

Town of Sahuarita

**AMENDMENTS TO THE
INTERNATIONAL BUILDING CODE
2006 EDITION**

The following provisions of the International Building Code, 2006 Edition, as published by the International Code Council, Inc. are hereby revised as follows:

General.

Throughout this code, change all references to “the International Electric Code” to “the 2005 Edition of NFPA 70 entitled The National Electric Code, as amended.”

Section 101.1 Title.: Revise as follows:

Add “Town of Sahuarita” as the jurisdiction.

Section 101.2 Scope. Revise as follows:

Delete exception 2 in its entirety.

Section 101.4.4 Plumbing. Revise as follows:

Change, “aspects of a medical gas system. The provisions of the International Private Sewage Disposal Code shall apply to private sewage disposal systems.” to read “aspects of a medical gas system will be in accordance with NFPA 99. The provisions of the Pima County DEQ apply to private sewage disposal systems”.

Section 105.1 Required. Revise as follows:

After “annual permit upon application”, add “and approval for status as a registered plant per Section 105.1.2.1”.

Add the following new Section 105.1.2 :

Section 105.1.2 Registered Plants.

Section 105.1.2.1 Definitions.

Registered Plant. For the purpose of this code, a registered plant is a person, firm, corporation or political entity engaged in manufacturing, processing or service which requires specialized building, utilities and equipment to the extent that the plant maintains full-time qualified personnel for the operation and maintenance of such buildings, utilities and equipments and when such plant has complied with all the provisions of this section.

Annual Permit. An official document or certificate issued by the authority having jurisdiction which authorizes performance of alterations to an already approved electrical, gas mechanical or plumbing installation in accordance with Section 105.1.2.1 of this code.

Qualifications. In addition to meeting the general definition above, a registered plant shall have in its employ an experienced architect or engineer registered in the State of Arizona who shall be directly responsible for complying with the substantive provisions of this code.

Section 105.1.2.2 Application and Registration

Section 105.1.2.3 Application. To obtain registration, the applicant shall first file an application in writing on a form furnished by the Building Official for that purpose. Every such application shall contain:

1. The name of the plant for which registration is requested.
2. A description of the property to be included under registration by address and other description that will readily identify and definitely locate the buildings and structures to be included under the registration.
3. The name of the individual who has the authority to act on behalf of the plant owner(s).
4. The State of Arizona registration number and the name and a complete resume of the registered architect or engineer who will be responsible for the work done under the registration.
5. The required categorical information must be updated and submitted annually to the Building Official on or before December 31st. Any changes to the company name, ownership or responsible registrant must be reported to the Building Official in a timely manner.

Appropriate action shall be taken by the Building Official on such application and the applicant shall be notified accordingly. If the application is disapproved, the applicant may appeal the decision to the Board of Appeals in the manner provided in Section 112 of this code.

Section 105.1.2.4 Registration Fees and Renewal. Every applicant for registration shall pay a fee in accordance with the schedule as established by The Town of Sahuarita Code, Article 3.10.050, at the time of filing for an annual permit. Such initial fee may be monthly prorated to the expiration date. Registrations shall expire on December 31st of each year. Registrations may be renewed each year by payment of the fee for a new annual permit on or before December 31st. The fee shall be refunded if the application is disapproved. Any work performed after expiration without permits and inspections required by this chapter shall be a violation of the code.

Section 105.1.2.5 Validity of Registration. Registration shall be valid only as long as the named architect or engineer remains in the employ of the registered plant in an active and full time capacity or in a continued capacity on a retainer basis. If the registered architect or engineer should leave the employ of the registrant, registration is suspended until another registered architect or engineer is assigned the responsibility for work done under the registration, the Building Official is notified of the change and the new registered architect has submitted a complete resume to the Building Official. The registrant shall notify the Building Official immediately and shall call for inspection of any work in progress in accordance with Section 109. Before any new work commences while registration is invalid or suspended, all appropriate fees shall be paid and permits and inspections shall be obtained pursuant to this chapter.

Section 105.1.2.6 Revocation of Registration.

Section 105.1.2.6.1 Authority. The Building Official may suspend or revoke a registration when the registrant fails to comply with any of the registration responsibilities or for violation of any provision of this code.

Section 105.1.2.6.2 Procedure. When the Building Official deems that the registration shall be suspended or revoked, the procedure shall be as follows:

1. The registrant shall be notified in writing, by certified mail, at least seven days prior to suspension or revocation.
2. Upon receipt of the notice, the registrant may request a hearing. Such request shall be in writing to the Building Official within seven days of receipt of notice.
3. If a hearing is requested by the registrant, the Building Official shall set a time, date and place and so notify the registrant.
4. When a hearing is conducted, the registrant and other interested parties may be in attendance. Upon completion of the hearing, the Building Official shall take all evidence submitted under advisement and shall notify the registrant of the findings in writing, by certified mail.
5. If the decision rendered by the Building Official is adverse to the registrant, the registrant may appeal the decision to the Board of Appeals in the manner provided in Section 112 of this code as amended by the Town of Sahuarita.

Section 105.1.2.7 Work Report and Inspections.

Section 105.1.2.7.1 A summary report of all work done as an approved registered plant under an annual permit shall be prepared by the registered architect or engineer and submitted annually to the Building Official. Plans or working drawings for alterations to buildings or utilities covered by this code need not be submitted for approval, except for those conditions listed below. Plans submitted pursuant to this section and as required in Section 105.1.2.7.2 below, shall be reviewed and approved and inspection of the work shall be conducted by the Building Official or authorized representatives as set forth in this code and applicable building permit and plan review fees must be paid by the applicant. The registrant may request a plan review or inspection of any work performed under this section but all applicable building permit and plan check fees must be paid by the applicant.

Section 105.1.2.7.2 Plans shall be submitted to the jurisdiction for permit, plan review and inspection for work which:

1. Creates a different occupancy classification, as defined in IBC Chapter 3 for all or any portion of the building.
2. Creates a different building construction type as defined in IBC Chapter 6 for all or any portion of the building.
3. Creates new rooms or increase the size or use of existing rooms.
4. Adds new electrical services, new mechanical equipment or systems, new plumbing systems or extensions of existing systems in excess of 7% of the existing plumbing, mechanical and/or electrical systems.
5. Add, alter, remove or penetrate required fire walls for area separation, occupancy separation or exterior wall construction.
6. Add, alter, remove or penetrate exits or egress courts as defined in IBC Chapter 10. Exception: Exit doors may be added, moved or removed from exit courts or passageways when an appropriate fire rated door(s) is installed or opening protections maintained in accordance with the fire resistive requirements.
7. Provide for alterations to the fire protection system which constitutes moving more than five sprinkler heads or causes an increased demand on the existing fire system.
8. Modify load bearing structures or add additional loads to the existing structural members.
9. Alters existing handicap accessibility components or routes or creates the requirement for an additional accessible route or components.

Construction shall not commence until these plans have been reviewed and approved by the Building Safety Department and a permit has been issued.

Section 105.1.2.8 Information required on plans and specifications. Submittal documents shall comply with Chapter 1 of the International Building Code. The first sheet of each set of plans shall give the building and street address of the work and the name and address of the owner and person who prepared them. The seal for the engineer(s) or architect(s) responsible for the preparation of such drawings, calculations and specifications shall be stamped on each drawing and signature affixed thereto. The Building Official may further require that plans for new construction shall indicate existing and finished grade elevations based on governmental data with existing and finished drainage flow patterns. Remodels and additions to buildings shall include existing floor plans and proposed new floor plans.

Section 105.2 Work exempt from permit. Revise as follows:

Building:

#2. Add "masonry or concrete walls not over 6'-0" (1682 mm) high, which do not retain earth." to #2.

Mechanical:

Add 8. "replacement of evaporative coolers with like coolers."

Section 105.3 Application for permit. Revise as follows:

#2. Add "Applicant shall provide an "Official Pima County Address" slip or other documentation verifying address and parcel."

Section 105.3.2 Time limitation of application. Revise as follows:

After "have been abandoned" add "and shall be expired".

After "additional periods not exceeding" add "180 days on unexpired applications".

Add the following to the end of this subsection, "An application shall not be extended if this code or any other pertinent laws or ordinances have been amended subsequent to the date of application. In order to renew action on an application after expiration, the applicant shall resubmit plans and pay a new plan review fee."

Section 108.2 Schedule of permit fees. Revise as follows:

Change "in accordance with the schedule as established by the applicable governing authority" to read: "in accordance with the schedule as established by the Sahuarita Town Code, Section 3.10.050."

Section 108.4 Work commencing before permit issuance. Revise as follows:

Change, "shall be subject to a fee established by the building official that shall be in addition to the required permit fees." to read: "shall be subject to a fee as established in the Sahuarita Town Code, Section 30.10.090 C. Miscellaneous Permit Violations Fee."

Section 108.6 Refunds. Revise the sentence "The building official is authorized to establish a refund policy." To read: "The Building Official shall be permitted to authorize refunding of a fee paid hereunder which was erroneously paid or collected. When the owner or the owner's authorized representative requests a permit be cancelled, the building official shall be permitted to authorize refunding of not more than 80 percent of the building permit fees paid when no work has been done under a permit issued in accordance with this code and the permit has not expired. The building official shall be permitted to authorize refunding of not more than 80 percent of the plan review fee paid when an application for a permit for which a

plan review fee has been paid is withdrawn or canceled before any examination time has been expended and the application has not expired.

The building official shall not be permitted to authorize refunding of any fee paid except upon written application filed by the original permit applicant.”

Section 110.1 Use and occupancy. Revise as follows:

After “structure shall be used or occupied,” add “or furnished in whole or in part,”.

110.3.1 Occupancy bonds required. Written assurance of compliance with this code, with the condition of temporary occupancy granted by the Building Official, and with the temporary occupancy time limit shall consist of a cash deposit or a performance bond in the penal sum of one thousand dollars (\$1,000.00) or the amount equal to one percent (1%) of the value determined pursuant to Section 108.3, whichever is greater but not to exceed twenty thousand dollars (\$20,000.00), payable to the jurisdiction and executed by a surety company qualified to execute surety bonds in the State of Arizona. Each bond shall be joint and several and conditioned that the principal in the bond will faithfully conform to this code for which the temporary occupancy authorization is to be issued. The principal and surety named in such bond shall be jointly and severally bound unto the jurisdiction, and to any and every other person aggrieved or damaged by any breach of the condition of the bond. The bond shall not be void upon any recovery or recoveries totaling less than the whole penalty but may be used and recovered upon from time to time until the whole penalty is exhausted. The term of the obligation of such bond shall be for a period that the authorization is outstanding and may be held for thirty days thereafter when required by the Building Official, except that if at the expiration of said thirty days, the jurisdiction has reason to believe that there is an action or claim impending or that there is a legal action pending which relates to the bond, the jurisdiction shall retain the bond until final disposition of such matter or matters.

Exception: owner built/owner occupied single family dwellings.

Add the following new section 111.2.1 to read:

Section 111.2.1 Construction power. Construction power is a privilege granted under the jurisdiction for convenience during construction. Construction power may be from either temporary power poles or through the permanent power panel. Each 120 Volt circuit used for construction power shall be GFCI protected. Construction power may be revoked at anytime upon cause by the Building Official.

Section 201.4 Terms not defined. Revise as follows:

Add the following to the end of this subsection:

“Webster’s Third New International Dictionary of the English Language, Unabridged, shall be considered as providing ordinarily accepted meanings.”

Section 308.2 Group I-1. Revise as follows:

In the first sentence change, “structures or parts thereof housing more than 16 persons,” to read, “structures or parts thereof housing more than 10 persons”.

In the sentence change “housing at least six and not more than 16 persons”, to read, “housing at least six and not more than 10 persons”.

Section 310.1 Residential Group R. Revise as follows:

Change, “**R-4 Residential occupancies shall include buildings arranged for occupancy as residential care/assisted living facilities including more than five but not more than 16 occupants, excluding staff.**” To read: “**R-4 Residential occupancies shall include buildings arranged for occupancy as residential care/assisted living facilities including more than five but not more than 10 occupants, excluding staff, who because of age, mental or physical**”

disability, or other reasons, live in a supervised residential environment which provides care licensed by Arizona Department of Health Services.”

Section 310.2 Definitions. Revise as follows:

Change the last paragraph: “Residential Care/Assisted Living Facilities”, by deleting the sentence: “The occupants are capable of responding to an emergency situation without assistance from staff.”

Table 720.1(2). Revise as follows:

Add the following row to this table:

Material	Item Number	Construction	4 hour	3 hour	2 hour	1 hour
1a. Earthen Walls	1a – 1.1	Solid wall construction utilizing earth as the structural wall	14	12	10	8

[F] Section 903.2.2 Group E. Revise as follows:

Delete all text for this section and replace with:

“An automatic fire sprinkler system shall be provided throughout all Group E Occupancies.

Exception: One story buildings when each room used for instruction has at least one exit door directly to the outside at ground level, and when rooms used for assembly purposes have at least one-half of the required exits directly to the exterior ground level, an automatic sprinkler system need not be provided.”

[F] Section 903.2.3 Group F-1. Revise as follows:

Change “2. Where a Group F-1 fire area is located more than three stories” to read, “2. Where a Group F-1 fire area is located more than two stories”.

[F] Section 903.2.6 Group M. Revise as follows:

Change “2. Where a Group M fire area is located more than three stories” to read, “2. Where a Group M fire area is located more than two stories”.

[F] Section 903.2.7 Group R. Add the following 2 sentences:

“In R-4 occupancies an automatic fire sprinkler system shall be installed throughout, including attached garages, attics and concealed spaces. The automatic fire sprinkler system in R-4 occupancies shall have a water-flow switch electronically supervised by an approved supervising station, and sound an audible signal (minimum 15 decibels) at a constantly attended location.”

[F] Section 903.2.8 Group S-1. Revise as follows:

Change “2. Where a Group S-1 fire area is located more than three stories” to read, “2. Where a Group S-1 fire area is located more than two stories”

[F] Section 903.3.1.1.1 Exempt locations. Revise as follows:

4. add, “when approved by the Fire Code Official” to the end of the sentence.

Section 1008.1.3.4 Access-controlled egress doors. Revise #3 as follows:

Change “shall be clearly identified by a sign that reads: PUSH TO EXIT.” To read: “shall be clearly identified by a sign that reads: PUSH TO EXIT. Lettering shall be at least 1 inch (25mm) in height and shall have a stroke of not less than 1/8 inch (3.2mm), on a contrasting background next to unlocking device.”

Section 1008.1.8.6 #5 Delayed egress locks. Revise #5 as follows:

Change “PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 SECONDS.” to read: “PUSH UNTIL ALARM SOUNDS. DOOR CAN BE OPENED IN 15 SECONDS. Lettering

shall be at least 1 inch (25mm) in height and shall have a stroke of not less than 1/8 inch (3.2mm), on a contrasting background.”

Section 1011.2 Illumination. Revise as follows:

Add the following sentence to the end of the first sentence:

“Floor level exit signs, when exit signs are required, additional approved low-level exit signs which are internally or externally or self-illuminated shall be provided in all interior corridors serving guest rooms of hotels in Group R-1 occupancies.”

SECTION 1026 EMERGENCY ESCAPE AND RESCUE

Add the following section:

“1026.6 R-4 Access and Means of Egress Facilities. In R-4 occupancies, every story, basement or portion thereof containing sleeping rooms, shall have not less than two exits. The maximum travel distance from the center point of any sleeping room to an exit shall not exceed 75 feet.

Section 1028 Maintenance of the Means of Egress. Revise as follows:

Add the following section:

Section 1028.8 Panic hardware. Where panic and fire exit hardware is installed, whether required or not, panic or fire exit hardware shall be the only locking device on the door except where otherwise permitted in this code.

Section 1101.2 Design. Revise as follows:

Add to the end of the first sentence, “and the Arizonans with Disabilities Act.”

Section 1704.5 Masonry construction. Revise as follows:

Delete Exception 2 and replace it with the following.

Exception 2: Nonessential facilities designed in accordance with Section 2107 with allowable masonry stresses reduced by one half and the maximum value of $f'm$ limited to 1500 psi for concrete or clay masonry. The following limitations shall apply to this exception:

1. The unsupported height (or length)-to-thickness ratio of a building wall shall not exceed 20.
2. The soil retaining height for a retaining wall shall not exceed 4'-0" measured from the top of footing for an 8-inch-thick wall or 6'-0" for a 12-inch-thick wall.
3. The height-to-thickness ratio shall not exceed 10 for a cantilevered masonry fence or combination masonry fence and retaining wall as measured from the top of footing to the top of wall. If a combination retaining/fence wall consists of more than one wall thickness, the smallest thickness shall be used in determining the height-to-thickness ratio.

Any portion or portions of a structure in which the design masonry stresses exceed one half the allowable masonry stresses, shall require Special Inspection for that portion or portions of the structure.

Table 1804.2 Revise as follows:

Add footnote designation “e” to the column heading, “Allowable Foundation Pressure”.

Add footnote “e” stating: “isolated footings shall use 1,000 psf for design unless a soils report is provided.”

Section 1805.2 Depth of footings. Revise as follows:

Delete the first sentence and replace it with the following:

“The minimum depth of footings below the undisturbed ground surface shall be 12 inches for 1000 psf maximum allowable foundation pressure and minimum 18 inches for maximum allowable foundation pressure values of Table 1804.2.”

Add the following new section to read:

Section 1901.2.1 Allowable stress design. *Structural concrete may be designed in accordance with ACI 318-99 Appendix A: Alternate design method.*

Section 1910.1 General. *Revise as follows:*

Add the following after the first sentence in exception 5:

“In the absence of a geotechnical report, vapor barriers are not required provided a minimum 4 inch aggregate base course is installed beneath the on-grade slab.”

Section 2109.8 *Revise as follows:*

Delete this section in its entirety except Table 2109.8.3.1 Allowable shear on bolts in adobe masonry. Add a new section 2109 as follows:

“Section 2109.8 Earthen structures.

Section 2109.8.1 General. *Earthen structures with any site condition may be designed with accepted engineering practice for earthen wall structures and with the provisions of this section.*

Section 2109.8.1.1 Earthen materials. *This section shall establish minimum standards for safety for construction of earthen materials structures, collectively known as adobe, burnt adobe, rammed earth, and hydraulic pressed unit construction.*

Section 2109.8.1.2 Professional registration required. *Plans and specifications designed under the provisions of Section 2109.8 shall be prepared by a registered professional architect or engineer licensed in the state Arizona.*

Section 2109.8.2. Minimum thickness. *The minimum thickness of earthen structures shall be designed to limit tension to zero unless tensile reinforcement is provided. Walls shall be designed to meet forces prescribed by Chapter 16. The measurement of height of walls shall be the distance between points of lateral support. Wall thickness shall be measured from face to face of each wall with. The thickness of walls using raked joints shall be the surface to surface distance of the mortar joints. The withes of wall sections shall not be combined without cross bonding of the masonry units throughout the structural element. Cross bonding shall mean overlapping of not less than 1/3 of the dimension of the masonry units.*

Section 2109.8.3 Support conditions. *Earthen structures shall be supported on a solid concrete, solid masonry foundation system the width of which shall be not greater than 1/2 inch narrower than the earthen structure which it supports. Earthen structures shall not be less than 6 inches above adjacent grade.*

Section 2109.8.4 Corbeled wall elements. *The maximum corbeled projection beyond the face of the wall shall not be more than 4 inches. Such corbeled projections shall add additional thickness to the wall, the opposite face of the wall remaining plane with the primary wall plane.*

Section 2109.8.5 Moisture barrier. *A moisture barrier equal to 30 lb. asphalt impregnated building paper, or equivalent moisture resistant barrier, shall be installed between the supporting foundation and the earthen material.*

Section 2109.8.6 Allowable stresses. *Allowable compressive, tensile and shear stresses in earthen structures shall not exceed the values prescribed in Table 2109.4. In determining the stresses, the effects of all loads and conditions of loading and the influence of all forces*

affecting the design and strength of the several parts shall be considered. Bolt values shall not exceed those set forth in Table 2109.8.3.1.

Section 2109.8.6.1 Combined units. In walls composed of different kinds or grades of units, materials or mortars, the maximum stress shall not exceed the allowable stress for the materials and mortars of which the wall is composed. The net thickness of any facing unit of earthen materials used to resist stress shall not be less than 3 inches (76 mm). When dissimilar materials, (e.g. concrete masonry or steel) is used to support earth wall construction, such elements shall be structurally isolated from other earth wall elements. The design shall recognize, with specific detailing, the effects shrinkage of the earth wall construction may have on the structural integrity of the structure.

**TABLE 2109.8.4
ALLOWABLE STRESSES FOR EMPIRICAL DESIGN OF EARTHEN WALL STRUCTURES
ALLOWABLE STRESSES**

STRENGTH OF UNIT	GROSS AREA	GROSS CROSS-SECTIONAL AREA	NOTE 1
Compression	300 psi	Normal Loading	30 psi
		Concentrated Loading	45 psi
Modulus of rupture	55 psi	Allowable tension without tensile reinforcing	0 psi
Shear	n.a.	With special inspection	8 psi
		Without special inspection	4 psi
Modulus of Elasticity	60,000 psi	Allowable Deflection	Less than 1/2%

For SI: 1 pound per square inch = 6.895 kPa.

Notes1.: Gross cross-sectional area shall be calculated on the actual rather than the nominal dimensions.

Section 2109.8.7 Lateral support. Earthen walls shall be laterally supported in the vertical direction and at intersection with other earthen walls. Support at the top of the wall shall in accordance with one of the methods in Section 2109.7.1 or Section 2109.7.2.

Section 2109.8.7.1 Bond beams. A continuous bond beam system embedded in the earthen walls, designed to provide lateral support for the walls without the aid of additional bracing elements such as roof diaphragm. Bond beams of concrete or masonry shall be not less than the width of the wall minus 6 inches.

Section 2109.8.7.1.1 Bond beam anchorage. Bond beams shall be anchored to earthen walls at intervals of not over 48 inches by a connection with shear strength of not less than the shear forces in both directions. The shear between a cast in place concrete bond beam and the earthen wall shall not exceed 1/8 the dead load at the base of the bond beam unless alternate attachment is provided compatible with the allowable stresses in Table 2109.8.4 or 2109.8.3.1.

Section 2109.8.7.2 Roof diaphragm. A roof diaphragm complying with other provisions of this code adequate to provide lateral support may be used to brace earthen walls. Anchorage

shall be tie beams as specified in Section 2109.8.7.2.2 or other anchorage methods of equal strength.

Section 2109.8.7.2.1 Tie beams. A tie beam is a beam built into the earthen wall for the purpose of anchoring the roof diaphragm and transferring the lateral perpendicular and parallel forces. Tie beams shall be provided for all earthen walls laterally braced by a roof diaphragm.

Section 2109.8.7.2.2 Tie beam anchorage. Tie beams shall be anchored to earthen walls at intervals of not over 48 inches by a connection with shear strength of not less than the shear forces in both directions. The shear between a cast in place concrete or masonry tie beam and the earthen wall shall not exceed 1/8 the dead load at the base of the bond beam unless alternate attachment is provided compatible with the allowable stresses in Table 2109.8.4 or 2109.8.3.1.

Section 2109.8.8 Lintels. Earthen walls over openings shall be supported by steel lintels, reinforced concrete or masonry lintels or earthen material arches designed to support load imposed. Lintels shall not be supported by rigid structural columns, frames or posts with rigidities greater than the earthen wall unless the design allows for the potential for differential settlements. Small openings less than 12" may be constructed without structural lintels.

Section 2109.8.9 Shear walls. Earthen walls subject to in-plane loads shall be designed to be tension free unless tensile reinforcement is provided. Solid panels less than 4 feet shall not be considered shear walls.

Section 2109.8.10 Opening jambs. Portions of walls between openings shall be constructed with lengths of not less than 1 ½ times the thickness of the wall in which they occur.

Section 2109.8.11 Freestanding piers. Piers independent of earthen walls shall be designed to support vertical and horizontal loads unless braced by other elements of the structure. Tensile reinforcement shall be provided where tension occurs. When structural posts or columns are provided within the pier ties or attachments shall be provided to the earthen wall system to laterally secure it.

Section 2109.8.11.1 Pier cap. A solid concrete cap shall be provided at the top of load bearing piers under all concentrated loads. The cap shall cover not less than 50% of the top of the pier.

Section 2109.8.12 Chases. Chases and recesses in earthen walls shall not be deeper than one-third the thickness of the wall thickness. The maximum length of a horizontal chase or horizontal projection shall not exceed 4 feet (1219 mm), and shall have at least 8 inches (203 mm) of earthen construction in back of the chases and recesses and between adjacent chases or recesses and at least 12 inches (305 mm) between the chase and the jambs of openings. Chases and recesses in earthen walls shall be designed and constructed so as not to reduce the required strength or required fire resistance of the wall and in no case shall a chase or recess be permitted within the required area of a pier. Earthen walls directly above chases or recesses wider than 16 inches (305 mm) shall be supported on noncombustible lintels.

Section 2109.8.13 Stack bond. When the earthen wall is constructed of units, (e.g. adobe brick), units shall not be laid in stack bond. Units shall, in all locations throughout the wall system, overlap the courses below by not less than one-third the dimension of the units.

Exception: Ornamental non-structural elements may be laid in stack bond if properly tied to the main structure.

Section 2109.8.14 Metal reinforcement. All walls shall be anchored at their intersections, at vertical intervals of not more than 16 inches with joint reinforcement of at least 9 gauge when using earthen units (e.g. adobe block). Horizontal reinforcement shall be used throughout the wall system and be continuous at the intersections. Reinforcement used throughout the wall system shall be not more than 4 inches narrower than the wall thickness.

Section 2109.8.15 Veneer. All veneers using earthen materials shall be installed in accordance with this section. Such veneers shall be installed with a noncombustible foundation, over concrete masonry, a backing of wood or cold-formed steel and the veneer shall be not less than 4 inches (101 mm) or greater than 8 inches in thickness.

Section 2109.8.15.1 Anchorage. Earth units shall be anchored to the supporting wall with a corrosion resistant veneer tie system mechanically attached to continuous horizontal joint reinforcement continuously installed in the veneer bed joint not less than 16 inches on center vertically. When earth mortar systems are used the tie system shall prevent the accumulation of mortar at the base of the veneer. Conventional brick ties shall not be used to anchor earth units.

Section 2109.8.15.2 Air space. The veneer shall be separated from the sheathing by an air space of a minimum of 1 inch but not more than 2 inches. A weather-resistant membrane or 15 lb. asphalt-saturated felt by shall be provided except when veneer is applied over concrete masonry or concrete backing.

Section 2109.8.15.3 Flashing. Approved corrosion-resistive flashing shall be provided in the exterior wall envelop in such a manner as to prevent entry of water into the wall cavity or penetration of water into the building structural framing components. The flashing shall extend to the surface of the exterior wall finish and shall be installed to prevent water from reentering the exterior wall envelope. Flashing shall be located beneath the first course of veneer, and at other points of support, including structural floors, shelf angles and lintels. Approved corrosion-resisting flashing shall be installed at all of the following locations:

- At top of all exterior window and door openings in such a manner as to be leak proof.
- At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings.
- Under and at the ends of masonry, wood or metal copings and sills.
- Where exterior porches, decks or stairs attach to a wall or floor assembly of wood – frame construction.
- At wall and roof intersections.

Section 2109.8.15.4 Weep holes. Weep holes shall be provided in the outside withe of masonry walls at a maximum spacing of 33 inches on center. Weep holes shall not be less than 3/16 inches in diameter. Weep holes shall be located immediately above the flashing.

Section 2109.8.16 Buttresses. Earthen walls used as buttresses shall not extend beyond an average length perpendicular to the wall to be braced a distance of 6 feet without consideration to out-of-plane bending of the buttress.

Section 2109.8.17 Gable End Walls. Gable end walls shall be constructed using veneer construction as required by Section 2109.8.15 or shall be provided with lateral bracing to prevent overturn.

Section 2109.8.18 Ledgers. Ledgers shall not be used to support vertical live and dead loads in excess of 75 lbs. per lineal foot unless the tension in the wall due to bending from out-of-plane loads and the eccentric load from the ledger is zero.

Section 2109.8.19 Material standards. The materials used in earthen wall structures shall comply with the following material standards. For each of the tests prescribed in these standards, five full size sample units shall be selected at random from each lot of units of fraction thereof produced. Mass wall systems such as rammed earth shall provide five tests for each required standard test series.

Section 2109.8.19.1 Manufacturers of earthen materials. Established manufacturers of earthen materials shall certify compliance with these standards. Copies of their periodic testing shall be supplied to the building official when requested. Literature, advertising and other information supplied by the manufacturer to designers and users of earthen materials shall include the actual dimensions of units, not nominal dimensions.

Section 2109.8.19.2 Onsite earthen materials. Earthen units, mortar, rammed earth wall materials mined, mixed, formulated, and or molded on site shall be tested for compliance with these standards. For individual structures, a set of tests shall be provided for the first 2500 square feet of wall and an additional test for each additional 2500 square feet or portion thereof in the structure. At least one set of tests shall be made for each structure and for each 2500 square feet of patio wall. The fabricator of the materials used in the project shall certify in writing to the building official compliance with these standards. The certification shall include the number of units site molded, size of the units, volume of material used as mortar, dates of fabrication, and results of testing of the material. If materials from established manufacturers and onsite materials are used in the project, copies of records including sources, quantities, and location of use within the structure shall be provided to the building official upon request.

Section 2109.8.19.3 Categories of earthen materials. Type I, II, III, and IV earthen materials are approved for use in construction of projects designed in accordance with Section 2109.8.

Exception: Type I adobe shall only be used for repairs and small additions in which new walls do not exceed 10% of the surface area of existing walls of Type I construction and for structures constructed of a similar material system and for projects requiring this class of materials to meet historic guidelines. Required plaster veneer. Adobe of Type I and II shall be protected on the exterior with exterior plaster meeting the requirements of IBC Section 2512 applied over wire lath. Type I and II adobe shall not be used within 4 inches of the floor or at the top of parapet walls or near potential sources of water which may effect the stability of the earth wall system. Other Types of adobe may be left unplastered and may be used without separation from the floor.

Adobe units and mortar. Moisture resistant stabilized adobe units and mortar shall meet the following testing standards as indicated in Table. Type S Portland cement mortar may be used for Type II, III, and IV adobe in lieu of earth mortar.

Table 2109.8.16.3.1

Material Type	Dry Compression 2114.16.3.1.1	Wet Compression 2114.16.3.1.2	Modulus of Rupture 2114.16.3.1.3	Absorption <2.5% 2114.16.3.1.4	Absorption <5.0% 2114.16.3.1.5	Moisture Content 2114.16.3.1.6
I	X		X			X
II	X		X		X	X

III	X		X	X		X
IV		X	X			X

X Indicates that material must pass the test standards prescribed in this Section.

Section 2109.8.19.3.3 Dry compression strength. Determine the compressive strength of the required number of samples as required by Section 2114.19. in accordance with the following procedures.

Section 2109.8.19.3.3.1 Dry the specimen. Dry the specimen at a temperature of 85 F.+-15o F. (29o C. +-9o) in an atmosphere having relative humidity of not more than 50 percent. Weigh the specimen at one day intervals until constant weight is attained.

Section 2109.8.19.3.3.2 Cap the specimen. The specimen may be suitably capped with calcined gypsum mortar or the bearing surfaces may be rubbed smooth and true. Then calcined gypsum is used for capping, conduct the test after the capping has set and the specimen has been dried to constant weight in accordance with Item 1 of this section.

Section 2109.8.19.3.3.3 Test the Specimen. Test the specimens in the position in which the earthen unit is designed to be used. And bed on and cap with a felt pad not less than 1/8 inch (3.2mm) or more than ¼ inch in thickness.

Section 2109.8.19.3.3.4 Testing equipment. The loading head shall completely cover the bearing area of the specimen and the applied load shall be transmitted through a spherical bearing block of proper design. The speed of the moving head of the testing machine shall not be more than 0.05 inch per minute.

Section 2109.8.19.3.3.5 Reporting results. Calculate the average compressive strength of the specimens tested and report this as the compressive strength of the block. Units shall have an average dry compressive strength of 300 psi (2068 kPa) and no individual unit may have a strength of less than 250 psi. (1724 kPa).

Section 2109.8.19.4 Wet compression strength. Determine the compressive strength of the required number of specimen as required by Section 2109.8.19. in accordance with the following procedures.

Section 2109.8.19.4.1 Cap the specimen. The specimens may be suitably capped with a capping material compatible with water saturation or the bearing surfaces may be rubbed smooth and true.

Section 2109.8.19.4.2 Wetting the specimen. Submerge the specimen under water for not less than 8 hours or longer as required until fully saturated.

Section 2109.8.19.4.3 Test the specimen. Immediately test the specimen in the position in which the earthen unit is designed to be used. And bed on and cap with a felt pad not less than 1/8 inch (3.2mm) or more than ¼ inch (6.4mm) in thickness.

Section 2109.8.19.4.4 Testing equipment. The loading head shall completely cover the bearing area of the specimen and the applied load shall be transmitted through a spherical bearing block of proper design. The speed of the moving head of the testing machine shall not be more than 0.05 inch (1.27mm) per minute.

Section 2109.8.19.4.5 Reporting results. Calculate the average compressive strength of the specimens tested and report this as the compressive strength of the block. Adobe units shall have an average wet compressive strength of 300 psi (2068 kPa). Five samples shall be

tested and no individual unit may have a wet compressive strength of less than 250 psi. (1724 kPa).

Section 2109.8.19.5 Modulus of rupture. Adobe units shall have an average modulus of rupture of 50 psi (345 kPa) when tested in accordance with the following procedure. Five samples shall be tested and no individual unit shall have a modulus of rupture of less than 35 psi (241 kPa).

Section 2109.8.19.5.1 Support conditions. A cured unit shall be simply supported by 2-inch-diameter (51 mm) cylindrical supports located 2 inches (51 mm) in from each end and extending the full width of the unit.

Section 2109.8.19.5.2 Loading conditions. A 2-inch-diameter (51 mm) cylinder shall be placed at midspan parallel to the supports.

Section 2109.8.19.5.3 Testing procedure. A vertical load shall be applied to the cylinder at the rate of 500 pounds per minute (37 N/s) until failure occurs.

Section 2109.8.19.5.4 Modulus of rupture determination. The modulus of rupture shall be determined by the formula:

$$Fr = 3W L_s / 2bt^2 \text{ (Equation 2116.3.1.3.4-1)}$$

Where, for the purposes of this section only:

b = Width of the test specimen measured parallel to the loading cylinder, inches (mm).

fr = Modulus of rupture, psi (Mpa).

L_s = Distance between supports, inches (mm).

t = Thickness of the test specimen measured parallel to the direction of load, inches (mm).

W = The applied load at failure, pounds (N).

Section 2109.8.19.6 Absorption less than 2.5%. A 4-inch (102 mm) cube, cut from an adobe unit fired to a constant weight in a ventilated oven at 212 degrees F to 239 degrees F, shall not absorb more than 2 ½ percent moisture by weight when placed upon a constantly water-saturated, porous surface for 7 days. A minimum of five specimens shall be tested and each specimen shall be cut from a separate unit.

Section 2109.8.19.7 Absorption less than 5.0%. A 4-inch (102 mm) cube, cut from an adobe unit fired to a constant weight in a ventilated oven at 212 degrees F to 239 degrees F, shall not absorb more than 2 ½ percent moisture by weight when placed upon a constantly water-saturated, porous surface for 7 days. A minimum of five specimens shall be tested and each specimen shall be cut from a separate unit.

Section 2109.8.19.8 Additional requirements. All earthen units shall meet the following requirements.

Section 2109.8.19.8.1 Moisture content requirements. Earthen units shall have a moisture content not exceeding 4 percent by weight at the time of use.

Section 2109.8.19.8.2 Shrinkage cracks. All earthen units shall not contain more than three shrinkage cracks and any single shrinkage crack shall not exceed 3 inches (76mm) in length or 1/8 inch (3.2mm) in width.

Section 2109.8.19.8.3 Soil requirements. Soil used for moisture resisting adobe units and mortar shall be chemically compatible with the stabilizing material. The soil shall contain sufficient clay to bind the particles together without the aid of stabilizers. The soil shall contain not more than 0.2 percent of water soluble salts.

Section 2109.8.19.9 Cement stabilized rammed earth. Cement stabilized Rammed Earth shall meet the following standards. The installer of the wall system shall comply with the requirements of Section 2109.8.19.2 for frequency of testing.

Section 2109.8.19.9.1 Testing before construction. The installer of cement stabilized Rammed Earth shall provide the following testing before issuance of a building permit.

Section 2109.8.19.9.2 Materials from a licensed sand and gravel producer. A copy of Proctor ASTM D698 shall be provided for each soil type and source or combination of sources. Periodic testing as provided by the supplier may be supplied to meet this requirement. The soil shall contain not more than 0.2 percent of water-soluble salts.

Section 2109.8.19.9.3 Material mined and mixed on site. A copy of ASTM D 698, ASTM C 117, ASTM C 136, and ASTM D 4318 shall be provide for each soil type and source or combination of sources. Such tests shall be repeated as required to assure that all materials to be used have been tested and are represented by the tests. The soil shall contain not more than 0.2 percent of water-soluble salts.

Section 2109.8.19.9.4 Testing required during construction. The installer of cement stabilized Rammed Earth shall provide the following tests made during the construction process. A certified testing laboratory shall provide field density tests for comparison to the pre-construction Proctor ASTM D 698, percent moisture ASTM D 2216, dry density ASTM D 698, and percent moisture ASTM D 1556. Cement Stabilized Rammed Earth walls shall meet or exceed 95% maximum dry density (ASTM D 698). Samples taken from the wall shall exceed 300 psi compression (ASTM D 1633) 14 days after placement.

Section 2308.10.1 Wind uplift. Revise as follows:

Delete the paragraph and replace with the following:

“Uplift resistance shall be determined by either method 1 or 2 below:

1. Design-based wind uplift criteria

Wind uplift requirements shall be determined by using the design wind value of 110 mph within Table 2308.10.1 for the continuous load path transmitting the uplift forces from the rafter or truss ties to the foundation.

2. Prescriptive Uplift resistance. *(Please note that the requirements of this section are in addition to those required for the structural connection of wood members).*

2.1. Conventionally-framed wood or cold-formed steel structures

All bearing wall vertical connections shall be clipped with either approved structural sheathing or approved clips to provide a continuous load path from the joist or truss through the ledger or top plate to the bottom wall plate. Where clips are used, they shall be minimum Simpson H2.5 (A34 at ledger), or equivalent load capacity, of configuration to match connection and spaced at intervals not to exceed 24". At openings, lower cripple studs do not require clipping but king/trimmer studs require double clips at bottom and upper cripples require both full clipping to header as well as header to king stud. All platform framing requires either strapping listed for the purpose or continuous sheathing over rim joist from stud to stud vertically at each floor level.

All non-bearing exterior walls shall be clipped as above except that the spacing may be extended not to exceed every other stud.

2.2. Masonry or concrete structures

If lateral design requires larger anchors or more conservative spacing, these may be used in lieu of those called out in this section.

2.2.1. Roof bearing on wall top plate

Top plates shall be secured to masonry or concrete walls with minimum 0.5" embedded anchor bolts spaced at intervals not to exceed 48". Each joist or truss shall be clipped to plate at bearing with minimum Simpson H2.5 or equivalent load capacity and of configuration to match connection. Gable end joists or trusses shall also be clipped at intervals not to exceed 48".

2.2.2. Roof bearing on wall ledger

Joists or trusses both parallel or perpendicular to a wall ledger shall be secured to masonry or concrete walls with minimum Simpson PA123 purlin anchors or equal with equivalent load capacity listed for the application and embedded into wall per listing at intervals not to exceed 48".

2.3. Structural steel structures

Structural steel buildings shall have roof members attached by either welds, bolt or other similarly approved connections at intervals not to exceed 48". Ledger designs shall connect to roof trusses with strapping listed for the purpose at intervals not to exceed 48" on all diaphragm sides. If lateral design requires larger anchors or more conservative spacing, these may be used in lieu of those called out in this section."

Section 2406.3 Hazardous locations. Revise as follows:

Delete items 5 and 6 in their entirety and replace them with the following:

"5. Glazing in any room containing a hot tub, whirlpool, sauna, steam room, bathtub, or shower where the bottom exposed edge of the glazing is less than 60 inches above a standing surface (ARS §36-1631).

6. Glazing, in an individual fixed or operable panel adjacent to a door where the nearest exposed edge of the glazing is within a 24 inch arc of either vertical edge of the door in the closed position, and where the bottom edge of the glazing is less than 60 inches above the walking surface; or where the nearest exposed edge of the glazing is within a 36 inch arc of either vertical edge of the door in the closed position and where the bottom edge of the glazing is less than 18 inches above the walking surface (ARS §36-1631)."

Table 2902.1 Minimum number of required plumbing fixtures. Revise as follows:

Items number 2 and 6, change "1 service sink" to read: "1 service sink except that service sinks shall not be required business and mercantile classifications equal to or less than 1500 square feet."

Change the column "Drinking Fountains" to read: "Drinking Fountains^e"

At the end of the table add the footnote: "e. drinking fountains required within this table may be replaced with Bottled Water service in all areas except public areas."

Section 3109.4.1 Barrier Heights and Clearances. Revise as follows:

Change the first sentence, "The top of the barrier shall be at least 48 inches (1219 mm) above grade measured on the side of the barrier that faces away from the swimming pool." To read: "The top of the barrier shall be at least 60 inches (1524 mm) above grade measured on the side of the barrier that faces away from the swimming pool. The space on the outside of the enclosure which falls within the area described by a radius 60 inches (1524 mm) in length and centered at the top of the enclosure must be maintained free of all natural or man made objects which could be use to gain access into the enclosure."