2025-02-20 | 01:13AM

0101-[1] Project Summary

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0101-[2] Overview and Codes

This report describes the structural design of a solar canopy covering a residential patio located in the City of Larkspur, California. It includes the design of a concrete slab and stem wall, steel tube frame, and clip attachments of solar panels to the frame.

wt■ = ■■■■■■

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Building Codes and Jurisdiction

- City of Larkspur, California
- 2019 California Building Code [CBC]
- 2019 California Residential Code [CRC]

**Table 01: Loading ========== ====== Category Standard Year ========== ========== ====== Loading ASCE-7 2016 Concrete ACI-318 2014 Wood-National Design Specifications AWC-NDS 2018 Wood-Special Design Provisions for Wind and Seismic AWC-SDPWS 2015 Wood Frame Construction Manual AWC-WFCM 2018 ========== ========== ====== [table read from file: c:gitrivt-solar-canopy-structural-calculationsd01-loadsins01cbc2019A_stds.csv] Design loads for the project are from the California Building and Residential Codes and are summarized in the following tables.

Sym	Load Effect	Notes
D	Dead load	See IBC 1606 and Chapter 3 of this publication
E	Combined effect of horizontal and vertical earthquake-induced forces as defined in ASCE/SEI 12.4.2	See IBC 1613, ASCE/SEI 12.4.2 and Chapter 6 of this publication
Em	Maximum seismic load effect of horizontal and vertical forces as set forth in ASCE/SEI 12.4.3	See IBC 1613, ASCE/SEI 12.4.3 and Chapter 6 of this publication
H	Load due to lateral earth pressures, ground water pressure or pressure of bulk materials	See IBC 1610 for soil lateral loads
L	Live load, except roof live load, including any permitted live load reduction	See IBC 1607 and Chapter 3 of this publication
Li	Roof live load including any permitted live load reduction	See IBC 1607 and Chapter 3 of this publication
R	Rain load	See IBC 1611 and Chapter 3 of this publication
W	Load due to wind pressure	See IBC 1609 and Chapter 5 of this publication

[table read from file: c:gitrivt-solar-canopy-structural-calculationsd01-loadsins01load_types01.csv]

**Table 02: Load Combinations ========== ==========

CBC 2019 reference Equation

variable value [value] description ========== ========== ========== ========== area1 10700.00 sf 994.06 SM roof area area2 100000.00 sf 9290.30 SM floor area area3 25.00 sf 2.32 SM floor area ht1 9.00 ft 2.74 m wall height len1 110.00 ft 33.53 m interior wall length len2 155.00 ft 47.24 m exterior wall length udl1 12.20 psf 584.14 Pa description ========== ========== ========== ==========

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variable	value	[value]	description
floordl1	50.00 psf	2394.01 Pa	interior wall length
floordl2	10.00 psf	478.80 Pa	exterior wall length

[values read from file: c:gitrivt-solar-canopy-structural-calculationsvalsv01test1.csv]

Equation for floor area Eq-02 .. raw:: math

wt■ = area■·floordl■

wt2	area2	floordl1
5000.00 kips	100000.00 sf	50.00 psf

22241108.00 N	9290.30 SM	2394.01 Pa

Equation for wall area Eq-03 .. raw:: math

wt■ = area■·floordl■·0.1

wt3	floordl2	area3
25.0 lbs	10.00 psf	25.00 sf
111.2 N	478.80 Pa	2.32 SM

Exterior wall - total area load Eq-04 ========== ========= ========= ========== variable value [value] description ========== ========= ========= ========== len1 410.00 ft 124.97 m interior wall length len2 455.00 ft 138.68 m exterior wall length ========== ========= ========= ========== [values read from file: c:gitrivt-solar-canopy-structural-calculationsvalsv01test2.csv]