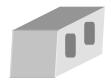


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### **ATTACHMENTS**

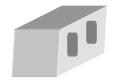
Attachment #1 - PHOTO A & B

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

Product Data literature for all products evaluated

Material Safety Data Sheets for all products evaluated





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FOR: Thomas C. Finn cc:

Jim Lucas

Perry Surber John Bourne

SUBJECT: Chicago Block & Brick Company

Chicago, IL

DATE: July 19, 2001

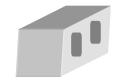
**PROJECT:** 0106-07 BP

SAMPLES SUBMITTED: Three different colors of concrete brick, two of each

<u>Sample</u>	<u>Color</u>	<u>Size</u>
Concrete brick	"Chicago Red"	4" x 16" x 8"
Concrete brick	"Saddle Brown"	4" x 16" x 8"
Concrete brick	"Persian Sand"	4" x 16" x 8"

Submitted by: Jim Lucas





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#### PURPOSE OF TESTING

Three colors of integrally colored concrete bricks with large, small and fine aggregate were submitted for testing using PROSOCO, Inc.'s new construction cleaning and water repellent products.

**A.** Cleaning Concrete Bricks – Sure Klean® Custom Masonry Cleaner was evaluated at various dilutions for removal of laboratory applied mortar.

To simulate new construction soiling, all concrete bricks 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 concrete brick and filled with a wet mixture of Ash Grove<sup>®</sup> Type S cementitious mortar. The wet, mortar-filled cylinder is allowed to remain in contact with the concrete brick for 10 minutes before removal.

Soiled concrete bricks 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<sup>®</sup> Type S mortar staining after 3 days, 7 days, and 14 days of curing.

Refer to "\*Note: When cleaning integrally colored concrete brick" in the following section, "Surface Alteration Testing."

**B.** Surface Alteration Testing – Sure Klean<sup>®</sup> Custom Masonry Cleaner was 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 concrete brick.

<u>Aggregate Exposure</u> is the visual examination of the concrete brick comparing aggregate exposure of the untreated control surface to surfaces cleaned with selected product(s) at given dilutions.

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

<u>Matrix Erosion</u> 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 concrete brick.

<u>Staining</u> 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

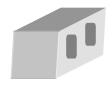
2 – moderate

#### \* NOTE: When cleaning integrally colored concrete brick.

Integrally colored concrete bricks frequently have high amounts of pigments concentrated on the surface. Variation of surface pigment concentrations from one concrete brick to the next creates a blotchy appearance in the completed wall. Allowed to remain on the surface of the concrete brick, the weakly bound pigment will weather and streak, further detracting from the appearance of the completed concrete brick wall.

In addition to removing excess mortar and construction related soiling, the goal of any cleaning operation undertaken on integrally colored concrete brick 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 concrete brick wall is improved.

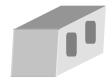




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- **C. Protective Water Repellents** Sure Klean<sup>®</sup> Weather Seal Blok-Guard<sup>®</sup> & Graffiti Control and Sure Klean<sup>®</sup> Weather Seal Siloxane WB Concentrate were evaluated for their ability to provide water repellency to the concrete bricks.
- **D. Graffiti Control** Sure Klean<sup>®</sup> Weather Seal Blok-Guard<sup>®</sup> & Graffiti Control was evaluated for its ability to control graffiti on the concrete bricks. Defacer Eraser<sup>®</sup> Graffiti Wipe and Sure Klean<sup>®</sup> Fast Acting Stripper were evaluated for their ability to remove graffiti from the concrete bricks.





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### **CLEANING PRODUCTS EVALUATED**

SAMPLE	Sure Klean <sup>®</sup> Custom Masonry Cleaner
All Colors of Concrete Brick	1:2*
	1:4*
	1:6*

## SURFACE ALTERATION PRODUCTS EVALUATED

SAMPLE	Sure Klean <sup>®</sup> Custom Masonry Cleaner
All Colors of Concrete Brick	1:2*
	1:4*
	1:6*

### WATER REPELLENT PRODUCTS EVALUATED

SAMPLE	Product	Dilution
All Colors of Concrete	Sure Klean <sup>®</sup> Weather Seal Blok- Guard <sup>®</sup> & Graffiti Control	Concentrate
Brick	Sure Klean <sup>®</sup> Weather Seal Siloxane WB Concentrate	1:9*

### **GRAFFITI CONTROL PRODUCTS EVALUATED**

SAMPLE	Product	Dilution
	Sure Klean <sup>®</sup> Weather Seal Blok-Guard <sup>®</sup> & Graffiti Control	Concentrate
All Colors of Concrete Brick	Defacer Eraser <sup>®</sup> Graffiti Wipe	Concentrate
	Sure Klean <sup>®</sup> Fast Acting Stripper	Concentrate

<sup>\*</sup> Dilution ratios refer to mixtures of parts concentrated cleaner : parts fresh water.





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#### SECTION A - CLEANING INTEGRALLY COLORED CONCRETE BRICKS

### **DESCRIPTION OF PRODUCTS EVALUATED – Cleaners**

These cleaning trials were conducted to determine the optimal cleaning/cure time combination.

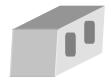
**Sure Klean**<sup>®</sup> **Custom Masonry Cleaner** – A general purpose, concentrated acidic cleaner for most custom masonry and colored concrete. Removes concrete splashes, excess mortar, mud, heavy efflorescence and surface soiling, leaving the masonry clean and uniform with no acid burning or streaking.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

#### **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 the cleaner at the appropriate dilutions.
- 4. Reapply the product 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
		1:2		100%
		1:4	3 day	100%
All Colors of Concrete Brick	Custom Masonry Cleaner	1:6		100%
		1:2		100%
		1:4	7 day	100%
		1:6		100%
		1:2		100%
		1:4	14 day	100%
		1:6		100%

### **CONCLUSIONS – Cleaning**

Based on the test data, all of the submitted block samples were efficiently cleaned with each dilution of Sure Klean<sup>®</sup> Custom Masonry Cleaner. Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

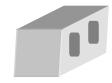
All dilutions of Sure Klean<sup>®</sup> Custom Masonry Cleaner tested affected the substrate in a similar manner, removing heavy concentrations of pigmented matrix from the concrete bricks, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete brick.

### **RECOMMENDED PRODUCTS AND DILUTIONS – Cleaning**

Based on these evaluations, all of the dilutions of Sure Klean<sup>®</sup> Custom Masonry Cleaner tested can be recommended for job-site testing on all colors of the concrete brick submitted by Chicago Block & Brick Co., Chicago, IL. 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<sup>®</sup> Custom Masonry Cleaner diluted with 6 parts fresh water.





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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.

#### **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 the cleaner at the appropriate dilutions.
- 4. Reapply the product 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: Concrete brick Pigment Color: "Chicago Red"						
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining	
Custom Masonry Cleaner	1:2	2	2	2	2	
Custom Masonry Cleaner	1:4	1	1	1	1	
Custom Masonry Cleaner	1:6	1	1	1	1	
Substrate: Concrete brick	Pigment Co	lor: "Saddle B	Brown"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining	
Custom Masonry Cleaner	1:2	2	2	2	2	
Custom Masonry Cleaner	1:4	1	1	1	1	
Custom Masonry Cleaner	1:6	1	1	1	1	
Substrate: Concrete brick	Pigment Co	olor: "Persian S	Sand"			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining	
Custom Masonry Cleaner	1:2	2	2	2	2	
Custom Masonry Cleaner	1:4	1	1	1	1	
Custom Masonry Cleaner	1:6	1	1	1	1	

Scale used for reporting results of all categories

0 – no change 3 – heavy 4 – excessive

2 - moderate

NOTE: See Attachment #1 "PHOTO A" for visual surface alterations.

#### **CONCLUSIONS – Surface Alterations**

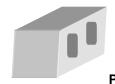
Based on the test data, all dilutions of Sure Klean<sup>®</sup> Custom Masonry Cleaner tested affected the substrate in a similar manner, removing heavy concentrations of pigmented matrix from the concrete bricks, exposing small and large aggregate, and enhancing the natural appearance.

#### **RECOMMENDED PRODUCTS AND DILUTIONS – Surface Alterations**

Based on these evaluations, all of the dilutions of Sure Klean<sup>®</sup> Custom Masonry Cleaner tested can be recommended for job-site testing on all colors of the concrete bricks submitted Chicago Block & Brick Co., Chicago, IL. They all are effective in removing excess mortar and assist in improving the color and uniformity of these concrete bricks. 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 Custom Masonry Cleaner diluted with 6 parts fresh water.





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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® Weather Seal Blok-Guard® & Graffiti Control** – A clear, solvent-based silicone elastomer formulated to weatherproof custom masonry units, cast stone, and concrete block without altering the natural appearance. Blok-Guard® & Graffiti Control 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 alkoxysiloxanes 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					
"Chicago Red"						
Untreated Control	56 mph					
Blok-Guard <sup>®</sup> & Graffiti Control	60 mph					
Siloxane WB Concentrate (1:9)	60 mph					
"Saddle Brown"						
Untreated Control	<40 mph					
Blok-Guard <sup>®</sup> & Graffiti Control	58 mph					
Siloxane WB Concentrate (1:9)	60 mph					
"Persian Sand"						
Untreated Control	<40 mph					
Blok-Guard <sup>®</sup> & Graffiti Control	60 mph					
Siloxane WB Concentrate (1:9)	<40 mph					

### **CONCLUSIONS - Protective Water Repellents**

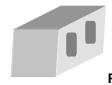
Based upon laboratory evaluations, Sure Klean<sup>®</sup> Weather Seal Blok-Guard<sup>®</sup> & Graffiti Control provided above average water repellency on all colors of the concrete brick. Sure Klean<sup>®</sup> Weather Seal Siloxane WB Concentrate diluted with nine parts fresh water was not able to achieve water repellency on color "Persian Sand" but did perform well on the other two colors. Sure Klean<sup>®</sup> Weather Seal Blok-Guard<sup>®</sup> & Graffiti Control did not alter the natural appearance of any of the submitted concrete bricks.

#### **RECOMMENDATIONS – Protective Water Repellents**

Based on evaluations, Sure Klean<sup>®</sup> Weather Seal Blok-Guard & Graffiti Control can be recommended for job-site testing on all colors of the concrete bricks submitted by Chicago Block & Brick Co., Chicago, IL.

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.





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### SECTION D - GRAFFITI CONTROL

#### **DESCRIPTION OF PRODUCTS EVALUATED – Graffiti Control**

These trials were conducted to determine the optimal graffiti control treatment.

### **Graffiti Control Treatments:**

Sure Klean® Weather Seal Blok-Guard® & Graffiti Control – A clear, solvent-based silicone elastomer formulated to weatherproof custom masonry units, cast stone, and concrete block without altering the natural appearance. Blok-Guard<sup>®</sup> & Graffiti Control 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.

### **Products Evaluated for Graffiti Removal:**

Defacer Eraser® Graffiti Wipe – An easy-to-use graffiti remover that does not contain methanol, methylene chloride or other "halogenated" solvents prohibited on many projects. Graffiti Wipe removes a variety of graffiti stains from most smooth masonry, wood and metal surfaces.

Sure Klean® Fast Acting Stripper – A thixotropic stripping compound designed for removing coatings and epoxies from masonry, wood and metal surfaces. It also removes oil, grease and waxes from concrete decks, tile and terrazzo floors. Fast Acting Stripper dissolves most spray paints, marking pens, lacquers and other graffiti.

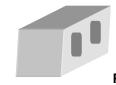
### **Graffiti Agents:**

Krylon<sup>®</sup> Interior/Exterior Paint (2101 Cherry Red) Krylon<sup>®</sup> Interior/Exterior Paint (1910 True Blue)

Avery<sup>®</sup> Marks-A-Lot<sup>®</sup> Permanent Marker (Red) Avery<sup>®</sup> Marks-A-Lot<sup>®</sup> Permanent Marker (Green)

Avery® Marks-A-Lot® Permanent Marker (Black)





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#### SAMPLE PREPARATION - Graffiti Control

This evaluation compares the effectiveness in preventing staining of enamel spray paint and permanent markers.

Sections of the concrete bricks were treated with one application of Sure Klean<sup>®</sup> Weather Seal Blok-Guard<sup>®</sup> & Graffiti Control in accordance with PROSOCO, Inc.'s Product Guide application recommendations, then allowed to cure for one week. At the end of the one-week cure period, a visual adverse effects evaluation was made, and then the graffiti agents were applied to the substrates.

Spray paint and markers were applied as graffiti agents to all treated surfaces 7 days following application of Sure Klean<sup>®</sup> Weather Seal Blok-Guard<sup>®</sup> and Graffiti Control. Removal of the graffiti agents was attempted 24 hours after application of the graffiti agents, using Defacer Eraser<sup>®</sup> Graffiti Wipe and Sure Klean<sup>®</sup> Fast Acting Stripper.

#### **TEST METHOD – Graffiti Control**

Chemical cleaners were evaluated using the following procedure:

- 1. Apply the product to a dry surface, soiled with graffiti.
- Apply the product to a dry surface, solled with grainti.
   Allow appropriate dwell time:

- 3. Pressure rinse thoroughly until water runs clear.\*
- 4. Allow the surface to dry thoroughly and visually examine to determine effectiveness.
- \* 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 - Graffiti Control**

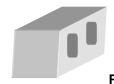
	"Chicago Red"							
Untreated Control	Red Paint	Blue Paint	Red Marker	Green Marker	Black Marker	Avg. Removal		
Graffiti Wipe	99%	98%	98%	98%	60%	91%		
Fast Acting Stripper	98%	95%	99%	97%	97%	97%		
Blok-Guard <sup>®</sup> & Graffiti Control	Red Paint	Blue Paint	Red Marker	Green Marker	Black Marker	Avg. Removal		
Graffiti Wipe	99%	98%	98%	98%	97%	98%		
Fast Acting Stripper	98%	95%	99%	98%	99%	98%		

"Saddle Brown"							
Untreated Control	Red Paint	Blue Paint	Red Marker	Green Marker	Black Marker	Avg. Removal	
Graffiti Wipe	99%	99%	60%	70%	60%	78%	
Fast Acting Stripper	98%	95%	98%	97%	98%	97%	
Blok-Guard <sup>®</sup> & Graffiti Control	Red Paint	Blue Paint	Red Marker	Green Marker	Black Marker	Avg. Removal	
Graffiti Wipe	99%	99%	95%	95%	95%	97%	
Fast Acting Stripper	98%	95%	98%	97%	99%	97%	

"Persian Sand"							
Untreated Control	Red Paint	Blue Paint	Red Marker	Green Marker	Black Marker	Avg. Removal	
Graffiti Wipe	99%	99%	60%	60%	60%	76%	
Fast Acting Stripper	98%	95%	97%	95%	97%	96%	
Blok-Guard <sup>®</sup> & Graffiti Control	Red Paint	Blue Paint	Red Marker	Green Marker	Black Marker	Avg. Removal	
Graffiti Wipe	99%	99%	95%	95%	95%	97%	
Fast Acting Stripper	98%	98%	98%	97%	98%	98%	

NOTE: See Attachment #1 "PHOTO B" for visual graffiti removal.





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#### **CONCLUSIONS - Graffiti Control**

Based upon laboratory evaluations, Defacer Eraser<sup>®</sup> Graffiti Wipe and Sure Klean<sup>®</sup> Fast Acting Stripper both effectively removed graffiti from all submitted samples. Removal was improved when the surfaces were treated with Sure Klean<sup>®</sup> Weather Seal Blok-Guard<sup>®</sup> & Graffiti Control.

Sure Klean<sup>®</sup> Weather Seal Blok-Guard<sup>®</sup> & Graffiti Control did not alter the natural appearance of the substrate.

### **RECOMMENDATIONS – Graffiti Control**

Based on evaluations, Sure Klean<sup>®</sup> Weather Seal Blok-Guard<sup>®</sup> & Graffiti Control is recommended for graffiti protection on all colors of the concrete bricks.

Defacer Eraser<sup>®</sup> Graffiti Wipe and Sure Klean<sup>®</sup> Fast Acting Stripper can be recommended for removal of graffiti in conjunction with the recommended graffiti protection treatments on all of the submitted concrete bricks from Chicago Block & Brick Co., Chicago, IL.

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 graffiti control product and procedures for a particular project. See product literature for additional application and product information.

Jason L. Anderson

Materials Testing Technician

Jason & auderson

JLA/csm



#### Attachment #1

PHOTO A - "Chicago Red"

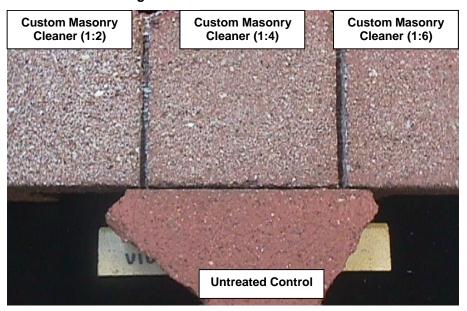
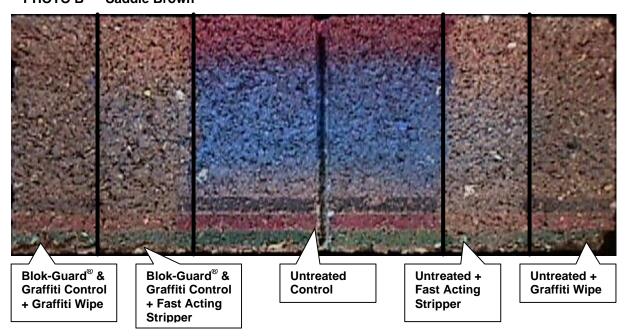
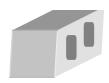


PHOTO B - "Saddle Brown"







## Laboratory Report

# **Block Program Evaluation**

# Chicago Block & Brick Company Chicago, IL

Project No. 0106-07 BP

Prepared For:

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Prepared By:



PROSOCO, Inc. July 2001