



GENERAL

It has been observed that in the grouting of masonry walls there are probably three items that are often overlooked or misunderstood.

These three items are:

1. **Mix Design** – The proper “mix design” or “proportions” for “Masonry Wall grout mix”;
2. **Slump** – The slump at which the “grout” is placed.
3. **Testing** – The testing of the “masonry grout mix”.

REFERENCES

MSJC – TMS 402-16 “Building Code Requirements for Masonry Structures”

MSJC – TMS 602-16 “Specifications for Masonry Structures”

ASTM C 476 –19 “Grout for Masonry”

ASTM C 1019 – “Sampling and Testing Grout”

NCMA TEK 3-2 Grouting

Using these references we’ll take a look at the three subjects: Mix Design, Slump and Testing.

MIX DESIGN

Direction for specifying masonry grouts is given in ACI 530.1, Page S-9 1.4B b

Concrete Masonry 3

- a. Grout conforms to ASTM C 476. [Ref. S-15 2.2]

- b. Grout compressive strength equals f'_m but compressive strength is not less than 2000 psi. Determine compressive strength of grout in accordance with ASTM C-1019.

As addressed here, grouts may have two alternative specifications:

1. Proportion specification – ASTM C 476 [ASTM C-476 5.2]
- or,
2. Compressive Strength of Grout shall be specified [ASTM C-476 5.2]

PROPERTY SPECIFICATIONS

The proportion or property specification shall govern as specified. When neither proportion or property specifications are specified, the proportion specifications shall govern, unless data is presented to and accepted by the specifier to show that grout meets the requirements of the property specifications.

It should be noted that attempts to combine proportion and property specifications often lead to confusion, are non-productive and overly restrictive.

The property specification should be used where grout compressive strength is specified and it is tested in accordance with ASTM C 1019.



GROUT – Grout for Masonry Walls

MAF
Technical
Note
2001-2

SLUMP

The proper slump for placement of grout in masonry walls is from 8” to 11”. [530.1 Page S-19 Ref.2.6B 2.] This may seem excessive to a structural engineer, because he is used to working with much lower slumps.

However, the difference, when placing grout in masonry is, the higher slumps are required for good flowability in relatively confining areas, and also the excess water is absorbed into the masonry so that the water/cement ratio after placement and consolidation is actually much lower than during placement. Slump range: “between 8 and 11 inches” [530.1 Page S-19 Ref 2.6B 2.]

TESTING

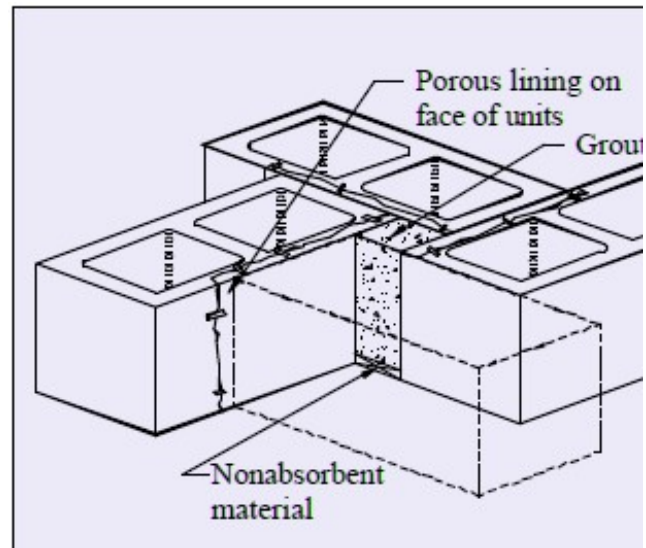
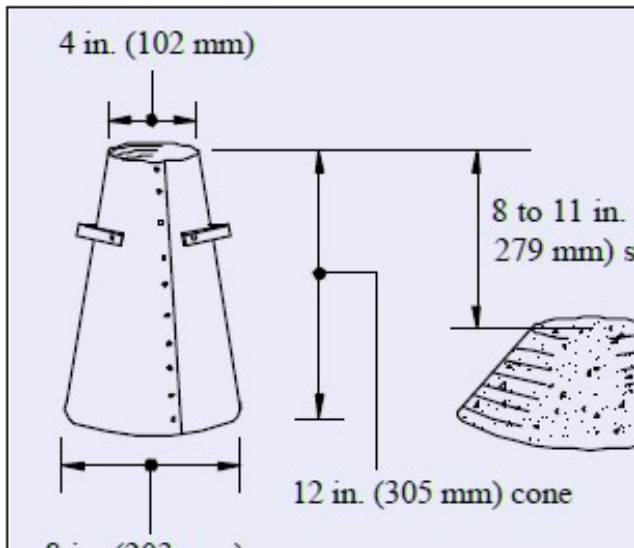
The sampling and testing of grout shall be done in accordance with ASTM C 1019, which requires a mold made up of masonry units forming a square.

Ref: ASTM C 1019 “Sampling and Testing Grout”

This method of removing the excess water must be used in order to provide compressive strength test results more nearly indicative of the grout strength in the wall.

REFERENCES

MSJC-ACI 530-99, ASCE 5-99, TMS, 402-99, ...ASTM C-476, ASTM C-1019



SUMMARY

Mix Design: *Either Proportion by ASTM C 476 or Strength Design (Property Specification) as tested by ASTM C 1019.*

Slump: *8 – 11 inches*

Testing: *ASTM C 1019*