**Humboldt Scientific, Inc.**

**Consolidated Undrained Triaxial Test (ASTM D4767)**

Date

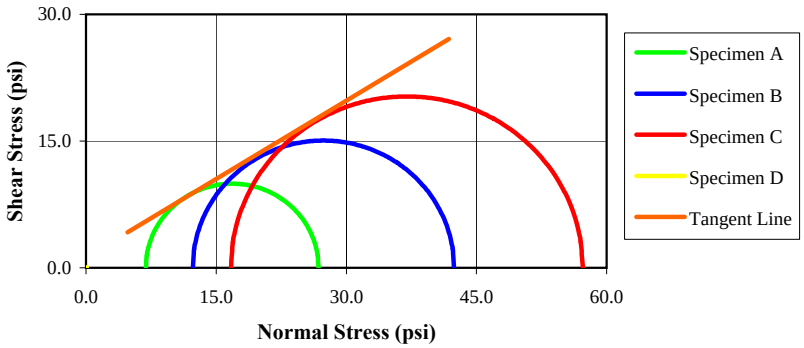
Checked By

Date

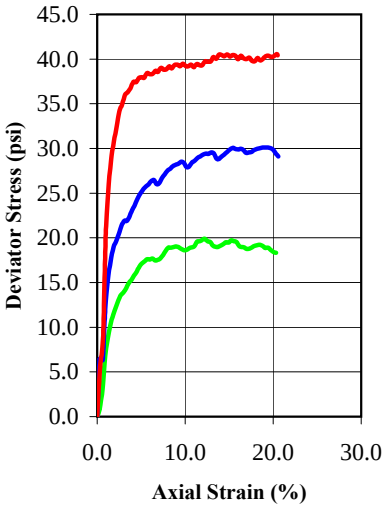
Date

Tested By

**Effective Stress at Maximum Deviator Stress Criterion**




**Deviator Stress vs. Axial Strain**




| Initial | Specimen A | B | C | D |
|---|---|---|---|---|
| Water Content (%) | 19.3 | 18.8 | 17.8 | |
| Dry Density (psf) | 94.90 | 97.22 | 96.96 | |
| Saturation (%) | 66.50 | 68.68 | 64.66 | |
| Void Ratio | 0.785 | 0.742 | 0.747 | |
| Diameter (in) | 2.880 | 2.880 | 2.880 | |
| Height (in) | 6.072 | 6.005 | 6.051 | |
| Specific Gravity | 2.72 | 2.72 | 2.72 | |
| Liquid Limit | 28 | 28 | 28 | |
| Plastic Limit | 0 | 0 | 0 | |
| **After Consolidation** | **A** | **B** | **C** | **D** |
| B-Value | 0.00 | 0.00 | 0.00 | |
| Water Content (%) | 19.7 | 19.6 | 20.5 | |
| Dry Density (pcf) | 100.62 | 103.79 | 103.37 | |
| Saturation (%) | 100.00 | 100.00 | 100.00 | |
| Void Ratio | 0.687 | 0.636 | 0.643 | |
| Confining Press. (psi) | 10.0 | 20.0 | 40.0 | |
| Back Press. (psi) | 80.0 | 80.0 | 80.0 | |
| Strain Rate (in/min) | 0.0090 | 0.0090 | 0.0090 | |

| Maximium Deviator Stress Criterion | |
|---|---|
| C (psi) | 5.3 |
| C' (psi) | 1.2 |
| Ø (deg) | 14.7 |
| Ø' (deg) | 31.7 |

| After Shear | A | B | C | D |
|---|---|---|---|---|
| σ'1 at Failure (psi) | 26.81 | 42.42 | 57.26 | |
| σ'3 at Failure (psi) | 6.90 | 12.30 | 16.70 | |
| | | | | |
| | | | | |

| | |
|---|---|
| **Project:** | Caldwell County |
| **Location:** | 237+60 |
| **Project Number:** | 34402.3.6 |
| **Boring Number:** | T-4950 |
| **Sample Number:** | ST-102 |
| **Depth:** | 4.5'-6.7' |
| **Sample Type:** | Undisturbed |
| **Description:** | the dog |
| **Test Type** | Consolidated Undrained |
| **Remarks** | |

| | | | |
|---|---|---|---|
| N/A | N/A | N/A | N/A |

Failure Photographs

**Humboldt Scientific, Inc.**

**Consolidated Undrained Triaxial Test (ASTM D4767)**

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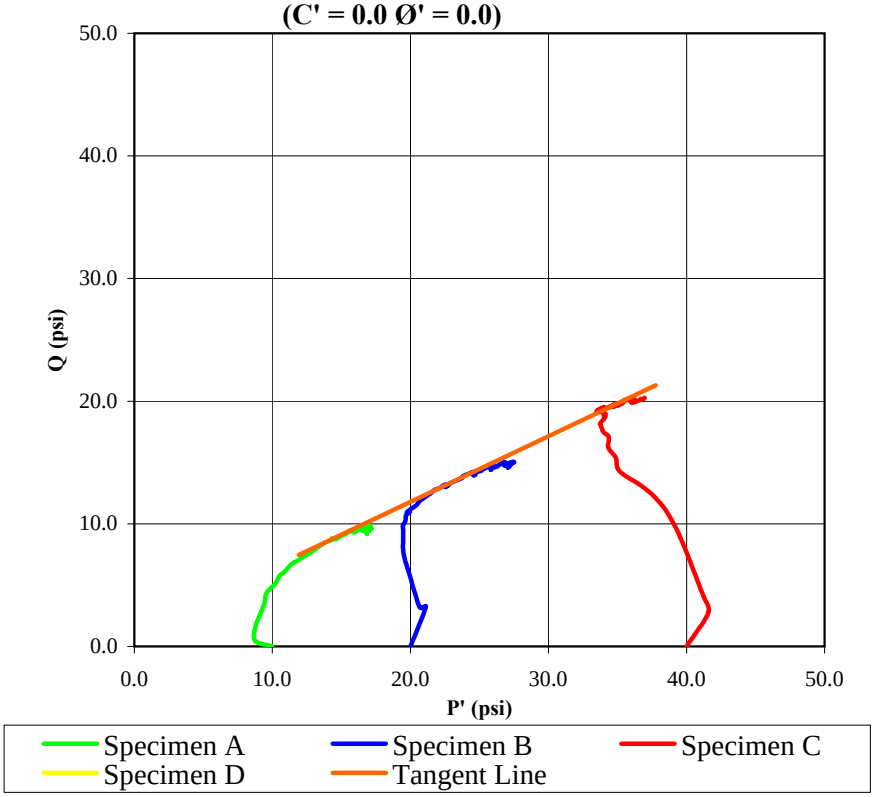
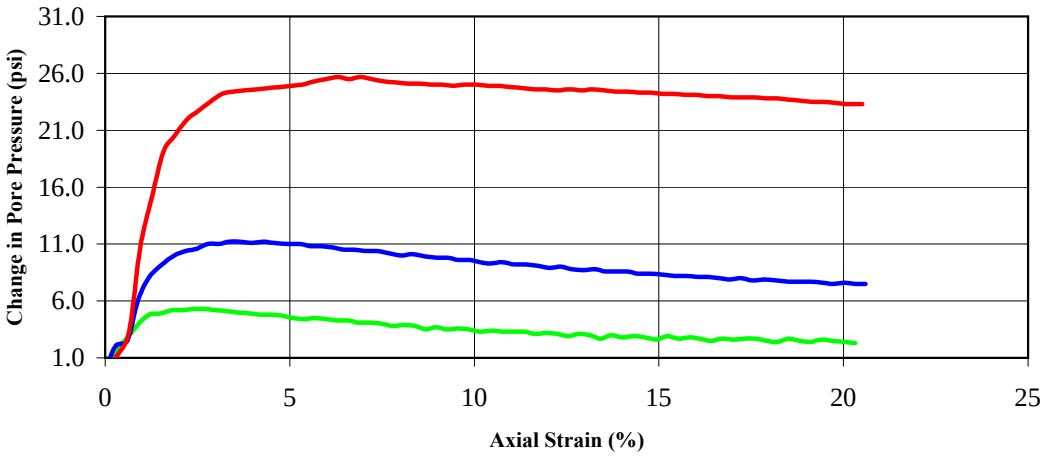
## Stress Paths (Effective)

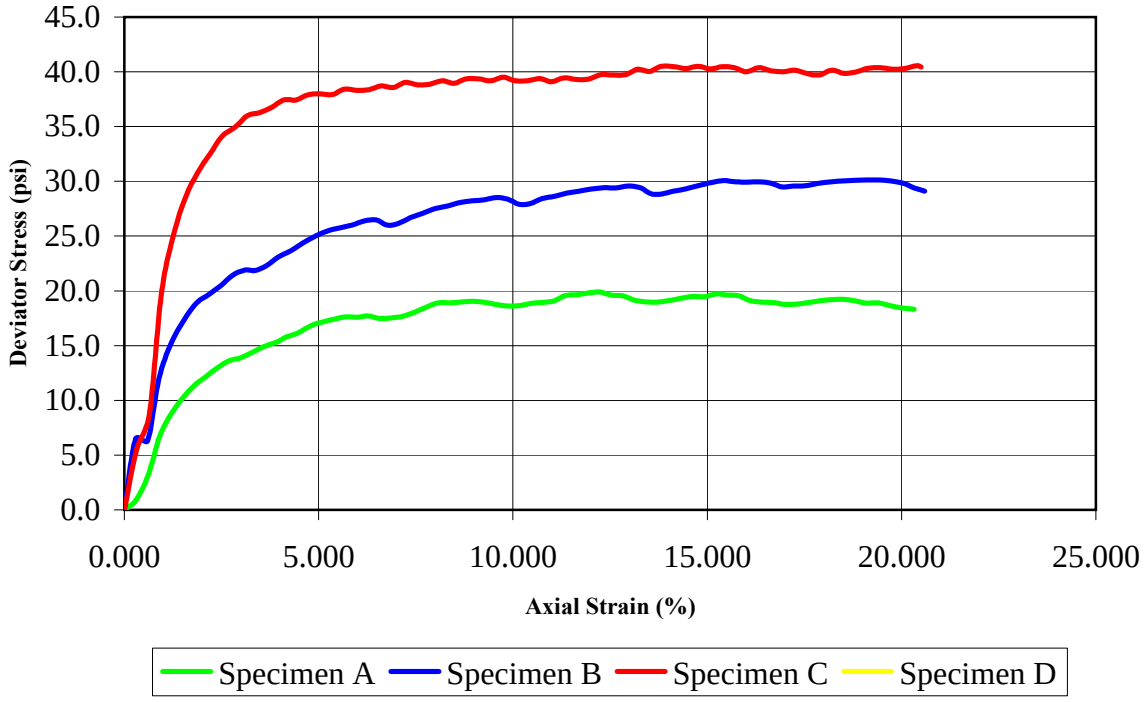
**(C' = 0.0 Ø' = 0.0)**



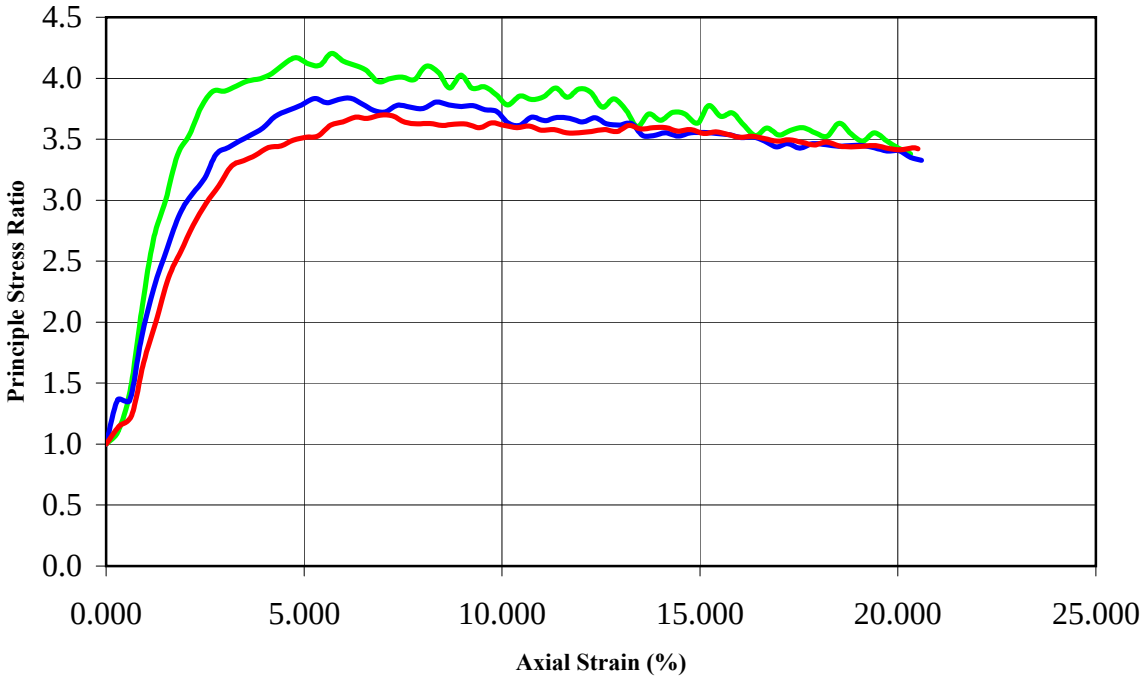

## Change in Pore Pressure vs. Axial Strain



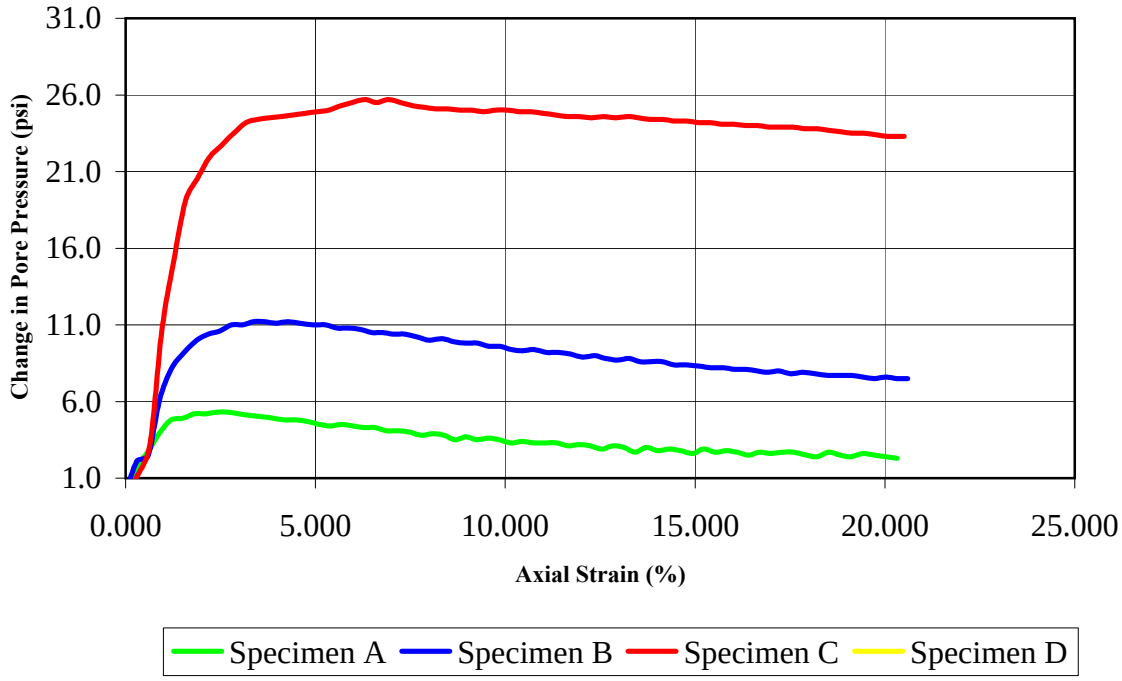
## Deviator Stress vs. Axial Strain




## Principle Stress Ratio vs. Axial Strain

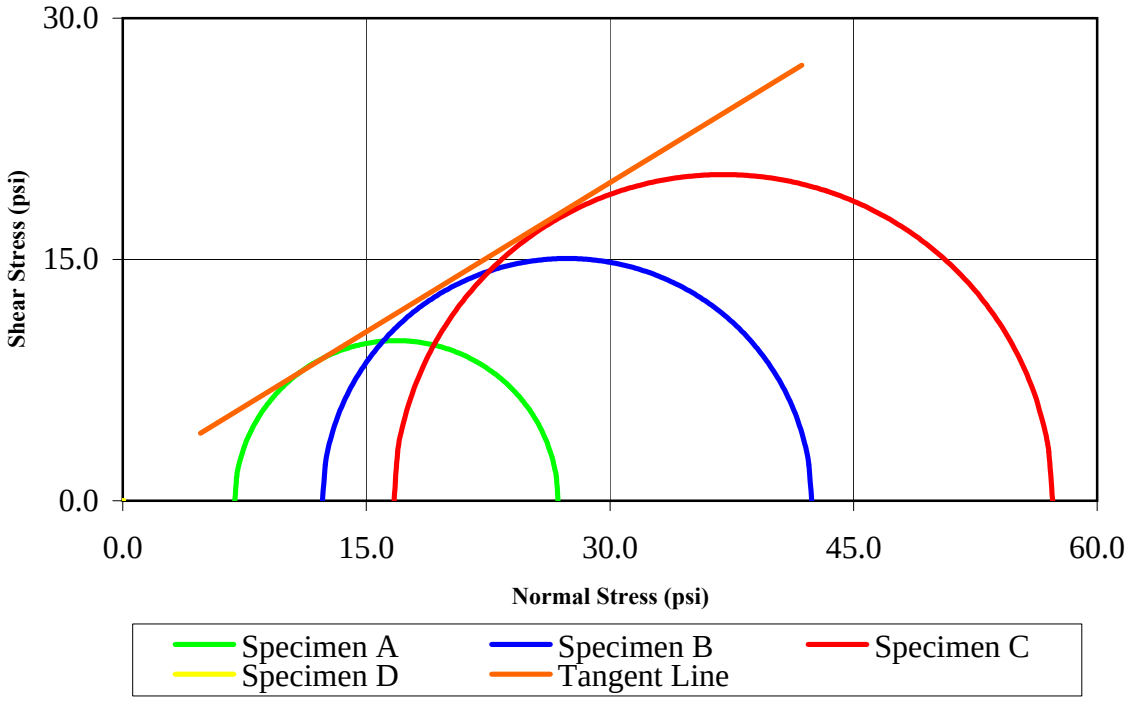


## Change in Pore Pressure vs. Axial Strain

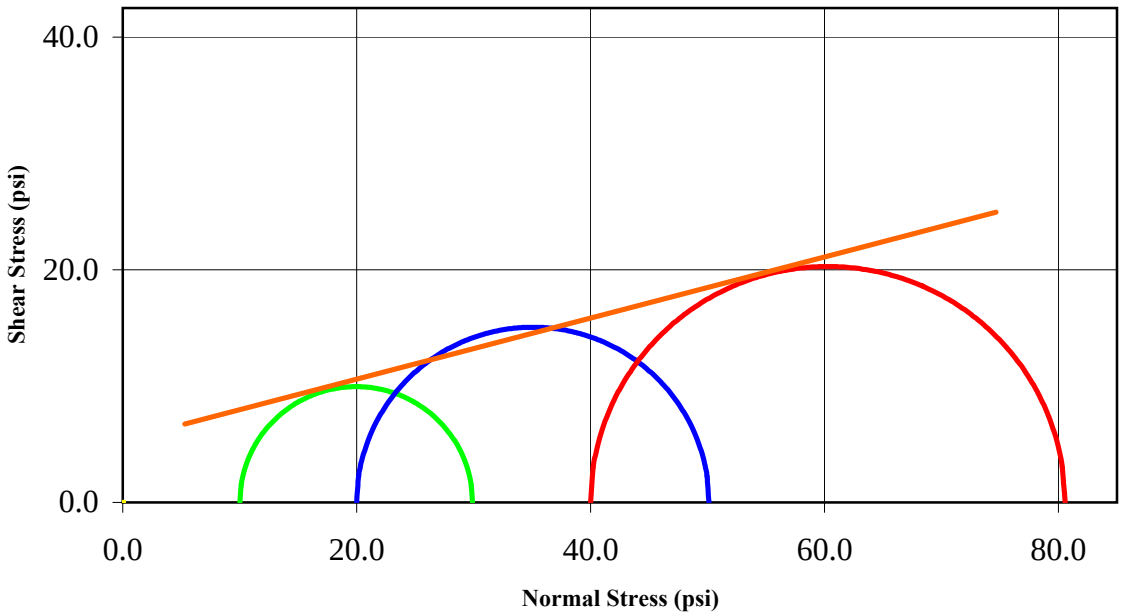


## Mohr Stress Circles at Maximum Deviator Stress Criterion

**Effective Stress**
**(C' = 1.2 Ø' = 31.7)**

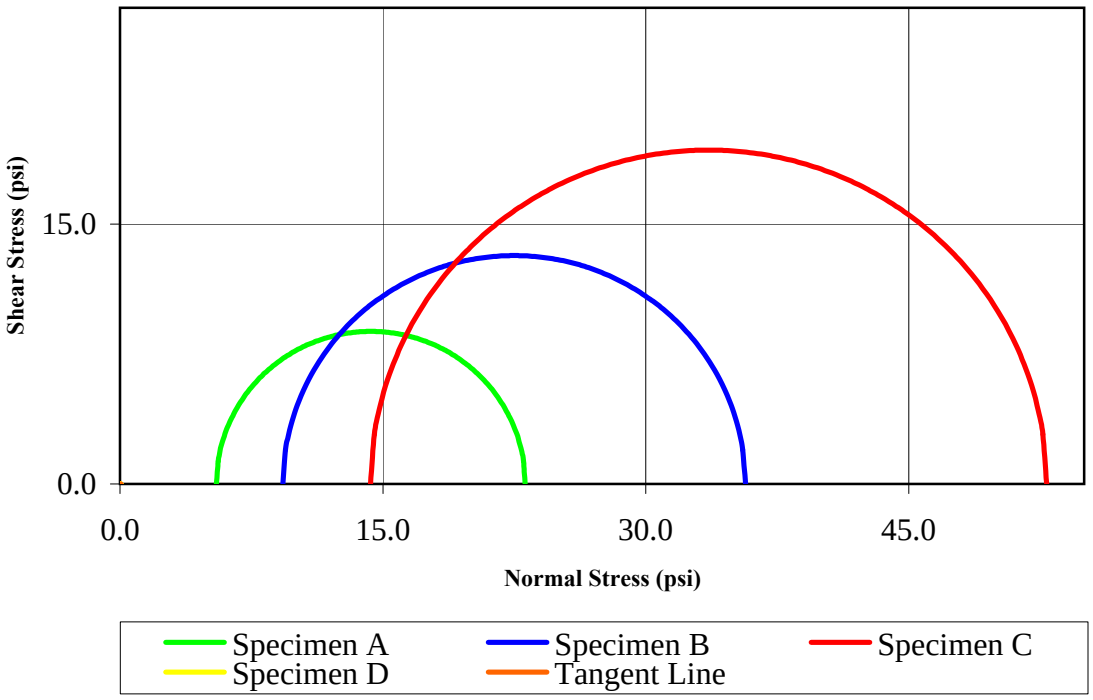



**Total Stress**
**(C = 5.3 Ø = 14.7)**

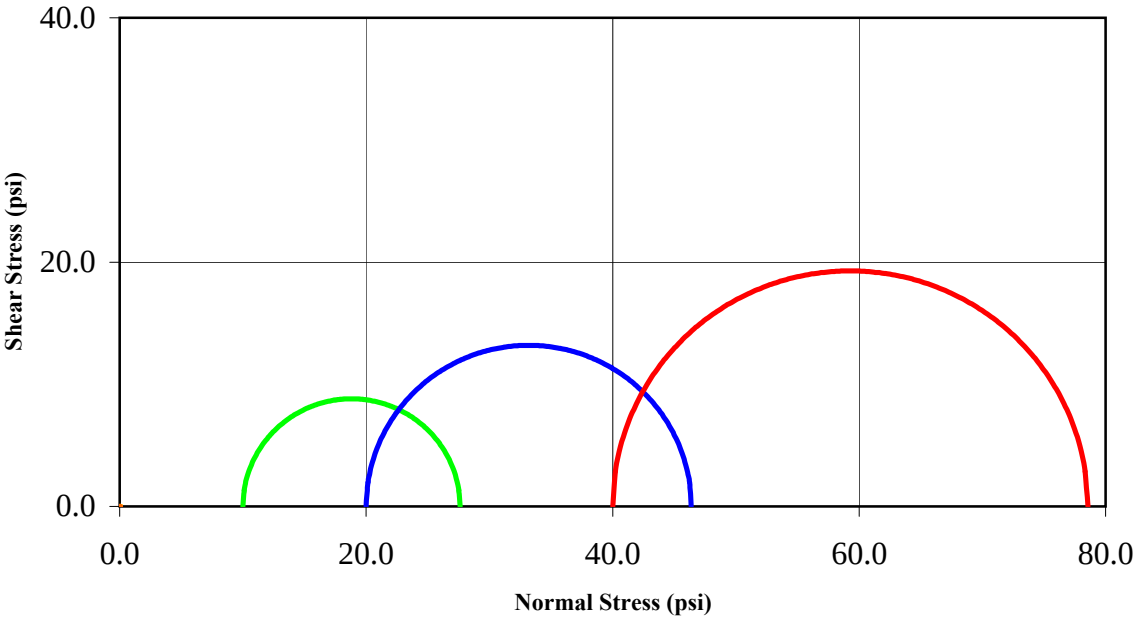


## Mohr Stress Circles at Maximum Principal Stress Ratio Criterion

### Effective Stress
### (C' = 0.0 Ø' = 0.0)

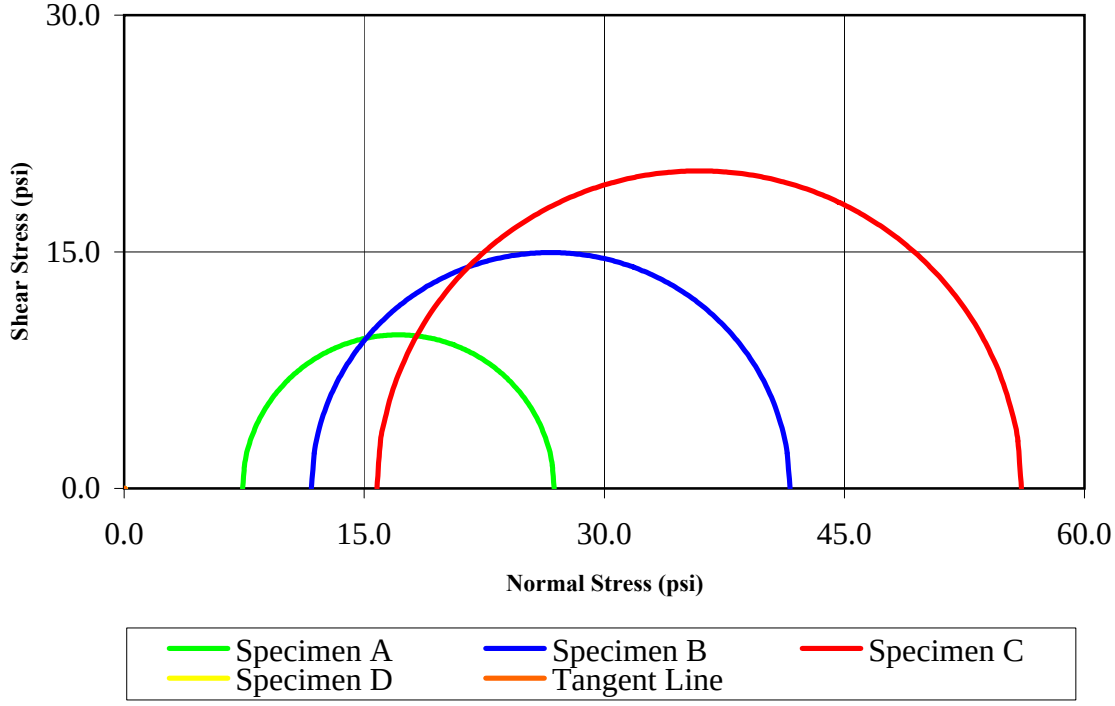



### Total Stress
### (C = 0.0 Ø = 0.0)

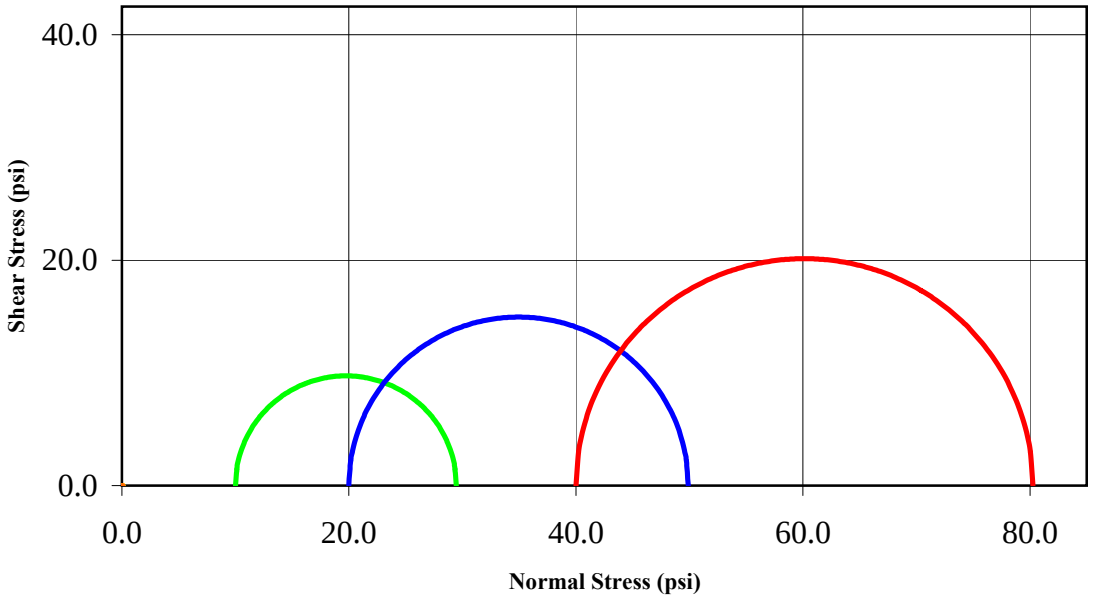


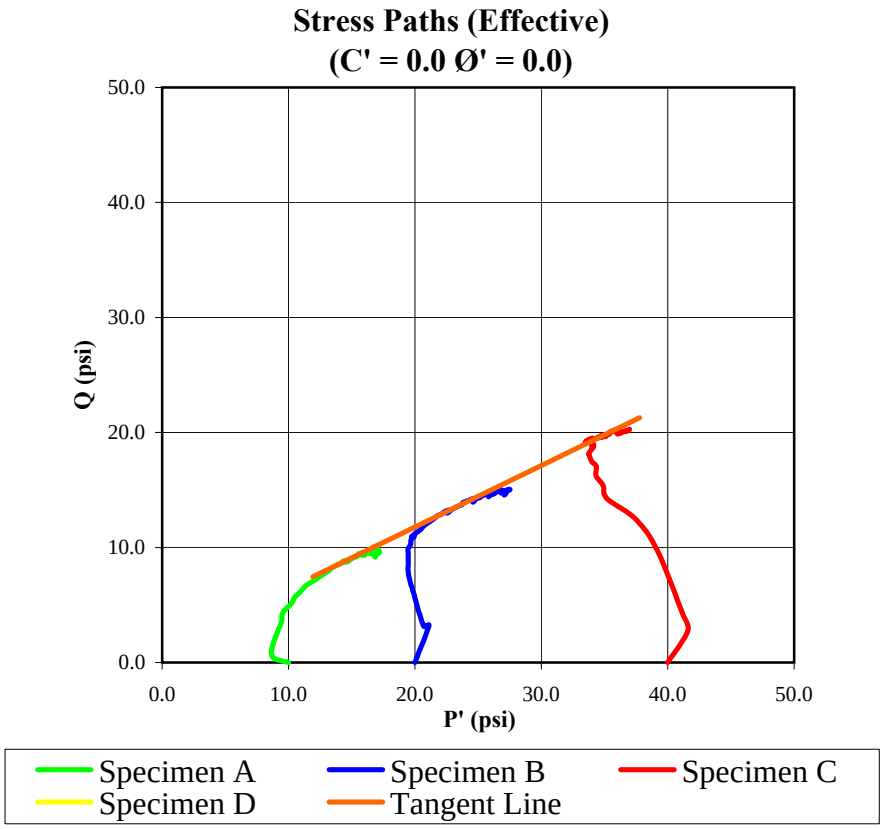
## Mohr Stress Circles at 15% Axial Strain Criterion

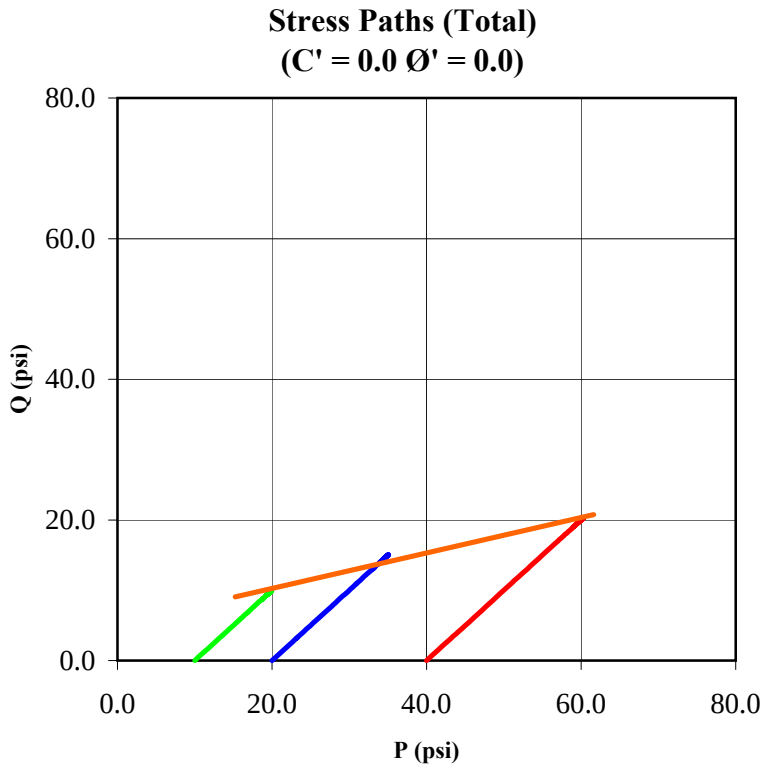
### Effective Stress
### (C' = 0.0 Ø' = 0.0)




### Total Stress
### (C = 0.0 Ø = 0.0)

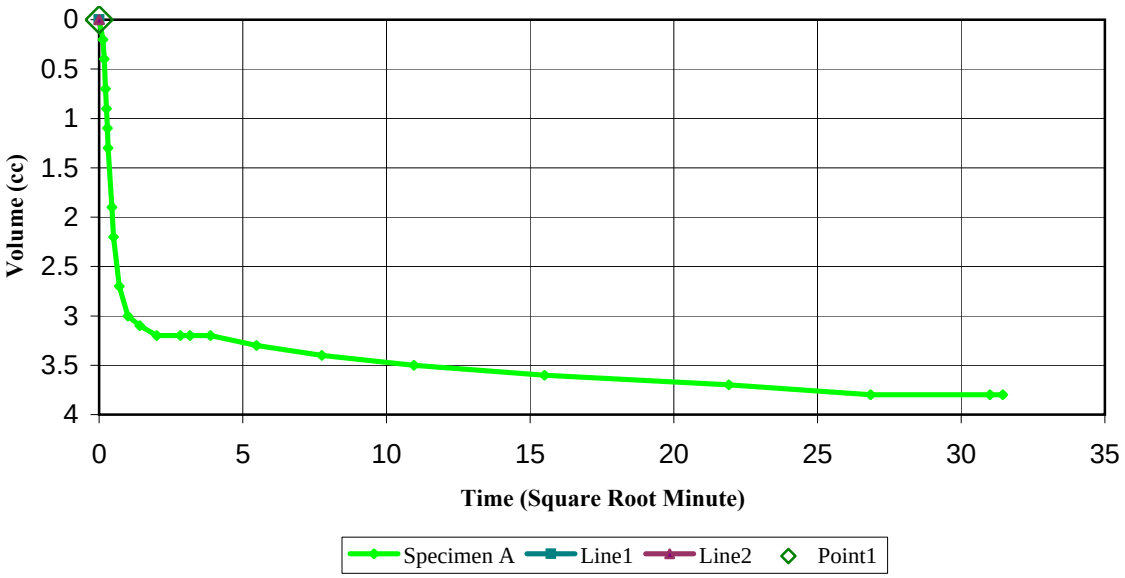



Stress Paths (Effective)
(C' = 0.0 Ø' = 0.0)
50.0
40.0
30.0
20.0
10.0
0.0
Q (psi)
0.0
10.0
20.0
30.0
40.0
50.0
P' (psi)
Specimen A
Specimen B
Specimen C
Specimen D
Tangent Line

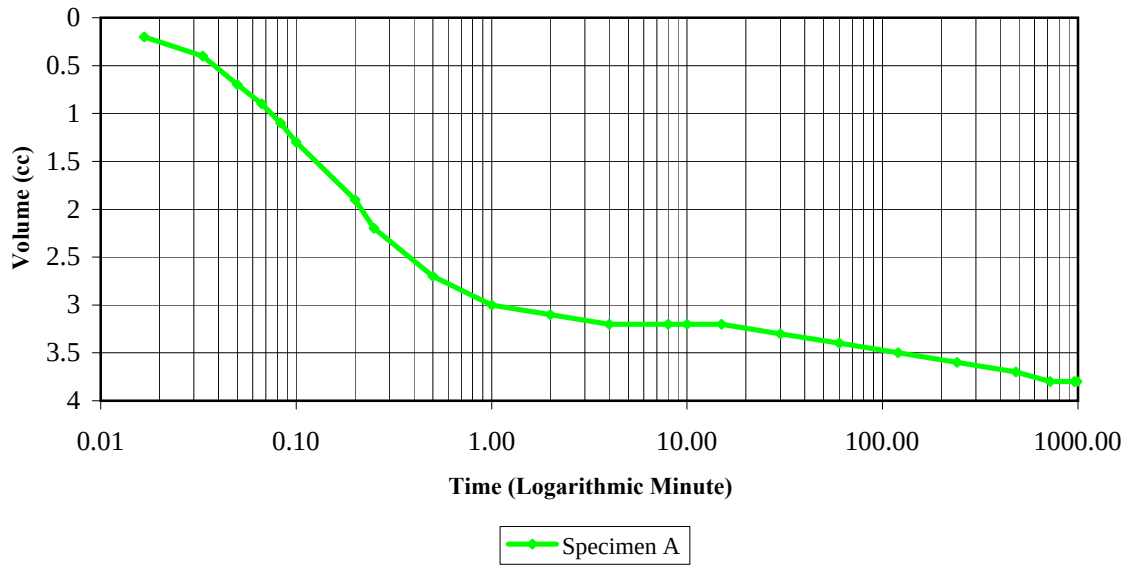

Stress Paths (Total)
(C' = 0.0 Ø' = 0.0)
80.0
60.0
40.0
20.0
0.0
Q (psi)
0.0
20.0
40.0
60.0
80.0
P (psi)

# Specimen A Consolidation Graphs

## Consolidation Graph (Square Root Time)

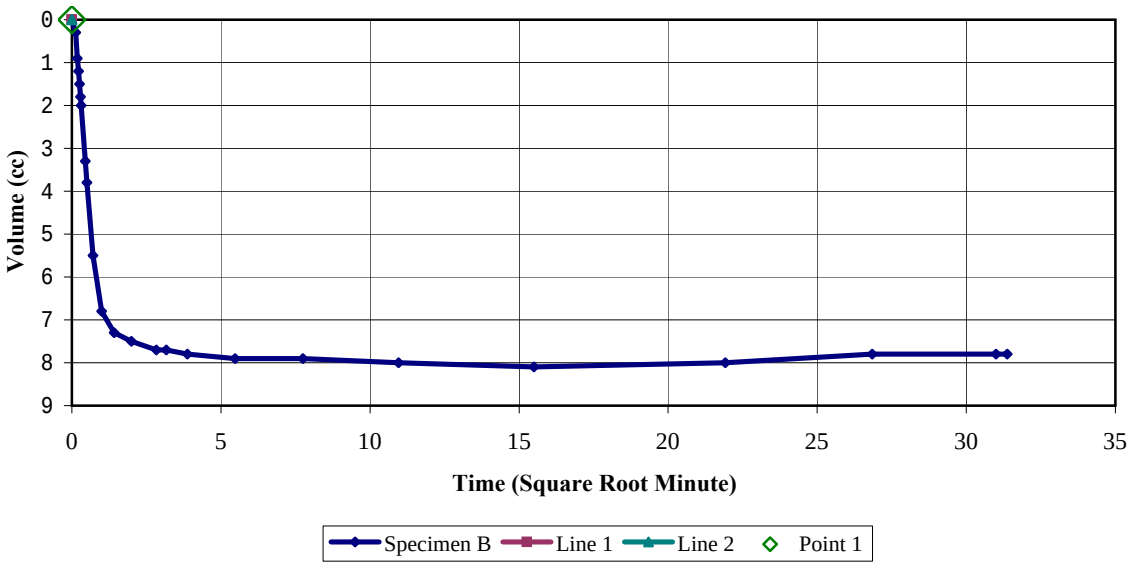



## Consolidation Graph (Logarithmic Time)

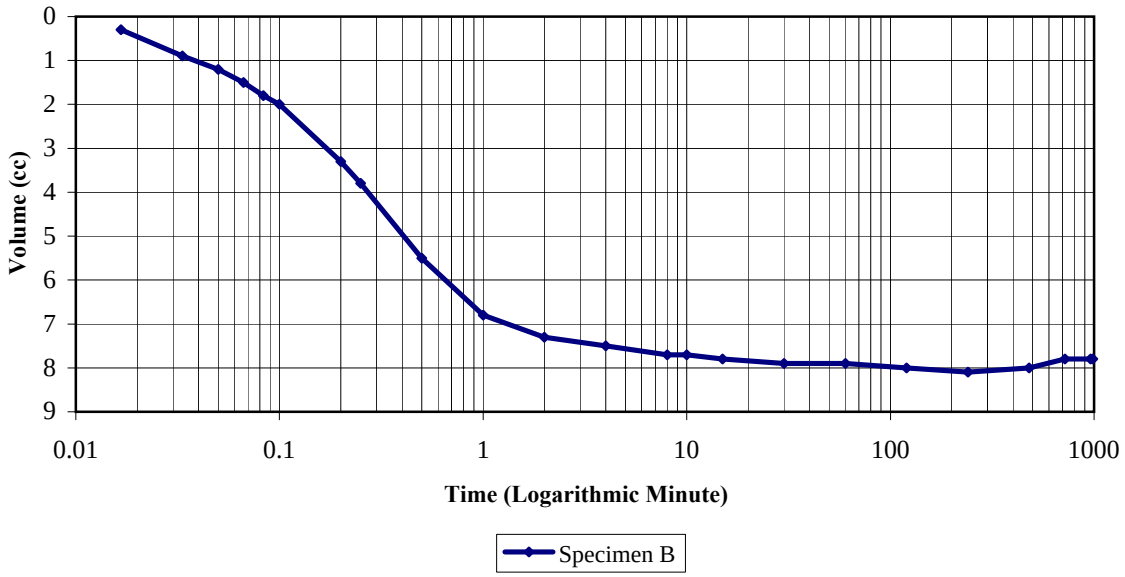


# Specimen B Consolidation Graphs

## Consolidation Graph (Square Root Time)

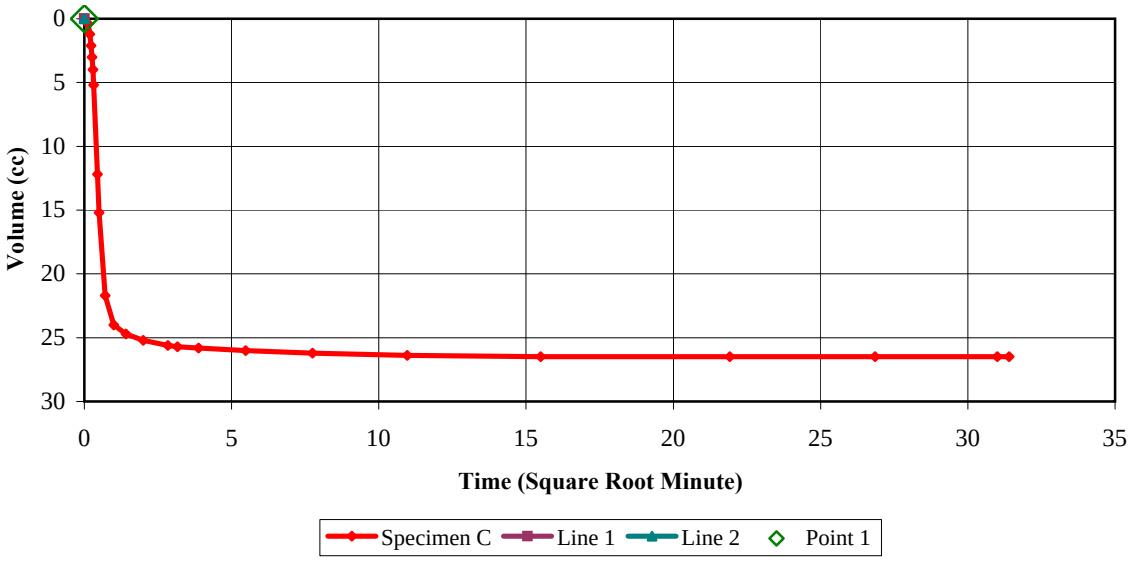



## Consolidation Graph (Logarithmic Time)

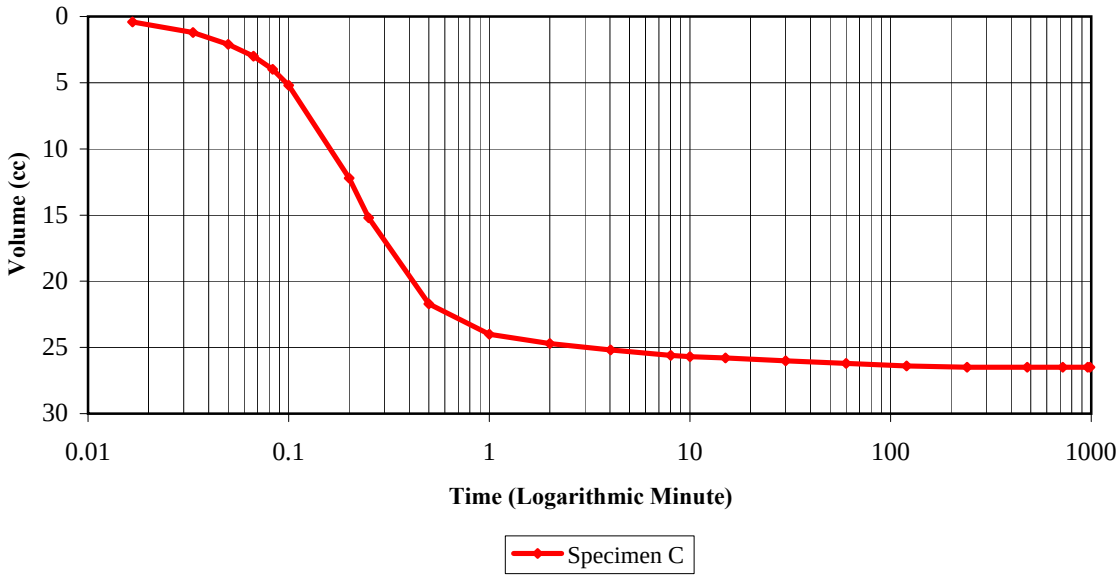


# Specimen C Consolidation Graphs

## Consolidation Graph (Square Root Time)




## Consolidation Graph (Logarithmic Time)



## Consolidation Calculations Specimen A
CU Triaxial Test

Humboldt Scientific, Inc.

Client: _____ Project No. 34402.3.6

Project Name: Caldwell County

Project Location: 237+60

Hole No. T-4950 Depth: 4.5'-6.7'

Cell Pressure (psi) = 90 Test Type = CU

Back Pressure (psi) = 80

Effective Pressure (psi)= 10

Initial Sample Diameter (in) = 2.88 Burrette Reading at Start of Test (cc)= 0

Initial Sample Height (in) = 6.072

Initial Sample Area (in2) = 6.514

Initial Volume (in3) = 39.56

| Time | Burrette Reading (cc) | Volume Change (cc) |
|---|---|---|
| 00:00:00 | 0.00 | N/A |
| 00:00:01 | 0.20 | 0.200 |
| 00:00:02 | 0.40 | 0.400 |
| 00:00:03 | 0.70 | 0.700 |
| 00:00:04 | 0.90 | 0.900 |
| 00:00:05 | 1.10 | 1.100 |
| 00:00:06 | 1.30 | 1.300 |
| 00:00:12 | 1.90 | 1.900 |
| 00:00:15 | 2.20 | 2.200 |
| 00:00:30 | 2.70 | 2.700 |
| 00:01:00 | 3.00 | 3.000 |
| 00:02:00 | 3.10 | 3.100 |
| 00:04:00 | 3.20 | 3.200 |
| 00:08:00 | 3.20 | 3.200 |
| 00:10:00 | 3.20 | 3.200 |
| 00:15:01 | 3.20 | 3.200 |
| 00:30:01 | 3.30 | 3.300 |
| 01:00:03 | 3.40 | 3.400 |
| 02:00:06 | 3.50 | 3.500 |
| 04:00:13 | 3.60 | 3.600 |
| 08:00:26 | 3.70 | 3.700 |
| 12:00:40 | 3.80 | 3.800 |

| | | |
|---|---|---|
| 16:00:53 | 3.80 | 3.800 |
| 16:28:40 | 3.80 | 3.800 |
| | | |

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## Consolidation Calculations Specimen B
CU Triaxial Test

Humboldt Scientific, Inc.

Client: _____ Project No. 34402.3.6

Project Name: Caldwell County

Project Location: 237+60

Hole No. T-4950 Depth: 4.5'-6.7'

| | | | |
|---|---|---|---|
| Cell Pressure (psi) = | 100 | Test Type = | CU |
| Back Pressure (psi) = | 80 | | |
| Effective Pressure (psi)= | 20 | | |
| Initial Sample Diameter (in) = | 2.88 | Burrette Reading at Start of Test (cc)= | 0 |
| Initial Sample Height (in) = | 6.005 | | |
| Initial Sample Area (in2) = | 6.514 | | |
| Initial Volume (in3) = | 39.12 | | |

| Time | Burrette Reading (cc) | Volume Change (cc) |
|---|---|---|
| 00:00:00 | 23.20 | N/A |
| 00:00:01 | 23.50 | 0.300 |
| 00:00:02 | 24.10 | 0.900 |
| 00:00:03 | 24.40 | 1.200 |
| 00:00:04 | 24.70 | 1.500 |
| 00:00:05 | 25.00 | 1.800 |
| 00:00:06 | 25.20 | 2.000 |
| 00:00:12 | 26.50 | 3.300 |
| 00:00:15 | 27.00 | 3.800 |
| 00:00:30 | 28.70 | 5.500 |
| 00:01:00 | 30.00 | 6.800 |
| 00:02:00 | 30.50 | 7.300 |
| 00:04:00 | 30.70 | 7.500 |
| 00:08:00 | 30.90 | 7.700 |
| 00:10:00 | 30.90 | 7.700 |
| 00:15:00 | 31.00 | 7.800 |
| 00:30:01 | 31.10 | 7.900 |
| 01:00:03 | 31.10 | 7.900 |
| 02:00:06 | 31.20 | 8.000 |
| 04:00:13 | 31.30 | 8.100 |
| 08:00:26 | 31.20 | 8.000 |
| 12:00:39 | 31.00 | 7.800 |

| | | |
|---|---|---|
| 16:00:52 | 31.00 | 7.800 |
| 16:24:19 | 31.00 | 7.800 |
| | | |

Laboratory Supervisor

# Consolidation Calculations Specimen C

CU Triaxial Test

Humboldt Scientific, Inc.

Client: _____ Project No. 34402.3.6

Project Name: Caldwell County

Project Location: 237+60

Hole No. T-4950 Depth: 4.5'-6.7'

Cell Pressure (psi) = 120 Test Type = CU

Back Pressure (psi) = 80

Effective Pressure (psi)= 40

Initial Sample Diameter (in) = 2.88 Burrette Reading at Start of Test (cc)= 0

Initial Sample Height (in) = 6.051

Initial Sample Area (in2) = 6.514

Initial Volume (in3) = 39.42

| Time | Burrette Reading (cc) | Volume Change (cc) |
|---|---|---|
| 00:00:00 | 37.10 | N/A |
| 00:00:01 | 37.50 | 0.400 |
| 00:00:02 | 38.30 | 1.200 |
| 00:00:03 | 39.20 | 2.100 |
| 00:00:04 | 40.10 | 3.000 |
| 00:00:05 | 41.10 | 4.000 |
| 00:00:06 | 42.30 | 5.200 |
| 00:00:12 | 49.30 | 12.200 |
| 00:00:15 | 52.30 | 15.200 |
| 00:00:30 | 58.80 | 21.700 |
| 00:01:00 | 61.10 | 24.000 |
| 00:02:00 | 61.80 | 24.700 |
| 00:04:01 | 62.30 | 25.200 |
| 00:08:01 | 62.70 | 25.600 |
| 00:10:01 | 62.80 | 25.700 |
| 00:15:01 | 62.90 | 25.800 |
| 00:30:02 | 63.10 | 26.000 |
| 01:00:04 | 63.30 | 26.200 |
| 02:00:07 | 63.50 | 26.400 |
| 04:00:13 | 63.60 | 26.500 |
| 08:00:26 | 63.60 | 26.500 |
| 12:00:39 | 63.60 | 26.500 |

| | | |
|---|---|---|
| 16:00:52 | 63.60 | 26.500 |
| 16:26:02 | 63.60 | 26.500 |
| | | |

Laboratory Supervisor

## Specimen A Shear Data

**CU Triaxial Test**

**Humboldt Scientific, Inc.**

File Location
T-4950.HSD

### Project Information

Project No. 34402.3.6
Project Name: Caldwell County
Client:
Sample Location: 237+60
Sample Description: the dog
Remarks:

### Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.72
LL: 28
PL: 0

| Sample Parameters | Initial | After Consolidation | Final |
|---|---|---|---|
| Diameter (in) | 2.880 | 2.832 | |
| Height (in) | 6.072 | 5.925 | |
| Weight (grams) | 1176.00 | | 1236.00 |
| Moisture (%) | 19.27 | | 25.35 |
| Dry Density (pcf) | 94.90 | 100.62 | |
| Saturation (%) | 66.50 | 100.00 | |
| Void Ratio | 0.785 | 0.687 | |

### Test Data

Rate of Strain (in/min): 0.009
Cell Pressure (psi): 90.000
Effective Confining Stress (psi): 10.0
Peak Deviator Stress (psi): 19.90534 at reading number: 41

| Reading No. | Deviator Load (lbs) | Axial Deformation (in) | Pore Pressure (psi) | Change in Pore Pressure (psi) | Corrected Area (in2) | Axial Strain (%) | Deviator Stress (psi) | Corrected Deviator Stress (psi) | $\sigma_1$ (psi) | $\sigma_3$ (psi) | $\sigma'_1$ (psi) | $\sigma'_3$ (psi) | $\sigma'_1/\sigma'_3$ | Abar | P (psi) | Q (psi) | P' (psi) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 79.3 | 0.246 | 80.0 | 0.0 | 6.30 | 0.000 | 0.000 | 0.000 | 10.0 | 10.0 | 10.0 | 10.0 | 1.00 | 0.00 | 10.0 | 0.0 | 10.0 |
| 1 | 85.0 | 0.264 | 81.7 | 1.7 | 6.32 | 0.304 | 0.905 | 0.902 | 10.9 | 10.0 | 9.2 | 8.3 | 1.11 | 1.88 | 10.5 | 0.5 | 8.8 |
| 2 | 99.2 | 0.282 | 82.8 | 2.8 | 6.34 | 0.608 | 3.158 | 3.139 | 13.1 | 10.0 | 10.3 | 7.2 | 1.44 | 0.89 | 11.6 | 1.6 | 8.8 |
| 3 | 122.3 | 0.300 | 84.0 | 4.0 | 6.36 | 0.911 | 6.825 | 6.763 | 16.8 | 10.0 | 12.8 | 6.0 | 2.13 | 0.59 | 13.4 | 3.4 | 9.4 |
| 4 | 135.0 | 0.317 | 84.8 | 4.8 | 6.38 | 1.198 | 8.841 | 8.735 | 18.7 | 10.0 | 13.9 | 5.2 | 2.68 | 0.55 | 14.4 | 4.4 | 9.6 |
| 5 | 144.5 | 0.335 | 84.9 | 4.9 | 6.40 | 1.502 | 10.348 | 10.193 | 20.2 | 10.0 | 15.3 | 5.1 | 3.00 | 0.48 | 15.1 | 5.1 | 10.2 |
| 6 | 152.3 | 0.353 | 85.2 | 5.2 | 6.42 | 1.806 | 11.586 | 11.377 | 21.4 | 10.0 | 16.2 | 4.8 | 3.37 | 0.46 | 15.7 | 5.7 | 10.5 |
| 7 | 157.8 | 0.371 | 85.2 | 5.2 | 6.44 | 2.110 | 12.459 | 12.196 | 22.2 | 10.0 | 17.0 | 4.8 | 3.54 | 0.43 | 16.1 | 6.1 | 10.9 |
| 8 | 163.1 | 0.388 | 85.3 | 5.3 | 6.46 | 2.397 | 13.300 | 12.982 | 23.0 | 10.0 | 17.7 | 4.7 | 3.76 | 0.41 | 16.5 | 6.5 | 11.2 |
| 9 | 167.4 | 0.406 | 85.3 | 5.3 | 6.48 | 2.700 | 13.983 | 13.605 | 23.6 | 10.0 | 18.3 | 4.7 | 3.89 | 0.39 | 16.8 | 6.8 | 11.5 |
| 10 | 169.5 | 0.423 | 85.2 | 5.2 | 6.49 | 2.987 | 14.316 | 13.889 | 23.9 | 10.0 | 18.7 | 4.8 | 3.89 | 0.37 | 16.9 | 6.9 | 11.7 |
| 11 | 173.0 | 0.441 | 85.1 | 5.1 | 6.51 | 3.291 | 14.872 | 14.382 | 24.4 | 10.0 | 19.3 | 4.9 | 3.94 | 0.35 | 17.2 | 7.2 | 12.1 |
| 12 | 176.6 | 0.458 | 85.0 | 5.0 | 6.53 | 3.578 | 15.443 | 14.891 | 24.9 | 10.0 | 19.9 | 5.0 | 3.98 | 0.34 | 17.4 | 7.4 | 12.4 |
| 13 | 179.5 | 0.477 | 84.9 | 4.9 | 6.56 | 3.899 | 15.903 | 15.283 | 25.3 | 10.0 | 20.4 | 5.1 | 4.00 | 0.32 | 17.6 | 7.6 | 12.7 |
| 14 | 183.2 | 0.494 | 84.8 | 4.8 | 6.58 | 4.186 | 16.491 | 15.800 | 25.8 | 10.0 | 21.0 | 5.2 | 4.04 | 0.30 | 17.9 | 7.9 | 13.1 |
| 15 | 186.1 | 0.512 | 84.8 | 4.8 | 6.60 | 4.489 | 16.951 | 16.190 | 26.2 | 10.0 | 21.4 | 5.2 | 4.11 | 0.30 | 18.1 | 8.1 | 13.3 |
| 16 | 190.5 | 0.530 | 84.7 | 4.7 | 6.62 | 4.793 | 17.649 | 16.803 | 26.8 | 10.0 | 22.1 | 5.3 | 4.17 | 0.28 | 18.4 | 8.4 | 13.7 |
| 17 | 193.2 | 0.548 | 84.5 | 4.5 | 6.64 | 5.097 | 18.078 | 17.156 | 27.2 | 10.0 | 22.7 | 5.5 | 4.12 | 0.26 | 18.6 | 8.6 | 14.1 |
| 18 | 195.2 | 0.566 | 84.4 | 4.4 | 6.66 | 5.401 | 18.395 | 17.402 | 27.4 | 10.0 | 23.0 | 5.6 | 4.11 | 0.25 | 18.7 | 8.7 | 14.3 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 197.0 | 0.583 | 84.5 | 4.5 | 6.68 | 5.688 | 18.681 | 17.618 | 27.6 | 10.0 | 23.1 | 5.5 | 4.20 | 0.26 | 18.8 | 8.8 | 14.3 |
| 20 | 197.2 | 0.601 | 84.4 | 4.4 | 6.70 | 5.992 | 18.713 | 17.592 | 27.6 | 10.0 | 23.2 | 5.6 | 4.14 | 0.25 | 18.8 | 8.8 | 14.4 |
| 21 | 198.3 | 0.618 | 84.3 | 4.3 | 6.72 | 6.278 | 18.887 | 17.701 | 27.7 | 10.0 | 23.4 | 5.7 | 4.11 | 0.24 | 18.9 | 8.9 | 14.6 |
| 22 | 197.2 | 0.635 | 84.3 | 4.3 | 6.74 | 6.565 | 18.713 | 17.484 | 27.5 | 10.0 | 23.2 | 5.7 | 4.07 | 0.25 | 18.7 | 8.7 | 14.4 |
| 23 | 198.0 | 0.653 | 84.1 | 4.1 | 6.77 | 6.869 | 18.840 | 17.546 | 27.5 | 10.0 | 23.4 | 5.9 | 3.97 | 0.23 | 18.8 | 8.8 | 14.7 |
| 24 | 199.3 | 0.671 | 84.1 | 4.1 | 6.79 | 7.173 | 19.046 | 17.680 | 27.7 | 10.0 | 23.6 | 5.9 | 4.00 | 0.23 | 18.8 | 8.8 | 14.7 |
| 25 | 202.3 | 0.689 | 84.0 | 4.0 | 6.81 | 7.477 | 19.522 | 18.063 | 28.1 | 10.0 | 24.1 | 6.0 | 4.01 | 0.22 | 19.0 | 9.0 | 15.0 |
| 26 | 205.9 | 0.707 | 83.8 | 3.8 | 6.83 | 7.781 | 20.094 | 18.530 | 28.5 | 10.0 | 24.7 | 6.2 | 3.99 | 0.21 | 19.3 | 9.3 | 15.5 |
| 27 | 208.9 | 0.725 | 83.9 | 3.9 | 6.85 | 8.084 | 20.570 | 18.907 | 28.9 | 10.0 | 25.0 | 6.1 | 4.10 | 0.21 | 19.5 | 9.5 | 15.6 |
| 28 | 209.3 | 0.743 | 83.8 | 3.8 | 6.88 | 8.388 | 20.633 | 18.902 | 28.9 | 10.0 | 25.1 | 6.2 | 4.05 | 0.20 | 19.5 | 9.5 | 15.7 |
| 29 | 210.3 | 0.760 | 83.5 | 3.5 | 6.90 | 8.675 | 20.792 | 18.988 | 29.0 | 10.0 | 25.5 | 6.5 | 3.92 | 0.18 | 19.5 | 9.5 | 16.0 |
| 30 | 211.2 | 0.777 | 83.7 | 3.7 | 6.92 | 8.962 | 20.935 | 19.059 | 29.1 | 10.0 | 25.4 | 6.3 | 4.03 | 0.19 | 19.5 | 9.5 | 15.8 |
| 31 | 211.0 | 0.794 | 83.5 | 3.5 | 6.94 | 9.249 | 20.903 | 18.970 | 29.0 | 10.0 | 25.5 | 6.5 | 3.92 | 0.18 | 19.5 | 9.5 | 16.0 |
| 32 | 210.0 | 0.812 | 83.6 | 3.6 | 6.97 | 9.553 | 20.744 | 18.763 | 28.8 | 10.0 | 25.2 | 6.4 | 3.93 | 0.19 | 19.4 | 9.4 | 15.8 |
| 33 | 209.5 | 0.830 | 83.5 | 3.5 | 6.99 | 9.857 | 20.665 | 18.628 | 28.6 | 10.0 | 25.1 | 6.5 | 3.87 | 0.19 | 19.3 | 9.3 | 15.8 |
| 34 | 210.0 | 0.847 | 83.3 | 3.3 | 7.01 | 10.143 | 20.744 | 18.640 | 28.6 | 10.0 | 25.3 | 6.7 | 3.78 | 0.18 | 19.3 | 9.3 | 16.0 |
| 35 | 211.9 | 0.865 | 83.4 | 3.4 | 7.04 | 10.447 | 21.046 | 18.847 | 28.8 | 10.0 | 25.4 | 6.6 | 3.86 | 0.18 | 19.4 | 9.4 | 16.0 |
| 36 | 213.0 | 0.883 | 83.3 | 3.3 | 7.06 | 10.751 | 21.220 | 18.939 | 28.9 | 10.0 | 25.6 | 6.7 | 3.83 | 0.17 | 19.5 | 9.5 | 16.2 |
| 37 | 214.5 | 0.901 | 83.3 | 3.3 | 7.08 | 11.055 | 21.458 | 19.086 | 29.1 | 10.0 | 25.8 | 6.7 | 3.85 | 0.17 | 19.5 | 9.5 | 16.2 |
| 38 | 218.4 | 0.919 | 83.3 | 3.3 | 7.11 | 11.359 | 22.077 | 19.570 | 29.6 | 10.0 | 26.3 | 6.7 | 3.92 | 0.17 | 19.8 | 9.8 | 16.5 |
| 39 | 219.3 | 0.936 | 83.1 | 3.1 | 7.13 | 11.646 | 22.220 | 19.633 | 29.6 | 10.0 | 26.5 | 6.9 | 3.85 | 0.16 | 19.8 | 9.8 | 16.7 |
| 40 | 221.0 | 0.954 | 83.2 | 3.2 | 7.16 | 11.949 | 22.490 | 19.803 | 29.8 | 10.0 | 26.6 | 6.8 | 3.91 | 0.16 | 19.9 | 9.9 | 16.7 |
| 41 | 222.2 | 0.971 | 83.1 | 3.1 | 7.18 | 12.236 | 22.681 | 19.905 | 29.9 | 10.0 | 26.8 | 6.9 | 3.88 | 0.16 | 20.0 | 10.0 | 16.9 |
| 42 | 220.6 | 0.989 | 82.9 | 2.9 | 7.20 | 12.540 | 22.427 | 19.614 | 29.6 | 10.0 | 26.7 | 7.1 | 3.76 | 0.15 | 19.8 | 9.8 | 16.9 |
| 43 | 220.5 | 1.006 | 83.1 | 3.1 | 7.23 | 12.827 | 22.411 | 19.536 | 29.5 | 10.0 | 26.4 | 6.9 | 3.83 | 0.16 | 19.8 | 9.8 | 16.7 |
| 44 | 218.2 | 1.024 | 83.0 | 3.0 | 7.25 | 13.131 | 22.046 | 19.151 | 29.2 | 10.0 | 26.2 | 7.0 | 3.74 | 0.16 | 19.6 | 9.6 | 16.6 |
| 45 | 217.6 | 1.041 | 82.7 | 2.7 | 7.28 | 13.418 | 21.951 | 19.005 | 29.0 | 10.0 | 26.3 | 7.3 | 3.60 | 0.14 | 19.5 | 9.5 | 16.8 |
| 46 | 217.7 | 1.058 | 83.0 | 3.0 | 7.30 | 13.705 | 21.966 | 18.956 | 29.0 | 10.0 | 26.0 | 7.0 | 3.71 | 0.16 | 19.5 | 9.5 | 16.5 |
| 47 | 219.3 | 1.076 | 82.8 | 2.8 | 7.33 | 14.008 | 22.220 | 19.108 | 29.1 | 10.0 | 26.3 | 7.2 | 3.65 | 0.15 | 19.6 | 9.6 | 16.8 |
| 48 | 221.3 | 1.094 | 82.9 | 2.9 | 7.35 | 14.312 | 22.538 | 19.312 | 29.3 | 10.0 | 26.4 | 7.1 | 3.72 | 0.15 | 19.7 | 9.7 | 16.8 |
| 49 | 223.2 | 1.112 | 82.8 | 2.8 | 7.38 | 14.616 | 22.839 | 19.501 | 29.5 | 10.0 | 26.7 | 7.2 | 3.71 | 0.14 | 19.8 | 9.8 | 17.0 |
| 50 | 223.5 | 1.131 | 82.6 | 2.6 | 7.41 | 14.937 | 22.887 | 19.468 | 29.5 | 10.0 | 26.9 | 7.4 | 3.63 | 0.13 | 19.7 | 9.7 | 17.1 |
| 51 | 225.8 | 1.148 | 82.9 | 2.9 | 7.43 | 15.224 | 23.252 | 19.712 | 29.7 | 10.0 | 26.8 | 7.1 | 3.78 | 0.15 | 19.9 | 9.9 | 17.0 |
| 52 | 225.6 | 1.166 | 82.7 | 2.7 | 7.46 | 15.527 | 23.220 | 19.615 | 29.6 | 10.0 | 26.9 | 7.3 | 3.69 | 0.14 | 19.8 | 9.8 | 17.1 |
| 53 | 225.6 | 1.183 | 82.8 | 2.8 | 7.48 | 15.814 | 23.220 | 19.548 | 29.5 | 10.0 | 26.7 | 7.2 | 3.72 | 0.14 | 19.8 | 9.8 | 17.0 |
| 54 | 222.8 | 1.200 | 82.7 | 2.7 | 7.51 | 16.101 | 22.776 | 19.109 | 29.1 | 10.0 | 26.4 | 7.3 | 3.62 | 0.14 | 19.6 | 9.6 | 16.9 |
| 55 | 222.2 | 1.218 | 82.5 | 2.5 | 7.54 | 16.405 | 22.681 | 18.960 | 29.0 | 10.0 | 26.5 | 7.5 | 3.53 | 0.13 | 19.5 | 9.5 | 17.0 |
| 56 | 222.4 | 1.235 | 82.7 | 2.7 | 7.56 | 16.692 | 22.712 | 18.921 | 28.9 | 10.0 | 26.2 | 7.3 | 3.59 | 0.14 | 19.5 | 9.5 | 16.8 |
| 57 | 221.7 | 1.253 | 82.6 | 2.6 | 7.59 | 16.996 | 22.601 | 18.760 | 28.8 | 10.0 | 26.2 | 7.4 | 3.54 | 0.14 | 19.4 | 9.4 | 16.8 |
| 58 | 222.4 | 1.271 | 82.7 | 2.7 | 7.62 | 17.300 | 22.712 | 18.783 | 28.8 | 10.0 | 26.1 | 7.3 | 3.57 | 0.14 | 19.4 | 9.4 | 16.7 |
| 59 | 224.1 | 1.289 | 82.7 | 2.7 | 7.65 | 17.603 | 22.982 | 18.937 | 28.9 | 10.0 | 26.2 | 7.3 | 3.59 | 0.14 | 19.5 | 9.5 | 16.8 |
| 60 | 226.1 | 1.308 | 82.5 | 2.5 | 7.68 | 17.924 | 23.300 | 19.123 | 29.1 | 10.0 | 26.6 | 7.5 | 3.55 | 0.13 | 19.6 | 9.6 | 17.1 |
| 61 | 227.1 | 1.325 | 82.4 | 2.4 | 7.70 | 18.211 | 23.458 | 19.186 | 29.2 | 10.0 | 26.8 | 7.6 | 3.52 | 0.13 | 19.6 | 9.6 | 17.2 |
| 62 | 227.9 | 1.343 | 82.7 | 2.7 | 7.73 | 18.515 | 23.585 | 19.219 | 29.2 | 10.0 | 26.5 | 7.3 | 3.63 | 0.14 | 19.6 | 9.6 | 16.9 |
| 63 | 227.4 | 1.361 | 82.5 | 2.5 | 7.76 | 18.819 | 23.506 | 19.082 | 29.1 | 10.0 | 26.6 | 7.5 | 3.54 | 0.13 | 19.5 | 9.5 | 17.0 |
| 64 | 226.3 | 1.378 | 82.4 | 2.4 | 7.79 | 19.105 | 23.331 | 18.874 | 28.9 | 10.0 | 26.5 | 7.6 | 3.48 | 0.13 | 19.4 | 9.4 | 17.0 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 65 | 227.0 | 1.396 | 82.6 | 2.6 | 7.82 | 19.409 | 23.442 | 18.892 | 28.9 | 10.0 | 26.3 | 7.4 | 3.55 | 0.14 | 19.4 | 9.4 | 16.8 |
| 66 | 225.7 | 1.414 | 82.5 | 2.5 | 7.85 | 19.713 | 23.236 | 18.656 | 28.7 | 10.0 | 26.2 | 7.5 | 3.49 | 0.13 | 19.3 | 9.3 | 16.8 |
| 67 | 224.6 | 1.432 | 82.4 | 2.4 | 7.88 | 20.017 | 23.062 | 18.445 | 28.4 | 10.0 | 26.0 | 7.6 | 3.43 | 0.13 | 19.2 | 9.2 | 16.8 |
| 68 | 224.2 | 1.450 | 82.3 | 2.3 | 7.91 | 20.321 | 22.998 | 18.325 | 28.3 | 10.0 | 26.0 | 7.7 | 3.38 | 0.13 | 19.2 | 9.2 | 16.9 |

# Specimen B Shear Data

**CU Triaxial Test**

**Humboldt Scientific, Inc.**

File Location
T-4950.HSD

## Project Information

Project No. 34402.3.6
Project Name: Caldwell County
Client:
Sample Location: 237+60
Sample Description: the dog
Remarks:

## Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.72
LL: 28
PL: 0

| Sample Parameters | Initial | After Consolidation | Final |
|---|---|---|---|
| Diameter (in) | 2.880 | 2.830 | |
| Height (in) | 6.005 | 5.831 | |
| Weight (grams) | 1187.00 | | 1237.00 |
| Moisture (%) | 18.82 | | 23.82 |
| Dry Density (pcf) | 97.22 | 103.79 | |
| Saturation (%) | 68.68 | 100.00 | |
| Void Ratio | 0.742 | 0.636 | |

## Test Data

Rate of Strain (in/min): 0.009
Cell Pressure (psi): 100.000
Effective Confining Stress (psi): 20.0
Peak Deviator Stress (psi): 30.12034 at reading number: 62

| Reading No. | Deviator Load (lbs) | Axial Deformation (in) | Pore Pressure (psi) | Change in Pore Pressure (psi) | Corrected Area (in2) | Axial Strain (%) | Deviator Stress (psi) | Corrected Deviator Stress (psi) | $\sigma_1$ (psi) | $\sigma_3$ (psi) | $\sigma'_1$ (psi) | $\sigma'_3$ (psi) | $\sigma'_1/\sigma'_3$ | Abar | P (psi) | Q (psi) | P' (psi) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 66.7 | 0.281 | 80.0 | 0.0 | 6.29 | 0.000 | 0.000 | 0.000 | 20.0 | 20.0 | 20.0 | 20.0 | 1.00 | 0.00 | 20.0 | 0.0 | 20.0 |
| 1 | 107.4 | 0.298 | 82.1 | 2.1 | 6.31 | 0.292 | 6.472 | 6.453 | 26.5 | 20.0 | 24.4 | 17.9 | 1.36 | 0.33 | 23.2 | 3.2 | 21.1 |
| 2 | 106.9 | 0.316 | 82.5 | 2.5 | 6.33 | 0.600 | 6.392 | 6.354 | 26.4 | 20.0 | 23.9 | 17.5 | 1.36 | 0.39 | 23.2 | 3.2 | 20.7 |
| 3 | 142.8 | 0.333 | 86.1 | 6.1 | 6.35 | 0.892 | 12.101 | 11.993 | 32.0 | 20.0 | 25.9 | 13.9 | 1.86 | 0.51 | 26.0 | 6.0 | 19.9 |
| 4 | 163.5 | 0.351 | 88.1 | 8.1 | 6.37 | 1.200 | 15.393 | 15.208 | 35.2 | 20.0 | 27.1 | 11.9 | 2.28 | 0.53 | 27.6 | 7.6 | 19.5 |
| 5 | 177.5 | 0.371 | 89.2 | 9.2 | 6.39 | 1.543 | 17.619 | 17.347 | 37.3 | 20.0 | 28.1 | 10.8 | 2.61 | 0.53 | 28.7 | 8.7 | 19.5 |
| 6 | 188.0 | 0.390 | 90.0 | 10.0 | 6.41 | 1.869 | 19.289 | 18.928 | 38.9 | 20.0 | 28.9 | 10.0 | 2.89 | 0.53 | 29.5 | 9.5 | 19.5 |
| 7 | 193.2 | 0.408 | 90.4 | 10.4 | 6.43 | 2.178 | 20.116 | 19.677 | 39.7 | 20.0 | 29.3 | 9.6 | 3.05 | 0.53 | 29.8 | 9.8 | 19.4 |
| 8 | 198.8 | 0.426 | 90.6 | 10.6 | 6.45 | 2.487 | 21.006 | 20.484 | 40.5 | 20.0 | 29.9 | 9.4 | 3.18 | 0.52 | 30.2 | 10.2 | 19.6 |
| 9 | 205.0 | 0.443 | 91.0 | 11.0 | 6.47 | 2.778 | 21.992 | 21.381 | 41.4 | 20.0 | 30.4 | 9.0 | 3.38 | 0.51 | 30.7 | 10.7 | 19.7 |
| 10 | 208.8 | 0.461 | 91.0 | 11.0 | 6.49 | 3.087 | 22.596 | 21.899 | 41.9 | 20.0 | 30.9 | 9.0 | 3.43 | 0.50 | 30.9 | 10.9 | 19.9 |
| 11 | 209.0 | 0.477 | 91.2 | 11.2 | 6.51 | 3.361 | 22.628 | 21.867 | 41.9 | 20.0 | 30.7 | 8.8 | 3.48 | 0.51 | 30.9 | 10.9 | 19.7 |
| 12 | 212.2 | 0.494 | 91.2 | 11.2 | 6.53 | 3.653 | 23.137 | 22.292 | 42.3 | 20.0 | 31.1 | 8.8 | 3.53 | 0.50 | 31.1 | 11.1 | 19.9 |
| 13 | 217.8 | 0.512 | 91.1 | 11.1 | 6.55 | 3.962 | 24.027 | 23.076 | 43.1 | 20.0 | 32.0 | 8.9 | 3.59 | 0.48 | 31.5 | 11.5 | 20.4 |
| 14 | 222.0 | 0.530 | 91.2 | 11.2 | 6.57 | 4.270 | 24.695 | 23.641 | 43.6 | 20.0 | 32.4 | 8.8 | 3.69 | 0.47 | 31.8 | 11.8 | 20.6 |
| 15 | 227.3 | 0.549 | 91.1 | 11.1 | 6.59 | 4.596 | 25.538 | 24.364 | 44.4 | 20.0 | 33.3 | 8.9 | 3.74 | 0.46 | 32.2 | 12.2 | 21.1 |
| 16 | 232.3 | 0.569 | 91.0 | 11.0 | 6.62 | 4.939 | 26.333 | 25.033 | 45.0 | 20.0 | 34.0 | 9.0 | 3.78 | 0.44 | 32.5 | 12.5 | 21.5 |
| 17 | 236.0 | 0.588 | 91.0 | 11.0 | 6.64 | 5.265 | 26.921 | 25.504 | 45.5 | 20.0 | 34.5 | 9.0 | 3.83 | 0.43 | 32.8 | 12.8 | 21.8 |
| 18 | 238.3 | 0.606 | 90.8 | 10.8 | 6.66 | 5.574 | 27.287 | 25.766 | 45.8 | 20.0 | 35.0 | 9.2 | 3.80 | 0.42 | 32.9 | 12.9 | 22.1 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 240.4 | 0.623 | 90.8 | 10.8 | 6.68 | 5.865 | 27.621 | 26.001 | 46.0 | 20.0 | 35.2 | 9.2 | 3.83 | 0.42 | 33.0 | 13.0 | 22.2 |
| 20 | 243.5 | 0.641 | 90.7 | 10.7 | 6.70 | 6.174 | 28.114 | 26.378 | 46.4 | 20.0 | 35.7 | 9.3 | 3.84 | 0.41 | 33.2 | 13.2 | 22.5 |
| 21 | 244.7 | 0.659 | 90.5 | 10.5 | 6.72 | 6.483 | 28.305 | 26.470 | 46.5 | 20.0 | 36.0 | 9.5 | 3.79 | 0.40 | 33.2 | 13.2 | 22.7 |
| 22 | 242.1 | 0.675 | 90.5 | 10.5 | 6.74 | 6.757 | 27.891 | 26.007 | 46.0 | 20.0 | 35.5 | 9.5 | 3.74 | 0.40 | 33.0 | 13.0 | 22.5 |
| 23 | 243.6 | 0.692 | 90.4 | 10.4 | 6.77 | 7.049 | 28.130 | 26.147 | 46.1 | 20.0 | 35.7 | 9.6 | 3.72 | 0.40 | 33.1 | 13.1 | 22.7 |
| 24 | 247.7 | 0.710 | 90.4 | 10.4 | 6.79 | 7.357 | 28.782 | 26.664 | 46.7 | 20.0 | 36.3 | 9.6 | 3.78 | 0.39 | 33.3 | 13.3 | 22.9 |
| 25 | 251.2 | 0.729 | 90.2 | 10.2 | 6.81 | 7.683 | 29.339 | 27.084 | 47.1 | 20.0 | 36.9 | 9.8 | 3.76 | 0.38 | 33.5 | 13.5 | 23.3 |
| 26 | 254.8 | 0.748 | 90.0 | 10.0 | 6.84 | 8.009 | 29.911 | 27.515 | 47.5 | 20.0 | 37.5 | 10.0 | 3.75 | 0.36 | 33.8 | 13.8 | 23.8 |
| 27 | 257.1 | 0.767 | 90.1 | 10.1 | 6.86 | 8.335 | 30.277 | 27.753 | 47.8 | 20.0 | 37.7 | 9.9 | 3.80 | 0.36 | 33.9 | 13.9 | 23.8 |
| 28 | 260.0 | 0.786 | 89.9 | 9.9 | 6.88 | 8.661 | 30.738 | 28.076 | 48.1 | 20.0 | 38.2 | 10.1 | 3.78 | 0.35 | 34.0 | 14.0 | 24.1 |
| 29 | 261.7 | 0.804 | 89.8 | 9.8 | 6.91 | 8.969 | 31.008 | 28.227 | 48.2 | 20.0 | 38.4 | 10.2 | 3.77 | 0.35 | 34.1 | 14.1 | 24.3 |
| 30 | 263.0 | 0.821 | 89.8 | 9.8 | 6.93 | 9.261 | 31.215 | 28.324 | 48.3 | 20.0 | 38.5 | 10.2 | 3.78 | 0.35 | 34.2 | 14.2 | 24.4 |
| 31 | 265.0 | 0.839 | 89.6 | 9.6 | 6.95 | 9.570 | 31.533 | 28.515 | 48.5 | 20.0 | 38.9 | 10.4 | 3.74 | 0.34 | 34.3 | 14.3 | 24.7 |
| 32 | 264.7 | 0.856 | 89.6 | 9.6 | 6.98 | 9.861 | 31.485 | 28.380 | 48.4 | 20.0 | 38.8 | 10.4 | 3.73 | 0.34 | 34.2 | 14.2 | 24.6 |
| 33 | 262.1 | 0.873 | 89.4 | 9.4 | 7.00 | 10.153 | 31.072 | 27.917 | 47.9 | 20.0 | 38.5 | 10.6 | 3.63 | 0.34 | 34.0 | 14.0 | 24.6 |
| 34 | 263.1 | 0.890 | 89.3 | 9.3 | 7.02 | 10.444 | 31.231 | 27.969 | 48.0 | 20.0 | 38.7 | 10.7 | 3.61 | 0.33 | 34.0 | 14.0 | 24.7 |
| 35 | 267.0 | 0.908 | 89.4 | 9.4 | 7.05 | 10.753 | 31.851 | 28.426 | 48.4 | 20.0 | 39.0 | 10.6 | 3.68 | 0.33 | 34.2 | 14.2 | 24.8 |
| 36 | 269.2 | 0.927 | 89.2 | 9.2 | 7.07 | 11.079 | 32.201 | 28.633 | 48.6 | 20.0 | 39.4 | 10.8 | 3.65 | 0.32 | 34.3 | 14.3 | 25.1 |
| 37 | 272.0 | 0.945 | 89.2 | 9.2 | 7.10 | 11.387 | 32.646 | 28.929 | 48.9 | 20.0 | 39.7 | 10.8 | 3.68 | 0.32 | 34.5 | 14.5 | 25.3 |
| 38 | 274.0 | 0.964 | 89.1 | 9.1 | 7.12 | 11.713 | 32.964 | 29.103 | 49.1 | 20.0 | 40.0 | 10.9 | 3.67 | 0.31 | 34.6 | 14.6 | 25.5 |
| 39 | 276.3 | 0.983 | 88.9 | 8.9 | 7.15 | 12.039 | 33.330 | 29.317 | 49.3 | 20.0 | 40.4 | 11.1 | 3.64 | 0.30 | 34.7 | 14.7 | 25.8 |
| 40 | 277.8 | 1.001 | 89.0 | 9.0 | 7.17 | 12.348 | 33.568 | 29.423 | 49.4 | 20.0 | 40.4 | 11.0 | 3.67 | 0.31 | 34.7 | 14.7 | 25.7 |
| 41 | 278.4 | 1.018 | 88.8 | 8.8 | 7.20 | 12.639 | 33.664 | 29.409 | 49.4 | 20.0 | 40.6 | 11.2 | 3.63 | 0.30 | 34.7 | 14.7 | 25.9 |
| 42 | 280.3 | 1.037 | 88.7 | 8.7 | 7.23 | 12.965 | 33.966 | 29.562 | 49.6 | 20.0 | 40.9 | 11.3 | 3.62 | 0.29 | 34.8 | 14.8 | 26.1 |
| 43 | 280.1 | 1.055 | 88.8 | 8.8 | 7.25 | 13.274 | 33.934 | 29.430 | 49.4 | 20.0 | 40.6 | 11.2 | 3.63 | 0.30 | 34.7 | 14.7 | 25.9 |
| 44 | 276.7 | 1.071 | 88.6 | 8.6 | 7.27 | 13.548 | 33.393 | 28.869 | 48.9 | 20.0 | 40.3 | 11.4 | 3.53 | 0.30 | 34.4 | 14.4 | 25.8 |
| 45 | 277.1 | 1.087 | 88.6 | 8.6 | 7.30 | 13.823 | 33.457 | 28.832 | 48.8 | 20.0 | 40.2 | 11.4 | 3.53 | 0.30 | 34.4 | 14.4 | 25.8 |
| 46 | 279.9 | 1.105 | 88.6 | 8.6 | 7.32 | 14.131 | 33.902 | 29.111 | 49.1 | 20.0 | 40.5 | 11.4 | 3.55 | 0.30 | 34.6 | 14.6 | 26.0 |
| 47 | 282.1 | 1.123 | 88.4 | 8.4 | 7.35 | 14.440 | 34.252 | 29.306 | 49.3 | 20.0 | 40.9 | 11.6 | 3.53 | 0.29 | 34.7 | 14.7 | 26.3 |
| 48 | 285.2 | 1.142 | 88.4 | 8.4 | 7.38 | 14.766 | 34.745 | 29.615 | 49.6 | 20.0 | 41.2 | 11.6 | 3.55 | 0.28 | 34.8 | 14.8 | 26.4 |
| 49 | 288.2 | 1.162 | 88.3 | 8.3 | 7.41 | 15.109 | 35.222 | 29.900 | 49.9 | 20.0 | 41.6 | 11.7 | 3.56 | 0.28 | 35.0 | 15.0 | 26.7 |
| 50 | 290.3 | 1.180 | 88.2 | 8.2 | 7.43 | 15.418 | 35.556 | 30.074 | 50.1 | 20.0 | 41.9 | 11.8 | 3.55 | 0.27 | 35.0 | 15.0 | 26.8 |
| 51 | 290.2 | 1.199 | 88.2 | 8.2 | 7.46 | 15.743 | 35.540 | 29.945 | 49.9 | 20.0 | 41.7 | 11.8 | 3.54 | 0.27 | 35.0 | 15.0 | 26.8 |
| 52 | 290.7 | 1.216 | 88.1 | 8.1 | 7.49 | 16.035 | 35.620 | 29.908 | 49.9 | 20.0 | 41.8 | 11.9 | 3.51 | 0.27 | 35.0 | 15.0 | 26.9 |
| 53 | 291.9 | 1.234 | 88.1 | 8.1 | 7.52 | 16.344 | 35.811 | 29.958 | 50.0 | 20.0 | 41.9 | 11.9 | 3.52 | 0.27 | 35.0 | 15.0 | 26.9 |
| 54 | 291.7 | 1.251 | 88.0 | 8.0 | 7.54 | 16.635 | 35.779 | 29.827 | 49.8 | 20.0 | 41.8 | 12.0 | 3.49 | 0.27 | 34.9 | 14.9 | 26.9 |
| 55 | 289.9 | 1.268 | 87.9 | 7.9 | 7.57 | 16.927 | 35.492 | 29.485 | 49.5 | 20.0 | 41.6 | 12.1 | 3.44 | 0.27 | 34.7 | 14.7 | 26.8 |
| 56 | 291.3 | 1.285 | 88.0 | 8.0 | 7.60 | 17.218 | 35.715 | 29.566 | 49.6 | 20.0 | 41.6 | 12.0 | 3.46 | 0.27 | 34.8 | 14.8 | 26.8 |
| 57 | 292.5 | 1.303 | 87.8 | 7.8 | 7.63 | 17.527 | 35.906 | 29.613 | 49.6 | 20.0 | 41.8 | 12.2 | 3.43 | 0.26 | 34.8 | 14.8 | 27.0 |
| 58 | 294.9 | 1.321 | 87.9 | 7.9 | 7.65 | 17.836 | 36.288 | 29.815 | 49.8 | 20.0 | 41.9 | 12.1 | 3.46 | 0.26 | 34.9 | 14.9 | 27.0 |
| 59 | 297.0 | 1.341 | 87.8 | 7.8 | 7.69 | 18.179 | 36.622 | 29.964 | 50.0 | 20.0 | 42.2 | 12.2 | 3.46 | 0.26 | 35.0 | 15.0 | 27.2 |
| 60 | 298.5 | 1.360 | 87.7 | 7.7 | 7.72 | 18.505 | 36.860 | 30.039 | 50.0 | 20.0 | 42.3 | 12.3 | 3.44 | 0.26 | 35.0 | 15.0 | 27.3 |
| 61 | 299.8 | 1.378 | 87.7 | 7.7 | 7.75 | 18.813 | 37.067 | 30.093 | 50.1 | 20.0 | 42.4 | 12.3 | 3.45 | 0.26 | 35.0 | 15.0 | 27.3 |
| 62 | 300.9 | 1.396 | 87.7 | 7.7 | 7.78 | 19.122 | 37.242 | 30.120 | 50.1 | 20.0 | 42.4 | 12.3 | 3.45 | 0.26 | 35.1 | 15.1 | 27.4 |
| 63 | 301.7 | 1.413 | 87.6 | 7.6 | 7.80 | 19.413 | 37.369 | 30.114 | 50.1 | 20.0 | 42.5 | 12.4 | 3.43 | 0.25 | 35.1 | 15.1 | 27.5 |
| 64 | 301.9 | 1.431 | 87.5 | 7.5 | 7.83 | 19.722 | 37.401 | 30.024 | 50.0 | 20.0 | 42.5 | 12.5 | 3.40 | 0.25 | 35.0 | 15.0 | 27.5 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 65 | 301.2 | 1.449 | 87.6 | 7.6 | 7.86 | 20.031 | 37.289 | 29.820 | 49.8 | 20.0 | 42.2 | 12.4 | 3.40 | 0.25 | 34.9 | 14.9 | 27.3 |
| 66 | 298.6 | 1.466 | 87.5 | 7.5 | 7.89 | 20.322 | 36.876 | 29.382 | 49.4 | 20.0 | 41.9 | 12.5 | 3.35 | 0.26 | 34.7 | 14.7 | 27.2 |
| 67 | 297.2 | 1.482 | 87.5 | 7.5 | 7.92 | 20.597 | 36.653 | 29.104 | 49.1 | 20.0 | 41.6 | 12.5 | 3.33 | 0.26 | 34.6 | 14.6 | 27.1 |

# Specimen C Shear Data

**CU Triaxial Test**

**Humboldt Scientific, Inc.**

File Location
T-4950.HSD

## Project Information

Project No. 34402.3.6
Project Name: Caldwell County
Client:
Sample Location: 237+60
Sample Description: the dog
Remarks:

## Sample Data

Sample Type: Undisturbed
Specific Gravity: 2.72
LL: 28
PL: 0

| Sample Parameters | Initial | After Consolidation | Final |
|---|---|---|---|
| Diameter (in) | 2.880 | 2.825 | |
| Height (in) | 6.051 | 5.905 | |
| Weight (grams) | 1183.00 | | 1239.00 |
| Moisture (%) | 17.83 | | 23.41 |
| Dry Density (pcf) | 96.96 | 103.37 | |
| Saturation (%) | 64.66 | 100.00 | |
| Void Ratio | 0.747 | 0.643 | |

## Test Data

Rate of Strain (in/min): 0.009
Cell Pressure (psi): 120.000
Effective Confining Stress (psi): 40.0
Peak Deviator Stress (psi): 40.55501 at reading number: 65

| Reading No. | Deviator Load (lbs) | Axial Deformation (in) | Pore Pressure (psi) | Change in Pore Pressure (psi) | Corrected Area (in2) | Axial Strain (%) | Deviator Stress (psi) | Corrected Deviator Stress (psi) | $\sigma_1$ (psi) | $\sigma_3$ (psi) | $\sigma'_1$ (psi) | $\sigma'_3$ (psi) | $\sigma'_1/\sigma'_3$ | Abar | P (psi) | Q (psi) | P' (psi) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 114.8 | 0.274 | 80.0 | 0.0 | 6.27 | 0.000 | 0.000 | 0.000 | 40.0 | 40.0 | 40.0 | 40.0 | 1.00 | 0.00 | 40.0 | 0.0 | 40.0 |
| 1 | 149.9 | 0.293 | 81.2 | 1.2 | 6.29 | 0.322 | 5.602 | 5.584 | 45.6 | 40.0 | 44.4 | 38.8 | 1.14 | 0.21 | 42.8 | 2.8 | 41.6 |
| 2 | 169.5 | 0.312 | 83.2 | 3.2 | 6.31 | 0.644 | 8.730 | 8.674 | 48.7 | 40.0 | 45.5 | 36.8 | 1.24 | 0.37 | 44.3 | 4.3 | 41.1 |
| 3 | 238.5 | 0.330 | 90.6 | 10.6 | 6.33 | 0.948 | 19.742 | 19.554 | 59.6 | 40.0 | 49.0 | 29.4 | 1.67 | 0.54 | 49.8 | 9.8 | 39.2 |
| 4 | 272.9 | 0.348 | 95.0 | 15.0 | 6.35 | 1.253 | 25.232 | 24.915 | 64.9 | 40.0 | 49.9 | 25.0 | 2.00 | 0.60 | 52.5 | 12.5 | 37.5 |
| 5 | 296.4 | 0.367 | 99.1 | 19.1 | 6.37 | 1.575 | 28.982 | 28.525 | 68.5 | 40.0 | 49.4 | 20.9 | 2.36 | 0.67 | 54.3 | 14.3 | 35.2 |
| 6 | 311.2 | 0.385 | 100.5 | 20.5 | 6.39 | 1.880 | 31.344 | 30.755 | 70.8 | 40.0 | 50.3 | 19.5 | 2.58 | 0.67 | 55.4 | 15.4 | 34.9 |
| 7 | 322.8 | 0.404 | 101.9 | 21.9 | 6.41 | 2.202 | 33.195 | 32.464 | 72.5 | 40.0 | 50.6 | 18.1 | 2.79 | 0.67 | 56.2 | 16.2 | 34.3 |
| 8 | 334.2 | 0.423 | 102.7 | 22.7 | 6.43 | 2.523 | 35.014 | 34.131 | 74.1 | 40.0 | 51.4 | 17.3 | 2.97 | 0.67 | 57.1 | 17.1 | 34.4 |
| 9 | 340.2 | 0.442 | 103.5 | 23.5 | 6.45 | 2.845 | 35.972 | 34.949 | 74.9 | 40.0 | 51.4 | 16.5 | 3.12 | 0.67 | 57.5 | 17.5 | 34.0 |
| 10 | 347.8 | 0.461 | 104.2 | 24.2 | 6.47 | 3.167 | 37.185 | 36.007 | 76.0 | 40.0 | 51.8 | 15.8 | 3.28 | 0.67 | 58.0 | 18.0 | 33.8 |
| 11 | 350.2 | 0.479 | 104.4 | 24.4 | 6.49 | 3.472 | 37.568 | 36.264 | 76.3 | 40.0 | 51.9 | 15.6 | 3.32 | 0.67 | 58.1 | 18.1 | 33.7 |
| 12 | 353.9 | 0.497 | 104.5 | 24.5 | 6.51 | 3.776 | 38.158 | 36.717 | 76.7 | 40.0 | 52.2 | 15.5 | 3.37 | 0.67 | 58.4 | 18.4 | 33.9 |
| 13 | 359.4 | 0.516 | 104.6 | 24.6 | 6.53 | 4.098 | 39.036 | 37.436 | 77.4 | 40.0 | 52.8 | 15.4 | 3.43 | 0.66 | 58.7 | 18.7 | 34.1 |
| 14 | 360.1 | 0.535 | 104.7 | 24.7 | 6.56 | 4.420 | 39.148 | 37.418 | 77.4 | 40.0 | 52.7 | 15.3 | 3.45 | 0.66 | 58.7 | 18.7 | 34.0 |
| 15 | 364.0 | 0.553 | 104.8 | 24.8 | 6.58 | 4.725 | 39.770 | 37.891 | 77.9 | 40.0 | 53.1 | 15.2 | 3.49 | 0.65 | 58.9 | 18.9 | 34.1 |
| 16 | 365.4 | 0.572 | 104.9 | 24.9 | 6.60 | 5.047 | 39.994 | 37.975 | 78.0 | 40.0 | 53.1 | 15.1 | 3.51 | 0.66 | 59.0 | 19.0 | 34.1 |
| 17 | 365.8 | 0.590 | 105.0 | 25.0 | 6.62 | 5.351 | 40.058 | 37.914 | 77.9 | 40.0 | 52.9 | 15.0 | 3.53 | 0.66 | 59.0 | 19.0 | 34.0 |
| 18 | 370.1 | 0.609 | 105.3 | 25.3 | 6.64 | 5.673 | 40.744 | 38.432 | 78.4 | 40.0 | 53.1 | 14.7 | 3.61 | 0.66 | 59.2 | 19.2 | 33.9 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 370.1 | 0.627 | 105.5 | 25.5 | 6.66 | 5.978 | 40.744 | 38.308 | 78.3 | 40.0 | 52.8 | 14.5 | 3.64 | 0.67 | 59.2 | 19.2 | 33.7 |
| 20 | 371.3 | 0.646 | 105.7 | 25.7 | 6.69 | 6.300 | 40.935 | 38.357 | 78.4 | 40.0 | 52.7 | 14.3 | 3.68 | 0.67 | 59.2 | 19.2 | 33.5 |
| 21 | 374.5 | 0.664 | 105.5 | 25.5 | 6.71 | 6.605 | 41.446 | 38.709 | 78.7 | 40.0 | 53.2 | 14.5 | 3.67 | 0.66 | 59.4 | 19.4 | 33.9 |
| 22 | 374.4 | 0.683 | 105.7 | 25.7 | 6.73 | 6.926 | 41.430 | 38.561 | 78.6 | 40.0 | 52.9 | 14.3 | 3.70 | 0.67 | 59.3 | 19.3 | 33.6 |
| 23 | 378.4 | 0.701 | 105.5 | 25.5 | 6.75 | 7.231 | 42.068 | 39.026 | 79.0 | 40.0 | 53.5 | 14.5 | 3.69 | 0.65 | 59.5 | 19.5 | 34.0 |
| 24 | 377.9 | 0.720 | 105.3 | 25.3 | 6.78 | 7.553 | 41.989 | 38.817 | 78.8 | 40.0 | 53.5 | 14.7 | 3.64 | 0.65 | 59.4 | 19.4 | 34.1 |
| 25 | 379.0 | 0.738 | 105.2 | 25.2 | 6.80 | 7.858 | 42.164 | 38.851 | 78.9 | 40.0 | 53.7 | 14.8 | 3.63 | 0.65 | 59.4 | 19.4 | 34.2 |
| 26 | 382.2 | 0.757 | 105.1 | 25.1 | 6.82 | 8.180 | 42.675 | 39.184 | 79.2 | 40.0 | 54.1 | 14.9 | 3.63 | 0.64 | 59.6 | 19.6 | 34.5 |
| 27 | 381.5 | 0.775 | 105.1 | 25.1 | 6.85 | 8.484 | 42.563 | 38.952 | 79.0 | 40.0 | 53.9 | 14.9 | 3.61 | 0.64 | 59.5 | 19.5 | 34.4 |
| 28 | 385.2 | 0.794 | 105.0 | 25.0 | 6.87 | 8.806 | 43.154 | 39.354 | 79.4 | 40.0 | 54.4 | 15.0 | 3.62 | 0.64 | 59.7 | 19.7 | 34.7 |
| 29 | 386.2 | 0.812 | 105.0 | 25.0 | 6.89 | 9.111 | 43.313 | 39.367 | 79.4 | 40.0 | 54.4 | 15.0 | 3.62 | 0.64 | 59.7 | 19.7 | 34.7 |
| 30 | 385.9 | 0.831 | 104.9 | 24.9 | 6.92 | 9.433 | 43.265 | 39.184 | 79.2 | 40.0 | 54.3 | 15.1 | 3.59 | 0.64 | 59.6 | 19.6 | 34.7 |
| 31 | 389.0 | 0.849 | 105.0 | 25.0 | 6.94 | 9.738 | 43.760 | 39.499 | 79.5 | 40.0 | 54.5 | 15.0 | 3.63 | 0.63 | 59.7 | 19.7 | 34.7 |
| 32 | 387.8 | 0.868 | 105.0 | 25.0 | 6.97 | 10.059 | 43.569 | 39.186 | 79.2 | 40.0 | 54.2 | 15.0 | 3.61 | 0.64 | 59.6 | 19.6 | 34.6 |
| 33 | 388.8 | 0.887 | 104.9 | 24.9 | 6.99 | 10.381 | 43.728 | 39.189 | 79.2 | 40.0 | 54.3 | 15.1 | 3.60 | 0.64 | 59.6 | 19.6 | 34.7 |
| 34 | 391.1 | 0.905 | 104.9 | 24.9 | 7.02 | 10.686 | 44.095 | 39.383 | 79.4 | 40.0 | 54.5 | 15.1 | 3.61 | 0.63 | 59.7 | 19.7 | 34.8 |
| 35 | 390.1 | 0.923 | 104.8 | 24.8 | 7.04 | 10.991 | 43.936 | 39.107 | 79.1 | 40.0 | 54.3 | 15.2 | 3.57 | 0.63 | 59.6 | 19.6 | 34.8 |
| 36 | 393.6 | 0.942 | 104.7 | 24.7 | 7.07 | 11.312 | 44.494 | 39.461 | 79.5 | 40.0 | 54.8 | 15.3 | 3.58 | 0.63 | 59.7 | 19.7 | 35.0 |
| 37 | 393.5 | 0.961 | 104.6 | 24.6 | 7.09 | 11.634 | 44.478 | 39.304 | 79.3 | 40.0 | 54.7 | 15.4 | 3.55 | 0.63 | 59.7 | 19.7 | 35.1 |
| 38 | 394.6 | 0.979 | 104.6 | 24.6 | 7.12 | 11.939 | 44.654 | 39.323 | 79.3 | 40.0 | 54.7 | 15.4 | 3.55 | 0.63 | 59.7 | 19.7 | 35.1 |
| 39 | 398.6 | 0.998 | 104.5 | 24.5 | 7.14 | 12.261 | 45.292 | 39.739 | 79.7 | 40.0 | 55.2 | 15.5 | 3.56 | 0.62 | 59.9 | 19.9 | 35.4 |
| 40 | 399.4 | 1.017 | 104.6 | 24.6 | 7.17 | 12.583 | 45.420 | 39.705 | 79.7 | 40.0 | 55.1 | 15.4 | 3.58 | 0.62 | 59.9 | 19.9 | 35.3 |
| 41 | 400.7 | 1.036 | 104.5 | 24.5 | 7.19 | 12.904 | 45.627 | 39.739 | 79.7 | 40.0 | 55.2 | 15.5 | 3.56 | 0.62 | 59.9 | 19.9 | 35.4 |
| 42 | 405.2 | 1.054 | 104.6 | 24.6 | 7.22 | 13.209 | 46.346 | 40.224 | 80.2 | 40.0 | 55.6 | 15.4 | 3.61 | 0.61 | 60.1 | 20.1 | 35.5 |
| 43 | 404.9 | 1.072 | 104.5 | 24.5 | 7.25 | 13.514 | 46.298 | 40.041 | 80.0 | 40.0 | 55.5 | 15.5 | 3.58 | 0.61 | 60.0 | 20.0 | 35.5 |
| 44 | 409.2 | 1.090 | 104.4 | 24.4 | 7.27 | 13.819 | 46.984 | 40.491 | 80.5 | 40.0 | 56.1 | 15.6 | 3.60 | 0.60 | 60.2 | 20.2 | 35.8 |
| 45 | 410.1 | 1.109 | 104.4 | 24.4 | 7.30 | 14.141 | 47.128 | 40.463 | 80.5 | 40.0 | 56.1 | 15.6 | 3.59 | 0.60 | 60.2 | 20.2 | 35.8 |
| 46 | 409.9 | 1.127 | 104.3 | 24.3 | 7.32 | 14.445 | 47.096 | 40.292 | 80.3 | 40.0 | 56.0 | 15.7 | 3.57 | 0.60 | 60.1 | 20.1 | 35.8 |
| 47 | 412.6 | 1.146 | 104.3 | 24.3 | 7.35 | 14.767 | 47.527 | 40.508 | 80.5 | 40.0 | 56.2 | 15.7 | 3.58 | 0.60 | 60.3 | 20.3 | 36.0 |
| 48 | 411.9 | 1.165 | 104.2 | 24.2 | 7.38 | 15.089 | 47.415 | 40.260 | 80.3 | 40.0 | 56.1 | 15.8 | 3.55 | 0.60 | 60.1 | 20.1 | 35.9 |
| 49 | 414.5 | 1.183 | 104.2 | 24.2 | 7.41 | 15.394 | 47.830 | 40.467 | 80.5 | 40.0 | 56.3 | 15.8 | 3.56 | 0.60 | 60.2 | 20.2 | 36.0 |
| 50 | 415.0 | 1.201 | 104.1 | 24.1 | 7.43 | 15.699 | 47.910 | 40.388 | 80.4 | 40.0 | 56.3 | 15.9 | 3.54 | 0.60 | 60.2 | 20.2 | 36.1 |
| 51 | 413.2 | 1.219 | 104.1 | 24.1 | 7.46 | 16.003 | 47.622 | 40.001 | 80.0 | 40.0 | 55.9 | 15.9 | 3.52 | 0.60 | 60.0 | 20.0 | 35.9 |
| 52 | 417.3 | 1.238 | 104.0 | 24.0 | 7.49 | 16.325 | 48.277 | 40.395 | 80.4 | 40.0 | 56.4 | 16.0 | 3.52 | 0.59 | 60.2 | 20.2 | 36.2 |
| 53 | 416.1 | 1.256 | 104.0 | 24.0 | 7.52 | 16.630 | 48.085 | 40.089 | 80.1 | 40.0 | 56.1 | 16.0 | 3.51 | 0.60 | 60.0 | 20.0 | 36.0 |
| 54 | 416.6 | 1.275 | 103.9 | 23.9 | 7.54 | 16.952 | 48.165 | 40.000 | 80.0 | 40.0 | 56.1 | 16.1 | 3.48 | 0.60 | 60.0 | 20.0 | 36.1 |
| 55 | 418.9 | 1.293 | 103.9 | 23.9 | 7.57 | 17.257 | 48.532 | 40.157 | 80.2 | 40.0 | 56.3 | 16.1 | 3.49 | 0.60 | 60.1 | 20.1 | 36.2 |
| 56 | 417.6 | 1.312 | 103.9 | 23.9 | 7.60 | 17.578 | 48.324 | 39.830 | 79.8 | 40.0 | 55.9 | 16.1 | 3.47 | 0.60 | 59.9 | 19.9 | 36.0 |
| 57 | 417.9 | 1.330 | 103.8 | 23.8 | 7.63 | 17.883 | 48.372 | 39.722 | 79.7 | 40.0 | 55.9 | 16.2 | 3.45 | 0.60 | 59.9 | 19.9 | 36.1 |
| 58 | 422.3 | 1.349 | 103.8 | 23.8 | 7.66 | 18.205 | 49.075 | 40.141 | 80.1 | 40.0 | 56.3 | 16.2 | 3.48 | 0.59 | 60.1 | 20.1 | 36.3 |
| 59 | 421.3 | 1.367 | 103.7 | 23.7 | 7.69 | 18.510 | 48.915 | 39.861 | 79.9 | 40.0 | 56.2 | 16.3 | 3.45 | 0.59 | 59.9 | 19.9 | 36.2 |
| 60 | 423.4 | 1.385 | 103.6 | 23.6 | 7.72 | 18.815 | 49.250 | 39.984 | 80.0 | 40.0 | 56.4 | 16.4 | 3.44 | 0.59 | 60.0 | 20.0 | 36.4 |
| 61 | 427.2 | 1.404 | 103.5 | 23.5 | 7.75 | 19.136 | 49.857 | 40.316 | 80.3 | 40.0 | 56.8 | 16.5 | 3.44 | 0.58 | 60.2 | 20.2 | 36.7 |
| 62 | 429.0 | 1.422 | 103.5 | 23.5 | 7.78 | 19.441 | 50.144 | 40.395 | 80.4 | 40.0 | 56.9 | 16.5 | 3.45 | 0.58 | 60.2 | 20.2 | 36.7 |
| 63 | 429.1 | 1.441 | 103.4 | 23.4 | 7.81 | 19.763 | 50.160 | 40.247 | 80.2 | 40.0 | 56.8 | 16.6 | 3.42 | 0.58 | 60.1 | 20.1 | 36.7 |
| 64 | 430.7 | 1.459 | 103.3 | 23.3 | 7.84 | 20.068 | 50.415 | 40.298 | 80.3 | 40.0 | 57.0 | 16.7 | 3.41 | 0.58 | 60.1 | 20.1 | 36.8 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 65 | 434.0 | 1.478 | 103.3 | 23.3 | 7.87 | 20.389 | 50.942 | 40.555 | 80.6 | 40.0 | 57.3 | 16.7 | 3.43 | 0.57 | 60.3 | 20.3 | 37.0 |
| 66 | 433.5 | 1.485 | 103.3 | 23.3 | 7.88 | 20.508 | 50.862 | 40.431 | 80.4 | 40.0 | 57.1 | 16.7 | 3.42 | 0.58 | 60.2 | 20.2 | 36.9 |