

MASONRY CATEGORY

Façade Rehabilitation of Callahan Tunnel Vent Building #13

BOSTON, MA

SUBMITTED BY SIMPSON GUMPERTZ & HEGER, INC.

The Callahan Tunnel Vent Building #13 is a four-story building constructed around 1961. The building is approximately 98 ft (30 m) high, with story heights of approximately 23.5 ft (7.2 m). The building is situated directly above, and provides ventilation for, the Callahan Tunnel located beneath Boston Harbor. The building structure consists of concrete slabs supported by concrete-encased steel framing. The original building enclosure consisted of composite

degrees, such as outward bowing, cracking, and water infiltration.

Two general alternatives to rehabilitate the façade were evaluated: repair/stabilization and replacement. The replacement option was selected and schematic designs and cost estimates prepared for the various replacement options. Brick veneer with reinforced CMU walls was selected as the replacement option. New reinforced concrete curbs were constructed at

the base of the CMU backup wall and dowelled into the existing concrete slab with vertically slotted steel inserts to provide vertical adjustability for the relieving angles. New hot-dip galvanized steel relieving angles were installed to vertically support the new brick veneer. Due to the large story heights, high-lift grouting techniques were used for the new CMU wall. Concrete repairs were performed at the deteriorated concrete encasements. A new brick masonry veneer was constructed matching the original architectural jogs in the façade and preserving the aesthetics of the original façade to match the surrounding



masonry walls with an inner wythe of cinder-block masonry extending from floor to floor, and an outer wythe of clay-brick masonry extending the full height of the building.

historic brick masonry buildings.

In 2009, a section of brick masonry at the west façade fell off the building, prompting a condition assessment of the façade that included visual and 3D laser scanning surveys. In general, the exterior masonry walls exhibited signs of distress to varying



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OWNER

**Massachusetts Department of Transportation
Highway Division
Boston, MA**

PROJECT ENGINEER/DESIGNER

**Simpson Gumpertz & Heger Inc.
Waltham, MA**

REPAIR CONTRACTOR

**G.V.W. Incorporated
East Boston, MA**

MATERIALS SUPPLIER/MANUFACTURER

**Costa Brothers Masonry
Fairhaven, MA**

ARCHITECT

**Fennick McCredie Architecture LTD
Boston, MA**