Project No.
13057.000.000

August 4, 2016

Mr. Tom Tietz
Executive Director
California Nevada Cement Association (CNCA)
24657 Via Melinda
Yorba Linda, CA 92887

Subject: CNCA Cellular Concrete Testing

UNCONFINED COMPRESSION TESTING (ASTM C495)

Dear Mr. Tietz:

We are pleased to provide you with our test results for Unconfined Compression Testing (ASTM C495). The results are presented on the following pages.

- Testing Procedure Summary
- Test Results Summary
- Test Results Detail
- Test Results Graphs
- Laboratory Test Reports
- Young's Modulus Graphs
- Test Failure Photos

Thank you for the opportunity to assist you. If you have any questions, please contact me at (925) 551-1042 or dseibold@engeo.com.

Sincerely,

ENGEO Incorporated

Derek Seibold
Laboratory Manager

Josef Tootle, GE
Principal

UNCONFINED COMPRESSION TESTING (ASTM C495)

TESTING PROCEDURE SUMMARY

Procedure A1: Specimens were moist cured from 2 days to 24 days at an average temperature of 22.4˚C and average humidity of 99%. At 24 days the specimens were removed from the moist cure environment and oven dried until 27 days at a constant temperature of 110˚C. At 27 days the densities of the specimens were calculated and the specimens were capped with Hydrostone gypsum cement prior to compression.

Procedure A2: Specimens were moist cured from 2 days to 24 days at an average temperature of 22.4˚C and average humidity of 99%. At 24 days the specimens were removed from the moist cure environment and oven dried until 27 days at a constant temperature of 110˚C. The specimens were not capped prior to compression.

Procedure B1: Specimens were moist cured from 2 days to 25 days at an average temperature of 22.4˚C and average humidity of 99%. At 25 days the specimens were removed from the moist cure environment and air dried until 28 days in accordance with ASTM C495. At 28 days the densities of the specimens were calculated and the specimens were capped with Hydrostone gypsum cement prior to compression.

Procedure B2: Specimens were moist cured from 2 days to 25 days at an average temperature of 22.4˚C and average humidity of 99%. At 25 days the specimens were removed from the moist cure environment and air dried until 28 days in accordance with ASTM C495. The specimens were not capped prior to compression.

Procedure C1: Specimens were moist cured from 2 days to 29 days at an average temperature of 22.7˚C and average humidity of 99%. At 29 days the specimens were removed from the moist cure environment and the densities of the specimens were calculated. The specimens were capped with Hydrostone gypsum cement prior to compression.

Procedure C2: Specimens were moist cured from 2 days to 29 days at an average temperature of 22.7˚C and average humidity of 99%. At 29 days the specimens were removed from the moist cure environment and the densities of the specimens were calculated. The specimens were not capped prior to compression.

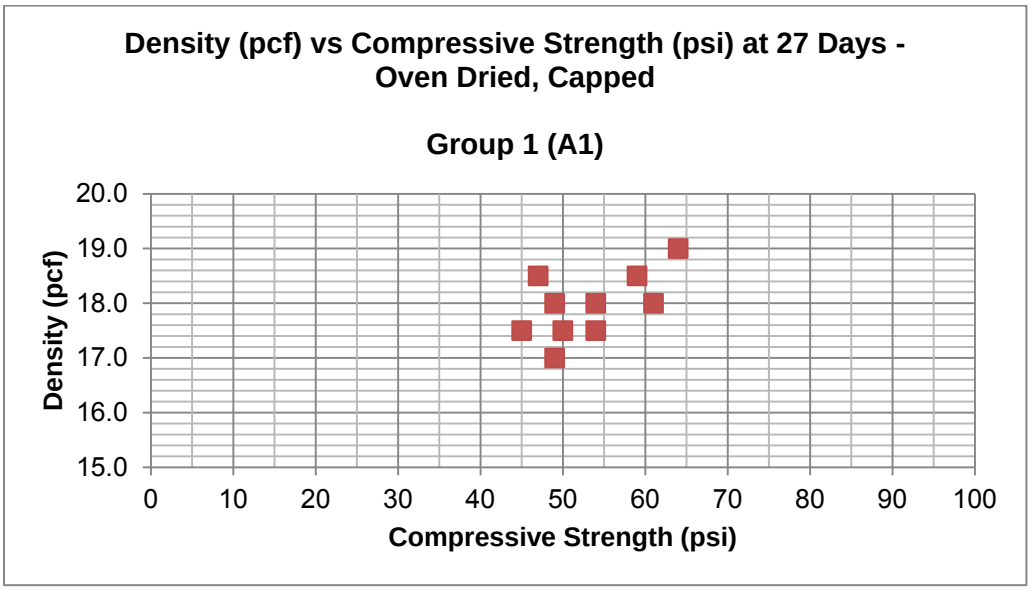
TEST RESULTS SUMMARY

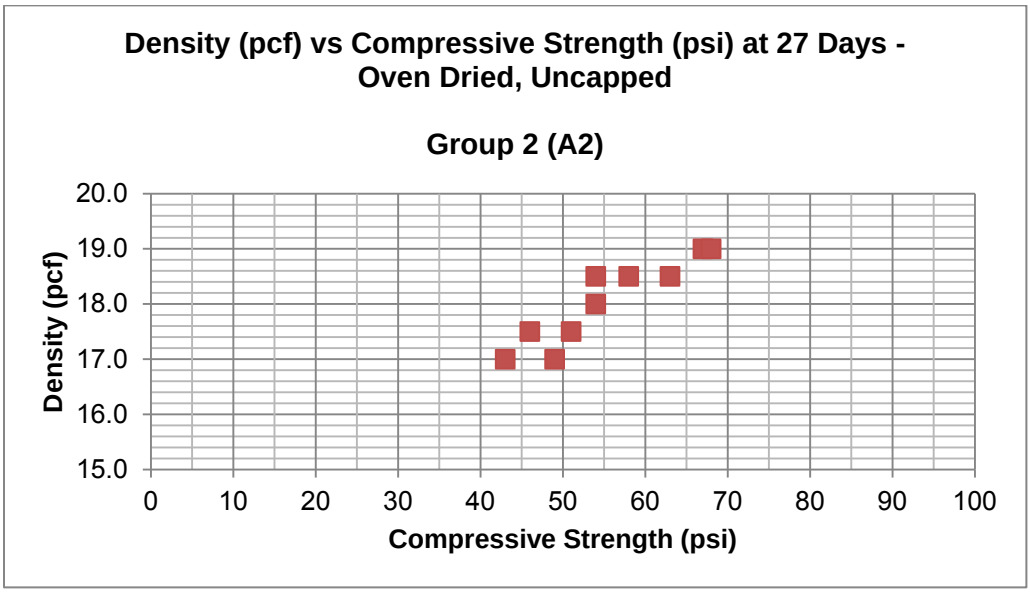
Group No.	No. of Samples	Average Compressive Strength (psi) (Mean)	Compressive Strength (psi) Standard Deviation	Capping Condition	Drying Condition
Group 1 (A1)	10	53.2	6.03	Capped	Oven Dried
Group 2 (A2)	10	55.3	8.15	Uncapped	Oven Dried
Group 3 (B1)	10	93.0	9.14	Capped	Air Dried
Group 4 (B2)	10	82.0	10.05	Uncapped	Air Dried
Group 5 (C1)	10	73.8	5.71	Capped	Un-dried
Group 6 (C2)	10	57.8	6.06	Uncapped	Un-dried

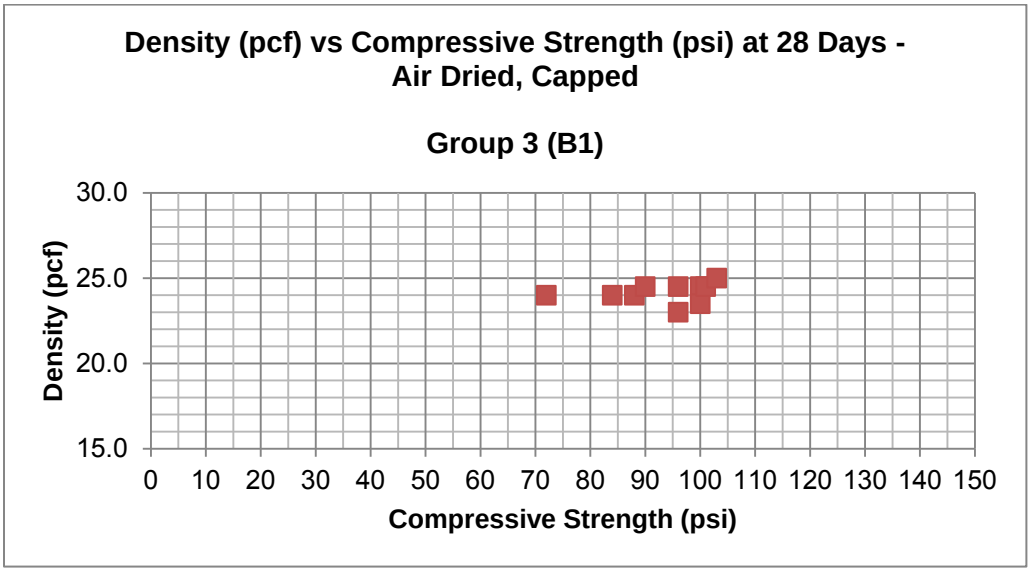
TEST RESULTS DETAIL

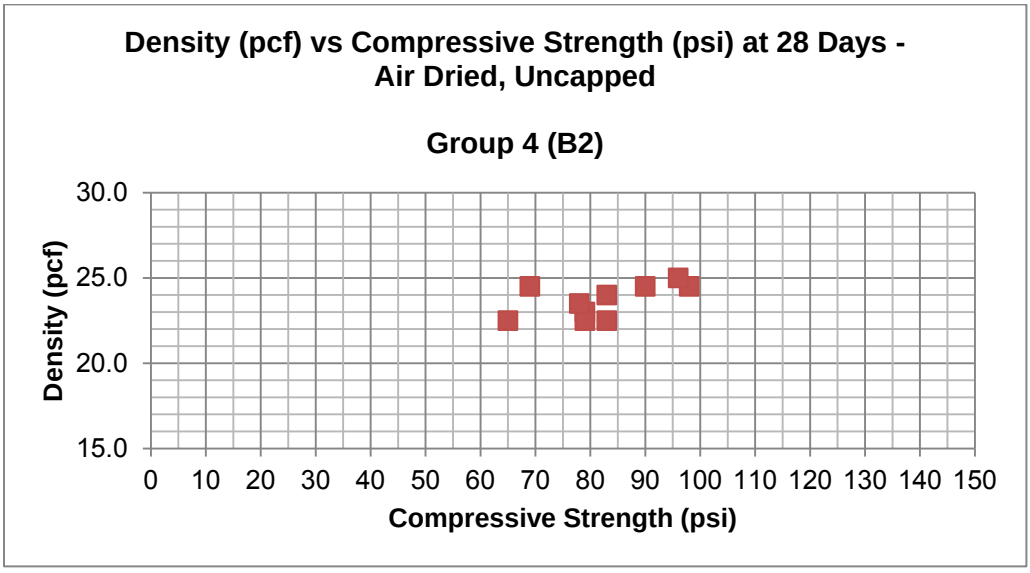
CAPPED SPECIMENS						UNCAPPED SPECIMENS					
Group No.	Sample ID (Box)	Break Strength (psi)	Cure Time (days)	Density (pcf)	Young's Modulus (psi)	Group No.	Sample ID (Box)	Break Strength (psi)	Cure Time (days)	Density (pcf)	Young's Modulus (psi)
1 (A1)	A1-1	54	27	18.0	13,900	2 (A2)	A1-2	63	27	18.5	18,400
	A1-7	49	27	17.0	14,700		A1-8	49	27	17.0	11,800
	A2-3	59	27	18.5	17,100		A2-4	51	27	17.5	14,300
	A2-9	64	27	19.0	17,500		A2-10	67	27	19.0	19,400
	B1-5	50	27	17.5	11,900		B1-6	46	27	17.5	12,500
	B2-1	54	27	17.5	15,000		B2-2	43	27	17.0	11,200
	B2-7	47	27	18.5	11,100		B2-8	68	27	19.0	14,400
	C1-3	49	27	18.0	11,400		C1-4	54	27	18.5	7,200
	C1-9	45	27	17.5	10,600		C1-10	54	27	18.0	12,800
	C2-5	61	27	18.0	16,200		C2-6	58	27	18.5	15,800
3 (B1)	A1-3	100	28	24.5	45,400	4 (B2)	A1-4	69	28	24.5	23,300
	A1-9	96	28	23.0	36,300		A1-10	83	28	22.5	25,000
	A2-5	84	28	24.0	45,000		A2-6	98	28	24.5	37,000
	B1-1	88	28	24.0	40,900		B1-2	65	28	22.5	18,900
	B1-7	72	28	24.0	32,000		B1-8	79	28	23.0	27,300
	B2-3	100	28	23.5	31,700		B2-4	79	28	22.5	21,600
	B2-9	90	28	24.5	36,000		B2-10	78	28	23.5	24,000
	C1-5	96	28	24.5	32,000		C1-6	90	28	24.5	30,000
	C2-1	101	28	24.5	37,000		C2-2	83	28	24.0	29,200
	C2-7	103	28	25.0	50,000		C2-8	96	28	25.0	41,700
5 (C1)	A1-5	65	29	29.0	27,300	6 (C2)	A1-6	58	29	28.5	23,100
	A2-1	71	29	30.0	31,800		A2-2	60	29	29.5	26,100
	A2-7	81	29	30.5	40,000		A2-8	61	29	30.0	12,000
	B1-3	70	29	30.5	25,000		B1-4	54	29	29.5	13,200
	B1-9	79	29	30.0	33,300		B1-10	65	29	28.5	13,200
	B2-5	65	29	29.0	27,300		B2-6	44	29	31.0	22,500
	C1-1	77	29	31.5	23,300		C1-2	58	29	30.5	14,300
	C1-7	72	29	30.0	35,000		C1-8	55	29	29.0	14,700
	C2-3	80	29	31.0	40,000		C2-4	67	29	29.0	19,400
	C2-9	78	29	31.0	40,000		C2-10	56	29	30.5	22,200

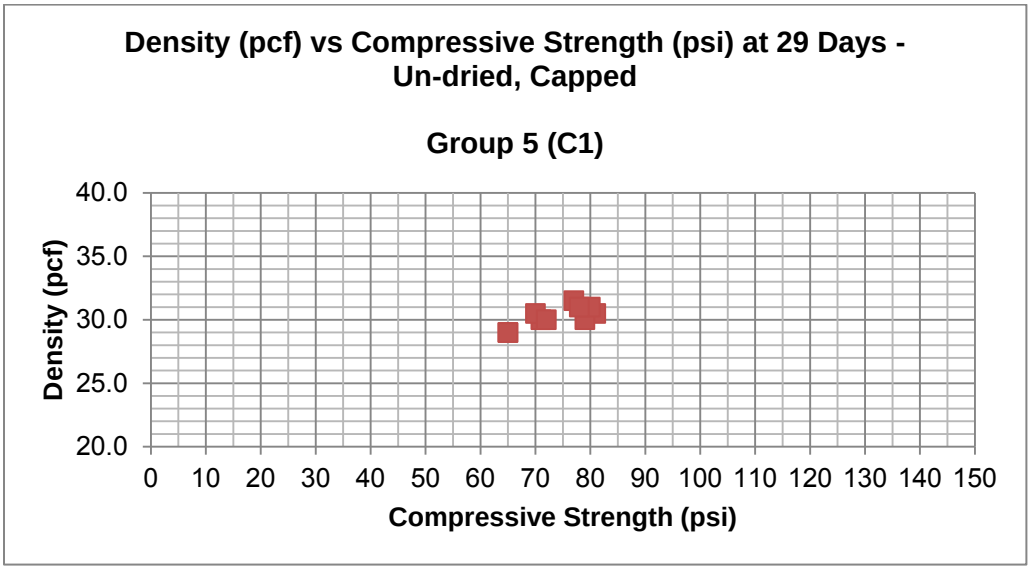
TEST RESULTS GRAPHS

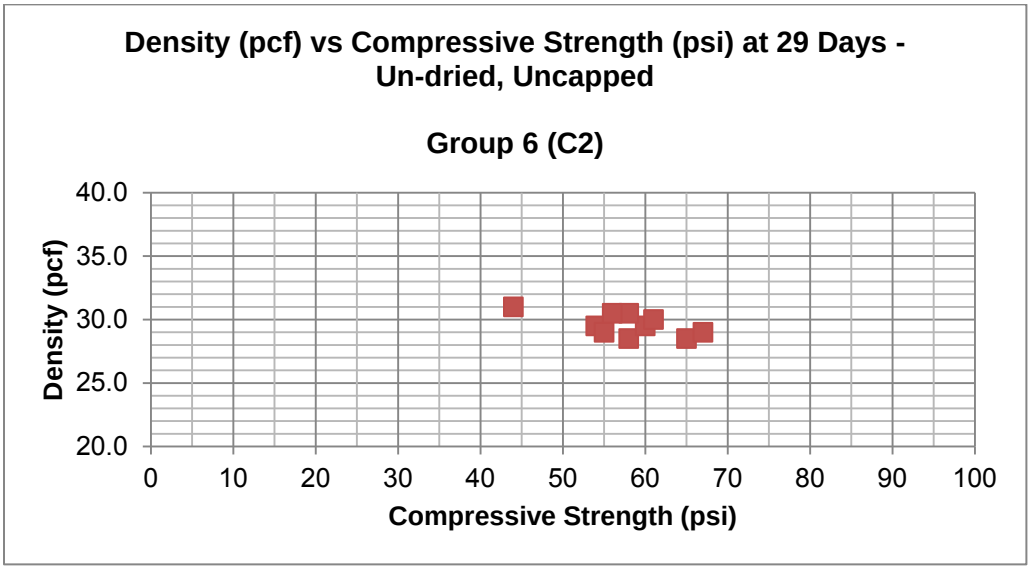




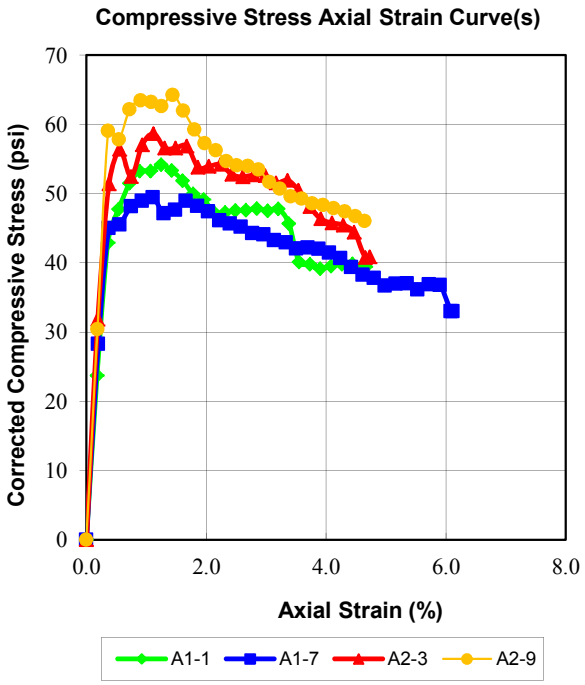

Density (pcf) vs Compressive Strength (psi) at 28 Days - Air Dried, Capped
Group 3 (B1)
Density (pcf)
30.0
25.0
20.0
15.0
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
Compressive Strength (psi)

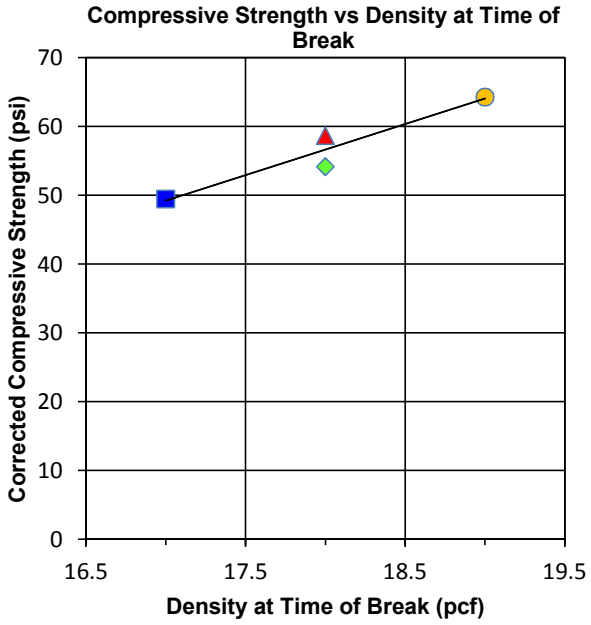

Density (pcf) vs Compressive Strength (psi) at 28 Days - Air Dried, Uncapped
Group 4 (B2)
Density (pcf)
30.0
25.0
20.0
15.0
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
Compressive Strength (psi)


Density (pcf) vs Compressive Strength (psi) at 29 Days - Un-dried, Capped
Group 5 (C1)
Density (pcf)
40.0
35.0
30.0
25.0
20.0
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
Compressive Strength (psi)


Density (pcf) vs Compressive Strength (psi) at 29 Days - Un-dried, Uncapped
Group 6 (C2)
Density (pcf)
40.0
35.0
30.0
25.0
20.0
0 10 20 30 40 50 60 70 80 90 100
Compressive Strength (psi)

UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modified)





INITIAL TEST DATA	SPECIMEN A1-1	A1-7	A2-3	A2-9
Box Number	1	2	4	5
Density at Time of Break (pcf)	18.0	17.0	18.0	19.0
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	27	27	27	27
Diameter (in)	2.940	2.940	2.930	2.890
Height (in)	5.680	5.470	5.410	5.620
Height-To-Diameter Ratio	1.932	1.861	1.846	1.945

FINAL TEST DATA	A1-1	A1-7	A2-3	A2-9	Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	54	49	59	64	57
Cross-sectional Area (in.^{2})	6.789	6.789	6.743	6.560	
Strain Rate (in./min.)	0.12	0.11	0.10	0.09	No. of Specimens
Porosity	0.891	0.897	0.891	0.885	4
Strain at Failure (%)	1.25	1.11	1.12	1.44	
Fracture Type	4	4	2	2	

Test Remarks: Specimens were moist cured to 24 days at an average temperature of 22.4˚C and humidity of 99%, then removed from the curing environment and oven dried until 27 days when the samples were capped with Hyrdostone gypsum cement prior to compression.

SPECIMEN	DESCRIPTION
A1-1	Cellular Concrete
A1-7	Cellular Concrete
A2-3	Cellular Concrete
A2-9	Cellular Concrete

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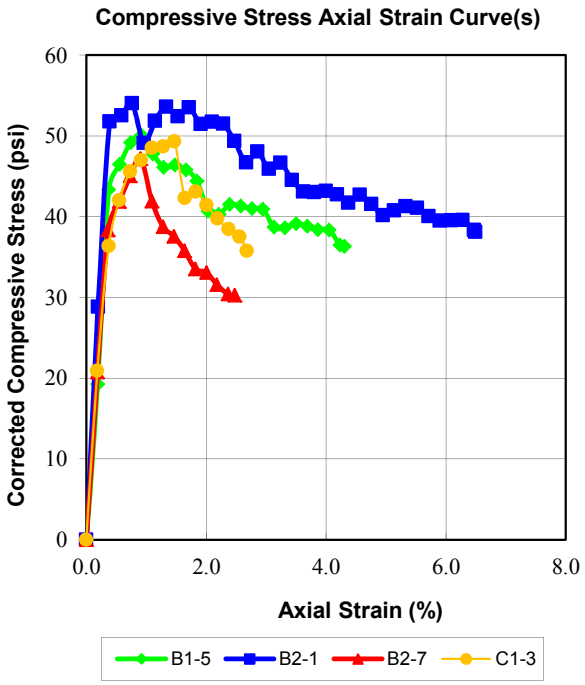
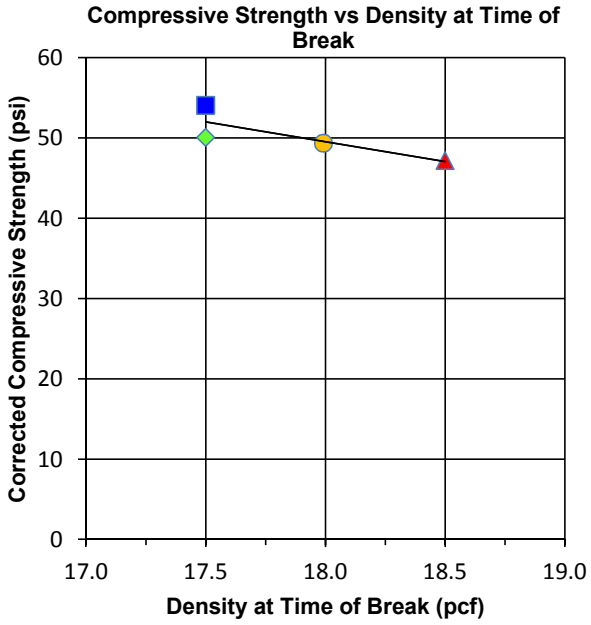
PROJECT NAME: California Nevada Cement Association (CNCA)
PROJECT NO: 10357.000.000
CLIENT: California Nevada Cement Association
LOCATION: Yorba Linda, CA
PHASE NO: CNCA

Test Date: 7/19/16
Tested By: T. Borde
Reviewed By: M. Tong

UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modified)





INITIAL TEST DATA	SPECIMEN B1-5	B2-1	B2-7	C1-3
Box Number	16	8	10	11
Density at Time of Break (pcf)	17.5	17.5	18.5	18.0
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	27	27	27	27
Diameter (in)	2.950	2.930	2.930	2.920
Height (in)	5.480	5.300	5.550	5.530
Height-To-Diameter Ratio	1.858	1.809	1.894	1.894

FINAL TEST DATA	B1-5	B2-1	B2-7	C1-3	Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	50	54	47	49	50
Cross-sectional Area (in.^{2})	6.835	6.743	6.743	6.697	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	No. of Specimens
Porosity	0.894	0.894	0.888	0.891	4
Strain at Failure (%)	0.92	0.76	0.91	1.47	
Fracture Type	2	4	3	4	

Test Remarks: Specimens were moist cured to 24 days at an average temperature of 22.4˚C and humidity of 99%, then removed from the curing environment and oven dried until 27 days when the samples were capped with Hyrdostone gypsum cement prior to compression.

SPECIMEN	DESCRIPTION
B1-5	Cellular Concrete
B2-1	Cellular Concrete
B2-7	Cellular Concrete
C1-3	Cellular Concrete

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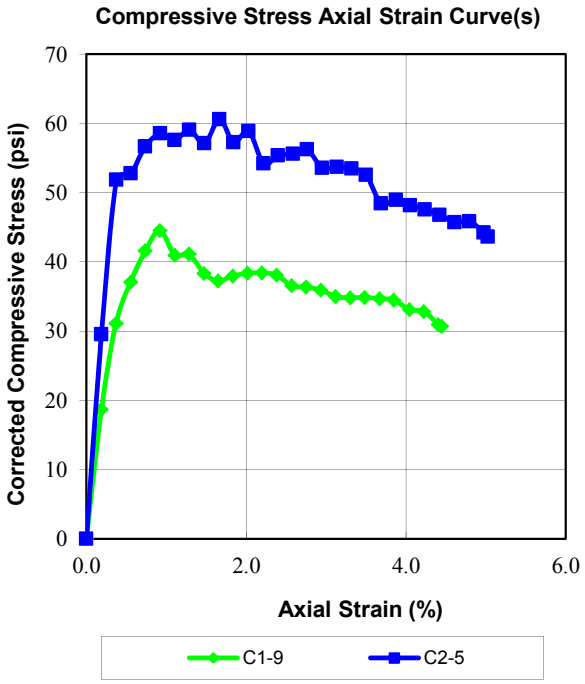
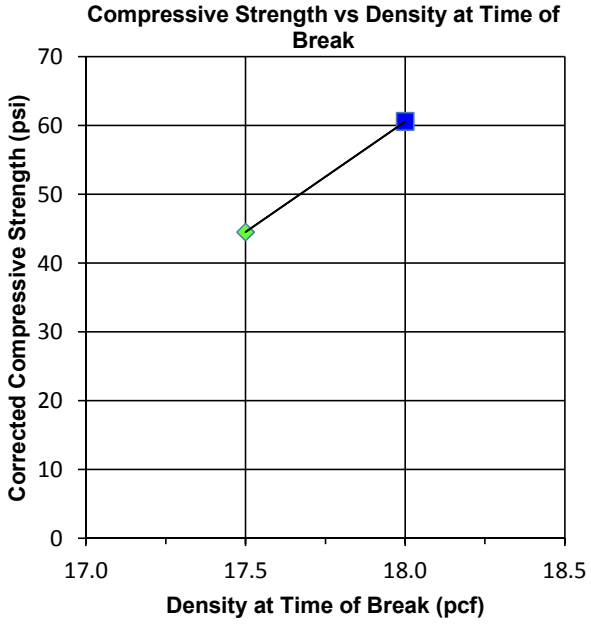
UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modified)





INITIAL TEST DATA	SPECIMEN C1-9	SPECIMEN C2-5
Box Number	16	14
Density at Time of Break (pcf)	17.5	18.0
Cast Density (pcf)	30.0	30.0
Test Age (Days)	27	27
Diameter (in)	2.920	2.920
Height (in)	5.500	5.470
Height-To-Diameter Ratio	1.884	1.873

FINAL TEST DATA			Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	45	61	53
Cross-sectional Area (in.^{2})	6.697	6.697	
Strain Rate (in./min.)	0.09	0.09	No. of Specimens
Porosity	0.894	0.891	2
Strain at Failure (%)	0.92	1.67	
Fracture Type	4	4	

Test Remarks: Specimens were moist cured to 24 days at an average temperature of 22.4˚C and humidity of 99%, then removed from the curing environment and oven dried until 27 days when the samples were capped with Hyrdostone gypsum cement prior to compression.

SPECIMEN	DESCRIPTION
C1-9	Cellular Concrete
C2-5	Cellular Concrete

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Reviewed By: M. Tong

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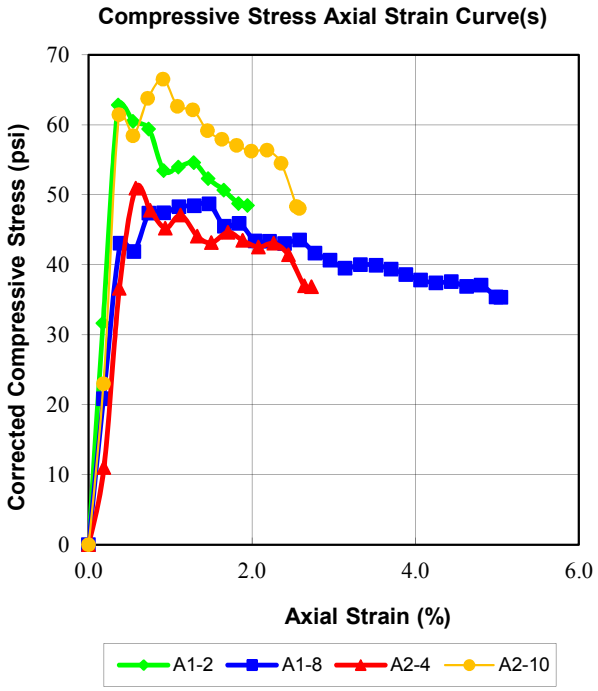
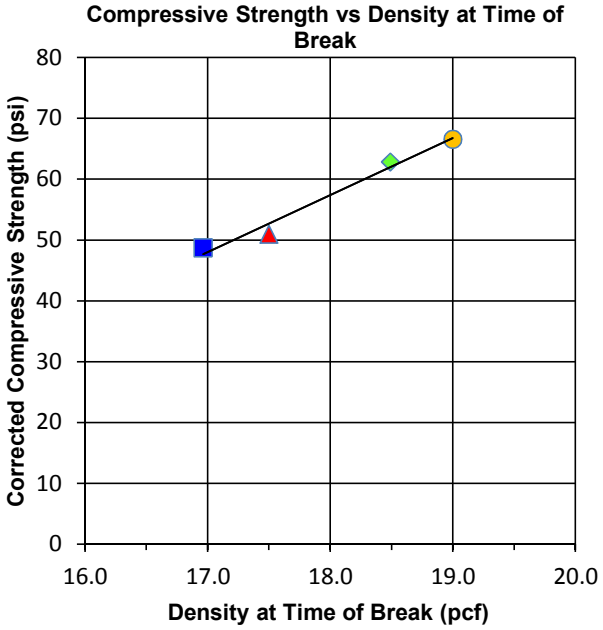
UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modifed)





INITIAL TEST DATA	SPECIMEN A1-2	A1-8	A2-4	A2-10
Box Number	1	2	4	5
Density at Time of Break (pcf)	18.5	17.0	17.5	19.0
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	27	27	27	27
Diameter (in)	2.950	2.960	2.940	2.900
Height (in)	5.480	5.450	5.360	5.560
Height-To-Diameter Ratio	1.858	1.841	1.823	1.917

FINAL TEST DATA					Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	63	49	51	67	57
Cross-sectional Area (in.^{2})	6.835	6.881	6.789	6.605	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	No. of Specimens
Porosity	0.888	0.898	0.894	0.885	4
Strain at Failure (%)	0.36	1.48	0.58	0.91	
Fracture Type	5	5	2	5	

Test Remarks: Specimens were moist cured to 24 days at an average temperature of 22.4˚C and humidity of 99%, then removed from the curing environment and oven dried until 27 days. Samples were not capped prior to compression.

SPECIMEN	DESCRIPTION
A1-2	Cellular Concrete
A1-8	Cellular Concrete
A2-4	Cellular Concrete
A2-10	Cellular Concrete

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UNCONFINED COMPRESSION TEST REPORT
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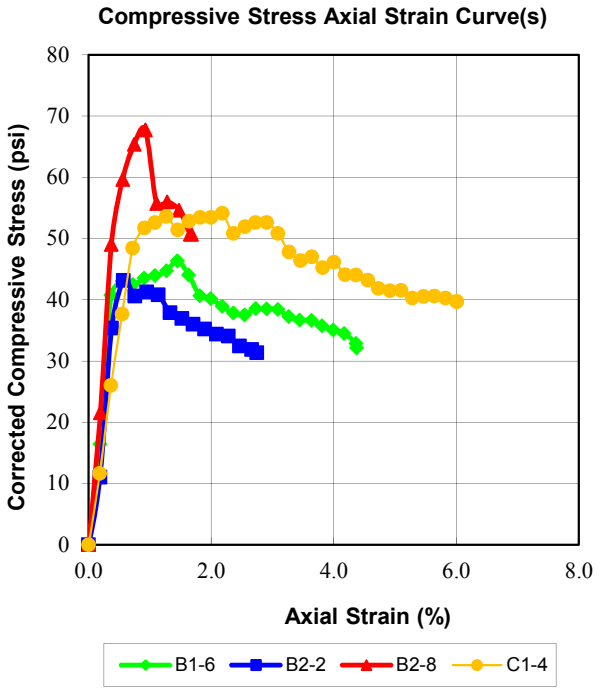

INITIAL TEST DATA	SPECIMEN B1-6	B2-2	B2-8	C1-4	
Box Number	7	9	10	12	
Density at Time of Break (pcf)	17.5	17.0	19.0	18.5	
Cast Density (pcf)	30.0	30.0	30.0	30.0	
Test Age (Days)	27	27	27	27	
Diameter (in)	2.920	2.920	2.920	2.920	
Height (in)	5.550	5.310	5.490	5.530	
Height-To-Diameter Ratio	1.901	1.818	1.880	1.894	
FINAL TEST DATA					**Avg. Compressive Strength (psi)**
Unconfined Compressive Strength (psi)	46	43	68	54	**53**
Cross-sectional Area (in.^{2})	6.697	6.697	6.697	6.697	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	**No. of Specimens**
Porosity	0.894	0.897	0.885	0.888	**4**
Strain at Failure (%)	1.45	0.57	0.93	2.18	
Fracture Type	3	3	3	5	
Test Remarks	Specimens were moist cured to 24 days at an average temperature of 22.4˚C and humidity of 99%, then removed from the curing environment and oven dried until 27 days. Samples were not capped prior to compression.				

SPECIMEN	DESCRIPTION
B1-6	Cellular Concrete
B2-2	Cellular Concrete
B2-8	Cellular Concrete
C1-4	Cellular Concrete

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UNCONFINED COMPRESSION TEST REPORT
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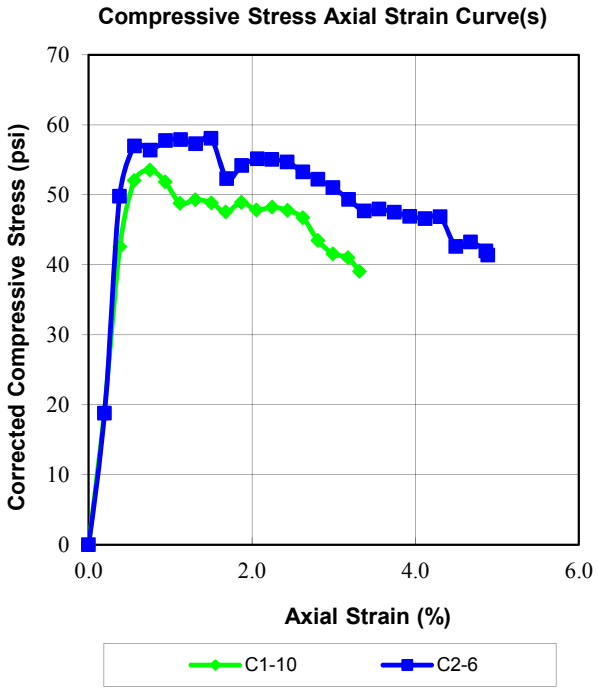

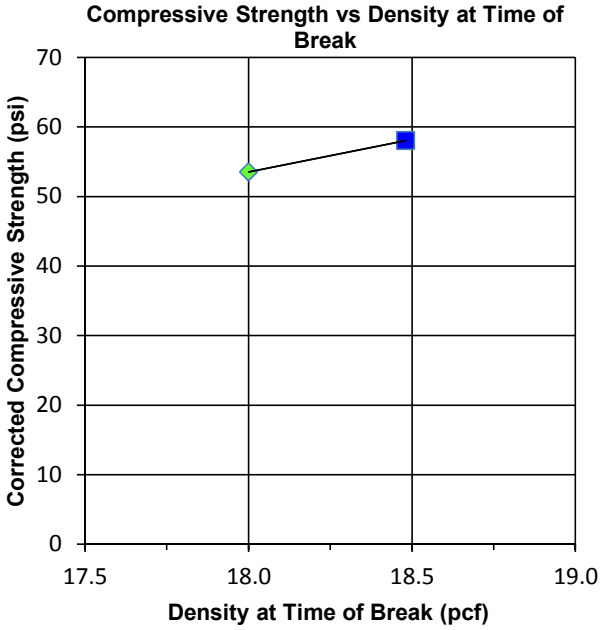

INITIAL TEST DATA	SPECIMEN C1-10	SPECIMEN C2-6
Box Number	13	15
Density at Time of Break (pcf)	18.0	18.5
Cast Density (pcf)	30.0	30.0
Test Age (Days)	27	27
Diameter (in)	2.930	2.930
Height (in)	5.400	5.390
Height-To-Diameter Ratio	1.843	1.840

FINAL TEST DATA	SPECIMEN C1-10	SPECIMEN C2-6
Unconfined Compressive Strength (psi)	54	58
Cross-sectional Area (in.^{2})	6.743	6.743
Strain Rate (in./min.)	0.09	0.09
Porosity	0.891	0.888
Strain at Failure (%)	0.75	1.50
Fracture Type	2	2

Avg. Compressive Strength (psi)
56

No. of Specimens
2

Test Remarks: Specimens were moist cured to 24 days at an average temperature of 22.4˚C and humidity of 99%, then removed from the curing environment and oven dried until 27 days. Samples were not capped prior to compression.

SPECIMEN	DESCRIPTION
C1-10	Cellular Concrete; Hairline fracture on top of specimen prior to compression
C2-6	Cellular Concrete

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Tested By: T. Borde
Reviewed By: M. Tong

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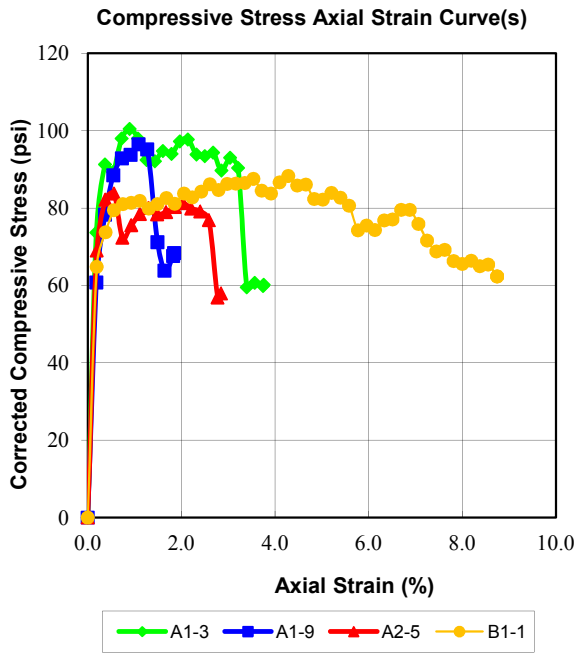
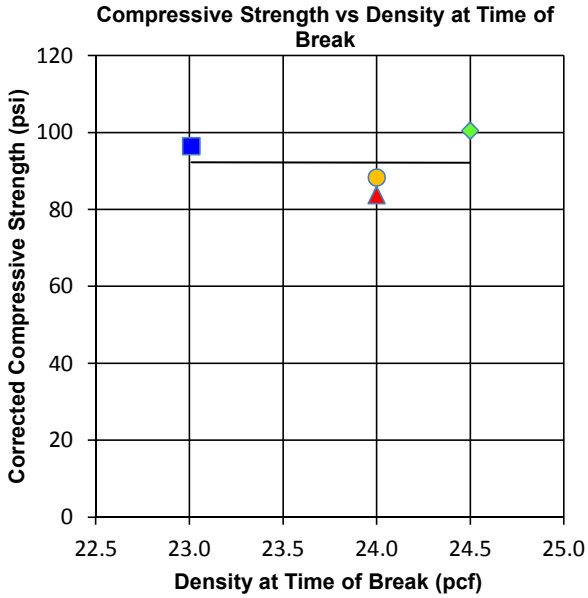
UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modified)





INITIAL TEST DATA	SPECIMEN A1-3	A1-9	A2-5	B1-1
Box Number	1	3	4	6
Density at Time of Break (pcf)	24.5	23.0	24.0	24.0
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	28	28	28	28
Diameter (in)	2.940	2.920	2.920	2.930
Height (in)	5.650	5.580	5.460	5.420
Height-To-Diameter Ratio	1.922	1.911	1.870	1.850

FINAL TEST DATA					Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	100	96	84	88	92
Cross-sectional Area (in.^{2})	6.789	6.697	6.697	6.743	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	No. of Specimens
Porosity	0.852	0.861	0.855	0.855	4
Strain at Failure (%)	0.90	1.09	0.56	4.28	
Fracture Type	5	4	2	5	

Test Remarks Specimens were moist cured to 25 days at an average temperature of 22.4˚C and humidity of 99% and then air dried to 28 days in accordance with ASTM C495. Samples were capped with Hydrostone gypsum cement before compression.

SPECIMEN	DESCRIPTION
A1-3	Cellular Concrete
A1-9	Cellular Concrete
A2-5	Cellular Concrete
B1-1	Cellular Concrete

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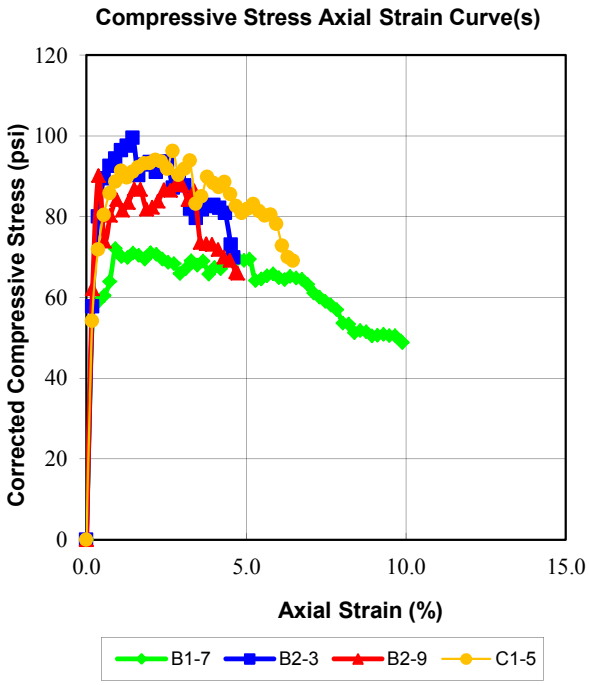
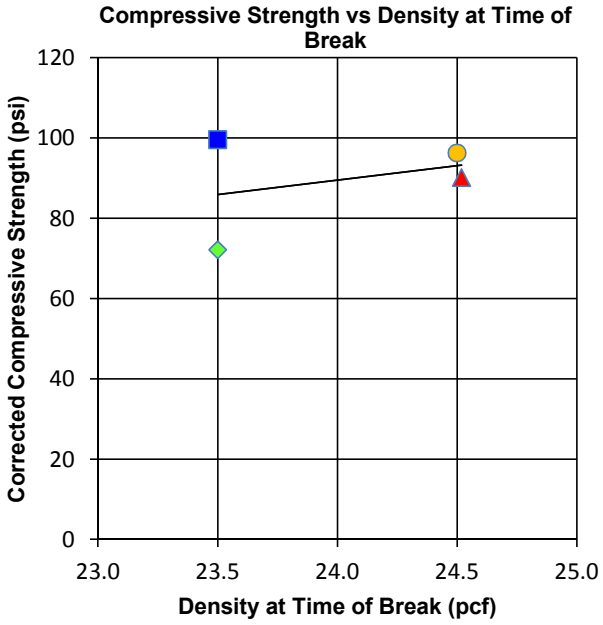
PROJECT NAME: California Nevada Cement Association (CNCA)
PROJECT NO: 10357.000.000
CLIENT: California Nevada Cement Association
LOCATION: Yorba Linda, CA
PHASE NO: CNCA

Test Date: 7/20/16
Tested By: T. Borde
Reviewed By: M. Tong

UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modified)





INITIAL TEST DATA	SPECIMEN B1-7	B2-3	B2-9	C1-5
Box Number	7	9	10	12
Density at Time of Break (pcf)	23.5	23.5	24.5	24.5
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	28	28	28	28
Diameter (in)	2.930	2.920	2.940	2.910
Height (in)	5.530	5.580	5.390	5.600
Height-To-Diameter Ratio	1.887	1.911	1.833	1.924

FINAL TEST DATA	B1-7	B2-3	B2-9	C1-5	Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	72	100	90	96	90
Cross-sectional Area (in.^{2})	6.743	6.697	6.789	6.651	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	No. of Specimens
Porosity	0.858	0.858	0.852	0.852	4
Strain at Failure (%)	0.91	1.45	0.38	2.70	
Fracture Type	3	5	5	5	

Test Remarks Specimens were moist cured to 25 days at an average temperature of 22.4˚C and humidity of 99% and then air dried to 28 days in accordance with ASTM C495. Samples were capped with Hydrostone gypsum cement before compression.

SPECIMEN	DESCRIPTION
B1-7	Cellular Concrete
B2-3	Cellular Concrete
B2-9	Cellular Concrete
C1-5	Cellular Concrete

PROJECT NAME: California Nevada Cement Association (CNCA)
PROJECT NO: 10357.000.000
CLIENT: California Nevada Cement Assocation
LOCATION: Yorba Linda, CA
PHASE NO: CNCA

Test Date: 7/20/16
Tested By: T. Borde
Reviewed By: M. Tong

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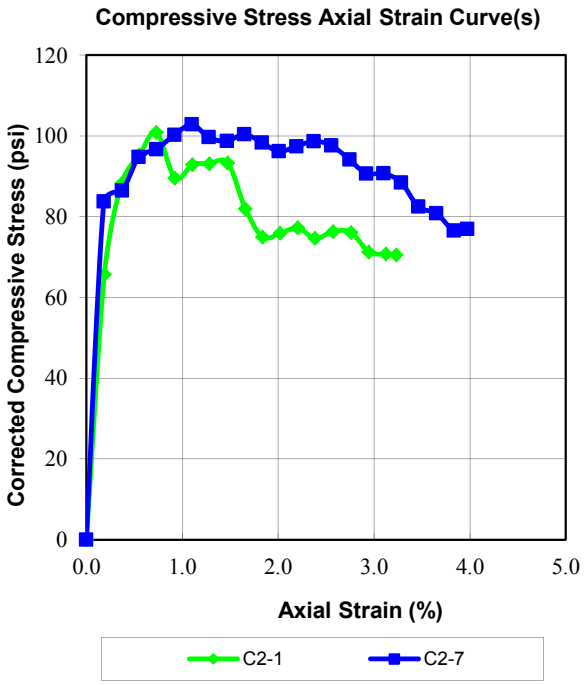
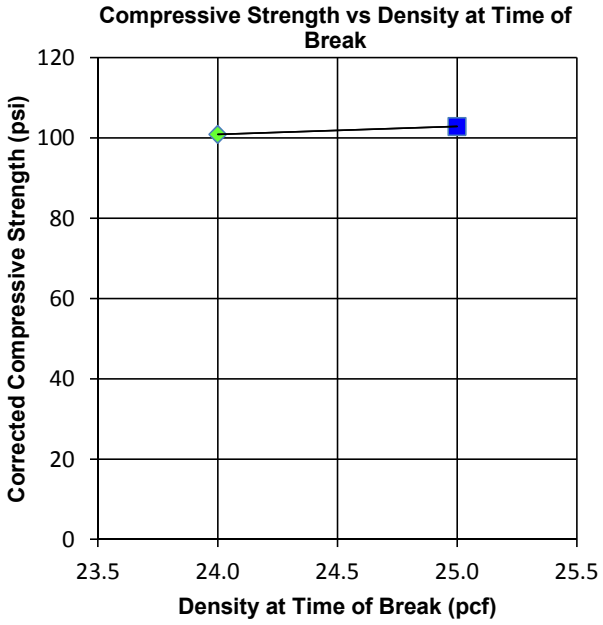
UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modified)





INITIAL TEST DATA	SPECIMEN C2-1	SPECIMEN C2-7
Box Number	13	15
Density at Time of Break (pcf)	24.0	25.0
Cast Density (pcf)	30.0	30.0
Test Age (Days)	28	28
Diameter (in)	2.940	2.910
Height (in)	5.480	5.530
Height-To-Diameter Ratio	1.864	1.900

FINAL TEST DATA			Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	101	103	102
Cross-sectional Area (in.^{2})	6.789	6.651	
Strain Rate (in./min.)	0.09	0.09	No. of Specimens
Porosity	0.855	0.849	2
Strain at Failure (%)	0.73	1.10	
Fracture Type	5	5	

Test Remarks Specimens were moist cured to 25 days at an average temperature of 22.4˚C and humidity of 99% and then air dried to 28 days in accordance with ASTM C495. Samples were capped with Hydrostone gypsum cement before compression.

SPECIMEN	DESCRIPTION
C2-1	Cellular Concrete
C2-7	Cellular Concrete

PROJECT NAME: California Nevada Cement Association (CNCA)
PROJECT NO: 10357.000.000
CLIENT: California Nevada Cement Association
LOCATION: Yorba Linda, CA
PHASE NO: CNCA

Test Date: 7/20/16
Tested By: T. Borde
Reviewed By: M. Tong

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UNCONFINED COMPRESSION TEST REPORT
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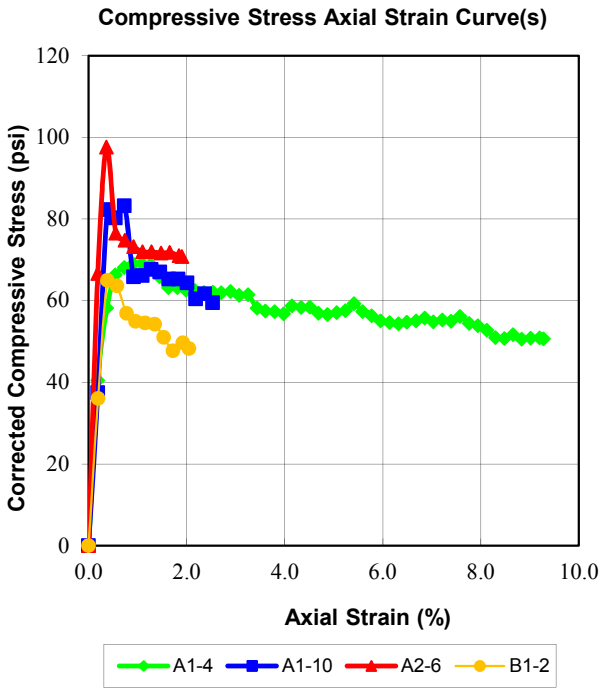

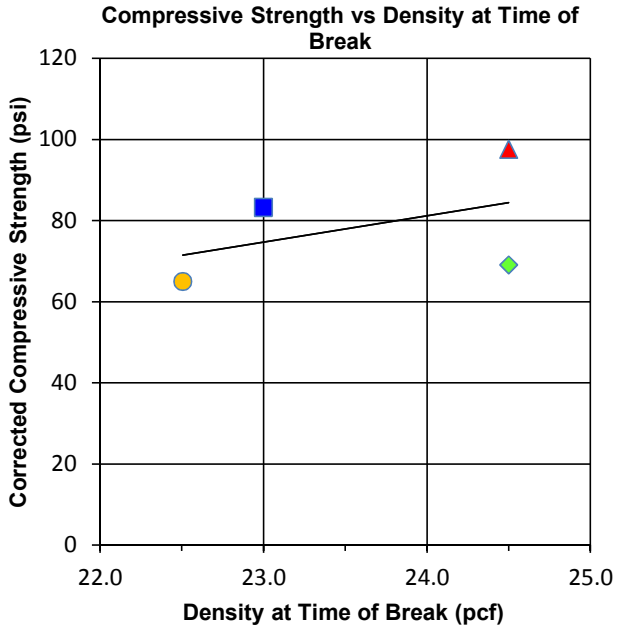

INITIAL TEST DATA	SPECIMEN A1-4	A1-10	A2-6	B1-2
Box Number	1	3	4	6
Density at Time of Break (pcf)	24.5	23.0	24.5	22.5
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	28	28	28	28
Diameter (in)	2.960	2.930	2.900	2.920
Height (in)	5.590	5.540	5.470	5.270
Height-To-Diameter Ratio	1.889	1.891	1.886	1.805

FINAL TEST DATA					Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	69	83	98	65	79
Cross-sectional Area (in.^{2})	6.881	6.743	6.605	6.697	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	No. of Specimens
Porosity	0.852	0.861	0.852	0.864	4
Strain at Failure (%)	1.09	0.73	0.36	0.38	
Fracture Type	3	3	3	3	
Test Remarks	Specimens were moist cured to 25 days at an average temperature of 22.4˚C and humidity of 99% and then air dried to 28 days in accordance with ASTM C495. Specimens were not capped prior to compression.				

SPECIMEN	DESCRIPTION
A1-4	Cellular Concrete
A1-10	Cellular Concrete
A2-6	Cellular Concrete
B1-2	Cellular Concrete

PROJECT NAME: California Nevada Cement Association (CNCA)
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CLIENT: California Nevada Cement Association
LOCATION: Yorba Linda, CA
PHASE NO: CNCA

Test Date: 7/20/16
Tested By: T. Borde
Reviewed By: M. Tong

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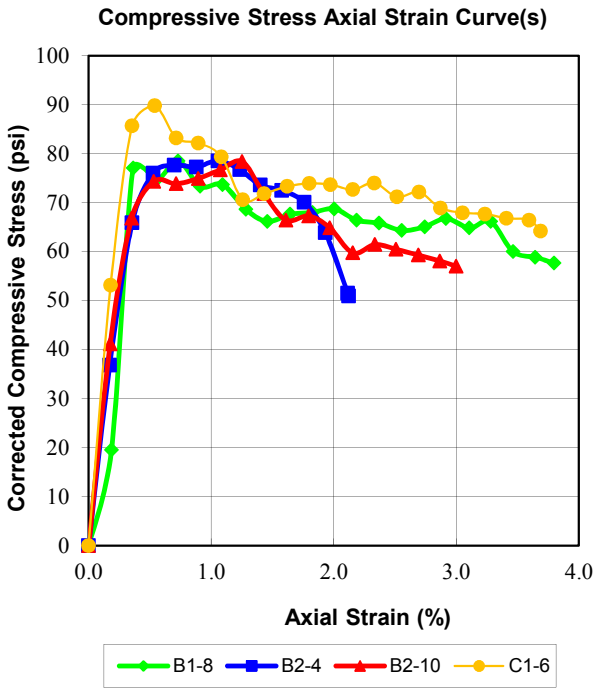

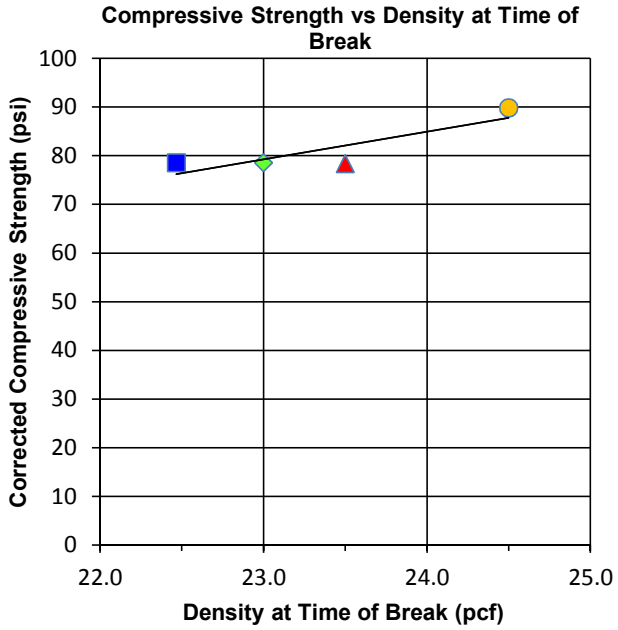

INITIAL TEST DATA	SPECIMEN B1-8	B2-4	B2-10	C1-6
Box Number	8	9	11	12
Density at Time of Break (pcf)	23.0	22.5	23.5	24.5
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	28	28	28	28
Diameter (in)	2.930	2.900	2.930	2.900
Height (in)	5.530	5.740	5.610	5.610
Height-To-Diameter Ratio	1.887	1.979	1.915	1.934

FINAL TEST DATA	B1-8	B2-4	B2-10	C1-6	Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	79	79	78	90	81
Cross-sectional Area (in.^{2})	6.743	6.605	6.743	6.605	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	No. of Specimens
Porosity	0.861	0.864	0.858	0.852	4
Strain at Failure (%)	0.73	1.06	1.25	0.54	
Fracture Type	3	3	5	3	
Test Remarks	Specimens were moist cured to 25 days at an average temperature of 22.4˚C and humidity of 99% and then air dried to 28 days in accordance with ASTM C495. Specimens were not capped prior to compression.				

SPECIMEN	DESCRIPTION
B1-8	Cellular Concrete
B2-4	Cellular Concrete
B2-10	Cellular Concrete; Hairline fracture on top of specimen prior to compression
C1-6	Cellular Concrete

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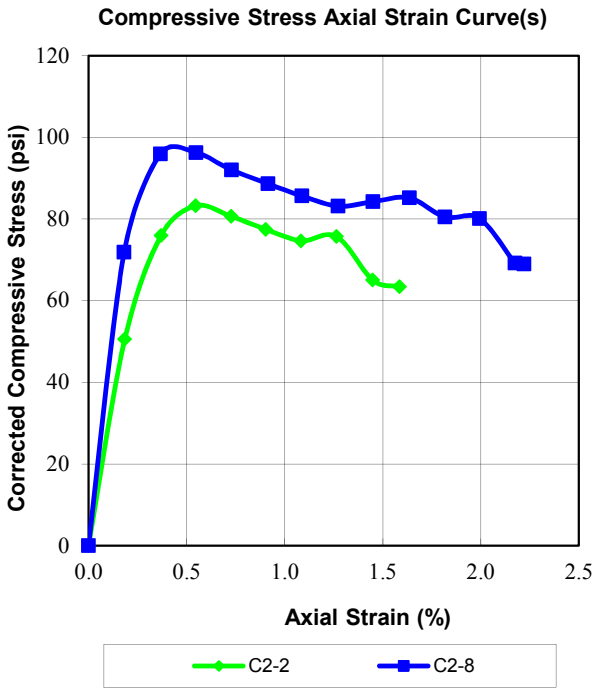

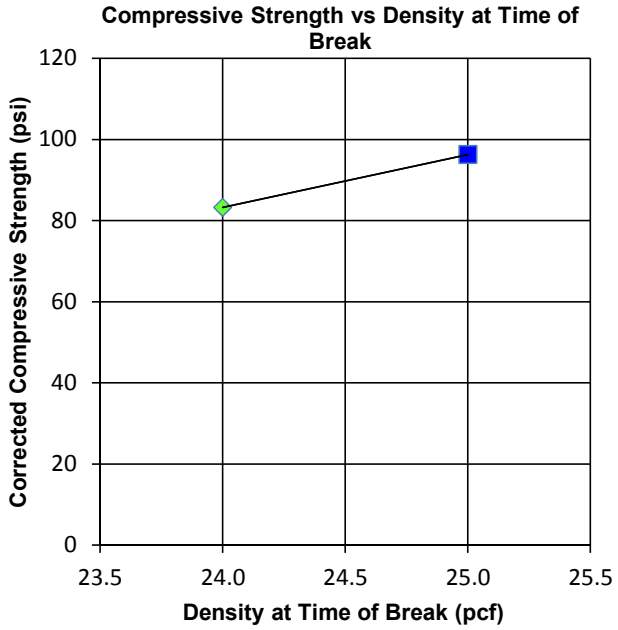

INITIAL TEST DATA	SPECIMEN C2-2	SPECIMEN C2-8
Box Number	14	15
Density at Time of Break (pcf)	24.0	25.0
Cast Density (pcf)	30.0	30.0
Test Age (Days)	28	28
Diameter (in)	2.950	2.930
Height (in)	5.580	5.560
Height-To-Diameter Ratio	1.892	1.898

FINAL TEST DATA	C2-2	C2-8
Unconfined Compressive Strength (psi)	83	96
Cross-sectional Area (in.^{2})	6.835	6.743
Strain Rate (in./min.)	0.09	0.09
Porosity	0.855	0.849
Strain at Failure (%)	0.55	0.55
Fracture Type	3	5
Test Remarks	Specimens were moist cured to 25 days at an average temperature of 22.4˚C and humidity of 99% and then air dried to 28 days in accordance with ASTM C495. Specimens were not capped prior to compression.	

Avg. Compressive Strength (psi)
90

No. of Specimens
2

SPECIMEN	DESCRIPTION
C2-2	Cellular Concrete
C2-8	Cellular Concrete

PROJECT NAME: California Nevada Cement Association (CNCA)
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PHASE NO: CNCA

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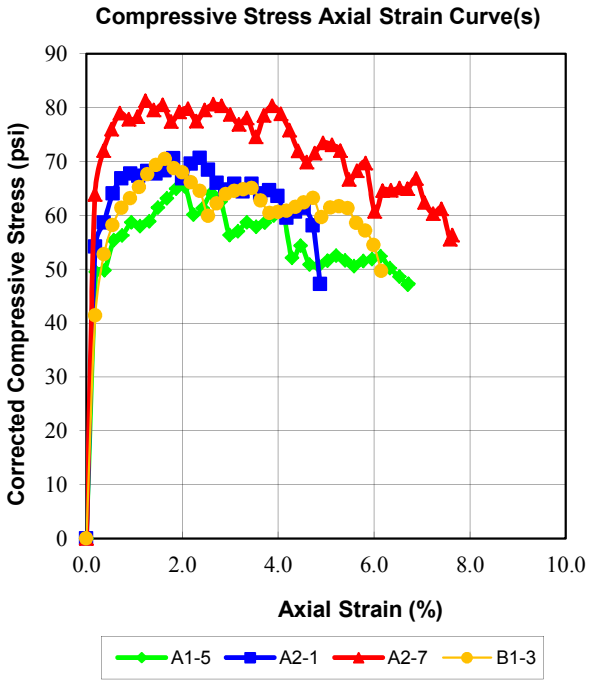

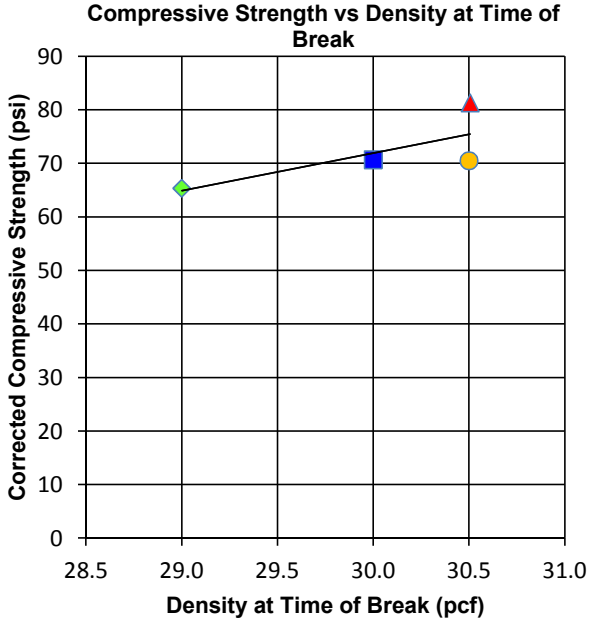

INITIAL TEST DATA	SPECIMEN A1-5	A2-1	A2-7	B1-3
Box Number	2	3	5	6
Density at Time of Break (pcf)	29.0	30.0	30.5	30.5
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	29	29	29	29
Diameter (in)	2.940	2.910	2.920	2.920
Height (in)	5.420	5.550	5.710	5.550
Height-To-Diameter Ratio	1.844	1.907	1.955	1.901

FINAL TEST DATA					Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	65	71	81	70	72
Cross-sectional Area (in.^{2})	6.789	6.651	6.697	6.697	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	No. of Specimens
Porosity	0.825	0.819	0.816	0.816	4
Strain at Failure (%)	2.05	2.36	1.24	1.64	
Fracture Type	6	6	6	6	
Test Remarks	Specimens were moist cured to 29 days at an average temperature of 22.7˚C and humidity of 99% and were capped with Hydrostone gypsum cement prior to compression.				

SPECIMEN	DESCRIPTION
A1-5	Cellular Concrete
A2-1	Cellular Concrete
A2-7	Cellular Concrete
B1-3	Cellular Concrete

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PROJECT NAME: California Nevada Cement Association (CNCA)
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LOCATION: Yorba Linda, CA
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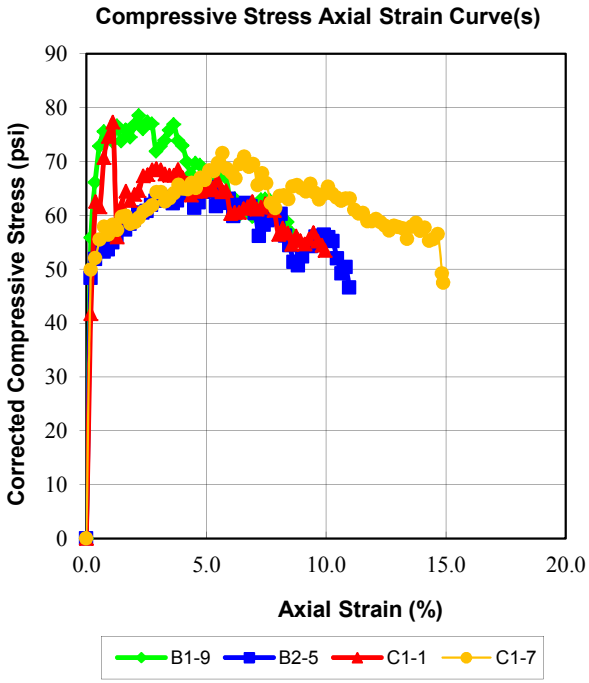

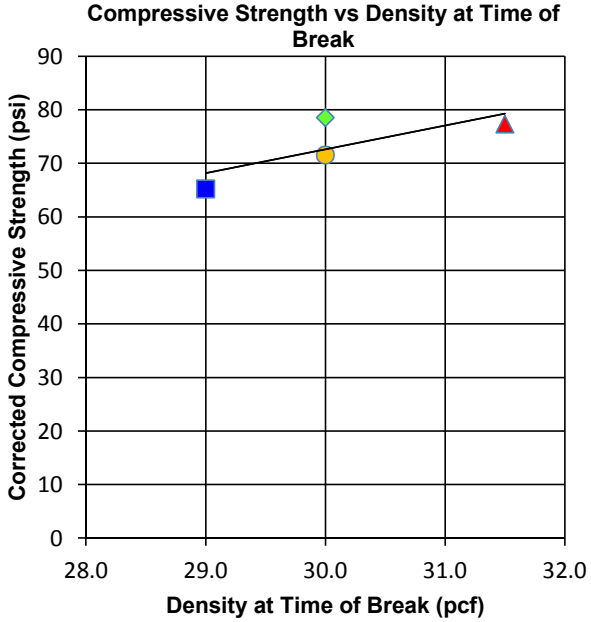

INITIAL TEST DATA	SPECIMEN B1-9	B2-5	C1-1	C1-7
Box Number	8	9	11	12
Density at Time of Break (pcf)	30.0	29.0	31.5	30.0
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	29	29	29	29
Diameter (in)	2.920	2.870	2.910	2.940
Height (in)	5.540	5.590	5.540	5.500
Height-To-Diameter Ratio	1.897	1.948	1.904	1.871

FINAL TEST DATA	B1-9	B2-5	C1-1	C1-7	Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	79	65	77	72	73
Cross-sectional Area (in.^{2})	6.697	6.469	6.651	6.789	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	No. of Specimens
Porosity	0.819	0.825	0.810	0.819	4
Strain at Failure (%)	2.18	5.05	1.10	5.69	
Fracture Type	6	6	6	6	

Test Remarks: Specimens were moist cured to 29 days at an average temperature of 22.7˚C and humidity of 99% and were capped with Hydrostone gypsum cement prior to compression.

SPECIMEN	DESCRIPTION
B1-9	Cellular Concrete
B2-5	Cellular Concrete
C1-1	Cellular Concrete
C1-7	Cellular Concrete

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PROJECT NAME: California Nevada Cement Association (CNCA)
PROJECT NO: 10357.000.00
CLIENT: California Nevada Cement Association
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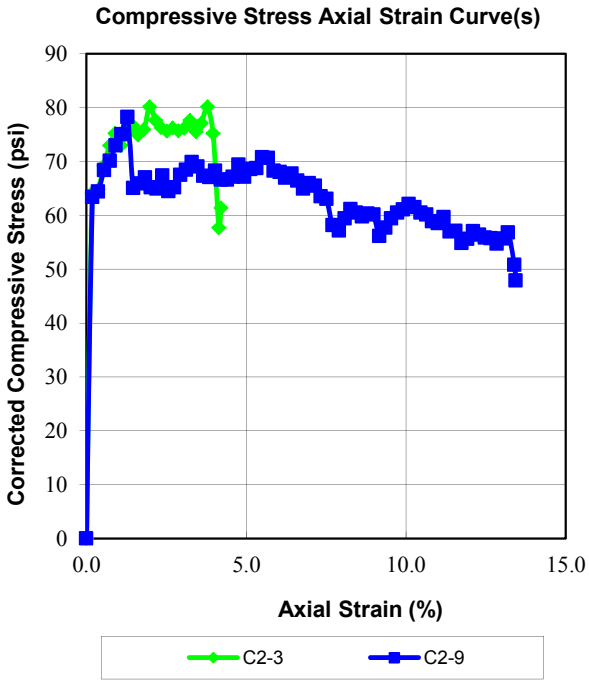

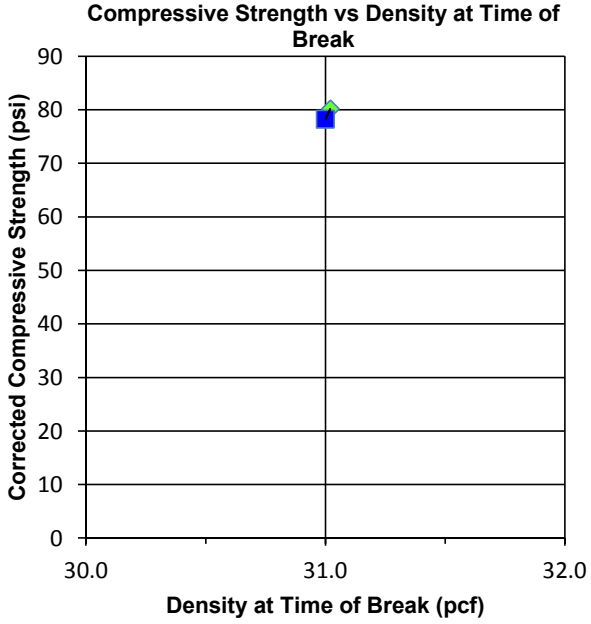

INITIAL TEST DATA	SPECIMEN C2-3	SPECIMEN C2-9
Box Number	14	15
Density at Time of Break (pcf)	31.0	31.0
Cast Density (pcf)	30.0	30.0
Test Age (Days)	29	29
Diameter (in)	2.900	2.930
Height (in)	5.600	5.500
Height-To-Diameter Ratio	1.931	1.877

FINAL TEST DATA			Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	80	78	79
Cross-sectional Area (in.^{2})	6.605	6.743	
Strain Rate (in./min.)	0.09	0.09	No. of Specimens
Porosity	0.813	0.813	2
Strain at Failure (%)	1.98	1.29	
Fracture Type	4	6	
Test Remarks	Specimens were moist cured to 29 days at an average temperature of 22.7˚C and humidity of 99% and were capped with Hydrostone gypsum cement prior to compression.		

SPECIMEN	DESCRIPTION
C2-3	Cellular Concrete
C2-9	Cellular Concrete

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PROJECT NAME: California Nevada Cement Association (CNCA)
PROJECT NO: 10357.000.000
CLIENT: California Nevada Cement Association
LOCATION: Yorba Linda, CA
PHASE NO: CNCA

Test Date: 7/21/16
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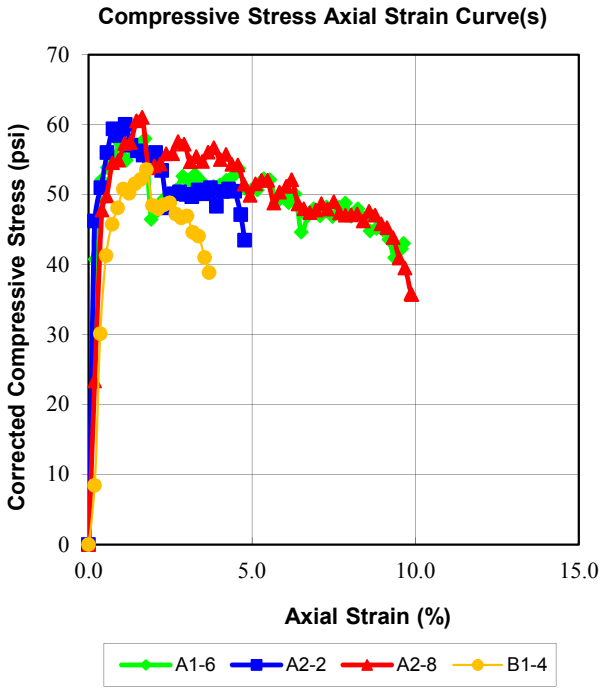
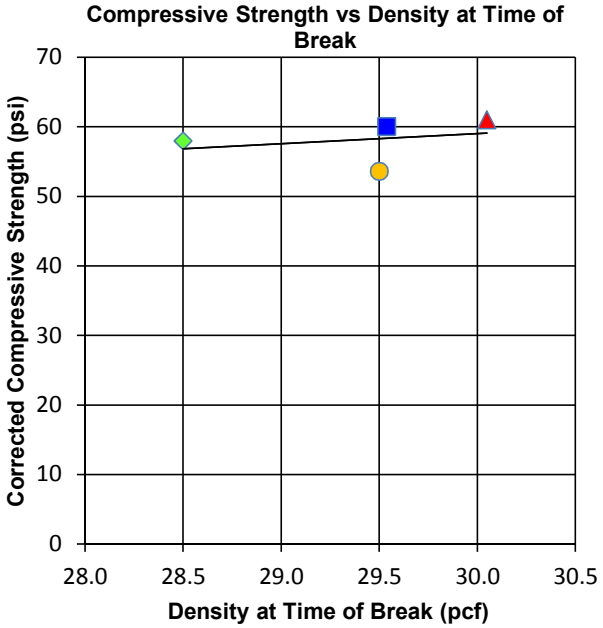
UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modified)





INITIAL TEST DATA	SPECIMEN A1-6	A2-2	A2-8	B1-4
Box Number	2	3	5	7
Density at Time of Break (pcf)	28.5	29.5	30.0	29.5
Cast Density (pcf)	30.0	30.0	30.0	30.0
Test Age (Days)	29	29	29	29
Diameter (in)	2.910	2.920	2.930	2.890
Height (in)	5.270	5.410	5.530	5.690
Height-To-Diameter Ratio	1.811	1.853	1.887	1.969

FINAL TEST DATA					Avg. Compressive Strength (psi)
Unconfined Compressive Strength (psi)	58	60	61	54	58
Cross-sectional Area (in.^{2})	6.651	6.697	6.743	6.560	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	No. of Specimens
Porosity	0.828	0.822	0.819	0.822	4
Strain at Failure (%)	1.73	1.12	1.64	1.77	
Fracture Type	6	6	6	6	
Test Remarks	Specimens were moist cured to 29 days at an average temperature of 22.7˚C and humidity of 99%. Specimens were not capped prior to compression.				

SPECIMEN	DESCRIPTION
A1-6	Cellular Concrete
A2-2	Cellular Concrete
A2-8	Cellular Concrete
B1-4	Cellular Concrete

PROJECT NAME: California Nevada Cement Association (CNCA)
PROJECT NO: 10357.000.000
CLIENT: California Nevada Cement Association
LOCATION: Yorba Linda, CA
PHASE NO: CNCA

Test Date: 7/21/16
Tested By: T. Borde
Reviewed By: M. Tong

ENGEO Expect Excellence

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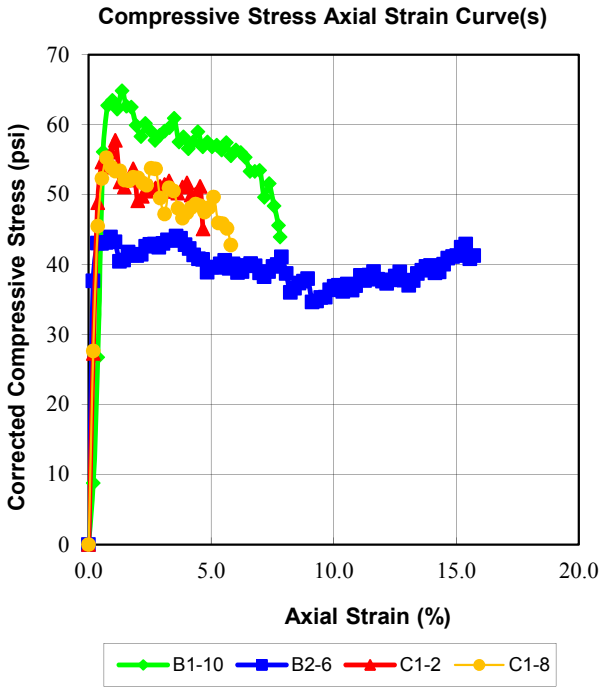
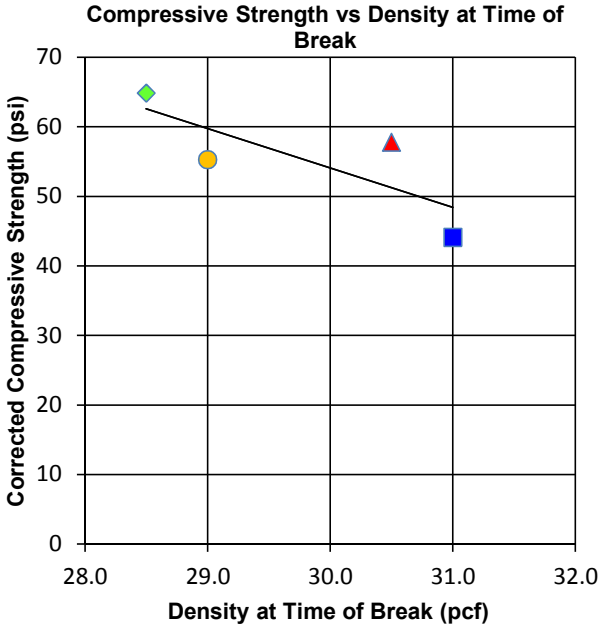
UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modified)





INITIAL TEST DATA	SPECIMEN B1-10	B2-6	C1-2	C1-8	
Box Number	8	10	11	13	
Density at Time of Break (pcf)	28.5	31.0	30.5	29.0	
Cast Density (pcf)	30.0	30.0	30.0	30.0	
Test Age (Days)	29	29	29	29	
Diameter (in)	2.920	2.930	2.940	2.940	
Height (in)	5.200	5.640	5.540	5.530	
Height-To-Diameter Ratio	1.781	1.925	1.884	1.881	
FINAL TEST DATA					**Avg. Compressive Strength (psi)**
Unconfined Compressive Strength (psi)	65	44	58	55	**56**
Cross-sectional Area (in.^{2})	6.697	6.743	6.789	6.789	
Strain Rate (in./min.)	0.09	0.09	0.09	0.09	**No. of Specimens**
Porosity	0.828	0.813	0.816	0.825	**4**
Strain at Failure (%)	1.36	3.58	1.10	0.73	
Fracture Type	6	6	6	6	
Test Remarks	Specimens were moist cured to 29 days at an average temperature of 22.7˚C and humidity of 99%. Specimens were not capped prior to compression.				

SPECIMEN	DESCRIPTION
B1-10	Cellular Concrete
B2-6	Cellular Concrete
C1-2	Cellular Concrete
C1-8	Cellular Concrete

PROJECT NAME: California Nevada Cement Association (CNCA)
PROJECT NO: 10357.000.000
CLIENT: California Nevada Cement Association
LOCATION: Yorba Linda, CA
PHASE NO: CNCA

Test Date: 7/21/16
Tested By: T. Borde
Reviewed By: M. Tong

ENGEO Expect Excellence

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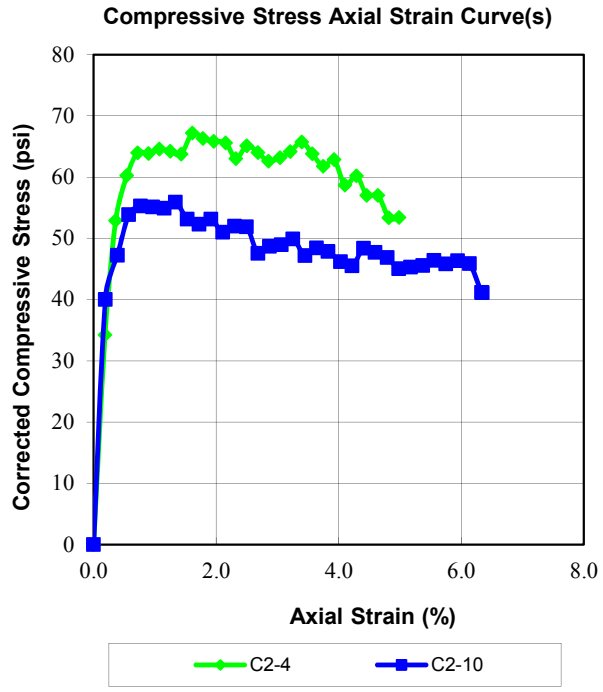
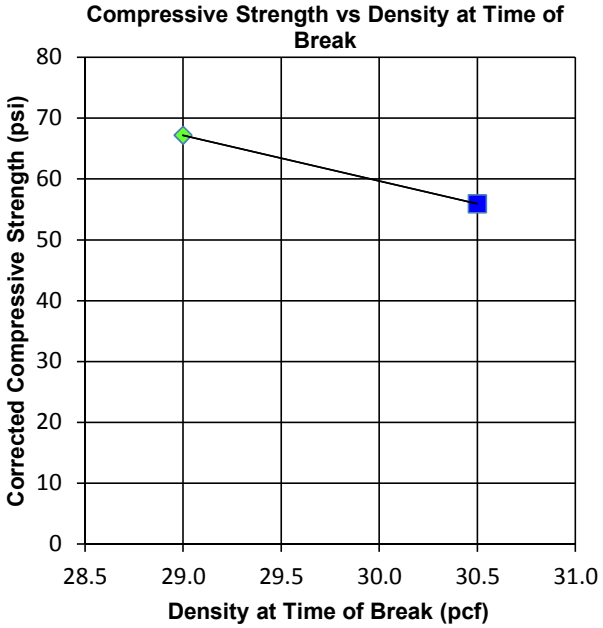
UNCONFINED COMPRESSION TEST REPORT
(ASTM C495 - Modified)





INITIAL TEST DATA	SPECIMEN C2-4	SPECIMEN C2-10
Box Number	14	16
Density at Time of Break (pcf)	29.0	30.5
Cast Density (pcf)	30.0	30.0
Test Age (Days)	29	29
Diameter (in)	2.930	2.940
Height (in)	5.650	5.260
Height-To-Diameter Ratio	1.928	1.789

FINAL TEST DATA	C2-4	C2-10
Unconfined Compressive Strength (psi)	67	56
Cross-sectional Area (in.^{2})	6.743	6.789
Strain Rate (in./min.)	0.09	0.09
Porosity	0.825	0.816
Strain at Failure (%)	1.61	1.34
Fracture Type	6	6
Test Remarks	Specimens were moist cured to 29 days at an average temperature of 22.7˚C and humidity of 99%. Specimens were not capped prior to compression.	

Avg. Compressive Strength (psi)
62

No. of Specimens
2

SPECIMEN	DESCRIPTION
C2-4	Cellular Concrete
C2-10	Cellular Concrete

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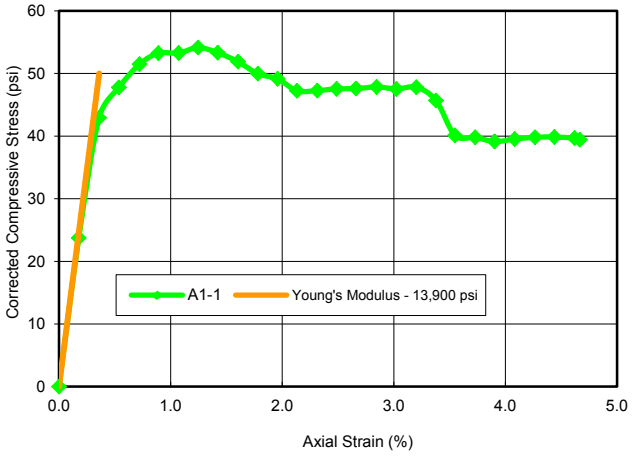
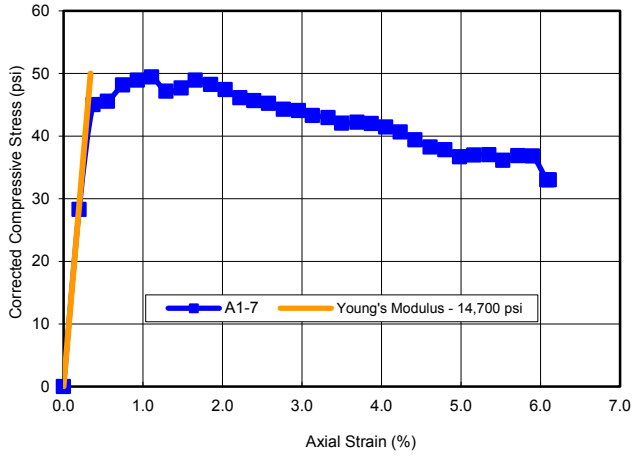
Expect Excellence

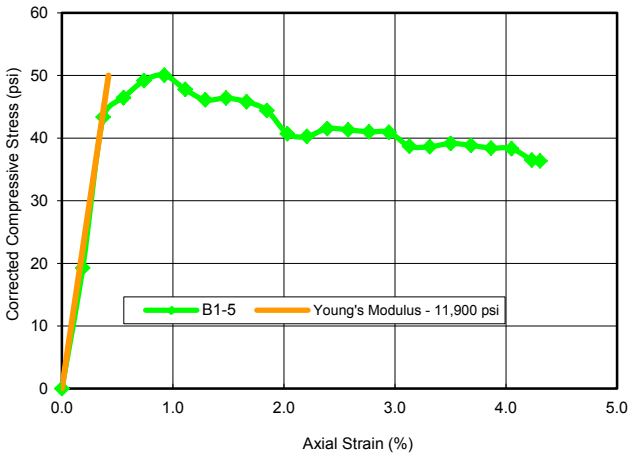
PROJECT NAME: California Nevada Cement Association (CNCA)
PROJECT NO: 10357.000.000
CLIENT: California Nevada Cement Association
LOCATION: Yorba Linda, CA
PHASE NO: CNCA

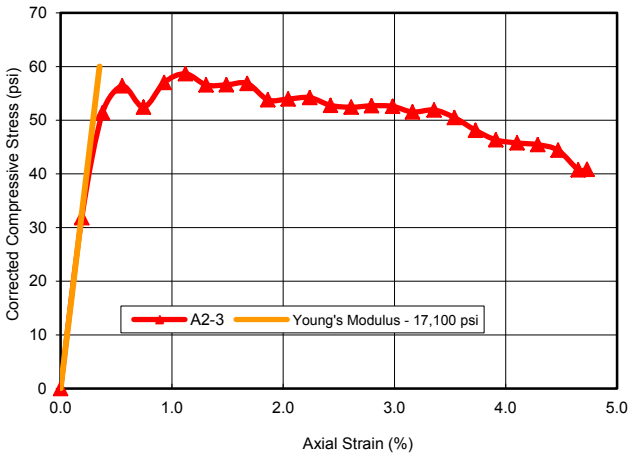
Test Date: 7/21/16
Tested By: T. Borde
Reviewed By: M. Tong

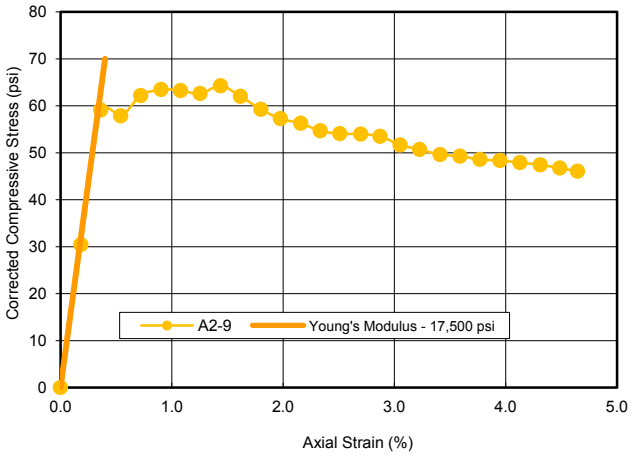
YOUNG'S MODULUS GRAPHS

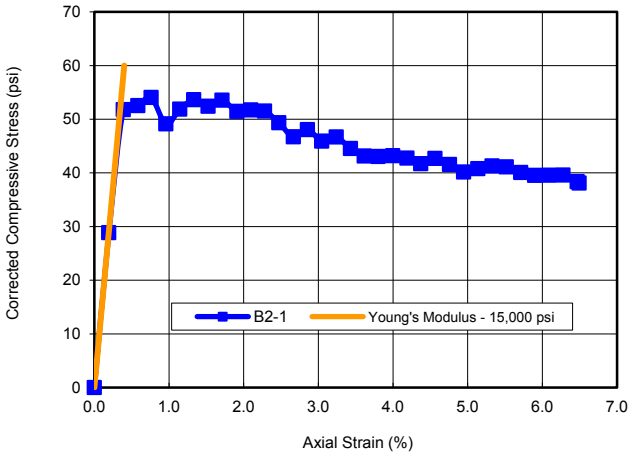


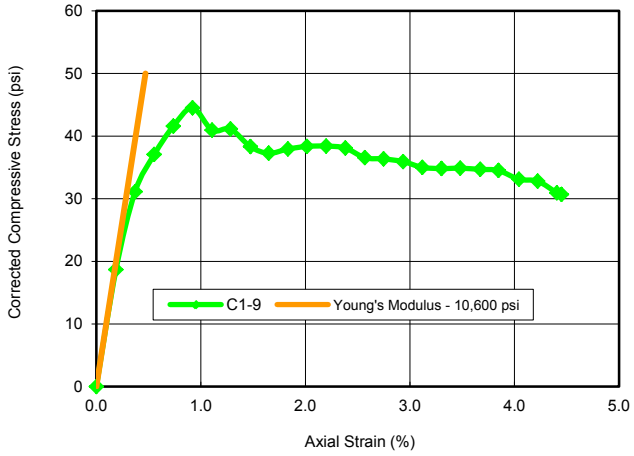


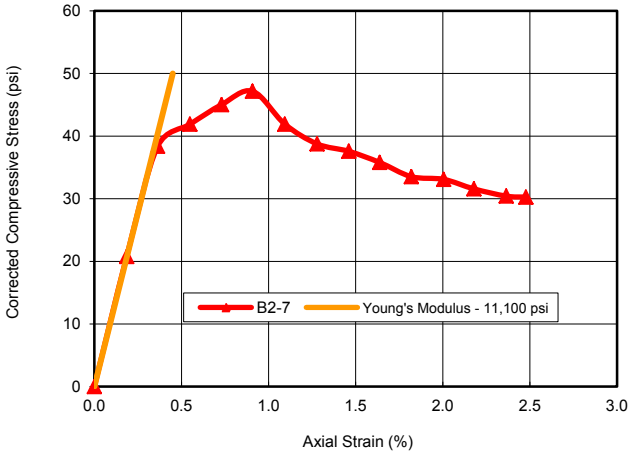


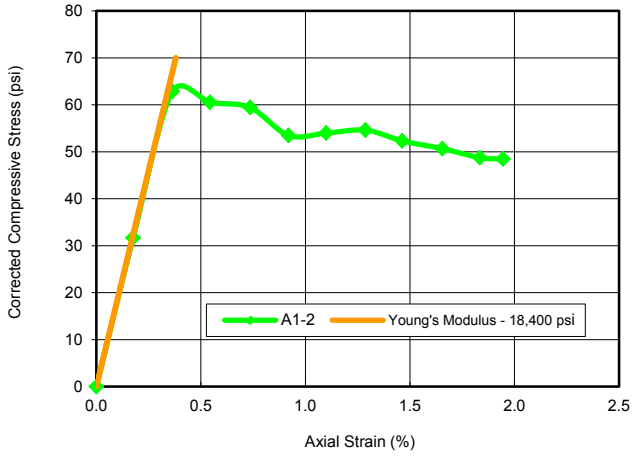


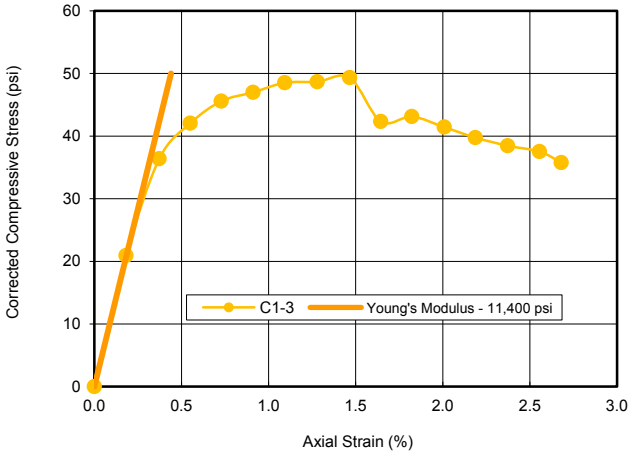


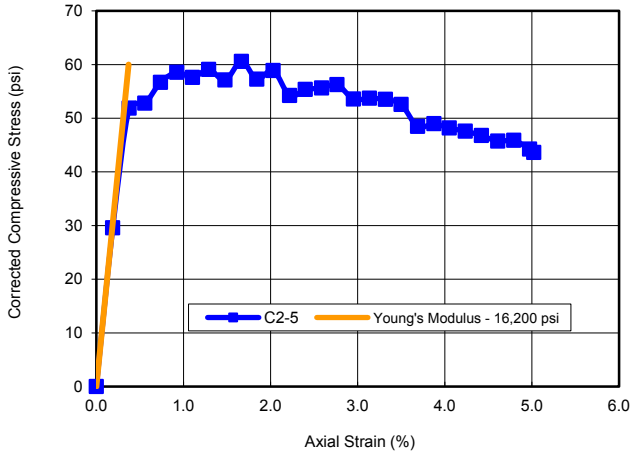


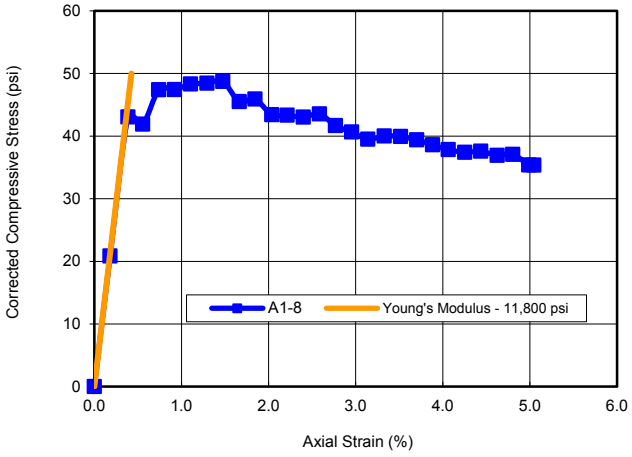

Corrected Compressive Stress (psi)
Axial Strain (%)
C1-9
Young's Modulus - 10,600 psi

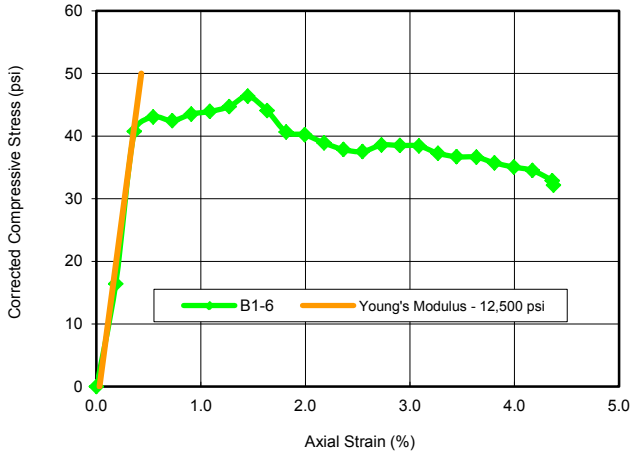

Corrected Compressive Stress (psi)
Axial Strain (%)
B2-7
Young's Modulus - 11,100 psi

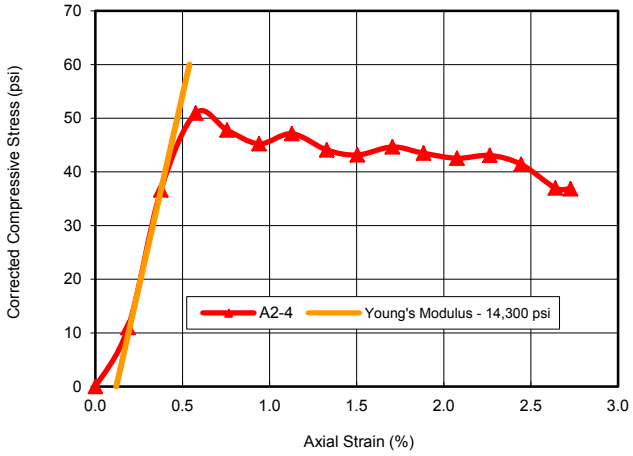

Corrected Compressive Stress (psi)
Axial Strain (%)
A1-2
Young's Modulus - 18,400 psi

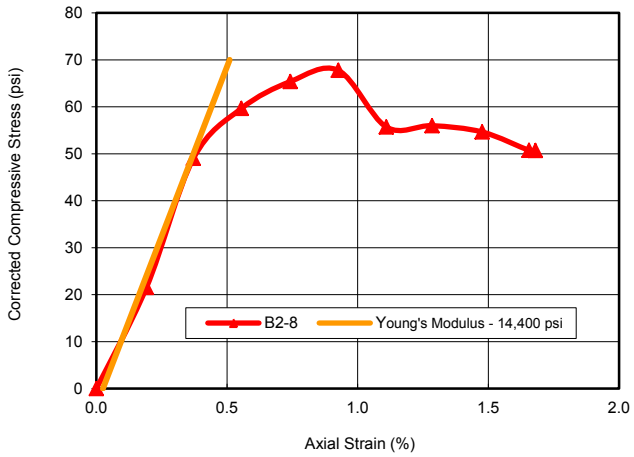

Corrected Compressive Stress (psi)
Axial Strain (%)
C1-3
Young's Modulus - 11,400 psi

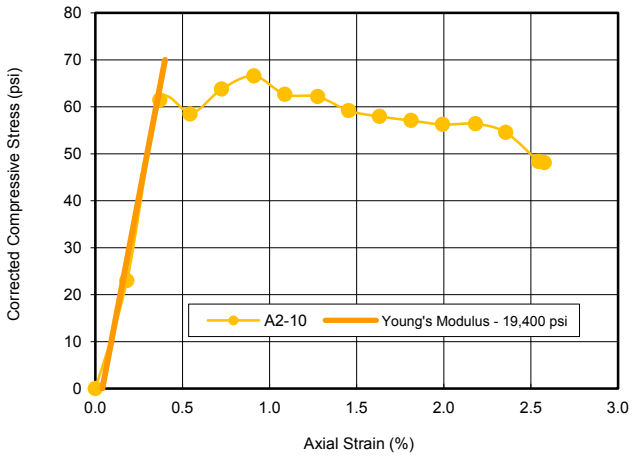

Corrected Compressive Stress (psi)
Axial Strain (%)
C2-5
Young's Modulus - 16,200 psi

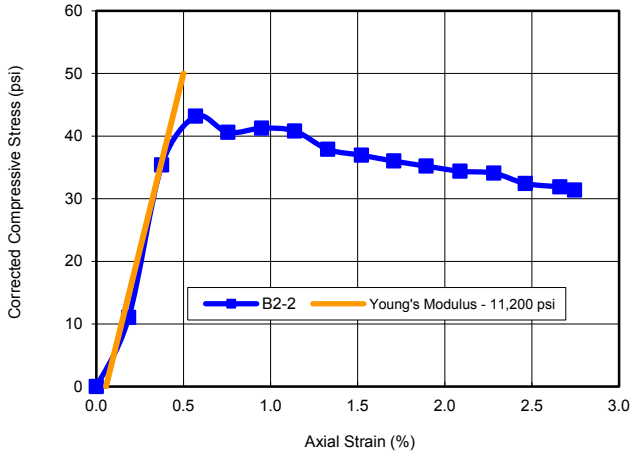

Corrected Compressive Stress (psi)
Axial Strain (%)
A1-8
Young's Modulus - 11,800 psi

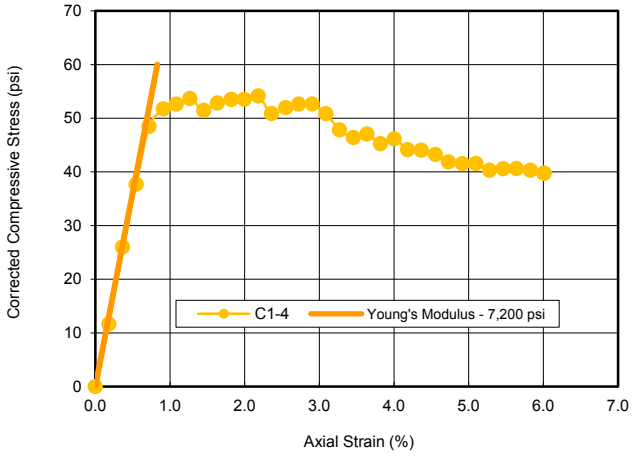

Corrected Compressive Stress (psi)
Axial Strain (%)
B1-6
Young's Modulus - 12,500 psi

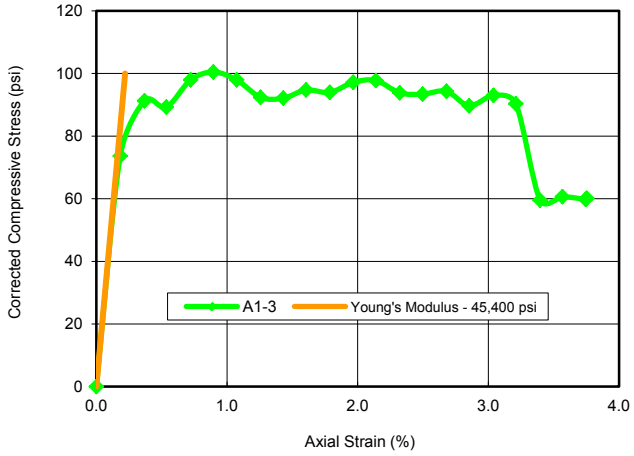

Corrected Compressive Stress (psi)
Axial Strain (%)
A2-4
Young's Modulus - 14,300 psi

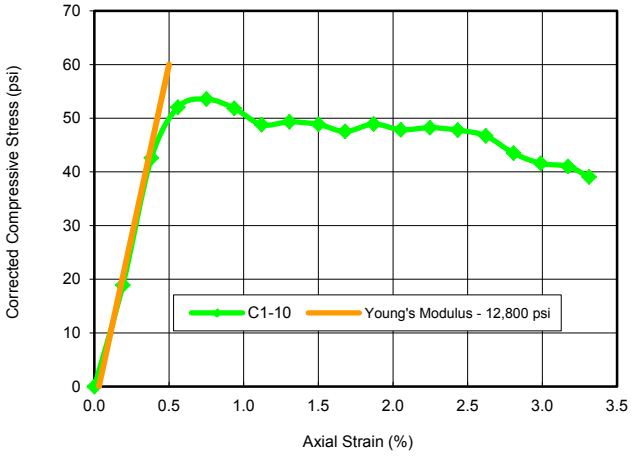

Corrected Compressive Stress (psi)
Axial Strain (%)
B2-8
Young's Modulus - 14,400 psi

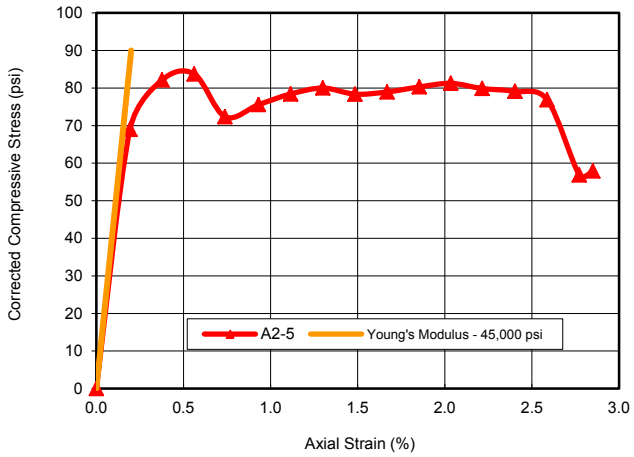

Corrected Compressive Stress (psi)
Axial Strain (%)
A2-10
Young's Modulus - 19,400 psi

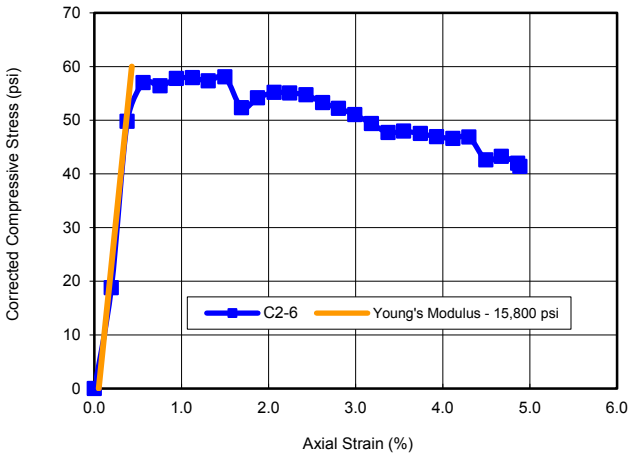

Corrected Compressive Stress (psi)
Axial Strain (%)
B2-2
Young's Modulus - 11,200 psi

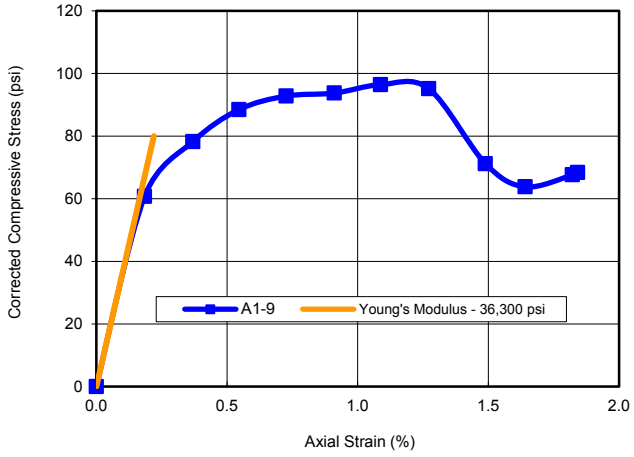

Corrected Compressive Stress (psi)
Axial Strain (%)
C1-4
Young's Modulus - 7,200 psi

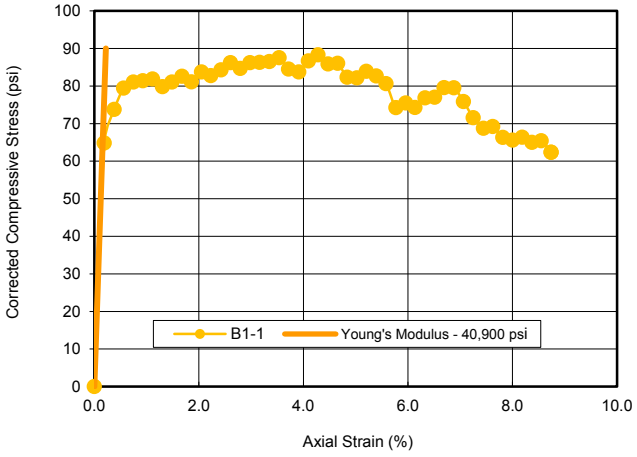

Corrected Compressive Stress (psi)
Axial Strain (%)
A1-3
Young's Modulus - 45,400 psi

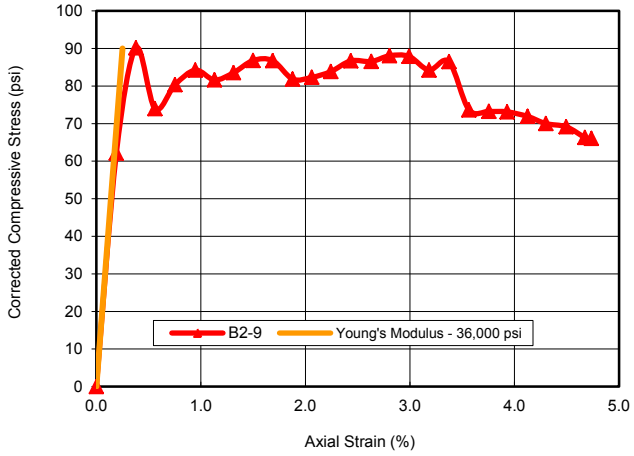

Corrected Compressive Stress (psi)
Axial Strain (%)
C1-10
Young's Modulus - 12,800 psi

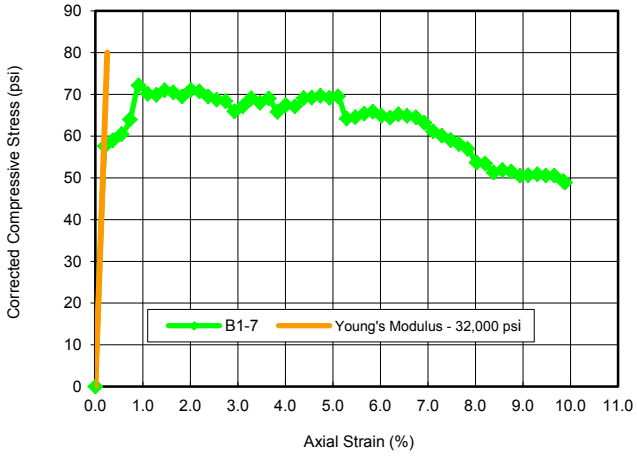

Corrected Compressive Stress (psi)
Axial Strain (%)
A2-5
Young's Modulus - 45,000 psi

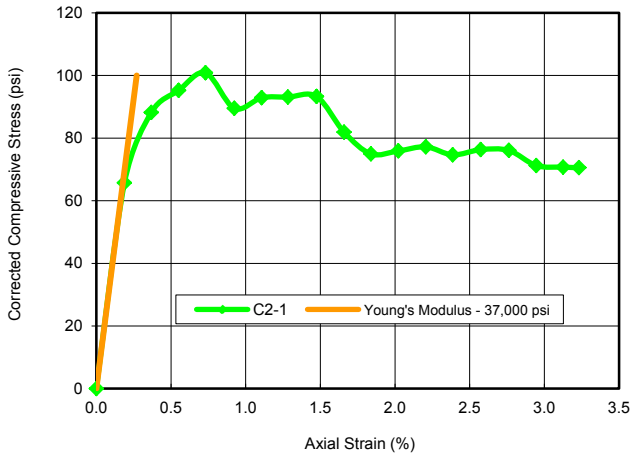

Corrected Compressive Stress (psi)
Axial Strain (%)
C2-6
Young's Modulus - 15,800 psi

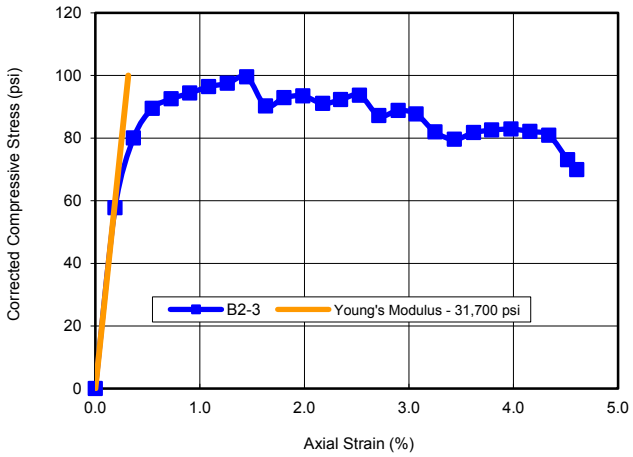

Corrected Compressive Stress (psi)
Axial Strain (%)
A1-9
Young's Modulus - 36,300 psi

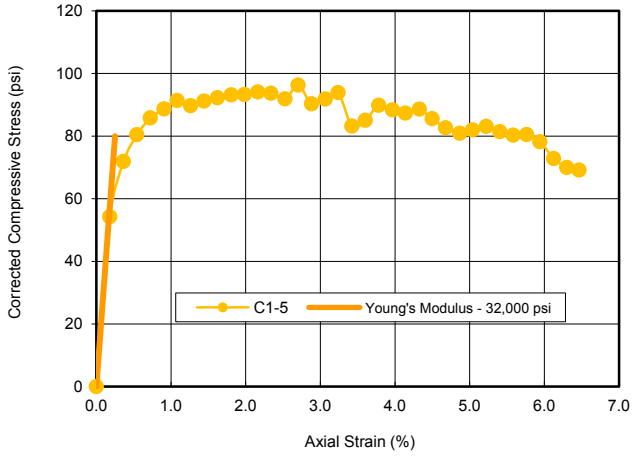

Corrected Compressive Stress (psi)
Axial Strain (%)
B1-1
Young's Modulus - 40,900 psi

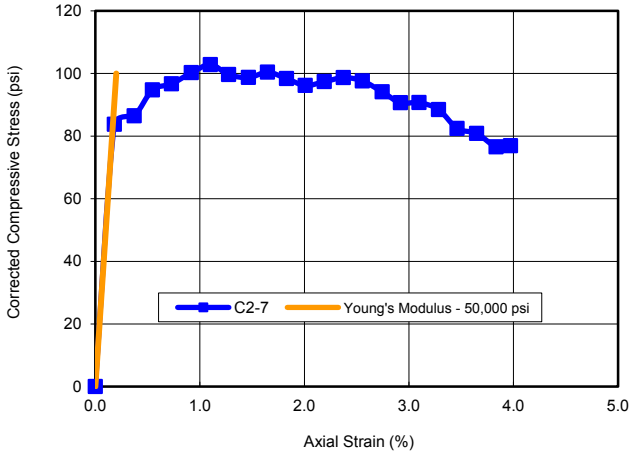

Corrected Compressive Stress (psi)
Axial Strain (%)
B2-9
Young's Modulus - 36,000 psi

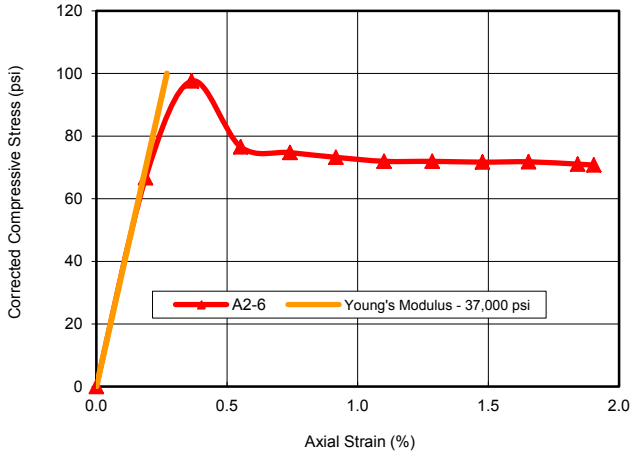

Corrected Compressive Stress (psi)
Axial Strain (%)
B1-7
Young's Modulus - 32,000 psi

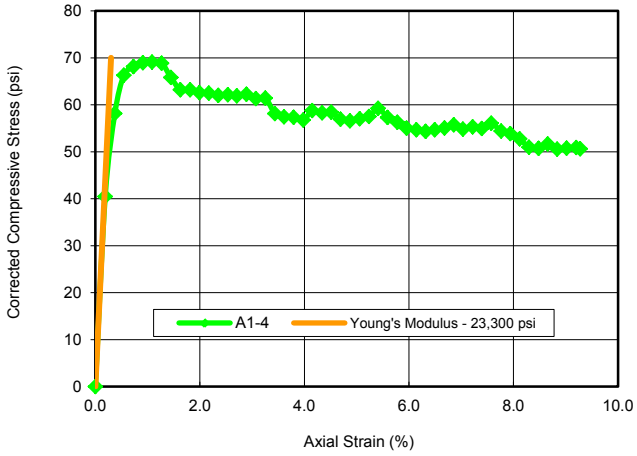

Corrected Compressive Stress (psi)
Axial Strain (%)
C2-1
Young's Modulus - 37,000 psi

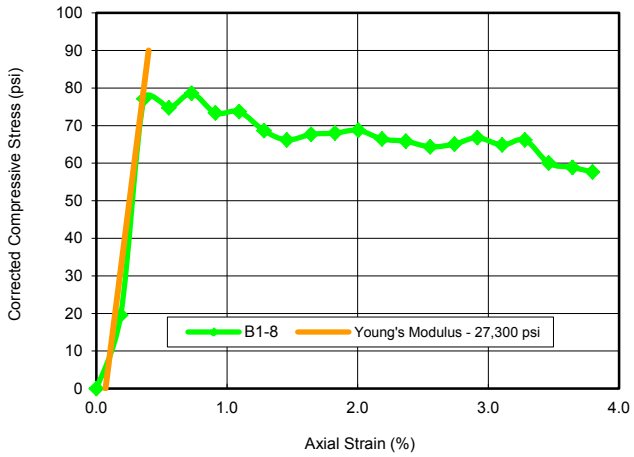

Corrected Compressive Stress (psi)
Axial Strain (%)
B2-3
Young's Modulus - 31,700 psi

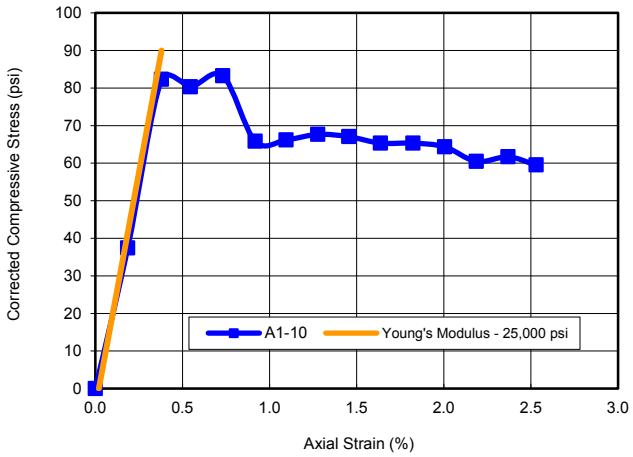

Corrected Compressive Stress (psi)
Axial Strain (%)
C1-5
Young's Modulus - 32,000 psi

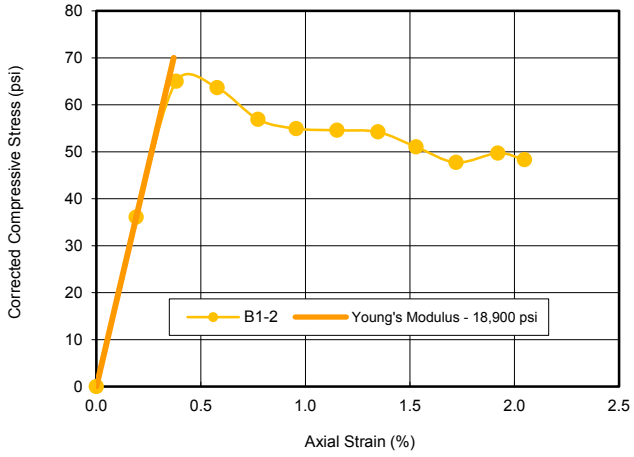

Corrected Compressive Stress (psi)
Axial Strain (%)
C2-7
Young's Modulus - 50,000 psi

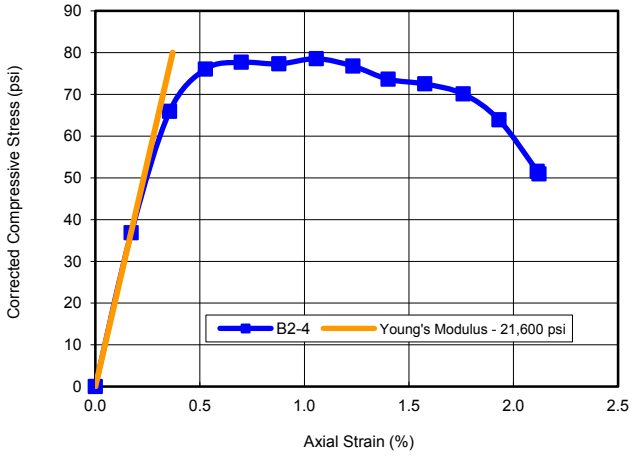

Corrected Compressive Stress (psi)
Axial Strain (%)
A2-6
Young's Modulus - 37,000 psi

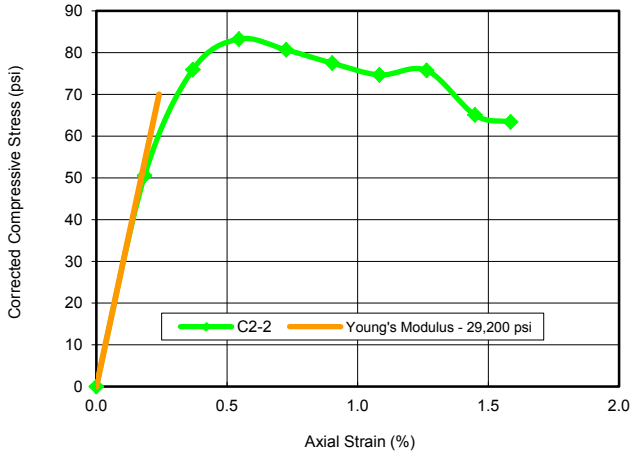

Corrected Compressive Stress (psi)
Axial Strain (%)
A1-4
Young's Modulus - 23,300 psi

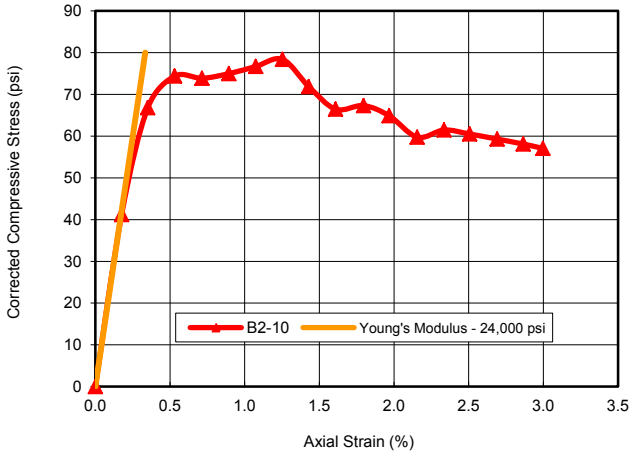

Corrected Compressive Stress (psi)
Axial Strain (%)
B1-8
Young's Modulus - 27,300 psi

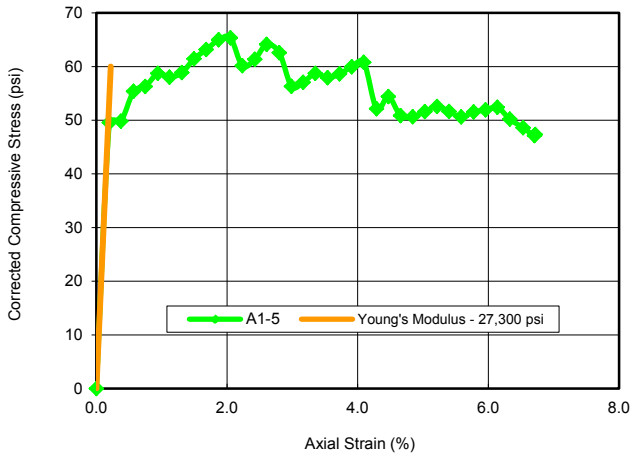

Corrected Compressive Stress (psi)
Axial Strain (%)
A1-10
Young's Modulus - 25,000 psi

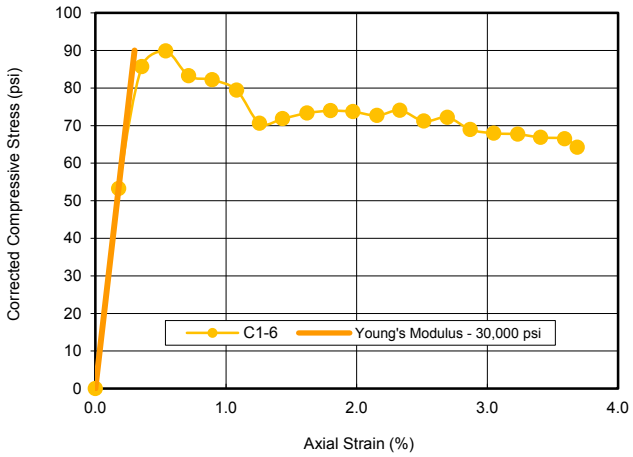

Corrected Compressive Stress (psi)
Axial Strain (%)
B1-2
Young's Modulus - 18,900 psi

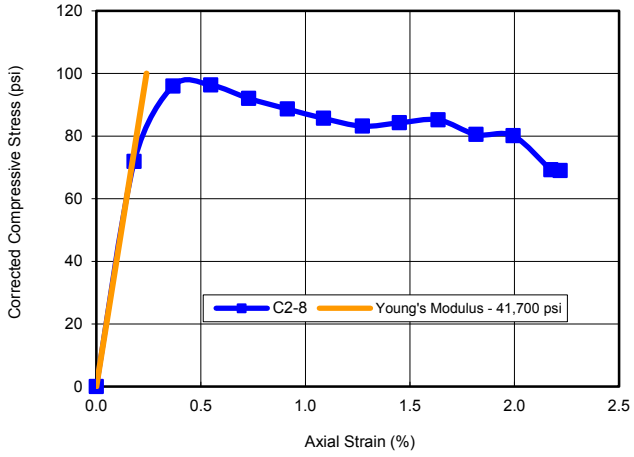

Corrected Compressive Stress (psi)
Axial Strain (%)
B2-4
Young's Modulus - 21,600 psi

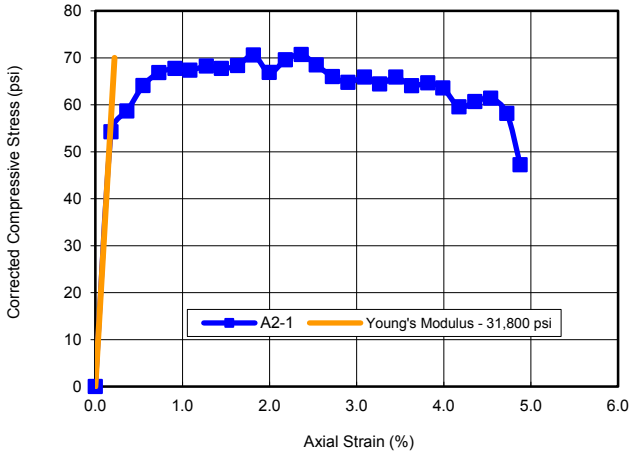

Corrected Compressive Stress (psi)
Axial Strain (%)
C2-2
Young's Modulus - 29,200 psi

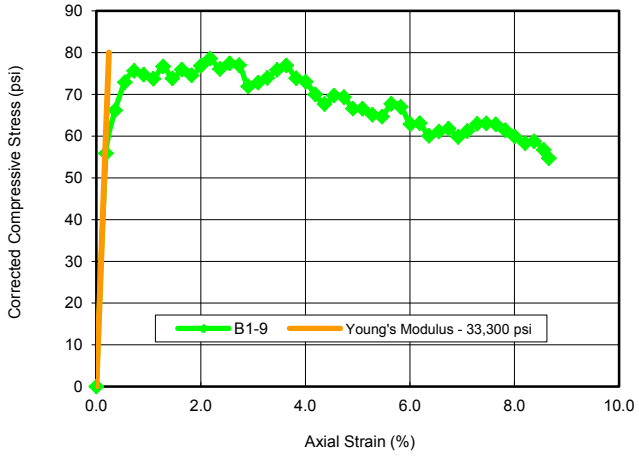

Corrected Compressive Stress (psi)
Axial Strain (%)
B2-10
Young's Modulus - 24,000 psi

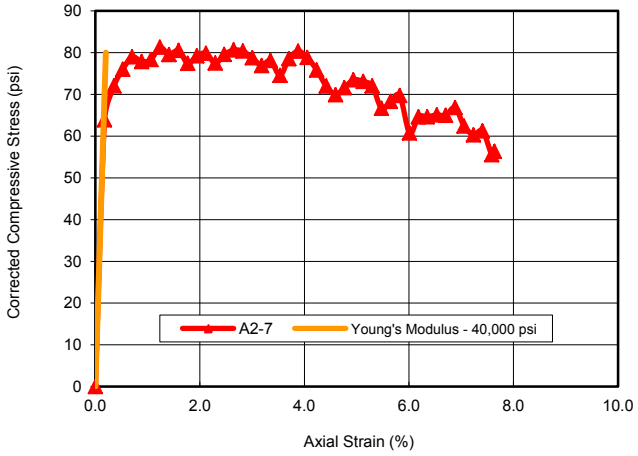

Corrected Compressive Stress (psi)
Axial Strain (%)
A1-5
Young's Modulus - 27,300 psi

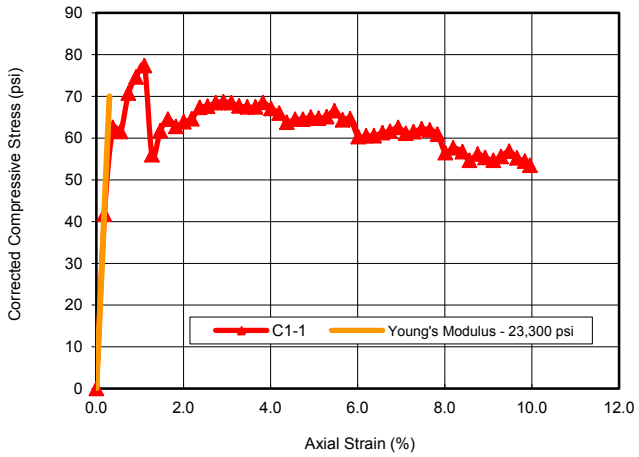

Corrected Compressive Stress (psi)
Axial Strain (%)
C1-6
Young's Modulus - 30,000 psi

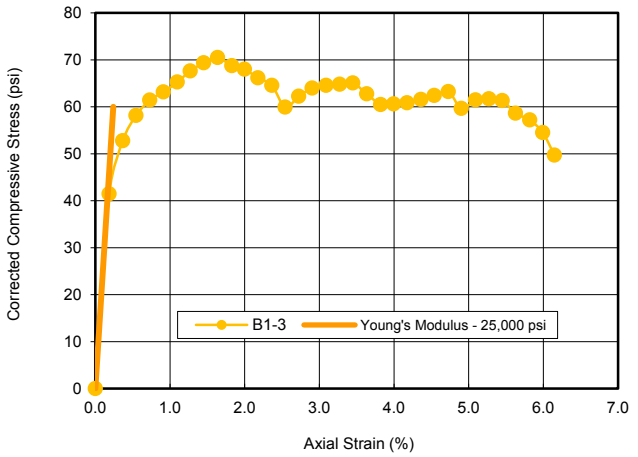

Corrected Compressive Stress (psi)
Axial Strain (%)
C2-8
Young's Modulus - 41,700 psi

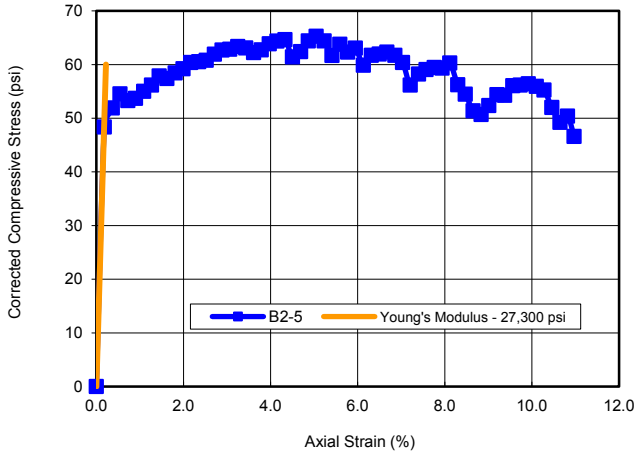

Corrected Compressive Stress (psi)
Axial Strain (%)
A2-1
Young's Modulus - 31,800 psi

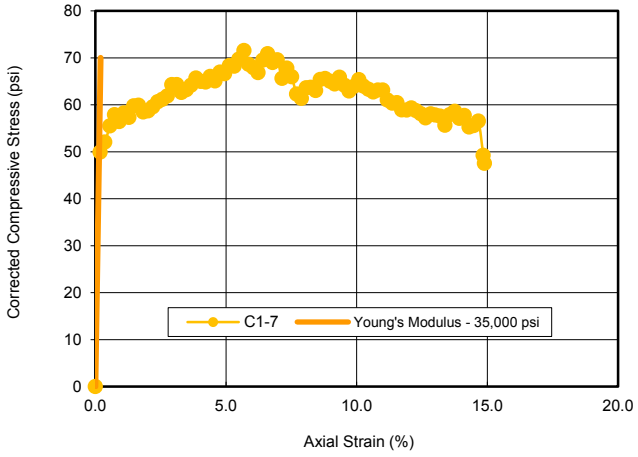

Corrected Compressive Stress (psi)
Axial Strain (%)
B1-9
Young's Modulus - 33,300 psi

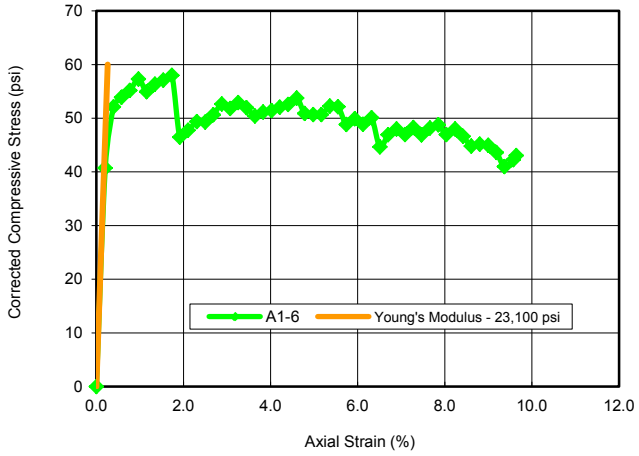

Corrected Compressive Stress (psi)
Axial Strain (%)
A2-7
Young's Modulus - 40,000 psi

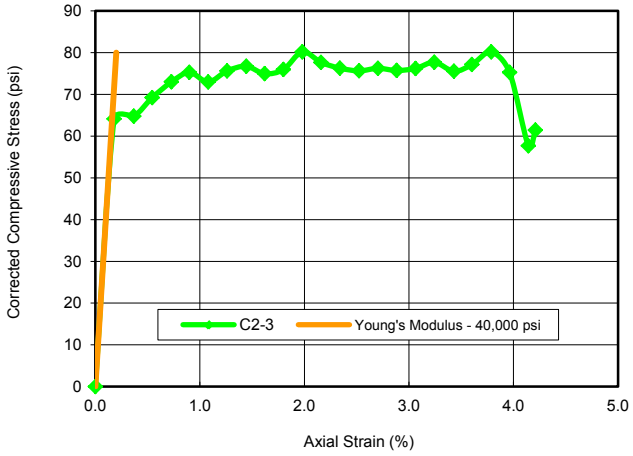

Corrected Compressive Stress (psi)
Axial Strain (%)
C1-1
Young's Modulus - 23,300 psi

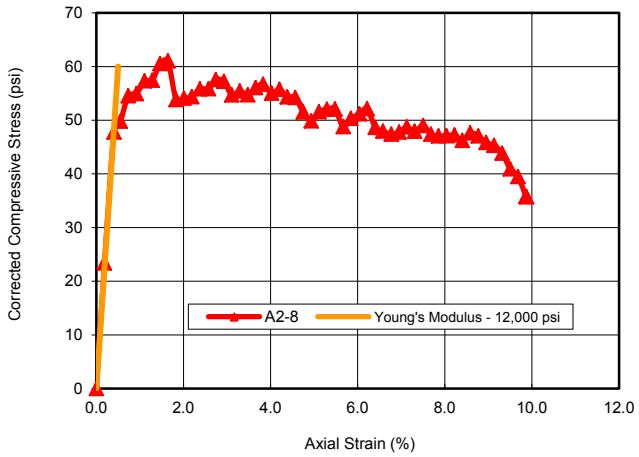

Corrected Compressive Stress (psi)
Axial Strain (%)
B1-3
Young's Modulus - 25,000 psi

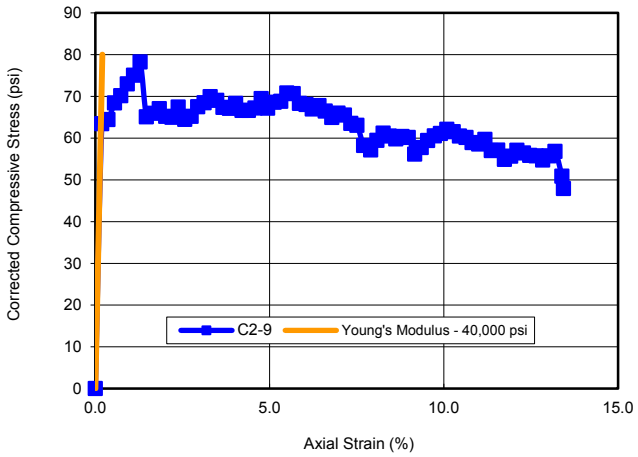

Corrected Compressive Stress (psi)
Axial Strain (%)
B2-5
Young's Modulus - 27,300 psi

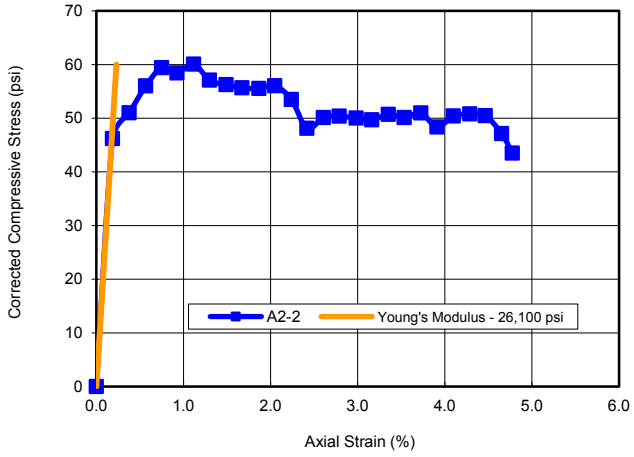

Corrected Compressive Stress (psi)
Axial Strain (%)
C1-7
Young's Modulus - 35,000 psi

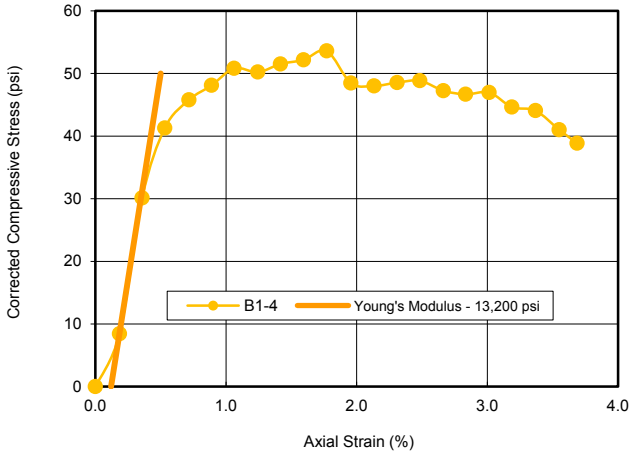

Corrected Compressive Stress (psi)
Axial Strain (%)
A1-6
Young's Modulus - 23,100 psi

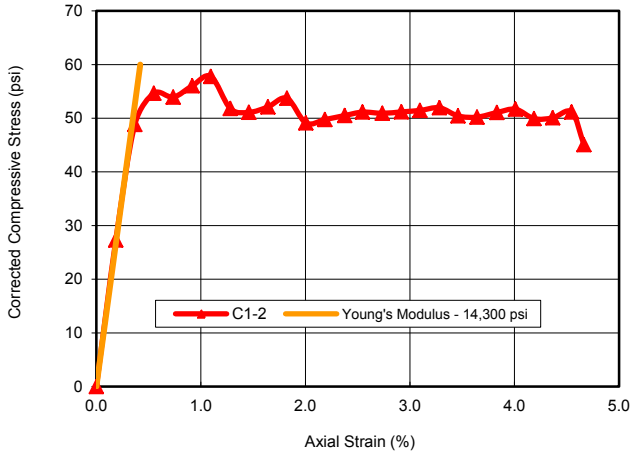

Corrected Compressive Stress (psi)
Axial Strain (%)
C2-3
Young's Modulus - 40,000 psi

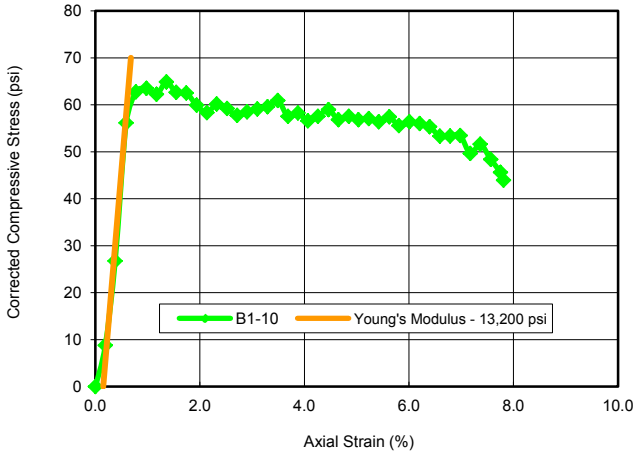

Corrected Compressive Stress (psi)
Axial Strain (%)
A2-8
Young's Modulus - 12,000 psi

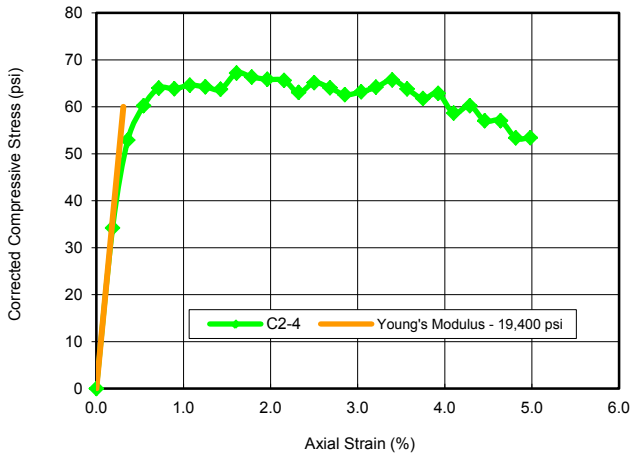

Corrected Compressive Stress (psi)
Axial Strain (%)
C2-9
Young's Modulus - 40,000 psi

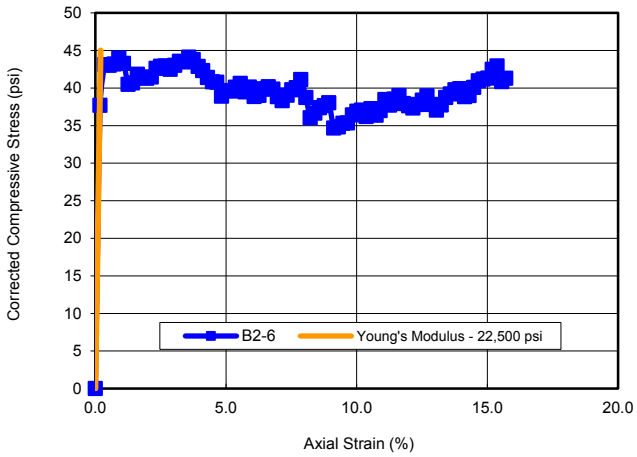

Corrected Compressive Stress (psi)
Axial Strain (%)
A2-2
Young's Modulus - 26,100 psi

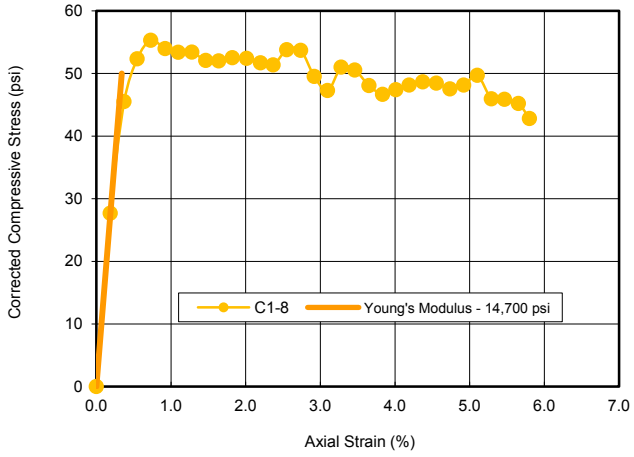

Corrected Compressive Stress (psi)
Axial Strain (%)
B1-4
Young's Modulus - 13,200 psi

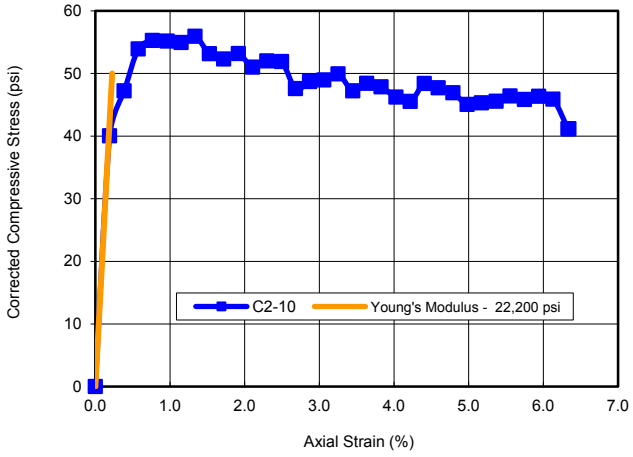

Corrected Compressive Stress (psi)
Axial Strain (%)
C1-2
Young's Modulus - 14,300 psi


Corrected Compressive Stress (psi)
Axial Strain (%)
B1-10
Young's Modulus - 13,200 psi


Corrected Compressive Stress (psi)
Axial Strain (%)
C2-4
Young's Modulus - 19,400 psi

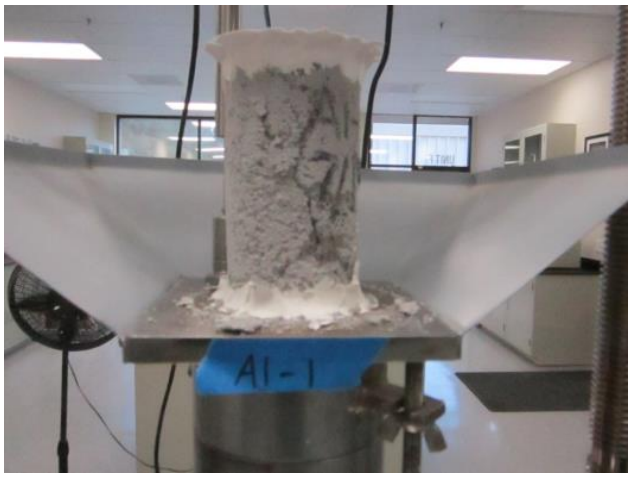

Corrected Compressive Stress (psi)
Axial Strain (%)
B2-6
Young's Modulus - 22,500 psi


Corrected Compressive Stress (psi)
Axial Strain (%)
C1-8
Young's Modulus - 14,700 psi

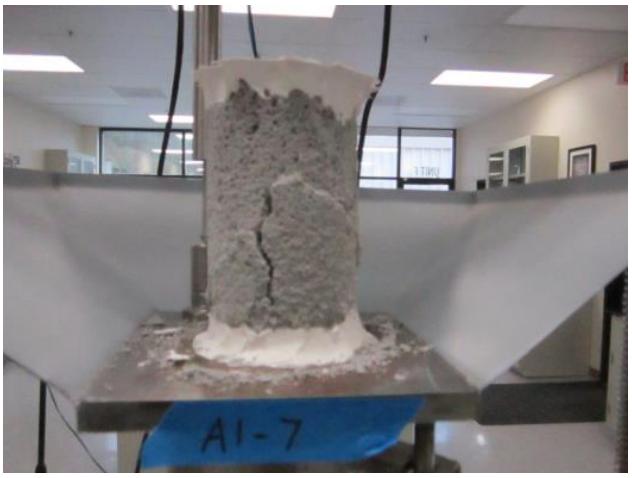

Corrected Compressive Stress (psi)
Axial Strain (%)
C2-10
Young's Modulus - 22,200 psi

FAILURE PICTURES

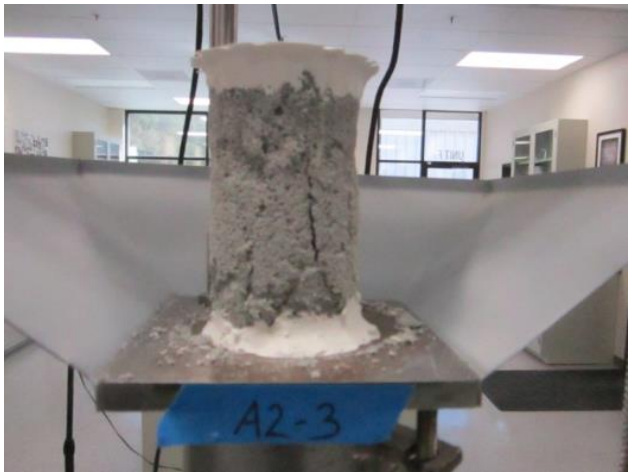
Group 1 (A1)



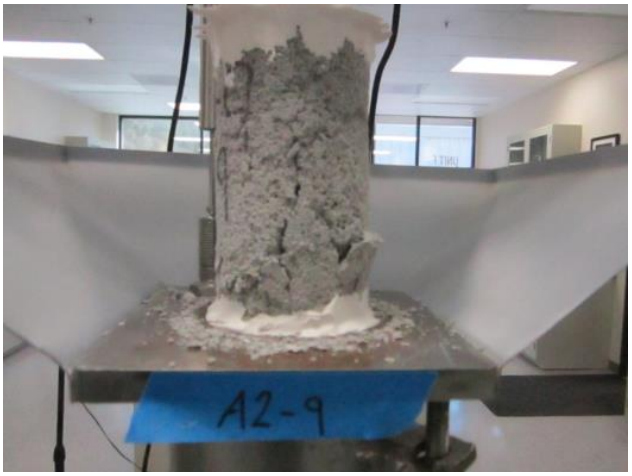
A1-1



A1-7

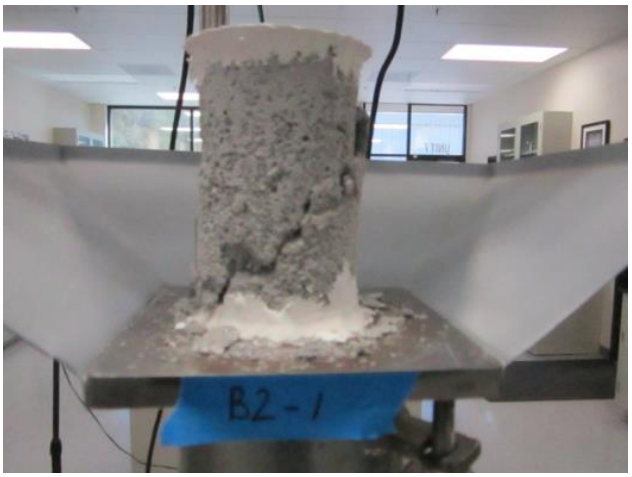


A2-3

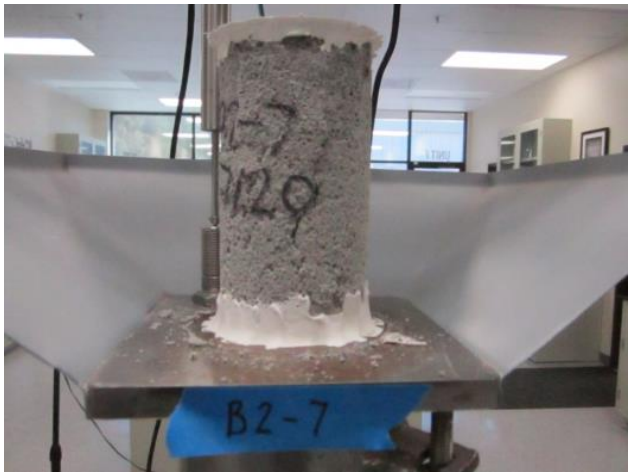


A2-9

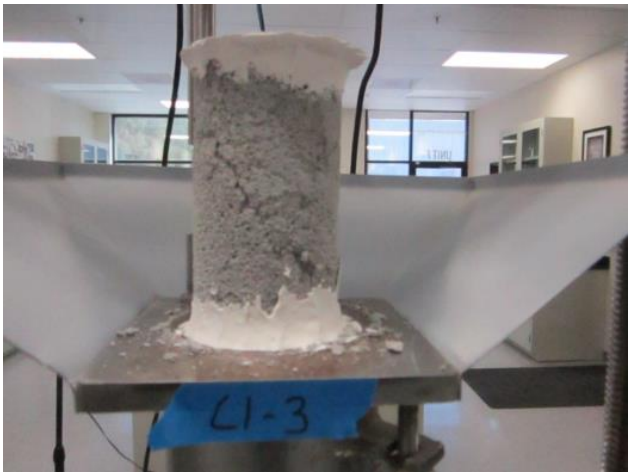
B1-5



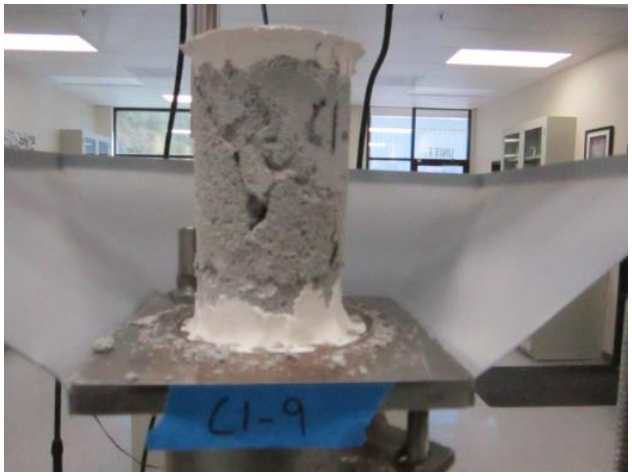
B2-1



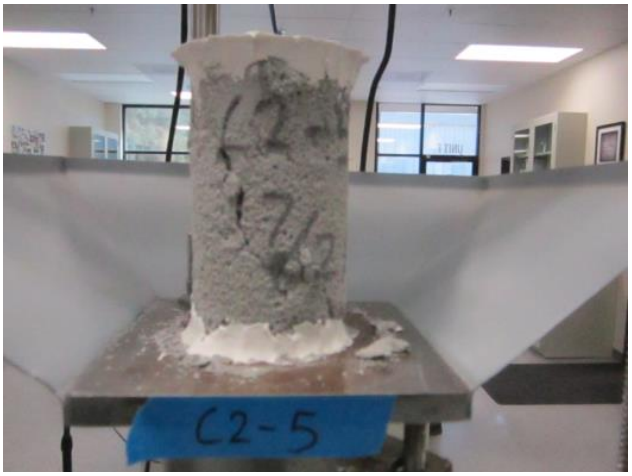
B2-7



C1-3



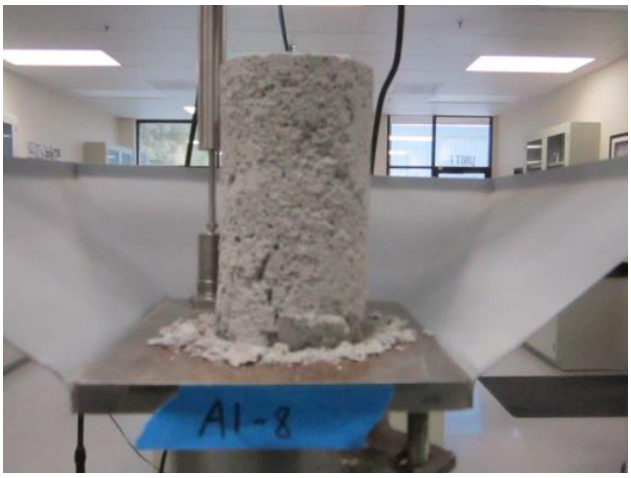
C1-9



C2-5

Group 2 (A2)

A1-2



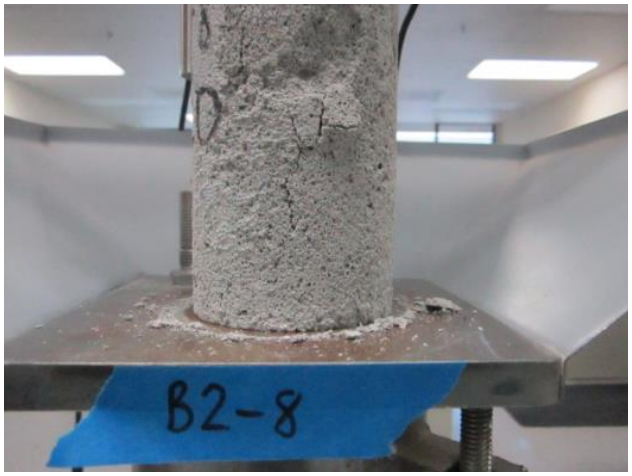
A1-8

A2-4

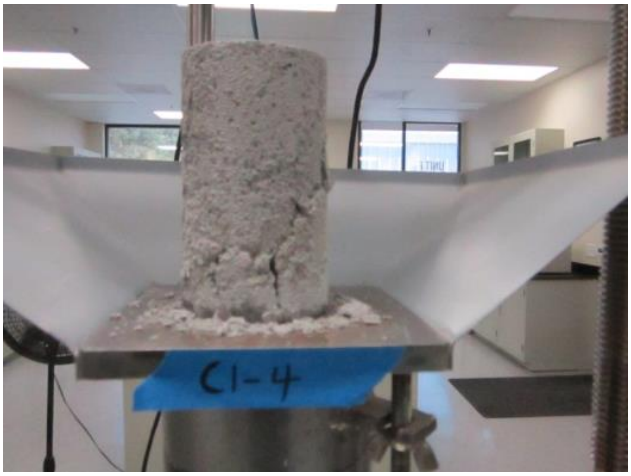
A2-10

B1-6

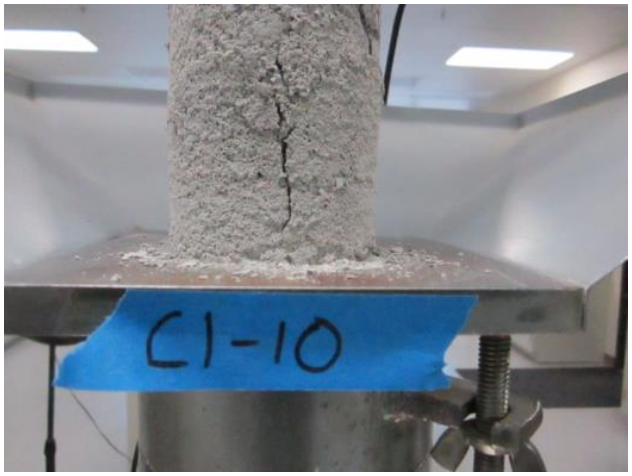
B2-2



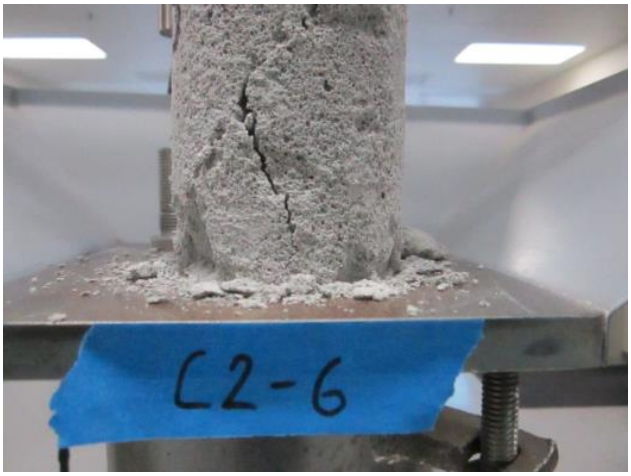
B2-8



C1-4



C1-10



C2-6

Group 3 (B1)

A1-3

A1-9

A2-5

B1-1

B1-7

B2-3

B2-9

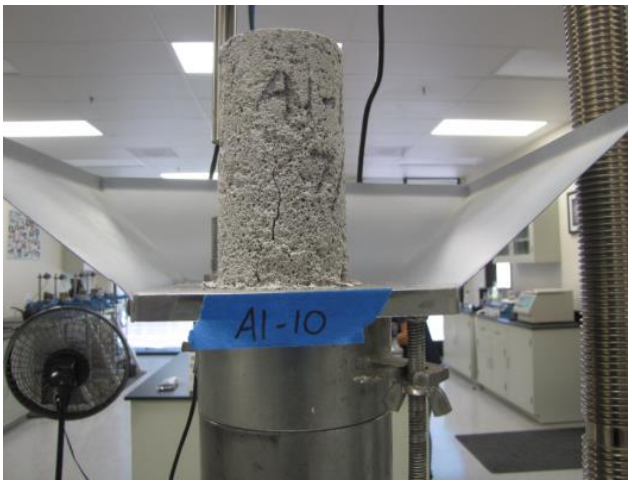
C1-5

C2-1

C2-7

Group 4 (B2)

A1-4



A1-10

A2-6

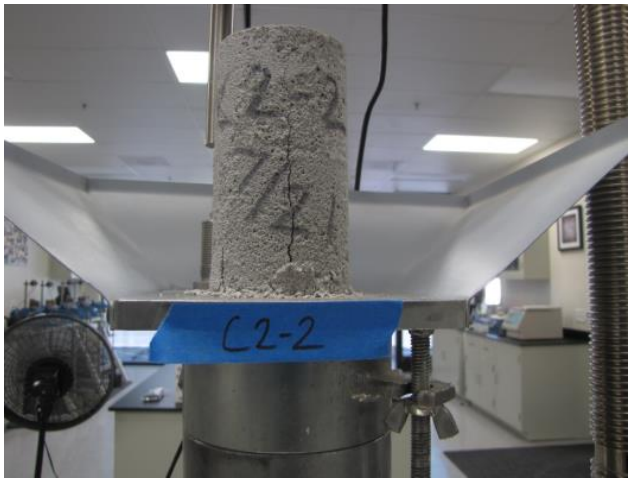
B1-2

B1-8

B2-4

B2-10

C1-6



C2-2

C2-8

Group 5 (C1)

A1-5

A2-1

A2-7

B1-3

B1-9

B2-5

C1-1

C1-7

C2-3

C2-9

Group 6 (C2)

A1-6

A2-2

A2-8

B1-4

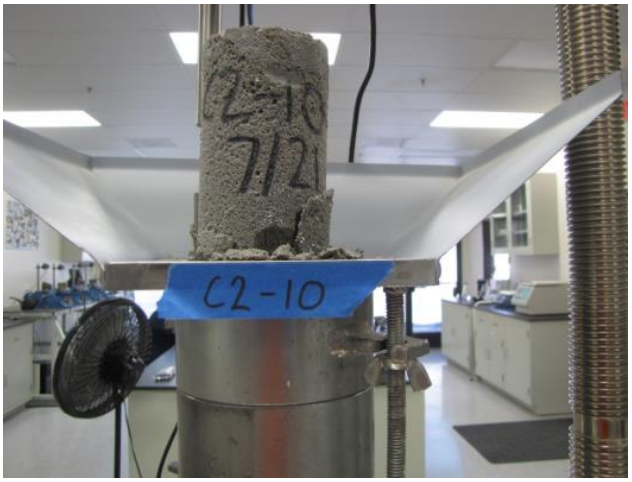
B1-10

B2-6

C1-2

C1-8

C2-4



C2-10