Concrete Façade Restoration, South Boston Waterfront, Boston, MA

369 Congress Street, Boston, MA

By: Neil Rouleau

Gorman Richardson Lewis Architects, Inc.

239 South Street,

Hopkinton, MA 01748

G | R | L | A

Gorman Richardson Lewis Architects

239 South Street Hopkinton, MA 01748

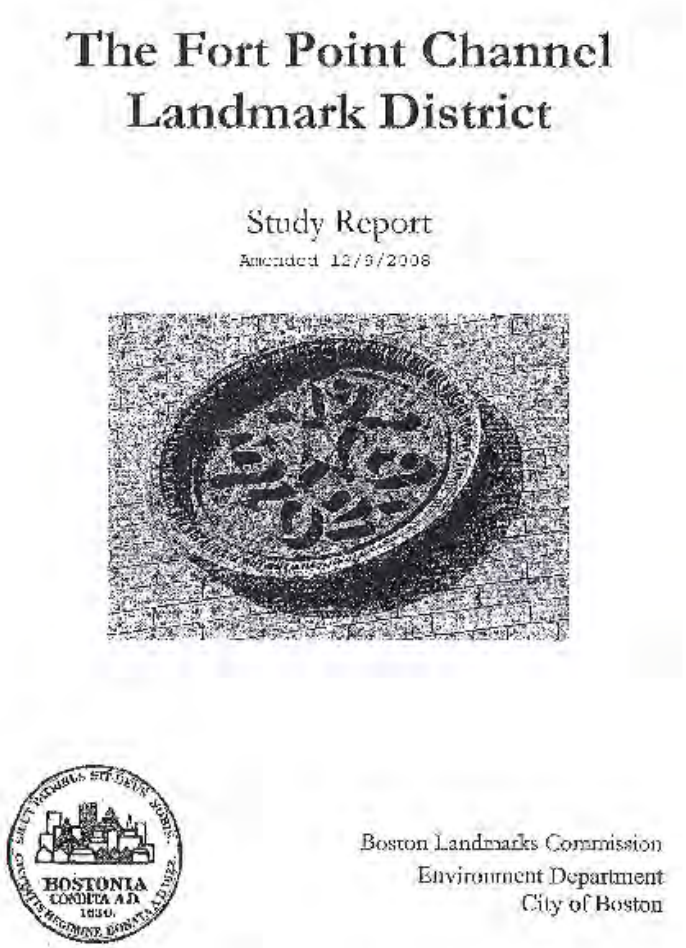
T – 508.544.2600 F – 508.435.0072

www.grlarchitects.com

Talking Points

What is Herein

- About 369 Congress Street, Boston, MA (About the Building)
- Project Lead-up
- The Project: Scope, Materials and Repairs
- The Completed Project – a Before and After View



About 369 Congress St., Boston, MA

Another extremely severe building with hints of Classical influence is the eight-story, flat-roofed, reinforced concrete wool warehouse at 367-375 Congress Street (#39). The only relatively unaltered example of reinforced concrete construction in the district, it is highly practical in its design with little attempt at ornament. Built in 1918 and designed by BWCo architect Howard B. Prescott, the concrete skeleton is trimmed with brick infill beneath its windows. The pilaster-panel design and stylized Classical trim at the parapet suggest Classical influence. At the roofline is a crenellated parapet treatment. Alterations have increased the stark appearance of this building. Now painted a solid gray, the original contrast between the concrete frame and brick panels is no longer seen on the main façade. On the main façade the replacement of steel-frame glass windows with glass blocks has eliminated window articulation that probably originally would have given it a more welcoming appearance.

In these two buildings, which were among the last to be built in the district, windows on the main facades were designed to occupy the entire width of the panels between the façade pilasters. Even though this window design had been introduced to the area just after 1900, these buildings were among the few to take advantage of the benefits that a wall of windows could offer.

About the Building

Study Report Designation:	MHC 5527, 369 – 375 Congress St., Boston, MA
Historic Name of Building Structure:	Boston Wharf Company Wool Warehouse
Completion Date:	1918
Architect:	Prescott, Howard B.
Construction Type:	Fireproofed/Reinforced Concrete
Type Architecture:	Classical Influence

Project Lead-up

The Owner's Program

- Current Owner purchased the building in the late 1960's:
  - For around $250,000 --- just before the Project, offers were coming in at ± $10,000,000

- Over the years, there has been a real "tension" between the Owner and the City:
  - This seemingly intensified in the ± 10 – 15 years prior to the project
  - The Owner had an ongoing program of removing loose concrete and coating the area
  - And, he replaced the windows sometime around 2010 – 2011

Project Lead-up

From Survey-to-Restoration

- The Contractor servicing the Building walked away:
  - The City moved in and began proceedings to file a violation against the building

- In 2013, the Owner complied with the City of Boston Façade Inspection Ordinance:
  - This author's firm performed the inspection and issued the report
    - The initial inspection recommended a program of close-up inspection and spall removal

- So, in August 2013, the firm performing the inspection got a call from the City:
  - A "chunk" of concrete fell off and smashed a windshield

Project Lead-up

At Left: Overall view of the North (front) and West (right side) Elevations

At Right: Close-up view, typical spalling conditions throughout the building.

Project Lead-up

At Left: Partial view of the South (rear) Elevations and associated spall areas.

At Right: Close-up view, typical spalling conditions throughout the building.

Project Lead-up

At Left: Partial overall view, East (left) and North (front) Elevations

At Right: Representative spall locations.

Project Lead-up

At Left: Partial overall view, West (right) Elevation

At Right: Representative spall locations.

Project Lead-up

The Owner Decides on a Program

- The City does file a violation --- and legal wrangling is underway:
  - A program of regular, quarterly surveys begins

- The Owner decides he wants metal panels to over-clad the entire building:
  - He assists with the Engineering: “I want to be sure you use very long screws”

- All-the-while, the legal wrangling continues:
  - But he says “Don’t worry, I will take care of the City”

Project Lead-up

The Approval Process

- The design firm undertakes a program:
  - Pricing documents are prepared; working with a couple of potential Contractors
  - A rendering is developed of the metal panel system cladding
  - Application is filed to the City of Boston Landmark District Commission for a hearing

- Some quotable quotes from the May 2014 hearing:
  - “Let me stop you right there”
  - “You’re going to do what”
  - “What part of no are you not understanding”

- June 2014, another chunk of concrete falls from the building. A program is proposed:
  - Safety scaffolding is erected at the front (North) and side (East) elevations
  - Bi-weekly inspections --- and Contractor action when loose pieces are found
  - This is to continue until such time the Contractor takes control of the last Elevation

Project Lead-up

Early rendering of a “shiny” new building, clad with metal panels.


RECORD OF
FACADE CONDITIONS
369 CONGRESS STREET
BOSTON, MA 02210
July 2014
LEGEND:
SPALLED CONCRETE
CRACK IN CONCRETE
PAINT PEELING
ER
EXPOSED REBAR
LOADING DOCK
NORTH ELEVATION
NORTH
ELEVATION
A3.0
2013023.02 - 369 CONGRESS STREET - RECORD OF FACADE CONDITIONS - JULY 22, 2014

LEGEND:

SPALLED CONCRETE

CRACK IN CONCRETE

PAINT PEELING

2 EAST ELEVATION

SCALE: 1/4" = 1'-0"

RECORD OF
FACADE CONDITIONS
369 CONGRESS STREET
BOSTON, MA 02210

July 2014

EAST
ELEVATION

A3.1

2013023.02 - 369 CONGRESS STREET - RECORD OF FACADE CONDITIONS - JULY 22, 2014


APPROX. LOCATION OF SIGNAGE
APPROX. LOCATION OF SIGNAGE
LEGEND:
4 WEST ELEVATION
RECORD OF FACADE CONDITIONS
369 CONGRESS STREET
BOSTON, MA 02210
July 2014
WEST ELEVATION
A3.3
2013023.02 - 369 CONGRESS STREET - RECORD OF FACADE CONDITIONS - JULY 22, 2014


RECORD OF
FACADE CONDITIONS
369 CONGRESS STREET
BOSTON, MA 02210
July 2014
LEGEND:
SPALLED CONCRETE
CRACKS IN CONCRETE
PAINT PEELING
3 SOUTH ELEVATION
SOUTH
ELEVATION
A3.2
2013023.02 - 369 CONGRESS STREET - RECORD OF FACADE CONDITIONS - JULY 22, 2014

One Lesson Learned

The Ongoing Survey

- The City of Boston Façade Inspection Ordinance:
  - Building height less than 75’ – 0” can be inspected from ground with binoculars

- Those conducting the surveys included (4 people):
  - Two Building Envelope Technicians
  - A Building Envelope Consultant
  - An Architect from the Architectural Team

- With concrete buildings, surveys from ground are inadequate:
  - Spalls can be seen on the surface --- and assumptions made about what is not seen
  - However, the reality is, spalls under the surface cannot be seen from ground

Project Lead-up

From Design-to-Construction

- Thus, the Owner accepts a concrete restoration program. The scope included:
  - Remove existing coatings (hazardous material testing finds negative results)
  - Remove lose, spalled concrete (the project is bid with 3,250 square feet at 3" deep)
  - Repair and/or replace damaged reinforcing steel
  - Undercut the sound, concrete border/margin areas to key-in new concrete
  - Form and pour new concrete --- "rub" it to blend in (surface texture)
  - Point brick masonry mortar joints
  - Application of a new coating to the concrete areas
  - Replace sealant at window and door perimeters

- The final tally of concrete spall area is: 4,619 sf (difference of 1,239)

Project Lead-up

Rendering of the repair and coating, with exposed, pointed brick masonry.

The Project

Concrete Repair

- Soy-based coating and urethane paint remover.
- Epoxy-adhesive anchor system.
- Spiral anchors.
- Re-bar couplers.

The Project

Concrete Repair Materials

- Bonding agent and reinforcement protection.
- Single-component, polymer-modified, silica fume enhanced, cementitious pump and pour mortar.
- Two-component, polymer-modified, cementitious, non-sag mortar plus penetrating corrosion inhibitor.
- Elastomeric, high-performance, anti-carbonation, crack-bridging coating.

The Project

West Elevation: Exposed reinforcing steel, as a result of removing loose concrete. Overall, steel was more intact than anticipated.

Ultimately, some repairs were made; often, existing reinforcing was supported back to structure.

The Project

South (rear) Elevation: Typical spalled area, after removal of loose concrete. As noted, overall reinforcing steel was not “as bad” as one may anticipate, although at times it was cut short.

The Project

South (rear) Elevation: A new horizontal bar was placed to help “grab” the concrete, tied back to structure using what affectionately became know as “candy-canes”.

Candy canes were at times reinforcing steel, or the spiral anchors.

The Project

South (rear) Elevation: A new horizontal bar was placed, tied back to structure using what affectionately became know as “candy-canes”.

Candy canes were at times reinforcing steel, or the spiral anchors.

The Project

East (rear) Elevation: Typical reinforcing steel provided as it was missing. As noted, steel was in “better” condition than anticipated; but, one issue was often reinforcing was altogether missing.

The Project

South (rear) Elevation: Typical spalled area, after removal of loose concrete. A “candy cane”, epoxy-anchored to support vertical reinforcing steel.

The Project

In the meantime, there was a City approval process for the color. This first round of Owner-desired colors was rejected.

The Project

South (rear) Elevation: After reinforcing repairs, forms were constructed for support of concrete repair material. The form work was intricate around windows, as at times spalls would undermine window frames.

The Project

South (rear) Elevation: Form work at a window head-to-column, with “port” for the pour.

The Project

South (rear) Elevation: Work in progress --- some forms in process, with some areas forms were removed. Here, patched areas are shown before they were rubbed.

The Project

South (rear) Elevation: This is among the first areas of repair. Initial impressions were not favorable; but, stone rubbing did well to blend the patch areas into older existing concrete.

The Project

East (left) Elevation:
Among the more pleasant “surprises” was the integrity and appearance of the brick once the coatings were removed.

The Project

South (rear) Elevation: Form work removed, after some initial stone rubbing. Texture would have been very difficult to match; but, the patches did blend fairly well overall.

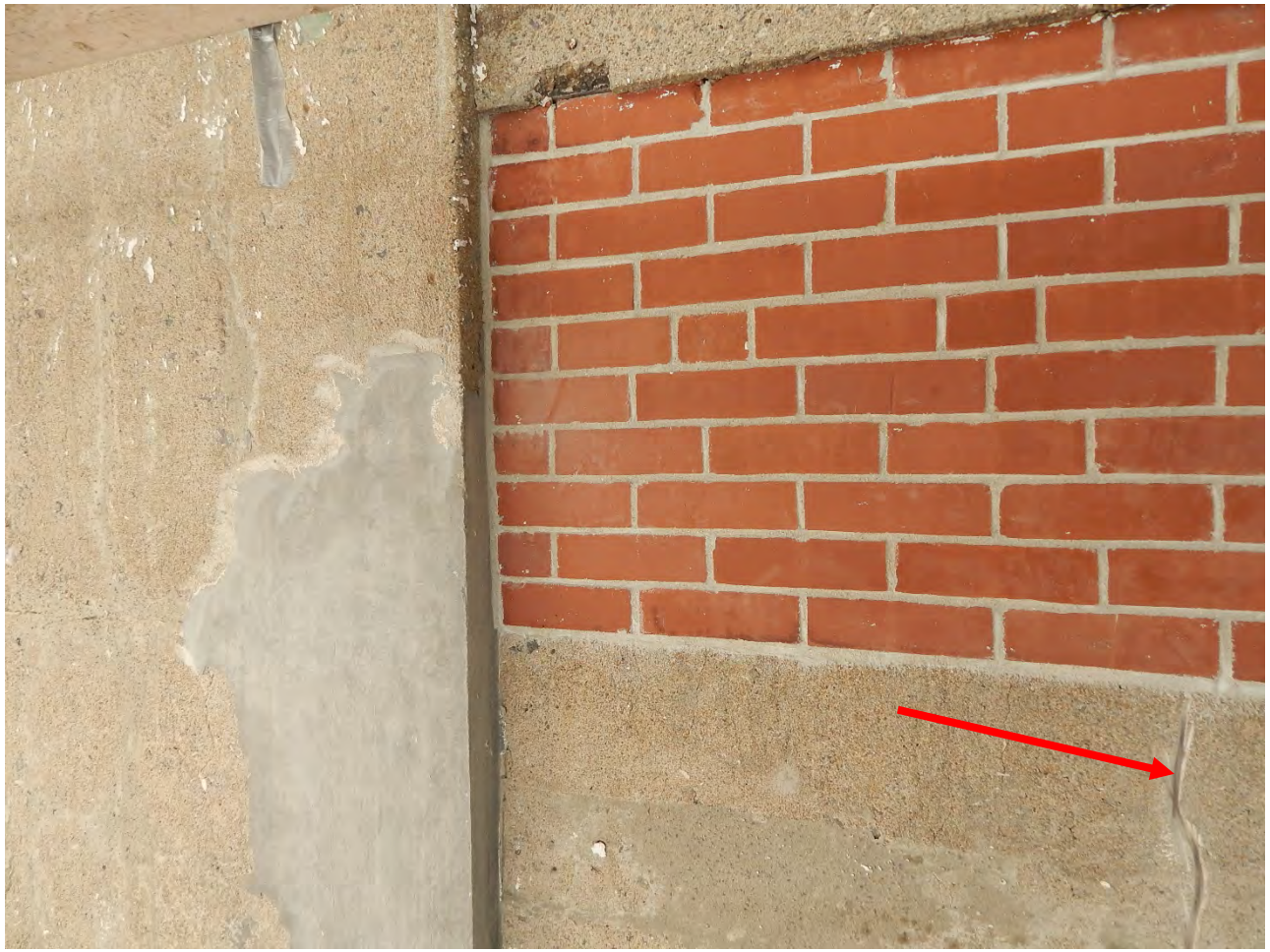
The Project

South (rear) Elevation: Form work removed, after some initial stone rubbing. Texture would have been very difficult to match; but, the patches did blend fairly well overall.

The Project

South (rear) Elevation: Area complete, prior to coating. The lower floor was done last, as there was some stucco repair; but, the Team waited owing to the risk of graffiti. The Owner had security monitoring installed in the meantime.

The Project



North (front) Elevation: Brick masonry after pointing, with a patch area at the column, “rubbed” in. Note, there was some crack repair at a few areas.

The Project

North (front) Elevation: Eventually, concrete work is finished; and the coating applied. The final product began to emerge.

The Project

North (front) Elevation: Eventually, concrete work is finished; and the coating applied. The final product began to emerge.

The Project

The Project

North (front) Elevation: Last; but, by no means least, the medallion was stripped on site. It was then taken down, further cleaned at "the shop" and reinstalled and left to patina, as one of several plans proposed that was preferred by the City.

The Project

North (front) Elevation: The details long-forgotten (the “Classical influence”) reemerge and provide some character.

North and West: Before

G | R | L | A
Gorman Richardson Lewis Architects
239 South Street Hopkinton, MA 01748
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North and East: After view. Final construction cost: $1,331,179