



BLOCK PROGRAM LABORATORY REPORT



PROSOCO, Inc.

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ATTACHMENT

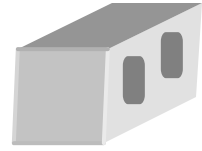
Attachment #1 – Surface Alterations

Technical Services TECH Note RILEM Test Method No. II.4

Product Data literature for all products evaluated



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FOR: Tony Garcia
Cc: Coburn Bond
Jack James
Paul Tessier

SUBJECT: Southwest Concrete Products
San Antonio, TX

DATE: February 6, 2002

PROJECT: 0112-03 BP

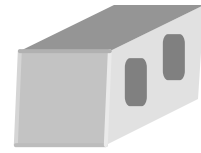
SAMPLES SUBMITTED: Two of each double-sided split/smooth face CMU submitted

<u>SAMPLE</u>	<u>DESCRIPTION</u>	<u>SIZE</u>
"White Limestone" CMU	Cream	3.5" x 8" x 16"
"Limestone Buff" CMU	Brown	3.5" x 8" x 16"
"Terra Cotta" CMU	Tan	3.5" x 8" x 16"
"Amber" CMU	Orange	3.5" x 8" x 16"

Submitted by: Jack James



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PURPOSE OF TESTING:

Three types of integrally colored split-face and one type of integrally colored smooth-face CMUs with large, small and fine aggregate were submitted for testing using PROSOCO's new construction cleaning and water repellent products.

A. Cleaning Concrete Masonry Units – Sure Klean[®] Custom Masonry Cleaner and Sure Klean[®] Burnished Custom Masonry Cleaner were evaluated for removal of laboratory applied mortar.

To simulate new construction soiling, all CMUs are placed on a bench with finished surface facing upward. Hollow cylinders measuring 50 mm in diameter and 75 mm tall are positioned on top of each CMU and filled with a wet mixture of Ash Grove[®] Type S cementitious mortar. The wet, mortar-filled cylinder is allowed to remain in contact with the CMU for 10 minutes before removal.

Soiled CMUs are allowed to dry before test cleaning.

Heavy deposits of mortar are removed with dry scraping after 24 hours. Prepared cleaning solutions are then evaluated for their effectiveness in removing residual Ash Grove[®] Type S mortar staining after 3 days, 7 days, and 14 days of curing.

Refer to “*Note: When cleaning integrally colored CMU” in the following section, “Surface Alteration Testing.”

B. Surface Alteration Testing – Sure Klean[®] Custom Masonry Cleaner and Sure Klean[®] Burnished Custom Masonry Cleaner were tested at various dilutions to determine if a cleaning program implemented to remove excess mortar and related new construction soiling would otherwise alter the appearance of cleaned surfaces. Surface Alteration was evaluated visually based upon perceived discoloration or erosion/etching of the masonry unit.

Aggregate Exposure is the visual examination of the CMU comparing aggregate exposure of the untreated control surface to surfaces cleaned with selected product(s) at given dilutions.

Surface Pigment Alteration/Removal* is the visual examination of the CMU comparing the surface pigmentation of the untreated control to surfaces cleaned with selected product(s) at given dilutions.

Matrix Erosion is the visual examination comparing the untreated control surface to surfaces cleaned with selected products at given dilutions looking for any potential erosion/digestion of the cementitious matrix of the CMU.

Staining is the visual examination for changes that are the result of a chemical reaction that leaves a staining precipitate.

The following is the scale used for reporting results of all categories:

0 – no change	3 – heavy
1 – slight	4 – excessive
2 – moderate	

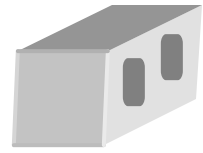
*** NOTE: When cleaning integrally colored CMU.**

Integrally colored concrete masonry units (CMUs) frequently have high amounts of pigments concentrated on the surface of the cured concrete unit. Variation of surface pigment concentrations from one CMU to the next creates a blotchy appearance in the completed wall. Allowed to remain on the surface of the CMU, the weakly bound pigment will weather and streak, further detracting from the appearance of the completed CMU wall.

In addition to removing excess mortar and construction related soiling, the goal of any cleaning operation undertaken on integrally colored CMU should include removal of unnaturally high concentrations of surface pigment. By revealing the natural through-body color on the integrally colored unit, the overall color uniformity and weathering resistance of the completed CMU wall is improved.



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C. Protective Water Repellents – Sure Klean[®] Custom Masonry Sealer and Sure Klean[®] Weather Seal Siloxane WB Concentrate were evaluated for their ability to provide water repellency to the submitted samples. All samples were evaluated for water repellency by using RILEM method II.4.



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CLEANING PRODUCTS EVALUATED

SAMPLE	PRODUCT	DILUTION
All colors of split-face CMUs	Sure Klean® Custom Masonry Cleaner	1:2, 1:4, 1:6
All colors of smooth-face CMUs	Sure Klean® Burnished Custom Masonry Cleaner	1:2, 1:3

SURFACE ALTERATION PRODUCTS EVALUATED

SAMPLE	PRODUCT	DILUTION
All colors of split-face CMUs	Sure Klean® Custom Masonry Cleaner	1:2, 1:4, 1:6
All colors of smooth-face CMUs	Sure Klean® Burnished Custom Masonry Cleaner	1:2, 1:3

WATER REPELLENT PRODUCTS EVALUATED

SAMPLE	PRODUCT	DILUTION
All colors and types of CMUs	Sure Klean® Weather Seal Siloxane WB Concentrate	1:9
	Sure Klean® Custom Masonry Sealer	Concentrate

NOTE: Dilution ratios refer to mixtures of concentrated product : fresh water.



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SECTION A – CLEANING INTEGRALLY COLORED CMUs

DESCRIPTION OF PRODUCTS EVALUATED

These cleaning trials were conducted to determine the optimal cleaning/cure time combination to most efficiently remove mortar from the submitted split-face and ground-face CMU samples.

Sure Klean® Custom Masonry Cleaner – A general purpose, concentrated acidic cleaner for most custom masonry and colored concrete. Removes concrete splashes, excess mortar, mud, heavy efflorescence and surface soiling, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 2-6 parts water. Apply by brush or low-pressure spray.

Sure Klean® Burnished Custom Masonry Cleaner – A general purpose, non-etching acidic cleaner removes rust, mud, oil, atmospheric dirt, mortar smears and other stains without altering the surface texture. Liquid concentrate for dilution with 2-3 parts water. Apply by brush or low-pressure spray.

TEST METHOD – Cleaning

Dilution ratios refer to mixtures of parts concentrated cleaner : parts fresh water. Chemical cleaners were evaluated using the following procedure:

1. Prewet the surface with water.
2. Apply each cleaner at the appropriate dilution.
3. Allow appropriate exposure time:

Custom Masonry Cleaner.....	3 minutes
Burnished Custom Masonry Cleaner.....	5 minutes
4. Reapply the products and moderately agitate with a brush.
5. Pressure rinse thoroughly.*
6. Allow the surface to dry for at least 18 hours and visually examine.

* Pressure rinsing was conducted at approximately 1300 psi with a warm water flow rate of 1.9 gallons per minute.



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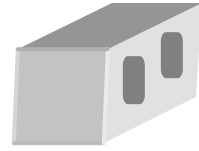
Test Results - Cleaning

SAMPLE	CLEANER	DILUTION	CURE	% EFFECTIVENESS
All type of smooth-face CMUs	Sure Klean [®] Burnished Custom Masonry Cleaner	1:2	3 day	100%
		1:3		100%
		1:2	7 day	100%
		1:3		100%
		1:2	14 day	100%
		1:3		100%

SAMPLE	CLEANER	DILUTION	CURE	% EFFECTIVENESS
All types of split-face CMUs	Sure Klean [®] Custom Masonry Cleaner	1:2	3 day	100%
		1:4		100%
		1:6		100%
		1:2	7 day	100%
		1:4		100%
		1:6		100%
		1:2	14 day	100%
		1:4		100%
		1:6		100%



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CONCLUSIONS – Cleaning

Based on the test data, all of the submitted block samples were efficiently cleaned with each dilution of the selected PROSOCO Inc. cleaning products. Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

All dilutions of Sure Klean[®] Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight to moderate concentrations of pigmented matrix from the split-face CMUs, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

All dilutions of Sure Klean[®] Burnished Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight concentrations of pigmented matrix from the smooth-face CMUs, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

RECOMMENDED – CLEANING

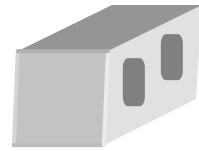
Based on these evaluations, all dilutions tested of Sure Klean[®] Custom Masonry Cleaner can be recommended on all split-face CMUs and Sure Klean[®] Burnished Custom Masonry Cleaner can be recommended on all smooth-face CMUs for job-site testing on the CMUs submitted by Southwest Concrete Products, San Antonio, TX. They all are effective in removing excess mortar, and they all assist in improving the color and uniformity of these concrete blocks. The most appropriate cleaner and dilution should be determined on the specific job-site, and will be dependent primarily on the nature and severity of soiling present at that location.

NOTE: To remove excess mortar while minimizing aggregate exposure and color enhancement, clean within 7 days of completion using Sure Klean[®] Custom Masonry Cleaner diluted with 6 parts fresh water on split-face CMUs and Sure Klean[®] Burnished Custom Masonry Cleaner diluted with 3 parts fresh water on smooth-face CMUs.

Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. On-site testing should be conducted to determine the most appropriate cleaning product and procedures for a particular project. See product literature for additional application and product information.



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SECTION B – Surface Alterations

DESCRIPTION OF PRODUCTS EVALUATED – Surface Alterations

Sure Klean® Custom Masonry Cleaner – A general purpose, concentrated acidic cleaner for most custom masonry and colored concrete. Removes concrete splashes, excess mortar, mud, heavy efflorescence and surface soiling, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 2-6 parts water. Apply by brush or low-pressure spray.

Sure Klean® Burnished Custom Masonry Cleaner – A general purpose, non-etching acidic cleaner removes rust, mud, oil, atmospheric dirt, mortar smears and other stains without altering the surface texture. Liquid concentrate for dilution with 2-3 parts water. Apply by brush or low-pressure spray.

TEST METHOD – Surface Alterations

Dilution ratios refer to mixtures of parts concentrated cleaner : parts fresh water. Chemical cleaners were evaluated using the following procedure:

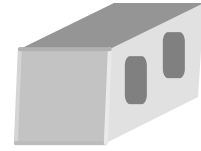
1. Prewet the surface with water.
2. Apply each cleaner at the appropriate dilution.
3. Allow appropriate exposure time:

Custom Masonry Cleaner	3 minutes
Burnished Custom Masonry Cleaner	5 minutes
4. Reapply the products and moderately agitate with a brush.
5. Pressure rinse thoroughly.*
6. Allow the surface to dry for at least 18 hours and visually examine.

* Pressure rinsing was conducted at approximately 1300 psi with a warm water flow rate of 1.9 gallons per minute.



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TEST RESULTS – Surface Alterations

Substrate: Smooth-face CMU		Pigment Color: "White Limestone"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Burnished Custom Masonry Clnr	1:2	1	0	1	0
Burnished Custom Masonry Clnr	1:3	1	0	1	0
Substrate: Smooth-face CMU		Pigment Color: "Limestone Buff"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Burnished Custom Masonry Clnr	1:2	1	0	1	0
Burnished Custom Masonry Clnr	1:3	1	0	1	0
Substrate: Smooth-face CMU		Pigment Color: "Terra Cotta"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Burnished Custom Masonry Clnr	1:2	1	0	1	0
Burnished Custom Masonry Clnr	1:3	1	0	1	0
Substrate: Smooth-face CMU		Pigment Color: "Amber"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Burnished Custom Masonry Clnr	1:2	1	0	1	0
Burnished Custom Masonry Clnr	1:3	1	0	1	0

Scale used for reporting results of all categories

0 – no change

3 – heavy

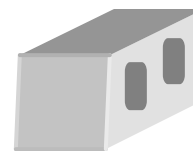
1 – slight

4 – excessive

2 – moderate



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TEST RESULTS – Surface Alterations

Substrate: Split-face CMU		Pigment Color: "White Limestone"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	1	1	1	0
Custom Masonry Cleaner	1:4	1	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0
Substrate: Split-face CMU		Pigment Color: "Limestone Buff"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	2	2	0
Custom Masonry Cleaner	1:4	1	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0
Substrate: Split-face CMU		Pigment Color: "Terra Cotta"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	1	2	0
Custom Masonry Cleaner	1:4	1	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0
Substrate: Split-face CMU		Pigment Color: "Amber"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	2	2	0
Custom Masonry Cleaner	1:4	1	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0

Scale used for reporting results of all categories

0 – no change

1 – slight

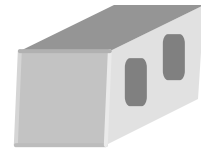
2 – moderate

3 – heavy

4 – excessive



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CONCLUSIONS – Surface Alterations

Based on test data, all dilutions of Sure Klean[®] Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight to moderate concentrations of pigmented matrix from the split-face CMUs, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit. Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

All dilutions of Sure Klean[®] Burnished Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight concentrations of pigmented matrix from the smooth-face CMUs, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit. Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

NOTE: Refer to Attachment #1 for Surface Alteration photographs.

RECOMMENDATIONS – Surface Alterations

Based upon laboratory evaluations, Sure Klean[®] Custom Masonry Cleaner in all dilutions are recommended for job-site testing on the split-face CMUs and Sure Klean[®] Burnished Custom Masonry Cleaner in all dilutions are recommended for job-site testing on the smooth-face CMUs submitted by Southwest Concrete Products, San Antonio, TX.

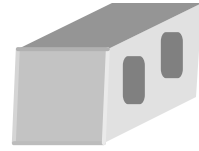
They are effective in removing excess mortar and assist in improving the color and uniformity of these CMUs. The most appropriate cleaner and dilution should be determined on the specific job site, and will be dependent primarily on the nature and severity of soiling present at that location.

NOTE: To remove excess mortar while minimizing aggregate exposure and color enhancement, clean within 7 days of completion using Sure Klean[®] Custom Masonry Cleaner diluted with 6 parts fresh water on split-face CMUs and Sure Klean[®] Burnished Custom Masonry Cleaner diluted with 3 parts fresh water on smooth-face CMUs.

Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. On-site testing should be conducted to determine the most appropriate cleaning product and procedures for a particular project. See product literature for additional application and product information.



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SECTION C – PROTECTIVE WATER REPELLENTS

The testing described below evaluates the suitability of water repellent treatments.

The surface treatments evaluated were selected for their suitability for application based on the following selection criteria:

1. Weatherproofing properties
2. Color change
3. Ease of application

DESCRIPTIONS OF PRODUCTS EVALUATED – Protective Water Repellents

Sure Klean® Custom Masonry Sealer – A clear, solvent-based silicone elastomer formulated to weatherproof custom masonry units, cast stone, and concrete block without altering the natural appearance. Custom Masonry Sealer penetrates and fills pores to prevent water penetration through exterior walls exposed to normal weathering as well as long-lasting protection against many types of graffiti.

Sure Klean® Weather Seal Siloxane WB Concentrate – A self-emulsifying water-repellent concentrate designed for dilution with fresh water at the job site. This solvent-free blend of silanes and oligomeric alkoxy siloxanes mixes easily with water to produce a penetrating water-repellent ideal for application to dense or porous masonry surfaces.

SAMPLE PREPARATION – Protective Water Repellents

The submitted blocks were scored, allowed to dry, and to reabsorb atmospheric humidity for 24 hours prior to treatment. The treatment method consisted of a wet-on-wet brush application. All treatments were allowed to cure at least 72 hours prior to testing.

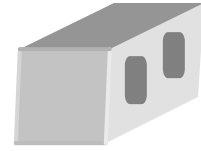
TEST METHODS – Protective Water Repellents

Water Absorption Tube Test: RILEM II.4, 60 mph, 20 Minutes

The water absorption tube test simulating wind driven rain conditions was performed. This test simulates 60 mile per hour wind driven rain conditions for a period of 20 minutes.



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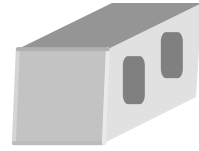
TEST RESULTS – Protective Water Repellents

Water Absorption Tube Test: RILEM II.4, 60 mph, 20 Minutes

	RESULTS
“White Limestone” Smooth-face CMU	
Untreated Control	<40 mph
Custom Masonry Sealer	60 mph
Siloxane WB Concentrate (1:9)	55 mph
“White Limestone” Split-face CMU	
Untreated Control	<40 mph
Custom Masonry Sealer	59 mph
Siloxane WB Concentrate (1:9)	55 mph
“Limestone Buff” Smooth-face CMU	
Untreated Control	<40 mph
Custom Masonry Sealer	59 mph
Siloxane WB Concentrate (1:9)	58 mph
“Limestone Buff” Split-face CMU	
Untreated Control	<40 mph
Custom Masonry Sealer	59 mph
Siloxane WB Concentrate (1:9)	58 mph
“Terra Cotta” Smooth-face CMU	
Untreated Control	<40 mph
Custom Masonry Sealer	57 mph
Siloxane WB Concentrate (1:9)	58 mph
“Terra Cotta” Split-face CMU	
Untreated Control	<40 mph
Custom Masonry Sealer	60 mph
Siloxane WB Concentrate (1:9)	57 mph



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“Amber” Smooth-face CMU	
Untreated Control	<40 mph
Custom Masonry Sealer	57 mph
Siloxane WB Concentrate (1:9)	56 mph
“Amber” Split-face CMU	
Untreated Control	<40 mph
Custom Masonry Sealer	57 mph
Siloxane WB Concentrate (1:9)	57 mph

CONCLUSIONS – Protective Water Repellents

Based upon laboratory evaluations, Sure Klean[®] Custom Masonry Sealer and Sure Klean[®] Weather Seal Siloxane WB Concentrate diluted with nine parts fresh water provided above average water repellency when tested on all smooth-face and split-face CMUs submitted by Southwest Concrete Products, San Antonio, TX.



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RECOMMENDATIONS – Protective Water Repellents

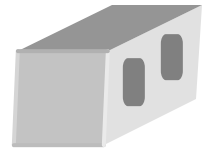
Based on evaluations the following recommendations are made for job-site testing on the CMUs submitted by Southwest Concrete Products, San Antonio, TX.

Substrate	Sure Klean [®] Custom Masonry Sealer	Sure Klean [®] Weather Seal Siloxane WB Concentrate (diluted 1:9)
"White Limestone" Smooth-face and Split-face CMU	Yes	Yes
"Limestone Buff" Smooth-face and Split-face CMU	Yes	Yes
"Terra Cotta" Smooth-face and Split-face CMU	Yes	Yes
"Amber" Smooth-face and Split-face CMU	Yes	Yes

Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. On-site testing should be conducted to determine the most appropriate water-repellent product and procedures for a particular project. See product literature for additional application and product information.

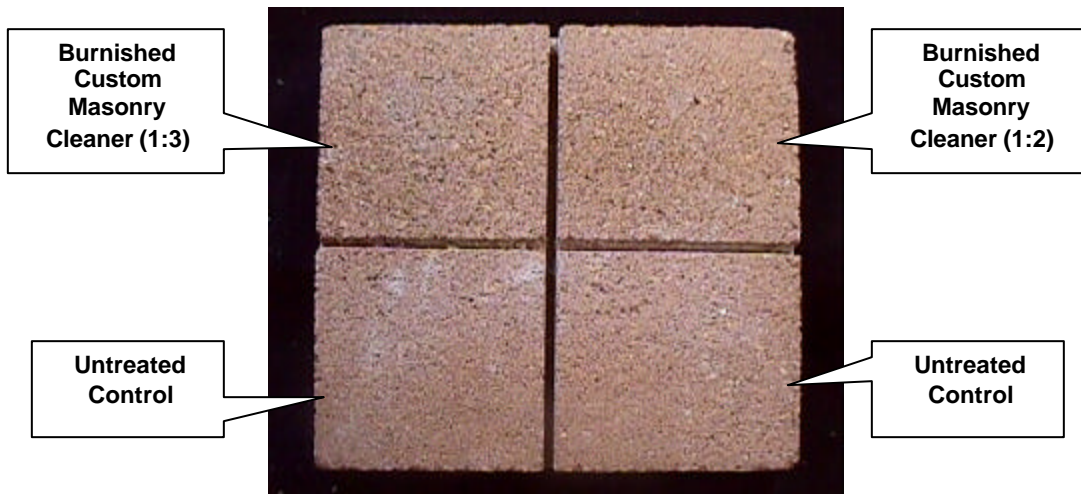
Carmen M. Niven
Project Testing Coordinator

CMN/csm

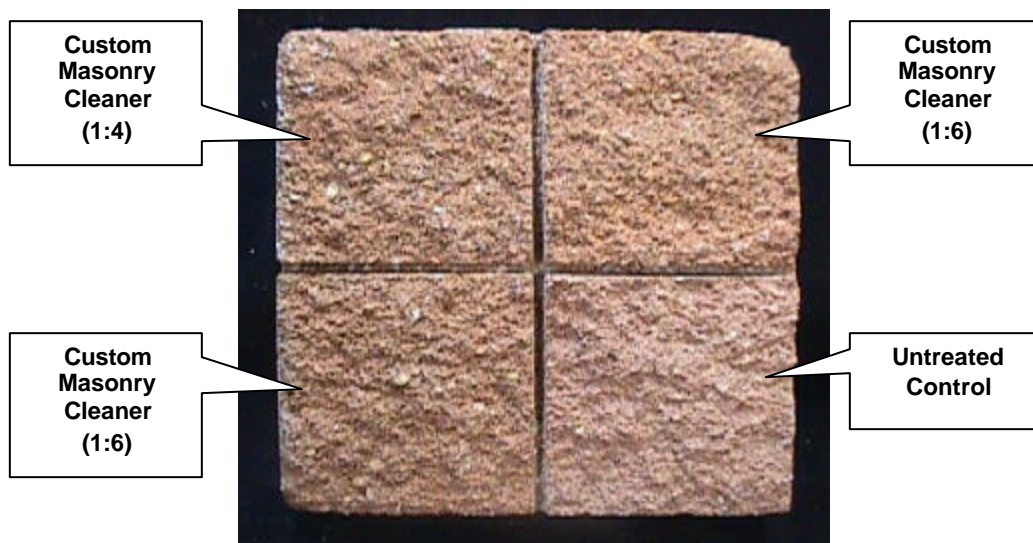


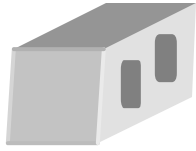
Attachment # 1 – Surface Alterations

“Terra Cotta” Smooth-face CMU



“Terra Cotta” Split-face CMU





Laboratory Report

Block Program Evaluation

**Southwest Concrete Products
San Antonio, TX**

Project No. 0112-03 BP

Prepared For:

Tony Garcia

**Southwest Concrete Products
2233 Ackerman Rd.
San Antonio, TX 78219**

Prepared By:



***PROSOCO, Inc.
February 2002***