

GOOD NEIGHBOR GRANT

Center City Development Corporation (CCDC) / Downtown Memphis Commission (DMC)
City of Memphis Division of Housing and Community Development (HCD) / Community
Redevelopment Agency (CRA) / Memphis Medical District Collaborative (MMDC)

Grant Proposal: St. Mary's Cathedral – Exterior Pressure Washing, Tuck-
Pointing, & Masonry Repair

Date: May 2, 2023

Contact Information: St. Mary's Episcopal Cathedral
c/o Andrew Pouncey, Staff Administrator
700 Poplar Ave., Memphis, TN 38105-4512
apouncey@stmarysmemphis.org
901.484.3303

Architect: Hord Architects, 66 Monroe Avenue, Memphis, TN 38103. (The architect has completed drawings for the larger \$1.4 million project (currently under construction) that also illustrate the buildings associated with this grant request.)

Owner: St. Mary's Episcopal Cathedral

Grant Manager: Scott Blake, the president of Design 500 Inc. and Executive Director of Victorian Village Inc.

Brief History in Downtown Memphis. St. Mary's Episcopal Cathedral observes as its founding date, Ascension Day, May 13, 1858. The Cathedral has remained in this downtown location for 165 years. It has played a major role in the downtown area through the Yellow Fever epidemic of the 1870s, through the racial violence of the 60s and the assassination of Martin Luther King. St. Mary's continues to minister to the downtown community, being a "House of Prayer for All People" on Poplar Avenue, and a vital part of the Memphis Medical District and Victorian Village.

Project Request: Exterior pressure washing of the Cathedral's Martyr's Hall, the historic Sister's Chapel, and the Moody Wing, all visible to Poplar and Alabama Streets. Such a project does require **tuck-pointing and masonry repair** where required - **\$25,000.00** (estimated cost of the project is \$38,560.00)

Projects Eligible for Grant: This project supports what the GOOD NEIGHBOR GRANT program is trying to accomplish by bringing together efforts to strengthen and restore the character of St. Mary's within the community, and completing site improvements that will support our longevity and improve the pedestrian experience along Poplar Avenue. We agree to comply with the policies of the CCDC financial program.

Justification for Request: The structures associated with **692 and 700 Poplar** from west to east include the Episcopal Bookstore, the Diocesan House, St. Mary's Episcopal Cathedral, Martyr's Hall (parish hall), Sister's Chapel and Moody Wing (educational and future leased space). Martyr's Hall and the Sister's Chapel also serve as shared meeting space.

Currently, St. Mary's is undergoing a \$1.4 million repair to the Nave including repairs to the Bell Tower, the Roof of the Cathedral and the painting of the interior. The one aspect that really is telling for the passersby is the pressure washing of the Cathedral and the Diocesan House (to the west). Pressure washing does include tuck-pointing and masonry repair where the pressure from the water requires repair to the façade. **Returning the original stone color is refreshing, a sign of rebirth that fosters a consistent, vibrant and safe pedestrian as well as vehicular experience along Poplar, a key commercial corridor in downtown Memphis.**

The budget for the current project (including the above referenced items) includes pressure washing & tuck-pointing and masonry repair for the Cathedral proper and the Diocesan House (**only**). Upon completion of this work in early June of 2023, the remaining and connecting structures (Martyr's Hall, Sister's Chapel and the Moody Wing) **will unfortunately contrast** in appearance to the public from Poplar and Alabama, as their facades will **not** have the benefit of the cleaning given to the Cathedral and the Diocesan House under the current contract. While the estimate for the balance of the work is \$38,560.00, and the grant request is for \$25,000 (70% of the expense), the congregation of St. Mary's Episcopal Cathedral will fund the balance (30%).

DMC's Equal Business Opportunity (EBO) Program: St. Mary's Cathedral will follow the fair and open bidding process for all contracting and sub-contracting opportunities per the attached EBO Plan.

See attachments:

- 1, Photos with Descriptions
2. Masonry Specifications,
3. EBO Implementation Plan,.

PROJECT PHOTOS



St. Mary's Cathedral – Left to Right: Diocesan House, Cathedral, Martyr's Hall (between Cathedral and Sister's Chapel), Sister's Chapel. Moody Wing is out of photo to the right.



Sisters Chapel

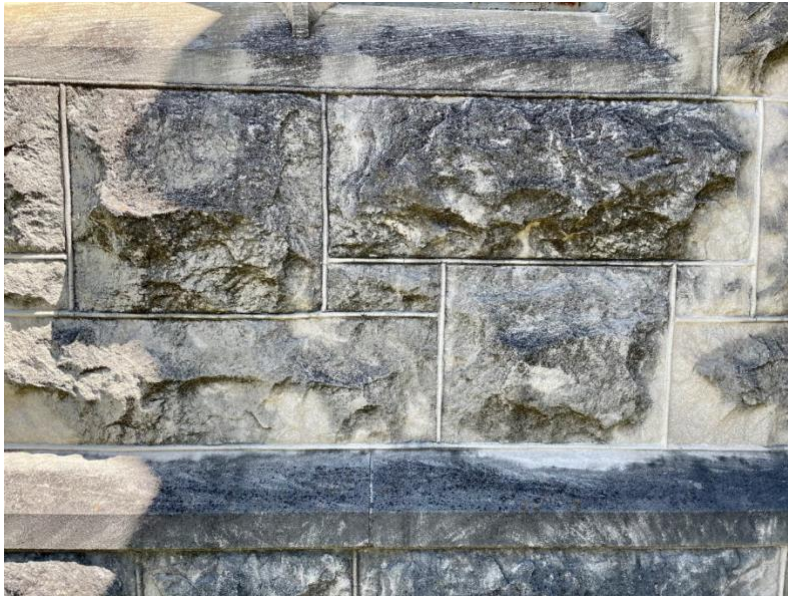


Moody Wing





Moody Wing



Sample of Dirt and Grime on Walls

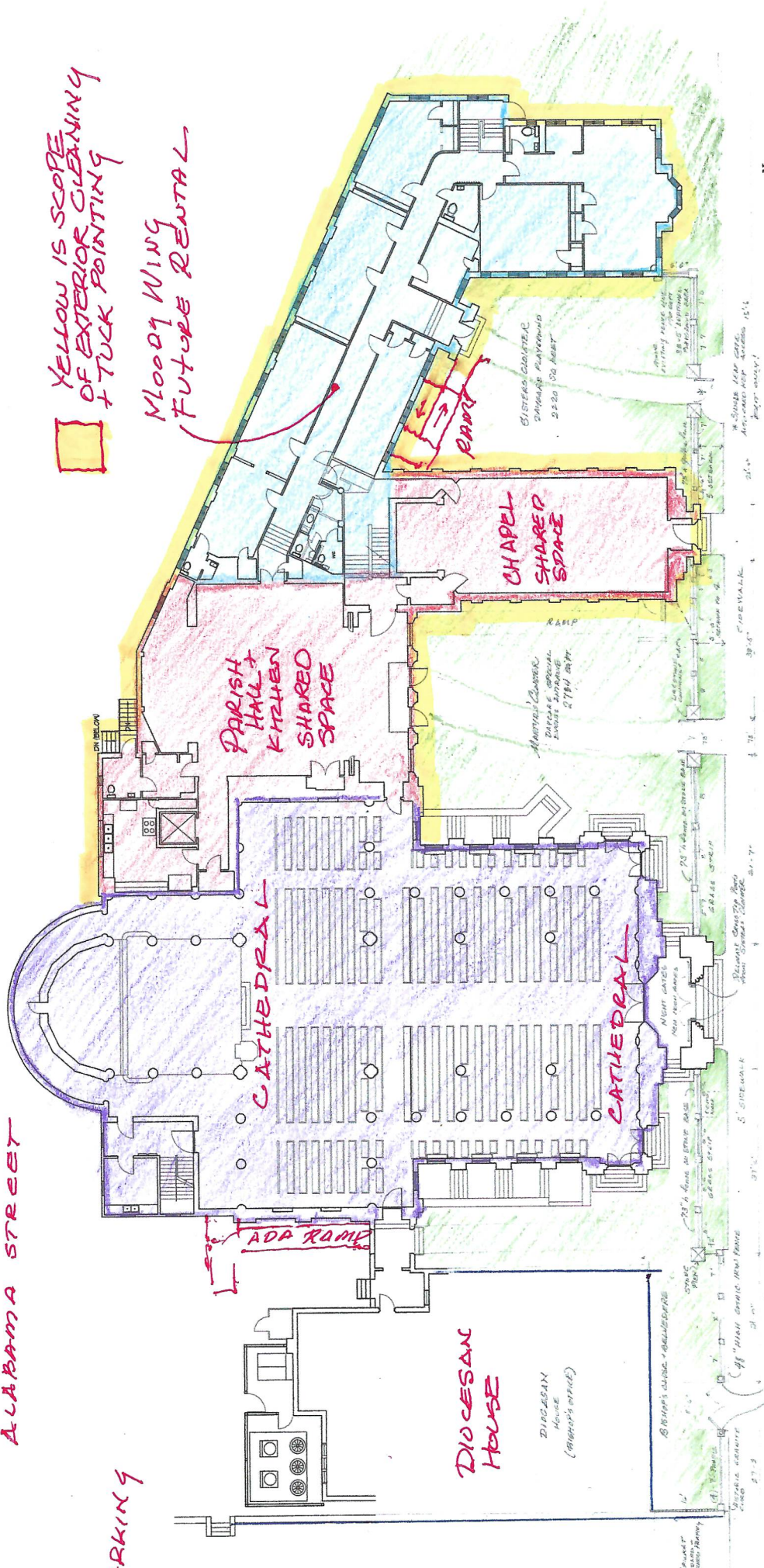
ST. MARY'S EPISCOPAL CATHEDRAL
700 POPLAR AVE.

ALABAMA STREET

PARKING

YELLOW IS SCOPE OF EXTERIOR CLEANING + TUCK POINTING

BLOODY WING FUTURE RENTAL



COMPOSITE FLOOR PLAN
SCALE: 1/8" = 1'-0"

POPLAR AVE.



Exterior Improvements for St. Mary's Episcopal Cathedral
Estimate of Costs and Scope of Work Needed

MAY 30, 2023

USES	Sources	Est. Cost	Location of Work
Pressure washing and tuck pointing		39,000	Moody Wing, Parish Hall, Chapel, Alabama St.
Exterior painting, prep, prime, 2 top coats		7,000	
ADA ramp to Moody Hall		12,500	
Modification of stone opening for Moody		3,000	
New door with exterior crash hardware		3,500	Moody Wing
ADA ramp west entrance		4,500	
Glass door with panic hardware west		3,500	
Digital keypad locks on gothic gates (2)		3,000	
TOTAL - TO BE BID TO MWOB		\$76,000	
PROJECTED AND CONFIRMED SOURCES			
DMC/CRA Good Neighbor Grant (pending)	25,000		
MMDC. ADA Ramp Grant. Moody Wing	12,500		
St. Mary's Capitol Campaign & trusts	38,500		
TOTAL SOURCES	\$76,000		

SECTION 04900

MASONRY RESTORATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. All labor, equipment and materials required for the Work, including, but not necessarily limited to, the following:
 - 1. Work of this Section is for the Cathedral. Diocesan House is not in Contract.
 - 2. Re-setting of existing undamaged face brick and stone units which are loose.
 - 3. Re-pointing of existing brick joints and stone joints which are missing, loose, or otherwise deteriorated.
 - 4. Cleaning of restored stone and brick as shown in the drawings; the tower above roof and stucco around Ambulatory are not included.
 - 5. Preparation and coordination of restoration Work and adjacent Work by other trades.
 - 6. Anchors and fasteners in conjunction with above.
 - 7. Setting and pointing mortars, sealants and joint fillers, and accessory setting materials in conjunction with above.

1.02 RELATED SECTIONS

- A. Section 07600 - Flashing: Replacement of damaged flashings.
- B. Section 07920 - Sealants and Caulking: Sealing in brick masonry at flashings.

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product Data: Submit manufacturer's specifications and installation instructions for each material.
- C. Shop Drawings
 - 1. Submit Shop Drawings for fabrication and installation of any new stone, based on field measurements.
 - 2. Include large scale details of anchorage and jointing provisions.
 - 3. Indicate materials and dimensions, including adjacent materials.
- D. Work Plan: Submit written program describing in detail materials, methods, equipment and sequencing to be used for restoration, including protection of surrounding materials on building and site during operations.
- E. Runoff Water Management Plan: If chemical cleaners are used, submit written plan for collecting, testing, treating, and disposing of runoff water from chemical cleaning operations.
- F. Samples: Prior to preparation of sample installation, submit samples of re-pointing mortar mounted in 6 inch long x 1/2 inch wide aluminum or plastic channels.
- G. Test Reports: Submit certified test reports performed by recognized testing laboratory of existing mortar.
- H. Manufacturer's Field Reports: Submit field reports of cleaning materials manufacturer's technical representative.
- I. Qualification Data: Submit installer qualifications verifying years of experience; include list of completed projects having similar scope of work identified by name, location, date, reference names and phone numbers.

1.04 SYSTEM REQUIREMENTS

A. Performance Requirements

1. Setting of new stone and re-setting of loose existing stone: Determine type, size, quantity and locations of anchors and supports based on design factor of safety as indicated in "Indiana Limestone Handbook" by Indiana Limestone Institute of America, Inc. (ILI).
2. Cleaning: Provide cleaning materials and methods which will not damage or deteriorate existing masonry or adjoining construction.
3. Re-pointing
 - a. Provide mortar, sealants, and joint filler materials and installations to replace missing, loose, cracked, or otherwise deteriorated existing masonry joint materials with like materials.
 - b. Re-pointing Work shall be permanent, structurally sound and watertight; shall not spall, crack, delaminate or otherwise deteriorate; and shall not damage or deteriorate existing masonry or adjoining construction.

B. Visual Requirements

1. Restoration Work shall match existing masonry work to remain, including texture and color, and accepted sample installations.
2. New Stone
 - a. Color Range: Uniform with no discernible variation between pieces in each contiguous area; as required to match color range of existing adjoining stone.
 - b. Finishing:
 - (1) Smooth stone: machine-planed producing an uninterrupted appearance free of tool marks; as required to match finish of existing adjoining stone.
 - (2) Rusticated: carved to match the style, texture, and relief of the existing stone.

C. Testing Requirements - Mortar

1. Submit sample of existing mortar, for both brick joints and stone joints, to recognized independent laboratory for analysis.
2. Test procedure shall be standard methods of inorganic analysis and shall determine mortar components as percent of weight, proportion by weight and proportion by volume.
3. Provide additional testing as required to provide materials and mixes required to fulfill performance requirements.

D. Interface with Other Systems: Coordinate with Work of other trades affected by Work of this Section.

1.05 QUALITY ASSURANCE

- A. Contractor Qualifications: Contractor performing cleaning and restoration work shall have had previous experience on projects similar in scope and been in business a minimum of ten years. Contractor shall submit evidence of previous, successful projects on at least five (5) projects similar in scope to this project.
- B. Contractor Supervision: Provide at least one (1) experienced person who will be present at all times during the execution of the work in this Section, and who shall be thoroughly familiar with the requirements of the work. This person shall direct all work performed under this Section of the specifications. No contractor will be considered for selection who has not demonstrated, through previous experience, the ability to perform the qualities of workmanship required of this Section.
- C. Sample Areas: Provide a sample area of masonry cleaning and repairs, at locations designated by the Architect, for review. The area should be large enough to adequately demonstrate the results. Obtain approval in writing of sample areas from Architect and Owner prior to proceeding with remainder of building.
- D. Cleaning Materials Manufacturer's Inspection
 1. At start of cleaning Work and periodically as Work progresses, provide the services of cleaning materials manufacturer's technical representative at job site as necessary to advise on phases of Work.

2. Representative shall inspect Work and Contractor shall be responsible for carrying out recommendations of manufacturer to ensure proper application of materials and proper cleaning of surfaces.
- E. Runoff Water Management
1. General: If chemical cleaners are used, collect, test, treat, and dispose of runoff water from chemical cleaning operations in accordance with the following general requirements, and with approved runoff water management plan.
 2. Collect runoff water in temporary holding tanks. Do not allow runoff water to drain to ground or sewers.
 3. Test collected water for pH.
 - a. Neutralize water with pH of less than 5, using methods approved by Architect.
 - b. Re-test treated water. Repeat testing and treating process until water is neutralized, ie. has pH between 5 and 7.
 4. Discharge neutralized water on site, when approved by Architect.
 5. Regulatory requirements: Comply with applicable requirements of authorities having jurisdiction over Project.
- F. Reference Standards: Except as may be modified by governing authorities or these Specifications, comply with applicable provisions and recommendations of The Indiana Limestone Institute of America, Inc. (I.L.I).

1.06 SAMPLE INSTALLATIONS

- A. Prior to commencing Work and preceding pre-installation conference, provide sample installations for the following:
1. Sample for removal of mortar and mortar re-pointing at joints to be re-pointed with mortar, for both brick joints and stone joints.
 2. Cleaning test patches to demonstrate materials and methods to be used for stripping and cleaning each type of masonry surface. Allow waiting period of not less than 7 days after completion of sample cleaning to permit study of sample installations for negative reaction of masonry to cleaning agents.
- B. Quantities and Sizes
1. Provide as required to adequately show Work in locations acceptable to Architect.
 2. Sizes and Locations
 - a. Minimum 25 square feet for each sample.
 - b. Each test patch for stone shall include both flat stone surfaces and profiled or tooled stone surfaces.
 3. Cleaning Test Patches
 - a. Provide one test patch for each proposed cleaning method and material, for water methods and for chemical cleaning methods (if both methods are proposed), for each different masonry material to be cleaned.
 - b. Locate test patches for each material adjacent to each other, for comparison of cleaning materials and methods, in inconspicuous areas of building as determined by Architect.
 - c. Document each tested procedure. Record number of applications, cleaning material and equipment, dwell time and wash/rinse procedures.
- C. Materials: Complete each installation with required materials including mortar, and sealants if required.
- D. Architect's Review
1. Architect will review sample installations for visual acceptance of workmanship.
 2. Obtain Architect's approval of sample installations before proceeding with subsequent Work.
- E. Maintain accepted sample installations during construction as standard for subsequent Work.
- F. Properly finished and maintained sample installations may be incorporated into completed Work.

1.07 PRE-INSTALLATION CONFERENCE

- A. Prior to start of Work, meet at site, under Contractor's direction, to review cutting and patching and installation procedures and coordination with other Work.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect products in accordance with manufacturer's instructions.
- B. Store in protected and dry area in manufacturer's unopened protective shipping packaging.
- C. Support as required to prevent any damage to materials.

1.09 PROJECT CONDITIONS

A. Cleaning Requirements

1. Prevent cleaning solutions, if used, from coming into contact with people, motor vehicles, landscaping or paving, buildings and other surfaces not to be cleaned.
2. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
3. Disposal of Run-off
 - a. Dispose of run-off from cleaning operations by legal means and in manner which prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
 - b. See "Runoff Water Management" above for additional requirements.

B. Temporary Protection

1. Provide temporary protection at building entrances, to protect public from water, cleaning solutions, and overspray.
2. Relocate temporary protection as may be required by the progress of the Work.
3. Remove temporary protection at completion of Work.

C. Environmental Requirements

1. Setting and Repairing Stone
 - a. Do not build upon frozen Work.
 - b. Do not set units which are at a temperature of less than 32°F which have a film of frozen water or frost.
 - c. Comply with recommendations of referenced standards and The International Masonry Industry All-Weather Council for cold weather construction and protection.
2. Cleaning
 - a. Clean masonry surfaces only when air temperatures are 40°F and above and will remain so until masonry has dried out, but for not less than 7 days after completion of cleaning.
 - b. Do not re-point mortar joints unless air temperatures are between 40°F and 80°F and will remain so for at least 48 hours after completion of Work.
 - c. Do not re-point units which are at temperatures of less than 32°F or which have film of frozen water or frost.
3. Provide temporary heat and enclosure for Work which has been completed less than 24 hours when ambient temperature is less than 40°F and falling.
4. Remove and replace Work which is observed to be damaged in any way by freezing or frost.

D. Periodically inspect area drains to ensure they are not clogged by water runoff or debris.

1. Remove debris to allow free draining of water.
2. If drains are clogged or backed-up, cease cleaning operations until back-up is relieved and drains are free-draining.

E. Field Measurements for New Stone: Verify dimensions of existing conditions and supporting structure at Project site by accurate field measurement.

1.10 SEQUENCING AND SCHEDULING

- A. If chemical cleaners could damage roofing, complete cleaning of masonry prior to starting re-roofing.
- B. Unless otherwise required for proper execution of Work to fulfill performance requirements, sequence the Work as follows:
 - 1. Re-setting Stone and Brick
 - a. Prior to commencing re-pointing and cleaning of each area of building, examine masonry in that area for loose, cracked, spalled, or otherwise damaged stone and brick.
 - b. Remove and replace brick and stone units which are cracked, spalled or otherwise damaged, with new brick and stone, respectively.
 - c. Remove and reset loose undamaged brick and stone units.
 - d. Make repairs to damaged masonry.
 - 2. Re-pointing Joints
 - a. Prior to commencing re-pointing of each area of building, examine brick joints and stone joints and wall opening perimeter joints around openings (such as windows, doors, and louvers) in that area for missing, loose, cracked, crumbling, or other deteriorated joint materials.
 - b. Remove loose or deteriorated joint materials.
 - c. Re-point existing brick joints and stone mortar joints with mortar; re-point existing sealant joints with sealant. See Section 07920 - Sealants and Caulking for re-pointing existing sealant joints with sealant and for repair of joint sealers around openings damaged by cleaning operations.
 - 3. Clean brick and stone.

PART 2- PRODUCTS

2.01 STONE

- A. Limestone: Limestone, complying with ASTM C568, Classification II.
 - 1. Grade: As required to match color, texture and grain structure of existing stone on Cathedral.
 - 2. Color: Match color range of existing adjoining stone.
 - 3. Finish: Smooth finish, to match finish of existing adjoining stone.
- B. Fabrication of New Stone
 - 1. If required, fabricate stone as indicated, as detailed on final Shop Drawings, and as recommended by ILL.
 - 2. Select stone to match and blend with existing adjoining stone.
 - 3. Cutting
 - a. Cut joints full and square for full thickness of stone with various shapes required for conditions of installation.
 - b. Make arrises straight, sharp, true and continuous at joints.
 - c. Cut and drill stones in shop as required for supports, anchors, and other inserts.
 - d. Cut and back-check as required for proper fit and clearance.
 - e. Allow for expansion and contraction within limits of joint material when cutting for anchorage devices.

2.02 MORTAR AND GROUT MATERIALS

- A. General: Materials for re-pointing and re-setting Work shall match existing mortar and grout materials and shall conform to the following standards, unless otherwise required to fulfill performance requirements.
- B. Portland Cement
 - 1. ASTM C150, Type I or Type II, from one source only, non-staining and non-air-entraining.
 - 2. Color: Gray or white or a blend as required for pointing mortar to match color of existing mortar, for brick joints and for stone joints.
- C. Lime: Hydrated lime; standard manufacture; ASTM C207, Type S.

D. Mortar Sand

1. General

- a. Match size, texture, and gradation of sand in existing mortar joints as closely as possible.
 - b. For pointing mortar, provide sand with rounded edges.
2. ASTM C144, clean, washed and free from impurities.
 3. Colored Aggregates
 - a. Natural sand, ground granite or other sound stone, well graded.
 - b. Provide as may be required for pointing mortar to match color of existing mortar.

E. Coloring Agent

1. Lime-proof and alkali-proof mineral oxide, harmless to mortar set and strength; stable at high temperature and resistant to ultraviolet light.
2. Provide as may be required for pointing mortar to match color of existing mortar.

F. Water: Clean, clear, non-alkaline and free of salts and other harmful elements which would impair Work; potable.

G. Antifreeze Additives: Do not lower freezing point of setting or pointing mortars by use of antifreeze agents, including calcium chloride.

2.03 MIXES

A. General: Provide mortar and grout of same mix and proportion as existing, based on results of laboratory analysis.

B. Mixing Procedures

1. Measure materials by volume or equivalent weight. Do not measure by shovel. Use known measure.
2. Mix dry mortar ingredients thoroughly. Mix again, using only enough water to make a damp, unworkable mix which will retain its form when pressed into a ball. Keep mortar in this dampened condition for one to two hours, then add water to bring it to proper consistency.
3. Use mortar within 60 minutes of final mixing. Re-tempering is not permitted.

2.04 CLEANING MATERIALS AND EQUIPMENT

A. Water for Cleaning: Clean, potable, free of oils, acids, alkalis, salts and organic matter.

B. Brushes: Fiber bristle, except where otherwise recommended by manufacturer of chemical cleaners.

C. Spray Equipment

1. Provide equipment for controlled spray application of water at rates specified below for pressure and volume. Use non-corrosive piping and hoses.
2. Provide pumps as required to provide necessary volume of water to soaking and spray equipment.

D. Chemical Cleaners

1. General

- a. Provide chemical cleaners specifically manufactured for cleaning stains from limestone and brick. Selected cleaners shall not damage or otherwise deteriorate facade materials.
- b. See "Cleaning" below for selection procedures for use of cleaners.

2. Prewash for Limestone

- a. Alkaline based cleaning compound containing no abrasives or ingredients harmful to stone; pH approximately 14.
- b. Formulated for use with afterwash for limestone, for removal of heavy carbon, dirt, and other atmospheric stains from limestone.

3. Afterwash for Limestone

- a. Organic acid cleaning compound containing no abrasives or ingredients harmful to stone; does not contain hydrochloric (muriatic) acid or hydrofluoric acid; pH approximately 1.6.

- b. Formulated for use with prewash for limestone, for removal of heavy carbon, dirt, and other atmospheric stains from limestone.
- 4. Acceptable Products and Manufacturers
 - a. Listed products establish standard of quality and are manufactured by Prosooco, Inc., Kansas City, KS.
 - (1) Brick Cleaners
 - (a) Sure Klean Restoration Cleaner.
 - (b) Sure Klean Heavy Duty Restoration Cleaner.
 - (c) For asphalt stains: Sure Klean Asphalt and Tar Remover.
 - (d) For rust stains: Sure Klean Ferrous Stain Remover.
 - (2) Limestone Cleaners
 - (a) Sure Klean Limestone Restorer.
 - (b) Sure Klean Limestone Prewash.
 - (c) Sure Klean Limestone Afterwash.
 - b. Equivalent products by Diedrich Technologies, Inc., Oak Creek, WI. may be acceptable provided they comply with requirements of Contract Documents.

E. Paint Remover: Standard formulation for removing paint from masonry.

2.05 MISCELLANEOUS MATERIALS

- A. Anchors and Fasteners: Provide anchors and fasteners as recommended by Contractor for setting new stone and for re-setting of loose existing stone, and as follows.
 - 1. Stainless steel Anchor Bolts, Nuts and Washers: ASTM A666, Type 304, sizes to suit conditions of installation.
 - 2. Stainless steel Shapes and Plates: ASTM A666 and ASTM A276, Type 304.
 - 3. Stainless steel Fasteners: Annealed stainless steel bolts, nuts and washers of same alloy as anchors, conforming to ASTM F593 for bolts and ASTM F594 for nuts.
 - 4. Expansion Anchors: Stainless steel, Type 304. Type, size, and load capacity as required to support loading. Do not use lead shield expansion bolts or cinch anchors.
 - 5. Dowels: Type 304 stainless steel of the sizes as required for strength, alignment, and permanent anchorage.
 - 6. Shims: Resilient plastic of required joint thickness and of size required to support stone Work.
- B. Sealants and Joint Fillers: Refer to Section 07920 - Sealants and Caulking.
- C. Repair Materials
 - 1. Adhesive: Two-component, non-staining, waterproof, thermosetting epoxy adhesive recommended by stone fabricator, developing full strength of stone; clear or matching stone color.
 - 2. Cement-based repair material: Portland cement-based compound recommended by stone fabricator; specifically developed for repair and patching of Indiana limestone.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates and adjoining construction, and conditions under which Work is to be installed. Do not proceed with Work until unsatisfactory conditions are corrected.

3.02 STONE SETTING AND REPAIRS

- A. General
 - 1. After examining brick and stone in each area of building for loose, cracked, spalled, or otherwise damaged brick and stone, Contractor shall submit written recommendation to Architect for replacement, re-setting, or repair for each location of loose, cracked, spalled, or otherwise damaged brick and stone.
 - 2. Proceed with the Work contained in Contractor's recommendation, upon approval of Architect.

B. Removal of Existing Stone

1. Temporarily shore and brace walls and arches that require support prior to removal of stone. Remove temporary bracing at completion of Work.
2. Remove loose existing stone units to be re-set. Remove full stone units, for full height, width, and depth of unit.
3. Remove any existing wood trim simulating stone.
4. Remove existing anchors and supports in conjunction with removed stone.
5. Cut joints using tools designed for sawing or grinding, not hammering and chopping, so as not to damage adjoining materials to remain.

C. Preparation

1. Clean existing mortar, dirt and other foreign matter from removed stone to be re-set.
2. After stone has been removed, clean joint surfaces of adjoining stone to remain of existing mortar, dirt, and other foreign matter.

D. Installation

1. General: These requirements apply to setting of new stone and to re-setting of existing stone.
2. Provide crimps, dowels, ties and other anchors as required for installation of stone.
 - a. Do not re-use existing anchors.
 - b. Provide anchors in sufficient quantity to eliminate "rattle" or loose pieces and to ensure a rigid installation.
3. Fit stone into bonding and coursing pattern of existing surrounding stone, to provide neat installation with minimum of field cutting.
 - a. If cutting is required, use motor driven saw designed to cut masonry with clean, sharp, unchipped edges and without marring visible surfaces.
 - b. Carefully grind edges of stone abutting adjacent construction and fit closely.
 - c. Erect Work plumb and true with joints uniform in width and accurately aligned.
4. Drench joint surfaces with clear water just prior to setting, unless otherwise recommended.
5. Butter joints for full width before setting and set in full bed of mortar and anchor,
6. Provide shims as required to prevent extrusion of mortar. Locate shims at least 1 inch back from face of stone, so as not to spall face and edges of stone below, and so as not to interfere with raking out of mortar for pointing as specified below.
7. Do not set units above until mortar in course below is set sufficiently to maintain alignment and prevent extrusion of mortar.
8. Build stone Work firmly against and around other Work.
9. Keep cavities clear of mortar droppings.
10. Completely fill anchor, dowel, and similar holes.
11. Remove spillage immediately.

E. Joints

1. General
 - a. Provide joint material (mortar or sealant) to match existing adjoining joint material and alignment.
 - b. Widths: Match existing adjoining joint width.
 - c. Tolerances: Match existing joint tolerances.
2. Joint Preparation
 - a. Sealant Joints: Rake out mortar after initial set to provide depth as recommended by sealant manufacturer to accommodate backer rod and sealant. See 07920 - Sealants and Caulking for sealant installation.
 - b. Pointing Mortar Joints
 - (1) Rake out mortar after initial set to 1-inch depth.
 - (2) Clean joint surfaces.
 - (3) Wet units before pointing as recommended by Contractor,
3. Joint materials installation: Follow procedures specified for re-pointing and re-sealing Work.

F. Repairs

1. General

- a. Repair chips, missing areas, holes, and cracks. Recommend repair method appropriate for each area of damage, and obtain Architect's approval for each area before proceeding.
 - b. Comply with materials and procedures as described in "Repairing Damage to Indiana Limestone" by ILI, as appropriate for each repair.
2. Remove existing nails in stone joints, and repoint joints with mortar.

3.03 EXISTING JOINT RE-POINTING

A. General

1. Base Bid Work

- a. Include 200 linear feet of removing existing mortar and re-pointing with new mortar in Base Bid Work.
 - b. If required, re-pointing in excess of Base Bid allowance must be approved by change order.
2. These requirements apply to all mortar joints in face brick and stone requiring re-pointing.

B. Preparation

1. Cut out old mortar by hand with chisel and mallet.
2. Rake out loose mortar from joints to depths equal to 2-1/2 times their widths but not less than 1/2 inch nor less than that required to expose sound unweathered mortar.
3. Remove mortar from joint surfaces within raked-out joints to provide reveals with square backs.
4. Expose masonry and/or stone for complete contact with pointing mortar.
5. Brush, vacuum or flush joints to remove dirt and loose debris.
6. Do not spall edges of units or widen joints.
7. Replace masonry which may become damaged with new brick or stone, as applicable, to match type, grade, color range, finish, and texture of existing adjoining undamaged brick or stone.

C. Joint Re-Pointing

1. Joint surfaces should be damp but free of standing water.
2. Pack joints with mortar leaving no voids.
3. Place mortar in layers not exceeding 1/2 inch in depth.
4. Apply succeeding layers only after preceding layer has taken initial set.
5. Use clean tools and equipment free from hardened or partially set mortar.
6. When mortar is thumb-print hard, tool joints to match original joints in appearance.
 - a. Where existing joints are concave-tooled, provide concave tooling of re-pointed joints.
 - b. Where existing joints are convex-tooled, provide convex tooling of re-pointed joints.
 - c. Where existing joints are flush-tooled, provide flush tooling of re-pointed joints.
7. Remove excess mortar from edge of joint by brushing.
8. Cure mortar by maintaining in a damp condition for not less than 72 hours or until surface is cured.

D. Joint Sealing or Re-Sealing

1. Rake out mortar or sealant from joints to depth required to receive new backer rod and sealant, to not less than 3/4 inch deep.
2. Stone Coping on Parapets: Remove existing lead joint cap, and mortar to depth required to receive new backer rod and sealant.
3. Prepare joints and install new materials as recommended by sealant manufacturer and as specified in Section 07920 - Sealants and Caulking.

3.04 CLEANING

A. Clean building as required to match accepted sample installations.

B. General

1. Base Bid Work

- a. Include scrubbing and water application methods in Base Bid Work.

- b. Include chemical cleaning methods as required. These methods must be reviewed and approved by the Architect prior to execution.
 - 2. Provide methods and procedures recommended by cleaning manufacturer and installer.
 - 3. Perform each cleaning method in manner resulting in uniform appearance and effect without streaking or damage to surfaces.
 - 4. Clean areas indicated to be cleaned, of dirt, algae, mildew, carbon deposits, asphalt, efflorescence, and rust stains and streaks.
 - 5. Selection of Cleaning Materials and Methods
 - a. General: Use the gentlest materials and methods possible to clean masonry. If these should not prove adequate for cleaning, other methods listed in the following sequence may be used after consultation and acceptance of Architect.
 - b. Sequence
 - (1) Use scrubbing and water application methods first.
 - (2) Use chemical cleaning methods to clean stone surfaces that do not become clean by water application method, upon approval of Architect.
 - c. Architect's selection of cleaning materials and methods will be based on results of cleaning sample installation test patches.
- C. Protection
- 1. Provide protection for facade materials, materials adjacent to Work and protection for surrounding surfaces from debris and run-off.
 - 2. Protect doors, windows, louvers, and other openings from water penetration.
 - 3. Chemical cleaning agents listed for limestone are not suitable for brick, and vice versa. If chemical cleaning agents are used, provide protection for adjacent unlike materials, in addition to other required protections.
- D. Paint Removal
- 1. Remove existing paint by applying paint stripper in accordance with manufacturer's directions.
 - 2. Allow stripper to stand on surface until paint is softened and easily removed.
 - 3. Remove softened paint by most appropriate method that does not harm or deface masonry.
 - 4. Apply multiple applications of stripper if required to completely remove paint.
 - 5. Neutralize and remove paint stripper residue by rinsing with clean water.
- E. Water Application Methods
- 1. Soak stone surfaces continuously with water using reciprocating sprayers, as required to loosen and dissolve surface dirt. Soak from bottom to top of each scaffold width.
 - 2. Scrub stone with bristle brushes as required to loosen and remove dirt.
 - 3. Following water soaking, pressure rinse saturated areas to rinse away loosened dirt and clean stone pores.
 - a. Rinse at pressure not exceeding 400 psi, at 4 gallons per minute at pressure pump, 40° fan tip. Keep tip of sprayer at least 24 inches from stone surfaces.
 - b. Higher pressures may be permitted by Architect on a case-by-case basis, for localized areas.
 - (1) Pressure shall not be so high as to erode masonry or mortar, or to wash out mortar or sealant from joints.
 - (2) If mortar or sealant is washed out of joints, remove damaged material back to sound joint material, and re-point with new material of same type, at no cost to Owner.
 - c. Rinse from bottom to top of each scaffold width; continue until rinse water runs clear.
 - 4. Direction of Spray
 - a. On smooth finished stone, spray from side to side in overlapping bands to produce uniform coverage and even effect.
 - b. On tooled stone, spray parallel to direction of tooling, so as not to damage stone or remove detail of tooling. Do not move spray across direction of tooling.

F. Chemical Cleaner Application

1. General

- a. Apply using materials and methods accepted on sample installation test patches.
- b. Strictly comply with manufacturer's instructions.
- c. Do not allow chemicals to remain on stone for longer than recommended periods.
- d. Do not apply to same stone surfaces more than twice.
- e. Scrub stone with bristle brushes as required to loosen and remove dirt.

2. Prewash

- a. Thoroughly prewet area to be cleaned, using water.
- b. Do not dilute prewash concentrate. Apply in concentrate form.
- c. Apply prewash with soft-bristled nylon brush or synthetic deep-nap roller. Spray-application of prewash is not permitted. Allow to remain on stone for approximately 50 minutes.
- d. Rinse thoroughly with water spray; 400 psi pressure, 4 gallons per minute at pressure pump, 40° fan tip. Keep tip of sprayer at least 18 inches from stone surfaces.

3. Afterwash

- a. Immediately after rinsing prewash, apply afterwash solution to area just cleaned. Dilute afterwash at rate of 1 part water to 1 part afterwash concentrate.
- b. Apply afterwash solution with tampico masonry brush, synthetic deep-nap roller, or low-pressure airless spray. Allow to remain on stone for 3 to 5 minutes.
- c. Rinse thoroughly with water spray; 400 psi pressure, 4 gallons per minute at pressure pump, 40° fan tip. Keep tip of sprayer at least 18 inches from stone surfaces.

4. Rinsing

- a. Higher pressures may be permitted by Architect on a case-by-case basis, for localized areas.
 - (1) Pressure shall not be so high as to erode masonry or mortar, or to wash out mortar or sealant from joints.
 - (2) If mortar or sealant is washed out of joints, remove damaged material back to sound joint material, and re-point with new material of same type, at no cost to owner.
- b. Rinse from top to bottom of each scaffold width; continue until rinse water runs clear.

5. Direction of Spray: Comply with requirements specified for Water Application Methods.

3.05 REPLACEMENT AND PROTECTION

- A. Immediately upon completion of cleaning in each area, remove overspray of materials from adjoining surfaces; clean surfaces and remove evidence of soiling.
- B. Replace materials damaged during restoration as required to match adjoining construction.
- C. Protect and maintain Work through construction period so that it will be without any indication of damage or deterioration at time of acceptance.

END OF SECTION

