Proposed specification - For review by qualified architects and engineers.

SECTION 04106
EPOXY FABRICATION, INSTALLATION, AND REPAIR COMPOUND FOR MASONRY- LIMESTONE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Application of epoxy compound on Indiana Limestone and masonry. Furnish all materials, labor, and equipment.

1.02 RELATED SECTIONS

A. Section 04410 - Limestone
B. Section 04950 - Stone Cleaning
C. Section 04920 - Stone Restoration
D. Section 04060 - Epoxy Mortar

1.03 REFERENCE STANDARDS

A. ASTM D 638 Test method for Tensile Properties of Plastics

B. ASTM D 648 Test method for Deflection Temperature of Plastics under Flexural Load.

C. ASTM D 695 Test Method for Compressive Properties of Rigid Plastics.

D. ASTM D 790 Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

E. ASTM D 2240 Test Method for Rubber Property - Durometer Hardness

1.04 QUALITY ASSURANCE

A. Manufacturer qualifications: Company regularly engaged in the manufacturing of the products specified in this section.

B. Contractor qualifications: Qualified to perform the work specified by reason of 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 to 85 degrees F before application.

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

1.06 PROJECT CONDITIONS

A. Apply product under ambient conditions between 60 and 85 degrees F. Protect site from precipitation, or apply product only after stone has thoroughly dried.

B. Mask or otherwise protect all adjacent work from epoxy compound or it's components .

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Bonstone Materials Corporation; 707 Swan Drive; Mukwonago, WI 53226; (800-425-2214); 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.

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2.02 PERFORMANCE CRITERIA

A. Bonstone® **Duropoxi** meets the requirements of this section. *For Faster set times and colder temperatures Bonstone® **Fast Set™ Extreme** epoxy also meets the requirements of this sections

B. Properties of the mixed epoxy repair compound for limestone shall meet the following:

Duropoxi Properties:

1.	Pot life:	20 minutes at 75 degrees F.
2.	Consistency at 75 degrees F.	Knife grade
3.	Color:	Tan/Buff
4.	Mix Ratio	1 part "A" to 1 part "B" by weight or volume
5.	Initial setting time at 75 degrees F.	1hours
6.	Full cure time at 75 degrees F.	within 24 hours

C. Cured properties of the epoxy compound shall meet or exceed the following:

1.	Tensile Strength - 14 days	ASTM D 638	2,622 psi minimum
2.	Tensile Elongation - 14 days	ASTM D 638	0.6 % minimum
3.	Tensile Modulus - 14 days	ASTM D 638	527,467 psi minimum
4.	Compressive Strength - 28 days	ASTM D 695	5,791 psi minimum
5.	Compressive Modulus -28 days	ASTM D 695	177,493 psi minimum
6.	Flexural Strength -14 days	ASTM D 790	4,740 psi minimum
7.	Flexural Modulus -14 days	ASTM D 790	281,936 psi minimum
9.	Shore D Hardness	ASTM D 2240	87
10.	Granite-to-granite shear bond strength		4.148.8 psi

FAST SET™ Extreme Properties:

1.	Pot life:	10 minutes at 75 degrees F.
2.	Consistency at 75 degrees F.	Knife grade
3.	Color:	Buff
4.	Mix Ratio	1 part "A" to 1 part "B" by weight or volume
5.	Initial setting time at 75 degrees F.	15 minutes
6.	90% of full cure at 75F	60 minutes

C. Cured properties of the epoxy compound shall meet or exceed the following:

1.	Tensile Strength - 14 days	ASTM D 638	2,414 psi minimum
2.	Tensile Elongation - 14 days	ASTM D 638	0.2 % minimum
3.	Tensile Modulus - 14 days	ASTM D 638	852,634 psi minimum
4.	Compressive Strength - 28 days	ASTM D 695	6,947 psi minimum
5.	Compressive Modulus -28 days	ASTM D 695	161,416 psi minimum
6.	Flexural Strength -14 days	ASTM D 790	5,626 psi minimum
9.	Shore D Hardness	ASTM D 2240	92
10.	Granite-to-granite shear bond strength		3,376 psi

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect all areas where epoxy compound is to be applied for possible exposure to precipitation, soundness of stone, need for masking of adjacent stone, and the existence of any coating or contamination on the stone surface.

3.02 PREPARATION

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

B. Ensure that all coatings or contaminates are removed before application of epoxy 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. Precondition materials to a temperature between 60 and 85 F degrees.

2. Premix each component of the epoxy compound separately before mixing.

3. Determine the amount of epoxy compound which can be utilized within the pot-life at the existing temperature.

4. Measure and mix part of "A" component and 1 part of "B" component in a clean mixing container. Mix thoroughly for at least one minute. Use either a stainless steel spatula when mixing by hand , or a slow speed mixer (400 RPM) with a clean stainless steel mixing paddle. Avoid the use of waxed paper cups as mixing containers.

5. Thoroughly scrape the sides of the mixing container, to ensure that no unmixed product exists on the sides or bottom of the mixing container and mix an additional one minute minimum. *(Or: Thoroughly scrape the mixed material to a second mixing container, and mix an additional 30 seconds minimum.This helps to ensure that no unmixed product is applied.)*

B. Application to stone:

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

3.04 FIELD QUALITY CONTROL

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

3.05 CLEANING

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

B. Remove cured epoxy compound mechanically,

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

END OF SECTION