Rational Analysis of Royston Architectural Elements Door and Window

Cronin Engineering Inc. has evaluated the Royston entry door by rational analysis.

Door Components

1. Steel frame 0.125" typ. wall thickness
2. 2" Door frame design
3. 1/2" Clear Insulated consisted of:
    - 3/16" CL-T
    - 0.090" PVB 0.090CL
    - 3/16" CL-T

Fastening details

The minimum number of anchors to be used is in accordance with the shop drawing's anchor layout consisting of a masonry substrate will use 1/4" redheads, or similar, at a length that ensures a minimum embedment depth into masonry of 1-3/4". For wood frame substrate a #10 wood screw, or similar, at a length that ensures a minimum embedment depth into the wood substrate of 1-1/2".

The impact rating and the design pressures of the glazing was determined by comparison to Palm City Ironworks Stile Door. Royston and Palm City doors have similar glazed areas, and both doors use the same glass specifications 1/2" clear insulated glass as described above. Palm City doors have been approved for large missile impact using this glass specification.

Based in the characteristics of the components of Royston door and by engineering calculations, I have determined that these elements are adequate to withstand design pressures of +50/-50 psf, and the glass is adequate to resist large missile impact per comparison to Cantera door.

We have provided signed and sealed drawings showing the specifications of the door assembly.

Therefore, I certify that the Royston door will withstand a design pressure of +50/-50 psf.

Site specific project:
Commercial Office
2659 Professional Circle, Naples, FL 34119
Design pressures for this specific location, considering an ultimate wind speed of 160 MPH, are +24.1/-26.4 psf for a door located on a zone 4.
Therefore, the entry door meets and exceeds the design pressures for this specific location.

Should you have any question, please feel free to contact me at (239) 593-2157.

DEREK P. CRONIN LICENSE No. 55382 STATE OF FLORIDA PROFESSIONAL ENGINEER

Derek Cronin

Digitally signed by Derek Cronin
Date: 2023.03.08 13:44:09 -05'00'

Derek Cronin, PE
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