



# SET-3G® Design Information — Concrete



- SET-3G has been qualified per ACI 355.4 and AC308. In order to design SET-3G in accordance with ACI 318 Chapter 17, the design information is published in Simpson Strong-Tie's C-A-2021 and ICC-ES ESR-4057. In addition, the design values are included in the Simpson Strong-Tie Anchor Designer Software. Simpson strongly encourages the designer to utilize the software when designing concrete anchorage solutions.
- In an attempt to provide the designer quick reference tables, Simpson Strong-Tie has provided the tables contained within this Technical Engineering Bulletin. These tables provide Tension Capacities only. The tables provide either a Design Strength level capacity or an Allowable Tension Load capacity. The footnotes of each table further explain how the Design Strength capacities were calculated and what factors were used to calculate the Allowable Load capacities. For additional information, please refer to Anchor Designer software and/or contact Simpson Strong-Tie.

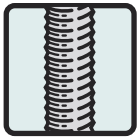
## Table of Contents

Icons and Nomenclature .....	2
Tension Design Strength for Threaded Rod Anchors in Normal-Weight Concrete .....	3-4
Allowable Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete — Static Load .....	5-6
Allowable Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete — Wind Load .....	7-8
Allowable Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete — Seismic Load .....	9-10
Allowable Tension Loads Based on Concrete or Adhesive Bond:	
• Interior Thickened Slab .....	11
• Turned Down Footing .....	12
• Flat Slab .....	13-15
• Stem Wall .....	16-17
Allowable Tension Loads Based on Threaded Rod Steel Strength .....	17
Tension Design Strength for Rebar in Normal-Weight Concrete .....	18-19
Allowable Tension Loads for Rebar in Normal-Weight Concrete — Static Load .....	20-21
Allowable Tension Loads for Rebar in Normal-Weight Concrete — Wind Load .....	22-23
Allowable Tension Loads for Rebar in Normal-Weight Concrete — Seismic Load .....	24-25
Allowable Tension Loads Based on Rebar Steel Strength .....	25

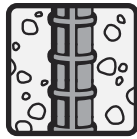
# SET-3G® Design Information — Concrete

## Icons and Nomenclature

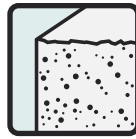
In order to facilitate easier identification of performance data, the following icon system has been incorporated into the sections of the technical bulletin with multiple load tables. These icons will appear in the heading of the table to promote easier visual identification of the type of load, insert type and substrate addressed in the table. Icons are intended for quick identification. All specific information regarding suitability should be read from the table itself.



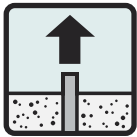
Threaded Rod



Rebar



Normal-Weight  
Concrete



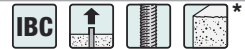
Tension Load



Valid for  
International  
Building Code

$b$	Footing Width
$c_{ac}$	Critical Edge Distance
$c_{edge}$	Edge Distance
$c_{end}$	End Distance
$f'_c$	Concrete Compressive Strength
$h_{ef}$	Effective Embedment Depth
$h_{min}$	Minimum Concrete Thickness

# SET-3G® Design Information — Concrete

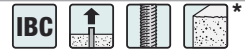


Tension Design Strength for Threaded Rod Anchors in Normal-Weight Concrete ( $f'_c = 2,500$  psi)

Rod Dia. (in.)	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Tension Design Strength Based on Concrete or Bond (lb.)							
						Edge Distances = $c_{ac}$ on all sides				Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides			
						SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>		SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>	
						Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$								
3/8	2 3/8	3 5/8	5 1/2	3 3/8	5 1/4	2,855	2,020	2,140	1,515	1,180	1,085	885	815
		5 3/4	5 1/4							1,690		1,265	
	3	4 1/4	7 1/2	4 1/4	5 1/4	4,055	2,565	<b>3,040</b>	1,925	1,385	1,370	1,035	1,030
		7 1/4	5 1/4							2,055		1,540	
	4 1/2	5 3/4	12 3/4	5 3/4	5 3/4	6,390	3,925	<b>4,795</b>	<b>2,945</b>	1,415	2,085	1,060	1,565
		10 7/8	8 1/4							2,195		1,645	
	6	7 1/4	17 1/2	7 1/4	6 3/4	8,520	5,235	<b>6,390</b>	<b>3,925</b>	1,375	2,585	1,030	1,935
		14 1/2	11							2,180		1,635	
	7 1/2	8 3/4	22 1/8	8 3/4	8	10,650	6,540	<b>7,990</b>	<b>4,905</b>	1,355	3,175	1,020	2,380
		18	13 3/4							2,180		1,635	
1/2	2 3/4	4	7	4	7	3,555	2,520	2,670	1,890	1,460	1,485	1,095	1,015
		6 5/8	7							2,095		1,570	
	4	5 1/4	7	5 1/4	7	4,485	4,420	3,365	3,040	1,955	2,190	1,465	1,480
		9 5/8	7							6,240		4,680	
	6	7 1/4	16 3/8	7 1/4	7 1/2	10,895	6,175	<b>7,355</b>	4,565	2,235	2,935	1,510	2,200
		14 1/2	10 3/8							3,550		2,395	
	8	9 1/4	23 1/4	9 1/4	9	14,530	8,120	<b>9,805</b>	<b>6,085</b>	2,100	3,680	1,420	2,760
		19 1/4	14 1/2							3,390		2,285	
	10	11 1/4	29 3/8	11 1/4	10 1/2	18,160	10,230	<b>12,260</b>	<b>7,605</b>	2,080	4,475	1,405	3,360
		24	18							18,150		12,250	
5/8	3 1/8	4 1/2	8 3/4	4 1/2	8 3/4	4,310	3,050	3,230	2,290	1,770	1,700	1,330	1,275
		7 1/2	8 3/4							2,405		1,800	
	5	6 3/8	11 3/4	6 3/8	8 3/4	8,695	6,175	6,525	4,635	2,635	2,935	1,975	2,200
		12	8 3/4							6,540		4,635	
	7 1/2	8 7/8	19 3/4	8 7/8	8 3/4	16,020	7,785	<b>12,015</b>	5,840	3,940	3,550	2,955	2,660
		18	12 3/8							6,305		4,730	
12 1/2	13 7/8	37 1/4	13 7/8	17 1/2	34,470	21,635	<b>25,855</b>	<b>16,225</b>	3,700	8,840	2,775	6,630	
	30	22 3/4							34,450		25,835		6,050
3/4	3 1/2	5 1/4	10 1/4	5 1/4	10 1/4	5,105	3,620	3,830	2,715	2,155	1,930	1,615	1,445
		8 1/2	10 1/4							2,725		2,045	
	6	7 3/4	13 5/8	7 3/4	10 1/4	11,465	8,120	8,600	6,090	3,445	3,680	2,585	2,760
		14 1/2	10 1/4							5,190		3,895	
	9	10 3/4	22 3/4	10 3/4	10 1/4	21,060	9,870	<b>15,795</b>	7,400	5,215	4,340	3,910	3,255
		21 5/8	14 1/4							21,030		15,775	
	15	16 3/4	43	16 3/4	21 3/4	45,315	30,095	<b>33,985</b>	<b>22,570</b>	4,980	11,935	3,735	8,950
		36	26 3/8							8,130		6,095	
7/8	3 3/4	5 3/4	11 3/4	5 3/4	11 3/4	5,665	4,010	4,250	3,010	2,475	2,085	1,855	1,565
		9	11 3/4							2,945		2,210	
	7	9	15 3/8	9	11 3/4	14,445	10,230	10,835	7,675	4,315	4,475	3,235	3,360
		16 7/8	11 3/4							6,320		4,740	
	10 1/2	12 1/2	25 3/4	12 1/2	11 3/4	26,520	12,115	<b>19,890</b>	9,085	6,610	5,180	4,955	3,885
		25 1/4	16 1/8							10,550		7,910	
17 1/2	19 1/2	48 3/8	19 1/2	26	57,040	39,555	<b>42,780</b>	<b>29,665</b>	6,330	15,325	4,745	11,495	
	42	29 3/4							10,340		7,755		

\* See page 2 for an explanation of the load table icons.

# SET-3G® Design Information — Concrete

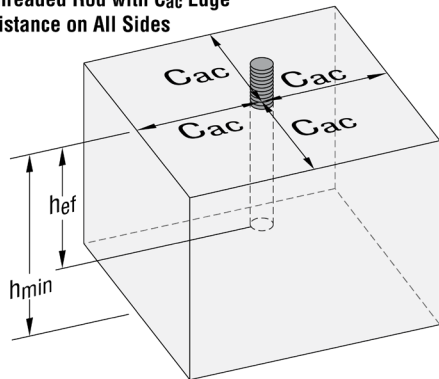


Tension Design Strength for Threaded Rod Anchors in Normal-Weight Concrete ( $f'_c = 2,500$  psi)

Rod Dia. (in.)	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Tension Design Strength Based on Concrete or Bond (lb.)							
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	Edge Distances = $c_{ac}$ on all sides				Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides			
						SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>		SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>	
		Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked		
1	4	6¼	13	6¼	13	6,240	4,420	4,680	3,315	2,805	2,250	2,105	1,685
		9⅝	13							3,175		2,380	
	8	10¼	17⅞	10¼	13	17,650	12,500	13,235	9,375	5,270	5,325	3,950	3,995
		19¼	13							7,520		5,640	
	12	14¼	28¾	14¼	13	32,425	14,095	<b>24,320</b>	10,570	8,135	5,920	6,100	4,440
		28⅞	18							12,970		9,730	
	20	22¼	54¼	22¼	13	69,765	14,095	<b>52,325</b>	10,570	7,700	5,920	5,775	4,440
		48	33⅞			69,710				<b>52,285</b>		12,590	
1¼	5	7¾	15½	7¾	15½	8,720	6,175	6,540	4,635	—	—	—	—
		12	15½							—	—	—	—
	10	12¾	20½	12¾	15½	24,640	17,470	18,480	13,105	—	—	—	—
		24	15½			24,665		18,500		—	—	—	
	15	17¾	34¾	17¾	15½	45,315	18,350	33,985	13,765	—	—	—	—
		36	22½							—	—	—	—
	25	27¾	64⅞	27¾	15½	97,500	18,350	<b>73,125</b>	13,765	—	—	—	—
		60	39⅞			97,485		<b>73,115</b>		—	—	—	

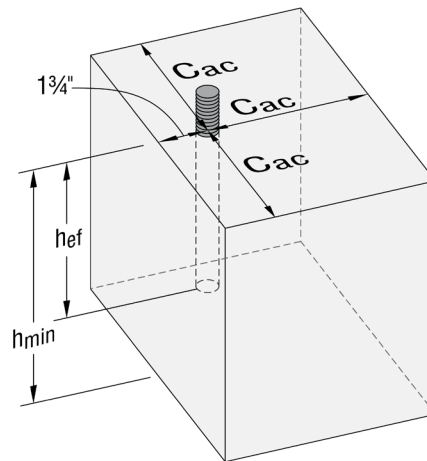
1. Tension design strength (SD level) must be the lesser of the concrete, bond or threaded rod steel load.
2. Tension design strength are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming dry concrete, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F.
3. Tabulated values are for a single anchor with no influence of another anchor.
4. Interpolation between embedment depths is not permitted.
5. Strength reduction factor,  $\phi$ , is based on using a load combination from ACI 318-14 Section 5.3
6. The Tension design strength listed for SDC (Seismic Design Category) A-B may also be used in SDC C-F when the tension component of the strength-level seismic design load on the anchor does not exceed 20% of the total factored tension load on the anchor associated with the same load combination.
7. When designing anchorages in SDC C-F, the Designer shall consider the ductility requirements of ACI 318-14 Section 17.2.3. Design strengths in **Bold** indicate that the anchor ductility requirements of 17.2.3.4.3 (a) (i) to (iii) are satisfied when using ASTM F1554 Grade 36 threaded rod. Any other ductility requirements must be satisfied.
8. Tension design strength in SDC C-F have been adjusted by 0.75 factor in accordance with ACI 318-14 Section 17.2.3.4.4
9. The Designer of Record is responsible for the foundation design.

**Threaded Rod with  $c_{ac}$  Edge Distance on All Sides**



**Flat Slab**

**Threaded Rod with 1¼" Edge Distance on One Side and  $c_{ac}$  on Three Sides**

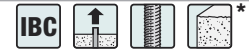


**Flat Slab**

\* See page 2 for an explanation of the load table icons.



# SET-3G® Design Information — Concrete

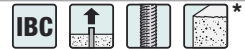


Allowable Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Static Load

Rod Dia. (in.)	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)			
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	Edge Distances = $c_{ac}$ on all sides		Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides	
						Uncracked	Cracked	Uncracked	Cracked
3/8	2 3/8	3 3/8	5 1/2	3 3/8	5 1/4	2,040	1,445	845	775
		5 3/4	5 1/4					1,205	
	3	4 1/4	7 1/2	4 1/4	5 1/4	2,895	1,830	990	980
		7 1/4	5 1/4					1,470	
	4 1/2	5 3/4	12 3/4	5 3/4	5 3/4	4,565	2,805	1,010	1,490
		10 7/8	8 1/4					1,570	
	6	7 1/4	17 1/2	7 1/4	6 3/4	6,085	3,740	980	1,845
		14 1/2	11					1,555	
	7 1/2	8 3/4	22 1/8	8 3/4	8	7,605	4,670	970	2,270
		18	13 3/4					1,555	
1/2	2 3/4	4	7	4	7	2,540	1,800	1,045	1,060
		6 5/8	7					1,495	
	4	5 1/4	7	5 1/4	7	3,205	3,155	1,395	1,565
		9 5/8	7			4,455		2,145	
	6	7 1/4	16 3/8	7 1/4	7 1/2	7,780	4,410	1,595	2,095
		14 1/2	10 3/8					2,535	
	8	9 1/4	23 1/4	9 1/4	9	10,380	5,800	1,500	2,630
		19 1/4	14 1/2					2,420	
	10	11 1/4	29 3/8	11 1/4	10 1/2	12,970	7,305	1,485	3,195
		24	18			12,965		2,420	
5/8	3 1/8	4 1/2	8 3/4	4 1/2	8 3/4	3,080	2,180	1,265	1,215
		7 1/2	8 3/4					1,720	
	5	6 3/8	11 3/4	6 3/8	8 3/4	6,210	4,410	1,880	2,095
		12	8 3/4			6,230		2,925	
	7 1/2	8 7/8	19 3/4	8 7/8	8 3/4	11,445	5,560	2,815	2,535
		18	12 3/8					4,505	
	12 1/2	13 7/8	37 1/4	13 7/8	17 1/2	24,620	15,455	2,645	6,315
		30	22 3/4			24,605		4,320	
3/4	3 1/2	5 1/4	10 1/4	5 1/4	10 1/4	3,645	2,585	1,540	1,380
		8 1/2	10 1/4					1,945	
	6	7 3/4	13 5/8	7 3/4	10 1/4	8,190	5,800	2,460	2,630
		14 1/2	10 1/4					3,705	
	9	10 3/4	22 3/4	10 3/4	10 1/4	15,045	7,050	3,725	3,100
		21 5/8	14 1/4			15,020		5,940	
	15	16 3/4	43	16 3/4	21 3/4	32,370	21,495	3,555	8,525
		36	26 3/8					5,805	
7/8	3 3/4	5 3/4	11 3/4	5 3/4	11 3/4	4,045	2,865	1,770	1,490
		9	11 3/4					2,105	
	7	9	15 3/8	9	11 3/4	10,320	7,305	3,080	3,195
		16 7/8	11 3/4					4,515	
	10 1/2	12 1/2	25 3/4	12 1/2	11 3/4	18,945	8,655	4,720	3,700
		25 1/4	16 1/8					7,535	
	17 1/2	19 1/2	48 3/8	19 1/2	26	40,745	28,255	4,520	10,945
		42	29 3/4			40,725		7,385	

\* See page 2 for an explanation of the load table icons.

# SET-3G® Design Information — Concrete

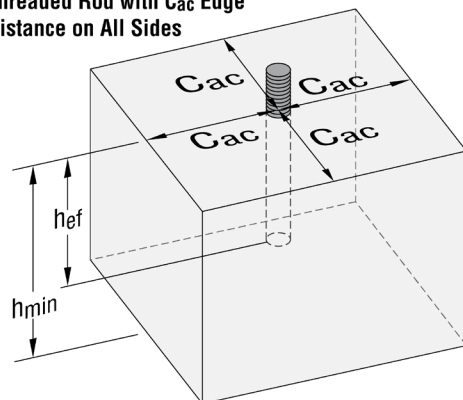


Allowable Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Static Load

Rod Dia. (in.)	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)			
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	Edge Distances = $c_{ac}$ on all sides		Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides	
						Uncracked	Cracked	Uncracked	Cracked
1	4	6¼	13	6¼	13	4,455	3,155	2,005	1,605
		9⅞	13					2,270	
	8	10¼	17⅞	10¼	13	12,605	8,930	3,765	3,805
		19¼	13					5,370	
	12	14¼	28¾	14¼	13	23,160	10,070	5,810	4,230
		28⅞	18					9,265	
20	22¼	54¼	22¼	13	49,830	10,070	5,500	4,230	
	48	33⅞			49,795		8,995		
1¼	5	7¾	15½	7¾	15½	6,230	4,410	—	—
		12	15½					—	—
	10	12¾	20½	12¾	15½	17,600	12,480	—	—
		24	15½			17,620		—	—
	15	17¾	34¾	17¾	15½	32,370	13,105	—	—
		36	22½					—	—
	25	27¾	64¾	27¾	15½	69,645	13,105	—	—
		60	39⅞			69,630		—	—

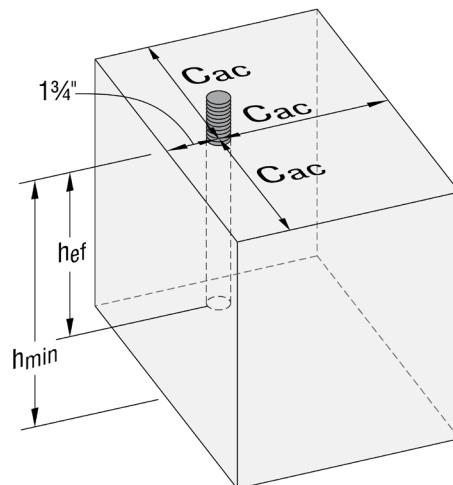
1. Allowable tension load must be the lesser of the concrete, bond or threaded rod steel load. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming dry concrete, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = 1.4$ . The conversion factor  $\alpha$  is based on the load combination  $1.2D + 1.6L$  assuming 50% dead load and 50% live load:  $1.2(0.5) + 1.6(0.5) = 1.4$ .
3. Tabulated values are for a single anchor with no influence of another anchor.
4. Interpolation between embedment depths is not permitted.
5. The Designer of Record is responsible for the foundation design.

**Threaded Rod with  $c_{ac}$  Edge Distance on All Sides**



**Flat Slab**

**Threaded Rod with 1¼" Edge Distance on One Side and  $c_{ac}$  on Three Sides**

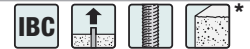


**Flat Slab**

\* See page 2 for an explanation of the load table icons.



# SET-3G® Design Information — Concrete



Allowable Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Wind Load

Rod Dia. (in.)	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)			
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	Edge Distances = $c_{ac}$ on all sides		Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides	
						Uncracked	Cracked	Uncracked	Cracked
3/8	2 3/8	3 3/8	5 1/2	3 3/8	5 1/4	1,710	1,210	705	650
		5 3/4	5 1/4					1,010	
	3	4 1/4	7 1/2	4 1/4	5 1/4	2,430	1,535	830	820
		7 1/4	5 1/4					1,230	
	4 1/2	5 3/4	12 3/4	5 3/4	5 3/4	3,825	2,350	845	1,250
		10 7/8	8 1/4					1,315	
	6	7 1/4	17 1/2	7 1/4	6 3/4	5,100	3,135	825	1,550
		14 1/2	11					1,305	
	7 1/2	8 3/4	22 1/8	8 3/4	8	6,375	3,915	810	1,900
		18	13 3/4					1,305	
1/2	2 3/4	4	7	4	7	2,130	1,510	875	890
		6 5/8	7					1,255	
	4	5 1/4	7	5 1/4	7	2,685	2,645	1,170	1,310
		9 5/8	7					1,800	
	6	7 1/4	16 3/8	7 1/4	7 1/2	6,525	3,700	1,340	1,755
		14 1/2	10 3/8					2,125	
	8	9 1/4	23 1/4	9 1/4	9	8,700	4,860	1,255	2,205
		19 1/4	14 1/2					2,030	
	10	11 1/4	29 3/8	11 1/4	10 1/2	10,875	6,125	1,245	2,680
		24	18					2,030	
5/8	3 1/8	4 1/2	8 3/4	4 1/2	8 3/4	2,580	1,825	1,060	1,020
		7 1/2	8 3/4					1,440	
	5	6 3/8	11 3/4	6 3/8	8 3/4	5,205	3,700	1,580	1,755
		12	8 3/4					2,450	
	7 1/2	8 7/8	19 3/4	8 7/8	8 3/4	9,595	4,660	2,360	2,125
		18	12 3/8					3,775	
	12 1/2	13 7/8	37 1/4	13 7/8	17 1/2	20,640	12,955	2,215	5,295
		30	22 3/4					3,625	
3/4	3 1/2	5 1/4	10 1/4	5 1/4	10 1/4	3,055	2,170	1,290	1,155
		8 1/2	10 1/4					1,630	
	6	7 3/4	13 5/8	7 3/4	10 1/4	6,865	4,860	2,065	2,205
		14 1/2	10 1/4					3,110	
	9	10 3/4	22 3/4	10 3/4	10 1/4	12,610	5,910	3,125	2,600
		21 5/8	14 1/4					4,980	
	15	16 3/4	43	16 3/4	21 3/4	27,135	18,020	2,980	7,145
		36	26 3/8					4,870	
7/8	3 3/4	5 3/4	11 3/4	5 3/4	11 3/4	3,390	2,400	1,480	1,250
		9	11 3/4					1,765	
	7	9	15 3/8	9	11 3/4	8,650	6,125	2,585	2,680
		16 7/8	11 3/4					3,785	
	10 1/2	12 1/2	25 3/4	12 1/2	11 3/4	15,880	7,255	3,960	3,100
		25 1/4	16 1/8					6,315	
	17 1/2	19 1/2	48 3/8	19 1/2	26	34,155	23,685	3,790	9,175
		42	29 3/4					6,190	

\* See page 2 for an explanation of the load table icons.

# SET-3G® Design Information — Concrete

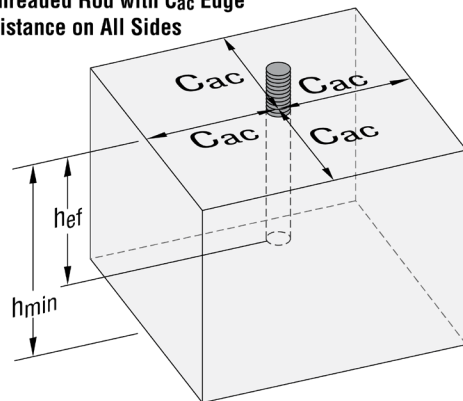


Allowable Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Wind Load

Rod Dia. (in.)	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)			
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	Edge Distances = $c_{ac}$ on all sides		Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides	
						Uncracked	Cracked	Uncracked	Cracked
1	4	6¼	13	6¼	13	3,735	2,645	1,680	1,345
		9⅝	13					1,900	
	8	10¼	17⅞	10¼	13	10,570	7,485	3,155	3,190
		19¼	13					4,505	
	12	14¼	28¾	14¼	13	19,415	8,440	4,870	3,545
		28⅞	18					7,765	
20	22¼	54¼	22¼	13	41,775	8,440	4,610	3,545	
	48	33⅞			41,745		7,540		
1¼	5	7¾	15½	7¾	15½	5,220	3,700	—	—
		12	15½					—	—
	10	12¾	20½	12¾	15½	14,755	10,460	—	—
		24	15½			14,770		—	—
	15	17¾	34⅞	17¾	15½	27,135	10,990	—	—
		36	22½					—	—
	25	27¾	64⅞	27¾	15½	58,385	10,990	—	—
		60	39⅞			58,375		—	—

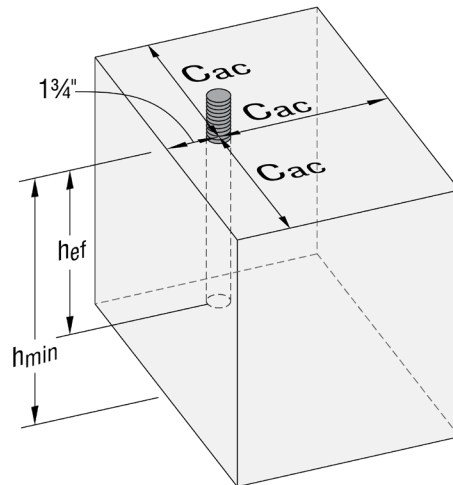
1. Allowable tension load must be the lesser of the concrete, bond or threaded rod steel load. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming dry concrete, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = 1/1.67$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% wind load.
3. Allowable table load = 0.6W
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The Designer of Record is responsible for the foundation design.

Threaded Rod with  $c_{ac}$  Edge Distance on All Sides



Flat Slab

Threaded Rod with  $1\frac{3}{4}$ " Edge Distance on One Side and  $c_{ac}$  on Three Sides



Flat Slab

\* See page 2 for an explanation of the load table icons.





# SET-3G® Design Information — Concrete



Allowable Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Seismic Load

Rod Dia. (in.)	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)								
						Edge Distances = $c_{ac}$ on all sides				Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides				
						SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>		SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>		
						Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$									
3/8	2 3/8	3 5/8	5 1/2	3 5/8	5 1/4	1,995	1,415	1,495	1,060	825	760	620	570	
		5 3/4	5 1/4							1,180		885		
	3	4 1/4	7 1/2	4 1/4	5 1/4	2,835	1,795	2,125	1,345	970	960	725	720	
		7 1/4	5 1/4							1,435		1,075		
	4 1/2	5 3/4	12 3/4	5 3/4	5 3/4	4,470	2,745	3,355	2,060	990	1,460	740	1,095	
		10 7/8	8 1/4							1,535		1,150		
	6	7 1/4	17 1/2	7 1/4	6 3/4	5,960	3,660	4,470	2,745	960	1,810	720	1,355	
		14 1/2	11							1,525		1,145		
	7 1/2	8 3/4	22 1/8	8 3/4	8	7,450	4,575	5,585	3,430	950	2,220	715	1,665	
		18	13 3/4							1,525		1,145		
1/2	2 3/4	4	7	4	7	2,485	1,760	1,865	1,320	1,020	1,040	765	710	
		6 5/8	7							1,465		1,100		
	4	5 1/4	7	5 1/4	7	3,135	3,090	2,355	2,125	1,365	1,530	1,025	1,035	
		9 5/8	7			4,365		3,275		2,100		1,575		
	6	7 1/4	16 3/8	7 1/4	7 1/2	7,620	4,320	5,145	3,190	1,565	2,050	1,055	1,540	
		14 1/2	10 3/8							2,485		1,675		
	8	9 1/4	23 1/4	9 1/4	9	10,160	5,680	6,855	4,255	1,470	2,575	995	1,930	
		19 1/4	14 1/2							2,370		1,600		
	10	11 1/4	29 3/8	11 1/4	10 1/2	12,700	7,155	8,575	5,320	1,455	3,130	985	2,350	
		24	18			12,690				8,565		2,370		1,600
5/8	3 1/8	4 1/2	8 3/4	4 1/2	8 3/4	3,015	2,135	2,260	1,600	1,240	1,190	930	890	
		7 1/2	8 3/4							1,680		1,260		
	5	6 3/8	11 3/4	6 3/8	8 3/4	6,080	4,320	4,565	3,240	1,845	2,050	1,380	1,540	
		12	8 3/4			6,100		4,575		2,865		2,145		
	7 1/2	8 7/8	19 3/4	8 7/8	8 3/4	11,205	5,445	8,400	4,085	2,755	2,485	2,065	1,860	
		18	12 3/8							4,410		3,310		
	12 1/2	13 7/8	37 1/4	13 7/8	17 1/2	24,105	15,130	18,080	11,345	2,585	6,180	1,940	4,635	
		30	22 3/4			24,090		18,065		4,230		3,175		
3/4	3 1/2	5 1/4	10 1/4	5 1/4	10 1/4	3,570	2,530	2,680	1,900	1,505	1,350	1,130	1,010	
		8 1/2	10 1/4							1,905		1,430		
	6	7 3/4	13 3/8	7 3/4	10 1/4	8,015	5,680	6,015	4,260	2,410	2,575	1,810	1,930	
		14 1/2	10 1/4							3,630		2,725		
	9	10 3/4	22 3/4	10 3/4	10 1/4	14,725	6,900	11,045	5,175	3,645	3,035	2,735	2,275	
		21 5/8	14 1/4			14,705		11,030		5,815		4,360		
	15	16 3/4	43	16 3/4	21 3/4	31,690	21,045	23,765	15,785	3,485	8,345	2,610	6,260	
		36	26 3/8							5,685		4,260		
	7/8	3 3/4	5 3/4	11 3/4	5 3/4	11 3/4	3,960	2,805	2,970	2,105	1,730	1,460	1,295	1,095
			9	11 3/4							2,060		1,545	
7		9	15 3/8	9	11 3/4	10,100	7,155	7,575	5,365	3,015	3,130	2,260	2,350	
		16 7/8	11 3/4							4,420		3,315		
10 1/2		12 1/2	25 3/4	12 1/2	11 3/4	18,545	8,470	13,910	6,355	4,620	3,620	3,465	2,715	
		25 1/4	16 1/8							7,380		5,530		
17 1/2		19 1/2	48 3/8	19 1/2	26	39,890	27,660	29,915	20,745	4,425	10,715	3,320	8,040	
		42	29 3/4			39,870		29,900		7,230		5,425		

\* See page 2 for an explanation of the load table icons.

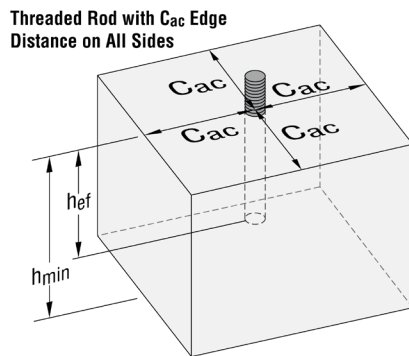
# SET-3G® Design Information — Concrete



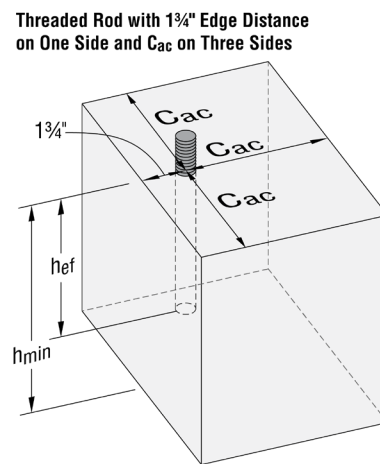
Allowable Tension Loads for Threaded Rod Anchors in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Seismic Load

Rod Dia. (in.)	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)							
						Edge Distances = $c_{ac}$ on all sides				Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides			
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>		SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>	
						Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked
1	4	6¼	13	6¼	13	4,365	3,090	3,275	2,320	1,960	1,575	1,470	1,180
		9⅝	13							2,220		1,665	
	8	10¼	17⅞	10¼	13	12,345	8,740	9,255	6,555	3,685	3,725	2,760	2,795
		19¼	13							5,260		3,945	
	12	14¼	28¾	14¼	13	22,675	9,855	<b>17,005</b>	7,390	5,690	4,140	4,265	3,105
		28⅞	18							9,070		6,805	
	20	22¼	54¼	22¼	13	48,785	9,855	<b>36,590</b>	7,390	5,385	4,140	4,040	3,105
		48	33⅞			48,750				<b>36,565</b>		8,805	
1¼	5	7¾	15½	7¾	15½	6,100	4,320	4,575	3,240	—	—	—	—
		12	15½							—	—	—	—
	10	12¾	20½	12¾	15½	17,230	12,215	12,925	9,165	—	—	—	—
		24	15½			17,250		12,935		—	—	—	
	15	17¾	34¾	17¾	15½	31,690	12,830	23,765	9,625	—	—	—	—
		36	22½							—	—	—	—
	25	27¾	64⅞	27¾	15½	68,180	12,830	<b>51,135</b>	9,625	—	—	—	—
		60	39⅞			68,170		<b>51,130</b>		—	—	—	

- Allowable tension load must be the lesser of the concrete, bond or threaded rod steel load. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
- Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming dry concrete, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = \frac{1}{1.43} = 0.7$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% seismic load.
- Allowable table load = 0.7E
- Tabulated values are for a single anchor with no influence of another anchor.
- Interpolation between embedment depths is not permitted.
- The allowable tension load listed for SDC (Seismic Design Category) A-B may also be used in SDC C-F when the tension component of the strength-level seismic design load on the anchor does not exceed 20% of the total factored tension load on the anchor associated with the same load combination.
- When designing anchorages in SDC C-F, the Designer shall consider the ductility requirements of ACI 318-14 Section 17.2.3. Design strengths in **Bold** indicate that the anchor ductility requirements of 17.2.3.4.3 (a) (i) to (iii) are satisfied when using ASTM F1554 Grade 36 threaded rod. Any other ductility requirements must be satisfied.
- Allowable tension loads in SDC C-F have been adjusted by 0.75 factor in accordance with ACI 318-14 Section 17.2.3.4.4
- The Designer of Record is responsible for the foundation design.



Flat Slab

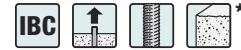


Flat Slab

\* See page 2 for an explanation of the load table icons.

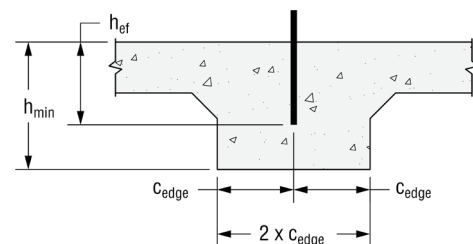
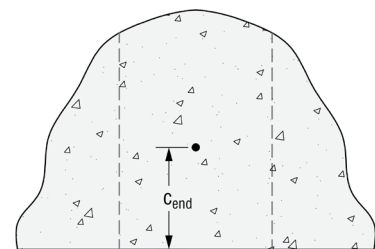
# SET-3G® Design Information — Concrete

Allowable Tension Loads Based on Concrete or Adhesive Bond  
- Interior Thickened Slab (Wind or SDC A-B)



Rod Dia. (in.)	Effective Embed. Depth $h_{ef}$ (in.)	Edge $C_{edge}$ (in.)	End $C_{end}$ (in.)	Min Thickness $h_{min}$ (in.)	Allowable Tension (lbs.) <sup>2</sup>		
					$f'_c = 3,000$ psi	$f'_c = 4,000$ psi	$f'_c = 5,000$ psi
1/2	5	6	12	6 1/4	2,945	3,155	3,330
	8	6	12	9 1/4	3,490	4,035	4,510
	5	12	12	6 1/4	3,530	3,785	3,990
	8	12	12	9 1/4	5,650	6,055	6,385
	10	12	15	11 1/4	7,060	7,565	7,985
5/8	6 1/4	6	12	7 5/8	3,240	3,740	4,180
	8	6	12	9 3/8	3,490	4,035	4,510
	6 1/4	12	12	7 5/8	5,675	6,550	7,325
	8	12	12	9 3/8	8,215	9,300	9,810
	12 1/2	12	18 3/4	13 7/8	9,160	10,580	11,830
3/4	7 1/2	6	12	9 1/4	3,420	3,950	4,415
	8	6	12	9 3/4	3,490	4,035	4,510
	7 1/2	12	12	9 1/4	7,460	8,610	9,630
	8	12	12	9 3/4	8,215	9,490	10,610
	15	12	22 1/2	16 3/4	9,675	11,175	12,490
7/8	8	6	12	10	3,490	4,035	4,510
	8	12	12	10	8,215	9,490	10,610
	17 1/2	12	26 1/4	19 1/2	10,175	11,745	13,135
1	8	12	12	10 1/4	8,215	9,490	10,610
	12	18	12	14 1/4	11,320	13,075	14,615
	20	18	30	22 1/4	17,150	19,800	22,140
1 1/4	8	12	12	10 3/4	8,215	9,490	10,550
	12	18	12	14 3/4	11,320	13,075	14,615
	25	18	37 1/2	27 3/4	18,390	21,235	23,740

1. Allowable tension loads for design must be the lesser of concrete, adhesive bond or steel strength. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming cracked concrete, dry hole condition, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = 1/6.6 = 1.67$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% wind load.
3. Allowable table load = 0.6W
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The Designer of Record is responsible for the foundation design.

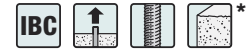


**Interior Thickened Slab**

\* See page 2 for an explanation of the load table icons.

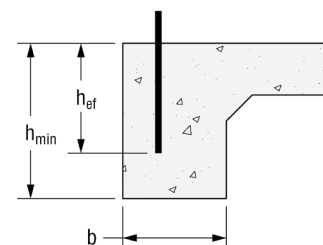
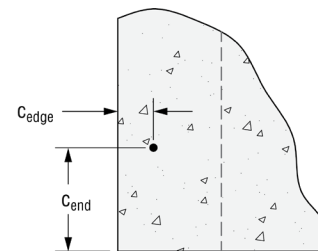
# SET-3G® Design Information — Concrete

Allowable Tension Loads Based on Concrete or Adhesive Bond  
 - Turned Down Footing (Wind or SDC A-B)



Rod Dia. (in.)	Effective Embed. Depth $h_{ef}$ (in.)	End $C_{end}$ (in.)	Width $b$ (in.)	Min Thickness $h_{min}$ (in.)	Allowable Tension in 3,000 psi Concrete (lbs.) <sup>2</sup>			Allowable Tension in 4,000 psi Concrete (lbs.) <sup>2</sup>			Allowable Tension in 5,000 psi Concrete (lbs.) <sup>2</sup>		
					1¾" Edge	2¾" Edge	4" Edge	1¾" Edge	2¾" Edge	4" Edge	1¾" Edge	2¾" Edge	4" Edge
½	5	6	12	6¼	1,605	1,890	2,275	1,720	2,025	2,435	1,815	2,135	2,570
	8	12	12	9¼	2,745	3,160	3,285	2,945	3,465	3,795	3,105	3,660	4,245
	5	6	18	6¼	1,605	1,890	2,275	1,720	2,025	2,435	1,815	2,135	2,570
	10	12	18	11¼	3,435	4,045	4,855	3,680	4,335	5,220	3,880	4,570	5,505
	10	15	18	11¼	3,435	4,045	4,870	3,680	4,335	5,220	3,880	4,570	5,505
¾	6¼	6	12	7½	2,085	2,345	2,495	2,410	2,710	2,880	2,695	3,030	3,220
	8	12	12	9¾	3,055	3,160	3,285	3,530	3,645	3,795	3,945	4,080	4,245
	6¼	6	18	7½	2,085	2,370	2,750	2,410	2,740	3,175	2,695	3,060	3,550
	10	12	18	11¾	4,240	4,615	4,855	4,895	5,330	5,610	5,475	5,960	6,270
	12½	18¾	18	13¾	5,610	5,730	5,885	6,475	6,620	6,795	6,990	7,400	7,600
¾	7½	6	15	9¼	2,465	2,750	3,075	2,850	3,175	3,550	3,185	3,550	3,970
	8	12	15	9¾	3,500	3,880	4,110	4,045	4,485	4,745	4,520	5,010	5,305
	7½	6	18	9¼	2,465	2,750	3,125	2,850	3,175	3,610	3,185	3,550	4,035
	10	12	18	11¾	4,240	4,615	4,855	4,895	5,330	5,610	5,475	5,960	6,270
	15	22½	18	16¾	6,105	6,215	6,355	7,050	7,180	7,340	7,880	8,025	8,205
¾	8	6	15	10	2,625	2,910	3,075	3,030	3,360	3,550	3,390	3,760	3,970
	8	12	15	10	3,500	3,880	4,110	4,045	4,485	4,745	4,520	5,010	5,305
	8¾	6	18	10¾	2,870	3,160	3,535	3,315	3,650	4,080	3,705	4,080	4,565
	10	12	18	12	4,240	4,615	4,855	4,895	5,330	5,610	5,475	5,960	6,270
	17½	26¼	18	19½	6,565	6,665	6,795	7,580	7,700	7,850	8,470	8,605	8,775
1	10	6	18	12¼	3,300	3,590	3,735	3,810	4,145	4,315	4,260	4,635	4,825
	10	12	18	12¼	4,240	4,615	4,855	4,895	5,330	5,610	5,475	5,960	6,270
	10	6	20	12¼	3,300	3,590	3,970	3,810	4,145	4,585	4,260	4,635	5,125
	11	12	20	13¼	4,630	5,005	5,360	5,345	5,780	6,190	5,980	6,465	6,920
	20	30	20	22¼	7,770	7,875	8,010	8,970	9,095	9,250	10,030	10,170	10,345
1¼	10	6	18	12¾	N/A	3,590	3,735	N/A	4,145	4,315	N/A	4,635	4,825
	11	12	20	13¾	N/A	5,005	5,360	N/A	5,780	6,190	N/A	6,465	6,920
	12½	6	24	15¼	N/A	4,520	4,910	N/A	5,215	5,670	N/A	5,835	6,340
	14	12	24	16¾	N/A	6,250	6,450	N/A	7,215	7,445	N/A	8,065	8,325
	25	37½	24	27¾	N/A	10,485	10,635	N/A	12,110	12,280	N/A	13,540	13,725

1. Allowable tension loads for design must be the lesser of concrete, adhesive bond or steel strength. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming cracked concrete, dry hole condition, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = \frac{1}{0.6} = 1.67$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% wind load.
3. Allowable table load = 0.6W
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The Designer of Record is responsible for the foundation design.

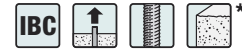


**Turned-Down Slab**

\* See page 2 for an explanation of the load table icons.

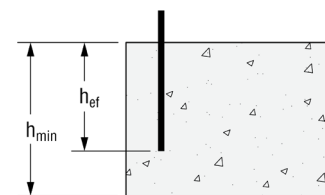
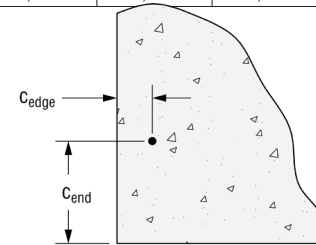
# SET-3G® Design Information — Concrete

Allowable Tension Loads Based on Concrete or Adhesive Bond  
- Flat Slab - 10" Thickness (Wind or SDC A-B)



Rod Dia. (in.)	Effective Embed. Depth $h_{ef}$ (in.)	End $C_{end}$ (in.)	Allowable Tension in 4,000 psi Concrete (lbs.) <sup>2</sup>				Allowable Tension in 5,000 psi Concrete (lbs.) <sup>2</sup>			
			1 3/4" Edge	2 3/4" Edge	4" Edge	No Edge <sup>7</sup>	1 3/4" Edge	2 3/4" Edge	4" Edge	No Edge <sup>7</sup>
1/2	5	6	1,720	2,025	2,435		1,815	2,135	2,570	
	5	12	1,840	2,165	2,610	3,785	1,940	2,285	2,750	3,990
	8 3/4	12	3,220	3,790	4,565		3,395	4,000	4,815	
	8 3/4	13 1/8	3,220	3,790	4,565	6,620	3,395	4,000	4,815	6,985
5/8	6 1/4	6	2,410	2,740	3,175		2,695	3,060	3,550	
	6 1/4	12	2,940	3,340	3,870	6,550	3,285	3,735	4,325	7,325
	8 1/2	12	4,250	4,690	5,260		4,750	5,240	5,880	
	8 1/2	12 3/4	4,380	4,830	5,420	9,880	4,750	5,400	6,060	10,425
3/4	7 1/2	6	2,850	3,175	3,610		3,185	3,550	4,035	
	7 1/2	12	3,715	4,145	4,710	8,610	4,155	4,635	5,265	9,630
	8 1/4	12	4,145	4,585	5,160		4,635	5,125	5,770	
	8 1/4	12 3/8	4,210	4,655	5,240	9,935	4,705	5,205	5,860	11,110
7/8	8	6	3,030	3,360	3,795		3,390	3,760	4,245	
	8	12	4,045	4,485	5,060	9,490	4,520	5,010	5,655	10,610
1	7 3/4	6	2,940	3,270	3,700		3,285	3,655	4,140	
	7 3/4	11 5/8	3,880	4,310	4,885	9,045	4,335	4,820	5,460	10,115
1 1/4	7 1/4	6	N/A	3,085	3,520		N/A	3,450	3,935	
	7 1/4	10 7/8	N/A	3,980	4,535	8,185	N/A	4,450	5,070	9,150

1. Allowable tension loads for design must be the lesser of concrete, adhesive bond or steel strength. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming cracked concrete, dry hole condition, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = \frac{1}{\phi} = 1.67$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% wind load.
3. Allowable table load = 0.6W
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The Designer of Record is responsible for the foundation design.
7. 'No edge' is defined as a minimum of 1.5 x embedment depth in all directions.

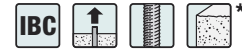


**Flat Slab**

\* See page 2 for an explanation of the load table icons.

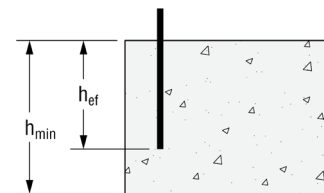
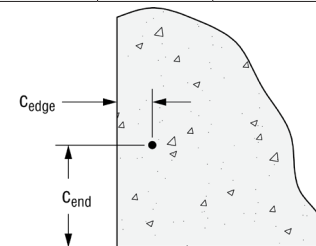
# SET-3G® Design Information — Concrete

Allowable Tension Loads Based on Concrete or Adhesive Bond  
- Flat Slab - 12" Thickness (Wind or SDC A-B)



Rod Dia. (in.)	Effective Embed. Depth $h_{ef}$ (in.)	End $C_{end}$ (in.)	Allowable Tension in 4,000 psi Concrete (lbs.) <sup>2</sup>				Allowable Tension in 5,000 psi Concrete (lbs.) <sup>2</sup>			
			1 3/4" Edge	2 3/4" Edge	4" Edge	No Edge <sup>7</sup>	1 3/4" Edge	2 3/4" Edge	4" Edge	No Edge <sup>7</sup>
1/2	5	6	1,720	2,025	2,435		1,815	2,135	2,570	
	5	12	1,840	2,165	2,610	3,785	1,940	2,285	2,750	3,990
	10	12	3,680	4,335	5,220		3,880	4,570	5,505	
	10	15	3,680	4,335	5,220	7,565	3,880	4,570	5,505	7,985
5/8	6 1/4	6	2,410	2,740	3,175		2,695	3,060	3,550	
	6 1/4	12	2,940	3,340	3,870	6,550	3,285	3,735	4,325	7,325
	10 1/2	12	5,120	5,555	6,115		5,725	6,210	6,840	
	10 1/2	15 3/4	5,565	6,305	6,945	12,205	5,870	6,720	7,765	12,875
3/4	7 1/2	6	2,850	3,175	3,610		3,185	3,550	4,035	
	7 1/2	12	3,715	4,145	4,710	8,610	4,155	4,635	5,265	9,630
	10 1/4	12	5,010	5,440	6,005		5,600	6,085	6,715	
	10 1/4	15 3/8	5,625	6,115	6,745	13,760	6,290	6,835	7,540	14,570
7/8	8 3/4	6	3,315	3,650	4,080		3,705	4,080	4,565	
	8 3/4	12	4,355	4,790	5,365		4,870	5,360	5,995	
	10	12	4,895	5,330	5,895		5,475	5,960	6,590	
	10	15	5,440	5,925	6,550	13,260	6,085	6,625	7,325	14,825
1	9 3/4	6	3,710	4,045	4,485		4,145	4,520	5,010	
	9 3/4	12	4,785	5,220	5,785		5,355	5,835	6,470	
	9 3/4	14 3/8	5,260	5,735	6,355	12,765	5,880	6,415	7,110	14,275
1 1/4	9 1/4	6	N/A	3,845	4,280		N/A	4,300	4,785	
	9 1/4	12	N/A	5,005	5,570		N/A	5,595	6,230	
	9 1/4	13 3/8	N/A	5,370	5,975	11,795	N/A	6,000	6,680	13,190

1. Allowable tension loads for design must be the lesser of concrete, adhesive bond or steel strength. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming cracked concrete, dry hole condition, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = 1/6.6 = 1.67$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% wind load.
3. Allowable table load = 0.6W
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The Designer of Record is responsible for the foundation design.
7. 'No edge' is defined as a minimum of 1.5 x embedment depth in all directions.

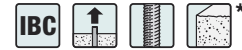


**Flat Slab**

\* See page 2 for an explanation of the load table icons.

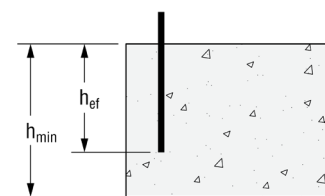
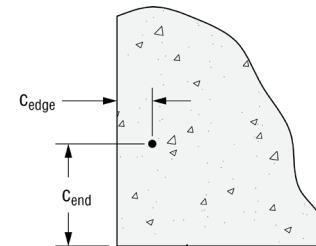
# SET-3G® Design Information — Concrete

Allowable Tension Loads Based on Concrete or Adhesive Bond  
 - Flat Slab - 14" Thickness (Wind or SDC A-B)



Rod Dia. (in.)	Effective Embed. Depth $h_{ef}$ (in.)	End $C_{end}$ (in.)	Allowable Tension in 4,000 psi Concrete (lbs.) <sup>2</sup>				Allowable Tension in 5,000 psi Concrete (lbs.) <sup>2</sup>			
			1 3/4" Edge	2 3/4" Edge	4" Edge	No Edge <sup>7</sup>	1 3/4" Edge	2 3/4" Edge	4" Edge	No Edge <sup>7</sup>
1/2	5	6	1,720	2,025	2,435		1,815	2,135	2,570	
	5	12	1,840	2,165	2,610	3,785	1,940	2,285	2,750	3,990
	10	12	3,680	4,335	5,220		3,880	4,570	5,505	
	10	15	3,680	4,335	5,220	7,565	3,880	4,570	5,505	7,985
5/8	6 1/4	6	2,410	2,740	3,175		2,695	3,060	3,550	
	6 1/4	12	2,940	3,340	3,870	6,550	3,285	3,735	4,325	7,325
	12 1/2	12	6,045	6,480	7,045		6,760	7,245	7,875	
	12 1/2	18 3/4	6,625	7,580	8,590	14,530	6,990	7,995	9,345	15,330
3/4	7 1/2	6	2,850	3,175	3,610		3,185	3,550	4,035	
	7 1/2	12	3,715	4,145	4,710	8,610	4,155	4,635	5,265	9,630
	12 1/4	12	5,930	6,365	6,925		6,630	7,115	7,740	
	12 1/4	18 3/8	7,175	7,700	8,375	16,505	7,655	8,605	9,365	17,415
7/8	8 3/4	6	3,315	3,650	4,080		3,705	4,080	4,565	
	8 3/4	12	4,355	4,790	5,365		4,870	5,360	5,995	
	12	12	5,810	6,245	6,805		6,495	6,980	7,610	
	12	18	6,975	7,495	8,165	17,430	7,795	8,380	9,130	19,220
1	10	6	3,810	4,145	4,585		4,260	4,635	5,125	
	10	12	4,895	5,330	5,895		5,475	5,960	6,590	
	11 3/4	12	5,695	6,125	6,690		6,365	6,850	7,480	
	11 3/4	17 5/8	6,775	7,290	7,960	16,890	7,575	8,150	8,895	18,885
1 1/4	11 1/4	6	N/A	4,670	5,115		N/A	5,220	5,720	
	11 1/4	12	N/A	5,895	6,455		N/A	6,590	7,220	
	11 1/4	16 7/8	N/A	6,890	7,545	15,825	N/A	7,705	8,435	17,690

1. Allowable tension loads for design must be the lesser of concrete, adhesive bond or steel strength. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming cracked concrete, dry hole condition, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = 1/6.6 = 1.67$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% wind load.
3. Allowable table load = 0.6W
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The Designer of Record is responsible for the foundation design.
7. 'No edge' is defined as a minimum of 1.5 x embedment depth in all directions.

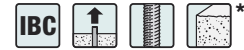


Flat Slab

\* See page 2 for an explanation of the load table icons.

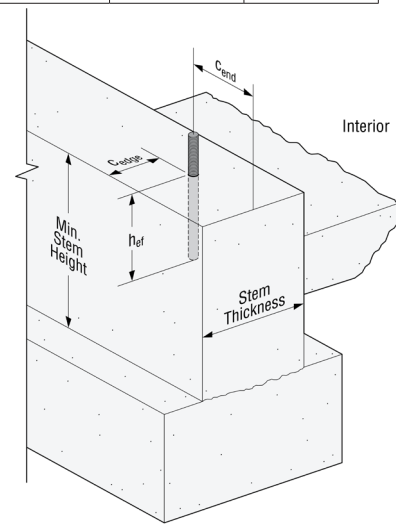
# SET-3G® Design Information — Concrete

Allowable Tension Loads Based on Concrete or Adhesive Bond  
- Stem Wall - 8" Thickness (Wind or SDC A-B)



Rod Dia. (in.)	Effective Embed. Depth $h_{ef}$ (in.)	End $C_{end}$ (in.)	Min. Stem Height (in.)	Allowable Tension in 3,000 psi Concrete (lbs.) <sup>2</sup>			Allowable Tension in 4,000 psi Concrete (lbs.) <sup>2</sup>		
				1 3/4" Edge	2 3/4" Edge	4" Edge	1 3/4" Edge	2 3/4" Edge	4" Edge
1/2	5	6	6 1/4	1,480	1,565	1,665	1,585	1,675	1,785
	5	12	6 1/4	1,585	1,675	1,785	1,700	1,795	1,915
	8	12	9 1/4	2,035	2,105	2,190	2,350	2,430	2,530
	10	15	11 1/4	2,250	2,310	2,390	2,600	2,670	2,760
5/8	5	6	6 3/8	1,520	1,620	1,745	1,700	1,775	1,870
	6 1/4	12	7 5/8	1,830	1,905	2,005	2,115	2,205	2,315
	8	12	9 3/8	2,035	2,105	2,190	2,350	2,430	2,530
	12 1/2	18 3/4	13 7/8	2,490	2,545	2,615	2,880	2,940	3,020
3/4	5	6	6 3/4	1,455	1,515	1,585	1,560	1,620	1,695
	7 1/2	12	9 1/4	1,980	2,050	2,140	2,285	2,370	2,470
	8	12	9 3/4	2,035	2,105	2,190	2,350	2,430	2,530
	15	22 1/2	16 3/4	2,715	2,765	2,825	3,135	3,190	3,260
7/8	5	6	7	1,365	1,410	1,470	1,460	1,515	1,575
	8	12	10	2,035	2,105	2,190	2,350	2,430	2,530
	17 1/2	26 1/4	19 1/2	2,915	2,965	3,020	3,370	3,420	3,490
1	5	6	7 1/4	1,295	1,335	1,385	1,385	1,430	1,485
	8	12	10 1/4	2,035	2,105	2,190	2,350	2,430	2,530
	20	30	22 1/4	3,105	3,150	3,205	3,590	3,640	3,700
1 1/4	5	6	7 3/4	N/A	1,225	1,265	N/A	1,315	1,355
	8	12	10 3/4	N/A	2,105	2,190	N/A	2,430	2,530
	25	37 1/2	27 3/4	N/A	3,495	3,545	N/A	4,035	4,095

1. Allowable tension loads for design must be the lesser of concrete, adhesive bond or steel strength. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming cracked concrete, dry hole condition, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = 1/0.6 = 1.67$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% wind load.
3. Allowable table load = 0.6W
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The Designer of Record is responsible for the foundation design.



**Stem Wall**

\* See page 2 for an explanation of the load table icons.



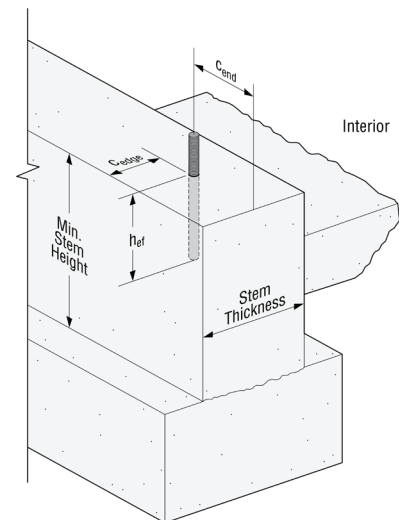
# SET-3G® Design Information — Concrete

Allowable Tension Loads Based on Concrete or Adhesive Bond  
- Stem Wall - 10" Thickness (Wind or SDC A-B)



Rod Dia. (in.)	Effective Embed. Depth $h_{ef}$ (in.)	End $C_{end}$ (in.)	Min. Stem Height (in.)	Allowable Tension in 3,000 psi Concrete (lbs.) <sup>2</sup>			Allowable Tension in 4,000 psi Concrete (lbs.) <sup>2</sup>		
				1 3/4" Edge	2 3/4" Edge	4" Edge	1 3/4" Edge	2 3/4" Edge	4" Edge
1/2	5	6	6 1/4	1,605	1,890	2,085	1,720	2,025	2,235
	5	12	6 1/4	1,715	2,020	2,230	1,840	2,165	2,390
	8	12	9 1/4	2,545	2,630	2,740	2,940	3,040	3,165
	10	15	11 1/4	2,815	2,890	2,985	3,250	3,335	3,450
5/8	5	6	6 3/8	1,735	1,980	2,180	2,005	2,220	2,340
	6 1/4	12	7 3/8	2,290	2,385	2,505	2,640	2,755	2,895
	8	12	9 3/8	2,545	2,630	2,740	2,940	3,040	3,165
	12 1/2	18 3/4	13 7/8	3,115	3,185	3,270	3,600	3,675	3,775
3/4	5	6	6 3/4	1,735	1,890	1,980	1,950	2,025	2,120
	7 1/2	12	9 1/4	2,475	2,565	2,675	2,860	2,960	3,090
	8	12	9 3/4	2,545	2,630	2,740	2,940	3,040	3,165
	15	22 1/2	16 3/4	3,390	3,455	3,530	3,915	3,990	4,080
7/8	5	6	7	1,705	1,765	1,840	1,830	1,890	1,970
	5	12	7	1,930	2,190	2,330	2,225	2,500	2,605
	8	12	10	2,545	2,630	2,740	2,940	3,040	3,165
	17 1/2	26 1/4	19 1/2	3,645	3,705	3,775	4,210	4,275	4,360
1	5	6	7 1/4	1,620	1,670	1,730	1,735	1,790	1,855
	8	12	10 1/4	2,545	2,630	2,740	2,940	3,040	3,165
	20	30	22 1/4	3,885	3,940	4,005	4,485	4,545	4,625
1 1/4	5	6	7 3/4	N/A	1,530	1,580	N/A	1,640	1,695
	8	12	10 3/4	N/A	2,630	2,740	N/A	3,040	3,165
	25	37 1/2	27 3/4	N/A	4,370	4,430	N/A	5,045	5,115

1. Allowable tension loads for design must be the lesser of concrete, adhesive bond or steel strength. Designer to select the lower value from the table above and the allowable tension load based on steel strength (page 17).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming cracked concrete, dry hole condition, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = 1/1.67 = 0.6$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% wind load.
3. Allowable table load = 0.6W
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The Designer of Record is responsible for the foundation design.



**Stem Wall**

## Allowable Tension Loads Based on Threaded Rod Steel Strength

Rod Dia. (in.)	ASTM F1554 Gr. 36	ASTM A449 Gr. 92 or ASTM A193 Gr. B7
3/8	1,495	3,090
1/2	2,720	5,625
5/8	4,325	8,950
3/4	6,395	13,225
7/8	8,845	18,295
1	11,600	24,000
1 1/4	18,545	39,970

1. Allowable steel tension loads are based on the following equation:  
 $F_v = 0.33 \times F_u \times \text{Tensile Stress Area}$ 
  - a. ASTM F1554 Gr. 36 - minimum  $F_u=58$ ksi
  - b. ASTM A449 Gr. 92 - minimum  $F_u=120$ ksi
  - c. ASTM A193 Gr. B7 - minimum  $F_u=125$ ksi
  - d. For 1/2" to 1" diameter, the steel strength is based on ASTM A449 Gr. 92.  
For 1 1/4" diameter, the steel strength is based on ASTM A193 Gr. B7.

\* See page 2 for an explanation of the load table icons.



# SET-3G® Design Information — Concrete



Tension Design Strength for Rebar in Normal-Weight Concrete ( $f'_c = 2,500$  psi)

Rebar Size	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Tension Design Strength Based on Concrete or Bond (lb.)							
						Edge Distances = $c_{ac}$ on all sides				Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides			
						SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>		SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>	
						Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked
#3	2½	3⅝	5½	3⅝	5¼	2,855	2,020	2,140	1,515	1,181	1,110	885	830
		5¾	5¼							1,690		1,265	
	3	4¼	7½	4¼	5¼	4,055	2,615	3,040	1,960	1,385	1,400	1,035	1,050
		7¼	5¼							2,055		1,540	
	4½	5¾	12⅝	5¾	5¾	6,150	3,925	4,615	2,945	1,355	2,100	1,020	1,575
		10⅞	8⅞							2,110		1,580	
	6	7¼	17⅞	7¼	6¾	8,180	5,235	6,135	3,925	1,330	2,585	995	1,935
		14½	10⅞			8,205				6,150		2,110	
	7½	8¾	21¾	8¾	8	10,250	6,540	7,690	4,905	1,310	3,175	985	2,380
		18	13½			10,230				7,675		2,110	
#4	2¾	4	6¾	4	6¾	3,555	2,520	2,670	1,890	1,460	1,485	1,095	1,115
		6⅝	6¾							2,095		1,570	
	4	5¼	6⅞	5¼	6¾	4,405	4,420	3,305	3,315	1,955	2,210	1,465	1,655
		9⅝	6¾			6,240				4,680		3,005	
	6	7¼	16⅝	7¼	8	10,340	6,760	7,755	5,070	2,085	3,175	1,565	2,380
		14½	10⅞							3,310		2,480	
	8	9¼	22¾	9¼	9¾	13,780	9,015	10,335	6,760	2,000	4,070	1,500	3,055
		19¼	14⅞			13,790				10,340		3,225	
	10	11¼	28¾	11¼	11¼	17,235	11,265	12,925	8,450	1,980	4,895	1,485	3,670
		24	17⅝			17,225				12,920		3,225	
#5	3⅝	4⅝	8½	4⅝	8½	4,310	3,050	3,230	2,290	1,795	1,700	1,350	1,275
		7½	8½							2,405		1,800	
	5	6½	11⅝	6½	8½	8,675	6,175	6,505	4,635	2,655	2,935	1,990	2,200
		12	8½			8,720				6,540		4,095	
	7½	9	19⅝	9	8½	16,020	7,455	12,015	5,590	3,840	3,425	2,880	2,565
		18	12⅝			15,760				11,820		6,115	
	12½	14	36⅞	14	17½	32,235	21,635	24,175	16,225	3,475	8,840	2,605	6,630
		30	22⅞			32,200				24,150		5,670	
#6	3½	5¼	9⅞	5¼	9⅞	5,105	3,620	3,830	2,715	2,155	1,930	1,615	1,445
		8½	9⅞							2,725		2,045	
	6	7¾	13⅝	7¾	9⅞	11,465	8,120	8,600	6,090	3,445	3,680	2,585	2,760
		14½	9⅞							5,190		3,895	
	9	10¾	22¾	10¾	9⅞	21,060	9,340	15,795	7,005	5,025	4,140	3,770	3,105
		21⅝	14¼			21,030				15,775		8,010	
15	16¾	42⅝	16¾	21¼	43,605	30,095	32,700	22,570	4,500	11,935	3,375	8,950	
	36	26							7,345		5,510		
#7	3¾	5¾	11⅞	5¾	11⅞	5,665	4,010	4,250	3,010	2,475	2,085	1,855	1,565
		9	11⅞							2,945		2,210	
	7	9	15⅝	9	11⅞	14,445	10,230	10,835	7,675	4,315	4,475	3,235	3,360
		16⅞	11⅞							6,320		4,740	
	10½	12½	25¾	12½	11⅞	26,525	11,165	19,890	8,375	6,205	4,830	4,655	3,620
		25¼	16⅞			26,520				9,910		7,430	
	17½	19½	48⅞	19½	26	55,470	39,555	41,605	29,665	5,540	15,325	4,155	11,495
		42	29½							9,050		6,790	

\* See page 2 for an explanation of the load table icons.

# SET-3G® Design Information — Concrete

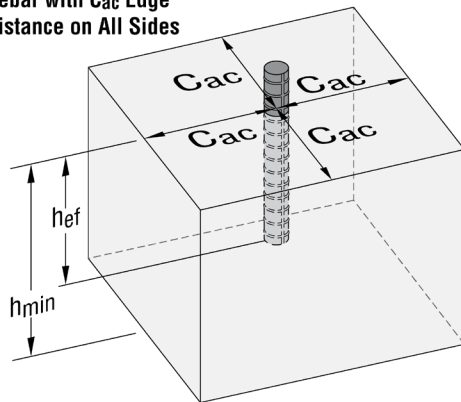


Tension Design Strength for Rebar in Normal-Weight Concrete ( $f'_c = 2,500$  psi)

Rebar Size	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Tension Design Strength Based on Concrete or Bond (lb.)							
						Edge Distances = $c_{ac}$ on all sides				Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides			
						SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>		SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>	
						Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked
#8	4	6¼	12¼	6¼	12¼	6,240	4,420	4,680	3,315	2,805	2,250	2,105	1,685
		9⅝	12¼							3,175		2,380	
	8	10¼	17⅞	10¼	12¼	17,650	12,500	13,235	9,375	5,270	5,325	3,950	3,995
		19¼	12¼							7,520		5,640	
	12	14¼	28¾	14¼	12¼	32,425	12,895	24,320	9,670	7,330	5,475	5,500	4,105
		28⅞	18							11,715		8,785	
	20	22¼	53½	22¼	12¼	67,430	12,895	50,570	9,670	6,560	5,475	4,920	4,105
		48	32¾							10,720		8,040	
#10	5	7¾	14⅞	7¾	14⅞	8,720	6,175	6,540	4,635	—	—	—	—
		12	14⅞							—	—	—	—
	10	12¾	20½	12¾	14⅞	24,640	15,975	18,480	11,980	—	—	—	—
		24	15			24,665		18,500					
	15	17¾	34⅞	17¾	14⅞	45,315	15,975	33,985	11,980	—	—	—	—
		36	22½							—	—	—	—
	25	27¾	62⅞	27¾	14⅞	89,480	15,975	67,110	11,980	—	—	—	—
		60	38⅞			89,530		67,150					

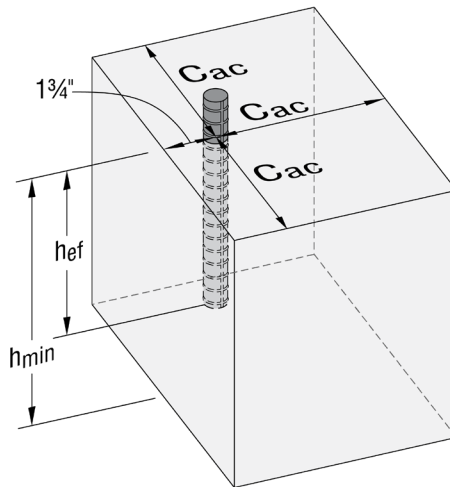
1. Tension design strength (SD level) must be the lesser of the concrete, bond or rebar steel design strength.
2. Tension design strengths are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming dry concrete, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F.
3. Tabulated values are for a single anchor with no influence of another anchor.
4. Interpolation between embedment depths is not permitted.
5. Strength reduction factor,  $\phi$ , is based on using a load combination from ACI 318-14 Section 5.3
6. The Tension design strength listed for SDC (Seismic Design Category) A-B may also be used in SDC C-F when the tension component of the strength-level seismic design load on the anchor does not exceed 20% of the total factored tension load on the anchor associated with the same load combination.
7. When designing anchorages in SDC C-F, the Designer shall consider the ductility requirements of ACI 318-14 Section 17.2.3
8. Tension design strengths in SDC C-F have been adjusted by 0.75 factor in accordance with ACI 318-14 Section 17.2.3.4.4
9. The Designer of Record is responsible for the foundation design.

Rebar with  $c_{ac}$  Edge Distance on All Sides



Flat Slab

Rebar with  $1\frac{3}{4}$ " Edge Distance on One Side and  $c_{ac}$  on Three Sides



Flat Slab

\* See page 2 for an explanation of the load table icons.



# SET-3G® Design Information — Concrete



Allowable Tension Loads for Rebar in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Static Load

Rebar Size	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)			
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	Edge Distances = $c_{ac}$ on all sides		Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides	
						Uncracked	Cracked	Uncracked	Cracked
#3	2½	3¾	5½	3¾	5¼	2,040	1,445	845	795
		5¾	5¼					1,205	
	3	4¼	7½	4¼	5¼	2,895	1,870	990	1,000
		7¼	5¼					1,470	
	4½	5¾	12¾	5¾	5¾	4,395	2,805	970	1,500
		10¾	8½					1,505	
	6	7¼	17½	7¼	6¾	5,845	3,740	950	1,845
		14½	10¾					1,505	
	7½	8¾	21¾	8¾	8	7,320	4,670	935	2,270
		18	13½					1,505	
#4	2¾	4	6¾	4	6¾	2,540	1,800	1,045	1,060
		6½	6¾					1,495	
	4	5¼	6¾	5¼	6¾	3,145	3,155	1,395	1,580
		9½	6¾					2,145	
	6	7¼	16¾	7¼	8	7,385	4,830	1,490	2,270
		14½	10¾					2,365	
	8	9¼	22¾	9¼	9¾	9,845	6,440	1,430	2,905
		19¼	14½					2,305	
	10	11¼	28¾	11¼	11¼	12,310	8,045	1,415	3,495
		24	17¾					2,305	
#5	3½	4¾	8½	4¾	8½	3,080	2,180	1,280	1,215
		7½	8½					1,720	
	5	6½	11¾	6½	8½	6,195	4,410	1,895	2,095
		12	8½					2,925	
	7½	9	19¾	9	8½	11,445	5,325	2,745	2,445
		18	12¾					4,370	
	12½	14	36¾	14	17½	23,025	15,455	2,480	6,315
		30	22½					4,050	
#6	3½	5¼	9¾	5¼	9¾	3,645	2,585	1,540	1,380
		8½	9¾					1,945	
	6	7¾	13¾	7¾	9¾	8,190	5,800	2,460	2,630
		14½	9¾					3,705	
	9	10¾	22¾	10¾	9¾	15,045	6,670	3,590	2,955
		21¾	14¼					5,720	
	15	16¾	42¾	16¾	21¾	31,145	21,495	3,215	8,525
		36	26					5,245	
#7	3¾	5¾	11½	5¾	11½	4,045	2,865	1,770	1,490
		9	11½					2,105	
	7	9	15¾	9	11½	10,320	7,305	3,080	3,195
		16¾	11½					4,515	
	10½	12½	25¾	12½	11½	18,945	7,975	4,430	3,450
		25¼	16½					7,080	
	17½	19½	48½	19½	26	39,620	28,255	3,955	10,945
		42	29½					6,465	

\* See page 2 for an explanation of the load table icons.

# SET-3G® Design Information — Concrete

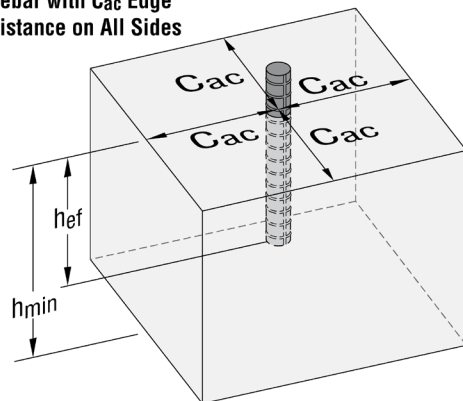


Allowable Tension Loads for Rebar in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Static Load

Rebar Size	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)			
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	Edge Distances = $c_{ac}$ on all sides		Edge Distances = 1 3/4" on one side and $c_{ac}$ on three sides	
						Uncracked	Cracked	Uncracked	Cracked
#8	4	6 1/4	12 1/4	6 1/4	12 1/4	4,455	3,155	2,005	1,605
		9 5/8	12 1/4					2,270	
	8	10 1/4	17 1/8	10 1/4	12 1/4	12,605	8,930	3,765	3,805
		19 1/4	12 1/4					5,370	
	12	14 1/4	28 3/4	14 1/4	12 1/4	23,160	9,210	5,235	3,910
		28 7/8	18					8,370	
	20	22 1/4	53 1/2	22 1/4	12 1/4	48,165	9,210	4,685	3,910
		48	32 3/4					7,655	
#10	5	7 3/4	14 1/8	7 3/4	14 1/8	6,230	4,410	—	—
		12	14 1/8					—	—
	10	12 3/4	20 1/2	12 3/4	14 1/8	17,600	11,410	—	—
		24	15			17,620		—	—
	15	17 3/4	34 3/8	17 3/4	14 1/8	32,370	11,410	—	—
		36	22 1/2					—	—
	25	27 3/4	62 3/8	27 3/4	14 1/8	63,915	11,410	—	—
		60	38 3/8			63,950		—	—

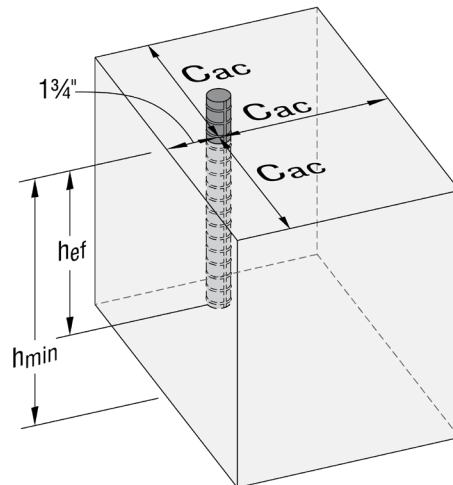
1. Allowable tension load must be the lesser of the concrete, bond or rebar steel load.  
Designer to select the lower value from the table above and the allowable tension load based on rebar steel strength (page 25).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming dry concrete, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = 1.4$ . The conversion factor  $\alpha$  is based on the load combination 1.2D + 1.6L assuming 50% dead load and 50% live load:  $1.2(0.5) + 1.6(0.5) = 1.4$ .
3. Tabulated values are for a single anchor with no influence of another anchor.
4. Interpolation between embedment depths is not permitted.
5. The Designer of Record is responsible for the foundation design.

Rebar with  $c_{ac}$  Edge Distance on All Sides



Flat Slab

Rebar with 1 3/4" Edge Distance on One Side and  $c_{ac}$  on Three Sides



Flat Slab

\* See page 2 for an explanation of the load table icons.



# SET-3G® Design Information — Concrete



Allowable Tension Loads for Rebar in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Wind Load

Rebar Size	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)				
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	Edge Distances = $c_{ac}$ on all sides		Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides		
						Uncracked	Cracked	Uncracked	Cracked	
#3	2½	3⅝	5½	3⅝	5¼	1,710	1,210	705	665	
		5¾	5¼					1,010		
	3	4¼	7½	4¼	5¼	2,430	1,565	830	840	
		7¼	5¼					1,230		
	4½	5¾	12⅝	5¾	5¾	3,685	2,350	810	1,255	
		10⅞	8⅞					1,265		
	6	7¼	17⅞	7¼	6¾	4,890	3,135	765	1,550	
		14½	10⅞					1,265		
	7½	8¾	21¾	8¾	8	6,140	3,915	785	1,900	
		18	13½					1,265		
#4	2¾	4	6¾	4	6¾	2,130	1,510	875	890	
		6⅝	6¾					1,255		
	4	5¼	6⅞	5¼	6¾	2,640	2,645	1,170	1,325	
		9⅝	6¾					1,800		
	6	7¼	16⅜	7¼	8	6,190	4,050	1,250	1,900	
		14½	10⅞					1,980		
	8	9¼	22¾	9¼	9¾	8,250	5,400	1,200	2,435	
		19¼	14⅞					1,930		
	10	11¼	28¾	11¼	11¼	10,320	6,745	1,185	2,930	
		24	17⅝					1,930		
#5	3⅝	4⅝	8½	4⅝	8½	2,580	1,825	1,075	1,020	
		7½	8½					1,440		
	5	6½	11⅞	6½	8½	5,195	3,700	1,590	1,755	
		12	8½					2,450		
	7½	9	19⅞	9	8½	9,595	4,465	2,300	2,050	
		18	12⅜					3,660		
	12½	14	36⅞	14	17½	19,300	12,955	2,080	5,295	
		30	22⅞					3,395		
	#6	3½	5¼	9⅞	5¼	9⅞	3,055	2,170	1,290	1,155
			8½	9⅞					1,630	
6		7¾	13⅞	7¾	9⅞	6,865	4,860	2,065	2,205	
		14½	9⅞					3,110		
9		10¾	22¾	10¾	9⅞	12,610	5,595	3,010	2,480	
		21⅞	14¼					4,795		
15		16¾	42⅜	16¾	21¾	26,110	18,020	2,695	7,145	
		36	26					4,400		
#7		3¾	5¾	11⅞	5¾	11⅞	3,390	2,400	1,480	1,250
			9	11⅞					1,765	
	7	9	15⅞	9	11⅞	8,650	6,125	2,585	2,680	
		16⅞	11⅞					3,785		
	10½	12½	25¾	12½	11⅞	15,885	6,685	3,715	2,890	
		25¼	16⅞					5,935		
	17½	19½	48⅞	19½	26	33,215	23,685	3,315	9,175	
		42	29½					5,420		

\* See page 2 for an explanation of the load table icons.

# SET-3G® Design Information — Concrete

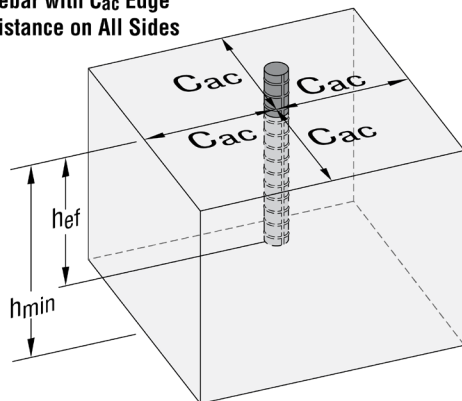


Allowable Tension Loads for Rebar in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Wind Load

Rebar Size	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)			
		$h_{min}$	$c_{ac}$	$h_{min}$	$c_{ac}$	Edge Distances = $c_{ac}$ on all sides		Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides	
						Uncracked	Cracked	Uncracked	Cracked
#8	4	6¼	12¼	6¼	12¼	3,735	2,645	1,680	1,345
		9⅝	12¼					1,900	
	8	10¼	17⅞	10¼	12¼	10,570	7,485	3,155	3,190
		19¼	12¼					4,505	
	12	14¼	28¾	14¼	12¼	19,415	7,720	4,390	3,280
		28⅞	18					7,015	
	20	22¼	53½	22¼	12¼	40,375	7,720	3,930	3,280
		48	32¾					6,420	
#10	5	7¾	14⅞	7¾	14⅞	5,220	3,700	—	—
		12	14⅞					—	
	10	12¾	20½	12¾	14⅞	14,755	9,565	—	—
		24	15					14,770	
	15	17¾	34⅜	17¾	14⅞	27,135	9,565	—	—
		36	22½					—	
	25	27¾	62⅝	27¾	14⅞	53,580	9,565	—	—
		60	38⅝					53,610	

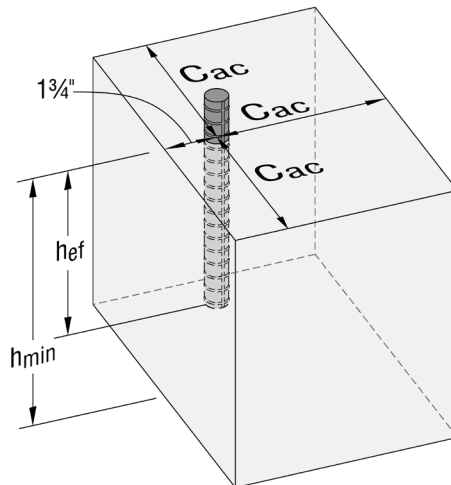
1. Allowable tension load must be the lesser of the concrete, bond or rebar steel load.  
Designer to select the lower value from the table above and the allowable tension load based on rebar steel strength (page 25).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming dry concrete, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = \frac{1}{1.67}$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% wind load.
3. Allowable table load = 0.6W
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The Designer of Record is responsible for the foundation design.

Rebar with  $c_{ac}$  Edge Distance on All Sides



Flat Slab

Rebar with  $1\frac{3}{4}$ " Edge Distance on One Side and  $c_{ac}$  on Three Sides



Flat Slab

\* See page 2 for an explanation of the load table icons.



# SET-3G® Design Information — Concrete



Allowable Tension Loads for Rebar in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Seismic Load

Rebar Size	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)							
						Edge Distances = $c_{ac}$ on all sides				Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides			
						SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>		SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>	
						Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked
#3	2½	3⅝	5½	3⅝	5¼	1,995	1,415	1,495	1,060	825	775	620	580
		5¾	5¼							1,180		885	
	3	4¼	7½	4¼	5¼	2,835	1,830	2,125	1,370	970	980	725	735
		7¼	5¼							1,435		1,075	
	4½	5¾	12⅝	5¾	5¾	4,300	2,745	3,225	2,060	950	1,470	715	1,100
		10⅞	8⅞							1,475		1,105	
	6	7¼	17⅞	7¼	6¾	5,720	3,660	4,290	2,745	930	1,810	695	1,355
		14½	10⅞			5,740		4,300		1,475		1,105	
	7½	8¾	21¾	8¾	8	7,170	4,575	5,380	3,430	915	2,220	690	1,665
		18	13½			7,155		5,365		1,475		1,105	
#4	2¾	4	6¾	4	6¾	2,485	1,760	1,865	1,320	1,020	1,040	765	780
		6⅝	6¾							1,465		1,100	
	4	5¼	6⅞	5¼	6¾	3,080	3,090	2,310	2,320	1,365	1,545	1,025	1,155
		9⅝	6¾			4,365		3,275		2,100		1,575	
	6	7¼	16⅝	7¼	8	7,230	4,725	5,425	3,545	1,460	2,220	1,095	1,665
		14½	10⅞							2,315		1,735	
	8	9¼	22¾	9¼	9¾	9,635	6,305	7,225	4,725	1,400	2,845	1,050	2,135
		19¼	14⅞			9,645		7,230		2,255		1,690	
	10	11¼	28¾	11¼	11¼	12,050	7,880	9,040	5,910	1,385	3,425	1,040	2,565
		24	17⅞			12,045		9,035		2,255		1,690	
#5	3⅝	4⅝	8½	4⅝	8½	3,015	2,135	2,260	1,600	1,255	1,190	945	890
		7½	8½							1,680		1,260	
	5	6½	11⅞	6½	8½	6,065	4,320	4,550	3,240	1,855	2,050	1,390	1,540
		12	8½			6,100		4,575		2,865		2,145	
	7½	9	19⅞	9	8½	11,205	5,215	8,400	3,910	2,685	2,395	2,015	1,795
		18	12⅞			11,020		8,265		4,275		3,205	
	12½	14	36⅞	14	17½	22,540	15,130	16,905	11,345	2,430	6,180	1,820	4,635
		30	22⅞			22,515		16,890		3,965		2,970	
#6	3½	5¼	9⅞	5¼	9⅞	3,570	2,530	2,680	1,900	1,505	1,350	1,130	1,010
		8½	9⅞							1,905		1,430	
	6	7¾	13⅝	7¾	9⅞	8,015	5,680	6,015	4,260	2,410	2,575	1,810	1,930
		14½	9⅞							3,630		2,725	
	9	10¾	22¾	10¾	9⅞	14,725	6,530	11,045	4,900	3,515	2,895	2,635	2,170
		21⅝	14¼			14,705		11,030		5,600		4,205	
15	16¾	42⅝	16¾	21¼	30,495	21,045	22,865	15,785	3,145	8,345	2,360	6,260	
	36	26			5,135		3,855						
#7	3¾	5¾	11⅞	5¾	11⅞	3,960	2,805	2,970	2,105	1,730	1,460	1,295	1,095
		9	11⅞							2,060		1,545	
	7	9	15⅝	9	11⅞	10,100	7,155	7,575	5,365	3,015	3,130	2,260	2,350
		16⅞	11⅞							4,420		3,315	
	10½	12½	25¾	12½	11⅞	18,550	7,810	13,910	5,855	4,340	3,380	3,255	2,530
		25¼	16⅞			18,545		6,930		5,195			
	17½	19½	48⅞	19½	26	38,790	27,660	29,095	20,745	3,875	10,715	2,905	8,040
		42	29½			6,330		4,750					

\* See page 2 for an explanation of the load table icons.





# SET-3G® Design Information — Concrete



Allowable Tension Loads for Rebar in Normal-Weight Concrete ( $f'_c = 2,500$  psi) - Seismic Load

Rebar Size	Eff. Embed. Depth $h_{ef}$ (in.)	Minimum Dimensions for Uncracked (in.)		Minimum Dimensions for Cracked (in.)		Allowable Tension Loads Based on Concrete or Bond (lb.)							
						Edge Distances = $c_{ac}$ on all sides				Edge Distances = $1\frac{3}{4}$ " on one side and $c_{ac}$ on three sides			
						SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>		SDC A-B <sup>6</sup>		SDC C-F <sup>7,8</sup>	
						Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked	Uncracked	Cracked
#8	4	6¼	12¼	6¼	12¼	4,365	3,090	3,275	2,320	1,960	1,575	1,470	1,180
		9¾	12¼							2,220		1,665	
	8	10¼	17½	10¼	12¼	12,345	8,740	9,255	6,555	3,685	3,725	2,760	2,795
		19¼	12¼							5,260		3,945	
	12	14¼	28¾	14¼	12¼	22,675	9,015	17,005	6,760	5,125	3,830	3,845	2,870
		28¾	18							8,190		6,145	
	20	22¼	53½	22¼	12¼	47,155	9,015	35,365	6,760	4,585	3,830	3,440	2,870
		48	32¾							7,495		5,620	
#10	5	7¾	14½	7¾	14½	6,100	4,320	4,575	3,240	—	—	—	—
		12	14½							—		—	
	10	12¾	20½	12¾	14½	17,230	11,170	12,925	8,380	—	—	—	—
		24	15			17,250		12,935					
	15	17¾	34¾	17¾	14½	31,690	11,170	23,765	8,380	—	—	—	—
		36	22½							—		—	
	25	27¾	62¾	27¾	14½	62,575	11,170	46,930	8,380	—	—	—	—
		60	38¾			62,610		46,960					

1. Allowable tension load must be the lesser of the concrete, bond or rebar steel load.  
Designer to select the lower value from the table above and the allowable tension load based on rebar steel strength (page 25).
2. Allowable tension loads are calculated based on the strength design provisions of ACI 318-14 Chapter 17 assuming dry concrete, periodic inspection, short-term temperature of 160°F and long-term temperature of 110°F. Tension design strengths are converted to allowable tension loads using a conversion factor of  $\alpha = 1/1.43 = 0.7$ . The conversion factor  $\alpha$  is based on the load combination assuming 100% seismic load.
3. Allowable table load = 0.7E
4. Tabulated values are for a single anchor with no influence of another anchor.
5. Interpolation between embedment depths is not permitted.
6. The allowable tension load listed for SDC (Seismic Design Category) A-B may also be used in SDC C-F when the tension component of the strength-level seismic design load on the anchor does not exceed 20% of the total factored tension load on the anchor associated with the same load combination.
7. When designing anchorages in SDC C-F, the Designer shall consider the ductility requirements of ACI 318-14 Section 17.2.3
8. Allowable tension loads in SDC C-F have been adjusted by 0.75 factor in accordance with ACI 318-14 Section 17.2.3.4.4
9. The Designer of Record is responsible for the foundation design.

## Allowable Tension Loads Based on Rebar Steel Strength

Rebar Size	ASTM A615 Gr. 40 <sup>1</sup>	ASTM A615 Gr. 60 <sup>2</sup>
#3	2,200	2,640
#4	4,000	4,800
#5	6,200	7,440
#6	8,800	10,560
#7	12,000	14,400
#8	15,800	18,960
#10	25,400	30,480

1. Allowable steel tension load is based on AC58 Section 3.3.3 (20,000 psi x Tensile Stress Area)
2. Allowable steel tension load is based on AC58 Section 3.3.3 (24,000 psi x Tensile Stress Area)

\* See page 2 for an explanation of the load table icons.

This technical bulletin is effective until December 31, 2024, and reflects information available as of January 1, 2023. This information is updated periodically and should not be relied upon after December 31, 2024; contact Simpson Strong-Tie for current information and limited warranty or see [strongtie.com](http://strongtie.com).