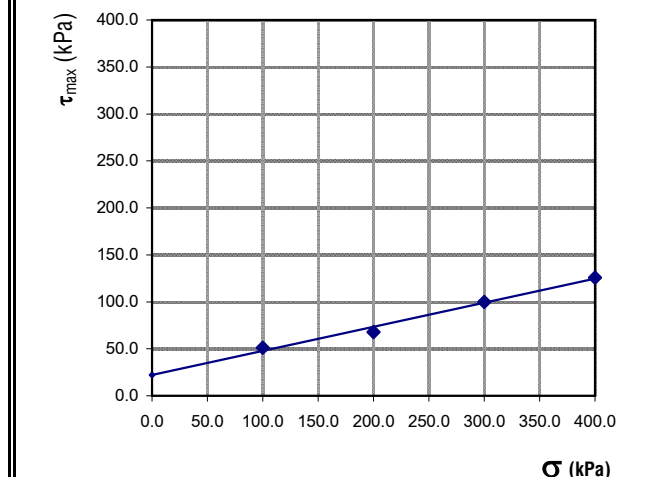
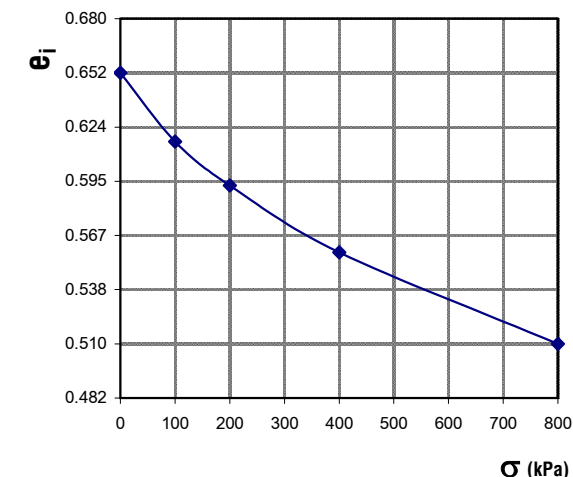
KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	38.50g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.128	0.006	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	3.4	100.0
			1-0.5	7.6	96.6
			0.5-0.25	12.1	89.0
			0.25-0.1	20.8	76.9
			0.1-0.05	8.2	56.1
10.0		Bụi/Silt	0.05-0.01	12.6	47.9
5.0			0.01-0.005	8.4	35.3
2.0					
1.0	1.31				
0.5	2.94				
0.25	4.66	Sét/Clay			
0.1	8.01		<0.005	26.9	26.9



Thí nghiệm nén lún/Compression test						
$m_k = 4.79$	Hộp nén số/Test box No.: 16		$e_0 = 0.652$			
$\beta = 0.62$	Số đọc sau 24h/Reading after 24h: 188.6		$h_p = 20\text{mm}$			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.652			
100	51.0	8.1	0.616	0.036	4588.9	13613.9
200	81.0	11.2	0.593	0.023	7026.1	20844.3
400	123.3	12.6	0.558	0.018	8850.0	26255.3
800	184.0	16.5	0.510	0.012	12983.3	38517.7

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.3	1.686	51.1
200	40.4	1.678	67.8
300	57.6	1.736	100.0
400	72.3	1.739	125.7
$\tan \phi = 0.2560$ $\phi = 14^\circ 22'$ C      22.2 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK7

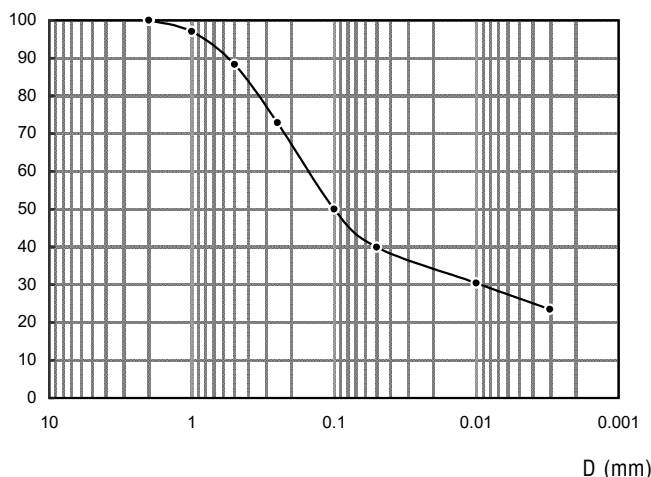
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.04	19.8	16.5	85.6	38.7	0.630	26.9	28.74	17.02	11.72	0.26

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	40.25g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
Nhiệt độ TN/Temp.				30.0°C		0.166	0.010	*	*	*

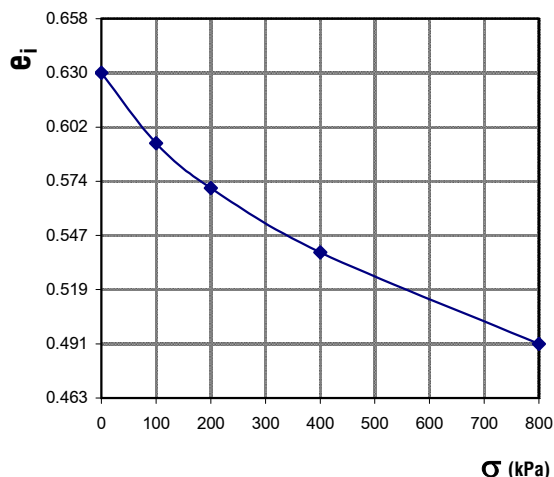
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	3.0	100.0
10.0			1-0.5	8.7	97.0
5.0			0.5-0.25	15.4	88.3
2.0			0.25-0.1	22.9	72.9
1.0	1.20		0.1-0.05	10.1	50.0
0.5	3.50	Bụi/Silt	0.05-0.01	9.5	39.9
0.25	6.18		0.01-0.005	4.0	30.4
0.1	9.20	Sét/Clay	<0.005	26.4	26.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.90$  Hộp nén số/Test box No.: 17  $e_0 = 0.630$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 186.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.630			
100	51.0	8.4	0.594	0.036	4527.8	13741.4
200	83.0	11.6	0.571	0.023	6930.4	21033.2
400	123.0	13.0	0.538	0.017	9241.2	28046.0
800	182.0	16.5	0.491	0.012	12816.7	38897.3

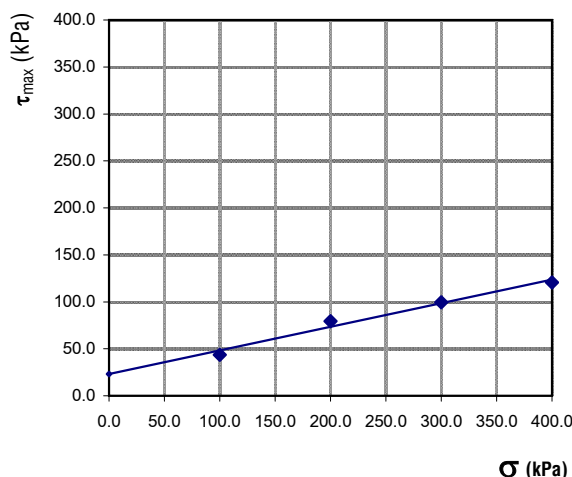


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.9	1.686	43.7
200	47.3	1.678	79.4
300	57.3	1.736	99.5
400	69.4	1.739	120.7

$\tan \phi = 0.2511$   $\phi = 14^\circ 06'$  C 23.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK7

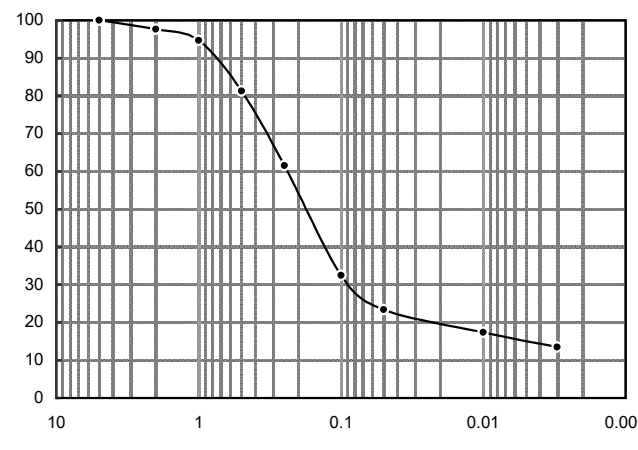
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Sandy clay

n	nguyên dạng/Undis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_p$	$I_p$	$I_L$
		24.35	18.6	15.0	82.2	44.4	0.800	27.0	31.57	18.99	12.58	0.43

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei		70.08g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	Nhiệt độ TN/Temp.		30.0°C	0.242	0.088	*	*	*

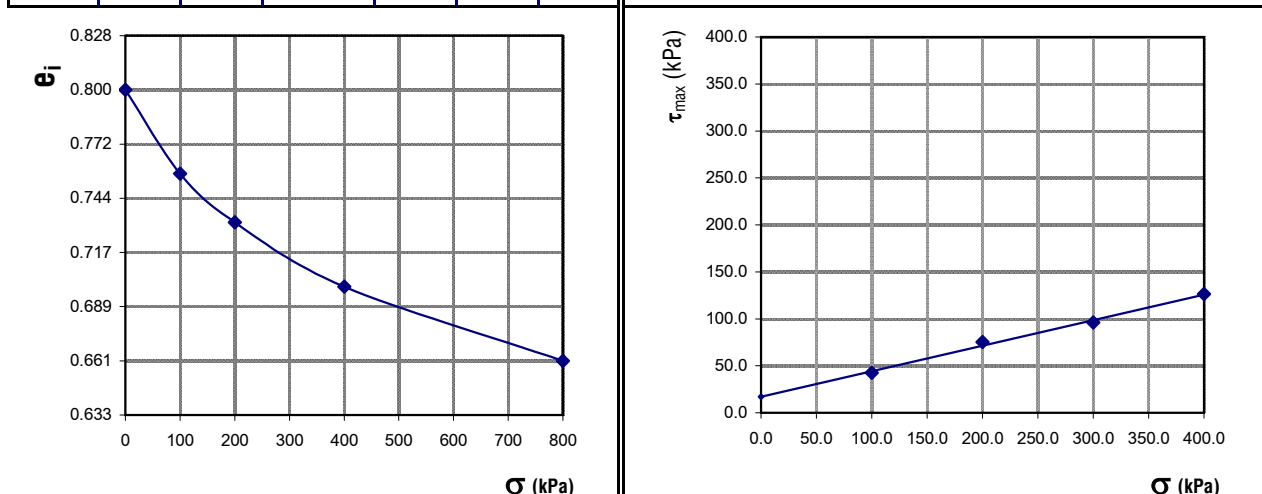
Khối lượng đất Mass of soil >0.1mm		Cấp hạt	$D_{10-2}$	$P_i$	P
		Grain grade	(mm)	%	%
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	2.4	100.0
20.0		Cát/Sand	2-1	2.9	97.6
10.0			1-0.5	13.4	94.7
5.0			0.5-0.25	19.8	81.3
2.0	1.67		0.25-0.1	29.0	61.5
1.0	2.02		0.1-0.05	9.1	32.5
0.5	9.40		Bụi/Silt	0.05-0.01	6.0
0.25	13.90	0.01-0.005		2.2	17.4
0.1	20.30	Sét/Clay		<0.005	15.2



D (mm)	% Passing
10	100
5	98
2	95
1	82
0.5	62
0.25	33
0.1	24
0.075	18
0.06	15

D (mm)

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 4.09$	Hộp nén số/Test box No.: 18			$e_0 = 0.800$			PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.62$	Số đọc sau 24h/Reading after 24h: 169.1			$h_p = 20\text{mm}$			Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$	$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa	kPa	Vạch/Div.	kPa/0.01mm	kPa
0			0.800				100	25.3	1.686	42.7
100	54.0	7.7	0.757	0.043	4186.0	10615.0	200	44.8	1.678	75.2
200	84.0	10.2	0.732	0.025	7028.0	17821.6	300	55.3	1.736	96.0
400	121.0	11.6	0.699	0.017	10188.2	25835.3	400	72.7	1.739	126.4
800	165.0	14.8	0.661	0.009	18877.8	47870.3	$\tan \phi = 0.2719$ $\phi = 15^\circ 13'$ C    17.1 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK7

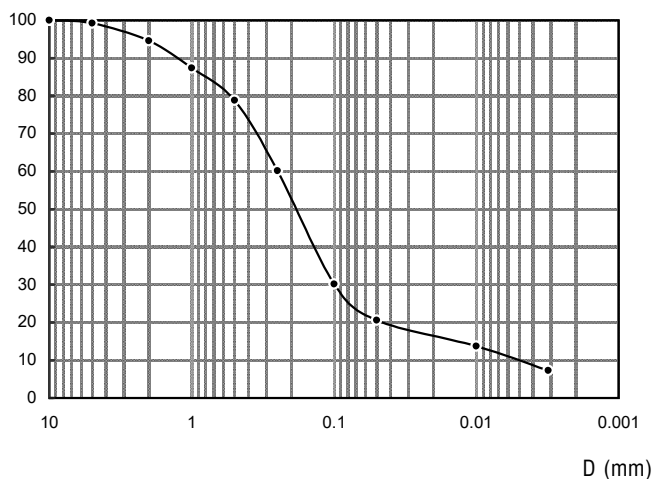
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng - xám hồng, trạng thái dẻo / Plasticity, whitish grey - pinkish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.24	19.9	16.6	89.4	37.6	0.602	26.6	23.50	17.28	6.22	0.48

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	87.33g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.249	0.099	0.005	7.9	49.8

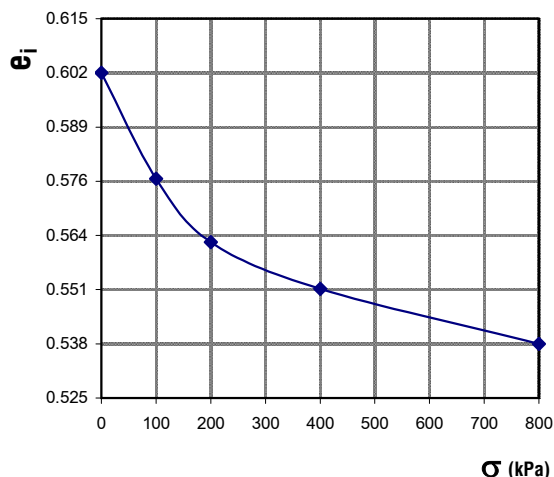
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	D <sub>1-12</sub> (mm)	P <sub>i</sub> %	P %
D (mm)	m <sub>i</sub> (g)	Sỏi/san /gravel	>10		100.0
			10-5	0.8	100.0
			5-2	4.6	99.2
20.0		Cát/Sand	2-1	7.2	94.6
10.0			1-0.5	8.6	87.4
5.0	0.70		0.5-0.25	18.6	78.8
2.0	4.00		0.25-0.1	30.0	60.2
1.0	6.30		0.1-0.05	9.6	30.2
0.5	7.50	Bụi/Silt	0.05-0.01	6.9	20.6
0.25	16.23		0.01-0.005	3.9	13.7
0.1	26.20	Sét/Clay	<0.005	9.8	9.8



## Thí nghiệm nén lún/Compression test

$m_k = 3.94$  Hộp nén số/Test box No.: 19  $e_0 = 0.602$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.602			
100	38.6	8.4	0.577	0.025	6408.0	18683.2
200	60.0	11.2	0.562	0.015	10513.3	30652.7
400	75.0	13.3	0.551	0.006	26033.3	75902.8
800	94.0	16.8	0.538	0.003	51700.0	150736.5

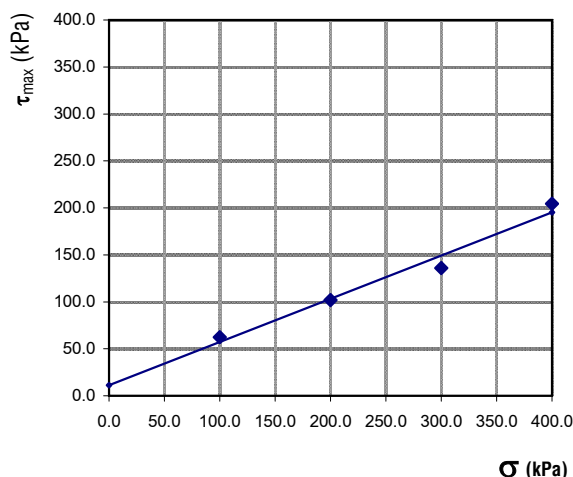


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	37.0	1.686	62.4
200	60.7	1.678	101.9
300	78.2	1.736	135.8
400	117.6	1.739	204.5

$\tan \phi = 0.4602$   $\phi = 24^\circ 43'$  C 11.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK7

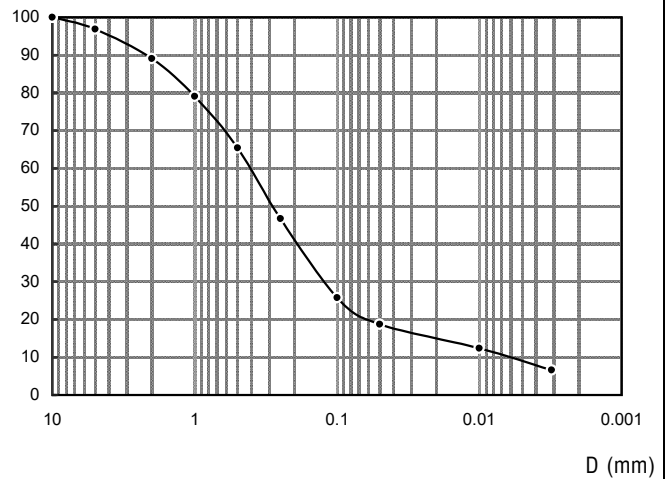
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng - xám hồng, trạng thái dẻo / Plasticity, whitish grey - pinkish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.30	20.4	17.1	91.9	36.0	0.561	26.7	22.12	16.67	5.45	0.48

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	95.76g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.428	0.130	0.006	6.6	71.3

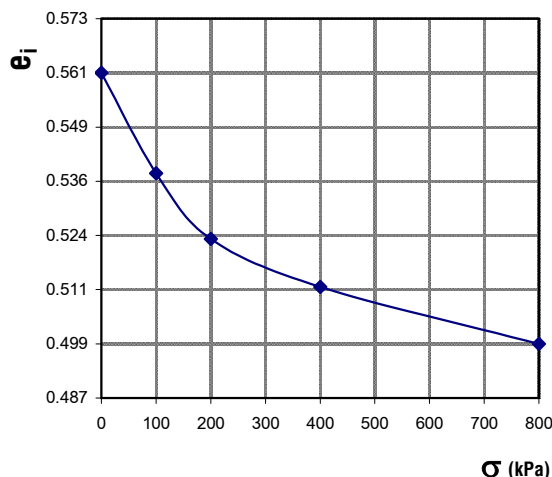
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5	3.1	100.0
Cát/Sand			5-2	7.8	96.9
			2-1	10.0	89.1
			1-0.5	13.7	79.1
			0.5-0.25	18.7	65.4
			0.25-0.1	20.9	46.7
Bụi/Silt			0.1-0.05	7.1	25.8
			0.05-0.01	6.3	18.7
			0.01-0.005	3.4	12.4
Sét/Clay			<0.005	9.0	9.0



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 20  $e_0 = 0.561$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.561			
100	38.0	8.8	0.538	0.023	6787.0	20089.4
200	59.0	11.6	0.523	0.015	10253.3	30349.9
400	75.0	13.7	0.512	0.006	25383.3	75134.7
800	94.0	17.9	0.499	0.003	50400.0	149184.0

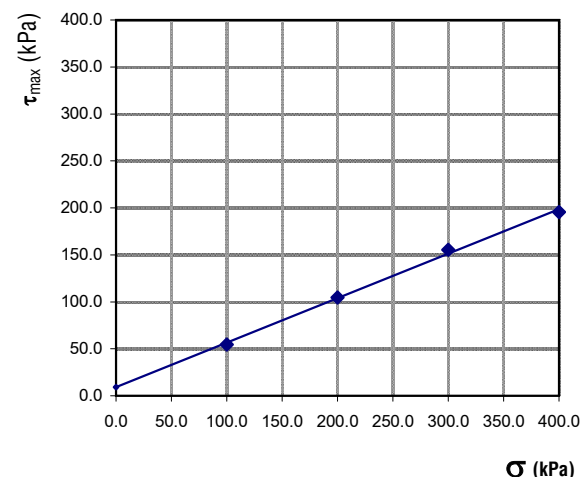


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.4	1.686	54.6
200	62.4	1.678	104.7
300	89.4	1.736	155.2
400	112.5	1.739	195.6

$\tan \phi = 0.4735$   $\phi = 25^\circ 20'$  C 9.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK7

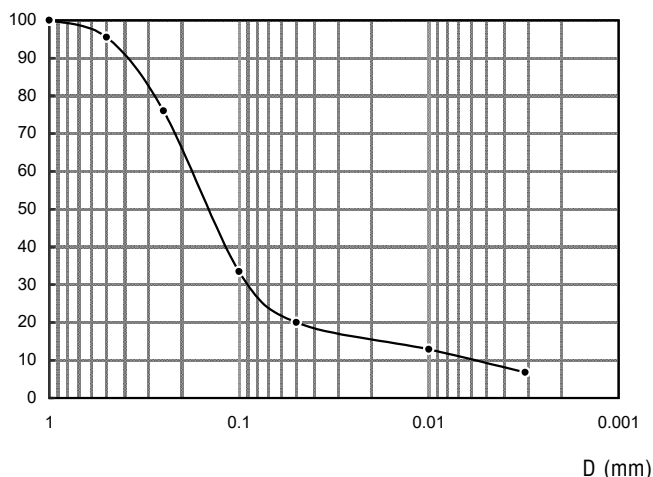
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.32	20.0	16.5	91.6	38.4	0.624	26.8	24.45	18.29	6.16	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	92.32g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.194	0.088	0.006	6.7	32.3

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	4.5	100.0
1.0			0.5-0.25	19.5	95.5
0.5	4.15		0.25-0.1	42.5	76.0
0.25	18.00		0.1-0.05	13.5	33.5
0.1	39.23	Bụi/Silt	0.05-0.01	7.1	20.0
			0.01-0.005	3.5	12.9
		Sét/Clay	<0.005	9.4	9.4



## Thí nghiệm nén lún/Compression test

$m_k = 3.86$  Hộp nén số/Test box No.: 21  $e_0 = 0.624$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 112.8  $h_p = 20mm$

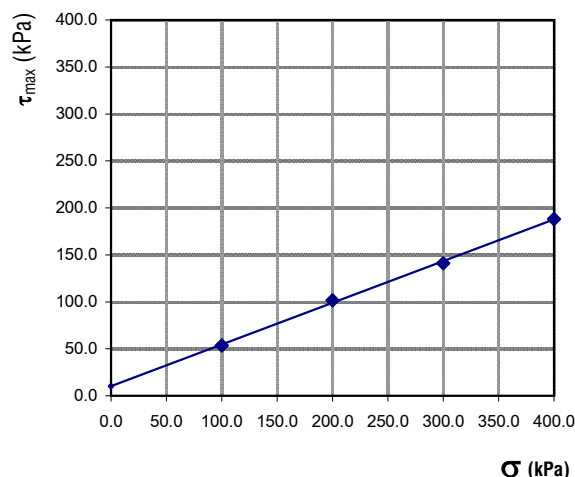
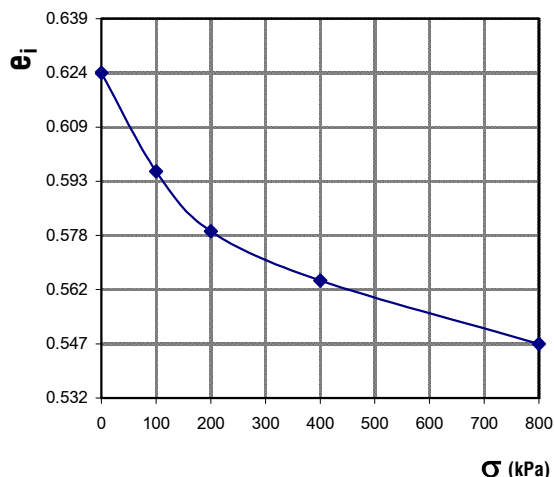
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.624			
100	42.0	9.1	0.596	0.028	5800.0	16545.7
200	66.0	11.9	0.579	0.017	9388.2	26781.8
400	85.0	14.0	0.565	0.007	22557.1	64348.8
800	110.0	17.5	0.547	0.004	39125.0	111611.9

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.8	1.686	53.6
200	60.4	1.678	101.4
300	81.3	1.736	141.1
400	108.2	1.739	188.2

$\tan \phi = 0.4435$   $\phi = 23^\circ 55'$  C 10.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK7

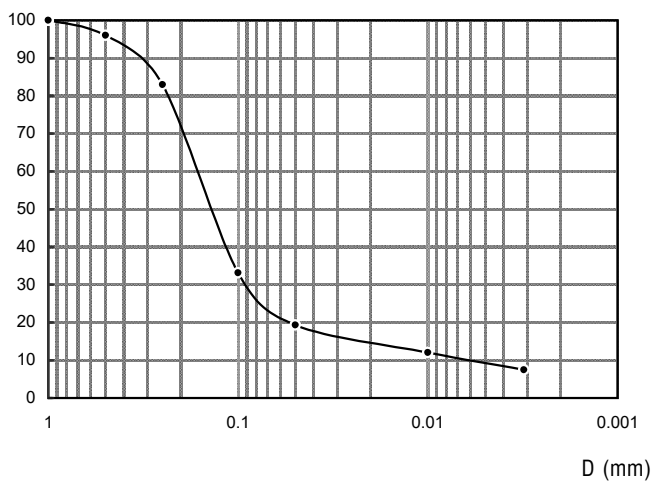
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.59	19.8	16.3	90.9	38.7	0.632	26.6	24.39	18.71	5.68	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	84.96g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.181	0.091	0.006	7.6	30.2

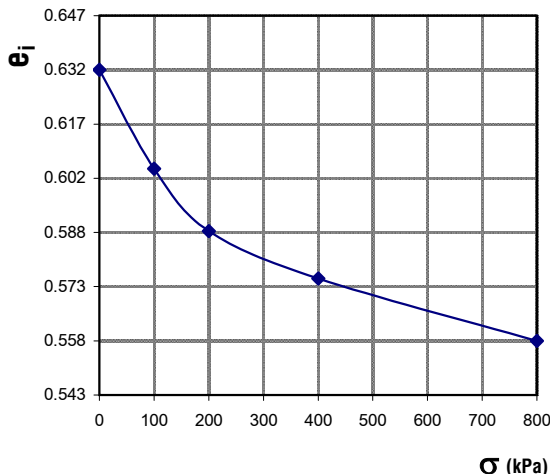
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	4.0	100.0
1.0			0.5-0.25	13.0	96.0
0.5	3.38		0.25-0.1	49.9	83.0
0.25	11.06		0.1-0.05	13.8	33.1
0.1	42.42	Bụi/Silt	0.05-0.01	7.3	19.3
			0.01-0.005	2.9	12.0
		Sét/Clay	<0.005	9.1	9.1



## Thí nghiệm nén lún/Compression test

$m_k = 3.81$  Hộp nén số/Test box No.: 22  $e_0 = 0.632$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 108.1  $h_0 = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.632			
100	42.0	9.8	0.605	0.027	6044.4	17041.7
200	64.0	11.6	0.588	0.017	9441.2	26618.5
400	81.0	13.3	0.575	0.007	22685.7	63960.1
800	105.5	17.2	0.558	0.004	39375.0	111013.9

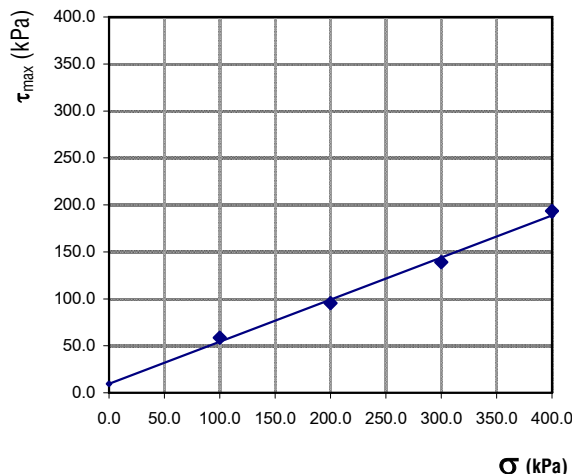


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.7	1.686	58.5
200	56.9	1.678	95.5
300	80.1	1.736	139.1
400	111.2	1.739	193.4

$\tan \phi = 0.4483$   $\phi = 24^\circ 09'$  C 9.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK7

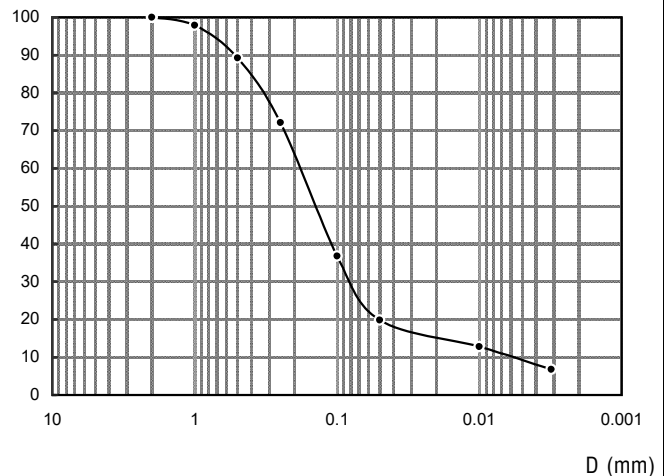
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng - xám hồng, trạng thái dẻo / Plasticity, whitish grey - pinkish grey, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.82	20.3	16.9	91.8	36.5	0.574	26.6	22.75	16.91	5.84	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	93.47g					
Nhiệt độ TN/Temp.	30.0°C	0.199	0.083	0.006	5.8	33.2

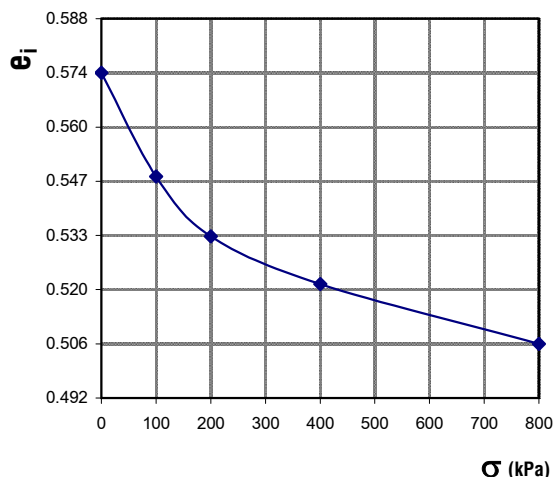
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	2.1	100.0
10.0			1-0.5	8.7	97.9
5.0			0.5-0.25	17.1	89.2
2.0			0.25-0.1	35.3	72.1
1.0	2.00		0.1-0.05	17.0	36.8
0.5	8.14	Bụi/Silt	0.05-0.01	7.0	19.8
0.25	16.00		0.01-0.005	3.6	12.8
0.1	33.00	Sét/Clay	<0.005	9.2	9.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 23  $e_0 = 0.574$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 104.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.574			
100	40.0	8.1	0.548	0.026	6053.8	17919.4
200	62.0	11.2	0.533	0.015	10320.0	30547.2
400	78.0	13.0	0.521	0.006	25550.0	75628.0
800	102.0	17.2	0.506	0.004	38025.0	112554.0

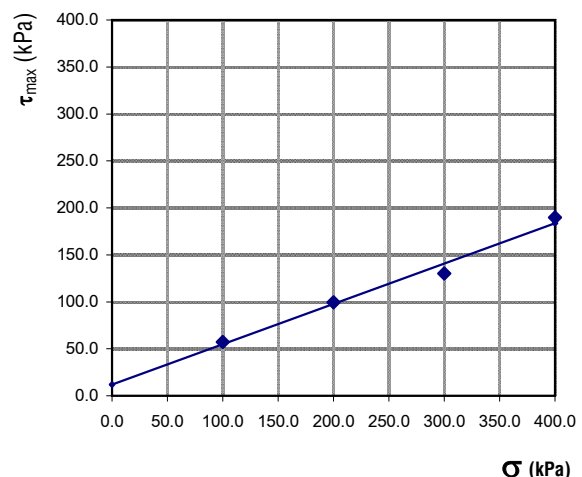


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	33.9	1.686	57.2
200	59.3	1.678	99.5
300	75.0	1.736	130.2
400	109.2	1.739	189.9

$\tan \phi = 0.4288$   $\phi = 23^\circ 13'$  C 12.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK7

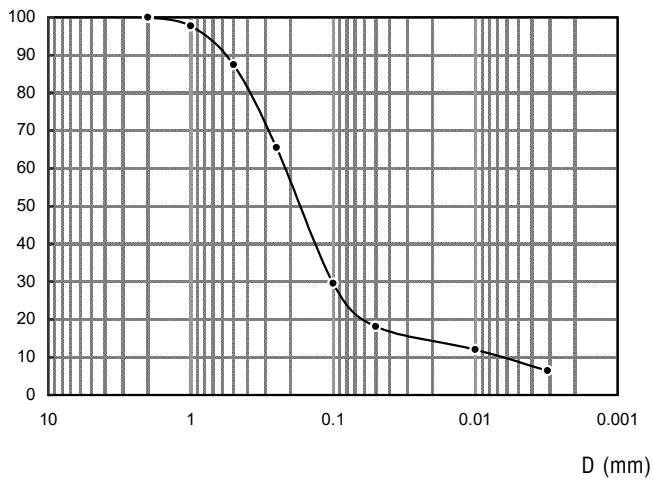
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng - xám hồng, trạng thái dẻo / Plasticity, whitish grey - pinkish grey, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.39	19.6	16.0	88.9	40.3	0.675	26.8	24.97	19.52	5.45	0.53

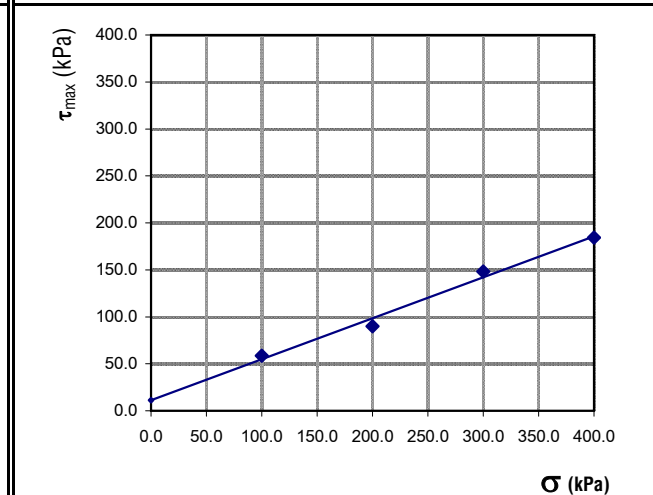
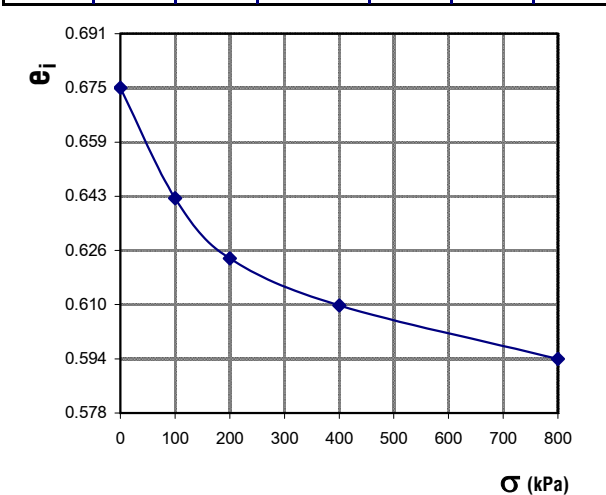
KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	99.27g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.227	0.102	0.007	6.5	32.4

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1	2.3	100.0
2.0			1-0.5	10.2	97.7
1.0	2.27		0.5-0.25	22.0	87.5
0.5	10.17		0.25-0.1	35.9	65.5
0.25	21.82	Bụi/Silt	0.1-0.05	11.5	29.6
0.1	35.67		0.05-0.01	6.1	18.1
		Sét/Clay	0.01-0.005	3.2	12.0
			<0.005	8.8	8.8



Thí nghiệm nén lún/Compression test						
$m_k = 3.63$	Hộp nén số/Test box No.: 24	$e_0 = 0.675$				
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 112.8	$h_p = 20\text{mm}$				
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.675			
100	45.0	7.4	0.642	0.033	5075.8	13634.5
200	69.0	10.2	0.624	0.018	9122.2	24504.1
400	88.0	12.3	0.610	0.007	23200.0	62319.8
800	110.0	15.5	0.594	0.004	40250.0	108119.6

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.7	1.686	58.5
200	53.5	1.678	89.8
300	85.4	1.736	148.3
400	106.0	1.739	184.3
$\tan \varphi = 0.4359$ $\varphi = 23^\circ 33'$ C      11.3 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK7

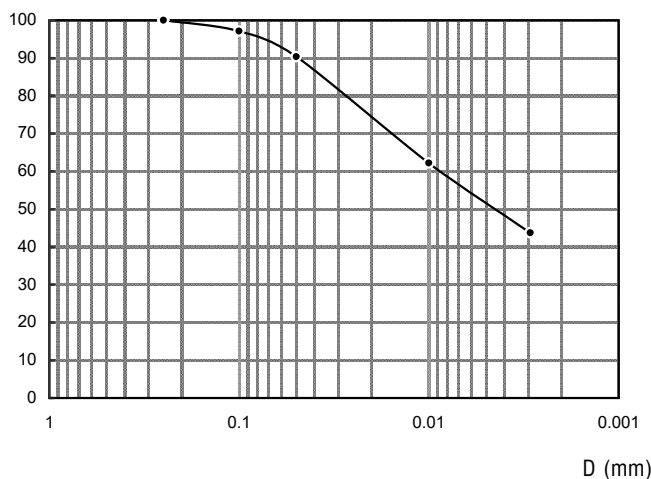
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - vàng nâu, trạng thái dẻo cứng / Stiff, whitish grey - brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	31.22	18.8	14.3	93.4	47.8	0.916	27.4	46.98	25.44	21.54	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					32.28g	0.009	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

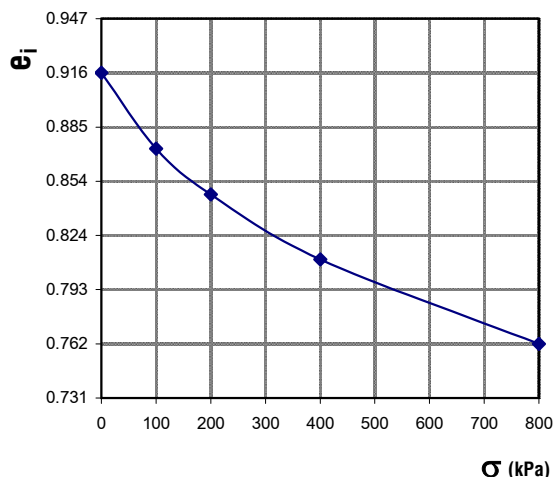
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5		Bụi/Silt	0.25-0.1	2.9	100.0
0.25			0.1-0.05	6.8	97.1
0.1	0.92		0.05-0.01	28.1	90.3
		Sét/Clay	0.01-0.005	10.7	62.2
			<0.005	51.5	51.5



## Thí nghiệm nén lún/Compression test

$m_k = 5.52$  Hộp nén số/Test box No.: 25  $e_0 = 0.916$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 176.9  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.916			
100	51.0	6.9	0.873	0.043	4455.8	9829.5
200	80.0	10.4	0.847	0.026	7203.8	15891.7
400	121.0	12.7	0.810	0.019	9721.1	21444.6
800	172.6	16.4	0.762	0.012	15083.3	33273.8

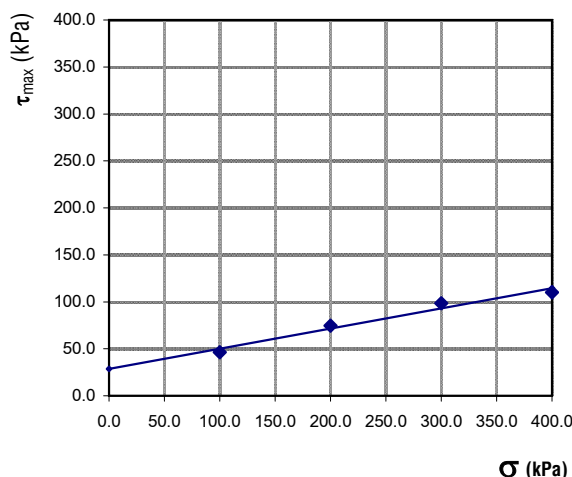


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.4	1.686	46.2
200	44.5	1.678	74.7
300	56.6	1.736	98.3
400	63.3	1.739	110.1

$\tan \phi = 0.2153$   $\phi = 12^\circ 09'$  C 28.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK7

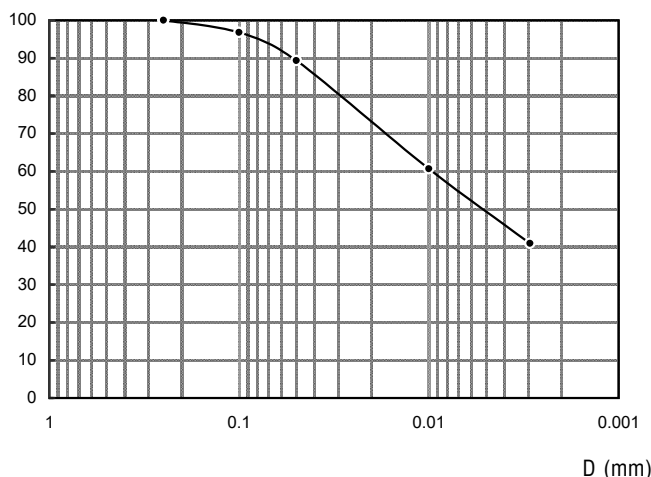
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - vàng nâu, trạng thái dẻo cứng / Stiff, whitish grey - brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	30.27	18.9	14.5	93.6	46.9	0.883	27.3	44.87	24.62	20.25	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	34.54g	0.010	*	*	*
						30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
Cát/Sand			2-1		100.0
			1-0.5		100.0
			0.5-0.25		100.0
			0.25-0.1	3.2	100.0
			0.1-0.05	7.5	96.8
Bụi/Silt			0.05-0.01	28.6	89.3
			0.01-0.005	12.5	60.7
0.1	1.10	Sét/Clay	<0.005	48.2	48.2



## Thí nghiệm nén lún/Compression test

$m_k = 5.74$

Hộp nén số/Test box No.: 26

$e_0 = 0.883$

$\beta = 0.40$

Số đọc sau 24h/Reading after 24h: 217.3

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.883			
100	58.0	7.6	0.834	0.049	3842.9	8823.2
200	94.0	10.6	0.802	0.032	5731.3	13159.0
400	143.6	12.6	0.756	0.023	7834.8	17988.7
800	212.0	15.4	0.693	0.016	10975.0	25198.6

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

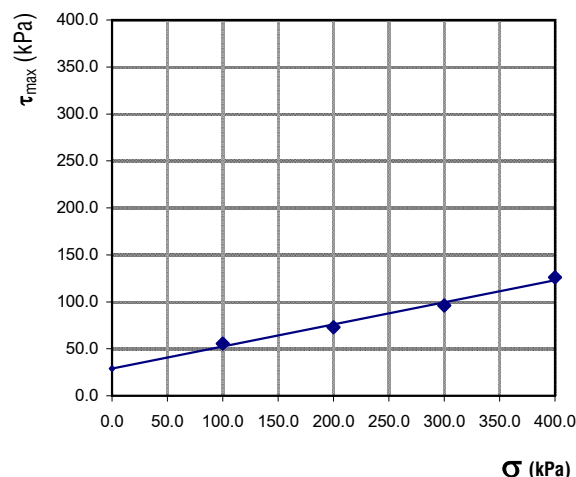
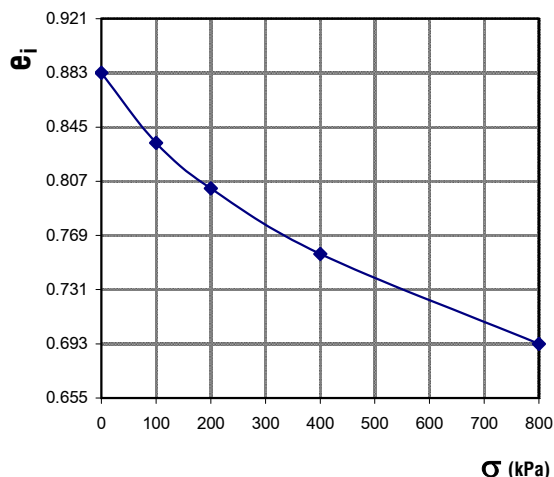
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.9	1.686	55.5
200	43.5	1.678	73.0
300	55.4	1.736	96.2
400	72.5	1.739	126.1

$\tan \phi = 0.2350$

$\phi = 13^\circ 13'$

C 29.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK7

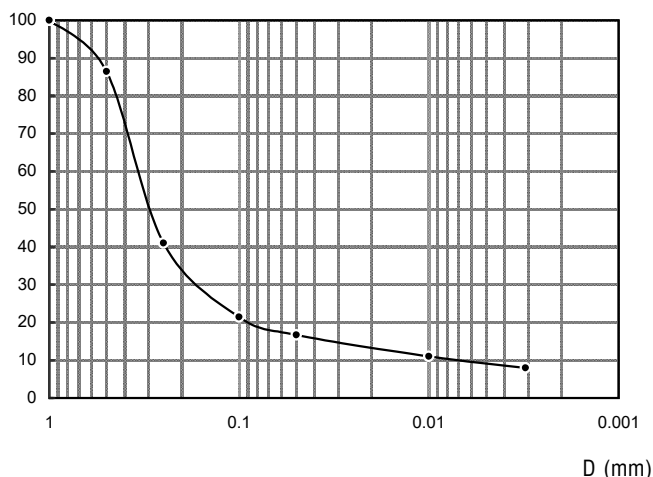
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu - nâu đỏ, trạng thái dẻo / Plasticity, brownish yellow - reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	22.71	19.4	15.8	88.3	40.6	0.684	26.6	25.65	19.88	5.77	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	98.61g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.355	0.166	0.007	11.1	50.7

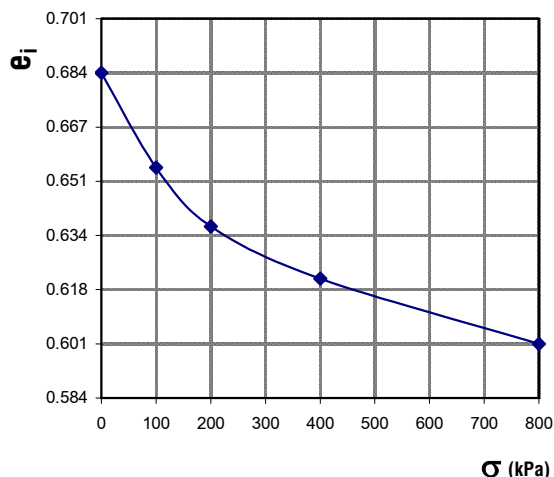
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel			
20.0		Cát/Sand	>10		100.0
10.0			10-5		100.0
5.0			5-2		100.0
2.0			2-1		100.0
1.0			1-0.5	13.6	100.0
0.5	13.37	Bụi/Silt	0.5-0.25	45.4	86.4
0.25	44.80		0.25-0.1	19.6	41.0
0.1	19.30		0.1-0.05	4.7	21.4
		Sét/Clay	0.05-0.01	5.7	16.7
			0.01-0.005	1.8	11.0
			<0.005	9.2	9.2



## Thí nghiệm nén lún/Compression test

$m_v = 3.57$  Hộp nén số/Test box No.: 27  $e_0 = 0.684$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 114.8  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.684			
100	41.0	7.8	0.655	0.029	5806.9	15319.2
200	65.0	10.2	0.637	0.018	9194.4	24255.9
400	86.0	13.1	0.621	0.008	20462.5	53982.1
800	112.0	15.5	0.601	0.005	32420.0	85527.2

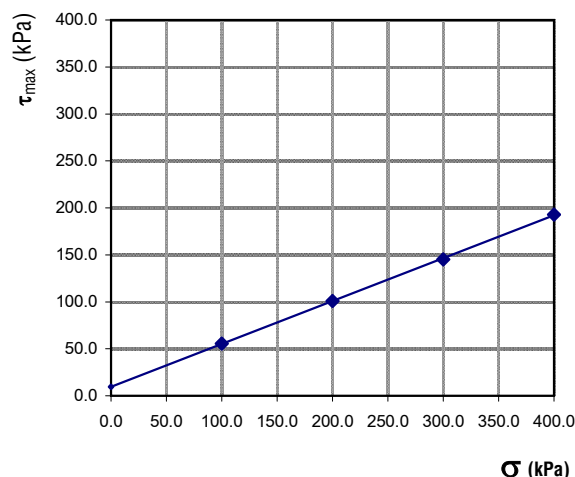


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.0	1.686	55.6
200	60.2	1.678	101.0
300	83.6	1.736	145.1
400	110.9	1.739	192.9

$\tan \phi = 0.4560$   $\phi = 24^\circ 31'$  C 9.7 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK7

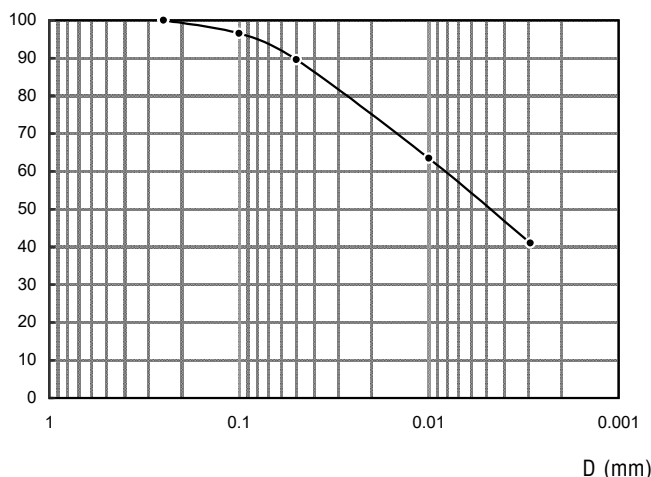
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	30.89	19.0	14.5	95.1	47.1	0.890	27.4	49.57	21.79	27.78	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	34.38g	0.008	*	*	*
						30.0°C				

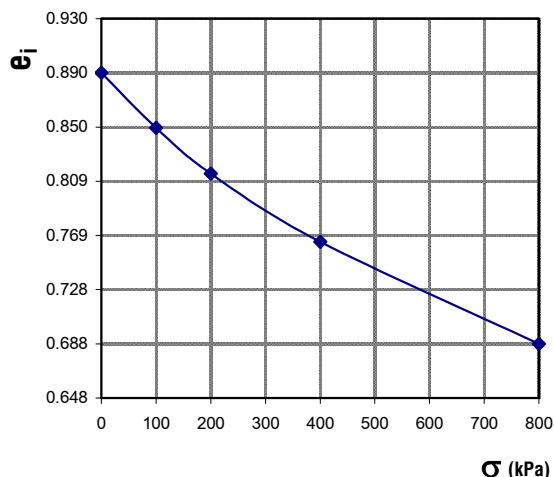
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	3.5	100.0
1.0			0.1-0.05	6.9	96.5
0.5		Bụi/Silt	0.05-0.01	26.1	89.6
0.25			0.01-0.005	15.2	63.5
0.1	1.20	Sét/Clay	<0.005	48.3	48.3



## Thí nghiệm nén lún/Compression test

$m_k = 5.68$  Hộp nén số/Test box No.: 28  $e_0 = 0.890$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 229.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.890			
100	49.9	8.3	0.849	0.041	4609.8	10464.1
200	88.0	11.3	0.815	0.034	5438.2	12344.8
400	142.0	13.0	0.764	0.026	6980.8	15846.3
800	224.0	16.1	0.688	0.019	9284.2	21075.2

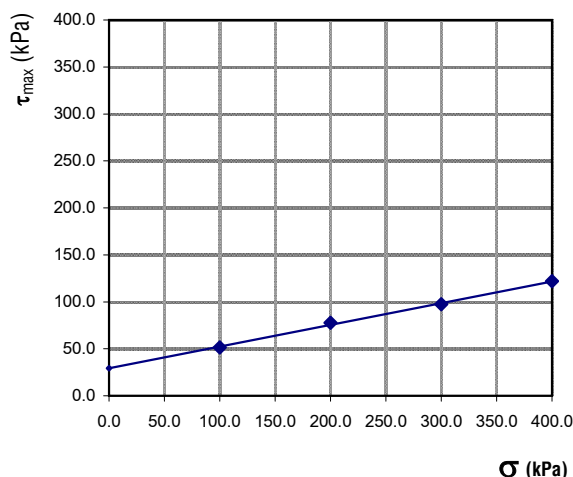


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	30.5	1.686	51.4
200	46.3	1.678	77.7
300	56.1	1.736	97.4
400	70.1	1.739	121.9

$\tan \phi = 0.2312$   $\phi = 13^\circ 01'$  C 29.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK7

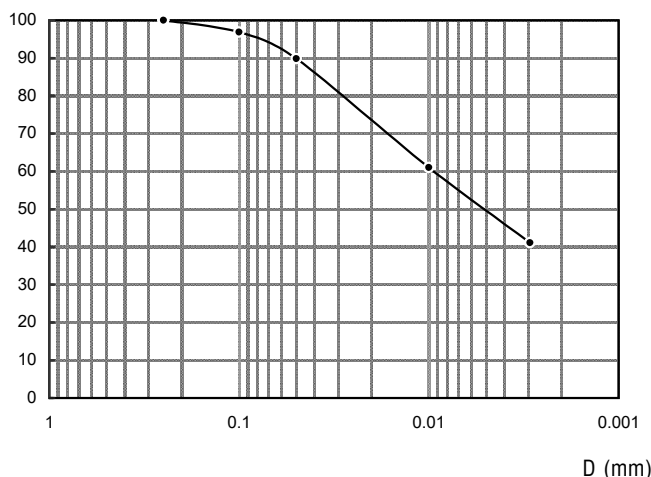
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.84	19.3	15.1	94.1	44.7	0.808	27.3	41.05	21.20	19.85	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					34.35g	0.010	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

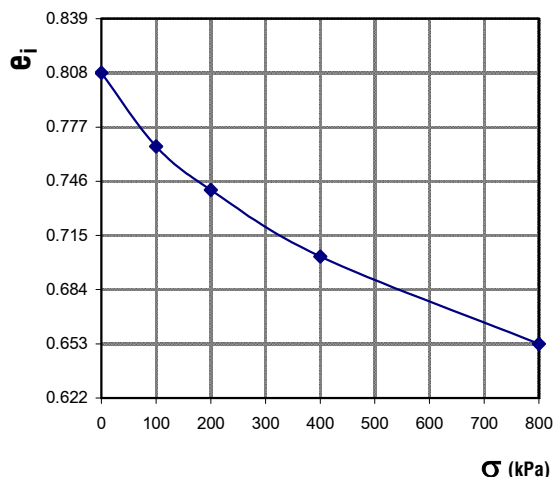
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	3.1	100.0
1.0			0.1-0.05	7.1	96.9
0.5		Bụi/Silt	0.05-0.01	28.8	89.8
0.25			0.01-0.005	12.6	61.0
0.1	1.05	Sét/Clay	<0.005	48.4	48.4



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 29  $e_0 = 0.808$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 188.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.808			
100	54.0	8.6	0.766	0.042	4304.8	10331.4
200	84.0	11.6	0.741	0.025	7064.0	16953.6
400	126.0	13.3	0.703	0.019	9163.2	21991.6
800	184.0	16.2	0.653	0.013	13100.0	31440.0

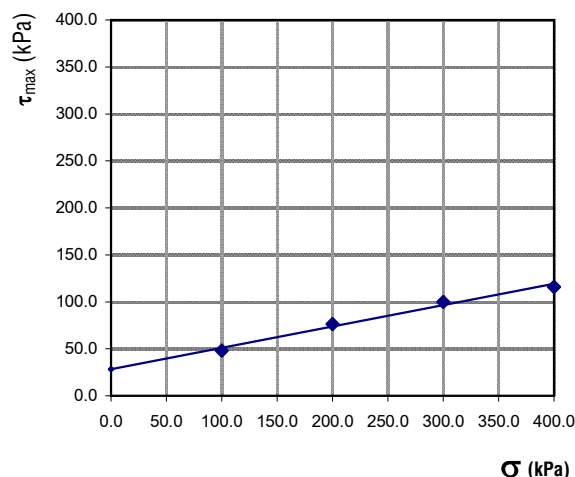


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.6	1.686	48.2
200	45.4	1.678	76.2
300	57.5	1.736	99.8
400	66.7	1.739	116.0

$\tan \phi = 0.2270$   $\phi = 12^\circ 47'$  C 28.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK7-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK7

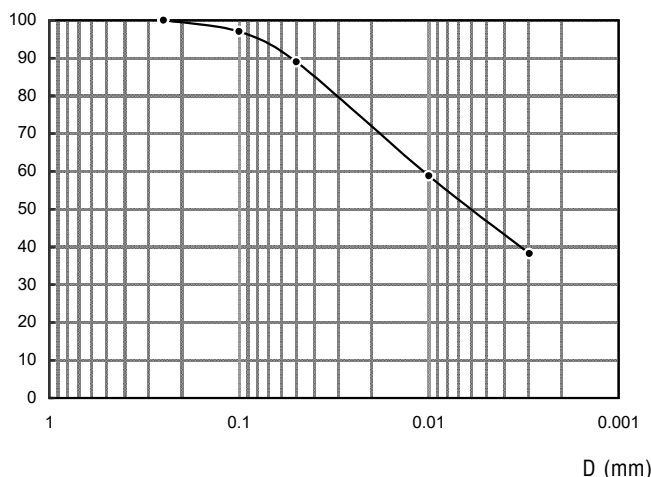
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	31.79	18.2	13.8	88.7	49.5	0.978	27.3	52.63	24.27	28.36	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	32.86g	0.011	*	*	*
						30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	3.0	100.0
0.25			0.1-0.05	8.0	97.0
0.1	1.00	Bụi/Silt	0.05-0.01	30.2	89.0
			0.01-0.005	13.1	58.8
		Sét/Clay	<0.005	45.7	45.7



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 30  $e_0 = 0.978$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 194.8  $h_p = 20\text{mm}$

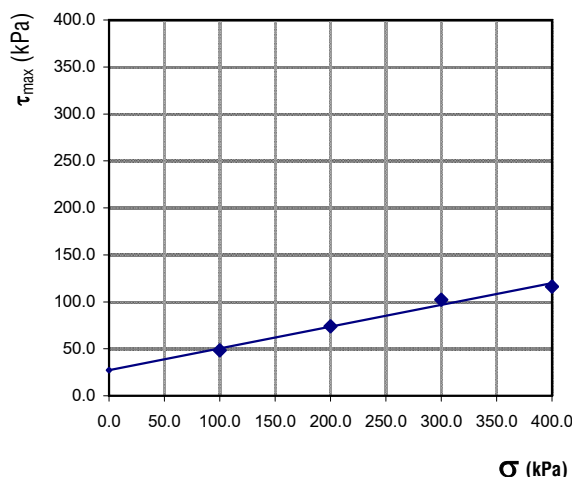
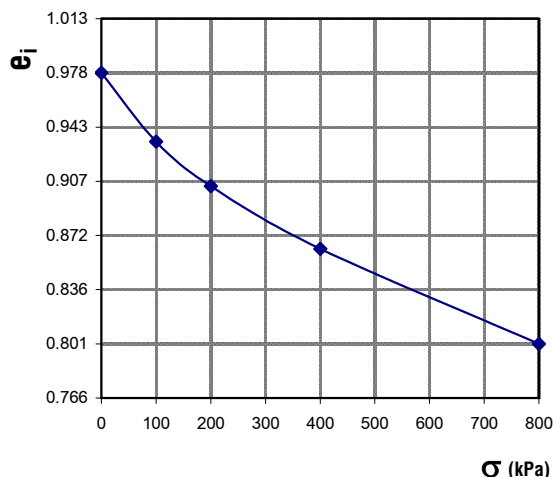
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.978			
100	51.0	6.8	0.933	0.045	4395.6	9670.2
200	84.7	12.0	0.904	0.029	6665.5	14664.1
400	126.3	13.4	0.863	0.021	9066.7	19946.7
800	190.0	16.3	0.801	0.016	11643.8	25616.3

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.7	1.686	48.4
200	44.1	1.678	74.0
300	58.9	1.736	102.3
400	66.9	1.739	116.3

$\tan \phi = 0.2320$   $\phi = 13^\circ 04'$  C 27.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK8

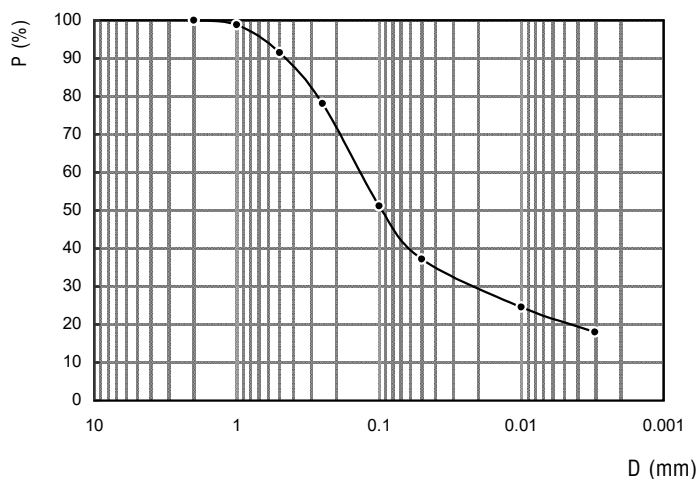
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu vàng, trạng thái dẻo cứng / Stiff, yellowish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	23.55	19.4	15.7	88.3	41.9	0.720	27.0	31.34	17.61	13.73	0.43

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	48.11g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.149	0.021	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	1.2	100.0
10.0			1-0.5	7.3	98.8
5.0			0.5-0.25	13.4	91.5
2.0			0.25-0.1	26.9	78.1
1.0	0.59		0.1-0.05	14.0	51.2
0.5	3.49	Bụi/Silt	0.05-0.01	12.6	37.2
0.25	6.46		0.01-0.005	4.2	24.6
0.1	12.94	Sét/Clay	<0.005	20.4	20.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.61$  Hộp nén số/Test box No.: 46  $e_0 = 0.720$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 260.0  $h_0 = 20\text{mm}$

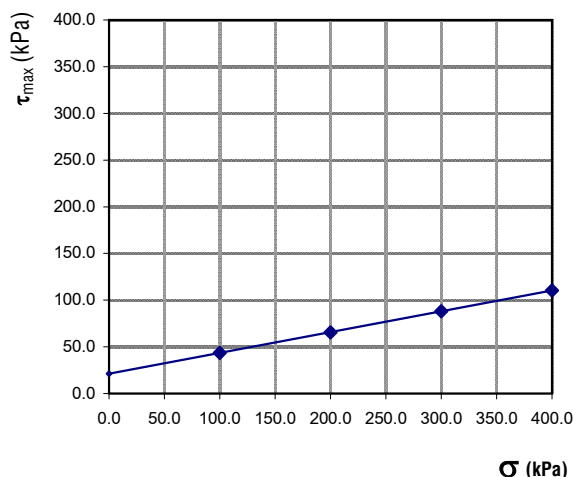
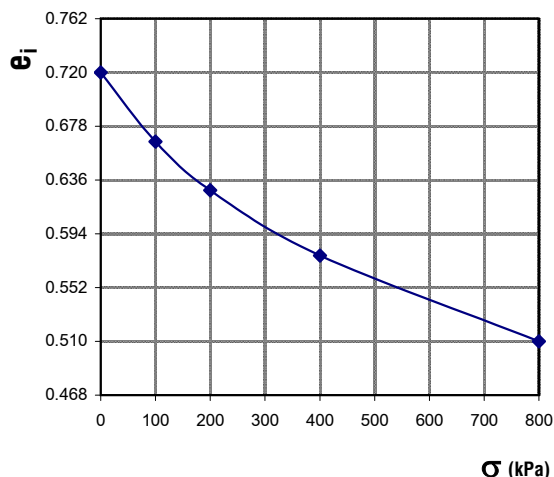
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.720			
100	69.6	8.3	0.666	0.054	3185.2	9103.9
200	115.0	11.0	0.628	0.038	4384.2	12531.0
400	175.0	13.4	0.577	0.026	6261.5	17896.7
800	253.7	16.0	0.510	0.017	9276.5	26514.0

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.9	1.686	43.7
200	38.9	1.678	65.3
300	50.7	1.736	88.0
400	63.5	1.739	110.4

$\tan \phi = 0.2228$   $\phi = 12^\circ 34'$  C 21.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK8

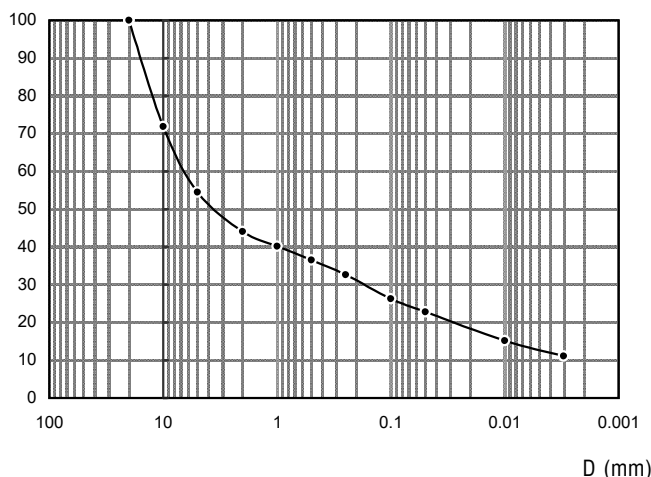
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn dăm sạn laterit, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay with laterite gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	23.47	19.7	16.0	92.1	40.7	0.688	27.0	33.84	18.40	15.44	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	78.81g	6.580	0.188	*	*
						30.0°C				

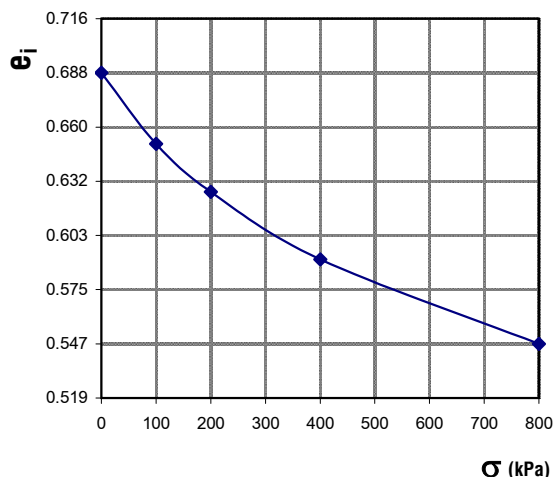
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10	28.1	100.0
20.0		Cát/Sand	10-5	17.4	71.9
10.0	22.18		5-2	10.4	54.5
5.0	13.71		2-1	3.9	44.1
2.0	8.20		1-0.5	3.7	40.2
1.0	3.11		0.5-0.25	3.9	36.5
0.5	2.95	Bụi/Silt	0.25-0.1	6.3	32.6
0.25	3.05		0.1-0.05	3.5	26.3
0.1	5.00		0.05-0.01	7.6	22.8
		Sét/Clay	0.01-0.005	2.7	15.2
			<0.005	12.5	12.5



## Thí nghiệm nén lún/Compression test

$m_k = 4.62$  Hộp nén số/Test box No.: 47  $e_0 = 0.688$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 183.5  $h_0 = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.688			
100	51.0	7.8	0.651	0.037	4562.2	13067.9
200	82.0	11.3	0.626	0.025	6604.0	18916.5
400	126.0	13.7	0.591	0.018	9033.3	25875.1
800	179.0	17.0	0.547	0.011	14463.6	41429.6

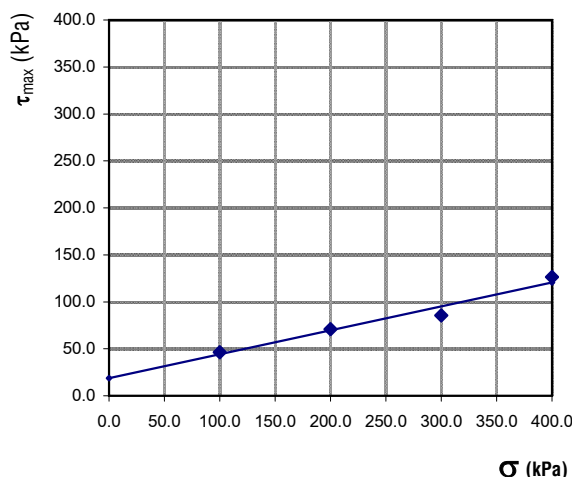


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.5	1.686	46.4
200	42.2	1.678	70.8
300	49.3	1.736	85.6
400	72.7	1.739	126.4

$\tan \phi = 0.2548$   $\phi = 14^\circ 18'$  C 18.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK8

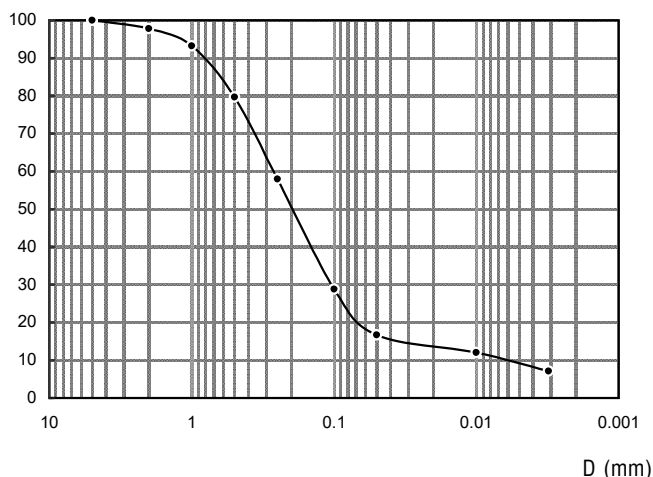
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.11	20.1	16.9	87.4	36.9	0.586	26.8	22.06	16.27	5.79	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	88.99g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.273	0.106	0.005	8.2	54.6

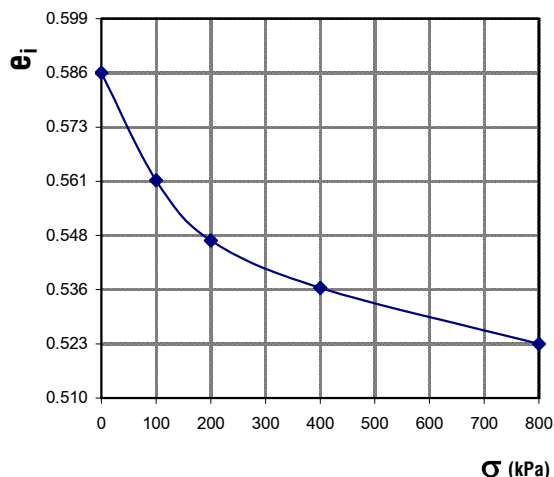
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	2.2	100.0
Cát/Sand	20.0	Cát/Sand	2-1	4.6	97.8
	10.0		1-0.5	13.5	93.2
	5.0		0.5-0.25	21.7	79.7
	2.0		0.25-0.1	29.2	58.0
	1.0		0.1-0.05	12.1	28.8
0.5	12.00	Bụi/Silt	0.05-0.01	4.7	16.7
0.25	19.30		0.01-0.005	2.4	12.0
0.1	26.00	Sét/Clay	<0.005	9.6	9.6



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 48  $e_0 = 0.586$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.586			
100	39.0	8.1	0.561	0.025	6344.0	18778.2
200	59.0	11.8	0.547	0.014	11150.0	33004.0
400	75.0	14.0	0.536	0.006	25783.3	76318.7
800	94.0	16.7	0.523	0.003	51200.0	151552.0

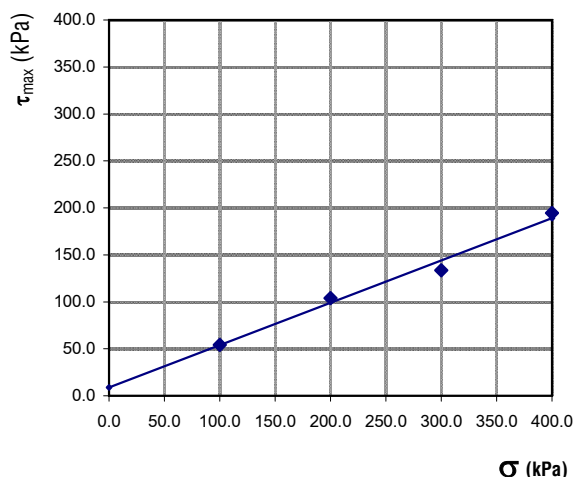


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.2	1.686	54.3
200	61.9	1.678	103.9
300	77.0	1.736	133.7
400	111.8	1.739	194.4

$\tan \phi = 0.4501$   $\phi = 24^\circ 14'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK8

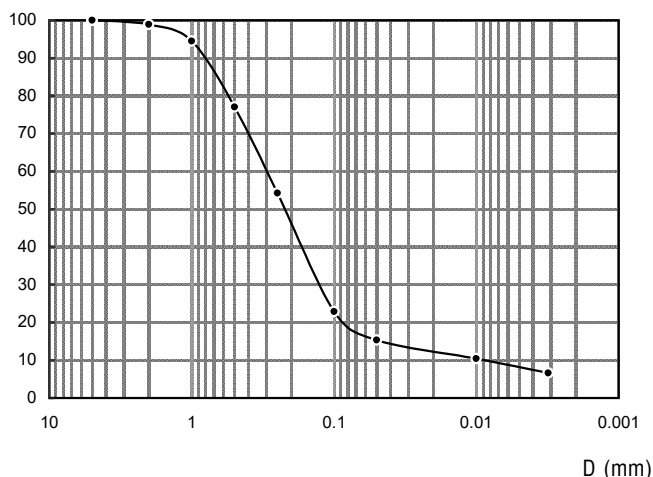
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	18.13	20.5	17.4	91.2	34.6	0.529	26.6	21.10	15.27	5.83	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	96.63g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.314	0.134	0.009	6.4	34.9

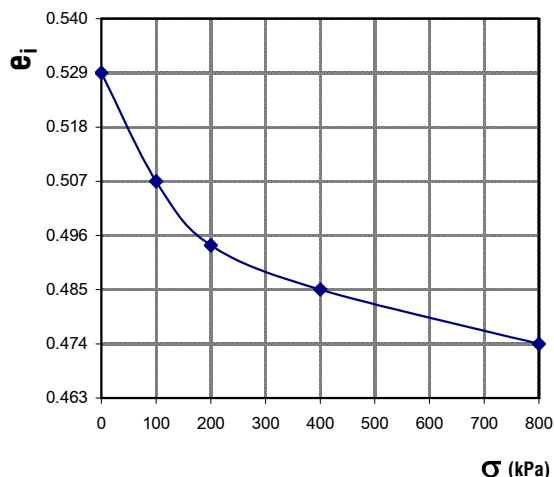
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	D <sub>11-2</sub> (mm)	P <sub>i</sub> %	P %
D (mm)	m <sub>i</sub> (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	1.1	100.0
20.0		Cát/Sand	2-1	4.4	98.9
10.0			1-0.5	17.5	94.5
5.0			0.5-0.25	22.8	77.0
2.0	1.07		0.25-0.1	31.3	54.2
1.0	4.30		0.1-0.05	7.6	22.9
0.5	16.87	Bụi/Silt	0.05-0.01	4.9	15.3
0.25	22.03		0.01-0.005	1.9	10.4
0.1	30.29		Sét/Clay	<0.005	8.5



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 49  $e_0 = 0.529$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 88.2  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.529			
100	36.0	8.3	0.507	0.022	6950.0	20572.0
200	57.0	12.0	0.494	0.013	11592.3	34313.2
400	70.0	13.7	0.485	0.005	29880.0	88444.8
800	86.0	16.2	0.474	0.003	49500.0	146520.0

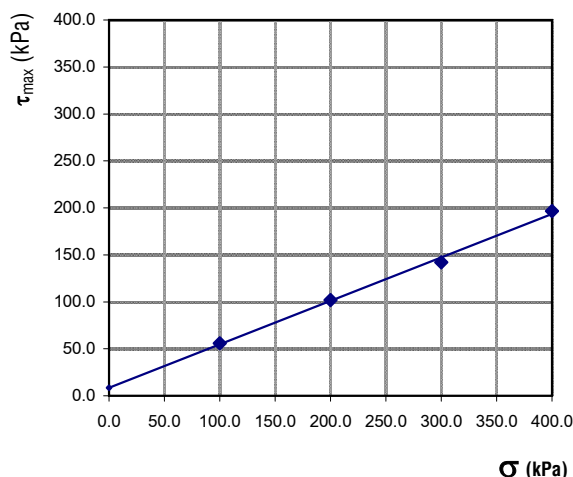


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.2	1.686	56.0
200	60.8	1.678	102.0
300	81.8	1.736	142.0
400	113.1	1.739	196.7

$\tan \phi = 0.4621$   $\phi = 24^\circ 48'$  C 8.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK8

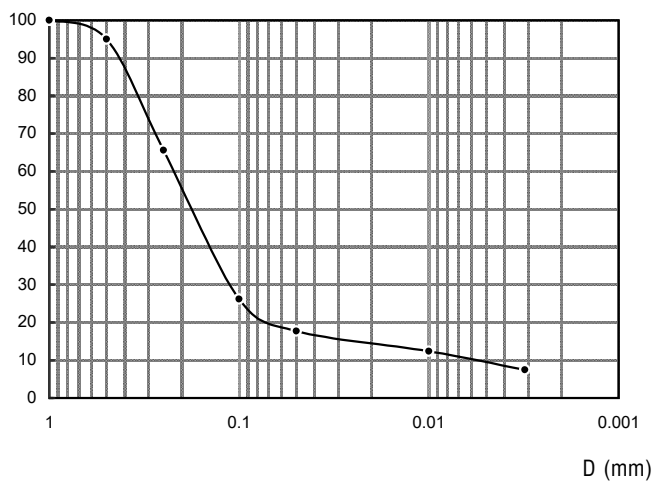
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám hồng, trạng thái dẻo / Plasticity, pinkish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.39	19.7	16.2	88.6	39.1	0.642	26.6	24.50	18.05	6.45	0.52

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	84.03g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.229	0.114	0.005	11.4	45.8

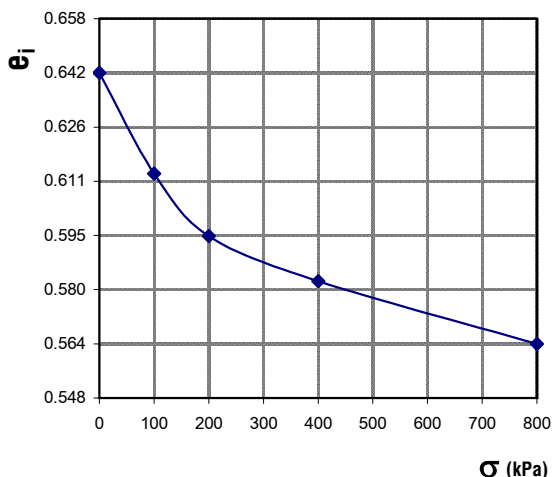
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	5.0	100.0
5.0			0.5-0.25	29.4	95.0
2.0			0.25-0.1	39.4	65.6
1.0			0.1-0.05	8.5	26.2
0.5	4.20	Bụi/Silt	0.05-0.01	5.3	17.7
0.25	24.71		0.01-0.005	2.6	12.4
0.1	33.09	Sét/Clay	<0.005	9.8	9.8



## Thí nghiệm nén lún/Compression test

$m_k = 3.78$  Hộp nén số/Test box No.: 50  $e_0 = 0.642$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 111.1  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.642			
100	42.0	7.9	0.613	0.029	5662.1	15817.0
200	67.0	11.5	0.595	0.018	8961.1	25032.9
400	85.0	14.2	0.582	0.007	22785.7	63651.9
800	108.4	16.6	0.564	0.005	31640.0	88386.3

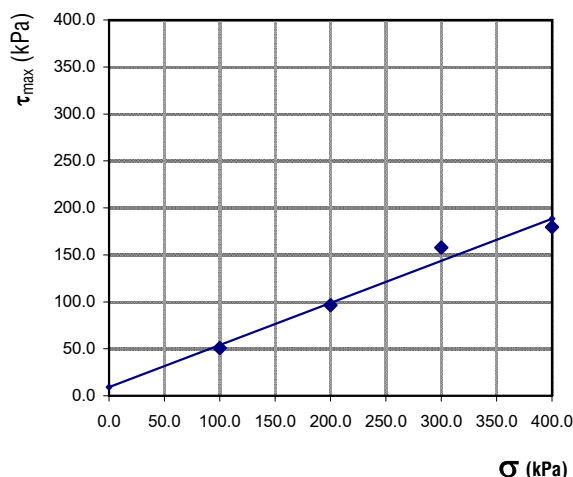


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	30.0	1.686	50.6
200	57.5	1.678	96.5
300	90.9	1.736	157.8
400	103.2	1.739	179.5

$\tan \varphi = 0.4480$   $\varphi = 24^\circ 08'$  C 9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK8

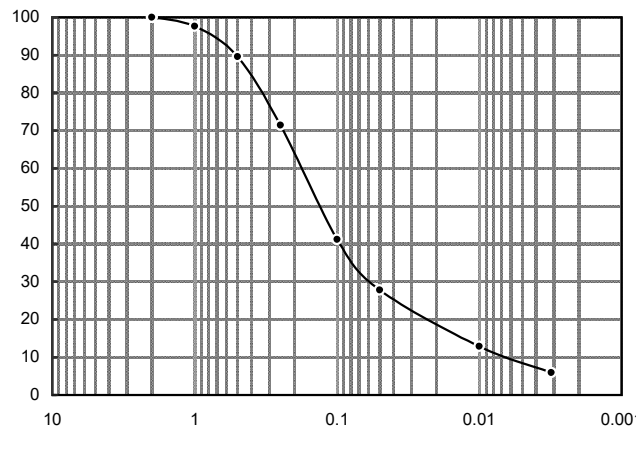
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám hồng, trạng thái dẻo / Plasticity, pinkish grey, Clayey sand

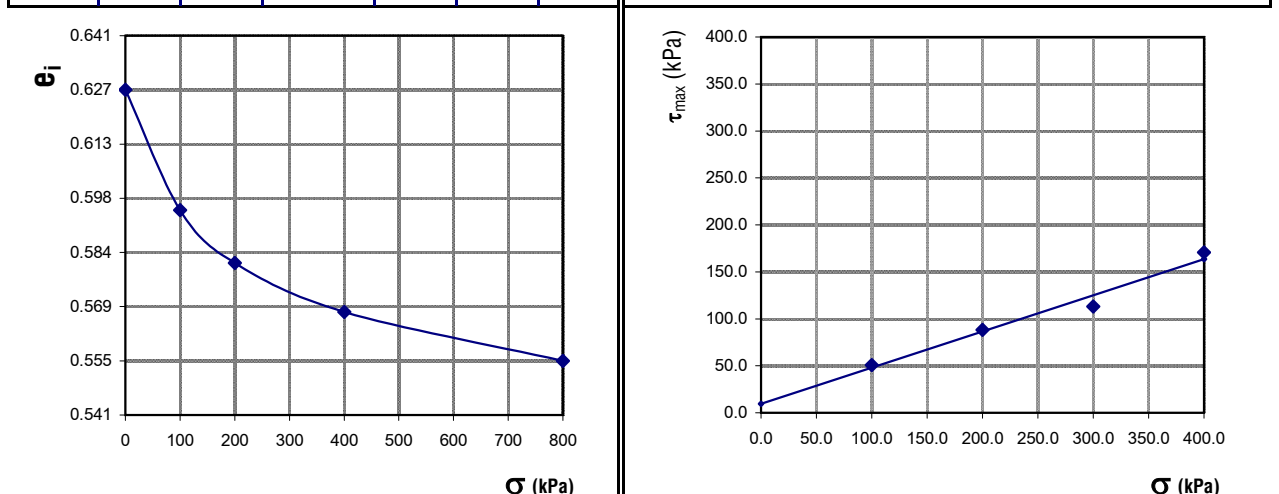
Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.63	20.0	16.6	88.8	38.5	0.627	27.0	24.10	17.32	6.78	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis		KL đất khô/Dry wei	66.32g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
		Nhiệt độ TN/Temp.	30.0°C	0.193	0.059	0.007	2.6	27.6

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1	2.4	100.0
2.0			1-0.5	8.0	97.6
1.0	1.58		0.5-0.25	18.2	89.6
0.5	5.30		0.25-0.1	30.2	71.4
0.25	12.08		0.1-0.05	13.4	41.2
0.1	20.00	Bụi/Silt	0.05-0.01	14.9	27.8
			0.01-0.005	4.9	12.9
		Sét/Clay	<0.005	8.0	8.0



Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 3.85$		Hộp nén số/Test box No.: 51		$e_0 = 0.627$			PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.74$		Số đọc sau 24h/Reading after 24h: 104.6		$h_p = 20\text{mm}$			Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$	$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa	kPa	Vạch/Div.	kPa/0.01mm	kPa
0			0.627				100	30.0	1.686	50.6
100	46.0	8.5	0.595	0.032	5084.4	14466.6	200	52.6	1.678	88.3
200	65.0	10.9	0.581	0.014	11392.9	32416.1	300	65.1	1.736	113.0
400	84.0	14.6	0.568	0.007	22585.7	64263.1	400	98.2	1.739	170.8
800	102.0	16.4	0.555	0.003	52266.7	148714.3	$\tan \varphi = 0.3853$ $\varphi = 21^\circ 04'$ C    9.4 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK8

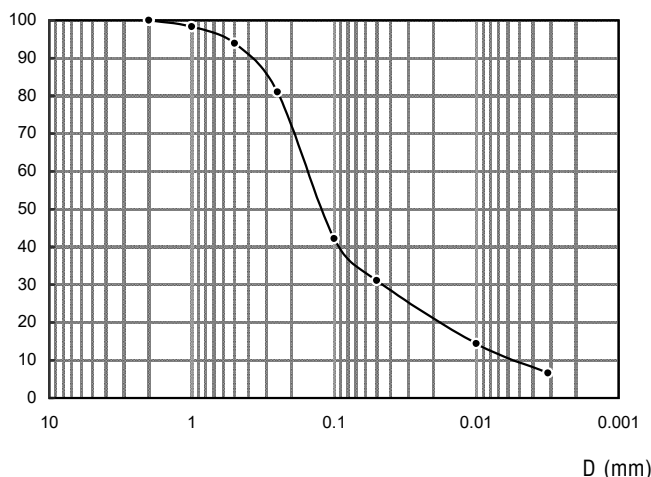
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám hồng, trạng thái dẻo / Plasticity, pinkish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	23.24	19.7	16.0	91.8	40.5	0.681	26.9	27.40	21.22	6.18	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	59.23g					
Nhiệt độ TN/Temp.	30.0°C	0.169	0.047	0.006	2.2	28.2

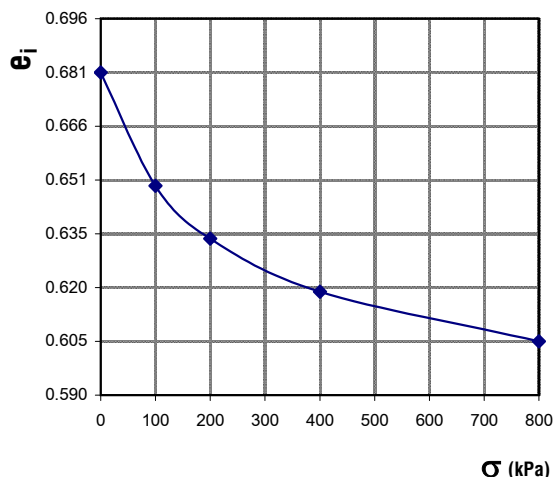
Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2		100.0
2.0		2-1	1.7	100.0
1.0	1.00	1-0.5	4.4	98.3
0.5	2.60	0.5-0.25	12.9	93.9
0.25	7.63	0.25-0.1	38.8	81.0
0.1	23.00	0.1-0.05	11.1	42.2
		0.05-0.01	16.7	31.1
		0.01-0.005	5.4	14.4
		Sét/Clay	<0.005	9.0



## Thí nghiệm nén lún/Compression test

$m_k = 3.58$  Hộp nén số/Test box No.: 52  $e_0 = 0.681$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 107.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.681			
100	46.0	8.8	0.649	0.032	5253.1	13916.6
200	66.0	11.4	0.634	0.015	10993.3	29123.5
400	87.0	15.0	0.619	0.008	20425.0	54109.9
800	105.0	16.9	0.605	0.004	40475.0	107226.4

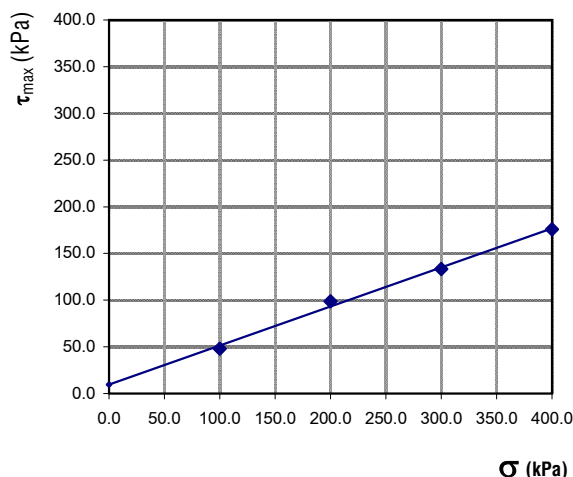


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.5	1.686	48.1
200	58.8	1.678	98.7
300	76.9	1.736	133.5
400	101.1	1.739	175.8

$\tan \phi = 0.4179$   $\phi = 22^\circ 41'$  C 9.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

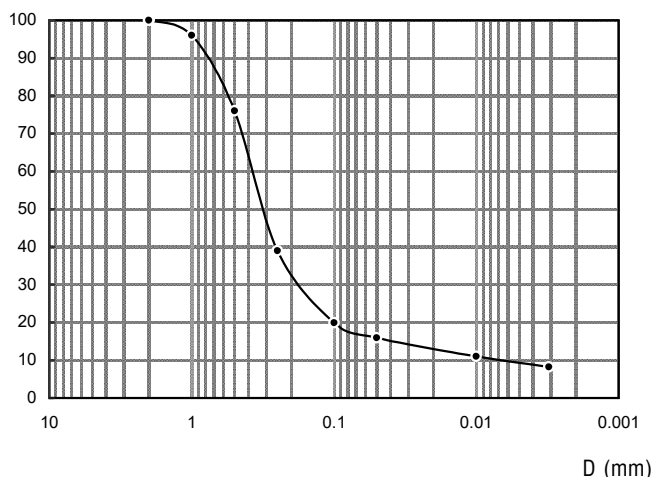
Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ - xám vàng, trạng thái dẻo / Plasticity, reddish brown - yellowish grey, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_p$	$I_L$
	19.46	20.2	16.9	90.2	36.5	0.574	26.6	22.30	16.52	5.78	0.51

<b>KQTN HẠT/Test results from sieve-hydrometer analysis</b>	KL đất khô/Dry wei    97.07g	<b>D<sub>60</sub>(mm)</b>	<b>D<sub>30</sub>(mm)</b>	<b>D<sub>10</sub>(mm)</b>	<b>C<sub>c</sub></b>	<b>C<sub>u</sub></b>
	Nhiệt độ TN/Temp.    30.0°C	0.392	0.179	0.006	13.6	65.3

<b>Khối lượng đất</b> <b>Mass of soil</b> <b>&gt;0.1mm</b>		Cấp hạt	D <sub>i1-i2</sub>	P <sub>i</sub>	P
		Grain grade	(mm)	%	%
		Sỏi sạn / Gravel	>10		100.0
D	m <sub>i</sub>		10-5		100.0
(mm)	(g)		5-2		100.0
20.0		Cát / Sand	2-1	4.0	100.0
10.0			1-0.5	20.0	96.0
5.0			0.5-0.25	37.0	76.0
2.0			0.25-0.1	19.1	39.0
1.0	3.87		0.1-0.05	4.0	19.9
0.5	19.44	Bụi / Silt	0.05-0.01	4.9	15.9
0.25	35.96		0.01-0.005	1.6	11.0
0.1	18.58	Sét / Clay	<0.005	9.4	9.4



### Thí nghiệm nén lún/Compression test

$$e_0: 0.574$$
$$h_0: 20\text{mm}$$

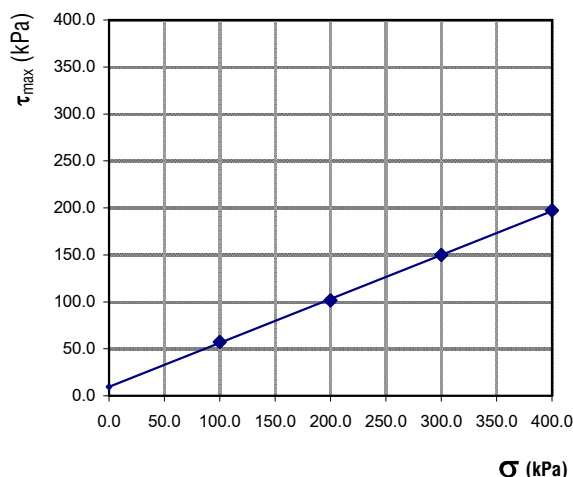
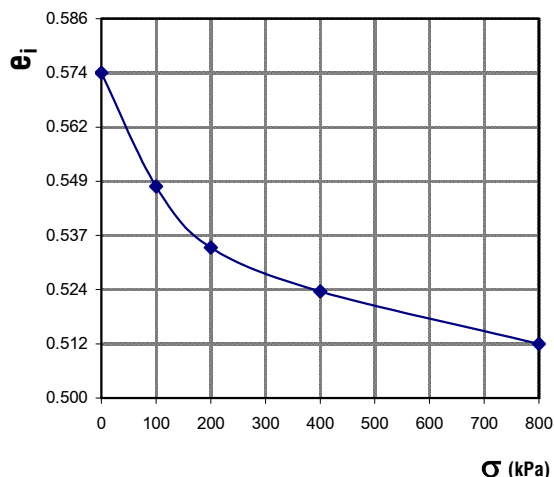
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	$a$	$E$	$E_0 = E^* m_k \cdot \beta$
kPa	V <sub>ach</sub> /Div.	V <sub>ach</sub> /Div.	-	kPa <sup>-1</sup> ·x10 <sup>-2</sup>	kPa	kPa
0			0.574			
100	41.0	8.9	0.548	0.026	6053.8	17919.4
200	61.0	11.6	0.534	0.014	11057.1	32729.1
400	77.0	15.2	0.524	0.005	30680.0	90812.8
800	94.0	17.4	0.512	0.003	50800.0	150368.0

### Thí nghiệm cắt phẳng/Direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.0	1.686	57.3
200	60.5	1.678	101.5
300	86.3	1.736	149.8
400	113.4	1.739	197.2

9.5 kPa



Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngộ



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK8

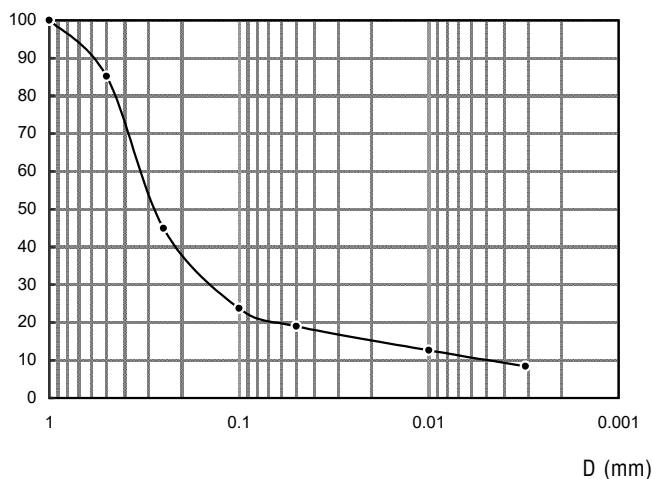
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ - xám vàng, trạng thái dẻo / Plasticity, reddish brown - yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	18.54	20.9	17.6	96.5	33.8	0.511	26.6	21.30	15.74	5.56	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	94.74g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.344	0.145	0.006	10.2	57.3

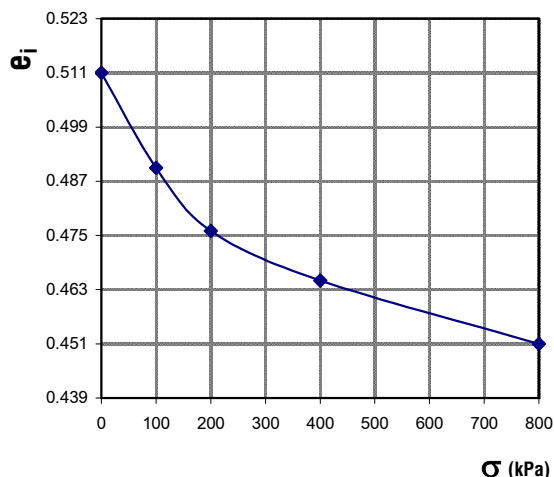
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	14.8	100.0
5.0			0.5-0.25	40.3	85.2
2.0			0.25-0.1	21.2	44.9
1.0			0.1-0.05	4.7	23.7
0.5	14.00	Bụi/Silt	0.05-0.01	6.4	19.0
0.25	38.14		0.01-0.005	2.9	12.6
0.1	20.10	Sét/Clay	<0.005	9.7	9.7



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 54  $e_0 = 0.511$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.511			
100	36.0	9.0	0.490	0.021	7195.2	21297.9
200	57.0	12.0	0.476	0.014	10642.9	31502.9
400	74.0	14.7	0.465	0.005	29520.0	87379.2
800	94.0	17.3	0.451	0.004	36625.0	108410.0

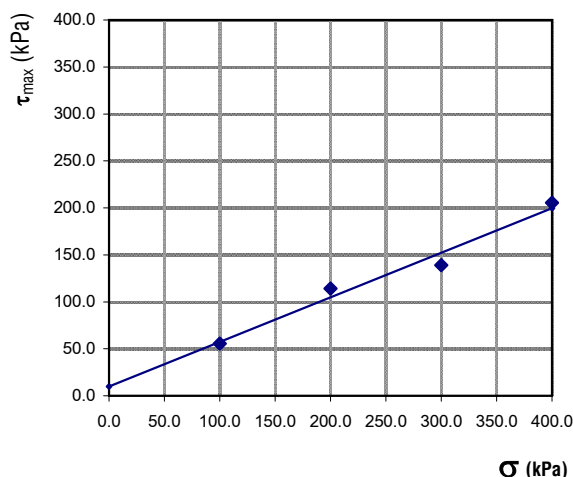


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.9	1.686	55.5
200	68.0	1.678	114.1
300	80.1	1.736	139.1
400	118.1	1.739	205.4

$\tan \phi = 0.4747$   $\phi = 25^\circ 24'$  C 9.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo

**Công trình/Project:** LOGISVALLEY HCMC

**Địa điểm/Location:** AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: **HK8-10**

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: **HK8**

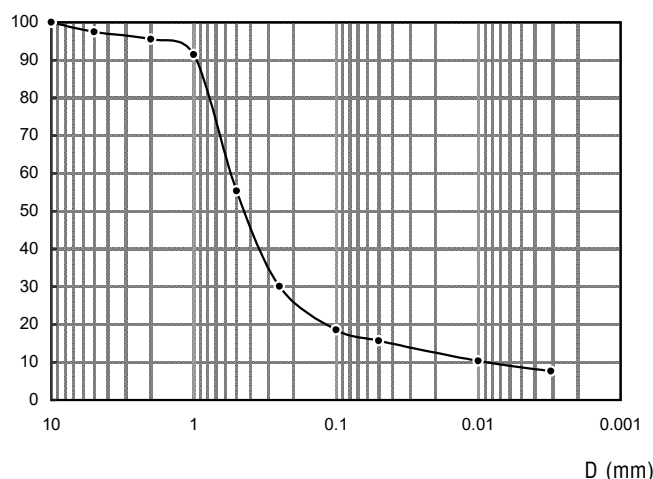
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ, trạng thái dẻo / Plasticity, reddish brown, Clayey sand

Nguyên dạng/Unit	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	18.72	20.5	17.3	92.0	35.2	0.543	26.7	21.67	15.83	5.84	0.49

<b>KQTN HẠT/Test results from sieve-hydrometer analysis</b>	KL đất khô/Dry wei 104.78g	<b>D<sub>60</sub>(mm)</b>	<b>D<sub>30</sub>(mm)</b>	<b>D<sub>10</sub>(mm)</b>	<b>C<sub>c</sub></b>	<b>C<sub>u</sub></b>
	Nhiệt độ TN/Temp. 30.0°C	0.565	0.249	0.009	12.2	62.8

<b>Khối lượng đất</b> <b>Mass of soil</b> <b>&gt;0.1mm</b>		Cấp hạt	D <sub>11-12</sub>	P <sub>i</sub>	P
		Grain grade	(mm)	%	%
		Sỏi/san/Gravel	>10		100.0
D	m <sub>i</sub>		10-5	2.5	100.0
(mm)	(g)		5-2	2.0	97.5
20.0		Cát/Sand	2-1	4.1	95.5
10.0			1-0.5	36.1	91.4
5.0	2.59		0.5-0.25	25.2	55.3
2.0	2.08		0.25-0.1	11.5	30.1
1.0	4.30		0.1-0.05	2.9	18.6
0.5	37.86	Bụi/Silt	0.05-0.01	5.4	15.7
0.25	26.41		0.01-0.005	1.7	10.3
0.1	12.08	Sét/Clay	<0.005	8.6	8.6



### Thí nghiệm nén lún/Compression test

$m_k = 4.00$	Hộp nén số/Test box No.:	55	$e_n: 0.543$
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$\beta = 0.74$       Số đọc sau 24h/Reading after 24h: 90.2       $h_0$ : 20mm

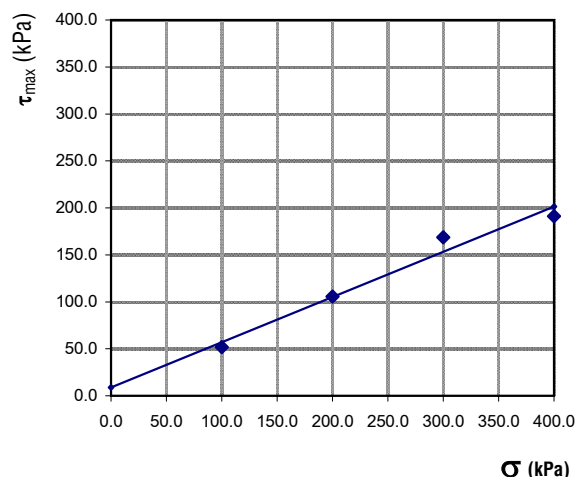
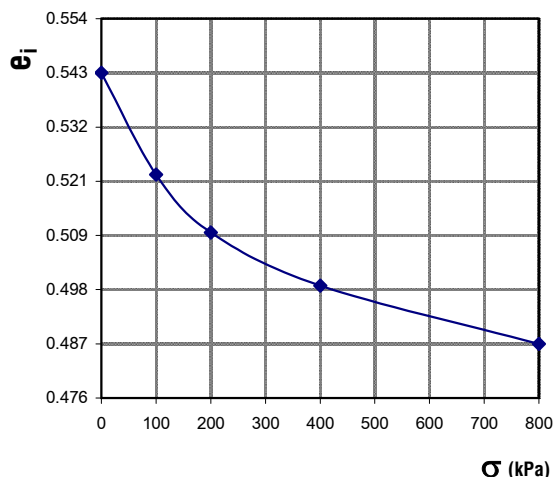
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	$a$	$E$	$E_0 = E \cdot m_k \cdot \beta$
kPa	V <sub>ach</sub> /Div.	V <sub>ach</sub> /Div.	-	kPa <sup>-1</sup> ·x10 <sup>-2</sup>	kPa	kPa
0			0.543			
100	32.0	6.3	0.522	0.021	7347.6	21749.0
200	54.0	12.6	0.510	0.012	12683.3	37542.7
400	70.0	15.2	0.499	0.006	25166.7	74493.3
800	88.0	18.3	0.487	0.003	49966.7	147901.3

### Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vach/Div.	kPa/0.01mm	kPa
100	30.7	1.686	51.8
200	62.9	1.678	105.5
300	97.1	1.736	168.6
400	109.9	1.739	191.1

$$\tan \phi = 0.4810 \quad \phi = 25^\circ 41' \quad C \quad 9.0 \text{ kPa}$$


**Đại diện TN/Tested by: Trần Hồng Văn**

**Xử lý/Computed by: KS. Võ Thanh Long**

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngộ





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK8

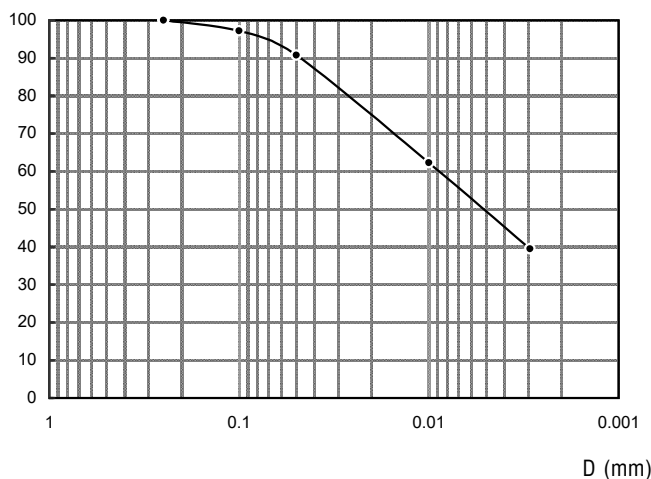
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám vàng - nâu vàng, trạng thái dẻo cứng / Stiff, yellowish grey - yellowish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	25.81	19.6	15.6	93.9	42.9	0.750	27.3	41.53	20.40	21.13	0.26

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	35.77g	0.009	*	*	*
						30.0°C				

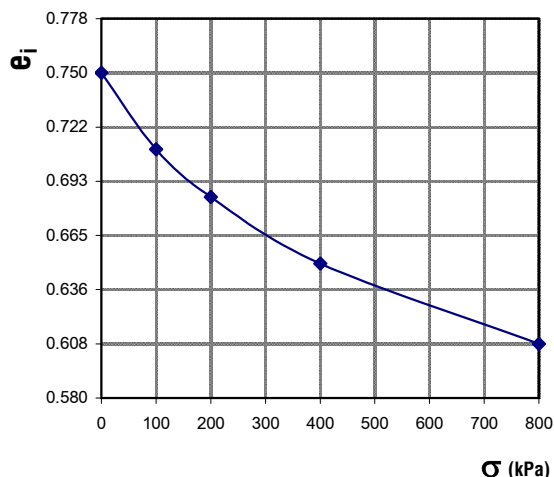
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	2.8	100.0
0.25			0.1-0.05	6.4	97.2
0.1	1.00	Bụi/Silt	0.05-0.01	28.5	90.8
			0.01-0.005	15.8	62.3
		Sét/Clay	<0.005	46.5	46.5



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 56  $e_0 = 0.750$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 179.4  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.750			
100	51.0	6.2	0.710	0.040	4375.0	10500.0
200	84.0	11.9	0.685	0.025	6840.0	16416.0
400	126.0	14.9	0.650	0.018	9361.1	22466.7
800	175.0	17.9	0.608	0.011	15000.0	36000.0

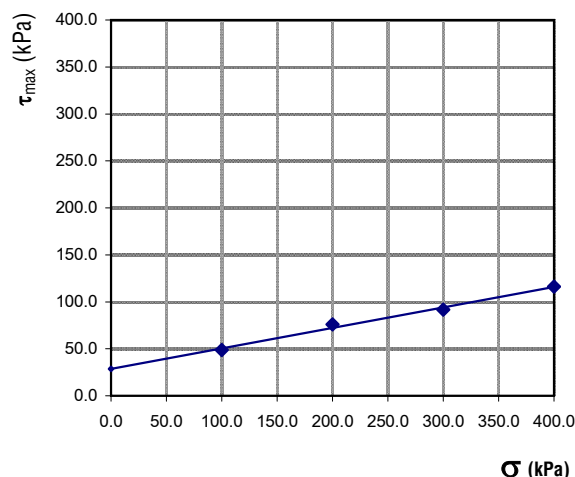


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.8	1.686	48.6
200	45.3	1.678	76.0
300	52.8	1.736	91.7
400	66.8	1.739	116.2

$\tan \phi = 0.2185$   $\phi = 12^\circ 20'$  C 28.5 kPa

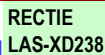


Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





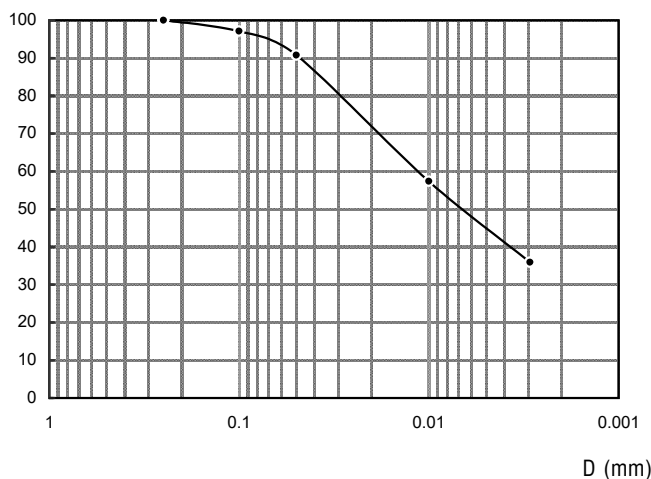
## TT04-BM16

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_p$	$I_L$
	29.53	19.0	14.7	94.1	46.2	0.857	27.3	41.32	20.78	20.54	0.43

<b>KQTN HẠT/Test results from sieve-hydrometer analysis</b>	KL đất khô/Dry wei    39.41g	<b>D<sub>60</sub>(mm)</b>	<b>D<sub>30</sub>(mm)</b>	<b>D<sub>10</sub>(mm)</b>	<b>C<sub>c</sub></b>	<b>C<sub>u</sub></b>
	Nhiệt độ TN/Temp.    30.0°C	0.011	*	*	*	*

Khối lượng đất		Cấp hạt	D <sub>i1-i2</sub>	P <sub>i</sub>	P
Mass of soil		Grain grade	(mm)	%	%
>0.1mm		Sỏi/san/Gravel	>10		100.0
D	m <sub>i</sub>		10-5		100.0
(mm)	(g)		5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	2.9	100.0
1.0			0.1-0.05	6.3	97.1
0.5		Bụi/Silt	0.05-0.01	33.4	90.8
0.25			0.01-0.005	15.2	57.4
0.1	1.16	Sét/Clay	<0.005	42.2	42.2

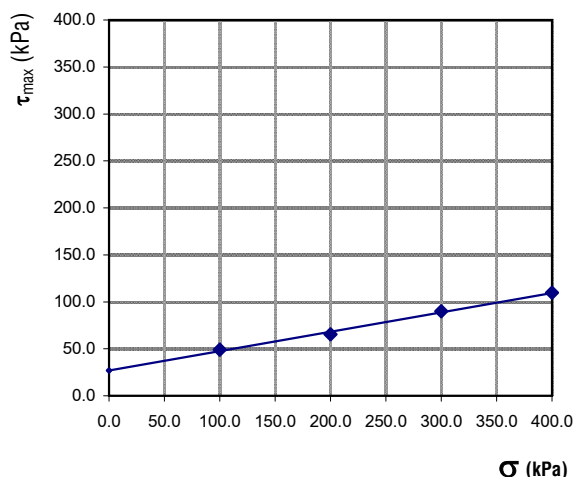
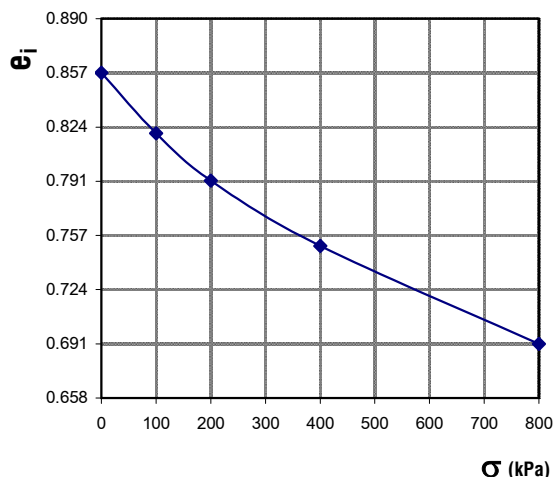


### Thí nghiệm cắt phẳng/Direct shear test

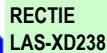
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
 Hệ số vòng lục/Proving ring calibration factor: Cr

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	$a$	$E$	$E_o = E \cdot m_k \cdot \beta$
kPa	V <sub>ach</sub> /Div.	V <sub>ach</sub> /Div.	-	kPa <sup>-1</sup> ·x10 <sup>-2</sup>	kPa	kPa
0			0.857			
100	45.0	6.3	0.820	0.037	5018.9	11633.9
200	81.0	11.6	0.791	0.029	6275.9	14547.4
400	126.0	14.7	0.751	0.020	8955.0	20757.7
800	191.0	17.1	0.691	0.015	11673.3	27058.8

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	V <sub>ach</sub> /Div.	kPa/0.01mm	kPa
100	29.2	1.686	49.2
200	38.9	1.678	65.3
300	51.9	1.736	90.1
400	63.1	1.739	109.7

$$\tan \phi = 0.2063 \quad \phi = 11^\circ 39' \quad C = 27.0 \text{ kPa}$$


Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngộ



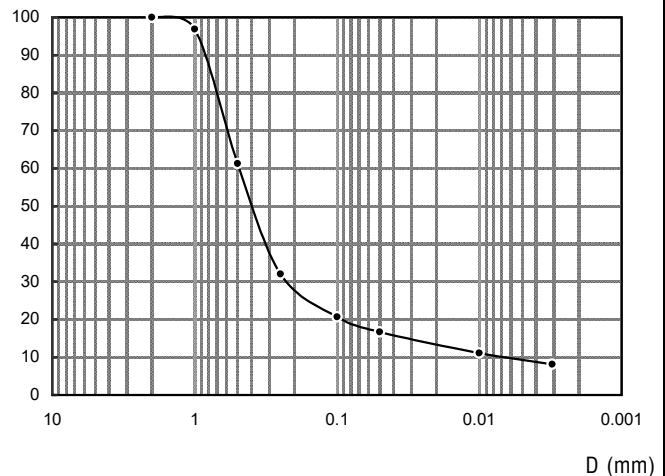
## TT04-BM16

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu đỏ, trạng thái dẻo / Plasticity, yellowish grey - reddish brown, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.93	20.0	16.4	92.7	38.8	0.634	26.8	24.73	19.00	5.73	0.51

<b>KQTN HẠT/Test results from sieve-hydrometer analysis</b>	KL đất khô/Dry wei 97.57g	<b>D<sub>60</sub>(mm)</b>	<b>D<sub>30</sub>(mm)</b>	<b>D<sub>10</sub>(mm)</b>	<b>C<sub>c</sub></b>	<b>C<sub>u</sub></b>
	Nhiệt độ TN/Temp. 30.0°C	0.489	0.223	0.007	14.5	69.9

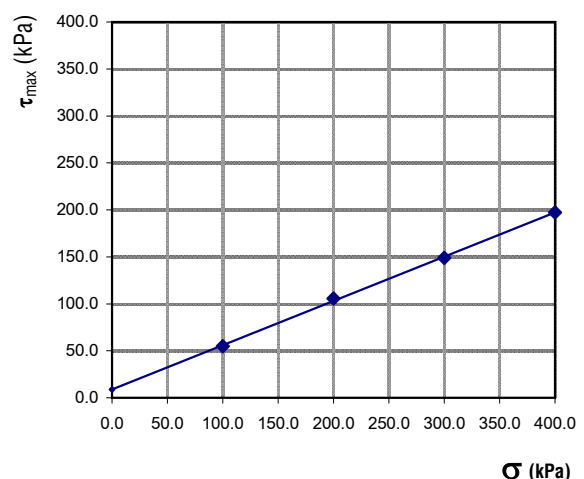
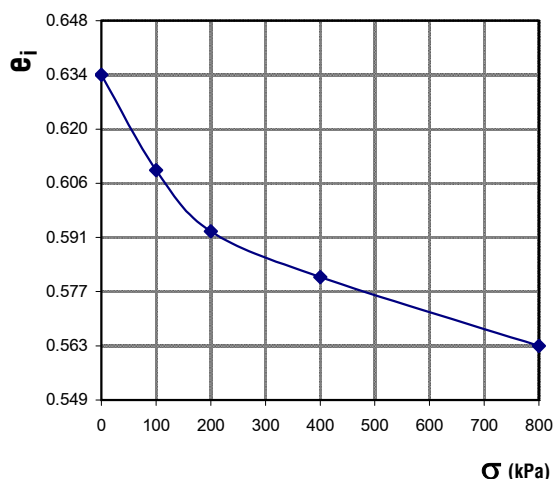
<b>Khối lượng đất</b> <b>Mass of soil</b> <b>&gt;0.1mm</b>		Cấp hạt	D <sub>1-12</sub>	P <sub>i</sub>	P
		Grain grade	(mm)	%	%
		Sỏi sạn / Gravel	>10		100.0
D	m <sub>i</sub>		10-5		100.0
(mm)	(g)		5-2		100.0
20.0		Cát / Sand	2-1	3.1	100.0
10.0			1-0.5	35.6	96.9
5.0			0.5-0.25	29.3	61.3
2.0			0.25-0.1	11.3	32.0
1.0	3.04		0.1-0.05	4.0	20.7
0.5	34.75	Bụi / Silt	0.05-0.01	5.6	16.7
0.25	28.60		0.01-0.005	1.8	11.1
0.1	11.00	Sét / Clay	<0.005	9.3	9.3



$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	$a$	$E$	$E_0 = E \cdot m_k \cdot \beta$
kPa	V <sub>ach</sub> /Div.	V <sub>ach</sub> /Div.	-	kPa <sup>-1</sup> ·x10 <sup>-2</sup>	kPa	kPa
0			0.634			
100	36.0	6.6	0.609	0.025	6536.0	18306.7
200	60.0	11.6	0.593	0.016	10056.3	28166.6
400	78.0	14.6	0.581	0.006	26550.0	74363.9
800	102.0	17.5	0.563	0.005	31620.0	88564.5

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Va $\dot{c}$ h/Div.	kPa/0.01mm	kPa
100	32.6	1.686	55.0
200	62.9	1.678	105.5
300	85.8	1.736	148.9
400	113.5	1.739	197.4

9.0 kPa



Kiểm tra/Checked by: PGS.TS. Đâu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK8

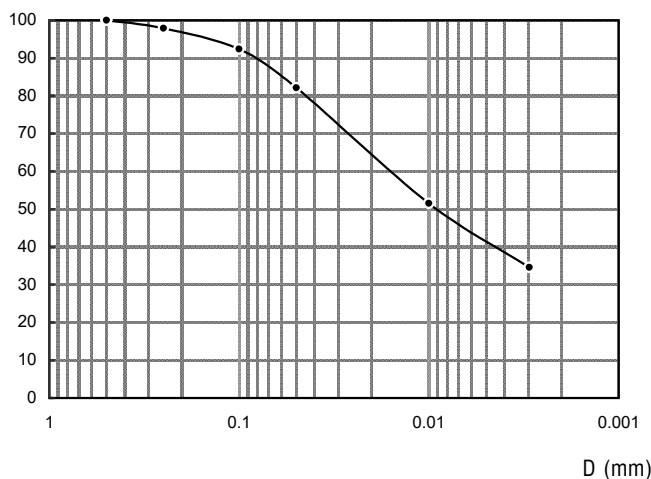
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	25.43	19.5	15.5	91.2	43.2	0.761	27.3	42.52	19.40	23.12	0.26

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	36.25g	0.017	*	*	*
						30.0°C				

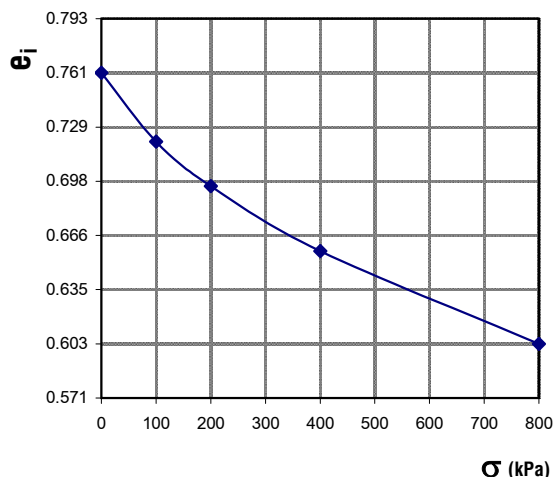
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25	2.1	100.0
2.0			0.25-0.1	5.5	97.9
1.0			0.1-0.05	10.3	92.4
0.5		Bụi/Silt	0.05-0.01	30.6	82.1
0.25	0.75		0.01-0.005	10.1	51.5
0.1	2.00	Sét/Clay	<0.005	41.4	41.4



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 59  $e_0 = 0.761$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 196.8  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.761			
100	51.0	6.9	0.721	0.040	4402.5	10566.0
200	84.0	11.3	0.695	0.026	6619.2	15886.2
400	129.0	14.3	0.657	0.019	8921.1	21410.5
800	192.0	17.0	0.603	0.014	11835.7	28405.7

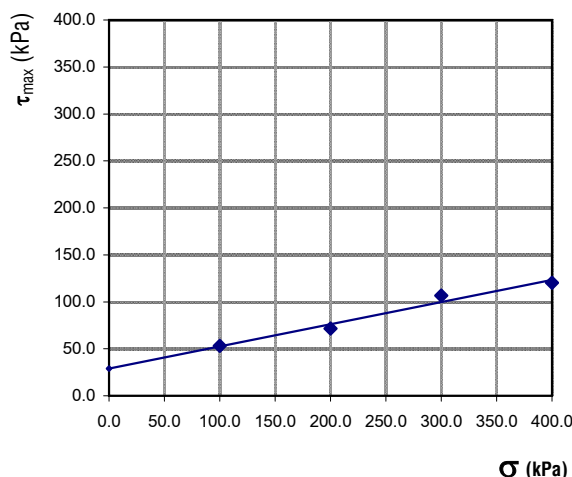


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.5	1.686	53.1
200	42.6	1.678	71.5
300	61.4	1.736	106.6
400	69.1	1.739	120.2

$\tan \phi = 0.2364$   $\phi = 13^\circ 18'$  C 28.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK8-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK8

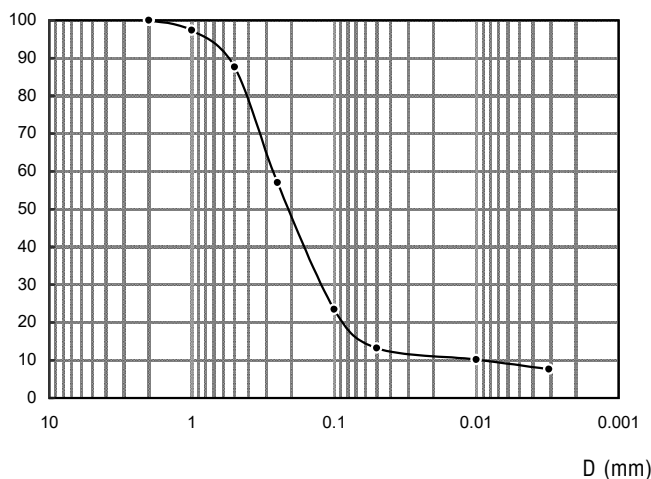
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.65	20.3	17.0	91.9	36.3	0.571	26.7	22.45	16.72	5.73	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	104.35g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.275	0.129	0.009	6.7	30.6

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Sieve size			
20.0		Cát/Sand	2-1	2.6	100.0
10.0			1-0.5	9.8	97.4
5.0			0.5-0.25	30.6	87.6
2.0			0.25-0.1	33.5	57.0
1.0	2.73		0.1-0.05	10.3	23.5
0.5	10.26	Bụi/Silt	0.05-0.01	3.0	13.2
0.25	31.90		0.01-0.005	1.5	10.2
0.1	35.00	Sét/Clay	<0.005	8.7	8.7



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 60  $e_0 = 0.571$

$\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 93.3  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.571			
100	35.0	6.7	0.548	0.023	6830.4	20218.1
200	56.0	10.3	0.534	0.014	11057.1	32729.1
400	72.0	13.8	0.524	0.005	30680.0	90812.8
800	91.0	16.1	0.511	0.003	50800.0	150368.0

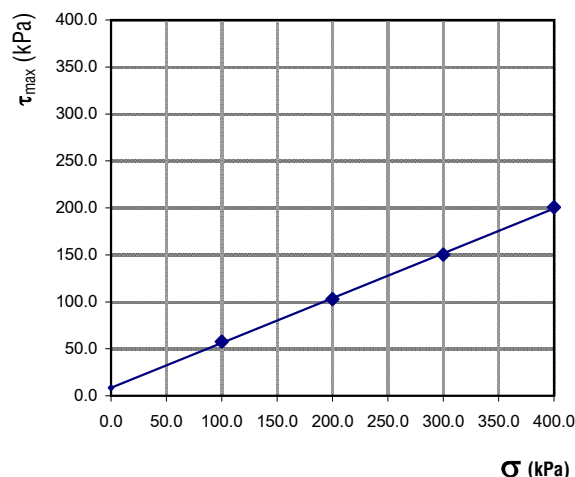
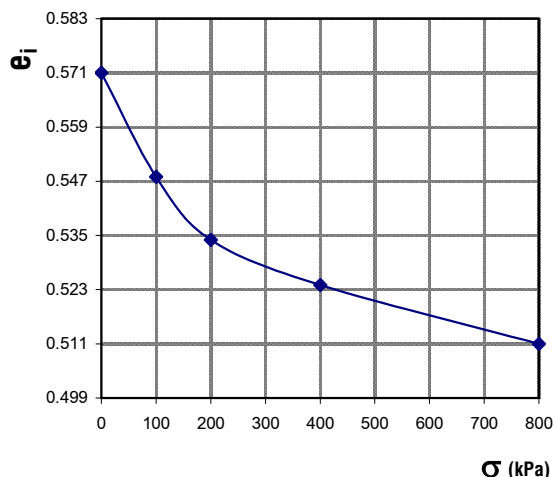
## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.1	1.686	57.5
200	61.3	1.678	102.9
300	86.5	1.736	150.2
400	115.4	1.739	200.7

$\tan \varphi = 0.4769$   $\varphi = 25^\circ 30'$  C 8.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK9

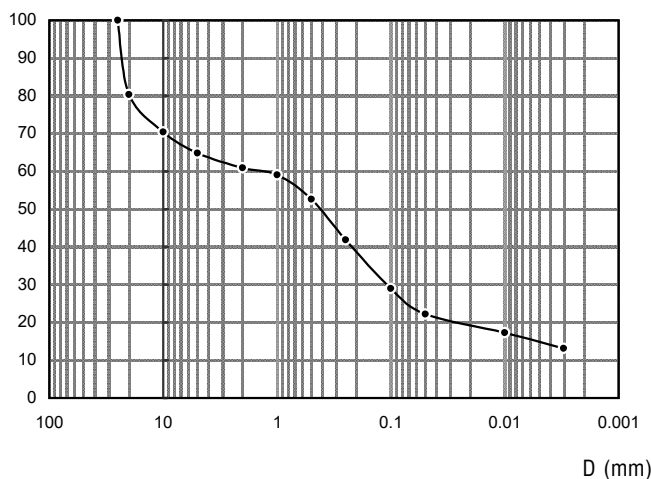
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn dăm sạn laterit, nâu đỏ - vàng nâu, trạng thái dẻo cứng / Stiff, reddish brown - brownish yellow, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.32	19.7	16.1	88.6	40.6	0.683	27.1	31.46	16.96	14.50	0.37

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	66.05g					
	Nhiệt độ TN/Temp.	30.0°C	1.500	0.112	*	*

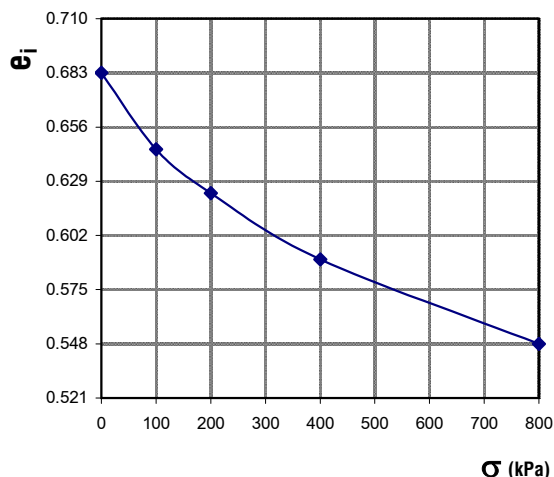
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10	29.6	100.0
20.0		Cát/Sand	10-5	5.6	70.4
10.0	6.55		5-2	3.9	64.8
5.0	3.68		2-1	1.8	60.9
2.0	2.55		1-0.5	6.5	59.1
1.0	1.21		0.5-0.25	10.7	52.6
0.5	4.30	Bụi/Silt	0.25-0.1	12.9	41.9
0.25	7.10		0.1-0.05	6.8	29.0
0.1	8.49		0.05-0.01	4.9	22.2
		Sét/Clay	0.01-0.005	2.5	17.3
			<0.005	14.8	14.8



## Thí nghiệm nén lún/Compression test

$m_k = 4.64$  Hộp nén số/Test box No.: 31  $e_0 = 0.683$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 176.3  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.683			
100	51.0	7.1	0.645	0.038	4428.9	12727.5
200	80.0	11.4	0.623	0.022	7477.3	21487.4
400	121.0	14.1	0.590	0.017	9547.1	27435.4
800	172.0	16.8	0.548	0.011	14454.5	41538.0

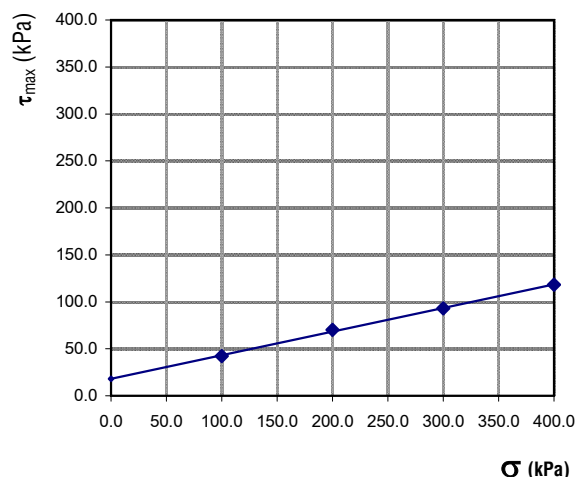


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.0	1.686	42.2
200	41.8	1.678	70.1
300	53.5	1.736	92.9
400	67.9	1.739	118.1

$\tan \phi = 0.2505$   $\phi = 14^\circ 04'$  C 18.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK9

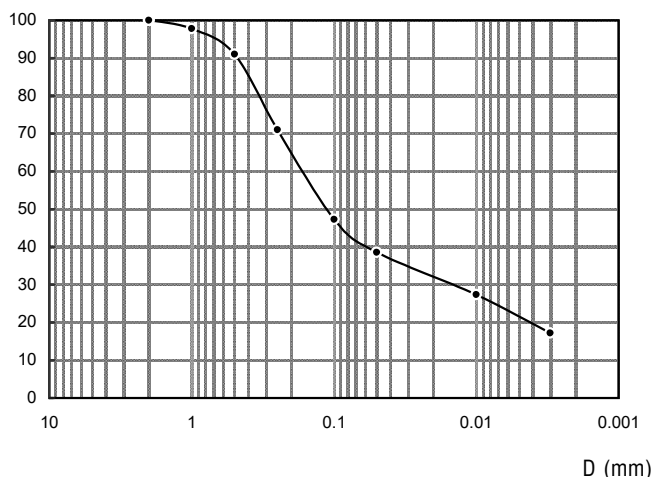
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám tro - vàng nâu, trạng thái dẻo cứng / Stiff, ashgrey - brownish yellow, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	25.67	19.1	15.2	89.3	43.7	0.776	27.0	33.27	19.00	14.27	0.47

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	54.91g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.180	0.015	*	*	*

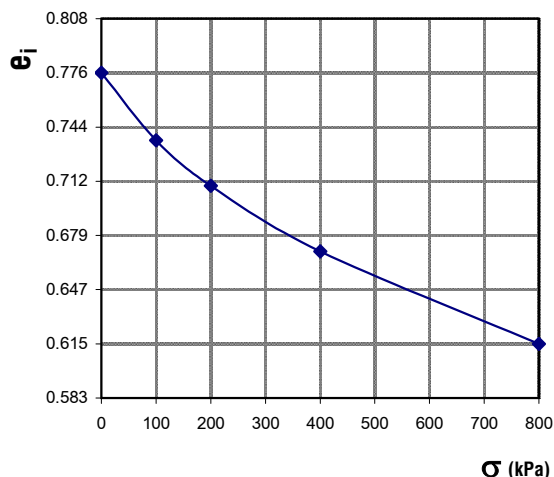
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1	2.2	100.0
2.0			1-0.5	6.8	97.8
1.0	1.20		0.5-0.25	20.0	91.0
0.5	3.75		0.25-0.1	23.7	71.0
0.25	11.00		0.1-0.05	8.7	47.3
0.1	13.00	Bụi/Silt	0.05-0.01	11.2	38.6
			0.01-0.005	5.9	27.4
		Sét/Clay	<0.005	21.5	21.5



## Thí nghiệm nén lún/Compression test

$m_k = 4.21$  Hộp nén số/Test box No.: 32  $e_0 = 0.776$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 198.9  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.776			
100	51.0	7.4	0.736	0.040	4440.0	11575.5
200	86.5	13.0	0.709	0.027	6429.6	16762.7
400	130.0	14.5	0.670	0.020	8545.0	22277.7
800	194.0	17.8	0.615	0.014	11928.6	31099.0

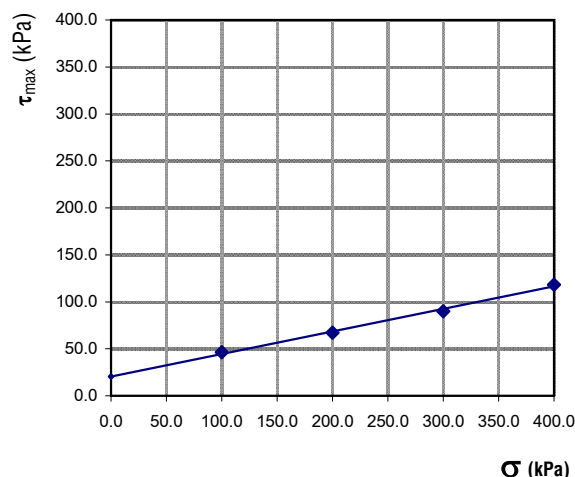


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.4	1.686	46.2
200	39.9	1.678	67.0
300	51.9	1.736	90.1
400	68.0	1.739	118.3

$\tan \phi = 0.2394$   $\phi = 13^\circ 28'$  C 20.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK9

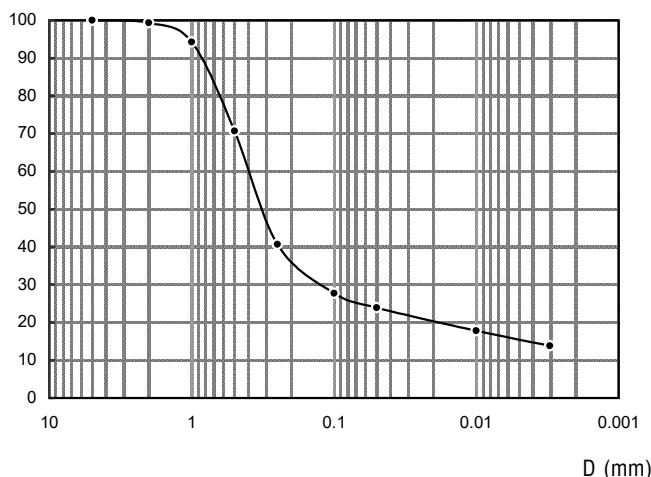
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám tro - vàng nâu, trạng thái dẻo cứng / Stiff, ashgrey - brownish yellow, Sandy clay

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.14	20.2	16.8	90.1	37.5	0.601	26.9	26.33	16.19	10.14	0.39

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	69.00g					
	Nhiệt độ TN/Temp.	30.0°C	0.411	0.127	*	*

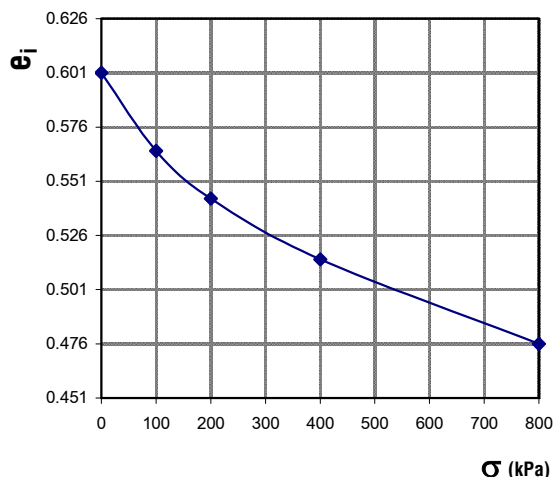
Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2	0.7	100.0
2.0	0.50	2-1	5.1	99.3
1.0	3.54	1-0.5	23.5	94.2
0.5	16.19	0.5-0.25	30.0	70.7
0.25	20.70	0.25-0.1	13.0	40.7
0.1	9.00	0.1-0.05	3.8	27.7
		0.05-0.01	6.1	23.9
		0.01-0.005	2.4	17.8
		Sét/Clay	<0.005	15.4



## Thí nghiệm nén lún/Compression test

$m_k = 5.00$  Hộp nén số/Test box No.: 33  $e_0 = 0.601$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 174.3  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.601			
100	50.0	6.5	0.565	0.036	4447.2	13786.4
200	84.0	13.4	0.543	0.022	7113.6	22052.3
400	119.0	15.1	0.515	0.014	11021.4	34166.4
800	170.0	18.7	0.476	0.010	15150.0	46965.0

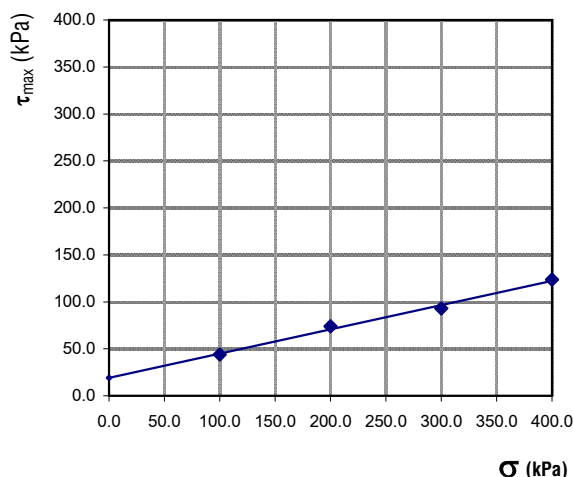


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.1	1.686	44.0
200	44.0	1.678	73.8
300	53.6	1.736	93.0
400	71.1	1.739	123.6

$\tan \varphi = 0.2580$   $\varphi = 14^\circ 28'$  C 19.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK9

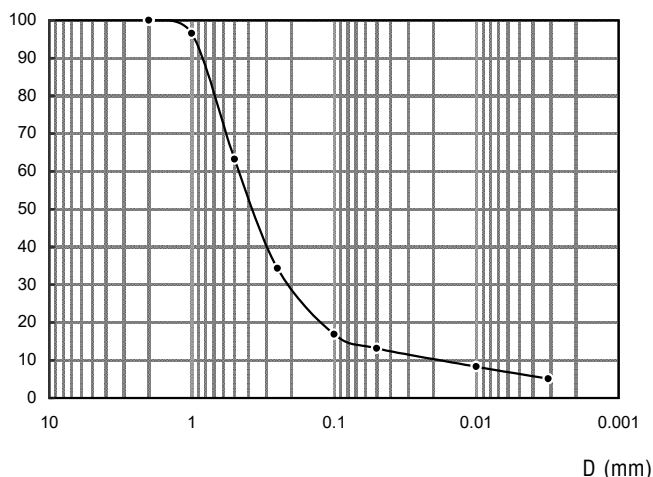
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	17.93	20.8	17.6	93.3	33.8	0.511	26.6	20.78	15.24	5.54	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	124.37g					
Nhiệt độ TN/Temp.	30.0°C	0.472	0.213	0.018	5.3	26.2

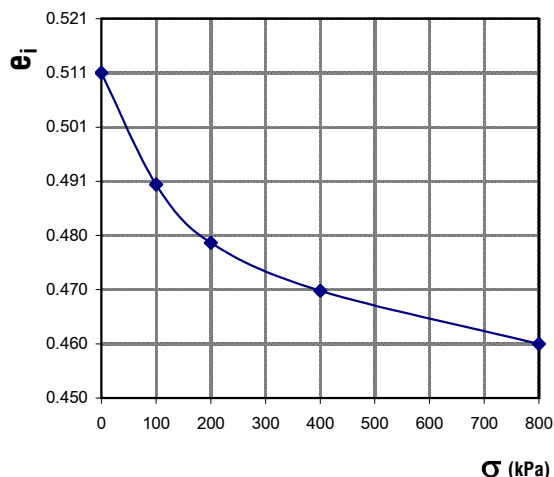
Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2		100.0
2.0		2-1	3.5	100.0
1.0	4.30	1-0.5	33.3	96.5
0.5	41.40	0.5-0.25	28.9	63.2
0.25	35.96	0.25-0.1	17.4	34.3
0.1	21.67	0.1-0.05	3.8	16.9
		0.05-0.01	4.8	13.1
		0.01-0.005	1.7	8.3
		Sét/Clay	<0.005	6.6



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 34  $e_0 = 0.511$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 86.1  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.511			
100	33.0	6.3	0.490	0.021	7195.2	21297.9
200	55.0	13.3	0.479	0.011	13545.5	40094.5
400	68.0	15.6	0.470	0.005	29580.0	87556.8
800	84.0	18.7	0.460	0.002	73500.0	217560.0

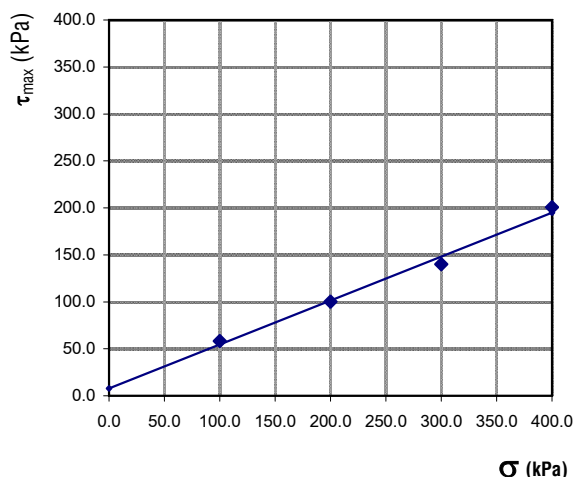


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.5	1.686	58.2
200	59.7	1.678	100.2
300	80.7	1.736	140.1
400	115.4	1.739	200.7

$\tan \varphi = 0.4674$   $\varphi = 25^\circ 03'$  C 8.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK9

Ngày TN/Date test: 01-10-18

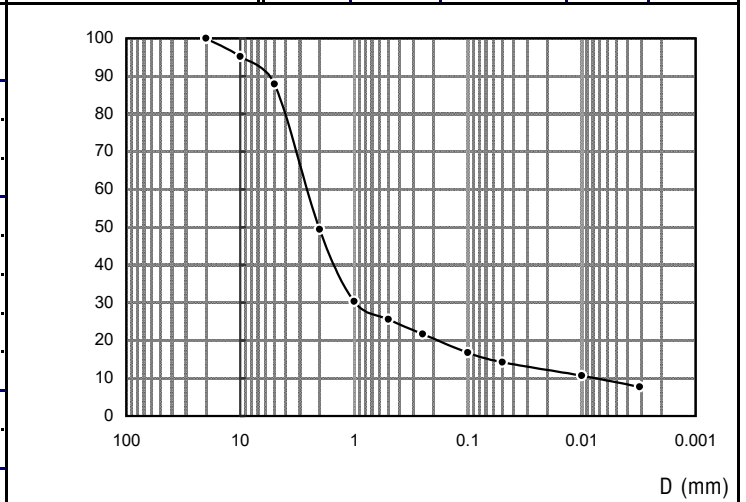
Tên đất/Soil name theo TCVN 9362:2012:

Á cát lẫn dăm sạn thạch anh, nâu đỏ - vàng nâu, trạng thái dẻo / Plasticity, reddish brown - brownish yellow, Claye

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.52	20.4	17.1	92.9	36.0	0.561	26.7	22.47	17.25	5.22	0.43

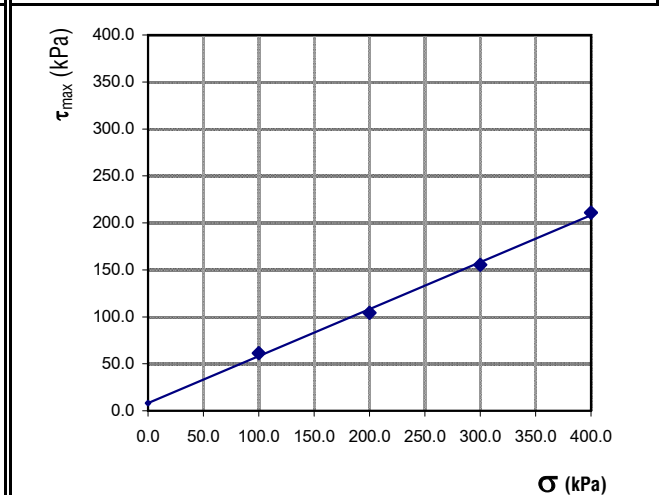
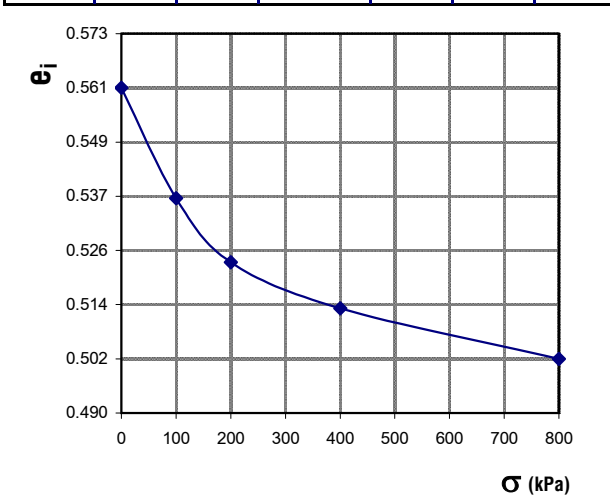
KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	91.47g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	2.826	0.968	0.008	41.4	353.3

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10	4.8	100.0
20.0		Cát/Sand	10-5	7.3	95.2
10.0	4.37		5-2	38.5	87.9
5.0	6.66		2-1	19.1	49.4
2.0	35.21		1-0.5	4.7	30.3
1.0	17.44		0.5-0.25	3.9	25.6
0.5	4.27	Bụi/Silt	0.25-0.1	4.9	21.7
0.25	3.55		0.1-0.05	2.6	16.8
0.1	4.50		0.05-0.01	3.5	14.2
		Sét/Clay	0.01-0.005	1.7	10.7
			<0.005	9.0	9.0



Thí nghiệm nén lún/Compression test						
$m_k = 4.00$	Hộp nén số/Test box No.: 35	$e_0 = 0.561$				
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 93.3	$h_p = 20mm$				
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.561			
100	36.0	6.2	0.537	0.024	6504.2	19252.3
200	58.0	11.0	0.523	0.014	10978.6	32496.6
400	75.0	14.8	0.513	0.005	30460.0	90161.6
800	91.0	17.6	0.502	0.003	50433.3	149282.7

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.4	1.686	61.4
200	62.2	1.678	104.4
300	89.6	1.736	155.5
400	121.3	1.739	210.9
$\tan \varphi = 0.4996$ $\varphi = 26^\circ 33'$ C      8.2 kPa			



Đại diện TN/ Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK9

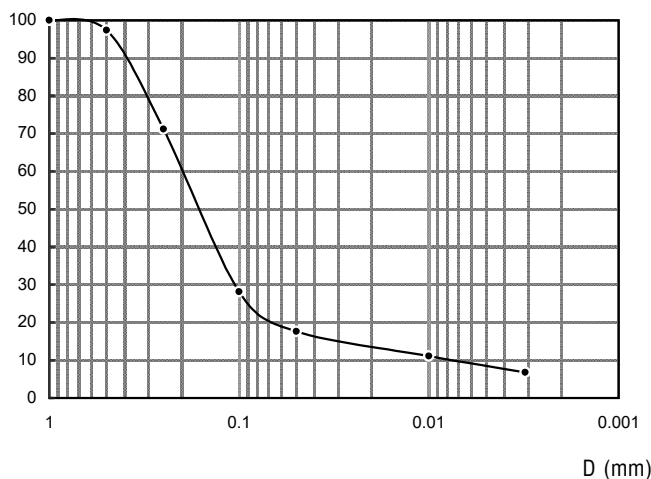
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ - vàng nâu, trạng thái dẻo / Plasticity, reddish brown - brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.58	20.0	16.6	89.8	38.1	0.614	26.8	23.47	17.67	5.80	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	92.88g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.211	0.107	0.008	6.8	26.4

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{11-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	2.6	100.0
1.0			0.5-0.25	26.2	97.4
0.5	2.40		0.25-0.1	43.1	71.2
0.25	24.30		0.1-0.05	10.5	28.1
0.1	40.00	Bụi/Silt	0.05-0.01	6.5	17.6
			0.01-0.005	2.3	11.1
		Sét/Clay	<0.005	8.8	8.8



## Thí nghiệm nén lún/Compression test

$m_k = 3.88$

Hộp nén số/Test box No.: 36

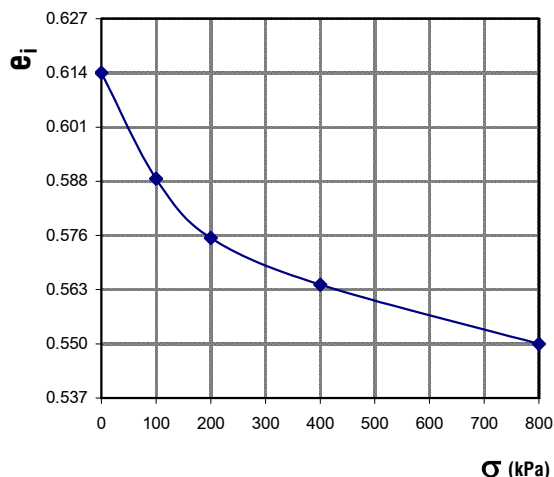
$e_0 = 0.614$

$\beta = 0.74$

Số đọc sau 24h/Reading after 24h: 96.4

$h_p = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.614			
100	36.0	6.1	0.589	0.025	6456.0	18512.6
200	58.0	11.4	0.575	0.014	11350.0	32546.1
400	74.0	14.4	0.564	0.006	26250.0	75271.9
800	94.0	17.4	0.550	0.003	52133.3	149492.3



## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

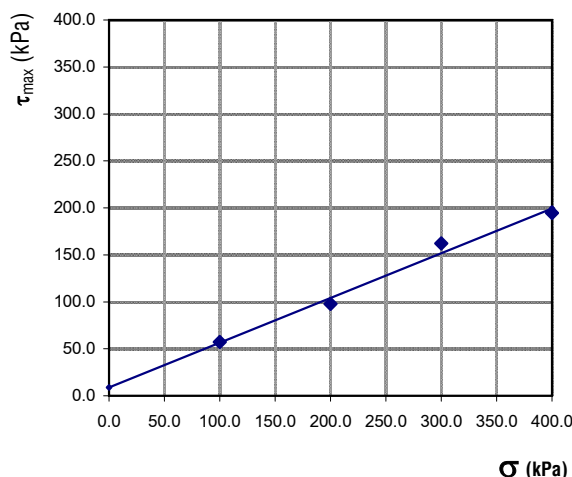
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.0	1.686	57.3
200	58.3	1.678	97.8
300	93.4	1.736	162.1
400	111.8	1.739	194.4

$\tan \phi = 0.4756$

$\phi = 25^\circ 26'$

C

9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK9

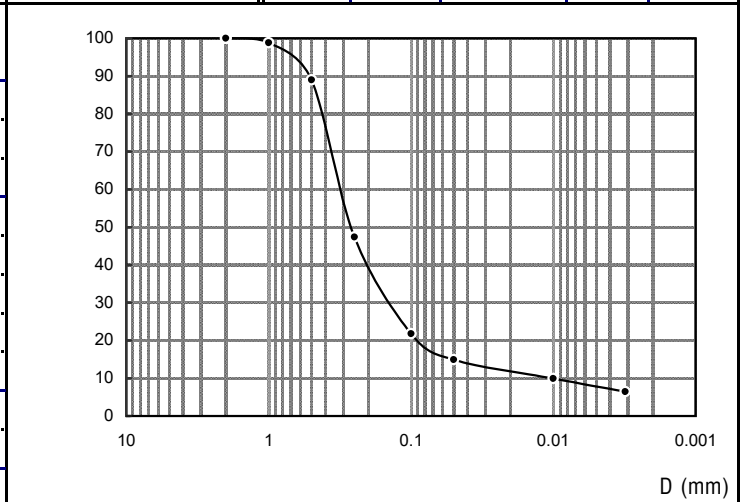
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.34	20.0	16.5	92.8	38.0	0.612	26.6	24.28	18.44	5.84	0.50

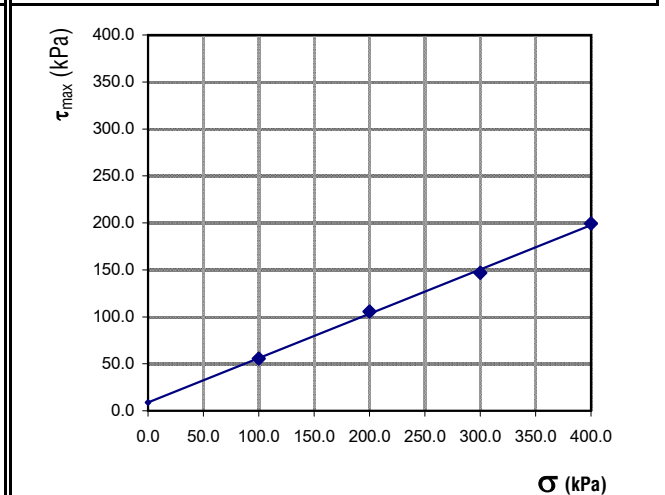
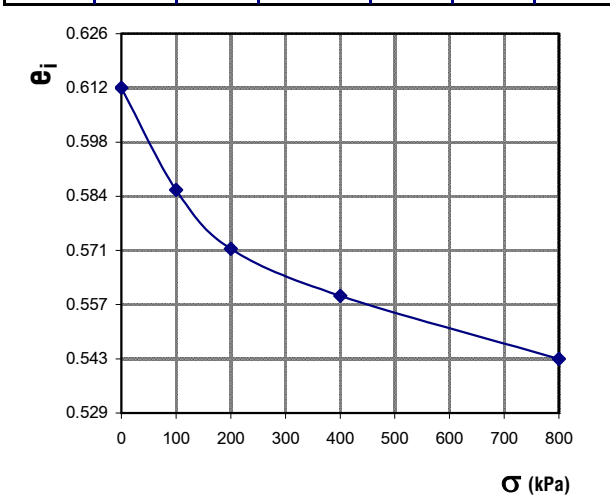
KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	99.14g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.326	0.148	0.010	6.7	32.6

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1	1.2	100.0
2.0			1-0.5	9.8	98.8
1.0	1.23		0.5-0.25	41.6	89.0
0.5	9.67	Bụi/Silt	0.25-0.1	25.6	47.4
0.25	41.27		0.1-0.05	6.9	21.8
0.1	25.34	Sét/Clay	0.05-0.01	5.0	14.9
			0.01-0.005	1.6	9.9
			<0.005	8.3	8.3



Thí nghiệm nén lún/Compression test						
$m_k = 3.90$	Hộp nén số/Test box No.: 37	$e_0 = 0.612$				
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 104.6	$h_p = 20\text{mm}$				
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.612			
100	38.0	6.7	0.586	0.026	6200.0	17870.3
200	62.0	12.5	0.571	0.015	10573.3	30475.5
400	80.0	15.6	0.559	0.006	26183.3	75468.2
800	102.0	18.8	0.543	0.004	38975.0	112337.6

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.0	1.686	55.6
200	63.0	1.678	105.7
300	84.6	1.736	146.9
400	114.6	1.739	199.3
$\tan \varphi = 0.4723$ $\varphi = 25^\circ 17'$ C      8.8 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK9

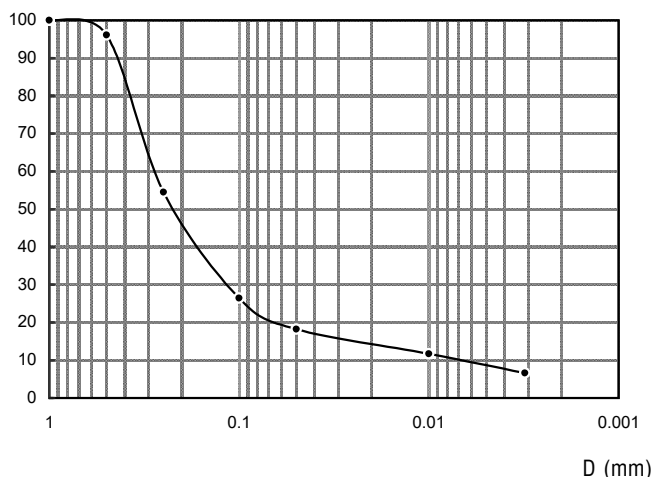
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.86	20.3	16.9	92.0	36.5	0.574	26.6	22.63	17.28	5.35	0.48

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	101.79g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.283	0.119	0.007	7.1	40.4

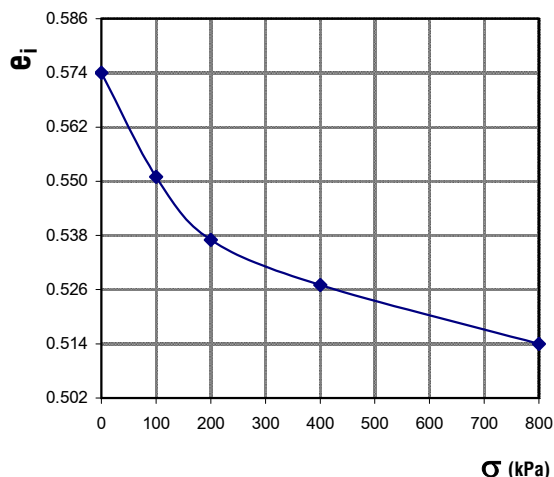
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	3.9	100.0
1.0			0.5-0.25	41.6	96.1
0.5	4.00	Bụi/Silt	0.25-0.1	28.1	54.5
0.25	42.30		0.1-0.05	8.2	26.4
0.1	28.63		0.05-0.01	6.5	18.2
		Sét/Clay	0.01-0.005	2.8	11.7
			<0.005	8.9	8.9



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 38  $e_0 = 0.574$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 92.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.574			
100	35.0	6.9	0.551	0.023	6843.5	20256.7
200	56.0	10.9	0.537	0.014	11078.6	32792.6
400	72.0	13.7	0.527	0.005	30740.0	90990.4
800	90.0	16.4	0.514	0.003	50900.0	150664.0

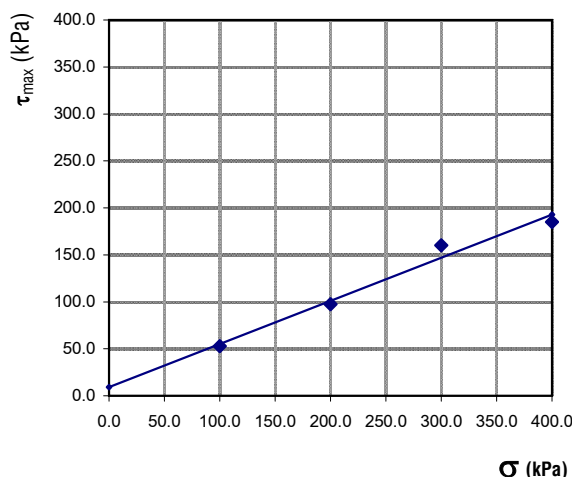


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.3	1.686	52.8
200	58.1	1.678	97.5
300	92.3	1.736	160.2
400	106.3	1.739	184.9

$\tan \phi = 0.4590$   $\phi = 24^\circ 39'$  C 9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK9

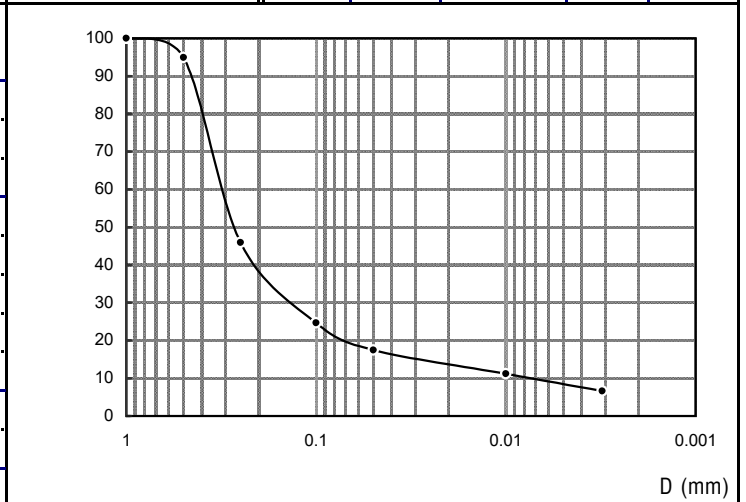
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.07	19.7	16.4	85.3	38.6	0.628	26.7	22.89	17.21	5.68	0.50

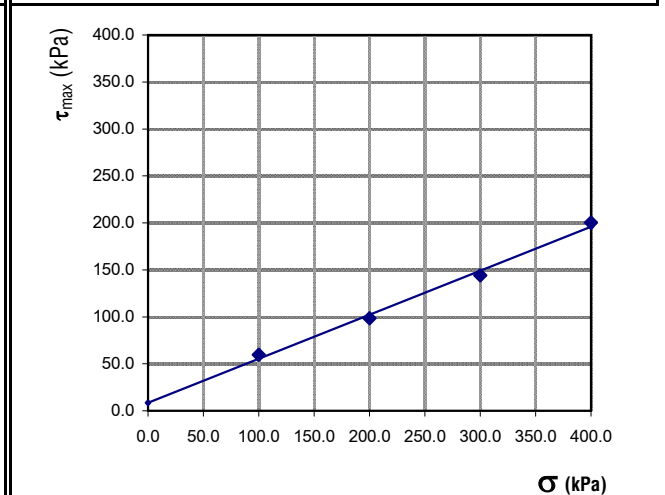
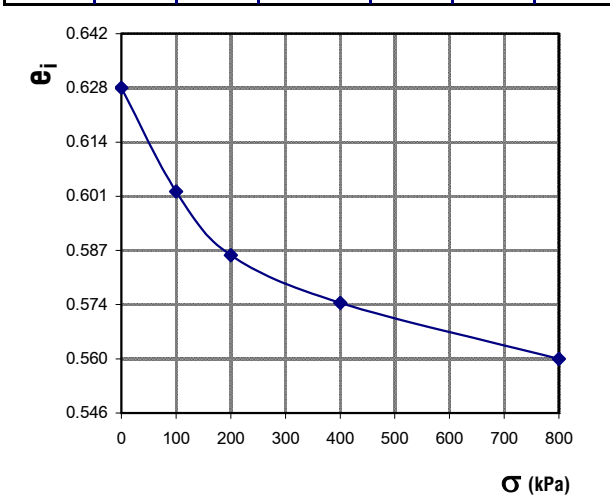
KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	95.78g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.322	0.138	0.008	7.4	40.3

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	5.1	100.0
5.0			0.5-0.25	49.0	94.9
2.0			0.25-0.1	21.2	45.9
1.0			0.1-0.05	7.2	24.7
0.5	4.85	Bụi/Silt	0.05-0.01	6.3	17.5
0.25	46.90		0.01-0.005	2.6	11.2
0.1	20.30	Sét/Clay	<0.005	8.6	8.6



Thí nghiệm nén lún/Compression test						
$m_v = 3.82$	Hộp nén số/Test box No.: 39		$e_o = 0.628$			
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 101.5		$h_p = 20\text{mm}$			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_o = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.628			
100	38.0	7.1	0.602	0.026	6261.5	17700.1
200	61.0	10.4	0.586	0.016	10012.5	28303.3
400	78.0	14.4	0.574	0.006	26433.3	74721.7
800	99.0	17.2	0.560	0.003	52466.7	148312.8

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	35.3	1.686	59.5
200	58.6	1.678	98.3
300	83.0	1.736	144.1
400	115.2	1.739	200.3
$\tan \phi = 0.4682$ $\phi = 25^\circ 05'$ C      8.5 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK9

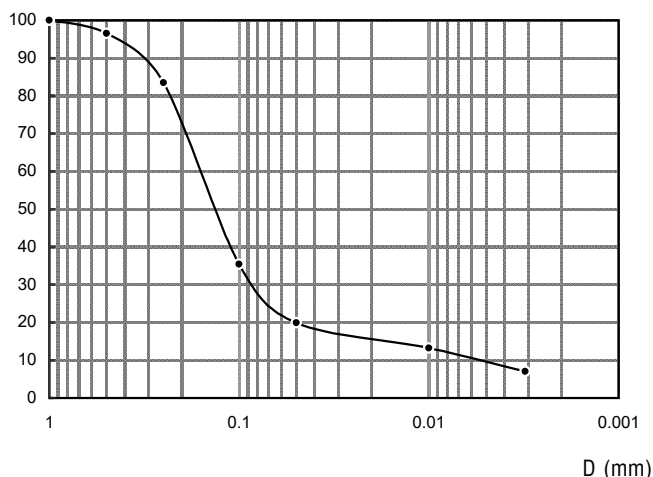
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	24.68	19.6	15.7	93.6	41.4	0.707	26.8	27.45	21.93	5.52	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	90.07g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.177	0.086	0.006	7.0	29.5

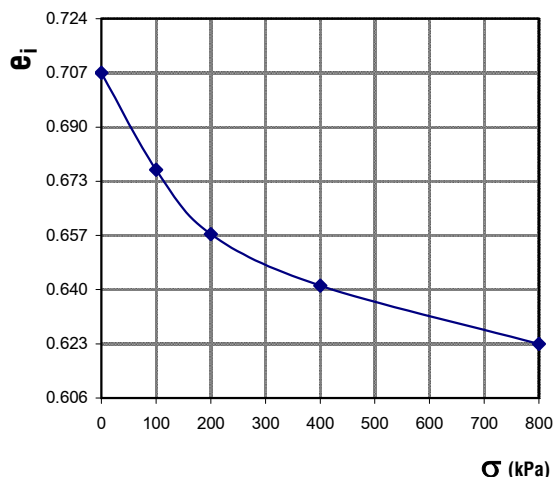
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	3.5	100.0
5.0			0.5-0.25	13.0	96.5
2.0			0.25-0.1	48.1	83.5
1.0			0.1-0.05	15.5	35.4
0.5	3.19	Bụi/Silt	0.05-0.01	6.7	19.9
0.25	11.75		0.01-0.005	3.7	13.2
0.1	43.29	Sét/Clay	<0.005	9.5	9.5



## Thí nghiệm nén lún/Compression test

$m_k = 3.40$  Hộp nén số/Test box No.: 40  $e_0 = 0.707$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 112.8  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.707			
100	41.0	6.8	0.677	0.030	5690.0	14295.0
200	66.0	9.5	0.657	0.020	8385.0	21065.6
400	88.0	13.2	0.641	0.008	20712.5	52036.0
800	110.0	14.7	0.623	0.005	32820.0	82453.7

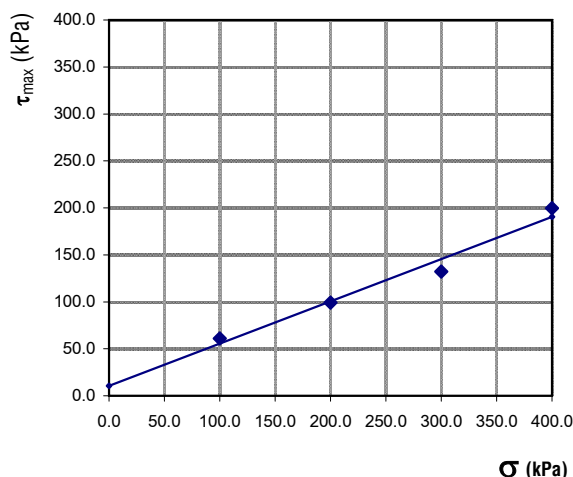


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.1	1.686	60.9
200	59.1	1.678	99.2
300	76.1	1.736	132.1
400	114.9	1.739	199.8

$\tan \phi = 0.4496$   $\phi = 24^\circ 13'$  C 10.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK9

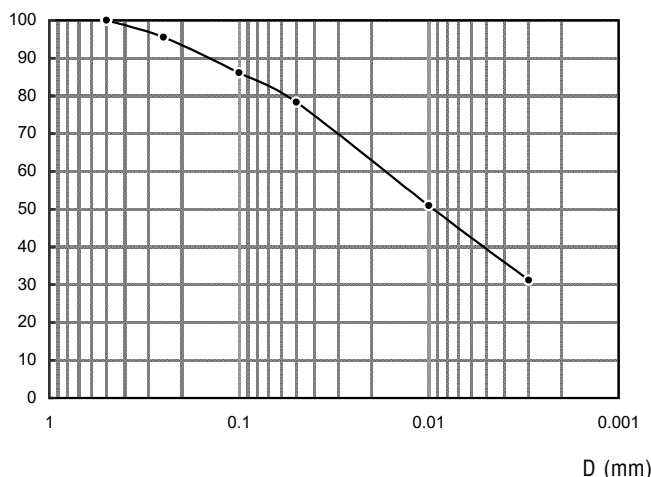
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Clay

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	27.66	19.3	15.1	93.5	44.7	0.808	27.3	42.80	20.96	21.84	0.31

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	35.25g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.017	*	*	*	*

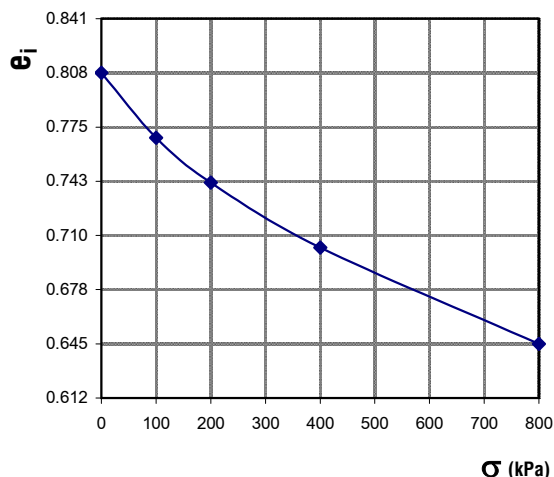
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25	4.5	100.0
2.0			0.25-0.1	9.4	95.5
1.0			0.1-0.05	7.8	86.1
0.5		Bụi/Silt	0.05-0.01	27.4	78.3
0.25	1.60		0.01-0.005	12.9	50.9
0.1	3.30	Sét/Clay	<0.005	38.0	38.0



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 41  $e_0 = 0.808$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 194.8  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.808			
100	48.0	6.5	0.769	0.039	4635.9	11126.2
200	81.6	10.2	0.742	0.027	6551.9	15724.4
400	125.5	12.5	0.703	0.020	8710.0	20904.0
800	190.0	14.8	0.645	0.015	11353.3	27248.0

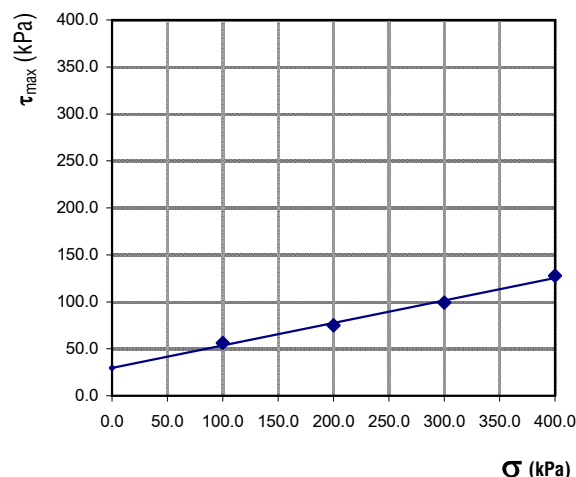


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.3	1.686	56.1
200	44.7	1.678	75.0
300	57.2	1.736	99.3
400	73.5	1.739	127.8

$\tan \phi = 0.2394$   $\phi = 13^\circ 28'$  C 29.7 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK9

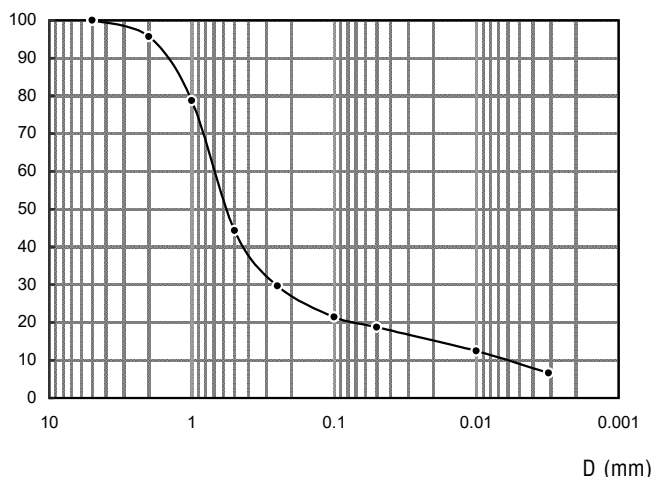
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.19	19.8	16.5	87.2	38.2	0.618	26.7	23.15	17.26	5.89	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	95.98g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.728	0.255	0.006	14.9	121.3

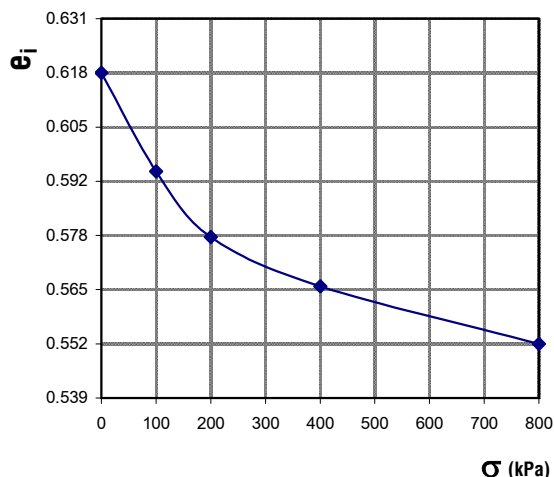
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	4.3	100.0
20.0		Cát/Sand	2-1	17.0	95.7
10.0			1-0.5	34.4	78.7
5.0			0.5-0.25	14.6	44.3
2.0	4.10		0.25-0.1	8.3	29.7
1.0	16.30		0.1-0.05	2.7	21.4
0.5	33.00	Bụi/Silt	0.05-0.01	6.2	18.7
0.25	14.00		0.01-0.005	3.6	12.5
0.1	8.00	Sét/Clay	<0.005	8.9	8.9



## Thí nghiệm nén lún/Compression test

$m_k = 3.86$  Hộp nén số/Test box No.: 42  $e_0 = 0.618$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.618			
100	36.0	6.6	0.594	0.024	6741.7	19256.9
200	58.0	9.8	0.578	0.016	9962.5	28456.9
400	75.0	12.8	0.566	0.006	26300.0	75123.3
800	94.0	15.6	0.552	0.003	52200.0	149104.1

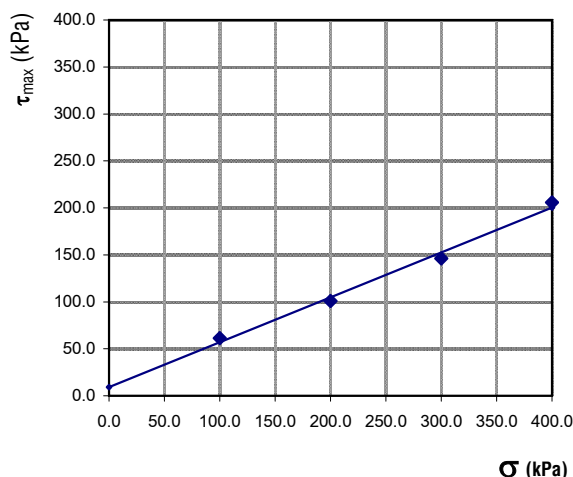


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.4	1.686	61.4
200	60.2	1.678	101.0
300	84.3	1.736	146.3
400	118.3	1.739	205.7

$\tan \phi = 0.4782$   $\phi = 25^\circ 33'$  C 9.1 kPa



Đại diện TN/ Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK9

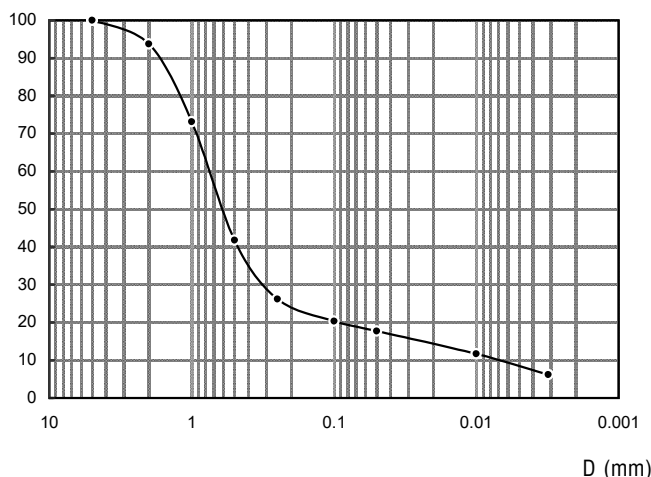
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	18.33	20.6	17.4	92.2	34.6	0.529	26.6	21.27	15.48	5.79	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	102.26g					
Nhiệt độ TN/Temp.	30.0°C	0.791	0.311	0.007	17.5	113.0

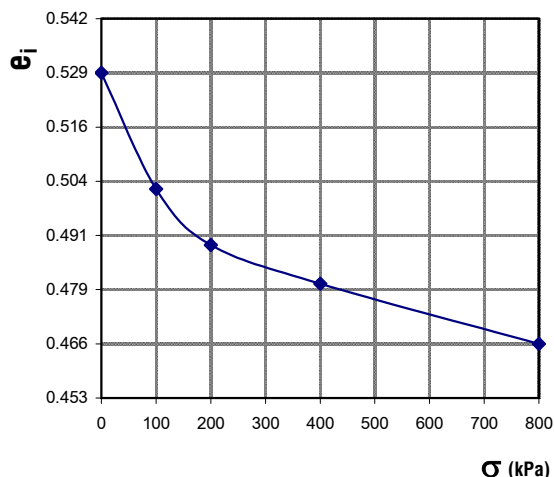
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	6.3	100.0
20.0		Cát/Sand	2-1	20.6	93.7
10.0			1-0.5	31.3	73.1
5.0			0.5-0.25	15.6	41.8
2.0	6.44		0.25-0.1	5.9	26.2
1.0	21.11		0.1-0.05	2.6	20.3
0.5	32.00	Bụi/Silt	0.05-0.01	6.0	17.7
0.25	16.00		0.01-0.005	3.0	11.7
0.1	6.00	Sét/Clay	<0.005	8.7	8.7



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 43  $e_0 = 0.529$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.529			
100	41.0	7.0	0.502	0.027	5663.0	16762.4
200	60.0	10.0	0.489	0.013	11553.8	34199.4
400	75.0	13.3	0.480	0.005	29780.0	88148.8
800	94.0	14.9	0.466	0.003	49333.3	146026.7

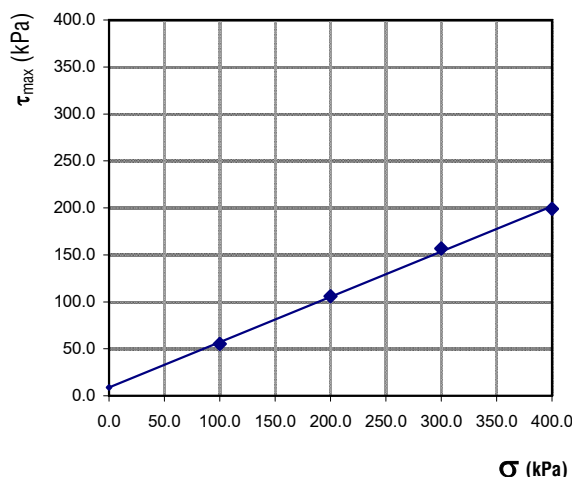


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	32.8	1.686	55.3
200	63.2	1.678	106.0
300	90.2	1.736	156.6
400	114.5	1.739	199.1

$\tan \varphi = 0.4820$   $\varphi = 25^\circ 44'$  C 8.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK9

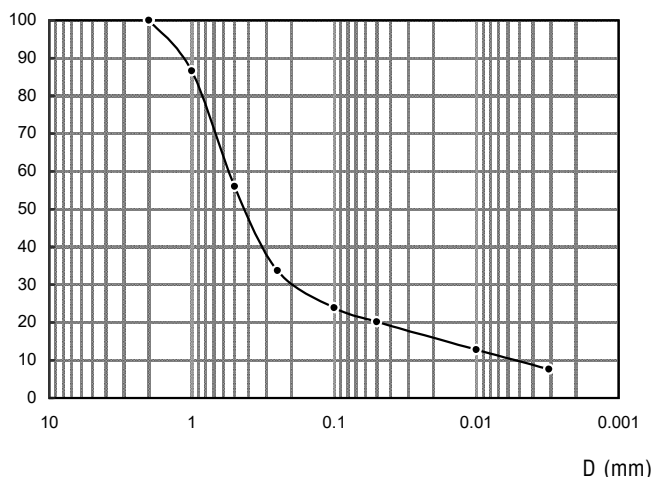
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.32	20.3	17.0	91.0	36.1	0.565	26.6	22.42	16.13	6.29	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	105.60g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.565	0.193	0.005	13.2	113.0

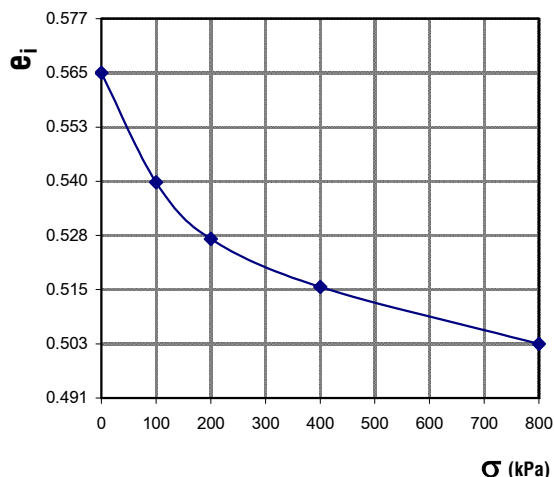
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Sieve/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	13.4	100.0
10.0			1-0.5	30.6	86.6
5.0			0.5-0.25	22.3	56.0
2.0			0.25-0.1	9.8	33.7
1.0	14.20		0.1-0.05	3.7	23.9
0.5	32.30	Bụi/Silt	0.05-0.01	7.4	20.2
0.25	23.60		0.01-0.005	3.1	12.8
0.1	10.36	Sét/Clay	<0.005	9.7	9.7



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 44  $e_0 = 0.565$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 93.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.565			
100	38.0	7.2	0.540	0.025	6260.0	18529.6
200	58.0	10.3	0.527	0.013	11846.2	35064.6
400	72.0	12.0	0.516	0.006	25450.0	75332.0
800	91.0	14.4	0.503	0.003	50533.3	149578.7

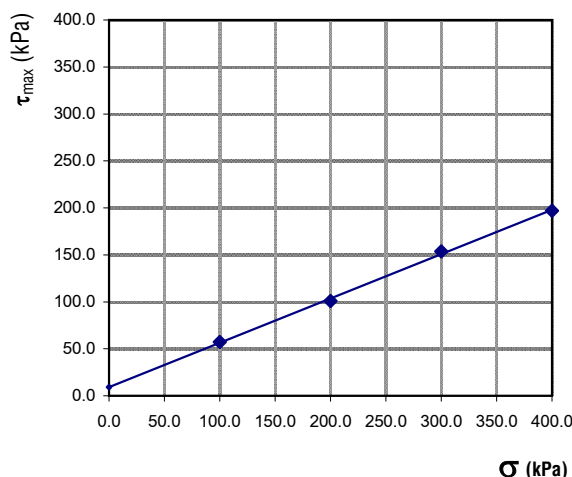


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.0	1.686	57.3
200	60.1	1.678	100.8
300	88.5	1.736	153.6
400	113.2	1.739	196.9

$\tan \phi = 0.4716$   $\phi = 25^\circ 15'$  C 9.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK9-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK9

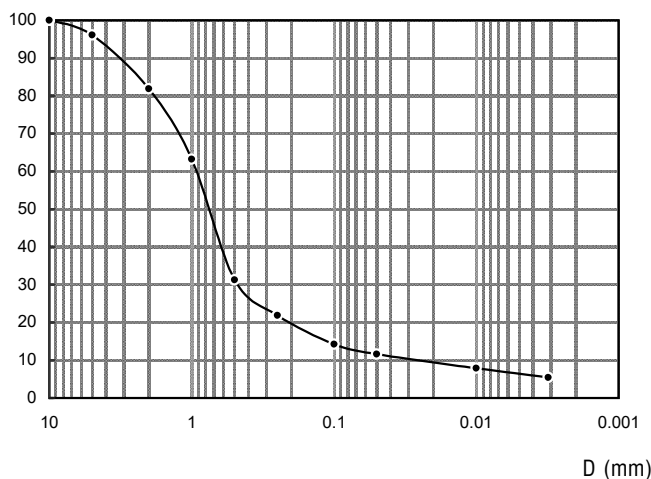
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát lẫn sỏi sạn thạch anh, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand with quartz gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	17.82	20.5	17.4	89.6	34.6	0.529	26.6	20.70	14.88	5.82	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	118.83g					
Nhiệt độ TN/Temp.	30.0°C	0.950	0.465	0.026	8.8	36.5

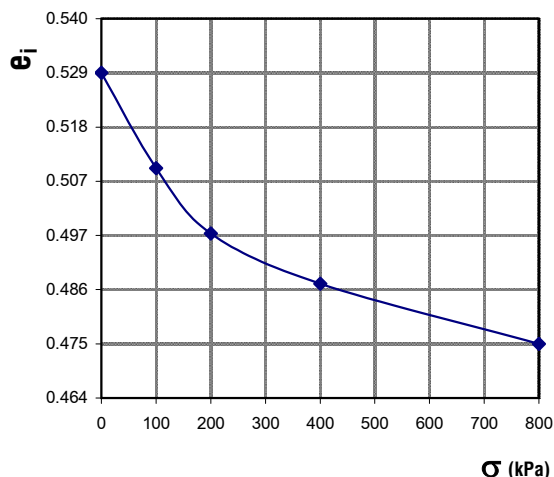
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5	3.9	100.0
			5-2	14.2	96.1
20.0		Cát/Sand	2-1	18.7	81.9
10.0			1-0.5	31.9	63.2
5.0	4.63		0.5-0.25	9.4	31.3
2.0	16.88		0.25-0.1	7.7	21.9
1.0	22.28		0.1-0.05	2.6	14.2
0.5	37.94	Bụi/Silt	0.05-0.01	3.7	11.6
0.25	11.17		0.01-0.005	1.6	7.9
0.1	9.14	Sét/Clay	<0.005	6.3	6.3



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 45  $e_0 = 0.529$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 86.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.529			
100	32.2	7.5	0.510	0.019	8047.4	23820.2
200	51.0	10.5	0.497	0.013	11615.4	34381.5
400	65.0	11.7	0.487	0.005	29940.0	88622.4
800	84.0	14.7	0.475	0.003	49566.7	146717.3

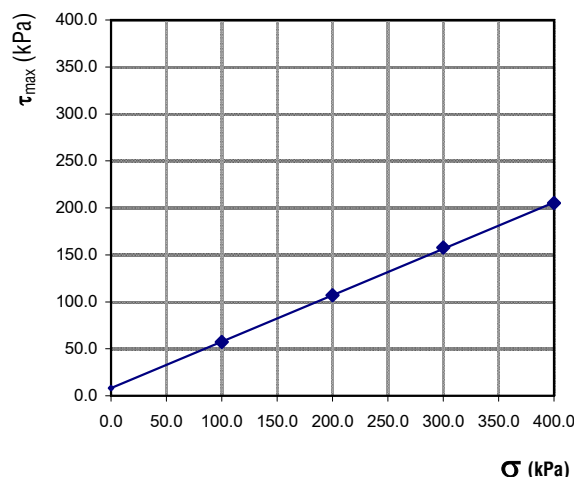


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	34.0	1.686	57.3
200	63.7	1.678	106.9
300	90.8	1.736	157.6
400	117.9	1.739	205.0

$\tan \phi = 0.4938$   $\phi = 26^\circ 17'$  C 8.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK10

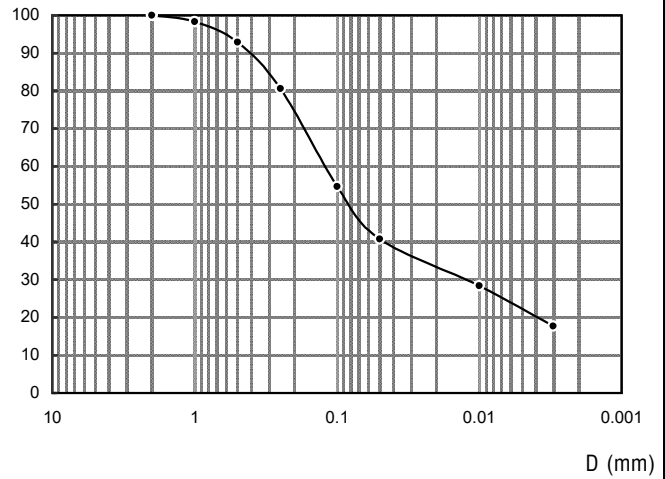
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	29.31	19.7	15.2	102.0	43.7	0.776	27.0	38.22	23.19	15.03	0.41

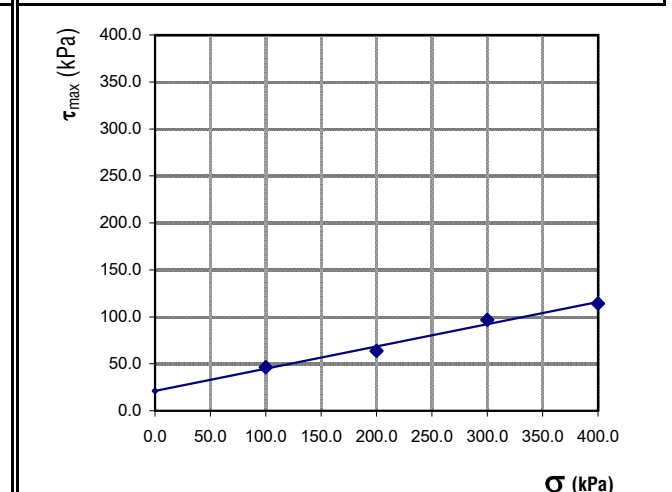
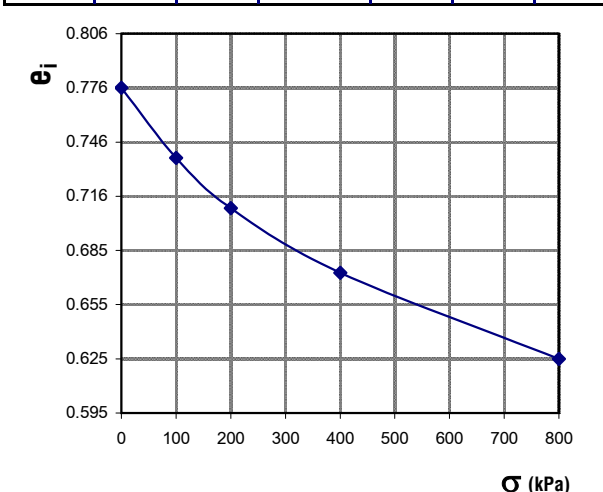
KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	53.51g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.131	0.012	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1	1.7	100.0
2.0			1-0.5	5.4	98.3
1.0	0.91		0.5-0.25	12.3	92.9
0.5	2.88		0.25-0.1	25.9	80.6
0.25	6.59		0.1-0.05	13.9	54.7
0.1	13.86	Bụi/Silt	0.05-0.01	12.4	40.8
			0.01-0.005	6.3	28.4
		Sét/Clay	<0.005	22.1	22.1



Thí nghiệm nén lún/Compression test						
$m_v = 4.21$	Hộp nén số/Test box No.: 16	$e_0 = 0.776$				
$\beta = 0.62$	Số đọc sau 24h/Reading after 24h: 186.6	$h_p = 20\text{mm}$				
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.776			
100	51.0	8.1	0.737	0.039	4553.8	11872.3
200	84.0	11.2	0.709	0.028	6203.6	16173.3
400	125.0	12.6	0.673	0.018	9494.4	24753.0
800	182.0	16.5	0.625	0.012	13941.7	36347.3

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.6	1.686	46.5
200	37.9	1.678	63.6
300	55.7	1.736	96.7
400	65.7	1.739	114.3
$\tan \phi = 0.2365$ $\phi = 13^\circ 18'$ C      21.2 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK10

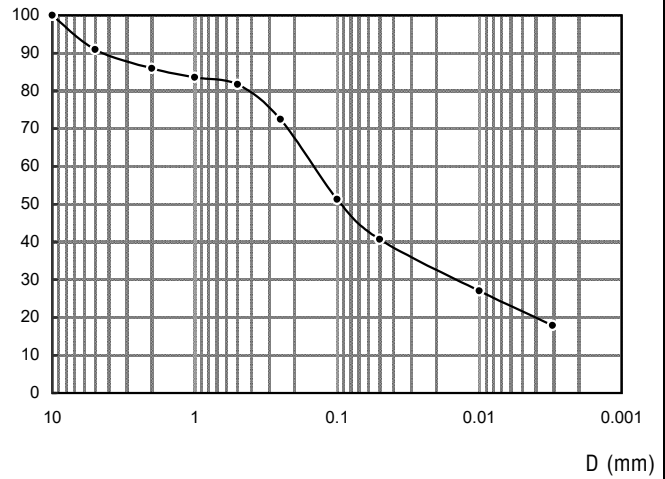
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	28.22	19.0	14.8	92.5	45.2	0.824	27.0	37.83	23.53	14.30	0.33

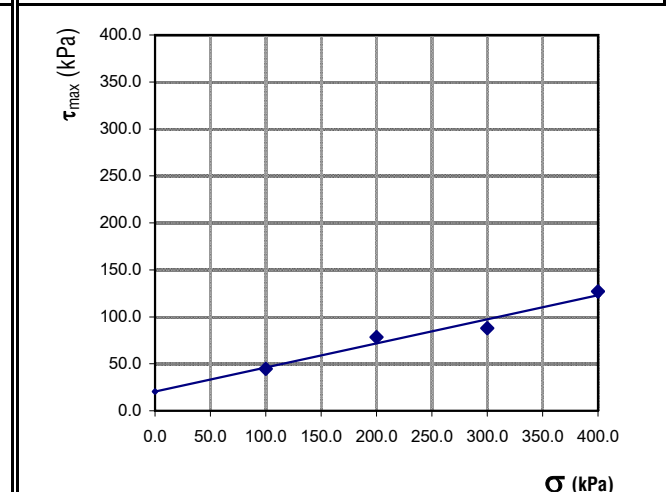
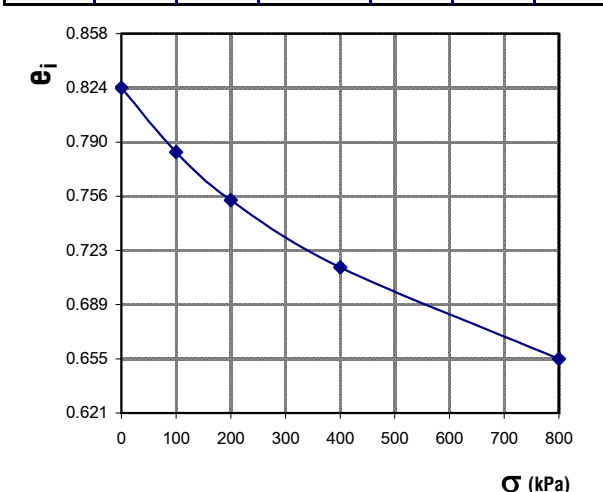
KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				43.91g					
				Nhiệt độ TN/Temp.	30.0°C	0.162	0.014	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-20}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5	9.1	100.0
10.0			5-2	5.0	90.9
5.0	4.00	Cát/Sand	2-1	2.3	85.9
2.0	2.19		1-0.5	1.9	83.6
1.0	1.00		0.5-0.25	9.2	81.7
0.5	0.85		0.25-0.1	21.2	72.5
0.25	4.02	Bụi/Silt	0.1-0.05	10.6	51.3
0.1	9.30		0.05-0.01	13.7	40.7
			0.01-0.005	6.5	27.0
		Sét/Clay	<0.005	20.5	20.5



Thí nghiệm nén lún/Compression test						
$m_v = 3.96$	Hộp nén số/Test box No.: 17		$e_0 = 0.824$			
$\beta = 0.62$	Số đọc sau 24h/Reading after 24h: 201.9		$h_p = 20\text{mm}$			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.824			
100	51.0	8.4	0.784	0.040	4560.0	11195.7
200	86.2	11.6	0.754	0.030	5946.7	14600.3
400	132.6	13.0	0.712	0.021	8352.4	20506.8
800	197.0	16.5	0.655	0.014	12228.6	30023.6

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.5	1.686	44.7
200	46.7	1.678	78.4
300	50.7	1.736	88.0
400	73.1	1.739	127.1
$\tan \phi = 0.2568$ $\phi = 14^\circ 24'$ C      20.4 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK10

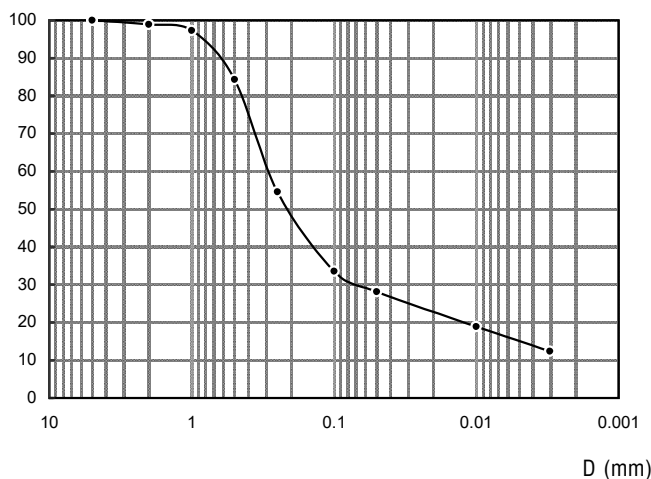
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.42	19.5	16.2	82.2	40.2	0.673	27.1	29.18	16.50	12.68	0.31

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					63.39g					
					Nhiệt độ TN/Temp.	30.0°C	0.295	0.065	*	*

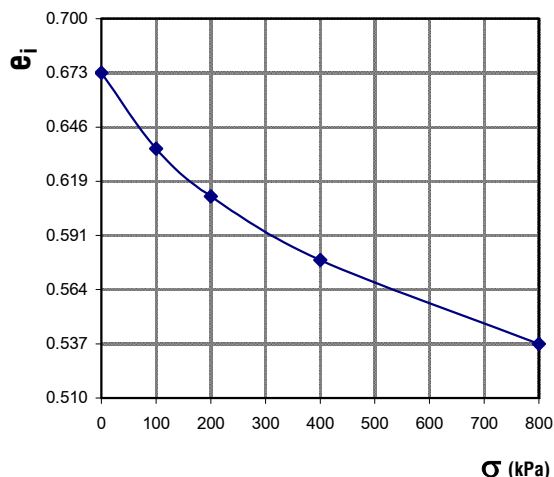
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	D <sub>1-12</sub> (mm)	P <sub>i</sub> %	P %
D (mm)	m <sub>i</sub> (g)	Sỏi/san /gravel	>10		100.0
			10-5		100.0
			5-2	1.1	100.0
20.0		Cát/Sand	2-1	1.6	98.9
10.0			1-0.5	13.0	97.3
5.0			0.5-0.25	29.7	84.3
2.0	0.67		0.25-0.1	21.0	54.6
1.0	1.02		0.1-0.05	5.5	33.6
0.5	8.23	Bụi/Silt	0.05-0.01	9.2	28.1
0.25	18.80		0.01-0.005	3.5	18.9
0.1	13.31		Sét/Clay	<0.005	15.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.70$  Hộp nén số/Test box No.: 18  $e_0 = 0.673$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 176.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.673			
100	51.0	7.7	0.635	0.038	4402.6	12815.6
200	82.0	10.2	0.611	0.024	6812.5	19830.5
400	121.0	11.6	0.579	0.016	10068.8	29309.1
800	172.0	14.8	0.537	0.011	14354.5	41784.6

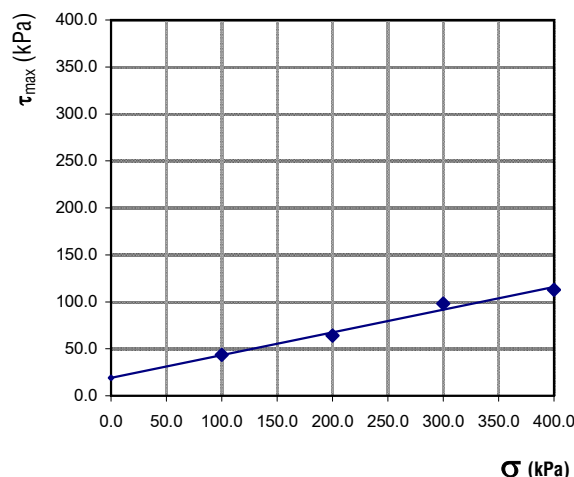


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.8	1.686	43.5
200	38.1	1.678	63.9
300	56.5	1.736	98.1
400	64.8	1.739	112.7

$\tan \phi = 0.2418$   $\phi = 13^\circ 36'$  C 19.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK10

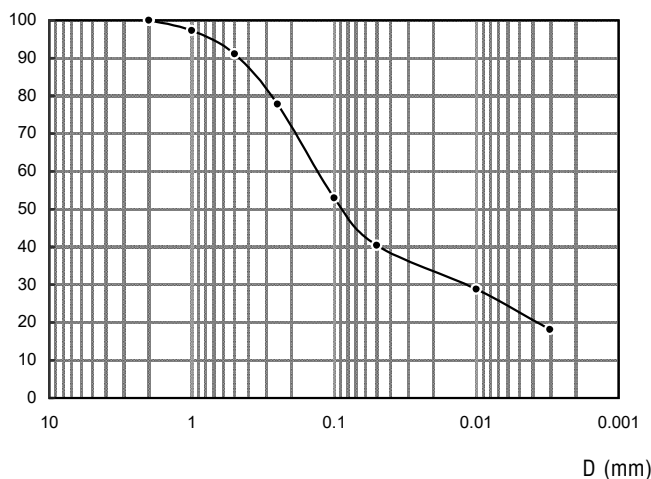
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ - vàng nâu, trạng thái dẻo cứng / Stiff, reddish brown - brownish yellow, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.06	19.9	16.6	87.0	38.3	0.620	26.9	27.18	16.44	10.74	0.34

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					52.47g	0.142	0.012	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

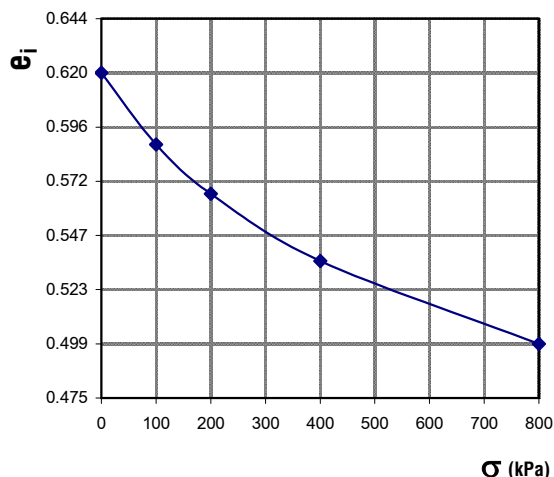
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
Cát/Sand			2-1	2.7	100.0
			1-0.5	6.2	97.3
			0.5-0.25	13.3	91.1
			0.25-0.1	24.8	77.8
			0.1-0.05	12.6	53.0
Bụi/Silt			0.05-0.01	11.6	40.4
			0.01-0.005	6.3	28.8
0.1	13.00	Sét/Clay	<0.005	22.5	22.5



## Thí nghiệm nén lún/Compression test

$m_k = 4.92$  Hộp nén số/Test box No.: 19  $e_0 = 0.620$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 166.1  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.620			
100	46.0	8.4	0.588	0.032	5062.5	15442.7
200	76.0	11.2	0.566	0.022	7218.2	22018.3
400	114.0	13.3	0.536	0.015	10440.0	31846.2
800	162.0	16.8	0.499	0.009	17066.7	52060.2

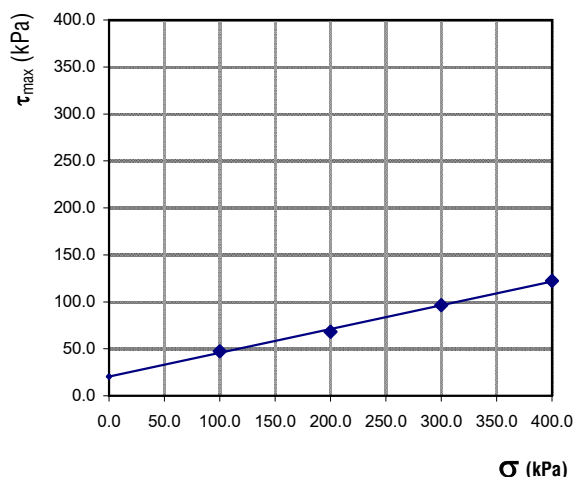


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	28.1	1.686	47.4
200	40.6	1.678	68.1
300	55.5	1.736	96.3
400	70.4	1.739	122.4

$\tan \phi = 0.2532$   $\phi = 14^\circ 13'$  C 20.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK10

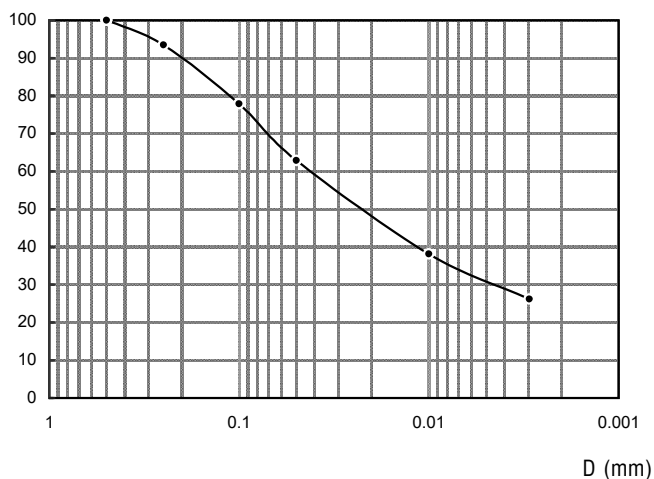
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - nâu đỏ, trạng thái dẻo cứng / Stiff, whitish grey - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.40	19.2	15.2	90.5	44.3	0.796	27.3	44.00	20.26	23.74	0.26

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	47.94g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.043	0.004	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25	6.5	100.0
2.0			0.25-0.1	15.6	93.5
1.0			0.1-0.05	15.0	77.9
0.5		Bụi/Silt	0.05-0.01	24.8	62.9
0.25	3.12		0.01-0.005	6.8	38.1
0.1	7.50	Sét/Clay	<0.005	31.3	31.3



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 20  $e_0 = 0.796$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 193.7  $h_p = 20\text{mm}$

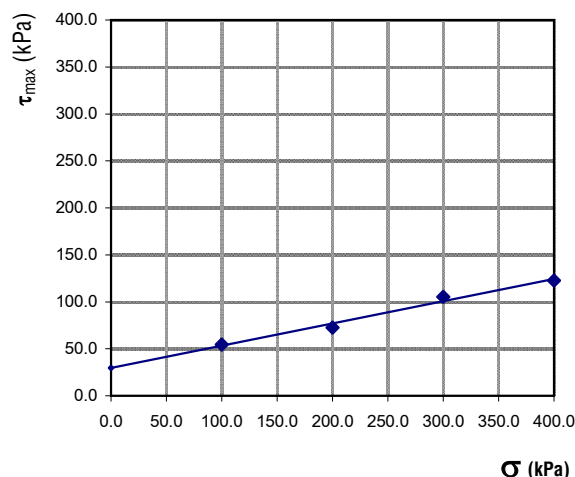
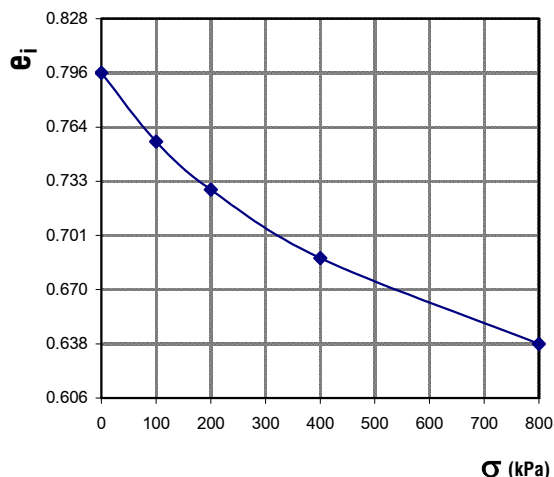
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.796			
100	52.0	8.8	0.756	0.040	4490.0	10776.0
200	85.2	11.6	0.728	0.028	6271.4	15051.4
400	130.0	13.7	0.688	0.020	8640.0	20736.0
800	189.0	17.9	0.638	0.013	12984.6	31163.1

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.4	1.686	54.6
200	43.3	1.678	72.7
300	60.6	1.736	105.2
400	70.6	1.739	122.8

$\tan \phi = 0.2371$   $\phi = 13^\circ 20'$  C 29.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK10

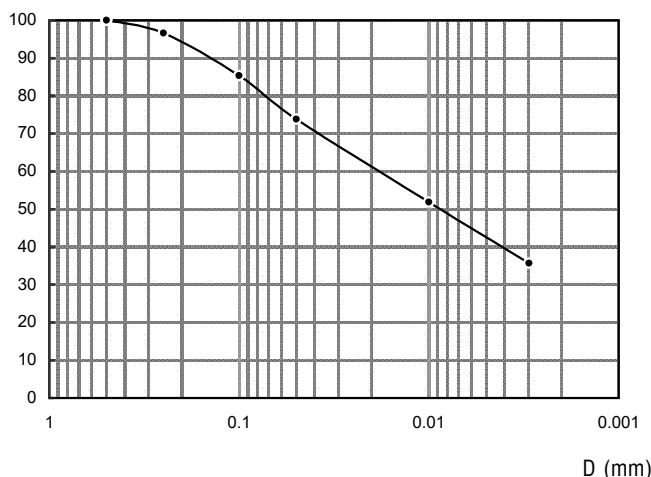
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - nâu đỏ, trạng thái dẻo cứng / Stiff, whitish grey - reddish brown, Clay

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	27.75	19.0	14.9	91.4	45.2	0.826	27.2	40.02	20.43	19.59	0.37

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	35.23g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.019	*	*	*	*

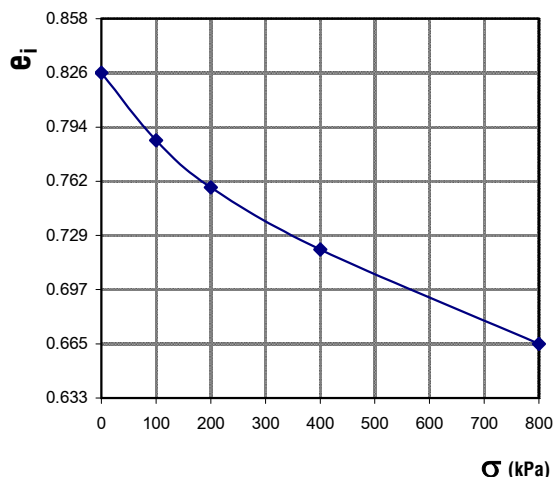
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25	3.4	100.0
2.0			0.25-0.1	11.3	96.6
1.0			0.1-0.05	11.5	85.3
0.5		Bụi/Silt	0.05-0.01	21.9	73.8
0.25	1.20		0.01-0.005	9.2	51.9
0.1	3.98	Sét/Clay	<0.005	42.7	42.7



## Thí nghiệm nén lún/Compression test

$m_k = 5.96$  Hộp nén số/Test box No.: 21  $e_0 = 0.826$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 193.5  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.826			
100	52.0	9.1	0.786	0.040	4565.0	10883.0
200	84.0	11.9	0.758	0.028	6378.6	15206.5
400	126.0	14.0	0.721	0.019	9252.6	22058.3
800	188.8	17.5	0.665	0.014	12292.9	29306.2

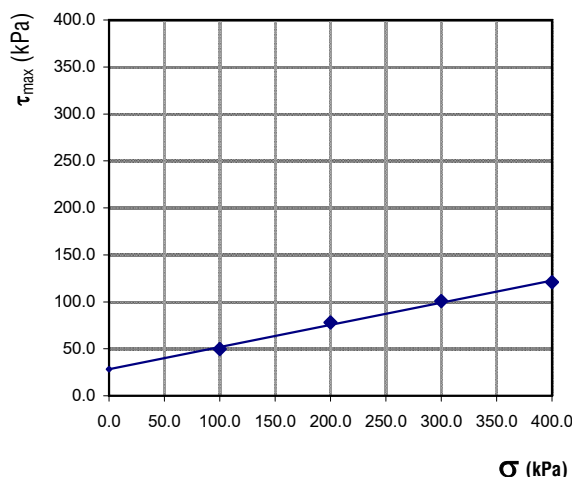


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.6	1.686	49.9
200	46.4	1.678	77.9
300	58.0	1.736	100.7
400	69.5	1.739	120.9

$\tan \phi = 0.2358$   $\phi = 13^\circ 16'$  C 28.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK10

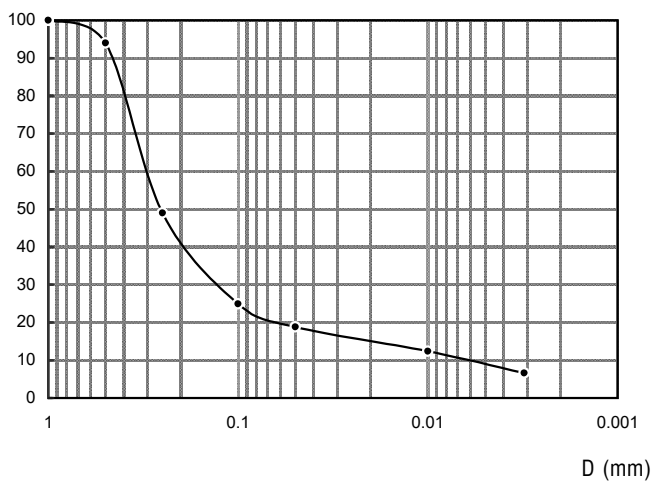
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu vàng, trạng thái dẻo / Plasticity, yellowish grey - yellowish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	24.73	20.1	16.1	100.3	39.7	0.658	26.7	27.48	21.90	5.58	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	95.56g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.311	0.132	0.006	9.3	51.8

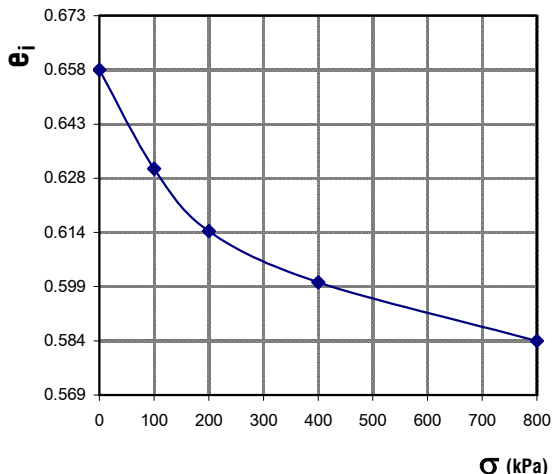
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)				
20.0		Silt/sand / Gravel	>10		100.0
10.0			10-5		100.0
5.0			5-2		100.0
2.0		Cát/Sand	2-1		100.0
1.0			1-0.5	6.0	100.0
0.5	5.73		0.5-0.25	45.0	94.0
0.25	43.00		0.25-0.1	24.1	49.0
0.1	23.02		0.1-0.05	6.1	24.9
		Bụi/Silt	0.05-0.01	6.4	18.8
			0.01-0.005	3.4	12.4
		Sét/Clay	<0.005	9.0	9.0



## Thí nghiệm nén lún/Compression test

$m_v = 3.68$  Hộp nén số/Test box No.: 22  $e_0 = 0.658$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 106.1  $h_p = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.658			
100	41.0	9.8	0.631	0.027	6140.7	16722.5
200	63.3	11.6	0.614	0.017	9594.1	26126.7
400	81.0	13.3	0.600	0.007	23057.1	62789.2
800	103.5	17.2	0.584	0.004	40000.0	108928.0

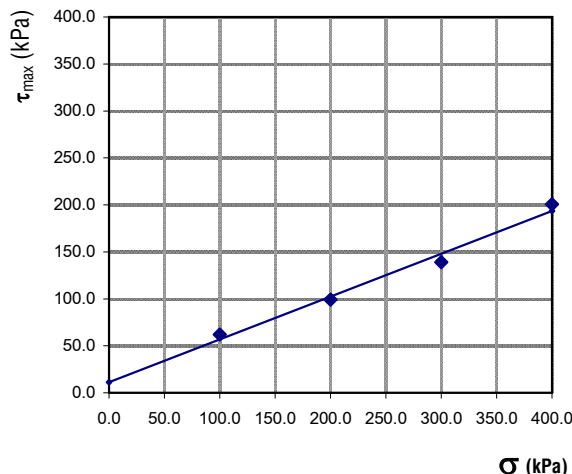


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.8	1.686	62.0
200	59.2	1.678	99.3
300	80.0	1.736	138.9
400	115.4	1.739	200.7

$\tan \phi = 0.4557$   $\phi = 24^\circ 30'$  C 11.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-8

Độ sâu/Depth: 15.8 - 16.0 m

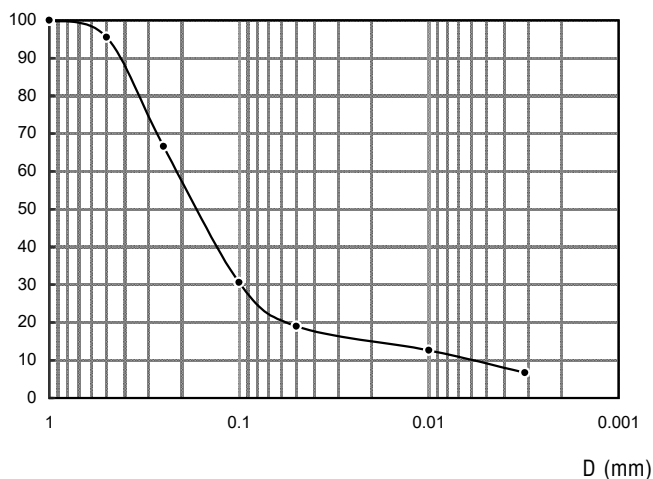
Hố khoan/Borehole: HK10

Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu vàng, trạng thái dẻo / Plasticity, yellowish grey - yellowish brown, Clayey sand

Nguyên dạng/Undis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	18.79	20.5	17.3	92.9	35.0	0.538	26.6	21.80	15.92	5.88	0.49
KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	94.28g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.223	0.098	0.006	7.2	37.2

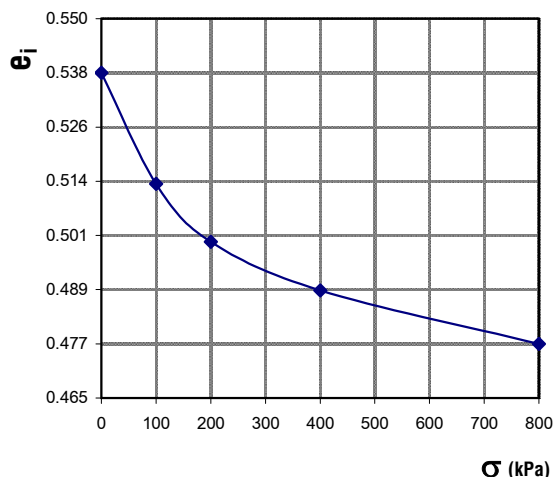
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	4.5	100.0
1.0			0.5-0.25	28.9	95.5
0.5	4.20	Bụi/Silt	0.25-0.1	36.0	66.6
0.25	27.20		0.1-0.05	11.6	30.6
0.1	33.90		0.05-0.01	6.4	19.0
		Sét/Clay	0.01-0.005	3.5	12.6
			<0.005	9.1	9.1



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 23  $e_0 = 0.538$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.538			
100	40.0	8.1	0.513	0.025	6152.0	18209.9
200	60.0	11.2	0.500	0.013	11638.5	34449.8
400	75.0	13.0	0.489	0.006	25000.0	74000.0
800	94.0	17.2	0.477	0.003	49633.3	146914.7

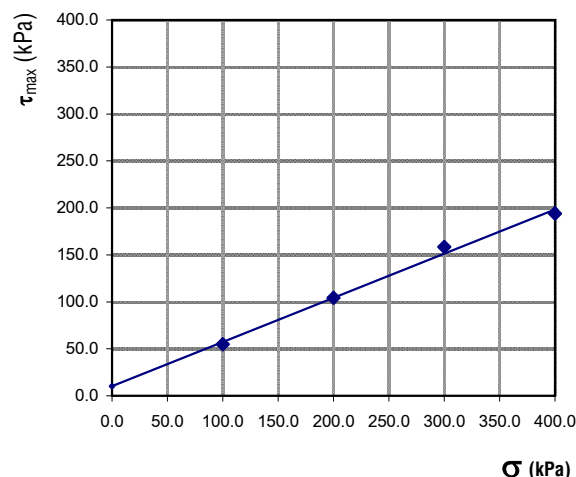


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.5	1.686	54.8
200	62.1	1.678	104.2
300	91.2	1.736	158.3
400	111.4	1.739	193.7

$\tan \phi = 0.4708$   $\phi = 25^\circ 13'$  C 10.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK10

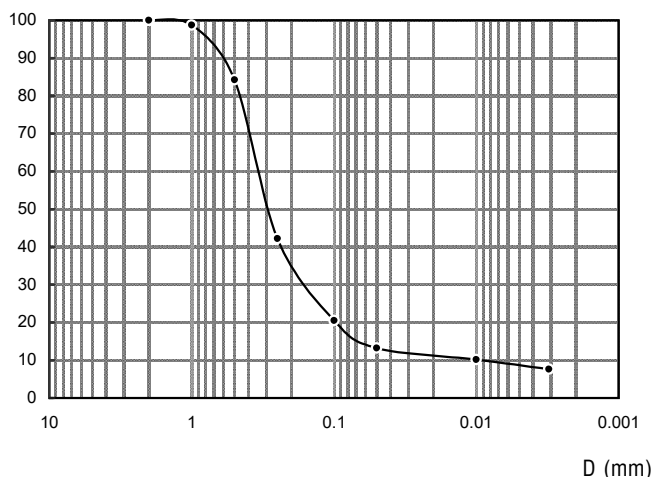
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu vàng, trạng thái dẻo / Plasticity, yellowish grey - yellowish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	23.68	19.5	15.8	92.1	40.6	0.684	26.6	26.21	20.89	5.32	0.52

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	104.07g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.356	0.166	0.009	8.6	39.6

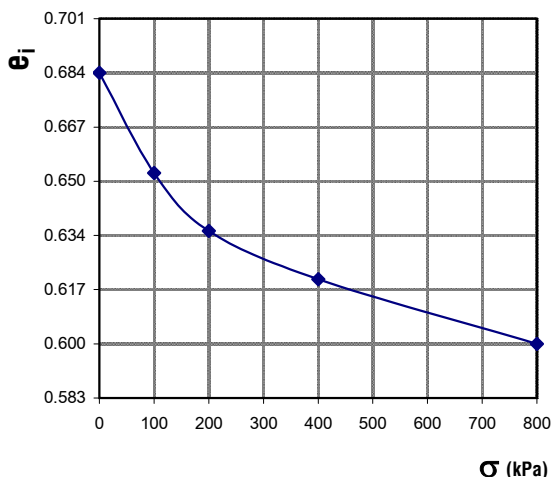
Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2		100.0
2.0		2-1	1.3	100.0
1.0	1.34	1-0.5	14.5	98.7
0.5	15.04	0.5-0.25	42.0	84.2
0.25	43.70	0.25-0.1	21.7	42.2
0.1	22.60	0.1-0.05	7.3	20.5
		0.05-0.01	3.0	13.2
		0.01-0.005	1.5	10.2
		Sét/Clay	<0.005	8.7



## Thí nghiệm nén lún/Compression test

$m_k = 3.58$  Hộp nén số/Test box No.: 24  $e_0 = 0.684$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 115.2  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.684			
100	43.0	7.4	0.653	0.031	5432.3	14371.0
200	67.0	10.2	0.635	0.018	9183.3	24294.5
400	86.0	12.3	0.620	0.008	20437.5	54067.4
800	112.4	15.5	0.600	0.005	32400.0	85714.2

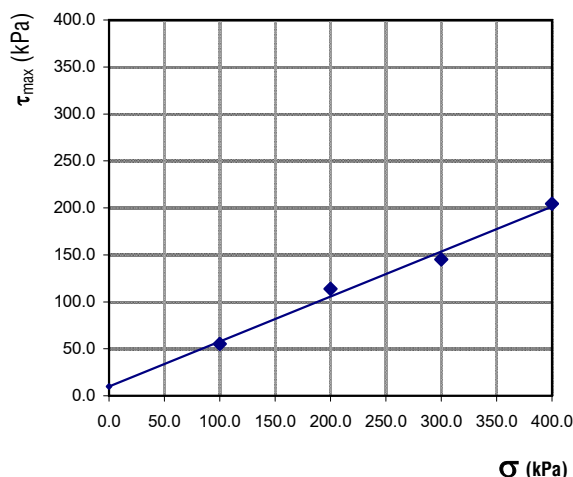


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.7	1.686	55.1
200	67.8	1.678	113.8
300	83.6	1.736	145.1
400	117.5	1.739	204.3

$\tan \phi = 0.4789$   $\phi = 25^\circ 35'$  C 9.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK10

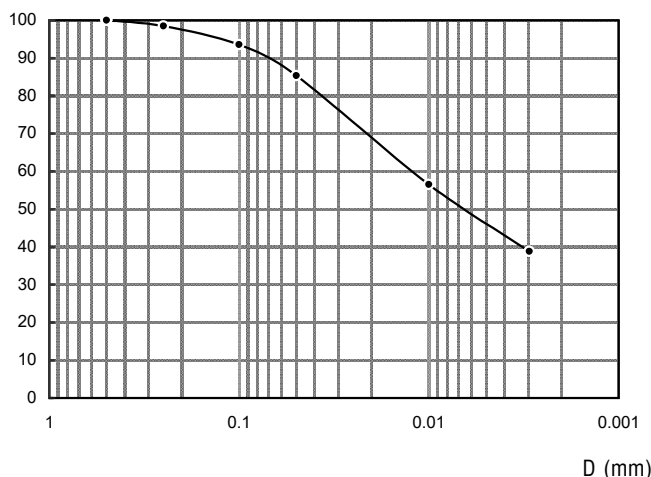
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Clay

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	26.68	19.0	15.0	88.8	45.1	0.820	27.3	42.00	20.12	21.88	0.30

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	32.37g	0.013	*	*	*
						30.0°C				

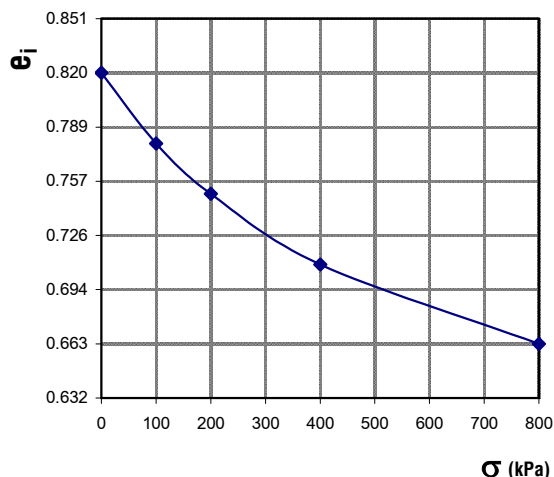
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25	1.5	100.0
2.0			0.25-0.1	4.9	98.5
1.0			0.1-0.05	8.3	93.6
0.5		Bụi/Silt	0.05-0.01	28.8	85.3
0.25	0.50		0.01-0.005	10.1	56.5
0.1	1.60	Sét/Clay	<0.005	46.4	46.4



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 25  $e_0 = 0.820$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 189.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.820			
100	51.0	6.9	0.779	0.041	4439.0	10653.7
200	85.0	10.4	0.750	0.029	6134.5	14722.8
400	131.2	12.7	0.709	0.021	8333.3	20000.0
800	185.0	16.4	0.663	0.012	14241.7	34180.0

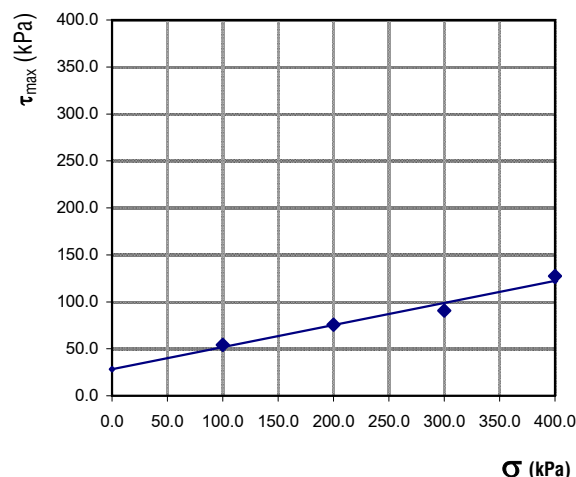


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.1	1.686	54.1
200	45.0	1.678	75.5
300	52.3	1.736	90.8
400	73.2	1.739	127.3

$\tan \phi = 0.2349$   $\phi = 13^\circ 13'$  C 28.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK10

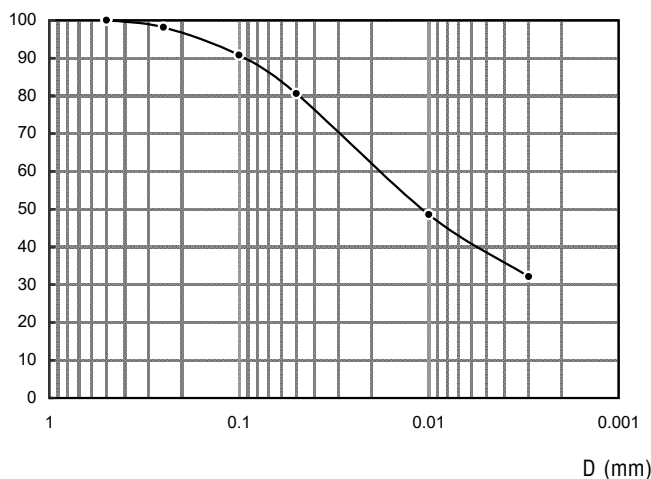
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	25.81	19.5	15.5	92.1	43.4	0.768	27.4	42.62	19.66	22.96	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					34.18g	0.020	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

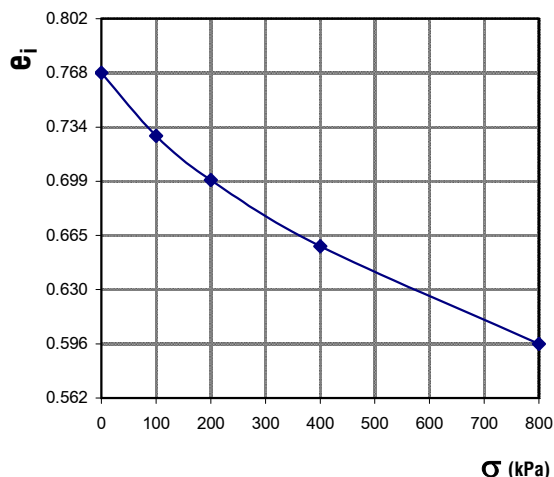
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25	1.9	100.0
0.5			0.25-0.1	7.3	98.1
0.25	0.66	Bụi/Silt	0.1-0.05	10.2	90.8
0.1	2.50		0.05-0.01	32.0	80.6
		Sét/Clay	0.01-0.005	9.4	48.6
			<0.005	39.2	39.2



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 26  $e_0 = 0.768$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 209.9  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.768			
100	51.0	7.6	0.728	0.040	4420.0	10608.0
200	86.0	10.6	0.700	0.028	6171.4	14811.4
400	133.0	12.6	0.658	0.021	8095.2	19428.6
800	204.8	15.4	0.596	0.016	10362.5	24870.0

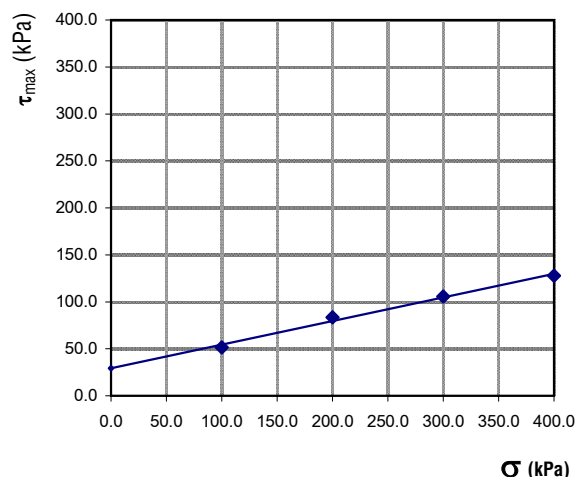


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.6	1.686	51.6
200	49.7	1.678	83.4
300	60.9	1.736	105.7
400	73.5	1.739	127.8

$\tan \phi = 0.2509$   $\phi = 14^\circ 05'$  C 29.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK10

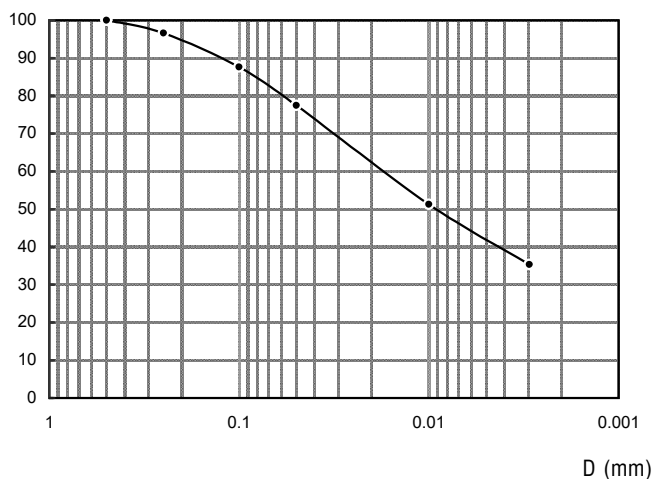
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Clay

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	27.34	19.2	15.1	92.4	44.7	0.808	27.3	42.80	20.29	22.51	0.31

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	35.57g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.018	*	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25	3.4	100.0
2.0			0.25-0.1	9.0	96.6
1.0			0.1-0.05	10.1	87.6
0.5		Bụi/Silt	0.05-0.01	26.2	77.5
0.25	1.20		0.01-0.005	9.1	51.3
0.1	3.20	Sét/Clay	<0.005	42.2	42.2



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$

Hộp nén số/Test box No.: 27

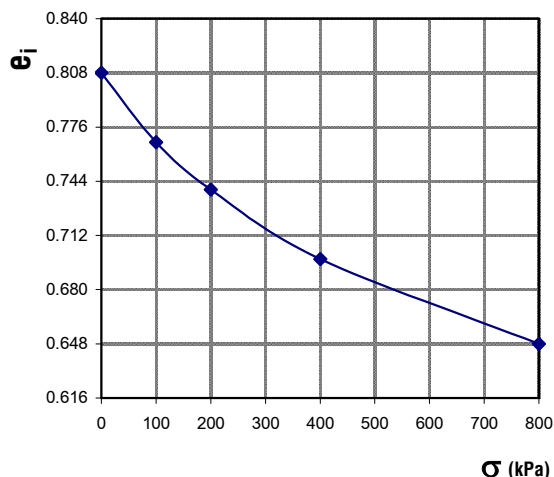
$e_0 = 0.808$

$\beta = 0.40$

Số đọc sau 24h/Reading after 24h: 192.7

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.808			
100	52.0	7.8	0.767	0.041	4409.8	10583.4
200	84.0	10.2	0.739	0.028	6310.7	15145.7
400	132.0	13.1	0.698	0.021	8281.0	19874.3
800	188.0	15.5	0.648	0.013	13061.5	31347.7



## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

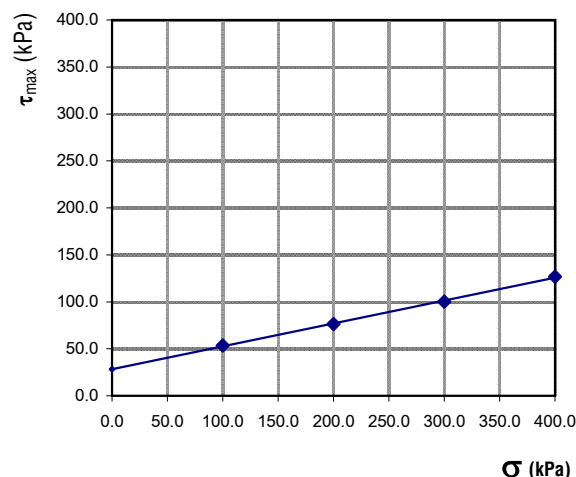
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.8	1.686	53.6
200	45.4	1.678	76.2
300	57.8	1.736	100.3
400	72.9	1.739	126.8

$\tan \phi = 0.2437$

$\phi = 13^\circ 42'$

C 28.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK10

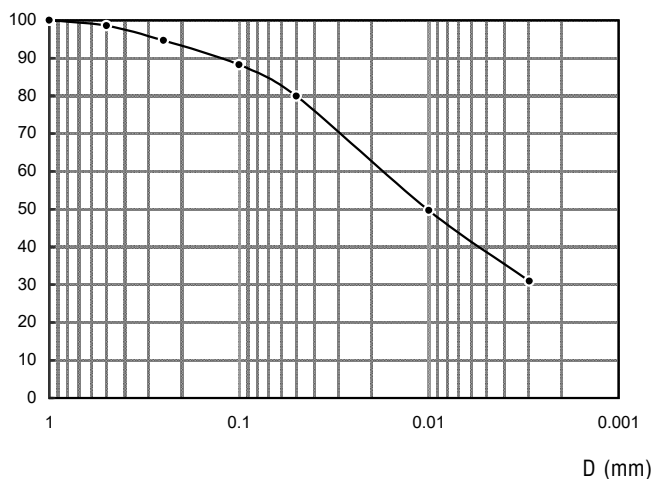
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám vàng - nâu đỏ, trạng thái dẻo cứng / Stiff, yellowish grey - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	27.40	18.9	14.8	88.5	45.8	0.845	27.3	40.67	21.05	19.62	0.32

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					40.66g	0.017	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

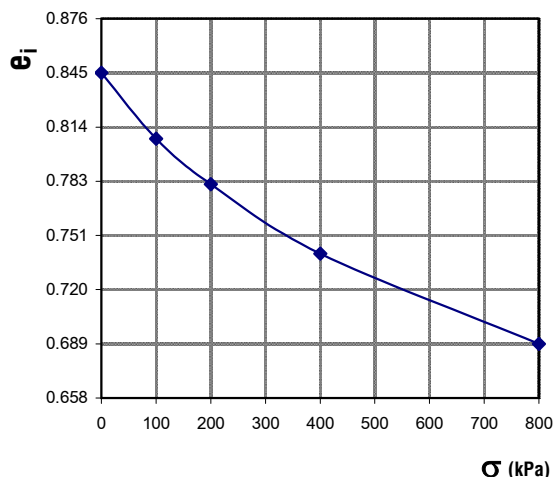
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	1.4	100.0
5.0			0.5-0.25	3.9	98.6
2.0			0.25-0.1	6.5	94.7
1.0			0.1-0.05	8.3	88.2
0.5	0.58	Bụi/Silt	0.05-0.01	30.2	79.9
0.25	1.60		0.01-0.005	12.7	49.7
0.1	2.65	Sét/Clay	<0.005	37.0	37.0



## Thí nghiệm nén lún/Compression test

$m_k = 5.85$  Hộp nén số/Test box No.: 28  $e_0 = 0.845$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 185.5  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.845			
100	48.2	8.3	0.807	0.038	4855.3	11351.6
200	78.0	11.3	0.781	0.026	6950.0	16249.1
400	123.0	13.0	0.741	0.020	8905.0	20819.9
800	181.0	16.1	0.689	0.013	13392.3	31311.2

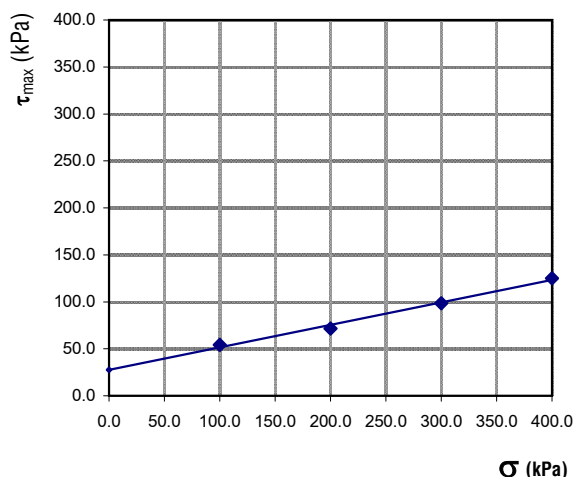


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	32.1	1.686	54.1
200	42.7	1.678	71.7
300	56.8	1.736	98.6
400	71.8	1.739	124.9

$\tan \varphi = 0.2393$   $\varphi = 13^\circ 27'$  C 27.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK10

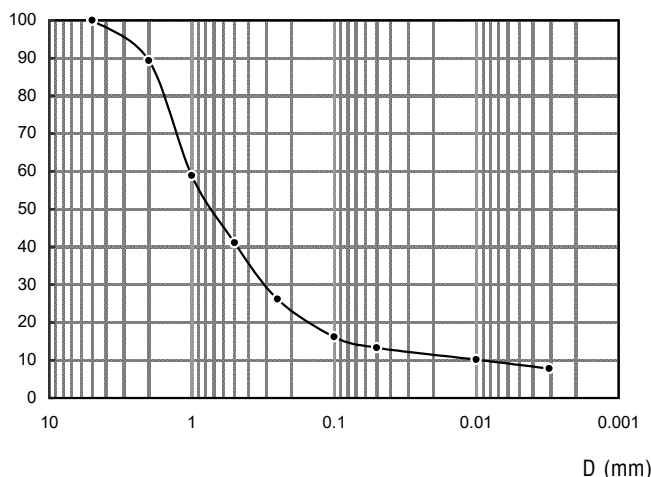
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu vàng, trạng thái dẻo / Plasticity, yellowish grey - yellowish brown, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.28	20.2	16.9	89.3	36.5	0.574	26.6	22.30	16.41	5.89	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	112.34g					
	Nhiệt độ TN/Temp. 30.0°C	1.036	0.314	0.009	10.6	115.1

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	10.7	100.0
20.0		Cát/Sand	2-1	30.4	89.3
10.0			1-0.5	17.8	58.9
5.0			0.5-0.25	14.9	41.1
2.0	12.00		0.25-0.1	10.0	26.2
1.0	34.10		0.1-0.05	2.9	16.2
0.5	20.05	Bụi/Silt	0.05-0.01	3.1	13.3
0.25	16.73		0.01-0.005	1.4	10.2
0.1	11.23	Sét/Clay	<0.005	8.8	8.8



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 29  $e_0 = 0.574$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 99.4  $h_p = 20\text{mm}$

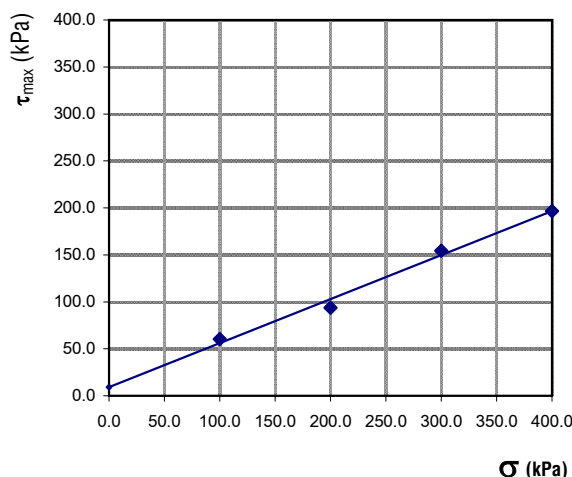
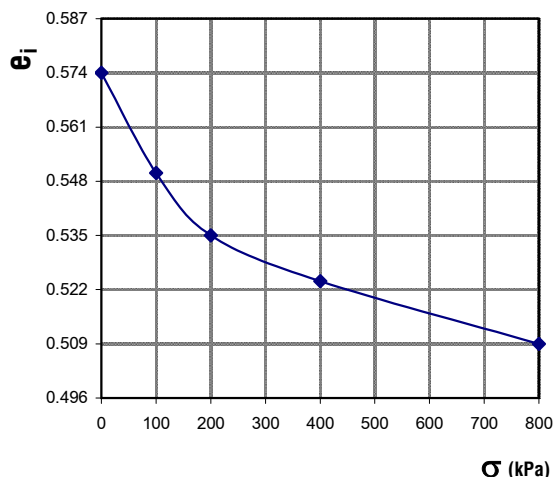
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.574			
100	39.0	8.6	0.550	0.024	6558.3	19412.7
200	60.0	11.6	0.535	0.015	10333.3	30586.7
400	75.0	13.3	0.524	0.006	25583.3	75726.7
800	97.0	16.2	0.509	0.004	38100.0	112776.0

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	35.8	1.686	60.4
200	55.9	1.678	93.8
300	88.8	1.736	154.2
400	113.0	1.739	196.5

$\tan \phi = 0.4687$   $\phi = 25^\circ 07'$  C 9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK10-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK10

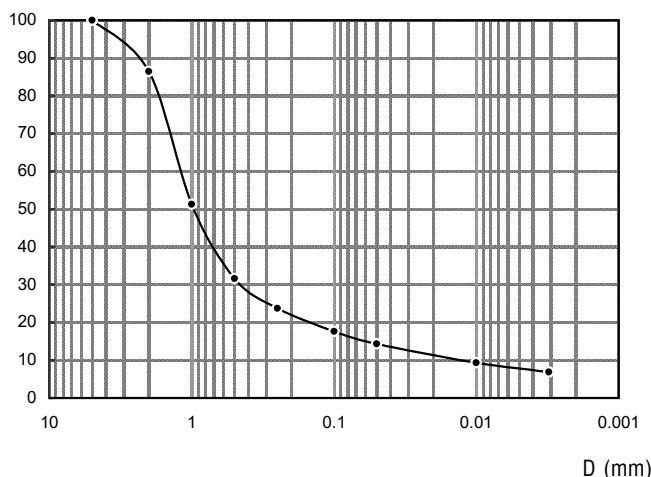
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu vàng, trạng thái dẻo / Plasticity, yellowish grey - yellowish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.56	20.4	16.9	95.3	36.5	0.574	26.6	23.40	17.71	5.69	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	114.47g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	1.248	0.449	0.014	11.5	89.1

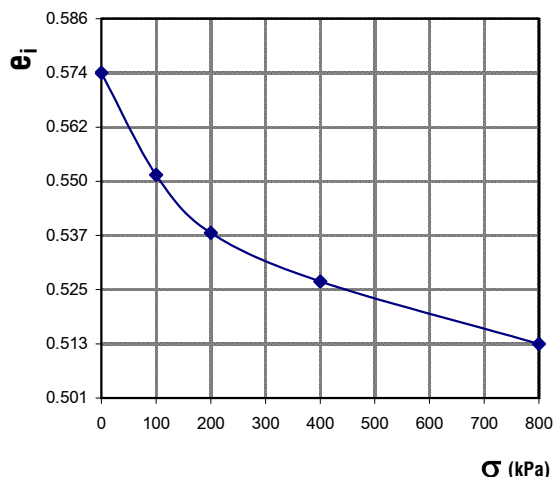
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	13.6	100.0
20.0		Cát/Sand	2-1	35.1	86.4
10.0			1-0.5	19.7	51.3
5.0			0.5-0.25	7.9	31.6
2.0	15.54		0.25-0.1	6.1	23.7
1.0	40.17		0.1-0.05	3.3	17.6
0.5	22.52	Bụi/Silt	0.05-0.01	5.0	14.3
0.25	9.00		0.01-0.005	1.4	9.3
0.1	7.00	Sét/Clay	<0.005	7.9	7.9



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 30  $e_0 = 0.574$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 93.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.574			
100	35.0	6.8	0.551	0.023	6843.5	20256.7
200	57.0	12.0	0.538	0.013	11930.8	35315.1
400	72.0	13.4	0.527	0.006	25633.3	75874.7
800	91.0	16.3	0.513	0.004	38175.0	112998.0

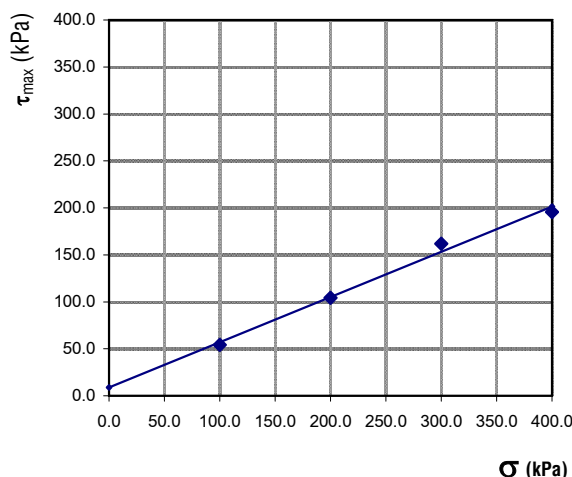


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.2	1.686	54.3
200	62.2	1.678	104.4
300	93.2	1.736	161.8
400	112.4	1.739	195.5

$\tan \phi = 0.4810$   $\phi = 25^\circ 41'$  C 8.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK11

Ngày TN/Date test: 25-09-18

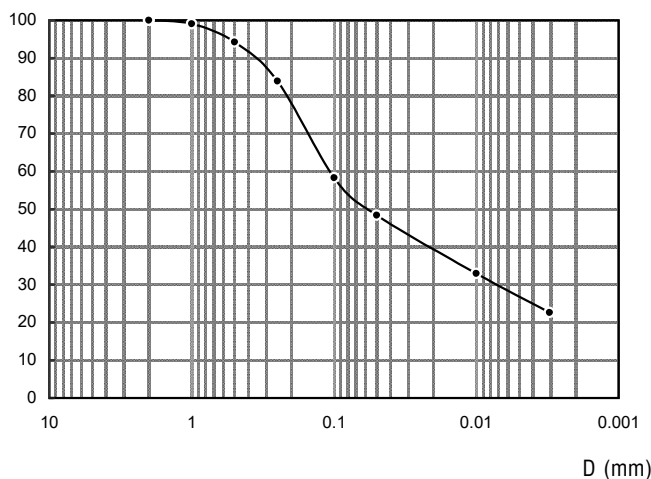
Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám vàng - nâu vàng, trạng thái dẻo cứng / Stiff, yellowish grey - yellowish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.56	19.2	15.2	92.4	43.7	0.776	27.0	34.17	20.88	13.29	0.43

## KQTN HẠT/Test results from sieve-hydrometer analysis

KL đất khô/Dry wei	37.04g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
Nhiệt độ TN/Temp.	30.0°C	0.110	0.007	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1	0.9	100.0
2.0			1-0.5	4.9	99.1
1.0	0.35		0.5-0.25	10.3	94.2
0.5	1.83		0.25-0.1	25.6	83.9
0.25	3.80		0.1-0.05	9.9	58.3
0.1	9.47	Bụi/Silt	0.05-0.01	15.4	48.4
			0.01-0.005	6.1	33.0
		Sét/Clay	<0.005	26.9	26.9



## Thí nghiệm nén lún/Compression test

$m_k = 4.29$  Hộp nén số/Test box No.: 1  $e_0 = 0.776$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 215.3  $h_p = 20\text{mm}$

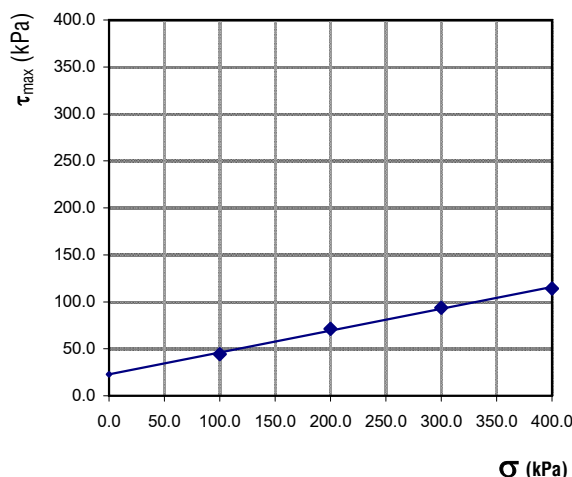
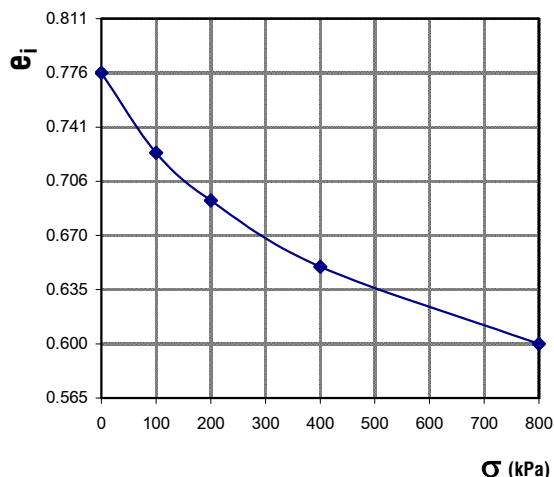
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.776			
100	65.0	8.4	0.724	0.052	3415.4	9073.7
200	103.5	11.9	0.693	0.031	5561.3	14774.7
400	152.0	13.7	0.650	0.022	7695.5	20444.5
800	210.0	17.6	0.600	0.013	12692.3	33719.7

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.3	1.686	44.3
200	42.5	1.678	71.3
300	53.9	1.736	93.6
400	65.7	1.739	114.3

$\tan \varphi = 0.2323$   $\varphi = 13^\circ 05'$  C 22.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK11

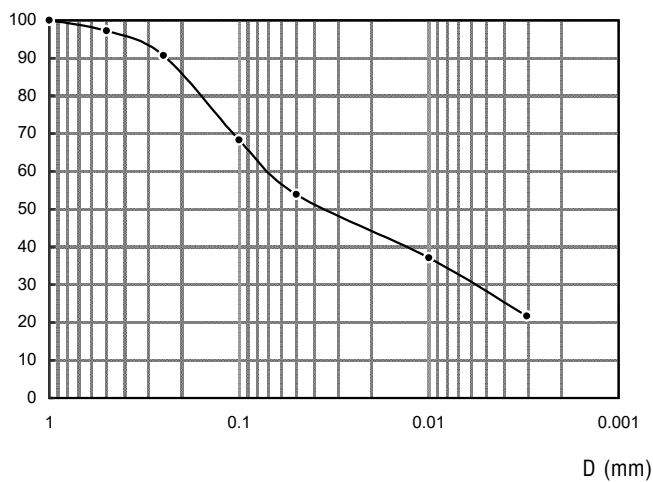
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ - xám trắng, trạng thái dẻo cứng / Stiff, reddish brown - whitish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	24.37	19.6	15.8	92.4	41.7	0.715	27.1	30.12	18.55	11.57	0.50

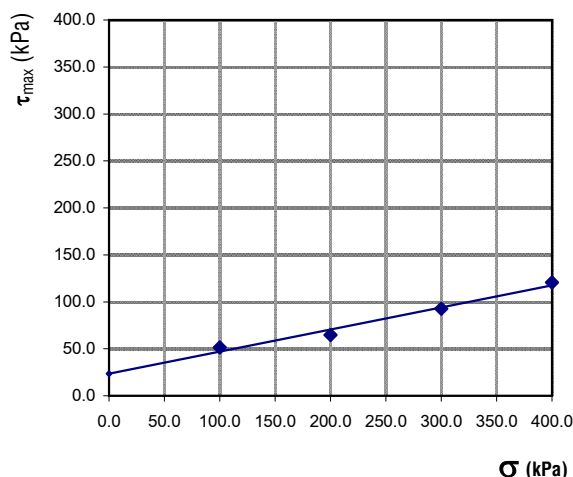
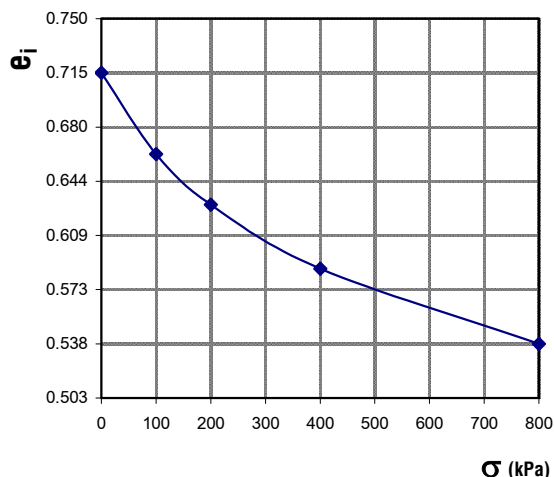
KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	36.18g	0.073	0.006	*	*
						30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	2.8	100.0
1.0			0.5-0.25	6.5	97.2
0.5	1.00		0.25-0.1	22.4	90.7
0.25	2.36	Bụi/Silt	0.1-0.05	14.4	68.3
0.1	8.10		0.05-0.01	16.8	53.9
			0.01-0.005	9.0	37.1
		Sét/Clay	<0.005	28.1	28.1



Thí nghiệm nén lún/Compression test						
$m_k = 4.61$	Hộp nén số/Test box No.:	2	$e_0 = 0.715$			
$\beta = 0.62$	Số đọc sau 24h/Reading after 24h:	225.5	$h_p = 20\text{mm}$			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.715			
100	70.0	9.8	0.662	0.053	3235.8	9238.7
200	110.3	13.3	0.629	0.033	5036.4	14379.3
400	160.0	15.5	0.587	0.021	7757.1	22147.4
800	220.0	19.1	0.538	0.012	13225.0	37758.7

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.5	1.686	51.4
200	38.7	1.678	64.9
300	53.4	1.736	92.7
400	69.3	1.739	120.5
$\tan \phi = 0.2351$ $\phi = 13^\circ 14'$ C      23.6 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK11

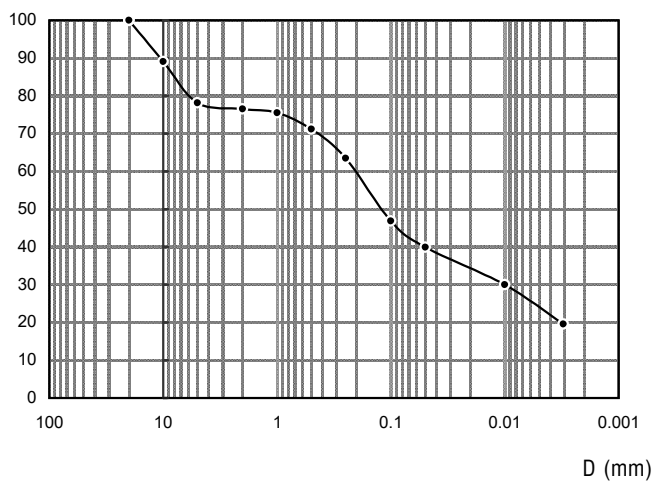
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn sỏi sạn laterit, xám hồng, trạng thái dẻo cứng / Stiff, pinkish grey, Sandy clay with laterite gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.80	19.7	16.0	89.5	40.7	0.688	27.0	30.12	18.47	11.65	0.37

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	40.30g					
	Nhiệt độ TN/Temp.	30.0°C	0.218	0.010	*	*

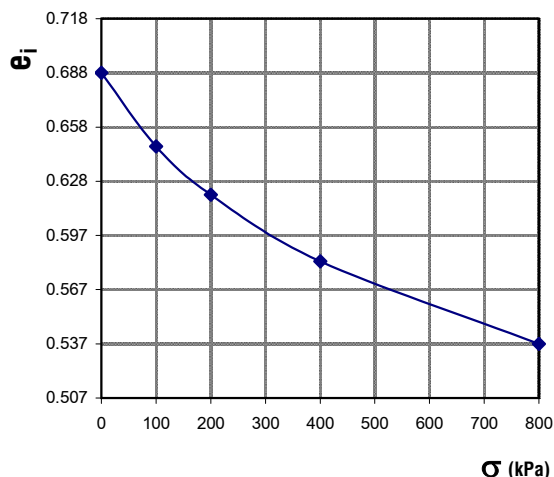
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10	10.9	100.0
20.0		Cát/Sand	10-5	11.0	89.1
10.0	4.40		5-2	1.6	78.1
5.0	4.43		2-1	1.0	76.5
2.0	0.65		1-0.5	4.3	75.5
1.0	0.41		0.5-0.25	7.7	71.2
0.5	1.72	Bụi/Silt	0.25-0.1	16.6	63.5
0.25	3.11		0.1-0.05	7.0	46.9
0.1	6.70	Sét/Clay	0.05-0.01	9.9	39.9
			0.01-0.005	5.0	30.0
			<0.005	25.0	25.0



## Thí nghiệm nén lún/Compression test

$m_k = 4.65$  Hộp nén số/Test box No.: 3  $e_0 = 0.688$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 197.8  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.688			
100	56.0	9.1	0.647	0.041	4117.1	11869.5
200	91.0	12.6	0.620	0.027	6100.0	17586.3
400	135.0	14.7	0.583	0.019	8526.3	24581.4
800	193.0	18.6	0.537	0.012	13191.7	38031.6

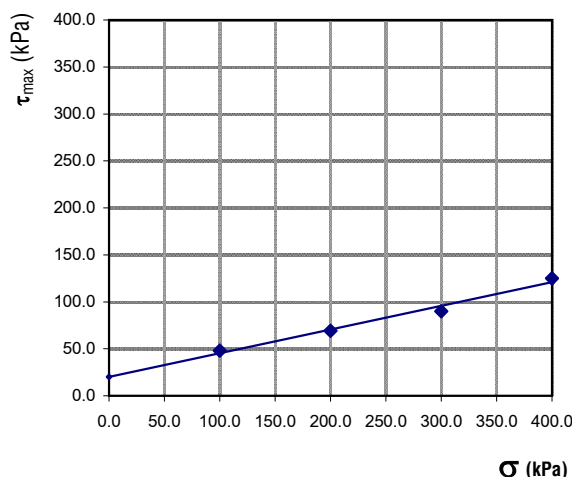


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.4	1.686	47.9
200	41.3	1.678	69.3
300	51.8	1.736	89.9
400	72.0	1.739	125.2

$\tan \phi = 0.2525$   $\phi = 14^\circ 10'$  C 20.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK11

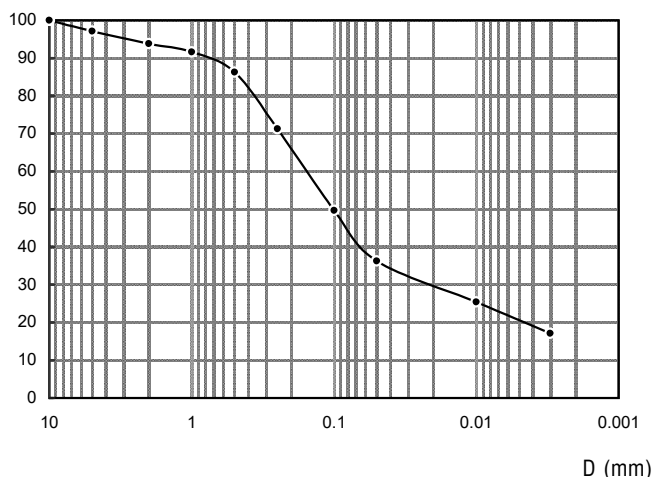
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng - xám vàng, trạng thái dẻo cứng / Stiff, whitish grey - yellowish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.90	19.6	16.3	81.9	39.6	0.656	27.0	26.39	15.24	11.15	0.42

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					60.05g					
					Nhiệt độ TN/Temp.	30.0°C	0.172	0.024	*	*

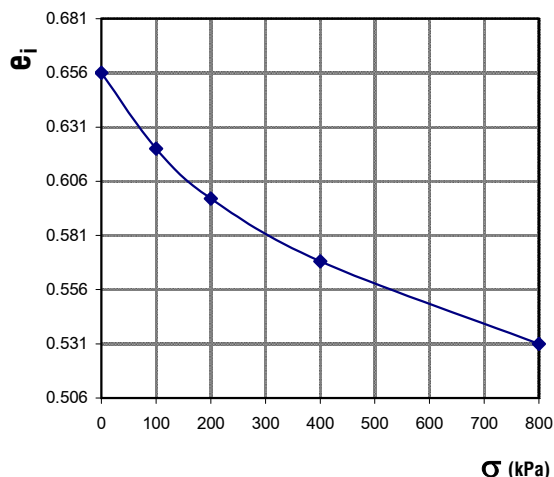
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5	2.9	100.0
10.0			5-2	3.3	97.1
5.0	1.72		2-1	2.2	93.8
2.0	2.00		1-0.5	5.3	91.6
1.0	1.30		0.5-0.25	15.0	86.3
0.5	3.20	Bụi/Silt	0.25-0.1	21.6	71.3
0.25	9.00		0.1-0.05	13.4	49.7
0.1	13.00		0.05-0.01	10.9	36.3
		Sét/Clay	0.01-0.005	4.2	25.4
			<0.005	21.2	21.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.76$  Hộp nén số/Test box No.: 4  $e_0 = 0.656$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 168.1  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.656			
100	50.0	8.8	0.621	0.035	4731.4	13963.4
200	80.0	11.9	0.598	0.023	7047.8	20799.5
400	116.0	14.0	0.569	0.015	10653.3	31440.1
800	164.0	17.5	0.531	0.009	17433.3	51449.3

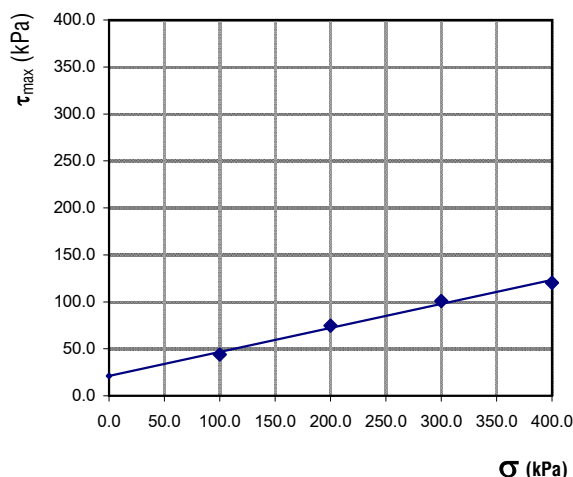


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	26.1	1.686	44.0
200	44.4	1.678	74.5
300	58.2	1.736	101.0
400	69.2	1.739	120.3

$\tan \phi = 0.2554$   $\phi = 14^\circ 20'$  C 21.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK11

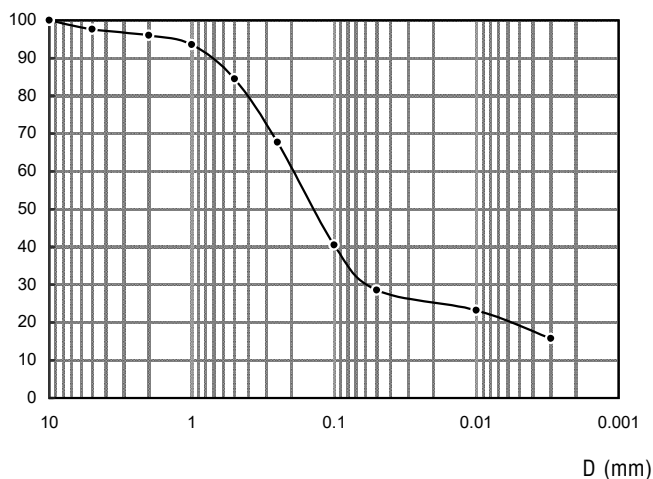
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng - xám vàng, trạng thái dẻo cứng / Stiff, whitish grey - yellowish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.68	19.0	15.0	89.6	44.6	0.807	27.1	34.07	20.13	13.94	0.47

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	69.75g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.208	0.064	*	*	*

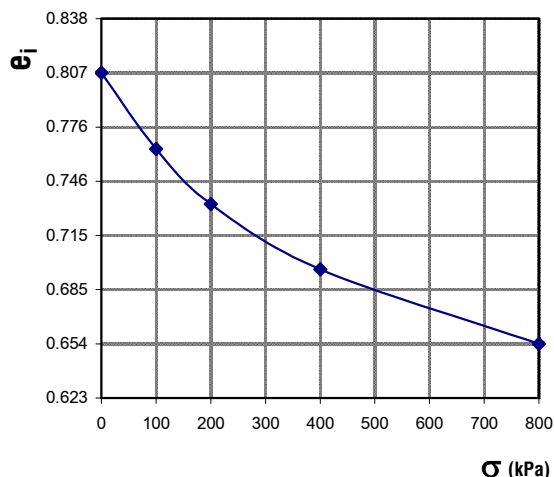
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5	2.4	100.0
			5-2	1.6	97.6
Cát/Sand			2-1	2.4	96.0
			1-0.5	9.1	93.6
			0.5-0.25	16.8	84.5
			0.25-0.1	27.2	67.7
			0.1-0.05	11.9	40.5
Bụi/Silt			0.05-0.01	5.4	28.6
			0.01-0.005	4.0	23.2
0.1	19.00	Sét/Clay	<0.005	19.2	19.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.09$  Hộp nén số/Test box No.: 5  $e_0 = 0.807$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 184.5  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.807			
100	54.0	7.4	0.764	0.043	4202.3	10643.2
200	90.2	10.5	0.733	0.031	5690.3	14411.9
400	132.0	12.6	0.696	0.019	9121.1	23100.9
800	180.0	15.8	0.654	0.011	15418.2	39049.6

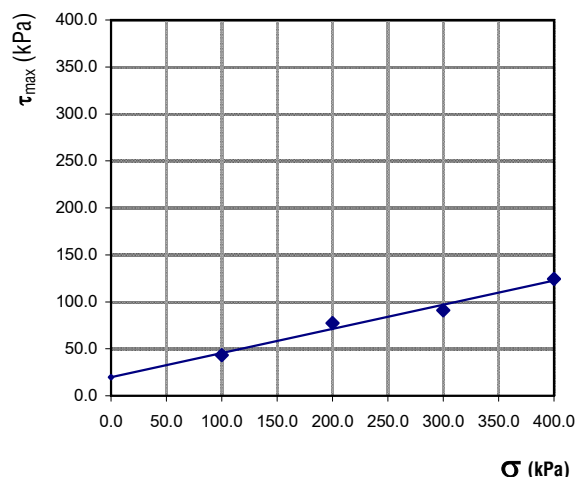


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.6	1.686	43.2
200	46.2	1.678	77.5
300	52.5	1.736	91.1
400	71.5	1.739	124.3

$\tan \phi = 0.2569$   $\phi = 14^\circ 24'$  C 19.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK11

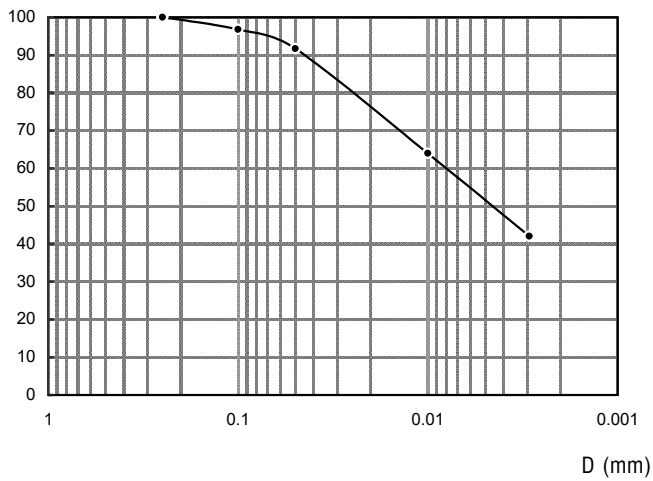
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.81	19.7	15.5	95.7	43.4	0.768	27.4	40.62	20.66	19.96	0.31

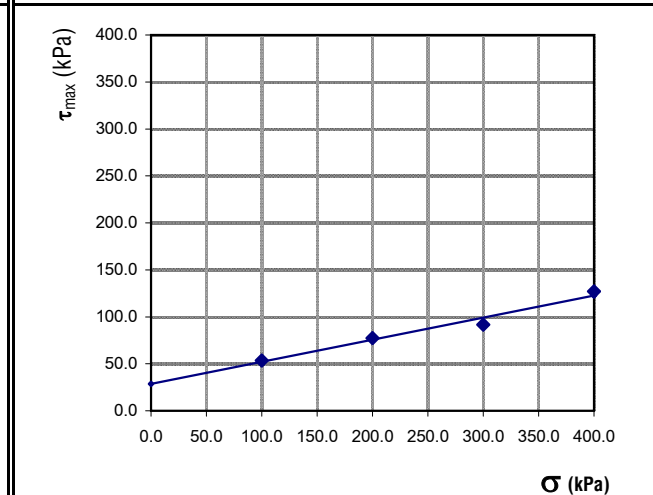
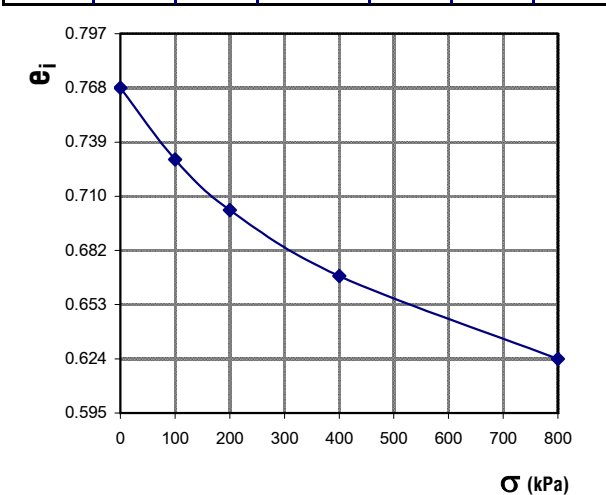
KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
	33.59g	0.008	*	*	*	*
	Nhiệt độ TN/Temp. 30.0°C					

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5		Bụi/Silt	0.25-0.1	3.2	100.0
0.25			0.1-0.05	5.1	96.8
0.1	1.09		0.05-0.01	27.7	91.7
		Sét/Clay	0.01-0.005	14.5	64.0
			<0.005	49.5	49.5



Thí nghiệm nén lún/Compression test						
$m_k$ = 6.00		Hộp nén số/Test box No.: 6		$e_0$ : 0.768		
$\beta$ = 0.40		Số đọc sau 24h/Reading after 24h: 182.5		$h_0$ : 20mm		
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0$ = $E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.768			
100	52.0	10.2	0.730	0.038	4652.6	11166.3
200	86.0	14.0	0.703	0.027	6407.4	15377.8
400	126.0	16.1	0.668	0.018	9461.1	22706.7
800	178.0	20.0	0.624	0.011	15163.6	36392.7

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.8	1.686	53.6
200	46.0	1.678	77.2
300	52.9	1.736	91.8
400	73.1	1.739	127.1
$\tan \phi = 0.2351$ $\phi = 13^\circ 14'$ C      28.7 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK11

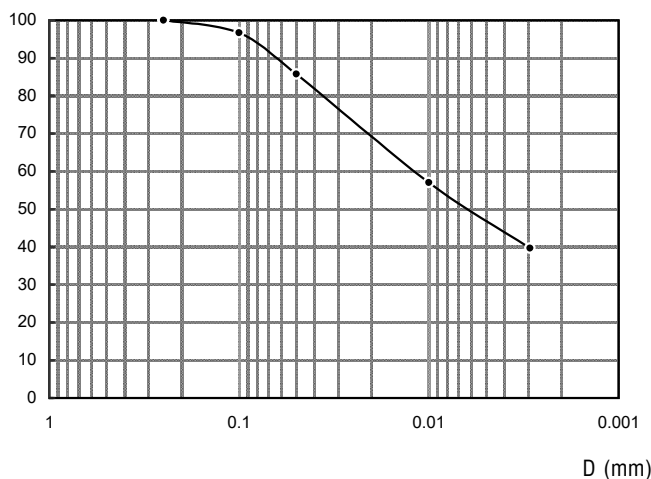
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	25.34	19.5	15.6	92.2	42.9	0.750	27.3	41.25	19.78	21.47	0.26

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					35.63g	0.012	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	3.3	100.0
0.25			0.1-0.05	10.9	96.7
0.1	1.19	Bụi/Silt	0.05-0.01	28.8	85.8
			0.01-0.005	10.3	57.0
		Sét/Clay	<0.005	46.7	46.7

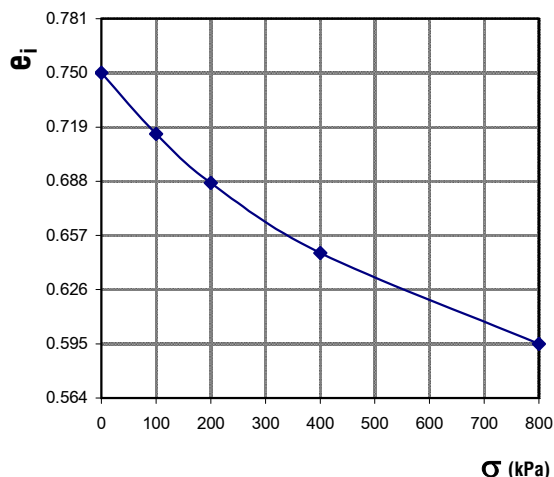


## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 7  $e_0 = 0.750$

$\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 194.2  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.750			
100	47.0	8.4	0.715	0.035	5000.0	12000.0
200	82.0	11.9	0.687	0.028	6125.0	14700.0
400	128.4	14.0	0.647	0.020	8435.0	20244.0
800	189.5	17.2	0.595	0.013	12669.2	30406.2



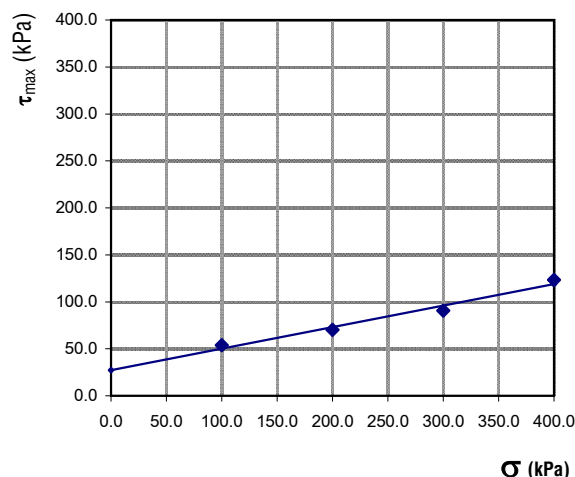
## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.9	1.686	53.8
200	41.9	1.678	70.3
300	52.3	1.736	90.8
400	70.9	1.739	123.3

$\tan \phi = 0.2290$   $\phi = 12^\circ 54'$  C 27.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK11

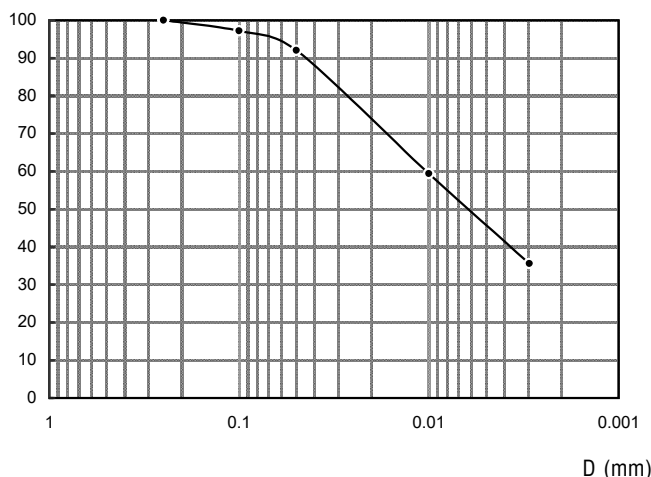
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.42	19.1	15.0	91.3	45.1	0.820	27.3	40.67	20.85	19.82	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	35.32g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.010	*	*	*	*

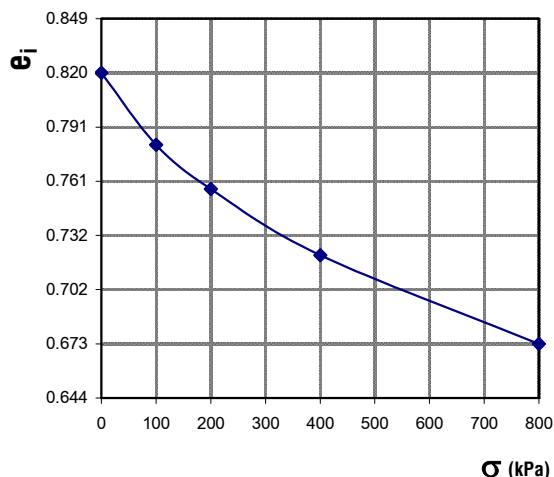
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	2.8	100.0
1.0			0.1-0.05	5.2	97.2
0.5		Bụi/Silt	0.05-0.01	32.6	92.0
0.25			0.01-0.005	14.2	59.4
0.1	1.00	Sét/Clay	<0.005	45.2	45.2



## Thí nghiệm nén lún/Compression test

$m_k = 5.97$  Hộp nén số/Test box No.: 8  $e_0 = 0.820$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 179.5  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.820			
100	51.0	8.8	0.781	0.039	4666.7	11134.7
200	80.0	12.6	0.757	0.024	7420.8	17706.1
400	121.0	15.1	0.721	0.018	9761.1	23290.0
800	175.1	18.5	0.673	0.012	14341.7	34219.2

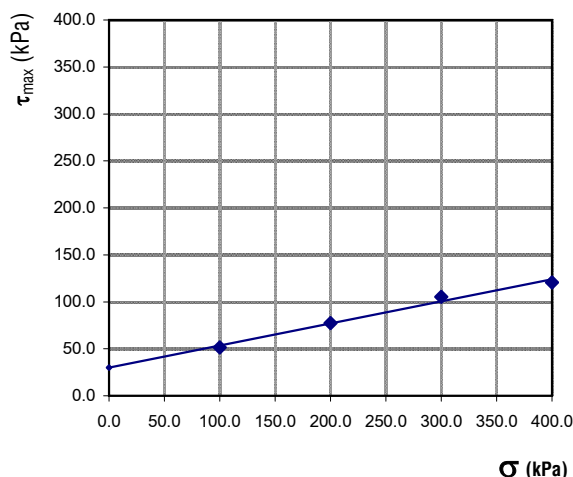


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.6	1.686	51.6
200	46.0	1.678	77.2
300	60.6	1.736	105.2
400	69.4	1.739	120.7

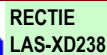
$\tan \phi = 0.2353$   $\phi = 13^\circ 14'$  C 29.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



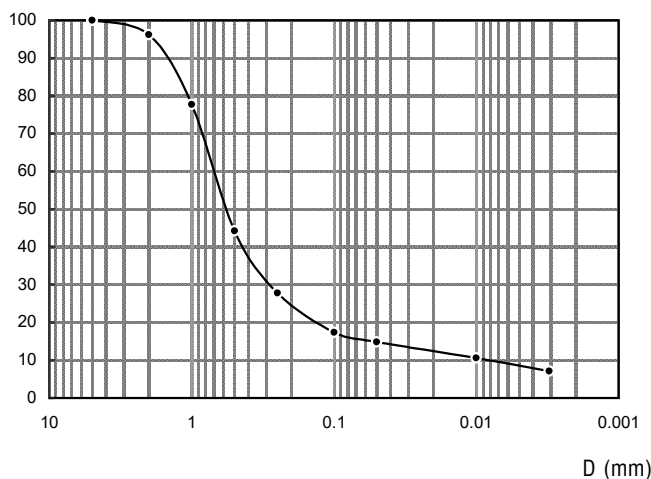
## TT04-BM16

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ, trạng thái dẻo / Plasticity, reddish brown, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.29	20.1	16.7	89.9	37.7	0.605	26.8	23.15	17.42	5.73	0.50

<b>KQTN HẠT/Test results from sieve-hydrometer analysis</b>	KL đất khô/Dry wei 111.65g	<b>D<sub>60</sub>(mm)</b>	<b>D<sub>30</sub>(mm)</b>	<b>D<sub>10</sub>(mm)</b>	<b>C<sub>c</sub></b>	<b>C<sub>u</sub></b>
	Nhiệt độ TN/Temp. 30.0°C	0.736	0.284	0.009	12.2	81.8

<b>Khối lượng đất</b>		<b>Cấp hạt</b>	<b>D<sub>1-12</sub></b>	<b>P<sub>i</sub></b>	<b>P</b>
<b>Mass of soil</b>		<b>Grain grade</b>	<b>(mm)</b>	<b>%</b>	<b>%</b>
<b>&gt;0.1mm</b>		<b>Sỏi/san/Gravel</b>	<b>&gt;10</b>		<b>100.0</b>
<b>D</b>	<b>m<sub>i</sub></b>		<b>10-5</b>		<b>100.0</b>
<b>(mm)</b>	<b>(g)</b>		<b>5-2</b>	<b>3.8</b>	<b>100.0</b>
20.0		<b>Cát/Sand</b>	2-1	18.5	96.2
10.0			1-0.5	33.5	77.7
5.0			0.5-0.25	16.4	44.2
2.0	4.23		0.25-0.1	10.4	27.8
1.0	20.60		0.1-0.05	2.6	17.4
0.5	37.40	<b>Bụi/Silt</b>	0.05-0.01	4.2	14.8
0.25	18.31		0.01-0.005	1.8	10.6
0.1	11.65	<b>Sét/Clay</b>	<0.005	8.8	8.8

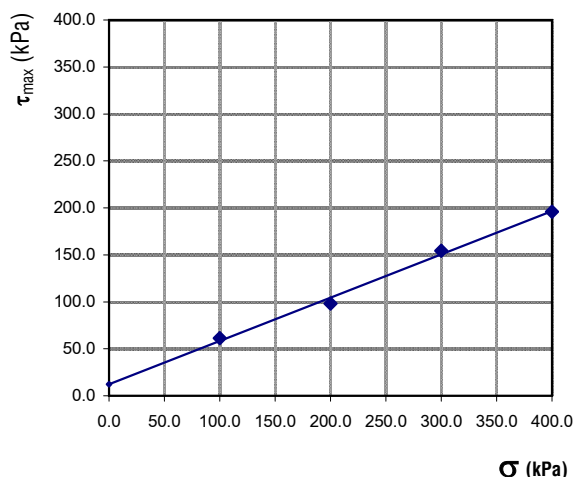
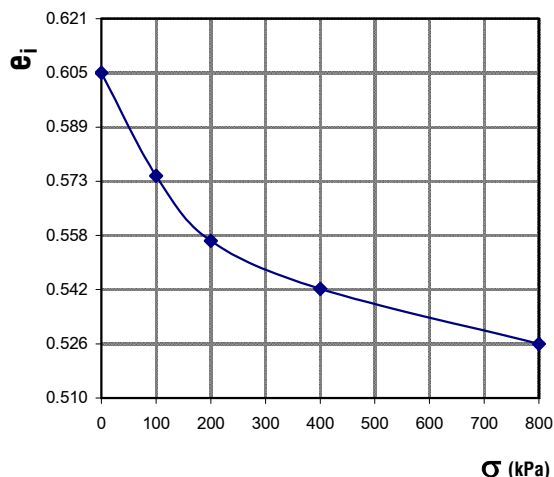


### Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
 Hệ số vòng lục/Proving ring calibration factor: Cr

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	$a$	$E$	$E_0 = E^* m_k \cdot \beta$
kPa	V <sub>ach</sub> /Div.	V <sub>ach</sub> /Div.	-	kPa <sup>-1</sup> ·x10 <sup>-2</sup>	kPa	kPa
0			0.605			
100	45.0	7.7	0.575	0.030	5350.0	15717.2
200	70.0	10.9	0.556	0.019	8289.5	24352.8
400	88.0	12.6	0.542	0.007	22228.6	65303.1
800	112.0	15.5	0.526	0.004	38550.0	113252.2

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	V <sub>ach</sub> /Div.	kPa/0.01mm	kPa
100	36.3	1.686	61.2
200	58.4	1.678	98.0
300	89.0	1.736	154.5
400	112.7	1.739	196.0

$$\tan \phi = 0.4609 \quad \phi = 24^{\circ}45' \quad C = 12.2 \text{ kPa}$$


Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngộ



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK11

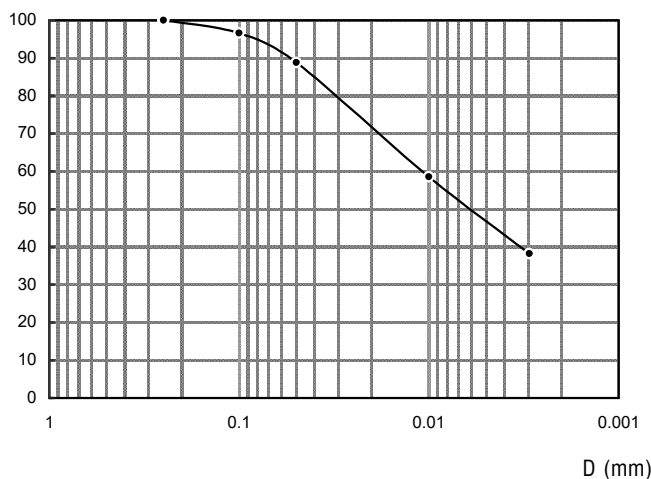
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu - nâu đỏ, trạng thái dẻo cứng / Stiff, brownish yellow - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	27.56	19.3	15.1	93.1	44.7	0.808	27.3	40.30	17.54	22.76	0.44

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	32.93g	0.011	*	*	*
						30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	3.4	100.0
0.25			0.1-0.05	7.8	96.6
0.1	1.13	Bụi/Silt	0.05-0.01	30.2	88.8
			0.01-0.005	13.0	58.6
		Sét/Clay	<0.005	45.6	45.6

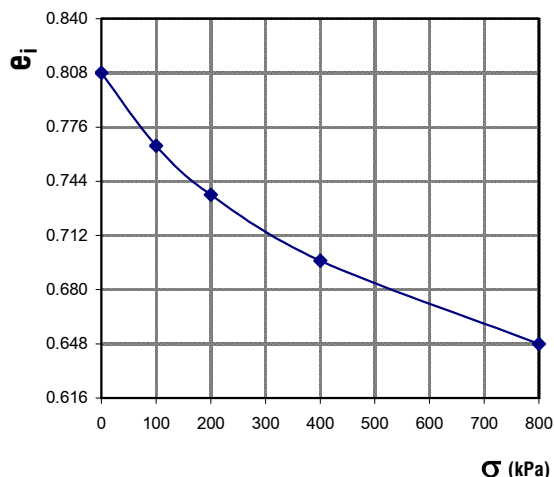


## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 10  $e_0 = 0.808$

$\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 192.7  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.808			
100	54.0	7.7	0.765	0.043	4204.7	10091.2
200	88.0	10.5	0.736	0.029	6086.2	14606.9
400	132.0	12.3	0.697	0.020	8680.0	20832.0
800	188.0	15.5	0.648	0.012	14141.7	33940.0



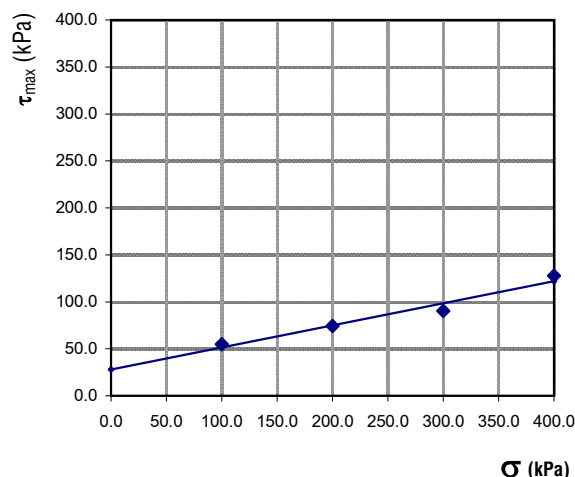
## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	32.5	1.686	54.8
200	44.2	1.678	74.2
300	52.0	1.736	90.3
400	73.4	1.739	127.6

$\tan \phi = 0.2345$   $\phi = 13^\circ 12'$  C 28.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK11

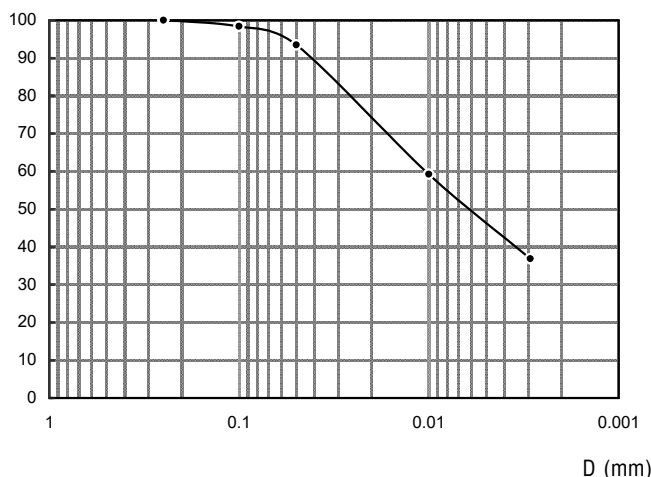
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu - nâu đỏ, trạng thái dẻo cứng / Stiff, brownish yellow - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	24.09	19.6	15.8	89.9	42.3	0.734	27.4	38.47	18.64	19.83	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					38.19g	0.010	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

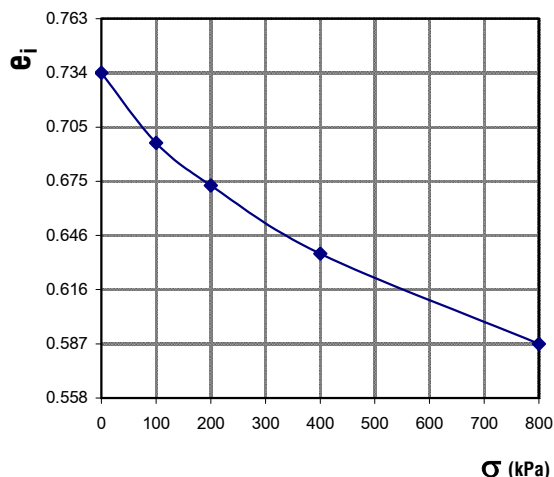
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	1.6	100.0
0.25			0.1-0.05	4.9	98.4
0.1	0.61	Bụi/Silt	0.05-0.01	34.3	93.5
			0.01-0.005	15.7	59.2
		Sét/Clay	<0.005	43.5	43.5



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 11  $e_0 = 0.734$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 186.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.734			
100	51.0	8.4	0.696	0.038	4563.2	10951.6
200	79.0	11.2	0.673	0.023	7373.9	17697.4
400	123.0	13.3	0.636	0.019	8805.3	21132.6
800	182.0	16.3	0.587	0.012	13633.3	32720.0

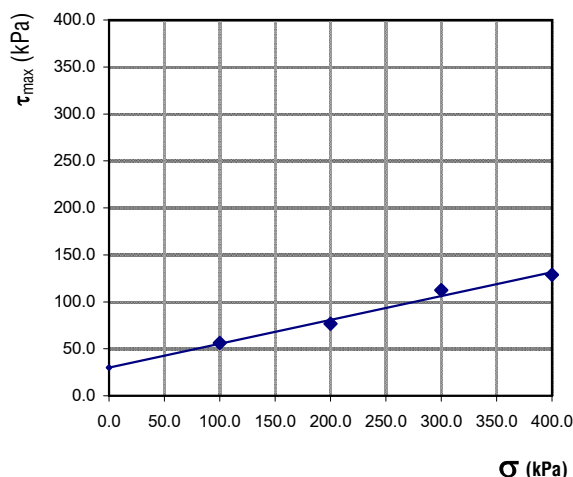


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.3	1.686	56.1
200	45.7	1.678	76.7
300	64.8	1.736	112.5
400	74.0	1.739	128.7

$\tan \phi = 0.2536$   $\phi = 14^\circ 14'$  C 30.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK11

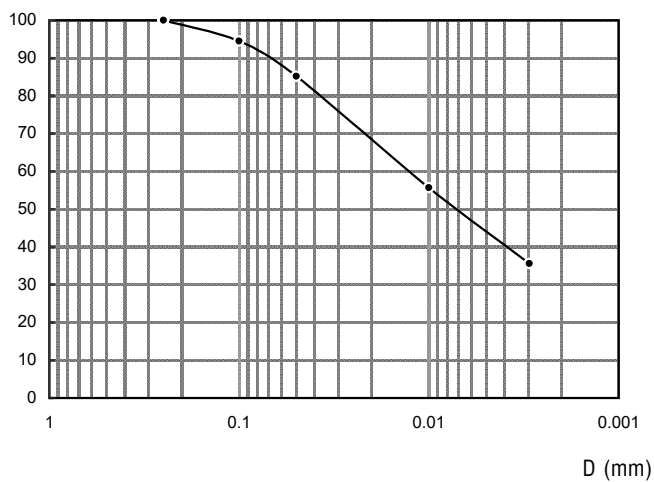
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu - nâu đỏ, trạng thái dẻo cứng / Stiff, brownish yellow - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.39	19.1	15.0	91.2	45.1	0.820	27.3	44.69	20.72	23.97	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	35.32g	0.013	*	*	*
						30.0°C				

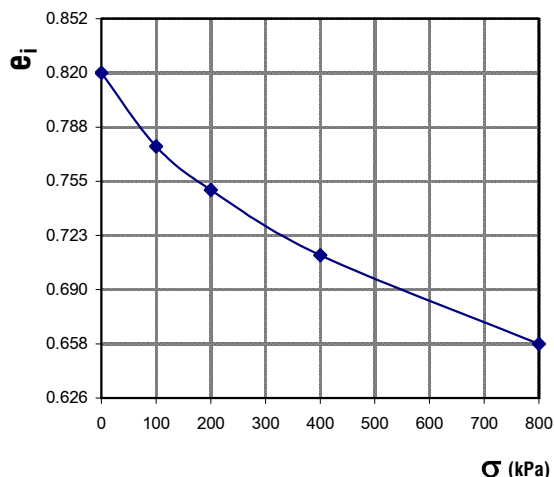
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	5.5	100.0
0.25			0.1-0.05	9.3	94.5
0.1	1.96	Bụi/Silt	0.05-0.01	29.5	85.2
			0.01-0.005	13.1	55.7
		Sét/Clay	<0.005	42.6	42.6



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 12  $e_0 = 0.820$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 191.7  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.820			
100	53.0	6.3	0.776	0.044	4136.4	9927.3
200	84.0	9.5	0.750	0.026	6830.8	16393.8
400	128.0	11.6	0.711	0.020	8750.0	21000.0
800	187.0	13.7	0.658	0.013	13161.5	31587.7

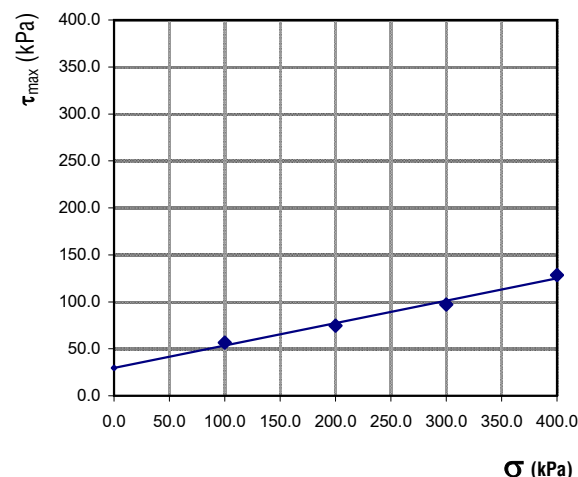


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.6	1.686	56.6
200	44.4	1.678	74.5
300	56.0	1.736	97.2
400	73.9	1.739	128.5

$\tan \phi = 0.2384$   $\phi = 13^\circ 25'$  C 29.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK11

Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu - nâu đỏ, trạng thái dẻo cứng / Stiff, brownish yellow - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.31	19.4	15.4	92.9	43.6	0.773	27.3	40.14	19.57	20.57	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	38.31g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.010	*	*	*	*

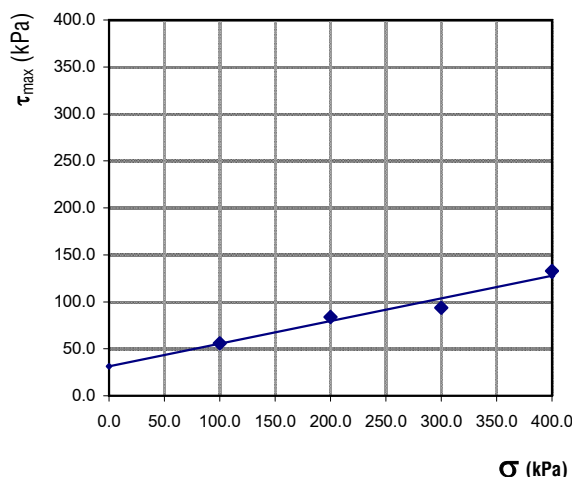
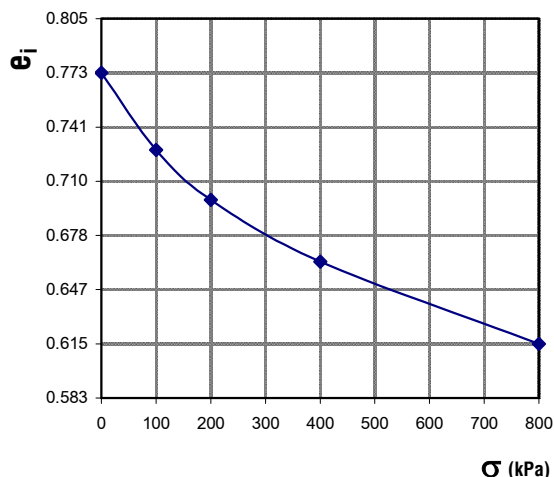
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	0.6	100.0
0.25			0.1-0.05	6.1	99.4
0.1	0.24	Bụi/Silt	0.05-0.01	34.2	93.3
			0.01-0.005	15.6	59.1
		Sét/Clay	<0.005	43.5	43.5

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 6.00$ Hộp nén số/Test box No.: 13 $e_0 = 0.773$							PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.40$ Số đọc sau 24h/Reading after 24h: 191.7 $h_p = 20\text{mm}$							Hệ số vòng lực/Proving ring calibration factor: Cr			

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$	$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa	kPa	Vạch/Div.	kPa/0.01mm	kPa
0			0.773				100	33.2	1.686	56.0
100	57.0	7.4	0.728	0.045	3940.0	9456.0	200	50.0	1.678	83.9
200	92.0	10.2	0.699	0.029	5958.6	14300.7	300	54.0	1.736	93.7
400	132.0	10.9	0.663	0.018	9438.9	22653.3	400	76.5	1.739	133.0
800	187.0	13.7	0.615	0.012	13858.3	33260.0	$\tan \varphi = 0.2408$ $\varphi = 13^\circ 32'$ C 31.5 kPa			



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK11

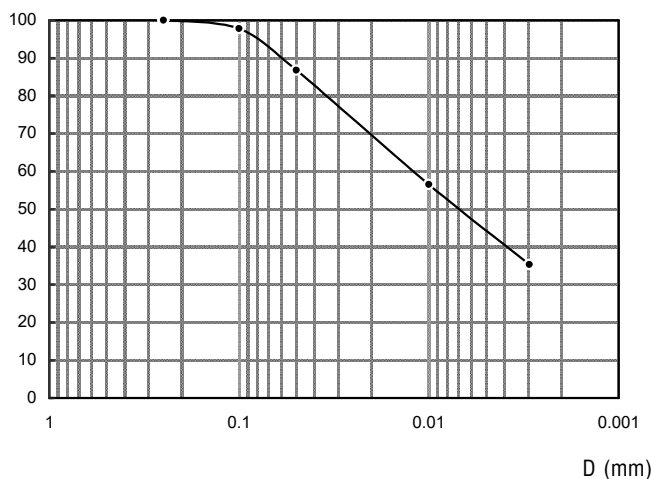
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu - nâu đỏ, trạng thái dẻo cứng / Stiff, brownish yellow - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	23.77	19.9	16.1	93.2	41.0	0.696	27.3	38.12	18.29	19.83	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	35.55g	0.012	*	*	*
						30.0°C				

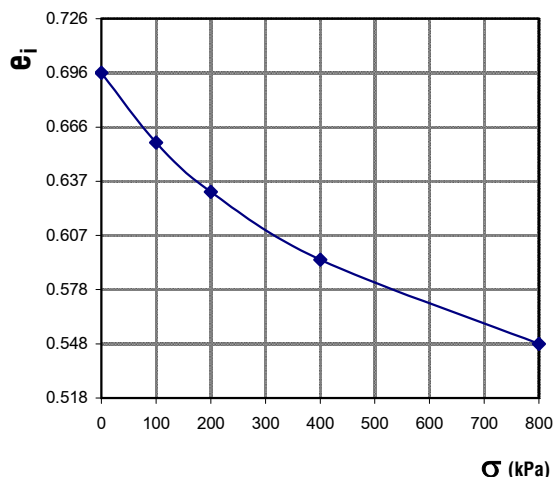
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	2.2	100.0
1.0			0.1-0.05	11.0	97.8
0.5		Bụi/Silt	0.05-0.01	30.3	86.8
0.25			0.01-0.005	14.2	56.5
0.1	0.77	Sét/Clay	<0.005	42.3	42.3



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 14  $e_0 = 0.696$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 188.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.696			
100	52.0	8.1	0.658	0.038	4463.2	10711.6
200	85.6	10.5	0.631	0.027	6140.7	14737.8
400	128.0	11.6	0.594	0.019	8584.2	20602.1
800	184.0	14.8	0.548	0.012	13283.3	31880.0

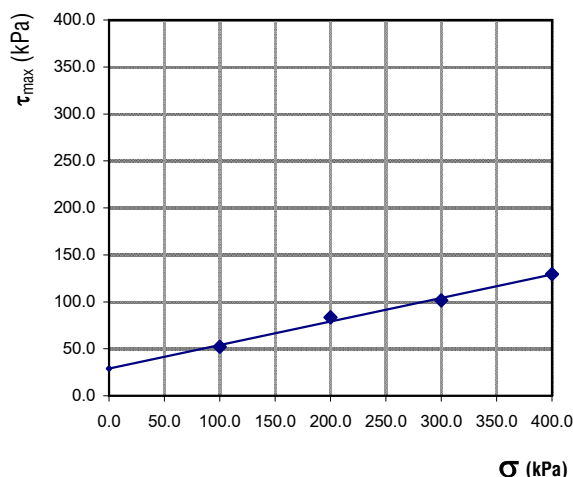


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	30.9	1.686	52.1
200	49.7	1.678	83.4
300	58.4	1.736	101.4
400	74.5	1.739	129.6

$\tan \phi = 0.2505$   $\phi = 14^\circ 04'$  C 29.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK11-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK11

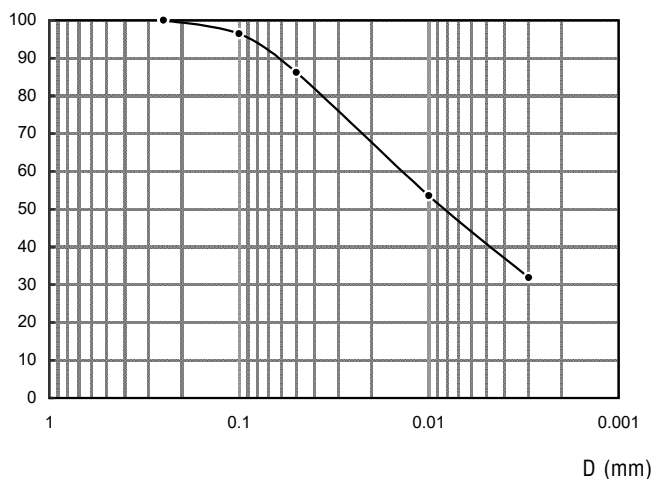
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu - nâu đỏ, trạng thái dẻo cứng / Stiff, brownish yellow - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.30	19.5	15.4	92.5	43.8	0.779	27.4	40.12	19.09	21.03	0.34

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					34.40g	0.014	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

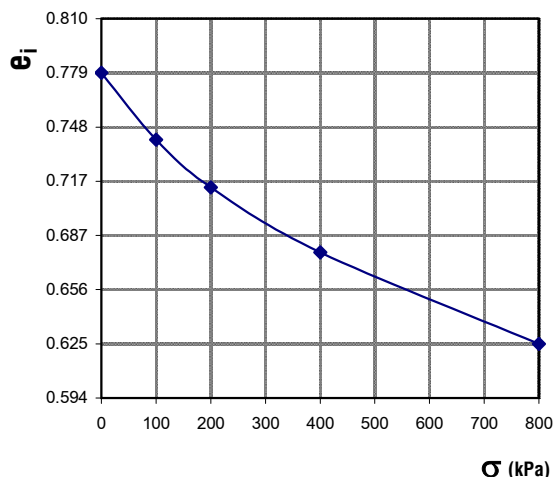
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	3.6	100.0
1.0			0.1-0.05	10.2	96.4
0.5		Bụi/Silt	0.05-0.01	32.6	86.2
0.25			0.01-0.005	14.7	53.6
0.1	1.24	Sét/Clay	<0.005	38.9	38.9



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 15  $e_0 = 0.779$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 186.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.779			
100	48.0	6.3	0.741	0.038	4681.6	11235.8
200	80.0	9.1	0.714	0.027	6448.1	15475.6
400	123.0	10.9	0.677	0.019	9021.1	21650.5
800	182.0	13.7	0.625	0.013	12900.0	30960.0

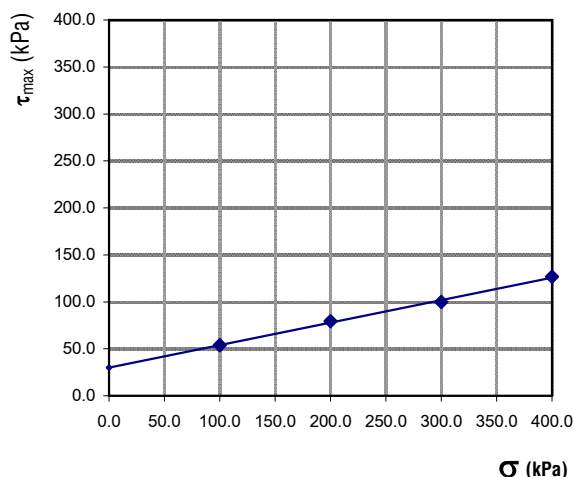


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.9	1.686	53.8
200	47.3	1.678	79.4
300	57.5	1.736	99.8
400	72.9	1.739	126.8

$\tan \phi = 0.2394$   $\phi = 13^\circ 28'$  C 30.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK12

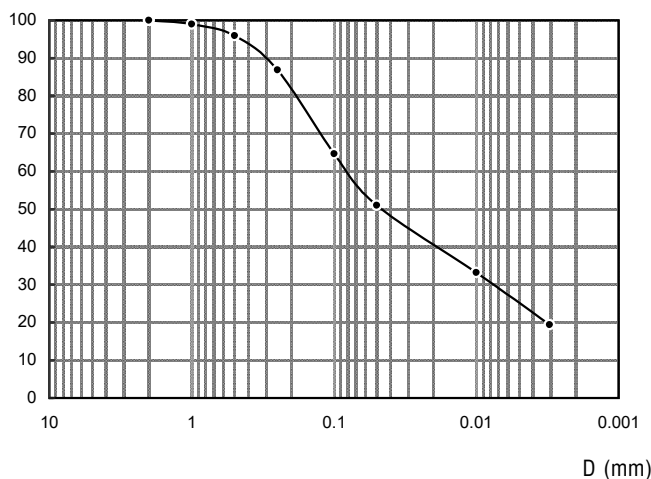
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu vàng, trạng thái dẻo cứng / Stiff, yellowish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.09	20.0	16.5	89.5	38.9	0.636	27.0	30.57	17.64	12.93	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	40.53g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
Nhiệt độ TN/Temp.				30.0°C		0.082	0.008	*	*	*

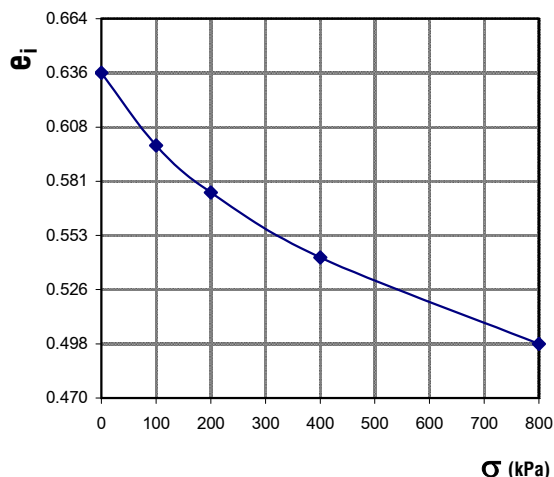
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	1.0	100.0
10.0			1-0.5	3.1	99.0
5.0			0.5-0.25	9.0	95.9
2.0			0.25-0.1	22.2	86.9
1.0	0.39		0.1-0.05	13.7	64.7
0.5	1.26	Bụi/Silt	0.05-0.01	17.8	51.0
0.25	3.66		0.01-0.005	7.8	33.2
0.1	9.00	Sét/Clay	<0.005	25.4	25.4



## Thí nghiệm nén lún/Compression test

$m_v = 4.88$  Hộp nén số/Test box No.: 31  $e_0 = 0.636$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 185.5  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.636			
100	51.0	7.1	0.599	0.037	4421.6	13364.4
200	84.0	11.4	0.575	0.024	6662.5	20137.4
400	126.0	14.1	0.542	0.017	9264.7	28002.6
800	181.0	16.8	0.498	0.011	14018.2	42370.0

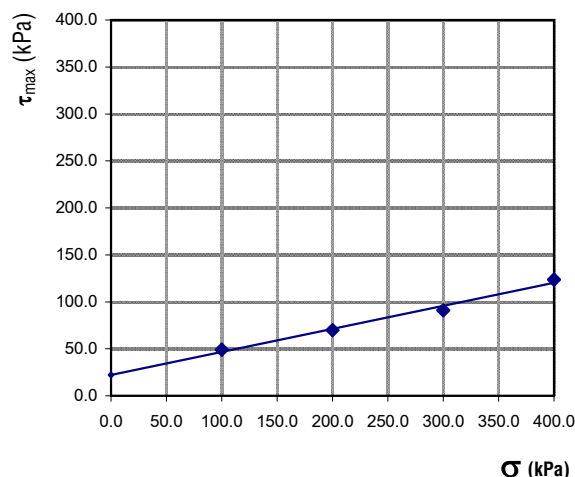


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.0	1.686	48.9
200	41.7	1.678	70.0
300	52.4	1.736	91.0
400	71.2	1.739	123.8

$\tan \phi = 0.2457$   $\phi = 13^\circ 48'$  C 22.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK12

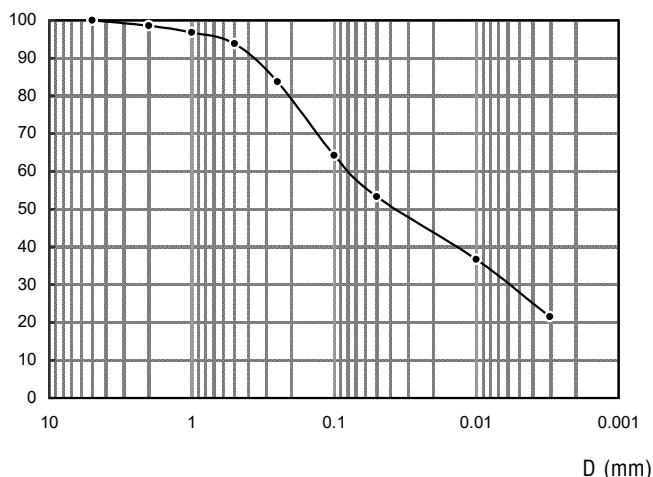
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	24.39	19.1	15.4	87.0	43.2	0.760	27.1	31.69	19.72	11.97	0.39

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	36.63g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.080	0.006	*	*	*

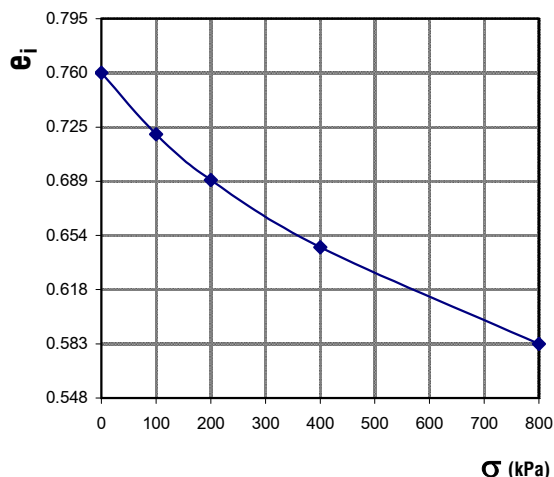
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2	1.4	100.0
20.0		Cát/Sand	2-1	1.8	98.6
10.0			1-0.5	3.0	96.8
5.0			0.5-0.25	10.1	93.8
2.0	0.53		0.25-0.1	19.5	83.7
1.0	0.65		0.1-0.05	10.9	64.2
0.5	1.09	Bụi/Silt	0.05-0.01	16.6	53.3
0.25	3.70		0.01-0.005	8.9	36.7
0.1	7.15	Sét/Clay	<0.005	27.8	27.8



## Thí nghiệm nén lún/Compression test

$m_k = 4.30$  Hộp nén số/Test box No.: 32  $e_0 = 0.760$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 218.9  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.760			
100	51.0	7.4	0.720	0.040	4400.0	11730.4
200	91.2	13.0	0.690	0.030	5733.3	15285.1
400	140.2	14.5	0.646	0.022	7681.8	20479.7
800	213.6	17.8	0.583	0.016	10287.5	27426.5

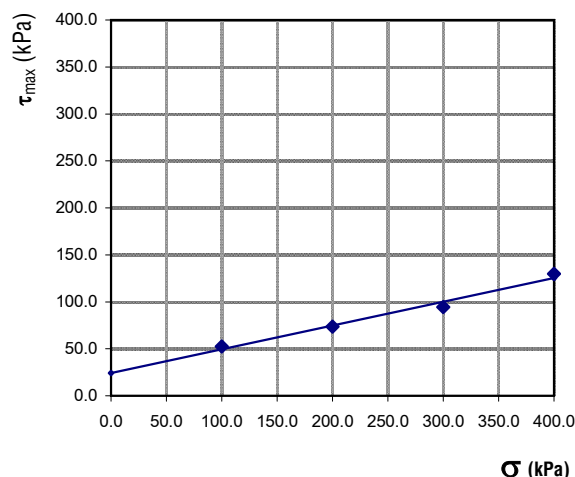


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.0	1.686	52.3
200	43.8	1.678	73.5
300	54.3	1.736	94.3
400	74.7	1.739	129.9

$\tan \phi = 0.2536$   $\phi = 14^\circ 14'$  C 24.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK12

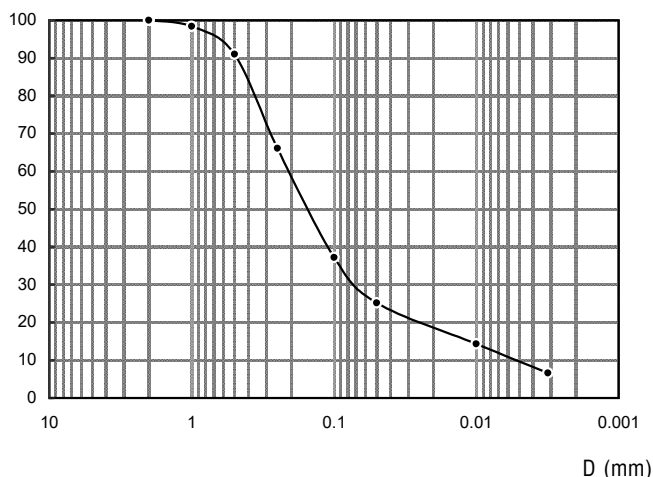
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.77	19.6	16.2	85.6	39.3	0.648	26.7	25.70	19.12	6.58	0.25

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	71.40g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.218	0.075	0.005	5.2	43.6

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	1.6	100.0
10.0			1-0.5	7.4	98.4
5.0			0.5-0.25	24.9	91.0
2.0			0.25-0.1	28.9	66.1
1.0	1.17		0.1-0.05	12.0	37.2
0.5	5.30	Bụi/Silt	0.05-0.01	10.9	25.2
0.25	17.80		0.01-0.005	4.6	14.3
0.1	20.60	Sét/Clay	<0.005	9.7	9.7



## Thí nghiệm nén lún/Compression test

$m_k = 3.78$  Hộp nén số/Test box No.: 33  $e_0 = 0.648$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 125.1  $h_p = 20\text{mm}$

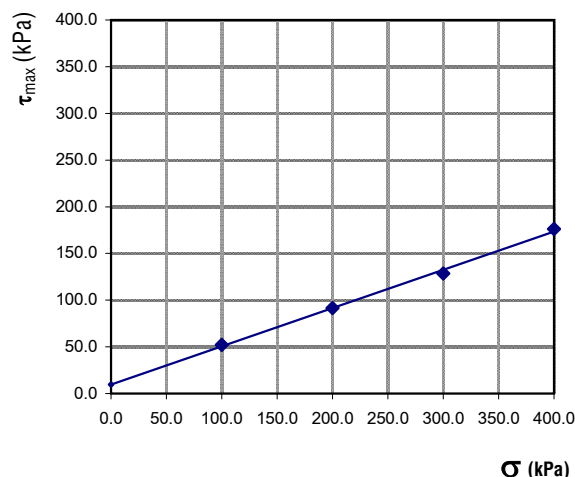
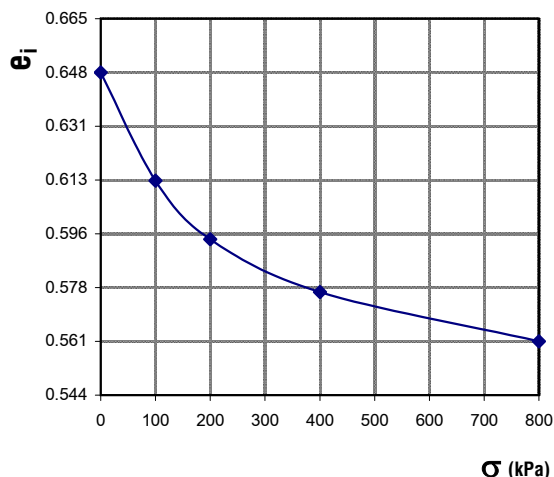
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.648			
100	47.0	6.5	0.613	0.035	4708.6	13170.8
200	76.0	13.4	0.594	0.019	8489.5	23746.8
400	99.0	15.1	0.577	0.009	17711.1	49541.5
800	122.0	18.7	0.561	0.004	39425.0	110279.6

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.9	1.686	52.1
200	54.5	1.678	91.5
300	74.1	1.736	128.6
400	101.4	1.739	176.3

$\tan \varphi = 0.4097$   $\varphi = 22^\circ 17'$  C 9.7 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK12

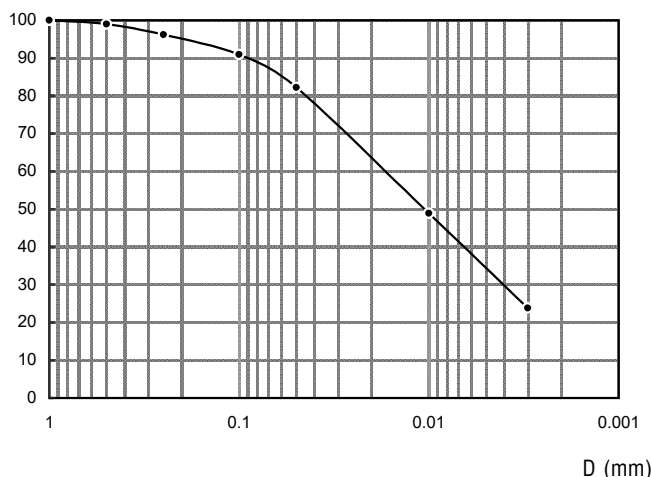
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ - nâu vàng, trạng thái dẻo cứng / Stiff, reddish brown - yellowish brown, Clay

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	27.37	19.1	15.0	91.1	45.1	0.820	27.3	42.05	21.96	20.09	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				39.49g					
				Nhiệt độ TN/Temp.	30.0°C	0.017	0.004	*	*

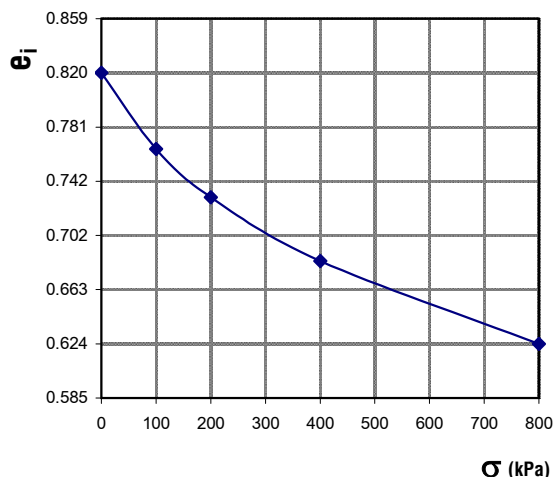
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	1.0	100.0
1.0			0.5-0.25	2.8	99.0
0.5	0.40	Bụi/Silt	0.25-0.1	5.3	96.2
0.25	1.10		0.1-0.05	8.7	90.9
0.1	2.09		0.05-0.01	33.3	82.2
		Sét/Clay	0.01-0.005	15.0	48.9
			<0.005	33.9	33.9



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 34  $e_0 = 0.820$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 234.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.820			
100	65.0	6.3	0.765	0.055	3309.1	7941.8
200	110.0	13.3	0.730	0.035	5042.9	12102.9
400	161.0	15.6	0.684	0.023	7521.7	18052.2
800	228.4	18.7	0.624	0.015	11226.7	26944.0

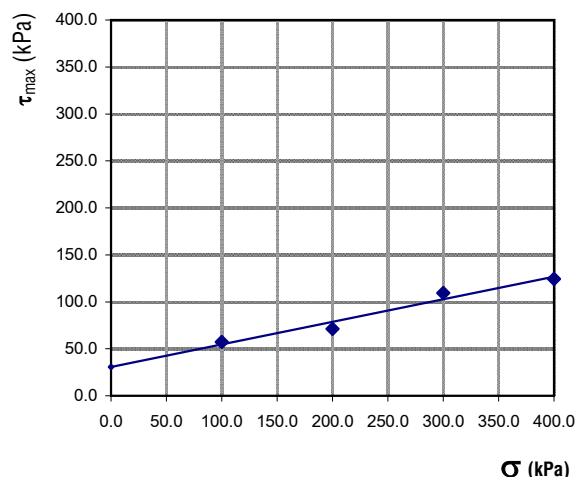


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.9	1.686	57.2
200	42.4	1.678	71.1
300	63.0	1.736	109.4
400	71.6	1.739	124.5

$\tan \phi = 0.2402$   $\phi = 13^\circ 30'$  C 30.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK12

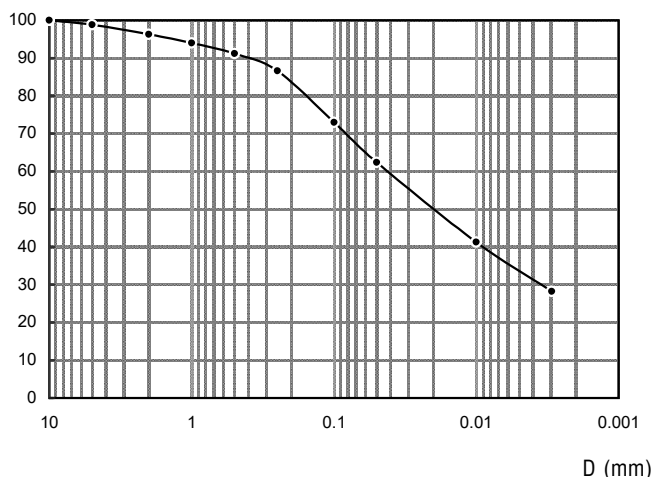
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ - nâu vàng, trạng thái dẻo cứng / Stiff, reddish brown - yellowish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	29.30	19.0	14.7	92.9	46.4	0.864	27.4	50.12	21.09	29.03	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	44.42g					
	Nhiệt độ TN/Temp.	30.0°C	0.040	0.004	*	*

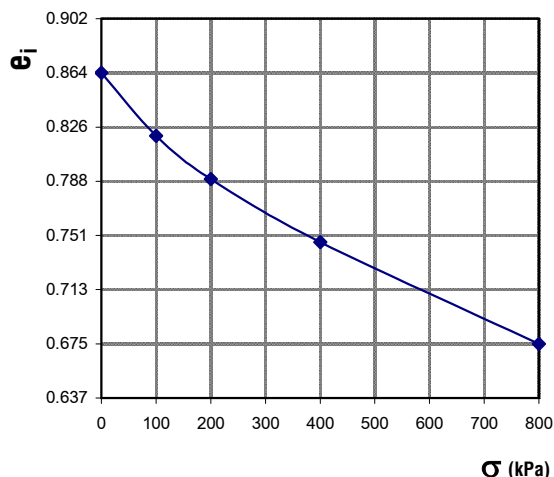
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	D <sub>11-2</sub> (mm)	P <sub>i</sub> %	P %
D (mm)	m <sub>i</sub> (g)	Sỏi/sand /gravel	>10		100.0
			10-5	1.2	100.0
			5-2	2.5	98.8
20.0		Cát/Sand	2-1	2.3	96.3
10.0			1-0.5	2.8	94.0
5.0	0.52		0.5-0.25	4.6	91.2
2.0	1.12		0.25-0.1	13.6	86.6
1.0	1.03		0.1-0.05	10.6	73.0
0.5	1.25	Bụi/Silt	0.05-0.01	21.1	62.4
0.25	2.06		0.01-0.005	7.5	41.3
0.1	6.05	Sét/Clay	<0.005	33.8	33.8



## Thí nghiệm nén lún/Compression test

$m_k = 5.80$  Hộp nén số/Test box No.: 35  $e_0 = 0.864$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 220.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.864			
100	52.0	6.2	0.820	0.044	4236.4	9828.4
200	88.0	11.0	0.790	0.030	6066.7	14074.7
400	138.0	14.8	0.746	0.022	8136.4	18876.4
800	215.0	17.6	0.675	0.018	9700.0	22504.0

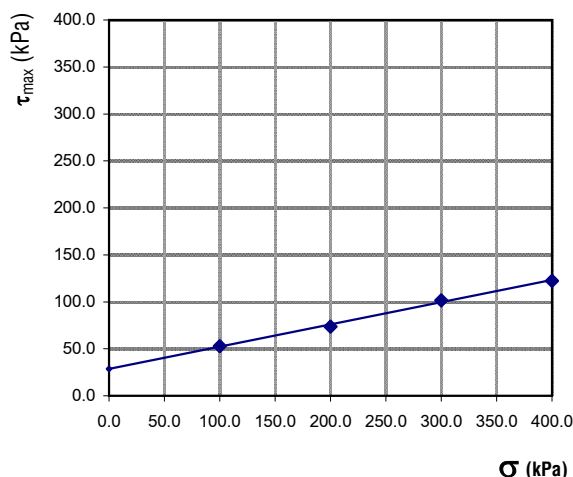


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.4	1.686	52.9
200	43.9	1.678	73.7
300	58.6	1.736	101.7
400	70.4	1.739	122.4

$\tan \phi = 0.2365$   $\phi = 13^\circ 18'$  C 28.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK12

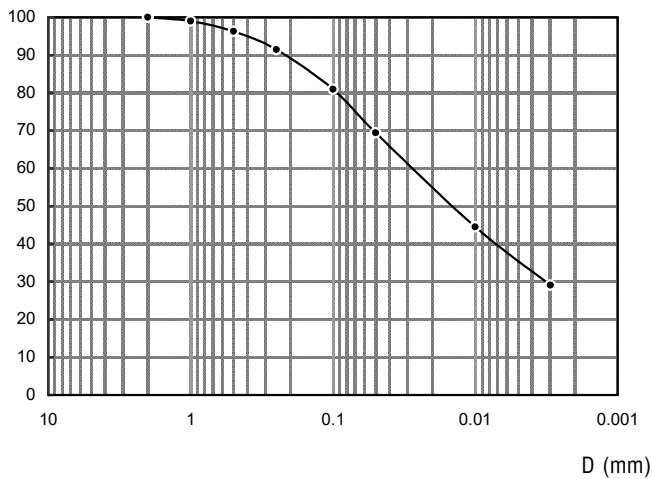
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ - nâu vàng, trạng thái dẻo cứng / Stiff, reddish brown - yellowish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	29.31	19.2	14.8	94.7	45.8	0.845	27.3	47.38	21.53	25.85	0.30

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					40.99g					
					Nhiệt độ TN/Temp.	30.0°C	0.028	0.003	*	*

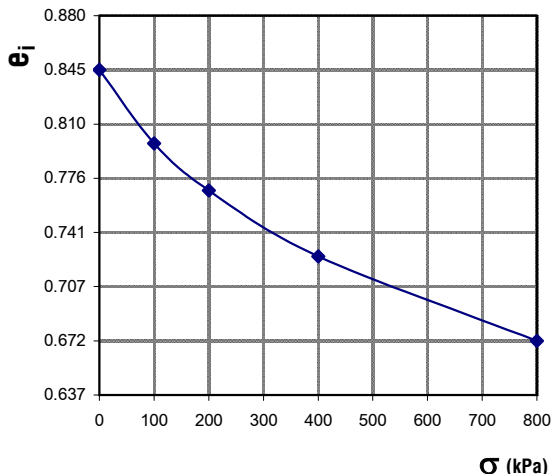
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
Cát/Sand			2-1	1.0	100.0
			1-0.5	2.7	99.0
			0.5-0.25	4.9	96.3
			0.25-0.1	10.5	91.4
			0.1-0.05	11.5	80.9
Bụi/Silt			0.05-0.01	24.9	69.4
			0.01-0.005	7.9	44.5
0.1	4.30	Sét/Clay	<0.005	36.6	36.6



## Thí nghiệm nén lún/Compression test

$m_k = 5.91$  Hộp nén số/Test box No.: 36  $e_0 = 0.845$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 205.0  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.845			
100	56.0	6.1	0.798	0.047	3925.5	9280.0
200	92.0	11.4	0.768	0.030	5993.3	14168.2
400	140.0	14.4	0.726	0.021	8419.0	19902.6
800	200.0	17.4	0.672	0.014	12328.6	29144.7

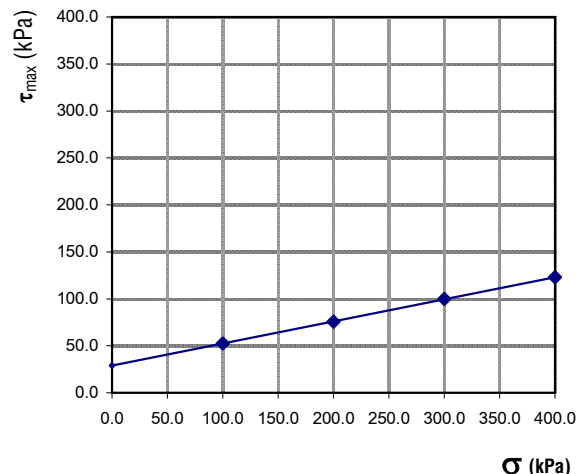


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.2	1.686	52.6
200	45.0	1.678	75.5
300	57.6	1.736	100.0
400	70.7	1.739	122.9

$\tan \phi = 0.2354$   $\phi = 13^\circ 15'$  C 28.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK12

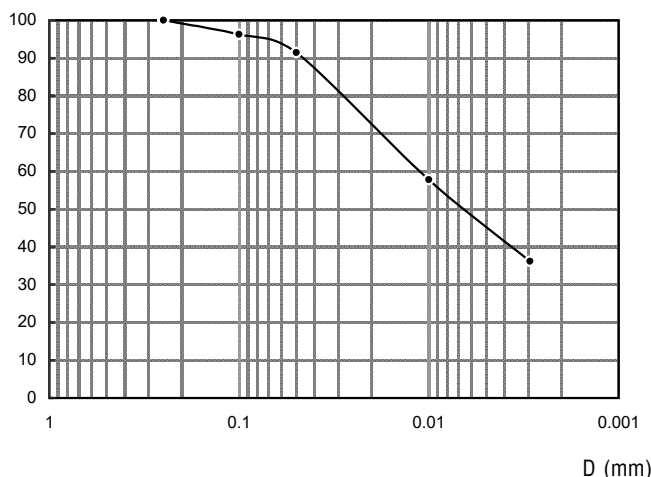
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu đỏ - xám trắng, trạng thái dẻo cứng / Stiff, reddish brown - whitish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	28.22	19.0	14.8	91.6	45.6	0.838	27.2	45.80	21.53	24.27	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.011	*	*	*

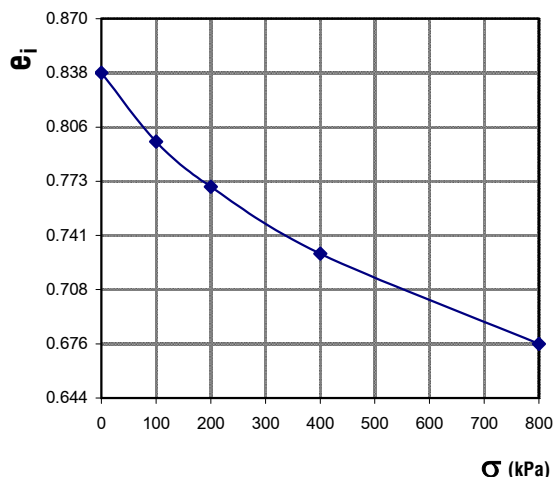
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	3.7	100.0
1.0			0.1-0.05	4.9	96.3
0.5		Bụi/Silt	0.05-0.01	33.6	91.4
0.25			0.01-0.005	15.3	57.8
0.1	1.45	Sét/Clay	<0.005	42.5	42.5



## Thí nghiệm nén lún/Compression test

$m_k = 5.90$  Hộp nén số/Test box No.: 37  $e_0 = 0.838$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 194.8  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.838			
100	50.0	6.7	0.797	0.041	4482.9	10579.7
200	84.0	12.5	0.770	0.027	6655.6	15707.1
400	130.0	15.6	0.730	0.020	8850.0	20886.0
800	190.0	18.8	0.676	0.014	12357.1	29162.9

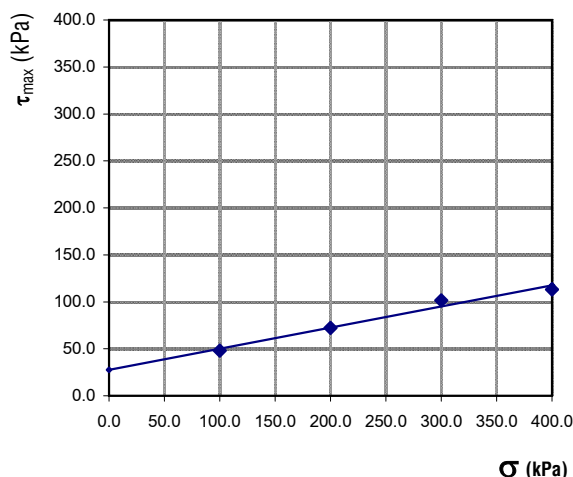


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.4	1.686	47.9
200	43.1	1.678	72.3
300	58.5	1.736	101.6
400	65.1	1.739	113.2

$\tan \phi = 0.2252$   $\phi = 12^\circ 41'$  C 27.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK12

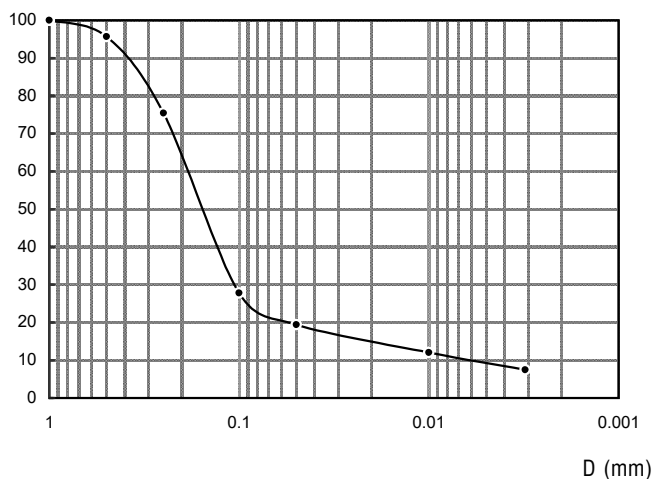
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu vàng, trạng thái dẻo / Plasticity, yellowish grey - yellowish brown, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.42	19.5	16.2	84.1	39.3	0.648	26.7	23.38	17.61	5.77	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	84.70g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.201	0.107	0.007	8.1	28.7

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Sieve size			
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	4.3	100.0
5.0			0.5-0.25	20.3	95.7
2.0			0.25-0.1	47.6	75.4
1.0			0.1-0.05	8.4	27.8
0.5	3.60	Bụi/Silt	0.05-0.01	7.4	19.4
0.25	17.20		0.01-0.005	3.1	12.0
0.1	40.30	Sét/Clay	<0.005	8.9	8.9



## Thí nghiệm nén lún/Compression test

$m_k = 3.71$  Hộp nén số/Test box No.: 38  $e_0 = 0.648$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

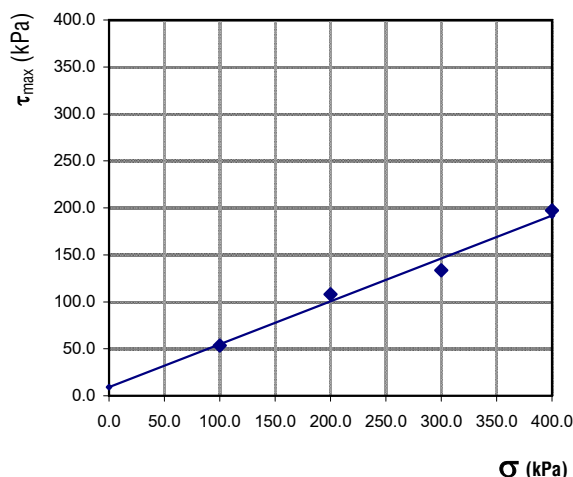
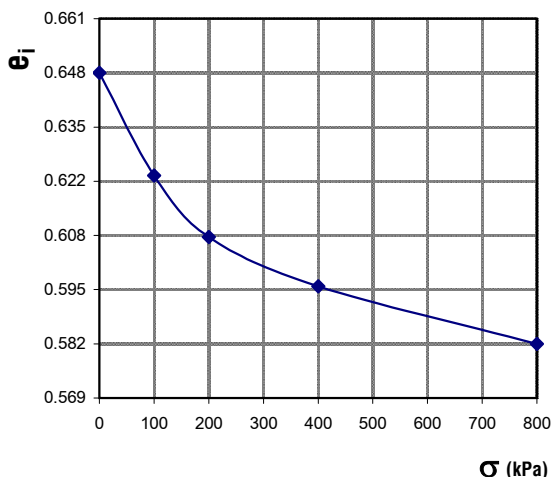
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.648			
100	36.0	6.9	0.623	0.025	6592.0	18097.7
200	58.0	10.9	0.608	0.015	10820.0	29705.2
400	75.0	13.7	0.596	0.006	26800.0	73576.7
800	94.0	16.4	0.582	0.004	39900.0	109541.5

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.8	1.686	53.6
200	64.4	1.678	108.1
300	77.0	1.736	133.7
400	113.4	1.739	197.2

$\tan \varphi = 0.4564$   $\varphi = 24^\circ 32'$  C 9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK12

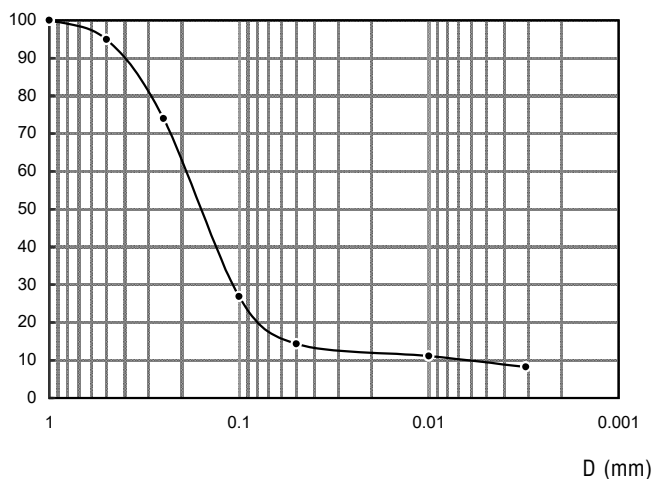
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu vàng, trạng thái dẻo / Plasticity, yellowish grey - yellowish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.06	19.8	16.4	89.0	38.8	0.634	26.8	24.00	18.22	5.78	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	95.79g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.205	0.110	0.006	9.8	34.2

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
		Cát/Sand	2-1		100.0
20.0			1-0.5	5.1	100.0
10.0			0.5-0.25	20.9	94.9
5.0			0.25-0.1	47.1	74.0
2.0			0.1-0.05	12.6	26.9
1.0		Bụi/Silt	0.05-0.01	3.2	14.3
0.5	4.85		0.01-0.005	1.7	11.1
0.25	20.00	Sét/Clay	<0.005	9.4	9.4
0.1	45.13				



## Thí nghiệm nén lún/Compression test

$m_k = 3.79$  Hộp nén số/Test box No.: 39  $e_0 = 0.634$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 106.6  $h_p = 20mm$

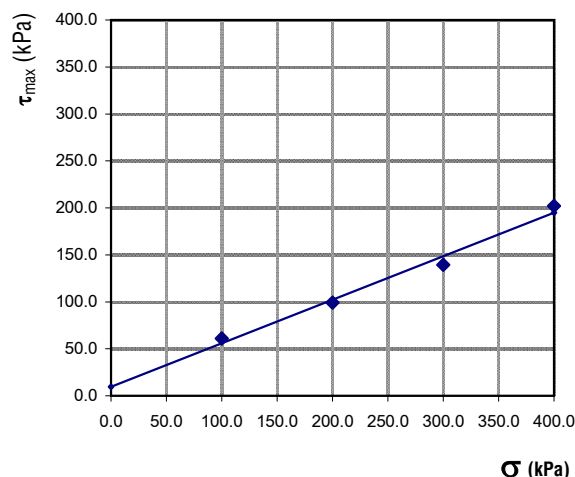
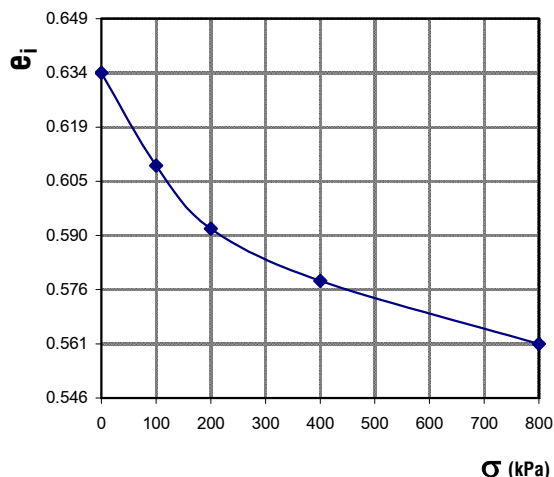
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.634			
100	36.0	7.1	0.609	0.025	6536.0	18330.9
200	60.0	10.4	0.592	0.017	9464.7	26544.7
400	81.0	14.4	0.578	0.007	22742.9	63784.6
800	104.0	17.2	0.561	0.004	39450.0	110641.5

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.1	1.686	60.9
200	59.0	1.678	99.0
300	80.2	1.736	139.2
400	116.1	1.739	201.9

$\tan \varphi = 0.4632$   $\varphi = 24^\circ 51'$  C 9.5 kPa



Đại diện TN/ Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK12

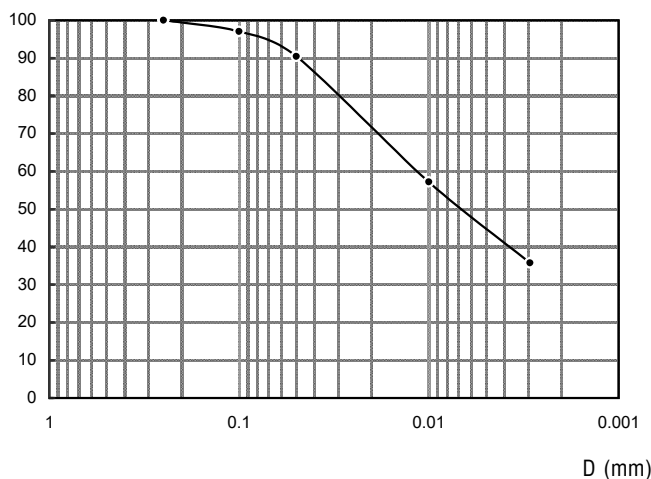
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu vàng, trạng thái nửa cứng / Very stiff, yellowish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.40	19.4	15.3	91.9	44.0	0.784	27.3	45.17	20.45	24.72	0.24

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	39.56g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.011	*	*	*	*

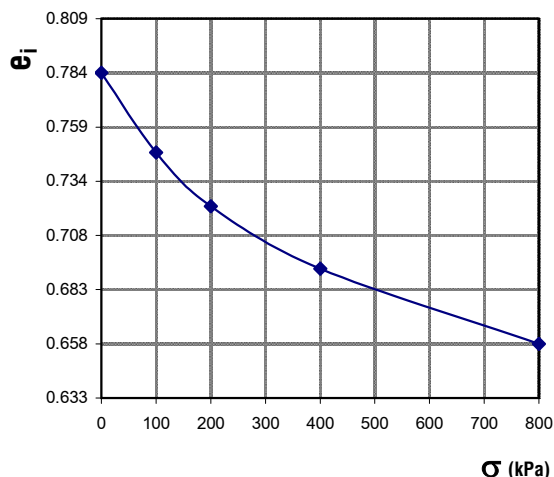
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5		Bụi/Silt	0.25-0.1	3.0	100.0
0.25			0.1-0.05	6.6	97.0
0.1	1.20	Sét/Clay	0.05-0.01	33.2	90.4
			0.01-0.005	15.2	57.2
			<0.005	42.0	42.0



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 40  $e_0 = 0.784$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 155.8  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.784			
100	48.0	6.8	0.747	0.037	4821.6	11571.9
200	78.0	9.5	0.722	0.025	6988.0	16771.2
400	112.0	13.2	0.693	0.015	11480.0	27552.0
800	152.0	14.7	0.658	0.009	18811.1	45146.7

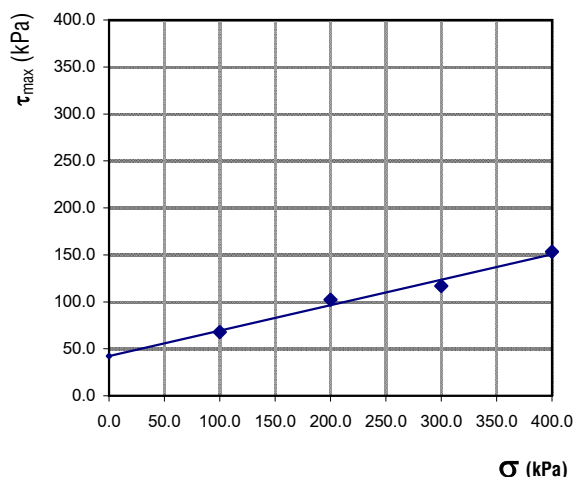


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	40.2	1.686	67.8
200	60.9	1.678	102.2
300	67.2	1.736	116.7
400	88.2	1.739	153.4

$\tan \phi = 0.2713$   $\phi = 15^\circ 11'$  C 42.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK12

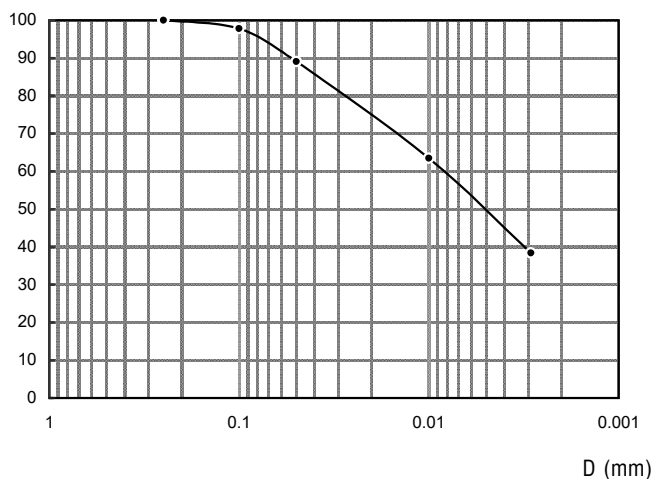
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu vàng, trạng thái dẻo cứng / Stiff, yellowish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	28.75	19.0	14.8	92.9	45.8	0.845	27.3	45.02	22.76	22.26	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	40.96g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.009	*	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5		Bụi/Silt	0.25-0.1	2.2	100.0
0.25			0.1-0.05	8.7	97.8
0.1	0.91		0.05-0.01	25.6	89.1
		Sét/Clay	0.01-0.005	16.4	63.5
			<0.005	47.1	47.1



## Thí nghiệm nén lún/Compression test

$m_k = 5.86$

Hộp nén số/Test box No.: 41

$e_0 = 0.845$

$\beta = 0.40$

Số đọc sau 24h/Reading after 24h: 169.1

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.845			
100	51.0	6.5	0.803	0.042	4392.9	10288.1
200	80.0	10.2	0.779	0.024	7512.5	17594.3
400	118.0	12.5	0.745	0.017	10464.7	24508.3
800	165.0	14.8	0.703	0.011	15863.6	37152.6

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

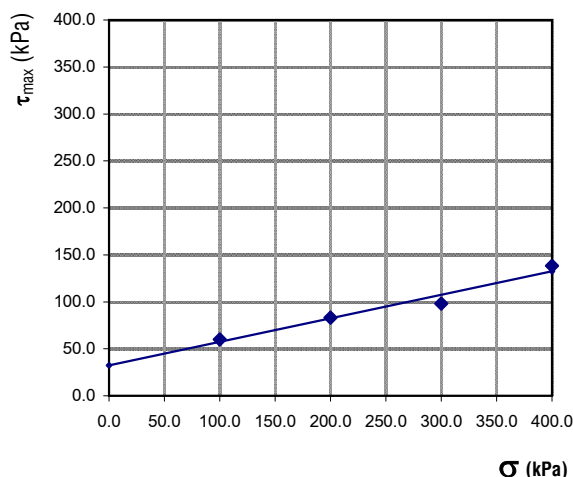
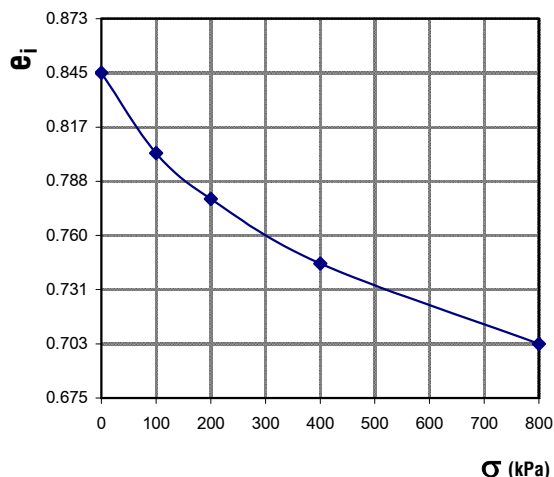
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	35.6	1.686	60.0
200	49.6	1.678	83.2
300	56.5	1.736	98.1
400	79.6	1.739	138.4

$\tan \phi = 0.2501$

$\phi = 14^\circ 02'$

C 32.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK12

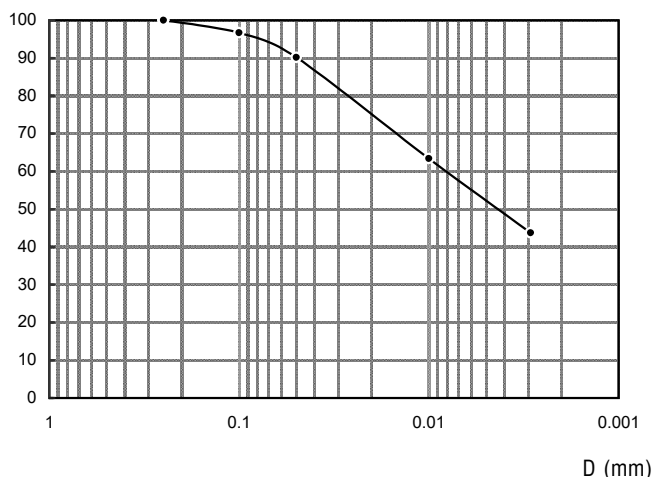
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu vàng, trạng thái nửa cứng / Very stiff, yellowish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	24.73	19.7	15.8	93.2	41.9	0.722	27.2	47.61	20.87	26.74	0.14

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	36.08g	0.009	*	*	*
						30.0°C				

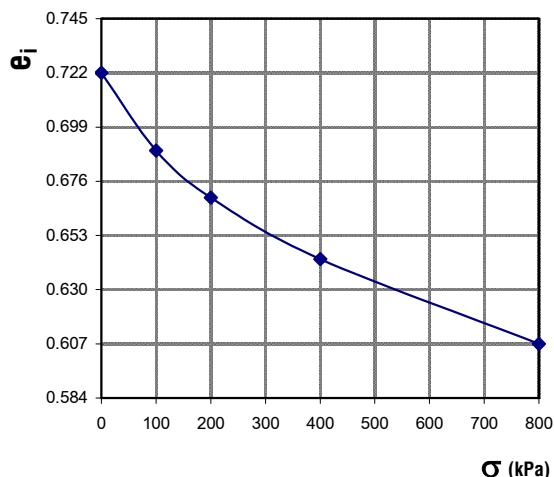
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	3.3	100.0
0.25			0.1-0.05	6.5	96.7
0.1	1.20	Bụi/Silt	0.05-0.01	26.8	90.2
			0.01-0.005	12.7	63.4
		Sét/Clay	<0.005	50.7	50.7



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 42  $e_0 = 0.722$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 149.1  $h_p = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.722			
100	44.0	6.6	0.689	0.033	5218.2	12523.6
200	70.0	9.8	0.669	0.020	8445.0	20268.0
400	102.0	12.8	0.643	0.013	12838.5	30812.3
800	145.5	15.6	0.607	0.009	18255.6	43813.3

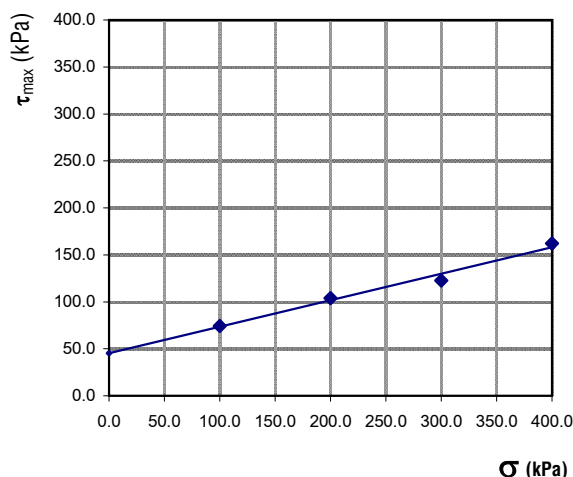


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	44.1	1.686	74.4
200	61.9	1.678	103.9
300	70.7	1.736	122.7
400	93.2	1.739	162.1

$\tan \phi = 0.2819$   $\phi = 15^\circ 45'$  C 45.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK12

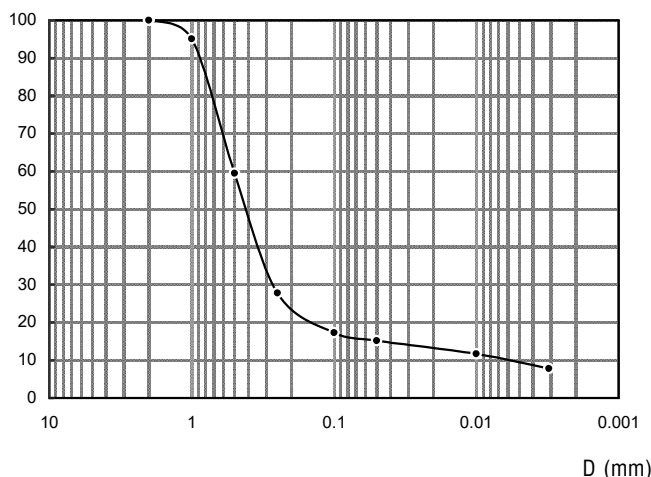
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	18.79	20.6	17.3	92.4	35.2	0.543	26.7	22.35	15.91	6.44	0.45

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	101.02g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.507	0.267	0.007	20.1	72.4

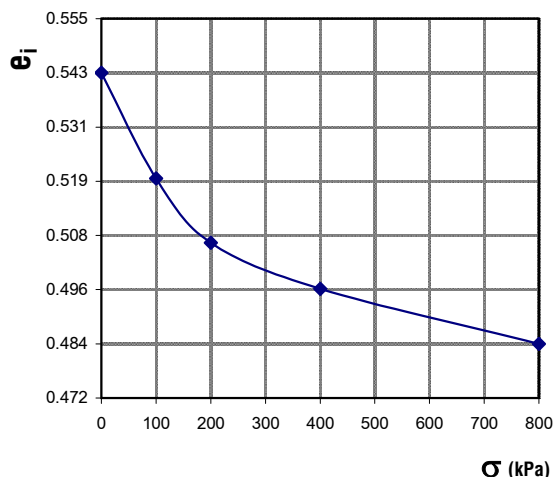
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.9	100.0
10.0			1-0.5	35.6	95.1
5.0			0.5-0.25	31.7	59.5
2.0			0.25-0.1	10.5	27.8
1.0	5.00		0.1-0.05	2.1	17.3
0.5	35.94	Bụi/Silt	0.05-0.01	3.5	15.2
0.25	32.00		0.01-0.005	2.8	11.7
0.1	10.60	Sét/Clay	<0.005	8.9	8.9



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 43  $e_0 = 0.543$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 92.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.543			
100	36.0	7.0	0.520	0.023	6708.7	19857.7
200	57.0	10.0	0.506	0.014	10857.1	32137.1
400	72.0	13.3	0.496	0.005	30120.0	89155.2
800	90.0	14.9	0.484	0.003	49866.7	147605.3

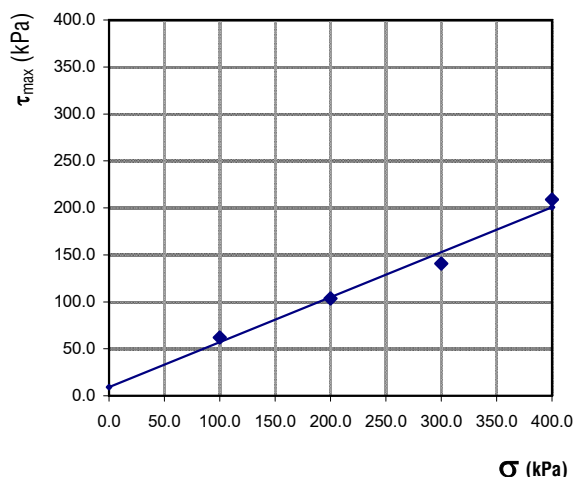


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.7	1.686	61.9
200	61.8	1.678	103.7
300	81.1	1.736	140.8
400	120.2	1.739	209.0

$\tan \phi = 0.4784$   $\phi = 25^\circ 34'$  C 9.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK12

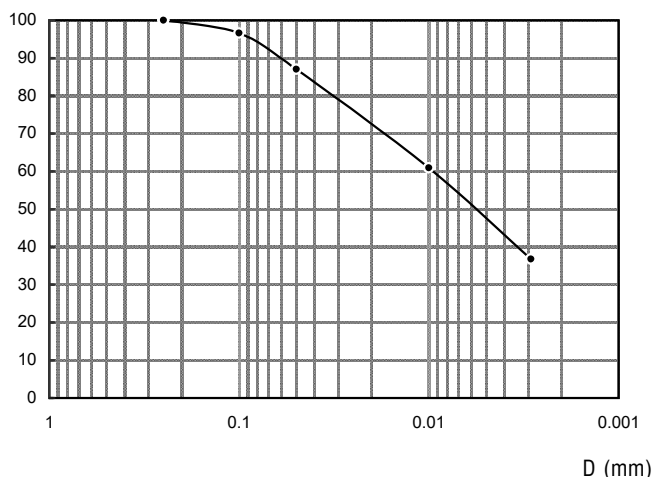
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.10	19.3	15.2	92.9	44.3	0.796	27.3	41.82	21.59	20.23	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					42.70g	0.010	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

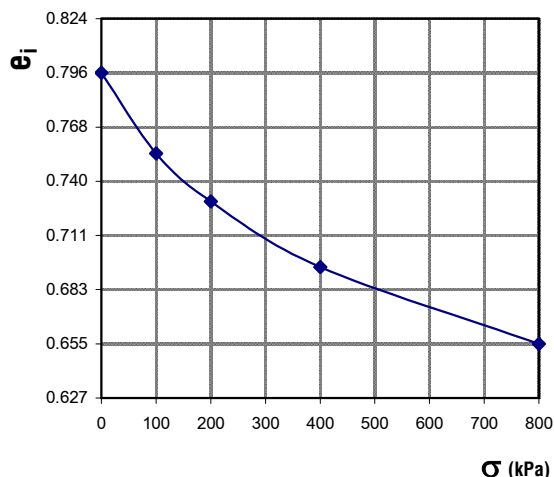
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5		Bụi/Silt	0.25-0.1	3.4	100.0
0.25			0.1-0.05	9.6	96.6
0.1	1.44		0.05-0.01	26.1	87.0
		Sét/Clay	0.01-0.005	15.7	60.9
			<0.005	45.2	45.2



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 44  $e_0 = 0.796$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 171.2  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.796			
100	53.0	7.2	0.754	0.042	4276.2	10262.9
200	83.3	10.3	0.729	0.025	7016.0	16838.4
400	121.0	12.0	0.695	0.017	10170.6	24409.4
800	167.0	14.4	0.655	0.010	16950.0	40680.0

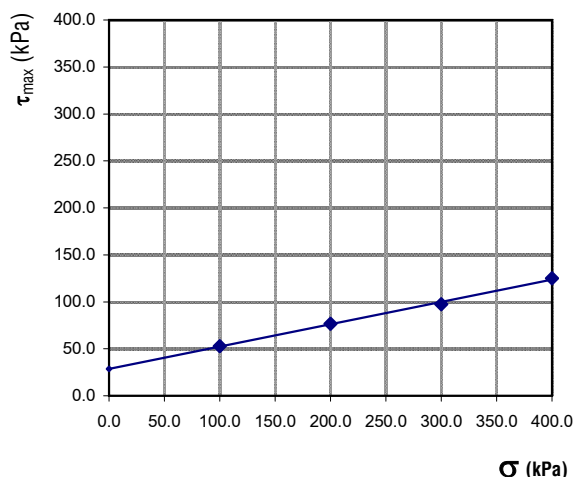


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	31.3	1.686	52.8
200	45.6	1.678	76.5
300	56.2	1.736	97.6
400	72.0	1.739	125.2

$\tan \phi = 0.2383$   $\phi = 13^\circ 24'$  C 28.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK12-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK12

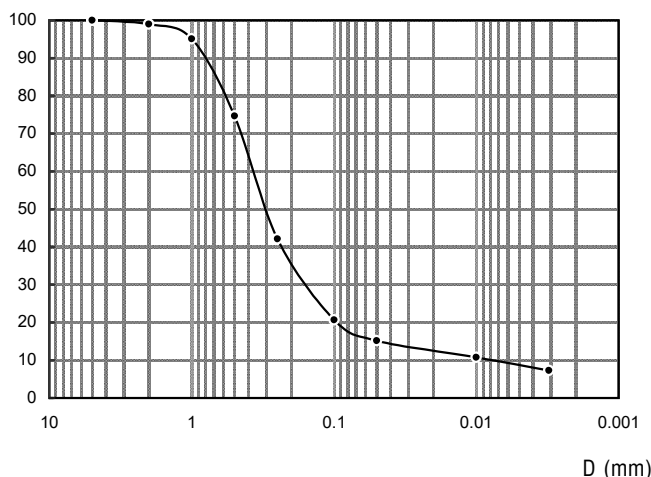
Ngày TN/Date test: 25-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.58	20.0	16.6	90.4	37.8	0.608	26.7	23.42	17.70	5.72	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	107.48g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.387	0.165	0.008	8.8	48.4

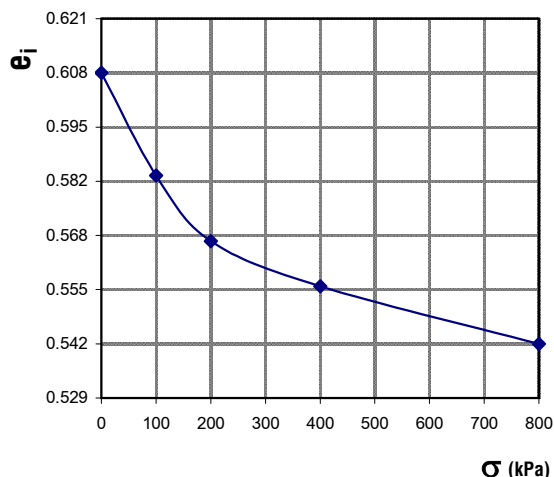
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2	1.0	100.0
5.0			2-1	3.9	99.0
2.0	1.06		1-0.5	20.4	95.1
1.0	4.14		0.5-0.25	32.6	74.7
0.5	21.90	Bụi/Silt	0.25-0.1	21.4	42.1
0.25	35.01		0.1-0.05	5.5	20.7
0.1	23.00	Sét/Clay	0.05-0.01	4.4	15.2
			0.01-0.005	1.9	10.8
			<0.005	8.9	8.9



## Thí nghiệm nén lún/Compression test

$m_v = 3.92$  Hộp nén số/Test box No.: 45  $e_0 = 0.608$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.608			
100	38.0	7.5	0.583	0.025	6432.0	18634.1
200	60.0	10.5	0.567	0.016	9893.8	28663.2
400	75.0	11.7	0.556	0.005	31340.0	90795.1
800	94.0	14.7	0.542	0.004	38900.0	112697.2

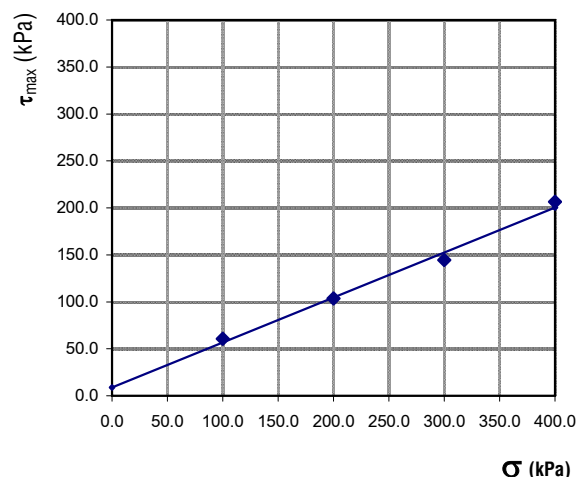


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	35.9	1.686	60.5
200	61.7	1.678	103.5
300	83.2	1.736	144.4
400	118.7	1.739	206.4

$\tan \phi = 0.4786$   $\phi = 25^\circ 35'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK13

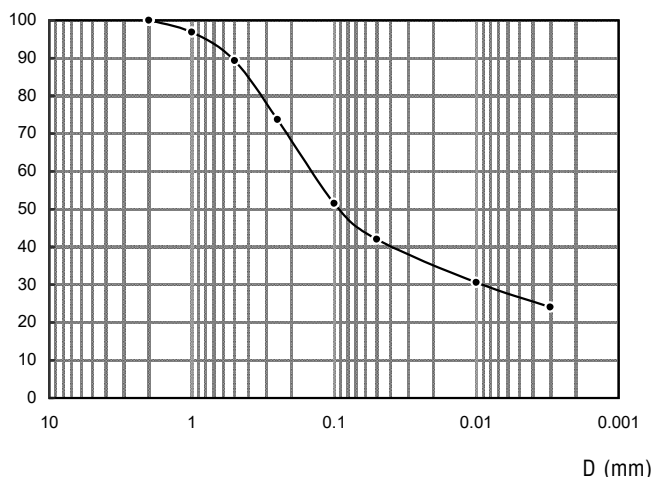
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám tro - vàng nâu, trạng thái dẻo cứng / Stiff, ashgrey - brownish yellow, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.47	20.1	16.8	87.1	37.5	0.601	26.9	27.37	13.48	13.89	0.43

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				42.72g					
				Nhiệt độ TN/Temp.	30.0°C	0.157	0.009	*	*

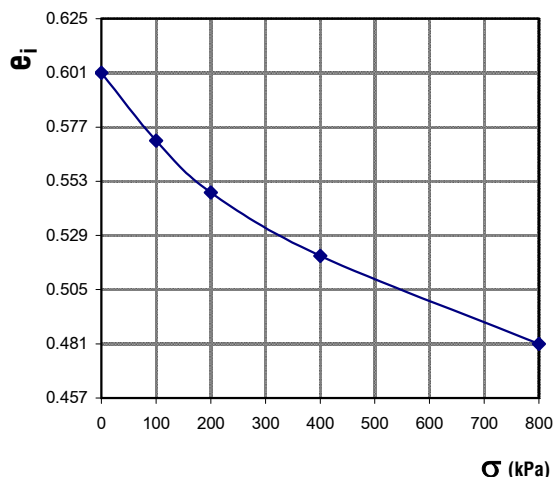
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	3.1	100.0
10.0			1-0.5	7.6	96.9
5.0			0.5-0.25	15.6	89.3
2.0			0.25-0.1	22.2	73.7
1.0	1.32		0.1-0.05	9.5	51.5
0.5	3.26	Bụi/Silt	0.05-0.01	11.4	42.0
0.25	6.66		0.01-0.005	3.8	30.6
0.1	9.50	Sét/Clay	<0.005	26.8	26.8



## Thí nghiệm nén lún/Compression test

$m_k = 5.00$  Hộp nén số/Test box No.: 46  $e_0 = 0.601$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 166.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.601			
100	45.0	8.3	0.571	0.030	5336.7	16543.7
200	75.0	11.0	0.548	0.023	6830.4	21174.3
400	112.0	13.4	0.520	0.014	11057.1	34277.1
800	162.0	16.0	0.481	0.010	15200.0	47120.0

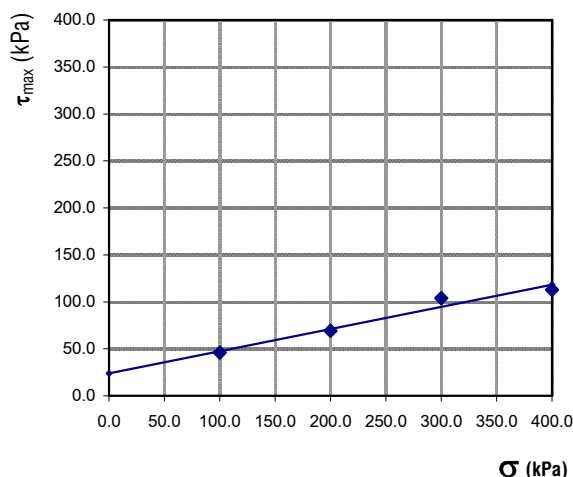


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.2	1.686	45.9
200	41.2	1.678	69.1
300	59.8	1.736	103.8
400	64.9	1.739	112.9

$\tan \phi = 0.2357$   $\phi = 13^\circ 16'$  C 24.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK13

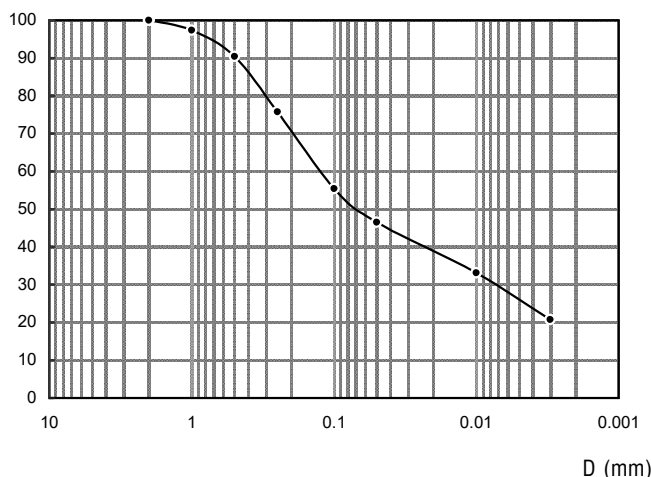
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng, trạng thái dẻo cứng / Stiff, whitish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	23.57	19.0	15.4	84.0	43.2	0.760	27.1	31.42	20.55	10.87	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	45.56g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.134	0.008	*	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	2.6	100.0
10.0			1-0.5	7.0	97.4
5.0			0.5-0.25	14.6	90.4
2.0			0.25-0.1	20.4	75.8
1.0	1.20		0.1-0.05	8.9	55.4
0.5	3.20	Bụi/Silt	0.05-0.01	13.4	46.5
0.25	6.66		0.01-0.005	7.2	33.1
0.1	9.30	Sét/Clay	<0.005	25.9	25.9



## Thí nghiệm nén lún/Compression test

$m_k = 4.27$  Hộp nén số/Test box No.: 47  $e_0 = 0.760$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 189.6  $h_p = 20\text{mm}$

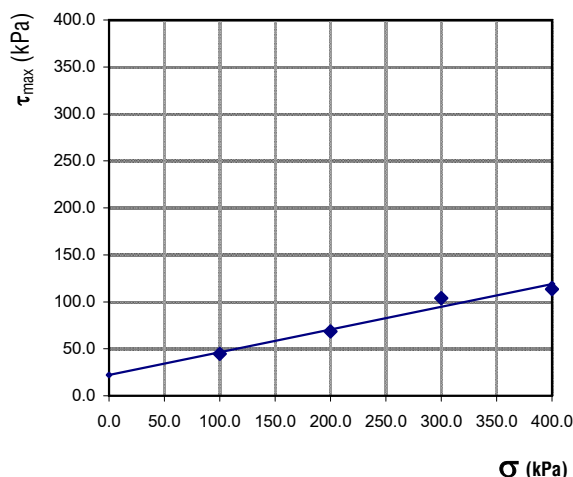
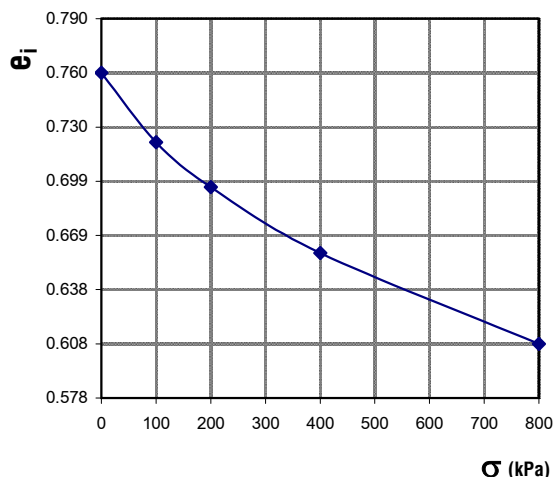
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.760			
100	50.3	7.8	0.721	0.039	4512.8	11947.2
200	82.0	11.3	0.696	0.025	6884.0	18224.7
400	126.0	13.7	0.659	0.019	8926.3	23631.5
800	185.0	17.0	0.608	0.013	12761.5	33784.9

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.5	1.686	44.7
200	40.8	1.678	68.5
300	59.8	1.736	103.8
400	65.3	1.739	113.6

$\tan \phi = 0.2420$   $\phi = 13^\circ 36'$  C 22.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK13

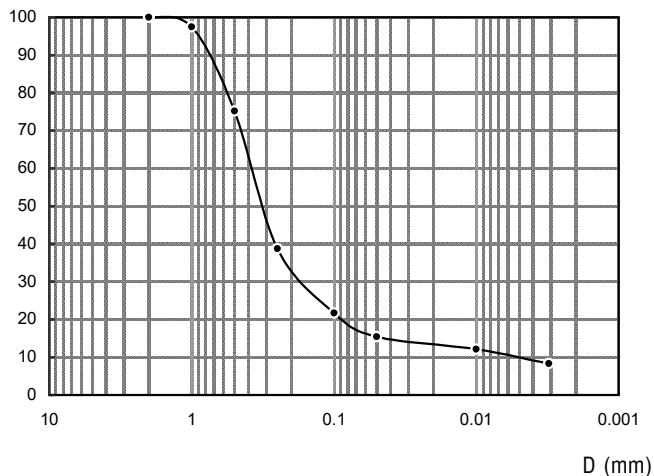
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.58	20.3	17.0	91.6	36.3	0.571	26.7	22.86	16.35	6.51	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	95.39g					
Nhiệt độ TN/Temp.	30.0°C	0.396	0.173	0.006	12.6	66.0

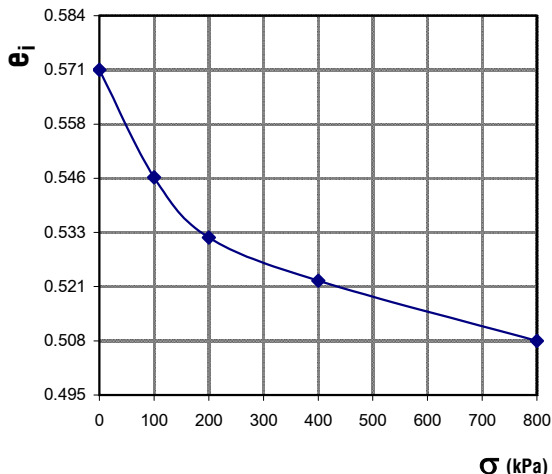
Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2		100.0
2.0		2-1	2.5	100.0
1.0	2.42	1-0.5	22.3	97.5
0.5	21.30	0.5-0.25	36.5	75.2
0.25	34.78	0.25-0.1	17.0	38.7
0.1	16.19	0.1-0.05	6.3	21.7
		0.05-0.01	3.3	15.4
		0.01-0.005	2.6	12.1
		Sét/Clay	<0.005	9.5



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 48  $e_0 = 0.571$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.571			
100	39.0	8.1	0.546	0.025	6284.0	18600.6
200	60.0	11.8	0.532	0.014	11042.9	32686.9
400	74.0	14.0	0.522	0.005	30640.0	90694.4
800	94.0	16.7	0.508	0.004	38050.0	112628.0

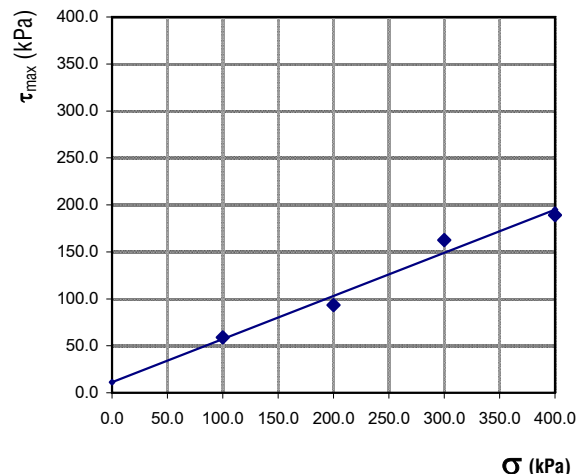


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	35.0	1.686	59.0
200	55.7	1.678	93.5
300	93.6	1.736	162.5
400	108.8	1.739	189.2

$\tan \phi = 0.4596$   $\phi = 24^\circ 41'$  C 11.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK13

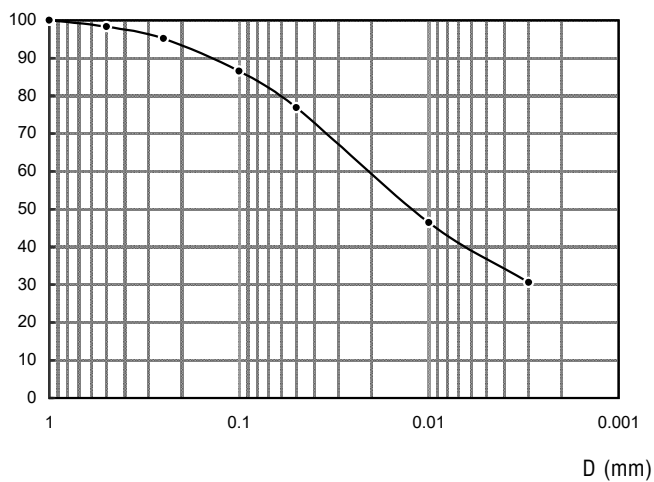
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.34	19.2	15.2	90.3	44.3	0.796	27.3	42.80	20.33	22.47	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	35.86g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.023	*	*	*	*

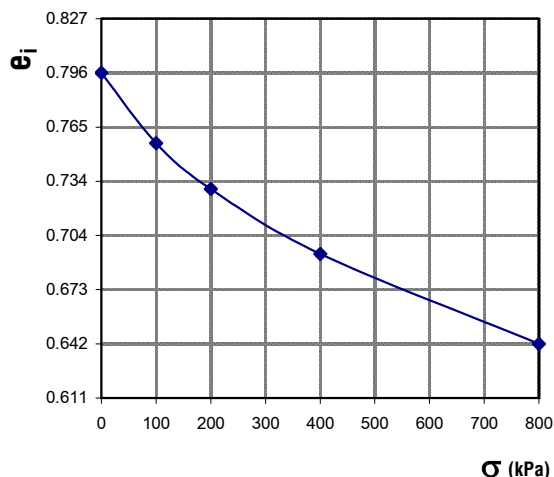
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	1.7	100.0
5.0			0.5-0.25	3.1	98.3
2.0			0.25-0.1	8.7	95.2
1.0			0.1-0.05	9.6	86.5
0.5	0.60	Bụi/Silt	0.05-0.01	30.5	76.9
0.25	1.10		0.01-0.005	9.1	46.4
0.1	3.12	Sét/Clay	<0.005	37.3	37.3



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 49  $e_0 = 0.796$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 188.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.796			
100	52.0	8.3	0.756	0.040	4490.0	10776.0
200	84.0	12.0	0.730	0.026	6753.8	16209.2
400	126.0	13.7	0.693	0.019	9105.3	21852.6
800	184.0	16.2	0.642	0.013	13023.1	31255.4

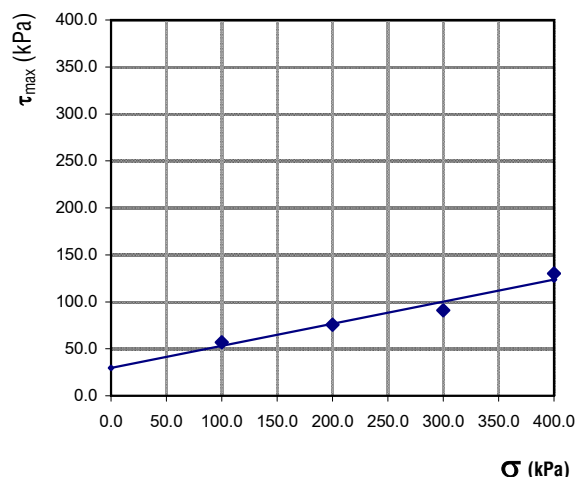


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.8	1.686	57.0
200	45.1	1.678	75.7
300	52.5	1.736	91.1
400	74.9	1.739	130.3

$\tan \phi = 0.2353$   $\phi = 13^\circ 14'$  C 29.7 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK13

Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.05	19.1	15.0	90.1	45.1	0.820	27.3	40.14	20.73	19.41	0.33

## KQTN HẠT/Test results from sieve-hydrometer analysis

KL đất khô/Dry wei 35.89g

$D_{60}$ (mm)

$D_{30}$ (mm)

$D_{10}$ (mm)

$C_c$

$C_u$

Nhiệt độ TN/Temp. 30.0°C

0.039

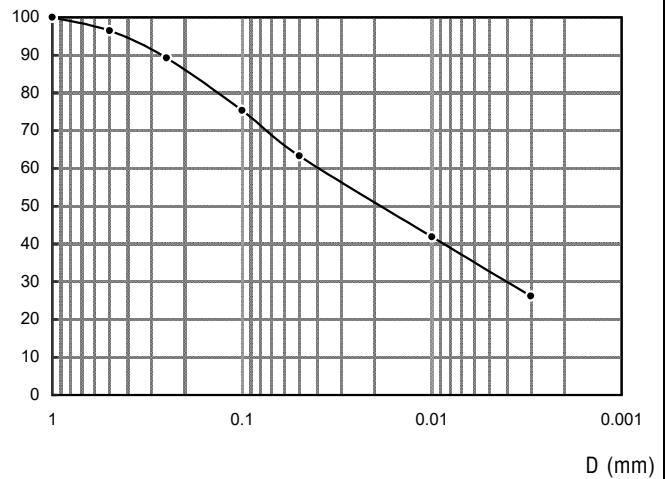
0.004

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Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	3.6	100.0
1.0			0.5-0.25	7.2	96.4
0.5	1.30	Bụi/Silt	0.25-0.1	13.9	89.2
0.25	2.60		0.1-0.05	12.0	75.3
0.1	4.98		0.05-0.01	21.4	63.3
		Sét/Clay	0.01-0.005	9.1	41.9
			<0.005	32.8	32.8



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$

Hộp nén số/Test box No.: 50

$e_0 = 0.820$

$\beta = 0.40$

Số đọc sau 24h/Reading after 24h: 198.4

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.820			
100	62.0	7.9	0.769	0.051	3568.6	8564.7
200	99.5	11.5	0.738	0.031	5706.5	13695.5
400	142.0	14.2	0.701	0.019	9147.4	21953.7
800	193.6	16.6	0.654	0.012	14175.0	34020.0

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

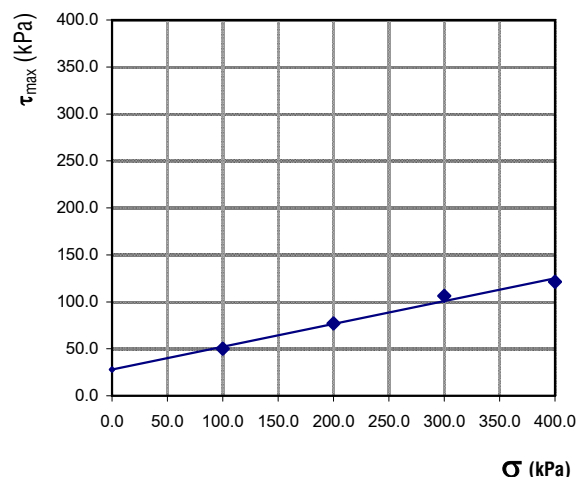
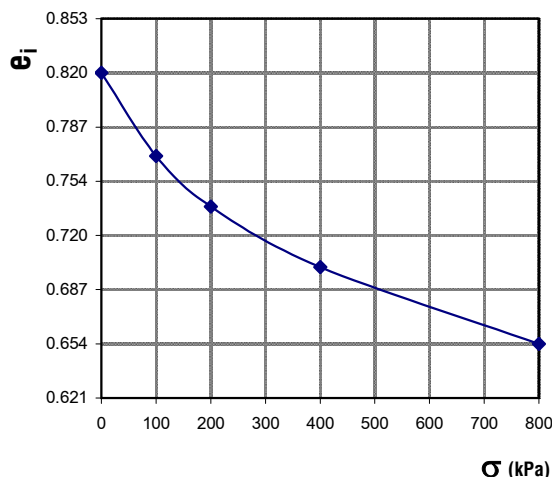
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.8	1.686	50.2
200	45.9	1.678	77.0
300	61.3	1.736	106.4
400	69.8	1.739	121.4

$\tan \phi = 0.2430$

$\phi = 13^\circ 39'$

C 28.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK13

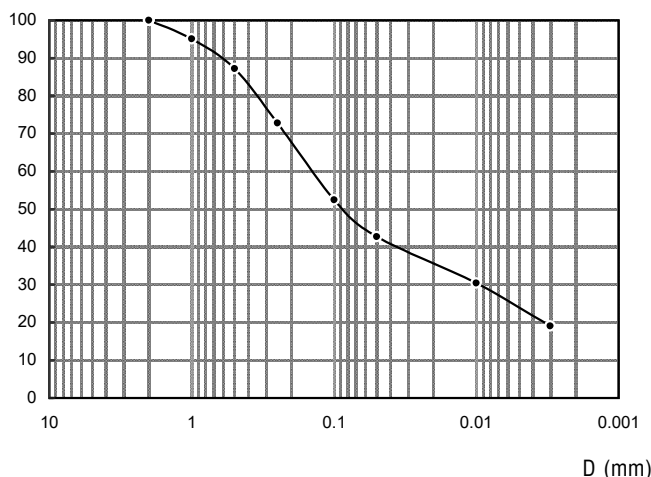
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.15	19.6	16.0	86.5	41.0	0.694	27.1	30.28	18.54	11.74	0.31

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	49.37g					
	Nhiệt độ TN/Temp.	30.0°C	0.155	0.010	*	*

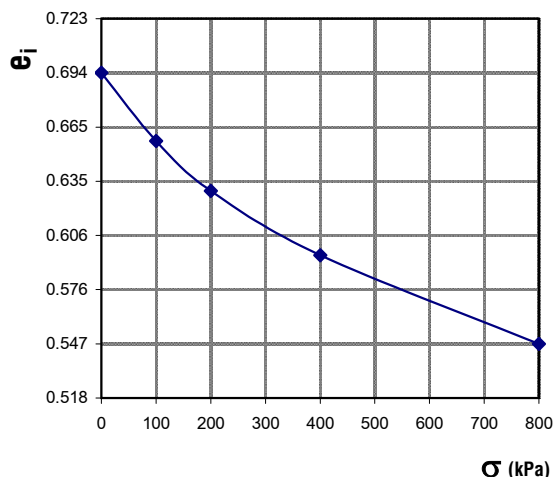
Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{10-20}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2		100.0
2.0		2-1	4.9	100.0
1.0		1-0.5	7.9	95.1
0.5		0.5-0.25	14.4	87.2
0.25		0.25-0.1	20.3	72.8
0.1		0.1-0.05	9.8	52.5
0.075		0.05-0.01	12.3	42.7
0.06		0.01-0.005	6.4	30.4
0.05		Sét/Clay	<0.005	24.0



## Thí nghiệm nén lún/Compression test

$m_k = 4.60$  Hộp nén số/Test box No.: 51  $e_0 = 0.694$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 189.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.694			
100	51.0	8.5	0.657	0.037	4578.4	13057.5
200	84.0	10.9	0.630	0.027	6137.0	17502.8
400	128.5	14.6	0.595	0.018	9055.6	25826.4
800	185.0	16.4	0.547	0.012	13291.7	37907.8

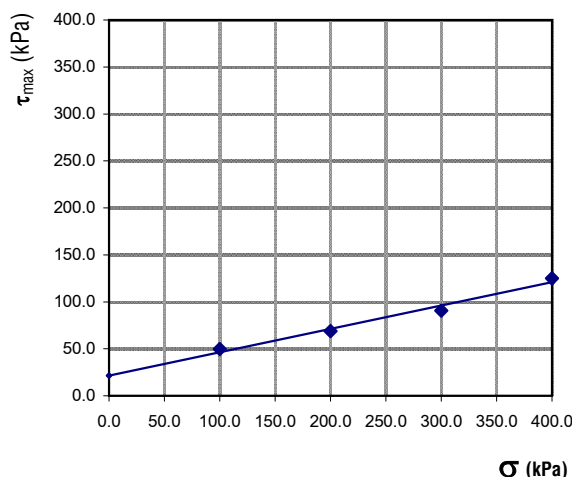


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.5	1.686	49.7
200	41.0	1.678	68.8
300	52.3	1.736	90.8
400	72.0	1.739	125.2

$\tan \phi = 0.2485$   $\phi = 13^\circ 57'$  C 21.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK13

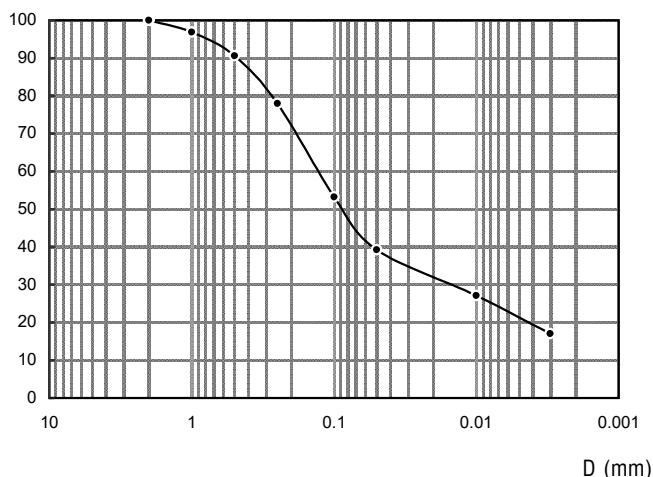
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	22.97	19.5	15.9	88.9	41.1	0.698	27.0	30.83	18.17	12.66	0.38

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	55.66g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.141	0.016	*	*	*

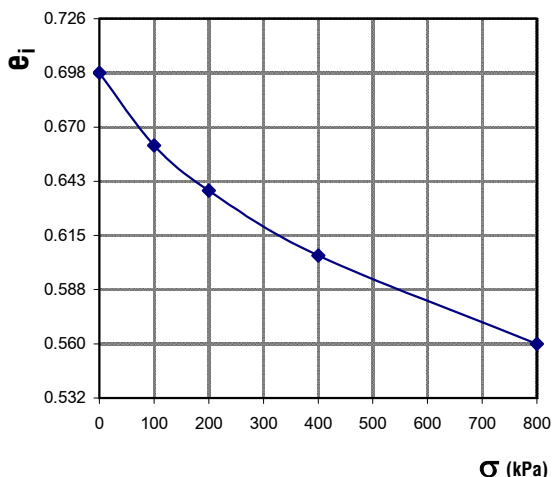
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	3.1	100.0
10.0			1-0.5	6.3	96.9
5.0			0.5-0.25	12.6	90.6
2.0			0.25-0.1	24.8	78.0
1.0	1.72		0.1-0.05	14.0	53.2
0.5	3.52	Bụi/Silt	0.05-0.01	12.1	39.2
0.25	7.03		0.01-0.005	5.7	27.1
0.1	13.80	Sét/Clay	<0.005	21.4	21.4



## Thí nghiệm nén lún/Compression test

$m_k = 4.56$  Hộp nén số/Test box No.: 52  $e_0 = 0.698$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 179.4  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.698			
100	50.2	8.8	0.661	0.037	4589.2	12974.6
200	80.0	11.4	0.638	0.023	7221.7	20417.3
400	121.0	15.0	0.605	0.017	9635.3	27240.9
800	175.0	16.9	0.560	0.011	14590.9	41251.4

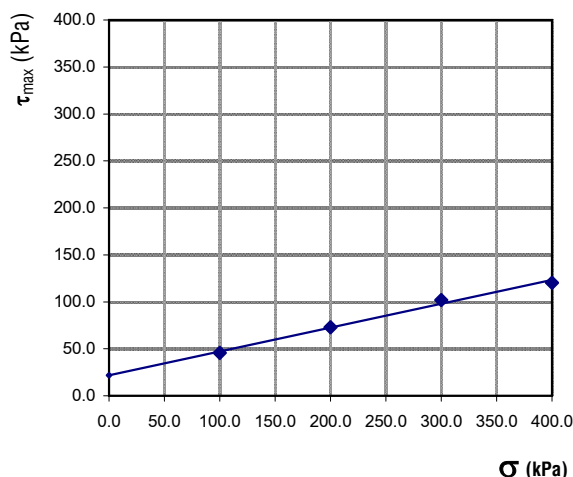


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.0	1.686	45.5
200	43.5	1.678	73.0
300	58.7	1.736	101.9
400	69.2	1.739	120.3

$\tan \phi = 0.2533$   $\phi = 14^\circ 13'$  C 21.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK13

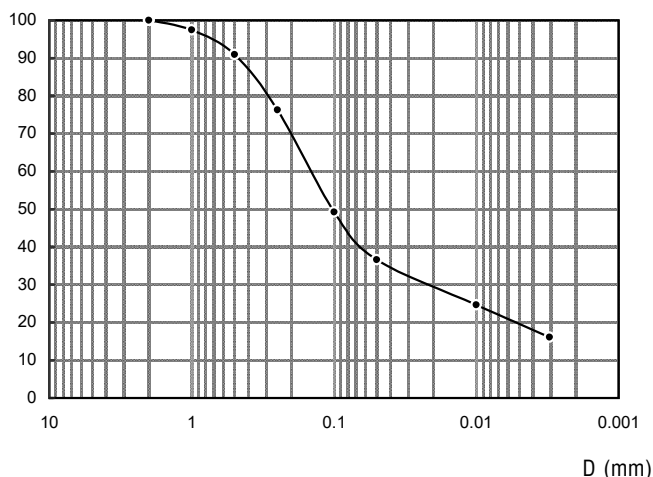
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.92	20.0	16.4	91.6	39.3	0.646	27.0	30.75	16.55	14.20	0.38

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					48.75g					
					Nhiệt độ TN/Temp.	30.0°C	0.160	0.023	*	*

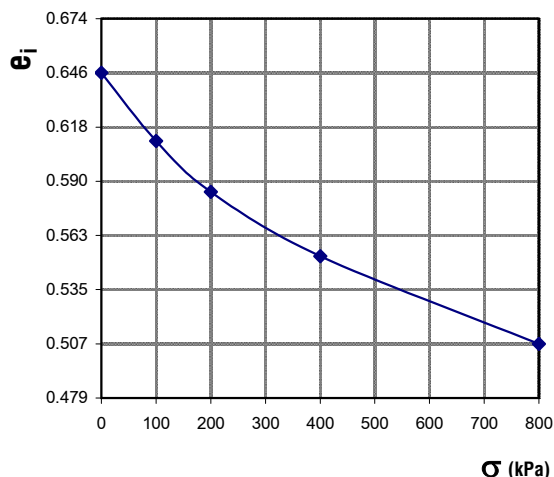
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	2.5	100.0
10.0			1-0.5	6.6	97.5
5.0			0.5-0.25	14.6	90.9
2.0			0.25-0.1	27.1	76.3
1.0	1.20		0.1-0.05	12.6	49.2
0.5	3.20	Bụi/Silt	0.05-0.01	11.9	36.6
0.25	7.10		0.01-0.005	4.6	24.7
0.1	13.20	Sét/Clay	<0.005	20.1	20.1



## Thí nghiệm nén lún/Compression test

$m_k = 4.83$  Hộp nén số/Test box No.: 53  $e_0 = 0.646$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 186.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.646			
100	51.0	8.9	0.611	0.035	4702.9	14068.6
200	84.0	11.6	0.585	0.026	6196.2	18535.8
400	126.2	15.2	0.552	0.017	9323.5	27891.3
800	182.0	17.4	0.507	0.011	14109.1	42207.3

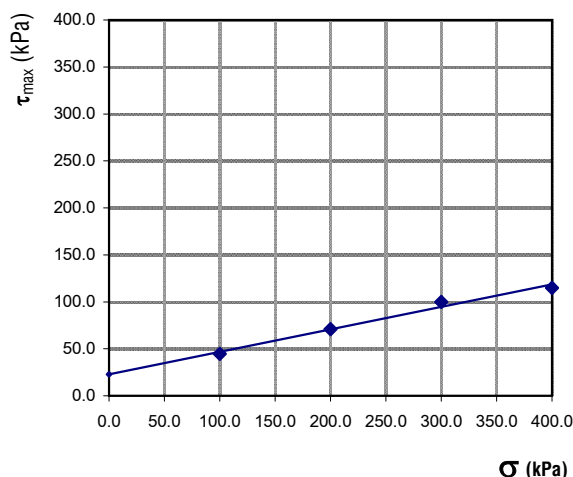


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.5	1.686	44.7
200	42.3	1.678	71.0
300	57.5	1.736	99.8
400	66.1	1.739	114.9

$\tan \phi = 0.2394$   $\phi = 13^\circ 28'$  C 22.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK13

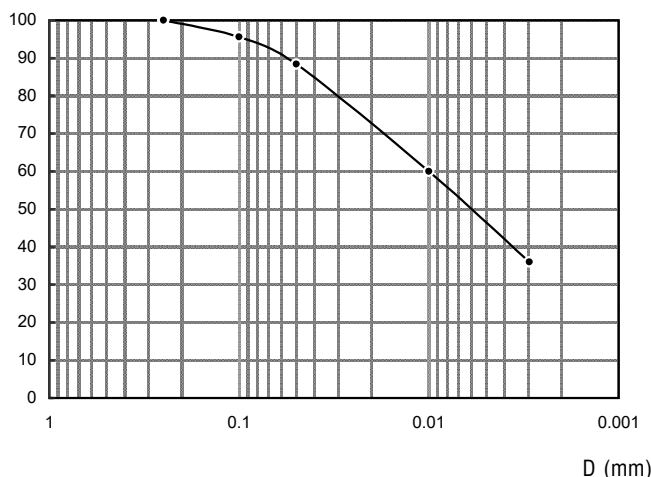
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	29.78	19.0	14.6	93.4	46.5	0.870	27.3	51.54	20.72	30.82	0.29

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	34.91g	0.010	*	*	*
						30.0°C				

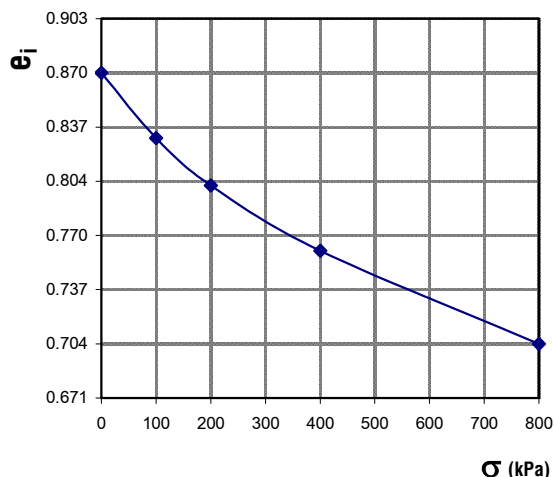
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	4.4	100.0
0.25			0.1-0.05	7.2	95.6
0.1	1.52	Bụi/Silt	0.05-0.01	28.4	88.4
			0.01-0.005	17.0	60.0
		Sét/Clay	<0.005	43.0	43.0



## Thí nghiệm nén lún/Compression test

$m_k = 5.75$  Hộp nén số/Test box No.: 54  $e_0 = 0.870$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 194.8  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.870			
100	51.0	9.0	0.830	0.040	4675.0	10743.2
200	84.0	12.0	0.801	0.029	6310.3	14501.2
400	128.2	14.7	0.761	0.020	9005.0	20693.5
800	190.0	17.3	0.704	0.014	12578.6	28905.6

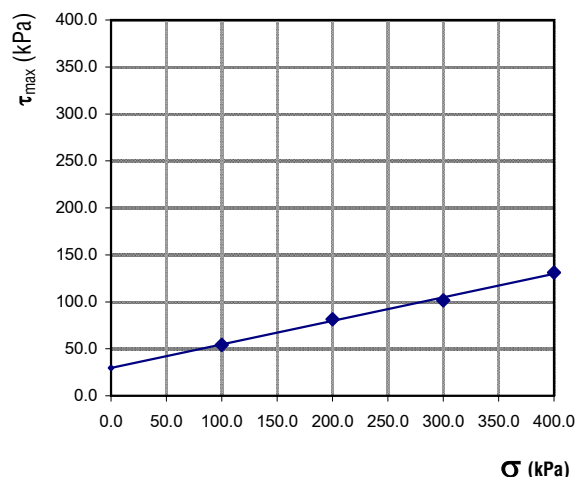


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	32.2	1.686	54.3
200	48.6	1.678	81.6
300	58.6	1.736	101.7
400	75.5	1.739	131.3

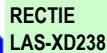
$\tan \phi = 0.2511$   $\phi = 14^\circ 06'$  C 29.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



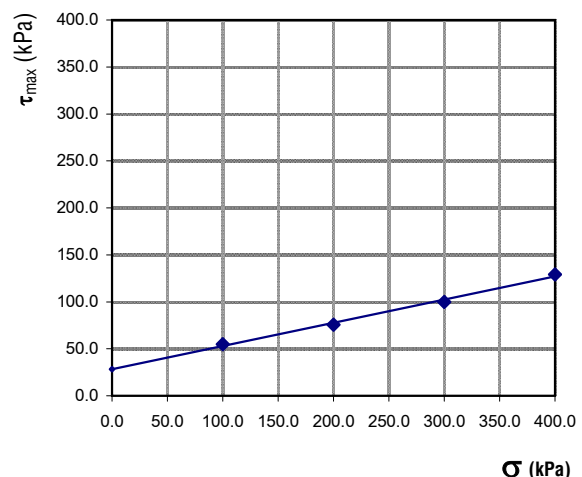
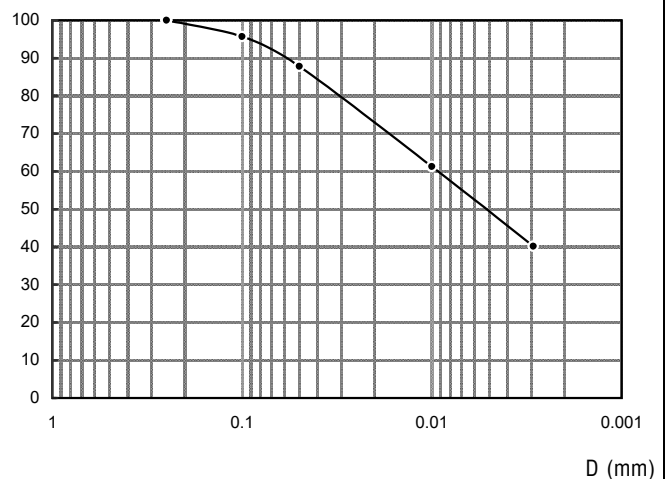
## TT04-BM16

*Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng - xám hồng, trạng thái dẻo cứng / Stiff, whitish grey - pinkish grey, Clay*

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	29.15	19.1	14.8	93.9	46.0	0.851	27.4	50.29	20.13	30.16	0.30

<b>KQTN HẠT/Test results from sieve-hydrometer analysis</b>	KL đất khô/Dry wei	35.08g	<b>D<sub>60</sub>(mm)</b>	<b>D<sub>30</sub>(mm)</b>	<b>D<sub>10</sub>(mm)</b>	<b>C<sub>c</sub></b>	<b>C<sub>u</sub></b>
	Nhiệt độ TN/Temp.	30.0°C	0.009	*	*	*	*

Khối lượng đất Mass of soil >>0.1mm		Cấp hạt Grain grade	D <sub>1-12</sub> (mm)	P <sub>i</sub> %	P %
D	m <sub>i</sub>	Sỏi sạn / Gravel	>10		100.0
(mm)	(g)		10-5		100.0
			5-2		100.0
20.0		Cát / Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	4.3	100.0
1.0			0.1-0.05	7.9	95.7
0.5		Bụi / Silt	0.05-0.01	26.5	87.8
0.25			0.01-0.005	13.9	61.3
0.1	1.52	Sét / Clay	<0.005	47.4	47.4



Kiểm tra/Checked by: PGS.TS. Đâu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK13

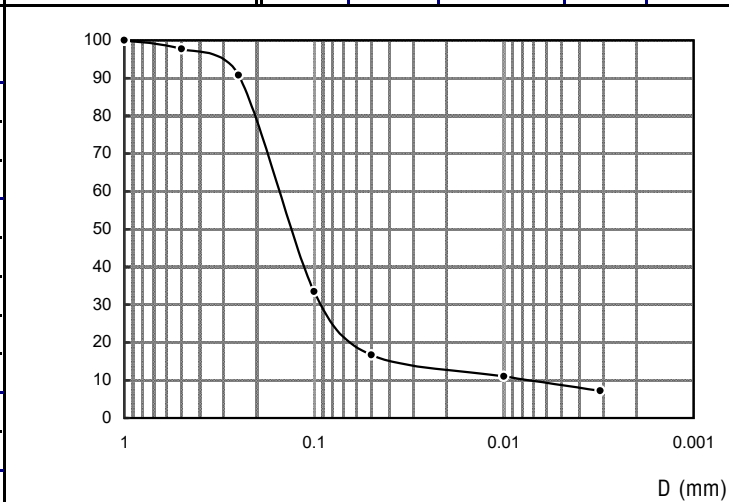
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám hồng - xám vàng, trạng thái dẻo / Plasticity, pinkish grey - yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.94	19.9	16.5	90.5	38.2	0.618	26.7	23.75	17.94	5.81	0.52

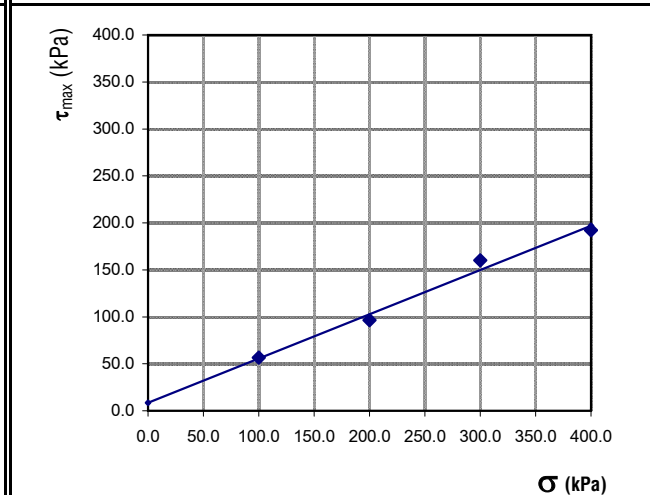
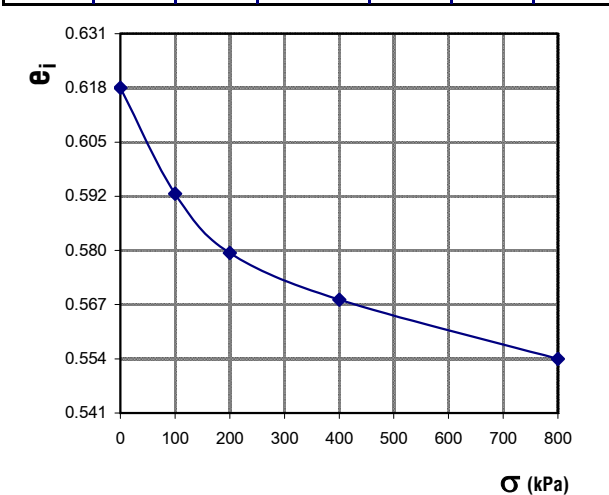
KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	87.96g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.169	0.092	0.008	6.3	21.1

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	2.3	100.0
5.0			0.5-0.25	6.9	97.7
2.0			0.25-0.1	57.3	90.8
1.0			0.1-0.05	16.8	33.5
0.5	2.04	Bụi/Silt	0.05-0.01	5.7	16.7
0.25	6.08		0.01-0.005	2.3	11.0
0.1	50.39	Sét/Clay	<0.005	8.7	8.7



Thí nghiệm nén lún/Compression test						
$m_v = 3.86$	Hộp nén số/Test box No.: 56		$e_0 = 0.618$			
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 96.4		$h_0 = 20\text{mm}$			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.618			
100	36.0	6.2	0.593	0.025	6472.0	18462.7
200	58.0	11.9	0.579	0.014	11378.6	32459.7
400	75.0	14.9	0.568	0.006	26316.7	75073.6
800	94.0	17.9	0.554	0.003	52266.7	149101.1

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.5	1.686	56.5
200	57.5	1.678	96.5
300	92.2	1.736	160.1
400	110.6	1.739	192.3
$\tan \phi = 0.4710$ $\phi = 25^\circ 13'$ C      8.6 kPa			



Đại diện TN/ Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK13

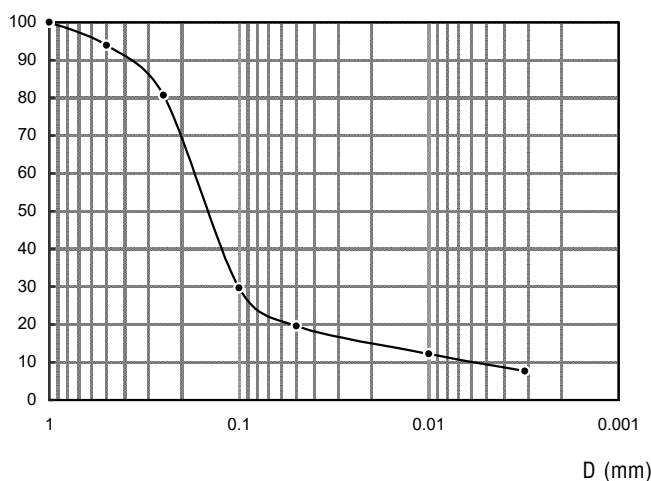
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám hồng - xám vàng, trạng thái dẻo / Plasticity, pinkish grey - yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	22.44	19.7	16.1	91.5	39.5	0.652	26.6	25.37	19.50	5.87	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	83.55g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.189	0.101	0.005	10.8	37.8

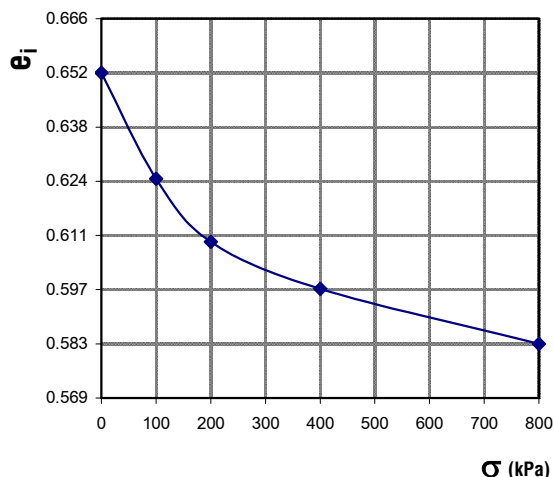
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	6.1	100.0
1.0			0.5-0.25	13.2	93.9
0.5	5.10		0.25-0.1	51.0	80.7
0.25	11.00		0.1-0.05	10.1	29.7
0.1	42.63	Bụi/Silt	0.05-0.01	7.4	19.6
			0.01-0.005	2.3	12.2
		Sét/Clay	<0.005	9.9	9.9



## Thí nghiệm nén lún/Compression test

$m_k = 3.71$  Hộp nén số/Test box No.: 57  $e_0 = 0.652$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 101.5  $h_p = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.652			
100	38.0	6.3	0.625	0.027	6118.5	16775.1
200	62.0	11.6	0.609	0.016	10156.3	27845.4
400	80.0	14.7	0.597	0.006	26816.7	73523.3
800	99.0	17.1	0.583	0.004	39925.0	109462.4

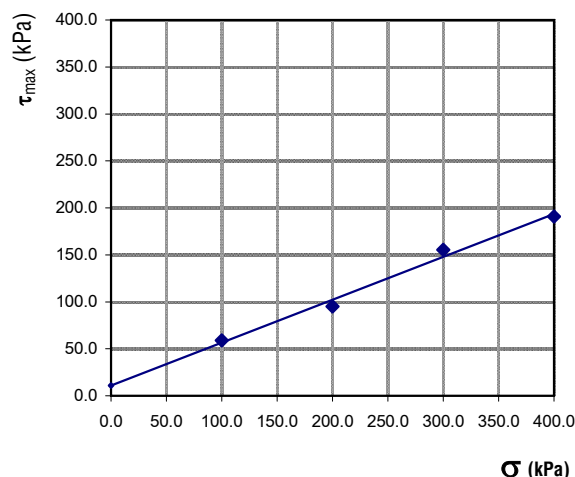


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.9	1.686	58.8
200	56.7	1.678	95.1
300	89.6	1.736	155.5
400	109.8	1.739	190.9

$\tan \phi = 0.4567$   $\phi = 24^\circ 33'$  C 10.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



RECTIE  
LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK13

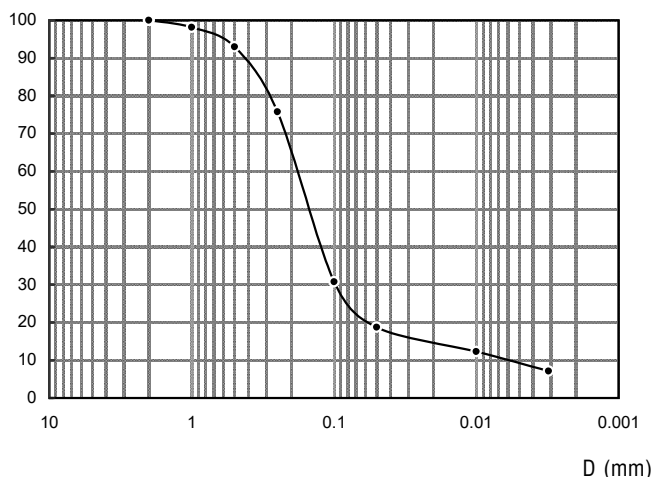
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám hồng - xám vàng, trạng thái dẻo / Plasticity, pinkish grey - yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.66	19.8	16.3	91.2	38.7	0.632	26.6	24.59	18.70	5.89	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	96.10g					
Nhiệt độ TN/Temp.	30.0°C	0.197	0.097	0.006	8.0	32.8

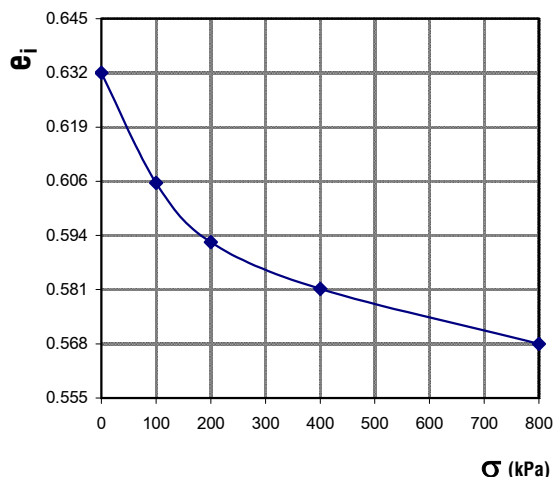
Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2		100.0
2.0		2-1	1.9	100.0
1.0	1.80	1-0.5	5.1	98.1
0.5	4.86	0.5-0.25	17.2	93.0
0.25	16.50	0.25-0.1	45.0	75.8
0.1	43.25	0.1-0.05	12.1	30.8
		0.05-0.01	6.4	18.7
		0.01-0.005	3.3	12.3
		Sét/Clay	<0.005	9.0



## Thí nghiệm nén lún/Compression test

$m_k = 3.79$  Hộp nén số/Test box No.: 58  $e_0 = 0.632$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 95.9  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.632			
100	38.0	6.6	0.606	0.026	6276.9	17604.3
200	59.0	11.6	0.592	0.014	11471.4	32172.8
400	75.0	14.6	0.581	0.006	26533.3	74415.4
800	93.6	17.5	0.568	0.003	52700.0	147802.4

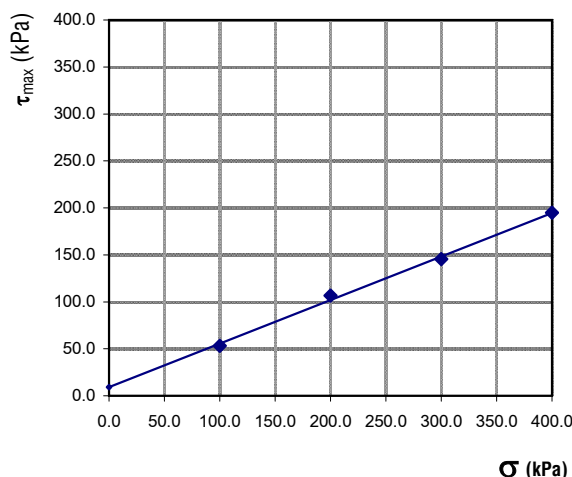


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.6	1.686	53.3
200	63.5	1.678	106.6
300	83.8	1.736	145.5
400	112.0	1.739	194.8

$\tan \varphi = 0.4634$   $\varphi = 24^\circ 52'$  C 9.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK13

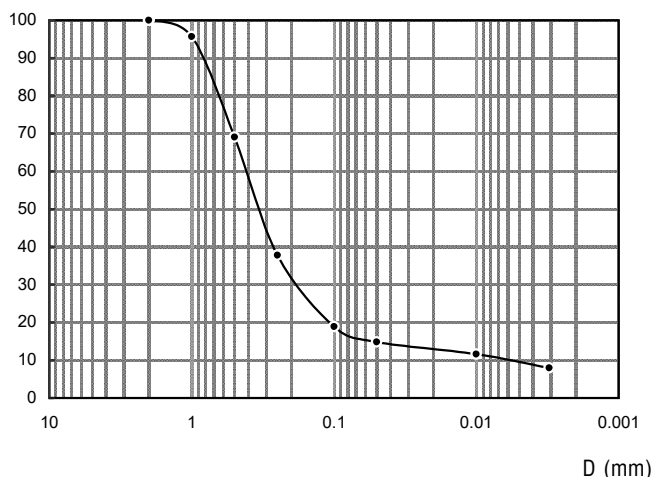
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.43	19.5	16.1	86.4	39.9	0.665	26.8	24.58	18.42	6.16	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	98.82g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.427	0.188	0.005	16.6	85.4

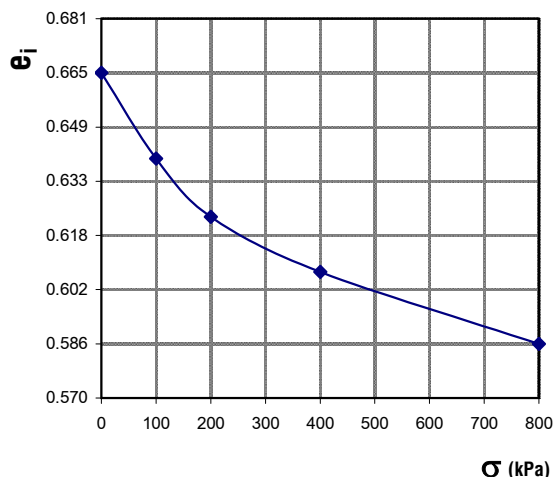
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.3	100.0
10.0			1-0.5	26.6	95.7
5.0			0.5-0.25	31.3	69.1
2.0			0.25-0.1	18.9	37.8
1.0	4.20		0.1-0.05	4.1	18.9
0.5	26.30	Bụi/Silt	0.05-0.01	3.2	14.8
0.25	30.90		0.01-0.005	1.7	11.6
0.1	18.64	Sét/Clay	<0.005	9.9	9.9



## Thí nghiệm nén lún/Compression test

$m_v = 3.64$  Hộp nén số/Test box No.: 59  $e_0 = 0.665$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 111.7  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.665			
100	36.0	6.9	0.640	0.025	6660.0	17914.7
200	61.0	11.3	0.623	0.017	9647.1	25949.6
400	82.0	14.3	0.607	0.008	20287.5	54571.3
800	109.0	17.0	0.586	0.005	32140.0	86453.4

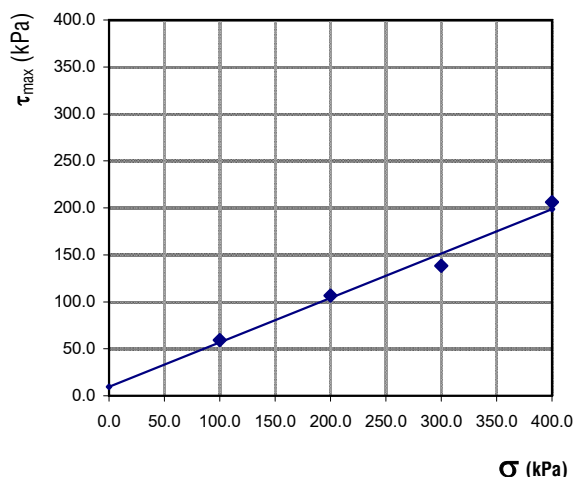


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	35.1	1.686	59.2
200	63.6	1.678	106.7
300	79.8	1.736	138.5
400	118.5	1.739	206.1

$\tan \phi = 0.4725$   $\phi = 25^\circ 17'$  C 9.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK13-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK13

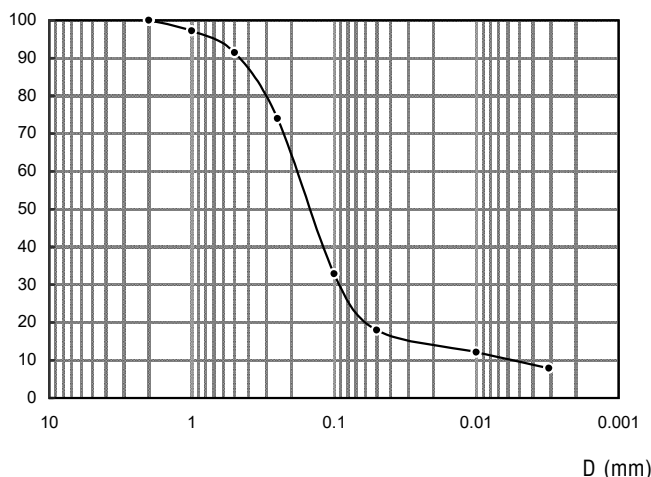
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	18.60	20.1	16.9	86.2	36.5	0.574	26.6	21.27	15.83	5.44	0.51

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	100.34g					
Nhiệt độ TN/Temp.	30.0°C	0.199	0.092	0.006	7.1	33.2

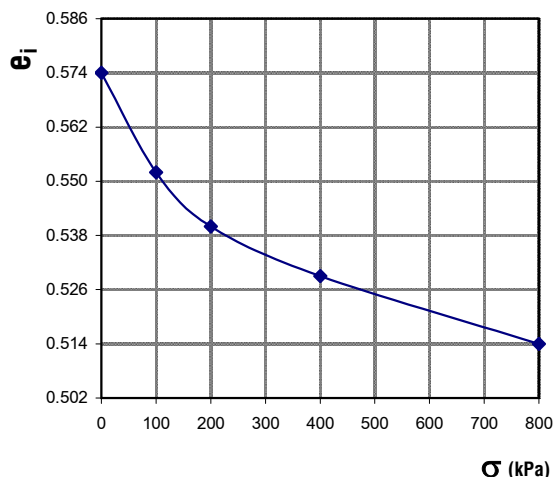
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1	2.8	100.0
2.0			1-0.5	5.8	97.2
1.0	2.80		0.5-0.25	17.4	91.4
0.5	5.86	Bụi/Silt	0.25-0.1	41.1	74.0
0.25	17.50		0.1-0.05	14.9	32.9
0.1	41.25		0.05-0.01	5.9	18.0
		Sét/Clay	0.01-0.005	2.8	12.1
			<0.005	9.3	9.3



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 60  $e_0 = 0.574$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 92.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.574			
100	34.0	6.7	0.552	0.022	7154.5	21177.5
200	52.0	10.3	0.540	0.012	12933.3	38282.7
400	69.0	13.8	0.529	0.006	25666.7	75973.3
800	90.0	16.1	0.514	0.004	38225.0	113146.0

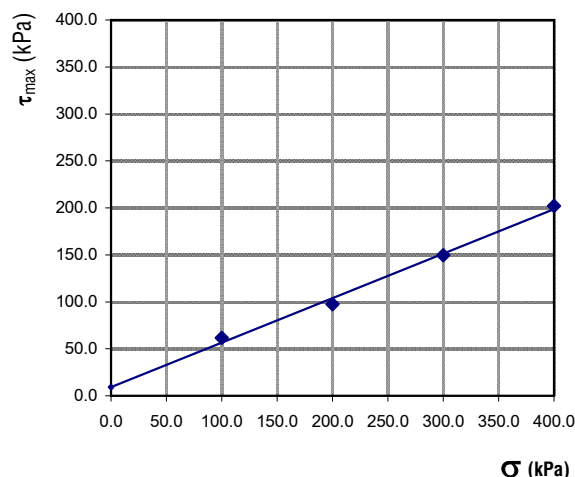


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.5	1.686	61.5
200	58.0	1.678	97.3
300	86.1	1.736	149.5
400	116.2	1.739	202.1

$\tan \phi = 0.4740$   $\phi = 25^\circ 22'$  C 9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK14

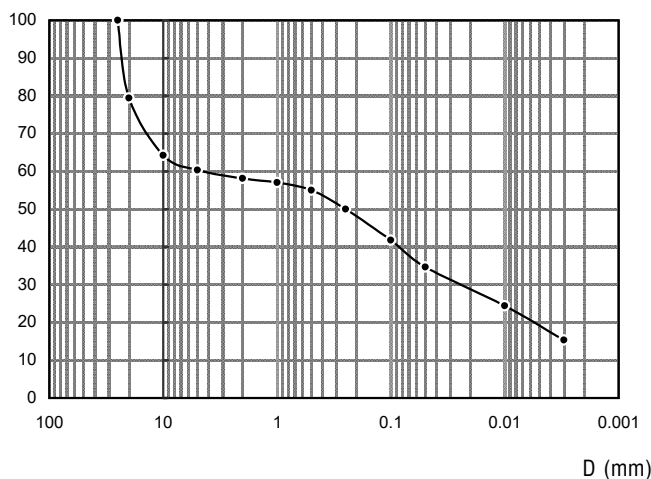
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn dăm sạn laterit, xám tro - nâu đỏ, trạng thái dẻo cứng / Stiff, ashgrey - reddish brown, Sandy clay with late

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	24.93	19.3	15.4	89.4	43.0	0.753	27.0	32.08	20.16	11.92	0.40

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
	61.75g					
	Nhiệt độ TN/Temp.	30.0°C	4.591	0.028	*	*

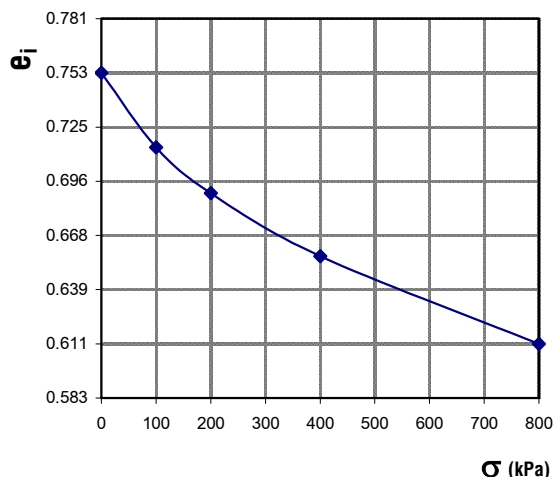
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10	35.8	100.0
20.0			10-5	3.9	64.2
10.0	9.38		5-2	2.2	60.3
5.0	2.42	Cát/Sand	2-1	1.1	58.1
2.0	1.36		1-0.5	2.0	57.0
1.0	0.65		0.5-0.25	5.0	55.0
0.5	1.22		0.25-0.1	8.2	50.0
0.25	3.07	Bụi/Silt	0.1-0.05	7.1	41.8
0.1	5.08		0.05-0.01	10.3	34.7
			0.01-0.005	5.2	24.4
		Sét/Clay	<0.005	19.2	19.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.30$  Hộp nén số/Test box No.: 1  $e_0 = 0.753$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 179.4  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.753			
100	51.0	8.4	0.714	0.039	4494.9	11983.3
200	82.0	11.9	0.690	0.024	7141.7	19039.7
400	121.0	13.7	0.657	0.017	9941.2	26503.2
800	175.0	17.6	0.611	0.012	13808.3	36813.0

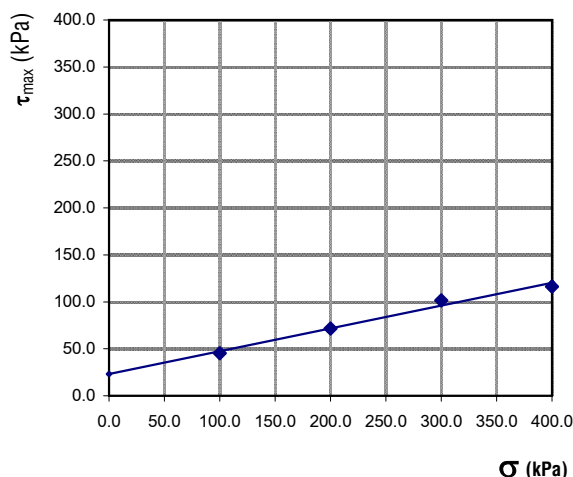


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.9	1.686	45.4
200	42.7	1.678	71.7
300	58.5	1.736	101.6
400	66.9	1.739	116.3

$\tan \phi = 0.2426$   $\phi = 13^\circ 38'$  C 23.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK14

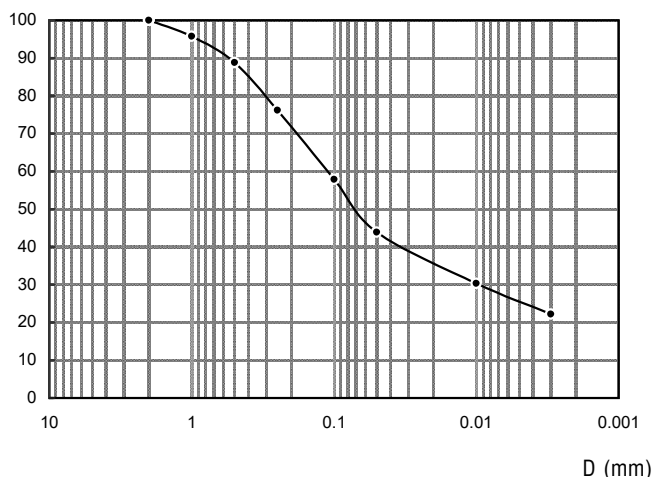
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám tro - nâu đỏ, trạng thái dẻo cứng / Stiff, ashgrey - reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.03	19.6	16.2	84.7	40.2	0.673	27.1	30.55	17.14	13.41	0.29

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					49.76g					
					Nhiệt độ TN/Temp.	30.0°C	0.117	0.010	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.2	100.0
10.0			1-0.5	7.0	95.8
5.0			0.5-0.25	12.6	88.8
2.0			0.25-0.1	18.3	76.2
1.0	2.10		0.1-0.05	14.0	57.9
0.5	3.50	Bụi/Silt	0.05-0.01	13.6	43.9
0.25	6.29		0.01-0.005	5.7	30.3
0.1	9.13	Sét/Clay	<0.005	24.6	24.6



## Thí nghiệm nén lún/Compression test

$m_k = 4.68$  Hộp nén số/Test box No.: 2  $e_0 = 0.673$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 179.4  $h_p = 20\text{mm}$

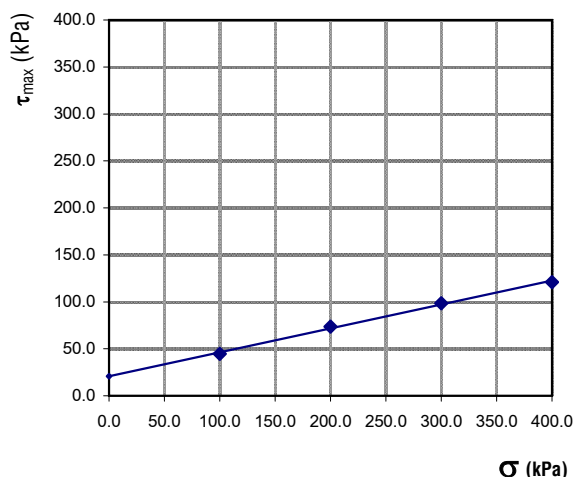
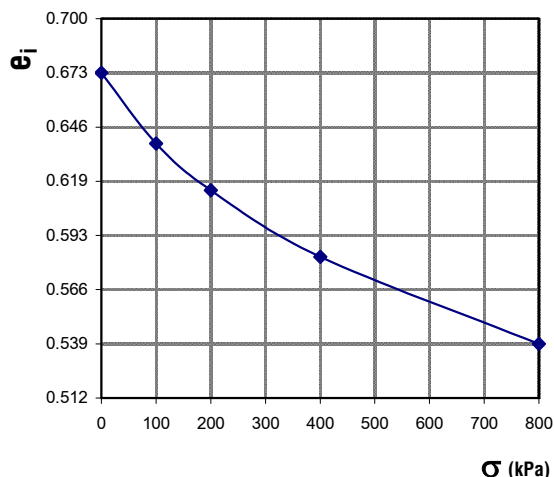
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.673			
100	51.0	9.8	0.638	0.035	4780.0	13854.8
200	80.0	13.3	0.615	0.023	7121.7	20642.4
400	121.0	15.5	0.582	0.017	9500.0	27535.8
800	175.0	19.1	0.539	0.011	14381.8	41685.7

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.4	1.686	44.5
200	43.9	1.678	73.7
300	56.7	1.736	98.4
400	69.6	1.739	121.0

$\tan \phi = 0.2542$   $\phi = 14^\circ 16'$  C 20.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK14

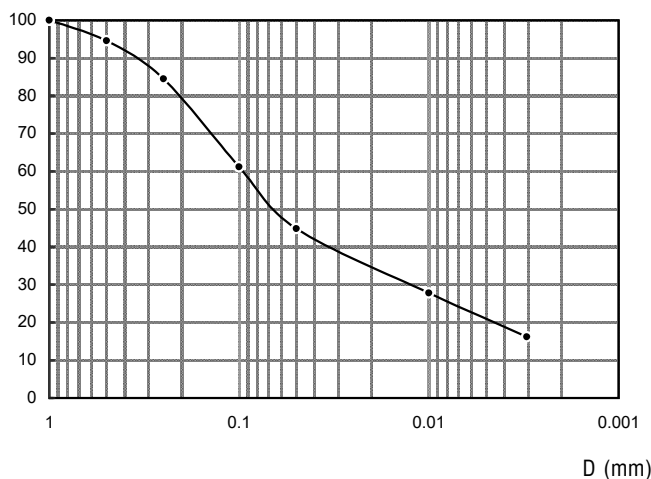
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám tro - nâu đỏ, trạng thái dẻo cứng / Stiff, ashgrey - reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.84	19.7	16.0	89.2	41.0	0.694	27.1	31.25	18.69	12.56	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	50.60g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.096	0.013	*	*	*

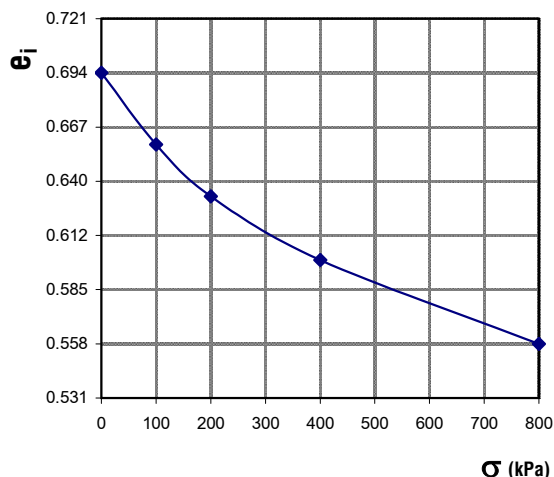
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5	5.4	100.0
1.0			0.5-0.25	10.1	94.6
0.5	2.64		0.25-0.1	23.3	84.5
0.25	4.89		0.1-0.05	16.4	61.2
0.1	11.31	Bụi/Silt	0.05-0.01	17.0	44.8
			0.01-0.005	6.9	27.8
		Sét/Clay	<0.005	20.9	20.9



## Thí nghiệm nén lún/Compression test

$m_k = 4.59$  Hộp nén số/Test box No.: 3  $e_0 = 0.694$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 179.4  $h_0 = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.694			
100	51.0	9.1	0.658	0.036	4705.6	13391.1
200	84.0	12.6	0.632	0.026	6376.9	18147.4
400	123.0	14.7	0.600	0.016	10200.0	29027.2
800	175.0	18.6	0.558	0.011	14545.5	41393.5

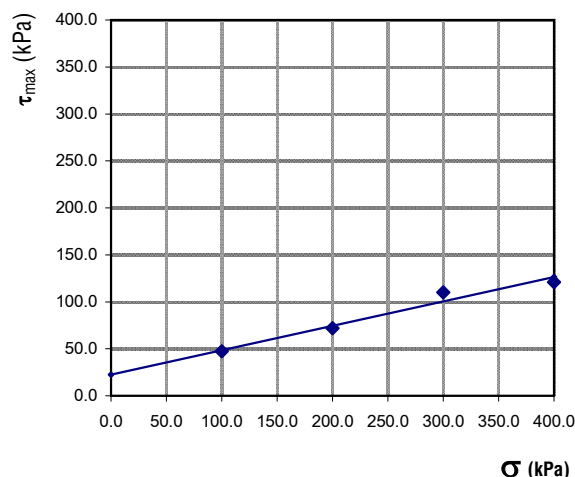


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.0	1.686	47.2
200	42.8	1.678	71.8
300	63.4	1.736	110.1
400	69.6	1.739	121.0

$\tan \phi = 0.2597$   $\phi = 14^\circ 33'$  C 22.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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LAS-XD238

# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK14

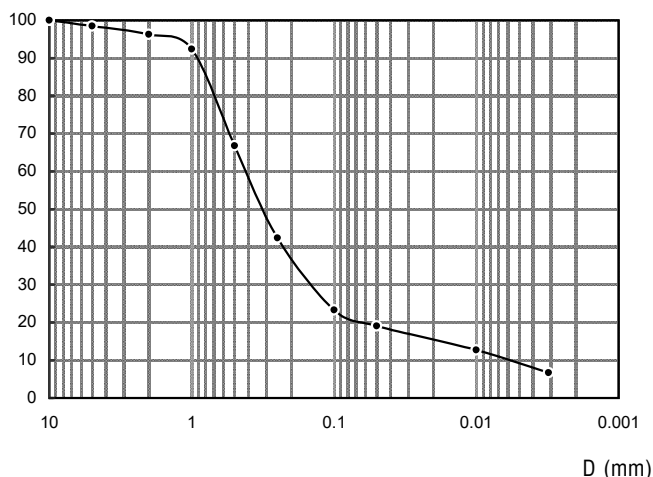
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng - xám hồng, trạng thái dẻo / Plasticity, whitish grey - pinkish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.02	19.9	16.6	87.9	37.8	0.608	26.7	23.47	17.33	6.14	0.44

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	94.15g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.430	0.153	0.006	9.1	71.7

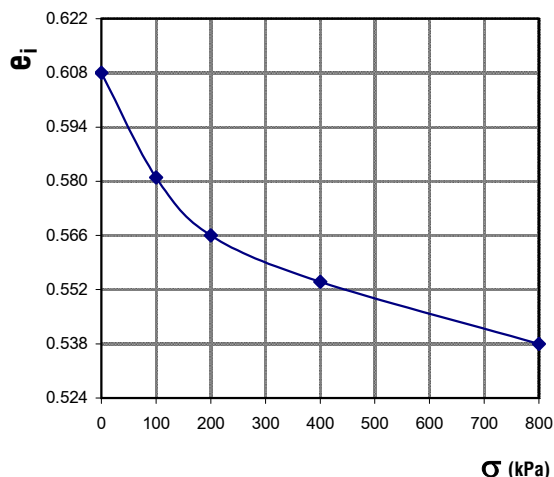
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5	1.5	100.0
			5-2	2.2	98.5
		Cát/Sand	2-1	3.9	96.3
20.0			1-0.5	25.6	92.4
10.0			0.5-0.25	24.4	66.8
5.0	1.42		0.25-0.1	19.1	42.4
2.0	2.03		0.1-0.05	4.2	23.3
1.0	3.65	Bụi/Silt	0.05-0.01	6.4	19.1
0.5	24.10		0.01-0.005	3.5	12.7
0.25	23.00	Sét/Clay	<0.005	9.2	9.2
0.1	18.00				



## Thí nghiệm nén lún/Compression test

$m_k = 3.92$  Hộp nén số/Test box No.: 4  $e_0 = 0.608$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 104.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.608			
100	41.0	8.8	0.581	0.027	5955.6	17275.9
200	62.0	11.9	0.566	0.015	10540.0	30574.4
400	79.0	14.0	0.554	0.006	26100.0	75710.9
800	102.0	17.5	0.538	0.004	38850.0	112696.1

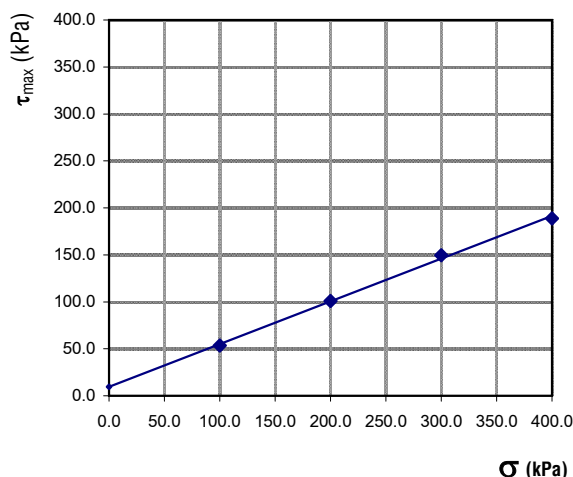


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.8	1.686	53.6
200	60.1	1.678	100.8
300	86.2	1.736	149.6
400	108.6	1.739	188.9

$\tan \phi = 0.4547$   $\phi = 24^\circ 27'$  C 9.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK14

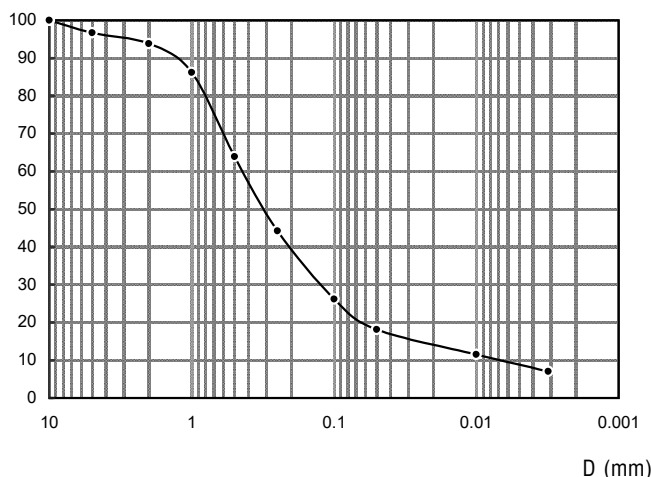
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng - xám hồng, trạng thái dẻo / Plasticity, whitish grey - pinkish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.50	20.2	16.9	90.4	36.5	0.574	26.6	22.34	16.61	5.73	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	90.50g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.451	0.132	0.007	5.5	64.4

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5	3.3	100.0
			5-2	2.9	96.7
20.0		Cát/Sand	2-1	7.6	93.8
10.0			1-0.5	22.3	86.2
5.0	2.96		0.5-0.25	19.7	63.9
2.0	2.62		0.25-0.1	18.0	44.2
1.0	6.87		0.1-0.05	8.1	26.2
0.5	20.17	Bụi/Silt	0.05-0.01	6.6	18.1
0.25	17.85		0.01-0.005	2.4	11.5
0.1	16.30	Sét/Clay	<0.005	9.1	9.1



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 5  $e_0 = 0.574$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

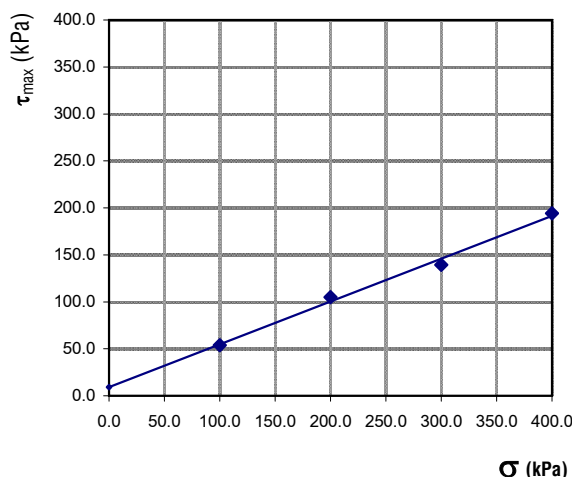
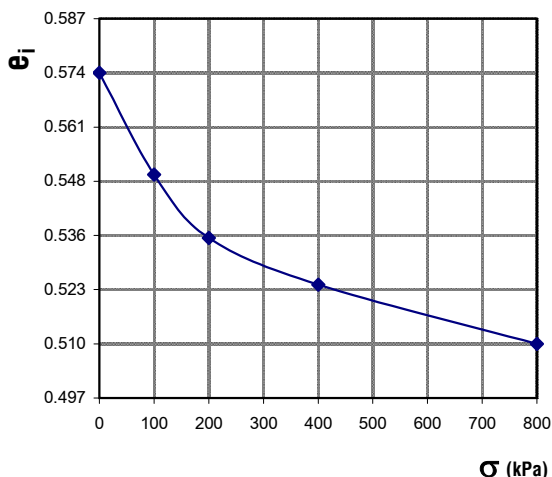
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.574			
100	36.0	7.4	0.550	0.024	6558.3	19412.7
200	58.0	10.5	0.535	0.015	10333.3	30586.7
400	75.0	12.6	0.524	0.006	25583.3	75726.7
800	94.0	15.8	0.510	0.004	38100.0	112776.0

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.9	1.686	53.8
200	62.6	1.678	105.0
300	80.2	1.736	139.2
400	111.7	1.739	194.2

$\tan \varphi = 0.4554$   $\varphi = 24^\circ 29'$  C 9.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK14

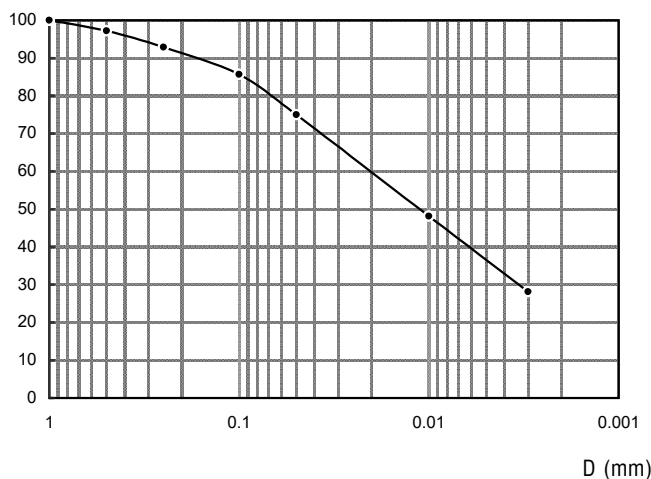
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu vàng, trạng thái dẻo cứng / Stiff, yellowish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.49	19.3	15.1	92.9	44.7	0.808	27.3	48.23	19.88	28.35	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	34.62g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.021	0.004	*	*	*

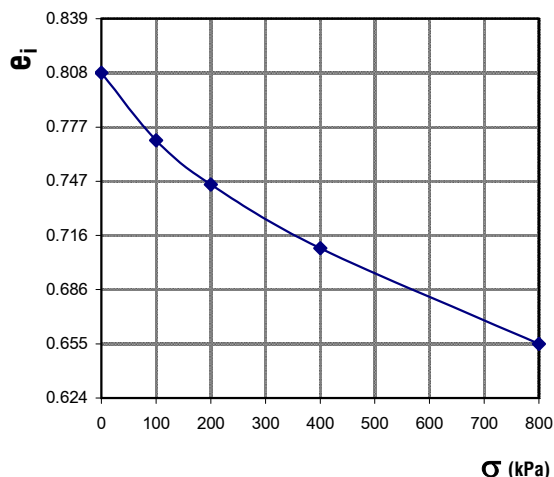
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1		100.0
2.0			1-0.5	2.8	100.0
1.0			0.5-0.25	4.3	97.2
0.5	0.97	Bụi/Silt	0.25-0.1	7.2	92.9
0.25	1.50		0.1-0.05	10.7	85.7
0.1	2.48		0.05-0.01	26.9	75.0
		Sét/Clay	0.01-0.005	13.6	48.1
			<0.005	34.5	34.5



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 6  $e_0 = 0.808$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 188.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.808			
100	51.0	10.2	0.770	0.038	4757.9	11418.9
200	82.0	14.0	0.745	0.025	7080.0	16992.0
400	123.0	16.1	0.709	0.018	9694.4	23266.7
800	184.0	20.0	0.655	0.014	12207.1	29297.1

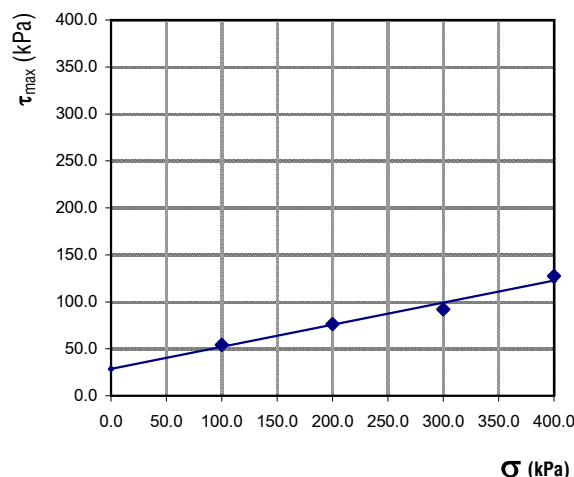


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.1	1.686	54.1
200	45.5	1.678	76.3
300	53.0	1.736	92.0
400	73.2	1.739	127.3

$\tan \phi = 0.2353$   $\phi = 13^\circ 14'$  C 28.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK14

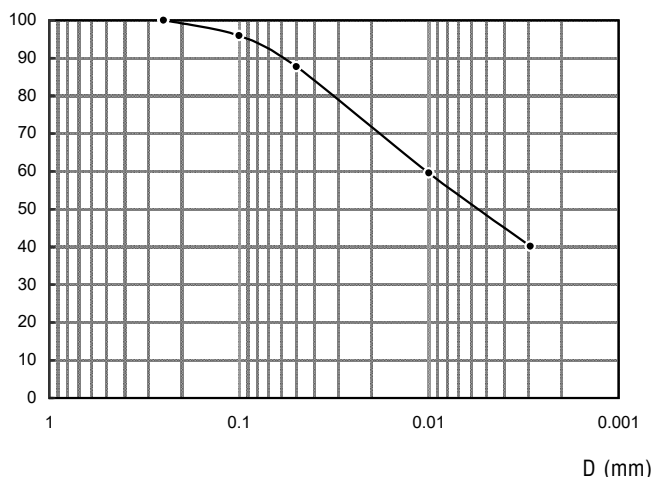
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám tro - nâu đỏ, trạng thái dẻo cứng / Stiff, ashgrey - reddish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	28.15	18.9	14.7	89.3	46.4	0.864	27.4	45.90	20.43	25.47	0.30

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					35.12g	0.010	*	*	*	*
					Nhiệt độ TN/Temp.	30.0°C				

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	4.1	100.0
0.25			0.1-0.05	8.2	95.9
0.1	1.45	Bụi/Silt	0.05-0.01	28.1	87.7
			0.01-0.005	12.2	59.6
		Sét/Clay	<0.005	47.4	47.4



## Thí nghiệm nén lún/Compression test

$m_k = 5.76$

Hộp nén số/Test box No.: 7

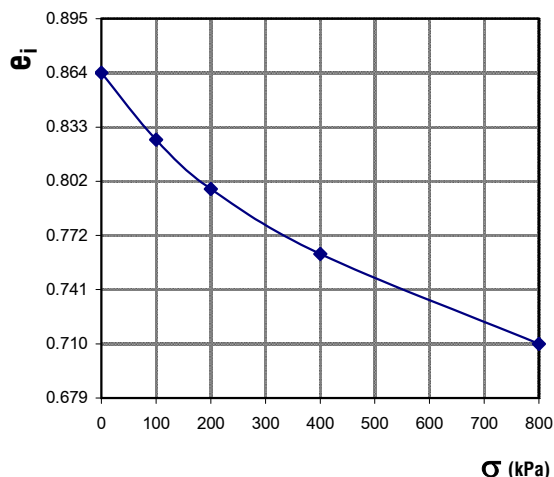
$e_0 = 0.864$

$\beta = 0.40$

Số đọc sau 24h/Reading after 24h: 182.5

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.864			
100	48.0	8.4	0.826	0.038	4905.3	11301.7
200	80.9	11.9	0.798	0.028	6521.4	15025.4
400	121.0	14.0	0.761	0.019	9463.2	21803.1
800	178.0	17.2	0.710	0.013	13546.2	31210.3



## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

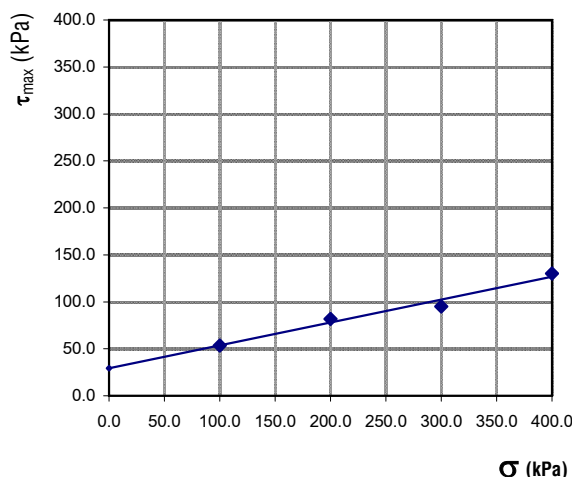
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	31.7	1.686	53.4
200	48.8	1.678	81.9
300	54.8	1.736	95.1
400	74.8	1.739	130.1

$\tan \phi = 0.2433$

$\phi = 13^\circ 40'$

C 29.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK14

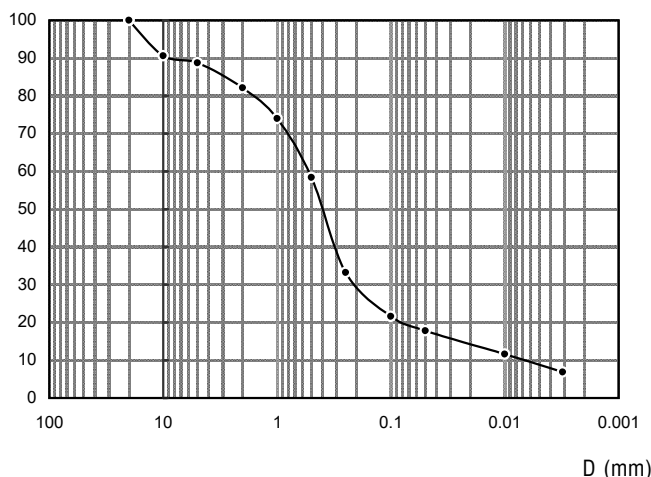
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát lẫn sỏi sạn thạch anh, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand with quartz gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.70	20.0	16.6	90.4	38.1	0.614	26.8	23.62	17.81	5.81	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	91.52g					
Nhiệt độ TN/Temp.	30.0°C	0.551	0.209	0.007	11.3	78.7

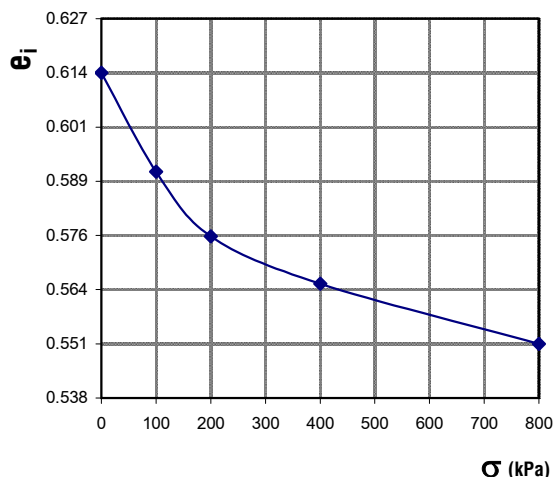
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Sieve/Gravel	>10	9.4	100.0
20.0		Cát/Sand	10-5	1.9	90.6
10.0	8.57		5-2	6.6	88.7
5.0	1.75		2-1	8.1	82.1
2.0	6.03		1-0.5	15.6	74.0
1.0	7.43		0.5-0.25	25.2	58.4
0.5	14.25	Bụi/Silt	0.25-0.1	11.6	33.2
0.25	23.10		0.1-0.05	3.8	21.6
0.1	10.60	Sét/Clay	0.05-0.01	6.2	17.8
			0.01-0.005	2.6	11.6
			<0.005	9.0	9.0



## Thí nghiệm nén lún/Compression test

$m_k = 3.87$  Hộp nén số/Test box No.: 8  $e_0 = 0.614$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.614			
100	36.0	8.8	0.591	0.023	7017.4	20096.4
200	58.0	12.6	0.576	0.015	10606.7	30375.4
400	74.0	15.1	0.565	0.006	26266.7	75222.5
800	94.0	18.5	0.551	0.003	52166.7	149394.9

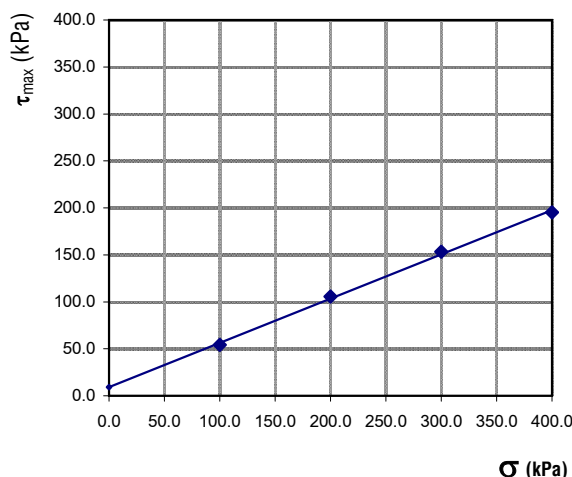


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.1	1.686	54.1
200	63.0	1.678	105.7
300	88.3	1.736	153.3
400	112.3	1.739	195.3

$\tan \phi = 0.4712$   $\phi = 25^\circ 14'$  C 9.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK14

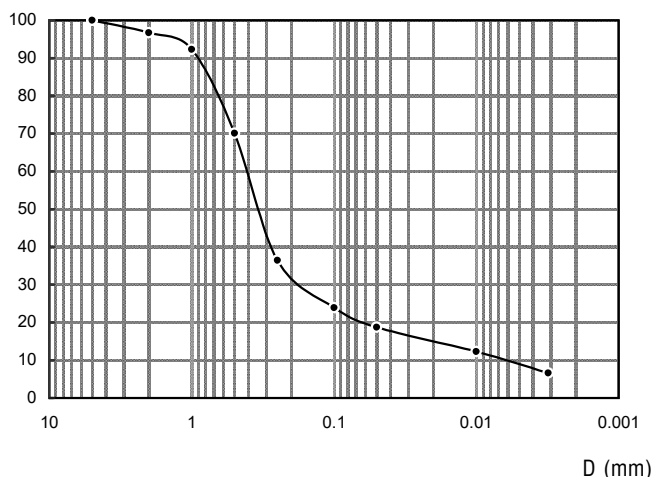
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.39	19.6	16.1	87.3	39.5	0.652	26.6	25.57	17.25	8.32	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	96.08g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.425	0.173	0.006	11.7	70.8

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	3.3	100.0
Cát/Sand			2-1	4.4	96.7
			1-0.5	22.2	92.3
			0.5-0.25	33.7	70.1
			0.25-0.1	12.5	36.4
			0.1-0.05	5.2	23.9
20.0		Bụi/Silt	0.05-0.01	6.4	18.7
10.0			0.01-0.005	3.4	12.3
5.0					
2.0	3.19				
1.0	4.18				
0.5	21.30	Sét/Clay			
0.25	32.37				
0.1	12.02				



## Thí nghiệm nén lún/Compression test

$m_k = 3.76$  Hộp nén số/Test box No.: 9  $e_0 = 0.652$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 117.6  $h_0 = 20\text{mm}$

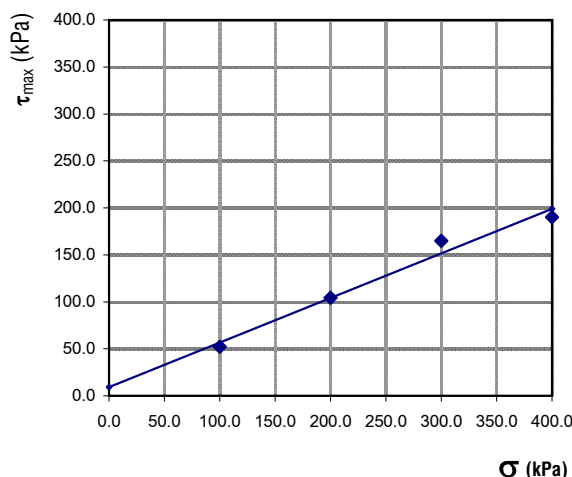
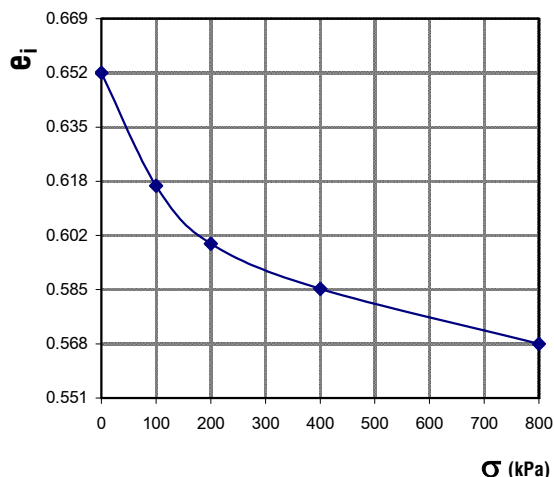
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.652			
100	48.0	7.7	0.617	0.035	4720.0	13115.5
200	73.0	10.9	0.599	0.018	8983.3	24962.0
400	91.3	12.6	0.585	0.007	22842.9	63473.4
800	114.7	15.5	0.568	0.004	39625.0	110106.0

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.9	1.686	52.1
200	62.1	1.678	104.2
300	95.0	1.736	164.9
400	109.4	1.739	190.2

$\tan \phi = 0.4750$   $\phi = 25^\circ 24'$  C 9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK14

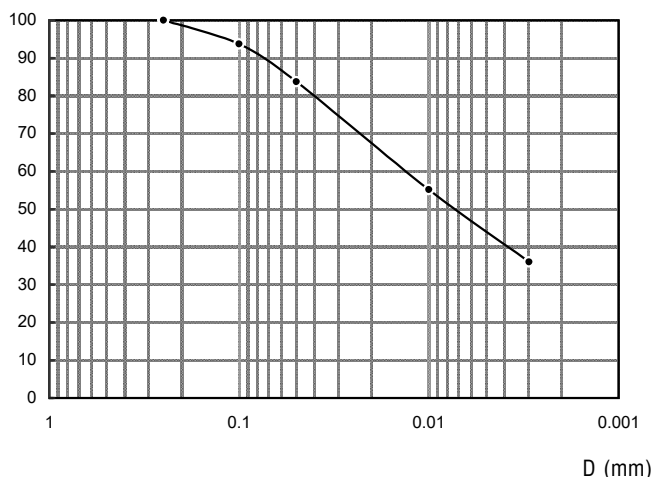
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám xanh đen - xám tro, trạng thái dẻo cứng / Stiff, blackish blue grey - ashgrey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	31.59	18.6	14.1	92.5	48.2	0.929	27.2	42.98	24.16	18.82	0.39

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	34.96g	0.013	*	*	*
						30.0°C				

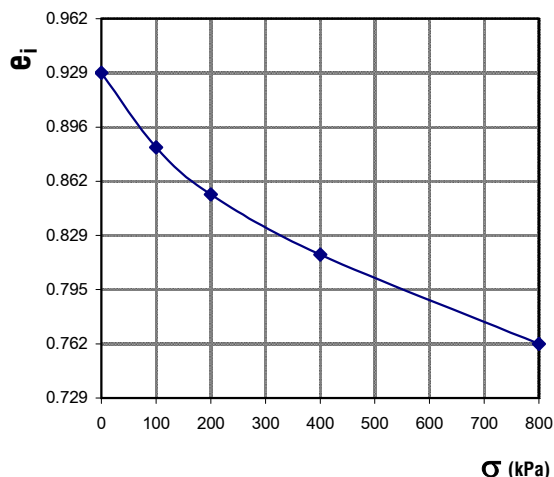
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	6.3	100.0
1.0			0.1-0.05	10.0	93.7
0.5		Bụi/Silt	0.05-0.01	28.5	83.7
0.25			0.01-0.005	12.2	55.2
0.1	2.20	Sét/Clay	<0.005	43.0	43.0



## Thí nghiệm nén lún/Compression test

$m_k = 5.50$  Hộp nén số/Test box No.: 10  $e_0 = 0.929$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 188.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.929			
100	54.0	7.7	0.883	0.046	4193.5	9225.7
200	86.0	10.5	0.854	0.029	6493.1	14284.8
400	125.0	12.3	0.817	0.019	9757.9	21467.4
800	184.0	15.5	0.762	0.014	12978.6	28552.9

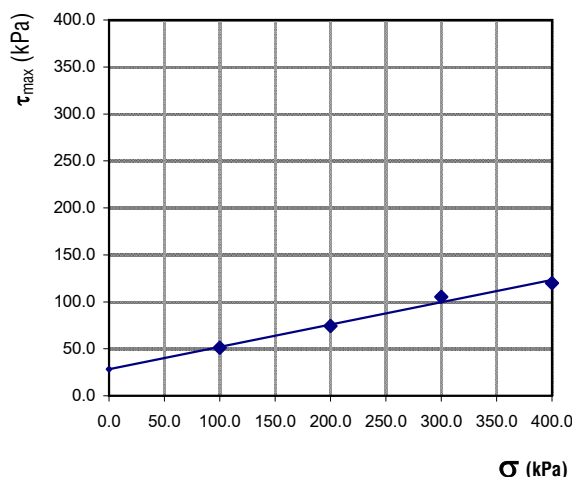


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.3	1.686	51.1
200	44.2	1.678	74.2
300	60.6	1.736	105.2
400	69.0	1.739	120.0

$\tan \phi = 0.2377$   $\phi = 13^\circ 22'$  C 28.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK14

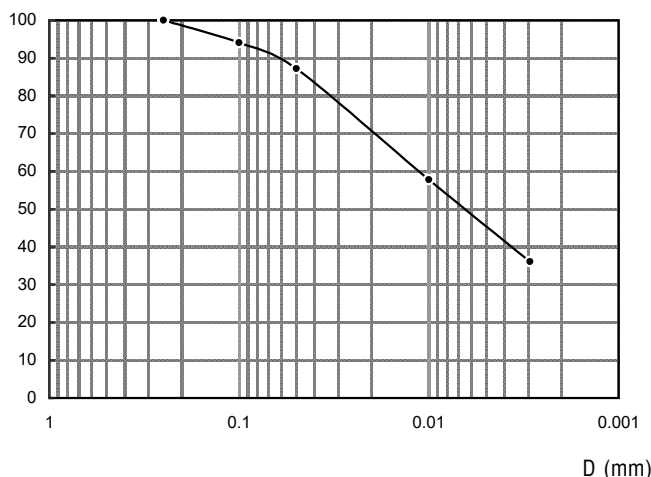
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám xanh đen - xám tro, trạng thái dẻo cứng / Stiff, blackish blue grey - ashgrey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.57	19.0	14.9	90.8	45.2	0.826	27.2	41.83	20.55	21.28	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	39.19g	0.011	*	*	*
						30.0°C				

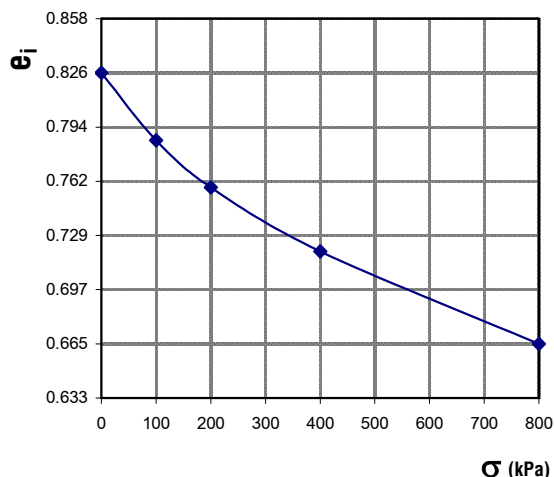
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	5.9	100.0
1.0			0.1-0.05	6.9	94.1
0.5		Bụi/Silt	0.05-0.01	29.4	87.2
0.25			0.01-0.005	15.3	57.8
0.1	2.30	Sét/Clay	<0.005	42.5	42.5



## Thí nghiệm nén lún/Compression test

$m_k = 5.96$  Hộp nén số/Test box No.: 11  $e_0 = 0.826$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 192.7  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.826			
100	51.0	8.4	0.786	0.040	4565.0	10883.0
200	84.0	11.2	0.758	0.028	6378.6	15206.5
400	126.0	13.3	0.720	0.019	9252.6	22058.3
800	188.0	16.3	0.665	0.014	12285.7	29289.1

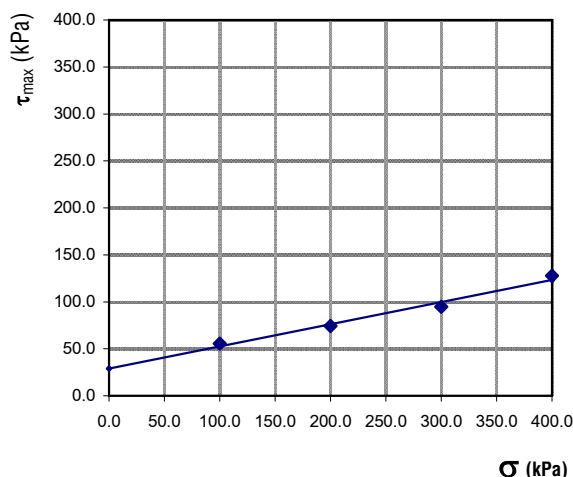


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	33.0	1.686	55.6
200	44.2	1.678	74.2
300	54.5	1.736	94.6
400	73.4	1.739	127.6

$\tan \phi = 0.2364$   $\phi = 13^\circ 18'$  C 28.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK14

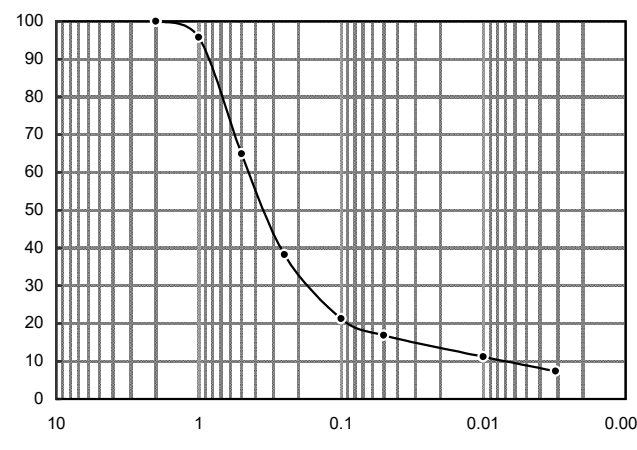
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_o$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.48	20.0	16.6	90.5	37.6	0.602	26.6	23.50	17.56	5.94	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	96.28g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.454	0.177	0.008	8.6	56.8

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{11-12}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Sỏi/san/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.2	100.0
10.0			1-0.5	30.9	95.8
5.0			0.5-0.25	26.7	64.9
2.0			0.25-0.1	16.9	38.2
1.0	4.00		0.1-0.05	4.4	21.3
0.5	29.76	Bụi/Silt	0.05-0.01	5.7	16.9
0.25	25.66		0.01-0.005	2.7	11.2
0.1	16.30		Sét/Clay	<0.005	8.5



D (mm)	% Passing
10	100
5	100
2.5	100
1.5	95
1.0	65
0.75	39
0.6	21
0.425	17
0.3	11
0.25	8

D (mm)

## Thí nghiệm nén lún/Compression test

$m_k = 3.95$

Hộp nén số/Test box No.: 12

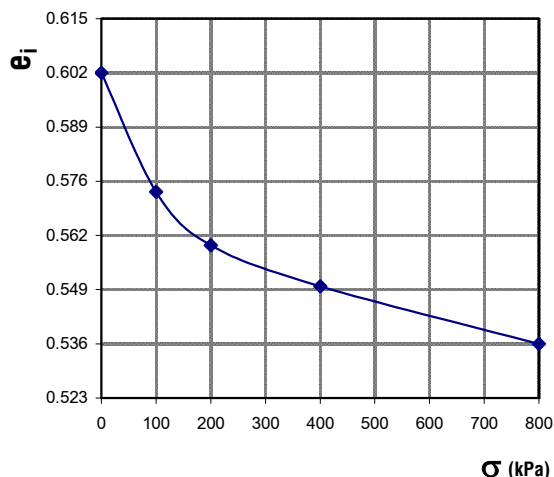
$e_0 = 0.602$

$\beta = 0.74$

Số đọc sau 24h/Reading after 24h: 96.4

$h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.602			
100	41.0	6.3	0.573	0.029	5524.1	16147.1
200	60.0	9.5	0.560	0.013	12100.0	35368.3
400	75.0	11.6	0.550	0.005	31200.0	91197.6
800	94.0	13.7	0.536	0.004	38750.0	113266.3



## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test

Hệ số vòng lực/Proving ring calibration factor: Cr

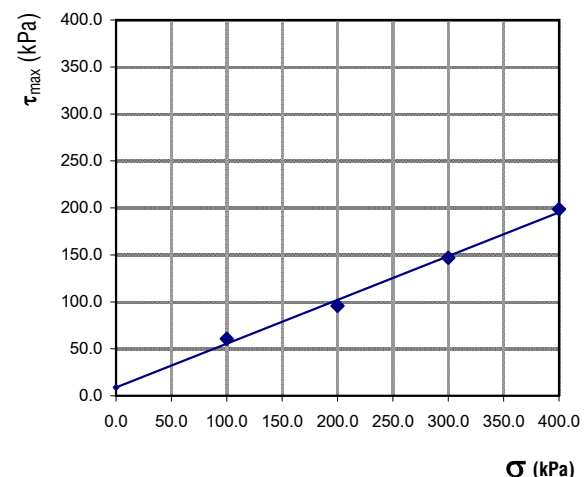
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	35.9	1.686	60.5
200	57.1	1.678	95.8
300	84.6	1.736	146.9
400	114.3	1.739	198.8

$\tan \phi = 0.4660$

$\phi = 24^\circ 59'$

C

9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK14

Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.35	19.2	15.2	89.9	44.5	0.803	27.4	40.49	20.35	20.14	0.30

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	41.65g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.008	*	*	*	*

Khối lượng đất/Mass of soil		Cấp hạt/Grain grade	$D_{10-20}(mm)$	$P_i$	P
>0.1mm				%	%
D (mm)	$m_i$ (g)	Silt/sand/Gravel			
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	3.5	100.0
1.0			0.1-0.05	7.0	96.5
0.5		Bụi/Silt	0.05-0.01	23.1	89.5
0.25			0.01-0.005	12.1	66.4
0.1	1.44	Sét/Clay	<0.005	54.3	54.3

Thí nghiệm nén lún/Compression test							Thí nghiệm cắt phẳng/Direct shear test			
$m_k = 6.00$ Hộp nén số/Test box No.: 13 $e_0 = 0.803$							PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
$\beta = 0.40$ Số đọc sau 24h/Reading after 24h: 179.4 $h_p = 20mm$							Hệ số vòng lực/Proving ring calibration factor: Cr			

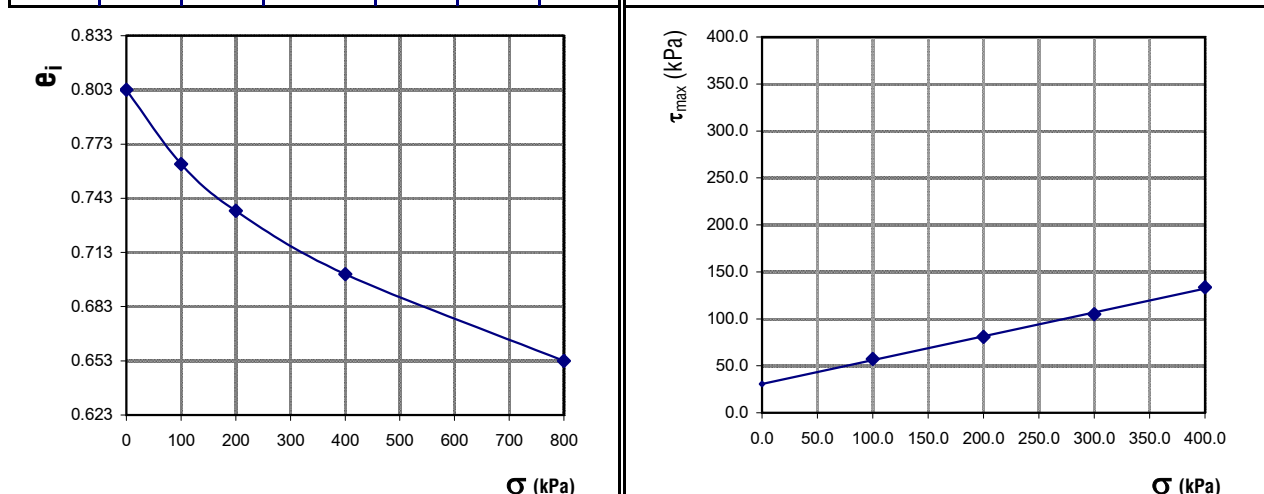
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.803			
100	51.0	7.4	0.762	0.041	4397.6	10554.1
200	82.0	10.2	0.736	0.026	6776.9	16264.6
400	121.0	10.9	0.701	0.018	9644.4	23146.7
800	175.0	13.7	0.653	0.012	14175.0	34020.0

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.9	1.686	57.2
200	48.1	1.678	80.7
300	60.4	1.736	104.9
400	76.8	1.739	133.6

$\tan \phi = 0.2534$   $\phi = 14^\circ 13'$  C 30.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK14

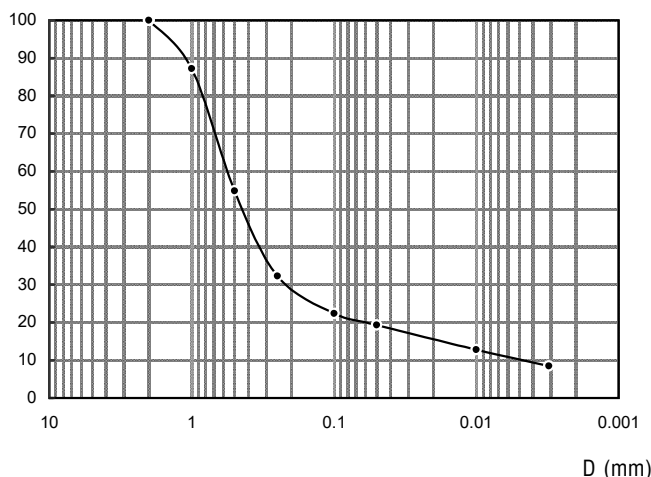
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.90	19.7	16.4	85.1	38.3	0.622	26.6	22.75	17.10	5.65	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	93.41g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.580	0.215	0.006	13.3	96.7

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	12.8	100.0
10.0			1-0.5	32.4	87.2
5.0			0.5-0.25	22.5	54.8
2.0			0.25-0.1	9.9	32.3
1.0	12.00		0.1-0.05	3.1	22.4
0.5	30.30	Bụi/Silt	0.05-0.01	6.5	19.3
0.25	21.00		0.01-0.005	3.1	12.8
0.1	9.23	Sét/Clay	<0.005	9.7	9.7





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK14-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK14

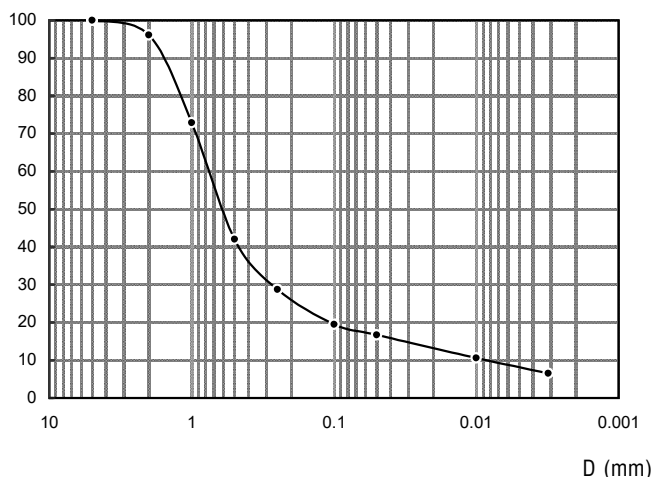
Ngày TN/Date test: 01-10-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	18.26	20.6	17.4	91.8	34.6	0.529	26.6	21.19	15.32	5.87	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	98.09g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.791	0.274	0.008	11.9	98.9

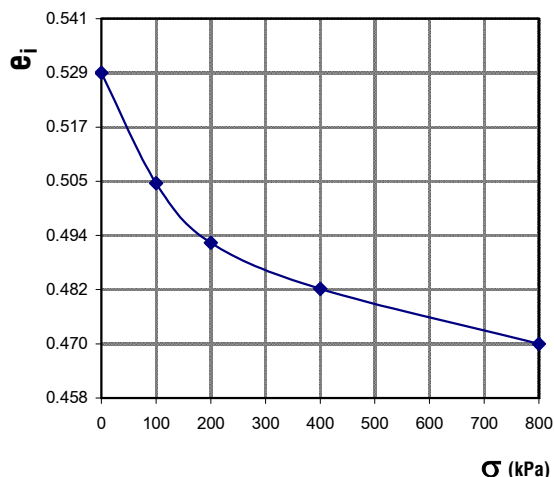
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	3.9	100.0
20.0		Cát/Sand	2-1	23.2	96.1
10.0			1-0.5	30.9	72.9
5.0			0.5-0.25	13.3	42.0
2.0	3.85		0.25-0.1	9.2	28.7
1.0	22.79		0.1-0.05	2.8	19.5
0.5	30.35	Bụi/Silt	0.05-0.01	6.1	16.7
0.25	13.00		0.01-0.005	2.0	10.6
0.1	9.00	Sét/Clay	<0.005	8.6	8.6



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 15  $e_0 = 0.529$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 90.2  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.529			
100	36.0	6.3	0.505	0.024	6370.8	18857.7
200	56.0	9.1	0.492	0.013	11576.9	34267.7
400	70.0	10.9	0.482	0.005	29840.0	88326.4
800	88.0	13.7	0.470	0.003	49400.0	146224.0

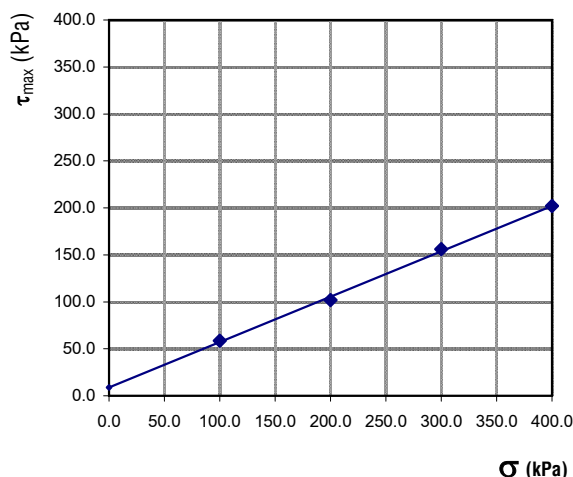


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.8	1.686	58.7
200	60.7	1.678	101.9
300	89.8	1.736	155.9
400	116.1	1.739	201.9

$\tan \varphi = 0.4836$   $\varphi = 25^\circ 49'$  C 8.7 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK15

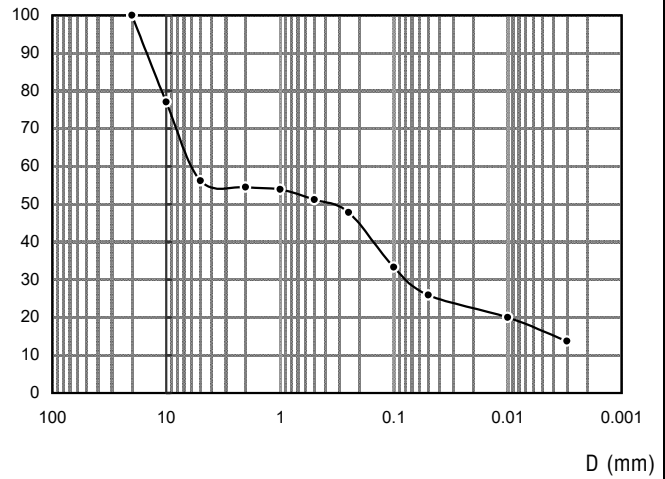
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn dăm sạn laterit, xám vàng - xám tro, trạng thái dẻo cứng / Stiff, yellowish grey - ashgrey, Sandy clay with l

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.38	19.7	16.2	86.5	40.0	0.667	27.0	30.90	16.85	14.05	0.32

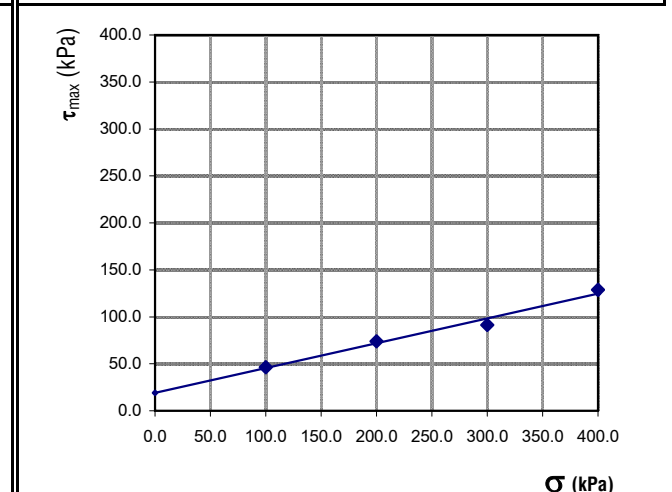
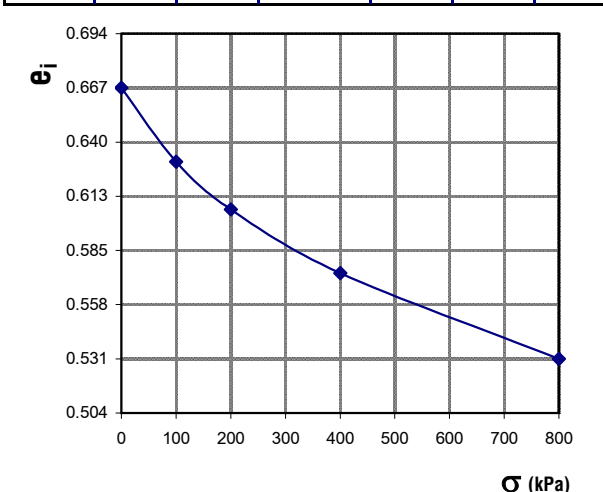
KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	5.913	0.079	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10	23.0	100.0
20.0			10-5	20.8	77.0
10.0	16.00		5-2	1.7	56.2
5.0	14.41	Cát/Sand	2-1	0.6	54.5
2.0	1.20		1-0.5	2.7	53.9
1.0	0.45		0.5-0.25	3.4	51.2
0.5	1.90		0.25-0.1	14.5	47.8
0.25	2.34	Bụi/Silt	0.1-0.05	7.4	33.3
0.1	10.10		0.05-0.01	5.9	25.9
		Sét/Clay	0.01-0.005	2.9	20.0
			<0.005	17.1	17.1



Thí nghiệm nén lún/Compression test						
$m_k = 4.72$	Hộp nén số/Test box No.:	16	$e_0 = 0.667$			
$\beta = 0.62$	Số đọc sau 24h/Reading after 24h:	179.4	$h_p = 20\text{mm}$			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.667			
100	51.0	8.1	0.630	0.037	4505.4	13184.6
200	82.0	11.2	0.606	0.024	6791.7	19875.1
400	121.0	12.6	0.574	0.016	10037.5	29373.7
800	175.0	16.5	0.531	0.011	14309.1	41874.1

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.6	1.686	46.5
200	44.0	1.678	73.8
300	52.6	1.736	91.3
400	74.0	1.739	128.7
$\tan \varphi = 0.2641$ $\varphi = 14^\circ 48'$ C      19.1 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK15

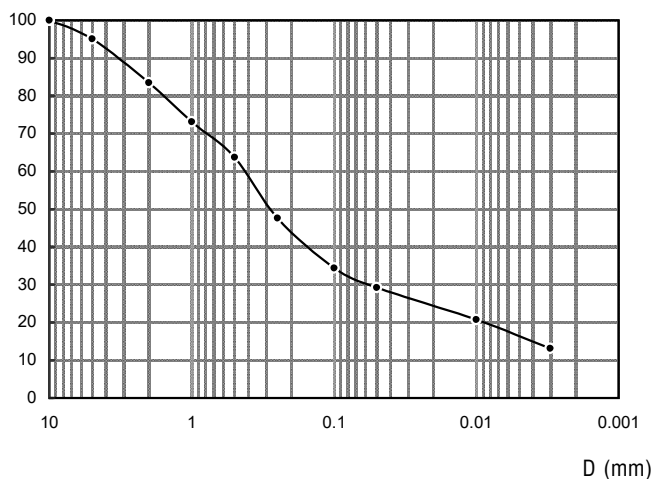
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn sỏi sạn laterit, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay with laterite gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	22.49	19.5	15.9	87.0	41.1	0.698	27.0	32.15	17.85	14.30	0.32

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	72.37g	0.443	0.057	*	*
						30.0°C				

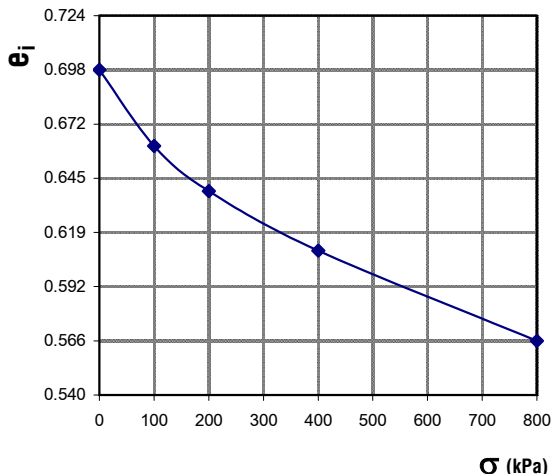
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Sỏi sạn/Gravel	>10		100.0
			10-5	4.9	100.0
			5-2	11.6	95.1
20.0	3.52	Cát/Sand	2-1	10.4	83.5
			1-0.5	9.4	73.1
			0.5-0.25	16.1	63.7
			0.25-0.1	13.2	47.6
			0.1-0.05	5.2	34.4
10.0	8.41	Bụi/Silt	0.05-0.01	8.4	29.2
5.0	7.52		0.01-0.005	4.5	20.8
2.0	8.41				
1.0	7.52	Sét/Clay	<0.005	16.3	16.3
0.5	6.82				
0.25	11.63				
0.1	9.54				



## Thí nghiệm nén lún/Compression test

$m_k = 4.56$  Hộp nén số/Test box No.: 17  $e_0 = 0.698$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 172.2  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.698			
100	50.0	8.4	0.661	0.037	4589.2	12960.3
200	80.0	11.6	0.639	0.022	7550.0	21322.0
400	114.0	13.0	0.610	0.015	10926.7	30858.0
800	168.0	16.5	0.566	0.011	14636.4	41334.6

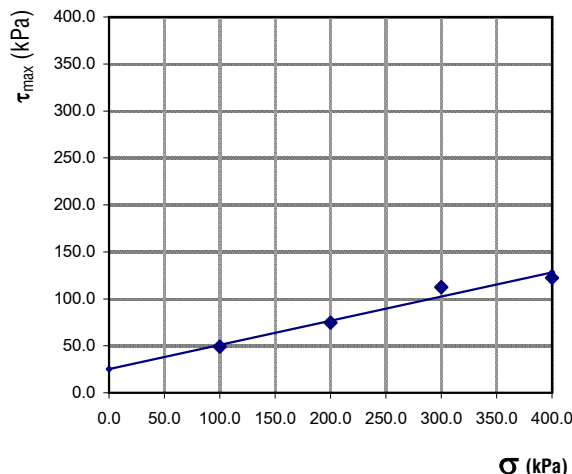


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.1	1.686	49.1
200	44.4	1.678	74.5
300	64.7	1.736	112.3
400	70.3	1.739	122.3

$\tan \phi = 0.2574$   $\phi = 14^\circ 26'$  C 25.2 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK15

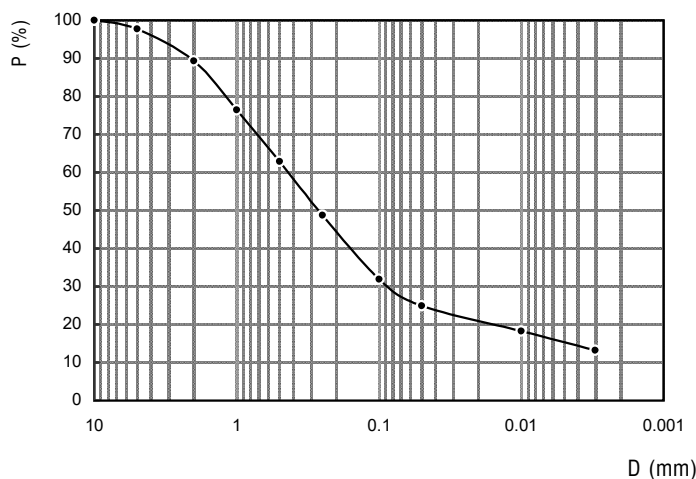
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.75	19.6	16.1	86.7	40.4	0.677	27.0	30.86	18.13	12.73	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.449	0.087	*	*

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5	2.3	100.0
			5-2	8.4	97.7
20.0		Cát/Sand	2-1	12.9	89.3
10.0			1-0.5	13.5	76.4
5.0	1.67		0.5-0.25	14.2	62.9
2.0	6.05		0.25-0.1	16.8	48.7
1.0	9.28		0.1-0.05	7.0	31.9
0.5	9.69	Bụi/Silt	0.05-0.01	6.6	24.9
0.25	10.25		0.01-0.005	2.4	18.3
0.1	12.10	Sét/Clay	<0.005	15.9	15.9



## Thí nghiệm nén lún/Compression test

$m_k = 4.69$  Hộp nén số/Test box No.: 18  $e_0 = 0.677$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 176.3  $h_p = 20\text{mm}$

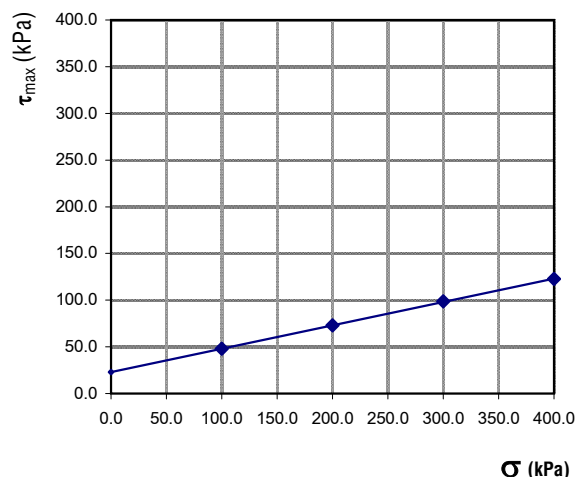
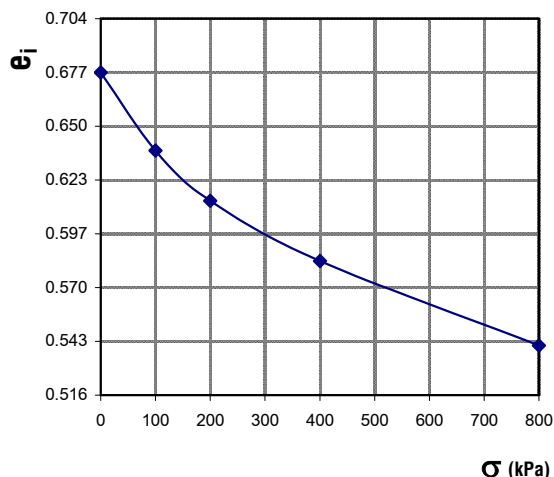
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.677			
100	52.6	7.7	0.638	0.039	4300.0	12490.2
200	84.0	10.2	0.613	0.025	6552.0	19031.6
400	121.0	11.6	0.583	0.015	10753.3	31235.2
800	172.0	14.8	0.541	0.011	14390.9	41801.3

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	28.4	1.686	47.9
200	43.5	1.678	73.0
300	56.8	1.736	98.6
400	70.5	1.739	122.6

$\tan \phi = 0.2497$   $\phi = 14^\circ 01'$  C 23.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK15

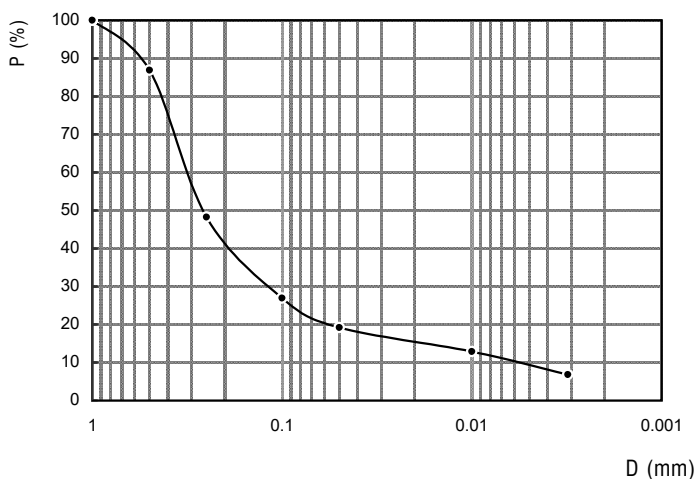
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám trắng, trạng thái dẻo / Plasticity, whitish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	22.92	19.2	15.6	86.5	41.4	0.705	26.6	25.60	20.35	5.25	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	93.80g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.326	0.122	0.006	7.6	54.3

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	13.1	100.0
5.0			0.5-0.25	38.7	86.9
2.0			0.25-0.1	21.3	48.2
1.0			0.1-0.05	7.7	26.9
0.5	12.30	Bụi/Silt	0.05-0.01	6.3	19.2
0.25	36.30		0.01-0.005	3.7	12.9
0.1	20.00	Sét/Clay	<0.005	9.2	9.2



## Thí nghiệm nén lún/Compression test

$m_k = 3.44$  Hộp nén số/Test box No.: 19  $e_0 = 0.705$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 114.8  $h_p = 20mm$

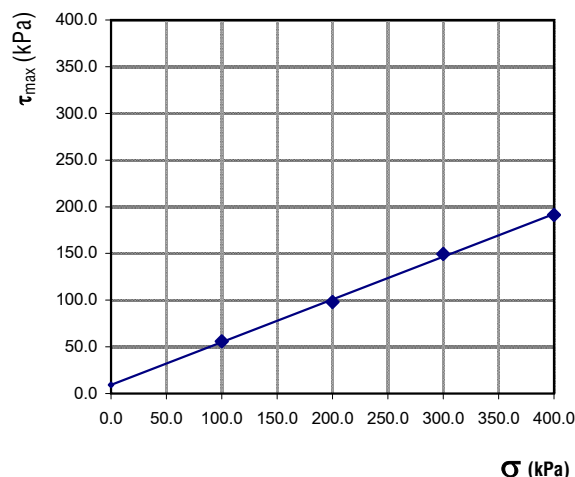
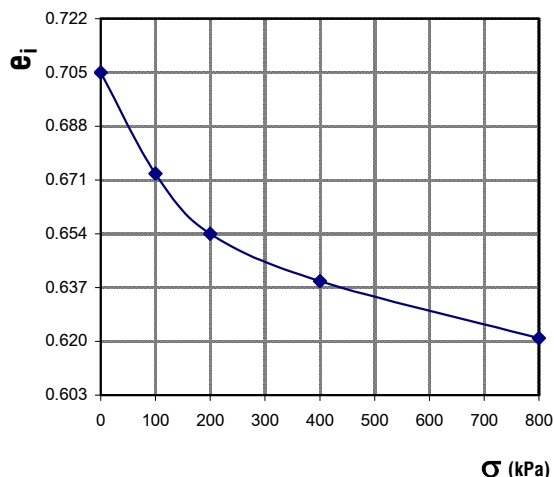
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.705			
100	45.0	8.4	0.673	0.032	5328.1	13563.3
200	69.0	11.2	0.654	0.019	8805.3	22414.7
400	88.0	13.3	0.639	0.008	20675.0	52630.3
800	112.0	16.8	0.621	0.005	32780.0	83444.8

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.1	1.686	55.8
200	58.4	1.678	98.0
300	86.0	1.736	149.3
400	109.9	1.739	191.1

$\tan \phi = 0.4572$   $\phi = 24^\circ 34'$  C 9.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK15

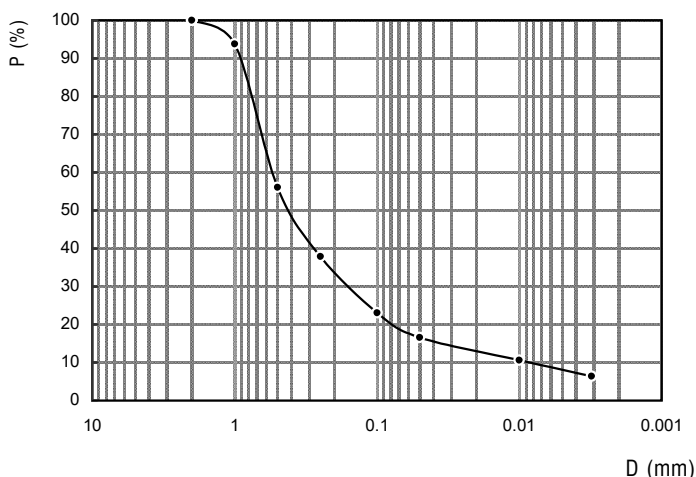
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu đỏ, trạng thái dẻo / Plasticity, yellowish grey - reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.20	20.0	16.6	88.7	37.8	0.608	26.7	23.09	17.44	5.65	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	98.92g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.552	0.170	0.009	5.8	61.3

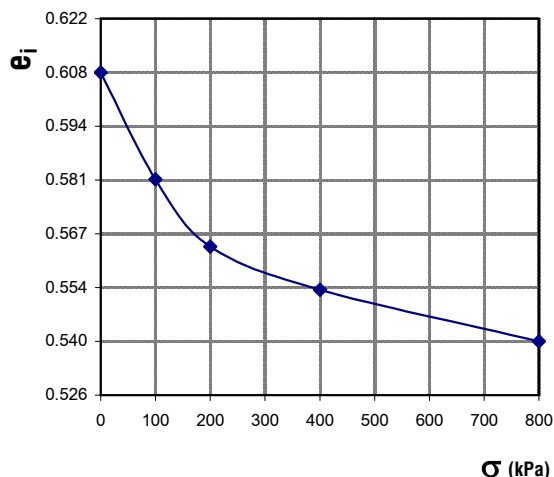
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	6.2	100.0
10.0			1-0.5	37.7	93.8
5.0			0.5-0.25	18.2	56.1
2.0			0.25-0.1	14.8	37.9
1.0	6.17		0.1-0.05	6.5	23.1
0.5	37.34	Bụi/Silt	0.05-0.01	6.0	16.6
0.25	18.00		0.01-0.005	2.2	10.6
0.1	14.65	Sét/Clay	<0.005	8.4	8.4



## Thí nghiệm nén lún/Compression test

$m_k = 3.93$  Hộp nén số/Test box No.: 20  $e_0 = 0.608$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 101.5  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.608			
100	42.0	8.8	0.581	0.027	5955.6	17319.9
200	65.0	11.6	0.564	0.017	9300.0	27046.3
400	81.0	13.7	0.553	0.005	31280.0	90968.5
800	99.0	17.9	0.540	0.003	51766.7	150547.8

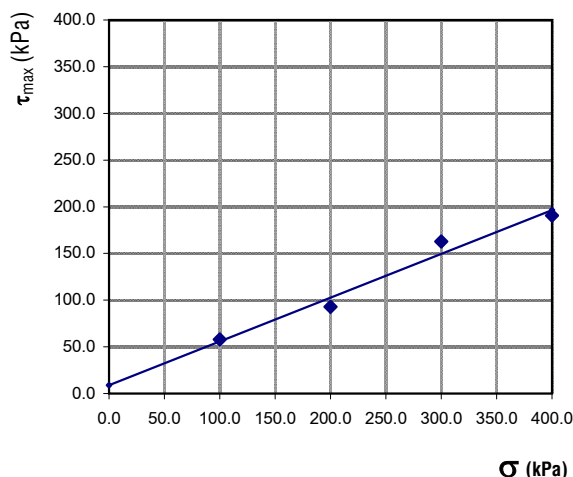


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.3	1.686	57.8
200	55.4	1.678	93.0
300	93.8	1.736	162.8
400	109.6	1.739	190.6

$\tan \phi = 0.4682$   $\phi = 25^\circ 05'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK15

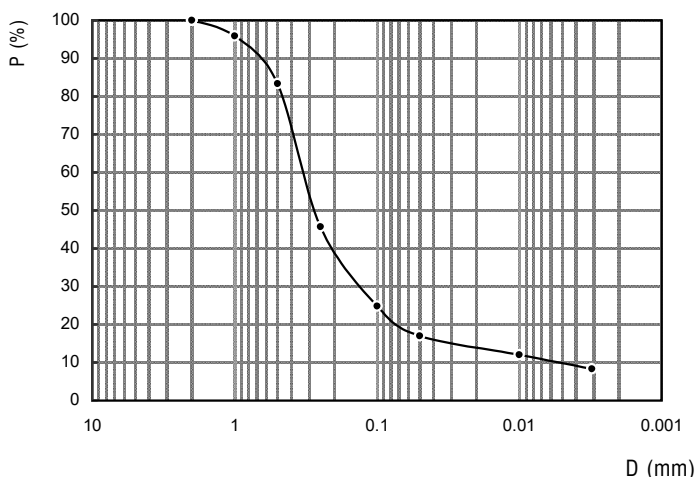
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.13	19.4	16.3	80.5	38.7	0.632	26.6	22.08	16.21	5.87	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	96.53g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.345	0.137	0.006	9.1	57.5

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
20.0		Cát/Sand	10-5		100.0
10.0			5-2		100.0
5.0			2-1	4.1	100.0
2.0			1-0.5	12.6	95.9
1.0	4.00		0.5-0.25	37.6	83.3
0.5	12.20	Bụi/Silt	0.25-0.1	20.9	45.7
0.25	36.30		0.1-0.05	7.8	24.8
0.1	20.20		0.05-0.01	5.0	17.0
		Sét/Clay	0.01-0.005	2.6	12.0
			<0.005	9.4	9.4



## Thí nghiệm nén lún/Compression test

$m_k = 3.84$  Hộp nén số/Test box No.: 21  $e_0 = 0.632$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 115.8  $h_p = 20\text{mm}$

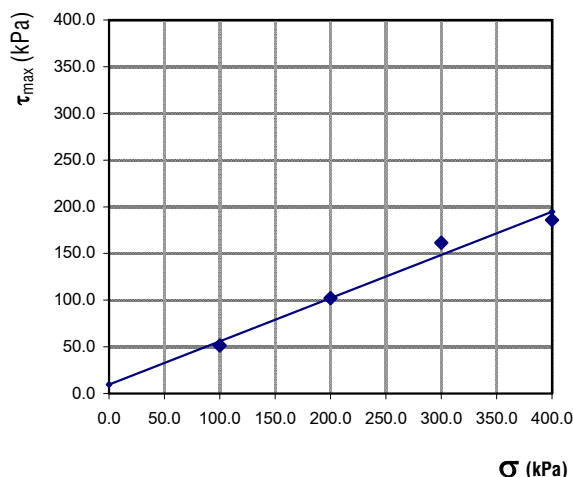
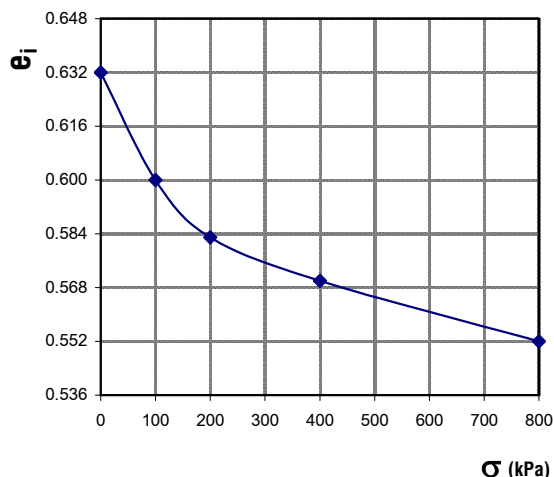
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.632			
100	47.0	9.1	0.600	0.032	5100.0	14473.3
200	70.0	11.9	0.583	0.017	9411.8	26709.6
400	88.0	14.0	0.570	0.007	22614.3	64177.1
800	113.0	17.5	0.552	0.004	39250.0	111387.6

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.4	1.686	51.3
200	60.9	1.678	102.2
300	92.9	1.736	161.3
400	106.8	1.739	185.7

$\tan \phi = 0.4623$   $\phi = 24^\circ 49'$  C 9.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK15

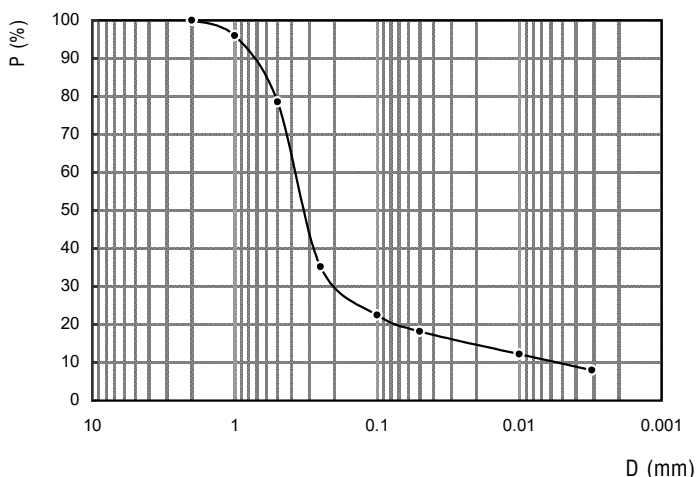
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng - nâu đỏ, trạng thái dẻo / Plasticity, yellowish grey - reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.20	20.3	17.0	90.4	36.1	0.565	26.6	23.31	16.46	6.85	0.40

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	99.43g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.393	0.189	0.006	15.1	65.5

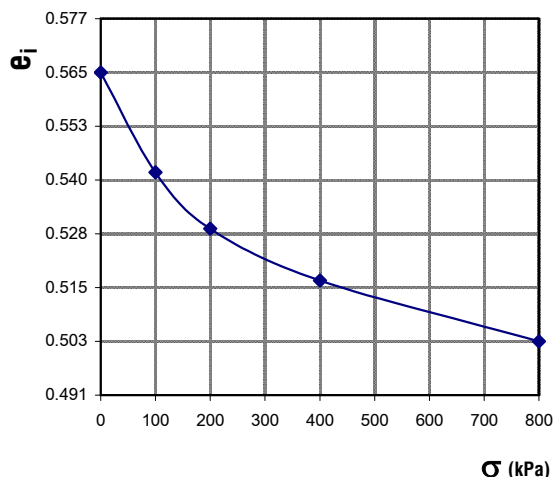
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.0	100.0
10.0			1-0.5	17.5	96.0
5.0			0.5-0.25	43.3	78.5
2.0			0.25-0.1	12.7	35.2
1.0	3.96		0.1-0.05	4.3	22.5
0.5	17.44	Bụi/Silt	0.05-0.01	6.0	18.2
0.25	43.10		0.01-0.005	2.9	12.2
0.1	12.62	Sét/Clay	<0.005	9.3	9.3



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 22  $e_0 = 0.565$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.565			
100	38.0	9.8	0.542	0.023	6804.3	20140.9
200	56.0	11.6	0.529	0.013	11861.5	35110.2
400	72.0	13.3	0.517	0.006	25483.3	75430.7
800	94.0	17.2	0.503	0.004	37925.0	112258.0

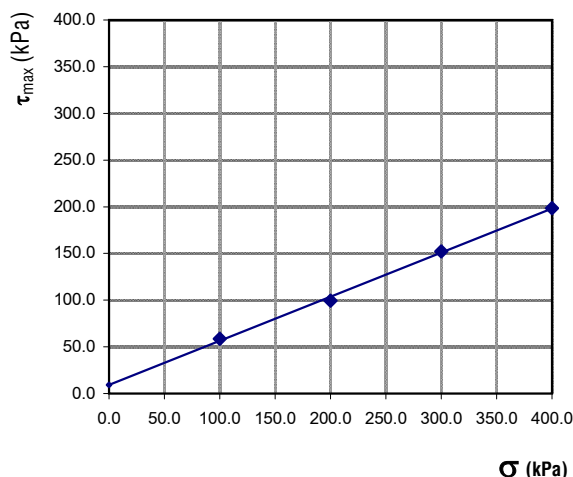


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.7	1.686	58.5
200	59.3	1.678	99.5
300	87.7	1.736	152.2
400	114.1	1.739	198.4

$\tan \phi = 0.4724$   $\phi = 25^\circ 17'$  C 9.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK15

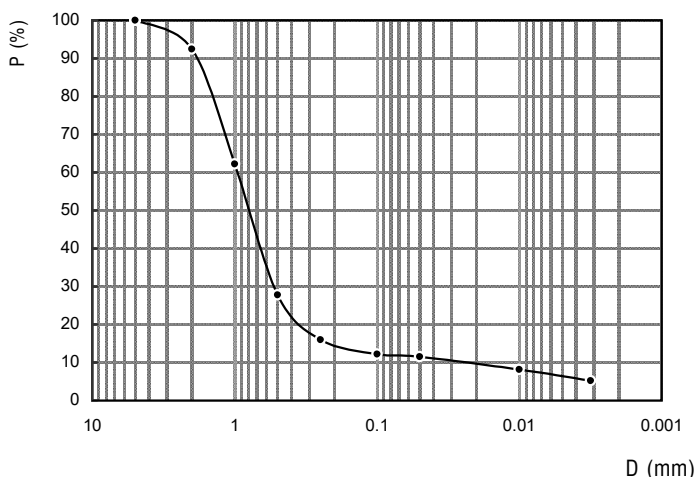
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.03	19.3	15.9	83.1	40.2	0.673	26.6	24.00	18.52	5.48	0.46

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	90.06g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.968	0.532	0.025	11.7	38.7

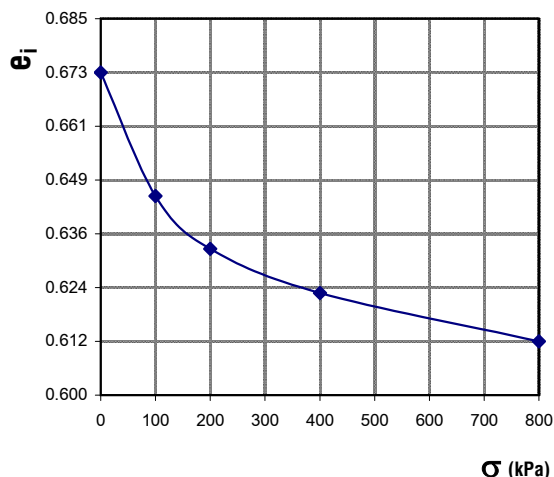
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	7.6	100.0
20.0		Cát/Sand	2-1	30.2	92.4
10.0			1-0.5	34.4	62.2
5.0			0.5-0.25	11.8	27.8
2.0	6.82		0.25-0.1	3.8	16.0
1.0	27.17		0.1-0.05	0.7	12.2
0.5	30.98	Bụi/Silt	0.05-0.01	3.3	11.5
0.25	10.61		0.01-0.005	1.8	8.2
0.1	3.44	Sét/Clay	<0.005	6.4	6.4



## Thí nghiệm nén lún/Compression test

$m_k = 3.59$  Hộp nén số/Test box No.: 23  $e_0 = 0.673$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 90.2  $h_0 = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.673			
100	40.0	8.1	0.645	0.028	5975.0	15851.1
200	58.0	11.2	0.633	0.012	13708.3	36366.8
400	71.0	13.0	0.623	0.005	32660.0	86643.7
800	88.0	17.2	0.612	0.003	54100.0	143521.9

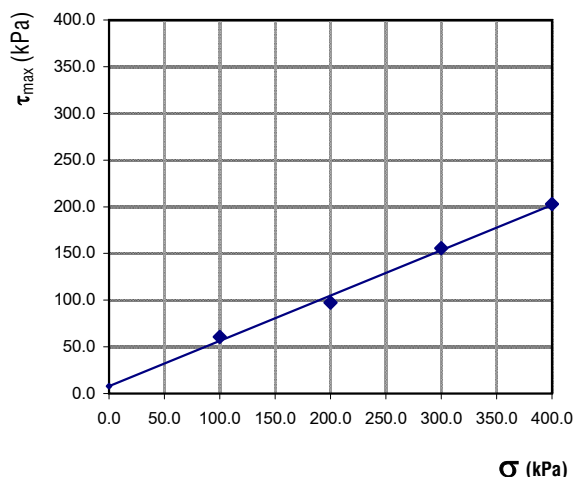


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.0	1.686	60.7
200	58.1	1.678	97.5
300	89.7	1.736	155.7
400	116.7	1.739	202.9

$\tan \phi = 0.4848$   $\phi = 25^\circ 52'$  C 8.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK15

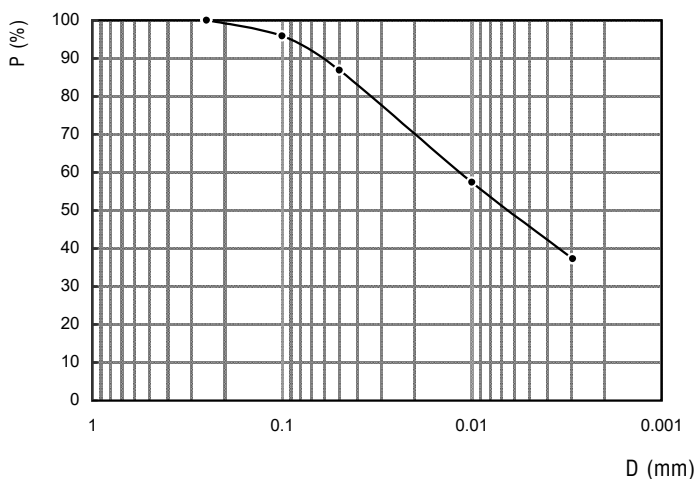
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu hồng, trạng thái dẻo cứng / Stiff, pinkish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	30.48	18.8	14.4	92.5	47.4	0.903	27.4	42.84	23.21	19.63	0.37

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	33.58g	0.011	*	*	*
						30.0°C				

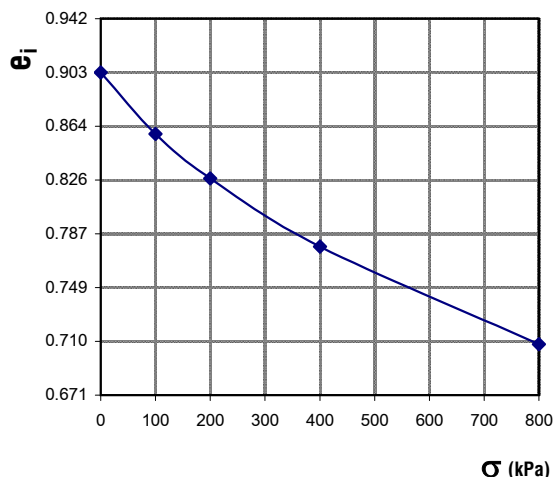
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0			10-5		100.0
10.0			5-2		100.0
5.0		Cát/Sand	2-1		100.0
2.0			1-0.5		100.0
1.0			0.5-0.25		100.0
0.5			0.25-0.1	4.1	100.0
0.25		Bụi/Silt	0.1-0.05	9.0	95.9
0.1	1.37		0.05-0.01	29.5	86.9
			0.01-0.005	12.7	57.4
		Sét/Clay	<0.005	44.7	44.7



## Thí nghiệm nén lún/Compression test

$m_k = 5.62$  Hộp nén số/Test box No.: 24  $e_0 = 0.903$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 220.4  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.903			
100	52.0	7.4	0.859	0.044	4325.0	9714.0
200	88.0	10.2	0.827	0.032	5809.4	13047.9
400	140.0	12.3	0.778	0.025	7308.0	16413.8
800	215.0	15.5	0.708	0.018	9877.8	22185.5

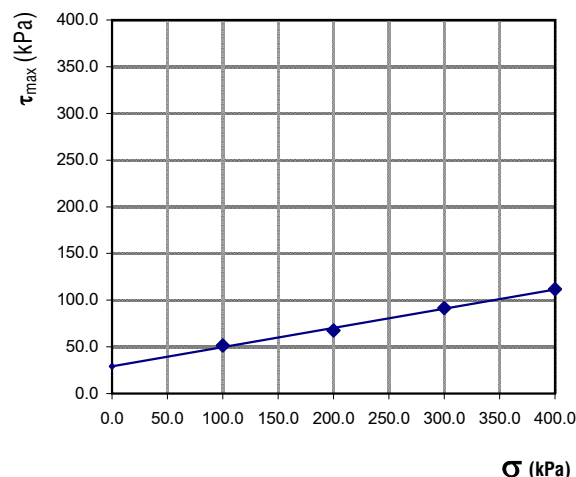


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.5	1.686	51.4
200	40.3	1.678	67.6
300	52.7	1.736	91.5
400	64.3	1.739	111.8

$\tan \phi = 0.2051$   $\phi = 11^\circ 35'$  C 29.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK15

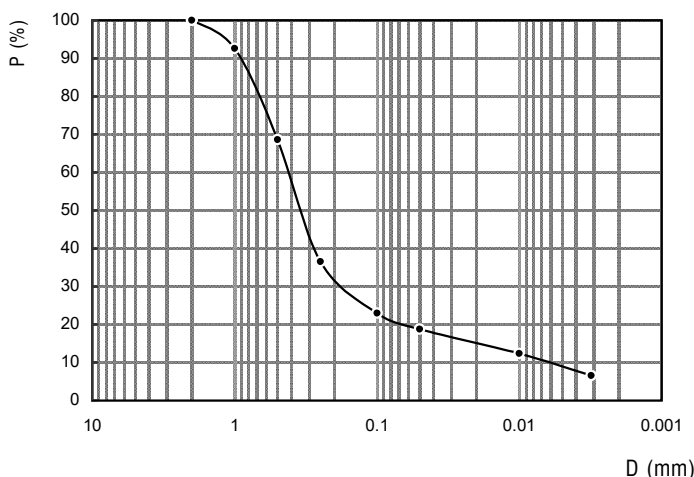
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.60	20.2	16.7	92.4	37.2	0.593	26.6	23.57	17.82	5.75	0.48

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	96.19g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.433	0.178	0.006	12.2	72.2

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	7.4	100.0
10.0			1-0.5	24.0	92.6
5.0			0.5-0.25	32.1	68.6
2.0			0.25-0.1	13.5	36.5
1.0	7.14		0.1-0.05	4.2	23.0
0.5	23.10	Bụi/Silt	0.05-0.01	6.4	18.8
0.25	30.90		0.01-0.005	3.4	12.4
0.1	13.00	Sét/Clay	<0.005	9.0	9.0



## Thí nghiệm nén lún/Compression test

$m_k = 3.99$  Hộp nén số/Test box No.: 25  $e_0 = 0.593$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 99.4  $h_p = 20\text{mm}$

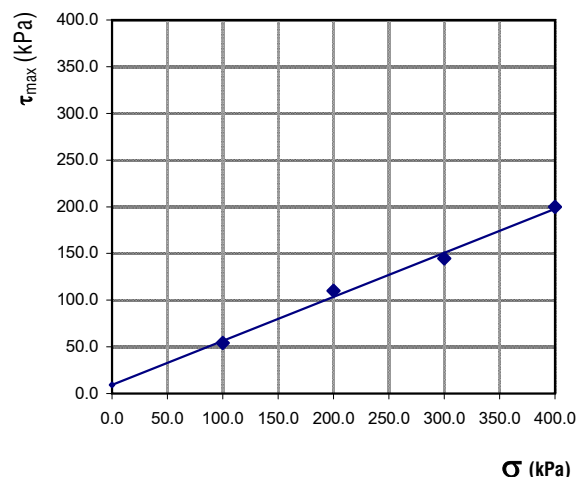
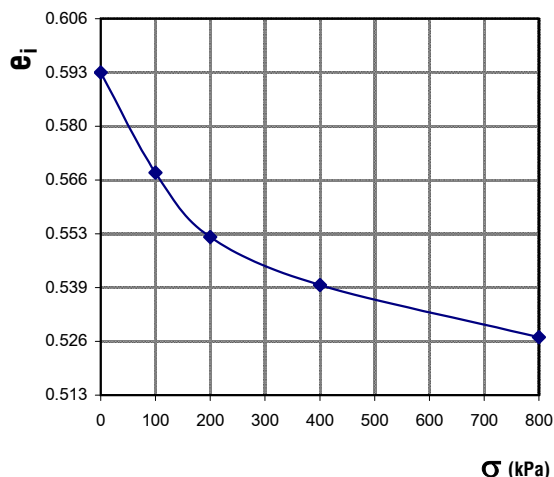
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.593			
100	38.0	6.9	0.568	0.025	6372.0	18814.0
200	61.0	10.4	0.552	0.016	9800.0	28935.5
400	77.0	12.7	0.540	0.006	25866.7	76373.9
800	97.0	16.4	0.527	0.003	51333.3	151566.8

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.2	1.686	54.3
200	65.5	1.678	109.9
300	83.3	1.736	144.6
400	114.9	1.739	199.8

$\tan \phi = 0.4712$   $\phi = 25^\circ 14'$  C 9.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK15

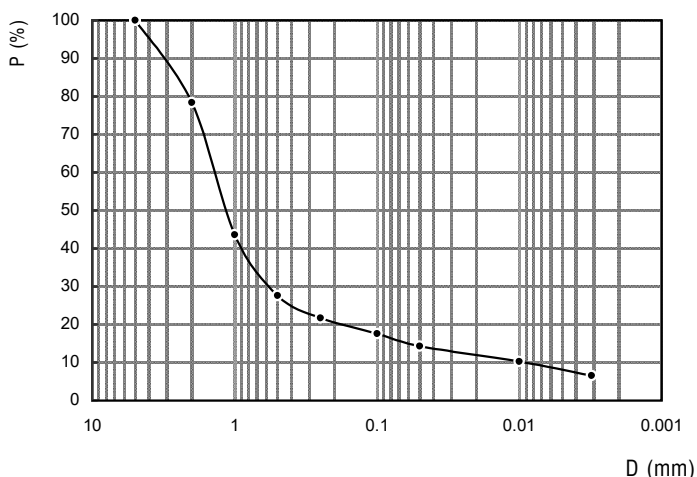
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát lẫn sỏi sạn thạch anh, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand with quartz gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	18.93	20.0	16.8	85.8	37.1	0.589	26.7	21.66	16.31	5.35	0.49

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	96.12g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	1.471	0.575	0.009	25.0	163.4

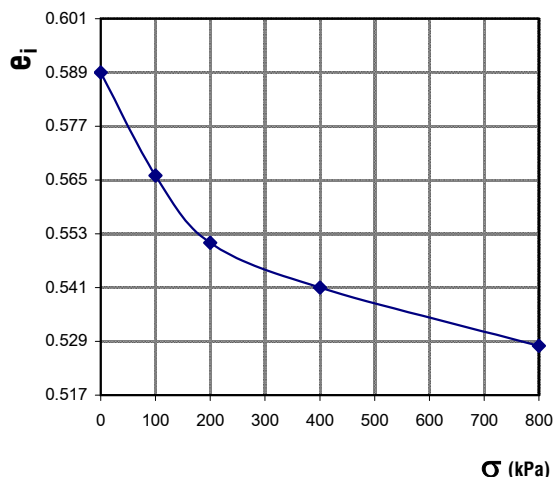
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-20}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)				
20.0		Sỏi sạn/Gravel	>10		100.0
10.0			10-5		100.0
5.0			5-2	21.6	100.0
2.0	20.73	Cát/Sand	2-1	34.8	78.4
1.0	33.46		1-0.5	16.0	43.6
0.5	15.36		0.5-0.25	5.9	27.6
0.25	5.70		0.25-0.1	4.1	21.7
0.1	3.98		0.1-0.05	3.3	17.6
		Bụi/Silt	0.05-0.01	4.0	14.3
			0.01-0.005	1.7	10.3
		Sét/Clay	<0.005	8.6	8.6



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 26  $e_0 = 0.589$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 92.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.589			
100	36.0	7.6	0.566	0.023	6908.7	20424.2
200	57.0	10.6	0.551	0.015	10440.0	30863.8
400	72.0	12.6	0.541	0.005	31020.0	91704.4
800	90.0	15.4	0.528	0.003	51366.7	151855.3

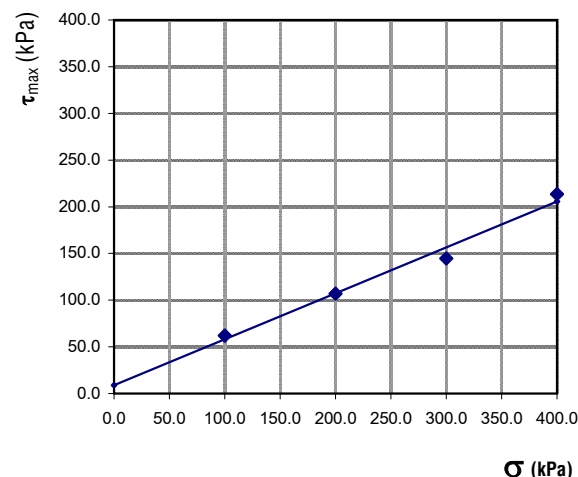


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.7	1.686	61.9
200	63.8	1.678	107.1
300	83.3	1.736	144.6
400	122.7	1.739	213.4

$\tan \phi = 0.4920$   $\phi = 26^\circ 12'$  C 8.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK15

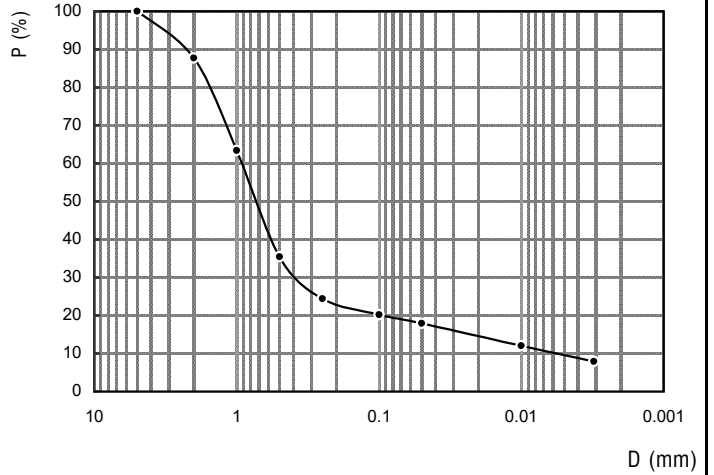
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Un dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.80	20.0	16.6	91.9	37.6	0.602	26.6	23.11	18.27	4.84	0.52

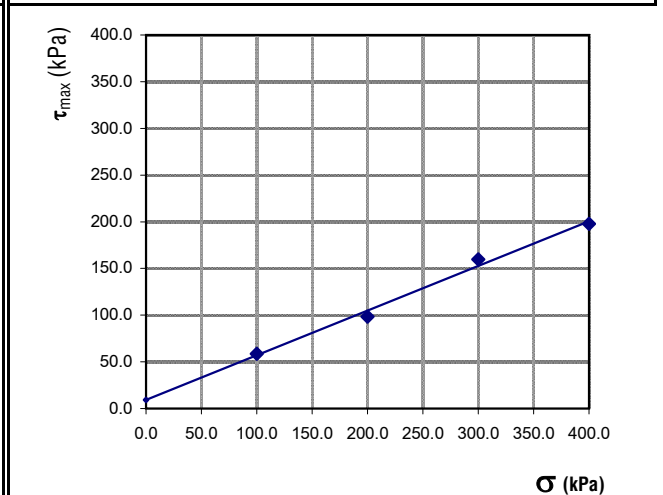
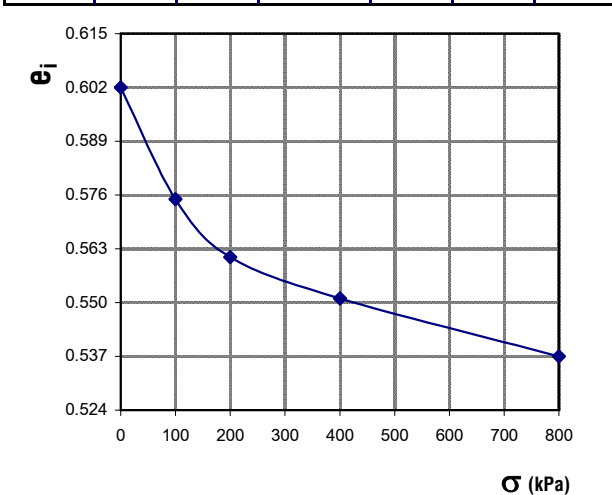
KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	100.17g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.939	0.377	0.006	25.2	156.5

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	12.3	100.0
20.0		Cát/Sand	2-1	24.3	87.7
10.0			1-0.5	28.0	63.4
5.0			0.5-0.25	11.0	35.4
2.0	12.30		0.25-0.1	4.2	24.4
1.0	24.30		0.1-0.05	2.3	20.2
0.5	28.00	Bụi/Silt	0.05-0.01	5.9	17.9
0.25	11.00		0.01-0.005	2.4	12.0
0.1	4.20	Sét/Clay	<0.005	9.6	9.6



Thí nghiệm nén lún/Compression test						
$m_v = 3.95$	Hộp nén số/Test box No.:	27	$e_0 = 0.602$			
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h:	96.4	$h_p = 20\text{mm}$			
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.602			
100	41.0	7.8	0.575	0.027	5933.3	17321.2
200	60.0	10.2	0.561	0.014	11250.0	32842.1
400	75.0	13.1	0.551	0.005	31220.0	91140.5
800	94.0	15.5	0.537	0.004	38775.0	113195.9

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.8	1.686	58.7
200	58.7	1.678	98.5
300	92.0	1.736	159.7
400	113.7	1.739	197.7
$\tan \varphi = 0.4782$ $\varphi = 25^\circ 33'$ C      9.1 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK15

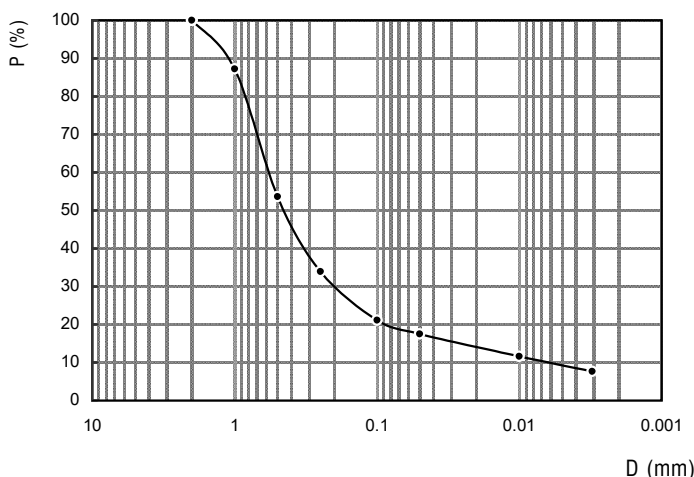
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.83	19.9	16.3	90.8	39.2	0.644	26.8	24.72	18.99	5.73	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	101.89g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.595	0.204	0.007	10.0	85.0

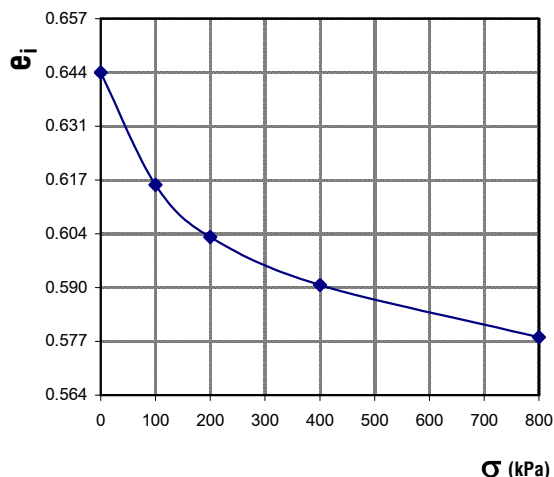
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)				
20.0			>10		100.0
10.0			10-5		100.0
5.0			5-2		100.0
2.0			2-1	12.8	100.0
1.0	13.00		1-0.5	33.6	87.2
0.5	34.20		0.5-0.25	19.7	53.6
0.25	20.10		0.25-0.1	12.8	33.9
0.1	13.00		0.1-0.05	3.6	21.1
			0.05-0.01	5.9	17.5
			0.01-0.005	2.6	11.6
			<0.005	9.0	9.0



## Thí nghiệm nén lún/Compression test

$m_k = 3.74$  Hộp nén số/Test box No.: 28  $e_0 = 0.644$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 96.4  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.644			
100	41.0	8.3	0.616	0.028	5871.4	16228.0
200	60.0	11.3	0.603	0.013	12430.8	34357.4
400	75.0	13.0	0.591	0.006	26716.7	73842.2
800	94.0	16.1	0.578	0.003	53033.3	146578.8

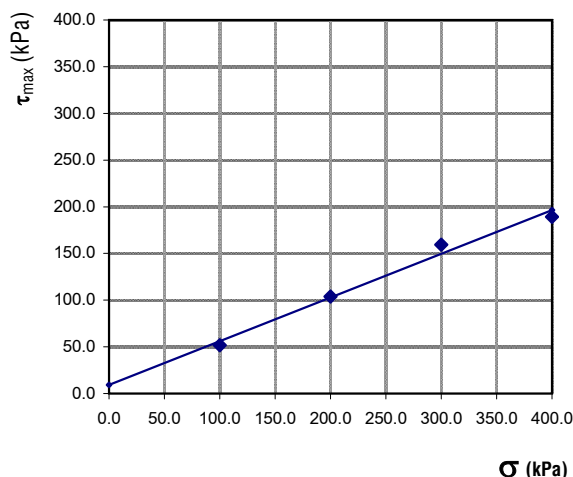


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	30.8	1.686	51.9
200	62.0	1.678	104.0
300	91.9	1.736	159.5
400	108.8	1.739	189.2

$\tan \phi = 0.4674$   $\phi = 25^\circ 03'$  C 9.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK15-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK15

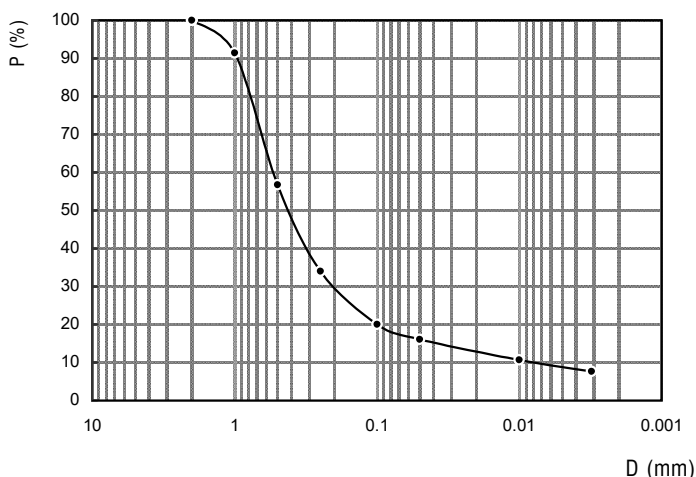
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	21.00	19.3	16.0	84.3	39.8	0.663	26.6	23.95	18.72	5.23	0.44

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	92.56g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.548	0.207	0.008	9.8	68.5

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	8.6	100.0
10.0			1-0.5	34.7	91.4
5.0			0.5-0.25	22.7	56.7
2.0			0.25-0.1	14.0	34.0
1.0	8.00		0.1-0.05	3.9	20.0
0.5	32.10	Bụi/Silt	0.05-0.01	5.4	16.1
0.25	21.00		0.01-0.005	1.8	10.7
0.1	13.00	Sét/Clay	<0.005	8.9	8.9



## Thí nghiệm nén lún/Compression test

$m_v = 3.67$  Hộp nén số/Test box No.: 29  $e_0 = 0.663$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 107.6  $h_0 = 20\text{mm}$

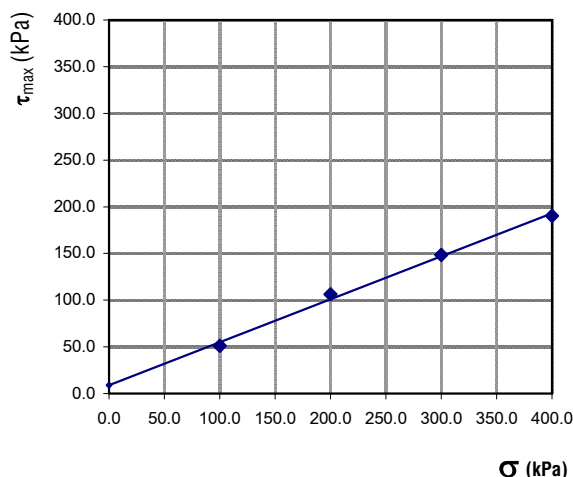
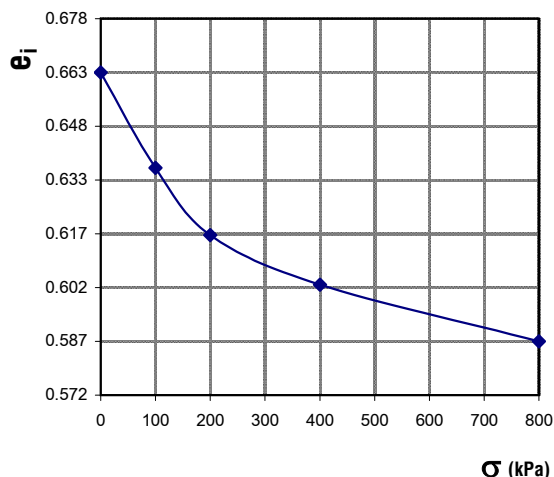
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.663			
100	41.0	8.6	0.636	0.027	6159.3	16704.5
200	65.0	11.6	0.617	0.019	8610.5	23352.6
400	83.0	13.3	0.603	0.007	23100.0	62649.5
800	105.0	16.2	0.587	0.004	40075.0	108687.4

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	30.2	1.686	50.9
200	63.4	1.678	106.4
300	85.5	1.736	148.4
400	109.4	1.739	190.2

$\tan \phi = 0.4599$   $\phi = 24^\circ 42'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-1

Độ sâu/Depth: 1.8 - 2.0 m

Hố khoan/Borehole: HK16

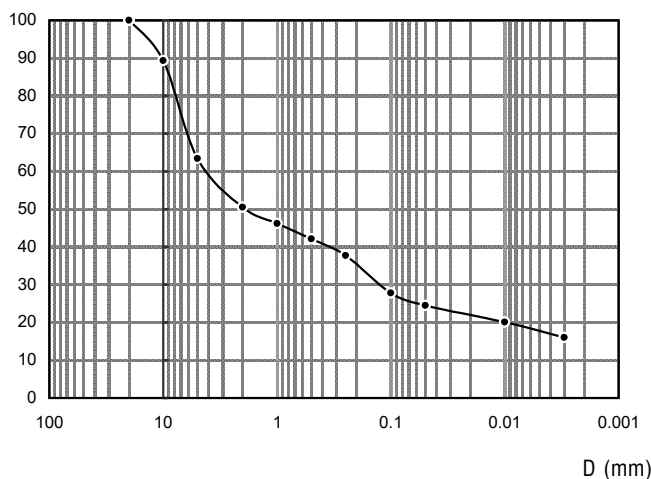
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét lẫn dăm sạn laterit, nâu đỏ, trạng thái dẻo cứng / Stiff, reddish brown, Sandy clay with laterite gravels

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.83	20.0	16.4	91.2	39.3	0.646	27.0	31.11	17.97	13.14	0.29

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
					68.87g					
					Nhiệt độ TN/Temp.	30.0°C	4.209	0.133	*	*

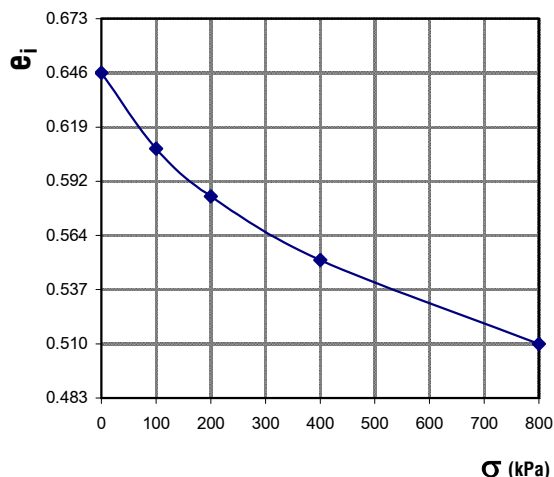
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10	10.7	100.0
20.0			10-5	25.9	89.3
10.0	7.40		5-2	12.9	63.4
5.0	17.81	Cát/Sand	2-1	4.3	50.5
2.0	8.87		1-0.5	4.1	46.2
1.0	2.97		0.5-0.25	4.4	42.1
0.5	2.81		0.25-0.1	9.9	37.7
0.25	3.06	Bụi/Silt	0.1-0.05	3.3	27.8
0.1	6.80		0.05-0.01	4.4	24.5
			0.01-0.005	2.3	20.1
		Sét/Clay	<0.005	17.8	17.8



## Thí nghiệm nén lún/Compression test

$m_k = 4.83$  Hộp nén số/Test box No.: 1  $e_0 = 0.646$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 182.5  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.646			
100	53.0	8.4	0.608	0.038	4331.6	12971.3
200	85.0	11.9	0.584	0.024	6700.0	20063.8
400	124.2	13.7	0.552	0.016	9900.0	29646.5
800	178.0	17.6	0.510	0.011	14109.1	42251.1

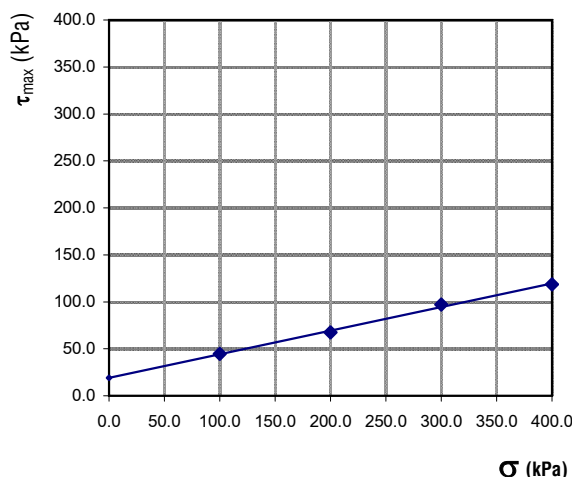


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	26.4	1.686	44.5
200	40.2	1.678	67.5
300	55.9	1.736	97.0
400	68.1	1.739	118.4

$\tan \phi = 0.2512$   $\phi = 14^\circ 06'$  C 19.1 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-2

Độ sâu/Depth: 3.8 - 4.0 m

Hố khoan/Borehole: HK16

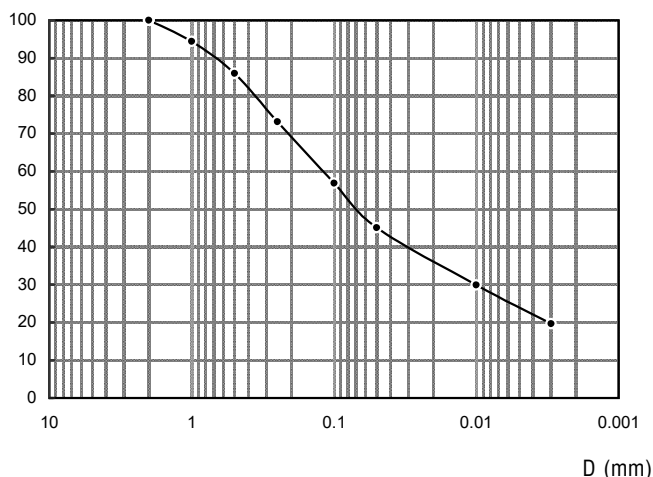
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng - nâu đỏ, trạng thái dẻo cứng / Stiff, whitish grey - reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	26.17	19.1	15.1	88.4	44.7	0.808	27.3	38.91	18.30	20.61	0.38

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	55.66g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.129	0.010	*	*	*

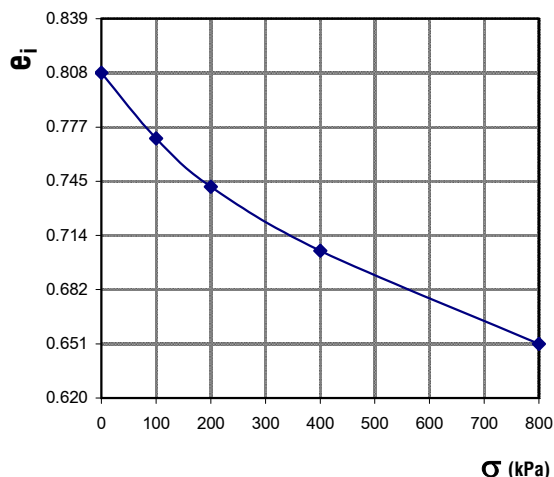
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	5.6	100.0
10.0			1-0.5	8.5	94.4
5.0			0.5-0.25	12.8	85.9
2.0			0.25-0.1	16.2	73.1
1.0	3.10		0.1-0.05	11.8	56.9
0.5	4.74	Bụi/Silt	0.05-0.01	15.2	45.1
0.25	7.14		0.01-0.005	5.8	29.9
0.1	9.00	Sét/Clay	<0.005	24.1	24.1



## Thí nghiệm nén lún/Compression test

$m_k = 4.04$  Hộp nén số/Test box No.: 2  $e_0 = 0.808$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 192.7  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.808			
100	51.0	9.8	0.770	0.038	4757.9	11917.6
200	84.0	13.3	0.742	0.028	6321.4	15833.9
400	126.3	15.5	0.705	0.019	9168.4	22965.1
800	188.0	19.1	0.651	0.014	12178.6	30504.9

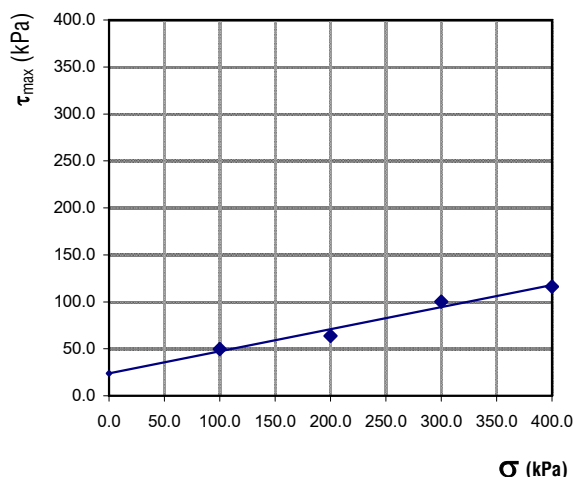


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.6	1.686	49.9
200	38.0	1.678	63.8
300	57.7	1.736	100.2
400	66.9	1.739	116.3

$\tan \phi = 0.2356$   $\phi = 13^\circ 15'$  C 23.7 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-3

Độ sâu/Depth: 5.8 - 6.0 m

Hố khoan/Borehole: HK16

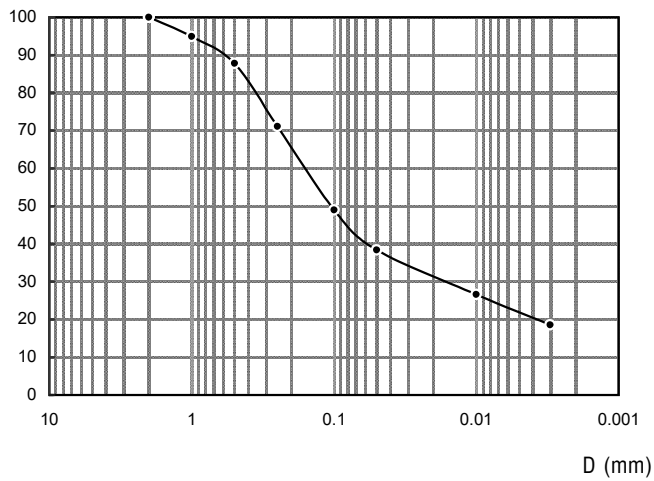
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng - nâu đỏ, trạng thái dẻo cứng / Stiff, whitish grey - reddish brown, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	24.27	19.3	15.5	87.9	42.8	0.748	27.1	32.23	18.72	13.51	0.41

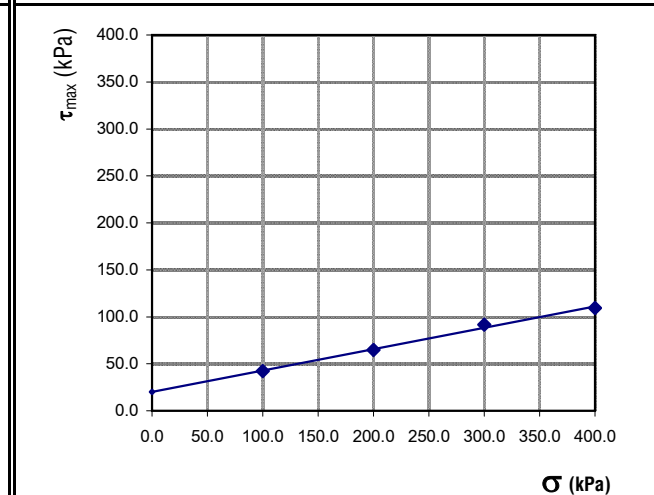
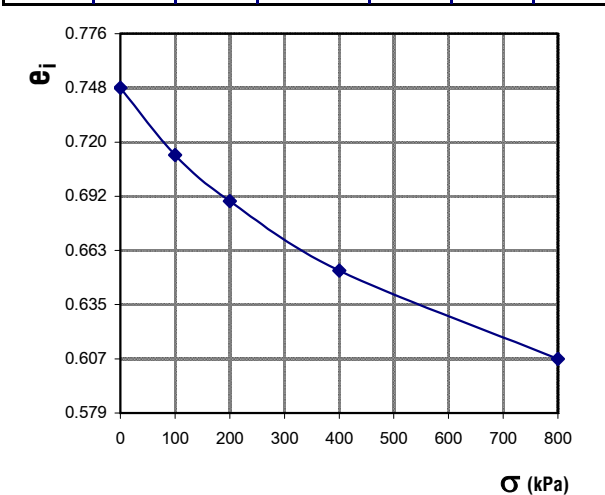
KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
	50.70g					
	Nhiệt độ TN/Temp.	30.0°C	0.175	0.017	*	*

Khối lượng đất Mass of soil >0.1mm	Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)			
20.0		>10		100.0
10.0		10-5		100.0
5.0		5-2		100.0
2.0		2-1	5.1	100.0
1.0		1-0.5	7.1	94.9
0.5		0.5-0.25	16.7	87.8
0.25		0.25-0.1	22.1	71.1
0.1		0.1-0.05	10.6	49.0
		0.05-0.01	11.8	38.4
		0.01-0.005	5.4	26.6
		Sét/Clay	<0.005	21.2



Thí nghiệm nén lún/Compression test						
$m_k$ = 4.31	Hộp nén số/Test box No.:		3	$e_0$ : 0.748		
$\beta$ = 0.62	Số đọc sau 24h/Reading after 24h:		179.4	$h_0$ : 20mm		
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0$ = $E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.748			
100	48.0	9.1	0.713	0.035	4994.3	13330.2
200	78.0	12.6	0.689	0.024	7137.5	19050.7
400	121.0	14.7	0.653	0.018	9383.3	25045.1
800	175.0	18.6	0.607	0.012	13775.0	36766.9

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.1	1.686	42.3
200	38.7	1.678	64.9
300	52.9	1.736	91.8
400	62.8	1.739	109.2
$\tan \phi = 0.2276$ $\phi = 12^\circ 49'$ C      20.2 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-4

Độ sâu/Depth: 7.8 - 8.0 m

Hố khoan/Borehole: HK16

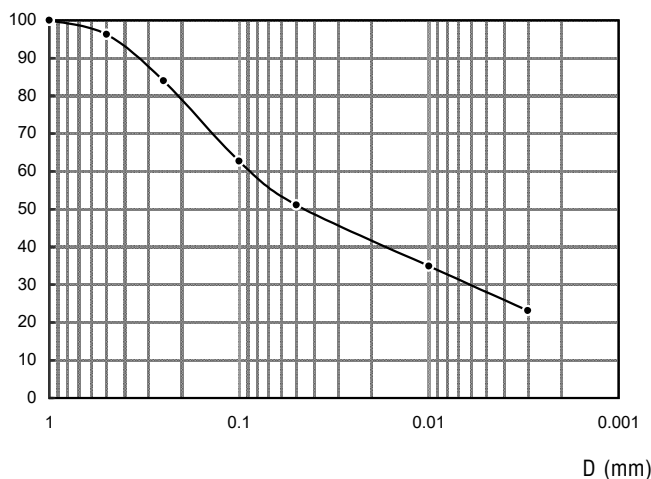
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, xám trắng, trạng thái dẻo cứng / Stiff, whitish grey, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	22.53	19.2	15.7	84.5	41.9	0.720	27.0	30.52	18.61	11.91	0.33

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	47.83g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.089	0.006	*	*	*

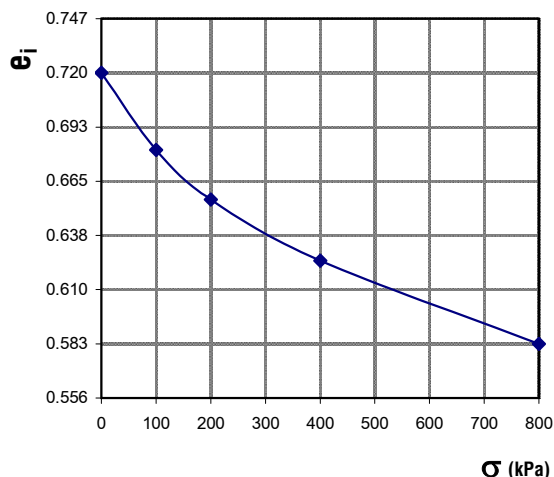
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand/Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	3.7	100.0
5.0			0.5-0.25	12.3	96.3
2.0			0.25-0.1	21.3	84.0
1.0			0.1-0.05	11.6	62.7
0.5	1.75	Bụi/Silt	0.05-0.01	16.2	51.1
0.25	5.90		0.01-0.005	6.6	34.9
0.1	10.20	Sét/Clay	<0.005	28.3	28.3



## Thí nghiệm nén lún/Compression test

$m_k = 4.47$  Hộp nén số/Test box No.: 4  $e_0 = 0.720$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 176.3  $h_p = 20mm$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.720			
100	53.0	8.8	0.681	0.039	4410.3	12222.6
200	84.0	11.9	0.656	0.025	6724.0	18634.9
400	121.0	14.0	0.625	0.016	10350.0	28684.0
800	172.0	17.5	0.583	0.011	14772.7	40941.1

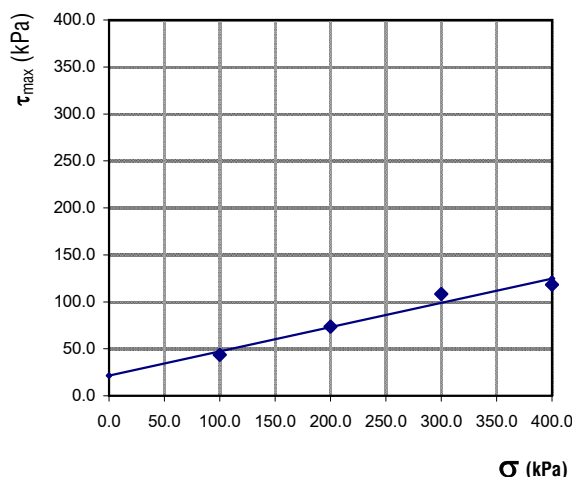


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	25.9	1.686	43.7
200	43.9	1.678	73.7
300	62.3	1.736	108.2
400	67.9	1.739	118.1

$\tan \phi = 0.2577$   $\phi = 14^\circ 27'$  C 21.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-5

Độ sâu/Depth: 9.8 - 10.0 m

Hố khoan/Borehole: HK16

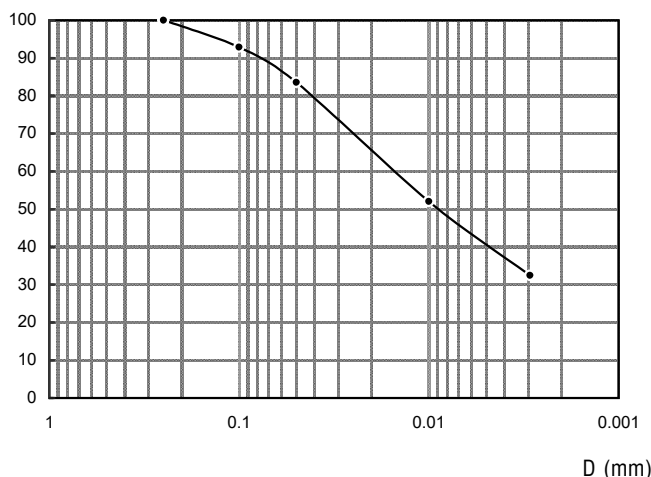
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng, trạng thái dẻo cứng / Stiff, whitish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	25.46	19.7	15.7	94.1	42.5	0.739	27.3	38.84	19.20	19.64	0.32

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	43.55g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.015	*	*	*	*

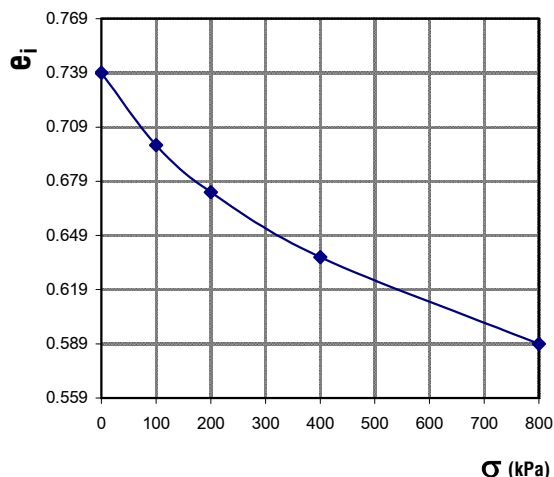
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	7.1	100.0
1.0			0.1-0.05	9.3	92.9
0.5		Bụi/Silt	0.05-0.01	31.6	83.6
0.25			0.01-0.005	13.8	52.0
0.1	3.08	Sét/Clay	<0.005	38.2	38.2



## Thí nghiệm nén lún/Compression test

$m_k = 6.00$  Hộp nén số/Test box No.: 5  $e_0 = 0.739$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 188.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.739			
100	52.0	7.4	0.699	0.040	4347.5	10434.0
200	84.0	10.5	0.673	0.026	6534.6	15683.1
400	126.0	12.6	0.637	0.018	9294.4	22306.7
800	184.0	15.8	0.589	0.012	13641.7	32740.0

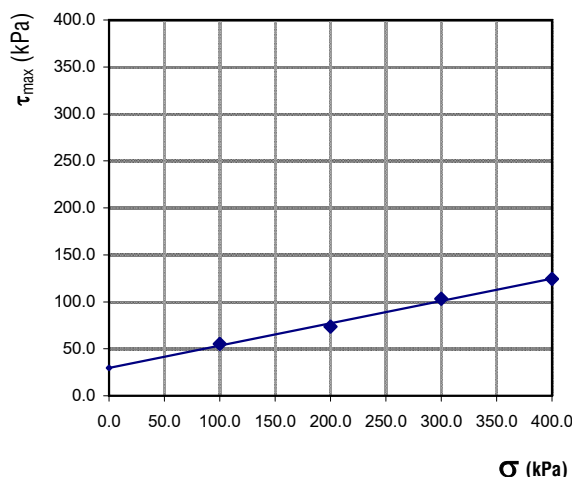


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.7	1.686	55.1
200	43.9	1.678	73.7
300	59.5	1.736	103.3
400	71.6	1.739	124.5

$\tan \phi = 0.2378$   $\phi = 13^\circ 23'$  C 29.7 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-6

Độ sâu/Depth: 11.8 - 12.0 m

Hố khoan/Borehole: HK16

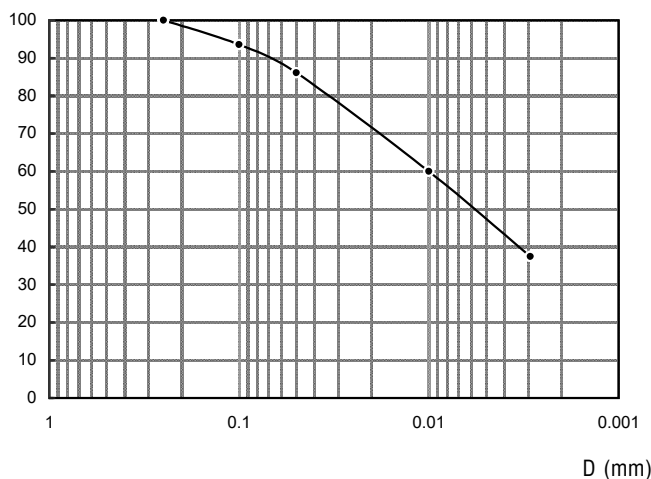
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, xám trắng, trạng thái dẻo cứng / Stiff, whitish grey, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	27.45	19.0	14.9	89.6	45.6	0.839	27.4	45.47	20.36	25.11	0.28

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	37.66g	0.010	*	*	*
						30.0°C				

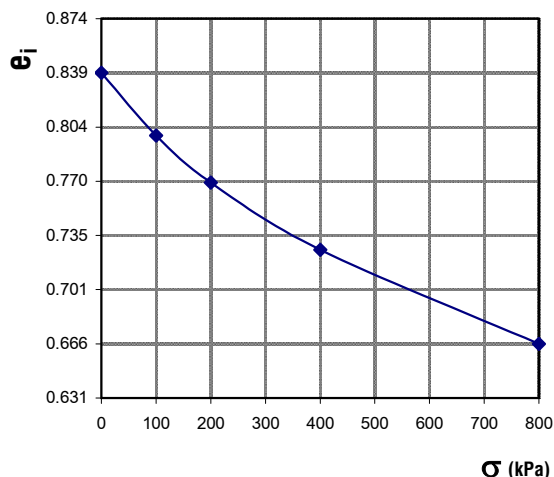
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	6.4	100.0
1.0			0.1-0.05	7.5	93.6
0.5		Bụi/Silt	0.05-0.01	26.1	86.1
0.25			0.01-0.005	15.9	60.0
0.1	2.40	Sét/Clay	<0.005	44.1	44.1



## Thí nghiệm nén lún/Compression test

$m_v = 5.91$  Hộp nén số/Test box No.: 6  $e_0 = 0.839$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 208.1  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_v \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.839			
100	52.4	10.2	0.799	0.040	4597.5	10859.3
200	88.0	14.0	0.769	0.030	5996.7	14164.1
400	135.3	16.1	0.726	0.022	8040.9	18992.6
800	203.0	20.0	0.666	0.015	11506.7	27178.7

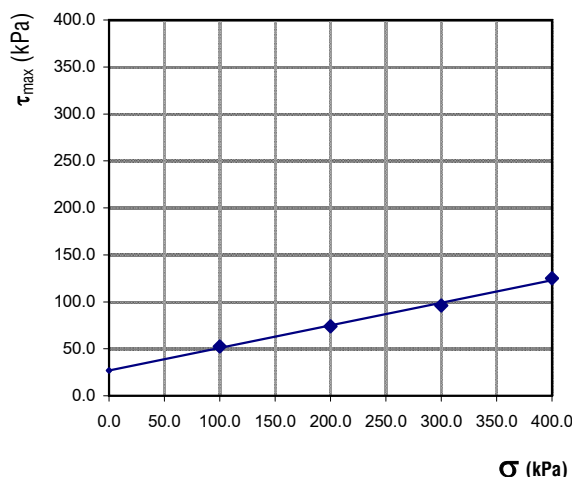


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	31.0	1.686	52.3
200	44.1	1.678	74.0
300	55.3	1.736	96.0
400	71.9	1.739	125.0

$\tan \phi = 0.2401$   $\phi = 13^\circ 30'$  C 26.8 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-7

Độ sâu/Depth: 13.8 - 14.0 m

Hố khoan/Borehole: HK16

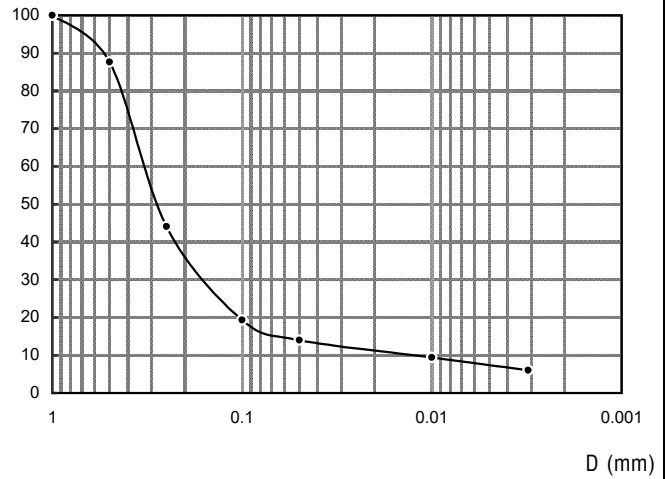
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu đỏ, trạng thái dẻo / Plasticity, reddish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	20.36	20.1	16.7	90.8	37.5	0.599	26.7	23.44	18.08	5.36	0.43

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	105.00g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.341	0.165	0.014	5.7	24.4

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	12.4	100.0
5.0			0.5-0.25	43.5	87.6
2.0			0.25-0.1	24.8	44.1
1.0			0.1-0.05	5.3	19.3
0.5	13.05	Bụi/Silt	0.05-0.01	4.6	14.0
0.25	45.68		0.01-0.005	1.5	9.4
0.1	26.00	Sét/Clay	<0.005	7.9	7.9



## Thí nghiệm nén lún/Compression test

$m_k = 3.99$  Hộp nén số/Test box No.: 7  $e_0 = 0.599$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 104.6  $h_p = 20mm$

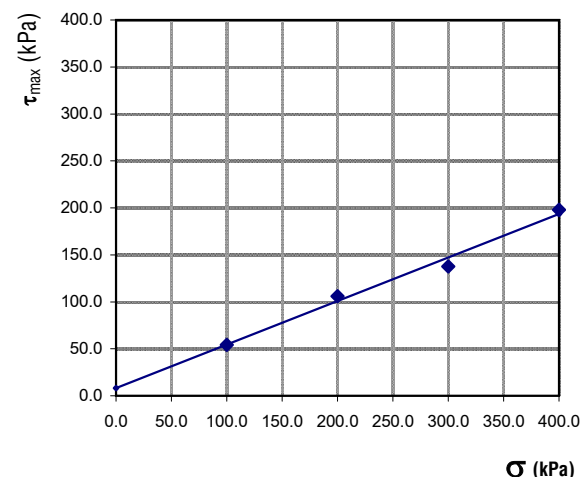
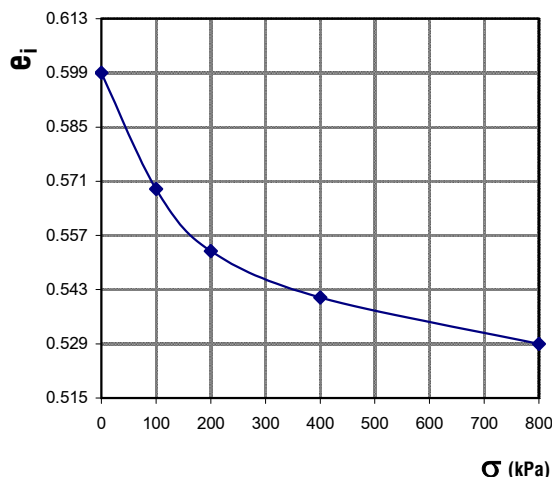
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.599			
100	45.0	8.4	0.569	0.030	5330.0	15717.6
200	68.0	11.9	0.553	0.016	9806.3	28917.7
400	84.0	14.0	0.541	0.006	25883.3	76327.4
800	102.0	17.2	0.529	0.003	51366.7	151475.2

## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	32.2	1.686	54.3
200	63.1	1.678	105.9
300	79.4	1.736	137.8
400	113.8	1.739	197.9

$\tan \phi = 0.4627$   $\phi = 24^\circ 50'$  C 8.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-8

Độ sâu/Depth: 15.8 - 16.0 m

Hố khoan/Borehole: HK16

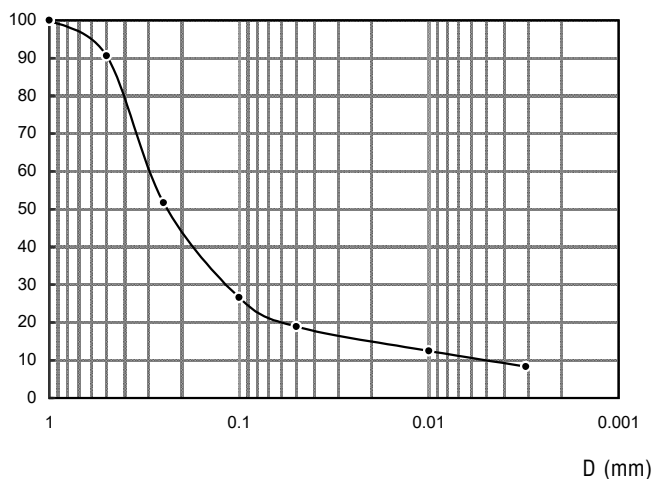
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, xám vàng, trạng thái dẻo / Plasticity, yellowish grey, Clayey sand

Nguyên dạng/Un-dis	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	21.80	19.6	16.1	87.9	39.9	0.665	26.8	24.56	18.79	5.77	0.52

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	95.48g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.303	0.120	0.006	7.9	50.5

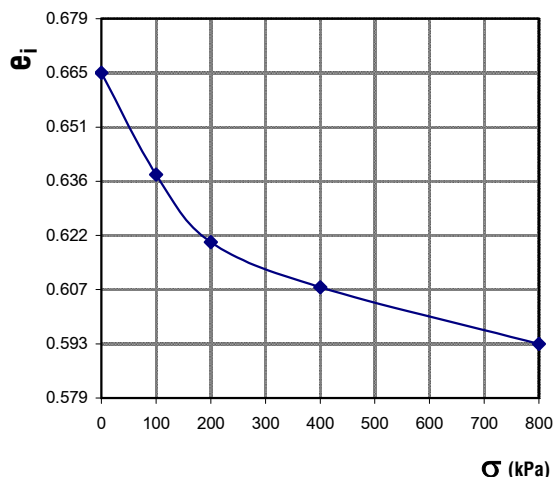
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	D <sub>11-12</sub> (mm)	P <sub>i</sub> %	P %
D (mm)	m <sub>i</sub> (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5	9.4	100.0
5.0			0.5-0.25	38.9	90.6
2.0			0.25-0.1	25.1	51.7
1.0			0.1-0.05	7.7	26.6
0.5	9.00	Bụi/Silt	0.05-0.01	6.4	18.9
0.25	37.18		0.01-0.005	2.9	12.5
0.1	23.98		Sét/Clay	<0.005	9.6



## Thí nghiệm nén lún/Compression test

$m_k = 3.65$  Hộp nén số/Test box No.: 8  $e_0 = 0.665$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 105.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.665			
100	41.0	8.8	0.638	0.027	6166.7	16656.2
200	65.0	12.6	0.620	0.018	9100.0	24579.1
400	81.0	15.1	0.608	0.006	27000.0	72927.0
800	103.0	18.5	0.593	0.004	40200.0	108580.2

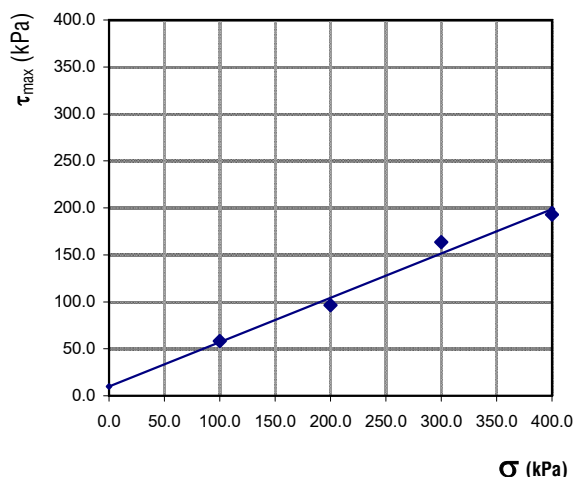


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	34.6	1.686	58.3
200	57.4	1.678	96.3
300	94.1	1.736	163.4
400	111.0	1.739	193.0

$\tan \phi = 0.4712$   $\phi = 25^\circ 14'$  C 10.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-9

Độ sâu/Depth: 17.8 - 18.0 m

Hố khoan/Borehole: HK16

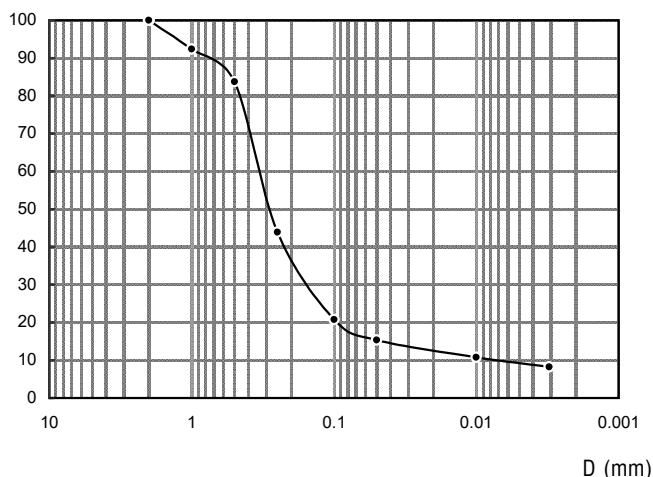
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	22.75	19.5	15.9	89.9	40.2	0.673	26.6	25.68	19.52	6.16	0.52

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	106.72g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.351	0.160	0.007	10.4	50.1

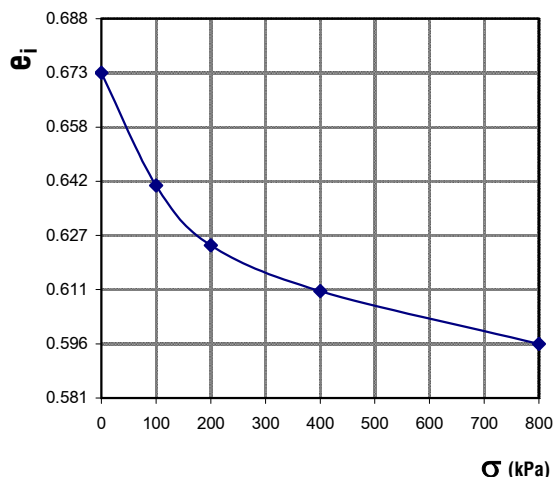
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	D <sub>11-12</sub> (mm)	P <sub>i</sub> %	P %
D (mm)	m <sub>i</sub> (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	7.6	100.0
10.0			1-0.5	8.7	92.4
5.0			0.5-0.25	39.8	83.7
2.0			0.25-0.1	23.1	43.9
1.0	8.10		0.1-0.05	5.5	20.8
0.5	9.26	Bụi/Silt	0.05-0.01	4.5	15.3
0.25	42.49		0.01-0.005	1.6	10.8
0.1	24.63		Sét/Clay	<0.005	9.2



## Thí nghiệm nén lún/Compression test

$m_k = 3.63$  Hộp nén số/Test box No.: 9  $e_0 = 0.673$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 107.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.673			
100	45.0	7.7	0.641	0.032	5228.1	14043.8
200	67.0	10.9	0.624	0.017	9652.9	25929.7
400	84.0	12.6	0.611	0.007	23200.0	62319.8
800	105.0	15.5	0.596	0.004	40275.0	108186.7

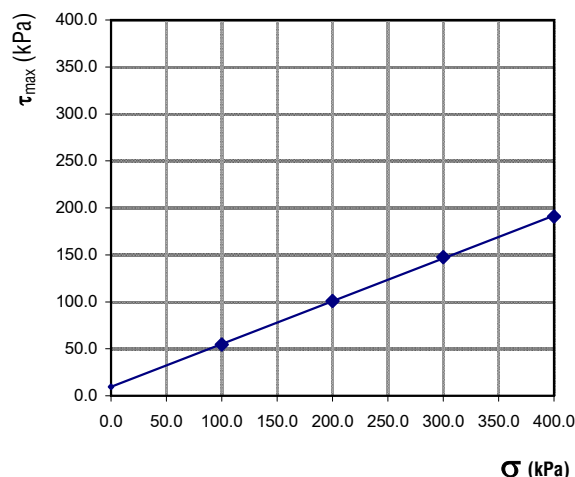


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{\max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	32.4	1.686	54.6
200	60.0	1.678	100.7
300	84.9	1.736	147.4
400	109.8	1.739	190.9

$\tan \phi = 0.4556$   $\phi = 24^\circ 30'$  C 9.5 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-10

Độ sâu/Depth: 19.8 - 20.0 m

Hố khoan/Borehole: HK16

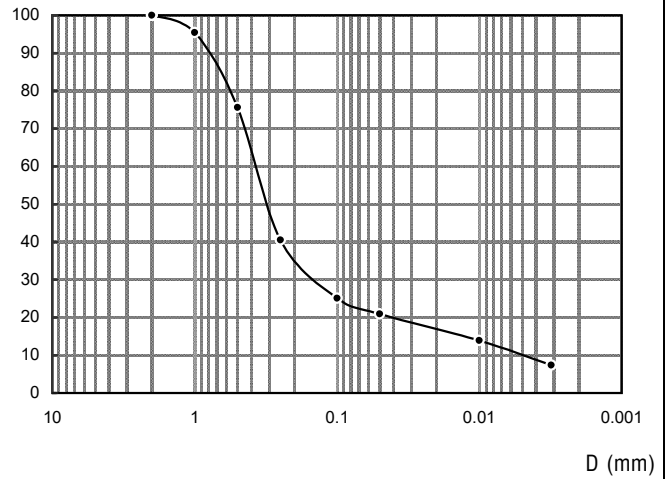
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.34	20.3	17.0	91.1	36.1	0.565	26.6	22.29	16.60	5.69	0.48

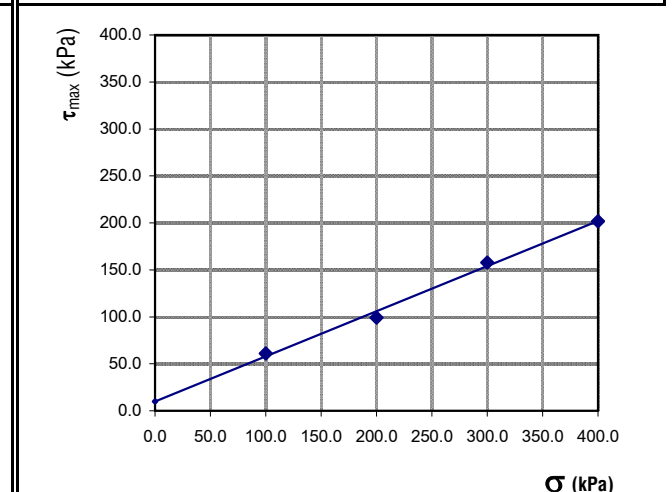
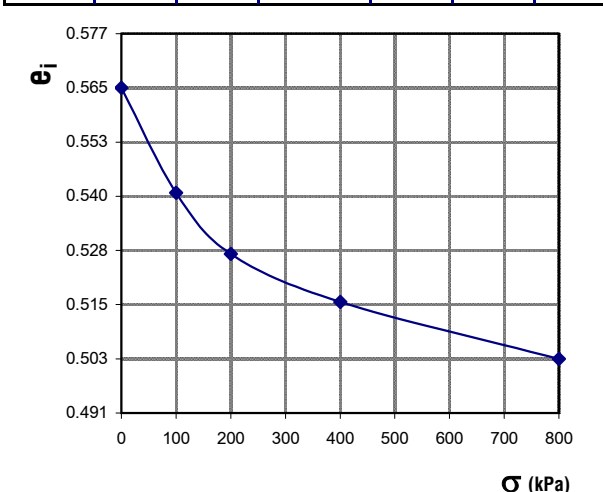
KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	86.31g	$D_{60}(mm)$	$D_{30}(mm)$	$D_{10}(mm)$	$C_c$	$C_u$
					Nhiệt độ TN/Temp.	30.0°C	0.389	0.148	0.005	11.3	77.8

Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	4.6	100.0
10.0			1-0.5	19.8	95.4
5.0			0.5-0.25	35.1	75.6
2.0			0.25-0.1	15.4	40.5
1.0	4.00		0.1-0.05	4.2	25.1
0.5	17.10	Bụi/Silt	0.05-0.01	7.0	20.9
0.25	30.30		0.01-0.005	4.0	13.9
0.1	13.30	Sét/Clay	<0.005	9.9	9.9



Thí nghiệm nén lún/Compression test						
$m_k = 4.00$	Hộp nén số/Test box No.: 10	$e_0 = 0.565$				
$\beta = 0.74$	Số đọc sau 24h/Reading after 24h: 94.3	$h_p = 20mm$				
$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$kPa^{-1} \times 10^{-2}$	kPa	kPa
0			0.565			
100	38.0	7.7	0.541	0.024	6520.8	19301.7
200	58.0	10.5	0.527	0.014	11007.1	32581.1
400	72.0	12.3	0.516	0.006	25450.0	75332.0
800	92.0	15.5	0.503	0.003	50533.3	149578.7

Thí nghiệm cắt phẳng/Direct shear test			
PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test			
Hệ số vòng lực/Proving ring calibration factor: Cr			
$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	36.2	1.686	61.0
200	59.2	1.678	99.3
300	90.8	1.736	157.6
400	116.0	1.739	201.7
$\tan \varphi = 0.4804$ $\varphi = 25^\circ 40'$ C      9.8 kPa			



Đại diện TN/Tested by: Trần Hồng Văn      Xử lý/Computed by: KS. Võ Thanh Long      Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-11

Độ sâu/Depth: 21.8 - 22.0 m

Hố khoan/Borehole: HK16

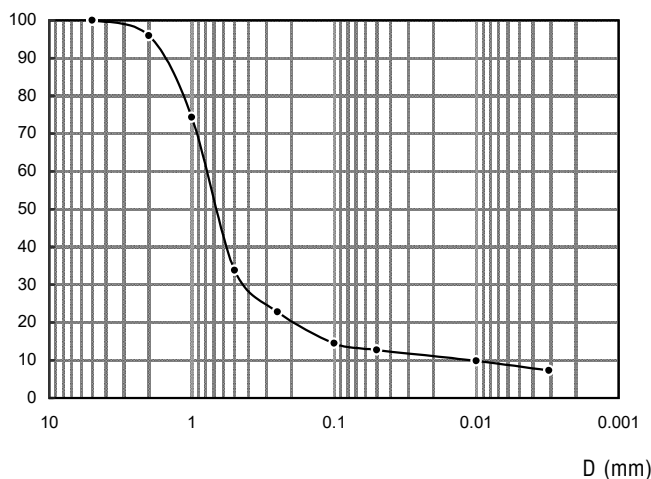
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu vàng, trạng thái dẻo / Plasticity, yellowish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	19.50	20.2	16.9	89.8	36.7	0.580	26.7	22.35	16.61	5.74	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	108.62g	$D_{60}(\text{mm})$	$D_{30}(\text{mm})$	$D_{10}(\text{mm})$	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.823	0.414	0.011	18.9	74.8

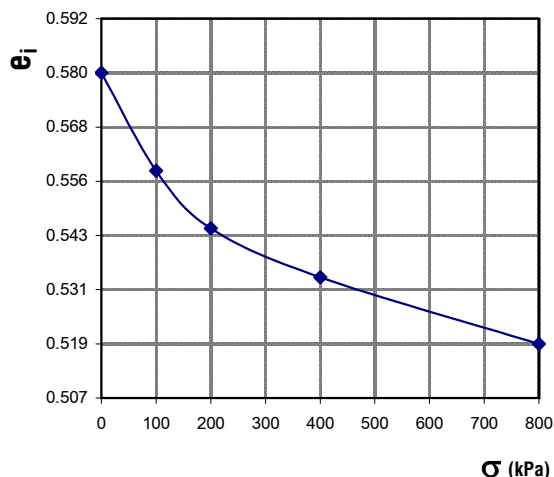
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	4.1	100.0
20.0		Cát/Sand	2-1	21.6	95.9
10.0			1-0.5	40.5	74.3
5.0			0.5-0.25	11.0	33.8
2.0	4.43		0.25-0.1	8.3	22.8
1.0	23.42		0.1-0.05	1.8	14.5
0.5	44.00	Bụi/Silt	0.05-0.01	2.9	12.7
0.25	12.00		0.01-0.005	1.5	9.8
0.1	9.04	Sét/Clay	<0.005	8.3	8.3



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 11  $e_0 = 0.580$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 93.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.580			
100	36.0	8.4	0.558	0.022	7181.8	21258.2
200	54.0	11.2	0.545	0.013	11984.6	35474.5
400	70.0	13.3	0.534	0.006	25750.0	76220.0
800	91.0	16.3	0.519	0.004	38350.0	113516.0

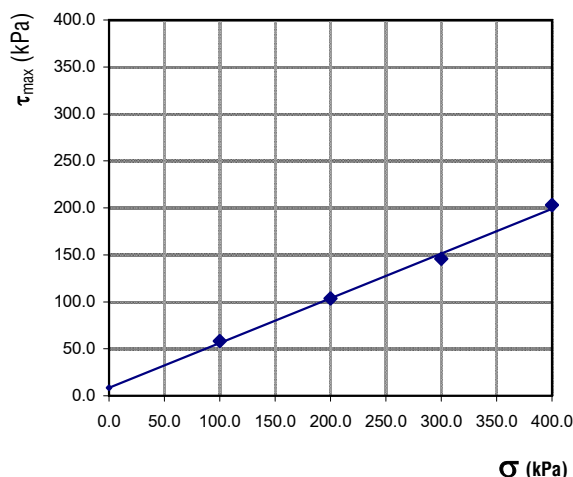


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	$\text{kPa}/0.01\text{mm}$	kPa
100	34.5	1.686	58.2
200	61.8	1.678	103.7
300	84.0	1.736	145.8
400	116.7	1.739	202.9

$\tan \phi = 0.4762$   $\phi = 25^\circ 28'$  C 8.6 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-12

Độ sâu/Depth: 23.8 - 24.0 m

Hố khoan/Borehole: HK16

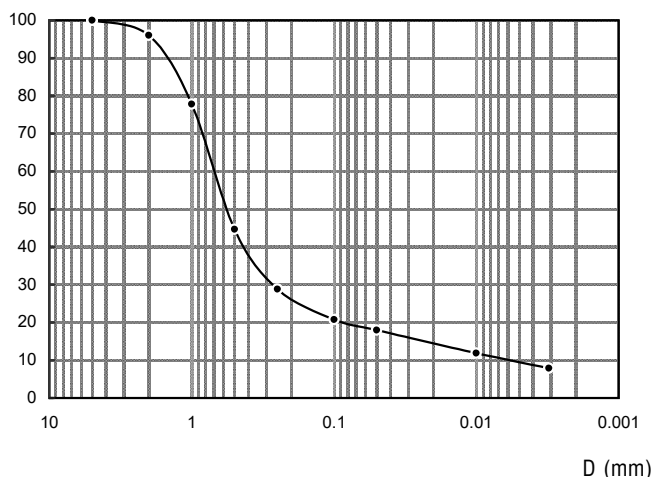
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, nâu vàng, trạng thái dẻo / Plasticity, yellowish brown, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	20.61	20.5	17.0	97.0	36.1	0.565	26.6	23.54	17.72	5.82	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	100.32g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.731	0.269	0.006	16.5	121.8

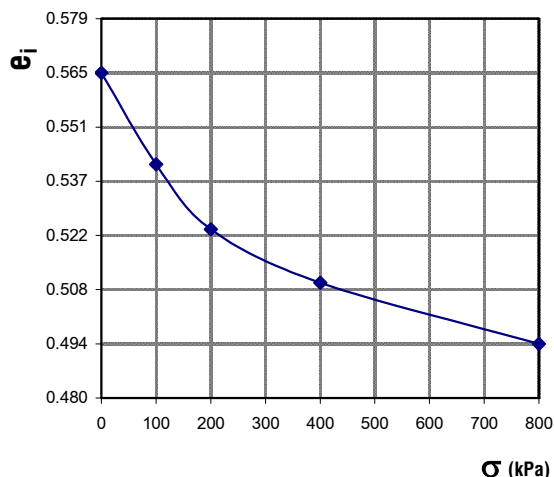
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2	4.0	100.0
Cát/Sand	20.0		2-1	18.2	96.0
	10.0		1-0.5	33.1	77.8
	5.0		0.5-0.25	15.9	44.7
	2.0		0.25-0.1	8.0	28.8
	1.0		0.1-0.05	2.8	20.8
0.5	33.20	Bụi/Silt	0.05-0.01	6.1	18.0
0.25	16.00		0.01-0.005	2.7	11.9
0.1	8.00	Sét/Clay	<0.005	9.2	9.2



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 12  $e_0 = 0.565$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 104.6  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.565			
100	36.0	6.3	0.541	0.024	6520.8	19301.7
200	60.0	9.5	0.524	0.017	9064.7	26831.5
400	80.0	11.6	0.510	0.007	21771.4	64443.4
800	102.0	13.7	0.494	0.004	37750.0	111740.0

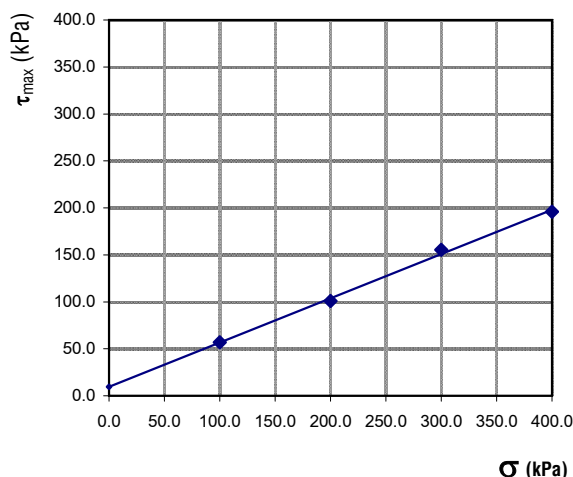


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	33.8	1.686	57.0
200	60.1	1.678	100.8
300	89.5	1.736	155.4
400	112.7	1.739	196.0

$\tan \phi = 0.4716$   $\phi = 25^\circ 15'$  C 9.4 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo





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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-13

Độ sâu/Depth: 25.8 - 26.0 m

Hố khoan/Borehole: HK16

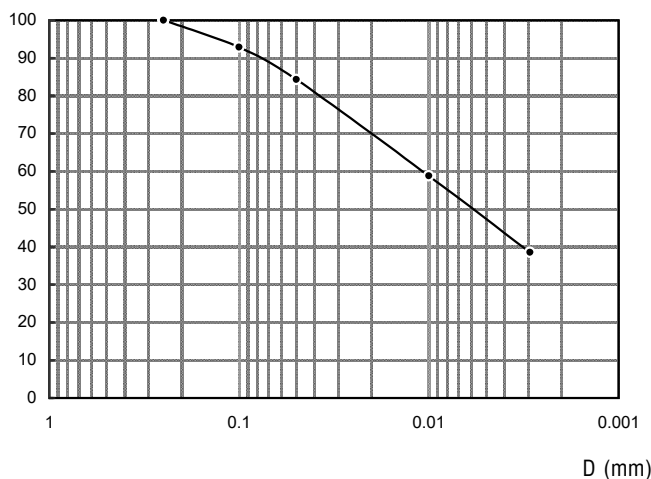
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Sét, nâu hồng, trạng thái dẻo cứng / Stiff, pinkish brown, Clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	27.40	19.0	14.9	89.9	45.4	0.832	27.3	42.45	21.81	20.64	0.27

KQTN HẠT/Test results from sieve-hydrometer analysis				KL đất khô/Dry wei	36.59g	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
				Nhiệt độ TN/Temp.	30.0°C	0.011	*	*	*	*

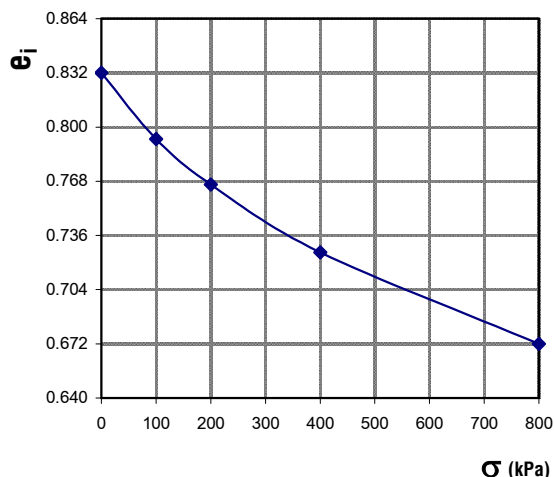
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1		100.0
10.0			1-0.5		100.0
5.0			0.5-0.25		100.0
2.0			0.25-0.1	7.1	100.0
1.0			0.1-0.05	8.6	92.9
0.5		Bụi/Silt	0.05-0.01	25.5	84.3
0.25			0.01-0.005	13.3	58.8
0.1	2.60	Sét/Clay	<0.005	45.5	45.5



## Thí nghiệm nén lún/Compression test

$m_k = 5.92$  Hộp nén số/Test box No.: 13  $e_0 = 0.832$   
 $\beta = 0.40$  Số đọc sau 24h/Reading after 24h: 188.6  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.832			
100	49.0	7.4	0.793	0.039	4697.4	11123.5
200	80.0	10.2	0.766	0.027	6640.7	15725.3
400	124.0	10.9	0.726	0.020	8830.0	20909.4
800	184.0	13.7	0.672	0.014	12328.6	29194.1

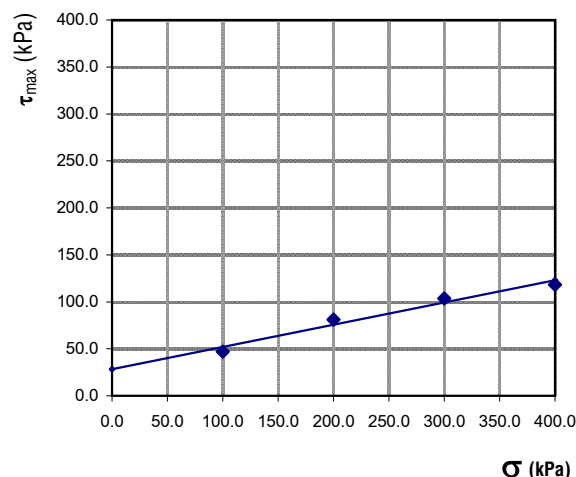


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	27.8	1.686	46.9
200	48.3	1.678	81.0
300	59.7	1.736	103.6
400	68.0	1.739	118.3

$\tan \phi = 0.2368$   $\phi = 13^\circ 19'$  C 28.3 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đậu Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-14

Độ sâu/Depth: 27.8 - 28.0 m

Hố khoan/Borehole: HK16

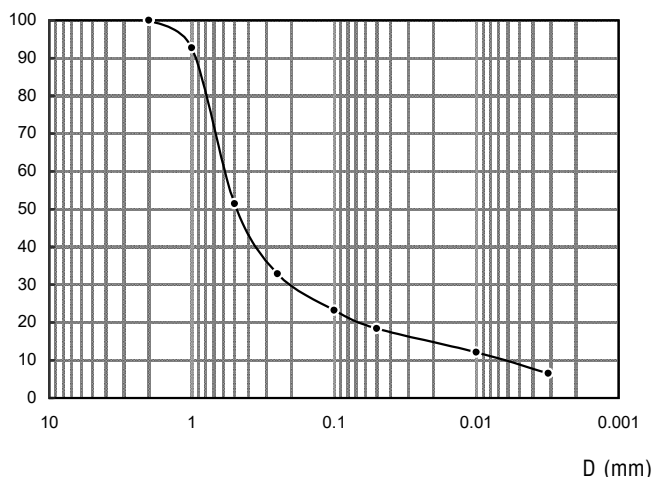
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á cát, vàng nâu, trạng thái dẻo / Plasticity, brownish yellow, Clayey sand

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
	19.01	20.4	17.1	90.9	35.7	0.556	26.6	21.97	16.05	5.92	0.50

KQTN HẠT/Test results from sieve-hydrometer analysis	KL đất khô/Dry wei	98.48g	D <sub>60</sub> (mm)	D <sub>30</sub> (mm)	D <sub>10</sub> (mm)	C <sub>c</sub>	C <sub>u</sub>
	Nhiệt độ TN/Temp.	30.0°C	0.604	0.205	0.007	9.9	86.3

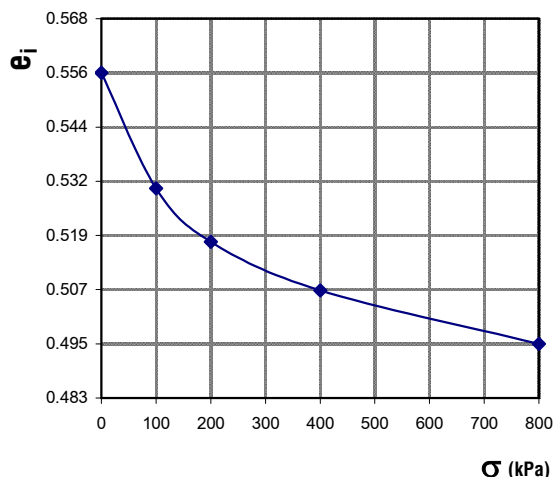
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{10-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
			10-5		100.0
			5-2		100.0
20.0		Cát/Sand	2-1	7.3	100.0
			1-0.5	41.3	92.7
			0.5-0.25	18.5	51.4
			0.25-0.1	9.7	32.9
			0.1-0.05	4.8	23.2
10.0		Bụi/Silt	0.05-0.01	6.3	18.4
5.0			0.01-0.005	3.4	12.1
2.0					
1.0	7.20				
0.5	40.66				
0.25	18.22	Sét/Clay			
0.1	9.60		<0.005	8.7	8.7



## Thí nghiệm nén lún/Compression test

$m_k = 4.00$  Hộp nén số/Test box No.: 14  $e_0 = 0.556$   
 $\beta = 0.74$  Số đọc sau 24h/Reading after 24h: 93.3  $h_p = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.556			
100	40.0	8.1	0.530	0.026	5984.6	17714.5
200	58.0	10.5	0.518	0.012	12750.0	37740.0
400	73.0	11.6	0.507	0.006	25300.0	74888.0
800	91.0	14.8	0.495	0.003	50233.3	148690.7

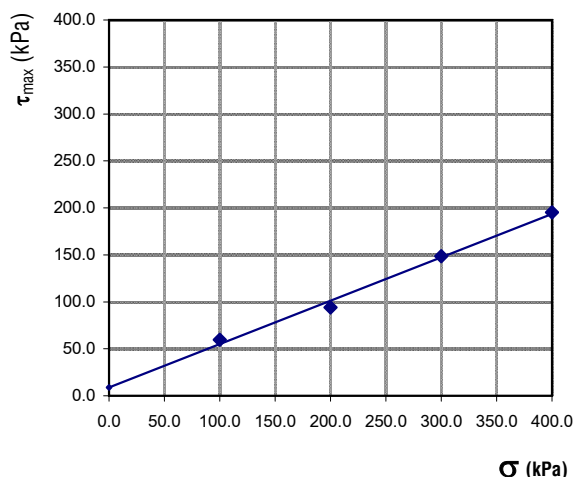


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	35.3	1.686	59.5
200	56.0	1.678	94.0
300	85.5	1.736	148.4
400	112.2	1.739	195.1

$\tan \phi = 0.4612$   $\phi = 24^\circ 46'$  C 9.0 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo



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# PHIẾU KẾT QUẢ THÍ NGHIỆM/TEST RESULT DATA SHEET

TT04-BM16

Công trình/Project: LOGISVALLEY HCMC

Địa điểm/Location: AN PHUOC INDUSTRIAL ZONE, LONG THANH DISTRICT, DONG NAI PROVINCE / AN PHUOC INDUSTRIAL PARK, LONG THANH DISTRICT, DONG NAI PROVINCE

Tên mẫu/Sample: HK16-15

Độ sâu/Depth: 29.8 - 30.0 m

Hố khoan/Borehole: HK16

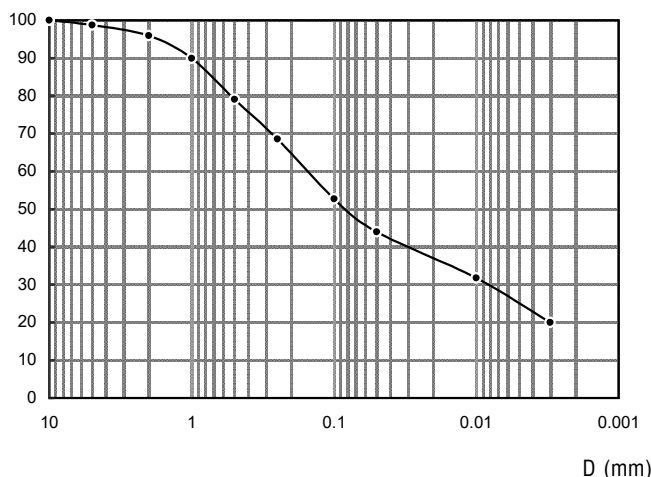
Ngày TN/Date test: 28-09-18

Tên đất/Soil name theo TCVN 9362:2012: Á sét, vàng nâu, trạng thái dẻo cứng / Stiff, brownish yellow, Sandy clay

Nguyên dạng/Undisturbed	W	$\gamma$	$\gamma_d$	$S_r$	n	$e_0$	$G_s$	$W_L$	$W_P$	$I_P$	$I_L$
dis	28.21	19.2	15.0	95.2	44.4	0.800	27.0	34.70	24.69	10.01	0.35

KQTN HẠT/Test results from sieve-hydrometer analysis					KL đất khô/Dry wei	$D_{60}$ (mm)	$D_{30}$ (mm)	$D_{10}$ (mm)	$C_c$	$C_u$
					47.48g					
					Nhiệt độ TN/Temp.	30.0°C	0.169	0.008	*	*

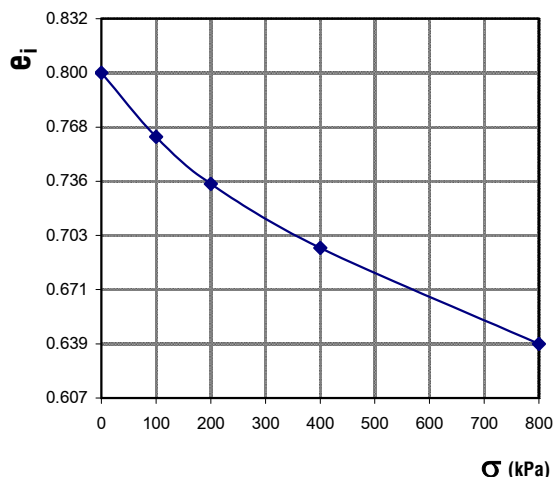
Khối lượng đất Mass of soil >0.1mm		Cấp hạt Grain grade	$D_{1-2}$ (mm)	$P_i$ %	P %
D (mm)	$m_i$ (g)	Silt/sand / Gravel	>10		100.0
20.0		Cát/Sand	10-5	1.3	100.0
10.0			5-2	2.8	98.7
5.0	0.62		2-1	6.0	95.9
2.0	1.35		1-0.5	10.8	89.9
1.0	2.84		0.5-0.25	10.5	79.1
0.5	5.14	Bụi/Silt	0.25-0.1	15.9	68.6
0.25	5.00		0.1-0.05	8.7	52.7
0.1	7.54	Sét/Clay	0.05-0.01	12.2	44.0
			0.01-0.005	6.9	31.8
			<0.005	24.9	24.9



## Thí nghiệm nén lún/Compression test

$m_k = 4.08$  Hộp nén số/Test box No.: 15  $e_0 = 0.800$   
 $\beta = 0.62$  Số đọc sau 24h/Reading after 24h: 192.7  $h_0 = 20\text{mm}$

$\sigma_i$	$\Delta h_n$	$\Delta h_m$	$e_i$	a	E	$E_0 = E \cdot m_k \cdot \beta$
kPa	Vạch/Div.	Vạch/Div.	-	$\text{kPa}^{-1} \times 10^{-2}$	kPa	kPa
0			0.800			
100	47.0	6.3	0.762	0.038	4736.8	11982.3
200	80.0	9.1	0.734	0.028	6292.9	15918.4
400	123.0	10.9	0.696	0.019	9126.3	23085.9
800	188.0	13.7	0.639	0.014	12114.3	30644.3

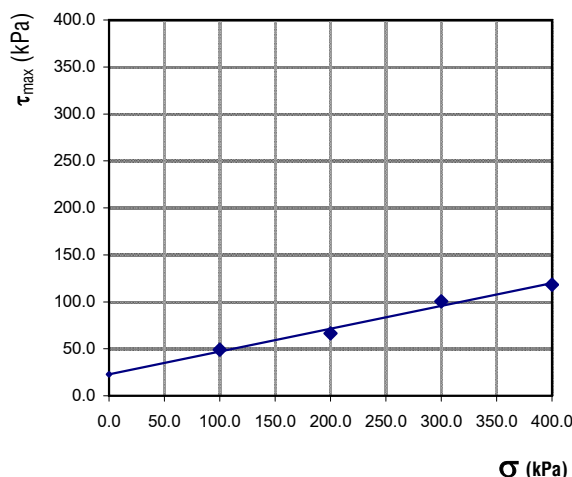


## Thí nghiệm cắt phẳng/Direct shear test

PP/Method: Cắt nhanh không thoát nước/Undrained quick direct shear test  
Hệ số vòng lực/Proving ring calibration factor: Cr

$\sigma_i$	R	Cr	$\tau_{max}$
kPa	Vạch/Div.	kPa/0.01mm	kPa
100	29.0	1.686	48.9
200	39.5	1.678	66.3
300	57.9	1.736	100.5
400	68.0	1.739	118.3

$\tan \phi = 0.2424$   $\phi = 13^\circ 38'$  C 22.9 kPa



Đại diện TN/Tested by: Trần Hồng Văn

Xử lý/Computed by: KS. Võ Thanh Long

Kiểm tra/Checked by: PGS.TS. Đặng Văn Ngo