# L. Roberto Lomas P.E.

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## Test Report:

Product: 6'8" and 8'0" opaque door two-piece steel frame

## Scope:

This analysis provides calculations, quantities, and spacing requirements for installing product to substrate, and it applies only to the product described herein. These calculations comply with requirements of the Florida Building Code.

Anchor capacity in w	ithdrawal or pullou	t cond	ition:				
	Fastener type: #	8	Wood scr	rew	(NDS 2012, NDS 2015)		
	Wood screw length:		1.50	in	Screw diameter: D=	0.164 ii	ı
	Thread length:		1.000	in	Embedment:	1.50 ii	ı
	Main member type: S	pruce-Pi	ne-Fir		Effective embedment: p <sub>m</sub> =	1.000 ii	ı
Tabulated wit	thdrawal design value:	W =	82	lbs/in	Duration Factor: $C_{\rm D}$ =	1.60	
Allowable Do	esign Value (Wp <sub>m</sub> C <sub>D</sub> ):	W' =	131	lbs/anch	or		
	Fastener type:	#10	Tek scre	w			
	Substrate:	18	GA, Stee	I			
Та	abulated design value:	W=	499	lbs			
	Safety factor:	F₅=	4				
Allowable	Design Value (WF <sub>5</sub> ):	W'=	124	lbs/anch	or		
	Fastener type:	#10			(Calculations per 2015 Aluminum Design Manual)		
Nor	minal screw diameter:	D	0.190	in	Nominal hole diameter:	Dh	0.142 in
	Root diameter:	Dr	0.138	in	Thread stripping area:	A <sub>sn</sub>	0.401 in <sup>2</sup>
Nominal	screw head diameter:	Dws	0.359	in	Root area:	Ar	0.0149 in <sup>2</sup>
Screw nominal ter	nsile strength (.75F <sub>u</sub> ):	F <sub>nt</sub>	90	ksi	Full thread engagement:	Le	0.060 in
Screw	v location coefficient:	С	1.0		Safety factor:	Ω	3
Si	de member material: M	etal fro	ming		Main member material:	Metal fram	ning
	Thickness:	<b>†</b> 1	0.036	in	Thickness:	†2	0.060 in
Ultin	nate tensile strength:	F <sub>tu2</sub>	70.00	ksi	Yield strength:	F <sub>ty2</sub>	50.00 ksi
т	Thickness coefficient:	K₅	1.01		Ultimate tensile strength:	F <sub>tu2</sub>	70.00 ksi
Screw tension calculations	:						
Mode 1 (pull out): If 0.06<=Le<=.125 th		ien $R_n = K_s DL_e F_{ty2}$			If 0.125 <le<.25 rn="(1.2DFty2(0.25-&lt;/td" then=""><td>t<sub>c</sub>)+1.16A<sub>sn</sub>F<sub>t</sub></td><td><sub>u2</sub>(L<sub>e</sub>-0.125))</td></le<.25>	t <sub>c</sub> )+1.16A <sub>sn</sub> F <sub>t</sub>	<sub>u2</sub> (L <sub>e</sub> -0.125))
	If 0.25<=Le<=0.375 th	en R <sub>n</sub> =0.	58A <sub>sn</sub> t <sub>c</sub> F <sub>tu</sub>	12	Mode 1:	R <sub>n</sub> =	575 lbs
Mode 2 (pull over):	$R_n = Ct_1F_{tu1}(D_{ws}-D_h)$				Mode 2:	R <sub>n</sub> =	546 lbs
Mode 3 (ultimate tensile ca	pacity): R <sub>r</sub>	=F <sub>tu</sub> A <sub>r</sub> /1	1.25		Mode 3:	R <sub>n</sub> =	1075 lbs
Allowable	withdrawal capacity:	W:	182	lbs/anch	or		

Minimum anchor capacity: 124 lbs/anchor for head and jambs anchoring



Luis R. Lomas P.E. FL No.: 62514 12/12/2017

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1432 Woodford Rd. Lewisville, NC 27023 434-688-0609 rllomas@lrlomaspe.com Manufacturer: Masonite Report #: 512746B Date: 12/12/2017

## Test Report:

Product: 6'8" and 8'0" opaque door two-piece steel frame

#### Scope:

This analysis provides calculations, quantities, and spacing requirements for installing product to substrate, and it applies only to the product described herein. These calculations comply with requirements of the Florida Building Code. Anchor capacity in shear condition:

Fastener type: 1	/4 ITW Taj	pcon	Tabulate	d values	
Ν	J.O.A. 16-122	22.06	edge	spacir	ng (in)
Substrate: C	Concrete		distance	2.00	4.00
Minimum embedment:	1.75 in		1.50	248	303
Actual edge distance:	2.50 in		3.00	345	421
Actual C To C spacing: Allowable Design Value:	6.00 in Z''=	382 lbs/anchor (per interpolation	when neede	:d)	
Minimum anchor co	apacity:	382 lbs/anchor			

Note: Anchors with the least capacity is used for calculations to qualify anchors with higher capacity.

## Anchor calculations, minimum required anchors

Single door 40x82 5/16



#### Double door 76x82 5/16"



#### Single door 40x98 5/16



					psf	55.0	ressure:	Design p					
	Pesult	Anchor			Anchor			Max.	Ind.	Ind.	Load	Area	Zone
	Result	(lbs)	Qty	(lbs)	O.C. (in)	0.C. (in)	(in)	(in)	(lbs)	(f†²)	Zone		
head	OK	76	2	124	N1/4	N1/4	153	2.8	٨				
sill	OK	76	2	382		IN/A	155	2.0	$\mathbf{A}_1$				
jambs	OK	60	10	124	10.13	6.00	598	10.9	A <sub>2</sub>				

#### ANCHOR UNITS AS FOLLOWS:

1. FOR ANCHORING HEAD AND JAMBS INTO WOOD FRAMING OR 2X BUCK USE #8 WOOD SCREWS WITH SUFFICIENT LENGTH TO ACHIEVE A 1 1/4" MINIMUM EMBEDMENT INTO SUBSTRATE. LOCATE ANCHORS AS SHOWN IN INSTALLATION DRAWING DWG-MA-FL0178-11 AND DWG-MA-FL0179-11

- 2. FOR ANCHORING HEAD AND JAMBS INTO METAL FRAMING USE #10 SELF DRILLING SCREWS WITH SUFFICIENT LENGTH TO ACHIEVE 3 THREADS MINIMUM BEYOND STRUCTURE INTERIOR WALL. LOCATE ANCHORS AS SHOWN IN INSTALLATION DRAWING DWG-MA-FL0178-11 AND DWG-MA-FL0179-11
- 3. FOR ANCHORING SILL INTO MASONRY/CONCRETE USE 1/4" TAPCONS WITH SUFFICIENT LENGTH TO ACHIEVE A 1 1/4" MINIMUM EMBEDMENT INTO SUBSTRATE WITH 2 1/2" MINIMUM EDGE DISTANCE. LOCATE ANCHORS AS SHOWN IN INSTALLATION DRAWING DWG-MA-FL0178-11 AND DWG-MA-FL0179-11

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	Area	Lood	Trad	Max		Anchor			
Zone	/(2)		Lind.	Mux.	Cap.	<b>Ct</b> <i>i</i>	Load	Result	
	(11)	(IDS)	(IN)	0.c. (in)	(lbs)	QIY	(lbs)		
٨	2.8	193	N1/4	N1/4	124	2	92	OK	head
$n_1$	2.0	105	IN/A	IN/A	382	2	92	OK	sill
A <sub>2</sub>	8.7	571	6.00	10.13	124	8	71	OK	jambs

Design	pressure:	66.0	psf	Ν	Jumber o Pan	f panels: el width:	2 38.0	in	
Zone	Area (ft <sup>2</sup> )	Load (Ibs)	Ind. (in)	Max. O.C. (in)	Cap. (lbs)	Anchor Qty	Load (Ibs)	Result	
<b>A</b> <sub>1</sub>	13 /	992	N1/4	N1/4	124	8	110	ОК	he
	15.4	002	INZA		382	4	221	OK	sil
A <sub>2</sub>	8.4	552	6.0	10.13	124	8	69	OK	jar