

The New York Landmarks Conservancy
Lucy G. Moses Preservation Awards
Nomination



St. Paul's Chapel
209 Broadway
New York, New York

Exterior Restoration

SUPERSTRUCTURES
+ **ENGINEERS**
ARCHITECTS

32 Avenue of the Americas
New York, NY 10013
Tel 212 505 1133
www.superstructures.com



Painting of St. Paul's Chapel in 1775, courtesy of the New York Historical Society

“City’s Greatest Architectural Achievement Prior to 1776” Restored Anew

St. Paul's Chapel is affiliated with Trinity Wall Street, a 1,000 member Episcopal parish that has been a part of New York City since 1697. Established during the British occupation of New York and recognized by royal charter, Trinity was the first Anglican Church in Manhattan. After the Revolutionary War, Trinity Church helped form the Episcopal Church of America.

Architect Thomas McBean designed St. Paul's in 1764 as a rustic interpretation of his teacher James Gibbs' famous St Martin-in-the-Fields in London, England. The 220-foot-tall clock tower and steeple was designed 28 years later by the American architect James Crommelin Lawrence, following the lines of the London church's steeple.

According to the National Register of Historic Places Inventory Nomination Form's Statement of Significance, St. Paul's Chapel "is only equaled ... by King's Chapel in Boston for its time period. St.

Paul's Chapel is also New York City's sole surviving religious edifice of the pre-Revolutionary period and it represents that city's greatest architectural achievement prior to 1776."

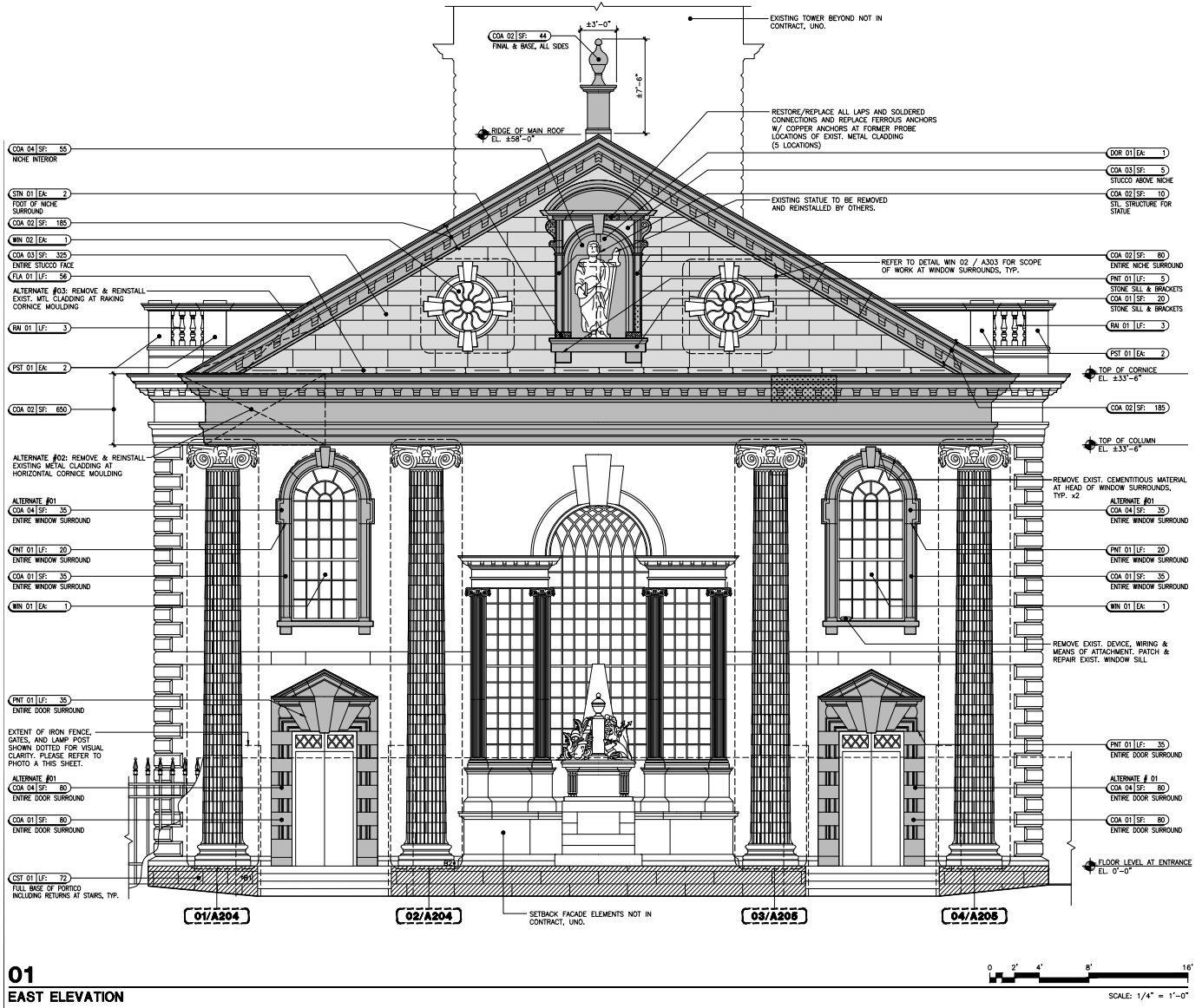
The church building was initially oriented to face the Hudson River, with its back to Broadway. According to the Landmarks Preservation Commission Designation Report, "The east portico was added three years later as a concession to the persistent demands of that busy thoroughfare." Revolutionary war hero General Richard Montgomery is buried beneath the east porch with a memorial monument to him located in the center of the porch. While he was serving as Ambassador to France, Benjamin Franklin commissioned the Italian sculptor, Jaques Caffieri to design and fabricate the monument. This is America's and New York's very first monument and it was installed by Pierre-Charles L'Enfant, known famously as the city planner of the then future capital, Washington, D.C.

The St. Paul's Chapel's primary façade consists mainly of rough-dressed blocks of Manhattan schist. Smooth finish sandstone accents the window and door frames, quoins, cornice and columns.

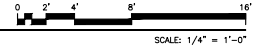
The 250-year-old structure was in remarkably good condition, nonetheless there were significant areas that needed to be addressed in the current exterior restoration. The parish retains an extensive archive of materials on the modifications and repairs that have occurred over the years. After extensive research and discussion between the design team, the owner, and Landmarks Preservation Commission staff, it was decided to restore the building as much as possible to its condition as of 1929. No major alterations had occurred since then and it was the earliest period for which overall conditions could reasonably be verified for a historically cohesive restoration. Another important stated goal of the project was to retain as much of the original building fabric as possible.



St. Paul's Chapel circa 1900, courtesy of the Museum of the City New York



01
EAST ELEVATION



The recent project began with restoration of the portico on the eastern side of the building. Work continued on the west portico, the clock tower and steeple and with window refurbishment. Key elements of the scope included restoration of sandstone, lead-coated copper steeple cladding, clock mechanics and faces, plaster tympanum and wooden windows.

As an important historic site, St. Paul's Chapel and its grounds receive a steady stream of visitors. During construction protections were put in place and scaffolding erected so that access and egress were never impeded. Temporary wooden ramps allowed for handicapped access during construction.

On the following pages are included narrative and photos depicting the restoration in greater detail.

Steeple Clock

The steeple clock was no longer functional and its four faces exhibited various amounts of deterioration, some severe. Existing tongue and groove boards on three clock faces were repaired using a wood consolidation system. Prior to consolidation, the wood was cleaned and primed. All the wooden tongue and groove slats on the eastern clock face were replaced with cedar slats. SUPERSTRUCTURES' conservator conducted research and analysis to determine the appropriate wood species and grain. All access doors on all elevations were replaced with cedar. The clock hands at all clock faces were replaced with cedar clock hands (4 short and 4 long hands), then gilded. The other brass elements (numbers and minute track

Top left and bottom row: Clock faces before restoration: Top right: Clock face after restoration.



Steeple Clock (continued)

elements) were cleaned, treated for corrosion, primed, and gilded with gold leaf.

The mechanics of the clock were replaced. A new digital system was installed by Elderhorst Bells, Inc. The bells were maintained and some of the original mechanical elements were turned over to the Owner for preservation as artifacts.

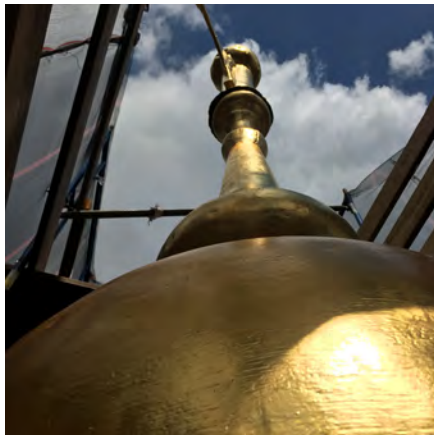
Top and bottom left, bottom center: Clock faces during restoration. Top right: Restored clock face. Bottom right: Parts of former clock mechanism retained for parish archives.



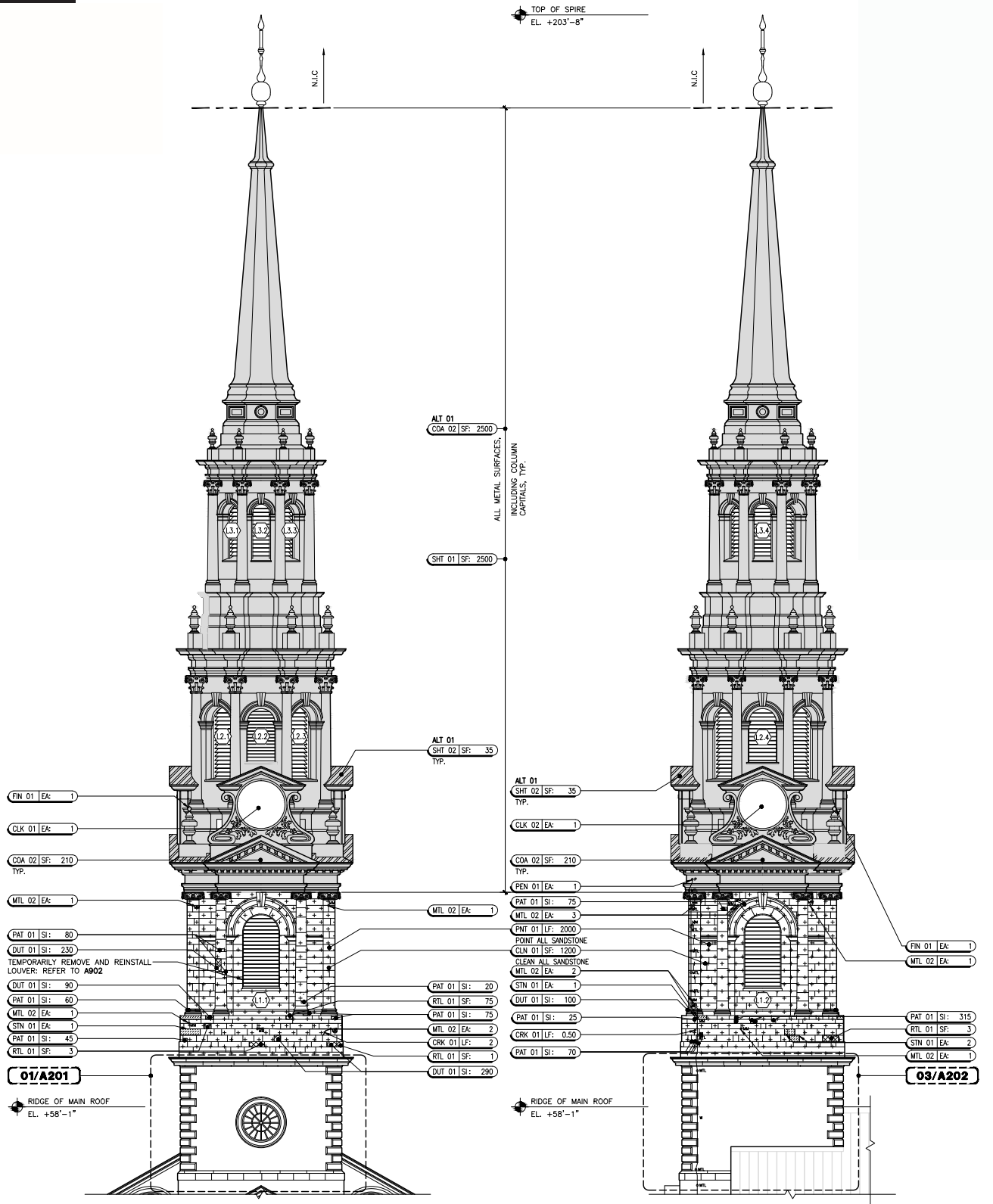
Steeple Cladding

The cladding of the steeple is lead coated copper. The original intent was to replace all the cladding but on investigation it was determined that much of it was in good condition and many decorative elements were deemed worthy of preservation. The upper portion of the steeple cladding was retained and restored by tightening seams and resoldering open joints as appropriate. The lower portion of the roof was replaced and coated to match the original lead-coated copper appearance. Minor damage on the weathervane was repaired and the entire assembly was gilded.

All photos on this page: Steeple cladding decorative elements and gilded weathervane during restoration. Following page: Steeple after restoration.



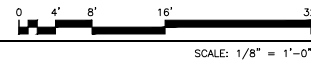




05
TOWER WEST ELEVATION



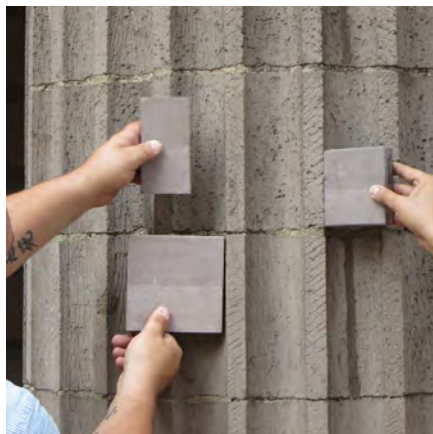
06
TOWER SOUTH ELEVATION



Sandstone

Sandstone was used for the columns at the east portico, as well as the stone around the windows, doors, and quoins. Significant restoration of this sandstone was done, including replacement, patching and dutchmen as appropriate. Comprehensive re-pointing was also done. Though various mortars had been applied over time, a conservator's analysis of underlying mortar established that the original mortar was white. SUPERSTRUCTURES' in-house conservators conducted an analysis to replicate the mortar formula containing the correct proportions of lime,

Top and bottom left: Sandstone columns before restoration. Bottom center and right: Columns during restoration. Top right: Restored column.



Sandstone (continued)

mortar, and sand as well as match the color and texture of the original mortar. Previously installed patches of improper materials were causing damage to the mother stone and were replaced with softer, more appropriate repair mortar and tooled to match the existing finish.

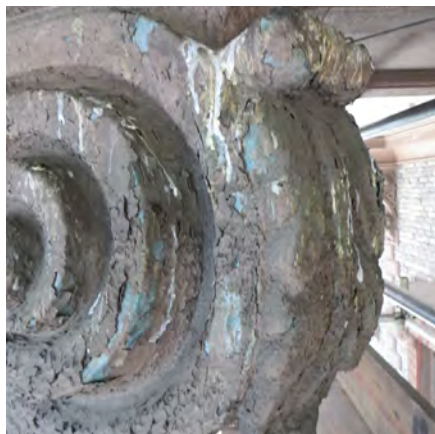
Top left: Sandstone around window before restoration. Top right, bottom left, right and center: Restored sandstone.



Sheet Metal Cornices and Capitals

Sheet metal cornices were restored on the east and west elevations, including those framing the tympanum, and on the north and south sides of the porticos. The metal cornices had been installed over wooden cornices in 1929 and mimicked their shape. The dentils were removed from the wooden cornices to allow installation of the sheet metal. This was one of the factors leading to selection of the 1929 exterior as the model for the present restoration. The cornices were recoated with sand-infused paint to give the appearance of surrounding sandstone, as was the intent with the original coatings on the cornices.

Upper left: Cornice before restoration. Lower left: Cornice during restoration. Upper right: Restored cornices. Lower center: Metal column capital before restoration. Lower right: Restored capital.

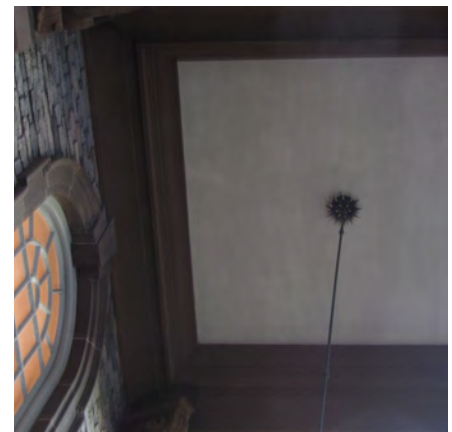


Typanum, Portico Base and Ceiling, East Elevation

A significant portion of the plaster facade of the tympanum above the eastern portico was deteriorated. For repair of the plaster wall SUPERSTRUCTURES specified a stucco mix matching the appearance of the original plaster. The scoring marks used to give the impression of stone were freshened and the entire area was coated.

The base of the portico had been replaced with historically inappropriate concrete, which in turn was extremely deteriorated. The concrete was replaced with cast stone selected to match the original sandstone.

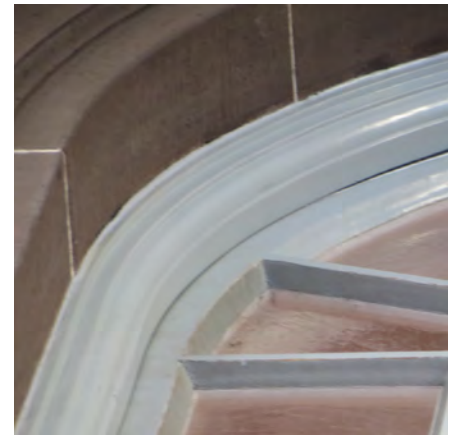
Upper left: Deterioration in facade of tympanum before restoration. Upper right: Restored tympanum. Lower left: Portico base before restoration. Lower center: Portico base restored. Lower right: Portico ceiling restored.

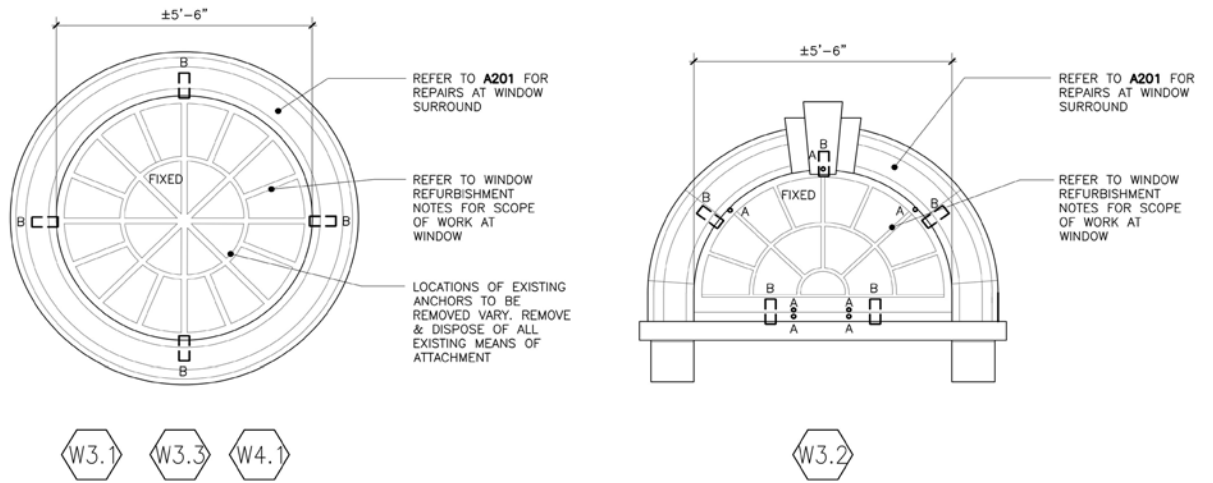


Windows

The window repair program was comprehensive. All wooden sashes were removed, stripped and repainted. Some wood consolidation was required. All the glazing was re-set. Broken panes were replaced with Restoration Glass® from Bendheim Architectural Glass for historical accuracy. Imported from Germany, the panes are mouth-blown glass and display characteristics of antique glass including mild waviness and occasional air bubbles. The window hardware was restored, including the mostly hidden operational hardware such as counterweights, chains and pulleys.

Upper and lower left: Windows before restoration. Upper right, lower center and right: Windows after restoration.





02

WINDOW REFURBISHMENT: TYPE 02

WINDOW REFURBISHMENT NOTES

1. REMOVE SASHES FROM MASONRY OPENINGS.
2. CAREFULLY REMOVE & STORE EXISTING SOUND GLAZING, REMOVE & DISPOSE OF PUTTY.
3. REMOVE & DISPOSE OF EXISTING ANCHORS AND MEANS OF ATTACHMENT. STRIP PAINT FROM ALL EXPOSED COPPER-CLAD SURFACES, EXTERIOR & INTERIOR FACES.
4. REPAIR EXISTING OPEN SEAMS IN COPPER CLADDING WITH COPPER RIVETS AND SILICONE SEALANT.
5. REINSTALL EXISTING GLAZING WITH NEW WINDOW PUTTY.
6. PAINT ALL EXPOSED COPPER-CLAD SURFACES.
7. INSTALL NEW HEAVY DUTY SOLID BRASS BRACKETS WITH BRASS ANCHORS TO MATCH EXISTING.
8. INSTALL NEW PERIMETER WEATHER-STRIPPING, TO BE 1-1/4" BRONZE ATTACHED TO SASH WITH #16x7/8" WEATHERSTRIP NAILS, ZERO INTERNATIONAL #19WB, OR EQUAL.
9. REINSTALL SASHES IN EXISTING MASONRY OPENINGS AFTER WORK TO SANDSTONE SURROUND IS COMPLETED.

KEY NOTES

- A • EXISTING ANCHORS TO BE REMOVED
- B □ □ BRASS BRACKETS (ON INTERIOR FACE): REFER TO NOTES #3 AND #9 FOR SCOPE OF WORK



SCALE: 1/2" = 1'-0"

Credits

Owner:

The Rector, Church-Wardens and Vestrymen of Trinity Church, in the City of New York.

- Ivor Anthony Hal – Senior Vice-President Design and Construction
- Luke S. Johns – Senior Construction Project Manger

Prime Architect / Engineer, Historic Preservation and Conservation:

SUPERSTRUCTURES Engineers + Architects

- David May, RA, Leed AP – Executive Principal
- John Galetta, RA, Leed AP – Principal in Charge
- Matthew Cronin, RA – Associate / Studio Head
- Margarita Pauliushchyk – Project Architect
- Timothy Wynter-Stoner, RA – Project Architect
- Patricia Miller – Conservator
- John Grande, PE – Project Structural Engineer
- Alan Radvinsky, PE – Structural Engineer
- Anna Kedrina – Project Architect
- Eugene Shvartsman – Engineer
- Klodian Pepaj – Engineer
- Gabriel Haywood – Technical Coordinator
- Diana Torres-Mella – Technical Coordinator
- Niraj Rawal – Expeditor

Contractors:

Conservator (preliminary investigation)

Integrated Conservation Resources, Inc. (ICR)
Glenn Boornazian, Co-President

Structural Subconsultant (to ICR and NOVA Construction)

Old Structures Engineering, PC
Donald Friedman, Principal

Prime Contractor (East Portico)

A. Ottavino Corp.
Kate Ottavino, President

Prime Contractor (West Portico, Windows, Tower and Steeple)

Nova Construction
Eric Janczyk, Owner

Stone Patching Materials

Edison Coatings, Inc.
Michael P. Edison, President

Clock Restoration (Mechanical)

Elderhorst Bells, Inc.
Mike Elderhorst, President

Spot Glazing Replacement

Bendheim Architectural Glass
Donald Jayson, Owner/Sr. Vice President

Dutchman and Full Stone Replacement (Natural Brownstone Sandstone)

Berkshire Stone, LLC
Dan Brooks, President

Material - Lead Coated Copper

Long Island Tinsmith Supply Corp. (LITSCO)
Larry Oberstein, Account Manager

Scaffolding

Everest Scaffolding
Christopher J. Downes, President

Metal Coating

RD Coatings USA
Jeff Dumas, President

Decorative Sheet Metal

W.F. Norman Corporation
Mark Quitno, Owner

Environmental Remediation

DEGMOR, Inc.
Morris Napolitano, President

Gilding

Evergreene Architectural Arts
Jeff Greene, President & Executive Project Director



St. Paul's Chapel, 2016

