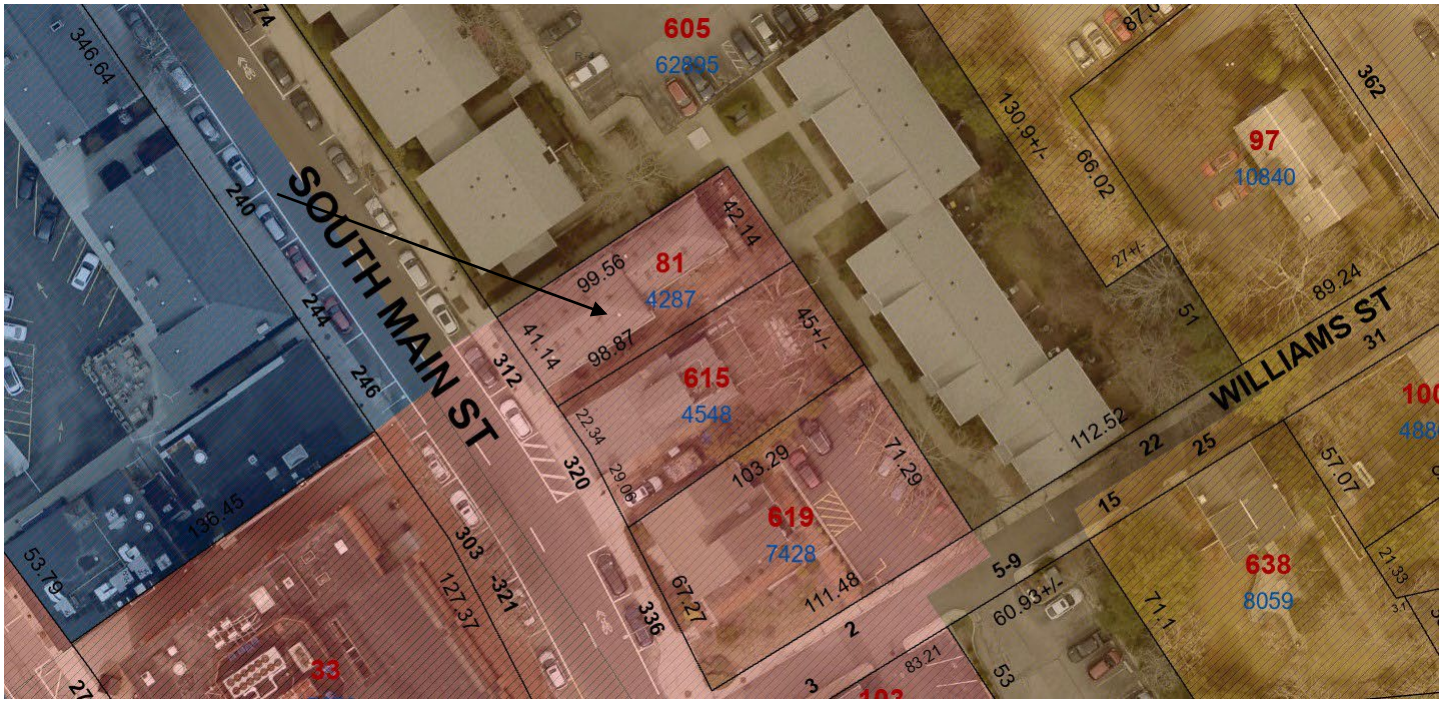
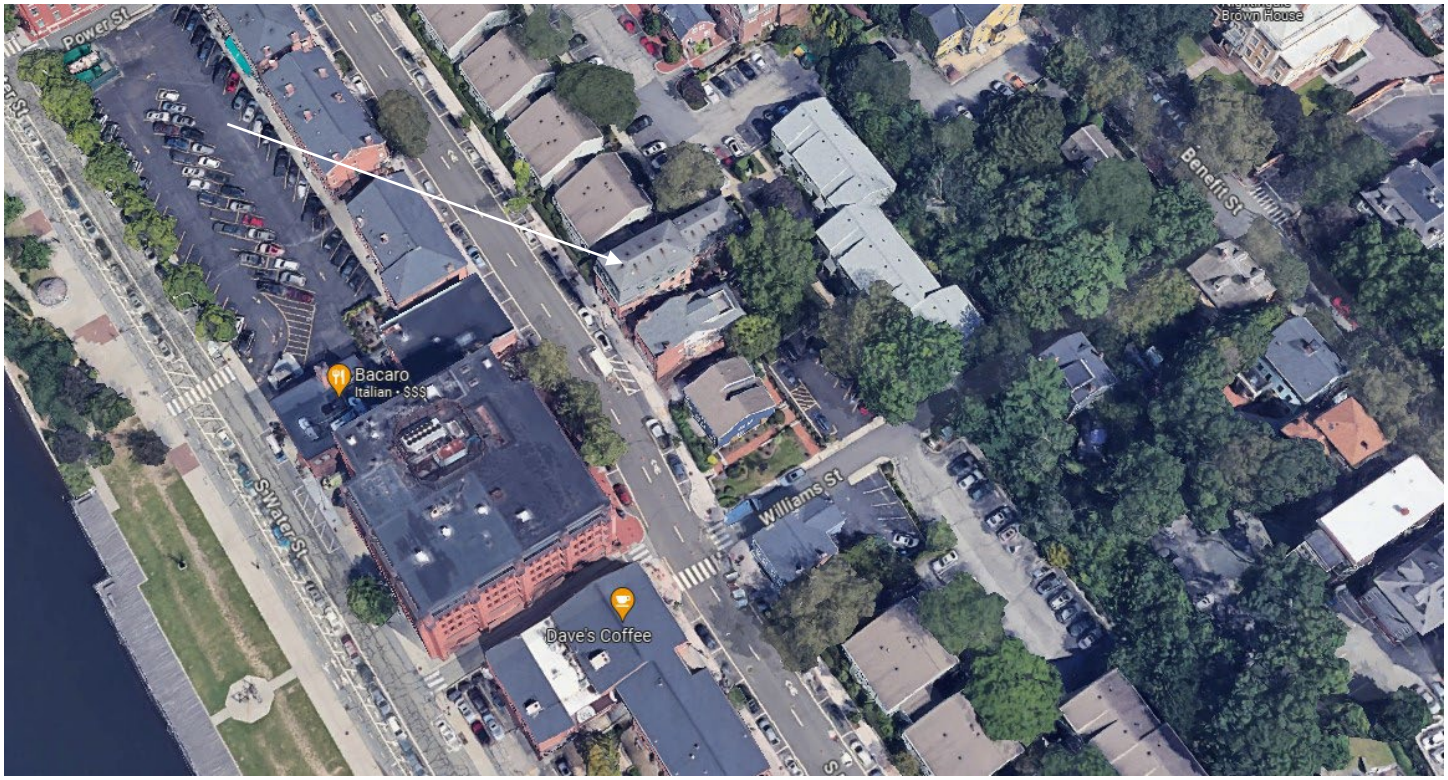
3. CASE 24.157, 312 SOUTH MAIN STREET, Dolphin House, 1798 (COLLEGE HILL)

Rebekah and Peleg Williams House, ca. 1770. Georgian with late Victorian alterations; 2 ½ story, brick, Mansard-roof house on a raised basement, with its five-bay, center-entry façade at right angles to the street; Ground-level storefront on the street-side with iron columns and granite lintels. Brick cornice with dentils; belt courses; flaring jack arches over the windows. CONTRIBUTING



Arrow indicates 312 South Main Street



Arrow indicates project location, looking north.

Applicants: ZDS Architecture, 2 Charles St, Providence, RI 02904
Owner: Dino Brosco, 312 South Main Street, Providence, RI 02903

Proposal: The scope of work proposed consists of Minor Alterations and includes:

- the cladding of the existing brownstone step's treads with bluestone treads, with repairs to the risers.

Issues: The following issues are relevant to this application:

- The front brownstone stairs have deteriorated, and the applicants would like to introduce new bluestone tread elements to the stairs as part of also repairing the risers with Jahn;
- Brownstone is a particularly difficult material to replace, as its availability is limited. The existing stairs are to be retained here with the addition of bluestone treads. In the proper color, "bluestone" treads are an acceptable solution to making the stairs safe, while still retaining much of its historic characteristics;
- A scope-of-work, plans and photos have been submitted.

Recommendations: The staff recommends the PHDC make the following findings of fact:

a) 312 South Main Street is a structure of historical and architectural significance that contribute to the significance of the College local historic district, having been recognized as a contributing structure to the College Hill National Historic Landmarks District;
b) The application for Minor Alterations is considered complete; and,
c) The work as proposed is in accord with PHDC Standards 2 & 8 as follows: the proposed alterations are appropriate having determined that the proposed construction will be similar in size and appearance to the existing, matching in visual features (Standard 2) and is architecturally and historically compatible with the property and district having an appropriate size, scale and form that while diminishing the historic quality of the property will not have an adverse effect on the property or district (Standard 8).

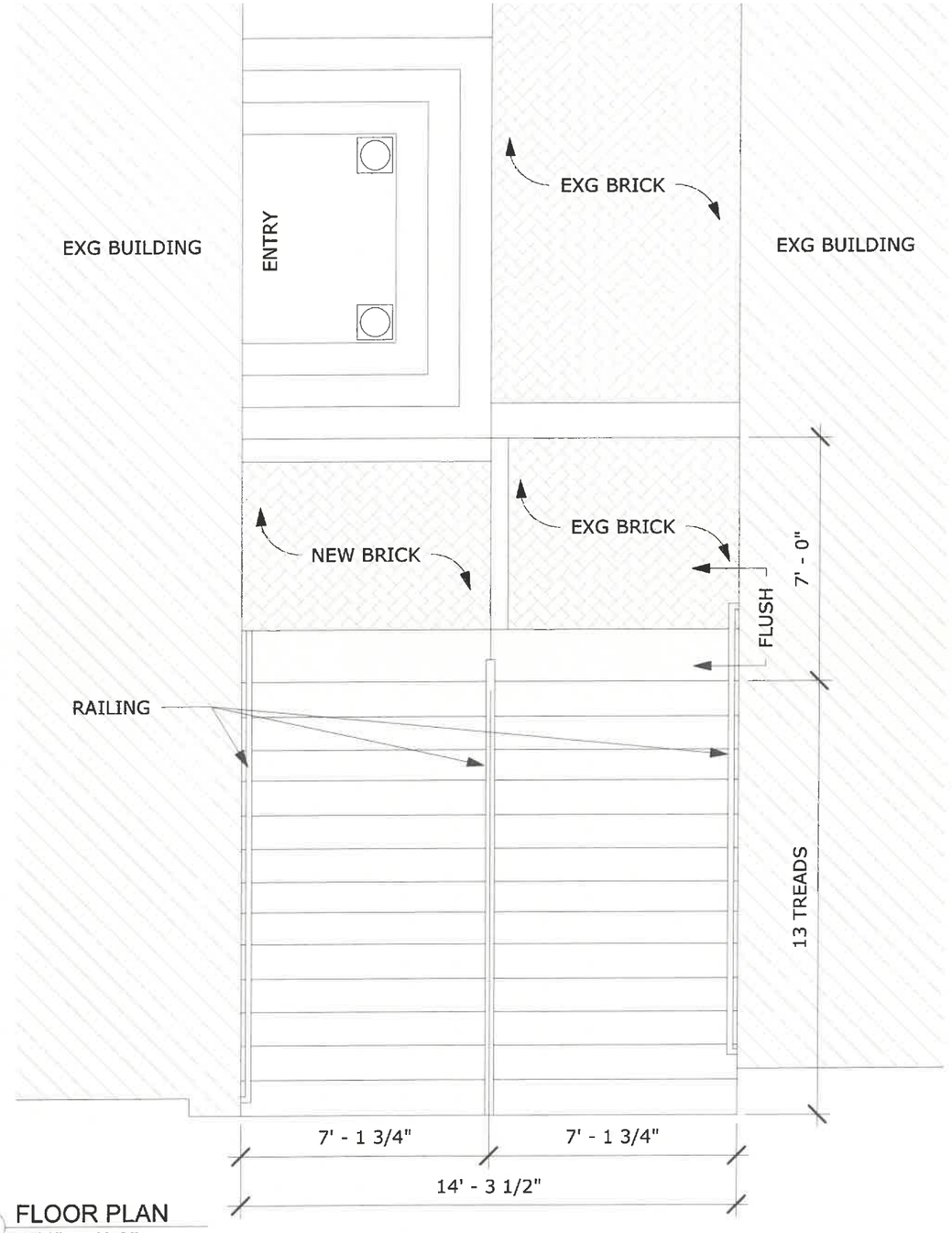
Staff recommends a motion be made stating that: The application is considered complete. 312 South Main Street is a structure of historical and architectural significance that contribute to the significance of the College Hill local historic district, having been recognized as a contributing structure to the College Hill National Historic Landmarks District. The Commission grants Final Approval of the proposal as submitted having determined that the proposed alterations are appropriate as the proposed alterations will be similar in size and appearance to the existing, matching in visual features (Standard 2) and architecturally and historically compatible with the property and district having an appropriate size, scale and form that while diminishing the historic quality of the property will not have an adverse effect on the property or district (Standard 8) citing and agreeing to the recommendations in the staff report, with staff to review any additional required details.

EXISTING CONDITIONS

CONCEPTUAL OPTION

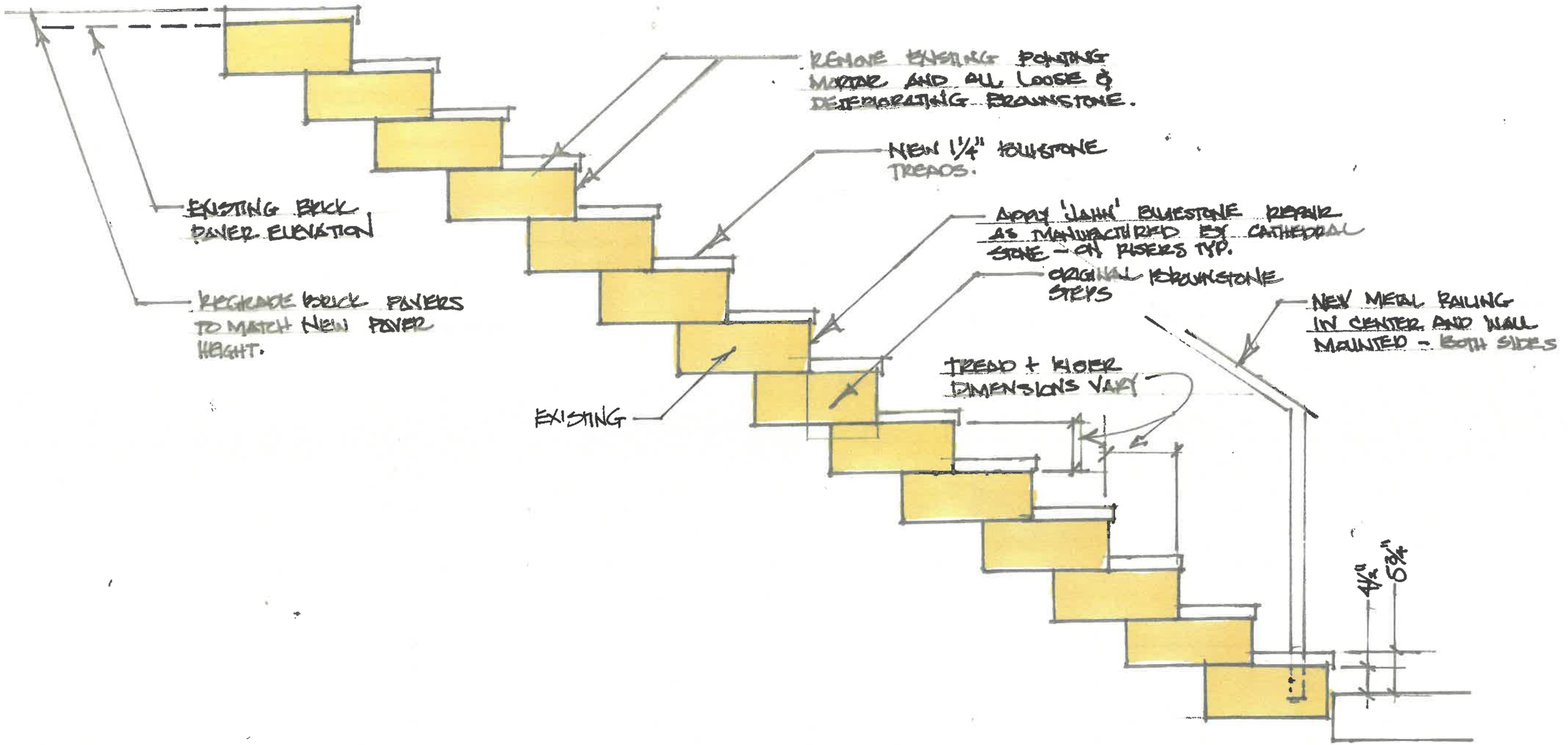
NEW BLUESTONE TREADS OVER EXISTING BROWNSTONE STEPS. INCLUDING REPAIR OF RISERS. TREAD AND RISER DIMENSIONS TO REMAIN CONSISTENT WITH EXISTING CONDITIONS.

STAIR PLAN



1 FLOOR PLAN
1/4" = 1'-0"

STAIR SECTION



Cathedral Stone Products, Inc.

jahn MASONRY RESTORATION SYSTEMS

PRODUCT DATA SHEET

Jahn M70 | Standard & Horizontal Grade Repair (CERTIFIED INSTALLERS ONLY)

• Brownstone • Limestone • Sandstone

This single-component, cementitious, mineral-based mortar is designed for the restoration of natural stone such as limestone and sandstone. **Jahn M70 is completely vapor permeable at any depth and contains no latex or acrylic bonding agents or additives**. The material is available in a variety of compatible, laboratory-engineered formulations, which match the physical properties of the substrate being repaired. M70 provides a permanent, compatible solution, which repairs and protects the beauty of natural stone.

FEATURES AND BENEFITS

- **Single-Component:** Mixes with water only, improving quality control and consistency of application.
- **Compatible Formulations**: Compatibility of physical properties ensures that the mortar and natural substrate react to the environment in the same way.
- **Contains No Latex or Acrylic Bonding Agents:** It protects the substrate by allowing salts, water vapor, and liquid water to reach the surface, preventing failure due to salt expansion or freeze/thaw cycles.
- **Tenacious Adhesion:** Strong bonding capabilities without relying on synthetic bonding agents.
- **Factory Controlled:** No field chemistry resulting in product variation.
- **Custom Colored Upon Request:** Closely matches existing masonry. Choose from Standard or Custom Colors.
- **Certified Installers:** Only installers with certification from Cathedral Stone Products can purchase Jahn M70 Limestone and Sandstone Repair Mortars.

APPLICATION PROCEDURES

Surface Preparation

Surfaces to receive M70 must be sound and free of all dust, dirt, grease, laitance and/or any other coating or foreign substance which may prevent proper adhesion. Remove all loose and deteriorated masonry from the repair area. The area to be repaired should be cut to provide a minimum of ½" depth. Do not install repairs that have a feathered edge (see diagram below), incorrect installation will cause repairs to fail prematurely. Wash the prepared surface with clean water and a bristle brush to remove dust from the pores. Rinse.

Section: Correct (Square Cut)Surface Preparation

Section: Incorrect (Feathered Edge) Surface Preparation

Exposed Ferrous Metals:

In the event that ferrous metal reinforcement (re-bar, threaded rod, etc.) is exposed within the repair area, coat exposed metal with an appropriate rust inhibitor to prevent future rust jacking/oxide jacking.

Mixing

The mixing ratio is approximately 5 to 5 1/2parts powder to 1 part water by volume, **depending on temperature and humidity.** More water may be required as ambient temperature rises. The mixing may be done by hand, stirring until the mortar is thoroughly mixed. The mortar should be the consistency of damp sand. M70 may also be mixed using a slow speed drill (400 -600 rpm) equipped with a Jiffler-type mixing paddle. For best results, add the powder to the water slowly. The working time will vary, depending upon wind, temperature, and humidity. Using excessive water in the mixture may affect the color of the repair.

Application

Moisten the substrate using clean water. Jahn Mortar should be applied to a glistening wet surface on vertical applications and a well-dampened surface (with no pooling water) on horizontal applications. **If the surface is allowed to dry out before applying M70, this step must be repeated. This is very important.**

The next step of the application is what CSP has termed the "Peanut Butter" coat. The Jahn mortar should be mixed with water to the consistency of wet putty. Apply the "Peanut Butter" coat to the glistening wet substrate approximately 1/8 inch thick. **Important -To achieve proper bond, the "Peanut Butter" coat must not dry out prior to application of Jahn Mortar (5:1) mix!**

Build the material out beyond the surface of the original stone. After achieving initial set, scrape away excess mortar until the desired profile is reached. Due to the effects of heat, humidity, and wind on the final color, the waiting period for scraping should be determined on the job. This is characteristic of all mortars, and should be determined through samples applied on site. In hot weather, darker colors may require scraping within a short time, while in cold weather the wait time may be several hours. For the best result, wait until the Jahn Mortar is the consistency of dry sand and does not stick to the screeding tool. To achieve a rougher texture, wait longer before finishing.

Where necessary, anchor using threaded stainless steel dowels (or other acceptable anchors). It is not recommended to build an armature within the repair using tie wire (or other material), or to use wire lath.

Horizontal Grade Repair (HG)

When repairing horizontal surfaces using this product, apply material flush to the surface and finish to a tight steel troweled finish, float, or broom to achieve a textured effect.

Curing

Traditional Cure

Periodically mist M70 repairs using clean water for at least a 72-hour period. The timing for initial water misting will vary with ambient conditions. Hot, dry conditions may require misting within 30 to 60 minutes. Cooler, damp conditions may require waiting several hours before beginning the curing process. Mist several times a day. Should access to the repairs be impossible over a period of time, plastic may be used to cover them temporarily. The application of plastic, however, does not remove the need for normal curing techniques.

Self-Cure

No curing is necessary when masonry surface temperature is 85°F or lower. When working on surface temperatures above 85°F, follow the Traditional Cure procedures outlined above.

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PRODUCT DATA SHEET

Jahn M70 | Standard & Horizontal Grade Repair (CERTIFIED INSTALLERS ONLY)

• Brownstone • Limestone • Sandstone

This single-component, cementitious, mineral-based mortar is designed for the restoration of natural stone such as limestone and sandstone. Jahn M70 is completely vapor permeable at any depth and contains no latex or acrylic bonding agents or additives. The material is available in a variety of compatible, laboratory-engineered formulations, which match the physical properties of the substrate being repaired. M70 provides a permanent, compatible solution, which repairs and protects the beauty of natural stone.

continued . . .

Clean Up

Remove uncured mortar from the perimeter of the repair before it dries using clean water and a rubber sponge. Repeat several times with clean water to prevent a halo effect (staining of adjacent masonry).

SAFETY REQUIREMENTS

It is recommended that safety goggles, gloves, and a dust mask equipped with P-2 filters (or equivalent) be worn for protection while mixing.

Limitations

- Do not apply Jahn Mortar to a frozen or exceedingly hot substrate. The applied mortar must be protected from extreme heat, freezing, excessive wind, direct sunlight, and rain. Ambient temperature range should be 40° F to 90° F with low to average humidity.
- Do not add bonding agents to Jahn Mortar or use them as surface preparation materials.
- Minimum thickness of mortar application is ½ “.

PACKAGING AND COVERAGE

A 5 gallon plastic pail contains approx. 44 lb. Of material. This will cover 0.5 cu. ft. (12 sq. ft. at 1/2” thickness).

STORAGE & SHELF LIFE

Store material in a dry area away from direct sunlight. Ambient storage conditions should be in the range of 40°F to 90°F with low to average humidity. Average shelf life is 2 years in original, unopened packaging.

TECHNICAL DATA

Jahn M70 - Sandstone

LIQUID/ PLASTIC PHASE	
Ratio water/dry material	2.3 to 3.0 fl. oz./lb.
Volume mixed mortar M70 in inches/3 per lb. Of dry material	12.0 fl. oz./lb. (approx.)
HARDENED PHASE	
Compressive strength, dry	1800 to 2200 psi
Tensile bending strength, dry	420 to 530 psi
Tensile strength	145 to 290 psi
Linear coefficient of thermal expansion	3.45E-06 to 4.20E-06 in/in °F
Hydraulic coefficient of expansion (%)	0.45 to 0.543
Modulus of elasticity	2418 to 2580 ksi
Open porosity (%)	34.1 to 35.5
Water absorption (%)	14 (approx.)
Specific gravity	1.6

TECHNICAL DATA

Jahn M70 - Limestone

LIQUID/ PLASTIC PHASE	
Ratio water/dry material	2.3 to 3.0 fl. oz./lb.
Volume mixed mortar M70 in inches/3 per lb. Of dry material	12.0 fl. oz./lb. (approx.)
HARDENED PHASE	
Compressive strength, dry	2600 to 3200 psi
Tensile bending strength, dry	540 to 620 psi
Tensile strength	145 to 290 psi
Linear coefficient of thermal expansion	2.0E-06 to 2.8E-06 in/in °F
Hydraulic coefficient of expansion (%)	0.30 to 0.40
Modulus of elasticity	1730 to 1860 ksi
Open porosity (%)	32.8 to 37.6
Water absorption (%)	16 (approx.)
Specific gravity	1.4

WARNING

Not for internal consumption. Keep out of reach of children and animals. Consult Material Safety Data Sheet (MSDS) for specific information.

GUIDELINE FOR WRITING SPECIFICATIONS WHEN USING

JAHN M70, M90, M160 RESTORATION MORTARS

Select Relevant Selection

Division 4 - Masonry

Part 1 – GENERAL

1.1 SUMMARY OF WORK

A. For repairing limestone, sandstone, brownstone, precast concrete, structural concrete or granite, bluestone.

1.2 SUBMITTAL

A. Submit the following items in time to prevent delay of the work and to allow adequate time for review and resubmittals, if needed; do not order materials or start work before receiving the written approval:

1. Certificates should be submitted stating that all Installers of the repair mortar have successfully completed the training workshop for installation of the mortar. (Three day workshops for Installers of Jahn Restoration Mortars are offered by Cathedral Stone ® Products, Inc. and held at 7266 Park Circle Drive, Hanover, MD 21076; tel. (410) 782-9150; fax. (410) 782-9155.)

2. Samples of all specified materials and Material Safety Data Sheets (MSDS) as appropriate.

3. Install mortar samples on masonry—preferably on the building. Do not make samples in cups or apply to plywood or other non-masonry surfaces.

4. *Written verification from the Contractor that all specified items will be used. Provide purchase orders, shipping tickets, receipts, etc. to prove that the specified materials were ordered an*d received.

1.3 QUALITY ASSURANCE/TEST REQUIREMENTS

A. *Installer certification:* All repairs should be performed by a trained installer holding a Training Workshop Certificate from Cathedral Stone Products, Inc.. Contractor shall maintain proof of this credential for each installer at the site at all times (for M70 & M160).

B. *Mortar Samples:* Prepare a sample of each type of repair listed below, using masonry removed from the building where designated by the Owner. Prepare, install, and finish each sample repair according to the specifications. **All samples must be applied to masonry.** Prepare samples in an area where they will be exposed to the same conditions as will be present on the building during curing. **Allow samples to cure at least three days (or longer, if possible) before obtaining Owner's approval for color match.** Mortar colors will continue to lighten as they cure and are exposed to the weather, so samples should be installed as far in advance as possible. A slightly darker color will give better long-term results. **Samples should be viewed from a minimum distance of 18-22 feet.**

1.4 DELIVERY, STORAGE, AND HANDLING

A. Materials are to be delivered, stored, and handled to protect them from damage, extreme temperature, and moisture in accordance with Manufacturer's written instructions.

B. Deliver and store material in Manufacturer's original, unopened containers with the production date shown on the container or packaging.

C. Comply with the Manufacturer's written specifications and recommendations for mixing, application, and curing of mortars.

1.5 PROTECTION/SITE CONDITIONS

A. *Cold Weather Requirements:* Do not work in temperatures below 40° F, when the substrate is colder than 40° F, or when the temperature is expected to fall below 40° F for 48 hours after installation of repair mortars. Building an enclosure and heating areas to maintain this temperature may only be done with the written approval of the Specifier.

B. *Hot Weather Requirements:* **Protect repair mortar from direct sunlight and wind.** Do not use or prepare mortar when ambient air temperature is above 90° F.

Part 2 – PRODUCTS

2.1 MASONRY REPAIR

A. Jahn Restoration Mortars are distributed by Cathedral Stone® Products, Inc., 7266 Park Circle Drive, Hanover, MD 21076; tel. (410) 782-9150; fax. (410) 782-9155; website: www.cathedralstone.com email: info@cathedralstone.com. Jahn Mortars are premixed cementitious repair materials formulated to match the color and texture of the existing masonry, and do not contain any acrylic, latex, or other synthetic polymer additives. Mix the mortar with clean, potable water.

Substitutions: If proposed equal is submitted, lab test to establish equivalent performance levels. Use an independent testing laboratory, as determined by the Specifier, and paid for by the submitting party.

B. *Setting anchors in existing masonry:* Jahn Anchor Setting Mortar (M80).

C. *Mechanical anchors and dowels*: Stainless steel threaded rod (ASTM F593) with a diameter as indicated on Contract Drawings, bent and cut to lengths required to achieve embedments shown on the Contract Drawings.

Part 3 – EXECUTION

3.1 WORKMANSHIP

A. Do not use any additives, such as bonding agents, accelerators, or retardants in the mortar.

3.2 PREPARATION FOR REPAIRS

A. Remove all loose mortar and masonry prior to installation of the repair mortar. "Sound" masonry with a hammer to verify its integrity. If necessary, cut away an additional 1/2" of the substrate to ensure the surface to be repaired is solid and stable. Remove any sealant residue.

B. Where cramp anchors, threaded rod anchors, or dowels have been cut and pieces remain embedded in the substrate: Anchors that are free of rust, solidly embedded, and do not project beyond the surface of the masonry unit may remain. All others should be removed.

C. Cut the edges of the repair area to provide a minimum depth of 1/4". The edges of the repair should be square cut. **Do not allow any feathered edges in the repair area.**

FOR DEEP OR OVERHANGING REPAIRS OR FOR USE IN HIGH RISE CONSTRUCTION, PROCEED WITH D-F, OTHERWISE SKIP TO G

D. Install mechanical anchors in all repair areas if specified on the Contract Drawing or as otherwise directed by the Specifier.

E. *Install anchors as follows:*

1. Drill holes to diameter specified on Contract Drawing.

2. Clean holes using compressed, oil-free air, and bristle brushes, until no dust cloud is produced when a brush, inserted the full depth of the hole, is pulled out of the hole.

3. Embed anchors in back-up using Jahn M80, mixed according to Manufacturer's instructions.

4. Anchors should be covered with a minimum of 3/4" repair material.

F. Clean all dust from surface and pores of the substrate, using clean water and a scrub brush.

G. For very dry or porous surfaces, pre-wet the substrate ahead of time to prevent the substrate from drawing moisture out of the repair too quickly. Re-wet the surface immediately before applying the repair material.

3.3 MIXING MORTAR FOR REPAIR

A. It is recommended that a dust mask be worn during mixing. Do not mix more material than can be used within 30 minutes. Discard any mixed material that has been unused for 30 minutes or more.

B. Mixing ratios for limestone, sandstone, granite, precast concrete, and structural concrete are as follows:

1. Approximately 5 parts dry material to 1 part water:
   M70 - Limestone, Sandstone, Brownstone
   M90 - Structural Concrete
   M160 - Granite, Bluestone

C. Add water to dry ingredients and mix well. Adjust amount of water according to the weather and the porosity of the substrate.

D. The next step of the application is what CSP has termed the "Peanut Butter" coat. The Jahn mortar should be mixed with water to the consistency of wet putty. Apply the "Peanut Butter" coat to the glistening wet substrate approximately 1/8 inch thick. **Important – To achieve proper bond, the "Peanut Butter" coat must not dry out prior to application of Jahn Mortar (5:1) mix!**

3.4 APPLICATION OF REPAIR MATERIAL

A. Apply the mortar mix (see data sheet) using a trowel to place and compress the mortar into the repair ensuring not to leave any voids. For overhead repairs thicker than 2", apply mortar in layers, allowing the first layer to cure for a two to four hours before applying the second layer. If applied in layers, scrape off any cement skin that has formed and continue application. Dampen the surface and before applying the next layer. Work mortar firmly into the surface of the masonry, including the corners, and under and around all mechanical anchors.

B. Build up repair material so that it is slightly above the adjacent masonry surface. Allow mortar 30 to 60 minutes to set slightly (wait time will vary with temperature and humidity–longer in cool weather), and then scrape off excess material using a straight edge (a plasterer's miter rod is good for this). Do not press down or "float" the repair. Where repairs occur at panel edges or corners, form mortar to match the profile of the surrounding masonry. In all cases, finish and texture repair so that it is as indistinguishable as possible from the adjacent masonry.

3.5 FINISHING TECHNIQUES

A. To obtain a smooth finish repair should be scraped down to the original profile then trowelled to leave a smooth surface. This may cause the repair to lighten and may need to be stained to match.

B. When finishing a granite repair, do not scrape the repairs as described above. The larger aggregate in the granite material will follow the screed, tearing the surface. Trowel the mortar even with the surrounding surface. Coarse aggregate or colored granite chips may be applied to the top surface only to match surrounding granite or precast concrete. Aggregate should be sifted and rinsed to ensure it is free of dust. Dampen the aggregate and press it firmly into the repair while the mortar is still damp. Allow patch to set (approximately 4-6 hours) scrub the repair with a bristle brush and water to remove excess mortar to expose aggregate. Some experimentation will be necessary to achieve the desired texture.

C. Patching mortar can be textured to match rough surfaces using a variety of finishing tools. (Contact Cathedral Stone Representative)

D. Clean any mortar residues from area surrounding the repair by sponging as many times as necessary with clean water. This should be done before repair material sets.

E. After the repair has been cured and allowed to dry for at least one week, if the appearance of a repair does not meet the specifications of the job, the surface color of the repair may be enhanced by applying a vapor permeable, mineral based pigmented stain. (masonRE Coatings, a mineral based pigmented stain is available from Cathedral Stone® Products, Inc., 7266 Park Circle Drive, Hanover, MD 21076; tel. (410) 782-9150; fax. (410) 782-9155.)

3.6 CURING PROCEDURE

A. Lightly mist the repair with water to wet the entire surface of the finished repair approximately 30 minutes to 1 hour after completion on hot sunny days, and approximately 2 hours or longer, on cool or cloudy days. Time will vary with temperature and humidity. Mist several times a day on the three days following the repair installation. Should access to the repairs be impossible for a period of time, plastic may be used to cover them temporarily. The application of plastic, however, does not remove the need for normal curing techniques. *Never cover repairs with plastic immediately after finishing—the water in the repair will be trapped on the surface, causing it to lighten.*

3.7 CLEAN UP

A. Remove uncured mortar from the perimeter of the repair before it dries using clean water and a rubber sponge. Repeat several times with clean water to prevent a halo effect (staining of adjacent masonry). Cured mortar may only be removed chemically or mechanically.

B. Remove uncured mortar from tools and equipment with water as soon as possible. Cured material may only be removed chemically or mechanically.

END OF SECTION

02/2012