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# **LAMPIRAN**



**LABORATORIUM PRODUKTIVITAS & KUALITAS PERAIRAN  
FAKULTAS ILMU KELAUTAN DAN PERIKANAN  
UNIVERSITAS HASANUDDIN**

Jl. Perintis Kemerdekaan, KM 10 Tamalanrea, Makassar, Indonesia 90245

Telp./ Fax: +62-0411-586025, email: [flkp@unhas.ac.id](mailto:flkp@unhas.ac.id), website: <http://flkp.unhas.ac.id>

No : 11.UM/Lab.Air/III/2021  
Pemilik sampel : Nidya Anastasia Nirwan (Teknik lingkungan Unhas)  
Tanggal masuk : 23 Maret 2021  
Jumlah sampel : 2  
Jenis sampel : Sampel lumpur & Abu ketel  
Asal sampel : TPA Antang  
Jenis Kegiatan : Penelitian S1

**Data Hasil Analisis**

No	Kode Sampel	Satuan	Sampel Uji	
			LL	AK
1	Kromium (Cr)	$\mu\text{g}/\text{gram}$	7.50	7.32
2	Kadmium (Cd)	$\mu\text{g}/\text{gram}$	0.05	0.01
3	Arsen (As)	$\mu\text{g}/\text{gram}$	0.21	0.26
4	Timbal (Pb)	$\mu\text{g}/\text{gram}$	2.15	0.77

Makassar, 14 April 2021  
Pranata Lab. Pendidikan (PLP)

  
Fitriyanti S. Si

Nip: 19771012 200112 2 001

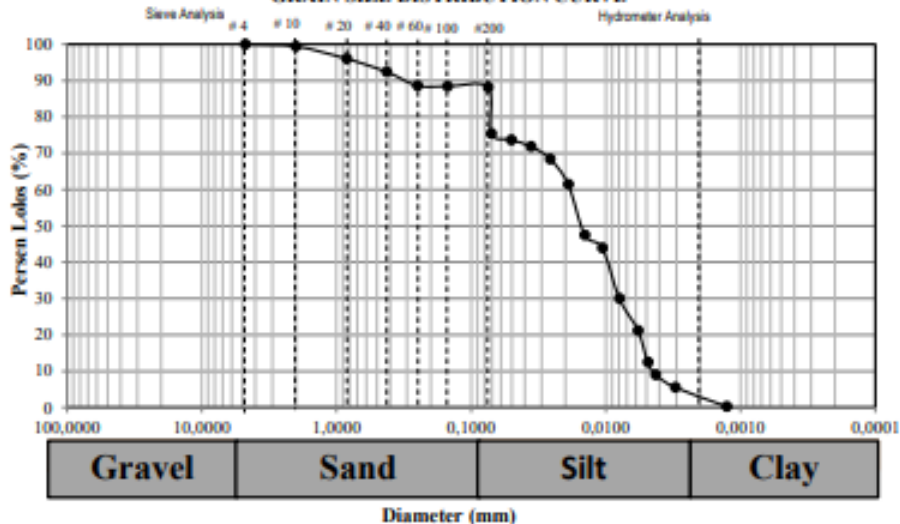
### TEST RESULTS OF GRAIN-SIZE ANALYSIS

(Sieve-Mechanical and Hydrometer Methods)


PROJECT : TA  
 LOCATION : TANAH  
 QUARRY :  
 TESTING METHOD : ASTM D 424-59, D 4318-(00), AASHTO T89/T90  
 LABORATORY : HASANUDDIN UNIVERSITY  
 TESTED BY : IMAMUL KHAIR HAS  
 DATE : JULI 2021

Berat Tanah Kering:		<b>500</b>		gr		Spec. Gravity, G <sub>s</sub> :		<b>2,693</b>		T :		<b>28,0</b>		°C	
Analisa Saringan						Analisa Hidrometer									
Saringan No.	Diameter (mm)	Berat Tertahan (Gram)	Berat Kurus (gram)	Persentase Tertahan (%)	Persentase Lolos (%)	Waktu (menit)	R	Rep = R <sub>1</sub> - R <sub>2</sub> / R <sub>2</sub>	S <sub>1</sub> (Pas = (100 Rep) / (100 Rep + 100) / 100)	Re <sub>1</sub> = R + F <sub>1</sub>	L (cm)	A	D <sub>10</sub> (mm)		
4	4,75	0	0	0	100	0,25	48,00	43,15	75,39	49,00	8,30	0,0123	0,07087		
10	2	3	3	0,6	99,4	0,5	47,00	42,15	73,64	48,00	8,40	0,0123	0,05041		
20	0,84	17	20	4	96	1	46,00	41,15	71,89	47,00	8,60	0,0123	0,03607		
40	0,425	18	38	7,6	92,4	2	44,00	39,15	68,40	45,00	8,90	0,0123	0,02595		
60	0,25	19	57	11,4	88,6	4	40,00	35,15	61,41	41,00	9,60	0,0123	0,01906		
100	0,15	1	58	11,6	88,4	8	32,00	27,15	47,43	33,00	10,90	0,0123	0,01436		
200	0,075	1	59	11,8	88,2	15	30,00	25,15	43,94	31,00	11,20	0,0123	0,01063		
Pan	-	441	500	100	0	30	22,00	17,15	29,96	23,00	12,50	0,0123	0,00794		
						60	17,00	12,15	21,23	18,00	13,30	0,0123	0,00579		
						90	12,00	7,15	12,49	13,00	14,20	0,0123	0,00489		
						120	10,00	5,15	9,00	11,00	14,50	0,0123	0,00428		
						240	8,00	3,15	5,50	9,00	14,80	0,0123	0,00305		
						1440	5,00	0,15	0,26	6,00	15,30	0,0123	0,00127		
Berat jenis air terhadap temperatur, g / cm <sup>3</sup>						=	0,99824								
Faktor, K = ( 1000 x G <sub>s</sub> x g <sub>air</sub> ) / ( 10 x W <sub>s</sub> (G <sub>s</sub> - 1) )						=	3,1694								
Faktor K <sub>1</sub> = (G <sub>s</sub> / T)						=	0,0123								
Temperatur Correction (F <sub>T</sub> ) = -4,85 + 0,25 T						=	2,15								
Zero Correction (F <sub>Z</sub> )						=	7,0								
Meniscus correction (F <sub>m</sub> )						=	1								
G <sub>s</sub> Correction						=	0,99								

#### GRAIN SIZE DISTRIBUTION CURVE



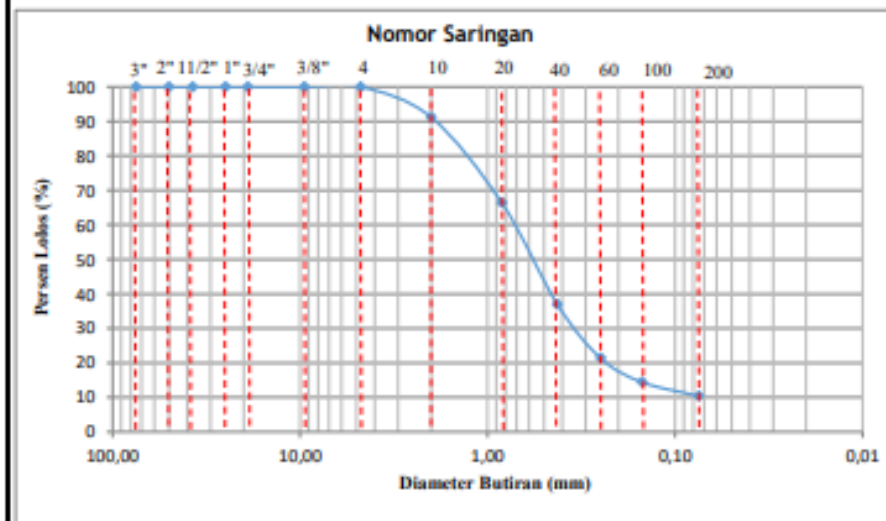
### SIEVE ANALYSIS

PROJECT	: SOIL INVESTIGATION REPORT	
LOCATION	: KIMA	
SAMPLE NO.	: LUMPUR LIMBAH	
SAMPLING DEPTH	: KEDALAMAN BORING/SAMPEL (JANGAN LUPA SATUANNYA)	
TESTING METHOD	: ASTM D 424-69, D 4318-(00), AASHTO T89/T90	
LABORATORY	: HASANUDDIN UNIVERSITY	TESTED BY : IMAMUL KHAIR HAS DATE : JULI, 2021

#### Hasil Perhitungan Analisa Saringan

	Sebelum	Setelah
Berat tanah kering + Container	-	
Berat Container	-	
Berat tanah Kering	500	

Saringan No.	Diameter (mm)	Berat Tertahan (gram)	Berat Kumulatif (gram)	Persen (%)	
				Tertahan	Lolos
3"	75.00	0	0	0.00	100.00
2"	50.00	0	0	0.00	100.00
1 1/2"	37.50	0	0	0.00	100.00
1"	25.00	0	0	0.00	100.00
3/4"	19.00	0	0	0.00	100.00
3/8"	9.500	0	0	0.00	100.00
4	4.750	0	0	0.00	100.00
10	2.000	44	44	8.80	91.20
20	0.840	124	168	33.60	66.40
40	0.425	147	315	63.00	37.00
60	0.250	78	393	78.60	21.40
100	0.150	35	428	85.60	14.40
200	0.075	20	448	89.60	10.40
Pan	-	52	500	100.00	0.00



	D10	D30	D60	Cu	Cc
1	0.068	0.346	0.750	11.106	2.372

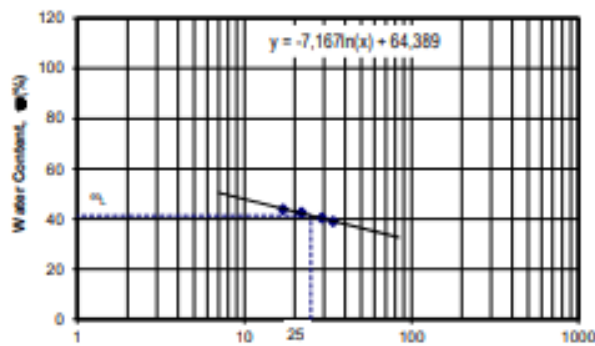


## ATTERBERG LIMITS TEST

PROJECT	: SOIL CLASSIFICATION		
LOCATION	: SUNGAI JE'NEBERANG		
SAMPLING DEPTH	: -		
TESTING METHOD	: ASTM D 424-59, D 4318-(00), AASHTO T89/T90	TESTED BY	IMAMUL KHAIR HAS
LABORATORY	: HASANUDDIN UNIVERSITY	DATE	: JULI 2021

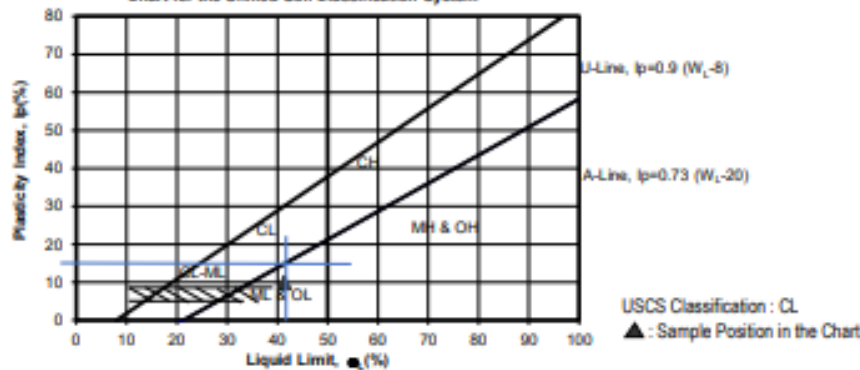
Sample No.	:	007									
Depth of Sample	:										
	Unit	Plastic Limit		Liquid Limit							
Test Number	-	1	2	1	2	3	4				
Number of Blows	N	-	-	17	22	29	34				
Container No. or Can No.	-	A1	A2	B1	B2	C1	C2	D1	D2	E1	E2
Weight of Wet Soil+Can, W1	gram	15.13	15.47	29.79	28.57	28.70	27.95	29.72	30.98	24.62	22.23
Weight of Dry Soil+Can, W2	gram	13.48	13.75	23.18	22.37	22.56	21.98	23.51	24.53	19.95	18.13
Weight of Water, Ww=W1-W2	gram	1.65	1.72	6.61	6.20	6.14	5.97	6.21	6.45	4.67	4.10
Weight of Can, W3	gram	8.22	8.27	8.11	8.23	8.12	7.95	8.15	8.57	7.94	7.58
Weight of Dry Soil, Ws=W2-W3	gram	5.26	5.48	15.07	14.14	14.44	14.03	15.36	15.96	12.01	10.55
Water Content, $\omega = Ww/Ws * 100\%$	%	31.37	31.39	43.86	43.85	42.52	42.55	40.43	40.41	38.88	38.86
Average of Water Content, w	%	31.38		43.85		42.54		40.42		38.87	

Chart for Liquid Limit Determination



Atterberg Limits	Value
Plastic Limit, $\omega_p$ (%)	31.38
Liquid Limit, $\omega_L$ (%)	41.32
Plastic Index, $I_p = \omega_L - \omega_p$	9.94
Shrinkage Limit, $\omega_s$ (%)	25.46

Chart for the Unified Soil Classification System



### SPECIFIC GRAVITY TEST RESULTS

PROJECT : SOIL INVESTIGATION REPORT AMRAN 2  
 LOCATION : KIMA  
 SAMPLE : LUMPUR LIMBAH  
 BORING DEF : -  
 TESTING ME : ASTM D 854-58(72)  
 LABORATOR : HASANUDDIN UNIVERSITY



TESTED BY : IMAMUL KHAIR HAS  
 DATE : JULI 2021

Sample	-	1					
Sample Depth & Inclination	m						
Number of Volumetric Flask	-	C	D				
Weight of Vol. Flask + Soil (W2)	Gram	40,07	32,02				
Weight of Vol. Flask (W1)	Gram	30,07	22,02				
Weight of Dry Soil (Ws=W2-W1)	Gram	10,00	10,00				
Temperature, T (oC)	Degree	28,0	28,0				
Weight of Vol. Flask+Water at T (W4)	Gram	77,98	72,79				
Weight of Vol. Flask+Water+Soil (W3)	Gram	83,13	77,97				
Unit Weight of Water at T, $\gamma_T$	Gram/Cm <sup>3</sup>	0,99624	0,99624				
Temp. Corr. Coefficient, $\alpha=\gamma_T/\gamma_{20}^{oC}$	-	0,99803	0,99803				
Weight of Soil (Wu=(Ws+W4-W3))	Gram	9,61	9,61				
Specific Gravity of Soil (Gs= $\alpha$ *Ws/Wu)	-	2,150	2,165		2,163		
Average of Gs	-	2,158					
Remarks:	Unit Weight of Water, $\gamma_{w,20}^{oC} = 0,99821$						

### SPECIFIC GRAVITY TEST RESULTS

PROJECT : SOIL INVESTIGATION REPORT NAMA CLIENT  
 LOCATION : LOKASI SAMPEL  
 QUARRY : -  
 BORING DEPTH : -  
 TESTING METHOD : ASTM D 854-58(72)  
 LABORATORY : HASANUDDIN UNIVERSITY



TESTED BY : IMAMUL KHAIR HAS  
 DATE : JULI 2021

Sample	-	1					
Sample Depth & Inclination	m						
Number of Volumetric Flask	-	A	B				
Weight of Vol. Flask + Soil (W2)	Gram	36,70	32,06				
Weight of Vol. Flask (W1)	Gram	26,70	22,06				
Weight of Soil	Gram	10,00	10,00				
Temperature, T (oC)	Degree	28,0	28,0				
Weight of Vol. Flask+Water at T (W4)	Gram	74,07	72,44				
Weight of Vol. Flask+Water+Soil (W3)	Gram	80,10	78,51				
Unit Weight of Water at T, $\gamma_T$	Gram/Cm <sup>3</sup>	0,99624	0,99624				
Temp. Corr. Coefficient, $\alpha=\gamma_T/\gamma_{20}^{oC}$	-	0,99803	0,99803				
Weight of Dry Soil, Ws	Gram	9,70	9,76				
Specific Gravity of Soil (Gs= $\alpha$ *Ws/Wu)	-	2,638	2,640				
Average of Gs	-	2,639					
Remarks:	Unit Weight of Water, $\gamma_{w,20}^{oC} = 0,99821$						

TEST RESULTS OF GENERAL PROPERTIES (Wet Density, Water Content, Dry Density, Porosity, & Degree of Saturation)											
PROJECT	: SOIL INVESTIGATION REPORT PT. PP ( PERSERO ) TBK										
LOCATION	: KIMA										
BORING DEPTH	: -										
TESTING METHOD	: ASTM D 2216-(98), D 2937-(71), AASHTO T100-71	TESTED BY	: IMAMUL KHAIR HAS								
LABORATORY	: HASANUDDIN UNIVERSITY	DATE	: JULI 2021								
Bore Hole No.	-										
Sample	-	01									KETERANGAN
Sample Depth & Inclination	m	-									
Ring / Container Number	-	1									
Weight of Ring, (1)	Gram	37,39									
Weight of Container, (2)	Gram	39,62									
Weight of Ring+Container+Wet Soil, (3)	Gram	154,50									
Weight of Wet Soil, (4)=(3)-(2)-(1))	Gram	77,49									
Volume of Soil or Ring, (5)	cm <sup>3</sup>	45,78									
Weight of Ring+Container-Dry Soil, (6)	Gram	121,60									
Weight of Dry Soil, (7)=(6)-(2)-(1))	Gram	44,59									
Weight of Water, (8)=(4)-(7))	Gram	32,90									
Specific Gravity, G <sub>s</sub>	-	2,158									
Volume of Dry Soil, (9)=(7)/G <sub>s</sub>	cm <sup>3</sup>	20,66									
Volume of Pore, (10)=(5)-(9))	cm <sup>3</sup>	25,12									
Wet Density, $\gamma_{wet}=(4)/(5)$	Gr/cm <sup>3</sup>	1,693									
Water Content, $w=(8)/(7)*100\%$	%	73,78									
Dry Density, $\gamma_d=\gamma_{wet}/(1+w)$	Gr/cm <sup>3</sup>	0,974									
Porosity, $n=(10)/(5)*100\%$	%	54,87									
Degree of Saturation, $S_r=(8)/(10)*100\%$	%	130,98									


COMPACTION TEST RESULTS											
PROJECT	: SOIL INVESTIGATION										
LOCATION	: SUNGAI JE'NEBERANG										
SAMPLE / SAMPLE NO.	: TANAH										
TESTING METHOD	: ASTM D 698/ D 1567	TESTED BY	: IMAMUL KHAIR HAS								
LABORATORY	: HASANUDDIN UNIVERSITY	DATE	: AGUSTUS 2021								
Berat tanah	gram	2000	2000	2000	2000	2000					
Kadar air mula-mula	%	6,61	6,61	6,61	6,61	6,61					
Penambahan air	ml	200	250	300	350	400					
Kadar air akhir	%	17,27	19,93	22,60	25,26	27,93					
<b>Berat Isi Basah (Wet density)</b>											
No. Mould	-	1	2	3	4	5					
Berat Mould	gram	1916	1916	1916	1916	1916					
Berat tanah basah + Mould	gram	3658	3728	3826	3814	3810					
Berat tanah basah, $W_{wet}$	gram	1742	1812	1910	1898	1894					
Volume Mould	cm <sup>3</sup>	1004	1004	1004	1004	1004					
Berat Volume Basah	gr/cm <sup>3</sup>	1,735	1,805	1,903	1,891	1,887					
<b>Kadar Air (Water Content)</b>											
No. Container	-	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B
Berat tanah basah + Container	gram	70,9	76,58	74,78	72,41	28,45	29,97	51,91	40,76	99,98	108
Berat tanah kering + Container	gram	60,28	65,03	62,44	60,46	24,2	25,43	41,95	33,32	78,11	84,09
Berat air	gram	10,62	11,55	12,34	11,95	4,25	4,54	9,96	7,44	21,87	23,89
Berat container	gram	8,21	8,47	8,3	8,07	8,1	8,22	8,04	7,97	8,26	7,84
Berat tanah kering	gram	52,07	56,56	54,14	52,39	16,1	17,21	33,91	25,35	69,85	76,25
Kadar air	%	20,40	20,42	22,79	22,81	26,40	26,38	29,37	29,35	31,31	31,33
Kadar air rata-rata	%	20,41		22,80		26,39		29,36		31,32	
<b>Berat Isi Kering ( Dry Density)</b>											
Berat tanah basah, $W_{wet}$	gram	1742	1812	1910	1898	1894					
Kadar air rata-rata	%	20,41	22,80	26,39	29,36	31,32					
Berat kering	$W_{dry} = \frac{W_{wet}}{1 + \left(\frac{W}{100}\right)}$	gram	1446,75	1475,56	1511,21	1467,22	1442,27				
Volume Mould	cm <sup>3</sup>	1003,94	1003,94	1003,94	1003,94	1003,94					
Berat isi kering	$\gamma_{dry} = \frac{W_{dry}}{V_{mould}}$	gr/cm <sup>3</sup>	1,44	1,47	1,51	1,46	1,44				
$g_{zav} = gw/(w+(1/G_s))$	gr/cm <sup>3</sup>	1,72	1,65	1,56	1,49	1,44					

### COMPACTION TEST RESULTS

<b>COMPACTION TEST RESULTS</b>											
PROJECT	: SKRIPSI										
LOCATION	: FT-UH										
QUARRY	:										
SAMPLE / SAMPLE NO.	: TANAH ASLI										
TESTING METHOD	: ASTM D 698/ D 1567					TESTED BY	: IMAMUL KHAIR HAS				
LABORATORY	: HASANUDDIN UNIVERSITY					DATE	: AGUSTUS 2021				
Berat tanah	gram	2000	2000	2000	2000	2000					
Kadar air mula-mula	%	1,93	1,93	1,93	1,93	1,93					
Penambahan air	ml	600	650	700	750	800					
Kadar air akhir	%	32,51	35,06	37,61	40,16	42,71					
<b>Berat Isi Basah (Wet density)</b>											
No. Mould	-	1	2	3	4	5					
Berat Mould	gram	1909	1909	1909	1909	1909					
Berat tanah basah + Mould	gram	3447	3484	3503	3485	3464					
Berat tanah basah, $W_{wet}$	gram	1538	1575	1594	1576	1555					
Volume Mould	cm <sup>3</sup>	1004	1004	1004	1004	1004					
Berat Volume Basah	gr/cm <sup>3</sup>	1,532	1,569	1,588	1,570	1,549					
<b>Kadar Air (Water Content)</b>											
No. Container	-	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B
Berat tanah basah + Container	gram	85,90	68,06	80,90	67,07	84,18	85,95	75,67	74,33	65,18	63,65
Berat tanah kering + Container	gram	68,09	54,43	62,79	53,57	65,57	66,85	59,28	56,23	49,98	49,61
Berat air	gram	17,81	13,63	18,11	13,50	18,61	19,10	16,39	18,1	15,2	14,04
Berat container	gram	15,19	15,02	15,34	15,38	15,13	15,49	15,43	15,32	15,54	15,49
Berat tanah kering	gram	52,9	39,41	47,45	38,19	50,44	51,36	43,85	40,91	34,44	34,12
Kadar air	%	33,67	34,59	38,17	35,35	36,90	37,19	37,38	44,24	44,13	41,15
Kadar air rata-rata	%	34,13		36,76		37,04		40,81		42,64	
<b>Berat Isi Kering ( Dry Density)</b>											
Berat tanah basah, $W_{wet}$	gram	1538		1575		1594		1576		1555	
Kadar air rata-rata	%	34,13		36,76		37,04		40,81		42,64	
Berat kering $W_{dry} = \frac{W_{wet}}{1 + \left(\frac{W}{100}\right)}$	gram	1146,68		1151,67		1163,15		1119,24		1090,14	
Volume Mould	cm <sup>3</sup>	1003,94		1003,94		1003,94		1003,94		1003,94	
Berat isi kering $\gamma_{dry} = \frac{W_{dry}}{V_{mould}}$	gr/cm <sup>3</sup>	1,14		1,15		1,16		1,11		1,09	
$\gamma_{soy} = \frac{gw}{w + (1/Gs)}$	gr/cm <sup>3</sup>	1,41		1,36		1,35		1,28		1,26	



### COMPACTION TEST RESULTS

PROJECT	: YA												
LOCATION	: SUNGAI JENEBERANG												
QUARRY	:												
SAMPLE / SAMPLE NO.	: 100:40:10:0												
TESTING METHOD	: ASTM D 698/ D 1567												
LABORATORY	: HASANUDDIN UNIVERSITY			TESTED BY	: IMAMUL KHAIR HAS								
				DATE	: APRIL 2020								
Berat tanah	gram	2000	2000	2000	2000	2000	2000						
Kadar air mula-mula	%	5,35	5,35	5,35	5,35	5,35	5,35						
Penambahan air	ml	0	200	300	400	500	600						
Kadar air akhir	%	5,35	15,89	21,15	26,42	31,69	36,96						
<b>Berat Isi Basah (Wet density)</b>		0,0318											
No. Mould	-	1	1	2	3	4	5						
Berat Mould	gram	1909	1912	1912	1912	1912	1912						
Berat tanah basah + Mould	gram	3145	3319	3395	3630	3625	3568						
Berat tanah basah, $W_{wet}$	gram	1236	1407	1483	1718	1713	1656						
Volume Mould	cm <sup>3</sup>	992	992	992	992	992	992						
Berat Volume Basah	gr/cm <sup>3</sup>	1,2462	1,419	1,495	1,732	1,727	1,670						
<b>Kadar Air (Water Content)</b>													
No. Container	-	1A	1B	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B
Berat tanah basah + Container	gram	59,22	61,12	63,89	64,48	50,17	39,13	53,47	44,57	58,45	45,61	64,06	64,25
Berat tanah kering + Container	gram	56,65	58,44	56,62	56,98	44,06	33,61	44,16	36,95	47,9	37,08	49,16	49,03
Berat air	gram	2,57	2,68	7,27	7,5	6,11	5,52	9,31	7,62	10,55	8,53	14,9	15,22
Berat container	gram	8,36	8,33	10,81	9,67	15,19	7,57	8,95	8,16	14,57	10,12	8,82	7,85
Berat tanah kering	gram	48,29	50,11	45,81	47,31	28,87	26,04	35,21	28,79	33,33	26,96	40,34	41,18
Kadar air	%	5,32	5,35	15,87	15,85	21,16	21,20	26,44	26,47	31,65	31,64	36,94	36,96
Kadar air rata-rata	%	5,34		15,86		21,18		26,45		31,65		36,95	
<b>Berat Isi Kering ( Dry Density)</b>													
Berat tanah basah, $W_{wet}$	gram	1236	1407	1483	1718	1713	1656						
Kadar air rata-rata	%	5,34	15,861	21,18	26,45	31,65	36,95						
Berat kering $W_{dry} = \frac{W_{wet}}{1 + \left(\frac{W}{100}\right)}$	gram	1173,40	1214,38	1223,79	1358,59	1301,21	1209,22						
Volume Mould	cm <sup>3</sup>	991,82	991,82	991,82	991,82	991,82	991,82						
Berat isi kering $\gamma_{dry} = \frac{W_{dry}}{V_{mould}}$	gr/cm <sup>3</sup>	1,18	1,22	1,23	1,37	1,31	1,22						
gzav = gw/(w+(1/Gs))	gr/cm <sup>3</sup>	2,32	1,86	1,70	1,56	1,44	1,34						

COMPACTION TEST RESULTS													
PROJECT	: TA												
LOCATION	: SUNGAI JENEBERANG												
QUARRY	:												
SAMPLE / SAMPLE NO.	: 100-40:10-0												
TESTING METHOD	: ASTM D 698/ D 1567			TESTED BY	: IMAMUL KHAIR HAS								
LABORATORY	: HASANUDDIN UNIVERSITY			DATE	: APRIL 2020								
Berat tanah	gram	2000	2000	2000	2000	2000	2000						
Kadar air mula-mula	%	6,06	6,06	6,06	6,06	6,06	6,06						
Penambahan air	ml	0	400	450	500	550	600						
Kadar air akhir	%	6,06	27,28	29,93	32,58	35,23	37,88						
<b>Berat Isi Basah (Wet density)</b>													
No. Mould	-	1	1	2	3	4	5						
Berat Mould	gram	1911	1912	1911	1912	1911	1912						
Berat tanah basah + Mould	gram	2801	3481	3584	3594	3541	3443						
Berat tanah basah, $W_{wet}$	gram	890	1569	1673	1682	1630	1531						
Volume Mould	cm <sup>3</sup>	992	992	992	992	992	992						
Berat Volume Basah	gr/cm <sup>3</sup>	0,8973	1,582	1,687	1,696	1,643	1,544						
<b>Kadar Air (Water Content)</b>													
No. Container	-	1A	1B	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B
Berat tanah basah + Container	gram	68,53	69,12	44,74	42,02	46,16	54,06	36,14	33,71	38,31	40,83	32,05	35,26
Berat tanah kering + Container	gram	65,11	65,66	36,29	34,12	37,46	43,51	28,48	26,67	29,68	31,54	25,46	27,82
Berat air	gram	3,42	3,46	8,45	7,9	8,7	10,55	7,66	7,04	8,63	9,29	6,59	7,44
Berat container	gram	8,51	8,45	5,28	5,15	8,39	8,28	4,95	5,03	5,2	5,18	8,05	8,18
Berat tanah kering	gram	56,6	57,21	31,01	28,97	29,07	35,23	23,53	21,64	24,48	26,36	17,41	19,64
Kadar air	%	6,04	6,05	27,25	27,27	29,93	29,95	32,55	32,53	35,25	35,24	37,85	37,88
Kadar air rata-rata	%	6,05		27,26		29,94		32,54		35,25		37,87	
<b>Berat Isi Kering ( Dry Density)</b>													
Berat tanah basah, $W_{wet}$	gram	890		1569		1673		1682		1630		1531	
Kadar air rata-rata	%	6,05		27,26		29,94		32,54		35,25		37,87	
Berat kering $W_{dry} = \frac{W_{wet}}{1 + \left(\frac{W}{100}\right)}$	gram	839,27		1232,91		1287,55		1269,02		1205,19		1110,49	
Volume Mould	cm <sup>3</sup>	991,82		991,82		991,82		991,82		991,82		991,82	
Berat isi kering $\gamma_{dry} = \frac{W_{dry}}{V_{mould}}$	gr/cm <sup>3</sup>	0,85		1,24		1,30		1,28		1,22		1,12	
$\gamma_{sat} = \frac{gw}{w+(1-Gs)}$	gr/cm <sup>3</sup>	2,27		1,53		1,47		1,42		1,37		1,32	

COMPACTION TEST RESULTS													
PROJECT	: TA												
LOCATION	: SUNGAI JENEBERANG												
QUARRY	:												
SAMPLE / SAMPLE NO.	: 100-40:10-0												
TESTING METHOD	: ASTM D 698/ D 1567			TESTED BY	: IMAMUL KHAIR HAS								
LABORATORY	: HASANUDDIN UNIVERSITY			DATE	: APRIL 2020								
Berat tanah	gram	2000	2000	2000	2000	2000	2000						
Kadar air mula-mula	%	5,34	5,34	5,34	5,34	5,34	5,34						
Penambahan air	ml	0	500	550	600	650	700						
Kadar air akhir	%	5,34	31,67	34,30	36,94	39,57	42,21						
<b>Berat Isi Basah (Wet density)</b>													
No. Mould	-	1	1	2	3	4	5						
Berat Mould	gram	1912	1914	1912	1914	1910	1912						
Berat tanah basah + Mould	gram	2612	3520	3522	3543	3479	3473						
Berat tanah basah, $W_{wet}$	gram	700	1606	1610	1629	1569	1561						
Volume Mould	cm <sup>3</sup>	992	992	992	992	992	992						
Berat Volume Basah	gr/cm <sup>3</sup>	0,7058	1,619	1,623	1,642	1,582	1,574						
<b>Kadar Air (Water Content)</b>													
No. Container	-	1A	1B	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B
Berat tanah basah + Container	gram	57,66	55,42	41,17	33,38	27,46	32,43	33,14	42,05	39,08	39,15	33,02	36,09
Berat tanah kering + Container	gram	55,19	53,04	33,15	26,57	21,74	26,19	25,55	32,77	29,43	30,23	25,61	27,79
Berat air	gram	2,47	2,38	8,02	6,81	5,72	6,24	7,59	9,28	9,65	8,92	7,41	8,3
Berat container	gram	8,63	8,34	7,82	5,08	5,05	7,99	5,02	7,65	5,03	7,69	8,07	8,13
Berat tanah kering	gram	46,56	44,7	25,33	21,49	16,69	18,2	20,53	25,12	24,4	22,54	17,54	19,66
Kadar air	%	5,30	5,32	31,66	31,69	34,27	34,29	36,97	36,94	39,55	39,57	42,25	42,22
Kadar air rata-rata	%	5,31		31,68		34,28		36,96		39,56		42,23	
<b>Berat Isi Kering ( Dry Density)</b>													
Berat tanah basah, $W_{wet}$	gram	700		1606		1610		1629		1569		1561	
Kadar air rata-rata	%	5,31		31,68		34,28		36,96		39,56		42,23	
Berat kering $W_{dry} = \frac{W_{wet}}{1 + \left(\frac{W}{100}\right)}$	gram	664,67		1219,66		1199,00		1189,43		1124,23		1097,50	
Volume Mould	cm <sup>3</sup>	991,82		991,82		991,82		991,82		991,82		991,82	
Berat isi kering	gr/cm <sup>3</sup>	0,67		1,23		1,21		1,20		1,13		1,11	
$\gamma_{sat} = \frac{gw}{w+(1-Gs)}$	gr/cm <sup>3</sup>	2,32		1,44		1,39		1,34		1,29		1,25	

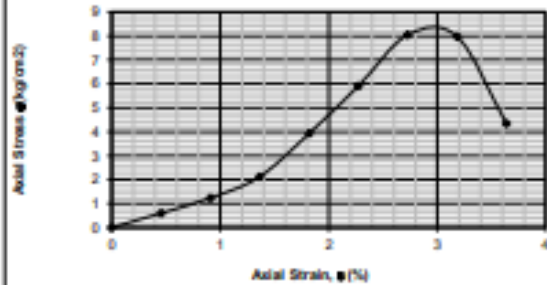
## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : Sungai Je'neberang	DATE : AGUSTUS 2021
SAMPLE : Tanah Lempau	
NO. SAMPLE : Tanahair: 0 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

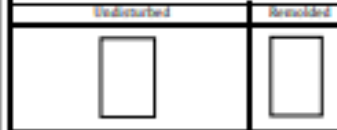
Sample Depth	-	m	Index Properties	Weight of Wet Soil	412,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	369,50	gram
	Height, h	11,00		Water Content	11,50	%
	Volume	215,98		Dry Unit Weight	1,711	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63	Proving Ring Calibration		1,32	lbs/dlv

Axial		Axial Load & Stress				Axial		Axial Load & Stress			
Deformation		Axial Load		Axial Stress		Deformation		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
(cm)	(%)	(dlv)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(dlv)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000						
0,05	0,45	9,0	11,08	19,72	0,602						
0,10	0,91	18,5	24,42	19,82	1,232						
0,15	1,36	32,0	42,24	19,91	2,122						
0,20	1,82	59,5	78,54	20,00	3,927						
0,25	2,27	90,0	118,80	20,09	5,913						
0,30	2,73	123,0	162,36	20,19	8,043						
0,35	3,18	122,5	161,70	20,28	7,973						
0,40	3,64	67,0	88,44	20,38	4,340						

**Axial Stress - Strain Relationship**



**Failure Visualization**



**Unconfined Compression Strength, kg/cm<sup>2</sup>**

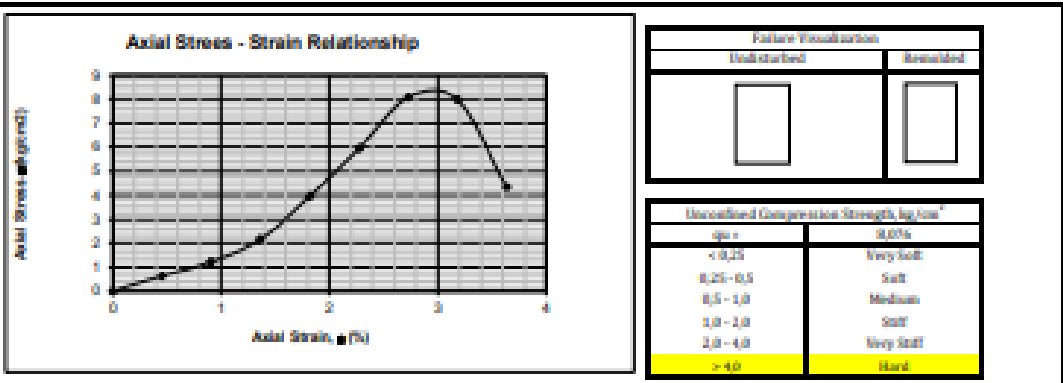
qc =	R042
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

### UNCONFINED COMPRESSION TEST RESULTS

PROJECT :	PERELITIAN	TESTED BY :	JMAMUL KHAIR HAS
LOCATION :	Sungai Je'neberang	DATE :	AGUSTUS 2021
SAMPLE :	Tanah Lempung		
NO. SAMPLE :	Tanah CaCl2 60% 0 hari		
TESTING METHOD :	ASTM D 2166-06		
LABORATORY :	HASANUDDIN UNIVERSITY		

Sample Depth	-	m	Index Properties	Weight of Wet Soil	413,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	274,88	gram
	Height, h	11,80		Water Content	11,50	%
	Volume	215,98		Dry Unit Weight	1,736	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63	Proving Ring Calibration		1,32	lbs/dia

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Displ. Reading	Axial Strain	Displ. Reading	Axial Stress	Corrected Area	Stress	Displ. Reading	Axial Strain	Displ. Reading	Axial Stress	Corrected Area	Stress
$\Delta h$	$\epsilon = \Delta h/h$	-	P	$A = A_0/(1 - \epsilon)$	$\sigma = P/A$	$\Delta h$	$\epsilon = \Delta h/h$	-	P	$A = A_0/(1 - \epsilon)$	$\sigma = P/A$
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000						
0,05	0,45	9,5	12,54	19,72	0,636						
0,10	0,91	18,5	24,42	19,82	1,232						
0,15	1,36	27,5	42,90	19,91	2,155						
0,20	1,82	60,0	79,20	20,00	3,960						
0,25	2,27	98,5	119,60	20,09	5,946						
0,30	2,73	123,5	161,02	20,19	8,076						
0,35	3,18	122,5	161,70	20,28	7,973						
0,40	3,64	67,0	88,44	20,38	4,340						



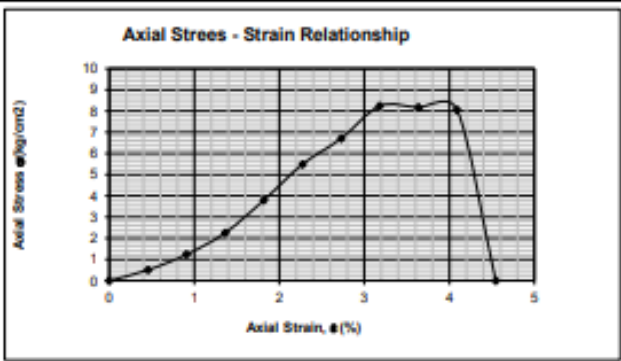


## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : Sungai Je'neberang	DATE : AGUSTUS 2021
SAMPLE : Tanah Lanau	
NO. SAMPLE : Tanah:Etanol 60%0 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	414,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	377,63	gram
	Height, h	11,00		Water Content	9,63	%
	Volume	215,98		Dry Unit Weight	1,748	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63	Proving Ring Calibration		1,32	lbs/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress	Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress
$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_o/(1 - \epsilon)$	$\sigma = P/A$	$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_o/(1 - \epsilon)$	$\sigma = P/A$
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000						
0,05	0,45	7,5	9,90	19,72	0,502						
0,10	0,91	18,5	24,42	19,82	1,232						
0,15	1,36	34,0	44,88	19,91	2,255						
0,20	1,82	57,5	75,90	20,00	3,795						
0,25	2,27	83,5	110,22	20,09	5,486						
0,30	2,73	102,5	135,30	20,19	6,703						
0,35	3,18	126,5	166,98	20,28	8,234						
0,40	3,64	126,0	166,32	20,38	8,163						
0,45	4,09	125,0	165,00	20,47	8,060						
0,50	4,55	0,0	0,00	20,57	0,000						



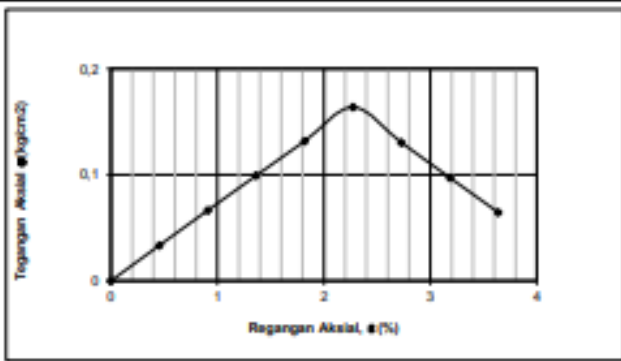
Failure Visualization	
Undisturbed	Remolded
Unconfined Compression Strength, kg/cm <sup>2</sup>	
qu =	8,234
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

### UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN  
 LOCATION : KIMA  
 SAMPLE : LUMPUR LIMBAH  
 NO. SAMPLE : 0% II 0 HARI CaO2  
 TESTING METHOD : ASTM D 2166-06  
 LABORATORY : HASANUDDIN UNIVERSITY  
 TESTED BY : IMAMUL KHAIR HAS  
 DATE : AGUSTUS 2021

Sample Depth			-	m	Index Properties	Weight of Wet Soil	402,00	gram
Sample Size	Diameter, d	5,00	cm			Weight of Dry Soil	209,30	gram
	Height, h	11,00	cm			Water Content	30,95	%
	Volume	215,90	cm <sup>3</sup>			Dry Unit Weight	1,339	gram/cm <sup>3</sup>
	Area, A <sub>0</sub>	19,63	cm <sup>2</sup>		Proving Ring Calibration		1,32	kg/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Depth Reading	Axial Strain	Depth Reading	Axial Stress	Corrected Area	Stress	Depth Reading	Axial Strain	Depth Reading	Axial Stress	Corrected Area	Stress
$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_0/[1 - \epsilon]$	$\sigma = P/A$	$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_0/[1 - \epsilon]$	$\sigma = P/A$
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000						
0,05	0,45	0,5	0,66	19,72	0,033						
0,10	0,91	1,0	1,32	19,82	0,066						
0,15	1,36	1,5	1,97	19,91	0,099						
0,20	1,82	2,0	2,63	20,00	0,132						
0,25	2,27	2,5	3,29	20,09	0,164						
0,30	2,73	2,0	2,63	20,19	0,130						
0,35	3,18	1,5	1,97	20,28	0,097						
0,40	3,64	1,0	1,32	20,38	0,065						



Failure Visualization	
Undisturbed	Remolded

Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> =	0,164
< 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	: PENELITIAN	TESTED BY	: IMAMUL KHAIR HAS
LOCATION	: KIMA	DATE	: AGUSTUS 2021
SAMPLE	: LUMPUR LIMBAH		
NO. SAMPLE	: 0% II 0 HARI ETHANOL		
TESTING METHOD	: ASTM D 2166-06		
LABORATORY	: HASANUDDIN UNIVERSITY		

Sample Depth	-	m	Index Properties	Weight of Wet Soil	398,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	300,58	gram
	Height, h	11,00		Water Content	32,41	%
	Volume	215,98	cm <sup>3</sup>	Dry Unit Weight	1,392	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63	cm <sup>2</sup>	Proving Ring Calibration	1,32	kg/dire

Axial		Axial Load & Stress				Axial		Axial Load & Stress			
Deformation		Axial Load		Axial Stress		Deformation		Axial Load		Axial Stress	
Deep. Reading	Axial Strain	Deep. Reading	Axial Stress	Corrected Area	Stress	Deep. Reading	Axial Strain	Deep. Reading	Axial Stress	Corrected Area	Stress
$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_o/(1 - \epsilon)$	$\sigma = P/A$	$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_o/(1 - \epsilon)$	$\sigma = P/A$
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000						
0,05	0,45	0,5	0,66	19,72	0,033						
0,10	0,91	1,0	1,32	19,82	0,066						
0,15	1,36	1,5	1,97	19,91	0,099						
0,20	1,82	2,0	2,63	20,00	0,132						
0,25	2,27	2,5	3,29	20,09	0,164						
0,30	2,73	2,0	2,63	20,19	0,130						
0,35	3,18	1,5	1,97	20,28	0,097						
0,40	3,64	1,0	1,32	20,38	0,065						

**Regangan Aksial, # (%)**

**Tegangan Aksial, # (kg/cm<sup>2</sup>)**

Failure Visualization	
Undisturbed	Remolded

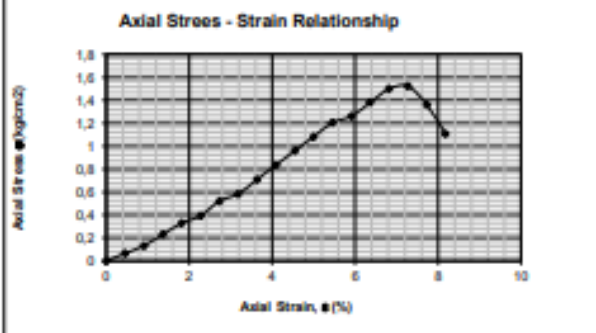
Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> >	0,164
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : KIMA	DATE : AGUSTUS 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCl <sub>2</sub> : 0%: 0 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	303,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	310,69	gram
	Height, h	11,00		Water Content	16,84	%
	Volume	215,98		Dry Unit Weight	1,438	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63		Proving Ring Calibration	1,32	kg/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Deep Reading	Axial Strain	Deep Reading	Axial Stress	Corrected Area	Stress	Deep Reading	Axial Strain	Deep Reading	Axial Stress	Corrected Area	Stress
δh	$\epsilon = \delta h/h$	-	P	$A = A_o/[1 - \epsilon]$	$\sigma = P/A$	δh	$\epsilon = \delta h/h$	-	P	$A = A_o/[1 - \epsilon]$	$\sigma = P/A$
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000	0,75	6,82	24,0	31,58	21,07	1,499
0,05	0,45	1,0	1,32	19,72	0,067	0,80	7,27	24,5	32,24	21,17	1,523
0,10	0,91	2,0	2,63	19,82	0,133	0,85	7,73	22,0	28,95	21,28	1,361
0,15	1,36	3,5	4,61	19,91	0,231	0,90	8,18	18,0	23,69	21,38	1,108
0,20	1,82	5,0	6,58	20,00	0,329						
0,25	2,27	6,0	7,90	20,09	0,393						
0,30	2,73	8,0	10,53	20,19	0,522						
0,35	3,18	9,0	11,84	20,28	0,584						
0,40	3,64	11,0	14,48	20,38	0,710						
0,45	4,09	13,0	17,11	20,47	0,836						
0,50	4,55	15,0	19,74	20,57	0,960						
0,55	5,00	17,0	22,37	20,67	1,082						
0,60	5,45	19,0	25,00	20,77	1,204						
0,65	5,91	20,0	26,32	20,87	1,261						
0,70	6,36	22,0	28,95	20,97	1,381						



Failure Visualization	
Undisturbed	Remained
Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> = 1,523	
< 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

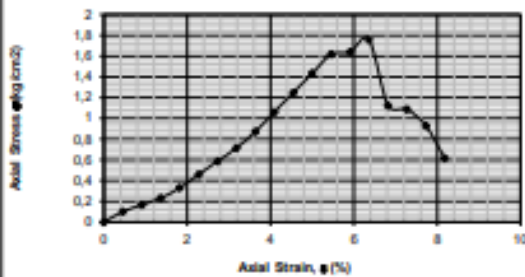
## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : KIMA	DATE : AGUSTUS 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCD: 0%- 7 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	336,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	315,01	gram
	Height, h	11,00		Water Content	6,66	%
	Volume	215,98		Dry Unit Weight	1,458	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63		Proving Ring Calibration	1,32	kg/div

Axial		Axial Load & Stress				Axial		Axial Load & Stress			
Deformation		Axial Load		Axial Stress		Deformation		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 = A <sub>o</sub> /(1 - ε)	σ = P/A	δh	ε = δh/h	-	P	A = A <sub>o</sub> /(1 - ε)	σ = P/A
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000	0,75	6,82	18,0	23,69	21,07	1,124
0,05	0,45	1,5	1,97	19,72	0,100	0,80	7,27	17,5	23,03	21,17	1,088
0,10	0,91	2,5	3,29	19,82	0,166	0,85	7,73	15,0	19,74	21,20	0,928
0,15	1,36	3,5	4,61	19,91	0,231	0,90	8,18	10,0	13,16	21,38	0,615
0,20	1,82	5,0	6,58	20,00	0,329						
0,25	2,27	7,0	9,21	20,09	0,459						
0,30	2,73	9,0	11,84	20,19	0,587						
0,35	3,18	11,0	14,48	20,28	0,714						
0,40	3,64	13,5	17,77	20,38	0,872						
0,45	4,09	16,5	21,71	20,47	1,061						
0,50	4,55	19,5	25,66	20,57	1,248						
0,55	5,00	22,5	29,61	20,67	1,433						
0,60	5,45	25,5	33,56	20,77	1,616						
0,65	5,91	26,0	34,22	20,87	1,640						
0,70	6,36	28,0	36,85	20,97	1,757						

**Axial Stress - Strain Relationship**



**Failure Visualization**



**Unconfined Compression Strength, kg/cm<sup>2</sup>**

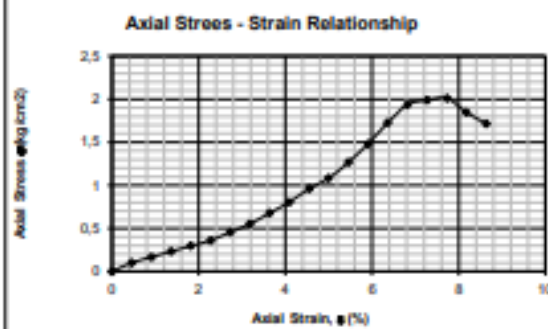
q <sub>u</sub> =	1,757
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : KIMA	DATE : SEPTEMBER 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCl <sub>2</sub> :0%: 14 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	325,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	308,67	gram
	Height, h	11,00		Water Content	5,29	%
	Volume	215,90		Dry Unit Weight	1,429	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63		Proving Ring Calibration	1,32	kg/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress	Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress
$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_o/(1 - \epsilon)$	$\sigma = P/A$	$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_o/(1 - \epsilon)$	$\sigma = P/A$
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000	0,75	6,82	31,0	40,00	21,07	1,936
0,05	0,45	1,5	1,97	19,72	0,100	0,80	7,27	32,0	42,11	21,17	1,989
0,10	0,91	2,5	3,29	19,82	0,166	0,85	7,73	32,5	42,77	21,20	2,010
0,15	1,36	3,5	4,61	19,91	0,231	0,90	8,18	33,0	39,48	21,30	1,846
0,20	1,82	4,5	5,92	20,00	0,296	0,95	8,64	28,0	36,85	21,49	1,715
0,25	2,27	5,5	7,24	20,09	0,360						
0,30	2,73	7,0	9,21	20,19	0,456						
0,35	3,18	8,5	11,19	20,28	0,552						
0,40	3,64	10,5	13,82	20,38	0,678						
0,45	4,09	12,5	16,45	20,47	0,804						
0,50	4,55	15,0	19,74	20,57	0,960						
0,55	5,00	17,0	22,37	20,67	1,082						
0,60	5,45	20,0	26,32	20,77	1,267						
0,65	5,91	23,5	30,93	20,87	1,482						
0,70	6,36	27,5	36,19	20,97	1,726						



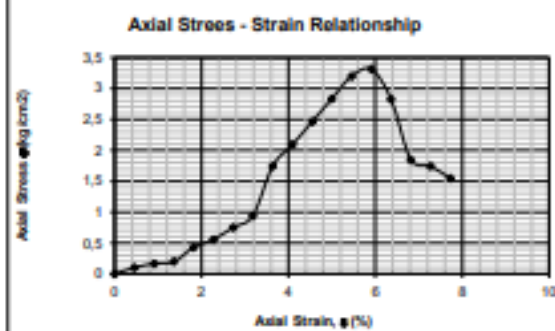
Failure Visualization	
Undisturbed	Remolded
Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> =	2,010
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : KIMA	DATE : AGUSTUS 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCl <sub>2</sub> : 0%: 21 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	310,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	295,14	gram
	Height, h	11,00		Water Content	5,03	%
	Volume	215,98		Dry Unit Weight	1,366	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63		Proving Ring Calibration	1,32	kg/div

Axial		Axial Load & Stress				Axial		Axial Load & Stress			
Deformation		Axial Load		Axial Stress		Deformation		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
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000	0,75	6,82	29,5	30,82	21,07	1,842
0,05	0,45	1,5	1,97	19,72	0,100	0,80	7,27	28,0	36,85	21,17	1,740
0,10	0,91	2,5	3,29	19,82	0,166	0,85	7,73	25,0	32,90	21,28	1,546
0,15	1,36	3,0	3,95	19,91	0,198						
0,20	1,82	6,5	8,55	20,00	0,428						
0,25	2,27	8,5	11,19	20,09	0,557						
0,30	2,73	11,5	15,13	20,19	0,750						
0,35	3,18	14,5	19,08	20,28	0,941						
0,40	3,64	27,0	35,53	20,38	1,744						
0,45	4,09	32,5	42,77	20,47	2,089						
0,50	4,55	38,5	50,67	20,57	2,463						
0,55	5,00	44,5	58,56	20,67	2,833						
0,60	5,45	50,5	66,46	20,77	3,200						
0,65	5,91	52,5	69,89	20,87	3,311						
0,70	6,36	45,0	59,22	20,97	2,824						



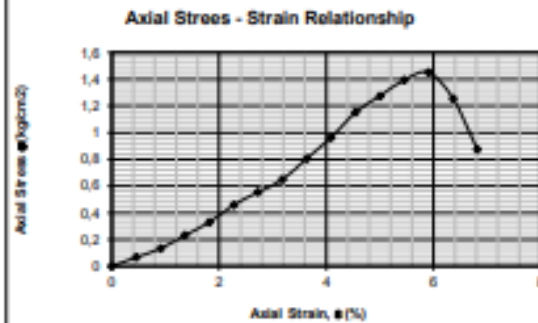
Failure Visualization	
Undisturbed	Remolded
Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> =	3,311
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : KIMA	DATE : AGUSTUS 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCl <sub>2</sub> 1% 0 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	357,00	gram
Sample Size	Diameter, d	5,00	cm	Weight of Dry Soil	318,19	gram
	Height, h	11,00	cm	Water Content	12,20	%
	Volume	215,90	cm <sup>3</sup>	Dry Unit Weight	1,473	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63	cm <sup>2</sup>	Proving Ring Calibration	1,32	kg/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & 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 = A <sub>o</sub> /(1 - ε)	σ = P/A	δh	ε = δh/h	-	P	A = A <sub>o</sub> /(1 - ε)	σ = P/A
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000	0,75	6,82	14,0	10,42	21,07	0,874
0,05	0,45	1,0	1,32	19,72	0,067						
0,10	0,91	2,0	2,63	19,82	0,133						
0,15	1,36	3,5	4,61	19,91	0,231						
0,20	1,82	5,0	6,58	20,00	0,329						
0,25	2,27	7,0	9,21	20,09	0,459						
0,30	2,73	8,5	11,19	20,19	0,554						
0,35	3,18	10,0	13,16	20,28	0,649						
0,40	3,64	12,5	16,45	20,38	0,807						
0,45	4,09	15,0	19,74	20,47	0,964						
0,50	4,55	18,0	23,69	20,57	1,152						
0,55	5,00	20,0	26,32	20,67	1,273						
0,60	5,45	22,0	28,95	20,77	1,394						
0,65	5,91	23,0	30,27	20,87	1,450						
0,70	6,36	20,0	26,32	20,97	1,255						



Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> =	1,450
< 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

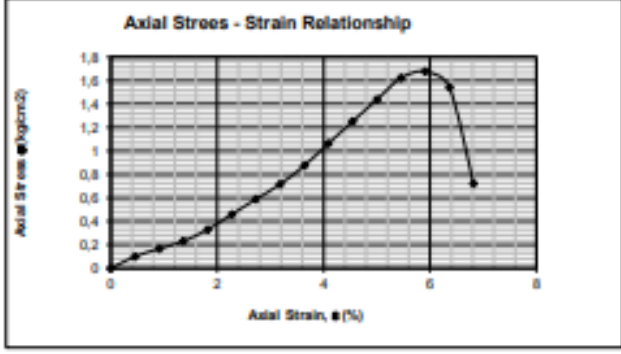


## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : MAMUL KHAIK HAS
LOCATION : KIMA	DATE : AGUSTUS 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCd: 0%: 7 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	332,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	313,74	gram
	Height, h	11,00		Water Content	5,82	%
	Volume	215,98		Dry Unit Weight	1,453	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63		Proving Ring Calibration	1,32	lbs/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Depth, Reading	Axial Strain	Depth, Reading	Axial Stress	Corrected Area	Stress	Depth, Reading	Axial Strain	Depth, Reading	Axial Stress	Corrected Area	Stress
Δh	ε = Δh/h	-	P	A = A <sub>o</sub> (1 - ε)	σ = P/A	Δh	ε = Δh/h	-	P	A = A <sub>o</sub> (1 - ε)	σ = P/A
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000	0,75	6,82	11,5	15,18	21,67	0,720
0,05	0,45	1,5	1,98	19,72	0,100						
0,10	0,91	2,5	3,30	19,82	0,167						
0,15	1,36	3,5	4,62	19,91	0,232						
0,20	1,82	5,0	6,60	20,00	0,330						
0,25	2,27	7,0	9,24	20,09	0,460						
0,30	2,73	9,0	11,88	20,19	0,589						
0,35	3,18	11,0	14,52	20,28	0,716						
0,40	3,64	13,5	17,82	20,38	0,875						
0,45	4,09	16,5	21,78	20,47	1,064						
0,50	4,55	19,5	25,74	20,57	1,251						
0,55	5,00	22,5	29,70	20,67	1,437						
0,60	5,45	25,5	33,66	20,77	1,621						
0,65	5,91	26,5	34,98	20,87	1,676						
0,70	6,36	24,5	32,34	20,97	1,542						



Failure Visualization	
Undisturbed	Reconsolidated
Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> =	1,676
< 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

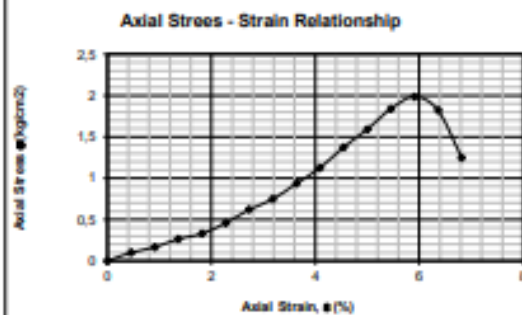
### UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN  
 LOCATION : KIMA  
 SAMPLE : LL+40% Tanah+10%AK  
 NO. SAMPLE : CaCl<sub>2</sub>: 0%: 14 hari  
 TESTING METHOD : ASTM D 2166-06  
 LABORATORY : HASANUDDIN UNIVERSITY

TESTED BY : IMAMUL KHAIR HAS  
 DATE : AGUSTUS 2021

Sample Depth	-	m	Index Properties	Weight of Wet Soil	335,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	319,30	gram
	Height, h	11,00		Water Content	4,92	%
	Volume	215,98		Dry Unit Weight	1,478	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63		Proving Ring Calibration	1,32	kg/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Deep Reading	Axial Strain	Deep Reading	Axial Stress	Corrected Area	Stress	Deep Reading	Axial Strain	Deep Reading	Axial Stress	Corrected Area	Stress
Δh	$\epsilon = \Delta h/h$	-	P	$A = A_o/[1 - \epsilon]$	$\sigma = P/A$	Δh	$\epsilon = \Delta h/h$	-	P	$A = A_o/[1 - \epsilon]$	$\sigma = P/A$
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000	0,75	0,82	20,0	20,32	21,07	1,249
0,05	0,45	1,5	1,97	19,72	0,100						
0,10	0,91	2,5	3,29	19,82	0,166						
0,15	1,36	4,0	5,26	19,91	0,264						
0,20	1,82	5,0	6,58	20,00	0,329						
0,25	2,27	7,0	9,21	20,09	0,459						
0,30	2,73	9,5	12,50	20,19	0,619						
0,35	3,18	11,5	15,13	20,28	0,746						
0,40	3,64	14,5	19,08	20,38	0,936						
0,45	4,09	17,5	23,03	20,47	1,125						
0,50	4,55	21,5	28,29	20,57	1,376						
0,55	5,00	25,0	32,90	20,67	1,592						
0,60	5,45	29,0	38,16	20,77	1,838						
0,65	5,91	31,5	41,45	20,87	1,986						
0,70	6,36	29,0	38,16	20,97	1,820						



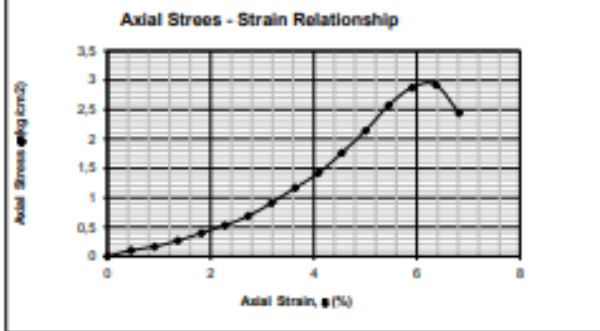
Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> =	1,986
< 0,25	Very soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very stiff
> 4,0	Hard

### UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : KIMA	DATE : SEPTEMBER 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCl <sub>2</sub> :1%- 21 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	334,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	319,65	gram
	Height, h	11,00		Water Content	4,49	%
	Volume	215,98	cm <sup>3</sup>	Dry Unit Weight	1,480	gram/cm <sup>3</sup>
Area, A <sub>o</sub>	19,63	cm <sup>2</sup>	Proving Ring Calibration	1,32	lbs/div	

Axial		Axial Load & Stress				Axial		Axial Load & Stress			
Deformation		Axial Load		Axial Stress		Deformation		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	$\epsilon = \delta h/h$	-	P	$A = A_o/[1 - \epsilon]$	$\sigma = P/A$	δh	$\epsilon = \delta h/h$	-	P	$A = A_o/[1 - \epsilon]$	$\sigma = P/A$
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000	0,75	0,82	39,0	51,48	21,07	2,443
0,05	0,45	1,5	1,98	19,72	0,100						
0,10	0,91	2,5	3,30	19,82	0,167						
0,15	1,36	4,0	5,28	19,91	0,265						
0,20	1,82	6,0	7,92	20,00	0,396						
0,25	2,27	8,0	10,56	20,09	0,526						
0,30	2,73	10,5	13,86	20,19	0,687						
0,35	3,18	14,0	18,48	20,28	0,911						
0,40	3,64	18,0	23,76	20,38	1,166						
0,45	4,09	22,0	29,04	20,47	1,418						
0,50	4,55	27,5	36,30	20,57	1,765						
0,55	5,00	33,5	44,22	20,67	2,140						
0,60	5,45	40,5	53,46	20,77	2,574						
0,65	5,91	45,5	60,86	20,87	2,878						
0,70	6,36	46,5	61,38	20,97	2,927						



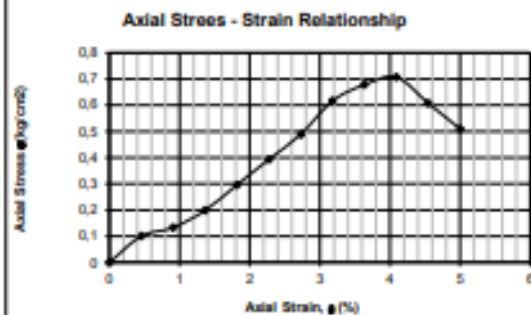
Failure Visualization	
Undisturbed	Remolded
Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> =	2,927
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : KIMA	DATE : AGUSTUS 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCE: 2%: 0 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	311,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	286,14	gram
	Height, h	11,00		Water Content	8,69	%
	Volume	215,90		Dry Unit Weight	1,325	gram/cm <sup>3</sup>
	Area, A <sub>0</sub>	19,63		Proving Ring Calibration	1,32	kg/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Depth Reading	Axial Strain	Depth Reading	Axial Stress	Corrected Area	Stress	Depth Reading	Axial Strain	Depth Reading	Axial Stress	Corrected Area	Stress
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000						
0,05	0,45	1,5	1,97	19,72	0,100						
0,10	0,91	2,0	2,63	19,82	0,133						
0,15	1,36	3,0	3,95	19,91	0,198						
0,20	1,82	4,5	5,92	20,00	0,296						
0,25	2,27	6,0	7,90	20,09	0,393						
0,30	2,73	7,5	9,87	20,19	0,489						
0,35	3,18	9,5	12,50	20,28	0,616						
0,40	3,64	10,5	13,82	20,38	0,678						
0,45	4,09	11,0	14,48	20,47	0,707						
0,50	4,55	9,5	12,50	20,57	0,608						
0,55	5,00	8,0	10,53	20,67	0,509						



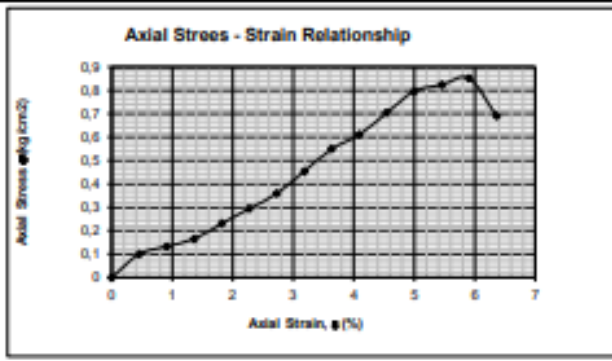
Failure Visualization	
Undisturbed	Remolded
Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> =	0,707
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

### UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : IMAMUL KHAIR HAS
LOCATION : KIMA	DATE : AGUSTUS 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCl2: 0%- 7 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m				Index Properties	Weight of Wet Soil	288,50	gram
Sample Size	Diameter, d	5,00	cm				Weight of Dry Soil	273,62	gram
	Height, h	11,00	cm				Water Content	5,18	%
	Volume	215,98	cm <sup>3</sup>				Dry Unit Weight	1,268	gram/cm <sup>3</sup>
	Area, A <sub>0</sub>	19,63	cm <sup>2</sup>			Proving Ring Calibration		1,32	kg/dire

Axial		Axial Load & Stress				Axial		Axial Load & Stress			
Deformation		Axial Load		Axial Stress		Deformation		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
$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_0/(1 - \epsilon)$	$\sigma = P/A$	$\delta h$	$\epsilon = \delta h/h$	-	P	$A = A_0/(1 - \epsilon)$	$\sigma = P/A$
(cm)	(%)	(dir)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(dir)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000						
0,05	0,45	1,5	1,97	19,72	0,100						
0,10	0,91	2,0	2,63	19,82	0,133						
0,15	1,36	2,5	3,29	19,91	0,165	0,90					
0,20	1,82	3,5	4,61	20,00	0,230	0,95					
0,25	2,27	4,5	5,92	20,09	0,295	1,00					
0,30	2,73	5,5	7,24	20,19	0,359	1,05					
0,35	3,18	7,0	9,21	20,28	0,454	1,10					
0,40	3,64	8,5	11,19	20,38	0,549						
0,45	4,09	9,5	12,50	20,47	0,611						
0,50	4,55	11,0	14,48	20,57	0,704						
0,55	5,00	12,5	16,45	20,67	0,796						
0,60	5,45	13,0	17,11	20,77	0,824						
0,65	5,91	13,5	17,77	20,87	0,851						
0,70	6,36	11,0	14,48	20,97	0,690						



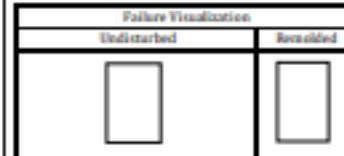
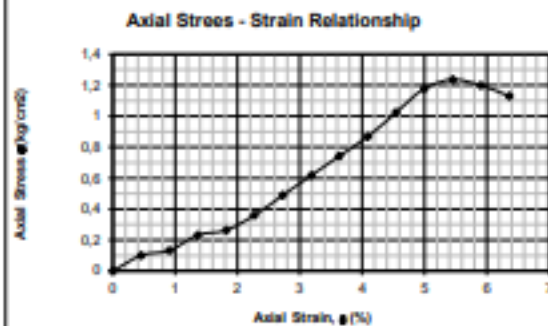
Failure Visualization	
Undisturbed	Reconstituted
Unconfined Compression Strength, kg/cm <sup>2</sup>	
$q_u =$	0,851
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

## UNCONFINED COMPRESSION TEST RESULTS

PROJECT	: PENELITIAN	TESTED BY	: IMAMUL KHAIR HAS
LOCATION	: KIMA	DATE	: AGUSTUS 2021
SAMPLE	: LL+40% Tanah+10%AK		
NO. SAMPLE	: CaCl <sub>2</sub> : 0%: 7 hari		
TESTING METHOD	: ASTM D 2166-06		
LABORATORY	: HASANUDDIN UNIVERSITY		

Sample Depth	-	m	Index Properties	Weight of Wet Soil	286,00	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	272,49	gram
	Height, h	11,00		Water Content	4,96	%
	Volume	215,98		Dry Unit Weight	1,262	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63		Proving Ring Calibration	1,52	kg/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress	Disp. Reading	Axial Strain	Disp. Reading	Axial Stress	Corrected Area	Stress
Sh	$\epsilon = \delta h/h$	-	P	$A = A_o/(1 - \epsilon)$	$\sigma = P/A$	Sh	$\epsilon = \delta h/h$	-	P	$A = A_o/(1 - \epsilon)$	$\sigma = P/A$
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000						
0,05	0,45	1,5	1,97	19,72	0,100						
0,10	0,91	2,0	2,63	19,82	0,133						
0,15	1,36	3,5	4,61	19,91	0,231						
0,20	1,82	4,0	5,26	20,00	0,263						
0,25	2,27	5,5	7,24	20,09	0,360						
0,30	2,73	7,5	9,87	20,19	0,489						
0,35	3,18	9,5	12,50	20,28	0,616						
0,40	3,64	11,5	15,13	20,38	0,743						
0,45	4,09	13,5	17,77	20,47	0,868						
0,50	4,55	16,0	21,06	20,57	1,024						
0,55	5,00	18,5	24,35	20,67	1,178						
0,60	5,45	19,5	25,66	20,77	1,236						
0,65	5,91	19,0	25,00	20,87	1,198						
0,70	6,36	18,0	23,69	20,97	1,130						



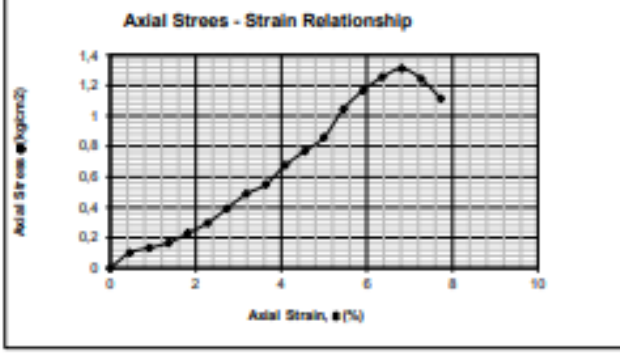
Unconfined Compression Strength, kg/cm <sup>2</sup>	
qu =	1,236
< 0,25	Very Soft
0,25 - 0,5	Soft
0,5 - 1,0	Medium
1,0 - 2,0	Stiff
2,0 - 4,0	Very Stiff
> 4,0	Hard

## UNCONFINED COMPRESSION TEST RESULTS

PROJECT : PENELITIAN	TESTED BY : MAMUL KHAIR HAS
LOCATION : KIMA	DATE : SEPTEMBER 2021
SAMPLE : LL+40% Tanah+10%AK	
NO. SAMPLE : CaCl <sub>2</sub> :2% 21 hari	
TESTING METHOD : ASTM D 2166-06	
LABORATORY : HASANUDDIN UNIVERSITY	

Sample Depth	-	m	Index Properties	Weight of Wet Soil	281,80	gram
Sample Size	Diameter, d	5,00		Weight of Dry Soil	209,39	gram
	Height, h	11,00		Water Content	4,31	%
	Volume	215,98		Dry Unit Weight	1,247	gram/cm <sup>3</sup>
	Area, A <sub>o</sub>	19,63		Proving Ring Calibration	1,32	kg/div

Axial Deformation		Axial Load & Stress				Axial Deformation		Axial Load & Stress			
Deep Reading	Axial Strain	Deep Reading	Axial Stress	Corrected Area	Stress	Deep Reading	Axial Strain	Deep Reading	Axial Stress	Corrected Area	Stress
δh	ε = δh/h	-	P	A = A <sub>o</sub> /(1-ε)	σ = P/A	δh	ε = δh/h	-	P	A = A <sub>o</sub> /(1-ε)	σ = P/A
(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )	(cm)	(%)	(div)	(kg)	(cm <sup>2</sup> )	(kg/cm <sup>2</sup> )
0,00	0,00	0,0	0,00	19,63	0,000	0,75	6,82	21,0	27,64	21,07	1,312
0,05	0,45	1,5	1,97	19,72	0,100	0,80	7,27	20,0	26,32	21,17	1,243
0,10	0,91	2,0	2,63	19,82	0,133	0,85	7,73	18,0	23,69	21,28	1,113
0,15	1,36	2,5	3,29	19,91	0,165						
0,20	1,82	3,5	4,61	20,00	0,230						
0,25	2,27	4,5	5,92	20,09	0,295						
0,30	2,73	6,0	7,90	20,19	0,391						
0,35	3,18	7,5	9,87	20,28	0,487						
0,40	3,64	8,5	11,19	20,38	0,549						
0,45	4,09	10,5	13,82	20,47	0,675						
0,50	4,55	12,0	15,79	20,57	0,768						
0,55	5,00	13,5	17,77	20,67	0,860						
0,60	5,45	16,5	21,71	20,77	1,046						
0,65	5,91	18,5	24,35	20,87	1,167						
0,70	6,36	20,0	26,32	20,97	1,255						



Failure Visualization	
Undisturbed	Reconstituted
Unconfined Compression Strength, kg/cm <sup>2</sup>	
q <sub>u</sub> =	1,312
< 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

# **DOKUMENTASI**







