

Base Plate Report

Date: 2021/04/04



Base Plate Data

Base Plate Width: 50 cm

Base Plate Height: 50 cm

Base Plate Thickness: 20 mm

Column Type: I Shape

Column Flange Width: 15 cm

Column Flange Thickness: 20 mm

Column Web Width: 20 cm

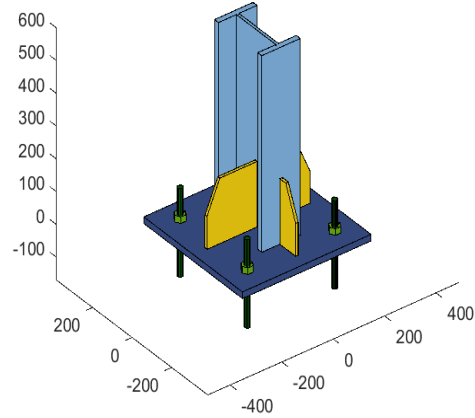
Column Web Thickness: 10 mm

Base Plate Force Type: Manual Forces

Anchor Diameter: 20 mm

Stiffeners Start Height: 20 cm

Number of Stiffeners Y: 1



Number of Anchors: 4

Stiffeners End Height: 10 cm

Number of Stiffeners X: 1

Design Preferences

Plate Fy: 2400 kgf/cm²

Foundation Fc: 250 kgf/cm²

Anchor Fu: 6000 kgf/cm²

Design Codes: AISC360-05, AISC341-05

Weld Fue: 4200 kgf/cm²

Foundation Ec: 255002 kgf/cm²

Anchor Es: 2039432 kgf/cm²

Forces

Pu: 0 kgf

Mu X: 0 kgf.cm

Vu X: 0 kgf

Mu Y: 0 kgf.cm

Vu Y: 0 kgf

Footing Bearing Stress Check

Fc = 250 kgf/cm²

A1 = 2500 cm²

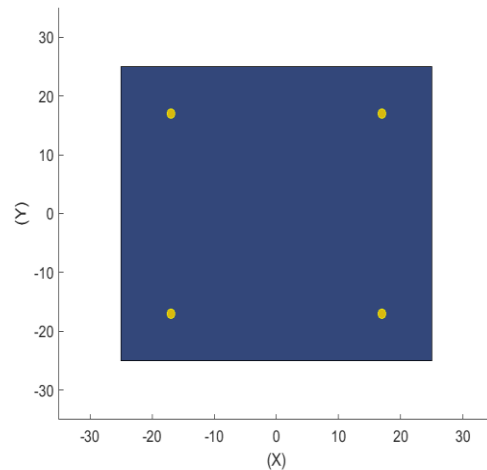
A2 = 10000 cm²

φ = 0.65

Fp = $0.85F_c\sqrt{A_2/A_1}$ = 425.00 kgf/cm²

Fup = 0.00 kgf/cm²

Fup/φFp = **0.000** **OK**



Anchors Shear Stress Check

Anchors Fu = 6000 kgf/cm²

Anchors Diameter = 20 mm

Anchors Anb = 314 mm²

Anchors Result:

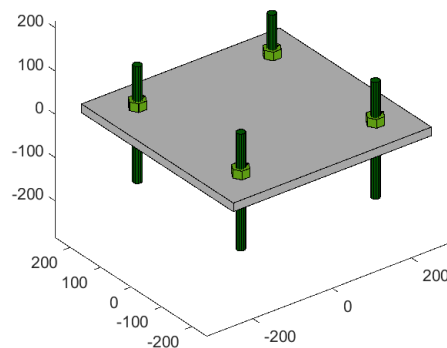
Vu = 0.00 kgf

φ = 0.75

Fnv = 2700 kgf/cm²

Rnv = 8482.30 kgf/cm²

Vu/φRnv = **0.000** **OK**



Stiffeners Bearing Stress Check

Stiffeners Fy: 2400 kgf/cm²

Stiffeners Start Height: 20 cm

Stiffeners End Height: 10 cm

Number of Stiffeners Y: 1

Number of Stiffeners X: 1

$\phi = 0.9$

Stiffeners X Result:

Mu = 0 kgf.cm

Mn = 643200 kgf.cm

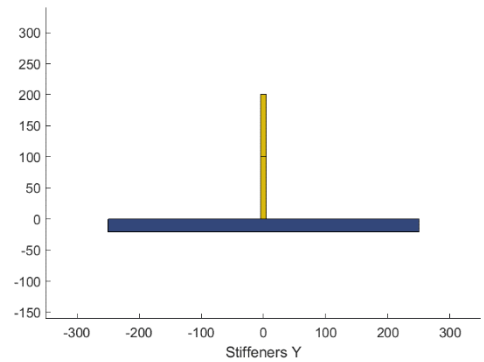
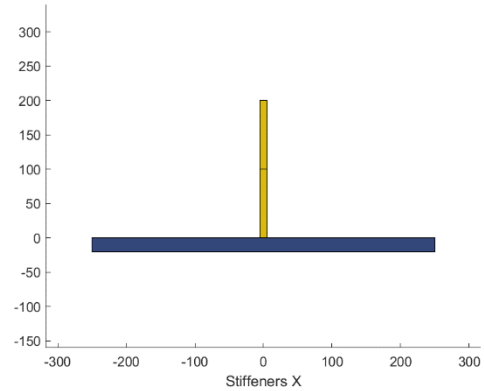
Mu/φMn = **0.000** **OK**

Stiffeners Y Result:

Mu = 0 kgf.cm

Mn = 643200 kgf.cm

Mu/φMn = **0.000** **OK**



Stiffeners Shear Stress Check

Stiffeners F_y : 2400 kgf/cm²

Stiffeners Start Height: 20 cm

Stiffeners End Height: 10 cm

Number of Stiffeners Y: 1

Number of Stiffeners X: 1

$\phi = 0.9$

Stiffeners X Result:

$V_u = 0$ kgf

$V_n = 0.6F_yA_w = 28800$ kgf

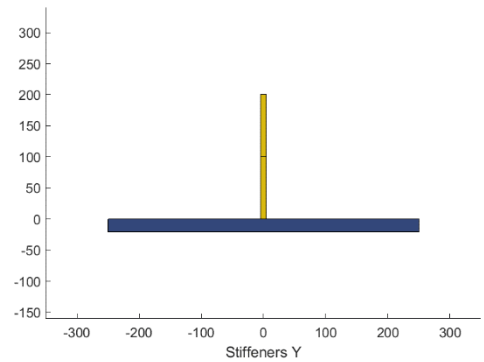
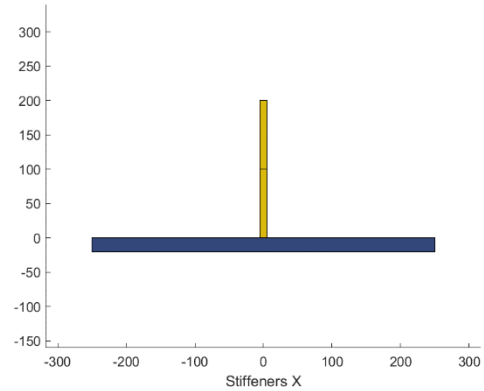
$V_u/\phi V_n = 0.000$ OK

Stiffeners Y Result:

$V_u = 0$ kgf

$V_n = 0.6F_yA_w = 28800$ kgf

$V_u/\phi V_n = 0.000$ OK



Base Plate Panels Check

Base Plate $f_{up} = 0.00 \text{ kgf/cm}^2$

Base Plate $F_y = 2400 \text{ kgf/cm}^2$

Edge Panel Results:

$f = 25 \text{ cm}$ $c = 25 \text{ cm}$

$e = 5 \text{ cm}$

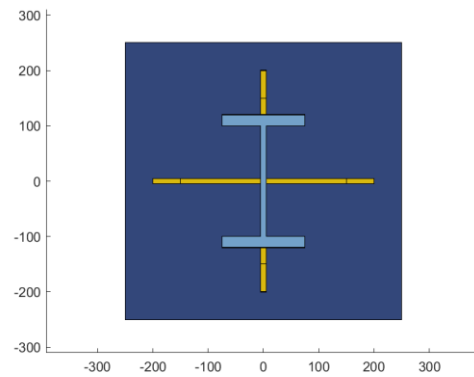
$\phi = 0.9$

$Z_p = 35 \text{ cm}^3$

$M_n = Z_p F_y = 84852.81 \text{ kgf.cm}$

$M_u = 0.5 f_{up} c f e = 0.00 \text{ kgf.cm}$

$M_u / \phi M_n = 0.000 \quad \text{OK}$



Base Plate Welds Check

Weld Fuc: 4200 kgf/cm²

$\phi = 0.75$

Stiffeners Weld Size to Column: 8 mm

Stiffeners Weld Size to Base Plate: 8 mm

Stiffeners Weld to Column Results:

Vux = 0 kgf

Vuy = 0 kgf

qax = 0.00 kgf/cm

qay = 0.00 kgf/cm

Aweldx = $q_{ax}/(0.707\phi F_{ue}) = 0.00 \text{ mm} < 8 \text{ mm}$ **OK**

Aweldy = $q_{ay}/(0.707\phi F_{ue}) = 0.00 \text{ mm} < 8 \text{ mm}$ **OK**

Stiffeners Weld to Base Plate Results:

Weld X Moment Inertia = 8383 cm⁴

Weld Y Moment Inertia = 8383 cm⁴

Mux = 0 kgf.cm

Muy = 0 kgf.cm

σ_{vx} = 0.00 kgf/cm²

σ_{vy} = 0.00 kgf/cm²

Aweldx = $(\sigma_{vx} \times 1 \text{ cm}) / (0.707\phi F_{ue}) = 0.00 \text{ mm} < 8 \text{ mm}$ **OK**

Aweldy = $(\sigma_{vy} \times 1 \text{ cm}) / (0.707\phi F_{ue}) = 0.00 \text{ mm} < 8 \text{ mm}$ **OK**