

ANEXO 2. Table I-C Manual of Steel Construction Allowable Stress Design Ninth Edition

Hasta la última edición del *Manual of Steel Construction. Allowable Stress Design*. Ninth edition, 1989, en su Parte 4 se encontraban las siguientes tablas:

Table I-A Bolts and Rivets. Tension on gross (nominal) area
 Table I-B Threaded Fasteners. Tension on gross (nominal) area
 Table I-C Bolts and Threaded Parts que se reproduce a continuación

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BOLTS AND THREADED PARTS ASTM Specifications

TABLE I-C. MATERIAL FOR ANCHOR BOLTS AND TIE RODS							
ASTM Specification	Strength, Ksi			Maximum Diameter In.	Type of Material ^b	Headed or Unheaded	
	Proof Load	Yield (Min.)	Tensile (Min.)				
A307	—	—	80	4	C	H	
A325 ^a	85	92	120	½ to 1, incl.	C, QT	H	
	74	81	105	1¼ to 1½ incl.			
A354 Gr. BD	120	130	150	¼ to 2½ incl.	A, QT	H, U	
	105	115	140	over 2½ to 4 incl.			
A354 Gr. BC	105	109	125	¼ to 2½ incl.	A, QT	H, U	
	95	99	115	over 2½ to 4 incl.			
A449	85	92	120	¼ to 1 incl.	C, QT	H, U	
	74	81	105	1¼ to 1½ incl.			
	55	58	90	1¾ to 3 incl.			
A490	120	—	150	½ to 1½ incl.	A, QT	H	
A887	—	105	150 ^c	¾ to 3 incl.	A, QT, NT	U	
Threaded Round Stock	A36	—	36	58	8	C	U
	A572 Gr. 50	—	50	65	2	HSLA	U
	A572 Gr. 42	—	42	60	6	HSLA	U
	A588	—	50	70	To 4 incl.	HSLA, ACR	U
—	—	46	67	over 4 to 5 incl.			
—	—	42	63	over 5 to 8 incl.			

ASTM A 193 B2

^aAvailable with weathering (atmospheric corrosion resistance) characteristics comparable to ASTM A242 and A588 steel.

^bC = carbon
 QT = quenched and tempered
 A = alloy
 NT = notch tough (Charpy V-notch 15 ft-lb. @ -20°F)
 HSLA = high-strength low alloy
 ACR = atmospheric corrosion-resistant

^cMaximum (ultimate tensile strength)

Notes:
 ASTM specified material for anchor bolts, tie rods and similar applications can be obtained from either specifications for threaded bolts and studs normally used as connectors or for structural material available in round stock that may then be threaded. The material supplier should be consulted for availability of size and length.
 Suitable nuts by grade may be obtained from ASTM Specification A563.
 Anchor bolt material that is quenched and tempered should not be welded or heated.
 Threaded rod with properties meeting A325, A490 or A449 Specifications may be obtained by the use of an appropriate steel (such as AISI C1040 or C4140), quenched and tempered after fabrication.

SAE 1020, A305, A140, A240

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Muy importante observar que deben usarse cabillas o barras de refuerzo para concreto reforzado como pernos de anclajes. El % de alargamiento de una cabilla no debe ser menor del 12% y el de los pernos de anclaje ASTM F 1554 no menor del 22%. Pero estos % de alargamiento pueden mermarse durante la instalación de los pernos, por lo que es necesario especificar al fabricante o suplidor de los mismos, en la correspondiente orden de compra, los requisitos adicionales.