

WHAT IS THE MINIMUM REQUIRED COMPRESSIVE STRENGTH FOR CONCRETE MASONRY?

Simplifying Concrete Masonry

COMPLIANCE METHODS

Specification for Masonry Structures
(TMS 602-13/ACI 530.1-13/ASCE 6-13)

Building Code Requirements for Masonry Structures
(TMS 602-13/ACI 530.1-13/ASCE 6-13)

ASTM C 90-14

- Prism Tests
- Unit Strength Method
- More Conservative

TABLE 1

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)	Net area compressive strength of concrete masonry units, psi (MPa)	
	Type M or S mortar	Type N mortar
1,700 (11.72)	—	1,900 (13.10)
1,900 (13.10)	1,900 (13.10)	2,350 (14.82)
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)	—

WHAT HAS CHANGED?

Increased f'_m from 1500 to 2000 psi Increased Compressive Strength from 1900 to 2000 psi (type M and S mortar) Adopted into ASTM C 90 in 2014

In certain instances:

- Double the spacing of vertical reinforcements
- Increase lap splice lengths
- Decrease in grout needed for partially
- Grouted walls by up to 50%

TABLE 2

Example of Design Impact of TMS 402/602 ASTM C 90-14

Code Edition ¹	Reinforcement Size	Reinforcement Spacing
2009 IBC ²	No. 5	40 inches
2012 IBC ²	No. 5	48 inches
2015 IBC ²	No. 5	96 inches ⁴

¹ The 2009, 2012 and 2015 editions of the IBC adopt the 2008, 2011 and 2013 editions of TMS 402/602, respectively.

² $f'_m = 1,500$ psi

³ $f'_m = 2,000$ psi

⁴ Incorporating 9 gage bed joint reinforcement at 16 inches.

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