NORANDEX/REYNOLDS DISTRIBUTION COMPANY
45 4 30TH S REET WES
BRADENTON FLORIDA 34207
94 755 '9 FAX: 94 751 7405

April 1, 2002

Mr. Alan C. Plante
Chief Plans Examiner
Building Division
Orange County Government
201 S. Rosalind Ave.
Orlando, Florida 33802-2687

Dear Mr. Plante:

This is to confirm that Norandex/Reynolds Distribution Company, AAMA and AAMA's Validator, Associated Laboratories Inc., use the attached Load Analysis Formulae and Derivations to determine the fiber stresses, deflections and concentrated loads for windows and doors (See attached Derivations). We also use the " Structural Engineering Handbook " by Edwin and Charles Gaylord, Third Edition and The Aluminum Association's " Aluminum Construction Manual. "

As requested, also attached are:

1) Three typical AAMA labels used by Norandex on windows and doors

2) Product Designations, Section 1.2.1. from AAMA / NWWDA 101 / I. S. 2 – 97

3) The required number of fasteners is calculated by:

Required Number of Fasteners =

Load Area in square feet x Design Pressure / Design Shear Strength of Fasteners

4) Note: The number of fasteners is rounded up.

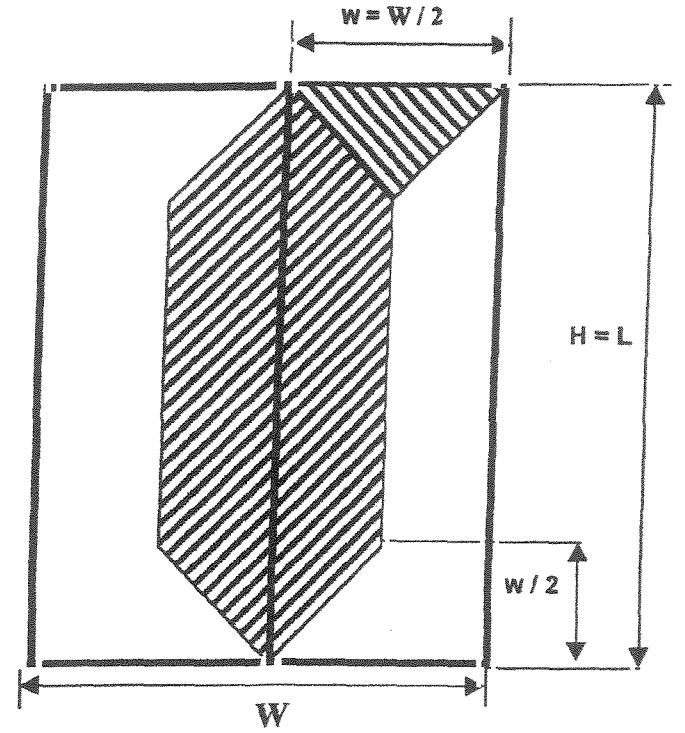
Sincerely,

Charles A. Pagen, P. E., Ph. D.

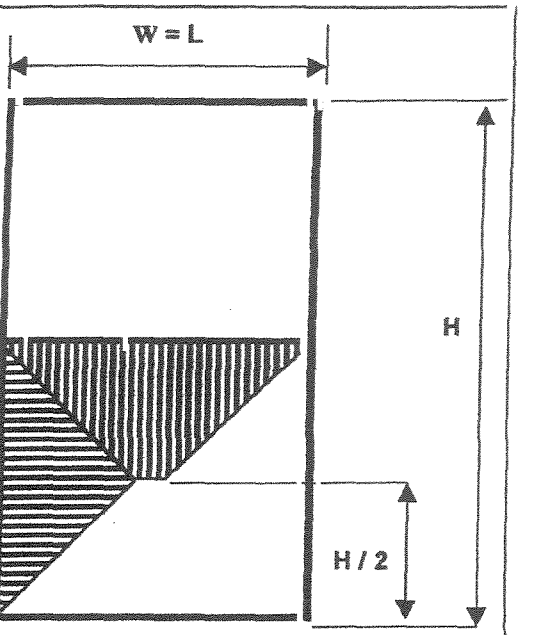
Florida Professional Engineer # 49121

Attachments

LOAD ANALYSIS FORMULAE & DERIVATIONS



SLIDING GLASS DOOR OR SLIDING WINDOW



SINGLE OR DOUBLE HUNG WINDOW

If the unit is not balanced (equal on both sides of the meeting rail), use the AAMA Procedural Guide as a reference to determine the K factors.

GENERAL DERIVATIONS

FIBERSTRESS	DEFLECTIONS	CONCENTRATED LOAD
$f = M / S$	$D = T_1L^3 / K_DEI$	
$M = T_1L / K_f$	$D = L / X^2$	
$f = T_1L / K_fS = PAL / K_fS$	$L / X = PAL / K_DEI$	$C = PA / 2$
For $f_1 = f_2$	For $X_1 = X_2$	For $C_1 = C_2$
$P_1A_1L_1 / K_{f1}S_1 = P_2A_2L_2 / K_{f2}S_2$	$K_{D1}EI / P_1A_1L_1^2 = K_{D2}EI / P_2A_2L_2^2$	$P_1A_1 / 2 = P_2A_2 / 2$
Since $S_1 = S_2$		
$P_2 = P_1A_1L_1 / K_{f1}S_1 / A_2L_2 / K_{f2}S_2$	$P_2 = P_1A_1L_1^2 K_{D2} / A_2L_2^2 K_{D1}$	$P_2 = P_1A_1 / A_2$

f = Fiberstress – psi
M = Moment – in.lb.
S = Section Modulus – in^3
T_1 = Total Load – lbs.
P = Load – psf
A = Tributary Area – $ft.^2$
L = Span – in.
K_f = Moment Coefficient
K_D = Deflection Coefficient
I = Moment of Inertia – $in.^4$
W = Width
H = Height
P_1 = Design Pressure (tested unit)
P_2 = Design Pressure (compared unit)

$K_D = (1920 - (1920 * C)) / ((25 - (40 * C^2)) + (16 * C^4))$
$K_f = (24 - (24 * C)) / (3 - (4 * C^2))$

C. Hagen, P.E.
49121
4/1/02