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Renovations to Uxbridge Library, Uxbridge, MA

Preliminary Structural Narrative

December 15, 2025

1.0 Existing Structure

The existing building consists of a historic masonry, 10,721 gsf, circa 1893 structure. Structural information on the existing building was obtained from a previous Existing Conditions Report by Building Evolution Corporation dated May 30, 2024, photographs taken by Schwartz Silver Architects during this study, and photos from a plans of a previous renovation, possibly done in 1980 or 1996.

1.1 Foundations

The existing foundations appear to be masonry foundation walls. The lowest floor is assumed to be a concrete slab on grade.

1.2 Superstructure

The elevated main floor level is assumed to consists of wood floor joists supported on interior and exterior masonry walls with some steel elements that were introduced to remove basement walls. The roof gable is wood framed. Lateral resistance against wind and seismic loads is assumed to be provided by exterior and interior masonry walls. There are two large chimneys and no parapets.

1.3 Design Criteria

No design criteria were provided for the existing building.

2.0 Proposed Building

2.1 Overview of Renovations and Additions

Proposed renovations include removing the stack area at the rear of the building, removing significant portions of existing interior and exterior masonry walls, and reconfiguring space throughout the building.

The proposed addition to rear will include three stories and a partial basement. These will be laterally tied into the historic building.

2.2. Code Implications

Under the Massachusetts State Building Code, 10th edition (International Building Code and International Existing Building Code 2021 with Massachusetts Amendments), the scope of work within the existing building is classified as Work Area Level 3 since more than 50% of the area is involved in the renovations. Gravity load carrying elements supporting more than 30% of the total floor and roof areas will also be involved in this proposed alteration, so this scope is classified as a Substantial Structural Alteration.

Per section 906.2 IEBC 2021: "Where work involves a *substantial structural* alteration, the lateral load-resisting system of the altered building shall be shown to satisfy the requirements of Sections 1609 and 1613 of the *International Building Code*. Reduced seismic forces shall be permitted."

Per section 1101.1: The proposed addition "shall comply to the International Codes as adopted for new construction". Per section 1103.2 IEBC 2021: "…Where the *addition* is not structurally independent of the *existing structure*, the *existing structure* and its *addition* acting together as a single structure shall meet the requirement of Sections 1609 and 1613 of the *International Building Code* using full seismic forces." The addition will be tied into the existing building and these sections will apply.

Per section 906.6 IEBC 2021 as amended: "Parapets constructed of unreinforced masonry, [and] unreinforced masonry chimneys…shall be removed, [or] have bracing installed as needed." The existing structure includes two tall chimneys.

2.3 Design Criteria

Design Criteria for the Addition, Per Massachusetts State Building Code, 10th edition, and MBLC criteria

Live Load

- Floors 150 psf (shelving)
- Accessible Roof Deck 100 psf
- Mechanical 150 psf + weight of equipment pads

Snow Load

- Ground Snow Load 40 psf
- Minimum Flat Snow Load 35 psf

Wind Load

- Basic Wind Speed (V_{ult}) 129 psf
- Exposure B
- Risk Category III

Seismic

- S_s 0.200
- S_1 0.059

2.4 Structural Scope of Work

Due to the removal of the stack area and existing masonry shear walls, and the addition, provide new lateral systems as follows:

- Reinforced concrete shear walls constructed against existing masonry walls with additional foundations.
- Supplemental steel braced frames.
- Additional steel braced frames within the addition to support lateral loads from the existing portion.

Unreinforced masonry chimneys will require bracing. This may include external structural elements to tie the chimneys into the roof, or rebuilding the chimneys to incorporate internal bracing.

Unreinforced masonry walls will require anchorage to floor and roof structures. This may include clips fastened to the walls with drilled and epoxy grouted anchors at 4 feet on center and holddowns or other connectors to engage the existing floor and roof structures.

Where masonry walls that support framing structure are to be removed, provide new steel beams and columns extending down to new footings in the basement. Some beams may be supported on existing masonry to remain. Smaller openings up to 7 feet may be created with lintels.

New floor structures will be steel framed with a lightweight composite slab on metal deck. Foundations will be concrete spread footings and foundation walls. The roof will be metal roof deck on steel beams.

Added floor and roof plates will be tied into the existing structure. This may include drilling and epoxy grouting dowels into the existing masonry walls.

Lateral resistance will be provided by steel concentrically braced frames as well as steel moment frames, with the new structure being tied into the existing structure.