TMS 602 SPECIFICATION

1.4 B.2. *Unit strength method* (Continued)

b. *Concrete masonry* - Use Table 2 to determine the compressive strength of concrete masoruy based on the strength of the unit and type of mortar specified, when masoruy complies with the following requirements:

1) Units are sampled and tested to verify conformance with, ASTM C90.

2) Thickness of bed joints does not exceed 5/8 in. (15.9 mm).

3) For grouted masonry the grout conforms to Article 2.2.

COMMENTARY

b. *Concrete masonry* - Prior to the 2013 Specification, the standardized correlations between unit compressive strength, mortar type, and resulting assembly compressive strength of concrete masoruy were established using prism test results collected from the 1950s through the 1980s. The result was a database of prism compressive strengths with statistically high variability, which when introduced into the Specification, drove the lower bound design values between unit, mortar, and prism to very conservative values. The reasons for the inherent historical conservatism in the unit strength table are twofold: 1) When originally introduced, the testing procedures and equipment used to develop the prism test data were considerably less refined than they are today. Changes introduced into ASTM C1314, particularly requirements for stiffer/thicker bearing platens on testing equipment, produce more consistent, repeatable compressive strength results. 2) Previous testing procedures either did not control the construction, curing, and testing of masoruy prisms, or permitted many procedures for doing so. As a result, a single set of materials could produce prism test results that varied significantly depending upon how the prisms were constructed, cured, and tested. Often, a field-constructed and field-cured prism would test to a lower value than a laboratory-constructed and laboratory-cured prism. Consequently, the compressive-strength values for concrete masonry prisms used to develop historical versions of the unit strength tables are not directly comparable to the compressive-strength values that would be obtained today.

Table 2 - Compressive strength of masonry based on the compressive strength of concrete masonry units and type of mortar used in construction

Net area compressive strength of concrete masonry, psi (MPa)[1]	Net area compressive strength of ASTM C90 concrete masonry units, psi (MPa)	
	Type M or S mortar	Type N mortar
1,750 (12.07)	—	2,000 (13.79)
2,000 (13.79)	2,000 (13.79)	2,650 (18.27)
2,250 (15.51)	2,600 (17.93)	3,400 (23.44)
2,500 (17.24)	3,250 (22.41)	4,350 (28.96)
2,750 (18.96)	3,900 (26.89)	—
3,000 (20.69)	4,500 (31.03)	—

[1] For units ofless than 4 in. (102 mm) nominal height, use 85 percent of the values listed.