



**PACIFIC STEEL**  
CERTAIN STRENGTH

# THE HISTORY OF REINFORCING STANDARDS

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# The History Of Reinforcing Standards

With standards often being changed, revised, and having additions made, a history of what standards may have been applicable at the time of build is a resource well worth having. Below is a summary of some of the previous reinforcing steel Standards in New Zealand. All current Standards are available for purchase from the Standards NZ website [www.standards.co.nz](http://www.standards.co.nz)

Standard Number	Year Issued	Details	Yield Strength	Tensile Strength	Elongation	C %w/w	p %w/w	S %w/w	CE %w/w
NZSS 197 (BS 785:1938)	1949	Rolled Steel Bars and Hard Drawn Steel Wire for Concrete Reinforcement (Adoption of BS 785. Most properties varied with diameter)	Not stated	62,720 – 73,920psi	min. 16/20/24% on 5x diam'	---	0.060	0.060	---
			39200/ 41440/ 43680	73,920 – 85,120psi	min. 14/18/22% on 5x diam'	---	0.060	0.060	---
NZSS 1693	1962	Deformed Steel Bars of Structural Grade for Reinforced Concrete (Deformed hot-rolled bars)	min. 33,000 psi	55,000 – 75,000 psi	min. 20% on 5x diam'	---	0.060	0.060	---
NZSS 1879	1964	Hot Rolled Deformed Steel Bars of HY 60 Grade (High Yield 60 000 psi) for Reinforced Concrete. (Not normally weldable. Deformation factor of 0.925 meant the bars really only needed to be 55,500 psi)	min. 60,000 psi	1.2 x YS, but min. 90,000 psi	min. 12% on 5x diam'	0.40	0.050	0.050	---
NZSS 1693 Amendment 1	1968		min. 40,000 psi	55,000 – 75,000 psi	min. 20% on 5x diam'	---	0.060	0.060	---
NZSS 1879 Amendment 1	1970	(added 1.5 inch bar)	min. 60,000 psi	1.2 x YS, but min. 90,000 psi	min. 12% on 5x diam'	0.40	0.050	0.050	---
NZSS 1879 Amendment 2	1972	(reduces testing frequency from once in every 10 tons to once in every 25 tons)	min. 60,000 psi	1.2 x YS, but min. 90,000 psi	min. 12% on 5x diam'	0.40	0.050	0.050	---
NZS 3423P	1972	Hot Rolled Plain Round Steel Bars of Structural Grade for Reinforced Concrete (Metric & imperial units)	min. 40,000 psi	55,000 – 75,000 psi	min. 20% on 5x diam'	0.25	0.060	0.060	---
NZS 3402P	1973	Hot Rolled Steel Bars for the Reinforcement of Concrete (Metric units, superseded 1693, 1879 & 3423P. Non specific bar mark introduced for 380 grade )	min. 275MPa	380 – 520MPa	min. 20% on 5x diam'	0.25	0.060	0.060	---
			min. 380MPa	min. 570MPa (min. 1.2 ratio)	min. 12% on 5x diam'	0.40	0.050	0.050	---
NZS 3402	1989	Steel Bars for the Reinforcement of Concrete (Use of characteristic ranges for yield and tensile ratio. Both grades are readily weldable. Bar marking of all deformed bar and plain 430 grade for grade and manufacturer)	300 - 355MPa	1.15 – 1.50 ratio	min. 20% on 5x diam'	0.22	0.050	0.050	0.45
			430 - 500MPa	1.15 – 1.40 ratio	min. 15% on 5x diam'	0.22	0.050	0.050	0.51
AS/NZS 4671	2001	Steel Reinforcing Materials (Joint materials Standard. Change to grade 500E for NZ, further development of the characteristic values to include uniform elongation)	300 - 380MPa	1.15 – 1.50 ratio	min. 15.0% uniform	0.22	0.050	0.050	0.43
			500 - 600MPa	1.15 – 1.40 ratio	min. 10.0% uniform	0.22	0.050	0.050	0.49
AS/NZS 4671 Amendment 1	2003	(Amends reference to external documents, changes some testing frequencies and the application of statistical analyses)	300 - 380MPa	1.15 – 1.50 ratio	min. 15.0% uniform	0.22	0.050	0.050	0.43
			500 - 600MPa	1.15 – 1.40 ratio	min. 10.0% uniform	0.22	0.050	0.050	0.49

Please note that this table is a summary for reference purposes only. All persons are encouraged to seek external advice before relying on the data contained in this summary table.

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