

KCAB Wedge Type Anchor Selection Guide

For wedge type concrete anchors, the factor of safety is computed using the following equation.

$$F.S. \geq 1 = 1/[(T/T_A)^{(5/3)} + (P/P_A)^{(5/3)}] \quad (\text{Eq. P10.3.1-1})$$

Where:

F.S. = the factor of safety.

T = the applied tensile force acting on the anchor (lbs).

T_A = the allowable tensile load for the specified anchor size (lbs).

P = the applied shear force acting on the anchor (lbs).

P_A = the allowable shear load for the specified anchor size (lbs).

It is possible to use Equation P10.3.1-1 to compute an allowable combined anchor load where the applied tensile force is equal to the applied shear force. With this information, a capacity envelope may be constructed for the various wedge type concrete anchors that are specified and used by Kinetics Noise Control. In Equation P10.3.1-2 the applied tensile load has been made equal to the applied shear load, and is designated as **F_C**.

$$1 = 1/[(F_C/T_A)^{(5/3)} + (F_C/P_A)^{(5/3)}] \quad (\text{Eq. P10.3.1-2})$$

Solving Equation P10.3.1-2 for **F_C** and simplifying will yield the following result.

$$F_C = (T_A * P_A) * [1/(T_A^{(5/3)} + P_A^{(5/3)})]^{(3/5)} \quad (\text{Eq. P10.3.1-3})$$

The data provided in Table P10.3.1-1 is based on concrete with a minimum compressive strength of **3,000 psi** and a minimum embedment depth equal to **8** anchor diameters. The capacity envelopes for the anchors presented in Table P10.3.1-1 are plotted in Figures P10.3.1-1 through P10.3.1-4.

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P10.3.1



Table P10.3.1-1; KCAB Wedge Type Anchor Basic Capacities.

Anchor Size ² (in)	Minimum Required Embed. Depth (in)	ASD Allow. Tensile Load ¹ (T=0) (lbs)	ASD Allow. Shear Load ¹ (P=0) (lbs)	ASD Allow. Comb. Load ¹ (F _C =T=P) (lbs)	LRFD Allow. Tensile Load ¹ (T=0) (lbs)	LRFD Allow. Shear Load ¹ (P=0) (lbs)	LRFD Allow. Com. Load ¹ (F _C =T=P) (lbs)
1/4	2	280	400	215	392	560	301
3/8	3	588	1,018	480	823	1,425	672
1/2	4	874	1,769	744	1,224	2,477	1,041
5/8	5	1,317	2,640	1,118	1,844	3,696	1,565
3/4	6	1,668	4,225	1,486	2,335	5,915	2,080
7/8	7	2,264	6,210	2,044	3,170	8,694	2,861
1	8	2,535	8,328	2,346	3,549	11,659	3,285
1	9	2,730	8,328	2,503	3,822	11,659	3,504
1-1/4	10	5,105	9,918	4,301	7,147	13,885	6,021

- 1) For Non-California projects these values may be inflated by 33-1/3% for seismic and wind applications. For California Non-OSHPD projects these values must be reduced by 20%. For California OSHPD projects the allowable loads for lightweight, 2,000 psi, concrete must be reduced by 20% to simulate cracked concrete. In this case the values listed here do not apply.
- 2) If the Clearance Hole Diameter is greater than or equal to 1/8" more than the Anchor Size, fill the clearance space with grout or epoxy, or use the appropriate Kinetics Noise Control model TG Grommet.

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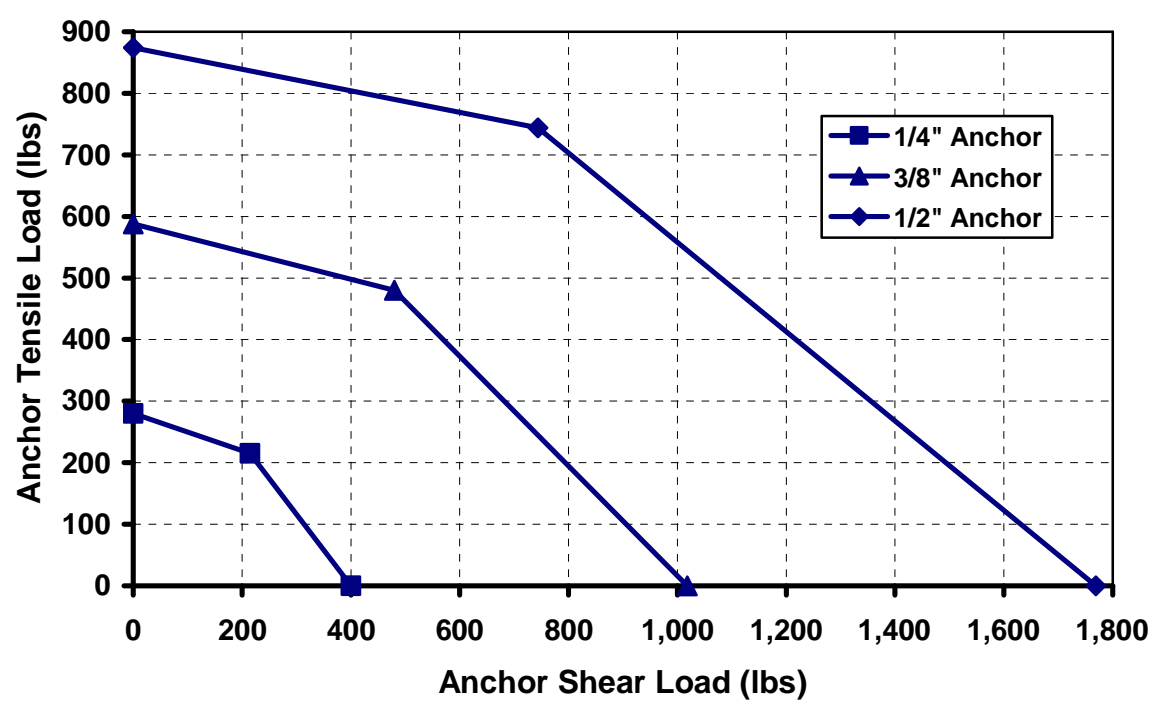


Figure P10.3.1-1; Basic ASD Values for 1/4" through 1/2" Anchors.

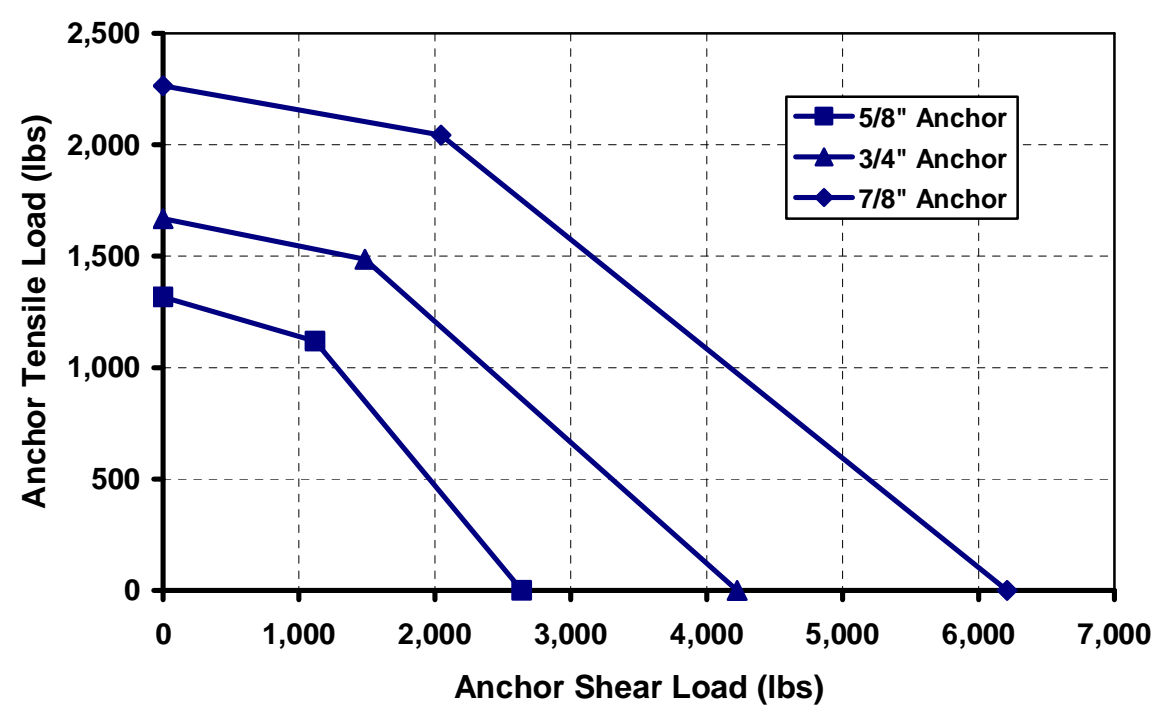


Figure 10.3.1-2; Basic ASD Values for 5/8" Though 7/8" Anchors

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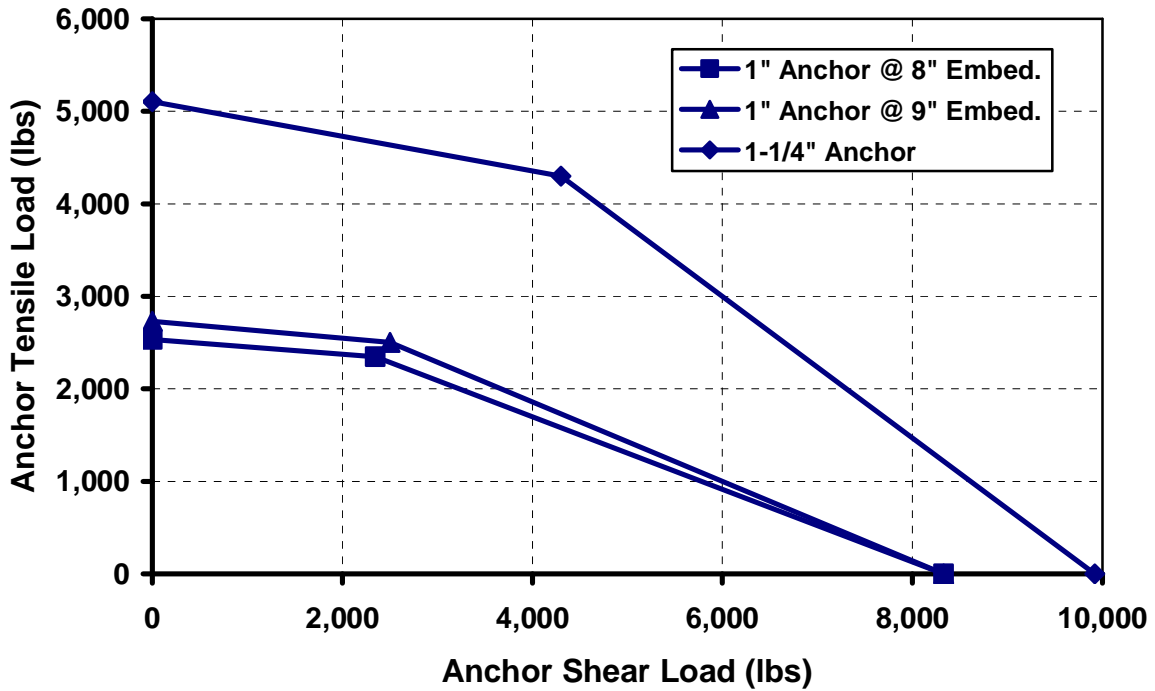


Figure P10.3.1-3; Basic ASD Values for 1" through 1-1/4" Anchors.

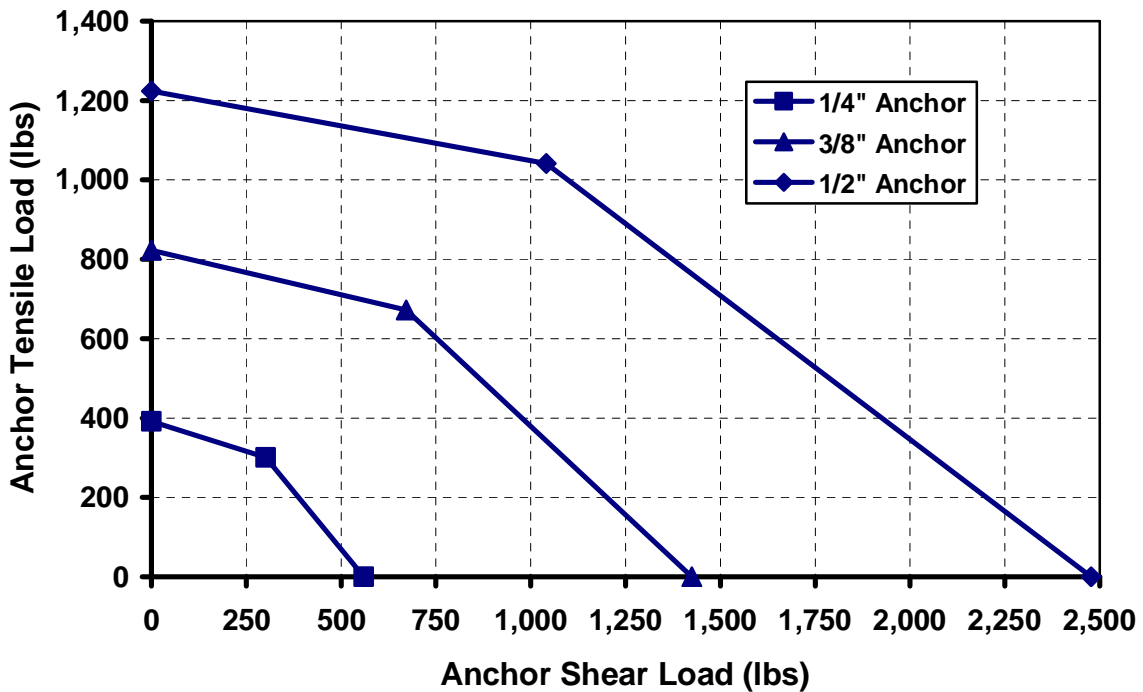


Figure 10.3.1-4; Basic LRFD Values for 1/4" Though 5/8" Anchors

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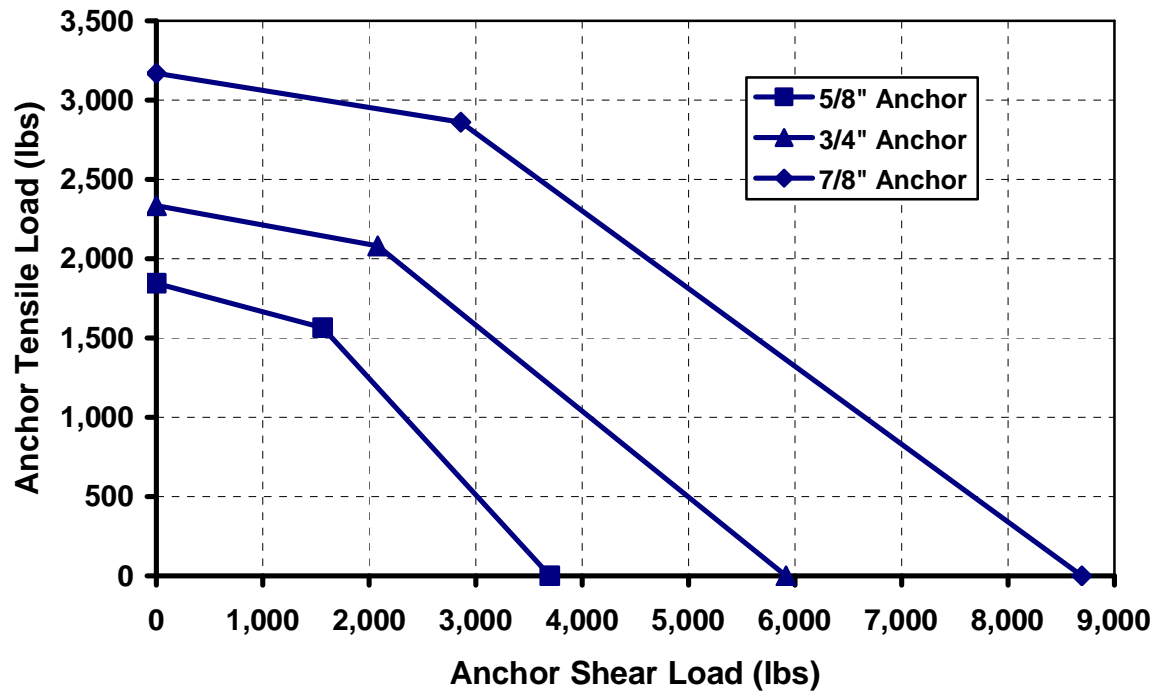


Figure P10.3.1-5; Basic LRFD Values for 5/8" through 7/8" Anchors.

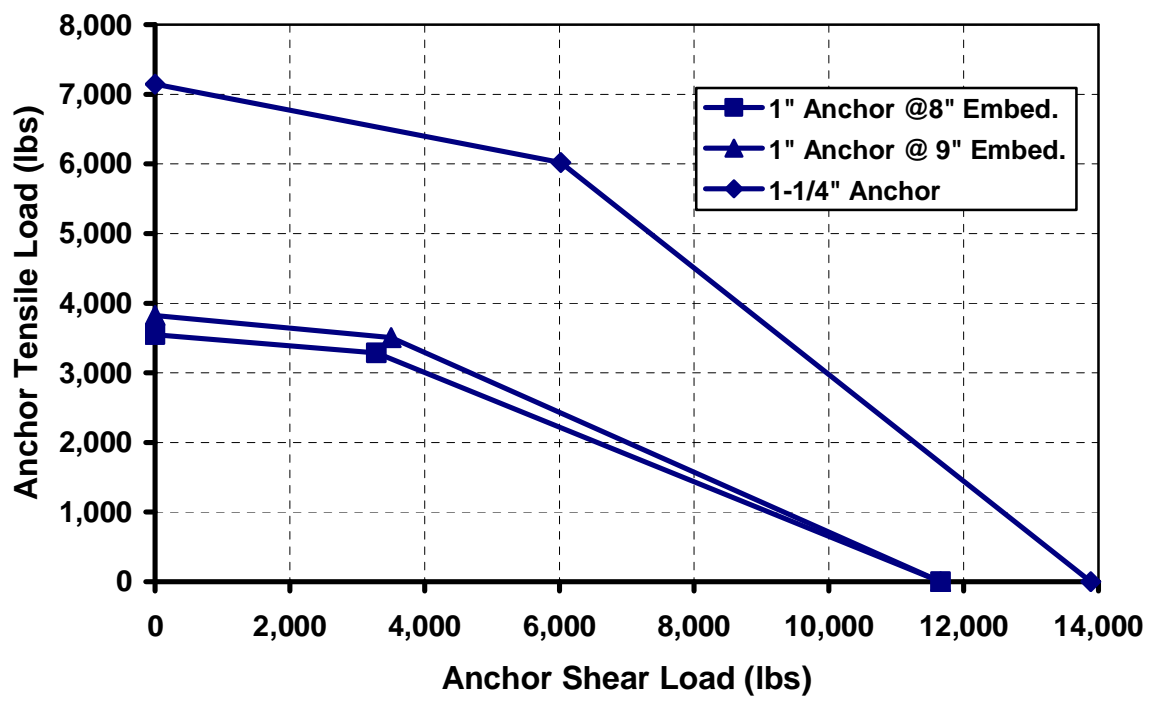
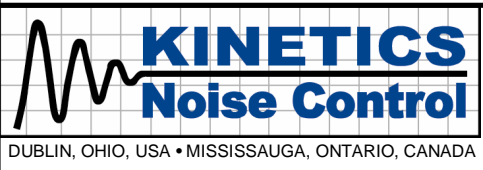


Figure 10.3.1-2; Basic LRFD Values for 1" Though 1-1/4" Anchors

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