



# CITY OF PATERSON

## Downtown Commercial Historic District

### DESIGN GUIDELINES

## ARCHITECTURAL METALS



*Decorative architectural metals are found on many buildings in Paterson's Downtown Commercial Historic District. This sheet metal cornice includes very deep and highly ornate brackets, helps to define its architectural style and period of construction and is a character defining feature of the building.*

### PURPOSE OF GUIDELINES

- Encourage retention and maintenance of historic architectural metals, typically located at upper floors of buildings in the Downtown Commercial Historic District (DCHD)
- Encourage regular safety reviews of architectural metal elements, particularly fire escapes and railings
- Provide design assistance in identifying options for new architectural metals that are historically compatible and visually minimal where appropriate

These *Guidelines* were developed in conjunction with the City of Paterson's Historic Preservation Commission (HPC) and with input of many diverse stakeholders. Please review this information during the early stages of planning your project. Familiarity with this material can assist you in moving a project quickly through the approval process, saving you both time and money. The HPC staff is available for informal meetings and to provide you with valuable information as you consider making improvements to your property.

Additional *Guidelines* addressing other historic building topics are available at 125 Ellison Street, Suite 408 and on the City's website at [www.patersonnj.gov](http://www.patersonnj.gov). For more information, to clarify whether your project requires HPC review, or to obtain permit applications, please call the HPC Staff at (973) 321-1355.

### ARCHITECTURAL METALS

Architectural metals can be found throughout the Downtown Commercial Historic District (DCHD), used for both decorative and functional purposes. Metal can be made into a variety of forms and shapes, including sheets, bars and cast elements. Various components can then be joined together to make elements that are used in building construction. Examples of architectural metals in Paterson's DCHD include:

- Water towers
- Cornices and parapets
- Fire escapes
- Projecting bay and oriel windows
- Railings
- Window spandrel panels
- Window security grilles
- Posts, columns and pilasters
- Storefronts

There are several types of metals used in the fabrication of these features, typically associated with the function as well as the architectural style. Sheet metal materials, which include copper, tin, zinc and aluminum.

Rigid metal is typically used for structural elements, but in many cases it can include decorative patterning or texture. Historically, rigid metal elements were made from cast or wrought iron, bronze, brass or steel.

## TYPES OF METAL

There are several different types of metals found at the exterior of historic buildings. Depending on the composition of the metal, the maintenance and care requirements will vary.

- **Iron** based metals, which include steel, wrought iron and cast iron, are all very strong in compression, however they are prone to rusting. To minimize the potential for rusting, it is important to keep the surfaces of iron based metals painted regularly.
- **Tin** is a white, corrosion-resistant material, which is often used as a coating for sheet steel or iron on buildings, typically at roofs, cornices and parapets. Similar to iron based metals, tinned metals (or tinplate) are often painted to improve its lifespan, or at cornices and parapets, for decorative purposes.
- **Copper** starts as a bright reddish brown color, which changes to brown, then black, and eventually green. Copper tends to be used as a sheet metal. Because it is a relatively soft metal, harsh cleaning can damage the surface.
- **Brass or Bronze** are copper mixed with other metals including zinc, lead and tin. Depending on the metals included, the color can range from golden yellow, to dark brown, to green. Brass and bronze are typically used in casting architectural elements such as window spandrels and monumental doors.



*The three cast bronze spandrel panels have a cast swag pattern and separate the arched window from the doors below.*



*This wrought iron balcony railing is highly decorative and a character defining feature of the building.*

## METAL REPAIR

Repair options for deteriorated metal features depended on the following issues:

- The type metal
- The type of deterioration
- The extent of deterioration
- Whether the feature is decorative, or serves a structural or life-safety role such as a column, balcony railing or a fire escape

If an feature is not structural, it might be possible to patch or fill the area of deterioration. If it is structural, replacing the deteriorated portion with a splice might be required. It is important to ensure that the resulting repair and the overall feature is strong enough to safely serve its original purpose. If enough of the feature has failed or is no longer able to safely fulfill its structural role, replacement of the element might be required.

### WROUGHT IRON VS. CAST IRON

Wrought iron, is hand made by heating, beating and stretching iron into decorative hardware and ironwork, and was common into the early 19th century. Cast iron, formed by casting iron in foundry molds, was popularized in the mid 19th century. Casting allowed the fabrication of more elaborate and larger elements such as columns, and produced standardized decorative components like scrollwork and filigree. Components could be ordered from a catalogue, and for larger and more complex installations, individual pieces were often fastened together.

The use of wrought or cast iron details including handrails, cornice components, columns, brackets, balusters, spandrel panels, etc. is typically associated with specific architectural styles and periods.



*Surface rusting is visible at the iron based metal railing at this balcony. Scraping and repainting is often all that is required at the earliest signs of surface rusting.*

## RUST

Iron based metals that have not been treated or coated will rust over time with exposure to moisture and the atmosphere. This is true of steel, wrought iron and cast iron. (Stainless steel, which is not a common building material, is an exception.) As metal rusts, it can expand in size as much as seven times its original thickness. In addition, it loses strength reducing its structural capacity. This can become a serious problem, particularly if the element is supporting a portion of a building, such as a column, or is meant to support or protect people, such as the case of a fire escape or railing.

One of the best ways to protect iron based metals from rusting is to provide a protective coating in the form of paint. Before applying paint to any metal surface it is important to make sure that it is clean and that all rust has been removed. If the rust is not too severe, hand scraping and a wire brush is generally all that is required to remove the rust. Since new rust will form quickly on a metal surface, it should be cleaned right away and painted with a rust-inhibiting primer to prevent new corrosion. Regular repainting with proper preparation will increase the lifespan of iron based metals.

## METALS IN MASONRY

Some metal features, such as fire escapes and handrails, are imbedded into masonry. If these elements are iron based, they can rust if exposed to moisture within the wall. This often occurs when there are open mortar joints in the masonry, or a deteriorated roofing system that allows the wall to become saturated.

With the expansion of the metal from the rust, the masonry wall can be damaged, with potential problems including cracking, opening of joints, and possibly dislodged or displaced bricks or stones. If damage is visible, consultation with a professional architect or engineer is highly recommended. For additional information, please refer to:

- *Guidelines for Masonry, Stucco & Concrete*
- *Guidelines for Roofing*



*The fire escape includes decorative wrought iron balconies. Also note the decorative metal cornice.*

## FIRE ESCAPES

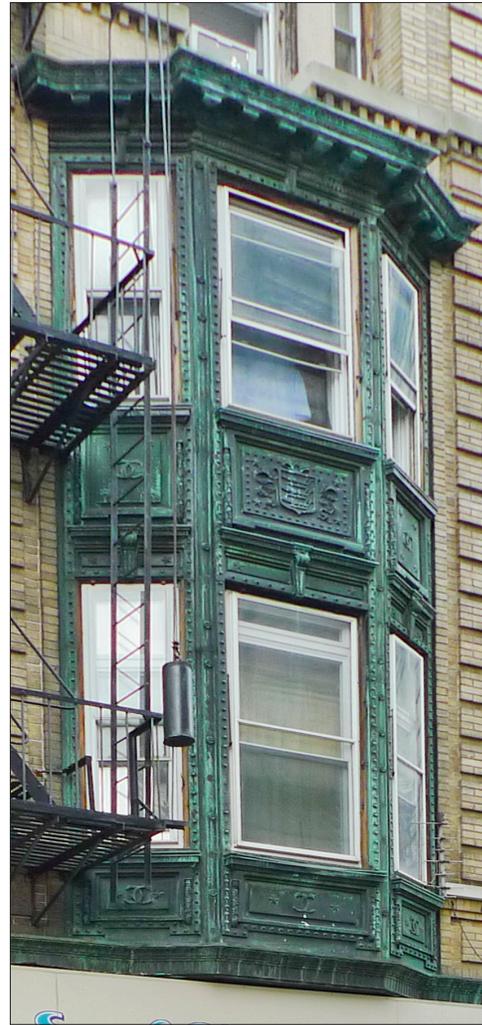
A fire escape is a combination of platforms, ladders and stairs located on the exterior of a building to provide an exit for occupants in the event of an emergency, such as a fire. Fire escapes are typically made from iron-based metals and are mounted into masonry walls, with their supports imbedded in the wall structure. Although fire escapes serve a functional purpose, historic examples can be decorative, with designed elements typically found on the balcony railings.

Since fire escapes are made from iron-based metals, they have the potential to rust if left unpainted. In addition, since their support depends on the structural capacity of the masonry wall to which it is attached, the condition of the masonry, and specifically the components of the fire escape that are embedded into the masonry, are critical in determining whether the fire escape will be able to hold the weight required if occupants are required to use it in the event of an emergency. Therefore, for the safety of occupants, it is critical to maintain both the metal fire escape as well as the supporting masonry wall. (Refer to *Metals in Masonry* on this page.)

## SHEET METALS

Sheet metals are formed by rolling or casting different types of metals into thin sheets. These thin sheets can then be formed and bent into varying shapes, and embossed or pressed with to add a decorative pattern. Because sheet metal can be attached together by welding or with fasteners, the uses, potential size and level of detail was often limited to the architect's or designer's imagination. As described in the *Guidelines for Roofing*, sheet metal was also historically used to protect joints in roofing or between dissimilar materials from water infiltration, and if installed properly, could provide a watertight surface.

In Paterson's DCHD, sheet metal is often found at building parapets and cornices as well as a facing material for projecting bays and oriel windows. (Refer to *Guidelines for Roofing*.) In these locations, the sheet metal provides a weather resistant enclosure and as a decorative element, often serving both roles in a single architectural feature. Since it is used as a decorative character defining element, it is typically part of the larger architectural design of a building and should be preserved.



*This projecting, two-story oriel window is clad in copper sheet metal. The top of the oriel window includes a projecting bracketed cornice. Decorative spandrel panels are located beneath each of the windows. The copper cladding serves as a decorative element as well as a weather resistant finish.*

### ARCHITECTURAL METAL GUIDE

#### THE HPC ENCOURAGES

- Maintaining existing architectural metal features rather than replacement
- Regular repainting of cast iron, wrought iron, steel and tin to prevent rusting
- Cleaning of architectural metals using the gentlest means possible
- Replacing only deteriorated components of architectural metal features, retaining serviceable decorative metal elements
- Matching the original material, size, shape, profiles, configuration, type, materials, and detailing to the greatest extent possible with a salvaged or new replacement architectural metal features

#### THE HPC DISCOURAGES:

- ✗ Replacing an architectural metal feature if repair and maintenance will improve its performance and preserve historic elements
- ✗ Removing, modifying or covering historic architectural metal elements especially metal cornices
- ✗ Installing new metal features at publicly visible elevations where they were not located historically
- ✗ Installing fire escapes on street facing elevations of buildings



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#### PREPARATION

All components of the *City of Paterson Downtown Commercial Historic District Design Guidelines* including all text, graphic design, photography and illustrations unless noted otherwise were prepared by:

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