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JOB TITLE Creech DRP PH 2 - AEG Canopy
JOB NO. SHEET NO.
CALCULATED BY ACV DATE
CHECKED BY DATE

Seismic Loads: IBC 2024

Strength Level Forces

Risk Category : II
Importance Factor (Ie) : 1.00
Site Class : D

Ss (0.2 sec) = 0.58 g
S1 (1.0 sec) = 0.17 g

Site specific ground motion analysis performed:

Sms = 0.790 S_{DS} = 0.527 Design Category = D
Sm1 = 0.460 S_{D1} = 0.307 Design Category = D

Seismic Design Category = **D**
Redundancy Coefficient ρ = 1.30
Number of Stories: 1

Structure Type: All other building systems
Horizontal Struct Irregularities: No plan Irregularity
Vertical Structural Irregularities: No vertical Irregularity

Flexible Diaphragms: No
Building System: **Structural steel systems not specifically detailed for seismic resistance**
Seismic resisting system: **Structural steel systems not specifically detailed for seismic resistance**
System Structural Height Limit: **System not permitted for this seismic design category**
Actual Structural Height (hn) = 11.0 ft
See ASCE7 Section 12.2.5 for exceptions and other system limitations

DESIGN COEFFICIENTS AND FACTORS

Response Modification Coefficient (R) = 3
Over-Strength Factor (Ωo) = 3
Deflection Amplification Factor (Cd) = 3

To = 0.2(Sd1/Sds) = 0.116
Ts = Sd1/Sds = 0.582
Long Period Transition Period (TL) = 6 sec

S_{DS} = 0.527
S_{D1} = 0.307

Seismic Load Effect (E) = Eh +/-Ev = ρ Q_E +/- 0.2S_{DS} D = 1.3Qe +/- 0.105D Q_E = horizontal seismic force
Special Seismic Load Effect (Em) = Emh +/- Ev = Ωo Q_E +/- 0.2S_{DS} D = 3Qe +/- 0.105D D = dead load

ALLOWABLE STORY DRIFT

Structure Type: All other structures

Allowable story drift Δa = 0.020hsx where hsx is the story height below level x

PERMITTED ANALYTICAL PROCEDURES

Index Force Analysis - Method Not Permitted (only applies to Seismic Category A)

Model & Seismic Response Analysis - Permitted (see code for procedure)

Equivalent Lateral-Force (ELF) Analysis - Permitted

Building period coef. (C_T) = 0.020 Cu = 1.40
Approx fundamental period (Ta) = $C_T h_n^x$ = 0.121 sec x= 0.75 Tmax = CuTa = 0.169 sec
User calculated fundamental period = T = 0.121 sec

Method 2:
Seismic response coef. (Cs) = SdsI/R = 0.176
need not exceed Cs = Sd1 I /RT = 0.846
but not less than Cs = 0.044Sds*I = 0.023
USE Cs = 0.176
Design Base Shear V = 0.176W

Method 1:
Enter Sa =
Seismic response coef. (Cs) = SaI/R = 0.000
but not less than Cs = 0.044Sds*I = 0.023
Cs = Method not applicable

SEISMIC FORCES AT FLOORS - ELF Procedure

Total Stories =	1	Floor Dead Load =	0.0 psf	Roof Snow Load =	0.0 psf
Building length L =	103.0 ft	Floor LL to include =	0.0 psf	Roof Equip wt =	0.0 kips
Building width W =	43.0 ft	Floor Equip wt =	0.0 kips	Parapet weight =	0.0 psf
hn =	11.0 ft	Partition weight =	0.0 psf	Parapet height =	0.0 ft
k =	1.000	Ext Wall Weight =	0.0 psf		
V =	0.176W	Roof Dead Load =	10.0 psf		

Bottom Floor (level 1) is a slab on grade

Diaphragm shall be designed for level force Fx, but not less than Fpx = (Σ Fi / Σ wi) wpx, but :
Fpx min = $0.2S_{DS}$ Ie wpx = 0.105 wpx
Fpx max = $0.4S_{DS}$ Ie wpx = 0.211 wpx

Seismic Forces (Including all exterior walls)

	EL above Seismic Base	Level Weight	Wx hx^k	Cvx = Wx hx^k / Σ Wi hi^k	V = 7.8k Base Shear Distribution			Diaphragm Force Fpx		
Level (x)	hx (ft)	Wx (kips)	(ft-kips)		Fx=CvxV	Σ Fx (k)	Story M	Σ Wi (k)	Fpx	Design Fpx
Roof	11.80	44	523	1.000	7.78	7.8	0	44	7.8	7.8
1	0.00	0	0	0.000	0.00	0.0	0	0	0.0	0.0
Base		44		1.000		7.8	92			
							92 = Base M			

Diaphragm Forces excluding parallel exterior walls

Diaphragm Force Fpx Parallel to Bldg Length V= 8k

Cvx =	Fx=CvxV	Σ Fx (k)	Σ Wi (k)	Fpx	Design Fpx
1.000	7.78	7.8	44	7.8	7.8
0.000	0.00	0.0	0	0.0	0.0
1.000		7.8			

Diaphragm Force Fpx Normal to Bldg Length V= 8k

Level (x)	Cvx =	Fx=CvxV	Σ Fx (k)	Σ Wi (k)	Fpx	Design Fpx
Roof	1.000	7.8	7.8	44	7.8	7.8
1	0.000	0.0	0.0	0	0.0	0.0
Base	1.000		7.8			