

DATE: October 2, 1996

TO: All Bridge Branch Staff

FROM: Steve Horton

SUBJECT: Technical Memorandum #20
Metric Reinforcing Steel Bars Designation, Minimum
Yield Strength, and Concrete Strength

The following information is being provided to establish new metric standards for CDOT reinforcing steel designation, minimum yield strength, and concrete strength for metric projects. Staff Bridge has adopted a policy to implement the soft metric conversion of reinforcing steel bars in accordance with CRSI tables published in June 1996. The minimum yield strength of steel reinforcement shall be in accordance with ASTM A615M. In addition, concrete class D strength shall be changed from 35 Mpa to 30 Mpa.

The CRSI metric reinforcing steel bars table is considerably different than the previously published one. The soft conversion method was utilized to develop this table versus the hard conversion method that was used previously.

Listed below is the latest CRSI metric reinforcing steel bars table with the English reinforcing steel equivalents.

METRIC BAR SIZE	DIAMETER (MM)	INCH-POUND BAR SIZE	DIAMETER (IN)
#10	9.5	#3	0.375
#13	12.7	#4	0.500
#16	15.9	#5	0.625
#19	19.1	#6	0.750
#22	22.2	#7	0.875
#25	25.4	#8	1.000
#29	28.7	#9	1.128
#32	32.3	#10	1.270
#36	35.8	#11	1.410
#43	43.0	#14	1.693
#57	57.3	#18	2.257

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It is worth noting that the metric bar size designation is the diameter of the bar rounded to the nearest millimeter. The bar sizes are the same that have been historically used in the English system.

The minimum yield strength for metric reinforcing bars in the ASTM specification has been revised. The recently approved revisions to ASTM A615M specifications has resulted in increasing the minimum yield strength of metric grade 400 Mpa to 420 Mpa. This revised minimum metric yield strength is equivalent to the English minimum yield strength of 60.9 ksi.

Previously, the department's concrete specifications have required a concrete strength of 35 Mpa for Class D concrete. This has been changed to 30 Mpa to obtain a more suitable equivalent to the English unit standard of 4500 psi. A new standard special provision providing this was issued August 9, 1996.

As of the date of this memorandum, all CDOT structure plans shall include the latest CRSI Metric Steel Bar Designation and the minimum yield strength of Metric Grade 420 Mpa, and the strength of concrete Class D shall be 30 Mpa. Projects currently in the final design may be excluded if revising the reinforcing steel designation, minimum yield strength, and/or the concrete strength would adversely impact the project schedule.

Staff Bridge Work Sheets have been revised in accordance with the above mentioned revisions.