Proposed specification - For review by qualified architects and engineers.

SECTION 090503
Monument: Bonding Granite, Marble & Limestone to Bases

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Application of exterior Adhesive Bonding of stone and masonry. Furnish all materials, labor, and equipment. Utilize architect approved repair technique honed or polished, 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 bonding stone, based upon samples forwarded to the manufacturer. Laminating or anchoring 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.

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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, utilize cold weather variant below 50 F degrees.

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

C. Mask or otherwise protect all adjacent work from epoxy mortar, it's component's, and the epoxy squeeze-out.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Bonstone Materials Corporation; 707 Swan Drive; Mukwonago, WI 53226; 262-363-9877; 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 bonding method and demonstrate the method’s performance on stone samples.

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2.02 PERFORMANCE

A. Bonstone® FAST SET 41™ 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 minutes at 75 degrees F
2.	Consistency at 75 degrees F.	Creamy paste
3.	Color:	Factory color match #_____
4.	Mix Ratio	1 part "A" to 1 part "B" by weight (kit packaged)
5.	Initial setting time at 75 degrees F.	15 minutes
6.	90% cure time at 75 degrees F.	1 hours

C. Cured properties of the bonding compound utilized, shall meet or exceed the following:

(Cohesive)

1.	Tensile Strength - 7 days	ASTM D 638	3,616 psi minimum
2.	Tensile Elongation - 7 days	ASTM D 638	0.29 % minimum
3.	Tensile Modulus - 7 days	ASTM D 638	1,271,933 psi minimum
4.	Compressive Strength - 7 days	ASTM D 695	14,543 psi minimum
5.	Compressive Modulus -7 days	ASTM D 695	235,228 psi minimum
6.	Shear Strength -7 days (Granite-to-Granite)	ASTM D 905	4211 psi minimum (Failure mode is stone breakage)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Inspect all areas to be applied for possible exposure to precipitation, soundness of stone to be bonded, 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 bonding compound or it's components.

B. Ensure that all coatings or contaminates are removed before application of bonding 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 degrees F.
2. *Mix Instructions:* Follow manufacturer recommended mix instructions.
3. *Application temperatures*: Review data sheet and temperature charts for set times. Excessive heat may require alterative Bonstone® Products

Contact manufacturer for specific techniques or questions.

B. Application to stone:

1. Apply by blade, trowel, or spatula to stone surface. Apply product in spot areas or spread to approximately 1/16” level, and spread in bonding area leaving ½” from sides to compensate squeeze-out of epoxy. The use of stainless steel pins is recommended for any stone anchoring.
2. If epoxy squeeze-out gets on surface of stone or concrete base remove immediately according to section 3.05 cleaning part A or B.

3.04 FIELD QUALITY

A. Keep samples of cured bonded 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