



March 13, 2025  
Job No. 0153-393A-25

Mr. Jeffrey Scott  
The Church of Jesus Christ of Latter-day Saints  
Utah North PM Office  
435 North Wall Avenue, Suite D  
Ogden, Utah 84404

Mr. Scott:

Re: Letter  
Geotechnical Evaluation Report Update and Observed Site Class Determination  
Spanish Fork Palmyra Meetinghouse  
2107 East Heritage Drive  
Spanish Fork, Utah 84660  
LDS Property Number: 501-4029

## **Introduction**

GSH Geotechnical, Inc. (GSH) completed a geotechnical study for the proposed Spanish Fork Palmyra Meetinghouse to be located at the above-referenced site dated August 2, 2018<sup>1</sup>. GSH was requested to review the referenced report as well as to visit the site and perform shear-wave velocity testing and an observed site class determination to provide any required geotechnical updates for the construction of the proposed meetinghouse. This letter is to serve as an addendum to the referenced geotechnical report.

## **Summary**

As requested, Ms. Kamryn Griffith and Mr. Gilbert Tingey, G.I.T. of GSH visited the above-referenced site on March 7, 2025, to observe current site conditions. Since the time of the referenced report, the surrounding area has been developed into a single-family residential structure neighborhood, where single-family residential structures and associated roadways are surrounding the site. The site appears to be similar to the original study, however, the entirety of

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<sup>1</sup> “Geotechnical Evaluation Report, Proposed Mapleton West Meetinghouse, Southwest Corner of Spanish Fork Parkway and Heritage Drive, Spanish Fork, Utah, LDS Property Number: 501-4029” GSH Job No. 0153-393-18.

the site is being used as an agricultural field. Based on the observed site conditions, topsoil consisting of black silty clay with fine sand shall be expected across the entirety of the site to anticipated depths of 6 to 12 inches below the current ground surface.

Prior to proceeding with construction, removal of any existing debris, surface vegetation, root systems, topsoil, non-engineered fill (if encountered), and any deleterious materials from beneath an area extending out at least 5 feet from the perimeter of the proposed structure footprints and 3 feet beyond rigid pavements and exterior flatwork areas will be required. All existing utility locations should be reviewed to assess their impact on the proposed construction and abandoned and/or relocated as appropriate.

### **Shear-Wave Velocity Profile**

The site shear-wave velocity profile was completed utilizing Refraction Microtremor (ReMi) testing. This geophysical testing was performed at the surface using a series of geophone sensors and a seismic source. A wavefield transformation was performed on the geophone recorded movements. The transformation was then utilized to create a shear-wave dispersion curve to model the subsurface shear-wave velocity profile.

The ReMi testing was analyzed with a resulting average shear-wave velocity in the upper 100 feet/30 meters ( $\bar{v}_{s30}$ ) of 1,002 ft/s. This characterizes the site as a Site Class D – Stiff Soil Profile as defined in Chapter 20 of ASCE 7-16.

The shear-wave velocity results are provided on Figure 1, Shear-Wave Velocity Profile.

### **Ground Motions**

The IBC 2021 code is based on USGS mapping, which provides values of short and long period accelerations for bedrock values for the Western United States and is subsequently corrected for local soil conditions. The following table summarizes the short and long period accelerations for the MCE event and incorporates the appropriate soil amplification factor for a Site Class D – Stiff Soil Profile. Based on the site latitude and longitude (40.1232 degrees north and 111.6194 degrees west), the values for this site are tabulated on the following page.

Spectral Acceleration Value, T	Bedrock Boundary [mapped values] (% g)	Site Coefficient	Site Class D [adjusted for site class effects] (% g)	Design Values* (% g)
0.2 Seconds (Short Period Acceleration)	$S_S = 144.6$	$F_a = 1.000$	$S_{MS} = 144.6$	$S_{DS} = 96.4$
1.0 Second (Long Period Acceleration)	$S_1 = 53.3$	$F_v = 1.767$	$S_{M1} = 94.2$	$S_{D1} = 62.8$

\* The  $S_1$ ,  $F_v$ ,  $S_{M1}$ , and  $S_{D1}$  values may not be valid for design and may need to be modified by the structural engineer in accordance with Exception #2 in Section 11.4.8 of ASCE 7-16. As an alternative to this Exception, GSH can provide a site-specific seismic study for the site. Please contact GSH for additional details.

**Closure**

Based on our site observations and review of the referenced geotechnical evaluation report, all other recommendations presented in the referenced geotechnical report remain valid and shall continue to be followed.

If you have any questions or would like to discuss these items further, please feel free to contact us at (801) 685-9190.

Respectfully submitted,

**GSH Geotechnical, Inc.**



Tristen Leberknight  
 Staff Engineer, E.I.T.

TL/MSH:jmt

Reviewed by:



Michael S. Huber, P.E.  
 State of Utah No. 343650  
 Vice President/Senior Geotechnical Engineer



Encl. Figure 1, Shear-Wave Velocity Profile

Addressee (email)

cc: Brittany White-Johnson

# SHEAR-WAVE VELOCITY PROFILE

