

ADHERED MASONRY VENEER CODE REFERENCES

- **CBC:** 2022 CBC – Chapters 14, 21 and 25
- **TMS 402:** TMS 402 – 2016 Building Code Requirements for Masonry Structures
- **TMS 602:** TMS 602 – 2016 Specification for Masonry Structures

DEFINITIONS

CBC: 202	VENEER. A facing attached to a wall for the purpose of providing ornamentation, protection or insulation, but not counted as adding strength to the wall. ADHERED MASONRY VENEER. Veneer secured and supported through the adhesion of an approved bonding material applied to an approved backing.
TMS 402: 2.2	<i>Veneer, masonry</i> — A masonry wythe that provides the exterior finish of a wall system and transfers out-of-plane load directly to a backing but is not considered to add load resisting capacity to the wall system.
TMS 402: 2.2	<i>Veneer, adhered</i> — Masonry veneer secured to and supported by the backing through adhesion.

PERFORMANCE REQUIREMENTS

CBC: 1402.2	Weather protection. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing, as described in Section 1404.4. The exterior wall envelope shall be designed and constructed in such a manner as to prevent the accumulation of water within the wall assembly by providing a water-resistive barrier behind the exterior veneer, as described in Section 1403.2, and a means for draining water that enters the assembly to the exterior. Exception: a weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapters 19 and 21, respectively.
1402.3	Structural. Exterior walls, and the associated openings, shall be designed and constructed to resist safely the superimposed loads required by Chapter 16.
1402.4	Fire resistance. Exterior walls shall be fire-resistance rated as required by other sections of this code with opening protection as required by Chapter 7.
TMS 402: 12.1.1.1	General. Provisions of the following apply to adhered veneer, with exclusions: <ul style="list-style-type: none">TMS 402 Part 1 [General Requirements], excluding<ul style="list-style-type: none">1.2.1(c) [Specified compressive strength]1.2.2 [designed based on specified compressive strength]TMS 402 Chapter 4 [General Analysis and Design Considerations], excluding:<ul style="list-style-type: none">4.1 [Loading]4.3 [Section properties]TMS 402 Chapter 6 [Reinforcement, Metal Accessories, and Anchor Bolts]
12.1.1.2	TMS Section 4.5 [Masonry not laid in running bond] shall not apply to adhered veneer.
12.1.1.3	The following TMS 602 articles shall not apply to adhered veneer: <ul style="list-style-type: none">1.4 A [Compressive strength requirements]1.4 B [Compressive strength determination]3.3 B [Placing mortar and units]3.4 A [Basic requirements reinforcement, wall ties, and anchor placement]3.4 B [Reinforcement]3.4 C [Wall ties]

	3.4 E [<i>Veneer anchors</i>]
	3.4 F [<i>Glass unit masonry panel anchors</i>]
12.1.6.1	General design requirements. Design and detail the backing system of exterior veneer to resist water penetration. Exterior sheathing shall be covered with a water-resistant membrane, unless the sheathing is water resistant and the joints are sealed.
12.1.6.2	Design and detail flashing and weepholes in exterior veneer wall systems to resist water penetration into the building interior. Weepholes shall be at least 3/16 in. (4.8 mm) in diameter and spaced less than 33 in. (838 mm) on center.
12.1.6.3	Design and detail the veneer to accommodate differential movement.

MATERIALS

CBC:	1403.2	Water-resistive barrier. A minimum of one layer of listed barriers shall be attached to the studs or sheathing, with flashing as described in Section 1404.4, in such a manner as to provide a continuous water-resistive barrier behind the exterior wall veneer.
		Water-resistive barriers shall comply with one of the following: No. 15 felt, ASTM D226, Type I, ASTM E2556, Type I or II, ASTM E331 in accordance with Section 1402.2, or Other approved, installed per manufacturer.
	1403.4	Masonry. Masonry units, mortar and metal accessories used in adhered veneer shall meet the physical requirements of Chapter 21. The backing of adhered veneer shall be of concrete, masonry, steel framing or wood framing. Continuous insulation shall be permitted between the backing and masonry veneer.
	2103.2.4 2103A.2.4	Mortar for adhered masonry veneer. Shall conform to ASTM C270 for Type S, or shall comply with ANSI A118.4 for latex-modified Portland cement mortar.

PRESCRIPTIVE REQUIREMENTS

TMS 402:	12.3.2.1	<i>Unit sizes.</i> Adhered veneer units not to exceed: 2 5/8 in. thickness; 36 in. any face dimension; 5 sq. ft. total face area; and 15 psf weight
	12.3.2.2	<i>Wall area limitations.</i> Height, width, and area of adhered veneer not limited except as required to control restrained differential movement stresses between veneer and backing.
	12.3.2.3	<i>Backing.</i> Shall provide a continuous, moisture-resistant surface to receive the adhered veneer. Backing permitted to be masonry, concrete, or metal lath and portland cement plaster applied to masonry, concrete, steel framing, or wood framing.
TMS 402: TMS 602:	12.3.2.4 1.4 C	<i>Adhesion</i> between adhered veneer units and backing shall have a shear strength of 50 psi minimum based on gross unit surface area when tested per ASTM C482, or shall be adhered in compliance with Article 3.3 C of TMS 602. If not placed per 3.3 C, see TMS 602 1.4 C.
CBC:	1410.1	[DSA-SS & DSA-SS/CC, OSHPD 1 & 4] Additional Requirements. General. Anchored or adhered veneer shall not be used on overhead horizontal surfaces.
	1410.2	[DSA-SS & DSA-SS/CC, OSHPD 1 & 4] Adhered veneer. Units exceeding 5/8 inch (16 mm) in thickness shall be applied as anchored veneer where used over exit ways or more than 20 feet (6096 mm) in height above adjacent ground elevation.
	1410.2.1	Bond strengths and tests. Veneer bond to backing in accordance with TMS 402 12.3.2.4. Minimum of two shear tests shall be performed for the adhered veneer between the units and the supporting element. At least one shear test shall be performed at each building for each 5,000 square feet (465 m ²) of floor area or fraction thereof.

CMU Requirements:

For Adhered Masonry Veneer		
Minimum cmu thickness:	.25 in.	CBC Table 1404.2
Maximum weight:	Interior – max weight is 20 psf	CBC 1404.10.3
	Exterior – max weight is 15 psf	TMS 402 12.3.2.1
Maximum cmu thickness:	2.625 in.	TMS 402 12.3.2.1



INSTALLATION

CBC:	1404.4	Flashing. For masonry, flashing shall be installed in such a manner so as to prevent moisture from entering the wall or to redirect it to the exterior. Flashing shall be installed at the perimeters of exterior door and window assemblies, penetrations and terminations of exterior wall assemblies, exterior wall intersections with roofs, chimneys, porches, decks, balconies and similar projections and at built-in gutters and similar locations where moisture could enter the wall. Flashing with projecting flanges shall be installed on both sides and the ends of copings, under sills and continuously above projecting trim. Self-adhered flashings must conform to AAMA 711. Fluid-applied membranes shall comply with AAMA 714.
	1404.10	Adhered masonry veneer. CBC refers to TMS 402 Sections 12.1 General and 12.3 Adhered veneer for design and detailing requirements (see below).
	1404.10.1.1	Water-resistive barriers. Installed as required in Section 2510.6.
	1404.10.1.2	Flashing. Comply with Section 1404.4 and 1404.10.1.2.1:
	1404.10.1.2.1	Flashing at foundation. A corrosion-resistant screed or flashing of a minimum 0.019-inch (0.48 mm) or 26 gage galvanized or plastic with a minimum vertical attachment flange of 3 1/2 inches (89 mm) shall be installed to extend not less than 1 inch below the foundation plate line on exterior stud walls, per Section 1404.4. The water-resistive barrier shall lap over the exterior of the attachment flange.
	1404.10.1.3	Clearances. On exterior stud wall, install adhered veneer not less than 4 inches (102 mm) above the earth, or not less than 2 inches (51 mm) above paved areas, or not less than 1/2 inch (12.7 mm) above exterior walking surfaces that are supported by the same foundation as the exterior wall.
	1404.10.1.4	Adhered masonry veneer installed with lath and mortar. Exterior adhered masonry veneer installed with lath and mortar shall comply with the following:
	1404.10.1.4.1	Lathing. Shall comply with Section 2510.
	1404.10.1.4.2	Scratch coat. Apply a nominal 1/2-inch-thick (12.7 mm) layer of mortar complying with Sections 2103 and 2512.2, encapsulating the lathing. The surface of this mortar shall be scored horizontally.
	1404.10.1.4.3	Adhering veneer. Adhere veneer units to the mortar scratch coat with a nominal 1/2-inch-thick (12.7 mm) setting bed of mortar complying with Sections 2103 and 2512.2. Work the masonry veneer units into the setting bed resulting in a nominal 3/8-inch setting bed after the units are applied.
	1404.10.1.5	Adhered veneer applied directly to masonry and concrete. Comply with applicable requirements of Section 1404.10 and with Section 1404.10.1.4 or 2510.7.
	1404.10.1.6	Cold weather construction. Comply with requirements of Sections 2104 and 2512.4.
	1404.10.1.7	Hot weather construction. Comply with requirements of Section 2104.
	1404.10.3	Interior adhered masonry veneers. Maximum weight of units is 20 psf (0.958 kg/m ³) and shall be installed in accordance with Section 1405.10. Where interior adhered veneer is supported by wood construction, the supporting members shall be designed to limit deflection to 1/600 of the span of the supporting members.
	1617.2.1.2 Table 1604A.3	[DSA-SS/CC] Veneers. Deflection shall not exceed 1/600 for adhered veneers over 1 inch (25 mm) thick, including mortar backing.
TMS 602:	3.3 C	<i>Placing adhered veneer.</i> Brush a paste of neat portland cement on the backing and the back of the veneer unit. Apply Type S mortar to backing and to veneer unit. Tap veneer into place, fill the space between veneer unit and backing. Use enough mortar to create a slight excess to be forced out between edges of veneer units. Mortar in back of veneer shall not be less than 3/8 in. nor more than 1 1/4 in. Tool mortar with round jointer when mortar is thumbprint hard.