Appendix H

Response to Geology and Soils Report Review Letter

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

May 18, 2026

Village Christian School
8930 Village Avenue
Sun Valley, California 91352

Job No. 2013-006-012

Attention: Mr. Tom Konjoyan

Subject: Response to City of Los Angeles
Department of Building and Safety
Geology and Soils Report Review Letter
Dated April 21, 2026
Proposed Gymnasium and Annex Building
Village Christian School
8930 Village Avenue
Sun Valley, California

Reference: See List

Ladies/Gentlemen:

This Response to City of Los Angeles has been prepared to respond to comments from the Building Department for the City of Los Angeles (City). The comments from the City were summarized in a Geology and Soils Report Review Letter dated April 21, 2026.

We initially prepared our referenced "Report of Geotechnical Investigation" (R. T. Frankian & Associates [RTF&A], 2025) that presented geotechnical recommendations for the development of the subject Gymnasium and Annex Building. Following a review of that report, the City issued a Soils Report Review Letter dated January 29, 2026. We (RTF&A) responded to the comments in that review letter in our referenced "Geologic Report and Response to City of Los Angeles" (RTF&A, 2026). The subject Geology and Soils Report Review Letter dated April 21, 2026, was issued following the City review of RTF&A, 2026.

The City comments from the Geology and Soils Report Review Letter are shown below in bold type. Our response follows each comment in regular type. The subject Geology and Soils Report Review Letter has been included as an attachment to this submittal.

SOILS REPORT REVIEW LETTER

1. **[ASCE 7-22] A site class C was recommended. However, the procedure for determining the Site Class was not indicated. Provide the procedure to determine the Site Class in accordance with Chapter 20 of ASCE 7-22 (i.e., measured average shear wave velocity; based on correlations with SPT, CPT, shear strength; estimated on the basis of site geology).**

Our firm has performed multiple geologic and geotechnical investigations in various areas of the Village Christian School campus. Those investigations included the excavation of test borings and test pits as well as a geologic reconnaissance of the school site and surrounding hillsides. The reviewed report (RTF&A, 2026) included Geologic Map and Sections, Figure 1.1 that is also included with this response. Based on review of the geologic sections and specifically Sections D-D' and F-F', the majority of the site after the completion of grading will be underlain by at least 5 feet of compacted fill, alluvium to a depth of up to a maximum of about 50 feet. The alluvium is underlain by quartz diorite bedrock. The depth to bedrock across the site varies as indicated on the plan and sections as indicated on Figure 1.1, but for purposes of the shear wave velocity determination was conservatively taken as being present at a depth of 60 feet. The shear wave velocity calculation is presented below and is estimated to be about 1,369 feet per second consistent with a Site Class of CD in accordance with ASCE 7-22 for the deeper alluvial areas of the site and consistent with our recommended use of Site Class C for the proposed development previously presented in the reviewed report.

Depth Interval	Blow Count	Classification	Est. Shear Wave Velocity ft/sec
0-5	30	90% Fill	1200
5-25	20	Alluvium	800
25-50	25	Alluvium	1000
50-100	>50	Med. Hard Rock	4500

V_{s30} = 100/(5/1200+20/800+35/1000+40/4500) = 1,369 feet per second
S_{s30} Lower Bound = 1369/1.3 = 1,053 feet per second
S_{s30} Upper Bound = 1369*1.3 = 1,779 feet per second

The following coefficients and factors apply to seismic force design of the proposed structures at the site. The parameters were determined using the OSHPD website and the calculations for site class C, CD, and D are presented in Appendix B. The parameters below are

based on the Design Code Reference Document (DCRD) ASCE 7-22 and a Risk Category of II. We defer to the project Structural Engineer to determine the appropriate DCRD to be used for the subject development; we can provide additional parameters, based on an alternate DCRD or Risk Category, upon request and authorization. These parameters replace and supersede the geotechnical design parameters that were included in our referenced reports RTF&A, 2026, 2025).

Latitude	34.22930308
Longitude	-118.35526793
Risk Category	II
Site Class	CD
SS	2.35
S1	0.8
SMS	2.52
SM1	1.51
SDS	1.68
SD1	1.01
PGAM	0.98

2. **Alternatively, the most critical site conditions of Site Class C, CD, and D could be used for seismic design. Provide the seismic parameters for retaining wall seismic pressure considering the most critical parameters obtained based on each of these site classes.**

The OSPOD website was used to determine seismic design parameters for Site Class C, CD, and D as presented in Appendix B. The resulting PGAm for each of these site classifications is presented below. The corresponding seismic lateral earth pressure for walls greater than 6 feet in height was determined using Equation 6 presented in Information Bulletin Public Building Code Document No. 2023-083.

Y_{EFP} (seismic) = ¾*Kh*Unit wt. of retained soils

The seismic lateral earth pressure shall be applied in addition to the static lateral earth pressure, and can be applied assuming an inverted triangular distribution, with the resultant applied at a height of 2/3 h measured from the bottom of wall footings.

Site Class	PGAm	Y_{EFP}
C	0.96	28.8
CD	0.98	29.4
D	0.91	27.3

Based on the response to Comment No. 1 the use of an inverted equivalent fluid pressure of 29.4 pcf for Site Class CD for the subject site is appropriate and should replace the previously recommended value of 29 pcf which will result in a small increase in the seismic load.

3. **As previously requested, provide design calculations for retaining walls (up to 10 feet high) for a minimum factor of safety of 1.5. Calculations shall be based on site specific laboratory testing data. All back-sloping conditions shall be included in the calculations.**

The structural design of the retaining wall is referred to the project Structural Engineer, and it is recommended that the retaining wall plans be designed in accordance with the geotechnical parameters presented in this response and the referenced reports for this site. The soil strength parameters to be used in the design of retaining walls were presented in our referenced "Report of Geotechnical Investigation" (RTF&A, 2025). The soil strength parameters presented in that report included a bearing value, a coefficient of friction, lateral earth pressures, and seismic lateral earth pressures for building walls and cantilevered retaining walls that are greater than 6 feet in height. Temporary excavation recommendations for the back-slope to used when constructing retaining walls were also presented in our referenced "Report of Geotechnical Investigation" (RTF&A, 2025).

The direct shear parameters presented in the referenced report for compacted fill and alluvium are summarized below in addition to published values for quartz diorite taken from the Seismic Hazard Zone Report for the Burbank 7.5 Minute Quadrangle (SHZR Burbank).

Material	Cohesion (psf)	Friction (degrees)
Compacted Fill Soils	360	29
Fill for EFP Design	200	25
Quartz Diorite	550	35.7

The highest retaining wall is 10 feet with almost a 2:1 Horizontal to Vertical (H:V) slope above the top of the retaining wall. The most critical condition for the proposed retaining wall is illustrated in Geologic Section A-A' relative to height and slope gradient. We have assumed that the entire backfill behind the wall will consist of compacted fill that is conservatively represented with cohesion of 200 psf and an angle of internal friction of 25 degrees that was determined by the shear test results from the direct shear summary presented in Appendix A.

The factor of safety for Section A-A' without a horizontal point load representing the retaining wall is 1.36 when using cohesion of 200 psf and an angle of friction of 25 degrees. We then applied a point load at 1/3 of the retained wall height and increased that load until a factor of safety in excess of 1.5 was obtained. With a horizontal load of 1.1 kips a factor of safety of 1.52 is obtained

as presented in Appendix C. These slope stability calculations also included a tension crack and a free body diagram of the upper slice showing that this slice is not in tension.

Resultant point Load = Equivalent Fluid Pressure*H*H*0.5

Since the resultant point load equals 1.1 kips per foot and the wall height is 10 feet the equivalent fluid pressure equals EFP = 1100 pounds per foot/(10'*10'*0.5) = 22 pcf. Since 22 pcf is less conservative than the City of LA prescribed minimums per Table 1 of Document 2023-083, revision of our report is not required and our recommendation of an equivalent fluid pressure of 35 pcf for level conditions and 50 pcf for 2:1 condition presented in our reviewed report (RTF&A, 2026) remain applicable.

oOo

The following are attached and complete this response.

- List of References
- Geologic Map and Sections, Figure 1.1
- Geology and Soils Report Review Letter dated April 21, 2026 (2 pages)
- Appendix A – Shear Strength Laboratory Test Results
- Appendix B – Seismic Design Parameters
- Appendix C – Slope Stability Calculations

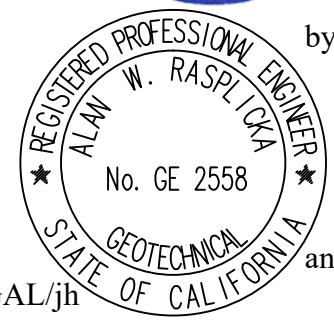


Respectfully submitted,

R. T. FRANKIAN & ASSOCIATES



by: Glenn A. Lauman
Principal Engineering Geologist



and: Alan W. Rasplicka
Principal Geotechnical Engineer

BKP/AWR/GAL/jh

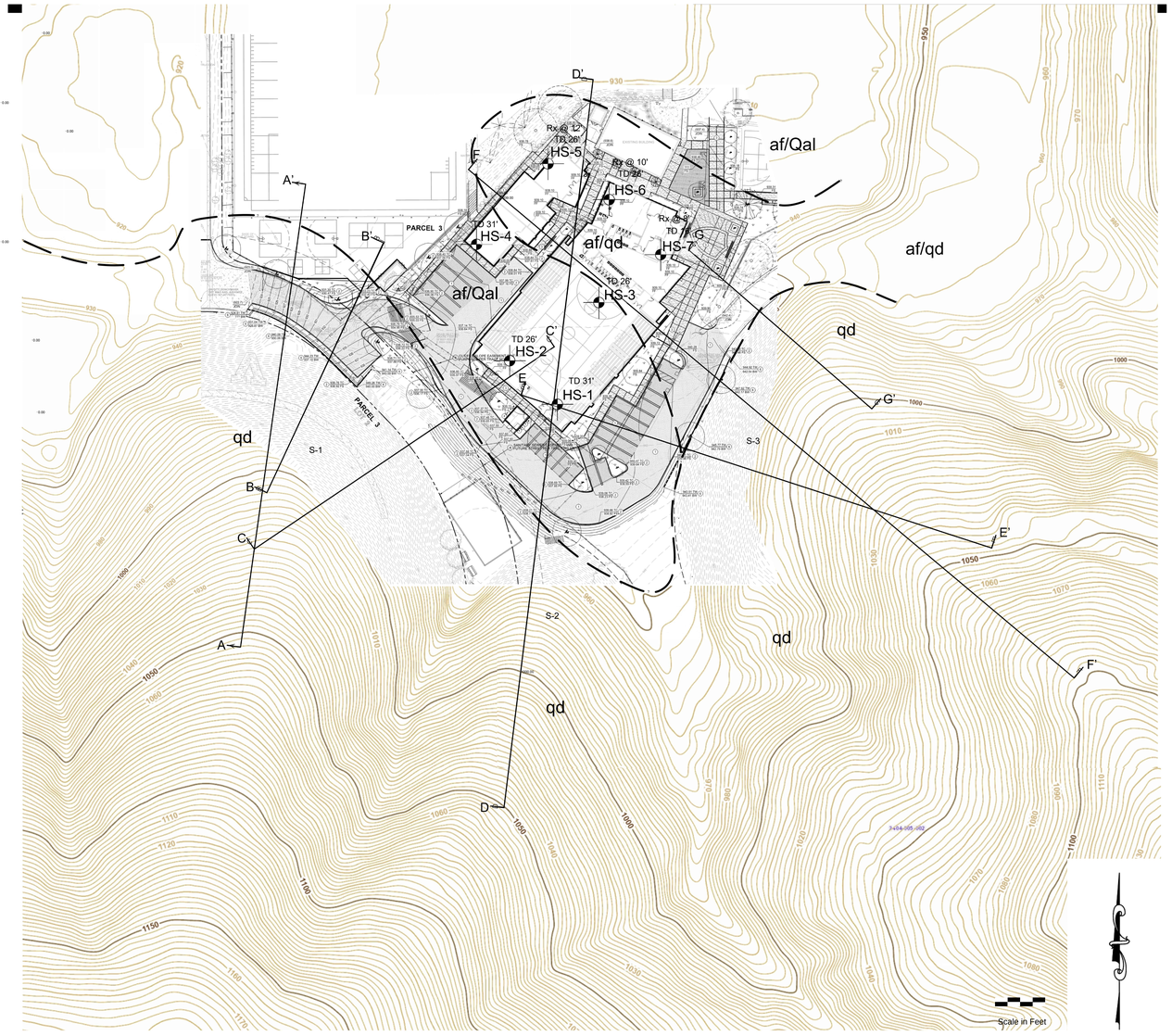
PDF Distribution via Email:
– Village Christian School, Attn: Mr. Tom Konjoyan
– Rafael Franco & Associates, Attn: Mr. Arthur Fernandez and Ms. Michele Stanghetti-DiScenza (for submittal to City of Los Angeles)

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

REFERENCES

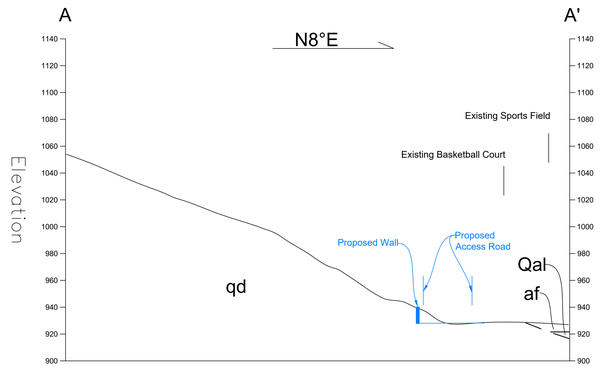
Frankian, R. T. & Associates, 2025, "Report of Geotechnical Investigation, Proposed Gymnasium and Annex Building, Village Christian School, 8930 Village Avenue, Sun Valley, California," for Village Christian School, dated August 22, 2025, Job No. 2013-006-012.

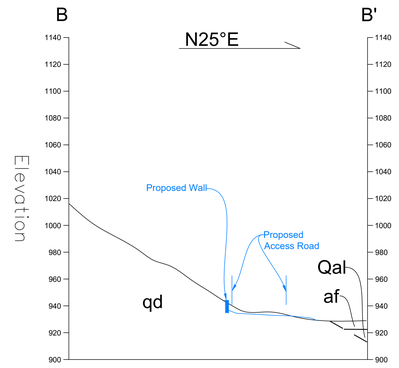
Frankian, R. T. & Associates, 2026, "Geologic Report and Response to City of Los Angeles, Department of Building and Safety, Soils Report Review Letter Dated January 29, 2026, Proposed Gymnasium and Annex Building, Village Christian School, 8930 Village Avenue, Sun Valley, California," for Village Christian School, dated March 31, 2026, Job No. 2013-006-012.

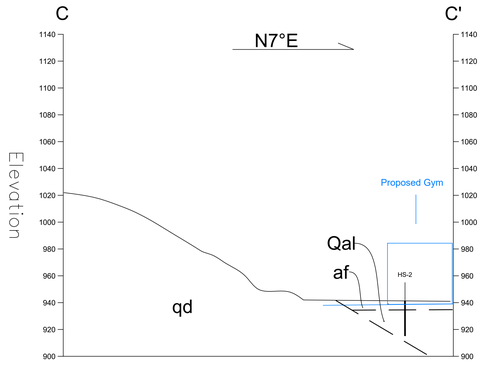


EXPLANATION

- af — Artificial Fill
- Qal — Quaternary Alluvium
- qd — Quartz Diorite
- Geologic Contact
  Dashed where Approximate
  Queried where Inferred
- HS-7 / Rx @ 12' TD 26' — RTF&A Hollow Stem Boring Locations with Depth to Rock and Total Depth of Boring
- Proposed Development







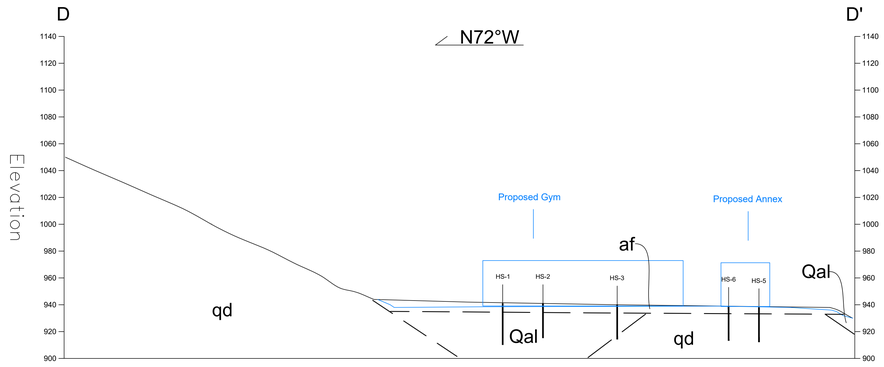
GEOLOGIC MAP & SECTIONS

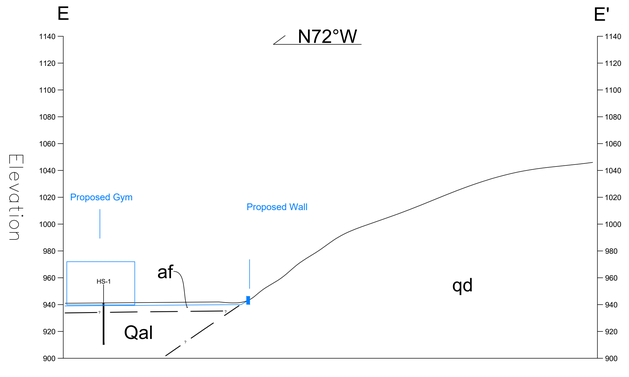
Prepared For:
Village Christian School
8930 Village Avenue
Proposed Gymnasium and Annex Building
Sun Valley, California

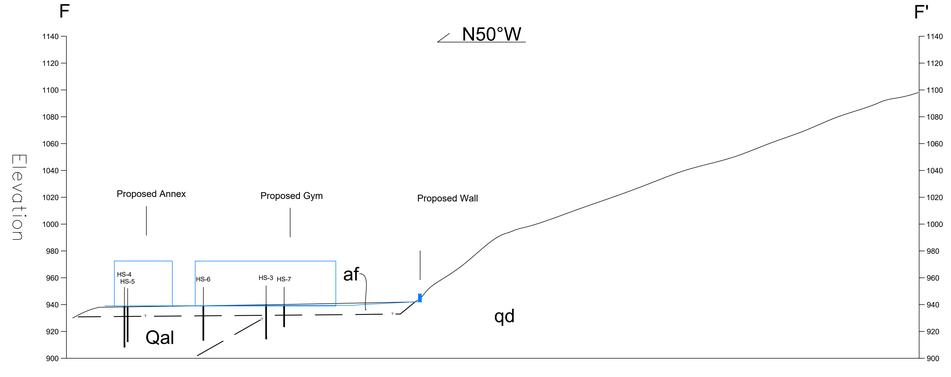
Scale:	1"=40'	Drawn By:	JH	Checked By:	GAL
Date:	3/31/2026		Figure 1.1		2025-307-010

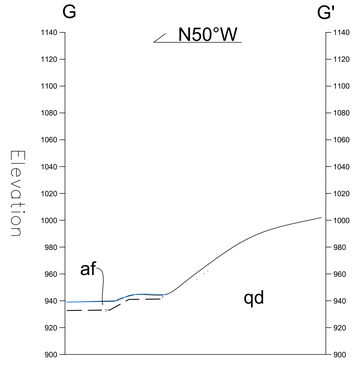
R. T. FRANKIAN & ASSOCIATES
26027 Huntington Lane, Unit A
Santa Clarita, California 91355
(818) 531-1501
www.RTFrankian.com

RTF&A
GEOTECHNICAL ENGINEERING & ENVIRONMENTAL SCIENCES









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CALIFORNIA

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GENERAL MANAGER
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JOHN WEIGHT
EXECUTIVE OFFICER

GEOLOGY AND SOILS REPORT REVIEW LETTER

April 21, 2026

LOG # 138828-01
SOILS/GEOLOGY FILE - 2

Village Christian School
8930 N. Village Avenue
Sun Valley, CA 91352

TRACT: 24256
LOT(S): LT 1
LOCATION: 8930 N. Village Avenue

CURRENT REFERENCE REPORT/LETTER(S)	REPORT No.	DATE OF DOCUMENT	PREPARED BY
Addendum Report	2013-006-012	03/31/2026	RTF&A

PREVIOUS REFERENCE REPORT/LETTER(S)	REPORT No.	DATE OF DOCUMENT	PREPARED BY
Dept. Review Letter	138828	01/29/2026	LADBS
Soils Report	2013-006-012	08/22/2025	RTF&A

The Grading Division of the Department of Building and Safety has reviewed the referenced report that provide recommendations for a proposed gymnasium, annex building and associated retaining walls. The earth materials at the subsurface exploration locations consist of native soils over bedrock. The consultants recommend to support the proposed structures on conventional foundations bearing on native undisturbed soils and/or properly placed fill.

The proposed construction is located on the campus of the Village Christian School. Hillside portions at the edges of the campus are located within a seismically induced landslide hazard zone established by the State of California. The proposed construction does not encroach into this zone and a slope stability evaluation addressing this hazard is not required.

As of January 1, 2026, the City of Los Angeles has adopted the new 2026 Los Angeles Building Code (LABC). The 2026 LABC requirements will apply to all projects where the permit application submittal date is after January 1, 2026.

The review of the subject report cannot be completed at this time and will be continued upon submittal of an addendum to the report which shall include, but not be limited to, the following:

(Note: Numbers in parenthesis ( ) refer to applicable sections of the 2026 City of LA Building Code. P/BC numbers refer to the applicable Information Bulletin. Information Bulletins can be accessed on the internet at dbs.lacity.gov.)

1. [ASCE 7-22] A site class C was recommended. However, the procedure for determining the Site Class was not indicated. Provide the procedure to determine the Site Class in accordance with Chapter 20 of ASCE 7-22 (i.e., measured average shear wave velocity; based on correlations with SPT, CPT, shear strength; estimated on the basis of site geology).

2. Alternatively, the most critical site conditions of Site Class C, CD, and D could be used for seismic design. Provide the seismic parameters for retaining wall seismic pressure considering the most critical parameters obtained based on each of these site classes

3. As previously requested, provide design calculations for retaining walls (up to 10 feet high) for a minimum factor of safety of 1.5. Calculations shall be based on site specific laboratory testing data. All back-sloping conditions shall be included in the calculations.

   Notes: Calculations shall be determined using the limit equilibrium method (free-body-diagram, and vectors) and with tension cracks. For walls over 6 feet, lateral earth pressure due to earthquake motions shall be considered, as required by section 1803.5.12 of the Los Angeles Building Code. For restrained walls, the higher value obtained for at-rest pressure and using the limit equilibrium method shall be recommended for design.

The soils engineer shall prepare a report containing an itemized response to the review items indicated in this letter. If clarification concerning the review letter is necessary, the report review engineer may be contacted. Online submission of the response report in pdf format and the appropriate fees will be required for submittal. [Two physical copies of the response report, including one unbound wet-signed original for archiving purposes, a pdf-copy of the complete report in flash drive, and the appropriate fees will be required for submittal.]

DANIEL C. SCHNEIDEREIT
Engineering Geologist II

ALAN DANG
Structural Engineering Associate II

DCS/AD:dcs/ad
Log No. 138828-01
213-482-0480

cc: RTF&A, Project Consultant
VN District Office

Village Christian School
May 18, 2026
2013-006-012

APPENDIX A

SHEAR STRENGTH LABORATORY TEST RESULTS

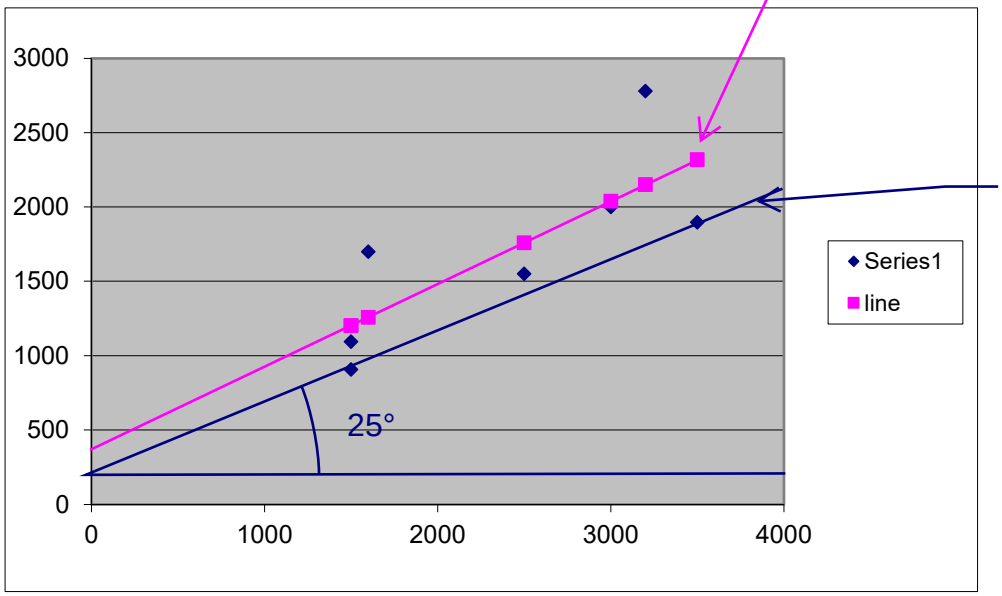
RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

i	x	y	x*y	x^2	y=mx+b
1	1500	907	1360500	2250000	1200.848
2	2500	1551	3877500	6250000	1760.223
3	3500	1898	6643000	12250000	2319.598
4	1600	1700	2720000	2560000	1256.786
5	3200	2780	8896000	10240000	2151.786
6	1500	1094	1641000	2250000	1200.848
7	3000	2000	6000000	9000000	2039.911
Sums	16800	11930	31138000	44800000	

N = 7
1.1346E+10
31360000
17542000
31360000

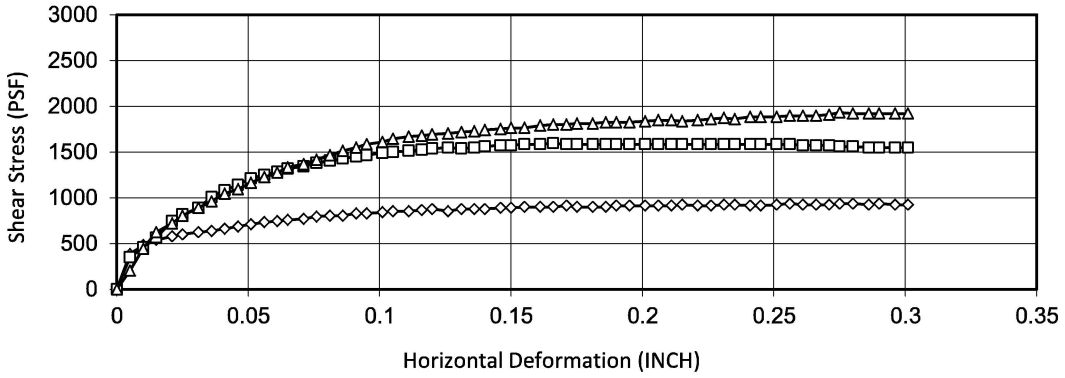
Y = mx + b
m = Line slope = 0.559375
b = Y intercept = 361.7857143

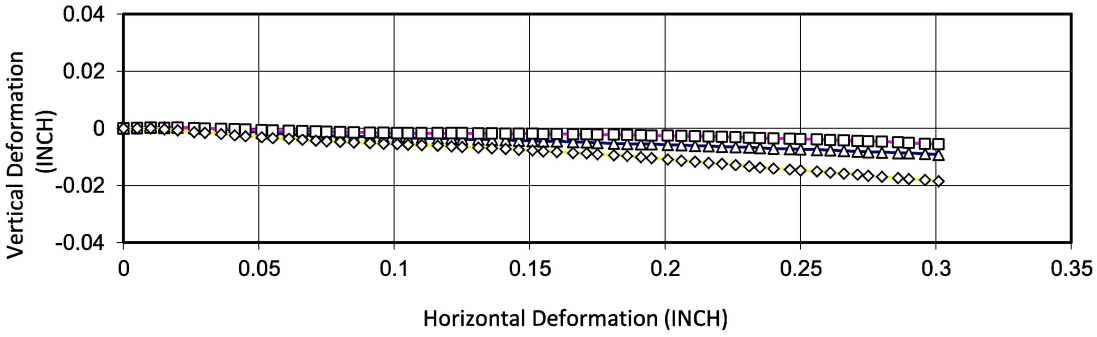
0.559375
Degrees -29.2216 Inverse tangent

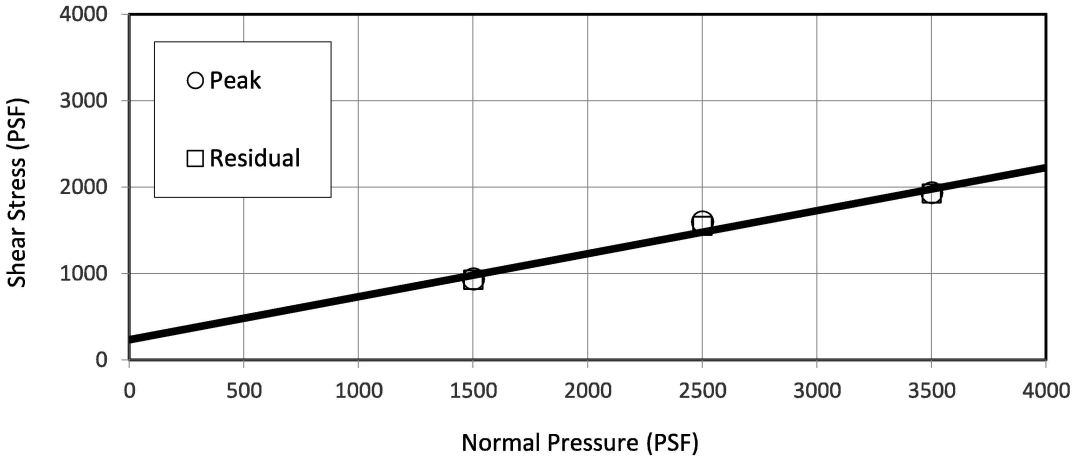


Best Fit Line Based on All Direct Shear Ultimate Points
Cohesion = 361.8 psf
Angle of Internal Friction = 29.2 Degrees

Retaining Wall Design Line
Cohesion = 200 psf
Friction Angle = 25 Degrees







Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
HS-1	S-10	1.0-5.0	Ring	SC	○	243	26
					□	219	26

Note: Sample was remolded to **126.5 pcf** dry density and **8.5%** moisture
Shear rate: **0.01 in/min**

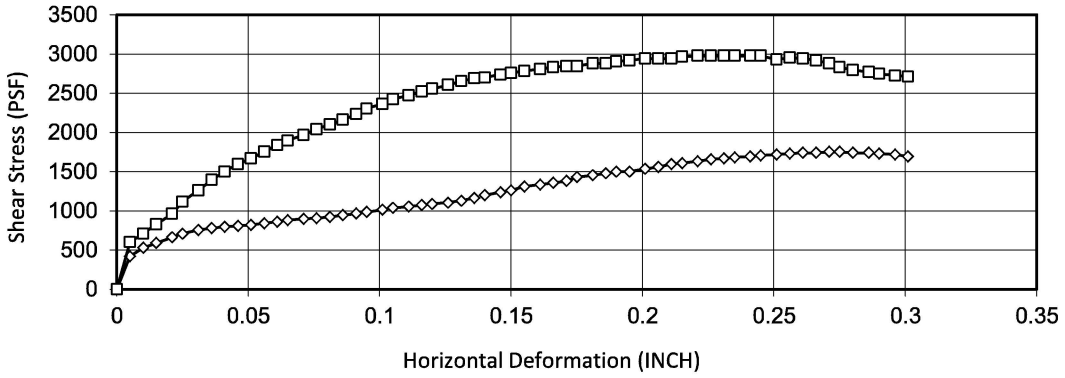
Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)
1500	8.5	16.8
2500	8.5	15.8
3500	8.5	15.4

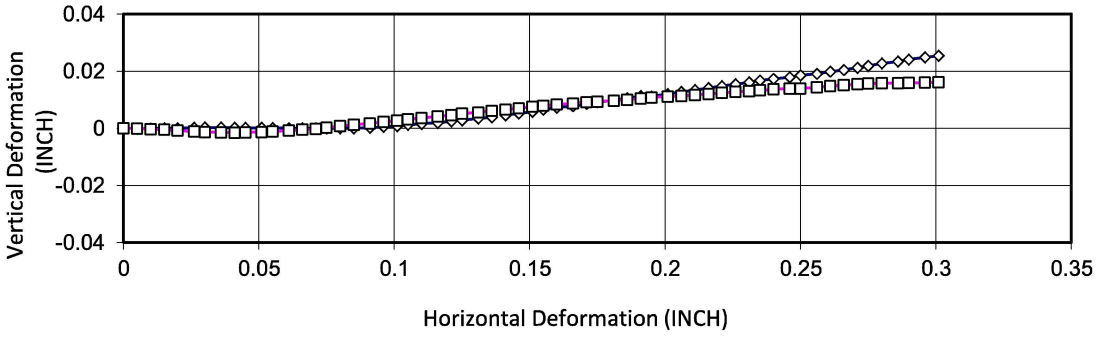
EGLAB, INC.

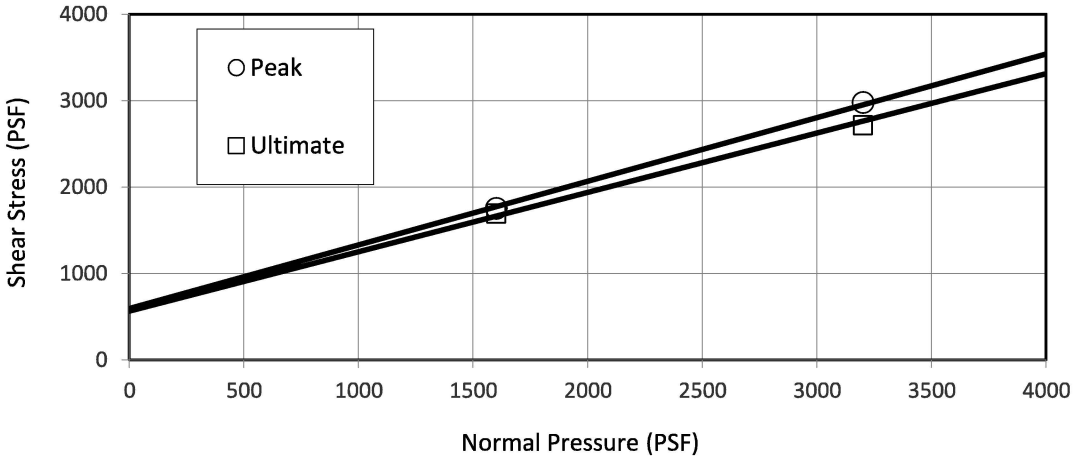
Project Name:
Village Christian Schools Project
Client: R.T. Frankian & Associates
Project No.: 2013-006-012
EGLAB Project No.: 25-013-004

DIRECT SHEAR

08/25 (ASTM D3080) Figure







Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
HS-3	S-2	5.0	Ring	SC	○	591	36
					□	563	34

Note: Shear rate: **0.01 in/min**

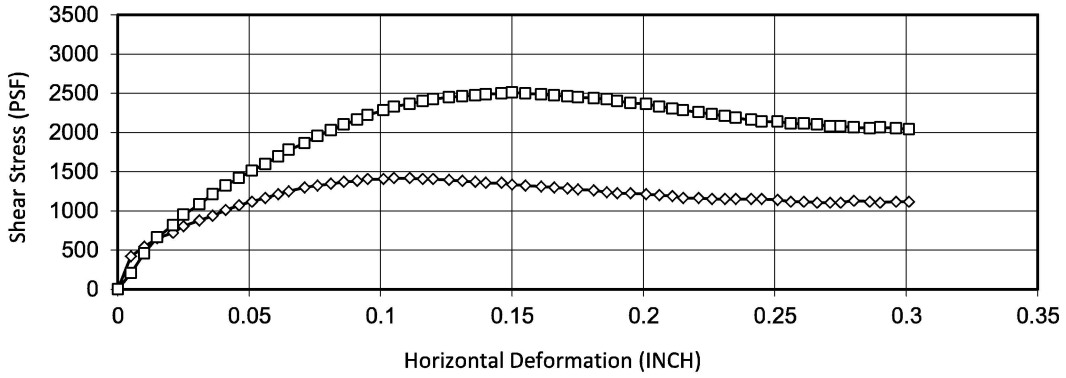
Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
1600	13.4	14.0	125.6	100
3200	13.4	14.7	128.1	100

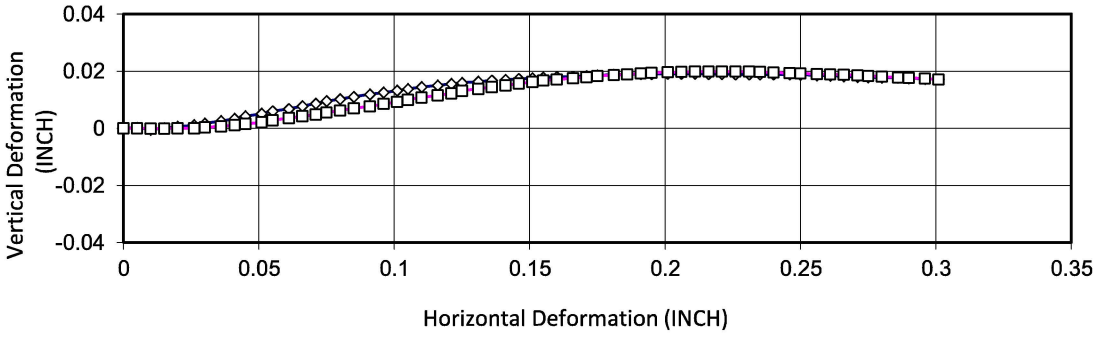
EGLAB, INC.

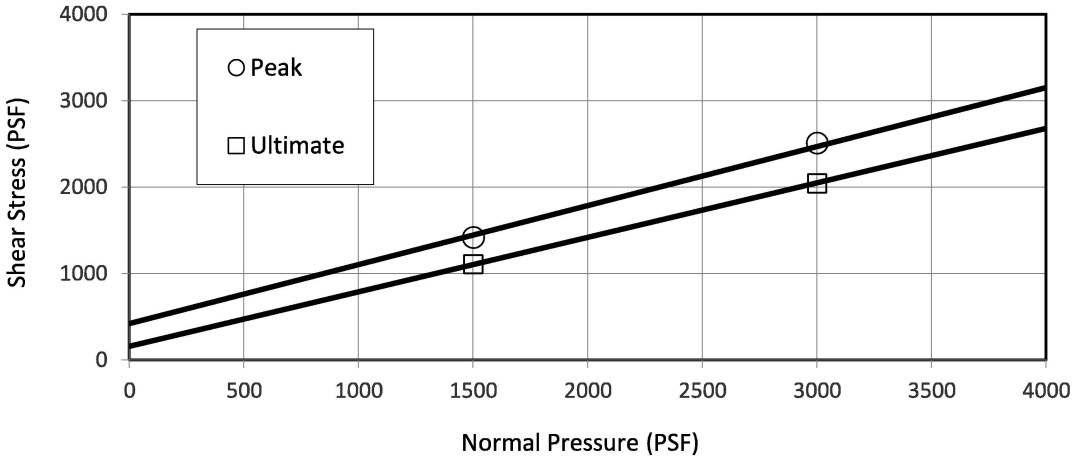
Project Name:
Village Christian Schools Project
Client: R.T. Frankian & Associates
Project No.: 2013-006-012
EGLAB Project No.: 25-013-004

DIRECT SHEAR

08/25 (ASTM D3080) Figure







Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
HS-4	S-2	5.0	Ring	SC	○	420	34
					□	154	32

Note: Shear rate: **0.01 in/min**

Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)	γ_d (pcf)	S (%)
1500	11.6	13.9	125.7	100
3000	11.6	14.0	127.6	100

EGLAB, INC.

Project Name:
Village Christian Schools Project
Client: R.T. Frankian & Associates
Project No.: 2013-006-012
EGLAB Project No.: 25-013-004

DIRECT SHEAR

08/25 (ASTM D3080) Figure

Village Christian School
May 18, 2026
2013-006-012

APPENDIX B

SEISMIC DESIGN PARAMETERS

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

Announcement
ASCE 7-22 is now available.

Village Christian Schools 2013-006

Latitude, Longitude: 34.229303, -118.355268



Date	5/21/2026, 11:26:15 AM
Design Code Reference Document	ASCE7-22
Risk Category	II
Site Class	C

Type	Value	Description (Data)
S_S	2.35	The MCE_R spectral response acceleration at 0.2 seconds for Site Class BC, in units of g.
S_1	0.8	The MCE_R spectral response acceleration at 1 second for Site Class BC, in units of g.
S_{MS}	2.42	$S_{MS} = 1.5 \times S_{DS}$, the Risk-Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class.
S_{M1}	1.12	$S_{M1} = 1.5 \times S_{D1}$, the MCE_R spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class.
S_{DS}	1.62	The design spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class, in units of g.
S_{D1}	0.75	The design spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class, in units of g

Type	Value	Description (Data Contd.)
SDC	E	Seismic design category
PGA_M	0.96	PGA_M, the Geometric-Mean Maximum Considered Earthquake (MCE_G) peak ground acceleration for the user-specified Site Class, in units of g
T_S	0.463	$T_S = S_{D1}/S_{DS}$, in seconds, for construction of the two-period design spectrum
T_0	0.0926	$T_0 = 0.2 \times T_S$, in seconds, for construction of the two-period design response spectrum
T_L	8	T_L, the long-period transition period, in seconds, for construction of the two-period design response spectrum

Type	Value	Description (Underlying Data and Metadata)
PGA_{uh}	0.96	Probabilistic uniform-hazard (2%-in-50-years), geometric-mean peak ground acceleration, in units of g.
PGA_{84th}	1.12	Deterministic 84th-percentile, geometric-mean peak ground acceleration (without deterministic lower limit), in units of g.
V_{S30}	530	The shear-wave velocity used for the user-specified Site Class, in units of m/s
Spatial Interpolation Method	linearloglinear	Identifier for spatial interpolation method used to obtain values for location of interest from underlying gridded values: "linearloglinear" for bilinear of natural logarithm of values.
PGA_{dFloor}	0.55	Deterministic lower limit peak ground acceleration (PGA_G) for the user-specified Site Class, in units of g.
riskTargetedSpectrum		Probabilistic risk-targeted, maximum direction response spectrum (for 1%-in-50-years collapse risk)
eightyFourthSpectrum		Deterministic 84th-percentile, maximum-direction response spectrum (without deterministic lower limit)

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Multi Period

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
0	0.72	1.08
0.01	0.72	1.08
0.02	0.73	1.1
0.03	0.79	1.18
0.05	0.99	1.48
0.075	1.27	1.9
0.1	1.48	2.22
0.15	1.71	2.57
0.2	1.8	2.69
0.25	1.76	2.65
0.3	1.66	2.5
0.4	1.46	2.19
0.5	1.28	1.92
0.75	0.95	1.43
1	0.75	1.12
1.5	0.48	0.72
2	0.35	0.52
3	0.22	0.33
4	0.16	0.23
5	0.12	0.18
7.5	0.073	0.11
10	0.048	0.073

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Two Period

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
0	0.65	0.97
0.025	0.91	1.36
0.05	1.17	1.75
0.093	1.62	2.42
0.1	1.62	2.42
0.15	1.62	2.42
0.2	1.62	2.42
0.25	1.62	2.42
0.3	1.62	2.42
0.35	1.62	2.42
0.4	1.62	2.42
0.45	1.62	2.42
0.46	1.62	2.42
0.5	1.5	2.24
0.55	1.36	2.04
0.6	1.25	1.87
0.65	1.15	1.73
0.7	1.07	1.6
0.75	1	1.5
0.8	0.94	1.4
0.85	0.88	1.32
0.9	0.83	1.25
0.95	0.79	1.18

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
1	0.75	1.12
1.05	0.71	1.07
1.1	0.68	1.02
1.15	0.65	0.98
1.2	0.62	0.94
1.25	0.6	0.9
1.3	0.58	0.86
1.35	0.55	0.83
1.4	0.53	0.8
1.45	0.52	0.77
1.5	0.5	0.75
1.55	0.48	0.72
1.6	0.47	0.7
1.65	0.45	0.68
1.7	0.44	0.66
1.75	0.43	0.64
1.8	0.42	0.62
1.85	0.4	0.61
1.9	0.39	0.59
1.95	0.38	0.58
2	0.37	0.56
2.05	0.36	0.55
2.1	0.36	0.53
2.15	0.35	0.52
2.2	0.34	0.51
2.25	0.33	0.5
2.3	0.33	0.49
2.35	0.32	0.48
2.4	0.31	0.47
2.45	0.31	0.46
2.5	0.3	0.45
2.55	0.29	0.44
2.6	0.29	0.43
2.65	0.28	0.42
2.7	0.28	0.42
2.75	0.27	0.41
2.8	0.27	0.4
2.85	0.26	0.39
2.9	0.26	0.39
2.95	0.25	0.38
3	0.25	0.37
3.05	0.25	0.37
3.1	0.24	0.36
3.15	0.24	0.36
3.2	0.23	0.35
3.25	0.23	0.35
3.3	0.23	0.34
3.35	0.22	0.34
3.4	0.22	0.33
3.45	0.22	0.33

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
3.5	0.21	0.32
3.55	0.21	0.32
3.6	0.21	0.31
3.65	0.2	0.31
3.7	0.2	0.3
3.75	0.2	0.3
3.8	0.2	0.3
3.85	0.19	0.29
3.9	0.19	0.29
3.95	0.19	0.28
4	0.19	0.28
4.05	0.18	0.28
4.1	0.18	0.27
4.15	0.18	0.27
4.2	0.18	0.27
4.25	0.18	0.26
4.3	0.17	0.26
4.35	0.17	0.26
4.4	0.17	0.26
4.45	0.17	0.25
4.5	0.17	0.25
4.55	0.16	0.25
4.6	0.16	0.24
4.65	0.16	0.24
4.7	0.16	0.24
4.75	0.16	0.24
4.8	0.16	0.23
4.85	0.15	0.23
4.9	0.15	0.23
4.95	0.15	0.23
5	0.15	0.22
5.05	0.15	0.22
5.1	0.15	0.22
5.15	0.15	0.22
5.2	0.14	0.22
5.25	0.14	0.21
5.3	0.14	0.21
5.35	0.14	0.21
5.4	0.14	0.21
5.45	0.14	0.21
5.5	0.14	0.2
5.55	0.13	0.2
5.6	0.13	0.2
5.65	0.13	0.2
5.7	0.13	0.2
5.75	0.13	0.2
5.8	0.13	0.19
5.85	0.13	0.19
5.9	0.13	0.19
5.95	0.13	0.19

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
6	0.12	0.19
6.05	0.12	0.19
6.1	0.12	0.18
6.15	0.12	0.18
6.2	0.12	0.18
6.25	0.12	0.18
6.3	0.12	0.18
6.35	0.12	0.18
6.4	0.12	0.18
6.45	0.12	0.17
6.5	0.12	0.17
6.55	0.11	0.17
6.6	0.11	0.17
6.65	0.11	0.17
6.7	0.11	0.17
6.75	0.11	0.17
6.8	0.11	0.17
6.85	0.11	0.16
6.9	0.11	0.16
6.95	0.11	0.16
7	0.11	0.16
7.05	0.11	0.16
7.1	0.11	0.16
7.15	0.1	0.16
7.2	0.1	0.16
7.25	0.1	0.15
7.3	0.1	0.15
7.35	0.1	0.15
7.4	0.1	0.15
7.45	0.1	0.15
7.5	0.1	0.15
7.55	0.099	0.15
7.6	0.098	0.15
7.65	0.098	0.15
7.7	0.097	0.15
7.75	0.097	0.14
7.8	0.096	0.14
7.85	0.095	0.14
7.9	0.095	0.14
7.95	0.094	0.14
8	0.094	0.14
8.05	0.092	0.14
8.1	0.091	0.14
8.15	0.09	0.14
8.2	0.089	0.13
8.25	0.088	0.13
8.3	0.087	0.13
8.35	0.086	0.13
8.4	0.085	0.13
8.45	0.084	0.13

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
8.5	0.083	0.12
8.55	0.082	0.12
8.6	0.081	0.12
8.65	0.08	0.12
8.7	0.079	0.12
8.75	0.078	0.12
8.8	0.077	0.12
8.85	0.076	0.11
8.9	0.076	0.11
8.95	0.075	0.11
9	0.074	0.11

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Probabilistic & Deterministic

Period T(s)	Risk Targeted Spectrum Ordinates (g)	84th Spectrum Ordinates(g)
0	1.08	1.34
0.01	1.08	1.34
0.02	1.1	1.37
0.03	1.18	1.47
0.05	1.48	1.79
0.075	1.9	2.22
0.1	2.22	2.54
0.15	2.57	2.99
0.2	2.69	3.33
0.25	2.65	3.37
0.3	2.5	3.2
0.4	2.19	2.86
0.5	1.92	2.55
0.75	1.43	1.94
1	1.12	1.54
1.5	0.72	1.01
2	0.52	0.72
3	0.33	0.45
4	0.23	0.31
5	0.18	0.24
7.5	0.11	0.13
10	0.073	0.086

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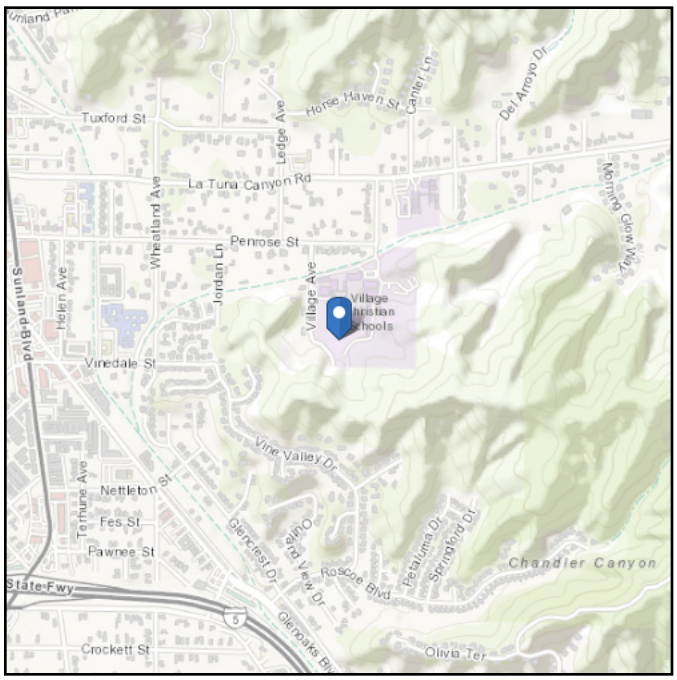
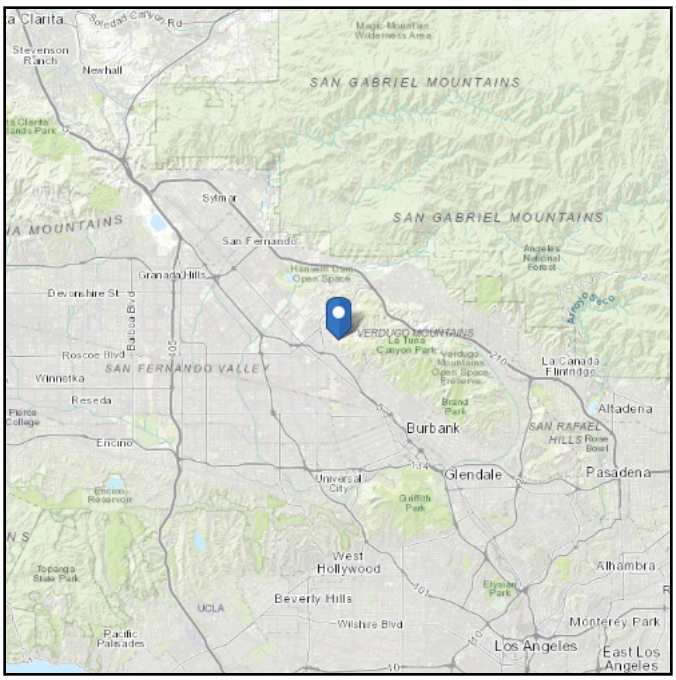
ASCE Hazards Report

Address:
No Address at This Location

Standard:	ASCE/SEI 7-22	**Latitude:**	34.229303
Risk Category:	II	**Longitude:**	-118.355268
Soil Class:	C - Very Dense Soil and Soft Rock	**Elevation:**	939.2347661414695 ft (NAVD 88)





Seismic

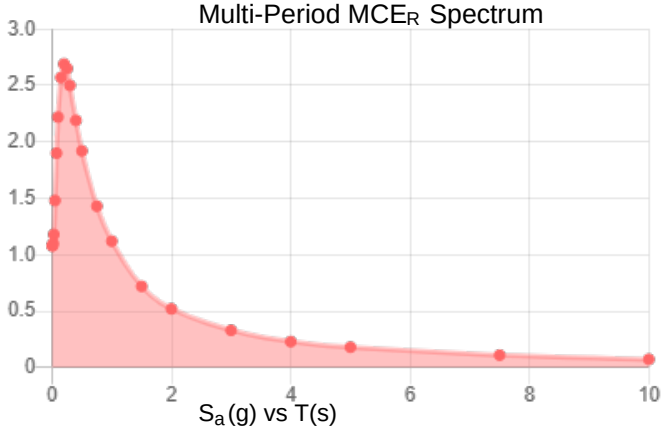
Site Soil Class: C - Very Dense Soil and Soft Rock

Results:

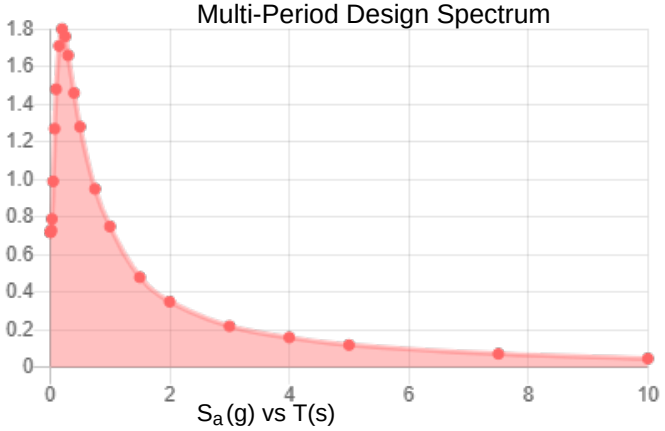
PGA_M :	0.96	T_L :	8
S_{MS} :	2.42	S_S :	2.35
S_{M1} :	1.12	S_1 :	0.8
S_{DS} :	1.62	V_{S30} :	530
S_{D1} :	0.75		

Seismic Design Category: E

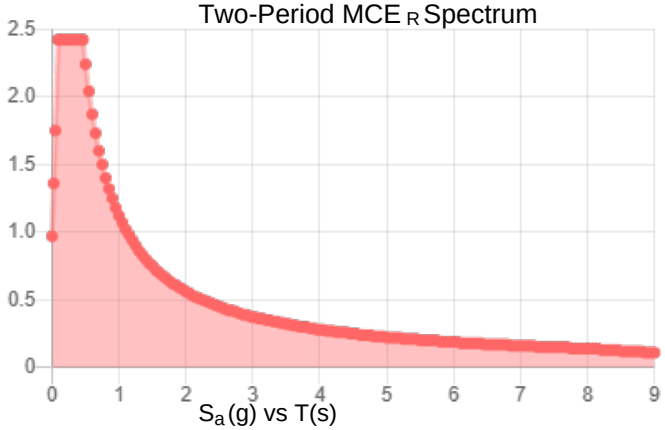
Multi-Period MCE_R Spectrum



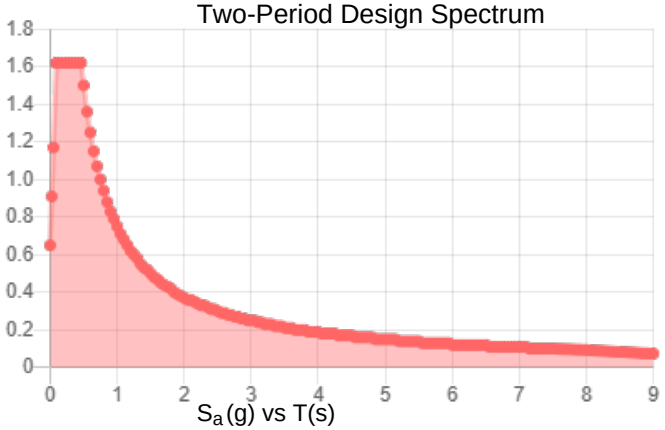
Multi-Period Design Spectrum



Two-Period MCE_R Spectrum



Two-Period Design Spectrum



MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Data Accessed: Tue Mar 31 2026

Date Source:
USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

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Announcement
ASCE 7-22 is now available.

Village Christian Schools 2013-006

Latitude, Longitude: 34.229303, -118.355268



Date	5/21/2026, 11:24:39 AM
Design Code Reference Document	ASCE7-22
Risk Category	II
Site Class	CD

Type	Value	Description (Data)
S_S	2.35	The MCE_R spectral response acceleration at 0.2 seconds for Site Class BC, in units of g.
S_1	0.8	The MCE_R spectral response acceleration at 1 second for Site Class BC, in units of g.
S_{MS}	2.52	$S_{MS} = 1.5 \times S_{DS}$, the Risk-Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class.
S_{M1}	1.51	$S_{M1} = 1.5 \times S_{D1}$, the MCE_R spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class.
S_{DS}	1.68	The design spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class, in units of g.
S_{D1}	1.01	The design spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class, in units of g

Type	Value	Description (Data Contd.)
SDC	E	Seismic design category
PGA_M	0.98	PGA_M, the Geometric-Mean Maximum Considered Earthquake (MCE_G) peak ground acceleration for the user-specified Site Class, in units of g
T_S	0.599	$T_S = S_{D1}/S_{DS}$, in seconds, for construction of the two-period design spectrum
T_0	0.12	$T_0 = 0.2 \times T_S$, in seconds, for construction of the two-period design response spectrum
T_L	8	T_L, the long-period transition period, in seconds, for construction of the two-period design response spectrum

Type	Value	Description (Underlying Data and Metadata)
PGA_{uh}	0.98	Probabilistic uniform-hazard (2%-in-50-years), geometric-mean peak ground acceleration, in units of g.
PGA_{84th}	1.09	Deterministic 84th-percentile, geometric-mean peak ground acceleration (without deterministic lower limit), in units of g.
V_{S30}	365	The shear-wave velocity used for the user-specified Site Class, in units of m/s
Spatial Interpolation Method	linearloglinear	Identifier for spatial interpolation method used to obtain values for location of interest from underlying gridded values: "linearloglinear" for bilinear of natural logarithm of values.
PGA_{dFloor}	0.56	Deterministic lower limit peak ground acceleration (PGA_G) for the user-specified Site Class, in units of g.
riskTargetedSpectrum		Probabilistic risk-targeted, maximum direction response spectrum (for 1%-in-50-years collapse risk)
eightyFourthSpectrum		Deterministic 84th-percentile, maximum-direction response spectrum (without deterministic lower limit)

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Multi Period

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
0	0.74	1.12
0.01	0.75	1.12
0.02	0.75	1.13
0.03	0.79	1.18
0.05	0.93	1.39
0.075	1.17	1.75
0.1	1.37	2.06
0.15	1.63	2.45
0.2	1.77	2.66
0.25	1.84	2.76
0.3	1.87	2.8
0.4	1.77	2.66
0.5	1.62	2.43
0.75	1.26	1.88
1	1.01	1.51
1.5	0.66	0.99
2	0.48	0.72
3	0.3	0.45
4	0.21	0.31
5	0.16	0.24
7.5	0.093	0.14
10	0.06	0.09

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Two Period

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
0	0.67	1.01
0.025	0.88	1.32
0.05	1.09	1.64
0.1	1.51	2.27
0.12	1.68	2.52
0.15	1.68	2.52
0.2	1.68	2.52
0.25	1.68	2.52
0.3	1.68	2.52
0.35	1.68	2.52
0.4	1.68	2.52
0.45	1.68	2.52
0.5	1.68	2.52
0.55	1.68	2.52
0.6	1.68	2.52
0.6	1.68	2.51
0.65	1.55	2.32
0.7	1.44	2.15
0.75	1.34	2.01
0.8	1.26	1.89
0.85	1.18	1.77
0.9	1.12	1.68
0.95	1.06	1.59

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
1	1.01	1.51
1.05	0.96	1.44
1.1	0.91	1.37
1.15	0.87	1.31
1.2	0.84	1.26
1.25	0.8	1.21
1.3	0.77	1.16
1.35	0.74	1.12
1.4	0.72	1.08
1.45	0.69	1.04
1.5	0.67	1.01
1.55	0.65	0.97
1.6	0.63	0.94
1.65	0.61	0.91
1.7	0.59	0.89
1.75	0.57	0.86
1.8	0.56	0.84
1.85	0.54	0.82
1.9	0.53	0.79
1.95	0.52	0.77
2	0.5	0.75
2.05	0.49	0.74
2.1	0.48	0.72
2.15	0.47	0.7
2.2	0.46	0.69
2.25	0.45	0.67
2.3	0.44	0.66
2.35	0.43	0.64
2.4	0.42	0.63
2.45	0.41	0.62
2.5	0.4	0.6
2.55	0.39	0.59
2.6	0.39	0.58
2.65	0.38	0.57
2.7	0.37	0.56
2.75	0.37	0.55
2.8	0.36	0.54
2.85	0.35	0.53
2.9	0.35	0.52
2.95	0.34	0.51
3	0.34	0.5
3.05	0.33	0.49
3.1	0.32	0.49
3.15	0.32	0.48
3.2	0.31	0.47
3.25	0.31	0.46
3.3	0.3	0.46
3.35	0.3	0.45
3.4	0.3	0.44
3.45	0.29	0.44

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
3.5	0.29	0.43
3.55	0.28	0.42
3.6	0.28	0.42
3.65	0.28	0.41
3.7	0.27	0.41
3.75	0.27	0.4
3.8	0.26	0.4
3.85	0.26	0.39
3.9	0.26	0.39
3.95	0.25	0.38
4	0.25	0.38
4.05	0.25	0.37
4.1	0.25	0.37
4.15	0.24	0.36
4.2	0.24	0.36
4.25	0.24	0.35
4.3	0.23	0.35
4.35	0.23	0.35
4.4	0.23	0.34
4.45	0.23	0.34
4.5	0.22	0.34
4.55	0.22	0.33
4.6	0.22	0.33
4.65	0.22	0.32
4.7	0.21	0.32
4.75	0.21	0.32
4.8	0.21	0.31
4.85	0.21	0.31
4.9	0.21	0.31
4.95	0.2	0.3
5	0.2	0.3
5.05	0.2	0.3
5.1	0.2	0.3
5.15	0.2	0.29
5.2	0.19	0.29
5.25	0.19	0.29
5.3	0.19	0.28
5.35	0.19	0.28
5.4	0.19	0.28
5.45	0.18	0.28
5.5	0.18	0.27
5.55	0.18	0.27
5.6	0.18	0.27
5.65	0.18	0.27
5.7	0.18	0.26
5.75	0.17	0.26
5.8	0.17	0.26
5.85	0.17	0.26
5.9	0.17	0.26
5.95	0.17	0.25

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
6	0.17	0.25
6.05	0.17	0.25
6.1	0.16	0.25
6.15	0.16	0.25
6.2	0.16	0.24
6.25	0.16	0.24
6.3	0.16	0.24
6.35	0.16	0.24
6.4	0.16	0.24
6.45	0.16	0.23
6.5	0.15	0.23
6.55	0.15	0.23
6.6	0.15	0.23
6.65	0.15	0.23
6.7	0.15	0.23
6.75	0.15	0.22
6.8	0.15	0.22
6.85	0.15	0.22
6.9	0.15	0.22
6.95	0.14	0.22
7	0.14	0.22
7.05	0.14	0.21
7.1	0.14	0.21
7.15	0.14	0.21
7.2	0.14	0.21
7.25	0.14	0.21
7.3	0.14	0.21
7.35	0.14	0.21
7.4	0.14	0.2
7.45	0.13	0.2
7.5	0.13	0.2
7.55	0.13	0.2
7.6	0.13	0.2
7.65	0.13	0.2
7.7	0.13	0.2
7.75	0.13	0.19
7.8	0.13	0.19
7.85	0.13	0.19
7.9	0.13	0.19
7.95	0.13	0.19
8	0.13	0.19
8.05	0.12	0.19
8.1	0.12	0.18
8.15	0.12	0.18
8.2	0.12	0.18
8.25	0.12	0.18
8.3	0.12	0.18
8.35	0.12	0.17
8.4	0.11	0.17
8.45	0.11	0.17

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
8.5	0.11	0.17
8.55	0.11	0.17
8.6	0.11	0.16
8.65	0.11	0.16
8.7	0.11	0.16
8.75	0.11	0.16
8.8	0.1	0.16
8.85	0.1	0.15
8.9	0.1	0.15
8.95	0.1	0.15
9	0.099	0.15

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Probabilistic & Deterministic

Period T(s)	Risk Targeted Spectrum Ordinates (g)	84th Spectrum Ordinates(g)
0	1.12	1.31
0.01	1.12	1.32
0.02	1.13	1.33
0.03	1.18	1.37
0.05	1.39	1.55
0.075	1.75	1.87
0.1	2.06	2.14
0.15	2.45	2.56
0.2	2.66	2.95
0.25	2.76	3.25
0.3	2.8	3.41
0.4	2.66	3.36
0.5	2.43	3.12
0.75	1.88	2.51
1	1.51	2.06
1.5	0.99	1.38
2	0.72	1
3	0.45	0.63
4	0.31	0.42
5	0.24	0.31
7.5	0.14	0.17
10	0.09	0.1

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Announcement
ASCE 7-22 is now available.

Village Christian Schools 2013-006

Latitude, Longitude: 34.229303, -118.355268



Date	5/21/2026, 11:28:34 AM
Design Code Reference Document	ASCE7-22
Risk Category	II
Site Class	D

Type	Value	Description (Data)
S_S	2.35	The MCE_R spectral response acceleration at 0.2 seconds for Site Class BC, in units of g.
S_1	0.8	The MCE_R spectral response acceleration at 1 second for Site Class BC, in units of g.
S_{MS}	2.42	S_{MS} = 1.5 x S_{DS}, the Risk-Targeted Maximum Considered Earthquake (MCE_R) spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class.
S_{M1}	1.79	S_{M1} = 1.5 x S_{D1}, the MCE_R spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class.
S_{DS}	1.62	The design spectral response acceleration for short periods (of the two-period spectrum) and the user-specified Site Class, in units of g.
S_{D1}	1.19	The design spectral response acceleration for 1 second (of the two-period spectrum) and the user-specified Site Class, in units of g

Type	Value	Description (Data Contd.)
SDC	E	Seismic design category
PGA_M	0.91	PGA_M, the Geometric-Mean Maximum Considered Earthquake (MCE_G) peak ground acceleration for the user-specified Site Class, in units of g
T_S	0.737	T_S = S_{D1}/S_{DS}, in seconds, for construction of the two-period design spectrum
T_0	0.147	T_0 = 0.2 x T_S, in seconds, for construction of the two-period design response spectrum
T_L	8	T_L, the long-period transition period, in seconds, for construction of the two-period design response spectrum

Type	Value	Description (Underlying Data and Metadata)
PGA_{uh}	0.91	Probabilistic uniform-hazard (2%-in-50-years), geometric-mean peak ground acceleration, in units of g.
PGA_{84th}	0.96	Deterministic 84th-percentile, geometric-mean peak ground acceleration (without deterministic lower limit), in units of g.
V_{S30}	260	The shear-wave velocity used for the user-specified Site Class, in units of m/s
Spatial Interpolation Method	linearloglinear	Identifier for spatial interpolation method used to obtain values for location of interest from underlying gridded values: "linearloglinear" for bilinear of natural logarithm of values.
PGA_{dFloor}	0.53	Deterministic lower limit peak ground acceleration (PGA_G) for the user-specified Site Class, in units of g.
riskTargetedSpectrum		Probabilistic risk-targeted, maximum direction response spectrum (for 1%-in-50-years collapse risk)
eightyFourthSpectrum		Deterministic 84th-percentile, maximum-direction response spectrum (without deterministic lower limit)

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Multi Period

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
0	0.71	1.06
0.01	0.71	1.07
0.02	0.71	1.07
0.03	0.73	1.09
0.05	0.82	1.22
0.075	0.95	1.43
0.1	1.09	1.63
0.15	1.3	1.95
0.2	1.5	2.24
0.25	1.69	2.53
0.3	1.79	2.69
0.4	1.79	2.69
0.5	1.72	2.58
0.75	1.41	2.12
1	1.19	1.79
1.5	0.84	1.27
2	0.64	0.96
3	0.41	0.61
4	0.28	0.42
5	0.21	0.31
7.5	0.12	0.18
10	0.074	0.11

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Two Period

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
0	0.65	0.97
0.025	0.81	1.22
0.05	0.97	1.46
0.1	1.3	1.95
0.15	1.62	2.42
0.15	1.62	2.42
0.2	1.62	2.42
0.25	1.62	2.42
0.3	1.62	2.42
0.35	1.62	2.42
0.4	1.62	2.42
0.45	1.62	2.42
0.5	1.62	2.42
0.55	1.62	2.42
0.6	1.62	2.42
0.65	1.62	2.42
0.7	1.62	2.42
0.74	1.62	2.42
0.75	1.59	2.38
0.8	1.49	2.23
0.85	1.4	2.1
0.9	1.32	1.98
0.95	1.25	1.88

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
1	1.19	1.79
1.05	1.13	1.7
1.1	1.08	1.62
1.15	1.04	1.55
1.2	0.99	1.49
1.25	0.95	1.43
1.3	0.92	1.37
1.35	0.88	1.32
1.4	0.85	1.28
1.45	0.82	1.23
1.5	0.79	1.19
1.55	0.77	1.15
1.6	0.74	1.12
1.65	0.72	1.08
1.7	0.7	1.05
1.75	0.68	1.02
1.8	0.66	0.99
1.85	0.64	0.97
1.9	0.63	0.94
1.95	0.61	0.92
2	0.6	0.89
2.05	0.58	0.87
2.1	0.57	0.85
2.15	0.55	0.83
2.2	0.54	0.81
2.25	0.53	0.79
2.3	0.52	0.78
2.35	0.51	0.76
2.4	0.5	0.74
2.45	0.49	0.73
2.5	0.48	0.71
2.55	0.47	0.7
2.6	0.46	0.69
2.65	0.45	0.67
2.7	0.44	0.66
2.75	0.43	0.65
2.8	0.43	0.64
2.85	0.42	0.63
2.9	0.41	0.62
2.95	0.4	0.61
3	0.4	0.6
3.05	0.39	0.59
3.1	0.38	0.58
3.15	0.38	0.57
3.2	0.37	0.56
3.25	0.37	0.55
3.3	0.36	0.54
3.35	0.36	0.53
3.4	0.35	0.53
3.45	0.35	0.52

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
3.5	0.34	0.51
3.55	0.34	0.5
3.6	0.33	0.5
3.65	0.33	0.49
3.7	0.32	0.48
3.75	0.32	0.48
3.8	0.31	0.47
3.85	0.31	0.46
3.9	0.31	0.46
3.95	0.3	0.45
4	0.3	0.45
4.05	0.29	0.44
4.1	0.29	0.44
4.15	0.29	0.43
4.2	0.28	0.43
4.25	0.28	0.42
4.3	0.28	0.42
4.35	0.27	0.41
4.4	0.27	0.41
4.45	0.27	0.4
4.5	0.26	0.4
4.55	0.26	0.39
4.6	0.26	0.39
4.65	0.26	0.38
4.7	0.25	0.38
4.75	0.25	0.38
4.8	0.25	0.37
4.85	0.25	0.37
4.9	0.24	0.36
4.95	0.24	0.36
5	0.24	0.36
5.05	0.24	0.35
5.1	0.23	0.35
5.15	0.23	0.35
5.2	0.23	0.34
5.25	0.23	0.34
5.3	0.22	0.34
5.35	0.22	0.33
5.4	0.22	0.33
5.45	0.22	0.33
5.5	0.22	0.32
5.55	0.21	0.32
5.6	0.21	0.32
5.65	0.21	0.32
5.7	0.21	0.31
5.75	0.21	0.31
5.8	0.21	0.31
5.85	0.2	0.31
5.9	0.2	0.3
5.95	0.2	0.3

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
6	0.2	0.3
6.05	0.2	0.3
6.1	0.2	0.29
6.15	0.19	0.29
6.2	0.19	0.29
6.25	0.19	0.29
6.3	0.19	0.28
6.35	0.19	0.28
6.4	0.19	0.28
6.45	0.18	0.28
6.5	0.18	0.27
6.55	0.18	0.27
6.6	0.18	0.27
6.65	0.18	0.27
6.7	0.18	0.27
6.75	0.18	0.26
6.8	0.18	0.26
6.85	0.17	0.26
6.9	0.17	0.26
6.95	0.17	0.26
7	0.17	0.26
7.05	0.17	0.25
7.1	0.17	0.25
7.15	0.17	0.25
7.2	0.17	0.25
7.25	0.16	0.25
7.3	0.16	0.24
7.35	0.16	0.24
7.4	0.16	0.24
7.45	0.16	0.24
7.5	0.16	0.24
7.55	0.16	0.24
7.6	0.16	0.24
7.65	0.16	0.23
7.7	0.15	0.23
7.75	0.15	0.23
7.8	0.15	0.23
7.85	0.15	0.23
7.9	0.15	0.23
7.95	0.15	0.22
8	0.15	0.22
8.05	0.15	0.22
8.1	0.15	0.22
8.15	0.14	0.22
8.2	0.14	0.21
8.25	0.14	0.21
8.3	0.14	0.21
8.35	0.14	0.2
8.4	0.14	0.2
8.45	0.13	0.2

Period T(s)	Design Spectrum Ordinates (g)	MCE_R Spectrum Ordinates (g)
8.5	0.13	0.2
8.55	0.13	0.2
8.6	0.13	0.19
8.65	0.13	0.19
8.7	0.13	0.19
8.75	0.12	0.19
8.8	0.12	0.18
8.85	0.12	0.18
8.9	0.12	0.18
8.95	0.12	0.18
9	0.12	0.18

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Probabilistic & Deterministic

Period T(s)	Risk Targeted Spectrum Ordinates (g)	84th Spectrum Ordinates(g)
0	1.06	1.16
0.01	1.07	1.16
0.02	1.07	1.16
0.03	1.09	1.16
0.05	1.22	1.22
0.075	1.53	1.43
0.1	1.81	1.63
0.15	2.17	1.95
0.2	2.4	2.24
0.25	2.57	2.53
0.3	2.69	2.8
0.4	2.69	3.05
0.5	2.58	3.05
0.75	2.12	2.69
1	1.79	2.35
1.5	1.27	1.73
2	0.96	1.33
3	0.61	0.85
4	0.42	0.57
5	0.31	0.41
7.5	0.18	0.21
10	0.11	0.13

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Village Christian School
May 18, 2026
2013-006-012

APPENDIX C

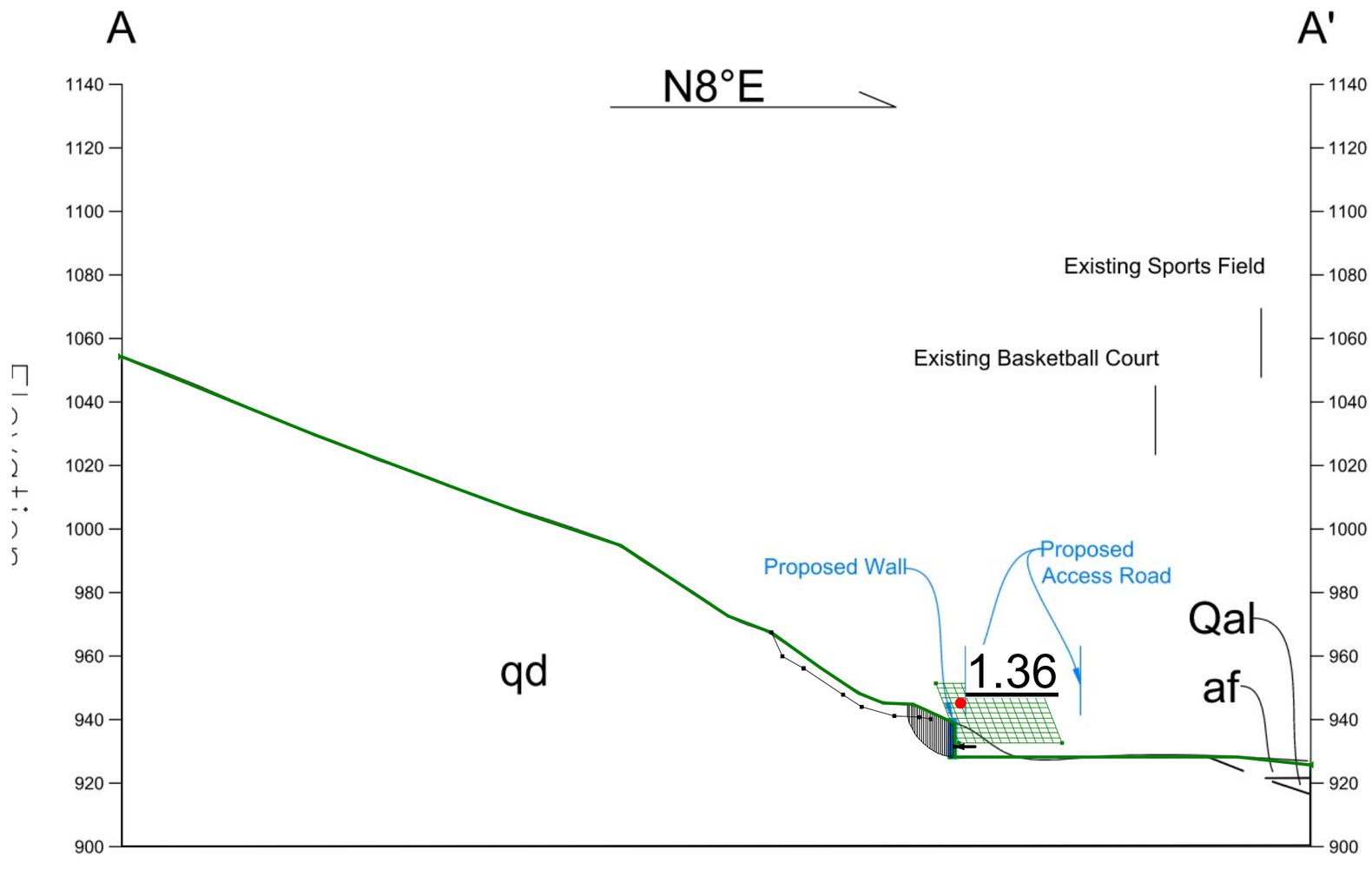
SLOPE STABILITY CALCULATIONS

RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

Cross-Section A Static Circular 0 K

Color:

Direct Shear Backfill Wt: 125 pcf C: 200 psf Phi: 25 °



RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

R. T. FRANKIAN AND ASSOCIATES
26027 Huntington Lane Unit A
Santa Clarita, California 91355
(818) 531-1501
www.RTFrankian.com

Village Christian Schools		
Job Number: 2013-006	05/21/2026	1:500

Cross-Section A Static Circular 0 K

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File Information

File Version: 11.12
Product Version: 25.2.1.39
Comments: Village Christian Schools Job Number: 2013-006
Revision Number: 555
Date: 05/21/2026
Time: 09:49:48 AM
File Name: Section A 5-8-2026 4-21 pm.gsz
Directory: R:\Documents\2013-006 GYM & Annex Building\slope stability\response 5-8-2026\
Last Solved Date: 05/21/2026
Last Solved Time: 09:49:49 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Cross-Section A Static Circular 0 K

Kind: SLOPE/W
Analysis Type: Limit Equilibrium
Settings
- Method: Spencer
- PWP Conditions from: (none)
- Unit Weight of Water: 62.430189 pcf

Slip Surface
- Slip Surface Settings
  - Search Method: Grid and Radius
  - Direction of Movement: Left to Right
  - Use Passive Mode: No
  - No. of Critical Slip Surfaces to Store: 10
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Minimum Slip Surface Volume: 35.314667 ft^3
  - Number of Columns: 30
- Tension Crack Option: Surface
  - Fraction Filled with Fluid: 0
  - Unit Weight of Fluid: 62.430189 pcf

Optimization
- Optimize Critical Slip Surface: No

Convergence
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100
  - Tolerable Difference in F of S: 0.001
- Under-Relaxation Criteria
  - Initial Rate: 1

Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50

Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Maximum Absolute Lambda: 2

Materials

Direct Shear Backfill

Slope Stability Material Model: Mohr-Coulomb
Unit Weight: 125 pcf
Effective Cohesion: 200 psf
Effective Friction Angle: 25 °
Phi-B: 0 °

Slip Surface Grid

Upper Left: (256.89917, 51.24737) ft
Lower Left: (264.41533, 32.26181) ft
Lower Right: (297.034, 32.26181) ft
Grid Horizontal Increment: 12
Grid Vertical Increment: 12

Slip Surface Radius

Upper Left Coordinate: (261.47438, 27.93771) ft
Upper Right Coordinate: (261.47438, 27.93771) ft
Lower Left Coordinate: (261.47438, 27.93771) ft
Lower Right Coordinate: (261.47438, 27.93771) ft
Number of Increments: 18
Use Left Projection: No
Left Projection Angle: 135 °
Use Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (-0.989, 154.52348) ft
Right Coordinate: (375.56534, 25.37702) ft

Point Loads

	Coordinate	Magnitude	Trend	Plunge
Point Load 1	(263.0866, 31.2)	0 lbf	270 °	0 °

Tension Crack Surface

	X	Y
Coordinate 1	204.91967 ft	67.32977 ft
Coordinate 2	208.4797 ft	59.78919 ft
Coordinate 3	215.13252 ft	56.00711 ft
Coordinate 4	227.5268 ft	47.62275 ft
Coordinate 5	233.50273 ft	43.78611 ft
Coordinate 6	243.89116 ft	40.80176 ft
Coordinate 7	251.63186 ft	40.44998 ft
Coordinate 8	255.46878 ft	39.79539 ft

Geometry

Name: 2D Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	-0.989 ft	-0.36156 ft
Point 2	-0.989 ft	154.52348 ft
Point 3	60.23936 ft	129.80537 ft
Point 4	102.41888 ft	113.81796 ft
Point 5	126.34329 ft	104.97387 ft
Point 6	148.6803 ft	97.60379 ft
Point 7	157.18424 ft	94.88253 ft
Point 8	191.19999 ft	72.54552 ft
Point 9	204.91967 ft	67.32977 ft
Point 10	220.22676 ft	56.33135 ft
Point 11	232.47243 ft	48.05418 ft
Point 12	240.40943 ft	44.99277 ft
Point 13	249.80328 ft	44.6539 ft
Point 14	263.0866 ft	38.52977 ft
Point 15	263.0866 ft	27.87151 ft
Point 16	283.49605 ft	27.87151 ft
Point 17	352.6614 ft	27.87151 ft
Point 18	375.56534 ft	25.37702 ft
Point 19	375.56534 ft	-0.02141 ft

Regions

	Material	Points	Area
Region 1	Direct Shear Backfill	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19	29,455 ft²

Slip Results

Slip Surfaces Analysed: 67 of 169 converged

Current Slip Surface

Slip Surface: 107
Factor of Safety: 1.36
Volume: 159.70687 ft³
Weight: 19,963.359 lbf
Resisting Moment: 235,808.94 lbf·ft
Activating Moment: 173,391.68 lbf·ft
Resisting Force: 11,089.277 lbf
Activating Force: 8,154.1091 lbf
Slip Rank: 1 of 169 slip surfaces
Exit: (267.85455, 27.87151) ft
Entry: (248.07373, 40.611681) ft
Radius: 17.311651 ft
Center: (264.841, 44.91885) ft

Slip Columns

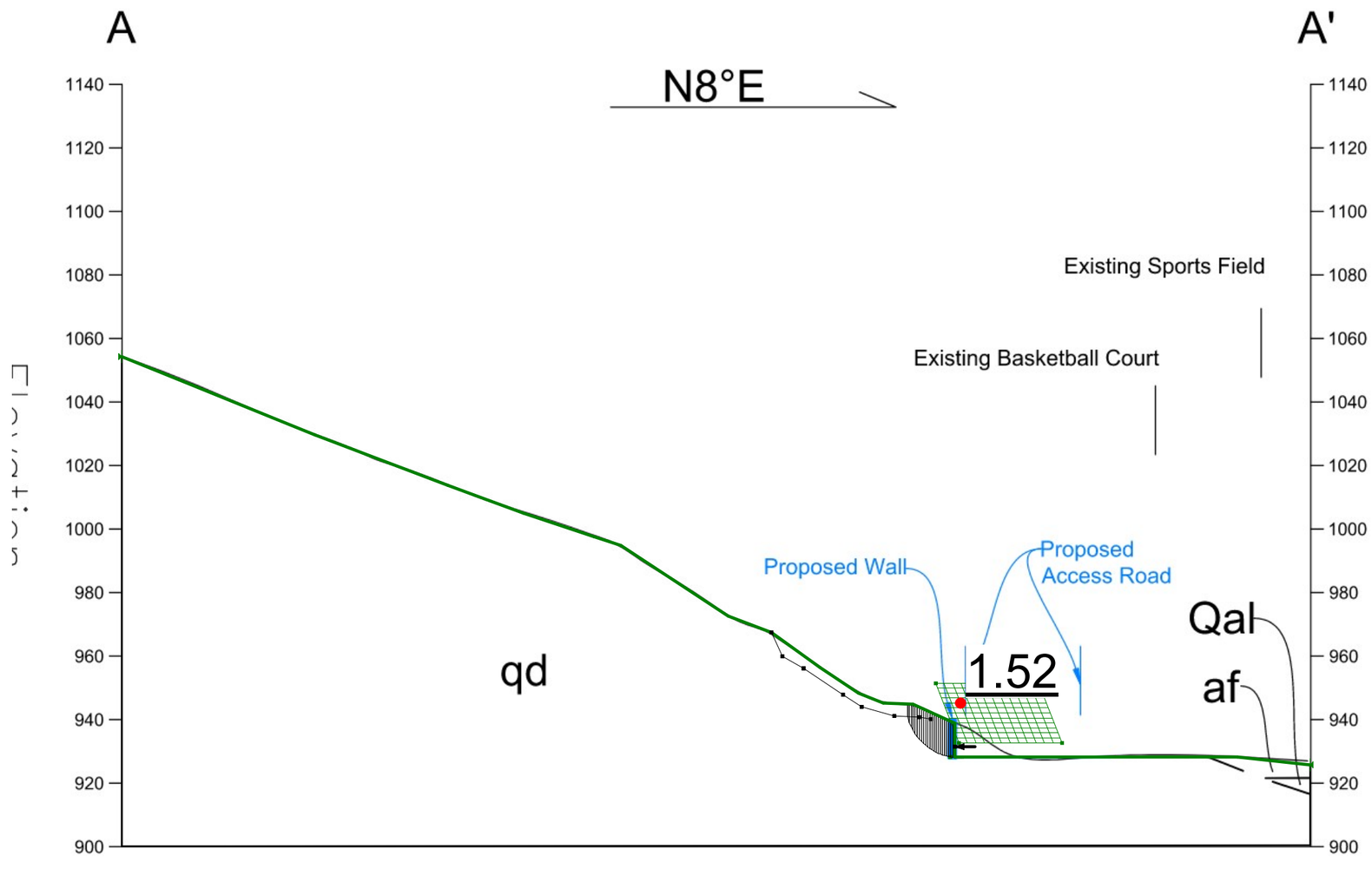
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Column Base Material
Column 1	248.36198 ft	39.70126 ft	0 psf	67.665113 psf	31.55276 psf	200 psf	0 psf	Direct Shear Backfill
Column 2	248.93850 ft	38.11690 ft	0 psf	194.62784 psf	90.756453 psf	200 psf	0 psf	Direct Shear Backfill
Column 3	249.51502 ft	36.89255 ft	0 psf	309.75947 psf	144.44321 psf	200 psf	0 psf	Direct Shear Backfill
Column 4	250.13536 ft	35.80622 ft	0 psf	416.96478 psf	194.43387 psf	200 psf	0 psf	Direct Shear Backfill
Column 5	250.79953 ft	34.80909 ft	0 psf	516.04958 psf	240.63787 psf	200 psf	0 psf	Direct Shear Backfill
Column 6	251.46369 ft	33.94311 ft	0 psf	607.18313 psf	283.13414 psf	200 psf	0 psf	Direct Shear Backfill
Column 7	252.12786 ft	33.17876 ft	0 psf	691.79268 psf	322.58822 psf	200 psf	0 psf	Direct Shear Backfill
Column 8	252.79203 ft	32.49704 ft	0 psf	770.84496 psf	359.45091 psf	200 psf	0 psf	Direct Shear Backfill
Column 9	253.45619 ft	31.88486 ft	0 psf	845.03655 psf	394.04702 psf	200 psf	0 psf	Direct Shear Backfill
Column 10	254.12036 ft	31.33275 ft	0 psf	914.89182 psf	426.62106 psf	200 psf	0 psf	Direct Shear Backfill
Column 11	254.78452 ft	30.83361 ft	0 psf	980.81856 psf	457.3632 psf	200 psf	0 psf	Direct Shear Backfill
Column 12	255.44869 ft	30.38195 ft	0 psf	1,043.142 psf	486.4251 psf	200 psf	0 psf	Direct Shear

								Backfill
Column 13	256.11286 ft	29.97345 ft	0 psf	1,102.1269 psf	513.93023 psf	200 psf	0 psf	Direct Shear Backfill
Column 14	256.77702 ft	29.60465 ft	0 psf	1,157.9926 psf	539.98081 psf	200 psf	0 psf	Direct Shear Backfill
Column 15	257.44119 ft	29.27273 ft	0 psf	1,210.9232 psf	564.66277 psf	200 psf	0 psf	Direct Shear Backfill
Column 16	258.10535 ft	28.97538 ft	0 psf	1,261.0757 psf	588.04928 psf	200 psf	0 psf	Direct Shear Backfill
Column 17	258.76952 ft	28.71068 ft	0 psf	1,308.5856 psf	610.20348 psf	200 psf	0 psf	Direct Shear Backfill
Column 18	259.43369 ft	28.47707 ft	0 psf	1,353.5711 psf	631.18058 psf	200 psf	0 psf	Direct Shear Backfill
Column 19	260.09785 ft	28.27323 ft	0 psf	1,396.1374 psf	651.02957 psf	200 psf	0 psf	Direct Shear Backfill
Column 20	260.76202 ft	28.09808 ft	0 psf	1,436.3793 psf	669.79466 psf	200 psf	0 psf	Direct Shear Backfill
Column 21	261.42618 ft	27.95072 ft	0 psf	1,474.3841 psf	687.51658 psf	200 psf	0 psf	Direct Shear Backfill
Column 22	262.09035 ft	27.83043 ft	0 psf	1,510.2343 psf	704.23381 psf	200 psf	0 psf	Direct Shear Backfill
Column 23	262.75452 ft	27.73665 ft	0 psf	1,544.0103 psf	719.98383 psf	200 psf	0 psf	Direct Shear Backfill
Column 24	263.42717 ft	27.66841 ft	0 psf	102.08567 psf	47.603329 psf	200 psf	0 psf	Direct Shear Backfill
Column 25	264.10830 ft	27.62607 ft	0 psf	119.17959 psf	55.574353 psf	200 psf	0 psf	Direct Shear Backfill
Column 26	264.78944 ft	27.61063 ft	0 psf	133.55185 psf	62.276249 psf	200 psf	0 psf	Direct Shear Backfill
Column 27	265.47057 ft	27.62201 ft	0 psf	144.91282 psf	67.573959 psf	200 psf	0 psf	Direct Shear Backfill
Column 28	266.15171 ft	27.66027 ft	0 psf	152.91032 psf	71.303252 psf	200 psf	0 psf	Direct Shear Backfill
Column 29	266.83284 ft	27.72559 ft	0 psf	157.10862 psf	73.260954 psf	200 psf	0 psf	Direct Shear Backfill
Column 30	267.51398 ft	27.81828 ft	0 psf	156.95862 psf	73.191007 psf	200 psf	0 psf	Direct Shear

Cross-Section A Static Circular 1.1 k

Color:

Direct Shear Backfill Wt: 125 pcf C: 200 psf Phi: 25 °



RTF&A
GEOTECHNICAL ENGINEERING & ENGINEERING GEOLOGY

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26027 Huntington Lane Unit A
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(818) 531-1501
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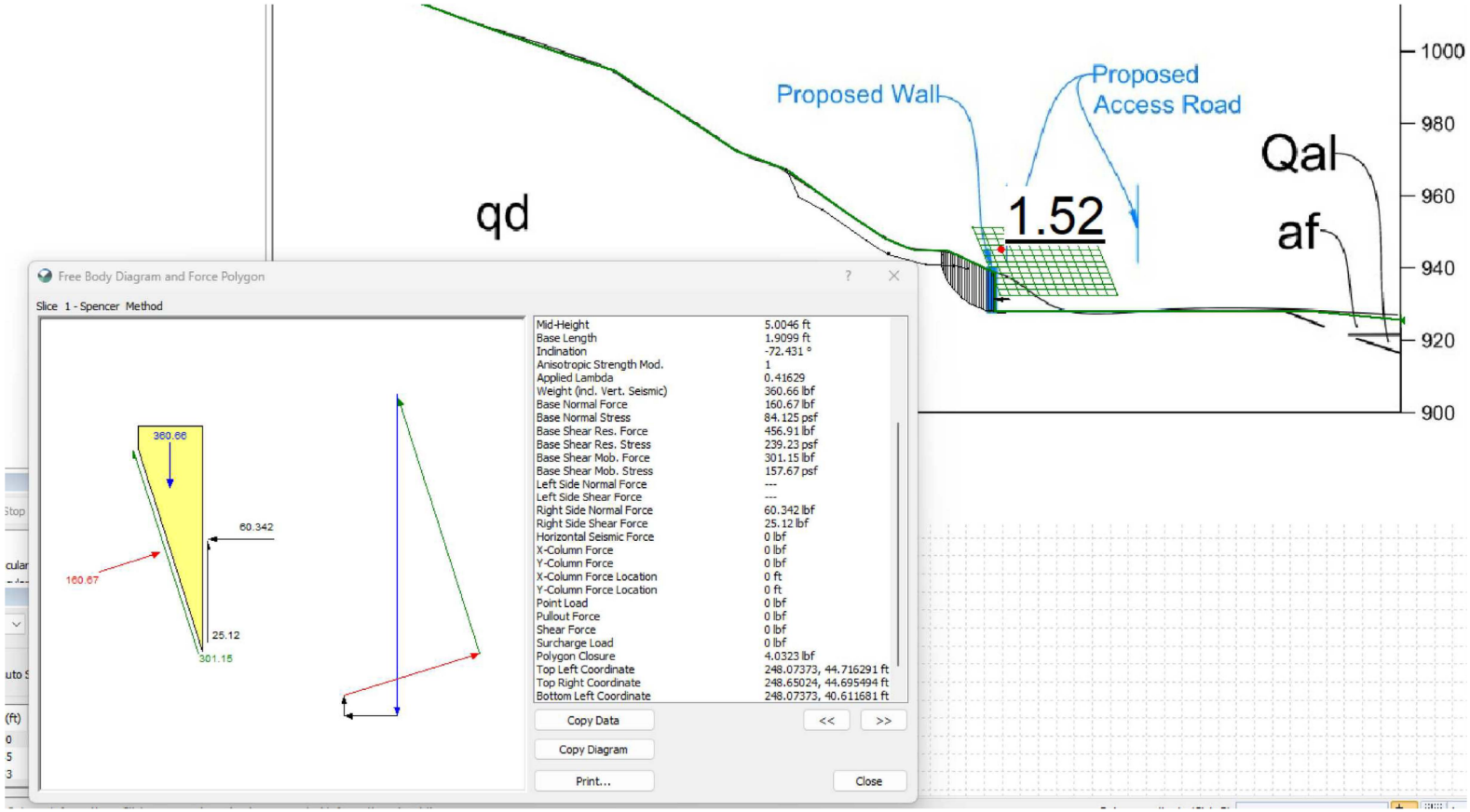
Village Christian Schools
Job Number: 2013-006

05/21/2026

1:500


Proposed Wall
Proposed
Access Road
qd
1.52
Qal
af
1000
980
960
940
920
900
Free Body Diagram and Force Polygon
Slice 1 - Spencer Method
360.66
60.342
160.67
25.12
301.15
Mid-Height 5.0046 ft
Base Length 1.9099 ft
Inclination -72.431 °
Anisotropic Strength Mod. 1
Applied Lambda 0.41629
Weight (incl. Vert. Seismic) 360.66 lbf
Base Normal Force 160.67 lbf
Base Normal Stress 84.125 psf
Base Shear Res. Force 456.91 lbf
Base Shear Res. Stress 239.23 psf
Base Shear Mob. Force 301.15 lbf
Base Shear Mob. Stress 157.67 psf
Left Side Normal Force ---
Left Side Shear Force ---
Right Side Normal Force 60.342 lbf
Right Side Shear Force 25.12 lbf
Horizontal Seismic Force 0 lbf
X-Column Force 0 lbf
Y-Column Force 0 lbf
X-Column Force Location 0 ft
Y-Column Force Location 0 ft
Point Load 0 lbf
Pullout Force 0 lbf
Shear Force 0 lbf
Surcharge Load 0 lbf
Polygon Closure 4.0323 lbf
Top Left Coordinate 248.07373, 44.716291 ft
Top Right Coordinate 248.65024, 44.695494 ft
Bottom Left Coordinate 248.07373, 40.611681 ft
Copy Data
<<
>>
Copy Diagram
Print...
Close

Cross-Section A Static Circular 1.1 k

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File Information

File Version: 11.12
Product Version: 25.2.1.39
Comments: Village Christian Schools Job Number: 2013-006
Revision Number: 554
Date: 05/21/2026
Time: 09:46:35 AM
File Name: Section A 5-8-2026 4-21 pm.gsz
Directory: R:\Documents\2013-006 GYM & Annex Building\slope stability\response 5-8-2026\
Last Solved Date: 05/21/2026
Last Solved Time: 09:46:37 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

Cross-Section A Static Circular 1.1 k

Kind: SLOPE/W
Analysis Type: Limit Equilibrium
Settings
- Method: Spencer
- PWP Conditions from: (none)
- Unit Weight of Water: 62.430189 pcf

Slip Surface
- Slip Surface Settings
  - Search Method: Grid and Radius
  - Direction of Movement: Left to Right
  - Use Passive Mode: No
  - No. of Critical Slip Surfaces to Store: 10
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Minimum Slip Surface Volume: 35.314667 ft^3
  - Number of Columns: 30
- Tension Crack Option: Surface
  - Fraction Filled with Fluid: 0
  - Unit Weight of Fluid: 62.430189 pcf

Optimization
- Optimize Critical Slip Surface: No

Convergence
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100
  - Tolerable Difference in F of S: 0.001
- Under-Relaxation Criteria
  - Initial Rate: 1

Minimum Rate: 0.1
Rate Reduction Factor: 0.65
Reduction Frequency (iterations): 50

Solution Settings
Search Method: Root Finder
Tolerable difference between starting and converged F of S: 3
Maximum iterations to calculate converged lambda: 20
Maximum Absolute Lambda: 2

Materials

Direct Shear Backfill

Slope Stability Material Model: Mohr-Coulomb
Unit Weight: 125 pcf
Effective Cohesion: 200 psf
Effective Friction Angle: 25 °
Phi-B: 0 °

Slip Surface Grid

Upper Left: (256.89917, 51.24737) ft
Lower Left: (264.41533, 32.26181) ft
Lower Right: (297.034, 32.26181) ft
Grid Horizontal Increment: 12
Grid Vertical Increment: 12

Slip Surface Radius

Upper Left Coordinate: (261.47438, 27.93771) ft
Upper Right Coordinate: (261.47438, 27.93771) ft
Lower Left Coordinate: (261.47438, 27.93771) ft
Lower Right Coordinate: (261.47438, 27.93771) ft
Number of Increments: 18
Use Left Projection: No
Left Projection Angle: 135 °
Use Right Projection: No
Right Projection Angle: 45 °

Slip Surface Limits

Left Coordinate: (-0.989, 154.52348) ft
Right Coordinate: (375.56534, 25.37702) ft

Point Loads

	Coordinate	Magnitude	Trend	Plunge
Point Load 1	(263.0866, 31.2)	1,100 lbf	270 °	0 °

Tension Crack Surface

	X	Y
Coordinate 1	204.91967 ft	67.32977 ft
Coordinate 2	208.4797 ft	59.78919 ft
Coordinate 3	215.13252 ft	56.00711 ft
Coordinate 4	227.5268 ft	47.62275 ft
Coordinate 5	233.50273 ft	43.78611 ft
Coordinate 6	243.89116 ft	40.80176 ft
Coordinate 7	251.63186 ft	40.44998 ft
Coordinate 8	255.46878 ft	39.79539 ft

Geometry

Name: 2D Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	-0.989 ft	-0.36156 ft
Point 2	-0.989 ft	154.52348 ft
Point 3	60.23936 ft	129.80537 ft
Point 4	102.41888 ft	113.81796 ft
Point 5	126.34329 ft	104.97387 ft
Point 6	148.6803 ft	97.60379 ft
Point 7	157.18424 ft	94.88253 ft
Point 8	191.19999 ft	72.54552 ft
Point 9	204.91967 ft	67.32977 ft
Point 10	220.22676 ft	56.33135 ft
Point 11	232.47243 ft	48.05418 ft
Point 12	240.40943 ft	44.99277 ft
Point 13	249.80328 ft	44.6539 ft
Point 14	263.0866 ft	38.52977 ft
Point 15	263.0866 ft	27.87151 ft
Point 16	283.49605 ft	27.87151 ft
Point 17	352.6614 ft	27.87151 ft
Point 18	375.56534 ft	25.37702 ft
Point 19	375.56534 ft	-0.02141 ft

Regions

	Material	Points	Area
Region 1	Direct Shear Backfill	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19	29,455 ft²

Slip Results

Slip Surfaces Analysed: 67 of 169 converged

Current Slip Surface

Slip Surface: 107
Factor of Safety: 1.52
Volume: 159.70687 ft³
Weight: 19,963.359 lbf
Resisting Moment: 240,178.9 lbf·ft
Activating Moment: 158,300.94 lbf·ft
Resisting Force: 11,261.954 lbf
Activating Force: 7,422.7314 lbf
Slip Rank: 1 of 169 slip surfaces
Exit: (267.85455, 27.87151) ft
Entry: (248.07373, 40.611681) ft
Radius: 17.311651 ft
Center: (264.841, 44.91885) ft

Slip Columns

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Column Base Material
Column 1	248.36198 ft	39.70126 ft	0 psf	84.124713 psf	39.227998 psf	200 psf	0 psf	Direct Shear Backfill
Column 2	248.93850 ft	38.11690 ft	0 psf	221.6364 psf	103.35075 psf	200 psf	0 psf	Direct Shear Backfill
Column 3	249.51502 ft	36.89255 ft	0 psf	343.83218 psf	160.33158 psf	200 psf	0 psf	Direct Shear Backfill
Column 4	250.13536 ft	35.80622 ft	0 psf	455.50455 psf	212.40526 psf	200 psf	0 psf	Direct Shear Backfill
Column 5	250.79953 ft	34.80909 ft	0 psf	556.75358 psf	259.61846 psf	200 psf	0 psf	Direct Shear Backfill
Column 6	251.46369 ft	33.94311 ft	0 psf	648.47187 psf	302.3874 psf	200 psf	0 psf	Direct Shear Backfill
Column 7	252.12786 ft	33.17876 ft	0 psf	732.38729 psf	341.5178 psf	200 psf	0 psf	Direct Shear Backfill
Column 8	252.79203 ft	32.49704 ft	0 psf	809.66299 psf	377.55205 psf	200 psf	0 psf	Direct Shear Backfill
Column 9	253.45619 ft	31.88486 ft	0 psf	881.13077 psf	410.87803 psf	200 psf	0 psf	Direct Shear Backfill
Column 10	254.12036 ft	31.33275 ft	0 psf	947.41102 psf	441.78501 psf	200 psf	0 psf	Direct Shear Backfill
Column 11	254.78452 ft	30.83361 ft	0 psf	1,008.9807 psf	470.49544 psf	200 psf	0 psf	Direct Shear Backfill
Column 12	255.44869 ft	30.38195 ft	0 psf	1,066.2149 psf	497.18418 psf	200 psf	0 psf	Direct Shear

								Backfill
Column 13	256.11286 ft	29.97345 ft	0 psf	1,119.4133 psf	521.99101 psf	200 psf	0 psf	Direct Shear Backfill
Column 14	256.77702 ft	29.60465 ft	0 psf	1,168.8184 psf	545.02896 psf	200 psf	0 psf	Direct Shear Backfill
Column 15	257.44119 ft	29.27273 ft	0 psf	1,214.6275 psf	566.39011 psf	200 psf	0 psf	Direct Shear Backfill
Column 16	258.10535 ft	28.97538 ft	0 psf	1,257.0021 psf	586.14969 psf	200 psf	0 psf	Direct Shear Backfill
Column 17	258.76952 ft	28.71068 ft	0 psf	1,296.0738 psf	604.36913 psf	200 psf	0 psf	Direct Shear Backfill
Column 18	259.43369 ft	28.47707 ft	0 psf	1,331.9494 psf	621.0982 psf	200 psf	0 psf	Direct Shear Backfill
Column 19	260.09785 ft	28.27323 ft	0 psf	1,364.7143 psf	636.37671 psf	200 psf	0 psf	Direct Shear Backfill
Column 20	260.76202 ft	28.09808 ft	0 psf	1,394.4349 psf	650.23569 psf	200 psf	0 psf	Direct Shear Backfill
Column 21	261.42618 ft	27.95072 ft	0 psf	1,421.161 psf	662.69827 psf	200 psf	0 psf	Direct Shear Backfill
Column 22	262.09035 ft	27.83043 ft	0 psf	1,444.9266 psf	673.78032 psf	200 psf	0 psf	Direct Shear Backfill
Column 23	262.75452 ft	27.73665 ft	0 psf	2,183.94 psf	1,018.388 psf	200 psf	0 psf	Direct Shear Backfill
Column 24	263.42717 ft	27.66841 ft	0 psf	74.539748 psf	34.758456 psf	200 psf	0 psf	Direct Shear Backfill
Column 25	264.10830 ft	27.62607 ft	0 psf	88.548009 psf	41.290614 psf	200 psf	0 psf	Direct Shear Backfill
Column 26	264.78944 ft	27.61063 ft	0 psf	99.58192 psf	46.435812 psf	200 psf	0 psf	Direct Shear Backfill
Column 27	265.47057 ft	27.62201 ft	0 psf	107.39148 psf	50.077467 psf	200 psf	0 psf	Direct Shear Backfill
Column 28	266.15171 ft	27.66027 ft	0 psf	111.67884 psf	52.076698 psf	200 psf	0 psf	Direct Shear Backfill
Column 29	266.83284 ft	27.72559 ft	0 psf	112.08471 psf	52.265961 psf	200 psf	0 psf	Direct Shear Backfill
Column 30	267.51398 ft	27.81828 ft	0 psf	108.16979 psf	50.440403 psf	200 psf	0 psf	Direct Shear