WEAVER CONSTRUCTION MANAGEMENT, INC.
3679 S. Huron St., Suite 404
Englewood, CO 80110
Phone: (303) 789-4111 FAX: (303) 789-4310

SUBMITTAL TRANSMITAL

August 17, 2011
WGC Submittal No: 04200-001

PROJECT: **Harold Thompson Regional WRF**
Birdsall Rd.
Fountain, CO 80817
Job No. 2908

ENGINEER: **GMS, Inc.**
611 No. Weber St., #300
Colorado Springs, CO 80903
719-475-2935 Roger Sams

OWNER: **Lower Fountain Metropolitan Sewage Disposal District**
901 S. Santa Fe Ave.
Fountain, CO 80817
719-382-5303 James Heckman

CONTRACTOR: **Ammex Masonry, Inc.**
P.O. Box 1272
Commerce City, CO 80022
303-853-9008 Amy Wheeler

SUBJECT: Submittal for Unit Masonry - 6" and 8" CMU's

SPEC SECTION: 04200 - Unit Masonry

PREVIOUS SUBMISSION DATES:

DEVIATIONS FROM SPEC: ___ YES _X_ NO

CONTRACTOR'S STAMP: This submittal has been reviewed by Weaver General Construction and approved with respect to the means, methods, techniques, & safety precautions & programs incidental thereto. Weaver General Construction also warrants that this submittal complies with contracted documents and comprises on deviations thereto:

Contractor's Stamp:	Engineer's Stamp:
Date: 8/17/11 Reviewed by: H.C. Myers (X) Reviewed Without Comments ( ) Reviewed With Comments ENGINEER'S COMMENTS:	

6" CMU

NATIONAL CONCRETE MASONRY ASSOCIATION
Sustainable Concrete Products for Structures and Hardscapes

13750 Sunrise Valley Drive
Herndon, Virginia 20171-4662
703.713.1900 ■ 703.713.1910 Fax
ncma@ncma.org ■ www.ncma.org

February 24, 2010

Kevin Miller
Robinson Block Company
3255 Drennan Rd.
Colorado Springs, CO 80910

Please find enclosed a copy of a test report that we performed at your request on the following product that you supplied:

* 6 x 8 x 16 Inch Concrete Masonry Unit
  Mark "coslw62010"

NCMA Job Number: 10-224-2

We are pleased to report that the tested properties from this report comply with the applicable requirements of ASTM C 90-09, Standard Specification for Loadbearing Concrete Masonry Units.

The attached report includes the tested compressive strength of the concrete masonry unit. The compressive strength of masonry constructed using these units can be calculated using the Unit Strength Method as outlined in Section 1.4.B.2.b of Specification for Masonry Structures (TMS 602-08 / ACI 530.1-08 / ASCE 6-08). In accordance with this method, the compressive strength of masonry is a function of unit strength and mortar type. As shown in the attached test report...

Net Area Compressive Strength of 6 x 8 x 16 Inch Concrete Masonry Unit Mark "coslw62010"	4330 psi

Therefore, the net area compressive strength of masonry when these units are used, can be considered to be the following:

When used with:	Net Area Compressive Strength of Masonry
Type M or S mortar	2780 psi
Type N mortar	2620 psi

The values provided above can be compared directly to the specified compressive strength of masonry, f'_m. If these values exceed f'_m, compliance has been documented.

Sincerely,

Nicholas R. Lang
Manager, Research & Development Laboratory

Generated by
Form TR-C140-01
Last Revised 11/30/2009 by NRL

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ASTM C140-09a Test Report
Sampling and Testing Concrete Masonry Units and Related Units

Job No.: 10-224-2
Report Date: 2/24/2010

Client: Robinson Block Company
Address: 3255 Drennan Rd.
Colorado Springs, CO 80910

Testing Agency: National Concrete Masonry Association
Research and Development Laboratory
Address: 13750 Sunrise Valley Drive
Herndon, VA 20171-4662

Standard Specification: ASTM C90-09

Sampling Party: Robinson Block Company

Unit Description:
6 x 8 x 16 inch Concrete Masonry Unit
Mark "coslw62010"

Date Samples Received: 1/27/2010

Project Identification: COS

Summary of Test Results

Physical Property	Specified Values	Average Test Results		Physical Property	Specified Values	Average Test Results	
Net Compressive Strength	1900 min	4330	psi	Min. Faceshell Thickness (t_{fs})	1.00 min	1.26	in.
Gross Compressive Strength	****	2580	psi	Min. Web Thickness (t_w)	1.00 min	1.19	in.
Density	****	103.4	pcf	Equivalent Web Thickness	2.25 min	2.75	in.
Absorption	18 max	13.1	pcf	Equivalent Thickness	****	3.37	in.
Percent Solid	****	59.6	%	Max. Var. from Spec. Dimensions	.125 max	0.055	in.
				Net Cross-Sectional Area	****	52.61	in^2
				Gross Cross-Sectional Area	****	88.26	in^2

Individual Unit Test Results

			Cross-Sectional Area*			Compressive Strength	
Compression	Specimen	Received Wt, W_R	Gross	Net	Max. Load	Gross	Net
Units	No.	lb	in^2	in^2	lb	psi	psi
	#1	24.70	88.26	52.61	229250	2600	4360
	#2	24.69	88.26	52.61	229030	2590	4350
Date Tested:	#3	24.69	88.26	52.61	225890	2560	4290
2/15/2010	Average	24.69	88.26	52.61	228060	2580	4330

* Unit areas determined as the average of the three absorption units and are assumed to be the same as those units tested in compression.

Absorption	Specimen	Avg Width	Avg Height	Avg Length	Avg./Min. t_{fs}**	Min. t_w
Units	No.	in.	in.	in.	in.	in.
	#4	5.68	7.62	15.65	1.26	1.19
	#5	5.66	7.68	15.62	1.26	1.19
Date Tested:	#6	5.66	7.63	15.62	1.25	1.20
1/29/2010	Average	5.65	7.64	15.63	1.26	1.19

**Where the thinnest points of opposite face shells differ in thickness by less than 0.125 inches, their measurements are averaged.

	Specimen	Received Wt, W_R	Immersed Wt, W_I	Saturated Wt, W_S	Oven-Dry Wt, W_D	Absorp	Density	Net Volume	Percent Solid
Date Tested:	No.	lb	lb	lb	lb	pcf	pcf	ft^3	%
1/29/2010	#4	24.72	12.60	27.13	24.09	13.1	103.5	0.2329	59.9
to	#5	24.67	12.60	27.13	24.08	13.1	103.4	0.2329	59.3
2/19/2010	#6	24.57	12.54	27.03	23.97	13.2	103.2	0.2322	59.6
	Average	24.65	12.58	27.10	24.05	13.1	103.4	0.2326	59.6

Comments: These units meet or exceed the compressive strength, absorption and dimensional requirements of ASTM C 90-09.

Nicholas R. Lang
Manager, Research & Development Laboratory

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Form TR-C140901
Revised 02-12-2009

8" CMU

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February 24, 2010

Kevin Miller
Robinson Block Company
3255 Drennan Rd.
Colorado Springs, CO 80910

Please find enclosed a copy of a test report that we performed at your request on the following product that you supplied:

* 8 x 8 x 16 Inch Concrete Masonry Unit
Mark "coslw82010"

NCMA Job Number: 10-224-3A

We are pleased to report that the tested properties from this report comply with the applicable requirements of ASTM C 90-09, Standard Specification for Loadbearing Concrete Masonry Units.

The attached report includes the tested compressive strength of the concrete masonry unit. The compressive strength of masonry constructed using these units can be calculated using the Unit Strength Method as outlined in Section 1.4.B.2.b of Specification for Masonry Structures (TMS 602-08 / ACI 530.1-08 / ASCE 6-08). In accordance with this method, the compressive strength of masonry is a function of unit strength and mortar type. As shown in the attached test report...

Net Area Compressive Strength of
8 x 8 x 16 Inch Concrete Masonry Unit 3600 psi
Mark "coslw82010"

Therefore, the net area compressive strength of masonry when these units are used, can be considered to be the following:

When used with:	Net Area Compressive Strength of Masonry
Type M or S mortar	2420 psi
Type N mortar	2280 psi

The values provided above can be compared directly to the specified compressive strength of masonry, f'_m. If these values exceed f'_m, compliance has been documented.

Sincerely,

Nicholas R. Lang
Manager, Research & Development Laboratory

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Form TR-C140-01
Last Revised 11/30/2009 by NRL

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ASTM C140-09a Test Report
Sampling and Testing Concrete Masonry Units and Related Units

Job No.: 10-224-3A
Report Date: 2/24/2010

Client: Robinson Block Company
Address: 3255 Drennan Rd.
Colorado Springs, CO 80910

Testing Agency: National Concrete Masonry Association
Research and Development Laboratory
Address: 13750 Sunrise Valley Drive
Herndon, VA 20171-4662

Standard Specification: ASTM C90-09

Sampling Party: Robinson Block Company

Unit Description:
8 x 8 x 16 Inch Concrete Masonry Unit
Mark "coslw82010"

Date Samples Received: 1/27/2010

Project Identification: COS

Summary of Test Results

Physical Property	Specified Values	Average Test Results		Physical Property	Specified Values	Average Test Results	
Net Compressive Strength	1900 min	3600	psi	Min. Faceshell Thickness (t_{fs})	1.25 min	1.26	in.
Gross Compressive Strength	****	1830	psi	Min. Web Thickness (t_w)	1.00 min	1.19	in.
Density	****	103.7	pcf	Equivalent Web Thickness	2.25 min	2.75	in.
Absorption	18 max	12.2	pcf	Equivalent Thickness	****	3.87	in.
Percent Solid	****	50.7	%	Max. Var. from Spec. Dimensions	.125 max	0.035	in.
				Net Cross-Sectional Area	****	60.39	in^2
				Gross Cross-Sectional Area	****	119.04	in^2

Individual Unit Test Results

Compression Units	Specimen No.	Received Wt, W_R lb	Cross-Sectional Area * Gross in^2	Cross-Sectional Area * Net in^2	Max. Load lb	Compressive Strength Gross psi	Compressive Strength Net psi
	#1	28.67	119.04	60.39	220850	1850	3650
	#2	28.64	119.04	60.39	214970	1810	3560
Date Tested:	#3	28.29	119.04	60.39	217110	1820	3600
2/16/2010	Average	28.53	119.04	60.39	217580	1830	3600

* Unit areas determined as the average of the three absorption units and are assumed to be the same as those units tested in compression.

Absorption Units	Specimen No.	Avg Width in.	Avg Height in.	Avg Length in.	Avg./Min. t_{fs}** in.	Min. t_w in.
	#4	7.65	7.66	15.62	1.28	1.21
	#5	7.61	7.65	15.60	1.26	1.19
Date Tested:	#6	7.64	7.65	15.59	1.26	1.19
1/29/2010	Average	7.63	7.65	15.60	1.26	1.19

**Where the thinnest points of opposite face shells differ in thickness by less than 0.125 inches, their measurements are averaged.

Date Tested:	Specimen No.	Received Wt, W_R lb	Immersed Wt, W_I lb	Saturated Wt, W_S lb	Oven-Dry Wt, W_D lb	Absorp pcf	Density pcf	Net Volume ft^3	Percent Solid %
1/29/2010	#4	28.78	14.55	31.40	28.12	12.1	104.1	0.2700	51.0
to	#5	28.20	14.16	30.77	27.53	12.2	103.4	0.2662	50.7
2/19/2010	#6	28.17	14.21	30.81	27.56	12.2	103.6	0.2660	50.5
	Average	28.38	14.31	30.99	27.74	12.2	103.7	0.2674	50.7

Comments: These units meet or exceed the compressive strength, absorption and dimensional requirements of ASTM C 90-09.

Nicholas R. Lang
Manager, Research & Development Laboratory

Generated by
Form TR-C140-07
Revised 02-12-2009

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ASTM C 426-07 Test Report
Linear Drying Shrinkage of Concrete Masonry Units

Job No.: 10-224-3B
Report Date: 4/7/2010

Client: Robinson Block Company
Address: 3255 Drennan Rd.
Colorado Springs, CO 80910

Testing Agency: National Concrete Masonry Association
Research and Development Laboratory
Address: 13750 Sunrise Valley Drive
Herndon, VA 20171-4662

Unit Specification: ASTM C90-08

Sampling Party: Robinson Block Company

Unit Size and Description:
8 x 8 x 16 Inch Concrete Masonry Unit
Mark "coslw82010"

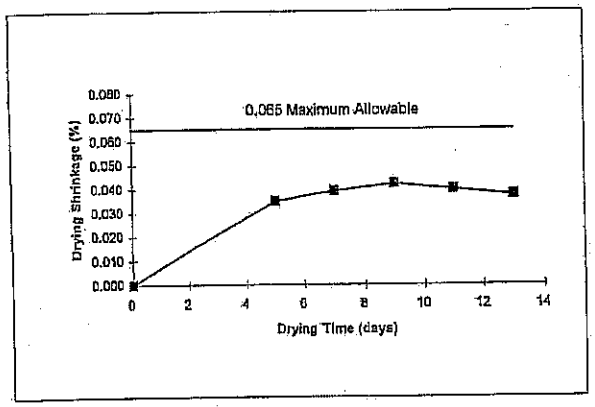
Date Samples Received: 1/27/2010

One face shell from each of three units was saw-cut from submitted specimens for the purpose of testing in accordance with ASTM C 426-07. Each reported value represents an average of calculated shrinkage values from measurements taken on each of two sides of the three specimens.

	Unit #1		Unit #2		Unit #3		Average	
	Weight (lbs)	Linear Drying Shrinkage (%)	Weight (lbs)	Linear Drying Shrinkage (%)	Weight (lbs)	Linear Drying Shrinkage (%)	Weight (lbs)	Linear Drying Shrinkage (%)
Saturated	5.15	—	5.43	—	5.11	—	5.23	—
5 Days	4.68	0.036	4.97	0.032	4.62	0.037	4.75	0.035
7 Days	4.67	0.042	4.96	0.036	4.62	0.039	4.75	0.039
9 Days	4.67	0.044	4.96	0.041	4.62	0.041	4.75	0.042
11 Days	4.67	0.044	4.96	0.038	4.62	0.037	4.75	0.040
13 Days	4.67	0.040	4.96	0.035	4.62	0.037	4.75	0.037

Final Linear Drying Shrinkage, S (%)

Unit #1	Unit #2	Unit #3	Average
0.043	0.038	0.038	0.040



Note: Final linear drying shrinkage, S, is calculated by averaging the final length measurement at equilibrium with the previous two measurements for each specimen.

Comments: These units comply with the drying shrinkage requirements of ASTM C 90-08.

Nicholas R. Lang
Manager, Research & Development Laboratory

Generated by
Form# TR-C426-07
Revised 2/3/2010