

**Baseplate Design - Double End Post Design**

**Anchor Bolt Analysis (4 bolt pattern, round baseplate)** Not Applicable, see single post design below

Bot Circle Dia = 23.00 inches  
 A bolts = 12.901 sq inches  
 I bolts = 89.01 in<sup>4</sup>  
 S bolts = 74.70 in<sup>3</sup>  
 Base Plate Dia = 32.00 inches  
 Allow Tensile Stress = Ft = 23.50 ksi  
 Allow Shear Stress = Fv = 16.50 ksi

Anchor Bolt Properties  
 Net Tensile Stress Area = At = 3.548 sq inches  
 Gross Area = Ag = 3.570 sq inches

| Reactions     | Max. Axial<br>kip | Min. Axial<br>kip | Moment<br>kip-ft | V<br>kip | AB Com.       |               |               | CSR<br>Eq. 5-24 | Post                 |                        | Max.<br>Stress<br>ksi |      |
|---------------|-------------------|-------------------|------------------|----------|---------------|---------------|---------------|-----------------|----------------------|------------------------|-----------------------|------|
|               |                   |                   |                  |          | Stress<br>ksi | Stress<br>ksi | Stress<br>ksi |                 | Bending<br>St. (ksi) | Post.<br>Stress<br>ksi |                       |      |
| Left Support  | 3.81              | 3.81              | 0.00             | 0.00     | 0.29          | 0.29          | 0.00          | 0.00            | 0.18                 | 0.18                   | 0.18                  |      |
| Right Support | 3.77              | 3.77              | 0.00             | 0.00     | 0.29          | 0.29          | 0.00          | 0.00            | 0.18                 | 0.18                   | 0.18                  |      |
| Left Support  | GR C1             | 2.86              | 2.96             | 23.26    | 4.63          | 3.96          | -0.52         | 0.37            | 0.02                 | 4.04                   | 0.13                  | 4.18 |
| Right Support | GR C2             | 2.84              | 2.96             | 19.87    | 3.92          | 3.38          | -0.44         | 0.26            | 0.01                 | 3.42                   | 0.13                  | 3.55 |
| Left Support  | GR C1             | 2.86              | 2.96             | 34.89    | 3.19          | 0.83          | -0.38         | 0.25            | 0.04                 | 6.07                   | 0.13                  | 6.20 |
| Right Support | GR C2             | 2.84              | 2.96             | 29.51    | 3.92          | 4.86          | -0.52         | 0.29            | 0.03                 | 5.13                   | 0.13                  | 5.26 |
| Left Support  | GR C1             | 3.95              | 3.95             | 11.63    | 2.58          | 2.17          | -1.56         | 0.20            | 0.00                 | 2.02                   | 0.19                  | 2.21 |
| Right Support | GR C2             | 3.81              | 3.81             | 6.84     | 2.14          | 1.87          | -1.29         | 0.17            | 0.00                 | 1.71                   | 0.18                  | 1.89 |
| Left Support  | GR C1             | 3.95              | 3.95             | 17.44    | 1.62          | 3.11          | -2.50         | 0.12            | 0.01                 | 3.03                   | 0.19                  | 3.22 |
| Right Support | GR C2             | 3.81              | 3.81             | 14.78    | 1.58          | 2.65          | -2.09         | 0.10            | 0.01                 | 2.67                   | 0.18                  | 2.75 |
|               |                   |                   |                  |          | 5.83          | 3.38          | 0.37          | 0.04            |                      |                        |                       | 6.00 |

**Baseplate weld design** Not Applicable, see single post design below

S post = 89.01 in<sup>4</sup>  
 A post = 21.21 in<sup>2</sup>  
 Max. Weld Size = 0.4375 inches  
 Min. Weld Size = 0.25 inches  
 Force per inch of post edge = 3.10 kips per inch  
 Weld Stress based on Max. Weld Size = 3.01 ksi Based on double weld (socket connection)  
 Weld Stress based on Min. Weld Size = 6.77 ksi Based on double weld (socket connection)  
 Weld Yield Strength = 70 ksi  
 Allowable Weld Stress = 18.9 ksi  
 Required weld size = 0.116 inches  
 Design Weld Size = 0.25 inches Based on double weld (socket connection)  
 Weld Length = 87.56 inches Based on double weld (socket connection)

**Baseplate Thickness** Not Applicable, see single post design below

Width of Baseplate section = 9.600 inches  
 Thickness = 2.250 inches  
 Sx = 7.59 in<sup>3</sup>  
 Bolt spacing = 8 = 18.65 inches Measured along circumference of bolt circle  
 Force per inch of post edge = 3.10 kips per inch  
 Moment in Baseplate = 101.16 kip inches  
 Bending Stress = 13.32 ksi  
 Allowable Bending Stress = 37.50 ksi  
 No vertical stiffeners needed  
 Capacity of 1/4" weld = 3.36 kips per inch  
 Length of 1/4" horizontal weld required on each leg of each vertical stiffener = X = 2.82 inches

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