wind load design

Mullion deflection is limited per AAMA TIR-A11-04
deflection is limited to \( \frac{L}{175} \) for spans up to 13'-6"
and \( \frac{L}{240} \) for spans beyond 13'-6"

allowable stress for 6063-T6 aluminum alloy = 15000 p.s.i.
allowable stress for A-36 steel = 21600 p.s.i.

maximum deflection was based on the following equation:
\[
\Delta = \frac{5WL^3}{384EI}
\]
maximum bending moment was based on the following equation:
\[
M = \frac{WL}{8}
\]

assumptions:
\( W \) = total uniform load
\( L \) = length of mullion between anchors
\( E \) = 10 \( \times \) 10^8 p.s.i.
\( I \) = moment of inertia of the mullion
\( M \) = maximum bending moment

* mullions are assumed to have equal size glass lights each side
check with local code requirements for acceptance of AAMA TIR-A11
CURVE REPRESENTATION
A = 20 P.S.F.
B = 25 P.S.F.
C = 30 P.S.F.
D = 35 P.S.F.
E = 40 P.S.F.

PLCW-1000 SERIES
2 1/2" x 10"
FULL SCALE

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dead load design

horizontal mullion deflection is limited to L/360 or 1/8" (whichever is less) curves represent limitations based on 2 point loads, equal in magnitude both located at 1/8 or 1/4 point of the horizontal mullions length

allowable stress for 6063-T6 aluminum alloy = 15000 p.s.i.
allowable stress for A-36 steel = 21600 p.s.i.

maximum deflection was based on the following equation:

\[ \Delta = \frac{Pa}{24EI} \left(3L^2 - 4a^2\right) \]

maximum bending moment was based on the following equation:

\[ M = Pa \]

assumptions:
P = 1/2 glass weight
a = 1/4 or 1/8 point of span (in inches)
E = 10 X 10^6 p.s.i.
I = moment of inertia of the mullion
L = length of horizontal mullion