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July 23, 2014

Mr. Tom Wood, Supervisor
Town of Saratoga
Town Hall - 30 Ferry Street
Schuylerville, New York 12871

Re: Supplemental Geotechnical Services for New Town Hall
Ferry Street - Schuylerville, New York
Dente File No. FDE-05-079

Dear Mr. Wood:

Several years after we submitted our Geotechnical Evaluation (June 2005) for the proposed Town Hall, new earthquake hazard mappings were developed by the USGS and incorporated into the State Building Codes. Based on the newer mapping and current plans for the new building construction, we have updated our findings regarding the seismic site class for the project and evaluated the potential for liquefaction.

In our 2005 report we noted that seismic site class "E" should be assumed for design purposes. Based on an accumulation of shear wave velocity testing we have conducted at a number of sites in the region in similar soil types, we now consider that class "D" can be assumed. This change in site class along with the new hazard maps in the State Building Code result in the following modification to the seismic parameters we listed in our 2005 report.

<u>Seismic Site Class:</u>	D - Stiff Soil Profile
<u>Short Period Site Coefficient:</u>	$F_a = 1.598$
<u>1-Second Period Site Coefficient:</u>	$F_v = 2.400$
<u>Short Period Design Spectral Response Acceleration:</u>	$S_{DS} = 0.269$
<u>1-Second Period Design Spectral Response Acceleration:</u>	$S_{D1} = 0.118$
<u>Seismic Design Category:</u>	B (for Seismic Use Group I, II, or III)

The potential for liquefaction was evaluated using the computer program LiquefyPro by CivilTech Software. For evaluation purposes, a bedrock acceleration equal to 0.1g and earthquake magnitude 6.0 were assumed based on a seismic deaggregation for the site we obtained from the USGS Earthquake Hazards website. The subsurface conditions were modeled for analyses based on the test borings completed in 2005. Our evaluation concludes that an adequate safety factor against liquefaction exists for the soils beneath the project site. However, it should be understood that some settlement of the ground surface, estimated to be less than one inch, may occur in response to an earthquake.

We also reviewed the cross-section for the structure prepared by Saratoga Associates, and continue to recommend the use of piles to support the building instead of attempting to remove and replace existing fills present at the site. The primary reasons for this are the presence of groundwater in the fills and unknown impacts the excavation work may have on the nearby Canal.

Please contact our office if you have any questions or need additional information.

Yours truly,
Dente Engineering, P.C.

A handwritten signature in black ink, appearing to read "Edward Gravelle". The signature is fluid and cursive, with the first name "Edward" and last name "Gravelle" clearly distinguishable.

Edward Gravelle, P.E.
Vice President