

KINGDOM OF THAILAND

APPENDIX TO THE REPORT

ON

SOIL EXPLORATION AT THE SITE OF

BANGKOK - THONBURI BRIDGE

1969

OVERSEAS TECHNICAL COOPERATION AGENCY

GOVERNMENT OF JAPAN

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ブレシオメーター測定結果一覧表

LOCATION. 所在地名

SITE . 地点No. /

[illegible]

TABLE 102 RESULTS OF PRESSIOMETER TEST
第 表 プレシオメータ測定結果一覧表

LOCATION 調査名

SITE 地点 No. 4

TEST DEPTH 測定深度 (m)	DESCRIPTION OF SOIL 土 質 型	EARTH PRESSURE AT REST 初期圧力 P_0 (kg/cm ²)	CREEP PRESSURE 限界圧力 P_c (kg/cm ²)	LIMIT PRESSURE 極限圧力 P_l (kg/cm ²)	MODULUS OF DEFORMATION 変形係数 E (kg/cm ²)	COHESION 粘着力 C (kg/cm ²)
0.00	soft clay	2.00	2.25	2.50	—	—
10.50	soft clay	0.20	—	—	1.2	—
12.50	soft clay	0.15	0.25	3.5	2	—
20.00	very clay	1.50	0.20	1.80	350	—
22.00	coarse sand	1.50	5.00	9.3	121	—
24.50	coarse sand	1.25	6.25	11.55	101	—
28.50	medium sand	1.55	8.10	2.65	33	—
33.00	medium sand	1.50	6.25	12.20	125	—
37.00	hard clay	1.30	4.50	12.30	105	—
41.50	medium sand	1.35	15.25	—	101	—

第 表
TABLE 103 RESULTS OF PRESSIMETER TEST
プレシオメーター測定結果一覽表

LOC'ATION. 調査名

SITE: 地点No. 5

[illegible]

TABLE 104. RESULTS OF PRESSIOMETER TEST
第 104 表 プレシオメータ測定結果一覧表

LOCATION. 簡介名

SITE · 地点 No. 7

[illegible]

Table 105 SUMMARY OF SOIL TEST (Bore Hole No. 4.5)

Project

Sample No.		Ja-1	Ja-2	Ja-3	Ja-4	Ja-5	PSa-6			Ss-1	Ss-2	Ss-3	Ss-4				
U: Undisturbed Sample D: Disturbed Sample		U	U	U	U	U	U			U	U	U	U				
Sample Depth (m)		4.10	4.30	4.70	4.80	4.85	4.90			5.60	5.70	5.70	5.80				
Natural Water Content Wc (%)		127	100	134	118	131	125			72.5	71.6	68.3	77.0				
Specific Gravity of Soil Particles Gs		2.609	2.599	2.671	2.612	2.676	2.679			2.671	2.689	2.612	2.615				
Wet Density γ_t (t/m ³)		1.87	1.672	1.601	1.736	1.924	2.003			1.527	1.612	1.572	1.566				
Dry Density γ_d (t/m ³)		1.905	1.603	1.576	1.183	1.444	1.183			1.776	1.900	1.905	1.890				
Natural Void Ratio e		1.83	1.07	1.50	1.71	1.83	1.13			1.21	1.26	1.80	1.90				
Degree of Saturation S (%)		100	100	73.0	100	100	100			100	100	99.1	100				
Liquid Limit LL (%)		63	41	63	51	59	46			72	60	69	71				
Plastic Limit PL (%)		21	21	21	23	19	17			21	23	27	22				
Plasticity Index P.I.		46	20	42	28	40	29			51	37	42	49				
Grain Size Analysis	Gravel (%)	1	1	1	0	1	1			1	0	0	0				
	Sand (%)	1	92	7	14	2	92			1	4	9	4				
	Silt (%)	81	54	44	37	88	81			41	46	47	34				
	Clay (%)	22	14	21	21	13	8			17	16	18	20				
	Colloid (%)	26	25	32	27	37	17			30	34	26	42				
	Percentage No. 200 Sieve (%)	29	25	32	27	37	17			33	36	31	36				
Classification		CH	CL	CH	CH	CH	CH			CH	CH	CH	CH				
Unconfined Compression Test	Unconfined Compression Strength of Undisturbed Sample (kg/cm ²)	1.11	1.71	1.77	1.92	1.67	1.10			1.41	0.400	0.319	0.312				
	Unconfined Compression Strength of Remolded Sample (kg/cm ²)	—	—	1.14	1.14	1.02	1.10			—	—	—	—				
	Sensitivity Ratio			5.8	10.1	1.40	2.25										
Triaxial Compression Test	Angle of Internal Friction in degree																
	Cohesion (kg/cm ²)																
	Drainage Condition																
Consolidation Test	Pre-Load (kg/cm ²)			1.11	1.77	2.18	3.90					1.96	1.00				
	Compression Index (Cc)			1.00	1.33	1.23	0.219					0.830	1.896				
Remarks																	

TABLE 106 SUMMARY OF SOIL TEST (Bore Hole No. 7)

Project

Sample No.	117-1	117-2	117-3	117-4	117-5	117-6	117-7	117-8	117-9	117-10									
U: Undisturbed Sample D: Disturbed Sample	U	U	U	U	U	U	U	U	U	U									
Sample Depth (m)	7.50	8.50	9.50	10.50	11.50	12.50	13.50	14.50	15.50	16.50									
Natural Water Content W_c (%)	112	102	71.2	79.3	52.1	54.1	50.4	51.4	51.2	52.1									
Specific Gravity of Soil Particles G_s	2.67	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65									
Wet Density γ_t (t/m ³)	1.525	1.571	1.476	1.594	1.747	1.906	1.783	1.721	1.701	1.793									
Dry Density γ_d (t/m ³)	1.338	1.367	1.333	1.402	1.477	1.414	1.349	1.272	1.211	1.316									
Natural Void Ratio e	2.13	1.72	1.19	1.36	0.91	0.91	0.97	0.91	1.01	0.65									
Degree of Saturation S (%)	100	99.0	100	100	100	100	100	100	100	100									
Liquid Limit L.L. (%)	87	70	78	81	60	65	50	40	31	41									
Plastic Limit P.L. (%)	26	25	28	26	26	25	36	17	17	17									
Plasticity Index P.I.	61	45	50	55	34	40	14	23	14	24									
Grain Size Analysis	Gravel (%)	0	0	0	0	0	0	0	0	0									
	Sand (%)	6	5	4	2	3	1	25	2	13									
	Silt (%)	26	31	20	37	36	37	26	26	26									
	Clay (%)	23	26	19	22	15	17	1	8	15									
	Colloid (%)	45	38	47	49	46	42	5	32	43									
	Percentage No. 200 Sieve (%)	94	95	16	98	91	96	99	55	91									
Classification		CH	CH	CH	CH	CH	CH	CH	CL	CH									
Unconfined Compression Test	Unconfined Compression Strength of Undisturbed Sample (kg/cm ²)	0.264	0.064	1.733	2.852	0.551	1.424	1.567	1.236	1.361	1.136								
	Unconfined Compression Strength of Remolded Sample (kg/cm ²)	-	-	-	-	1.500	1.245	1.302	1.279	1.332	1.201								
	Sensitivity Ratio					1.58	1.84	1.88	1.54	1.57	2.16								
Triaxial Compression Test	Angle of Internal Friction in degree																		
	Cohesion (kg/cm ²)																		
	Drainage Condition																		
Consolidation Test	Pre-Load (kg/cm ²)			1.18	1.12	1.95	1.60			2.10	0.90								
	Compression Index (Cc)			0.960	1.320	0.190	0.168			0.166	1.217								
Remarks							solidity dry												

TABLE 107

P-4-1 2.00 - 4.60

Test No.	Lateral pressure (lb./sq. in.)	Diameter of specimen (in.)	Length of specimen (in.)	Sectional area of specimen (sq. in.)	Volume of specimen (cu. in.)	Weight of specimen (lb.)	Net density (lb./cu. in.)	Moisture content (%)	Water content (%)	Void ratio	Volume change (%)	Remarks
	0.5	3.48	8.74	9.51	83.12	138.4	1.665	1.030	61.4	1.574		1
			8.36	8.71	72.56	127.8	1.762	1.184	49.0	1.239	10.56	2
2	1.0	3.49	8.73	9.56	83.46	138.4	1.658	1.041	59.0	1.540		1
			8.10	8.16	68.61	123.55	1.801	1.270	42.0	1.085	14.85	2
3	2.0	3.46	8.78	9.40	82.53	137.2	1.662	1.030	61.5	1.547		1
			8.10	8.16	62.38	117.05	1.876	1.362	37.7	0.943	20.15	2
4	3.0	3.48	8.73	9.51	83.02	137.7	1.659	1.052	57.5	1.520		1
			7.86	7.66	58.22	112.9	1.939	1.500	29.2	0.767	24.80	2
5	4.0	3.52	8.70	9.72	84.56	140.5	1.660	1.008	64.8	1.630		1
			7.87	7.87	60.41	116.35	1.928	1.440	64.8	0.840	24.15	2

1.00 - 2.00 - 4.00

1.00 - 2.00 - 4.00

Test No.	Lateral pressure (lb./sq. in.)	Effective stress (lb./sq. in.)	Vertical stress (lb./sq. in.)	Effective stress (lb./sq. in.)	Effective stress (lb./sq. in.)	Effective stress (lb./sq. in.)	Effective stress (lb./sq. in.)
1	0.5	0.512	10.5	0.37	0.642	0.13	0.128
2	1.0	0.940	11.0	0.72	1.220	0.28	0.766
3	2.0	1.799	14.5	1.27	2.529	0.73	0.707
4	3.0	2.345	9.0	1.96	3.385	1.04	0.835
5	4.0	2.665	2.5	2.85	3.815	1.15	1.070

TABLE 108

Test No.	Pressure Kg/cm ²	Diameter of specimen cm	Length of specimen cm	Sectional area of specimen cm ²	Volume of specimen cm ³	Weight of specimen g	Net density g/cm ³	Hy density g/cm ³	Water content %	Oil content %	Oil charge ΔV	Notes
1	1.0	3.50	8.72	9.62	83.89	142.2	1.695	1.076	67.3	1.10		1
			8.29	8.67	71.43	129.74	1.816	1.265	43.5	1.054	12.46	2
2	2.0	3.51	8.73	9.67	84.42	141.0	1.670	1.054	57.9	1.455		1
			8.04	8.13	64.22	120.8	1.881	1.390	35.2	3.869	20.20	2
3	3.0	3.50	8.73	9.62	84.18	142.2	1.689	1.050	56.3	1.404		1
			8.03	8.02	63.28	121.3	1.917	1.439	33.3	0.905	20.70	2
4	4.0	3.52	8.77	9.73	85.33	142.5	1.670	1.055	54.9	1.404		1
			8.02	8.66	63.33	120.5	1.703	1.452	31.0	0.789	22.00	2
		3.55	8.78	9.89	86.75	145.4	1.676	1.120	49.6	1.320		1
	5.0		7.79	8.11	63.45	122.1	1.924	1.530	25.6	0.692	23.30	2

Test No.	Pressure Kg/cm ²	Max. deviation of pressure Kg/cm ²	Length cm	Sectional area cm ²	Volume cm ³	Weight g	Net density g/cm ³	Hy density g/cm ³	Water content %	Oil content %	Oil charge ΔV	Notes
1	1.0	0.151	8.0	0.75	1.001				0.45	1.000		
2	2.0	1.762	11.0	1.36	2.462				0.64	0.771		
3	3.0	2.480	10.5	1.98	3.500				1.02	0.800		
4	4.0	3.125	11.5	2.62	4.505				1.38	0.839		
5	5.0	4.580	11.5	4.15	6.430				1.85	3.688		

TABLE 109

Summary of Triaxial Test Results (Consolidated Undrained)

S-X-3 9.20 ~ 10.00

Test No	Lateral pressure (kg/cm ²)	Diameter of specimen D cm	Length of specimen L cm	Sectional area of specimen A cm ²	Volume of specimen V cm ³	Weight of specimen W g	Wet density ρ_w g/cm ³	Dry density ρ_d g/cm ³	Water content w %	Void ratio e	Volume change ΔV	Remarks
1	1.0	3.50	8.74	9.62	84.08	147.2	1.751	1.157	51.6	1.310		①
			8.38	8.83	73.66	136.78	1.857	1.320	40.9	1.022	10.42	②
2	2.0	3.46	8.74	9.40	82.16	144.5	1.759	1.152	52.5	1.319		①
			8.21	8.27	67.28	129.62	1.927	1.410	36.9	0.895	14.88	②
3	3.0	3.51	8.73	9.67	84.42	146.2	1.732	1.127	53.9	1.372		①
			8.15	8.37	67.42	129.2	1.916	1.410	36.0	0.896	17.00	②
4	4.0	3.51	8.74	9.67	84.52	146.2	1.729	1.132	52.6	1.360		①
			8.05	8.14	64.32	126.0	1.959	1.490	31.5	0.793	20.20	②
5												

1) before consolidation

2) after consolidation

Test No	Lateral pressure (kg/cm ²)	Max. deviator stress $\sigma_1 - \sigma_3$ kg/cm ²	Axial strain at ϵ %	pore pressure at max ($\sigma_1 - \sigma_3$) u kg/cm ²	Effective major principal stress at max ($\sigma_1 - \sigma_3$) $\sigma_1 - \sigma_3 - u$ kg/cm ²	Effective minor principal stress at max ($\sigma_1 - \sigma_3$) $\sigma_3 - u$ kg/cm ²	pore pressure coefficient A at max ($\sigma_1 - \sigma_3$) A_1
1	1.0	1.165	10.0	0.68	1.485	0.52	0.583
2	2.0	1.914	14.5	1.40	2.514	0.60	0.731
3	3.0	2.650	9.0	2.175	3.475	0.825	0.821
4	4.0	3.380	8.5	2.79	4.590	1.21	0.825
5							

TABLE 1/3

Summary of Triaxial Compression Test (Consolidated Undrained)

Test No.	Lateral pressure σ_3	Diameter of specimen d , cm	Length of specimen h , cm	Sectional area of specimen A , cm ²	Volume of specimen V , cm ³	Weight of specimen G , g	Wet density ρ_t , g/cm ³	Dry density ρ_d , g/cm ³	Water content w , %	Void ratio e	Volume change ΔV	Remarks
1	1.0	3.40	8.78	9.07	79.63	122.9	1.543	0.852	181.2	2.080		①
			8.48	8.25	71.48	114.75	1.605	0.929	69.1	1.760	8.15	②
2	2.0	3.49	8.80	9.55	84.04	129.2	1.537	0.838	83.5	2.130		①
			8.14	8.12	65.19	110.35	1.693	1.080	56.7	1.430	18.85	②
3	3.0	3.53	8.76	9.78	85.54	132.0	1.543	0.845	82.5	2.100		①
			7.95	7.96	61.74	108.2	1.754	1.173	49.6	1.230	23.80	②
4	4.0	3.47	8.74	9.45	82.59	129.6	1.569	0.876	78.8	1.990		①
			7.79	7.40	55.70	102.71	1.844	1.387	33.0	0.891	26.89	②
5	5.0	3.51	8.75	9.66	84.53	128.0	1.514	0.799	89.6	2.280		①
			7.72	7.88	54.63	98.1	1.796	1.234	45.4	1.120	29.90	②

1) before consolidation

2) after consolidation

Test No.	Lateral pressure σ_3	Max. deviator stress $\sigma_1 - \sigma_3$, Kg/cm ²	Axial strain at max ϵ , %	Core pressure at max $(\sigma_1 - \sigma_3)$, Kg/cm ²	Effective major principal stress at max $(\sigma_1 - \sigma_3)$, $\sigma_1 - \sigma_3 - \sigma_3 - K_p \sigma_3$	Effective minor principal stress at max $(\sigma_1 - \sigma_3)$, $\sigma_3 - K_p \sigma_3$	Core pressure coefficient A at max $(\sigma_1 - \sigma_3)$
1	1.0	0.815	5.0	0.540	1.275	0.460	0.663
2	2.0	1.372	7.5	1.075	2.297	0.925	0.783
3	3.0	1.869	7.5	1.790	3.079	1.210	0.958
4	4.0	2.960	9.5	2.080	4.880	1.920	0.703
5	5.0	3.478	4.0	2.640	5.358	2.360	0.758

TABLE 114

Summary of Triaxial Compression Test (Consolidated Undrained)

Test No	Lateral pressure (Kg/cm ²) σ_3	Diameter of specimen (cm) D	Length of specimen (cm) L	Sectional area of specimen (cm ²) A	Volume of specimen (cm ³) V	Weight of specimen (g) W	Wet density (g/cm ³) ρ_w	Dry density (g/cm ³) ρ_d	Water content (%) w	Void ratio e	Volume change (%) ΔV	Remarks
1	1.0	3.54	8.80	9.83	86.50	136.5	1.578	0.894	76.5	1.960		①
			8.49	9.13	77.35	127.35	1.647	1.100	64.8	1.650	9.15	②
2	2.0	3.54	8.79	9.83	86.41	134.5	1.557	0.885	76.0	1.995		①
			8.23	8.58	69.90	117.99	1.686	1.091	54.4	1.435	16.51	②
3	3.0	3.54	8.80	9.83	86.05	137.7	1.600	0.923	73.2	1.870		①
			8.11	8.30	65.95	117.6	1.781	1.206	47.9	1.200	20.10	②
4	4.0	3.53	8.79	9.78	86.00	137.5	1.599	0.924	73.0	1.870		①
			8.00	7.95	61.90	113.4	1.832	1.286	42.6	1.060	24.10	②
5	5.0	3.53	8.73	9.76	85.20	136.9	1.607	0.956	68.0	1.770		①
			7.94	8.00	62.10	113.8	1.833	1.314	39.6	1.020	23.10	②

1) before consolidation

2) after consolidation

Test No	Lateral pressure (Kg/cm ²) σ_3	Max. deviator stress $\sigma_1 - \sigma_3$ (Kg/cm ²)	Axial strain at max. stress ϵ (%)	Pore pressure at max. stress u (Kg/cm ²)	Effective major principal stress at max. stress $\sigma_1 - \sigma_3 - u$ (Kg/cm ²)	Effective minor principal stress at max. stress $\sigma_3 - u$ (Kg/cm ²)	Pore pressure coefficient at max. stress $u / (\sigma_1 - \sigma_3)$
1	1.0	0.854	4.5	0.550	1.304	0.450	0.644
2	2.0	1.340	6.5	1.240	2.100	0.760	0.925
3	3.0	2.080	6.0	1.720	3.360	1.280	0.828
4	4.0	2.465	6.0	2.230	4.235	1.770	0.905
5	5.0	3.258	14.5	2.840	5.418	1.216	0.873

TABLE

115

Summary of Triaxial Test Results for Unconsolidated

S. T-4

11.00~11.75

Test No.	Lateral pressure σ_3 (kg/cm ²)	Diameter of specimen (cm)	Length of specimen (cm)	Sectional area of specimen (cm ²)	Volume of specimen (cm ³)	Height of specimen (cm)	Set density (kg/cm ³)	App. density (kg/cm ³)	Water content (%)	Void ratio e	Volume change ΔV	Remarks
1	1.0	3.51	8.78	9.67	84.90	134.8	1.588	0.912	70.8	1.950		①
			8.55	9.17	78.25	128.15	1.640	1.010	62.5	1.660	6.65	②
2	2.0	3.52	8.79	9.73	85.53	136.7	1.598	0.925	72.8	1.910		①
			8.27	8.58	70.38	121.55	1.727	1.124	53.7	1.390	1.515	②
3	3.0	3.52	8.76	9.70	85.23	138.5	1.625	0.955	70.3	1.820		①
			8.14	8.36	67.23	120.5	1.792	1.210	48.2	1.220	1.800	②
4	4.0	3.54	8.78	9.84	86.40	136.7	1.582	0.907	74.4	1.965		①
			8.01	8.11	63.60	113.9	1.791	1.232	45.3	1.180	2.280	②
5	5.0	3.52	8.74	9.72	84.95	139.0	1.636	1.010	62.0	1.660		①
			7.89	7.85	60.35	114.4	1.896	1.420	33.3	0.894	2.460	②

1. before consolidation

2. after consolidation

Test No.	Lateral pressure σ_3 (kg/cm ²)	Max. deviator stress $\sigma_1 - \sigma_3$ (kg/cm ²)	Max. shear stress τ (kg/cm ²)	App. pressure at failure $(\sigma_1 - \sigma_3)$ (kg/cm ²)	Effective max. principal stress $\sigma_1 - \sigma_3$ (kg/cm ²)	Effective max. principal stress $\sigma_1 - \sigma_3$ (kg/cm ²)	App. pressure coefficient λ at max. $(\sigma_1 - \sigma_3)$
1	1.0	0.810	4.0	0.560	1.250	0.440	0.691
2	2.0	1.270	5.5	0.930	2.340	1.070	0.733
3	3.0	1.752	7.0	1.650	3.102	1.350	0.942
4	4.0	2.270	6.5	2.240	4.030	1.760	0.995
5	5.0	2.950	8.0	2.740	5.210	2.260	0.929

TABLE 1/6

Summary of Triaxial Compression Test (Consolidated Undrained)

8.7-5 12.00-12.30

Test No.	Lateral pressure (kg/cm ²)	Diameter of specimen (cm)	Length of specimen (cm)	Sectional area of specimen (cm ²)	Volume of specimen V (cm ³)	Weight of specimen (g)	Wet density γ_d (g/cm ³)	Dry density γ_d (g/cm ³)	Water content (wc %)	Void ratio e	Volume change ΔV	Remarks
1	1.0	3.52	9.77	9.72	85.24	170.3	1.998	1.563	27.8	0.707		①
			9.66	9.47	81.99	167.05	2.037	1.622	25.4	0.643	3.25	②
2	2.0	3.52	9.79	9.72	85.44	168.7	1.974	1.523	29.6	0.750		①
			9.65	9.40	81.21	164.47	2.026	1.603	26.3	0.661	4.23	②
3	3.0	3.52	9.80	9.72	85.54	167.00	1.952	1.498	30.5	0.790		①
			9.62	9.31	80.16	161.62	2.016	1.596	26.3	0.670	5.32	②
4	4.0	3.52	9.77	9.72	85.24	167.7	1.967	1.520	29.5	0.753		①
			9.55	9.23	78.79	161.25	2.047	1.646	24.5	0.620	6.45	②
5	5.0	3.54	9.72	9.63	85.72	166.3	1.940	1.492	30.0	0.786		①
			9.39	9.08	75.87	156.45	2.062	1.686	22.3	0.581	9.85	②

1. slope of failure line

2. after consolidation

Test No.	Lateral pressure (kg/cm ²)	Max. deviator stress $\sigma_1 - \sigma_3$ (kg/cm ²)	Failure stress σ_1 (kg/cm ²)	Effective stress $\sigma_1' = \sigma_1 - u$ (kg/cm ²)	Effective principal stress at max. $\sigma_1 - \sigma_3$ $\sigma_1' = \sigma_1 - u$	Effective principal stress at max. $\sigma_1 - \sigma_3$ $\sigma_3' = \sigma_3 - u$	Interpretation coefficient at max. $\sigma_1 - \sigma_3$ $\frac{\sigma_1' - \sigma_3'}{\sigma_1' + \sigma_3'}$
1	1.0	1.740	15.0	0.225	2.515	0.775	0.129
2	2.0	2.355	4.0	1.005	3.350	0.995	0.427
3	3.0	2.750	4.5	1.325	4.425	1.675	0.482
4	4.0	3.300	4.5	1.990	5.310	2.010	0.603
5	5.0	3.819	6.0	2.270	6.549	2.730	0.595

Table 117 RESULTS OF CONSOLIDATION TEST

Project _____
 Sample No. P. 1 - 3
 Tester No. 920 - 000
 Condition of Sample brownish grey clay
containing sand lens
medium hard

Specific Gravity of Soil Particles $G_s = 2.71$
 Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$
 Dry Weight of Specimen $W_s = 59.5 \text{ g}$
 Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

Solid Height $2H_0$
 $2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{59.5}{2.71 \times 1.00 \times 28.26} = 0.787 \text{ cm}$
 Void Ratio

$$e = \frac{2H_1 - 2H_0}{2H_0} \frac{R}{2H_0} = \frac{2.000 - 0.787}{0.787} \frac{R}{2H_0}$$

$$= 1.522 - \frac{R}{2H_0}$$

Log. t Fitting Method

P	p_m	ΔP	R	2H	H_m	R	e	e_m	Δe	$\Delta e'$	d_s	d_{100}	t_{50}	C_v	a_v	a_v'	k	m_v
(kg/cm ²)	(kg/cm ²)	(kg/cm ²)	(cm)	(cm)	(cm)	2H ₀					(cm)	(cm)	(sec)	(cm ² /sec)	(cm ² /kg)	(cm ² /kg)	(cm/sec)	(cm ³ /kg)
0																		
	0.05	0.1																
0.1																		
	0.15	0.1																
0.2																		
	0.35	0.3																
0.5																		
	0.75	0.5																
1.0																		
	1.50	1.0																
2.0																		
	3.50	3.0																
5.0																		
	7.50	5.0																
10.0																		
	15.00	10.0																
20.0																		
10.0																		
5.0																		
2.0																		
1.0																		
0.5																		
0.2																		
0.1																		
0																		

Remarks:

$\Delta e' = \frac{d_{100} - d_s}{2H_0}$: Variation of Void Ratio to Primary Compression

d_s : Reading at Corrected Zero Point
 d_{100} : Compression Dial Reading at 100% Primary Compression by Log. Fitting Method

$C_v = \frac{0.197 H_0^2}{t_{50}}$ (cm²/sec) : Coefficient of Consolidation
 $a_v = \frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility
 $a_v' = \frac{\Delta e'}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compression
 $k = \frac{a_v \cdot C_v \cdot \gamma_w}{1 + e_m}$ (cm/sec) : Coefficient of Permeability
 $\gamma_w = 1 \times 10$ (kg/cm³) : Unit Weight of Water
 $m_v = \frac{a_v}{1 + e_m}$ (cm²/kg) : Coefficient of Volume Change

Table 118 RESULTS OF CONSOLIDATION TEST

Project _____
 Sample No. S-1-A
 Tester No. 100-110
 Condition of Sample: dark brownish gray stiff clay
containing sand lens

Specific Gravity of Soil Particles $G_s = 2.65$
 Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$
 Dry Weight of Specimen $W_s = 7.00 \text{ g}$
 Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

Solid Height $2H_0$
 $2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{7.00}{2.65 \times 1.00 \times 28.26} = 0.938 \text{ cm}$
 Void Ratio
 $e = \frac{2H_1 - 2H_0}{2H_0} \frac{R}{2H_0} = \frac{2.000 - 0.938}{0.938} \frac{R}{2H_0}$
 $= 1.08 - \frac{R}{2H_0}$

Log. t Fitting Method

p (kg/cm ²)	p_m (kg/cm ²)	Δp (kg/cm ²)	R (cm)	$2H$ (cm)	H_m (cm)	R $2H_0$	e	e_m	Δe	$\Delta e'$	d_s (cm)	d_{100} (cm)	t_{100} (sec)	c_v (cm ² /sec)	a_v (cm ² /kg)	a_v' (cm ² /kg)	k (cm/sec)	m_v (cm ² /kg)
0			0	1.000			1.000											
	0.05	0.1			0.938		1.000	0.938										
0.1			0.102	0.938		0.938	0.938											
	0.15	0.1			0.938		1.000	0.938										
0.2			0.204	0.938		0.938	0.938											
	0.35	0.3			0.938		1.000	0.938										
0.5			0.506	0.938		0.938	0.938											
	0.75	0.5			0.938		1.000	0.938										
1.0			1.012	0.938		0.938	0.938											
	1.50	1.0			0.938		1.000	0.938										
2.0			1.216	0.938		0.938	0.938											
	3.50	3.0			0.938		1.000	0.938										
5.0			1.420	0.938		0.938	0.938											
	7.50	5.0			0.938		1.000	0.938										
10.0			1.514	0.938		0.938	0.938											
	15.00	10.0			0.938		1.000	0.938										
20.0			1.702	0.938		0.938	0.938											
10.0			1.450	0.938		0.938	0.938											
5.0			1.132	0.938		0.938	0.938											
2.0			0.824	0.938		0.938	0.938											
1.0			0.516	0.938		0.938	0.938											
0.5			0.258	0.938		0.938	0.938											
0.2			0.103	0.938		0.938	0.938											
0.1			0.052	0.938		0.938	0.938											
0			0	0.938		0.938	0.938											

Remarks:

$\Delta e = \frac{d_{100} - d_s}{2H_0}$: Variation of Void Ratio to Primary Compression

d_s : Reading at Corrected Zero Point
 d_{100} : Compression Dial Reading at 100% Primary Compression by Log. Fitting Method

$C_v = 0.197 \frac{H_0^2}{t_{100}}$ (cm²/sec) : Coefficient of Consolidation
 $a_v = \frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility
 $a_v' = \frac{\Delta e'}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compression
 $k = \frac{a_v C_v}{1 + e_m}$ (cm/sec) : Coefficient of Permeability
 $\gamma_w = 1 \times 10^{-3}$ (kg/cm³) : Unit Weight of Water
 $m_v = \frac{a_v}{1 + e_m}$ (cm²/kg) : Coefficient of Volume Change

Table 119 RESULTS OF CONSOLIDATION TEST

Project _____
 Sample No. S-2-5
 Tester No. 1001-2-1-2
 Condition of Sample light brown clay
medium hard

Specific Gravity of Soil Particles $G_s = 2.76$
 Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$
 Dry Weight of Specimen $W_s = 8.5 \text{ g}$
 Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

Solid Height $2H_0$
 $2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{8.5}{2.76 \times 1.00 \times 28.26} = 1.07 \text{ cm}$
 Void Ratio
 $e = \frac{2H_1 - 2H_0}{2H_0} = \frac{2.000 - 1.07}{1.07} = 0.869$

Log. t Fitting Method

p (kg/cm ²)	p_w (kg/cm ²)	Δp (kg/cm ²)	R (cm)	$2H$ (cm)	H_w (cm)	R $2H_0$	e	e_w	Δe	$\Delta e'$	d_s (cm)	d_{100} (cm)	t_{50} (sec)	C_v (cm ² /sec)	a_v (cm ² /kg)	a_v' (cm ² /kg)	k (cm/sec)	m_v (cm ² /kg)
0			6	2.000		1.07	0.869											
	0.05	0.1																
0.1			6.10	2.000		1.07	0.869											
	0.15	0.1																
0.2			6.15	2.000		1.07	0.869											
	0.35	0.3																
0.5			6.20	2.000		1.07	0.869											
	0.75	0.5																
1.0			6.25	2.000		1.07	0.869											
	1.50	1.0																
2.0			6.30	2.000		1.07	0.869											
	3.50	3.0																
5.0			6.35	2.000		1.07	0.869											
	7.50	5.0																
10.0			6.40	2.000		1.07	0.869											
	15.00	10.0																
20.0			6.45	2.000		1.07	0.869											
10.0			6.50	2.000		1.07	0.869											
5.0			6.55	2.000		1.07	0.869											
2.0			6.60	2.000		1.07	0.869											
1.0			6.65	2.000		1.07	0.869											
0.5			6.70	2.000		1.07	0.869											
0.2			6.75	2.000		1.07	0.869											
0.1			6.80	2.000		1.07	0.869											
0			6.85	2.000		1.07	0.869											

Remarks:

$\Delta e' = \frac{d_{100} - d_s}{2H_0}$: Variation of Void Ratio to Primary Compression

d_s : Reading at Corrected Zero Point

d_{100} : Compression Dial Reading at 100% Primary Compression by Log. Fitting Method

$C_v = \frac{0.197 H_1^2}{t_{50}}$ (cm²/sec) : Coefficient of Consolidation
 $a_v = \frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility
 $a_v' = \frac{\Delta e'}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compression
 $k = \frac{a_v C_v \gamma_w}{1 + e_0}$ (cm/sec) : Coefficient of Permeability
 $\gamma_w = 1 \times 10^{-3}$ (kg/cm³) : Unit Weight of Water
 $m_v = \frac{a_v}{1 + e_0}$ (cm²/kg) : Coefficient of Volume Change

Table 120 RESULTS OF CONSOLIDATION TEST

Project _____
 Sample No. 83-1
 Tester No. _____
 Condition of Sample blown sandy clay
hard

Specific Gravity of Soil Particles $G_s = 2.70$
 Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$
 Dry Weight of Specimen $W_s = 0.273 \text{ g}$
 Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

Solid Height $2H_0$
 $2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{0.273}{2.70 \times 1.00 \times 28.26} = 0.356 \text{ cm}$
 Void Ratio
 $e = \frac{2H_1 - 2H_0}{2H_0} = \frac{2.000 - 0.356}{0.356} = 4.618$

Log. t Fitting Method

p (kg/cm ²)	p_u (kg/cm ²)	Δp (kg/cm ²)	R (cm)	$2H$ (cm)	H_u (cm)	$\frac{R}{2H_0}$	e	e_u	Δe	$\Delta e'$	d_s (cm)	d_{100} (cm)	t_{50} (sec)	C_v (cm ² /sec)	a_v (cm ² /kg)	a_v' (cm ² /kg)	k (cm/sec)	m_v (cm ² /kg)
0			0	2.000			0.356											
	0.05	0.1																
0.1																		
	0.15	0.1																
0.2																		
	0.35	0.3																
0.5																		
	0.75	0.5																
1.0																		
	1.50	1.0																
2.0																		
	3.50	3.0																
5.0																		
	7.50	5.0																
10.0																		
	15.00	10.0																
20.0																		
30.0																		
200																		
10.0																		
5.0																		
2.0																		
1.0																		
0.5																		
0.2																		
0.1																		
0																		

Remarks:

$\Delta e' = \frac{d_{100} - d_s}{2H_0}$: Variation of Void Ratio to Primary Compression

d_s : Reading at Corrected Zero Point
 d_{100} : Compression Dial Reading at 100% Primary Compression by Log. Fitting Method

$C_v = \frac{0.197 H_u^2}{t_{50}}$ (cm²/sec) : Coefficient of Consolidation
 $a_v = \frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility
 $a_v' = \frac{\Delta e'}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compression
 $k = \frac{a_v C_v \gamma_w}{1 + e_u}$ (cm/sec) : Coefficient of Permeability
 $\gamma_w = 1 \times 10^{-3}$ (kg/cm³) : Unit Weight of Water
 $m_v = \frac{a_v}{1 + e_u}$ (cm²/kg) : Coefficient of Volume Change

Table 123 RESULTS OF CONSOLIDATION TEST

Project _____
 Sample No. P 7 ~ 8
 Tester No. 1000 ~ 1075
 Condition of Sample dark grey clay
containing sand grains

Specific Gravity of Soil Particles $G_s = 2.616$ Solid Height $2H_0$ Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$ Dry Weight of Specimen $W_s = 28.6 \text{ g}$ Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

$$2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{28.6}{2.616 \times 1.00 \times 28.26} = 0.370 \text{ cm}$$

$$e = \frac{2H_1 - 2H_0}{2H_0} = \frac{2.000 - 0.370}{0.370} = 4.405$$

Log. t Fitting Method

P (kg/cm ²)	P _{av} (kg/cm ²)	ΔP (kg/cm ²)	R (cm)	2H (cm)	H _{av} (cm)	R 2H ₀	e	e _{av}	Δe	Δe'	ds (cm)	d ₁₀₀ (cm)	t ₅₀ (sec)	C _v (cm ² /sec)	a _v (cm ² /kg)	a' _v (cm ² /kg)	k (cm/sec)	m _v (cm ³ /kg)
0																		
	0.05	0.1																
0.1																		
	0.15	0.1																
0.2																		
	0.35	0.3																
0.5																		
	0.75	0.5																
1.0																		
	1.50	1.0																
2.0																		
	3.50	3.0																
5.0																		
	7.50	5.0																
10.0																		
	15.00	10.0																
20.0																		
10.0																		
5.0																		
2.0																		
1.0																		
0.5																		
0.2																		
0.1																		
0																		

Remarks:

 $\Delta e = \frac{d_{100} - d_s}{2H_0}$ Variation of Void Ratio to Primary Compression

ds : Reading at Corrected Zero Point

d₁₀₀ : Compression Dial Reading at 100% Primary Compression by Log. Fitting MethodC_v = $\frac{0.197 H_0^2}{t_{50}}$ (cm²/sec) : Coefficient of Consolidationa_v = $\frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibilitya'_v = $\frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compressionk = $\frac{a_v C_v \gamma_w}{1 + e_{av}}$ (cm/sec) : Coefficient of Permeabilityγ_w = 1 × 10⁻³ (kg/cm³) : Unit Weight of Waterm_v = $\frac{a_v}{1 + e_{av}}$ (cm³/kg) : Coefficient of Volume Change

Table 124 RESULTS OF CONSOLIDATION TEST

Project _____
 Sample No. 87-4
 Tester No. 100-100
 Condition of Sample dark gray clay soft
containing some sharp sand

Specific Gravity of Soil Particles $G_s = 2.73$
 Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$
 Dry Weight of Specimen $W_s = 55.8 \text{ g}$
 Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

Solid Height $2H_0$
 $2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{55.8}{2.73 \times 1.00 \times 28.26} = 0.722 \text{ cm}$
 Void Ratio
 $e = \frac{2H_1 - 2H_0}{2H_0} = \frac{2.000 - 0.722}{0.722} = 1.714$
 $= \frac{R}{2H_0}$

Log. t Fitting Method

P	p_a	ΔP	R	2H	H _u	R	e	e _a	Δe	$\Delta e'$	d _s	d ₁₀₀	t ₁₀	C _v	a _v	a' _v	k	m _v
(kg/cm ²)	(kg/cm ²)	(kg/cm ²)	(cm)	(cm)	(cm)	2H ₀					(cm)	(cm)	(sec)	(cm ² /sec)	(cm ² /kg)	(cm ² /kg)	(cm/sec)	(cm ² /kg)
0			0	2.000			1.714											
	0.05	0.1		1.995			1.711											
0.1				1.990			1.708											
	0.15	0.1		1.985			1.705											
0.2				1.980			1.702											
	0.35	0.3		1.975			1.699											
0.5				1.970			1.696											
	0.75	0.5		1.965			1.693											
1.0				1.960			1.690											
	1.50	1.0		1.955			1.687											
2.0				1.950			1.684											
	3.50	3.0		1.945			1.681											
5.0				1.940			1.678											
	7.50	5.0		1.935			1.675											
10.0				1.930			1.672											
	15.00	10.0		1.925			1.669											
20.0				1.920			1.666											
10.0				1.915			1.663											
5.0				1.910			1.660											
2.0				1.905			1.657											
1.0				1.900			1.654											
0.5				1.895			1.651											
0.2				1.890			1.648											
0.1				1.885			1.645											
0				1.880			1.642											

Remarks:

$$\Delta e' = \frac{d_{100} - d_s}{2H_0} : \text{Variation of Void Ratio to Primary Compression}$$

d_s : Reading at Corrected Zero Point
 d₁₀₀ : Compression Dial Reading at 100% Primary Compression by Log. Fitting Method

$C_v = \frac{0.197 H_u^2}{t_{10}}$ (cm²/sec) : Coefficient of Consolidation
 $a_v = \frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility
 $a'_v = \frac{\Delta e'}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compression
 $k = \frac{a_v C_v}{1 + e_m}$ (cm/sec) : Coefficient of Permeability
 $\gamma_w = 1 \times 10^3$ (kg/cm³) : Unit Weight of Water
 $m_v = \frac{a_v}{1 + e_m}$ (cm²/kg) : Coefficient of Volume Change

Table 125 RESULTS OF CONSOLIDATION TEST

Project _____
 Sample No. 8-7-5
 Tester No. 100-1180
 Condition of Sample dry, grey to light medium hard
low of organic

Specific Gravity of Soil Particles $G_s = 2.65$
 Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$
 Dry Weight of Specimen $W_s = 15.2 \text{ g}$
 Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

Solid Height $2H_0$
 $2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{15.2}{2.65 \times 1.00 \times 28.26} = 0.197 \text{ cm}$
 Void Ratio
 $e = \frac{2H_1 - 2H_0}{2H_0} = \frac{2.000 - 0.197}{0.197} = 9.15$
 $e = \frac{R}{2H_0}$

Log. t Fitting Method

P	P _m	ΔP	R	2H	H _m	R	e	e _m	Δe	Δe'	d _s	d ₁₀₀	t ₅₀	C _v	a _v	a _v	k	m _v
(kg/cm ²)	(kg/cm ²)	(kg/cm ²)	(cm)	(cm)	(cm)	2H ₀					(cm)	(cm)	(sec)	(cm ² /sec)	(cm ² /kg)	(cm ² /kg)	(cm/sec)	(cm ² /kg)
0			0.197															
	0.05	0.1			0.197													
0.1			0.197	0.197														
	0.15	0.1			0.197													
0.2			0.197	0.197														
	0.35	0.3			0.197													
0.5			0.197	0.197														
	0.75	0.5			0.197													
1.0			0.197	0.197														
	1.50	1.0			0.197													
2.0			0.197	0.197														
	3.50	3.0			0.197													
5.0			0.197	0.197														
	7.50	5.0			0.197													
10.0			0.197	0.197														
	15.00	10.0			0.197													
20.0			0.197	0.197														
10.0			0.197	0.197														
5.0			0.197	0.197														
2.0			0.197	0.197														
1.0			0.197	0.197														
0.5			0.197	0.197														
0.2			0.197	0.197														
0.1			0.197	0.197														
0			0.197	0.197														

Remarks:

$\Delta e' = \frac{d_{100} - d_s}{2H_0}$: Variation of Void Ratio to Primary Compression

d_s : Reading at Corrected Zero Point
 d_{100} : Compression Dial Reading at 100% Primary Compression by Log. Fitting Method

$C_v = \frac{0.197 H_0^2}{t_{50}}$ (cm²/sec) : Coefficient of Consolidation
 $a_v = \frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility
 $a_v' = \frac{\Delta e'}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compression
 $k = \frac{a_v C_v \gamma_w}{1 + e_m}$ (cm/sec) : Coefficient of Permeability
 $\gamma_w = 1 \times 10^3$ (kg/cm³) : Unit Weight of Water
 $m_v = \frac{a_v}{1 + e_m}$ (cm²/kg) : Coefficient of Volume Change

Table 126 RESULTS OF CONSOLIDATION TEST

Project _____
 Sample No. 87-6
 Tester No. 1500-1550
 Condition of Sample gray to light brown hard clay
mined organic

Specific Gravity of Soil Particles $G_s = 2.62$
 Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$
 Dry Weight of Specimen $W_s = 97.0 \text{ g}$
 Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

Solid Height $2H_0$:
 $2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{97.0}{2.62 \times 1.00 \times 28.26} = 1.20 \text{ cm}$
 Void Ratio
 $e = \frac{2H_1 - 2H_0}{2H_0} = \frac{2.000 - 1.20}{1.20} = 0.667$
 $e = \frac{R}{2H_0}$

Log. t Fitting Method

p (kg/cm ²)	p_m (kg/cm ²)	Δp (kg/cm ²)	R (cm)	$2H$ (cm)	H_m (cm)	R $2H_0$	e	e_m	Δe	$\Delta e'$	d_s (cm)	d_{100} (cm)	t_{50} (sec)	C_v (cm ² /sec)	a_v (cm ² /kg)	a'_v (cm ² /kg)	k (cm/sec)	m_v (cm ² /kg)
0			0	2.000		0.667												
	0.05	0.1			0.975		0.526	0.628										
0.1			0.100	1.990		0.667	0.752											
	0.15	0.1			0.975		0.526	0.628										
0.2			0.200	1.970		0.667	0.752											
	0.35	0.3			0.975		0.526	0.628										
0.5			0.500	1.950		0.667	0.752											
	0.75	0.5			0.975		0.526	0.628										
1.0			1.000	1.930		0.667	0.752											
	1.50	1.0			0.975		0.526	0.628										
2.0			2.000	1.910		0.667	0.752											
	3.50	3.0			0.975		0.526	0.628										
5.0			5.000	1.890		0.667	0.752											
	7.50	5.0			0.975		0.526	0.628										
10.0			10.000	1.870		0.667	0.752											
	15.00	10.0			0.975		0.526	0.628										
20.0			20.000	1.850		0.667	0.752											
10.0			0.2750	1.7070		0.667	0.752											
5.0			0.2750	1.7070		0.667	0.752											
2.0			0.2750	1.7070		0.667	0.752											
1.0			0.2750	1.7070		0.667	0.752											
0.5			0.2750	1.7070		0.667	0.752											
0.2			0.2750	1.7070		0.667	0.752											
0.1			0.2750	1.7070		0.667	0.752											
0			0.2750	1.7070		0.667	0.752											

Remarks:

$\Delta e' = \frac{d_{100} - d_s}{2H_0}$: Variation of Void Ratio to Primary Compression

d_s : Reading at Corrected Zero Point

d_{100} : Compression Dial Reading at 100% Primary Compression by Log-Fitting Method

$C_v = \frac{0.197 H_0^2}{t_{50}}$ (cm²/sec) : Coefficient of Consolidation

$a_v = \frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility

$a'_v = \frac{\Delta e'}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compression

$k = \frac{a_v \cdot C_v \cdot \gamma_w}{1 + e_m}$ (cm/sec) : Coefficient of Permeability

$\gamma_w = 1 \times 10^3$ (kg/cm³) : Unit Weight of Water

$m_v = \frac{a_v}{1 + e_m}$ (cm²/kg) : Coefficient of Volume Change

Table 127 RESULTS OF CONSOLIDATION TEST

Project _____

Sample No. 87-9

Tester No. 2115-2116

Condition of Sample dry, brown, hard
filling sand

Specific Gravity of Soil Particles $G_s = 2.65$ Solid Height $2H_0$ Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$

$$2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{0.65 \times 1.00 \times 28.26}{2.65 \times 1.00 \times 28.26} = 1.268 \text{ cm}$$

Dry Weight of Specimen $W_s = 0.65 \text{ g}$ Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

Void Ratio

$$e = \frac{2H_1 - 2H_0}{2H_0} \frac{R}{2H_0} = \frac{2.000 - 1.268}{1.268} \frac{R}{2H_0}$$

$$= 0.575 - \frac{R}{2H_0}$$

Log. t Fitting Method

P	p_u	Δp	R	2H	H_u	$\frac{R}{2H_0}$	e	e_u	Δe	$\Delta e'$	d_s	d_{100}	t_{50}	C_v	a_v	a_v'	k	m_v
(kg/cm ²)	(kg/cm ²)	(kg/cm ²)	(cm)	(cm)	(cm)						(cm)	(cm)	(sec)	(cm ² /sec)	(cm ² /kg)	(cm ² /kg)	(cm/sec)	(cm ² /kg)
0			0	2.000			0.575											
	0.05	0.1			1.923		0.558	0.005										
0.1			0.0069	1.923			0.558	0.005										
	0.15	0.1			1.923		0.558	0.005										
0.2			0.0129	1.923			0.558	0.005										
	0.35	0.3			1.923		0.558	0.005										
0.5			0.0376	1.923			0.558	0.005										
	0.75	0.5			1.923		0.558	0.005										
1.0			0.0601	1.923			0.558	0.005										
	1.50	1.0			1.923		0.558	0.005										
2.0			0.1015	1.923			0.558	0.005										
	3.50	3.0			1.923		0.558	0.005										
5.0			0.1536	1.923			0.558	0.005										
	7.50	5.0			1.923		0.558	0.005										
10.0			0.2685	1.923			0.558	0.005										
	15.00	10.0			1.923		0.558	0.005										
20.0			0.2762	1.923			0.558	0.005										
30.0			0.3158	1.923			0.558	0.005										
40.0			0.3719	1.923			0.558	0.005										
50.0			0.4258	1.923			0.558	0.005										
60.0			0.4758	1.923			0.558	0.005										
80.0			0.5882	1.923			0.558	0.005										
1.0			0.2112	1.923			0.558	0.005										
0.5			0.2448	1.923			0.558	0.005										
0.2			0.2668	1.923			0.558	0.005										
0.1			0.2928	1.923			0.558	0.005										
0			0.3130	1.923			0.558	0.005										

Remarks:

 $\Delta e' = \frac{d_{100} - d_s}{2H_0}$: Variation of Void Ratio to Primary Compression
 d_s : Reading at Corrected Zero Point
 d_{100} : Compression Dial Reading at 100% Primary Compression by Log Fitting Method

 $C_v = \frac{0.197 H_0^2}{t_{50}}$ (cm²/sec) : Coefficient of Consolidation

 $a_v = \frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility

 $a_v' = \frac{\Delta e'}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compression

 $k = \frac{a_v C_v \gamma_w}{1 + e_u}$ (cm/sec) : Coefficient of Permeability

 $\gamma_w = 1 \times 10^{-3}$ (kg/cm³) : Unit Weight of Water

 $m_v = \frac{a_v}{1 + e_u}$ (cm²/kg) : Coefficient of Volume Change

Table 128. RESULTS OF CONSOLIDATION TEST

Project _____
 Sample No. 8-7-10
 Tester No. 2401 ~ 2475
 Condition of Sample sandy clay brown
hard

Specific Gravity of Soil Particles $G_s = 2.65$
 Initial Height of Specimen $2H_1 = 2.000 \text{ cm}$
 Dry Weight of Specimen $W_s = 82.3 \text{ g}$
 Sectional Area of Specimen $A = 28.26 \text{ cm}^2$

Solid Height $2H_0$
 $2H_0 = \frac{W_s}{G_s \gamma_w A} = \frac{82.3}{2.65 \times 1.00 \times 28.26} = 1.07 \text{ cm}$
 Void Ratio
 $e = \frac{2H_1 - 2H_0}{2H_0} \frac{R}{2H_0} = \frac{2.000 - 1.07}{1.07} \frac{R}{2H_0}$
 $= 0.87 - \frac{R}{2H_0}$

Log. t Fitting Method

P	P_m	ΔP	R	2H	H_m	$\frac{R}{2H_0}$	e	e_m	Δe	$\Delta e'$	d_s	d_{100}	t_{50}	C_v	a_v	a_v'	k	m_v
(kg/cm ²)	(kg/cm ²)	(kg/cm ²)	(cm)	(cm)	(cm)						(cm)	(cm)	(sec)	(cm ² /sec)	(cm ² /kg)	(cm ² /kg)	(cm/sec)	(cm ² /kg)
0			0	1.07		0	0.6090											
	0.05	0.1			0.276		0.105	0.111							1.1×10^{-1}			1.9×10^{-2}
0.1			0.0108	0.982		0.0211	0.579											
	0.15	0.1			0.290		0.192	0.111							1.1×10^{-1}			1.1×10^{-2}
0.2			0.0212	0.938		0.0211	0.589											
	0.35	0.3			0.222		0.579	0.133	0.211	0.211	0.211	0.211	20	1.2×10^{-1}	2.1×10^{-1}	0.112	1.2×10^{-1}	5.0×10^{-3}
0.5			0.0611	0.859		0.0211	0.589											
	0.75	0.5			0.160		0.572	0.133	0.211	0.211	0.211	0.211	50	1.2×10^{-1}	2.1×10^{-1}	0.112	1.5×10^{-1}	4.1×10^{-3}
1.0			0.0910	0.730		0.0211	0.587											
	1.50	1.0			0.235		0.521	0.133	0.211	0.211	0.211	0.211	20	1.2×10^{-1}	2.1×10^{-1}	0.112	1.1×10^{-1}	4.0×10^{-3}
2.0			0.1215	0.620		0.0211	0.515											
	3.50	3.0			0.234		0.506	0.133	0.211	0.211	0.211	0.211	100	1.2×10^{-1}	2.1×10^{-1}	0.112	1.1×10^{-1}	3.0×10^{-3}
5.0			0.1580	0.520		0.0211	0.460											
	7.50	5.0			0.230		0.471	0.133	0.211	0.211	0.211	0.211	50	1.2×10^{-1}	2.1×10^{-1}	0.112	1.2×10^{-1}	2.5×10^{-3}
10.0			0.2500	0.450		0.0211	0.400											
	15.00	10.0			0.250		0.374	0.133	0.211	0.211	0.211	0.211	20	1.2×10^{-1}	2.1×10^{-1}	0.112	1.2×10^{-1}	2.0×10^{-3}
20.0			0.3250	0.350		0.0211	0.340											
30.0			0.3790	0.270		0.0211	0.310	0.336	0.133	0.211	0.211	0.211	10	1.2×10^{-1}	2.1×10^{-1}	0.112	1.2×10^{-1}	1.8×10^{-3}
40.0			0.3785	0.215		0.0211	0.300											
50.0			0.3726	0.171		0.0211	0.290											
60.0			0.3715	0.135		0.0211	0.285											
70.0			0.3690	0.110		0.0211	0.280											
80.0			0.3250	0.050		0.0211	0.240											
90.0			0.2980	0.010		0.0211	0.215											
100.0			0.2819	0.001		0.0211	0.230											
0.1			0.2690	0.210		0.0211	0.280											
0.2			0.2690	0.140		0.0211	0.2150											

Remarks:

$\Delta e = \frac{d_{100} - d_s}{2H_0}$: Variation of Void Ratio to Primary Compression

d_s : Reading at Corrected Zero Point
 d_{100} : Compression Dial Reading at 100% Primary Compression by Log. Fitting Method

$C_v = \frac{0.197 H_0^2}{t_{50}}$ (cm²/sec) : Coefficient of Consolidation
 $a_v = \frac{\Delta e}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility
 $a_v' = \frac{\Delta e'}{\Delta p}$ (cm²/kg) : Coefficient of Compressibility to Primary Compression
 $k = \frac{C_v \cdot C_v \cdot \gamma_w}{1 + e_m}$ (cm/sec) : Coefficient of Permeability
 $\gamma_w = 1 \times 10^{-3}$ (kg/cm³) : Unit Weight of Water
 $m_v = \frac{a_v}{1 + e_m}$ (cm²/kg) : Coefficient of Volume Change

