Chapter 1

Restoration

Repair, Restoration, Replacement, and Re-Creation of Building Facades and Related Exterior Elements

The rich texture and character of New York City's streetscapes and historic buildings are created through the architectural elements and materials used in their construction. Historic materials, including wood, stone, terra cotta, metal, and stucco, among others, were deliberately chosen by architects and builders and are considered a significant part of a building's landmark designation. Historic materials, therefore, should be maintained, repaired, and replaced in-kind whenever possible. The protection of these historic materials serves as the basis for LPC's rules for work involving repair, restoration, replacement, and re-creation of historic materials such as building facades and related exterior elements (see **LPC Rules**, Section 2-11, available at **www.nyc.gov/landmarks**.)

NYC Landmarks Preservation Commission

In This Chapter, You Will Find:

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This chapter explains LPC's rules on repair, restoration, replacement, and re-creation work. Our goal is to help you submit a fully completed permit application for work that conforms to LPC Rules so you can get your permit more quickly.

Section A
How to Get Started

Before applying for your permit, you should:

Find Information About Your Building

This will help you determine how the rules apply.

What type of building is it?
Search for the building on the **Discover NYC Landmarks map** to determine if it is a designated landmark or located within a historic district.

Click on your building to find **construction date, architect and style, building and landmark type,** and a link to the **LPC designation report** with additional historical background.

What did your building look like?
Find **historic tax photos** from the 1940s and 1980s, available through the NYC Department of Records & Information Services NYC Municipal Archives Collections.

Additional information, including guidance on finding **historic maps**, can be found in the **LPC Resource Guide**, Researching Historic Buildings in New York City, available at www.nyc.gov/landmarks.

Do you need a special permit?
Verify whether your property is subject to a special permit such as a **Modification of Use (MOU)**. Specific guidelines for repair and replacement of historic materials may apply. To verify, contact LPC at 212-669-7817 or email info@lpc.nyc.gov.

How big is your building?
Verify the **height** of your building. Eligibility requirements for using substitute materials can vary, depending on the height (number of stories). See *Section B, Replacing Historic Materials*, for more information.

See if Your Work Requires an LPC Permit

Maybe you don't need a permit.
LPC requires permits for most types of work involving repair, restoration, replacement, and re-creation of historic materials.

A permit is **not required** for:

- Routine maintenance such as minor repairs to wood trim (e.g., filling nail/screw holes), polishing metalwork, or refastening loose elements
- Repainting a facade or an architectural feature the existing color, provided it was painted the color prior to historic district designation or was previously approved by the Commission
- Replacing flat roofing systems
- Minor probes or other investigative work

Probes must take place in unobtrusive areas, with the simple removal of a limited amount of material to expose underlying conditions for a short period of time, and all existing conditions must be restored in-kind upon completion of the probe.

Unsure whether your work requires a permit?
Contact LPC at 212-669-7817 or info@lpc.nyc.gov.

What You Will Need

All LPC permit applications and supporting materials are now filed and processed through Portico, the agency's web-based permit application portal. A complete application typically requires the materials listed below, but additional materials may be required depending on the type of work. See *Section B* for a list of all materials required for your work type.

Basic Application Materials

- ☐ **LPC permit application** filed on Portico
- ☐ **Color photos** of the entire building and close-ups that pinpoint areas of proposed work for context
- ☐ **Documentation** that supports restoration of missing or altered architectural features, if available, including historic photographs or drawings of the building or similar buildings
- ☐ **Assessment** of deteriorated conditions
- ☐ **Comparative drawings:**
  - Elevations of existing conditions and proposed restoration work
  - Sections of existing conditions and proposed restoration work for reconstructing architectural features, parapets, and partial / full facades
  - Large-scale details (in elevation, section, or plan, as needed) of existing conditions and proposed restoration work for replacing architectural features (sills, lintels, band courses, cornices, ornamentation, etc.) to illustrate proposed work
- ☐ **Written specifications** on methods of repair or replacement, noting that new work will match existing or historic conditions
- ☐ **Material specifications**
- ☐ **Color specifications / samples** to illustrate the proposed work
- ☐ **Department of Buildings (DOB) filing drawings** if proposed work requires a DOB permit

Section B
LPC Rules and Criteria

This is how the Landmarks Preservation Commission works:

The LPC Rules establish criteria that allow staff to review and approve proposals for certain types of work at landmark properties. Permit applications for work that meets the LPC Rules can be approved faster. If the work does not meet the rules, staff may suggest alternatives that do meet the rules — or your proposal may be presented to the LPC Commissioners for review at a public hearing. LPC staff can guide you through this process. Visit www.nyc.gov/landmarks for more information.

This section explains and illustrates the rules and criteria for the most common types of work involving repair, restoration, replacement, and re-creation of building facades and related exterior elements. See LPC Rules, Section 2-11, for more information.

In This Section:

General Criteria

Staff can issue permits for work to repair, restore, replace, and re-create building facades and related exterior elements if it meets the criteria in this chapter. Additional criteria may apply, depending on the work you are planning to do. See your specific work type for more information. Historic materials must be maintained, repaired, and replaced in-kind whenever possible, as most buildings are designated based in part on the presence of historic materials. Maintaining these elements in good repair keeps the building in a condition that is closer to its original appearance and helps its long-term preservation.

Repair, restoration, replacement, or re-creation must match the physical and aesthetic characteristics of the original or historic materials and features, including design, detail, profile, dimension, material, texture, tooling, dressing, color, and finish.

If materials are too deteriorated to repair and need to be replaced to ensure safe conditions, detailed information about the deterioration must be provided by a qualified engineer, contractor, or other industry professional. When feasible, repair is preferred over replacement.

Staff may consider alternative repair methods and substitute materials in certain situations. In others, use of substitute materials is prohibited. See your specific work type to determine whether materials must be replaced in-kind, i.e., match historic materials, or if substitute materials can be used.

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Note: If repair, restoration, replacement, or re-creation of architectural elements occurs on the front facade of the building, staff requires a sample of the material to be used to ensure it matches original or historic materials. After a permit is issued but prior to work commencing, LPC Staff must review and approve all requested samples. Most applicants provide samples by uploading photographs and other supporting documents to Portico, though in some cases an in-person site visit may be necessary.

Repairing or Restoring Facade Materials and Features

Cleaning and Removing Paint

Staff can issue permits for cleaning and removing paint and coatings from exterior masonry and facade materials if the proposed work meets the following criteria:

Removal Methods

The cleaning and paint removal methods and products should be the gentlest possible to avoid causing damage.

Tip: *Always start with the mildest possible form of cleaning (such as mild soap, water, and a soft bristle brush) before proposing a stronger method.*

Pressure Washer

A pressure washer can be used to clean the facade and remove paint but should not be used on wood or other fragile surfaces. Water pressure cannot exceed 500 psi on masonry or 300 psi on cast iron.

Tip: *To clean and remove paint or coatings, begin with the lowest possible water pressure and hold the nozzle at a safe distance. As needed, increase to the maximum allowable pressure.*

Required Application Materials

- ☐ **Photos of building facades**
- ☐ **Historic 1940s tax photos,** if available (See *Section A* for information on how to obtain tax photos.)
- ☐ **A conditions statement** that describes type, extent, and cause (if known) of deterioration, if applicable
- ☐ **Proposed annotated elevation or photo** of areas of the facade or architectural features to be stripped, cleaned, painted, or coated
- ☐ **Written specifications** of method of stripping or cleaning and painting/coating products (e.g., water pressure will not exceed 500 psi)
- ☐ **Color samples,** if applicable
- ☐ **DOB filing drawings** if proposed work requires a DOB permit

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Coating removal without damaging the historic material

Historic masonry damaged by harsh coating removal and cleaning methods

Chemical Detergents

Chemical detergents can be permitted, as long as they do not damage historic materials.

Tip: *Testing multiple products in consultation with LPC is the best way to find a cleaner that does not damage historic materials.*

Products should be tested in a small, discreet area.

Alternative methods such as micro-abrasive, dry ice, chemical, or laser cleaning can only be approved in specific cases and only in consultation with LPC staff.

Sandblast Cleaning

Sandblast cleaning ("sand-blasting") is **prohibited**. It can cause permanent damage to historic materials and allow water to infiltrate the building.

Heavy sandblasting scarred the surface of the masonry, contributing to its deterioration.

Historic bricks (on the left) damaged by heavy sandblasting.

Painting

Staff can issue permits for painting facades and building features that were originally or historically painted to protect them from damage or to more closely return them to their historic appearance. Painting facades or building features that were not originally or historically painted may be inappropriate.

First confirm that your building was painted the same color at time of designation or was previously approved to be painted a certain color by the Commission.

Paint must match physical and aesthetic characteristics of the building's original or historic paint. Color should be in keeping with the historic palette of buildings of the same type, style, and age, except in the following cases:

For painted historic masonry, proposed paint color needs to match the color of the underlying masonry, unless the color is part of a significant later alteration. However, removal of paint is preferred.

For individual landmarks, if a substantial portion of the paint on a primary facade is being removed, you must perform a paint analysis to document it (unless one already exists).

Note: The facade or architectural feature can be repainted the existing color present at the time of designation or previously approved by the Commission. This work does not require a permit. Changing colors does require a permit.

Required Application Materials

- ☐ **Photos of building facades**
- ☐ **Historic 1940s tax photos,** if available (See *Section A* for information on how to obtain tax photos.)
- ☐ **A conditions statement** that describes type, extent, and cause (if known) of deterioration, if applicable
- ☐ **Proposed annotated elevation or photo** of areas of the facade or architectural features to be stripped, cleaned, painted, or coated
- ☐ **Written specifications** of method of stripping or cleaning and painting/coating products (e.g., water pressure will not exceed 500 psi)
- ☐ **Color samples,** if applicable
- ☐ **DOB filing drawings** if proposed work requires a DOB permit

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Restoring Architectural Features: Painting

Style	Dates	Body	Trim	Shutter	Window Sash
Federal	1790–1830	Gentle pastel shades: Light yellow Beiges Grays Smoky blues Muted greens	Slightly lighter tones than body: Off-white Creams Pale yellows Buffs Restrained blues	Rich greens Dark reds Deep brown Blacks	Whites
Greek Revival	1820–1860	White Pale yellow Light gray/blue Buffs Gray/green Light gray	White Gray blue Olive green Buffs Evergreen	Greens Black Dark red Dark brown	White
Italianate	1845–1880	Warm neutral tones: Muted stone grays Yellow ochres Peachy tans Moss green Yellows Grayish greens Terra cotta reds	Similar color as building but lighter or darker: Deep browns Olive green Evergreen	Warm browns Reddish browns	Black Deep green
Second Empire	1860–1880	Rich earthy tones: Maroons Warm browns Burnt orange Dark terra cotta reds Olive/sage/evergreen Dark ochres Soft tans Yellow beige	Contrasts with body: Evergreen Light chocolate brown Whites Beiges Creams Yellows	Slate gray Green blacks Dark browns	Dark brown Dark gray
Romanesque	1875–1895	Natural masonry colors	Red browns Dark browns Dark stone grays	Olive/blue greens Brown Grays Deep reds	Olive/dark greens Reds Browns Brown/gold yellows
Queen Anne	1875–1900	Harmonious 3–5 colors, emphasis on decorative details: Brick/terra cotta reds Warm light yellows Greenish/yellow ochres Gray greens Deep tans Dark browns Sage/bottle/olive greens Muted grays	Wood: Maroons Dark browns Slate grays Sage/olive green Burnt sienna Stone: Dark copper Maroons Dark browns Deep tans White	Dark reds Tan Dark blues Evergreen	Dark reds Maroons Olive/dark greens Black Whites Crimson
Colonial Revival	1885–1940	Whites Pale yellows Beige Muted terra cotta reds Pale olive green Medium grays	Whites	Dark olive green (sometimes same color as building)	Whites Same color as trim Dark green
Craftsman	1905–1930	Natural colors Muted earth tones	Natural colors	Natural colors	Natural colors

If a building is currently not painted, can it be painted?

If the building's facade or features were originally painted but are currently unpainted, staff can issue a permit to repaint to match original conditions if it meets the following criteria:

Paint color matches the color of the underlying masonry; or

Paint color blends with surrounding materials and other elements on the building or adjacent buildings

Note: Staff cannot approve painting of existing unpainted masonry which was not historically painted.

How are appropriate paint colors determined?

The historic painted condition of a facade or architectural elements such as cornices, windows, and doors can be determined by using historic and existing conditions, photographs, and physical evidence at the building. Conditions are typically documented through probes and/or a paint analysis.

Work with LPC staff to determine the style, type, and age of the building. Begin by referring to the designation report for the building's historic district. You can also consult the reference chart on page 1.9, which lists appropriate paint colors for late 18th-early 20th century residential buildings.

What type of paint should be used?

In most cases, use paint that is breathable and appropriate for exterior use. Interior paints may not perform well outdoors.

Do not use paints described as "waterproof," as they may trap water inside materials and accelerate deterioration. If you have questions about what type of paint is appropriate, reach out to LPC.

These rowhouses in the MacDougal-Sullivan Gardens Historic District were historically painted in a variety of colors.

Coating

To protect a masonry facade and building features from damage, staff can issue a permit for coating with non-paint materials such as a mineral coating or stain, if:

Water has infiltrated through the facade or features due to deteriorated conditions of the surface.

It is always preferable to make appropriate repairs to deteriorated materials, but staff can issue a permit for a coating that temporarily protects the facade or features from further damage.

Existing deteriorated conditions (i.e., water infiltration) must be documented so an appropriate coating may be selected in consultation with staff.

Coatings can be approved if the base of the facade has been repeatedly subjected to graffiti.

The coating used on the bricks resulted in severe deterioration of the brickwork.

Coating would be appropriate in this case where cleaning revealed staining and previous repairs.

The color of the historic masonry on the left is matched by the mineral stain coating on the right.

Coatings described as "waterproof" cannot be approved by staff. These types of coatings can contribute to and sometimes accelerate deterioration of historic materials.

If coating is an approved method, which types of coatings can be used?
The type of coating varies, depending on the deteriorated condition to be addressed. In general, it must be breathable and compatible with historic materials.

Most coatings are clear, with a dull, not shiny, finish. In certain cases coatings can be pigmented to provide a more uniform appearance to a facade with poorly matched patches. LPC staff will make this determination.

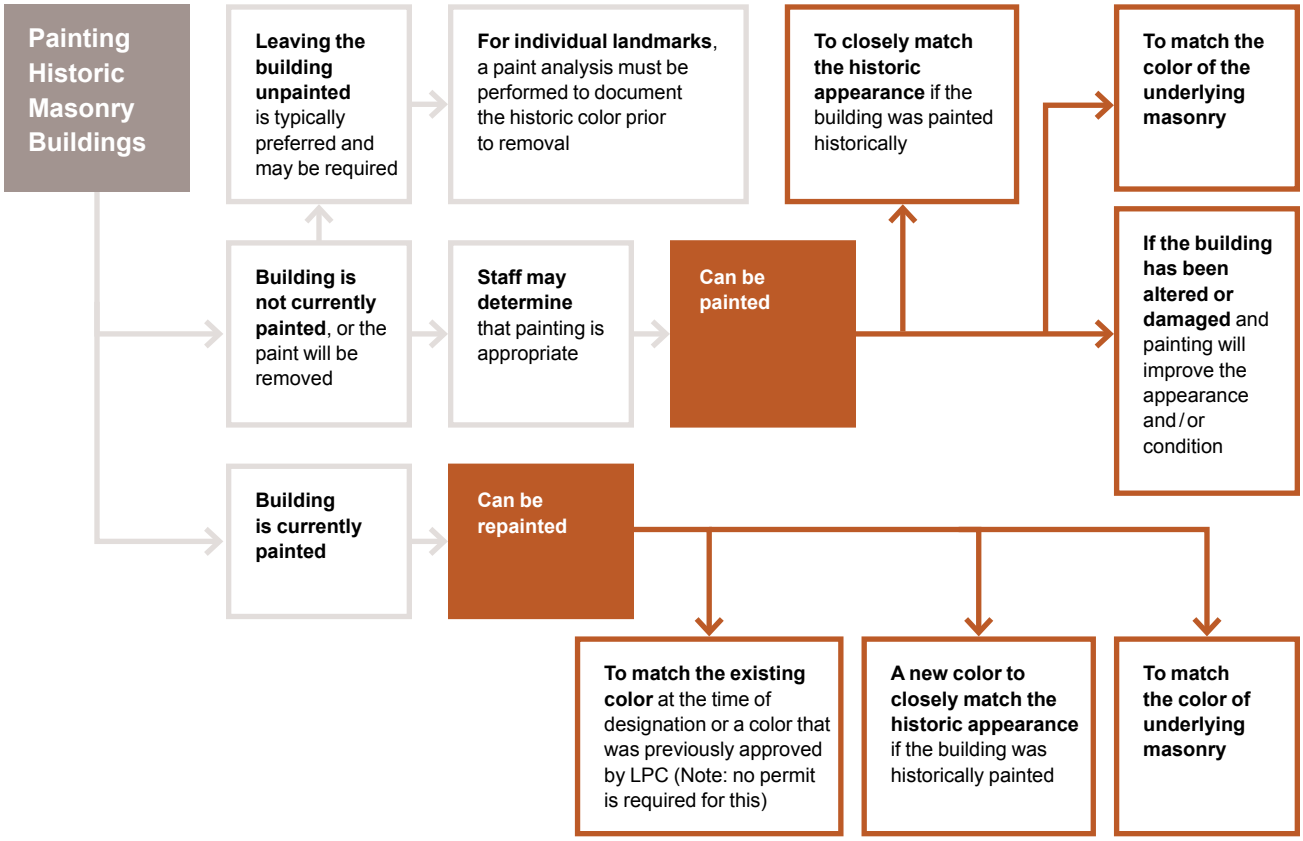
Required Application Materials

- ☐ **Photos of building facades**
- ☐ **Historic 1940s tax photos,** if available (See *Section A* for information on how to obtain tax photos.)
- ☐ **A conditions statement** that describes type, extent, and cause (if known) of deterioration, if applicable
- ☐ **Proposed annotated elevation or photo** of areas of the facade or architectural features to be stripped, cleaned, painted, or coated
- ☐ **Written specifications** of method of stripping or cleaning and painting/coating products (e.g., water pressure will not exceed 500 psi)
- ☐ **Color samples,** if applicable
- ☐ **DOB filing drawings** if proposed work requires a DOB permit

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Can the building be painted or have a coating applied?

This chart shows when staff can issue a permit to paint or coat a masonry building in historic districts and individual landmarks.



Example of inappropriate coating. In addition to being a poor color match, the coating extends over the mortar joints, sealing the masonry and mortar and restricting moisture transmission, which could accelerate deterioration.

Example of inappropriate coating. Repair mortars and patching compounds should be tinted to match the original material, not the coated and/or stained materials.

Repairing Natural and Historic Cast Stone

Staff can issue a permit for repairs to natural stone and historic cast stone facades and elements if they meet the following criteria:

Patching

Patching repairs are typically made using a cementitious repair mortar or patching compound.

Deteriorated stone is cut back to sound stone, and the new surface keyed into sound stone with a tinted cementitious patching compound. See *Section C* for more information on how to prepare and apply patching compound.

Patching should match the physical and aesthetic characteristics of the original or historic stone.

Dutchman Repair

The term "Dutchman repair" refers to new or matching salvaged stone fitted into existing facade stone.

Dutchman repairs require the craftsman to cut back an area of existing stone deep enough and large enough to give the new fitted stone sufficient surface area to adhere to, using a thin grout or adhesive at the perimeter.

Dutchman repairs must match the physical and aesthetic characteristics of the original or historic stone.

Materials and methods for adhesives and/or anchoring must be compatible with existing stone and be discreet or concealed from view.

Required Application Materials

- ☐ **Photos of building facades**
- ☐ **Photos of the areas** of the historic material or architectural feature to be repaired
- ☐ **Historic 1940s tax photos**, if available (See *Section A* for information on how to obtain tax photos.)
- ☐ **A conditions statement** that describes the type, extent, and cause (if known) of deterioration
- ☐ **Written specifications** of method of repair and materials/products used should reflect the methods described in this chapter
- ☐ **If the work is substantial**, prescriptive construction specifications that describe requirements regarding materials, products, installation procedures, and quality aspects involved in execution of the work
- ☐ **For masonry repairs**, specifications including the recipe mortar mixture and confirmation that work will be performed by hand; will match the color, texture, dimension, and tooling of the original; and will take place only when the exterior temperature remains a constant 45 degrees or above for a period of 72 hours from commencement of the work. All other written specifications should reflect the methods described in this chapter
- ☐ **Proposed annotated photos or elevations**
- ☐ **Detailed drawings of repairs** if the work is substantial or complex, e.g., rebuilding or resetting large areas of masonry, mending fractured cast iron
- ☐ **Color samples** if applicable
- ☐ **DOB filing drawings** if proposed work requires a DOB permit

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

The patching material used here (the light colored areas) is not compatible with the original stone, was installed incorrectly, and was not tinted properly (the color is wearing off).

Here, the patched stone matches the physical and aesthetic characteristics of the historic material so well the patch is virtually invisible.

Anchoring

"Anchoring" is using pins, ties, anchors, etc. to secure stone.

All anchors must be galvanized or stainless steel, compatible with the existing stone, and discreet and/or concealed from view.

The light colored stone seen on the lower step is replacement stone installed as a Dutchman repair.

The light colored stone shown here is replacement stone installed as a Dutchman repair.

Repairing Brownstone

Staff can issue a permit for repairing or resurfacing brownstone facades and elements, which are very susceptible to deterioration over time and often in need of repair. Resurfacing applies the same process and materials used for patching natural stone to an entire facade. All resurfacing work must be undertaken by a qualified contractor since it often requires the skilled re-creation of decorative elements. See *Section C* for more information on resurfacing procedures.

Staff can issue a permit for brownstone resurfacing of select areas, such as the stoop or base of the building or elaborate carving, if warranted by the extent of deterioration and if an appropriate method and material is used (see *Section C* for approvable methods and materials). An entire facade should not be resurfaced unless LPC determines that the historic brownstone is in extremely poor condition.

Significantly deteriorated brownstone, often referred to as delamination.

Resurfacing ornament with cementitious brownstone-tinted stucco to replicate historic details.

Repointing Masonry Facades

Repointing is one of the most common types of repair work for masonry facades. It is the process of removing deteriorated mortar from the joints and installing new mortar to reestablish a watertight bond with the masonry. Staff can issue a permit for repointing if it meets the following criteria:

Materials

Mortar must match the physical and aesthetic characteristics of the original or historic mortar.

It is important that replacement mortar be **compatible with the historic masonry,** i.e., less strong and more permeable than the historic brick or stone. If the mortar is too strong or less permeable, it will cause masonry units to deteriorate. (See *Which types of mortar should be used?*.)

If the building is an individual landmark and the facade needs to be completely repointed, a mortar analysis should be performed to determine the appropriate type of replacement mortar.

Color and Tooling

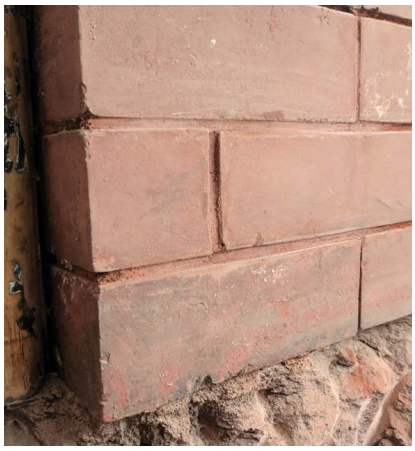
Typically, **new mortar must match the color and tooling (joint profile)** of the original mortar. To ensure a good match, samples of the new mortar must be installed next to areas of clean original mortar.

In two specific cases it may not be necessary to match new mortar with the historic mortar's original color, texture, or tooling:

Example of inappropriate mortar joint repointing. Note how the new mortar has been layered on top of the old mortar, overlapping the brick faces and covering the joints rather than filling them.

If very limited areas of the facade require repointing and the entire facade was previously repointed with mortar that does not match the historic mortar, the new mortar can match adjacent mortar in terms of color, texture, and tooling.

If mortar joints have previously been widened by improper joint cutting, an alternative mortar can help minimize the appearance of joints and unify the facade.



The mortar joints have been repointed to match the historic joints in terms of color, texture, and profile.

Which types of mortar should be used?

Mortar is the matrix that attaches masonry units (such as bricks) to each other in a wall. Classified by its compressive strength and other properties, ASTM International (formerly the American Society for Testing and Materials) identifies mortar strength by the letters M, S, N, and O — with type M mortar having the highest compressive strength and O having the lowest. Type N is commonly used for repointing historic masonry because its compressive strength is lower than the masonry itself. Using a mortar with a higher compressive strength than the masonry, i.e., mortar that is too hard, causes masonry to crack and deteriorate. Soft mortar such as type O or other lime-rich mortars is commonly used to repoint 19th century buildings. With 20th century buildings, a mortar equivalent to type N can be used.

How is mortar color determined?

Since mortar is frequently replaced, determining its original color can be difficult. Removing mortar from a sample area can expose original mortar deeper within the joint. **Hard-to-access areas are a good place to find original mortar.**

What tools can be used for repointing?

Deteriorated mortar must be removed from mortar joints by hand using a chisel. Care should be taken not to chip bricks while removing mortar, particularly when working with the very thin mortar joints often found at 19th century buildings.

In certain cases, such as when the building has wide horizontal joints, deteriorated mortar can be removed with power tools. This work must be supervised to ensure there is no overcutting or widening of mortar joints, causing irreversible damage to bricks and changing the appearance of the historic facade.

An example of careful mortar joint removal.

Inappropriate mortar joint removal. Note how the edges of the bricks have been damaged by the process.

Repairing Brick and Terra Cotta

Staff can issue a permit for repairs to brick and terra cotta (fired clay and ceramic unit masonry) if they meet the following criteria:

Repairs should match the physical and aesthetic characteristics of the original or historic brick or terra cotta.

Repairs are generally limited to minor spalling or chipping of the brick or terra cotta and its glazing.

A patching compound can be used to make terra cotta repairs.

Deteriorated material is cut back to sound material, and the new surface is keyed into sound material with a patching compound.

A repair glaze is applied to the patch to replicate the historic finish and texture of the terra cotta unit.

If pieces of terra cotta are at risk of becoming detached, staff can issue a permit for **stabilizing those units with galvanized or stainless steel anchors.**

Anchors must be compatible with the terra cotta itself.

All anchors must be discreet and/or concealed from view.

If the bricks are deteriorated, they can be **replaced by new bricks, as long as they match the historic bricks**.

In some cases, if the brick is cracked, a **repair grout or epoxy can be used**.

Repairing Stucco

Staff can issue a permit for repairing stucco if it meets the following criteria:

Areas of deteriorated stucco can be patched using new stucco in a traditional three-coat (or lath) system or a two-coat system.

Three-Coat Stucco System

A traditional three-coat stucco system consists of a lath base (made of wood or galvanized/stainless steel metal mesh), a scratch coat, a brown coat, and a finish coat. The first layer, or scratch coat, has a rough, "scratchy" surface so the next layer better adheres to it. The middle layer, or brown coat, uses a long trowel or "darby" to create a smooth finish. The top coat, or finish coat, is the layer that is colored and/or textured to achieve the final desired appearance.

Two-Coat Stucco System

A two-coat stucco system is used when stucco is applied directly to masonry. Therefore, it only consists of a brown coat and a finish coat.

Staff cannot approve most modern stucco wall systems, including exterior insulation and finish systems (EIFS), multiple layers of wallboard, weatherproofing membranes, and lath.

Repairing Ornamental Sheet Metal and Cast Iron or Wrought Iron

Staff can issue a permit for repairing metal, including sheet metal, cast iron, and wrought iron used in fences, railings, cornices, balconies, cladding, storefront piers and elements, lintel and sill caps, etc., if repairs meet the following criteria:

Small holes and small areas of loss can be repaired using soldering, spot welding, anchors, fasteners, and/or filling compounds/sealants.

All repair materials must be compatible with the historic metal in order to avoid galvanic corrosion.

Repairs must be made in a discreet location, with anchors and fasteners concealed from view wherever possible and painted to match surrounding metalwork.

Repairing Wood Features

Staff can issue a permit for repairing wood used in cornices, cladding, window frames, window lintels or sills, doors, decorative elements, etc., if repairs meet the following criteria:

Small repairs can be made using wood putty, a patching compound, or a consolidant.

The Dutchman method can be used to repair larger areas of loss or deteriorated wood by replacing portions of the historic wood with new pieces of wood.

All repair materials must be compatible with the historic wood. High-strength putty or consolidant is not permitted, although Dutchman repairs are not required to match historic wood in terms of wood species.

Repairing Other Materials

Staff can issue a permit for repairing other materials such as laminates, plastic and synthetic rubbers, curtain walls, and poured concrete if repairs meet the following criteria:

Repairs must match the physical and aesthetic characteristics of original or historic materials.

Staff can issue permits approving minor repairs with substitute materials as long as repairs do not detract from the appearance of original materials.

The wood mullions (vertical pieces of unpainted wood) have been repaired with a Dutchman repair. The new pieces of wood match the dimensions and profiles of the adjacent historic wood and will be repainted to blend in.

Replacing Historic Materials

General Criteria

When feasible, repair is preferred over replacement, but if materials are too deteriorated to be repaired, staff can issue a permit for the replacement of historic materials, which can be replicated or recreated and reinstalled, if they meet the following general criteria. Additional criteria may apply depending on the work you are planning to do. See your specific work type for more information.

Replacement materials (both in-kind and substitute) must match the physical and visual characteristics of the historic materials in every way, including, but not limited to, details, profiles, dimensions, texture, color, tooling, dressing, and finish.

Replacement material must either be in-kind or substitute. For example, an in-kind replacement material for limestone would be limestone while a substitute replacement material for limestone could be cast stone or precast concrete.

If the property is an individual landmark or building subject to a special permit such as a Modification of Use (MOU), criteria are very strict in order to keep the replacement materials as **aesthetically and physically compatible** as possible. Consult staff prior to filing your application to determine if substitute materials can be used. Call 212-669-7817 or email info@lpc.nyc.gov.

Required Application Materials

- ☐ **Photos of building facades**
- ☐ **Photos of areas of historic materials** or architectural features to be replaced
- ☐ **Historic 1940s tax photos**, if available (See *Section A* for information on how to obtain tax photos.)
- ☐ **A conditions statement** that describes the type, extent, and cause (if known) of deterioration
- ☐ **Written specifications** of method of replacement and materials/products used
  - **If the work is substantial,** written specifications must describe requirements for materials, products, installation procedures, and quality aspects involved in execution of the work.
  - **For masonry replacement,** specifications must state that work will take place only when the exterior temperature remains a constant 45 degrees or above for a period of 72 hours from commencement of the work.
- ☐ **Proposed annotated photos** or elevations
- ☐ **Detailed drawings** of replacements if work is substantial or complex, e.g., cornice replacement
- ☐ **Color samples**, if applicable
- ☐ **DOB filing drawings** if proposed work requires a DOB permit

Shop drawings of certain features may be requested by staff to ensure a good match to the historic condition. See *Section C* for examples of shop drawings.

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Photo: Higgins Quasebarth & Partners LLC

Replacement polychrome (colored glaze) terra cotta at the head of the window units.

Substitute Materials

Modern cast building materials can be used as an alternative to natural and historic cast stone. Modern cast materials, which became popular in the mid-20th century, include precast concrete (colored concrete molded and cured in a controlled environment); glass fiber reinforced concrete (GFRC), which consists of a concrete matrix embedded with glass fibers; glass fiber reinforced plastic (GFRP), which consists of a plastic matrix embedded with glass fibers; and microcotta, a polymer-based composite resin material intended to imitate terra cotta.

How to Determine When a Substitute Material Can Be Used

Materials	Buildings in Historic Districts			Individual Landmarks and MOU Buildings		
	Primary facades *(6th story and below)*	Primary facades *(7th story and above)*	Secondary facades *(visible and non-visible)*	Primary facades *(Individual landmarks)*	Secondary facades *(Individual landmarks)*	Primary / Secondary facades *(MOU buildings)*
Cast iron	yes *(limited to cast aluminum or other cast metal)*	yes *(in limited quantities of discrete elements only)*	yes *(in limited quantities of discrete elements only)*	⊗ no	yes *(in limited quantities of discrete elements only)*	⊗ no
Other cast metals	⊗ no	yes	yes	⊗ no	yes	⊗ no
Wrought metals	⊗ no	yes	yes	⊗ no	yes	⊗ no
Natural finish sheet metals (i.e., copper)	⊗ no	yes	yes	⊗ no	yes	⊗ no
Painted sheet metals and painted wood elements (excluding siding)	yes [5]	yes	yes	⊗ no	yes	⊗ no
Stucco	⊗ no	⊗ no	⊗ no	⊗ no	⊗ no	⊗ no
Brick	⊗ no	⊗ no	⊗ no	⊗ no	⊗ no	⊗ no
Natural stone (excluding brownstone) and cast stone (historic)	yes [1]	yes [1 2 3]	yes	yes [1]	yes	⊗ no
Brownstone **(Note: resurfacing brownstone with tinted stucco is considered a repair, not a replacement.)**	yes *(limited to cast stone at facade elements, and cast stone or stucco at stoops and areaway walls)*	yes *(limited to cast stone)*	yes	*yes (limited to cast stone)*	yes	yes *(limited to cast stone, if the particular type of historic brownstone is no longer commercially available)*
Terra cotta	yes [1 3]	yes [1 2 3]	yes	yes [1 3]	yes	⊗ no
Wood siding	yes [4]	yes [4]	yes	yes [4]	yes [4]	⊗ no
Historic roofing	yes [6] *(not visible)*	yes [6] *(minimally or not visible)*	yes [6] *(minimally or not visible)*	⊗ no	⊗ no	⊗ no
Non-historic roofing	yes [6]	yes [6]	yes [6]	yes [6]	yes [6]	⊗ no

General Note: Substitute materials should match the physical and visual characteristics of the historic materials in terms of design, detail, profile, dimension, materials, texture, tooling, dressing, color, and finish, as applicable.

Where a substitute material has previously been approved as an aspect of a Certificate of Appropriateness application, LPC staff may continue the use of the same or other comparable substitute material in new applications for the same building or structure consistent with that approval, provided the substitute material has proven to be an acceptable match in terms of appearance and compatibility over time with the surrounding original or historic material.

Substitute materials may not be used on a building or portions of a building where in-kind replacement was an important aspect of an approval of a Certificate of Appropriateness application.

1 Allowed at coping elements only

2 Allowed at projecting cornices and balconies with weight and/or attachment issues where in-kind replacement has potential to cause additional loss at surrounding material

3 Allowed at limited quantities of other discrete elements that are not part of a cladding field of similar units where physical and visual compatibility is critical

4 Allowed to use untextured painted fiber-cement siding if wood is prohibited by code

5 Painted wood and sheet metal elements may be used interchangeably at facade elements that were historically used in a similar manner (consistent with the age and style of the building), such as cornices and bay windows, and other painted substitute materials (such as fiberglass) allowed at elaborate top floor cornices less than 25 feet in length where any joints in the material would be hidden or obscured by the design elements

6 Substitute material must visually match or recall the original roofing and not call attention to itself or detract from the building; visible flashing, gutters, etc., must match original materials

Replacing Natural Stone and Cast Stone

Staff can issue a permit for replacing natural stone and cast stone if it meets the following criteria:

Cast stone and natural stone (other than brownstone) must be in-kind at or below the sixth story of the primary facade; however, substitute materials may be used for coping elements (top course of a masonry wall).

Above the sixth story on the primary facade, substitute materials may be used in limited quantities for other discreet elements that are not part of a cladding field (typically the flat masonry units in a wall) of similar units where physical and visual compatibility is critical.

Substitute materials may also be used at projecting cornices and balconies with weight and/or attachment issues. This applies when a licensed engineer has determined that in-kind replacement has the potential to cause additional loss of surrounding materials.

At individual landmarks, substitute materials may not be used, except coping elements.

Replacement of brownstone may be in-kind on the primary facade, or cast stone can be used for facade elements and features. Cast stone or stucco over backup masonry can be used at stoops and areaway walls. **At individual landmarks, stucco over backup masonry cannot be used.**

The replacement masonry (on the left) matches the historic masonry.

Replacement balusters that match the historic ones in terms of their dimensions, profiles, and finish.

Replacement terra cotta unit (bottom) next to a piece of historic terra cotta (top).

New brick that matches the historic brick in terms of size, dimensions, and finish.

Example of a poor brick match. Note how the new bricks (above the lintels) do not match the historic bricks, calling undue attention to the repair.

Replacing Brick and Terra Cotta

Staff can issue a permit for replacing brick and terra cotta (fired clay and ceramic unit masonry) if it meets the following criteria:

Replacement of terra cotta is in-kind at or below the sixth story of the primary facade. However, substitute materials can be used for coping elements, as well as for limited quantities of other discrete elements that are not part of a cladding field of similar units where physical and visual compatibility is critical.

Above the sixth story of the primary facade, substitute materials may also be used at projecting cornices and balconies with weight and/or attachment issues. This applies when a licensed engineer has determined that in-kind replacement has the potential to cause additional loss of surrounding materials.

At individual landmarks, substitute material cannot be used, except for coping elements and limited quantities of other discrete elements that are not part of a cladding field of similar units where physical and visual compatibility is critical.

Brick must be replaced in-kind. No substitute materials are permitted for brick replacement.

Replacing Ornamental Sheet Metal and Cast Iron or Wrought Iron

Staff can issue a permit for replacing ornamental sheet metal and cast iron or wrought iron if it meets the following criteria:

Replacement materials are in-kind at or below the sixth story of the primary facade. For cast iron, cast aluminum or another cast metal with a painted finish can be used.

Above the sixth story of the primary facade, substitute materials can be used. For cast iron, substitute materials may also be used only for limited quantities of discrete elements.

Painted sheet metal elements can be used interchangeably with wood at facade elements historically used in a similar manner, such as cornices and bay windows.

For sheet metal, other substitute materials may be used at elaborate top floor cornices less than 25 feet in length where joints in the material would be hidden or obscured by design elements.

At individual landmarks, substitute materials cannot be used.

Replacement decorative metal feature matches the historic metalwork.

Replacement decorative metal stoop matches the historic metalwork.

Replacing Wood Features

Staff can issue a permit for replacing wood features if replacement meets the following criteria:

Wood should be replaced in-kind at the primary facade. However, painted wood elements can be used interchangeably with painted sheet metal on facade elements (such as cornices and bay windows) historically used in a similar manner.

Other substitute materials can be used at elaborate top floor cornices less than 25 feet in length where joints in the material would be hidden or obscured by design elements.

Above the sixth story at the primary facade, substitute materials can be used.

At individual landmarks, substitute materials cannot be used.

Wood siding at primary facades and individual landmarks must be replaced in-kind. However, fiber cement board can be used only if applicable building, fire, or other codes prohibit the use of wood siding and provided that the substitute material is the minimum required by code.

Replacing Other Materials

Staff can issue a permit for replacing materials such as laminates, plastic and synthetic rubbers, curtain walls, and poured concrete if replacement meets the following criteria:

Physical and aesthetic characteristics of other materials match original or historic materials.

Minor repairs using substitute materials, as long as substitute materials do not detract from the appearance of the original material.

Replacing Roofing Elements

Staff can issue a permit for roofing elements if they meet the following criteria:

If the existing roofing material is original or historic, visible from a public thoroughfare, and the building is six stories or fewer (most commonly gable and mansard roofs), historic materials must be replaced in-kind.

At buildings seven stories or taller, historic visible roofing can be replaced with substitute materials if the new materials are not discernable from the street.

If roofing is not visible (such as flat roofs), substitute materials can be used.

At individual landmarks, substitute materials cannot be used to replace original or historic roofing.

If historic roofing material has been replaced in the past, new roofing materials must match historic roofing in terms of visual characteristics such as artificial slate or clay shingles and architectural asphalt shingles.

Asphalt shingles are commonly approved to replace visible roofing, provided they are an architectural shingle that better recalls the historic roofing material. Solar shingles can also be approved if they are designed to look like and function as conventional roofing materials while producing electricity.

What kinds of materials can be used to replace flashing, gutters, and leaders?

If historic elements are visible they must be replaced in-kind. At non-visible locations, substitute materials can be approved.

Replacement roofing material that matches the historic roofing material.

Recreating or Restoring Missing Facade Features

Every effort must be made to retain existing architectural features on historic buildings. In certain instances, however, facade elements may be missing, including roofs, cornices, stoops, storefronts, window and door enframements, ironwork, and porches. While restoring architectural elements removed prior to designation is not a requirement, LPC encourages the practice. These architectural elements are not only aesthetically significant but can be functional as well, e.g., a cornice protecting a facade from water infiltration. In such cases, staff can issue a permit for re-creation or restoration of missing facade features, provided features are returned to their original or historic appearance and meet the following criteria:

Design

Design of replacement elements must be based on historic photographs, physical evidence at the building (or matching buildings, e.g., another house in the row or a building of the same style), or historic drawings, if available.

If historic evidence does not exist, you can work with LPC staff to determine a design appropriately-based on buildings of a similar age and style.

Required Application Materials

- ☐ **Photos of building facades**
- ☐ **Photos of areas** of the facade or architectural features to be restored/ recreated
- ☐ **Historic 1940s tax photos**, if available (See *Section A* for more information on how to obtain tax photos.)
- ☐ **Written specifications** on method of installation and materials / products used
  - **If the work is substantial,** written specifications that describe requirements regarding materials, products, installation procedures, and quality aspects involved in execution of the work
- ☐ **Proposed annotated photos or elevations**
- ☐ **Detailed drawings of installations** if the work is substantial or complex, e.g., cornice replication
- ☐ **Color samples**, if applicable
- ☐ **DOB filing drawings** if proposed work requires a DOB permit

Shop drawings of certain features may be required to ensure a good match to the historic condition. See *Section C* for examples of shop drawings.

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

1940s tax photo (left) and designation photo in 2006 (right) of 120 Kingston Avenue in the Crown Heights North Historic District. In the 1950s, the building was altered at the base with black and red glass cladding when it housed a notable jazz club. This alteration is considered a significant feature in its own right and should be retained.

Materials

Materials for recreating and restoring missing facade features must match original or historic materials in-kind or must meet the requirements for using substitute materials in this chapter.

Can architectural features that are not original to the building and were added over time be removed to restore missing original features?

Consult with staff about the removal of any facade features that were added to the building after construction but before designation. Such features may be considered significant layers of the building's historic fabric, i.e., Victorian period features added to a Federal style structure (see photo above for example).

Before: Photo of 60-66 White Street in the Tribeca East Historic District showing two decorative finials at 60 and 62 White Street and a missing decorative finial at 66 White Street.

After: Photo of 60-66 White Street showing the restored decorative finial at 66 White Street, based on evidence at 60 and 62 White Street, which were built at the same time as 66 White Street.

Reconstructing Building Facades

Required Application Materials

- ☐ **Photos of building facades**
- ☐ **Photos of areas of deterioration and reconstruction**
- ☐ **Historic 1940s tax photos,** if available (See *Section A* for information on how to obtain tax photos.)
- ☐ **A conditions report,** prepared by a licensed engineer, that documents and assesses deteriorated conditions and the need for facade reconstruction
- ☐ **Existing condition survey drawings of the facade,** including unit masonry size, joint size and patterns, size and horizontal/vertical location of window and door openings, and architectural features such as sills, lintels, band courses, and cornices
- ☐ **Proposed annotated floor plans and elevations**
- ☐ **Comparative vertical section drawings** of the existing wall and proposed reconstructed wall
  - — **Large-scale detailed drawings** of the wall section showing construction type, window and door openings, and architectural features
- ☐ **Prescriptive construction specifications** that describe requirements for materials, products, installation procedures, and quality aspects involved in execution of the work
- ☐ **DOB filing drawings**

Shop drawings of certain features may be required to ensure a good match to the historic condition. See *Section C* for examples.

If LPC requires additional materials after your application is reviewed, you will receive a Materials Checklist from LPC staff.

Staff can issue a permit for the reconstruction of a building facade if the entire facade is highly deteriorated and/or unstable and the work meets the following criteria:

Staff can only issue a permit for facade reconstruction for buildings in historic districts, not individual landmarks or buildings seeking a special permit for Modification of Use and Bulk.

Staff can issue a permit for reconstructing the facade of a building if a licensed professional engineer has prepared a thorough report demonstrating why the facade cannot be repaired or restored if it is the primary facade. The report then undergoes peer review by a structural engineer contracted by the Commission, who must concur with the recommendations in order for staff to approve the application and issue a permit.

Reconstructing an entire facade is not common, but, if deemed necessary, applications for this type of work must include thorough documentation of the condition, an assessment of existing materials and the potential for salvaging and re-use, and fully dimensional survey drawings of the facade.

Before facade reconstruction.

After facade reconstruction.

Facade Materials

Facade materials, such as brick or stone window lintels and sills, must be salvaged and reused to the greatest extent feasible. Otherwise the facade must be reconstructed in-kind in terms of wall construction — with the exception that backup masonry can be either brick or concrete masonry units (CMU) — and architectural features.

Substitute Materials

Substitute materials can be used to recreate historic details, provided they meet the requirements for replacement of deteriorated architectural features explained above and in this chapter.

Section C
Technical Guidance and Resources

This section provides additional guidance and resources to help you understand LPC's rules and criteria in order to submit the correct materials with your application.

In This Section:

Glossary

Brick
is a small rectangular block, typically made of fired or sun-dried clay. Bricks are available in various sizes, shapes, colors, textures, and finishes.

Brownstone
is a type of sandstone. Despite its name, the color of brownstone can vary widely.

Cutting and "Raking"
are both names for the process of removing old mortar. Removal prepares joints between masonry units (brick, stone, or terra cotta) for new mortar. Deteriorated mortar on historic buildings must be carefully removed with hand tools, not electric grinders.

Dutchman Repair
is a repair made by removing a small portion of deteriorated natural stone, cast stone, or wood and replacing it in-kind with a piece of new natural stone, cast stone, or wood.

Facade
is the main exterior wall of a building, sometimes distinguished from the other faces by elaboration of architectural or ornamental details.

- **Primary facade** refers to a facade fronting a street or a public thoroughfare that is not a street such as a mews or a court; a visible facade with a level of design or significant architectural features similar to the building's street-fronting facades but does not front a street, such as a setback facade or part of a dominant massing element where at least one facade is street-fronting or street-facing, such as a tower element; and a facade with a primary entrance to the building.
- **Secondary facade** refers to a facade that does not front on a street or a public thoroughfare and does not possess significant architectural features commensurate with the street-fronting facade.

Historic Cast Stone
is a cement-based matrix (a mixture of water, sand, coarse aggregate, and cementing agents) molded or "cast" into shapes that mimic the color, texture, profile, and details of natural stone.

In-Kind Replacement
refers to replacing a material with a new material of the same type as the original or historic material, e.g., using a new piece of limestone to replace an original or historic piece of limestone.

Masonry
refers to a variety of different building materials that are made of stone or fired clay units. The term can be used to describe natural stone, cast stone (historic and modern), brick, and terra cotta.

Modern Cast Stone
refers to modern building materials that include precast concrete, which consists of colored concrete molded and cured in a controlled environment; glass fiber reinforced concrete (GFRC), consisting of a concrete matrix embedded with glass fibers; glass fiber reinforced plastic (GFRP), consisting of a plastic matrix embedded with glass fibers; and microcotta, a polymer-based composite resin material intended to imitate terra cotta.

Mortar
is a mixture of water, aggregate (typically sand), lime, and, in most cases, cement. Ingredients are mixed together to form a paste that is used to bond building materials such as brick and stone.

Natural Stone
is a construction term for building material that is quarried from the earth. Various types of natural stone were used on historic buildings, most commonly sandstone, limestone, marble, and granite.

Patching Compound
is a mixture of water, cement, and minerals used to repair damaged or missing portions of natural stone, cast stone, or terra cotta. The mixture is typically tinted to match the color of the original or historic masonry, and can be molded and shaped to match the masonry's profile and texture. Care must be taken to use a patching product that does not contain latex, acrylic, or other bonding agents, additives, or modifiers and is appropriate for use on historic materials.

Physical and Aesthetic Characteristics
are the tangible attributes of materials and features, such as design, detail, profile, dimension, material, texture, dressing, color, or finish.

Pinning
is a method of anchoring that uses pieces of stainless steel or galvanized metal to secure one item to another. Pins can be used in conjunction with patching compounds and Dutchman repairs, as well as to re-secure loose pieces of original or historic masonry.

Repointing
is the process of removing old mortar and installing new mortar. Replacing deteriorated mortar helps ensure the building stays watertight.

Resurfacing
is the process of repairing large areas of deteriorated sandstone (specifically brownstone). See *Section C, Resurfacing Procedure and Stucco Recipe*.

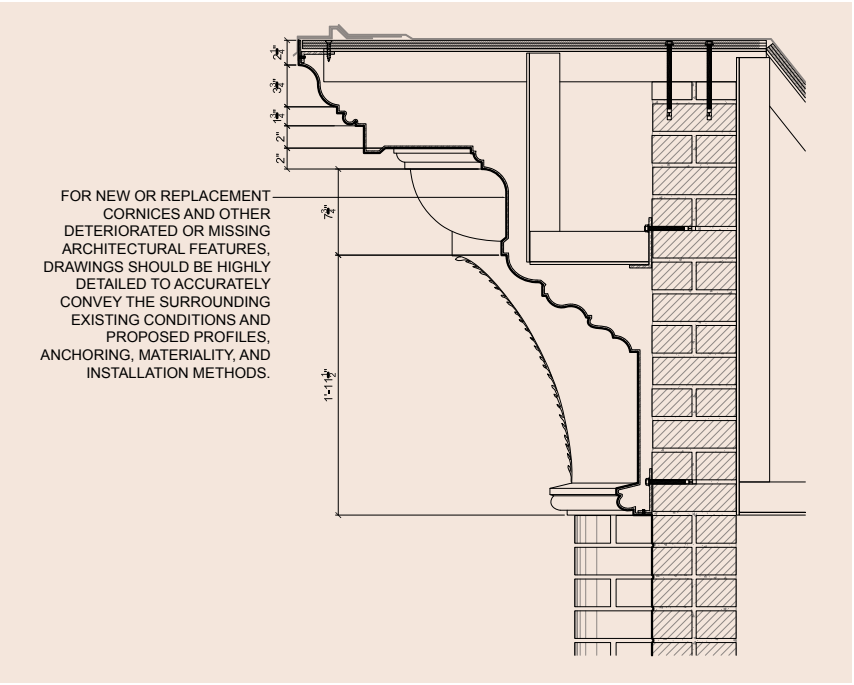
Substitute Material
is a material with a substance made of something other than the original or historic material, but one that matches its dimensions, profiles, texture, color, and finish, e.g., using a piece of precast concrete to replace a piece of original or historic limestone.

Terra Cotta
is unglazed or glazed fired clay used for architectural purposes. A terra cotta "biscuit" is a piece of unglazed terra cotta. Glazed terra cotta has been coated with a type of liquid glass that hardens during the firing (baking) process and forms a protective layer on the clay. Glaze can be colored or clear, and sometimes features a special texture or pattern.

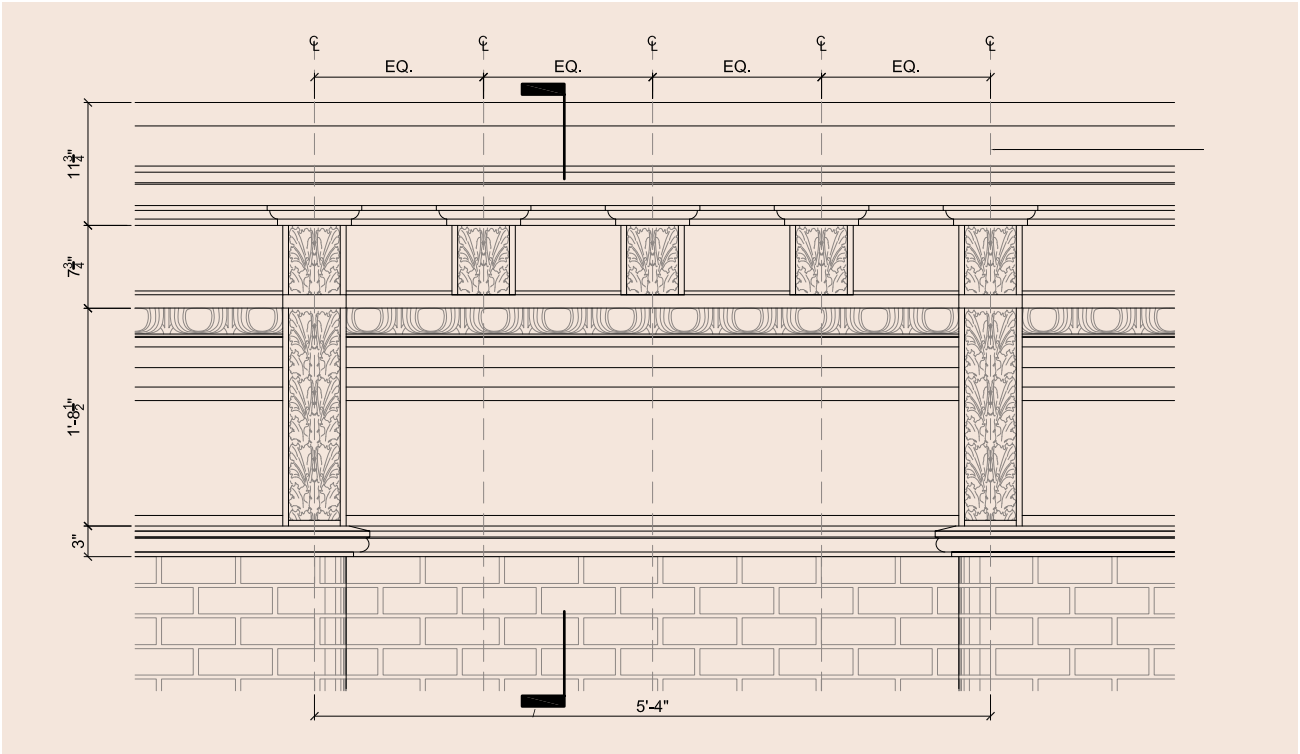
Tooling
is the process by which natural stone is cut with chisels and hammers to form surface textures and profiles.

Shop Drawings

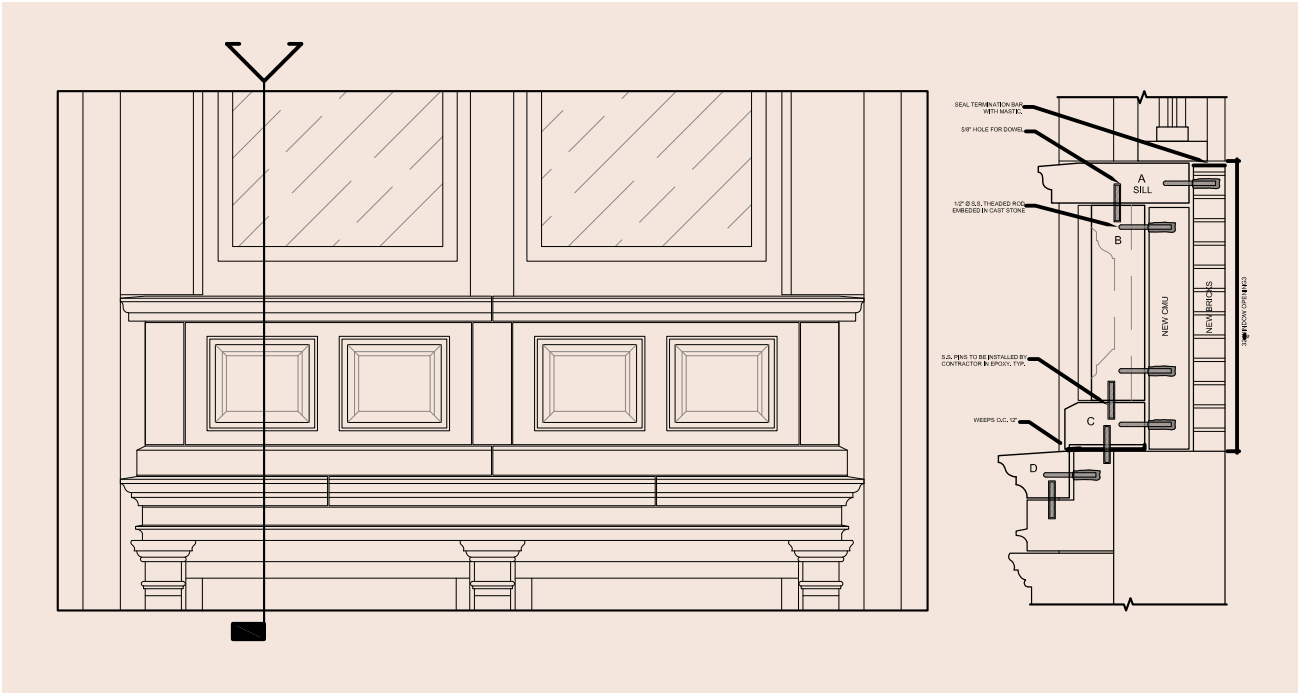
Shop drawings (a drawing or set of drawings produced by a contractor, supplier, manufacturer, or fabricator) are often required as a condition of approval once LPC has issued a permit since it is sometimes only possible to take accurate dimensions of facade features once scaffolding has been erected. Shop drawings must be provided to staff prior to any manufacturing or installation, if requested. In some cases, shop drawings may be requested by staff before the permit is issued.



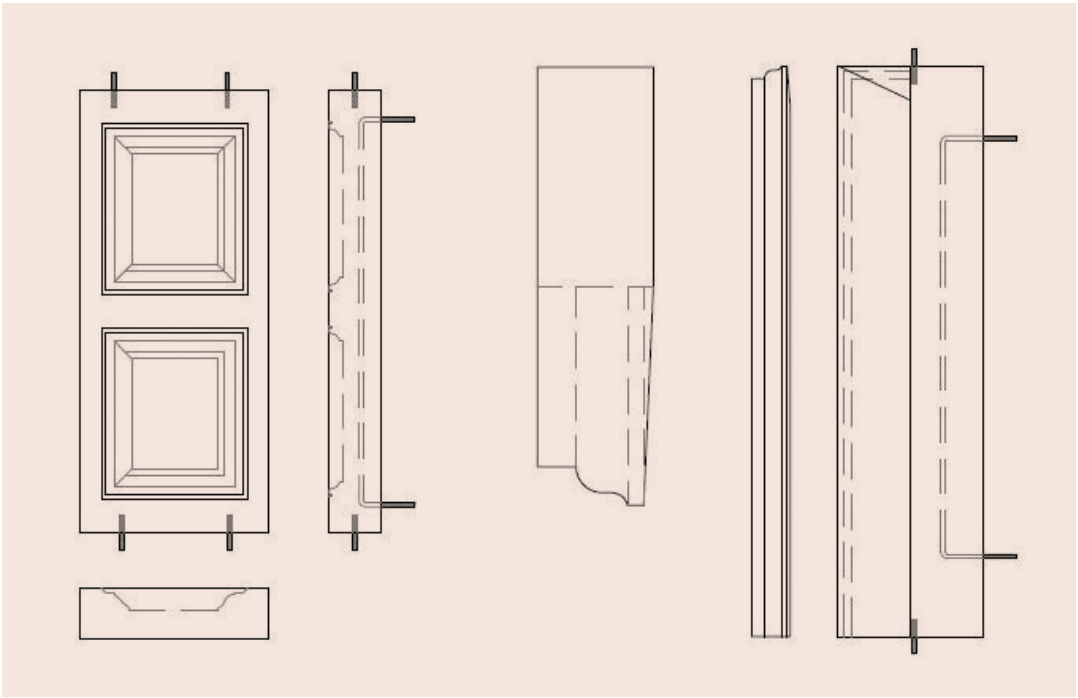
Vertical section shop drawing of a proposed cornice.



Elevation shop drawing of a proposed cornice.



Elevation and vertical sections illustrating proposed masonry unit replacement.



These drawings illustrate individual masonry units.

Sample Review

Samples of materials, methods, and finishes may be required for review and approval prior to commencement of your work. Samples will be requested by and submitted to LPC staff via Portico. Along with your samples, include a memo detailing the scope of work and materials depicted. A site visit by staff may be necessary in order to review samples in person. **Work may not commence or proceed until LPC staff has approved required samples, so it is important to check your issued permit to see if samples are required.**

A sample review of potential bricks and mortar. The bricks in the foreground show the variety of brick colors in the approved blend. The new bricks are also seen installed at a repair location just above.

Sample reviews most commonly include:

- Cleaning methods and products
- Raking/cutting and repointing masonry joints
- Masonry repairs (patching, Dutchman, etc.)
- Sandstone resurfacing
- Replacement materials, e.g., brick

Guidelines for Sample Review

Prior to installing a mock-up, the historic materials surrounding or adjacent to it must be lightly cleaned to ensure accurate assessment.

Clearly identify the mock-up or sample review area on the building, either with drawings or annotated photos.

Identify the cleaning product and product number being issued.

Patching and repointing mock-ups are reviewed for color, texture, and profile, so prepare your samples as they will appear when finished. Ensure that temperature-sensitive materials have been installed under the correct conditions and sufficiently cured. (Temperature must remain a constant 45 degrees or above for a period of 72 hours after installation.)

For masonry replacement, mock-ups must be installed in the historic masonry where feasible, at locations where repair is needed, and photographed next to the historic materials they are intended to match.

Always provide at least two sample options for review, e.g., multiple mortar or patching compound colors, a range of brick colors and blends, etc.

High-quality photographs of each sample are required, including, but not limited to, photographs of the overall facade and overall mock-up area; close-ups of mock-ups and historic materials; and close-ups that detail texture, finish, etc. Images from Google Street View are not accepted.

Take photos in both bright sunlight and in shade.

Prior to submitting, make sure your photos are of high resolution so staff can evaluate texture and color. Annotate photos, as necessary, to clearly identify materials to be reviewed — especially if multiple materials are shown.

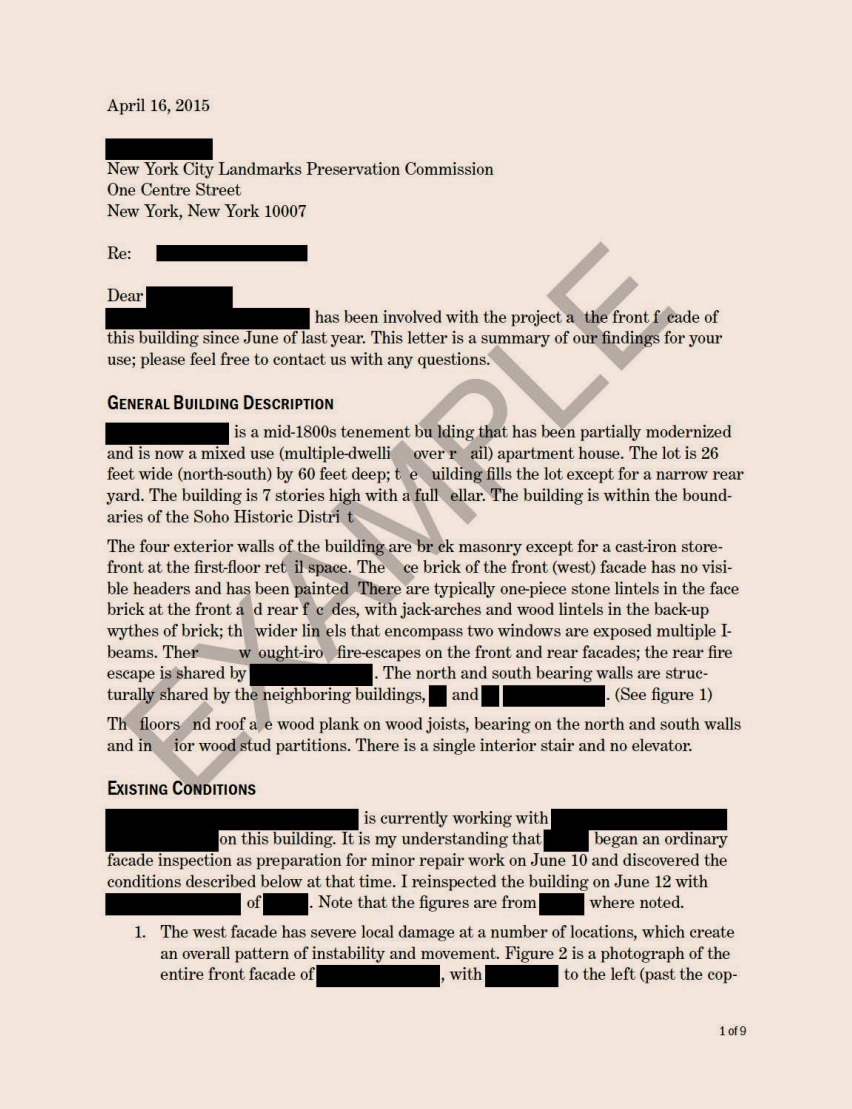
Prior to approving samples, staff may request additional photos, information, and/or a site visit.

Conditions Report / Assessment

When replacement is proposed for large quantities of materials or significant architectural features (such as cornices), you must provide a conditions report or assessment of deteriorated conditions that warrant replacement. In some cases, probes are required in combination with the conditions report.

Your report must include:

- High-quality photographs showing locations of proposed work
- Identification of the type of materials, e.g., wood, limestone, brick, terra cotta
- Written statements that assess conditions



April 16, 2015

[redacted]
New York City Landmarks Preservation Commission
One Centre Street
New York, New York 10007

Re: [redacted]

Dear [redacted] has been involved with the project a the front f cade of this building since June of last year. This letter is a summary of our findings for your use; please feel free to contact us with any questions.

GENERAL BUILDING DESCRIPTION

[redacted] is a mid-1800s tenement bu lding that has been partially modernized and is now a mixed use (multiple-dwelli over r ail) apartment house. The lot is 26 feet wide (north-south) by 60 feet deep; t e uilding fills the lot except for a narrow rear yard. The building is 7 stories high with a full ellar. The building is within the boundaries of the Soho Historic Distri t

The four exterior walls of the building are br ck masonry except for a cast-iron storefront at the first-floor ret il space. The ce brick of the front (west) facade has no visible headers and has been painted There are typically one-piece stone lintels in the face brick at the front a d rear f c des, with jack-arches and wood lintels in the back-up wythes of brick; th wider lin els that encompass two windows are exposed multiple I-beams. Ther w ought-iro fire-escapes on the front and rear facades; the rear fire escape is shared by [redacted]. The north and south bearing walls are structurally shared by the neighboring buildings, [redacted] and [redacted]. (See figure 1)

Th floors nd roof a e wood plank on wood joists, bearing on the north and south walls and in ior wood stud partitions. There is a single interior stair and no elevator.

EXISTING CONDITIONS

[redacted] is currently working with [redacted] on this building. It is my understanding that [redacted] began an ordinary facade inspection as preparation for minor repair work on June 10 and discovered the conditions described below at that time. I reinspected the building on June 12 with [redacted] of [redacted]. Note that the figures are from [redacted] where noted.

1. The west facade has severe local damage at a number of locations, which create an overall pattern of instability and movement. Figure 2 is a photograph of the entire front facade of [redacted], with [redacted] to the left (past the cop-

1 of 9

An example of a conditions assessment report.

Investigative Probes

To assess the current condition of building materials and systems, staff can issue a permit for select intrusive investigative work or probes. These methods can also be used for discovery and documentation of hidden historic materials in connection with an anticipated or open application for work, or for an approval that has been granted.

LPC requires that:

- No more material than necessary be removed to discover underlying conditions or to make a mold for replication. Where possible, removal is limited to non-character-defining features and materials
- Probes or removals be performed in unobtrusive locations
- Temporary protection of the probe area be provided
- Where original material is removed in connection with a probe, it be reinstalled to match the original condition, or, if necessary, replaced in-kind
- For removals in connection with making a mold for replication, the original fabric be reinstalled or adequate protective measures taken to ensure that the facade is kept watertight until reinstallation or replacement of the feature is complete

Example of a minor probe. A very small portion was carefully removed to determine the condition of the underlying material. This type of probe would not require a permit.

Example of a major investigative probe that would require a permit.

Mortar Analysis Report

If a substantial amount of the facade at an individual landmark or a building subject to a special permit (Modification of Use and Bulk) is being repointed, an analysis report of the original/historic mortar is required. The analysis must investigate the type and contents of the original mortar to create specifications for the replacement mortar. Please consult with staff for further guidance.

Soft Mortar Recipe for Repointing Brick Facade

- 1 part white Portland cement
- 2 1/ 2 parts lime
- 5–6 parts sand

Parts are noted by volume. Mix dry ingredients first, then add potable water. Use dry pigments (natural or synthetic stable oxide pigments) to tint or color mortar. Thoroughly mix all ingredients.

Mixing Tips

All measurements are parts by volume.

Combine dry ingredients, then mix with potable water.

When crushed stone is an insufficient color match, use dry pigments (natural or synthetic stable oxide pigments). Do not exceed recommended maximum amounts, as too much pigment can reduce strength and result in unstable color.

The best brownstone patching contains actual crushed stone. Consider using stone removed from the area being repaired or old stone with the same qualities. Crushed stone must be ground, passed through a 16-mesh screen, and thoroughly washed.

Resurfacing Procedure and Stucco Recipe

Preparation of the surface

Use a toothed chisel to cut back all deteriorated surfaces to be repaired to a sound base, removing all loose stone to provide a rough surface.

Mechanical keying

To create a mechanical key or holding mechanism for the patch, undercut edges of the patch to form a slight dovetail. Drill holes 1/2 inch in diameter and 1/2 inch deep, spaced 2–3 inches apart in staggered rows. Angles of holes must be varied.

Application of patching material: Proper application of patching material involves several steps.

Surface washing: Wash the prepared surface with water and a soft brush.

Slurry coat

Apply a thin slurry coat with a brush and rub vigorously into the surface. The slurry coat consists of the following mix, by volume:

- 1 part white Portland cement
- 2 parts type S lime
- 6 parts sand
- Mix with water

Scratch coat

The first scratch coat must be pressed into the slurry coat while the slurry is still moist. Each scratch coat must be scored before initial drying to provide a key for following coats. No coat should exceed 3/8 inch in thickness. Allow 2-4 hours between scratch coat applications.

The scratch coat consists of the following mix, by volume:

- 1 part white Portland cement
- 1 part type S lime
- 6 parts sand
- Water for mixing

Finish coat

The finish coat is applied once the patch has been built up to the required thickness. This final coat is the only coat formulated to match the color and texture of the stone being repaired.
The finish coat consists of the following mix, by volume:

- 1 part white Portland cement
- 1 part type S lime
- 2–3 parts sand
- 3–4 parts crushed stone (of the same type being resurfaced)
- Dry pigments
- Water for mixing

All measurements are parts by volume.

All ingredients must be combined dry then mixed with potable water.

Use dry pigments (natural or synthetic stable oxide pigments) when crushed stone is not a sufficient color match. Do not exceed recommended maximum amounts, as too much pigment can reduce strength and result in unstable color. The best brownstone patching contains actual crushed stone. When possible, use stone removed from the area being repaired or old stone with the same qualities. Crushed stone must be ground, passed through a 16-mesh screen, and thoroughly washed.

Surface finishing

The surface must be finished to match the original stone tooling or existing condition. Possible surface treatments include damp sponging (stippling), dry toweling with a wooden float, and acid etching with diluted hydrofluoric acid. All treatments are executed while the patch is partially cured to leather hardness.