Building Name: Fire & Police Facility

Address: 150 Washington Street

Building Use: Joint Police and Fire Stations

Year of Construction: 1963 **Last Modification/Addition:** 1997 – Police
2000 - Fire

Report By: K. Champagne **GSF** Approx. 17,000 SF **Date:** 12/7/17

EXTISTING CONDITIONS:

Structural System(s): Floor – *1st floor for Original Police & Fire Building:* Concrete floor slab spanning between concrete walls. *1st floor for Fire Addition:* Wood-framed supported by wood-framed load-bearing walls; not visible at the time of the visit due to finishes. *2nd floor for Police Addition:* Wood-framed supported by load-bearing reinforced CMU; not visible at the time of the visit due to finishes.

Roof – *Original Police & Fire Building:* Timber plank spanning between interior steel beams and stack-bond load-bearing CMU - typical. The fire station apparatus bay is steel-framed (prefabricated metal building) with wood roof planking. *Police Addition:* Wood-framed rafters; not visible at the time of the visit due to finishes and insulation. *Fire Addition:* Wood-framed with dimensional lumber spanning between wood-framed load-bearing walls; not visible at the time of the visit due to finishes.

Foundation – Perimeter concrete foundation wall (only visible in basement areas of building; i.e. not visible within Police Addition and below Fire Station apparatus bay). Footings were not visible at the time of the visit. Ground floor is slab-on-grade.

Superstructure Condition: The first floor elevated concrete floor slab in the original Fire and Police building is generally in sound condition where visible at the time of the visit. The wood-framed Fire Station Addition 1st floor and Police Addition 2nd floor were not visible at the time of the visit due to finishes.

Where visible, the roof decking, steel beams, and CMU walls in the original building are generally in sound condition. Roof framing in the Police Addition and Fire Addition was not visible at the time of the visit due to finishes and insulation.

Foundation Condition: Where visible, the foundation appears to generally be in sound condition. Some shrinkage cracking was noted in the ground floor slab-on-grade in the Police Addition Apparatus Bay (at changes in slab pitch) and in the ground floor slab-on-grade in the original Fire Apparatus Bay (random cracking). The cracks did not appear to be indicative of active movement and generally shrinkage cracks to do not affect the structural integrity of the slab.

Areas of cracking and spalling were observed along the Fire Apparatus Bay approach apron at the building's exterior. The transition between the exterior apron and the interior slab-on-grade has been patched with asphalt.

Roof Loading: Flat/low-slope roof (typical), pitched roof at Police Addition and original Fire Station Apparatus Bay; snow loading.

Floor Loading: Classrooms, office spaces, workout spaces, meeting rooms, apparatus bays.

Observed Deficiencies: According to facility personnel, the basement area of the original police station gets water infiltration/standing water approximately once per year. Based on their discussions with the Town Engineer, facility personnel believes this is caused by poor drainage around the building and an undersized drainage discharge system.

Areas of cracking and spalling were observed along the Fire Apparatus Bay approach apron at the building's exterior. A crack was observed in the original Police Station elevated first floor slab within the evidence room.

Some water staining was observed along ceiling tiles in the original Police Station under the flat roof area. According to facility personnel, this roof was recently replaced in 2014-2015 and evidence of leaks are still occasionally observed.

Facility personnel stated that the windows along the southwest side of the original police station are out-of-plumb and allow air infiltration. The header above the windows appeared to generally be plumb.

RECOMMENDED ACTIONS: Drainage improvements should be investigated around the original Police Station building.

The concrete spalls and cracks along the Fire Station Apparatus Bay exterior apron should be repaired with patching mortar and epoxy crack injection, applied in accordance with manufacturer's recommendations. The crack within the original Police Station elevated first floor slab (in evidence room) is less than 1/16" in width and should be monitored. If the crack widens, it should be routed and filled with epoxy in accordance with manufacturer's recommendations.

The integrity of the original Police Station roof membrane and window blocking should be further investigated for soundness and repaired/replaced as necessary.

GENERAL COMMENTS: Load-bearing and partition walls within the original Fire and Police building are constructed with stack bond masonry and support a timber plank roof (considered a flexible diaphragm per the building code). It is unclear from the original drawings if these CMU walls are unreinforced, but given the age of the original building they are likely either unreinforced or only lightly reinforced. Therefore, for any significant alteration of the building it should be assumed that the attachment of the walls to the existing roof framing will need to be evaluated for code-

prescribed seismic loads and upgraded as necessary. Connections may require some level of retrofit including, but not necessarily limited to installation of new ledger boards, new anchor rods, and strapping. Note that a “significant alteration” (i.e. Level 3 alteration) is defined by the Massachusetts Existing Building Code as renovations/alterations where the “work area” exceeds 50% of the aggregate area of the building. The work area is defined as “that portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents.”

Attached Photo Log: Photo 1 – Hairline crack (1/16” crack width or less) observed in elevated concrete floor slab within evidence room.

Photo 2 – Typical condition of timber roof planking and supporting steel beam (viewed from within original Fire Station building).

Photo 3 – Typical stack-bond CMU wall.

Photo 4 – Random shrinkage crack observed along original Fire Station Apparatus Bay slab-on-grade.

Photo 5 – Cracking/spalling observed along Fire Station Apparatus Bay approach apron.

Photo 6 – Asphalt patch at transition between Fire Station Apparatus Bay approach apron and interior slab-on-grade.

Photo No. 1

Photo No. 2

Photo No. 3

Photo No. 4

Photo No. 5

Photo No. 6