

**STEFFENSEN ENGINEERING ASSOCIATES, INC**

CONSULTING STRUCTURAL ENGINEERS

31 CALEF ROAD

AUBURN, NEW HAMPSHIRE 03032-3518

TEL (603) 483-1300 FAX (603) 483-0650

January 16, 2009

Town of Hollis - Selectmen  
7 Monument Square  
Hollis, NH 03049

Attention: Mr. Troy Brown

Re: Hollis Town Hall  
Clock Tower  
Hollis, NH

Dear Mr. Brown,

At your request on December 8, 2008 and following, we visited the clock tower site to make observations and to take measurements to enable us to perform a structural analysis of the tower. We concur with the comments by others on damaged structural elements, splits, rot and other deficiencies. We found by analysis that key elements of the existing tower framing are overstressed by approximately 3 times when the tower is subjected to a 90 mph wind as required by the building code. This analysis was based upon the assumption that all structural elements were sound. Considering the condition of framing and joints and the existing design shortcomings when current code loading is applied, we designed a secondary bracing system to resist full loading with the original framing being redundant. Drawings S1.4 and S1.5 show the required repairs and modifications.

The new bracing system consists of angle reinforcing of the existing corner columns to compensate for splits and rot and to provide adequate connections for the new diagonal rod bracing that will be tensioned with turnbuckles and dramatically reduce the sway of the building under wind load as well as limit the loads through existing tower framing to acceptable levels.

The existing tower with the aforementioned discrepancies has probably not experienced failure of any components at possible prior 90 mph wind loads due to encroachment upon the factor of safety of the timber framing although sway of the tower has resulted in opening of joints in the tower as well as between the tower and the adjacent roof planes. Open joints have permitted the entrance of water and subsequent worsening damage. The tower will probably not collapse when wind loads less than 45 mph are applied although structural integrity is continually lessened as time passes due to deterioration from rot, cracking and loosening of joints.

Thank you for this opportunity to be of service. If there are any questions please call or write.

Sincerely,



Peter H. Steffensen, P.E.

08-163 tower rept