SEISMIC GEOTECHNICAL ANALYSIS

Project: Sample Project **Number:** SG-2026-008
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1. INPUT PARAMETERS

Parameter	Symbol	Value	Unit
Analysis type	*Analysis*	`Site Classification`	
Spectral acceleration at 0.2 s	*Ss*	`1.000`	g
Spectral acceleration at 1.0 s	*S*1	`0.400`	g

1. SITE CLASSIFICATION

AASHTO/NEHRP Site Classification Criteria

Site Class	Vs30 (m/s)	N-bar	su-bar (kPa)
A	> 1500	—	—
B	760 – 1500	—	—
C	360 – 760	> 50	> 100
D	180 – 360	15 – 50	50 – 100
E	< 180	< 15	< 50
F	Site-specific	Site-specific	Site-specific

Priority: Vs30 > N-bar > su-bar per AASHTO LRFD 3.10.3.1

Site Classification Result

$$Classify based on Vs30, N-bar, or su-bar per AASHTO Table 3.10.3.1-1$$

SiteClassD

$SiteClass = \mathbf{D}$

AASHTO LRFD Table 3.10.3.1-1

1. SITE COEFFICIENTS

Site Coefficient Fpga (PGA amplification)

$$Fpga = f(SiteClass, Ss) from AASHTO Table 3.10.3.2 - 1$$

$$SiteClass D, Ss = 1.000 g$$

$Fpga = \mathbf{1.100}$

AASHTO LRFD Table 3.10.3.2-1

Site Coefficient Fa (short-period amplification)

$$Fa = f(SiteClass, Ss) from AASHTO Table 3.10.3.2 - 1$$

$$SiteClass D, Ss = 1.000 g$$

$Fa = \mathbf{1.100}$

AASHTO LRFD Table 3.10.3.2-1

Site Coefficient Fv (long-period amplification)

$$Fv = f(SiteClass, S1) from AASHTO Table 3.10.3.2 - 3$$

$$SiteClass D, S1 = 0.400 g$$

$Fv = \mathbf{1.600}$

AASHTO LRFD Table 3.10.3.2-3

1. DESIGN SPECTRAL ACCELERATIONS

Design Short-Period Spectral Acceleration

$$SDS = Fa \times Ss$$

$$SDS = 1.100 \times 1.000$$

$$SDS = \mathbf{1.1000}\ \text{g}$$

AASHTO LRFD Eq. 3.10.4.2-1

Design Long-Period Spectral Acceleration

$$SD1 = Fv \times S1$$

$$SD1 = 1.600 \times 0.400$$

$$SD1 = \mathbf{0.6400}\ \text{g}$$

AASHTO LRFD Eq. 3.10.4.2-2

Design Spectral Parameters Summary

Parameter	Value	Unit
Site Class	D	
Fpga	1.100	
Fa	1.100	
Fv	1.600	
SDS = Fa × Ss	1.1000	g
SD1 = Fv × S1	0.6400	g

1. FIGURES

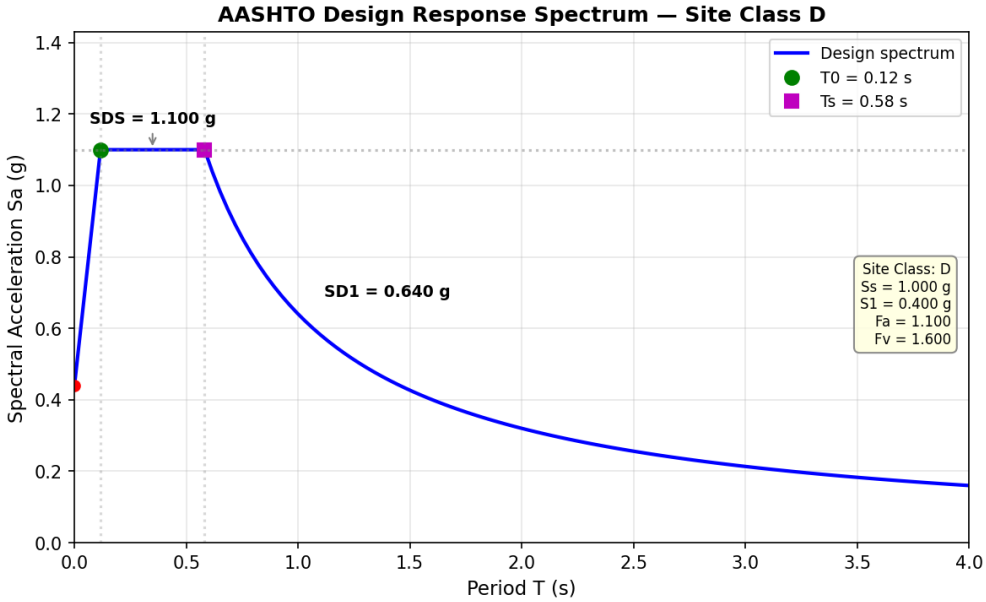

Figure 1: *

Figure 1: AASHTO design response spectrum for Site Class D. SDS = 1.1000 g, SD1 = 0.6400 g.

1. REFERENCES

1. AASHTO LRFD Bridge Design Specifications, 9th Ed., Section 3.10.3.
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