# SECTION 04119a
# EXTERIOR PATCHING COMPOUND - REPAIR METHOD FOR LIMESTONE

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Application of exterior patching compound. Furnish all materials, labor, and equipment. Utilize architect approved repair technique, developed by the manufacturer.

### 1.02 RELATED SECTIONS

A. Section 04460 - Stone

B. Section 04500 - Masonry Cleaning

### 1.03 REFERENCE STANDARDS

| | |
|---|---|
| A. ASTM D 638 | Test method for Tensile Properties of Plastics |
| B. ASTM D 695 | Test Method for Compressive Properties of Rigid Plastics |
| D. ASTM C-321 | Standard Test Method for Bond Strength of Chemical Resistant Mortars |
| E. ASTM D-905 | Strength Properties of Adhesive Bonds in Shear by Compression Loading |

### 1.04 QUALITY ASSURANCE

A. Manufacturer qualifications: Company regularly engaged in the manufacturing of the products specified in this section. Manufacturer will develop specific technique for repairing stone, based upon samples forwarded to the manufacturer. Repair technique will be documented by the manufacturer and samples will be returned for review and acceptance by design professional.

B. Contractor qualifications: Qualified to perform the work specified by reason of manufacturer's contractor certification or experience in the installation and repair of dimensional building stone.



### 1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number. Provide Material Safety Data Sheets for each product.

B. Store products above 60 degrees F in an area protected from precipitation, construction activity, and direct sunlight.

C. Condition products to a temperature between 60 and 85 degrees F before application.

D. Handle all products in accordance with Material Safety Data Sheets.

1.06 PROJECT

A. Apply standard product under ambient conditions between 50 and 110 F degrees.

B. Protect site from precipitation, or apply product only after stone has thoroughly dried.

C. Mask or otherwise protect all adjacent work when applying the adhesive.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Bonstone Materials Corporation; 707 Swan Drive; Mukwonago, WI 53226; 414-363-9877; conforms to the requirements of this specification.

B. Substitutions:

1. Alternates to the acceptable manufacturer will be considered only upon the basis of written request and shall include substantiation of product performance as listed in section 2.02 below. Manufacturer must document repair method and demonstrate the method's performance on stone samples.



2.02 PERFORMANCE

A. Bonstone® LAST PATCH™ Limestone meets the requirements of this section.

B. Properties of the mixed repair compound utilized for preparing the stone and adhesive mortar, shall meet the following

| | | |
|---|---|---|
| 1. | Pot life: | 10 to 15 minutes at 75 degrees F |
| 2. | Consistency at 75 degrees F. | Knife Grade Mortar |
| 3. | Color: | Buff Select |
| 4. | Mix Ratio | 7 parts "A" to 1 part "B" by volume ( kit packaged) |
| 5. | Initial setting time at 75 degrees F. | 15 minutes (standard version) |
| 6. | 90% cure time at 75 degrees F. | 1 hour (standard version) |
| 7. | Dry Grinding | Can be done after 2 hours; makes patch appear more porous. |

C. Cured properties of the repair compound utilized for producing the mortar, shall meet or exceed the following:

(Cohesive)

| | | | |
|---|---|---|---|
| 1. | Tensile Strength - 7 days | ASTM D 638 | 900 psi minimum |
| 2. | Tensile Elongation - 7 days | ASTM D 638 | 6.0 % minimum |
| 3. | Tensile Modulus - 7 days | ASTM D 638 | 10,000 psi minimum |
| 4. | Compressive Strength - 7 days | ASTM D 695 | 3,900 psi minimum |
| 5. | Compressive Modulus -7 days | ASTM D 695 | 15,000 psi minimum |
| 6. | Non-yellowing in 300hr QUV exposure | | delta $E_{cmc}$ less than 1 irradiance level of _____ |

(Adhesive to limestone)

| | | | |
|---|---|---|---|
| 7. | Tensile Strength -7 days | ASTM C 321 | 500 psi minimum |
| 8. | Shear Strength -7 days | ASTM D 905 | 1,000 psi minimum |



PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect all areas to be repaired for possible exposure to precipitation, soundness of stone to be repaired, need for masking of adjacent objects, and the existence of any coating or contamination on the stone surface.

3.02 PREPARATION

A. Protect all adjacent surroundings from exposure to mixed repair compound or it's components.

B. Ensure that all coatings or contaminates are removed before application of repair compound to a stone surface.

C. Ensure that all stone surfaces are clean, dry, sound, and dust free.

3.03 APPLICATION

A. Mixing Procedure

1. 1. Precondition materials to a temperature between 60 and 85 degrees F.

2. For color variation in the sandstone, add up to 10% of job-site limestone particles with Last Patch™ Limestone “Part A”. Powdered tints are available from Bonstone for slight color change options.

3. Mix enough material to be used in a short period of time. Small patches are recommended. If large areas need to be filled, build up patch area with several layers. Practicing on samples of stone is recommended. Mixing containers are enclosed with packaging for precise mixing. Last Patch™ Limestone is mixed 7 parts A with 1 part B by volume. Review data sheet for more information.

B. Application to stone:

1. Apply by blade, trowel, or spatula to stone surface. Apply product (level with or just above) existing surfaces, and follow contours wherever possible. Consult original installation drawings or photographs before damage had occurred for accurate reconstruction.

2. Texture surface before cure as specified in approved repair technique. (Product is applied 1/8 inch above existing surface.)

or

3. Grind to match contours as specified in approved repair technique. Utilize dust masks during grinding and while dust is airborne. (Product is over filled and ground flush.)

3.04 FIELD QUALITY

A. Keep samples of cured repair compound for quality control. Log time and dates of use.



3.05 CLEANING

A. Remove uncured repair compound from tools and equipment with dry towel or with xylene or MEK.

B. Remove cured repair compound mechanically.

C. Remove all debris related to the repair application from the work site in accordance with all applicable regulations for hazardous waste disposal.

END OF SECTION

Project Name/99-01/03-09-00 04119a-1 Repair for Limestone