

LAMPIRAN C

UJI TRIAKSIAL

UNCONSOLIDATED-UNDRAINED



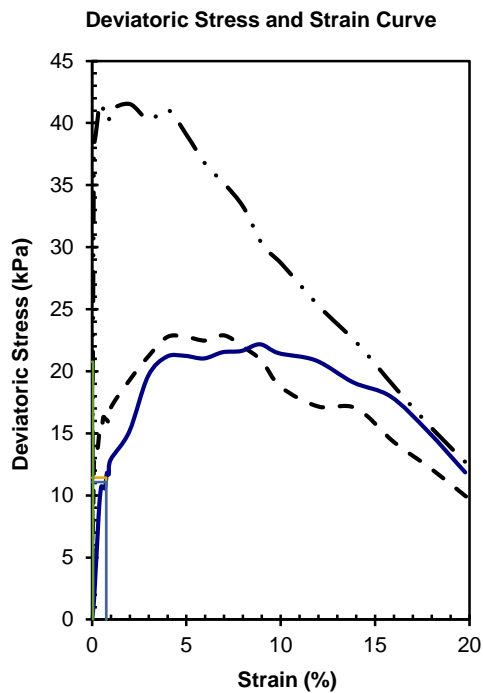
SOIL MECHANICS LABORATORY
CIVIL ENGINEERING DEPARTEMEN, FACULTY OF ENGINEERING

MUHAMMADIYAH UNIVERSITY OF YOGYAKARTA

Project : Tugas akhir
 Location : Drum 2
 Bore hole no. : 1D

Depth :
 Date : 24-11-16
 Laboran: Mei Liya Faridatun Khaeza

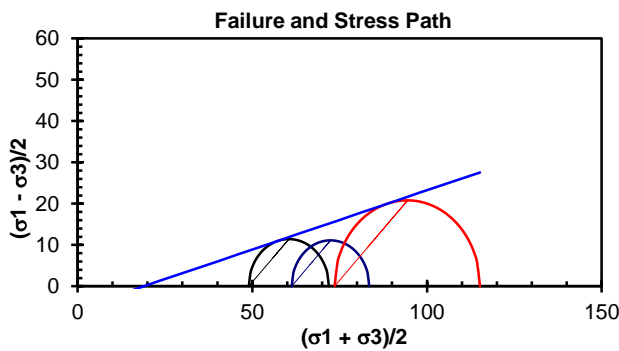
TRIAxIAL COMPRESSION TEST



--- $(\sigma_1 - \sigma_3)_1$
 — $(\sigma_1 - \sigma_3)_2$
 - · - $(\sigma_1 - \sigma_3)_3$

- Note:
 1. Side drains
 2. Stress/strain curves corrected for:
 Area changes √
 Membranes -

| | | | | |
|-------------------------------------|---------------------------------|-------|-------|-------------------|
| Soil Description: | | | | |
| 1D | | | | |
| Test condition : UU/CU/CD | | | | |
| Type of specimen UNDISTURBED | | | | |
| SPECIMEN | | 1 | 2 | 3 |
| DIMENSIONS | Diameter, mm | 34,65 | 35 | 34,5 |
| | Length, mm | 70,1 | 70,9 | 69,7 |
| INITIAL | Density, Mg/m ³ | 1,63 | 1,54 | 1,66 |
| | Moisture, % | 48,34 | 49,94 | 48,68 |
| | Dry Density, mg/m ³ | 1,10 | 1,04 | 1,12 |
| | Void ratio | 1,39 | 1,53 | 1,35 |
| | Degree of Saturation, % | 91,62 | 85,81 | 95,17 |
| AFTER CONSOLIDATION | Density, Mg/m ³ | | | |
| | Moisture, % | | | |
| | Dry Density, Mg/m ³ | | | |
| COMPRESSION | Cell pressure, kPa | 49,05 | 61,31 | 73,58 |
| | Initial pwp, kPa | | | |
| STAGE | Strain rate, %/hour | 0,63 | 0,62 | 0,63 |
| | Strain % | 3,10 | 3,60 | 4,00 |
| FAILURE CONDITIONS | $(\sigma_1 - \sigma_3)_f$, kPa | 22,89 | 22,18 | 41,57 |
| | u_f , kN/m ² | | | |
| | σ'_{3f} , kPa | 49,05 | 61,31 | 73,58 |
| | σ_{1f} , kPa | 71,94 | 83,49 | 115,14 |
| SHEAR STRENGTH PARAMETERS | | c : | 0 | kN/m ² |
| | | φ : | 16,01 | ° |



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Data Penggeseran Benda Uji Dalam Sel Triaksial

(1D)

| Pemendekan | | | Tekanan Sel (σ_3 , kPa) | | |
|----------------------|----------------------------|---------------------|---------------------------------|------------------------|------------------------|
| | | | 49,05 | 61,31 | 73,58 |
| Pembacaan arloji (a) | DL a* 10 ³ (cm) | Regangan e =DL/Lo % | Pembacaan arloji beban | Pembacaan arloji beban | Pembacaan arloji beban |
| 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| 7,01 | 0,01 | 0,00 | 0,90 | 0,10 | 2,70 |
| 14,02 | 0,01 | 0,00 | 1,00 | 0,30 | 2,80 |
| 21,03 | 0,02 | 0,00 | 1,00 | 0,50 | 2,90 |
| 28,04 | 0,03 | 0,00 | 1,10 | 0,70 | 3,00 |
| 35,05 | 0,04 | 0,01 | 1,10 | 0,80 | 3,00 |
| 42,06 | 0,04 | 0,01 | 1,20 | 0,80 | 3,00 |
| 49,07 | 0,05 | 0,01 | 1,20 | 0,80 | 3,00 |
| 56,08 | 0,06 | 0,01 | 1,20 | 0,90 | 3,00 |
| 63,09 | 0,06 | 0,01 | 1,20 | 0,90 | 3,00 |
| 70,10 | 0,07 | 0,01 | 1,30 | 1,00 | 3,10 |
| 140,20 | 0,14 | 0,02 | 1,50 | 1,20 | 3,20 |
| 210,30 | 0,21 | 0,03 | 1,70 | 1,60 | 3,20 |
| 280,40 | 0,28 | 0,040 | 1,90 | 1,80 | 3,40 |
| 350,50 | 0,35 | 0,050 | 2,00 | 1,90 | 3,40 |
| 420,60 | 0,42 | 0,060 | 2,10 | 2,00 | 3,40 |
| 490,70 | 0,49 | 0,070 | 2,30 | 2,20 | 3,50 |
| 560,80 | 0,56 | 0,080 | 2,40 | 2,40 | 3,60 |
| 630,90 | 0,63 | 0,090 | 2,50 | 2,70 | 3,60 |
| 701,00 | 0,70 | 0,100 | 2,50 | 2,90 | 3,80 |
| 841,20 | 0,84 | 0,120 | 2,60 | 3,20 | 3,80 |
| 981,40 | 0,98 | 0,140 | 3,00 | 3,40 | 3,90 |
| 1121,60 | 1,12 | 0,160 | 3,00 | 3,80 | 3,90 |
| 1261,80 | 1,26 | 0,180 | 3,10 | 3,90 | 3,90 |
| 1402,00 | 1,40 | 0,200 | 3,10 | 3,80 | 3,90 |



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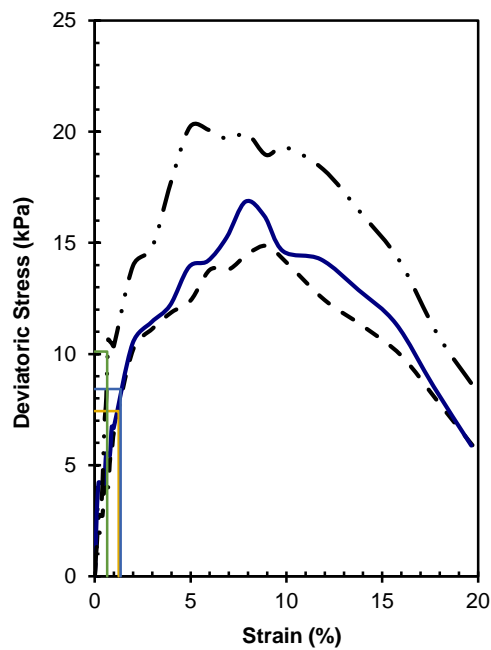
MUHAMMADIYAH UNIVERSITY OF YOGYAKARTA

Project : Tugas akhir
 Location : Drum 2
 Bore hole no. : 2D

Depth :
 Date : 25-11-16
 Laboran: Mei Liya Faridatun Khaosa

TRIAxIAL COMPRESSION TEST

Deviatoric Stress and Strain Curve

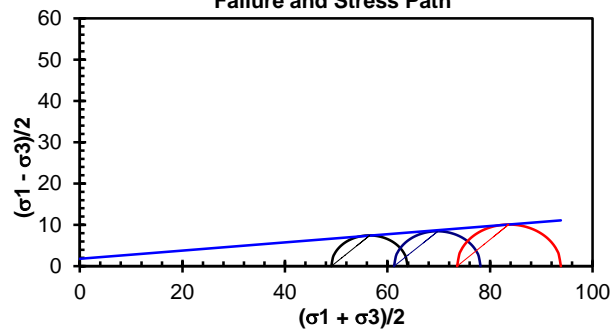


--- $(\sigma_1 - \sigma_3)_1$
 — $(\sigma_1 - \sigma_3)_2$
 - . - $(\sigma_1 - \sigma_3)_3$

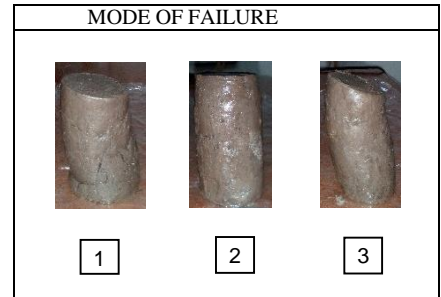
- Note:
 1. Side drains
 2. Stress/strain curves corrected for:
 Area changes √
 Membranes -

| | | | | |
|-------------------------------------|---------------------------------|----------|-------|-------------------|
| Soil Description: | | | | |
| 1D | | | | |
| Test condition : <i>UU/CU/CD</i> | | | | |
| Type of specimen UNDISTURBED | | | | |
| SPECIMEN | | | | |
| DIMENSIONS | Diameter, mm | 34,8 | 34,4 | 34,9 |
| | Length, mm | 71,1 | 72,4 | 71,6 |
| INITIAL | Density, Mg/m ³ | 1,57 | 1,59 | 1,55 |
| | Moisture, % | 54,62 | 54,03 | 56,24 |
| | Dry Density, mg/m ³ | 1,01 | 1,03 | 1,00 |
| | Void ratio | 1,59 | 1,55 | 1,63 |
| | Degree of Saturation, % | 90,27 | 91,43 | 90,85 |
| AFTER CONSOLIDATION | Density, Mg/m ³ | | | |
| | Moisture, % | | | |
| | Dry Density, Mg/m ³ | | | |
| COMPRESSION | Cell pressure, kPa | 49,05 | 61,31 | 73,58 |
| | Initial pwp, kPa | | | |
| STAGE | Strain rate, %/hour | 0,62 | 0,61 | 0,62 |
| | Strain % | 2,40 | 2,40 | 2,40 |
| FAILURE CONDITIONS | $(\sigma_1 - \sigma_3)_f$, kPa | 14,87 | 16,85 | 20,22 |
| | u_f , kN/m ² | | | |
| | σ_{3f}' , kPa | 49,05 | 61,31 | 73,58 |
| | σ_{1f} , kPa | 63,92 | 78,16 | 93,80 |
| SHEAR STRENGTH PARAMETERS | | c : | 1,76 | kN/m ² |
| | | ϕ : | 5,66 | ° |

Failure and Stress Path



MODE OF FAILURE



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Data Penggeseran Benda Uji Dalam Sel Triaksial

(2D)

| Pemendekan | | | Tekanan Sel (σ_3 , kPa) | | |
|----------------------|----------------------------|---------------------|---------------------------------|------------------------|------------------------|
| | | | 49,05 | 61,31 | 73,58 |
| Pembacaan arloji (a) | DL a* 10 ³ (cm) | Regangan e =DL/Lo % | Pembacaan arloji beban | Pembacaan arloji beban | Pembacaan arloji beban |
| 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| 7,11 | 0,01 | 0,00 | 0,10 | 0,20 | 0,10 |
| 14,22 | 0,01 | 0,00 | 0,20 | 0,30 | 0,10 |
| 21,33 | 0,02 | 0,00 | 0,20 | 0,30 | 0,20 |
| 28,44 | 0,03 | 0,00 | 0,20 | 0,30 | 0,30 |
| 35,55 | 0,04 | 0,01 | 0,30 | 0,30 | 0,50 |
| 42,66 | 0,04 | 0,01 | 0,30 | 0,40 | 0,60 |
| 49,77 | 0,05 | 0,01 | 0,30 | 0,40 | 0,80 |
| 56,88 | 0,06 | 0,01 | 0,40 | 0,40 | 0,80 |
| 63,99 | 0,06 | 0,01 | 0,40 | 0,50 | 0,80 |
| 71,10 | 0,07 | 0,01 | 0,50 | 0,50 | 0,80 |
| 142,20 | 0,14 | 0,02 | 0,80 | 0,80 | 1,10 |
| 213,30 | 0,21 | 0,03 | 0,90 | 0,90 | 1,20 |
| 284,40 | 0,28 | 0,040 | 1,00 | 1,00 | 1,50 |
| 355,50 | 0,36 | 0,050 | 1,10 | 1,20 | 1,80 |
| 426,60 | 0,43 | 0,060 | 1,30 | 1,30 | 1,90 |
| 497,70 | 0,50 | 0,070 | 1,40 | 1,50 | 2,00 |
| 568,80 | 0,57 | 0,080 | 1,60 | 1,80 | 2,20 |
| 639,90 | 0,64 | 0,090 | 1,80 | 1,90 | 2,30 |
| 711,00 | 0,71 | 0,100 | 1,90 | 1,90 | 2,60 |
| 853,20 | 0,85 | 0,120 | 1,90 | 2,10 | 2,80 |
| 995,40 | 1,00 | 0,140 | 2,00 | 2,20 | 2,90 |
| 1137,60 | 1,14 | 0,160 | 2,10 | 2,30 | 3,00 |
| 1279,80 | 1,28 | 0,180 | 2,00 | 2,10 | 2,80 |
| 1422,00 | 1,42 | 0,200 | 1,80 | 1,80 | 2,70 |



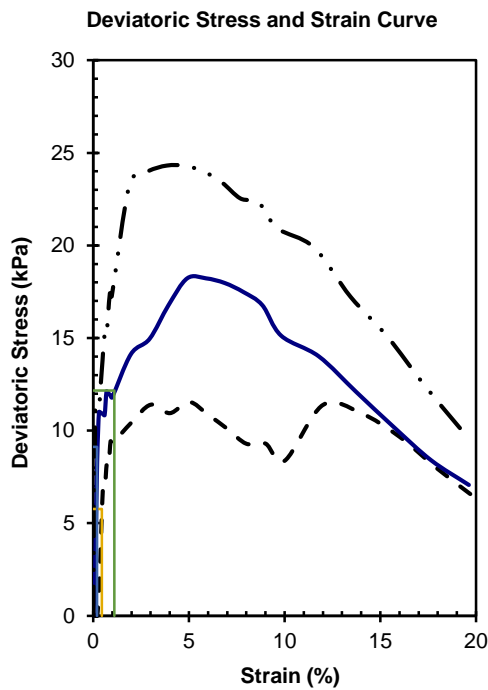
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MUHAMMADIYAH UNIVERSITY OF YOGYAKARTA

Project : Tugas akhir
 Location : Drum 2
 Bore hole no. : 3D

Depth :
 Date : 25-11-16
 Laboran: Mei Liya Faridatun Khaosa

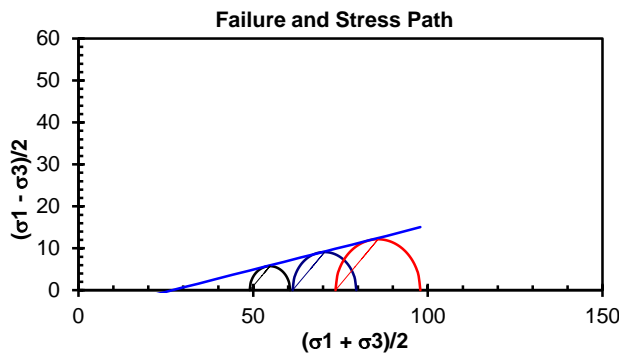
TRIAxIAL COMPRESSION TEST



--- $(\sigma_1 - \sigma_3)_1$
 — $(\sigma_1 - \sigma_3)_2$
 - . - $(\sigma_1 - \sigma_3)_3$

- Note:
 1. Side drains
 2. Stress/strain curves corrected for:
 Area changes √
 Membranes -

| | | | | |
|-------------------------------------|---------------------------------|-------|-------|-------------------|
| Soil Description: | | | | |
| 1D | | | | |
| Test condition : UU/CU/CD | | | | |
| Type of specimen UNDISTURBED | | | | |
| SPECIMEN | | | | |
| DIMENSIONS | Diameter, mm | 34,4 | 34,7 | 34,5 |
| | Length, mm | 68,1 | 69,4 | 70,9 |
| INITIAL | Density, Mg/m ³ | 1,66 | 1,62 | 1,62 |
| | Moisture, % | 51,63 | 51,98 | 52,94 |
| | Dry Density, mg/m ³ | 1,10 | 1,07 | 1,07 |
| | Void ratio | 1,40 | 1,47 | 1,47 |
| | Degree of Saturation, % | 97,31 | 93,16 | 94,97 |
| AFTER CONSOLIDATION | Density, Mg/m ³ | | | |
| | Moisture, % | | | |
| | Dry Density, Mg/m ³ | | | |
| COMPRESSION | Cell pressure, kPa | 49,05 | 61,31 | 73,58 |
| | Initial pwp, kPa | | | |
| STAGE | Strain rate, %/hour | 0,65 | 0,64 | 0,62 |
| | Strain % | 1,30 | 2,10 | 2,70 |
| FAILURE CONDITIONS | $(\sigma_1 - \sigma_3)_f$, kPa | 11,55 | 18,23 | 24,31 |
| | u_f , kN/m ² | | | |
| | σ_{3f}' , kPa | 49,05 | 61,31 | 73,58 |
| | σ_{1f} , kPa | 60,60 | 79,54 | 97,89 |
| SHEAR STRENGTH PARAMETERS | | c : | 0 | kN/m ² |
| | | φ : | 11,92 | ° |



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Data Penggeseran Benda Uji Dalam Sel Triaksial

(3D)

| Pemendekan | | | Tekanan Sel (σ_3 , kPa) | | |
|----------------------|----------------------------|---------------------|---------------------------------|------------------------|------------------------|
| Pembacaan arloji (a) | DL a* 10 ³ (cm) | Regangan e =DL/Lo % | 49,05 | 61,31 | 73,58 |
| | | | Pembacaan arloji beban | Pembacaan arloji beban | Pembacaan arloji beban |
| 0,00 | 0,00 | 0,00 | 0,00 | 0,00 | 0,00 |
| 6,81 | 0,01 | 0,00 | 0,00 | 0,20 | 0,80 |
| 13,62 | 0,01 | 0,00 | 0,00 | 0,60 | 0,80 |
| 20,43 | 0,02 | 0,00 | 0,10 | 0,80 | 0,80 |
| 27,24 | 0,03 | 0,00 | 0,30 | 0,80 | 0,90 |
| 34,05 | 0,03 | 0,01 | 0,50 | 0,80 | 1,00 |
| 40,86 | 0,04 | 0,01 | 0,50 | 0,80 | 1,10 |
| 47,67 | 0,05 | 0,01 | 0,60 | 0,90 | 1,10 |
| 54,48 | 0,05 | 0,01 | 0,60 | 0,90 | 1,20 |
| 61,29 | 0,06 | 0,01 | 0,70 | 0,90 | 1,30 |
| 68,10 | 0,07 | 0,01 | 0,70 | 0,90 | 1,30 |
| 136,20 | 0,14 | 0,02 | 0,80 | 1,10 | 1,80 |
| 204,30 | 0,20 | 0,03 | 0,90 | 1,20 | 1,90 |
| 272,40 | 0,27 | 0,040 | 0,90 | 1,40 | 2,00 |
| 340,50 | 0,34 | 0,050 | 1,00 | 1,60 | 2,10 |
| 408,60 | 0,41 | 0,060 | 1,00 | 1,70 | 2,20 |
| 476,70 | 0,48 | 0,070 | 1,00 | 1,80 | 2,30 |
| 544,80 | 0,54 | 0,080 | 1,00 | 1,90 | 2,40 |
| 612,90 | 0,61 | 0,090 | 1,10 | 2,00 | 2,60 |
| 681,00 | 0,68 | 0,100 | 1,10 | 2,00 | 2,70 |
| 817,20 | 0,82 | 0,120 | 1,70 | 2,10 | 2,90 |
| 953,40 | 0,95 | 0,140 | 1,90 | 2,10 | 2,90 |
| 1089,60 | 1,09 | 0,160 | 2,00 | 2,10 | 3,00 |
| 1225,80 | 1,23 | 0,180 | 2,00 | 2,10 | 3,00 |
| 1362,00 | 1,36 | 0,200 | 2,00 | 2,20 | 3,00 |