Material Properties

Material	Yield Strength (psi)	Tensile Strengh (psi)
Grade 105 Galvanized Steel	105000	125000
Shear Per bolt (lbs)	Tension Front Per Bolt(lbs)	Tension back Per Bolt (lbs)
4962.725	8966.905	2719.505

Stresses on Bolt

Diameter (in)	Tensile Area (in^2)	Ny (psi)	Ts (psi)
0.250	0.013	1389767.561	769165.528
0.375	0.050	356313.786	197201.524
0.500	0.112	159709.647	88391.152
0.625	0.199	90219.427	49931.856
0.750	0.310	57888.162	32038.148
0.875	0.445	40268.724	22286.687
1.000	0.605	29621.270	16393.864
1.250	0.999	17948.208	9933.419

Bolt Analysis: 1 in diameter 8 Threads per inch

Yeild Failure	
Tensile Stress in bolt > Yield Strength	
Bolt Stress (psi)	Bolt Yield Stregth (psi)
29621.270	63570.87431
Will Not Fail in Yield	

Shear Stress in bolt > Yield Strength	
Bolt Stress (psi)	Bolt Yield (psI)
16393.864	45407.76736
Will Not Shear	

Anchor Bolt Sizes

A = nominal area

A_b = effective tensile stress area

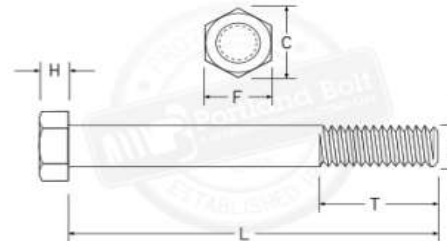F = width across flats

C = width across corners

H = height of head

d_0 = nominal anchor diameter

n_t = number of threads per inch

http://www.portlandbolt.com/print/?table=1601

$$A_b = \frac{\pi}{4}\left(d_0 - \frac{0.9743}{n_t}\right)^2$$

Bolt	A (in.^{2})	A_b (in.^{2})	F (in.)	C (in.)	H (in.)
1/2 - 13	0.196	0.142	3/4	0.866	11/32
5/8 - 11	0.307	0.226	15/16	1.083	27/64
3/4 - 10	0.442	0.334	1-1/8	1.299	1/2
7/8 - 9	0.601	0.462	1-5/16	1.516	37/64
1 - 8	0.785	0.606	1-1/2	1.732	43/64