File :   Kieffer1033b.mcd

Site :   Hampton Inn & Suites
          5740 North State Road 7
          Coconut Creek, Florida 33073

Sign Type :   2'-6" x 4'-1" x 1'-0" deep six sided ID sign for installation into 5'-0" overall height x 6'-6" wide x 8" deep
               twin pole monument, by others.
               Drawing No. 1404057 rev. A

Design loads are based on the 2010 Florida Building Code (ASCE 7-10) using Exposure C and 170 mph winds.

Design Wind Speed : (mph.) $V := 170.0$ Based on Risk Category II

Velocity Pressure Coefficient at a Height of Less Than 15', Exposure C : $Kz := 0.85$ Based on Table 30.3-1

Topographic Factor : $Kzt := 1.00$ Based on Table 26.8-1

Wind Directionality Factor : $Kd := 0.85$ Based on Table 26.6-1

Velocity Pressure : (PSF) $qz := 0.00256 \cdot Kz \cdot Kzt \cdot Kd \cdot V^2$ $qz = 53.453$ Based on 30.3-1

Force Coefficient : $Cf := 1.80$ Based on Figure 29.4-1

Gust Effect Factor : $G := 0.85$ Based on 26.9.4 for Other Structures

Load Combination Factor : $LCF := 0.60$ Based on 2.4.1, Case 7

Design Pressure : (PSF) $F := qz \cdot Cf \cdot G \cdot LCF$ $F = 49.07$ Use : $WL := 49.1$

Reference :   Manual of Steel Construction, AISC 13th Edition.

Mounting Bolts :   18-8 Stainless Steel   Fu = 60.0 ksi. ;   Ft = 20.00 ksi. ;   Fv = 10.00 ksi.
                                                                                (Threads included in shear plane.)

          <u>Design Loads :</u>

                  <u>Dead Load :</u>

Based on 12.5 lbs./sq.ft. : $ShrDL := (2.5 \cdot 4.08) \cdot 12.5$ $ShrDL = 127.5$ lbs.

                  <u>Wind Load :</u>

Suction : $ShrWL := (2.5 \cdot 4.08) \cdot WL$ $ShrWL = 500.82$ lbs.

          <u>Design of Mounting Bolts :</u>

Mounting Bolt Diameter : (in.) $MntBltDia := 0.375$

Stress Area : (in.²) $MntBltArea := \dfrac{\pi \cdot MntBltDia^2}{4}$ $MntBltArea = 0.11$
(Based on nominal diameter per AISC 4-3)

Allowable Tension : (lbs.) $AllwTen := 20000 \cdot MntBltArea$ $AllwTen = 2209$

Allowable Shear : (lbs.) $AllwShr := 10000 \cdot MntBltArea$ $AllwShr = 1104$

Number of Mounting Bolts in Shear : $NoShr := 4$
(There are two mounting bolts top and bottom.)

Shear per Mounting Bolt : (lbs.) $ShrMntBlt := \dfrac{ShrWL}{NoShr}$ $ShrMntBlt = 125.205$

Number of Mounting Bolts in Tension : $NoTen := 2$

Tension Load per Mounting Bolt : (lbs.) $TenMntBlt := \dfrac{ShrDL}{NoTen}$ $TenMntBlt = 63.75$

Unity Check :
Mounting Bolts $UCMntBlt := \dfrac{ShrMntBlt}{AllwShr} + \dfrac{TenMntBlt}{AllwTen}$ $UCMntBlt = 0.142$ $<$ 1.00 OK

Note :   Use 3/8" diameter 18-8 Stainless Steel self drilling, self tapping hex washer head TEK screws.