BECKER
STRUCTURAL ENGINEERS

May 08, 2017

Mr. Ron Lamarre
Lavallee Brensinger Architects
305 Commercial Street
Portland, Maine 04101

Town of Wells Fire Department Station
Wells, ME

Dear Ron,
Per your request, we have reviewed the requirements of the 2009 International Existing Building Code (IEBC) as it pertains to the structural provisions associated with renovations and additions of an existing building which under the present code will be classified as an essential facility and therefore subject to the strictest provisions of the code.

Based on my review of the circa late 1980's construction photos provided, it appears the existing building is wood framed using a combination of dimensional lumber infill wall framing with solid sawn posts and laminated beams supporting multi-ply pre-manufactured wood roof trusses at approximately 8ft to 10ft on center. Dimensional joists span between trusses and in turn support plywood roof sheathing.

A wood building of this era was likely designed in accordance with the 1984 or 1987 BOCA Building Code. While the 1987 BOCA code did recognize the importance of police and fire stations and the need for them to remain functioning in the aftermath of a natural disaster caused by high wind, heavy snow or an earthquake, the requirements were rather limited in comparison with today's IEBC code requirements. Today, buildings of this type must comply with the strictest requirements of the code that strive to improve survivability by using much higher load factors for all loading conditions. Once a substantial addition or renovation is undertaken, the building in question will be required to comply with all current code structural loading and performance requirements as if it were a new building.

We have designed many such renovations, particularly in historic structures, where the option of abandoning the existing structure is not desired. The code upgrades are invasive and costly. The entire roof framing will need to be reinforced for higher snow loads as possibly will wall posts supporting the trusses. Wind and seismic wall anchorage will be required, additional plywood shear walls and additional lateral elements will likely be needed for the higher lateral loads. This may include the addition of steel moment frames around each existing apparatus bay overhead door to provide the necessary lateral strength for the building. This may then also require foundation improvements. While any building can be modified to meet code, considering the nature of the Wells Fire Station building's wood construction typology and standard construction practices used in the late 1980s, our professional experience has found that the retrofit work necessary to modify and upgrade the structural components to bring them into compliance with the current codes will likely be of equal or greater cost than new construction on a clean pad. We trust this information clarifies the level of work necessary as you consider the options for the future use of the building.

Sincerely,
BECKER STRUCTURAL ENGINEERS, Inc.

Paul B. Becker P.E.
President