ALAYON RESIDENCE

9875 SW 69TH COURT,
PINECREST, FL 33156

PROJECT # 23-206

09/14/2023

PREPARED BY: MA

DLG ENGINEERING, INC.
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WIMAL SUARIS LICENSE No 37369 STATE OF FLORIDA PROFESSIONAL ENGINEER

WIMAL SUARIS, P.E.
P.E. # 37369

Wimal Suaris

Digitally signed by Wimal Suaris
DN: cn=Wimal Suaris, c=US, o=DLG ENGINEERING, INC, email=rad@dlgengineering.com
Reason: I agree to the specified portions of this document
Date: 2024.03.05 12:37:54 -05'00'

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09/14/2023

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DESIGN CRITERIA

ALAYON RESIDENCE

1/24/2024

.2023 FLORIDA BUILDING CODE

ASCE 7-22

DEFLECTION LIMIT = L/180 IN.

ALLOWABLE STRESS OF ALUM WAS CHECKED W/O STRESS INCREASE OF 1/3:

ALUMUNIM: (PER SPEC 2 ALUM DESIGN MANUAL):

ALLOWABLE BENDING STRESS (Fb) (6063-T6) = 15000 PSI

ANCHORS WERE CHECKED W/O THE 1/3 INCREASE

ALL GLASS TO BE AS NOTED AND SPECIFIED ON PRODUCT APPROVALS (NOA)

IMPACT RESISTANT GLAZING:

LARGE MISSILE: UP TO 30 FT. ABOVE GRADE
SMALL MISSILE: ABOVE 30 FT. OF GRADE

SHOP DRAWINGS CHECKED FOR STRUCTURAL REQUIREMENTS ONLY

DLGE WILL NOT PROVIDE A STATEMENT OF INSPECTION OR LETTER OF COMPLIANCE UNLESS CALLED PRIOR TO INSTALLATION

Wind Loads Per ASCE 7-22

Wind Speed	175 mph	
Exposure	C	Open Terrain
Risk Category	II	All Buildings except I, III & IV
Building Width (ft)	50 ft.	
Building Length (ft)	100 ft.	
Building Height (ft)	22.1 ft.	
Roof Slope [Deg] :	11 °	> 10 degrees
Building Natural Freq.	3.4 $^{1}/_{sec.}$	Rigid Structure
Critical Damping Ratio	1.0 %	
Gust Factor x, y	0.878	0.863
Enclosure Clasificatior	Enclosed	
GCpi	0.18 +/-	
Region Type	Hurricane Prone	
Importance Factor	1	
Directionality Factor [Kd]	0.85	

INPUT PAGE FOR COMPONENTS & CLADDING LOADS

X
Kz^{II} = 1.00
Kzt = 1.00
Kd = 0.85
V = 175 mph
Occupancy Category II
q_Z = 66.78 x Kz psf
K_H = 0.92
q_H = 61.38 psf
a = 5.00 ft.

Y
Kz^{II} = 1.00
Kzt = 1.00
Kd = 0.85
V = 175 mph
Occupancy Category II
q_Z = 66.78 x Kz psf
K_H = 0.92
q_H = 61.38 psf
a = 5.00 ft.

Project :	**Alayon Residence, 9875 SW 69th Court,**			
	Pinecrest, FL 33156			
Project # :	**DLGE- 23-206**	**Date :**	**08/14/23**	
Prepared by :	**MA**			

DLG Engineering, Inc.
555 NE 15th St | Suite 21B
Miami, Florida
P: (305) 665-9089

ASCE 7-22 - Components & Cladding for Buildings Walls

Impact Protection :	Yes	Gcpi = +/- 0.18	Project :	Alayon Residence, 9875 SW 69tl	V [mph] :	175	Kzt :	1
Roof Slope [Deg.] :	11	> 10 degrees	Project # :	DLGE- 23-206	Exposure:	C	qh :	61.38
Roof Height [ft] :	22.1	ft w/h = 2.26	Date :	08/14/23	Import. :	1	a [ft.] :	5
Kh @ Roof :	0.92	Min. W = 50	Done by :	MA	Kd :	0.85	Type :	Enclosed

ID	Tributary Area	Height	Gcp Coefficients				Kh @ opening	Design Pressures, q [psf]							
			Zone 4		Zone 5			Zone 4				Zone 5			
			(+) ve	(-) ve	(+) ve	(-) ve		(+) Ult	(+) Allow	(-) Ult	(-) Allow	(+) Ult	(+) Allow	(-) Ult	(-) Allow
	10		1.00	1.10	1.00	1.40	0.92	72.4	43.5	78.6	47.1	72.4	43.5	97.0	58.2
	15		0.97	1.07	0.97	1.34	0.92	70.5	42.3	76.7	46.0	70.5	42.3	93.2	55.9
	20		0.95	1.05	0.95	1.29	0.92	69.2	41.5	75.3	45.2	69.2	41.5	90.5	54.3
	25		0.93	1.03	0.93	1.26	0.92	68.1	40.9	74.3	44.6	68.1	40.9	88.4	53.0
	30		0.92	1.02	0.92	1.23	0.92	67.3	40.4	73.4	44.0	67.3	40.4	86.6	52.0
	35		0.90	1.00	0.90	1.21	0.92	66.5	39.9	72.7	43.6	66.5	39.9	85.2	51.1
	40		0.89	0.99	0.89	1.19	0.92	65.9	39.5	72.0	43.2	65.9	39.5	83.9	50.4
	45		0.88	0.98	0.88	1.17	0.92	65.3	39.2	71.5	42.9	65.3	39.2	82.8	49.7
	50		0.88	0.98	0.88	1.15	0.92	64.9	38.9	71.0	42.6	64.9	38.9	81.8	49.1
	55		0.87	0.97	0.87	1.14	0.92	64.4	38.6	70.5	42.3	64.4	38.6	80.9	48.6
	65		0.86	0.96	0.86	1.11	0.92	63.6	38.2	69.8	41.9	63.6	38.2	79.4	47.6
	70		0.85	0.95	0.85	1.10	0.92	63.3	38.0	69.4	41.6	63.3	38.0	78.7	47.2
	100		0.82	0.92	0.82	1.05	0.92	61.6	37.0	67.7	40.6	61.6	37.0	75.3	45.2
	500		0.70	0.80	0.70	0.80	0.92	54.0	32.4	60.2	36.1	54.0	32.4	60.2	36.1

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PROJECT #: 23-206	CLIENT: READY WINDOWS	
PROJECT NAME: ALAYON RESIDENCE		
DATE: 8/14/2023	DESIGNED BY: MA	CHECKED BY: JRO

DESCRIPTION:
2X5 MULLION
OPENINGS: D

CA-1

Horizontal Mullion Comparative Analysis

Comparative Analysis of : MULLION

Tested Mullion		**New Mullion**	
Test RPT# :	FTL-3810, FTL-3819, FTL-3820		
Tested Cyclic Load:			
(+):	**150 psf**		
(-):	**150 psf**		
Test Size :	**W [in.] x H [in.]**	**New Size :**	**W [in.] x H [in.]**
	72 x 84		73 x 73 3/8
Number of Panels	**1**	**Number of Panels :**	**1**
Area :	**42.00 ft²**	**Area :**	**37.20 ft²**
p_1 (Ext.) :	**64.5 psf (Design)**		
p_1 (Int.) :	**64.5 psf (Design)**		
			TRIBUTARY AREA NOT EXCEEDED.
K_1 [W/(2L)]=	**0.429**	**K_2 [W/(2L)]=**	**0.497**
K_{D1} =	**60.4222**	**K_{D2} =**	**60.0088**
K_{F1} =	**6.0561**	**K_{F2} =**	**6.0007**

Deflection Check

p2 = 94.794 psf - [Exterior Pressure Load]

94.794 psf - [Interior Pressure Load]

Fiberstress Check

p2 = 82.61 psf - [Exterior Pressure Load]

82.61 psf - [Interior Pressure Load]

Concetrated Load Check

p2 = 72.83 psf - [Exterior Pressure Load]

72.83 psf - [Interior Pressure Load]

Maximum Allowable Design Load

p2 = 72.83 psf - [Exterior Pressure Load]

72.83 psf - [Interior Pressure Load]

THE MAXIMUM ALLOWABLE DESIGN LOAD OF +/- 72.83 PSF EXCEEDS THE PROJECT SPECIFIC DESIGN LOAD OF +43.5/-47.1 SF.
THEREFORE, THE MULLION IS OK.

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PROJECT #: 23-206	CLIENT: READY WINDOWS	
PROJECT NAME: ALAYON RESIDENCE		
DATE: 8/14/2023	DESIGNED BY: MA	CHECKED BY: JRO

DESCRIPTION:
2X5 MULLION
OPENINGS: E

CA-2

Horizontal Mullion Comparative Analysis

Comparative Analysis of : MULLION

Tested Mullion		**New Mullion**	
Test RPT# :	FTL-3810, FTL-3819, FTL-3820		
Tested Cyclic Load:			
(+):	**150 psf**		
(-):	**150 psf**		
Test Size :	**W [in.] x H [in.]**	**New Size :**	**W [in.] x H [in.]**
	72 x 63		109.25 x 38 1/4
Number of Panels	**1**	**Number of Panels :**	**1**
Area :	**31.50 ft²**	**Area :**	**29.02 ft²**
p_1 (Ext.) :	**102.6 psf (Design)**		
p_1 (Int.) :	**102.6 psf (Design)**		
K_1 [W/(2L)]=	**0.500**	**K_2 [W/(2L)]=**	**0.500**
K_{D1} =	**60.0000**	**K_{D2} =**	**60.0000**
K_{F1} =	**6.0000**	**K_{F2} =**	**6.0000**

TRIBUTARY AREA NOT EXCEEDED.

Deflection Check

p2 = 302.124 psf - [Exterior Pressure Load]

302.124 psf - [Interior Pressure Load]

Fiberstress Check

p2 = 183.43 psf - [Exterior Pressure Load]

183.43 psf - [Interior Pressure Load]

Concetrated Load Check

p2 = 111.37 psf - [Exterior Pressure Load]

111.37 psf - [Interior Pressure Load]

Maximum Allowable Design Load

p2 = 111.37 psf - [Exterior Pressure Load]

111.37 psf - [Interior Pressure Load]

THE MAXIMUM ALLOWABLE DESIGN LOAD OF +/- 111.37 PSF EXCEEDS THE PROJECT SPECIFIC DESIGN LOAD OF +43.5/-58.2 SF.
THEREFORE, THE MULLION IS OK.

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PROJECT #: 23-206	CLIENT: READY WINDOWS	
PROJECT NAME: ALAYON RESIDENCE		
DATE: 8/14/2023	DESIGNED BY: MA	CHECKED BY: JRO

DESCRIPTION:
2X6 MULLION
OPENINGS: C

CA-3

Horizontal Mullion Comparative Analysis

Comparative Analysis of : MULLION

	Tested Mullion		New Mullion	
Test RPT# :	FTL-3810, FTL-3819, FTL-3820			
Tested Cyclic Load:				
(+):	150 psf			
(-):	150 psf			
Test Size :	W [in.] x H [in.]		New Size :	W [in.] x H [in.]
	54 x 120			55 x 109
Number of Panels	1	Area : 45.00 ft^2	Number of Panels :	1 Area : 41.63 ft^2
p_1 (Ext.) :	54.4 psf (Design)			
p_1 (Int.) :	54.4 psf (Design)			
K_1 [W/(2L)]=	0.225		**K_2 [W/(2L)]=**	0.252
K_{D1} =	64.5182		**K_{D2} =**	63.6519
K_{F1} =	6.6359		**K_{F2} =**	6.5221

TRIBUTARY AREA NOT EXCEEDED.

Deflection Check

p2 = 70.311 psf - [Exterior Pressure Load]

70.311 psf - [Interior Pressure Load]

Fiberstress Check

p2 = 63.62 psf - [Exterior Pressure Load]

63.62 psf - [Interior Pressure Load]

Concetrated Load Check

p2 = 58.80 psf - [Exterior Pressure Load]

58.80 psf - [Interior Pressure Load]

Maximum Allowable Design Load

p2 = 58.80 psf - [Exterior Pressure Load]

58.80 psf - [Interior Pressure Load]

THE MAXIMUM ALLOWABLE DESIGN LOAD OF +/- 58.8 PSF EXCEEDS THE PROJECT SPECIFIC DESIGN LOAD OF +43.5/-47.1 SF.
THEREFORE, THE MULLION IS OK.