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March 7, 2019 BSK Project No.: G16-054-11L

Ms. Carmen Burky
Project Manager
Vanir Construction Management, Inc.
24400 Amador Street
Hayward, California 94544

SUBJECT: Geotechnical Report Addendum
Summary Table Seismic Design Parameters
Harder Elementary School Campus Reconstruction
495 Wyeth Road
Hayward, California

Dear Ms. Burky:

At the request of T.S. Yang, Senior Structural Engineer with the Department of General Services (DSA)we are providing additional information with respect to site-specific design parameters for the planned campus reconstruction of Harder Elementary School located at 495 Wyeth Road in Hayward, California.

Summary of Seismic Design Parameters

A summary of seismic design parameters based on the USGS general mapped values and the results of the site-specific analysis from ASCE 7-10 Section 21.4 is presented in the following Table. Site-specific values for S_{DS} and S_{D1} were developed by adjusting the site-specific values according to the requirements set in ASCE 7-10, Section 21.4.

HARDER ELEMENTARY SCHOOL CAMPUS RECONSTRUCTION SUMMARY OF DESIGN ACCELERATION PARAMETERS ASCE 7-10 SECTION 21.4		
Criteria	Value	Reference
USGS MAP BASED VALUES (GENERAL)		
Design Spectral Acceleration (g) S_{DS}	1.595	ASCE Equations 11.4.3-4
Design Spectral Acceleration (g) S_{D1}	0.995	ASCE Equations 11.4.3-4
Geometric Mean PGA (g)	0.922	ASCE Equations 11.8-1
(Continued)		

HARDER ELEMENTARY SCHOOL CAMPUS RECONSTRUCTION SUMMARY OF DESIGN ACCELERATION PARAMETERS ASCE 7-10 SECTION 21.4	
SITE-SPECIFIC DESIGN SPECTRAL ACCELERATION VALUES (SEE FIGURE D-17, May 17, 2016 Report)	
0.2 Second Site-specific Design Spectral Acceleration (g)	1.464
0.2 Second Site-specific Spectral Acceleration (g) Adjustment 1	1.464
0.2 Second Site-specific Spectral Acceleration (g) Adjustment 2 (S_{DS})	1.464
1.0 Second Site-specific Design Spectral Acceleration (g)	1.136
1.0 Second Site-specific Spectral Acceleration (g) Adjustment 1	1.136
1.0 Second Site-specific Spectral Acceleration (g) Adjustment 3 (S_{D1})	1.268
Site-specific PGA (g) (Maximum Rotated Component)	1.075
Site-specific PGA (g) (Geometric Mean) Adjustment 4	0.977
Site-specific PGA (g) (Geometric Mean) Adjustment 1 (PGA)	0.977

Adjustments Per ASCE 21

1. Site-specific value greater than 80% of General Value from USGS Maps
2. 0.2 Second Sa greater than 90% of Sa values at periods greater than 0.2 second
3. Second Sa greater than 2x Sa value at period of 2 seconds
4. Geometric Mean PGA = Maximum Rotated Component/1.1

CLOSURE

We appreciate the opportunity of providing our services to the District on this project and trust this meets your needs currently. Please, contact us at (925) 315-3151 if you have any questions or require additional information.

Respectfully submitted,
BSK Associates

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