



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
Project Id:	123-1112
Structural Design Loads per:	IBC 2021
Subject:	Cover

Joe's Tile Store Depot

Design Loads

Description: New project 2025.08.26

Project Number: 123-1112

Structural Design Loads per: IBC 2021

Project Location

132 Granite Blvd
Los Cabos, NM

Engineering Team

Engineer: ACB

Engineer of Record: WRB

Notes

New single story retail building



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Subject:	Structure 1 Overview

Structure 1

Design Loads

Risk Category: II

Engineering Team

Engineer: ACB

Engineer of Record: WRB



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Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Dead Load 1

Dead Load Assemblies

Typical Roof Load - 1

Material	Weight
Waterproofing membranes - Bituminous, gravel-covered	5.50 psf
Insulation, Roof Boards - Polystyrene foam - 6 in.	1.20 psf
Deck, metal, 18 gauge	3.00 psf
4 x 12 - 24in. o.c.	4.30 psf
Gypsum board - 5/8 in.	2.75 psf
Mechanical duct allowance	4.00 psf
Assembly Weight	20.75 psf

Tilt-Up walls - 2

Material	Weight
7 1/4" Tilt-up Panel	87.60 psf
Assembly Weight	87.60 psf



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Subject:	Structure 1 - Live Load 1

Live Loads Used

Apartments				
Use	Uniform	LL Reduction Permitted	Multistory LL Reduction Permitted	Concentrated
Private Rooms And Corridors Serving Them	40 psf	Yes	Yes	0 lbs
Public Rooms	100 psf	No	No	0 lbs
Corridors Serving Public Rooms	100 psf	Yes	Yes	0 lbs



Project Title:	Joe's Tile Store Depot
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Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Rain Load 1

Rain Loads

General Rain - Parameters

15 min. or 2*60 min Rainfall intensity 2.24 mm/hr Section 8.2

Roof Region - Main Roof

Main Roof - Drainage System

Drainage System	Overflow Dam or Standpipe	User Defined
Inlet Diameter	6	User Defined
Outlet Diameter	4	User Defined

Main Roof - Design Loads

$$R = 5.2(d_s + d_h)$$

ASCE 7-16, (8.3-1)

$$Q = 0.0104 A i$$

ASCE 7-16, (C8.3-1)

Drainage Collection Area (A)	Static Head Pressure (DS)	Flow Rate (Q)	Hydraulic Head Pressure (DH)	Design Rain Load (R)
1400.00sqft	2.00in/hr	32.61gal/min	0.65in	13.79psf
1000.00sqft	2.00in/hr	23.30gal/min	0.47in	12.82psf



Project Title:	Joe's Tile Store Depot
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Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Snow Load 1

Snow Load Report

General Snow - Parameters

Ground Snow Load	$p_g = 20.0$ psf	Figure 7-1 to 7-3
Building Risk Category	Risk Category = II	User Defined
Snow Importance Factor	$I_s = 1.0$	Table 1.5-2

Roof Region - Main Roof

Main Roof Design Summary

Balanced Flat Roof Snow Load	$p_f = 14.0$ psf	Section 7.3
Balanced Sloped Roof Snow Load	$p_s = 14.0$ psf	Section 7.4
Minimum Roof Snow Load	$p_m = 20.0$ psf	Section 7.3.4
Drift Loads for Roof Projection Parapets		Section 7.8

Location	Length of roof upwind of the drift (lu)	Length of roof downwind (ld, lower)	Height of roof step (h)	Uniform pressure, windward face (pw)	Uniform pressure, leeward face (pL)	Height of drift (hd)	Pressure surcharge on leeward face (pLS)	Leeward Surcharge width (ds)
High Parapet	1.2 ft	240.0 ft	4.75 ft	59.19 psf	9.98 psf	3.57 ft	59.19 psf	14.26 ft
Low Parapet	1.2 ft	240.0 ft	2.5 ft	27.5 psf	9.98 psf	1.66 ft	27.5 psf	6.63 ft

Main Roof Design Detail

Balanced Flat Roof - Section 7.3

$$p_f = 0.7C_eC_tI_s p_g \quad \text{Eq. 7.3-1}$$

Exposure Factor	$C_e = 1.0$	Section 7.3.1
Thermal Factor	$C_t = 1.0$	Table 7.3-2
Snow Importance Factor	$I_s = 1.0$	Table 1.5-2
Ground Snow Load	$p_g = 20.00$ psf	Figure 7-1 to 7-3
Balanced Flat Roof Snow Load	$p_f = 14.00$ psf	ASCE 7-16: Eq. 7.3-1

Balanced Sloped Roof Snow Load - Section 7.4

$$p_s = C_s p_f \quad \text{Eq. 7.4-1}$$

Roof Obstructions/ Friction	Obstructed	User Defined
Roof Slope	$\theta = 1.19^\circ$	User Defined
Roof Snow Factor	$C_s = 1.00$	Figure 7.4-1, 7.4-2
Balanced Sloped Roof Snow Load	$p_s = 14.00$ psf	Eq. 7.4-1



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Minimum Snow Load - Section 7.3.4

$$p_m = \begin{cases} I_s p_g & [\text{for } p_g \leq 20\text{psf}] \\ 20I_s & [\text{for } p_g > 20\text{psf}] \end{cases} \quad \text{Eq. 7.3-2}$$

Snow Importance Factor	$I_s=1.0$	ASCE 7-16 Table 1.5-2
Ground Snow Load	$p_g=20.00$ psf	Figure 7-1 to 7-3
Minimum Roof Snow Load	$p_f=20.00$ psf	ASCE 7-16: Eq. 7.3-2

Drift Loads for Projections and Parapets - Section 7.8

$$\begin{aligned} \gamma &= 0.13p_g + 14 \leq 30\text{pcf} && [\text{Snow density}] \\ h_b &= p_s/\gamma && [\text{Balanced snow load on lower}] \\ h_c &= h - h_b && [\text{Clear height from balanced snow to top of obstruction}] \\ h_d &= 0.75(0.43l_u^{1/3}(p_g + 10)^{1/4}) \leq h_c && [\text{Max drift height}] \\ w &= 4h_d && [\text{Snow drift width}] \\ p_d &= h_d\gamma && [\text{Max drift load}] \end{aligned} \quad \text{Eq. 7.8-1}$$

Ground Snow Load	$p_g=20.00$ psf	Figure 7-1 to 7-3
Balanced Flat Roof Snow Load	$p_f=14.00$ psf	Eq. 7.3-1
Balanced Sloped Roof Snow Load	$p_s=14.00$ psf	Eq. 7.4-1
Roof Slope	$\theta=1.19^\circ$	User Defined
Roof Slope Run for A Rise of One Foot	$S=48.14$	Derived from roof slope
Snow Density	$\gamma=16.60$ pcf	Section 7.8

Location	Length of roof upwind of the drift (lu)	Length of roof downwind (lu, lower)	Height of roof step (h)	Uniform pressure, windward face (pw)	Uniform pressure, leeward face (pL)	Height of drift (hd)	Pressure surcharge on leeward face (pLS)	Leeward Surcharge width (ds)
High Parapet	1.2 ft	240.0 ft	4.75 ft	59.19 psf	9.98 psf	3.57 ft	59.19 psf	14.26 ft
Low Parapet	1.2 ft	240.0 ft	2.5 ft	27.5 psf	9.98 psf	1.66 ft	27.5 psf	6.63 ft

* Denoted values are enveloped values between windward and leeward drift cases



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Subject:	Structure 1 - Seismic Load 1 - Design Criteria

Seismic - Design Criteria

Site Parameters

Building Risk Category	Risk Category = II	Section 1.5
Seismic Importance Factor	$I_S = 1.0$	Table 1.5-2
Site Class	D	Section 20.3
Special Acceleration at short periods	$S_S = 0.5 \text{ g}$	Section 11.4.4
Spectral Acceleration at 1s Period	$S_1 = 0.5 \text{ g}$	Section 11.4.4
Long-Period Transition Period	$T_L = 12.0 \text{ sec}$	Section 11.4.6
Site Coefficient for Short Periods	$F_a = 1.4$	Table 11.4-1
Site Coefficient for 1s Period	$F_v = 1.8$	Table 11.4-2
MCE _R Spectral Response Acceleration at Short Periods	$S_{MS} = 0.7$	Section 11.4.4
MCE _R Spectral Response Acceleration at 1s Period	$S_{M1} = 0.9$	Section 11.4.4
Design Spectral Response Acceleration at Short Periods	$S_{DS} = 0.467$	Section 11.4.5
Design Spectral Response Acceleration at 1s Period	$S_{D1} = 0.6$	Section 11.4.5



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Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Seismic Load 1 - Building Design

Seismic - Main Force Resisting System

Building Levels / Seismic Weight

Description	Elevation	Seismic Weight at Level, W_x
Level 1	0.00 ft	0.00 k
Level 2	15.40 ft	1584.00 k
Total Seismic Weight, W		1584.0 k

Main Building System

Main Building System System Parameters

System Category	A. BEARING WALL SYSTEMS
System Name	5. INTERMEDIATE PRECAST SHEAR WALLS
Response Modification Coefficient	R=4.0
Overstrength Factor	$\Omega_0=2.5$
Deflection Amplification Factor	$C_d=4.0$

Main Building System Design Summary

Level	Seismic Weight at Level, W_x	Level Force, F_x	Diaphragm Force, F_{px}
Level 1	0.00 k	0.00 k	0.00 k
Level 2	1584.00 k	184.80 k	184.80 k

Main Building System Design Details

Approximate Building Period, T_a

$$T_a = C_t h_n^x \quad \text{ASCE 7-16, (12.8-7)}$$

Coefficient for the Fundamental Period	$C_t = 0.02$	ASCE 7-16: Table 12.8-2
Exponent for the Fundamental Period	$x = 0.75$	ASCE 7-16: Table 12.8-2
Height of structure	$h_n = 15.4$	User Defined
Approximate Fundamental Period	$T_a = 0.16$	ASCE 7-16: Section 12.8.2.1

Base Shear, V

$$V = C_s W \quad \text{ASCE 7-16, (12.8-1)}$$

Seismic Response Coefficient	$C_s = 0.12$	ASCE 7-16: Section 12.8.1.1
Seismic Weight	$W = 1584.00 \text{ k}$	ASCE 7-16: Section 12.8.1
Seismic Base Shear	$V = 184.80 \text{ k}$	ASCE 7-16: Section 12.8.1

Vertical Distribution of Seismic Loads to Main Force Resisting System, F_x



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Subject:	Structure 1 - Seismic Load 1 - Building Design

$$F_x = C_{vx} V \quad [\text{Lateral seismic force at level}] \quad \text{ASCE 7-16, (12.8-11, 12.8-12)}$$

$$C_{vx} = \frac{w_x h_x^k}{\sum_{i=1}^n w_i h_i^k} \quad [\text{Vertical distribution factor}]$$

Level	w_x	h_x	$w_x h_x^k$	C_{vx}	F_x
Level 1	0.00 k	0.00 ft	0.00 k	0.00	0.00 k
Level 2	1584.00 k	15.40 ft	24393.60 k	1.00	184.80 k

Vertical Distribution of Seismic Loads to Diaphragm, F_{px}

$$F_{px} = \frac{\sum_{i=x}^n F_i}{\sum_{i=x}^n w_i} w_{px} \quad [\text{Diaphragm design force at level}] \quad \text{ASCE 7-16, (12.10-1, 12.10-2, 12.10-3)}$$

$$F_{px,min} = 0.2 S_{DS} I_e w_{px} \quad [\text{Minimum req'd diaphragm force at level}]$$

$$F_{px,max} = 0.4 S_{DS} I_e w_{px} \quad [\text{Maximum req'd diaphragm force at level}]$$

Level	w_{px}	Σw_i	ΣF_i	$F_{px,min}$	$F_{px,max}$	F_{px}	Design F_{px}
Level 1	0.00 k	1584.00 k	184.80 k	0.00 k	0.00 k	0.00 k	0.00 k
Level 2	1584.00 k	1584.00 k	184.80 k	147.84 k	295.68 k	184.80 k	184.80 k



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Subject:	Structure 1 - Wind Load 1 - General Requirements

Wind - General Requirements

Site Parameters

Basic Wind Speed	V=115.00 mph			Section 26.5.1			
Ground Surface Roughness				Section 26.7.2			
North Quadrant		South Quadrant		East Quadrant		West Quadrant	
B		B		B		B	
Exposure Category				Section 26.7			
North Quadrant		South Quadrant		East Quadrant		West Quadrant	
C		C		C		C	
Topographic Factors				Section 26.8			
Topographic Feature							
Feature Type	Quadrant	H	L _h	X	Z		
2D Ridge	N	0.0	0.0	0.0	0.0		
Topographic Factors - Downwind							
Feature Type	Quadrant	H/L _h	x/L _h	K1	K2	K3	K _{zt}
2D Ridge	N	0	0	0.0	0.0	0.0	1.0
Topographic Factors - Upwind							
Feature Type	Quadrant	H/L _h	x/L _h	K1	K2	K3	K _{zt}
2D Ridge	N	0	0	0.0	0.0	0.0	1.0
Ground Elevation from Sea Level		Z=0.00 ft			User Defined		
Ground Elevation Factor		Ke=1.0000			Section 26.9		
Building Rigidity Factor		Rigid			Section 26.11.3, 26.11.4		
Gust Factor		G=0.85			Section 26.11.1, 26.11.3, 26.11.4		
Enclosure Classification		Enclosed			Section 26.12		
Internal Pressure Coefficient		+GCpi=0.18, -GCpi=-0.18			Table 26.13-1		



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Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - MWFRS Directional

Wind – Main Force Resisting System

Region - Region 1

Region 1 - Building Information

Region 1 - General Configuration

North-South Direction	240.0 ft	User Defined
East-West Direction	300.0 ft	User Defined
Gust Factor	G = 0.85	Section 26.11.1, 26.11.3, 26.11.4
Internal Pressure Coefficient	GC _{pi} =+/-0.18	Section 26.13

Region 1 - Levels and Parapets

Description	Elevation	Parapet
Roof	15.4 ft	No
High Parapet	19.4 ft	Yes
Low Parapet	17.4 ft	Yes

Region 1 - Roof Configuration

Roof Shape	Flat	User Defined
Roof slope	18.5°	User Defined
Low point of roof	20.0 ft	User Defined
High point of roof	24.0 ft	User Defined
Mean roof height	22.0 ft	User Defined

Region 1 - Wall Design Pressures (MWFRS)

Region 1 - Wall Cp Values

Wall Pressure Coefficients				
Wind Flow Direction	L/B	C _p , Windward	C _p , Leeward	C _p , Sidewalls
North	0.8	0.8	-0.5	-0.7
South	0.8	0.8	-0.5	-0.7
East	1.25	0.8	-0.45	-0.7
West	1.25	0.8	-0.45	-0.7

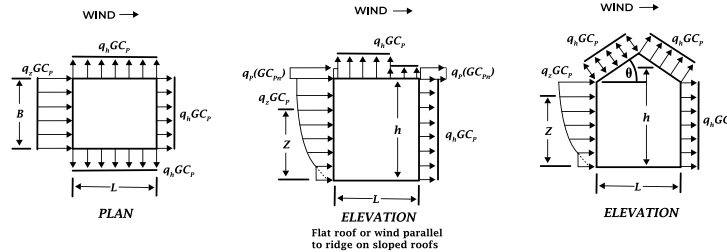
Region 1 - Wall Design Pressures – North-South Wind Flow (MWFRS)

$$p = q_h GC_p - q_i (GC_{pi})$$

ASCE 7-16, (27.3-1)



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Subject:	Structure 1 - Wind Load 1 - MWFRS Directional



Case 1 (+GCpi)

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewalls
Roof	15.4 ft	24.56 psf	26.48 psf	26.48 psf	11.94 psf	-16.02 psf	-20.52 psf
High Parapet	19.4 ft	25.79 psf	26.48 psf	26.48 psf	12.77 psf	-16.02 psf	-20.52 psf
Low Parapet	17.4 ft	25.2 psf	26.48 psf	26.48 psf	12.37 psf	-16.02 psf	-20.52 psf

Case 2 (-GCpi)

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewalls
Roof	15.4 ft	24.56 psf	26.48 psf	26.48 psf	21.47 psf	-6.49 psf	-10.99 psf
High Parapet	19.4 ft	25.79 psf	26.48 psf	26.48 psf	22.3 psf	-6.49 psf	-10.99 psf
Low Parapet	17.4 ft	25.2 psf	26.48 psf	26.48 psf	21.91 psf	-6.49 psf	-10.99 psf

Case Minimum¹

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewall
Roof	15.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf
High Parapet	19.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf
Low Parapet	17.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf

Notes

1. The wind load to be used in the design of the MWFRS for an enclosed or partially enclosed building shall not be less than **16psf** multiplied by the wall area of the building, and **8psf** multiplied by the roof area of the building projected onto a vertical plane normal to the assumed wind direction. Wall and roof loads shall be applied simultaneously. The design wind force for open buildings shall be not less than **16psf** multiplied by the area, A_f .

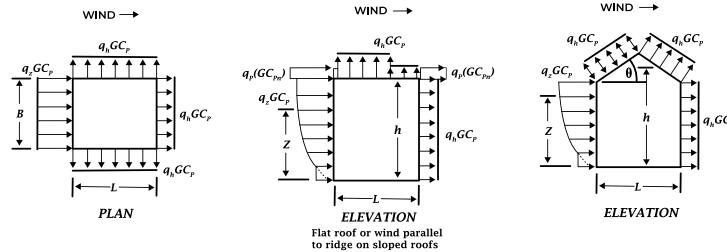
Region 1 – Wall Design Pressures – South-North Wind Flow (MWFRS)

$$p = q_h GC_p - q_i (GC_{pi})$$

ASCE 7-16, (27.3-1)



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Subject:	Structure 1 - Wind Load 1 - MWFRS Directional



Case 1 (+GCpi)

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewalls
Roof	15.4 ft	24.56 psf	26.48 psf	26.48 psf	11.94 psf	-16.02 psf	-20.52 psf
High Parapet	19.4 ft	25.79 psf	26.48 psf	26.48 psf	12.77 psf	-16.02 psf	-20.52 psf
Low Parapet	17.4 ft	25.2 psf	26.48 psf	26.48 psf	12.37 psf	-16.02 psf	-20.52 psf

Case 2 (-GCpi)

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewalls
Roof	15.4 ft	24.56 psf	26.48 psf	26.48 psf	21.47 psf	-6.49 psf	-10.99 psf
High Parapet	19.4 ft	25.79 psf	26.48 psf	26.48 psf	22.3 psf	-6.49 psf	-10.99 psf
Low Parapet	17.4 ft	25.2 psf	26.48 psf	26.48 psf	21.91 psf	-6.49 psf	-10.99 psf

Case Minimum¹

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewall
Roof	15.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf
High Parapet	19.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf
Low Parapet	17.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf

Notes

1. The wind load to be used in the design of the MWFRS for an enclosed or partially enclosed building shall not be less than **16psf** multiplied by the wall area of the building, and **8psf** multiplied by the roof area of the building projected onto a vertical plane normal to the assumed wind direction. Wall and roof loads shall be applied simultaneously. The design wind force for open buildings shall be not less than **16psf** multiplied by the area, A_f .

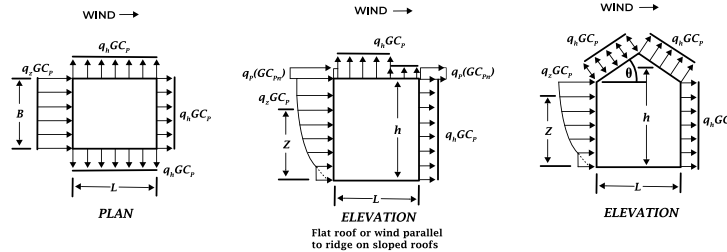
Region 1 - Wall Design Pressures - East-West Wind Flow (MWFRS)

$$p = q_h GC_p - q_i (GC_{pi})$$

ASCE 7-16, (27.3-1)



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FLAT, GABLE, HIP ROOF

Case 1 (+GCpi)

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewalls
Roof	15.4 ft	24.56 psf	26.48 psf	26.48 psf	11.94 psf	-16.02 psf	-20.52 psf
High Parapet	19.4 ft	25.79 psf	26.48 psf	26.48 psf	12.77 psf	-16.02 psf	-20.52 psf
Low Parapet	17.4 ft	25.2 psf	26.48 psf	26.48 psf	12.37 psf	-16.02 psf	-20.52 psf

Case 2 (-GCpi)

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewalls
Roof	15.4 ft	24.56 psf	26.48 psf	26.48 psf	21.47 psf	-6.49 psf	-10.99 psf
High Parapet	19.4 ft	25.79 psf	26.48 psf	26.48 psf	22.3 psf	-6.49 psf	-10.99 psf
Low Parapet	17.4 ft	25.2 psf	26.48 psf	26.48 psf	21.91 psf	-6.49 psf	-10.99 psf

Case Minimum¹

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewall
Roof	15.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf
High Parapet	19.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf
Low Parapet	17.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf

Notes

1. The wind load to be used in the design of the MWFRS for an enclosed or partially enclosed building shall not be less than **16psf** multiplied by the wall area of the building, and **8psf** multiplied by the roof area of the building projected onto a vertical plane normal to the assumed wind direction. Wall and roof loads shall be applied simultaneously. The design wind force for open buildings shall be not less than **16psf** multiplied by the area, A_f .

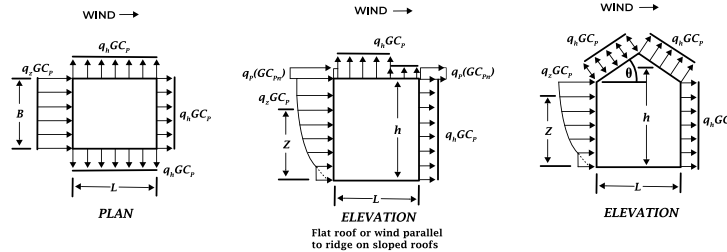
Region 1 - Wall Design Pressures - West-East Wind Flow (MWFRS)

$$p = q_h GC_p - q_i (GC_{pi})$$

ASCE 7-16, (27.3-1)



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FLAT, GABLE, HIP ROOF

Case 1 (+GCpi)

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewalls
Roof	15.4 ft	24.56 psf	26.48 psf	26.48 psf	11.94 psf	-16.02 psf	-20.52 psf
High Parapet	19.4 ft	25.79 psf	26.48 psf	26.48 psf	12.77 psf	-16.02 psf	-20.52 psf
Low Parapet	17.4 ft	25.2 psf	26.48 psf	26.48 psf	12.37 psf	-16.02 psf	-20.52 psf

Case 2 (-GCpi)

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewalls
Roof	15.4 ft	24.56 psf	26.48 psf	26.48 psf	21.47 psf	-6.49 psf	-10.99 psf
High Parapet	19.4 ft	25.79 psf	26.48 psf	26.48 psf	22.3 psf	-6.49 psf	-10.99 psf
Low Parapet	17.4 ft	25.2 psf	26.48 psf	26.48 psf	21.91 psf	-6.49 psf	-10.99 psf

Case Minimum¹

Level	Elevation	qz	qh	qi	Pwindward	Pleeward	Psidewall
Roof	15.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf
High Parapet	19.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf
Low Parapet	17.4 ft	N/A	N/A	N/A	16.0 psf	0 psf	0 psf

Notes

1. The wind load to be used in the design of the MWFRS for an enclosed or partially enclosed building shall not be less than **16psf** multiplied by the wall area of the building, and **8psf** multiplied by the roof area of the building projected onto a vertical plane normal to the assumed wind direction. Wall and roof loads shall be applied simultaneously. The design wind force for open buildings shall be not less than **16psf** multiplied by the area, A_f .

Region 1 - Parapet Design Pressures (MWFRS)

Region 1 - Parapet Design Pressures (MWFRS) – East - West Wind Flow



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
Project Id:	123-1112
Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - MWFRS Directional

$$p_p = q_p G C_{pn}$$

ASCE 7-16, (27.3-5)

Parapet Design Pressures (E/W)

Level	Elevation	Kd	qp	GCpn Windward	GCpn Leeward	Pwindward parapet	Pleeward parapet
High Parapet	19.4 ft	0.85	25.79 psf	1.5	-1.0	38.68 psf	-25.79 psf
Low Parapet	17.4 ft	0.85	25.2 psf	1.5	-1.0	37.81 psf	-25.2 psf

Region 1 - Parapet Design Pressures (MWFRS) - West - East Wind Flow

$$p_p = q_p G C_{pn}$$

ASCE 7-16, (27.3-5)

Parapet Design Pressures (W/E)

Level	Elevation	Kd	qp	GCpn Windward	GCpn Leeward	Pwindward parapet	Pleeward parapet
High Parapet	19.4 ft	0.85	25.79 psf	1.5	-1.0	38.68 psf	-25.79 psf
Low Parapet	17.4 ft	0.85	25.2 psf	1.5	-1.0	37.81 psf	-25.2 psf

Region 1 - Parapet Design Pressures (MWFRS) - North - South Wind Flow

$$p_p = q_p G C_{pn}$$

ASCE 7-16, (27.3-5)

Parapet Design Pressures (N/S)

Level	Elevation	Kd	qp	GCpn Windward	GCpn Leeward	Pwindward parapet	Pleeward parapet
High Parapet	19.4 ft	0.85	25.79 psf	1.5	-1.0	38.68 psf	-25.79 psf
Low Parapet	17.4 ft	0.85	25.2 psf	1.5	-1.0	37.81 psf	-25.2 psf

Region 1 - Parapet Design Pressures (MWFRS) - South - North Wind Flow

$$p_p = q_p G C_{pn}$$

ASCE 7-16, (27.3-5)

Parapet Design Pressures (S/N)

Level	Elevation	Kd	qp	GCpn Windward	GCpn Leeward	Pwindward parapet	Pleeward parapet
High Parapet	19.4 ft	0.85	25.79 psf	1.5	-1.0	38.68 psf	-25.79 psf
Low Parapet	17.4 ft	0.85	25.2 psf	1.5	-1.0	37.81 psf	-25.2 psf

Region 1 - Roof Design Pressures (MWFRS)

Region 1 - Roof Cp Values



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
Project Id:	123-1112
Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - MWFRS Directional

Case 1 (+GCpi) - Normal to Ridge - Section 27.3.2

Wind Flow Direction	h/L	Windward	Leeward
North	0.09	-0.36	-0.57
South	0.09	-0.36	-0.57
East	0.07	-0.36	-0.57
West	0.07	-0.36	-0.57

Case 2 (-GCpi) - Normal to Ridge - Section 27.3.2

Wind Flow Direction	h/L	Windward	Leeward
North	0.09	0.14	-0.57
South	0.09	0.14	-0.57
East	0.07	0.14	-0.57
West	0.07	0.14	-0.57

Case 1 (+GCpi) - Parallel to Ridge - Section 27.3.2

Wind Flow Direction	h/L	0 to h/2	h/2 to h	h to 2h	> 2h
North	0.09 psf	-0.9	-0.9	-0.5	-0.3
South	0.09 psf	-0.9	-0.9	-0.5	-0.3
East	0.07 psf	-0.9	-0.9	-0.5	-0.3
West	0.07 psf	-0.9	-0.9	-0.5	-0.3

Case 2 (-GCpi) - Parallel to Ridge - Section 27.3.2

Wind Flow Direction	h/L	0 to h/2	h/2 to h	h to 2h	> 2h
North	0.09 psf	-0.18	-0.18	-0.18	-0.18
South	0.09 psf	-0.18	-0.18	-0.18	-0.18
East	0.07 psf	-0.18	-0.18	-0.18	-0.18
West	0.07 psf	-0.18	-0.18	-0.18	-0.18

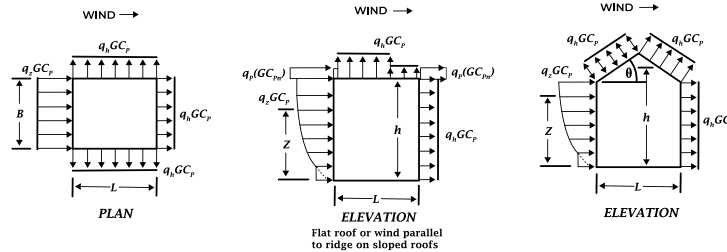
Region 1 – Roof Design Pressures (MWFRS)

$$p = q_h GC_p - q_i (GC_{pi})$$

ASCE 7-16, (27.3-1)



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
Project Id:	123-1112
Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - MWFRS Directional



FLAT, GABLE, HIP ROOF

Case 1 (+GCPi) - Normal to Ridge - Section 27.3.1

Wind Flow Direction	qh & qi	Windward	Leeward	Overhang
North	26.48 psf	-12.87 psf	-17.6 psf	5.14 psf
South	26.48 psf	-12.87 psf	-17.6 psf	5.14 psf
East	26.48 psf	-12.87 psf	-17.6 psf	5.14 psf
West	26.48 psf	-12.87 psf	-17.6 psf	5.14 psf

Case 2 (-GCPi) - Normal to Ridge - Section 27.3.1

Wind Flow Direction	qh & qi	Windward	Leeward	Overhang
North	26.48 psf	7.92 psf	-8.06 psf	25.92 psf
South	26.48 psf	7.92 psf	-8.06 psf	25.92 psf
East	26.48 psf	7.92 psf	-8.06 psf	25.92 psf
West	26.48 psf	7.92 psf	-8.06 psf	25.92 psf

Case Minimum^{1,2} - Normal to Ridge - Section 27.3.1

Wind Flow Direction	qh & qi	Windward	Leeward	Overhang
North	N/A	8.0 psf	0 psf	0 psf
South	N/A	8.0 psf	0 psf	0 psf
East	N/A	8.0 psf	0 psf	0 psf
West	N/A	8.0 psf	0 psf	0 psf

Case 1 (+GCPi) - Parallel to Ridge - Section 27.3.1

Wind Flow Direction	qh & qi	0 to h/2	h/2 to h	h to 2h	> 2h
North	26.48 psf	-25.02 psf	-25.02 psf	-16.02 psf	-11.52 psf



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
Project Id:	123-1112
Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - MWFRS Directional

South	26.48 psf	-25.02 psf	-25.02 psf	-16.02 psf	-11.52 psf
East	26.48 psf	-25.02 psf	-25.02 psf	-16.02 psf	-11.52 psf
West	26.48 psf	-25.02 psf	-25.02 psf	-16.02 psf	-11.52 psf

Case 2 (-GCPi) - Parallel to Ridge - Section 27.3.1

Wind Flow Direction	qh & qi	0 to h/2	h/2 to h	h to 2h	> 2h
North	26.48 psf	0.71 psf	0.71 psf	0.71 psf	0.71 psf
South	26.48 psf	0.71 psf	0.71 psf	0.71 psf	0.71 psf
East	26.48 psf	0.71 psf	0.71 psf	0.71 psf	0.71 psf
West	26.48 psf	0.71 psf	0.71 psf	0.71 psf	0.71 psf

Case Minimum^{1,2} - Parallel to Ridge - Section 27.3.1

Wind Flow Direction	qh & qi	0 to h/2	h/2 to h	h to 2h	> 2h
North	N/A	8.0 psf	8.0 psf	8.0 psf	8.0 psf
South	N/A	8.0 psf	8.0 psf	8.0 psf	8.0 psf
East	N/A	8.0 psf	8.0 psf	8.0 psf	8.0 psf
West	N/A	8.0 psf	8.0 psf	8.0 psf	8.0 psf

Notes

1. The wind load to be used in the design of the MWFRS for an enclosed or partially enclosed building shall not be less than **16psf** multiplied by the wall area of the building, and **8psf** multiplied by the roof area of the building projected onto a vertical plane normal to the assumed wind direction. Wall and roof loads shall be applied simultaneously. The design wind force for open buildings shall be not less than **16psf** multiplied by the area, A_f .
2. This load shall be applied horizontally onto the projected roof surface when considering the minimum load case.



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
Project Id:	123-1112
Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - Components & Cladding

Components and Cladding

C&C - Walls - Mean Roof Height ≤ 60 ft - Main Building

Mean Roof Height	$h = 22.0$ ft	Section 26.2
Roof Slope	$\theta = 1.19^\circ$	User Defined
Least Horizontal Dimension	LHD = 240.0 ft	User Defined
Velocity Pressure at mean roof height	$q_h = 26.48$ psf	Section 26.5.1
Internal Pressure Coefficient	$GC_{pi} = \pm 0.18$	Table 26.13-1
Edge Distance	$a = 9.6$	Section 30.3

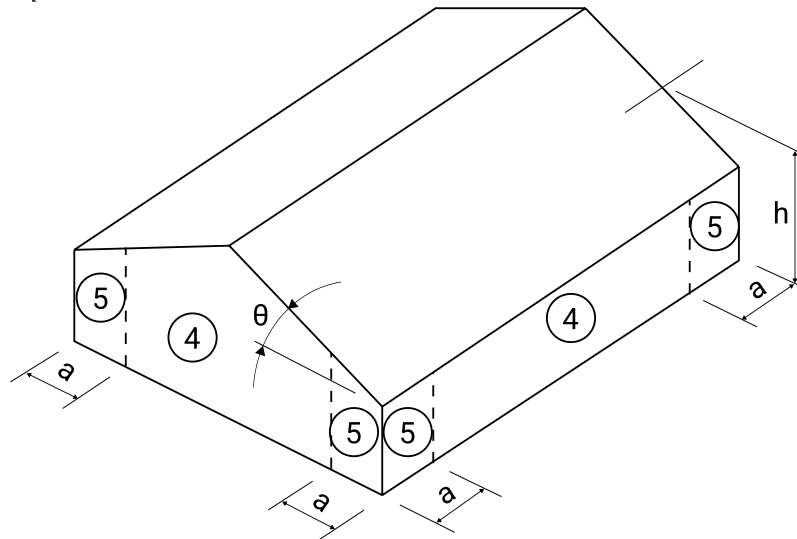
C&C - Walls - Mean Roof Height ≤ 60ft - Main Building - GCp Section 30.3

Effective Area	All Zones (+GCp)	4 (-GCp)	5 (-GCp)
20.0 sqft	0.85	-0.94	-1.16
90.0 sqft	0.75	-0.84	-0.96

C&C - Walls - Mean Roof Height ≤ 60ft - Main Building - Design Pressures

$$p = q(GC_p) - q_i(GC_{pi})$$

ASCE 7-16, (30.3-1)



Case 1 (+GCpi)

Effective Area	All Zones (+GCp)	Zone 4 (-GCp)	Zone 5 (-GCp)
20.0 sqft	17.8 psf	-29.71 psf	-35.6 psf
90.0 sqft	15.05 psf	-26.97 psf	-30.1 psf

Case 2 (-GCpi)



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
Project Id:	123-1112
Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - Components & Cladding

Effective Area	All Zones (+GCp)	Zone 4 (-GCp)	Zone 5 (-GCp)
20.0 sqft	27.33 psf	-20.18 psf	-26.06 psf
90.0 sqft	24.58 psf	-17.43 psf	-20.57 psf

Notes

1. Positive numbers mean towards the surface; negative numbers mean away from the surface.
2. Net C&C pressures shall not be less than ± 16 psf

C&C - Roofs

Enclosure Classification	Enclosed	<i>User Defined</i>
Mean Roof Height	h = 22.0 ft	<i>User Defined</i>
Roof Shape	Flat	<i>User Defined</i>
Roof Slope	$\theta = 1.19^\circ$	<i>User Defined</i>
Least Horizontal Dimension	LHD = 240.0 ft	<i>User Defined</i>
Velocity Pressure at mean roof height	qh = 26.48 psf	<i>Section 26.5.1</i>
Internal Pressure Coefficient	GCpi = ± 0.18	<i>Table 26.13-1</i>
Edge Distance	a = 9.6	<i>Section 30.3</i>

C&C - Roof - GCp Section 30.3**C&C - Roof -- Enclosed Building - GCp****Section 30.3**

Effective Area	All Zones (+GCp)	Zone 1	Zone 1'	Zone 2	Zone 3
50.0 sqft	0.23	-1.41	-1.05	-1.93	-2.46
125.0 sqft	0.2	-1.25	-0.85	-1.72	-2.04
350.0 sqft	0.2	-1.06	-0.63	-1.48	-1.56
500.0 sqft	0.2	-1.0	-0.55	-1.4	-1.4

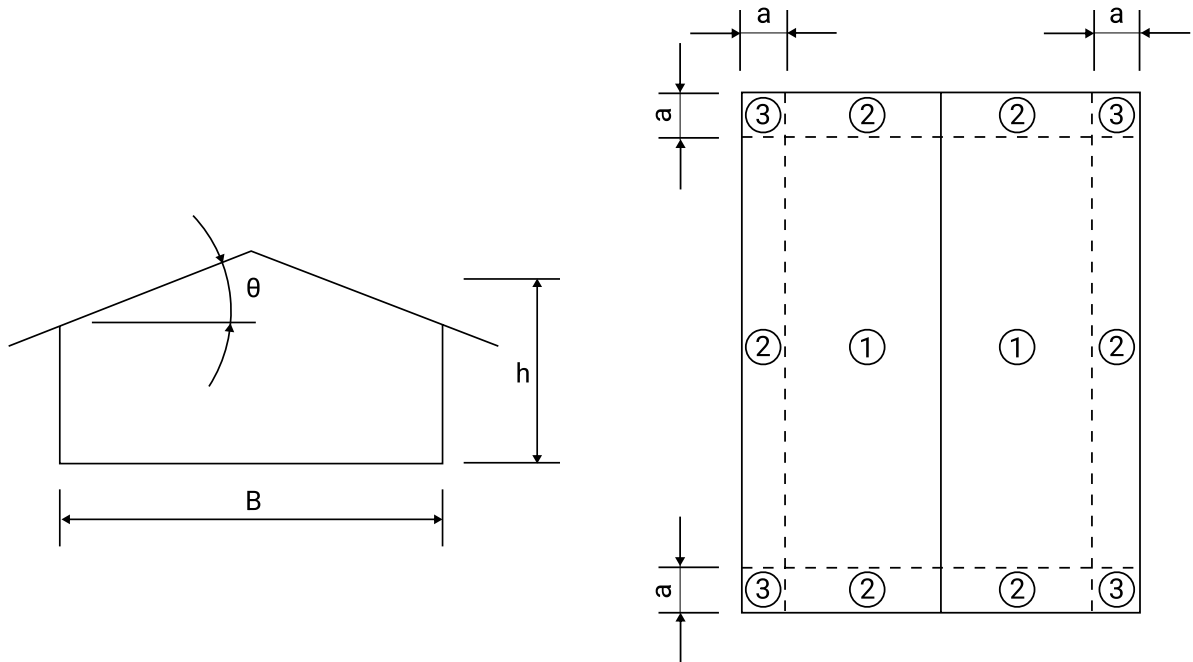
C&C - Roof - Design Pressures

$$p = q(GC_p) - q_i(GC_{pi})$$

ASCE 7-16, (30.3-1)



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
Project Id:	123-1112
Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - Components & Cladding

**Case 1 (+GCpi)**

Effective Area	All Zones (+GCp)	Zone 1	Zone 1'	Zone 2	Zone 3
50.0 sqft	1.33 psf	-42.16 psf	-32.58 psf	-55.87 psf	-69.89 psf
125.0 sqft	0.53 psf	-37.82 psf	-27.32 psf	-50.28 psf	-58.73 psf
350.0 sqft	0.53 psf	-32.94 psf	-21.4 psf	-44.01 psf	-46.18 psf
500.0 sqft	0.53 psf	-31.25 psf	-19.34 psf	-41.84 psf	-41.84 psf

Case 2 (-GCpi)

Effective Area	All Zones (+GCp)	Zone 1	Zone 1'	Zone 2	Zone 3
50.0 sqft	10.86 psf	-32.62 psf	-23.05 psf	-46.33 psf	-60.36 psf
125.0 sqft	10.06 psf	-28.28 psf	-17.78 psf	-40.75 psf	-49.2 psf
350.0 sqft	10.06 psf	-23.4 psf	-11.86 psf	-34.48 psf	-36.65 psf
500.0 sqft	10.06 psf	-21.71 psf	-9.81 psf	-32.31 psf	-32.31 psf

Notes

1. Positive numbers mean towards the surface; negative numbers mean away from the surface.
2. Net C&C pressures shall not be less than ± 16 psf

C&C - Parapets - Front Parapets

Mean Roof Height	$h = 22.0$ ft	Section 26.2
Roof Shape	Flat	User Defined
Roof Slope	$\theta = 1.19^\circ$	User Defined
Structure Width	$B = 240.0$ ft	User Defined



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
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Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - Components & Cladding

C&C – Parapet - Front Parapets - GCp Section 30.8

Top of Parapet Elevation	Effective Area	Wall Zone below parapet	Roof Zone at parapet ¹	Parapet Porosity	1	2	3	4
19.4 ft	40.0 sqft	Zone 4	Zone 2	Fully Enclosed	0.8	N/A	0.8	N/A
19.4 ft	40.0 sqft	Zone 5	Zone 3	Fully Enclosed	0.8	N/A	0.8	N/A
17.4 ft	30.0 sqft	Zone 4	Zone 2	Fully Enclosed	0.82	N/A	0.82	N/A
17.4 ft	30.0 sqft	Zone 5	Zone 3	Fully Enclosed	0.82	N/A	0.82	N/A

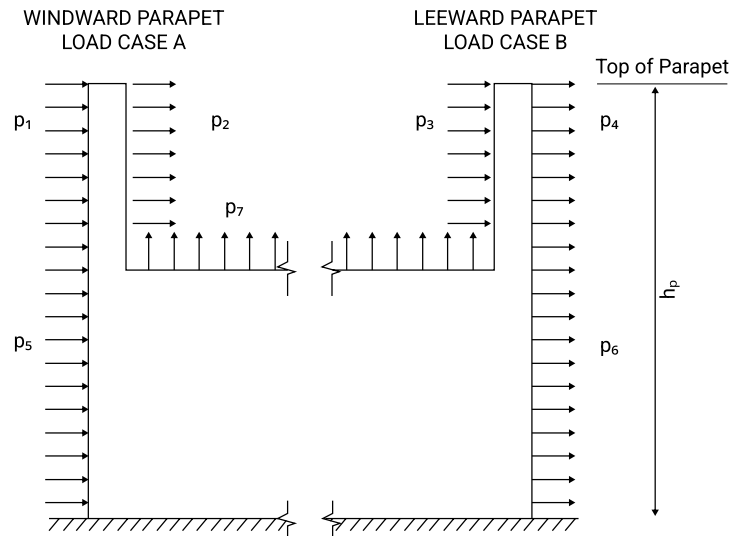
Notes

1. If more than one zone type exists for a particular zone (e.g. zone 2e and 2r), the worst case GCp is used for that zone.
2. GCp values are determined from the applicable wall and roof figures from the row's information provided.

C&C – Parapet - Front Parapets - Design Pressures

$$p = q(GC_{pn})$$

ASCE 7-16, (30.8-1)



Top of Parapet Elevation	Effective Area	Wall Zone below parapet	Roof Zone at parapet ¹	Parapet Porosity	1	2	3	4
19.4 ft	40.0 sqft	Zone 4	Zone 2	Fully Enclosed	16.1 psf	N/A	16.1 psf	N/A
19.4 ft	40.0 sqft	Zone 5	Zone 3	Fully Enclosed	16.1 psf	N/A	16.1 psf	N/A
17.4 ft	30.0 sqft	Zone 4	Zone 2	Fully	16.24 psf	N/A	16.24 psf	N/A



Project Title:	Joe's Tile Store Depot
Engineer:	ACB
Project Id:	123-1112
Structural Design Loads per:	IBC 2021
Subject:	Structure 1 - Wind Load 1 - Components & Cladding

	Enclosed							
17.4 ft	30.0 sqft	Zone 5	Zone 3	Fully Enclosed	16.24 psf	N/A	16.24 psf	N/A

Notes

1. If more than one zone type exists for a particular zone (e.g. zone 2e and 2r), the worst case GCp is used for that zone.
2. Net C&C pressures shall not be less than +/-16psf