LAMPIRAN

PENGUJIAN SIFAT FISIK TANAH

Proyek : Penelitian Tugas Akhir
Lokasi Laboratorium Teknik Sipil
Dikerjakan : Nur Nilasari
NPM : 2112161179

KADAR AIR (SNI 1965 – 2008)

	Depth *(kedalaman)*	(m)		
	Container number *(No. cawan)*		1	2
1	Wt. wet soil + Wt. container *(Berat tanah basah + cawan)*	W_1 (gr)	39.70	35.51
2	Wt. dry soil + Wt. container *(Berat tanah kering + cawan)*	W_2 (gr)	32.08	29.22
3	Wt. of water *(Berat air)*	W_3 (gr)	7.62	6.29
4	Wt. of container *(Berat cawan)*	W_4 (gr)	18.42	18.11
5	Wt. of dry soil *(Berat tanah kering)*	W_5 (gr)	13.66	11.11
6	Water content *(Kadar air)*	W_n (%)	55.78	56.62
7	Average water content *(Kadar air rata-rata)*	W_n (%)	56.20	

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BERAT JENIS TANAH (SNI 1964 – 2008)

	Depth *(kedalaman)*	(m)		
	Type of sample *(Jenis contoh)*		DS	DS
	No. of pycnometer *(No. piknometer)*		1	2
	Volume of pycnometer *(Isi piknometer)*	(ml)	100	100
	Temperature *(Suhu)*	T (°C)	26.0	26.0
1	WT. Dry soil + WT. Pycnometer *(Berat Tanah Kering + Piknometer)*	W_1 (gr)	60.33	73.62
2	WT. Pycnometer *(Berat Piknometer)*	W_2 (gr)	35.16	53.41
3	WT. Dry soil *(Berat Tanah Kering)*	$W_s = W_1 - W_2$ (gr)	25.17	20.21
4	WT. Pycnometer + water *(Berat piknometer + Air)*	W_3 (gr)	138.22	152.72
5	$W_s + W_3$	W_4 (gr)	163.39	172.93
6	$W_s + W_3$ after boiled/vacuum *(setelah direbus/divakum)*	W_5 (gr)	152.96	164.55
7	$W_s + W_3 - W_5$	(gr)	10.43	8.38
8	Specific gravity of water at T *(Berat Jenis Air pada T)*	G_T	1.00	1.00
9	Specific gravity of soil *(Berat Jenis tanah)*	G_s	2.41	2.41
	specific gravity rata-rata		2.4125	

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BERAT ISI KERING (SNI 03 – 3637 – 1994)

MACAM TANAH				Lempung Abu
1	Massa ring + tanah basah		(gr)	266.17
2	Massa ring		(gr)	123.07
3	Massa tanah basah	(1) - (2)	(gr)	143.10
4	Massa bahan kering	$\frac{(3)\times 100}{100+(10)}$	(gr)	91.61
5	Isi tanah basah		(cm^3)	82.84
6	Isi bahan kering	(4) / (11)	(cm^3)	37.98
7	Massa bahan kering per isi tanah basah	(4) / (5)		1.11
8	Isi pori	(5) - (6)	(cm^3)	44.86
9	Angka pori	$\frac{(12)}{100-(12)}$		1.18
10	Air dalam bahan kering			56.20
11	Berat jenis			2.41
12	Pori dari tanah basah	$\frac{(8)}{(5)}\times 100$		54.16
13	Berat isi	(3) / (5)		1.73
14	Derajat kejenuhan	$\frac{[(3)-(4)]\times 100}{(8)}$		114.77

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ANALISA SARINGAN (SNI 3423 : 2008)

Sieve no. *(No. Ayakan)*	Diameter (mm)	Mass Retained (gr)		Percent Cumulative (%)	Percent Cumulative Retained (%)	Percent Passing (%)
3/8	9.52	0.00	0.00	0.00		100.00
4	4.76	0.00	0.00	0.00		100.00
10	2.00	0.00	0.00	0.00		100.00
20	0.84	2.35	2.35	4.70	95.30	95.30
40	0.42	1.27	3.62	7.24	92.76	92.76
80	0.18	0.72	4.34	8.68	91.32	91.32
100	0.149	0.25	4.59	9.18	90.82	90.82
200	0.074	0.16	4.75	9.50	90.50	90.50
PAN (%)		**90.50**				

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ANALISA HIDROMETER (SNI 3423 : 2008)

Elapsed time (minute)	R 1000 (r-1)	Ra 1000 (Ra-1)	Temp. T °C	R-Ra	Zr	$\sqrt{\frac{Zr}{t}}$	D (mm)	N (%)	N' (%)
0,5	43	-1	26.0	42.00	9.2	4.290	0.0546	89.40	89.40
1	42	-1	25.0	41.00	9.4	3.066	0.0390	87.27	87.27
2	40	-1	26.0	39.00	9.7	2.202	0.0280	83.01	83.01
5	38	-1	26.0	37.00	10.1	1.421	0.0181	78.75	78.75
15	37	-1	26.0	36.00	10.2	0.825	0.0105	76.62	76.62
30	34	-1	26.0	33.00	10.70	0.597	0.0076	70.24	70.24
60	31	-1	26.0	30.00	11.2	0.432	0.0055	63.85	63.85
240	29	-1	26.0	28.00	11.5	0.219	0.0028	59.60	59.60
1440	28	-1	26.0	27.00	11.7	0.090	0.0011	57.47	57.47

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BATAS – BATAS ATTERBERG

1. BATAS CAIR (SNI 1967 : 2008)

Number of blows *(Jumlah Ketukan)*		35	23	17
Weight of container + wet soil = W_1 *(Berat Cawan + Tanah Basah)*	(gr)	30.32	29.30	29.33
Weight of container + dry soil = W_2 *(Berat Cawan + Tanah Kering)*	(gr)	24.82	24.18	23.98
Weight of water = $W_1 - W_2 = W_3$ *(Berat Air)*	(gr)	5.50	5.12	5.35
Weight of container = W_4 *(Berat Cawan)*	(gr)	18.35	18.38	18.23
Weight of dry soil = $W_2 - W_4 = W_5$ *(Berat Tanah Kering)*	(gr)	6.47	5.80	5.75
Water content = $(W_3/W_5)\times 100 = w$ *(Kadar air)*	(%)	85.01	88.28	93.04

2. BATAS PLASTIS (SNI 1966 : 2008)

Weight of container + wet soil = W_1 *(Berat Cawan + Tanah Basah)*	(gr)	20.22	19.98
Weight of container + dry soil = W_2 *(Berat Cawan + Tanah Kering)*	(gr)	19.71	19.54
Weight of water = $W_1 - W_2 = W_3$ *(Berat Air)*	(gr)	0.51	0.44
Weight of container = W_4 *(Berat Cawan)*	(gr)	18.03	17.91
Weight of dry soil = $W_2 - W_4 = W_5$ *(Berat Tanah Kering)*	(gr)	1.68	1.63
Water content = $(W_3/W_5)\times 100 = w$ *(Kadar air)*	(%)	30.36	26.99
Rata-rata		28.68	

DOKUMENTASI PENGUJIAN SIFAT FISIK TANAH


Electronic Scale
Lucky
269.50
ON/OFF
UNIT
MODE
TARE


ENGINEERING

PENGUJIAN PEMADATAN STANDAR METODE A

Proyek : Penelitian Tugas Akhir
Lokasi Laboratorium Teknik Sipil
Dikerjakan : Nur Nilasari
NPM : 2112161179

PEMADATAN STANDAR A TANAH ASLI (SNI 1742 : 2008)

No. of blows	: 25	Weight of rammer	: 5.50 lb.	Diameter of mold	9.84 cm
No. of layer	: 3	Height of rammer dropped	: 12.00 in.	Height of mold	11.46 cm
				Volume of mold	871.1 cm^3

Water Content Dertemination

Specimen No.		1		2		3		4		5	
Water add	ml	200		250		300		350		400	
Can No.		A	B	C	D	E	F	G	H	I	J
Wt of can + wet soil,	gr.	66.120	50.590	61.320	46.260	57.820	43.110	60.750	53.970	45.990	43.370
Wt of can + dry soil,	gr.	56.570	44.100	52.590	40.010	48.980	37.530	50.210	45.760	36.760	34.810
Wt of water	gr.	9.550	6.490	8.730	6.250	8.840	5.580	10.540	8.210	9.230	8.560
Wt of can	gr.	18.320	18.200	18.110	18.220	18.300	18.230	18.150	18.120	8.710	8.710
Wt of dry soil	gr.	38.250	25.900	34.480	21.790	30.680	19.300	32.060	27.640	28.050	26.100
Water Content, w	%	24.967	25.058	25.319	28.683	28.814	28.912	32.876	29.703	32.906	32.797
		25.013		27.001		28.863		31.290		32.851	

Density Determination

Water content, w	%	25.013	27.001	28.863	31.290	32.851
Wt of soil + mold	gr.	3628.0	3684.0	3730.0	3651.0	3593.0
Wt of mold	gr.	2190.0	2190.0	2190.0	2190.0	2190.0
Wt of soil in mold	gr.	1438.0	1494.0	1540.0	1461.0	1403.0
Wet density, gt	gr/cc	1.651	1.715	1.768	1.677	1.611
Dry density, gd	gr/cc	1.321	1.351	1.372	1.278	1.212

PEMADATAN STANDAR A TANAH ASLI + 5% GARAM DAPUR

No. of blows	: 25	Weight of rammer	: 5.50 lb.	Diameter of mold	9.84 cm
No. of layer	: 3	Height of rammer dropped	: 12.00 in.	Height of mold	11.46 cm
				Volume of mold	871.1 cm^3

Water Content Determination

Specimen No.		1		2		3		4		5	
Water add	ml	200		250		300		350		400	
Can No.		A	B	C	D	E	F	G	H	I	J
Wt of can + wet soil,	gr.	55.760	32.380	55.610	42.880	58.400	42.530	60.750	53.970	45.990	43.370
Wt of can + dry soil,	gr.	48.250	29.720	46.890	37.500	48.630	36.670	48.210	46.760	35.760	34.810
Wt of water	gr.	7.510	2.660	8.720	5.380	9.770	5.860	12.540	7.210	10.230	8.560
Wt of can	gr.	18.150	18.140	18.130	18.380	17.910	18.410	18.150	18.120	8.710	8.710
Wt of dry soil	gr.	30.100	11.580	28.760	19.120	30.720	18.260	30.060	28.640	27.050	26.100
Water Content, w	%	24.950	22.971	30.320	28.138	31.803	32.092	41.717	25.175	37.819	32.797
		23.960		29.229		31.948		33.446		35.308	

Density Determination

Water content, w	%	23.960	29.229	31.948	33.446	35.308
Wt of soil + mold	gr.	3582.0	3685.0	3754.0	3681.0	3593.0
Wt of mold	gr.	2190.0	2190.0	2190.0	2190.0	2190.0
Wt of soil in mold	gr.	1392.0	1495.0	1564.0	1491.0	1403.0
Wet density, gt	gr/cc	1.598	1.716	1.796	1.712	1.611
Dry density, gd	gr/cc	1.289	1.328	1.361	1.283	1.190

PEMADATAN STANDAR A TANAH ASLI + 10% GARAM DAPUR

No. of blows	: 25	Weight of rammer	: 5.50 lb.	Diameter of mold	9.84 cm
No. of layer	: 3	Height of rammer dropped	: 12.00 in.	Height of mold	11.46 cm
				Volume of mold	871.1 cm^3

Water Content Determnation

Specimen No.		1		2		3		4		5	
Water add	ml	200		250		300		350		400	
Can No.		A	B	C	D	E	F	G	H	I	J
Wt of can + wet soil,	gr.	54.630	52.260	55.370	47.880	52.870	44.530	60.750	53.970	45.990	43.370
Wt of can + dry soil,	gr.	48.000	46.010	47.530	41.650	44.960	38.620	48.240	47.760	36.760	34.810
Wt of water	gr.	6.630	6.250	7.840	6.230	7.910	5.910	12.510	6.210	9.230	8.560
Wt of can	gr.	18.280	18.160	18.450	18.250	18.220	18.290	18.150	18.120	8.710	8.710
Wt of dry soil	gr.	29.720	27.850	29.080	23.400	26.740	20.330	30.090	29.640	28.050	26.100
Water Content, w	%	22.308	22.442	26.960	26.624	29.581	29.070	41.575	20.951	32.906	32.797
		22.375		26.792		29.326		31.263		32.851	

Density Determination

Water content, w	%	22.375	26.792	29.326	31.263	32.851
Wt of soil + mold	gr.	3623.0	3698.0	3765.0	3681.0	3593.0
Wt of mold	gr.	2190.0	2190.0	2190.0	2190.0	2190.0
Wt of soil in mold	gr.	1433.0	1508.0	1575.0	1491.0	1403.0
Wet density, gt	gr/cc	1.645	1.731	1.808	1.712	1.611
Dry density, gd	gr/cc	1.344	1.365	1.398	1.304	1.212

PEMADATAN STANDAR A TANAH ASLI + 15% GARAM DAPUR

No. of blows : 25 No. of layer : 3	Weight of rammer : 5.50 lb. Height of rammer dropped : 12.00 in.	Diameter of mold 9.84 cm Height of mold 11.46 cm Volume of mold 871.1 cm^3

Water Content Determination

Specimen No.		1		2		3		4		5	
Water add	ml	200		250		300		350		400	
Can No.		A	B	C	D	E	F	G	H	I	J
Wt of can + wet soil,	gr.	56.460	39.270	52.260	38.040	60.750	53.970	60.790	62.230	60.220	62.260
Wt of can + dry soil,	gr.	49.990	35.520	45.800	34.170	52.210	46.760	49.340	55.550	51.230	52.110
Wt of water	gr.	6.470	3.750	6.460	3.870	8.540	7.210	11.450	6.680	8.990	10.150
Wt of can	gr.	18.270	18.410	18.210	17.780	18.150	18.120	18.150	18.120	18.100	18.000
Wt of dry soil	gr.	31.720	17.110	27.590	16.390	34.060	28.640	31.190	37.430	33.130	34.110
Water Content, w	%	20.397	21.917	23.414	23.612	25.073	25.175	36.710	17.847	27.136	29.757
		21.157		23.513		25.124		27.279		28.446	

Density Determination

Water content, w	%	21.157	23.513	25.124	27.279	28.446
Wt of soil + mold	gr.	3630.0	3679.0	3775.0	3681.0	3593.0
Wt of mold	gr.	2190.0	2190.0	2190.0	2190.0	2190.0
Wt of soil in mold	gr.	1440.0	1489.0	1585.0	1491.0	1403.0
Wet density, gt	gr/cc	1.653	1.709	1.820	1.712	1.611
Dry density, gd	gr/cc	1.364	1.384	1.454	1.345	1.254

DOKUMENTASI PENGUJIAN PEMADATAN STANDAR A


CIVIL