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 Warren, OH 44483  
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## 12-inch FS-9319 and FS-9401 Design Loads

| <b>@ 5" Edge Distance - Using a (2) bolt connection – 3-1/2" min. bolt spacing</b>                            |                     |                     |
|---|---------------------|---------------------|
| <b>Safety Factor</b>  | 3                   |                     |
| <b>Pull-out</b>   | 6250 lb             |                     |
| <b>Shear</b>  | 6170 lb             |                     |
| <b>Fc</b>   | 4000 psi NWT        |                     |
| <b>Edge Distance</b>  | 5"                  |                     |
| <b>End Distance</b>   | 8" min.             |                     |
| <b>@ 2-3/4" Edge Distance - Using a (2) bolt connection – 3-1/2" min. bolt spacing</b>                        |                     |                     |
| <b>Safety Factor</b>  | 3                   |                     |
| <b>Pull-out</b>   | 6000 lb             |                     |
| <b>Shear</b>  | 2635 lb             |                     |
| <b>Fc</b>   | 4000 psi NWT        |                     |
| <b>Edge Distance</b>  | 2-3/4"              |                     |
| <b>End Distance</b>   | 8" min.             |                     |
| <b>Allowable Single Channel Nut Loads (S.F. = 3.0)</b>  |                     |                     |
| <b>Using a single bolt connection – 5" min. edge distance - centered on embed</b>                             |                     |                     |
| <b>Size</b>   | <b>Tension (lb)</b> | <b>Shear (lb)</b>   |
| 1/2"-M  | 4000                | 3580 (Grade 5 bolt) |
| 5/8"  | 4000                | 4970 (Grade 5 bolt) |
| 3/4"  | 4000                | 4418                |
| 7/8"  | 2200                | 4970                |
| <b>Allowable 2-Bolt Channel Nut Loads (S.F. = 3.0)</b>  |                     |                     |
| <b>Using a (2) bolt connection – 2-3/4" min. edge distance - 3-1/2" min. bolt spacing – centered on embed</b> |                     |                     |
| <b>Size</b>   | <b>Tension (lb)</b> | <b>Shear (lb)</b>   |
| 1/2"-M; 5/8", 3/4"  | 6250                | 2635                |
| 7/8"  | 4400                | 2635                |



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| <b>Allowable Single Channel Nut Slip Loads (S.F. = 3.0)</b>                                 |                      |                       |                       |
|---|----------------------|-----------------------|-----------------------|
| <b>Size</b>   | <b>Grade</b>         | <b>Torque (ft-lb)</b> | <b>Slip Load (lb)</b> |
| 1/2"-M  | 5                    | 75                    | 1550                  |
| 5/8"; 3/4"  | ASTM A 307 / Grade 5 | 97                    | 1800                  |
| 7/8"  | ASTM A 307           | 75                    | 1550                  |
| <b>Allowable 2-Bolt Channel Nut Slip Loads (S.F. = 3.0)<br/>Using a (2) bolt connection</b> |                      |                       |                       |
| <b>Size</b>   | <b>Grade</b>         | <b>Torque (ft-lb)</b> | <b>Slip Load (lb)</b> |
| 1/2"-M  | 5                    | 75                    | 2640                  |
| 5/8"; 3/4"  | ASTM A 307 / Grade 5 | 97                    | 3000                  |
| 7/8"  | ASTM A 307           | 75                    | 2640                  |
| <b>Allowable Single Bolt Loads (AAMA TIR-A9)</b>  |                      |                       |                       |
| <b>Size</b>   | <b>Grade</b>         | <b>Tension (lb)</b>   | <b>Shear (lb)</b>     |
| 1/2"  | 5                    | 6811                  | 3580                  |
| 5/8"  | ASTM A 307           | 6136                  | 3068                  |
| 5/8"  | 5                    | 12149                 | 6259                  |
| 3/4"  | ASTM A 307           | 8836                  | 4418                  |
| 7/8"  | ASTM A 307           | 12026                 | 6013                  |

\* End distance is the required distance from the end of the insert channel to the end of the slab.