COMPOSITE MASONRY CODE REFERENCES

- *2010 CBC – Chapter 21*
- *2010 CBC – Chapter 21A (Modified for DSA, OSHPD)*
- *2008 MSJC (ACI 530-08/ASCE 5-08/TMS 402-08)*
- *2008 Specification for Masonry Structures (ACI 530.1-08/ASCE 6-08/TMS 602-08)*

DEFINITIONS

CBC:
Section 2102.1
Section 2102A.1
MSJC:
Section 1.6

COLLAR JOINT. Vertical longitudinal joint between wythes of masonry…permitted to be filled with...grout.

COMPOSITE ACTION. Transfer of stress between components of a member designed so that in resisting loads, the combined components act together as a single member. *[MSJC]*

COMPOSITE MASONRY. Multicomponent masonry members acting with composite action. *[MSJC]*

GROUTED MASONRY.

Grouted multiwythe masonry. That form of grouted masonry construction in which the space between the wythes is solidly or periodically filled with grout.

TIE, WALL. A connector that connects wythes of masonry walls together.

WALL. A vertical element with a horizontal length-to-thickness ratio greater than three, used to enclose space.

Composite wall. A wall built of a combination of two or more masonry units bonded together, one forming the backup and the other forming the facing elements.

MASONRY CONSTRUCTION MATERIALS

CBC:
Section 2103.1
Section 2103A.1

Concrete masonry units. CMU shall conform to:

ASTM C 55 for concrete brick

ASTM C 90 for load-bearing cmu

ASTM C 744 for prefaced cmu

DESIGN

MSJC:
Section 1.9.1.2

Section properties

Stresses computed using section properties based on minimum transformed net cross-sectional area; transformed area concept for elastic analysis shall apply.

MSJC:
Section 2.1.5.2

Multiwythe walls. Composite action.

Multiwythe walls designed for composite action shall have collar joints filled with grout and connected by wall ties.

Shear stresses developed in the planes of interfaces between wythes and collar joints shall not exceed 10 psi (69.0 kPa) for grouted collar joints.

Wythes not bonded by headers shall be bonded by wall ties as follows:

Wire size	*Minimum number of wall ties required*
W1.7 (MW11)	one per 2 2/3 ft^2 (0.25 m^2) of wall
W2.8 (MW18)	one per 4 1/2 ft^2 (0.42 m^2) of wall

The maximum spacing between ties shall be 36 in. (914 mm) horizontally and 24 in.

(610 mm) vertically.

The use of rectangular wall ties to tie walls made with any type of masonry units is permitted. The use of Z wall ties to tie walls made with other than hollow masonry units is permitted. Cross wires of joint reinforcement are permitted to be used instead of wall ties.

CBC:
Section 2105.2.1
Section 2105A.2.1

MSJC:
Section 1.18.6.1

Compliance with f'_m

Compressive strength of masonry shall be considered satisfactory if the compressive strength of each masonry wythe and grouted collar joint equals or exceeds the value of f'_m [and requirements of Section 2105A.2.2 is satisfied – *CBC (DSA)*].

CONSTRUCTION

CBC:
Section 2104.1
Section 2104A.1

Masonry construction. Masonry construction must comply with Sections 2104.1.1 through 2104.5 and with TMS 602/ACI 530.1/ASCE 6 [Specification for Masonry Structures].

CBC:
Section 2104.1.2.3
Section 2104A.1.2.3

Placing mortar and units. Solid units. Solid units are placed in fully mortared bed and head joints.

IBC:
Section 2104.1.3
CBC:
Section 2104A.1.3

Installation of wall ties. The ends of wall ties shall be embedded in mortar joints at least 1 ½ in., and shall not be bent after embedment in grout or mortar.

CBC:
Section 2104A.6.1.1.1

Reinforced grouted masonry. Reinforced grouted masonry is that form of construction made with solid **concrete building brick** [ASTM C 55] in which interior joints of masonry are filled by pouring grout around reinforcing therein as the work progresses.