DAFTAR PUSTAKA

Alkadri, dkk. 2022. Pengaruh Biosementasi Bakteri Terhadap Karakteristik Campuran Tanah Kohesif dan Organik. Prosiding Seminar Nasional Teknik Sipil 227-232

ASTM D 854-14 *Standard Test Methods for Specific Gravity of Soil Solids by Water Pycnometer* 1. 2014. Tersedia pada: https://fliphtml5.com/sxjc/tcto/basic.

ASTM D 2216-19 *Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass* 1. 2019. Tersedia pada: www.astm.org.

ASTM D 3080M-11 *Standard Test Method for Direct Shear Test of Soils Under Consolidated Drained Conditions* 1. 2004. Tersedia pada: www.astm.org.

ASTM D 6913/D6913M-17 *Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis*. 2018. United States. doi: 10.1520/D6913-17.

ASTM D698-12 *Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort* (12 400 ft-lbf/ft 3 (600 kN-m/m 3)) 1. 2012. Tersedia pada: www.astm.org.

Bowles, J.E. 1996. *Foundation Analysis and Design*. 5th ed. Irwin/McGraw-Hill.

Cheng, L., Shahin, M.A., Asce, M. dan Mujah, D. 2016. *Influence of Key Environmental Conditions on Microbially Induced Cementation for Soil Stabilization*. *J. Geotech. Geoenviron. Eng.* doi: 10.1061/(ASCE).

Coduto, D.P.., Kitch, W.A.. dan Yeung, M.Ronald. 2016. *Foundation design : principles and practices*. Pearson.

Das, Braja.M. 1995. Mekanika Tanah (Prinsip-prinsip Rekayasa Geoteknis). Jilid 1. Mochtar, Noor. E. dan Mochtar, Indrasurya. B. ed. Erlangga.

Das, Braja.M. 2010. *Principles of Geotechnical Engineering, Seventh Edition*. 7th Edition. Gowans, H. dan Saundercook, N. ed. Stamford: Chris Carson.

Febyayuningrum, I.C., Rosyidah, R.A. dan Aini, R. 2021. Kontaminasi Bakteri Alat Stetoskop Dengan Media Bap Dan Mca Di Ruang Penyadapan Darah Udd Pmi Kabupaten Sleman Diy. *JURNAL JIKKI* 1(3).
Tersedia pada: https://journal.amikveteran.ac.id/index.php/.

Garrison, A.T. dan Huigens, R.W. 2016. *Eradicating Bacterial Biofilms with Natural Products and their Inspired Analogues that Operate Through Unique Mechanisms*. *Current Topics in Medicinal Chemistry* 17(17), hlm. 1954–1964. doi: 10.2174/1568026617666161214150959.

Hardiyatmo, H.C. 2002. Mekanika Tanah 1. 3 ed. Gadjah Mada University Press.

Hashim, Z. Alzubaidi, L. Al-Madhhachi, A. 2020. *The Influence Of Microbiology On Soil Aggregation Stability*. *IOP Conference Series: Materials Science and Engineering* 870(1)

Hasriana. Samang, L. Djide, M. Harianto, T. 2018. *A Study On Clay Soil Improvement With Bacillus Subtilis Bacteria As The Road Subbase Layer*. *International Journal of GEOMATE* 15(52) 114-120

Holtz, R.D. dan Kovacs, W.D. 1981. *Holtz& Kovacs - An Introduction to Geotechnical Engineering*. Skrable, K. ed. New Jersey: Prentice-Hall, Inc.

Jeong, J.H., Jo, Y.S., Park, C.S., Kang, C.H. dan So, J.S. 2017. *Biocementation of concrete pavements using microbially induced calcite precipitation*. *Journal of Microbiology and Biotechnology* 27(7), hlm. 1331–1335.
doi: 10.4014/jmb.1701.01041.

Knappett, J.A. dan Craig, R.F. 2012. *Craig's Soil Mechanics*. 8th ed. Spon Press.

Kusuma, R.I., Mina, E. dan Ikhsan, I. 2016. Tinjauan Sifat Fisis Dan Mekanis Tanah (Studi Kasus Jalan Carenang Kabupaten Serang). *Jurnal Fondasi* 5(2).

Mujah, D., Cheng, L. dan Shahin, M.A. 2019. *Microstructural and Geomechanical Study on Biocemented Sand for Optimization of MICP Process*. *Journal of Materials in Civil Engineering* 31(4).
doi: 10.1061/(asce)mt.1943-5533.0002660.

Purnama, T. 2023. Uji Skrining Fitokimia Ekstrak Supernatan Dari Bakteri Endofit Kulit Pisang. Jurnal Biologi Makassar 8, hlm. 44–50.
Tersedia pada: https://journal.unhas.ac.id/index.php/bioma.

Rochimi Setiawati, M., Suryatmana, P., Herdiyantoro, D. dan Zahra Ilmiyati. 2014. Karakteristik Pertumbuhan Dan Waktu Generasi Isolat *Azotobacter sp.* Dan Bakteri Endofitik Asal Ekosistem Lahan Sawah. Jurnal Agroekotek 6(1), hlm. 12–20.

Rochmawati, R. dan Irianto. 2020. Tinjauan Sifat Fisis Dan Mekanis Tanah Untuk Menentukan Daya Dukung Tanah (Studi Kasus: Jalan Baru Kayu Batu Base-G Jayapura Sta 0+200). INTAN Jurnal Penelitian Tambang 3(1).

Santosa, B., Suprapto, H. dan Suryadi, H. 1998. *Dasar Mekanika Tanah*. Gunadarma.

Sinambela, Eleanor.A.N., Rondonuwu, Steeva.G. dan Legrans, Roski.R.I. 2023. Potensi Penggunaan *Bacillus Subtilis* Untuk Stabilisasi Tanah Bekas Tambang Emas. *TEKNO* 21, hlm. 86.

SNI 1742:2008 Cara uji kepadatan ringan untuk tanah.

2008 SNI 1964:2008 Cara uji berat jenis tanah.

2008. Indonesia. SNI 1965:2008 Standar Nasional Indonesia Cara uji penentuan kadar air untuk tanah dan batuan di laboratorium.

2008 SNI 2813:2008 Cara uji kuat geser langsung tanah terkonsolidasi dan terdrainase.

2008 SNI 3420:2016 Metode uji kuat geser langsung tanah tidak terkonsolidasi dan tidak terdrainase. 2016. Tersedia pada: www.bsn.go.id.

SNI 3423:2008 Cara uji analisis ukuran butir tanah. 2008. Indonesia.

Toyeb, M., Puri, A. dan Masrizal. 2017. Perilaku Kuat Geser Tanah Terstabilisasi Semen Untuk *Subgrade* Jalan. Prosiding Konferensi Nasional Teknik Sipil dan Perencanaan .

Wesley, L.D.. 2010. *Fundamentals of soil mechanics for sedimentary and residual soils*. Wiley.

Whitman, W.B. 2010. *Systematic Bacteriology Second Edition Volume Four*. 2nd ed. Whitman, W. B. ed. Bergey's Manual.

LAMPIRAN

Lampiran 1. Data Pengujian Sifat Fisis Tanah

HASIL PEMERIKSAAN BERAT JENIS

Specific Gravity Test

Laboratorium : Universitas Hasanuddin
Metode Pengujian : ASTM D-854, SNI 1964:2008
Dikerjakan : M. Afif Dzulfaqar Idris
Tanggal : Juni 2024

Nama Sampel	-	A							
Kedalaman Sampel	m								
Nomor Piknometer	-	*A*	*B*						
Berat Piknometer + Tanah	g	36,03	35,50						
Berat Piknometer	g	26,03	25,50						
Berat Tanah Sampel	g	10,00	10,00						
Suhu, ***T***	°C	30,0	30,0						
Berat Piknometer + Air pada suhu T	g	74,59	73,81						
Berat Piknometer + Tanah + Air	g	80,84	80,08						
Berat Jenis Air pada suhu T, g_T	g/cm^3	0,99624	0,99624						
Koefisien Koreksi Berat Jenis, $a=g_T/g_{20°}$	-	0,99803	0,99803						
Berat Tanah Kering, ***Ws***	g	10,00	10,00						
Berat Jenis Tanah, ***(Gs=a*Ws/Ww)***	-	2,66	2,68						
Berat Jenis Tanah Rata-rata	-	2,67							

Berat Jenis Air $g_{w,20}$°C= 0,99821

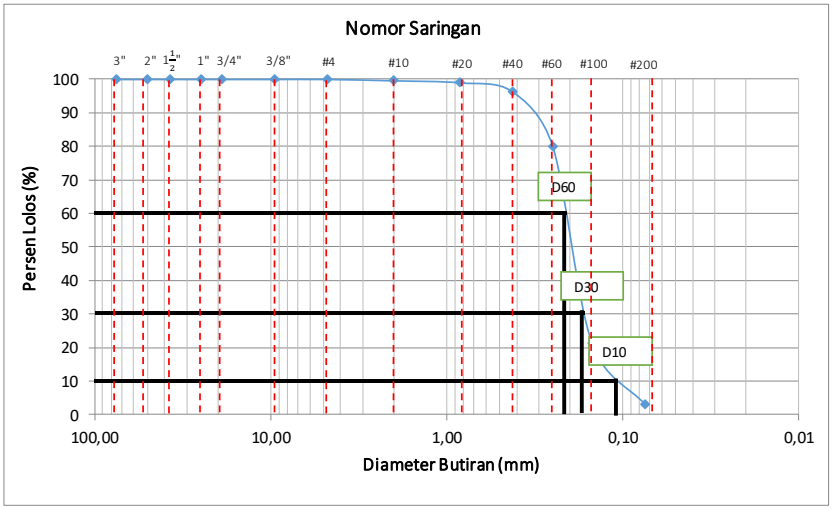
HASIL PENGUJIAN ANALISA SARINGAN

Metode Pengujian : ASTM D-6913, ASTM D-7928, SNI 3423:2008
Laboratorium : Universitas Hasanuddin
Nama Sampel :

Dikerjakan : M. Afif Dzulfaqar
Tanggal : Mei 2024

Berat Tanah Kering	500 gram

Saringan No.	Diameter (mm)	Berat Tertahan (gram)	Berat Kumulatif (gram)	Persen (%)	
				Tertahan	Lolos
3"	75,00	0	0	0,0	100,0
2"	50,00	0	0	0,0	100,0
11/2"	37,50	0	0	0,0	100,0
1"	25,00	0	0	0,0	100,0
3/4"	19,00	0	0	0,0	100,0
3/8"	9,500	0	0	0,0	100,0
4	4,750	0	0	0,0	100,0
10	2,000	2	2	0,4	99,6
20	0,840	3	5	1,0	99,0
40	0,425	13	18	3,6	96,4
60	0,250	82	100	20,0	80,0
100	0,150	293	393	78,6	21,4
200	0,075	92	485	97,0	3,0
Pan	-	15	500	100,0	0,0



Rekapitulasi	D10	D30	D60	Cu	Cc
	0,104	0,165	0,216	2,085	1,213

Lampiran 2. Data Pengujian Sifat Mekanis Tanah

HASIL PENGUJAN KEPADATAN RINGAN

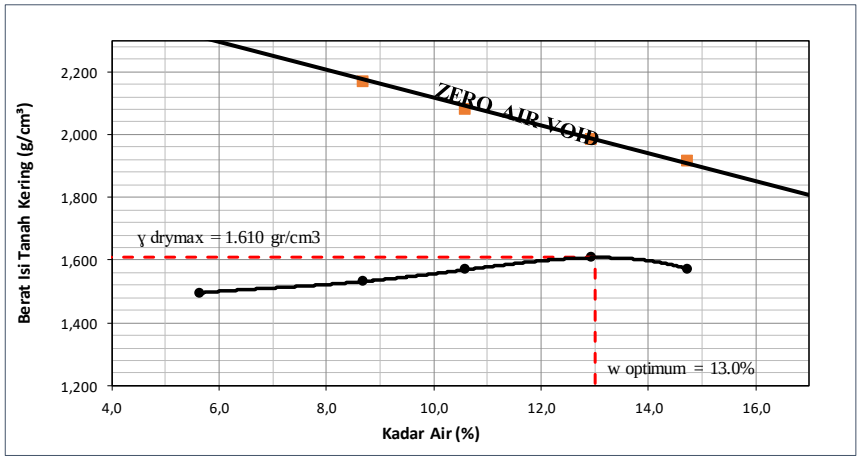
STANDARD PROCTOR TEST

Metode Pengujian	: ASTM D-698, SNI 1742:2008	Dikerjakan	:
Laboratorium	: Universitas Hasanuddin	Tanggal	:

Persiapan Uji						
Berat Tanah Uji	g	2500	2500	2500	2500	2500
Kadar Air Mula-mula	%	2,6	2,6	2,6	2,6	2,6
Penambahan Air	ml	100	150	200	250	300
Kadar Air Campuran	%	6,7	8,8	10,8	12,9	14,9

Kepadatan						
Berat Mould	g	1891	1891	1891	1891	1891
Berat Mould + Tanah Basah	g	3466	3551	3621	3701	3689
Berat Tanah Basah	g	1575	1660	1730	1810	1798
Volume Mould	cm^3	997	997	997	997	997
Kepadatan Basah	g/cm^3	1,580	1,665	1,735	1,815	1,803
Kepadatan Kering	g/cm^3	1,495	1,532	1,569	1,607	1,572

Kadar Air											
Nomor Cawan	-	**1A**	**1B**	**2A**	**2B**	**3A**	**3B**	**4A**	**4B**	**5A**	**5B**
Berat Cawan + Tanah Basah	g	45,42	38,69	32,99	34,28	43,29	44,21	34,16	34,07	38,30	34,14
Berat Cawan + Tanah Kering	g	43,42	37,06	30,98	32,24	39,95	40,73	31,15	31,10	34,19	30,58
Berat Air	g	2,00	1,63	2,01	2,04	3,34	3,48	3,01	2,97	4,11	3,56
Berat Cawan	g	8,14	8,06	8,08	8,53	8,12	8,19	8,04	8,03	6,37	6,33
Berat Tanah Kering	g	35,28	29,00	22,90	23,71	31,83	32,54	23,11	23,07	27,82	24,25
Kadar Air	%	5,7	5,6	8,8	8,6	10,5	10,7	13,0	12,9	14,8	14,7
Kadar Air Rata Rata	%	5,6		8,7		10,6		12,9		14,7	



Berat Jenis
2,67

w optimum (%)
13,0

drymax (gr/cm³)
1,610

Lampiran 3. Data Pengujian *Direct Shear* Tanpa Bakteri

HASIL PENGUJIAN GESER LANGSUNG

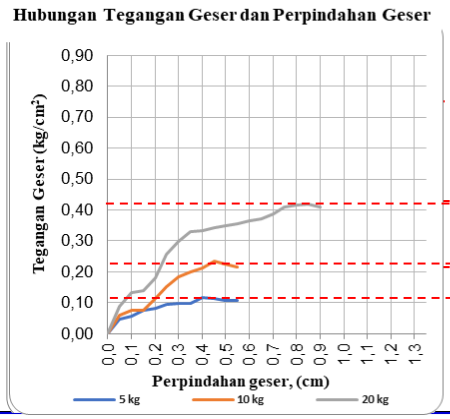
Tak Terkonsolidasi - Tak Terdrainase (UU)

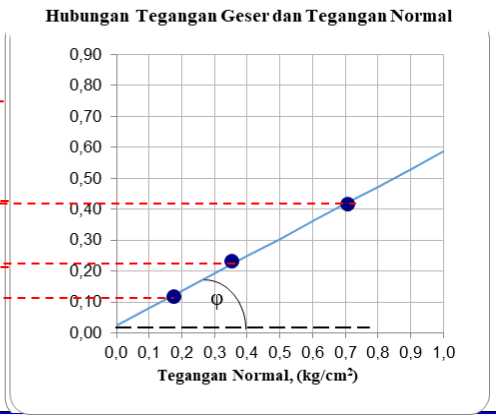
DS Tanpa Bakteri

Metode Pengujian	: ASTM D3080-11, SNI 3420:2016	Dikerjakan	: M. Afif Dzulfaqar
Laboratorium	: Universitas Hasanuddin	Tanggal	: Juli 2024

Ukuran Sampel				Kalibrasi Proving Ring	=	0,55	kg/div
Diameter, ***d***	=	6,00	cm	Kecepatan Geser	=	2	mm/menit
Tinggi, ***h***	=	2,00	cm	Kohesi, ***c***	=	0,02	kg/cm^2
Luas, ***A***	=	28,27	cm^2	Sudut geser dalam, **φ**	=	29	°

Nomor Uji	1			2			3		
Beban Normal	P1 =	5,00	kg	P1 =	10,00	kg	P1 =	20,00	kg
Tegangan Normal	σ1 =	0,18	kg/cm^2	σ1 =	0,35	kg/cm^2	σ1 =	0,71	kg/cm^2
Perpindahan Geser (cm)	Gaya Geser (kg)	Tegangan Geser (kg/cm^2)		Gaya Geser (kg)	Tegangan Geser (kg/cm^2)		Gaya Geser (kg)	Teganga Geser (kg/cm^2)	
0,00	0,00	0,00		0,00	0,00		0,00	0,00	
0,05	1,32	0,05		1,71	0,06		2,53	0,09	
0,10	1,60	0,06		2,15	0,08		3,74	0,13	
0,15	2,15	0,08		2,15	0,08		3,96	0,14	
0,20	2,31	0,08		3,25	0,11		5,12	0,18	
0,25	2,64	0,09		4,29	0,15		7,26	0,26	
0,30	2,81	0,10		5,23	0,18		8,42	0,30	
0,35	2,81	0,10		5,61	0,20		9,30	0,33	
0,40	3,30	0,12		6,05	0,21		9,46	0,33	
0,45	3,25	0,11		6,60	0,23		9,74	0,34	
0,50	3,08	0,11		6,33	0,22		9,85	0,35	
0,55	3,03	0,11		6,11	0,22		10,07	0,36	
0,60							10,29	0,36	
0,65							10,51	0,37	
0,70							11,00	0,39	
0,75							11,55	0,41	
0,80							11,77	0,42	
0,85							11,83	0,42	
0,90							11,55	0,41	
0,95									
1,00									
1,05									
1,10									
1,15									
1,20									
1,25									
1,30									
1,35									





Lampiran 4. Data Pengujian *Direct Shear* Dengan Bakteri

HASIL PENGUJIAN GESER LANGSUNG

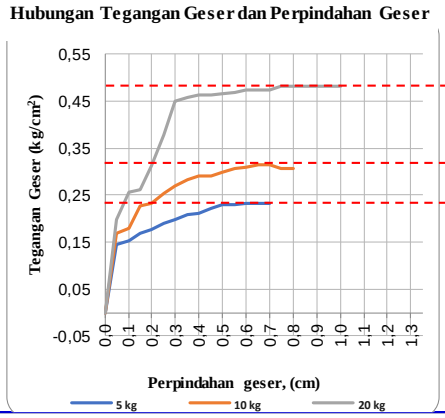
Tak Terkonsolidasi - Tak Terdrainase (UU)

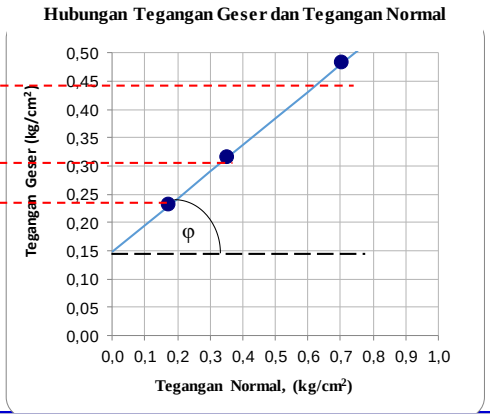
DS 8% 28 Hari 1

Metode Pengujian	: ASTM D3080-11, SNI 3420:2016	Dikerjakan	: M. Afif Dzulfaqar
Laboratorium	: Universitas Hasanuddin	Tanggal	: Juli 2024

Ukuran Sampel				Kalibrasi Proving Ring	=	0,55	kg/div
Diameter, ***d***	=	6,00	cm	Kecepatan Geser	=	2	mm/menit
Tinggi, ***h***	=	2,00	cm	Kohesi, ***c***	=	0,15	kg/cm^2
Luas, ***A***	=	28,27	cm^2	Sudut geser dalam, **φ**	=	25	°

Nomor Uji	1			2			3		
Beban Normal	P1 =	5,00	kg	P1 =	10,00	kg	P1 =	20,00	kg
Tegangan Normal	σ1 =	0,18	kg/cm^2	σ1 =	0,35	kg/cm^2	σ1 =	0,71	kg/cm^2
Perpindahan Geser (cm)	Gaya Geser (kg)	Tegangan Geser (kg/cm^2)		Gaya Geser (kg)	Tegangan Geser (kg/cm^2)		Gaya Geser (kg)	Teganga Geser (kg/cm^2)	
0,00	0,00	0,00		0,00	0,00		0,00	0,00	
0,05	4,13	0,15		4,73	0,17		5,61	0,20	
0,10	4,29	0,15		5,06	0,18		7,21	0,25	
0,15	4,79	0,17		6,38	0,23		7,43	0,26	
0,20	5,01	0,18		6,60	0,23		8,80	0,31	
0,25	5,34	0,19		7,15	0,25		10,73	0,38	
0,30	5,56	0,20		7,65	0,27		12,71	0,45	
0,35	5,89	0,21		7,98	0,28		12,93	0,46	
0,40	6,00	0,21		8,20	0,29		13,09	0,46	
0,45	6,27	0,22		8,25	0,29		13,09	0,46	
0,50	6,49	0,23		8,42	0,30		13,15	0,46	
0,55	6,49	0,23		8,69	0,31		13,26	0,47	
0,60	6,55	0,23		8,75	0,31		13,37	0,47	
0,65	6,55	0,23		8,91	0,32		13,37	0,47	
0,70	6,55	0,23		8,91	0,32		13,42	0,47	
0,75				8,69	0,31		13,59	0,48	
0,80				8,69	0,31		13,64	0,48	
0,85							13,59	0,48	
0,90							13,64	0,48	
0,95							13,64	0,48	
1,00							13,64	0,48	
1,05									
1,10									
1,15									
1,20									
1,25									
1,30									
1,35									





HASIL PENGUJIAN GESER LANGSUNG

Tak Terkonsolidasi - Tak Terdrainase (UU)

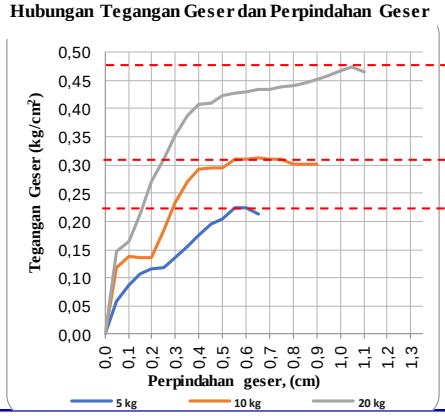
DS 8% 28 Hari 2

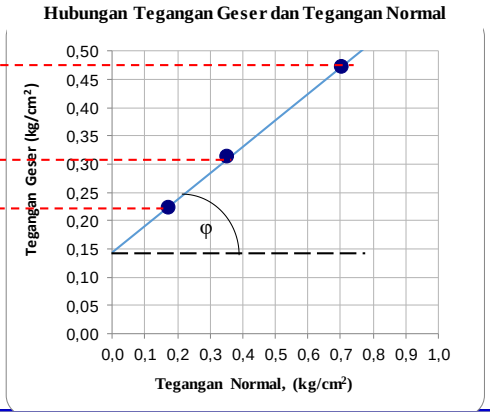
Metode Pengujian	: ASTM D3080-11, SNI 3420:2016	Dikerjakan	: M. Afif Dzulfaqar
Laboratorium	: Universitas Hasanuddin	Tanggal	: Juli 2024

Ukuran Sampel				Kalibrasi Proving Ring	=	0,55	kg/div
Diameter, ***d***	=	6,00	cm	Kecepatan Geser	=	2	mm/menit
Tinggi, ***h***	=	2,00	cm	Kohesi, ***c***	=	0,14	kg/cm^2
Luas, ***A***	=	28,27	cm^2	Sudut geser dalam, **φ**	=	25	°

Nomor Uji	1			2			3		
Beban Normal	P1 =	5,00	kg	P1 =	10,00	kg	P1 =	20,00	kg
Tegangan Normal	σ1 =	0,18	kg/cm^2	σ1 =	0,35	kg/cm^2	σ1 =	0,71	kg/cm^2

Perpindahan Geser (cm)	Gaya Geser (kg)	Tegangan Geser (kg/cm^2)	Gaya Geser (kg)	Tegangan Geser (kg/cm^2)	Gaya Geser (kg)	Teganga Geser (kg/cm^2)
0,00	0,00	0,00	0,00	0,00	0,00	0,00
0,05	1,65	0,06	3,36	0,12	4,13	0,15
0,10	2,48	0,09	3,91	0,14	4,68	0,17
0,15	3,03	0,11	3,85	0,14	6,05	0,21
0,20	3,30	0,12	3,85	0,14	7,65	0,27
0,25	3,36	0,12	5,23	0,18	8,80	0,31
0,30	3,85	0,14	6,60	0,23	9,96	0,35
0,35	4,40	0,16	7,65	0,27	10,95	0,39
0,40	4,95	0,18	8,25	0,29	11,50	0,41
0,45	5,56	0,20	8,31	0,29	11,61	0,41
0,50	5,78	0,20	8,31	0,29	11,99	0,42
0,55	6,33	0,22	8,75	0,31	12,10	0,43
0,60	6,33	0,22	8,80	0,31	12,16	0,43
0,65	6,00	0,21	8,86	0,31	12,27	0,43
0,70			8,75	0,31	12,27	0,43
0,75			8,75	0,31	12,38	0,44
0,80			8,53	0,30	12,43	0,44
0,85			8,53	0,30	12,60	0,45
0,90			8,53	0,30	12,76	0,45
0,95					12,98	0,46
1,00					13,20	0,47
1,05					13,37	0,47
1,10					13,15	0,46
1,15						
1,20						
1,25						
1,30						
1,35						





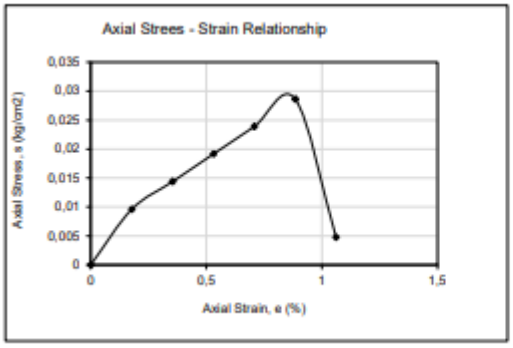
Lampiran 5. Data Pengujian *Unconfined Compression Test* Tanpa Bakteri

UNCONFINED COMPRESSION TEST RESULTS

PROJECT	:	Research of soil stabbilization with various agents		
LOCATION	:	-		
SAMPEL	:			
TESTING METHOD	:	ASTM D 2166-66	TESTED BY :	UCT 0% - 1
LABORATORY	:	HASANUDDIN UNIVERSITY	DATE :	

Sample Depth		m	-	m	Index Properties	Weight of Wet Soil	gram
Sample Size	Diameter, d		5,90	cm		Weight of Dry Soil	gram
	Height, h		11,30	cm		Water Content	%
	Volume		308,94	cm^3		Dry Unit Weight	$gram/cm^3$
	Area, Ao		27,34	cm^2	Proving Ring Calibration	1,316	kg/div

Axial Deformation		Axial Load & Stress: Axial Load		Axial Load & Stress: Axial Stress		Axial Deformation		Axial Load & Stress: Axial Load		Axial Load & Stress: Axial Stress	
Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress	Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress
δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A	δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A
(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)	(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)
0,00	0,00	0,0	0,00	27,34	0,000						
0,20	0,18	0,2	0,26	27,39	0,010						
0,40	0,35	0,3	0,39	27,44	0,014						
0,60	0,53	0,4	0,53	27,49	0,019						
0,80	0,71	0,5	0,66	27,53	0,024						
1,00	0,88	0,6	0,79	27,58	0,029						
1,20	1,06	0,1	0,13	27,63	0,005						



Failure Visualization	
Undisturbed	Remolded

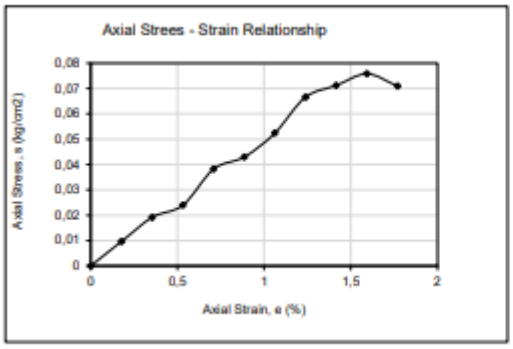
Unconfined Compression Strength, kg/cm^2	
qu =	0,029
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

UNCONFINED COMPRESSION TEST RESULTS

PROJECT	:	Research of soil stabbilization with various agents		
LOCATION	:	-		
SAMPEL	:			UCT 0% - 2
TESTING METHOD	:	ASTM D 2166-66	TESTED BY	:
LABORATORY	:	HASANUDDIN UNIVERSITY	DATE	:

Sample Depth		m	-	m	Index Properties	Weight of Wet Soil	gram
Sample Size	Diameter, d		5,90	cm		Weight of Dry Soil	gram
	Height, h		11,30	cm		Water Content	%
	Volume		308,94	cm^3		Dry Unit Weight	$gram/cm^3$
	Area, Ao		27,34	cm^2	Proving Ring Calibration	1,316	kg/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
		Axial Load		Axial Stress				Axial Load		Axial Stress	
Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress	Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress
δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A	δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A
(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)	(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)
0,00	0,00	0,0	0,00	27,34	0,000						
0,20	0,18	0,2	0,26	27,39	0,010						
0,40	0,35	0,4	0,53	27,44	0,019						
0,60	0,53	0,5	0,66	27,49	0,024						
0,80	0,71	0,8	1,05	27,53	0,038						
1,00	0,88	0,9	1,18	27,58	0,043						
1,20	1,06	1,1	1,45	27,63	0,052						
1,40	1,24	1,4	1,84	27,68	0,067						
1,60	1,42	1,5	1,97	27,73	0,071						
1,80	1,59	1,6	2,11	27,78	0,076						
2,00	1,77	1,5	1,97	27,83	0,071						



Failure Visualization	
Undisturbed	Remolded

Unconfined Compression Strength, kg/cm^2	
qu =	0,076
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

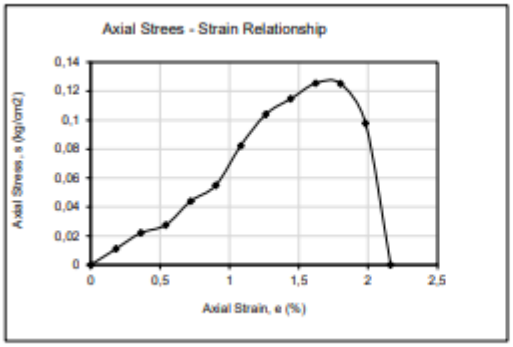
Lampiran 6. Data Pengujian *Unconfined Compression Test* Dengan Bakteri

UNCONFINED COMPRESSION TEST RESULTS

PROJECT	:	Research of soil stabbilization with various agents		
LOCATION	:	-		
SAMPEL	:			
TESTING METHOD	:	ASTM D 2166-66	TESTED BY	**UCT 8% - 28 Hari 1**
LABORATORY	:	HASANUDDIN UNIVERSITY	DATE	:

Sample Depth		m	-	m	Index Properties	Weight of Wet Soil	gram
Sample Size	Diameter, d		5,50	cm		Weight of Dry Soil	gram
	Height, h		11,10	cm		Water Content	%
	Volume		263,72	cm^3		Dry Unit Weight	$gram/cm^3$
	Area, Ao		23,76	cm^2	Proving Ring Calibration	1,316	kg/div

Axial Deformation		Axial Load & Stress: Axial Load		Axial Load & Stress: Axial Stress		Axial Deformation		Axial Load & Stress: Axial Load		Axial Load & Stress: Axial Stress	
Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress	Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress
δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A	δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A
(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)	(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)
0,00	0,00	0,0	0,00	23,76	0,000						
0,20	0,18	0,2	0,26	23,80	0,011						
0,40	0,36	0,4	0,53	23,84	0,022						
0,60	0,54	0,5	0,66	23,89	0,028						
0,80	0,72	0,8	1,05	23,93	0,044						
1,00	0,90	1,0	1,32	23,97	0,055						
1,20	1,08	1,5	1,97	24,02	0,082						
1,40	1,26	1,9	2,50	24,06	0,104						
1,60	1,44	2,1	2,76	24,11	0,115						
1,80	1,62	2,3	3,03	24,15	0,125						
2,00	1,80	2,3	3,03	24,19	0,125						
2,20	1,98	1,8	2,37	24,24	0,098						
2,40	2,16	1,0		24,28							



Failure Visualization	
Undisturbed	Remolded

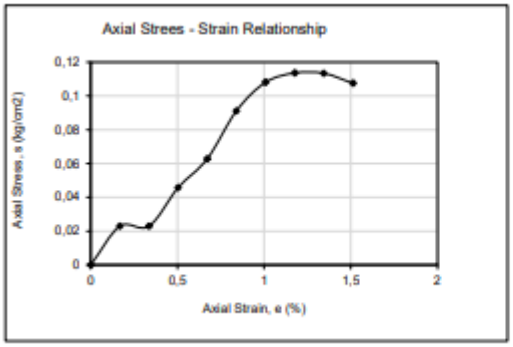
Unconfined Compression Strength, kg/cm^2	
qu =	0,125
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

UNCONFINED COMPRESSION TEST RESULTS

PROJECT	:	Research of soil stabbilization with various agents		
LOCATION	:	-		
SAMPEL	:			UCT 8% - 28 Hari 2
TESTING METHOD	:	ASTM D 2166-66	TESTED BY	:
LABORATORY	:	HASANUDDIN UNIVERSITY	DATE	:

Sample Depth		m	-	m	Index Properties	Weight of Wet Soil	gram
Sample Size	Diameter, d		5,40	cm		Weight of Dry Soil	gram
	Height, h		11,90	cm		Water Content	%
	Volume		272,54	cm^3		Dry Unit Weight	$gram/cm^3$
	Area, Ao		22,90	cm^2	Proving Ring Calibration		1,316 kg/div

Axial Deformation		Axial Load & Stress: Axial Load		Axial Load & Stress: Axial Stress		Axial Deformation		Axial Load & Stress: Axial Load		Axial Load & Stress: Axial Stress	
Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress	Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress
δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A	δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A
(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)	(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)
0,00	0,00	0,0	0,00	22,90	0,000						
0,20	0,17	0,4	0,53	22,94	0,023						
0,40	0,34	0,4	0,53	22,98	0,023						
0,60	0,50	0,8	1,05	23,02	0,046						
0,80	0,67	1,1	1,45	23,06	0,063						
1,00	0,84	1,6	2,11	23,10	0,091						
1,20	1,01	1,9	2,50	23,14	0,108						
1,40	1,18	2,0	2,63	23,17	0,114						
1,60	1,34	2,0	2,63	23,21	0,113						
1,80	1,51	1,9	2,50	23,25	0,108						



Failure Visualization	
Undisturbed	Remolded

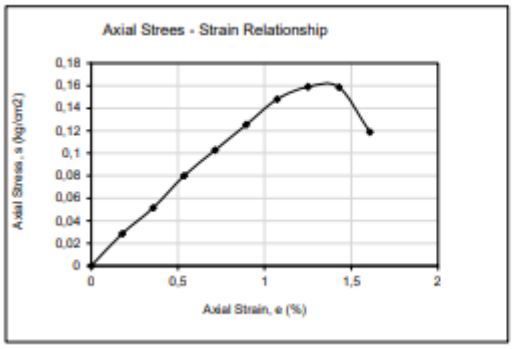
Unconfined Compression Strength, kg/cm^2	
qu =	0,114
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

UNCONFINED COMPRESSION TEST RESULTS

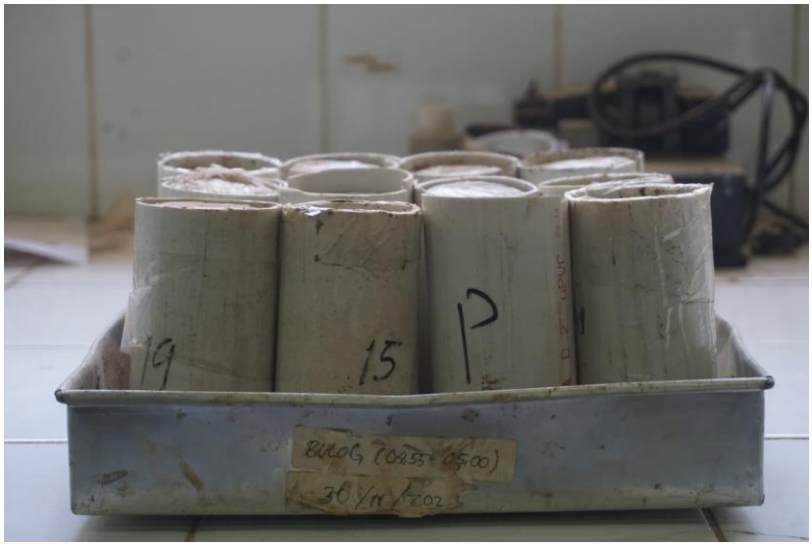
PROJECT	:	Research of soil stabbilization with various agents		
LOCATION	:	-		
SAMPEL	:			UCT 8% - 28 Hari 3
TESTING METHOD	:	ASTM D 2166-66	TESTED BY	:
LABORATORY	:	HASANUDDIN UNIVERSITY	DATE	:

Sample Depth		m	-	m	Index Properties	Weight of Wet Soil	gram
Sample Size	Diameter, d		5,40	cm		Weight of Dry Soil	gram
	Height, h		11,20	cm		Water Content	%
	Volume		256,50	cm^3		Dry Unit Weight	$gram/cm^3$
	Area, Ao		22,90	cm^2	Proving Ring Calibration	1,316	kg/div

Axial Deformation		Axial Load & Stress: Axial Load		Axial Load & Stress: Axial Stress		Axial Deformation		Axial Load & Stress: Axial Load		Axial Load & Stress: Axial Stress	
Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress	Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress
δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A	δh	ε = δh/h		P	A = Ao/(1- δh/h)	σ = P/A
(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)	(mm)	(%)	(div)	(kg)	(cm^2)	(kg/cm^2)
0,00	0,00	0,0	0,00	22,90	0,000						
0,20	0,18	0,5	0,66	22,94	0,029						
0,40	0,36	0,9	1,18	22,98	0,052						
0,60	0,54	1,4	1,84	23,03	0,080						
0,80	0,71	1,8	2,37	23,07	0,103						
1,00	0,89	2,2	2,90	23,11	0,125						
1,20	1,07	2,6	3,42	23,15	0,148						
1,40	1,25	2,8	3,68	23,19	0,159						
1,60	1,43	2,8	3,68	23,23	0,159						
1,80	1,61	2,1	2,76	23,28	0,119						



Failure Visualization	
Undisturbed	Remolded

Unconfined Compression Strength, kg/cm^2	
qu =	0,159
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

Lampiran 7. Dokumentasi Selama Penelitian